

Dear Dr Barnard,

Thank you for your email and your interest in UKOG's activities.

Firstly, as Broadford Bridge is an exploration well, even though we have a lot of very positive scientific indicators, the outcome of the well at this stage is uncertain. If we detect the presence of mobile oil (i.e. make a discovery), we will carry out flow testing over a period of months to determine whether oil can be extracted at rates and volumes that are commercially viable. Should this be demonstrated, we will plan to move to permanent production, which will require further planning permission from West Sussex County Council, plus three other UK oil regulators. Note that the Petroleum Exploration and Development Licences (PEDL) encompass a production period spanning up to 20 years.

Until a well or wells from the Kimmeridge Limestones have produced for a period spanning months to a year or so, we will not know with real certainty the likely productive life-span of such a well or wells. Hence the need for production testing. That's the fundamental nature of exploration and production, data gathered from an increasing number of wells over time improve our ability to predict into the future.

We will make announcements concerning the well's progress as we complete the drilling phase.

There are some other important points to be made.

Renewables do not fill the same energy role as oil and petroleum-derived products. As I'm sure you know, renewables (wind, solar, tide/wave, biomass) are used to generate electricity for the UK grid and in some homes and businesses. Oil and oil-derived products, however, are not used to generate electricity in the UK, being used to fuel transportation (land, sea and air) and as vital chemical feedstocks for oil-derived materials such as plastics, that are essential to support our everyday lives. These feedstocks alone support much of the UK chemical industry which employs over 30,000 jobs.

Currently UK daily oil demand is around 1.4 million barrels per day, of which around 70% is used for transportation (land, sea, air), the majority being road transport. Significantly around 20% of demand is used for air transport, fuelling Heathrow & Gatwick, both key global-hub airports. While road transport could potentially become increasingly non-oil based by 2030, there is currently no renewable/alternative technology that can power commercial aircraft, but undoubtedly it may come along sometime in the future. Electric road transport will require a significant increase in electricity generation capability to support the increased demand for charging battery powered vehicles. Incidentally, a few % of UK oil demand is used for heating (fuel oil).

The remaining 30% or so of UK oil consumption is utilised as petrochemical feedstocks to create derivatives used to manufacture goods ranging from; plastics in

phones/ computers/ cars/ boats/ planes/ TVs, tyres, road surfaces, insulation for electrical wiring, construction materials, to name a few. Oil-derived products are widely used in your own specialist sector, the medical industry, to include: catheters & tubing, sutures, blood and drip bags, surgical gowns, face masks, surgical gloves, disinfectants and hand sanitisers, aspirin, medical computers & electronic equipment, ambulances, hospital construction and more.

Returning to the theme of renewable energy, wind turbine blades and solar panels/cells are made using significant proportions of petrochemical-based materials. Even electric cars require a significant component of materials (mostly plastics) that are derived from petroleum products.

You might be interested in the following site which illustrates the use of petroleum derivatives in everyday life:

<http://education.afpm.org/petrochemicals/uses/>

Crucially, at the present day, around 35% of our daily oil demand is derived from imports. Due to the more rapid than expected decline in North Sea oil production, this is set to rise to over two thirds by 2030, even with forecast reduced daily demand. Imported oil brings a higher carbon footprint associated with the increased distances and scale of transportation and, importantly, none of the benefits that indigenous petroleum production brings, namely of tax revenue generation and UK jobs. Imports can often be from regimes that are not as environmentally conscious or controlled as the UK. In increasingly uncertain times it is surely more sensible for the UK to increase its Energy Security rather than to be wholly reliant on imports. Think back to the 1973 OPEC oil embargo and its effect on the UK in a time when the UK was almost wholly dependent on imported oil. UK indigenous oil & gas has a key part to play in a post-Brexit UK plc.

In answer to your question about use of water, let me stress we are not fracking. We don't need to. The Kimmeridge Limestones are widely naturally fractured on a basin-wide scale. You will, no doubt, be aware that massive hydraulic fracturing requires significant volumes of water, millions of gallons per well in fact. Consequently, as an operation using conventional techniques and methods, our water usage is very modest, one tanker of water per 48-72 hours is brought onto the site to mix with the non-toxic, biodegradable vegetable starch drilling fluid during the drilling phase only. The spent drilling fluid containing the water is taken to an EA approved site and the water cleansed and recycled. A mains water supply exists on site for the domestic use of the staff, so no tankers are required. Similarly, all grey waste water is collected, cleansed and recycled at approved sites. During production, there would be no water used on site other than any rainwater collected in the impermeable membrane-lined perimeter containment ditches, which is removed to an EA approved site and recycled.

Let us also clarify the issue of acidisation, which is a one-time process at the start of the flow test phase. There are many unfounded claims and scaremongering about this process, which has been used safely in the global oil and water-well drilling

industry for 120 years. This technique has been safely used over many years in a limestone oil reservoir in the Wytch Farm oil field in Dorset's heritage coastal area. Prior to this process the entire length of the well will have been isolated from the surrounding rock with heavy gauge steel tubing, known as casing, which is bonded to the surrounding rock with impermeable concrete. As stated in our recent letter to The Rt Hon Nick Herbert, at our site, diluted hydrochloric acid (HCl) will be applied directly via steel tubing directly and only into the limestone oil reservoir rock through a section of perforated steel casing, lying between half to over three quarters of a mile beneath the surface.

The dilute acid dissolves small amounts of the limestone (rocks comprised of calcium carbonate) within a few tens of centimetres of the well bore. This process enables the well bore to properly connect with the natural fracture system and permits greater fluid flow into the well bore. The reaction with the limestone neutralises the acid, forming water, calcium chloride (a highly-soluble and natural component of sea water) and small volumes of carbon dioxide. The dilute acid (85% water, 15% hydrochloric acid) is similar in strength to that contained in domestic toilet bowl cleaners and lime scale removers. Indeed, the acidisation process is identical to the domestic limescale removal i.e. to dissolve calcium carbonate.

The HCl used is approximately half the concentration of the acid typically used by the public water supply industry when drilling water wells in limestone rocks for public water supply. Please note that the dilute acid is NOT forced into the well to artificially fracture the limestone, that would require a pump capacity far beyond those we have on site, and as we have said, our reservoir rocks are already naturally fractured.

The Broadford Bridge hard-standing well pad is specifically designed and constructed to ensure that ZERO fluids, including rainwater, can discharge down into the ground beneath and adjacent to the site. The pad has five liquid containment systems to ensure zero discharge and complete isolation of surface activities from the underlying and surrounding ground, including; both a man-made impermeable membrane and an impermeable natural clay-layer underlying the entire well pad, a membrane-lined perimeter ditch, an impermeable concrete cellar and bunding of all storage tanks and chemicals.

Even rainwater from the site during operations is not discharged and is collected by tanker and sent to an Environment Agency approved disposal site.

You also mention the use of hydrofluoric acid(HF). Let us state categorically, that HF is not used in the oil industry to dissolve limestone rocks such as ours, therefore it has zero efficacy in our operations. It is, in our opinion and experience, due to its highly toxic nature only suitable to be used on silica based rock samples (i.e. sandstones and clay) in a laboratory environment.

On the question of multiple wells, it is far too early to say. However, if other wells were eventually drilled, they would be on the same pad, metres away from the

existing borehole. We do not need (and are not permitted) to enlarge the well-pad.

Finally, we believe that drilling for oil in the UK is good for the country, good for economy and better for the environment than imports.

I hope this covers most of the topics you raised in your email. We are operating within one of the world's most rigorously controlled industries, with the Environment Agency, the Oil and Gas Authority, HSE and the local council continuously monitoring our activities.

Beyond that, we believe we are an honest and transparent company, who do our best to liaise with the community and listen to residents' concerns. We have established a Community Liaison Group and will be meeting with the representatives of the local parish councils and residents' associations later this week.

Thank you again for your interest.

Kind regards,

UK Oil & Gas Investments plc