

Power down under

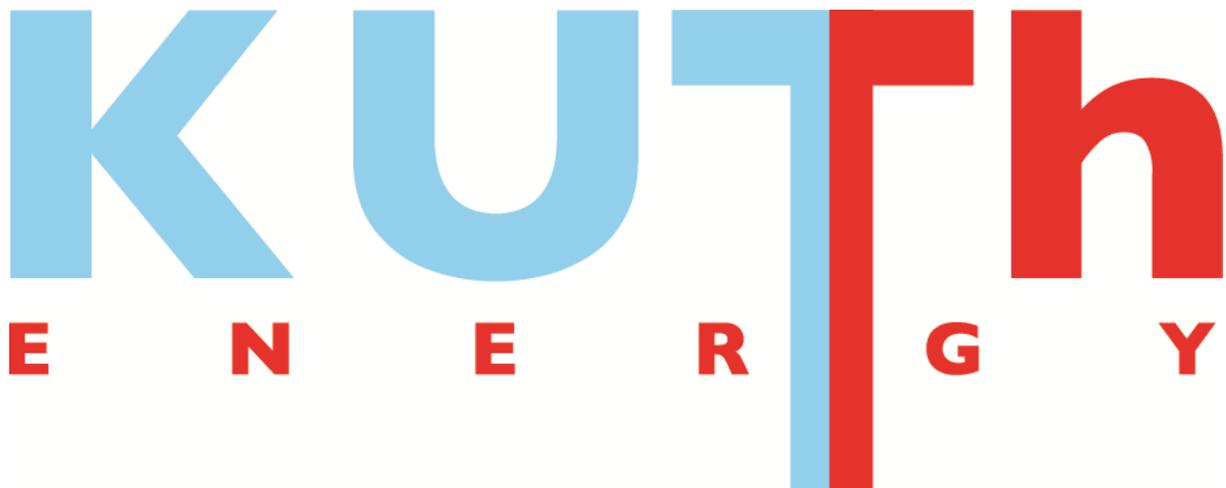
Partial Relinquishment Report 2010

SEL 45/2007
Partial Relinquishment
12th November 2010

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Summary

KUTh Exploration Pty Ltd (KUTh) holds three Special Exploration Licences in Tasmania for Category 6 minerals (geothermal substances). The principle target of KUTh's work on these tenements is the location of high-temperature Hot Rock geothermal resources suitable for development as Enhanced Geothermal System (EGS) power generators. The tenement area discussed in this report was also chosen as a potential source of direct-use for thermal air conditioning for large buildings in Hobart. This relinquishment report covers work completed in the year 19/12/2007 – 12/11/2010 on part of tenement SEL 45/2007 that has now been recommended for surrender. SEL45/2007 was granted on 19/12/2007 and is located in south eastern Tasmania and incorporates a total area of 1,811km².

Work commenced and/or completed on the tenements in this period includes:

- A comprehensive geological review incorporating compilation of existing surface geology, borehole and geophysical data.*

The combined results of work completed to date indicate that the potential for geothermal resource in the relinquished area is low. Whilst insulating sequences and subsurface granites are present across the tenement, the relinquished area reported low surface heat flow values and is unlikely to have temperatures at depth hot enough to be useful for geothermal production. This being the case, a recommendation for partial surrender of this area of SEL 45/2007 has been made.

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1 Introduction

KUTh Exploration Pty Ltd (KUTh) is a geothermal explorer based in Hobart, Tasmania and is the holder of three current geothermal exploration licences in that State. The principle target of KUTh’s work is the location of high-temperature Hot Rock geothermal resources suitable for development as Enhanced Geothermal Systems (EGS) power generators. Whilst the primary goal of this work is to produce electrical energy, the company also maintains an interest in both cascading and direct-use applications for geothermal energy.

This report covers work completed in the period 19/12/2007 – 12/11/2010 on that portion of KUTh’s tenement SEL 45/2007 that has now been recommended for surrender.

1.1 Tenement Status

KUTh Exploration Pty Ltd (KUTh) is a subsidiary of KUTh Energy Ltd and is the sole holder and operator of SEL 26/2005, SEL 45/2007 and SEL 57/2008 (Figure 1). All three tenements were granted for periods of five years to search for geothermal substances (Category Type 6). Tenure details of SEL 45/2007, granted in December 2007, are included in Table 1.

Tenement Type	SEL
Number	45/2007
Commodity	Geothermal
Licensee	KUTh Exploration P/L
Operator	KUTh Exploration P/L
Area	1811km ²
Date Granted	19/12/2007
Renewal	18/12/2012

Table 1: Tenure details for SEL 45/2007.

1.2 Location and access

SEL 45/2007 is located in the south east of Tasmania below SEL26/2005. It extends from Kingston in the west to Orford and Eaglehawk Neck on east coast (Figure 1). Approximately a half of the tenement is over water.

Access to the Tasman Peninsula is primarily via the Arthur Highway which bisects the tenement diagonally from Dodges Ferry to Port Arthur. Access to Kingston is via the Southern Outlet and access to South Arm (middle of the tenement) via the South Arm Highway. A number of minor roads connect various localities to the highways and, together with farm, and powerline tracks, provide reasonable access to the western half of the tenement. A small number of areas are excluded from SEL 45/2007, these consist of nature and game reserves, and various other features.

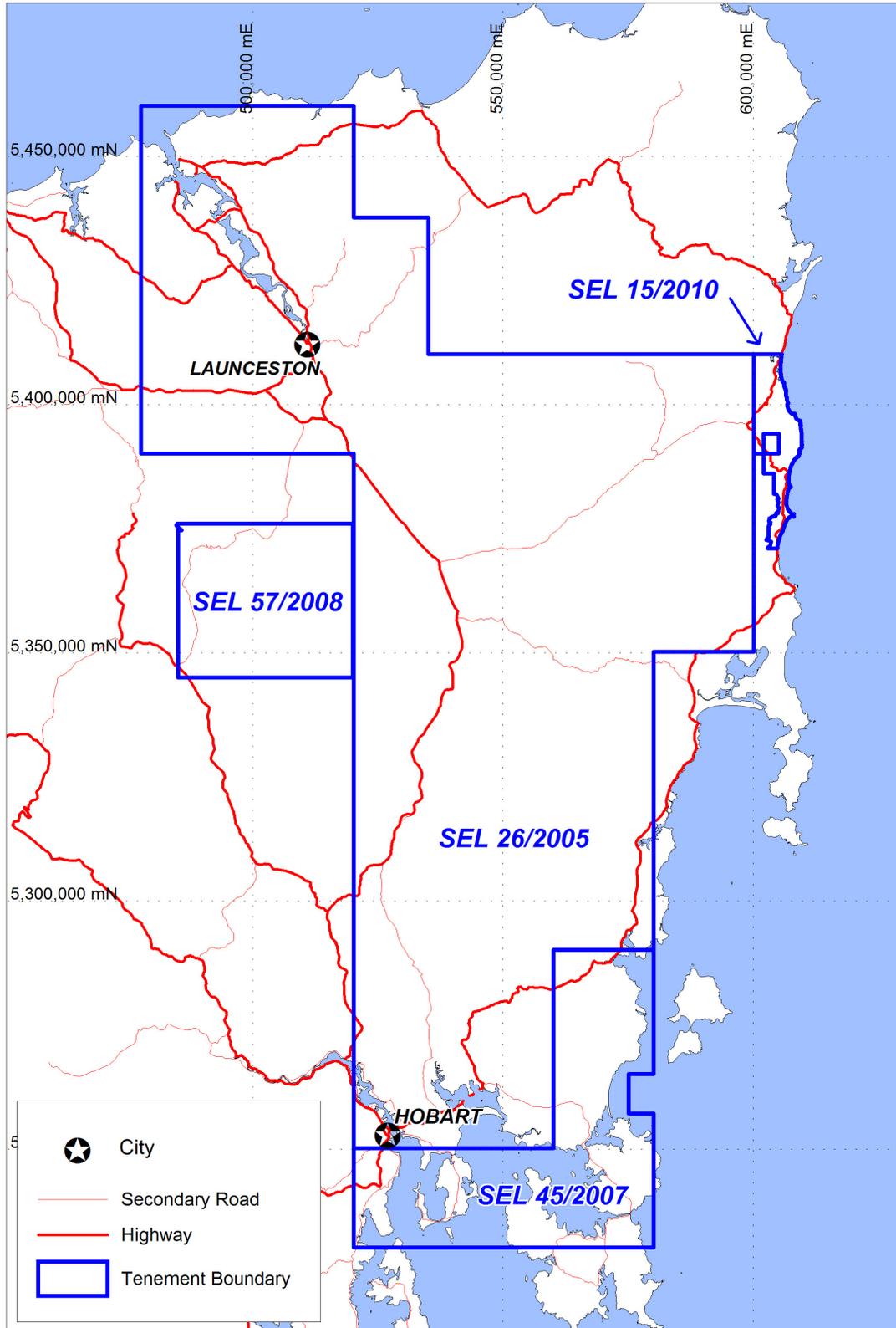


Figure 1: KUTh Energy tenement boundaries. SEL 45/2007 was granted on the 19th December 2007. Total tenement area is 1,811km².

1.3 Geological setting

Tasmania is divided into two basement terrains located in the west and east of the State (Figure 2). Distinguished by age, lithology and deformation these two regions are ‘believed to have been juxtaposed at a NNW trending dislocation’ inferred to coincide with the Tamar Valley region in central Tasmania (Burrett & Martin, 1989). The Western Terrain comprises variably deformed and metamorphosed Pre-Cambrian basement, the now-deformed Cambrian volcanics and sediments of the Dundas Trough and Mt Read Volcanic Belt and the Ordovician-Silurian shelf sediments of the Wurrawina Supergroup. In the East, deformed low-grade meta-sediments of the Ordovician – Devonian Mathinna Supergroup comprise deep water turbidite deposits that are analogous to the ubiquitous Tasminide flysch of mainland eastern Australia. Similarities in the deformation and depositional style of the Mathinna Supergroup and mainland Tasminide units have led to numerous attempts to correlate the two, the Mathinna being compared variably to the Melbourne Trough and the Tabberabbera Zone of central and eastern Victoria (Powell & Baillie, 1992; Reed, 2001).

Across much of the state, basement is concealed by up to 1km of flat-lying Permian-Triassic sediments of the Tasmania Basin and the extensive thick (>300m) Jurassic dolerite sills which intruded these during Gondwana break-up. Mesozoic and Tertiary cover, including extensive dolerite, shale, silt and some coal formations, totally obscure the contact between the Pre-Cambrian Western and Palaeozoic Eastern terrains, which is inferred lie to the east of the tenement area. Both Western and Eastern Terrains host Devonian granite, the most extensive intrusions being the slightly older batholiths in the East (Burrett & Martin, 1989).

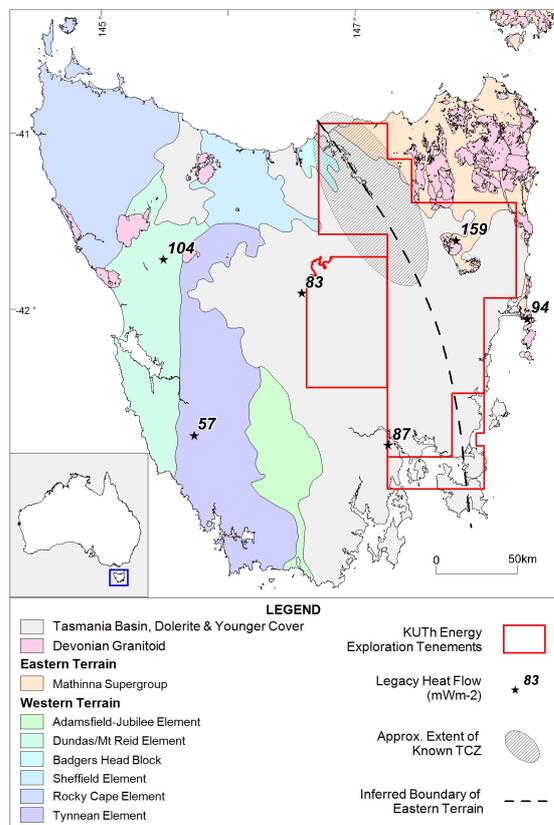


Figure 2: Regional geology of Tasmania showing the major crustal elements. Legacy heat flow data are as summarised by Cull (1991).

2 Geological review

Information regarding the *in situ* geological relationships at surface and depth are relevant to geothermal explorers and, even in the absence of specific thermal data, may be sufficient to determine the geothermal prospectivity of an area. To this end, a summary of available relevant geological data on SEL 45/2007 was collated to assess the prospectivity of the tenement area.

2.1 Surface Geology & Drilling

SEL 45/2007 is overlain by five 1:50,000 geological map sheets (clockwise from NE corner): Buckland, Sorell, Tasman, Kingborough and Hobart. No deep stratigraphic drilling has taken place within the tenement area.

The basement geology within SEL 45/2007 is almost entirely obscured by younger sequences (Tasmanian Basin). From the magnetic and gravity interpretation of Leaman (Leaman, 1976) the Adamsfield-Jubille Element is inferred to lie beneath the Tasmanian Basin. The concealed Cambrian sediments and volcanic succession appears to be several kilometres thick and extends northwest- southeast with a smaller trough under Hobart (Seymour & Calver, 1995).

Cover rocks within the tenement area are dominated by the sediment of the Permo-Triassic Tasmania Basin (Parmeener Group) and the younger Jurassic Dolerite which intrudes them. Parmeener Group sediments are generally divided into two sub-groups, the older (Permian), dominantly marine, Lower Parmeener and the younger (Triassic), fluvial/lacustrine, Upper Parmeener. Parmeener sediments are generally observed to be flat-lying with bedding dips of <10° (Forsyth, 1984). Intrusion of tholeiitic Jurassic Dolerite into the Parmeener sequences is extensive and typically manifests as flat-lying sills 300-400m thick along sedimentary bedding layers.

Within the boundaries of SEL 45/2007 dolerite is overlain only by relatively minor occurrences of Tertiary basalt and sedimentary sequences and younger Quaternary alluvium and colluvial deposits. Tertiary basalts are alkali - tholeiite in composition and are typically preserved in palaeo-drainage channels (Matthews *et al.*, 1996; Forsyth, 1989; Forsyth, 1984). Tertiary sediments are most significant to the south-east of the tenement where they infill river valleys and form beaches on the coast.

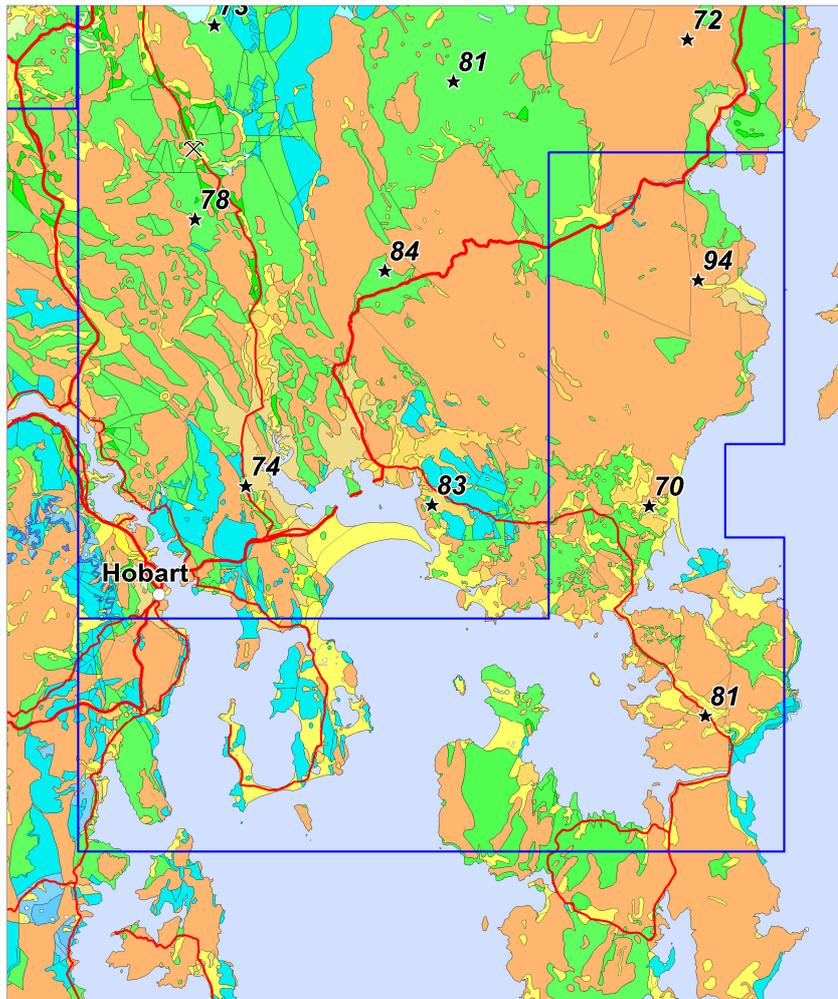


Figure 3: Surface geology and legacy data beneath SEL 45/2007. Geology legend is as per 1:500,000 Geological Map of Tasmania. Black stars indicate KUTh Energy surface heat flow data; red, legacy heat flow data. All heat flows are reported in mWm^{-2} . Red lines indicate primary roads.

2.2 KUTh Energy Geothermal Exploration SEL26/2005

In 2007 KUTh Exploration commenced work on its tenement SEL 26/2005 which now lies adjacent to the north of SEL 45/2007. Work completed to date includes determination of shallow heat flow values in areas adjacent to SEL 45/2007 (Figure 3, Table 1). The heat flux recorded in areas adjacent to the relinquishment area are moderate, typically $<83\text{mWm}^{-2}$, and are consistent with a small volume of heat producing granite at depth with poor insulating cover.

Well name	Marion Bay	Murdanna
Modelled Heat Flow (mW/m^2)	70 ± 0.5	81 ± 1.1
Relative confidence	High	High

Table 2: Surface heat flow values for KUTh wells in surrendered portion of SEL45/2007. Please see the Technical Annual Report for SEL26/2005 for the full Heat Flow Modelling report from Hot Dry Rocks PL.

3 Conclusion and Recommendations

The combined results of work completed to date indicate that the potential for geothermal resource in the relinquishment area (1390km²) is limited. Whilst insulating sequences are present across the tenement and the relinquishment area is interpreted to be underlain by some Devonian granites, these appear to be too shallow and heat flow values too low to suggest a significant source of heat. For this reason a 1390km² area is considered to have a low prospectivity for geothermal exploitation and is thus recommended for surrender. A map detailing the proposed partial surrender of SEL 45/2007 is presented in Figure 4.

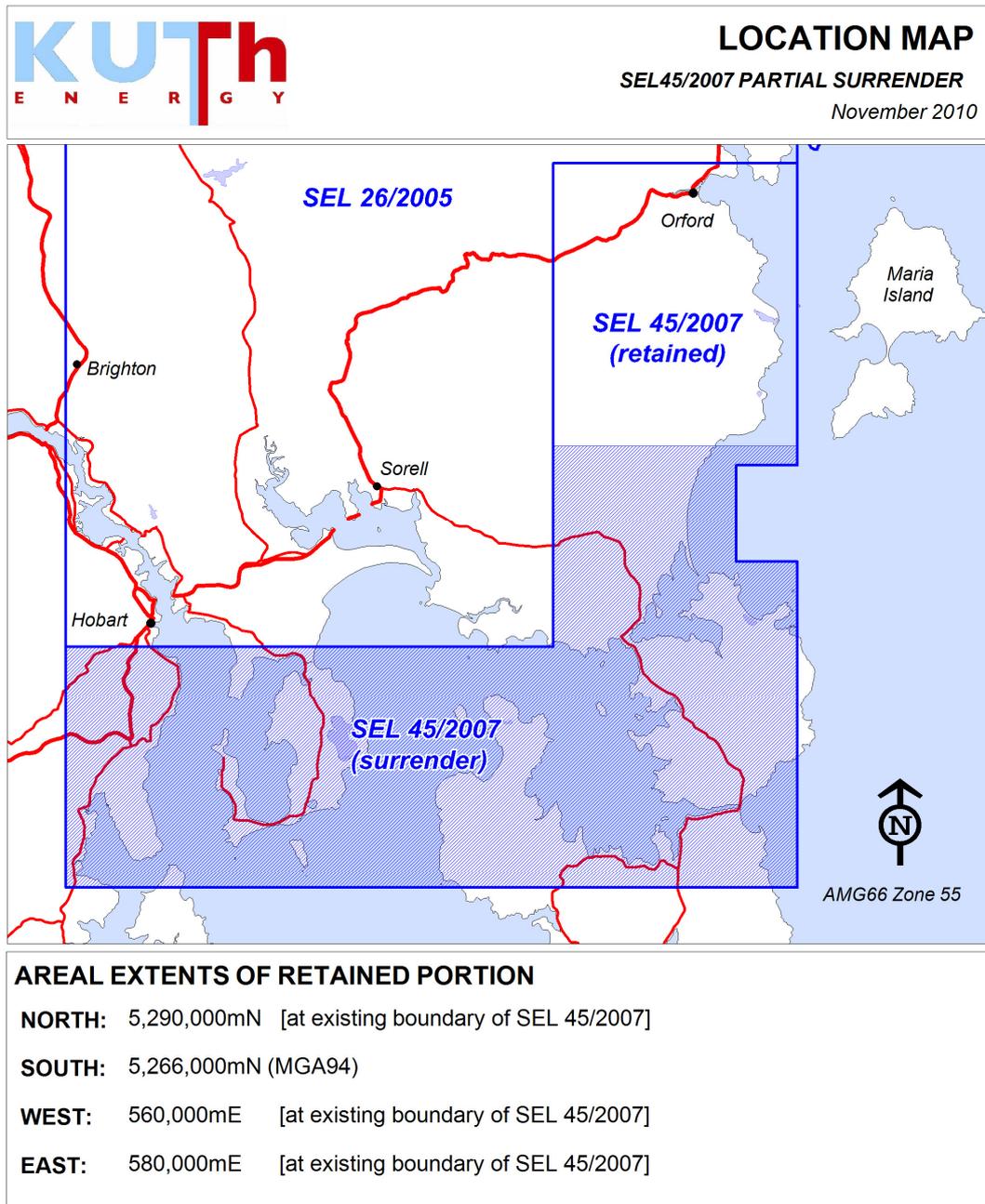


Figure 4: Map illustrating partial surrender area for SEL45/2007.

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5 Keywords

Geothermal exploration

HDR (Hot Dry Rock)

HFR (Hot Fractured Rock)

EGS (Enhanced Geothermal System)

High Heat Producing (HHP) granite

Appendix 1

Drilling logs for Marion Bay and Murdunna attached.