Permitting decisions

Variation and consolidation

We have decided to grant the variation for **Broadford Bridge 1 Wellsite** operated by **Kimmeridge Oil & Gas Limited (the Operator).**

The variation number is **EPR/AB3806CG/V003**.

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

Purpose of this document

This decision document provides a record of the decision making process. It summarises the decision making process in the decision checklist to show how all relevant factors have been taken 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
- shows how we have considered the consultation responses

Unless the decision document specifies otherwise, we have accepted the applicant's proposals. Read the permitting decisions in conjunction with the environmental permit and the variation notice. The introductory note summarises what the variation covers.

Key issues of the decision

Mining Waste

A Waste Management Plan (WMP) has been submitted which now includes a description of the processes that will generate additional extractive waste, the waste types, how they will be minimised and how they will be stored on site. The Operator must operate the new flow testing in accordance with the WMP (BB-PR-Q10 revision 4 dated 29 May 2017) which forms part of the permit.

We have approved the WMP and we are satisfied that the Operator (from time to time also addressed as 'the Applicant' in this document) will operate the regulated facility accordingly, complying with the requirements of the Mining Waste Directive.

Waste Management Plan

Under the Mining Waste Directive (Article 5) an Operator of a mining waste operation must draw up a waste management plan (WMP) for the minimisation, treatment, recovery and disposal of extractive waste. We have assessed the Applicant's WMP in line with the requirements of Article 5. We have approved the plan subject to conditions in the permit. We are satisfied the permit requirements, including the WMP, will protect the environment and that the Directive requirements of Articles 4 and 5 of the MWD are met.

The WMP provides that the material inputs have been selected to minimise risk and will be restricted to the minimum amount necessary, thereby minimising the amount of waste generated as required by the MWD. It provides an estimate of the amount of each waste that will be managed. Wastes arising from the activities will be recovered where possible. It also characterises each waste type.

The WMP is incorporated into the permit by means of condition 2.3.1 and table S1.2. The WMP needs to be reviewed every 5 years but in the unlikely event that the activities give rise to pollution, condition 2.3.2 enables us to require a revision of the plan to be submitted to us for approval and thereafter implemented. Condition 2.3.3 is a standard condition and refers to an extended time period. Although the condition is used in the permit, we do not expect the mining waste operation to extend beyond two months.

The regulations define a mining waste operation as the management of any extractive waste that falls within the scope of the Mining Waste Directive. For Broadford Bridge wellsite, all areas associated with the storage and handling of extractive wastes including drilling muds, drill cuttings and cement will be treated as mining waste operations.
The extractive wastes that will need to be managed on site as described in the Waste Management Plan are:

- Acid wash
- Natural/formation gas
- Surface water run off
- Suspension fluid
- General waste

All wastes will be disposed of to a permitted disposal or treatment site using a registered waste carrier. The quantity of waste produced will be monitored and recorded. The data will be used to inform waste prevention and reduction strategies.

The Applicant has also applied for a separate standard rules permit for the management of radioactive waste.

Groundwater activity

In addition to information provided by the Applicant, we have carried out our own groundwater risk assessment. We have evaluated whether a Groundwater Activity Permit is required. Based on the information presented, we have determined that a Groundwater Activity Permit is not required for the proposed activity which is limited to flow testing and acidisation, based on the following:

- We consider that the use of the acid to clean the well will comply with the groundwater activity exclusion under the EPR 2016 (paragraph 3.3(b) of Schedule 22) in that any discharge to groundwater that may occur would be of a quantity and concentration so small as to obviate any

present or future danger of deterioration in the quality of any receiving groundwater and that a permit will therefore not be required.

- The process of acidisation added to the well testing operations will not increase any risk to groundwater. The borehole design and construction details have already been assessed as part of the original permit and we are satisfy that they comply with the standards to prevent release of fluids to underground strata. We are therefore satisfied that there is no likelihood of environmental risk from this process.

Flow testing and acidisation

The acidisation operation to be added to the WMP is for the cleaning of the well bore and removal of drilling induced formation damage. The process is fully described in the approved WMP and uses low volumes and quantities of fluids. Unlike hydraulic fracturing, the fluids will not be injected at a high pressure. The pressures will be just above formation pressures so that the fluid will only travel short distances in to the formation. The acid will become neutralised during the process and will be pumped out and removed from site and transported to an appropriate waste treatment facility. Acidisation has been carried out historically within oil wells and water wells therefore we are satisfied that there is no likelihood of environmental risk from this process.

Emissions to air – volume of gas flared

There is currently no produced gas from the existing operations. It is not yet known whether there will be any gas from the well testing, and if so, at what volume it would be produced.
We have approved that gas can be flared at a volume of less than 10 tonnes per day as the operator/applicant has demonstrated that the impact from the produced gas is below the insignificance threshold for the relevant air quality standards for the potential pollutants it may contain.

The flared gas from the wellsite would pass through a shrouded flare designed to incinerate natural gas across a variable range of flow rates and pressures. The permit stipulates that no more than 10 tonnes of gas shall be flared per day.

Emissions to water

There are no point source emissions to water. The drill site area is underlain with an impermeable membrane, and containment ditches lie around the perimeter of the site to capture any surface water run-off. There is bunding around storage container areas, to contain any spillages. Management procedures are in place to inspect bunds and ensure safe handling of materials during the transfer / delivery process.

The applicant has also applied for a separate Standard Rule Permit SR 2015 No 2 for the storage and handling of crude oil.

Financial competence

As per Article 14 of the Mining Waste Directive (2006/21/EC), there is no requirement for financial provision in a permit where the management of extractive waste does not involve a waste facility.

Additionally, we have carried out a financial check of the Operator. This check has not identified any reason to consider that the operator will not be financially able to comply with the permit conditions.

Decision checklist

Aspect considered	Decision
Consultation	
Consultation substantial change installations or mining waste	The consultation requirements were identified in accordance with the Environmental Permitting Regulations 2016 and our public participation statement. The application was publicised on the GOV.UK website. We consulted the following organisations: Director of Public Health Public Health England Health & Safety Executive West Sussex County Council The comments and our responses are summarised in the consultation section.
The facility	
The regulated facility	We considered the extent and nature of the facility at the site in accordance with RGN2 'Understanding the meaning of regulated facility', Appendix 2 of RGN 2 'Defining the scope of the installation', Appendix 1 of RGN 2 'Interpretation of Schedule 1'. The extent of the facility is defined in the site plan and in the permit. The activities are defined in table S1.1 of the permit.
The site	
Extent of the site of the facility	The operator has provided a plan which we consider is satisfactory, showing the extent of the site of the facility. The plan is included in the permit.
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.
Waste management plan	The operator has provided a waste management plan which we consider is satisfactory.
Biodiversity, heritage, landscape and nature conservation	The application is not within the relevant distance criteria of a site of heritage, landscape or nature conservation 200m screening distance, and/or protected species or habitat, 1000m screening distance. There are 4 Local Wildlife Sites (LWS): Cattlestone Farm (1.7km), Rosier Wood (2.1km), St. Cuthmans Pond (2.6km) and Lordings Farm Meadow (2.4km). A full assessment of the application and its potential to affect the LWS has been carried out as part of the permitting process. We consider that the application will not affect the features of the sites. We have not consulted Natural England on the application. The decision was taken in accordance with our guidance.
Environmental risk assessment	
Environmental risk	We have reviewed the operator's assessment of the environmental risk from the facility. The operator's risk assessment is satisfactory.

Aspect considered	Decision
Operating techniques	
Operating techniques	We have reviewed the techniques proposed by the operator and compared these with the relevant technical guidance and we consider them to represent appropriate techniques for the facility. The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.
Permit conditions	
Updating permit conditions during consolidation	We have updated permit conditions to those in the current generic permit template as part of permit consolidation. The conditions will continue to provide the same high level of protection as those in the previous permit(s).
Pre-operational conditions	Based on the information in the application, we consider that we need to impose pre-operational conditions. The operator shall also provide a method for calculating the emissions from the flare. This must be approved by us before flaring commences.
Monitoring	We have decided that monitoring should be added for the following parameters, using the methods detailed and to the frequencies specified: For the flare: • Oxides of Nitrogen • Carbon monoxide • Total volatile organic compounds (VOCs) • Methane concentration in flare feed gas • Flare gas feed rate • Flare combustion temperature For groundwater and surface water: • Temperature, • Total Dissolved Oxygen, • Electrical Conductivity, • pH, • Redox Potential, • Turbidity • Ammoniacal Nitrogen, • Arsenic, • Barium, • Boron, • Cadmium, • Calcium, • Chloride, • Total Chromium, • Copper, • Lead, • Magnesium, • Mercury, • Nickel, • Potassium, • Selenium, • Sodium, • Zinc, • pH, • PAH, • EPH, • GRO (BTEX) • COD, • TDS,

Aspect considered	Decision
	• Electrical Conductivity • Alkalinity. These monitoring requirements have been included as an additional risk control and to ensure that the drilling and testing activities are not impacting on the area surrounding the site.
Reporting	We have added reporting in the permit for the parameters detailed above, to ensure that the flare is being operated in an efficient manner.
Operator competence	
Management system	There is no known reason to consider that the operator will not have the management system to enable it to comply with the permit conditions.
Financial competence	There is no known reason to consider that the operator will not be financially able to comply with the permit conditions.
Growth Duty	
Section 108 Deregulation Act 2015 – Growth duty	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. Paragraph 1.3 of the guidance says: "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." 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. 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.

Consultation

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

Responses from organisations listed in the consultation section

Response received from
Public Health England (03/04/17)
Brief summary of issues raised
Based solely on the information contained in the application provided, PHE has no significant concerns regarding risk to health of the local population from this variation to permitted activities, providing that the applicant takes all appropriate measures to prevent or control pollution, in accordance with the relevant sector technical guidance or industry best practice.
Summary of actions taken or show how this has been covered
None required

Representations from individual members of the public.

Brief summary of issues raised
Acidisation
Summary of actions taken or show how this has been covered
The site lies on a thick sequence of Weald Clay which is classified as a Unproductive Strata. These are geological strata with low permeability that have negligible significance for water supply or river base flow. Therefore any risks to surface aquifers is negligible. The Acidisation process is only being used on the target formation(s) which are the Micrite Beds in the Kimmeridge Clay. Acidisation is not taking place in any other strata or aquifers. The WMP states that all of the liquid will be 100% returned. There may be a small fraction of residual liquid that is not returned through unexplained losses or gains through formation water. We have reviewed this and have concluded that the acidisation activity meets the de-minimus definition.

Brief summary of issues raised
Nature of chemicals used in flow test
Summary of actions taken or show how this has been covered
The Environment Agency has undertaken an assessment of the proposed additives (chemicals) and we are satisfied that they will not cause environmental harm at the rates and levels of use proposed. All fluids would be returned to the surface for storage and disposal to an appropriately permitted waste treatment facility.

Brief summary of issues raised
Well stimulation
Summary of actions taken or show how this has been covered
The Environment Agency has undertaken an assessment of the proposed additives. A full set of Material Safety Data Sheets were provided. It is likely that the acid used would neutralise in the well bore. In any event, all fluids would be returned to the surface for storage and disposal to a permitted waste facility. We consider the proposed well testing operations do not pose a significant risk to groundwater providing they are undertaken in accordance with the revised Waste Management Plan BB-PR-Q10 Revision 4; 27 May 2017.

Brief summary of issues raised
Reinjection of produced fluids - Several comments raised regarding the reinjection of produced waters back into the aquifers.
Summary of actions taken or show how this has been covered
No reinjection well has been proposed at this site.

Brief summary of issues raised
Accidents and spillage in onshore oil and gas incidents - Concerns raised regarding details of any emergencies being made available to the public
Summary of actions taken or show how this has been covered
The details of any emergencies that may arise, including health and safety procedures in the event of an emergency, for example a well blowout, spillage, or accident. The Environment Agency will provide full details of any emergency situation, within its remit, if one occurs.

Brief summary of issues raised
Risk of pollution of Groundwater - A number of comments have raised concerns that the activities will cause contamination or pollution of Groundwater.
Summary of actions taken or show how this has been covered
These risks are controlled and mitigated through pollution prevention measures and surface water containment on site. The site is lined with an impermeable membrane to protect the underlying soils and groundwater. The risk assessment includes details of how spillages will be reduced or avoided and how the risks from potential spillages are going to be minimised. The Environment Agency has fully assessed the risks associated with pollution occurring from activities on the site and is satisfied that the risk of any significant pollution is minimal. No hydraulic fracturing is permitted. HSE regulates wellbore completion in accordance with Design and Construction Regulations 1995 and the Borehole Site Operations Regulations 1996. We have a Memorandum of Understanding and work collaboratively with HSE to ensure that standards of construction also meet the needs of environmental regulations. We consider that the well was constructed in accordance with the requirements and offers a high level of protection against well failure and are therefore satisfied with the measures proposed by the operator.

Brief summary of issues raised
Potential impact of activity on surface water and groundwater - Concerns were raised that surface water and groundwater may be contaminated by the proposed drilling activities.
Summary of actions taken or show how this has been covered
We have reviewed the Environmental Risk Assessment provided by the applicant against our information and conceptual understanding of the location. We are satisfied that the testing activities, which are controlled by this variation, will not pose a risk to groundwater or surface water given the mitigation measures required. Drinking water supplies are not at risk. The Waste Management Plan (WMP) and the Environmental Risk Assessment specify the pollution prevention measures that will ensure that surface water and groundwater will be protected. The WMP sets out the nature of the fluids to be used in each process of the proposal, their expected volumes and their treatment or disposal, where applicable. These measures are required through conditions in the permit. Site construction is detailed in section 5 of the approved WMP. We are satisfied that the design of the site containment is appropriate. As part of the site construction, the impermeable membrane has been tested for integrity. During operations, the membrane will be protected via the aggregate work surface and will be visually inspected. Any spillage will be identified and remediated.

Brief summary of issues raised
Surface water
Summary of actions taken or show how this has been covered
Surface water will collect in the perimeter ditch and will be collected and taken off site to a permitted waste facility.

Brief summary of issues raised
Waste water
Summary of actions taken or show how this has been covered
Waste water will be stored in appropriately bunded tanks and taken off site to a permitted waste treatment facility.

Brief summary of issues raised
Light pollution - Concerns have been raised that the operations on site will create light pollution which may impact on both local residents and wildlife.
Summary of actions taken or show how this has been covered
The use of artificial lights on site is controlled by the planning permission and falls outside of the remit of this permit. However, the applicant has submitted a technical assessment of the lighting on site. We have reviewed the assessment and we are satisfied that it covers all appropriate risks and that measures are in place to address them.

Brief summary of issues raised
Noise from drilling activities - Concerns have been raised that the activities will cause noise pollution.
Summary of actions taken or show how this has been covered
We are satisfied that the activities, if carried out in accordance with the Permit, will not cause noise pollution. The Operator submitted a Noise Assessment as part of the Risk Assessment, this details measures to be implemented on site to mitigate noise from permitted activities. Condition 3.4 of the Permit controls Noise and Vibration and requires that such emissions are minimised and, in the unlikely event that the activities give rise to pollution due to noise or vibration outside the site, a noise and vibration management plan can be requested and will have to be submitted to the Environment Agency for approval prior to being implemented.

Brief summary of issues raised
Odour pollution / Air Quality - Concerns have been raised that the activities will cause odour pollution and fugitive methane emissions.
Summary of actions taken or show how this has been covered
We have carefully considered all the permitted activities and there are no point sources of pollutants, from the permitted activities. We are satisfied that they are unlikely to give rise to any significant odour or impact on air quality. Condition 3.3 of the permit controls Odour and requires that emissions are minimised and, in the unlikely event the activities give rise to pollution due to odour outside the site, an odour management plan can be requested and will have to be submitted to the Environment Agency for approval and, once approved, be implemented. There are other sources of emissions outside our regulatory remit such as vehicles and generators. We cannot control these through the permit.

Brief summary of issues raised
Radioactive waste - Several comments raised concerns that radioactive substances will be generated from the drilling activity.
Summary of actions taken or show how this has been covered
The Applicant has applied for a radioactive substances activity (RSR) permit that will deal with the management of naturally occurring radioactive materials arising from the proposed activities. Issues relating to the management of radioactive materials raised as part of the consultation have been shared with the relevant officers and will be considered under the RSR permit.

Brief summary of issues raised
Risk associated with well failure and well integrity - Concerns were raised that there was no certainty that the exploratory borehole to be drilled would be safe and structurally adequate to prevent leakages that could cause pollution.
Summary of actions taken or show how this has been covered
Well integrity is assured through compliance with the well examination regime and regulation by the Health and Safety Executive (HSE), and further through conformity with the Oil & Gas UK and UK Onshore Operators' Group good practice guidelines for well design and construction. The well has been designed and constructed such that we are satisfied well integrity has been demonstrated and that measures which are in place ensure that the environment is protected from fluid or gas releases, through both our requirements and those of the HSE. All boreholes (whether offshore or onshore) used for hydrocarbon extraction are subject to The Offshore Installations and Wells (Design and Construction) Regulations 1996 (DCR). These regulations, enforced by HSE, are primarily concerned with well integrity and require the Operator to carry out regular monitoring and reporting of the well integrity. This is usually done by monitoring well casing pressure, which would indicate possible failures of casings. The Environment Agency and HSE will work together to carry out inspections under a memorandum of understanding and assess well integrity during the lifetime of the well.

Brief summary of issues raised
Operator competence, management arrangements and lack of trust in the Operator - A number of concerns have been raised about the Operator and their competence to run the operations on site.
Summary of actions taken or show how this has been covered
The permit conditions require the Operator to have an appropriate management system in place that includes details of staff capability, roles and responsibilities, experience and training records to demonstrate technical competence. We will assess the Operator's activities and we will be checking they comply with the permit conditions as part of our compliance work. We have carefully considered Operator competence and we have no reason to believe that it would not comply with the permit requirements and conditions. We have considered all relevant factors and have determined that there is no reason to consider that the Operator will not operate the site in accordance with the permit.

Brief summary of issues raised
Human health impacts - Concerns have been raised that the proposed activities conducted at the well site will have general impacts on human health.
Summary of actions taken or show how this has been covered
We are satisfied that the activities we are permitting will not give rise to significant pollution or harm to human health. We consulted Public Health England in relation to this application; they have raised no concerns regarding health impacts resulting from the proposed operations.

Brief summary of issues raised
Suitability of the Risk Assessment - Concerns have been raised about the adequacy of the Applicant's Risk Assessment and whether it identified all the risks and categorised them correctly.
Summary of actions taken or show how this has been covered
We have reviewed the assessment, and we are satisfied that it complies with our relevant guidance and that it identifies and covers all appropriate risks and that measures are in place to address them.

Brief summary of issues raised
Energy policy - Several comments raised concerns with the proposed activities not being in line with the current Energy Policy.
Summary of actions taken or show how this has been covered
Energy policy is made by the Government and the policy on exploitation of oil is no different to that of any other fossil fuel. One of the policy's main goals is to maximise the economic recovery of oil and gas from the UK's oil and gas reserves, whilst taking full account of environmental, social and economic objectives

Brief summary of issues raised
Climate change policy - Concerns were raised regarding the impact on the climate from the proposed activities.
Summary of actions taken or show how this has been covered
Policy is made by the Government and the policy on exploitation of oil is no different to that of any other fossil fuel. The policy states "We aim to maximise the economic recovery of oil and gas from the UK's oil and gas reserves, taking full account of environmental, social and economic objectives". The Environment Agency is aware of the need to ensure that fugitive emissions are prevented or reduced as far as possible so that no adverse effects on the environment or human health occur as a result of the management of extractive waste that will take place on site. To this end, we have imposed measures within the permit that address the potential impact of fugitive methane emissions from the site, in a manner consistent with the requirements of Mining Waste Directive.

Brief summary of issues raised
Precautionary Principle - Concerns were raised that the Environment Agency has failed to adopt a precautionary approach in relation to the proposal to issue permits in this case.
Summary of actions taken or show how this has been covered
The United Kingdom Interdepartmental Liaison Group on Risk Assessment (UK-ILGRA) state in their paper "The Precautionary Principle: Policy and Application" that the precautionary principle should be invoked when there is good reason to believe that harmful effects may occur and that the level of scientific uncertainty about the consequences or likelihood of the risk is such that the best available scientific advice cannot assess the risk with sufficient confidence to inform decision making. The Environment Agency considers it has followed all relevant EU and UK legislation regarding the protective measures to be implemented when granting permits. In setting permit conditions for the Broadford Bridge site we have had proper regard to the potential impact the proposed activities will have on the hydrogeological conditions of the area concerned. We are satisfied we have sufficient information to make an informed decision.

Brief summary of issues raised
Earth tremors/Seismic activity - Concerns were raised that the drilling activity could cause earthquakes. Some of the respondents pointed to previous coal mines being at risk of collapse from the drilling activities.

Summary of actions taken or show how this has been covered
We have considered the risk of seismicity in relation to the potential impact on the permitted activities, including the integrity of the wells, and we are satisfied that appropriate measures will be in place to ensure that seismicity will not result in pollution or harm to human health from the permitted activities.

Brief summary of issues raised
Well abandonment and site restoration- Concerns were raised that the well site will be left in state of disrepair.
Summary of actions taken or show how this has been covered
We have considered the risk of the company leaving the well site in a state of disrepair and we are satisfied that appropriate measures will be in place as detailed in the section 6.7 above. At the point when the Operator wishes to decommission the well they will have to carry out any necessary works to make the well safe and prevent any leakage that could cause environmental damage. The Health and Safety Executive have detailed legal requirements relating to this stage of the well life, which the Operator will have to comply with. The Environment Agency will be involved in this process to ensure that any groundwater is protected during the abandonment process and for the future. The Operator will have to provide sufficient evidence to satisfy the Environment Agency that the decommissioned well will not cause any on-going or future impact on the environment before surrender of the permit would be accepted. Monitoring at the site will continue into the post-decommissioning period and will have to demonstrate that no impact has occurred and that there are no on-going environmental issues. Well site restoration will be the subject of a separate waste management plan submitted by the Operator as part of any permit application to surrender the Mining Waste permit.

Brief summary of issues raised
Proximity to local conservation area and threat to wildlife - Concerns were raised that no assessment of the operations impact on a conservation area and local wildlife.
Summary of actions taken or show how this has been covered
The potential for the proposed activities to impact on any designated sites is not significant. The nearest designated Local Wildlife Site (LWS) is 1.7km to the south east of the site, no direct pathway is present from the well site to the designated LWS. We are satisfied that there will be no emissions at levels that would have a significant effect on the LWS. The standard conditions of the permit do not allow fugitive emissions to land, air or water and this includes dust.

Brief summary of issues raised
Proximity to ancient woodlands and protected species. Concerns raised that ancient woodland protected species were in close proximity to the wellsite and could be impacted by the operations activities.
Summary of actions taken or show how this has been covered
Within the original determination for the drilling operation we identified two ancient woodlands, we concluded that the site was not within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat. No protected species were identified within 500m of the wellsite.