Offshore Petroleum Regulator
for Environment & Decommissioning

D/4261/2021

Department for Business, Energy & Industrial Strategy

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4 August 2021

Dear [redacted]

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

The Offshore Petroleum Regulator for Environment and Decommissioning ("OPRED") acting on behalf of the Secretary of State for Business, Energy and Industrial Strategy ("the Secretary of State") is currently considering the Environmental Statement ("ES") and the representations received from the public consultation process in relation to the above project. Siccar Point Energy E&P Limited ("SPE") is hereby required to provide further information in relation to the following:

1. **Page 2-15 – Section 2.2.3.3 – Produced Water Management.** This section states that producing wells will be completed with alternate path open hole gravel pack ("AP OHGP") and the use of standalone sand screens has been rejected. However, section 3.7.9 states that alternative sand control options, including standalone sand screens, are being assessed. Please clarify.

2. 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 hazards, given the time lag associated with inclusion on FishSafe of up to six months.

3. Page 2-26 – Section 2.2.5.4 – Main Power Generation. While the proposed FPSO has been designed to accommodate the installation of a future electrical infrastructure to facilitate electrical power import and eventual replacement (in whole or in part) of the proposed gas-turbine driven power and heat generation system, it is noted that i) a West of Shetland Operator Electrification Workgroup was established in early 2021 consisting of SPE, Equinor and BP and that '…work to date supports the view that there is potential for collaboration, although significant technical, commercial and regulatory challenges remain to be addressed', ii) SPE is also a member of the steering committee of Project

ORION, an initiative established by the Oil and Gas Technology Centre, Shetland Islands Council and others with a number of strategic priorities, including support to net zero ambitions through electrification of oil and gas assets.

Table 2.10 states 'Delivery of Viking Wind Farm and Shetland HVDC Interconnector projects provides a potential source of power for Cambo from a renewable source' and 'First renewable power from Shetland expected to be available from 2027 at the earliest – Cambo first oil targeted end 2025'. This does not appear to align with the Viking Energy website which shows the predicted connection of the Viking wind farm to the National Grid by 2024 - https://www.vikingenergy.co.uk/timeline.

Please clarify why the proposed Cambo project cannot benefit from onshore electrification before first oil, including best estimated costs for providing Cambo with renewable power on a standalone basis. Where other technical challenges may prevent this, such as the reference to the subsea cable technology not being qualified for the water depth at Cambo, please clarify and advise what action is being taken, including a timeline, for addressing these challenges.

4. 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.

5. Page 3-24 - Gas Processing. No mention of mercury has been made within the ES whereas the Field Development Plan ("FDP") (Rev 6, Section 3.5.6.2) refers to the removal of mercury in the gas treatment system. Please clarify. Where Mercury removal is to be undertaken describe how the resulting waste is to be handled and any effects on produced water discharge constituents/impact.

6. Page 3-24 - Gas Processing. The change out of the adsorbent media beds within the H2S removal package has been specified as once per year based on an H2S loading of 20ppm. This appears to differ from the FDP (Rev 6, Section 2.9.2) that states 'Souring predictions for sea water injection give rise to H2S levels of tens to low hundreds of ppm of H2S in gas at separator conditions'. Please clarify this apparent discrepancy and describe any implications for the life of the absorbent media.

7. Page 3-28 – Section 3.7.11 – Utility Systems (Power Generation). The Medium Combustion Plant Directive ("MCPD") Emission Limit Value ("ELV") for NOx will need to be met for each fuel, and compliant stack sampling facilities for each turbine exhaust stack will need to be included in the FPSO design. Please clarify that SPE have considered these aspects in FPSO design.

8. Page 3-30 – Table 3.13 – Cambo FPSO Power Generation.

i) The FDP (Rev 6, Table 36) describes an auxiliary unit of site rated power 1.5MW which is not described within the ES. Please clarify and confirm if the emissions associated with this unit have been considered for the emissions calculations later in the ES.

ii) The main FPSO power generation units are described here, and the operating philosophy is stated as 3 x 50% i.e., three units operating at 50% capacity. Please clarify the rationale for this operating philosophy and whether two units operating at 75% would offer lower emissions and be technically achievable.

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 600m^2 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 1,200m^2 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.

16. Page 7-15 – Section 7.2.2 – Impacts on Shipping and Navigation. Please clarify whether a post lay survey will be conducted along the pipeline to ensure no hazards to fishing activities remain because of trenching activities.

17. Page 8-6 – Figure 8.1 – Greenhouse Gas Emissions and Intensity for the Cambo Field. This graph includes a depiction of the Greenhouse gas (GHG) emissions over the life of the Cambo field. Please clarify why the Global Warming Potential (GWP) rises and falls cyclically.

18. Page 8-7 – Section 8.2 and Table 8.7 – Environmental Impacts Resulting from Atmospheric Emissions. The FDP (Rev 6, section 3.11.3.2) acknowledges the GWP of methane and states that SPE are developing a framework to identify and build in best technologies and practices to mitigate methane emissions from the Cambo development. Please clarify what measures are being considered to mitigate methane emission from the Cambo development.

19. Page 8-3 – Table 8.3 – Estimated CO2 Emissions Reduction at Cambo Drilling Operations. Well clean-up is proposed to be undertaken via the FPSO installation and not the Mobile Operated Drilling Unit (MODU). Table 8.3 shows a CO2 reduction of 10.8% for well clean up undertaken on the FPSO instead of the MODU. Please clarify how this CO2 reduction has been calculated.

20. Page 8-2 – Table 8.2 - Estimated Emissions During Drilling and Well Completion. Table 8.2 includes details of the indirect drilling emissions associated with supply vessel, construction support vessel and helicopter support to drilling activities but there is no description of the measures in place to minimise emissions from any of these activities. Please clarify.

21. Page 8-3 – Section 8.1.2 and Table 8.4 – Quantification of Emissions during the Installation of the SPS/SURF and FPSO. Section 8.1.2 and Table 8.4 describe the estimated emissions during Subsea Production System ("SPS")/ Subsea Umbilicals Risers and Flowlines ("SURF") installation but there is no description of the measures in place to minimise emissions from any of these activities. Please clarify.

22. Page 8-4 – Section 8.1.3 and Table 8.5 – Quantification of Emissions during the Installation of the Gas Export Pipeline. Section 8.1.3 and Table 8.5 describe estimated

emissions during pipeline installation but there is no description of the measures in place to minimise emissions from any of these activities. Please clarify.

23. Page 8-5 – Section 8.1.4 and Table 8.6 – Estimated Emissions from FPSO Operations over the Life of Field. Section 8.1.4 and Table 8.6 convey the estimated atmospheric emissions from FPSO operations over the life of the field.

i) While flaring is included it is unclear if this refers only to flaring during production operations or encompasses flaring associated with well clean-up. Please clarify.

ii) The indirect/secondary emissions associated with FPSO operations over the life of the field do not appear to have been considered. For example: Emergency Response and Rescue Vessel ("ERRV"), supply vessels and helicopter flights. Please clarify.

24. 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.

25. Page 9-18 – Conclusion (Drilling Discharges). This section describes a predicted area of drill cuttings impact between 0.0067km2 and 0.01324km2 whereas Tables 9.1 and 9.2 state a predicted impact area of between 0.00707km2 and 0.01465km2. Please clarify.

26. Page 13-10 – Table 13.1 - Well Blow-out Modelling Parameters.

i) The properties of the Cambo crude appear to differ to that identified within Table 12 of the FDP (Rev 6). Please clarify.

ii) The oil spill modelling has been undertaken using a declining oil release rate from well P3. Please clarify how a declining release rate has been determined.

27. 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.

28. Page A2-2 – Appendix 2 – Commitments Register. While SPE state that the proposed Cambo FPSO will not have routine flaring or venting of gas for operational purposes there has been no commitment to this within the commitments register. Please confirm that SPE commit to no routine operational flaring or venting of gas.

29. 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) Please confirm that SPE commit to complying with the 15mg/l oil in water concentration on a monthly average basis.

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.

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.

30. Page A5-2 – Appendix 5 – (Cambo) Average Production Profiles (P10) in Metric Units. The data presented within this table is marginally different to that presented within the FDP (Rev 6). The production profiles presented in the ES must align with those presented within the FDP. Please clarify.

31. Page A5-5 – appendix 5 – (Cambo) Cumulative Production Profiles (P10) in Metric Units. The data presented within this table is marginally different to that presented within the FDP (Rev 6). The production profiles presented in the ES must align with those presented within the FDP. Please clarify.

Your response will be reviewed, and consideration given as to whether the information provided ought to be made public because the information is directly relevant to reaching a conclusion on whether the project is likely to have a significant effect on the environment. If so, OPRED will notify SPE under Regulation 12(3), and SPE will have to take further steps to publish information and make provision for further public consultation under Regulations 12(5) to 12(9).

OPRED looks forward to receiving your response so that we can progress our consideration of the ES.

Yours sincerely

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Environmental Manager
The Offshore Petroleum Regulator for Environment and Decommissioning
For and on behalf of the Secretary of State for Business, Energy and Industrial Strategy