CHAPTER 3
ENERGY POLICY CONTEXT



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INTRODUCTION

3.1 The following chapter sets out the energy policy context to the proposed development.

ENERGY POLICY

White Paper: "Meeting the Energy Challenge" (2007)

3.2 The 2007 White Paper: "Meeting the Energy Challenge" sets out the United Kingdom's (UK) Government's international and domestic energy strategy to address the long term energy challenges faced by the UK.

3.3 The White Paper identifies two long-term energy challenges:

- Tackling climate change by reducing carbon dioxide emissions both within the UK and abroad; and
- Ensuring secure, clean and affordable energy as we become increasingly dependent on imported fuel.

3.4 A number of policy goals are set out including:

- To put the UK on a path to cut carbon dioxide emissions;
- To maintain reliable energy supplies;
- To promote competitive markets in the UK and beyond, helping to raise the rate of sustainable economic growth and to improve productivity; and
- To ensure that every home is adequately and affordably heated.

The Climate Change Act (2008)

3.5 The Climate Change Act introduced a legally binding target of at least an 80% cut in the UK's carbon account by 2050 and a reduction in Carbon Dioxide (CO2) emissions of at least 26% by 2020 (against a 1990 baseline).

3.6 In April 2009 the Government set a requirement for a 34% cut in emissions by 2020, in line with the recommendations of the Committee on Climate Change.

UK Low Carbon Transition Plan (2009)

3.7 The UK Low Carbon Transition Plan (the Plan) details the actions to be taken to cut carbon emissions to legally binding levels by 2020.

3.8 The Plan sets out a number of goals including:

- Driving decarbonisation.
- Supporting new technologies and infrastructure.
- Securing energy supplies by ensuring a supportive climate for the substantial new investment needed to bring forward low carbon infrastructure.
- Helping UK low carbon and energy businesses to grow.
- Protecting the environment by making the most of measures which bring wider environmental benefits and minimising impacts where they are avoidable.

3.9 The Plan identifies that space heating within buildings makes a significant contribution to green house gas emissions in the UK. For example, the energy that households use to heat their homes and water accounts for over 80% of total household energy use, which corresponds to 13% of the UK's greenhouse gas emissions, whilst around a sixth of the UK's greenhouse gas emissions are generated as a result of heating workplaces.

3.10 The Plan underlines the UK's dependence on imported natural gas to generate this heat. The Plan identifies that in 2008 the UK imported about 25% of the gas that it used and projections suggest that by 2020 this could rise to around 60%. The Transition Plan aims to reduce this to 45%.

3.11 The Plan sets out steps to reduce UK gas demand across the economy by 27% compared to 2008 levels. If these targets are met emissions from heating UK homes will fall by 29% by 2020.

3.12 A number of actions are set out in the Plan including incentives for producing renewable electricity, introducing energy efficiency measures and more onerous building standards. The Plan also sets out a key initiative to incentivise energy consumers to use heat from renewable sources known as the 'Renewable Heat Incentive' (RHI). The RHI is described in more detail below.

3.13 Deep geothermal energy is identified as a key industry in the overall UK renewable energy mix. The Plan identifies that bringing new and innovative technology to market is essential not only for UK businesses to compete in the low carbon market, but also as part of the global effort to combat climate change effectively. The Plan sets out that with appropriate support, deep geothermal energy could become a significant player in the UK's energy landscape.

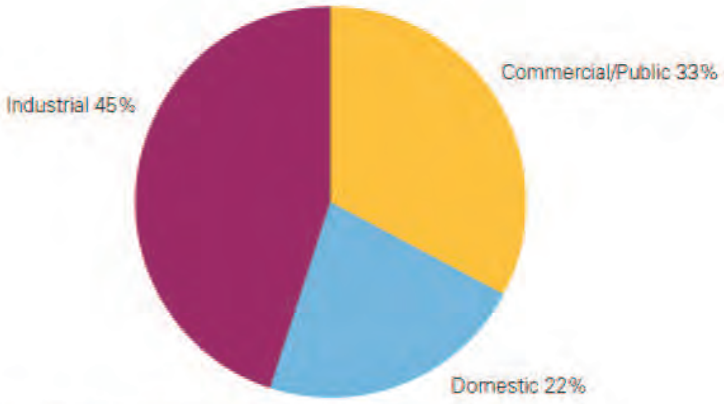
Renewable Energy Strategy

3.14 The Renewable Energy Strategy (RES) sets out the UK government's approach to tackling climate change, reducing the UK's emissions of carbon dioxide by over 750 million tonnes between now and 2030. It includes targets for reducing emissions of CO2, promoting the security of energy supply, reducing overall fossil fuel demand and reducing gas imports.

3.15 Alike the Transition Plan the RES sets out that the UK heat market is dominated by non-renewable technologies with only around 1% (7.7TWh) of total heat demand currently from renewable sources.

3.16 The RES sets out that by 2020 12% (72TWh) of the UK's heat could come from renewable sources, supplying the equivalent of 4 million households. Illustrative sector contributions to this target are set out in Diagram 3-1.

Diagram 3-1
Illustrative Sector Contributions to Renewable Heat in 2020



Source: DECC internal analysis based on NERA (2009)

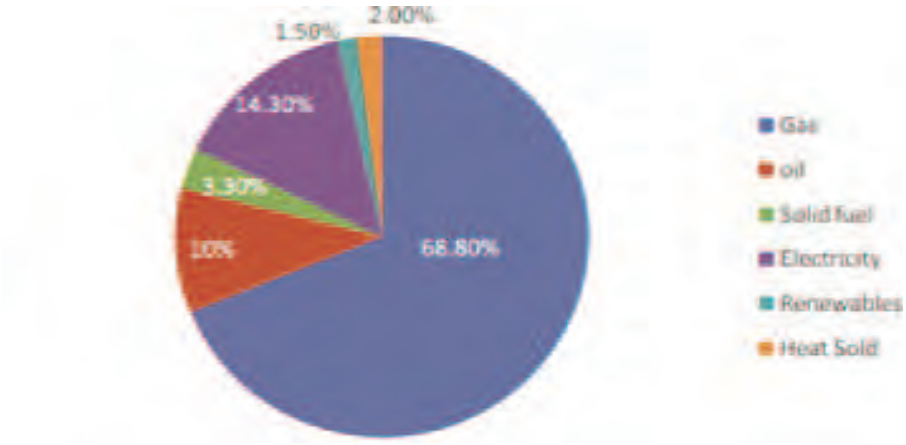
3.17 The Strategy describes that the precise breakdown of the 2020 renewable energy target between technologies will depend on how investors respond to the incentives the UK government puts in place.

RENEWABLE HEAT

UK Heat Market

3.18 In the UK, 47% of final energy consumption is for heating, the majority of which is sourced from non- renewable sources, refer to Diagram 3-2.

Diagram 3-2
Analysis of Energy Consumption UK Data: Digest of Energy Statistics (2008)



3.19 Nearly 8 in every 10 people in the UK lived in an urban area in the UK in 2001. Of this 41% (19m) were concentrated in the UK's 10 most populous urban areas. Universities, hospitals, nursing homes and industry are widespread in urban areas. This concentration of population and business with space and hot water heating needs, offers a readymade and concentrated market for renewable heat.

3.20 As gas is the dominant source of heat supply and generation, the question arises as to how to substitute gas in these urban areas with a low carbon solution where typically planning and spatial issues represent a significant challenge. Large scale renewable heat generation technologies include biomass, heat pumps and geothermal energy.

3.21 Geothermal energy is considered as a large scale base load renewable energy technology.

The Renewable Heat Incentive

3.22 In November 2011, the Department of Energy and Climate Change introduced the Renewable Heat Incentive (RHI), a support mechanism to incentivise and increase the deployment of renewable heat in the UK. Geothermal energy is one of a number of eligible technologies.

3.23 The RHI is made available to eligible technologies for a 20 year period and is index linked to the Retail Price Index on an annual basis. Geothermal energy is recognised as an eligible technology under the RHI scheme and will receive a designated tariff for renewable heat generation.

3.24 The RHI will help drive a significant increase in the level of renewable heat. The Government is committed to the ambition that by 2020, the RHI could save up to 44 million tonnes of CO2, if the 12% 2020 target is met.

Manchester City Centre Heat Network Strategy

3.25 In this Strategy[i] the Council outlines its 2020 vision to emit 41% less CO_2 than its 2005 levels by means of driving, co-ordinating and facilitating the development of heat clusters in identified areas of the City.

3.26 One such cluster identified is the 'Corridor Cluster', which is area that runs from north of the Mancunian Way to the southern end of the University of Manchester campus, with a heat load of approximately 520 GWh per annum. These heat clusters are to provide low carbon heating to new and existing buildings in the area.

3.27 The Strategy also sets out plans to develop a district heating network throughout the city centre with a view to reducing carbon emissions and reducing exposure to international fuel price fluctuations. The Strategy sets out that such a network could save around 160 k tonnes of CO_2 per annum or roughly 5% of Manchester's total current carbon emissions through development of this cluster.

3.28 The strategy highlights the technical feasibility of developing this network around the city centre area and the Oxford Road corridor.

District Heating

3.29 While district heating has been deployed in the UK since the 1950s it has achieved only a low market penetration and currently provides less than 2% of UK heat demand.

3.30 This is in notable contrast to the position in many other European countries in Finland and Denmark for example, district heating is the dominant heat source accounting for 49% and 60% of total heat supply respectively. In Vienna district heating provides 36% of the city's heat supply including over 270,000 domestic households.

3.31 A recent DECC Report identified that that in the right conditions, district heating could supply up to 14% of the UK heat demand, and be a cost-effective and viable alternative to individual renewable technologies, at the same time as reducing bills for consumers.

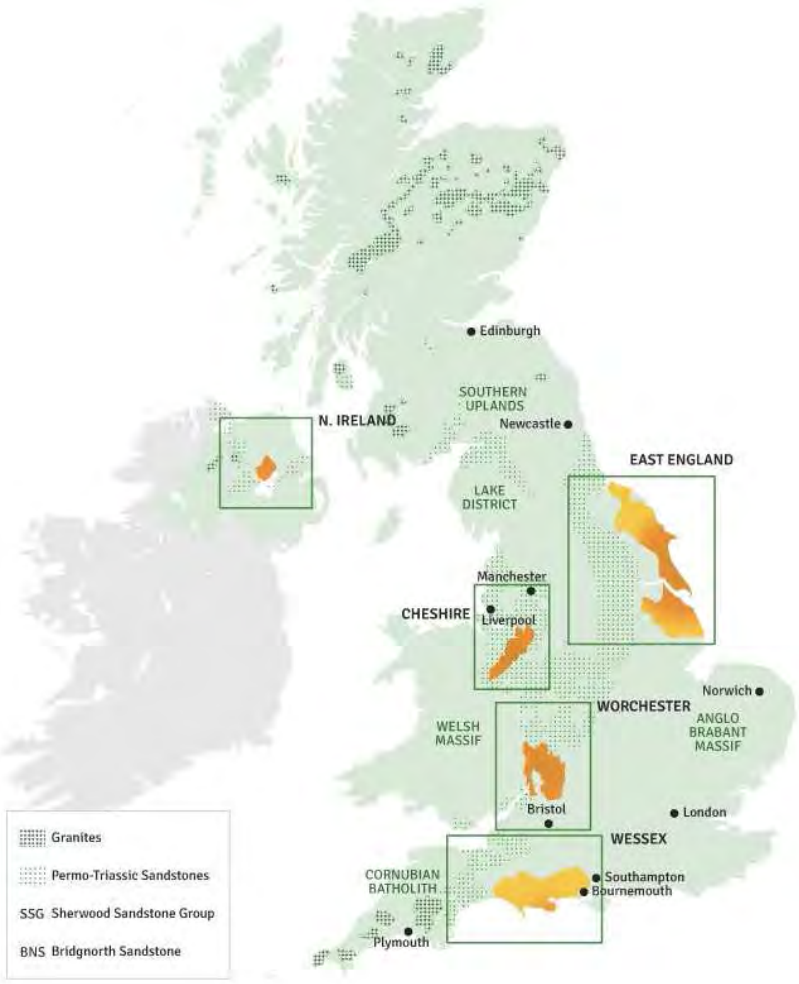
GEOTHERMAL ENERGY

SKM Geothermal Resource Assessment of the UK

3.32 The geothermal potential of the United Kingdom has been extensively described and calculated in numerous studies completed in the 1970s and 1980s. These studies highlighted that temperatures between 60 C and 100 C were present between depths of 2km and 3.5km ideal temperatures and depths for economically harnessing geothermal energy.

3.33 More recently, an independent resource assessment carried out by SKM Consultants, a leading consultancy firm with direct involvement in the development of over 3,000MW of geothermal projects across 20 different countries, identified a geothermal resource potential of over 100GWth. Importantly, they estimated that 4GW, equivalent of 4% of the resource potential, could be installed by 2030.

Diagram 3-3
Geothermal Resource Assessment of the UK



Geothermal Potential of Manchester

3.34 Studies during the 1980s on the geothermal potential of the UK, and more recently, the SKM Geothermal Resource Assessment of the UK have highlighted the Cheshire Basin as a potential area suitable for the harnessing of geothermal energy. The city of Manchester and the Greater Manchester city region are located over the Cheshire Basin and the potential heat density of these areas make it an ideal location to investigate the potential to harness geothermal energy further.

Diagram 3-4
Geological map of the UK & Cheshire basin



[i] City Centre Heat Network, Manchester City Council, 2011