

# **THE CHALLENGES OF FRACKING**

## **Shale Gas Exploration & Proposed Extraction in Lancashire**

**A Church Discussion Document**

**January 2014**



**CHURCHES TOGETHER  
IN LANCASHIRE**

## AN INTRODUCTION FROM THE FYLDE

‘Fracking’ is the word commonly used now to describe the extraction of shale gas by a mining process correctly described as high volume hydraulic fracturing (HVHF), which began in the US in 1998.

The industry is being vigorously supported by the UK Government, a policy that is proving controversial, evoking both strong opposition and strong support in the face of what is seen to be the ‘dash for gas’.

The first impact of the development of this new industry has been felt among the communities of the North West of England where geological evidence strongly suggests a rich source of shale gas in the Bowland Shale that underlies much of the region. Lancashire has thus for some years been at the forefront of exploration and development of early strategies that seem likely to be rolled out in many other areas of the country.

The Parish Church of Lytham is at the heart of these developments and as a Parish Church, ‘responsive to live issues in the community it serves’, is naturally concerned to listen and act. It is from such local concerns that our initiative springs.

The arguments for and against fracking have grown in strength of feeling as evidence of the impacts and risks of the industry have become clearer.

Arguments against fracking include impacts on the quality of the landscape, on consumption of water resources and on the agricultural and tourist industries which are crucial for the region. There are seen to be potential risks from the fracking process: to contamination of ground water; and to public health, including stress and anxiety, noise and waste.

Proponents of fracking point to the prospects of relieving local unemployment, the benefits of income for the local communities and the energy security for the UK which results from domestic energy production.

All these have become hot topics locally and nationally.

We found much confusion among local people. What can and what cannot be believed to be true as these controversies rage? Our own listening to local individuals and groups has prompted us to look for order and clarity in the arguments.

As a first contribution, we focus here on the **key question of regulation** of the process of fracking. We take our start from recognised experts in the field, look at the government response to their findings and put the particular challenge before you: What are the risks from fracking? What kind of regulation is necessary?

Our aim is to make an informed contribution to the debate, to enrich public education in the face of the impending changes we expect from fracking and to prompt you to decide for yourself where security for our shared future lies.

## WHY SHOULD THE CHURCH ENTER THE FRACKING DEBATE?

As Christian people, we believe that we have a duty to reflect on and speak out about the implications of fracking for the condition of the environment, the welfare of our human communities and the survival of other creatures with whom we share the earth. We do this because we believe that **all that there is depends upon the love of God**. What the world calls ‘natural resources’, we see as gifts of God’s Creation. We exist in fellowship with all that God has made, we speak up on its behalf and we share an ultimate destiny with it<sup>1</sup>.

The use of natural resources can sustain and nourish human life, build up societies, creatively challenge our technologies and enable us to enrich our cultures. But **the gifts of creation can also be treated simply as commodities, consumed without thought for wider consequences and traded for profit at the expense of others**, about all of which the Christian Scriptures speak with challenging clarity<sup>2</sup>. For us, therefore, it is in this light that the questions which fracking raises - of benefits for energy consumption and costs, of environmental impacts of drilling and extraction, of employment and other rewards for communities and the nation - need to be weighed.

For Christian people, the use of natural resources should always be accompanied by **gratitude** for what are God’s gifts, **concern** for those less able to benefit from their riches, **penitence** for the damage we do to the environment and **learning** together how to behave more sustainably. Fracking presents us with a particular challenge at this moment to articulate our responsibility in all these different ways. Underlying our response, there must be **prayerful waiting upon God’s will**, a **discernment to be prophetic** and a **willingness to act sacrificially**. These are the hallmarks of our life in Jesus Christ, in this situation as always.

Human impacts on the environment are always of **more than local concern**. The immediate consequences of fracking in any particular locality and among any community should therefore be set in the frame of ultimate environmental, economic and social impacts that may be far distant from our own place and time. As Christians we have the opportunity to think and speak about these things in fellowship with other denominations and as part of the worldwide Church. As well as being attentive to our local communities, our wide reach will enable us to give unheard concerns about what we ourselves do here and now, and far distant voices, a serious hearing.

The background to concerns about fracking is the current discussion of **the impacts of global climate change** on the quality of life and sustainability of our atmosphere and seas, the human populations of the world and the landscapes they inhabit. On such questions, evidence multiplies, arguments rage, many are left confused and wondering who to trust<sup>3</sup>. It is in this wider frame that we should respond; helping to foster free access to information, an understanding of the issues at stake, and courage to make decisions about how we act as individuals, in our local communities and as members of wider society<sup>4</sup>. For many Christians and some influential Church organisations, the evidence linking human behaviour, carbon emissions and global climate change is already convincing, so much so that disinvestment in fossil fuels has

become an explicit target or commitment for them<sup>5</sup>. Such determination casts proposals to frack under very close critical scrutiny and deserves our keenest attention.

The Recommendations of the Royal Society and the Royal Academy of Engineering of June 2012 summarised below suggest how mandatory regulation and operational best practice might attend to effective immediate management of the health, safety and environmental risks were fracking operations to go ahead. But endorsement of these does not fully acquit us as Christian people of **our wider concerns for justice**. There are, in shale-gas exploration and fracking operations, societal challenges connected to property rights and values, investment and recompense, planning procedures and the cohesion of communities. A Biblical perspective allows us to see the land itself as a gift and ourselves as tenants for the here and now<sup>6</sup>. The Scriptures also challenge us to be mindful of those who do not immediately benefit from the harvest of its goods or who are effectively dispossessed of something in which they might have a rightful share. Such concerns carry weight wherever and whenever we threaten to damage our environment.

As Christian people, we have a distinctive role to play in the response to any technological development. The prospect of fracking is **an opportunity for our witness and mission at this God-given moment**. After all, we are ourselves interested in deep exploration but, for us, this quest ends in a rather particular kind of challenge: ‘The end of the seam lies in darkness and it is followed to its furthest limit ... but where can wisdom be found, and what is the source of understanding?’<sup>7</sup>

## References

<sup>1</sup>Deut 6, 10-15 & 26, 1-10; Psalms 8, 65, 104, 145, 147, 148; Hosea 2, 18-23; Song of the Three 26-68; Romans 8, 18-25; Mission & Public Affairs Council (2005) *Sharing God's Planet*, Church House Publishing: London.

<sup>2</sup>Lev 25, 1-7; Amos 8, 4-6; I Tim 6, 6-10.

<sup>3</sup>For a recent presentation of the evidence and arguments about fracking, see, for example, Gwen Harrison, Stuart Parkinson & Gary McFarlane (2014) *Shale gas and fracking: examining the evidence*, Chartered Institute of Environmental Health: London.

<sup>4</sup>For theological reflection about climate change, see, for example, David Atkinson (2008) *Renewing the Face of the Earth*, Canterbury Press: Norwich; Michael S. Northcott (2013) *A Political theology of Climate Change*, Eerdmans, Grand Rapid MI; Jonathan Moo & Robert White (2013) *Hope in an Age of Despair*, IVO: Nottingham; Michael S. Northcott & Peter M Scott (2014) *Systematic Theology & Climate Change*, Routledge: London & New York.

<sup>5</sup>See, for example, the Quaker disinvestment campaign (<http://quaker.org.uk>), the ‘Bright Now’ campaign of Operation Noah (<http://operationnoah.org>) and the recent decision of the World Council of Churches (2-8 July 2014 Finance Policy Committee Report on <http://www.oikumene.org>).

<sup>6</sup>I Kings 21; Jer 32, 1-15; Luke 12,16-21; Walter Brueggemann (2002, 2<sup>nd</sup> edition) *The Land: Place as Gift, Promise and Challenge in Biblical Faith*, Fortress Press, Minneapolis MN.

<sup>7</sup>Job 28, 3 & 12.

# THE SEARCH FOR SECURITY

In 2012, the UK Government sought authoritative advice on fracking from the Royal Society, the country's most prestigious academic organisation, and the Royal Academy of Engineers, the key professional body with undisputed expertise in technical questions and risk assessment in engineering industries. The government's aim was to ensure wide public confidence in and support for shale gas extraction in the UK.

In their Report, *Shale Gas Extraction in the UK: A Review of Hydraulic Fracturing*, the RS and RAE acknowledge a wide range of concerns: to protect groundwater from contamination; to ensure that the integrity of wells is guaranteed; to guard against hydraulic fracturing causing damaging seismic events; to guard against leakages of gas and inadequate handling of contaminated waste water; and to minimise wider environmental damage.

The Report makes ten decisive recommendations essential for regulation of the fracking industry, each clearly stated and supported by a commentary. The RS and RAE consider that Government should put in place a strong mandatory system of regulation independent of the shale gas industry.

## Recommendation 1

### **To detect groundwater contamination**

- ▶ The UK's environmental regulators should work with the British Geological Survey (BGS) to carry out comprehensive national baseline surveys of methane and other contaminants in groundwater.
- ▶ Operators should carry out site-specific monitoring of methane and other contaminants in groundwater before, during and after shale gas operations.
- ▶ Arrangements for monitoring abandoned wells need to be developed. Funding of this monitoring and any remediation work needs further consideration.
- ▶ The data collected by operators should be submitted to the appropriate regulator.

## Recommendation 2

### **To ensure well integrity**

- ▶ Guidelines should be clarified to ensure the independence of the well examiner from the operator.
- ▶ Well design should be reviewed by the well examiner from both a health and safety perspective and an environmental perspective.
- ▶ The well examiner should carry out onsite inspections as appropriate to ensure that wells are constructed according to the agreed design.
- ▶ Operators should ensure that well integrity tests are carried out as appropriate, such as pressure tests and cement bond logs.
- ▶ The results of well tests and the reports of well examinations should be submitted to the Department of Energy and Climate Change. (DECC)

### Recommendation 3

#### **To mitigate induced seismicity**

- ▶ BGS or other appropriate bodies should carry out national surveys to characterise stresses and identify faults in UK shale. Operators should carry out site-specific surveys to characterise and identify local stresses and faults.
- ▶ Seismicity should be monitored, during and after hydraulic fracturing.
- ▶ Traffic light monitoring systems should be implemented and data fed back to well injection operations so that action can be taken to mitigate any induced seismicity.

### Recommendation 4

#### **To detect potential leakage of gas**

- ▶ Operators should monitor potential leakages of methane or other emissions to the atmosphere before, during and after shale gas operations.
- ▶ The data collected by the operators should be submitted to the appropriate regulator. These data could inform wider assessments, such as the carbon footprint of shale gas extraction.

### Recommendation 5

#### **Water should be managed in an integrated way**

- ▶ Techniques and operational practices should be implemented to minimise water use and avoid abstracting water from supplies that may be under stress.
- ▶ Wastewater should be recycled and reused where possible.
- ▶ Options for treating and disposing of wastes should be planned from the outset. The construction, regulation and siting of any future onshore disposal wells need further investigation.

### Recommendation 6

#### **To manage environmental risks**

- ▶ An Environmental Risk Assessment (ERA) should be mandatory for all shale gas operations, involving the participation of local communities at the earliest possible opportunity.
- ▶ The ERA should assess risks across the entire lifecycle of shale gas extraction, including the disposal of wastes and well abandonment. Seismic risk should also feature as part of the ERA.

#### Recommendation 7

### **Best practice for risk management should be implemented**

- ▶ Operators should carry out goal based risk assessments according to the principle of reducing risks to As Low As Reasonably Practicable (ALARP). The UK's health and safety regulators and environmental regulators should work together to develop guidelines specific to shale gas extraction to help operators do so.
- ▶ Operators should ensure mechanisms are put in place to audit their risk management processes.
- ▶ Risk assessments should be submitted to the regulators for scrutiny and then enforced through monitoring activities and inspections.
- ▶ Mechanisms should be put in place to allow the reporting of well failures, as well as other accidents and incidents, between operators. The information collected should then be shared to improve risks assessments and promote best practices across the industry.

#### Recommendation 8

**The UK's regulators should determine their requirements to regulate a shale gas industry should it develop nationwide in the future. Skill gaps and relevant training should be identified. Additional resources may be necessary.**

#### Recommendation 9

**Co-ordination of the numerous bodies with regulatory responsibilities for shale gas extraction should be maintained. A single body should take the lead.**

Consideration should be given to:

- ▶ Clarity on roles and responsibilities.
- ▶ Mechanisms to support integrated ways of working.
- ▶ More formal mechanisms to share information.
- ▶ Joined-up engagement of local communities.
- ▶ Mechanisms to learn from operational and regulatory best practice internationally.

#### Recommendation 10

**The Research Councils, especially the Natural Environment Research Council, the Engineering and Physical Sciences Research Council and the Economic and Social Research Council should consider including shale-gas extraction in their research programmes and possibly a cross-Research Council programme. Priorities should include research into the public acceptability of the extraction and use of shale gas in the context of UK policies on climate change, energy and the wider economy.**

## **THE UK GOVERNMENT RESPONSE**

The Government did not request the Royal Society and the Royal Academy of Engineers to give an opinion on whether, given the risks they might identify, fracking should or should not go ahead in the UK.

The Report stresses the importance of risk-management through coordinated regulation if fracking does go ahead. The Report emphasises the responsibility of Government in the regulation of fracking and that this should be implemented by bodies independent of the industry.

We are therefore concerned that, having commissioned and received the Report from these authoritative bodies, the Government has adopted only one of its recommendations as a mandatory requirement: Regulation 3 concerning the seismicity that might be induced by fracking.

## **HOW CAN WE MAKE AN INFORMED DECISION?**

The Government repeatedly insists that shale gas production is covered by robust regulations, but comprehensive regulation for risk management is not in place. Indeed it is hard to see that the many risks identified by the Report of the Royal Society and the Royal Academy of Engineers are all being taken seriously.

If this troubles you, we urge you, as individuals and organisations, to promote an open consideration of the evidence, to look at the further sources of information we list below and to join in a concerted debate, in your own community and regionally, as to whether and how we should be challenging and holding to account those who promise benefits from fracking. If it does go ahead, how can we ensure that its risks are minimised and that communities can feel assured that they will be secure while it is in operation?



## FURTHER SOURCES OF INFORMATION AND COMMENT

Scarcely a day goes by without some new research data and associated comment on issues affected by the fracking process being published in assorted international and national academic, scientific, political and industry professional media. Some of the following links may provide further education and reflection:

**Biodiversity:** "Biotic impacts of energy development from shale: research priorities and knowledge gaps"; Southern S. *et al* *Frontiers in Ecology and the Environment* August 2014. <http://www.esajournals.org/doi/abs/10.1890/130324>.

**Carbon Emissions and Global Climate Change:** Potential greenhouse gas emissions associated with shale gas extraction and use; MacKay, David J. C. FRS, and Timothy J. Stone (2013).  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/237330/MacKay\\_Stone\\_shale\\_study\\_report\\_09092013.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/237330/MacKay_Stone_shale_study_report_09092013.pdf).

**Economics:** 'Baseless economics': Lord Stern on David Cameron's claims that a UK fracking boom can bring down price of gas. On  
<http://www.independent.co.uk/news/uk/politics/baseless-economics-lord-stern-on-david-camerons-claims-that-a-uk-fracking-boom-can-bring-down-price-of-gas-8796758.html>

**Employment:** How Many Jobs Does Fracking Really Create?; Foran C, *National Journal*, Washington, April 2014. See <http://www.nationaljournal.com/new-energy-paradigm/how-many-jobs-does-fracking-really-create-20140414>.

**Environmental Health:** Shale gas and fracking: examining the evidence: Harrison G *et al*, Chartered Institute of Environmental Health, July 2014.  
<http://www.cieh.org/WorkArea/showcontent.aspx?id=53520> (report) and  
<http://www.cieh.org/WorkArea/showcontent.aspx?id=53912> (rebuttal of criticisms).

**Health:** Shale gas regulation in the UK and health implications of fracking; Hill M. *The Lancet* June 2014. [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(14\)60888-6/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(14)60888-6/fulltext).

Potential Health Impacts of the Proposed Shale Gas Exploration Sites in Lancashire: Report of the Director of Public Health, November 2014.  
<http://council.lancashire.gov.uk/ieDecisionDetails.aspx?Id=6130>

**Other recent faith community reflections:** "Fracking", Ralston A. & Shaw B. Discussion Paper for the Catholic NPN Environment Group August 2014:  
<http://www.lancasterfaithandjustice.co.uk/environment-group>.

**Overview of fracking-related topics:** Regular online updates by Alan Toothill, author: 'Fracking the UK. The Storm Gathering over our Countryside. ISBN: 1482655993. See <http://www.frackingdigest.co.uk>.

**Rural life:** Shale Gas - Rural Economy Impacts, Rural Community Policy Unit, DEFRA, March 2014. The report, heavily redacted with much withheld from public scrutiny, was published under FOI August 2014.  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/337654/RFI6751\\_Draft\\_Shale\\_Gas\\_Rural\\_economy\\_impact\\_report.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/337654/RFI6751_Draft_Shale_Gas_Rural_economy_impact_report.pdf).

**The Very Revd Christopher Armstrong, Dean of Blackburn**

**The Revd Philip Biggs, Priest-in-Charge, St Cuthberts, Lytham**

**Ian Birnie, Education Consultant, Chair Development Committee, St Cuthbert's,  
Lytham**

**Helen Boothroyd, Social Justice and Inter-Faith Development Officer, Churches  
Together in Lancashire**

**The Revd Chris Halliwell, Rural & Environmental Project Officer, Blackburn  
Diocese**

**The Revd Julie Jones, Priest-in-Charge, Wesham with Treales**

**The Revd Canon Professor John Rodwell, Chair, Blackburn Diocese  
Environment Group**