

North Yorkshire County Council

Joint Sub-Committee Meeting of the Transport, Economy and Environment Overview and Scrutiny Committee and the Scrutiny of Health Committee

Minutes of the meeting held at County Hall, Northallerton on 22 January 2016 at 10.00 am.

Present:-

Members:-

County Councillors: Val Arnold, Andrew Backhouse, John Blackburn (sub. for Margaret Atkinson), Robert Baker, Philip Barratt, David Billing, Liz Casling, Jim Clark, John Clark, Margaret-Ann de Courcey-Bayley, John Ennis, Andrew Goss, Michael Heseltine, Robert Heseltine, Peter Horton, David Jeffels, Penny Marsden, Heather Moorhouse, Robert Packham, Chris Pearson, David Simister, Andy Solloway, Cliff Trotter, Richard Welch and Robert Windass.

Co-opted Members:-

District Council Representatives:- Kevin Hardisty (Hambleton), Judith Chilvers (Selby), Bob Gardiner (Ryedale), Jane E Mortimer (Scarborough), Linda Brockbank (Craven), Karin Sedgwick (Richmondshire) and Ian Galloway (Harrogate).

In attendance:-

County Council Officers: Bryon Hunter (Scrutiny) and Jonathan Spencer (Scrutiny)

38 members of the public and press

Present by invitation: Naomi Luhde-Thompson (Friends of the Earth), Ken Cronin (UK Onshore Oil and Gas), Steve Thompsett (UK Onshore Oil and Gas), Dr. Andrew Buroni (RPS Planning & Development), Emily Bourne (Department of Energy and Climate Change), Toni Harvey (Oil and Gas Authority), Martin Christmas (Environment Agency), Ben Hocking (Environment Agency), Greg Hodgson (Public Health England), Simon Padfield (Public Health England), Tony Almond (Health and Safety Executive) and Mark Morton (Yorkshire Water).

Apologies for absence were received from: County Councillors Margaret Atkinson and Shelagh Marshall.

1. Election of Chairman

Bryon Hunter sought nominations for the election of Chairman.

County Councillor Jim Clark nominated County Councillor Andrew Backhouse. This nomination was seconded by County Councillor Bob Packham. There were no further nominations and County Councillor Andrew Backhouse was elected unanimously as Chairman by a show of hands.

Resolved -

That County Councillor Andrew Backhouse be elected Chairman for the duration of the meeting.

2. Chairman's Introduction

The Chairman welcomed County Councillors, external organisations invited to the meeting and members of the public.

He referred to the report and related appendices providing the background to the meeting.

He noted that it was a key meeting in the forward plan of the draft Joint Minerals and Waste Plan, in particular in helping to recommend how the County Council should treat and handle policy and recommendations relating to the process of hydraulic fracking if and when any applications are approved through its Planning and Regulatory Functions Committee. He went on to note that the joint sub-committee is not a planning committee and so its role is not to comment upon or determine individual applications.

He referred to the Ryedale Area Committee meeting held on 10 June 2015 at which it had considered a petition demanding that: "the North Yorkshire County Council publicly oppose fracking and all other forms of unconventional fossil fuel extraction in North Yorkshire, and that this anti-fracking position should be reflected in all decisions relating to mineral planning applications in North Yorkshire". The Area Committee resolved to note the petition and to recommend that further investigation on the matter is commissioned by the Executive from the Transport, Economy and Environment Overview and Scrutiny Committee and the Health Overview and Scrutiny Committee. At its meeting on 7 July 2015 the Executive resolved to consider taking the action the petition requested after hearing the views of the two scrutiny committees. The two scrutiny committees had formed the joint sub-committee to take this work forward.

He said that the Joint Minerals and Waste Plan is currently at the public consultation stage and once finalised will provide the context under which all mineral planning applications including fracking will be judged up to 2030. It is appropriate therefore that the joint sub-committee is involved in that development and advises the Executive as requested.

The key purpose of the meeting is to consider the broad strategic aspects around fracking including considering the extent to which the Plan is 'future proof' should there be a proliferation of wells across the county. The joint sub-committee will also be assessing whether there are any regulatory gaps or ambiguities in the regulatory framework and the general risks associated with fracking activity. This is with a view to then influencing how the Plan could address these problems, for instance, through the publication of supplementary guidance.

He went on to explain the process and procedure of the meeting and noted a sound recording of the meeting would be made.

3. Public Questions or Statements

The Chairman invited members of the public who had given notice to speak to put their questions or statements to Members.

Kevin Hollinrake MP for Thirsk and Malton made the following statement:

It is important to understand the reasons why we consider shale gas explorations in North Yorkshire but first and foremost it is the environmental challenges that we have. Climate change is one of the biggest risks that we have. There was a reduction in global CO2 emissions in 2015 primarily due to the reduction in coal-fired power stations use. In the United States 50% of the reduction in CO2 emissions was directly due to the move from coal to shale gas. We would all like to see a future of renewables, a carbon free future but renewables currently only provide 7% of our energy needs. The World Health Organisation declared our air quality is a public health emergency primarily due to the amount of coal we are burning across the planet.

It also helps to solve some geopolitical risks. Despite the turmoil we see across the Middle East prices of energy are falling in our oil markets, at our petrol pumps, in our domestic home energy costs, and because markets can see that we have domestic solutions to our energy needs in the West.

There are economic opportunities. If we extract just 10% of the predicted shale gas reserves we can meet our UK gas needs for 40 years and in the process create 64,000 jobs.

It was in trying to determine whether shale gas exploration could be done in a discrete and safe way that I went out to Pennsylvania in September last year. It is clear that we need to learn from the early mistakes made in the United States. We need independent supervision of activities and a single regulator. Most importantly we need a 'local plan' for shale gas exploration covering a five and ten year rollout of this industry across our county.

We need detailed solutions within that plan to cover:

- Traffic movements and traffic plans
- Minimum distance from settlements and schools
- Minimum distance between shale gas sites
- The impacts on other important parts of our economy
- The visual impact of our the countryside
- Buffer Zones around our most sensitive parts such as National Parks and Areas of Outstanding Natural Beauty

I do believe we should take a cautious first step but with clear parameters that give the public confidence that we will protect the beauty, tranquility and purity of our countryside.

Jim Tucker made the following statement:

Like Jim Ratcliffe the chairman of INEOS, I too have a degree in Chemical Engineering from the University of Birmingham. Unlike Jim Ratcliffe, the billionaire, who lives in Switzerland to avoid paying taxes in the UK, I live in North Yorkshire and continue to pay all my taxes in this country.

Taking the tax analogy a step further, who in North Yorkshire benefits from any industrial scale development of a fracking industry? It will certainly not be the existing sectors of tourism, agriculture and food production.

It is highly likely that fracking would follow a boom and bust scenario, as is happening today in the USA, by which time the current economic contributors and the county

itself, will have been decimated in order to export profits and taxes to Westminster, Switzerland and the Cayman Islands.

The residents of North Yorkshire deserve a coherent plan for all mineral extraction that covers spatial factors and the overall cumulative impact and not one that relies on treating each application on its merits.

Following his visit to Pennsylvania, our MP thinks fracking should go ahead, but the 10,000 wells drilled in Pennsylvania are in an area 14 times the size of North Yorkshire. The intention of Third Energy is for almost 1000 wells in Ryedale alone, leading to a density per square kilometre 7.5 times greater than that of Pennsylvania.

Adding the ambitions of INEOS and Cuadrilla, plus the associated infrastructure of compressor stations and pipelines across the region, as well as the likelihood of flaring, it becomes evident why a comprehensive plan is essential.

INEOS and all other gas companies have no interest in "energy security", the only motivation will ever be one of creating profit, for example, INEOS has already invested in vessels to bring gas from the U.S. to Grangemouth.

Unless it was cheaper to extract it in the UK why would any business switch supplies to the UK? And does doing it cheaper also mean doing it better with the gold standard regulations the industry likes to talk about, I'll leave you to form your own judgement.

When gas prices start to rise, North Yorkshire will turn into a repeat of the Klondike, with everybody trying to get rich and a flood of drilling and fracking applications will occur. At that point, assessing each application on its merits will not be an option. A coherent plan that protects the long term interests of the residents in North Yorkshire is required before this happens.

This should not be something that is cooked up behind closed doors in Westminster by a consortium of the gas companies chaired by our MP, we all know where the motivations of the gas exploration companies lie and their interests are not those of North Yorkshire residents.

The best way to predict the future is to create it, that is precisely what the gas companies are trying to do, and so it falls to North Yorkshire CC to have its own plan in place to protect the region, its residents and current industries, one that isn't driven by the profit motives of the oil and gas industry.

John Baxter made the following statement:

I am a professional engineer with 15 years of hands-on experience in oilfield servicing which includes oil well cementing and hydraulic fracture stimulation, gained in North America and the UK.

I know there is a lot of sentiment and negative publicity around the subject in the UK, probably because the public has not been engaged and enlightened by industry and regulators leading to anxiety and distrust, resulting in very vociferous and unfounded protest.

The UK operates within the tightest of regulations in oilfield terms both onshore and offshore.

From my attendance of many meetings in Ryedale I have noticed that the main concern in peoples' minds is that of contamination of aquifers, and confusion in the term 'fracking'.

The regulations around drilling of surface casing in oil wells, that protect aquifers, are very thorough. The protective casing is the foundation on which the remainder of the well rests. Subsequent protective casings function to maintain the well integrity to its total depth, with alternating layers of casing and cement.

Many oil wells have been drilled in the UK without incident. The question is: How many have contaminated aquifers? There are none to my knowledge.

To move away from drilling and on to hydraulic fracture stimulation; the surface casing is not exposed to applied flows and pressures at any time. Intermediate and production casing may be exposed to pressure and flow that fall within the design parameters of the stimulation treatment.

In all the stimulation treatments I have taken part in, at no time has there been casing or tubing failures; neither in North America nor in the UK.

This is a very well regulated industry in the UK, and safety is paramount, as it should be.

I live within 400 metres of a producing gas well in Pickering and can honestly say that I would hardly notice its presence, even when servicing of the well is taking place. The building site near me, just off the A169 has been much more disruptive, and for much longer than any hydraulic fracture stimulation treatment would be, to put things in perspective.

The term 'fracking' has come to be confused with the drilling of an oil well. Hydraulic fracture stimulation is the process that takes place in the completed well. This confusion has led to many condemning hydraulic fracture stimulation on what is perceived to be an incomplete production well. That is NOT the case.

Those in support of an indigenous onshore gas industry have been muted by the more vocal outbursts of those opposing future development.

I speak as one of those who has faith in the hydraulic fracturing process having seen it develop over the years into the highly technical and safe process that it is today, in a well regulated environment.

Lorraine Allanson made the following statement:

I would like to say that I support the purpose and direction of the Minerals and Waste Joint Plan. Anything that is aimed at improving efficiency and reducing bureaucracy has my full support.

25 years ago I experienced the same situation that we find ourselves in today. Knapton Generating Station was proposed and my father had just bought our farm. The opponents terrified us with their scaremongering about the devastation of farming and tourism and how we would be poisoned. It was all very stressful and time has proven them wrong since being built the plant has operated perfectly safely with not one issue. That is why I question every scare story the anti-fracking movement make.

Fast forward to today and this time they have the internet and social media to perpetuate their ever more drastic falsehoods bringing their scare stories into everyone's home from around the world.

In Ryedale we have endured an 18 month high profile propaganda campaign by Frack Free Ryedale and Frack Free North Yorkshire and it may interest you to know that their two main spokespersons both live in London. Well, this is Yorkshire and we do not suffer fools gladly, their scaremongering may work elsewhere but not in Yorkshire. They claim the majority support them, the following statistics reveal the truth:

- o At the last general election in our parliamentary constituency, 83% of the vote went to candidates who said they would support fracking if it was properly regulated.
- o We have a live application to frack an existing well at Kirby Misperton. I checked a few days ago and only 23 residents have so far objected out of a possible 370 villagers.
- o Only nine locals bothered to turn up at their Parish Council meeting to specifically discuss the application.
- o Even a much publicised National petition to "Scrap Fracking UK wide" after six months had only received a paltry 264 signatures from our constituency out of a possible 77,000 people.

In a short while, before the real professionals speak, you are going to be subjected to a group of genuine but largely mis-informed people who will state their objections quoting many dubious peer reviewed papers around health, industrialisation, earthquakes and chemicals based on their internet searches and in some cases even visits to Pennsylvania. When listening to these claims I would ask that you bear in mind their intentions, their credentials and their pre-determined mind sets. We should not mind them having their own opinions but we should object to them making up their own version of the facts.

Joanne White made the following statement:

My name is Jo White and I am a Chartered Surveyor. I have worked both in the public and private sector, and have worked as a construction project manager.

My husband and I travelled to Pennsylvania following Mr Hollinrake's visit. Mr Hollinrake returned with some concerns but overall reassured.

We travelled with an open mind, in the hope that we too would be reassured because that would mean we could stop worrying about fracking and get our lives back. We were not reassured.

As a point of accuracy, which is very important, Mr Hollinrake incorrectly claimed that Pennsylvania is more densely populated. Pennsylvania is about the size of England but England has a population about four times greater.

As a specific example, one of the counties we visited is Susquehanna County. It is rural, roughly 40% larger than Ryedale and about half as densely populated. Around 1,300 wells have been drilled, 40 compressor stations built and more planned. There are 10,000 wells in Pennsylvania and development has only paused because of the oil downturn.

This industry is sprawling and invasive, requiring multiple sites, thousands of wells and heavy supportive infrastructure. Miles and miles of pipes need to be laid. It generates lots of traffic and huge volumes of contaminated waste.

We were invited by the Vice President of a fracking company. It was refreshing to have a very experienced professional answer our questions honestly and directly. He confirmed that you cannot deliver this industry without thousands of wells, noise, disruption and traffic. He told us that it was an entirely different ball game from conventional gas extraction.

Professor Andy Aplin at Durham University said to an all-industry conference that we would need 33,000 wells from 5,000 pads to have meaningful amounts of shale gas. When is our industry going to admit this to the public? Instead they cite Wytch Farm as an example; this is only one site, not hundreds or indeed thousands.

In relation to the health impacts, the industry claim shale gas extraction can be done completely safely. However many uncertainties remain. Examples include:

- Contamination of drinking water caused by documented well-casing failure.
- South West Pennsylvania Environmental Health Project's concerns over emissions from compressor stations. More research is needed.
- A study from Yale (January 2016) concerned about toxins found in fracking fluids and waste water and impact on health. More research is needed.
- The US's Environmental Protection Agency's report has been challenged by its own science panel for claiming that fracking has not led to widespread, systemic impacts on drinking water resources in the United States

For these reasons I oppose fracking.

Having seen first-hand the impact, I consider the Joint Minerals and Waste Plan needs to be extremely robust with mandatory setbacks of at least a mile from all residential settlements and more besides.

I would like to ask each member of the committee how they consider this industry can be controlled and how they can ensure that North Yorkshire can be protected.

David Davis made the following statement:

I am a Chartered Surveyor and a signatory to the Ryedale Area Committee petition.

I started where the committee is probably now at by starting to look at the facts about fracking and what I found was that there are some facts, there are some half-facts and a lot of misinformation.

From the pro-fracking side we hear that the chemicals that the shale gas industry is using are non-hazardous. If you look on the Environment Agency website there is not a definition for what 'non-hazardous'. There is quite a lot of documentation that tells you how to assess what is hazardous but if you look at those chemicals listed as non-hazardous I think most of us would consider a good number of them, in the concentrations likely to be around, to be fairly toxic.

There is a lot of information if you are setting up a new industry available from other countries in the world that have had this industry there and yet we should look and learn from that and I think if we are promised gold standard regulation, hydraulic fracturing the main regulations that we will be using are those from America. All seven are from the American Petroleum Institute so the gold standard regulation needs some work.

Moreover the spatial planning is the aspect that concerns me. It is an area that I know something about. If you work out how many lorries this industry will create you are looking at many millions of lorry movements.

What I would ask the County Council to consider is what spatial control regulations you think will protect North Yorkshire, its landscape and its community.

Bill Rigby made the following statement.

I am the Chair of the Harrogate and District Alliance Against Fracking (HADAAF).

We are local representatives, from churches, community organisations and environmental groups: generally respectful of and indeed representatives of what one may call 'establishment' - teachers, elected councillors, local government officers - retired and in employment, historically willing to trust the authorities' judgements. But the HADAAF group's researches into well documented and authoritative sources have led us seriously to qualify this view in respect of Fracking.

In the interest of simplicity, we would like to recall the old Methodist maxim: "Is it true? Is it kind? Is it necessary?"

In respect of the suggestion that we embark upon a massive programme of mining for oil and gas using unconventional procedures at great depth, is it true that the extraction of oil and gas by these means:

- is not a risk to the health of communities nearby, despite the evidence from expert medical witnesses in the UK, the US and elsewhere;
- will bring economic benefits to local communities in Yorkshire, despite evidence that staff are recruited almost exclusively from itinerant workers, the companies are all foreign, and local authorities will be responsible for clean ups when failed mining operations are discovered years after the frackers have departed;
- will lower the price of oil and gas in the UK – when economic experts deny that this is the case;
- will have no waste materials which cannot be processed locally, despite their massive and unusual toxic content;
- will have no impact on the traffic patterns and road infrastructure in a Region already under strain from road system under-capacity; and
- that regulations are sufficiently robust to ensure safety, when local experience in Lancashire at the Fylde and East Yorkshire at West Newton demonstrate the opposite?

Is it kind to our communities:

- to have the landscape industrialised;
- to the agriculture sector;
- to communities throughout the world threatened by climate change;
- to the tourist trade and local communities as vastly increased traffic thunders down our lanes; and
- to the landscape?

Is it necessary:

- for our energy security that we mine an energy source at twice the price of current global markets;
- that we jeopardise the ability to insure our homes in the light of the impact of mining operations nearby;
- for us to experience catastrophic impacts on the value of our homes because of the proximity of mining operations nearby; and
- for us to threaten the quality of our water supplies, through the inevitable failure of a high proportion of the thousands of wells?

Mrs Thatcher argued that the coal should be left in the ground because there was a cheaper alternative available in abundance on the international markets.

The Coalition government argued that local voices should be heard in opposing wind farm developments, while government now plans to stifle a local voice in decisions on fracking.

HADAAF wishes to make clear that this is a policy in need of immediate reconsideration, and North Yorkshire County Council is in a position to express this wish to Government on our behalf.

Anne Stewart made the following statement:

The government voted in December to allow fracking under Protected Areas, such as National Parks, AONBs, SSSIs and Ramsar sites, if the well-site was situated just outside the boundary of the protected area. However, the impact of multi-well site on the edge of the Howardian Hills AONB, for example, would be profound, resulting in increased traffic, noise from fracking and drilling day and night, light pollution and air pollution – not to mention the possibility of contaminating protected water courses.

Given that these areas have been specifically chosen for their landscape and wildlife value, and many are home to protected and endangered species, how can this unavoidable intrusion on these protected areas be justified? Surely, at the very least, there should be buffer zones around these areas of at least three miles to avoid the impacts listed above?

Helen Jenkins made the following statement:

Members are asked to consider that a fracking well-site will require thousands of HGV journeys for a single commercial frack.

Third Energy and other fracking companies are talking about developing well-pads with ten, twenty or even fifty wells, with Third Energy talking about 19 well pads and up to 950 wells in their PEDL licences alone. These will all require transport by HGV of sand, chemicals and fresh water to the site, and frack waste - solid and liquid - away from the site. Given that almost the whole of North Yorkshire is covered in fracking PEDL licences, and companies such as INEOS are also talking about establishing 200 wells in each licence area, how would this huge increase in traffic impact on the rest of the economy of North Yorkshire, particularly tourism and agriculture?

Brian Appleby made the following statement:

The essential component of this decision making process is to seek unbiased scientific sources of information about fracking.

North Yorkshire County Council's superb quality Climate Change Strategy accepted the unbiased scientific evidence that places all fossil fuels as the major problem. Your own climate strategy firmly commits your Minerals and Waste Plan to the reduction of levels of CO₂ and methane from all sources.

There is now sufficient new unbiased scientific evidence to show that gas from fracking is even worse than coal in contributing to climate change. Fracking will worsen climate change in three ways:

- It locks us into the use of fossil fuels at the very point where we should be disengaging from them.

- The overall processes for production have a high carbon footprint.
- Worst of all leakages of methane occur at roughly 1 in every 15 sites and that methane is more than 80 times worse than CO2 in its first 15 years. Recently drilled wells in the USA are leaking sometimes as much as 10% of the methane produced.

Unbiased evidence reveals that fracking companies in the United States have persistently under-reported to government agencies about leakages of methane and wellhead and casing cement failures. The cement used bonds very poorly with shale. Even so-called “perfect” cement mix only has a tensile strength of 1 to 2 MPa (megapascals) but the fluid pressures are 10's of MPas. Consequently in the United States at this point in time there are literally tens of thousands of wells leaking gas to the surface.

In the United States, the Environmental Protection Agency depended upon the fracking companies self-regulating but the evidence shows that they were totally let down by the fracking industry. The monitoring was highly ineffective. In the UK our Environment Agency has got neither the staff nor the in-house expertise to continually monitor thousands of fracking sites over a long period of time, and yet self-regulation would be disastrous.

The unbiased scientific evidence of complex geological faulting in the UK is available and for real.

In conclusion, there is a need for an unbiased scientific assessment of the carbon footprint of the Minerals and Waste Joint Plan and in the meantime North Yorkshire County Council should declare a moratorium on fracking whilst all the independent unbiased scientific information is examined in detail. To allow fracking in North Yorkshire would be inconsistent with your climate change strategy.

Paul Andrews made the following statement:

I live one and a half miles from the site at Kirby Misperton and I am Chairman of the adjacent Parish Council. I am concerned about the damage to the landscape.

The problem with fracking is that each borehole has a range because fluid has to be inserted under extreme pressures. For example, at the beginning of this year, Third Energy were saying the maximum range of a single borehole is 2.5 kilometres. This means that, in order to fully exploit the Kirby Misperton gas field, for example, there will have to be a whole grid of borehole pads, each being not less than 5km apart. 5km is less than 3 miles.

When I talk about a borehole pad, I don't mean a single borehole. Each pad will have boreholes radiating out in every direction like the spokes from a wheel – and in the case of Kirby Misperton at five separate levels. So there could be as many as 50 boreholes on each pad.

It takes 100 days to drill a borehole so if a single drilling rig is stationed on a borehole pad, it could be drilling continuously for 15 years, making a lot of noise and lit up like a Christmas tree at night.

[Paul Andrews showed an aerial photograph of the Jonah Gas Field in Wyoming USA at this point.]

Fracking will result in the complete industrialisation of the landscape. The tourist industry will be destroyed, particularly important for a district which hosts major

leisure and tourist attractions like Flamingo Land, Castle Howard, heritage coast and two national parks.

People say this sort of thing could not happen in the UK. Do not believe it. John Dewar told a House of Commons Select Committee that Third Energy plan 19 pads, each with between ten and fifty boreholes, and that is only a start.

The legislation requires gas and oil companies to maximise gas extraction.

Third Energy is now only one of several players in Ryedale, every inch of which is now covered in fracking licences. INEOS Chief Executive Jim Ratcliffe (a billionaire who pays no tax in the UK) was quoted in the Liverpool Echo as follows:

"Under Mr Ratcliffe's plans, a typical six mile, by six mile parcel of land with up to 200 wells on it could generate nearly £400m for land owners and communities over the average 15-20-year lifetime of a production site. He estimates it could be worth a total of £2.5bn in payments."

Finally, I would like members to consider two documents which I now hand in to the clerk.

My question is Chairman: Would the County Council consider policies which would prohibit or restrict fracking in areas of high amenity value such as those areas which form the setting of AONB's, National Parks and SSSI's?

Adam Harper made the following statement:

I am an independent environmental consultant. You will have been passed a copy of my brief which is a review of the recent scientific evidence on fracking in the UK. It specifically relates to the emission of methane from the fracturing process.

To briefly sum up the findings of this research, which is from the last three years or so, studies indicate that methane in the United States has been significantly underestimated by the US government figures and by the US Environmental Protection Agency. One study said that it was in the magnitude of 100 times more methane than the figures suggest.

Methane leaks from fracking are actually higher than conventional gas extraction due to the differing processes used. The papers concluded that methane leakage is an inevitable consequence of fracking and it is very hard to completely eliminate methane.

Across the studies they have found that methane leakage ranged from 0.18% to 17% as a percentage of the overall gas production, which on the higher end is a very significant amount.

Disused and abandoned fracking wells may leak significant quantities of methane. Papers also concluded that methane leakage could pose a safety as well as an air pollution risk. A few studies have also suggested that the high levels of methane leakage may in fact render shale gas production worse in terms of climate change impact than coal.

These studies raise the following questions in terms of fracking in the UK:

- Given the scale of methane leakage in sites in the United States and its potential to exacerbate climate change why does the Department of Energy

and Climate Change still consider hydraulic fracturing to be a low carbon bridging fuel?

- Will the government and/or fracking companies fund independent scientists to monitor their sites for methane leakage into both the air and ground and will this data be publicly accessible?
- How will fracking companies prevent safety and air pollution and hazards related to methane leakage?
- How long are fracking companies responsible for abandoned wells which are no longer in active use to ensure that they are not leaking methane in the long term?

Christopher Pickles made the following statement:

Do you think Ryedale and, by implication, all parts of North Yorkshire in time will retain their unique characteristics that make them so appealing to residents and visitors alike, if fracking on the scale envisioned by the gas industry and the Government goes ahead? We are told that there will need to be thousands of wells in an area the size of Ryedale if the industry is to be successful. Further, what about the compressor stations, gas processing plants and dehydration plants which are so much a part of the American experience?

Stuart Leach made the following statement:

I have four specific questions. The first two are addressed to the County Council, the third to the Oil and Gas Authority and the fourth to Yorkshire Water.

1. With the awarding of PEDLs to companies we can expect many applications for drilling and fracking to be submitted in the next few years. With the enormous demand this will place on North Yorkshire County Council's resources how can each application receive the sufficient level of scrutiny that would be demanded by local people? It is critical that local decision making is retained within local authority control.
2. Once the fracking industry is established in Ryedale and other parts of the country, one of the government objectives of obtaining 10% of UK gas needs from shale will start to pressurise other areas sitting above shale resources such as Harrogate, Wetherby and Lower Wharfedale. As these are not protected areas how will the impacts on these areas be addressed?
3. Why have PEDLs in National Parks and AONBs been offered to companies when these are protected areas. PEDL SE69 and SE79, incorporating Bransdale and Rosedale Abbey, are entirely contained within the North Yorks Moors National Park but have been awarded to INEOS on a basis to "drill or drop" one well.
4. Disposal of fracking waste water is a hugely controversial topic in all countries where fracking takes place. This is because it may contain radioactive materials, heavy metals and carcinogenic hydrocarbons such as Benzene Xylene and Toluene that are drawn up from deep underground, as well as the fracking chemicals that were injected down there in the first place. Will Yorkshire Water be given an independent chemical analysis of all flow-back fluid at all fracking sites so that the public water supply can be tested for contamination by these substances arising from an unexpected migration to the source of supply? Will the results be made public?

Nellie Trevelyan made the following statement:

Essential to addressing our worries is clarity about who is responsible for what pollution. I have failed to find that there are assurances about adequate baseline testing. We need to know the state of Ryedale and the state of North Yorkshire as it stands so that when changes are perceived we know that blame can be imputed to the activities possibly of fracking. Without adequate baseline testing over a long enough period and a wide enough area and of a sufficient number of indicators we cannot prove that changes have happened and will be attributable to fracking. It will be in the fracking industry's interests for there to be inadequate baseline testing. What are we going to do to make sure that this wide-ranging baseline testing happens adequately? It will be an onerous procedure; it will create delays; it will be very expensive. Should the County Council and the Environment Agency be responsible and pay for this? I do not think so. The industry will not want to do it to the level that it needs to be done. We need to make sure that liability issues are covered by the industry.

Lynne Blair made the following statement:

My statement concerns energy security and the amount of gas that we will be producing from fracking.

The House of Commons Library Research Service Reports on shale gas says and I quote: 'The consensus seems to be that shale gas will not be a game changer in the UK as it is in the US as there is less available land to drill on. It is too early to say whether domestic production will result in cheaper prices.'

UK Energy Research Centre in their report came to the same conclusions adding that it will not add to the reduction in CO² emissions.

Third Energy have also told me that until they start drilling they have no way of knowing how recoverable the gas is or how much is there.

I also understand that the UK is part of an integrated European energy market and the gas is sold to the highest bidder. Lord Browne, ex-chairman of Quadrilla, said and I quote ' we are part of a well-connected European Gas Market and unless it is a gigantic amount of gas it is not going to have a material impact on price.'

My question to the above is:

In view of the above why are the government the gas companies and the media telling the public that fracking will allow the UK to be self-reliant on energy and that it will be cheaper. It is quite obvious that no one really knows yet they are prepared to take all the risks associated with fracking on a gamble

My second point is:

Sherriff Hutton has just been granted a PEDL licence to INEOS. INEOS is not an energy company but a petro-chemical company and have a pipeline (Teeside to Humberside) running through this part of the world - it is currently used for ethylene supply as opposed to gas.

My question is:

Are INEOS are going to be producing domestic gas or ethylene which will be used in their petro chemical and manufacturing industries? If they are producing ethylene then again this will not be contributing to our energy security but is likely to industrial Ryedale.

Shan Oakes made the following statement:

I would like first to invite our Elected Members to imagine the Gulf oil disaster. No doubt the industry was well-regulated there like many other disaster sites worldwide. Second please imagine drilling perhaps a mile deep under and through our unique land and water systems. We know the best laid plans of mice and men go wrong. Please ask yourself how confident we can be that subterranean rearrangement of our water 'pure' to use the local MP's word. My question to Elected Members is who will pay for attempts to clean up our irreplaceable aquifers when wells inevitably fail sooner or later.

The Chairman noted the further written questions or statements submitted from Linda Hurrell, Jane Gibbs, Penny Fiddler and Margaret George who were not in attendance at the meeting to speak. He went on to provide a summary of the key themes coming out of the public questions and statements for further consideration by Members alongside the lines of enquiry set out in the report. These included: immediate environmental risks, climate change risks, public health risks, water usage and disposal, spatial planning issues arising from the cumulative impacts of having a number of shale gas operations within a given area, regulatory issues, economic issues and the social impacts on communities.

4. Informing Production of the Minerals and Waste Joint Plan for North Yorkshire, York and the North York Moors National Park with regards to Hydraulic Fracturing (Fracking)

Considered -

The joint report of the Scrutiny Team Leader and the Corporate Development Officer providing a framework for the joint sub-committee to inform production of the Minerals and Waste Joint Plan for North Yorkshire, York and the North York Moors National Park with regards to Hydraulic Fracturing (Fracking).

Friends of the Earth

The Chairman explained the role of Friends of the Earth, as set out in the report, and introduced Naomi Luhde-Thompson to the meeting. Naomi Luhde-Thompson provided an overview of her role in Friends of the Earth.

A Member asked the following question:

- Public Health England notes that in the UK shale gas operators will be required, through the planning and environmental permitting processes, to satisfy the relevant regulators that their proposals and operations will minimise the potential for pollution and risks to public health. Why is the existing system of regulation including the specific 'safeguards' in the Infrastructure Act 2015 not sufficient to mitigate the environmental and health risks that could occur from hydraulic fracturing?

Naomi Luhde-Thompson replied that in the last few years communities have been contacting Friends of the Earth about shale gas developments in their area. Friends of the Earth have been examining how the regulators have been responding to these developments.

The County Council as the Minerals Planning Authority is the only regulator that is locally and democratically accountable. That is important in terms of public perception and public trust and putting together your plan.

There have been issues relating to enforcement and planning conditions where conditions have been set for example in relation to wintering birds and these conditions have been breached. There needs to be quite a bit of funding in place to ensure the Minerals Planning Authority can do the enforcement on the planning conditions that it sets.

The regulators appear to be learning as the applications come forward because shale gas operations are new. The first well to be high volume hydraulically fracked was at Preese Hall, which caused earth tremors and there was a moratorium because it was a new process. There have been changes since then but it has only been public knowledge since January 2016 where the waste water went from that well. That has now changed because the Environmental Protection Regulations have changed. However that shows that three years after the event we are only just finding out what happened to the waste water.

A precautionary approach should be taken in terms of regulation due to this being new technology. The public sense of this precautionary approach, though, is undermined by government statements such as the leaked letter that George Osborne sent to the Select Committee asking them to do all that is possible to get the shale gas industry moving. That does not sound like a precautionary approach that has taken evidence into consideration, looking carefully at what might be the implications.

There have been several papers published that have assessed whether the regulation relating to the shale gas industry is fit for purpose. Joanne Hawkins's review in the Environmental Law Review looks across the board at the different regulations governing chemicals, the EU directive and Mining Waste Directive and so on. What comes out of the review, and the United Nations Environment Programme has agreed with this, is that there needs to be a specific approach as the shale gas industry has a different set of technology and impacts.

Friends of the Earth have an in principle position that we need to tackle climate change. The Paris agreement has just been signed, and it is very important to understand that shale gas is a fossil fuel - it is not low carbon. The target set by the Committee on Climate Change is that average emissions of UK electricity generation by 2030 needs to be 50 grammes CO² by kilowatt hour. The average emissions from gas fired power generation is 450 grammes CO² by kilowatt hour. That is the difference going from 450 to 50, which is why we need to look at renewables and alternatives in terms of tackling climate change.

The Minerals Planning Authority will be looking at the national planning policy framework and the online planning practice guidance on minerals. However the online planning practice was not published for public consultation and yet it will be very influential in how the Minerals Planning Authority puts together its Minerals and Waste Plan. The first test of that planning guidance will be through the local planning process. The Minerals Planning Authority should therefore look carefully at that because it has not been consulted upon and therefore not properly tested.

In relation to the specific safeguards in the Infrastructure Act 2015, the first one states that '*hydraulic fracturing is prohibited from taking place in land at a depth of less than 1000 metres*'. That is quite an arbitrary depth as it depends upon the geology of the area. Under the Town and Country Planning Act 1990, as the planning authority, you are approving development activity within the land: that is the definition in law. Consequently you need to be careful about an arbitrary depth when

actually there might be site specific geological reasons why that might not be the case.

In relation to the third safeguard listed in the Act, *'that the environmental impact of the development which includes the relevant well has been taken into account by the relevant planning authority'*, why is an Environmental Impact Assessment not mandatory? It should be. With regards to some of the earliest sites in Lancashire, the planning applications put forward were deliberately sized at 0.99 hectare to fall under the threshold of 1 hectare.

In relation to the independent inspection of the well and the other safeguards in the Act requiring the regulators to put in resources to monitor shale gas activities, there has been significant cuts to quite a number of the regulators including to the planning authorities. Yet they – the Health and Safety Executive, the Environment Agency and the Planning Authority - are being asked to resource a new area of work. When you have got a bigger job of monitoring, enforcement and inspection you need the resources to do that properly. If this is not the case your communities, faced with noise breaches and breaches of planning conditions, are the ones calling out as they are facing these on the ground.

In terms of the monitoring one of the points that Friends of the Earth has consistently made is that there needs to be public access to monitoring information. In turn the monitoring needs to be robust and it needs to be seen to be independent. One of the big public health issues is around public perception of fear and risk - and that becomes a public health impact. Public Health England in their report state that they did not look at issues such as water sustainability, noise, traffic apart from vehicle exhaust emissions, odour, visual impact, occupational exposure and other wider public health issues. There is a gap there. It would be helpful if your Director of Public Health makes sure that there is a proper assessment of the health impact and that should feed into your Minerals and Waste Plan.

The ninth safeguard in the Act: *'that in considering an application for the relevant planning permission, the local planning authority has (where material) taken into account the cumulative effects of – (a) that application, and (b) other applications relating to exploitation of onshore petroleum obtainable by hydraulic fracturing'*, is contradictory. This is because the online planning guidance states that you should look at the application on its merits but in an Environmental Impact Assessment you should always look at the cumulative impacts. It is therefore inconsistent and not helpful for you as a Planning Authority. There are different types of cumulative effects: the immediate ones, the secondary indirect ones and the long term. In relation to exploratory applications what we are seeing in terms of planning applications is that there is a lot of talk about the benefits from the production in relation to exploration. However in considering exploration, the Planning Authority has advised against looking at the production impacts even though the production benefits are supposed to be taken into account. This is a confusing situation again because you will not get the production benefits unless you are at that scale. Why therefore are we looking at those benefits when exploratory applications are being examined? It is quite inconsistent in that regard.

A Member asked the following questions:

- Is Friends of the Earth opposed in principle to fracking or do you believe that it may be acceptable if specific changes to regulations included further safeguards?

- Are your concerns related to fracking also more closely related to climate change issues?

Naomi Luhde-Thompson replied that Friends of the Earth is against fracking in principle because of the need to tackle climate change. Friends of the Earth have looked at the research, commissioned research and spoken to a lot of academics. Their view is that shale gas is not compatible with meeting our climate change targets and particularly not in the context of the Paris Agreement to keep global warming below 1.5 C.

Friends of the Earth do not believe that shale gas should be part of the energy mix for the UK. When discussing energy security we need to be define whether we are talking about 'security of supply' or 'security for the user', Professor Andersen says that in terms of the user what you need to know is that when you turn your appliance on it works. However supply is different because you could have a very energy efficient appliance which would mean that you would use a lot less. The best energy security therefore is the energy that you don't need because your home is warm because it is well insulated; that is the best energy security for either an individual, a household or a business. The energy security argument is quite flawed in the sense that it only looks at supply instead of the person requiring the energy.

A Member asked the following question:

- In relation to your point about the need for monitoring to be undertaken of the impacts of fracking, do we have current baseline data available?

Naomi Luhde-Thompson replied that I do not think we have.

UKOOG

The Chairman explained the role of UK Onshore Oil and Gas (UKOOG), as set out in the report, and introduced Ken Cronin, Steve Thompsett and Dr. Andrew Buroni to the meeting. Ken Cronin and Steve Thompsett provided an overview of their roles in UKOOG and Dr. Andrew Buroni provided an overview of his role in RPS Planning & Development.

A Member asked the following question:

- How will the industry ensure that:
 - Where multiple drilling wells are proposed in an area, adequate protection can be afforded to the landscape, nature conservation, the historic environment and the established local economy.
 - Leaks from fracking sites will not contaminate surface water.
 - There will not be excessive and/or continuous noise near drilling sites.
 - There will not be risks to air quality.
 - The volume of heavy goods vehicle traffic required for fracking will not have a significant traffic impact on local roads, especially in areas where new road building is impractical or environmentally destructive.

Ken Cronin replied that it is important first and foremost to be aware of what stage the industry has reached in terms of its development and current activity. The industry is currently carrying out exploration activity, which involves small individual well sites examining the local geology, working out the gas flow rate, the cost economics and so on. This is before we get to the point where we start to think about production facilities. The reality is that we may find that in certain areas of the

country the geological formations do not work and we cannot extract the gas. Multiple drilling is a number of years away.

The industry has committed to undertake Environmental Impact Assessments for all sites that involve hydraulic fracturing, which is over and above the current EU directive. In that Environmental Impact Assessment we will look at all of the issues that are listed in the question above - noise, transport, air impacts, health impacts, landscape and nature conservation etc. The Environmental Impact Assessment is consulted on with local communities and discussed. It also forms part of the planning consent that we will put into the Minerals Planning Authority and it also forms part of the environmental permits consenting process that we have to do with the Environment Agency. We have to apply for up to eight different permits with the Environment Agency that covers 17 EU directives. Those EU directives cover things like water, nature conservation and so on. There is therefore a well-defined regulatory pathway that we have to follow as part of this process. We also have a UKOOG engagement charter and as an industry we will do our utmost to have the most open and transparent debate with local communities prior to planning application going in. Also the environmental permitting process and planning consent process involve public consultation.

In responding to the issues raised earlier about cumulative impacts, both planning guidance and the new Infrastructure Act require the Planning Authority to look at cumulative impacts. Companies will also look at the cumulative impacts when undertaking environmental impact assessments. It is not just the cumulative impacts of our industry that will need to be taken into account but also the impacts of other industries close by so that they can be added together.

Regarding issues relating to leaks from fracking sites, there are a number of issues that we need to consider. Firstly all of the chemicals that we use as an industry in terms of fracking fluid have to be approved by the Environment Agency and they have to be deemed as non-hazardous to groundwater. We also have very strict regulations relating to where we can drill in terms of proximity to water. That is defined in the Infrastructure Act and also the secondary legislation. For example, we are not allowed to drill on or under any area which is deemed as a 'Zone 1' within the Environment Agency, and that is a set of regulations that go across all activities as we are not the only industry working with chemicals.

The most fundamental thing about onshore oil and gas drilling is the integrity of the well. If you get the design and the creation of that well correct from the start then you reduce substantially the potential environmental impacts. As part of that process we are regulated by the Health and Safety Executive who regulate both onshore and offshore drilling. We have to get our design approved by an independent well examiner who then reports to the Health and Safety Executive. That well design is very different from what you see in the United States for example. In the UK wells are constructed from a triple layer of steel and cement. In the United States wells are typically have only two layers. We have a good track record in this country in terms of well integrity. The well examiner has to on weekly basis report to the Health and Safety Executive as the construction of the well is being undertaken and there is a raft of information passed to the Health and Safety Executive. The Health and Safety Executive also audits the independent well examiner scheme that the company sets up.

The other significant environmental issues are how we store the chemicals used in the fracking fluid, how we store the flowback water and how we store rainwater on the site. There are a number of environmental permits that we have to cover in terms of those issues. We have to ensure that we have impermeable membranes on our

sites; that all of the chemicals are banded on special mats. In terms of flowback water, again it is different in the UK to the United States. Flowback water in the United States has typically been stored in open pit lagoons chemicals which has allowed methane and other chemicals to evaporate into the air. In the UK the flowback water is stored on site in double skinned tanks on buns and is then disposed of safely according to the waste plan approved by the Environment Agency.

One of the members of the public talked about baseline monitoring. One of the big problems that we have seen in the United States is that there is no baseline monitoring so we do not know what was there before. We do know that methane is typically part of the atmosphere particularly around areas where there is gas. In recognition of the current situation regarding baseline monitoring, in early 2014 we published best practice guidelines on baseline monitoring. These guidelines tell each operator how to conduct baseline monitoring, what to conduct and when and for how long. Parts of these have been incorporated into Infrastructure Act 2015. We then monitor those sites all the way through the life of their operation and in the post decommissioning phase to ensure that we are not having an impact on those baseline documents.

In terms of noise and transport, again as part of the Environmental Impact Assessment the operator has to produce noise and transport management plans. There are strict rules and regulations around noise within planning guidance during the day and night and we have to adhere to all of those. In terms of the noise management plan each operator will identify how they are going to mitigate the noise as much as possible. That may be in terms of working out who the closest person is to the site and what time of the day to do carry out certain activities. It may be in terms of the types of covering over engines or it may be about using different types of engines or generators to ensure that noise levels are reduced and monitored on a regular basis. This is included in the noise management plan and this goes to the Minerals Planning Authority for approval and discussion.

In terms of transport impacts and impacts on the environment, the first phase of development (construction) will generate traffic. As a construction site it is no different from any other construction site so the impacts both from the local community and from an environmental assessment point of view are very well known. Exploration represents a very short period - two to three months. For production sites the time period will be longer.

- The Chairman asked if UKOOG could give an example of vehicle movements for a typical well.

Ken Cronin replied that he would need to provide that information in writing because at present there is not a typical well but. He would be able to provide an answer based upon two to three recent exploration sites. He noted that information about vehicle movements is set out in the environmental impact assessment in the noise management plan and the transport management plan that the operator puts forward.

A Member asked the following questions:

- Will the nature of the chemicals used be made public to give some reassurance to concerns that have been expressed?
- How will the potential extensive night time pollution during construction of wells be ameliorated?

- Will there be recompense paid to the highways authority in light of the potential impact on the integrity of the road structure caused by vehicle movements to and from shale gas operations?

Ken Cronin replied that in terms of water contamination the most important thing about onshore oil and gas drilling is the integrity of the well. If you can ensure the integrity of the well you minimise the risks to environment substantially and that is the reason why it is so heavily regulated by HSE and why there is an independent well examiner. In addition to that, the Environment Agency has the role of regulating from an environmental impact point of view. The industry is heavily regulated in terms of well integrity and construction. Once the well is operating the Environment Agency is there to ensure that we can monitor what is happening. There is a large suite of regulation that we have to comply with. Of the 2000 wells that the industry has drilled in this country there is a very good track record.

In terms of the disposal of waste water, when the waste water reaches the surface it will be stored in double-skin tanks on buns in accordance with a waste permit obtained from the Environment Agency. Again, the handling of this type of waste is not specifically new to our industry because other industries have to handle waste streams so it is well understood from a regulatory and operational point of view. The waste water then gets taken away to be treated at a waste water treatment facility - that again is approved by the Environment Agency.

In terms of disclosure, the industry published a document in 2013 called 'The Shale Gas Well Guidelines' and that made clear what the industry would disclose in a transparent way. The first point to make is that the baseline monitoring that the industry has to do will be open to the public as well as to the regulators - that is set out in the baseline monitoring document. In terms of other issues the operator will disclose the amount of water that it uses, how it produces the waste water, the fracturing fluids that it will use by chemical and concentration. Again that is something that is very unique to the UK. We will also disclose the volumes and characteristics of the waste water, the emissions, the fracture design size and containment and any induced seismic activity. Therefore there is a very significant amount of disclosure that the industry will do publicly and will also have to provide to the regulators - the Health and Safety Executive, the Oil and Gas Authority and the Environment Agency. The other point to make is that there is also a lot of discussion about independence of monitoring and I was pleased to see the current government announcing last year an independent monitoring scheme led by the British Geological Survey for the first few sites that the industry will undertake in this country. The consortium led by the British Geological Survey is going to be monitoring independently of the monitoring that the industry and the regulators do, to ensure that there is some independence in the first sites.

In terms of night time light pollution, again this is looked at in the environmental impact assessment in terms the current baseline for the sites that we are using and the impacts that the light will have on the surrounding environment and communities. The light issue is at its highest when the site is being constructed and drilling activity takes place. This is because that tends to be when the 24 hour timescales are involved. Once we get into production and we finish drilling those sites, levels go down to very low levels of use in terms of noise, transport etc. and will carry on producing gas for many years without people really noticing it. In terms of what the industry does it will look at ways to mitigate light pollution such as the way lights are angled and in terms of the spatial awareness of the lights. Those mitigating actions are included in the Environmental Impact Assessment and in the planning consent documents that are approved by the Minerals Planning Authority.

In terms of impact on roads there is a construction period involved in this industry as there is with other industries so there will be traffic movements, particularly from Heavy Goods Vehicles, in the early stages. The company carries out a baseline monitoring exercise to establish existing traffic levels and to assess the impact of the potential traffic that the operation will be introducing into the system. Best practice guidance is used including I.S.O. standards. The company includes this information in the traffic management plan to the Minerals Planning Authority for discussion and approval.

- The Chairman noted that the question that had been asked by the Member more specifically related to the impact that multi-vehicle movements to and from shale gas sites would have upon the integrity of the structure of roads and the recompense, if any, that the County Council would receive upon the failing of the fabric of the roads itself.

Ken Cronin replied that the integrity of the road will be included in the Traffic Management Plan. This is nothing new in terms of comparison with house building or building a supermarket. These issues are looked at by the Minerals Planning Authority and discussions are held with the developers about those impacts and how they could be improved.

A Member asked the following questions:

- What is the general lifespan of a well and what restoration and aftercare is carried out when the well is decommissioned to make good the land?
- How do you see the industry evolving within the next 25 years and could it lead to the industry carrying out its operations in a different way?

Ken Cronin replied that in terms of how long sites last for, the reality depends on the geology of the area and a number of other different local factors. However, the assumption at the moment is that these sites will last somewhere between 20 to 25 years. Of the 2000 wells that the industry has drilled in the UK over the last 60 to 70 years, we still have wells that are producing hydrocarbons 30 to 40 years hence.

In terms of making good, there are three aspects to this. Firstly, conditions will be put upon the operator by the Minerals Planning Authority with respect to restoring the landscape. There is then the responsibility of decommissioning that well and that is regulated by the Health and Safety Executive. There is a whole suite of procedures that the operator will have to do to decommission that well and that is signed off by the Health and Safety Executive. Finally there is the environmental impact and the industry will do baseline monitoring from the start all the way through the operations. After the well has been decommissioned the operator is not allowed to hand back the environmental permits to the Environment Agency until the Environment Agency is assured that there is no longer an environmental impact. Again, there will be monitoring done on those sites to ensure that that is the case.

In terms of future developments, I have a personal view which is that I would like to see water treatment technology introduced on site so that operators no longer have to transport waste water out of the facilities. This would in turn reduce HGV movements. We already have a big difference to the United States because the truck movements coming in there tend to be carrying water whereas here the industry tends to use water from the mains on site. I think we will see technology moving forward to reduce the local impacts on communities in the next 10 years.

- A Member asked for a point of clarification in relation to the terminology used to denote 'an operator'. He asked if that was an industry term operator to exclusively mean the owner or shareholder or drilling company. If it is an international company could the responsibility for the well lie abroad? Is operator the correct term to describe ultimate responsibility?

Ken Cronin replied that typically in any operation one or two companies will be involved but one of those companies has to take the lead as the operator. The Oil and Gas Authority has to make sure that that operator has the right operating experience in order to carry out the role. Consequently the lead operator is the one that is included on the license and is responsible. The other companies will have a financial interest and may also contribute experience.

A Member asked the following question:

- In terms of the economics of the concept, does the shale gas industry still feel that there is a major argument that shale gas can be a low cost, low-emitting fuel to take us on until we meet better and less polluting forms of energy? This is in view of the price of oil having reduced, in a relatively short space of time, from 110 dollars a barrel to 20 dollars a barrel at present.

Ken Cronin replied that climate change is a really important issue and he was pleased to see the agreements coming out of the Paris climate conference (COP21).

There is a need to be pragmatic and examine what gas is used for when we discuss climate change. In this country 30% of our electricity is from gas and in fact this week nearly 50% of the supply came from gas. 84% of our homes use gas for heating, 61% of our homes use gas for cooking. Half a million people are employed in this country to take gas and create other productions. There are over 6000 products in this country that contain gas and so it is very important that when we talk about gas it is not just in terms of 'keeping the lights on'.

In terms of gas as a bridging fuel prior to COP21, globally there were over 2000 coal fired stations in the process of being built. If tomorrow we were to replace coal fired power stations with gas-powered power stations there would be a big impact almost immediately on climate change globally. In this country in terms of our gas needs we currently take 50% of our gas from outside the UK. That has changed in the last 15 years from 100% in our own country to 50% outside. In the next 15 years that will rise to nearly 80% and most of that gas will come from outside the UK and will present us with not only an economic climate security issue it will also have an environmental impact of transporting that gas many thousands of miles. Producing gas in this country, which is well regulated, is a much better way of helping the environment than importing gas.

In terms of the current oil and gas price, the next two to three years for the industry are about exploration and so the industry was never going to produce hydrocarbons in a great amount and so was not going to generate large amounts of revenue. We will be able to take a longer term view once we understand the geology, how the gas flows, what the economics are and the prevailing gas price. Until that point we will not know whether it is economic or not.

A Member asked the following questions:

- If all the exploration that you are doing in the next two to three years develops what will this mean in terms of numbers of fracking pads in North Yorkshire, number of wells across Ryedale, or both, or as a percentage of success?

- If the industry can work all those licenses how much will it reduce climate change by?

Ken Cronin replied that in relation to the number of sites, the industry is in an exploration phase at present and needs to work out first how the geology works before getting into production. The industry will have the answers about the number of sites once the exploration is complete. The reality is that part of the answer to the question is about the regulatory process. Operators have to go through four separate regulators in order to get site approval to proceed so a lot of it comes down to whether regulatory approval is obtained or not. In terms of climate change, all of the major groups such as the IEA are showing a major increase in gas over the course of the next 20 to 30 years to replace coal. The future is very much orientated for gas before we get to 2100 where predictions are showing fossil fuels in terms of power generation will have gone completely.

- The Chairman asked Ken Cronin to provide a written answer to the climate change issues raised by the Member. He went on to note that Ken Cronin had mentioned that well structure and integrity is paramount however structural weaknesses had been identified at the Preese Hall well site in Lancashire. The Chairman asked how confident the industry is moving forward about safeguards around well integrity?

Ken Cronin replied that this was chiefly a question to put to the Oil and Gas Authority but wished to reiterate that wells in this country have a triple layer of steel and concrete and each of those layers represented fail-safes. The well at Preese Hall did not fail, what happened was that one of those barriers failed and that is the point of having the barrier. The well and the way it was constructed and designed did its job properly.

The Department of Energy and Climate Change

The Chairman explained the role of the Department of Energy and Climate Change, as set out in the report, and introduced Emily Bourne to the meeting. Emily Bourne provided an overview of her role in the Department of Energy and Climate Change.

A Member asked the following question:

- What is the UK government's approach to on-shore shale gas extraction and how does this fit in with its wider energy policy, including meeting our climate change targets?

Emily Bourne replied that the government supports the development of domestic energy sources including shale gas in a safe and sustainable manner. The government believes that shale gas may provide huge potential in providing a home grown energy source to help improve the UK's energy security, secondly it could provide national and local economic benefits and thirdly it could help us to meet our carbon reduction targets if it substitutes for more carbon intensive sources such as coal.

Looking first at the energy security benefits, the government wants the UK to successfully transition in the longer term to a low carbon economy. Access to safe and secure supplies of natural gas for years to come will be part of that transition. Gas is an important part of our energy mix and currently provides a third of our total energy supply. It is worth bearing in mind what gas is used for in the UK. About 40% is used in the home for heating and cooking, about a third is used in the industrial sector and about a quarter is used for electricity generation. However since 2004 the

UK has been a net importer of gas due to the decline of the production from our North Sea gas reserves. Last year about 45% of our gas supply was imported. Our projections suggest that domestic production will decline and without shale gas net imports could increase to around 75% by 2030. A key rationale for us exploring the potential that we have in the UK is that the more energy sources that we are able to access the greater energy security. There is clearly a strong driver, the government believes to explore the potential of the home grown gas under our feet with the associated benefits that that would bring to the UK if we are able to do so in a safe and sustainable way.

Secondly looking at the climate change impacts of shale gas, the government believes that shale gas is compatible with our goal to cut greenhouse gas emissions and does not detract from our support for renewables. The government remains committed to the development of renewables and of the development of new nuclear and also to improving energy efficiency. One of the greatest and most cost-effective contributions that we can make to emissions reduction in electricity would be to replace coal fired power stations with gas. Gas is the cleanest fossil fuel and provides half the carbon emissions of coal when used for power generation.

Consultation proposals are out to close coal fired power stations by 2025 and to restrict its use from 2023. If we take this step we will be one of the first developed countries to deliver on the commitment to take coal off the system. However government will only proceed with this if we can be confident that the shift to new gas can be achieved within these timescales because of the importance of energy security.

The government commissioned the 2013 report 'Potential Greenhouse Gas Emissions associated with Shale Gas Extraction and Use' by Professor David McKay and Dr. Tim Stone. This report concluded that the carbon footprint of shale gas would likely be significantly less than coal and also less than imported liquified natural gas. This is also supported by the findings by the taskforce's shale gas report on the climate change impacts of shale gas, last year. To make absolutely sure we have included in the Infrastructure Act 2015 a requirement to seek advice from the Committee on Climate Change on the likely impact of onshore oil and gas production on meeting our carbon budget obligations. These are the obligations to reduce our carbon emissions by 80% on 1990 levels by 2050, and these are legally binding targets.

Finally there are the economic benefits from a successful shale gas sector in the UK. The scale of these benefits will of course depend on the scale of any production sector and as has been said we cannot yet know the potential for shale gas extraction in the UK without exploration going forwards. However EY (Ernst & Young) has estimated that a thriving shale gas industry could require around £33 billion of investment over the period to 2032 and could mean as many as 64,000 jobs nationally at peak. Locally that might mean jobs such as local companies, lorry drivers and environmental consultants. The government also believes that communities hosting shale gas development should share in the financial returns that they generate. We welcome the commitment by the operators to make set payments to these communities: £100,000 for each exploration well and in the production stage 1% of revenues which the industry estimates could be worth up to £5 million to £10 million for a typical well site. As announced by the Chancellor in the Spending Review in November 2015, the government will commit up to 10% of shale gas tax revenues to a shale wealth fund which could deliver up to £1 billion of investment depending upon the size of the sector, to local communities and local regions. Finally as with renewables, wider communities will benefit as local councils will be

able to retain 100% of the business rates they collect from productive shale gas developments.

Emily Bourne went on to explain how the Department of Energy and Climate Change fitted into the regulatory structure. She explained that the Department of Energy and Climate Change holds the policy responsibility for shale gas work and works closely with the other government departments involved in various aspects of the policy and also with the regulators.

- A Member said that she hoped the government would provide the funding to undertake baseline monitoring for example in relation to air quality beforehand. This should be paid for by government and not by local taxpayers. She also expressed concerns about the potential damage that would be created to the landscape by shale gas extraction production in the county and the impact of increased traffic.

Emily Bourne said that she agreed with the importance of monitoring and referred to an independent project led by the British Geological Survey which included some funding from government. The study is undertaking baseline monitoring in the two areas where we have planning applications that have been put forward - Lancashire and Yorkshire. That project is looking at baseline measurements regarding water, seismicity, air quality, greenhouse gas emissions, ground motion, soil gases and radon in the air. The project began last year and the first details of the project can be found on the British Geological Survey's website.

A Member asked the following question:

- Some commentators state that research into conventional wells indicates that horizontal wells have a failure rate four times higher than for vertical wells in the same area. Why is a condition that prevents surface drilling in groundwater protection zones, National parks, SSSIs and AONBs adequate mitigation for these areas in view of the fact that drilling will be able to take place horizontally underneath them?

Emily Bourne replied that the Department of Energy and Climate Change does not anticipate that at the depths involved, horizontal drilling in these areas would have any impact on the surface. This was a question though primarily to direct to the Health and Safety Executive as the regulator responsible for well integrity.

Looking particularly at the restrictions on activity in protected areas, protected areas in which hydraulic fracturing will be restricted are set out in the Onshore Hydraulic Fracturing Protected Areas Regulations which were formally in December 2015. These regulations ensure that the process of hydraulic fracturing cannot take place above 1200 metres in National Parks, the Broads, AONBs, World Heritage Sites and areas that are most vulnerable to groundwater pollution.

Rather than enabling activities in these areas these regulations introduced an additional protection by adding the 1200m depth limits and they complement the strong protections that are already in place through the environmental and planning permitting systems. These regulations do not grant any form of permission for fracturing to take place. Applicants still need to go through the same processes of planning approval and permits.

The government has separately committed to ensure that hydraulic fracturing cannot be conducted from wells that are drilled at the surface in the most valuable protected areas. The Department of Energy and Climate Change has concluded consultation

on this and is considering the responses. Whilst the Department continues to believe that protections exist under the planning system and the existing regulatory regime are sufficient, it does recognise that these surface areas are of particular concern to people and therefore is minded to apply the surface restrictions to SSSIs as well as to the areas covered by regulations.

A Member asked the following question:

- How close will a surface operation be to the boundary of a national park and are there any suggested or proposed regulations on that bearing in mind that a well could have an impact on a national park even if it is over four or five miles away?

Emily Bourne replied that there is no restriction in regulation but there is a requirement on the Minerals Planning Authority when considering a planning application to consider the local impacts including the location.

A Member asked the following question:

- Would the results of the baseline monitoring being led by the British Geological Survey have to be accepted by all the relevant companies and could not be contested?

Emily Bourne replied that there is a requirement on the operators to conduct their own monitoring, which they will do including baseline monitoring 12 months in advance of their operations going forward. This data is being conducted separately to the data that the operator will collect and independently by the consortium led by the British Geological Survey. The purpose is to give reassurance that the first few sites will not be purely relying on the operator's data.

- The Chairman sought clarification on the words 'for the first few sites'. He noted that baseline monitoring would be very onerous time wise and potentially financially for any Authority, not just North Yorkshire. He asked if the Department of Energy and Climate Change had only provisioned for baseline monitoring for the first few sites with the rest left to the professionally qualified trust of the operators.

Emily Bourne replied that it is very early days as there are not yet any live shale applications in the UK and there are only a limited number coming forwards for planning approval. That is something that the Department would want to keep under review to check that it remains appropriate for the scale and size of the industry.

A Member asked the following questions:

- What is the efficiency of the process of shale gas to produce electricity?
- What is the difference in carbon cost efficiency between shale gas and conventional gas, adding in all the additional surveys, hazards, transport costs and so on?

Emily Bourne said that she would provide a written answer to those questions.

A Member asked the following questions:

- Does the government recognise that shale gas is still a fossil fuel and that the methane produced from shale gas operations is twenty times more powerful a greenhouse gas than shale gases?
- The government remains committed to renewables, is it true though that renewables have had a big reduction in their subsidies whereas production of fossil fuels including shale gas still keep theirs?
- Does the government recognise the impact on councils like ours which will have to have a very strong regulatory function in relation to planning applications and yet we are facing huge budget cuts?

Emily Bourne replied that the government is clear that gas is a fossil fuel and that the UK does use a lot of gas, about a third of our current energy use, and we are going to need gas for some years to come. The government looks to the McKay and Stone report which compares the carbon intensity of gas and shale gas compared with liquefied natural gas and compared with coal. There is a benefit compared to those two alternatives.

With regards to the commitments to renewables there have been some changes to the subsidies to some renewables. However we do not subsidise shale gas production so it is different from renewables in that respect.

With regards to the impact on councils' workloads there is a fund that the government has opened for councils to apply to which has £1.2 million available to support them in dealing with shale gas applications in particular. This is in recognition that there is a lot of additional work that can come with these types of applications.

Oil and Gas Authority

The Chairman explained the role of the Oil and Gas Authority, as set out in the report, and introduced Toni Harvey to the meeting. Toni Harvey provided an overview of her role in the Oil and Gas Authority.

A Member asked the following question:

- OGA's role includes assessing the licence applicant (the proposed well operator) on technical competence, environmental awareness, financial viability and capacity. How does it go about doing this?

Toni Harvey replied that we, (the Oil and Gas Authority), normally offer new licenses in licensing rounds and this is a competitive process.

On closing day the applicant company submits technical information to be marked against a mark scheme. However there are thresholds that they must meet before we even consider a technical assessment of their competitive applications. We set out clearly in guidance to applicants what information is required and if we do not get this information the applications do not progress any further. In the last onshore licence round there were a number of applications that did not cross this first threshold.

In carrying out the technical assessment of the applications we check a number of things. Firstly that they are technically competent and have organisational capability and environmental competence to enable them to operate to the standards we require. They also have to demonstrate their long term financial viability and adequate funding to meet their proposed work programme.

In looking at their technical competence we ask them for their previous operating experience and specifically supervising or carrying out drilling operations within the last five years. This includes details of the proposed operators' relevant crisis management and public engagement experience and the track record of their sub-contractors that they propose using.

We consider their management structure and strategy carefully to make sure, for example, that there are health and safety executives on the board and that they have technical expertise throughout the organisation on the board.

We look at the summary of their approach to risk assessment and the hierarchy of decision-making on the site and production operations. We look at how they plan to monitor their operations, their crisis management plan and their community engagement plan.

Finally we ask for a summary of their environmental risk management plan and potential impacts and assessment that would have to be managed during the execution of the proposed work. For some of the applicants that are at the very early stage of knowing what their plans would be, this is not very detailed but the detailed plans are looked at when we consider an application to drill. In the licencing round we look carefully at who the people are that the applicant intends to employ and in particular those carrying out the key roles.

The applicant is required to describe which skills are in-house and which will be delivered through contractors. If they do plan to use contractors, we need the names of those contractors and a description of who will be monitoring them including what arrangements are in place to deal with any unexpected incidents. In considering any applications for operatorship we look at the applicant's relevant insurance coverage and this is scrutinised in much greater detail when they have a plan to drill.

Although we are not the environmental regulator we do try to screen out people at an early stage who do not know how to operate here in the UK. To this end the applicant is required to provide a document called an Environmental Awareness Statement.

For each application the applicant has to lay out their understanding of the UK onshore environmental and planning legislation relevant to exploration, development, production and decommissioning. They also have to describe their understanding of the environmental sensitivities in the specific areas that they are applying for and how they plan to address those sensitivities when carrying out their operations.

In the strategic assessment that we conduct on a nationwide basis, before we launch the licence round the applicant has to consider issues that were raised in that strategic environmental assessment and how they are going to address those.

We also check each applicant's past records in the UK and internationally of their compliance with environmental legislative standards and requirements. This includes checks on any criminal or civil actions against them for environmental reasons, convictions for breaches of environmental legislation or pending criminal action for environmental breaches.

We also ask the applicant to provide very detailed and confidential financial records. They have to demonstrate that the company is in sound financial health. This also extends to every company involved because under the licence they are jointly liable. We make sure that each company has the money to pay for their share of the

elements of the proposed work programme. They also need to meet the Department of Energy and Climate Change's Residency Requirements, so we would not allow someone to operate their operations from a non-UK base.

Once the applicant has met this threshold they are assessed against a marks scheme that lays out the marks we will award for different work. Within the marking scheme there are sections for the amount of data that they have provided, the studies that they have used, the prospectivity that they have identified and their plans for further analysis in their work programme. The applicant's work programme is an important part of the licence as it represents the work that they commit to do within the next five years. In the fourteenth licence round for the first time we also awarded marks for companies that had experience specifically for shale gas extraction if they were applying for shale licenses. Detailed information about this is on our website.

A Member asked the following question:

- The Royal Society and the Royal Academy of Engineering note that attention must be paid to the way in which risks scale up should a future shale gas industry develop nationwide. Regulatory co-ordination and capacity must be maintained. Therefore how will risks relating to the intensity of activities within each licence block be managed if more wells come into operation in the area over time, or to put it another way if there are a lot of applications are the regulatory bodies in a position to cope with them?

Toni Harvey said that from Oil and Gas Authority's point of view in terms of consents and approvals, we recognise that things are at a very early stage. The number of applications coming forward will be incremental and we will consider those proposals as they come forward. The intensity of activity within each block is partially driven by the licence commitments. However all operations require local planning permission, successful applications to the Environment Agency, access agreements with the landowners, scrutiny by the Health and Safety Executive and the Oil and Gas Authority consents. There are many steps along the way that these effects will be considered. The Oil and Gas Authority like the other regulators will continue to work together to address these as the issues arise.

Responding for the Department of Energy and Climate Change, Emily Bourne said that with regards to the resourcing of the regulators, the regulators have confirmed that they have sufficient specialist inspectors to deliver the regulatory regime during the current exploratory phase. If there are a large number of wells drilled during the production stage, the Health and Safety Executive and the Environment Agency may then need to increase their resource accordingly and we will continue to review the resources needed on a periodic basis. The government funds the work of the environmental regulators up to the point at which a company applies for a permit. The permit charge that the operator pays then funds the work from then on. Therefore you would expect if you had more applications that would also increase the amount of funds that the Environment Agency would be able to attract. However the Department of Energy and Climate Change will keep this under review, and as has been said it is not something that is going to happen very suddenly, there is a long lead in time to these applications.

- The Chairman sought clarification on the points raised by Emily Bourne with regards to funding. He asked if the permit charge to the operator sits within central government or is there is an acceptance that it should be shared proportionately to the local authorities where the drilling takes place.

Emily Bourne replied that she was referring above to the funding for the Environment Agency. With regard to impact on local authorities at the moment there is a fund available from the Department for Communities and Local Government that can be applied to for help with shale gas applications, and this will be kept under review.

A Member asked the following question:

- Is the money that is paid for licences, ring-fenced to be spent within the industry?

Emily Bourne said that she could provide a written reply but her assumption was that it is not ring-fenced.

A Member asked the following question:

- What requirements does the Oil and Gas Authority place on operators to monitor seismic activity during hydraulic fracturing?

Responding for the Oil and Gas Authority, Toni Harvey said that the micro-seismic events caused by hydraulic fracturing are normally very small - less than zero on the richter scale.

What the Oil and Gas Authority is looking for in its monitoring is an 'abnormal event'. Earthquake magnitude is measured on a logarithmic scale so that a zero event is 10 times smaller than a one event which is then hundred times smaller than a two event. Only when the magnitude is three or four can seismic activity be felt and is equivalent to the ground movement of a passing train. By the time that earthquakes reach a magnitude 5 they can cause damage.

Once hydraulic fracturing commences, real time seismic monitoring is required. A 'traffic light' system is in place so that the operations can be quickly paused and the data reviewed to see if there is any unusual seismic energy created. The traffic light system is part of the hydraulic fracture plan, which is a broader plan of information of what the company proposes to do and has to be agreed with the Oil and Gas Authority.

The traffic light system is there to look for things that we might expect to happen later so for the next few operations the red light is set at 0.5 on the richter scale, which is below human detection. If this figure is exceeded during monitoring the company will stop injecting and listen for 24 hours and look for a 'felt event'. If there is no felt event 24 hours later the company will probably be told that they can go on to the next level and frack higher up. If a felt earthquake is recorded in the 24 hours after a 0.5 seismic event a full technical evaluation of the event would be required before any further hydraulic fracturing could commence.

The British Geological Survey is carrying out independent seismic monitoring as part of the environmental monitoring baseline programme in North Yorkshire and Lancashire. It is the Oil and Gas Authority's intention that for the next few wells at least the British Geological Survey will also be doing their own to check the traffic light system to make sure that it is done properly. The operators will also be required to monitor growth in the frack to allow them to evaluate the effectiveness of their frack but also to ensure that the actual fracture is conforming to its design that it remains contained and far away from the aquifers.

Some responses to our consultation on the traffic light protocol suggested that 0.5 magnitude is overly- cautious in comparison with the other control protocols

established for other industries such as for the construction industry and for quarrying. As our experience in applying this protocol develops it may be that the trigger levels can be adjusted upward or downward without compromising the effectiveness of the controls. For the next few operations the Oil and Gas Authority has promised that it will have an independent observer on site during fracking operations to make sure that the protocols that it has established are followed and to monitor the interpretation of the data. The Oil and Gas Authority hopes to learn as much as it can about the next few fracking sites so that it can fine-tune its plans and put the lessons properly into effect.

There was a break at this point in the meeting for lunch.

Environment Agency

The Chairman explained the role of the Environment Agency, as set out in the report, and introduced Martin Christmas and Ben Hocking to the meeting. Martin Christmas and Ben Hocking provided an overview of their roles in the Environment Agency.

A Member asked the following questions:

- What monitoring will be undertaken by the Environment Agency before, during and after shale gas extraction has taken place, to supplement the operator's own monitoring, and what enforcement action will be taken if permitted levels are exceeded e.g. air emissions?
- Will the Environment Agency be seeking bonds from the fracking industry when granting permits to allow for clean up in the event of contamination?

Martin Christmas responded by noting that the answer to the question does not just relate to the oil and gas industry but also to all the industries that we, (the Environment Agency), regulate. We do not undertake the monitoring. Instead, we expect the operator to arrange for the monitoring to be undertaken by paying for appropriately accredited field staff and chemists to collect and analyse the data. Our role is one of an auditing process whereby we collect the data from the operator to understand what the background levels are. We are also involved in compliance work to check how those samples are being collected. The reason that we rely on the operator to fund the information required for their operation, is that we do not expect the taxpayer to pay for the industry to develop.

In respect of enforcement we carry out regular compliance visits to sites. Our enforcement options go from anything from advice and guidance right through to prosecution. That is largely based on a risk based approach in terms of how the operator has performed previously and that will determine how many visits we might make. Breaches can be anything from the operator not being able to demonstrate that the right paperwork is in place right through to a breach having a significant impact on the environment.

With regards to the question relating to bonds, we do not seek financial provision from the operators. We also do not seek bonds for clean-up costs should there be an environmental accident. Under the Mining Waste Directive there is an opportunity for us to make financial provision as part of that permit. That however is only for operations that are classified as hazardous waste facilities and we do not expect onshore oil and gas to fall into that category.

A Member asked the following question:

- Does the Environment Agency ask operators to set up or pay into a fund to pay for any 'necessary' clean up costs, if there is a problem, or in the event of an operator going into administration?

Martin Christmas replied that the Environment Agency does not require such a fund to be set up by the industry but there are checks that the Oil and Gas Authority makes before operators get a Petroleum, Exploration and Development Licence around their ability to carry out that activity.

Ben Hocking added that the Environment Agency does not have the powers to require such a fund to be set up. However there are opportunities for other authorities to require that, including the Minerals Planning Authority under planning legislation.

- The Chairman noted that this was a point that the joint sub-committee should follow up with North Yorkshire County Council's planning department.

A Member asked the following question:

- Does the Environment Agency have sufficient staff resources to carry out its role in monitoring the industry, especially in light of recent government cutbacks?

Martin Christmas replied that over the last few years the Environment Agency's staff had reduced from about 13,000 to about 10,500. Part of that has been a restructure of the organisation to remove the middle tier regional co-ordination area. The purpose of the restructure is to make sure that funding follows workload and that activities from the different funding streams are not cross-subsidised. To help the Environment Agency with the onshore oil and gas industry, in 2015 it received an additional £3.1m from government to carry out this early stage of the exploration phase. This year we are bidding for £2.5m additional resources to carry out oil and gas work. The Environment Agency in Yorkshire is bidding for 24% of that additional funding. This share is largely based on the number of Petroleum Exploration and Development Licences that sit within the region's geographical boundaries.

A Member asked the following question:

- How frequently and under what sort of stipulations are the operators required to provide monitoring information to the Environment Agency.

Martin Christmas said that it depends upon the requirements defined in the permit and what is required on a case-by-case basis. These requirements determine the scope and nature of our compliance visits. Such visits typically involve checking the records that the operator has in place, including audits of data and data quality. There is an element of self-reporting around issues and we would expect if there are minor or major compliance problems that operators would inform us. We do however routinely collect data and share that.

A Member asked the following the following question:

- Is all the information that is contained in the permits relating to the chemicals to be used included within planning applications, and by default are the permits public documents in the same way that the planning application is?

Martin Christmas replied that the permits are public documents and the chemicals used in that permit are available.

A Member asked the following question:

- The Environment Agency has stated in the past that damage to groundwater may be irreversible. What, if any, safeguards can be put in place to avoid contaminating ground water supplies and aquifers?

Martin Christmas referred to the Health and Safety Executive's role of making sure that the well bore is as safe as possible. He said that the approach of the regulators, including the Environment Agency is about prevention rather than responding reactively, and the well bore integrity is key in this regard.

Some of the other issues that the Environment Agency looks at when considering the groundwater elements of the permit are around source protection zones and the distance between where the aquifer and possible water suppliers are, and where the fracturing would happen. One of the safeguards set out in the Infrastructure Act 2015 bans hydraulic fracturing from taking place above 1200m in depth in groundwater source areas. As part of the determination of the groundwater permit, our geologists take into account not only the advice from the Health and Safety Executive but also their local understanding of the local geology and they make that recommendation as to whether that permit should be issued or not based on their experience and opinion of the risk of a migration of fluids from that fracturing area reaching any aquifer. We do not allow exploration to take place within a source protection Zone 1 - the critical water supply areas in the North Yorkshire area.

A Member asked the following questions:

- The Chartered Institution of Water & Environmental Management has stated that any negligence associated with storage, transportation and operational spills represent the greatest threats to surface water, as well as to groundwater. What other enforceable safeguards, in addition to those already discussed (double-skinned storage tanks and impermeable platforms), can be put in place to dispose of waste water safely or ensure that it is stored safely above the ground on-site even in the event that heavy rainfall causes the site to flood?
- What efforts will the Environment Agency put into the work that the UKOOG representative has suggested at today's meeting with regards to developing new technologies to manage, recycle and cleanse water used in fracking operations?

Martin Christmas said that the Environment Agency has teams that work closely with UKOOG around what future developments are in train for the industry. In turn that helps the Agency shape what its future approach to regulation will be. If the industry wants to come up with a new way of working the Environment Agency will assess that and determine what the suitable safeguards are with that new way of working.

In terms of the here and now, the Environment Agency insists on bunded or double skinned tanks to make sure that any spills or failures of those tanks are contained on the site. The tank sits on top of an impenetrable membrane with a drainage facility around it that will include an interceptor to ensure that there is no possibility of spills on the actual site migrating on to unprotected soil and then into the groundwater. We feel that that is a suitable safeguard to manage surface water spills on a well site.

A Member asked the following questions:

- In light of the complex regulatory framework associated with fracking, to what extent does the Environment Agency liaise with the other regulatory authorities?
- Are there any gaps in the current regulatory framework, as suggested by Friends of the Earth?

Martin Christmas replied that since 2013 when the Environment Agency became heavily involved in the oil and gas industry, its relationships with the Health and Safety Executive in particular and the local planning authority had strengthened significantly.

In terms of gaps in the regulatory framework Martin Christmas asked for clarification about the earlier criticism made by Friends of the Earth.

Responding on behalf of Friends of the Earth, Naomi Luhde-Thompson said that the point made by Friends of the Earth is that the unconventional fossil fuel industry is a new industry in the UK and yet the regulation in place has not been designed specifically to deal with unconventional fossil fuels. For instance in terms of waste it cannot go to normal waste water treatment centres because it contains Naturally Occurring Radioactive Materials. Queries are around the reach and classification of chemicals used and whether the Mining Waste Directive, in the way that is implemented in the UK, need to be looked at. There are various regulatory issues that have been raised not just by Friends of the Earth but also by the legal profession.

Martin Christmas replied that with regards to the Environmental Permitting Regulations the Environment Agency uses that across a range of industries. Waste management is intrinsic across a number of industries that it regulates. That regulatory framework is appropriate because it has been tested. There are some elements of the operation of hydraulic fracturing that may be seen as new but in terms of waste management in ensuring that the right waste ends up at the right treatment facility, it is something that the Environment Agency has long experience of as a waste regulator.

Public Health England

The Chairman explained the role of Public Health England, as set out in the report, and introduced Greg Hodgson and Simon Padfield to the meeting. Greg Hodgson and Simon Padfield provided an overview of their roles in Public Health England.

A Member asked the following questions:

- How comprehensive and robust is the research and information on the public health impacts of fracking?
- In examining the potential cumulative long-term impacts on health, is there a need to establish a comprehensive health and exposure monitoring programme, to assess the extent and level of the release of pollutants from the fracking process? If so, and acknowledging that in order for the results to be statistically reliable, would it be appropriate for Public Health England to conduct or co-ordinate this surveillance using North Yorkshire as a pilot area, and what elements could be included in such a study?

In responding to the first question, Greg Hodgson said that Public Health England's 2014 report on the potential public health impacts from shale gas extraction looked at exposures to chemical and radiological pollutants only. The report did not look at the broader public health aspects as that was not its remit. In putting together the report Public Health England reviewed 229 papers and reports up to January 2014.

As with all evolving technologies the evidence grows over-time as the industry develops and this includes evidence from other countries that have a more developed shale gas industry such as in the United States and Australia. The research and information that is available is only as good as the data collected and the methods used. It is also important to consider the context in which the data is collected, the country in which those studies are undertaken including their regulatory framework and nuances of their populations.

Since the report was produced Public Health England has continued to review the evidence that is available. However the conclusion and recommendations of the 2014 report from the evidence that we have reviewed since continues to support these. The majority of the research published so far looks at environmental outcomes. There are few studies that have suggested associations between adverse health impacts and shale gas activities. Authors of studies that have suggested such an association have also highlighted the limitations of their research, adding further weight to Public Health England's recommendation for further work to be carried out.

Public Health England believes that there is a unique opportunity in the UK, in advance of the industry developing, to consider appropriate environmental and epidemiological studies to ensure that we gather evidence and strengthen the evidence base as we move forward. Colleagues have already talked about environmental baseline monitoring programmes that are being led by the British Geological Survey in Lancashire and Yorkshire. Public Health England is a partner in that consortium looking at environmental radion levels and will also be looking at the data that originates from those studies to see how that also forms its view and its risk assessment.

In responding to the second question, Greg Hodgson said that Public Health England's view is that the regulatory framework in the UK will ensure that emissions are carefully controlled at source and therefore does not anticipate that shale gas activities will lead to adverse health impacts if the industry is properly run and regulated. However where opportunities arise for Public Health England to undertake studies on the health impacts of shale gas extraction it will do so.

Specifically in relation to what aspects could be included in a local study, Simon Padfield replied that you can only measure what you are looking for in the first place. The studies that have been done already have tended to pick on important public health outcomes such as birth outcomes. The conclusion of the 2014 Public Health England report is that are potential risks but the probability is low if shale gas operations are well regulated and well run.

A Member asked the following questions:

- Scientifically we have not anywhere in this country measured detailed baseline health, and that is across every health issue, so how do you know when and if changes could occur?
- Has Public Health England considered working with North Yorkshire Public Health to produce a pilot study with regards to baseline health that could then

be rolled out nationally? Have you had discussions with HM Treasury about the amount of funding that would be required to conduct such a study?

Greg Hodgson replied that Public Health England would support and encourage effective baseline monitoring as the industry develops, and he went on to note Public Health England's involvement in the environmental baseline monitoring being led by the British Geological Survey. In terms of assessing impacts on health, Public Health England takes a source and a pathway approach. This means that in order for there to be an effect from a particular pollutant there has to be a pathway to reach a person. The way that environmental regulation is run in the UK is to minimise pollutants getting there. However Public Health England is considering the potential need for and options available, including collaboration with academic partners, for further research on the public health impacts of shale gas extraction. In terms of specific discussions with the Treasury I am not aware of discussions at that level but Public Health England nationally are having discussions about how we might do studies should they be considered appropriate.

- The Member asked for Public Health England to provide a written response with regards to progress made of such discussions.

Dr. Lincoln Sargeant, Director of Public Health for North Yorkshire, said that the Public Health team in North Yorkshire does some monitoring but it is very basic. The Public Health team has access to data on causes of death, cancer registrations, GP registers and hospital admissions. The difficulties that those sources of routine data have, is that they do not give the timeliness of response. This means that issues might be picked up sometime after the events have happened. The other challenge is in relation to local changes. We can pick issues up over a large geography with a large number of people. However, looking at data just for North Yorkshire, for example around the number of births, does not generate enough statistical power. Another difficulty in looking at the impacts that shale gas operations may or may not have had upon a person's health, is trying to remove all the other factors that could have impacted upon that individual or population. For instance where you look at factors such as air pollution you have to then consider the prevalence of smoking in the population. The prevalence of smoking will dominate other factors and you need large populations to be able to tease out those additional other effects. That said the Public Health team have begun discussing with colleagues in Public Health England about commissioning an appropriate study as and when the evidence suggests we need to do so. We would need to partner with academic institutions and any funding for the study would need to come out of a separate pot from the Public Health grant.

- The Chairman said that in noting the comments made, a possible recommendation for the joint sub-committee is for some health-related baselines to be put in place so that reference can be made about any anomalies arising if and when shale gas operations go ahead.

Health and Safety Executive

The Chairman explained the role of the Health and Safety Executive, as set out in the report, and introduced Tony Almond to the meeting. Tony Almond provided an overview of his role in the Health and Safety Executive.

A Member asked the following question:

- What are the safeguards taken around wellbore structural integrity and decommissioning of wells? How sure can we be that well casings will not over time lose their structural integrity causing toxic chemicals to contaminate

the land and water supply? Who will be monitoring this once the well has been decommissioned?

Tony Almond replied that Great Britain is one of the safest places to work in the world. The Health and Safety Executive is proud to have played its part in that over the last forty years. We, (the Health and Safety Executive), have been regulating the oil and gas industry since the mid-1990s both onshore and offshore in the UK. At that stage we introduced specific regulations for oil and gas wells.

Our view is that there is a robust regulatory regime in place and we have that view because there are clear duties on the operator to work in a way that there are no unplanned release of fluids from an oil and gas well throughout its life cycle and that includes post-abandonment. Under health and safety regulations in the UK, the operator – ‘duty holder’ – who creates the risk is responsible for managing it.

The Health and Safety Executive takes a lifecycle approach in our regulatory regime for oil and gas wells, which means we start at the design stage of the well. We scrutinise the plans of the operator for the design of the well and how they would manage the health and safety risks associated with the geology that the well is going to be drilled through.

We help the regulatory bodies to set the standards for oil and gas developments. We look at each well on an individual basis. We get a notification from the well operator which sets out their plans for the design of the well, the equipment that they will have on site and a full programme of work. It is only when we are content that they are managing the risks in the appropriate way that we will give the Oil and Gas Authority notification so that they can give the operator the necessary consent to drill the well.

If and when the work is given the go-ahead we then continue our scrutiny through the construction phase of the well so every week the operator must report into the Health and Safety Executive on what they have done that week and provide the results of any integrity test on the well. Any other activity on the well that could lead to an unplanned release of fluids requires further notification and during that activity we want a further weekly report. We have a range of powers similar to the Environment Agency, so we can instruct the operator to do things if we think they are not operating in a safe way, we can tell them not to do things and if we are concerned that they have broken the regulations we can prosecute. We have powers of entry on demand to any work site in the UK.

In addition to the Health and Safety at Work Act 1974 there are specific regulations for oil and gas sites: Borehole Sites and operations regulations which cover the notification process but they also set out duties on the operator to produce a health and safety plan for the site and emergency planning arrangements. There are also the Offshore Installation and Wells Design and Construction Regulations which apply to offshore and onshore wells. They set out the key requirement for there to be no unplanned release of fluids from the well so far as is reasonably practicable. They also set out the requirement for the operator to abandon the well in such a way that there is no unplanned release of fluids from either the well or from the reservoir associated with it. Under the Reporting of Injuries and Diseases and Dangerous Occurrences Regulations (RIDDOR), the operator must report to the Health and Safety Executive if there is any unplanned release of fluids or if they deploy any safety equipment to prevent an unplanned release.

A Member asked the following question:

- What is the life term integrity of the casings used in the well after it has been decommissioned?

Tony Almond said that he could provide a written answer but in brief the Health and Safety Executive's role ends once the well has been abandoned but we scrutinise the decommissioning process and we help set the standards. Wells must have at least two barriers inside the well as well as the casing between any hydrocarbon bearing zone and the top of the well. Each of these barriers will consist of a steel plate plus 500ft of concrete. If there is any porous zone in the formations it also needs to be either concreted across or a plug placed above it. Therefore we are not talking about the life cycle of just one barrier but several.

- The Chairman said that he would welcome a written response to the question.

A Member asked the following question:

- Who monitors the well after it has been sealed off and closed? If in 20 years' time one of the three seams fails who notices and how soon, and if in another 20 years another seam fails who notices, how and when, and in 100 years who will be monitoring the well?

Tony Almond said that once the well is abandoned the Health and Safety Executive's enquiries finish because it ceases to be a work site. If there is an unplanned release from an abandoned well then we would need to be informed about it as part of the requirements of RIDDOR. There is a study from the University of Durham looking at abandoned wells going back to 1919 to see if there is evidence that the wells leaked. Once the study reports we will have a better indication about how wells that have previously been abandoned have reacted but at the moment we do not see any number of abandoned wells coming on to our reports.

- Chairman said that the long term integrity of the well beyond the decommissioning stage was an important issue to note and there may be some directive that the joint sub-committee wishes to make in its report in this regard.

A Member asked the following question:

- Has the Health and Safety Executive the staffing resources to adequately carry out its responsibilities if and when the shale gas industry expands?

Tony Almond replied that the Health and Safety Executive's wells specialists are funded by the Offshore Industry and so are not subject to government cuts in the same way that some regulators are. The team of inspectors that cover offshore also cover onshore. We have recently recruited additional staff and over the next three years we will be training up new inspectors to concentrate specifically on onshore if the industry develops.

- For a point of clarification the Chairman sought confirmation that the onshore/offshore industry in financing the well inspectors does not employ the well inspectors directly but simply pays money towards the provision of that placement.

Tony Almond replied that the Chairman was correct in making this assumption.

A Member asked the following question:

- Is it too early looking at statistics that you have gathered under RIDDOR to suggest what the accident record is within the onshore oil and gas industry and what if any improvements need to be made?

Tony Almond said that the Health and Safety Executive's inspectors would tell you that the onshore industry has got a good safety record in UK. We work in a very similar way to the Environment Agency in that a lot of our work is aimed at preventing accidents taking place.

A Member asked the following question:

- In light of the Health and Safety Executive noting in 2012 a number of commonly observed weaknesses when inspecting well operators' well examination schemes, what assurances if any can you give on the robustness of well operators' well examination schemes for onshore shale gas extraction wells?

Tony Almond said that this report provided a good example of how the Health and Safety Executive regulates the industry.

The independent well examiner is not a regulator. The Health and Safety Executive is the regulator and so we scrutinise the well design. The independent well examiner's role is about quality control for the industry and the operator. It is set out in the regulations mentioned earlier and it is an important role because it is an independent check on the activity on the site to ensure that the relevant standards are being applied and the regulations are being complied with. Our own inspectors carry out an audit of each operator's well operators examination scheme. That includes an interview with the well examiner to establish that they have the right level of competence that we require from the regulations. If we find deficiencies we publish those so that other operators can also look at their well examination scheme.

- The Chairman sought clarification that with regards to the 2012 report, the actions identified by the Health and Safety Executive had been acted upon.

Tony Almond confirmed that they had.

A Member asked the following questions:

- To what extent have the regulations caught up with the onshore shale gas developments in view of the fact that they predate the industry and were originally developed for offshore oil and gas extraction?
- The 2014 Public Health England report, mentioned chemicals using fracking fluid should be exposed. Is there not a requirement for this to be the case under health and safety law?

Tony Almond said that the view of the Health and Safety Executive is that the regulation is goal-setting, so that it continues to be relevant no matter how industry develops and the key part of the regulation is around there being no unplanned release from the well and this covers this risk completely. We do feel that the regulations are still relevant and up to date. With regards to the disclosure of the chemicals use, the regulation of chemicals is one of the areas where we jointly

regulate with the Environment Agency. Any chemicals used on the site will be disclosed.

A Member asked the following question:

- In view of the offshore and onshore regulations being melded together to also apply to onshore wells is there a requirement for a safety case relevant in the offshore industry as required in the offshore industry?

Tony Almond replied that there is not. The system is similar to the safety case system but it is not exactly the same. The rationale is that the risks from offshore drilling and the safety case regime includes the installation itself, we do not have installation like an oil rig on shore.

A Member asked the following question:

- Why is a condition that prevents surface drilling in groundwater protection zones, National parks, SSSIs and AONBs adequate mitigation for these areas in view of the fact that drilling will be able to take place horizontally underneath them?

Tony Almond said that there had been a lot of horizontal drilling in the UK both onshore and offshore and the Health and Safety Executive has not received reports of well integrity issues because of horizontal drilling.

Yorkshire Water

The Chairman explained the role of Yorkshire Water, as set out in the report, and introduced Mark Morton to the meeting. Mark Morton provided an overview of his role in Yorkshire Water.

A Member asked the following question:

- What is our capacity to treat wastewater at licensed wastewater treatment facilities in the county?

Mark Morton replied that some assessment has been made in terms of the size of treatment works that can deal with waste water from shale gas production. The requirement is that the treatment facility must be at least a 50,000 population equivalent, so big sewage works.

From our (Yorkshire Water's) point of view it is unlikely that we would receive the waste water directly it is most likely to come through a third party although we have not had confirmation of that at present from any of the companies that are looking at shale gas in Yorkshire. Any third party that does discharge to our sewage works will have to comply with any consents that they already have from us so that will make sure that whatever they do discharge will not damage the sewage works and the effluent quality that we maintain. If they wish to discharge something that is outside of their consent there is a negotiation process and we have the capacity to refuse that discharge if it is going to damage the works.

A Member asked the following question:

- A Member asked what happens if Yorkshire Water refuses to treat the waste water?

Mark Morton said that if the waste water could not be treated by Yorkshire Water because it would harm its sewage works or harm the environment that it discharges into, the operator would have to find some other means of doing it. The shale gas companies are looking at various forms of on-site treatments to improve the quality of water before it is discharged. There are companies that offer specialist management services who could deal with the waste water pre-treated before it is discharged either directly to the environment or to one of our sewage works and as I understand it, it would most likely go via a third party who would pre-treat the waste before it is discharged to a sewage works.

Ben Hocking from the Environment Agency added that the waste water produced through shale gas activities would need to comply with the duty of care regulations. The Environment Agency would have overview of what was happening to that waste water and we make sure that it was taken to be treated at a suitably licensed facility before it was discharged back into the environment.

Mark Morton confirmed that the waste water arising from shale gas operations would not be sent to small treatment works. He said that in Yorkshire there are two, possibly three, sites that the waste water could go to. These are Knostrop Waste Water Treatment Works in Leeds, Blackburn Meadows Waste Water Treatment Plant in Sheffield and possibly Esholt Waste Water Treatment Works near Bradford.

Ben Hocking said that from the Environment Agency's perspective because of the likely NORM content within the water we would accept that in terms of recycling, the water might be re-used on-site. This means that the operator might use the same basewater for several fractures but ultimately that water would almost certainly end up at a specialist waste facility to be pre-treated before it would go to a Yorkshire Water facility.

A Member asked the following question:

- In view of the water utility company not having the responsibility for disposing of the waste water, which organisation does?

Mark Morton answered that the regulation of waste is the responsibility of the Environment Agency. We, (Yorkshire Water) are responsible for treating waste that is discharged to our sewers but with industrial waste a company cannot simply discharge anything that they want into the sewer.

We are very conscious that we do not want hazardous waste discharged to our sewers. We do deal with industrial waste but it generally comes via a third party and they have a consent to discharge to our sewage works. If they can meet their consent it has already been determined that the waste water is not going to affect the sewage works or the quality of the effluent that we discharge back to the environment. Although we are not necessarily bound to accept the waste, any waste that we do accept has to be assessed by us first. We need to be confident that we can dispose of that waste properly before accepting it.

A Member asked the following question:

- How closely does Yorkshire Water work with the Environment Agency and the operators to ensure that our water supply remains clean?

Mark Horton replied that our, (Yorkshire Water's), responsibility is to make sure its customers receive good quality drinking water. It is not our responsibility to manage the raw water quality. Our responsibility is to take that raw water at the best quality

that we can find it, treat it and then provide it to our customers at good quality. The responsibility for managing the raw water quality lies with the Environment Agency. However as a company we have a wider vision of not just taking care of our customers but the environment as a whole.

We work closely with the Environment Agency colleagues on a whole range of issues. We have very good links with other regulators as well to make sure that we understand shale gas developments in North Yorkshire.

We have encouraged the operators to speak to us and have had meetings with Third Energy and with one of the other shale gas operators recently. This enables us and the operators to build an understanding of each other's positions and understanding what the risks are. Ultimately our duty is to protect our customers' water treatment supplies and ensure that we can treat the waste water supplies effectively.

A Member asked the following question:

- What is the 'Plan B' for the industry if the water utility companies and the regulatory authority refuse to allow the waste water from shale gas operations to be treated?

Responding on behalf of UKOOG, Steve Thompsett said that the industry, like any other, considers water as a resource. Whilst water is regulated in various different ways, we have companies that extract water and companies that manage waste.

In managing that resource we buy the water either from a water company or obtain an extraction licence through the Environment Agency or buy it from a landowner by using a borehole on their land.

The waste water does not necessarily have to just go to a waste handler. In the production stage the water might be able to be treated on site or recycled and used in a well. Many conventional wells recycle huge quantities of water on a daily basis. If the water can be treated on-site it could be used for agriculture, or if treated sufficiently well, it might be able to be released into the environment. That leaves you with less waste to remove and that is an aspiration for production but for exploration we are dealing with much smaller quantities and generally it would go to the water treatment works or be treated first.

A Member asked the following question:

- A Member asked if in the event contaminated water flowed into the aquifer, at what stage would Yorkshire Water know if there was a problem - before or after it had got into circulation?

Mark Morton said that in most cases it would be before the contaminated water got into the supply. We have online monitoring for our water sources but we would almost certainly see increased acidity and that would trigger the works to shut down before it got into the water supply.

A Member asked the following question:

- Hydraulic fracturing requires large amounts of fresh water supplies and the need to process large volumes of wastewater. The Institution of Civil Engineers estimates that 10,000 to 25,000 cubic metres of water would be required for each well. How confident is Yorkshire Water that our available water supply would be able to support a proliferation of wells in a licence

block in North Yorkshire bearing in mind also the anticipated growth of thousands of new homes in the county over the next few years, which will place an additional strain on the system?

Mark Morton replied that in terms of our overall ability to supply water there is a countywide 'grid system' in place that can transport water from many different sources such as reservoirs, rivers and groundwater sources. We produce about 1.3 billion litres of water a day. Yorkshire Water has produced calculations based on the absolute maximum number of fracking pads that could be developed in the prospective area for Yorkshire. This calculation is based upon the fracking pads being only about 1.5 kilometres apart and the worst case scenario of 20 mega litres for each frack, with the assumption that the operator will drill every single well within 10 years. On a daily basis that is between one to two per cent of our daily production, which is well within our capability to supply.

What we do potentially face are difficulties locally, in that the local supply system might not be able to supply that amount of water that is required in the timescale that the company requires it. In that case we would enter into negotiations with the company. We are obliged to supply any legitimate business with water, so we cannot turn them away. However if we needed to increase our supply capability by laying pipelines and putting in pumping stations it would be for the operator to fund those developments and we would need to supply them with the water if it was possible. That assumes that all of the water came from the main supply. However the operators are at liberty to try and find other sources of water so they can extract from rivers, they can drill boreholes or they could use someone else's water source. In that respect we are pretty confident that we could supply the water if we were asked to.

A Member asked the following question:

- Has Yorkshire Water any plans to develop any more reservoirs?

Mark Morton replied that this was not the case.

A Member asked the following question:

- In view of a substantial number of properties in rural areas not being on mains water and instead having their own boreholes, what protection will exist and by whom for dealing with private water supplies close to shale gas operations?

Mark Horton replied that the regulation and protection of private water supplies is the responsibility of the Environment Agency. The Environment Agency defines a default 50 metre radius source protection zone around every borehole. The Environment Agency would also look at any impacts on private water supplies from such activity.

A Member asked the following question:

- What if any impact could there from the requirements of the Water Act 2014 of non-household customers mainly or wholly in England being able to choose their supplier of water and wastewater, in relation to the capacity and co-ordination of water companies to supply water for shale gas operations and treat the wastewater?

Mark Horton said that as he understood it Yorkshire Water would still produce water that the vast majority of customers in Yorkshire use but the customer would have the option of paying someone else to do the billing and negotiate a rate with Yorkshire Water for supplying water to that customer. This is akin to how it works in other utilities. Due to the fact that water is heavy and is difficult to transport and there are not good interconnection links between different water companies, the capacity to move water between water companies is limited. In terms of the waste water, there is less of a requirement for co-ordination between water companies. The key issue as now will be whether the sewage works could accommodate waste water from fracking.

The Chairman invited additional comments and questions from Members and additional comments from the external organisations invited to the meeting.

Ken Cronin (UKOOG) referred to the questions raised earlier about operators' financial arrangements. He explained that the operators have to have an insurance scheme in place over and above the checks that are done by the Oil and Gas Authority. Three different types of insurance have to be in place to cover various different types of risk: loss of well control, third party liability and environmental liability. The insurance needs to be taken out throughout their operations and after decommissioning. The environmental permit that the operator gets from the Environment Agency also lasts after decommissioning.

In the longer term the industry is looking at having in place mutual funds for bonds as the industry grows. However the amount of financial information that the Oil and Gas Authority has at present in terms of parental guarantees and the insurance requirements is adequate for the industry for now.

He went on to note the questions raised about the regulation not being up to speed as it predated onshore shale gas extraction. He said that he would like to reiterate what a number of the other speakers have said that there is no difference between an onshore well and an offshore well apart from the size of the well and where it is located. The actual physical mechanisms of a well are very similar wherever they are and that is the reason why it is covered by the same regulation.

5. Chairman's concluding remarks

The Chairman thanked the members of the public present at the meeting and the representatives from the external organisations for attending.

He said that it was clear from today's meeting that there has been a vast range of views captured from the public questions and duplicated to a certain degree by the questions raised by Members to the external organisations. In turn the representatives from the external organisations have confirmed or clarified some of the key issues raised.

Key themes raised and discussed at the meeting had included:

- Environmental risks based around the noise, odours, traffic, leakages, proximity of wells to housing, transportation and congestion
- The water usage and disposal of contaminated water and other waste material, including Naturally Occurring Radioactive Materials.

- Climate change, green houses gases, carbon emissions – macro energy policy.
- The ‘what ifs’ about the potential cumulative impacts of fracking operations to communities.
- Giving consideration to the validity and merits of having buffer zones beyond the parameters of National Parks, AONBs and SSSIs.
- The need for effective regulation, and we have had some clarification on this at the meeting.
- Economic issues.
- Social impacts on local communities.
- Public health risks, and we have had the request from Members for some baselines to be put in place in North Yorkshire so that we can have reference about any anomalies arising if and when shale gas operations go ahead.

The Chairman noted that many of these issues are inter-related and that there is a need to ensure a coherent approach and a plan going forward for shale gas operations in North Yorkshire rather than treating it in a piecemeal fashion. The joint sub-committee needs to be mindful not to rush this piece of work simply because there is an application going through process. Instead the findings and recommendations of the joint sub-committee have to be fit for purpose and ‘future proof’.

He went on to remind each of the external organisations to produce a small written report about any additional information they would like to submit and to respond to the questions that Members had raised where the external organisations did not have sufficient evidence to respond fully at the meeting.

The Chairman then referred to the recommendations in the report and commended them for approval by the Joint Sub-Committee.

Resolved –

- a) That taking into account the outcome of discussions during the meeting, the Chairman of the Transport, Economy and Environment Overview and Scrutiny Committee and the Chairman of the Scrutiny of Health Committee, in consultation with the group spokespersons for these committees, be authorised to produce a joint report for approval by both committees on the implications of Hydraulic Fracturing with a view to informing the consultation currently taking place on the Minerals and Waste Joint Plan for North Yorkshire, York and the North York Moors National Park.
- b) That subject to the approval of the Transport, Economy and Environment Overview and Scrutiny Committee and the Scrutiny of Health Committee, the joint report be submitted to the Executive with a view to informing the consultation currently taking place on the Minerals and Waste Joint Plan for North Yorkshire, York and the North York Moors National Park and also the Executive’s consideration of the petition submitted to the Ryedale Area Committee on 10 June 2015.

The Chairman noted that the next steps would be for the Group spokespersons to work through the findings and produce a joint draft report for submission to the two committees in April 2016. Subject to the committees' approval the report would then be submitted to the Executive in May 2016.

Record of Thanks

Members commended the work that Bryon Hunter and Jonathan Spencer had done for the meeting and the Chairman was thanked for chairing the meeting.

The meeting concluded at 3.10pm

JS