



Offshore Petroleum Regulator
for Environment & Decommissioning

ES/2022/006

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23rd February 2023

Dear [REDACTED]

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

NOTICE UNDER REGULATION 12(1)

Teal West Development

The Offshore Petroleum Regulator for Environment and Decommissioning (“OPRED”) acting on behalf of the Secretary of State for Energy Security and Net Zero (“the Secretary of State”) is currently considering the Environmental Statement (“ES”) in relation to the above project. Anasuria Hibiscus UK Ltd is hereby required to provide further information in relation to the following:

COMMENT NUMBER	ES REFERENCE	COMMENT
1	Non-technical summary - Location	Please clarify the location of the Teal West field. The text states north-east of Peterhead, however, the graphic indicates south-east. This is also mentioned in Section 1.2 (page 22).
2	Section 1.2. Project overview	As per the 2020 EIA Regulations and the EIA Guidance, please include the volumes of oil produced in tonnes per day and gas in m3 per day. In addition to the high case (P10), please also provide the low (P90) and mid (P50) production forecasts.
3	Section 3.2.2. Drilling Strategy	AHUK makes reference to Synthetic Oil Based Mud (SOBM) - please clarify how/if this is different to the more familiar terminology used by industry, ‘Low Toxicity Oil Based Mud’ (LTOBM).
4	Section 3.2.5 Mud System and Cuttings Discharge	Table 3-2. Taking Table 3-1 lengths to calculate volumes and subsequent densities results in cuttings densities of approximately (2.5 t/m3 - expected). However, taking the lengths reported in table 6-2 (which differ from those of Table 3-1) a density of 0.8 is obtained for cuttings, which is unexpected. Please clarify.

5	Section 3.2.6. - Cement and other chemicals	Up to 67 tonnes of cement could be discharged at each well which may form a 'cement patio'. How will this be mitigated at the time of decommissioning to ensure it does not pose a future risk to other sea users? Will discharged cement setting around existing infrastructure pose challenges for future decommissioning of these items? Please clarify.
6	Section 3.2.6./6.5.1 - Cement and other chemicals/Drilling Programme Overview The development	It is understood from section 6.5.1. that an ROV will be used to provide visual monitoring of returns to the seabed. Will pumping of cement therefore cease once cement returns are observed at the seabed? Are any other measures proposed to reduce the amount of cement discharged to the seabed to a minimum (i.e. pH sensors or dye detection)? Please clarify.
7	Section 3.2.6. - Cement and other chemicals	AHUK state, ' <i>Up to 200% excess cement will be discharged...</i> ' please clarify what is meant by 'excess'.
8	Section 3.2.8 - Well testing completion and clean-up.	AHUK state, " <i>As the bottom hole section of each well will be drilled using SOBMs, there is a potential for the discharged completion brine to contain residual quantities of SOBMs.</i> " No Oil Based Mud is allowed to be discharged. Are AHUK confusing themselves with residue base oil from the OBM potentially being discharged after clean up, and thus would need to adhere to Condition 6 of a Chemical Permit issued under OCR? Please clarify.
9	Section 3.2.8 - Well testing completion and clean-up.	AHUK state, " <i>The production wells will be cleaned up with a clean-up package rigged up on the drilling rig. The wells will be flowed to the drilling rig for planned 24 hrs with rates +/- 3000 bbls/day at controlled choke sizes to separators and burners. A surge tank will be rigged up to ensure zero spill overboard with a flare system to burn flowed oil and gas at surface. A filtration system will also be rigged up to ensure fluid is filtered to required levels prior to discharge...</i> ". This whole section is very technical and would benefit from some clearer explanation of AHUK proposed plans. This section also seems to be confusing the legislative requirements of OPPC and OCR. Please remember that this is a public document. Please amend accordingly.
10	Section 3.2.8 - Well testing completion and clean-up.	AHUK state, ' <i>Oil and gas will be flared via high combustion efficiency burners with water injection</i> '. Please clarify?
11	Section 3.2.8 - Well testing completion and clean-up.	AHUK state, " <i>After the well has been cleaned up, it may be flowed for a test period of approximately 24 hours, during which time approximately 477 m³/day (3000 bbls/day) of oil may be produced.</i> " What is the reason for this? No justification seems to have been made. Have AHUK not required any info from a previously drilled appraisal well?
12	Section 3.3.7. - Static and Dynamic Umbilical	The dynamic umbilical will be a weighted lazy wave type with buoyancy units and will have additional tethers to hold it in place. Have the tethers been accounted for in the seabed footprint? Please clarify.
13	Section 3.2.12. Well abandonment	The section refers to the casing being cut 1 - 2m below the seabed; this contradicts information in section 3.6 where 3m is stated. OPRED's expectation is that conductors are cut 3m below the seabed at the time of well abandonment. Please clarify.

14	Section 3.3.1 Overview of field layout and subsea infrastructure	The section states that " <i>Installing both lines in a single trench was considered as this would incur a lower overall environmental footprint. However, the EIA has assumed the worst case which is that the production flowline will be installed in a separate trench from the static umbilical with approximately 30 m spacing. The main reason for keeping this option of separate trenches is that the installation vessel may be unable to carry and install the flowline and umbilical in a single vessel campaign</i> ". Why would the installation vessel be unable to carry and install both lines in a single vessel campaign? Please clarify.
15	Section 3.3.1 Overview of field layout and subsea infrastructure	Table 3-3 refers to a worst case rock berm width of 2m. How has this worst case figure been derived? Please clarify.
16	Section 3.3.4. Production flowline	The section refers to the production pipeline being 3,600m which contradicts earlier sections stating 3.4km. Please clarify the proposed length of the production pipeline.
17	Section 3.3.4. Production flowline	AHUK state, " <i>The 6" ID production flexible will be up to 3,600 m in length.</i> " This is the first mention that the production line will be flexible. Please confirm/clarify.
18	Section 3.4.9 Flaring and Venting	AHUK state " <i>There will be additional venting from the cargo oil tanks as a result of the additional oil production from Teal West.</i> " Can AHUK confirm what consideration has been made of tank vapour recovery on the FPSO?'
19	Section 3.6 Decommissioning	Is all infrastructure designed to be removable should that be the policy in place at the time of decommissioning or the preferred outcome of a comparative assessment? Please clarify.
20	Section 3.6 Decommissioning	Does the crossing of existing pipelines impact on the ability to decommission those pipelines? Please clarify.
21	Section 4.2.2. Bathymetry and seabed features	Figure 4-2 - The Figure refers to a proposed well and <u>proposed</u> FPSO - Please clarify.
22	Section 4.3.3. Fish and shellfish	The text describing species using the area as a nursery ground omits Norway pout. Please clarify.
23	Section 4.3.3. Fish and shellfish	The following paper provides an update to the cod spawning areas and describes a 'recurrent' cod spawning area to the immediate East of the Teal West area. Please consider this update and provide further information where necessary. José M. González-Irusta, Peter J. Wright; Spawning grounds of Atlantic cod (<i>Gadus morhua</i>) 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)
24	Section 4.3.3. Fish and shellfish	Figure 4-5 - The sprat nursery area should also be shown. The spawning map for Norway pout is incorrect. It appears the spawning map for <i>Nephrops</i> has been used. The high intensity spawning area for Norway pout should be highlighted on the map.
25	Section 4.5.5.	For purposed of transparency, please provide a Figure indicating the locations of the previously observed MDAC and the distance from the proposed works.

26	Section 4.6.5	Please check the distances to the Tampnet Central North Sea Fibre Telecommunications Company (CNSFTC) cable and the North Sea Link Interconnector as these appear to be incorrect.
27	Section 5.3 Scoping and Consultation. Table 5-1. Marine Scotland.	Please clarify whether potential impacts on plankton have been discussed have been discussed in the ES.
28	Section 6.4	The section describes a peak produced water rate of 2,347 Te/day in year 14 but it is understood that field life is only anticipated for 10 years. Please clarify.
29	Section 6.5.1 Drilling Programme Overview	Table 6-1. Coordinates are provided in ED50/TM0, this is unexpected as other coordinates in the ES are reported in ED50 31N. Please confirm which Coordinate Reference System is used here and that the coordinates are correct.
30	Section 6.5.4./Section 6.11.1.	Potential seabed impacts - The text states that within 110 m the cuttings thickness decreases to less than 1 mm. This does not appear to reflect what is shown in Figure 6.1, where the 1 mm contour appears to be in excess of 500 m according to the scale provided. Please clarify.
31	Section 6.5.4./6.9/6.11.1.	Potential seabed impacts - The text states that the maximum deposit thickness will be 33cm, however, Figure 6-2 appears to show this as 3.3m. Please clarify.
32	Section 6.5.4 Behaviour of Drill Cuttings at Sea	AHUK state, " <i>The water column impacts as a result of suspended solids are further discussed in Section 11.</i> " It is unclear where in Section 11 . Please clarify.
33	Section 6.6.2 Operational Discharges	AHUK state, " <i>Most studies on produced water toxicity and dispersion have concluded that the necessary dilution to achieve a No Effect Concentration (NEC) would be reached at <10 to 100 m, and usually less than 500 m from the discharge point (IOGP, 1994; OLF, 1998; Riddle et al., 2001; Berry and Wells, 2004; DECC, 2016).</i> " However, this does not apply to the submitted RBA report (to the Department) for the Anasuria FPSO. Please clarify.
34	Section 6.6.2.	Please detail the produced water (PW) capacity in the same units as the expected PW generated (Te/day) to allow a direct comparison. Please also include forecast PW profiles for the existing consented production to allow direct comparison.
35	Section 6.10	AHUK state, " <i>The nearest protected area is the East of Gannet and Montrose Fields which is located approximately 3.4 km from the well discharge locations and 0.9 km from the FPSO discharge locations.</i> " This contradicts section 4.5.1. " <i>The closest site of conservation interest is the East of Gannet and Montrose Fields NCMPA, immediately adjacent to the Development (0.7 km from the riser base manifold) (Figure 4-9)</i> ", (albeit metres in comparison). Please clarify.
36	Section 7.3 Description and Quantification of Seabed Impact	Please clarify why cement discharges have not been included in Section 7.3

37	Section 7.3.1 Physical loss or abrasion of benthic habitats or species.	The assessment correctly identifies high intensity sandeel spawning in the area. How have AHUK considered the timings of the operation to account for this? Please clarify.
38	Section 7.3.1. Physical loss or abrasion of benthic habitats or species.	Please clarify how the indirect impact area (being double that of the direct impact area) has been calculated.
39	Section 8.5.5 Summary of Results - Underwater noise modelling	How have the distances of injury to fish been produced if no modelling has been undertaken? Please clarify.
40	Section 8.6.4 Soft-Start	Please include commentary on the ramp up procedure for the piling operations as has been done for the seismic survey.
41	Section 9.3	The section describes a contingency rock use of 3,000 tonnes but this is described elsewhere as 4,500 tonnes - please clarify.
42	Section 9.4.1.	The distance to the coast described as 143 km differs whereas other sections make reference to 152, 153 and 155km. Please clarify the correct distance.
43	10.3 Assumptions	This section would benefit from explaining further why has the removal of the gas export pipeline has not been included in the atmospheric calculations e.g. mentioning the results from other comparative assessments to leave pipeline in place compared to removing it.
44	10.4.2 Well clean up flaring	Please clarify what is meant by the following, " <i>Wells cannot be cleaned up to the Anasuria FPSO due to the potential for damage to the swivel seals</i> "
45	10.4.2 Well clean up flaring	AHUK state, " <i>A 24-hour flow period will be required to obtain the required cleanliness prior to finishing the well activities and producing hydrocarbons to the FPSO.</i> " Please clarify the reason for a proposed 24 hour flow period.
46	10.4.2 Well clean up flaring	Please clarify what is meant by, " <i>to ensure aqueous discharges are filtered to required levels prior to discharge.</i> "
47	10.4.2 Well clean up flaring	General comment - there is no introduction about 'well clean up flaring' in terms of what it means, why it is required, and what happens during this process. A robust justification must be made for why the necessary duration is required.
48	10.4.4. Total emissions	Please clarify what is meant by, " <i>It is anticipated that the Anasuria FPSO will not require to be operated out with the Best Available Technology currently in use to accommodate the Teal West production.</i> " Please note that BAT is defined as Best Available Technique.
49	10.5. Management and Mitigation	AHUK state, " <i>Opportunities for further reduction of emissions and improvements in energy efficiency will be sought during emissions reduction reviews in subsequent design phases.</i> " Please clarify what subsequent design phases are planned

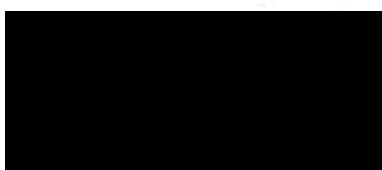
50	10.5. Management and Mitigation	AHUK state, " <i>During the Teal West operational phase, AHUK will support AOC in operation, maintenance and modification of the Anasuria installation to seek and realise emissions reductions, which may include the timely deployment of appropriate new abatement technologies.</i> " Please expand on what modifications are planned for the AOC FPSO, and what ' <i>appropriate new abatement technologies</i> ' are proposed.
51	Table 10-10	AOC view the projects in Table 10-10 as commercially feasible and they are planned to be implemented before Teal West first. Please provide further information
52	10.5.1. Drilling and vessel activities	"The latest 'green burner' technology will be used on the selected rig." Please clarify.
53	10.4.3. Operational emissions - Power Generation	In order to make a comparison, and to isolate the incremental impact of Teal West, Table 10-6 should be updated to also show include the emissions that would occur from Anasuria FPSO without Teal West, and then the incremental emissions for Teal West upside case and base case. This would make the incremental changes for the project transparent. A similar set of disaggregated data should be included for the GHG intensity from the Anasuria alone, and the proposed Teal West project only (i.e. project incremental emissions / project incremental production). This should also include the emissions data from 2022-2024. If the additional columns are too much data to show in the one table, then the intensity metrics for the different projects could be split out into an additional separate table. Please also update tables 10-7, 10-8.
54	Section 10.4.2. Drilling and vessel activities	The section refers to an 11 year field life which contradicts other section that refer to a 10 year field life. Please clarify.
55	10.4.4 Total emissions	Please clarify how carbon intensity of 14.1 kg CO ₂ e/boe is calculated. It is not obvious from the text in this section.
56	Net Zero	Electrification – does the proposed project enable future electrification? If electrification options have not been selected, please confirm/justify why they have been discounted.
57	Net Zero	Please explain how AHUK/AOC intend to achieve zero routine flaring by 2030
58	Net Zero	Methane intensity metric – how will the proposed project contribute to meeting the stated methane intensity goals as per the NSTD and the NSTA? Please provide further information.
59	Net Zero	Power from renewable energy – have any renewable energy sources been considered?
60	Net Zero	How will atmospheric emissions be monitored during each stage of the proposed project?
61	11.3.1 Blowout and Well Releases Accidental Events	AHUK refer to the likelihood of a well blowout both as "remote" (in previous sections) not "extremely remote". Please clarify
62	11.3.1 Blowout and Well Releases Accidental Events	Please include shoreline minimum arrival time and probability plots as well as surface oiling minimum arrival time plots as per guidance quoted in the ES (OPEP guidelines).

63	13.1 Overview	Atmospheric emissions appear to have been omitted from the conclusion. Please clarify
64	Appendix A - Commitments register	As per OPRED Guidance, please indicate how and when the measures will be implemented and confirm lines of responsibility for ensuring implementation.
65	Appendix B - ENVID	The table states " <i>The 2021 will provide information on the presence/absence of wrecks in the project area</i> ". Please clarify what this is referring to.
66	General	Schedule 6 of the EIA Regulations requires 'A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of its likely evolution without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge'. A description of the baseline environment has been provided but discussion of the likely evolution of the environment without the Teal West project does not appear to have been included. Please expand.

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 Anasuria Hibiscus UK Ltd under Regulation 12(3), and Anasuria Hibiscus UK Ltd 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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Senior Environmental Manager

The Offshore Petroleum Regulator for Environment and Decommissioning
For and on behalf of the Secretary of State for Energy Security and Net Zero

