

Permitting decisions

Variation to permit

We have decided to issue the variation for Cold Hanworth operated by IGas Energy Production Limited.

The variation number is EPR/AP3737YC/V002

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 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;
- Addition of groundwater activities; and
- Oil storage activities.

The variation also aim to:

- Consolidate all previous variations to the original permit so as to bring them 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.

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:

- 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
- 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. The introductory note summarises what the permit covers.

Radioactive Substances

Preliminary information

The Applicant also submitted a bespoke permit application for an existing radioactive substances activities, which we have given the application number EPR/NB3192DK. The decision with regards to that application is not dealt with in this document (as it is a separate permit and application).

Brief outline of the process

The installation comprises of oil production activities at a single site (approximately 1.23 hectares in area) at which crude oil is abstracted from a natural underground reservoir. The Westphalian A (Carboniferous) oil bearing sandstones (incorporating the Upper and Basal successions) is the geological formation from which oil is extracted at a depth of 1,448 metres below ground level (and is the formation to which re-injection via well CHN-4z is proposed). The site is located in Cold Hanworth approximately 3.5 km North-East of Welton, Lincolnshire.

The site is currently producing oil from three existing production wells (CHN-5, CHN-6 and CHN-7). These three wells pump produced fluids (crude oil admixed with water from the formation and natural gas) to on-site storage tanks via beam abstraction pumps.

Produced fluids (crude oil admixed with water from the formation and natural gas) are pumped (via beam abstraction pumps) from the three wells for storage within tanks. Associated gas, released from the phased separation is combusted within the site's ground flare (which has a maximum capacity of less than 10 tonnes per day). Oil is stored in three storage tanks (CHNT39, CHNT40 and CHNT106) with a combined capacity of 1,371 bbls or 219 m³ (457 bbls or 73 m³ per tank). Separated water is stored in two additional storage tanks with a combined capacity of 158 m³ (tank CHNT831 with 505 bbls or 80 m³, and tank CHNT832 with 489 bbls or 78 m³) prior to re-injection via borehole CHN-4z. The oil storage and produced water storage tanks each have a vent stack, which allows small amounts of gas to vent to atmosphere.

The oil storage tanks are emptied as required by road tanker, with the crude oil transferred by road to an appropriate gathering centre or refinery for processing. Surface waters collected from well cellars and bunds are collected and transported to an appropriate gathering centre for treatment and re-injection. The site is powered by electricity, supplied from a local solar farm and supplemented by the local electricity network.

The principal releases into the environment from the site comprise:

- (a) Combustion of gas emissions from the site's flare
- (b) Emissions to air of gaseous hydrocarbons from separation of volatiles in storage.
- (c) Emissions of gaseous hydrocarbons from the road tanker by displacement during loading.
- (d) Contaminated rainwater from well cellars and site ditch containment systems/bunds is removed by tanker for off-site treatment and disposal.
- (e) Produced water from the producing reservoir which is contained and injected back into the producing reservoir for production/pressure support.
- (f) Engineering waste resulting from maintenance work is removed for disposal at a licensed waste disposal facility.

There are no sites of special scientific interest (SSSI) or European designated sites within proximity of this existing site.

Description of the changes introduced by the variation

This is a normal variation to:

1. Update an existing Installations Activity; Oil storage and handling has been updated to a schedule 1.2 A(1)(e)(i) activity under the Industrial Emissions Directive and updated Environmental Permitting (England and Wales) Regulations 2016, as a result of renumbering of schedule 1 activities in the updated regulations. This activity was previously permitted as 1.2A (1) (h) (i) in the existing permit (issued 21/06/2007). The existing oil storage activities on site at Cold Hanworth have not changed from those currently permitted.
2. Add an existing Mining Waste Operation, as defined by the Mining Waste Directive and Schedule 20 of the Environmental Permitting (England and Wales) Regulations 2016 as amended, relating to the management of extractive waste not involving a Mining Waste Facility. The permit is being varied to include activities specified by the approved Waste Management Plan. This includes venting of gas from storage tanks, well maintenance and well work overs, and the incineration by flaring of hazardous waste, namely natural gas below 10 tonnes per day. Well maintenance includes hot oil washing, wax dissolver treatment and acid treatment for scale removal. These are not new activities and were previously covered by the operator's operating techniques in their existing permit.
3. Add a new Groundwater Activity, as defined by the Groundwater Directive and Schedule 22 of the Environmental Permitting (England and Wales) Regulations 2016 as amended, for the re-injection of produced water for production support. The operator has submitted a hydrogeological risk assessment (HRA) for this groundwater activity as part of this application. There is one re-injection borehole (well CHN-4z) at Cold Hanworth. Well CHN-4z is subject to meeting pre-operational conditions in table S1.4 of the permit prior to the re-injection activity commencing (as CHN-4z is a former production well that is to be converted for re-injection). For information, in order to permit the re-injection of produced water to the ground, an environmental permit for a groundwater activity is required. Where it is proposed to convert a production well to a re-injection well for the re-injection of produced water to ground, an environmental permit for a groundwater activity is required. This permit requires the applicant to have provided a detailed hydrogeological risk assessment, or equivalent document, prior to the commencement of the operations, which the Environment Agency must be satisfied with. The groundwater activity permit will need to be granted prior to the use of the well for injection purposes and be agreed and issued with a condition that requires the operator to **submit a notification** to the Environment Agency prior to the conversion. The activity must not take place until the operator has received written approval from the Environment Agency of the request for a change contained within the notification. The operator will need to confirm that the conditions relevant to the groundwater activity on the permit have been complied with prior to the operation of the well for reinjection purposes.

The activities on site have not changed significantly from those currently permitted. This permit variation and consolidation is part of an onshore oil and gas sector wide review. There are no other changes to the permit as a result of this variation.

Key issues of the decision

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 conventional oil and gas production site. This variation does not permit any hydraulic fracturing as specified in Schedule 1 of the permit under Table S1.1, activity A4.

The site was previously regulated by an installation permit (issued 21/06/2007) 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. The site's permit was at this point held by Star Energy (East Midlands) Limited.

During 2008 these permits automatically became environmental permits under the environmental permitting regime. On the 01/02/2008, the permit was varied, and on 01/04/2011 the permit has transferred from Star Energy (East Midlands) Limited to Star Energy Oil and Gas Limited. The permitting regime was expanded in 2010, being covered by the Environmental Permitting (England and Wales) Regulations 2010.

The permit was varied on the 06/02/2012 and later transferred on 06/08/2012 from Start Energy Oil and Gas Limited to Island Gas Limited. The Environmental Permitting (England and Wales) Regulations 2010 are now the Environmental Permitting (England and Wales) Regulations 2016. On the 17/10/2017, the permit was transferred from Island Gas Limited to IGas Energy Production Limited.

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.

Installation Activities

The Installations activities (oil storage, treatment and handling), have not changed at this site. The activity reference has been amended to align with the legislative change as a result of the updated Environmental Permitting (England and Wales) Regulations 2016. Limits on activities have been specified in this permit to align with our current permit wording under the standard rules permit (SR2015 No.2) for oil storage.

Mining Waste Activities

A permit subject to the Mining Waste Directive covers the management of extractive waste generated during oil and gas production. This variation does not permit any hydraulic fracturing. We have specified this limit in Schedule 1 of the permit under Table S1.1, Activity A4.

The operator may also undertake near wellbore treatments during the lifetime of hydrocarbon production from the wells, as part of routine preventative well maintenance activities, which includes hot oil washing, wax dissolver treatment and acid treatment.

We have reviewed and agreed with the assessments that have been provided in the waste management plan and the application's supporting information (environmental risk assessment and de-minimis assessment, which include details of these operations and quantities), that determine that the treatments meet de-minimis criteria and will not need groundwater activity permits (as we have concluded that all of these activities meet the ground activity exclusion as described in Schedule 22 Paragraph 3.3 (b) of the Environment Permitting Regulations). None of the routine well maintenance activities involve the pressurization of the circulating fluids in order to penetrate the reservoir.

The process of hot oil washing is similar to hot water washing; heated crude oil from the well is heated and used to remove/dissolve the build-up of paraffin precipitates/wax deposits from subsurface rods, tubulars and pipework. Crude oil is used were the face of the reservoir could be damaged if hot water was to be used for the same purpose. The crude oil is heated using specifically designed mobile plant known as a 'hot oil truck'. Crude oil is pumped from the delivery truck to the hot oiler were the temperature is raised from ambient to 90°C. This is achieved by passing crude oil through a coil which is situated in a heater chamber. A diesel fuelled burner raises the temperature within the chamber which then increases the temperature of the crude oil as it passes through the coil. Once the set temperature has been achieved the heated crude oil is delivered to the well via flexible hoses.

Hot oil is then circulated down the well and back to surface pipelines which carries the heated fluids back to oil storage tanks (along with the removed/dissolved paraffin precipitates/wax deposits which return to the oil phase as a result of the process). Any Volatile Organic Compounds being released through the heating process will be vented to atmosphere via the designated emission point along with gas associated with the oil production.

The purpose of wax dissolver treatment is to remove deposits produced by certain crude oils (such as asphaltines and waxes) from tubulars, rods and pipework that are not dissolved when using hot oil. In these circumstances a wax dissolver is used as the dissolving liquid. The circulated fluid returns to the oil phase.

The purpose of the acid wash is to remove produced water scales (mainly calcium carbonate) from tubing, rods, pumps and casing perforations which have been blocked during the production of hydrocarbons. Typically 15% Hydrochloric acid with water is circulated down the well and across the perforated sections of the well. Acid may then be selectively pushed into the near wellbore area. The acid reacts with the minerals in the formation and all spent acid is recovered to the surface (where the neutralised water is stored with produced fluids then exported off site to an appropriate treatment facility for re-injection).

Despite the routine preventative well maintenance measures taken above, there will instances when a well work over is required and a work over rig is temporarily installed on site to work over the well. These operations may generate extractive mining waste. We have varied the permit to allow the operator to carry out a mining waste operation involving the management of extractive waste from production activities (not involving a waste facility. The operation will include the management of extractive waste generated by well work over.

We have imposed an improvement programme for has management at the site in line with the sector guidance under improvement conditions (ICs) 2, and 4. We are satisfied that these measures to minimise risk of air emissions together with condition 3.1.1 provide acceptable controls.

If the operator wishes to carry out different or additional activities not covered by this permit, a further permit 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.

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

Groundwater Activity

A groundwater activity, in general terms, is defined in Schedule 22 of the 2016 Regulations as meaning the discharge of a pollutant that results in the direct input of that pollutant to groundwater, or a discharge of a pollutant in circumstances that might lead to an indirect input of that pollutant to groundwater or any other discharge or activity that might lead to a direct or indirect input of that pollutant to groundwater.

The groundwater activity for this site is to re-inject (via well CHN-4z) produced water resulting from the extraction of hydrocarbons into the Westphalian A (Carboniferous) oil bearing sandstones (incorporating the Upper and Basal successions), as specified under activity reference A5 in Table S1.1 in Schedule 1 of the permit. The produced water for re-injection via modified injection well CHN-4z) will come from the site's existing production wells (the permit does not allow produced water to be imported from other sites for re-injection).

We have reviewed the Hydrogeological Risk Assessment submitted with the supporting documents against our information and conceptual understanding of the location. We are satisfied that the potential risks to groundwater have been identified and addressed through mitigation measures and controls specified in this permit.

This includes a requirement for groundwater monitoring to be carried out under improvement condition (IC) 3, and the pre-operational measures (PO) 01, 02 and 03 (within table S1.4, as per condition 2.5.1). Before activity A5 can commence, our written approval will be required by the operator, which will be based on the information provided in response to the improvement condition IC3 and pre-operational measures 01 to 03 by the operator.

We will assess this information to ensure satisfactory evidence is provided regarding the modification of the former production well CHN-4z for re-injection, and to ensure that the risk of pollution from re-injection of produced water continues to be assessed throughout the lifetime of this environmental permit. We have also specified compliance limits for maximum daily volume (cubic metres day) and rate (litres/second) of the re-injection via activity A5.

This 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 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 permit, we have considered the application and accepted that the details are sufficient and satisfactory to make the standard conditions appropriate.

Gap Analysis

We have assessed the Operator's gap analysis response which we received on 11/10/2017. We have included a number of improvement conditions (ICs) in response to this.

Schedule 5 responses

We requested additional information to be provided under a schedule 5 notice issued on 17/05/2018. The operator's response was received on the 14/06/2018. We are satisfied that the notice has been complied and additional information provided in order that the permit can be determined. Any outstanding issues have been included as part of our improvement programme under table S1.3 under the permit.

Improvement Programme

The site had historic improvement conditions (ICs) 1 to 7 within the original site permit EPR/VP3931LC (issued 21/06/2007). All of the seven historic ICs have previously been completed. Based on the outcomes of the onshore oil and gas re-permitting variation determination and gap analysis response for the site, we have imposed the following new improvement conditions within the varied permit (ICs 1 to 9):

1.) Improvement condition: Secondary and tertiary containment (as IC1)

Improvement condition IC1 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.

2.) Improvement condition: Leak detection and repair (as IC2)

Improvement condition IC2 is required for a leak detection and repair plan, which is needed to manage fugitive VOC emissions from potential leak points such as seals, 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.

3.) Improvement condition: Groundwater Monitoring Plan (as IC3)

Improvement condition IC3 is required because there is currently no groundwater monitoring plan in place for the proposed new groundwater discharge activity (A5); for the re-injection of produced water from the extraction of hydrocarbons for production support (this activity will also be subject of the three pre-operational measure requirements specified in condition 2.5.1 and table S1.4 of the environmental permit). The re-injection will occur via a former production well that is being converted for re-injection (well CHN-4z at TF 03746 82181).

We have included Improvement Condition IC3 which requires the operator to submit for written approval a groundwater plan for the operational phase as well as for decommissioning of the well site. The groundwater monitoring plan, once approved, shall be incorporated into the permit as an operating technique. The hydrogeological risk assessment (HRA) has identified that the current groundwater monitoring infrastructure needs to be updated and new monitoring wells installed to sample the deeper Principal Aquifer (Lincolnshire Limestone) that underlies the well site.

Groundwater Monitoring is necessary to help determine whether the reinjection of produced water is affecting the quality of groundwater and whether satisfactory measures are being undertaken to prevent groundwater pollution. Groundwater monitoring is required for the purposes of requisite surveillance in accordance with the Environmental Permitting Regulations 2016. The submission of a groundwater monitoring plan will ensure that groundwater monitoring is based on the site conceptual model and hydrogeological risk assessment.

4.) Improvement condition: Environment Management System review (as IC4)

Improvement condition IC4 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 the usual compliance audits in the future.

5.) Improvement condition: Gas Management System (as IC5).

This improvement condition has been added as the operator does not currently appear to be applying appropriate measures for the management of waste gas arising from their production of hydrocarbons. It requires the operator to submit a plan detailing their identified method for reducing the impact of gas emissions to atmosphere, for written approval

6.) Improvement condition: Air emissions monitoring (as IC6)

Improvement condition IC6 is necessary as the site features emissions to air with the potential to cause pollution. We have applied IC6 to require the operator to undertake appropriate emissions monitoring from each of the emission points 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 IC5, 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.

By requiring on-going 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.

7.) Improvement condition: Vapour recovery (as IC7)

Improvement condition IC7 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 into vehicles.

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

8.) Improvement condition: Surface water management plan (as IC8)

Improvement condition IC8 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, and will clarify how the requirements are being met and how the environment is being protected.

9.) Improvement condition: Site condition report (as IC9)

Improvement condition IC9 is necessary as a review of the site condition report by the operator is required to ensure that Article 22 of the Industrial Emissions Directive (IED) is complied with. A site condition report is required 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 IED.

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.

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 because of the high levels of public interest in the onshore Oil and Gas sector. The application itself is NOT high public interest.</p> <p>We consulted the following organisations:</p> <ul style="list-style-type: none"> • Local Authority, Environmental Health/Protection (Lincolnshire County Council/West Lindsey District Council) • Food Standards Agency • Health and Safety Executive • Public Health England • Local Mineral Planning Authority (Lincolnshire County Council) <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 including the discharge points. The plan is included in the permit.

Aspect considered	Decision
Site condition report	<p>The operator has provided a description of the condition of the site.</p> <p>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 requiring the operator to review and update their site condition report to include at least the following:</p> <ul style="list-style-type: none"> 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. ii) Reference to any historic spillages, the chemicals involved and locations baseline soil sample results and groundwater data. We have included an improvement condition (IC8) in the permit to review the site condition report to ensure Article 22 of the Industrial Emission Directive is complied with. <p>The decision was taken in accordance with our guidance on site condition reports and baseline reporting under the Industrial Emission Directive.</p>
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 not within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat.
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	
Operating techniques Water Quality	<p>We have reviewed the techniques proposed by the operator and compared these with the relevant technical guidance 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> <ul style="list-style-type: none"> • IC1 requires the operator to review their site containment in order to demonstrate there is no pollution risk to surface and groundwater. • IC8 requires the operator to review their surface water management and implement any agreed changes.

Aspect considered	Decision
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 operator must use are specified in table S1.2 in the environmental permit. 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.</p> <p>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. In addition we have specified 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>
Operating techniques for emissions that screen out as insignificant	<p>Air emissions of Methane, Ethane, Propane and Butane have been screened out as insignificant in the operators H1 assessment (provided with the variation application). To ensure that gas management on site is BAT in accordance with our sector guidance we have included IC2, IC4, IC5 and IC6 to review leak detection, gas management and emissions and vapour recovery during unloading in order to agree that the operator's proposed techniques are BAT for the installation.</p> <p>We consider that the emission limits included in the installation permit along with the ICs above reflect the BAT for sector.</p>
Odour management	<p>We have considered potential odour emissions from the activities during our determination. We do not consider that the activities will give rise to significant levels of odour. 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 are satisfied that appropriate measures will be in place to manage odour. However, 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 is suitable, it will form part of the permit and the Operator must carry out the activities in accordance with the approved techniques.</p>
Noise management	<p>We have considered emissions from noise and vibration during our determination. Condition 3.4.1 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. We have included condition 3.4.2 in the permit.</p> <p>This condition enables is 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 activities in accordance with the approved techniques.</p>

Aspect considered	Decision
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 permits.
Changes to the permit conditions due to an Environment Agency initiated variation	<p>We have varied the permit as stated in the variation notice.</p> <p>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.</p>
Pre-operational conditions	<p>Based on the information in the application, we consider that we need to impose pre-operational conditions.</p> <p>We have imposed pre-operational conditions for the reasons outlined in the 'key issues' section above.</p>
Improvement programme	<p>Based on the information on the application, we consider that we need to impose an improvement programme.</p> <p>We have imposed an improvement programme for the reasons outlined in the 'key issues' section above.</p>
Emission limits	<p>We have considered emissions to air during the determination of the application. Fugitive emissions associated with the proposed activities will be at insignificant levels which are unlikely to cause negative impact on nearby receptors.</p> <p>The operator has provided environmental risk assessments and consideration in the WMP for the management of waste gas and we have found these to be satisfactory.</p> <p>ELVs equivalent parameters have been set for the following substances in Schedule 3 of the permit:</p> <p>For activity A4 (via emissions points A2 and A4 within table S3.1):</p> <ul style="list-style-type: none"> • Gas vented (calculation method) • Hydrogen Sulphide <p>We have also required the operator to monitor emissions to air, and if trends show an increase in emissions, then the Environment Agency will require the operator to implement a plan to manage these emissions.</p> <p>Maximum discharge volume (m³/day) and rate (litres/second) are also specified for the groundwater discharge activity (A5) for the re-injection of produced water.</p>

Aspect considered	Decision
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>Condition 3.5 of the permit requires the Operator to monitor emissions to air from the storage tank vents.</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 the 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>
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>
Financial provision	<p>We are satisfied that the waste from the site has properly been characterised as non-hazardous waste and that there is no mining waste facility for extractive waste. By virtue of paragraph 9(3) of Schedule 20 to the Environmental Permitting (England and Wales) Regulations 2016 the requirements mentioned in Article 2(3) of the MWD are waived. These requirements include the need for a financial guarantee for non-hazardous waste, unless deposited in a Category A facility. So no financial guarantee can be required in respect of fluid left in the target formation.</p>

Aspect considered	Decision
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>
Schedule 22 to the EPR 2016 – Water Framework and Groundwater Daughter Directives.	<p>To the extent that it might lead to a discharge of pollutants to groundwater (a ‘groundwater activity’ under the EPR 2016), the permit is subject to the requirements of Schedule 22, which delivers the requirements of EU Directives relating to pollution of groundwater. The Permit will require the taking of all necessary measures to prevent the input of any hazardous substances to groundwater, and to limit the input of non-hazardous pollutants into groundwater so as to ensure such pollutants do not cause pollution, and satisfy the requirements of paragraph 6 of Schedule 22 and Article 6(1) Groundwater Daughter Directive.</p>
Water Environment (Water Framework Directive)(England and Wales) Regulations 2003	<p>Consideration has been given to whether any additional requirements should be imposed in terms of the Environment Agency’s duty under regulation 3 to secure compliance with the requirements of the Water Framework Directive through (inter alia) environmental permits, but we consider that existing conditions are sufficient in this regard, and no other appropriate requirements have been identified.</p>

Consultation

Responses from organisations listed in the consultation section

The application was publicised on the GOV.UK website because of the high levels of public interest in the onshore Oil and Gas sector. The application itself is NOT high public interest.

We consulted the following organisations:

- Local Authority, Environmental Health/Protection (Lincolnshire County Council/West Lindsey District Council)
- Food Standards Agency
- Health and Safety Executive
- Public Health England
- Local Mineral Planning Authority (Lincolnshire County Council)

No objections were received in the responses (provided below) that were received from the statutory consultees whom we consulted.

Response received from
The only consultation response received was from Public Health England on 09/02/2018
Brief summary of issues raised
Thank you for forwarding a copy of this application to the Centre for Radiation, Chemical and Environmental Hazards (CRCE) at Public Health England on 17 January 2018. The application is for a permit variation to document mining waste operations. This application is a result of a request by the Environment Agency, as all existing onshore oil and gas production facilities now require the same environmental permits to be in place as for new facilities. There is no change to site operations or emissions related to this variation. 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. 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.
Summary of actions taken or show how this has been covered
N/A

Consultation responses from members of the public/community organisations

A total of 2 responses/objections were received from:

- Individual members of the public

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

Impacts from noise

Concerns were raised about the potential impact of noise.

Please see the comments on noise in the Operating Techniques part of the Decision Checklist above. As discussed within this section, condition 3.4 of the permit controls noise and vibration and requires that emissions are minimised. If the activities give rise to pollution due to noise or vibration outside the site, a noise and vibration management plan shall be submitted to the Environment Agency for approval and then be implemented.

We are satisfied that the activities, if carried out as per the waste management plan, will not cause noise pollution.

Groundwater monitoring for the proposed re-injection activity (A5)

Concerns were raised that the existing groundwater monitoring boreholes are not suitable for monitoring the new groundwater discharge activity (A5). The hydrogeological risk assessment (HRA) submitted by the operator identifies that the current groundwater monitoring infrastructure needs to be updated and improved (which will be required before the commencement of activity A5). Part of the improvement will be the installation of new monitoring wells installed to sample/monitor the deeper Principal Aquifer (Lincolnshire Limestone) that underlies the well site. The permit includes improvement condition IC3 (within conditions 2.4.1 and 2.4.2 and table S1.3) for a written groundwater monitoring plan, and pre-operational measures PO 02 and PO 03 (condition 2.5.1 and table S1.4) which address the installation of new monitoring wells.

The discharge activity A5 will not commence until the above required improvement conditions and pre-operational measures have been completed and our written approval provided to the operator.

Concerns regarding well integrity and well failure

Concerns were raised about potential future well integrity issues and well failure and the associated pollution risks from such an event.

Before the re-injection of produced water via well CHN-4z can commence (activity A5 within the permit), the operator must complete the pre-operational measure (PO 01) specified within table S1.4 (as required via condition 2.5.1) and the improvement condition (IC) requirements specified within IC3 within table S1.3 (as required via conditions 2.4.1 and 2.4.2). These measures are discussed in the key issues section above. Our written approval will need to be provided to the operator before activity A5 can commence. For example, prior to the commencement of groundwater activity A5 listed in table S1.1 the operator shall submit, for written approval by the Environment Agency, the as built construction details for the modified re-injection borehole (CHN-4z).

Whilst the operation and maintenance of a well is important to the assessment of risk from the site, the Health and Safety Executive and the Department for Business, Energy and Industrial Strategy (BEIS) are responsible for the structural integrity.

Use of Acid

Concerns were raised about the risks from carrying out acid washing of the existing wells. We do not consider acid wash to be a well stimulation method. We have reviewed and agreed with the assessments that have been provided in the waste management plan and the application's supporting information (environmental risk assessment and de-minimis assessment, which include details of these operations and quantities), that determine that the acid treatment meets de-minimis criteria and will not require a groundwater activity permit (as we have concluded that all of the well maintenance activities meet the ground activity exclusion as described in Schedule 22 Paragraph 3.3 (b) of the Environment Permitting Regulations).