

# Permitting decisions

## Variation to permit

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We have decided to issue the variation for Storrington Well Site operated by Island Gas Limited.

The variation number is EPR/XP3031CF/V003

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

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

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

- Implementation of the Mining Waste Directive namely the addition of extractive waste management activities,
- Addition of groundwater activities;
- Oil storage activities

We also aim to:

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

The site is located at Storrington Well Site, Pulborough Road, Storrington, West Sussex, RH20 4HP. The Application was duly made on 11th July 2017.

We gave the Application the reference number EPR/XP3031CF/V003. 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/XP3031CF. 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

### Preliminary information

The Applicant also submitted a permit application for a radioactive substances activity, which we have given the application number EPR/RB3194DV/A001. That application is an application for a separate permit. The decision with regards to that application is not dealt with in this document.

### Summary of the Application

As some of the wastes, such as produced water, arising from the activities has the potential to contain low levels of Naturally Occurring Radioactive Material (NORM) in sufficient quantities to be classed as radioactive waste, the Applicant has also applied for a separate Radioactive Substances Activity (RSR) permit which will regulate the ways in which the radioactive material is managed. The Applicant applied for a Standard Rules RSR Permit (SR2014 No.4) managing the storage and export of the radioactive material offsite. This permit does not allow the receipt of radioactive substances from any other site. A bespoke RSR Permit would need to be gained before radioactive material from another site could be received at Storrington Well Site and the Applicant has confirmed awareness of this requirement.

## Brief outline of proposed process

This installation comprises a single oil production site in Storrington, West Sussex. Crude oil together with admixed reservoir water is pumped from the oil reservoir by three beam pumps to a water bath heater prior to passing through a three phase separator, to on site storage tanks by pipeline. The produced water is separated off in the three phase separator and sent to the produced water tank for re-injection back to the oil producing reservoir for production pressure support. Produced water is also received from Holybourne Oil Terminal for re-injection at Storrington Well Site. The oil tanks are emptied as required by road tanker and the oil is transported to Holybourne Oil Terminal. Associated gas, separated in the three phase separator is used on site as fuel for the oil bath heater heating the produced fluids to aid separation. Fugitive gas emissions from the oil storage tanks is vented to atmosphere via a common vent stack. Excess gas not utilized on site is combusted in the enclosed ground flare.

Alongside the associated gas, Mining waste is also 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 are considered preventive maintenance measures, if not carried out the result would lead to a complete pumping system failure. The rectification of the failure is high cost and a greater operational and environmental risk.

Electrical power for the installation is provided for from the grid. The installation occupies an area of approximately 1 hectare and produces approximately 50 barrels of oil per day.

The principal releases into the environment comprise:

- (a) Emissions to air of gaseous hydrocarbons from separation of volatiles in storage.
- (b) Emissions to air of gas combustion products.
- (c) Re-injection of produced water and treated site surface water to the oil reservoir.
- (d) Engineering waste resulting from maintenance work is removed to a licensed waste disposal facility.

An ISO 14001 compliant management system is operated on the installation. The installation is within 2km of four SSSI's (Amberley Mount to Sullington Hill, Hurston Warren, Parham Park and Pulborough Brooks) and 10km of two candidate Special Areas of Conservation (Duncton to Bignorm Escarpment and The Mens), Arun Valley SPA and Arun Valley Ramsar.

## **Description of the changes introduced by the variation**

This Normal variation is 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 venting of gas from storage tanks, well maintenance and well workovers 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 operators operating techniques in their existing permit. One of the two ground flares included in the original Permit has been removed from site so the varied Permit reflects this change and emission points to air have been re-numbered accordingly.
3. A 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 for this groundwater activity as part of this application. There is 1 reinjection borehole into the Great Oolite formation at Storrington Well Site. Groundwater activities for reinjection of produced water were previously permitted as directly associated activities under the existing Permit. Produced water is also received from Holybourne Oil Terminal for re-injection at Storrington Well site.

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.

# 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 A3.

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 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 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 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 A3.

## Groundwater Activities

The Operator previously carried out reinjection of produced water as a directly associated activity under the existing Permit. Re-injection of produced water and clean 'treated' surface water has been reviewed as part of this variation determination and the Operator submitted an updated Hydrogeological Risk Assessment.

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. The groundwater activity for this site is to re-inject produced water resulting from the extraction of hydrocarbons into the Great Oolite formation, which contains groundwater.

The discharge is a direct discharge to groundwater which is prohibited under by 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 and we are satisfied that none of the relevant environmental objectives set out in Article 4 of the Water Framework Directive will be compromised.

A Groundwater Activity has therefore been added to Schedule 1 of the Permit under Table S1.1, activity A4, for the re-injection of produced water for production support. 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 under Improvement Condition IC3 for a review of the existing groundwater monitoring practices and potential additional down gradient groundwater monitoring borehole locations to ensure that the risk of pollution to groundwater from the activities carried out on site continues to be adequately assessed throughout the lifetime of the permit. There are currently 2 up-gradient and 1 down-gradient groundwater monitoring boreholes in place and being monitored from but it is currently Best Practice to have 2 down-gradient groundwater monitoring boreholes. The operator should propose a suitable additional down-gradient groundwater monitoring borehole under their response for IC3. The existing groundwater monitoring arrangements specified in Schedule 3 Table S3.5 shall continue to be undertaken until any alternatives are agreed under IC3.

The varied permit specifies more details on the location and depth of the re-injection activity than was specified in the existing permit in order to restrict this groundwater activity to the Great Oolite formation, the oil bearing strata that the crude oil is being extracted from.

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, wax dissolver treatment and acid treatment. The purpose of hot oil washing is to remove the build-up of paraffin precipitates. 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 and at the surface are passed through a three phase separator and directed to on-site storage tanks. The hot oil wash does not have any contact with the reservoir formation and does not pose a risk to groundwater.

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. This will allow the acid to dissolve the debris that is reducing the permeability and restore the natural flow paths. The water and acid wash solution is circulated below fracturing pressure. No high

pressure circulation will be used which could create fractures in the reservoir rock. Any penetration of acid wash in to the formation is minimal and limited to the immediate vicinity of the wellbore. The volumes of acid to be used are low and the acid will come into contact with a relatively small area of the reservoir formation. The acid reacts with the minerals in the formation to produce an inert salty solution and carbon dioxide. Spent acid is recovered to the surface, as much as is feasibly possible.

We have considered the chemicals used (biocides and corrosion inhibitors), hot oil wash, wax dissolver and acid wash treatment as described in the application and conclude that they are either intrinsic to the operations or are considered de-minimis and can be excluded under Schedule 22 Paragraph 3.3(b) of the Environmental Permitting Regulations 2016.

## Gas Management

There were previously 2 ground flares included within the Permit under Schedule 4 Table S4.1 as emission points A2 and A3. These were also included on Site Plan B in Schedule 2 of the existing Permit as flare A2 (Emission Point A2) and flare A2a (Emission Point A3). The Operator has applied to remove flare A2a from the Permit as it has previously been removed from site, leaving only flare A2 remaining. This has been accepted and the remaining emission points to air have been consecutively re-numbered accordingly. A revised site plan, showing the one remaining flare, was submitted and has been included in Schedule 7 of this varied Permit.

At various points in the revised Waste Management Plan the Operator describes the installed flare as 'enclosed'. In the sense intended by the Onshore Oil & Gas sector guidance (17 August 2016), the installed flare is not enclosed as it does not feature a mechanism to control the feed of combustion air which is essential for ensuring optimal incineration across a range of flow rates. As such, the current flare cannot be considered to be BAT. Waste Management Plan Appendix 12 'A Review of Enclosed Ground Flares – Environmental Performance' supports the Operator's contention that the currently installed flare is BAT equivalent.

The Onshore Oil and Gas sector guidance (17 August 2016) provides guidance on how alternatives to enclosed flaring may be justified at onshore oil and gas sites. The detail of this assessment is outlined on pages 32-33 of the sector guidance. A 'BAT equivalence' argument can be constructed where an operator can satisfy us that the following tests has been satisfied:

1. 'supporting evidence to demonstrate that the environmental performance of your proposed technique will be equivalent to that of an enclosed flare.'
- and
2. 'the applicability limitations that make an enclosed flare unsuitable'

The operator's argument, as laid out in Appendix 12, is largely based around the results of an ambient air monitoring study carried out by the Environment Agency at the Storrington Well Site between January and July 2015. The study concludes that no significant difference in air quality (as measured by key Air Quality Standard (AQS) determinands) was observed when prevailing winds were from the Storrington Well Site relative to other wind directions. Furthermore, the results of the study suggested that each substance monitored for was likely to meet the relevant AQS objective. Additionally, the study concluded that the level of emissions from the site alone were unlikely to lead to exceedances of relevant AQS objectives at the nearest sensitive receptor. We accept that this broadly satisfies the first element of the BAT equivalence test, as set out above.

The operator has provided no information to justify why an enclosed flare is not suited to their operations at Storrington Well Site so cannot be considered to have adequately satisfied the second part of the BAT equivalence test, as set out above.

While it is accepted that the 2015 ambient air monitoring study did not observe any significant impact which could reasonably be attributed to the Storrington Well Site, there remains significant uncertainty over the actual performance of the Storrington flare and similar units at other sites. Flares of the kind installed at Storrington are inclined to produce sub-optimal combustion conditions, particularly so, when gas flows are at the lower end of the flare's intended range as is the case at Storrington. The Operator has provided no evidence to allow us to be confident that high temperature and smokeless combustion is achieved at the Storrington site, particularly at the very low flows occasionally encountered at the site.

Taking into account all of the above the varied permit includes improvement condition IC5 requiring a holistic review of all available options for the utilisation, or disposal of the gases produced in association with crude oil at Storrington Well Site, in line with our indicative BAT position.

We have also required an improvement programme for gas management at the site in line with the sector guidance under Improvement Conditions IC2 and IC6. We are satisfied that these measures to minimise the risk of air emissions, together with condition 3.1.1, will provide acceptable controls.

## **Gap Analysis**

The operator was required to complete a Gap Analysis assessing how they meet the requirements of the Onshore Oil and Gas Sector Guidance, August 2016. This information was used to generate Improvement Conditions to address any shortfalls.

Improvement Conditions IC1, IC2, IC4, IC5, IC6 and IC7 have been added accordingly. Further information is included on each of these improvement conditions in the sections above and in the decision checklist below.

## **Schedule 5 Requests**

A Schedule 5 Notice was served on 13 December 2017 requiring further information. The operator responded and supplied additional information on 31 January 2018 and 26 September 2018. This information has been taken into account in our decision.



## 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	<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.</p> <p>We consulted the following organisations:</p> <p>Local Authority, Environmental Health, Horsham District Council</p> <p>Food Standards Agency</p> <p>Health and Safety Executive</p> <p>Mineral Planning Authority, West Sussex County Council</p> <p>Director of Public Health</p> <p>Public Health England</p> <p>The comments and our responses are summarised in the <a href="#">consultation section</a>.</p>
<b>Operator</b>	
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.
<b>The facility</b>	
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' and Appendix 2 of RGN 2 'Defining the scope of the installation'.</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>
<b>The site</b>	
Extent of the site of the	The operator has provided a plan which we consider is satisfactory, showing the extent of the site of the facility including emission and discharge points.

<b>Aspect considered</b>	<b>Decision</b>
facility	The plan is included in the permit.
Site condition report	The operator has provided a description of the condition of the site, which we consider is satisfactory. The decision was taken in accordance with our guidance on site condition reports and baseline reporting under the Industrial Emissions Directive.
Waste management plan	The operator has provided a revised waste management plan which we consider is satisfactory.
Biodiversity, heritage, landscape and nature conservation	<p>The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat.</p> <p>We have assessed the application and its potential to affect all known sites of nature conservation, landscape and heritage and/or protected species or habitats identified in the nature conservation screening report as part of the permitting process.</p> <p>We consider that the application will not affect any sites of nature conservation, landscape and heritage, and/or protected species or habitats identified.</p> <p>We have not consulted Natural England on the application. The decision was taken in accordance with our guidance.</p>
<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>	
Operating techniques Water Quality	<p>We have reviewed the Hydrogeological Risk Assessment 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. The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.</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.</p> <p>In addition to condition 3.5.1, which requires the operator to monitor groundwater and surface water quality, we have also imposed the following improvement conditions in Schedule 1 Table S1.2:</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 review their existing groundwater monitoring strategy and propose an additional down gradient groundwater monitoring borehole location to monitor re-injection activities and any future pollution</p>

Aspect considered	Decision
	<p>incidents at the site.</p> <p>IC4 requires the operator to ensure the procedures for well integrity are maintained during operation of the reinjection well</p> <p>IC7 requires the operator review their surface water management and implement any agreed changes.</p>
<p>General operating techniques</p>	<p>We have reviewed the techniques used by the operator and compared these with the relevant guidance notes and we consider them to represent appropriate techniques for the facility.</p> <p>The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.</p> <p>A revised waste management plan was submitted as part of the application determination process and 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>
<p>Operating techniques for emissions that screen out as insignificant</p>	<p>Emissions of Nitrogen Dioxide, Carbon Monoxide and Sulphur Dioxide have been screened out as insignificant, and so we agree that the applicant's proposed technique is BAT for the installation.</p> <p>We consider that the emission limits included in the installation permit reflect the BAT for the sector.</p>
<p>Odour management</p>	<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. Use of the ground flare provides a satisfactory mechanism 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>
<p>Noise management</p>	<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
	<p>We have included condition 3.4.2 in the permit. This condition enables us to require the Operator to submit a specific noise and vibration management plan, should noise and vibration become a problem. If a plan be required in the future, once we have assessed this plan as suitable, it will form part of the permit and the Operator must carry out the activity in accordance with the approved techniques.</p>
<p>Use of conditions other than those from the template</p>	<p>Based on the information in the application, we consider that we do not need to impose conditions other than those in our permit template.</p>
<p>Updating permit conditions during consolidation</p>	<p>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).</p>
<p>Changes to the permit conditions due to an Environment Agency initiated variation</p>	<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>
<p>Pre-operational conditions</p>	<p>Based on the information in the application, we consider that we do not need to impose pre-operational conditions.</p>
<p>Improvement programme</p>	<p>Based on the information in the application, we consider that we need to impose a new improvement programme.</p> <p>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.</p> <p>All previous improvement conditions in the existing permit, except for improvement condition IC5, have been completed and removed from the new permit. Previous improvement condition IC5 has been superseded by new improvement conditions IC5 and IC6.</p> <p>The following Improvement Conditions have been added to this permit to address the gap analysis response we received from the operator to demonstrate compliance with our Onshore Oil and Gas Sector Guidance, August 2016. This is explained in our key issues above.</p> <p><b>IC1 - Secondary and Tertiary Containment Review</b></p> <p>This Improvement Condition has been added to the permit 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.</p> <p><b>IC2 - Leak Detection and Repair Plan</b></p> <p>This Improvement Condition has been added to the permit to require the Operator to produce a leak detection and repair plan that will manage fugitive VOC emissions from potential leak points such as seals, flanges, pumps and valves. This standard technique is a method for identifying and prioritising</p>

Aspect considered	Decision
	<p>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>Although the operator currently has groundwater monitoring boreholes installed with groundwater monitoring taking place, the locations of these boreholes do not meet best practice. Further detail on this is included under Groundwater Activities in the Key Issues section above.</p> <p>This improvement condition requires the operator to review their existing groundwater monitoring strategy and propose an additional down gradient groundwater monitoring borehole location to monitor re-injection activities and ensure appropriate measures have been undertaken to prevent groundwater pollution. The operator shall submit a new groundwater monitoring plan, based on the site conceptual model and hydrogeological risk assessment, for approval. Once approved this plan shall be incorporated into the permit as an operating technique.</p> <p><b>IC4 – Environmental Management System Review</b></p> <p>This improvement condition has been added as a number of procedures did not appear to be in place from the information submitted with the application.</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 and monitoring to confirm integrity of the re-injection well. This shall cover any remedial measures in the event of a failure.</p> <p>The last point, point iv), has been included in response to a consultation comment from PHE. Further detail is provided in the Consultation section below. This point requires the production of an Accident Management Plan.</p> <p><b>IC5 – Gas Management</b></p> <p>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</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>Gas management is necessary to reduce the environmental and human health impacts of emitting natural gas directly to atmosphere.</p> <p><b>IC6 – Air emissions monitoring</b></p> <p>This improvement condition has been added 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, and the potential to cause pollution. 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</p>

Aspect considered	Decision
	<p>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 – Surface Water Management Plan</b></p> <p>Improvement condition IC7 has been added because the operator has indicated that rainwater is not always being dealt with in accordance with requirements necessary to protect the environment from uncontrolled contaminated discharges of site surface water. The development of a plan to show how rainfall is managed to ensure the environment is not compromised, will clarify how the requirements are being met and how the environment is being protected. The operator shall include details of their proposed method to ‘treat’ site surface water prior to re-injection with the produced water.</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 emissions to air:</p> <ul style="list-style-type: none"> <li>Oxides of Nitrogen</li> <li>Carbon Monoxide</li> <li>Total volatile organic compounds (VOCs)</li> <li>Methane (calculation method)</li> <li>Hydrogen Sulphide</li> <li>Gas vented (calculation method)</li> </ul>
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>The operator will continue to monitor groundwater and emissions to air.</p> <p>We require monitoring of the rate and volume of produced water re-injected along with concentrations and volumes of chemicals added to the re-injection and production wells. This will include chemicals intrinsic to operations and those which have been accepted as de minimis. In addition following approval</p>

Aspect considered	Decision
	<p>of the groundwater monitoring and the surface water management plan under IC3 and IC7, we will also require additional groundwater and surface water monitoring under Table S3.5 of 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.</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 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>
<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	<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 been properly 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.</p>
<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</p>

Aspect considered	Decision
	<p>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>
<b>Further Legislation</b>	
<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 Health
- Food Standards Agency
- Health and Safety Executive
- Mineral Planning Authority, West Sussex County Council
- Director of Public Health
- Public Health England

Two responses were received from the all the Statutory consultees whom we consulted. Objections were received from 2 members of the public. This has 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>
Public Health England
<b>Brief summary of issues raised</b>
Public Health England have no significant concerns about this application. However, they have raised the following points: <ul style="list-style-type: none"><li>• Public Health England requested that the permit contain conditions to ensure the products of combustion from flaring, generators and process heaters and fugitive emissions from storage tank vents do not impact on public health.</li><li>• They gave a recommendation that the operator produces an accident management plan, as one was not included with the application.</li><li>• They also suggested we consult with the Local Authority and Southern Water on risks to groundwater and public water abstraction points.</li></ul>
<b>Summary of actions taken or show how this has been covered</b>
Operational limits are set for these parameters under condition 3.1.2.  Improvement Condition IC4 has been set requiring improvements to the Operator's management systems, including ensuring they have an Accident Management Plan.  The Local Authority has been consulted on this application. Storrington Well Site does not lie in a Source Protection Zone and therefore does not lie within an area where groundwater is abstracted by Southern Water. There is no risk to the public abstraction supply so Southern Water have not been consulted. The nearest private licenced abstraction is approximately 1900m to the north of Storrington Well Site. There are no risks to this abstraction from the activities carried out on site.

<b>Response received from</b>
Health and Safety Executive
<b>Brief summary of issues raised</b>
No objections raised.
<b>Summary of actions taken or show how this has been covered</b>
None required.

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

<b>Brief summary of issues raised</b>
Objections were received from 2 members of the public on the application
<b>Summary of actions taken or show how this has been covered</b>
<p>Summaries of the main points raised and how we have addressed them are as follows:</p> <p><b>Hydraulic Fracturing ‘Fracking’</b>  The public objection relates to opposition to fracking at the site. This is an existing oil and gas producing site and no hydraulic fracturing takes place. The operator is not permitted to carry out hydraulic fracturing at this site. Condition 2.1.1 and table S1.1 specify that “well stimulation by hydraulic fracturing is not permitted”.</p> <p><b>Against the use of fossil fuels</b>  Policy is made by the Government. The policy states “We aim to maximise the economic recovery of oil and gas from the UK’s oil and gas reserves, taking full account of environmental, social and economic objectives”.</p> <p><b>Emissions to air</b>  Concerns have been raised on how emissions to air from the activities on site (heater, flare and storage tank vents) will be controlled. Please see the Gas Management comments in the Key Issues section above.  We recognise that utilisation and flaring of gas needs to be controlled and we have included monitoring conditions in the permit requiring the Operator to monitor the flare feed gas flow rate and combustion temperature. This can be used with the feed gas composition analysis to calculate the emissions of substances including oxides of nitrogen, carbon monoxide, Volatile Organic Compounds, methane and hydrogen sulphide. The operator is required to provide monthly reports of these calculation results to the Environment Agency.  The permit conditions also require the operator to monitor, by calculation, the quantity of gas vented from storage tank vents.</p> <p><b>Human Health Impacts</b>  We have assessed the emissions from the site and are satisfied that flaring emissions predictions are insignificant for all pollutants and Environmental Standards (ES).  Public Health England have raised no objections and we are satisfied that the activities we are permitting will not give rise to significant pollution or harm to human health.</p> <p><b>Impacts from odour</b>  Concerns were raised about the impact of odour on local residents.  Please see the comments on Odour in the Operating Techniques part of the Decision Checklist above.  We are satisfied that the activities, if carried out as per the waste management plan, will not cause noise, vibration, dust or odour pollution.</p> <p><b>Potential impact on groundwater and surface water</b></p>

Concerns were raised during consultation that groundwater may be contaminated.

A full review of the groundwater risk assessment was carried out which concluded that there was no immediate risk to groundwater but that a review of the groundwater monitoring borehole locations should take place to ensure best practice is being met. This requirement has been included in the Permit under improvement condition IC3. Please see the Key Issues section and the Operating Techniques part of the Decision Checklist above for further details.

There are no direct discharges to surface water from the site.

The operator has and will continue to carry out groundwater monitoring, as required by the Permit, to ensure that there is no pollution of groundwater that could affect the environment or drinking water supplies.

**Operator trust**

Concerns were raised that this variation application is an attempt by the Operator to expand into less conventional techniques. 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. No changes have been made to the existing activities carried out on site as a result of the application.