

# Environment Agency Permitting Decisions

## Bespoke permit for accumulation and disposal of radioactive waste

### Executive Summary

1. As the leading organisation working to protect the environment, it is the Environment Agency's role to regulate discharges and waste disposals from non-nuclear premises in England and to ensure their impact on air, water and land is minimised.
2. Based on our recent experience, authorising the production of oil and gas is the new area of regulation that has the highest profile and the greatest perceived uncertainties.
3. This decision document summarises our detailed assessment of an application to manage the radioactive waste arising as a result of a gas extraction in a particular area. We have decided to grant a permit for radioactive waste management to Third Energy UK Gas Limited at the Kirby Misperton A Wellsite, Off Habton Road, Kirby Misperton, North Yorkshire YO17 6XS.

### About this decision document

4. This document, which accompanies the permit, is our record of our decision-making process, to show how we have taken into account all relevant factors in reaching our decision.

### Preliminary information

5. The number we have given the permit is KB3098DE. We refer to the permit as “the **Permit**” in this document.
6. We gave the application the reference number EPR/KB3098DE/A001. We refer to the application as “the **Application**” in this document.
7. The Applicant is Third Energy UK Gas Limited. We refer to Third Energy UK Gas Limited as “the **Applicant**” in this document. Where we are talking about what would happen after the Permit is granted, we call Third Energy UK Gas Limited “the **Operator**”.
8. The site for the proposed radioactive substances activity (the accumulation and disposal of radioactive waste) is at Kirby Misperton A Wellsite, Off Habton Road, Kirby Misperton, North Yorkshire YO17 6XS (‘the **premises**’)
9. The Application was duly made on 03 June 2015. This means we considered it was in the correct form and contained sufficient information for us to begin our determination.

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10. The Applicant also submitted a permit application for two other activities (the management of mining waste and a groundwater activity). We gave the application for these activities the reference number EPR/DB3002HE/A001. That application is an application for a separate 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.

## Use of terms

### *EPR*

11. The Environmental Permitting (England & Wales) Regulations 2010 and the amendments made to radioactive substances regulation in the Environmental Permitting (England & Wales) (Amendment) Regulations 2011 are referred to together as "the EPRs". References to schedules or paragraphs in EPR are to the schedule or paragraph currently in force. Radioactive substances activities have to meet the requirements set out in Schedule 23 of the EPRs. The current version of Schedule 23 is contained in the 2011 Regulations. EPR permits for radioactive substance activities are referred to as RSR permits.

### *Flowback fluids*

12. Fluid contaminated with minerals and NORM returned to the surface during and following well stimulation.

### *NORM*

13. Is "naturally occurring radioactive material" derived from the radioactive decay of uranium and thorium naturally present in rocks since their formation. NORM will contain many different radioactive materials in differing amounts from the radioactive decay of uranium and thorium, with radium 226 and radium 228 typically the radioactive materials of most significance in produced waters.

The production of oil and gas is a NORM industrial activity which requires a radioactive substances activity permit for the accumulation and disposal of radioactive waste.

### *Produced water*

14. The water naturally present in some hydrocarbon-bearing strata that is brought up during the extraction of oil and gas.

### *Radiation dose*

15. The total amount of radiation absorbed by material or human tissues, expressed in sieverts (Sv). The average annual dose from all sources of radiation in the UK (including from radon and medical procedures) is 2.6 millisieverts per year.

### *Regulated facility*

16. This is the term used in the EPRs. Those regulations provide that any regulated facility must be operated only under and in accordance with an environmental permit.

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## *Well stimulation fluids*

17. Fluids, often water, mixed with additives used to encourage more oil and gas to flow from a particular rock formation.

## Brief outline of the process

18. There is an existing well at KM8 drilled in 2013 down to 3048m into the Bowland Shale Formation. No gas was ever extracted from the well and it was suspended. The Applicant has decided to use the well stimulation technique of hydraulic fracturing to try to extract natural gas from the shale in the existing well. There will be five fractures perforated through the existing vertical well casing. There are no lateral wells extending outwards, and no proposals to carry out any further drilling. During the well stimulation, well stimulation fluid will be used and water (including flowback fluid) may be produced. The produced water and flowback fluid will be transferred to storage tanks for subsequent offsite disposal at a permitted waste disposal facility. The natural gas extracted during testing will be a product rather than waste. The infrastructure is in place at the wellsite, with some minor alterations, to connect KM8 to the Operator's central gathering point, Knapton Generating station, where the gas will be combusted to produce energy to feed directly into the electricity grid. There will be no need or requirement to discard of any natural gas produced. As a result there will be no flaring of gas on the KMA wellsite except in emergency situations at the Knapton Generating Station. A radioactive substances regulation (RSR) permit is required as the operator is going to be flowing (producing) gas which may contain radioactive waste.
19. The application was made for a permit for the management of radioactive waste resulting from the NORM industrial activity of production of oil and gas. The produced water and flowback fluid from the testing is likely to contain NORM in sufficient quantities to be classed as radioactive waste. Solid wastes such as pipeline scale and sediment may also contain NORM in sufficient quantities to be classed as radioactive waste. The permit also recognises that a residual layer of fluids from the process, which may contain NORM, may remain in the area adjacent to the wellbore. This would constitute a disposal of radioactive waste, occurring in the area of or immediately adjacent to the well. This disposal has been taken into account in our decision.
20. A separate application was also submitted for an environmental permit to cover activities at Kirby Misperton A Wellsite, specifically at well KM8, relating to well stimulation by hydraulic fracturing for natural gas extraction, namely: (1) A mining waste operation for the management of extractive waste not involving a mining waste facility; (2) In respect of the hydraulically fractured well; a non-hazardous mining waste facility for the accumulation of injected hydraulic fracturing fluid which has not returned back from the underground target formation and has become extractive waste; and (3) A groundwater activity, being a discharge, namely of hydraulic fracturing fluid, to the target formation, that might lead to the indirect input of pollutants to groundwater. These activities will also be regulated by the Environment Agency by means of a separate permit subject to the EPRs; reference EPR/DB3002HE/A001.

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## Record of decision

21. We have decided to grant the permit specified below.

The permit number is KB3098DE.

The applicant is Third Energy UK Gas Limited

The facility is located at Kirby Misperton A Wellsite, Off Habton Road, Kirby Misperton, North Yorkshire YO17 6XS.

The decision is effective from 11 April 2016.

22. We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure the appropriate level of protection of people and the environment. These considerations and legal requirements are set out in the published government and Environment Agency guidance supporting the EPRs.

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## Reasons for our decision

23. Unless specified otherwise below, we have accepted the applicant's proposals.

## Justification

24. Justification is the process by which Government decides whether types of practices involving radiation are acceptable, as set out in The Justification of Practices Involving Ionising Radiation Regulations 2004 (the Regulations'). Further information is in Government guidance available at:  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/48980/Justification\\_of\\_Practices\\_on\\_Ionising\\_Regulationsguidance.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48980/Justification_of_Practices_on_Ionising_Regulationsguidance.pdf).
25. We conclude that justification is not required in this case because the radioactive substances activity being carried out is not a "practice" as defined in the Regulations, where the radioactive material is being exploited for its fissile or fertile properties. The radioactive waste arises from natural radioactivity present in the rocks being unavoidably displaced by the permitted operations.

## Operator and operator competence

26. We are satisfied that the applicant is the person who will have control over the operation of the facility after we grant the permit in line with our 'Legal operator and competence requirements: environmental permits web guide' and that the Operator will be able to operate the regulated facility in compliance with the conditions included in the Permit.
27. We have assessed the operator's management arrangements against our guidance (see <https://brand.environment-agency.gov.uk/mb/DzM3jp>). Having considered the information submitted in the application, we are satisfied that appropriate management systems and management structures will be in place. Also that there are procedures for dealing with accidents and if they should occur, their consequences are minimised.  
We have not identified any reasons indicating that the operator will be unable to operate in accordance with the permit.

## Disposal of radioactive waste – optimisation

28. The principle of optimisation is that all reasonable efforts be made to reduce radiation doses (social and economic factors being taken into account) to as low as reasonably achievable (ALARA). Optimisation is one of the three principles of radiation protection, the others being justification (see above) and limitation. In the case of the potential for public exposure to radiation from activities involving radioactive substances optimisation in waste management including disposals to the environment is required.

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29. We have assessed the operator's proposals against our guidance on 'best available techniques' BAT (see <https://brand.environment-agency.gov.uk/mb/DECqof>) to minimise radioactive waste creation and disposals, minimise the time over which radioactive waste is accumulated, and select appropriate disposal routes.
30. We are satisfied that the operator has demonstrated that the best available techniques will be used to minimise the creation of radioactive waste and the activity in and volume of radioactive waste to be disposed of.
31. The operator considered various different disposal routes for the aqueous waste. We are satisfied that the selected route, transfers to an offsite treatment facility with a separate RSR permit, represents BAT. When an RSR permit for a treatment facility is determined the impact of any releases of radioactive substances are assessed.

## Disposal routes and permit limits

32. Permit conditions specify certain key measures for this type of process to protect members of the public and the environment. We have used the relevant generic conditions from our bespoke permit template along with other process-specific conditions to ensure that the permit provides the appropriate standards of environmental protection.
33. Our generic conditions allow us to deal with common regulatory issues in a consistent way and help us to be consistent across the different types of radioactive substance activities.
34. The permit limits the length of time that the solid and aqueous waste can be stored to three months and the maximum activity in the accumulated aqueous waste to 300 MBq Ra-226 and 30 MBq Ra-228.
35. The operator was asked to demonstrate that they had contracts in place or could readily put contracts in place for the disposal by transfer of aqueous and solid waste. The operator provided evidence that contracts could be readily put in place.

## Assessment of the radioactivity in discharges and disposals

36. We are satisfied that the operator has identified appropriate measures to assess the radioactivity in discharges and disposals on and from the premises.
37. We are requiring the operator to sample and analyse any accumulated produced water and any solid waste that is generated.

## Radiological assessment

38. The operator has not had to assess the radiological impacts of any transfers of radioactive waste to another operator, for example the transfer of aqueous waste to a waste disposal operator for treatment and disposal. This is because we have

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assessed the impacts of disposals from the waste disposal operators when we issued their permits.

39. The operator has not had to assess the radiological impacts of any fluids that are left underground because there is no pathway that could lead to the radiological exposure of members of the public or the environment from such disposals.
40. We are satisfied that the authorised accumulation and disposals of radioactive waste will not give rise to any dose exceeding the public dose limit of 1000 microsieverts per year, and the source dose constraint of 300 microsieverts per year.
41. We are satisfied that reference flora and fauna would be exposed to a maximum dose-rate within our guideline value of 40 micrograys per hour. The discharges will thus have no significant adverse impact on a European site, SSSI or AONB.

## Consultation and Web Publicising

42. Consultation commenced on: 10 June 2015

Consultation ended on: 07 August 2015

Minded to consultation commenced on: 2 December 2015

Minded to consultation ended on: 12 February 2016

43. We advertised the Application by a notice placed on our website, which contained all the information required by the regulations, including telling people where and when they could see a copy of the Application.
44. We placed adverts in the Malton & Pickering Mercury and the Yorkshire Gazette & Herald on 10 June 2015 and Scarborough Evening News on 11 June 2015 as well as contacting local MPs, MEPs, local authorities, local councillors, Parish Councils, local schools and Flamingo Land to notify them of the consultation, and issuing a press release. The press release was picked up by various local newspapers, and local radio and television news media. A drop in session was held for the public at Kirby Misperton Village Hall on 16 June 2015.
45. We placed a copy of the Application and all other documents relevant to our determination on our Public Register. Copies of the application were also held at the following locations:

The Environment Agency, Lateral, 8 City Walk, Leeds, LS11 9AT.

The Environment Agency, Coverdale House, Aviator Court, Amy Johnson Way, Clifton Moor, York, YO30 4GZ.

Malton Library, St Michael Street, Malton, North Yorkshire, YO17 7LJ.

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Pickering Library, The Ropery, Pickering, North Yorkshire, YO18 8DY

Anyone wishing to see these documents could do so and arrange for copies to be made.

We sent copies of the Application to the following bodies, including those with whom we have “Working Together Agreements”:

- Local Authority: Ryedale District Council
- Mineral Planning Authority: North Yorkshire County Council
- Health and Safety Executive
- Public Health England
- Director of Public Health: North Yorkshire County Council
- Water Company: Yorkshire Water
- Food Standards Agency

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

We carried out a Minded to consultation on our draft decision taking into account the Environmental Permitting (England and Wales) Regulations 2010 and our statutory Public Participation Statement. We advertised the Application by a notice placed on our website and in local newspapers, which contained all the information required by the Regulations, including telling people where and when they could see a copy of the Application.

The Minded to consultation ran from 2 December 2015 to 15 January 2016, a period of just over 6 weeks, instead of the usual 4 weeks, to allow for the Christmas holidays. During this period we received a request to extend the consultation, which we did by allowing an additional 4 weeks, to 12 February 2016. Although we did not agree with the reasoning behind the request, in view of the pressures some people in the locality faced as a result of the winter floods, we felt it would be fair to provide more time.

46. Further details along with a summary of consultation comments and our response to the representations we received can be found in Annex 1. We have taken all relevant representations into consideration in reaching our determination.

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## Annex 1: Consultation and web publicising

47. Summary of (relevant) responses to consultation and web publication and the way in which we have taken these into account in the determination process.

<b>Frack Free Ryedale (edited)</b>	
<b>Relevant Issues raised in the consultation</b>	<b>Our Response</b>
<p><u>Executive summary</u></p> <p>There is insufficient detail in many parts of the application. The permit should not be granted until the regulator is certain of the extent of the activities to be carried out under the permit, and satisfied that risks are adequately mitigated.</p>	<p>We are satisfied that there is sufficient detail/information in the application. We are clear on the extent of radioactive substances activities being carried out on the premises and have granted a permit because the risks are adequately mitigated.</p>
<p><u>Areas where further information is sought</u></p> <p><b>Waste management</b></p> <p>There is no mention in Appendix 3 of who will be site lead to assist the Radiation Protection Advisor and the Radioactive Waste Advisor.</p> <p>Waste codes are given in the application. What steps are in place to ensure that the waste is correctly coded before it is removed from site, given there are variables such as NORM etc that are not known at the outset?</p> <p><b>Risk of Water Pollution (to be read in conjunction with JBA Report at Appendix 1)</b></p> <p>The applicant is proposing to treat waste water on site, for re-use. The applicant cannot rule out that the flow back fluid may be contaminated with NORM (page 14 non technical summary, Studvik Report, para 3), and has sought an environmental permit to manage and dispose of NORM. This application does not sufficiently particularise the steps that the applicant will take to mitigate the risks of this material to groundwater,</p>	<p>We are satisfied that there is sufficient information in the application, which will be verified during our compliance inspections, that the operator will have the resources to comply with the permit as granted.</p> <p>Radioactive wastes will need to be analysed when stored on site and where practicable before they are disposed of via an authorised third party.</p> <p>We are satisfied that the measures that the applicant has described in their application will minimise the risk of an accidental release of radioactive waste.</p> <p>Any water re-used on site is not considered to be radioactive waste. The applicant intends to dispose of any radioactive waste by transfer to an offsite facility. The applicant has provided evidence that suitable disposal routes</p>

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<b>Frack Free Ryedale (edited)</b>	
<b>Relevant Issues raised in the consultation</b>	<b>Our Response</b>
<p>surface water and inland freshwater in the event of spills, human error or mechanical failure on site.</p> <p><b>Risk of Pollution to Land and Air</b> It is proposed to do baseline testing of environmental media for background concentrations of radionuclides, followed by a contamination monitoring programme (Studsvik, para 7.2). A baseline Radiological Site Condition Report will also be obtained (Studsvik para 7.6). It does not specify what will be tested for, which media, over what period will base line testing take place, and the methodology for that testing. Will it include radon, and if so, where will radon testing be carried out? There is no mention of measurement of Radon, other than theoretical exposure testing (Studvik external memo).</p> <p>There is no detail on testing once the site has ceased production.</p> <p><b>Public Health</b></p> <ul style="list-style-type: none"> <li>• Baseline monitoring of water quality of the surrounding areas should consider a wider range of potential contaminants such as NORMS. Further information is found in the JBA Hydrogeological Risk Assessment review (Appendix 1).</li> </ul>	<p>are available. The waste will be transferred to a facility that has a permit for the accumulation and disposal of radioactive waste. The applicant's permit will not allow disposal of radioactive waste into the local sewer or watercourse.</p> <p>Any monitoring of environmental media for background concentrations of radionuclides, including radon, falls outside the scope of this permit.</p> <p>Any monitoring of groundwater or surface water for background concentrations of NORM falls outside the scope of this permit. Baseline monitoring has been considered in the associated groundwater/mining waste permit reference DB3002HE (Table S1.3).</p>
<p><u>Permit conditions/restrictions sought</u></p> <p>Include a permit condition requiring baseline radon testing in nominated residential premises before, during and</p>	<p>Public Health England (PHE) is responsible for assessing the impact of radon in general. PHE has published a</p>

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<b>Frack Free Ryedale (edited)</b>	
<b>Relevant Issues raised in the consultation</b>	<b>Our Response</b>
<p>after fracking on this site.</p> <p>Include a permit condition requiring the operator to publishing all monitoring data on a public website within an agreed period of time.</p> <p>A permit condition seeking to restrict the length of time untreated flow back fluid is stored on site, to reduce the risk of pollution. In the Studvik report, para 7 it is defined as ‘as soon as is reasonably practicable’, which could mean anything.</p>	<p>“Review of the Potential Public Health Impacts of Exposures to Chemical and Radioactive Pollutants as a Result of the Shale Gas Extraction Process”. Chapter 5 of this specifically addresses radon, covering;</p> <ul style="list-style-type: none"> <li>• Radon releases from the ground. [5.2]</li> <li>• Radon in natural gas, including the impact resulting from gas burnt on-site [5.3]</li> <li>• Radon in ground water [5.4]</li> <li>• Radon in flowback water [5.5]</li> </ul> <p>In all cases, PHE concludes the impact is minimal with the overall conclusion being</p> <p>It is considered unlikely that shale gas extraction and related activities would lead to any significant increase in public exposure from outdoor radon levels or indoor levels in nearby homes.</p> <p>The Environment Agency is obliged by various pieces of legislation to maintain and make available public registers of information. The duty to keep a public register is found at Regulation 46 and Schedule 24 of the Environmental Permitting (England &amp; Wales) Regulations 2010 SI 2010 no 675.</p> <p>Radioactive waste can be accumulated on site for only three months.</p>

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<b>Friends of the Earth</b>	
<b>Relevant Issues raised in the consultation</b>	<b>Our Response</b>
<p><u>Waste management</u></p> <p>We are concerned that the applicant has failed to properly characterise the waste with sufficient detail.</p> <p>We are also concerned about the implications for the operation in the likely event that large levels of NORMs are extracted from the shale and the assessment and monitoring of these levels.</p> <p>We would also expect the Agency to assure themselves of the capacity of the permitted waste treatment facility to handle the quantities of waste that could potentially be produced by the applicant. We understand that DEFRA has made clear that just 3 facilities in England are currently capable of processing and making safe this waste stream.</p>	<p>The Environment Agency can confirm it is satisfied that the operator will properly characterise all the radioactive wastes. This is because the permit requires monthly monitoring for NORM wastes to be undertaken as detailed in a separate monitoring specification to be read with the permit. A draft specification was made available during the consultation. The monitoring undertaken by the operator will be audited from time to time by the Environment Agency.</p> <p>The applicant has demonstrated that there are suitable existing permitted waste facilities that can accept and treat the radioactive waste. If the capacity of these waste facilities is insufficient then the production operation will cease.</p>

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Edited Response Received from <b>Public Health England (09/07/15)</b>	
<b>Brief summary of (relevant) issues raised:</b>	<b>Summary of action taken / how this has been covered</b>
<p>PHE agrees that it is important to ensure that robust environmental monitoring is conducted prior to, during and post the proposed operations such that the resident groups can be reassured that any potential impacts can be identified and investigated further. The Regulator should validate the suitability of the applicant's proposals for monitoring, so that any unexpected impact from operations will be detected and investigated promptly and results presented with comparison to relevant health based standards, where applicable.</p>	<p>The permit requires monthly monitoring for liquid and solid NORM wastes to be undertaken as detailed in a separate monitoring specification to be read with the permit. A draft specification was made available during the consultation. The monitoring undertaken by the operator will be audited from time to time by the Environment Agency. We can commission our own monitoring at any time if we feel there is sufficient justification.</p>
<p>Based on the information contained in the application supplied to us, PHE has no significant concerns regarding the risk to the health of the local population from the installation.</p> <p>In 2014, PHE published a 'Review of the potential Public Health Impacts of Exposures to Chemical and Radioactive Pollutants as a Result of the Shale Gas Extraction Process' which concludes that: An assessment of the currently available evidence indicates that the potential risks to public health from exposure to the emissions associated with shale gas extraction will be low if the operations are properly run and regulated.</p> <p>This consultation response is based on the assumption that the permit holder will take all appropriate measures to prevent or control pollution, in accordance with the relevant sector guidance and industry best practice.</p>	<p>The permit conditions require the Operator to have an appropriate management system in place that includes details of staff capability, roles and responsibilities, experience and training records to demonstrate technical competence. We will assess the operator's activities and we will be checking they comply with their permit conditions as part of our compliance work.</p> <p>The Operator must also act in accordance with other regulator's requirements, such as the Planning Authority and Oil and Gas Authority.</p>

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<p>Edited Response Received from: <b>North Yorkshire County Council – Director of Public Health (07/08/15)</b></p>	
<p><b>Brief summary of (relevant) issues raised:</b></p> <p>Following the recommendation of Public Health England, I would ask the Environment Agency to take account of the following comments when considering appropriate permit conditions:</p> <p>Together with PHE, I agree that it is important to ensure that robust environmental monitoring is conducted prior to, during and post the proposed operations such that resident groups can be reassured that any potential impacts can be identified and investigated further. The Regulator should validate the suitability of the applicant’s proposals for monitoring so that any unexpected impact from operations will be detected and investigated promptly and results presented with comparison to relevant health-based standards, where applicable.</p> <p>Based on the information contained in the application supplied to us and the assessment of Public Health England, I have no significant concerns regarding the risk to the health of the local population from the installation.</p> <p>In 2014, Public Health England published a “Review of the Potential Public Health Impacts of Exposures to Chemical and Radioactive Pollutants as a Result of the Shale Gas Extraction Process”<sup>1</sup> which concluded that: An assessment of the currently available evidence indicates that the potential risks to public health from exposure to the emissions associated with shale gas extraction will be low if the operations are properly run and regulated.</p> <p>This consultation response is based on the assumption that the permit holder will take all appropriate measures to prevent or control pollution, in accordance with the relevant sector guidance and industry best practice.</p>	<p><b>Summary of action taken / how this has been covered</b></p> <p>See responses to the same issues as raised above.</p>

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Edited Response Received from <b>Yorkshire Water (07/08/15)</b>	
<b>Brief summary of issues raised:</b>	<b>Summary of action taken / how this has been covered</b>
<u>Disposal of waste water</u> Yorkshire Water is the statutory undertaker for waste water in the region. At present it is unclear on where any liquid waste from KM8 hydraulic fracturing operations will be treated, but we understand it will be treated on-site and/or tankered to a licensed treatment facility. We are therefore unable to comment further on this matter.	Radioactive waste has to be transferred to an operator with a separate EPR permit already in place to treat and dispose of radioactive waste. The radiological impact of any releases of radioactive wastes made under the permit will have been assessed and found to be within acceptable limits.

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<p>Edited Response Received from: <b>Ryedale District Council (07/08/15)</b></p>	
<p><b>Brief summary of issues raised:</b></p>	<p><b>Summary of action taken / how this has been covered</b></p>
<p><b>Water and Waste</b></p> <p>There is some uncertainty as to the quantity of flow back water as the information states that all flowback water may be diverted directly to storage tanks <b>and /or</b> disposal of an Environment Agency facility. The Environment Agency should satisfy itself that there is sufficient storage on site for both the water requirements for the hydraulic stimulation and storage for waste water having regard to the worse case scenario as regards the anticipated flow back following hydraulic fracture stimulation operation.</p> <p>The Environment Agency should satisfy itself that adequate arrangements are in place for the transportation and final disposal of the residual flowback water.</p>	<p>We are satisfied that the anticipated volumes of water can be stored and managed appropriately on site.</p> <p>The residual flowback water will be tankered off site to the pre-arranged permitted waste water treatment facility.</p> <p>We are satisfied that the appropriate measures will be in place to manage this process.</p>
<p><b>General</b></p> <p>It is not clear if environmental permits relate only to the exploration phase during which the operations of mining waste and NORMS are dealt with on site. I am unsure if the retained fluids within the shale make this site a mining waste facility controlled by the environmental permit in perpetuity (the information advises it will be classed as a non-hazardous mining waste facility), or that once these operations have ceased and the waste and equipment removed that the controls of the environmental permit cease, once the site moves into the production testing phase.</p> <p>It needs to be made clear on any environmental permit the scope of the permit and what operations are controlled by the permit and at what stage the permit is surrendered.</p>	<p>The permit is for the management of radioactive waste arising from the NORM industrial activity of production of oil and gas.</p>

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Brief summary of issues raised by members of the public	Summary of actions taken or show how this has been covered
<p>If the produced waste water containing NORMs is 'perfectly safe' and the same as in a 'bottle of mineral water', as John Dewar has publicly claimed on BBC Look North over the last two months, why do Third Energy need permits for this water at all? Is it not the case that the produced water is in fact a danger to human health, hence the need for permits?</p>	<p>Third Energy have applied for the permit as the legislation requires those intending to carry out the NORM industrial activity of production of oil and gas, and generated radioactive waste as a result, to apply for an environmental permit.</p>
<p><b>Type of applications applied for, consultation and commercial production</b></p> <p>Concerns were raised that the environmental permits applied for were not consulted on properly; in that they the applications had always been referred to as being for test fracks. This appeared to contradict what has been submitted for both the environmental permits and the planning permission.</p>	<p>The environmental permit application has been consistent with regards to the activities being applied for; the Operator bases their decision on the data gathered during the production test stage; moving to production may mean they need to seek new permissions from other regulatory bodies. The Operator must ensure they have all the relevant permissions before they continue.</p> <p>Environmental permits are not time limited; therefore the period of time referred to in the planning application is not taken into account for the purposes of environmental regulation.</p>
<p><b>Operator competence and lack of trust in the Operator</b></p> <p>A number of concerns have been raised about the Operator and their competence to run the operations on site.</p>	<p>The permit conditions require the Operator to have an appropriate management system in place that includes details of staff capability, roles and responsibilities, experience and training records to demonstrate technical competence. We will assess the operator's activities and we will be checking they comply with their permit conditions as part of our compliance work.</p> <p>We have carefully considered operator competence and we have no reason to believe that they would not comply with permit requirements and conditions.</p>

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Brief summary of issues raised by members of the public	Summary of actions taken or show how this has been covered
	<p>We have considered all relevant factors and have determined that there is no reason to consider that the applicant will not operate in accordance with the permit.</p>
<p><b>Radioactive waste – generation</b>            Concern about release of radioactive materials/NORM and damaging effects upon the health of the population and wildlife</p>	<p>The applicant intends to dispose of any radioactive waste by transfer to an offsite facility. The applicant has provided evidence that suitable disposal routes are available. The waste will be transferred to a facility that has a permit for the accumulation and disposal of radioactive waste.</p> <p>The applicant's permit will not allow disposal of radioactive waste into the local sewer or watercourse.</p> <p>We are satisfied that the measures that the applicant has described in their application will minimise the risk of an accidental release of radioactive waste.</p> <p>We have also considered the effect of radiation emitted by the radioactive substances in the waste water that is being stored in the onsite tanks. We concluded that there would be negligible impact.</p>
<p><b>Radioactive waste - disposals</b>            Concern that removing radioactive waste spreads the risk to wider communities</p>	<p>Radioactive waste has to be transferred to an operator with a separate EPR permit already in place to treat and dispose of radioactive waste. The radiological impact of any releases of radioactive wastes made under that permit will have been assessed and found to be within acceptable limits.</p>
<p>Risk during transport of radioactive waste</p>	<p>The transport of radioactive waste is regulated by the Office for Nuclear Regulation. Regulations governing the transport of radioactive material in Great Britain are based on standards developed by the International Atomic Energy Agency (IAEA). The IAEA regulations are prescriptive and apply internationally to enable the safe transport of packages across international borders.</p>

# Environment Agency Permitting Decisions

Response Received from Friends of the Earth 12 February 2016	
Brief summary of issues raised:	Summary of action taken / how this has been covered
<p><b><u>NORM</u></b></p> <p>We are concerned that the Agency has erred in law by failing accurately to characterise NORM which will be generated at the Site in connection with fracking. It seems clear that NORM which returns to the surface in the flowback fluid is extractive waste within the meaning of the Mining Waste Directive (2006/21), and that it is therefore regulated under the Directive, because radioactive waste is not an exempted category under Article 2 of the Directive.</p> <p>This view is underlined by recital 11 of the Directive which states that extractive waste which is radioactive is regulated under the Mining Waste Directive (save in relation to its radioactive aspects, which are regulated under Euratom legislation). Article 2(2)(a) of the Radioactive Waste Directive (2011/70/EURATOM) contains a corresponding exemption for extractive waste which is radioactive, which underlines the point.</p> <p>We argue that EU legislation is clear that NORM waste is required to be regulated under both regimes but it is not clear whether this is the intended effect of the draft documents subject to consultation. For example section 5 of the draft mining waste decision could be read as indicating that it is not intended to capture NORM waste. Yet the RSR draft permit consulted on is so brief and incomplete it is almost impossible to tell what it relates to. Even if the draft decision could be</p>	<p><b>Refer also to Mining Waste permit EPR/DB3002HE.</b></p> <p>The Environment Agency is satisfied that we have not erred in law by failing to accurately characterise NORM in the manner suggested or at all.</p> <p>We have treated flowback fluid which contains NORM as extractive waste, and subject to the Mining Waste Directive, even though it is radioactive waste. As pointed out, radioactive waste is not excluded from the scope of the Mining Waste Directive, but as recital 10 (not 11) explains: ‘...while covering the management of waste from the extractive industries which may be radioactive, this Directive should not cover such aspects as are specific to radioactivity, which are a matter dealt with under the Treaty establishing the European Atomic Energy Community (Euratom).’</p> <p>The accumulation and disposal of the flowback fluid which contains NORM is therefore regulated under both the Mining Waste regime and the Radioactive Substances regime, hence the need for separate permits – but only the latter (EPR/KB3098DE) addresses the radioactive aspects of this waste stream.</p> <p>With regard to section 5 of the draft decision document (conclusion that the flowback fluid is non-hazardous):</p> <p>Section 5 refers to the characterization and management of extractive waste as hazardous or non-hazardous waste, for the purposes of Annex II of the Mining Waste Directive. On that basis we consider the non-radioactive component of the flowback fluid to be non-hazardous.</p> <p>In terms of the radioactive component of the flowback fluid, we agree that all radioactive</p>

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<p>read as capturing NORM waste, it would still err in law on the basis that all radioactive waste is required to be categorised as “hazardous” under the JAGDAG guidance<sup>27</sup>, issued (<i>inter alia</i>) by the Environment Agency whereas the draft decision concludes that the flowback fluid is non-hazardous.</p> <p>We are concerned that failure to regulate NORM under the mining waste regime in accordance with the 2006 Directive fails to ensure effective protection of the environment and applies an incomplete set of standards which do not appear to be focussed on environmental protection.</p>	<p>waste is required to be categorised as ‘hazardous’, according to the JAGDAG guidance, but this is for the purpose of the definition of ‘hazardous substances’ in the Water Framework and Groundwater Directives.</p> <p>NORM is naturally occurring below ground, and it may reach the surface with flowback fluid, which is either removed for disposal at an appropriate treatment facility or re-used. If flowback fluid is reused then NORM can return underground, but in practice this will only result in the mineralised content returning to the formation from which it came. This is treated as a disposal of radioactive waste (where the NORM is above the out of scope values) and is included, as such, in Schedule 3 (Table S3.3) to the draft Radioactive Substances Activity permit No. EPR/KB3098DE. But it will have no discernible impact upon the receiving environment. The draft Decision Document notes, at paragraph 39, that there is no pathway that could lead to the radiological exposure of members of the public or the environment from such disposals.</p> <p>As noted above, NORM waste, being radioactive waste, is categorized as a ‘hazardous substance’ for the purposes of the Water Framework and Groundwater Directives. However, we consider that even if there was an indirect input of NORM into groundwater as a result of the discharge of flowback fluid to the target formation, it would be environmentally insignificant, and that the exemption in paragraph 3(3)(b) of Schedule 22 applies: ‘The regulator may determine that a discharge, or an activity that might lead to a discharge, is not a groundwater activity if the input of the pollutant - ...(b) is or would be of a quantity and concentration so small as to obviate any present or future danger of deterioration in the quality of the receiving groundwater’.</p>

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	<p>This approach is consistent with Defra's Guidance on Environmental Permitting and Groundwater Activities, (December 2010), in particular paragraph 4.28 which states: 'When considering what is environmentally significant...in the case of radioactive substances, consideration should be given to the significance of any input in respect of the radiation doses which might be received by people and non-human species...'. In keeping with Defra's guidance (paragraph 3.9) we also consider that the exemption referred to above can be applied '...to an individual substance or group of substances within a discharge where the remainder of the discharge otherwise requires control under a permit'.</p> <p>We are satisfied that both the Mining Waste permit and the Radioactive Substances Activity permit include the necessary controls to regulate the accumulation and disposal of NORM, in accordance with EU legislation.</p>