

# Derbyshire & Derby Development Plans Joint Advisory Committee Towards a Strategy for Hydrocarbons

Derbyshire County Council and Derby City Council (the mineral planning authorities) are working together to prepare a joint minerals local plan. It will be called the Derbyshire and Derby Joint Minerals Local Plan and cover the geographical area of Derbyshire, excluding the Peak District National Park.

It will cover the period to 2030.

Minerals are essential raw materials, which are used to provide the infrastructure, buildings, energy and goods that our country needs. They are vital for economic growth and our quality of life. They are, however, a finite resource and can only be worked where they are found. It is important therefore, that we make the best use of them to enable their long term conservation.

The Plan area has a wealth of mineral resources. Mineral extraction and development has, for a long time, been a part of the Derbyshire landscape and an important part of the local economy, making an important contribution to the national, sub-regional and local need for minerals. Whilst mineral working can also provide environmental benefits, residents and local businesses are often concerned about any unwelcome impacts.

A clear, long-term Minerals Local Plan is a way of setting out the future scale and location of mineral working in the Plan area to support economic growth whilst protecting the environment and local communities. It is important that the Minerals Local Plan gets the balance right between the needs of the economy, the environment and local communities. It is vital, therefore, that communities, businesses, organisations and people throughout Derbyshire and Derby are involved in developing the Minerals Local Plan so that, as far as possible, it contains an agreed set of priorities that will deliver sustainable minerals development that is right for the Plan area.

**This consultation presents a series of papers, which seek to develop further the emerging vision and objectives, strategies and policies of the Minerals Local Plan. We now need your comments, suggestions and input on these papers, which will then be used to feed into the Draft Minerals Local Plan. We will ask your views on this document later in the process.**

**This paper discusses the emerging strategy for how we approach the provision for hydrocarbon minerals (conventional and unconventional sources of oil and gas) over the Plan period. It explains what hydrocarbons are, where they are to be found in the Plan area and why they are so important to the country.**

**It summarises the main messages from previous consultation exercises and presents a number of options for the approach of the new Plan. It identifies those hydrocarbons which have previously been worked in Derbyshire, and those for which known resources are still potentially available for extraction, including those now available from new and emerging methods of extraction including hydraulic fracturing (commonly referred to as fracking).**

**It identifies the main planning issues associated with hydrocarbon mineral extraction. This includes a review of national planning policy, the role of other regulators involved in the extraction of hydrocarbons and known information about the extent and location of the remaining reserves.**

## Introduction

### 1.1 What are hydrocarbons and how are they used?

Hydrocarbons are the simplest of organic compounds containing only hydrogen and carbon. The majority of hydrocarbons found on earth naturally, occur in crude oil, where decomposed organic matter provides an abundance of these elements, which when bonded, can frequently occur in forms we can utilise in energy production. Other components are used as raw materials for the petro-

chemical industry and in the manufacturing of drugs and plastics. Hydrocarbons are therefore an important mineral resource and the working of these resources within Derbyshire and Derby can contribute to the prosperity of the local area and the national economy. The working of these resources however, could potentially have adverse impacts on the environment and the communities close to the sites. It is important therefore that the Minerals Local Plan (MLP) recognises the respective benefits and disbenefits and sets out an approach to guide the assessment of future proposals for hydrocarbon developments, taking account of the appropriate balance between economic, social and environmental considerations.

For clarification, mineral resources are defined as natural concentrations of minerals, or bodies of rock that are, or may become, of potential economic interest due to their inherent properties. Mineral reserves are that part of a mineral resource, which has been fully evaluated and is deemed commercially viable to work and has a valid planning permission for extraction[1].

## **1.2 Where are they found in Derbyshire?**

This section focuses on oil and gas (mostly methane) as the two main resources of relevance to Derbyshire and Derby. The geology of Derbyshire and Derby is such that there is the potential for further resources of oil and gas to be found in commercial quantities. Hydrocarbon sources have been classified into two main categories: conventional and unconventional. Conventional hydrocarbons are oil and gas where the reservoir is sandstone and limestone. Unconventional hydrocarbons refers to oil and gas which comes from sources where shale or coal seams act as the reservoir. The Plan area therefore has the geological potential for both sources of hydrocarbons.

The eastern part of the County is on the western margin of the East Midlands oil and gas province[2] where earlier developments (early part of 20<sup>th</sup> Century) were centred around Heath, Calow and Hardstoft. It is possible that further resources may be found in this area. A substantial part of the County is underlain by coal. Methane gas is commonly found in coal measures and therefore the coalfield along the eastern county boundary is a potential source of further resources.

Gas can also be obtained from shale deposits and research by the British Geological Survey[3] has identified substantial resources within the Bowland-Hodder shale deposits. This area extends from Lancaster in the north-west across to Scarborough in the north-east. The broadly rectangular area extends as far south as Derby and Loughborough and therefore covers a large part of the County.

Detailed information on the scale of all these resources is not currently available but in view of their value and importance it is essential that the MLP sets the framework for the consideration of any future development proposals that may come forward during the Plan period.

## **1.3 Potential extraction methods**

The hydrocarbon resources in Derbyshire and Derby can be worked by a number of different methods. The working of the conventional oil and gas resources in the north-eastern part of the County referred to above was by drilling and pumping. Methane gas can be extracted from coal seams (an unconventional source) in a number of ways. It can be obtained from un-mined coal seams using a method known as Coalbed Methane (CBM) extraction. The gas can be extracted by drilling directly into the coal measures without affecting the physical properties of the remaining coal. Other gas resources can be obtained from abandoned mines where methane has accumulated over time and by underground coal gasification (drilling and subsequent controlled gasification of coal seams to recover gas). Currently there is one abandoned mine methane gas extraction operation in Derbyshire at the former Whitwell Colliery.

New methods of extraction are emerging and one technique that needs to be addressed in the Minerals Local Plan is Hydraulic Fracturing (known as fracking) which can be utilised to exploit the gas contained within the shale deposits lying much deeper than other methane resources. The British Geological Survey study referred to above estimates that the volume of the shale gas resource in the 11 counties in the study area (including Derbyshire and Derby) amounts to 40 trillion cubic metres, although it is not yet known how much of this resource could be exploited commercially.

Hydraulic fracturing is a technique that uses water, pumped at high pressure, into the rock to create narrow fractures to allow the gas to flow into the well bore to be captured. A proppant (usually sand or ceramic beads) is carried into the fractures and prevents them from closing. The material pumped under high pressure into the rock consists of approximately 98% water, 1% proppant and 1% of other additives such as lubricants or gels[4].

There are normally three phases involved in hydrocarbon extraction from both conventional and unconventional sources: exploration, testing (appraisal) and production. The exploratory phase seeks to acquire geological data to establish whether hydrocarbons are present. The appraisal stage takes place when the existence of oil or gas has been confirmed, but where the operator needs further information about the extent of the deposit or its characteristics to establish whether it can be exploited economically. The production stage normally involves the drilling of a number of wells and the installation of ancillary equipment such as pipelines, processing facilities and storage tanks. Each phase raises separate issues which need to be addressed in the Minerals Local Plan.

#### 1.4 Licencing of oil and gas operations

Anyone wanting to undertake hydrocarbon extraction operations (conventional or unconventional) requires an appropriate licence and other permits and approvals. The Petroleum Act 1998 vests all rights to the nation's petroleum resources in the Crown, but the Government can grant licences that confer exclusive rights to 'search and bore for and get' petroleum[5]. As a result of the long history of legislation, several types of onshore licence existed. To simplify things, the DTI in 1996 commenced the issue of Petroleum Exploration and Development (PEDL) Licences at the 8<sup>th</sup> Licensing Round. These carry a three-term lifetime: a six-year Initial Term allows completion of an agreed Work Programme, which is a pre-condition of entry into the five-year Second Term. Successful completion and approval of a development plan is a pre-condition of entry to the Third Term for production, which is granted for a period of 20 years, although the Secretary of State has the discretion to extend this period if production is continuing.

PEDL approvals cover areas (blocks) which correspond to the 10 km by 10 km Ordnance Survey grid and many licences cover more than one block. The Department of Energy and Climate Change was responsible for the determination of licence applications but in April 2015 this was transferred to the Oil and Gas Authority, an executive agency of DECC. On 18 August 2015 the Oil and Gas Authority announced the latest licence approvals granted under the 14<sup>th</sup> Onshore Oil and Gas Licensing Round. This covers 27 blocks which will be formally offered to the companies later in 2015. Another 132 blocks have been subjected to detailed assessment under the Conservation of Habitats and Species Regulations, 2010, the findings of which are currently out for consultation. Subject to the outcome of that consultation, OGA will announce offers for the second group of licence blocks later in the year. Further details of this announcement and the extent of areas covered by the new licences can be obtained via the following link: <https://www.gov.uk/government/news/new-onshore-oil-and-gas-blocks-to-be-offered>. The areas covered by existing licences can be viewed on the plan below.

**More information about hydrocarbons, the different methods of working hydrocarbons and the relevance to Derbyshire and Derby is available in the Derbyshire and Derby Minerals Local Plan Supporting Papers; Conventional Oil and Gas, Gas from Coal and Shale Gas, August 2015.**

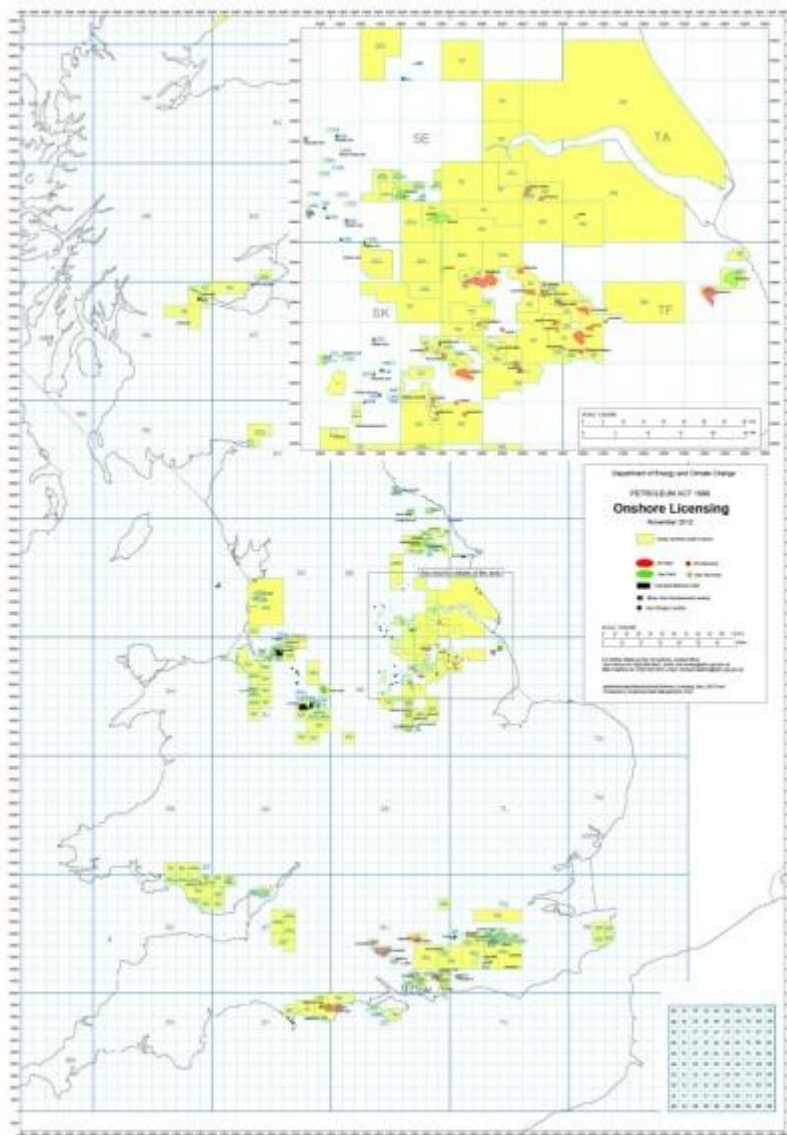
[1] British Geological Survey Planning 4 Minerals Factsheet.

[2] Also known as the East Midlands Petroleum Province, it covers the petroliferous geological area across the north-eastern part of the East Midlands region.

[3] British Geological Survey and DECC report: The Carboniferous Bowland Shale Gas Study, Geology and Resource Estimation, 2013.

[4] About shale gas and hydraulic fracturing (fracking), 30 July 2013, Department of Energy and Climate Change.

[5] Petroleum – literally translates from Greek origins as ‘rock oil’. The name petroleum covers both naturally occurring unprocessed crude oil and petroleum based products that are made up from refined crude oil



## National Policy Considerations

2.1 Government policy and guidance on the exploration and extraction of hydrocarbons is developing rapidly in response to the discovery of new resources and the emergence of new techniques for working those resources. The following section reviews the main publications which currently apply.

### 2.2 National Planning Policy Framework, 2012 (NPPF)

National guidance for the extraction of minerals, including hydrocarbons, is set out in the National Planning Policy Framework[1]. In general terms, the NPPF states that, "Minerals are essential to support sustainable economic growth and our quality of life. It is important therefore that there is a sufficient supply of material to provide the infrastructure, buildings, energy and goods that the country needs. However, since minerals are a finite natural resource and can only be worked where they are found, it is important to make best use of them to secure their long-term conservation."

Specific but limited guidance on hydrocarbons is set out in Paragraph 147 of the NPPF which 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...”. In addition it states that mineral planning authorities should: “encourage underground gas and carbon storage and associated infrastructure if local geological circumstances indicate its feasibility; and encourage capture and use of methane from coal mines in active and abandoned coalfield areas”.

When determining planning applications the NPPF states that “...mineral planning authorities should ensure that the integrity and safety of underground storage facilities are appropriate, taking into account the maintenance of gas pressure, prevention of leakage of gas and the avoidance of pollution.”

## **2.2 National energy policy**

There have been several important stages in the evolution of current national energy policy. The Department of Trade and Industry paper, Meeting the Energy Challenge, 2007[2] states that England, Wales and Scotland’s substantial remaining coal resources, including gas contained within the coal, have the potential not only to help meet our national demand for coal and to reduce our dependence on imported primary fuels, but also to contribute to the economic vitality and skills base of the regions where they are found.

The draft National Policy Statement for Energy, published in 2009, built on the 2007 Energy White Paper. Together they formed an evolving international and domestic energy strategy in response to the changing circumstances in global energy markets. They set out to address the long-term energy challenges of security of supply, whilst acknowledging the implications of climate change. Whilst recent emphasis has been on the development of renewable energy supplies the Government recognised the important and continuing role that indigenous sources of coal, oil and gas will play in meeting national energy requirements.

This policy is set against the background of recent changes in the sources of our energy requirements. By 2004 the United Kingdom became a net importer of natural gas and a net importer of oil in 2010. By 2020, it was then estimated that the UK is likely to be importing about three-quarters of its energy supplies.

On 27 June 2013 the Government announced its long-term infrastructure investment plans which included a package of reforms to facilitate shale gas exploitation. The Government recognised that the simultaneous announcement of the British Geological Survey study highlighting the extent of potential reserves required further appraisal but it considers that shale gas has the potential to contribute significantly to the UKs’ energy security, inward investment and growth.

The announcement did not make any specific statements concerning the planning system but it did expand on the provision of community benefits from shale gas extraction. It stated that the companies involved in this industry would fully engage with the local communities as early as possible and that they would provide direct benefits to the areas where shale gas extraction took place. The benefits would include £100,000 for each community situated near each exploratory well and 1% of the revenue from every production site[3]. More recently the Government has introduced changes to the system of notifying landowners and tenants[4] about the submission of hydrocarbon related planning applications which now only applies to the owners and tenants of land where surface operations are to take place. Notification is not now required for purely underground operations.

The infrastructure investment plan statement indicated that a key role for gas is consistent with the need to decarbonise our economy. It is regarded by the Government as the cleanest fossil fuel, and much of the new gas capacity needed would be replacing the ageing coal capacity. Gas is also seen as important for balancing the increasing levels of intermittent and inflexible low-carbon energy on the system

## **2.3 Energy Act 2013**



The Energy Act received final assent on 18 December 2013[5]. The Act has several objectives and in relation to hydrocarbons it seeks to make provision for the setting of a decarbonisation target range and duties in relation to it; or in connection with reforms to the electricity market for purposes of encouraging low carbon electricity generation, or ensuring security of supply. It is also about the designation of a strategy and policy statement concerning domestic supplies of gas and electricity. It does not actually prescribe a new strategy or policy at this stage but instead sets the procedural requirements for doing so. It is likely however that future policy and strategy will reflect the overall objective of the Act to reduce our carbon footprint and in turn this will affect the future demand for minerals including fossil fuels.

#### **2.4 National Planning Practice Guidance, March 2014 (NPPG)**

In July 2013 the Department for Communities and Local Government published new guidance relating to onshore oil and gas developments (planning practice guidance for onshore oil and gas)[6]. This has now been superseded although most of the advice and guidance it contained has been incorporated into the new National Planning Practice Guidance[7] which contains guidance for oil and gas developments from both conventional and unconventional sources.

The NPPG states that as an emerging form of energy supply, there is a pressing need to establish through exploratory drilling, whether or not there are sufficient recoverable quantities of unconventional resources such as shale gas and coal bed methane present to facilitate economically viable full scale production. In terms of new guidance the NPPG encourages mineral planning authorities to make appropriate provision for hydrocarbons in local mineral plans, based on emerging information, to allow them to highlight areas where proposals for extraction may come forward, as well as managing potentially conflicting objectives for the use of land.

Where mineral planning authorities consider it is necessary to update their local plan and they are in a Petroleum Licence area the NPPG states that they are expected to include Petroleum Licence Areas on their policies maps and include criteria based policies for each phase; that is exploration, appraisal and production, setting clear guidance for the location and assessment of hydrocarbon extraction within those areas. Existing hydrocarbon extraction sites should be identified in local plans, through the local plan site allocation process, where appropriate, and mineral planning authorities may include specific locations should the oil and gas industry wish to promote specific sites. In contrast to the practice established for other minerals resources, the guidance does not advocate the creation of formal safeguarding areas for hydrocarbons due to the depth of those reserves, the ability to use drilling equipment and the small surface area required for the installations. It also does not repeat or expand on the requirement of the National Planning Policy Framework that minerals local plans should address constraints on production and processing within areas that are licensed for oil and gas exploration or production.

The NPPG provides a description of the different operations involved in the three phases, the technical issues associated with hydrocarbon working and the planning issues which arise from hydrocarbon developments. It includes an explanation of the role of the planning system in obtaining permission together with a summary of the role of the other official regulators also involved in the process.

With regard to the determination of development proposals, mineral planning authorities are advised to assess applications for each phase on their respective merits and applications for the exploratory stage of development should not involve the consideration of the potential impacts of extraction. Mineral planning authorities should take account of Government energy policy, which indicates a preference for energy supplies to be obtained from a variety of sources, including onshore oil and gas. Mineral planning authorities should use appropriate conditions, having regard to the issues for which they are responsible, to mitigate against any adverse environmental impact. The NPPG provides some examples of model conditions. It states that above ground separation distances would be acceptable in specific circumstances where it is clear that, based on site specific assessments and other forms of mitigation measures (such as working scheme design and landscaping) a certain distance is required between the boundary of the minerals site and the adjacent development. Operators and mineral planning authorities are also encouraged to seek appropriate restoration schemes for sites once mineral extraction is completed.

[1] National Planning Policy Framework, Department for Communities and Local Government, March 2012.

[2] Department of Trade and Industry paper, Meeting the Energy Challenge 2007.

[3] Package of community benefits announced by the Department of Energy and Climate Change on 27 June 2013.

[4] Town and Country Planning (Development Management Procedure and Section 62A Applications) (England) (Amendment No.2) which came into force from 13 January 2014.

[5] Energy Act 2013.

[6] Planning practice for onshore oil and gas, July 2013, Department for Communities and Local Government (now deleted)

[7] National Planning Practice Guidance, March 2014.

## Planning, Economic, Social and Environmental Issues

3.1 The main issues to be addressed in the new Minerals Local Plan centre around the scale of the hydrocarbon resource in the Plan area, how much more may be discovered, how economical it could be to work those resources and the economic, environmental and social impacts of extraction set against the potential benefits. The specific impacts will vary according to the source of the hydrocarbon (conventional or unconventional) and the techniques employed to extract the mineral from the ground. The main issues of relevance to the new MLP are summarised below.

3.2 The surface site area requirements to facilitate the extraction of onshore oil and gas are significantly different from other forms of mineral extraction. In most cases the site area required to accommodate the drilling equipment and the well-head, together with the limited level of ancillary facilities, is small compared to developments for the extraction of other minerals such as limestone or sand and gravel. For example some extraction sites for these types of minerals in Derbyshire extend to hundreds of hectares. This may affect the scale and nature of impacts created by the respective developments. Further, the experience in the Plan area to date is that most oil and gas developments have been relatively short term operations (less than 20 years), which has reduced the duration of any impacts that were generated. In contrast some of the limestone quarries in the northern part of the Plan area have been in operation since the 1940s (or earlier) and will continue in operation for many years to come.

3.3 The visual impact of hydrocarbon developments is an important consideration. The size of the drilling equipment and well-head structures can vary from 3 to 4 metres for mobile facilities (used for exploratory drilling) to 15 metres or more for 'permanent' large-scale operations requiring deep drilling, and these could be visually intrusive in sensitive or exposed locations. The choice of location for the surface installations will be influenced by the need to maximise the volume of oil and gas that can be extracted, taking account of the geological conditions between the surface and the resource, and other environmental and amenity restrictions such as site access and the need to minimise any visual intrusion. This flexibility could also be used to minimise any adverse impact on local communities and landscape or archaeological features in the area.

3.4 Whilst these operations are relatively short-term, the drilling activities are normally a continuous operation, where drilling occurs 24 hours per day for the duration of that activity. The NPPG indicates that, for conventional hydrocarbons, site construction, exploratory drilling and site clearance will typically take between 12 to 25 weeks for onshore developments. It adds that for unconventional hydrocarbons exploratory drilling may take considerably longer, especially if there is going to be hydraulic fracturing and, in the case of coalbed methane, removing water from the coal seam. This period has the potential to generate unacceptable levels of noise, particularly at night time. Additional noise could be generated by other ancillary on-site activities and also off-site from lorry movements. Due to the relatively small site areas involved, the level of ground disturbance is modest compared to other mineral extraction operations and this should reduce the potential for dust emissions, although dust emissions could be an issue for some specific operations.

3.5 The NPPG indicates that other potential adverse impacts which are particularly associated with conventional and unconventional oil and gas developments are those concerning pollution risks. Pollution risks will vary depending on the extraction technique being used but could include the spillage of oil at the surface, seepage pollution from below ground to the surface and the disposal of drilling mud and other drilling residues which could be contaminated. An additional issue is the potential need to dispose of (probably flare) unwanted gas. The management of these issues are mainly the responsibility of other regulators but they are matters of relevance to the planning process. The NPPG indicates that additional impacts could arise from the methods employed to transport the oil and gas from the extraction site to where it is to be used or processed. The main methods for onshore oil and gas are pipelines or heavy goods vehicles.

3.6 The NPPF advises that all mineral extraction development proposals should be formulated to avoid or minimise any adverse impact on areas of high quality agricultural land, areas at risk of flooding and any important features of ecological value. It acknowledges that in some cases it may not be possible to completely avoid all biodiversity interests, but in cases where the benefits of the development outweigh such adverse impacts, the replacement of such features should be an integral part of the restoration plans.

3.7 The potential environmental impacts of obtaining methane gas from coal reserves will vary according to the technique employed. Coalbed Methane extraction operations involve drilling and other aspects common to traditional operations for obtaining oil and gas from conventional sources and therefore some of the potential impacts are likely to be similar. Water in the coal measures is normally removed to help increase the volume of gas that can be obtained so additional attention should be given to the impacts of abstracting ground waters. The Gasification of virgin underground coal measures leaves the coal in situ, eliminating the need for extracted materials to be stored above ground (as in coal mining operations), but the process does deplete the coal resource and does not completely avoid the risk of subsidence. This technique could give rise to other impacts if any of the materials used in the process entered the water system. The extraction of methane from old or current mine workings minimises the dangers from the uncontrolled escape of gas from these facilities, taking advantage of a resource that may otherwise go to waste, but it also requires the use of ground level facilities to capture and store the gas which could give rise to access and visual intrusion impacts depending upon the location.

3.8 Whilst the hydraulic fracturing industry in the United States is now established and expanding, experience in the UK is very limited. The publicity generated by recent exploratory facilities in this country however, has led to concerns about potential adverse environmental impacts. The main issues identified in recent Government publications (in particular the Department of Energy and Climate Change - see footnotes 3, 13, 14, 15, 16 and, 17) relate to:

Risk of fractures propagating from shale reaching the overlying aquifers. The DECC publication<sup>[1]</sup> states that available evidence suggests that this risk is very low provided that the shale gas extraction takes place at depths of hundreds of metres or more. The large quantities of water required in the process and the risk of depleting local eco-systems.

Seismic activity. Research indicates that the seismic events experienced in Blackpool in 2011 were related to the shale gas drilling operation by Cuadrilla Resources. The outcome of research on this matter was summarised in the DECC publication which suggests that the level of seismic activity arising from fracking would be similar to that from previous coal mining activities and would be smaller than naturally occurring events.

Methane leakage. Concerns that even small leakages of methane during shale gas extraction may offset the effects of reduced carbon dioxide emissions.

Property values. The DECC publication Fracking UK shale, planning permission and communities<sup>17</sup>, states that there is no evidence that current exploration will adversely affect insurance availability or property values in the vicinity as no effects of this kind have been observed in 50 years of onshore oil and gas exploration and



production. It also indicates that house buyer searches may reveal that properties lie within or near to an area covered by a PEDL licence but as these areas are very large the property may not be anywhere near a hydrocarbon development site.

3.9 Two reports published in 2011 and 2012<sup>18</sup> concluded that the use of high pressure water did not pose a significant risk to water supplies from underground aquifers, subject to appropriate design, (the risks being assessed to be no different to those encountered when exploring for hydrocarbons in conventional geological formations), and that “the health, safety and environmental risks associated with hydraulic fracturing as a means to extract shale gas can be managed effectively in the UK as long as operational best practices are implemented and enforced through regulation.” The NPPG states that several of these concerns are matters for other regulators and mineral planning authorities should assume that these regimes will operate effectively. Notwithstanding these assertions these considerations will be assessed in the development of any new policy.

3.10 The Government has also announced a package of benefits<sup>8</sup> for those communities who will host shale exploration and production. The announcement stated the package would provide a welcome boost for those communities as well as offering strong assurances that operators will engage with them and work to the highest health, safety and environmental standards. With regard to community engagement the United Kingdom Onshore Operators Group (UKOOG)<sup>19</sup> issued a publication which outlines the steps that the industry will take to address concerns around safety, noise, dust, truck movements and other environmental issues. In January 2014 the Government announced that councils would be able to keep 100% of the business rates collected from shale gas sites.

3.11 The security of energy supplies is a major issue for society as a whole. The corresponding consultation paper Towards a Strategy for Coal and Colliery Waste, summarises the major contribution to energy provision obtained from coal but also explains why there is uncertainty about its future role. The section on national energy policy above indicates that the Government is seeking to secure future energy supplies from a variety of sources (including hydrocarbons) whilst simultaneously reducing our carbon footprint. Gas is seen as the cleanest fossil fuel and Government statements suggest that interest in obtaining gas from onshore facilities is likely to increase significantly over the Plan period.

**Further information about the issues raised by hydraulic fracturing can be found in the Derbyshire and Derby Minerals Local Plan Shale Gas supporting Paper, August 2015.**

3.12 The summary provided above together with the experience of the Councils of processing planning applications for mineral developments, including coal and hydrocarbons and the observations made by local communities in response to publicity on those applications and to previous consultation exercises would indicate that the factors which need to be taken into account in developing a strategy for the provision of hydrocarbons in the Minerals Local Plan relate to:

Government energy policy to secure sufficient supplies of energy to serve the requirements of the country whilst also reducing our carbon footprint

The benefits of an indigenous supply compared to a growing reliance on imported sources

The uncertainty about the future of coal as a means of energy production

The limited supply of energy requirements currently met by renewable facilities

The current support, in principle, of the Government for more energy supplies to be obtained from hydrocarbons

The known availability of oil and gas resources in the Plan area and the potential for further resources to be discovered

The limited level of information about the location, scale and economic viability of the hydrocarbon resource in the Plan area

The likelihood that these questions may be resolved during the Plan period leading to the development of proposals to extract those resources

The environmental and social impacts of extracting those resources, some of which are well known whilst other potential impacts are less certain

The likelihood that proposals for exploration and appraisal will be forthcoming during the Plan period

The potential for new extraction technologies to be developed over the Plan period

The possible identification of potential areas for hydrocarbon extraction

The issue of the identification of constraints

The development of policies, including detailed criteria, which would be used to assess and determine future hydrocarbon extraction applications

The definition of potential benefits, how they should be assessed and the role to be played in the determination of proposals for new working

3.13 The County and City Councils will need to explain and justify why the forthcoming Plan adopts the approach it takes to the extraction of minerals in the area, the policies it contains and the level of provision it makes for the extraction of certain minerals during the Plan period. The prior identification of the main issues will form an important part of that explanation and justification. It is important therefore that the Plan sets out the evidence on which it is based, the main issues which were identified, and how the responses from all interested parties to consultations on those issues were taken into account and led to the selection of the Plan in its ultimately adopted form. We therefore want you to tell us whether or not you consider that the list above covers all of the issues relating to the extraction of hydrocarbons in Derbyshire and Derby that will need to be addressed in the new Minerals Local Plan.

3 See 1.2, page 2.

[1] Department of Energy and Climate Change, about shale gas and hydraulic fracturing (fracking), 30 July 2013.

<sup>14</sup> Department of Energy and Climate Change, Onshore Shale Gas and Oil – Facts about Fracking, December 2013.

<sup>15</sup> Department of Energy and Climate Change, Regulatory Roadmap: Onshore Oil and Gas Extraction in the UK – Regulation and Best Practice, December 2013

<sup>16</sup> Department of Energy and Climate Change, The Hydrocarbon Prospectivity of Britain's Onshore Basin, 2010.

<sup>17</sup> Other DECC publications – Facts about fracking, Fracking UK shale: climate change, Fracking UK shale: local air quality, Fracking UK shale: planning permission and communities, Fracking UK shale: regulation and monitoring, Fracking UK shale: safety from design to decommissioning, Fracking UK shale: understanding earthquake risk, and Fracking UK shale: water.

<sup>8</sup> See 2.2, page 8.[1]

<sup>18</sup> Energy and Climate Committee report of inquiry into Shale Gas, 23 May 2011 and Royal Society and the Royal Academy of Engineering, Shale Gas Extraction in the UK: A Review of Hydraulic Fracturing, June 2012.

<sup>19</sup> United Kingdom Onshore Operators Group (UKOOG) June 2013, Community Engagement Charter – Oil and Gas From Unconventional Reservoirs Package of community benefits announced by the Department of Energy and Climate Change on 27 June 2013.

## Vision and Objectives

4.1 A separate paper will seek your views on the emerging vision and objectives for the plan and will ask what you think about matters relating to the provision for hydrocarbons, including how to achieve the best possible balance between maintaining the economic and other benefits to be gained and the need to minimise any adverse impacts on the environment and communities, co-operative working, sustainable delivery, climate change, maximising the use of existing infrastructure, cumulative impacts of developments and restoration.

## Duty to Co-operate

5.1 The Duty to Co-operate was created by the Localism Act 2011 which places a legal duty on local planning authorities, county councils and public bodies to engage constructively, actively and on an ongoing basis to maximise the effectiveness of Local Plan preparation relating to strategic cross-boundary matters. The distribution of hydrocarbon resources in the UK and the energy needs of the country represent significant cross-boundary matters for this Minerals Local Plan and those of neighbouring authorities. Derbyshire County Council and Derby City Council will continue to engage with all relevant authorities and public bodies over matters relating to the development of a complementary approach to the extraction of hydrocarbons and this will be used to help formulate the policies of the new Minerals Local Plan.

## Progress So Far – What you have said and how we have responded

6.1 The County and City Councils have undertaken earlier stages of community engagement and it is now an ideal opportunity to review the messages which emerged from those stages and to assess their relevance at the present time in light of subsequent changes in Government policy and guidance.

### 6.2 Stakeholder Workshop 2009

We held a stakeholder workshop in 2009, which scoped the issues that the Minerals Local Plan should address. At this event, people recognised and identified the need for mineral extraction, provided that its social and environmental impact is minimised.

### 6.3 Issues and Options exercise

The issues identified for hydrocarbon minerals in this exercise were Issue 10, 'managing how we make provision for conventional oil and gas', and Issue 11, 'managing how we make provision for new coal exploitation technologies'. The 'Suggested Approach' for Issue 10 was to include a policy for oil and gas developments from conventional sources which sets out criteria similar to those in the existing Minerals Local Plan (policies MP13 and MP35). For Issue 11 the 'Suggested Approach' was to include a policy for new coal exploitation technologies which sets out criteria similar to those for conventional oil and gas developments in Policy MP35 of the existing Minerals Local Plan. It did not specifically address the issue of hydraulic fracturing which was then a new issue and with little known relevance to Derbyshire and Derby.

There was agreement from all the respondents to the Issues and Options consultation who answered this question that a criterion based policy would be the most appropriate way of dealing with the future working of hydrocarbons. No other possible options for dealing with the issue were suggested by the respondents.

### 6.4 Sustainability Appraisal

**The Interim Sustainability Appraisal<sup>20</sup> found that for both of the approaches identified in the Issues and Options exercise was that they would have a similar affect to the current Minerals Local Plan and therefore impacts on the baseline would be negligible. It also concluded that the policies would be inherently positive as they would help to minimise the environmental effects of both forms of extraction. It also concluded that allowing both oil and gas and coal extraction is inherently negative in terms of the greenhouse gas emissions combustion that**

**these fuels would have, however, these are not something that the Plan should control.**

<sup>20</sup> Sustainability Appraisal (SA) of the Minerals Issues and Options Paper (2010), Interim SA Report, July 2013, URS.

## Next Steps

7.1 The Issues and Options consultation exercise was undertaken in the context of a different national and regional policy framework. Accordingly, it is necessary to reconsider the extent to which the Issues and Options Report and the responses to it remains relevant and to decide if it can help inform the debate and development of alternatives for the provision for hydrocarbons. In order to develop the new Minerals Local Plan we now need to seek to establish a strategy for the provision of hydrocarbons and work towards the formulation of new policies to be included in the new Plan to deliver the chosen strategy.

### 7.2 Issue 1: Emerging approach to the provision for hydrocarbons

As indicated above, the NPPF and NPPG require minerals planning authorities to plan for the steady and adequate supply of minerals, to identify and include policies for the steady and adequate supply of minerals, to identify and include policies for the extraction of mineral resources of local and national importance in their area and set out environmental criteria against which planning applications will be assessed so as to ensure that permitted operations do not have unacceptable adverse impacts. With regard to the extraction of hydrocarbons the NPPG encourages mineral planning authorities to make appropriate provision in local minerals plans through the use of published data (where available). Local minerals plans are also expected to include Petroleum Licence Areas on their policies maps and set criteria based policies for each of the three phases of development.

It is intended that the new MLP will adopt an approach to the provision of hydrocarbon minerals in accordance with the policy guidance of the NPPF and NPPG. The Plan, as a minimum, will identify on a plan the areas currently subject to Petroleum Licences and also any operational sites at the time of publication but will not seek to identify specific sites for future development due to the limitations of the existing information. The Plan may be able to identify areas where hydrocarbons resources are present and where development could be undertaken and this is addressed in a separate issue below. The Plan will also set out criteria for the assessment of planning applications and the criteria that will be included will also be determined through your responses to the issues below. The NPPG indicates the use of separate criteria policies for each of the three phases of development (exploration, appraisal and production) but in practice there may be little or no difference in the criteria that could be used for the first two phases. The number and form of criteria policies to be included in the Plan will be determined through your responses to the issues below.

### 7.3 Issue 2: Identification of hydrocarbon resources within the plan area

The National Planning Practice Guidance states that the exploratory, appraisal or production phase of hydrocarbon extraction can only take place in areas where the Department of Energy and Climate Change (or any successor) has issued a licence under the Petroleum Act 1998 (Petroleum Licence). The new Minerals Local Plan will identify Petroleum Licence Areas and any existing oil and gas extraction sites which are present in the Plan area. In addition the NPPG also encourages mineral planning authorities to make provision for hydrocarbons by the use of published data on the location of conventional and unconventional hydrocarbons, use of ordnance survey based policies maps and available data on existing wells. It states that this approach will allow mineral planning authorities to highlight areas where proposals for hydrocarbon extraction may come forward, as well as managing potentially conflicting objectives for use of land. The NPPG also suggests that potential new working sites could be identified where these have been brought forward by the industry. It does not advocate the need to create mineral safeguarding areas specifically for the extraction of conventional and unconventional sources of hydrocarbons given the depth of the resource, the ability to utilise directional drilling and the small surface area requirements of well pads.

We need to establish how the new Minerals Local Plan could or should identify areas for potential hydrocarbon extraction which are within existing Petroleum Licence areas and to consider other areas where resources exist and which may be covered by future licence areas.

There are practical limitations concerning the extent to which the new Minerals Local Plan can identify areas where hydrocarbon extraction may be possible and also potentially acceptable. The limitations for the identification of these resources are similar to those for coal. The level and accuracy of information which is currently available about the location, scale and the economic viability of the remaining hydrocarbon resource is very limited. In the absence of detailed information about an individual site and how the hydrocarbon would be extracted it is difficult to assess the acceptability of working the resource.

**Option 1: Identify on a plan the information required by new Government guidance – that is current Petroleum Exploration Development Licence areas and existing working sites.**

This would represent a practical option within the information resources currently available and would satisfy the requirements of current Government guidance. It would be a clear and simple expression of the evidence currently available as the presence of a PEDL designation indicates that oil and gas resources are likely to exist within the area. This option however, would not provide any more information than could be readily obtained from other sources. PEDLs cover large areas but the presence of a licence does not automatically mean that hydrocarbon resources will be found across the entire area. In contrast the absence of a licence does not mean that hydrocarbon resources could not be found elsewhere and would therefore not indicate the full extent of the oil and gas resource of the Plan area.

**Option 2: In addition to Government guidance requirements - Identify on a plan the extent of other areas where conventional and unconventional oil and gas resources are known to be present.**

From the information which is currently available the Minerals Local Plan could identify the broad areas where oil and gas resources are known to exist, both within and outside existing Petroleum Licence areas. It is known that oil and gas have been found and obtained from sites in the Plan area in previous years and that further resources still exist in the part of the Plan area lying within the East Midlands Oil and Gas Province. Methane gas is commonly found in coal measures and therefore the coalfields in the Plan area are likely to contain further resources. The recent British Geological Survey report<sup>1</sup> indicates that parts of the Plan area are underlain by shale containing resources of gas.

This option would provide a more comprehensive picture of the hydrocarbons resources which are available within the Plan area and would fulfil the approach encouraged by the NPPG by highlighting where proposals for hydrocarbon extraction may come forward.

**Option 3: In addition to Government guidance requirements - Identify on a plan the extent of other areas where conventional and unconventional oil and gas resources are known to be present and other areas where geological conditions indicate that further resources of hydrocarbons may be found.**

From the known information about the prevailing geological conditions in the Plan area it may also be possible to indicate other areas where additional conventional and unconventional hydrocarbon resources could be found. It would provide the most comprehensive portrayal of potential sources of hydrocarbons in the Plan area indicating all areas where development proposals may come forward. However, the information could not be guaranteed to be wholly accurate and may be considered to be too speculative to be included in the new Minerals Local Plan. It could potentially raise unnecessary concerns about the prospects of future developments.

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<sup>1</sup> See 1.1, page 1.

#### **7.4 Issue 3: Identification of constraints on the production and processing of conventional and unconventional hydrocarbons**

The National Planning Policy Framework states that mineral local plans should address the constraints on the production and processing of hydrocarbons within the areas that are licensed for oil



and gas exploration or production (paragraph 147). Licensed areas are those in designated Petroleum Exploration and Development Licence areas.

The term is used in the NPPF in a generic sense and could therefore cover environmental, physical, economic and social issues. Paragraph 13 of the Minerals section of the NPPG identifies the environmental issues of mineral working that should be addressed by mineral planning authorities for the assessment of individual development proposals. These issues are often the basis for constraints and provide a starting point for the identification of environmental constraints. Neither the NPPF nor the NPPG however, provides any further information on the range or form of other economic or social constraints which could be identified, nor do they specify how constraints should be identified or presented.

The NPPF does not indicate whether it is referring only to the processing which is undertaken within an extraction site or for independent processing facilities on separate sites, or for both situations. It also does not indicate whether the constraints should be identified separately for production and processing.

We therefore need to establish the constraints that will be included in the Minerals Local Plan, the area for which constraints will be identified and also how best to present them. This section therefore asks two sets of questions to help address these issues.

### **7.5 Area of the Plan in which constraints will be identified**

The NPPF states that constraints should be identified for those parts of the Plan area that are within PEDL areas. Current PEDL licence areas in Derbyshire and Derby do not cover the whole of the Plan area and it is possible that further licences could be issued over the Plan period.

#### **Option 1: Identify constraints for current PEDL areas only.**

This option would accord with current Government guidance but it is possible that further PEDL licences could be granted during the Plan period which would require it to be reviewed and updated.

#### **Option 2: Identify constraints for current PEDL areas and also for those parts of the Plan area where hydrocarbon resources are known to be present.**

This would provide a comprehensive picture of constraints for all areas where hydrocarbon extraction could possibly take place and would avoid the need for further consultations in the future if and when new PEDLs were issued.

### **7.6 Identification of constraints on production and/or processing**

We are now seeking your help to determine the range of constraints that the Plan will identify. It is proposed that the Plan will identify constraints for all forms of hydrocarbon production and processing, including stand-alone processing facilities. With reference to the environmental issues listed in the NPPF and NPPG it is proposed that the Plan will identify constraints which relate to the following environmental issues:

- Landscape
- Biodiversity/Ecology.
- Heritage
- Archaeology
- Geology/Geomorphology.
- Water Protection/Flood Zones.
- Green Belt.
- Contaminated Land.

It is also proposed that the Plan will identify:

- Cumulative constraints.

Social Constraints.  
Economic Constraints.

## **7.7 Issue 4: The use of criterion based policies for conventional and unconventional hydrocarbon developments**

### **a) The use of separate policies for each stage of hydrocarbon developments**

The National Planning Policy Framework states that mineral planning authorities should include criteria policies in minerals local plans to assess and determine development proposals. The National Planning Practice Guidance states that planning permission is required for each of the separate phases of the overall development; that is exploration, appraisal and production and that minerals local plans should include criteria based policies for each of the phases. The MLP will therefore include criteria based policies covering all these stages of development. However, based on the experience gained from processing previous mineral development proposals there are unlikely to be significant difference between the issues which are relevant to the exploration and appraisal stages. Indeed these stages are often combined in to one planning application.

#### **Option 1: Include only two separate criteria policies; one for exploration and appraisal and another for production.**

The provision of one criteria policy for both the exploration and appraisal stages would help streamline the Minerals Local Plan and provide for policy considerations which correlate to the manner in which many hydrocarbon development proposals are formulated.

#### **Option 2: Include separate criteria policies for each of the three stages of development.**

### **b) The use of additional criteria policies for oil or gas, for conventional or unconventional sources or for different extraction technologies**

With regard to the use of criteria policies, the guidance does not differentiate between the various sources of hydrocarbons or the different methods of production. For example, it does not indicate whether plans should include separate criteria based policies for the extraction of oil or gas, for hydrocarbons from conventional or unconventional sources, or for methods of extraction utilising different technologies (e.g. hydraulic fracturing or coal bed gasification). You may consider that developments in these different categories raise different issues which merit the inclusion of additional criteria policies specific to those forms of development. This consultation presents a number of options to help us determine the approach of the new Minerals Local Plan.

#### **Option 1: Include only two or three separate criterion based policies for the three phases of hydrocarbon developments (as determined by the responses to the options above).**

This option would broadly represent the approach advocated in Government guidance. The inclusion of one set of criteria policies for the phases of all forms of hydrocarbon developments would provide a clear and succinct framework for the assessment and determination of development proposals. It would be unambiguous and both developers and local communities would readily know the criteria that would be used to determine planning applications.

#### **Option 2: Include a separate set of criterion based policies for the phases of each of the different types of hydrocarbon (e.g. conventional oil and natural gas, gas from coal measures and gas from unconventional sources such as the hydraulic fracturing of shale deposits).**

You may consider that the exploration, appraisal and extraction of the different types of hydrocarbons listed above raises significantly different issues which merit the inclusion of criteria policies specifically tailored to each form. The policies could take account of how and where conventional and unconventional hydrocarbons are found beneath the ground and the differences in how they are extracted or the facilities that would be required above ground. In practice however there are many similarities in the methods used to extract hydrocarbons irrespective of how and where they are located. Most of these differences could be covered in a comprehensive single set of criteria policies

for all forms of development. The inclusion of separate policies could lead to unnecessary duplication and possible confusion, particularly for any hybrid developments extracting oil and gas from one site or by employing more than one extraction method.

**Option 3: In addition to Option 1 include only an additional set of criterion based policies specifically for hydraulic fracturing.**

You may consider that the issues raised by most forms of hydrocarbon development are sufficiently similar such that one set of criteria based policies would suffice but do not agree that this would be appropriate for hydraulic fracturing of shale gas. You may consider that the issues raised by this method of extracting shale gas merits the inclusion of an additional set of policies for each phase of this form of hydrocarbon development. Although its use is widespread in the USA it remains an emerging technology in this country. At present there are only a limited number of sites which have reached the exploration stage and none have developed to the production stage and therefore there is little empirical evidence or experience about the issues such developments do raise. It should also be remembered that many of the issues which have caused public concern in this country would be matters for other regulators and not for the planning system. Accordingly they could not be addressed in a policy in a Minerals Local Plan.

**7.8 Issue 5: The range of criteria to be included in the policies for conventional and unconventional hydrocarbons.**

We are now seeking your help to determine the actual criteria that will be included in the policies to assess and determine hydrocarbon developments. This is to be derived from two separate questions. The first is to help compile a list of criteria to be included in the policies for hydrocarbon developments in general and the second is to help compile a separate list for policies relating to hydraulic fracturing. This second list will only apply if you decide that hydraulic fracturing does merit a separate set of policies otherwise the matter will be redundant. It is included at this stage to avoid the need for a further round of consultations which could delay progress of the new Minerals Local Plan.

The DCLG publication, Planning practice for onshore oil and gas, July 2013, (reference 10) identified the principal environmental issues of hydrocarbon extraction that should be addressed by mineral planning authorities. These issues have not been carried forward into the National Planning Practice Guidance, March 2014 advice on hydrocarbons, although a similar list has been included to identify the environmental issues which could apply to all forms of mineral developments. Although the DCLG publication has been cancelled following the release of the NPPG it is considered that these two documents address the environmental issues which are relevant to hydrocarbon developments and which could be used to help identify and establish the list of criteria that will be included in the policies. The NPPG clarifies the issues which are matters for other regulators and which mineral planning authorities should not take into account in their assessment of development proposals. Criteria based on these matters would therefore not be appropriate for inclusion in the policies. The issues which are identified to be matters for other regulatory regimes include seismic risks, well design, construction and integrity, operation of other surface equipment on the well pad, mining waste, chemical content of hydraulic fracturing fluid, flaring and venting, off-site disposal of water and well decommissioning.

The issues below are those identified in the NPPG and the DCLG cancelled publication. These are very similar to the main issues raised in consultation and publicity responses to other energy based mineral development proposals submitted to Derbyshire County Council and Derby City Council in recent years.

**Criteria**

- Criteria for noise associated with the operation.
- Criteria for the assessment of dust.
- Criteria for the assessment of the impact on air quality.
- Criteria for assessing lighting.
- Criteria for the assessment of the level of visual intrusion into the local setting. and the wider landscape caused by the placement of any building or structure within the application site area.

Criteria for the assessment of the impacts on landscape character.  
Criteria to assess the importance of archaeological and heritage features.  
Criteria to assess the generation and impact of traffic.  
Criteria to assess the level of risk of contamination of land.  
Criteria to assess the impact on soil resources.  
Criteria to assess the impact on the best and most versatile agricultural land.  
Criteria for flood risk.  
Criteria to assess the impact on the water environment.  
Criteria for land stability and subsidence.  
Criteria to assess the impact on internationally, nationally or local designated wildlife sites, protected habitats and species, and ecological networks.  
Criteria to assess impact on nationally protected geological and geomorphological sites and features.  
Criteria to establish site restoration and aftercare requirements.

Government guidance indicates that policies should address each phase separately but your responses to the questions above will determine whether the Plan will combine the exploration and appraisal phases into one policy. Whether we include two or three separate policies we are asking for your views about the criteria that should be included in the policies for the respective phases.

#### **7.9 Issue 6: Criteria to be applied to proposals for the hydraulic fracturing of shale gas.**

The emergence of hydraulic fracturing as a means of extracting gas for use in our energy supplies has become a major issue in recent years. Although the scale and economic viability of the resource in the Plan area is yet to be established, it is an aspect of mineral working that must be addressed in the Minerals Local Plan. Whilst hydraulic fracturing proposals could be assessed and determined using a set of policies which apply to all hydrocarbon developments, you may consider that it is such a major issue that it merits individual consideration. As stated above, your responses to this issue will only be considered if it is concluded that hydraulic fracturing of shale gas merits a separate set of policies.

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### **Actions**

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