



**Geo-Environmental**

# Supporting Renewable Energy Infrastructure

- Site Risk Assessment
- Environmental Consultancy
- Geotechnical Consultancy
- Remediation and Validation

Geo-Environmental Services is an International Geotechnical and Environmental Engineering Consultancy, part of the Geo-Environmental group of companies. Our consulting engineering team consists of Degree and Masters qualified consulting engineers, and include; Chartered Geologists, Chartered Environmentalists, Chartered Scientists. This experience is backed up by our use of the latest technology to support our investigations, a fully integrated management system, a range of health and safety accreditations and our membership of a range of industry bodies.

The disciplines of geotechnical and environmental engineering have as an important role to play in the installation of renewable energy infrastructure, as they do in any other energy infrastructure. We can help by providing services to assess and provide solutions to the following:

- The ground conditions, hydro-geology and geology beneath a site are critical to geothermal and hydro-power projects, as the ground acts as a medium for the heating process. Wind turbines, solar PV and any associated buildings at a site will require foundations and therefore an understanding of the geotechnical characteristics of the ground to support these. Finally, any cabling and piping to/from the site will also require an assessment of ground conditions to evaluate the feasibility of various anticipated construction methods.
- Environmental issues also need to be considered. For example; bio-gas has the ability to produce leachates or emissions, geothermal and hydropower have the potential to contaminate groundwater and change the temperature of ground conditions, if potential risks are not assessed and mitigation measures considered. Finally there is a growing trend to situate renewable energy sites on contaminated land and an assessment is required to ensure contamination is not mobilised, posing a risk to human health.



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# Russel Way | Case Study

## Services Supplied on this Project:

- Geological assessment for commercial ground source heat pump project.
- Sizing of heat pump units and ground-loop.
- Laying out of the borehole array.
- Market costing exercise.
- Project feasibility assessment.

## The Project

EDF Energy are considering installing renewable energy at their Russell Way site in Crawley West Sussex – a large four storey office that would eventually accommodate 400 individuals and had an initial estimated heating requirement of 200kW and 400kW of cooling load. It was suggested that a patch of vacant ground on the margins of the car-park to the front of the building could be used for the borehole array for the GSHP. Our brief was to:

- Assess the feasibility of Ground Source Heat Pumps at the site;
- Assess the feasibility of running a mixed renewables solution at the site; and
- Create a proposal of how to move forward with the project for EDF Energy

## Expertise

We provided a due diligence check of the heating requirements, ground conditions and proposed groundloop area. Based on anticipated ground conditions and the revised heating/cooling requirement, we undertook an initial design to ascertain the feasibility of the project.

## Benefits

From our study EDF Energy were able to ascertain the feasibility of this type of project, in terms of impact on the building footprint of the required plant, the costs and how it would integrate with the other elements of their building refurbishment, much earlier than they would normally have been able to, and this saved the company both costs and time.

Geo-Environmental were praised by the client for their integrity and the comment was made that they “wished that they had employed Geo-Environmental much earlier in the process”.

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