Planning on the Doorstep: The Big Issues – Fracking

The exploration of shale gas and hydraulic fracturing – or "fracking" as it has become commonly known – is a huge issue for councils and communities across the country that it affects.

This advice note looks at the reality of shale gas exploration and production and how local authorities make planning decisions on these highly contentious applications.

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1 Introduction

1.1 Shale gas exploration, appraisal and development is relatively new to the UK but is expected to be a major area of growth in the coming years. Mineral Planning Authorities are being encouraged to support applications for exploration and appraisal.

1.2 The Government considers that shale gas development should be part of the future energy mix subject to continued environmental assessment and controls. There is however a need to undertake more extensive exploration and appraisal activities to better assess the commercial viability of shale gas in the UK

1.3 Environmental impacts can occur during exploration/development and require:

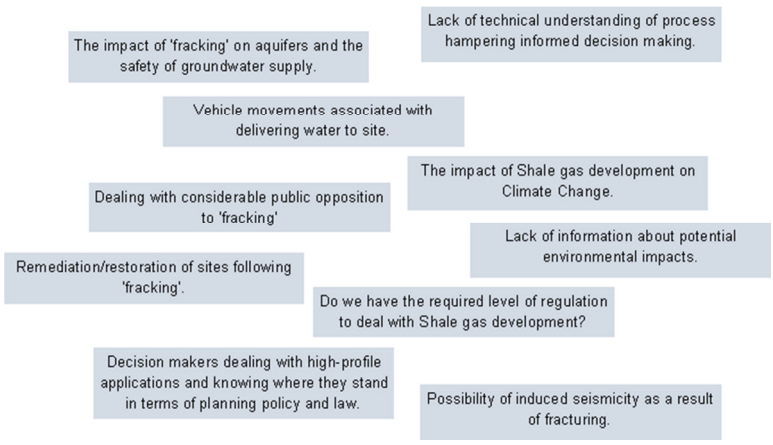
- comprehensive baseline assessments;
- assessment and understanding of risks and impacts;
- implementation of mitigation where required; and
- monitoring before, during and after hydraulic fracturing.

1.4 The Government believes that the existing regulatory systems are fit for purpose – whilst acknowledging that experience will enable more robust controls to be developed where necessary.

1.5 This guide is to help Local Authority officers and members:

- understand the basics of shale gas development or 'fracking'; and
- understand the current guidance that is available to decision makers with regards to planning applications

1.6 Some of the key concerns about fracking in the UK include:



1.7 A reference list for further reading is included at the back of this guide that includes the key documents used to inform the main text as well as additional further reading that might be of interest.

2 What is Shale Gas?

2.1 Conventional and Unconventional Gas

2.1.1 Conventional gas is gas that is trapped in porous reservoirs (e.g. sandstone and limestone) and is relatively easy to extract. Conventional gas has been extracted on-shore in the UK for over 100 years.

2.1.2 There are currently around 2,000 on-shore conventional oil and gas wells in the UK, some of which have been hydraulically fractured. Current production for onshore oil production is estimated at 20,000 barrels of oil per day.

2.1.3 Unconventional gas is gas that is trapped in rocks with low permeability and from which gas is difficult to extract. Unconventional gas reserves include shale gas, tight gas and coal bed methane.

2.1.4 Recent developments in drilling and well development technology have made it more economically attractive to extract unconventional gas.

2.2 Shale Gas

2.2.1 Shale is formed from muddy sediments rich in organic matter deposited in seas millions of years ago. As these sediments were buried, they were heated and turned into rock and the organic matter was converted into gas which is trapped in the rock. Shale gas consists predominantly of methane although other gases may be present.

2.2.2 These rocks are often the source rocks for conventional oil and gas fields but have low permeability so it is difficult to extract the gas from them directly.

2.3 Shale Gas in the UK

2.3.1 In the UK shales containing gas are present in:

- Northern and Central England
- Southern England
- Scotland
- South Wales

2.3.2 The British Geological Survey (BGS) is in the process of producing assessments of the amount of gas in each area.

2.3.4 An assessment for Northern and Central England was produced by the BGS in 2013. The assessment for the Weald Basin (Southern England) is due in 2014 with other area assessments to follow.

2.3.5 The assessment for Northern and Central England estimates that there is a median **resource** of 1,329 trillion cubic feet of shale gas in the area (i.e. the total estimated quantity of gas present). The **reserve** (the amount of gas which might feasibly be extracted) cannot be estimated at present without further exploration and appraisal but may be up to 10% of the total resource. If this was the case this would be equivalent of approximately 50 years gas supply in the UK (at the current rate of use). However, the recoverable reserve may be much lower than this.

2.4 Licensing for Onshore Oil and Gas Exploration

2.4.1 The Department of Energy and Climate Change (DECC) is responsible for administering the oil and gas licensing system in Great Britain. All rights and ownerships of the hydrocarbon resources of Great Britain (and UK territorial waters) are vested in the Crown by the Petroleum Act 1998. The Secretary of State for Energy and Climate Change periodically offers licences to explore and develop these resources.

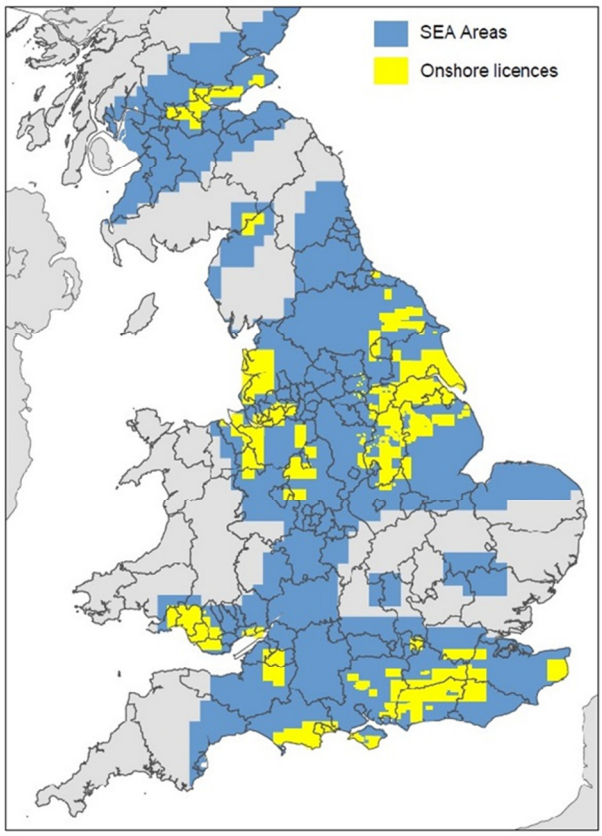
2.4.2 Petroleum Exploration and Development Licences (PEDLs) are valid for a sequence of periods, called terms. These are designed to comprise the typical life cycle of a field: exploration, appraisal, and production. Each licence will expire automatically at the end of each term, unless the licensee has completed the working programme agreed with DECC.

2.4.3 The initial term is usually an exploration period. For PEDLs the initial term is set at six years and carries a work programme of exploration activity that DECC and the licensee will have agreed as part of the application process. The second term is intended for appraisal and development and is set at five years. The licence will expire at the end of the second term unless the Secretary of State approves a development plan. The third term is intended for production and is set at 20 years. The Secretary of State has the discretion to extend the term if production is continuing, but DECC reserves the right to reconsider the provisions of the licence before doing so.

2.4.4 The currently licensed blocks can be viewed on DECCs webpage:

https://www.gov.uk/oil-and-gas-petroleum-licensing-guidance

2.4.5 The currently licensed areas are located in areas of conventional oil and gas resources. Current shale gas exploration is restricted to these areas. DECC intend to grant a new round of licences in 2014. These are likely to extend the licensed areas of the UK considerably. The area under consideration for licensing by DECC has been subject to a Strategic Environmental Assessment published in 2013.



Potential Future Licence Areas – including Shale Gas (DECC)

2.4.6 The area covered by this SEA indicates areas of the UK which may be potentially licensed for shale gas exploration and development.

2.5 Shale Gas Exploitation

2.5.1 The rocks in the UK that contain significant shale gas resources are typically 2,000 m to 3,000 m below the ground surface. Accessing the gas requires the use of established oil and gas drilling techniques.

Vertical drilling – to reach the required depth below the surface.

Horizontal drilling – to maximise the amount of shale available for hydraulic fracturing; and

Hydraulic fracturing – to maximise the amount of gas which can be extracted from the shale.

2.5.2 Whilst none of these techniques are new technological advances over the past few years have allowed for increased control and accuracy during drilling allow exploitation of shale gas reserves.

2.6 Hydraulic Fracturing

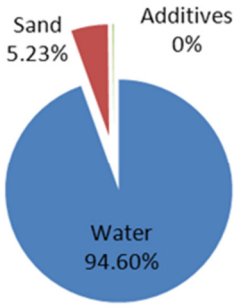
2.6.1 Hydraulic fracturing is the process of fracturing rocks by the injection of water into the shale at high pressure.

2.6.2 The wells are cased with steel tubes cemented in place. The tubes along the horizontal section of the well within the shale are perforated. Water, sand and additives are pumped at pressure into the shale.

2.6.3 This hydraulic action or fracturing (hence 'fracking') opens up fractures in the shale that allow the gas to flow from the rock into the well. Fractures are typically < 350m long.

2.6.4 The process of hydraulic fracturing a horizontal well would typically take a few days.

2.6.5 The presence of the sand in the water acts as a "proppant" that ensures that the fractures stay open to allow the gas to continue to migrate after the initial fracturing is undertaken.



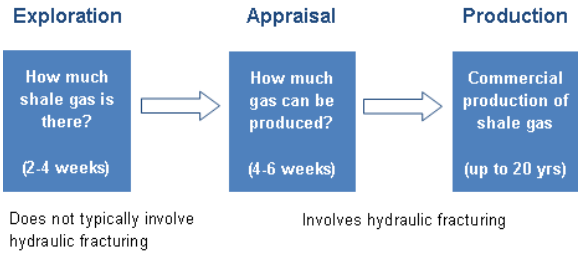
2.6.6 Additives in the water include surfactants to enable the fluid to pass easily through fractures, bactericides and acids to prevent build-up of scale in the well. All chemical additives used in hydraulic fracturing require pre-approval by the Environment Agency and are required to be non-hazardous (non-carcinogenic)

2.6.7 Following fracturing gas is allowed to migrate into the well which displaces the water forcing some of it back up the well to the surface, this is referred to as 'flow back' fluid.

2.6.8 Gas reaching the surface will either be flared (during exploration and appraisal) or piped off site to the gas transmission network (during production).

2.7 Shale Gas Development

2.7.1 There are three phases in the development of a shale gas field.



2.8 Exploration and Appraisal

2.8.1 The well is situated on a pad – the 'wellpad'. The wellpad for an exploratory or appraisal well might be approximately 1 hectare in size, large enough to accommodate the drilling equipment, any on-site water storage requirements, staff facilities, parking and space for vehicle deliveries and movements.

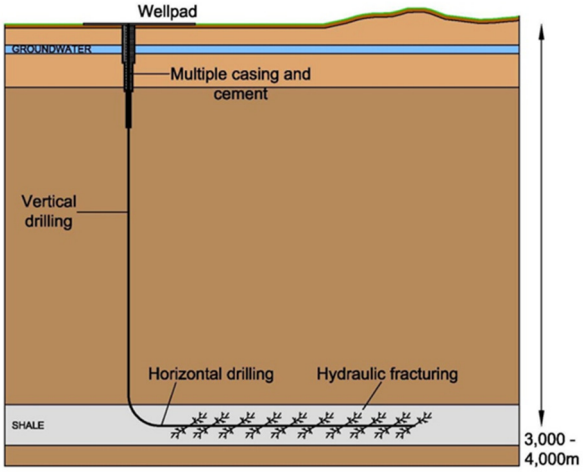
2.8.2 Within a given licence block there might be a number of exploratory wells but these would be relatively widely spaced over a licence block that could be hundreds of square kilometres in area.

2.8.3 The siting of wellpads will not only have to take into account the best locations in terms of the available knowledge regarding the shale gas potential of a given area but also the land use constraints that would relate to any development.

2.8.4 The data gathered from the exploration stage (the establishment of how much shale gas might be present in the source rock) would form the basis for the appraisal stage during which how much gas could be produced will be assessed by undertaking hydraulic fracturing.

2.8.5 For each exploratory well the exploration phase itself is relatively short – 2 to 4 months and therefore some wellpads will represent very short-term development should there be insufficient gas.

2.8.6 When appraisal follows on from exploration the process is also relatively short term – 4 to 6 months in duration.



2.9 Production

2.9.1 The production phase requires a larger wellpad, circa 2 hectares in size. A single well wellpad could produce gas from an area of 5 to 10 km^2. A multi well wellpad could support up to 10 individual wells each with several horizontal wells ("laterals"). A single horizontal lateral could reach up to 2,000 metres from the wellpad.

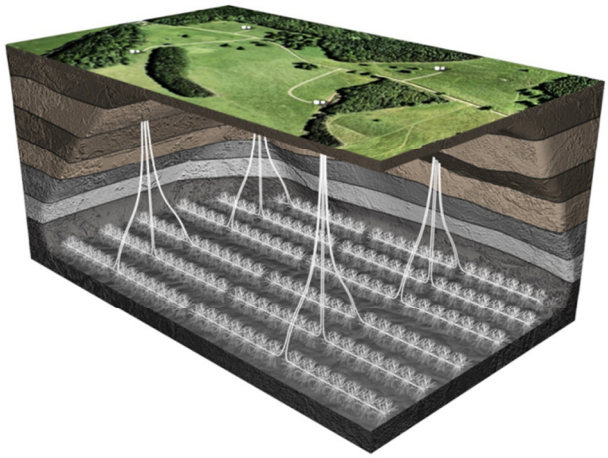


Image courtesy of Statoil.

2.9.2 After the well is hydraulically fractured the drill rig and associated infrastructure can be removed from the site with only the gas production and transmission infrastructure remaining. A single well could be expected to produce gas for up to 20 years.

2.9.3 Off-site gas compression and transmission infrastructure will be required to service a number of pads to allow gas to be transported to the national grid. Connecting pipework is likely to be underground.

2.9.4 All exploration, appraisal and production wells will ultimately be plugged and abandoned

with well heads removed and the sites restored to their original state. DECC requires operators to submit an abandonment plan and obtain consent before operations to abandon a well are commenced, Operators are responsible for wells once abandoned and have an open-ended liability to remediate any ineffective abandonment operations.

3 Environmental Impacts

- **Water Use**
- **Waste Management**
- **Groundwater Contamination**
- **Surface Contamination**
- **Aerial Emissions**
- **Seismicity**
- **Traffic**
- **Noise**
- **Landscape and Visual**
- **Ecology**

3.1 Water Use

3.1.1 The hydraulic fracturing of typical shale gas would require between 10,000 and 20,000 cubic metres of water (the equivalent of 4 to 8 swimming pools of water). Water with additives would be stored on-site in tanks.

3.1.2 During multi-stage fracturing for gas production the additives added to the water may vary throughout the process. In order to facilitate this, a development site would need to house the necessary storage and mixing equipment.

3.1.3 Sources of water for hydraulic fracturing include mains water, surface water and ground water. The use of mains water would require the agreement of the relevant utilities company whilst the abstraction of surface water or groundwater would require an abstraction licence from the Environment Agency (EA).

3.2 Waste Management

3.2.1 Each stage of shale gas development will produce waste.

3.2.2 Drilling activity of any kind produces drill cuttings (rock fragments and drilling mud). This waste can be disposed of to landfill - as is currently the case for other drilling activities undertaken in the UK.

3.2.3 Flowback water will be collected and contained on-site in closed tanks (open storage ponds are not permitted in the UK.) The water will need to be discharged to sewer or transported to a water treatment works for treatment.

3.2.4 Flowback water may contain Naturally Occurring Radioactive Materials (NORM) at low levels. This is also the case in conventional oil and gas extraction and procedures for the effective management of these materials are well-established. Flow back water containing NORM is likely to require pre-treatment prior to conventional treatment.

3.2.5 There is a significant opportunity to reduce the overall water consumption of the fracking process by recycling and re-using the flowback water, particularly during the development of multi-well pads.

3.3 Groundwater Contamination

3.3.1 Fracturing takes place at 2,000 to 3,000 m below the surface. Freshwater aquifers are at shallow depths (typically within 100 m of the ground surface). Thousands of metres of rock separate fractures from drinking water supplies (aquifers).

3.3.2 Aquifers are protected from leakages from the well by the use of multiple cemented casing and the contamination of aquifers therefore is very unlikely if best practice is followed during drilling and completion..

3.3.3 Monitoring of groundwater quality before during and after development will be essential in assessing the impact of shale gas development on groundwater quality.

3.4 Surface Contamination

3.4.1 Controls such as impermeable bunded or lined wellpads, effective flowback water containment, good working practises and continual monitoring should all be employed to limit the risk of surface contamination. Baseline monitoring prior to any development is again important in order to compare surface conditions throughout and after development.

3.5 Aerial Emissions

3.5.1 Aerial emissions associated with shale gas development will include:

- dust – as a result of well pad construction activities;
- particulates and NOx – as a result of HGV movements and use of on-site generators during drilling and fracking; and
- fugitive gas from the well and from flaring during appraisal and production.

3.5.2 UK and EU legislation on emissions apply to shale gas development and it is the role of Local authorities under the Environmental Protection Act 1990 to inspect sites for odour and noise associated with the venting or flaring of gas as well as to monitor emissions to ensure that they do not breach local air quality standards.

3.5.3 Operators should adopt best practice on site as well as undertaking emissions monitoring. Flaring is a method for controlling gaseous emissions that can be employed during shale gas development for use when necessary. Venting and flaring of methane and other emissions are controlled through conditions of PEDLs and flares on-site will be enclosed. During production it is not in operator's interest to flare gas but to capture and maximise gas production/sale from each site.

3.6 Seismicity

3.6.1 Earthquakes felt at surface induced by hydraulic fracturing are a very rare occurrence. Of over 35,000 hydraulically fractured wells there have only been three noticeable earthquakes:

- 1979 Oklahoma
- 2011 Blackpool/Preese Hall
- 2012 British Columbia

3.6.2 In light of the seismic activity experienced at Preese Hall the Secretary of State for Energy announced the introduction of new regulatory requirements to ensure that seismic risks are effectively mitigated.

3.6.3 The controls will be enforced by DECC. Operators will first be required to review the available information on faults in the area of the proposed well to minimise the risk of activating any fault by fracking, and required to monitor background seismicity before operations commence.

3.6.4 Real time seismic monitoring will also continue during operations, with these subject to a "traffic-light" regime, so that operations can be quickly paused and data reviewed if unusual levels of seismic activity are observed.

GREEN:	Go, injection proceeds as planned
AMBER:	Injection proceeds with caution, possibly at reduced rates, Monitoring is intensified
RED:	Injection is suspended immediately

3.6.5 If a magnitude greater than M_L 0.5 is detected operations will stop and the pressure of the fluid will be reduced. A magnitude of M_L 0.5 would only be detectable by sensitive equipment and would not be felt by people at the surface.

3.7 Other impacts

3.7.1 There may potentially be other impacts to the local community and environment.

3.7.2 Development will result in an increase in HGVs on local roads associated with:

- well pad construction;
- drilling and fracking operations; and
- management of wastes – particularly flow back fluid.

3.7.3 Noise impacts may occur as a result of:

- construction of the site and well pad; and
- drilling and fracking operations.

3.7.4 Impacts on ecology may include those on protected species and habitats as a result of development sites. All of the impacts of the development should be identified, assessed against baseline data and mitigated against wherever possible.

3.7.5 There may be short-term visual and landscape impacts during drilling.

3.8 Climate Change

3.8.1 Greenhouse gas emissions from shale gas development are primarily associated with two different elements of the process:

- emissions released by the extraction process; and
- the carbon footprint of shale gas when used for electricity production.

3.8.2 The process of extracting shale gas has the potential to release methane into the atmosphere. During exploration and appraisal there is a limited

economic use for gas released and flaring is employed to minimise emissions of greenhouse gases. 'Green completion technologies' will be utilised allow operators to capture the methane from the flowback fluid for flaring.

3.8.3 DECC recommend that '*shale gas exploration and production in the UK should be accompanied by careful monitoring and inspection of GHG emissions relating to all aspects of exploration, pre-production and production, at least until any particular production technique is well understood and documented in the context of UK usage.'*

3.8.4 A recent study undertaken by DECC found that the carbon footprint for shale gas is significantly less than that for coal when used for electricity generation and that the majority of carbon emissions will come from its final use as a fuel. The production of shale gas could increase global cumulative greenhouse gas emissions if the fossil fuels displaced by shale gas are used elsewhere. This is not specific to shale gas and would apply to the exploitation of any new fossil fuel reserve.

4 Planning for Shale Gas Development

4.1 Planning Application Process

4.1.1 Planning permission is one of the regulatory approvals required before any activity may start.

4.1.2 A minerals planning authority (MPA) will decide whether the activity is acceptable in planning terms at that particular location, after local communities and other interested people have had the opportunity to set out their views on the benefits and impacts of the proposal through a public consultation process.

4.1.3 The mineral planning authority in England will be the county or unitary authority that the application is proposed in.

4.1.4 Planning permission is required for each stage of the process; exploration, appraisal and production.

4.1.5 The MPA will assess economic, social and environmental factors like noise, dust, air quality, levels of traffic and other important environmental issues using local and national planning policies to make its decision.

4.1.6 In the case of shale gas there are two key policy / guidance documents that apply:

- National Planning Policy Framework (DCLG, March 2012); and
- Planning Practice Guidance (DCLG March 2014):

4.1.7 Important evidential material includes governmental statements, professional reports published and studies undertaken regarding shale gas development in the UK (key study references are included at the back of this note). Also relevant is the Ministerial Statement by Edward Davey (Secretary of State for Energy & Climate Change) published in December 2012.

4.1.8 If significant environmental impacts are likely, the minerals planning authority will require the operator to make an Environmental Impact Assessment (EIA).

4.2 Material Considerations

4.2.1 There is no statutory definition of "material considerations". They have been established through case law and a wide range of policy and evidential documents can also be considered as material.

4.2.2 Some "principal issues" for planning consideration for shale gas extraction are:

• noise associated with the operation
• dust
• air quality
• lighting
• visual intrusion into the local setting and the wider landscape caused by any the placement of any building or structure within the application site area
• landscape character
• archaeological and heritage features
• traffic
• risk of contamination to land
• soil resources
• the impact on best and most versatile agricultural land
• flood risk
• land stability/subsidence
• internationally, nationally or locally designated wildlife sites, protected habitats and species, and ecological networks
• nationally protected geological and geomorphological sites and features
• site restoration and aftercare

4.3 Development Plans

4.3.1 Shale gas is too recent a phenomenon to be addressed in local authority plans of produced either before or after the Planning and Compulsory Purchase Act 2004. Local policies are only likely to exist for conventional (i.e. not involving hydraulic

fracturing) hydrocarbon exploration, appraisal and production in areas which have seen this activity in the past.

4.3.2 Current development plan policies largely carry forward the approach originally set out in Department of the Environment Circular 2/85 'Planning Control over Oil and Gas Operations' :

- encourage exploration and production;
- maximum exploitation consistent with good practice;
- onus on the industry to demonstrate need.

4.3.3 Existing policies are also typically structured in terms of the 3 phases of development (exploration, appraisal and production) – to reflect:

- different policy considerations at each stage; and
- planning decisions should not pre-empt those to be taken later at the production stage.

4.3.4 MPAs which fall in areas that are the subject of PEDLs issued by DECC will need to consider the issues likely to be raised by shale gas development. This includes those MPAs which have up to date policies on conventional hydrocarbon exploration, appraisal and production.

4.3.5 In the interim, decisions on individual shale gas proposals are likely to give more weight to the 'material considerations' which apply.

National Planning Policy Framework (NPPF)

4.3.6 Key sections of the NPPF that should be given weight include:

Paragraph 14 - 'Presumption in favour of sustainable development'

Paragraph 142 - 'important that there is a sufficient supply of ……. Energy'

Paragraph 144 - 'local planning authorities should give great weight to the benefits of mineral extraction, including to the economy…..'

Paragraph 147 - 'When planning for …..unconventional hydrocarbons, MPAs should clearly distinguish between the three phases of development and address constraints on production and processing…..'

4.3.7 Planning Practise Guidance: Minerals

Paragraph 091 Ref ID: 27-091-20140306- 'there is a pressing need to establish – through exploratory drilling – whether or not there are sufficient recoverable quantities of unconventional hydrocarbons such as shale gas and coal bed methane present to facilitate economically viable full scale production.'

Paragraph 012 Ref ID: 27-012-20140306 - 'The planning and other regulatory regimes are separate but complimentary. …..the focus of the planning system should be on whether the development itself is an acceptable use of land and the impacts of those uses, rather than any control processes, health and safety issues or emissions where these are subject to approval under other regimes. MPAs should assume that these non – planning regimes will operate effectively.'

4.3.8 Ministerial Statement

Key extracts from the written ministerial statement by Rt. Hon. Edward Davey MP (Secretary of State for Energy and Climate Change) published on 13th December 2012 are as follows:

"….. appropriate controls are available to mitigate the risks of undesirable seismic activity. Those new controls will be required by my Department for all future shale gas wells."

"I believe that the industry has a good record, and that there are already in place robust regulatory controls on all oil and gas activities."

"……. emphasise the importance ……. of the integrity of the well. This issue is central to the regulation of the safety of well operations by the HSE. The Executive ….. will scrutinise the well design and operational plan. Additionally, the regulations require a full review …… by an independent competent person.

"the ….. hazard potential of all substances proposed to be injected into the ground will be assessed [by the Environment Agency] and the use of substances hazardous to groundwater will not be permitted."

"….. water used ….. if directly abstracted by the operators, requires a licence from the Environment Agency. Licences will only be given where the Agency is satisfied that a sustainable [water] supply is obtainable."

"disposal of waste water is subject to scrutiny by the [Environment Agency] and will require a permit ……. A case-specific radiological assessment is required in support of any application for a permit for the disposal of radioactive waste. The Agency will critically review any such assessment, and will only issue a permit if satisfied."

" ……. Subsidence ….. is not considered a risk because of the strength and load-bearing characteristics of these rocks." [i.e. the host shales and overlying strata]

Key issues for decision makers…."great weight"

The government is strongly supportive of shale gas exploration and appraisal but what does the Government say about shale gas production?

The NPPF says that **"great weight"** should be given to the protection of areas where development is to be restricted (e.g. SAC, SPA, Ramsar, SSSI, Green Belt, Local Green Space)

The NPPF also says that **"great weight"** should be given to the benefits [to the economy] of shale gas production.

Should the long standing principle established in Green Belt policy (NPPF paragraph 90), that mineral development is exempted from the definition of "inappropriate development" apply across the restricted areas or should shale gas production facilities be located elsewhere?

This is an issue that is going to have to be considered by decision makers where development for production is proposed in restricted areas.

4.4 Asking local people for their views

4.4.1 As part of the planning process, mineral planning authorities will make applications (and EIA where appropriate) available to local people and ask for their comments.

4.4.2 These will be considered with the planning application. Other organisations – such as the Environment Agency – will also be consulted on any application.

4.4.3 Each planning application must be publicised by a display on site and in local newspapers and information must also be available on the relevant local authority website. This must include a section on how interested people can submit representations about the application, giving a period of at least 14 days.

4.5 Public Concern

4.5.1 Shale gas development has already attracted a lot of attention from the media and the public. Public concerns include a wide range of things from groundwater protection to induced seismicity as a result of hydraulic fracturing.

4.5.2 Weight to be given to public concern has been considered by the courts and can be broadly summarised as:

- public safety is capable of being a material consideration;
- public opposition per se is not a material consideration;
- concerns may be a material consideration if they relate to a planning matter, are objectively justified and may have land-use consequences; and
- where public concern is not justified, it cannot be conclusive.

4.5.3 The Localism Act (2012) is often held to enable a MPA to refuse planning permission on the basis of the weight of public opinion. This is not the case and the points summarised above have not been changed by the new Act (see further reading at the back of this note for relevant case references).

Key issues for decision makers… a hot topic

One of the issues raised by objectors to shale gas development is its impact on climate change.

It is important that the impacts of emissions from individual well sites are assessed and mitigated against. It is also however important for MPAs to recognise that decisions on individual planning applications are not the vehicle for the expression of concerns about the Governments energy policy with regards to shale gas being part of the future energy mix and the impact of this on climate change.

Key issues for decision makers….not my problem

Policy makers need to design policies which strike the right balance between the role of the MPA and the other regulatory regimes involved in shale gas development. Planning Practice Guidance can be interpreted as oversimplifying the situation since it suggests that MPAs should not concern themselves with matters dealt with by other regulators.

Case law has established however, that impacts regulated under another regime and the existence of that regime are both material considerations for the planning decision maker. MPAs will therefore need to be satisfied that matters regulated by others have been addressed by the applicant and that the relevant regulatory body recommends that that there are no reasons to refuse planning permission due to such impacts.

4.5.4 The UK Onshore Operators Group (UKOOG) has adopted a "Community Engagement Charter" which includes a commitment to provide:

- £100,000 per well site where hydraulic fracturing takes place; and
- 1% of revenues allocated approximately 2/3rd to the local community and 1/3rd at the county level.

In addition to this, the Prime Minister announced on 13th January 2014 that Councils will be able to keep 100 per cent of business rates they collect from shale gas sites. This is double the current 50 per cent figure. DECC has stated that the benefits to be provided via the UKOOG scheme could be worth £5 to £10 million for a typical producing site over its lifetime and that the business rates could be worth up to £1.7 million a year for a typical site.

Key issues for decision makers…money makes the world go round

Regulation 122 of the Community Infrastructure Levy Regulations 2010 sets out the limitations which apply to the use of planning obligations. Regulation 122(2) states that: "A planning obligation may only constitute a reason for granting planning permission for the development if the obligation is:

- necessary to make the development acceptable in planning terms;
- directly relate to the development; and
- fairly and reasonably related in scale and kind to the development."

The type of local community benefits scheme which UKOOG has adopted fails all three of the tests set out in Regulation 122(2) MPAs are therefore likely to be advised that it would be improper to take any account of such financial benefits when determining applications.

Could payments made in accordance with the industry's Community Engagement Charter fall to be a 'material consideration' given the Localism Act 2011?

Section 143 of the Localism Act 2011 requires local planning authorities to have regard to any 'local finance considerations', so far as material to the application. 'Local finance consideration' means

- a grant or other financial assistance that has been, or will or could be provided to a relevant authority by a Minister of the Crown or;
- sums that a relevant authority has received, or will or could receive, in payment of Community Infrastructure Levy.

UKOOG Community Engagement Charter payments therefore appear to fall outside definition of a 'local finance consideration'.

5.1 Environmental Impact Assessment

5.1.1 Planning applications for 'deep drilling' at exploration, appraisal and production require an Environmental Impact Assessment where the area of works exceeds 1 hectare ('area of works' includes any area occupied by apparatus, equipment, machinery, materials, plant, spoil heaps, or other facilities or stores required for construction or installation) or is likely to give rise to significant environmental effects.

5.1.2 An Environmental Impact Assessment can be submitted voluntarily by developers even where the development may not fall into the scope of the EIA Regulations. As with all EIA development applications the 'scope' of the assessment should be agreed with the MPA.

5.1.3 An EIA requires baseline monitoring to be undertaken for groundwater and surface water, air and noise and seismicity before development commences. The impact assessment identifies mitigation of predicted impacts where necessary and specifies the scope for ongoing monitoring as required. Assessment of the cumulative effects of field development will be very important at the production stage of shale gas development.

5.2 Regulatory Controls

5.2.1 Shale gas development is subject to a range of regulatory controls co-ordinated by different UK regulators including the Minerals Planning Authority, Environment Agency, the Department of Energy & Climate Change, the Health & Safety Executive and the Coal Authority.

- Planning permission from the MPA
- Notification to EA of intention to drill
- Environmental Permit from EA
- Assessment of well by HSE and periodic inspections by independent person arranged by HSE
- Water abstraction licence from EA (if requiring more than 20m^3 of surface water or groundwater per day)
- Coal Authority to be notified if well passes through coal seam
- Fracturing plan to be submitted to DECC including appropriate plans to monitor seismicity
- Continued monitoring of fugitive emissions as required by the planning permission and permit

5.2.2 A number of studies have been undertaken and report produced with regards to the effectiveness of the current regulatory regimes in the UK to manage shale gas development. Regulators have also produced and are continuing to develop industry specific guidance as to how development will be monitored and managed and also how the different regulatory bodies envisage working together going forwards. Key document references are included at the back of this note.

5.2.3 The Royal Society/Royal Academy of Engineering – Shale Gas Extraction in the UK: A Review of Hydraulic Fracturing 2012 report states:

"Shale gas extraction in the UK is presently at a very small scale. […] Uncertainties can be addressed through robust monitoring systems and research […] Co-ordination of the [regulators] must be maintained. Regulatory capacity may need to be increased."

5.2.4 Public Health England – Draft Review of Public Health Impacts 2013 states:

"The currently available evidence indicates that the potential risks to public health from exposure to the emissions associated with shale gas extraction are

low if the operations are properly run and regulated."

5.2.5 In addition to the guidance provided by statutory regulatory bodies, the United Kingdom Onshore Operators Group (UKOOG) has published their UK Onshore Shale Gas Well Guidelines for the exploration and appraisal phases of development. The document contains details of what is considered to be good industry practise and it references relevant legislation, standards and practises.

Further Reading

Key Studies:

The Unconventional Hydrocarbon resources of Britain's onshore basins – Shale Gas, 2012, Department of Energy & Climate Change

The Carboniferous Bowland Shale gas study: geology and resource estimation, 2013, British Geological Survey, Department of Energy & Climate Change

Shale gas extraction in the UK: a review of hydraulic fracturing, June 2012, The Royal Society and The Royal Academy of Engineering.

Shale gas: challenges and opportunities - A briefing note by the Geological Society of London

Potential groundwater impact from exploitation of shale gas in the UK - Groundwater Science Programme Open Report OR/12/001, British Geological Survey, 2012

Review of the Potential Public Health Impacts of Exposure to Chemical and Radioactive Pollutants as a Result of Shale Gas Extraction (Draft for Comment) – Public Health England, 2013

Industry Guidance

UK Onshore Shale Gas Well Guidelines, Exploration and appraisal phase: Issue 1 February 2013, United Kingdom Onshore Operators Group.

Regulatory Guidance

Onshore oil and gas exploration in the UK: regulation and best practice, England (different versions available for Scotland, Wales and Northern Ireland), December 2013, Department of Energy & Climate Change

Fracking UK Shale: safety from design to decommissioning, February 2014, Department of Energy 7 Climate Change.

Onshore oil and gas exploratory operations: technical guidance, Consultation Draft, Environment Agency, August 2013.

Guidance Note: Regulation of exploratory shale gas operations – Environment Agency 2012

The Environment Agency and the Health and Safety Executive: Working together to regulate unconventional oil and gas developments, November 2012

Climate Change:

Fracking UK Shale: Climate change, February 2014, Department of Energy & Climate Change.

Potential Greenhouse Gas Emissions Associated with Shale Gas Extraction and Use, September 2013, Professor David J C MacKay FRS, Dr Timothy J Stone CBE, Department of Energy & Climate Change.

Case Law References

Regulation of impacts under other regimes:

Gateshead MBC v SSE and another (1994) 67 P&CR 179

Weight given to public opposition on the basis of public safety:

Newport BC v SSW [1998] Env LR 174, Midlands Probation Committee v SSE [1998] JPL 388, R v Broadland District Council Ex p Dove [1998] NPC 7

Minerals development in the Green Belt:

Europa Oil and Gas Ltd v SSCGL [2013] EWHC 2643 (Admin)

This PAS publication was researched and written by URS.

Web: www.pas.gov.uk

Email: pas@local.gov.uk

Tel: 020 7664 3000