A Local Gas Field?
What if there were Fracking in Timsbury?

A Report prepared by members of the Timsbury Environment Group

There is currently much interest in the government and oil/gas industry in fracking to obtain gas, and drilling licences have been granted for this area. If initial exploration suggested significant reserves, it appears that the area might be transformed by gas wells, flaring, pipelines and heavy road traffic. This report examines some of the issues.

1. Conygre Hall Public Meeting

Gas Field Free Mendip is a "network of local people", which "campaigns to raise awareness and prevent unconventional gas development on the Mendips in Somerset". Its website is http://www.gasfieldfreemendip.org/

On 4th November 2013 Gas Field Free Mendip organised a very well-attended public meeting in the Conygre Hall to consider the implications should a gas field be established in the locality. Members of the Timsbury Environment Group (TEG) considered that the information presented would be of wide interest in the village, and sent a short report for publication in the December *Timsbury Newsletter*. This report is a more detailed account of the meeting and of the question of shale gas and coal-bed methane extraction.

Note. **Methane** (CH_4) is the major constituent of natural gas which is piped into many houses in the country as a fuel. When burnt, it forms carbon dioxide, the best-known greenhouse gas. Methane itself is a greenhouse gas, 86 times more powerful than carbon dioxide over a 20 year time scale.

2. Background

For the best part of a century we have enjoyed cheap energy in the form of easily accessible oil and gas. Now that easily-exploited resources are running out the oil and gas industries are turning to much more difficult and therefore expensive sources, which include what is known as "unconventional gas". Two types of unconventional gas, both methane, both of which might be exploited in the Mendip area and in particular on the Somerset coalfield around Timsbury, are *shale gas* and *coal-bed methane*. Often the term "fracking" is used loosely to cover extraction of both.

Shale gas – Fracking

Fracking, short for hydraulic fracturing, involves drilling deep wells into shale rocks, typically 1 to 2 km below the surface and pumping in a fluid at high pressure to break up (fracture) the shale and release the methane "shale gas". The fluid typically consists of about 98% water and sand, and 2% chemical additives which may include toxic, allergenic, mutagenic, and carcinogenic substances.

Coal-bed methane (CBM).

This is methane adsorbed onto the surface of coal deep in the ground. It may be possible to extract it by releasing the pressure of the surrounding water and rock which hold it in place. A variety of techniques may be needed to release the CBM. These include high pressure fracking (described above), fracturing with high pressure nitrogen gas and dewatering (pumping large amounts of water out of the coal seams over several months.

3. What could happen around Timsbury?

The Government sees fracking for shale gas and CBM as a potential energy source and has decided to stimulate their extraction by giving generous tax subsidies to oil and gas companies and by introducing a planning régime which makes it very difficult for local communities to oppose proposals for shale gas (and coal-bed methane) extraction.

Drilling licences for the whole of the Bath-Bristol-Mendip area have already been granted. It is expected that the first stage would be for exploratory drilling to assess the profitability of large-scale extraction in various areas. Interest has already been shown in sites at Keynsham, Ston Easton and Compton Martin. ***Supposing that an area, Timsbury for example, was suitable for fracking, what would be the local impact?***

Numbers of Boreholes and Gas Wells

Wells linked by gas pipelines are about 1km apart, so there could easily be **half a dozen or so in or close to Timsbury**. Each well operated takes up a ground level area of 0.5 to 1 hectare to accommodate the facilities needed.

Fracking

Wells operate day and night, possibly for 20 – 25 years. Hydraulic fracturing is repeated perhaps every 2-5 years in order to stimulate gas flow.

During fracking methane, a much more powerful greenhouse gas than carbon dioxide, is either released to the atmosphere or **flared at the wellhead** causing severe visual and noise intrusion.

Some 4 **million gallons of water** are brought by tanker for each fracturing stage. 20 to 80% of this comes back to the well head, further contaminated by heavy metals, and is taken away, by tanker again, for disposal.

The rest of the water is "lost" in the rock formations and may lead to contamination of water courses, particularly in our local area with its complex highly fractured and faulted geology – "the most tectonically complex area in the U.K.". This is the basis of fears for the integrity of the springs which feed the Chew Valley reservoirs and the British Geological Survey conclusion that fracking within the carboniferous rocks would pose an undefinable risk to the Bath hot springs. Our local streams could be vulnerable to contamination.

There would also be major local impacts from the installation of a **network of gas pipelines** and the **new roads** required for all the vehicles and their traffic.

4. Are there safety concerns?

The Environment Agency [ref. below] acknowledges the "*environmental risks associated with exploring and extracting unconventional gas*" which include:

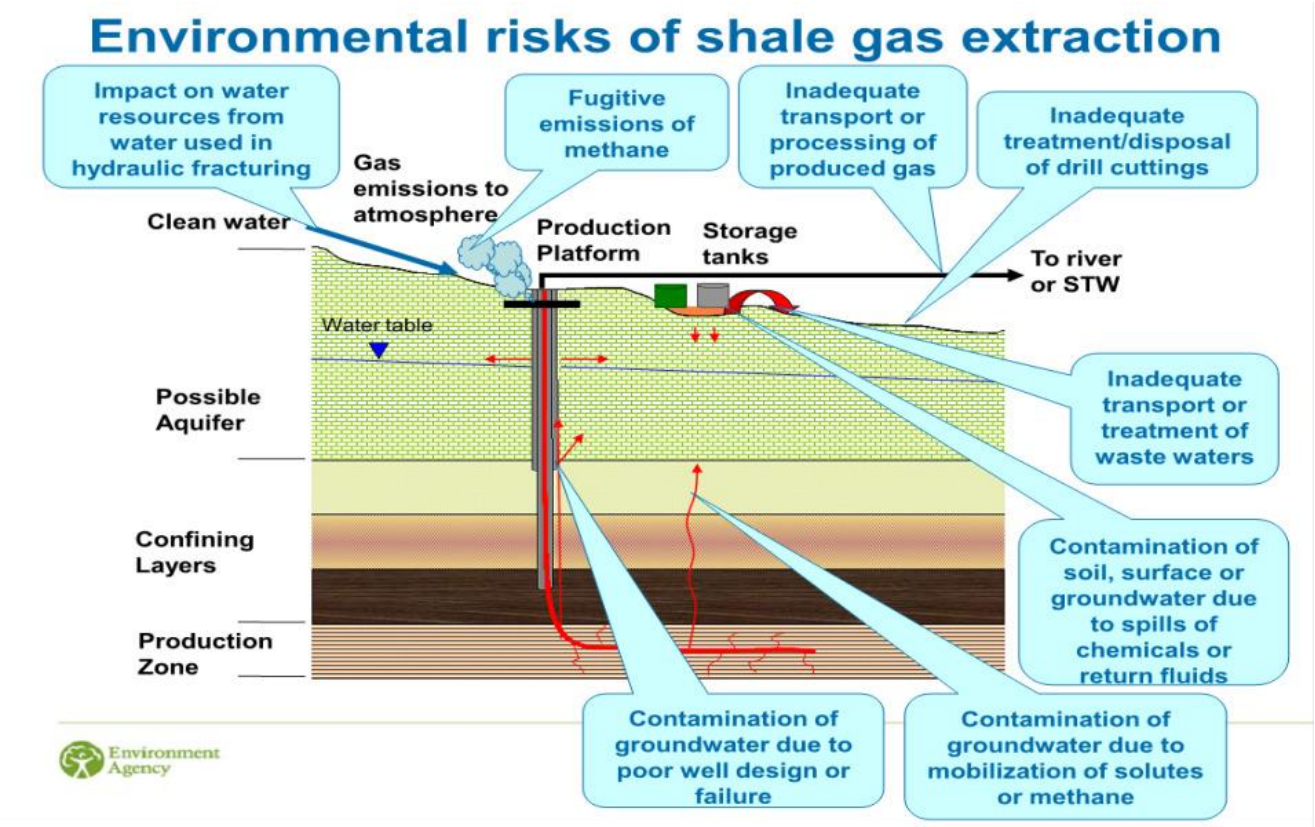
gas or dissolved minerals moving through other rocks into aquifers,
leaks from production wells into neighbouring rock formations and aquifers,
leaks of gas to the atmosphere,
spills of fluids that come to the surface from storage tanks or lagoons,

The figure below summarises these and other risks.

The Environment Agency adds "*All these risks can be controlled through proper design and management of the drilling and extraction site*", note risks are "controlled", not accidents "prevented".

The government and other supporters of fracking often selectively quote from a recent Royal Society report [ref. below] to strengthen their case. The Royal Society however was sanguine: "*likely causes of possible environmental contamination include faulty wells, and leaks and spills associated with surface operations. Neither cause is unique to shale gas.* ***Both are common to all oil and gas wells and extractive activities***" [added emphasis]. It insisted on the need for "*operational best practices [to be] implemented and enforced through regulation*" and expressed concern about the regulatory framework in the U.S. There the government has encouraged gas extraction by exempting

gas extractors from laws protecting the environment, including ones relating to drinking water safety and waste disposal. They are allowed to keep secret the nature of fracking fluids used.



So we could expect "faulty wells, and leaks and spills" to happen, but with "proper design and management" they might be "controlled". Gas and oil extraction is a messy business. The BP disaster spilling nearly 5 million barrels of crude oil into the Gulf of Mexico was simply a recent spectacular example. No doubt both the government regulators and the oil company would have insisted before the accident that the proper design and management was enforced through adequate regulation.

5. Serious Implications for Climate Change

The 2008 Climate Change Act was passed by Parliament with the aim of reducing our greenhouse gas emissions to a level which might prevent disastrous run-away global warming. It established the Climate Change Committee with responsibility to advise the government on climate-related policies. In September 2012, this Committee wrote formally to the government expressing "great concern" that the government policy of significant additional use of gas [from CBM and shale gas] would be incompatible with the carbon reduction targets [ref. below]. The government rejected this advice, setting us on the path to uncontrollable climate change.

Our own M.P., the Hon. Jacob Rees-Mogg told the TEG that he was in favour of development towards exploitation of shale gas, despite the fact that this might be incompatible with meeting carbon targets of the Climate Change Act of 2008. He rejects the scientific consensus on climate change and is prepared to see the carbon reduction targets of the Climate Change Act changed to allow increased carbon emissions [ref. below].

6. The planning position: can local people stop it?

The government has recently introduced planning regulations to favour facking which make local opposition very difficult. Saltford Environment Group [ref. below] has an item on its website entitled "*Councils lose powers for opposing onshore gas developments* " which summarised the new regulations, "Planning practice guidance for onshore oil and gas" (ISBN: 978-1-4098-3960-6)
http://www.saltfordenvironmentgroup.org.uk/fracking.html

The **Transatlantic Trade and Investment Partnership** and related Canada Comprehensive Economic and Trade Agreement (CETA) *could further restrict planning opposition* to fracking and unconventional gas exploitation in general [refs. below]. It seems likely that these would grant investors the right to challenge governments' decisions to ban and regulate fracking, and to seek *compensation for consequent loss of value of investments*.

However Greenpeace is arguing that "in English law, if you own land then your rights extend to all the ground beneath it. The Supreme Court held in 2010 in Bocardo SA v Star Energy [2010] UKSC 35; [2011] 1 AC 380 that these rights apply when someone wants to drill underneath your land. That means that if someone drills under your home without permission, or without a statutory right, it is a trespass and trespass is unlawful". Greenpeace urges those who want to "sign up" for this to go to www.wrongmove.org where they can add their name.

Note
Much of the technical information given here is based on the talk at the Conygre Hall by Gareth Thomas of Intégrale, independent geological consultants, see:
Kay Boreland, *Unconventional Gas Exploration & Exploitation in Somerset & Mendip* Technical Briefing Notes, Intégrale Ltd. June 2013
http://www.gasfieldfreemendip.org/wp-content/uploads/2013/07/Unconventional-Gas-Integrale-Technical-Briefing-Notes-Vers-3-June-2013.pdf
and see http://www.integrale.uk.com/

Prepared by members of the *Timsbury Environment Group*

Contact: timsburyenvironmentalgroup@gmail.com

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http://www.environment-agency.gov.uk/business/topics/133885.aspx [accessed 23.11.13]

Royal Society and Royal Academy of Engineering 2012, *Shale gas extraction in the UK: a review of hydraulic fracturing*, June 2012 DES2597

Carbon emissions and Climate Change: Report of a meeting with the Hon. Jacob Rees-Mogg, Member of Parliament for North-East Somerset. *Timsbury Community website*:
http://www.timsbury.net/PDFS/TEG.pdf

Letter from Climate Change Committee to Secretary of State, Department of Energy & Climate Change, "*The need for a carbon intensity target in the power sector*", 13th September 2012. On line.

Saltford Environment Group http://www.saltfordenvironmentgroup.org.uk/fracking.html

Transatlantic Trade and Investment Partnership
http://ec.europa.eu/trade/policy/in-focus/ttip/questions-and-answers/
http://www.monbiot.com/2013/11/04/a-global-ban-on-left-wing-politics/

EU–Canada Comprehensive Economic and Trade Agreement (CETA):
http://corporateeurope.org/climate-and-energy/2013/05/right-say-no-eu-canada-trade-agreement-threatens-fracking-bans

Other information

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Department for Energy and Climate Change, *Guidance About shale gas and hydraulic fracturing (fracking)*, 30 July 2013
https://www.gov.uk/government/publications/about-shale-gas-and-hydraulic-fracturing-fracking/about-shale-gas-and-hydraulic-fracturing-fracking

P. Richards et al., *Shale gas and fracking,* **House of Commons Library**, Standard Note: SN/SC/6073, 16 July 2012

Ruth Wood, Paul Gilbert, Maria Sharmina and Kevin Anderson *Shale gas: a provisional assessment of climate change and environmental impacts,* **Tyndall Centre, University of Manchester**, January 2011, www.tyndall.ac.uk

Frack-free Somerset www.frackfreesomerset.org/

Gas Field Free Mendip http://www.gasfieldfreemendip.org/