

# Permitting decisions

## Variation to permit

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We have decided to issue the variation for Palmers Wood Oilfield operated by IGas Energy Production Limited.

The variation number is EPR/YP3237YS/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 the 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;
- Addition of a groundwater activity; and
- Oil storage activities.

The variation also aims 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 an environmental 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.

The site for the proposed activities is located at Rook's nest and Coney Hill well sites, Godstone, Surrey, RH9 8DE. The national grid reference for the centre of the site is TQ375 526.

The Application was duly made on 7th February 2017. The original application was made under EPR/XP3831CL but was subsequently transferred to IGas Energy Production Limited under the permit reference EPR/YP3237YS on 23/10/2017.

We gave the Application the reference number EPR/YP3237YS/V002. We refer to the Application as "the Application" in this document in order to be consistent.

The number we have given to the permit is EPR/YP3237YS. We refer to the permit as “the Permit” in this document.

## 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 Activity Permit Application

The Applicant also submitted a separate permit application for a radioactive substances activity, for handling NORM (naturally occurring radioactive materials) as a result of oil and gas production activities, which we have given the application number EPR/ NB3292DH/A001. This is a bespoke permit to allow the operator to accept produced water from other IGas sites containing NORM for reinjection at Palmers Wood. That application is for a separate permit as Radioactive Substances Activities are a separate regime to the Environmental Permitting Regulations and therefore cannot be consolidated into this permit.

The decision with regards to that application is not dealt with in this document. A separate decision document is being consulted upon in conjunction with this document to explain the minded to position on that application.

## Brief outline of proposed process

The installation comprises two associated oil production sites at Rook’s Nest and Coney Hill, near Godstone in Surrey, which are linked by an underground pipeline. Crude oil is extracted at both facilities from the Jurassic Corallian Sandstone Formation. There are four wells currently operational at the site, two at the Rooks Nest facility (PW06 and PW10) and two the Coney Hill facility (PW05 and PW08), and a number of historic wells that are currently not in production (two at the Rooks Nest facility, PW01 and PW07, and one at Coney Hill PW09). Production fluids (crude oil, reservoir water and associated gas) extracted from Coney Hill Well site is pumped through an underground pipeline to the Rook’s Nest Well Site where it is combined with crude oil, reservoir water and associated gas extracted from the Rook’s Nest Well Site. The production fluids are heated in a water bath heater, prior to passing through a 3-phase separator to remove the associated water and gas. The oil is then sent to one of three bulk storage tanks for temporary storage prior to road tanker transport to either a refinery or the Holybourne Oil Terminal. The total oil storage capacity is 2,128 bbls or 282 tonnes. The produced water is stored in two tanks at Rook’s Nest before re-injection into the oil reservoir via two wells on the site (PW02 and PW03). Reinjection at Coney Hill using well PW09 is currently suspended, but could be used again in the future, subject to compliance with the pre-operational conditions. The associated gas, released in the separator, is utilised as a fuel gas for the water bath heater. Any surplus gas is combusted in the onsite ground flare. Small quantities of methane and non-methane VOCs are released from the stored crude oil via a vent stack. Electrical power for the sites is sourced from the national grid.

Mining waste is generated from routine well maintenance activities and well work overs. During the abstraction process wax and scale can precipitate from the well fluids and be deposited on the walls of the tubing, casing, rods and pumps. The deposition if left untreated will result in poor production efficiency and mechanical failure of the pumping system. Typical mechanical failures include broken rods, seized pumps and plugged tubulars. To prevent the loss of produced fluids and mechanical failures well maintenance activities are routinely carried out on the pumping systems. These include hot oil washing, wax dissolver treatment and acid treatment. In all cases this involves circulating fluids around the well pumping system to dissolve the deposits. These activities can be considered preventive maintenance measures that, if not carried out would lead to a complete pumping system failure. The rectification of the failure is high cost and a greater operational and environmental risk.

The principal releases into the environment comprise of:

- (a) Emissions of combustion gases (CO<sub>2</sub>, CO, NO<sub>x</sub>) from the water bath heater and ground 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 on loading.
- (d) Rainwater that collects at the low point of the Rook's Nest Well Site to Gibbs Brook. This rainwater is discharged to the brook using a diesel powered pump.
- (e) Engineering waste resulting from maintenance work to a licensed waste disposal facility.
- (f) Reinjection of produced water and treated site surface water to the oil reservoir for production support.

The installation operates an Integrated Management System which is externally audited to ISO14001 and 9001. There are no European designated sites within 10 km of the installation. The installation has two SSSIs within 2km. The closest is Woldingham & Oxted Downs, situated 0.7 km north of the installation.

## Description of the changes introduced by the variation

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

- 1) Installation Activities, Oil storage and handling has been changed 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. The existing oil storage activities on site have not changed from those currently permitted.
- 2) A Mining Waste Operation, as defined by the Mining Waste Directive (2006/21/EC) 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 flaring of gas (less than 10 tonnes per day), venting of gas from storage tanks, well maintenance and well workovers. 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 operators operating techniques in their existing permit.
- 3) Groundwater Activities 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 and treated site surface water for production support. The operator has submitted a hydrogeological risk assessment for the groundwater activities as part of this application. There are 3 reinjection boreholes into the Coriallian Sandstone formation, PW2 and PW3 at Rook's Nest and PW9 at Coney Hill. PW9 at Coney Hill is subject to meeting the additional pre-operational conditions specified in Table S1.4 prior to reinjection activities commencing. Groundwater activities for reinjection of produced water were previously permitted as directly associated activities under the previous permit. As the effluent type and receiving formation are the same, these 3 reinjection boreholes are treated as one groundwater activity.

## Key issues of the decision

### 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 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 A6.

The operator previously held an 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 2016 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, for example reinjection of produced water
- 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 Installation activities (oil storage, treatment and handling) have not changed at the 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 sector guidance and current permit wording used 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 A6.

The Operator may also undertake near wellbore treatments during the lifetime of hydrocarbon production from the well, as part of routine maintenance activities. These will include hot oil washing (with wax dissolver) and acid treatment. The purpose of hot oil washing is to remove the build-up of paraffin precipitates. Wax dissolver chemical may be added to the hot oil wash to aid the dissolution of paraffin and wax. The process involves circulating hot oil down the well, to the production tubing above the perforations and is circulated back to the surface. Paraffin precipitates dissolved in the hot oil at the surface are passed through a free phase separator and directed to on-site storage tanks. The hot oil wash does not have any significant contact with the reservoir formation and does not pose a risk to groundwater. We have considered the hot oil wash treatment as described in the waste management plan and concluded that it meets the ground activity exclusion as described in Schedule 22 Paragraph 3.3(b) of the Environmental Permitting Regulations.

The purpose of the acid wash is to remove produced water scales from production tubing which have been blocked during the production of hydrocarbons. 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 to remove any further deposit of scale that has occurred in that area. The acid reacts with the scale deposits and rock debris / mineral in the formation and all spent acid is recovered to the surface. We have considered the acid wash treatment as described in the waste management plan and concluded that it meets the ground activity exclusion as described in Schedule 22 Paragraph 3.3(b) of the Environmental Permitting Regulations.

We have amended condition 2.1.1 as read with table S1.1, activity A6 of the permit to impose limits on the total amount of gas that can be flared per day to a maximum of 10 tonnes per day. This is to ensure it remains a Mining waste activity rather than an Installation activity under the Industrial Emissions Directive (IED). The Operator is also required to monitor emissions to air from incineration activities which will be released into the air. We have also imposed an improvement programme for gas management at the site in line with the sector guidance under ICs 2, 5 and 7. We are satisfied that these measures to minimise the risk of fugitive emissions, together with condition 3.1.1 provide acceptable controls.

### **Groundwater Activities**

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 a pollutant to groundwater.

## Reinjection at Rooks Nest:

The groundwater activity for this site is to re-inject produced water resulting from the extraction of hydrocarbons and treated site surface water into the Corallian Sandstone Formation, as specified under A7 in Table S1.1 in Schedule 1 of the permit. The Corallian Sandstone Formation contains groundwater and is located around 1000m deep at Rooks Nest and around 1700m deep at Coney Hill. The re-injection is via PW02 and PW03 on the Rooks Nest site, and PW09 at Coney Hill. PW09 is subject to additional pre-operation conditions prior to reinjection commencing as explained below.

The discharge is a direct discharge to groundwater which is prohibited under the Water Framework Directive except under certain exemptions. One of these exemptions is:

*The injection of water containing substances resulting from the operations for exploration and extraction of hydrocarbons or mining activities, and injection of water for technical reasons, into geological formations from which hydrocarbons or other substances have been extracted or into geological formations which for natural reasons are permanently unsuitable for other purposes, provided that the injection does not contain substances other than those resulting from the above operations.*

We are satisfied that this activity meets the above exemption. A permit can only be granted provided it does not compromise the achievement of any of the environmental objectives relating to groundwater in Article 4 of the Water Framework Directive. We have given detailed consideration to the proposal we are satisfied that none of the relevant environmental objectives set out in Article 4 of the Water Framework Directive will be compromised.

We have reviewed the Hydrogeological Risk Assessment (HRA) 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. The operator has a system in place to monitor the integrity of the wells and to trigger an alarm in the event of a problem being detected, or in the event that the process of re-injection does not follow a normal pattern. The operator reviews the information regularly. The operator has been carrying out re-injection at the Rooks Nest site since the 1980's. As re-injection is now considered a groundwater activity they are now required to carry out groundwater monitoring. Specific groundwater monitoring will be required, focussing mainly on the units of the Lower Greensand principal aquifer underlying the site at depth. We have, therefore, included a requirement for additional groundwater monitoring to be carried out under IC3, to ensure that the risk of pollution from re-injection of produced water continues to be assessed throughout the lifetime of the permit.

We have also requested additional details regarding the reinjection wells and potential risks this activity may present owing to the presence of geological faults nearby. The main concerns were:

- Possibility for reinjection to cause reactivation (movement) within the faults, causing ground disturbance, and,
- Whether there were any risks of reinjection fluids being able to migrate along local faults and enter adjacent geological horizons rather than remain within the intended target formation.

Based on additional details provided by the operator, including an updated interpretation of seismic data, analysis of the reinjection data including formation pressure changes, and a review of well data from opposite sides of local faults, we are satisfied there is no evidence of fluid movement and that the risks of fault reactivation are low based on the current reinjection procedure. We also acknowledge that there has been no other evidence of adverse impacts from reinjection to date since the site began drilling in the mid-1980s, and has been operating under an environmental permit since 2007.

However we consider that the risk assessment provided only demonstrates that the current reinjection activities are acceptable. Should this procedure change an updated risk assessment is likely to be required under a permit variation. As a result, the operator has also specified details of their current reinjection method and we used this to incorporate numerical limits on the discharge volumes and flow rate within Table S3.2 of the permit to ensure reinjection continues to be carried out in a manner which is protective of groundwater environment.

## Reinjection at Coney Hill:

At present no re-injection is taking place at Coney Hill, although the operator wishes to retain the option of using PW-09 for re-injection. PW-09 is currently an un-used well. We have put additional pre-operational controls in place on the use of PW09 for reinjection in future. Prior to any future re-injection taking place at the Coney Hill site the operator will need to provide adequate information to ensure that we are satisfied that the groundwater environment is protected. The operator cannot carry out re-injection until they have our agreement in writing.

## Acid washing and Hot oil washing:

We are satisfied that all chemicals used are either intrinsic to the operations or meet the requirements for a de minimis exclusion and are therefore not separate groundwater activities in their own right. These include hot oil washing (with wax dissolver) and acid washing as de minimis, and the use of biocides and corrosion inhibitors as intrinsic to the oil production process as detailed in the HRA.

## Gap Analysis

We have assessed the Operators gap analysis response which was received on 29/06/2017. We have included a number of additional Improvement conditions in response to this. In particular we have specified some improvements to the operator's management system under IC4 to review:

- i) The procedure for identifying bund fill levels, e.g. high level alarm on unmanned sites
- ii) The procedures for testing the impermeable membrane and subsequent remediation measures if required.
- iii) The procedure for notifying the Environment Agency on each occasion where natural gas is vented uncombusted to atmosphere for safety purposes.
- iv) The procedure for providing emergency flare capacity in the event that primary flare / gas management processes are unavailable / if venting likely to continue for more than 24 hours.

## Schedule 5 responses

We requested additional information to be provided by 07/02/2017 under a schedule 5 notice issued on 02/06/2017. 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.

## Decision checklist

Aspect considered	Decision
<b>Receipt of application</b>	
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.
<b>Consultation</b>	
Consultation	The consultation requirements were identified in accordance with the Environmental Permitting Regulations and our public participation statement.

Aspect considered	Decision
	<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> <p>Local Authority, Environmental Protection, Surrey County Council</p> <p>Food Standards Agency</p> <p>Health and Safety Executive</p> <p>Mineral Planning Authority, Surrey County Council</p> <p>Public Health England</p> <p>Water Companies</p> <p>The comments and our responses are summarised in the <a href="#">consultation section</a>.</p>
<b>Operator</b>	
Control of the facility	<p>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 variation. The decision was taken in accordance with our guidance on legal operator for environmental permits.</p>
<b>The facility</b>	
The regulated facility	<p>We considered the extent and nature of the facilities 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 facilities are defined in the site plan and in the permit. The activities are defined in table S1.1 of the permit.</p>
<b>The site</b>	
Extent of the site of the facility	<p>The operator has provided plans which we consider are satisfactory, showing the extent of the site of the facility including emission and discharge points. The plans are included in the permit.</p>
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 IC9 requiring the operator to review and update their site condition report include at least the following:</p> <ul style="list-style-type: none"> <li>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.</li> <li>ii) reference to any historical spillages, the chemicals involved and locations baseline soil sample results and groundwater data. We</li> </ul>



Aspect considered	Decision
	<p>have included an improvement condition (IC9) 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	The operator has provided a waste management plan which we consider is satisfactory.
Biodiversity, heritage, landscape and nature conservation	<p>We consider that the application will not affect any sites of nature conservation, landscape and heritage, and/or protected species or habitats identified. These include Woldingham &amp; Oxted Downs (SSSI), Godstone Ponds (SSSI). Local wildlife sites: Chalte Field (SCNI), Hilly Field, Godstone Green (SCNI), Godstone Cricket Field (SCNI), The Rookery (SCNI), Glebe Water and Moore's Shaw (SCNI), Robins Grove Wood and Rye Wood (SCNI), Five Acre Shaw and Lodge Wood (SCNI), Armitage Wood and Hamfield Shaw (SCNI).</p> <p>We have not consulted Natural England on the application. The decision was taken in accordance with our guidance.</p> <p>An Appendix 4 CROW assessment form has been completed for information and filed on EDRM.</p> <p>Emissions to air: This is an existing site which has been permitted since 2007 with no increases in air emissions from activities as a result of this variation and consolidation. Although the H1 submitted with the application doesn't screen out Nitrogen Dioxide and Sulphur Dioxide as insignificant, no deterioration in these sites above has been noted as a result of air quality impacts. To ensure air emissions and gas management, including flaring meet BAT as part of the permit sector review we have inserted additional conditions as part of this variation and consolidation. These include flow and monitoring limits on the flare and oil storage tanks to minimise impact to air, and a review of gas management has been requested though IC5 and IC7 to ensure emissions are in line with our sector guidance/BAT for the sector.</p> <p>Emissions to water: Any site discharges have potential for impact on Gibbs Brook which flows into Rooks Nest Park Lake and through ancient semi natural woodland into the Godstone Ponds (SSSI). The HRA submitted with this application includes information on this discharge. The surface water discharge to Gibbs Brook at Rook's Nest is an existing discharge from the original permit. It is for surface water which collects in a low point of the site near the flare. The discharge is made via an oil interceptor, is subject to a visual check for hydrocarbons, and has a chloride limit prior to any release to the environment. We have also inserted IC8 which requires the operator to review surface water management at the site. This is likely to lead to most of this water not being discharged to this watercourse in future and instead used to supplement the produced water for reinjection as stated in the HRA. As a result, there is no stated impact or pollution of the designated sites from the existing site activities.</p>

Aspect considered	Decision
<b>Environmental risk assessment</b>	
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>
<b>Operating techniques</b>	
<p>Operating techniques</p> <p>Water Quality</p>	<p>We have reviewed the operators Hydrogeological Risk Assessment (latest revision V3) and operating 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>We are satisfied that the risks to groundwater have adequately been assessed and the proposed activities are not likely to have an adverse impact on the hydrological features in this area.</p> <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. The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.</p> <p>In addition we have imposed condition 3.5.1 which requires the operator to monitor groundwater and surface water quality.</p> <p>We have also specified several improvement conditions and pre-operational condition to ensure the operations meet the requirements of our Onshore Oil and Gas Sector Guidance, August 2016.</p> <p>IC1 requires the operator to review their site containment in order to demonstrate there is no pollution risk to surface and groundwater.</p> <p>IC3 requires the operator to install groundwater monitoring to monitor reinjection activities on site.</p> <p>IC8 requires the operator review their surface water management and implement any agreed changes.</p> <p>IC10 requires the operator to abandon the soakaway at Coney Hill to prevent it being a potential pollution pathway to groundwater.</p> <p>PO 01-3 requires the Operator to pre-notify us, reconfirm well integrity and carry out baseline monitoring prior to reinjection of produced water in PW09 at Coney Hill.</p>
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</p>

Aspect considered	Decision
	<p>applicant 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. 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 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 do not screen out as insignificant	<p>Emissions of Nitrogen Dioxide and Sulphur Dioxide cannot be screened out as insignificant under the H1 assessment provided with this application. We have assessed whether the proposed techniques are BAT.</p> <p>The proposed techniques/ emission levels for emissions that do not screen out as insignificant depart from the techniques and benchmark levels contained in the technical guidance. We have considered the operator's justification for departure from the guidance. We do not accept it in the following respects, principally the combustion of waste gas in a shrouded flare rather than a non-enclosed ground flare does not meet BAT under our Sector guidance which was published in August 2016. We have also sought the opportunity for the operator to fully review their gas management practices to minimise air emissions and have therefore imposed additional requirements IC5 and IC7 in the permit to require these plans to be produced and approved once we are satisfied they meet BAT or an equivalent standard.</p>
Odour management	<p>We have considered potential odour emissions from the activity during our determination. We do not consider that the activity will give rise to significant levels of odour. The use of the proposed ground flare, with automatic control of combustion temperature provides satisfactory mechanisms to prevent odour emissions. 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 as suitable, it will form part of the permit and the Operator must carry out the activity 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.</p>

Aspect considered	Decision
	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.
<b>Permit conditions</b>	
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. We have also updated permit conditions to make reference to the most modern legislation. The conditions will provide the same level of protection as those in the previous permit(s).
Changes to the permit conditions due to an Environment Agency initiated variation	We have varied the permit as stated in the variation notice.  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 pre-operational conditions.  PO 01-3 requires the Operator to pre-notify us, reconfirm well integrity and carry out baseline monitoring prior to reinjection of produced water in PW09 at Coney Hill.
Improvement programme	Based on the information in the application, we consider that we need to impose an improvement programme.  We have imposed an improvement programme to ensure that the standards of operation for the sector are consistent and reflect those currently required by newly permitted sites (since 2013) and meet the requirements of our Onshore Oil and Gas Sector Guidance, August 2016.  The following ICs have included in this permit to address the gap analysis responses we received from operator to demonstrate compliance with our Onshore Oil and Gas Sector Guidance, August 2016. This is explained in our key issues above.  <b>IC1 - Secondary and Tertiary Containment Review</b>  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.  <b>IC2 - Leak Detection and Repair Plan</b>  Improvement condition IC2 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

Aspect considered	Decision
	<p>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.</p> <p><b>IC3 - Groundwater Monitoring Plan</b></p> <p>Improvement condition IC3 is necessary because the operator has specified that there no groundwater monitoring boreholes at the site and there is no groundwater monitoring plan in place.</p> <p>Groundwater Monitoring is required at the Palmers Wood site because the operator is undertaking a groundwater activities for reinjection of produced water.</p> <p>We have included Improvement Condition IC3 which requires the operator to submit for written approval a groundwater plan. The groundwater monitoring plan, once approved, shall be incorporated into the permit as an operating technique.</p> <p>Groundwater Monitoring is necessary to help determine whether the reinjection activities are affecting the quality of groundwater and whether satisfactory measures are being undertake 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.</p> <p><b>IC4 - Environmental Management System Review</b></p> <p>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.</p> <p>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.</p> <p>The specific management requirements include: bund filling procedures, testing of the membrane, procedure for notification on venting of gas for safety and emergency procedures if gas management failure or venting continues for more than 24 hours.</p> <p><b>IC5 - Gas management</b></p> <p>Improvement condition IC5 is necessary as the operator does not appear currently to be applying appropriate measures for the management of waste gas arising from their production of hydrocarbons.</p> <p>Gas management is required as the impact of releasing large quantities of uncombusted hydrocarbons leads to a significant environmental impact which can be readily mitigated using available techniques.</p> <p>We have included improvement condition 5 which requires the operator to submit for written approval a plan identifying their identified method for reducing the impact of gas emissions to atmosphere.</p> <p>Gas management is necessary to reduce the environmental and human</p>

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	<p>health impacts of emitting natural gas directly to atmosphere.</p> <p><b>IC6 - Air emissions monitoring</b></p> <p>Improvement condition 6 is necessary as the site features emissions to air with the potential to cause pollution. We have applied improvement condition 6 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. Where appropriate, we will use these monitoring results to set appropriate assessment levels or compliance limits for the operator to comply with in future.</p> <p>We consider this condition 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.</p> <p><b>IC7 - Vapour recovery</b></p> <p>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.</p> <p>Vapour recovery is necessary both for safety reasons and also to reduce the environmental impacts of storing, loading, transporting and unloading hydrocarbons.</p> <p><b>IC8 - Surface water management</b></p> <p>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, will clarify how the requirements are being met and how the environment is being protected.</p> <p><b>IC9 - Site Condition Report Review</b></p> <p>Improvement Condition IC9 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.</p> <p>The Operator has provided a Site Condition Report with the application but it does not contain baseline data to confirm the current state of any soil and/or groundwater contamination, or confirm that existing soil and groundwater data for the site enables a baseline to be defined for the site.</p>

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	<p><b>IC10 – Soakaway abandonment</b></p> <p>Improvement Condition IC10 is a site specific IC to require the operator to produce a plan for approval, which must be agreed in writing, outlining how they will abandon the soakaway at Coney Hill to prevent it being a potential pollution pathway to groundwater.</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 for the management of waste gas. We have set emission limits as stated below and also required the operator to review their gas management practices under ICs 5 and 6 above.</p> <p>ELVs equivalent parameters have been set for the following substances in Schedule 3 of the permit.</p> <p>Oxides of Nitrogen (calculation method)</p> <p>Carbon Monoxide (calculation method)</p> <p>Total volatile organic compounds (VOCs) (calculation method)</p> <p>Methane (calculation method)</p> <p>Hydrogen Sulphide</p> <p>For emissions to surface water we have included the existing emission limits as specified in the existing permit to control this emission.</p> <p>Oil and Grease</p> <p>Chloride</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. Condition 3.5 of the permit requires the Operator to monitor emissions to air from the flare and storage tank vents.</p> <p>We also require monitoring of rate and volume of produced water reinjected along with concentrations and volumes of chemicals added to the produced water prior to reinjection.</p> <p>The surface water discharge at Rook’s Nest is also required to be monitored for chloride and oil and grease. In addition following approval of the groundwater monitoring and the surface water management plan under IC3 and IC8, we will also require additional groundwater and surface water monitoring under S3.5 under the permit.</p> <p>The Operator will keep records of the data collected, which must be submitted to the Environment Agency on a regular basis, as specified in the permit or agreed in writing.</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>

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	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.
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>
<b>Operator competence</b>	
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>
Financial competence	There is no known reason to consider that the operator will not be financially able to comply with the permit conditions.
Financial provision	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.
<b>Growth Duty</b>	
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</p>



Aspect considered	Decision
	<p>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>
Further Legislation	
<p>Schedule 22 to the EPR 2016 – Water Framework and Groundwater Daughter Directives</p>	<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>
<p>Water Environment (Water Framework Directive) (England and Wales) Regulations 2003</p>	<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

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 Protection- Surrey County Council
- Food Standards Agency
- Health and Safety Executive
- Mineral Planning Authority- Tandridge District Council
- Public Health England
- Water Companies

In addition the Area consulted with the locally elected members for both Tandridge and Surrey Councils and the local MP, Sam Gyimah. Local interest Oil and Gas groups, Brockham Oil Watch and the Campaign to Protect Rural England CPRE were also informed.

No objections were received from the all the Statutory consultees whom we consulted. 5 objections were received from members of the public and 1 comment was received from Godstone Village Organisation, but these have been dealt with as summarised below.

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

### Responses from organisations listed in the consultation section

<b>Response received from</b>
Surrey County Council, Planning department, 5 <sup>th</sup> April 2017
<b>Brief summary of issues raised</b>
No objections raised. Condition in the planning permission restricts no installation of new plant and machinery without prior approval. They also requested to be kept informed regarding any new flare that may be required under BAT.
<b>Summary of actions taken or show how this has been covered</b>
IC 8 requires the operator to review their gas management options (which includes flaring) and submit a plan to the Environment Agency within 18 months of permit issue for approval. We will keep the Planning Authority informed following submission of this plan any new planning requirements.

<b>Response received from</b>
Public Health England, 3 <sup>rd</sup> April 2017
<b>Brief summary of issues raised</b>
No objections raised. Due to proximity to drinking water abstraction points recommend we also consult with Sutton and East Surrey Water, and Portsmouth Water in addition.
<b>Summary of actions taken or show how this has been covered</b>
Local Groundwater team held meeting with the water companies regarding this application.

<b>Response received from</b>
Mineral Planning Authority, Tandridge District Council, 21 <sup>st</sup> March 2017
<b>Brief summary of issues raised</b>
No objections raised.

#### Representations from community and other organisations

<b>Response received from</b>
Godstone Village Organisation
<b>Brief summary of issues raised</b>
<p>I understand that this Permit is required to cover existing operations on both the Rooks Nest site and the Coney Hill site as a result of revised and strengthened Regulations.</p> <p>I have looked through the various documents supporting the application for the Permit and have no objection to the grant of the Permit PROVIDED the grant is made SUBJECT to and LIMITED to the existing operators Island Gas Ltd and to the current operations referred to in the Application AND strictly in accordance with the safety guidelines set out. ON any variation in the mode of operation or a change in the Operators, the Permit should be withdrawn until a new Permit is sought. The operations must also cease on any failure to operate and/or maintain the equipment to the standards necessary for the safety of local residents, the Water Table &amp; aquifer's and of the Environment.</p>
<b>Summary of actions taken or show how this has been covered</b>
No Actions required. The variation contains the necessary conditions to protect the environment. Safety aspects are regulated separately by HSE.

#### Representations from individual members of the public.

<b>Brief summary of issues raised</b>
5 objections from individual members of the public on the application.
<b>Summary of actions taken or show how this has been covered</b>
<p>No actions required. In summary the public objections received were based on this being an application for a new facility. This is not a new site, but a variation to an existing one, which has been operating since 2007. The additional controls and improvement programme under the permit variation will ensure the site will continue to not have an adverse environmental impact on the surrounding area.</p> <p>There are also general objections raised to radioactive materials mentioned in the consultation. These are naturally occurring substances (NORM) which are routinely encountered in deeper geology associated with onshore oil production. These are controlled through a separate permit and any objections to radioactive substances are dealt with in the separate decision document for this application EPR/ NB3292DH/A001</p>