



ES/2022/007

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**Department for Business, Energy
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Offshore Petroleum Regulator for
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9 December 2022

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Dear [REDACTED]

**THE OFFSHORE OIL AND GAS EXPLORATION, PRODUCTION, UNLOADING
AND STORAGE (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS
2020**

NOTICE UNDER REGULATION 12(1)

The Captain EOR Stage 2 Phase II Project

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”) in relation to the above project. Ithaca Energy (UK) Limited is hereby required to provide further information in relation to the following:

ES REFERENCE PAGE	COMMENT
page 1-11	Please clarify why GEN 13 -Noise has not been included as there will be noise impacts associated with the piling of subsea infrastructure.
page 2-7	Please confirm that the hopper of projects is a general one for all Ithaca assets, or if these are specific to the Captain installations.
page 2-7	Please confirm whether the OMFE group is considered including the Captain assets for electrification.
page 3-1	Please provide a process overview of operations at Captain including power generation, oil/gas export and process operations at the different installations.
page 3-2	Please confirm that Area B will have 15 production wells after the Phase II project.
page 3-4	Please provide further clarity regarding what the stage 2 Phase I and II developments are?
page 3-5	Please clarify what a 4% reduction in recovery factor equates to in terms of a reduction in barrels of oil?

page 3-6	Please provide further information to support the statement relating to not undertaking a further geotechnical survey (for the CANDuctors) as it was 'considered unlikely to offset... the environmental impact of drilled and cemented conductors'.
page3-6	Please confirm how the use of Quiccure cement minimises excess cement on the seafloor, and also what process is involved in heating up the seawater.
page 3-6	Please explain further why the soil in the Captain area does not support a ploughing and backfilling method. It would be beneficial to provide a comparison of the seabed disturbance using both methods to support the statement that jet trenching will disturb the seabed less than ploughing and backfilling.
Page 3-8	Please clarify why the EH umbilical is not in the same trench as one of the new pipelines.
page 3-8	The locations of Area D and possibly Area E in Figure 3-3 shows that this area is outside of the Captain field. Please confirm if the areas are out with the current FDP.
page 3-9	Please clarify the length of the catenary contact for the anchor lines and how much is on the seabed?
page 3-19	Please confirm whether there will be contingency sidetracks required for the production well?
Page 3-10	Please clarify the total weight of mud and cuttings for all 7 wells.
page 3-13	Please provide additional information to support the estimation that there could be 20t of cement discharged per well, and the assumption that the cement patio will have a radius of 7.5m.
page 3-18	What are the contents of the pressurisation fluid?
page 3-18	Please provide detail on the jet trenching methodology.
page 3-18	Please provide drawings detailing where the mattresses, grout bags and anticipated rock cover will be used.
page 3-19	Please confirm that the total fuel use in Table 3-11 is 2243t.
page 3-20	Please provide an estimate of the increase in produced water as a result of the project (using all cases) and compare this with current PW volumes, and current PWRI capacity.
page 3-20	Please confirm that the production rates used in Tables 3-12 and 3-13 align with the production figures provided in Appendix E.
Page 3-20/21	Please confirm that the heading of the second columns in Tables 3-12 and 3-13 mean ' <i>without Stage 2 Phase II project</i> ', and the heading of the third columns means ' <i>with Stage 2 Phase II project (high case)</i> '.
page 3-21	Please clarify which oil production figures have been used to populate the graph in Figure 3-7. Please also clarify what the legends on the Figure mean, as it doesn't appear to correlate with the text directly underneath Figure 3-7.

Page 3-22	Please clarify which gas production figures have been used to populate the graph in Figure 3-8. Please also clarify what the legends on the Figure mean, as it doesn't appear to correlate with the text directly underneath Figure 3-8
page 3-23	Will there be any changes to the current oil in water currently permitted? Is there an increase expected?
page 4-10	Please confirm what the UKOAA average values are for the metals listed under the Heavy/Trace metals section.
page 4-24	Please confirm whether 45E8 is of low, moderate or high importance to the UK fishing sector.
page 4-30	Please confirm if Ithaca has had any involvement with the INTOG areas identified in Figure 4-19.
page 4-30	Please identify the wrecks which are close to the project infrastructure and whether these are protected or of historic importance. Can Ithaca confirm that the mooring lines (which can be longer than 900m) will not extend towards this wreck.
page 6-5	Please detail what action would be taken in the event clay berms were identified from the post installation survey. Impacts from any mitigation should be included as a worst-case scenario.
page 6-5	Please confirm that the use of a guard vessel prior to pipelines being buried will be used as a mitigation measure.
page 7-3	Please clarify that the process gas, as a result of the Phase II project will be utilised (under normal operations for the duration of the Phase II project), in all 3 process heaters on the FPSO.
page 7-3	Please detail the average fuel split (using the last 5 years data) for the fuel used on the FPSO (diesel, gas and crude oil).
page 7-3	Please clarify if the requirement for additional process heating requirements, due to increased production, has been taken account in the ES. The ES must include the worst-case environmental impact, which would include the addition of more process heaters (section 7.2.1)
page 7-3	Please clarify that the additional 2.7MW power demand as a result of the Phase II project, will be met only with an increased use of diesel on the FPSO. Please confirm that there will be no additional fuel requirements on any other installation except the 5 generators on the FPSO.
page 7-4	Please indicate along the top of the tables in section 7 (where appropriate), the EEMS factors that have been used (as per Table 7-1)
page 7-5	Please explain why under normal operating conditions, produced gas is flared and not utilised, when process heaters and generators use diesel as there is insufficient gas.
page 7-5	Please confirm that there will be no additional routine flaring and venting as a result of the phase II project. S 2.5 states that there will be '.... through increased production with a limited increase in energy and flaring'.

page 7-5	Please detail how Ithaca will meet the NSTD target of zero routine flaring and venting by 2030 for the Captain assets. The commitment is to reduce routine flaring as soon as possible. Ithaca's GHG Emissions policy also states that it will achieve zero routine flaring by 2030.
page 7-5	Please provide information regarding the projected increase in the amount of gas available to be used in power generation and process heating. Please include an estimate of how much this will reduce the need for diesel as a fuel source and an estimate in the emissions to air.
page 7-5	Please provide information regarding energy efficiency for the power generation equipment across the installations and whether the Captain field has been considered for options for renewable power
page 7-6	Please confirm that Table 7-3 does include a 'with' and 'without' scenario in this table. Please also confirm which production case has been used to determine these figures, noting that Table D-2 in the Appendix shows the highest volume of gas comes from the low production case.
page 7-6	Please confirm that the venting rate is 1.2t/day as an average across all 4 production scenarios?
page 7-7	Please explain why, in Table 7.4, the venting rate is higher in 2034 and 2035 in the 'without' case compared to the phase II project (all 3) when oil production is lowest.
page 7-6	Has any mitigation been considered for the increase in the volume of venting gases from the cargo tanks as a result of the phase II project?
page 7-7	What actions will Ithaca take to meet their own methane intensity target of 0.2% by 2025. There is no discussion around Methan Action plans, or how Ithaca will mitigate the additional methane emissions as a result of the phase II project.
page 7-7	The ES discusses venting in section 7.2.3. The only venting it refers to is the venting from the cargo tanks from the FPSO. It is unclear why Table 7-4 (FPSO venting) and Table 7-5 (emissions from venting from Captain <u>field</u>) are related unless the only venting from the Captain field is from the FPSO cargo tanks. If there is other venting from the Captain field installations, the details and data associated with this, should be included in this section.
page 7-8	Please clarify whether the 2019 EEMS data used for venting in Table 7-6 is a typical year for the WPP.
page 7-9	2028 appears to be the date when offloads decrease back to the historic average for the FPSO. The oil production table in Appendix D does not show the same trend, e.g. production for low, mid and high cases are much higher after 2028 than the 'without' case. Please explain why these 2 tables/graphs do not appear to align?

page 7-10	Fig 7-3 shows a 'maximum without EOR Stage 2', which is not included in Table 7-7. Please explain how this figure has been calculated and why it is not used in Table 7-7 as a worst case.
page 7-10	Please explain why the CO ₂ e for the without case a is straight line in Figure 7-3, when the offloads decrease over time with production (as shown in Table 7-7)?
Page 7-10	Please provide information for the incremental increase in the polymer injection flowrate to 2035.
page 7-11	Please detail the breakdown for the calculation for the total hydrocarbon use figure in Table 7-9 and its associated emissions from fuel flare and venting. Please also confirm that the figures in this table are only for drilling, subsea installation and commissioning in 2023, and not for the 'operation with EOR Stage 2 Phase II' as indicated in the left column.
page 7-13	Please clarify where the additional figure of 50,268 CO ₂ (e) has been calculated from in Table 7-11, and the GWP factors used to determine the CO ₂ e
page 7-13	Please explain why after 2032, the GHG intensity is higher for the low, mid and high cases compared to the 'without' case? Please also confirm the production numbers and CO ₂ e emissions used to calculate the GHG intensities in Table 7-12.
page 7-17	Please can you confirm in s7.5.4, that the percentage increases in CO ₂ e compared to the base case from the low, mid and high production cases are 10%, 10% and 11% respectively.
page 7-18	According to NSTA for 2019, GHG intensity is 25.1 kgCO ₂ e/boe and total CO ₂ e emissions were 14.6 MT. Please detail where the figures in s.7.5.4 are derived from.
page 7-18	Figure 7-4. The key from this figure is that the Captain field GHG intensity is after 2029/2030 more than double and towards 2035, 4- 5 times larger than the UKCS average and this should be discussed within the text. The narrative around this should include how the forecasted increase in GHG intensity will be reconciled by action/mitigation with the Net Zero commitments in the NSTD, the UK Governments Net Zero Strategy and Ithaca's own policy emission reduction commitments (reduce all scope 1 & 2 CO ₂ and CO ₂ (e) emissions of operated assets by 25% from 2019 levels by 2025). There needs to be detail within this section showing the steps that Ithaca are taking to reduce the GHG intensity in the Captain field.
page 7-18	Please explain why there is such a pronounced increase in the GHG intensity slope in the 'without' project case after 2025?
page 7-19	Please provide a reference under table 7-17 for 'UKCS Gas production' and 'UK Oil Production' GHG intensity figures. Please also explain how the GHG intensities for each Captain case have been calculated.
page 7-20	Table 3-12 shows that production levels are the same from 2032-2035 'without' and with the stage 2 Phase II project. Please explain why the % increase against the UKCS context in Table 7-

	19 for the high case, is much higher in 2030 when compared to the 'without' case in 2030, when indications are that the production will be the same for both cases
page 7-20	Please clarify further the statements made in s7.5.5 - 'GHG emissions from the Captain field are low in the context of current UK and UKCS emissions', and 'EOR Phase II would therefore contribute to achieving the goals for emissions reduction in the UKCS established by the NSTD' when in all cases, the Captain GHG intensity is above this number.
page 7-20	In s7.5.5, please also explain why Ithaca consider that the GHG emissions from the Captain field are relatively low, so that the conclusion of the impact significance of emissions is low. For noting, emissions to air from the activities within the project have in some cases been considered moderate in the ENVID
page 7-21	The statement " <i>In the context of UKCS oil and gas production, the Captain field with the proposed project offers relatively low GHG emission per barrel of oil equivalent</i> " is difficult to reconcile with the intensity figures reported in Table 7-12, Table 7-17 and Figure 7-4. Please explain further how these conclusions has been arrived at, given that the average GHG intensity at Captain is reported to be, in all cases, above the UK oil and gas production average for 2019.
page 9-2	Please confirm that Figure 9-1 is the depositional thickness for 3 wells around 1 drilling location (area D), and not the total depositional thickness from drilling activity for the Stage 2 Phase II project.
page 9-4	Please confirm the total seabed disturbance for Table 9-1 for permanent impacts is 0.0163 km ² . Please also confirm the temporarily and permanently impacted areas for row 8 is 0.000144 km ² and 0.000096 km ² respectively.
page 12-3	Please confirm that the release rate of a well blow out is aligned with the current OPEP.
page 12-12	Please provide a list of the potentially affected protected areas and the impacts on their designated features that may arise from a well blowout.
page 12-13	It is stated that the probability of surface crude crossing the median line is high. However, an impact assessment of that modelling outcome has not been undertaken. Please clarify why this has not been included.
Appendix A	Please review the consistency between the ENVID and main body of the text on sensitivities, magnitudes and impact significance. There appear to be differences between the ENVID and text.
Appendix C	Please provide a summary with the estimated impacted areas and volumes for the whole project given that only half of the wells have been modelled.
Appendix E	Table D1 illustrates the 'without Phase II' production rates and low, mid and high production cases. Please check the decimal point for each figure.

Appendix E	The proposed forecast for Gas illustrates that from 2023, the mid and low case will produce more gas than the high case. Please clarify this.
FDP(A) pages 4 & 27, & Table 7.	The FDP(A) refers to a number of wells being drilled in Areas B and C in the Upper Captain Sand. Please confirm which of these wells are related to EOR Phase II project, which forms the basis of the ES.
FDP(A) page 33	Please confirm that there will be a new production well at Area B as per the information in the ES, and this new well at Area B is not a polymer injection well.
FDP(A) page 39	Please confirm that the additional power requirements due to the Phase II project, as specified in the ES is 10%. The FDP(A) states this is 0.5%.
FPD(A) page 39	Please clarify why the assumption has been made that the CO2 emissions are to be equal for each case.
FDP(A) page 39 (Table 10)	Please provide further detail for calculating the GHG intensity for the base case and EOR Stage 2 expansion, so a comparison can be made to Table 7-17 in the ES, which appears to show different GHG intensities.
FDP(A) Figure 22	Please provide the numbers that were used to populate Figure 22. According to the ES, the GHG intensity for the low mid and high cases are higher than the base case from 2032 onwards.
FDP(A) Appendix A	Please provide Appendix A in the format of t/d for oil, and m ³ /day for gas for the incremental production and total production figures for each case.

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 Ithaca Energy (UK) Limited under Regulation 12(3), and Ithaca Energy (UK) Limited 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



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