

TOWN AND COUNTRY PLANNING (EIA) REGULATIONS 2017 – REGULATION 25				
Planning Application Number:		LCC/2019/0037	Application Dated:	
Operator:		Aurora Energy Resources Limited	Site:	
SECTION A: FURTHER INFORMATION (REGULATION 25)				
PLANNING STATEMENT				
I.D.	Chapter	Information Requested	AER Response	Supporting Documents
1	Development Description	Looking at drawing ZG-AER-ALT-PA-11, it is noted that there would be a security cabin located at the point where the access road diverges from Suttons Lane. Is it the intention to have the access track enclosed within fencing between the security cabin and the exploration site itself?	<p>It is the Applicant's intention not to enclose the access track with fencing. Site security staff will control entry to the wellsite via the access track.</p> <p>During construction, it will be necessary to secure the area being constructed with temporary Heras fencing to prevent unauthorised access for safety reasons. However, it should be noted that the Heras fencing will be temporary and transient.</p>	N/A
2	Development Description	Where will the soils / materials be stored from the excavation of the drilling cellar	<p>The soils/materials excavated to construct the drilling cellar have been accounted for within the cut/fill balance. As such, there is no requirement for a subsoil storage bund on surface.</p> <p>Separation between the topsoil and subsoil will be provided to ensure the excavated subsoil does not comingle with the topsoil during the life of the site. It also aids restoration, insofar as demarcation of the subsoil, to be placed (back-filled) and compacted in layers, once the drilling cellar has been removed.</p>	N/A
3	Development Description	Why are there two AER security areas? There is one at the entrance to the site compound (shown on drawing ZG-AER-ALT-PA-16) and another on the access road (shown on drawing ZG-AER-ALT-PA-11)	Two security areas are required. One to manage the security of the wellsite and the second to manage the security of the access track entrance.	N/A
4	Development Description	Para 6.1.2 – wellsite construction. The text says that there will be an element of cut and fill. I assume this would be relatively minor to allow the creation of a flat site prior to laying of the impermeable membrane and aggregate materials.	Your assumption is correct. The topographic survey indicates a high point within the proposed wellsite boundary. This high point will be reduced by removing the topsoil and placing it across the lower areas of the site. In addition, and as set out in our response to ID No. 2, subsoil excavated to construct the drilling cellar will also be used to raise the lower area.	N/A
5	Development Description	What will be the depth of the aggregate materials and total tonnage of such materials required to construct the site?	<p>Details of the depths of materials are provided within Appendix 5 of the Civil Engineering and Design Statement, drawings 5883.504 (Wellsite Construction Details Sheet 1) and 5883.506 (Typical Access Road Construction Details).</p> <p>Approximate aggregate tonnage is as follows:            Access Track Stone = 1265 Tonne            Platform (unlined – non active) Stone = 1404 Tonne            Platform (lined – Active) Stone = 6303 Tonne            Platform (lined – Active) Concrete = 1105m3 (2206 Tonne)            Platform (lined- Active) Gravel for ditch backfill = 400 Tonne</p>	N/A
6	Development Description	How will the non active area (car parking / office areas) be surfaced? I assume this will be with aggregate materials without the need for	Your assumption is correct. Paragraph 3.5 of the Civil Engineering Design Statement and Appendix 5 drawing 5883.504 (Wellsite Construction Details Sheet 1) sets out the platform surface construction and hardstanding surface construction. For clarity, the cross-section	N/A

		any impermeable membranes because this part of the site would not include any potentially polluting activities.	showing the platform surface construction relates to the active part of the wellsite, which will accommodate the potential polluting activities and the cross-section showing the hardstanding surface construction relates to the inactive area of the wellsite, which will accommodate non-polluting activities, such as office accommodation and car parking. As indicated on drawing 5883.504 (Wellsite Construction Details Sheet 1), the non-active area will have an aggregate depth of approximately 420mm and will be overlaid with a 100mm track panel.	
7	Development Description	The wellsite construction section describes the fencing around the compound area and describes 3 metre high steel mesh security fencing with interwoven solid panels. Does this fencing have any form of noise attenuation properties and has the use of this fencing been factored into the noise assessment?	A Noise Impact Assessment (NIA) has been undertaken in support of the planning application and to inform the Environmental Impact Assessment. The assessment took into consideration the development description, as set out in the Chapter 4 of the Environmental Statement, which, for clarity, included a 3m high steel mesh security fence with interwoven solid panels to give a solid appearance. The assessment concludes that the predicted noise to be generated by the development is such that no noise attenuated fencing is required at the wellsite in order to meet maximum permissible noise limits at the nearest sensitive receptors.	N/A
8	Development Description	The proposed drill rig has a height of 60 metres. This is significantly higher than the drill rig used at Preston New Road which is limited by planning condition to 36 metres. Why is a higher rig proposed to be used at Altcar Moss? If the use of the higher rig would shorten the drilling period, could you provide a comparison to demonstrate how much longer it would take to drill the two boreholes using a 36 metre high rig compared to a 60 metre rig as currently proposed.	<p>The height of a drilling rig mast dictates how many lengths (joints) of drill pipe the drilling rig can lower into and pull out of the borehole at any one time. Each set of drill pipe joints is referred to as a stand, with each stand being racked back in the mast vertically for subsequent reuse.</p> <p>A drill pipe joint consists of a hollow steel tube with a male thread at the bottom and a female thread at the top. When connected together, each joint of drill pipe makes up the drill string, to which the drilling bit is attached and through which drilling fluid can be pumped, cooling the drill bit and circulating rock cuttings to surface.</p> <p>In accordance with the American Petroleum Institute (API), drill pipe falls with the following range lengths:</p> <p>Range 1: 5.49m to 6.71m Range 2: 8.23m to 9.45m Range 3: 11.58m to 13.72m</p> <p>A drilling rig that can lower, raise and rack three joints of Range 2 drill pipe (most common range used onshore) in the mast is referred to as a triples rig. Likewise, a drilling rig that can lower, raise and rack two joints of Range 2 drill pipe in the mast is referred to as a doubles rig. Hydraulic drilling rigs, such as the Drillemec HH220 lower, raise and rack only single joints of drill pipe, typically Range 3.</p> <p>During drilling operations, the drill string will need to be removed from the borehole, either to replace the drill bit or, upon completion of each hole section, to install steel casing to line the borehole. This is referred to as 'tripping' pipe (i.e. a trip (journey) of drill pipe out of the borehole and a trip of drill pipe back into the borehole). When removing the drill string, having the ability to remove three joints of drill pipe (one stand) and racking it in the mast is quicker than removing two joints of drill pipe (one stand), a saving of circa 9m per stand over a doubles rig and 14m over a Drillemec HH220. In the context of deep boreholes, analysis shows that using a triples rig equates to circa 10% time efficiency saving when compared with a smaller height drilling rigs during normal drilling operations. This is considered a minimum as any additional operations such as tripping to replace the bit in the lower sections of the well can add up to 1 day per trip. Should a fishing trip (recovering broken drilling equipment (drill pipe, tools etc.) from the borehole) be required in the deep section this could add a further 4-5 days. Over the duration of the proposed drilling phases, time saved equates to fewer days that the drilling rig</p>	N/A

			<p>is on site.</p> <p>It is also important to note the rationale for imposing a 36m rig height condition at Preston New Road and how it relates to the proposed Altcar Moss development.</p> <p>At the Preston Road public inquiry, it was identified during cross examination of a witness on behalf of North West Chamber of Commerce that the Appellant had a 36m high drilling rig lying dormant in a contractor's premises and, whilst the range of drilling rigs which would be available in the future to the Appellant to carry out work might be restricted, there was insufficient evidence that such a restriction would constrain their choice of drilling rig to the extent that a condition to impose a 36m height restriction should be considered unreasonable. In paragraph 12.137, the Planning Inspector states:</p> <p><i>'I have given careful consideration to the operator's need for flexibility and recognise that, if planning permission were to be granted for the development, there is the possibility that Cuadrilla's own rig might be out on hire, even though it would appear it has not been utilised for the past year. It would seem from the evidence of Mr Matich that, at least historically, those hire periods have been fairly short-term. The details of any future hire arrangements are matters that remain to be agreed. In the event that that particular rig was on hire at the relevant time, little evidence has been provided to support the view that an alternative 36m rig could easily be found, or that it would involve a financial burden to secure such a rig compared to a 53m rig. In short, there is no substantial evidence before me to support the view that there would be any genuine difficulties or undue burden placed upon Cuadrilla in gaining access to a 36m rig. Such evidence is indeed notable by its absence.'</i></p> <p>In the context of the proposed Altcar Moss development, the Applicant does not own and/or operate its own drilling rig. It is purely at the mercy of the market, hence the planning application considers the worst case scenario drilling rig, from the perspective of landscape and visual amenity assessment, the British Drilling &amp; Freezing Rig 92.</p> <p>Imposing a planning condition similar to that at Preston New Road, restricting the drilling rig height to 36m, would compromise the Applicant's ability to secure a contract with a drilling rig provider on reasonable commercial terms. A drilling rig height restriction of 36m would result in only hydraulic drilling rigs, such as the Drillemec HH220, being permitted for use. There is currently only one (1) Drillemec HH220 in the UK and, given the current limited demand for its use, it is reasonable to assume (and the most likely outcome) that the drilling rig will be contracted overseas. With this in mind, having to mobilise the Cuadrilla HH220 or similar height drilling rig from Europe (or further afield) would add significant cost to its mobilisation to the Altcar Moss site. An increase that could represent an unreasonable financial burden on the Applicant.</p> <p>Furthermore, and as set out above, an increase in the duration of each drilling phase due to increased tripping times (using single joints of drill pipe) will also represent an increased financial burden on the Applicant.</p> <p>In the context of landscape and visual impact at Preston New Road, paragraphs 12.146 to 12.148 of the Planning Inspector's report states:</p> <p><i>'12.146 The Appellant agrees that the test of whether a condition is necessary should be approached in the same way as it is approached for the purpose of deciding whether a planning obligation is necessary for the purposes of regulation 122(2)(a) of the</i></p>	
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9	Development Description	Figures are presented in tables 6.10 and 6.11 of the Planning Statement to show the vehicle movements and waste volumes produced during the Phase 4 works (hydraulic fracturing). The text says that hydraulic fracturing flowback may be retained on site and reused. Are the figures in table 6.10 based upon all flowback being taken off site for treatment so they are therefore a worst case scenario?	The planning application assesses a worst case scenario, which, for clarity, is that all flowback is taken off site for treatment and/or disposal. Table 6.10 and 6.11 of the Planning Statement are, therefore, based on a worst case scenario.	N/A
10	Development Description	During phase 4, water will be required to undertake the hydraulic fracturing. Will this water be imported by tanker, be mains water, use water collected on site or abstracted from ground water via an onsite borehole?	The planning application assesses a worst case scenario, which, for clarity, is that water required to undertake hydraulic fracturing will be brought to site by road tanker. The vehicle movements associated with water being brought to the site have been considered and assessed by the Transport Consultant (Local Transport Projects) and represent a worst case scenario in terms of vehicle movements. Should an alternative means of providing water to the site be secured prior to the commencement of operations then vehicle movements associated with this phase of the development will reduce.	N/A
11	Green Belt	In your planning statement you come to the conclusion that as the development is for temporary minerals development and includes for restoration, then it is appropriate development in the Green Belt. I am not convinced that this is a correct reading of the policy.	<p>The National Planning Policy Framework (NPPF), February 2019, Paragraph 134, sets out the five purposes of Green Belt, which are:</p> <ul style="list-style-type: none"> <li>a) to check the unrestricted sprawl of large built-up areas;</li> <li>b) to prevent neighbouring towns merging into one another;</li> <li>c) to assist in safeguarding the countryside from encroachment;</li> <li>d) to preserve the setting and special character of historic towns; and</li> </ul>	Drawing Reference: GB 01

		<p>Whilst I note that the Altcar Moss site would be a relatively short term development, it would still be of significant scale and therefore cannot reasonably be considered to be appropriate development. Very special circumstances should therefore be demonstrated to justify the development in the Green Belt. I do think that these circumstances could exist in this case by reference to geological factors, the extent of the Green Belt and the geographical area of the licence block compared to the Green Belt boundary. However, it is for the applicant to demonstrate the very special circumstances that apply and therefore I consider that you need to submit additional evidence in relation to Green Belt impacts.</p>	<p>e) to assist in urban regeneration, by encouraging the recycling of derelict and other urban land.</p> <p>For the period of the exploratory drilling works, the construction of the compound, the attendant buildings, drilling rig, site operations and the vehicle movements would encroach into an area of countryside that forms part of the Green Belt. Thus, for a short period, the proposal would temporarily conflict with green belt purpose (c), as set out in the Policy.</p> <p>Paragraph 143 of the NPPF states: <i>“Inappropriate development is, by definition, harmful to the Green Belt and should not be approved except in very special circumstances”</i>.</p> <p>Paragraph 144 goes on to state: <i>“Very special circumstances will not exist unless the potential harm to the Green Belt by reason of inappropriateness, and any other harm resulting from the proposal, is clearly outweighed by other considerations”</i>.</p> <p>In the context of this planning application, there is an overriding consideration which constitutes ‘very special circumstances’ and which justifies this development within the Green Belt, in that minerals (including oils and gas) can only be won where they are located. The minerals are located within Petroleum Exploration and Development Licence 164 (PEDL 164), the extent of which is covered by Green Belt, save for settlement boundaries, as indicated on Drawing GB 01 attached. In order to fulfil its obligations and entitlements under PEDL 164, it is inevitable that development would need to fall within the Green Belt.</p> <p>In this particular case, there is no suitable location for exploration beyond the Green Belt boundary. Therefore, in order to carry out the obligations and entitlements under PEDL 164, the short-term harm caused to the openness and to a single purpose of the Green Belt must clearly be outweighed by this very special circumstance.</p>	
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**ENVIRONMENTAL STATEMENT**

12	Ecology	<p>It is noted that you have produced a Habitats Regulations Assessment in view of the possible impact on the above European wildlife sites and that the conclusion of your assessment is that there would be no likely significant effect. However, Natural England do not agree with that conclusion and are of the view that there is currently insufficient information within the ES to be able to conclude that there would not be a likely significant effect on the European sites in question. Natural England suggest that the bird surveys that were carried out are incomplete and do not follow the methodology that was previous agreed with them. Natural England suggest that survey data be produced for the months of December, February, March, April and May in order to take account of all migrations and changes in agricultural practices. Unless you have additional bird survey data for the above months that has not been submitted with the</p>	<p>All surveys from September to May were completed as agreed with Natural England. The results of those surveys completed at the time of planning application submission were included within the Environmental Statement and utilised in the Shadow Habitats Regulations Assessment (SHRA). The full data sets are presented in Appendix D5 of the submitted Environmental Statement. The data presented at paragraph 8.27 of the SHRA only presents the dates when observations of Pink-Footed Geese (PFG) were made. No PFG were observed on the other survey dates, therefore, they were not listed at paragraph 8.27.</p> <p>Due to timing of the planning application submission, only the survey data to the end of February was included in the SHRA, however, surveys were undertaken to the agreed scope through March-May and are provided in the 2018/19 Wintering Bird Survey report, a copy of which is attached.</p> <p>With regard to the March-May surveys, there was only one further count of PFG exceeding the 1% threshold for the Ribble and Alt Estuaries of 740 geese (total flock size at end of survey) on 8th March 2019, 390m north of the site. There were no further records of PFG following this date. This brings the total number of PFG recorded within 500m of the proposed development to 12,425.</p> <p>In terms of the analysis in the SHRA (paragraphs 8.30 and 8.31), this can be revised as follows, incorporating the March-May 2018/19 data:</p>	Ecology Services Ltd, Wintering Bird Survey Report, August 2019 (rev. October 2019)
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		<p>Environmental Assessment, I therefore consider that you need to be undertaking some additional bird surveys in winter 2019 / 2020.</p>	<ul style="list-style-type: none"> <li>• The 1% National threshold was exceeded during one of the 42 survey visits in winter 2018/19 (approximately 2.4% of the visits);</li> <li>• The 1% Regional threshold was exceeded five times during a total of 42 survey visits in winter 2018/19 (approximately 11.9% of the visits);</li> <li>• The 1% Ribble and Alt Estuaries threshold was exceeded nine times in winter 2018/19 (approximately 21% of the visits);</li> <li>• The National 1% threshold was only exceeded once in September 2018 out of a total of 76 visits over the three years (1.3% of visits);</li> <li>• The Regional 1% threshold was exceeded six times (once in January 2016 and five times in 2018/19, representing 7.9% of visits); and</li> <li>• The Ribble and Alt Estuaries 1% threshold was exceeded twelve times (once in 2013/14, twice in 2015/16 and nine times in 2018/19, representing 15.8% of all visits).</li> </ul> <p>Table 10 of the submitted SHRA, can be updated with data for 2018/19 as follows:</p> <table border="1" data-bbox="1062 688 1893 1108"> <thead> <tr> <th></th> <th>2018/19</th> </tr> </thead> <tbody> <tr> <td>Peak Count (month of occurrence)</td> <td>4,000 (Sept)</td> </tr> <tr> <td>Number of Surveys</td> <td>42</td> </tr> <tr> <td>No. occurrences &gt;1% of Ribble and Alt Estuary SPA Population</td> <td>9</td> </tr> <tr> <td>No. occurrences &gt;1% of Regional Population</td> <td>5</td> </tr> <tr> <td>No. occurrences &gt;1% of National Population</td> <td>1</td> </tr> <tr> <td colspan="2">% of surveys that exceed:</td> </tr> <tr> <td>Ribble and Alt Estuary SPA threshold</td> <td>21%</td> </tr> <tr> <td>Regional threshold</td> <td>11.9%</td> </tr> <tr> <td>National threshold</td> <td>2.4%</td> </tr> </tbody> </table> <p>For clarity, the additional 2018/19 data does not affect the overall conclusions of the submitted SHRA.</p>		2018/19	Peak Count (month of occurrence)	4,000 (Sept)	Number of Surveys	42	No. occurrences >1% of Ribble and Alt Estuary SPA Population	9	No. occurrences >1% of Regional Population	5	No. occurrences >1% of National Population	1	% of surveys that exceed:		Ribble and Alt Estuary SPA threshold	21%	Regional threshold	11.9%	National threshold	2.4%																				
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13	Ecology	<p>Natural England consider that the calculations used in tables 7 – 9 of the HRA have been undertaken incorrectly to assess the 1% threshold for considering the significance of the bird species present in the area around the site. NE consider that the 1% threshold should be calculated using the figure in the citation or the Webs 5 year mean peak as a base line (depending on which is the most up to date figure) for each single SPA and not the aggregated figure for all SPA's as appears to have been done within the HRA. NE expect that the lowest of the SPA 1% figures to be used as the baseline for the assessment.</p>	<p>The 1% threshold data used in Tables 7-9 of the submitted Shadow Habitats Regulations Screening Assessment, was the latest WeBS 5 year mean peak available at the time of submission (2011/12-2016/17), which would be more up to date than the figures in the citations. The latest 2012/13-2017/18 data has been reviewed as follows:</p> <p><b>Regional assemblages of pink-footed goose, Bewick's swan and Whooper swan</b></p> <table border="1" data-bbox="1062 1411 1944 1890"> <thead> <tr> <th rowspan="2">Site name</th> <th colspan="3">5yr mean peak 2012/13-2017/18</th> </tr> <tr> <th>Pink-footed goose</th> <th>Bewick's swan</th> <th>Whooper swan</th> </tr> </thead> <tbody> <tr> <td>Ribble Estuary</td> <td>14,448</td> <td>13</td> <td>445</td> </tr> <tr> <td>Alt Estuary</td> <td>17,853</td> <td>0</td> <td>6</td> </tr> <tr> <td>Morecambe Bay</td> <td>25,934</td> <td>7</td> <td>253</td> </tr> <tr> <td>Mersey Estuary</td> <td>897</td> <td>3</td> <td>23</td> </tr> <tr> <td>Dee Estuary</td> <td>6,459</td> <td>5</td> <td>18</td> </tr> <tr> <td>Martin Mere</td> <td>28,838</td> <td>0</td> <td>1411</td> </tr> <tr> <td>Simonswood Peat Moss</td> <td>5,000</td> <td>0</td> <td>0</td> </tr> <tr> <td>Ribble and Alt Estuary total (1% threshold)</td> <td>32,301 (323)</td> <td>13 (0.13)</td> <td>451 (4.51)</td> </tr> </tbody> </table>	Site name	5yr mean peak 2012/13-2017/18			Pink-footed goose	Bewick's swan	Whooper swan	Ribble Estuary	14,448	13	445	Alt Estuary	17,853	0	6	Morecambe Bay	25,934	7	253	Mersey Estuary	897	3	23	Dee Estuary	6,459	5	18	Martin Mere	28,838	0	1411	Simonswood Peat Moss	5,000	0	0	Ribble and Alt Estuary total (1% threshold)	32,301 (323)	13 (0.13)	451 (4.51)	N/A
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2011/12-2016/7 Ribble and Alt Estuary total (1% threshold)	34,601 (346)	19 (0.19)	510 (5.1)
Regional total (1% threshold)	99,429 (994)	28 (0.28)	2,156 (21.56)
2011/12-2016/7 Regional total (1% threshold)	96,023 (960)	49 (0.49)	2,228 (22)
National threshold 2012/13- 2017/18	3,600	70	110
National threshold 2011/12- 2016/17	3,600	70	150

The analysis in the submitted SHRA has been reviewed in relation to the latest WeBS 5 year mean peak counts, which makes minimal difference as detailed in Table 10 below (changes highlighted in red for ease of identification). Overall, the revised significance thresholds have reduced the number of occurrences of PFG greater than regional threshold by 1% in 2018/19.

**Table 10: Peak counts of pink-footed geese and significance in relation to National, Regional and Ribble and Alt Estuaries SPA populations (updated in relation to latest 2012/13-2017/18 significance thresholds – changes highlighted in red)**

	2013/14	2015/16	2018/19
Peak Count (month of occurrence)	800 (Dec)	2,500 (Jan)	4,000 (Sept)
Number of Surveys	20	33	26 (42*)
No. occurrences >1% of Ribble and Alt Estuary SPA Population	2	1	8 (9)
No. occurrences >1% of Regional Population	0	1	4
No. occurrences >1% of National Population	0	0	1
% of surveys that exceed:			
Ribble and Alt Estuary SPA threshold	10%	3%	35% (21%)
Regional threshold	0	3%	15%
National threshold	0	0	4%

\*Numbers in brackets incorporating surveys undertaken March-May 2019

The SHRA has assessed the data in the context of all the functionally linked SPAs combined (taken as the Regional threshold) and, in the context of the nearest (and most relevant) SPA, the Ribble and Alt Estuaries. All of the other SPAs lie over 10km from the proposed development site (the distance PFG readily commute from their roosting sites and which has been applied to the in-combination effects assessment and accepted by Natural England for other developments in the vicinity of the site).

Whilst it is acknowledged by the Applicant's EIA assessment team that the sites are functionally linked and there is movement of PFG between the sites, it does not seem logical to the

			Applicant's EIA assessment team to assess the significance against the lowest of the SPA figures, where that SPA lies beyond the distance regularly travelled by PFG.	
14	Ecology	Taking account of the surveys that you have carried out, Natural England consider that these demonstrate that the populations of pink footed geese or lapwing utilising the application site or land within 500 metres of the site are greater than 1% of the SPA population which would therefore indicate that the application site and surrounding land is functionally linked to the SPA and therefore need to be subject to appropriate assessment. If an impact would result, then mitigation measures would need to be explored.	<p>The SHRA acknowledges that the proposed development site and 500m buffer at the Regional (combined SPA population) and Ribble and Alt Estuaries SPA level has been shown to regularly support significant numbers of PFG, the Applicant's EIA assessment team does not dispute that the application site and surrounding land is functionally linked to the SPA. The assessment of likely significant effects, however, concluded that disturbance and displacement of PFG from a relatively small development during construction and operation is not considered to have a significant effect on either the PFG population or the ability of the adjoining functional land to support the SPA. This is due to the small area of available habitat affected, the transient nature of food availability in the landscape, temporary disturbance effects and existing levels of disturbance from traffic, agricultural and other activities and shooting.</p> <p>In accordance with Natural England Standard: HRA Habitats Regulations Assessment (HRA) (NESTND026), June 2013, when no likely significant effects are found, there is no need to progress the SHRA further.</p>	N/A
15	Ecology	Natural England consider that the noise impacts during construction, operation and restoration of the site on land which is functionally linked to the SPA also need to be reassessed. EN consider that the assessment should take into account the exact types of disturbance that would be created by this development and the sensitivities to such noise by the bird species that are found in the area. EN do not agree with the use of the generic approach which appears to have been used as the basis for the assessment of noise impacts. EN suggest that a baseline noise increase of 3Db(A) would be appropriate in terms of avoiding significant effects on bird interests and that any necessary mitigation measures outlined that may be required to meet such a noise level. EN request a revised noise contour map be produced to illustrate the noise impacts of the site.	<p>The submitted NIA has reviewed both LAeq (A-weighted equivalent continuous sound level) and LMax levels (A-weighted maximum sound level, to take account of piling activities). The assessment has been undertaken in line with a study by Cutts et. al. (2008) on waterbirds and a previous Natural England planning response (2011) relating to noise impacts on waterbirds.</p> <p>The approach suggested by Natrual England is highly generic and is based on the unsupported assumption that birds hear and react to sound in the same way as humans. In deriving the 3 dB change criterion, the Natural England guidelines state that:</p> <p><i>"For steady noise, and in everyday situations, a difference of 3 dBA in similar types of sounds is normally just distinguishable. A difference of 10 dBA in two similar steady sounds represents a subjective doubling or halving of loudness. We assume that birds hear in the same way as humans."</i></p> <p>The assumption that birds hear (or react) in the same way as humans is not supported by evidence. Excluding nocturnal predators (Strigiformes), humans have a greater hearing sensitivity than Passeriformes and Non-Passeriformes throughout the frequency range and the shape of the hearing sensitivity curve deviates significantly to that of humans at mid to low frequencies and very high frequencies. Thus, if a source of noise with a given A-weighted sound pressure level (an effort to account for the relative loudness perceived by the human ear, which is less sensitive to low audio frequencies) had predominantly low frequency characteristics, a bird would be expected to exhibit less response to this than to a source of noise with the same A-weighted sound pressure level, but having a frequency characteristic more in line with the maximum sensitivity of the bird's hearing.</p> <p>Whilst it may be expedient to use the A-weighting noise index in attempts to quantify the potential disturbing effects of noise on birds, the frequency sensitivity of birds varies between species and therefore significant errors may be introduced by assuming that bird species hear as humans do. Absolute hearing thresholds also vary significantly and both Passeriformes and some Non-Passeriformes have hearing thresholds 18 dB less sensitive than humans at 1kHz. Furthermore, the concept of "loudness" is a human construct and care should be taken when attributing this to birds or other animals.</p> <p>The Natural England guidance also states that <i>"generic guidelines suggest that birds begin to</i></p>	N/A

			<p><i>react to a noise level above 55 dB</i>". In a very quiet environment, birds should be able to hear a level of 55 dB (assuming it is at frequencies to which the bird is sensitive). However, given the generally higher threshold of hearing that birds have, compared to humans, a level of 55 dB to a bird would be more like a level of 35 dB to a human. The available evidence therefore suggests that birds do not hear in the same way as humans.</p> <p>Even if it was the case that birds hear in the same way as humans, it is considered nonsensical by the EIA assessment team to take the approach that a "normally just distinguishable" change in noise level would indicate the onset of a significant effect. However, as stated previously, it is inadvisable to use human constructs such as "loudness" to assess potential effects on birds.</p> <p>Taking the above into consideration, it is clear that Natural England's suggested methodology is based on arbitrary assumptions regarding the hearing and reaction of birds to noise. There is no known evidence which supports the theory that a 3 dB change in noise levels could have a significant effect on birds and, in particular, the assumption that the hearing and reaction to noise of birds is similar to that of humans is demonstrably not supported by evidence. It is therefore concluded that the suggested 3 dB noise change criterion for assessing the impact of noise on birds is generic and inappropriate.</p>	
16	Ecology	<p>EN also draw attention to the possible impacts on the Down Holland Moss SSSI and state that there is inadequate assessment of the impacts on this site. However, I note that there is a considerable standoff between the proposed site and the SSSI and that furthermore the SSSI is a geological site. It is therefore my view that the proposal would be unlikely to impact upon the SSSI but you may wish to present some information to demonstrate that this would be the case.</p>	<p>The Down Holland Moss SSSI was designated due to its geological importance. The Natural England Citation states the following under the description and reasons for notification:</p> <p><i>"Downholland Moss is situated approximately 2km east of Formby, at a height of about 3m OD and consists of an arable field and a small birch woodland. It is a key reference site for establishing relative sea level changes in north-west England during the period from about 8000 – 4000 yrs B.P.</i></p> <p><i>Alternating organic and inorganic deposits represent a sequence of changing tidal flat, lagoonal and perimarine palaeoenvironments. These have been the subject of detailed stratigraphic, micro and macro-palaeontological analyses supported by radio carbon dating. The results have provided a detailed record of transgressive and regressive overlaps in northern England and sea-level index points. Downholland Moss is also noted for its surface microtopography which demonstrates roddons, sandbanks and tidal creek features."</i></p> <p>The proposed development lies some 100m from the Down Holland Moss SSSI boundary and will not be accessed during the proposed development. There will be no impact upon the geological importance of the SSSI as a result of the proposed operations.</p>	N/A
17	Seismicity	<p>The information within your ES appears to demonstrate that the stratigraphy and structural geological setting of the Altcar Moss site is very similar to the Preston New Road and Preese Hall site. It might therefore be expected that similar seismic impacts might be encountered in response to hydraulic fracturing of wells at Altcar Moss. The risk assessment within the ES (tables 17.4 and 17.10) should therefore be updated as they are based upon an assumption that the embedded mitigation will limit the size of seismic events to 1.5Ml. Events at PNR appear to demonstrate that seismic events well above this level are possible.</p>	<p>As requested in the Scoping Letter dated 17th March 2018, Chapter 17 of the Environmental Statement comprises a review of baseline natural seismicity and an assessment of the likely impact of any induced seismicity resulting from the proposed development. Details of the current regulatory framework for induced seismicity, administered by the Oil &amp; Gas Authority (OGA), was also provided.</p> <p>The assessment has been reviewed in the light of the induced seismicity observed at the Preston New Road Site and material now in the public domain, including the interim reports on PNR-1z published by the OGA.</p> <p>The impact significance assessment in the Environmental Statement considered the potential impact of induced seismic events of varying local magnitude, including up to magnitude 3.1 M<sub>L</sub>. Impact significance was assessed as a combination of magnitude of impact (based upon expected European Macroseismic Scale Intensity) and receptor sensitivity. The assumptions used in the assessment of impact significance remain valid.</p>	N/A

			<p>Table 17.10, within Chapter 17 of the Environmental Statement, provided an estimate of the likelihood of events of a particular magnitude resulting from the proposed operations. It is conceded that, following the events at Preston New Road, the likelihood of the larger events, up to magnitude 3.1 ML, may be considered to be greater than indicated in the table. However, the likelihood or frequency of events of a particular size is not used in the assessment of impact significance as presented, which focuses on the effects of seismicity of a particular size on receptors of varying sensitivity.</p> <p>Table 17.4, within Chapter 17 of the Environmental Statement presents the results of a study modelling expected ground motion and these are compared to data publicly available at the time the assessment was made. On review of data available from PNR-1z, the conclusions drawn remain valid.</p>	
18	Seismicity	The County Council has taken some initial advice on seismicity issues. The initial advice is that the information on geological setting is too generic and that a more site specific study would assist in justifying the conclusions of the ES. In particular Figure 17.1 shows that none of the faults within the Carboniferous reaches the surface and are terminated by the unconformity at the base of the Permian. The County Council's advice is that this is unlikely to be the case and that more detail should be presented within the ES to justify the conclusions.	<p>It is noted that the responsibility for the regulation of induced seismicity lies with the OGA. Planning guidance is clear that the mineral planning authority should not seek to duplicate the functions of other regulators. Therefore, the information on seismicity and on the geological setting of the area, provided in the Environmental Statement, should be considered as being for information only, as subsurface controls are not within the purview of the mineral planning authority.</p> <p>Additional site-specific subsurface information, if required, will be supplied to the OGA, in support of any hydraulic fracture plan submission.</p> <p>On the specific issue raised regarding faults cutting the Variscan Unconformity, please see the text in Section 17.6.1 of the Environmental Statement for more detail on this point.</p>	N/A
19	Seismicity	Many local residents have raised issues in relation to the historic oil wells that have been drilled in this area and the implications of these wells on potential seismic activity from future hydraulic fracturing works. However, this topic does not appear to be covered in section 17 of your ES	<p>As detailed in the Planning Statement, paragraph 5.3.2 and Chapter 6, a significant number of historic wells have been drilled in the area. The locations of these wells are known to both the OGA and Health and Safety Executive. These wells were almost entirely shallow boreholes of less than 500m, with most less than 100m. The deeper Formby-1 well, located 950m NW of the site, was drilled to a depth of 2,341m and reached total depth in the Carboniferous-age Bowland shales. All the historic wells have long been securely abandoned. It is not envisaged that the proposed hydraulic fracturing operations will have any impact on these abandoned historic wells.</p> <p>Furthermore and as set out in section 3.5 of the Planning Statement, the integrity of wells falls within the remit of the Health and Safety Executive, who regulate well operations under the Offshore Installation and Wells (Design and Construction, etc) Regulations 1996 and the Borehole Sites and Operations Regulations 1995 (BSOR 1995). Under these regulations, in particular, Regulation 6 of BSOR 1996 (Notification), the Health and Safety Executive is made aware of the proposed well operations in advance and following review of these proposed operations, can take enforcement action to prohibit or to improve the operation for health and safety reasons.</p>	N/A
20	Highways	Sefton comment that no information is provided showing the roads within Sefton that will be used to access the Formby bypass. However, I note you have included figure 18.1 which shows vehicle routing and which appears to give sufficient certainty of the routes that HGs would use.	Section 5.2 of the submitted Transport Assessment sets out the routing of all HGV's and AILV's, including roads within Sefton. The Supplementary Transport Statement at paragraphs 2.2.2 to 2.1.3 sets out our detailed response and provides further detail on the routing within Sefton.	Supplementary Transport Statement, prepared by Local Transport Projects, Dated November 2019.
21	Highways	Sefton also state that the TA does not consider	Section 4.3 of the submitted Transport Statement sets out that national policy indicates that a	Supplementary Transport Statement,

		<p>existing or forecast flows on the Formby bypass and Altcar Road and no account is taken of committed development or local plan allocations that would affect traffic levels at these junctions. They consider that an assessment of capacity and queuing at the affected junctions should be made.</p>	<p>transport assessment is undertaken for “developments that generate significant amounts of movement” (DCLG, 2014) and, although ‘significant’ is not defined, previously issued guidance from the Department for Transport (DfT) states that a more detailed transport assessment of development impacts could be based on a threshold of “30 two-way peak hour vehicle trips” (DfT, 2007a), with no detailed assessment necessary below this level.</p> <p>It is considered by the Applicant’s EIA assessment team that the projected trip generation associated with the proposed development does not represent a significant amount of movement, with a maximum of 97 daily two-way trips generated by the site (as detailed in Section 3 of the submitted Transport Statement). This maximum number of daily vehicle movements is expected to occur in Phase 4 of the development, which is expected to last 60 days. Although there may be some 24 hour working during this phase, for the purposes of this Supplementary Transport Statement and robustness, it has been assumed that deliveries may occur during the 12-hour daytime period (07:00-19:00).</p> <p>Given that the development is projected to generate a significantly lower number of trips during all phases of the development than the DfT threshold for assessment of 30 two-way peak hour vehicle trips, the proposed development should not have a detrimental impact on the operation of the local highway network. Therefore, as the traffic impact of the proposals is not expected to be significant, there is not considered to be a need to test local junctions/roads for capacity and queuing. With no requirement for capacity testing, there is not a purpose for establishing existing or future traffic flows on the highway network (including the future traffic associated with committed development, as well as network traffic growth).</p> <p>Our detailed response is set out in paragraphs 3.3.1 – 3.1.6 of the Supplementary Transport Statement.</p>	<p>prepared by Local Transport Projects, Dated November 2019.</p>
22	Highways	<p>Sefton also make comment about abnormal loads in particular the Active Mud Tank Transport. I note that you have included swept path diagrams for this vehicle and Sefton note that this vehicle would have to cross into the opposite carriageway to pass the Altcar Road / Stephenson Way roundabout and would have to cross a bridge on the Sefton / Lancashire boundary. In assessing the highway impacts of this abnormal load, it would be useful to know how often this vehicle would access the site and its total weight. You should also take into account Sefton’s observations regarding on street parking but my own observations are that there are ‘no parking’ restrictions around the Altcar Road / Stephenson Way roundabout which should prevent parking in that particular location.</p>	<p>The largest vehicle has been identified as the transport for the Active Mud Tank, which will generate two (2) movements, once upon mobilisation of the drilling rig and then again upon demobilisation of the rig.</p> <p>Our detailed response is set out in paragraphs 4.1.5 of the Supplementary Transport Statement.</p>	<p>Supplementary Transport Statement, prepared by Local Transport Projects, Dated November 2019.</p>
23	Highways	<p>Sefton have commented that route condition monitoring is proposed for the highway within Lancashire. However, my reading of the mitigation measures within section 18.8 of your TA is that they are not specific to Lancashire but apply to the access route as a whole including roads within Sefton. Could</p>	<p>It is confirmed that the proposed traffic management measures in Section 7 of the submitted Transport Statement, which includes route condition monitoring, are intended to be applied across all affected roads, including those managed by Lancashire County Council and Sefton Council respectively.</p> <p>Our detailed response is set out in paragraph 7.1.2 of the Supplementary Transport Statement. Assessment.</p>	<p>Supplementary Transport Statement, prepared by Local Transport Projects, Dated November 2019.</p>

		you please confirm this.		
24	Highways	It is stated in section 2.2.1 of the TA that the southern section of Suttons lane will be widened to 4.6 metres. Drawing ZG-AER-ALT-PA-11 shows the detail of the widening / new construction works on the northern part of Suttons Lane and asks the reader to refer to drawing SK02. However, that drawing does not appear to be anywhere within the documentation.	Drawing 5883.SK02 was submitted with the planning application and can be found within the Appendix 5 of the Civil Engineering Design Statement, which is included as Appendix 3 to the Planning Statement.  Our detailed response is set out in paragraph 8.1.2 of the Supplementary Transport Statement.	Supplementary Transport Statement, prepared by Local Transport Projects, Dated November 2019.
25	Highways	During my visits to the site, I have looked at the arrangements for vehicles accessing the site and it is clearly important that vehicles are able to pull clear of Lord Sefton Way when entering the site. If an HGV was exiting the site, would there be room on the southern part of the access road to allow two HGVs to pass?. LCC Highways have raised a number of comments regarding existing infrastructure in this location and it would be useful for a plan to be produced showing this infrastructure and how it relates to any road widening that might be required and to demonstrate that the existing infrastructure in this area can be moved if required to create adequate passing / waiting space.	The proposed works to Sutton's Lane at the junction with Lord Sefton Way are detailed in the Civil Engineering Design Statement (SMA, 2018), drawing number 5883.SK02 in Appendix 3, to the Planning Statement.  Our detailed response is set out in paragraph 8.1.4 of the Supplementary Transport Statement.	Supplementary Transport Statement, prepared by Local Transport Projects, Dated November 2019.
26	Highways	LCC Highways have raised an issue with the carriageway widths on Lord Sefton Way and state that roads narrower than 5.5 metres are not well suited to accommodating 2 way HGV movements and particularly increases in numbers of such vehicles which would be the impact of the proposal. There is limited information within the ES to demonstrate that the existing carriageway is suitable to accommodate such movements or if any localised widening or other improvement would be required. The only section of highway beyond Suttons Lane that appears to have been assessed in terms of large HGVs appears to be the Altcar Lane / Stephenson Way roundabout in Sefton. None of the other potential pinch points or substandard sections of highway in Lancashire appear to have been assessed. You will note that Highways have asked for passing places to be identified and suitably marked using signage. Highways have stated that these works and the other improvement works that may be required to the public highway would need to be the subject of a section 278 agreement.	As detailed in the submitted Transport Statement, the carriageway width on the site access route was measured to generally be comfortably above the 5.5m minimum width referenced by Lancashire County Council Highways. The route includes sections of Lord Sefton Way and Altcar Road, which are both two-way single carriageways with a centreline marking throughout and no existing signing to indicate that there was any road narrowing.  As noted in the Traffic Signs Manual (DfT, 2019), "[w]here the carriageway is less than 5.5m in width, the centre line should be omitted". It is also noted that the route is already utilised by HGVs travelling in both directions, with no reported issues or collisions associated with these movements.  However, in order to provide further evidence, the Applicant has acquired a topographical survey of the full route between the A565 and the Sutton's Lane junction with Lord Sefton Way. This on-site survey data shows that the roads along the route measure in excess of 5.5m at each point.  Our detailed response is set out in paragraphs 5.1.2 – 5.1.5 of the Supplementary Transport Statement.	Supplementary Transport Statement, prepared by Local Transport Projects, Dated November 2019.

27	Highways	It would be useful to know the frequency of trips that would be made by abnormal load vehicles such as the Active Mud Tank Transporter or the crane used to assemble / disassemble the drilling rig or coiled tubing rig.	<p>In addition to the movement of materials/equipment via Heavy Goods Vehicles (HGVs), the proposed development would also require some trips via Abnormal Indivisible Load Vehicles (AILVs). The movement of these AILVs on the highway network would require specific traffic management, as detailed in Section 7 of the submitted Transport Statement.</p> <p>Our detailed response is set out in paragraphs 4.1.4 – 4.1.5 of the Supplementary Transport Statement</p>	Supplementary Transport Statement, prepared by Local Transport Projects, Dated November 2019.
28	Highways	Highways have raised an issue with the timing and control of abnormal load departures / arrivals. I would expect this issue to be addressed in a construction / highways management plan should planning permission be granted.	<p>In addition to the movement of materials/equipment via Heavy Goods Vehicles (HGVs), the proposed development would also require some trips via AILVs. The movement of these AILVs on the highway network would require specific traffic management, as detailed in Section 7 of the submitted Transport Statement.</p> <p>Our detailed response is set out in paragraphs 4.1.4 – 4.1.5 of the Supplementary Transport Statement.</p>	Supplementary Transport Statement, prepared by Local Transport Projects, Dated November 2019.
29	Highways	LCC Highways have also made a number of comments about the trip generation analysis in the TA. The figures are presented in terms of the number of HGVs per day but Highways consider that analysis of peak flows may be more relevant especially if events outside the control of the operator mean that HGVs are concentrated through convoys.	<p>As detailed in Section 3 of the submitted Transport Statement the highest daily traffic generation at the site is expected during phase 4 (60 days duration), with 97 total two-way vehicle movements, which comprises 55 trips by HGVs and 42 by staff (likely to be in cars and small vans).</p> <p>However, in order to address the potential concern raised by Lancashire County Council Highways, the potential for some peaking of movements into more condensed periods has been assessed in the Supplementary Transport Statement paragraphs 6.1.5 – 6.1.7.</p>	Supplementary Transport Statement, prepared by Local Transport Projects, Dated November 2019.
30	Highways	You will note that Highways have raised a comment about the timing and weather conditions during the traffic surveys. However, in my view this will not have significantly affected the baseline traffic data.	<p>The original comments from Lancashire County Council Highways on this topic are reproduced below:</p> <p><i>“A traffic survey was undertaken on Wednesday 21st November 2018 on Lord Sefton Way. In addition, a week long manual classified count (video survey) was carried out Wednesday 28th March to Tuesday 3rd April 2018 to establish all modes movements including pedestrians, cyclists and equestrians. This survey was carried out in the half term week as it was expected this would result in higher than average numbers of vulnerable road users. I would note that a review of the weather indicated some scattered showers during this week.”</i> (Ref: David Watson).</p> <p>Based on the above comments, it is understood that there are no concerns from Lancashire County Council Highways regarding the traffic surveys. It is also noted that, as discussed above, there is not considered to be a requirement to consider the proposals against the existing traffic flows on the local highway network, given the low traffic impact.</p> <p>Our detailed response is set out in paragraphs 3.1.8 – 3.1.9 of the Supplementary Transport Statement.</p>	Supplementary Transport Statement, prepared by Local Transport Projects, Dated November 2019.
31	Highways	You will note that highways comment upon vehicle routing. The B5195 to the east of the site has not been assessed in the ES and does have significant highways issues. It is therefore vital in my view that any permission is supported by mechanisms that require all HGVs to approach / leave the site via the A565. The only issue with this is that it will remove any flexibility in the event that there is protestor activity between the site and the	The traffic management measures to enforce the HGV access routing restrictions are outlined in Section 7.2 of the submitted Transport Statement.	Supplementary Transport Statement, prepared by Local Transport Projects, Dated November 2019.

		A565. You will note that Highways have commented with regards to how compliance with the routing requirements will be monitored. This appears to be a valid point since the proposed security cabin on the access road is not located in a position where it would allow monitoring of any routing requirement		
32	Highways	The outstanding requirements of LCC Highways are helpfully set out in the conclusions section of the response which can be viewed on our website.	<p>The requirements of Lancashire County Council Highways, as set out in the conclusions section of their consultation response to the planning application, are fully addressed within both the submitted Transport Statement and the Supplementary Transport Statement with the exception of the following:</p> <p><i>“Further information and proposals to demonstrate adequate consideration has be given to potential need to safely accommodate in the vicinity of the site peaceful protest associated with the proposal and the additional presence of, for example. Lancashire constabulary;”</i></p> <p>The Applicant is not responsible for facilitating peaceful protest, nor does it form part of the development description. Nevertheless, the Applicant will liaise with the Lancashire Constabulary and, should a protestor presence be established in the vicinity of the wellsite, the Applicant and the Police will review the situation and the appropriate plans will be implemented to ensure the safety of the Applicant, the protestors, other road users and the community’.</p> <p>For absolute clarity, the steps which Lancashire Constabulary may choose to take in order to facilitate lawful protest of those who consider that a protest must be made against an entirely lawful activity are not material to the determination of planning applications. This is supported by the Approved Judgement, dated 5th December 2014, following the Judicial Review of planning permission of 2nd May 2014 granted by West Sussex County Council, as Minerals Planning Authority’ to Cuadrilla Balcombe Limited.</p>	Supplementary Transport Statement, prepared by Local Transport Projects, Dated November 2019.
33	Cultural Heritage (Archaeology)	The response from Lancashire Historic Environment Service is that the site development should include a programme of archaeological investigation providing for a trial trenching scheme to at least the depths to which the site will be stripped of overburden. Whilst the planning application discusses the construction of the drilling cellar which would clearly involve excavation of the soils and overburden, this does not appear to be the case with the remainder of the site which appears to be constructed leaving the topsoil in situ. The description of development in section 6.1.2 is not entirely clear on this point and some further explanation would assist to help to confirm the extent of archaeological works that would be required. In particular, what would be the extent of the cut and fill works that are described in the	The site will be investigated through a programme of archaeological trial trenching. This would be set out in a Written Scheme of Investigation, which would be submitted to the Lancashire Historic Environment Service for approval and would follow Chartered Institute for Archaeologists standards and guidance. The work would be the initial phase of intrusive investigation, the results of which would guide any further work as required. The investigations would cover the main drilling cellar and any areas of cut and cover ground works. The results of the investigations would be published in an appropriate format, to be agreed with the Lancashire Historic Environment Service.	N/A

34	Climate Change	<p>planning statement.</p> <p>Table 8.1 states that the overall contribution to greenhouse gas emissions from the proposed development is 0.118% of the total of the UK greenhouse gas emission from the energy supply sector in 2017. These figures are different from those included within the Executive Summary of Chapter 12 which states that the total contribution of tCO<sup>2</sup> equivalent will be 84,199t which is 0.07% of the total UK greenhouse gas emissions. Can you explain the differences in these figures please.</p>	<p>Table 8.1, within Chapter 8 of the submitted Environmental Statement, contains a typographical error under the Air Quality Heading, specifically under the Greenhouse Gases interaction. The figures provided in Chapter 12 is correct, therefore, the figure within Table 8.1 has been reduced to 0.07%. An amended Table 8.1 is provided below:</p> <table border="1" data-bbox="1083 384 2131 1885"> <thead> <tr> <th colspan="3" data-bbox="1083 384 2131 447">Summary of Interactions</th> </tr> <tr> <th data-bbox="1083 447 1291 552">Environmental Topic</th> <th data-bbox="1291 447 1484 552">Interaction With</th> <th data-bbox="1484 447 2131 552">Interaction</th> </tr> </thead> <tbody> <tr> <td data-bbox="1083 552 1291 1207" rowspan="3">Air Quality</td> <td data-bbox="1291 552 1484 693">Ecology</td> <td data-bbox="1484 552 2131 693">Point source emissions and fugitive emissions have the potential to impact on sites/habitats sensitive to changes in air quality.</td> </tr> <tr> <td data-bbox="1291 693 1484 987">Greenhouse Gases</td> <td data-bbox="1484 693 2131 987">The release of greenhouse gases is inherently linked with air quality. The expected total maximum contribution to greenhouse gas emissions from the proposed development will be circa 84,199 tCO<sub>2</sub> equivalent. 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Releases of greenhouse gases are highest during the testing phases, Phase 5 and Phase 6.</td> </tr> <tr> <td data-bbox="1291 1747 1484 1885">Ecology</td> <td data-bbox="1484 1747 2131 1885">The release of greenhouse gases is inherently linked with air quality, which in turn could impact upon ecology.</td> </tr> </tbody> </table>	Summary of Interactions			Environmental Topic	Interaction With	Interaction	Air Quality	Ecology	Point source emissions and fugitive emissions have the potential to impact on sites/habitats sensitive to changes in air quality.	Greenhouse Gases	The release of greenhouse gases is inherently linked with air quality. The expected total maximum contribution to greenhouse gas emissions from the proposed development will be circa 84,199 tCO <sub>2</sub> equivalent. This estimate equates to 0.07% of the total UK greenhouse gas emissions from the energy supply sector in 2017 (112.67 MtCO <sub>2</sub> equivalent).	Public Health	A reduction in Air Quality Standards (AQS) has the potential to impact on public health. Point source emissions and fugitive emissions have been assessed against applicable air quality standards set to protect human health.	Cultural Heritage	Landscape Character	Temporary tall structures are required during the drilling phase and the hydraulic fracture stimulation/well test phases. Changes in the value in terms of setting of cultural heritage assets have the potential to impact on landscape character and visual appearance.	Ecology	N/A	The Assessment Team considers there to be no interactions between ecology and any other environmental topic areas.	Greenhouse Gases	Air Quality	The release of greenhouse gases is inherently linked with air quality. Releases of greenhouse gases are highest during the testing phases, Phase 5 and Phase 6.	Ecology	The release of greenhouse gases is inherently linked with air quality, which in turn could impact upon ecology.	N/A
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	Greenhouse Gases	The release of greenhouse gases is inherently linked with air quality. The expected total maximum contribution to greenhouse gas emissions from the proposed development will be circa 84,199 tCO <sub>2</sub> equivalent. This estimate equates to 0.07% of the total UK greenhouse gas emissions from the energy supply sector in 2017 (112.67 MtCO <sub>2</sub> equivalent).																										
	Public Health	A reduction in Air Quality Standards (AQS) has the potential to impact on public health. Point source emissions and fugitive emissions have been assessed against applicable air quality standards set to protect human health.																										
Cultural Heritage	Landscape Character	Temporary tall structures are required during the drilling phase and the hydraulic fracture stimulation/well test phases. Changes in the value in terms of setting of cultural heritage assets have the potential to impact on landscape character and visual appearance.																										
Ecology	N/A	The Assessment Team considers there to be no interactions between ecology and any other environmental topic areas.																										
Greenhouse Gases	Air Quality	The release of greenhouse gases is inherently linked with air quality. Releases of greenhouse gases are highest during the testing phases, Phase 5 and Phase 6.																										
	Ecology	The release of greenhouse gases is inherently linked with air quality, which in turn could impact upon ecology.																										

				Public Health	A reduction in Air Quality Standards (AQS) has the potential to impact on public health. Anticipated emissions calculated for the proposed development have been assessed against applicable air quality standards set to protect human health.
			<b>Landscape Character</b>	Cultural Heritage	Temporary tall structures are required during the drilling phase and the hydraulic fracture stimulation/well test phases. Changes in the landscape and visual character of the area have the potential to interact with the setting of above ground cultural heritage assets.
			<b>Lighting</b>	Cultural Heritage	24 hr lighting is proposed for Phases 2 – 6. A change in landscape and visual appearance due to lighting has the potential to impact on the settings of cultural heritage assets.
				Ecology	24 hr lighting is proposed for phases 2 – 6. Additional lighting has the potential for visual disturbance to ecological receptors using habitats outside the wellsite boundary but in close proximity to the operations (e.g. foraging nocturnal mammals, owls, breeding birds, brown hares).
				Landscape Character	24 hr lighting is proposed for phases 2 – 6. Lighting has the potential to change the character of the landscape and visual appearance.
				Public Health	24 hr lighting is proposed for phases 2 – 6. Lighting has the potential to change to impact on public health if lighting design and use are inappropriate. Consideration has been given to this with regards to the lighting design and usage and also the distance of the wellsite from sensitive receptors.
			<b>Noise</b>	Ecology	Noise has the potential to impact upon ecology. However, through mitigation and distance from sensitive receptors, the likely significance of any noise effects from all phases of the development is considered to be low.
				Public Health	Noise has the potential to impact up-on human health. Noise has been considered for all development phases will be well within the PPG-Minerals noise criteria during the daytime, evening and night and will not result in a noticeable change in ambient noise during

					the daytime or evening. It is concluded that the temporary noise change will not be significant.
			<b>Public Health</b>	N/A	The Assessment Team considers there to be no interactions from changes in public health on any of the environmental topic areas
			<b>Seismicity</b>	Cultural Heritage	Induced seismicity may occur as a result of hydraulic fracture stimulation. Even if unmitigated, induced seismicity from the proposed operations is considered unlikely to result in significant adverse impact on cultural heritage assets. Embedded mitigation will be included in the hydraulic fracture plan to be approved by the OGA aimed at minimising induced seismicity from the proposed development.
				Ecology	Induced seismicity may occur as a result of hydraulic fracture stimulation. Even if unmitigated, induced seismicity from the proposed operations is considered unlikely to result in significant adverse impact on ecological receptors. Embedded mitigation will be included in the hydraulic fracture plan to be approved by the OGA aimed minimise induced seismicity from the proposed development.
				Public Health	Induced seismicity may occur as a result of hydraulic fracture stimulation. Even if unmitigated, induced seismicity from the proposed operations is considered unlikely to result in significant adverse impact on public health. Embedded mitigation will be included in the hydraulic fracture plan to be approved by the OGA aimed at minimising induced seismicity to ensure that disturbance to local residents and/or the potential for even cosmetic damage to local property is minimised.
				Water	Induced seismicity may occur as a result of hydraulic fracture stimulation. Even if unmitigated, induced seismicity from the proposed operations is considered unlikely to result in any loss of well integrity that might potentially impact on water receptors. Embedded mitigation will be included in the hydraulic fracture plan to be approved by the OGA aimed minimise the possibility of induced seismicity impacting on well integrity.

				Air Quality	Traffic generated by the proposed development has the potential to impact on air quality. Data provided within the Traffic and Transport Assessment has been used to determine the impact of traffic on air quality. The assessment concludes that the proposed development will not affect the attainment of air quality standards around the areas of permanent and transient human habitation closest to the wellsite.	
			<b>Traffic &amp; Transport</b>	Ecology	Traffic generated by the development has the potential to impact on ecology from air quality and noise. Data provided within the Traffic and Transport Assessment has been used to determine the impact of traffic on both air quality and noise.	
				Greenhouse Gases	Emissions from transport to and from the wellsite will contribute to the release of greenhouse gas emissions.	
				Noise	Traffic generated by the development has the potential for noise impact. Data provided within the Traffic and Transport Assessment has been used to predict and assess the impact of noise.	
				<b>Waste</b>	Air Quality	Odour from waste, including from well fluid storage, has the potential to impact on air quality. Whilst odour is not anticipated during the proposed development, all fluids and wastes will be stored on site in enclosed tanks and enclosed skips. Tank breather lines will be monitored to ensure compliance with environmental permits. Continual monitoring for odour will be undertaken at the wellsite.
			Traffic & Transport		Waste minimisation has been sought from the outset of the project and built into the design, which in turn reduces the number of vehicle movements associated with the development.	
			Water		The wellsite will be covered by an impermeable membrane and the wells constructed in accordance with relevant legislation. Waste will be managed in accordance with an Environment Agency approved waste management plan and therefore no pathway will exist for waste to impact upon water.	
			<b>Water Resources and Flood Risk</b>	Ecology	Changes in hydrology and hydrogeology have the potential to impact on ecology. A flood risk assessment has been undertaken and concludes that with the	

			<table border="1"> <tr> <td></td> <td>implementation of mitigation the proposed development will not have a detrimental impact on drainage and flooding at or from the Site. A hydrogeological risk assessment has been undertaken which concludes that with mitigation the hydrogeological risks associated with the proposed development are low and not significant.</td> </tr> <tr> <td>Public Health</td> <td>Changes in hydrology and hydrogeology have the potential to impact on public health. A flood risk assessment has been undertaken and concludes that with the implementation of mitigation the proposed development will not have a detrimental impact on drainage and flooding at or from the Site. A hydrogeological risk assessment has been undertaken which concludes that with mitigation the hydrogeological risks associated with the proposed development are low and not significant.</td> </tr> </table>		implementation of mitigation the proposed development will not have a detrimental impact on drainage and flooding at or from the Site. A hydrogeological risk assessment has been undertaken which concludes that with mitigation the hydrogeological risks associated with the proposed development are low and not significant.	Public Health	Changes in hydrology and hydrogeology have the potential to impact on public health. A flood risk assessment has been undertaken and concludes that with the implementation of mitigation the proposed development will not have a detrimental impact on drainage and flooding at or from the Site. A hydrogeological risk assessment has been undertaken which concludes that with mitigation the hydrogeological risks associated with the proposed development are low and not significant.									
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<b>Table 8.1: Interrelationships – Summary of Interactions (Amended)</b>																
35	Noise	The assessment appears to have been carried out in accordance with BS 5228 rather than Planning Policy Guidance for Minerals / Noise policy statement for England. This matter appears to have been covered in the Preston New Road appeal where the Inspector appears to have come to the conclusion that the appropriate assessment methodology should be PPG – M and the NPSE rather than the BS standards	<p>It is an incorrect interpretation of the NIA to say that the noise assessment has been carried out in accordance with BS 5228 rather than PPG-M or the NPSE. The various policy, guidance and standards used within the assessment are set out in full in Section 4 of the NIA submitted with the planning application and contained within Appendix G of the Environmental Statement (ref. JA10171–REPT–01–R3). This includes detailed discussion of the NPSE, NPPF, PPG-N, PPG-M, BS 4142, BS 5228, BS 8233 and WHO Guidelines. BS 5228 has only been used to assess the Construction and Restoration phases of the development, which is considered to be entirely appropriate for the type of equipment and activities that will be utilised during these phases. The assessment methodologies used for each phase are summarised below:</p> <table border="1"> <thead> <tr> <th>Phase</th> <th>Assessment methodology</th> </tr> </thead> <tbody> <tr> <td>Road traffic noise (all phases)</td> <td>DMRB</td> </tr> <tr> <td>Construction and restoration (phases 1 and 8) – daytime only</td> <td>BS 5228</td> </tr> <tr> <td>Drilling (phases 2 and 3)</td> <td>PPG-M, WHO and noise change</td> </tr> <tr> <td>Hydraulic fracture stimulation (phase 4) – daytime only</td> <td>PPG-M and noise change</td> </tr> <tr> <td>Initial flow testing and extended well test (phases 5 and 6)</td> <td>PPG-M, WHO and noise change</td> </tr> </tbody> </table>	Phase	Assessment methodology	Road traffic noise (all phases)	DMRB	Construction and restoration (phases 1 and 8) – daytime only	BS 5228	Drilling (phases 2 and 3)	PPG-M, WHO and noise change	Hydraulic fracture stimulation (phase 4) – daytime only	PPG-M and noise change	Initial flow testing and extended well test (phases 5 and 6)	PPG-M, WHO and noise change	N/A
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36	Noise	The assessment that has been carried out provides an assessment of noise for different periods during the day and night which is particularly relevant for drilling operations which would be undertaken during the night time period. The information included in Table 15.8 shows the noise changes between existing ambient sound levels at six properties and the maximum new ambient sound level. However, I would question whether the assessment methodology accords with Planning Practice Guidance for Minerals. For the evening periods the guidance appears to	<p>The proposed development as a whole is assessed in accordance with the Government’s noise policy aims, including the NPSE, PPG-M and WHO guidance in paragraphs 7.18 to 7.23 of the submitted NIA (Appendix G of the Environmental Statement) . It is, therefore, clear that a PPG-M assessment has been undertaken for all phases of the development, except for construction and restoration where the most appropriate standard is BS 5228. (See tables 7.3, 7.5 and 7.7 of the NIA for the PPG-M assessment tables.)</p>	N/A												

		require that noise from a development should not exceed the background (LA90) level by a prescribed amount rather than the ambient level (LAeq) as used in the assessment. Table 15.7 appears to indicate that the background noise level during the evening at Suttons Farm is 35 dB(A) which increases to 56 dB(A) with the development (Table 15.8)		
37	Noise	<p>For the night time period, the guidance states that noise limits should be set to reduce to a minimum any adverse impacts without imposing unreasonable burdens on the operator with the maximum noise level not exceeding 42 dB(A). The outcome of the assessment appear to show that the worst impact occurs during night time drilling (phases 2 and 3) at Sutton's Farm where a predicted increase in ambient noise of 5dB is shown. In BS4142 it states that an increase of around 5dB(A) is likely to be indicative of an adverse impact. I therefore consider that further mitigation needs to be incorporated into the development and a demonstration included of the level of noise mitigation that would be provided. The night time noise impacts are not greatly discussed in the summary section at the end of the noise assessment except to say that night time noise will not affect resident because they will be indoors or asleep. This conclusion seems to disregard the point that during the summer residents may sleep with windows open and that they could be subject to sleep disturbance if woken by site noise.</p>	<p>Lancashire County Council's reference to BS 4142 as an assessment methodology for the proposed development is inappropriate.</p> <p>Paragraph 1.3 of BS 4142 states that "the standard is not intended to be applied to the rating and assessment of sound from other sources falling within the scopes of other standards or guidance". In this respect, BS 4142 is not applicable to noise from mineral operations, including oil and gas exploration and appraisal, because these activities fall within the scope of other guidance, specifically the PPG-M. Consequently, noise from the proposed development falls outside the scope of BS 4142.</p> <p>It should be noted that the Public Inquiry relating to Preston New Road examined the issue of whether BS 4142 is the relevant standard to be used for assessing noise from oil and gas exploration activities and the Inspector concluded (paragraph 12.219 of the Inspectors Report) that the appeal proposal fell most appropriately within the scope of PPG-M and that BS 4142 does not therefore apply.</p> <p>With specific reference to the drilling phase, it should be noted that the highest noise level due to any of the example drilling rigs will be 38 dBA at the most affected noise sensitive receptor. This is some 4 dB below the suggested night-time noise limit of 42 dBA contained within the PPG-M. Noise levels at other locations or due to other rigs generally fall within the range of 28 to 35 dBA.</p> <p>Section 6 of the NIA includes a description of each rig, along with a list of mitigation measures included in the assessment for each rig (see paragraphs 6.11 and 6.19 of the NIA). The approach taken for the assessment has been to reduce noise levels from the example drilling rigs using best practicable means. Notwithstanding this, it is not known which drilling rig will be utilised and, consequently, it is difficult to specify the exact noise mitigation measures that will be installed. Nevertheless, Chapter 9 of the NIA provides details of possible engineering noise control measures for the drilling rigs based on specific noise measurements on the example rigs combined with experience of carrying out noise control on other drilling rigs. These mitigation measures represent the range of typical techniques that could be applied. Mitigation measures will be finalised once the equipment has been chosen and a noise management plan will be prepared detailing the specific mitigation measures to be installed and their effect on ambient noise levels in the vicinity.</p>	N/A
38	Groundwater/Surface Water	The assessment of the hydrology and hydrogeological impacts of the development is complicated by the fact that this planning application has not been twin tracked with a permit application to the Environment Agency. As you will note the EA have responded that they have no objection in principle but there is limited consideration of the issues to assess the planning authority in	<p>There is no legislative requirement obligating the Applicant to twin-track the planning and environmental permit applications. Legislation, in the form of EPR 2016, does require the environmental permit application to include a copy of the Environmental Statement, where such development is subject to Environmental Impact Assessment.</p> <p>The granting of planning permission does not confer any exemption from other regulatory regimes. Indeed, Paragraph 012 of the NPPG on Minerals (ID: 27-012-20140306) is clear that other regulatory regimes are separate to, but complementary with, the planning regime.</p>	N/A

		its assessment of the application. The County Council are therefore taking further advice from consultants on this aspect of the development and will respond to you in due course if there are further outstanding issues on this topic.	<p>The Environment Agency sets out within its consultation response that it cannot offer any detailed advice or comments on issues we regulate through permitting that may also be considered through the planning regime, however, Paragraph 112 of the NPPG on Minerals (ID: 27-112-20140306) is clear that minerals planning authorities should not need to carry out their own assessment as they can rely on the assessments of other regulatory regimes.</p> <p>It follows then that any additional information required by the Environment Agency, to which the Minerals Planning Authority is seeking advice, is regulated by the Environment Agency under EPR 2016 and, in accordance with Paragraph 112 of the NPPG on Minerals (ID: 27-112-20140306), the Minerals Planning Authority, who can rely on the Environment Agency, should assume that the environmental permitting regime will operate effectively.</p> <p>The Minerals Planning Authority does need to be satisfied that these issues can or will be adequately addressed by taking the advice from the relevant regulatory body, a notion well established in law.</p>	
39	Groundwater/Surface Water	The application states that the effectiveness of the ground and surface water mitigation measures will be demonstrated through a scheme of monitoring that will be agreed with the EA through the permitting process. However, no details of the monitoring have been provided to provide comfort at the planning stage that this matter will be adequately addressed or that mitigation measures can be implemented if there is any variance from the baseline during operations.	A scheme of groundwater monitoring will be agreed with the Environment Agency as part of the Environmental Permit Application. The monitoring of groundwater will be regulated by the Environment Agency. A copy of the groundwater monitoring plan can be provided to the Minerals Planning Authority for information, following agreement of the plan with the Environment Agency.	N/A
40	Air Quality	The application states that monitoring will be undertaken of air quality during the proposed development, there are no details of baseline monitoring presented or of the actual monitoring techniques that will be used during the operational phases.	A scheme of air quality monitoring will be agreed with the Environment Agency as part of the Environmental Permit Application. The monitoring of air quality will be regulated by the Environment Agency. A copy of the air quality monitoring plan can be provided to the Minerals Planning Authority for information, following agreement of the plan with the Environment Agency.	N/A
41	Air Quality	In relation to emissions from the flare, the modelling is based upon an assumed gas composition. However, the actual emissions may vary depending upon the actual gas composition at this site. In particular the potential for hydrogen sulphide or VOC emissions should be quantified at this stage to establish what the potential impacts would be and if there is a need for any specific monitoring or mitigation for these parameters.	<p>Whilst the modelling is based upon an assumed gas composition, the assumption is that this is the expected likely gas composition. Gas compositions that are not considered likely (e.g. H<sub>2</sub>S rich gases) have not been modelled.</p> <p>A scheme of air quality monitoring will be agreed with the Environment Agency as part of the Environmental Permit Application. The monitoring of air quality will be regulated by the Environment Agency. A copy of the air quality monitoring plan and copies of monitoring undertaken can be provided to the Minerals Planning Authority for information, following agreement of the plan with the Environment Agency.</p> <p>The agreed air quality monitoring plan will ensure appropriate monitoring for the site-specific gas composition.</p>	N/A
42	Air Quality	Radon Gas : The air quality assessment section of the ES states that the assessment of radon releases is contained in appendix B. However, appendix B does not appear to contain anything in relation to radon	Radon Appendix attached.	Appendix B of AQIA (Radon).
43	Air Quality	Norm: There is nothing in the air quality	NORM is not typically included within an air quality assessment. It is regulated by the	N/A

		assessment that reviews the potential for NORM within the drill cuttings and more especially the flowback fluid and how any impacts will be controlled and mitigated.	Environment Agency under EPR 2016  An assessment for NORM will be included within the Environmental Permit Application that will be submitted to the Environment Agency for approval in due course.	
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