

Oil and Gas Development in Surrey: Q & A

Updated November 2017

This Q & A document has been prepared by Surrey County Council. It addresses some questions frequently associated with oil and gas development and particularly around hydraulic fracturing or “fracking”. The document will be updated as required to take account of the latest information:

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What is shale oil and gas and how is it different from conventional oil and gas?

Conventional oil and gas refers to oil and gas resources (also known as hydrocarbons) which are found in relatively porous sandstone or limestone rock formations with good permeability. Conventional oil and gas resources are located both off-shore (e.g. The North Sea) and on-shore.

Conventional extraction methods generally involve drilling a borehole down to the porous rock where oil or gas has formed in a reservoir. Because the oil and gas resources can flow relatively freely within the permeable rock all that's needed is for the gas or oil to be pumped out of the ground using beam pumps ('nodding donkeys') or electric pumps.

The conventional oil and gas industry is well established in the United Kingdom.

Unconventional gas and oil resources are commonly found in fine-grained sedimentary rocks known as shales. Shale rocks are very common. Shale gas and oil is trapped in the rock and cannot be recovered using conventional oil and gas extraction techniques due to their low permeability. Hence there is the need for 'fracking' (see below). Shale gas and oil is frequently found at great depths - sometimes 2 km and more beneath the surface. Despite vast reserves worldwide shale gas and oil was until recently thought to be uneconomic to exploit.

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What is fracking?

Shale gas and oil is hard to extract because it is trapped in the rock due to its low permeability (known as tight oil and gas) and does not flow freely when a well is drilled. The gas and oil has to be extracted using a technique known as hydraulic fracturing or, more commonly, as "fracking".

Fracking uses fluid, usually a mixture of water, sand and chemicals, pumped at high pressure into the rock to create narrow fractures to create paths for the gas to flow to the surface. Ninety eight to ninety nine percent of the fracking fluid is water and sand and any chemicals used have to be approved for use by the Environment Agency. The principles behind fracking have been used in the oil industry since the mid nineteenth century (in the US) to improve and extend oil production, but using it to extract shale gas is a relatively recent innovation¹.

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¹ For a simple diagrammatic explanation of shale gas and fracking see this DECC infographic: <https://www.flickr.com/photos/deccgovuk/sets/72157635443509437>

Is there on-shore gas and oil in the UK?

In the UK today, there are 120 on-shore sites with 250 operating wells producing conventional oil and gas.

The British Geological Survey (BGS) has estimated that the UK has more shale gas than previously expected (1,300 trillion cubic feet of shale gas in the north of England and the Midlands). If only 10% of this gas could be extracted this would still be enough to supply the country for at least 43 years. The most recent estimate by the British Geological Survey (BGS) suggests that the Weald Basin in southern England is most likely to contain shale oil rather than gas².

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Is there conventional gas and oil in Surrey?

There are reserves of conventional gas and oil in the south of Surrey. These have been exploited for many decades from the Weald Basin (for more information see below).

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Why shale gas is considered so important?

Over the past decade, fracking has allowed access to large volumes of shale gas in the United States that were previously uneconomical to produce. The production of shale gas has grown from less than one per cent of domestic natural gas production in 2000 to over 50% per cent in 2015. This is predicted to grow further.

Given the lead by the US and the potential huge reserves across the globe shale gas is seen as a potentially significant new and abundant source of energy. In the UK, over the last decade, we have moved from a net exporter of gas to a net importer as North Sea production has fallen.

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Is there shale gas in Surrey?

A recent British Geological Survey (BGS) estimation² concludes that there is no significant shale gas potential in the Weald Basin which includes the southern part of Surrey. Shale oil rather than gas is likely to be present. This means that the focus for exploration using fracking is likely to be the north of England for the foreseeable future.

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² See [Jurassic shale of the Weald Basin: Resource Estimation Report](#). BGS May 2014.

Will shale gas and oil be produced in the UK?

We are still at the very early stages of shale gas exploration in the UK (see below). So even if significant quantities of shale gas are estimated to exist in the UK, the question remains whether it will be practicable and/or feasible to extract large amounts. The geological and regulatory obstacles in the UK are far greater than in the US. Then there is the whole issue of competing land uses in a densely populated island and whether or not exploration, let alone production, will be publically and politically acceptable. Even if all these obstacles can be overcome shale gas will not be produced in the UK if it is not economic to do so.

It is now considered that shale oil rather than gas will be present in the south of England. Extracting shale oil rather than gas may prove even more difficult.

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Why are there environmental concerns about fracking?

Shale gas and oil extraction raises a number of environmental concerns in relation to:

- **Climate change** – shale gas is a fossil fuel and although burning relatively cleanly, its use will result in greenhouse gas emissions when the gas is combusted with a risk of methane leakages during drilling³. There is also concern that investment in shale gas extraction will divert investment away from the development of renewable energy including the production of bio gas from household waste. Shale oil would not be as clean as gas. Although leaks would not be a problem for climate change the burning of oil produces relatively more greenhouse gas.
- **Water consumption** – Large amounts of water are required although no more so than many other agricultural and commercial uses.
- **Contamination** - the chemicals used in fracking and their subsequent disposal with the possible risk of contaminating groundwater.
- **Land use** - competing land-use requirements in densely populated areas
- **Minor earth tremors**. The physical effects of fracking in the form of increased seismic activity⁴ [\(Back to top\)](#)

³ See [Potential Greenhouse Gas Emissions Associated with Shale Gas Extraction and Use](#) DECC September 2013 for a recent assessment of the climate change implications of shale gas

⁴ Minor earth tremors near Blackpool in 2011 were likely to have been caused by fracking. The tremors caused no structural damage or injury, but as a result the DECC (now BEIS) suspended fracking operations in the UK until the linkages between fracking and seismic activity were satisfactorily understood and safeguards put in place. This suspension has now been lifted.

The Royal Society and Royal Academy of Engineering has carried out an independent review of the major environmental and geological risks associated with the process of fracking in the UK and the extent to which these risks can be effectively managed. The main conclusion is that the risks associated with fracking can be managed effectively in the UK provided that operational best practices are implemented and regulated effectively. A copy of the report can be found [here](#)⁵. Public Health England (PHE) has published a draft report that concludes that the risks to public health from fracking for shale gas are low. Any problems publicised so far, such as in the US, are the result of operational failure or poor regulation⁶.

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What are Oil and Gas Exploration and Development Licenses (PEDLs)?

Licences for onshore drilling and exploration known as Petroleum Exploration and Development Licence's (PEDLs) are granted by the Oil & Gas Authority (OGA)⁷. Surrey County Council does not issue PEDLs.

Licenses give a company or group of companies (a joint venture) exclusive rights in a particular geographic location to invest the considerable time and resources needed to explore and appraise the extent of oil and gas reserves, and possibly move on to production. A PEDL does not give them permission to drill. Before drilling they must first obtain all the necessary regulatory approvals. Licences allow a company to pursue a range of exploration activities for conventional or unconventional gas

Before granting a license the OGA checks that an operator has the relevant insurance and will look at the technical competence of the operator.

More PEDLs have been issued through the 14th round of onshore oil and gas licensing managed by the OGA. In December 2015 a total of 159 additional licenses were offered in England to successful applicants. Only one of these was in Surrey and that was a renewal of a previous license⁸.

The map below shows the extent of petroleum licenses granted to companies by the OGA in Surrey.

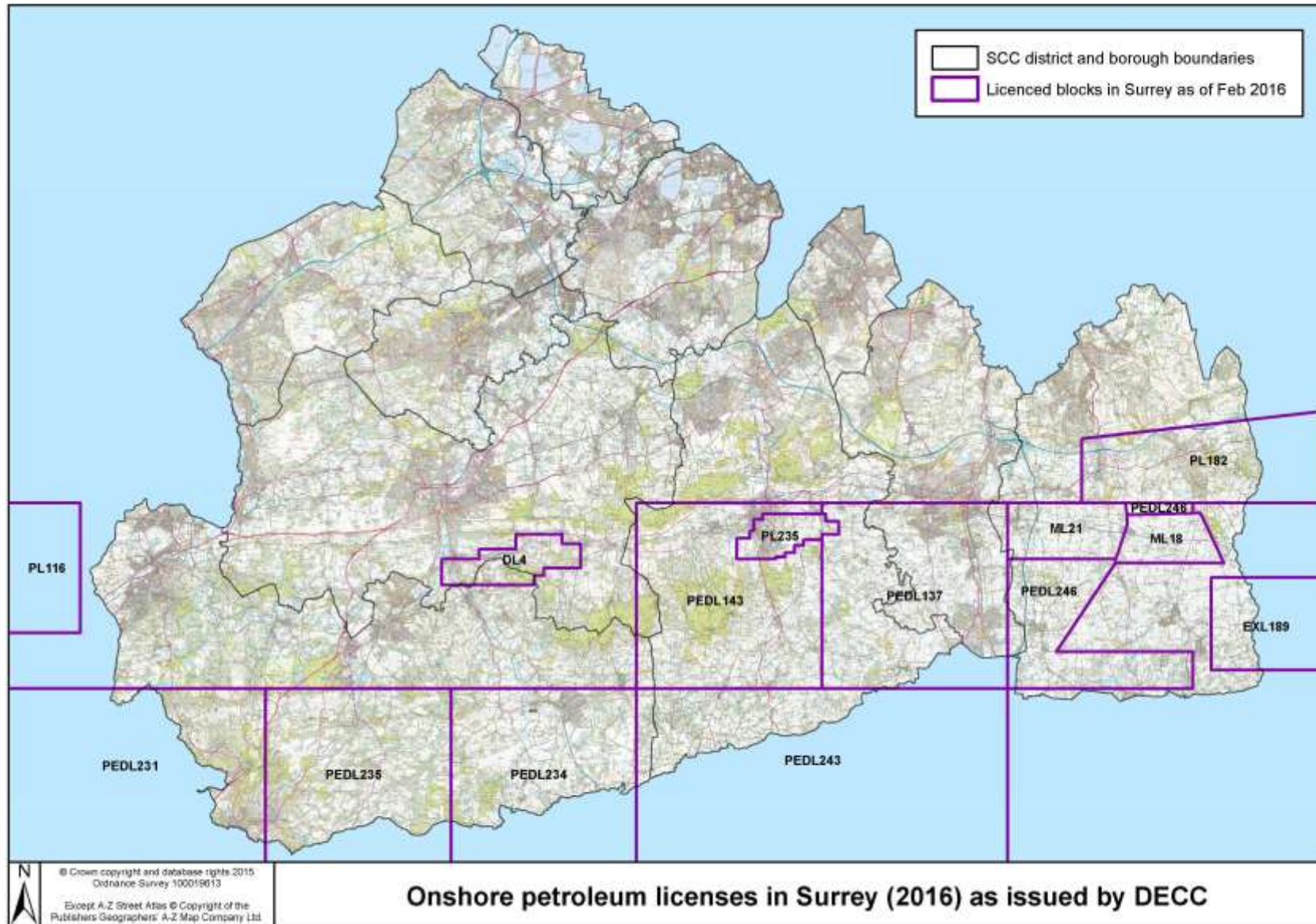
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⁵ Shale gas extraction in the UK: a review of hydraulic fracturing, The Royal Society and The Royal Academy of Engineering June 2012.

⁶ See [Review of the potential public health impacts of exposures to chemical and radioactive pollutants as a result of the shale gas extraction](#). PHE October 2013

⁷ For more information on PEDL licences see Oil & Gas Authority <https://www.ogauthority.co.uk/licensing-consents/>

⁸ For a map showing all the 14th onshore round of licensing blocks offered see OGA https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/485475/14R_Map_v1.pdf



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What is the regulatory framework and who determines planning applications?

Before a company can start exploring for conventional or unconventional oil or gas reserves they must:

- Obtain a Petroleum Exploration and Development Licence (PEDL).
- Obtain planning permission from the Minerals Planning Authority. In a two tier area such as Surrey this will be the County Council. The County Council will determine whether the planning application needs to be informed by an Environmental Impact Assessment (EIA).
- The Environment Agency may also require an Environmental Permit at the exploration phase, and are likely to require an abstraction licence if more than 20,000 litres of water per day is to be abstracted.
- At least 21 days before drilling is planned, the Health & Safety Executive⁹ (HSE) must be notified of the well design and operation plans to ensure that major accident risks are properly controlled.
- Gain a 'well consent' from the Oil and Gas Authority (If fracking is involved a 'consent to fracture'). If the intention is to 'frack', the Oil and Gas Authority would require a geological assessment, a 'Frack Plan', and the monitoring of seismic activity before, during and after fracking.

For more information about the regulatory framework including a regulatory roadmap see *Onshore oil and gas exploration in the UK: regulation & best practice guidance* issued by the DECC¹⁰

There are three phases of oil and gas extraction:

1. Exploration: This phase seeks to acquire geological data to establish whether hydrocarbons are present. This may involve drilling and, in the case of shale gas, fracking. We are only at the very early stages of shale gas exploration in the UK with the only exploratory drilling to date being in Lancashire.
2. Appraisal: This is where the operator needs further information about the extent of reserves and its characteristics to establish whether it can be economically exploited.
3. Production: This is the longer term process of extracting the oil and gas and will involve associated infrastructure such as pipelines, processing facilities and storage tanks.

At each phase a new and separate planning permission and all other environmental and safety consents and permits will be required.

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⁹ See HSE [The regulation of onshore unconventional oil and gas exploration \(shale gas\)](#)

¹⁰ [Onshore oil and gas exploration in the UK: Regulation & best practice](#). DECC, Dec 2013

What is the UK government's position?

Although the shale gas industry is in its early stages in the UK, the government considers there is great potential for it to increase our energy security, create jobs and generate substantial tax revenue.

The Government hopes that shale gas will be a significant part of the future energy mix. To meet challenging climate targets there will need to be significant quantities of renewables, nuclear and gas in our energy mix. The Government's position on shale gas exploration and planning has been made clear via a couple of ministerial statements 13 Aug 2015 and 16 September 2015¹¹. These statements set out the importance of exploring for shale gas in terms of the nation's economy and security. They also emphasises the Government commitment to ensuring local communities are fully involved in planning decisions that affect them - whilst emphasising that no one benefits from uncertainty caused by delay. The Government makes it clear that the Secretary of State will intervene if delay is seen as unjustified, whilst emphasising the importance of engaging with local communities. These statements should be taken into account in planning decisions and plan-making.

The Department for Business, Energy & Industrial Strategy (BEIS) has published guidance and answers to frequently asked questions: [Guidance on fracking: developing shale gas in the UK](#)

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What community benefits are being proposed?

The government is promoting an industry-led scheme of community benefits for unconventional gas. Operators will commit to provide £100,000 in community benefits at exploration phase, per well-site where hydraulic fracturing occurs and to sharing their proceeds with communities, providing 1% of revenues to communities that host them.

The Department of Energy and Climate Change have indicated that it is anticipated that community benefits associated with oil and gas development will be managed by the United Kingdom Community Foundations.

The Government consulted on the establishment of a Shale Wealth Fund in 2016.¹²
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¹¹ See: [Joint policy statement by DECC and DCLG on shale gas and oil](#). DECC and DCLG 13 August 2015

[Shale gas and oil policy: Written Statement SoS DCLG 16 September 2016](#)

¹² See <https://www.gov.uk/government/consultations/shale-wealth-fund>

What is Surrey County Council's position on fracking?

Surrey County Council does not have a specific policy either to promote fracking or to oppose it. Any planning application for hydrocarbon development for exploration, appraisal or production (whether using conventional or unconventional techniques such as fracking) will need to be considered on its merits and be considered against national policies and guidance and policies in the [Surrey Minerals Plan Core Strategy 2011](#). In particular policies¹³:

- MC2 - Protection of key environmental interests such as protected landscapes (e.g. the AONBs), sites of international, European or national importance for nature conservation (e.g. Ramsar Sites, SPAs, SACs and SSSIs), and important heritage assets (e.g. Scheduled Monuments, Registered Parks & Gardens, and Listed Buildings).
- MC3 - Mineral extraction in the Green Belt will only be permitted where the highest environmental standards of operation are maintained and the land restored to beneficial after-uses.
- MC12 - Planning applications for drilling boreholes for the exploration, appraisal or production of oil or gas will be permitted only where the mineral planning authority is satisfied that, in the context of the geological structure being investigated, the proposed site has been selected to minimise adverse impacts on the environment.
- MC14 - Mineral development will be permitted only where ...the applicant has provided information sufficient for the mineral planning authority to be satisfied that there would be no significant adverse impacts arising from the development.

The issue of shale gas and fracking was discussed at the Council meeting on 15 October 2013 in response to an original member motion relating to potential environmental impacts and the regulatory regime. The motion and minutes can be viewed [here](#) together with a webcast of the debate.

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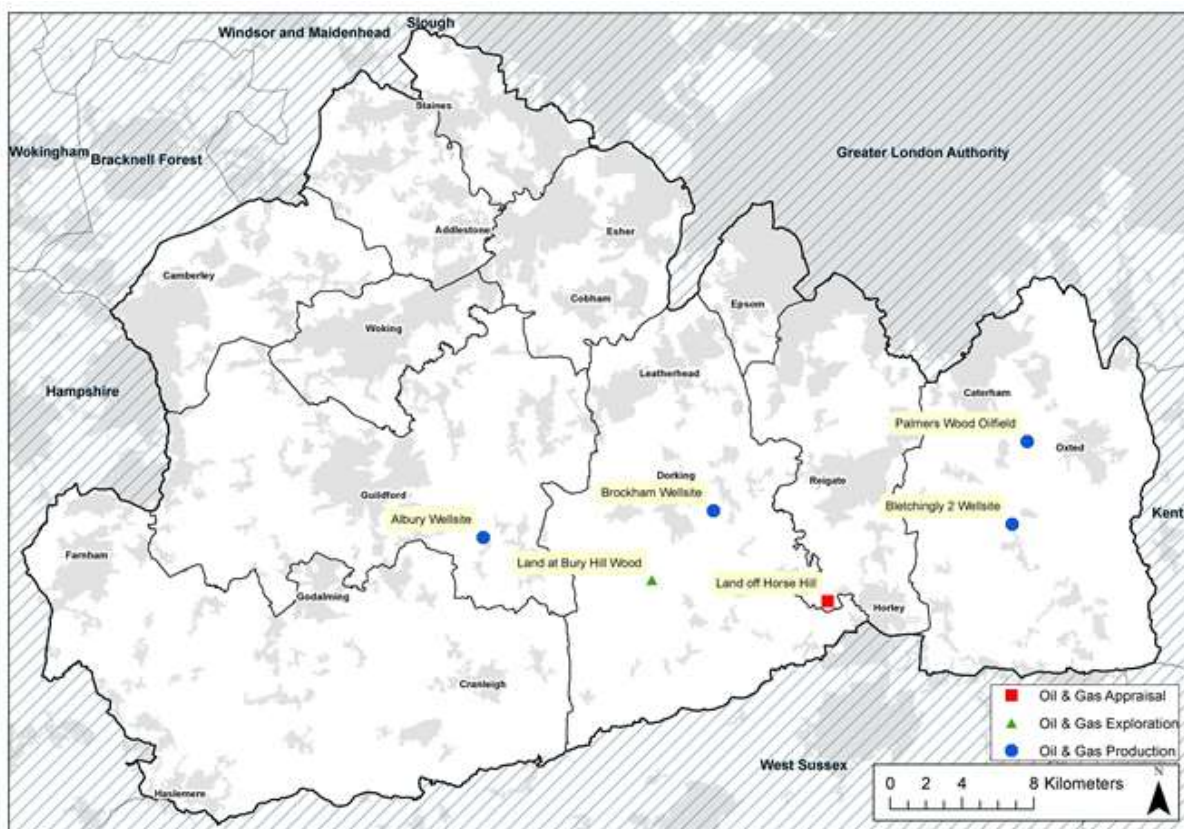
¹³ For the sake of brevity, the policy wording given here is only a summary/extract and reference should also be made to the full policy wording in the Minerals Plan Core Strategy.

What is happening within Surrey?

Since the 1950s, conventional oil and gas exploration and appraisal has occurred fairly widely across the southern part of Surrey. Limited quantities of conventional hydrocarbons are currently produced to the south of the North Downs. There are two operational sites producing oil: Felton's Farm, Brockham and Palmers Wood Oilfield, Godstone. In addition, the Albury wellsite has permission to produce compressed natural gas using conventional method.

There is one site currently with planning permission for conventional exploratory hydrocarbon operations at land at Bury Hill Wood, Dorking. There is one site currently with planning permission for conventional appraisal activities at Horse Hill, near Horley. There is one site currently with planning permission for conventional production activities at Kings Farm (Bletchingly 2 Wellsite), South Godstone. None of these sites have implemented these planning permissions at the date of publishing this note. See below for a map of oil and gas sites in Surrey.

Should you wish to view any of the planning applications associated with any of these sites regardless of the outcome, you can do so via our online [planning applications register](#).



NB. It must be emphasised that all the above exploration and appraisal is for conventional oil and gas. There is no fracking for shale gas taking place or proposed in Surrey.

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Where do I look for further information on fracking and shale gas?

General advice and information

Final conclusions and recommendations: Task Force on Shale Gas. December 2015
<https://www.taskforceonshalegas.uk/news-and-events/final-conclusions-and-recommendations>

Shale Gas and Fracking: House of Commons Library Updated 27 September 2016
<http://www.parliament.uk/briefing-papers/SN06073>

About Shale Gas and Hydraulic Fracturing (Fracking): BEIS last updated 13 Jan 2017
<https://www.gov.uk/government/publications/about-shale-gas-and-hydraulic-fracturing-fracking>

More technical and environmental advice

Assessing the Impact of Shale Gas on Climate Change: Task Force on Shale Gas, Third Interim Report 16 September 2015
<https://darkroom.taskforceonshalegas.uk/original/8879c0b838c6e09864638cbd6902b190:7f5b9e74c66410cff3253321938981d6/right-report.pdf>

Assessing the Impact of Shale Gas on the Local Environment and Health: Task Force on Shale Gas, Second Interim Report 15 July 2015
<https://darkroom.taskforceonshalegas.uk/original/e4d05cb29b0269c2a394685dad7516e6:c48ffe7884e9b668b8d4b7799a027874/task-force-on-shale-gas-assessing-the-impact-of-shale-gas-on-the-local-environment-and-health.pdf>

Environmental risks of fracking: - Eighth report of Session 2014-15. House of Commons Environmental Audit Committee 21 January 2015
<http://www.parliament.uk/business/committees/committees-a-z/commons-select/environmental-audit-committee/publications/?type=&session=26&sort=false&inquiry=2026>

Shale gas extraction in the UK: - a review of hydraulic fracturing. The Royal Society and Royal Academy of Engineering June 2012
http://royalsociety.org/uploadedFiles/Royal_Society_Content/policy/projects/shale-gas/2012-06-28-Shale-gas.pdf

Potential Greenhouse Gas Emissions Associated with Shale Gas Extraction and Use. DECC September 2013. Government response 24 April 2014:
<https://www.gov.uk/government/publications/the-governments-response-to-the-mackay-stone-report-potential-greenhouse-gas-emissions-associated-with-shale-gas-extraction-and-use>

The British Geological Survey has comprehensive information on the extent of shale gas reserves, how it differs from conventional reserves and the risks associated with extraction:

<http://www.bgs.ac.uk/research/energy/shaleGas/home.html#ad-image-0>

The planning and regulatory regime

Planning Regulation and Local Engagement: Task Force on Shale Gas, First Interim Report 25 March 2015

<https://darkroom.taskforceonshalegas.uk/original/4a404397432d0de3bf00268bf5b7949f:c b9c39ad61440801d4ad547d70d5fa9e/task-force-on-shale-gas-first-interim-report.pdf>

Planning Practice guidance for onshore oil and gas. DCLG July 2013

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

Onshore oil and gas exploration and development integration between regulatory agencies March 2013

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/139624/Onshore_Role_of_Regulatory_Agencies__March_2013_.pdf

Onshore oil and gas exploration in the UK: Regulation & best practice. DECC, Dec 2013

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/265988/Onshore_UK_oil_and_gas_exploration_England_Dec13_contents.pdf

Economics

The Economic Impacts of a UK Shale Gas Industry: Task Force on Shale Gas. Final Interim Report 15 December 2015

<https://darkroom.taskforceonshalegas.uk/original/e8f75f1fc890e7798b5835178111a742:1ffd504a15ac7f36d0f4a2879862ec60/task-force-on-shale-gas-final-report-economic-impacts.pdf>

The Impact of Shale Gas on Energy Markets: House of Commons Energy and Climate Change Committee 26 April 2013

<http://www.publications.parliament.uk/pa/cm201213/cmselect/cmenergy/785/785.pdf>

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