

In recent years the rolling green hills of Sussex and Surrey have been found to contain huge volumes of oil. **Will Dunn** spoke to the companies, campaigners and locals at the centre of the Home Counties oil rush

A blackness beneath the village green



In 1896, engineers working for the London, Brighton and South Coast Railway began drilling beneath the platform at Heathfield Railway Station in Sussex. As they passed 300 feet, the engineers discovered not the water that they had been looking for, but natural gas. For 35 years the gas burned in the station boiler and the platform lights, until the station was connected to the main grid and the well was sealed. For another half-century the hydrocarbons beneath the Weald – the Old English term that describes the wooded hills of Sussex, Hampshire, Kent and Surrey – remained for the most part unexploited until the 1980s when a number of companies drilled exploratory wells in the Weald that produced oil – but not at a scale that interested global firms. For decades these wells kept up a steady trickle of up to a

few hundred barrels a day until, in 2015, a flurry of headlines declared that new wells and extraction technologies could make the Home Counties an oil-producing region that could compete with the North Sea. Statements at the time suggested that there could be 100 billion barrels of oil in the Weald.

The headlines were not welcomed by everyone. In 2013 Michael Fallon, who was at the time minister of state for energy, prefigured the debate that was to emerge in the Weald when he told a private Westminster meeting that “the beauty” of the oil in the Weald Basin “is that of course it’s underneath the commentariat. All these people writing leaders saying ‘why don’t they get on with shale?’ – we are going to see how thick their rectory walls are, whether they like the flaring at the end of the drive.” Fallon’s



comments, though he never intended them to be made public, were prescient.

A protest against oil exploration in a wood near Balcombe, in West Sussex, began in 2012 and is still under way. Similar protests have emerged at other places in Sussex and Surrey, including Leith Hill, designated as an Area of Outstanding Natural Beauty. “Swampy and the Surrey stockbroker unite” wrote the *Daily Mail* at the beginning of this year, as middle-class villagers and campaigners joined forces to oppose drilling. Last month, tempers flared again as it was alleged that one company, Angus Energy, had drilled an extension to its well in the village of Brockham, without planning permission.

Brockham surrounds a large, triangular village green that is overlooked by houses, the village church and two pubs. The

green, archetypal among Surrey villages, has hosted cricket matches for centuries. WG Grace is said to have played here. A recent survey by a private investment firm listed the surrounding Mole Valley area as the second-most prosperous council area in the UK; and Zoopla lists the village’s average house price at over £650,000. But for Stephen Sanderson, the real value lies further down.

Sanderson, a petroleum geologist who has uncovered multi-billion barrel wells off the coast of Norway, is the executive chairman of UK Oil and Gas (UKOG) – the biggest company involved in exploring oil in the Weald. “We have interest in 12 licenses,” says Sanderson, “which is about 950 square kilometres. Our primary focus is on the Kimmeridge limestones. Think of the white cliffs of Dover – that’s limestone. We tested oil from two of these limestones, which cover pretty much the whole of the south-east of England, and got a stable flow rate of almost 1700 barrels a day. Compared to everything else in the basin, it’s an order of magnitude greater.”

The advantage of the limestones beneath the Weald, says Sanderson, is that “they’re naturally fractured,” meaning expensive and highly controversial fracking is not required. “It all results from the Horse Hill well. That was the first well drilled with modern data acquisition and analysis techniques. I looked at the data from it, and it didn’t fit with the existing model in the Weald, which stated that this Kimmeridge shale rock wasn’t ever buried deep enough to have generated significant volumes of oil. The Horse Hill well showed that to be incorrect. With that information I came to the conclusion that the Kimmeridge limestone is a viable target, and that there could well be a very decent prize in that. The rate that we got out was beyond my wildest expectation.”

The next stage for UKOG will be to conduct production tests, which it will do from the end of this year. At that point, says Sanderson, “we should be able to make a declaration of commerciality.” If commerciality of the Kimmeridge Limestone is proved at Horse Hill and UKOG’s other test wells, the question of

oil in the Weald will become much more significant. The whole region may become attractive to a new wave of developers.

One of the people hoping this won’t happen is Ada, a spokesperson for Brockham Oil Watch. Ada says she is “not part of this anti-fracking movement”, but that she became involved in scrutiny of oil exploration in the area “because it’s all happening on my doorstep.” Ada lives between Brockham and Leith Hill. “When we found out about what was happening it was a shock, especially at Leith Hill, because it’s an Area of Outstanding Natural Beauty. You go there and it’s like being in the mountains, it’s very special. Brockham is different, because there’s been a well there since 1987. People are used to it; they don’t have a problem with it because it’s out of sight.”

Ada found out about the Brockham well “because there was a camp by the side of the road. Originally, people in the village were just upset about the camp – they were slowing down lorries, blocking traffic on the lane. It’s generally quite a conservative village, politically, and the feeling was, what’s the fuss?”

That feeling changed abruptly on the 9th March, when a BBC news report alleged that Angus Energy had drilled without permission. “People here trust the regulatory system. They trust the Environment Agency to look after them. So when the news came out, it challenged that trust. There is interest, now from local people, and it’s mostly around these new [extraction] technologies.” The technology that most worries Ada and her fellow villagers is not fracking, but something less well-known: acidisation.

UKOG’s Stephen Sanderson says acidisation “has been around for 120 years or more. We use a dilute hydrochloric acid that dissolves the limestone. Most wells on the planet have a bit of dilute hydrochloric acid in there, to ‘clean up’ the well. We also use it to dissolve a little bit of the limestone immediately surrounding the well, so it allows a good connection from the fractures into the well. It’s not fracking at all. In order to frack a formation you have to inject very large amounts of liquid in, at very

Would you be happy with an oil well in your garden?

→ high pressures. To do that you need massive pumps, and permission from the Environment Agency. Acidisation is entirely misunderstood, and there's a huge amount of scaremongering going on. The techniques we use to drill through the rock are exactly those used by the water-well drilling industry."

Brockham Oil Watch, however, says there is a difference between what Sanderson describes and "matrix acidising, or acid fracking. The "acid wash" is a benign method of cleaning the well. But if you start pumping larger quantities that are squeezed into the formation itself, as opposed to the well, that is a different process. The industry will say that "we've got the same acid in our stomachs", but it's not just hydrochloric acid they're using. Other chemicals are pumped with it too." Ada refers to a study on acidisation carried out in California that lists 26 chemicals used in the process that are 'F' graded as hazardous. "Neurotoxins, carcinogens, developmental toxins. It's a nasty cocktail. Nothing like that study has been done in the UK. The impact on human health and the environment has not been evaluated."

Ada says the Leith Hill Environment Agency application includes a request to vary the permit to allow "acid squeeze", which she understands to mean matrix acidising, while the Markwells Wood application uses a vague definition to "muddy the vocabulary" around matrix acidising. "In California, they developed an equation to determine when acid washing becomes matrix acidising. It has to do with the size of the drill bit, the porosity of the rock and the volume of acid. That definition is quite clear. In the UK, there isn't anything like that."

It is not only new technologies that concern local residents, but the attitudes of the companies using them. Mole Valley councillor Clayton Wellman says amendments to planning applications at Leith Hill and Brockham were "passed straight up to Surrey", without local district councillors having the chance to give their opinions. "If it was all above board, that would foster trust," he says, but refers to one company as operating

"in an underhand way". Wellman does not oppose drilling per se, but he says it's vital to have "a strategic view, if this is something that's going to happen often."

Will it happen often? Joseph Gatdula is a senior analyst at Global Data, which provides intelligence on the energy industry (Global Data is also owned by the same parent company as the *New Statesman*). Gatdula says the question is not so much whether the oil is there, but whether you can make from getting it out. "The common method that's used in evaluating whether or not a discovery is economical is looking at the cost to develop it. How much is it going to cost per barrel of oil? That number can float from anywhere from less than five dollars to in excess of 100 dollars a barrel. Where it's more expensive, you generally need a higher [oil] price to justify it." Gatdula says that given "the cost of the wells in this area of the UK, in addition to the properties of the reservoir," Horse Hill "looks like it would probably warrant development at this point." However, Gatdula also points out that new extraction technologies benefit other producers, too. "It's a bit of a catch-22, where you develop this great technology but now it reduces the cost elsewhere. So now you're going to have to compete with the best metrics in places where it might be a lot cheaper to buy the same thing." The Weald is not likely to become a hotspot for the "supermajor" companies, but "smaller firms, without large pockets... this type of investment size fits that type of company." With investments and profit margins still comparatively small the Weald won't take off overnight, Gatdula concludes, but "It's got potential."

As production increases, the one certainty is that more disputes along similar lines to Brockham will arise between the UK's various regulators, energy companies pushing for margins, and the villagers who don't want to see oil wells springing up beyond their mullioned windows. After all, would Stephen Sanderson put up with an oil well at the end of his garden? "As long as I had a royalty on it," he answers, "yes."