BROADFORD BRIDGE – ANSWERS TO FREQUENTLY ASKED QUESTIONS

UK Oil & Gas Investments PLC (UKOG) is proud of the level of openness and transparency we have shown since drilling operations began at Broadford Bridge at the end of May 2017.

Unlike any other onshore well operator in the UK, to our knowledge, we have built a viewing platform at the Broadford Bridge-1 (BB-1) well site to allow visitors to see the entire site. To date, we have organised four visits by parish councillors and residents (18 people per visit), 12 representatives from local media (TV, radio and print), investors, our neighbours, county councillors and many other interested parties – a total of well over 120 visitors. Further visits of interested parties are planned before the end of operations.

We held the first Community Liaison Group meeting with the parish councils of West Chiltington, Pulborough and Billingshurst, plus the Adversane Residents Association and West Sussex County Council (WSCC). We are due to hold another meeting shortly. Similar meetings and many discussions with the parish councils have also taken place.

In spite of this, the BBAG have criticised UKOG for its level of public consultation.

We were made aware of two "public" meetings arranged by the Broadford Bridge Action Group (BBAG), but decided not to attend. This is for two reasons: (i) we were not confident of receiving a fair hearing and (ii) we disputed the validity of the so-called "experts" who would form the Action Group's panel.

Public consultation had already taken place in 2012-14, when the WSCC planning application and Environment Agency (EA) permit application, from previous site operator Celtique Energy, were being considered. Kimmeridge Oil & Gas Limited (KOGL), which now operates Broadford Bridge and is a 100%-owned subsidiary of UKOG, is not required under planning regulations to hold further consultation meetings. However, we have engaged extensively as described above and been highly commended for our transparent approach.

Through various means, the BBAG have demanded a full response to 10 questions by a retired academic, David Smythe, who is one of the so-called experts who has served on the BBAG public meeting panel. Most of these questions and their subject matter have been answered in UKOG's prior written responses and during the various on-site visits.

As far as we are aware and judging by media reports about his relationship with the University of Glasgow, we understand that, even with his claimed credentials, that David Smythe is not a recognised scientific expert in the field of hydrogeology, petroleum geology or an expert in oil and gas project economics, upon all three of which he has made multiple unsubstantiated assertions. We have been alerted to issues about his description of his current professional status and the consequent adverse reaction of various professional bodies. A description of the dispute(s) is available on his own website.

There is also considerable media coverage concerning these disputes, especially that with the University of Glasgow, who seem to wish to distance themselves from him.

The bulk of David Smythe's questions seem to relate to UKOG's Kimmeridge Limestone play being uneconomic. That is precisely the purpose of the Broadford Bridge exploration well and subsequent well testing, to establish if economic development is possible or not. That is the purpose of the exploration and appraisal process. Per our latest corporate presentation, available on our website, we clearly state that in the event of success the project has robust economics as it uses conventional drilling and production techniques and isn't reliant on using expensive massive fracking techniques. If the well proves uneconomic or not commercially viable, KOGL will clearly not pursue further development.

BBAG also submitted questions raised by Mr Graham Warren, a former hydrologist with the EA. Mr Warren is a well-known opponent of drilling for fossil fuels in the south of England.

Mr Warren's main concerns appear to be about "the integrity of a strategic public water supply" and "a high density of geological faults that provide pathways for the migration of contaminants into the over-lying aquifers".

Based on our own detailed assessment, the guidance of UK-based specialist hydrologists and hydrogeologists, Envireau Water, and the opinion of the relevant regulator, the Environment Agency, we strongly dispute Mr Warren's views. There is no viable potable aquifer underlying the well site or the well trajectory and there are no geological faults that could provide a pathway to the surface or near to surface.

However, the following states further facts which demonstrates that Mr Warren's and Mr Smythe's assertions are incorrect and misleading:

1. The site does not sit within or connect to the Arun river catchment area. A perusal of the current Ordnance Survey map sheet shows that the topography rises to the west of the site isolating the area from the Arun. The river Arun's headwaters are fed by surface run off from the underlying Weald Clay Formation to the west of the site, not via springs associated with faults from the underlying Tunbridge Sands as Mr Warren cites. The Arun is in fact only fed by springs and spring-fed run-off (associated with the Greensand and Chalk sequences at surface within the South Downs) some 10 km or more to the south of the site. There can therefore be no possibility that a new Arun abstraction site could be contaminated from Broadford Bridge.
2. The British Geological Survey (BGS) and Environment Agency (EA) hydrogeological maps show that the site sits upon the Lower Cretaceous Weald Clay rock formation, which is classified as unproductive strata for water use (i.e. rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow). The BG'S field mapping shows the thin Horsham Sandstone member of the Weald Clay, used for minor historical private water abstraction from shallow boreholes, some kilometres north of the site, is not present under or immediately

surrounding our site. This has been confirmed by our drilling, which shows the Weald Clay to consist of 850 feet of impermeable clay. There are, therefore, no potable aquifers under, adjacent to, or connected to our site.

3. The Tunbridge Wells sands, claimed by Mr Warren as a significant aquifer at the site, are shown by the BGS's mapping and by our well, to lie 1000 feet below the surface of the site and under the entire area to the south and west. These units rise towards the surface in the High Weald area to the north east. Importantly, the Tunbridge Wells sands below the site contain saline (salty) water, not fresh or potable water, ranging from 2-6 times the WHO's safe maximum salinity for drinking water and between 10-30 times the salinity of most UK tap water (which is usually 200 ppm). The Tunbridge Wells sands are solely recognised as a secondary drinking water resource in the High-Weald area some 20+ km to the north-east of Broadford Bridge, where they are exposed at the surface (the overlying Weald Clay rock unit having been removed by erosion). Mr Warren's assertion is therefore, again, factually incorrect.
4. The Weald contains faulting, like all sedimentary basins underlying the UK. The Weald is not more highly-faulted than other onshore basins where hydrocarbons are known to occur. Perusal of the publicly available geological cross sections from the BGS (e.g. the BGS map sheet running through Guildford) and seismic data at UKOGL, demonstrate that faulting within the Jurassic (Kimmeridge) geological section does not penetrate upwards to surface through the Weald Clay Formation within the Basin. The exceptions to this are at the basin's margin underlying the North and South Downs escarpments and in the Central High-Weald area where the Weald Clay has been eroded and deeper faulting is exposed at surface i.e. far from Broadford Bridge.

   The impermeable Weald Clay, along with the deeper impermeable Jurassic Purbeck anhydrite, is described in literature (based on analysis of over 84 legacy wells) to provide a regional vertical barrier to the upward movement of Jurassic hydrocarbons to the surface. This explains why there are no oil seeps recognised in the Weald, except where the Weald Clay has been removed by erosion in the High Weald area. The only documented, six small natural oil seeps around Tunbridge Wells as cited by Dr. Richard Selley of Imperial College, London, fully support this conclusion. Seismic data over the well site, also publicly available online, demonstrates that faulting within the Jurassic section does not come to surface as it terminates at the base of the Weald Clay some 850 feet below surface.

   Furthermore, as is documented by the BGS and others, the vast majority of faults within the Weald trend east to west. These faults have been subject to Alpine-related compressional forces from the south and SSE for the past 38 million years. This fault orientation is thus closed to any possible upwards migration of fluids.

Another issue raised is that: "The applicant's Site Condition Report advises at paragraph 3.2.1, under the heading 'Environmental Statement Overview', that "there are no protected sites within 10km of the site. However, mapping at:

www.magic.defra.gov.uk/MagicMap.aspx

depicting the locations and extent of sites with designated protection, shows that there are 8 sites within 10 km of KOGL's site.

We acknowledge a typographical error by Celtique Energy in their original planning submission. KOGL corrected this error in the latest submission to the EA. There are no protected sites within 1 km of the site.

Mr Warren also poses the question: "How can you say 'Our drilling activity will have ZERO IMPACT on groundwater'? How can you ensure there is no accident with an HGV carrying oil or chemicals on the way in or out of the site?"

On the emotive issue of possible groundwater contamination, widely used by the opponents of fossil fuels, such as David Smythe and Graham Warren, to create fear within the general population, it is worth emphasising that our site at Broadford Bridge employs multiple safeguards to ensure that zero discharge occurs from the site. As we have pointed out many times, the site is completely underlain by a combined impermeable membrane and clay layer which permits zero fluids from soaking into the underlying rocks. Although the membrane was only laid in 2014, it was tested for integrity prior to operations, using a technique derived from testing landfill site membranes, a UK oil-industry first. This testing will continue regularly throughout the membrane's operational life. It should be noted that we do not even discharge rain water from the site, that is all collected in the perimeter containment ditches underlain by the membrane, collected, tested and sent to an EA approved waste recycling and disposal site near Bournemouth.

Discussion of drilling at Broadford Bridge is essentially irrelevant since the planning and EA public consultation process took place four or five years ago. All relevant regulatory approvals (EA, WSCC, the Health and Safety Executive and the Oil and Gas Authority) are in place. KOGL has already drilled through the shallow groundwater zone without incident. This zone has already been sealed behind two cemented steel pipes, with a third pipe being installed and cemented.

In addition, we are in the vanguard of the use of non-toxic biodegradable drilling fluids, as used by water companies for the drilling of public water supply wells and as approved by DEFRA. Our well, BB-1 has effectively been drilled to the same or better environmental and HSE standards as a water well drilled to provide public drinking water supply. There is therefore zero-risk to any aquifer, potable or non-potable, via our drilling process using the PureBore "potato-starch" drilling fluid. As previously described, there are no potable aquifers under or adjacent to our site and the site is zero discharge. This is how we can state that our operation has zero impact on groundwater.

All drilling fluids have been reviewed and accepted by the EA. Indeed, UKOG varied the original EA permit to replace Celtique's planned oil-based drilling fluid programme with the non-toxic, biodegradable zero hazard Pure Bore fluid. Mr Warren refers to a 211-page document of chemicals for the EA variation application for well testing. The document referred to is not a list of chemicals, but simply the Material Safety Data Sheets, required by HSE and EU law. The EA variation originally included all drilling and well testing chemicals. At EA's request, we have subsequently reduced the list to only those chemicals used and wastes generated during our programme. There are 12 chemical components on one A4 page, which is available on our website. Note that water is the major component used in our programme.

The roads around Broadford Bridge are already used by tankers carrying chemicals (including fertilisers) and oil, indeed many residents are dependent on these for their domestic heating. The potential for a large increase in these is very small – the Company is already actively investigating possible alternatives, including pipeline and rail transport, to remove any future HGV impact on the locality.

The site has been visited on a number of occasions by the Regulatory Authorities and only very minor changes have been requested and actioned.

Another issue we would like to clarify is our approach to accident and emergency issues in the area. Horsham is the nearest hospital for minor cases, but we acknowledge that Chichester Hospital and Redhill Hospital are is the nearest major facilities. In case of emergency it is the Emergency Services who decide where any casualty should be taken, not UKOG.

Mr Warren also raises the issue of climate change. We firmly believe that the world continues to need and use oil and gas and it is far better to produce it locally as this reduces transportation carbon emissions, provides UK jobs, benefits the local community through royalty payments, fees and taxes, and the oil is produced from a far more rigorous regulatory regime in the UK compared to importing oil from regions where procedures are more lax.

We would also like to comment on the use of a shrouded flare at BB-1. There will be no visible flame and gas emissions will be steam and carbon dioxide, as is normal when gaseous hydrocarbons are burnt in the air. Air emissions will be low. The EA have published details of KOGL's variation application on their website.

Finally, we would point out that our operation is far smaller than other unregulated commercial and agricultural operations in the immediate area. This can be readily checked by a perusal of google earth or maps. Also note that our BB-1 deviated well direction is in a north-north east direction rather than the NNW direction as stated by opponents.

Regretfully, we do not believe we can convince all our critics, but KOGL and UKOG are totally committed to continuing our open approach with significant efforts to minimise intrusion in the local area. We are also committed to continue an open dialogue with all parties including our neighbours, their elected representatives and the regulatory bodies to everyone's benefit.

STEPHEN SANDERSON
Executive Chairman & CEO
UK Oil & Gas Investments PLC