

Permitting decisions

Variation

We have decided to grant the variation for West Newton 'A' Well Site operated by Rathlin Energy (UK) Limited.

The variation number is EPR/BB3001FT/V003.

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 summarises the decision making process in the decision checklist to show how all relevant factors have been taken into account.

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
- shows how we have considered the [consultation responses](#)

Unless the decision document specifies 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/BB3001FT issued 30/04/2014.

We gave the variation the reference number EPR/BB3001FT/V003. We refer to the Application as "the Application" in this document for consistency.

The number we have given to the variation notice is EPR/BB3001FT/V003. We refer to the notice as "the Notice" in this document.

The Application was duly made on 18/12/2018.

Summary of the application

The applicant has requested the addition of the following activities to their permitted operations:

- Add an installation activity for the storage and handling of crude oil generated from well testing under Schedule 1 Section 1.2 A(1)e(i)
- Make changes to the proposed testing of Well WNA-2 in the approved Waste Management Plan. This well was authorised under the original permit. This includes initial testing of the well, well clean up, Extended Well Test and well and reservoir treatments using acid wash and acid squeeze. The testing of well WNA-2 will also involve the incineration of waste gas in a flare with a capacity exceeding 10 tonnes per day.

1. Summary of our Decision

We have decided to grant the variation.

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 18/12/18. 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 placed a copy of the Application and all other documents relevant to our determination on our Public Register.

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":

- Director of Public Health – East Riding of Yorkshire Council
- Mineral Planning Authority – East Riding of Yorkshire Council
- Environmental Health – East Riding of Yorkshire Council
- Health and Safety Executive
- Public Health England

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

The original permit issued allowed for the drilling of well WNA-2. The applicant has requested to make changes to the permit to allow changes to the proposed testing of well WNA-2.

Geological logging is undertaken during well construction to determine whether formations encountered during drilling contain petroleum. The borehole logs assist the Operator in determining specific zones, which justify subsequent testing.

Well testing may involve various different processes, all of which are intended to obtain a greater understanding of the formation properties and ultimately determine whether the formations are capable of producing commercial quantities of petroleum. Well testing processes vary, depending on the formation being tested.

The Operator has identified a number of zones of interest within the Permian which may warrant clean up and testing.

Perforation of the Casing and Reservoir Formation

In order to establish communication between the formation(s) being tested and the wellbore the casing must be perforated.

The perforating operation, in particular the use of explosive charges, is regulated by the Police Authority and the Health and Safety Executive. Perforating may be undertaken a number of times as deemed necessary by the Operator.

This activity is described in section 6.3.1 of the approved updated Waste Management Plan and we are satisfied that the appropriate controls are in place to manage extractive wastes generated by this activity.

Well Clean Up

The Operator has proposed to undertake a number of well clean-up activities. Well clean up may include one or more well treatment activities, described below.

Following the perforation of the casing and following any well treatments that may be undertaken the formation will be evaluated by means of flow testing. The purpose of an initial flow test or well clean-up is to prepare the well for an Extended Well Test (EWT).

Natural gas is flowed to surface (ordinarily unaided), together with any produced fluids (oil, condensate and or formation water). Once at surface, natural gas and produced fluids will be diverted by temporary pipework to a three phase separator, which will separate out oil/condensate, formation water and natural gas.

Oil and condensate, which for clarity is not a waste, will be stored onsite for subsequent offsite removal by a licensed haulier to a permitted refinery for sale. Formation water, which is considered a waste, will be stored onsite for subsequent offsite removal by a licensed haulier to an Environment Agency permitted water treatment facility where it is processed, treated and discharged in accordance with the permitted controls of the water treatment facility. Natural gas, which is considered a waste, will be incinerated onsite using a shrouded flare or CEB 1200 incinerator.

The Operator has produced a Gas Management Plan and an Odour Management Plan, which both include controls on potential fugitive emissions from the storage of crude oil (including condensate) and these two documents have been incorporated into the permit as Operating Techniques under table S1.2.

Extended Well Test (EWT)

Once each well clean-up is completed the WNA-2 well will be shut in whilst the shrouded flare or Aeron CEB1200 incinerator is substituted for the larger CEB 4500 unit, with the exception of an EWT for oil where the shrouded flare or Aeron CEB1200 will continue to be used. For clarity, following the completion of an

EWT the flares / incinerators may again be substituted to allow for further well clean-up operations within the formation.

A number of EWTs may be undertaken as part of the well testing activities following on from the well clean up phase.

As with the clean-up phase, natural gas will be flowed to surface together with any produced fluids (oil/condensate and formation water). The natural gas and produced fluids will be separated by the three phase separator where natural gas will be incinerated and considered a waste, with oil/condensate and formation water being separated and stored in separate storage tanks for subsequent offsite removal.

Both the initial well clean-up and the Extended Well Test will potentially give rise to crude oil (including condensate), the Operator has applied to add an Installation activity in table S1.1 of the permit under Schedule 1 Section 1.2 A (1)(i): The loading, unloading, handling or storage of, or the physical, chemical or thermal treatment of crude oil. We have reviewed the information provided as part of the application, including the Environmental Risk Assessment and we are satisfied that this is appropriate. We have set limits of activity to control the storage and handling of crude oil (including condensate) in table S1.1. In addition we have reviewed the Odour Management Plan submitted with the application and we are satisfied that the appropriate controls are in place to control potential odour from the new activities. We have also set monitoring requirements to measure the volumes of natural gas vented from the storage tanks.

The initial well clean-up and the EWT will involve the incineration of natural gas in a flare with a capacity exceeding 10 tonnes per day from the testing of Well WNA-2, the Operator has applied to add a Section 1.2Part A(1)(e)(i) installation activity in table S1.1 of the permit to allow storage of crude oil.

The Applicant provided a detailed Gas Management Plan, which included a Best Available Techniques (BAT) assessment of the proposed flares on site during both activities.

During the initial well clean-up, the Operator proposes to use either the PW flare or the Aeron CEB1200 flare, depending on availability of the flare during the planned period of testing. However, this new proposed flare (Aeron CEB-1200) is shown to have a better environmental performance than the original proposal of a shrouded flare as the Operator has demonstrated that the new type of flare is BAT for both the well clean-up phase and the EWT phase. This is consistent with the sector guidance <https://www.gov.uk/guidance/onshore-oil-and-gas-sector-guidance>. We have therefore specified in the permit that, for the gas flare scheduled activity the proposed gas management plan Rev 5 shall be followed with the exception that for well clean-up and oil extended well test the higher efficiency low emission burner CEB 1200 and/or CEB 4500 shall be used. If these are not available, the operator will have to demonstrate that this is the case and the alternative PW Well Test Shrouded Ground Flare may be used if we accept their justification.

During the Extended Well Test, the Operator proposes to use either:

- The PW flare or the Aeron CEB1200 flare in the event of oil being produced due gas flow being expected to be low. The choice of which flare will be used will be made depending on the availability of the flare during the planned period of testing.
- An Aeron CEB4500 flare in the event of gas being produced as gas flow is expected to be higher.

The Gas Management Plan submitted as part of the application includes relevant information regarding the operation of the flares and has been incorporated in the permit as an Operating Technique under table S1.2. In addition, the Operator has provided a work instruction (Work Instruction 32 – Operation of combustion units during well testing) which contains detailed information on how the flares will be selected and operated. We have incorporated this work instruction in the permit as an Operating Technique under table S1.2.

There are no changes to the monitoring requirements of air emissions from the flare. However the Operator has provided an updated procedure, Work Instruction 20 - Recording Flare Stack - Incinerator Temperature Data (RE-04-020) which has been incorporated into the permit as an Operating Technique under table S1.2.

The Operator has also provided an updated Leak Detection and Repair Plan which will be used to ensure that any potential leaks from the plant used on site will be swiftly identified and rectified. We have incorporated this plan into the permit as an Operating Technique under table S1.2.

Well and Reservoir Treatments

Well treatments may be undertaken following the drilling of the WNA-2 well. This may include acidisation, as described below following perforation, or the use of Nitrogen. The same section may be the subject of repeated well treatments in the event the first treatment is only partially successful in cleaning the near wellbore formation.

Acid Wash and Squeeze

The existing permit allows the Operator to undertake an acid wash and squeeze at the West Newton A wellsite. Following the drilling of the WNA-2 well and when necessary during the lifetime of the well and acid wash and squeeze will be undertaken for the purpose of cleaning the well and the near wellbore.

The purpose of an acid wash is to clean the well after drilling and results in improved permeability. The fine particles and drilling muds may block, or blind, the natural pore spaces in the rock. An acid wash is used to clean the well out following drilling in order to return the natural porosity and permeability of the damaged formation. The proposed dilution of hydrochloric acid (HCl) is 15%.

An “acid squeeze” is an oil industry term that is generally used when the intention is for the acid to remain local to the well in to the geological formation. It is most frequently used when the permeability of the geological formation is very low. An acid squeeze results in the acid being squeezed in to the rock formation and dissolving the rock.

The chemical reaction between the calcium carbonate formation and acid can be represented by the following formula:



Once the Hydrochloric acid has reacted with the formation it will form a waste stream known as ‘spent acid’ which, following the completion of the acid squeeze, will be recovered (circulated) back to surface.

It is anticipated that the acid wash and squeeze process may be undertaken a number of times depending on the discrete zones perforated. Each acid squeeze would involve the application of up to 15m³ of 15% acid solution.

We consider that the use of acid wash and acid squeeze in well WNA-2 will comply with the groundwater activity exclusion under the Environmental Permitting (England and Wales) Regulations 2010, paragraph 3.3(b) of Schedule 22 in that any discharge to groundwater that may occur would be of a quantity so small as to obviate any present or future danger of deterioration in the quality of any receiving groundwater and that a permit for a groundwater activity is not required.

Nitrogen Treatment

To aid the initial flow of petroleum, nitrogen may be introduced into the wellbore to displace wellbore fluids, reducing its hydrostatic weight. Nitrogen is classified as an inert waste and venting of such considered a closed loop system, insofar as nitrogen is extracted from the atmosphere and is vented back atmosphere. No nitrogen would remain in the wellbore.

The use of Nitrogen may result in the cold venting of natural gas albeit for a short period of time this is due to the mix of natural gas and oxygen being at levels considered incombustible. As the Nitrogen depletes the mix of natural gas and oxygen will then ignite as soon as the mix of oxygen and natural gas become combustible. Both the shrouded flare and the CEB1200 Unit have a pilot light so as soon as it is able to the natural gas will ignite. The Operator has submitted a Gas Management Plan which provides justification for cold venting during short periods.

We have assessed the use of nitrogen to aid initial flow of petroleum and reviewed the justification provided as part of the Gas Management Plan and we are satisfied that it is appropriate. Furthermore, additional controls relating to the potential generation of odour from the use of nitrogen are detailed in the Odour Management Plan.

Both the Gas Management Plan and the Odour Management Plan have been incorporated in the permit as Operating Techniques under table S1.2.

Decision checklist

Aspect considered	Decision
Receipt of application	
Confidential information	A claim for commercial or industrial confidentiality has not been made.
Identifying confidential information	We have not identified information provided as part of the application that we consider to be confidential. The decision was taken in accordance with our guidance on confidentiality.
Consultation/Engagement	
Consultation	The consultation requirements were identified in accordance with the Environmental Permitting Regulations and our public participation statement. The application was publicised on the GOV.UK website. We consulted the following organisations: Director of Public Health – East Riding of Yorkshire Council Mineral Planning Authority – East Riding of Yorkshire Council Environmental Health – East Riding of Yorkshire Council Health and Safety Executive Public Health England The comments and our responses are summarised in the consultation section .
The facility	
The regulated facility	We considered the extent and nature of the facility at the site in accordance with RGN2 'Understanding the meaning of regulated facility'. The extent of the facility is defined in the site plan and in the permit. The activities are defined in table S1.1 of the permit.
The site	
Extent of the site of the facility	The operator has provided a plan which we consider is satisfactory, showing the extent of the site of the facility. The plan is included in the permit.
Waste management plan	The operator has provided a waste management plan which we consider is satisfactory.
Biodiversity, heritage, landscape and nature conservation	The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat. We have assessed the application and its potential to affect all known sites of nature conservation, landscape and heritage and/or protected species or

Aspect considered	Decision
	<p>habitats identified in the nature conservation screening report as part of the permitting process.</p> <p>We consider that the application will not affect any sites of nature conservation, landscape and heritage, and/or protected species or habitats identified.</p>
Environmental risk assessment	
Environmental risk	<p>We have reviewed the operator's assessment of the environmental risk from the facility.</p> <p>The operator's risk assessment is satisfactory.</p> <p>The assessment shows that, applying the conservative criteria in our guidance on environmental risk assessment, all emissions may be categorised as environmentally insignificant.</p>
Operating techniques	
General operating techniques	<p>We have reviewed the techniques used by the operator and compared these with the relevant guidance notes and we consider them to represent appropriate techniques for the facility.</p> <p>The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.</p>
Odour management	<p>We have reviewed the odour management plan in accordance with our guidance on odour management.</p> <p>We consider that the odour management plan is satisfactory.</p>
Permit conditions	
Updating permit conditions during consolidation	<p>We have updated permit conditions to those in the current generic permit template as part of permit consolidation. The conditions will provide the same level of protection as those in the previous permit(s).</p>
Use of conditions other than those from the template	<p>Based on the information in the application, we consider that we do not need to impose conditions other than those in our permit template.</p>
Emission limits	<p>No emission limits have been added, amended or deleted as a result of this variation.</p>
Monitoring	<p>We have decided that monitoring should be added for the following parameters, using the methods detailed and to the frequencies specified:</p> <p>Volume of gas vented from stock tank 1 and 2.</p> <p>These monitoring requirements have been imposed in order to demonstrate that fugitive emissions from the stock tanks are kept to a minimum and that the Gas Management Plan is being complied with.</p>

Aspect considered	Decision
Operator competence	
Management system	There is no known reason to consider that the operator will not have the management system to enable it to comply with the permit conditions.
Financial competence	There is no known reason to consider that the operator will not be financially able to comply with the permit conditions.
Growth Duty	
Section 108 Deregulation Act 2015 – Growth duty	<p>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.</p> <p>Paragraph 1.3 of the guidance says:</p> <p>“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.”</p> <p>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.</p> <p>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.</p>

Consultation

The following summarises the responses to consultation with other organisations, our notice on GOV.UK for the public and the way in which we have considered these in the determination process.

Responses from organisations listed in the consultation section

Response received from
Public Health England
Brief summary of issues raised
Based on the information contained in the application supplied to us, Public Health England considers the proposed operations to present a low risk to the health of the local population.
Summary of actions taken or show how this has been covered
None needed

Representations from individual members of the public.

A total of 50 responses were received.

Although the consultation ended on 11/02/2019, any comments that have been received after the close of the consultation 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:

Independent well inspector:

Concerns were raised about the use of independent well inspectors.

The use of independent well inspectors falls under the remit of the Health and Safety Executive and is not relevant to this variation.

Record of compliance:

A number of concerns were raised regarding the past record of compliance at the site.

As part of our regulation of the site, we have carried out and will continue to carry out a number of planned and unplanned site visits to ensure that the activities on site comply with the requirements of the permit. Where we have identified compliance at the site, we have taken action, where necessary in accordance with our enforcement guidelines.

Use of acid washes and acid fracking:

Concerns were raised about the use of acid in the well.

The permitted activities are limited to the use of acid washes and acid squeezes. Fracturing of any type is not permitted under this permit.

Acid washes and acid squeezes using hydrochloric acid are common method to treat onshore oil and/or gas wells and we are satisfied that the proposed activities will not pose a risk to groundwater.

For more information about the use of acid at oil and gas exploration and production sites please see:

https://consult.environment-agency.gov.uk/onshore-oil-and-gas/onshore-oil-and-gas-regulation-information-page/supporting_documents/Acidisation%20FAQs%20January%202018.pdf

Gas incineration:

Concerns were raised about the incineration of natural gas and potential air pollution.

We have carried out an extensive review of the changes proposed by the Applicant as part of this variation.. This review takes into account the proposed activities, whether they are Best Available Techniques, the technical specification of the proposed flares, the duration of the activities and the location of any nearby sensitive receptors. We are satisfied that the proposed flares are appropriate for each of the period of activity they have been selected for and that emissions from the flare will be insignificant and will not have an impact on any nearby sensitive receptors.

NORM:

A number of concerns were raised regarding the risk from Naturally Occurring Radioactive Minerals (NORMs) that may arise as part of the activities.

The Operator was granted a separate Radioactive Substances Regulation (RSR) permit to control the management of NORMS in 2014 when the original permit was issued. The changes proposed as part of this variation have no impact on the NORM permit (ref EPR/PB3030DJ/A001).

Additionally, a number of comments raised the issue of radon. Radon is under the remit of Public Health England and therefore not relevant to this variation.

Odour:

Concerns were raised about the potential for odour pollution from the use of nitrogen and flaring.

We are satisfied that the Operator has the procedures in place to control potential odours from the site. They have submitted an updated Odour Management Plan, which takes into account the flaring of gas, storage of crude oil (including condensate) and the use of nitrogen and we are satisfied that it is appropriate.

We have incorporated this odour Management Plan into the permit as an Operating Technique in table S1.2 of the permit.

In addition 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, the approved odour management plan shall be implemented.

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 Onshore Oil and 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".

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.

Use of CO2:

A number of comments were made about the proposed use of carbon dioxide in the well.

Following discussion with the Applicant, the proposed use of carbon dioxide in the well was removed and therefore no longer relevant to this variation.