All-Party Parliamentary Group on

# Deep Geothermal

## Wednesday, 4th December 2024, 10:00 - 11:30

Room M, Portcullis House, SW1A 2LW

Attendees

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| **Name** | **Affiliation** |
| Alison Monaghan | Head of Geothermal, British Geological Survey |
| Andy Jackson | Geothermal team, DESNZ |
| Catherine Burns | Geothermal team, DESNZ |
| Chris McDonald MP | MP for Stockton North, PPS to the DESNZ team |
| David Mackey | CEO, Carbon and Energy Fund |
| David Townsend | Founder and CEO, TownRock Energy |
| Diane Frachon | Director, SLB New Energy |
| Gary Edwards | Environment Agency |
| Jack Alderson | Miatta Fahnbulleh’s Private Office, DESNZ |
| James Naish MP | MP for Rushcliffe |
| Jonti Hobday | Managing Director, Marriott Drilling |
| Jordan Weddepohl | Senior Geologist, Arup |
| Kieran Mullan MP | MP for Bexhill and Battle, Chair of the APPG |
| Kishan Rana | External Affairs Executive, REA |
| Lisl Lewis | Business Development Manager, SLB New Energy |
| Lord Cameron of Dillington | Crossbench Peer |
| Madeha Ahmed | Geothermal team, DESNZ |
| Melanie Jans-Singh | Lead Technical Energy Advisor, DESNZ |
| Miatta Fahnbulleh MP | MP for Peckham, Minister for Energy Consumers at DESNZ |
| Monique Goldsmith | Bid Manager, Marriott Drilling |
| Noah Law MP | MP for St Austell and Newquay |
| Perran Moon MP | MP for Camborne and Redruth |
| Polly Tandy | Advisor Drilling Engineer, MWEM Services |
| Poppy Airey | Senior Policy Analyst, REA |
| Robin Jones | Kieran Mullan MP’s office |
| Rollo Maschietto | Public Affairs Manager, REA |
| Ross Glover | CEO, Star Energy |
| Ryan Law | CEO, Geothermal Engineering Limited |
| Sam Rushworth MP | MP for Bishop Auckland |
| Tom Grand | Chief Commercial Officer, Eden Geothermal |
| Trevor Hutchings | Chief Executive Officer, REA |

Actions

* REA to circulate DESNZ/Arup study to industry for feedback.
* KM’s office to check if the geothermal system on the parliamentary estate works.

Minutes

**Session with Minister Fahnbulleh MP: introduction to geothermal and the case for investment**

KM opened the meeting, thanked the Minister for attending, and began with an introduction to geothermal energy. He talked through information about the potential for geothermal energy available to us in the UK already, including at the Eden Project. He referred to the challenges posed by the North Sea transition in terms of employment, and how geothermal provides a solution. There are also opportunities to rejuvenate “left behind” communities across the UK.

KM explained how, during the 1980s-90s, the government came to a view on geothermal energy based on its capacity to provide electricity, rather than heat, which stunted its development especially relative to other countries. Many European countries went ahead with developing their geothermal industries.

KM referred to the risk and uncertainty inherent with geothermal projects. Nevertheless, the sector has managed to make some progress including the Eden Project. Meetings with the Treasury seemed to not recognise the wide spectrum of benefits associated with geothermal energy, even when DESNZ (and predecessor departments) did compared to e.g. solar and wind.

KM talked about a challenge facing us today – and the Minister’s challenge in particular – of decarbonising heat. The NHS has set ambitious net zero targets of its own.

KM developed a small-scale proposal that would involve bundling together a group of NHS sites, for example 10 hospitals. This would help tick a lot of boxes including increasing the scale, reducing the risk. There are a few hospitals that do sit above high-potential areas. The Public Sector Decarbonisation Scheme (PSDS) is the main route to acquire funding for these projects. Investors are very keen on opportunities, and the NHS and DHSC are also supportive of these projects. NL added that this may be the ideal kind of project for the National Wealth Fund. SR added there is also an angle from the New Towns agenda.

KM said about £15-20m of funding is being asked for from the PSDS to unlock £250m of private sector investment. The initial money would be used to acquire the sites, de-risk them – then the private sector can handle the rest. It is the de-risking that is key. Alternatively, it could be other public sector sites as well.

KM then opened up to the floor for comments and input.

PM talked about geothermal energy in his constituency where it is quite advanced, and there are wider plans around Cornwall. RL works in his constituency. RL’s company’s mission was to prove geothermal power was possible. In the next 5 weeks, they will switch on geothermal electricity for the first time in the UK. Contracts for Difference fundamentally underpin the investment for companies like his. His company develops power, heat and critical minerals – progress can be made in 3 areas on one capital investment. The problems KM referred to are specifically for heat-only projects. Investors need to know where the revenues are coming from. It was easier when there was the Renewable Heat Incentive (RHI).

RG talked about the contrast with Croatia, where his company works – the Croatian government is willing to drill its own wells to collect data for companies to then embark on their projects. RG referred to some of his company’s UK projects with hospitals via the PSDS. It’s a very “bitty” process. But with the energy available they have the potential to decarbonise all of heat in Manchester. Central government should start talking about decarbonising heat more – as Government’s focus so far has been on power. In addition to KM’s points, one of the benefits not yet mentioned was the stability of heat prices. In Croatia it is now 30% cheaper than gas.

KM talked about the RHI. There seemed to be a timing issue, as industry was not quite ready for it at the time, and then it was closed. JN said the main opportunity here is around scale. Other technologies are based around individual properties, whereas with geothermal it’s around wider swathes of property. Industry is there, it needs help to get over the line, with a sense of ambition – it can be a big win if government can stump up the initial capital. Referring to KM’s report, there are also major levelling up opportunities.

* SR referred to the map, showing some of the best potential areas are located in some of the most deprived communities in Europe. KM said 6 out of the top 10 most deprived local authorities as per the Government’s Levelling Up Index are deep geothermal areas. Nearly all of this money would be going to the most deprived areas.
* SR said in places like his constituency Bishop Auckland, there is an attempt to move forward with this.

DT provided some numbers: £30m into drilling, 6 full-scale exploration wells, in the right areas, £70m investment, connecting doublets to hospitals, private investors would be knocking down the door to put that money in once the drills have been drilled. Further, in areas like Manchester, you can expect £300m - £400m more over the subsequent 5 years. A small initial injection can lead to a much better investment opportunity.

TG talked about heat networks. There is a key opportunity for geothermal energy in decarbonising heat networks. At the moment, burning rubbish is causing problems for the viability of the heat networks due to carbon emissions. There are synergies from the development of heat networks, and the development of the geothermal industry.

TH re-emphasised the challenge of decarbonising heat and the importance of geothermal energy in meeting our net zero commitments. There are also linkages to the clean power by 2030 plan, as if geothermal energy can contribute to power then that reduces pressure on other power sources. There are many reasons to invest public funds, including through GB Energy, as well as adopting a better policy landscape. TH also offered any help the REA can offer to the Minister on these issues.

KM then asked MF if she had thoughts to share.

MF thanked the room for all the information, and that she will definitely be coming back in the future. She provided some context from her perspective, the Department is focussed on Clean Power 2030 and the Warm Homes Plan. The challenge of heat decarbonisation is not easy – a pathway that can be pursed at pace, at scale, in a way which is affordable, is the policy puzzle the Department is looking at.

MF is an advocate of heat networks, particularly urban areas, and is open to geothermal within that. The challenge with heat networks across the piece is the large capital outlay – and so how the private sector investment can be unlocked. The better the ratio of private/public investment, the easier it is to make the case within Government. MF is keen to work with industry on this. A proposition that involves private sector working with local and regional government, with clear community benefit, is a winning proposition.

MF asked 3 questions of the room.

First, on pace. If we were to get the catalytic investment, what’s the trajectory we’re looking at, to get to production?

* MF understands the main barrier to have been the Treasury view of the relative cost of technologies. The room agreed, pointing out that referring to it as a “nascent” technology is misleading given how well established it is in other countries; and solar and wind were also once very “nascent” and expensive before costs declined.
* DT pointed out the link to the power grid. The more we can lean on geothermal, the less you need electricity for heat pumps.
* In terms of the actual timeline, RG said that 2 hospitals could be supplied by the second quarter of 2026, if they were ready to start from now. This is not uncommon for the sector as a whole.

Second, on community benefits. MF is keen to be able to illustrate the long-term benefits of projects like this. For instance, the jobs and the stable heat pricing. A story that links decarbonisation to public benefits would help to sell it to the public.

* KM added that the public understands the variable nature of solar and wind, which is not the case for geothermal. There is also the case of the Eden Project, a real-life example which people know about and commands popular support.
* SR added that as time goes on, the cost of heating (from geothermal sources) will actually reduce as a proportion of household spending, thanks to the fact that the main large cost is the initial up-front capital.

Third, on the disadvantages of geothermal energy. MF asked why she might be advised by others to steer clear of geothermal energy in favour of other energies or technologies.

* The room talked about the risk inherent with the initial exploration. However, KM pointed out that other countries have taken the risk, gotten more data around potential wells, and then been better able to undertake projects, in an ongoing virtuous cycle of information, innovation and production. By contrast, the longer the UK takes to get started, the longer it takes for us to gather the information about the wells – we are in a vicious cycle of falling further and further behind the frontier.

KM also added that he has had conversations with the North Sea Transition Authority who are in principle willing to be the regulator in this space, if given that mandate.

TH talked about the synergies across the heat sector – including heat networks – as investment in the infrastructure would lead to a greater return overall.

KM said the climate change challenge is a capacity challenge to a large extent. There are parts of the economy that would be able to contribute to meeting our net zero commitments through geothermal that they may otherwise be unable to if the Government stuck to certain pre-decided sectors.

TG said that the environment has changed recently. Particularly the development of heat networks, as the delivery mechanism, as well as innovation in the geothermal industry – meaning greater long term benefits.

MF said she would love to continue the conversation, and this is a timely contribution as the Department is working on the Warm Homes Plan. She is definitely in the market for ideas as she tackles the challenges of heat decarbonisation. She is very keen to continue the conversation and take up our offer of help.

KM offered one final simple takeaway: a carve out of the PSDS would lead to the development of the proposal for the NHS sites.

MF thanked everyone for their contributions before leaving.

**Immediate reflections**

Following the Minister’s departure KM asked for immediate thoughts and reflections. DT and others said it was a well thought out, well-framed discussion.

LC said he mentioned geothermal in the Great British Energy Bill debate (Committee Stage in the House of Lords) that happened the previous afternoon. GB Energy could play an important role in providing seed funding for geothermal projects.

PM, who was on the Bill’s Public Bill Committee as it passed through the House of Commons, said that the next stage was to set its strategic objectives. This is where geothermal needs to be lobbying the Energy Secretary, and the chief executive of GB Energy, especially given how much competition there will be from other areas. Geothermal’s delivery mechanism is much closer, which makes it more politically attractive. KM agreed, saying it appeals to MPs in more marginal constituencies as they can have projects that they can talk about.

NL said the really exciting thing is the modularity of it, citing examples in Cornwall in particular, which also helps the investment case. The question is finding the initial catalytic funding with the longer time horizon.

TG said that whilst the concept of heat networks is great, we have to be careful about how geothermal energy fits into them. Investors will be looking at the timeframe for these investments.

DT said a quick win would be a framework agreement with the NHS. KM said there are multiple trusts have in principle agreed to pay the prices for geothermal as opposed to, for example, air source heat pumps.

* DT said one hospital wants to replace an ASHP with a geothermal system
* RG said we are cost competitive with heat pumps, but not with gas

RG said a proposal that included a revenue support mechanism along the lines of a feed-in-tariff for 12-15 years.

KM said the key is the first stage – securing an initial capital outlay to de-risk a number of NHS sites, the rest will flow from that. Multiple investors have said they would be willing to invest under such a proposal.

KM explained that this area lies between different ministers, the other being Michael Shanks MP. PM said Shanks will be visiting Cornwall soon. KM said both Ministers will need to agree to progress.

**Wider discussions**

DT talked about the 2 types of exploration digging: slim-hole drilling and full-scale exploration wells, and the pros and cons of each. NL asked DT about picking the initial batch of sites to drill. DT explained there are different factors that would have to be examined to find and filter sites where we have a higher confidence.

SR suggested there could be a degree of mandating with new developments, particularly under the New Towns programme. KM agreed and referred to the recent heat network zoning pilot programme being run by DESNZ.

GE spoke from the point of view of the Environment Agency (EA). The EA is in principle behind the developments in the geothermal industry but asked the room not to ignore public engagement or regulatory barriers. Pointing to the hype around shale gas there are some lessons for those seeking to dig, including for geothermal energy. A mechanism to smooth out the regulatory process would remove the “stop start” nature of developments, as happens with other energies.

* PM agreed and referred to the history of Cornwall, and how projects have dedicated public engagement leads to explain to the public what is happening to their environment. There are a lot of ‘myths and nonsense’ which will be amplified by the fossil fuel industry that can be levelled at these developments.

NL added that community ownership could help. GB Energy may provide the mechanisms to facilitate this. Not only can we look at template contracts for the companies involved in drilling, but also a template contract with the communities in which these rigs are located.

DT suggested the EA might be able to put time aside in their permitting department for geothermal applications, citing problems in an existing application.

* LC said that in Scotland there is no need for a licence for such projects.
* KM agreed it is probably a good idea for the EA to have a separate team to focus specifically on this industry.
* GE agreed with these comments and will bring them back to the EA.

RL said that Ed Miliband will come to a ribbon-cutting ceremony for a geothermal project.

KM asked attendees from DESNZ if they would like to offer their thoughts (insofar as they are able to).

MJS started by providing an update on the development of the geospatial platform, in conjunction with BGS. It is going well. A key thing being considered in the next phase is data-sharing obligations to ensure value for public money from this data. They are currently in an exploratory phase – looking at what can be done, how it can be used to support growing the industry, and screening areas for potential. She said she is open to involvement from industry in the platform’s development.

AM provided an update on the platform on behalf of the British Geological Survey (BGS). The Survey is targeted at local authorities and other stakeholders who do not necessarily already know a lot about geothermal energy, rather than the people in this room. It will also show where there is potential, linking with the work done by Arup on ballpark costs. In the future it could incorporate new information and data-sharing obligations.

AJ asked the room if there are any lessons we could learn from other countries where geothermal has been pursued successfully, and if there are any things we should do differently in the UK?

* Attendees said other countries are more advanced in their development of heat networks, more enthusiastic about decarbonisation, as well as mechanisms for risk insurance, and their respective industries are backed by their governments
* There are greater databases, and data-sharing, between authorities and industry.
* A comparison was made to the success of Paris and the potential of Manchester.
* It was also mentioned that projects in other countries tend to be between state-owned utilities and local government authorities – perhaps in the UK we should look to give Local Authorities more resource, then utility companies with a long-term investment horizon may be able to come in. DT said Vattenfall Heat UK has done more long-term visioning for heat in UK cities, than actual UK cities.
* LC added that in other countries there is a greater culture of community heating systems, which we currently lack in the UK.

DM said geothermal is quite advanced, with several projects in the pipeline with the NHS.

JW provided an update on the study Arup conducted for DESNZ. The study is currently being considered by senior DESNZ officials undergoing the final stages of review. We are expecting the study to be published early next year. He said he encourages critical feedback from industry. The study will contain a lot of data and complex models, and hopes it can be used as a messaging tool.

* Asked about these models, JW explained there were questionnaires sent to industry as well as bilateral meetings with industry representatives, including some in the room.
* CB said DESNZ is happy to float the study on a preliminary basis, if anyone is interested. KM asked REA to circulate this invitation to the whole group. MJS added that, when it is read, it will contain a lot of estimates for theoretical costs, and demand, and are not based on actual examples. Real specific sites might be considered in a next stage.

JW said key messages will be around timescales, the transition from first of a kind to “nth” of a kind, cooling, CHP, lithium (despite limited data). He reiterated that discussions with industry ahead of the official release would be welcome and is keen to be singing from the same hymn sheet as the sector.

AM flagged an upcoming report from the International Energy Agency on geothermal, which will be published on 13th December, which may be of interest to those in the room. She also asked what information would be useful to attendees from the BGS, and how they could work better with industry so she can take comments back to her colleagues.

* DT suggested a quick geological peer-review service, combining geologists from the BGS and from industry, would allow a quicker narrowing of the pool of viable sites as it would incorporate commercial concerns.

DM said we have to think about how these projects are carried out. For private sector developers, it is not in their interests to share information.

PT said they have rescheduled their intended rig site visit from November to spring (TBC). The plan will be to showcase the rig, explain how it functions, as well as explain geothermal more broadly. KM suggested she include Minister Fahnbulleh in her invitations.

KM said we should check to see if the geothermal system on the parliamentary estate works.

KM thanked everyone for coming and said he will be following up with the Minister as well as other Ministers in the Department. He then brought the meeting to a close.