

From: ukop@ogauthority.co.uk
To: [MS PON15](#)
Subject: UKOP: WIA/882 CP/2038/0 (Version 1) , Chemical Permit: SAT update during review
Date: 25 June 2019 09:56:05

UK Energy Portal Message

Subject: UKOP: WIA/882 CP/2038/0 (Version 1) , Chemical Permit: SAT update during review

An update to the SAT that you are currently reviewing (CP/2038/0 (Version 1)) has been submitted. You will need to review these changes before submitting your review. Please log in using the link below to review these changes.

If this email has been copied to you, you may click [UK Oil Portal](#) to logon as yourself.
For assistance or support email: ukop@ogauthority.co.uk or telephone 0300 067 1682.

This message is intended for the addressee only and may contain private and confidential information or material which may be privileged. If this message has come to you in error you must delete it immediately and should not copy it or show it to any other person.

The Oil and Gas Authority is a limited company registered in England and Wales. Registered number 09666504. VAT registered number 249 433 979. Registered office: 21 Bloomsbury Street, London, United Kingdom, WC1B 3HF.

This email has been scanned by the Symantec Email Security.cloud service.
For more information please visit <http://www.symanteccloud.com>

0131 244 [REDACTED]
MS.PON15@gov.scot

EMT
BEIS
Aberdeen

MARINE SCOTLAND SCIENCE RESPONSE

DRA-533
CP-1520-3 (Version 1)
AGR Chemical Permit 204/10a-Cambo

Marine Scotland, Marine Laboratory has reviewed the changes to the Chemical Risk Assessment included in the above Chemical Permit.

The variation to add and replace certain products in the well test completion section, to add and replace certain chemicals in the gravel pack completion section, to add a suite of filter cake breaker chemicals to the completion section, and to add a suite of tracer chemicals to the completion section and are acceptable.

Marine Scotland agrees with the RQs modelled and suitable justifications were provided for chemicals with a substitution warning and of environmental concern.

Therefore we can confirm that Marine Scotland has no objections to the variation to the Chemical Permit for this application.

Marine Scotland advise that the following comments should be addressed in a future variation/submission.

1. In the CRA the information related to the tracer chemicals states that they will be placed at different sections of the sidetrack to determine which parts are producing and which parts are not. It is also stated that the tracers will return in the oil after a significant amount during the extended well test. However, can you clarify what the expected fate of the tracers that are in sections that aren't producing and therefore not dissolved in the oil? Can you also clarify if there is a possibility that not all of the tracers will be released in the 10 days of the extended well test or could there be later discharges that are not flared?

2. Please note that Oceanic HW540 E has been given a BAT discharge code but from the information provided it appears that the discharge will be subsea, like the other hydraulic fluid, and therefore it is a nonstandard discharge and should have the discharge code OTH.

The assessment of this application was conducted by [REDACTED]. Any correspondence should be sent by email to MS.PON15@gov.scot.

Regards

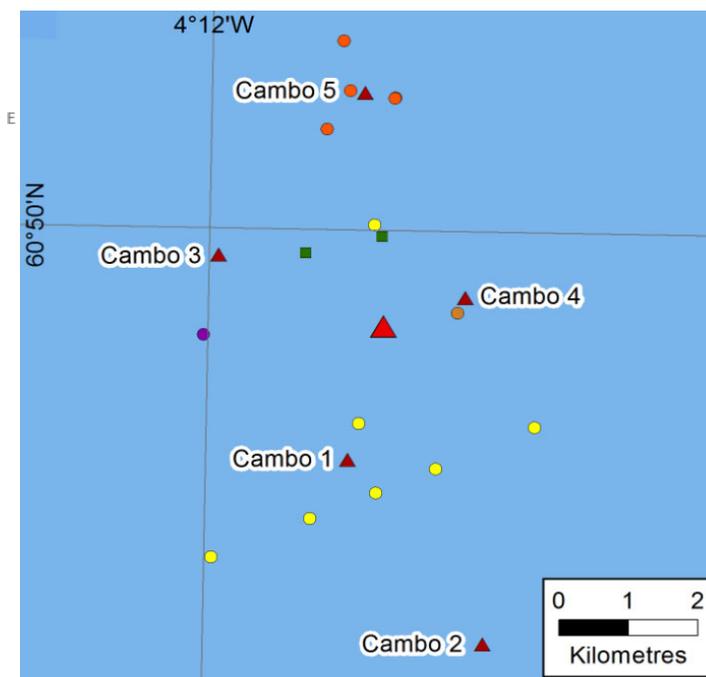
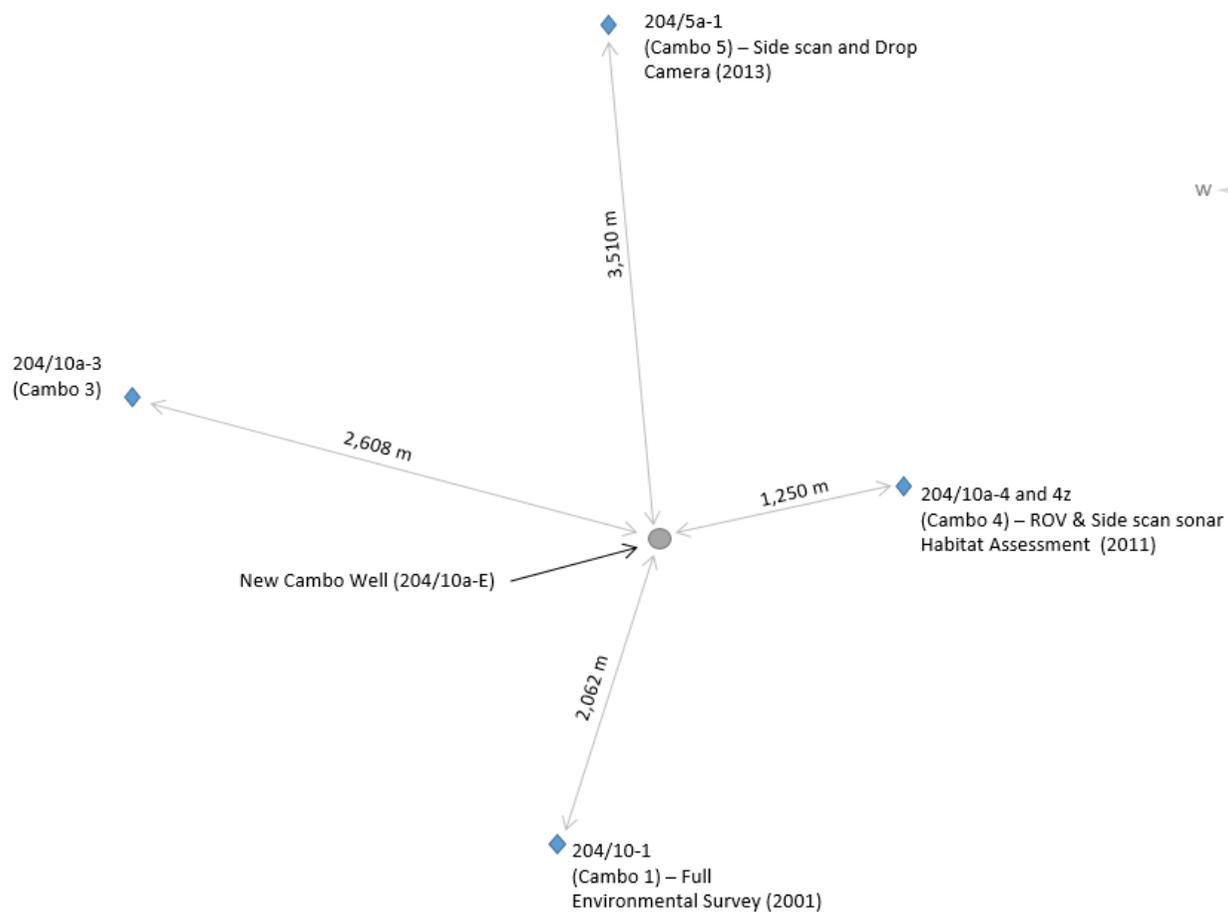
[REDACTED]
Offshore Chemical Risk Assessor
07 June 2018

Siccar Point Energy

Cambo Well (204/10a-E) Proposed Habitat Survey

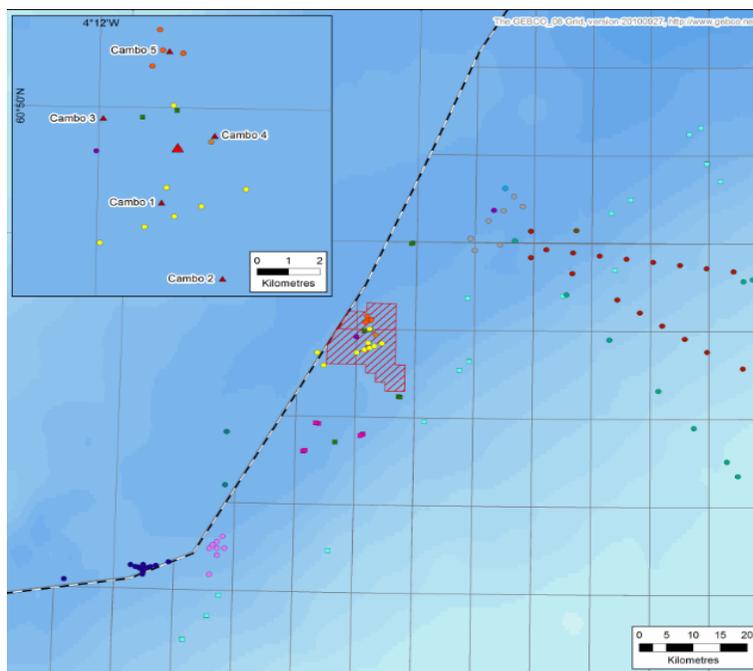
Cambo Well (204/10a-E) Proposed Habitat Survey

204/10a-E - Well Position In Relation To Previous Cambo Wells



Cambo Well (204/10a-E) Proposed Habitat Survey

Regional and Local Environmental Survey Data



Study Area

▨ Cambo Licence Area ▲ Proposed Appraisal Well Location ▲ Previous Cambo Field Wells

Regional Surveys

■ 1996 AFEN Survey ■ 1998 AFEN Survey ■ 1999 DTI Survey

Site Surveys

● 2001 FOIB ● 2001 Hess Block 204/21 and 6004/16 ● 2001 Hess Cambo 1 ● 2002 Texaco Block 204/17 ● 2005 Chevron Rosebank ROV ● 2007 Chevron Aberlour ● 2009 Chevron/Hess Rosebank/Cambo ROV
 ● 2011 Hess Cambo 4 ROV ● 2011 Hess Cambo Habitat Assessment ● 2011 Chevron Rosebank to Laggan pipeline ● 2011 Chevron Rosebank EBS ● 2012 Chevron Rosebank Pipeline ● 2013 Hess Cambo 5 ROV

Reports and Studies (Held by SPE)

Survey Reports

- (Cambo 4) - FGCERT, 2011. Cambo Pre- and Post-Drill Habitat Assessment. Fugro Geo Consulting ERT Report Number: J36124.
- (Cambo 5) - FSLTD, 2011. Cambo Environmental Survey UKCS Block 204/05. Fugro Survey Ltd Report No 00650V2.0.
- (Cambo 1) - GARDLINE, 2002. Environmental Baseline Survey of the UKCS 204/10. August to October 2001. Gardline project ref 5694.

Scoping Studies

- Blackrock Environmental Desk Top Study (2014)
- Cambo Scoping Study (2013)

Cambo Well (204/10a-E) Well Proposed Habitat Survey



Previous Survey Work

Conclusions

- A number of environmental surveys in close proximity to the proposed location provide a robust overview of the benthic environment near the proposed well location.
- Based on current information, no significant environmental concerns have been identified so far that would preclude the proposed drilling operations.
- Numerous environmental surveys have previously been undertaken in the (wider) area which can also be drawn upon for information regarding the benthic environment.
- The combined data collected during these surveys provide a comprehensive overview of the benthic environment in the area around, and at similar water depths as, the proposed well.
- Results from surveys are fairly uniform in their findings:
 - Seabed sediments at the well location can be expected to comprise of (soft) silty clay with occasional gravel patches and scattered pebbles, cobbles and boulders.
 - The associated benthic infauna associated with this type of seabed are generally dominated by crustaceans and polychaetes.
 - The density and diversity of epifauna is expected to be low. Sessile epifauna associated with the occasional hard substrata expected to be present (i.e. cobbles, boulders, pebbles and gravel), are likely to include sponges, small soft corals and bryozoans.
 - Mobile epifauna, such as sea spiders and sea stars, are also expected to be present in low numbers.
- To date, no surveys across the greater area or locally to the proposed well site have found any reef-forming corals or large scale sponge aggregations that would qualify as a potential Annex I habitats.
- It is, therefore, considered unlikely that such features would occur at the proposed well location.
- SPE would like to conduct a pre drilling ROV habitat survey to confirm the above assumption and to provide additional data for input into the environmental assessment and permitting process.

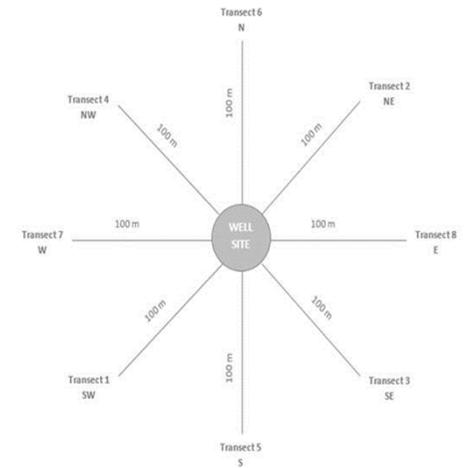
Cambo Well (204/10a-E) Proposed Habitat Survey



Proposed Survey Scope

The survey scope is based on a previously accepted Habitat Assessment ROV survey at the Cambo location.

- Survey will consist of 8 transects.
- Each transect will begin as close as possible to the well location.
- The ROV shall hold a straight course as possible along the entire length of each transect.
- Approximately every 10 m along the transect two still photographs will be taken. The habitat assessment will be based solely on what can be seen in the video footage and what is captured by the stills images.
- The video transect will be continued to approximately 100 m from the well location. The ROV will return to the well location, before starting the next transect.
- Programme MAY vary if area of interest is identified by the onboard trained environmental observer.



Cambo Well (204/10a-E) Well Proposed Habitat Survey

Summary

- SPE are planning to drill a new appraisal well (204/10a-E) within the Cambo Field (April 2018).
- Previous surveys provide a local and regional view of the area.
- Reports suggest the benthic environment and the faunal assemblages in and on it are uniform both spatially and temporally.
- SPE would like to confirm the above observations apply at the 204/10-E location as well as gathering additional data for input into the environmental assessment and permitting process.
- SPE wish to gather location data utilising an ROV deployed from a 'state of the art' dedicated ROV vessel; mobilizing 20th May 2017.
- A trained environmental observer will be onboard the survey vessel.
- SPE will use recognised assessment criteria to assess whether any sponge aggregations or areas of potential 'reefiness' observed during the survey could be considered to be of conservation interest.
- Survey pictorial data will be analysed onshore and a final report shall be prepared and submitted to OPRED and their Advisors.
- If any feature or habitat of potential conservation interest is identified during the proposed habitat survey, SPE would request further assessment by OPRED and their Advisors to establish whether their drilling operation could 'significantly' impact a habitat or feature of potential conservation value.
- The proposed survey approach is felt to be suitable given the wealth of data available from previous surveys and the previous success of ROV based survey.

Siccar Point Energy - Cambo Appraisal Well Habitat Survey 2017

Overview

Siccar Point Energy (SPE) are planning to drill a new appraisal well in the Cambo field Area and wish to conduct a habitat survey prior to the rig locating to ensure the area of the proposed well location is free from any features or Benthic habitats that might be damaged by the planned Drilling Operations. In addition, it is hoped that the data gathered will provide current and relevant Information and data for input into the well environmental assessment and permitting processes.

The Cambo field area has previously had 5 wells drilled at that location. These were all in close proximity to the proposed new well location (Figure 1).

Previous well locations were subject to site environmental surveys which have provided a detailed baseline close to the proposed well location. The previous surveys, conducted over a number of years, suggest the habitats and benthic assemblages vary little across the field, either spatially, or over time.

The most recent of the surveys, the environmental survey conducted for Cambo 5 agreed with the findings of the Cambo 4 Remotely Operated Vehicle (ROV) habitat assessment (FGCERT, 2011), with the main fauna recorded as burrowing anemones, Sabellid worms, Sponges, Soft corals and Pycnogonids (sea spiders).

The Cambo 1 environmental survey observed similar biota, the most common of which were tube-building polychaetes (Gardline, 2002).

Given the above, SPE would like to propose an ROV type habitat survey using an Ultra Heavy Duty ROV being deployed from a purpose built Offshore Survey vessel. The ROV team will be supported by a specialist Environmental Observer who will identify any features of interest and will be empowered to change the survey scope if any features of environmental interest are observed to allow closer more detailed examination.

SPE would welcome guidance, advice and input into the proposed design and methodology of the proposed survey from OPRED and their specialist advisors, JNCC and Marine Scotland, to ensure that both SPE and their Stakeholders are in accord regarding the objectives and outcome of the survey work.

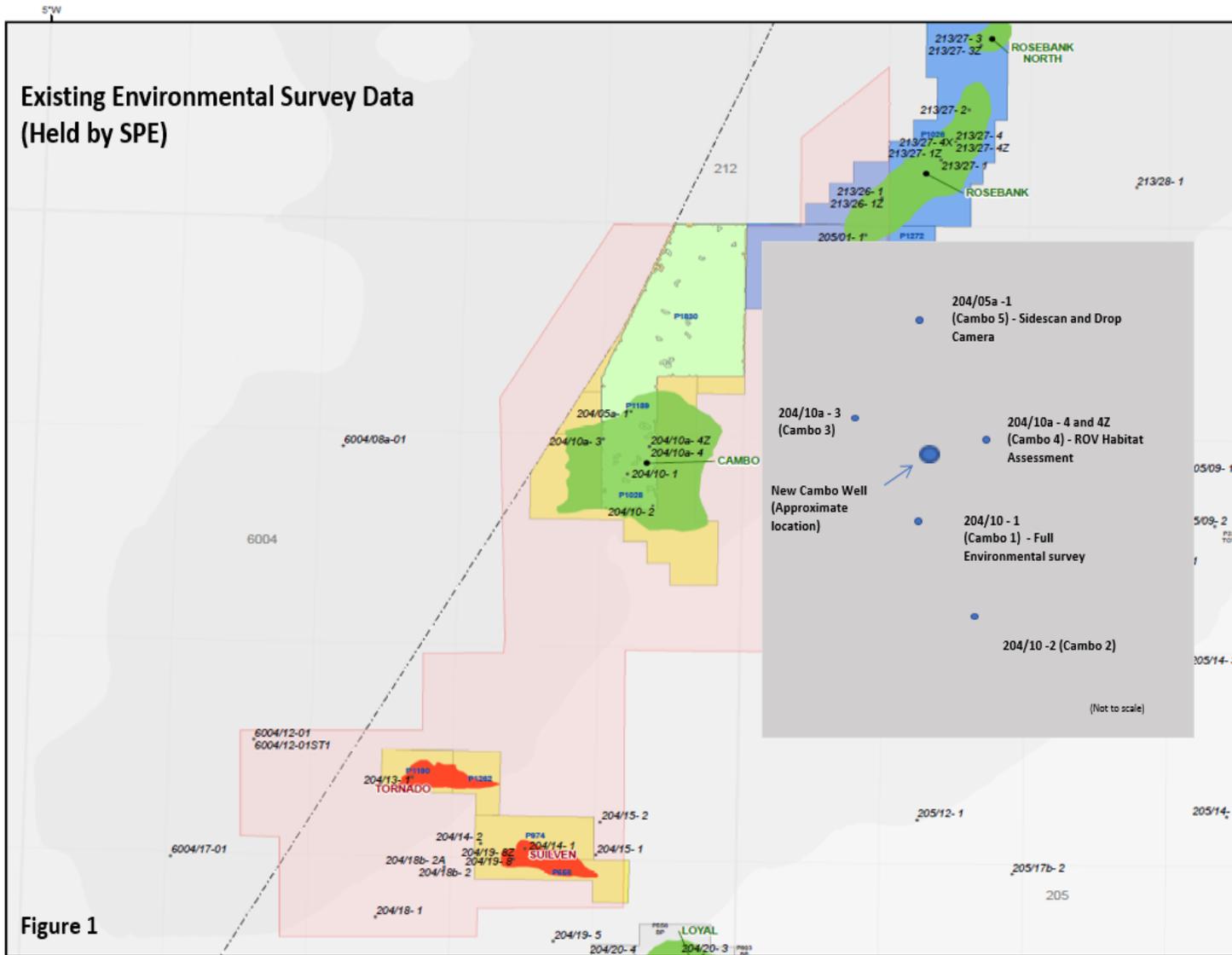


Figure 1



Legend

Licences

- Operated
- Non-operated

Pipelines

- Gas
- Condensate
- Oil

Fields

- Gas
- Condensate
- Oil
- FSB11 / 12
- Blackrock SH Cube

ACREAGE POSITION SICCAR POINT ENERGY



Coordinate System: EPSG:31466 UTM Zone 30N
 Projection: Transverse Mercator
 Datum: European 1956
 False Easting: 500,000.0000
 False Northing: 0.0000
 Central Meridian: 0.0000
 Scale Factor: 0.9996
 Length of Origin: 0.0000
 Units: Meter
 Author:
 Printed on: 23 February 2017

Habitat Survey Proposed Scope

The survey scope is based on a previously accepted Habitat Assessment ROV survey at the Cambo location.

- Survey will consist of 8 transects (Diagram 1).
- Each transect will begin as close as possible to the proposed well location.
- The ROV should hold a straight course as possible along the entire length of each transect.
- Approximately every 10 m along the transect two still photographs will be taken.
- The habitat assessment will be based entirely on what can be seen in the video footage and what is captured by the stills images.
- The video transect will be continued to approximately 100 m from the well location. The ROV will return to the well location, before starting the next transect.
- Programme MAY vary if area of interest is identified by the onboard trained environmental observer.

N.B. A more detailed methodology will be drafted for actual survey

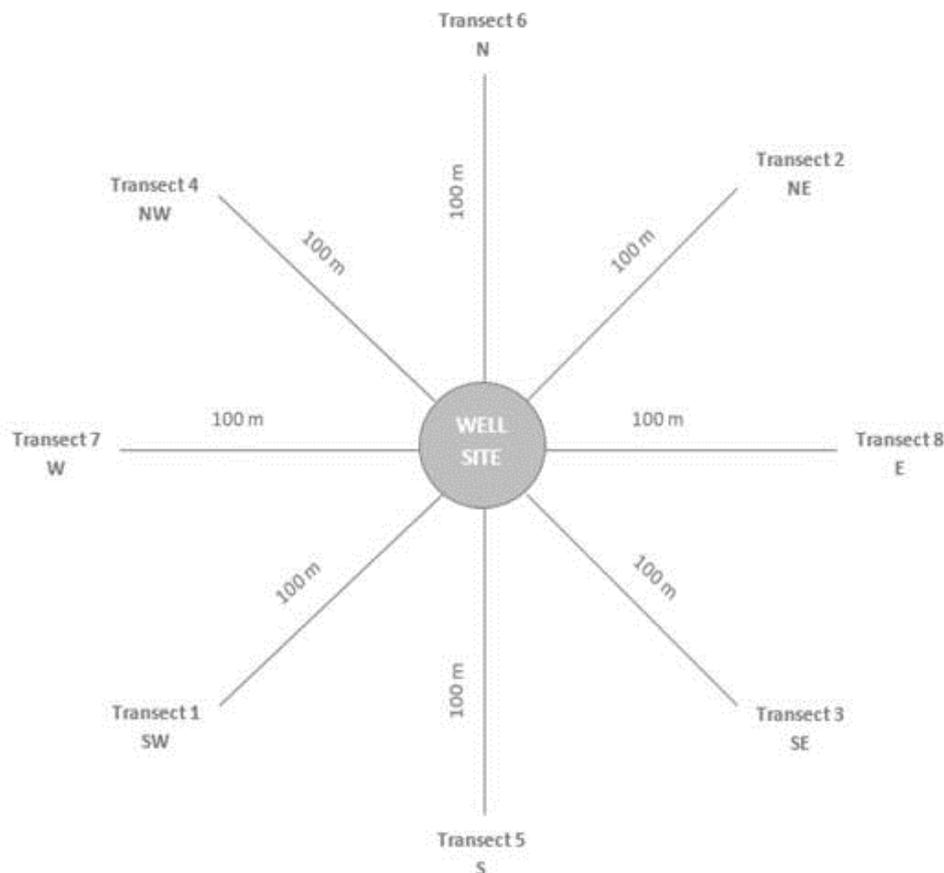


Diagram 1

Environmental Survey Reports

(Cambo 4) - FGCERT, 2011. Cambo Pre- and Post-Drill Habitat Assessment. Fugro GeoConsulting ERT Report Number: J36124.

(Cambo 5) - FSLTD, 2011. Cambo Environmental Survey UKCS Block 204/05. Fugro Survey Ltd Report No 00650V2.0

(Cambo 1) - GARDLINE, 2002. Environmental Baseline Survey of the UKCS 204/10. August to October 2001. Gardline project ref 5694.

COMMENT	ORIGINATOR	OPRED ASSESSMENT / ACTION	NEXT STEP	OPERATOR RESPONSE	
FPSO anchors to be wet stored for up to 2 months (section 7.1.2). Clarify mitigation measures.	Marine Scotland/OPRED	Further information request	Page 7-6 – Section 7.1.2 – Infield Infrastructure and Associated Risers, Umbilicals and Flowlines. It is noted that anchors and chains will be wet stored for a period of up to two months. Please clarify whether the FPSO subsea safety zone will be in place prior to storage of this equipment and if not how other users of the sea will be notified of their presence. (Comment 14)	Given the extreme water depth, the anchors and mooring temporary laydown will be outwith the FPSO 500m safety zone. The base plan is to install the anchors in their final intended positions, then the mooring legs (chains, buoyancy, ropes and fittings) will be installed via connection to the anchor cans and laid onto the seabed for period of up to two months prior to FPSO hook up. The notifications e.g. FishSafe (Kingfisher), Admiralty charts etc., to other users of the sea will be carried out as normal for work of this type.	Closed.
MSS welcome that SPE have committed to conducting a trenching and fisheries risk assessment, with a view to address potential interactions with fishing gear down to 800 m water depth. MSS advise that the risk assessment takes account of foreign fishing vessel activity which is not represented in the Scottish Government landings statistics, potential future changes to regulatory restrictions and potential changes to fishing effort within the 25 year life of the development, particularly as species move into deeper, colder waters as highlighted in section 4.3.3.	Marine Scotland	Further information requested	Page 7-3 – Section 7.1.1 – Physical Extent of the Area Affected by the Proposed Operations (Proposed Export Gas Pipeline). It is noted that SPE have committed to conducting a trenching and fisheries risk assessment, with a view to address potential interactions with fishing gear down to 800 m water depth. SPE should ensure the risk assessment takes account of foreign fishing vessel activity, which is not represented in the Scottish Government landings statistics and potential changes to fishing effort within the 25 year life of the development, particularly as species move into deeper, colder waters as highlighted in section 4.3.3. Please clarify your intentions in this regard. (comment 11)	A trenching assessment will be performed during detailed design to consider likely achievable performance of trenching (and backfilling) operations taking soil properties along the route, the specific trenching tool proposed and the water depth into account. In parallel, further assessment of the potential for on bottom fishing interaction with increasing depth will be undertaken. Any new assessment will consider foreign fishing vessel activities and possible future changes to fish movements and spatial distributions, where such relevant data exists. On completion of the two assessments, a decision will be made on the extent of pipeline trenching that is required.	Closed.
MSS also welcomes that SPE have considered additional mitigation for the polyester ropes of the FPSO and understand the constraints presented. It is advised the Scottish Fishermen’s Federation (SFF) are consulted further to ensure the mooring lines are appropriately charted on Kingfisher / Fish Safe. Consideration should be given to advanced notification of these potential hazards, given the time lag highlighted by SFF of six months.	Marine Scotland	Further information requested	Page 14-6 – Physical Presence (Conclusions). This section refers to the consideration of using reflectors on the FPSO mooring lines. However, this has been ruled out earlier within the ES. Please clarify. (comment 27) Page 2-25 – Section 2.2.5.3 - FPSO Hull Type. It is noted that the Floating Production, Storage and Offloading installation (FPSO) mooring lines and subsea infrastructure will be marked on Admiralty charts and FishSafe. Please clarify whether SPE intend to ensure advanced notification of these potential	The reference to the consideration of using reflectors on the FPSO mooring lines in Section 14.1 (page 14-6) was left in error and should have been removed from the text. The use of sonar reflectors on the mooring lines was dismissed for the reasons explained in Section 2.2.5.3 of the ES. Prior to installation of any subsea infrastructure an application will be made to designate the Cambo area an ‘Offshore Development area’. This will be clearly marked on the relevant Admiralty Charts. Kingfisher notices will be posted taking note of the time lag advising other sea users in the area of the construction programmes.	Closed Clarified - no reflectors to be used. NFA Clarified – advanced notice to be given. NFA

			hazards, given the time lag associated with inclusion on FishSafe of up to six months. (Comment 2)		
MSS would like to understand whether a Health and Safety Executive granted 'Offshore Development Area' would be appropriate for this development during the construction phase.	Marine Scotland	Not significant. ODA's are advisory only and have no statutory force. Adequate mitigation measures to be in place - Notice to mariners to be issued for both FPSO and MODU. UKHO will chart FPSO and gas pipeline. Kingfisher will be notified for inclusion in bulletin. Comment not passed to operator.	NFA	-	CLOSED
It is unfortunate that infrastructure sharing opportunities with other potential or existing developments are not considered feasible and is advised that the Department satisfy themselves in this regard.	Marine Scotland	Not significant. There are no infrastructure sharing opportunities. However, SPE have sized gas export line to allow for future sharing with proposed developments in the area such as Rosebank. Comment not passed to operator.	NFA	-	CLOSED
It is also noted that the only feasible oil export route (due to cost effectiveness and flow assurance issues) is to tanker oil from the development, which is likely to carry an inherently higher risk of an accidental event, particularly given the environmental conditions experienced at this exposed location. In the event that offloading is disrupted by weather, will production be curtailed / shut in?	Marine Scotland	Not significant. Adequate controls to be in place with regard to crude offtake. Comment not passed to operator.		It is also noted that the only feasible oil export route (due to cost effectiveness and flow assurance issues) is to tanker oil from the development, which is likely to carry an inherently higher risk of an accidental event, particularly given the environmental conditions experienced at this exposed location. In the event that offloading is disrupted by weather, will production be curtailed / shut in?	Marine Scotland
It appears from the description that the pipeline will first be laid then jet trenched (potentially from the WOSPS tie in point down to 800 m water depth). MSS welcome that guard vessel provision is now proposed where the exposed pipeline on the seabed may pose a hazard to commercial fishing operations during laying. MSS advise that appropriate guard vessel coverage is discussed with SFF and that due consideration is given to timing of this operation to avoid the peak fishing season.	Marine Scotland	Not significant. SPE confirm that a guard vessel will be utilised and so SFF will be fully informed. Comment not passed to operator.	NFA	-	CLOSED
It appears from the description that the pipeline will first be laid then jet trenched (potentially from the WOSPS tie in point down to 800 m water depth).	Marine Scotland	Not significant. SPE confirm that a guard vessel will be utilised	NFA	-	CLOSED

MSS welcome that guard vessel provision is now proposed where the exposed pipeline on the seabed may pose a hazard to commercial fishing operations during laying. MSS advise that appropriate guard vessel coverage is discussed with SFF and that due consideration is given to timing of this operation to avoid the peak fishing season.		and so SFF will be fully informed. Comment not passed to operator.			
An appropriate reference in support of the likely sediment plume from jet trenching activities is advised in section 7.1.3.	Marine Scotland	Not significant. This section references an OSPAR report which states installation via jetting by means of sledge or ROV or use of a plough involves the lowest environmental impacts. Comment not passed to operator.	NFA	-	Closed
MSS note that the Non-Technical Summary and the commitments register state that the pumping of cement will cease when cement returns are observed by ROV at the seabed, however, section 3.5.4. states "An ROV will monitor the return flow at the seabed and all attempts will be made to identify returns and reduce the pumped slurry volume when possible and safe to do so". MSS advise this position is clarified. Will the pumping of cement also stop in the event that returns are observed by ROV from the 20" x 13 7/8" casing cement job? What is the worst case volume of cement that will be discharged when using the CAN-Ductor? How will cement returns be monitored during periods of inclement weather / poor visibility. It is advised this is addressed at the appropriate permitting stage.	Marine Scotland	Mostly not significant. Use of CAN-ductors will significantly reduce the quantity of cement discharged at seabed by replacing the conventional tophole section. Cement discharge will be assessed at any subsequent permitting stage. However, clarification on quantity of cement to be discharged assuming CAN-ductors are used to be requested.	Page 9-2 – Section 9.1.2 – Cement (Description and Quantification of Discharges). This section states that the worst-case cement discharge, where no CAN-ductors are used, is anticipated to be 41.1m3 per well. Please clarify the anticipated quantity of cement that may be discharged per well if CAN-ductors are used as planned. (comment 24)	Section 9.1.2 describes the discharge of cement in the case that CAN-Ductor is not used, as this is deemed to be the worst-case discharge (41.1 m3 per well). As described in more detail in Section 3.5.4 of the Environmental Statement, a well with CAN-ductor is expected to result in a maximum cement discharge of 22.7 m3, therefore a theoretical reduction of 18.6 m3 per well is achieved.	Closed. Clarified - information already in ES, within different section. NFA.
It is noted that no wellhead protective structures are to be used, however, SFF have advised that 'fishing friendly structures' as opposed to 'overtrawlable structures' are normally recommended for wells within 500 m safety zones. Can SPE confirm that the well heads are designed to be 'fishing friendly'?	Marine Scotland	Not significant. Little or no fishing effort within 10nm radius of Cambo location in water depth of ~1,100m and no trawl marks at the FPSO location. SPE risk assessed and concluded no significant impact.	NFA	-	CLOSED
It is noted that anchors and chains will now be wet stored for a period of up to two months. It is not clear from the application whether guard vessel provision is proposed for this and it is advised that this is discussed further with SFF to ensure that the	Marine Scotland	Raised above – see comment 14.	-	NFA	Closed.

pre-laid anchors and chains to not pose a hazard to other sea users.					
It is noted that this application now includes a 25 km fibre optic cable from the FPSO to the SHEFA-2 cable. The environmental data presented does not appear to provide coverage of the proposed installation route and MSS advise this is considered further. MSS advise the route of the proposed cable is shown in a Figure. It is understood that the cable will be laid directly on the seabed. Will the cable be stable on the seabed and protected from any fishing interactions? Is any protective material for this cable envisaged	Marine Scotland	Further information request	Page 7-6 – Section 7.1.2 – Infield Infrastructure and Associated Risers, Umbilicals and Flowlines. It is noted that a 25 km fibre optic cable from the FPSO to the SHEFA-2 cable is to be installed. Please advise if the cable is expected to remain stable on the seabed and whether it requires protection from any potential fishing interactions. If it will require protection, please clarify whether any protective material such as rock deposit for this cable is envisaged. (comment 15)	The cable will be designed in such a manner that it will be stable on the seabed without the need for any further protection. Previous studies have shown that fishing interaction is extremely unlikely given the water depth in the area being circa 1100 m. The existing SHEFA 2 fibre optic cable network, to which this extension will be added, adopts the same design philosophy.	Closed. Clarified - no protection required, like existing cable. NFA.
MSS notes that the produced water (PW) management option chosen for the development is overboard discharge with an oil content of 15 mg/l or less measured on a monthly average basis. It is highlighted that the base case for any new developments in line with OSPAR 2001/1 should zero discharge of oil in PW, however, it is acknowledged that issues with reservoir souring and weak rock formations are provided in this case as justification for overboard discharge. It is advised the Department satisfy themselves with the technical justification provided and that all alternative options have been explored. MSS welcome that all discharges will be maintained within regulatory limits and that the Risk Based Approach (RBA) threshold for PW is likely to be met.	Marine Scotland (OPRED comments taken forward)	Further information requested. OPRED consistently raised issue with SPE throughout ES process.	See comment 29	NFA	Closed.
<i>OPRED comment 29 – for info.</i>	<i>OPRED</i>	<i>Further information requested</i>	<i>Page A2-2 – Appendix 2 – Commitments Register. It is noted that SPE commit to complying with ‘OSPAR 30 mg/l dispersed oil standard’ and that SPE will commit to designing produced water treatment to achieve a lower dispersed oil content, with a target of ≤15 mg/l (on a monthly average basis). Please note the Department have previously conveyed to SPE that a 30mg/l oil in water concentration on a monthly average basis will not be applicable to Cambo and it is likely that a 15mg/l oil in water concentration on a monthly average basis will be the regulatory limit applied.</i> <i>i) Please confirm that SPE commit to complying with the 15mg/l oil in water</i>	<i>i) SPE can confirm that it will commit to complying with the 15 mg/l dispersed oil in water concentration on a monthly average basis.</i> <i>ii) SPE confirms that the produced water treatment package will be designed to meet the 15 mg/l oil in water concentration on a monthly average basis. Whilst provision to inject de-oiler or flocculant chemical will be provided to aid in produced water treatment for disposal, this is considered normal practice and will be implemented to compliment the physical package design and performance. Whilst a final produced water treatment package selection decision has yet to be taken, SPE anticipates the selected package will contain centrifugal (hydrocyclone) separation and a further two-stage separation process, a key feature that will provide assurance that the package will deliver the required outlet specification.</i>	Closed.

			<p><i>concentration on a monthly average basis.</i></p> <p><i>ii) Please confirm SPE will ensure the produced water treatment package can meet the 15mg/l oil in water concentration on a monthly average basis by physical system design and not by heavy reliance upon the use of chemicals that may pose a risk to the environment.</i></p> <p><i>iii) Under circumstances where this is no further off-spec produced water storage capacity available on the FPSO, please confirm that SPE commit to restrict or shut-in production until such times compliance with the relevant oil discharge permit can be re-established, as per section 2.2.5.6. (comment 29)</i></p>	<p><i>iii) SPE can confirm that under normal operating circumstances where there is no further off-spec produced water storage capacity available on the FPSO it will commit to restrict or shut-in production until such times compliance with the relevant oil discharge permit can be re-established.</i></p>	
The commercial fisheries section is well constructed and makes good use of figures, however, tabulated data in addition to the Figures are advised for clarity. 'Within year' seasonality of fishing effort (by month) is also advised as this may highlight additional mitigation opportunities, particularly with regards to timing of pipelaying operations in shallower waters.	Marine Scotland	Not significant - Pass to operator for future applications.	Passed to operator 13-09-21	-	Closed
Other sea users and oil and gas infrastructure are identified and information in these sections is well presented. MSS welcome that an updated Vessel Traffic Study is proposed in support of future permit applications. The EMODNET Human Activities data portal now contains useful up to date shipping	Marine Scotland	Not significant - Pass to operator for future applications.	Passed to operator 13-09-21	-	Closed

information based on the Automatic Identification System (AIS). Further information is available here: https://www.emodnet-humanactivities.eu/view-data.php .					
Section 3.6.1 (Trees, Jumpers and Manifolds) – Table 3.9 – The table refers to the footprint of ‘associated protection’. Should the table therefore include the footprint associated with the worst case rock dump and mattress protection?	Marine Scotland	Further information requested	Page 3-15 – Section 3.6.1 – Table 3.9 – Seabed Footprint of All Infield Umbilicals, Risers and Flowlines and Associated Protection. The table refers to the footprint of ‘associated protection’. Please clarify why this table has not included all associated protection, such as concrete mattresses and, please clarify the impact associated with these items.	There is no protection required for any infield umbilicals, risers and flowlines. All installed equipment shall be surface laid. Table 3.16 is concerned with the location and seabed footprint of SPS Infrastructure for the Gas Export pipeline system. It highlights the planned use of 36 concrete mattresses (6 m x 3 m x 0.15 m thick) to protect the rigid spool pieces and pipeline end, where the pipeline is tied into the new CTIS (Cambo Tie in Structure) which is itself tied in via rigid spools to the existing WOSPS PLEM. This location is approximately 62 km SSE of the Cambo field.	Closed. Clarified - misleading heading in table 3.9 - there is no protection involved. NFA
Section 3.7.2. (Mooring and installation) – Figure 3.8 - MSS advise that the 500 m safety zone in place at the WOSPS tie in point is also shown in the Figure as this is not clear from the application.	Marine Scotland	Not significant - Pass to operator for future applications.	Passed to operator 13-09-21	-	Closed
Section 3.7.9. (Sand production and disposal) – Can SPE detail what quantities of sand are likely to be discharged? Will this be discharged at the water surface from the FPSO?	Marine Scotland	Not significant. Not passed to operator. Sand control measures to be in place (section 3.7.9) and sand to be cleaned up to <1% oil on sand before discharge. No significant effect identified.	NFA	-	CLSOED
Section 4.3.3. (Fish and shellfish) – It is highlighted that ICES 49E6 is also recognised as a low intensity cod spawning area by Ellis et al, 2012.	Marine Scotland	Not significant - Pass to operator for future applications.	Passed to operator 13-09-21	-	Closed
MSS advise reference to the following paper (José M. González-Irusta, Peter J. Wright; Spawning grounds of Atlantic cod (Gadus morhua) in the North Sea, ICES Journal of Marine Science, Volume 73, Issue 2, 1 February 2016, Pages 304–315, https://doi.org/10.1093/icesjms/fsv180) which provides an update to the cod spawning areas and describes the area as an 'unfavourable' cod spawning area.	Marine Scotland	Not significant - Pass to operator for future applications.	Passed to operator 13-09-21	-	Closed
Section 4.5.2. (Offshore conservation areas) – At its closest point (the WOSPS tie in point) the proposed pipeline route appears to be located only 55 km from the West Shetland Shelf MPA and some 63 km from the North-West Orkney MPA. Distances from the development to all SAC's described appear to be incorrect.	Marine Scotland	Not significant - Pass to operator for future applications.	Passed to operator 13-09-21	-	Closed
Section 4.5.2 - The text in this section still refers to the Seas off Foula as a proposed SPA, however, this is now designated.	Marine Scotland	Not significant - Pass to operator for future applications.	Passed to operator 13-09-21	-	Closed

<p>Section 4.6.1. (Other Users of the Sea) - MSS advise that references to the work by 'Kafas et al, 2012' are now replaced with a visual representation of the new aggregated VMS fishing effort data sets for 2009 - 2016 which are available on the National Marine Plan Maps interactive web site (NMPi). The data are split into three groups of fishing method: bottom trawls, dredges and crustaceans caught by bottom trawl (i.e. Nephrops). The Nephrops and crustaceans layer is a subset of the dredges layer but also includes data for 2017. Further information may be obtained here http://marine.gov.scot/node/12832.</p> <p>In addition, MSS advise visual representation of the recently added nine new spatial layers to the National Marine Plan interactive (NMPi) showing changes over the last five years of published statistics for:</p> <ol style="list-style-type: none"> 1. tonnage for demersal, pelagic and shellfish species; 2. value (£) for demersal, pelagic and shellfish species; 3. effort (days) (by UK vessels >10m length) for demersal active (bottom trawls, dredges etc.); pelagic active (pelagic trawls, purse seines etc.); and passive (pots/creels, gillnets etc.). <p>Further details are available here: http://marine.gov.scot/node/12674</p> <p>The 2009 - 2016 VMS fishing effort data set and the statistics map layers (1, 2 and 3 above) may be viewed on the NMPi web site: https://marinescotland.atkinsgeospatial.com/nmpi/.</p> <p>It is not clear why 2012 data is specifically referred to when discussing foreign fishing vessel activity.</p> <p>The section describes the total effort of all three types of gears within the study area between 2015 and 2019 to be 5,805 days, however, MSS calculate this to be 5,817 days.</p> <p>Figures 4.33, 4.34, 4.36 and 4.37 appear to show total figures for the period 2015 to 2019 not average figures as the chart titles suggest.</p> <p>MSS calculate the combined pelagic sales value from all ICES rectangles considered between 2015 and</p>	<p>Marine Scotland</p>	<p>Not significant - Pass to operator for future applications.</p>	<p>Passed to operator 13-09-21</p>	<p>-</p>	<p>Closed</p>
--	------------------------	--	------------------------------------	----------	---------------

2019 to be £12,020,796 not £12,021,909. Likewise, MSS calculate the shellfish sales value from within 50E6, 49E5 and 49E6 to be £550,922 not £551,102.					
Section 4.6.2. (Aquaculture) – The section states that in 2019 no shellfish were produced. MSS advise this should read “no oysters and scallops were produced”.	Marine Scotland	Not significant - Pass to operator for future applications.	Passed to operator 13-09-21	-	Closed
Figure 4.38 - MSS recommend removal of all categories from this map with the exception of ‘Active seawater finfish’, ‘Active shellfish’ and ‘Shellfish Water Protected Areas’. The remaining categories are either inactive / deregistered or located in freshwaters and therefore not likely to be impacted.	Marine Scotland	Not significant - Pass to operator for future applications.	Passed to operator 13-09-21	-	Closed
Section 4.6.4. (Shipping) – Should Figure 4.40 refer to the 2019 Anatec report?	Marine Scotland	Not significant. Reference incorrectly made to 2017 report rather than 2019. To be checked in any subsequent applications.	NFA	-	Closed
Section 6.3. (Assessment of effects and their significance) – Citations included in this section are not listed in the references section.	Marine Scotland	Not significant - Pass to operator for future applications.	Passed to operator 13-09-21	-	Closed
Section 7.1.2. (Infield infrastructure and associated risers, umbilicals and flowlines) – It is not clear to MSS how SPE have arrived at a figure of 600 m3 for the bottom chain disturbance. If 120 m of bottom chain disturbs a 10 m corridor should this not equate to 1,200 m2 per chain? Seabed take – the section states “..once the Cambo Field is decommissioned, all subsea infrastructure placed on the seabed will be removed again, after which habitats and associated communities will recover over time”. Does this include protective materials such as rock dump?	Marine Scotland	Further information request	Page 7-6 – Section 7.1.2 and Table 7.4 – Infield Infrastructure and Associated Risers, Umbilicals and Flowlines. It is stated that each anchor chain will disturb 600m2 of seabed due to swell movement during adverse weather conditions. This does not align with the text on page 7-5 which states an anchor chain length of 120m will disturb an area of a lateral distance of up to 5m either side of the anchor chain. This would equate to 1,200m2 per anchor. Please clarify and review the area of impact within the relevant sections and tables of the ES. (Comment 13)	One end of the chain section is fixed at the anchor and there is only movement at the free end, thus creating a triangular area of disturbance. The free end of the 120 m chain can move up to ±5 m with the chain straight between the fixed point and the free end. Therefore, 0.5 x 120 m x 10 m = 600 m2 area of disturbance.	Closed. Clarified - reason for 600m2 area of impact explained. NFA.
Section 7.1.3. (Potential effects on seabed communities) – It would be useful for the section to define what is meant by ‘siltation changes ‘light’’. FEAST provides a definition of this.	Marine Scotland	Not significant - Pass to operator for future applications.	Passed to operator 013-09-21	-	Closed
Section 8.3. (Wider scale impacts) – Should annual flaring from the proposed Development (2,340 tonnes of CO2 equivalents per year on average over the life of field) not account for 0.078% rather than 0.082% of the overall flaring on the UKCS	Marine Scotland	Not significant. Miscalculation by SPE but conservative number in ES. Will be checked at subsequent submissions.	NFA	-	Closed
Section 9.2.1. (Physical extent of discharges) – The section highlights differences between the cuttings	Marine Scotland	Not significant. Proposed Cambo wells	NFA	-	Closed

<p>generated from this operation and the SERPENT study at the Rosebank location, but it not clear how these differ.</p> <p>The section would also benefit from detailing what volumes of cement were discharged in association with the Cambo 4 well, where cement deposition was observed within 50 m of the well.</p>		<p>will utilise CAN-ductor tophole sections and therefore significantly less cement will be discharged compared with SERPENT study well. Not passed to operator.</p> <p>Pager 9-10 discusses the Cambo 4 and 4z (sidetrack) cuttings volumes and states they are significantly greater than the planned Cambo wells. Not passed to operator.</p>			
<p>Section 11.1.5. (Underwater sound from piling during installation of the Cambo tie-in structure) – A citation for ‘Betke (2008)’ is not listed in the references section.</p>	Marine Scotland	Not significant - Pass to operator for future applications.	Passed to operator 13-09-21	-	Closed
<p>Section 11.1.6. (Underwater sound generated by the FPSO) A citation for ‘Erbe et al, (2013)’ is not listed in the references section.</p>	Marine Scotland	Not significant - Pass to operator for future applications.	Passed to operator 13-09-21	-	Closed
<p>Section 14.1. (Physical presence) – The section still refers to consideration of sonar reflectors for the polyester mooring ropes, which should now be updated.</p>	Marine Scotland	Duplicate comment	NFA	-	CLOSED
<p>MSS would like to request a copy of the following surveys / reports cited in this submission for our archive. Please note that survey reports held by Marine Scotland may be made publicly available and published on the Marine Scotland website:</p> <ul style="list-style-type: none"> • MMT, 2019. Cambo Field development survey. Geophysical, benthic and geotechnical site and route survey. August-September 2018. Report to Siccar Point Energy. • Xodus, 2019. Cambo fishing intensity study (Phase I). Report No: L-100528-S00-REPT-001. Rev 02, 9 January 2019. 	Marine Scotland	Not significant. Will be passed to operator.	SPE requested to provide MS with copies of surveys 13-09-21.	-	Closed
<p>The commercial fisheries section is well constructed and makes good use of figures, however, tabulated data in addition to the Figures are advised for clarity. ‘Within year’ seasonality of fishing effort (by month) is also advised as this may highlight additional mitigation opportunities, particularly with regards to timing of pipelaying operations in shallower waters.</p>	Marine Scotland	Not significant - Pass to operator for future applications.	Passed to operator 13-09-21	-	Closed

From: ukop@ogauthority.co.uk
To: [MS PON15](#)
Subject: UKOP: DRA/533 CP/1520/0 (Version 3) Folder Ref: 01.01.01.01-2350U, Chemical Permit: Full Review Delivery
Date: 04 April 2018 08:12:58

Oil and Gas Authority (OGA)

UKOP: UK Energy Portal

For the attention of: [REDACTED]

Subject: UKOP: DRA/533 CP/1520/0 (Version 3) Folder Ref: 01.01.01.01-2350U, Chemical Permit: Full Review Delivery

A full review requiring your response has recently been delivered to your workbasket. Use the URL below to login to your workbasket. There you will be able to manage and respond to this review.

Use the following URL http://itportal.ogauthority.co.uk/eng/fox/live/PORTAL_LOGIN/login to visit the UKOP (UK Energy Portal) login page.

For assistance or support email: ukop@ogauthority.co.uk or telephone 0300 067 1682.

This message is intended for the addressee only and may contain private and confidential information or material which may be privileged. If this message has come to you in error you must delete it immediately and should not copy it or show it to any other person.

The Oil and Gas Authority is a limited company registered in England and Wales. Registered number 09666504. VAT registered number 249 433 979. Registered office: 21 Bloomsbury Street, London, United Kingdom, WC1B 3HF.

This email has been scanned by the Symantec Email Security.cloud service.
For more information please visit <http://www.symanteccloud.com>

0131 244 [REDACTED]
MS.PON15@gov.scot

EMT
BEIS
Aberdeen

MARINE SCOTLAND SCIENCE RESPONSE

DRA-533
CP-1520-0 (Version 3)
AGR Chemical Permit 204/10a-Cambo E planned well Cambo

Marine Scotland, Marine Laboratory has reviewed the Chemical Risk Assessment included in the above Chemical Permit.

The update (CP-1520-0 (Version 3)) to address minor issues in the modeling of LD-8e in all drill sections is acceptable.

Marine Scotland agrees with all the amended RQs and adequate justification has already been provided for RQs>1, products with substitution warnings and other products of an environmental concern.

Therefore we can confirm that Marine Scotland has no objections to a Chemical Permit for this application.

Marine Scotland advise that the following comments should be addressed in a future variation/submission.

1. A review of the volume of cement potentially required for the contingency conductor has meant the total use and discharge quantities of Portland Cement has been reduced. Changes have been made to Table 1 of the Chemical Risk Assessment however the portal entries are unchanged. Please amend to correlate with the lower amounts in Table 1.

The assessment of this application was conducted by [REDACTED]. Any correspondence should be sent by email to MS.PON15@gov.scot.

Regards

[REDACTED]
Offshore Chemical Coordinator Assistant
04 April 2018

[Redacted]

From: BST <bst@beis.gov.uk>
Sent: Tuesday, 29 October 2019 12:21
To: OIA@jncc.gov.uk; MS PON15; Navigationsafety@mcga.gov.uk; DIO-Safeguarding-Offshore@defence.gsi.gov.uk; navigation@nlb.org.uk; [Redacted]@jardfeingi.fo
Subject: D/4240/2019 - Siccar Point Energy - Cambo - ES notification to consultees

THE OFFSHORE PETROLEUM PRODUCTION AND PIPE-LINES (ASSESSMENT OF ENVIRONMENTAL EFFECTS)
REGULATIONS 1999

CAMBO PHASE 1 FIELD DEVELOPMENT ENVIRONMENTAL STATEMENT

Siccar Point Energy E&P Limited submitted to OPRED an Environmental Statement for the above Field Development on 28th October 2019. The project number for this application is D/4240/2019.

As one of the environmental authorities that Siccar Point Energy E&P Limited has been asked to consult you will soon receive a copy of the above Environmental Statement by post. You will then have 28 days from date of receipt to provide comments on the proposals. Your representations should be addressed to the Secretary of State and submitted to:

EIA Co-ordinator
Department for Business Energy & Industrial Strategy
Wing C, AB1 Building
Crimon Place
Aberdeen
AB10 1BJ
Email: bst@beis.gov.uk

I would be grateful if you could confirm receipt of the Environmental Statement to bst@beis.gov.uk

Kind regards,

[Redacted]



Business Support Team

Offshore Petroleum Regulator for Environment and Decommissioning
Department for Business, Energy and Industrial Strategy
3rd Floor, AB1 Building (Wing C), Crimon Place, Aberdeen.
T: 01224 254138
E: bst@beis.gov.uk
[Follow us on Twitter @beisgov.uk](#)

This email has been scanned by the Symantec Email Security.cloud service.
For more information please visit <http://www.symanteccloud.com>



A Technical Review of the permit renewal
Environmental Impact Assessment (EIA)
for the
Cambo Oil Field
United Kingdom Continental Shelf
Blocks 204/4a, 204/5a, 204/9a and 204/10a

Proposed by
Siccar Point Energy
29 October 2019

For
Uplift, United Kingdom

By
The Environmental Law Alliance Worldwide Science Team

21 September 2021

The project described by this Environmental Impact Assessment (EIA) would take place in the Cambo Oil Field, United Kingdom Continental Shelf Blocks 204/4a, 204/5a, 204/9a and 204/10a, approximately 125 km to the west of the Shetland Islands. The drilling, installation and production operations would occur in water depths between 1,050 m and 1,100 m. Extraction from 13 wellheads is scheduled to proceed uninterrupted until 2050.¹

The primary concerns for a drilling project of this nature are the potential impacts to marine species and their habitats. Those impacts include but are not limited to noise pollution, water pollution, light pollution, habitat destruction (permanent), habitat disturbance (temporary), and the extreme potential for toxic oil spills from the wellheads and leaking pipelines. An independent, complete list of impacts from oil and gas activities can be found online in the “Advice on Operations” spreadsheet provided by the Joint Nature Conservation Committee (JNCC) Faroe-Shetland Sponge Belt Nature Conservation Marine Protected Area (MPA) website.² The MPA overlaps substantially with the area where much of the Cambo Oil Field project will be carried out. These impacts can be immediate or extend generations into the future in the case of habitat destruction and oil spills. Researchers are still discovering population-level deleterious impacts from the Deepwater Horizon oil spill in the Gulf of Mexico in 2010.³

This review will focus on potential impacts to the seabed from the pipeline as well as species vulnerability to oil exploration and exploitation. The third section highlights the EIA’s assessment of potential impacts from an oil spill and provides some insight into the EIA’s approach to this threat. The final section addresses emissions calculations.

I. Seabed (pipeline) Potential Impacts

The Environmental Impact Assessment (EIA) for this project states:

“The scope of the development also includes an export pipeline route extending 70 km to the southeast of the Cambo field, and will terminate at the West of Shetland Pipeline End Manifold tie-in.”⁴

¹ Environmental Impact Assessment (EIA) for the Cambo Oil Field UKCS Blocks 204/4a, 204/5a, 204/9a and 204/10a. 2019. Siccar Point Energy. 491 pp. Non-Technical Summary pp. 1 and 3.

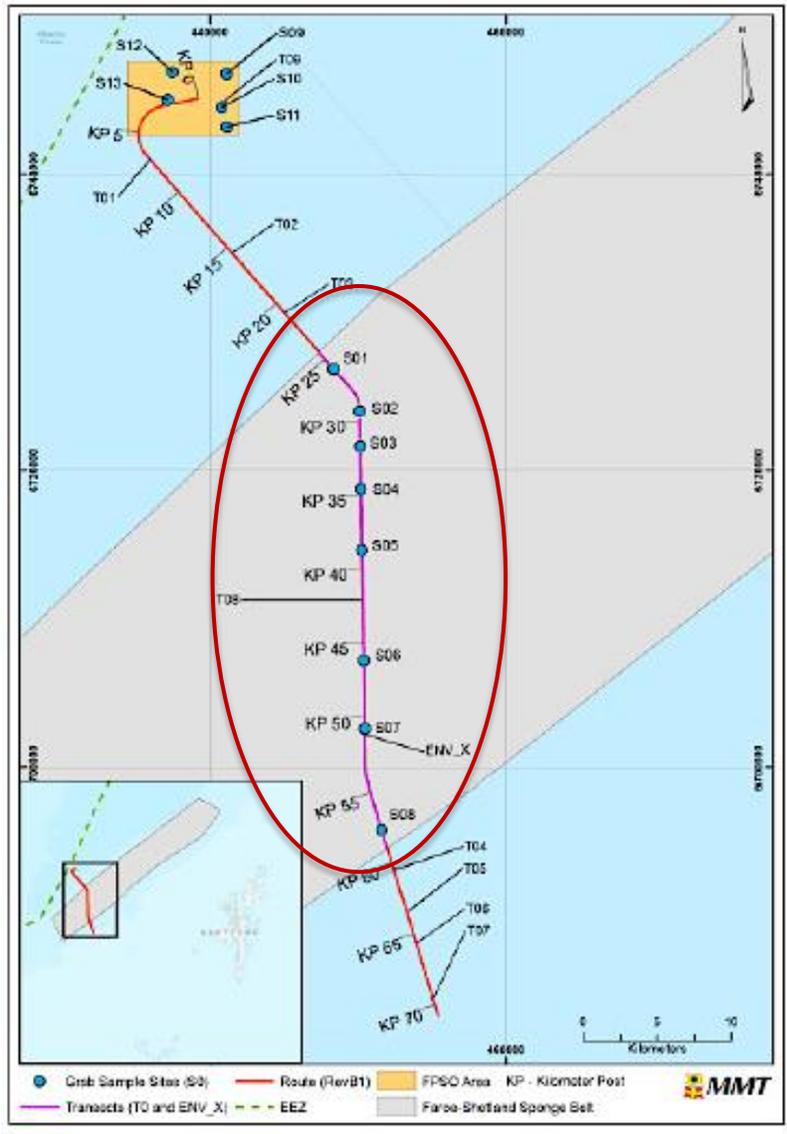
² Joint Nature Conservation Committee. 2018. Faroe-Shetland Sponge Belt Marine Protected Area – Conservation Advice.

<https://hub.jncc.gov.uk/assets/1422e961-edfb-40e8-b1ad-2eaf67cf21f0#FSSB-5-AdviceOnOperations-v1.0.xlsx>

³ De Guise, S., M. Levin, L. Jasperse, J. Herrman, R. S. Wells, T. Rowles, and L. Schwacke. 2021. Long-Term Immunological Alterations in Bottlenose Dolphin a Decade after the Deepwater Horizon Oil Spill in the Northern Gulf of Mexico: Potential for Multigenerational Effects. *Environmental Toxicology and Chemistry* 40(5): 1308-1321.

⁴ EIA, p. v-xiii.

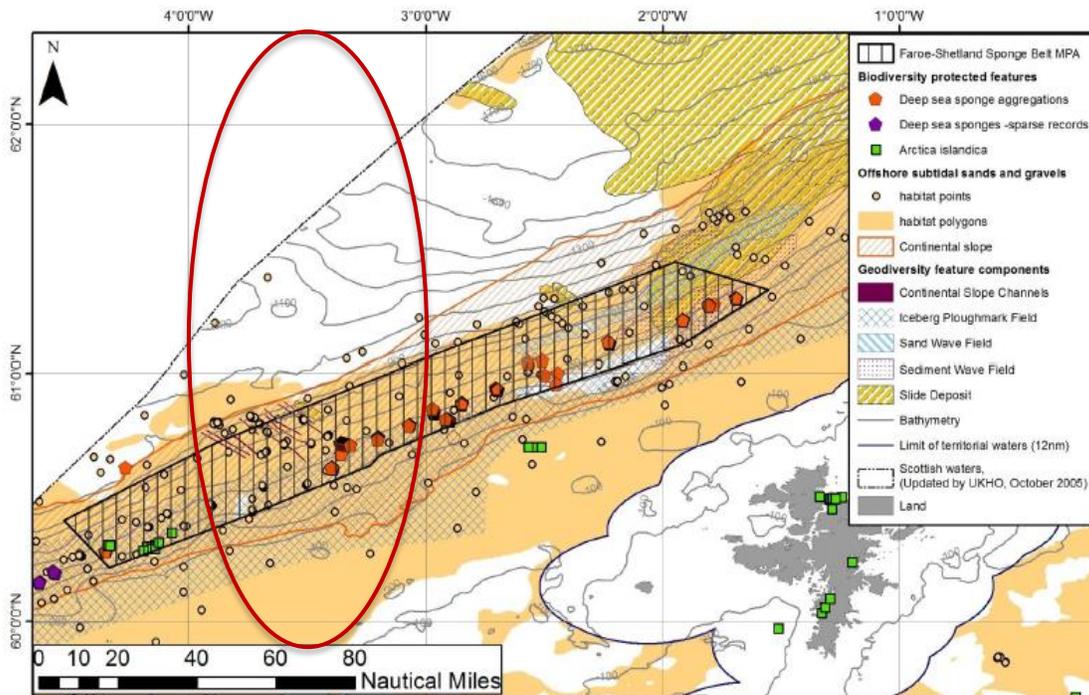
The route for this pipeline cuts straight through the Faroe-Shetland Sponge Belt Nature Conservation Marine Protected Area for 34.8 km, as shown in the two images below. The first image is the EIA pipeline path; the second image is the MPA, showing the location of various protected species. The red oval shows the overlap between the two areas.



5

⁵ EIA, p. 4-4.

Map 2 The distribution of protected features within the Faroe Shetland Sponge Belt MPA



Map displayed in geographic coordinates WGS84. The exact limits of the UK Continental Shelf are set out in the Continental Shelf (Designation of Areas) Order 2013, Statutory Instrument 2013/3162 (© Crown Copyright). Scotland (Adjacent waters) Updated by the Law of the Sea Division, United Kingdom Hydrographic Office October 2005. Bathymetry © GEBCO, 2011. Bio data from Geodatabase of Marine features in Scotland (GeMS v4) © Crown copyright. MPA & geodiversity data © JNCC & SNH, 2014.

6

Although drilling and pipelines can be permitted within the MPA, proper consultation must be done, and access is granted on a case-by-case basis.⁷ Activities carried out in this area must be properly mitigated and managed, given the protected species and features it contains:

“The Faroe Shetland Sponge Belt MPA is designated for the following protected features, as shown in Map 2:

- Ocean quahog aggregations
- Deep-sea sponge aggregations
- Offshore subtidal sands and gravels
- Continental slope*
- Geodiversity interests* – continental slope channels, iceberg ploughmark fields, prograding wedges, slide deposits, sand wave fields and sediment wave fields.

⁶ Joint Nature Conservation Committee (JNCC). 2014. Faroe Shetland Sponge Belt MPA Management Options Paper v4.0. 25 pp. p. 9.

<https://data.jncc.gov.uk/data/411ea794-b135-4877-9fc8-e3e6c054eef9/FSSB-4-ManagementOptionsPaper-v4.0.pdf>

⁷ JNCC, p. 23.

* The continental slope and geodiversity features (excluding the iceberg ploughmarks) are all considered to have a low sensitivity to the pressures associated with marine activities taking place within the MPA.”⁸

The EIA claims that there were very few species of concern along the exact transect where the pipe will be laid:

“The 32 km seabed video tow (undertaken in 2018) along the proposed route of the Gas Export Pipeline through the Faroe-Shetland Sponge Belt NCMMPA did not reveal any significant sponge assemblages. Coverage of sponges was typically recorded as <5% with some instances of coverage reaching 5% to 10% only. No deep-sea sponge aggregations (defined as sponge coverage > 10%) for which the Faroe-Shetland Sponge Belt NCMMPA is designated, were identified during the survey. No Boreal Ostur sponge aggregations which are characteristic of the Faroe-Shetland Channel were recorded within the study area.”⁹

However, this characterization fails to include nearby areas and species aggregations, which will be affected by sediment plumes as the pipeline is being laid down, as well as potentially being harmed if there is an oil spill or leak of any kind. Simply surveying the exact track where a pipeline will be laid fails to account for the realities of working in moving currents deep below the water surface. The pipeline is bound to shift with storms, and in any event, many of the species identified in the baseline survey are mobile, which means they might not have been present during the survey but may be attracted to the area once the pipeline is in place. The EIA reports myriad benthic species in the area, including, “...sea fans, sponges, sea anemones, stalked hydroid and faunal turf, sea spiders, starfish, burrowing anemones, burrowing hexacorals, sponges, small soft corals and bryozoans.”¹⁰

Further, the MPA includes habitat features it was designed to protect in addition to specific species. The zone:

“...also includes an area of continental slope. It is thought that the Faroe-Shetland Channel continental slope is important for maintaining the health and biodiversity of Scotland’s seas. The interaction between the various water masses and the channel slope create conditions that supply organic material to sponges and other benthic fauna, as well as aggregating prey. The wider Faroe-Shetland Channel may be an important pathway for migrating fin and sperm whales.”¹¹

⁸ JNCC, p. 7.

⁹ EIA, p. 4-21.

¹⁰ EIA, p. 4-22.

¹¹ <https://jncc.gov.uk/our-work/faroe-shetland-sponge-belt-mpa/#summary>

Pipeline placement through the MPA is likely to affect these important habitat features.

The United Kingdom Government, in its preliminary assessment of the EIA, has already indicated that more information is required to satisfy concerns about habitat destruction from the pipeline. The Government reviewers have written:

“9. Page 3-34 – Section 3.8 – Gas Export Pipeline and Associated Subsea Infrastructure.
The potential deposit of 40,000 tonnes of rock for 7km of pipeline protection is described here. It is noted that this differs from the previous Cambo ES (D/4240/2019) which stated 20,000 tonnes of rock could potentially be deposited. It is further noted section 7.1.1 – Physical Extent of the Area Affected by the Proposed Operations – page 7-3 refers to 20,000 tonnes of rock for the protection of 3.5km of pipeline. Please clarify the reason for the apparent increase to potential rock quantity, the discrepancy in quantities and potential lengths of pipeline to be protected within this ES and confirm that the worst-case impacts have been assessed in relation to potential rock deposit within all relevant sections and tables of the ES, including in relation to potentially sensitive areas.

10. Pages 3-34 and 3-35 – Section 3.8 – Gas Export Pipeline and Associated Subsea Infrastructure.
This section confirms that rock deposit may be required where pipeline trench and burial fail to meet the required depth. It further states that no rock deposit will be undertaken within areas of offshore subtidal sands and gravels, unless strictly required to mitigate against potential upheaval buckling of the pipeline. Please clarify whether pipeline upheaval buckling could be an issue for the remainder of the pipeline that is not trenched and buried and if so whether the total quantity of rock specified in the ES will be sufficient to mitigate any such potential upheaval buckling, noting that the ES must present and assess the maximum i.e., worst-case rock deposit quantity.

11. Page 7-3 – Section 7.1.1 – Physical Extent of the Area Affected by the Proposed Operations (Proposed Export Gas Pipeline.)
It is noted that SPE have committed to conducting a trenching and fisheries risk assessment, with a view to address potential interactions with fishing gear down to 800 m water depth. SPE should ensure the risk assessment takes account of foreign fishing vessel activity, which is not represented in the Scottish Government landings statistics and potential changes to fishing effort within the 25 year life of the development, particularly as species move into deeper, colder waters as highlighted in section 4.3.3. Please clarify your intentions in this regard.

12. Pages 7-4 and 7-5 – Section 7.1.2 and Table 7.2 – Infield Infrastructure and Associated Risers, Umbilicals and Flowlines.

The areas of the subsea structures described within section 7.1.2 do not match those presented within Table 7.2. Please clarify.

13. Page 7-6 – Section 7.1.2 and Table 7.4 – Infield Infrastructure and Associated Risers, Umbilicals and Flowlines.

It is stated that each anchor chain will disturb 600m² of seabed due to swell movement during adverse weather conditions. This does not align with the text on page 7-5 which states an anchor chain length of 120m will disturb an area of a lateral distance of up to 5m either side of the anchor chain. This would equate to 1,200 m² per anchor. Please clarify and review the area of impact within the relevant sections and tables of the ES.

14. Page 7-6 – Section 7.1.2 – Infield Infrastructure and Associated Risers, Umbilicals and Flowlines.

It is noted that anchors and chains will be wet stored for a period of up to two months. Please clarify whether the FPSO safety zone will be in place prior to storage of this equipment and if not how other users of the sea will be notified of their presence.

15. Page 7-6 – Section 7.1.2 – Infield Infrastructure and Associated Risers, Umbilicals and Flowlines.

It is noted that a 25 km fibre optic cable from the FPSO to the SHEFA-2 cable is to be installed. Please advise if the cable is expected to remain stable on the seabed and whether it requires protection from any potential fishing interactions. If it will require protection, please clarify what protective material such as rock deposit for this cable is envisaged and assess the potential impact of such.”¹²

The EIA as it stands has not provided an adequate assessment of impacts nor an adequate explanation for how those impacts will be mitigated for the pipeline construction.

II. Species Vulnerability

Ecological surveys are critical to a proper EIA evaluation, and all available data should be reviewed as part of the authorization decision-making process. In this instance, there are data that have already been collected, resulting in some species found in the project area to be highlighted for their protection status. For example:

¹² Offshore Petroleum Regulator for Environment and Decommissioning, Aberdeen, Scotland, United Kingdom. 4 August 2021. The Offshore Oil and Gas Exploration, Production, Unloading and Storage (Environmental Impact Assessment) Regulations 2020. Notice Under Regulation 12(1). Cambo Phase 1 Field Development.

“Deep-sea sponge aggregations and ocean quahogs have been included on the OSPAR list of threatened and/or declining species and habitats (OSPAR, 2018a), and as a Scottish PMF (NatureScot, 2021).”¹³

However, there are data that remain to be analyzed, and even data that have yet to be collected, that have a direct bearing on the project. On the Friday before this review was submitted (17 September 2021), the JNCC completed a new survey of the MPA.¹⁴ The government should wait for those analyses to be completed, as it stands to reason that those data should be included in any assessment of drilling or laying a pipeline in the Cambo Field region. Similarly, the EIA states:

“As part of the EIA process, SPE has also commissioned a fisheries intensity study (Xodus, 2019) for the area around the proposed infield development location and export pipeline route.”¹⁵

These updated fishery data will be critical for the government regulators to take into consideration. The existing data presented in the EIA suggest that **there are several commercially significant species in the vicinity.**

¹³ EIA, p. 4-21.

¹⁴ “Farewell from Faroe-Shetland Sponge Belt MPA.” 17 September 2021. JNCC Staff James Albrecht. <https://jncc.gov.uk/about-jncc/jncc-blog/tags/1121s>

¹⁵EIA, p. 1-9.

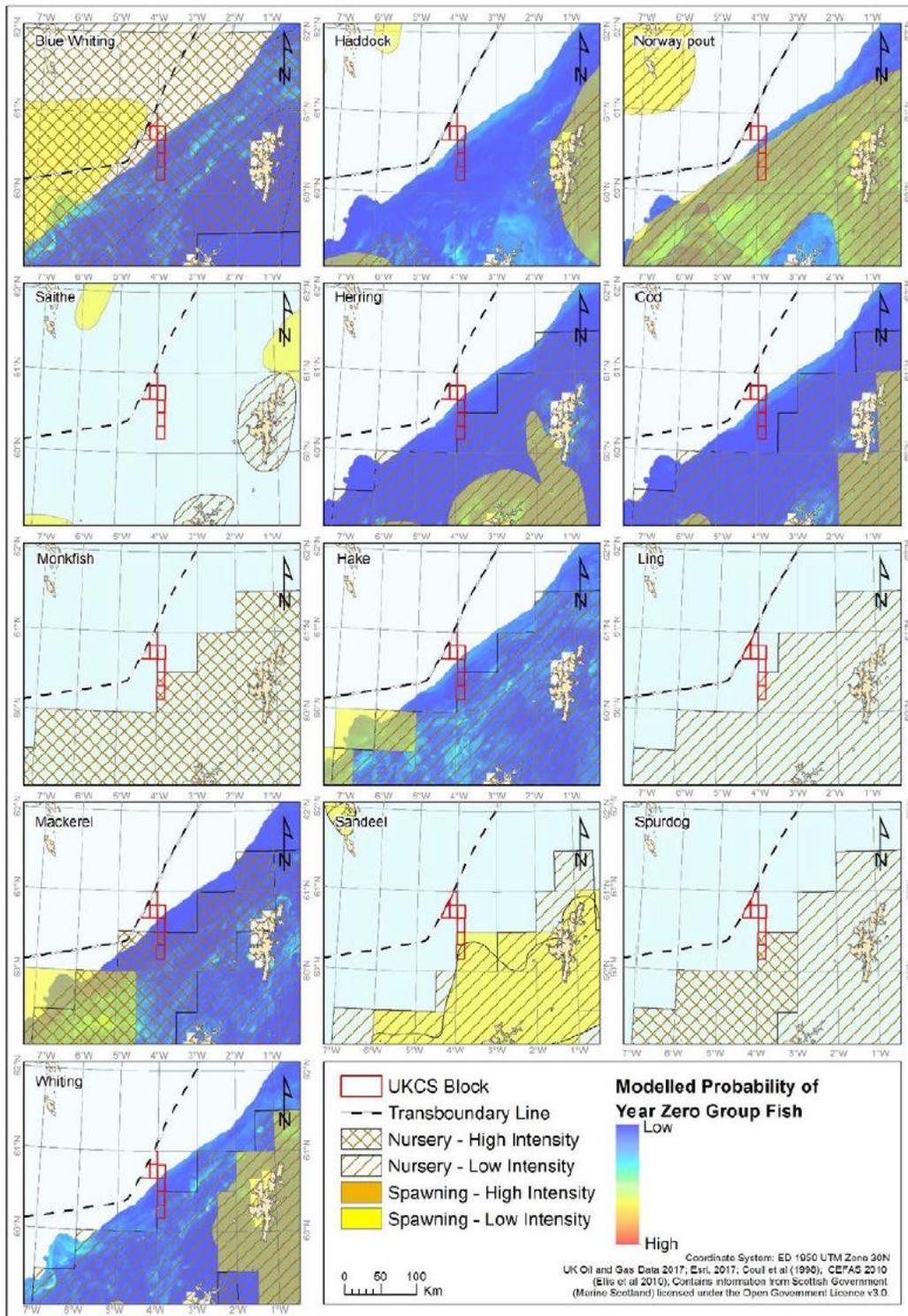


Figure 4.21: Commercially Important Fish Spawning, Nursery Grounds and Year Zero Group Fish in the Vicinity of the Proposed Cambio Field Development

Sources: Coull et al., 1998. Ellis et al., 2012, Aires et al., 2014.

¹⁶ EIA, p. 4-29.

Confirming the locations and patterns of fish species dispersal is important, as changing currents and warming ocean waters are likely to affect which of these species—as well as new species—will be found in the project area.

The area is also significant for myriad marine mammal species, several of which are protected. According to the EIA:

“Many of the cetacean species which have been identified within or in the vicinity of the proposed Cambo Field Development have been designated as PMFs. These include, Atlantic white-sided, whitebeaked and Risso’s dolphins, fin, killer, long-finned pilot and sperm whales (NatureScot, 2021).” [Priority Marine Feature = PMF]¹⁷

Finally, multiple species of seabirds are found in the Cambo Field area, with high potential for negative interactions through normal operations (light pollution, changes to fishing behavior) and catastrophic interactions should an oil spill occur. The EIA explains that:

“During the breeding season, generally between March and June, large numbers of seabirds congregate in coastal breeding colonies. Numerous breeding sites are present along the coastline of the Orkney and Shetland Islands for guillemot, Arctic tern, common tern, great skua, kittiwake, fulmar, puffin, European storm-petrel, razorbill, shag, gannet, cormorant, black-headed gull, common gull, lesserblack backed gull, herring gull, great black backed gull and Arctic skua (JNCC, 2021; Birdlife International, 2018; Magic, 2018; Kober et al 2010). Data from the JNCC indicate that Scottish breeding populations of razorbill, Arctic tern, guillemot, black-headed gull and northern gannets have grown between 2000 and 2014, whilst breeding colonies for several other species, including, fulmar and kittiwakes, were found to be in decline over the same period (JNCC, 2015). Notable seabird breeding sites around the Faroe-Shetland Channel include Foula, Sumburgh Head and Hermaness, Sax Vord and Valla on the Shetland Islands and West Westray and Calf of Eday on the Orkney Islands (JNCC, 2021). Kober et al (2010 and 2012) show that the great skua is abundant in the area just west of Shetland during the breeding season.

“The island of Foula, designated as a Special Protection Area (SPA), regularly supports populations of Arctic tern which are of European importance, Leach’s storm-petrel and red-throated diver as well as migratory species such as great skua, puffin and guillemot. The waters around Foula have been selected as a proposed SPA to protect the adjacent marine foraging area and the prey on which the seabirds of Foula depend. Foula is located 136 km from the proposed Cambo Field Development.

¹⁷ EIA, p. 4-33.

“The Faroe Islands also have 19 Important Bird Areas (IBA) including Vidoy, Fugloy, Nólsoy, and Lítla Dímun along the east coasts (Birdlife International, 2018). With Norway designating four IBAs along its southwest coast (Birdlife International, 2018).”¹⁸

In summary, given its location, the project could jeopardize 100s of species over several decades, as well as livelihoods.

Despite this acknowledgment, the “Physical Presence” description within the EIA downplays any issues, despite it being identified as a “key environmental concern.”^{19*}

“14.1 Physical Presence

“There are no protected or sensitive habitats or species associated with the proposed location of the FPSO site and associated subsea infield infrastructure and so significant adverse effects on nature conservation are not expected in this regard. Any effects on local seabed communities will be very small in size and will last for the duration of the development, for as long as the infrastructure remains in place. Impacts will cease on decommissioning when any infield infrastructure placed upon the seabed will be removed, after which the seabed communities are expected to recover to baseline conditions over time.

“The proposed Gas Export Pipeline, on the other hand, will traverse the Faroe-Shetland Sponge Belt Nature Conservation Marine Protected Area (NCMPA) resulting in benthic habitat take, benthic habitat disturbance and alteration and temporary deposition of sediment plumes. Features potentially affected include ‘offshore sands and gravels’ and ‘burrowed mud’ Priority Marine Feature (PMF) habitats and the ‘ocean quahog’ PMF species as well as a very short section of potential Annex I stony reef. The proposed pipeline also has the potential to interact with important sponge assemblages although sponge coverage along the entire pipeline route was found to be very low and no Boreal ‘ostur’ communities, which are characteristic of the Faroe-Shetland Channel, were found during a recent pipeline route survey. The spatial extent of the predicted effects of the pipeline installation and operation will be very small within the context of the NCMPA and with respect to habitat disturbance and plume deposition, will be very short term lasting for the duration of the pipeline laying only. Effects of habitat take and habitat alteration will last for as long as the infrastructure remains in place. A Comparative Assessment will be undertaken to assess all potential decommissioning options available

¹⁸ EIA, p. 4-38.

¹⁹ EIA, p. 14-6. *Unfortunately, Chapter 14 (Conclusions) of the EIA is marked incorrectly, with every page being numbered 14-6.

for the gas export pipeline at the time, including complete recovery of the pipeline as well as leaving sections of the pipeline in-situ. In conclusion therefore, effects of the physical presence of the proposed export pipeline on high value receptors will be long term, but will be highly localised and will have no significant effects on the conservation objectives of the NCMPA.”²⁰

This description in the Conclusions chapter appears to negate the earlier acknowledgment that the project area is home to many ecologically and commercially valuable species and habitats.

Another disconcerting aspect of this description is the fact that decommissioning involves removing all traces of the project in the first paragraph, and possibly leaving some infrastructure in the second paragraph. The fact that the proponents have not thoroughly planned for the decommissioning phase of the project should give stakeholders pause. Infrastructure left in or on the seabed is substantially different from any removal process, and they should not be treated interchangeably, as they are in this EIA.

III. Oil Spill Impacts

In the Environmental Description chapter, the EIA states in Section 4.4 (Coastal Habitats):

“Oil spill modelling has been conducted to inform the assessment of potential impacts from hydrocarbon spills associated with the proposed Cambo Field Development (see Section 13). This modelling indicates that under typical climactic conditions, a hydrocarbon spill could reach the coastlines of the Scottish mainland, Shetland Islands, Orkney Islands, Faroe Islands, Norway and Iceland.”²¹

This paragraph suggests that should there be any accident in the 25 years the field is proposed to be in operation, it could prove devastating for many of the invertebrate, fish, marine mammal, and seabird species that have been found in the project area. It could further harm pelagic and coastal food webs in the surrounding waters, not just of the UK, but of neighboring countries that have not agreed to accept this level of risk to their biological resources and whose citizens and governments are not benefiting from the project.

The two maps that outline the protected areas for the project footprint do not include other countries, but they nonetheless help illustrate the substantial threat an oil spill poses to surrounding ecosystems, both coastal and pelagic.²²

²⁰ EIA, p. 14-6 and the subsequent page, also numbered 14-6.

²¹ EIA, p. 4-38.

²² EIA, pp. 4-44 and 4-45.

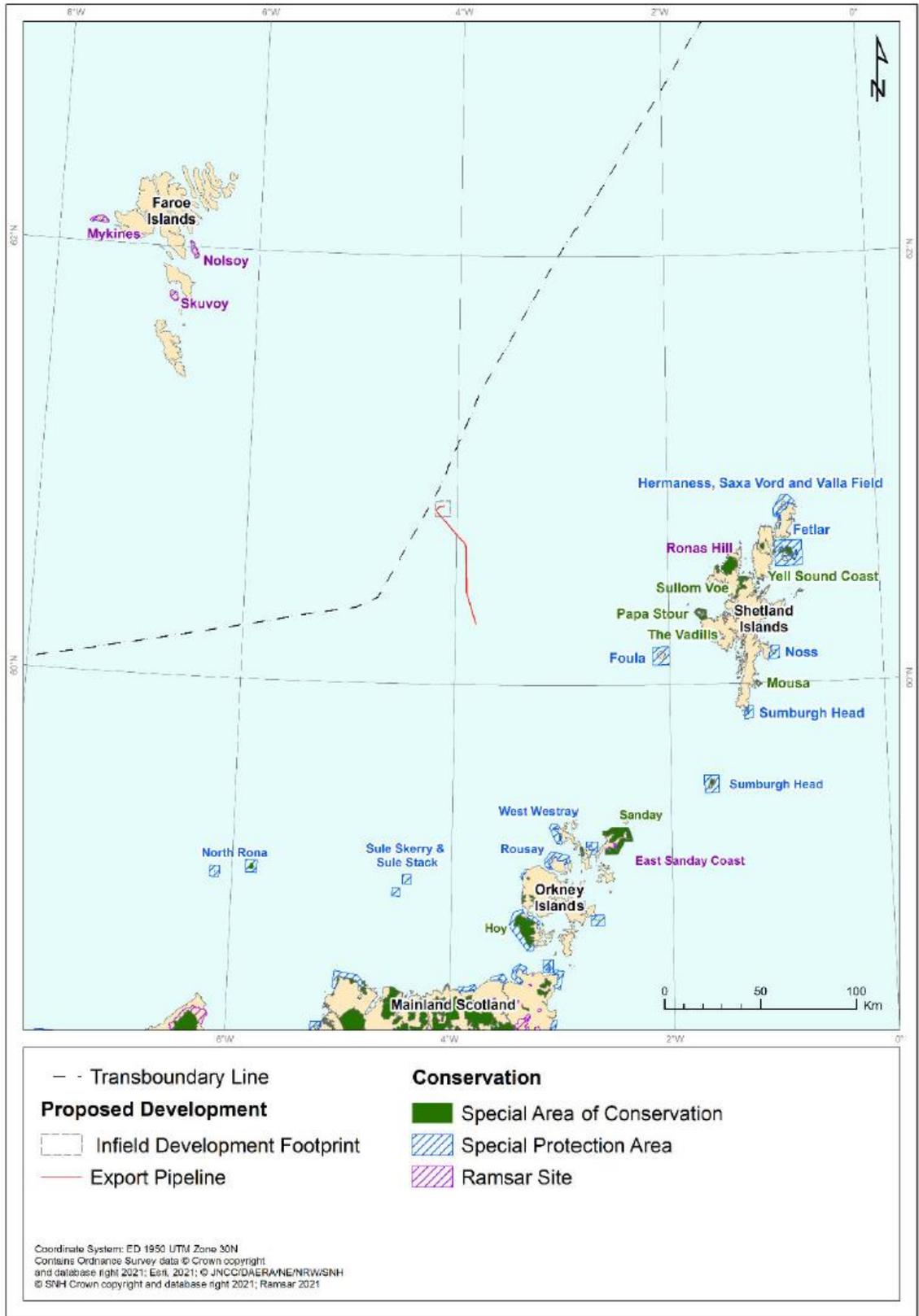


Figure 4.24: Coastal Conservation Areas
 Sources: JNCC, 2021; NatureScot, 2021.

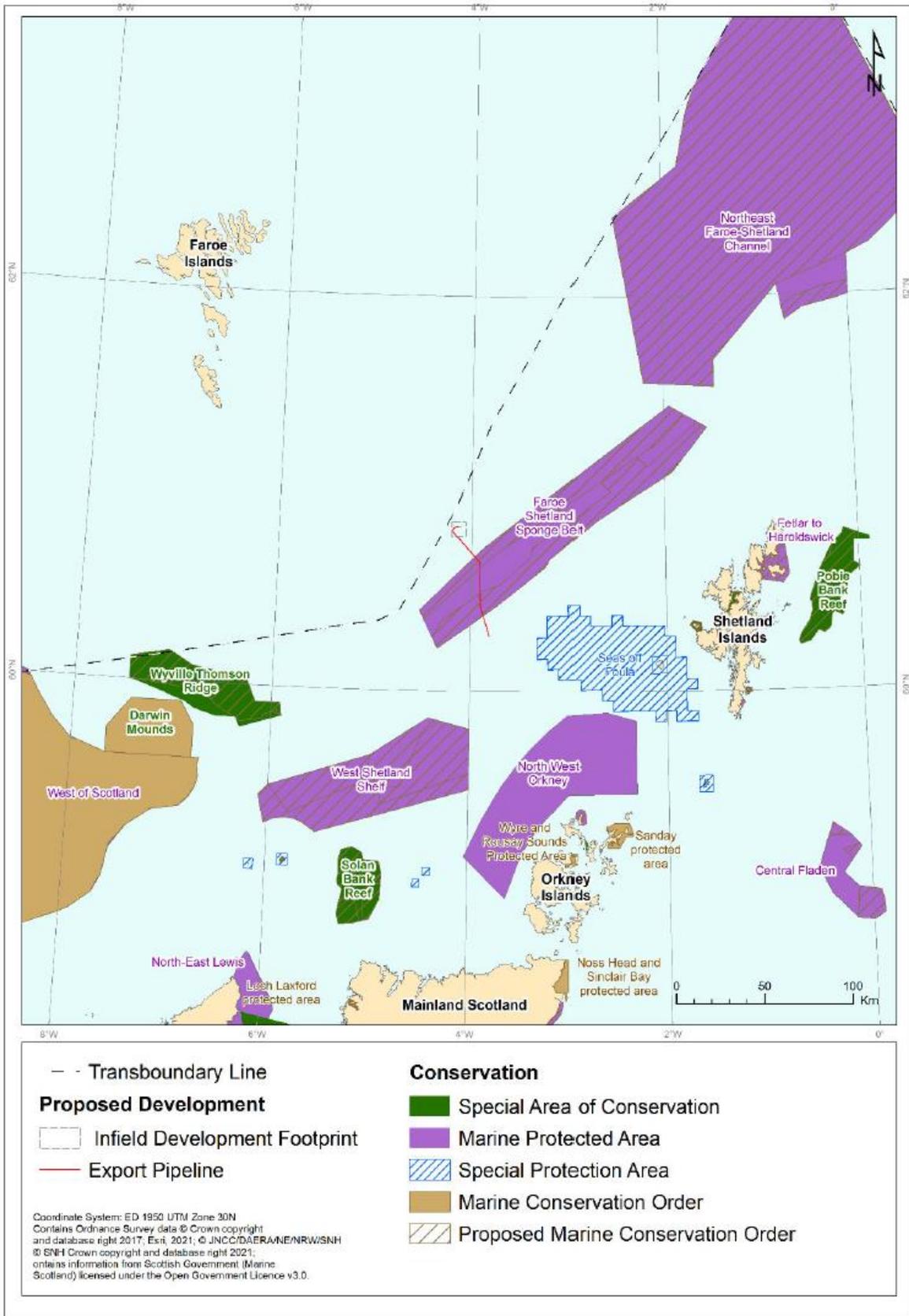


Figure 4.25: Offshore Conservation Areas
 Sources: JNCC, 2021; NatureScot, 2021, Marine Scotland, 2021.

With so many species, protected areas and countries at risk, the expectation is that the project proponents would acknowledge the specific harmful impacts and suggest strong mitigations to address them.

However, EIA section 13.5.1, “Impacts on Marine Life,” in the “Accidental Events” chapter, contains multiple unreferenced statements that recent oil spill experiences have in fact shown to be false. Below, several of these statements are highlighted in ***bold italics***, with a scientific explanation and citations included to refute the EIA claims.

EIA Claim

“Benthos

Shallow Coastal Communities

[...]

It should be noted that any oil that reaches these shallow areas will have travelled a considerable distance through the water column and across the sea surface, and will therefore have been affected by the range of degradation processes described in Section 13.4. These mechanisms will have contributed to remove the various toxic components of the oil and the primary impact of the oil deposition on benthic communities is anticipated to be related to smothering.”²³

Scientific Evidence

Surface slicks containing oil compounds continue to be extremely toxic for long periods of time. And indeed, in the case of marine oil spills, Polycyclic Aromatic Hydrocarbon compounds (PAHs) and UV radiation on the surface can combine to produce compounds within the slick that are orders of magnitude more toxic than PAHs alone.²⁴ In a recent paper, authors calculated the toxicity footprint of the Deepwater Horizon spill, which was considerably bigger than the satellite-observable footprint of the slick itself. As the authors explain:

“Photoinduced PAH toxicity has the potential to present a hazard to a wide spectrum of taxa including fish (28–30), invertebrates (31, 33, 41), and plants (42), which play key roles in the ecosystem, forming the base of the food web and primary productivity and consisting the base for the adult organisms pool. Damaging these important components at large scales can have deleterious effects on the ecosystem (43), especially considering that photoinduced toxicity may similarly affect many other taxa, which were not tested. Moreover, beyond the

²³ EIA, p. 13-19.

²⁴ Deepwater Horizon Natural Resource Damage Assessment Trustees. 2016. Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement. www.gulfspillrestoration.noaa.gov/sites/default/files/wp-content/uploads/Draft_ERP-PEIS_Part_2_Chapter_4_through_Chapter_9.pdf

direct lethal effects of photoinduced toxicity, sublethal physiological effects such as reduced growth and impaired reproduction and health have also been observed in the field and in the laboratory (4). It is therefore important to map these concentrations in the domain to better understand which regions were potentially affected and to what possible extent.”²⁵

It is incorrect to suggest that oil coming from offshore will become less toxic once it reaches shallow coastal and intertidal habitats. The oil may become less toxic over an extremely long time (centuries), but not over the days or weeks it will take to reach shore in an accidental event.

EIA Claim

“Benthos

Deepwater Communities

As described above, the buoyancy of the produced oil (and associated gas) will carry all hydrocarbons straight up to the sea surface in the event of a subsea spill. Therefore, it is expected to be very unlikely for the crude oil to reach the surrounding benthic communities.

[...]

“Any subsea release of crude oil would be pushed directly up in a plume to the sea surface, rather than towards the surrounding benthic communities. It would then be carried away from the spill location by the local current systems, with the majority of the oil moving to the northeast (Figure 13.7). Due to the time it would take to reach these areas and the large surface area available for microbial attack, it is expected that most of the toxic constituents would have been lost from the plume. It therefore seems unlikely that the released oil would significantly affect either suspension feeding or the more prevalent deposit feeding species comprising deep-water benthic communities.”²⁶

Scientific Evidence

The U. S. National Oceanic and Atmospheric Administration produced a simple infographic to explain what happened to the released oil during the Deepwater Horizon blowout. The infographic,²⁷ pasted in below, indicates that a substantial amount of the oil spilled from the well underwater (shown in brown) stayed underwater, where it caused

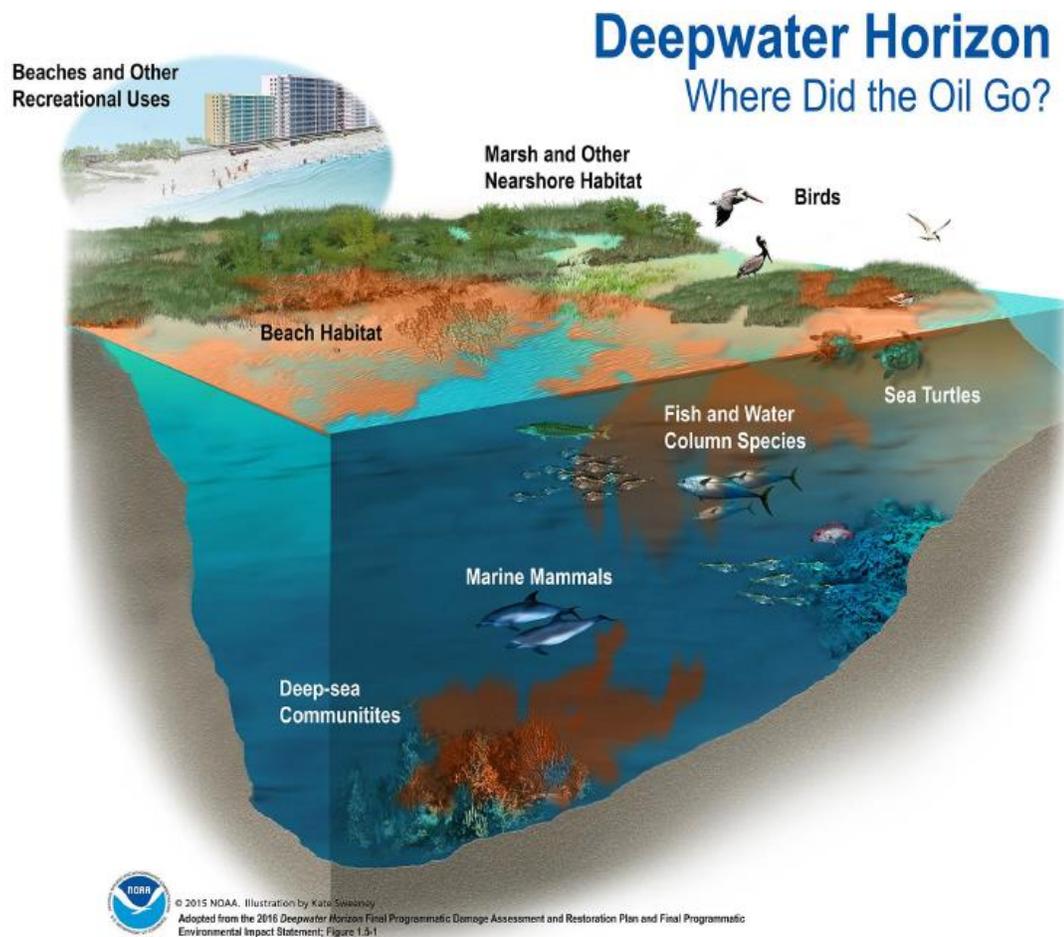
²⁵ Berenshtein, I., C. B. Paris, N. Perlin, M. M. Alloy, S. B. Joye, and S. Murawski. 2020. Invisible oil beyond the Deepwater Horizon satellite footprint. *Science Advances* 6: eaaw8863. 11 pp. p. 7.

²⁶ EIA, pp.13-19 and 13-20.

²⁷ United States National Oceanic and Atmospheric Administration. 2015.

<https://www.fisheries.noaa.gov/infographic/infographic-deepwater-horizon-where-did-oil-go>

considerable damage to pelagic and benthic deepwater species,²⁸ including and especially deepwater suspension feeders.²⁹



EIA Claim

“Fish

Offshore fish populations remain relatively unaffected by oil pollution, as oil concentrations below the surface slick are generally low (Clark, 2001). There is also evidence that fish are able to detect and avoid oil-contaminated waters.”³⁰

Scientific Evidence

There have been serious deleterious impacts experienced by multiple species of fish from myriad oil spills documented in the scientific literature, suggesting that fish species are

²⁸ Montagna, P. A., J. G. Baguley, C. Cooksey, I. Hartwell, L. J. Hyde., J. L. Hyland, R. D. Kalke, L. M. Kracker, M. Reuscher, A. C. E. Rhodes. 2013. Deep-Sea Benthic Footprint of the Deepwater Horizon Blowout. PLoS ONE 8(8): e70540. 8 pp. doi:10.1371/journal.pone.0070540.

²⁹ Girard, F. and C. R. Fisher. 2018. Long-term impact of the Deepwater Horizon oil spill on deep-sea corals detected after seven years of monitoring. Biological Conservation 225: 117-127.

³⁰ EIA, p. 13-20.

not able to reliably detect or avoid oil-contaminated waters.³¹³²³³ The statement also does not stand to reason when considering a large oil spill, occurring quickly and covering several kilometers. It is somewhat like suggesting that forest species can sense and escape a traveling wildfire. How would fish species know where to go to avoid a large area of contamination? Also, as several studies have shown, severe damage can be done to the heart tissues in particular, well below easily detectable levels.

One recent study looked specifically at the impacts of PAHs from oil spills on haddock, finding that haddock eggshells are unique in that they bind easily to oil droplets, enhancing their direct contact with toxic compounds during a vulnerable life stage.³⁴

In the Cambo Field EIA, haddock's commercial and ecological significance in the region is mentioned more than once:

“The end of the proposed pipeline route passes through a moderate to high level of intensity for demersal static and mobile gear, located over the continental shelf. A fishing intensity study showed that that the main type of fishing activity around the area of the pipeline route is demersal fishing comprising saithe, hake, monkfish, ling, cod and haddock.”³⁵

And

“Minke whales feed on a variety of fish, with sandeels thought to be an important prey species, together with herring, haddock and cod.”³⁶

And

“The demersal inshore fishery around the Shetland Islands is dominated by haddock and cod landings (Scottish Government, 2020a). Many commercial

³¹ Incardona, J. P., M. G. Carls, L. Holland, T. L. Linbo, D. H. Baldwin, M. S. Myers, K. A. Peck, M. Tagal, S. D. Rice, and N. L. Scholz. 2015. Very low embryonic crude oil exposures cause lasting cardiac defects in salmon and herring. *Scientific Reports* 5:13499. 13 pp. DOI: 10.1038/srep13499.

³² Xu, E. G., E. M. Mager, M. Grosell, C. Pasparakis, L. S. Schlenker, J. D. Stieglitz, D. Benetti, E. S. Hazard, S. M. Courtney, G. Diamante, J. Freitas, G. Hardiman, and D. Schlenk. 2016. Time- and Oil-Dependent Transcriptomic and Physiological Responses to Deepwater Horizon Oil in Mahi-Mahi (*Coryphaena hippurus*) Embryos and Larvae. *Environmental Science and Technology* 50: 7842-7851. DOI: 10.1021/acs.est.6b02205.

³³ Johansen, J. L., B. J. M. Allan, J. L. Rummer and A. J. Esbaugh. 2017. Oil exposure disrupts early life-history stages of coral reef fishes via behavioural impairments. *Nature Ecology and Evolution* 1: 1146-1152.

³⁴ Sørhus, E., J. P. Incardona, Ø. Karlsen, T. Linbo, L. Sørensen, T. Nordtug, T. van der Meer, A. Thorsen, M. Thorbjørnsen, S. Jentoft, R. B. Edvardsen & S. Meier. 2016. Crude oil exposures reveal roles for intracellular calcium cycling in haddock craniofacial and cardiac development. *Scientific Reports* 6: 31058. 21 pp. DOI:10.1038/srep31058.

³⁵ EIA, p. 17 of the Non-Technical Summary.

³⁶ EIA, p. 4-33.

species such as haddock, cod, whiting, monkfish and saithe are found in inshore area during certain times of the year for spawning or as nursery grounds for juveniles.”³⁷

Given its significance in the ecosystem, its commercial value, and its particular vulnerability to oil spills, project proponents would do well to consider every possible method to protect haddock species in the project area.

EIA Claim

“Marine Mammals

Whales, dolphins, porpoises and seals are generally able to avoid a spill and are rarely affected significantly. However, if they do come into contact with a spill, possibly by surfacing in a slick to breathe, they may suffer from irritation of the eyes, mouth, nasal passages and skin. Volatile hydrocarbon fractions may also cause respiratory problems.”³⁸

Scientific Evidence

Marine mammals are no more able to avoid oil spills than fishes or other species, and there is no evidence that they are rarely affected significantly. High mortality in dolphins was recorded following the Deepwater Horizon well blowout, starting in 2010 and continuing through 2014. Studies have described a link between the catastrophic oil spill and this unusual mortality event.³⁹

The passage also makes it sound as though any impacts from an oil spill on marine mammals would be transitory in nature. Again, there is little evidence to support that claim. On the contrary, studies have shown fatal impacts in the offspring of pregnant dolphins that were transiting through the Gulf of Mexico oil spill zone in 2010⁴⁰ and multigenerational impacts that have yet to disappear in these vulnerable dolphin populations.⁴¹

³⁷ EIA, p. 4-61.

³⁸ EIA, p. 13-21.

³⁹ Venn-Watson, S., K. M. Colegrove, J. Litz, M. Kinsel, K. Terio, J. Saliki, S. Fire, R. Carmichael, C. Chevis, W. Hatchett, J. Pitchford, M. Tumlin, C. Field, S. Smith, R. Ewing, D. Fauquier, G. Lovewell, H. Whitehead, D. Rotstein, W. McFee, E. Fougères, T. Rowles. 2015. Adrenal Gland and Lung Lesions in Gulf of Mexico Common Bottlenose Dolphins (*Tursiops truncatus*) Found Dead following the Deepwater Horizon Oil Spill. PLoS ONE 10(5): e0126538. 23 pp. doi:10.1371/journal.pone.0126538.

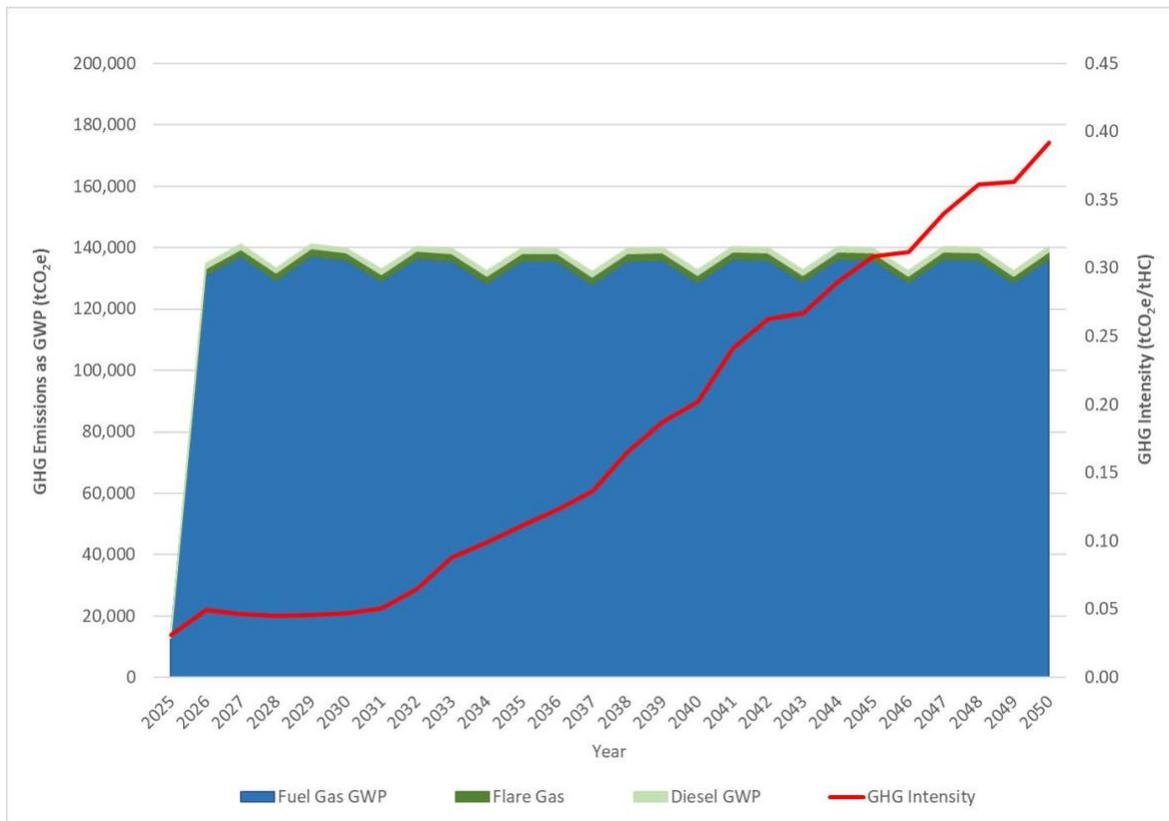
⁴⁰ Colegrove, K. M., S. Venn-Watson, J. Litz, M. J. Kinsel, K. A. Terio, E. Fougères, R. Ewing, D. Ann Pabst, W. A. McLellan, S. Raverty, J. Saliki, S. Fire, G. Rappucci, S. Bowen-Stevens, L. Noble, A. Costidis, M. Barbieri, C. Field, S. Smith, R. H. Carmichael, C. Chevis, W. Hatchett, D. Shannon, M. Tumlin, G. Lovewell, W. McFee, T. K. Rowles. 2016. Fetal distress and in utero pneumonia in perinatal dolphins during the Northern Gulf of Mexico unusual mortality event. Diseases of Aquatic Organisms 119: 1-16. doi: 10.3354/dao02969.

⁴¹ De Guise *et al.* 2021.

IV. The EIA Fails to Explain the Significance of the Substantial Increase in the Intensity of Greenhouse Gas Emissions over the Expected Life of the Project

Aside from a failure to assess downstream emissions related to oil and gas produced by the Cambo Project (a flaw of the EIA noted by others), the EIA for the Cambo Oil Field presents without explanation the following information (on pages 8-5 to 8-6 of the EIA) about the intensity of direct (upstream) greenhouse gas emissions from the project.

“Figure 8.1 displays Greenhouse Gas (GHG) Emissions and intensity from the FPSO over the production life of the Cambo field. The GHG Intensity calculation is based upon the total GHG emissions (calculated GWP in tonnes of CO₂ equivalent; tCO₂e) from the Cambo field divided by the total amount of hydrocarbons produced (tHC) on an annual basis, over the expected production life of the field. The calculation excludes emissions arising from installation and decommissioning activities. The Figure shows that the GHG intensity increases from 0.031 tCO₂e/tHC in 2025 at the start of production to 0.392 tCO₂e/tHC in 2050, at the end of field life.”



The EIA contains no explanation as to why the GHG intensity is expected to increase more than 10-fold (from 0.031 tCO₂e/tHC in 2025 at the start of production to 0.392 tCO₂e/tHC in 2050).

However, seeing that absolute GHG emissions would remain relatively constant (green line), the only possible conclusion is that hydrocarbon production from the field would fall over time despite a constant application of effort in the form of GHG-emitting equipment.

The emissions intensity of conventional hydrocarbon production ranges from 0.211 to 0.228 tCO₂e/tHC.⁴² By the year 2040, the emissions intensity of the Cambo Field would significantly exceed this range.

The EIA contains no information about the significance of the rising GHG intensity increase of the project, including a failure to address the question of whether development of Cambo Field should continue beyond such time when its emissions intensity increases substantially, starting in 2032.

⁴² Stephenson, T., J. E. Valle, and X. Riera-Palou. 2011. Modeling the relative GHG emissions of conventional and shale gas production. *Environmental Science and Technology* 45(24): 10757-10764.
<https://pubs.acs.org/doi/pdf/10.1021/es2024115>

From: ukop@ogauthority.co.uk
To: [MS PON15](#)
Subject: UKOP: DRA/533 CP/1520/0 (Version 1) , Chemical Permit: SAT update during review
Date: 26 March 2018 11:41:26

UK Energy Portal Message

Subject: UKOP: DRA/533 CP/1520/0 (Version 1) , Chemical Permit: SAT update during review

An update to the SAT that you are currently reviewing (CP/1520/0 (Version 1)) has been submitted. You will need to review these changes before submitting your review. Please log in using the link below to review these changes.

If this email has been copied to you, you may click [UK Oil Portal](#) to logon as yourself.
For assistance or support email: ukop@ogauthority.co.uk or telephone 0300 067 1682.

This message is intended for the addressee only and may contain private and confidential information or material which may be privileged. If this message has come to you in error you must delete it immediately and should not copy it or show it to any other person.

The Oil and Gas Authority is a limited company registered in England and Wales. Registered number 09666504. VAT registered number 249 433 979. Registered office: 21 Bloomsbury Street, London, United Kingdom, WC1B 3HF.

This email has been scanned by the Symantec Email Security.cloud service.
For more information please visit <http://www.symanteccloud.com>

From: ukop@ogauthority.co.uk
Sent: 24 June 2019 13:06
To: MS PON15
Subject: UKOP: SA/1156 GS/949/0 (Version 2), Application to carry out a Marine Survey Apply for Consent to Undertake a Geophysical Survey: Full Review Delivery

Oil and Gas Authority (OGA)

UKOP: UK Energy Portal

For the attention of: [REDACTED]

Subject: UKOP: SA/1156 GS/949/0 (Version 2), Application to carry out a Marine Survey Apply for Consent to Undertake a Geophysical Survey: Full Review Delivery

A full review requiring your response has recently been delivered to your workbasket. Use the URL below to login to your workbasket. There you will be able to manage and respond to this review.

Use the following URL http://itportal.ogauthority.co.uk/eng/fox/live/PORTAL_LOGIN/login to visit the UKOP (UK Energy Portal) login page.

For assistance or support email: ukop@ogauthority.co.uk or telephone 0300 067 1682.

This message is intended for the addressee only and may contain private and confidential information or material which may be privileged. If this message has come to you in error you must delete it immediately and should not copy it or show it to any other person.

The Oil and Gas Authority is a limited company registered in England and Wales. Registered number 09666504. VAT registered number 249 433 979. Registered office: 21 Bloomsbury Street, London, United Kingdom, WC1B 3HF.

This email has been scanned by the Symantec Email Security.cloud service.
For more information please visit <http://www.symanteccloud.com>
