

DIOCB2/236 - Statement of Requirement for the Provision of a Geothermal Feasibility Study for Identified MOD Sites

Introduction:

A need has been identified to undertake an 8 to 12-week feasibility study (FS) to develop one (or more) geothermal station(s) (heat and/or electricity) to meet Army utility consumption. The Defence Infrastructure Organisation (DIO) is seeking engagement during the research and development stage for a potential future operation of large-scale Geothermal power and heat generating plants in the UK, co-located on Army owned land at consumption sites, to inform strategic infrastructure planning on behalf of the MoD.

Background:

There is a need for a considered technical analysis on the feasibility of developing one (or more) geothermal station(s) (heat and/or electricity) to meet Army utility consumption (primarily of electricity), thereby enabling Army to positively address future UK legislative requirements regarding Climate Change and sustainability.

Renewable energy sources include the production of heat and / or electricity from geothermal energy, thermal energy stored and generated at depth in the Earth's crust, accessible given the right geological conditions at depths around 2<5 km, dependent upon geology.

The primary siting considerations for geothermal heat and power stations are the co-location of:

- geothermal gradient, increasing temperature with increasing depth, produced through a combination of radioactive decay and latent primordial heat;
- fault zone, geological strata with fractures enabling water / steam circulation;
- and local water supply, to maintain / enhance water flow.

The UK market has recently started to utilise readily accessible geothermal sources for both heat and power, such as the Eden Deep Geothermal Energy Project, whilst global regions including the Rift Valley and Iceland have a longer history of geothermal power usage.

The Army Training Review (Defence Training and Evaluation Estate and its Capacity, Use and Cost, dated 31 Aug 18) quantified the Estate at 776K hectares. This scale of UK land 'ownership' and stewardship by Army, offers the potential to identify a UK geothermal site co-located beneath / near to Army major consumption footprints.

The geothermal initiative would be targeted at, but not limited to, the Army's major footprint locations with the greatest electricity consumption and heating load (see Enclosure 2).

Specifics of Requirement:

The objectives for this Feasibility Study would include:

- a. Identifying potential locations (macro and micro siting) co-located on identified MOD Estate to develop one (or more) geothermal station(s) for the production of heat and / or electricity, at a scale to match present (and future) utility consumption.
- b. Validation of current industry geothermal heat and/or power technology and its potential for successful application on the Army estate to fulfil full site demand for heating and / or electricity consumption. Advice should also be given to the minimum power and heat demands required by a site for cost effective deployment of these technologies.

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c. Provide guidance and advice applicable on relevant legislation and national and local governmental policy to indicate any constraints and how to overcome such.

d. Identify existing local Army Estate grid connection(s) and Distribution Network Operators (DNO) for each potential site. Thereby, enabling direct (no / low development cost) electricity sleeving 'upstream' into the national grid, or internally 'downstream' into the consumer Army garrison.

The results of the FS will be presented to the MOD in a report format. All supporting data to specialist software products must be provided in '.csv' format when cited in the report (including diagrams, tables, etc.) and the report is to be produced (electronically) in .pdf/.doc format.

Enclosures:

1. SOR KPIs.
2. SOR targeted Army consumption areas; Salisbury Plain, Colchester, and Catterick.

Enclosure 1**Key Performance Indicators:**

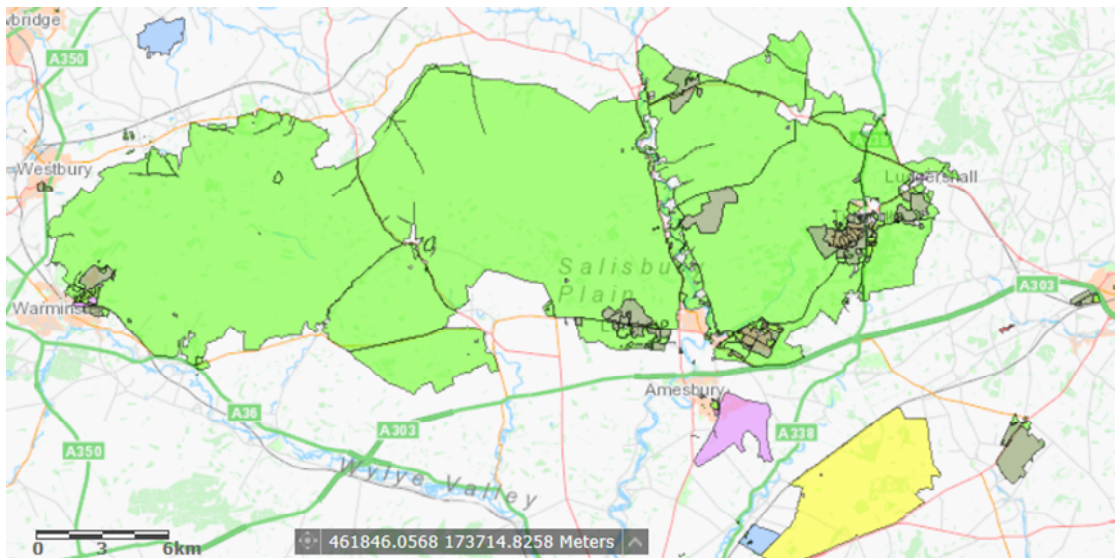
KPI Number	KPI Description	KPI Reporting Frequency
1.	<p>Measure – Delivery to programme, services; completion of the services, and the meeting of specified conditions by key dates Delivery of the FS in line with the agreed Project Schedule of 8-12 weeks from date of Contract Commencement.</p> <p>Target – Delivery to schedule or before date</p> <p>Data source – Project schedule</p>	On delivery
2.	<p>Measure – delivery of the Services to Specification and Required Standards and Quality</p> <p>Target – Provision of the services in accordance with the Scope agreed with the DIO, the Specification and applicable Standards/Regulations.</p>	<p>Tri-weekly online meetings;</p> <p>Tue 0825-0855hrs</p>
3.	<p>Measure – Consultants Resources and Staff Continuity</p> <p>Target – Provision of resources, with appropriate experience and skill level, and continuity of allocated staff.</p> <p>Data source – delivery team composition</p>	<p>By commencement and as change occurs</p>

Enclosure 2**Army Estate electricity consumption indicative quantification by location**

Location (main UK Army freehold owned footprints)	Electricity Consumption p/a (MWh)
Salisbury Plain Training Area (SPTA)	63,930
Catterick	29,316
Colchester	9,799

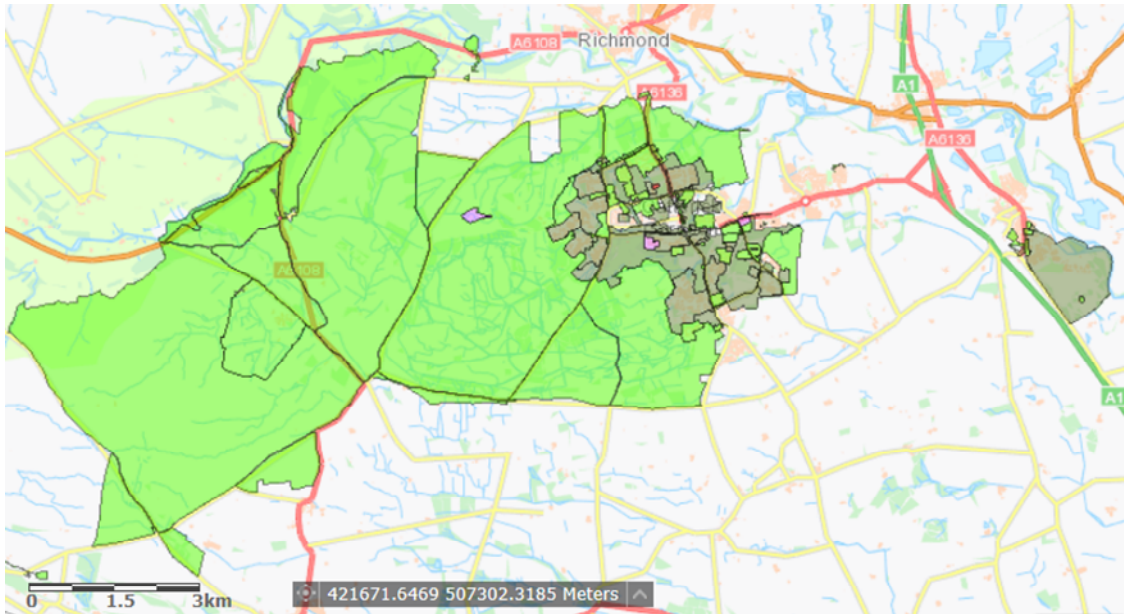
1. Army footprints were geographically bound using the DIO [ArcGIS](#) viewer (MOD intranet), as follows:

a. SPTA.



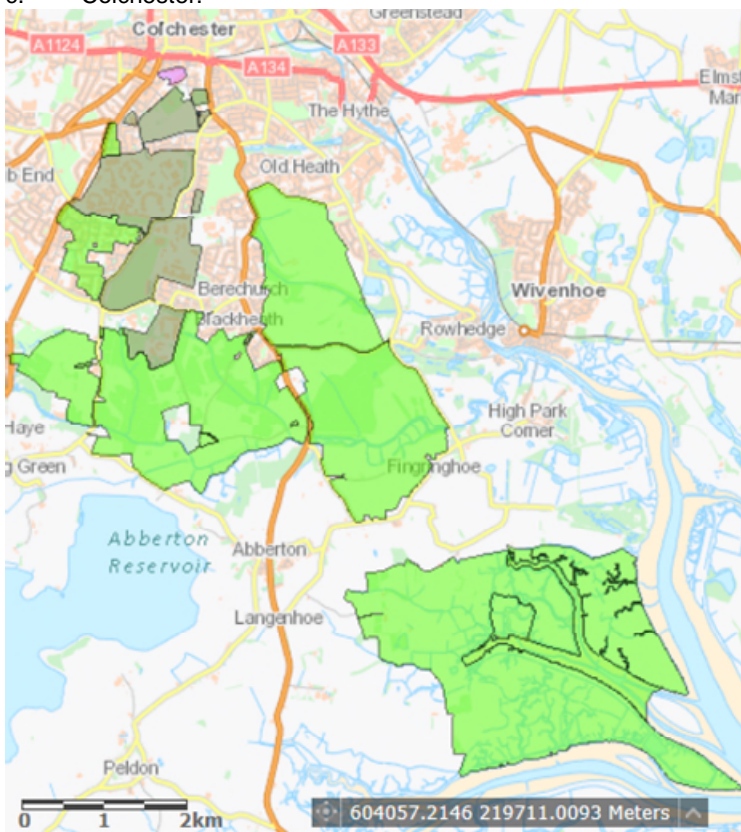
<https://diospatialportal.dio.r.mil.uk/portal/apps/webappviewer/index.html?appid=10815f739f804836977a91b9dd7d0926>
(Accessed: 20/4/19).

b. Catterick.



<https://diospatialportal.dio.r.mil.uk/portal/apps/webappviewer/index.html?appid=10815f739f804836977a91b9dd7d0926>
(Accessed: 30/4/19).

c. Colchester.



<https://diospatialportal.dio.r.mil.uk/portal/apps/webappviewer/index.html?appid=10815f739f804836977a91b9dd7d0926>
(Accessed: 30/4/19).