

22<sup>nd</sup> December 2016

Sir James Bevan  
Chief Executive  
Environment Agency  
Horizon House  
Deanery Road  
Bristol  
BS1 5AH

I am sure you will be aware that the final report on the impacts from hydraulic fracturing on drinking water in the USA was recently published by the EPA.

The report identifies conditions under which hydraulic fracturing can impact on drinking water resources, which of course is of great concern to many of my constituents as there are a high number of PEDL licences across my constituency.

I would very much appreciate if the Environment Agency could look to respond to this in due course to highlight how our regulations will prevent such contamination in my constituency and of course other parts of the UK, so that I can then share this with my concerned constituents.

Kevin Hollinrake MP  
Member of Parliament for Thirsk & Malton

Mr Kevin Hollinrake MP  
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Your ref:

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Dear Mr Hollinrake

### US EPA report on the impacts of hydraulic fracturing on drinking water

Thank you for your letter of 22 December 2016 to our Chief Executive, James Bevan. James has read your letter and asked me to respond on his behalf. He will also receive a copy of this response.

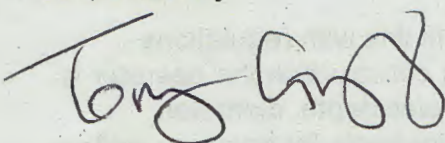
We are confident that the regulations in place in England provide a high level of protection to drinking water. Our regulatory approach is evidence based and we have published a comprehensive risk assessment of the environmental risks of shale gas exploration. We have also published reviews of well design and methane emissions.

We have an ongoing programme of research into potential environmental impacts which we are working on in collaboration with a number of independent organisations and universities. We have a programme of international research into potential environmental impacts to learn from experience around the world. We will continue to use evidence based, objective scientific data to ensure our regulations provide a high level of protection.

The US EPA report identified six potential impacts from hydraulic fracturing activities on drinking water resources. At the end of this letter we have summarised how the impacts identified in the US EPA report will be mitigated and regulated in England.

If you would like to discuss this matter further Mark Ellis-Jones, Onshore Oil and Gas Programme Executive, is happy to talk with you. You can contact Mark by telephone (020 3025 4512) or email ([mark.ellisjones@environment-agency.gov.uk](mailto:mark.ellisjones@environment-agency.gov.uk)).

Yours sincerely



Tony Grayling  
Director, Sustainable Business and Development



#### **4- Injection of hydraulic fracturing fluids directly into groundwater resources;**

The Infrastructure Act 2015 requires all high volume hydraulic fracturing to take place at a depth of more than 1000m below the surface, or more than 1200m under protected areas which includes areas designated for drinking water (Source Protection Zones). Typically, Source Protection Zones extend to a maximum depth of 400m, within this zone only the first 250m is usually suitable for drinking water. Waters found at greater depths can be saline and may contain naturally occurring hydrocarbons.

The environmental permit specifies where hydraulic fracturing can take place and operators must ensure fractures remain within the specified area and that they do not intersect with natural faults or fissures or other pathways which could lead the fluid to migrate into groundwater-bearing strata above the shale.

Operators are required to conduct baseline monitoring of methane and chemicals in groundwater before hydraulic fracturing can commence. Operational monitoring of the groundwater will be a requirement of the environmental permit to ensure operations are not impacting the quality of the groundwater. Only non-hazardous chemicals, approved by the Environment Agency, can be used. Their use will be strictly controlled by the environmental permit.

#### **5- Discharge of inadequately treated hydraulic fracturing wastewater to surface water resources;**

In England, waste flowback fluids from hydraulic fracturing must be treated at a suitably permitted waste treatment facility. The operators of waste treatment facilities are legally required to adhere to all of the conditions in the environmental permits and should not accept any waste that would cause them to breach the emission limits or permitted volumes. Before treated waste waters can be discharged the effluent must meet strict conditions to ensure the receiving environment is protected. The permit will contain monitoring and reporting conditions. The Environment Agency will check this information and conduct site inspections to ensure operators are complying with the conditions of the permit.

#### **6- Disposal or storage of hydraulic fracturing wastewater in unlined pits, resulting in contamination of groundwater resources.**

The storage of waste waters in unlined pits is not permitted in England. All waste waters must be stored in sealed tanks within bunded areas to prevent surface and ground water contamination.



## Key findings of the US EPA report and the Environment Agency's regulatory approach

The US EPA (2016) report identified six potential impacts from hydraulic fracturing activities on drinking water resources. These are outlined below with a short summary of the Environment Agency's regulatory approach in England.

### **1- Water withdrawals for hydraulic fracturing in times or areas of low water availability, particularly in areas with limited or declining groundwater resources;**

In England the shale gas operator can obtain water for hydraulic fracturing from their local water company or they can apply for an abstraction licence from the Environment Agency. If there is not enough water locally (groundwater or surface water), taking into account all others users and the needs of the environment, the operator may not be able to obtain the full amount for the period it is required.

The Environment Agency produces a Water Resources Strategy, which sets out how water resources should be managed throughout England to 2050 and beyond to ensure that there will be enough water for people and the environment. By law, water companies have to produce water resource management plans every five years to show how demand for water is going to be managed and met over a twenty-five year period. Water companies are also required to produce drought plans.

### **2- Spills during the management of hydraulic fracturing fluids and chemicals or produced water that result in large volumes or high concentrations of chemicals reaching groundwater resources;**

Environmental permits have legally binding conditions specifying how operators must carry out operations, ensuring compliance with requirements for environmental protection. Well pads in England must be lined with an impermeable membrane and chemicals and waste waters must be stored in bunded areas in case of any spillages. Operators must produce waste and accident management plans which outline how the wastes will be managed, risks mitigated and how any spillages will be cleaned up. These need to be approved by the Environment Agency.

### **3- Injection of hydraulic fracturing fluids into wells with inadequate mechanical integrity, allowing gases or liquids to move to groundwater resources;**

Operators must design, construct and decommission wells in line with regulations enforced by the Health and Safety Executive (HSE). During construction the operator is required to submit weekly activity reports to HSE regarding well depth, diameter, pressure, integrity, stability and drill fluid density. HSE requirements for ensuring well integrity also contribute to mitigating environmental risks.

The Environment Agency and HSE have a working together agreement committing to joint well inspections and the sharing of information to ensure the well integrity is maintained and fluids cannot leak into the surrounding geology and groundwater.