

	Information	Reason	Response
1	<p>Explain how the changes in operation which are subject to this variation will have an impact on the designated habitats.</p>	<p>Reason –You previously submitted report entitled ‘Ecological Impact Assessment, Project number: 60630268’ dated December 2021 Revision 3 as part of the previous variation which remains applicable however, you have not assessed potential impacts on relevant ecological features as a consequence of the development and how the change in operation will affect the designated habitats, or set out the measures to be Hornsea Mere SPA, Lambwath Meadows SSSI, or the Local Wildlife Sites; The Moors, Burton Constable LWS and Wycliffe, North Plantation LWS.</p> <p>Explain in terms of source-pathway-receptor linkages how, if any, the revised operation will impact any of these designated habitats.</p>	<p>The Ecological Impact Assessment of Dec 2021 is still valid as the extents of the operation still fit within the @operation' phase already assessed. The embedded mitigations have not changed as the well construction and surface water drainage will not change, the lighting assessment and air quality assessments have been conducted using the 'worst case scenario' of lighting during the drilling phase and the air quality when flaring. The reservoir stimulation will not add any additional sources or pathways which will have impacts upon the ecological receptors set out in the Ecological Impact Assessment.</p>
2	<p>Explain how the changes in operation which are subject to this variation will contribute to noise emanating from the site.</p>	<p>Reason –You previously submitted report entitled ‘Noise Impact Assessment for West Newton A Exploration, Appraisal and Production Development, JAT2106–REPT–04–R3-Rathlin-WNA, RPS, dated 14/12/2021’ as part of the previous variation which remains applicable however, you have not assessed potential impacts of noise as a consequence of this variation and how the revised operation will have any additional impact</p>	<p>Temporary pumping equipment is already conditioned by the extant planning permission for minerals development. The RPS, Noise Impact Assessment for West Newton A Exploration, Appraisal and Production Development, December 2021 considers the worst-case scenario of two flares operating 24/7. Similar to the workover equipment and acid squeeze pumping equipment, the fluid pumping equipment is not considered a primary source of noise.</p> <p>Accounting for the reservoir stimulation pumping equipment, which has a similar noise profile to the acid squeeze pumping and gas lift equipment, the conclusion is the same as previously assessed due to the short duration (minutes) of activity at the wellsite.</p> <p>For clarity, this variation in activity is not proposing additional noise sources to run simultaneously alongside the already permitted pumping equipment. The pumping equipment will inject acid or fluid for the reservoir stimulation in isolation, never cumulatively.</p> <p>With the existing assessment accounting for pumping equipment, along with the short duration of daytime activity to be less than 1 hour (measurement time for LAeq) and the existing minerals authority noise condition, there is no change to the assessment conclusions.</p>

3	<p>The application states there is a proposed change to permit boundary due to a change in activity A4 – oil storage location. For clarity confirm any physical boundary changes because of this variation. If the boundary is to increase provide a clear map showing the current permitted boundary (The permit boundary is as detailed in Schedule 7 Figure 1 of the current permit (V005) and the proposed extension. If the boundary is to increase explain why this is necessary and what activities are proposed in this new area.</p>	<p>Reason: There are various references to ‘changes in boundary’ within the application documents. For example, para 4.1.1.1 and 4.1.5 of the Waste Management Plan, para 4.1.1.1 and 4.1.5 of the NTS, and the footnote point 2 on page 11 of the NTS as examples. This was discussed by phone with the applicant, and it was confirmed that there were no changes to the boundary. The application remains confusing. Confirm which is correct. Is it that you are proposing to increase the permit boundary in a future variation? (Also note question 19 below on the SWMP).</p>	<p>The permit boundary is not changed to that which has already been approved and shown in Schedule 7, figure 2 of the Permit EPR/BB3001FT/V005</p>
4	<p>Provide a copy the probabilistic assessment of seismic hazards resulting from the proposed reservoir stimulation.</p>	<p>Reason: To allow for full review of the considerations made to assess any impact to surrounding geological structures as a product of the proppant injection. The independently produced report is referenced within supporting documents (Outer Limits, 2024) but not provided.</p>	<p>Outler Limits Seismic Hazard Assessment Provided</p>
5	<p>Provide a copy of the Central Regional GeoSeismic cross-section.</p>	<p>Reason: This is referenced as Figure 10 in the HRA Technical Addendum, but it is not provided in the supporting document, or as an appendix. This is needed to support analysis of faulting across the basin and any extent into adjacent stratigraphy.</p>	<p>Central Regional Geoseismic Cross-Section Provided. Since the initial mapping of the area in 2008 additional proprietary seismic, both 2D and 3D, have been acquired. Updated mapping, particularly around the West Newton wells where a three component three dimensional (3D3C) survey was acquired by Rathlin show no evidence for faulting in the immediate area that would extend either into the deeper Carboniferous or overlying Sherwood Sandstone sections from the Kirkham Abbey. Additional detail in this regard is provided in the Seismic Hazard Assessment by Outer Limits Geophysical provided for Item 4 above</p>
8	<p>Confirm what re-conditioning activities have taken place at site to date.</p>	<p>Reason: If the DFIT has been completed, confirm the propagation pressure is still appropriate at 9,000psi. If greater pressure is needed, then re-submission of assessments made in mind of faulting and structural stability will need to be completed.</p>	<p>A DFIT has not been undertaken in this reservoir using the proposed fluid. As above, the surface pressure of 9000psi has been assessed.</p>
9	<p>Confirm the type of casing to be used in the borehole from the start of the Sherwood Sandstone to total depth, specifically outlining details from 1700m TVD.</p>	<p>Reason: Figure 3 in the HRA Technical Addendum shows production casing stopping at c. 1700m TVD and the configuration of the borehole appears to move towards an open hole set up. The Waste Management Plan indicates steel production casing with be set from c.1520m TVD, which does not seem to follow the same as the schematic in Figure 3.</p>	<p>The HRA technical addendum shows the well schematically in figure 3. The WMP describes a typical well design that would be used for a newly drilled well. All new wells would require a WR11 submission an consent to drill. The WR11 submission for the WNA-2 well is attached, along with the consent. CAR forms PP3833VA/0332764r2 dated 13/05/2019 and PP3833VA/0335353 dated 06/06/2019 note the inspection audits on construction of the borehole.</p>

10	<p>Confirm the depth when the side track commenced. Confirm the angle of the hole through the Kirkham Abbey Formation, including the angle at entry and exit of the formation. Confirm the total depth of the hole. Confirm the remaining thickness (both upper and lower to the stimulation zone) of the Kirkham Abbey Formation which will not be subject to any stimulation affects; be clear on the unaffected thickness of the Formation at the point closest to the entry and exit of the unit. Include details of any mitigation methods proposed.</p>	<p>Reason: To re-affirm the distance between the stimulation zone and adjacent stratigraphic units across the 27/30m interval which the stimulation is proposed to take place; and to ensure the upper and lower lithologies are not at risk from any stimulation effects. Reassurance is needed to show the stimulation fractures will be isolated to only the Kirkham Abbey Formation.</p>	<p>There is no sidetrack in the WNA-2 well. The WNA-2 well is drilled slightly deviated. It enters the KA at -1679.5m TVDSS (1715m MD KB) at an angle of 11.26deg. The top of the Hayton Anhydrit (immediately below the Kirkham Abbey) is 1743.5m TVDSS (1780.2m MD KB) and the well is at an angle of 10.92deg, giving a total of 65.2m exposure to the formation.</p> <p>The proposed area to undertake the reservoir stimulation is 1736-1761m MD BRT leaving 20.6m TVD above the top perforations to the Fordon Evaporite and 18.85m TVD below the bottom of the perforations to the Hayton Anhydrite.</p>
11	<p>Confirm if the HFP (Hydraulic Fracture Plan) has been submitted and approved by the NSTA. Provide a copy of the HFP. Provide any comments given by the NSTA.</p>	<p>Reason: Supporting documents confirm the HFP has been submitted to both the NSTA and EA for approval with sign off. No copy is stored on internal EA systems nor has a copy been submitted with this application.</p>	<p>The HFP has not yet been submitted to the NSTA but will be in advance of the operation. The EA will receive a copy of the HFP when submitted to the NSTA.</p>
14	<p>Confirm the volume of proppant fluid need for the stimulation. Explain any variations to the confirmed amount.</p>	<p>Reason: Supporting documents confirm 60 m3 to 70 m3, but not more than 85 m3 will be needed for the activity. This is a variation of up to 42% of proppant required.</p>	<p>85m3 is to include the volume used for the DFIT. This is currently unknown, so maximum volume has been specified to allow for assessment of worst case scenario.</p>
15	<p>Explain why both an acidic or alkali-based wash and squeeze are discussed as interchangeable.</p>	<p>Reason: Given the composition of adjacent lithologies being primarily compounds sensitive to acid, justification is needed for why an acidic wash might be chosen. An alkyl ester gelling agent is also confirmed as the chosen additive during the reservoir stimulation so explanation into the potential interchangeable use of an acid-based wash is needed.</p>	<p>To clarify, the acid / alkali wash and squeeze have already been approved in past permits. The methods are not meant to be interchangeable but ot os required to have the ability to use each operation if deemed appropriate. The acid / alkali wash is a common operation to conduct to wash out any residue left from drilling. The alkali fluid is often used to remove barite (which is a weighting agent used in oil based mud). The product approved to use as an alkali-based wash is actually an acid with a high pH (alkaline) and so behaves in the same way as the acid but with a lot slower reaction time than some of the low pH acids proposed.</p>
16	<p>For the wash/squeeze activity, confirm explicitly the volumes intended to be used, the exact depths and frequency of the acid wash activity. Explain and justify any variation to figures provided.</p>	<p>Reason: To be registered as a deminimis activity we need to know such specifics to include in the permits operating techniques.</p>	<p>This operation has already been approved. The quantities stipulated are 1m3 per 1m of perforations.</p>

17	Define which chemicals listed in the chemical inventory are to be used for which activity.	Reason: It is unclear which chemical is being used for which activity. Justification for the use of hazardous chemicals over non-hazardous alternatives is needed for both activities.	All chemicals apart from the reservoir stimulation chemicals have already been approved. The reservoir stimulation chemicals are denoted under a separate heading and have been resubmitted separately for clarity.
19	Provide an updated SWMP which covers the permit extension area.	Reason: (Subject to your response in question 3 above). A change to surface water discharge (Activity A3) is requested and an extension to the permit boundary for WNA. A revised SWMP should be provided which takes into consideration the periods of increased activity on site and the changes requested in the application. It should also consider any impacts climate change could have which may affect site activities.	No change is being sought to the SWMP techniques to those already approved. SWMP Rev5 is included for reference.
20	Provide a copy of the Waste Gas Management Plan	Reason: A review of this document is needed to approve the request to the AR2 Activity, which seeks to add natural gas incineration.	No additional gas shall be incinerated as a result of this operation that has not already been accounted for in the previous assessments.
21	<p>Clarify the composition of the chemicals listed below from the chemical inventory: Product Name  Hazardous Chemical Composition (SDS Section 3)</p> <p>Dynared (All Grades)  "No Hazardous Materials" - confirm actual chemical composition of the product</p> <p>Defoam Plus NS  "No Hazardous Materials" - confirm actual chemical composition of the product</p> <p>M-I Pac (All Grades)  "No Hazardous Materials" - confirm actual chemical composition of the product</p> <p>Pure Bore  "No Hazardous Materials" - confirm actual chemical composition of the product</p> <p>Safe Scav* CA  "No Hazardous Materials" - confirm actual chemical composition of the product</p> <p>MO-IV BREAKER - "This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). The product contains no substances which at their given concentration, are considered to be hazardous to health." - confirm actual chemical composition of the product</p> <p>Note: Where there are significant updates required to documents associated with the application, we would ask that you provide a summary reference table to show which elements in the revised documents have been changed or added to answer the questions in the schedule 5 response. This will reduce the time we have to spend reviewing the documents.</p>		<p>Only additional product is MO-IV Breaker. All other products have previously been approved.</p> <p>Breakdown of this chemical shall be submitted in due course.</p>