

# Shale Gas Extraction

Fracking proposals and the planning system



**Advice for Planning Aid Volunteers,  
politicians, community groups and  
individuals affected by shale gas proposals**

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# Introduction

Applications for shale gas extraction (commonly known as fracking) have become one of the most emotive and controversial applications that a local planning authority can receive. Many local communities have become very concerned about the potential impact of shale gas extraction on their local area, resulting in a high level of scrutiny and representations on individual proposals. It is a process that is little understood by the public, but one that has been the subject of many sensational stories that has generated a fear of the unknown.

This advice aims to clearly outline the facts about fracking for Planning Aid volunteers, politicians, community groups and individuals affected by proposals. The advice applies to England, as it is the only part of the UK where shale gas extraction is currently permitted. The information contained in this note is derived from a training event for RTPI Planning Aid England volunteers in July 2016.

## Contents

This advice has two purposes.

### Part one

Provides general information on how shale gas is extracted, how applications are assessed and determined through the planning process. It also briefly outlines the role of other regulatory bodies.

### Part two

Goes on to brief RTPI Planning Aid England volunteers on how best to advise communities affected by shale gas extraction proposals. It assumes that the local community has no prior experience of shale gas extraction.

# Part one:

# Introduction to shale gas extraction

## What is shale gas extraction?

Shale gas extraction is a way of extracting gas (and sometimes oil) from shale rock. Shale gas is a natural gas (methane) and can be fed straight into the national grid.

Shale is a sedimentary rock with a high organic content. Pressure converts the organic content into methane. The gas is trapped within the rock strata which are impermeable. This is known as an unconventional source of gas, as it is not found in a reservoir void between layers of rock like other sources of oil and gas such as under the North Sea.

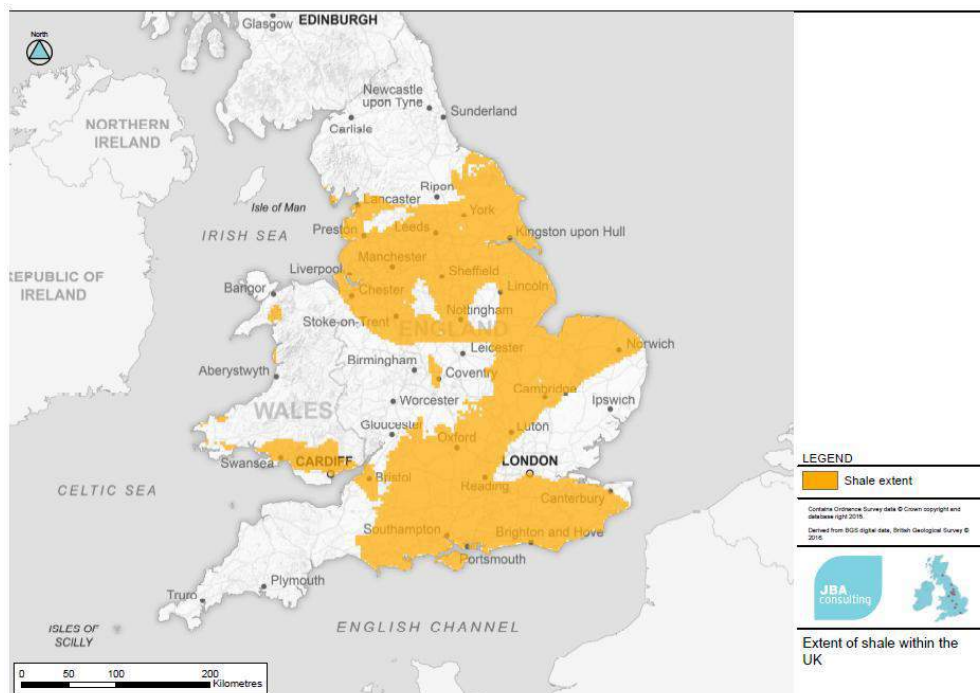
To reach the shale a vertical borehole well is drilled from the ground surface and then horizontally within the rock layer. Large amounts of water with sand and chemicals are pumped into the borehole at high pressure, which fractures the shale rock. The sand keeps the fissures open, which allows the gas to escape along the fracture paths to the borehole and up to the wellhead to be collected at the surface.

## Why are shale gas extraction proposals arising in England?

The UK Government believes there is a need to find new sources of natural gas. In the UK gas makes up one third of energy consumption, but reserves of North Sea gas are declining. Without any contribution from shale gas extraction imports of natural gas are expected to rise to 70 percent of the nation's demand by 2030. Shale gas is seen by the UK Government as a means of reducing the UK's dependence on imports.

## There are extensive deposits of shale rock.

This is particularly the case in North West England and Yorkshire extending into the North Midlands and Lincolnshire. There are also large tracts of shale in Southern England. The British Geological Survey<sup>1</sup> continues to investigate the location, depth and properties of the shale rock.



Extent of shale deposits across England and Wales.  
Source: JBA Consulting

## There is UK Government support for shale gas extraction.

The UK Government believes that shale gas has the potential to provide the UK with greater energy security, growth and jobs and are encouraging exploration to determine this potential. National planning practice guidance states there is a;

**“pressing need to establish – through exploratory drilling – whether or not there are sufficient recoverable quantities of shale gas<sup>2</sup>”.**

A moratorium blocking shale gas extraction was introduced in Wales in 2015, with a requirement for planning applications for “Unconventional Oil and Gas Development”

<sup>1</sup> [www.bgs.ac.uk/research/energy/shaleGas/howMuch.html](http://www.bgs.ac.uk/research/energy/shaleGas/howMuch.html)

<sup>2</sup> [www.gov.uk/guidance/minerals#planning-for-hydrocarbon-extraction](http://www.gov.uk/guidance/minerals#planning-for-hydrocarbon-extraction)

to be referred to Welsh Ministers, where the local planning authority does not propose to refuse them<sup>3</sup>. This was introduced whilst further devolution powers to the Welsh Government were considered. The Scottish Government also issued a moratorium in January 2015<sup>4</sup> and commissioned a series of independent research projects into hydraulic fracturing and coal bed methane to examine the potential environmental, health and economic impacts. These research reports have now been published and a public consultation is taking place during 2017<sup>5</sup>, in tandem with the Climate Change Plan, and the consultation on the draft Energy Strategy. A final decision will be taken by the end of 2017. In Northern Ireland the Strategic Planning Policy Statement (SPPS) states in relation to unconventional hydrocarbon extraction there should be a presumption against their exploitation until there is sufficient and robust evidence on all environmental impacts<sup>6</sup>.

## **The technology for shale gas extraction has been proven outside the UK.**

Although shale deposits are shallower and thinner than those found in England very significant volumes of shale oil and gas are being commercially produced in the USA. The United States is currently the only country where shale gas extraction is carried out on a large scale, with over one million operations. As the shale deposits exist at greater depths and thicknesses in the UK the experience of exploring for and extracting shale gas in this country is likely to be different. However, the technology is directly transferable, although it is not yet known how financially viable the shale gas extraction process could be in England. This will only become apparent after several exploratory wells have been drilled and initial test shale gas extraction carried out. The market price of gas at the time of production will also be a factor.

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<sup>3</sup> <http://gov.wales/topics/planning/policy/dear-cpo-letters/unconventional-oil-and-gas/?lang=en>

<sup>4</sup> <http://news.gov.scot/speeches-and-briefings/ministerial-statement-to-parliament-on-unconventional-oil-gas>

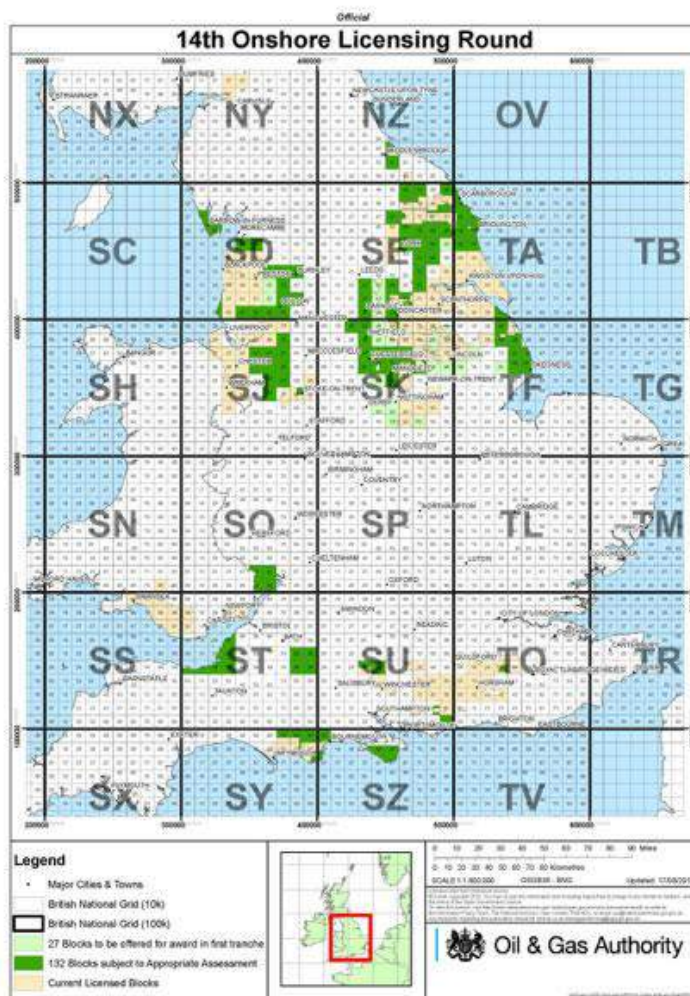
<sup>5</sup> <https://consult.scotland.gov.uk/energy-and-climate-change-directorate/fracking-unconventional-oil-and-gas/>

<sup>6</sup> [www.planningni.gov.uk/index/policy/spps\\_28\\_september\\_2015-3.pdf](http://www.planningni.gov.uk/index/policy/spps_28_september_2015-3.pdf)



# How is shale gas extraction regulated?

Exploration for oil and gas can only take place in areas where licences are awarded by the Oil and Gas Authority, part of the Government. Over numerous bidding rounds very extensive areas of land have been licensed across northern England including most of the Bowland Shale deposits that are considered accessible. Licences have also been granted in the south of England, such as in Dorset and the Isle of Wight. Bidding rounds take place on a biannual basis and the last bidding round was announced in December 2015.



Map showing 14<sup>th</sup> Onshore Licencing Round made by the Oil and Gas Authority in December 2015.

Source: Oil and Gas Authority

The Oil and Gas authority has an interactive map<sup>7</sup> showing all onshore oil and gas activity and the location of exploration licences to individual operators.

Before operators can begin extraction they must also receive planning permission from the relevant local planning authority. However, there are also several other agencies that need to be satisfied before all the necessary consents can be granted.

### Other regulatory bodies and their roles in shale gas extraction.

- **Oil and Gas Authority (part of the government Department for Business, Energy and Industrial Strategy)** [www.ogauthority.co.uk/](http://www.ogauthority.co.uk/) is responsible for granting initial exploration licenses and subsequently consent licences to drill at a particular location, as well as monitoring seismic activity.
- **Environment Agency** [www.gov.uk/government/organisations/environment-agency](http://www.gov.uk/government/organisations/environment-agency) is responsible for environmental permits to protect water resources, ensure appropriate treatment and waste disposal (including mining waste and waste water), emissions to air, and suitable treatment and management of any naturally occurring radioactive material.
- **Health and Safety Executive** [www.hse.gov.uk/shale-gas/index.htm](http://www.hse.gov.uk/shale-gas/index.htm) regulates the safety aspects of all phases of extraction and, specifically, oversees the design and construction of wells.
- **The Coal Authority** [www.gov.uk/government/organisations/the-coal-authority](http://www.gov.uk/government/organisations/the-coal-authority) holds mining records and need to be informed of drilling proposals involving coal measures.
- **Natural England** [www.gov.uk/government/organisations/natural-england](http://www.gov.uk/government/organisations/natural-england) is a consultee for proposals requiring assessment under the Habitats Directive and for planning application in certain circumstances. They can have a more direct statutory function outside of the planning system, for instance in cases directly affecting Sites of Special Scientific Interest (SSSIs) or protected species.
- **British Geological Survey** [www.bgs.ac.uk/shalegas/](http://www.bgs.ac.uk/shalegas/) holds geological records and conducts research and monitoring on a range of mineral resources, including shale gas. However, BGS has no direct statutory function relating to shale gas operations.

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<sup>7</sup><https://ogauthority.maps.arcgis.com/apps/webappviewer/index.html?id=29c31fa4b00248418e545d222e57dda>

# The shale gas extraction process

## What stages are involved?

The main stages of shale gas and oil extraction are:

### **Stage 1 – Exploration**

### **Stage 2 – Moving into production**

### **Stage 3 - Production**

### **Stage 4 - De-commissioning and restoration**

Stage 1 usually involves a separate planning application from stages 2, 3 and 4, which are usually combined. Some initial borehole drilling for monitoring purposes and ground radar surveys to establish how faulted the rock strata is, is normally carried out from slow moving road vehicles and constitute permitted development. If planning permission is given for the relatively short term (up to 6 months) exploration and test phase this does not mean that a precedent has been set for any subsequent permissions for a production phase, as different planning considerations apply, especially in terms of the potential environmental impacts. These include; water use, waste management, groundwater contamination, surface contamination, traffic, seismicity, landscape and visual and noise<sup>8</sup>.

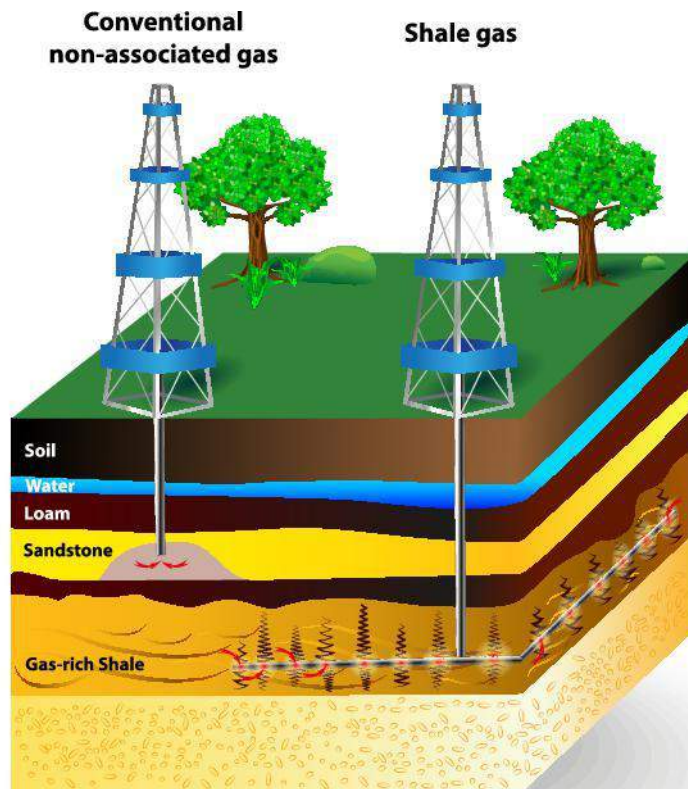
If an initial exploratory borehole reveals that shale deposits are likely to be suitable for gas extraction, following some initial test shale gas extraction the operation will be likely to enter stage 2 – moving into production. Sinking further boreholes and ‘moving into production’ could last several months. The production stage itself follows the shale gas extraction of the wells and could last many years. The sinking of new wells to different depths and in different orientations would enable the shale gas extraction and production cycle to be repeated from the same site. Much will depend on the on-going level of gas flow and commercial viability at the time.

The de-commissioning and restoration stage normally involves returning the site safely to its original condition unless some other treatment of the land is agreed with the planning authority.

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<sup>8</sup> [www.pas.gov.uk/documents/332612/6752551/Updated+26.4+Shale+advice+note+1/cb21f215-c483-42eb-af24-3d8363efb8f5](http://www.pas.gov.uk/documents/332612/6752551/Updated+26.4+Shale+advice+note+1/cb21f215-c483-42eb-af24-3d8363efb8f5)





Simplified diagram comparing shale gas extraction to a conventional onshore gas field.

Source: Designua/ Shutterstock

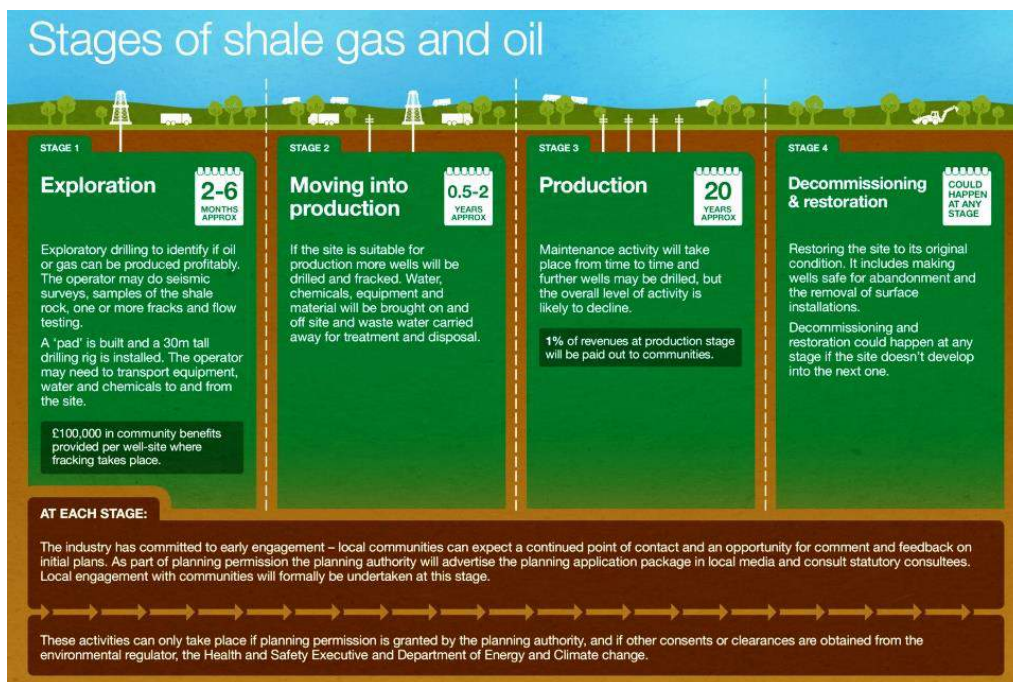
## What is involved in operating a shale gas extraction site?

Sites vary in size, but could be up to 2 and 3 hectares (equivalent to the area of 2 – 3 football pitches) and there may be potential for 10 sites per 10km square. When drilling operations are being carried out there will be a drilling rig which can be as high as 50 metres and if gas is being burned off the flare from the top of the rig could be 10 metres tall.

Once the rig is constructed traffic to and from an exploration site will comprise of delivery of well liners and associated drilling materials as well as workers' vehicles. During exploration pumps, sands and water will need to be delivered and waste water removed. However, the drilling process is likely to be 24 hours per day for a short period with the site lit at night. Shale gas extraction operations involving high pressure pumping is likely to be restricted to daytime hours by the proposal or the use of planning conditions. Once a site has moved into production more wells could be drilled and the rig is moved to different parts of the site. When shale gas extraction starts the main logistical issue will be to maintain a supply of water and dealing with the contaminated returned water. If water is supplied by road tanker and taken away afterwards to be treated then there will be considerable heavy vehicle

movements. On-site water recycling, which may be feasible, would reduce this traffic to an extent but the water can only be re-used a few times. Normally the gas itself is piped into the National Grid, if not then road takers would be required to transport it.

Once a site is solely in the production stage the built structures on the site would only need to be low in height, no higher than a single storey building and operations can be largely automated. However, in an effort to maintain gas flows there could be a periodic resumption of new well drilling, possibly re-fracturing the existing wells.



Stages of shale gas extraction

Source: Department for Business, Energy and Industrial Strategy.

# The Planning application process

## What stages of shale gas extraction require planning permission?

All stages require the approval of submitted planning applications except for some initial investigation and of monitoring boreholes and ground radar surveys. Operators are required to notify planning authorities at least 28 days before, of their intention to undertake such permitted development works, so that local authorities are able to raise issues that are particular to the locality that may constrain permitted development rights.

## What advance knowledge may there be of a planning application submission?

Operators are not under any obligation to enter into pre-application discussions with the local minerals planning authority or to provide any advance publicity of their precise intentions. However, given the complexity of the application and the likely high level of local interest in an application, most operators are likely to carry out various general public consultation events and have discussions with the planning authority. In such circumstances, however they may decide not to define the actual site at this stage to try so as to avoid pre-emptive protests and attempts by land owners to dissuade them from operating in their area. Onshore Oil and Gas (UKOOG) is the representative body for the industry and they have committed to ensure open and transparent engagement with local communities by requiring their members to sign a Community Engagement Charter<sup>9</sup>.

Operators need land owner consent to enter private land, but land owners have no rights to prevent horizontal drilling at depths of greater than 300 metres below their property. The depth is 1200 metres in groundwater source protection zone 1, National Parks, Areas of Outstanding Natural Beauty and World Heritage Sites.

## How will local communities get to know an application has been submitted?

Like any other planning application it will need to be published in the weekly list of submitted proposals. Local parish councils, where they exist, and district councils (in county areas) will be consulted. Site notices will be displayed and published in the

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<sup>9</sup> [www.ukoog.org.uk/community/benefits](http://www.ukoog.org.uk/community/benefits)

local press; additionally the occupiers of neighbouring property may be notified, although the latter is not a statutory requirement and will depend on the established practice of the authority.

## **What timescales are involved in reaching a decision on a planning application?**

As with all planning applications the nationally prescribed determination time periods will apply to shale gas extraction proposals. They will be classed as 'major' applications for which the maximum time period is 13 weeks from the date the application is submitted. However, an application for shale gas extraction will need to be assessed to see if the nature, size and location of the proposal is likely to have significant environmental effects and therefore need to be accompanied by an Environmental Impact Assessment (EIA) which means the statutory time period is 16 weeks. An EIA must cover the geographical area where the impacts occur, both above and below ground. This is likely to be a broader area than the application area.

In practice it is likely that the overall time for deciding a shale gas extraction proposal will take longer than 16 weeks, with the agreement of the applicant (early applications have been taking 12 to 18 months from application validation to the committee stage). However, the planning authority has to gear its work, on considering the application and setting deadline dates for consultation replies and public representation responses, to meeting the statutory timescale. As with any planning application if the decision date is missed the applicant has the right to appeal against the non-determination of the application. Also the Government has set performance targets for planning authorities to decide applications in a timely manner. Poor performance risks intervention actions by the UK Government. These applications are not excluded from the planning performance regime.

## **What roles do the other regulatory bodies have in the planning application process?**

The other regulatory bodies must be consulted by the planning authority on the submitted application, and are expected to respond in a timely manner. As with all correspondence on a planning application their replies will be part of the publicly accessible files. The planning authority will need to take into account the comments from these bodies and come to its own view. However, the local authority is required by national policy to assume that the other regulators have performed their duties correctly and will do so in the future if the proposal is implemented. The local planning authority cannot duplicate the statutory roles of the other regulators.

## What particular submission requirements and determination procedures are likely to be involved?

It has already been stated that an EIA is highly likely to be submitted with the planning application where shale gas extraction is involved. The EIA needs to meet the statutory requirements set out for such documents including the procedures for consultation with the key environmental bodies – Natural England, Historic England and the Environment Agency.

As with any large planning proposal the applicant and the local authority can enter into a Planning Performance Agreement (PPA) to set out a specific timescale for determining a shale gas extraction application based on the local authority's devoted specific staff resources to the consideration work and the applicant paying for these. Because of their likely controversial nature, some planning authorities may be reluctant to enter into PPAs for shale gas extraction schemes so as to try and ensure that there is no public perception that planning permission being 'bought' because of their likely controversial nature.

It is also likely that elected members will take a particular interest in the consideration of the application and its determination. Councillors with wards close to the application site may not be members of the determining planning committee' but may make procedural moves to oppose the proposal. A controversial shale gas extraction proposal is highly likely to be considered by the planning committee at a specially arranged meeting. This will be because of the level of interest generated means many people will wish to exercise a right to speak at the committee meeting. A day long or even longer meeting might be necessary for all the relevant material to be presented to councillors by officers and all other parties given time to voice their points of view.

As with any large and controversial planning application the Government, through the Secretary of State, has the right to intervene in the determination process. If this happens it is usually when the application is refused planning permission and the applicant appeals against that decision. The Planning Inspectorate deal with appeals on behalf of the Secretary of State but it may be that the final decision is one made by the Government after receiving the Planning Inspector's report.

The final opportunity to affect the outcome of any planning application is to pursue a judicial review of the decision. This is not a route to be taken lightly, a barrister will need to be engaged to pursue the matter and a case would need to be submitted based on an argument that a procedural error or errors have been made in deciding the application. The process can be costly especially for the 'losing' side as they may be required to meet all the parties' legal fees.



## Forward planning for shale gas applications

The Mineral Planning Authority (MPA) is responsible for mineral planning, including deciding planning applications. In some parts of England the responsibility for mineral planning resides with unitary authorities, which deal with all planning issues within their areas. In those parts of England with two tiers of local government (counties and districts), MPAs are the County Councils. National Parks are also MPAs. MPAs are required to produce a 'Minerals and Waste Development Framework' (MWDF), which shows how the MPA will plan for future provision of minerals and disposal of waste in their area. National Planning Practice Guidance (NPPG) encourages mineral planning authorities to:

**“make appropriate provision for hydrocarbons in local minerals plans”<sup>10</sup>.**

This will allow mineral planning authorities to highlight areas where proposals for shale gas extraction may come forward, as well as managing potentially conflicting objectives for use of land.

## What legitimate factors are taken into account in deciding a shale gas extraction application?

The planning authority is required to take full account of national planning policy and guidance<sup>11</sup> (which is generally supportive of shale gas extraction proposals) and its own local policies when deciding a shale gas extraction application. There will however also be a series of factors, other 'material considerations', particular to the submitted proposal that will need to be assessed. The main ones are:

- **Water use for hydraulic fracturing** – supplies and dealing with contaminated used water,
- **Waste management** – drill cuttings and flow back fluid,
- **Risk of contamination** – to ground water, surface water and soil,
- **Emissions** – dust, noise (particularly from night time drilling operations) and air quality including leaking methane gas arising from drilling operations, well construction, tanks and pipework. However the technical lead on site emissions is the Environment Agency as part of the Environmental Permitting process,
- **Seismicity** – any earth tremors caused by shale gas extraction will be picked up by on-going local monitoring; the level set to halt operations is very low and detectable only by sensitive equipment,

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<sup>10</sup> [www.gov.uk/guidance/minerals#planning-for-hydrocarbon-extraction](http://www.gov.uk/guidance/minerals#planning-for-hydrocarbon-extraction)

<sup>11</sup> [www.gov.uk/government/collections/planning-practice-guidance](http://www.gov.uk/government/collections/planning-practice-guidance)

- **Risk of subsidence** – surface level ground movement arising from fracturing of the underlying strata,
- **Transport and traffic** – construction traffic, deliveries, removal of waste fluids and gas (if not piped), and personnel movements,
- **Ecology** – the licensed blocks have been subject to a high level Habitats Regulations Assessment but a local assessment of protected species and other biodiversity features will be required covering at least 2 km surrounding the site, plus any protected sites further away that are linked and susceptible to ‘downstream’ effects,
- **Landscape and visual amenity** – shale gas extraction sites are normally in the open countryside and drilling rigs will often be visible: periodically there will also be gas flaring from the rig. Night-time operations will be lit and light pollution could be significant. It will be more feasible to screen the operations from view at the production stage given the low level structures that will then be present,
- **Climate change** – methane is a potent greenhouse gas and direct emission leaks from the wellhead are a legitimate concern in this regard, but the UK Government has ruled that arguments based around the use of the gas as a power source and the climatic effect of it being burnt and releasing carbon dioxide into the atmosphere as a result is not a factor to count against shale gas extraction proposals. This is mainly due to arguments that the use of gas facilitates movement away from more carbon intensive fuels such as coal,
- **Health and wellbeing** – at present there is no reliable cause and effect evidence that shale gas extraction operations can directly cause ill-health (due to this being a novel industry with no long term baseline data) but indirect effects may be legitimate concerns,
- **Public concerns and perceptions** – again there is argument that these are legitimate. It is not surprising that local people will be worried about possible adverse impacts given the amount of vivid publicity and the lack of a long track record of shale gas extraction practice in England.

### What factors are irrelevant?

- **Decrease in property values** – as with all planning applications,
- **Loss of individual views** – there is no ‘right’ to retain a view,
- **Cost of fuel** – as with any resource the market prices of hydro-carbons vary, but the commercial viability of a shale gas extraction proposal is for the operator alone to consider,
- **Depleted uranium in shale gas extraction fluids** – this radioactive element is NOT used in the shale gas extraction process. However, the returned contaminated water (also known as flowback) is likely to contain salts and organic materials, Naturally Occurring Radioactive Materials (NORMs) and heavy metals. The arrangements proposed for the treatment and disposal of

waste water is a legitimate issue for consideration (see above),

- **Gas/flames coming out of taps/deformed babies etc.** – these are scare stories circulating on the internet without any credible foundation that they are definitively linked to shale gas extraction schemes.

## Community compensation arrangements

There are two sources of compensation available to a community directly affected by a shale gas extraction proposal, a scheme devised by the industry and another from the Government.

The proposed Government scheme, the Shale Wealth Fund<sup>12</sup> (consultation responses are currently being considered) envisages that a ten percent share of the tax revenues derived from shale gas production will be made available to local communities with well sites over a 25 year period. Regional payments are also envisaged. Also 100 percent of business rates paid by operators will go to local authorities. In two tier areas generally 60 percent are allocated to the County Council and 40 percent to the District Council.

The industry's community benefits scheme<sup>13</sup> provides for payments to be made to the local community of £100,000 for each well site where shale gas extraction takes place at the exploration stage and if the well goes into commercial production a sum equivalent to one percent of the total revenues will be made available for community benefits.

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<sup>12</sup> [www.gov.uk/government/consultations/shale-wealth-fund](http://www.gov.uk/government/consultations/shale-wealth-fund)

<sup>13</sup> [www.ukoog.org.uk/economy/benefits](http://www.ukoog.org.uk/economy/benefits)

# Part two

## How to advise local communities

The local community representatives to be advised by the appointed Planning Aid volunteer will have either directly asked for assistance or been offered it by Planning Aid England and agreed to receive some help. The following are some key guidelines on how a volunteer can advise an affected community.

### Making first contact

As with any Planning Aid work involving members of the public, make clear from the outset that you are a Planning Aid volunteer and acting solely in that capacity.

If the shale gas extraction proposal has only very recently been made public, there may not be a properly organised group of interested local people. In such circumstances care will need to be taken about accepting how representative the contacting persons are of the local community. Separately advising many people individually in a single community is not likely to be practical. In any event a key first step is to carefully listen, either in person or on the telephone to what the concerns are held by the people you are in contact with. Try from the outset to direct attention to the legitimate concerns and away from those that are irrelevant.

### Establish how advanced the planning application is

If a planning application has been submitted, you can offer to support community representatives to make written representations on the proposal. However due to the set timeframes for determining planning applications it is important to establish from the local community or directly from the planning authority what the representations deadline is. If the deadline has already passed then the council should be contacted to establish if they are prepared to consider late representations.

### Try to act as an intermediary

The planning authority is likely to be very busy dealing with a complex planning application and a wide range of enquiries about it, so getting to speak to the relevant planning officers may be difficult. However, once you do, explain that your involvement will enable a coherent and relevant case to be presented by at least a

section of the local community and so will hopefully reduce the volume of comments being submitted.

If there are community engagement events planned, either by the operator or the planning authority to explain the proposals, offer to assist at these as an honest broker/facilitator.

### **Assist with making representations**

To do this you will clearly need to become familiar with all the key aspects of the proposal and have visited the area affected. Use this advice note to remind yourself of the relevant material considerations and explain to the local community representatives why these are important and that raising unfounded, spurious points will undermine the whole credibility of the representations being made.

### **Keep up to date with the progress of the application and offer to assist further**

Although the statutory time period for determining applications is relatively short, extensions of time may be agreed to by the applicant so the whole timeframe could become protracted. Look out for revised or new material submitted to accompany the planning application. The submission of these may lead to a further opportunity for the public to comment. Keep in touch with the case planning officers, but don't pester them!

When the application is due to be considered by the relevant committee ask the community representatives if they need help to prepare and present verbal comments to be made at the meeting. If officers recommend that planning permission is granted you may help by advising on conditions that could be imposed on consents, such as peak night time noise and lighting levels.



# Further information

- Guidance on fracking: developing shale gas in the UK  
[www.gov.uk/government/publications/about-shale-gas-and-hydraulic-fracturing-fracking/developing-shale-oil-and-gas-in-the-uk](http://www.gov.uk/government/publications/about-shale-gas-and-hydraulic-fracturing-fracking/developing-shale-oil-and-gas-in-the-uk)
- Government information on shale gas  
[www.gov.uk/government/publications/about-shale-gas-and-hydraulic-fracturing-shale gas extraction](http://www.gov.uk/government/publications/about-shale-gas-and-hydraulic-fracturing-shale-gas-extraction)
- Regulatory Roadmap showing how planning fits in with other procedures  
[www.gov.uk/government/publications/regulatory-roadmap-onshore-oil-and-gas-exploration-in-the-uk-regulation-and-best-practice](http://www.gov.uk/government/publications/regulatory-roadmap-onshore-oil-and-gas-exploration-in-the-uk-regulation-and-best-practice)
- Oil and Gas Authority (OGA) regulates, influences and promotes the UK oil and gas industry. [www.ogauthority.co.uk/](http://www.ogauthority.co.uk/) their resources include a map of areas licensed for exploration, along with general information about exploration licensing.
- Friend of the Earth has campaigned extensively against shale gas extraction in the UK [https://www.foe.co.uk/campaigns/climate/issues/shale gas extraction background information 33157](https://www.foe.co.uk/campaigns/climate/issues/shale-gas-extraction-background-information-33157)
- United Kingdom Onshore Oil and Gas (UKOOG) is the representative body for the UK onshore gas and oil industry [www.ukoog.org.uk/](http://www.ukoog.org.uk/)
- Planning Advisory Service (PAS) has a detailed briefing note Planning for Shale Gas and Oil  
[www.pas.gov.uk/documents/332612/6752551/Updated+26.4+Shale+advice+note+1/cb21f215-c483-42eb-af24-3d8363efb8f5](http://www.pas.gov.uk/documents/332612/6752551/Updated+26.4+Shale+advice+note+1/cb21f215-c483-42eb-af24-3d8363efb8f5)

## For more information about Planning Aid:

<http://rtpi.org.uk/planning-aid/>

## Written by:

Julian Jackson, MRTPI. Based on a Planning Aid England training event sponsored by Eversheds.

## Our thanks to the event speakers:

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