



Council Motion on Fracking and Associated Drilling

Scrutiny (Community & Regeneration) Committee

Recommendation of the Scrutiny (Community and Regeneration) Committee

RECOMMENDATION: That it be recommended to Council:

- (a) That it notes that the Scrutiny (Community and Regeneration) Committee, while not anti-energy and accepting that there are risks inherent in the extraction of any natural resource, has the following primary concerns in the absence of sufficient independent peer reviewed data to reassure it:
 - (i) That the long term consequences of any pollution of the groundwater supply in the district due to chemicals used as part of the fracking process itself or contamination via improperly management, storage and disposal of contaminated 'flowback' water are unclear.
 - (ii) The impact of the high volume of water consumption involved in the hydraulic fracturing process on groundwater resources given that the Dover District is an identified area of water stress.
 - (iii) The risk of seismicity arising from the hydraulic fracturing process given the particular characteristics of the local geology and the close proximity of population centres to the areas identified so far as potential drilling sites.
- (b) That it note that the Scrutiny (Community and Regeneration) Committee also has secondary concerns over the impact of noise, air pollution, light pollution and traffic on rural roads which it anticipates will be dealt with by the appropriate statutory bodies as part of the Kent County Council planning process in the event of any future applications.
- (c) That the Council be mindful of (a) and (b) above in its response to any future planning application considered by Kent County Council involving hydraulic fracturing and/or associated drilling activity until such time as sufficient independent peer reviewed data exists to mitigate the concerns expressed by the Committee.

Executive Summary of the Views of the Committee

The Scrutiny (Community and Regeneration) Committee having considered the views received from those organisations that accepted the invitation to meet with it or respond in writing and the contents of the research report, has formed the following view at its meeting held on 18 November 2013.

The Scrutiny (Community and Regeneration) Committee, while not anti-energy and accepting that there are risks inherent in the extraction of any natural resource, has significant concerns around the limited availability of authoritative independent peer reviewed information in respect of the risks to the districts water supply and the possibility of seismic activity arising from the use of hydraulic fracturing to extract unconventional shale and coal-bed methane gas.

The main areas of risk where the Committee feels that it is unable to reassure local residents of their concerns are:

- (iv) The long term consequences of any pollution of the groundwater supply in the district due to chemicals used as part of the fracking process itself or contamination via improperly management, storage and disposal of contaminated 'flowback' water.
- (v) The impact of the high volume of water consumption involved in the hydraulic fracturing process on groundwater resources given that the Dover District is an identified area of water stress.
- (vi) The risk of seismicity arising from the hydraulic fracturing process given the local geology and the close proximity of population centres to the areas identified so far as potential drilling sites.

The Committee recognises that the issues of traffic movements, air and light pollution and noise are a concern to the local community that will need to be addressed through the planning process.

The Committee does however, does note that a number of reports are expected to be published in 2014 that may provide the level of authoritative independent peer reviewed information necessary in the view of the Committee to provide clarity as to the realistic risks of the process of hydraulic fracturing in the UK.

Scope of the Review and Report

The Council at its meeting held on 18 September 2013 requested that the Scrutiny (Community and Regeneration) Committee action the following Motion:

“This Council is concerned by the prospect of fracking and related drilling activity in the Dover District area and requests that a report is brought forward to the next meeting of this Council to inform the Council of the nature of the process, the potential impact on subsurface water resources and geological formations, the type and scale of the surface structures, and the impact of anti-fracking demonstrations in the light of recent experience in Sussex on the local communities and on the police.”

This motion was formally accepted by the Scrutiny (Community and Regeneration) Committee at its meeting on 5 November 2013.

It should be noted that the motion does not require a conclusion to be made by the Committee on the merits of hydraulic fracturing (otherwise known as ‘fracking’) and related drilling activity and this report does not seek to draw any.

Research Report

Introduction

In compiling this report it should be noted that there is still a considerable amount of work being conducted by Government Departments, Non-Governmental Organisations and regulatory organisations in the UK into the risks involved in hydraulic fracturing. This has led to much emphasis being placed on the experience in the United States and Australia as an example of the risks involved in hydraulic fracturing.

In compiling this report there has been a necessity to use some information relating to other nations to achieve the objectives of the motion. While this has usefulness in compiling the report it should be noted that differences in geology, drilling techniques and regulatory frameworks mean that not all the data is directly applicable to the Dover District.

“Many apprehensions over fracking in the UK are a result of the experience of regulation in the US. There each State regulates separately and to varying levels of stringency. A further key difference is that land owners own the mineral rights and these circumstances have led to a rapidly expanding industry with limited environmental controls.”¹

In England petroleum rights are held by the Crown not by individual land owners and ‘unconventional’ gas is regulated by the Department of Energy and Climate Change (DECC), the Health and Safety Executive (HSE), the Department for Communities and Local Government (DCLG), the Local Planning Authority (Kent County Council in respect of minerals), and the Environment Agency (EA). The DECC, the HSE and the EA are responsible for drafting appropriate regulations for the control and monitoring of well design for safety, drinking water protection and the disposal and/or recycling of fracture fluids.

Water companies are not currently statutory consultees in the planning process and it has been argued by bodies such as Water UK that they should be made so.

The recent (now withdrawn) applications to Kent County Council (as the Local Planning Authority) by Coastal Oil and Gas Ltd for 3 exploratory boreholes in the Dover District are not directly addressed by this report due to the scope of the motion but some information has been gathered in relation to them as part of the fact-finding process.

Nature of the Process (Fracking and Related Drilling Activity)

How does hydraulic fracturing work?

Hydraulic Fracturing is the fracturing of rock by a pressurised liquid and can occur naturally creating most mineral vein systems. Induced Hydraulic Fracturing or Hydrofracturing (more commonly known as ‘fracking’) is an industrial process for fracturing rock that involves the pumping of a pressurised liquid (a mixture of water together with other materials and chemicals) into the underlying strata in order to create small fractures within which oil and gas can flow towards a wellhead from where it can be extracted.

The hydraulic fracturing process is usually performed at the start of the life of a well, with several rounds of fracturing lasting no more than one to two hours each, spaced out over several weeks while readings are taken and assessed. Once fracturing is completed the well can go on to produce for 30-50 years without the need for further treatments.

Why fracking? (Conventional and Unconventional Gas)

¹ Chartered Institute of Water and Environmental Management

The process of hydraulic fracturing allows for the extraction of hydrocarbon reserves that were previously inaccessible using conventional extraction methods.

Conventional gas deposits are contained in porous reservoirs, often limestone or sandstone, which have interconnected spaces that allow the gas to flow freely in the rock and through well boreholes. These reservoirs may be many miles from the organic material that was the original source of the gas.

In contrast, unconventional gas deposits are contained in reservoirs of lower porosity, such as shale and coal which require greater levels of technology. The gas is held in fractures, tiny pore spaces and adsorbed on to the organic material of the rock. Unconventional gas reservoirs are often also the source of the gas. Unconventional gas cannot be extracted by conventional means due to being absorbed on to the organic material so it is extracted by cracking (fracturing) the rock at high pressure to create narrow fractures that allow the gas to flow into the well bore and to the surface.

How much oil and gas is obtained from this process?

Shale gas is classified in terms of 'resource' (the amount of gas in the ground) and 'reserve' (the amount of gas that can be extracted).

Table 1 Terms used in shale gas estimation ²

Terms for resources and reserves	Term	Acronym	Summary	Excludes
Resource 'How much gas is in the ground'	Original gas in place	OGIP	Total volume of gas	
	Gas (initially) in place	GIIP/GIP	Total volume of gas	
	Ultimately recoverable		Total recoverable volume	Gas not expected to be recovered
	Technically recoverable		Limited by technology	Ditto, as well as gas not recoverable with current technology
	Economically recoverable		Limited by economics	Ditto, as well as gas not economic to recover
Reserve 'How much gas could be extracted'	Reserves		Total producible gas	Ditto
	Proved reserves	1P	Probability of reserves (proven)	Probable and possible reserves
	Median figure of reserves	2P	Proven and probable	Possible reserves
	High figure of reserves	3P	Proved, probable and possible	

The first commercially successful applications of hydraulic fracturing were in 1949 and by 2010 it was estimated that 60% of all new oil and gas wells worldwide were the subject of this process. The US Department of Energy estimates that out of the more than 4 million oil

² House of Commons Select Committee on Energy and Climate Change:
<http://www.publications.parliament.uk/pa/cm201213/cmselect/cmenergy/writev/isg/m17.htm>

and gas related wells that have been drilled in the US over the last 150 years, at least 2 million have been the subject of hydraulic fracturing. Currently, 95% of new wells drilled in the US are hydraulically fractured accounting for over 40% of total US oil production and nearly 70% of US natural gas production.

In the UK the estimates for the amount of shale gas resources (resource and reserve) are variable but recent estimates suggest that the figure for resource may be very substantial. How much is technically and economically recoverable remains the subject of much speculation but even with a recovery rate of 10% there is the potential for substantial additional gas resources.

The UK Licensing Regime

Hydraulic Fracturing has taken place in the UK since the mid-1970s in the North Sea and elsewhere and it is estimated that in the last 20 years 200 wells have been 'fracked'.³ The Elswick site operated by Cuadrilla Resources was hydraulically fractured in 1993 and has generated approximately 1MW of electricity.⁴

DECC has produced a map of the United Kingdom setting out the current fields and licences for onshore oil and gas (as of 6 November 2013). While the Petroleum Act 1998 vested all rights for the UK's petroleum resources in the Crown the Government can grant licences that confer exclusive rights to 'search and bore for and get' petroleum. Each Petroleum Exploration and Development License (PEDL) is conferred for a specific period and time. Each licence takes the form of a deed, which binds the licensee to obey the licence conditions regardless of whether or not they are using the licence at any given moment.

Due to concerns that a number of the licences have remained unexploited by the licence holders, DECC through its PILOT group, has instigated the 'Fallow Initiative' to ensure that licences are worked optimally to maximise economic recovery of oil and gas. The Fallow Initiative works by placing undeveloped prospective acreage into the hands of companies that wish to develop it.

Petroleum Exploration and Development Licences (PEDL) in East Kent

The areas marked in yellow indicate areas currently under license. Areas where there has been a discovery are marked in red (oil field), Green (gas field) or Black (Coal Bed Methane Field). A coloured dot is indicative of a well. The above image shows four areas where Petroleum Exploration and Development Licences (PEDL) have been granted in East Kent. These are centred on the Dover District.

The four licences in East Kent were awarded in July 2008 for a 6 year period to Eden Energy (UK) Ltd and Coastal Oil and Gas Ltd jointly. The PEDL listed the addresses of both companies as the same address in Port Talbot. However, Eden Energy (UK) Ltd has subsequently been sold by its Australian parent company Eden Energy Ltd to Shale Energy PLC in September 2013.

Each licence granted carries with it an annual charge, known as a rental, based on an escalating rate for each square kilometre the licence covers at the time of the annual charge. The purpose of this is to encourage licensees to surrender unwanted acreage and focus on the acreage that they do want to exploit.

A PEDL licence is divided into 3 terms, with qualifying criteria for continuation into a following term defined by the minimum amount of progress that the licensee must make. They confer

³ The Telegraph, 'The Town Where Fracking is Already Happening' (10 August 2013): <http://www.telegraph.co.uk/earth/earthnews/10233955/The-town-where-fracking-is-already-happening.html>

⁴ Cuadrilla Resources: <http://www.cuadrillaresources.com/what-we-do/hydraulic-fracturing/>

Licence	Firm (Minimum) Commitment
PEDL249	<p>The Licensee shall obtain and reprocess 22km of 2D seismic data.</p> <p>The Licensee shall drill one well to a depth of 1000m.</p>
PEDL250	<p>The Licensee shall obtain and reprocess 22km of 2D seismic data.</p> <p>The Licensee shall drill one well to a depth of 1000m.</p>
PEDL251	<p>The Licensee shall drill one well to a depth of 1000m.</p>
PEDL252	<p>The Licensee shall obtain and reprocess 44km of 2D seismic data.</p> <p>The Licensee shall drill one well to a depth of 1000m.</p>

The hydraulic fracturing undertaken by Cuadrilla Resources in the Bowland Basin in Northern England (potentially the biggest shale basin found so far in the world) takes place at depths generally in excess of 6,000 feet.

Coal-related Hydrocarbons

Coal Bed Methane (CBM) is methane formed through the geological process of coal generation. It is present in varying quantities in all coal and can be extracted using hydraulic fracturing techniques. The Coal Authority manages the UK's coal reserves and must agree to any access to coal formations for any purpose.

Certain processes capture native hydrocarbons, which originate in coal seams. The use of these require permission from the Coal Authority (for access to the coal) and a licence from DECC (for capture of the hydrocarbons). The processes include:

- Coal Bed Methane – liberates native methane from virgin coal seams
- Vent Gas (also called mines gas) – captures methane from working or disused mines

Coal bed methane is different to typical sandstone or other conventional gas reservoirs, as the methane is held within the coal by a process called adsorption. The process of extracting coal bed methane works by releasing pressure in coal seams by natural gas production or the pumping of water from the coal bed.

Kent Coalfield⁵

DECC in a report produced in 2010 stated that there have been few problems with methane encountered in Kent coal mining except at Betteshanger.

⁵ Department of Energy and Climate Change, 'Unconventional Hydrocarbon Resources of Britain's Onshore Basins' (2010)

The DECC report, now potentially superseded by subsequent reports, suggested that multiple unconformities on the NE margin of the Mesozoic Weald Basin and the permeable overlying limestone and sandstone might have allowed migration of gas out of the coalfield over an extended period of time into the Weald Basin. The issue of freshwater influx from Mesozoic aquifers having formed biogenic methane was identified as a potential resource.

The Potential Impact on Subsurface Water Resources and Geological Formations

Sub-Surface Water Resources

As mentioned earlier in this report, the process of hydraulic fracturing is designed to release methane trapped in unconventional rocks. A concern identified in Australia and the United States from areas where there has been large scale hydraulic fracturing is the risk of contamination of the groundwater supply with methane gas through release of trapped methane into aquifers and pollution through the chemicals used as part of the hydraulic fracturing process. These issues are addressed as best as possible in this report given the problems in finding sufficient peer reviewed work on this matter. However, a number of government and non-government agencies are undertaking research on the matter currently.

As part of the research for this report, the British Geological Survey (BGS) was contacted and their comments can be found later in this report. In addition, the Chartered Institute of Water and Environmental Management (CIWEM) was contacted and they advised that they would be producing a report in 2014 in respect of the potential water implications of hydraulic fracturing.⁶ In the United States where hydraulic fracturing has been undertaken for longer, the Environment Protection Agency at the request of the US Congress is conducting a study to “better understand the potential impacts of hydraulic fracturing on drinking water resources” that is expected to be released for peer review in 2014.

Sub-Surface Water Resources in the UK

Across the UK as a whole 35% of our drinking water comes from groundwater resources, though this figure is higher for the South East of England.⁷

Water issues arising from hydraulic fracturing process

There is much controversy over the level of risk involved in hydraulic fracturing to the water supply. In a publication from the Royal Society and the Royal Academy of Engineering⁸ issued in June 2012, it was stated that:

“the available evidence indicates that this risk is very low provided that shale gas extraction takes place at depths of many hundreds of metres or several kilometres. Geological mechanisms constrain the distances that fractures may propagate vertically. Even if communication with overlying aquifers were possible, suitable pressure conditions would still be necessary for contaminants to flow through fractures. More likely causes of possible environmental contamination include faulty wells, and leaks and spills associated with surface operations. Neither cause is unique to shale gas. Both are common to all oil and gas wells and extractive activities. Ensuring well integrity must remain the highest priority to prevent contamination.”

The Consumer Council for Water (CCWater) identifies the following potential risks involved to the safety of the UK’s water supply:⁹

⁶ Email from Laura Grant of the Chartered Institute of Water and Environmental Management

⁷ British Geological Survey, ‘Can shale gas be extracted safely?’

⁸ Royal Society and Royal Academy of Engineering, ‘Shale gas extraction in the UK: a review of hydraulic fracturing’ (June 2012)

⁹ Consumer Council for Water: <http://www.ccwater.org.uk/server.php?show=ConWebDoc.2867#>

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- (a) Contamination of the aquifers (underground water sources) by allowing 'fugitive' methane to permeate into drinking water sources from rocks where it was previously confined or by the chemicals involved in hydraulic fracturing;
- (b) Problems over the water demand involved (particularly in water stressed areas);
- (c) Possible issues over contaminated effluents and discharges; or
- (d) Damage to the water and sewerage infrastructure.

However, it should be noted that CCWater recognise that the evidence base in relation to potential risks is limited. As part of this, they are campaigning for water companies to be statutory consultees in all applications for fracking, although this would require legislation to be enacted.

Water UK, the representative body for UK water and wastewater service suppliers, identifies four areas of potential challenge for water companies in the UK:

(a) Water Quality

- Contamination of aquifers as a result of fracturing running through geology;
- Contamination via a failure in the well casing;
- The direct contamination of surface waters from poorly managed waste water or chemical handling; and
- Tertiary risk associated with traffic movement or drilling in general.

(b) Water Quantity

- The high volume of water use involved in hydraulic fracturing and the stress it places on existing potable water supplies.

(c) Removing and treating waste water

- Fluids involved in the hydraulic fracturing process will need to be treated by the local waste water company. This 'flowback' water will be contaminated with both the chemicals involved in the process and typically saline; and
- Naturally Occurring Radioactive Material (NORM) in waste water.

(d) Infrastructure

- Building of new infrastructure to connect water supply to drill site. This may present problems to install on the edges of a network; and
- Periods of variable use / what happens to infrastructure after drilling finishes

The Environment Agency identifies the following risks associated with exploring for and extracting unconventional gas:¹⁰

- gas or dissolved minerals moving through other rocks into aquifers;
- leaks from production wells into neighbouring rock formations and aquifers;
- leaks of gas to the atmosphere; and

¹⁰ Environment Agency: <http://www.environment-agency.gov.uk/business/topics/133885.aspx>

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- spills of fluids that come to the surface from storage tanks or lagoons.

It is the view of the Environment Agency that the above risks can be controlled through proper design and management of the drilling and extraction site. The Environment Agency is a statutory consultee in the planning process and provides local mineral planning authorities (in our case Kent County Council) with advice on the potential risks to the environment from individual gas exploration and extraction sites. Furthermore, any PEDL licence holder is required to consult with the Environment Agency (the environmental regulator for unconventional gas operations in England) and apply for environmental permits and other permissions for these activities.

The environmental permitting regulations cover:

- protecting water resources, including groundwater (aquifers) as well as assessing and approving the use of chemicals which form part of the hydraulic fracturing fluid
- appropriate treatment and disposal of mining waste produced during the borehole drilling and hydraulic fracturing process
- suitable treatment and management of any naturally occurring radioactive materials (NORM)

The International Energy Agency, founded in response to the 1973/74 Oil Crisis, is a 28 country group that includes the UK in its membership. In its publication 'Golden Rules for a Golden Age of Gas' it identifies the following golden rules in respect of unconventional gas extraction and water under the Rule 'treat water responsibly':

- Reduce freshwater use by improving operational efficiency;
- Reuse or recycle, wherever practicable, to reduce the burden on local water resources;
- Store and dispose of produced and waste water safely; and
- Minimise use of chemical additives and promote the development and use of more environmentally benign alternatives.

As part of its fact finding, the Scrutiny (Community and Regeneration) Committee was advised by the Campaign to Protect Rural England (CPRE) that any contamination of the groundwater supply would be "for all practical purposes, irreversible".

Turbidity Issues

Affinity Water in its response to the planning applications made by Coastal Oil and Gas Ltd raised questions over turbidity issues arising at public water supply borehole sources while any drilling may take place through the chalk layers. Affinity Water also highlighted the potential for outages at one or more of the pumping stations as a result.

Turbidity is defined as the cloudiness of a fluid caused by individual particles (suspended solids). While heavier particles will settle to the bottom, smaller particles can remain suspended in the fluid.

'Flowback' Water

Research undertaken by the water industry has concluded that the flowback water should be treatable at larger urban / industrial waste water treatment facilities. The flowback water itself is normally highly saline, which is toxic to the bacteria used by water companies in the treatment process and only larger facilities can provide sufficient dilution of the saline flowback water. It also contains minerals dissolved from rocks as well as small particles of

rock. Due to the high mineral count, the Environment Agency requires that this flowback water should be properly disposed of.

The Environment Agency as part of its monitoring of the flowback water in the Bowland Basin in 2011 stated that typically a quarter of the water injected as part of the hydraulic fracturing process will return to the surface over a period of weeks to a few months through the drilled well.

As part of the monitoring, the Environment Agency found the minerals that it would expect to find naturally occurring in shale rock such as notably high levels of sodium, chloride, bromide and iron, as well as higher values of lead, magnesium and zinc compared with the local mains water that was used for injecting into the shale.

The flowback water could potentially also contain Naturally Occurring Radioactive Material (NORM) that would have to be treated.

Naturally Occurring Radioactive Materials (NORM)

Naturally Occurring Radioactive Material (NORM) is not exclusive to hydraulic fracturing and is found in conventional oil and gas exploration as well as coal mining. In hydraulic fracturing, wastewater from the drilling process may contain (NORM), although the exact levels will be dependent on the local geology.

The Environment Agency states the following in respect of NORM in their report on Bowland Basin samples:

“Naturally occurring radioactive materials have been present in rocks since their formation, perhaps billions of years ago. All radioactive materials undergo decay to become more stable, eventually ceasing to be radioactive. Some radioactive materials decay over very long time periods and others more quickly, and so naturally occurring radioactive materials will contain many different radioactive isotopes in differing amounts. The radioactive materials with very long decay times are usually present in larger amounts. Commonly this is radium-226.”¹¹

The samples from the Bowland Basin taken by the Environment Agency found levels of radium-226 as the radioactive material present at the highest levels at between 14 and 90 Becquerel per litre compared to the average values for natural radioactivity in soil in Western Europe of radium-226 at 40 Bq/kg.

Methane levels in Groundwater

Methane is naturally occurring in most groundwater sources, and originates from one of two main sources – biogenic methane and thermogenic methane.¹² Biogenic methane is bacterially produced and is detectable in nearly all groundwater. It is usually associated with peat bogs, wetlands, lake sediments and landfills. Thermogenic methane is formed during the thermal decomposition of organic matter at depth under high pressures. It is usually associated with coal, oil and gas fields. The British Geological Survey (BGS) states that most methane in UK groundwater is likely to be biogenic in origin.

As a gas methane while not classified as toxic, is flammable and may form explosive mixtures in air. Methane becomes an explosive hazard at concentrations of 5–15% by volume in air.¹³ It is also an asphyxiant and may (as a gas) displace oxygen in an enclosed space. In terms of methane in groundwater, assuming complete outgassing from water, this

¹¹ Environment Agency, Shale Gas ‘North West – Monitoring of Flowback Water’ (6 December 2011)

¹² British Geological Survey, ‘Methane in UK groundwater research overview’

¹³ British Geological Survey, ‘Methane in UK groundwater research overview’

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requires a minimum dissolved methane concentration of 1600 µg/l⁻¹ (micrograms per litre) for it to be a potential safety hazard.

Measurements from Cretaceous, Jurassic and Triassic carbonate and sandstone aquifers in the UK have shown mean methane concentrations of less than 10 µg/l⁻¹. The upper range of 500 µg/l⁻¹ for Cretaceous, Jurassic and Triassic carbonate and sandstone aquifers is well below the 1600 µg l⁻¹ level, though Aquiclude and thermal waters from the Carboniferous and Triassic have shown concentrations in excess of 1500 µg/l⁻¹.¹⁴

Baseline methane levels in the Dover District

The BGS is currently conducting studies to establish the baseline methane levels in the UK, including the Dover District and the results of this survey will be published in 2014. As part of the fact finding for this scrutiny review, contact was made with the BGS and while they are unable to provide analyses for individual sites in the district at this stage before publication, they advised that of the 11 sites (7 of which were Affinity Water boreholes) they tested in the Dover District none exceeded 5 µg/l for methane¹⁵. This is an extremely low background concentration and any leakage of methane gas into the district's aquifers would be readily detectable.

Water Stress

The Environment Agency (EA) defines areas of serious water stress as being where:

- The current household demand for water is a high proportion of the current effective rainfall which is available to meet that demand; or
- The future household demand for water is likely to be a high proportion of the effective rainfall available to meet that demand.

Under the methodology used by the EA, the Dover District areas served by both Affinity Water and Southern Water respectively are classified as being 'Areas of Serious Water Stress' in the most recent survey (2013) for the purposes of Regulation 4 of the Water Industry (Prescribed Condition) Regulation 1999 (as amended).

Water usage in hydraulic fracturing

There were many estimated figures quoted for water consumption involved in hydraulic fracturing as part of the research for this report and although no single definitive water consumption figure 'per frack' was found there were common ranges identified.

In terms of the UK, Cuadrilla Resources' website states that during operations at Preese Hall, Lancashire, 8,400 cubic metres of water were used for the fracture treatments.¹⁶ Drilling at each site used around 900 cubic metres, some of which was recycled water. A distinction was however drawn over water usage in the exploratory stage and the production phase, with most fracturing water during the exploratory stage not being recycled as opposed to the production phase where it was "more practical to recycle the water".¹⁷ Cuadrilla state that during dry spells and droughts, the supply for hydraulic fracturing would be restricted "well before residents and farmers see any impact on their supplies".

¹⁴ British Geological Survey, 'Methane in UK groundwater research overview'

¹⁵ Email from Dr George Darling, British Geological Survey

¹⁶ Cuadrilla website: <http://www.cuadrillaresources.com/protecting-our-environment/water/water-sourcing/>

¹⁷ Cuadrilla website: <http://www.cuadrillaresources.com/protecting-our-environment/water/water-sourcing/>

Cuadrilla cite as a comparison a figure of 1-6 gallons of water needed per million British Thermal Units¹⁸ for deep shale natural gas production in comparison with 13-32 gallons of water per million British Thermal Units for coal (ready to use in a power plant) or 8-14 gallons of water per million British Thermal Units for nuclear power.

Water UK estimated that a single production field could have a peak demand of approximately 2 million litres per day during fracturing with a total demand in the order of 20 million litres per year. The research assumed no recycling of waste water and was based on the demand of a 1000 well field reaching peak production in around 3 to 6 years into the development.¹⁹ This was on a par with large industrial usage and would require a 300mm pipe to deliver to the site.

The 'Explore Shale' website which is focused on the drilling activity in the Marcellus Shale in Pennsylvania, cites that each drill site uses between 3 – 5 million gallons of water per 'frack'. The Groundwater Protection Council in the US states that every 'fracked' well requires up to 4 million gallons of water.

Any potential mitigation of the burden that hydraulic fracturing would place on local aquifers could involve utilising water tanker deliveries from sources outside the district, recycling waste water from the drill site, and collecting rain water. Water UK suggests that a water management plan should be developed by the operator of any drilling site.

Contamination of Groundwater by 'Fracking Fluid'

In the UK the disclosure of the constituents of fracturing fluid is already mandatory although this does not mean that the chemical additives are non-hazardous. The use of non-hazardous chemical additives is identified by the Royal Society as a factor that would mitigate the environmental impact of any spill.

Cuadrilla Resources' states that their fracturing fluid is 99.95% water and sand, leaving 0.5% as chemicals.²⁰ As was pointed out to the Committee during its fact finding process, the volume of liquid used in the hydraulic fracturing process can still make 0.5% a substantial quantity of chemical fluids.

According to the Cuadrilla Resources' website, the fracturing fluid used at the Preese Hall exploration well site and for future exploration well sites used the following additives:

- Polyacrylamide (friction reducer)
- Sodium salt (for tracing fracturing fluid)
- Hydrochloric acid (diluted with water)
- Glutaraldehyde biocide (used to cleanse water and remove bacteria)

The website states that so far as an additive to fracturing fluid, Cuadrilla has only used polyacrylamide friction reducer along with a miniscule amount of salt, which acts as a tracer. There has been no need to use any biocide as the water supplied to the Lancashire exploration well sites had been treated to remove bacteria by United Utilities (the water supply company). They have not had to use diluted hydrochloric acid in fracturing fluid at

¹⁸ A British Thermal Unit is the energy needed to heat one pound of water by one degree Fahrenheit (1055 Joules).

¹⁹ Water UK, "Understanding the impacts of shale gas on the UK water industry", Speech given at – UK Shale 2013, 17 July 2013: <http://www.water.org.uk/home/news/press-releases/challenge-on-gas-fracking/publication-version---jm-shale-gas-speech.pdf>

²⁰ Cuadrilla Resources: <http://www.cuadrillaresources.com/what-we-do/hydraulic-fracturing/>

Preese Hall. The additives proposed, in the quantities proposed, have resulted in the fracturing fluid being classified as non-hazardous by the Environment Agency.²¹

The concerns expressed in relation to fracking fluid are that the fractures caused by the fracking process could lead to the chemical permeating into the groundwater supply such as aquifers.

Restrictions on Drilling

The Chartered Institute of Water and Environmental Management (CIWEM) views the impact on amenity of hydraulic fracturing as likely to be greater in the UK than other countries where fracking is common practice, as the proximity and density of populations relative to possible UK sites are greater. CIWEM advocate the restriction or prevention of development in areas of high value or sensitivity with regard to biodiversity, water resources and local communities.

Furthermore, it considers that an Environmental Risk Assessment should be made mandatory for proposed shale gas operations to ensure that each site is individually assessed and the cumulative impacts of fields and the likelihood of a specific impact are taken into account.²²

In Pennsylvania, gas wells cannot be drilled within 200 feet of structures, water wells or freshwater springs or within 100 feet of streams or wetlands. However, waivers do permit companies to drill inside of these limits with additional protective measures.²³

Public Health Issues

On 31 October 2013, Public Health England published its draft 'Review of the Potential Public Health Impacts of Exposures to Chemical and Radioactive Pollutants as a Result of Shale Gas Extraction'.²⁴ The report focused on the impact of direct releases of chemicals and radioactive material from shale gas extraction and related activities, primarily through pollution to air, land and water.

The report also highlights the absence of peer reviewed research on the health implications of the hydraulic fracturing process. It identifies the problems in the United States as being due to "operational failures and inadequacies in the regulatory environment" and cautions over difficulties in accurately extrapolating information from events there.

The main areas of risk are summarised by Public Health England as:

- Contamination of groundwater as a result of borehole leakage; and
- Accidental spills and accidents above ground.

The report also draws a distinction between the risks from small scale exploratory drilling (a single well) and commercial scale operations. The cumulative impact of multiple wells at different phases of operation in a relatively small area is identified as needing careful scrutiny.

Public Health England concludes on the available evidence that "the contamination of groundwater from the underground fracking process itself is unlikely". However, it recognises the need for further work on:

²¹ Cuadrilla Resources: <http://www.cuadrillaresources.com/what-we-do/hydraulic-fracturing/fracturing-fluid/>

²² Chartered Institute of Water and Environmental Management: <http://www.ciwem.org.uk/policy-and-international/policy-position-statements/hydraulic-fracturing-%28fracking%29-of-shale-in-the-uk.aspx>

²³ Explore Shale website

²⁴ Public Health England <http://www.hpa.org.uk/Publications/Environment/PHECREReportSeries/>

Scrutiny (Community and Regeneration) Committee Report

- baseline monitoring;
- development of emission inventories and monitoring programmes during and post production;
- early toxicological assessment of chemicals used in fracking fluids; and
- the cumulative impact of multiple wells.

The report emphasises the need for “good on-site management and appropriate regulation of all aspects of operations, from exploratory drilling to gas capture and use and storage of fracking fluid” and the importance of the planning and environmental permitting process.

Seismic Impact

The UK, on average, experiences seismicity of magnitude 5M (felt by everyone nearby) every 20 years and magnitude 4M (felt by many people) every 3 or 4 years. Coal mining related seismicity according to British Geological Survey records was no larger than magnitude 4M. As of June 2012, the Royal Society / Royal Academy of Engineering stated that the emerging consensus was that seismicity induced by hydraulic fracturing would be no greater than magnitude 3M and therefore less than coal mining related seismicity. The depth of the hydraulic fracturing would also determine the surface impact of any seismicity, with a lesser impact the deeper the fracturing.

The earth tremor attributed to the hydraulic fracturing undertaken near Blackpool in April and May 2011 was measured as magnitude 2.3M. The earth tremor that affected Folkestone in 2007 measured 4.3M, with a subsequent earth tremor in 2009 measuring 2.3M.

As a result of these earth tremors, the Secretary of State for Energy and Climate Change issued a Written Ministerial Statement in December 2012 announcing the outcome of investigations into the cause. The evidence was reviewed with the aid of independent experts and concluded that appropriate controls were available to mitigate the risks of undesirable seismic activity and that such controls would be required by DECC for all future shale gas wells.

All new applications for hydraulic fracturing require the applicant to conduct a review of fault lines in the area of the licence application and produce a plan showing any seismic risks. In the UK hydraulic fracturing is monitored by a ‘traffic light system’ and drilling must be stopped if seismic activity reaches 0.5 on the Richter scale above the background seismic activity.

However, a study conducted by Columbia University (in the US) concluded that the use of water to extract oil and gas in hydraulic fracturing could weaken existing fault lines and leave them vulnerable to being triggered by normal seismic activity. There is some controversy over how permanent this weakening of the fault lines could be.

The Type and Scale of Surface Structures

In the UK Shale gas operations are likely to require environmental permits from the Environment Agency under the Environmental Permitting Regulations 2010 and Shale gas wells must be designed, built and operated to standards set in the regulations governed by the Health and Safety Executive (HSE).

The Campaign to Protect Rural England (CPRE) state that a drilling site is approximately 1900 square metres in size with a drilling rig standing around 9 metres in height.²⁵ In

²⁵ Campaign to Protect Rural England - <http://protectkent.org.uk/blog/fracking-coming-kent/>

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addition to the visual impact, there will be issues around the lighting of the site, the flaring of methane gas, the noise of production / drilling and traffic movements to and from the site. All of these issues are covered by the planning process.

The image below is obtained from the Cuadrilla Resource website shows hydraulic fracturing equipment at Preese Hall in 2011.

Picture 2: Source Cuadrilla Resources - Image of Preese Hall.

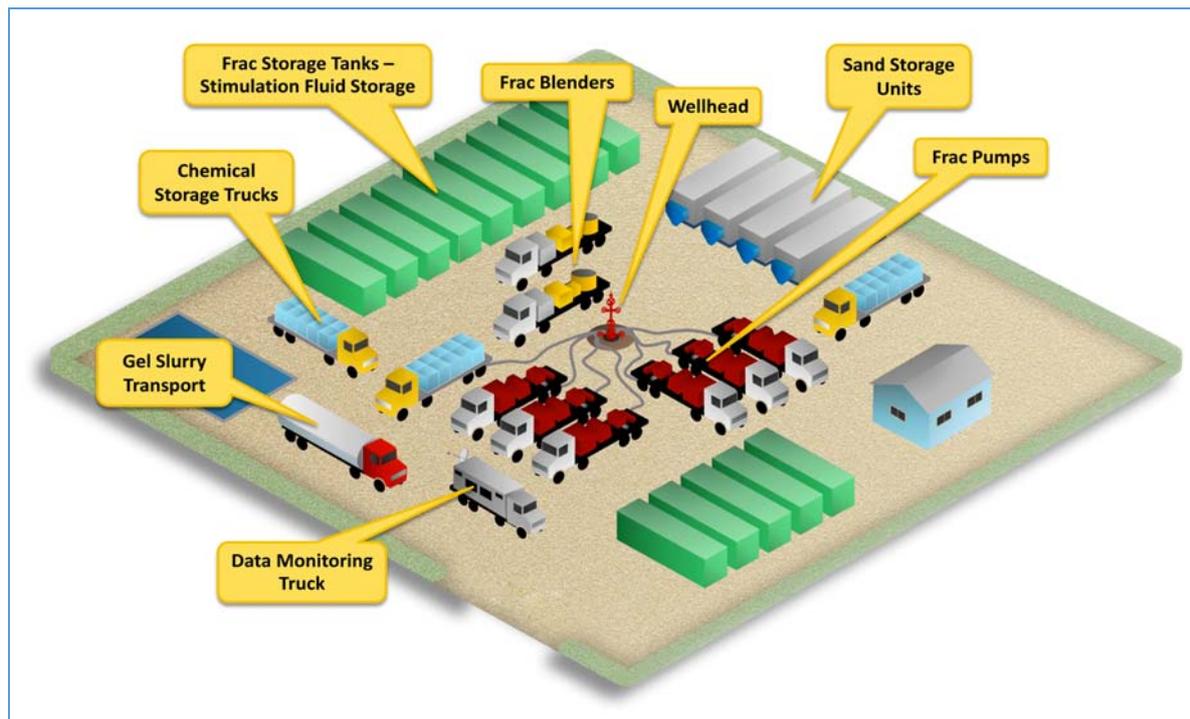


The US Department of Energy leaflet on how shale gas is produced provides the following illustration of common equipment at a hydraulic fracturing drill pad.

The American energy company Chevron state that it takes up to a year to build the well site and drill and complete the well. This is based on a drilling rig that drills a vertical well approximately 8,000 feet (2,438 m) below the earth's surface. The rig then drills horizontally, about 2,000 to 6,000 feet (610–1,829 m) outward into the layer of shale rock.

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Picture 3: Source US Department of Energy - Representation of common equipment at a natural gas hydraulic fracturing drill pad.



Impact of Anti-Fracking Demonstrations on the Local Communities and on the Police

Sussex Police has responsibility for policing the anti-fracking demonstrations at the Cuadrilla Resources site in Balcombe. The cost of policing the demonstrations was estimated at £2.381 million as of Thursday 5 September 2013.

As part of this report a letter was sent to Kent Police in respect of this area. The response from Paul Brandon, Assistant Chief Constable (Operations) recognises the possibility of protest at potential drilling sites (the letter was written at the time the planning applications to Kent County Council were live) and states that "Kent Police will facilitate lawful protest while also seeking to prevent crime and disorder". The experience Kent Police has of policing peaceful protests is cited and that officers were "specially trained to deal with events of this nature, to uphold the law and police protests fairly and even-handedly".

In addition, Kent Police have been liaising with Sussex Police to share lessons learnt from the experience at Balcombe. The costs for any deployment would be met by Kent Police.

Supporting Papers

Correspondence (Appendix 1)

- Cuadrilla Resources – Letter dated 24 October 2013
- British Geological Survey – Email dated 13 November 2013
- Kent Police – Letter dated 7 November 2013
- Affinity Water – Letter dated 4 November 2013
- Chartered Institute of Water and Environmental Management – Email dated 23 October 2013

Letters were written to Southern Water and Coastal Oil and Gas Ltd to which no reply was received.

Documentation Received by the Committee at its meeting held on 11 November 2013

- Campaign to Protect Rural England – Slides with explanatory information
- East Kent Against Fracking – Text of address to Committee
- Keep Shepherds Well – Text of address to Committee
- Keep Shepherds Well – Letter to Kent County Council Planning Department
- Shepherds Well Parish Council – Letter in respect of Planning Application (KCC/DO/0218/2013)
- Guston Parish Council – Report
- DVD 'Fracking in the UK' by Marco Jackson (Provided by Campaign to Protect Rural England)

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<http://www.hse.gov.uk/offshore/unconventional-gas.htm>

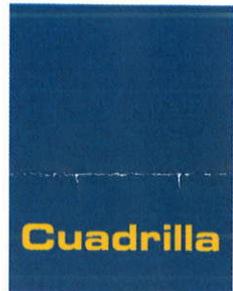
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- The Global Warming Policy Foundation website: <http://www.thegwpf.org/britain-holds-biggest-shale-basin-world/>
- House of Commons Select Committee – Energy and Climate Change: <http://www.publications.parliament.uk/pa/cm201213/cmselect/cmenergy/writev/isg/m17.htm>
- Hydraulic fracturing (Wikipedia): <http://en.wikipedia.org/wiki/Fracking>
- UK Groundwater Forum: <http://www.groundwateruk.org/Default.aspx>
- Shale Gas Report: <http://www.shalegas-europe.eu/en/index.php/about-us/the-expert-advisory-panel>
- Centre for Energy Economics and Policy: http://www.rff.org/centers/energy_economics_and_policy/Pages/Shale-Gas-Expert-Survey.aspx
- The Telegraph, 'Shale could fuel UK for 10 years': <http://www.telegraph.co.uk/finance/newsbysector/energy/oilandgas/10111793/Shale-could-fuel-UK-for-10-years-say-experts.html>
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- The Telegraph, 'Prof Robert Mair: Here the facts about fracking': <http://www.telegraph.co.uk/finance/newsbysector/energy/oilandgas/10266881/Prof-Robert-Mair-Here-are-the-facts-about-fracking.html>
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- 'Frack Off' website: <http://frack-off.org.uk/locations/bad-guys/>
- East Kent Against Fracking: <http://eastkentagainstfracking.blogspot.co.uk/>
- Affinity Water: <https://stakeholder.affinitywater.co.uk/home.aspx>
- Environmental Impact of Mining: http://en.wikipedia.org/wiki/Environmental_impact_of_mining
- Public Health England: <http://www.hpa.org.uk/Publications/Environment/PHECR CERReportSeries/>
- Sussex Police 'Balcombe Protests Policing Costs Update' (6 September 2013): <http://www.sussex.police.uk/whats-happening/latest/news-stories/2013/09/06/balcombe-protests-policing-costs-update>

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Tel: +44(0)1543266444
Fax: +44(0)15432664440
www.cuadrillaresources.com



By email and post rebeccabrough@dover.gov.uk

Ms R Brough
Team Leader – Democratic Support
Dover District Council
Democratic Services
White Cliffs Business Park
Dover
Kent
DT16 3PJ

24 October 2013

Dear Ms Brough,

**Invitation to attend and present to Scrutiny (Community and Regeneration)
Committee meeting on Wednesday 13 November 2013**

Thank you for your letter dated 18th October inviting Cuadrilla to attend and present to The Scrutiny (Community and Regeneration) Committee meeting scheduled for Wednesday 13 November.

We appreciate the invitation and the opportunity to contribute to your session, however, we do not have any planned operations in the Dover district area and will therefore politely decline to attend your Committee meeting on this occasion.

Cuadrilla is keen to ensure that information about the company, its operational sites and activities and the fracking process is readily available and there are comprehensive details available via our website www.cuadrillaresources.com – we hope you find this source of information useful in answering the points raised in your motion.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Francis Egan".

Francis Egan
Chief Executive Officer

FGE-E-L036/FGE/dmp

Dear Ms Brough,

At this stage in our methane baseline investigations we are not reporting analyses for individual sites in any area; it is intended that the data will be released in a report some time next year. However, I can tell you that of the 11 sites we have measured in the DDC area (seven of which were Affinity Water boreholes), none has exceeded 5 µg/L for methane. This is an extremely low background concentration against which any leakage of gas into the aquifers would be readily detectable.

I hope this helps,

Kind regards,

George Darling

British Geological Survey
Wallingford



**Kent
Police**

Protecting and serving the people of Kent

**Paul Brandon
Assistant Chief Constable (Central Operations)**

Ms. R. Brough
Team Leader, Democratic Support
Dover District Council
White Cliffs Business Park
DOVER
Kent CT16 3PJ

Date: 7 November 2013
Ref: 3621/2013

Dear Ms. Brough

Re: Proposed drilling activity in the Dover District.

Thank you for your letter, dated 22nd October 2013, which was passed to me by Chief Constable Learmonth. Kent Police is aware of a number of planning applications relating to exploratory drilling in Kent. These planning applications are with the KCC Planning Committee and Kent Police have no control over their decision.

None of these sites has to date attracted any notable protest, but we recognise that is a possibility and should the situation change then Kent Police will facilitate lawful protest while also seeking to prevent crime and disorder.

Kent Police has a great deal of experience of policing peaceful protests and officers are specially trained to deal with events of this nature, to uphold the law and police protests fairly and even-handedly. As a further contingency, officers and staff have been liaising with our counterparts in Sussex Police to draw on their experiences following the incidents at Balcombe earlier this year.

Costs for policing protests are likely to be met by Kent Police, but no significant deployment is either necessary or anticipated at this time.

Chief Superintendent Roden, who is the appointed Gold Commander for the Operation, has arranged a briefing session on the 21st November 2013 to key partners on the preparations that are underway from a Police perspective.

You may be aware that an invitation was sent to Mr. Nadeem Aziz on the 30th October, which he declined. However, he has confirmed that the briefing will be attended by Mr. David Randall.

Yours sincerely

Paul Brandon
Assistant Chief Constable (Central Operations)

cc: C/Supt. Alison Roden – Head of Tactical Operations.

Rebecca Brough
Dover District Council
Democratic Services
White Cliffs Business Park
Dover
Kent. CT16 3PJ

Dear Rebecca,

Ref: Methane levels in Dover District Groundwater

I am writing in response to Dover District Council's Scrutiny Committee request for Affinity Water views in respect of potential contamination of the aquifers from proposed Coal Bed Methane exploration planning applications submitted to Kent County Council.

Affinity Water Limited is the water undertaker appointed by Ofwat for the area affected by the potential exploratory drilling operations. As the water undertaker for the area, we have a duty under the Water Industry Act 1991 to ensure that the water we supply to our customers is wholesome and that in relation to each of our water sources there is, as far as reasonably practicable, no deterioration in the quality of water which is supplied from the source. We must therefore ensure that an assessment is made of the proposed activity within the catchments that present a risk of pollution to our public supply boreholes.

We have reviewed the documentation provided by Coastal Oil and Gas as part of their planning applications and the documentation does not currently contain sufficient information to provide assurance that appropriate steps have been taken to identify, assess and mitigate potential risks to groundwater. Consequently, we have raised an objection to these applications to Kent County Council.

I have summarised below our general concerns which were raised in the objection:

- Hydrogeological Risk Assessments have not been included in the applications so potential risks to groundwater are not identified at the planning stage of the process. We therefore cannot be certain that risks to groundwater have been adequately considered and mitigation measures identified.
- We are concerned that turbidity issues may arise at the nearby public water supply borehole sources while drilling through the chalk layers which may cause outages at one or more of our pumping stations. We have particular concerns during periods of high demand and request assurance on how this can be mitigated/avoided.
- There appears to be a lack of baseline monitoring for methane and other gases and also groundwater level monitoring at the existing boreholes in the vicinity that may be affected by the drilling activities prior to, during and after the installation of the exploratory borehole. We also have concerns that long term monitoring has not been defined once the exploration stage has ceased, especially should the exploratory boreholes become production sources.

There is uncertainty regarding the potential nature and impact of such activities on groundwater which we are seeking assurances that our concerns are addressed through the planning process. Affinity Water is working with the Environment Agency and the water industry to identify, assess and understand the mitigation measures required to protect groundwater.

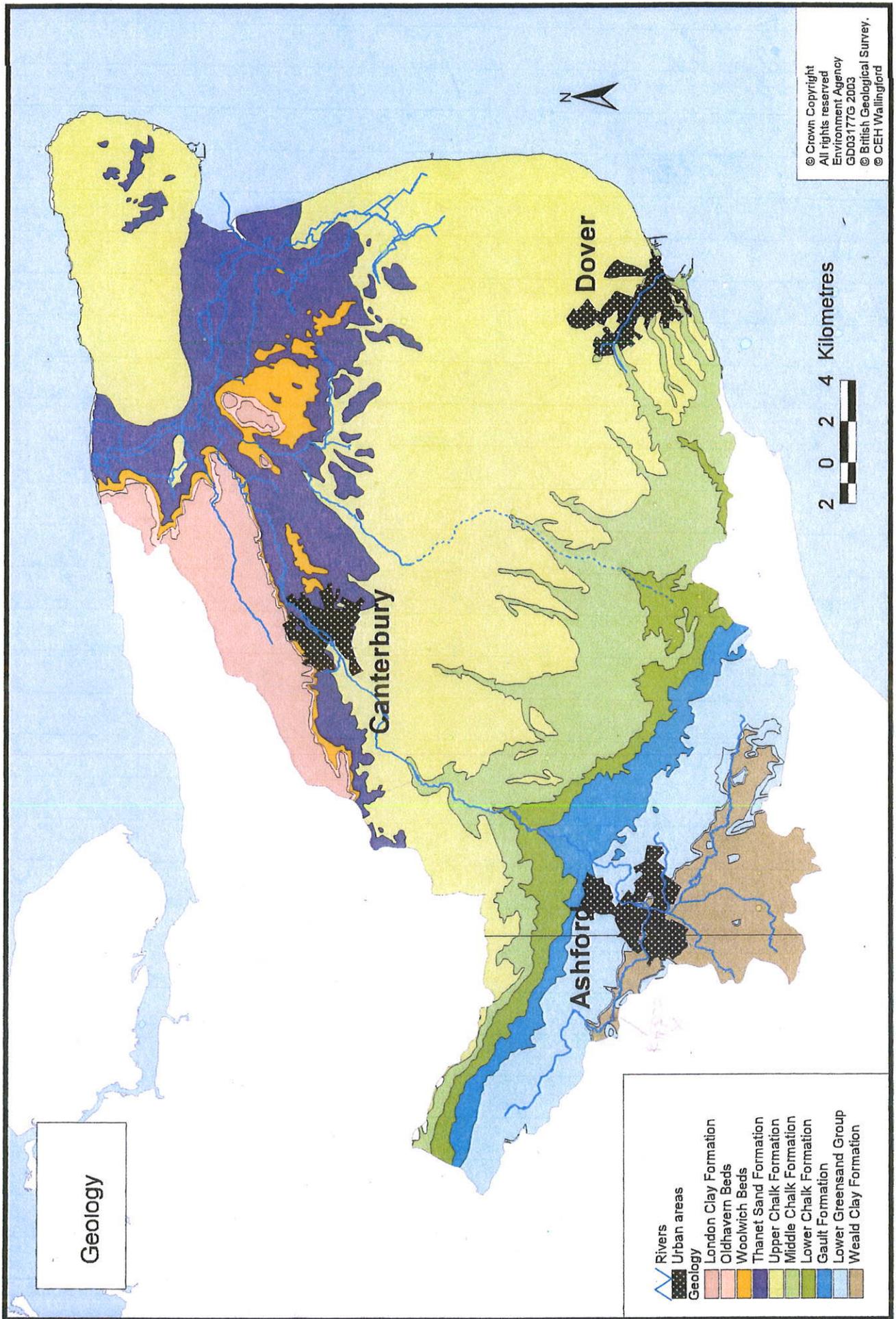
We are prepared to discuss these concerns further with the Environment Agency, Kent County Council and the applicants (Coastal Oil and Gas) to ensure that protection of groundwater during drilling, exploration and long term monitoring is fully considered and any risks identified are mitigated.

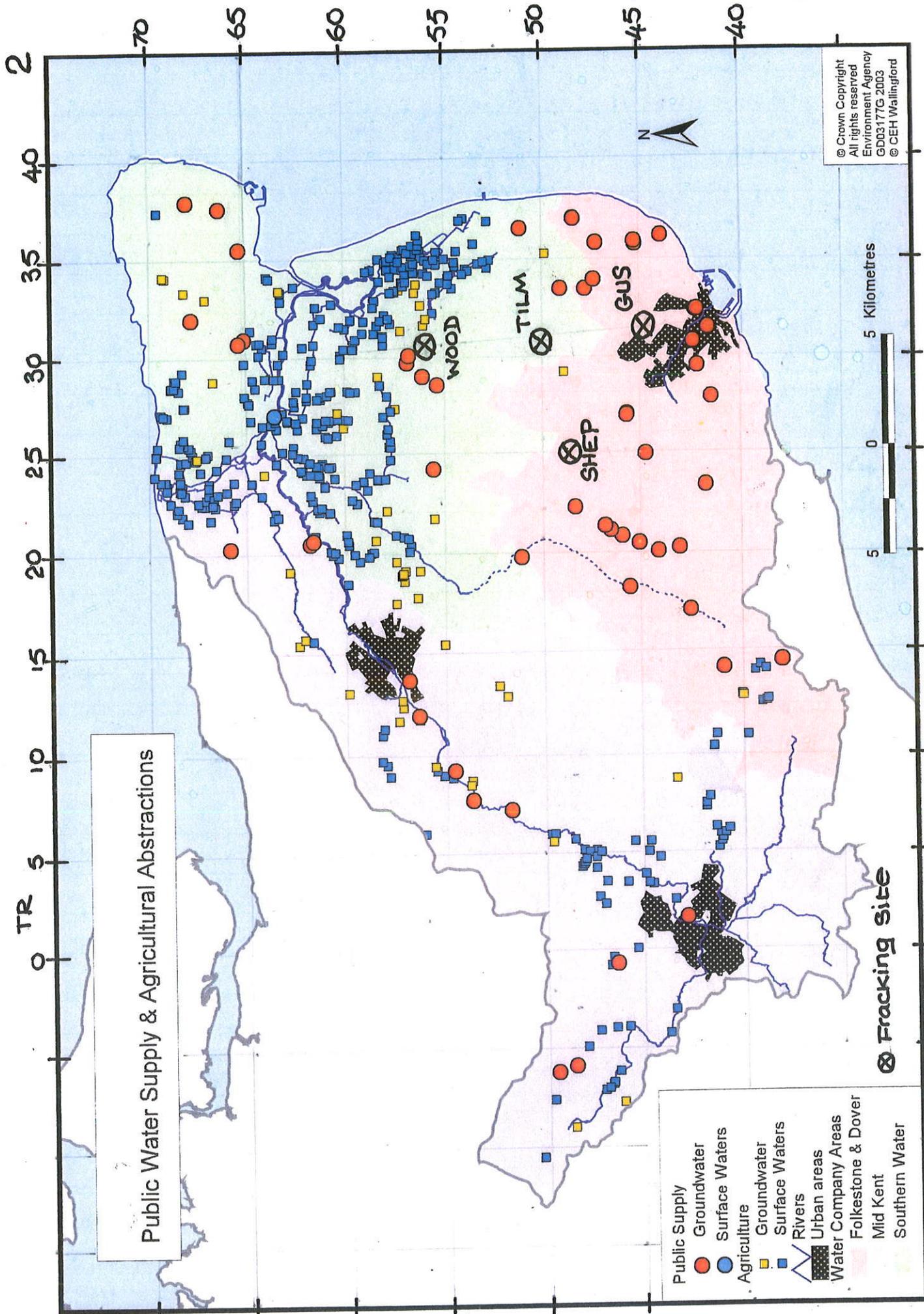
Yours sincerely

Alister Leggatt
Catchment Officer
Affinity Water Ltd.

CPRE KENT.

SHALE GAS RECOVERY IN EAST KENT
WATER RESOURCE IMPLICATIONS

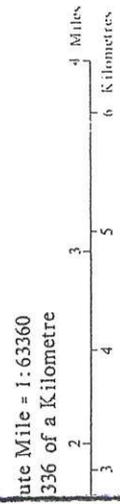




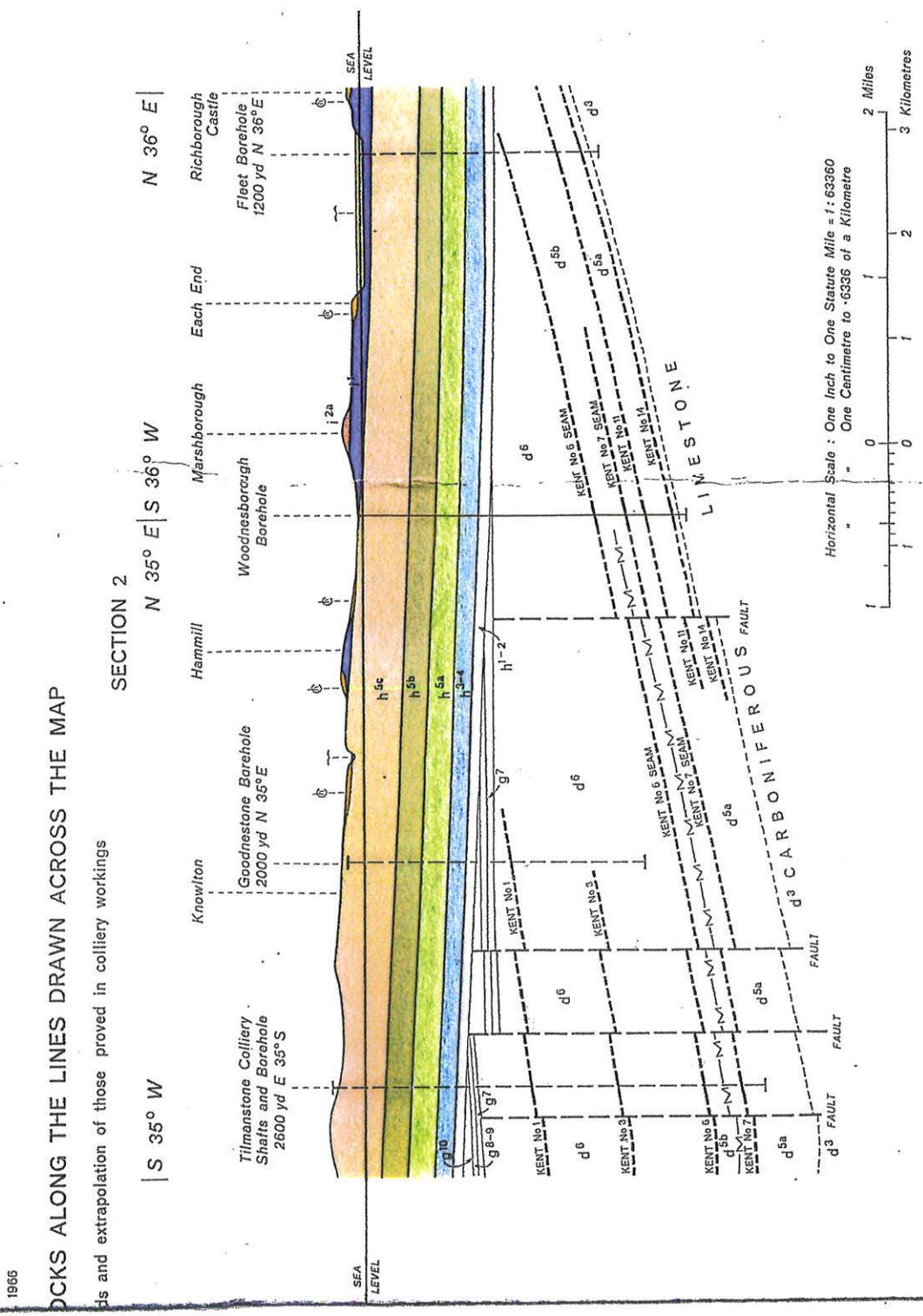
The representation on this map of a road, track or foot-path, is no evidence of the existence of a right of way.
 Made and published by the Director General of the Ordnance Survey, Cheshington, Surrey, 1966, for the Geological Survey.

Index to the Six-Inch Maps in this sheet

NE	NW	NE
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SE	SW	SE
NE	NW	NE
TR.24	TR.34	TR.34
SE	SW	SE



Scale: One Statute Mile = 1:63360
 One Centimetre = 1:6336 of a Kilometre



DOCKS ALONG THE LINES DRAWN ACROSS THE MAP

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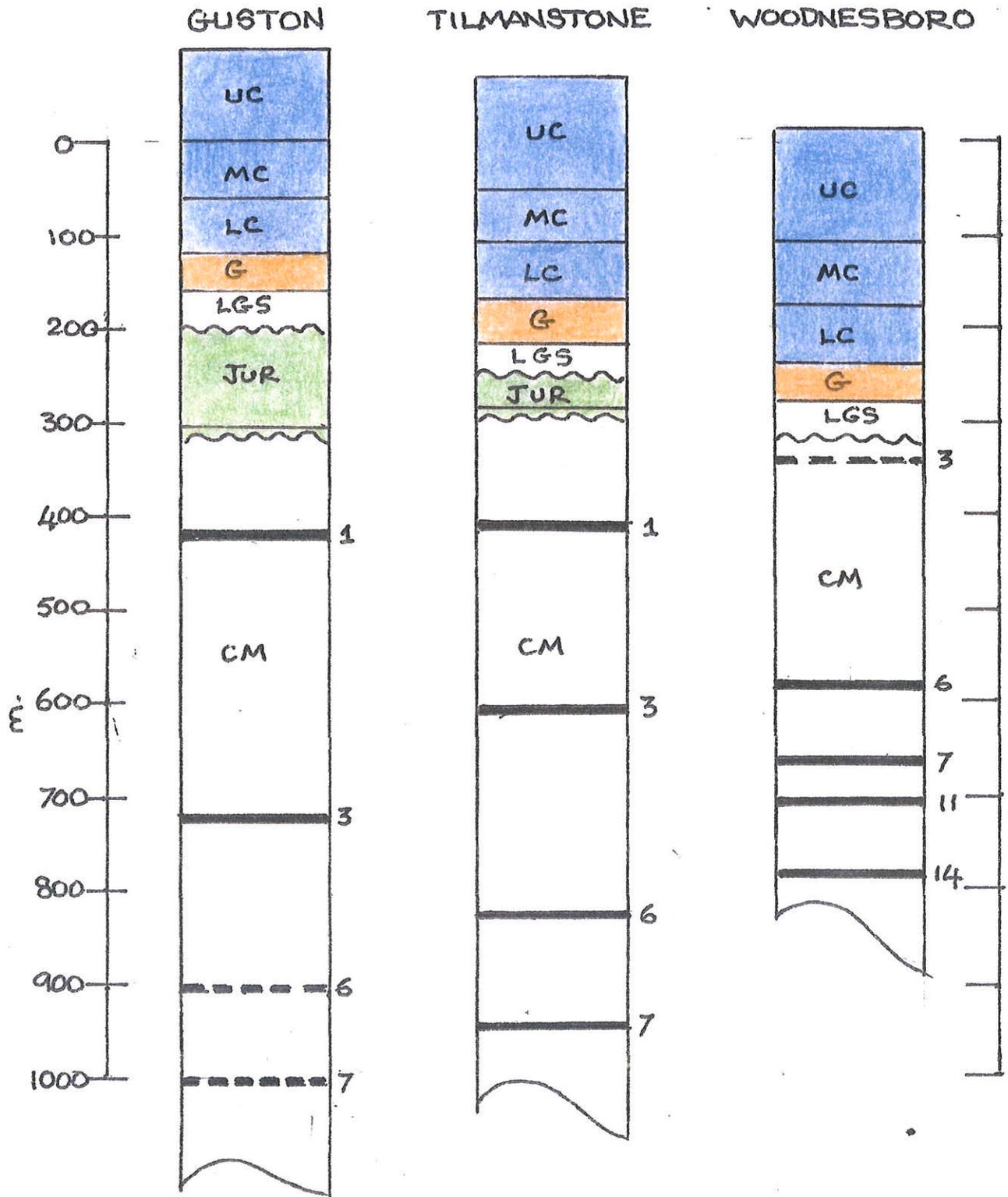
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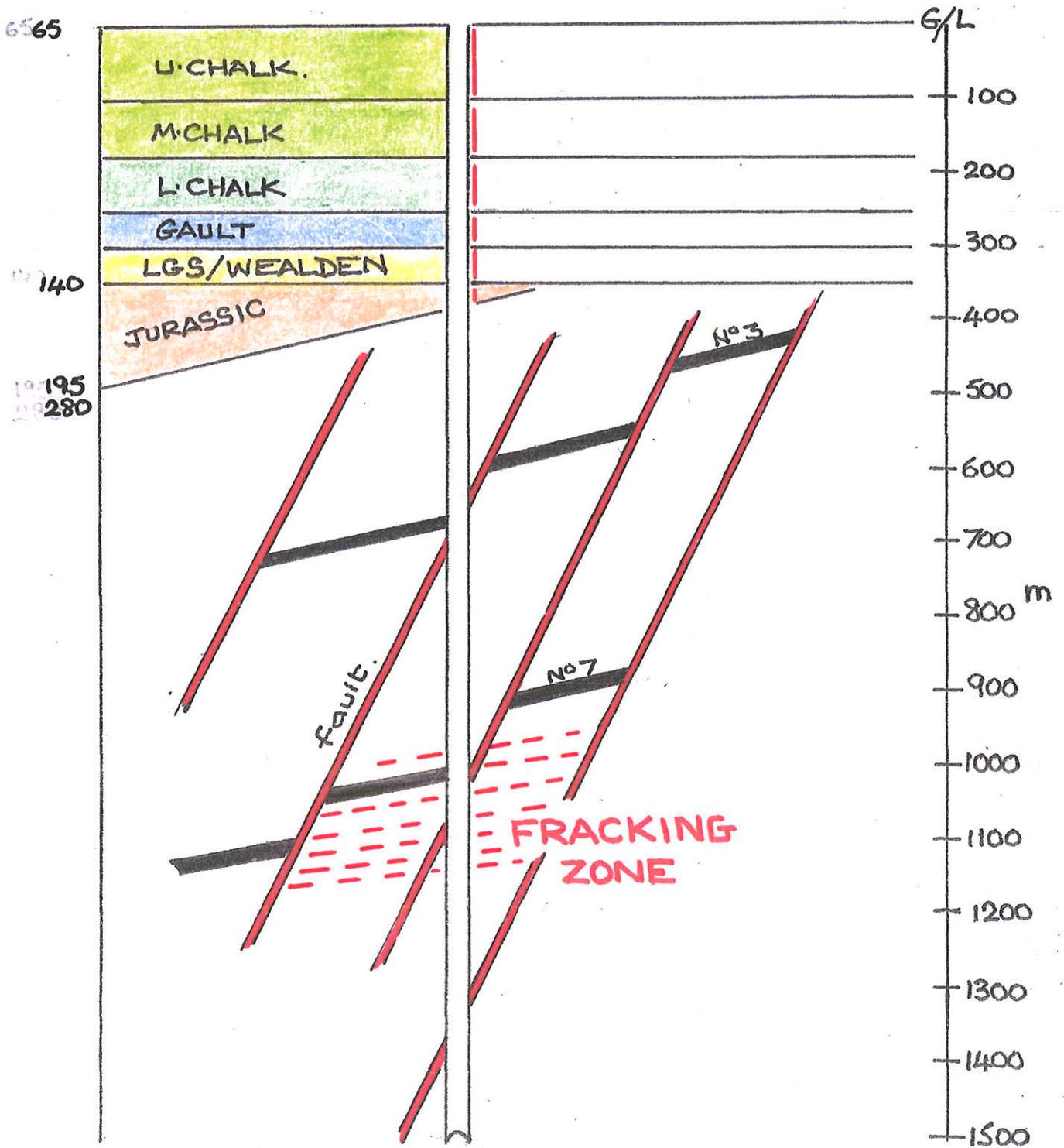
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 LINESSTONE







East Kent Against Fracking

The impacts of unconventional gas extraction on the local economy and jobs

I am sure that those of you who are in favour of approving these applications take that position because you believe that they will lead to cheaper energy and more jobs. These are the key arguments of the industry and of our government and are seen to outweigh the risk to our water and the quality of life issues raised by industrialising our countryside.

First of all, I should like to outline the true picture of the position today in the USA, which is not quite the rosy picture painted by the industry.

Cheap Energy – the American Experience

In January 2012, the price of natural gas plunged to below \$2 per thousand cubic feet (mcf) due to overproduction by shale operators. Unfortunately, as with most aspects of unconventional shale production, this proved short-lived and was oversold. Electricity generation from natural gas began to fade only months after it had gained ground in much the same way that shale gas wells fade only months after initial production. As gas prices moved up to trade between \$3.50 and \$4 per mcf, utilities promptly began switching back to using coal for generation.

During the first half of 2013 the price of natural gas delivered to electricity generators averaged \$4.46 per mcf, 44% higher than in the same period last year.

Industry and its proponents, including such entities as the *Wall Street Journal*, have made extravagant comments about natural gas providing “benefits to the poor”, particularly with respect to lower electricity costs for the consumer well into the future. Such benefits are already evaporating.

Secondly, but most importantly, we can now safely assume that natural gas is priced out of the market for electricity generation; it is somewhere between \$3.50 and \$4 per mcf. This produces an enormous difficulty for natural gas producers in that the break-even costs of unconventional shale wells are considerably higher, with the average amounting to around \$6/mcf. Exportation of shale gas will drive these prices higher still, creating an unfavourable climate for natural gas as a primary source of electricity generation.

The financial analyst Rogers¹ warns that the interplay of geological constraints and financial exuberance are creating an unsustainable bubble. Her report shows that shale oil and gas reserves have been “overestimated by a minimum of 100% and by as

¹ <http://energypolicyforum.org/portfolio/deborah-rogers-in-londons-guardian/>

much as 400-500% by operators according to actual well production data filed in various states... Deliberate overproduction drove gas prices down so that Wall Street could maximise profits “from mergers & acquisitions and other transactional fees”, as well as from share prices. Meanwhile, the industry must still service high levels of debt due to excessive borrowing justified by overinflated projections.

With the addition of our proximity to EU markets, plus the higher cost of production here if regulation is to make it safe, do you really still believe the myth of cheap energy?

Job Creation – the American Experience

Much has been claimed by the oil and gas industry with regard to job creation from shale development. In the USA it has been stated repeatedly that as many as 600,000 jobs will be generated by shale production. But these numbers are based on economic models which, when assessed, were found to include jobs such as strippers and prostitutes in the mix. Arguably this is job creation, just not the sort that most Americans would prefer to acknowledge.

Unemployment is growing in Pennsylvania in spite of its self-proclaimed “booming” Marcellus shale production. The oil and gas industry has shouted from the roof tops for quite some time about the “shale revolution” and its supposed long-term economic benefits. But those benefits seem to be confined to the few, such as one of the biggest players in the business who boasts: “I can assure you that buying leases for x and selling them for 5x or 10x is a lot more profitable than trying to produce gas at \$5 or \$6 per thousand cubic feet.”

Meanwhile, small business owners are the ones who have been impoverished. They are the ones whose businesses have failed and faltered and struggled. They are also the largest provider of net new jobs in the USA, in spite of all the oil and gas industry’s rhetoric. Independent analyses of shale plays throughout the country confirm that wells are short-lived and reserves not as great as industry promises. In addition, communities where drilling has occurred are now dealing with the expensive aftermath. The drilling companies have offloaded that significant burden onto the taxpayers and local businesses. This is true of the oil and gas industry as a whole. In fact, economists estimate that if all the external costs of oil and gas were included, gasoline would cost in excess of \$12 per gallon.

What are these costs? Firstly, water must be provided for communities where it has been contaminated. Secondly, there are rising health care costs to pay for those suffering from the effects of fracking, everything from skin rashes to respiratory problems and cancer. And last but not least for district councillors are the costs of repairing roads damaged by the constant stream of heavy goods vehicles to and from fracking sites. Some roads require annual maintenance at \$70,000-80,000 per mile. However, other roads need basic reconstruction at a cost of up to \$920,000 per mile.

The Scenario Locally

So let's look at the issues in our local context. First of all, jobs. The extraction of unconventional gas is not a labour-intensive industry. You will note on the planning applications that they require only 2-3 cars per shift. The normal practice in this industry is to bring in existing staff or experienced contractors for skilled posts such as engineers; companies will not recruit locally for these positions. There may be some work available on and between sites, but this will be unskilled, insecure and potentially hazardous (operatives are not given details of the toxic substances which they handle).

However, the real worry is the likely impact on existing jobs. How will these proposed developments affect the various sectors that at present provide jobs in Dover District? First of all, *The Economic Impact of Tourism in 2011*, commissioned by Dover District Council and Visit Kent, found that tourism was worth £243,590,000 to the district in 2011 – up 16% on 2009 – and employment supported by tourism was up by 3%. So local tourism is an existing, growing industry. What impact could be made on these positive figures by even a year's worth of unsightly, traffic-heavy drilling, with the associated reputational cost to Kent's natural beauty? The world-famous Church of St Nicholas at Barfreston is not two miles from the proposed drilling site at Tilmanstone. Then consider the effects of the hundreds of wells that would have to be drilled to make the project economically viable. How much of our lovely countryside would be left? And who would want to visit our district any more?

While the three exploratory sites under consideration and the one already approved might not represent a large take of agricultural land, should these tests prove successful and Coastal Oil and Gas Ltd proceed to production, then there would be a considerable loss of agricultural land and the jobs attached to it. And the damage would not stop there: all adjacent land and what it produces could also be blighted by public perception that the food produced might be contaminated. Consider a business like Tilmanstone Salads, which supplies fresh, locally grown produce to Marks & Spencers: how would their trade be affected? Not only would they be worried about consumer perception of their product, but also about the speedy delivery essential to them. With the huge increase in HGV traffic in the area and the congestion caused by regular demonstrations, their delivery trucks would face unacceptable delays. In their position I would already be considering relocation . . . and they employ over 800 people.

Of course the other major employer is Dover Harbour with its associated freight trade, as well as private passengers and the cruise liners. How will the big increase in traffic impact on them? With the very narrow lanes which will have to be negotiated to reach Guston and the possibility of HGVs causing gridlock on those roads, with traffic backed up to the routes out of Dover, who would not consider another route for their journeys to the continent?

Our local economy is also boosted by the large number of second home owners and retirement households. But who would choose to come and live inside an industrial

complex? I am sure there are many other businesses whose prospects will not be improved by the coming of this industry to the district. The realistic prospects are for an enormous net loss of jobs.

At the same time, we need to consider all the other costs to our local economy that such an industry will bring with it.

I have already referred to the damage to roads, and possible health care costs. Other costs to the taxpayer could include the costs of processing such controversial applications to local government, the costs of policing such unpopular developments which will inevitably draw demonstrations, the cost of implementing the regulation and ongoing monitoring of what is a potentially dangerous operation, and finally the costs of any clean-up in the event of a catastrophe, and/or the probable bankruptcy of the firm involved. You may not be aware that the total assets of Coastal Oil and Gas declared in October 2012 amounted to only £1,000. So potentially enormous costs will devolve onto the taxpayer. We should also consider the costs to residents of increased insurance payments and the loss of value to their property.

Many people I know are saying: "Let them get on and test, because we don't think they will find economically viable methane." But we must be aware that companies will want to test the shale below the coal bed. Having expended so much, they will not want to give up. There is also the fact that once those applications are passed, it will be much more difficult to refuse later ones. If the company receives permission for three more exploratory boreholes on top of the one it already has, drilling will be going on within the District for more than a year. The whole area will be blighted, incoming business will falter, and heaven help you if you need to sell your house or business during that year.

Furthermore, should these trials lead on to production, any employment created by the industry would be vastly outweighed by the likely number of existing and future jobs and small business livelihoods which would be lost in the tourism and agriculture sectors. Even if no accidents, leaks or other problems occurred (statistically almost impossible, given the number of wells contemplated) the effect upon our unspoilt countryside, which can sustain world-class tourism and high-quality food production would be disastrous. As an industrial zone, with ravaged landscapes, thousands of daily HGV vehicle journeys and the diversion of millions of gallons of water, both the perception and the reality of the area would be drastically and irrevocably changed.

Sources

Osborn et al. (2011) *Methane Contamination of drinking water accompanying gas--well drilling and hydraulic fracturing.*

Bamberger, M. & Oswald, R. E. (2012) *Impacts of Gas Drilling on Human and Animal Health.*

Brundage. et al. (2011). *Pennsylvania Marcellus Shale Workforce Needs Assessment*

Barth (2011) *Hydrofracking offers short--term boom, long--term bust*

Deutsche Bank (2011) *European Gas: A First Look At EU Shale--Gas Prospects*

Goldenberg (11 August 2013) *A Texan tragedy: ample oil, no water*

Food & Water Watch (2012) *Fracking and the food system*

Osborn et al. (2011) *Methane Contamination of drinking water accompanying gas--well drilling and hydraulic fracturing.*

Tom Brown, Senior Credit Executive, Norddeutsche Landesbank, London EC2 UK (quoted in *Financial Times*)

The Economic Impacts of Developing CSG in North West NSW The Australian Institute

Deborah Rogers Energy Policy Forum

Keep Shepherdswell Well

Address to Dover District Council Scrutiny committee on the subject of Fracking,

November 11, 2013

Introduction: My name is Pamela Mudge-Wood. I have lived in East Kent for 30 years; 25 years in Canterbury and 5 years in Shepherdswell. Originally from America, I am married to Kevin Mudge-Wood, the son of a Kent miner, raised in Snowdown; he is an Old Pharosian and has worked for 20 years as a production editor on Kent's local newspapers. With a PGCE from Christ Church University, I have taught music and English in Kent schools since 1993.

I say all this to show that, contrary to the popular image of anti-fracking campaigners as rent-a-mob ideologues drifting from benefit offices to protest camps, neither I nor my fellow Keep Shepherdswell Well colleagues speaking tonight are 'professional protesters'. We are hard-working, tax-paying residents of a village and district directly threatened by the government-backed encroachment of a polluting industrial practice upon and underneath our locality.

We are standing up alongside our neighbours to protect ourselves from the deteriorating effects on the landscape, local economy, public health, social cohesion and political integrity that fracking and related drilling practices have brought to many parts of the US over the past decade, including the area where I grew up, on the banks of the Delaware River in the Catskill Mountains; on the border between New York and Pennsylvania; above the Marcellus Shale.

I first encountered the gas drilling industry on an extended visit to my parents in 2007, as I witnessed a gas pipeline cutting 100 foot-wide scars along hundreds of miles of the gently forested and rural landscape of the Catskill foothills. This was before I had ever heard of fracking, or coal bed methane extraction, or coal gasification, or any of the other extreme forms of fossil fuel extraction currently being sold to the UK public as the magic formula that has brought Americans cheaper gas bills, skilled jobs, and clean, safe energy.

Argument:

Having watched the development of the fracking boom in my home area from the safe distance across the Atlantic over the past 5 years, I have become thoroughly convinced that all of these

unconventional extraction practices are to be opposed on principle, not just as a localised or NIMBY issue, for the following reasons:

- They have the potential to cause air and water pollution with catastrophic consequences, and cannot be made entirely risk-free even if regulation and monitoring of industrial practices are of the highest standard. All cement casing deteriorate eventually.
- The US government has reduced standards of monitoring and regulation by excluding these practices from the jurisdiction of federal environmental protection legislation, (the Halliburton loophole) thus leaving the states and local authorities to take up the responsibility for regulating, monitoring and dealing with accidents; and
- The UK government is giving every indication that it intends to follow the same agenda:
 - by cutting Environment Agency budgets further and faster than expected,
 - by putting political pressure on local authorities to permit drilling applications,
 - by pledging de-regulation, while at the same time promising that accidents that have happened abroad could never happen in our highly regulated industrial scenario; and
 - by appointing gas industry moguls to cabinet posts, including Lord John Browne, former CEO of BP, who while in office has made extensive use of his power to appoint non-executive members of his choice to government departments concerned with regulating the oil and gas industry. (1)

We have heard much eyewash from central government and the energy companies about how utterly risk-free these drilling practices are. Only this Saturday, Business and Energy minister Michael Fallon was again assuring us in the Daily Telegraph (2) that the Water UK study into the dangers of fracking, as yet unpublished, **will show** that fracking is “largely safe” (but it’s the small, unsafe bit we’re concerned about!) and **will show** that there is “no risk” of contamination of water supplies. We must ask (a) how can he know what the report will say before it is published, and (b) how can we believe that anything can be as risk-free as they repeatedly claim, especially when (c) our government is working so hard to increase the risk through de-regulation; as Fallon boasts later in the article, “ministers have reduced the regulatory barriers to fracking, clearing the way for the industry to spread across the country.”

This relentlessly positive slant on the risk-free benefits of fracking strains the credulity of the famously sceptical British public and so weakens the government's Dash for Gas.

Conflict of interest in the highest offices of state, rampant de-regulation, exemption from environmental protection legislation, dismissal of risk, denial of alleged harm, disparagement of dissent and legal gagging of dissenters; these are all hallmarks of the political climate which has allowed fracking to spread unrestricted across rural America over the past decade. This laissez-faire approach enabled fracking companies to go from a small handful of vertical test bores in Western Pennsylvania in 2007 to over 3,000 wells, about half of which are now horizontal fracking wells, spreading like a fungus across the once-rural landscape of Northwestern Pennsylvania. (3)

In response to the repeated industry claim that there is no documented evidence of fracking ever causing harm, may I direct you to the Pennsylvania Alliance for Clean Water and Air's "List of the Harmed". (4) an online list of now approaching 1800 cases of harm to individuals' health and homes caused by gas drilling, ranging from nosebleeds and cracks in walls to cancer and sudden death. Each entry includes direct online links to media reports, photos and films of the people concerned; I have included one such media report here (5). So how does the industry maintain this stance of blanket denial of harm? Proof of contamination is hidden from public view by the industry-wide practice of settling out of court and imposing non-disclosure agreements, once the harmed individuals have themselves paid for environmental testing to prove contamination. Big oil and gas companies have big pockets to pay for big lawyers, and individuals impoverished by legal fees, deteriorating health and plummeting property values eventually must give up the fight and agree to remain silent, or face further penury, often alongside public disparagement. (6) For further development and evidence of the political climate in which fracking has flourished in the US, please refer to Sourcewatch.Org (7) <http://www.sourcewatch.org/index.php/Fracking> Also watch Gasland I and II <http://gaslandmovie.co.uk/>

Conclusion:

We are aware that there is a public order concern in East Kent around the anti-fracking movement, and my aim here has been to inform you of the political paradigm under which the fracking debate has developed and is developing. What is happening in East Kent has

happened before in many other places in the US. EKAF and Keep Shepherds Well have not brought the threat of public protest to our area; no more than the residents of Balcombe started direct action on a whim, to follow some environmental bandwagon in August. By allowing Cuadrilla unchecked permission to drill in their village, over the heads and literally under the feet of the residents, Balcombe Parish Council and East Sussex County Council themselves brought the prospect of public protest to their doorstep. And without the concerted intervention on our own behalf of local residents of Shepherds Well and East Kent, Coastal Oil and Gas were undoubtedly hoping to push their borehole plans through unnoticed and unopposed as well.

We are grateful that the Parish Councils of the four villages most directly affected have voted over-whelmingly to reject the test bore applications, we are grateful that Dover District Council has undertaken the task of scrutinising the potential effects of fracking and related practices on our locality, and we are very glad that as a result of public opposition through the democratic process and material concerns raised by the Environment Agency about the safety of East Kent's water supply, we have, for now, escaped the fate of Balcombe as well as those of Dimock, PA, Pavillion, WY and Dish TX. (see Gasland I and II) We should be wary though, of Michael Fallon's warning/threat in The Telegraph this weekend: "Households right across the South should prepare for gas fracking to begin in their areas, a senior minister warns." (2)

(1) <http://frack-off.org.uk/the-fracking-czar-lord-john-browne/>

(2) <http://www.telegraph.co.uk/earth/energy/fracking/10437394/Fracking-is-safe...-and-its-coming-soon.html>

(3) www.eia.gov/todayinenergy/detail.cfm?id+6390

(4) <http://www.pennsylvaniaallianceforcleanwaterandair.wordpress.com/the-list/>

(5)

[http://www.alternet.org/story/150527/%22they are afraid their house could blow up%22 %3A meet the families whose lives have been ruined by gas drilling %5Bphotos by award-winning photographer nina berman%5D](http://www.alternet.org/story/150527/%22they%20are%20afraid%20their%20house%20could%20blow%20up%22%3A%20meet%20the%20families%20whose%20lives%20have%20been%20ruined%20by%20gas%20drilling%5Bphotos%20by%20award-winning%20photographer%20nina%20berman%5D)

(6) Cycle of fracking denial, Earthworks, handout

(7) <http://www.sourcewatch.org/index.php/Fracking>

(8) <http://gaslandmovie.co.uk/>

Keep Shepherdswell Well

www.KeepShepherdswellWell.org

c/o 42 Saint Andrews Gardens
Shepherdswell
Dover, CT 15 7LP

10 November 2013

Mr M Clifton
Planning Applications Unit
Invicta House
Maidstone
ME14 1XX

Dear Mr Clifton

**Planning Application DOV/13/0074 (KCC/DO/0218/2013)
Land off un-named road, South West of Puckland Wood, Shepherdswell, CT15 7PZ**

The organisers of 'Keep Shepherdswell Well', a campaign group established by Shepherdswell residents, wish to object to the above planning application.

The Kent Minerals Plan states in OG2 that the Planning Authority has to be satisfied that the proposed site has been selected to "minimise its environmental and natural resource impact". OG8 goes on to state that Planning Authority "will be required to be satisfied that the earth sciences and ecological interests of the site and its surroundingshave been established". The National Planning Policy Framework para 109 states that 'the planning system should contribute to the natural and local environment' by 'preventing new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air water or noise pollution'.

We do not see how KCC can possibly consider this application as meeting these requirements.

We have carefully read the Environment Agency's advice (ref. KT/2013/117018/01-L01) and the 17 items of further information it requires from the applicant. We have also noted the concerns of the Kent Wildlife Trust's letter (Ref 315420/KN) and the objections by Shepherdswell and Coldred Parish Council. We add our support to the points made by these organisations.

Our concerns cover the environment, including the impact on the aquifer and wildlife, access to the site, noise pollution and impact on general amenities. We are also concerned at the general lack of 'knowledge and awareness' about potential risks displayed in the application by Coastal Oil and Gas (COG).

1. The aquifer and our water supply

The application makes no attempt to address concerns about the effect on the environment, especially potential contamination of the chalk aquifer. Its failure even to acknowledge the fact that Shepherdswell is located in a protected area of the aquifer suggests that COG is unaware of the issues involved. It would be very difficult if not impossible to put in place safeguards to guarantee protection of the aquifer but the applicants show little understanding that this is even

necessary. As the Environment Agency (EA) points out, groundwater flow can be rapid and reach the aquifer, boreholes and surface water very quickly.

COG gives no details about how it would capture, store or remove contaminated water from the drilling process. It does not detail what chemicals would be used and whether they are appropriate to this onshore area.

Not only will waste water contain chemical contaminants, it may also be affected by the presence of Radon and arrangements for disposal are not set out in the application. The Indicative Atlas of Radon in England and Wales (p. 15) identifies the area in which the proposed borehole is located as having 5 to 10 per cent of dwellings 'at or above the action level'.

The area is also one of seismic activity. This issue has also not been addressed by COG. According to the British Geographical Survey, the April 2007 activity at Folkestone was measured at an intensity of 5 on European macroseismic scale. In April and May 2011, tremors in Lancashire measured at 1 and 2.3 on the macroseismic scale. They nevertheless resulted in an annulus becoming twisted on the Caudrilla site. An earthquake in East Kent, whether occurring naturally or induced could rupture the borehole linings and seals, potentially contaminating the aquifer. A review by independent experts, *Preese Hall Shale Gas Fracturing Review & Recommendations for Induced Seismic Mitigation*, stated that the seismic activity in Blackpool 'was induced by the hydraulic fracture treatment'. Noting the lack of research into the industry, the authors were not convinced by Caudrilla's projected low probability of further earthquakes during future treatments.

The application would involve large amounts of water but this has not been quantified, nor are details given of how it would be sourced.

2. General environment/wildlife

The aquifer also feeds into rivers and other important features of the landscape and ecology which may be affected by contamination.

The site is adjacent to Puckland Wood, which, according to the Kent Landscape Information System, is the largest wood designated as ancient woodland in Shepherdsweil and Coldred Parish and Dover District and an acknowledged Local Wildlife Site (LWS – DO36). Westcourt Lane also has wayside nature reserves managed by Kent Wildlife Trust. The proposed site is two kilometres from the Lydden National Nature Reserve (NNR), which is designated as a Site of Special Scientific Interest. The applicant sees fit to acknowledge 'the proximity of the racing circuit used by cars and motorbikes' but fails to acknowledge any of the above.

COG's 'ecological walkover survey' attached to the application was carried out in February. It states that 'no badgers, bats or barn owls were present'. Yet villagers often see badgers at night in the road next to the site. Bats and owls also hunt the area at night, especially the leafed tunnel that has formed over the road that will be the access to the site. (See below). The woods and adjacent fields are rich in birds, such as buzzards, kestrels, owls, pheasants, partridge and song birds.

We are very concerned to protect this habitat and wild life from noise and light pollution which will result from the 24hr drilling operations. We are alarmed that Coastal Oil and Gas fail to recognise the local ecology and give no detail about how it would be protected.

3. Traffic and access

The access road to the proposed site is single track and unsuitable for drilling rig and associated equipment access.

The field entrance COG intends to use will not allow access to plant and heavy vehicles without destroying some of the natural hedgerows and trees. A significant length of the lane intended

as access is a natural tunnel of trees, which adds to the natural beauty of the area. The movement of plant up and down this road will destroy this.

Emergency access to and from the proposed site is severely restricted by the closure of the central reserve at the Barfreston junction on the A2. Emergency vehicles coming from the Dover direction have to travel to the Wingham junction before retracing their journey. Vehicles leaving the site travelling towards Canterbury would have to travel to the Shepherdswell junction before taking the Canterbury direction.

The lanes through the village are not suitable for site traffic and should not be used in any way. There is already considerable concern and inconvenience within the village because of the use of these lanes by HGVs.

4. Noise and pollution

The noise level assessment included in the application was based and modelled on out of date information. The same criteria were used to assess the noise levels at the test drilling site in Balcombe, and decibel levels were frequently exceeded, leading to a suspension of drilling. The noise report does not address the problem of continuous low frequency noise, which can be equally disruptive to residents. Low noise also poses a risk to public health (see Colin H. Hansen (ed), *The Effects of Low-Frequency Noise and Vibration on People*, 2007).

COG assumes that the risk of vibration is low because it will be drilling through soft materials. However, chalk is not considered to be in this category and therefore the company's reassurances are based on faulty information.

The application does not address emissions from the site; both for construction and methane. It does not mention whether any methane flaring will take place at the exploratory stage.

The prevailing wind in our area is from the South West and will carry noise to the village and cause noxious emissions to be deposited over the village, which lies in a valley and on a ridge to the North East of the site. We would have expected the Health Protection Agency to be consulted concerning the likely impact of this application on the health of local residents. We would also have expected a review of existing research and the commissioning of further studies where there was a lack of relevant knowledge. Research findings should be made available to residents as part of the consultation process.

5. General amenities and heritage

The site threatens to severely damage the tourist industry, which is worth an estimated £243 million to the Dover and District economy. Plans to regenerate Dover town centre and areas of the sea front, and improved marketing of the area, aim to attract more tourists. But they will be jeopardised if the environment is trashed by a polluting industry.

We are concerned that the responsibility for land restoration is unclear. The details given in application are insufficient. Companies in this industry have a reputation for attempting to avoid their responsibilities. For example, Cuadrilla is involved in a legal battle to avoid cleaning up post-operation pollution following open cast mining in Scotland.

Two national recreational routes go through Shepherdswell and both are threatened by this development. The first is National Cycle Route 16, which has attracted a marked increase in use by cyclists since last year's Olympics. National Cycle Routes are defined as 'a series of safe, traffic-free lanes and quiet on-road routes' (Sustrans). Yet the applicant proposes to use a half-mile section of Cycle Route 16 as an access route for its Guston site. The presence of heavy site traffic threatens the amenity value and safety of this route.

The North Downs Way also passes through the centre of Shepherdswell and is popular with recreational walkers and tourists. The applicant's proposed access route to the Guston site dissects the North Downs Way.

The applicant fails to acknowledge the existence of these two amenities. They are important for local people and for those from wider afield, contribute to the local economy and should be protected.

The proposed site would also undermine the local footpaths neighbouring the site, which are used by local people.

6. Reporting and regulation

It is documented that COG had discussions with EA, KCC and other interested parties before submitting their application. Yet the EA comments that COG has submitted completely inadequate information. The company, says the EA, shows lack of 'awareness and knowledge' of the risks it is meant to address. We would ask how much confidence this gives KCC that this company is managed and equipped in a way that can safely monitor the environmental and health risk of its activities should the application be granted.

We are concerned about the whole issue of monitoring and self regulation in relation to this industry. Regulations are not 'red tape' but in place to protect our drinking water, safety, health, quality of life and our local and general environment.

We are very concerned that the EA generally, because of workloads and staffing issues, relies on operators to self-report problems. The EA is now facing staff cuts of 15% by October 2014. We tremble at the prospect of COG self-reporting given the inadequacy of their 'awareness and knowledge'. We wonder how the EA with its wide ranging responsibilities and fewer staff are going to monitor them. Without proper monitoring and inspections, regulations are insufficient protection.

7. Consultation

There was no discussion between COG and the local community prior to the submission of the planning application. The presence of the company's geologist at the first Parish Council meeting to discuss the application was hardly reassuring. He appeared unaware of environmental or social issues which might apply and was also unforthcoming on geological details in response to concerns that were raised by residents.

Considering the controversial nature of the planning application and the potential impact on residents' health and quality of life, we would anticipate that, should COG supply further information in relation to its application, residents will be informed at the earliest opportunity and given appropriate and adequate time to research and consider a response.

Yours sincerely,

John Bulaitis
Claudine Nutley
Eddie Higham
Dick Martin
Paul Beamont
Julie Williams
Alan Williams
Steve Gaymer
Linda M Gaymer
Pamela Mudge-Wood
Margaret Creear

(signatures over page)

Notes for the Parish Council
Planning Application DOV/13/0074 (KCC/DO/0218/2013)

The Planning Application does not involve either fracking or horizontal drilling, and therefore should stand alone as an application to sink an exploratory borehole. However care should be taken that should permission be given this will not automatically give the right to extend the consent for further investigation including **fracking or horizontal drilling**.

Therefore consideration on this planning application should only consider those issues concerning an exploratory borehole.

- The Kent Minerals Plan states in OG2 the Planning Authority has to be satisfied that the proposed site has been selected to “**minimise its environmental and natural resource impact**”
- The Kent Minerals Plan goes on to state in OG8 that the Planning Authority “**will be required to be satisfied that the earth sciences and ecological interests of the site and its surroundingshave been established**”

These criteria have not been met by this application as it does not attempt to minimise the adverse effect on the environment and amenity issues.

Therefore, this application should be refused on the following grounds:-

- The site is in an area where protection to the chalk aquifer is enshrined in the Dover District Council’s planning policy. This area is an extremely important water resource in an area of stressed water supply and any pollution would have a serious effect on the residents of Shepherdsweil and East Kent.

Whatever safeguards are put into place would not guarantee 100% the protection of this resource.

The detail given in the application is woefully short of detail as to the protection envisaged.

There is no reference regarding the acceptance by the Water Authorities (Affinity and Southern South East Water) of the works to maintain the integrity of the aquifers following a borehole drilled through them.

The expected section does not detail the Wealden clay that lies between the chalk and Jurassic beds and effectively maintains the aquifer, thus the application gives no details as how the various tubes are sealed at this level.

There are insufficient details of the hardstanding to ensure no contamination will occur.

There are many known cases of the well heads of the proposed design cracking causing loss of fluid into the ground and thereby causing contamination.

- The site is adjacent to an area of Outstanding Natural Beauty
- The site abuts Puckland wood, the largest wood designated as ancient woodland in Shepherdswell and Coldred Parish and Dover District.

The ecology report attached to the application was carried out in February and stated that there was no evidence of badgers in the area or birds. This is blatantly wrong.

Badgers are often seen at night in the road adjacent to the site, in fact one was recently a victim of road kill adjacent to the proposed site.

The woods and adjacent fields are rich in birds, such as Buzzards, Kestrels, Owls, Pheasants, Partridge and song birds.

Bats and Owls hunt the area at night especially the natural leafed tunnel that has formed over the road that will be the access to the site.

The application does not even acknowledge that the adjacent woodland is Ancient Woodland, never mind demonstrated sufficient mitigation to protect this habitat from noise and light pollution which will result from the 24hr drilling operations.

- Roads to the north and east of the proposed site are single track and unsuitable for drilling rig and associated equipment access.

The existing field entrance the applicant intends to use is angled to the north east and will not, in its current form, allow access from the A2 direction for the proposed plant without destroying some of the natural hedgerows and trees. Further a good length of the lane intended as access is a natural tunnel of trees, which adds to the natural beauty of the area (see the point above). The movement of plant up and down this road will destroy this.

- Emergency access to the proposed site is severely restricted by the closure of the central reserve at the Barfreston junction on the A2. This will require emergency vehicles to either travel to the Wingham junction to access the site from Dover or to the traffic light junction at the Shepherdswell junction in order to return in the Canterbury direction. The lanes through the village are not suitable and should not be used in any way.

- There has been no discussion between the applicant and the local community prior to the submission of the planning application, which is contrary to the guidance for onshore oil and gas issued by DCLG.

- There appears to be no advice from the HSE or the EA on the issues of well design and integrity, operation of surface equipment to prevent

contamination, flaring and venting, disposal of water, decommissioning and abandonment, before the application, all in accordance with the DCLG guidance. KCC need to **satisfy themselves** that all these issues can be adequately addressed by taking advice from these regulatory authorities before they grant planning consent.

- The noise level assessment that was included in the application was based and modelled on out of date information. The same criteria were used to assess the noise levels at Balcombe, and these levels were frequently exceeded. The prevailing wind will further exacerbate the situation with the village lying in a valley WSW of the proposed site. The noise report does not address low continuous noise which can equally disruptive to residents.
- The application has not addressed emissions from the site; both for construction and methane (if they do in fact find any), this prevailing wind will cause all noxious emissions to be deposited over the village.
- The area is one of seismic activity and this has not been addressed by the applicant. There are numerous faults within the area and any movement of these could easily rupture the borehole linings and seals, thereby causing potential contamination of the Aquifer.
- The British Research Establishment report on Radon Gas, No211, identifies the area in which the proposed borehole is located as having 5-10% of dwellings where action against radon gas emissions has been required. There is no mention in the Applicant's documents as to what precautions will be taken to deal with possibility of encountering radon gas.
- The applicant has not demonstrated that the site chosen has no alternative for the proposed borehole.

Alternative sites within the vicinity may exist where disruption to the countryside caused by drilling operations could be minimised, **although the integrity of the aquifers would still remain suspect**. These should have been investigated by the Applicant, in order to satisfy the requirements of the Kent Minerals Plan and the provisions of policy OG2 in particular.

Geoff Peagram/Peter Stebbings

Guston Parish Council

Objection Report

KCC/DO/0216/2013

Temporary use of land (for up to 52 weeks) to allow drilling of exploratory borehole to test insitu coal measures for methane gas, including provision of drilling rigs and associated site compound at Guston Court Farm, off Pineham Road, Guston, Dover, Kent CT15 5ES.

Coastal Oil & Gas “This site is not necessarily considered to be the most suitable for gas production should gas resources be found”.

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The National Planning Policy Framework sets out the Government’s planning policies for England and explains how these are expected to be applied. It is under this planning framework and additional sources that we wish to make our objection.

The 3 core areas that we have consulted are:

- **Economic** - Ensure that sufficient land of the right type is available in the right places, including the provision of infrastructure.

- **Social** - Supporting strong, vibrant and healthy communities and support its health, social and cultural well-being;
- **Environmental** -Contributing to protecting and enhancing our natural, built and historic environment; and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy.

We feel the need to remind councilors on the KCC planning committee of the following statement within the framework on which decisions for planning must be adhered to, you must..

Set out environmental criteria, in line with the policies in this Framework, against which planning applications will be assessed so as to ensure that permitted operations do not have unacceptable adverse impacts on the natural and historic environment or human health, including from noise, dust, visual intrusion, traffic, tip- and quarry-slope stability, differential settlement of quarry backfill, mining subsidence, increased flood risk, impacts on the flow and quantity of surface and groundwater and migration of contamination from the site.

This application would NOT apply any of these principles. Guston Parish Council has attached a detailed report to support our objection and we request that this report is read in detail by all KCC councilors before any decision is finalised.

Dover District Local Development Framework- core strategy

In DDC Local Development plan core strategies form the basis of the policy many of these as listed below are directly relevant to this planning application:

Landscape

2.11 About 6,900 hectares (21%) of the District are designated as part of the Kent Downs Area of Outstanding Natural Beauty (AONB) and of this 876 hectares (3% of the District) are designated as Heritage Coast, centred on the white cliffs either side of Dover. The Kent Downs AONB Management Plan provides information on quality, condition and management priorities.

Green Infrastructure

2.13 Green infrastructure includes all forms of recreational open spaces and areas of importance or potential for wildlife. The network of green infrastructure is multi-functional providing habitat for wildlife and ecosystems and for a range of human recreational needs, including cemeteries and churchyards.

Water

2.17 The District is one of the drier parts of the region and country.

2.18 Drinking water is supplied from groundwater sources and local supply is augmented by transfers from Thanet and Canterbury areas. The Environment Agency's Stour Valley Catchment Abstraction Management Plan indicates that all groundwater sources are over-abstracted. In common with most of the region, the District is classified as an area of serious water stress but the southern part has been designated as a water scarcity area in recognition of the pressures on water resources and to enable demand management measures such as compulsory metering.

2.21 The River Dour catchment has good water quality but the River Stour historically and currently has poorer quality due to high nutrient concentrations, particularly nitrates and phosphates, which affect ecology. The cause of these high concentrations is a combination of wastewater and private discharges and run-off from agricultural land and urban areas.

2.22 Parts of the District are at risk to flooding from a combination of river (fluvial) and tidal (sea) sources, and from localised surface water runoff. At Dover the risk is from flooding associated with the River Dour

Air Quality

2.23 Dover suffers from air quality issues. The main sources of pollution that contribute to poor air quality are road traffic associated with the trunk roads leading to the Port and from shipping movements in the Port. The Council is working with its partners to take forward Air Quality Action Plans in these areas to improve air quality.

Energy

2.24 Driven by climate change issues there are regional targets to reduce carbon dioxide emissions by at least 20% below 1990 levels by 2010 and by at least 25% by 2015. In support of this the Regional Spatial Strategy includes county based targets for electricity generation from renewable energy sources. The national policy context is evolving in an ever more stringent way.

Historic Assets

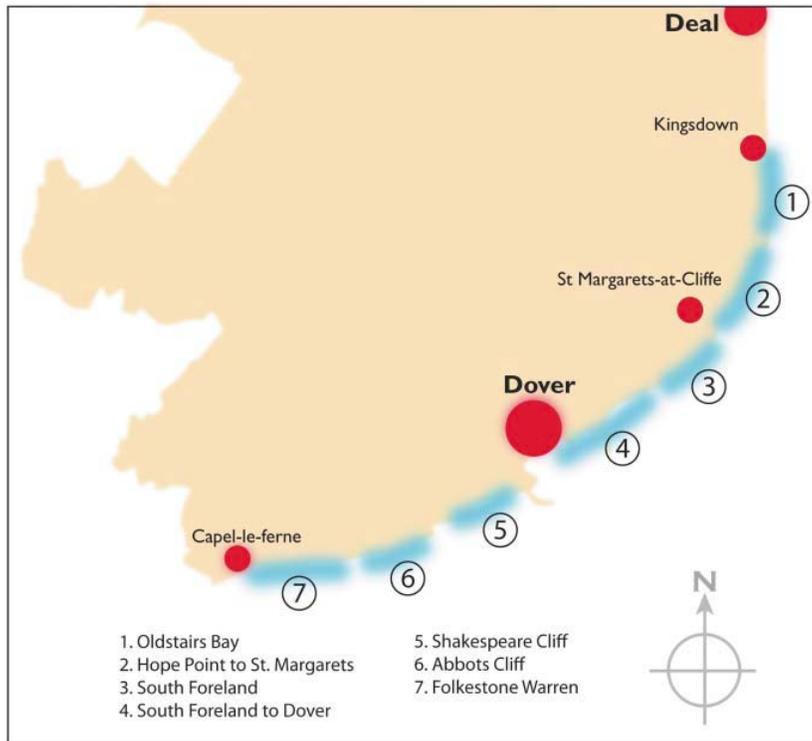
2.29 There are, as at 2008, also about 2,800 listed buildings, and 57 conservation areas which cover 669 hectares. These are concentrated at Dover, Deal and Sandwich (which has an exceptional concentration) but also cover many of the District's villages and hamlets which have a long history of human settlement.

2.30 These assets play a large part in defining the character of the District and the individuality of settlements. In many cases they reflect the District's strategic coastal location and particularly in Dover's case, its military importance as the closest crossing point to continental Europe. This has given rise to a series of fortifications, most notably the Roman Classis Britannica, Dover Castle, Fort Burgoyne, the Western Heights and First and Second World War fortifications.

Health

2.34 Although the 2001 Census indicated a much higher than average incidence of people suffering long term illness

Strategic allocations - a set of policies to allocate land for development



2.28 The CCMA's are not intended to be used to define areas that are at risk of coastal erosion. The role is to identify areas in which the vulnerability of development proposals can be tested to ensure that only appropriate development that requires a coastal location and provides substantial economic and social benefits is permitted in those areas.

Guston falls under the ward of St. Margarets at Cliffe, we are not mentioned within this local plan as a village in our own right and we therefore fall into the 'Hamlet category'. If St Margarets is defined under the Coastal Change Management Area then Guston should be too.

Kent Downs Area of Outstanding National Beauty (AONB)

3.7 The Kent Downs AONB, covers substantial parts of the south of the District. The AONB is an area of high scenic quality with statutory protection in order to conserve and enhance the natural beauty of their landscapes (See NPPF, para 115). Consideration must be given not only to the impact development could have on the AONB, but also the impact on the setting of the AONB. The AONB is particularly a constraint to development in the settlements where the boundary is immediately adjacent to the existing built development. In Capel-le-Ferne, Kingsdown, Lydden, and

St.Margaret's (GUSTON) there are very limited development opportunities that would not damage the setting of the AONB or the character of the village itself.

Dover is divided up into specific areas ie, industrial and residential - the industrial zone being identified within the DDC Core Strategy. 'Although the Oil and Gas section contains no specific sites for development, an exploration licence covers most of the District. The Licence grants sole rights to search for oil and gas for a period of six years. It permits the holder to carry out seismic investigations, to drill deep exploratory boreholes and to test any discovery for a period not exceeding four days. Should oil or gas be discovered in the District, development for onshore oil or gas fields will be judged against the policies in the Oil and Gas section of the Plan and the Council will seek to ensure that any development includes stringent environmental safeguards.'

Petroleum Act Licence (DECC)

Any company wishing to exploit the nation's hydrocarbon resources needs a licence from DECC to do so. The onshore production licence is known as a Petroleum Exploration and Development Licence (PEDL). Each such licence grants exclusive rights to explore, drill and produce within a small, specified area. DECC awards PEDLs in a competitive and transparent system based on open Licensing Rounds. Before a licence can be awarded, the applicant must satisfy DECC of the competence of its proposed operator, and each member of the applicant group must satisfy DECC of its financial viability and financial capacity.

Please find on pages 10-12 an N2 check showing Coastal Oil and Gas last 4 years financial data. As you can see their risk score is 30 out of 100 stating that they are HIGH RISK..." This company's Credit Limit should be regarded as an absolute limit and may require some form of guarantee". Director - Gerwyn Llewellyn Williams (One or more of this director's other appointments has adverse information related to it).

At 31 Dec 2012 Coastal Oil & Gas financial data:

- 1) £2,655 in the bank/cash at hand.
- 2) Their total assets minus their total liabilities leave a Net Asset of £3132 of which a further £1000 was issued as share capital.
- 3) Profit showing at the end of their financial year 2012 as £2132
- 4) Working capital at **-£167,129**
- 5) Since 2009 reported financial data and 2012 their financial credibility has declined each year.
- 6) Current Ratio 0.34
- 7) Solvency **-151.16 %**

Solvency is the ability of a business to have enough assets to cover its liabilities. Coastal Oil & Gas credit check shows a high chance of solvency and we therefore request further details on their public liability and also how they propose to complete this methane gas exploration. Any damages to our village, to properties structurally either residential or places of worship, pollution, through explosion of gases...how would they financially propose to manage such a situation?

Solvency is often measured as a ratio, the "current ratio," which is the total current assets divided by the total current liabilities. In order to be solvent and cover liabilities, a business should have a current ratio of 2/1, meaning that it has twice as many current assets as current liabilities. Coastal Oil & Gas current ratio is very low and further proves they are not financially viable to continue with this application.

DECC "A company with a Current Ratio less than 1.00 must demonstrate that its working capital requirements are financed by adequate short term funding arrangements (e.g. by a corporate parent, bank overdrafts, directors loans etc), and must produce evidence of the funding. Arrangements with trade or other creditors are not acceptable because they often imply that a company is in financial difficulty."

DECC must be confident that any company that receives a licence will continue in sound financial health for the foreseeable future. Each company (even if it is applying for a Promote licence) must therefore demonstrate its basic Financial Viability.

We believe that Coastal Oil & Gas financial situation has declined since they applied for the PEDL251 5 years ago and if they were to apply today they would be declined. They will need to prove their financial stability in order to be granted Well Consent from DECC at a later date.

Requirements for exploration operators (DECC)

In considering any request for exploration operatorship, DECC will look at the management governance structure, systems and technical competence of the company to plan and perform offshore operations, and its capacity to ensure environmental protection. More specifically we will look for the following factors:

- capability to plan, supervise, manage and undertake the proposed exploration operations including interfaces with contractors
- arrangements for pollution liability
- details of the management of environmental responsibilities (including the company's environmental policy and environmental management system (EMS))
- details of past record of compliance with environmental legislation
- insurance coverage

There is no fixed amount of information DECC requires to be satisfied of a proposed operator's competence. Clearly a very small company with little experience should expect to come under greater scrutiny and have to provide more information than an established operator with a good record. Where the company has limited experience of planning, organising or supervising activity, we will require a detailed understanding of the operator-contractor relationship and the in-house management responsibilities and control of the contracted support.

Guston Parish Council and residents request that Coastal Oil & Gas are placed under scrutiny and have to provide more information than an established operator. These are:

- details of previous experience of supervising or carrying out drilling operations within the past two years: location and description of the proposed operator's responsibilities for the operations
- in-house governance and management structure, geotechnical and drilling management expertise:
- lists of (a) the skills that exist in-house and (b) the skills to be contracted
- list of the key personnel involved in decision-making, including their previous experience and the basis on which they are employed
- description and chart showing the management structure (including interfaces with contractors), hierarchy of decision-making responsibilities, and key contact point in an emergency

Environment

- details of proposed pollution liability arrangements (this could be evidence the proposed operator of a licence has registered, or intends to register, its operatorship with the Offshore Pollution Liability Association Ltd (OPOL)).
- details of the company's environmental policy, including any environmental policy and environmental management statements
- a description of the company's management structure (directors/managers/personnel), identifying specific responsibilities for environmental issues up to and including board level (an organisation chart is the best way to summarise the responsibilities)
- details of the company's environmental management system, i.e. in-house, ISO 14001 or EMAS, which must take account of DECC requirements in relation to securing compliance with OSPAR Recommendation 2003/5. Where an EMS has not yet been independently verified in accordance with DECC EMS guidance, the applicant must commit to complying with requirements before any offshore operations take place
- details of the proposed operator's environmental experience working in (a) similar environments to the UKCS and (b) other relevant operations
- a brief 'high-level' or summary environmental assessment to demonstrate the company is aware of sensitivities in the area within, and immediately adjacent to, the acreage of interest, and of the potential impacts that would have to be managed during execution of the proposed work

Use of contractors

- name(s) of contractor(s)
- list of the areas of drilling management activity to be outsourced to contractors
- description of operator's relationship with the contractor (who is responsible for what, and who makes the decisions? Who will monitor and supervise the contractors? In particular, what arrangements are in place to deal with an emergency?)

- details of contractor's experience of planning and/or drilling wells, especially where relevant to the operations currently proposed (e.g. High Pressure High Temperature or deep water)

Proposed operator's presence during drilling operations

- written confirmation that at least one qualified representative from the proposed operator will be present, usually in the UK, for the duration of drilling operations

Insurance

- list of the contingencies covered by insurance

All these questions should be answered fully to support their proposed application.

Full report supplied on 15 October 2013

COASTAL OIL AND GAS LIMITED
Company Number 03440732

Holding Company Thistle Gas Ltd
Ultimate Holding Company UK Onshore Gas Ltd

Incorporation Date 26 September 1997
Last Return 26 September 2012
Last Accounts 31 December 2012

Registered Address
First Flr Unit 9
Bridgend Business Cntr
Bridgend
CF31 3SH

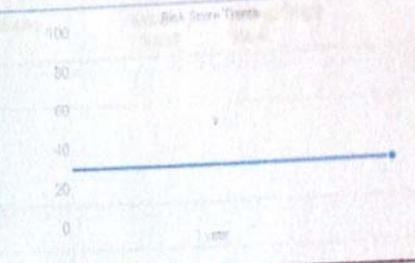
Trading Address
Unit C Kenfig Indstl Est
Margam
PORT TALBOT
SA13 2PR



Report Reference: COASTAL

Risk Information

Risk Score	30 out of 100 High Risk! - This company's Credit Limit should be regarded as an absolute limit and may require some form of guarantee
Credit Limit	GBP 0 Selling to this company? The Credit Limit is the recommended maximum outstanding debtor exposure at any one time.
Contract Limit	GBP 0 Buying from this company? The Contract Limit is the recommended aggregate annual value for supply contracts.



Payment Performance

Industry DBT Comparison

Upper Quartile	2
Median	11
Lower Quartile	19

Official Company Data

Legal Form Private Limited Company
Registration Number 03440732
Date of Incorporation 26/09/1997
Registered Office First Flr Unit 9, Bridgend Business Cntr, Bridgend, CF31 3SH
Date of Last Annual Return to Registry 26/09/2012
Activities Extraction of crude petroleum and natural gas

Accounts

The last filed accounts cover the period to 31/12/2012 with Companies House.
Please note that the transition, analysis and publication of these accounts may take up to 10 days to appear on this report.

Recently Filed Documents

[view available documents](#)

Details of the most recent documents

Date Received	Description
26/09/2012	Annual Return
31/12/2012	Financial Statement / Set of Accounts

It should be noted that there is no legal requirement to file satisfaction details of mortgages/charges at Companies House.

Known Directors

DIRECTOR [GERWYN I LEWELLYN WILLIAMS](#)
(One or more of this director's other appointments has adverse information related to it)

Date of Birth 21/02/1950
 Appointment Date 26/09/1997
 Other Appointments ALTESSE LIMITED, HIGH LINE MINING LTD., LOCAL ENERGY SUPPLY SYSTEMS LIMITED, MANDACO 727 LIMITED, MODAL MINING LIMITED, NEWTON BEACH DEVELOPMENT COMPANY LIMITED, SOUTH WALES GAS LIMITED, ST. JOHN'S VISION LIMITED, THISTLE GAS LIMITED, TOPEX LIMITED, TRANSGAS LIMITED, U.K. MINING CONTRACTORS LTD., U.K. COAL LIMITED, U.K. GAS LIMITED, U.K. METHANE LIMITED, U.K. ONSHORE EXPLORATION LTD., UK WATER SUPPLIES LIMITED, UK WIND ENERGY LIMITED

SECRETARY
 Address SHELAGH ROSE WILLIAMS
 39 BEACH ROAD, NEWTON, PORTHCAWL., CF36 5NH
 Country of Origin BRITISH
 Date of Birth //
 Appointment Date 14/05/2002

Recently Resigned Directors (last 3)

None

Shares Information

Share Currency: GBP

Principal Shareholders:	Type Of Share	No. of Shares	Value	Voting %age
THISTLE GAS LTD	ORD	1,000A	1,000.00	100.00

Mortgages

Total Registered	0
Total Outstanding	0
Total Satisfied	0

Public Record Information

Summary of CCJs/Scottish Decrees

There are no unsatisfied CCJs against the company.

Operations

Sic Code	Description
1110	Extraction of crude petroleum and natural gas

Activities Extraction of crude petroleum and natural gas

Staff Employed 2

Financial Data

Profit and Loss

RETAINED PROFITS

Balance Sheet

	52	52	52	52
	31/12/2012	31/12/2011	31/12/2010	30/09/2009
	GBP	GBP	GBP	GBP
Units	units	units	units	units
Consolidated?	No	No	No	No
TOTAL FIXED ASSETS	170,261	47,546	34,875	0
Intangible Assets	170,261	47,546	34,875	-
TOTAL CURRENT ASSETS	85,508	44,557	40,175	134,807
Other Receivables	82,853	43,853	32,270	87,502
Cash	2,655	704	7,905	47,305
TOTAL ASSETS	255,769	92,103	75,050	134,807
TOTAL CURRENT LIABILITIES	252,637	86,883	64,502	52,486
Other Current Liabilities	252,637	86,883	64,502	52,486
WORKING CAPITAL	(167,129)	(42,328)	(24,327)	82,321
TOTAL LONG TERM LIAB	0	0	0	68,541
NET ASSETS / (LIABILITIES)	3,132	5,220	10,548	82,321
SHARE CAPITAL + RESERVES	3,132	5,220	10,548	13,780
Issued Share Capital	1,000	1,000	1,000	1,000
Profit and Loss account	2,132	4,220	9,548	12,780
SHAREHOLDERS FUNDS	3,132	5,220	10,548	13,780
CAPITAL EMPLOYED	3,132	5,220	10,548	82,321

TANGIBLE NET WORTH	(167,129)	(42,326)	(24,327)	13,780
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Key Credit Ratios

Accounts Date	31/12/2012	31/12/2011	31/12/2010	30/09/2009
Current Ratio	0.34	0.51	0.62	2.57
Quick Ratio	-	-	-	-
T.N.W/Total Assets	-0.65	-0.46	-0.32	0.10
Equity Gearing	1.22	5.67	14.06	20.79
Solvency (%)	-151.16	-205.27	-265.15	878.28

Financial Summary

Working Capital	The company's working capital deficiency increased in the period and now stands at GBP 167,129, units
Tangible Net Worth	Net worth reduced by 124,803 during the period and now stands at GBP -167,129, units

*** End of Report On COASTAL OIL AND GAS LIMITED. Supplied by n2check ***

Whilst n2check attempts to ensure that the information provided is accurate and complete by reason of the immense quantity of detailed matter dealt with in compiling the information and the fact that some of the data are supplied from sources not controlled by n2check which cannot always be verified, including information provided direct from the subject of enquiry as well as the possibility of negligence and mistake, n2check does not guarantee the correctness or the effective delivery of the information and will not be held responsible for any errors therein or omissions therefrom.

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PEDL 251

After reading through PEDL licence 251 relating to the application for borehole drilling for exploratory methane gas in Guston a couple of questions have arisen which we would like you to investigate:

- 1) Coastal Oil and Gas have explained that they will be drilling into the coal bed 8th-14th layer which will equate to 1200m. The PEDL 251 under Schedule 3 Clauses 4 and 12, Work Programme - Firm Commitment:

“The Licensee shall drill one well to a depth of 1000m”

Please explain why Coastal Oil and gas are requesting to exceed the depth of their licence.

- 2) Under Part 1 - Model Clauses in PEDL 251 under section INTERPRETATION please see Petroleum.

“Petroleum” includes any mineral oil or relative hydrocarbon and natural gas existing in its natural condition in strata BUT DOES NOT INCLUDE COAL OR BITUMINOUS SHALES or other stratified deposits from which oil can be extracted by destructive distillation”

Does this mean that the PEDL license 251 does not cover works carried out in the Coal and Shale Layer????? Please investigate and advise. Coastal Oil and Gas have a Petroleum Exploration and Development Licence.

[Please see below 7.7 Expected Geological Section found within document Supporting Statement Guston Court Farm.](#)

This shows very basically the depth surface levels of the expected section of Borehole. It further proves that the drilling will exceed the 1000m PEDL 251 but also does not mention that Coastal Oil & Gas will actually be drilling into the ‘Shale Division’ which covers the lower coal beds of 7-14 layers. I have attached a more descriptive diagram (page 14) which details the Shale Division. We do not believe that Coastal Oil & Gas licence allows drilling into the Shale Layer.

Our attention has also been focused on diagram 7.7 (page 14) as Coastal Oil & Gas note ‘Surface casing - to seal off Surface Water’ within the Cretaceous Chalk level and also ‘Casing - To seal off ground Water in Cretaceous and Jurassic Strata’ within the Jurassic beds.

Please explain why when historical knowledge of mining shafts in Dover and surrounding areas claim that flooding of groundwater was an enormous problem within the Westphalian Coal Measures that no Casing to seal off ground water at this level is being proposed by Coal Oil & Gas????? Flooding is critical at 244m+ yet no care is being taken to avoid the gallons of ground water at this depth.

7.7 Expected Geological Section

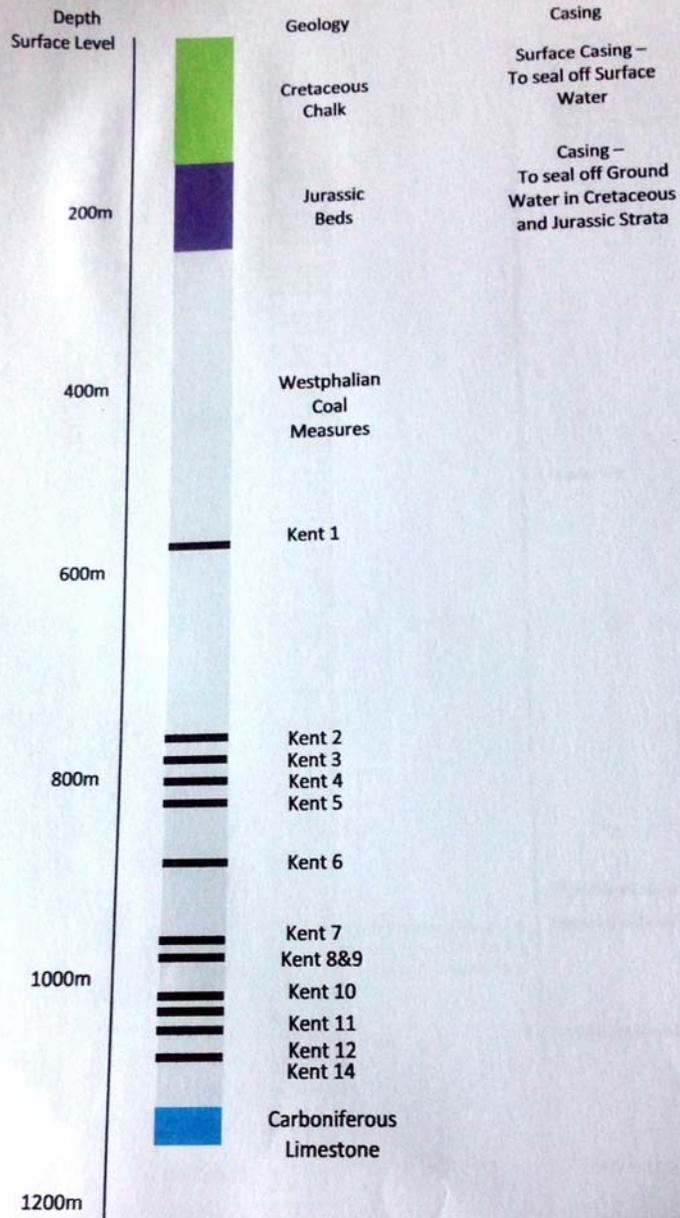
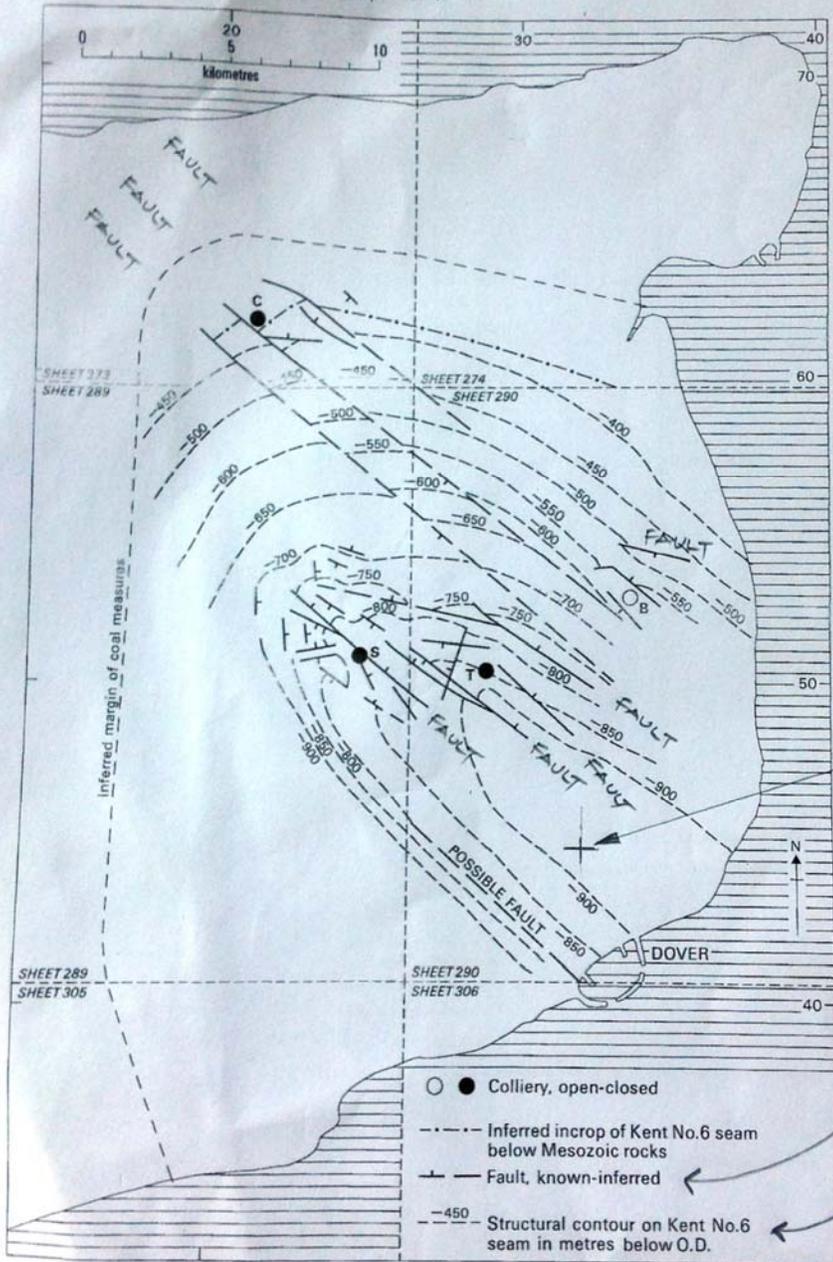


Figure 2: Expected Section of Borehole

INFO FROM BRITISH GEOLOGICAL SURVEY:
RAMSGATE AND DOVER (SHEET MEMOIR 274 & 290)
GUSTON IS ON MAP SHEET 290.

SHEET 1.

CARBONIFEROUS 7



FROM THE CONTOUR BELOW GUSTON
BAND KG IS APPROX -900M. BELOW THIS IS THE
LOWER SHALE DIVISION WHICH IS 215M THICK.
THEREFORE THE BORE HOLE PROPOSED WILL GO THROUGH
THIS LAYER. 900 + 215 = 1115M. (SEE SECTION)

GUSTON.

NOTE ALSO
THE FAULT LINES
THIS INFO WAS
TAKEN FROM
BRITISH COAL
RECORDS AND
OTHER BORE
HOLE INFORMATION

- ● Colliery, open-closed
- - - - - Inferred incrop of Kent No.6 seam below Mesozoic rocks
- - - - - Fault, known-inferred
- 450- Structural contour on Kent No.6 seam in metres below O.D.

BELOW GUSTON
= -900M
KENT NO.6.
COAL BED

Figure 5 Simplified structural geology of the Kent Coalfield. B: Betteshanger, C: Chislet, S: Snowdown, T: Tilmanstone

We have included the 2 extracts from the British Geological survey, sheet 1 Page 15 shows the coal bed contours and fault lines below Guston and within the East Kent coal fields, sheet 2 Page 16 shows a vertical section through the coal beds including the " Shale beds" these shale beds have not been drawn to our attention in any of the planning application documents, we are very concerned this word "Shale" has been left out, because of the existing fault lines and the shale beds we have contacted the following and would like to include their responses to the planning application at a later stage but before the 15th November.

- 1) Geotechnical Engineers
- 2) Eurotunnel
- 3) National Trust
- 4) English Heritage

Please see on Page 16 a copy of the structure geology of the Kent Coalfield.

This diagram shows information from the British Geological survey: Ramsgate and Dover (sheet Memoir 274 & 290) Guston is on map sheet 290.

From the contour below Guston bank K6 is approx. -900m. Below this is the lower shale division which is 215m thick. Therefore the borehole proposed will go through this layer. $900+215 = 1115\text{m}$.

Note also the fault lines, these have not been pointed out in the supporting statement by Coastal Oil & Gas. This information was taken from the British Coal records and borehole information.

The fault lines run horizontally and at a downward slope, many present near the proposed drilling site. Please explain with drilling being taken down to 1200m how the fault lines will not be increased causing possible subsidence issues??

One of the fault lines runs directly out to sea not far from underground networks of the Channel Tunnel. Have KCC contacted the Channel Tunnel to see if this type of exploratory works within approx. 3 mile radius is something that they might be interested in?

1) Noise

The European Environment Agency 4th Assessment of Europe's Environment 2007 identifies that the health impacts of environmental noise are underestimated and require further attention.

Noise Pollution can be defined as UNWANTED sounds caused by industry. They affect health and overall quality of life by raising stress and disruption to your sleep can lead to an increased risk of heart disease.

Noise Impact Assessment 2996/ENS1

Carried by Hunter Acoustics, Cardiff on behalf of Mr. Oliver Taylor, Coastal Oil & Gas

Dated 1 August 2013 (listed in planning application details)

3.0 Environment Noise Survey

Continuous noise monitoring was carried out between 1530hrs on 7th November and 0815hrs on 9th November 2012 to determine the existing background noise. Data including Lmax, Leq & L90 were logged at 5-minute intervals over the monitoring period.

Point 1: November, when the noise assessment was carried out, does not represent the time of year when farm movements reflect a true picture of village background noise. This site is an operating dairy and arable farm surrounded by other arable farms in the local vicinity. Farms are busiest during summer and autumn months when combining for harvest is exceptionally busy, movements of tractors and combines are frequent through the centre of the village, night and day. Noise pollution therefore varies dramatically at different times of the year and November would represent the 'quiet period'.

Point 2: Monitoring noise over 1.5 days is not deemed a long enough time frame to produce adequate average dB(A) readings. Tones vary with time in level and frequency.

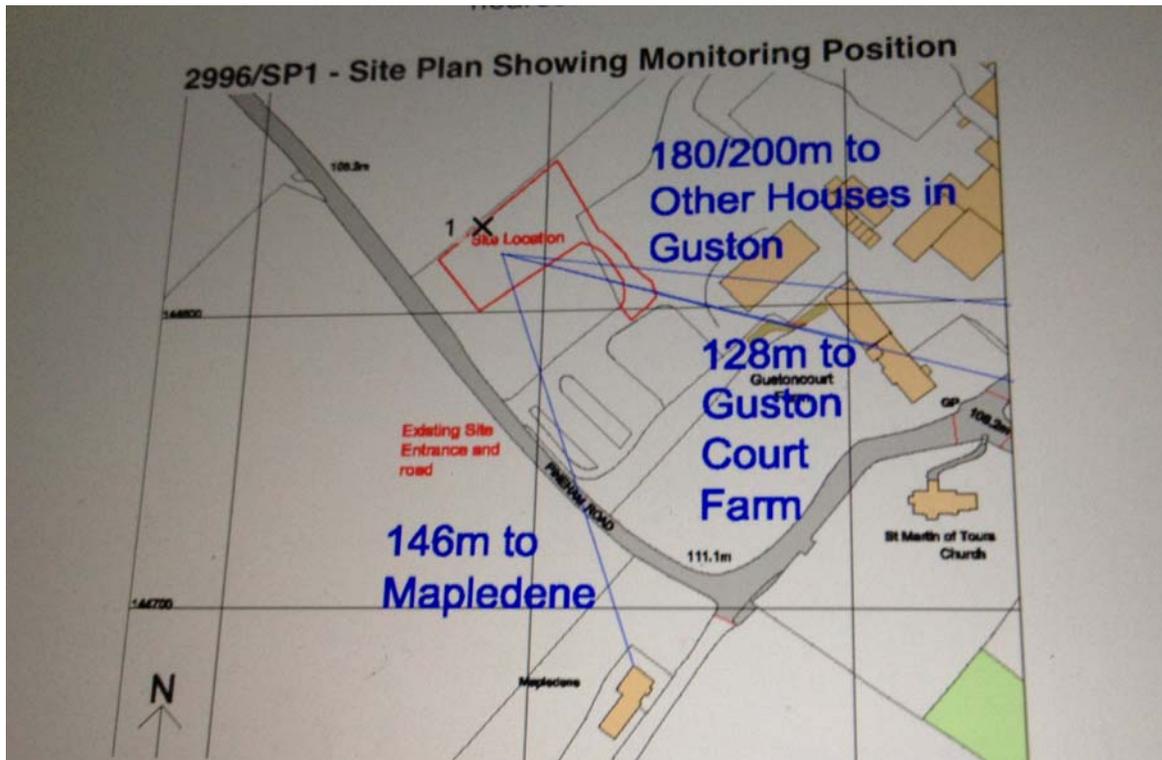
Point 3: The International Organisation of Standardisation states that 60 seconds average tone recording should be measured rather than the 5-minute intervals in this report. If the tone frequency varies then the tone will smear out and if the averaging isn't shortened the method used may not detect the tone even though it is audible. The solution to analysing tones that vary with frequency is to divide the averaging time into shorter intervals and manually average the result. This has not been done in this survey.

Site Plan showing Monitoring Position

3.1

Position 1 Located at North West of proposed drilling site, approximately 1.2-1.5m above ground level. Background noise levels at this location are deemed representative of those at the nearest sensitive premises.

2996/SP1 - Site Plan showing Monitoring Position



Point 4: The above site plan shows that the positioning of the sound monitoring (point X) took place at the furthest point away from the nearest sensitive premises and Guston Court Farm where most of the agricultural works take place including milking of the dairy cows. This position is at a significant distance away from of everyday work areas and residential properties to be affected by the noise pollution.

When assessing nuisance from industrial sources it is common practice to compare the levels from the drill rig at the resident's house with the background noise at pre-existing levels before the alleged nuisance is introduced. This has not been carried out during this survey.

3.2 Equipment Used

Make	Description	Model	Serial Number	Last Calibrated	Certificate No.
Larson Davis	Type 1 - Sound Level Meter	824	824A2722	18-May-11	U8989
Larson Davis	Preamplifier	PRM902	2705	16-May-11	U8989
Larson Davis	Microphone 1/2" Prepolarized FF	2551	933	16-May-11	U8989
Norsonic AS	Calibrator (114.09 dB @ 999.68 Hz)	1251	31429	27-Jul-12	U11716

The measurement systems were calibrated before and after the survey; no variation occurred.

Point 5: Annual calibration of equipment should be carried out, equipment can be damaged throughout the course of daily usage therefore all equipment used should be checked for accuracy. The survey was carried out Nov 2012 determining all equipment above had exceeded the annual calibration anniversary.

4.0 Results

4.0 Results

Time history graph 2996/TH1 shows L_{max} , L_{eq} & L_{90} sound pressure levels measured over consecutive 5minute periods at position 1.

Period	Minimum Consistent L_{90}	Proposed Noise Limit
Daytime (0700-1900)	50.1dB(A)	55dB(A)
Evening (1900-2200)	46.0dB(A)	56dB(A)
Night (2200-0700)	30.7dB(A)	42dB(A)

As the drill rig is to operate 24 hrs/day during the 8-week period, night-time is the critical period when setting noise limits. We understand that in the case of an emergency, the Telehandler may be required to work at night.

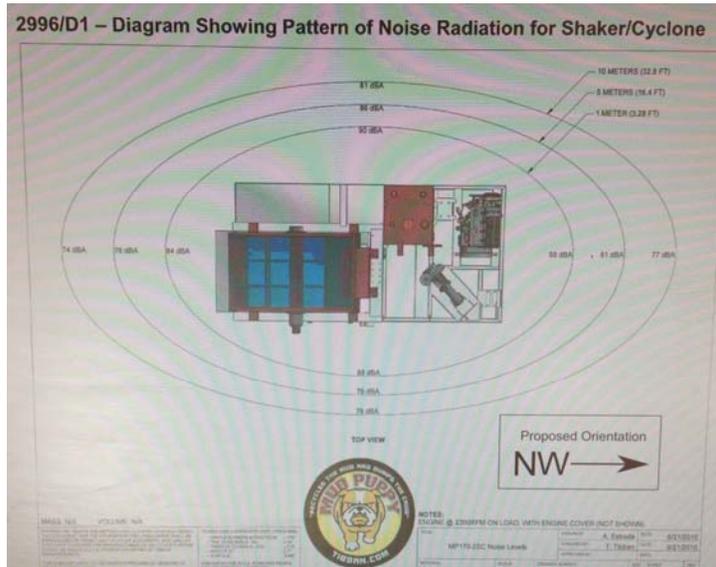
Point 6: These results are based on an area outside the residential property zone and are not representative of background noise. These noise values are suspiciously the same as the World Health Organisation accepted noise levels.

Point 7: If proposed noise levels are breached who takes ownership of the noise breach and monitor noise levels and frequencies? Are the residents expected to purchase their own calibrated sound meter? Will Guston Parish Council be able to obtain the sound noise level meter readings, if monitored, as a Freedom of Information request?

5.0 Noise Predictions

The following pattern of noise radiation for the proposed shaker/cyclone (Tibban Mud Puppy) is quoted by the manufacturer;

2996/D1 - Diagram Showing Pattern of Noise Radiation for Shaker/Cyclone



Noise levels range from 74dB(A) to 81dB(A) at 10m.

The proposed drill rig has a typical noise level of 79 dB(A) at 1m - based on data included in an email from Oliver Taylor dated 21/01/2011 with manufacturer's specifications for a similar drill rig and our own measurements of a similar drill rig.

Point 8: Similar? And based only on Oliver Taylor's information? Not the exact type which will be used in each case. Without this information, how can one accurately assess the noise impacts on local dwellings and amenities (e.g. PROW, natural habitats)?

Point 9: Noise isn't just about decibels, it's about frequency. The Queensland Govt. Dept. of Health March 2013 report, *Coal Seam Gas in the Tara Region*, sec.4.2.2. reported possible issues with low-frequency noise: *"health-related effects of low-frequency noise include stress, irritation, unease, fatigue, headache, possible nausea and disturbed sleep. Sensitisation to low-frequency noise often occurs over time, resulting in the person becoming more aware of the noise and not being able to shut it out or get used to it... If concerns continue in the community about low frequency noise, additional assessment by DEHP and/or industry stakeholders may be required even though the conditions in the environmental authority are being complied with at the one site where noise monitoring was undertaken. This would be needed to determine if low frequency noise is a significant issue across the area and if noise mitigation measures are required."*

Has low-frequency noise been addressed in the noise impact assessment? The survey seems to address noise *levels* more than noise *range*.

Point 10: The survey carried out only takes into account surface noise and does not detail levels of noise created underground through vibrations. This is a significant addition to level noise. We therefore request a full noise and vibration survey to be carried before any decision is finalised.

The manufacturer's data sheet for the Aggreko Diesel Generating Set SHP/8035E dated September 2009 lists the sound pressure level below 60dB(A) at 7 metres and is therefore indicated not to contribute significantly to overall sound power levels.

Based on noise data for the Manitou MHT 780 TELEHANDLER and previous measurements of typical mobile plant activity, a figure of 77dB dB SPL at 10m has been used in our assessment of mobile noise, with a maximum of 50% ontime (i.e. 30 minutes operation in an hour).

Point 11: Why has only the drilling rig been taken into account when calculating the final dB(A) impact at noise sensitive properties??? The generator is to be placed at a nearer position than the rig and although predicted to only allow 60dB(A) at 7 Meters when added to the output of the drilling rig this significantly increases the impact on the properties. In addition we will also have a Telehandler in operation 50% of the time, including night time hours; this movement also will affect noise pollution on the porous ground. Sound propagation occurs over porous ground, this has not been taken into account in this survey.

Point 12: No mention is made of noise created by water pumps; water bowsers that we are informed will be moving the waste water. Vehicles starting up, leaving and entering the site. The noise created by the digging of the surrounding drainage ditch and removal of that soil.

Point 13: We have a train line on the opposite side of the village that creates noise and vibrations which are already felt by properties in the village. What survey has been done on this noise? We could potentially be situated between a railway line and a drilling rig causing more underground noise and vibration. We request a Noise Monitoring terminal with warning attached so that any excessive noise will be flagged immediately.

Noise levels have been predicted using the CONCAWE model with the shaker/cyclone orientated such that the quietest side of the rig faces towards the nearest NSPs (see 'Proposed Orientation' marked on 2996/D1 above).

Point 14: CONCAWE is only one method of calculating noise from environmental intrusion. Other methods exist including ISO 9613. Both can give varied results. We therefore feel that more than 1 method of obtaining these results should have been carried out to give a true reflection of proposed dB(A) results.

5.2 Predicted Noise Levels

At residential NSPs the following noise levels are predicted:

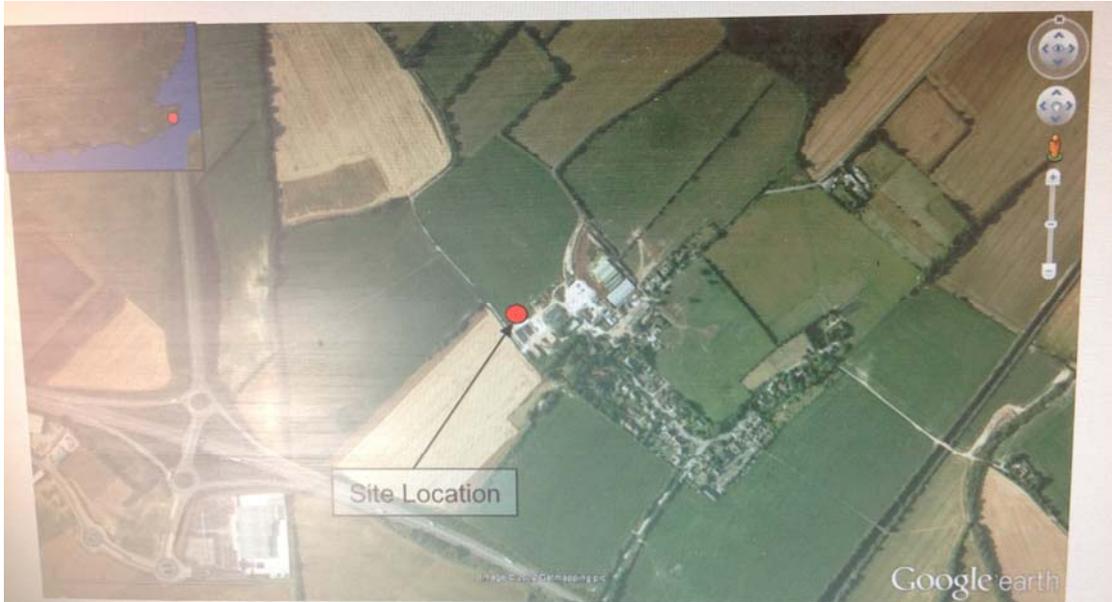
Note: No screening losses have been included in the predictions at this stage.

Position	Predicted noise level at residence (dB L _{Aeq}) from stationary plant (unscreened)	Predicted noise level at residence (dB L _{Aeq}) from stationary and mobile plant combined (unscreened)
1. 128m east	53.4	54.6
2. 146m south	53.1	54.0
3. 180m east	49.1	50.3

Point 15: When looking at the dB(A) output from the Mud Puppy shaker/cyclone alone the diagram shows 81 dB(A) at 10m max. When using the standard calculation for decibel reduction over distance = 6dB reduction when distance is doubled, this would calculate the dB(A) to be 57dB(A) at 160m, calculated in between position 2 and 3. This is significantly higher and still does not take into account other stationary or mobile plant. Noise level at 57dB has been described by the European Environment Agency as the same as noise levels in a ‘business office’ which is an unaccepted noise level for a small village community in a rural environment. We feel that these predicted levels are suspiciously set to match the World Health Organisation accepted noise levels. This requires extensive investigation.

Point 16: The noise on the proposed site compound and associated drilling rigs can be said to be tonal. The ISO International Organisation of Standardisation states that noise containing tonal components is more annoying than noise with no tones. Therefore annoying impulses and tones require an adjustment to be made to the dB(A) rating level applied in this survey.

2) Visual Intrusion into local setting and wider landscape caused by the placement of any building or structure within the application area



8.15 Visual Amenity

Any views of the drilling rig from the highway will be screened from the main part of the village by existing vegetation. Views from the main will be fleeting and the structure will not be dissimilar to other temporary structures/masts that are located in rural areas and will be viewed against the back cloth of the farm buildings and storage areas. The rig and equipment will only be in place for a short period of time and will be removed once the drilling operations are completed. The soil bund will remain until testing is completed and it is proposed to sacrificially seed the outer slopes during the first planting season.

Point 17: The above photo shows proposed site location. Guston is a small parish with an unusual geography being split out into 3 distinct centers and clusters of housing. The site of the drilling rigs and compound is planned for the village center, which is comprised of residential properties, one farm and one church. The proposed siting of the compound and drill is particularly ill-considered: it is to be positioned within 120m of the nearest residential property, neighbored by 10th century St Martin's of Tours Church, a Grade II* listed building, plus a listed grave in the churchyard, working cemetery, and 180m from a vast selection of our parishioner's homes, all of which will be dramatically affected by noise, dust, air quality and light pollution. The drilling rig will be an intrusive structure visible to every resident including resident's homes on East Langdon Road which will overlook the site.

This structure will be visible from the A2 and A256 as will the lighting even at the 3 meter limit. These are busy roads that serve Dover Port and surrounding areas, is this not considered a dangerous distraction?

There is nothing within this application that is sympathetic to the surrounding rural area, all of which is clearly visible to our community and intrusive to our everyday lives.

Point 18: This area is used by many parishioners and tourists for recreation including cycling and rambling, and development here would both diminish the striking view from the North Downs Way and height of the rigs would be prominent from most angles within the village.

Point 19: The potential effect of mineral workings on the landscape and visual environment needs to be assessed before permission to work a site is granted. Although there is a strong link between them, landscape and visual impact assessments involve different procedures because the possible effects being investigated are different.

- Rural countryside of value to our local residents - may be lost to permanent development
- Mature landscapes and landscape features like hedgerows and hedgerow trees may be lost directly, or indirectly in the development of new roads and infrastructure. The application mentions the road through Pineham may need tarmac, a car park may need to be installed into the site due to weather conditions, and HGV traffic will damage hedgerows during movements as the lane is single traffic only.
- The character of the wider landscape may be affected by the visual intrusion of new industrial scale buildings ie, The site offices, laboratory, toilets etc.
- The rural character of the countryside between settlements, and particularly along main transport corridors, may be eroded. The Pineham Road infrastructure cannot cope with this type of transport.
- The tranquility of the surrounding countryside may be weakened by noise and light pollution and by increased traffic levels on local roads.

The Forestry Commission 1999 published '*Tranquillity is a term used to describe the relative sense of peace, quiet and 'naturalness' of the countryside.*

Tranquillity is an important contribution to the value many people obtain from living in or visiting the countryside. It takes into account a combination of factors which have effects on our perception of tranquillity, particularly related to sight and hearing. The perception of tranquillity also relates to our aesthetic response to the landscape and the pleasure we gain from visiting it. Tranquillity can be summed up as the quality that allows us to feel that we have 'got away from it all'.

3) Traffic

A summary of proposed traffic flows into the site is as follows: -

Drill rig 2
Drill Pipe 4

Casings 5
Tanks and other equipment 5
Survey equipment 1
Cabins 5
Tankers used water 3
Steel linings 2
Foul sewerage tanker 1 per week
Skips 4 per week
Drilling supplies (transit) 3 per week
Personnel (cars/vans) 2/3 per 12 hr. shift

Point 20: These figures give a simplistic and low picture of the traffic movements involved and it will be at least doubled. For example, the 5 cabins will be delivered to site, the empty lorries will leave, then return and leave again to take them away - 5 cabins in and out - 20 HGV movements.

Similarly, all weekly deliveries will be return trips (two movements) and the car / vans for each shift personnel could be 3 in and 3 out twice per day.

So the actual figures will be something like 66 HGV movements for plant and equipment on and off site and, assuming 3 months operations, 208 HGV movements for weekly supplies and waste with 526 car/van movements for personnel.

Point 21: The access to this is proposed to be along a small country lane. This lane serves the village as access to Whitfield. There are three other farms as well as Guston Court Farm that use this. At certain times of year due to necessary increase in farming activity this lane is impassable due to volume of farming vehicles. It is a totally inappropriate route in or out of the site and will cause major disruption to residence and other local businesses which operate from Guston. The Pineham Road over recent months has been resurfaced due to the agricultural vehicles impact on this slight country lane, the works were carried out by KCC Highways. If agricultural tractors are ruining the road surface what detrimental impact will HGV vehicles have?



We have recently had traffic calming measures installed in the village which highlights to you that an increase in any traffic is a danger to all residents old and young especially.

The applicant has stated that a portable wheel wash may be provided if the weather conditions require it, and similarly depending on the weather and site conditions there may be consideration given to the surface of the parking area.

In order to ensure that no mud is tracked out onto the highway, wheel washing facilities would be required, as part of an Operational Statement for the site, and an appropriate surface material for the access and parking areas would also be required. The wheel wash facility will be a free standing power washer. Run off water will be collected in receptacles sunk into the ground and the waste water tankered away to a licensed disposal site at the same time and in conjunction with the waste drill water.

Point 22: The road infrastructure via Archers Court Road, Whitfield, which has been identified as the designated route to the site is already congested with heavy traffic and parked cars. It is also the route taken by many school children early in the morning that walk to DCCA and Whitfield & Aspen School. The addition of HGV traffic in this zone is a health and safety issue and I request a detailed traffic movement policy and consultation carried out to agree traffic movement times. The Local Planning Framework states *-All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment.*

The submitted plans do not show the layout of the site in context with the intended means of access, and further plans should be submitted which indicate, in detail, the access onto the highway network, the internal access route and the on-site facilities.

Point 23: Local Planning Framework also states *‘safe and suitable access to the site can be achieved for all people’* the safety of residents trying to travel from Guston, through Pineham to Whitfield should also be considered. Single lane, narrow passing points, sharp bends, all of which would result in any vehicle meeting a HGV head on would need to reverse some considerable distance before a safety passing point could be achieved.

Point 24: Guston Parish Council received many complaints concerning the Guston Bus number 593 travelling through Pineham. A single height bus which is used to transport children from local schools. This was not the designated route due to Safety Issues. Many cars met this vehicle on the Pineham Road and the road became impassable. The bus company was contacted and informed to instruct the driver that this route must NOT be used under any circumstances.

Point 25: The Local Planning Framework also states *‘Plans should protect and exploit opportunities for the use of sustainable transport modes for the movement of goods or people. Therefore, developments should be located and designed where practical to:*

- *accommodate the efficient delivery of goods and supplies;*
- *give priority to pedestrian and cycle movements, and have access to high quality public transport facilities;*
- *create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians*

Point 26: This route from Church Whitfield via Pineham is used by a significant number of cyclists weekly. This route is a KCC recognized cycle route number 16+17. The KCC website details this route *‘The route passes along leafy lanes and bridleways amid rolling hills, wide skies, woodland, country villages and hamlets; the perfect recipe for a cycle holiday or a mixture of great day rides. Each trail will lead you along national and regional cycle routes to discover Kent’s rich heritage as the Garden of England, past historic oast houses, hop gardens and orchards. Enjoy invigorating off-road cycling through picturesque woodland, or along the many miles of country roads.*

Kent boasts beautiful scenery and a rich history, from the stunning Canterbury Cathedral to the famed fort of Dover Castle, cycling provides the perfect way to explore these treasures of the south east.’

4) Archaeological and Heritage

The local Planning Framework states that government *'should recognise that heritage assets are an irreplaceable resource and conserve them in a manner appropriate to their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation. The impact of a proposal on a heritage asset'*.

'As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification. Substantial harm to or loss of a grade II listed building, park or garden should be exceptional.'

*Safeguard:
existing, planned and potential rail heads, rail links.*

Point 27: This is less than 150m from our village 10th century church, St Martin of Tours. This is a Grade II* listed building and a heritage asset. We request an archeological assessment be carried out on to access previous observations/ finds in the vicinity and the likely impact of the proposed development.

Having spoken to the Diocese we have been informed that the church may have to be closed for the duration of the drilling for health and safety concerns, or, because of an influx of agitators but have been advised to monitor the structure very carefully for any signs of subsidence. The drilling noise could well cause disruption to services at 8am and Evensong at 6pm when it is normally very quiet.! Is it not in our Human Rights to be able to worship in our place of choice ie, our own Parish Church? How can this be acceptable!

Point 28: We are also very concerned about our rail infrastructure. Guston tunnel has a gradient of 1:71 and is 1412 yards long. It also has a bend some way along. This rail network is still in operation. Has anyone considered the implications of borehole drilling on the stability of the banks and tunnel. We have for some weeks now had a team from Network Rail working on the railway banks adjacent to Hangmans Lane. They have been removing trees due to the high banks instability and have installed a mesh netting to stop the soil falling onto the railway tracks. This area is already unstable, any falling debris could be catastrophic to any oncoming trains.

Point 29: Guston Tunnels have raised substantial concern among the Parish Council and residents. We approached Oliver Taylor, Coastal Oil & Gas and asked him how he intended to deal with the potential issue of underground historic tunnels. He admitted that he had no idea of any such tunnels and did not know where they were. This issue needs further investigation. Tunnels are present at Peverell Cottage, The Lane and Apple Tree Cottage, The Lane. Tunnel networks also exist under Fort Burgoyne and Dover Castle.

Point 30: Dover Castle, National Heritage - *Dover Castle is a medieval castle in the town of the same name in the English county of Kent. It was founded in the 12th*

century and has been described as the "Key to England" due to its defensive significance throughout history. *St Mary in Castro, or St Mary de Castro, is a church in the grounds of Dover Castle. It is a heavily restored Saxon structure, built next to a Roman lighthouse which became the church bell-tower. St Mary serves the local population and the army, and is the church of the Dover Garrison.*

As a village we are unconvinced that the borehole drilling down to 8th - 14th underground layers reaching 1200m will have zero vibration impact and are not happy to take Coastal Oil & Gas at their word. We request a full vibration survey to be carried out to include the possible detrimental effect on our natural heritage.

5) Risk of Contamination to land.

8.9 Surface Water Protection

In order to prevent the discharge of surface water from the site a cut off ditch and a submerged sealed interceptor tank will be constructed on the southern boundary across the lowest point. Drawing PEDL251/DRAWINGS/GUSTON/CUTOFF051212 - Pollution Prevention Measures shows the location of the cut off ditch. A 10,000 gallon bowser will be kept onsite to allow the interceptor to be regularly emptied in the event of rain / surface run off. The bowser that the tank is pumped into will be sent off site to a licensed facility when it has been filled.

Point 31: Will the cut off ditch and bowser be able to collect suspended solids? Require full proposals for treatment and disposal of suspended solids from surface water that is run off.

Point 32: Will the cut off ditch and submerged interceptor be constructed under section 23 of Land Drainage Act 1991? This is not mentioned in the application.

Point 33: The field of the proposed site includes a bund on which silage pits are located. Has a risk assessment been done to ensure no effects from the drilling vibration will disturb this land and cause any spillage from these pits onto surrounding areas especially any of the drilling site or areas of surface and groundwater?

8.10 Ground Water Protection

A recent private water supply, a water supply has been drilled at Guston Court farm to supply water for use around the farm.

There are a number of measures in place to protect private water supplies during the drilling of the boreholes. The installation of steel casing at the top of the coal measures below the base of the Mesozoic strata will prevent any ground water entering the borehole of drilling fluids leaving the borehole.

The Environment Agency's report on condition of the groundwater in our area in 2008 states *'The Kentish Stour Aquifer supplies tens of thousands of homes in Ashford, Dover, Deal, Canterbury and Thanet. This equates to over half a million people!! 75% of the water comes from underground aquifers already under stress because of years of over extraction and pollution.'*

Point 5.1 'The South of England is one of the most populated areas of the country and resource protection is therefore paramount'.

5.3 'However, there are potentially some more general pollution issues that are significant. Coal mining took place in Tilmanstone, Bettshanger and Snowdown. Because of this groundwater and surface water contamination in Tilmanstone is well documented. This resulted in the plume 1970 BGS Hydrogeological map still being monitored.'

Point 34: A risk of pollution of our water supply from drilling of the exploratory bore holes. While this may be an acceptable risk in Wales and the North of England where the majority of domestic water supplies come from surface water run-off from rivers and moorland into reservoirs, here in East Kent we are a designated Water Scarce Area and we rely heavily on extraction from boreholes into the aquifer. Any compromise of this resource would have a serious effect on our water supply and may well outweigh any benefit from gas extraction or even the assessment of this.

Point 35: The exploratory drilling for all 4 sites would position the drilling right on top of the aquifer.

Point 36: Local Planning Framework states: *'preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution. The aim should be to minimise pollution and other adverse effects on the local and natural environment.'*

'Encourage capture and use of methane from coal mines in active and abandoned coalfield areas.'

'Contribute to conserving and enhancing the natural environment and reducing pollution.'

Point 37: Coastal Oil & Gas state there are a number of measures in place to protect the private water but they only care to mention 1. We would request, in writing, methods that will be used to minimise the risk of loss of drilling fluid to ground water resources.

Point 38: Request a Full account of the construction of the compound and borehole, the type and nature of materials imported and stored on the site. This is not provided in detail in the application.

Point 39: We would like to request that Environmental Management Team visit site.

Point 40: Will any water be used prior to any discharged? Please request they apply for an Abstraction License if necessary.

Point 41: WR 12 Notice to Conserve Water Resources issue this to CO&G.

Point 42: DDC planning application submitted to extend Charlton Cemetery which is in vicinity of Guston was declined by Environment Agency on the grounds of pollution to the water table through contamination dead bodies. If the water table can be polluted by this then surely it can be contaminated significantly more by pollutants used during borehole drilling.

8.11 The Storage of Oils or Chemicals (Including Drilling fluids)

The storage of all oils and Fuels will be within a bunded fuel tank where the volume of the bund is 1.5 times the capacity of the tank. During fuel transfer absorbent matting will be placed below the fuel fill point to catch any drips. Drip trays lined with absorbent matting will be placed under the drilling rig at all times.

The storage of drilling fluids, prior to mixing the drilling fluids are in powder form in bags. These will be stored in the drilling store shown on the site layout plan.

Point 43: We request work is carried out in accordance with the EA Pollution Prevention Guide= Can we see their Emergency Procedures and also a full list of chemicals to be used with other chemical content detailed.

Point 44: We request a Waste Management Plan to include waste relevant to their operations, plans for closure, details of waste leaving site, proposals for flaring and venting.

Full details of how controlled waste will be removed off site. Details of the registered waste carrier and authorised facility taking the waste. They must follow the Duty of Care Regulations.

Point 45: We request a more detailed programme of works, timetable and contact points. Due to the closeness of the site to residential properties and children's amenities and the safe guarding of children from chemical and pollutants...will this site be manned at all times??

Point 46: *Supporting Statement* says that gas control measures *will* be approved by HSE and have been used for drilling similar holes previously. Where? In the UK? Or elsewhere? Where regulatory regimes may be less stringent?

6) Soil resources

The environment Agency groundwater survey 2008 states '*Point 5.2 'The chalk Aquifer is classified as an intermediate vulnerability where it is covered in clay with flints, indicating that the soil covering this chalk has the capacity to transmit a wide range of pollutants'*

'Exposed chalk within dry valleys or where the clay with flints is absent has a high vulnerability as the covering soil will readily transmit liquid discharges'
There is limited info that base of chalk has been impacted by 'gassing, brown, bubbling groundwater' it is considered that rising mine water maybe a potentially sizable problem in the future...A further investigation of the Chalk Aquifer is required !!'

Point 47: Coast Oil & Gas application states they will not 'knowing allow' pollution into the water table. This is not a guarantee to the residents living in Guston or local areas. This pollution risk should be investigated more thoroughly as the EA states that our chalk layer is a major absorber.

7) Land Stability/Subsidence

7.4 Site Infrastructure

The site is relatively flat land with an established safe access from the highway at a sufficient distance from the junction of Pineham Lane. There is around 50m of existing concrete road connected to the highway. Additional hard standing road will be constructed to allow access for the site

7.5 Ground Conditions

There is some made ground that has been used to level the site. The Upper Chalk directly underlies the site. A detailed survey will be conducted during the development process.

Point 48: There are concerns about the bund in this field and the buildings that are located very close to the drilling site. It is not only a storage area as stated by the planning application but barns are located here for a dairy herd. What investigations

have been done to ensure the stability of this bund and materials used to build it? Any movement could be catastrophic, there is heavy farm machinery, cattle, cattle sheds, waste storage and as mentioned silage pits which are known to contain corrosive waste which can contaminate water all on this bund. Has a risk assessment been done?

Point 49: Please contact DEFRA and arrange a welfare assessment of the dairy cattle in close situ to this borehole drilling. Coastal Oil and Gas have stated they will not 'knowingly' cause any pollution from contamination of water. Any contamination occurring on the farm as a result of waste removal from the drilling site, or should the farmers own personal well water that is the source of water for the herd become contaminated then the milk that they produce becomes contaminated too.. What is the potential for this via the dairy herd to enter the milk subsequently entering the food chain? How will this be monitored?

8) Flood Risk

7.4: "The site is relatively flat land with an established safe access from the highway at a sufficient distance from the junction of Pineham Lane. There is around 50m of existing concrete road connected to the highway. Additional hard standing road will be constructed to allow access for the site".

Point 50: There is also no indication in the *Supporting Statement* that this area is prone to surface water flooding - sec. 7.8, *Environment Agency - Flood Risk* only addresses coastal / river flooding, and sec.8.9, *Surface Water Protection* makes no specific mention of problems with surface water flooding at this site and only very general provisions to prevent it, similar to those proposed for the other two sites and not taking into account the lie of the land and the actual surface water flooding risk in this area. The Pineham Road is made up of different heights of road, at some points the road infrastructure drops so significantly that a bowl effect is created. These bowls fill with rain water in just one heavy bout of rain over a few hour period. One of the areas is directly at the proposed entrance to the site. KCC Highways have already moved the drain once due to flooding on this road but this has not resolved the situation.



Pineham Road, site Entrance (3 hrs of rain)

7.6 “Access Statement: The proposed access from the main highway network will be from the Whitfield roundabout on the A2 travelling in a north easterly direction along Archers Court road. Then turn right into Pineham Road travelling through Pineham to the site. The first 50m of the site entrance is currently hard standing and additional 10m of hard road access is required”.

Point 51: The actual site itself is a flat bit of land but it sits on a natural dip which lies between Guston Court Farm house on one side and the S-bend of Pineham Lane on the other side. The surrounding dip (including the road) is prone to surface water flooding in autumn and winter, as is indeed demonstrated by the *Walkover Ecological Assessment*, 6.10: *“Recent rainfall had filled a cutting made two weeks earlier (between the site and the lane) but this was a very temporary body of water that will not exist in the future as it is part of a drainage issue to reduce flooding on the road”*. In fact, Guston generally is subject to problems with surface water flooding and soggy ground conditions - to the extent that there are home-made signs by the Farm, just around the corner from this site, warning of “mud on road”.

Point 52: Access to the site itself: according to the *Supporting Statement 7.6*, the first 50m of the site entrance is hard standing, but according to the *Walkover Ecological Assessment 1.0* *“the access part of the proposed site is 100% mud”*. Which is correct? Putting in further hard standing / concrete, in any case, won't help reduce the risk of surface water flooding - surely quite the opposite, as it reduces local natural drainage?

9) Internationally, nationally or locally designated wildlife sites, protected habitats and species, and ecological networks

Local Planning Framework states -‘Moving from a net loss of bio-diversity to achieving net gains for nature’

8.16 Ecology

A Walkover Habitat Survey conducted by Wildlife Matters is shown in Appendix VI. The report concludes:-

- The site is part of an existing farmyard.
- The site is a marginal area used for storage.
- The access part of the proposed site is 100% mud.
- No trees, ponds or buildings were on site.
- No protected habitats were found on site.
- Apart from birds (all protected) no other protected species were found on site.
- No badgers, bats or barn owls were present.
- The farm, as a whole, supports a bio diverse avifauna and invertebrate fauna, but none will be affected by the proposed development.
- The proposed development would not have to remove any habitats or destroy any hedgerows to provide access.
- The proposed development will not see any land lost (other than consolidating the existing farm track).
- The main part of the site to be used for the drilling will be returned to its former state.
- It is concluded that the proposal will not have an adverse environmental effect on adjacent habitats.

Point 53: The Walkover Ecological Assessment has several interesting things to say:

- 6.4 Hedgehogs are known to be in the area according to the landowner. They are Biodiversity Action Plan (BAP) species.
- 6.6 The only birds actually on the proposed development site were Dunnock and Pied Wagtail.
- 6.7 Elsewhere, and in the neighbourhood and flying over the site (but not settling), were 11 other bird species. These included two Biodiversity Action Plan (BAP) species: skylark in the field adjacent, and Starling - many around the farmyard buildings 50m to the northeast.
- 6.8 Protected barn owls were not seen, but the landowner stated that they were present and that barn owl boxes are in all the open farm buildings.

Hedgehogs are not only a UK BAP priority terrestrial mammal species (this list remains good for the UK post-2010 Biodiversity Framework) but also on the Kent BAP species list.

Point 54: The Walkover Ecological Survey, at sec.8.4, suggests that “it is expected that on clearing the site for the drilling platform that due consideration will be given

to any wildlife that is encountered, such as hedgehog which should be carefully moved to a safer place underneath the nearest hedgerow, but away from the adjacent road". However under the Kent & Medway Structure Plan 2006, Mapping out the Future: Supplementary Planning Guidance SPG2 Biodiversity Conservation (July 2006), sec.4.13, "Translocation of habitats or species should not normally be considered as a form of mitigation or compensation for the purposes of planning. The general difficulty and unproven efficacy of translocation means that nature conservation agencies do not accept it as a valid nature conservation method." And at 3.4.8: "Biodiversity Action Plans identify priority species and habitats for conservation. Whilst these species do not necessarily enjoy legal protection, they can be material considerations in development control."

Point 55: We have Pipistrelle bats in the vicinity of this development what provisions have been made to protect these? There are mature trees close by (50m) which is likely to provide foraging, feeding and roosting for bats. It is true to say that these trees are isolated from the surrounding geographic area however with bats being present here then this habitat becomes more important than similar trees elsewhere and could accommodate a denser population of bats in the local context. The farm will provide a good supply of food for bats. A badger was recently found dead on Pineham Road beside the access to the churchyard. The ducks and geese use this crossing (site entrance) into the field on the opposite side of the road. They do this at least twice a day and animals have specific routes that are difficult to change (creatures of habit). What is the impact on their habitat?

The Guardian this week has reported that a rare and exotic butterfly 'long tailed blue' has settled on chalk grassland owned by the National Trust and laid eggs, and has been seen flying over the white cliffs of Dover. "A vivacious little creature with distinctive tails on its wings, the long-tailed blue is found across Africa, southern Asia, and Australia." "It has only reached Britain in significant numbers twice- in 1945 and 1990 - but has a talent for popping up in unusual places. In 2003, the butterfly laid eggs on the North Downs." According to Richard Fox of Butterfly Conservation, if there is an Indian summer with gentle winds coming up from southern Europe, the influx of migrant insects may get even more notable with a potential influx of monarch butterflies and spectacular moths including the Death's Head Hawk moth and the Crimson Speckled."

The timing too of the walkover survey, middle of the day, (25th October) is well into the beginning of hibernation for animals and although the temperature was warm for October I would ask what were the temperatures preceding his survey date? Bats, Owls, Badgers etc are nocturnal creatures and do not come out during the middle of the day!

Point 56: The lane is not suitable for wide vehicles so some hedgerows will be damaged or removed. There is no evidence to show this has been surveyed or investigated as to the damage to wildlife or vegetation it may cause.

Point 57: Similarly the saved policy OG8 from the Kent Minerals Local Plan: Oil & Gas states: BEFORE GRANTING PERMISSION FOR AN OIL OR GAS RELATED PROPOSAL THE PLANNING AUTHORITY WILL REQUIRE TO BE SATISFIED THAT THE EARTH SCIENCE AND ECOLOGICAL INTERESTS OF THE SITE AND ITS SURROUNDINGS... HAVE BEEN ESTABLISHED, AND PROVISIONS MADE FOR THE SAFEGUARDING OF... SPECIES OF WILDLIFE IMPORTANCE. Note the mention of and its surroundings.

Coastal Oil & Gas therefore must demonstrate, not assume, no negative impact to those “red” and “amber” RSPB list birds, particularly the two UK BAP, RSPB red list and DEFRA red list species (skylark and starling), as well as the barn owls protected by legislation, not only on site but in the surrounding area. What, for instance, would be the impact of night-time external lighting upon the local barn owl and bat population?

Point 58: We request any work or structure will be built min 3m from hedgerows and line of trees. This ensures soil conservation, wildlife and natural heritage THIS IS NEEDED IN THE PLANNING APPLICATION

10) Nationally protected geological and geomorphological sites and features

The Local Planning Framework states ‘Great weight should be given to conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty’.

The pilgrims footpath is a National Trail called 'The North Downs Way'. The National Trail supposedly should mean it goes through an area of Outstanding Beauty this side of Dover. The North Downs Way will view the site.

11) Lighting

8.8 Lighting at Night

The lights will be on stands no more than 3m in height, the lights will be hooded and down pointing so that light cannot spill over the site boundary. No lights will be allowed to point directly at an existing dwelling or onto the highway. No lights will be allowed within 15m of the borehole unless certified flameproof. The plan titled, Lighting Layout Plan PEDL251/DRAWINGS/GUSTON/LIGHTLAYOUT051212, shows the position of the lights on site. The lights will be positioned so that they do not cause distraction to drivers on the A2 or other roads. The lighting will be positioned to cause no disturbance to wildlife within the adjoining vegetation.

Point 59: Light pollution can affect bats and barn owls, nether have been considered in their application. Need to limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

The internal lighting arrangements need to be shown in context with the highway, and to ensure that the lighting does not impact on the safety of highway users, a full lighting design will need to be submitted, which indicates the number of column heads, inclination of heads, luminance levels etc.

12) Site Restoration and aftercare

Point 60: If borehole not successful it needs to be sealed in accordance with Decommissioning Redundant Boreholes and Wells 2012 (EA). Site needs to be restored to original condition within 3 months and plant, machinery, buildings and bund compound removed.

Point 61: Put in place policies to ensure worked land is reclaimed at the earliest opportunity, taking account of aviation safety, and that high quality restoration and aftercare of mineral sites takes place.

In Conclusion....

Section 2“This supporting documentation and site design has been prepared giving consideration to the purposes of the current legislation governing planning and environmental matters. The aim being to ensure, as far as is practically possible, that the development will not knowingly permit the introduction into the environment of any substances or energy liable to cause hazards to human health, harm to living resources and ecological systems, loss of any amenity, or interference with the legitimate use of the environment by the general public and especially those that are neighbours to the development”.

Essentially, this is an admission that this is a new technology and so safety is a grey area, having to be hedged around with words like *knowingly*. Messing things up *unknowingly* isn't any better than doing so knowingly, in terms of impact. Should KCC - given its duty of care to the public interest - accept such half-hearted assurances?

As with our objection we have not dwelled on what might happen after this stage of application and we therefore request that KCC planning committee is only to consider the merits of this specific application - the planning committee should NOT bring into its considerations any question of the (questionable) long-term economic benefits of coal-bed methane production in East Kent. In terms of these applications, any local jobs are likely to be short-term and unskilled, with skilled and specialised labour being brought in from elsewhere - for the sake of 52 weeks' drilling, it's not likely the applicant will train anyone local up to do the quality work.