# Permitting decisions

## Variation

We have decided to grant the variation application for Preston New Road Exploration Site operated by Cuadrilla Bowland Limited.

The variation number is EPR/AB3101MW/V005.

We have also carried out an Environment Agency initiated variation to the permit.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

## Purpose of this document

This decision document provides a record of the decision making process. It:

- highlights key issues in the determination
- summarises the decision making process in the decision checklist to show how all relevant factors have been taken into account
- explains why we have also made an Environment Agency initiated variation
- summarises the engagement carried out because this is a site of high public interest
- shows how we have considered the consultation responses

This is a decision document, which accompanies a variation notice.

It explains how we have considered the Applicant's application, and why we have included the specific conditions in the variation notice we have issued to the Applicant. It is our record of our decision-making process, to show how we have taken into account all relevant factors in reaching our position. Unless the document explains otherwise, we have accepted the Applicant's proposals.

Read the permitting decisions in conjunction with the environmental permit and the variation notice. The introductory note summarises what the variation covers.

# Key issues of the decision

## Preliminary information

The application we received contained proposals to vary the existing permit EPR/AB3101MW issued 16/01/2015.

We gave the variation the reference number EPR/AB3101MW/V005. We refer to the Application as "the Application" in this document for consistency.

The number we have given to the variation notice is EPR/AB3101MW/V005. We refer to the notice as "the Notice" in this document.

The Application was duly made on 05/02/2019.

## Summary of the application

The Applicant requested the: update of the approved Waste Management Plan to:

- Clarify that hydraulic fracturing may be conducted during more than one occasion along a lateral well.
- Clarify the potential requirement to periodically carry out well workovers and well intervention.
- Add the use of open-topped tanks to manage flowback during specific operations where there is an insignificant risk of natural gas emissions.
- Revise ambient air monitoring requirement.
- Add two potential chemical additives, methanol and gluteraldehyde to the list of approved chemicals for use in the permitted operations and allow the use of higher viscosity gelled water fracturing fluid.

The applicant also requested the amendment of Table S3.5 to change the frequency of monitoring for Surface Water to a single set frequency during all stages of operations.

## 1. Summary of our Decision

We have decided to grant part of the variation however we have not agreed to vary table S3.5 to change the frequency of monitoring for Surface Water. In addition as part of our determination we have decided to vary the following conditions by way of an Environment Agency initiated variation:

- We have amended condition 3.5.7 to add “or otherwise agreed in writing with the Environment Agency” to allow flexibility in the analysis of the gas to the flare.
- We have amended table S3.2 to correct an error where the limit for Cadmium was mistakenly set for Total Chromium.
- We have amended table S3.6 to remove the requirement to use a specific method to monitor flare temperature and to remove the requirement to monitor organic substances as this was a duplication of the requirement set out in condition 3.5.7. We have also amended the wording of Table S3.6 to replace “geophones” with “array” to reflect the wording of the Approved Hydraulic Fracturing Plan.
- We have amended table S4.1 to clarify that the reporting requirement for the Total Daily Volume applies to the surface water discharge and changed the reporting frequency for surface water monitoring parameters to quarterly as per table S3.5.
- We have amended Table S3.5 to change the monitoring frequency for surface water to fortnightly unless agreed in writing with the Environment Agency.

To maintain clarity of the permit, the changes detailed above have been consolidated into a new version of the permit which replaces the original permit issued 15/01/2015.

The Notice and consolidated Permit include conditions taken from our standard Environmental Permit template including the relevant Annexes. We developed these conditions in consultation with industry, having regard to the legal requirements of the Environmental Permitting Regulations, Mining Waste Directive, Industrial Emissions Directive, Groundwater Directive, Water Framework Directive and other relevant legislation.

This document does not therefore include an explanation for these standard conditions. Where they are included in the Notice and consolidated permit, we have considered the Application and accepted that the details are sufficient and satisfactory to make the standard conditions appropriate.

We have tried to explain our decisions as accurately, comprehensively and as plainly as possible, although given the nature of the Application it is inevitable that this document contains a significant amount of technical and specialist language.

# 2. How we took our decision

The Application was duly made on 05/02/19. This means that we considered it was in the correct form and contained sufficient information for us to begin our determination.

We carried out consultation on the Application taking into account the Environmental Permitting (England and Wales) Regulations 2016 and our statutory Public Participation Statement. We advertised the Application by a notice placed on our website, which contained all the information required by the Regulations, including telling people where and when they could see a copy of the Application.

We also contacted local MPs, local authorities and Parish Councils to notify them of the consultation. We also issued a press release to Lancashire media on 20/02/2019.

We placed a paper copy of the Application and all other documents relevant to our determination on our Public Register.

The Environment Agency, Richard Fairclough House, Knutsford Road, Latchford, Warrington WA4 1HT

Anyone wishing to see these documents could do so and arrange for copies to be made.

We sent copies of the Application to the following bodies, including those with whom we have "Working Together Agreements":

- Local Planning Authority, Lancashire County Council
- Mineral Planning Authority, Lancashire County Council
- Health and Safety Executive
- Public Health England
- Director of Public Health

These are bodies whose expertise, democratic accountability and/or local knowledge make it appropriate for us to seek their views directly.

Although the application contained sufficient information for us to begin our determination we asked the Applicant to provide additional information.

Further details, along with a summary of consultation comments and our response to the representations we received, can be found in Annex 1 to this Decision Document. We have carefully considered all representations and have taken into account any relevant points in reaching our draft determination.

# 3. Description of the changes to the Permit

### 3.1 Changes requested by the Applicant

3.1.1 Clarify that hydraulic fracturing may be conducted during more than one occasion along a lateral well and clarify the potential requirement to periodically carry out well workovers and well intervention:

These changes are administrative changes and provide clarification of the operations being carried out on site.

3.1.2 Add the use of open-topped tanks to manage flowback during specific operations where there is an insignificant risk of natural gas emissions:

The Applicant has made changes to the operations on site to include the use of open topped tanks to manage flowback fluid during a number of specific operations on site.

As part of our determination, we requested additional information on the purpose and design of the open topped tanks. We also requested a revised H1 assessment to verify that the emissions from the open topped tanks would remain insignificant as well as a review of the proposed design against the requirements of the Mining Waste BREF.

As a result of our request for further information, the Operator carried out a comprehensive review of their initial proposal and has made significant changes to the design of the process to comply with the requirements of the Mining Waste BREF.

The primary purpose of the open topped tanks is to collect debris from well maintenance activities, or to manage substantial quantities of proppant (sand) returning during a short period of time during well circulation activities.

Debris within returning flowback fluid largely arises due to wellbore clean out runs (required after running tools and/or milling). Entrained gas returning during this activity is highly unlikely due to the overbalanced pressure in the wellbore and there being no contact between the fluid and the target formation.

The use of the open topped tanks is also required during well circulation to lift proppant, either following hydraulic fracturing or to resolve downhole screen outs (restrictions in flow). In such activities, large quantities of proppant or other solids will be returned in a short space of time, which would overwhelm the sand filter and subsequent separator. As with well maintenance activities, entrained gas returning during this activity is highly unlikely due to the well remaining overbalanced throughout.

The tanks are open topped to provide safety redundancy in the extremely unlikely event of an undetected build-up of gas flowing into the tanks, resulting in the risk of a potentially explosive gas / atmosphere mixture.

In all other circumstances, after ‘bottoms up’ of the well (where fluid from the bottom of the well is brought to the top), the open topped tanks will not be used as the primary fluid handling technique, with the separator being used preferentially. These activities include:

- Flowback for seismicity purposes
- Flowback between hydraulic fracture stages
- Flowback during well completion
- Flowback for well testing

The separator allows for gas and flowback fluid to be separated, and subsequently flared if sufficient gas volume and pressure is present. The liquid phase of the flowback fluid is then transferred to storage tanks. If there is insufficient gas volume or pressure to flare, the small quantity of gas present remains within the separator until future well activities yield sufficient gas volume or pressure to send the gas towards the flares. As an additional and/or alternative stage of gas separation (depending on flowback rate and gas breakout rate), a two stage pressurised surge tank is connected to the separator. Both the separator and the surge tank are independently connected to the flare system, with any gas separated being directed towards the flare once sufficient pressure is present, rather than emitted to atmosphere.

To minimise releases to the atmosphere, as required by the applicable BAT conclusion, an additional operational control will be put in place. During primary use of the open topped tanks (as outlined above), a monitor with the ability to detect methane at parts per million (ppm) resolution will be positioned to sample above the open topped tanks. When alerted by the monitoring equipment of the presence of small quantities of natural gas in the tanks, the choke operator will direct the returning fluid into the separator. These alerts will be triggered at a level of 7.1ppm, which is only marginally higher than the natural background level of 1-3ppm recorded at the Preston New Road site, and is in keeping with the approved EMMP which initially established the agreed notification levels.

Once the fluid has been managed and initially stored in the open topped tanks, the flowback fluid is reused for subsequent hydraulic fracturing, or transferred to the closed top (not sealed) tanks for storage or disposal.

We are satisfied that the revised design and use of open topped tanks in the operations detailed above and that the risk of natural gas being emitted from the open topped tanks is insignificant. The use of open topped tanks has been limited in table S1.1 of the permit to the operations detailed in the approved Waste Management Plan and Instruction 009 Flowback Fluid Diversion Instruction version 3.0. This procedure for the use of the open topped tanks has been incorporated into the permit as an Operating Techniques in table S1.2

3.1.3 Revise ambient air monitoring requirement:

The Applicant has requested to reduce the number of determinands to be monitored through the use of diffusion tubes and gauges located around the site.

These were originally set out in the waste management plan approved with the original permit issued 16/01/2015.Since then the Applicant has carried out ambient air monitoring and installed a monitoring station which provides continuous ambient air monitoring for targeted determinands that is of higher quality and that is sufficient information for compliance assessment.

The Applicant has requested to cease using diffusion tubes and gauges to monitor for methane, carbon monoxide, nitrogen dioxide, nitric oxide, sulphur dioxide, ozone, total petroleum hydrocarbons, volatile organic compounds, PM10, PM25 and dust as higher quality continuous monitoring for targeted determinands has replaced this passive monitoring station. Monitoring for hydrogen sulphide and BTEX using diffusion tubes and gauges located around the site would continue.

We are satisfied that the requirements to monitor ambient air at locations around the site using diffusion tubes and gauges can be reduced. Monitoring of ambient air will continue using the continuous monitoring station in accordance with the approved EMMP as stated in table S3.7.

3.1.4 Add two potential chemical additives, methanol and gluteraldehyde to the list of approved chemicals for use in the permitted operations and use of higher viscosity gelled water fracturing fluid:

Methanol is proposed to be used in small quantities as part of well maintenance to prevent the formation of gas hydrate where a well is suspended for a prolonged period of time which can lead to operational difficulties. Methanol is a simple alcohol which can be used to lower the temperature at which liquids freeze. Methanol has been determined as non-hazardous to groundwater by JAGDAG and we are satisfied that the use of methanol in suspended wells will not pose a risk to groundwater.

Gluteraldehyde is proposed to be used in small quantities as a biocide in combination with the UV disinfection system currently in operation to treat flowback prior to reuse to control bacterial growth. The decision to use UV and or glutaraldehyde will be dependent upon the effectiveness of the UV system as well test results from the fluid returning to the surface. Gluteraldhyde has been determined to be non-hazardous to groundwater by JAGDAG and we are satisfied that the use of gluteraldhyde in combination with the UV disinfection system will not pose a risk to groundwater.

Shale wells are treated with various types of fluids. The preferred option is ‘slickwater’. This is a low viscosity fluid that creates a complex fracture network in the shale formation. This was previously approved under the original permit issued in 2015. Slickwater requires a high injection rate in order to carry the proppant down the wellbore and deep into the fracture network. In cases where it is difficult to place proppant or there are restrictions to injection rate, a more viscous fluid may be required. The higher viscosity fluid is able to transport the proppant at lower rates. It also reduces the

complexity of the fracture network, which helps to initiate the fractures and increases the fracture width to allow more space for the proppant to enter. Hybrid systems are used that start with a high viscosity fluid in order to initiate the fracture network then transition to low viscosity fluid or start with a low viscosity fluid to create the main fracture network and finish with a higher viscosity fluid in order to maximize proppant concentration near the wellbore.
The composition of the gelled water hydraulic fracturing fluid is as follows:

- Water and sand (approximately 96% by volume). No reuse of flowback fluid will occur.
- Gelling agents (approximately 4% by volume). The gelling agents will be added to the water to transport the proppant along the length of the fractures.

We are satisfied that the use of higher viscosity gelled water fracturing fluid is appropriate and will not pose a risk to groundwater.

3.1.5 The applicant also requested the amendment of Table S3.5 to change the frequency of monitoring for Surface Water to a single set frequency during all stages of operations:

We have not accepted this change and have instead changed the frequency to fortnightly during all stages of operations. This change is explained in section 3.2.5 below.

### 3.2 Changes we have imposed

3.2.1 We have amended condition 3.5.7 to add "or otherwise agreed in writing with the Environment Agency" to allow flexibility in the analysis of the gas to the flare:

This change has been made to provide flexibility in the analysis of the components of the flare feed gas. The Operator has informed the Environment Agency that analysing for chlorinated compounds may not be possible due to the unavailability of an approved laboratory capable of carrying out this analysis. However, we have requested evidence of this issue and in the meantime, the original monitoring requirements will remain in place. Once evidence has been provided and reviewed, we may be able to agree reduced monitoring requirements.

3.2.2 We have amended table S3.2 to correct an error where the limit for Cadmium was mistakenly set for Total Chromium:

This is an administrative change to correct an error in the previous variation (EPR/AB3010MW/V004) where the limit for Cadmium was instead applied to Total Chromium.

3.2.3 We have amended table S3.6 to remove the requirement to use a specific method to monitor flare temperature and to remove the requirement to monitor organic substances as this was a duplication of the requirement set out in condition 3.5.7:

The method set out in the previous version of the permit (EPR/AB3010MW/V004) for the monitoring of flare combustion temperature (PD ISO/TR 15377:2007) is not appropriate for the type of flare in use on site and therefore we have removed the requirement to use this specific method. The Operator is still required to monitor and report this parameter using an appropriate method to be agreed with the Environment Agency.

Condition 3.5.7 already includes a requirement to carry out monthly monitoring of the flare feed gas which includes speciation and concentration of organic substances. The inclusion of this parameter in Table S3.6 was a duplication which has now been removed.

We have also amended the wording of table S3.6 to remove reference to "geophones" and replace it with "array". This is an administrative change to reflect the wording of the Approved Hydraulic Fracturing Plan which is subject to a separate approval process.

3.2.4 We have amended table S4.1 to clarify that the reporting requirement for the Total Daily Volume applies to the surface water discharge and changed the reporting frequency for surface water monitoring parameters to quarterly as per table S3.5:

These are administrative changes to clarify the reporting requirements for the surface water discharge and ensure that the reporting requirements for surface water monitoring parameters are consistent with the requirements of table S3.5.

3.2.5 We have amended Table S3.5 to change the monitoring frequency for surface to fortnightly unless agreed in writing with the Environment Agency:

We have recently (June 2019) approved the operator's procedure under pre-operational condition 11 to discharge clean, uncontaminated surface water into Carr Bridge Brook. We therefore require fortnightly surface water monitoring to be carried out. Once a sufficient dataset is gained, this condition provides the flexibility for the operator to potentially provide us with a justification for a different monitoring frequency. We will assess this information and determine whether the any change in frequency is appropriate.

# 4. General issues

### 4.1. Administrative issues

We are satisfied that the Applicant is the person who will have control over the operation of the regulated facility after we grant the Notice, in line with our Regulatory Guidance Note RGN 1: *Understanding the meaning of Operator (version 4.0)*; and that the Applicant will be able to operate the regulated facility in compliance with the conditions included in the consolidated permit.

### 4.2. Management

Having considered the information submitted in the application, we are satisfied that appropriate management systems and management structures will be in place.

### 4.3. Financial competence and relevant convictions

The variation does not include any changes that would require a change to the existing Financial Provision arrangements.

The Operator does not have any relevant convictions and it is technically competent.

### 4.4. External Emergency Plan

The provisions relating to an external emergency plan do not apply as none of the mining waste facilities are Category A facilities,

### 4.5. Accident management

Having considered the information submitted in the application, we are satisfied that appropriate measures will be in place to ensure that environmental accidents that may cause pollution are prevented. However, in the unlikely event that an accident should happen, we are satisfied that the consequences will be minimised. This is part of the written management system of the site, required under permit condition 1.1.1 a.

### 4.6. Surrender of the permit

When the Operator wants to surrender their permit, they will have to satisfy us that the necessary measures have been taken to:

- Avoid any on-going pollution risk resulting from the operation of the facility; and

- To return the site to a satisfactory state, having regard to the state of the site before the activity was put into operation.

We will not grant any application for surrender unless and until we are satisfied that these requirements have been complied with.

### 4.7. Site security and protection

The variation does not include any changes that would impact site security and protection.

### 4.8. Planning Permission

Our decision on whether to grant an Environmental Permit is separate from the planning process. An Environmental Permit allows the site to operate and to be regulated by the Environment Agency exercising its pollution control functions. The Planning Authority, in this case the Lancashire County Council, decides whether or not to grant planning permission.

The planning authority determines whether the activity is an acceptable use of the land. It considers matters such as visual impact, traffic and access issues, which do not form part of our Environmental Permit decision making process. The planning authority must also consider and respond to any objections they may receive on a particular planning application.

There is no requirement for planning permission to be in force before an environmental permit is granted.

### 4.9. Pollution prevention measures

The variation does not include any changes to the existing pollution prevention measures.

### 4.10. Odour management

We carefully considered potential odour emissions from the activity during our determination.

Odour, from the activities we permit, is not considered likely to be an issue considering the site is in a rural location, which is 250 metres from the nearest sensitive receptor. In addition the regulated activities are not likely to produce any odours due to the processes and chemicals used being inherently non-odorous.

We are satisfied that the environmental risk assessments contain adequate measures to manage any potential odour and that the regulated activities will not cause pollution of the environment or harm to human health from odour.

Under Condition 3.3 of the permit, we can require the Operator to produce and implement an odour management plan in the unlikely event that activities at the site give rise to odour. Should a plan be required in the future, once we have assessed this plan as suitable, it will form part of the permit and the Operator must carry out the activity in accordance with the approved techniques.

### 4.11. Noise management

We carefully considered emissions from noise and vibration during our determination and concluded that noise and vibration from the regulated activities are not considered to be an issue due to the design of the flare, the rural location of the site, the distance to the nearest receptor (250 metres) and the level of background noise (the site is located close to the M55 and A583).

The risk of the flares themselves causing noise complaints is low. Based on the sound pressures presented by the Applicant, it is unlikely to cause a noise level that is greater than 10dB above background at the closest receptor (270m). As these figures assume the flares run at 100% capacity and the distances represent actual distances from the flare, we are satisfied that the environmental risk assessments contain adequate measures to manage noise and that the regulated activities will not cause pollution of the environment or harm to human health from noise.

Under Condition 3.4 of the permit, we can require the Operator to submit a specific noise and vibration management plan, should noise and vibration become a problem from activities we regulate. Should a

plan be required in the future, once we have assessed this plan as suitable, it will form part of the permit and the Operator must carry out the activity in accordance with the approved techniques.

## 5. Other legal requirements

### 5.1. Mining Waste Directive 2006/21/EC

In this section we explain how we have addressed other relevant legal requirements under the Mining Waste Directive, to the extent that we have not addressed them elsewhere in this document and they apply to this variation.

#### 5.1.1. Article 4 – General requirements

Article 4 sets out requirements for the protection of the environment and human health which apply to the management of extractive waste. Under the Environmental Permitting (England and Wales) Regulations 2016 an environmental permit is required for a mining waste operation, which is defined as the management of waste whether or not it involves a waste facility. It is through the permit and the conditions imposed that we are satisfied that the provisions of Article 4 will be met.

#### 5.1.2. Article 5 - Waste management plan

This includes the requirement for the Operator to provide a waste management plan and the information required within this. The waste management plan, including associated documents, has been assessed in accordance with these requirements and is approved subject to conditions. Condition 2.3.1 ensures that the operations are limited to those described in the WMP and in table S1.2. It also ensures that the Operator follows the techniques set out and that any deviation will require our written approval. Any significant changes will require a formal variation of the permit. Where a condition imposes a specific requirement that will take precedence over anything in the plan.

#### 5.1.3. Article 6 – Major accident prevention

We are satisfied that the proposed activities do not involve a Mining Waste Facility which should be classified as a Category A facility.

#### 5.1.4. Article 7 – Application for a permit

The permit covers the management of extractive waste and includes a Mining Waste Facility as defined in the MWD. The Application contained all necessary elements in Article 7(2) relevant to this site. We are satisfied that the requirements in Article 7(3) are met.

#### 5.1.5. Article 8 – Public participation

Through our consultation procedure we are satisfied that the public have been informed as required by Article 8 and that we have made available the information set out in Article 8(2). We have provided the public with the ability to express comments and opinions to us before a decision has been taken and the results of the consultation will be taken into account in deciding whether to grant this permit.

#### 5.1.6. Article 9 – Classification system for waste facilities

We are satisfied that there is no waste facility that should be classified as a category A facility. Although the waste facility in respect of the on-site storage of waste will contain hazardous waste during the operational phase, no waste is expected to be present at the end of the planned period of operation.

#### 5.1.7 Article 11- Construction and management of facilities

This outlines a requirement for the facility to be suitably constructed, managed and maintained to ensure its physical stability and to prevent pollution and contamination of soil, air, surface water and groundwater. Under this article there is a requirement for suitable plans and arrangements for regular monitoring and inspection of the facility by competent persons.

We are satisfied that the operator will comply with these requirements, based on the information provided and the conditions in the permit.

#### 5.1.8. Article 13 - Prevention of water status deterioration, air and soil pollution

We are required, as the competent authority, to be satisfied that the Operator has taken the necessary measures in order to meet environmental standards, particularly to prevent deterioration of current water status.

We are satisfied that the Operator will comply with these requirements based on the information provided and the conditions in the permit.

#### 5.1.9. Article 14 - Financial Guarantee

Article 14 requires the provision of a financial guarantee, in respect of a waste facility, to ensure funds are available to meet the obligations of the permit and to rehabilitate the site when operations finish. We will require a financial guarantee to be provided in respect of the area designated for the accumulation or deposit of hazardous waste stored at the surface before any permit is issued to satisfy this requirement.

In respect of the waste facility relating to waste fluid left in the formation, we are satisfied that this waste is properly characterised as non hazardous waste. By virtue of paragraph 9(3) of Schedule 20 to the Environmental Permitting (England and Wales) Regulations 2016 the requirements mentioned in Article 2(3) of the MWD are waived. These waived requirements include the need for a financial guarantee for non hazardous waste, unless deposited in a Category A facility. So no financial guarantee can be required in respect of the fluid left in the target formation.

### 5.2. Further legislation

#### 5.2.1 Industrial Emissions Directive (IED)

We have addressed the requirements of the IED as part of the determination of the original permit. The changes made by this variation do not change that assessment.

#### 5.2.3. Directive 2003/35/EC – The Public Participation Directive

Regulation 59 of the EPR 2010 requires the Environment Agency to prepare and publish a statement of its policies for complying with its public participation duties. We have published our public participation statement.

This Application has been consulted upon, in line with that statement, as well as with our guidance RGS6 on Sites of High Public Interest, which addresses specifically extended consultation arrangements for determinations where public interest is particularly high. This satisfies the requirements of the Public Participation Directive.

Our decision in this case has been reached following a programme of extended public consultation, both on the original application and later, separately, on this permit and a decision document. The way in which this has been done is set out in Section 2. A summary of the responses received to our consultations and our consideration of them is set out in Annex 1.

#### 5.2.4. Section 4 Environment Act 1995 (pursuit of sustainable development)

We are required to contribute towards achieving sustainable development, as considered appropriate by Ministers and set out in guidance issued to us. The Secretary of State for Environment, Food and Rural Affairs has issued *The Environment Agency's Objectives and Contribution to Sustainable Development: Statutory Guidance (December 2002)*. That document:

*"provides guidance to the Environment Agency on such matters as the formulation of approaches that the Environment Agency should take to its work, decisions about priorities for the Environment Agency and the allocation of our resources. It is not directly applicable to individual regulatory decisions of the Environment Agency."*

The guidance contains objectives in relation to the Environment Agency's operational functions and corporate strategy. Some of these objectives relate to the Environment Agency's wider role in waste management and strategy. In respect of the management of extractive waste, the guidance notes state that the Environment Agency should pursue the following objective:

*"to prevent or reduce as far as possible any adverse effects on the environment as well as any resultant risk to human health from the management of waste from the quarrying and mineral extraction industries."*

In respect of water quality, the Environment Agency is required to: '*protect, enhance and restore the environmental quality of inland and coastal surface water and groundwater, and in particular:*

- *To address both point source and diffuse pollution;*
- *To implement the EC Water Framework Directive; and to ensure that all relevant quality standards are met.'*

In respect of regulation of industrial pollution through the EPR, the Guidance refers in particular to the objective of setting permit conditions "*in a consistent and proportionate fashion based on Best Available Techniques and taking into account all relevant matters…*".

The Environment Agency considers that it has pursued the objectives set out in the Government's guidance, where relevant, and that there are no additional conditions that should be included in this Permit to take account of the Section 4 duty

**5.2.5. Section 5 Environment Act 1995 (preventing or minimising effects of pollution to the environment)**

We are satisfied that our pollution control powers have been exercised for the purpose of preventing or minimising, or remedying or mitigating the effects of pollution of the environment in accordance with section 5 of the Environment Act 1995.

**5.2.5. Section 7 Environment Act 1995 (pursuit of conservation interests)**

Section 7(1)(c) of the Environment Act 1995 places a duty on us, when considering any proposal relating to our functions, to have regard amongst others to any effect which the proposals would have on the beauty and amenity of any urban or rural area.

We do not consider that any conditions additional to those in the permit are required to meet this duty. The structures that could affect visual amenity will be the drilling rig and the flares. These structures are temporary in nature and any visual impact will be limited.

**5.2.6. Section 81 Environment Act 1995**

The site is not within a designated Air Quality Management Area.

We consider that we have taken our decision in compliance with the National Air Quality Strategy and that there are no additional or different conditions that should be included in this variation.

**5.2.7. Section 40 Natural Environment and Rural Communities Act 2006**

Section 40 places a duty on us to have regard, so far as it is consistent with the proper exercise of our functions, to conserving biodiversity. 'Conserving biodiversity' includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat. We have done so and consider that no conditions additional or different to those in the permit are required.

**5.2.8. Section 23 of the Local Democracy, Economic Development and Construction Act 2009**

Section 23 requires us, where we consider it appropriate, to take such steps as we consider appropriate to secure the involvement of interested persons in the exercise of our functions by providing them with information, consulting them or involving them in any other way. Section 24 requires us to have regard to any Secretary of State guidance as to how we should do that.

The way in which the Environment Agency has consulted with the public and other interested parties is set out in this document. The way in which we have taken account of the representations we have received is set out in annex 1. Our public consultation duties are also set out in the Environmental Permitting (England and Wales) Regulations 2016, and our statutory Public Participation Statement, which implement the requirements of the Public Participation Directive. In addition to meeting our consultation responsibilities, we have also taken account of our guidance in Environment Agency Guidance Note RGS6 and the Environment Agency's Building Trust with Communities toolkit.

**5.2.10. Human Rights Act 1998**

We have considered any potential interference with rights under the European Convention on Human Rights in reaching our decision and consider that our decision is compatible with our duties under the Human Rights Act 1998. In particular, we have considered the right to life (Article 2), the right to a fair trial (Article 6), the right to respect for private and family life (Article 8) and the right to protection of property (Article 1, First Protocol). We do not believe that Convention rights are engaged in relation to this determination and to the extent that they may be, any interference with those rights is justified.

**5.2.11. Countryside and Rights of Way Act 2000 (CROW 2000)**

Section 85 of this Act imposes a duty on Environment Agency to have regard to the purpose of conserving and enhancing the natural beauty of the area of outstanding natural beauty (AONB). There is no AONB which could be affected by the variation of the permit.

**5.2.12. Wildlife and Countryside Act 1981**

Under section 28G of the Wildlife and Countryside Act 1981 the Environment Agency has a duty to take reasonable steps to further the conservation and enhancement of the flora, fauna or geological or physiographical features by reason of which a site is of special scientific interest. Under section 28I the Environment Agency has a duty to consult Natural England in relation to any permit that is likely to damage SSSIs.

We have assessed the application and concluded that there will be no likely damage to any SSSIs as there is no change to the overall impact of the activities - see section 7.2 and 7.6 of our original Decision Document.

**5.2.13. The Conservation of Habitats and Species Regulations 2010**

We have assessed the Application in accordance with guidance agreed jointly with Natural England and concluded that there will be no likely significant effect on any European Site.

The assessment we carried out as part of the determination of the original permit took into account the potential impacts from the continuous incineration of gas for 365 days and this impact was been fully assessed and is detailed in section 7.6 of the original Decision Document. Following our assessment we were satisfied that there would be no likely significant effect on the statutory conservation sites (SPA/Ramsars/SSSI) from air emissions and that assessment remains valid. We presented our assessment and conclusion to Natural England on an Appendix 11 form (Habitats Directive: Form for recording likely significant effect) for information as part of the determination of the original application. Natural England responded, agreeing with our conclusions.

**5.2.14. Section 108 Deregulation Act 2015 – Growth duty**

We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 110 of that Act in deciding whether to grant this permit.

Paragraph 1.3 of the guidance says:

"The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a

factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation."

We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections.

We consider the requirements and standards we have set in this permit are reasonable and necessary to avoid a risk of an unacceptable level of pollution. This also promotes growth amongst legitimate operators because the standards applied to the operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.

# Summary of responses to consultation and web publication and the way in which we have taken these into account in the determination process.

## A) Advertising and Consultation on the Application

The Application has been advertised and consulted upon in accordance with the Environment Agency's Public Participation Statement. The way in which this has been carried out, along with the results of our consultation and how we have taken consultation responses into account in reaching our decision, is summarised in this Annex. Copies of all consultation responses have been placed on the Environment Agency public registers.

The Application was advertised on the Environment Agency's Citizen Space website from 20th February 2019 to 20th March 2019. Copies of the Application were placed in the Environment Agency Public Register at Richard Fairclough House, Knutsford House, Latchford, Warrington WA4 1HT.

The following statutory and non-statutory bodies were consulted:

- Local Planning Authority – Lancashire County Council
- Public Health England
- Director of Public Health – Lancashire County Council
- Health and Safety Executive
- Mineral Planning Authority – Lancashire County Council

## 1) Consultation Responses from Statutory and Non-Statutory Bodies

| Response Received from Local Planning Authority - Lancashire County Council | |
|---|---|
| **Brief summary of issues raised:** | **Summary of action taken / how this has been covered** |
| Changes to chemistry of well fluids: The County Council understands that the main change to the composition of the fracturing fluids is to allow the use of a more viscous fluid to increase the effectiveness of the fracturing process by improving the sand carrying capacity of the liquid.<br>It also appears that a number of other chemicals are proposed including methanol and glutaraldehyde in order to treat and clean the well. Provided the Agency is satisfied these additives are non-hazardous to any groundwater resource, there does not appear to be any reason on the grounds of environmental protection why the permit should not be revised as proposed. The aim of the amendment appears partly to maximise the effectiveness of the fracturing exercise. These amendments could also reduce the need to revisit the traffic light monitoring system or at least might reduce the vibration levels required to sufficiently fracture the shale.<br>It appears that the reuse of flow back water containing gelling agents is not possible and therefore this waste has to be taken off site. The use of such additives in the | None required |

| | |
|---|---|
| fracturing fluid may therefore increase the numbers of HGVs associated with the development.<br><br>However, there is no limit within the planning permission on vehicle movements and therefore this amendment would not have any planning and highway implications, particularly given that around 250 HGVs per day use the road already. The County Council therefore has no objection to the changes that are proposed to the revised composition of the well fluids. | |
| The amendments to the waste management plan: These amendments appear to largely relate to the presentation of the document or are minor changes to the wording. There are also various points of clarification and addition within the document but these changes appear to all lie within the broad parameters set by the planning permission relating to the drilling and fracturing of the wells. | None required |
| Monitoring requirements: The proposed amendments to the water monitoring proposals are noted. It appears from the proposals that there would still be regular monitoring of the key water parameters and that the changes proposed would not undermine the principles of the water monitoring requirements. | See section 3.2.5 – we have not accepted the changes requested by the Applicant and have instead changed the monitoring frequency to “fortnightly unless agreed in writing with the Environment Agency” |
| In relation to the air quality monitoring, it is noted that an additional air quality monitoring station has been established since the original monitoring regime was designed. The additional monitoring station should provide higher quality data on the key pollutants which might be associated with the exploration activities and it is therefore considered that it is appropriate for the air quality monitoring to be amended in the manner proposed. | None required. |

| Response Received from Public Health England | |
|---|---|
| **Brief summary of issues raised:** | **Summary of action taken / how this has been covered** |
| The main emissions of potential concern are releases to the atmosphere. However, based on the information contained in the application supplied to us, Public Health England has no significant concerns regarding the risk to the health of the local population from the installation. | None required |

## 2) Consultation Responses from Members of the Public and Community Organisations

A total of 224 responses were received.

Although the consultation ended on 20/03/2019, any comments that have been received after the close of the consultation and prior to issue of our minded to position were taken into consideration as part of our determination process.

We can only consider comments which are relevant to changes proposed under the variation application.

Summaries of the consultation responses and how we have addressed them are as follows:

**Use of additional chemicals:**

A number of concerns have been raised about the Applicant's request to add new chemicals to the list of approved chemicals for use in their operations.

Only methanol and gluteraldhyde have been added to the approved chemicals list. All other chemicals were previously approved as part of the determination of the original permit. Methanol will only be used in small quantities as part of well suspension to ensure that gas hydrates do not form within the well. Gluteraldehyde has been proposed for use to complement the UV disinfection system to prevent bacterial growth. We are satisfied that these chemicals do not pose a risk to groundwater.

**Use of language in the variation application:**

A number of concerns were raised about the use of "non-hazardous" to describe methanol and gluteraldehyde. We are satisfied that the Applicant has used the correct terminology to describe the proposed chemicals in relation to their potential impact on groundwater.

The term "non-hazardous to groundwater" referred to in the variation application is a technical reference which has been used following a preliminary assessment of methanol and glutaradehyde under the Joint Agency Groundwater Directive Advisory Group (JAGDAG) methodology. This assessment is done to comply with the requirements of the Water Framework Directive (2000/60/EC) and the Groundwater Daughter Directive (2006/118/EC). Hazardous substances are defined in the Water Framework Directive as "*substances or groups of substances that are toxic, persistent and liable to bioaccumulate, and other substances or groups of substances which give rise to an equivalent level of concer*n". Non-hazardous pollutants are not defined in the Directive but are taken to be any potential pollutant other than a hazardous substance. Further information on the JAGDAG methodology can be found at https://www.wfduk.org/stakeholders/jagdag

**Number of variations:**

Concerns were raised about the number of variations that have been applied for this activity.

It is standard practice for an Operator to review their operations as they progress and make adjustments or changes and the Operator has an obligation to apply for a variation of the permit to ensure those changes are appropriately controlled. In other sectors, this would happen over the life of the site, potentially many years. However in this case, the activities are time-limited and as a result a number of variation have been applied for over a relatively short period of time.

The original permit was granted in 2015 and since then the Operator has carried out work on site and made changes to their procedures, plant design and operations based on site and activity specific knowledge developed during the initial period of operation. We have a duty to ensure that the permit accurately reflects the activities on site and as part of our continuous compliance work, were we have identified where improvements can be made, we have also taken the opportunity to make changes to the permit.

**Changes to the monitoring requirements:**

A number of comments raised concerns about the request to change monitoring requirements.

We have not accepted all the changes requested by the Applicant. We have accepted the changes to the Ambient Air monitoring to reduce the number of determinands to be monitored using diffusion tubes around

the site. We are satisfied that this reduction is appropriate as a new ambient air monitoring station, providing continuous monitoring of these determinands has been installed and provides more accurate continuous monitoring data. This monitoring forms part of the approved Emission Management and Monitoring Plan (EMMP) which forms part of the Operating Techniques in table S1.2.

We have not accepted the request to reduce the frequency of monitoring of surface water.

**Impacts on Groundwater:**

A number of concerns were raised about the risk to groundwater from the operations and the use of additional chemicals in the process.

There have been no changes to the risk to groundwater from the changes in this variation. As detailed in section 3.1.4 both methanol and gluteraldhyde have been assessed under the JAGDAG protocol as Non-Hazardous to groundwater and we are satisfied that their use in the operations specified in the approved Waste Management Plan does not pose a risk to groundwater.

**Noise pollution:**

Concerns were raised that the activities will cause noise pollution.

We are satisfied that the activities, if carried out in accordance with the permit, will not cause pollution.

Condition 3.4 of the permit controls Noise and Vibration and require that such emissions are minimised and, in the unlikely events that the activities give rise to pollution due to noise or vibration outside the site, a noise and vibration management plan can be requested and will have to be submitted to the Environment Agency for approval prior to being implemented.

**Odour:**

Concerns were raised about the potential for odour pollution from the use of open topped tanks.

We are satisfied that the use of the open-topped tanks, if carried out in accordance with the permit, will not cause pollution.

Condition 3.3 of the permit controls Odour and require that such emissions are minimised and, in the unlikely events that the activities give rise to pollution due to odour outside the site, an odour management plan can be requested and will have to be submitted to the Environment Agency for approval prior to being implemented.

**Tremors:**

A number of concerns were raised about the tremors associated with previous activities on site and the potential for the new activities to induce tremors.

We are satisfied that the changes in this variation do not increase the potential for tremors. Any changes to the fracturing process would form part of the approval of the relevant Hydraulic Fracturing Programme, which is a separate process to this variation and is done in association with the Oil and Gas Authority and the Health and Safety Executive who have joined responsibility for this issue.

**Climate change policy**

Concerns were raised about the impacts of the activities on climate change.

Policy is made by the Government and the policy on exploitation of Shale Gas is no different to that of any other fossil fuel. The policy states “We aim to maximise the economic recovery of oil and gas from the UK’s oil and gas reserves, taking full account of environmental, social and economic objectives”.