

**Frequently Asked Questions (FAQs) about Shale Gas Development  
Updated September 2016**

**1 About shale gas development**

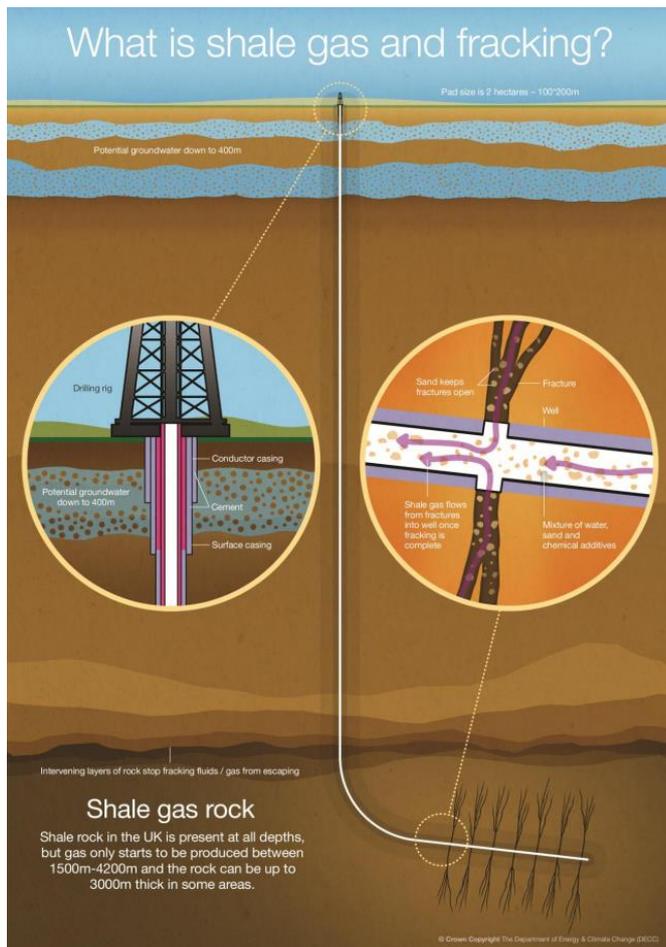
**1 What is shale gas development? What does it involve?**

Shale gas is made up of methane gas that is trapped in layers of impermeable shale rock found at depths between 1,500 and 4,200 metres.

Shale gas development involves constructing a well to drill into the ground vertically and horizontally to reach the shale rock layer. A mixture of water, sand and chemicals is then pumped under high pressure into the bore hole to fracture the shale rock to enable the gas to flow out. This process is known as hydraulic fracturing or 'fracking'.

The sand keeps the fractures in the rock open as the gas flows out of the rock.

The chemicals - around 2% - are used to provide lubrication for the drill to help to reduce friction.



*Image from Developing Onshore Shale Gas and Oil – Facts about 'Fracking'*

## **2 Why is there more interest in onshore shale gas development?**

Supplies of onshore oil and gas are becoming increasingly important as existing offshore reserves in the North Sea begin to decline.

In 2010, 125 million tonnes of oil and gas were produced in the UK – whilst 165 million tonnes were consumed. By 2025, the UK is likely to be importing close to 70% of the gas consumed, assuming shale gas is not developed.

At the moment around one third of UK energy demand is met by gas, but as we use less coal to produce electricity, more gas will be needed. Shale gas will help fill the gap alongside renewable and nuclear electricity, helping the UK reduce carbon emissions.

By developing onshore oil and gas reserves, the Government believes that we could provide greater security of energy supply.

The [National Planning Policy Framework](#) expects Mineral Planning Authorities to provide for the extraction of mineral reserves of national importance.

## **3 Who says shale gas development is safe?**

The process to secure permission for shale gas development is strictly controlled in the UK. The Government has set a framework for any company to follow which requires licences and planning permission for each of the three stages of development:

- Exploration
- Appraisal
- Extraction.

Planning permission is required from Nottinghamshire County Council at each of these stages.

Checks are made by the regulatory bodies involved at each of the three stages involved in the shale gas development process to make sure the site will operate safely.

For example:

- Seismic risks – checks are made by the [Oil and Gas Authority](#)
- Well design, construction, and integrity - [Health and Safety Executive](#)
- Mining waste and impact on water resources - [Environment Agency](#)
- The chemical content of fracking fluid - [Environment Agency](#)
- Flaring or venting of gas – [Oil and Gas Authority/Environment Agency](#) but [Nottinghamshire County Council](#) considers the noise and visual impacts
- The impact on water resources - [Environment Agency](#)
- The disposal of water following fracking – [Environment Agency](#).

In addition, the UK has over 50 years of experience of regulating the onshore oil and gas industry nationally. More than 2,000 wells have been drilled onshore during that time and companies work closely with the Health and Safety Executive to make sure sites are safe and to meet the requirements of any relevant legislation.

#### **4 Can shale gas development affect public health?**

[Public Health England](#) assessed the risk to human health of extracting shale gas in an October 2013 report. They evaluated available evidence on issues including air quality, radon gas, naturally occurring radioactive materials, water contamination and waste water. They concluded that:

*“the risks to public health from exposure to emissions from shale gas extraction are low if operations are properly run and regulated.”*

#### **5 How is groundwater protected during the fracking process?**

The [Environment Agency](#) is responsible for making sure that the site operator takes adequate steps to protect local water courses. Extraction will take place well below the water bearing rock – or aquifer – that provides drinking water, due to the depth of the shale resource.

The Environment Agency works closely with the [Health and Safety Executive](#) to make sure that the drilling well is constructed to a high standard to protect aquifers and drinking water supplies.

Groundwater is protected in the fracking process by:

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

The Environment Agency will assess the risks posed by the operations and decide whether they can be permitted. If groundwater contamination is possible, either directly by drilling fluids, frack fluids or indirectly by a substance disturbed by the borehole or fracking, the Environment Agency may find the environmental risk unacceptable and not permit activity.

The water and shale industries have, through [Water UK](#) and the [UK Onshore Operators Group](#), signed an agreement to work together to identify, watch and manage risks to water quality, including waste water processing.

#### **6 Are there sufficient supplies of water available for shale gas development to take place?**

Fracturing rock for shale gas and oil is likely to use large volumes of clean water, though the amount is not exceptional compared with other industrial or leisure activities.

The volume will depend on the site, but operating a shale gas well for a decade would typically use a similar volume to that needed to water a golf course for a month.

Water companies will assess the amount of water available before agreeing to supply an operator. If the operator applies for a licence to extract water themselves, it will be

granted by the environmental regulator only where a sustainable water supply is available. Water UK and industry have also agreed to cooperate on water demand, reuse and management.

## **7 How are the risks of earth tremors managed?**

In 2011, the then Department of Energy and Climate Change halted the use of hydraulic fracturing for shale gas in the UK after two tremors occurred in the Blackpool area. It carried out a careful assessment, drawing on recommendations from independent experts, a public consultation, and the Royal Society/Royal Academy of Engineering review.

In 2012, the then Department of Environment and Climate Change introduced measures to control seismic risks (earth tremors). Operators have to assess the location of any relevant geological faults before planning fracking operations for shale gas or oil. They must now submit to the [Oil and Gas Authority](#) the plan of operations, starting with small test fractures before main operations and install real-time monitoring systems. Operators must stop and investigate if they detect tremors above the normal range.

## **8 How would air pollution be controlled?**

Licences require operators to minimise the release of gases. Environmental permits and planning permissions may require monitoring or impose further limits. When it can't be economically used, natural gas must be 'flared' – burnt off - to reduce its global warming emissions. Natural gas may only be 'vented' – released into the air – when necessary for safety.

## **2 Preparing for a planning application for shale gas development**

### **9 What is an Environmental Impact Assessment (EIA)?**

#### **How does the scoping request and scoping opinion support an EIA?**

Certain planning applications for significant developments in environmentally sensitive areas are legally required to be accompanied by an [Environmental Impact Assessment \(EIA\)](#).

An EIA is a formal and detailed assessment of the likely impacts a particular development is anticipated to give rise to and how such impacts may be avoided or appropriately mitigated. Although only legally required in certain cases, the shale gas industry has undertaken to voluntarily submit an EIA for shale gas applications irrespective of whether or not one is legally required.

The first steps of the preparation of the EIA involve the prospective applicant submitting a scoping request by the applicant to the County Council.

The scoping request identifies a proposed site, outlines the proposed development, highlights the main environmental impacts and invites the County Council to provide a 'scoping opinion' setting out the environmental topics and key issues that the prospective applicant should include within their EIA. This includes site issues like impact on water resources, noise, visual impact, transport and restoration of the site.

Providing a 'scoping opinion' is a technical exercise and the 'scoping request' is therefore shared with various specialists both within the County Council and external organisations, such as the Environment Agency, for their comment and suggestions as to any additional points the EIA should consider.

Feedback will be used by the applicant to inform their proposals in readiness for the submission of a full planning application and EIA to the County Council.

As a technical exercise, the scoping stage does not involve members of the public, but they will have the opportunity to comment on the proposals as part of any pre-application publicity staged by a prospective applicant and in response to the full planning application as part of the formal consultation process.

## **3 About the National Planning Policy Framework for shale gas development and the local planning process**

### **10 What is the national and local planning policy for oil and gas exploration?**

The Planning Practice Guidance (July 2013) states that onshore oil and gas production can make an essential contribution to the country's prosperity and quality of life.

The National Planning Policy Framework NPPF (paragraph 147) states that: Minerals Planning Authorities should also when planning for on-shore oil and gas development, including unconventional hydrocarbons, clearly distinguish between the three phases of development - exploration, appraisal and production - and address constraints on production and processing within areas that are licensed for oil and gas exploration or production.

The national policy and guidance is interpreted locally in the [Nottinghamshire Minerals Local Plan](#), which is under review as part of the consultation process to create a new, up-to-date Minerals Local Plan covering the period up to 2030.

Any application for shale gas development would need to be considered against a range of relevant policies, including the existing 'adopted' Nottinghamshire Minerals Local Plan and the ['emerging' Minerals Local Plan](#) which includes a policy on hydrocarbons including shale gas.

Any shale gas development would need to be assessed against a wide range of issues including:

- Land allocation in the relevant development plan, for example for industry, housing etc
- Transport and routes to get to the site
- Wildlife and flora including any important habitats/protected species that might be disturbed
- Impact on water resources and potential flood risks
- Impact on any local residential areas.

If the County Council refused to develop policies about hydrocarbon development, the emerging Minerals Local Plan would be declared 'unsound', potentially exposing the Council to significant costs and delaying the adoption of an up-to-date Minerals Local Plan.

## **11 What is the process a company has to follow to obtain permission for shale gas development?**

A company has to initially obtain a [Petroleum Exploration Development Licence](#). These are awarded by the [Oil and Gas Authority](#). The licence does not give permission for the company to drilling or frack for shale gas.

The extraction of shale gas involves three phases of development:

- Exploration
- Appraisal
- Production.

Separate planning permissions and licences/permits are required at each stage. Hydraulic fracturing (fracking) is part of the appraisal and production stages but may not necessarily form part of the initial exploratory stage to check the underlying geology of the site.

Companies involved in the exploration for hydrocarbons must obtain the relevant permissions or licences from the following key regulators:

- [Oil and Gas Authority](#)
- [The Minerals Planning Authority](#). The Minerals Planning Authority for Nottinghamshire is Nottinghamshire County Council
- [The Environment Agency \(EA\)](#)

- [The Health and Safety Executive \(HSE\)](#)

Other bodies such as the [Coal Authority](#) may also be involved. Permission will also be required from the landowner.

Any firm wanting to extract shale gas would need to demonstrate how their application addresses all the relevant planning considerations and policies before planning permission could be given by Nottinghamshire County Council.

## 12 What do each of the three phases required to extract shale gas involve?

The extraction of shale gas involves three phases: exploration; appraisal and production. Planning permissions and licences/permits are required for each stage.

Exploration phase: Seismic surveys are used to understand the geological structure. Exploratory drilling (possibly including some hydraulic fracturing) is used to determine whether hydrocarbons are present. It is a short-term but intensive activity.

Testing and Appraisal phase: This phase may involve further drilling to establish whether the deposit can be economically exploited. It includes hydraulic fracturing and is usually a relatively short-term activity, typically between six months and two years.

Production phase: This involves the long-term production of oil or gas commercially and again includes hydraulic fracturing.

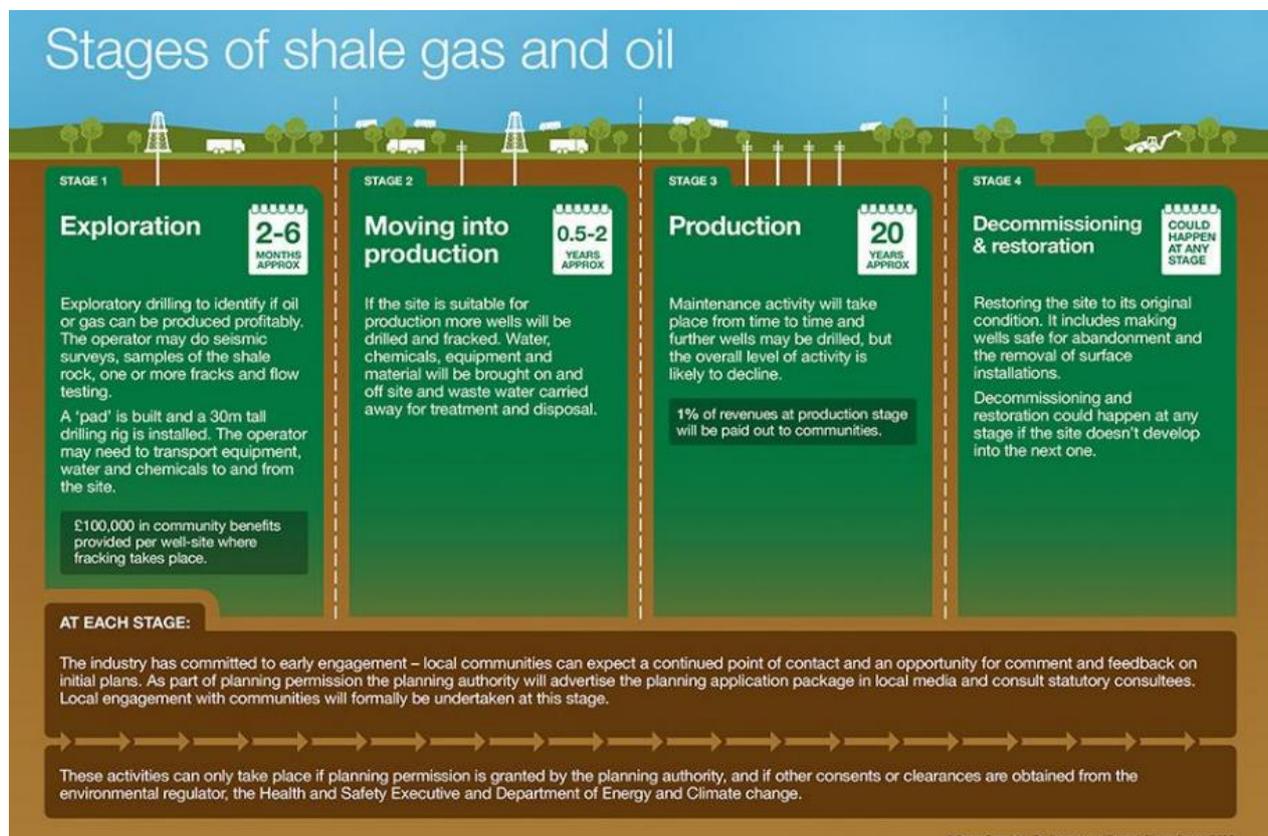


Image from *Developing Onshore Shale Gas and Oil – Facts about 'Fracking'*

### **13 What do each of the organisations involved in the licensing process for shale gas development do?**

#### **A The Department of Business, Energy and Industrial Strategy (BEIS)**

In July 2016, the Department of Energy and Climate Change (DECC) became part of the [Department for Business, Energy and Industrial Strategy \(BEIS\)](#). BEIS have responsibility for setting central government policy, in particular on Energy Security and Energy Mix and Oil and Gas legislation.

Following the granting of Royal Assent to the Energy Act in May 2016 the Oil and Gas Authority (OGA) was established as an independent regulator in the form of a government company. The OGA will act as an independent agency with regulatory powers. OGA will issue Petroleum Exploration and Development Licences (PEDL). These give the licence holder exclusive permission to drill under the licence area once other permissions and approvals are in place. The OGA assess the risk of seismic activity caused by drilling, such as the risk of an earth tremor. They also grant consent for flares or vents – a safety device to burn off gases which cannot be used.

In Nottinghamshire, 17 Petroleum Exploration and Development Licences (PEDL) have been issued by the then Department of Energy and Climate Change (DECC). The licences were issued in 2008 to a number of companies on the north Nottinghamshire area. A further round of licensing is underway although as yet the OGA have yet to confirm successful bidders.

PEDL licences allow the holder to explore for and develop unconventional gas; to “search for, bore and get hydrocarbons” subject to access rights.

#### **B Nottinghamshire County Council - the Minerals Planning Authority**

Securing planning permission from the [Minerals Planning Authority](#) – the relevant local county council in ‘two tier’ local government areas – is required at each of the three stages of shale gas development – exploration, testing and production. Planning permission has to be obtained for any wells and wellpads to bore into the ground to extract the shale gas.

The planning process assesses applications against national and local planning policy taking into account any material planning considerations to establish whether the development is an acceptable use of the land.

This involves assessing the application against a range of practical issues contained in the Minerals Local Plan such as:

- Land allocation in the relevant development plan, for example for industry, housing etc
- Impact on residential areas through lighting, dust and noise
- Landscape and visual impact
- Traffic and transport routes

- Heritage features and archaeology
- Wildlife and flora
- Water resources and flood risk
- Site restoration and aftercare once the works have been completed.

The control of drilling processes, health and safety issues including the effect on human health and site emissions are subject to approval from other regulators including BEIS, the EA and the HSE.

The County Council is not required to delay a planning decision about shale gas exploration until the licenses from other regulatory bodies have been provided.

### **C Environment Agency (EA)**

The site operator has to demonstrate to the [Environment Agency](#) that they have taken steps to protect local water courses, including groundwater resources. The EA also make sure that the operator is treating and disposing of waste water properly and that any emissions into the atmosphere are controlled. The operator will also have to show how they will handle any naturally occurring radioactive materials.

### **D Health and Safety Executive (HSE)**

The [Health and Safety Executive](#) (HSE) review the workings on the site to make sure that the operations are carried out safely to meet current legislation. Their focus is to make sure that the extraction of the gas is carried out safely including the construction of an appropriate well casing for the borehole.

#### **4 About Nottinghamshire County Council's policy on shale gas exploration and development**

##### **14 What is Nottinghamshire County Council's policy on shale gas exploration and development?**

As the Minerals Planning Authority, Nottinghamshire County Council is responsible for preparing the [Minerals Local Plan](#), the blueprint for future mining and quarrying in the county including gas and oil.

The [latest Plan](#) is in preparation and includes a policy and supporting information on the extraction of hydrocarbon minerals which include shale gas.

The Plan recognises that potential shale gas resources are thought to exist in deeply buried shale deposits found in the far south and the north of the county and describes the process by which the gas is extracted.

The policy for hydrocarbon minerals will be used to determine all future planning applications for hydrocarbon development in Nottinghamshire, including shale gas extraction, oil, gas, mine gas, coal bed methane and underground coal gasification.

The policy makes clear that applications for any exploration, appraisal or extraction of hydrocarbons will only be approved if they do not adversely affect the local environment or nearby communities. This means that any applicant would have to prove how they could effectively manage issues like traffic and noise as well as safeguard local important wildlife habitats and water resources as part of any future planning application.

Without the policies contained in the plan, planning applications for future hydrocarbon development in Nottinghamshire could only be assessed against the broad National Planning Policy Framework policies, reducing the extent to which local issues could be taken into account.

The next stage in the development of the Minerals Local Plan will be the submission of the draft document which will be undertaken in winter 2016 and subsequently submitted to the Secretary of State for independent examination at a Public Inquiry prior to formal adoption.

## **5 The role of the Planning and Licensing Committee and the consultation process**

### **15 What is the role of the Planning and Licensing Committee?**

Most major planning applications, including those for hydrocarbon development accompanied by an Environmental Impact Assessment in Nottinghamshire are determined by the County Council's [Planning and Licensing Committee](#).

The Committee makes decisions based on facts using the information presented by applicants with commentary and analysis from Planning Officers taking into account responses from technical consultees and the views expressed by other interested parties.

The [Minerals Local Plan](#) provides a framework through the policies it contains to support decision making by the Planning and Licensing Committee along with national policy and other planning guidance.

All decisions are made impartially by members of the Planning and Licensing Committee. The Planning and Licensing Committee acts in a quasi-judicial capacity. This means it makes decisions on an impartial basis taking into account the relevant facts and applicable law.

Both objectors and supporters may, with prior approval, speak at a meeting of the Planning Committee before a planning application is determined, although rules apply as to registering and there are limits on the numbers of speakers and duration.

### **16 How are the proposals publicised to give local residents the opportunity to comment on a shale gas application?**

Nottinghamshire County Council will publicise the fact that it has received a planning application by placing a press notice, erecting site notices and writing directly to people who live close by.

The County Council encourages people to submit their views in writing - preferably by email - about any planning applications that might affect them. The publicity arrangements specify the relevant period within which written comments should be made, although the Case Officer may be agreeable to extend this period in some circumstances.

During its consideration of the planning application, the County Council may consider that the applicant needs to submit further information to enable informed views to be reached on particular issues. Any additional information would be formally requested as part of the Environmental Impact Assessment and would be subject to further publicity and consultation. Interested parties would therefore have the opportunity to express views on the additional information and any changes to the proposed development.

In addition, the shale oil and gas industry has set out its own Community Engagement Charter. This includes commitment to engage with communities early at each stage of the planning process.

## **17 How are statutory and non-statutory organisations consulted on a planning application?**

The County Council consults a range of local and national statutory and non-statutory organisations to gain their views about the planning development.

The statutory organisations that would be consulted include:

- The relevant local district council(s)
- The County Council's Highways department
- The Environment Agency.

Non-statutory organisations that may be consulted include:

- Nottinghamshire Wildlife Trust
- The County Council's Landscape Team
- Emergency Services.

## **18 How do I submit my views about a planning application?**

It's easy to register comments about a planning application. People can do this in a number of different ways:

**Online** by viewing the current list of applications at:

<http://www.nottinghamshire.gov.uk/planningsearch/searchresults.aspx?mode=pub>

**By emailing:** [development.management@nottscc.gov.uk](mailto:development.management@nottscc.gov.uk)

**Or write to:**

Development Management  
County Hall  
Loughborough Road  
West Bridgford  
Nottingham  
NG2 7QP.

Always include your name and address to validate the views expressed.

## **19 What issues can I address when commenting on a planning application?**

The County Council can take certain issues into account. These issues include:

- Whether the proposal is an acceptable use of the site
- The visual impact of a new building or structure (location, size, and appearance) on the local area and on the wider landscape (including designated landscapes)
- The impact on neighbours and the surrounding area resulting from overshadowing, overlooking, loss of privacy, and disturbance caused by noise and lighting
- The impact on the local environment including dust and air quality
- Whether new roadways, accesses, and parking are adequate and the impact on highway capacity and road safety
- The impact on the rights of way network
- The impact on the historic environment, including archaeological and heritage sites or features
- The impact on ecology and biodiversity, including designated wildlife sites, and protected habitats and species
- The risk of contamination to land and impact on soil resources

- The risk of flooding
- Land stability and subsidence
- Site restoration and aftercare and
- Consistency with national and local planning policies.

The County Council **cannot** take into account issues that are not legitimate considerations of the planning process. This includes:

- The number of letters or petitions received about an application as a reason to refuse permission
- The demand for, or alternatives to, onshore oil and gas resources
- Emissions, control processes, or health and safety issues that are matters to be addressed under other regulatory regimes
- Loss of views
- Boundary and other disputes between neighbours, for example, private rights of way or covenants or
- Loss of property value.

## **20 What weight is given to the views of the public and others?**

The responses submitted by statutory consultees and representations by objectors and supporters on planning grounds are 'material considerations' and they are fully considered before a decision is made.

However, it should be noted that the number of objections or supporting representations received is not a planning consideration, regardless of how many people submit an opinion or sign a petition. Members can only consider objections and representations which address planning issues with proven, factual information. Planning issues include the location of the site, transport and access, the identified land use for the site in local development plans, wildlife, flora and how water resources could be affected.

## **21 What happens if planning permission is refused?**

If a planning application is refused by the County Council, it has to give valid planning reasons why it has done so. The applicant has the right to appeal the decision and a Planning Inspector is appointed by the Government to decide whether permission should be granted.

If an appellant considers that the County Council has acted unreasonably, e.g. that there is insufficient evidence to support a reason for refusal, they can also seek to recover the costs of the appeal; the Inspector would determine whether costs should be awarded against the County Council.

## **22 Can I appeal against a decision made by the County Council?**

Only the applicant has a right of appeal. Therefore, if an application is refused permission, the applicant can lodge an appeal but if a third party objects to a planning application and it gets approved, they do not have a right of appeal.

Objectors may challenge a decision to approve a planning application by seeking to have that decision judicially reviewed. However, this can only relate to a 'point of law' and is a costly process so parties are strongly advised to seek legal advice in the first instance. A legal challenge must be made within six weeks of the decision.

## **6 Historical background**

### **23 Has Nottinghamshire County Council ever considered a fracking planning application before?**

No, we have not considered a fracking application before, although we have experience of dealing with applications for drilling boreholes and contentious development proposals.

### **24 Has fracking ever taken place in Nottinghamshire in the past?**

To date, fracking for shale gas has not taken place in Nottinghamshire.

### **25 How many oil/gas site permissions have been granted in Nottinghamshire? How many wells are already in operation?**

Nottinghamshire has reserves of oil in the north-eastern, central and southern areas of the county. During World War II, oil extraction started from land at Eakring. Since then, further oil fields have been identified mostly in north Nottinghamshire but ranging as far south as Rempstone near the county boundary with Leicestershire.

The oil recovered in Nottinghamshire is high quality and is mainly used in the plastics and chemical industries, rather than as fuel. The majority of oil is taken by rail from the central collecting station at Gainsborough to refineries at Immingham in Humberside.

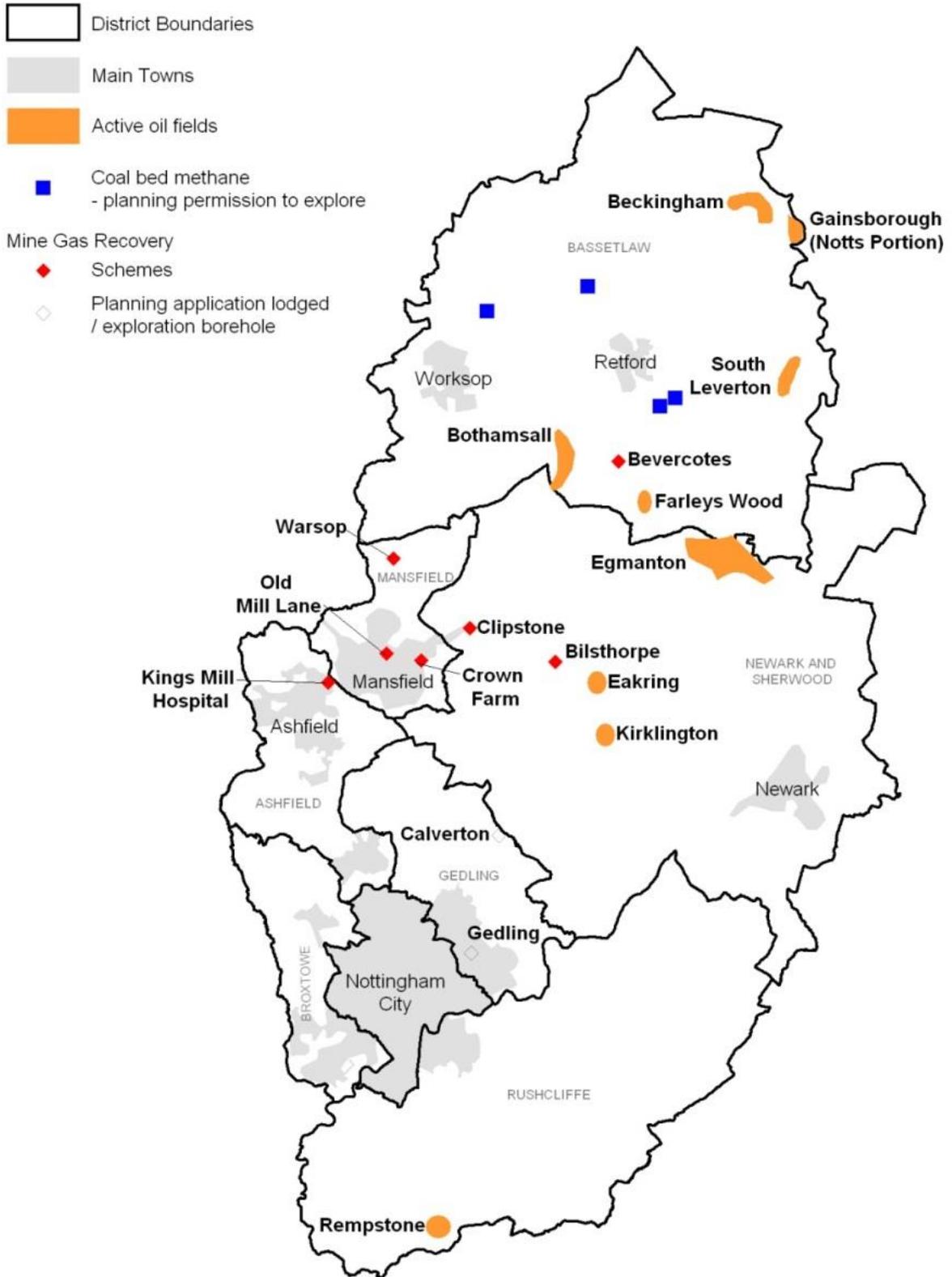
At the moment there is only one permission for oil and gas exploration in the county, for conventional hydrocarbons like gas and oil. This is at Radcliffe-on-Trent and involves conventional drilling, not shale gas exploration.

Sites in Nottinghamshire currently producing oil/gas include:

- Beckingham
- Bothamsall
- Eakring.

# Plan 1 - Nottinghamshire Hydrocarbons - Current Activity

Survey Date December 2010



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British Geological Survey. 2003. Digital Geological Map of Great Britain 1:625 000 scale (DiGMapGB-625) Superficial Deposits data [CD-Rom] Version 1.10. Keyworth, Nottingham: British Geological Survey. Release date 30-04-2003

## **7 About oil and gas**

### **26 What is conventional oil and gas?**

'Conventional' oil and gas refers to oil and gas resources (known as hydrocarbons) which are situated in sandstone or limestone rock formations.

Conventional oil and gas does not include shale gas or coal bed methane extraction.

### **27 What is unconventional oil and gas?**

Natural gas produced from shale and coal is often referred to as 'unconventional' and this refers to the type of rock type in which it is found.

### **28 What is shale gas?**

Shale gas is methane found in rocks deep below the earth's surface which had previously been considered too impermeable ('tight') to allow for economic recovery. Shale gas is considered to be 'unconventional'. Technological advancements over the last decade have made shale gas development economically viable.

### **29 What is coal bed methane?**

Many coal seams contain natural gas, either within the seam itself or the surrounding rock. This coalbed methane is trapped underground, and is generally not released into the atmosphere until coal mining activities take place.

Historically, coalbed methane has been considered a nuisance in the coal mining industry, however, coalbed methane has become a popular unconventional form of natural gas. This methane can be extracted and injected into natural gas pipelines for resale, used as an industrial feedstock, or used for heating and electricity generation. Coal Bed Methane is considered to be 'unconventional'.