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**UNCONVENTIONAL OIL AND GAS EXPLORATION IN GREATER
MANCHESTER**

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PURPOSE OF REPORT

This report is for information and provides an overview of unconventional oil and gas exploration in Greater Manchester and list of frequently asked questions.

RECOMMENDATIONS

To note this report.

BACKGROUND

There are no proposals for ‘fracking’ in Greater Manchester or planning applications pending, nor any discussions being held or have occurred regarding ‘fracking’ in Greater Manchester. However the prospect of exploratory drilling for coal bed methane in parts of GM (which does not involve a fracturing process), the existence of shale deposits which might interest the industry across GM and the extensive publicity being given at a national level to fracking with protests in Sussex to Cuadrilla’s activities, and elected members being e-mailed on the issue by anti-fracking campaigners, requires everyone to have a greater understanding of the issue. The purpose of this note is therefore to provide information and a checklist of answers to questions which may be asked.

Hydraulic fracturing or ‘fracking’ of shale to extract natural gas has recently received national and local press coverage and local members have received e-mails enquiring about fracking. The Department for Communities and Local Government has also recently (July, 2013) produced “Planning practice guidance for onshore oil and gas” which amongst other matters sets out the Governments approach to the recovery of onshore gas by the hydraulic fracturing of shale. This can be found at the link below.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/224238/Planning_practice_guidance_for_onshore_oil_and_gas.pdf

If any commercial interest came forward in Greater Manchester then the individual districts will work with the Greater Manchester Waste and Minerals Planning Unit in dealing with any planning issues. The relevant planning policies that would be considered in dealing with fracking interests are contained within the Greater Manchester Minerals Local Plan (Joint Development Plan Document) which was adopted this year. This requires careful consideration of the environmental impacts of fracking. Any fracking proposals or any planning application submitted with regard to fracking would be subject to extensive technical and public consultation.

PROCESS

A “Frequently Asked Questions” document on unconventional oil and gas is attached (Appendix A). Unconventional gas and oil resources are those which cannot be extracted using standard drilling techniques. The gas itself is the same as other forms of natural gas and could provide both industrial and domestic power. It has the potential to be an important new source of energy for the UK. The continuing decline in natural gas from the North Sea means that unconventional gas is likely to become an increasingly attractive alternative potential source of gas. It is important to note that the likely future interest in exploration and production is highly dependant on the price of oil.

The nature of the oil and gas exploration, appraisal and processing operations are very different from conventional mineral workings and are significantly less intrusive in terms of their limited land-take and more flexible locational

requirements. There are three phases of onshore oil and gas extraction (conventional and unconventional):

- exploration;
- testing (appraisal);
- and production.

Planning permission is required for each phase of oil and gas extraction from the Minerals Planning Authority. In Greater Manchester the 10 districts are also Mineral Planning Authorities. The granting of planning permission for exploration and appraisal of unconventional gas opportunities does not include the presumption that long term production from those wells, or the development of further wells, will be permitted. Options for further development of the area will have to be presented as part of the initial planning application to enable the Mineral Planning Authority to consider the potential long term environmental impacts of the development.

In Greater Manchester, unconventional gas resources are likely to include coal bed methane (CBM) and coal mine methane (CMM). They may also include shale gas. The occurrence of CBM in Greater Manchester corresponds with the location of coal seams. Extraction of CBM can be contemplated at depths of 200-1500m. CMM is produced when methane escapes from coal seams during the working of mines. This gas is not currently mined in Greater Manchester but given the history of coal mining in the area, former mines could offer potential for working. Shale gas is associated with shale rock and its extraction uses new technologies. Drilling depths can be deeper than associated with CBM extraction. Permission was granted in Lancashire for exploratory drilling of shale gas and the Greater Manchester Minerals Plan includes this resource as the potential for extraction may also exist in Greater Manchester.

EXISTING ACTIVITIES

There are no current permissions in Greater Manchester for the extraction of shale gas by hydraulic fracturing -'fracking'. There are three current permissions for the extraction of coal bed methane, however it is important to note that these permissions do not allow for fracking.

Salford

There is planning permission at Barton Moss for drilling 2 exploratory boreholes for coal bed methane appraisal and production. It is not planning permission for shale gas exploration/extraction using fracking. The planning permission at Barton Moss is subject to conditions including levels of noise, dust management, protection of water resources and restoration of the site. IGas anticipates that they will commence drilling in Autumn 2013. The company operating the site at Barton Moss, have stated that under their permission "The drilling will not involve the extraction of shale gas or hydraulic fracturing".

Trafford

Planning permission was granted in September 2010 for exploration, production testing and extraction of coal bed methane at land adjacent to the M60 High Level Bridge and Davyhulme Waste Water Treatment Works and to the South of Trafford Soccer Dome. It is not planning permission for shale gas exploration/extraction using fracking

Wigan

Methane extraction: Alkane Energy UK Ltd were granted permission January 2012 to drill an exploratory borehole to extract mine gas to generate electricity and associated plant etc. This is a site north of Plank Lane (by Bickershaw). They already extract mine gas in Golborne. This is not planning permission for shale gas using fracking.

GREATER MANCHESTER MINERALS PLAN

The Greater Manchester Minerals Local Plan (a Joint Development Plan Document) was adopted by all 10 districts came into force on the 26 April 2013¹. The Plan provides the planning policy framework for determining minerals planning applications. The Plan also identifies areas where there is likely to be the potential for the future extraction of unconventional gas resources.

PETROLEUM EXPLORATORY DEVELOPMENT LICENSES (PEDLS)

Petroleum Exploratory Development Licenses (PEDLs) covering Salford, Trafford and Wigan (see Appendix B) were granted by the Department of Energy and Climate Change to energy companies in 2008. This is an onshore licence covering oil and gas resources. Onshore and offshore licensing rounds generally take place every year.

Following the release of the British Geological Society report (2013) it is clear that there is the potential for shale gas extraction across the whole of the north west and therefore there may be applications in future for exploration in GM.

The link below shows the full extent of PEDL's issued nationally and show that the two licences that extended into Greater Manchester are part of a much wider area. It must be stressed that the existence of these licences does not imply whatsoever that fracking will occur within the conurbation.

<https://www.gov.uk/oil-and-gas-onshore-maps-and-gis-shapefiles>

¹ Please see: http://www.agma.gov.uk/what_we_do/planning_housing_commission/our-work/integrated-infrastructure-strategy-for-gm/minerals-and-waste/index.html

APPENDIX A – FREQUENTLY ASKED QUESTIONS

Frequently Asked Questions (FAQs)

This note addresses some FAQs associated with conventional and unconventional oil and gas. The FAQ considers issues relating to the following areas:

- 'Oil and Gas'
- 'Exploration, appraisal and production of oil and gas'
- 'Current planning policy and guidance for oil and gas'
- 'Licencing'
- 'The Planning Process'
- 'Other regulatory regimes involved in licencing / the planning process'
- 'Current shale gas extraction in the United Kingdom'
- 'Current oil and gas activity in Greater Manchester'
- 'Where can I find out more information?'

Oil and Gas

1) Why are oil and gas important?

Oil and gas are primary sources of energy in the United Kingdom. However, they are both finite natural resources which are being depleted through our energy and manufacturing requirements. Accordingly, there is a national and local need to sustainably secure oil and gas resources.

Unconventional oil and gas (such as shale gas extracted by fracking) is now emerging as a form of energy supply and the Government believes shale gas has the potential to provide the UK with greater energy security, growth and jobs.

The economic benefits of oil exploration can be seen at both a local and national level. It is important to note that the likely future interest in exploration and production is highly dependant on the price of oil. The local economic impact of oil and gas production is significant in supporting local services and direct employment.

2) What is conventional oil and gas?

'Conventional' oil and gas refers to oil and gas resources (also known as hydrocarbons) which are situated in sandstone or limestone rock formations. Conventional oil and gas **does not include shale gas extraction**

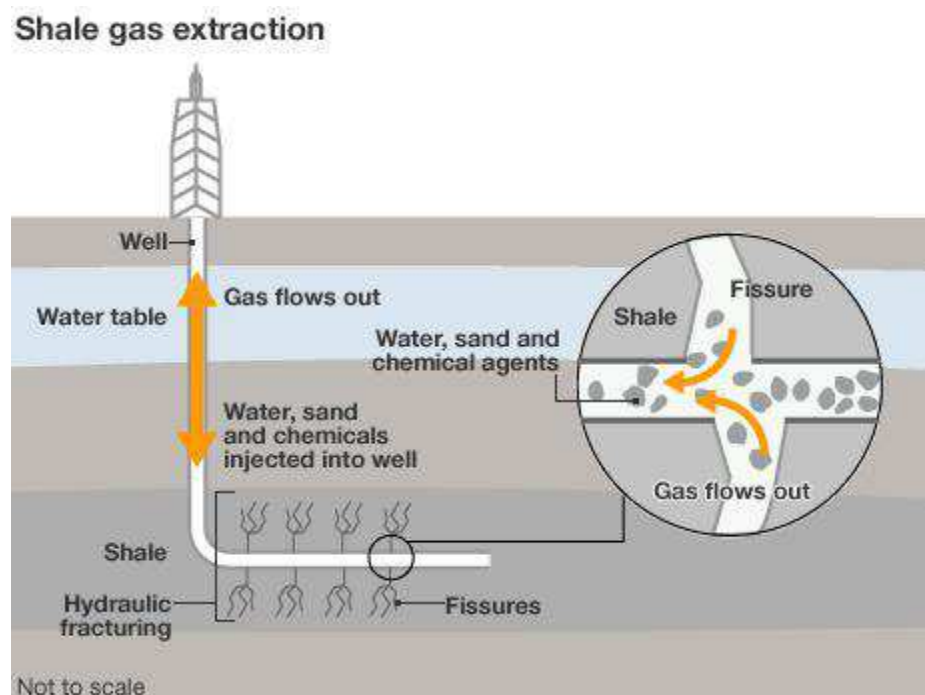
3) What is unconventional oil and gas?

Natural gas produced from shale is often referred to as 'unconventional' and this refers to the type of rock type in which it is found. Shale gas is methane found in rocks deep below the earth's surface which had previously been considered too impermeable ('tight') to allow for economic recovery. technological advancements over the last decade have made shale gas development economically viable.

4) What is hydraulic fracturing ('fracking')?

Hydraulic fracturing or 'fracking' is the process used to release natural gas from shale rock formations. The technique is used to release oil, natural gas including unconventional (shale) gas and oil. This type of fracturing creates fractures from a wellbore drilled into reservoir rock formations, fracturing the rock structure before chemicals and sand mixed in water are injected into the shale. The chemicals and sand prop the fractures open to increase gas extraction and maintain porosity once the rock structure has been fragmented so to allow the shale gas deposits to be extracted.

The process opens and/or extends existing narrow fractures or creates new ones (fractures are typically hairline in width) in gas or oil-bearing rock, which allows gas or oil to flow into wellbores to be captured. The following diagram summarises how shale gas is extracted.



The system is designed to be a closed loop, so that when the high pressure is removed, the hydraulic fracturing fluid returns to the surface for treatment and storage. The flowback water also may contain salts and other dissolved minerals from the shale rock formation. Estimates vary on what percentage of the hydraulic fracturing fluid returns to the surface: from 25-75%. This wide

range is explained by differences in the properties of the shale and its response to the hydraulic fracture.

5) What are the concerns being raised about 'fracking'?

Fracking is a relatively new and emerging process and one which has come under intense environmental scrutiny in the United Kingdom (UK). The main environmental concerns related to shale gas extraction include:

- seismic activities;
- water quantities;
- groundwater; and
- wider environmental concerns.

6) Why is 'fracking' water intensive?

The fracking process can use significant amounts of water as water is injected into the shale to help with the gas extraction process. Water use is greatest at the production stage. When proposing a site for shale gas extraction, developers must ensure that there is sufficient water and infrastructure for their operations, and, where necessary, they would need to apply for an abstraction license from the Environment Agency.

7) How is groundwater protected during 'fracking'?

Groundwater is protected in the fracking process by:

- ensuring the casing around the wellhole is of an adequate standard;
- ensuring adequate distance (and therefore rock) between the fracking activity and the groundwater;
- ensuring the chemicals used and the amounts used render it harmless, should they enter the water supply;
- controlling the storage and disposal of waste from the sites.

The Environment Agency (EA) protects water resources. Where risks to the environment are significant (for example where development is proposed contrary to the EA Groundwater protection policy and guidance), the EA are likely to object to any planning application for the construction and operation of individual wells.

8) What are the potential benefits of 'fracking'?

Proponents of 'fracking' point to the economic benefits from large amounts of formerly inaccessible hydrocarbons the process can extract. The UK government considers shale gas represents a promising new potential energy resource for the UK that could contribute significantly to the UK's energy security (security of supply), reducing reliance on imported gas. The local economic impact of oil and gas production may be significant in supporting local services and direct employment.

9) Will shale gas extraction mean cheaper energy?

Production of unconventional gas could offer the UK additional security of energy supply. However, the actual impacts on energy prices are not fully known as the process is still emerging in the UK.

Exploration, appraisal and production of oil and gas

10) What are the phases of onshore oil and gas extraction?

There are three phases of onshore oil and gas extraction (conventional and unconventional):

- exploration;
- testing (appraisal);
- and production.

Planning permission is required for each phase of oil and gas extraction from the Council.

The stages of oil and gas development are highlighted in the following table.

Phase	What this phase involves (All oil and gas development)	Unconventional extraction
Exploratory	The exploratory phase seeks to acquire geological data to establish whether hydrocarbons are present. It may involve seismic surveys, exploratory drilling and, in the case of shale gas, Hydraulic fracturing.	Exploratory drilling is an intensive activity and may take longer than conventional drilling, especially if there is going to be hydraulic fracturing.
Appraisal	The appraisal phase takes place following exploration when the existence of oil or gas has been proved, but the operator needs further information about the extent of the deposit or its production characteristics to establish whether it can be economically exploited. The length of time take to complete this stage will depend on the size and complexity of the oil or gas reservoir involved.	The appraisal phase can take several forms including additional seismic work, longer-term flow tests, or the drilling of further wells. This may involve additional drilling at another site away from the exploration site or additional wells at the original exploration site. For shale gas it may involve further hydraulic fracturing followed by flow testing to establish the strength of the resource and its potential productive life.

Phase	What this phase involves (All oil and gas development)	Unconventional extraction
Production	<p>The production phase normally involves the drilling of a number of wells. This may be wells used at the sites at the exploratory and/or appraisal phases of hydrocarbon development, or from a new site. Associated equipment such as pipelines, processing facilities and temporary storage tanks. Any additional sites following exploration, will be selected by the operator taking account of what they have learnt or discovered through previous phases. In doing so, they should also take account of their ability to access the resource whilst seeking to minimise or avoid any adverse environmental and amenity issues.</p> <p>Production life of an oil or gas field can be up to 20 years, possibly more. When production ceases, the facilities should be dismantled and the sites restored to their former use, or, in some circumstances, an appropriate new use.</p>	<p>Unconventional oil and gas (such as shale) extraction is emerging as a form of energy supply and there is a pressing need to establish (through exploratory drilling) whether or not there are sufficient recoverable quantities present to facilitate economically viable full scale production.</p>

11) What is current national planning policy on onshore oil and gas extraction?

The National Planning Policy Framework (NPPF) sets out minerals planning policy for onshore oil and gas. The Government is clear that responsibility for determining planning applications for onshore oil and gas activities, including for the exploration of shale gas, will be with Minerals Planning Authorities (MPAs) such as the ten Greater Manchester Authorities.

Decisions will therefore continue to be taken in accordance with local plans (in particular the Greater Manchester Minerals Local Plan) and the NPPF. The NPPF also expects Councils to ensure that mineral extraction does not have an unacceptable adverse impact on the natural or historic environment or human health.

12) What is the current Government position on 'fracking'?

The Government believes shale gas has the potential to provide the UK with greater energy security, growth and jobs. While shale gas in the UK is in the very early stages of development, scientists from the British Geological Survey (BGS) have estimated that the total volume of gas in the Bowland Hodder shale in northern England at some 1,300 trillion cubic feet. The BGS

is doing further work to establish the amount of shale gas in the Weald Basin in the south east of England.

The Royal Society and the Royal Academy for Engineering published an independent report into the environmental, health and safety risks of fracturing for shale gas in June 2012. This concluded:

- the health, safety and environmental risks can be managed effectively in the UK;
- fracture propagation is an unlikely cause of contamination;
- well integrity is the highest priority;
- robust monitoring is vital;
- an Environmental Risk Assessment (ERA) should be mandatory;
- seismic risks are low;
- water requirements can be managed sustainably;
- regulation must be fit for purpose.
- policymaking would benefit from further research.

In December 2012, following the completion of the reviews of potential for shale and oil extraction, and the investigation into the earthquakes in Lancashire, the Department of Energy and Climate Change announced that 'exploratory hydraulic fracturing (fracking) for shale gas can resume in the UK, subject to new controls to mitigate the risks of seismic activity'.

13) What does the Government's new Planning Guidance (July 2013) on onshore oil and gas cover?

The Government has prepared planning policy guidance on Fracking. The document – “Planning practice guidance for onshore oil and gas” can be found at the following web link:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/224238/Planning_practice_guidance_for_onshore_oil_and_gas.pdf

As the shale gas industry develops, the Government wants to ensure an effective, locally-led planning system is in place. The guidance provides advice on the planning issues associated with the three phases of extraction.

The guidance states that the exploratory, appraisal or production phase of hydrocarbon extraction can only take place in areas where the Department of Energy and Climate Change (DECC) have issued a licence under the Petroleum Act 1998 (Petroleum Exploration and Development Licence (PEDL)).

14) What is Greater Manchester's current planning policy for onshore oil and gas (unconventional)?

Local planning policies for unconventional gas extraction are contained within the Greater Manchester Minerals Local Plan (a joint Development Plan Document).

In particular **Policy 6** states the following:

Unconventional Gas Resources

Applications for exploration and appraisal, and production wells for unconventional gas resources will be permitted where the applicant can demonstrate that the proposal:

- 1. Is in accordance with the Key Planning and Environmental Criteria in Policy 2; and*
- 2. Includes options for the next stage of extraction, following exploration; and*
- 3. Includes detailed plans for removal of all equipment and restoration of the site in accordance with a scheme and to a standard approved by the Mineral Planning Authority.*

Policy 2 of the plan states the following:

Key Planning and Environmental Criteria

All proposals for minerals working or the provision of minerals infrastructure will be permitted where any adverse impacts on the following criteria is avoided

or can be appropriately mitigated:

- 1. Controlled waters and flood risk management;*
- 2. Landscape and visual intrusion;*
- 3. Biological and geological conservation including European sites;*
- 4. Historic environment and built heritage;*
- 5. Best and most versatile agricultural land*
- 6. Infrastructure*
- 7. Traffic and access;*
- 8. Amenity e.g noise, dust, vibration, and odours;*
- 9. Air Quality*
- 10. Land instability;*
- 11. Potential land use conflict;*
- 12. Design, phasing and operational details;*
- 13. Aviation safety.*

The above are the matters that would be taken into account in the consideration of any planning application for fracking.

It should be noted that Minerals Plan Policy 6 refers to all types of unconventional gas resources, including coal bed methane (CBM), coal mine methane (CMM) and shale gas. **Fracking is associated with the extraction of shale gas.**

15) What are licences?

Licences for on-shore drilling and exploration are granted by the Department for Energy and Climate Change (DECC). In the 13th Onshore Licensing Round in 2008, consent was given to drill for shale gas in five locations in the United Kingdom. No method for drilling is specified in the initial licence, as it only conveys exclusivity in an area for the licensee.

Before starting works the operator must also gain a 'well consent' for exploration from the DECC. An operator will then need to seek planning permission from the Council to drill. The granting of a licence for the exploration for the resource does not imply that planning permission would be granted for the extraction of the resource.

The 14th DECC consultation round of PEDLs is ongoing and the area available covers the whole of Greater Manchester. Following consultation new licences could be available covering areas outside those currently licensed. It should be noted that these licences do not give consent for drilling or any other operations, and a range of regulatory processes and controls (including planning control) still apply.

16) Are there any unconventional oil and gas ('fracking') licences in Greater Manchester?

Licences (conventional and unconventional oil and gas in Greater Manchester have been issued by the Department for Energy and Climate Change (DECC)

Existing licences (for both conventional and unconventional oil and gas) in Greater Manchester are outlined in the following map:

In an area that has been granted a licence from DECC, potential operators still need to obtain:

- consent from the landowner;
- planning permission of each stage of development (explorations, extraction and production);
- regulatory consents (such as from the Environment Agency); and
- an additional consent from DECC for drilling operations.

DECC will also consider the view of the Health and Safety Executive in coming to the final decision. DECC states that 'final consent to any well or well operations is dependent on confirmation that all other necessary permits and consents have been obtained'. Before starting works the operator must also gain a 'well consent' for exploration from the DECC. An operator will then seek planning permission from the Council to drill.

There are two licences currently covering parts of the Borough. PEDL 165 covers the northern parts of Wigan and PEDL 193 covers parts of Salford and Trafford and the southern parts of Wigan.

It must be stressed that the existence of these licences does not necessarily mean that fracking will occur in the Borough. Moreover, when they were issued in 2008 the concept of fracking was not known to the extent to which it is today.

The Planning Process

17) What does the planning application process for fracking development entail?

Planning permission is one of the main regulatory requirements that operators must meet before drilling a well, for both conventional and unconventional oil and gas.

The planning system controls the development and use of land in the public interest and this includes:

- ensuring that new development is appropriate for its location taking account of the effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and
- the potential sensitivity of the area or proposed development to adverse effects from pollution.

In doing so the focus of the planning system should consider whether the development itself is an acceptable use of the land; the impacts of those uses and any control processes.

18) How will the community be consulted on any planning application for oil and gas development?

Public consultation forms an important part of every minerals or waste planning application (including oil and gas). Following submission on an application for oil and gas development, the local community in which the proposal is located will be consulted.

For shale gas development, the industry's own charter sets out that communities must be engaged from the very start of any planning application process.

19) If planning permission is granted, what else is required before shale gas extraction can commence?

If the Council grants permission to explore oil and gas resources, Department of Energy and Climate Change (DECC) will consider an application to drill and at least 21 days before drilling is planned.

The Health and Safety Executive (HSE) must also be notified of the well design and operation plans to ensure that major accident hazard risks to people from well and well related activities are properly controlled, subject to the same stringent regulation as any other industrial activity. Before starting works the operator must also gain a 'well consent' for exploration from the DECC.

Once DECC checks the geotechnical information and that Environment Agency (EA) and HSE are aware of the scope of the well operations, they may consent to drilling. At this stage, if the intention is to 'frack', the DECC would impose the new controls introduced in December 2012 which include:

- a geological assessment identifying geological faults;
- a 'Frack Plan'
- monitoring of seismic activity before, during and after fracking.

Following exploration, if operators then wish to go into production to actually extract gas, the company must gain:

- a new planning permission
- a Field Development Consent from the DECC
- an Environmental Permit from the EA.

20) What community benefits can be associated with shale gas extraction?

The shale industry has set out their commitment to community engagement in its Charter. The industry has committed to a package for communities that host shale gas extraction in their area. This includes:

- At exploration stage, £100,000 in community benefits will be provided per well-site where fracking takes place;
- 1% of revenues at production stage will be paid out to communities;

Operators will publish evidence each year of how these commitments have been met. The charter and offer to communities will be regularly reviewed as the industry develops, and operators consult further with communities.

Other regulatory regimes involved in licensing / the planning process

21) How does the planning process link to other regulatory regimes?

The planning and other regulatory regimes are separate but complementary. The planning system controls the development and use of land in the public interest.

Some issues of importance may be covered by other regulatory regimes but may be relevant to the planning process in specific circumstances. For example,

- the Environment Agency (EA) has responsibility for ensuring that risk to groundwater is appropriately identified and mitigated.
- Mitigation of seismic risks – Department of Energy and Climate Change (DECC) is responsible for controls, usually through the licence consent regime, to mitigate seismic risks. Seismic assessment of the geology of the area to establish the geological conditions, risk of seismic activity and mitigation measures to put in place is required by the DECC for all hydraulic fracturing processes;
- Well design and construction – The Health and Safety Executive (HSE) are responsible for enforcement of legislation concerning well design and construction. Before design and construction operators must

- assess and take account of the geological strata, and fluids within them, as well as any hazards that the strata may contain;
- Well integrity during operation – Under health and safety legislation the integrity of the well is subject to examination by independent qualified experts throughout its operation, from design through construction and until final plugging at the end of operation;
 - Operation of surface equipment on the well pad – Whilst planning conditions may be imposed to prevent run-off of any liquid from the pad, and to control any impact on local amenity (such as noise), the actual operation of the site's equipment should not be of concern to MPAs as these are controlled by the EA and the HSE;
 - Mining waste – The EA is responsible for ensuring that extractive wastes do not harm human health and the environment. An environmental permit is required for phases of hydrocarbon extraction and this will require the operator to produce and implement a waste management plan;
 - Chemical content of hydraulic fracturing fluid– This is covered by the environmental permit as operators are obliged to inform the EA of all chemicals that they may use as part of any hydraulic fracturing process;
 - Flaring or venting of any gas produced as part of the exploratory phase will be subject to DECC controls and will be regulated by the EA. Councils will, however, need to consider how issues of noise and visual impact will be addressed;
 - Final off-site disposal of water – Water that comes back to the surface following hydraulic fracturing may contain naturally occurring radioactive materials. Whilst storage on-site and the traffic impact of any movement of water is of clear interest to local authorities, it is the responsibility of the EA to ensure that the final treatment/disposal at suitable water treatment facilities is acceptable;
 - Well decommissioning/abandonment – Following exploration, the well is likely to be suspended and abandoned for a period of time. Health and Safety Legislation requires its design and construction that, so far as reasonably practicable, there is no unplanned escape of fluids from it.

The Council is responsible for ensuring sites are restored through planning permissions granted.

22) What is the role of the Department of Energy and Climate Change (DECC)?

DECC issues Petroleum Licences, gives consent to drill under a Petroleum Exploration and Development Licence which gives operators exclusive rights to explore for, and develop the resource. Licences are issued once other permissions and approvals are in place, and have responsibility for assessing risk of and monitoring seismic activity, as well as granting consent to flaring or venting.

23) What is the role of the Environment Agency (EA)?

The EA protects water resources (including groundwater aquifers), ensures appropriate treatment and manages any naturally occurring radioactive materials. The EA may also require an Environmental Permit at the exploration phase. It is also likely to require an abstraction licence if more than 20,000 litres of water per day is to be abstracted as part of the development.

24) What is the role of the Health and Safety Executive (HSE)?

The HSE regulates the safety aspects of all phases of extraction of oil and gas and has a particular responsibility for ensuring the appropriate design and construction of a well casing for any borehole.

Current shale gas extraction in the United Kingdom

25) Where does fracking take place in the United Kingdom (UK) currently?

There are large reserves of shale gas beneath the UK, but it is not known what fraction of this could be economically viable to access. Currently, there is only one well in the UK has been partially fractured and tested in Lancashire.

The Government placed a temporary moratorium on fracking to allow for investigations into the small earthquakes in Lancashire in late 2011. This was completed and concluded they may have been caused by the shale gas extraction and recommended a series of safeguards to prevent a similar situation occurring in the future. In December 2012 the Department of Energy and Climate Change announced that 'exploratory hydraulic fracturing (fracking) for shale gas could resume in the UK, subject to new controls to mitigate the risks of seismic activity.

Currently, there are no shale gas extraction or fracking activities taking place in Greater Manchester.

26) Are there any known proposals for 'fracking' in Greater Manchester?

Currently, there are no shale gas extraction or fracking activities in Greater Manchester. There have been no pre-application discussions with any operators for fracking in Greater Manchester. We do not have any knowledge of any interest and we do not have any planning applications for extraction of unconventional gas using fracking techniques currently pending.

27) Are there any planning permissions for other types of unconventional gas extraction in Greater Manchester (ie. not involving fracking)?

There are three current planning permissions for the extraction of coal bed methane (CBM, an 'unconventional gas') in Greater Manchester. CBM is the generic name given to gases locked into coal measures. This CBM gas can be released by drilling directly into unworked coal seams and offers a method of extracting methane from the coal bed without detrimentally affecting the physical properties of the coal.

Extraction of coal bed methane does **not** involve fracking.

An application was submitted to **Salford** City Council, Planning Application 10/58590, for drilling 2 exploratory boreholes for CBM appraisal and production on land north of Barton Moss road. Planning permission was granted in June 2010.

An application was submitted to **Trafford** Council, Planning Application 74681/FULL/2010, for exploration, production testing and extraction of coal bed methane on land adjacent to the M60 High Level Bridge and Davyhulme Waste Water Treatment Works and to the South of Trafford Soccer Dome. Planning permission was granted in September 2010.

Wigan, methane extraction: Alkane Energy UK Ltd were granted permission January 2012 to drill an exploratory borehole to extract mine gas to generate electricity and associated plant etc. This is a site north of Plank Lane (by Bickershaw). They already extract mine gas in Golborne.

It should be noted that neither of these permissions permit for the extraction of shale gas using fracking techniques.

APPENDIX B – CURRENT LICENSED FIELDS.

