

Shale Gas Seminar
7th July 2016
Notes of Question and Answers Session

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Q **When will DECC publish their report on the responses to the report on climate change?**

A DECC – This will be published this week. (It has now been published – please see link below.)
<https://www.gov.uk/government/news/committee-on-climate-change-report-and-government-response-on-the-compatibility-of-uk-onshore-petroleum-with-meeting-the-uks-carbon-budgets>

Q **The EA have granted a permit for Misson. How do they propose to deal with the mining waste, air quality and the impact on the SSSI?**

A EA – The mining waste permit issued by the Environment Agency controls the handling and storage of waste produced by the drilling of the borehole. The potential impacts of vehicles on air quality will be considered by other regulatory bodies.

NCC – Traffic issues will be considered in the planning application. Natural England will be looking at impacts on the SSSI as part of their consultation response.

Q **How do all the processes co-ordinate?**

A NCC – As stated in the National Planning Policy Framework, there is a need to operate on the assumption that all other regulatory bodies will operate effectively.

HSE – The regulators work closely together to ensure that there is a robust regulatory regime in place. The EA and HSE have had a working together agreement in place since 2012 which includes a commitment for joint visits to all shale gas sites during the exploratory stage of industry development.

<http://www.hse.gov.uk/aboutus/howwework/framework/aa/hse-ea-oil-gas-nov12.pdf>

Q Are old regulations being used to govern new technology? Are they fit for purpose?

A DECC – In the UK, we have been successfully regulating for gas and oil drilling, both onshore and offshore, for over 50 years. Our regulatory system uses existing regulators with long-standing experience of regulating across different sectors in their area of specialisation. Because each regulator specialises in the aspect that they oversee, such as health and safety or the environment, they can bring to bear extensive knowledge gained from their work in other sectors.

To reinforce these regulations, we introduced the Infrastructure Act 2015 which brought forward a range of further requirements if an operator is to carry out fracking, to provide the public with confidence that this industry is being taken forward in a balanced way. These include the assessment of environmental impacts, groundwater monitoring, community payments and the exclusion of drilling in protected areas.

EA – The current regulations are fit for purpose for the areas of environmental regulation which fall under the jurisdiction of the EA. We will also ensure best practice is adopted by the industry and are about to publish our technical guidance document for the onshore oil and gas industry that will encourage the use of best available techniques and innovation in the industry.

HSE – HSE's regulatory regime is long-established and goal-setting. The general duties under the **Health and Safety at Work etc Act 1974 (HSWA)** require risks to workers and the public to be reduced as far as reasonably practicable. This is supplemented with more specific regulations particular to the extraction of gas and oil through wells, which includes shale gas and oil operations. These address issues of design, construction, operation and decommissioning of the well over its entire life cycle.

Q People are concerned about earthquakes and the possibility of something going wrong? What is the traffic light system?

A OGA – a traffic light system will be used to indicate if hydraulic fracturing should stop.

- Green – everything proceeding as planned;
- Amber – proceeding with caution;
- Red – injection stopped followed by 24 hours of earthquake monitoring.

Strong controls are in place to mitigate seismic risks. Operators have to assess the proximity of relevant faults before fracturing, monitor seismic

activity before, during and after operations, and halt injection if seismic activity exceeds a predefined level.

The defined level has initially been set at a magnitude of 0.5 M_L , a level which can only be detected by sensitive equipment. Injection must stop if a tremor of magnitude 0.5 or greater is detected and a 24 hour monitoring procedure must be enacted to determine whether any later seismic events are recorded. If there is no significant seismic activity further to the 0.5 event, work can resume. If there is significant seismic activity further to the 0.5 event, OGA will expect an analysis of the cause of the activity before considering whether work can restart, or needs to be re-planned in the light of what the analysis discloses.

The regulations on seismic monitoring ensure that seismic activity during fracking operations is monitored to allow action to be taken where necessary.

Q Is there still pressure from former mining workings? Ground movements in the former Harworth Colliery have a reverse geology and the floor comes up rather than the roof coming down.

A OGA – As part of a Hydraulic Fracture Plan, companies will need to consider the location of historic mines and address any risks. Ground movement from modern longwall mining occurs at the time of mining and occasionally mining induced earthquakes have been recorded. The BGS has studied mining induced seismicity and concluded that the hazard from mining induced earthquakes is likely to be low in terms of the probability of damaging ground motions and the extent of the areas affected. The Coal Authority does manage claims for subsidence due to the collapse of the historic mines and have not had any claims for damages attributed to induced seismicity.

[After the meeting OGA contacted the Coal Authority and learned that “floorlift” is not unusual in coal mines where the coal layers are encased above and below by relatively plastic soft sand, mudstones and clays.]

HSE – Before work can begin on the site the operator must make an assessment of any other underground workings that could be impacted by drilling the well. HSE specialist inspectors scrutinise the operator’s assessment of the risks and will only allow drilling to start if the operator has demonstrated that the health and safety risks can be managed appropriately.

Q Who takes the final responsibility?

A OGA – OGA regulates hydraulic fracturing induced seismicity.

Q What is the planning process for shale gas development?

A NCC – Shale gas development is not a national infrastructure project. Any application would be considered by Nottinghamshire County Council's Planning and Licensing Committee which would decide whether to approve or refuse the application. If refused, the applicant has the right of appeal to the Secretary of State. Any grant of permission could also be subject to a 'call in' by the Secretary of State.

Q Experience in Lancashire shows that regulation is not enforced. Is that a risk for Nottinghamshire, particularly if there are hundreds of sites?

A NCC – We have planning applications for only two sites. The Council has a team of monitoring and enforcement officers who regularly monitor sites. Each of these visits earns a fee and if there were more sites which needed to be visited, the increase in fees would help fund additional monitoring and enforcement officers.

EA – We also inspect sites to ensure they are compliant with their permits.

HSE – The HSE has a team of well engineers and is training new specialists. We have made clear that HSE has enough inspectors to regulate the industry throughout the exploration stage of its development. We keep our resource position under review and if the industry develops we may need to recruit further.

Q The landowner at Misson is under a gagging order. Is this because of concerns about the structural soundness of the ground?

A NCC – Any agreement between the landowner and IGas is a private matter including any confidentially agreement which would not be in the public domain.

Q What does fracking mean?

A DECC – As set out in the Infrastructure Act, "associated hydraulic fracturing" is defined as involving more than 1,000 cubic metres of fluid at each stage or more than 10,000 cubic metres of fluid in total. This definition uses the EU definition of high volume hydraulic fracturing. It is defined as:

“Associated hydraulic fracturing” means hydraulic fracturing of shale or strata encased in shale which:

- a) Is carried out in connection with the use of the relevant well to search or bore for or get petroleum; and
- b) Involves, or is expected to involve, the injection of:
 - i) More than 1,000 cubic metres of fluid at each stage, or expected stage, of the hydraulic fracturing; or
 - ii) More than 10,000 cubic metres of fluid in total.

Q What about where thresholds are not met?

A OGA – Operators are required to submit a hydraulic fracturing plan for all planned hydraulic fracturing activities, but less information may be required for a small volume hydraulic stimulation of a conventional target.

EA – Operations at sites where high volume fracking isn’t proposed will still require permits from the EA to regulate the activities we control.

DECC – We have tough regulations in place to ensure on-site safety, prevent water contamination, and mitigate seismic activity and air pollution for all cases, not just those covered by the definition. All onshore oil and gas wells are subject to such considerations whether hydraulic fracturing has been employed within the well or not.

UK legislation also imposes two additional requirements if an operation meets the definition of associated hydraulic fracturing: it is prohibited at a depth of 1,000m or less, and hydraulic fracturing consent must be obtained from DECC.

In addition, these requirements will apply where an operator is required to get consent from the Secretary of State for hydraulic fracturing that is not “associated hydraulic fracturing”: the Secretary of State intends to require that such consent be obtained for any operations which use more than 1,000 cubic metres of fluid at any single stage, or expected stage, of the hydraulic fracturing, unless an operator can persuasively demonstrate why requiring such consent would not be appropriate in their case.

Q The industry is water intensive, what happens to the water? Is it taken away or used again? If it is taken away will that generate lorry movements?

A EA – Depending on the location of the site and operational decisions of the operator, water will either be abstracted on site (an abstraction licence would be needed), taken from the mains or tankered on to the site.

The volume of water required depends on the nature of the operations being undertaken. Flow back fluid (which is the processed water that comes back to

the surface) will be stored in tanks prior to being taken to industrial waste water treatment plants for treatment and disposal. These treatment sites will be permitted by the EA and their operations also subject to inspection and monitoring by the EA.

Water which does not come back to the surface as part of the operations will be retained at depth in the shale and the operators would require a permit for this. In order to get the required permit, operators must disclose all substances used and ensure that the borehole is constructed in a way which does not cross contaminate aquifers. The EA will assess the suitability of all substances to be used and only approve those which are not hazardous to groundwater.

NCC – Any impacts resulting from lorry movements will be considered as part of the planning application.

Q There is acknowledgement that regulators are doing their best, however new systems are only brought in after the event. What is the real capacity to regulate?

A EA – If there are breaches, the EA will take action. Sites will be inspected against permits and when breaches are found action will be taken in accordance with our enforcement and sanctions policies.

Q Nottinghamshire County Council's Planning Committee makes decisions which could affect people and has to rely on expert opinion. Do you have sufficient information to give advice and are you confident that if committee take your advice, you feel nothing will go wrong.

A NCC – The issues that will be considered as part of this planning application are similar to the issues that are dealt with on all planning applications. The advice to the committee will be sound.

HSE – Confident that we have a strong regulatory regime, if HSE inspectors feel that the risks cannot be managed appropriately the operator will not be able to drill the well.

Q What happens to consultation responses?

A EA – Most bespoke permit applications made to the EA which relate to oil and gas are open to public consultation and this has been the case for the site at Misson which was open to two periods of public consultation.

All consultation responses are considered and if the EA decides that it is appropriate to issue a permit the replies to the consultation responses are included as part of the decision document that is made available to the public.

Some sites however can use what are known as “standard rules” permits.

Standard rules permits define the activities that an operator can carry out and specify restrictions on those activities. They have been used for a number of years across a variety of industries including waste management and water discharges to cover lower risk activities.

A standard rules permit cannot be issued unless a series of conditions (the “standard rules”) can be complied with. Under standard rules permitting, we still assess the environmental risks and mitigation options but we do this based around the activity and the location of the site and whether the standard rules are complied with.

The scope and detail of a series of Standard Rules Permits relating to onshore oil and gas was opened for public consultation in both 2014 and 2015. None of the current suite of standard rules permits allows high volume hydraulic fracturing activities. During one round of consultation on a permit for acid washing 36,000 responses were made by the public. Every response was considered and a report published on how the EA responded to each issue raised.

If an operator cannot meet all the requirements of “the standard rules”, they must apply for a bespoke permit, which has been the case with the mining waste permit for the site in Misson.

Q There is a reliance on reports coming out of the USA. The speed that these reports are coming out seems to suggest that there are problems. How much confidence can we have?

A OGA – We have developed a regulatory system in the UK with protections to address the risks identified.

EA – Knowledge and evidence has been gathered from around the world and good practice shared from countries across the globe, from which lessons have been learnt. Our regulatory frameworks, experience of regulating a broad range of industry sectors and deployment of best practice standards of operation provide for robust regulation of this industry.

Q Recent flooding has caused damage to properties. What happens if there is a problem?

A EA – The two things are very different, and therefore very difficult to compare. The onshore oil and gas industry is tightly regulated with clear accountability for the operators whilst rainfall is a natural phenomenon over which we have little control.

The EA has a 24 hour Environmental Incident hotline which people can call if they have a complaint about any site we regulate.

Q Ollerton was the epicentre of mining related earthquakes. If there was a horizontal drill in Edwinstowe could it extended to Ollerton? Would the Government repair the damage if the company fails?

A NCC – The County Council does not have any applications for shale gas development in Edwinstowe.

DECC – if there are any failures the company would be liable. If the company goes bankrupt, all named on the licence would be liable. Detailed background checks are carried before any PEDL licences are issued.

Q Are there any maps showing licences against flood areas?

A EA – BGS has carried out an aquifer location study to identify the vertical separation distances between shale layers and aquifers in the UK. Flood maps can be found on the EA's website.

<http://www.bgs.ac.uk/research/groundwater/shaleGas/aquifersAndShales/maps/separationMaps/home.html>

Q With all the uncertainty and concerns how can we be sure that shale gas development is worth it?

A DECC – The regulators cover all kinds of sectors with attendant risks and their purpose is to mitigate risk. Onshore oil and gas extraction has taken place in Britain for many years. Shale gas development in Britain is still a new industry with a small number of exploration wells.

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The UK has over 50 years' experience in regulating onshore oil and gas, and we are confident that the regulatory system will continue to provide robust protection for the environment.

Reports by the Royal Society and Royal Academy of Engineering, and Public Health England have considered a wide range of evidence in the UK context. They concluded that risks can be managed if industry follows best practice enforced by regulation.

We believe shale gas may hold huge potential in providing a new home-grown energy source, which would help to improve our energy security. Secondly, it could provide significant national and local economic benefits through jobs and growth. Finally, it could help us to meet our carbon targets if it substitutes for more carbon intensive sources such as coal.