



Chapter 6

Who Owns the Heat? Navigating Subsurface Rights in the United Kingdom's Legal and Regulatory System

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There is no obvious national legal framework in place for the ownership, licensing, and management of geothermal heat in the UK. Geothermal projects are in various states of development across the country, but reaching the scale outlined in this report will require a clearer path forward. Luckily, with existing laws and regulations as precedent, improved government focus on geothermal would create that clarity and enable the nation to scale the use of this resource.

With granite deposits, sedimentary basins, and thousands of abandoned mines, the United Kingdom is well suited to make geothermal a cornerstone of its transition to a clean energy future. The resources, technology, and infrastructure that could make the UK a leader in harnessing the Earth's heat for power securely and cleanly are already available.

To build a robust geothermal industry, all stakeholders—including policymakers and developers—must have an understanding of the laws and regulations that would govern the industry: What laws and systems could be considered precedents? What is missing for a legal framework? And what needs to be implemented for geothermal to have the legal and regulatory certainty to scale?

More specifically, with geothermal in mind, the following questions need answers: Who owns the surface land needed to access the underground resources? Who owns the underground resources needed to produce geothermal energy? What laws govern the use of the underground resources that are necessary for geothermal development? And, in the United Kingdom, are geothermal resources established as minerals or not? (This question is important because the mining, mineral extraction, and oil and gas industries offer a precedent for the use of minerals.)

In a perfect world, the answers to these questions would be clear so that public and private entities can access and use the subsurface heat without confusion. And in some parts of the UK, questions around land, surface,



and subsurface ownership—and therefore the leasing or severing of resources—are relatively simple to answer.

On the other hand, the governing of land use is very local for the most part. The British Geological Survey (BGS) points out that the legal framework for land-use planning “is largely provided by town and country planning legislation.”¹ That means governing systems can be different in different places. On top of that fact, there is no definitive answer to the question of whether or not geothermal resources count as minerals. Unlike other resources such as groundwater or gas, geothermal energy is not currently recognised by law as a natural resource in the United Kingdom. In other words, because there has not been a lot of development of geothermal in the UK so far, the legal and regulatory framework for geothermal energy development remains underdeveloped.

Specific recommendations for developing a legal framework and supporting a robust geothermal industry can be found in Chapter 5. To provide a sense of the precedents and possibilities for building clarity around an industry, this chapter looks at what legal and regulatory structures exist; what agencies and entities currently govern subsurface land use and development; and, in particular, the laws and regulations governing the mining and oil and gas extraction industries (because of these industries’ similarities with next-generation geothermal). Policymakers might also look to other European countries with developed geothermal energy resources—such as Germany, the Netherlands, or France—for a legal framework.

LAWS AND PRECEDENTS

An important first step in developing geothermal energy is to clarify who owns the heat in the Earth’s subsurface. Because of the transfer of certain powers from the UK Parliament to regional governments, however, not all parts of the UK are governed the same way, which can complicate geothermal endeavours.

The basic principle in England and Wales is that the owner of a surface estate is presumed to own everything up to the sky and down to the centre of the Earth. This principle was reaffirmed in the 2010 UK Supreme Court decision of *Star Energy Weald Basin Limited v Bocardo SA*. (In this decision, Lord Hope concluded that “the owner of the surface is the owner of the strata beneath it, including the minerals that

are to be found there, unless there has been an alienation of it by a conveyance, at common law or by statute to someone else.”²) However, this idea does not always apply.

There are statutory regimes for certain mining activities. For example, most coal interests are held or licenced by the Mining Remediation Authority, even when those mines extend beneath land owned by others.³ Landowners typically have air space rights only to certain heights (aircraft flying overhead, for example, would not generally be considered trespassing).⁴

Similarly, the default position is that the owner of a parcel of land also owns the minerals underneath it and is able to grant leases of those minerals. Based on this notion, the practical assumption is that a landowner can also permit others to extract and use subsurface heat and steam, though there is no settled authority or legislation to this point specifically. (This idea can also get complicated depending on the classification of geothermal resources, as discussed in the following section.) This assumption is similar to the right that landowners have to extract water running through or percolating below their land, even though the water itself does not form part of the land (as affirmed by the Court of Appeal in *Stephens v Anglian Water Authority*,⁵ though some statutory limitations may apply).

It is worth noting that the rights to mines and minerals can be transferred separately from rights to surface land,⁶ and a mining lease can likewise be granted for purposes of working mines and minerals.⁷ The extent of the minerals excluded from the land (or included in the lease) will depend on the contractual wording in an original transfer or lease documentation. In most cases, these documents are historic and will not include any reference to geothermal energy, so the entitlement to use these subsurface natural assets will be unclear as a matter of contractual interpretation.

As a result, the use of these resources would depend on the specific context and wording of property transfer documents and leases.⁸ If a landowner grants rights for the purposes of extracting geothermal energy from the subsurface, then it is prudent for the documentation to be clearly drafted to permit the extraction of heat and any other necessary activities that must take place on the land for the purposes of developing and operating the geothermal plant.



Another practical issue that often arises is that while the Land Registry provides a definitive record of the legal ownership of most surface land in England, this is not always the case for ownership of subsurface mines and minerals, which is often not clear from the public record. The information might be found by inspecting the title deeds, but often there is no definitive answer, and title indemnity insurance is typically obtained where there is doubt about ownership.

DEEP GEOTHERMAL

In 2015, Parliament passed the Infrastructure Act,⁹ which established the right to deep exploration (300 metres or more below the surface) in the UK for geothermal energy purposes. But the legislation did not outline any new provisions for accessing the deep-level land, meaning developers would still need to negotiate with the relevant surface landowners (and mineral owners, if they are different) before moving forward with exploration.

Subsurface Geothermal Resources: Minerals or Not?

Today, the state owns or has licenced subsurface rights to (for the most part) oil, gas, coal, gold, and silver. It does not, by default, own other mineral rights in the UK.

The Law of Property Act 1925 clarifies that the term *mines and minerals* in the UK includes “any strata or seam of minerals or substances in or under any land, and powers of working and getting the same.”¹⁰ Beyond this clarification, there is no single, codified definition of minerals in English land law.

The BGS says, “In the UK, ‘minerals’ are defined in town and country planning legislation as ‘all substances in, on or under land of a kind ordinarily worked for removal by underground or surface working, except that it does not include peat cut for purposes other than for sale.’” The BGS adds that minerals are “valuable assets and vital to a modern economy” and that they underpin the manufacturing, construction, and agriculture industries. Additionally, “society enjoys important benefits from their extraction and use through their contribution to wealth creation, infrastructure, housing and consumer needs.” Further, the BGS says the overall aim of mineral planning is “to ensure that a steady and adequate supply of minerals remains in place to meet the demands of society at all times.”¹¹

While none of these definitions make it clear that geothermal energy is treated as a mineral, it could be argued that geothermal resources are—like minerals—valuable assets and vital to a modern economy.

Planning Permission

Today, deep geothermal projects in the UK require navigating a complex web of permits and regulations, most of which were not written with geothermal energy in mind. The process primarily involves local planning authorities, the Environment Agency for environmental permits and the Mining Remediation Authority for access to coal seams. Environmental permits are needed for reinjection or discharge of geothermal water, while planning permission is required from local authorities. Access to coal seams or abandoned coal mine workings necessitates an agreement with the Mining Remediation Authority. The co-production of critical minerals (such as lithium) is increasingly being considered, and while co-production can enhance a project’s viability, it might further complicate planning, permitting, and legal aspects.

In the UK, “the legal framework for land-use planning is largely provided by town and country planning legislation. This aims to secure the most efficient and effective use of land in the public interest, and to reconcile the competing needs of development and environmental protection.”¹² The steps a public or private entity would need to take to launch a geothermal project could be dependent on, region by region, planning department by planning department.

In other words, local planning authorities are responsible for granting planning permission for a geothermal scheme. Permission from the local planning authority is also required for borehole construction and wellhead development. Additionally, these entities decide whether an Environmental Impact Assessment (EIA) will be required as part of the planning application. In cases that do require an EIA, the applicant must prepare and submit an Environmental Statement that identifies any “significant” (above-ground) environmental effects that a development is likely to cause. Developers must also outline the measures they will take to avoid, prevent, minimise, monitor, and, if possible, offset adverse effects on the environment. Planning submissions need to address ecological impact, transportation, flood risk, pollution of watercourses, and biodiversity net gain, as well as



ground movements (induced seismicity) arising from drilling, borehole construction, reservoir development (well testing and production enhancement), and operation of a geothermal scheme. (For more about policies, environmental benefits, and potential impacts, see Chapter 5, “Clearing the Runway: Policies and Regulations to Scale the United Kingdom’s Geothermal Potential,” and Chapter 7, “Environmental Stewardship in an Energy-Abundant Future: Considerations and Best Practices.”)

The EIA regime includes a provision that—while not specific to geothermal—could apply to geothermal drilling. It relates more broadly to energy and infrastructure projects, including thermal power stations and other combustion installations. The provision would apply only to a select set of geothermal energy projects that fall into one of five specific categories set out in the legislation: (i) those that have a heat output of 300 megawatts or more; (ii) those that abstract or discharge of 10 million cubic metres of groundwater or more per year, are in a sensitive area (as defined in the legislation), or have an area of the works exceeding 1 hectare of land; (iii) those where the area of drilling works exceeds 1 hectare or is within 100 metres of controlled water or within a sensitive area; (iv) those that produce or carry electricity or hot water and the area of development exceeds 0.5 hectare or 1 hectare, respectively, or is a sensitive area; and (v) those that form part of an urban development of more than 1 hectare (including more than 150 dwellings) or that are within a sensitive area.¹³

Of course, local planning authorities can ultimately decide whether to approve or refuse geothermal development in the areas they govern. Public consultation is an essential prerequisite for any geothermal development in the UK as well. The opinion of the local community can often have a significant impact on the decision taken by the local authority about whether to grant planning consent for geothermal development. In addition, the Mineral Planning Authorities may prevent development if a proposed development area falls in Minerals Safeguarding Areas—that is, areas where the government has determined that a mineral deposit needs to be safeguarded from non-mineral development. Planning consents may be for a full project, or they could be hybrid consents, in which full consent is issued for early stages (such as site preparation, drilling, and well testing) and outline consent is issued for the subsequent stages. The Health and Safety Executive also needs to be notified about and

satisfied with the location of a proposed new geothermal development within a former mining area.

Environmental Permission

Environmental regulators regulate activities that may cause pollution or pose a risk to the environment. Agencies include the Environment Agency, National Resources Wales, Scottish Environment Protection Agency, and the Northern Ireland Environment Agency. Legislation and guidance currently in place, as well as how they are interpreted in relation to geothermal projects, can be confusing for the developer, regulators, and stakeholders. Further consultation between these organisations would help clarify and standardise the process.

For deep geothermal projects, these entities would regulate both water abstractions from and discharges to the environment, as well as the management of naturally occurring radioactive material in areas where such materials are expected to be co-produced with the geothermal water. For England and Wales, regulations usually require a groundwater investigation consent and an abstraction licence for projects that abstract more than 20 cubic metres of groundwater per day. The impoundment of water at the surface only requires consent from the Environment Agency if the volume exceeds 25 million litres. (For more information, see Chapter 7, “Environmental Stewardship in an Energy-Abundant Future: Considerations and Best Practices.”)

WHAT TO DO NEXT: DEVELOP A NATIONAL GEOTHERMAL STRATEGY

Stakeholders have a general consensus that a clearer “route to market” and streamlined legal and regulatory paths are needed to promote the development of the geothermal sector in the UK (see Chapter 5, “Clearing the Runway: Policies and Regulations to Scale the United Kingdom’s Geothermal Potential.”) In a 2023 review of geothermal energy policy in the UK for the journal *Energy Policy*, McClean and Pedersen describe the UK’s current geothermal energy approach as “piecemeal” and call for the establishment of a “regulatory regime” for these resources.¹⁴

The creation of a national geothermal strategy would therefore represent a major improvement to the current scattered system.



CHAPTER REFERENCES

- 1 MineralsUK. (n.d.). *Legislation and policy*. British Geological Survey. <https://www.bgs.ac.uk/mineralsuk/planning/legislation-and-policy/>
- 2 *Star Energy Weald Basin Limited and another (Respondents) v Bocardo SA (Appellant)* [2010] UKSC 35, paragraph 27. <https://www.supremecourt.uk/cases/uksc-2009-0032>
- 3 The licences were originally transferred to the Coal Commission under the Coal Act 1938 in return for compensation.
- 4 *Lord Bernstein v Skyviews and General Ltd* [1978] QB 479.
- 5 *Stephens v Anglian Water Authority* [1987] 1 WLR 1381.
- 6 See *Law of Property Act 1925* s.205(1)(ix), which defines *land* to include “land of any tenure, and mines and minerals, whether or not held apart from the surface, buildings or parts of buildings (whether the division is horizontal, vertical or made in any other way).”
- 7 See *Law of Property Act 1925* s.205(1)(xiv), which defines a *mining lease* as a lease for mining purposes—that is, the searching for, winning, working, getting, making merchantable, carrying away, or disposing of mines and minerals, or purposes connected therewith, and includes a grant or licence for mining purposes.
- 8 See *Aldridge Leasehold Law*, Part 3, Chapter 1, Section 3, Subsection 1, and *Earl of Lonsdale v Attorney-General* [1982] 1 WLR 887.
- 9 See *Infrastructure Act 2015*, section 43. Note that the act was primarily introduced to support the extraction of shale gas by preventing nearby landowners from obtaining an injunction for trespass of deep-level land. Section 45 of the act also permits regulations that create governing payments with respect to the relevant land, but no such regulations have yet been introduced.
- 10 *Law of Property Act 1925*, s.205(1)(ix).
- 11 MineralsUK, n.d.
- 12 MineralsUK, n.d.
- 13 Government of the United Kingdom. (2017). *The Town and Country Planning (Environmental Impact Assessment) Regulations 2017*. <https://www.legislation.gov.uk/uksi/2017/571/contents>
- 14 McClean, A., & Pedersen, O. W. (2023). The role of regulation in geothermal energy in the UK. *Energy Policy*, 173, 113378. <https://doi.org/10.1016/j.enpol.2022.113378>

