

DATE *Dec 2007*

GROUND SOURCE

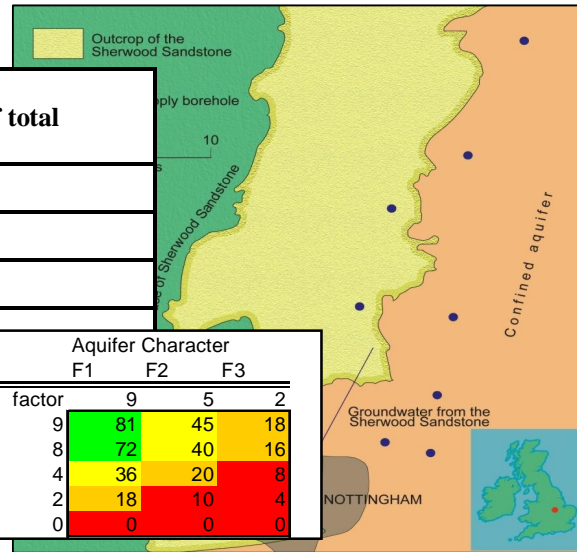
PROJECT *Strategic assessment of UK Open-Loop viability*

HEATING & COOLING

SUBJECT *Ground Source Heating and Cooling*

| 307 Locations; England, Wales & Scotland | Number | % of total |
|---|------------|------------|
| High Potential | 30 | 10% |
| Good Potential | 36 | 12% |
| Medium Potential | 47 | 15% |
| Low, poor, no potential | 194 | 63% |

| | Aquifer Character | | |
|----|-------------------|----|----|
| | F1 | F2 | F3 |
| | factor 9 | 5 | 2 |
| P1 | 81 | 45 | 18 |
| P2 | 72 | 40 | 16 |
| P3 | 36 | 20 | 8 |
| P4 | 18 | 10 | 4 |
| P5 | 0 | 0 | 0 |



Strategic assessment of Open-loop ground-source viability:

Assessment of hydrogeology and thermogeology; England, Wales and Scotland

Carbon Zero Consulting (CZC) was contracted to provide a UK-wide assessment of potential for development of open-loop ground-source heating and cooling. This technology has the potential to provide renewable heating and cooling at a fraction of the cost of traditional gas, oil and electric alternatives.

The client has a large number of sites throughout the UK, all with a significant heating and cooling demand.

Open loop systems are dependant upon the available yield of groundwater at the site, the type of aquifer beneath the site and the nature of water flow through that aquifer. There is no single data set available that can provide all of this information without additional hydrogeological analysis and input

The volume of data and number of sites required the use of a Geographical Information System (GIS) to plot all of the site locations and overlay geological, hydrogeological and thermogeology information.

The output provided a visual reference for site viability, and also provided the basis for the development

of a ranking system for each site.

The ranking divided sites into categories from lowest to highest potential.

A list of sites with good to high potential is now being considered further for open-loop ground-source project development.

Sites ranked as medium to low potential will come back into consideration for closed-loop ground source development as this does not require the presence of an aquifer, although greater financial outlay land area is required.

