
INEOS: WORKING FOR SCOTLAND

Employing 1300
skilled people

Generating 4%
GDP for Scotland

Investing over
£450m locally

Competing in
world markets

The highest
Health, Safety
& Environment
performance

Providing
essential raw
materials for
manufacturing

INEOS
Shale

INEOS is one of the largest chemical companies in the world, with 65 sites in 16 countries. Our Grangemouth site in Scotland is our largest in the UK and is a strategically important asset not only to INEOS but also to Scotland and the rest of the UK. Our chemical products, made from gas, provide the UK manufacturing sector with the building blocks that go into everything from medicine and clothing, through to buildings, vehicles, computers and green technologies. UK shale gas can help to protect manufacturing and jobs by providing competitive secure energy and raw materials.

INEOS is currently investing about £450 million to transform its Grangemouth manufacturing site, which employs more than 1,300 people directly, into one of the best in the world. It is the most significant investment into UK and Scottish petrochemical manufacture of recent times and is something every Scot has good reason to be proud of.

As part of this project a newly built 60,000-cubic metre tank will hold 30,000 tons of liquefied ethane gas – and herald a new era in the manufacture of petrochemicals. Long-term contracts have been agreed with American suppliers to bring ethane from the shale gas fields across the Atlantic to Scotland – in a fleet of eight specially-designed ships commissioned by INEOS.

INEOS has to continually plan for the future and a major part of this is to secure competitive energy and raw materials. As North Sea ethane gas supplies decline we will import shale gas from America. It would be better for INEOS and Scotland to consider the opportunity to source gas from several thousand metres below our feet. A strong onshore shale gas production industry can benefit Scotland's finances, energy and job security and provide skills export opportunities

INEOS operates complicated chemical manufacturing plants across the world and safety is our top priority. We have examined the risks involved in extraction of shale gas and believe they can be managed and mitigated to as low as reasonably practical. We simply wouldn't be doing it if we didn't believe shale gas could be extracted safely and with due regard to the built and natural environment.

INEOS is currently undertaking a shale gas information programme in communities in the Midland Valley and, in addition to face-to-face conversations at the exhibitions it has presented a series of information leaflets and video's. This document addresses the questions about shale gas and fracking we have heard so far.



SHALE GAS WILL MAKE US LESS DEPENDENT ON IMPORTED GAS FROM EUROPE AND THE MIDDLE EAST.

“ THERE IS INCREDIBLE POTENTIAL TO PROVIDE THE UK WITH GREATER ENERGY SECURITY, GROWTH AND JOBS, AND HELP THE UK'S CHEMICAL INDUSTRY AND ENERGY-INTENSIVE MANUFACTURING TO SUCCEED, WORLDWIDE. ”

GARY HAYWOOD, CEO INEOS UPSTREAM

WHY ARE YOU TALKING TO US WHILE THE MORATORIUM IS IN PLACE?

The Scottish Government announced a moratorium on unconventional gas development in January and also stated that it would hold a public consultation on the subject. To date there has been far too much scaremongering and misrepresentation about the subject of shale gas and fracking and we believe the Scottish public deserve clear facts and information based in science not scaremongering. INEOS is prepared to have a grown-up conversation with the Scottish public and feedback from our Town Hall meetings and community exhibitions suggest the majority of the public appreciate that.

HOW CAN COMMUNITIES GET INVOLVED?

INEOS has an established Community Liaison Group at Grangemouth and anticipates establishing in due course a similar Shale Gas Liaison Group for the communities living and working close to its operations. If members of the public and politicians see benefit in us setting up a wider Scottish Shale Gas Liaison Group sooner we would be delighted to do so and be very happy to hear ideas on how it should be constituted.

WHAT INFLUENCE DOES THE PUBLIC REALLY HAVE?

The UK planning process has evolved over the past hundred years or more to help manage and regulate projects across the country. The legislation provides a well developed process taking into account all stakeholders. It is the basis upon which decisions on significant developments are made in the UK. This tried and tested process allows for public consultation and input into any planning application. In addition INEOS will consult extensively with communities ahead of submitting an application. We are very happy to listen to those that live or work close to our sites and discuss concerns and indeed pick up on relevant anecdotal evidence.

WHAT IS FRACKING AND WHAT ARE THE PROCESSES INVOLVED?

Fracking is a short term operation where a mixture of water (95%), sand (4.5%) and chemicals (0.5%) are injected into specific locations in the shale rock to open up the tiny cracks already present which in turn allows the gas to flow to the well. Although the frack equipment is on site for a week or two per well the actual pumping of the frack fluid at each “frack stage” takes only minutes. The drilling and fracking equipment is removed and small unobtrusive valves are put in place. These wells can produce gas silently for up to 20 years.

WHAT CHEMICALS WILL YOU BE USING? ARE THEY DANGEROUS?

Frack fluid is 99.5% water and sand and the balance is diluted chemicals. In the concentrations used these are not harmful. Typically fewer than a dozen chemicals are used in each well; these are dependent on the specific characteristics of the rock at each site. All chemical additives have to be approved as safe by the Scottish Environment Protection Agency and disclosed as part of the planning process.

HOW LONG WILL A DRILLING AND FRACKING OPERATION TAKE?

In a development phase a multi-well pad would see activity and equipment on site for around five or six months. Thereafter the drilling rigs are removed, small well caps are put in place and the wells will produce discreetly for up to 20 years.

CAN FRACKING FLUIDS REACH THE AQUIFER?

Not through the fracking of the shale rock. There have been instances in the US where fracking fluids have entered the aquifer due to poor well construction or reuse of old wells. We will only use newly drilled wells and our well engineering will ensure integrity of the borehole.

WILL SHALE GAS EXTRACTION LEAD TO INDUSTRIALISATION OF THE COUNTRYSIDE?

No. Scotland is not the USA, where the land and the regulations are totally different. In the US there is a lot of easily accessible land. Vertical wells are often drilled in some parts of the USA because there is the space and drillers are able to do so. The land mass in Scotland is different. Although PEDL's 133 and 162 cover 729 square kilometres, 40% to 50%, of that area will not be accessible at surface due to urbanisation and environmental designated areas so the available land for drilling is already reduced by those factors alone, and we take many more factors into account when we screen potential drilling sites. We will seek to use multi-well pads at surface and horizontal drilling within the deep shale layer to reduce the surface impact of our operations. Once the drilling and fracking operation has ceased the footprint of these well pads will be reduced and landscaped to provide screening.

HOW WILL YOU DEAL WITH CONTAMINANTS IN WASTE WATER FROM FRACKING?

Any water produced will be captured and stored in sealed tanks, treated to remove contaminants and disposed of under licence from SEPA. Contaminants recovered through the water treatment will similarly be disposed of safely and by licensed contractors. As a chemical producer INEOS has vast experience of handling and safely disposing of contaminants, under strict regulations set by SEPA.

WHAT WILL YOU DO WITH DRILLING CUTTINGS?

Similar to water waste drilling cuttings, which consists of rock and drilling fluid, will be captured and disposed of safely under licence. Drill cuttings usually go to landfill while drilling fluid is treated and disposed of just like the water produced after the fracking operation is complete.

THERE ARE EXTENSIVE MINEWORKINGS ACROSS THE MIDLAND VALLEY, HOW CAN/WILL YOU AVOID THEM?

As part of our screening process we identify mineworkings and their extent to avoid drilling through them.

I AM WORRIED THAT YOU MIGHT DESTABILISE THE OLD MINEWORKINGS WITH YOUR FRACKING.

Any fracking will be so deep that there will not be an effect on the stability of mineworkings above a horizontal well section. This will form part of any Geological Risk assessment.

THE MIDLAND VALLEY IS HEAVILY FRACTURED, HOW CAN YOU PRODUCE GAS COMMERCIALY?

It is heavily fractured and we will make use of 2D and 3D seismic data to clearly identify the fracture systems and take them into account in our drilling and fracking plans. It is possible that once we see the seismic data and examine the cores of shale rock from early exploration drilling that we decide that shale gas cannot be extracted commercially. That is a financial risk that INEOS is prepared to take.



GAS IS **50%** CLEANER THAN COAL

“ AT INEOS WE KNOW THE IMPORTANCE OF TALKING TO THE COMMUNITY ABOUT SHALE GAS EXTRACTION. WE BELIEVE SHALE GAS COULD REVOLUTIONISE MANUFACTURING IN SCOTLAND, CREATING TENS OF THOUSANDS OF NEW JOBS. WE ALSO BELIEVE INEOS HAS THE SKILLS TO SAFELY EXTRACT IT FROM THE GROUND AND THAT OUR PLAN TO SHARE THE REVENUE WITH THE LOCAL COMMUNITY IS A GOOD ONE. ”
TOM PICKERING, INEOS UPSTREAM DIRECTOR

DOES FRACKING CAUSE EARTHQUAKES?

Fracking can induce small tremors deep underground but these are very rare and too small to pose a risk to people or property. In the UK, in addition to having detailed 2D and 3D seismic data to identify fault systems to avoid while fracking, a seismic activity monitoring system will be deployed at each fracking site and if movement above a very low threshold of 0.5 on the Richter scale is detected, operations must stop. In the US reports of “fracking related earthquakes” are actually to do with injection underground of fracking wastewater. This is not allowed in the UK.

CAN YOU GUARANTEE THAT FRACKING IS SAFE?

The drilling and fracking process is safe if wells are properly engineered and constructed, drilling and fracking operations are properly conducted and the oversight from the regulators is firm and appropriate. Accidents and incidents tend to happen through a failure to execute an agreed operational procedure or someone taking a shortcut. INEOS will ensure that its people and contractors adhere to a process of operational excellence.

MULTIPLE BREACHES AT GRANGEMOUTH AND FINED FOR DUMPING CHEMICALS FROM A BROKEN PIPE INTO A RIVER IN ENGLAND. WHY SHOULD WE TRUST YOU ON ANYTHING WHEN YOU SAY YOUR SAFETY RECORD IS GREAT WHEN IT IS NOT?

INEOS is a responsible global company. Its Safety Health and Environmental performance is its highest priority. Any safety breach is not acceptable. We work very hard to instil our safety culture throughout the organisation down to the level of recording every single incident, including slips, trips, and near misses. By preventing the smallest incidents we prevent the larger ones.

I'VE HEARD FRACKING CAUSES HEALTH ISSUES SUCH AS CANCER. HOW CAN YOU ASSURE ME THIS IS NOT THE CASE?

Fracking does not cause cancer. Public Health England has completed a comprehensive review of the potential health impacts of shale gas extraction. The review found that the potential risks to public health from exposure to the emissions associated with shale gas extraction will be low if the operations are properly run and regulated. The Scottish Health Authority did not disagree with this conclusion.

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HOW WILL YOU ENSURE INTEGRITY OF THE WELL STRUCTURE?

We have in-house well engineers supported by specialist consultants who will design the well to protect its integrity. Each well will be fully lined with steel, with added layers of steel and cement from the surface to below the aquifer.

I HEARD THAT ALL WELLS LEAK EVENTUALLY. DO YOU AGREE?

No. In any case we will conduct routine checks on our equipment including wells with a view to identifying and rectifying potential issues as part of a normal operational maintenance plan.

“ SHALE GAS IS A ONCE IN A LIFETIME OPPORTUNITY THAT THE UK CANNOT AFFORD TO MISS. NORTH SEA OIL CREATED GREAT WEALTH FOR THE UK AND SHALE GAS CAN DO THE SAME. IT WILL HELP SECURE MANUFACTURING, DELIVER INVESTMENT AND CREATE THOUSANDS OF JOBS, PROVIDE US WITH GREATER ENERGY SECURITY, AND HELP US TO MEET OUR CLIMATE CHANGE OBLIGATIONS USING OUR OWN HOME-GROWN SOURCE OF ENERGY. ”

GARY HAYWOOD, CEO INEOS UPSTREAM

WHY NOT CALL THE PROMISED SHARE OF REVENUES A BRIBE?

Because it is not. A bribe would be illegal apart from anything. The promise of a share of revenues is recognition that landowners and communities close to our operations should share the benefits of shale gas extraction activity in their area.

WE DON'T NEED TO FIND MORE GAS WHEN WE HAVE FIVE TIMES MORE FOSSIL FUELS ALREADY DISCOVERED AROUND THE WORLD THAN WE CAN USE WITHOUT ENDANGERING THE PLANET MORE.

The country needs gas for heating, cooking and to manufacture everyday essential items so our view is that we are better obtaining that gas from under our feet rather than bringing it in from other far away countries. Gas contributes less than half the GHG's of coal and should be considered a transition fuel to the low carbon economy. It is needed to help meet our carbon emission commitments, to keep us warm and to keep the lights on.

WHY NOT BRING IN GAS FROM ELSEWHERE, YOU ARE DOING IT ALREADY WITH US SHALE GAS?

We are. The shale gas from the US is on a 15 year contract and we need to look beyond that time. Importing shale gas from other regions is possible but may not be as stable or as environmentally rigorous as the UK and may not be a secure supply. Imported gas makes the manufacturing industry less competitive and the cost of paying other countries for our gas has adverse balance of payments and economic/employment consequences for Scotland.

WHAT ARE YOUR PLANS FOR THE AIRTH CBM PROJECT?

Airth is subject to the Ministers decision on the planning application and also the moratorium. Until such time as those issues are resolved nothing will happen.

IF YOU GET PERMISSION TO DEVELOP AIRTH WILL YOU TAKE IT FORWARD AS PER THE PLAN OR RESUBMIT A NEW PLAN WITH MANY MORE WELLS?

We will look at the proposals submitted as part of the planning application in detail over the coming months while we await the outcome of the Planning Decision and the moratorium.

HOW DOES THE AIRTH CBM DEVELOPMENT PROPOSAL AFFECT YOUR INTEREST IN SHALE AROUND AIRTH?

They are two completely separate resources. The coal beds are at around 800m depth and shale is about 2600m in Scotland.

ARE YOU INVOLVED IN UNDERGROUND COAL GASIFICATION (UCG)?

No. UCG is where Syngas is produced from igniting the coal in place by injecting oxygen and is an entirely different process from shale gas extraction. INEOS has no involvement in UCG extraction.

I HAVE HEARD A UCG COMPANY SAY THAT THE GAS FROM UCG COULD GO DIRECTLY TO GRANGEMOUTH HOW CAN THAT BE TRUE IF YOU HAVE NO INVOLVEMENT IN IT?

INEOS has no involvement in the extraction process. While it is true that Grangemouth could, in theory, potentially buy the Syngas, that would be subject to plant modifications and commercial arrangements.



FURTHER FACTS:

■ **SEPA:** www.sepa.org.uk/customer_information/energy_industry/unconventional_gas/frequently_asked_questions.aspx

■ **Office of Unconventional Gas:** www.gov.uk/government/groups/office-of-unconventional-gas-and-oil-ougo

■ **DECC website:** www.gov.uk/government/organisations/department-of-energy-climate-change

■ **UKOOG:** www.ukoog.org.uk

■ **Frackland Blog:** www.frackland.blogspot.co.uk

■ **No Hot Air:** www.nohotair.co.uk/index.php/library

■ **ReFINE:** www.refine.org.uk

■ **Frac Focus:** www.fracfocus.org

■ **The Boom:** www.russellgold.net/books/the-boom

■ **US EPA:** www2.epa.gov/hydraulicfracturing

■ **PENN State University:** <http://stateimpact.npr.org/pennsylvania/tag/fracking/>

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