

Permitting decisions

Variation to permit

We have decided to grant the variation for Knapton Generating Station operated by Third Energy UK Gas Limited.

The variation number is EPR/HP3038LA/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.

This variation is required as the Environment Agency has a duty, under the Environmental Permitting (England and Wales) Regulations 2016, regulation 34(1), to periodically review permits. As a result of that review we have identified a number of necessary changes we must make to your permit to reflect current legislation and best practice. These changes principally relate to:

- Implementation of the Mining Waste Directive namely the addition of extractive waste management activities;
- The permitting of the on-site flare as a listed activity, that is the incineration by flaring of hazardous waste, rather than as a safety device, as is currently the case;
- Oil storage activities; and
- Changes to vary the frequency of testing of the discharge to Difford Beck.

The variation also aims to:

- Consolidate permits - all variations to your permit will be brought together into one permit so the requirements will be clearer.
- Formalise changes to monitoring requirements and compliance limits where we have agreed them in writing, for example as the result of a hydrogeological risk assessment review.
- Address site specific issues which result in a change to the current permit, for example incorporating completed improvement conditions into the permit and removing inconsistencies.

Other than the addition of the extractive waste management activity the operations on site are not changing, rather our review of the permit has led to amendments and updates to the current permit.

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 in to account.

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

- gives a brief outline of the proposed process
- gives a description of the changes introduced by the variation
- 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 decision document specifies otherwise we have accepted the applicant's proposals.

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 in to account.

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

Use of terms

Applicant

The Applicant is Third Energy UK Gas Limited. We refer to Third Energy UK Gas Limited as 'the Applicant' in this document. Where we are talking about what would happen after the draft permit is granted, we call Third Energy UK Gas Limited 'the Operator'.

Regulations

In this document the term 'Regulations' refers to the Environmental Permitting (England and Wales) Regulations 2016 No. 1154.

Brief outline of the process

Third Energy UK Gas Limited, 'the Operator', operates an Open Cycle Gas Turbine (OCGT) power station, and a Gas Conditioning Plant within the installation, located in East Knapton to the North East of Malton, North Yorkshire (at National Grid Reference SE 8875 7698). The Installation is capable of supplying electricity for up to 40,000 homes. The Installation is designated Large Combustion Plant (LCP) number 376, and the Operator has chosen to operate this LCP under the Industrial Emissions Directive (IED) chapter III annex V compliance route. The Operator has implemented an Environmental Management System for the installation.

The Open Cycle Gas Turbine Engine, which was commissioned in 1994, has a thermal input of 110 MWth, and drives a generator producing an electrical output of 41.5 MW (Section 1.1 A(1) (a) activity of Schedule 1 to the Regulations). The engine operates exclusively on sour gas (natural gas containing hydrogen sulphide, H₂S, together with other sulphur compounds) which is recovered from a local gas field and delivered by pipeline to the installation and stored prior to conditioning and combustion.

Conditioning of the sour gas takes place within the Gas Conditioning Plant (Section 1.2 A(1) (a) activity of Schedule 1 to the Regulations), where water and hydrocarbon liquids are removed from the gas stream. The gas is then heated above its water and hydrocarbon dew point using a gas-fired boiler (with a thermal input of 1 MWth). This process ensures that the gas meets a suitable quality for use as a fuel within the gas turbine.

A non-hazardous mining waste operation covers the storage of mining waste received from the local gas field. These wastes comprise produced water, flowback fluid from shale gas production from the local well network and brine for well suspension generated during workovers or well abandonment.

A number of ancillary systems are also used to enable viable operation of the installation, including a water treatment plant, a ground flare, a gas fired pre-heater and an emergency gas oil generator for a firewater pump.

The principal environmental issues concerned with the installation include emissions released to air and emissions produced during the gas conditioning process. Emissions to air are primarily derived from the gas turbine exhaust. Emissions from the gas treatment plant arise from the removal of gas condensate, water, and other additives concerned with hydrate prevention and pipeline protection.

The main air emissions of concern associated to the gas turbine exhaust are oxides of nitrogen (NO_x) and sulphur dioxide (SO₂).

Emissions to air are also released from the ground flare, the hydrochloric acid (HCl) storage tank within the water treatment plant and the gas-fired pre-heater.

Effluent is produced from two main areas within the installation: the Gas Conditioning Plant and the water treatment plant.

Increased traces of hydrocarbon fractions and moisture occur naturally within abstracted gas. It is necessary to remove these prior to use within the gas turbine engine. This condensate – consisting of hydrocarbon liquids and water (salt saturated brine) – together with injected additives, is removed within the gas conditioning plant. Additives, which are injected into the gas stream at the well heads in order to prevent the occurrence of hydrate formation and corrosion, include glycol and corrosion inhibitor. Gas condensate is stored prior to its disposal via the KM-3 well at the Kirby Misperton A Wellsite and covered by a separate permit.

There are no releases to sewer from the site. Uncontaminated surface water is discharged to Difford Beck, via an oil interceptor.

Land use surrounding the Installation and dominating the whole of the Vale of Pickering is primarily agricultural, both arable and pasture land. Small villages and farm buildings are scattered within the surrounding farmland, together with a number of small woodland areas. The closest residential property is located 650 metres to the northeast of the Installation. East Knapton and West Knapton are small villages, and lie between 1.0 kilometres and 1.5 kilometres southwest from the Installation.

There are two designated European (Natura 2000) sites within 10 kilometres of the Installation. The closest of these sites is the River Derwent, designated as a Special Area of Conservation (SAC), and lies at a distance of 5.9 kilometres, the second being Ellers Wood and Sand Dale (SAC) at a distance of 8.2 kilometres. There are no Sites of Special Scientific Interest (SSSI) designated sites within a distance of 2 kilometres from the Installation.

Description of the changes introduced by the variation

This is a Variation to add or change the following activities.

1. A Mining Waste Operation, as defined by the Mining Waste Directive (2006/21/EC) and Schedule 20 to the Environmental Permitting (England and Wales) Regulations 2016 as amended, relating to the management of extractive waste, whether or not involving, a Mining Waste Facility. The permit is being varied to include activities specified by the approved Waste Management Plan (which constitutes Chapter 6 of the following document: "Knapton Generating Station. Accompanying Report to inform Variation to Installation Permit EPR/HP3038LA/V004" to allow crude oil storage, and a mining waste facility, and Application for a Radioactive Substances Permit. KGSInsRepv2. June 2018).
2. The incineration by flaring of hazardous waste, namely natural gas above 10 tonnes per day, as an activity listed in Section 5.1 of Chapter 5 of Part 2 of Schedule 1 to the Environmental Permitting (England and Wales) Regulations 2016 as amended.
3. A listed activity for the loading, unloading, handling or storage of, or the physical, chemical or thermal treatment of crude oil – a Section 1.2 A(1)(e)(i) activity under Chapter 1 of Part 2 of Schedule 1 to the Environmental Permitting (England and Wales) Regulations 2016.

The permit has also been changed to vary the frequency of testing of the discharge to Difford Beck. There are no other changes to the permit.

Except where a permit condition imposes a different requirement, the permit requires the Operator to comply with the techniques in the waste management plan (WMP) and limits the activities to those stated unless otherwise agreed in writing by the Environment Agency. We will authorize only minor amendments to the WMP without the need to vary the Permit.

The Permit includes 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 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 permit, we have considered the Application and accepted that the details are sufficient and satisfactory to make the standard conditions appropriate. We try to explain our decisions as accurately, comprehensively and as plainly as possible.

If the Applicant wishes to carry out different or additional activities not covered by this permit, a further variation of the permit will be required. Any such variation application would be determined on its merits and would be subject to our normal consultation process. Any further application to vary operations to manage mining waste will require an amended waste management plan to be submitted.

Key issues of the decision

We are minded to issue the variation to the Applicant. The main features of this permit variation are described above. We consider that, in reaching that decision, we have taken into account all relevant considerations and legal requirements and that the permit will ensure that a high level of protection is provided for the environment and human health.

Background

This variation is part of a sector wide permit review of onshore oil and gas sites. The variation to the permit is for continued operation of an existing oil and gas production site. This variation does not permit any hydraulic fracturing as specified in Schedule 1 to the permit under Table S1.1, activity A11. The permit is being varied to include activities specified by the approved Waste Management Plan. This allows for the management of extractive mining wastes from borehole drilling activities for exploratory activities and well workovers. It is important to note that the waste referred to here is imported from other Third Energy sites. There are no

wells producing oil or gas on KGS, so the site does not directly produce mining waste through extraction. However, there is the potential that mining waste from Third Energy's other sites in Ryedale could be brought onto KGS for storage prior to being removed from the site by a licensed waste contractor for disposal – more detail of which can be read below.

The flare on site will be used both for disposal and emergency use. Given that it will be used for disposal it will be permitted as a 5.1 activity (Section 5.1 A(1)(a): The incineration of hazardous waste in a waste incineration plant or waste co-incineration plant with a capacity exceeding 10 tonnes per day) – more detail of which can be read below.

The Operator previously held its current installation permit as an onshore oil and gas production facility, unloading, handling or storage of crude oil, or treatment under the Pollution Prevention and Control (England and Wales) Regulations 2000. During 2008, these permits automatically became environmental permits under the environmental permitting regime. This regime was expanded in 2010 and is now covered by the Environmental Permitting (England and Wales) Regulations 2016 (the Regulations).

Since 1 October 2013 we have taken the view that operators of new onshore oil and/or gas exploration or appraisal facilities require environmental permits where activities include:

- the management of extractive waste, whether or not this involves a waste facility (as a mining waste operation)
- flaring of waste gas using a flare which has the capacity to incinerate over 10 tonnes a day (as an installation)
- a water discharge activity
- a groundwater activity, such as an indirect discharge of pollutants as part of high pressure high volume hydraulic fracturing
- waste being managed that meets the thresholds for radioactivity set out in the 2016 Regulations (as a radioactive substances activity)

We now consider that the same environmental permits are required for existing onshore oil and/or gas facilities, in addition to the permit required for crude oil unloading, handling or storage, or treatment. This permit variation and consolidation brings these permits in line with the new regulations and approach for permits issued since 2013.

1. How we took our decision

The Application was duly made on 27/01/2017. This means we considered it was in the correct form and contained sufficient information for us to begin our determination.

We carried out consultation on the Variation taking into account the requirements of the Regulations and our statutory Public Participation Statement.

We advertised the Variation 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 Variation Application.

We placed a paper 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 with whom we have “Working Together Agreements”:

- Health and Safety Executive (HSE)
- Public Health England (PHE) / Director of Public Health (DoPH)
- Local Authority, North Yorkshire County Council
- Mineral Planning Authority (MPA), North Yorkshire County Council
- Food Standards Agency (FSA)

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

No objections were received from these bodies as statutory consultees and no comments or objections were received from members of the public.

2. Key Issues

Installation Activities

An Installation activity to allow oil storage, treatment and handling has been added to this permit - a Section 1.2 A(1)(e)(i) activity under Chapter 1 of Part 2 of Schedule 1 to the Environmental Permitting (England and Wales) Regulations 2016. This will cover the receipt of gas from the satellite wellsites and its storage at Knapton Generating Station prior to conditioning and combustion. It will cover receipt of sour gas to its dispatch to the gas conditioning plant (where it would be covered under Section 1.2A(1)(a) Refining gas where this is likely to involve the use of 1,000 or more tonnes of gas in any 12-month period - which is already permitted).

In addition, gas condensate is handled at the site as a waste, for disposal via the KM-3 well at the Kirby Misperton A Wellsite. For the purposes of the permit, "crude oil" means crude oil, gas condensate, gas condensate and mixtures of crude oil and water that contain more than 25% by weight crude oil. Limits on activities have been described in Chapter 4 of document 'Accompanying Report to inform Variation to Installation Permit EPR/HP3038LA/V004 to allow crude oil storage, and a mining waste facility, and Application for a Radioactive Substances Permit. KGSInsRepv2. June 2018'.

The procedures for managing waste condensate on site include, but are not limited to the following:

- Condensate shall be stored in vessels which are of sufficient strength and structural integrity to ensure that it is unlikely to burst or leak in its ordinary use.
- Any road tanker loading systems must be fully contained and the delivery system shall be fitted with dry break couplings.
- During loading of road tankers, the road tanker shall be back vented to the bulk storage tank, or routed to a suitable vent treatment system.
- Provisions shall be made to minimise the emissions of non-methane volatile organic compounds (NMVOC) and methane from the oil storage tank vent.
- Any water, contaminated with condensate, which is drained off from the storage vessel and is not being recycled for reinjection must be collected for treatment before disposal.
- Any water collected in the secondary containment (bund) must be sampled and analysed before release to controlled water. If found to be contaminated with crude oil, it must be collected for treatment before disposal.

We have imposed an improvement programme for a secondary and tertiary containment plan, and a leak detection and repair plan at the site in line with the sector guidance under Improvement Conditions IC17 and IC18 (Details of which can be read below). We are satisfied that these measures to minimise the risk, together with condition 3.1.1 of the environmental permit, will provide acceptable controls.

Mining Waste Activities

A Mining Waste Operation, as defined by the Mining Waste Directive (2006/21/EC) and Schedule 20 to the Environmental Permitting (England and Wales) Regulations 2016 as amended, relating to the management of extractive waste, whether or not involving, a Mining Waste Facility, has been added to the permit. The proposed operation authorised by the permit includes a mining waste operation involving:

- The management of extractive waste from exploratory activities not involving a waste facility.
- The management of extractive waste by way of a waste facility for non-hazardous waste.

A permit subject to the Mining Waste Directive covers the management of extractive waste generated during oil and gas production. The Waste Management Plan allows for the management of extractive mining wastes from borehole drilling activities for exploratory activities, well workovers and extractive waste generated by well abandonment. The activities shall be limited to the following extractive waste types – non-hazardous water based drilling muds, hazardous drill cuttings and non-hazardous drill cuttings. The storage of extractive waste is limited to temporary storage in secure containment as part of the collection and transportation of waste from the site. A non-hazardous mining waste operation not involving a mining waste facility is therefore required at KGS.

It is important to note that the waste referred to here will be imported from other Third Energy sites. There are no wells producing oil or gas on KGS, so the site does not directly produce mining waste through extraction. However, there is the potential that mining waste from Third Energy's other sites in Ryedale could be brought onto KGS for storage prior to being removed from the site by a licensed waste contractor for disposal.

It is intended that these wastes would use the existing pipeline network between the wellsites and KGS. There is no proposal or intention to transport solid waste by road to KGS from the wellsites.

The Regulations define a waste facility as 'any area designated for the accumulation or deposit of extractive waste, whether in a solid or liquid state or in solution or suspension for a period of more than one year for facilities for non-hazardous non-inert waste. Mining waste is waste directly generated by the prospecting, extraction, treatment and storage of mineral resources. A mining waste facility is required to store this waste for longer than periods defined in the Mining Waste Directive. At present mining waste is not handled on site. However, it is proposed to use KGS to store mining waste prior to its reuse or removal for treatment by a licensed waste contractor. This would include the storage of produced water, prior to its dispatch via the reinjection well found at KM-A and Pickering, flowback fluid from hydraulic fracturing operations at the KM-8 well on KM-A (and potentially from other wells in the areas, subject to the relevant planning consents), and suspension brine for well suspension, generated during workovers or well abandonment. A non-hazardous mining waste facility is therefore required at KGS.

It is proposed that any tanks to hold mining waste would be brought to KGS on a project basis, as required. The Operator does not intend to construct permanent tanks. The Applicant has proposed that the tanks would be double-bunded and positioned on areas of hardstanding, and wherever they are located onsite, they would be above the low permeability clay-liner, within the isolated drainage system on a High Density Polyethylene (HDPE) spill-guard. All temporary tanks would be removed from the site within three months of their delivery, by a licensed waste contractor.

The Operator committed to not bring any mining waste onto site (Schedule 5 response dated 16/11/2017) until the integrity of the site is understood.

Section 6.4.4 (Tertiary containment) of the waste management plan (provided 10/06/2018) states: "*The depth of the clay liner will be established prior to any mining waste being brought onto site. It is intended to ensure there is a permeability of less than 1×10^{-9} m/s. If the clay lining provides a lesser barrier than this, HDPE lining will be used for as a spill-guard for any temporary tanks*".

The Waste Management Plan is included in the permit as an operating technique in table S1.2 and captured through condition 2.3.1. Therefore, the Operator will have to comply with the commitments made within the approved WMP before bringing mining waste onto site.

In addition, we have imposed an improvement programme for the whole site and all on site activities, for a secondary and tertiary containment plan, a leak detection and repair plan, and a site surface water management plan at the site in line with the sector guidance under Improvement Conditions IC17, IC18 and IC23 (Details of which can be read below). Furthermore, we felt it necessary to incorporate a pre-operational programme (PO 1) that requires the Operator to complete IC17 and IC20 prior to mining waste being brought onto site for storage. We are satisfied that these measures to minimise the risk, together with condition 3.1.1 of the environmental permit, provide appropriate and acceptable controls.

Although the Applicant proposed groundwater monitoring, as there is no groundwater activity authorised by this permit we have decided it is unnecessary to impose a condition requiring groundwater monitoring beyond that required under the Industrial Emissions Directive (IED), whereby all permits are now required to contain a condition relating to protection of soil, groundwater and groundwater monitoring. Condition 3.1.3 of the environmental permit reads:

Subject to any other condition of this permit, periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless such monitoring is based on a systematic appraisal of the risk of contamination.

This requires the Operator to carry out groundwater monitoring every 5 years and this requirement, which along with the control measures described above, and the conditions of the permit, is deemed sufficient and proportionate to provide appropriate and acceptable controls.

Flare

The flare at Knapton Generating Station is currently permitted as an emergency flare. Additional information received on 16/11/2017 in response to a Schedule 5 notice stated that the flare will be occasionally used as a “waste disposal” route. Three scenarios were described where this may occur, including:

- 1) The initial process of bringing wells into production, which may use nitrogen in sufficient quantities to inhibit combustion – New wells (or wells being restarted after a period of being shut in) may require the use of nitrogen to reduce the hydrostatic liquid head in a well so that flow into the well from the surrounding reservoir can commence. Nitrogen cannot (alone) be used to fuel the turbine, though moderate amounts of nitrogen mixed with methane can. The exact proportions for the KGS turbine depend on the other qualities of the gas (i.e. pressure and volume);
- 2) The testing of a well, when the flow of gas is at low pressure and/or the flow is not constant or predictable – Flow testing may require low wellhead pressure. To achieve the low pressure required, the pipeline pressure may have to be reduced to levels insufficient to fuel the turbine at KGS; and
- 3) Ongoing flow of gas where it is not in sufficient quantities and/or at sufficient pressure to fuel the turbine – Once a well is flowing gas, it may be possible to mix gas from other wells if the volume or pressure is not sufficient to fuel the turbine independently.

We informed the Operator that we did not agree with point 3. In the production stage, insufficient production of gas to power the turbine is not an acceptable reason to flare. A more appropriate method in this instance would be to either shut the well or allow pressure to build up to sufficient levels to fuel the turbine. The Operator was asked to acknowledge and confirm they understood this in a request for further information issued on 11/05/2018. A response from the Operator was received on 10/06/2018 removing point 3 from their waste management plan.

The flare will be used both for disposal and emergency use. Given that it will be used for disposal it will be permitted as a 5.1 activity (Section 5.1 A(1)(a))

Flare impacts

The Installation has gas turbines that burn natural gas as well as the flare described above, which will act both as a safety device and also burn waste gas as a disposal activity in certain situations.

The gas turbines and flare burn sour gas and have been permitted since 2006. Based on the modelling carried out in 2006 and the use of the flare screening tool, there are unlikely to be any significant impacts from the flare or the gas turbines and no further assessment is required at this stage. However, we have imposed improvement condition (IC21), which will require the Operator to review all point source emissions to air including the turbine. IC21 is explained in greater detail below.

We have reviewed the predicted impacts from the flare at nearby receptors, the closest being Ochre Farm, approximately 510 metres from the Installation boundary. The assessment was based on the flare's maximum capacity and the screening tool assumes the nearest receptor is down wind. It therefore represents a worse-case screening. Impacts of NO₂ from the flare were shown to be insignificant.

| | Ochre Farm NO2 impacts | |
|--|--|---|
| | Long Term PC (µg/m³) | Short Term PC (µg/m³) |
| Gas turbines (dispersion modelling) | 0.7 | 38.1 |
| Flare (Screening tool) | 0.19 | 2.38 |

The Environment Agency's Air Quality Modelling Assessment Unit (AQMAU) carried out sensitivity checks based on calculated SO₂ emission rates for a H₂S content of 800 ppm. With an air to fuel ratio of 1:20 the emission concentration of SO₂ will be approximately 67 mg/m³. Based on the high pressure emergency disposal rate of 12769 m³/hr, the SO₂ short-term (ST) process contribution (PC) is insignificant compared to the standard, even when assuming emergency flaring coincides with 'worst case' met conditions. Under the low pressure system disposal rate of 88 m³/hr the ST SO₂ PC is also insignificant and long term impacts at ecological sites are unlikely to be significant.

We have taken a precautionary approach and assumed the plant operates at full capacity as specified in the variation application. The capacities of the low pressure and high pressure systems were given as 88 m³/hour and 12,769 m³/hr respectively. Quarterly returns from 2016/17 show that the most gas flared in a quarter was 98,972 m³ which equates to an average over the quarter of 45.8 m³/hr, which is well below the above modelled figure of 88m³/hr. Operation at 12,769 m³/hr, if it did occur, would be an emergency event.

Improvement Conditions

We have included improvement conditions in the permit on issues where we identified that the Operator did not meet "best practice" for particular topics when responding to a "gap analysis" exercise for the oil and gas industry. The specific reasons for the improvement conditions are stated below:

Secondary and Tertiary Containment Review

IC17 requires the operator to submit for approval a written 'secondary and tertiary containment plan' the plan should contain the results of a review conducted by an competent person in accordance with the detailed methodology detailed within CIRIA C736 (2014), of the condition and extent of secondary and tertiary containment systems where all polluting liquids and solids are being stored, treated, and/or handled.

Improvement condition IC17 is necessary to ensure that secondary and tertiary containment systems meet the standards required of a new oil and gas site. This will reduce the likelihood of any uncontrolled polluting discharges to the environment.

Leak Detection and Repair Plan

IC18 requires the operator to submit for approval a written 'leak detection and repair plan', and associated procedures. The plan should identify, measure and reduce emissions of volatile organic compounds and other substances to air, appropriate to their operations and in accordance with European standard EN15446 or an equivalent standard.

Improvement condition IC18 is necessary because a leak detection and repair plan is needed to manage fugitive VOC emissions from potential leak points such as seals, flanges, pumps and valves. This standard technique is a method for identifying and prioritising potential sources of leaks, developing a leak detection and repair programme using the monitoring standard EN 15446 including assessing reductions in emissions resulting from the programme and estimation/calculation of any residual emissions. The EN 15446 method is described in the Refineries BRef (2015) as an available method for carrying out monitoring of fugitive emissions. Alternative but equivalent methods can be proposed.

Environmental Management System Review

IC19 requires the operator to review and update the written management system to ensure the procedures are in place to meet the requirements resulting from the variation of this permit. In particular:

- Details of the training given to staff on use of spill kits; ensure training records updated accordingly.
- The procedure for determining the consignments of wastes for disposal off-site to be sampled and the procedure for retaining those samples.
- The procedure for identifying bund fill levels, e.g. high level alarm on unmanned sites
- The procedures for testing the impermeable membrane and subsequent remediation measures if required.
- The procedure for notifying the Environment Agency on each occasion where natural gas is vented uncombusted to atmosphere for safety purposes. Notification to include, but not limited to: reasons for, duration of and quantity of gas vented.

Improvement condition IC19 is necessary as based on the information submitted with the Application we have identified a number of procedures that do not appear to be in place.

This improvement condition requires the relevant procedures to be written into the Operator's management system, and to be adhered to. The management system will be subject to usual compliance audit in future.

Gas management

We have included improvement condition 20 which requires the operator to submit for written approval a plan identifying their identified method for reducing the impact of gas emissions to atmosphere and implement this approved plan.

Improvement condition IC20 is necessary as the operator does not appear currently to be applying best available techniques for the management of waste gas arising from their production of hydrocarbons.

Gas management is required as the impact of releasing large quantities of uncombusted hydrocarbons leads to significant environmental and health impacts which can be readily mitigated using available techniques.

Air emissions monitoring

We have imposed improvement condition 21 to require the Operator to undertake appropriate emissions monitoring from each of the emission point[s] on the site to understand the current performance of the process / equipment which gives rise to the emission. We will use the results of this monitoring to determine whether the Operator's processes and equipment minimises the emission to air to as low as reasonably

achievable in line with best available techniques. We expect the Operator to use these monitoring results when responding to IC20 to ensure they are applying appropriate measures / best available techniques for the management of waste gas arising from their production of hydrocarbon.

Where appropriate, we will use these monitoring results to set appropriate assessment levels or compliance limits for the operator to comply with in future.

We consider IC21 necessary as although the volume of each individual emission is comparatively small, the quality of combustion employed in each case can significantly alter the levels of various pollutants ultimately present within the emission. By requiring ongoing emissions monitoring, this condition will ensure that the Operator achieves, and then continues to operate their processes and equipment to an acceptable standard, and commensurately reduces their environmental impact to as low a level as is reasonably practical.

Vapour recovery

Improvement condition IC22 is necessary as the Operator does not appear to be currently complying with the requirement to capture and recover all hydrocarbon vapours arising from the loading and unloading of liquid hydrocarbons.

Vapour recovery is necessary both for safety reasons and also to reduce the environmental impacts of storing, loading, transporting and unloading hydrocarbons.

IC22 requires the capture of hydrocarbon vapours. The requirements of IC22 include consideration of the management / utilisation of this vapour as part of the wider assessment of appropriate measures / best available techniques for the management of waste gas arising from their production of hydrocarbons.

Surface water management

Improvement condition IC23 is required because the Operator has indicated that rainwater is not always being dealt with in accordance with requirements necessary to protect the environment from uncontrolled contaminated discharges of site surface water. The development of a plan to show how rainfall is managed to ensure the environment is not compromised, will clarify how the requirements are being met and how the environment is being protected.

Site Condition Report Review

Improvement Condition IC24 is necessary because the Operator is required to produce a Site Condition Report where there is a possibility of soil and groundwater contamination from activities that involve the use, production or release of a relevant hazardous substance, as defined in the Industrial Emissions Directive.

The Operator has not provided a Site Condition Report with baseline data to confirm the current state of any soil and/or groundwater contamination, or confirmed that existing soil and groundwater data for the site enables a baseline to be defined for the site.

Odour management

Improvement condition IC25 requires the Operator to submit for approval an odour management plan (OMP). The plan should identify and minimise risks of pollution appropriate to their operations. IC25 is necessary as the engine operates exclusively on sour gas (natural gas containing hydrogen sulphide, H₂S, together with other sulphur compounds), which is potentially odourous. Therefore an updated OMP is required, which identifies and minimises the risk of pollution from odour.

Methane monitoring

Improvement condition IC26 requires the Operator to review methods to monitor methane in the flare feed gas and submit a written plan detailing the method(s) by which methane will be monitored.

Radioactive Substances

Preliminary information

The Applicant also submitted a permit application for a radioactive substances activity, which we have given the application number EPR/CB3694DG/A001. That application is an application for a separate permit. The decision with regards to that application is not dealt with in this document.

Summary of the Application

As some of the wastes, such as produced water and/or flowback fluid, arising from the activities has the potential to contain low levels of Naturally Occurring Radioactive Material (NORM) in sufficient quantities to be classed as radioactive waste, the Applicant has also applied for a separate Radioactive Substances Activity (RSA) permit which will regulate the ways in which the radioactive material is managed.

Brief outline of proposed process

Some of the wastes, such as produced water and/or flowback fluid may contain Naturally Occurring Radioactive Material (NORM) in solution, derived from the target formation. The application for the Radioactive Substances permit referred to above deals with this aspect.

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. |
| Consultation | |
| Consultation | <p>The consultation requirements were identified in accordance with the Environmental Permitting Regulations and our public participation statement.</p> <p>The application was publicised on the GOV.UK website and we consider this application to be of high public interest.</p> <p>We consulted the following organisations:</p> <ul style="list-style-type: none"> Public Health England (PHE) Mineral Planning Authority (MPA) Local Planning Authority Director of Public Health (DoPH) Health and Safety Executive (HSE) <p>The comments and our responses are summarised in the consultation section.</p> |
| Operator | |
| Control of the facility | We are satisfied that the Applicant (now the Operator) is the person who will have control over the operation of the facility after the grant of the permit. The decision was taken in accordance with our guidance on legal operator for environmental permits. |
| The facility | |
| The regulated facility | <p>We considered the extent and nature of the facility at the site in accordance with RGN2 'Understanding the meaning of regulated facility', Appendix 2 of RGN 2 'Defining the scope of the installation', Appendix 1 of RGN 2 'Interpretation of Schedule 1', guidance on waste recovery plans and permits.</p> <p>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.</p> |
| The site | |
| Extent of the site of the facility | The Operator has provided plans which we consider are satisfactory, showing the extent of the site of the facility. The plan is included in the permit. |

| Aspect considered | Decision |
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| Site condition report | <p>The Operator has provided a description of the condition of the site. We have assessed the site condition report and concluded that it will need updating in order to comply with requirements of Article 22 of the Industrial Emissions Directive. We have therefore imposed an improvement condition (IC24) requiring the operator to review and update their site condition report to include at least the following:</p> <p>i) consideration of oil storage areas including oil storage vessels, bunds, loading and unloading areas and other potential sources of contamination as shown in the site location plan.</p> <p>ii) reference to any historical spillages, the chemicals involved and locations, baseline soil sample results and groundwater data. We have included an improvement condition (IC24) in the permit to review the site condition report to ensure Article 22 of the Industrial Emissions Directive is complied with.</p> <p>The decision was taken in accordance with our guidance on site condition reports and baseline reporting under the Industrial Emissions Directive.</p> |
| Waste management plan | <p>The Operator has provided a waste management plan which we consider is satisfactory. Please see details in the key issues section of this document.</p> |
| Biodiversity, heritage, landscape and nature conservation | <p>The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat.</p> <p>We have assessed the application and its potential to affect all known sites of nature conservation, landscape and heritage and/or protected species or 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> <p>A Habitats Regulations Assessment form detailing the impacts of the proposals on the River Derwent Special Area of Conservation (SAC) and Eller's Wood and Sand Dale SAC and conclusion of no likely significant effect on European sites was sent to Natural England on 06/11/2017 for information only purposes.</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>There will be no increase in emissions as a result of this variation, and consequently no increase in environmental risk.</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. The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.</p> |

| Aspect considered | Decision |
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| | <p>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.</p> <p>In addition have inserted additional improvement conditions as part of the permit review to ensure these operations continue to meet the requirements of our Onshore Oil and Gas Sector Guidance, August 2016.</p> |
| Odour management | <p>We have considered potential odour emissions from the activity during our determination. Condition 3.3.1 in the permit requires that emissions from the activities shall be free from odour at levels likely to cause pollution outside the site.</p> <p>We have included condition 3.3.2 in the permit. This condition enables us to require the Operator to submit a specific odour management plan, should odour become a problem. If 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.</p> <p>We have imposed an improvement condition 25 which requires the Operator to submit a specific odour management plan, to be approved in writing by the Environment Agency, to identify and minimise risks of pollution appropriate to their operations. IC25 is necessary as the engine operates exclusively on sour gas (natural gas containing hydrogen sulphide, H₂S, together with other sulphur compounds), which is potentially odourous. Therefore an updated OMP is required, which identifies and minimises the risk of pollution from odour.</p> |
| Noise management | <p>We have considered emissions from noise and vibration during our determination. Condition 3.4 in the permit requires that emissions from the activities shall be free of noise and vibration at levels likely to cause pollution outside the site.</p> <p>We have included condition 3.4.2 in the permit. This condition enables us to require the Operator to submit a specific noise and vibration management plan, should noise and vibration become a problem. If 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.</p> |
| Permit conditions | |
| Use of conditions other than those from the template | Based on the information in the application, we consider that we do not need to impose conditions, other than those in our permit template. |
| Updating permit conditions during consolidation | 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). |

| Aspect considered | Decision |
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| Changes to the permit conditions due to an Environment Agency initiated variation | This variation is required as the Environment Agency has a duty, under the Environmental Permitting (England and Wales) Regulations 2016, regulation 34(1), to periodically review permits. As a result of that review we have identified a number of necessary changes we must make to your permit to reflect current legislation and best practice. These changes principally relate to the improvement programme specified in condition 2.4 of the permit. |
| Pre-operational conditions | Based on the information in the application, we consider that we need to impose a pre-operational condition, for reasons outlined in key issues above. The pre-operational condition relates to the storage of mining waste on site and reads: The operator shall not import mining waste onto site or store mining waste (including the storage of mining waste in temporary containment tanks) until IC 17 and IC 23 have been satisfied. |
| Improvement programme | Based on the information on the application, we consider that we need to impose an improvement programme. We have imposed an improvement programme for reasons outlined in key issues above. |
| Emission limits | <p><u>Point source emissions to air</u></p> <p>Gas Turbine</p> <p>Emission limits for the gas turbine have been carried forward from previous iterations of the environmental permit. No emission limits have been added, amended or deleted as a result of this variation.</p> <p>Gas pre heater and HCL scrubber vent stack</p> <p>Emission limits were not previously set for these sources. No emission limits have been added, amended or deleted as a result of this variation.</p> <p>Flare</p> <p>Emissions limits for point source emissions to air have not been set within the permit with the exception of limits on temperature and flare gas feed flow rate. Oxides of nitrogen, carbon monoxide and total volatile organic compounds (TVOC) will be calculated by the operator via a method agreed in writing with the Environment Agency. Screening and assessment of the flaring activities undertaken by the Environment Agency have concluded that the impact to sensitive receptors is considered to be insignificant and that detailed or specific limits are not required.</p> <p>Flowback storage tank(s)</p> <p>Flowback storage tanks have been included as a source of emission to air as there is the potential to either have these tanks connected to the rest of the system (i.e. closed system) or be standalone tanks with a vent to atmosphere. The location of these tanks, and any potential emission limit value will be determined through the completion of IC17, IC23 and PO1.</p> <p><u>Point source emissions to water and land</u></p> <p>No emission limits have been added, amended or deleted as a result of this variation.</p> |

| Aspect considered | Decision |
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| | <p><u>Point source emissions to sewer, effluent treatment plant or other transfers off-site</u></p> <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 carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified.</p> <p>Monitoring related to the gas turbine, gas pre heater and HCL scrubber vent stack remains unchanged. Monitoring related to the gas conditioning plant also remains unchanged.</p> <p>However, we have decided that monitoring should be amended for the following parameters in Table S3.2 point source emissions to water and land, using the methods detailed and to the frequencies specified:</p> <p>BOD</p> <p>Total suspended solids</p> <p>pH</p> <p>These were monitored quarterly, but the monitoring frequency has been amended to annually. The Applicant requested to vary the frequency of water testing of the discharge to Difford Beck. A requirement for quarterly sampling was added to the permit with the introduction of a new piece of equipment in 2009, a reverse osmosis unit. The waste arising from this unit was intended to be discharged to Difford Beck. This was proposed as an alternative means of treating water to a demineralised (de-ionised) state for use in the gas turbine. As a condition of the previous permit, sampling was undertaken to determine the most appropriate monitoring frequency moving forward.</p> <p>Due to current production levels, the reverse osmosis unit is currently not in use. The Applicant has provided monitoring results which indicate that the quality of the discharged water over the course of the year is not significantly different and has proposed annual monitoring, rather than quarterly. This has been accepted with a caveat in the permit that states that if the Reverse Osmosis Unit is reintroduced (if plant production increases) the monitoring frequency will revert to the previous state, that is quarterly for BOD, total suspended solids and pH, and weekly for oil or grease.</p> <p>The Operator will keep records of the data collected, which must be submitted to the Environment Agency on a regular basis.</p> <p>We made these decisions in accordance with the requirements of our Onshore Oil and Gas Sector Guidance, August 2016 and the Groundwater Directive and to baseline report required under the Industrial Emissions Directive.</p> <p>Based on the information in the application we are satisfied that the operator's techniques, personnel and equipment have either MCERTS certification or MCERTS accreditation as appropriate as required under 3.5.3 of the permit.</p> |

| Aspect considered | Decision |
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| Reporting | <p>We have specified reporting in the permit.</p> <p>The reports will enable information on trends to be assessed and interventions to be carried out when required.</p> <p>We made these decisions in accordance with the requirements of our Onshore Oil and Gas Sector Guidance, August 2016 and the Groundwater Directive and to baseline report required under the Industrial Emissions Directive.</p> |
| Operator competence | |
| Management system | <p>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.</p> <p>The decision was taken in accordance with the guidance on operator competence and how to develop a management system for environmental permits.</p> |
| Relevant convictions | <p>The Case Management System and National Enforcement Database have been checked to ensure that all relevant convictions have been declared.</p> <p>No relevant convictions were found. The Operator satisfies the criteria in our guidance on operator competence.</p> |
| Financial competence | <p>There is no known reason to consider that the Operator will not be financially able to comply with the permit conditions.</p> |
| 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> |

| Aspect considered | Decision |
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Consultation

The application was publicised on our website and we consider this application to be of high public interest. It was advertised between 7 December 2017 and 2 February 2018. We also made available electronic copies of the Application on the webpage.

We consulted the following organisations:

- Local Authority, North Yorkshire County Council
- Food Standards Agency (FSA)
- Health and Safety Executive (HSE)
- Mineral Planning Authority (MPA), North Yorkshire County Council
- Public Health England (PHE) / Director of Public Health

1) Consultation Responses from Statutory and Non-Statutory Bodies

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| Response received from |
| Public Health England (PHE) – received 29/01/2018 |
| Brief summary of issues raised |
| Public Health England had no significant concerns regarding the risk to the health of the local population from the proposed changes to this installation, with the response based on the assumption that the permit holder take all appropriate measures to prevent or control pollution, in accordance with the relevant sector guidance and industry best practice. |
| Summary of actions taken or show how this has been covered |
| No action required. |

No objections or comments were received from any of the other consultees and no comments or objections were received from members of the public or other non-governmental organisations.

Advertising and consultation on the Draft Decision

This section reports on consultation on our draft decision carried out between 01/03/2019 and 29/03/2019. In accordance with the Environment Agency's Public Participation Statement and RGN 6 High Profile Sites, we have consulted on the draft permit and decision document for this application. Copies of all consultation responses have been placed on the Environment Agency public register.

A total of 5 responses were received from individual members of the public. We also received a response from Public Health England.

The issues raised in the consultation in many cases have already been examined in section 'Key Issues' above and the Environment Agency response provided in section 'Key Issues' has not been repeated and reference should therefore be made to this section.

Also, some of the consultation responses received were on matters which are outside the scope of the Environment Agency's powers under the Environmental Permitting Regulations.

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| Response received from |
| Public Health England (PHE) – received 21/03/2019 |
| Brief summary of issues raised |
| <p>The main potential emission change within the proposed variation application is from use of the ground flare when gas levels are insufficient for efficient combustion for generation of electricity. We note that the applicant will limit flaring for waste disposal purposes to 876 hours per year (equivalent to 10% of the year or less) and that such usage will be tracked.</p> <p>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.</p> <p>This consultation response is based on the assumption that the permit holder shall take all appropriate measures to prevent or control pollution, in accordance with the relevant sector guidance and industry best practice.</p> |
| Summary of actions taken or show how this has been covered |
| No action required. |

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| Response received from |
| Member of the public – received 01/03/2019 |
| Brief summary of issues raised |
| <ol style="list-style-type: none"> 1. New attempts to extract fossil fuels should be stopped. 2. Fracking is proven to cause earthquakes, pollution, traffic, noise and radioactive waste and uses large amounts of water. |
| Summary of actions taken or show how this has been covered |
| <ol style="list-style-type: none"> 1. This is an existing permitted facility. Policy decisions as to whether or not fossils fuels should be exploited are outside the remit of the Environment Agency permitting decision making process. 2. This permit does not permit fracking. Third Energy operates an Open Cycle Gas Turbine (OCGT) power station, and a Gas Conditioning Plant within the installation. The engine operates exclusively on sour gas (natural gas containing hydrogen sulphide, H₂S, together with other sulphur compounds) which is recovered from a local gas field and delivered by pipeline to the installation and stored prior to conditioning and combustion. <p>A non-hazardous mining waste operation covers the storage of mining waste received from the local gas field. These wastes comprise produced water, flowback fluid from shale gas production from the local well network and brine for well suspension generated during workovers or well abandonment.</p> <p>A number of ancillary systems are also used to enable viable operation of the installation, including a water treatment plant, a ground flare, a gas fired pre-heater and an emergency gas oil generator for a firewater pump.</p> |

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| Response received from |
| Member of the public – received 07/03/2019 |
| Brief summary of issues raised |
| <ol style="list-style-type: none"> 1. Assurances sought that the risk to the water table has been assessed. 2. Assurances sought that the management of the mining waste and crude oil, and the change of use of ground flare do not pose a health risk. 3. Impacts from increased traffic movements associated with the site. |

| Summary of actions taken or show how this has been covered |
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| <p>1. There is no increase in risk to groundwater associated with the change to this permit. Moreover, a number of improvement conditions (IC) have been set, including IC17, which requires the operator to submit for approval a written 'secondary and tertiary containment plan' the plan should contain the results of a review conducted by an competent person in accordance with the detailed methodology detailed within CIRIA C736 (2014), of the condition and extent of secondary and tertiary containment systems where all polluting liquids and solids are being stored, treated, and/or handled.</p> <p>Improvement condition IC17 is necessary to ensure that secondary and tertiary containment systems meet the standards required of a new oil and gas site. This will reduce the likelihood of any uncontrolled polluting discharges to the environment. This will ensure the risk to the water table is minimised.</p> <p>2. Details of our assessment of these matters can be seen in the section 'Key Issues' above. We are satisfied that the management of the mining waste and crude oil, and the use of the flare will not cause harm to human health or the environment. Furthermore, PHE were also consulted and they have stated that based on the information contained in the application they have no significant concerns regarding the risk to the health of the local population from the installation.</p> <p>3. Offsite traffic movements do not form part of the environmental permit decision. It is not envisaged that the changes brought about by this variation will result in any significant change to on-site traffic movements.</p> |

| Response received from |
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| Member of the public – received 09/03/2019 |
| Brief summary of issues raised |
| <p>1. Objection to the rules that the EA has set for raising an objection to this application, as all comments related to fossil fuel extraction should be taken into consideration.</p> <p>2. Concern about the lack of oversight on site and as such, it is considered that the industry is self-regulating.</p> <p>3. Multiple concerns also raised including: evidence of previous breaches by oil exploration companies; risk of pollution to the water supply; threat to wildlife; risk of earthquakes; threat of climate change; the emissions of methane from the site; industrialisation of the countryside.</p> <p>4. Lack of confidence in the EA</p> |
| Summary of actions taken or show how this has been covered |
| <p>1. As stated above, policy decisions as to whether or not fossils fuels should be exploited are outside the remit of the Environment Agency permitting decision making process.</p> <p>2. The Operator will not be self-regulating, however, self-monitoring is a standard procedure across a variety of industrial sectors, under environmental permitting the Environment Agency has assessed the Applicant as being competent to carry out the activities applied for, and monitoring will have to be carried out to a specific standard.</p> <p>3. A number of concerns have been raised about the Operator and their competence to run the operations on site.</p> <p>The permit conditions require the Operator to have an appropriate management system in place that includes details of staff capability, roles and responsibilities, experience and training records to demonstrate technical competence. We will assess the operator's activities and we will be checking they comply with their permit conditions as part of our compliance work.</p> <p>We have carefully considered operator competence and we have no reason to think that they</p> |

would not comply with permit requirements and conditions.

We have considered all relevant factors and have determined that there is no reason to consider that the applicant will not operate in accordance with the permit.

With regards to location of the site and industrialization of the countryside, decisions over land use are matters for the planning system. The location of the site is a relevant consideration for Environmental Permitting, but only in so far as affects the potential for the site to have an adverse environmental impact on communities or sensitive environmental receptors. The environmental impact is assessed as part of the determination process and has been reported upon in the decision document.

4. The Environment Agency considers it has followed all relevant legislation regarding the protective measures to be implemented when granting permits. We are satisfied we have sufficient information to make an informed decision and that all permit conditions are necessary and enforceable.

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| Response received from |
| Member of the public – received 09/03/2019 |
| Brief summary of issues raised |
| Concern of the impacts from fracking and if it is permitted, it must be controlled. |
| Summary of actions taken or show how this has been covered |
| As stated above, this permit does not permit fracking. Details of what this permit does allow is explained elsewhere in this document including in the section titled 'brief outline of the process' and 'description of the changes introduced by the variation' as well the response generated by a comment raised by a member of the public received 01/03/2019. |

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| Response received from |
| Member of the public – received 13/03/2019 |
| Brief summary of issues raised |
| 1. Concern raised about self-monitoring, particularly with regard to the flaring of gas and how often flaring happens and the temperature and emissions which escape into the atmosphere. |
| 2. Concern about the storage of mining waste at the site, particularly if production were to happen at KM8. |
| 3. Questions as to how often the site would be inspected and what facilities are in place to deal with an accidental spill. |
| 4. Is there a facility to check the discharges to Difford Beck and how quickly could emergency plans be enacted given a pollution event as Difford Beck flows into the River Derwent. |
| 5. Concern raised about the transport of flowback fluid using existing ageing pipelines. |
| Summary of actions taken or show how this has been covered |
| 1. As stated above, self-monitoring is a standard procedure across a variety of industrial sectors, under environmental permitting the Environment Agency has assessed the Applicant as being competent to carry out the activities applied for, and monitoring will have to be carried out to a specific standard. Volume of gas flared has to be reported every 3 months, and the operating hours of the flare has to reported to the Environment Agency annually. The temperature of the flare also has to be reported and the frequency and method of reporting will as approved in writing with the Environment Agency after completion of improvement condition 21, which is explained in greater detail above. |
| 2. It is proposed that any tanks to hold mining waste would be brought to KGS on a project |

basis, as required. The tanks would be double-bunded and positioned on areas of hardstanding, and wherever they are located onsite, they would be above the low permeability clay-liner, within the isolated drainage system on a High Density Polyethylene (HDPE) spill-guard. All temporary tanks would be removed from the site within three months of their delivery, by a licensed waste contractor.

The Operator committed to not bring any mining waste onto site (Schedule 5 response dated 16/11/2017) until the integrity of the site is understood.

Section 6.4.4 (Tertiary containment) of the waste management plan (provided 10/06/2018) states: "*The depth of the clay liner will be established prior to any mining waste being brought onto site. It is intended to ensure there is a permeability of less than 1×10^{-9} m/s. If the clay lining provides a lesser barrier than this, HDPE lining will be used for as a spill-guard for any temporary tanks*".

The Waste Management Plan is included in the permit as an operating technique in table S1.2 and captured through condition 2.3.1. Therefore, the Operator will have to comply with the commitments made within the approved WMP before bringing mining waste onto site.

In addition, we have imposed an improvement programme for the whole site and all on site activities, for a secondary and tertiary containment plan, a leak detection and repair plan, and a site surface water management plan at the site in line with the sector guidance under Improvement Conditions IC17, IC18 and IC23 (Details of which can be read below). Furthermore, we felt it necessary to incorporate a pre-operational programme (PO 1) that requires the Operator to complete IC17 and IC20 prior to mining waste being brought onto site for storage. We are satisfied that these measures to minimise the risk, together with condition 3.1.1 of the environmental permit, provide appropriate and acceptable controls.

3. Site inspections would be carried out by Environment Agency Officers. Where appropriate for the type of monitoring, the MCERTS monitoring scheme must be adhered to (or alternative monitoring agreed in writing with the EA), and only MCERTS accredited laboratories used for the analysis in accordance with permit condition 3.5.3. As stated above, storage tanks would be double bunded and have spill guards. Site staff will also have access to spill kits should spills occur.

4. Uncontaminated surface water is discharged to Difford Beck, via an oil interceptor. The Applicant has provided monitoring results which indicate that the quality of the discharged water over the course of the year is not significantly different and has proposed annual monitoring, rather than quarterly. This has been accepted with a caveat in the permit that states that if the Reverse Osmosis Unit is reintroduced (if plant production increases) the monitoring frequency will revert to the previous state, that is quarterly for BOD, total suspended solids and pH, and weekly for oil or grease.

IC17 requires the operator to submit for approval a written 'secondary and tertiary containment plan' the plan should contain the results of a review conducted by an competent person in accordance with the detailed methodology detailed within CIRIA C736 (2014), of the condition and extent of secondary and tertiary containment systems where all polluting liquids and solids are being stored, treated, and/or handled.

Improvement condition IC17 is necessary to ensure that secondary and tertiary containment systems meet the standards required of a new oil and gas site. This will reduce the likelihood of any uncontrolled polluting discharges to the environment.

Improvement condition IC23 is required because the Operator has indicated that rainwater is not always being dealt with in accordance with requirements necessary to protect the environment from uncontrolled contaminated discharges of site surface water. The development of a plan to show how rainfall is managed to ensure the environment is not compromised, will clarify how the requirements are being met and how the environment is being protected.

The permit requires the Operator to manage and operate the activities in accordance with a written management system that identifies and minimises the risk of pollution, including those risks arising from operations, maintenance, accidents, incidents and non-conformances.

These measures are deemed satisfactory to protect Difford beck from significant pollution.

5. The transfer of flowback fluid to Knapton using existing pipelines has not been considered and is outside the remit of the Environment Agency permitting decision making process. The Health and Safety Executive (HSE) are responsible for the integrity of the pipeline.