Task Force on Shale Gas

First Interim Report

Planning, Regulation and Local Engagement

Letter from The Chair

Thank you for your interest in the Task Force on Shale Gas and the consideration we've given to some of the key issues over recent months. This is our first interim report, and it focuses on a number of these issues. There will in fact be three further reports during the course of this year, to address many of the other issues that are of public interest and concern.

I am indebted to the Panel Members – Professor Ernest Rutter, Professor Nigel Brandon and Emma Duncan.

In addition the Task Force continues to be assisted by a number of esteemed advisors, whose counsel and guidance is invaluable.

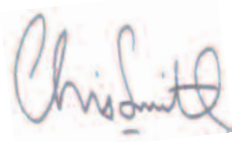
Particular thanks goes to all of those businesses, organisations, community groups and individuals who have taken time to contact or meet with us. The insights that we have gleaned from these meetings have been extremely instructive.

The Task Force on Shale Gas has a lot more work to do. Our guiding principle remains to provide the accurate, impartial information that people need in order to make up their own minds. And we have consistently made it clear that our focus is on shale gas, not shale oil, where many of the environmental arguments are different.

It is clear from our conversations and studies that a consensus on whether or not a shale gas industry will benefit or harm the United Kingdom will not be found. Nor is it necessary that everyone agrees. Such propositions are bound by their nature to generate conflicting opinions. The danger is that, in the midst of argument, basic truths become obscured. Not everyone may agree on the benefits or risks of creating a shale gas industry – but everyone has the right to reach their own, personal decision on the basis of trusted and factual information.

Everyone has the right to expect that their concerns will be listened to and that systems will be in place to mitigate or eradicate justified concerns, where possible.

This first report begins the journey of the Task Force on Shale Gas to help the public to make a decision one way or another as to whether a shale gas industry should be created. I hope that it stimulates reasoned and respectful argument and thus helps establish what is best for the UK.



Lord Chris Smith

Acknowledgements

We would like to thank all the people and organisations who have contributed information and their perspectives to this report through the submission of evidence to the Task Force by email or through the website.

We would also like to thank Professor Michael Bradshaw, Professor Nick Butler, Professor Mike Bowman, Dan Byles MP, Geoff Davies, Professor Richard Davies, Francis Egan, Professor Joe Howe, Matthew Lambert, Mark Linder, Nigel Mills MP, Dan Sadler, Baroness Verma, and Professor Jim Watson for taking the time to meet with Lord Smith and the Secretariat. Special thanks go to Lloyd's Register, The World Wide Fund for Nature, Trades Union Congress, Country Land and Business Association, Environment Agency, Blackpool and The Fylde College, Derek Blackwood, and Professor Robert Mair.

Thanks are also due to all the people and organisations that we have worked with and spoken to on our UK site visits. As such, we would like to thank Marcus Adams, Dr Petra Billings, Cllr Ian Campbell, Denise Campbell, Keith Charman, Mike Damms, Pat Davies, Jean Diggens, Simon Diggens, John N. Diggens, Gayzer Frackman, Rob Green, John Hodson, Neil Jack, Cllr Mike King, Gary Lovatt, Christina Maude, Babs Murphy, Laurence Rankin, Gordon Smith, Martin Spurrier, Dr Jill Sutcliffe, Michelle Taylor, Eric Vaughan, Elizabeth Warner, Charles Metcalfe, Kathryn McWhirter, Professor Laurence Dunne, Louisa Delpy, Helen Savage, Juliette Harris, Dr Rosalind Merrick, Robert Greer, Ed Pack, Jane Burston, Rod Robinson, Arul Murugan, and Matt Whitney.

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Finally, we particularly wish to thank our advisors, Michael Holgate, Stephen Tindale, James Taylor, Professor Alan Riley, Professor Sarah O'Hara, and Dr Robert Ward for giving their perspectives on this report as it was developing. Responsibility for its contents, however, remains entirely with the Task Force.

Introduction

About the Task Force on Shale Gas

The Task Force on Shale Gas was launched in September 2014 to provide an impartial, transparent and evidence-based assessment of the potential benefits and risks of shale gas extraction to the United Kingdom.

The Task Force's funding comes from businesses involved in the shale gas industry. However the Task Force operates independently from its funders and the funders have no influence over its research, recommendations or publications.

The Task Force recognises that the issue of shale gas extraction and its potential benefits and risks to the UK has become a polarising topic in the UK. As such, it is difficult to find a platform for reasoned discussion about shale gas extraction.

The mission of the Task Force is to create that platform, to provide reasoned and evidence-based conclusions and recommendations to both industry and Government about the potential of shale gas extraction in the UK, to inform the general public and to promote reasonable discussion about these findings.

To make this possible we have decided to deal in detail with clusters of issues over a series of reports, enabling us to publish our conclusions at the earliest possible time.

This first interim report addresses the existing planning and regulatory system for shale gas and public consultation. It makes a series of recommendations based on our reading of the available academic literature, evidence submitted to the Task Force and the many people, businesses, organisations and community groups that we have met.

Our second report, to be published in June, will deal with local environmental impacts. For this report we will look at topics including health impacts, fugitive emissions, earthquakes and water.

Our third report, to be published in September, will examine and assess evidence related to climate change.

Our fourth interim report will examine the economics of a shale gas industry in the UK – including community benefits and compensation.

Finally, in April 2016 we will publish our final, cumulative report taking into consideration all of the evidence we have assessed as well as the feedback we receive from our interim reports.

The Task Force is indebted to the many organisations, institutions, politicians, industry experts and community groups who have taken time to submit evidence or to meet in person to discuss thoughts and raise concerns about what the establishment of a shale gas industry could mean for the UK. We have also had the opportunity to visit the United States, to see shale gas sites in operation, to meet with regulators, environmental groups, companies, research bodies and Government to consider the evidence of shale gas first-hand.

The conclusions drawn by the Task Force in each report, and the resulting recommendations reflect the views of the Panel. They are drawn from a combination of academic review, personal meetings, interviews and shale gas site visits.

Our Starting Point

The current Government has shown a disposition to support the creation of a shale gas extraction industry in the UK.

In the Autumn Statement 2014 the Chancellor announced a range of measures to encourage a shale gas industry in the UK. These included a £5 million fund to provide independent evidence on the robustness of the existing regulatory regime, £31 million of funding to create sub-surface research centres and the setting up of a long-term investment fund from tax revenues derived from shale for the North and other areas hosting shale gas developments.

In May 2013 a report from the Institute of Directors, which has attracted considerable controversy, suggested that shale gas production in the UK could support up to 74,000 jobs and attract investment of £3.7 billion a year, as well as associated tax revenue. Much of this investment, the IoD concluded, would be in areas with high levels of unemployment. This report was substantially more optimistic than an earlier report by the Department of Energy and Climate Change that concluded that shale gas was unlikely to be a 'game-changer' for the UK.

However, many people and groups have expressed doubts about the optimistic assumptions of the IoD report; and many people are concerned by the prospect of the creation of a shale gas industry in the UK. Nationally, a coalition of conservation and wildlife charities, including the National Trust and the Royal Society for the Protection of Birds (RSPB), has produced a report drawing attention to a number of risks associated with shale gas extraction, including the potential impact on ground water, the adverse ecological effects of the loss, fragmentation and disruption of habitats, and implications for climate change.

At a local level more than 180 groups have been identified that oppose shale gas extraction and argue that local planning authorities have insufficient knowledge of the process of high-volume hydraulic fracturing, or fracking, used to extract it, and of the impact it will have on local areas.

Public opinion more broadly appears to be divided, and overall levels of understanding of the process and its potential benefits and risks are poor.

Our series of reports are intended to raise understanding about the process, to examine some of the claims made at both ends of the spectrum of shale gas exploration and extraction and to stimulate fruitful discussion through the publication of conclusions and recommendations designed to benefit the public.

"Public opinion more broadly appears to be divided, and overall levels of understanding about the process and its potential benefits and risks are poor"

Overview

What is shale gas and what is hydraulic fracturing?

Shale Gas

Shale gas is also known as 'unconventional gas' – meaning that it is a natural gas (mainly methane) extracted from an unconventional reservoir. Unlike conventional gas, which has migrated to porous and permeable rock reservoirs and become trapped beneath an impervious sealing rock, shale gas has been trapped for hundreds of millions of years at high pressure in the very small pores of shale, which forms layers of sedimentary rock deep underground. Shale is the commonest sedimentary rock on the planet.

For the shale to host sufficient gas to be exploitable, it must ideally have been buried two or three kilometres underground so that the gas pressure can be sufficiently high, due to the weight of the overlying rocks, to form an economically viable resource. A small percentage of primary organic matter (e.g. algae and plant fragments) in the rock generates the gas through the heating and pressurisation associated with deep burial. Gas flows so slowly through the small and poorly-connected pore spaces that the rock is itself the source, reservoir and seal for the gas. That is, it is a self-contained hydrocarbon system.

The main technological advance that has allowed exploitation of shale gas is horizontal drilling, in which an initially vertical borehole, after reaching a depth of perhaps 3km, is deviated to horizontal and steered underground so that it follows the shale layer for about 2km. Many such horizontal sections, 12 or more drilled parallel to each other and about 200m apart, form a single drill pad, allowing access to the laterally extensive bed of shale, which is often (especially in the US) not very thick. However, even this is not enough to recover gas at a viable rate. It is also necessary to induce fractures in the shale bed, extending away from each borehole at regular intervals, to facilitate flow of gas from the rock bed to the boreholes.

Hydraulic Fracturing

Hydraulic fracturing, commonly known as fracking, is a technical process used to maximise the flow of gas to a borehole for extraction by creating a fracture in the surrounding layer of rock. As the proper name implies, each crack is induced by raising the water (hydraulic) pressure in a section of the borehole. The cracks propagate away from the borehole at regular intervals, extending more than 100m in either direction into the surrounding rock. The fracking fluid acts like a crowbar, wedging each crack open by a few millimetres. Fine sand is injected into the fractures to prop them open to facilitate gas flow.

The hydraulic fracturing operation for each well involves fracturing the shale along a selected length of the well within the target shale. For example, along the length of the horizontal well section. The fracturing is carried out in stages (a hydrofracture treatment) starting from the furthest end well. There may be 10 to 20 treatments required per well to achieve the desired extent of fracturing. The exact procedures and technologies used for hydraulic fracturing can vary according to local circumstances but the following is typical:

> Each hydrofracture treatment comprises the perforation of an isolated horizontal section of the steel well casing (and surrounding cement) using a directional explosive charge. The section is then cleaned by injecting fluid at high pressure before hydraulic fracturing of the shale rock. The process starts in the section at the furthest end of the well and continues until the required length of well has been treated.

Hydraulic fracturing has been used in the oil and gas industry since 1947 to stimulate well production, and several millions of such operations have been carried out worldwide. It is also used as a standard technique for measuring the underground state of stress. However, hydraulic fracturing as used to exploit unconventional gas represents a much more intense application of the method, because a much greater number of fractures must be induced compared to conventional hydrocarbon applications. For this reason it is known as High Volume Hydraulic Fracturing (HVHM), to emphasise the much greater scale of application.

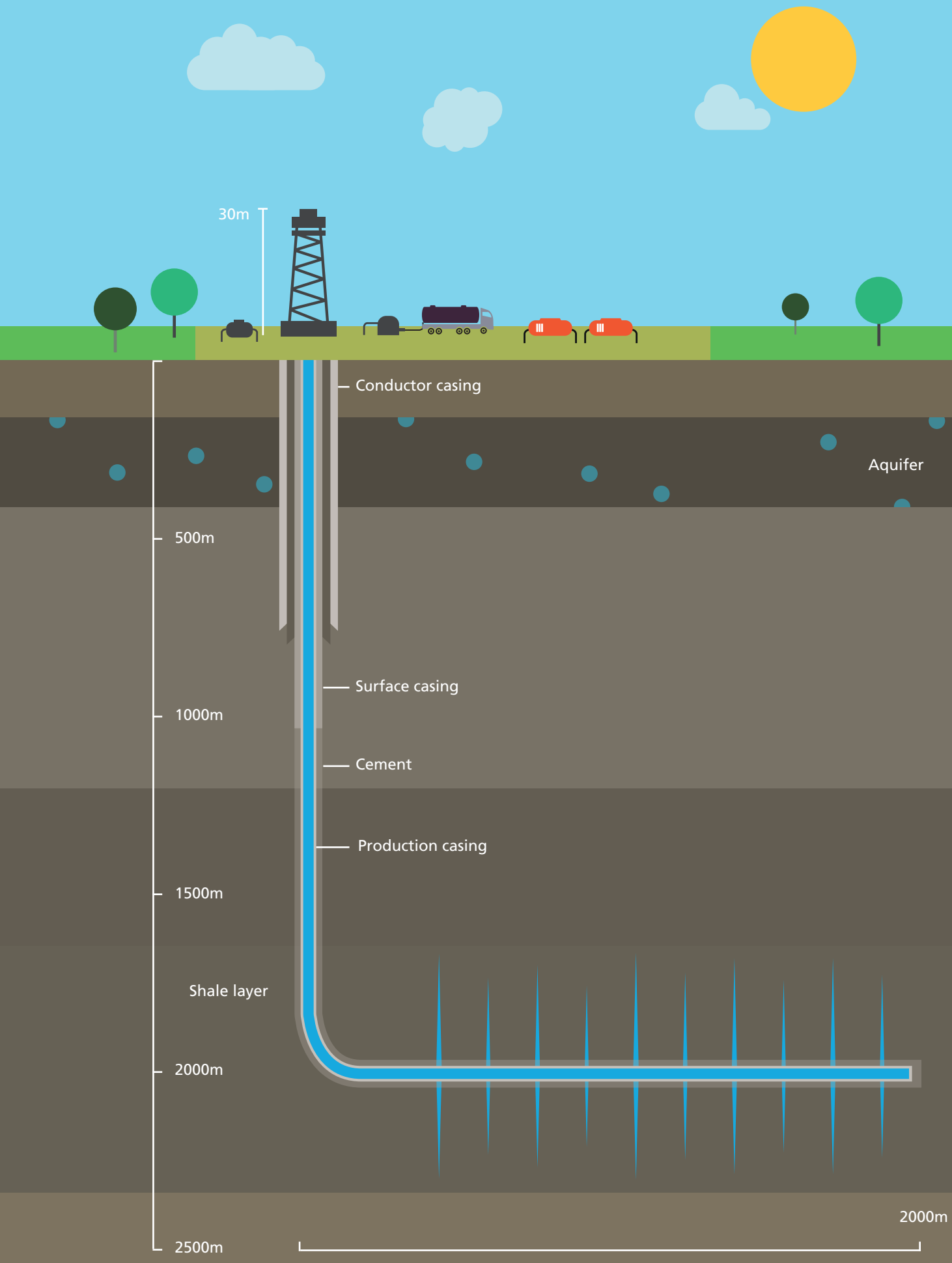


Fig. 1 What is Shale Gas

Shale Gas Activity in the United Kingdom

The shale gas industry in the United Kingdom has barely entered its exploratory phase. The size of the shale gas resource and its economic viability in the UK remains unclear and cannot be known until a number of exploration boreholes have been drilled.

A study published by the British Geological Survey (BGS) and Department of Energy and Climate Change (DECC) in June 2013 assessing the Bowland shale formation in Northern England estimated 37.6 trillion cubic metres (tcm; gas volume at 1 atmosphere pressure and 16 °C) of gas-in-place (GIP), based on the known amount of shale and an estimate of how much gas it may contain. GIP does not represent the amount of commercially recoverable gas. Estimates suggest that if only 10 per cent of this were to be recovered it could meet UK gas needs for approximately twenty-five years.

Currently only a handful of companies are looking to explore the potential of shale gas in the UK. Cuadrilla Resources began testing wells near Blackpool in 2010. A series of small tremors, two of which were felt at the surface, arose from the hydraulic fracturing at one of these wells, Preese Hall. This led to a temporary suspension of all shale gas operations while an independent investigation was carried out. In 2013 Centrica acquired 25 per cent of the exploratory licences for the Bowland shale from Cuadrilla.

In 2011 and 2012 IGas drilled test holes in the Bowland shale formation and published estimates of gas reserves in the North West of 2.9tcm.

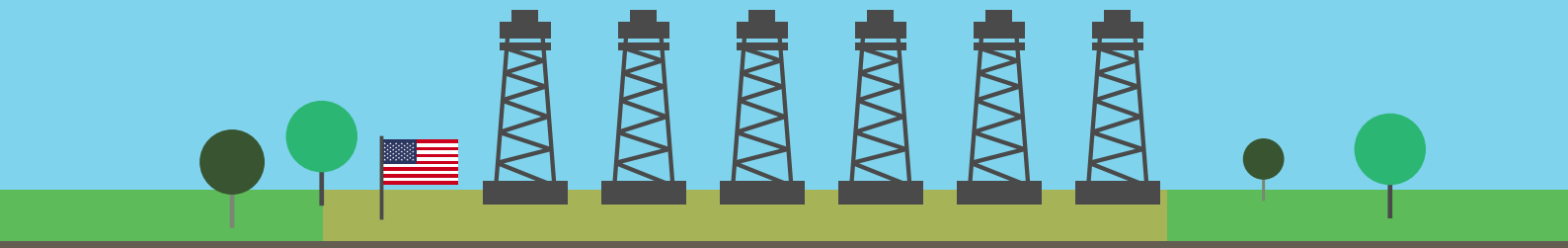
In November 2012, the Government consulted on extending the major infrastructure planning regime to certain types of business and commercial development – to include onshore oil and gas extraction developments of over 500 tonnes per day for petroleum and 500,000 cubic metres per day for gas. The Government published its consultation response in June 2013 and decided not to include these oil and gas extraction projects in the major infrastructure planning regime because the Town and Country Planning Association (TCPA) were concerned that including coal, oil and gas within the business and commercial category raised questions about the Government's commitment to addressing climate change.

After considering the responses received and comments made during the passage of the Growth and Infrastructure Act, the Government concluded that applications for planning permission for onshore oil and gas schemes, including any future planning proposals for shale gas development, should not be included in the new business and commercial category. They concluded that this will be kept under review.

In December 2014, the Labour Party launched a campaign to tighten regulations governing the hydraulic fracturing industry, putting forward a number of amendments to the Infrastructure Bill to government legislation designed to "close key loopholes", and to force operators to disclose more information on their activities and provide further protection for National Parks, Areas of Outstanding Natural Beauty (AoNBs) and Sites of Special Scientific Interest (SSSIs).

Government has included provisions in the final Infrastructure Act to simplify procedures by which the onshore oil and gas and deep geothermal industries obtain underground drilling access 300 metres or more below the surface.

Ministers accepted a series of new regulations from Labour on 26 January 2015 after facing defeat by concerned backbenchers. Prior to receiving Royal Assent, however, they decided that operators will be allowed to drill horizontally under national parks and other protected areas if the well heads are located outside their boundaries.



Shale Gas Activity in the United States

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For this reason it is worth examining the growth of shale gas in a country that has developed a large industry over the past ten years. The United States has experienced a rapid rise in the production of shale gas. In 2000, shale gas represented 1.6 per cent of total US natural gas production. By 2010 it accounted for 23.1 per cent and, despite the recent drop in oil prices, is still predicted to rise to 53 per cent by 2040.

A major difference between the US and the UK is that in the US every land or property owner under whose land drilling takes place is statutorily eligible for compensation and royalty payments. In the UK the subsurface is owned by the crown and no compensation is directly payable, although there is provision in place for payments to be made *ex gratia* (without legal obligation) to the local community.

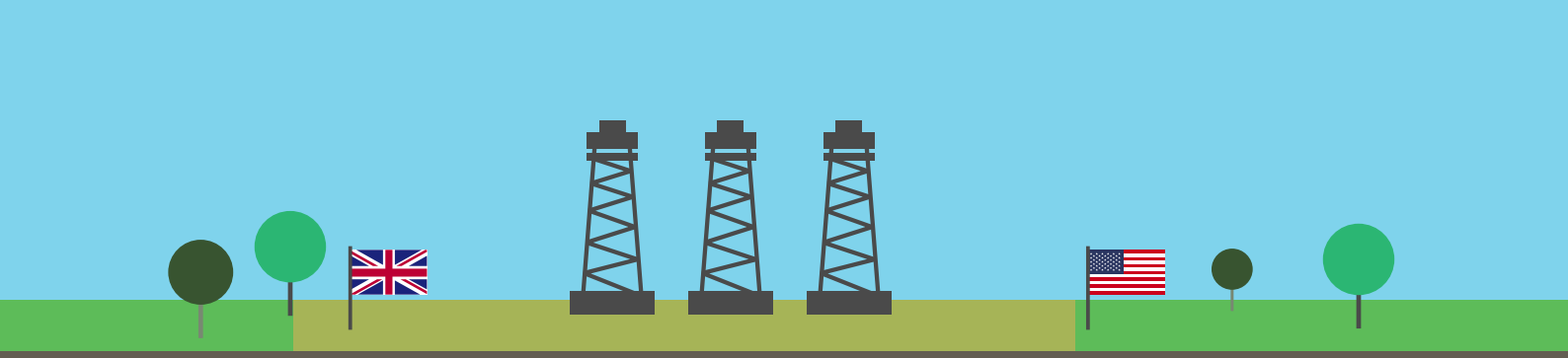
We'll be taking further evidence on this over the next few months, and will consider this issue in detail in our fourth interim report to be published in December.

In the US, regulation of the shale gas industry is predominantly managed by individual states, counties and cities. There has been huge variation in the attitudes of individual states towards the benefits and/or risks of allowing a shale gas industry to develop. For example, Texas and Pennsylvania have been very supportive of the industry, while New York State has banned hydraulic fracturing pending further research into potential adverse effects on human health.

Diverging attitudes to shale gas development can be seen both at state level, as well as within the research literature. Supporters of shale gas in the US claim that shale gas exploitation leads to higher employment, lower energy costs, stimulation of supporting and energy-intensive dependent industries, increased energy security and their opinion that shale is a less polluting and less carbon-intensive alternative to coal.

Opponents believe that shale gas exploitation risks contamination of water resources, earthquakes, discharge of hydraulic fracturing fluids, fugitive emissions, and hazards of dealing with waste materials, noise, air pollution and increased traffic.

In some areas of the US a rapid roll out of shale gas extraction, combined with poor governance and limited attempts to establish appropriate public participation has created distrust. However regulatory oversight and operational probity have improved substantially in recent years in the US - this was certainly one of the messages that we received during the Task Force's recent discussions in Pennsylvania and Washington.



Public Perception of Shale Gas in the United Kingdom and the United States

Opinion polling by United Kingdom Onshore Oil and Gas (UKOOG) implies that the British public has been supportive of the creation of a shale gas industry, but that this support is in decline following protests in Balcombe in the summer of 2013.

A Guardian newspaper poll in August 2013 found an equal split in public opinion to shale gas extraction taking place in their area – 40 per cent in favour and 40 per cent opposed. The most recent polling from DECC shows a continuing decline in support and an even split – with 24 per cent of respondents supportive and the same percentage opposed.

US studies have found that at a national level there is limited familiarity with the process of shale gas extraction and uncertainty about its impacts. At this level 20 per cent of respondents were somewhat or strongly opposed to hydraulic fracturing, compared to 22 per cent who expressed some or strong support.

In areas such as Pennsylvania, where the shale industry is more established and residents believe that they have a greater awareness about the hydraulic fracturing process, they believe on balance that the economic benefits strongly outweigh environmental risks.

At local level in the US, polling reveals that the issue remains divisive – with those who perceive themselves to benefit directly from the industry more likely to support it than those who do not (or are not aware of any benefits).

One consistent and relevant feature of the polling in the US is the attitude towards regulation. There is consistent support for full disclosure of the chemicals used in hydraulic fracturing – something that is still not a requirement in many parts of the United States – and also for severance taxes on the industry.

> "In the US, there is consistent support for full disclosure of the chemicals used in hydraulic fracturing"

The regulatory and planning landscape of the United Kingdom

Current regulatory responsibilities

Currently, responsibility for shale gas extraction in the United Kingdom is shared amongst several national and local government agencies, each covering regulation and/or monitoring of different aspects of the shale gas extraction process.

The first step in the exploration, development and exploitation of a hydrocarbon resource is that DECC issues onshore Petroleum and Exploratory Development Licences (PEDL) as part of a licensing round. These licences can be held by a single company or several working together, although in the latter case it is only considered that there is one licensee, with companies sharing liability. DECC has stated that once a licence is issued it should be worked by the licensee within a specified time frame. The licence will be based on the Model Clauses set out in the Petroleum Licensing (Exploration and Production) (Landward Areas) Regulations 2014.

DECC also gives consent to drill under the licence once other permissions and approvals, outlined below, are in place. It has responsibility for assessing the risk of and monitoring seismic activity and grants consent for flaring or venting.

National policy is set out in the National Planning Policy Framework (NPPF) as well as specific planning guidance. It is the responsibility of local government to produce a Minerals Plan for their area. However when taking a decision, planning officers at planning authority level must consider the guidance associated with the NPPF.

The planning process

Within the above overarching framework mineral (i.e. local) planning authorities – usually the relevant county council – are required to grant planning consent for development, i.e. for the physical structures and location of drilling and production activities related to shale gas. Along with the PEDL Licence, this is the main regulatory constraint that applies to shale exploration. Some necessary initial exploratory work using seismic reflection methods to determine the site of a drill pad is considered to be 'permitted development', which means it does not require planning permission.

Then there are three phases of development common to all onshore hydrocarbon production: exploration and testing/appraisal; development; and production. It is possible for an operator to apply for all three phases of the process in a single application. This is followed, once operations have ceased, by site closure and restoration, which is specified in the initial application by the operator for approval by the planning authority. This information should be easily accessible and available to the public.

The issues considered in the planning application (Planning Guidance 2014b) are:

- Ground and surface water
- Visual intrusion and landscape
- Noise control and monitoring
- Dust and air quality
- Lighting
- Soils
- Protection of species and habitats
- Restoration and aftercare

Meanwhile, the Environment Agency (EA) and the Health and Safety Executive (HSE) split their responsibilities as follows.

The Environment Agency (EA) is responsible for the protection of water resources (including groundwater aquifers and surface water), and ensuring that any waste is treated and disposed of appropriately. The EA is also responsible for regulation of air emissions.

The Health and Safety Executive (HSE) regulates the safety aspects of all phases of on-site well infrastructure and operations extraction and is particularly responsible for ensuring the appropriate design and construction of a well casing for any borehole.

Planning permission should be determined within 13 weeks for a major application. However, a main concern for the planning process is whether an Environmental Impact Assessment (EIA) or Habitats Regulations Assessment is required as this a key determinant in the grant of planning permission. Where an EIA is applicable, a 16 week period applies. If a planning authority fails to meet this deadline or rejects an application on grounds that are inconsistent with the local plan or national guidance then the applicant may appeal and be awarded costs.

The planning process can also consider impacts and mitigation outside of the redline boundary of the application site and these can be resolved through the imposition of planning obligations (under section 106 of the Town and Country Planning Act).

In addition, a group of Universities, (Birmingham, Bristol, Liverpool, Loughborough and Manchester) under the auspices of the British Geological Survey (BGS), have proposed an independent process to augment the official monitoring, especially in relation to air and ground water quality, seismicity and ground movements. This proposal is, of course, welcome.

"A group of Universities have proposed an independent process to augment the official monitoring. This proposal is, of course, welcome"

Environment Agency permitting

The Environment Agency permitting system can require operators to obtain environmental permits covering a series of activities.

The main potential areas are:

- Groundwater activity
- Control of waste disposal (i.e. flowback water) as a 'mining waste activity'
- Industrial air emissions where more than 10 tonnes a day of gas is flared

In addition, specific consents may be required in relation to the water abstraction and discharge activities. At the moment, shale gas exploration does not fall under the main form of industrial process environmental permitting and therefore does not require a holistic and integrated environmental permit as a matter of course. The European Union is currently considering this area.

Applicants must give notice of their intention to construct a borehole for mineral extraction or exploration. They are also required to notify the BGS about planned boreholes deeper than 30m.

If required, a permit to ensure groundwater protection prevents any drilling in 'source protection zones' which is intended to prevent any risk of contamination of drinking water sources through shale drilling gas operations. This requires the applicant to conduct detailed assessments of the hazards and associated risks of the pollution to groundwater from any hazardous substance and to limit the input of non-hazardous substances to avoid potential pollution of groundwater. The applicant must also provide an assessment of the chemicals used for well stimulation and outline their plans for decommissioning the site.

It is likely that applicants must also gain a permit for mining waste operations, because used drilling mud, borehole cuttings and flowback water are treated as waste materials. This definition also includes any waste gas such as fugitive methane, which is defined as the methane escaping during the drilling, extraction, and transportation process. This permit would only regulate the waste aspects of the operations. Where the flowback water has picked up traces of radioactive materials, the final issue dealt with in the EA permitting process is the radioactive substances waste plan, which deals with the naturally occurring radioactive material (NORM) present in many geological formations, including oil and gas-bearing layers of rock.

Throughout this process the onus is on the applicant to demonstrate contracts with appropriate, approved waste material and water treatment facilities.

Public consultation

Planning authorities are required to involve the public when creating a Local Plan for their area (which, as outlined above, will include a Mineral Plan). National planning guidance suggests that these plans should be reviewed and possibly updated, in part or in full, at least every five years. In addition planning authorities are required to publish a Statement of Community Involvement to explain how they will involve the local community in the creation of their plan.

It is more common, however, for interested parties to comment on planning applications at the stage at which they are submitted. There will be a designated consultation period but there is significant expectation that applicants seeking planning permissions will begin to consult with relevant parties even before the application is submitted, to ensure that those who are interested have an opportunity to comment and influence proposals at an early stage.

In addition, within the EA permitting process there is also scope for consultation, particularly if a site is declared to be of 'high public interest'.

Anyone has a right to comment on an application, although the final decision by either the EA or the planning authority should be determined on the basis of their relevant spheres of responsibility, as outlined above.

Poor implementation versus inherent concerns

When examining the concerns associated with the creation of a shale gas industry in the UK we have found it useful to differentiate between:

- concern over the alleged or potential consequences of badly implemented hydraulic fracturing, and;
- concern over the alleged or potential consequences that are inherent to the process of hydraulic fracturing itself, including wider perceived environmental impacts.

This distinction allows us to examine whether concerns over hydraulic fracturing could be overcome by a rigorous regulatory system, effective monitoring and trusted community involvement and communication.

Recommendations

The current regulatory process is complex – involving DECC, the EA, the HSE, and local planning authorities. A regulator, to our mind, must command the confidence of the public and must have the resources, skills, expertise and capacity to execute its duties effectively.

In discussions with local communities, we have been struck by the frustration many have felt about the current system, its complexity and the absence of real confidence in the regulatory framework.

Because this confidence is so crucial for ensuring the proper monitoring and regulation of the industry, we recommend that the regulatory process should change. We believe that a new, bespoke regulator should be created for onshore underground energy, to assume the current responsibilities of the Environment Agency, Health and Safety Executive, and the regulatory activities of DECC.

It is our belief that not only will this new regulator be able to command more public confidence, its specific remit will allow it to develop expertise and skills required to ensure that it is able to execute its duties effectively. We also believe that, because of the public interest in shale gas there is an argument to be made that, over time, the new regulator should consider working with the European Commission to develop bespoke regulations specific to the shale gas industry to substitute for the current general suite of regulations laid down by European Directives. At the moment, shale gas is regulated under Water, Mining Waste, Radioactive Substances, and Industrial Emissions Directives, none of which were actually created for this purpose, even though – at present – they provide appropriate protection.

This new regulator should be jointly accountable to the Department for Environment, Food and Rural Affairs (Defra) and DECC and should have the public and environmental interest at the heart of its remit. Planning consent for local issues like traffic, noise, visual impact and local disturbance, should of course continue under the democratic supervision of the local planning authority; however planning authorities should have a statutory duty to consult the new regulator when assessing an application.

We conclude that full Environmental Impact Assessments are not readily accessible nor easily understood. A system has now been put in place for an Environmental Risk Assessment – more succinct and approachable than a full-blown Environmental Impact Assessment – to be submitted for each application. We believe that this system should be built upon, in order to achieve a well-considered and readily accessible Risk Assessment made available to local communities, and should be a requirement for all applications.

The new regulator should establish a template for these Risk Assessments that includes an analysis of social as well as environmental risk. The Risk Assessments should look at cumulative as well as immediate impacts and should cover a cluster of sites where they are in close proximity to one another.

It would, of course, take time for a new regulator to be established; however, in our view, a new government after 7 May 2015 should legislate as soon as possible for this to happen. In the meantime the existing regulatory system should continue to operate. The existing system, whilst complex and relatively unapproachable, nonetheless works; but if the industry develops and the number of applications rises, we believe there will be a need for a single, simplified system. We would add that both the existing and the new regulator must be properly staffed in order to provide appropriate oversight, especially if the number of drilling applications increases substantially. It is also, of course, essential for planning authorities to have the necessary resources and expertise to undertake their responsibilities efficiently.

Funding for the regulator and for monitoring should come from fees and levies drawn from the operators.

The full process is set out by the Government in its Planning Practice Guidance:

Planning Practice Guidance

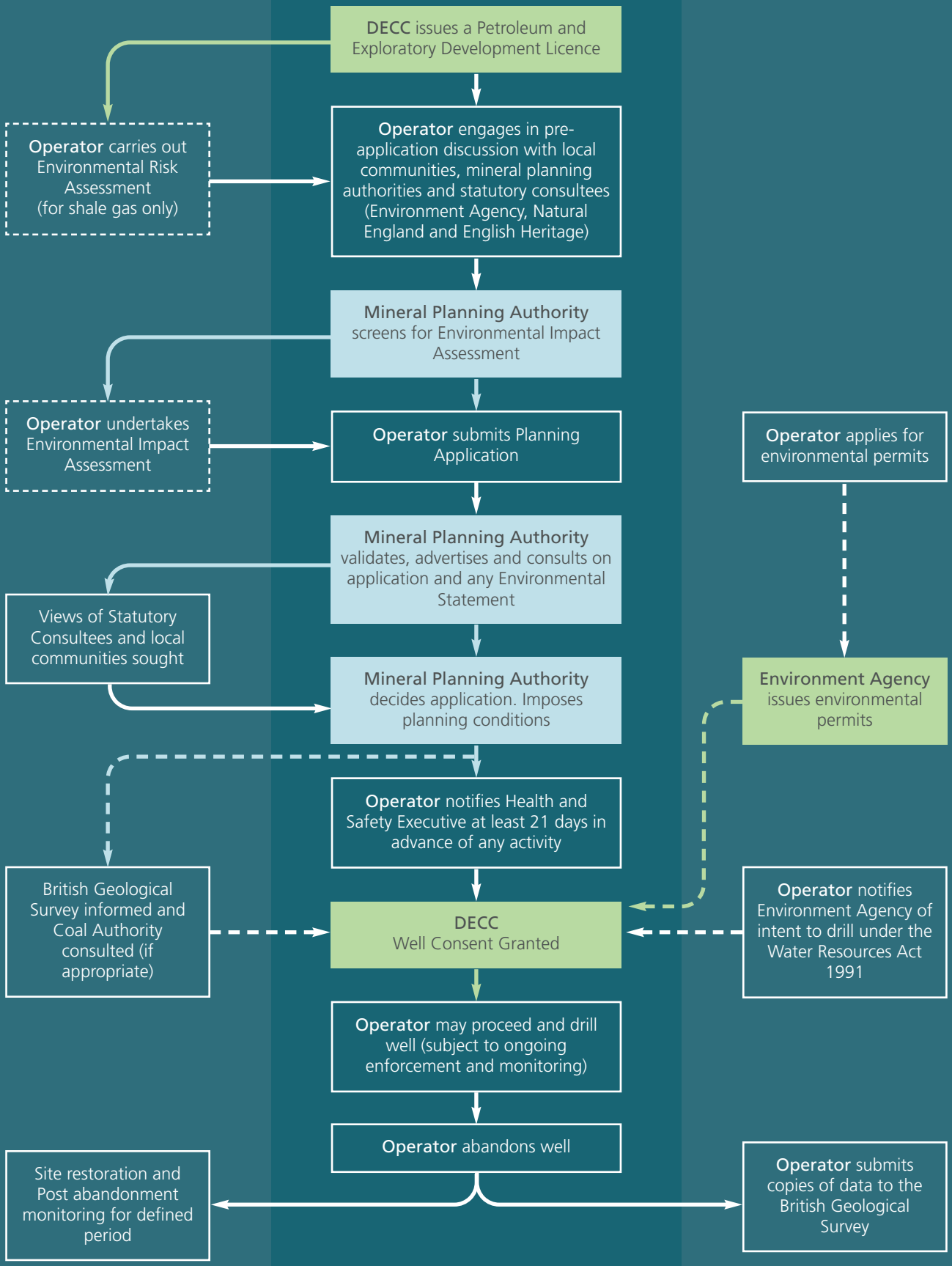


Fig. 2 Planning Practice Guidance (2014c), adapted from CLG outline of process for drilling an exploratory well

Public consultation in practice

In meetings the Task Force on Shale Gas has held with interested parties, the manner in which public consultations are conducted has emerged as a major concern.

Operators say they have made genuine efforts to involve local communities. Community groups opposed to proposed developments in their area believe that operators are not really interested in hearing what they have to say. To establish what is happening in practice and whether this disconnect can be resolved or improved it is worth looking at what happens in practice and hear the thoughts of both operators and local residents in affected areas.

Operators' engagement

Operators that the Task Force has spoken to believe strongly that they have not only met the statutory requirements set out earlier in this document, but have gone further in their desire to inform and involve communities in areas in which they hope to establish operations.

With regard to its two current applications to Lancashire County Council, Cuadrilla, for example, points out that it developed a full Environmental Impact Assessment.

For the two applications it held a total of 46 events which attracted a total of 2,500 people. The company mailed more than 87,000 communications in the form of letters, updates, reports and invitations and also went door to door to speak to local residents.

Cuadrilla produced an Environmental Risk Assessment (ERA) – evaluating internal practices – i.e. working practices rather than external issues - to accompany the EIA. This was conducted early in the process using established methods and involved the community through a series of workshops.

Moreover, the operator states that the results of the EIA led to changes in the operational design. Cuadrilla states *"as a result of deep engagement with the community, Cuadrilla was able to develop an understanding of the issues as they perceived them and to quantify this analysis. As a consequence Cuadrilla made a number of design and operational changes in areas of priority for the community"*.

The firm also said that it created different types of communication materials to inform local residents about their proposals – including community maps, visualisations, animations and an information video presented by Cuadrilla Chief Executive Officer, Francis Egan.

"Operators that the Task Force has spoken to believe strongly that they have not only met the statutory requirements, but gone further to involve communities"

Public disenchantment

Those people who are concerned about the development of a shale gas industry believe that operators are disingenuous and that consultations are largely a tick-box exercise for a decision that had already been made.

One local resident referred to a national-level consultation on the Government's 'Proposal for Underground Access for the Extraction of Gas, Oil or Geothermal Energy'. This consultation ran from May until August 2014. The Government received more than 40,000 responses, 99 per cent of which opposed the proposal to legislate providing underground access to gas, oil and geothermal developers below 300 metres.

The Government's response to this consultation concluded: *"We acknowledge the large number of responses against the proposal and the fact that the proposal has provided an opportunity for the public to voice their concerns and raise issues. However the role of the consultation was to seek arguments and evidence to consider in developing the proposed policy. Whilst a wide range of arguments were raised and points covered, we did not identify any issues that persuaded us to change the basic form of the proposals."*

This gets to the nub of the issue – when the public enters into a consultation process they want to believe that they are being given a chance to influence a final decision. Often it appears they are being asked to give a reason why 'not' to go ahead with a decision that has already been made, or that they are being given a chance to record objections, but without any collective or individual power to influence the outcome in reality.

Residents expressed frustration at a planning system that invites them to comment on individual applications but does not seek opinions on the wider or longer term intentions of operators for particular areas.

Residents also believed that operators were behaving 'tactically' in how they approached consultation with the public – using methods to ensure that they met all of their statutory requirements whilst in practice limiting the ability of the local population to become effectively involved in the decision-making process. This included commissioning local resident surveys but refusing to publish the results; holding community exhibitions only during working hours and producing hugely complicated materials for the public that are difficult to use and understand.

"Residents expressed frustration at a planning system that invites them to comment on individual applications but does not seek opinions"

Recommendations

It is obvious to us that there is substantial public distrust within communities directly affected by shale gas proposals. The level of distrust differs from community to community, and not all communities are unanimous in their view.

It is obvious to us that there is substantial public distrust within communities directly affected by shale gas proposals. The level of distrust differs from community to community, and not all communities are unanimous in their view.

It is also true that in many cases operators are now beginning their engagement with communities earlier, and more fully, than was the case in some of the early instances. However, because genuine community engagement is essential in order to secure broad acceptance for any development proposals that might be proposed, we recommend that community engagement (which should go further than 'consultation') should begin before a formal proposal is submitted to either the licensing or the planning authority.

We also recommend that a community engagement plan must be submitted by the operator alongside their initial application for a licence to drill.

It is important when monitoring is being carried out for it not to rely solely on self-monitoring and self-reporting by the operator, but must include regular (and sometimes random) visits and inspections by the regulators. This does happen to an extent at present, but should be more actively pursued in future. We recommend that the statutory regulator should be proactive in carrying out the relevant inspections and monitoring of a site where permission to drill has been granted.

And as part of the process of full community engagement, we recommend that community representatives should be involved alongside the regulator in carrying out the monitoring where they wish to be involved.

The results of all monitoring should be readily and regularly available to the local community together with the regulator's analysis.

> "We recommend that community representatives should be involved alongside the regulator in carrying out the monitoring"

Specific local concerns associated with Shale Gas

A number of specific local concerns have been raised about the development of a shale gas industry in the UK that relate directly to what is being discussed in this report, insofar as they fall within the gambit of current regulatory and planning systems.

They represent a subset of the whole gamut of potential environmental impacts of shale gas development. The specific issues include (i) noise pollution, (ii) traffic routing and the disturbance posed, and (iii) effects on human health.

As noted above, the Task Force on Shale Gas will examine the *whole* gamut of local environmental impacts fully in a standalone report that will be published in June. This will include impacts on groundwater, treatment of wastewater, earthquake impacts, fugitive emissions, light pollution and well integrity. We want to touch here, however, on one or two of the more specific local planning issues.

Noise and Traffic

In February 2015 Lancashire County Council's planning officers were asked by councillors, prior to the planning committee meeting taking place, to recommend refusal of Cuadrilla's application for drilling a site at Roseacre Wood, near Preston. They did so on the basis of a perception of noise and traffic movements.

At the Preston New Road site, Cuadrilla committed to a night time noise level of 42db at the nearest residential property – for comparison this is roughly the same volume as a household freezer.

The Government's planning guidance specifies that noise should be considered as part of a planning authority's decision-making process, although it is not something to be considered in isolation.

The onus for shale gas operators and planning authorities is to determine the potential noise implications of any proposed development. The table of Government planning advice (Fig. 3) outlines how different levels of noise impact should be tackled by the planning authority.

PERCEPTION	EXAMPLES OF OUTCOMES	INCREASING EFFECT LEVEL	ACTION
Not noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Noticeable and intrusive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

Fig. 3 CLG Planning Practice Guidance - Noise

Traffic

The planning officer commenting on the Roseacre Wood application also recommended refusal on the basis of traffic safety, stating:

"…it would generate an increase in traffic, particularly HGV movements that would result in an unacceptable impact on the rural highway network and on existing road users, particularly to vulnerable road users, and a reduction in overall highway safety that would be severe."

Cuadrilla argued that it proposed a number of mitigation measures, including vehicle route restrictions, site management, driver training, monitoring and ongoing consultation with statutory and community bodies.

The application also included highway works to improve safety, including road widening to create passing places in certain locations.

In conversation with local residents, the Task Force encountered repeated scepticism that the amount of traffic estimated by operators would be the actual amount of traffic if drilling at a site were to go ahead. In contrast, Cuadrilla argued that their estimated traffic movement estimates were carefully considered and realistic.

"the Task Force encountered repeated scepticism that the amount of traffic estimated by operators would be the actual amount of traffic"

Recommendations

It is very clear to us, from our discussions with local residents in Lancashire and Sussex, that lorry movements, and the trucking in and out of drilling equipment, water, sand, pipes, and other plant materials, are by far the greatest cause of concern in relation to the immediate environmental impact of a well site.

We observed a similar problem (especially with the trucking-in of water) at fracking sites in Pennsylvania. We therefore recommend that operators should pay particular attention to this issue when they are considering making a proposal for well development.

We recommend that in considering the siting of a possible well, the operator should take into account the impact of access to the site on surrounding towns and villages and ensure that disruption is minimised; water should, where possible, be sourced by pipeline rather than by truck; and that at the outset of an application process, full and accurate information should be made available to the community about all potential lorry movements throughout the life of the well.

Health Impacts

The Task Force has also been examining much of the evidence that has been brought together about the possible impacts of the shale gas industry on the health of those living in the surrounding community, and of those working on the sites. We are still considering the various studies that have been carried out, in depth, and we expect to report our findings in the second interim report.

Conclusions

The outline above cannot fully reflect the importance of the many submissions, meetings and research briefings undertaken by the Task Force on Shale Gas over the course of preparing this first interim report. Taken as a whole we have been able to draw the following conclusions:

1. It is impossible to assess the potential size and relevant impact of developing a shale gas industry in the United Kingdom while knowledge about the size of the resource and recoverable reserves (i.e. both total gas-in-place (GIP) and commercially recoverable gas) remains limited, and the various estimates disputed. Exploratory drilling would fill in many of the gaps in our knowledge.

2. Concerns associated with the establishment of a shale gas industry in the United Kingdom refer to both the consequences of a poorly implemented industry and to concerns that there may be issues inherent to the process of hydraulic fracturing in itself. It is important to distinguish between the two.

3. If concerns are related to the improper implementation of hydraulic fracturing, the public has the right to expect that if the shale gas industry is to be developed in this country it must be held to the highest standards and subjected to a rigorous regulatory system and effective monitoring that has public confidence.

4. The current regulatory oversight for any potential shale gas industry at national level does not command the public confidence that is necessary. The separation of permitting and oversight between the Department of Energy and Climate Change, the Environment Agency and the Health and Safety Executive is unwieldy and difficult for the public to navigate. A single regulator with overall responsibility is more likely to provide the clear and transparent framework necessary to build public confidence in the issue.

5. Public consultation over proposed shale gas exploration and development sites has not been wholly effective and the systems put in place for public consultation are not seen by communities as serving the interests of the public. This applies both to the aims of the consultation – where, for example, there is consultation to no useful end – and to what is actually being consulted upon. The current system effectively allows operators to meet all of their statutory requirements – and more – without adequately addressing the concerns of local communities.

Summary of Recommendations

In light of the above, in this first interim report the Task Force on Shale Gas recommends that the following measures be adopted by relevant parties as soon as is practicable. This will establish and enhance public confidence in the regulatory and planning systems related to shale gas, and set a benchmark for community involvement throughout the process of shale gas development.

1. Our over-arching recommendation is that a new, bespoke regulator be created for onshore underground energy, to assume the current responsibilities of the Environment Agency, Health and Safety Executive, and the regulatory activities of DECC.

   It would, of course, take time for a new regulator to be established; however, in our view, a new government after 7 May 2015 should legislate as soon as possible for this to happen. In the meantime the existing regulatory system should continue to operate.

   Over time, the new regulator should consider working with the European Commission to develop bespoke regulations specific to the shale gas industry and beyond the current general suite of regulations laid down by European Directives. This new regulator should be jointly accountable to Defra and DECC and should have the public and environmental interest at the heart of its remit.

2. Planning consent for local issues like traffic, noise, visual impact and local disturbance, should continue under the democratic supervision of the local planning authority; however planning authorities should have a statutory duty to consult the new regulator when assessing an application.

3. We conclude that full Environmental Impact Assessments are not readily accessible nor easily understood. A system has now been put in place for an Environmental Risk Assessment – more succinct and approachable than a full-blown Environmental Impact Assessment – to be submitted for each application. We believe that this system should be built upon, in order to achieve a well-considered and readily accessible Risk Assessment made available to local communities, and should be a requirement for all applications.

   The new regulator should establish a template for these Risk Assessments that includes an analysis of social as well as environmental risk. The Risk Assessments should look at cumulative as well as immediate impacts and should cover a cluster of sites where they are in close proximity to one another.

4. Proactive, independent monitoring by the regulator must take place to ensure that all sites are fully compliant with permits - especially in relation to well integrity - so that the public can be assured that any examples of poor implementation are being identified and remedied. It is important when monitoring is being carried out for it not to rely solely on self-monitoring and self-reporting by the operator, but must include regular (and sometimes random) visit and inspections by the regulators. This does happen to an extent at present, but should be more actively pursued in future.

5. In order to encourage a move towards genuine public involvement in the proper regulation of shale gas sites, local community representatives should – if they wish – undertake a role in the monitoring process outlined above, alongside the regulator.

6. Community engagement must begin before a proposal is formally submitted to either the new regulator or to the planning authority.

7. A community engagement plan – with a degree of emphasis on involving the community rather than merely consulting with them – must be submitted by the operator alongside the initial application for a licence to drill and agreed in advance with the local authority.

8. At the outset of any application process, full information must be made available to the local community about all potential lorry and plant movements over the course of the life of the drill pad; in considering the siting of a possible well, the operator should take into account the impact of access to the site on surrounding towns and villages and ensure that disruption is minimised and water should, where possible, be sourced by pipeline rather than by truck.

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