



Dunlin Alpha Decommissioning

Stakeholder Engagement Report

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Fairfield Betula Limited





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1 Introduction

1.1 Purpose

This report describes the stakeholder engagement undertaken by Fairfield Energy ('Fairfield') to help inform the development of the options for decommissioning the Dunlin Alpha Concrete Gravity Base Substructure (CGBS) and recommendations for the proposed way forward. It was originally prepared in support of the statutory and public consultation in 2018 on the Dunlin Alpha Draft Decommissioning Programme [1], alongside the Comparative Assessment Report [2] and the Environmental Appraisal Report [3]¹. It has since been updated (March 2021) to incorporate submissions to the consultation and to demonstrate Fairfield's response to these.

The report provides an account of the stakeholder engagement journey to date, setting out how organisations and individuals interested in the formulation of the plans have been involved and their views and comments taken into account in order to build a robust programme.

1.2 Context

The Dunlin Alpha Draft Decommissioning Programme is one of five separate programmes covering the Greater Dunlin Area. These include three programmes for subsea infrastructure, approved by the regulator in late 2017, and the draft programme for the Dunlin Alpha to Cormorant Alpha pipeline, approved in July 2019².

1.3 The Requirement for Consultation

When, as in the case of Dunlin Alpha, an offshore installation has reached the end of its economic life as a production facility, it is required to be decommissioned if there is no other viable option for reuse. The UK has a comprehensive regime controlling the decommissioning of offshore oil and gas installations which favours re-use, recycling or final disposal on land of offshore facilities. These provisions are requirements of European Union Directives, UK legislation, and the OSPAR Commission [4]. The multi-field Greater Dunlin Area facilities which are currently being decommissioned includes the Dunlin Alpha CGBS which forms the sole focus of the Draft Decommissioning Programme currently subject to statutory and public consultation.

The Department for Business, Energy and Industrial Strategy (BEIS) guidance, issued by the Offshore Petroleum Regulator for Environment & Decommissioning (OPRED), requires that larger decommissioning programmes are supported by a wide-ranging public consultation process proportionate to the level of interest from stakeholders [5], citing the approach advocated in the Oil and Gas UK industry Guidelines on Stakeholder Engagement for Decommissioning Activities [6] as a guide.

1.4 Approach to Stakeholder Engagement for Dunlin Alpha Decommissioning

Fairfield's intention from the outset has been to pro-actively engage with stakeholders to explore the challenges, positive lessons and potentially feasible options for decommissioning the Dunlin Alpha platform. The main objectives of the engagement have been to ensure that views could be incorporated to inform each stage of the decommissioning pre-planning process.

¹ Both these documents have since been updated (in 2021) and are available at:
<http://www.fairfield-energy.com/operations/greater-dunlin-area/stakeholder-engagement>

² See OPRED Table of Approved Decommissioning Programmes at:
<https://www.gov.uk/guidance/oil-and-gas-decommissioning-of-offshore-installations-and-pipelines>



Good stakeholder engagement practice requires the earliest possible involvement of interested parties, recognising the changing dynamics within stakeholder organisations which may occur over the course of planning a major project and the need to keep them updated.

For Dunlin Alpha, Fairfield has emphasised the importance of the 'Define – Agree – Implement' approach advocated in the industry guidelines. This is in contrast with the now-outdated 'Decide – Announce – Defend' approach to consultation where stakeholders were unable to influence outcomes. The Fairfield engagement approach has been based on the following principles:

- Early, pro-active engagement to underpin future dialogue
- Inclusive approach to all interested parties
- Acknowledgement of all concerns
- Consistency
- Realistic commitments
- Joint fact finding
- Transparency and openness
- Action to explore stakeholder views and/or concerns



2 The Dunlin Alpha Platform

2.1 Overview

Detailed descriptions of the Dunlin Alpha installation are given in the Draft Decommissioning Programme and principal supporting documents, with just a limited overview provided here for context.

Located in the East Shetland Basin of the UK Continental Shelf, Northern North Sea (see Figure 2.1), Dunlin Alpha was installed in 1977 and until cessation of production in 2015 exported over 522 million barrels of oil. Since 2008, the platform has been operated and owned by Fairfield and its partners.



Figure 2-1: Dunlin Alpha Location

The Dunlin Alpha platform, shown in Figure 2.2 overleaf, comprises 81 concrete storage cells at the base which underpin four 111 m concrete legs topped with steel transitions which extend through the water line or ‘splash zone’. These transitions are a unique feature of the Dunlin Alpha installation and were used in response to weight and buoyancy challenges for the tow-out of the structure from the construction site in Rotterdam. Internal steel reinforcement in the legs helps to withstand North Sea wave and weather conditions. The legs also contain pipework from the platform base through to the topsides, together with internal access down to the top of the cells. The 45 well conductors extend from below the seabed through to the platform topsides.

The 81 concrete storage cells that form the base of the structure are each 11 m long by 11 m wide, with a height of 32 m. 96,800 te of iron ore ballast within the cells provides additional anchorage and stability. The cells were originally used for oil storage until 1995. In 2007 a major oil recovery programme was initiated to recover the ‘attic oil’ which resided in the upper region of the cells above the oil extraction pipework. The size and limited interconnectivity of the cell design means that a small amount of oil remains in the cells. The walls and ceiling of the cells will have a build-up of waxy hydrocarbon residue. The floor will be covered in deposits of sand, clay and scale and this sediment layer on the cell floor is likely to contain hydrocarbons that adhered to the particulates as they settled.

A large volume of drill cuttings (c20,000 m³) covers the south east portion of the top of the storage cells below and onto the seabed, extending to approximately 60 m from the base of the platform.

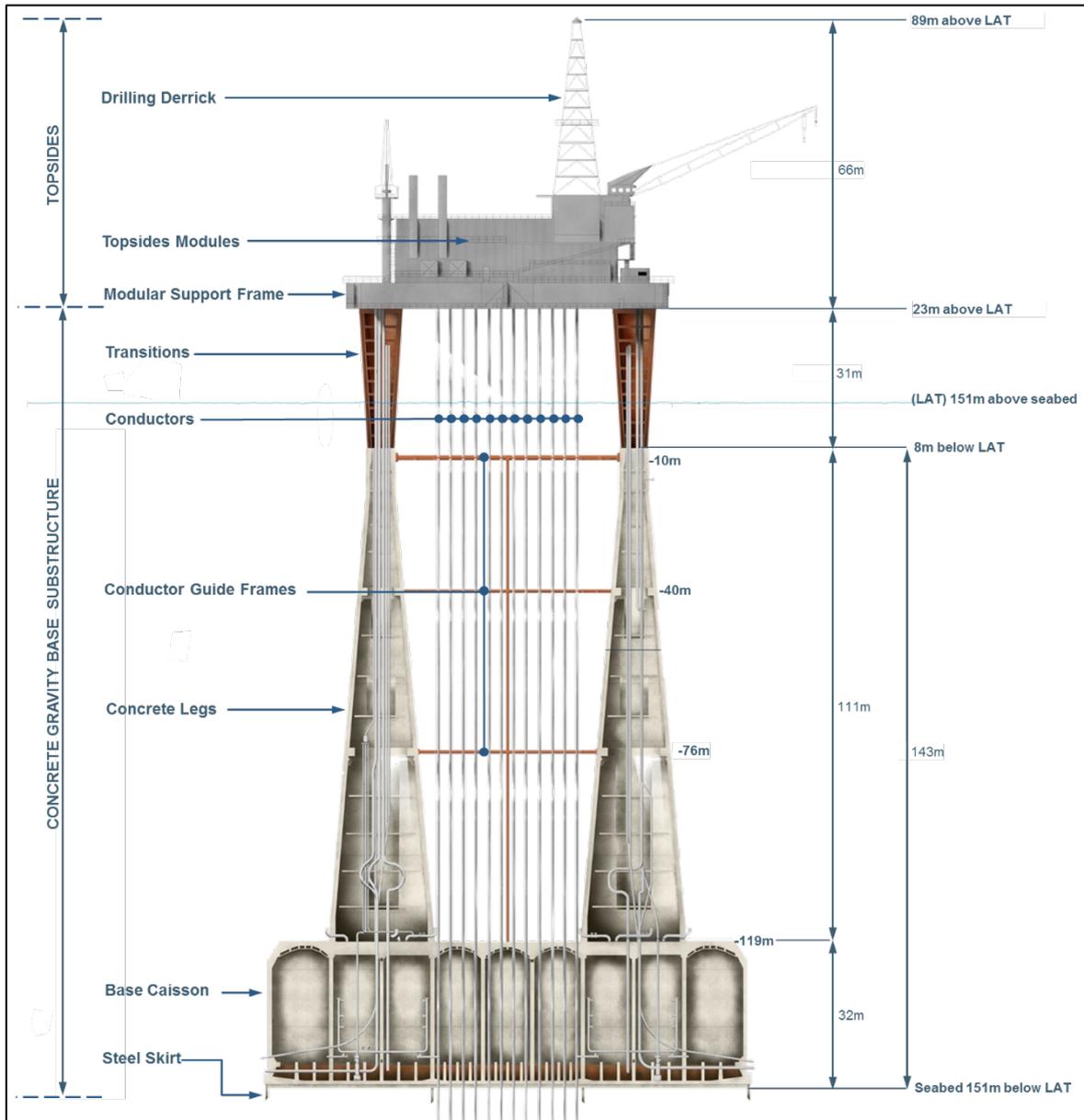


Figure 2-2: Dunlin Alpha CGBS



2.2 Decommissioning Recommendations

The recommendations for decommissioning which resulted from the Comparative Assessment evaluation of the four most feasible substructure and cell contents options are as follows:

1) Concrete Gravity Base Substructure (CGBS)

After removal of the topsides and upper conductor sections, the recommendation is to leave in place all four concrete legs and the steel transitions which extend above the waterline, with navigation aids fitted to one of the legs. This was identified as the 'most preferred' decommissioning option when considered against four of the five primary criteria, namely Safety, Environment, Technical and Economic.

2) Cell contents

The recommendation is to leave in place the residual contents of the Dunlin Alpha storage cells at the base of the CGBS, identified as the 'most preferred' decommissioning option (considered against more than 70 initial options examining recovery options, bioremediation, and capping possibilities). No credible options could be identified that would have enabled full removal of the residual cell contents, other than full removal of the entire structure.

Since the formal consultation in 2018 on the draft Decommissioning Programme and subsequent consideration by BEIS, the project has undertaken a review of the option definitions (i.e. the proposed execution scopes), base assumptions, and input data used to evaluate the decommissioning options. This has confirmed that the recommendations from the Comparative Assessment process remain valid.



3 Engagement Overview

3.1 Timeframe and Focus

Stakeholder engagement has been concentrated in two main time frames. The first phase of engagement took place between 2010 and 2012 and involved a series of stakeholder workshops, the initiation and sharing of technical studies resulting from the engagement, the formation of a Cell Contents Expert Discussion Group, early discussions with five OSPAR Contracting Parties, and a series of one-to-one meetings with stakeholders. This was part of a long-term approach to decommissioning, ahead of the circumstances that precipitated cessation of production (CoP) in 2015.

Since CoP was announced, engagement has focused on the revisiting of potential options for decommissioning. While stakeholder liaison was re-initiated for the subsea decommissioning programme in 2015 and Dunlin Alpha was mentioned peripherally, the second phase of engagement around the CGBS did not properly commence until May 2016. This took place in parallel with the refinement of potential decommissioning approaches and of options for decommissioning the cell contents housed within the base of the structure ahead of Comparative Assessment (CA) evaluation.

The key features of the second phase of engagement have included consultation on the scope of proposals for environmental impact assessment to inform further studies, and bilateral and multilateral meetings with stakeholders to better understand their interests and potential concerns. A major workshop to update the broader range of stakeholders and to better understand their views was held (November 2017) [7] ahead of the CA evaluation itself, and to ensure that the range of studies undertaken properly addressed all relevant points and provided a robust foundation.

Follow up meetings and discussions were held to answer areas of specific interest to stakeholders as far as possible, and to ensure that there were no gaps in the foundations for the eventual CA evaluation workshop held in March 2018. Access was provided to studies for this purpose, notably those covering the cell contents and drill cuttings. External stakeholders (notably regulators and regulatory advisors, and those representing other users of the sea, principally fishing and navigation) were invited to take part in the evaluation of options. The report on the emerging recommendations [8] from this meeting was circulated to all stakeholders for comment and as a pre-read for discussion at a second stakeholder workshop in May 2018. This second workshop was also the subject of a post-workshop report [9], issued for circulation to and comment by all stakeholders.

Details of all the engagement activity for both Phase 1 and Phase 2 is provided in Chapters 4 and 5.

Subsequent engagement in the period since statutory and public consultation is described within Chapter 6.



4 Stakeholder Engagement Activity Details – Phase 1 (2010-11)

4.1 Summary of Activity

Stakeholder engagement began in 2010 in conjunction with the commissioning of initial studies to produce a reference case programme primarily to understand the costs, options and potentially credible outcomes for decommissioning at a later stage. These studies included reports on: reuse, refloat, *in situ* deconstruction, derogation options (in case full removal was not possible), cells and cell entry, and leg entry, all of which fed into an options screening exercise in 2011. However, while a Draft Decommissioning Programme was produced and shared with the regulator at that time, it was not formally submitted.

The principal activity during the two years which followed are shown below in Table 4-1. Key elements of the activity are discussed in subsequent sections.

Table 4-1: Phase 1 stakeholder engagement activity (2010 to 2012)

Date	Engagement	Outcomes
January 2010	Workshop – Aberdeen Wide range of stakeholders attended a workshop to introduce the Dunlin platform, set out the challenges and seek advice from stakeholders	Comprehensive list of concepts identified Support for further work on cell contents and potential sampling
May 2010	Re-use Report [10] sent to all stakeholders for comment	No comments received
September 2010	Expert Discussion Group – Cell Contents Environmental Impact Assessment. Advice and way forward sought	Support for proposed scope of work for impact assessment report subsequently carried out by Intertek Metoc
November 2010 to July 2011	Consultation meetings with OSPAR Contracting Parties (France, Germany, Netherlands, Norway, UK)	Contracting parties familiarised with Fairfield and the Dunlin Alpha platform. Key concerns set out for Fairfield to take into account
June 2011	Cell Contents Impacts Assessment Report [11] – independent study report, issued to all stakeholders in August 2011	No comments received
July 2011	Access to Legs and Cells Report [11] issued	No comments received
August 2011	Second Refloat Report [13] issued	No comments received
October 2011	<i>In Situ</i> Deconstruction Report [14] issued	No comments received
November 2011	<i>In Situ</i> Decommissioning Report [15]	No comments received
Ongoing engagement	Regular ongoing dialogue with stakeholders with particular interest, notably regulatory at this stage, with publication of information on the Fairfield decommissioning webpages	



4.2 Introductory Stakeholder Workshop, January 2010

Stakeholders were researched and each individual consulted on their level of interest and consultation method, preferred location of a meeting and issues of particular interest. As a result, an introductory one-day workshop was organised and held in Aberdeen (where most of the stakeholders were located). The participants were as follows:

- Aberdeenshire Council
- Centre for Environment, Fisheries and Aquaculture Science (Cefas)
- Decom North Sea
- Department of Energy & Climate Change (DECC) x 3
- Fairfield x 3
- Health & Safety Executive (HSE) x 2
- Independent facilitators x 2
- Intertek METOC x 2
- Joint Nature Conservation Committee (JNCC) x 2
- Marine Scotland x 2
- Maritime and Coastguard Agency
- MCX (Mitsubishi)
- Offshore Design Engineering (ODE)
- Oil & Gas UK
- Scottish Enterprise
- Scottish Environment Protection Agency (SEPA) (Marine)
- Scottish Environment Protection Agency (SEPA) (Radioactive Waste)
- Scottish Fishermen's Federation x 2.

An independent facilitator, Andrew Acland, was engaged by Fairfield to ensure that the meeting was felt to be fair and equitable for all concerned.

Some 30 participants took part in the meeting which was carefully structured to ensure that the stakeholders gained a thorough understanding of the Dunlin Alpha and the particular challenges that would be faced when assessing the different decommissioning options available. The participants were also asked to brainstorm the issues that were of particular concern that they would like Fairfield to explore further.

The main focus of this initial stakeholder meeting was to set out the key facts relating to the Dunlin Alpha platform as then understood and also to become familiar with the main issues of interest and/or concern to stakeholders as Fairfield began the review of potential decommissioning options. The independent facilitator prepared a report of the meeting [16].

A number of organisations were unable to attend the engagement workshop in Aberdeen (e.g. Greenpeace Research Laboratories). Individual meetings were subsequently held with these organisations.

Table 4.2 below summarises some of the main concerns raised by stakeholders at the Aberdeen meeting and how these have been addressed.



Table 4-2: Main stakeholder concerns from 2010 introductory workshop

Area	Concerns Raised	Where Addressed
Marine Environment	Access to cells	Cells Access Report [11]
	Best practice in handling drill cuttings	OSPAR Recommendation 2006/5 [4]
	Record of what went into the cells	Cells Contents Impact Assessment Report [11]
	Contingency for leakage from cells	Cells Contents Impact Assessment Report [11]
	Ongoing monitoring	Decommissioning Programme [1]
	Removal of cell contents	Cells Access Report [11]
	Degradation and erosion of concrete gravity base substructure	Cells Contents Report [11] and <i>In Situ</i> Decommissioning Report [15]
	Clean up	Cells Contents Report [11] and Decommissioning Programme [1]
	Balancing costs of decommissioning and environmental protection	Comparative Assessment Report [2]
	Cumulative impacts of leaving structures in place	Decommissioning Programme [1] and Environmental Appraisal Report [3]
	Seabed survey data	Environmental Appraisal Report [3]
	Heavy metals contents	Cells Contents Report [11]
Other Users of the Sea	Navigation aids	<i>In Situ</i> Decommissioning Report [15]
	Long term liability/residual liability fund	Acknowledged
	Funding of UK Fisheries Legacy	Acknowledged
	Every remaining structure makes life difficult for fishermen	Acknowledged
	Dangers of cutting down to -55 m below sea level	Taken into account when assessing different options – Comparative Assessment Report [2]
	FishSafe updating requirements	Acknowledged
	Long term concern that structures left in place will crumble away	<i>In Situ</i> Decommissioning Report [15]
	Loss of access	Acknowledged
Technical	Link to safety issue	Decommissioning Programme [1] and Comparative Assessment Report [2]
	Risks – health and safety, technology	Decommissioning Programme [1]



Area	Concerns Raised	Where Addressed
	Reuse and recycling options (e.g. windfarms, emergency response base, etc.)	Re-use Report [10]
	Look at alternative decommissioning options	Second Refloat Report
Stakeholder Engagement	Feedback to stakeholders/keeping informed	Ongoing

Note: All Cell Contents reports have now been consolidated into one 'master' Cell Contents Technical Report, February 2018 [11] which has, in turn, since been updated to accommodate additional investigations.

4.3 Cell Contents Expert Discussion Group

One of the main issues raised by stakeholders in January 2010 was the contents of the 81 storage cells in the base of the structure. The concerns voiced by the stakeholders focused on the options for sampling the cells and what might happen in the event of a major structural failure, as well as the impact of the eventual leakage of the contents into the marine environment as the cells degrade over time.

In order to address this issue thoroughly, Fairfield commissioned Metoc (now Intertek Metoc) to carry out a detailed environmental study into both the contents of the cells and their potential environmental impacts on the marine environment [12].

With agreement from the wider group of stakeholders, representatives from among them (see Table 4.3) were asked by Fairfield to form an Expert Discussion Group to look at the cells contents issue. To this end, a meeting was convened in September 2010 in Southampton at the National Oceanography Centre to review the proposed scoping report for the cell contents and environmental impact assessment. As with the previous workshop in Aberdeen, independent facilitators were asked by Fairfield to run the session. Although seven organisations were invited to participate, three were unable to attend on the day. Andrew Acland, the independent facilitator, followed up with each organisation to ensure their views were captured and taken into account.

Table 4-3: Participants at September 2010 stakeholder meeting, Southampton

Participating Organisations	Organisations Approached Separately
JNCC	DECC (now BEIS)
Cefas	Greenpeace Research Laboratories
National Oceanography Centre, Southampton	SEPA
Scarborough Centre for Coastal Studies	

The main aims of the Expert Discussion Group were:

- To consider the preliminary results of the cells inventory evaluation, pathways and potential environmental impact
- To identify any further factors that should be risk assessed
- To identify any further environmental receptors



- To review with experts the approaches, methods, priorities, uncertainties and possible approaches to management and mitigation of risks and consequences.

A full report of the meeting [17] was compiled by the facilitator and published online.

Early on, Fairfield advised stakeholders that it would not be possible to access the sealed cells in order to take samples as attempts to do this would affect the structural integrity of the CGBS. If it were possible to access the cells, it would be necessary to take a great number of samples since the distribution of contents in the large cells volume would be different. In order to support this position, Fairfield carried out a study into the feasibility of accessing the legs and the cells [11], also published at that time on the Fairfield website.

The views from the Expert Discussion Group participants were taken into account by Intertek Metoc as it worked towards finalising the Cells Contents Impact Assessment [11]. The study was completed in May 2011 and issued to all stakeholders for comment. The study was also published on the website.

At the end of each of the stakeholder workshops in January and September 2010, the facilitator conducted an evaluation process of the workshop, summarising these as follows:

“Both workshops were well received with participants commending in particular the openness and transparency of Fairfield’s approach. A number of participants in the January 2010 stakeholder engagement workshop in Aberdeen would have liked the re-use options to have been developed in more detail, but there was also recognition that the decommissioning process was still at a very early stage. The September 2010 Expert Discussion Group in Southampton, held in response to suggestions made at the earlier workshop, was more technical in nature and less well attended but contribute to a shared understanding of the issues around cell contents and the challenges involved in resolving them. Participants assessed both workshops overall to be valuable, well-structured and well-facilitated.”

4.4 Engagement Resulting from Initial Stakeholder Contact

Following the first stakeholder workshop in January 2010, engagement with all stakeholders continued over the next two years. A number of studies were commissioned, some on advice from stakeholders, for example the CGB Re-use [10] and Cell Contents Reports [11], and were the basis for further engagement with stakeholders.

4.5 Preliminary OSPAR Contracting Party Consultation Process

Under the OSPAR Convention, OSPAR Decision 98/3 acknowledges that some platforms, for example large concrete gravity base platforms, cannot be removed [4]. In these circumstances the platform operator may apply for an exemption or ‘derogation’ to leave the structure wholly or partly in place. The Dunlin Alpha installation qualifies as a candidate for derogation.

As the early decommissioning study work progressed, and the difficulties of removal became clear, Fairfield took the view that it would be helpful to approach OSPAR Contracting Parties with an interest in decommissioning with the aim of providing an overview of the Dunlin Alpha platform and the main reasons why a derogation case was likely to be necessary. Contracting Parties were therefore contacted in September 2010 with the aim of setting up meetings to discuss the decommissioning issues. Table 4.4 summarises the meetings with OSPAR members which took place in 2010-11.



Table 4-4: Meetings with OSPAR Contracting Parties

Date of Meeting	Location	OSPAR Contracting Party
November 2010	Oslo	Norway
January 2011	Paris	France
March 2011	Rijswijk	The Netherlands
May 2011	Aberdeen	United Kingdom
July 2011	Hamburg	Germany

At each meeting, a presentation was given providing an overview of Fairfield and the key facts about the Dunlin Alpha platform, and the main decommissioning challenges were explained. Each of the Contracting Parties set out their primary areas of concern and expectations for any potential application for derogation from the UK government.

4.6 Other Bilateral Meetings

4.6.1 Centre for Environment, Fisheries and Aquaculture Science (Cefas)

Fairfield held an initial meeting with Cefas in 25 March 2010 to discuss options for assessing the cell contents and drill cuttings. This meeting stimulated thought which assisted with the development of the cell contents analysis of scope of work, and the potential value of toxicological testing with a synthetic 'sludge'. The meeting also considered data requirements to enable a meaningful analysis of drill cuttings to be undertaken.

As reported above, Cefas were participants in the cell contents Expert Discussion Group and attended the meeting in September 2010 where there was further discussion on the merits of an experimental toxicological programme and the potential wide range of uncertainty in any results.

A subsequent meeting was arranged in 29 April 2011 to discuss the findings of the Intertek Metoc cell contents report. The meeting concluded that the analysis undertaken by Intertek Metoc was thorough and that a toxicological programme was unlikely to reduce the range of uncertainty in the cell contents.

4.6.2 Scottish Fishermen's Federation (SFF)

Following SFF attendance at the January 2010 stakeholder consultation, meetings were held with their representatives in June 2010, May and October 2011 to brief them on progress of the development of decommissioning options for Dunlin Alpha. The findings of the Intertek Metoc report were also discussed together with the industry's experience with aids to navigation installed on other derogated concrete gravity based structures. It was agreed that the SFF would also lead in commenting on behalf of the National Federation of Fishermen's Organisations and the Northern Ireland Fishermen's Federation.

4.6.3 Greenpeace Research Laboratories

Fairfield held meetings with Greenpeace Research Laboratories in February 2010, March and November 2011.

The initial meeting was arranged in order to provide a briefing on the company's approach to the Dunlin Alpha decommissioning as Greenpeace had been unable to attend the Aberdeen stakeholder meeting in the January. Greenpeace were subsequently consulted on the scope of the cell contents study [10] and provided constructive comment on the draft report at the meeting held on 4 March 2011.



The draft *In Situ* Decommissioning Report [15] was discussed at the meeting of November 2011 meeting prior to the document being made available on the Dunlin website.

Greenpeace has consistently stressed the need to follow the process in applying OSPAR Decision 98/3 rigorously with respect to the concrete gravity base substructure, also expressing interest in the options for addressing the drill cuttings accumulations on and around the base of the platform. In 2011 Fairfield committed to evaluating all options for the drill cuttings within the Dunlin Alpha environmental impact assessment, at that time scheduled for the following year.

4.6.4 Northern Lighthouse Board

Fairfield first met with the Northern Lighthouse Board (NLB) in Edinburgh on 12 February 2010 to discuss the statutory requirements for Aids to Navigation systems on decommissioned structures left in place under the provisions of OSPAR Decision 98/3. This meeting produced a useful exchange of information and recognised that the NLB's views would be formally sought by the regulator within the statutory consultation process, should a formal application for derogation be submitted.

4.6.5 Marine Scotland

Fairfield met with the science division of Marine Scotland (formerly Fisheries Research Services) in March 2011. The purpose of the meeting was to discuss the cell contents study [11] following Marine Scotland's attendance at the January stakeholder meeting. The meeting was also attended by Intertek Metoc who had carried out the study.

Marine Scotland discussed the range of possible environmental impact mechanisms arising from the cell contents, and examined the methodologies and assumptions applied by the Intertek Metoc study.

The meeting concluded with an expression of support by Marine Scotland for the method and conclusions of the cell contents study and, in particular, concurring with the specific conclusions of the study concerning the uncertainties of sampling techniques.



5 Stakeholder Engagement Activity Details – Phase 2 (2016-18)

5.1 Summary of Activity

General stakeholder engagement from 2012 onwards was relatively low level and confined principally to regulatory meetings. However, the pace accelerated in the wake of cessation of production in 2015 and, for the Dunlin Alpha platform after the subsea infrastructure decommissioning pre-planning for the Osprey and Merlin fields and the Dunlin Fuel Gas Import and Dunlin Power Import facilities were commenced. As such, there was a relatively knowledgeable base of understanding among regulatory stakeholders and other users of the sea because of their involvement in the broader Dunlin field decommissioning planning. The unique nature of the Dunlin Alpha installation and the unusual challenges facing its decommissioning meant, however, that a more wide ranging consultation process was required, bringing stakeholders up to date with contemporary activity, ensuring the consistent sharing of this across different interest groups.

A refresh of the original stakeholder base was therefore undertaken and its scope redrawn in order to ensure current relevance and accuracy. Approximately 100 stakeholder organisations were identified as being of particular relevance, listed in Appendix 1, many with several points of contact representing different interests. The main stakeholder groupings are as follows:

- Statutory consultees
- Regulatory bodies and advisory agencies (UK and Norwegian)
- Dunlin Alpha partners and commercial agreement partners for shared infrastructure
- Industry groups (e.g. oil and gas, marine, ports and harbours, enterprise and technology)
- Other users of the sea and non-statutory fishermen's organisations (UK and relevant EU)
- Research academics and relevant university departments
- Environmental interest groups

A summary of the principal engagement activity conducted in this second phase of engagement is shown in Table 5-1, with discussion of key elements in the sections which follow. The engagement was supported by a series of tools to aid communication, notably:

- A working model to show the options, scale and general layout of the installation
- 3-D virtual reality headsets to provide an appreciation of context
- Sharing of the 1970s film footage of the original construction of the Dunlin Alpha
- Creation of a short, animated film explaining the decommissioning challenge
- Regular updates to the Dunlin Alpha decommissioning pages of the website, including workshop reports and meeting documentation



Table 5-1: Phase 2 stakeholder engagement activity (2016 to 2018)

Date	Engagement	Outcomes
March 2016	Dunlin Alpha website updated	Accessibility for wider public to information on pre-planning for the installation's decommissioning, updating on progress
May 2016	Statutory Consultees: Introductory approaches through telephone meetings with Global Marine Systems, Northern Ireland Fishermen's Federation, National Federation of Fishermen's Organisations to supplement existing face-to-face contact with the Scottish Fishermen's Federation established through other aspects of the field decommissioning pre-planning	Personal contact established with key representatives of each statutory consultee and pre-planning process outlined ahead of later contact
May 2016	UK Fisheries Legacy Trust Fund Ltd introductory meeting	Awareness raised of project focus and potential legacy implications
May 2016	Introductory call to SEPA to raise awareness of pre-planning activity	Meeting held to share project overview and explore SEPA expectations in more depth, especially on Duty of Care, trans-frontier shipment of waste, radioactive and hazardous waste
September 2016	International Association of Oil and Gas Producers CGBS Working Group	Sharing of lessons learned and current activity details between CGBS operators
October 2016	Scottish Environment Protection Agency: meeting to discuss Dunlin Alpha pre-planning in more detail and to gain regulatory insights to optimise project delivery	Questions answered on a range of regulatory expectations and advice received on process, including waste hierarchy and waste management strategy requirements
February 2017	Consultation on the Environmental Impact Assessment (EIA) Draft Scoping Report, shared with 17 environmentally-focused regulatory and NGO organisations	Comments received from BEIS (Environmental Management Team), JNCC, Marine Scotland, Scottish Fishermen's Federation (SFF). Recommendations incorporated into scope for the EIA process and reported in Environmental Appraisal Report [3]
April 2017	'Lessons learnt' meeting with operator CNRI focusing on the Murchison topsides experience	Awareness raised within Fairfield team of project learnings from CNRI
September 2017	Briefing workshop on Dunlin Alpha for key stakeholders: <ul style="list-style-type: none"> • BEIS • Independent Review Group • Marine Scotland • Northern Lighthouse Board • OGA • Scottish Fishermen's Federation 	Enabled consolidation of understanding regarding Dunlin Alpha pre-planning to build on earlier contact which in some cases had been focused solely on the subsea rather than CGBS decommissioning



Date	Engagement	Outcomes
October 2017 and February 2018	University of Edinburgh ANChor Project meetings with principal investigator	Dunlin Alpha models run to explore potential impacts on species seeding (e.g. for cold water coral <i>lophelia pertusa</i>) that may arise from a derogation outcome; led to discussions regarding opportunities for ground-truthing through sampling and monitoring which are now being progressed
October 2017	Offshore Contractors Association introductory meeting	Provided opportunity for mutual understanding of respective areas of interest
October 2017	Draft Environmental Impact Assessment Scoping Report shared with all stakeholders (whether attending or not) as a pre-read for the November stakeholder workshop, with comments invited. (Note: original distribution to 17 environmentally focused organisations, both regulatory and NGO, was carried out in February 2017 – see above)	No further comments received in response to re-circulation of Draft EIA Scoping Report. Clarification sought by KIMO on whether the risks both of removing and of leaving <i>in situ</i> the structure would form part of the EIA. Confirmation provided. See Environmental Appraisal Report [3] for full discussion
November 2017	Norwegian Environment Agency approached for potential engagement on Dunlin Alpha	Limited resource available in Norway for engagement but agreement by the Agency to share material with relevant governmental teams within the Norwegian administration
November 2017	Major stakeholder workshop attended by 63 external stakeholders presenting the current status of the project, a number of which had been involved in the Phase 1 engagement. Post-event report circulated to all stakeholders (not just attendees) for comment/correction	Opportunity for refreshing and informing awareness of the project, and to gain feedback from stakeholders of particular areas of interest and/or concern; final version of event report circulated to all stakeholders and put on line in January 2018; comments and queries, including questions on R&D, addressed
November 2017	University of Aberdeen Decommissioning MSc Programme meeting to establish areas of potential collaboration	Sources of information and contacts shared by Fairfield to facilitate real-world experience of MSc students
October/November/December 2017	SEPA and Environment Agency (EA) liaison on Fairfield's Waste Management Strategy	Waste Management Strategy confirmed as thorough and comprehensive. Further information (from EA) and discussion held (with SEPA) on latest guidance and expectations on recycling, waste and trans-frontier shipment procedures
December 2017	WWF meeting held to introduce installation decommissioning pre-planning	Queries raised with respect to Fairfield intentions, particularly on cell contents; note of meeting followed by further queries to which detailed feedback on installation decommissioning provided (see Appendix 2)
December 2017	Scottish Parliament short presentation made to MSPs and industry guests giving overview of Dunlin Alpha opportunities for the supply chain	Awareness raised of potential work stream opportunities for Scottish supply chain



Date	Engagement	Outcomes
December 2017	Oil & Gas Technology Centre presentation to Fairfield to set out potential for collaboration; second presentation on potential participation in accelerated corrosion collaboration also attended later in December	Followed up in February with further contact on areas of potential interest including the broader Dunlin field decommissioning
January 2018	Scottish Environment Protection Agency meeting held as follow-up to November 2018 stakeholder workshop, exploring waste issues in more detail	Greater understanding gained by Fairfield of detail of revised regulatory expectations
January 2018	Decom North Sea Environmental Appraisal guidance review participation	Lessons from Dunlin Alpha decommissioning shared and greater awareness gained of forthcoming requirements for Environmental Appraisal that will replace previous approach to environmental reporting of impact assessment in support of decommissioning programmes
February 2018	Norwegian Petroleum Society Decommissioning Conference presentation and attendance	Sharing of experiences to date and capturing of learnings from others to input into ongoing development of decommissioning pre-planning
February 2018	Provision of Drill Cuttings Technical Report and Cell Contents Technical Report to WWF and Greenpeace to fulfil requests for additional information; also made available to all stakeholders	Reports requested by 15 stakeholders; minor comments received back from one organisation only, addressed in revised version of Drill Cuttings Report [18]
February 2018	Northern Lighthouse Board meeting held to introduce project and brief new staff member	Clarity provided in terms of stakeholder thinking in the context of the project overview provided, notably with respect to Aids to Navigation
February 2018	Provision of comprehensive set of pre-read documents to external participants (regulatory and other users of the sea) ahead of the March Comparative Assessment workshop	Enabled preparation and allowed examination of the detail of supporting material ahead of evaluation workshop
March 2018	Design 4 Decommissioning marine science and industry workshop attended for input into areas where innovation required and the development of potential solutions	Greater awareness of academic interest in key areas noted, with opportunities for follow up and joint industry projects as research develops



Date	Engagement	Outcomes
March 2018	Comparative Assessment Evaluation Workshop held, including external participation from: <ul style="list-style-type: none"> • Health & Safety Executive • Independent Review Group • Joint Nature Conservation Committee • Marine Scotland • Northern Lighthouse Board • Oil & Gas Authority • Offshore Petroleum Regulator for Environment & Decommissioning (BEIS Environmental Management Team and Offshore Decommissioning Unit) 	Opportunity for stakeholders to either participate in or to observe the scoring of the options for the installation decommissioning, and to question and challenge assumptions and data where relevant; sensitivity tests performed on aspects of the evaluation, reported separately in the Comparative Assessment Report [X]. Full access provided in advance to supporting studies and relevant documentation
April 2018	Comparative Assessment Emerging Recommendations Report circulated to all stakeholders	Comments received from one stakeholder (see section 5.6 below)
May 2018	Second external stakeholder workshop held with 39 external participants; Emerging Recommendations from the Comparative Assessment evaluation workshop and sensitivity tests circulated as pre-read. Post-event report circulated to all stakeholders (not just attendees) for comment/correction	Outstanding issues of concern highlighted through structure of discussions at workshop, captured in report by independent facilitators for follow up by Fairfield
May 2018	Leg Internals and Inventory Reports shared with SEPA at their request	No comments received to date
June 2018	Comments on May Stakeholder Workshop Report received	See section 5.7 below
Throughout	Ongoing engagement with other operators and the regulator	Informed input into the pre-planning for the Decommissioning Programme and approach to supporting studies



5.2 Environmental Impact Assessment – Scoping Consultation

The draft Dunlin Alpha Environmental Impact Assessment Scoping Report for the project was circulated to 17 stakeholders with environmental responsibilities or interests in February 2017. A further 100 stakeholders were contacted in October 2017 with copies of the scoping report for additional comment. Comments were received back from four: BEIS Environmental Management Team, Joint Nature Conservation Committee, Marine Scotland and the Scottish Fishermen's Federation. The comments, incorporated into the revised scope for the environmental impact assessment and reported in the Environmental Appraisal Report [3], covered the following:

- Regulatory responsibility clarifications
- Clarifications on species diversity and interpretations of modelling figures, and on marine mammal distributions
- The need for caution in interpretations of fishing intensity statistics because of the impacts of reduced activity during the timeframe of the Cod Recovery Plan and Scottish Conservation Credit Scheme
- Greater detail on fish and fisheries
- Legacy issues from any leave in situ decommissioning solutions
- Impacts on infrastructure from waste brought to shore
- Advice on resources that may be useful to inform the assessment and their availability (e.g. the National Marine Plan Interactive online resource (known as NMPi), landing statistics, and fishing effort reports
- A recommendation that potential impact pathways are considered in the final environmental report and, where possible, evidence-based conclusive statements are drawn in relation to whether there could/couldn't be a likely significant effect on any of the designating features in relation to Nature Conservation Marine Protected Areas
- The need for conclusions to be given in relation to whether the proposed decommissioning activities are capable of affecting, other than significantly, the protected features of designated sites
- That alternative solutions to decommissioning Dunlin Alpha are included and discussed to enable understanding of alternative impacts on key receptors
- Recommendation that realistic worst case scenarios be used in the environmental report, including contingency plans which may be required, for example additional rock cover for stabilisation purposes for topsides removal or maximum number of anchors that may be used. Maximum values should be used to inform the assessment with some discussion provided as to the likelihood of their actual use
- Suggestion that key survey limitations and scope of surveys be included in the environmental report so that it is clear how the survey results have been interpreted
- The way in which lophelia pertusa cold-water coral should be considered in the environmental report, and the information required, notably assessment of the impact against threatened and declining habitats
- Recommendations that the environmental report should include drill cuttings survey information
- The requirement for both mitigation to be included and discussed in the environmental report
- The need for cumulative impacts to be considered (including timescale indication for decommissioning activity and interaction with other neighbouring installations and facilities which are being decommissioned, for example those resulting from vessel concentration



5.3 Update Briefing September 2017

A half-day briefing session was held in September 2017 to update representatives from regulatory bodies and other users of the sea on the progress of the Comparative Assessment process and the four options for decommissioning the Dunlin Alpha installation which had been screened from the nine possible options originally under consideration. The organisations represented comprised:

- Dunlin Alpha Independent Review Group
- Marine Scotland
- Oil & Gas Authority
- Northern Lighthouse Board
- Scottish Fishermen's Federation

BEIS and JNCC, although invited, were unable to attend.

The meeting enabled a complete overview to be given to those previously involved with other aspects of the Greater Dunlin Area decommissioning, and for questions to be answered with respect to individual elements of the pre-planning.

Among the issues highlighted were: the potential impacts of other users of the sea and ways in which safety could be protected; the loss of seabed access for fishermen arising from any potential derogation option, navigational safety; practicalities of different options for removal; and the special nature of the platform given the steel transitions rising from the concrete legs through the splash zone. A stakeholder request for a strong visual approach to be taken to the presentation of the options and eventual recommendation was taken on board by the Fairfield team as a means of making documentation more accessible.

5.4 Stakeholder Workshop (1) – November 2017

In order to provide an update on current thinking to the full group of stakeholders, a stakeholder workshop was held in November 2017, attended by 62 people from 45 organisations, together with the project team. The formal objectives of the meeting, led by independent facilitators Resources for Change, were:

- To inform stakeholders (organisations with an interest or stake in the Dunlin Alpha decommissioning project) about the current status of the planning and the future steps in the decommissioning process
- To facilitate stakeholder understanding and acceptance of Fairfield's preparations, reasoning and foundation for the eventual proposals, which will be set out in an application to the UK government authorities for permission to decommission
- For stakeholders to understand the decommissioning challenge being considered by Fairfield and to consider and discuss these challenges with other stakeholders and company representatives.
- For stakeholders to provide feedback on any issues raised from their perspective, so that these could either be addressed on the day, or understand the process by which these will be responded to by Fairfield at a later point
- To help Fairfield to better understand stakeholder issues and concerns about the planning for Dunlin Alpha decommissioning and to use this knowledge to inform the CA evaluation of options for decommissioning
- To capture stakeholder perspectives which may usefully inform Fairfield's exploration and assessment of decommissioning options more broadly



An offer of support from the Oil & Gas Innovation Centre to contact relevant academics to attend the workshop was accepted and resulted representatives from the Universities of Aberdeen, Dundee and Strathclyde attending the event.

A full report of proceedings [7] was prepared following the event, including details of those attending and their evaluation of the day, circulated for comment to all stakeholders whether or not they attended the meeting, and a final, amended version of the report circulated and made available online in early 2018.

Comments arising and the Fairfield response (beyond minor clarifications corrected in the final report and offers of support for further research) are listed in Table 5.2 below.

Table 5-2: Stakeholder Workshop (1) Comments and Responses

Comment or Query	How/Where Addressed
Further information on the potential for the reuse of the installation offered	Declined on the basis that a comprehensive study [10] into re-use possibilities [ref] had previously been undertaken and had concluded that no technically feasible or economically viable re-use for the platform existed. Since publication, there is no evidence to suggest that the situation has changed. Also addressed within the stakeholder workshop report.
Where will plans for materials' disposal and recycling be captured and where will the asset inventory appear?	Covered in the post-workshop report; this is addressed in the Decommissioning Programme [1] and Environmental Appraisal [3]
Request for specific information on cell contents including characterisation of non-hydrocarbon residues and the status and recoverability possibilities for drill cuttings associated with the platform.	Through stakeholder workshop report and via provision of Cell Contents Report [11] and Drill Cuttings Report [18] to all stakeholders in February 2018, with updated versions now online. The Environmental Assessment Report [3] also summarises contents
Intentions regarding consultation on rock cover to be used in connection with broader field decommissioning where selected for pipeline safety mitigation should not be limited to the Scottish Fishermen's Federation.	JNCC to be kept informed of discussions and proposals regarding rock cover size and type. Other nature conservation consultees to be kept informed on a by-request basis.
Presence of <i>lophelia pertusa</i> cold-water coral could be considered a benefit within a derogation solution. Dunlin Alpha may act as a potential larvae 'donor' for <i>lophelia pertusa</i> and other species.	Acknowledged in Environmental Appraisal. Collaboration with Edinburgh University ANChor Project initiated for sampling, deployment of monitoring equipment and review of survey footage.
Where will the potential risks associated with both removal and leaving the structure <i>in situ</i> be covered?	This is covered in the Environmental Appraisal [3]
Expertise from other removal operations (i.e. Maureen Alpha platform) should be captured	Discussions previously held with the company which had been responsible for this aspect of the Maureen project demonstrated extensive difficulties would be associated with such a solution for Dunlin Alpha.
What has been done beyond examination of Best Available Technology in terms of additional research into cutting reinforced concrete and can further studies be conducted?	Studies into concrete degradation were commissioned by Fairfield in conjunction with two other operators with the Universities of Dundee [19, 20] and Leeds (PhD thesis), but no further standalone research is being considered because of the low expectations for any significant breakthroughs in the near term. Copies of papers provided.



Comment or Query	How/Where Addressed
<p>Many of the issues associated with the fishing community are common to other users of the sea, including recreational vessels. Royal Yachting Association Scotland would wish to be consulted about marking of the structure (if derogation applies) on electronic charts as well as Admiralty Charts for the benefit of recreational users – notwithstanding the relative lack of recreational craft in the area. Longevity of the structure also an issue.</p> <p>Aids to Navigation preference for 'legs up' option is for more than one leg to be marked with AIS signalling plus radar reflectors for all legs.</p>	<p>Noted. Aids to Navigation will be discussed and developed with the Northern Lighthouse Board and these options together with longevity of the structure will be considered within that context.</p> <p>Addressed in the Comparative Assessment Report and Decommissioning Programme.</p>
<p>To what extent are the reports underpinning the decommissioning to be made available?</p>	<p>These were made available at the stakeholder workshop and requests for documentation relating to the project accommodated on request; in addition, all reports cited in eventual Decommissioning Programme and supporting documents are available for inspection during the statutory and public consultation.</p>
<p>Novel techniques to predict the behaviour of the concrete structure and diagnose integrity over coming decades are available and can be shared on request.</p>	<p>While there will be periodic monitoring of the structure if left <i>in situ</i> in agreement with the regulator, studies identify that leg failure is likely to be so far into the future as to make short and medium term monitoring unnecessary. Invitation offered to present the new technologies to the Fairfield team for the benefit of learning and knowledge exchange more generally.</p>
<p>More detail on the decommissioning timeline would be helpful.</p>	<p>Fairfield's decommissioning website to be updated as and when information is available.</p>
<p>Reference within Dunlin Alpha Decommissioning video shown at the start of proceedings included reference to having removed all the attic oil – yet not absolutely everything was removed.</p>	<p>Video edited to make clear that 'almost all the oil' was removed during the attic oil recovery programme in order not to give a misleading impression.</p>

Meetings were also held with stakeholder organisations where no-one was available to attend the stakeholder workshop. These included introductory meetings with the Offshore Contractors Association, Maritime and Coastguard Agency, and an in-depth discussion with WWF to explore issues relating particularly to cell contents (minutes and subsequent exchanges from this latter meeting appear in Appendix 2).

5.5 Comparative Assessment Evaluation Workshop March 2018

Once the preparatory studies for the four principal decommissioning options were sufficiently mature, a CA Evaluation Workshop was convened in March 2018 by the Fairfield project team with external stakeholders and relevant consultants. The CA process to date was described and the evaluation of the remaining options was reviewed. This meeting enabled the invited stakeholders to refresh and/or gain familiarity with the evaluation methodology and the information which the supporting studies and analyses had generated both through advance copies of documentation and through a presentation at the start of the workshop. It also allowed the evaluation to be challenged in key areas and, at the culmination of the workshop, outcomes for each of the decommissioning groups were presented.

The Evaluation Workshop was attended by representatives acting in the capacity of either decision-making participants, or observers. The external attendees were as follows:



- JNCC
- Marine Scotland
- Scottish Fishermen's Federation
- Northern Lighthouse Board
- Health & Safety Executive
- Independent Review Group
- Oil & Gas Authority
- BEIS Environmental Management Team
- BEIS Offshore Decommissioning Unit

Full details of the capacities in which representatives attended are contained within the Comparative Assessment Report [2] where minutes of the meeting are also provided within the appendices.

5.6 Emerging Recommendations Report – April 2018

Following the Comparative Assessment Evaluation Workshop, an Emerging Recommendations Report [8] was produced and circulated to the wider stakeholder base for their review. It also formed the pre-read for a second stakeholder workshop described below.

Greenpeace Research Laboratories submitted direct responses to the report contents, described in Table 5-3 below. These, together with Fairfield's responses, are summarised below and shown in full in Appendix 3.

Table 5-3: Emerging Recommendations Report – Greenpeace Comments and Fairfield Responses

<p>Option 9 is first compared against options 5 and 6 and then subsequently against option 4. This gives the impression that option 9 is somehow a preferred case against which other options should be compared, rather than as one of four options that were still on the table. This is unlikely to impact on the final outcome of the comparative analysis, but does look like preselection of an option against which others have to measure up, rather than as an entirely objective analysis.</p>	<p>Option 9 (Transitions Up) was compared firstly to options 5 (Shallow Cut) and 6 (IMO Cut), and then subsequently to option 4 (Full Removal), but this was not the stated intent of the two stage evaluation. At the start of the evaluation, option 9 was neither a preferred case nor a preselected option against which to judge the others. The intent of the first stage of evaluation was to determine the derogation option with most merit when considered against the five evaluation criteria. This proved to be option 9 when the Evaluation Workshop was conducted but might equally have been one of the other derogation options.</p> <p>The second stage of the evaluation was to comparatively assess the leading derogation option against the Full Removal case – option 4.</p> <p>The intent of the two stage evaluation was actually to have the Full Removal case (option 4) as the preselected case against which the 'best of the rest' would be evaluated. Fairfield believes that both the approach and analysis were entirely objective. Clarify of this logic has been made in the final version of the Comparative Assessment Report.</p>
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<p>In section 6.3 on page 64, it is stated that the assessment that Option 4 was the most preferred option against the Operational Marine Impacts criterion was “dominated by the potential for marine impacts from the removal and recovery of the drill cuttings from the top of the cell base, an inherent part of all cell contents removal options.” However, in section 6.4.3 on pages 69 onwards, which assumes that there are no drill cuttings to remove or disturb, the environment criterion for option 1 for the cell contents barely increases at all (from 3.9 to 4.3%). If the preference for option 4 had been strongly influenced by the presence of drill cuttings as suggested, then it would be expected that assuming no drill cuttings would have had a far bigger influence over the comparison of options 1 and 4 than it appears to have had from e.g. table 6.5.</p>	<p>The sensitivity analysis described in section 6.4.2 was based on disregarding the drill cuttings in the evaluation of cell content management options. Table 6.4 summarises the impact of this sensitivity on the original evaluation of the options.</p> <p>Directionally, under the Operational Marine Impact sub-criterion, option 1 becomes stronger (actually less weak) in comparison to the other options when disturbance of cuttings is ignored. This is partially offset, however, by option 1 having less merit when considering the Legacy Marine Impacts sub-criterion – moving from stronger to neutral in comparison to other options as result of option 1 no longer having cuttings recovery as part of the option’s environmental impact.</p> <p>This offset explains why there is a slight, rather than significant, increase (3.9% to 4.3%) in the overall environmental score for option 1 under this sensitivity. The greater benefit to option 1 under this sensitivity is actually the improved societal assessment – resulting from no longer carrying the burden of bringing large volumes of drill cuttings ashore for processing. Further information is available on these aspects of the evaluation if required.</p> <p>Text has been amended in the CA Report to clarify.</p> <p>In response to subsequent correspondence [see Appendix 3] and further explanation on the sensitivity analysis, Fairfield identified that an error had been made in the presentation of Table 6.4 of the Comparative Assessment Report [2] which has now been amended.</p>
<p>On a more general level, it would be good to see the cell contents and drill cuttings described in more detail in this decommissioning report; which chemicals did they contain and at what sorts of concentrations? Even if this is all in other associated report, but it would be really useful to have a summary here.</p>	<p>The Comparative Assessment (CA) Emerging Recommendation Report is a record of the CA process and, most pointedly, the evaluation phase off that process. This document is not intended to be the repository for detailed information on either the cell contents or drill cuttings.</p> <p>The cell contents and drill cuttings are described in overview within the Draft Decommissioning Programme [1] and the components summarised in Chapter 2 of the Environmental Appraisal Report [3]. This will be accompanied by key supporting documents and amongst these will be the Cell Contents Technical Report and the Drill Cuttings Technical Report. These latter technical reports were made available to stakeholders in early February and all of the above will be made available online through the Fairfield website for the statutory and public consultation and beyond.</p> <p>Further clarifications resulting from subsequent correspondence, detailing efforts to sample cell contents, appear in Appendix 3.</p>

5.7 Stakeholder Workshop (2) – May 2018

The contents of the Emerging Recommendations Report were discussed more fully at the second stakeholder workshop held in May 2018. Attended by 40 people from 25 separate organisations, the meeting was designed to update stakeholders on the progress of the development of decommissioning proposals for the Dunlin Alpha installation, and on the emerging recommendations from the CA of



options. A second objective was to collectively reflect on the work to date, and to identify whether there were any areas of outstanding concern which remained to be addressed before plans were finalised within a formal programme for statutory and public consultation.

Resources for Change who, once again, acted as facilitators, structured proceedings differently from the first workshop in November 2017. For this second workshop, the introductory presentations on the concrete gravity base substructure and the cell contents recommendations were followed by small group, round table discussions without members of the Fairfield team. This was designed to encourage participation and to give more opportunity for people to make contributions. Fairfield team members were available for questions of clarification, but were seated separately to ensure that the focus of the round table groups was on stakeholder discussion and comment in the first instance.

After considering reactions to the emerging recommendations from the Comparative Assessment process, key questions or issues were elicited by the facilitator and captured for feedback to the plenary session which followed, and for more detailed answers within the post-event report.

The May 2018 Stakeholder Workshop Report [9] captures all the questions, issues and answers in detail. However, it is worth highlighting that the principal questions related to monitoring over time and long term liability, and the potential environmental impacts from the eventual release of cell contents. These are addressed in both the Decommissioning Programme [1] and in the supporting Environmental Appraisal Report [3].

A further key question related to the verification of cell contents through sampling to validate modelling. Fairfield was at the time attempting (with some difficulty) to obtain samples of the contents from the topsides via internal pipework. External entry to the cells cannot be attempted until the topsides of the platform have been removed because of the risk of destabilisation of the legs that this would cause and the potentially fatal consequences for personnel on board the platform. Nevertheless, external entry remains an option post-topsides removal should efforts to obtain samples internally before topsides removal prove unsuccessful.

Once again, a full report of proceedings including evaluation was produced and circulated widely with the opportunity for stakeholders to correct and/or comment upon the content before being put online. As a result, comments were received from stakeholders as described in Table 5-4 below.

Table 5-4: Stakeholder Workshop (2) Comments and Responses

Comment	Response
A more informed answer to the question of liability in perpetuity could usefully be provided against section 3.4.6, incorporating details of the monitoring programme to be agreed with BEIS. Reference to the role of section 29 notice holders might also be usefully made to give confidence that in the long term there is control over liability.	Incorporated into final version of workshop report [9]
The provision of one Aid to Navigation (referenced in section 2.5.5) seems to be the optimal solution. Northern Lighthouse Board expectations would be based on expectation of an availability of 99.8% over any three year period, in accordance with relevant recommendations. This equates to a little over two days permitted downtime in any three year period, which in turn means that any failure will require immediate mobilisation of a repair initiative that will be good for at least the next three years, regardless of the current weather conditions. As such, it would be in Fairfield's interest to provide fall-back capability, consisting of either a second live unit or a (testable) hot spare unit.	Fairfield intend to commission two Aid to Navigation assemblies and two docking frames. One active unit will be positioned on the structure and one standby unit will be held onshore under contract with the maintenance provider. The aid to navigation shall be located on leg C or D at approx. 23m above LAT. Two docking frames will be installed on the selected leg to enable helicopter change out.



Comment	Response
<p>I have reviewed key parts of the [workshop report] and it is consistent with my personal observations and contributions throughout the stakeholder engagement sessions.</p> <p>The entire process was rigorous and open, enabling full dialogue with the stakeholders at appropriate times. The events were professionally set up and managed. Any questions outside of the forums were again professionally managed with effective responses.</p>	<p>Response noted</p>
<p>Main interests of our organisation relate to marine mammals and noise but based on the lack of relevant results in the report we don't have any comments on the present document.</p>	<p>Advised that the Environmental Appraisal Report [3] covers environmental sensitivities in greater depth than the Stakeholder Workshop Report [9].</p>
<p>Perhaps a couple of general observations, which are not for Fairfield to answer, because they are much wider, more societal issues. Positions on these, however, may well have assisted Fairfield, or future decommissioning campaigns.</p> <p>The tension between the government's liability to the abandonment of North Sea assets and obligations to society has not been extensively explored. Our society has progressed through several industrial revolutions. The Bings to the west of Edinburgh generated in the late 19th and early 20th century from the energy industry are a liability society is left to manage today. The CGB structures appear to be becoming the 21st century legacy from the energy industry. Perhaps, as a society would could be learning more from the past. The points above may be areas where further research could be done providing recommendations to government and industry.</p>	<p>Noted, and included here for wider awareness.</p>
<p>While the document does cover legacy this is confined to perpetual liabilities, environmental effect etc. Has there been any consideration so far on legacy aspects with respect to key documents and plans for what happens to these once decommissioning has been completed? It would be interesting to know what documents there are relating to Dunlin, both older pre-decommissioning documents and now during decommissioning planning.</p>	<p>Fairfield will consider plans for the documentation and how this will be managed beyond the statutory information that is required to be transferred and/or store. Guidance has now been provided by Capturing the Energy in order to make an assessment of the way forward.</p>

5.8 Regulatory Meetings

5.8.1 BEIS and the Oil & Gas Authority

Throughout the decommissioning pre-planning activity, regular meetings have been held with the Offshore Decommissioning Unit at BEIS. Generally held on a quarterly basis, their frequency has increased since 2015 to enable practical matters to be addressed and an understanding of the level of detail required within the Decommissioning Programme and supporting documentation and studies to enable regulatory compliance. The Oil & Gas Authority were routinely present at many of these meetings.

5.8.2 SEPA and the Environment Agency

As described within earlier tables, contact with the Scottish Environment Protection Agency gained pace from late 2018 with a meeting held to more fully understand expectations on waste strategies and Duty of Care. Copies of the Dunlin Alpha Waste Management Strategy [21] and various studies have been provided to SEPA for their review and met with approval. The Environment Agency has also had sight



of the strategy and useful guidance provided to the Fairfield team on related issues to guide proposals for onshore recycling and disposal should materials be landed within England rather than Scotland.

5.9 Supply Chain and Industry Learning

While stakeholder engagement on the pre-planning has not been focused on the supply chain, it is worth noting that industry contact – both formal and informal – over the second phase of engagement has nevertheless been extensive in terms of the development and identification of potential solutions to overcome technical and other challenges. To this end, Fairfield has:

- Participated in the industry Share Fair
- Made presentations on a regular basis to industry conferences and meetings
- Attended seminars, working groups and conferences for learning and sharing of experience
- Held numerous one-to-one meetings with individual companies to explore ideas and understand potential offerings.



6 Statutory and Public Consultation

In accordance with regulatory requirements, statutory and public consultation was triggered by submission of the Draft Decommissioning Programme to the Offshore Decommissioning Unit of OPRED for their consideration. Regulatory consultation was conducted simultaneously by the latter. A six-week consultation was held (rather than the normal four weeks), from 3rd August to 14th September 2018.

6.1 The Formal Consultation Process

The Draft Decommissioning Programme and principal supporting documents, comprising the Comparative Assessment Report, Environmental Appraisal Report³ and an earlier version of this Stakeholder Engagement Report, were made available online. Other documentation referred to within the consultation documents was also offered for inspection to supplement that which was already on the Fairfield Energy website. Hard copies were offered to statutory consultees and supplied where requested.

Emails were also sent to every stakeholder with whom engagement had been conducted to advise them of the consultation period and availability of materials.

Public Notices were placed in four publications to alert other interested parties to the consultation, namely the Aberdeen Press & Journal, the Guardian, Edinburgh Gazette and Shetland Times. An example showing the Guardian version appears at Appendix 4.

Comments were accepted by post and by email (via the dedicated address Stakeholder.Mailbox@fairfield-energy.com), for the attention of the Regulatory Affairs & Stakeholder Engagement Manager. The responses are summarised in Table 6-1 below and are reproduced in full, together with Fairfield's responses, in Appendix 5.

³ It should be noted that since that time each of these reports have been updated and the 2021 versions of the Comparative Assessment and Environmental Appraisal reports are available online at <http://www.fairfield-energy.com/operations/greater-dunlin-area/stakeholder-engagement>. The 2018 versions are also available for reference at <http://www.fairfield-energy.com/operations/greater-dunlin-area/dunlin-alpha-documentation>



Table 6-1: Statutory and Public Consultation Comments and Responses

Name/Organisation	Comment	Response
Tom Baxter	Supported proposals to decommission substructure <i>in situ</i> , but queried costings regarding leave in situ solutions for topsides and Fairfield's view on the regulatory position with respect to removal requirements and taxpayer interests.	Explanation of analysis given referring to regulatory requirements; costings for topsides removal have been provided in confidence for scrutiny by OPRED and OGA (on behalf of Treasury). Actual costs will appear in the close-out report. Derogation for topsides removal would not have extended the period before Cessation of Production, given the particular circumstances precipitating the decommissioning requirement.
DTU Aqua (Christian Riisager-Pedersen)	Requested Dunlin Alpha Decommissioning Option Screening for Comparative Assessment)	Document provided.
Greenpeace Research Laboratories (Dr David Santillo)	Formal objection based on lack of physical samples with which to verify modelling; prematurity of proposals in the absence of sufficient empirical data available to support proper characterisation and assessment, pending results of Fairfield's cell sampling efforts; and shortness of consultation period.	Comprehensive update provided following major surveying and sampling campaign, culminating in the revisiting of the comparative assessment of options incorporating the findings, which validated original recommendations.
Royal Yachting Association (Scotland) (Dr Graham Russell)	Preference is removal of upper section of CGBS to aid safety but recognises compelling reasons for not taking this approach. Appropriate notification required for vessels without radar or AIS receivers in addition to marking on relevant charts; full visibility is vital with rapid replacement of beacons in the event of failure. Content to defer to the Northern Lighthouse Board in their view of this. Requests that decommissioning activity be publicised in both Shetland and Norway to cover vessels without radar or AIS receivers.	Discussions held with Northern Lighthouse Board to confirm requirements for Aids to Navigation, servicing and interim interventions if required, and explained to the Royal Yachting Association. Relevant publicity will be given to the decommissioning process and post-decommissioning status.
Scottish Fishermen's Federation (Steven Alexander)	Expressed the organisations general policy preference for full removal to shore, or for removal to -55m in the case of derogation.	Views taken into consideration in updated comparative assessment following consultation comments from stakeholders and additional studies but <i>in situ</i> recommendation unaffected.
Scottish Wildlife Trust (Dr Sam Collin)	Formal objection, based on unacceptability of proposal to leave cell contents in place. Advocated a levy on derogation cases to support an Environmental Stewardship Fund.	Set out rationale for balance to be struck through comparative assessment in determining optimum outcomes for decommissioning proposals and the absence of proven technology to recover residual cell contents, showing leave in place solution to be demonstrably better on environmental, safety, technical risk and cost criteria, even after sensitivity testing. Legacy responsibilities fully acknowledged but Environmental Stewardship Fund for industry is beyond Fairfield's remit.



6.2 Current Status and OSPAR Review

After the consultation and following discussions with OPRED, the decision was taken to separate out the Dunlin Alpha topsides and substructure plans to expedite progress on the decommissioning of the former. Statutory consultees were contacted to alert them to this intention although no comments were received in response. An example of the correspondence is included at Appendix 6.

Refinements to the Comparative Assessment and Environmental Appraisal Reports for the Dunlin Alpha substructure Decommissioning Programme in its standalone form have also been made. These reflect the additional work which has followed the stakeholder and regulatory comments from the 2018 consultation, including the additional, extensive investigative work into the storage cells which has been undertaken during this period to validate the modelling.

The next stage of consultation will be the submission of the Dunlin Alpha Derogation application to the OSPAR Convention's Contracting Parties. This will be undertaken by OPRED who lead the UK Government's participation in OPSAR's Offshore Industries Committee.

Under the terms of the OSPAR Convention (Decision 98/3), the proposals for the substructure require consideration by the international community since a formal derogation is being sought for decommissioning the substructure *in situ*. Decision 98/3 on the Disposal of Disused Offshore Installations allows for exceptions to be made from the normal requirement for disused offshore installations to be fully removed, such as in the case of concrete installations like Dunlin Alpha, where there are significant reasons why an alternative disposal method is preferable rather than re-use, recycling or final disposal on land.

6.3 Preparation of the Final Decommissioning Programme

Following the OSPAR review of the derogation application, OPRED will liaise further with Fairfield Energy on any areas requiring further detail. When the regulator is satisfied with the plans for the Dunlin Alpha substructure and conditions of approval have been agreed, the Secretary of State for Energy will call for the Final Decommissioning Programme. Once approved, this will be made available online and stakeholders will be notified.

The Final Decommissioning Programme will incorporate details of the OSPAR review, alongside comments from statutory and public consultees, including any modifications which may be required. The Stakeholder Engagement Report will also be updated at that stage. In the meantime, any requests for information, or further comment, should be provided to Fairfield at: Stakeholder.Mailbox@fairfield-energy.com.



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- [2] Dunlin Alpha Comparative Assessment Report A-301649-S07-REPT-005 ([issued 2018](#) and [reissued 2021](#))
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- [14] Dunlin Alpha *In Situ* Deconstruction Report, October 2011
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8 Abbreviations

BEIS	Department for Business, Energy and Industrial Strategy
CA	Comparative Assessment
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CGBS	Concrete Gravity Base Substructure
CoP	Cessation of Production
DECC	Department for Energy and Climate Change (now BEIS)
JNCC.....	Joint Nature Conservation Committee
NLB	Northern Lighthouse Board
OSPAR	The OSPAR Commission is the mechanism by which 15 Governments and the EU cooperate to protect the marine environment of the North-East Atlantic.
SEPA.....	Scottish Environment Protection Agency
SFF	Scottish Fishermen's Federation



APPENDIX 1 LIST OF STAKEHOLDERS CONTACTED FOR ENGAGEMENT

Aberdeen & Grampian Chamber of Commerce
Aberdeen City Council
Aberdeen Harbour Board
Aberdeenshire Council
Asociacion de Armadores (Spain)
British Geological Survey
British Marine Federation
British Ports Association
Capturing the Energy
Cefas
Cetacean Research and Rescue Unit
Canadian Natural Resources
Comité National des Peches
Cromarty Firth Port Authority
Danish Centre for Marine Research
Danmarks Fiskeriforening PO (Danish Fish Producers)
Decom North Sea
Dunlin Alpha Offshore Installation Manager
East of England Energy Group
Edinburgh University
Energy Industries Council
EnQuest
Environment Agency
Equinor (formerly Statoil)
ExxonMobil
Faroese Fishermen's Association
Forth Ports
Friends of the Earth (Scotland)
Global Marine Systems
GMB Scotland
Greenpeace Research Laboratories
Health & Safety Executive
Heriot-Watt University



Highlands & Highlands Enterprise
Historic Scotland
International Association of Oil and Gas Producers
International Marine Contractors Association
International Maritime Organisation
Joint Nature Conservation Committee
KIMO UK
Lerwick Port Authority
Marine Alliance for Science & Technology for Scotland
Marine Conservation Society UK
Marine Scotland
Maritime and Coastguard Agency
National Federation of Fishermen's Organisations
National Oceanography Centre
Newcastle University - SEAFRONT Project
NOF Energy
Norges Fiskarlag (Norwegian Fishermen's Association)
North Sea Commission
North Sea Regional Advisory Council
Northern Ireland Fishermen's Federation
Northern Lighthouse Board
Norwegian Environment Agency
Norwegian Petroleum Directorate
Ocean Governance
Offshore Contractors Association
Oil & Gas Authority
Oil & Gas Innovation Centre
Oil & Gas Institute
Oil & Gas Technology Centre
Oil & Gas UK
OPITO
Opportunity North East
Peterhead Port Authority
Rederscentrale (Belgian Fish Producers Association)



RMT

Royal Yachting Association Scotland

RSPB Scotland

Scottish Association for Marine Science

Scottish Enterprise

Scottish Environment LINK

Scottish Environment Protection Agency

Scottish Fishermen's Federation

Scottish Wildlife Trust

Sea Source Offshore

Seas at Risk

Shell UK Limited

Shetland Oil Terminal Advisory Group (SOTEAG)

Siccar Point Energy

Society for Underwater Technology

Society of Maritime Industries

TAQA Bratani

UK Fisheries Offshore Oil and Gas Legacy Trust Fund

Unite the Union

University of Aberdeen (Centre for Research in Energy Economics & Finance)

University of Aberdeen (Decommissioning MSc Programme)

University of Aberdeen (School of Biological Sciences)

University of Strathclyde

University of West of Scotland

VisNed (Netherlands Fish Producers' Association)

WDC Whale and Dolphin Conservation

WWF



APPENDIX 2 DETAILED RESPONSES TO WWF QUERIES

MINUTES RELATING TO ELEMENTS OF DISCUSSION ON THE DUNLIN ALPHA PLATFORM, held 8 December 2018	WWF's SUBSEQUENT COMMENT	FAIRFIELD'S RESPONSE TO COMMENT
<p><i>WWF query:</i></p> <p>Why isn't qualitative risk assessment done before comparative assessment (CA) to inform it?</p> <p><i>Fairfield Energy response:</i></p> <p>Quantitative assessments covering safety risk, environmental impacts, and cost are typically undertaken as inputs to the CA. Societal and technical risk assessment can be harder to measure quantitatively, and need to be modified according to the facility to be decommissioned. Descriptions don't always work across different scenarios and can require adaptation to enable quantification. On safety, we undertake quantitative risk assessment based on stakeholder engagement and internal sessions, but challenges do exist, such as the 100m tunnels in the CGBS legs, which are particular to this project.</p>	<p>We believe QRAs can be done at any time but need to reflect the levels of uncertainties being dealt with. The CA process are single value numbers – there are no allowances for the ranges that exist within the studies conducted to support the CA process. The works up front, allowed limited time/discussion about the 'CA' process outcomes, with limited stakeholders, and no QRA input.</p>	<p>We would reiterate that both qualitative and quantitative risk assessments have been conducted at various stages of the Comparative Assessment process. Screening stage assessments have typically been qualitative in nature, whereas evaluation stage assessments have tended to be quantitative. Quantitative assessments are generally regarded as more robust as they are based on documented scopes of work. We therefore believe we have performed appropriate QRAs at each stage of the CA process.</p>



MINUTES RELATING TO ELEMENTS OF DISCUSSION ON THE DUNLIN ALPHA PLATFORM, held 8 December 2018	WWF's SUBSEQUENT COMMENT	FAIRFIELD'S RESPONSE TO COMMENT
<p><i>WWF comment:</i></p> <p>Our consultant says that FEED-level engineering should be applied before decision making.</p> <p><i>Fairfield Energy response:</i></p> <p>There are various different phases of in a typical project but for decommissioning, FEED studies would be undertaken later. For development work, it is normal for operators to use conceptual engineering for selecting between alternatives, followed by FEED for the final investment decision. Detailed design and execution is carried out afterwards.</p> <p>In terms of understanding the four CGBS options being explored for Dunlin Alpha, we do think they have been assessed to the appropriate level, and we have prepared full methods statements for each. Quantified analysis of risk to persons, environmental impacts, fuel use, emissions, noise in the marine environment, and cost and technical challenges as well as societal upsides have all been covered and we therefore think we understand the options for the CGBS very well. The full removal case is one of the options.</p> <p>[The four options for decommissioning the CGBS were described at this point, with reference to the diagram showing all options in the stakeholder workshop report.] All feasible options explored back in 2010-12 were revisited and re-explored in 2015 and extra options added. The possibility of toppling was not considered acceptable. Leaving the module support frame in place was also examined for the potential of the structural role this could play in keeping the concrete legs together and enhancing longevity from 1000 to 1500 years. The question was whether one could rely on the structure over that period of time and the implications of constant maintenance.</p>	<p>It is not usual to make key decisions so early in the process based on 'concept/feasibility studies'.</p> <p>FEED studies demonstrate that you have a good understanding of the issues and have done some realistic works to try to come up with solution to problems. Feasibility levels works do not go to this level and usually identify areas requiring further efforts. The uncertainty bands for feasibility level works are so wide you cannot confidently make decisions – that is why FEED studies for more than one option are always done. Decommissioning is no different in this respect to any other project.</p> <p>Maersk undertook more advanced studies for Leadon before making the final decision –there is no evidence of any attempt to address full removal of the bundle properly.</p> <p>w.r.t. GBS – as there is no formal paperwork in the public domain past 2012 it is not possible to see if the works are adequate – based on 2012 and SID approach.</p>	<p>Many industry sectors employ a stage-gate process for decision making. The labels Appraise-Select-Define-Execute-Operate are commonly used in the Oil and Gas sector and the underlying principle is to mature available options sufficiently in order to make an informed decision between them. For investment decisions, this is typically done in the 'Select' phase of a project, based on feasibility level studies. It is simply not the case that FEED studies are always done for more than one option. FEED is typically performed in the 'Define' stage. We view decommissioning scopes in the same manner and believe we have an appropriate level of engineering definition to make an informed comparative assessment of the options.</p>



MINUTES RELATING TO ELEMENTS OF DISCUSSION ON THE DUNLIN ALPHA PLATFORM, held 8 December 2018	WWF's SUBSEQUENT COMMENT	FAIRFIELD'S RESPONSE TO COMMENT
<p><i>WWF comment:</i></p> <p>The four options for the CGBS CA have used 50 years to truncate some of the study assessments since if you extend these to infinity the case becomes too hypothetical.</p> <p>On cost, we understand the ongoing monitoring liability that any leave <i>in situ</i> solutions for installations and subsea infrastructure entails.</p>	<p>[You've] done the CA for the GBS – if so why not talk to stakeholders first?</p> <p>On ongoing liabilities – how can these costs be understood with no firm proposals or agreement with the Regulators?</p>	<p>We note that you refer to the CA as a discrete one-off activity whereas we would contend that the CA is a multi-stage process. With reference to the CA evaluation step, this has not yet been undertaken for the Dunlin CGBS. While the CA process is an ongoing activity, the CA evaluation is scheduled to be held in March 2018. In preparation for this stage of the process, we have spoken extensively with stakeholders, not least the very well attended general workshop we conducted at the Aberdeen Exhibition Centre in Nov 2017, and of course our engagement with your Simon Walmsley in Dec 2017.</p> <p>We agree with your point that ongoing liability costs are uncertain in the absence of any firm agreement on a monitoring program with the regulators. That said, we do have some appreciation of what each derogation option might require by way of monitoring and, where necessary, navigation aid maintenance and have made cost estimates for these aspects. We believe these costs will be found to have little influence in the outcome of the evaluation. It might also be noted that the removal of costs is the first sensitivity analysis we would be expected to perform during the CA evaluation stage which might diminish the importance of any cost uncertainty.</p>



MINUTES RELATING TO ELEMENTS OF DISCUSSION ON THE DUNLIN ALPHA PLATFORM, held 8 December 2018	WWF's SUBSEQUENT COMMENT	FAIRFIELD'S RESPONSE TO COMMENT
<p><i>WWF query:</i></p> <p>Questions have been raised about in-perpetuity responsibilities at the Shell Brent workshops, particularly on monitoring and payment. Would you work this up? What are the expectations?</p> <p><i>Fairfield Energy response:</i></p> <p>The regulator (OPRED) is currently talking about three to six year cycles for pipeline monitoring in the northern North Sea (two to four elsewhere), with five to ten years for the footings of steel piled jackets and ten years for CGBS, but a risk based approach is being taken to the ongoing monitoring of installations.</p> <p>On liability in perpetuity, it's important to understand the options and their implications. If a structure is brought to shore, where do you stop on the waste stream in terms of accounting for the societal and environmental impacts. 50 years isn't when those cease, but when assessing options for CA, execution of the scope and later monitoring needs to be bounded rather than go to infinity. The way future cash flows are discounted means that the costs further out become less relevant anyway.</p>	<p>The answer on Liability in Perpetuity – if materials are brought to shore then the ongoing liabilities are well understood and would apply – so you don't need to go on indefinitely.</p> <p>50 years limit is not agreed with anyone, nor it seems discussed with stakeholders before being applied, at any time and is an arbitrary value applied. If costs are discounted back to such a level they do not influence the decision then why not remove the liability now as money isn't the issue?</p>	<p>We believe the use of the 50 year time horizon within our CA process has been greatly misunderstood. This limit has been applied solely to the costs associated with navaid maintenance for those options which would require a long term aid to navigation. We believe that extrapolating such costs to infinity might be viewed as disingenuous and would not facilitate a meaningful comparison of the options under consideration. We have discussed this issue, and likely future developments in navigation technology, with stakeholders who specialise in this area and are informed that vessel traffic is likely to be fully autonomous within a fairly limited timeframe. We will offer to perform sensitivity analysis on this value but believe it will be found to have little influence on the outcome of the evaluation.</p> <p>May we reiterate that 50 years is being used solely on Navaid costs and that the other assessments, such as for example the longevity of the structure or the snagging risk to fisherman from derogated options, have used much longer timeframes.</p> <p>With regard to your final point in this area, comparative assessment seeks to understand the advantages and disadvantages of the various options across a full suite of criteria – safety, environment, technical, societal and cost. It is not a simple trade-off of 'cost now' versus 'cost in the future' as your question would suggest. We believe the options to be considered have material differences in the other criteria which will inform the decision.</p>



MINUTES RELATING TO ELEMENTS OF DISCUSSION ON THE DUNLIN ALPHA PLATFORM, held 8 December 2018	WWF's SUBSEQUENT COMMENT	FAIRFIELD'S RESPONSE TO COMMENT
<p><i>WWF query:</i></p> <p>What about black swan events or decay, or a problem with the fishermen?</p> <p><i>Fairfield Energy response:</i></p> <p>We have explored speculative scenarios, such as if derogation were applied for and granted, with the legs left up on the basis that they'd last 1000 years, but collapse (for whatever reason) occurred in 20 years. While the CA doesn't include the costs of going back to fix the issue, that doesn't mean we wouldn't return to remediate it. We don't include such scenarios in the definition of the option since by the time weightings for probability were applied it would be inconsequential in terms of how it affected the option scores. But we have thought through the possibility of a number of significant, if unlikely, incidents. With respect to risks to other users of the sea, not just the fishermen, we are well aware of the legacy impacts, but not every 'worst case' scenario has to be included because the low probability of them occurring means there would be low material impact on CA outcomes.</p>	<p>Not too sure that this is acceptable – the IMO regulations say that the structures needs maintaining to prevent collapse – that implies some 250+ years of ongoing liabilities etc. There needs to be much more clarity on how these issues will be managed – Regulators are not clear either except for the fact that the taxpayer won't become liable.</p>	<p>Under derogation scenarios, OSPAR Decision 98/3 requires that consideration be given to management measures and mitigations, but no timeframe is specified. As per above, we interpret this as in-perpetuity liability. Our expectation is that monitoring requirements would be developed in conjunction with the regulator, while an unexpected or 'black swan' event would require appropriate response.</p>
<p><i>WWF comment</i></p> <p>Sector wide, we would like to see more JIPs, not just for bundles but for cell contents.</p> <p><i>Fairfield Energy response:</i></p> <p>We represent a relatively small percentage of bundles, but we do have a CGBS and so there is a higher responsibility for us to pursue investigations on these. We have therefore engaged with other operators to understand what they're doing and the difficulties they encounter given the variation between the different structures. We are trying to set up a work group around cells and we were party to the IOGP work group last year.</p>	<p>Please provide evidence of this activities?</p>	<p>As described previously, we were party to the IOGP work group on CGBS decommissioning and, more recently, we have been sharing our approach and findings with TAQA and Shell, and vice versa. We currently have a non-disclosure agreement in place with Shell and are therefore not permitted to share these discussions at this point in time. Similarly TAQA are currently investigating options for recovery of attic oil and characterisation of cell contents on their Cormorant Alpha facility and we are not permitted to share discussions held around this project.</p> <p>On specific issues, we will continue to reach out to other organisations and strive to learn and adopt best practice. As an example, on cell contents, we have actively looked for shared learnings from other similar projects - this is discussed further in the Cell Contents Technical Report (Rev A2) in Section 3.5.2, pg 176 onwards.</p>



MINUTES RELATING TO ELEMENTS OF DISCUSSION ON THE DUNLIN ALPHA PLATFORM, held 8 December 2018	WWF's SUBSEQUENT COMMENT	FAIRFIELD'S RESPONSE TO COMMENT
<p><i>WWF comment:</i></p> <p>Cell contents and drill cuttings are the two things we will always bring up and we may push more on these than on other areas. Based on the stakeholder workshop report, drill cuttings still seem to need more work to be done on the biology and implications for disturbance from benthic storms and bioturbation, and for BAT and sampling techniques to be able to take deeper samples. The Norwegians do very well on this.</p> <p><i>Fairfield Energy response:</i></p> <p>In fact we believe we have done rather well in this area with the number and type of samples obtained, and really went the extra mile over the course of a year on drill cuttings sampling. While we had trouble getting deep cores off the side we actually did take quite a number of samples. The company we used had thought the technology could deliver for us and we tried hard on this one. We spoke to BEIS EMT beforehand and their feedback was that we were doing more than others. At some point we will be able to provide you with the drill cuttings report and then discuss this further with you. A joint meeting with David Santillo at Greenpeace might be a useful way forward as he has expertise in this area.</p>	<p>Debatable about cutting sampling being 'done rather well' – not very deep samples taken. Fugro don't have the right technology for deep coring drill cuttings.</p> <p>Drill cuttings report will follow usual oil industry assessments etc. (i.e. won't address heavy metals etc.)</p>	<p>The effort put into our drill cuttings pile sampling has enabled us to undertake a more thorough and accurate assessment of the Dunlin drill cuttings pile than has previously been undertaken for other drill cuttings piles decommissioned on the UKCS.</p> <p>The Murchison drill cuttings pile, for example, which was decommissioned in-situ, in compliance with OSPAR 2006/5, on the basis of data taken only 6 push core samples (three for faunal analysis and three to characterize the physical and chemical composition of the pile), none of which extended beyond 50 cm in depth. By comparison, we took three vibrocore samples (ranging from 3.0 to 3.8 metres in depth), four ROV push core samples (ranging from 0.35 to 0.725 m in depth) as well as twelve seabed sampling stations in and around the footprint of the Dunlin drill cuttings pile.</p> <p>The survey strategy was developed collaboratively by Fairfield, Fugro and Xodus Group and in consultation with OPRED who approved the methodology prior to execution of the survey. The survey fulfils the requirements for a cuttings pile assessment as stated in OLF, 2003.</p> <p>Rather than Fugro not having the right technology for deep coring drill cuttings as is suggested in the comment, the equipment deployed was chosen to give the best chance of success taking into consideration previous experience of surveying the Dunlin cuttings pile where the flare boom and weather (blow on conditions) had prevented samples from being taken.</p> <p>Regarding WWF's assumption that Fairfield won't have addressed heavy metals, sediments collected were analysed for aluminium, arsenic, barium, cadmium, chromium, copper, lithium, lead, mercury, nickel, strontium, vanadium and zinc, as well as radionuclides. This is talked to in both the Fugro survey report and the Dunlin Alpha Drill Cuttings Technical Report (links to this)</p>



MINUTES RELATING TO ELEMENTS OF DISCUSSION ON THE DUNLIN ALPHA PLATFORM, held 8 December 2018	WWF's SUBSEQUENT COMMENT	FAIRFIELD'S RESPONSE TO COMMENT
		have been provided to WWF) with the latter making comparison between metal concentrations sampled by Fugro during the Dunlin pre-decommissioning survey, those sampled during historic Dunlin field surveys as well as other historic cuttings and regional surveys. Should a more suitable approach exist, Fairfield would be pleased to discuss this further.



MINUTES RELATING TO ELEMENTS OF DISCUSSION ON THE DUNLIN ALPHA PLATFORM, held 8 December 2018	WWF's SUBSEQUENT COMMENT	FAIRFIELD'S RESPONSE TO COMMENT
<p><i>WWF comment:</i></p> <p>Regarding cell contents on Brent (noting that the quantity of cell contents is far more significant in Shell's case), we replied to Shell's reply to the joint NGO submission by writing a letter to the OSPAR Contracting Parties' heads of department. We have proposed to them that a two-stage decommissioning process be carried out, with sampling of the cells at the second stage. Shell have not done many samples and we would like to see a different approach explored by Fairfield to get an idea of what is in Dunlin Alpha, and to prevent release of the contents in hundreds of years. The Norwegians do cell content analysis differently.</p> <p><i>Fairfield Energy response:</i></p> <p>I am not aware of anyone else doing this sampling differently. We have had discussions with Enpro on their hub technology and they have contributed to our option definition work. We are continuing to work with them on the cell content sampling possibilities.</p> <p>In terms of access to the cells, you are familiar with the structural requirement for differential pressure (achieved through drawdown). External penetration through cells has a potential impact. Normally, if there was a leak of the Enpro hub you'd pressure up the caisson but wouldn't flood the legs which sit atop the cells. However, we have an irreparable breach in the conductor cooling system in a 6" GRP (glass reinforced plastic) line. This is one of the integrity issues which shut down the platform alongside Brent System issues and low oil prices. This breach means that whatever pressure we see in the cells is experienced in leg A. A sea to cell leak would therefore flood leg A to LAT, requiring flooding of the other legs. This would necessitate down-manning of the installation.</p> <p>We are currently conducting the plugging and abandonment (P&A) of the wells - isolating the reservoir is our first responsibility to prevent release, but we're only half way through and won't externally penetrate cells and risk compromising the P&A. It would be possible to go back after P&A, but then we have to ask 'what's the value of the information that we'd obtain?'</p>	<p>Seem to have completely missed the point of a 2 stage programme. Enpro use is based upon sampling whilst in operation –same issue as Brent</p> <p>Need 'legal compliance of delivering an accurate inventory (BEIS and OSPAR expectation) –is this making the argument that there is no or limited value in sampling.</p>	<p>Our approach to the characterisation of the cell contents has sought to be as robust as possible, where the inventory is validated through alternative means such as modelling or physical sampling. This is explained in more detail in the Cell Contents Technical Report (Rev A2) in Chapter 3, pg 110 onwards.</p> <p>The project stance is that the data we have is sufficient to inform the recommendation on the preferred management option for the cell contents. We are however endeavoring to obtain further data through sampling via the existing pipework (rather than creating new external penetrations) in which to further validate the inventory and provide supporting evidence should a derogation be sought to leave the structure and contents in place.</p> <p>The requirement for independent assurance of the supporting data has been addressed, inert alia, through the appointment of an Independent Review Group (IRG). We have also appointed an independent body to oversee aspects such as Chain of Custody if we are successful in obtaining direct survey and sample information from within the cells.</p>



<p><i>WWF comment:</i> A JIP on this would be useful.</p> <p><i>Fairfield Energy response:</i> Unfortunately a JIP on this would be too specific to this particular platform. We looked at this as a possibility in 2010-12 through the cell contents discussion group. The view then was that the Attic Oil Recovery Programme had been done well.</p> <p>We have looked again at what is in the cells in recent times and assessed the adequacy of the CO2 removal of the attic oil: 75 cells, internal compartments each contain steelwork with 36 mini sections within the 100ft tall cells. There are 2700 little pockets, with a delivery pipe some 4-5m below, inhibiting further removal. Shell (via Sigma3 and SWACO) introduced chemicals to deliver the CO2 to get to the stranded attic oil. We've looked, remodeled, done everything we could think of to assess from different perspectives and have to say that Shell did a pretty good job of removal. So then we have to ask 'do you go back and do it again?'</p> <p>There will inevitably be some mobile oil – there will always be a layer/water breakthrough because of coning and cusping. The model says that there is a layer of less than 2cm of oil. We have erred on the side of caution and assumed 5-10cm for our modelling, but we're probably into uncertainty because of the scale and so have now exhausted modelling options. We know there is oil, and we are trying to understand where it is, how concentrated it is, how it would come out in cases of acute release. We're also looking at the fate of wax and sediment. We are trying to build up a 3D picture of where the hydrocarbon is and how change occurs over time, working through scenarios.</p> <p>On sediment, Shell blew the Brent reservoir down; this wasn't done on Dunlin so we don't have anywhere near the same amount of sediment. There will probably be some sediment in the four cell groups, mainly where the rundown lines terminate in each group. We have modelled the flow characteristics and the sediment particulates will typically not have travelled far through the cell groups. In the four cells where the rundown lines terminate, the modelling says there could be 90cm in the first cell, whereas the sediment in more remote cells would be much less. There are two key things here that account for this: first, the port jumps [cell interconnections] at an elevation of 28m and the settlement of particulates in the first cell, inhibiting passage.</p>	<p>Thank you for the hypothesis – now can you please advise how you intend to validate it and produce an accurate inventory of what you propose to dump in the sea in some 250 -1250 years' time?</p>	<p>An assessment of the level of confidence in the base case inventory and the validation process is explained in depth within the Cell Contents Technical Report (Rev A2) in Section 3.2, pg 111 onwards.</p> <p>It is important to be aware that the physical construction of the cells is what inhibits access and circulation of contents – as well as inhibiting potential release to the water column. This will be assessed further at the CA evaluation in March.</p>
<p><i>WWF comment:</i></p>	<p>Vitrification and solidification of wastes – where is the evidence of</p>	<p>The residual oil layer in the tops of the cells is likely to have been changing significantly in nature over the last</p>



MINUTES RELATING TO ELEMENTS OF DISCUSSION ON THE DUNLIN ALPHA PLATFORM, held 8 December 2018	WWF's SUBSEQUENT COMMENT	FAIRFIELD'S RESPONSE TO COMMENT
<p>That explains the remark about AORP down to ALARP in the stakeholder report – although I don't like the term ALARP in this context.</p> <p><i>Fairfield Energy response:</i></p> <p>Agreed – it is an awkward use of the concept.</p> <p><i>WWF question:</i></p> <p>Have you considered vitrification and solidification of waste in the cells?</p> <p><i>Fairfield Energy response:</i></p> <p>Yes.</p>	<p>these assessments. No existent stakeholder engagement makes this difficult to assess.</p>	<p>ten years, becoming more viscous and less mobile. The project considered delivery of gelling agents into the cells, similar to the concept considered by Shell during development of the Attic Oil Recovery Project (AORP), however this concept was never taken any further as it was not technically feasible to deliver the gel through the cell matrix. The project also considered capping of the sediment, this was screened out and is further discussed in the Cell Contents Technical Report (Rev A2) in Sections 4.9 and 4.12.3, pg 223 onwards and pg 255 onwards respectively.</p> <p>Any option to manage the cell contents requires new external access points to the cells. Assessment results showed that should the decision be made to create this access then the most effective option thereafter was to remove the contents as far as possible, balancing the resources used and creation of waste materials against the residual inventory, rather than delivering more materials into the cells to manage the contents <i>in situ</i>.</p>



MINUTES RELATING TO ELEMENTS OF DISCUSSION ON THE DUNLIN ALPHA PLATFORM, held 8 December 2018	WWF's SUBSEQUENT COMMENT	FAIRFIELD'S RESPONSE TO COMMENT
<p><i>WWF question:</i> Have you done anything on bioremediation?</p> <p><i>Fairfield Energy:</i> Yes, we have looked at both bioremediation and capping. There is also a 'leave alone' option. Other options include further mechanical intervention (recovery of mobile oil, wax, water and sediment phases). On cell by cell basis we have a picture of where we think the contents are and some 70 options/permutations of different scales of recovery are currently being screened to see which has most merit. There can be no full oil recovery from the cells other than via the entire removal of the structure. Penetration of each cell (as in Brent) would only get a maximum of 50%. How much effort do you go to? Different options have different recovery efficiencies, for example related to whether or not drill cuttings have to be moved, and the 500-page cell contents report, currently being finalized, speaks to this. On recovery, it is external penetration-based recovery that would be done post-P&A. If we were to do it, we wouldn't get everything – it would be 25-50% and the drill cuttings would also need to be removed with hydrocarbon release implications (which we've also modelled) via different release mechanisms.</p> <p>On bioremediation and capping, we looked at this for the hydrocarbon phase and then at capping of the sediment, but by the time you drill a hole to deliver the capping medium, you'd be as well to try to get the contents out. We think the sediment is in the initial cells so we would need to go in and try to excavate, Hoover, or somehow fluidise them. It would be necessary to prove up the technology and upscale it first, however - assuming we could do this. We are questioning whether there is merit in doing this. On bioremediation, the 'quick view' is that by the time you make the hole you'd probably opt for conventional recovery rather than bioremediation which would entail ongoing management and significant resources for a very small return, especially in the absence of any heat.</p>	<p>Poor quality input data (production records) = poor output report by default.</p> <p>Bioremediation – always difficult to assess what to do when you don't really know what you are dealing with. It is however a much better option than doing nothing as there is some 1000 years for things to happen before any releases.</p>	<p>The option to bioremediate the residual contents has been considered in our planning. The treatment methodology considered the materials that would need to be delivered into each of the cells, taking account of the limited means of circulating them within the cell groups and how they would need to be delivered, as well as maintenance that would be required after initial deployment. The project findings were that in order to deliver the materials, new access points would need to be created in the cell tops, but with no guarantee of their efficacy over time. Furthermore there would be repeated future intervention requirements to top up reagents and monitor the biological processes, with an impact in terms of vessel emissions, etc. The bioremediation option was therefore screened out.</p> <p>This is discussed in full in the Cell Contents Technical Report (Rev A2) in Sections 4.8 and 4.12.3, pg 218 onwards and pg 255 onwards respectively.</p>



MINUTES RELATING TO ELEMENTS OF DISCUSSION ON THE DUNLIN ALPHA PLATFORM, held 8 December 2018	WWF's SUBSEQUENT COMMENT	FAIRFIELD'S RESPONSE TO COMMENT
<p><i>WWF comment:</i> There are seeded species that work at low temperatures.</p> <p><i>Fairfield Energy response:</i> Yes, but there is no current passing through the cells and so they couldn't be distributed and just wouldn't get through. There is no piping there to circulate contents.</p> <p>We undertook screening for all options including a leave <i>in situ</i> scenario, but capping and bioremediation have been screened out and the further recovery options do not look attractive. We think the conclusion by most observers will be that 'the orange has been squeezed'.</p>	<p>So without any discussions options screened out?</p>	<p>We have consulted a number of parties, including academia, throughout the CA process to verify that our basis for screening out options has considered appropriate information and facts. This has included a review of new developments in biotechnology and species able to work outside of their niche environmental conditions. None of these are available on an industrial scale and, even if they were, they would still require access to the cells to deploy initially and then future intervention as discussed in the response directly above.</p>



APPENDIX 3 DETAILED RESPONSES TO GREENPEACE RESEARCH LABORATORY QUERIES

Extract from exchange of correspondence, 18 June 2018, in response to initial queries of 2 May 2018

Greenpeace Research Laboratories: (1) In section 5.2 on page 49, option 9 is first compared against options 5 and 6 and then subsequently against option 4. This gives the impression that option 9 is somehow a preferred case against which other options should be compared, rather than as one of four options that were still on the table. This is unlikely to impact on the final outcome of the comparative analysis, but does look like preselection of an option against which others have to measure up, rather than as an entirely objective analysis.

Fairfield: You are correct to observe that option 9 (Transitions Up) was compared firstly to options 5 (Shallow Cut) and 6 (IMO Cut), and then subsequently to option 4 (Full Removal), but this was not the stated intent of the two stage evaluation. At the start of the evaluation, option 9 was neither a preferred case nor a preselected option against which to judge the others. The intent of the first stage of evaluation was to determine the derogation option with most merit when considered against the five evaluation criteria. This proved to be Option 9 when the Evaluation Workshop was conducted but might equally have been one of the other derogation options. The second stage of the evaluation was to comparatively assess the leading derogation option against the Full Removal case – option 4. The intent of the two stage evaluation was actually to have the Full Removal case (option 4) as the preselected case against which the ‘best of the rest’ would be evaluated. We believe both the approach and analysis were entirely objective. We will clarify this logic in the final version of the Comparative Assessment Report.

Greenpeace Research Laboratories: (2) In section 6.3 on page 64, it is stated that the assessment that Option 4 was the most preferred option against the Operational Marine Impacts criterion was “dominated by the potential for marine impacts from the removal and recovery of the drill cuttings from the top of the cell base, an inherent part of all cell contents removal options.” However, in section 6.4.3 on pages 69 onwards, which assumes that there are no drill cuttings to remove or disturb, the environment criterion for option 1 for the cell contents barely increases at all (from 3.9 to 4.3%). If the preference for option 4 had been strongly influenced by the presence of drill cuttings as suggested, then it would be expected that assuming no drill cuttings would have had a far bigger influence over the comparison of options 1 and 4 than it appears to have had from e.g. table 6.5.

Fairfield: The sensitivity analysis described in section 6.4.2 was based on disregarding the drill cuttings in the evaluation of cell content management options. Table 6.4 summarises the impact of this sensitivity on the original evaluation of the options. Directionally, under the Operational Marine Impact sub-criterion, option 1 becomes stronger (actually less weak) in comparison to the other options when disturbance of cuttings is ignored. This is partially offset, however, by option 1 having less merit when considering the Legacy Marine Impacts sub-criterion – moving from stronger to neutral in comparison to other options as result of option 1 no longer having cuttings recovery as part of the option’s environmental impact. This offset explains why there is a slight, rather than significant, increase (3.9% to 4.3%) in the overall environmental score for option 1 under this sensitivity. As you will have noticed, the greater benefit to option 1 under this sensitivity is actually the improved societal assessment – resulting from no longer carrying the burden of bringing large volumes of drill cuttings ashore for processing. Please advise if you need any further information on these aspects of the evaluation.

Greenpeace Research Laboratories: On a more general level, it would be good to see the cell contents and drill cuttings described in more detail in this decommissioning report; which chemicals did they contain and at what sorts of concentrations? I guess that is all in other associated report, but it would be really useful to have a summary here.



Fairfield: You will appreciate that the Comparative Assessment (CA) Emerging Recommendation Report is a record of the CA process and, most pointedly, the evaluation phase off that process. This document is not intended to be the repository for detailed information on either the cell contents or drill cuttings. As you suggest, it is our intention to describe the cell contents and drill cuttings within the draft Decommissioning Programme to be submitted for consultation in the coming months. This will be accompanied by key supporting documents and amongst these will be the Cell Contents Technical Report and the Drill Cuttings Technical Report. These latter technical reports were made available to stakeholders in early February and all of the above will be made available online through our website for the statutory and public consultation and beyond.

Exchange of Correspondence, 3 July 2018, in response to 18 June exchange of emails

Greenpeace Research Laboratories: So far, I have had chance only to look at the cell contents report. There is an impressive amount of modelling and specification of assumptions and uncertainties there, but am I correct in understanding that so far there have been no validation samples collected from either the sediments or the water phase? It is so far based entirely on models with input from past records of production rates and volumes and chemicals used, is that right? I thought I saw some data but then realised that those were from Brent.

Fairfield: That is correct – no physical samples (of oil, water, wax or sediment) have been taken from within the cells. The compositional basis used for these materials has been validated by both analogous sampling from similar projects and operational sampling from Dunlin. The sediments recovered from the topsides separators during vessel cleaning have been used to enhance our understanding of the nature and location of the sediment materials in the cells and similarly the *historical* produced water discharge sampling has also been used. We have further validated the basis through the use of dynamic simulation on the oil recovery operations to understand how the fluids would have behaved within the cells and whether this correlates with the observations during the operations.

Greenpeace Research Laboratories: I realise that there are substantial technical difficulties in collecting samples, but I feel this is going to remain a fundamental limitation unless and until it is possible to get some real, representative materials for empirical analyses. Most of the contents in the cells would have accumulated over times before the introduction of the HMCS, as far as I can tell, such that records on precisely which chemicals were used and in what quantities may well have been much more limited. The validation that has been carried out so far is, as far as I am able to tell, further desk-based validation rather than empirical validation, and if so, this will always feel a bit like pulling oneself out of the mud by one's bootstraps.

From Page 331, it appears that there is still a plan to collect and analyse some real samples, though it's not clear when, nor whether any final decision on decommissioning will have been taken before the results of any such analyses may become available. It is also not clear what range of contaminants would be included in the analyses conducted, and using which methods. Would be great to hear more about those plans and how the results could influence the decision-making given that the proposal is likely to be submitted for consultation in advance of sampling and analysis.

Fairfield: The project is currently progressing projects to obtain physical evidence from within the cells. A number of challenges have been encountered during both the deployment of a neutron backscatter tool into the J-tubes in Leg D and ROV access to the rundown lines in Leg B. The status and forward plan to address these challenges is as follows:

- There are high pressures in the rundown pipework and difficulties have been encountered with safely venting these gas phases due to their volume and sour composition. Additional risk mitigations are being put in place and an engineered venting solution is under development.



- Attempts to flow fluids from the umbilical connected to the STATS plug in rundown line B have encountered wax pellets, creating a blockage to flow. It is now looking unlikely that a representative fluid sample will be able to be extracted from the B rundown line, but this is under further investigation.
- Further investigation is also required into the inhibitor gel inserted into the rundown line pipework to understand if an ROV can navigate through this material or whether it will first need to be displaced. Further engineering will be required to develop this scope.
- Offshore testing of the neutron backscatter technique to see through the pipework into the structure has been performed for a single cell to support data interpretation and calibrate the readings with respect to material type (concrete, gas, oil, emulsion, wax or water) and location (due to how the tool detects the different material phases). Should the issues with data interpretation be resolved, Fairfield would look to deploy the tooling on a number of J-tubes to survey selected cells.

In preparation for if physical samples are obtained, the project has defined a list of the physical, chemical and biological parameters that would be analysed in the samples and how the survey information would be interpreted. The samples would be independently analysed. Due consideration would be taken to ensure the safe custody and transportation of all samples, from the time that the sample tooling is retrieved until the time the samples are formally accepted and logged by the analytical laboratory. The recovery, storage, transport and handover of the samples would be witnessed by an independent third-party. The intent is to evaluate the results from the planned survey / sample operations and then consider whether further evidence is required. If further evidence is required, new external penetrations in the cell tops would need to be considered. As external penetrations create the potential for a sea to cell leak, which ultimately would necessitate abandonment of the installation, such a programme would only be contemplated after the topsides have been removed.

Greenpeace Research Laboratories: I'll take a look at the drill cuttings report as soon as I get chance.

In relation to the responses [of 18 June]:

(1) that is now clearer to me, but would definitely benefit from the additional clarification in the text. As I said, it is unlikely to have a difference in the final assessment, but could be significant in relation to how those assessments are viewed and understood.

Fairfield: Thank you for your comments. We will endeavour to make this point clear in the final revision of the Comparative Assessment Report.

Greenpeace Research Laboratories: (2) I see what is being said here, but I feel that is an artefact of the method...if it is a positive to remove something under one scenario, then the same positive rating should apply if that thing was not there to be removed in the first place. As it stands, it seems that the fact that there is no longer this improvement to be made has counted against that option. In other words, assuming there are no cuttings has pushed one criterion up and another simultaneously down. That seems like a bias. I would be interested to know how the assessment would look if that neutral rating was not applied to offset but instead it was left as a positive, given that the legacy impacts would be expected to be the same for there being no cuttings as there would be in the case that cuttings were there initially but were removed. Otherwise it feels as though Option 1 is in a no-win scenario in relation to this aspect.

Hope that makes sense. Very happy to arrange a call at some stage to talk any of this through, if it could help resolve these questions more simply.

In the meantime, thanks again for making sure that I have had the opportunity to see and comment on all this information, despite my lack of availability for the stakeholder meetings. It is much appreciated.

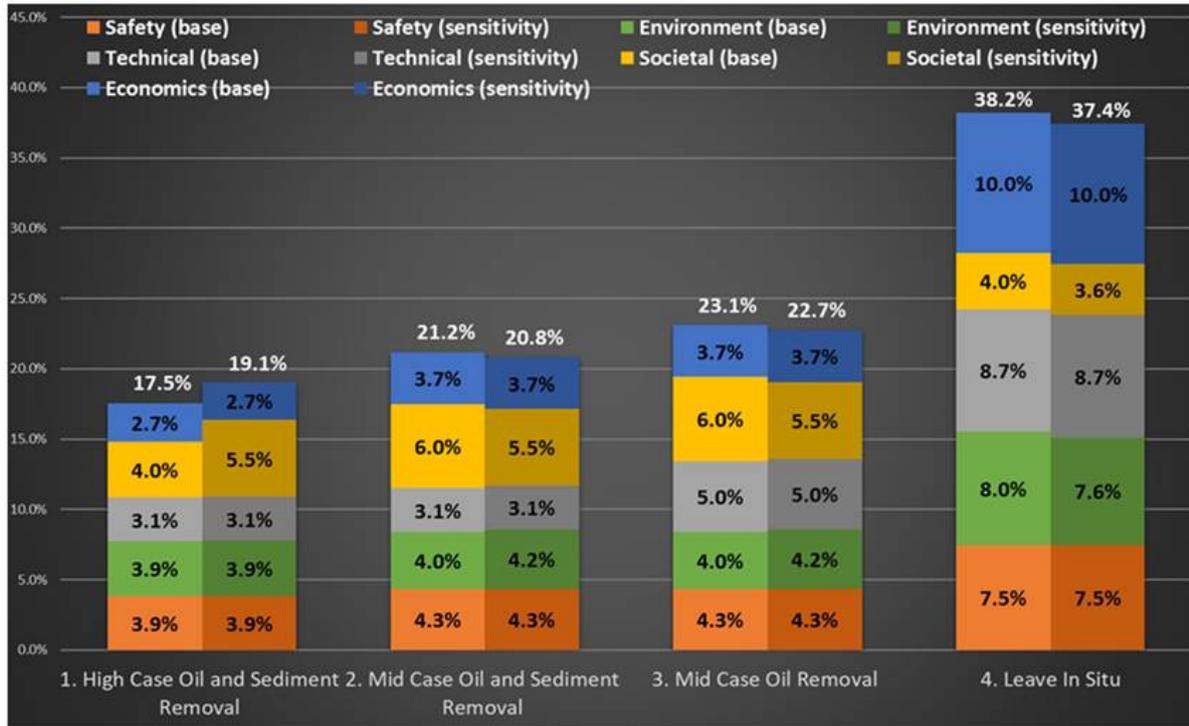


Fairfield: As stated earlier, the sensitivity analysis portrayed in section 6.4.2 was based on disregarding the drill cuttings in the evaluation of cell content management options. This sensitivity was conducted to better understand whether the best long term management option for the cells was dependent or independent of the presence of the drill cuttings. With drill cuttings disregarded, the relative merits of each option will naturally change. It would be inappropriate to only disregard the cuttings when it favours a particular option. Put in simple terms, keeping the virtues while ignoring the disadvantages of a single option would seem like the very definition of bias. Building on your point regarding a positive to remove something staying a positive if that thing is not there to be removed in the first place, why would that positive (ie no cuttings present) only apply to option 1? Options 2, 3 and 4 could also lay claim to this positive, if somewhat fictitious, assumption. As a result, the comparative assessment of the options on this aspect would rightly be neutral – just as we concluded in the sensitivity analysis.

That said, your comments made us reflect on why there was any discernible improvement in option 1 under the environmental criterion for the ‘no drill cuttings’ sensitivity. While the wording in table 6.4 accurately reflects the sensitivity case we performed and describes how the two environmental sub-criteria offset one another, and how the societal evaluation of option 1 improved as a result of not bringing large volumes of drill cuttings ashore for processing, we have realised that the bar chart actually portrays the set of assumptions you have proposed. For clarity, the stacked bar chart which shows the environmental evaluation increasing from 3.9% to 4.3% is already based upon the following inputs:

- (i) disregard the cuttings disturbance required for option 1, thereby making option 1 stronger (less weak) under ‘Operational Marine Impacts’ in comparison to the other three options which would, in reality, require no cuttings disturbance; and
- (ii) retain any benefit of removing cuttings for option 1, thereby leaving option 1 stronger under ‘Legacy Marine Impacts’ than the other three options; and
- (iii) disregard the adverse societal impacts of bringing large volumes of drill cuttings ashore for processing, thereby making option 1 stronger under the ‘Societal’ criterion

As outlined above, we believe that the above suite of assumptions is demonstrably biased in favour of option 1. As the text and chart are not precisely aligned, we propose to revise the Comparative Assessment Report to include the bar chart which should have been presented in table 6.4. This will show that the environmental evaluation for option 1 was unchanged under the ‘no drill cuttings’ sensitivity analysis, with the only difference in the overall assessment being from the societal benefit of no longer handling the drill cuttings waste stream. We have included the correct chart below and apologise for the error in the original report. In summary, we would contend that the long term management option for the Dunlin cells is insensitive to any assumptions on the presence or management of the drill cuttings.





APPENDIX 4 EXAMPLE OF PUBLIC NOTICE FOR CONSULTATION LAUNCH

The Guardian, 3 August 2018

PUBLIC NOTICE
The Petroleum Act 1998
DUNLIN ALPHA DECOMMISSIONING
PROGRAMME

Fairfield Betula Limited has submitted, for the consideration of the Secretary of State for Business, Energy and Industrial Strategy, a draft Decommissioning Programme for the Dunlin Alpha concrete gravity base installation in accordance with the provisions of the Petroleum Act 1998. It is a requirement of the Act that interested parties be consulted on such decommissioning proposals.

The facilities covered by the draft Decommissioning Programme are located in Block 211/23a in the Northern North Sea, approximately 137 km north east of Shetland and 11 km from the UK/Norwegian median line. They comprise a four leg concrete gravity base substructure with storage cells, and steel transitions spanning the splash zone to support the topsides which consist of a steel box girder module support frame deck and two further levels of modules.

Fairfield Betula Limited hereby gives notice that the draft Decommissioning Programme can be viewed online at www.fairfield-energy.com/public-consultation. Alternatively a digital copy of the Decommissioning Programmes can be requested from, or hard copies inspected at:

Reception
Fairfield Energy Limited
19 Abercrombie Court
Prospect Road
Arnhall Business Park
Westhill, Aberdeen AB32 6FE
Tel: 01224 320500

Representations regarding the Dunlin Alpha draft Decommissioning Programme should be submitted to stakeholder.mailbox@fairfield-energy.com before the consultation closing date, 14 September 2018, and should state the grounds upon which any representations are being made. Representations can also be made in writing to Peter Lee, Regulatory Affairs & Stakeholder Engagement Manager, at the above address.

3 August 2018



APPENDIX 5 RESPONSES TO STATUTORY AND PUBLIC CONSULTATION (CGBS) WITH REPLIES

Appendix 5.1	Tom Baxter
Appendix 5.2	Dr David Santillo, Greenpeace Research Laboratories
Appendix 5.3	Christian Riisager-Pedersen, DTU Aqua
Appendix 5.4	Dr Graham Russell, Royal Yachting Association (Scotland)
Appendix 5.5	Steven Alexander, Scottish Fishermen's Federation
Appendix 5.6	Dr Sam Collin, Scottish Wildlife Trust



Appendix 5.1 Tom Baxter

From: TOM BAXTER <tom.baxter@btinternet.com>
Sent: 03 August 2018 10:21
To: Fairfield Stakeholder Mailbox
Subject: Dunlin Decommissioning – Consultation Query
Attachments: BEIS Response.pdf

Sir,

Dunlin Decommissioning – Consultation Query

Firstly I would like to state that I am in full agreement with your decision to leave the concrete substructure in place. However, as a taxpayer, the largest overall stakeholder in decommissioning, I would like to ask why you have not extended the analysis into leaving a clean and inert topsides in place? What are the environmental, economic and societal benefits arising from removal and onshore recycling for the taxpayer?

If the topsides were to remain, what would be the resultant cost savings for the taxpayer and the Operator? I note that the consultation information provided by Fairfield does not include the anticipated costs. I attach a letter from BEIS indicating that the taxpayer should have a keen interest in the costs. Of course it is hard to have a keen interest, which I have, if no visibility is given to the cost elements. Would Fairfield be willing to publish the anticipated costs?

Furthermore, if Fairfield had known beforehand that leaving a clean topsides would be an acceptable option, would that have allowed the asset to produce for longer prior to COP? If so how much additional tax revenue would the additional production have generated? Anticipating your answer to the query regarding leaving a clean topsides to be - the marine regulations do not allow for this - do Fairfield believe that the current regulations are serving the taxpayer? I look forward to your response.

Regards

Tom Baxter
Deemount Avenue
Aberdeen
AB11 7UF



Department for
Business, Energy
& Industrial Strategy

Department for Business, Energy &
Industrial Strategy
1 Victoria Street
London SW1H 0ET

Tom Baxter
tom.baxter@btinternet.com

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E enquiries@beis.gov.uk
W www.gov.uk

Our ref: TOB2017/06526
17th March 2017

Dear Tom Baxter,

Thank you for your email of 28 February, to Greg Clark, proposing an alternative way forward for dealing with the decommissioning of offshore oil and gas assets in the UKCS whilst increasing investment in renewable energy.

The Secretary of State receives a large amount of correspondence every day and is unable to respond to each one personally. I have been asked to reply

The UK's international obligations on decommissioning are governed principally by the 1992 Convention for the Protection of the Marine Environment of the North East Atlantic (OSPAR Convention).

As a contracting party to OSPAR, we have developed a regulatory approach to decommissioning offshore oil and gas installations and pipelines in accordance with the principles agreed by OSPAR. We have also established a clear mechanism for ensuring that owners of installations and pipelines are responsible for decommissioning the infrastructure at the end of the life of the field. This means that when we review and approve decommissioning programmes we balance the requirements for safety and the environment alongside considerations of efficiency, cost effectiveness and the requirements of other users of the sea.

The system is well understood by industry and decommissioning is recognised as a stage in the life-cycle that they are required to support and fund just as they would with any other stage. As such it is liability, and cost that is an integral part of industry's financial and business planning process.

As you note, decommissioning activity does attract tax relief for companies that have previously paid tax (at the rate that tax was paid) and in this way taxpayers have a keen interest in ensuring that it is delivered in a cost effective manner. That is why we are working with and through the Oil and Gas Authority (OGA) to ensure that it is not only cost effective for all of us, but that the opportunities it creates are maximised for UK industry.

We recognise the challenges of transitioning to a low carbon energy supply and we have set out ambitions to deliver affordable energy and clean growth as a key pillar of our industrial strategy. The consultation on our industrial strategy can be found on our website (https://beisgovuk.citizenspace.com/strategy/industrialstrategy/?utm_campaign=gov&utm_source=gov.uk&utm_medium=referral&utm_content=hom_epage) and we'd welcome your views on the questions it poses.

While we are keen to see continued investment into the renewable energy sector we believe this is required alongside our decommissioning obligations not instead of it, and we have no plans currently to change our approach to decommissioning. We are however in the process of updating our guidance notes for industry to explain how a comparative assessment process should be used on a case by case basis to develop appropriate decommissioning solutions.

We have engaged widely with stakeholders and we'd be happy to discuss our proposals with you. Please contact Pauline Innes (Pauline.innes@beis.gov.uk) if you would like to hear more about the updated guidance.

Yours sincerely

S Solomita
BEIS MINISTERIAL CORRESPONDENCE UNIT



From: Peter Lee
Sent: 31 August 2018 17:22
To: 'TOM BAXTER' <tom.baxter@btinternet.com>
Subject: RE: Dunlin Decommissioning – Consultation Query

Dear Tom

Thank you for your email regarding the Draft Dunlin Alpha Decommissioning Programme. You raise a number of queries about the topsides decommissioning which I address below.

Our analysis of the feasible options for decommissioning the facilities followed the regulatory requirements as set out in OSPAR Decision 98/3 and the BEIS decommissioning guidance. As you are aware, the former (in Annex 1) specifically excludes topsides as derogation candidates, while the latter (e.g. section 7.7) restates the OSPAR 98/3 requirement for topsides to be returned to shore. Compliance with the regulatory position does not seek an exploration of any potential leave in situ solution for topsides, nor indeed comparative assessment of topside removal solutions. Even if there were a need for comparative assessment, cost would not be permitted to take precedence over safety, environmental, societal and technical criteria.

In terms of your scenarios for leaving the topsides in place, or for a change in the regulations, the potential cost liabilities – both for the company and for the taxpayer – arising from such an approach could be very significant. The responsibility would remain in perpetuity and the safety issues arising from the topsides as they deteriorated would compromise the substructure of the installation when the collapse eventually occurred, potentially giving rise to unwanted environmental impacts. Remediation on an ongoing basis to ensure structural integrity and thus prevent any such damage and associated impacts would be expensive. I am sure that you will recognise that there is no precedent for any such approach, including the Gulf of Mexico, where even jacket structures of installations left in place do not breach the waterline.

Regarding the costs of the Draft Decommissioning Programme, details have been provided to BEIS and the Oil & Gas Authority who will be scrutinising them on behalf of the Treasury and the taxpayer. It would be commercially disadvantageous to the tender process to put this into the public domain and thus also to the public purse. The close-out report at the end of decommissioning will, of course, report on the costs in line with normal practice. In the meantime, it is the regulator's responsibility to determine value for money of different elements of the programme. Finally, we do not consider that availability of a derogation case for the topsides would have extended the period before Cessation of Production, given the particular circumstances which precipitated the decommissioning requirement for Dunlin Alpha.

Yours sincerely

Peter

Peter Lee Regulatory Affairs & Stakeholder Engagement Manager

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Appendix 5.2 Christian Riisager-Pedersen, DTU Aqua

From: Christian Riisager-Pedersen <chrii@aqua.dtu.dk>
Sent: 20 August 2018 14:44
To: Fairfield Stakeholder Mailbox
Subject: Information

Dear Mr/Ms.

I should like to hear if you could show me where to find the report mentioned in several of your recent reports on the Dunlin Alpha decommissioning process.

The report is referenced as:

Fairfield (2016). Dunlin Alpha Decommissioning Option Screening for Comparative Assessment, Doc. No.: FBL-DUN-DUNA-HSE-01-PLN-00003, Rev.: A1, Dated: 20/10/16

My main interest is to understand why there appears to be no assessments of the potential re-purposing of the structure for other purposes than oil drilling.

Best regards
Christian Riisager-Pedersen
Research Assistant
DTU Aqua
Email: chrii@aqua.dtu.dk
Telephone: +45 20119987



From: Fairfield Stakeholder Mailbox
Sent: 05 September 2018 14:55
To: Harry Yorston; Shirley McIntyre; Carol Barbone
Subject: FW: Fairfield Energy Limited: RE: Information request
Attachments: FBL-DUN-DUNA-HSE-01-PLN-00003.pdf

From: Jonathan Bird
Sent: 05 September 2018 14:54:34 (UTC+00:00) Dublin, Edinburgh, Lisbon,
London To: 'chrii@aqu.dtu.dk'
Subject: RE: Fairfield Energy Limited: RE: Information request

Good afternoon Christian,

Thank you for your interest in our project ref email sent of the 20th Aug 2018.

As requested please find attached the Dunlin Alpha Decommissioning Option Screening for Comparative Assessment Doc. No.: FBL-DUN-DUNA-HSE-01-PLN-00003, Rev.: A1, Dated: 20/10/16.

Section 8.4 details the considerations for re-using the asset in situ for alternative purposes, however this would be viewed as decommissioning deferral rather than a final solution and was screened out.

Please let us know if you have any further questions.

Regards Jonathan

Jonathan Bird
Regulatory Approvals Lead

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Appendix 5.3 Dr David Santillo, Greenpeace Research Laboratories

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isunit@greenpeace.org

14th September 2018

Response to Public Consultation on Dunlin Alpha Draft Decommissioning Programme

To whom it may concern,

We have read and considered in detail the proposals put forward by Fairfield Energy Ltd for the decommissioning of structures associated with the Dunlin Alpha platform, under which it is proposed that both the concrete gravity base and the contents of the storage cells contained within that base would be left in place.

We wish to raise some formal objections regarding those proposals, based on (1) the acknowledged limitations to information available on the quantities, chemical characteristics and therefore likely toxicity and long-term environmental impacts of the cell contents, (2) the fact that the development of techniques designed to yield information on those and other associated wastes remain under development, and that formal proposals regarding the leaving in place of those materials in the marine environment must therefore be premature and (3) the relatively short period (30 days) permitted by Fairfield Energy for formal public consultation, which will inevitably have limited the number and scope of responses to what are long and complex technical reports that have only recently been finalised by Fairfield Energy.

(1) During the Stakeholder Dialogue process, we have raised questions regarding the apparent absence of sampling of the cell contents to date and, therefore, the consequent absence of empirical data on the physical and chemical composition of those contents, the spatial variability of that composition and the overall quantities of the wastes and, therefore, their associated contaminants. During that dialogue, it has been confirmed by Fairfield Energy that no physical samples (of oil, water, wax or sediment) have been taken from within the cells and that the compositional basis for the proposals to leave these materials in place has therefore been derived through a combination of historical data records, modelling and comparison with other waste materials that are assumed to be analogous to the wastes in the cells. These are proxy measures only and cannot be considered to provide legitimate and scientifically defensible validation of the assumptions used in formulating the recommendations in the final decommissioning proposal that the preferred option should be to leave these cell contents in place. Such unvalidated proxy comparisons cannot provide the confidence necessary in order to justify the leaving in place of large quantities of uncharacterised waste materials within the marine environment, even if currently contained within concrete structures on the seabed as they represent an unquantified risk and, therefore, a future environmental liability that is not amenable to proper assessment. On this basis, it is inappropriate for the Draft Decommissioning Programme to make any recommendations on a final management option of 'leave in place' for those cell contents, and such recommendations should be unacceptable from a regulatory perspective. Any proposals regarding the future management of those cell contents should only be made once sufficient empirical data are available to support their proper characterisation and assessment.

(2) In this regard, we recognise that Fairfield Energy is in the process of developing equipment and techniques that may eventually enable some degree of characterisation of those and other waste



materials associated with the concrete gravity base of the Dunlin Alpha platform. We also understand from discussions during the Stakeholder Dialogue process that the operator is currently working to overcome some technical difficulties in accessing the pipework, as necessary to deploy relevant measuring and sampling devices and that there is therefore still some way to go before empirical characterisation and quantification of wastes may become possible. Given that these technical efforts are underway and may ultimately provide some empirical data on the nature of the cell contents (where there are currently no data), it only seems appropriate that any decision regarding the management of those cell contents and other associated but so far uncharacterised wastes be deferred until such time that (i) the identified technical difficulties have been resolved, (ii) sample collection and characterisation have been successfully completed and (iii) the results of those analytical investigations have been subjected to independent scrutiny, at least by the Independent Review Group and preferably also through additional Stakeholder Dialogue. As the proposed Decommissioning Programme stands, it appears that the ongoing efforts by Fairfield Energy to overcome the technical difficulties in accessing and sampling internal spaces will be inconsequential as the 'preferred' management option for the cell contents has already been determined by the operator. It is not the case that such a decision must be made at this time, nor on the basis that no empirical data will ever be available; rather it should be a matter of allowing the necessary time for those technical projects to be completed before any final assessment and proposal for management of the cell contents. To accept a 'leave in place' option at this stage would be to pre-empt those technical developments and efforts and render them inconsequential in both practical and legal terms to any decisions taken regarding the decommissioning programme.

(3) All decommissioning programmes are complex and involve the collation of large volumes of technical data, along with associated assessments, assumptions and decision points. As is inevitably the case, the Draft Decommissioning Programme developed by Fairfield Energy for the Dunlin Alpha platform has an evidential basis which is spread across a number of lengthy and detailed technical reports and furthermore has developed and changed over time, partly in response to technical progress, partly in response to comments from the Independent Review Group and the Stakeholder Consultations. While we recognise and acknowledge the opportunities that have been provided to stakeholders during the development of the draft programme, it must also be recognised that the publication of the final compilation of documentation which sets out the proposed programme represents the first opportunity for stakeholders and the wider public alike to read and be able to assess, understand and question the programme in its totality and in its final form. Taking the proposal and its relevant supporting documents together, the package opened for public consultation runs to well over 1000 pages in length and is comprised of considerable technical detail and cross references. We therefore feel that allowing only the minimum period of 30 days for public consultation is unreasonable and should be reconsidered and extended in order to allow for greater independent scrutiny.

The comments and objections above are raised in the spirit of ensuring that OSPAR Decision 98/3 is implemented in full, including through proper application of Annex 2, and that any and all proposals submitted for approval have an empirical basis that is as complete and sound as possible, rather than being based very heavily or exclusively on proxy measures and assumptions. We contest that the Dunlin Alpha Draft Decommissioning Programme as proposed is based on a number of assumptions that have so far not been tested or validated, as outlined above, and therefore presents 'preferred' options, for example in relation to the cell contents and other associated wastes, that have been formulated prematurely and unjustifiably. ON this basis, we therefore conclude that the proposed programme as it stands does not constitute a responsible decommissioning programme in relation to the obligations on operators or the regulator to protect the marine environment from all sources of pollution.

Yours faithfully,

Dr David Santillo, Senior Scientist, Greenpeace Research Laboratories



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19 Abercrombie Court, Prospect Road
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25 February 2021

Greenpeace Research Laboratories
Rennes Drive
University of Exeter
Exeter, EX4 4RN

Attention of Dr David Santillo

Dr David

Dunlin Alpha Decommissioning Proposals

You recall our dialogue before and during the period of formal public consultation on our proposals for the decommissioning of the Dunlin Alpha installation (<http://www.Fairfield-Energy.com/Draft-Decommissioning-Programme>). I wish to provide you with an update on our progress and address the issues you raised on the residual contents of the concrete gravity base substructure. By way of context, since our last engagement, the project organisation has been focussed on three primary objectives:

(i) The plugging and abandonment of the no former production or water injection wells on the installation. This work has progressed well and, at time of writing, only two wells remain to be installed. The reservoir for the majority of the wells have now been fully and safely decommissioned with the remaining well being scheduled to be completed this year.

(ii) The making safe of the topside facilities for their eventual removal and recycling. Flushing, de-energising and preparation of the topsides modules has proceeded safely and on schedule with a planned 'cut stack' date late in 2021. It is anticipated that the topsides will be removed in either 2022 or 2023.

(iii) The sampling of cell contents to reduce uncertainty and provide verification data on the volume and composition of the contents. This workstream developed into a major undertaking over the last two years with significant technical and safety challenges. Crucially, we have been successful in capturing oil and water samples from the cells which have enabled us to refine our estimates and provide physical evidence of the characterisation of those components.

You may recall that our principal reference document for the residual cell contents is the Cell Contents Technical Report (CCTR) (<http://www.Fairfield-Energy.com/Cell-Contents-Technical-Report>). This comprehensive document has been maintained and updated on our website since its first publication in early 2019. The progress on cell sampling is discussed in some detail in Section 3.4.20 of the CCTR but is summarised below for your information.

The assessment of the residual inventory within the cells has drawn upon a wide range of input data. As you have rightly commented, this has included both historical data records and analytical modelling. Fairfield believes that these sources provided a robust foundation for understanding the nature of the residual contents of the cells. The oil, water and sediments in the cell structures are not only analogous to the oil, water and sediments, which were managed in the topside production, process for almost 40 years. They are one and the same produced from the same hydrocarbon-bearing reservoir sands, with known characteristics and composition. We believe the historical production records, being based on experience, observation and physical sampling, all qualify as empirical data.

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We do recognise, however, that physical samples from within the cells can provide further validation of the data and help to reduce areas of uncertainty. To that end and, in no small part, in response to your consultation comments, Fairfield has explored a variety of physical means to gain survey or sample data via existing topside-based penetrations into the Dunlin Alpha concrete gravity base.

Those survey and sampling efforts were generally hampered by the age and condition of the piping penetrations which are now well beyond their original design life and had been isolated for more than ten years. In addition, the cell structures typically have a free gas phase in their upper sections – comprising light end hydrocarbons (flushed from hydrocarbons in solution or the product of biological methanogenesis); Carbon Dioxide (CO₂ is a residual component of the historic Attic Oil Recovery Project); and Hydrogen Sulphide (H₂S is an indicator of biological activity within the cells breaking down the residual hydrocarbons). The access points are within the platform legs, in the order of 80m below external sea level. The operations have therefore involved hazardous work in confined spaces and often under full breathing apparatus. As you will appreciate, the safety of our personnel has been an absolute and overriding consideration during these operations and the safety and technical challenges have been significant.

Therefore, we have now managed to execute a sampling campaign to support and refine the inventory assessment. This was achieved by installing a new, temporary, two-phase vessel deep inside one of the legs. By venting the free gas, and from flooding the water phase in the cells, a total of 34 samples of residual gas and water were recovered (from the four cell groups) for detailed analysis and characterisation. All sampling activities were independently witnessed and verified and all analysis was conducted by independent and renowned laboratories. The results of the chemical analysis align with the inventory assessment and validate the input used in the environmental impact evaluations. Importantly, no evidence was expected or found of any Alkyl Phenols (NP & NPE), Naphthalene, Phthalates and Dibenzodioxane (NPDs), Polychlorinated Biphenyl (PCBs) or Tributyltin (TBT).

While these efforts were successful, other techniques did not prove to be as feasible. In brief, the concept of sending a remotely operated vehicle (ROV) through these same process lines for survey and sampling within the cell spaces was abandoned due to the significant technical challenges associated with navigation, tooling and recovery, in addition to the need for confined space working within a hazardous atmosphere (H₂S) atmosphere. Similarly, while the concept of deploying well wireline tools via J-tube pipework through the pipe wall into the cells was physically undertaken, the data could not be reliably interpreted. The attempt to use sophisticated but proven technology in an entirely novel manner proved fruitless.

In summary, gas, oil and water samples have been retrieved from within the Dunlin cells to provide validation of the components of the inventory basis. Those components, their volumes, compositions and spatial distributions are described in detail within Section 2.6 of the CCTR. It should be noted that, in emptying the free gas phases within the cells, the sampling activities not only reduced uncertainty on the gas volumes, but also recovered approximately 100m³ of accessible mobile oil from the cells before the sampling recovery operations were exhausted. This is described in Section 2.6.2 of the latest CCTR. The venting of the 'ground' gas phases and blockages in the piping systems mean that no other opportunities exist for additional sampling or recovery by these methods.

While no survey or sampling was achievable for the assessment phase, the inventory estimate used for the purposes of assessing the management options and the environmental impact is considered to be conservative as it overestimates both the volume and the hydrocarbon content) and therefore additional data to reduce uncertainty is unlikely to change either of the assessments. It is worth restating that the Dunlin reservoirs were not over-pressured or 'blow-down' as a part of a field development strategy and therefore Dunlin Alpha did not suffer the high solids loading of some other installations.



We believe that all credible opportunities for survey or sampling of the Dunlin cells from the topsides have now been exhausted. The safety and technical challenges associated with the remaining sampling options far outweigh the value of any information to be gained. The contents of the cells are believed to be sufficiently understood to make an informed decision on their long term management and resultant environmental impact.

Based on the latest physical evidence (which has validated and reduced the inventory assessment); an updated toxicology review; and a refined view on drill cuttings disturbance, Fairfield has revisited the options for the long term management of the residual contents and refreshed the Comparative Assessment (CA) evaluation (previously performed in 2018). The oil recovery aspects of the removal options are all clearly slightly diminished in that the recoverable oil volumes are lower. Offsetting this, the refreshed evaluation assumed a higher recovery efficiency as the recent oil samples have demonstrated reasonable mobility.

On drill cuttings, the refreshed evaluation adopted a more limited assumption on the volume of disturbed cuttings per penetration, reducing the potential impact of the intervention options on the water column. On this point, you may recall that the base case evaluation of 2018 had a sensitivity analysis - complete ignoring the presence of the cuttings - which was not required in the recent refresh. Finally, with regard to the use of rough-concrete penetrations, the original evaluation had assumed that the small triangular cells are circumferential to the leg bases were accessed via another cell (if at all) rather than directly from above. This was based on an assumption that the triangle cells were too close to the legs for direct access. This assumption has now been amended.

The results of the CA evaluation are unchanged by this refresh. The preferred option is still to leave the residual cell contents *in situ* to degrade naturally with no further recovery or treatment. This remains the preferred option when economic factors are removed from the evaluation. The results of the CA evaluation are summarised in sub-section 4.12.6 of the CCTR.

Section 5 of the CCTR describes how, despite the reduced oil inventory (approximately one third lower), the environmental impact of leaving the cell contents *in situ* is largely unchanged from earlier revisions of the document. Based on the cell contents and their release pathways, the assessment clearly concludes that impacts to the water surface, water column or benthic seabed are insignificant to slight; short term to temporary; and all reversible (by the definitions cited in the document).

Fairfield acknowledges that the decommissioning proposals have an evidential basis which is spread across a number of lengthy and detailed technical reports, not least the CCTR referenced above. As outlined in your formal correspondence, we have sought to develop that basis over time in response to stakeholder consultations and technical progress. Indeed, your previous feedback reinforced the need for further evaluation of the cell contents, which has now been achieved. We would be happy to discuss, or respond to any aspects of these sampling activities and how they have contributed to our evaluation of the decommissioning options for Dunlin Alpha.

In the meantime, we have published the updated CCTR on our website, along with a brief FAQs document on the cells. We will shortly be issuing the refreshed Comparative Assessment Report, although the CCTR already reflects the refreshed evaluation of the cell contents. We look forward to receiving any additional comments on our proposals.

Yours sincerely,
For and on behalf of Fairfield Petula Limited

Peter Jones
Regulatory Affairs Manager

Fairfield Petula Limited
Cannon Street, London, EC4N 6AF



Carol Barbone

From: David Santillo <D.Santillo@exeter.ac.uk>
Sent: 25 February 2021 12:24
To: Carol Barbone
Subject: Re: Dunlin Alpha Update

Hi Carol,

thanks a lot for sending that through - received safe and sound :) Very much appreciate you forwarding this on...I'll take a look as soon as I get chance.

Hope life is good for you, despite the craziness that still pervades the world.

Best wishes from Exeter in the sunshine.

David

On 25/02/2021 12:21, Carol Barbone wrote:

CAUTION: This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Dear David

Please find enclosed a letter from Peter Lee with an update on activity for the Dunlin Alpha decommissioning, notably cell contents sampling, over the period since your comments on the draft programme. Do let me know that it has come through safely.

I hope all is well with you and yours.

Kind regards

Carol

Carol Barbone
Stakeholder Relations

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Appendix 5.4 Dr Graham Russell, Royal Yachting Association (Scotland)



RYA Scotland

Royal Yachting Association Scotland

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14 August 2018

Peter Lee
Regulatory Affairs & Stakeholder Engagement Manager
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Stakeholder.Mailbox@fairfield-energy.com
Cc carol.barbone@fairfield-energy.com

Dear Mr Lee,

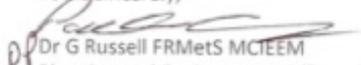
Dunlin Alpha Draft Decommissioning Programme

Although the RYA would have preferred that the legs be cut off well below sea level, we recognise that there are compelling reasons why this will not be done. I have a few comments to make about Table 4.2 in the Dunlin Alpha Decommissioning Programme document. In particular I refer to the entry for substructure degradation where it is stated, correctly, that 'The permanent physical presence of the substructure could result in potential interaction with other users of the sea.'

The 500 m safety zone is unlikely to contribute to safety since it will presumably not be monitored and enforced. In any case, prudent navigators are used to taking appropriate action to avoid charted hazards. As not all recreational vessels on passage between Norway and Shetland are equipped with radar or an AIS receiver (about a quarter transmit an AIS signal and others will have a receiver) it is important that the legs should be clearly visible by day and night and that the light should be able to be replaced quickly if it is out of action. I am happy to defer to the Northern Lighthouse Board in their view of this.

Although recreational electronic charts are not updated as frequently than the professional products, older charts will still have the position of Dunlin Alpha marked. Nevertheless the decommissioning process needs to be publicised both in Shetland and Norway as the decommissioned structure will be less visible to vessels that are not equipped with radar or an AIS receiver.

Yours sincerely,


Dr G Russell FRMetS MCIEEM
Planning and Environment Officer, RYA Scotland



The Royal Yachting Association Scotland
A company limited by guarantee and registered in Scotland
Number SC219439



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19 Abercrombie Court, Prospect Road
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11 March 2021

Dr G Russell
Royal Yachting Association Scotland
Caledonian House
10 Craighugh Rigg
South Gyle
Edinburgh EH10 6BQ

Dear Dr Russell

Dunlin Alpha Decommissioning Proposals

We have passed through the statutory and public consultation for the Dunlin Alpha installation, during which the proposals for decommissioning the topsides and the substructure have been separated. We have also continued to refine our proposals for the latter, to include comments received from yourself and others during the 2018 consultation period.

Your letter of 14 August 2018 makes clear your decommissioning option preference while recognising the compelling reasons for the recommended option of leaving the platform's substructure in situ. You also raised some points with respect to table 4-2 in the Final Decommissioning Programme as it stood at that time which I can now address.

We note your remarks about the 500m search zone and confirm that, while it will not be monitored, it is our intention to ensure that the remaining structure will be marked on Admiralty Charts and the FishSafe system. It would also be our expectation that Notices to Mariners would be issued (which would automatically cover Shelford mariners) and that relevant information would be shared with the relevant Norwegian authorities.

Regarding the visibility of the structure in relation to recreational vessels on passage between Norway and Shetland where these are not equipped with radar or an AIS receiver and your deferral on this to the Northern Lighthouse Board (NLB) I can also confirm that Fairfield have now agreed with the NLB that two aid to navigation assemblies and two docking frames will be commissioned: one active unit on the structure, and one standby unit held ashore.

The aid to navigation will be located on one of the legs at approximately 23m above LAT. Two docking frames will be installed on the selected leg to enable helicopter change out (one on, one off). As a minimum, these will conform to the following specification to satisfy both national and international maritime regulations:

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- 10 NM White LED Light
- 2 x Racon X & S Band Frequency Agile Radar Transponder
- Remote Communication/Monitoring/Reporting System
- Maintenance: 4-year Servicing
- 99.9% Reliability (entire system)
- Solar Powered System
- Bird Protection

All units will be remotely monitored via satellite and a contract placed with the NLB to monitor the Aid to Navigation on a daily basis. NLB will also be responsible for the maintenance of the spare units. The AtoN units are required to be replaced every 4th year with a spare unit. This interval may change after the first replacement. Replacement of an Aid to Navigation may take place between scheduled intervals due to unexpected malfunction in which case the spare unit will be rapidly transported to the site by a supply boat. The replacement of the units will then be performed by a specially equipped helicopter with crew trained for such operations.

I hope this reassures you but do come back to me if you have any further queries.

Yours sincerely,
For and on behalf of Fairfield Betts Limited

Peter Lloyd
Regulatory Affairs Manager

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Carol Barbone

From: Graham Russell <consultations@ryascotland.org.uk>
 Sent: 12 March 2021 13:50
 To: Carol Barbone
 Cc: Pauline McGrow
 Subject: Re: Dunlin Alpha Installation - follow up on 2018 consultation response

Follow Up Flag: Follow up
 Flag Status: Flagged

Thanks Carol. I am happy with that outcome.
best wishes,
Graham

Dr G Russell FRMetS MCEEM
Planning and Environment Officer
RYA Scotland

From: Carol Barbone <Carol.Barbone@fairfield-energy.com>
 Sent: 11 March 2021 16:09
 To: Graham Russell <consultations@ryascotland.org.uk>
 Cc: Pauline McGrow <Pauline.McGrow@ryascotland.org.uk>
 Subject: Dunlin Alpha Installation - follow up on 2018 consultation response

Dear Graham

Further to your comments on the draft Decommissioning Programme for the Dunlin Alpha installation, back in 2018, I have pleasure in enclosing an update from Peter Lee in response, contained in the attached letter.

Do come back to me if you have any queries.

All best wishes

Carol

Carol Barbone
Stakeholder Relations

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Appendix 5.5 Steven Alexander, Scottish Fishermen's Federation



Our Ref:

Your Ref:

7 September 2018

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Peter Lee
Regulatory Affairs & Stakeholder Engagement Manager
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Aberdeen AB32 6FE

Dear Peter,

Dunlin Alpha Decommissioning Programme – Consultation Draft

I refer to the Consultation Draft Decommissioning Programme and key supporting documents described in Fairfield's Stakeholder email of 3 August 2018 and provided via email link and hard copy.

The Scottish Fishermen's Federation (SFF) appreciates the clearly laid out and detailed explanation of Fairfield Energy's proposals for the decommissioning of the Dunlin Alpha installation and place on record our appreciation of the information provided and discussions held at the various Stakeholder Engagement sessions as well as the one to one sessions with the Federation to date.

While appreciating the complexity of full removal and noting that Fairfield will seek derogations from OSPAR Decision 98/3, we would highlight to Fairfield that the Federation's decommissioning preference(s) with regard to surface installations can be summarised as follows:

- **Surface installations: total removal to shore.** Failing that, and where a derogation against the Oslo and Paris Commission for the Protection of the Marine Environment of the North East Atlantic (OSPAR) Decision 98/3 has been granted, the preference is for seabed footings (minimum water clearance of 55 metres required above any partially removed installation which does not project above the surface of the sea) rather than for any part of the installation to be left visible above the water line (statutory Safety Zone/oil and gas decommissioned Awareness Zone implications to be considered) *

* The SFF's Oil and Gas Decommissioning Policy and accompanying Key Principles document can be viewed via the SFF's website using the following link: <https://www.sff.co.uk/sff-offshore-oil-gas-decommissioning-policy/>.

Members:

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Mallaig & North-West Fishermen's Association Ltd · Orkney Fisheries Association · Scottish Pelagic Fishermen's Association Ltd ·
The Scottish White Fish Producers' Association Ltd · Shetland Fishermen's Association

VAT Reg No: 605 096 748



The Federation having stated the above position, would reaffirm its continued appreciation of the openness of the dialogue hitherto and its wish to continue to work closely and positively with the Dunlin Alpha Decommissioning Project Team, as you work through the challenges before you.

Yours sincerely,

Steven Alexander
Offshore Liaison



Fairfield Betula Limited
19 Abercrombie Court, Prospect Road
Arnhall Business Park
Westhill, AB32 6FE, UK

11 March 2021

Steven Alexander
Spanish Fishermen's Federation
24 Rubislaw Terrace
Aberdeen
AB10 1XZ

Dear Steven

Dunlin Alpha Decommissioning Proposals

We have been in contact since the statutory consultation in 2018 on proposals for decommissioning the Dunlin Alpha installation, notably on the separation of the programmes for topsides and substructure but also on fishery-related matters. We wanted, however, to respond formally to acknowledge your comments to the consultation and, of course, the SFF's revised Decommissioning Policy and Key Principles.

Since the original programme was submitted, we have revised the comparative assessment of options, taking account of refinements made following statutory consultee, stakeholder and regulatory comments from the 2018 consultation and additional work undertaken during this period. This has confirmed the validity of the proposals to decommission the Dunlin Alpha installation *in situ* and a derogation application will be submitted by OSPAR to OSPAR for review by the Contracting Parties in due course.

The updated Comparative Assessment Report, produced after the reassessment, will shortly be online at <http://www.fairfield-energy.com/operations/greater-dunlin-area/stakeholder-engagement> if you are interested to view it at the moment.

I would like to thank you for the cooperative approach adopted by the SFF and the time spent considering our plans and contributing to their development over the course of their preparation, as well as for your own appreciation of the transparency of the process. If you would find it helpful to have a further discussion on any aspect of our plans, please do let me know.

Yours sincerely
For and on behalf of **Fairfield Betula Limited**

Peter Lee
Regulatory Affairs Manager

Fairfield Betula Limited
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Carol Barbone

From: Steven Alexander <S.Alexander@sff.co.uk>
Sent: 11 March 2021 17:45
To: Carol Barbone
Subject: RE: Dunlin Alpha update

Thank you Carol.

Hope all well with you.

Kind regards,

Steven

Steven Alexander
Offshore Liaison

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From: Carol Barbone <Carol.Barbone@fairfield-energy.com>
Sent: 11 March 2021 16:12
To: Steven Alexander <S.Alexander@sff.co.uk>
Subject: Dunlin Alpha update

Dear Steven



Further to your comments on the Dunlin Alpha during the 2018 consultation and work undertaken by Fairfield since that time, I have pleasure in enclosing an update letter from Peter Lee in response.

Do let me know if you have any queries.

Kind regards

Carol

Carol Barbone
Stakeholder Relations

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Appendix 5.6 Dr Sam Collin, Scottish Wildlife Trust

Consultation Response

Dunlin Alpha Decommissioning Programme

Scottish Wildlife Trust Response

14 September 2018

The Trust considers the proposal to leave polluting materials in situ as unacceptable and presents a long-term environmental risk to the marine environment. MCX Dunlin (UK) Ltd should be held responsible for removing all pollutants from the Dunlin Alpha platform.



Enhancing Scotland's Wildlife

scottishwildlifetrust.org.uk

1. The Scottish Wildlife Trust welcomes the opportunity to comment on the draft Dunlin Alpha decommissioning programme (DP). The Trust recognises that the decommissioning of the oil and gas industry in the North Sea is still in its infancy and considers this consultation as an opportunity to set a precedent for all future oil and gas decommissioning programmes in UK waters, especially for those structures that meet the requirements for derogation under OSPAR 98/3.

Key Points

- The Scottish Wildlife Trust has concerns over the proposed option of leaving the contents of the storage cells in situ, which includes oil, heavy metals, and other chemicals, and believes MCX Dunlin (UK) Ltd should be held responsible for removing them.
- The Trust considers that MCX Dunlin (UK) Ltd's proposed management of the storage cell contents is effectively applying for free waste disposal.
- The Trust believes that a fee should be introduced for oil companies that propose to leave polluting material(s) on the seafloor and that the money from this fee should go into an Environmental Stewardship Fund.
- The Trust cannot support the proposed Dunlin Alpha decommissioning programme.

Overview

2. The Scottish Wildlife Trust's policy on decommissioning¹ promotes a case-by-case approach to the removal of structures from the sea and supports pragmatic solutions that present the best possible outcome for the marine environment. The Trust is willing to support leaving oil and gas structures in situ (the 'rigs-to-reefs' approach), where there is likely to be a net benefit to the environment and provided the remaining structure is cleaned of all pollutants.
3. While the Trust accepts MCX Dunlin (UK) Ltd's right to apply for derogation to leave the Dunlin Alpha platform in situ, we consider that the current proposal to leave the storage cell contents and the drill cuttings pile in situ could pose an unacceptable long-term environmental risk. By leaving pollutants in the storage cells (including oil, heavy metals and a suite of other chemicals), MCX Dunlin (UK) Ltd are effectively applying for free waste disposal, which appears to demonstrate a disregard for the health of the marine environment. Therefore, the Trust cannot support this proposal.

Legacy impact

4. It is the Trust's firm view that all marine activities must consider and maintain (or improve) the quality, health and biodiversity of the waters they occupy, avoiding significant, cumulative, long-term or irreversible damage to the environment. The Trust has a particular interest in oil and gas activity because the decommissioning process has the potential to impact the environment in many ways. For example, removing a structure that has been in place for decades can have an immediate ecological impact on the surrounding marine environment through the loss of an artificial reef. This kind of immediate impact should be weighed against the long-term risks of leaving the structure in situ which, in some cases, could persist for hundreds of years (e.g. if pollutants in drill cuttings or within the rig structure itself are left behind).

¹ https://scottishwildlifetrust.org.uk/wp-content/uploads/2016/09/002_293__decommissioningoffshoreinfrastructure_policy_1386585277.pdf



5. The Dunlin Alpha DP proposes to leave the entire platform (excluding the topside) in place. The Trust considers it paramount that all actions necessary are taken during these initial stages of the decommissioning process to eliminate any long-term environmental risks that this structure and associated materials present. With this in mind, the Trust finds the proposal to leave polluting materials in the storage cells of the platform concerning. Over time, the concrete structure will begin to physically break down, resulting in the release of the abandoned pollutants into the marine environment. The release of these pollutants could occur slowly, resulting in a long-term, cumulative impact, but it should also be acknowledged that there is potential for a rapid release in a sudden event where, for example, the legs of the platform collapse and fall onto the storage cells below. Either way, by leaving the pollutants behind, it is virtually guaranteed that they will be released into the marine environment.
6. The Trust considers it the responsibility of the platform owner to ensure all materials left on the seafloor are inert and pose no further environmental risks. The Trust's view is in line with the Polluter Pays Principle, which requires that 'preventative action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay.'² The Polluter Pays Principle is also a guiding principle of the OSPAR Convention, which requires that 'the costs of pollution prevention, control and reduction measures must be borne by the polluter.'³
7. The Trust understands that current technology may restrict the ability to remove these materials but considering the oil and gas industry has built up decades of expertise in drilling and extracting oil and gas from deep beneath the seafloor, we would like to see the same initiative and innovation applied to developing new technologies in the decommissioning process. We therefore believe there should be a commitment from MCX Dunlin (UK) Ltd to develop the appropriate technologies to remove the pollutants from the storage cells.
8. The Trust was pleased to see cost estimates for the different decommissioning options included in the Dunlin Alpha DP and welcomes the transparency shown. It is important to highlight the range in cost estimates for the different management options for the storage cell contents – the most expensive option at £62.5m for high case oil and sediment removal down to £0 for leaving all contents in place. MCX Dunlin (UK) Ltd's preferred option, unsurprisingly, is to leave all contents in place. Assuming the UK Government is expected to cover approximately 50% of decommissioning costs through tax relief, the preferred option proposed by MCX Dunlin (UK) Ltd represents a saving to them of £31.25m – a considerable sum of money. Also important to highlight is that MCX Dunlin (UK) Ltd do not appear to have made any attempt to take account of the environmental damage virtually guaranteed to occur from their preferred option.
9. The Trust believes that MCX Dunlin (UK) Ltd should be held responsible for removing all polluting material from the platform and ensuring that the remaining material left on the seafloor (i.e. the concrete and steel structure) is inert and poses no further environmental risks.
10. It is the Trust's view that all platform owners who propose to leave polluting material on the sea floor should incur a fee (possibly a percentage of the estimated cost of complete removal or the equivalent cost of disposing of the waste material if it was on land), and that the money from this fee should go into an 'Environmental Stewardship Fund' (see section below).

²Treaty on the Functioning of the European Union (Article 191(2) TFEU)

³<https://www.ospar.org/about/principles/polluter-pays-principle>



Long-term ecological monitoring

11. If MCX Dunlin (UK) Ltd's application for derogation under OSPAR 98/3 is successful and the oil platform is left in situ, the Trust believes there should be a concerted effort to establish a long-term environmental monitoring programme to further assess the impact these large offshore structures have on the marine environment and marine ecology. It is broadly acknowledged that offshore oil rigs may have the potential to act as artificial reefs and create hotspots for marine life. The Trust believes that the oil and gas industry, research institutes and the UK Government should seize upon this opportunity to improve our understanding of artificial reefs and provide insights into the potential ecological value of a 'rigs-to-reefs' programme in the North Sea.

Environmental Stewardship Fund

12. There is no denying that the installation, operation and decommissioning of oil and gas platforms has had, and will have, a significant environmental impact and that returning the environment to pre-development condition is unlikely. It is, therefore, important that the degradation of the marine environment is acknowledged and accounted for by the oil and gas industry.
13. However, the Trust recognises that in some circumstances there may be significant environmental benefits to leaving structures in place and therefore advocates for further research into the potential for a 'rigs-to-reefs' programme in the North Sea.
14. If research were to identify circumstances in which the best environmental outcome is to leave a structure in place, the Trust proposes that a portion of the savings to the oil and gas industry should be placed in an 'Environmental Stewardship Fund' that supports marine conservation, research projects, innovative technologies, and advancements in marine management. These projects could include: establishing demonstration and research Marine Protected Areas; trialling sustainable fishing gear and practices; and increasing research into the carbon sequestration value of 'blue carbon' habitats.
15. The decommissioning oil and gas infrastructure can provide opportunities across multiple sectors, involving multiple stakeholders, and include a range of potential environmental and social, as well as economic, benefits. The Trust believes that the proposed Dunlin Alpha DP inadequately explores these possibilities and considers that it would represent an opportunity lost for developing innovative and world-leading approaches, not just for decommissioning but for marine management as a whole.

Conclusion

16. The Trust is willing to support leaving oil and gas structures in situ, but only if there is likely to be a net benefit to the environment and the remaining structure is cleaned of all pollutants. MCX Dunlin (UK) Ltd's proposal to leave polluting materials in situ is unacceptable and appears to demonstrate a disregard for the long-term health of the marine environment. The Trust believes that MCX Dunlin (UK) Ltd should be held responsible for removing all pollutants from the Dunlin Alpha platform.

Please can you keep the Trust informed of how this consultation progresses.



Fairfield Betula Limited
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Westhill, AB32 6FE, UK

31 January 2019

Dr Samuel Collin
Marine Planning Officer
Scottish Wildlife Trust

By email: scollin@scottishwildlifetrust.org.uk

Dear Sam

DUNLIN ALPHA DECOMMISSIONING PROGRAMME SCOTTISH WILDLIFE TRUST CONSULTATION RESPONSE

Further to our earlier acknowledgment, we would like to thank you again for your written response to the Dunlin Alpha Consultation Draft Decommissioning Programme on behalf of the Scottish Wildlife Trust (SWT). We are now writing to formally acknowledge your position on various elements of the consultation and to respond to the points that you raised in the sincere hope that this will provide you with a greater level of confidence in our proposals.

Firstly, we would like to explain that, while MCX Dunlin (UK) Limited now holds a 100% interest in the subject licences, Fairfield Betula Limited (Fairfield) is the licence operator and has been duly appointed as the Dunlin Alpha well operator and installation operator in accordance with the *Offshore Petroleum Licensing (Offshore Safety Directive) Regulations 2015*. It is therefore appropriate that any communication on, or reference to, these decommissioning proposals be made to Fairfield. Support from joint venture partner(s), or other Section 29 Notice Holders, will be addressed upon completion of the full consultation process.

Introduction

It is acknowledged that the decommissioning of the oil and gas industry in the North Sea is still in its infancy and that operators, regulators, statutory consultees and the wider stakeholder community will have lessons to learn as the industry matures its approach to decommissioning. However, the prevailing regulatory framework ensures that each decommissioning proposal is assessed on its own merits and only after extensive study work has been conducted. For those reasons, we do not believe that this consultation sets any precedent for future decommissioning proposals, even those which may meet the requirements for derogation under OSPAR 98/3. We have developed our proposals within the prescribed regulatory framework, ensuring the appropriate level of rigour, and resulting in the most appropriate proposals for the Dunlin Alpha installation.

Overview

Fairfield is aware of the stated SWT policy on decommissioning and, in line with the regulatory position, welcomes the case-by-case approach to finding the best possible outcome for the marine environment. We acknowledge that this same principle was reiterated in SWT's recent written evidence to the Scottish Affairs Committee on the future of the oil and gas industry. Fairfield believes that the current proposals for the Dunlin Alpha installation, which are based on extensive and independent studies, uphold this same principle.

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As you will be aware, Dunlin Alpha is a large 'first generation' North Sea installation with a complex and aged concrete gravity based substructure. It could be argued that no decommissioning proposal for the Dunlin Alpha substructure would be without some degree of environmental risk. It is important to note, however, that a major project was completed over a decade ago to recover almost all of the hydrocarbons, leaving the storage cells in the substructure predominately filled with seawater.

It is evident that impacts to the marine environment will arise from any attempts to remove the residual contents. The internal geometry of the substructure, and the various piping systems within it, make further recovery extremely challenging. The immediate impacts from such an operation would be dominated by, (i) the significant disturbance and redistribution of drill cuttings over a potentially large area of sea bed, and (ii) the likely loss of a significant portion of the cell contents into the water column during recovery to surface.

It is acknowledged that impacts to the marine environment will also arise if those residual contents are left in situ in that the cell contents will ultimately, over centuries or millennia, be exposed to the marine environment. Fairfield has studied both chronic and sudden release scenarios to understand the potential impact on the environment. The Environmental Appraisal Report has addressed cumulative impacts and these have been shown to be not significant. While it may be counter-intuitive, the environmental impacts of leaving these materials in situ have been assessed as less than those arising from attempted recovery.

Fairfield fully recognises the need to weigh immediate ecological impacts against those in the longer term. Our studies have addressed this need and our assessment criteria have included a weighting for both. These assessment criteria, and the results of the assessment, are fully documented in the Decommissioning Programme and supporting documents. The clear conclusion from our studies and assessments is that leaving the remaining cell contents in situ is the best environmental solution available. Similarly, our proposal for drill cuttings is to leave these in situ as their persistence and leaching rate are within the prescribed thresholds of OSPAR Recommendation 2006/5 which would advocate non-disturbance in these circumstances.

Legacy Impacts

The Polluter Pays Principle is fully accepted and Fairfield is engaged in a decommissioning project which will ultimately cost many hundreds of millions GBP. SWT's own evidence to the Scottish Affairs Committee cited the significant forecast spend across the North Sea decommissioning arena and you will likely have some understanding of the 'order of magnitude' cost of decommissioning Dunlin Alpha. Fairfield believes that all of the proposals contained within the draft Decommissioning Programme are well grounded in scientific study and transparent assessment. Leave in situ was demonstrably the preferred option for cell contents from an Environmental perspective, as well as being the preferred option in three of the other four criteria, namely Safety, Technical Risk and Economics.

The associated studies have recognised the absence of proven technology to recover any residual materials in the cells. While there has been limited technological development in terms of cell access for sampling and survey purposes, these approaches have not been proven for recovery purposes. Nevertheless, in order to further test this issue, Fairfield's assessment of cell contents recovery options did assume that current technology could be enhanced and up-scaled by a sufficient margin to enable recovery of a portion of the residual materials. Even under this questionable assumption, the attempted recovery of residual materials within the cells was assessed to be a poor option against four of the five assessment criteria – including Environment. Notwithstanding this, we acknowledge that Section 29 Notice Holders could be required to revisit any approved Decommissioning Programme should enabling technology be brought forward.



We appreciate SWT's recognition of the transparent nature in which costs have been described. Fairfield believes that stakeholders should recognise that the differing options have materially different costs and that this should be part of the consideration in assessing those options. That said, cost should not be the main driver and as discussed in the Decommissioning Programme and the supporting Comparative Assessment Report, a sensitivity analysis was performed whereby the economic criterion was fully discounted. The leave in situ option for cell contents was still clearly preferred under this sensitivity analysis.

As summarised above, and based on the outcome of the Comparative Assessment process required by OSPAR and the UK regulatory framework, the removal of all residual materials is neither technically credible nor the environmentally responsible course of action in the case of Dunlin Alpha. Attempts to remove the residual materials would result in significant safety risk to the individuals engaged in the operation and cause inevitable impacts on the environment.

With regard to responsibility, while operatorship of Dunlin rests with Fairfield, our joint venture partners recognise that they are responsible for the ongoing funding of the decommissioning programme. In the highly unlikely event that they were ever unable to meet their commitment, responsibility would revert to the Section 29 Notice Holders⁴ who, under the Petroleum Act, are jointly and severally liable for ensuring that decommissioning and legacy liabilities are met.

We believe the concept of an Environmental Management Fund is an industry-wide discussion item rather than an issue which can be resolved on an installation-by-installation basis. Fairfield will reserve judgement until a clearer framework is under discussion. In principle, however, it would seem unfortunate to penalise installation owners for making a sound environmentally-preferred selection merely because there was also a more expensive, less environmentally-preferred option available.

Ecological Monitoring

We concur with the essence of SWT's comments with regard to ecological monitoring and agree that offshore oil and gas structures may have the potential to act as artificial reefs and support key elements of the marine environment. Fairfield has already agreed to support various research initiatives with academia (for example, at Edinburgh and Aberdeen universities) and will also be informed by the INSITE Programme which brings together government, oil and gas operators, academia and, most recently, the Natural Environment Research Council. This, of course, is in addition to the regulatory requirements for long-term monitoring following decommissioning activities.

Environmental Stewardship Fund

SWT's proposal for an Environmental Management Fund has been addressed above and we reiterate our view that more detail would be required on these proposals in order to take a considered view. In the interim, we hope that stakeholders will recognise that all decommissioning options have potential environmental impacts and that, in certain circumstances, leave in situ can justifiably be the preferred long-term management option. In such circumstances, a financial levy on installation owners would seem inappropriate.

⁴ The details of our partners and former owners are set out in Table 1.2 in each of the decommissioning programmes.



We recognise that the decommissioning of oil and gas infrastructure can provide opportunities to multiple sectors. The studies and comparative assessments conducted for Dunlin Alpha have covered a range of potential benefits by consideration of environmental, safety, technical, societal and economic factors for each of the options under consideration. The underlying principle of multi-criteria decision analysis is at the heart of the assessments carried out by Fairfield in developing its decommissioning proposals.

It is beyond our scope, however, to investigate the full socio-economic opportunities presented by the decommissioning sector which is more appropriately left to government and its agencies. In furtherance of this, we are copying this letter and your original consultation response to the Department for Business, Energy and Industrial Strategy and the Oil and Gas Authority.

Conclusion

We note your stated position on the proposals for the Dunlin Alpha installation including its cell contents and drill cuttings and your preference for an alternative outcome. We trust, however, that the above responses will clarify that the rigorous process which we are obliged to follow has resulted in the proposals presented in the Decommissioning Programme and why these are the optimal solutions with respect to the environment.

We will certainly keep you informed of progress on the decommissioning proposals and would be pleased to answer any questions arising from this letter. If it would be helpful, we could arrange to meet again to follow up on the contact at our Stakeholder Workshop in late 2017. Please let me know of your interest and availability for such a meeting.

Yours sincerely

Peter Lee
Manager – Regulatory and Stakeholder Engagement

cc Debbie Taylor, Senior Decommissioning Manager, BEIS
Ian Fozdar, Infrastructure Decommissioning Manager, Oil & Gas Authority



APPENDIX 6 ADDITIONAL CONSULTATION ON TOPSIDES/SUBSTRUCTURE DECOMMISSIONING PROGRAMME SPLIT

From: **Peter Lee** Peter.Lee@fairfield-energy.com
Subject: Fairfield - Dunlin Alpha - Decommissioning Programme Update
Date: 15 March 2019 at 09:18
To: john.wrottesley@globalmarinesystems.com
Cc: Taylor, Debbie (Energy Development & Resilience) debbie.taylor@beis.gov.uk,
Yates, Lisa (Energy Development & Resilience) lisa.yates@beis.gov.uk

PL

Dear John

I hope this message finds you well. You may recall that the Dunlin Alpha Decommissioning Programme passed through public consultation in August/September 2018. Following that consultation, and in agreement with BEIS-OPRED, a decision was made to split the Dunlin Alpha Decommissioning Programme and Environmental Appraisal into two separate programmes, addressing the topsides and substructure respectively. The first of these programmes, concerning the removal of the installation topsides, is now ready for further consultation and I have today placed the draft Dunlin Alpha Topsides Decommissioning Programme and associated Environmental Appraisal on the Fairfield website for review by interested parties. You will find the two documents at the following location:

<http://www.fairfield-energy.com/operations/greater-dunlin-area/stakeholder-engagement/public-consultation>

The proposals for the removal of the topsides are unchanged from those contained within the August 2018 draft programme but have been decoupled from the proposals for the substructure to enable the topsides removal to be executed in a timely manner. In the event that you have any comments on the above proposals for topsides removal, please direct those to myself and/or the Fairfield Stakeholder Mailbox (stakeholder.mailbox@fairfield-energy.com). Any comments would be appreciated before March 29th if possible. For your information, the draft Decommissioning Programme for the substructure will not be available for review until perhaps September of this year, at which time we will welcome your input on the decommissioning of the Concrete Gravity Base Substructure.

Best regards
Peter

Peter Lee
Regulatory Affairs & Stakeholder Engagement Manager

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