

KUTh Exploration Pty Ltd

**SECOND ANNUAL REPORT
Period ending 6 August 2008**

SEL26/2005

20 July 2008

1:250,000 map sheets

Northeast
Southeast

Report #1

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1 ABSTRACT

SEL26/2005 was granted on 7 August 2006 to KUTh Exploration Pty Ltd for Category 6 minerals (geothermal substances). It was the first licence for geothermal exploration in Tasmania. The SEL covers 12,360 km², and stretches from the mouth of the Tamar River in the north west, to Hobart in the south and St Mary's in the north-east.

The ground was selected on two main criteria.

- 1) The application of a 'hot rock' model for the generation of electricity to the buried extensions of outcropping thermally anomalous Devonian granites in eastern Tasmania; and
- 2) The possibility of using warm to hot geothermal waters from relatively shallow depth, for 'direct use' applications such as building and space heating, agricultural and industrial drying.

Work conducted during the second year of the licence was as forecast, and included:

- Completion and interpretation of a gravity survey in the central east of the licence;
- Drilling of shallow (maximum depth 300m) cored drill holes to measure down hole temperature and thermal conductivities, to calculate heat flows;
- Commencement of a magneto-telluric survey over two orientation lines;
- Preliminary discussions with the University of Tasmania, and project managers and engineers for the new Hobart Hospital project, with a view to supplying geothermal waters for heating of those institutions.

The gravity survey allowed a re-interpretation of the depth to granite in the central east of the tenement and expanded the area favourable for EGS geothermal power (ie potentially hot granite within 5 km of the surface).

The shallow drilling program was about 75% complete by the end of the reporting period, but as thermal readings and results lag the drilling by at least three months, only about 30% of heat flow readings are at hand. However a large and strong heat flow anomaly is emerging in the area between the Fingal Valley and Buckland, to the east of the Midlands Highway, in central eastern Tasmania.

After a long planning period, the magneto telluric survey was about to begin as this report is being submitted, and will be reported on in detail next year.

In the coming year, KUTh intends to:

- Complete the shallow drilling programme and interpret the resulting heat flow data;
- Complete the 2008 magneto-telluric programme, interpret the results and probably undertake some follow-up surveys; and
- Drill additional shallow 'heat flow' holes to in-fill and clarify the 2008 results.

Further, depending on the magnitude and extent of the heat flow anomaly, and the ability from that data to estimate the temperature of the basement rocks, KUTh may undertake follow-up drilling in two possible scenarios.

- a) Drill one or more 'intermediate depth' cored holes, to measure thermal properties down to about 1,500m. This hole or holes will primarily target the Mathinnna Group sediments in central eastern Tasmania, which are thought to comprise most of the 'insulating blanket' above the granites there.
- b) Commence planning of an initial deep (+4km deep) 'production' geothermal well, which will target the hot granitic basement (or hot sediments above the basement) and be the first of a pair of holes for 'proof of concept' of EGS in eastern Tasmania.

It is most likely that a) will be undertaken, leading to b) in 2010; however if 2008 results are good enough, it is possible that a) could be skipped, leading to the first deep hole drilled in late 2009.

2 INTRODUCTION

This report covers the work completed on SEL26/2005 for the year ending 6th August 2008, although the required report timing means that the magneto telluric survey scheduled for July cannot be reported on.

The work programme was almost exactly as forecast in the 2007 Annual Report and results were very encouraging for the future successful delineation of an 'Engineered Geothermal Systems' (EGS) or 'hot rocks' resource.

3 TENEMENT STATUS

SEL26/2005 was granted in August 2006, for five years. It ranges from the mouth of the Tamar River, south to Hobart and north-east to St Marys. Numerous blocks are excluded from the overall tenement outline, including National Parks, Commonwealth land, a gas pipeline easement and numerous small historic sites and other features.

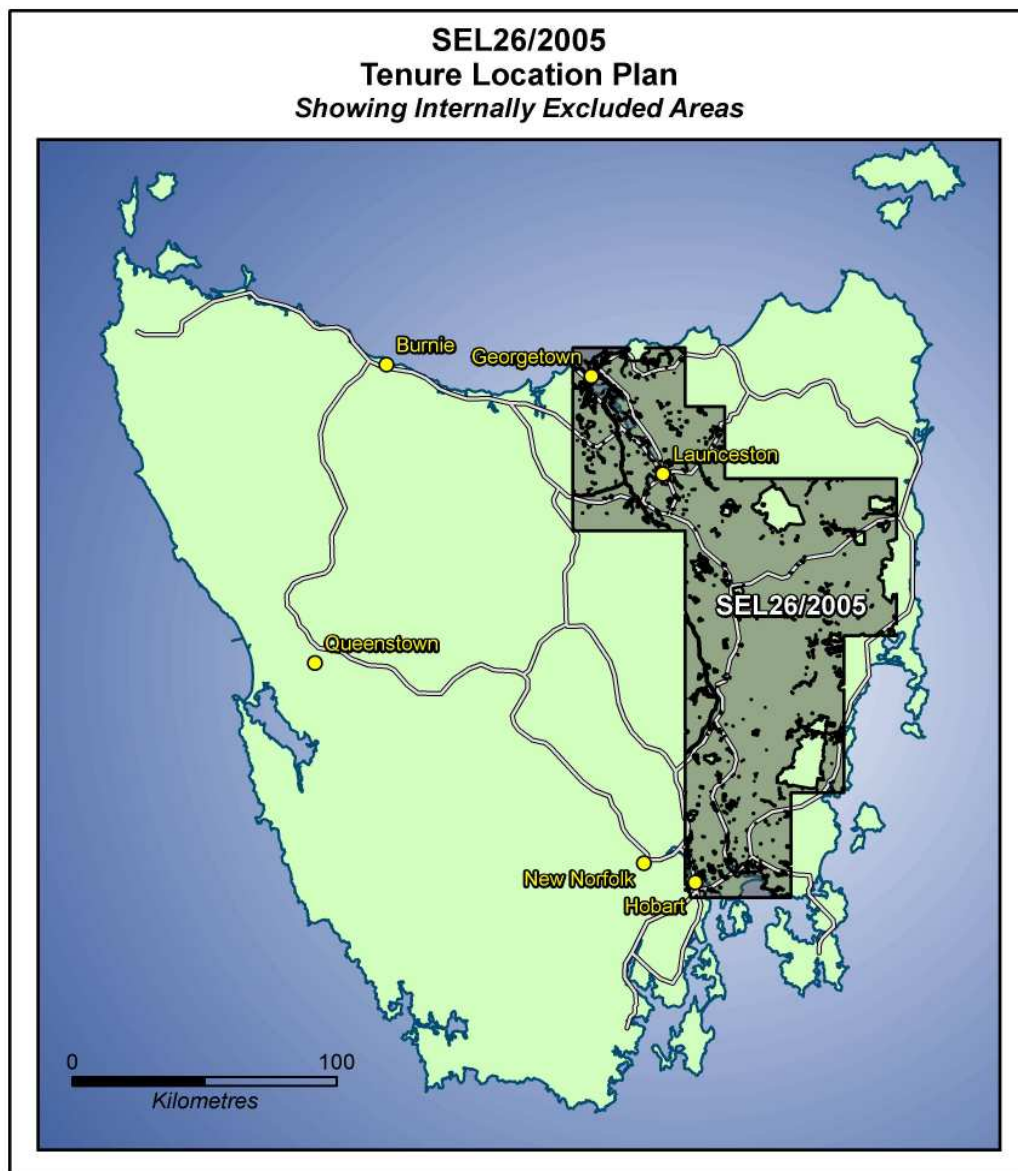


Figure 1. Tenement location showing internally exclude areas.

4 TOPOGRAPHY AND ACCESS

The SEL covers a substantial area of Tasmania, including metropolitan Hobart and Launceston. A number of highways traverse the area. Topography ranges from coastal and inland plains, to granite and doleritic ranges and tors.

5 GEOLOGY

The geology of eastern Tasmania has been well documented and will not be repeated in detail here. The relevant geology is the suite of Devonian granitoids which have intruded through Ordovician – Lower Devonian Mathinna Supergroup sediments, all of which have been mantled by Parmeener Supergroup sediments, which include coal measures.

The granitoids include a number of known thermally anomalous intrusions outcropping in the east, whilst the sedimentary cover is modelled to be between 0 and +6km thick over the granitoids as one progresses to the west.

KUTh's basic model is that thermally anomalous granites will occur under the sedimentary cover. If the sedimentary cover is +3km thick, and has sufficient insulating qualities, then temperatures of +200°C may be achieved within the granitoid body, and this would be accessible by drilling.

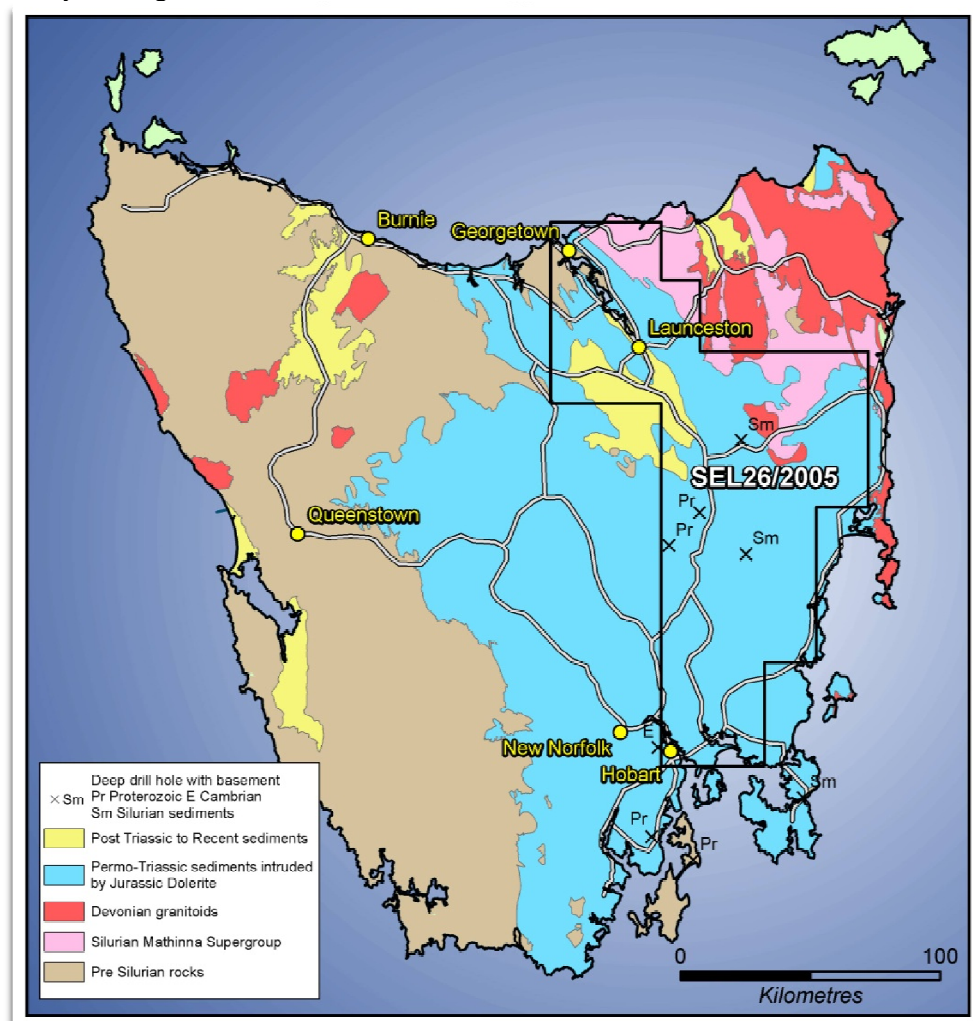


Figure 2 Simplified geology of Tasmania

6 GEOTHERMAL ENERGY

6.1 What is geothermal energy?

Put simply, geothermal energy is the energy stored and flowing as heat beneath the surface of the earth. This heat comes from two fundamental sources. Firstly, heat remaining from the original formation of the earth. This heat travels up through the thousands of kilometres of rock to the earth's crust, where it flows through the earth's surface. Secondly, there is heat generated locally within the earth's crust, from the natural decay of the radiogenic elements uranium, thorium and an isotope of potassium. These occur in almost all rocks, but in certain granitic bodies, they can be concentrated such that there is a marked elevation in the local surface heat flow. The average 'heat flow' through the earth's crust is about 87 milliwatts per square metre of the surface (87mW/m²) (Somerville et al 1994). The global heat flow is very large, approximately 44 terawatts (1 terawatt = 10¹² or a million million watts).

The amount of heat flow in the earth is not uniform. Beneath oceans, the average heat flow is about 101 mW/m² and beneath continents the value is about 65 mW/m². However, there are areas within continents where the heat flow is very much larger due to either localised igneous activity or 'hot granites', and where this occurs, there is the potential for the geothermal energy to be harnessed to produce electricity, or to be used directly in heating and drying applications.

6.2 How much stored energy?

As the potential to utilise the energy stored as heat in the shallow earth's crust has become apparent, various agencies have begun to estimate the amount of energy that may be accessible.

A recent report by the Massachusetts Institute of Technology, looking at energy stored in rocks between 3 and 10km deep in the USA, estimated 13.3 million exajoules (1EJ = 10¹⁸ Joules = 277 million megawatt hours) of conduction-dominated 'Engineered Geothermal System' (EGS) resource in crystalline basement rock formations. This greatly exceeded the energy stored in other heat systems, such as volcanic and 'hot springs' types of areas and is 13,000 times the consumption of primary energy in the United States in 2005 (MIT, 2007). Of course the economically extractable amount will be much lower. The study attempted to estimate a recoverable EGS resource and if only 2% of the total resource was recoverable, it was found that this would amount to approximately 280,000 exajoules (78 million million MWh) or 2,800 times the 2005 US energy consumption.

A similarly detailed study has not been done for Australia, but preliminary figures from Geoscience Australia estimate that Australia's hot rock energy between the depth corresponding to a minimum temperature of 150°C and a maximum depth of 5,000 m is approximately 1.2 million exajoules (333 million million MWh) or 20,000 years of Australia's primary energy use in 2005; again this is an estimated total resource figure and not an estimate of recoverable or economic energy (Goldstein *et al* in prep.). This resource figure is currently under review.

6.3 Producing electricity from geothermal energy

One of the most attractive uses for geothermal energy is to convert it into electricity. This was first done at Larderello, Italy in 1904 using steam from a natural geothermal field. Since that time, harnessing of steam and hot water at or close to the surface for electricity has been undertaken at many locations throughout the world, including California, New Zealand, Iceland, Indonesia, Mexico and the Philippines. The installed world generating capacity of

this type of generation is nearly 10,000MWe (MIT, 2007). These projects have mostly tapped thermal resources associated with recent igneous and volcanic activity.

Electricity can also be generated from geothermal waters that are not boiling at the surface. Sub surface aquifers in rocks can contain water heated from below or laterally, but perhaps only to temperatures much less than 100°C. These aquifers can be drilled into, and the heated waters pumped to the surface and the heat used to generate electricity, albeit at lower efficiency than the surface boiling waters mentioned above.

Although common around the world, the only geothermal energy currently being generated in Australia is from a small binary power station at Birdsville, Queensland, which uses hot water sourced from the Great Artesian Basin flowing at 98°C and is rated at 120kW (Goldstein *et al* in prep.). Although the resource has not been explored extensively, there is no real shortage in Australia of such hot artesian waters which might be utilised to generate electricity. The reason for the lack of development is probably due to the abundant alternative sources of energy and the relative low efficiency, using current technology, of producing power from lower temperature waters.

The oil price shocks of the 1970s stimulated research in the United States and elsewhere on a possible third source of geothermal energy to produce electricity. Certain granitic bodies are well known to contain higher than average concentrations of the radiogenic elements and isotopes of potassium (K) uranium (U) and thorium (Th) and consequently, these bodies produced heat flows well in excess of the continental average. It was reasoned that if such bodies were covered by a thickness of insulating cover rocks, trapping the heat, then there may be a large reservoir of very hot rocks accessible by drilling. If this heat reservoir was found or was made to be permeable, it could act as a heater for waters injected down one drill hole and the super heated water could be extracted from an adjacent drill hole. The very hot water would then be used to generate electricity at high efficiency, and then re-injected back down again, to be re-heated. Such a system has become known by a variety of terms, including 'hot dry rocks' (HDR) and 'Engineered Geothermal Systems' (EGS).

6.4 Engineered Geothermal Systems (EGS)

The EGS process can be summarised as follows:

- Identification of an area of high heat flow, usually caused by a thermally anomalous granitic body, with the granite insulated by thick sedimentary or other rock cover;
- Detailed heat flow measurements and modelling to establish the deep heat reservoir as being probably hot enough to support efficient electricity generation;
- Drill down into the heat reservoir; this may be through 3+km of cover rocks and 1+km into the granite (at present 5km is the limit of drilling technology);
- Stimulate or enhance the permeability of fractures within the granite by pumping water at very high pressures into the granite. This is technology adapted from the oil industry;
- Drill a second hole into the enhanced fracture system and demonstrate connectivity and adequate heat exchange and fluid flow between the two holes;
- Drill a third hole into the fracture system to complete a circuit whereby the original hole acts as the cool water injection hole and the other two holes act as extraction holes for super heated water. The hot water is put through a heat exchanger and the heated second fluid used to drive a turbine to generate electricity. The original water, having lost most of its heat, is re-injected down the first hole to repeat the

cycle. Flow directions and pressures are maintained such that little water is lost underground.

EGS was first investigated in the United States in the early 1970s at Fenton Hill, New Mexico. This site was chosen in part because of known high (approx 200°C) rock temperatures at relatively shallow depths (approx 3km). The heat reservoir was drilled into at two locations almost 100m apart and water circulated between them, passing through the hot rocks. Almost 5 GWh of energy was produced during the test work, using a 60kW binary fluid turbine generator (MIT, 2007). A key finding of the Fenton Hill and other research in the 1980s was that the enhancement of the permeability of the heat reservoir (done though pumping water into the reservoir at high pressure – a technique from the oil industry) was mainly done via the activation of existing naturally occurring fracture, rather than the artificial creation of a new fracture set.

The work at Fenton Hill to 3,000m depth was followed by Phase II work there, and this research deepened the reach of suitable drilling technologies to beyond 4,000m. By the time it concluded in the early 1990s, the Fenton Hill work showed that drilling (including directional drilling) can achieve depths beyond 4,000m; that this drilling can be controlled and directed in rocks +200°C; that reservoirs can be hydraulically stimulated to produce permeable fracture networks, and that circulation and heat exchange can occur over extended periods to produce electricity (MIT, 2007).

Fenton Hill was followed by the Rosemanowes project in Cornwall and several in continental Europe through the 1980s. In the 1990s drilling commenced at Soultz in France. Several holes here eventually reached 5,000m depth and hydraulic pressurisation again demonstrated that natural fracture networks can be stimulated and enhanced. The Soultz project is on-going.

EGS type geothermal has been embraced enthusiastically in Australia. An early study by Somerville et al (1994) was a “hot dry rock feasibility study” which assessed Australia’s HDR geothermal energy resource and the technical and economic factors involved in hot dry rock energy development. The analysis (which focussed on resources in the Great Artesian Basin) showed that the prospects for HDR development in Australia were favourable in terms of the scale of the resource, the efficiency with which the resource could be exploited and the cost of developing the resource.

Geodynamics Limited have been operating at their ‘Habanero’ project in the Cooper Basin, South Australia for several years and theirs is the most advanced EGS project in Australia. Reported findings of an initial concept study include:

- Large scale hot rock geothermal power development may be Australia’s most economic option for generating zero or low emission base-load power;
- Well spacing can be increased from the original assumptions of 500m to between 500m and 1,000m with greatly improved economics and project life;
- The economic life of an HFR power development is expected to be over 50 years;
- Temperature is clearly the most significant economic driver. (Geodynamics Limited, 2002).

Geodynamics drilled their first well to 4,421 m (including 753m in granite with a 6” diameter hole) in 2003. This encountered a fractured, brine saturated system, which was a surprise over the dry rock that was expected. The well was stimulated over several phases and an enhanced fracture system acoustically mapped over 4km². A second well, drilled in 2006 encountered some mechanical problems resulting in the need to drill a side-track hole,

which was successful but a dropped plug resulted in the hole not being able to perform the expected test work. However some circulation was achieved between the first and second drill hole (MIT, 2007). Geodynamics have recently purchased a dedicated deep drilling rig and have announced that the drilling of their third well will occur in 2007.

Although there is no commercial electricity production for an EGS project, on-going work at Habanero and also at Soultz in France indicates that the individual technologies of target selection, deep drilling, reservoir stimulation, sustainable circulation and power generation from hot waters returned to surface should be able to be brought together technically. With appropriate connecting infrastructure and a suitable energy pricing regime, the resultant electricity should find attractive markets.

6.5 *Direct use geothermal*

Mankind has made use of geothermal energy, expressed through surface warm to hot waters, for thousands of years, including for bathing and heating. Today, conventional drilling technology allows us to tap into suitable aquifers and draw the warm to hot waters to the surface at points where they can be put to domestic or industrial uses. Such uses include building and space heating, air conditioning, drying of agricultural crops, drying in industrial applications and other industrial processes.

Using geothermal energy as a substitute for electricity allows the conservation of electricity and hence the lessening of pollutants associated with the generation of that electricity, such as carbon dioxide.

Low to medium geothermal energy is being used on a modest scale in Australia at the moment, including the heating of swimming pools and the heating of the Geoscience Australia building in Canberra. Again, KUTh believes that the use of such geothermal resources in Australia has not been exploited to the degree possible, due to cheap alternative sources of power, but this situation will not continue due to increasing energy costs and concerns over carbon emissions.

7 WORK PROGRAM

7.1 Gravity Survey

One of the primary aims of the current geothermal exploration programme is to delineate the location and depths of granitoid bodies beneath the cover of Siluro-Devonian to recent cover. There was a relative paucity of gravity stations in central eastern Tasmania, so an in-fill survey was undertaken.

7.1.1 Specifications

Solo Geophysics of Adelaide was contracted to read approximately 500 gravity stations along tracks and roads in the eastern 2/3 of the area bound by the Midlands Highway to the west, the Lake Leake road to the north, the coast of Tasmania to the east and Sorell to the south (see Figure 3). With the permission of Mineral Resources Tasmania, some areas not under SEL26/2005 were also read. These included an area to the east of SEL26/2005, under a petroleum exploration tenement, which area at the time was also under application by KUTh Exploration for geothermal substances and has since been granted as SEL45/2007. It also included most of the area known as the “Buckland Army Training Area”, which was an excluded ‘hole’ in SEL26/2005. Permission was sought and obtained from the Australian Defence Force for this part of the survey.

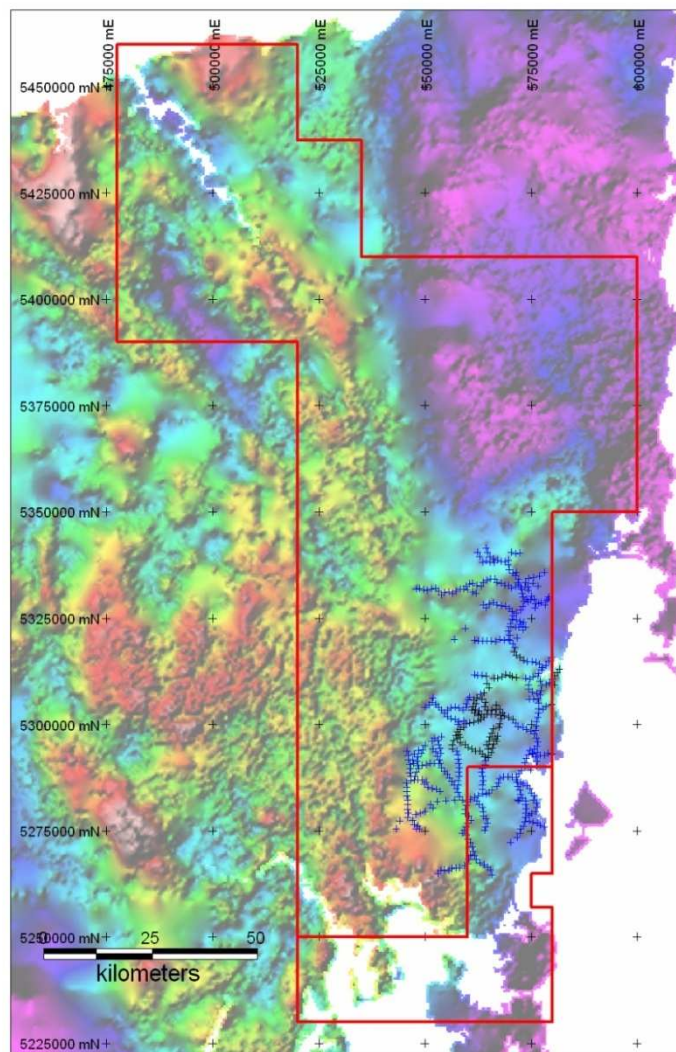


Figure 3. Station locations of 2007 gravity survey.

7.1.2 Survey report (by Solo Geophysics Pty Ltd)

The survey crew based themselves at Orford being central access to the survey areas and convenience of access to RTK GPS control.

Gravity control was carried to Orford from Launceston and Hobart airport using a re-established airport station from Mount Pleasant to Hobart. Additional controls were established en route from Launceston to Hobart for the survey should they be needed. The local gravity control base at Orford was occupied daily.

GPS survey controls were acquired via internet from the State data base and initially GPS base SPM3444 north of Orford was used. Later new controls were occupied or created as needed in more remote locations further north. Data base listed survey controls were not numerous or easily accessible in the survey area and Solo established additional bases of convenience when the RTK radio repeater could no longer be useful in areas of steep terrain.

General road access in the area was good, however surveying nearby to a highway required caution and use of safety clothing and warning lights on the survey vehicle.

All access from the roads and tracks in this area was locked with the exception of tracks to small holiday / shack communities. Forestry Tasmania's office in Triabunna was the principal controller of logging tracks in this area with the addition of some local logging firms on private lands where additional keys were not available. Master keys opened all non private lands and were of convenience to the survey.

Areas of dense timber reduced data acquisition by limiting satellite visibility and these were not acquired due to extra delays required. Washouts on old logging tracks prevented some additional access as these were no longer accessible. The Buckland training area was a significant area to be surveyed and required liaison with the military for permission to enter.

7.1.3 Data acquisition

Position control was via GPS, using a Leica 1200 dual frequency RTK for survey applications, a Garmin GPS60 for local activities, with communication via a radio link 4W/25W UHF on 467.075MHz frequency. The RTK survey resolution was better than 0.05m for horizontal and vertical measurements as satellite availability was usually resolved better than 0.03m. The data was not recorded when a vertical error of 0.05m was exceeded. Tasmanian satellite availability limits useful survey periods in dense vegetation.

Gravity was read using a LaCoste & Romberg Model G #556 gravity meter, appropriately calibrated. Meter daily variations closely follow Longmans tidal calculations.

Control Data:

- All raw GPS survey controls were acquired in GDA94 datum (WGS84) and transformed in real time to survey grid references to AMG66 Zone 55 using the Tasmanian AGD66 transformation and geoid files.
- All map presentation is AMG66 zone 55 datum.
- All time references for gravity are EST, or UTM plus 10 hours.
- All height references are AHD

RTK GPS Base stations:

- Main Base station SPM3444:
 - Location on west side of highway to Swansea about 6km north of Triabunna.
 - Brass survey marker and post near gate.
 - AMG66 Zone 55
 - 576,091.78E 5,298,747.01N 35.753m

Gravity Base stations:

- Main control base station at Mt Pleasant gravity base:
 - Plaque: 9699.9160 RM1 (file ID is 199699.916)
 - Value Isogal65: 980,436.970 mGals
 - Value Isogal84: 980,423.706 mGals
 - AMG66 Zone55 535,927E 5,260,737N (elevation approx 73m by Garmin GPS)
- The Mt Pleasant base was tied into a new base at Hobart Airport (the former base being made inoperative by new Terminal works):
 - Value: Isogal65 980,448.310 mGals
 - Location: AGD66 Zone55 541,258E 5,256,804N (elevation approximately 9.0m by Garmin GPS)
- A further local base was established outside 'Scorchers' café at Orford:
 - Value: Isogal65 980,418.95 mGals
 - Location: AGD66 Zone55 571,525.40E 5,287,619.64N (elevation 1.88m by RTK GPS)

GPS Surveys:

- Main roads, minor roads, forest logging tracks, and private property tracks were accessed at 1000m intervals for data recording.
- Topography in the area ranged from 10m to 840m and required accessing several suitable high areas for the radio GPS link. Access afforded by Forestry Tasmania keys.
- The base RTK GPS when on high ground was set to automatic on three day cycles between battery changes to give more time to the survey.
- Low level base control was recovered daily.
- Additional RTK coverage was gained by a mobile radio repeater link.
- The survey crew were equipped with reflective clothing and a vehicle with flashing beacons for advance traffic warning of survey crew when on roads and tracks.
- All GPS readings were measured from the roof of the vehicle where the antennae was located and the result was ground level height when offset applied.
- No incidents or accidents occurred during this survey period.

GPS Data Processing:

- Each survey station was given a unique six digit ID.
- RTK GPS positioning at each gravity station was recorded in the GPS memory in GDA94 datum as raw data in addition to the real time transformed display in AMG66 zone55.
- Final AHD elevations were derived by using a standard ellipsoid to geoid file produced for the local area from Geoscience Australia tables.
- This transformed survey data was then downloaded to a memory card for computer access.
- Format was Station ID, Easting, Northing, Elevation, and satellite elevation position error to 0.05m
- No additional post processing was required when using this data set format.

Gravity Survey:

- Gravity stations occupied were located by RTK GPS in real time in the appropriate datum at approximately 1000m station intervals along all accessed tracks unless interrupted by lack of satellite access.
- All field stations were given a unique six figure ID commencing with 200001
- The first two digits identified RTK GPS base station.
- This was reduced to a four digit number by request, the last survey number being 0500 for government data base records.
- Readings were taken in loops from a single control station at Orford, the loop duration dependent on access and terrain elevation. Additional control ties were also made during the day.
- All meter readings were observed at ground level along roads and tracks.
- Additional delays occurred when some periods of seismic activity predominated.
- The extended period of fine weather this year was exceptional and aided survey progress.

Gravity Data Initial Processing:

- All gravity stations were given a unique six digit ID.
- Gravity data was recorded in loops from a control station, the field measurement being a relative gravity measurement referenced to the base station control.
- Orford town base and an additional base tie to a base station each day was used for data control. Regional tie points were used for drift checks.
- Gravity data was recorded at each station in instrument divisions.
- The time of measurement was recorded in EST.
- All tidal corrections referenced UTM plus 10 hours.
- A Solo program combined the common GPS point ID to the gravity station point ID as these were stored in two separate instruments.
- This data set was then processed to produce a tidal corrected data set of instrument readings to check repeatability of stations before further processing.
- Longmans' formulae was used for the calculation of tidal changes at the local time and location.
- The final data set was processed to produce final results.
- This includes instrument drift at base, daily drift, latitude and Bouguer calculation.
- The Observed 65 value is a drift corrected tie to a base station with a recorded AGSO Isogal65 value.
- The final calculations are derived by the standard AGSO Isogal65 formulae.
- Only a single Bouguer density of 2.67 gms/cc was required to be calculated and terrain corrections for this survey are by consultant Dr. David Leaman.

7.1.4 Further data processing and interpretation

The data was passed to Drs Bob Richardson and David Leaman who incorporated the data into the wider Tasmanian data set. Quoting from Leaman (2007) regarding the evolution of the gravity model of Tasmania:

(A gravity) source model was developed by Leaman & Richardson (1989) based on available seismic control for mantle limits and a large array of long modelled profiles in NW Tasmania. These profiles examined all large sources in the upper crust, as well as defining the overall form of the lower crust. The lower crustal elements were combined into a three dimensional model which can generate the gross form of the gravity field across Tasmania and its adjacent ocean basins. This was known as MANTLE88.

Following a series of regional interpretations in western and northern Tasmania the model was refined and termed MANTLE91. It has been in use ever since and has formed the basis of most local interpretations.

Gravity data acquired since 1991 have been accumulated into the Tasmanian gravity data base but there has been no revision of the crustal model in order to make full use of it. Consequently, with additional surveys in central and eastern Tasmania and a requirement to review the granitoids, the crustal model has been reviewed and refined using the same specifications and methods of the original.

In order to do this a series of long (at least 300 km) profiles was randomly selected across the region south and east of the northern tip of Great Lake on the Central Plateau. The fan of lines covers the entire region south of St Marys in eastern Tasmania and South Cape in southern Tasmania. The original density constraints, the seismic ties, and fitting specifications were sustained so that the new or revised quadrant would remain consistent with the remainder of the model. The modelling led to some significant changes in crustal profile and also identified some minor errors and deficiencies in the ocean part of the model. The new model, now termed MANTLE07, thus represents a significant update. A minor change was made to the static shift which allows the best general fit to all data: to 389 mgal, vs 388 mgal, based on an implied range of 388-390 mgal see also Leaman, 1988.

The new crustal model has been applied to the gravity data base and the result is shown in Figure [5]. This may be compared with the older model Figure [4].

Using the new model, Dr David Leaman modelled two lines 5,360,000N, (from 500,000E to 620,000E) and 5,275,000N, (from 500,000E to 620,000E). He also produced a model of depths to the top of the granitoids in south-eastern Tasmania, and this is reproduced in Figure 6. The Leaman report is attached here as Appendix 1. The data from the gravity survey has previously been forwarded to Dr Bob Richardson at MRT and is already on Open File and available on the MRT web site. The data is re-included here as hardcopy and ASCII files in Appendix 2.

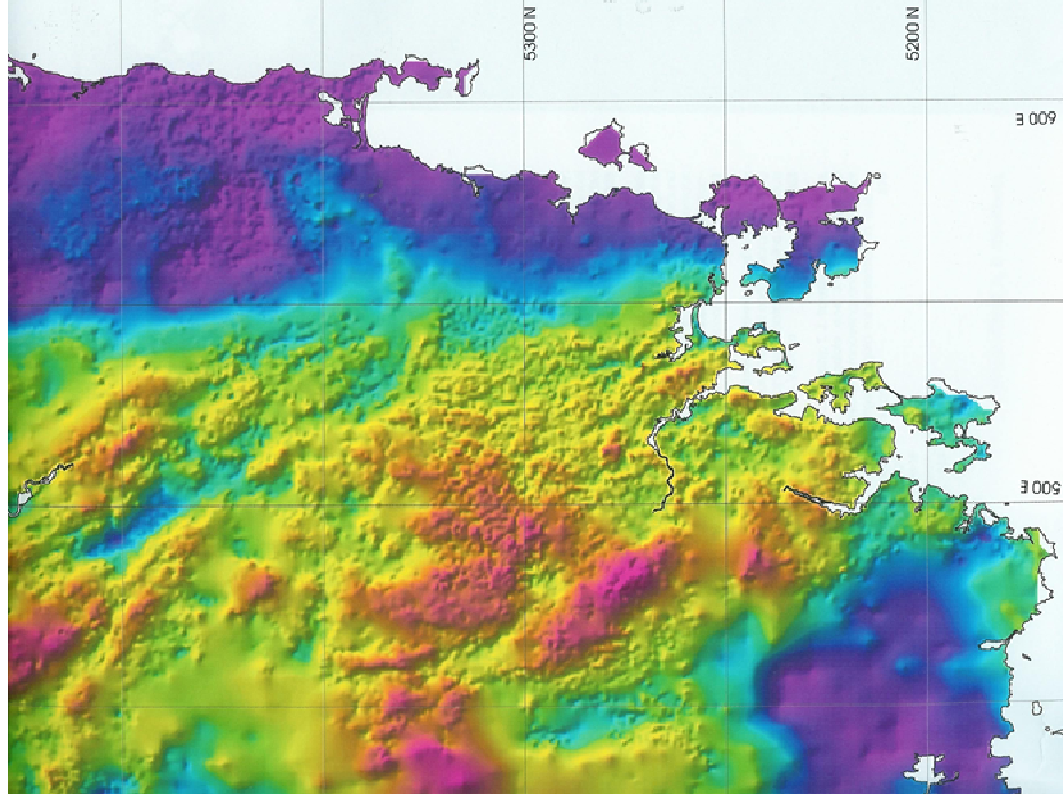


Figure 4. MANTLE91 Residual bouguer anomaly, SE Tasmania (supplied by Dr David Leaman).

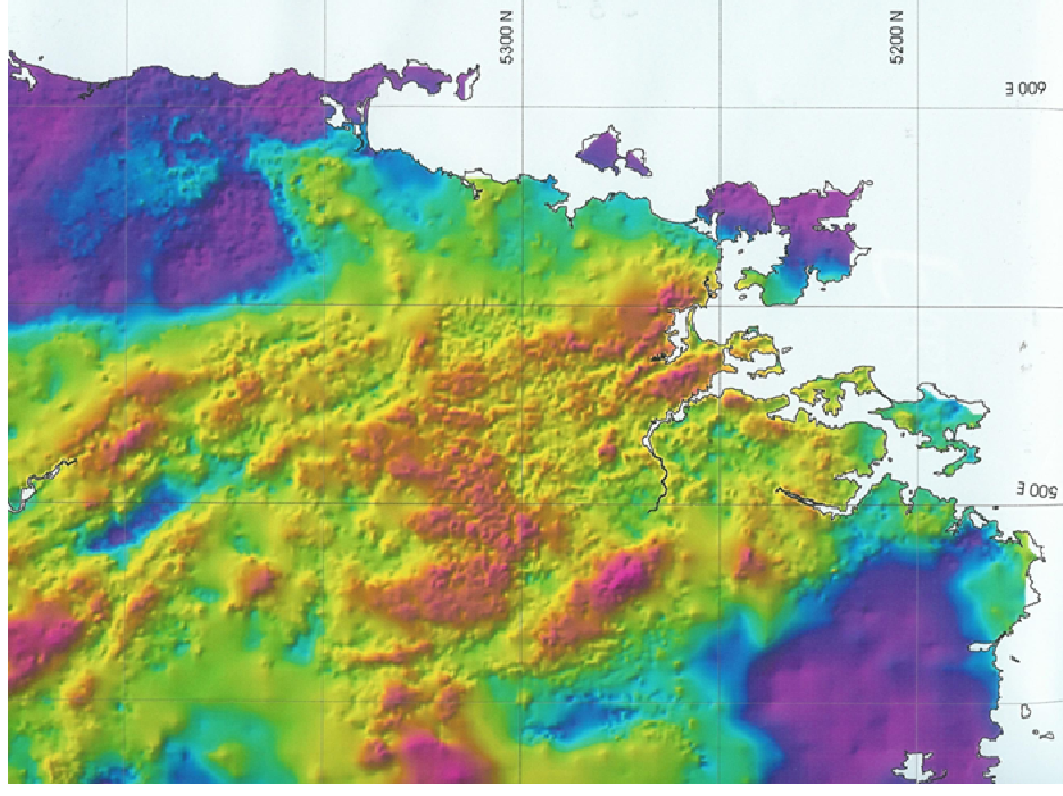


Figure 5. MANTLE07 Residual bouguer anomaly, SE Tasmania (supplied by Dr David Leaman).

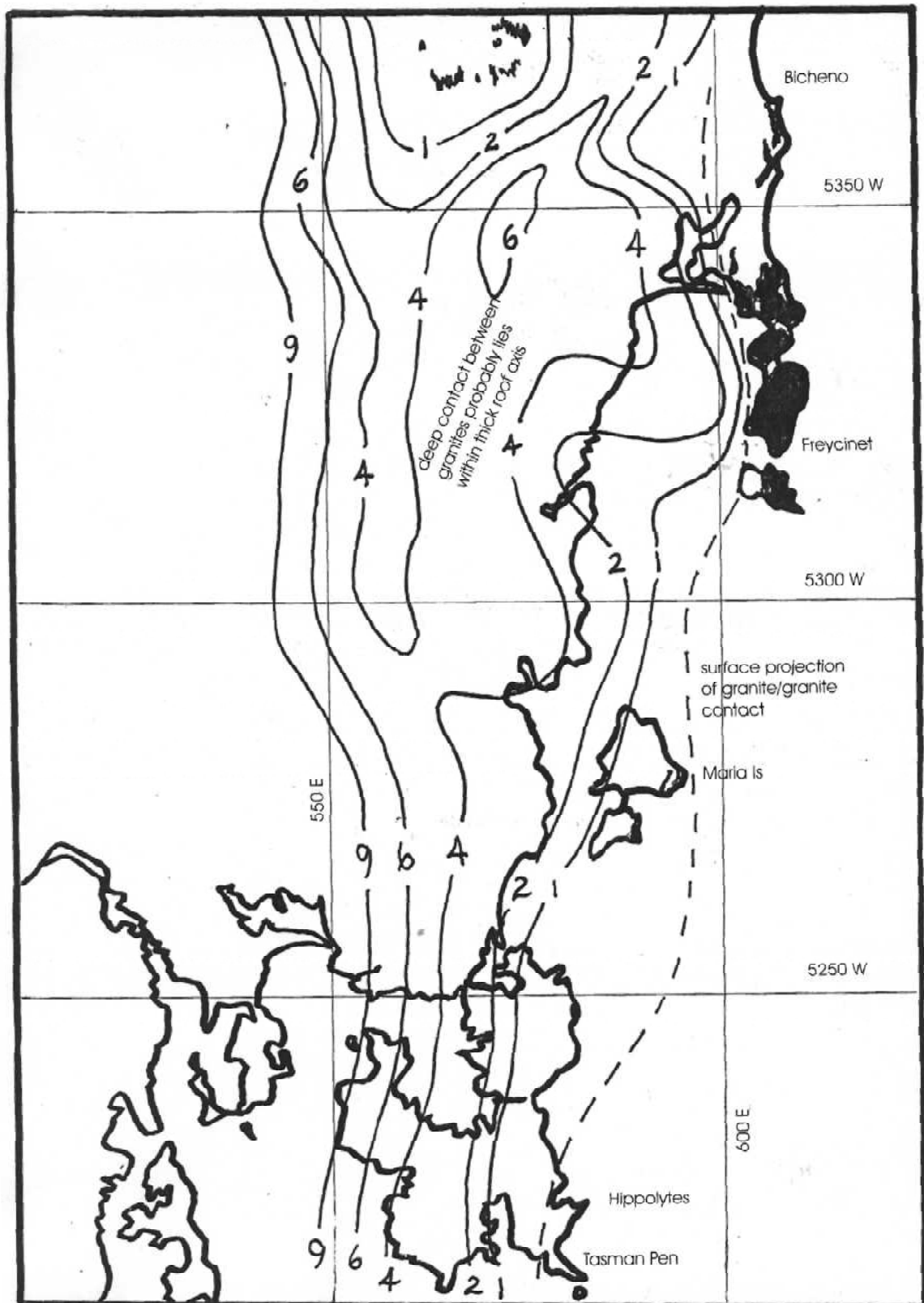


Figure 6. Contours of depths to top of granite (supplied by Dr D Leaman).

7.1.5 Discussion

The 2007 gravity survey, combined with the computation of the MANTLE07 residual bouguer gravity anomaly for south-eastern Tasmania has led to a significant re-interpretation of the distribution of buried Devonian granitoids in south-eastern Tasmania.

Figure 6 indicates that the Rossarden/Storeys Creek granite appears to have a buried projection at about 4km depth extending due south of its surface expression. The Coles Bay granite deepens to the west as expected, but there appears to be a relatively shallow extension west of Schouten Island, about 2km deep. As they come together, these extensions form a basin in the Lake Leake area with a maximum depth of about 6km.

More broadly, it is possible to interpret that the two granite phases join at depth, rather than being separate plugs. Whilst this may merely be an appearance rather than actuality, the new morphology is strongly encouraging for geothermal exploration, as it leaves the possibility open that south-eastern Tasmania is underlain by a larger 'hot' granite of the type found at Coles Bay and Rossarden/Storeys Creek.

The previous requirement to model a granodiorite to the west was not seen in the current modelling however Dr Leaman still incorporates two separate phases, with density differences of only 0.01g/cc.

7.2 Shallow heat flow drilling programme

7.2.1 Aquifer study

As the intersection of aquifers in a thermal drilling programme is undesirable from both an environmental and thermal stability point of view, consultants were engaged to advise on the gross distribution of aquifers, their quality and to make recommendations in respect of aquifers and the proposed thermal drilling programme. The report relied heavily on MRT studies. The consultant's report is attached in Appendix 3.

The main outcome of the study was the decision to collar the thermal drill holes in dolerite, as far as possible, as dolerite is a widespread rock type in eastern Tasmania but is relatively unfractured and hence only a moderate to low prospectivity for groundwater. The following Figure 7 shows the distribution of dolerite outcrops in the tenement area.

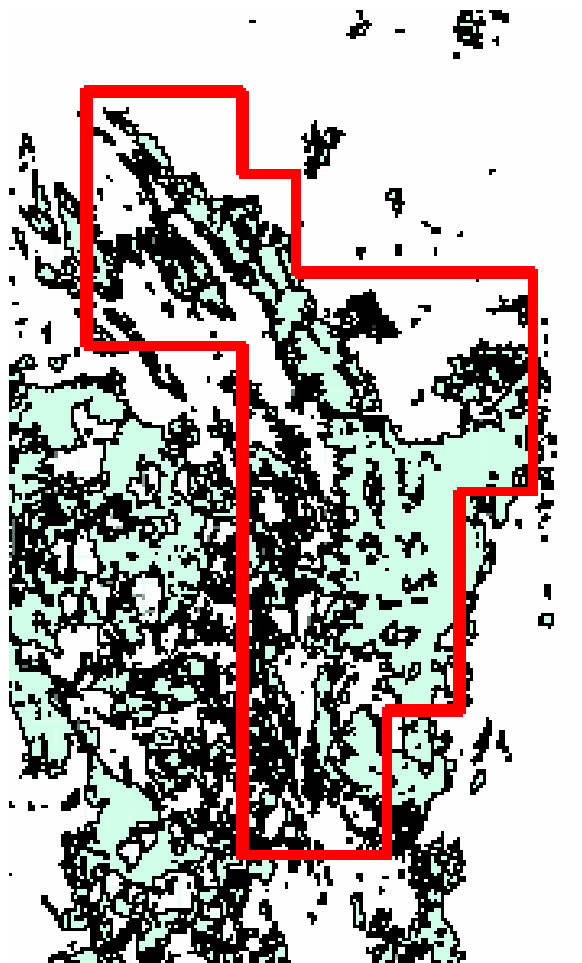


Figure 7. Distribution of dolerite within SEL26/2005.

7.2.2 Programme specifications

Due to the paucity of heat flow data in Tasmania, a systematic shallow drilling programme was commenced over the entire tenement. In consultation with geothermal consultants Hot Dry Rocks Pty Ltd, it was decided that the following parameters would apply:

- Spacing: nominal 20km x 20km
- Geology: dolerite preferred, due to stability and relative poor aquifer quality
- Depth: 300m (150m percussion pre-collar, 150m core) – this was later reduced to 250m, with 100m pre-collar and 150m core
- Orientation: vertical
- Pre-collar to be cased with PVC and aquifers grouted off
- 40mm PVC to end of hole, for down hole temperature logging.

Although the programme was on a nominal 20km x 20km grid, specific sites were selected using a number of criteria; including lithology (dolerite preferred), the presence of an existing appropriate site, land-owner wishes, previous site disturbance, protected/endangered species distribution and MRT direction.

The programme was carried out by Gerald Spaulding Drilling of Devonport. Two rig types were used in the program - a G & K 1000 diamond drill rig and a TH 62 percussion drill rig. The percussion rig was used to drill the pre-collar (about 150m originally, later shortened to 100m). The hole was then cased with 125mm class 12 PVC which was grouted to prevent aquifer cross contamination. On completion of diamond drilling 40mm class 9 PVC was put down from surface to end-of-hole to act as a guide to the thermal probe. This was then dummy probed to ensure that it was open and clear to the bottom of hole. A capped lockable lid was then fixed onto HWT casing at the top of the hole which was then left for approximately two to three months to equilibrate before geothermal assessments were undertaken.

Chips from the percussion rig were collected every 3 metres and logged, photographed and archived. HQ core was placed in trays with up to 1 metre from each tray wrapped in "Gladwrap" to retain moisture for thermal conductivity measurements. The core was then transported to the MRT core shed where it was logged, photographed and archived.

Site preparation was minimal due to the policy of selecting sites which were already available, where possible. Sumps were required for the diamond drilling. On completion of drilling, the sites were rehabilitated, taking care to ensure that rock, clay and soil were put back in the approximate order to which they had been excavated. Topsoil containing seed-bank was then placed on top.

Locations and other details of the drill holes are located in Table 1 and are plotted in Figure 8. Drill logs completed to date are presented in Appendix 4 and images of chips and core available to date in Appendix 5 (digital files on DVD only).

TABLE 1 Drill hole details to 10 July 2008

	B	C	D	E	F	I	L	M	T
	Hole Name	Easting	Northing	Orientation	Altitude	Percussion	Diamond		
1						Depth	From	To	Comments
2						metres	metres	metres	
3		GDA94	GDA94		metres	metres	metres	metres	
4	Tooms	567,354	5,319,894	Vertical	414	102.0	102.0	261.5	
5	Leake	568,510	5,338,586	Vertical	475	150.0	150.0	300.4	
6	Snow	572,873	5,358,389	Vertical	749	126.0	126.0	279.3	
7	Swan1	586,856	5,362,471	Vertical	444	15.0	NA	NA	Abandoned - loose talus
8	Swan2	588,108	5,359,271	Vertical	126	150.0	150.0	300.0	Abandoned - drilled successfully but casing deformed and couldn't lower thermal probe
9	Elizabeth	549,501	5,356,701	Vertical	439	150.0	150.0	300.0	
10	Tower Hill	573,964	5,399,699	Vertical	584	147.0	147.0	253.0	
11	Fingal1	590,084	5,380,114	Vertical	563	36.0	NA	NA	Abandoned - loose talus
12	Fingal2	589,312	5,380,292	Vertical	577	66.0	NA	NA	Abandoned - loose talus
13	Fingal3	590,381	5,381,540	Vertical	613	-	0.0	249.8	Diamond drilled from surface
14	Ben Lomond	546,613	5,402,059	Vertical	694	126.0	126.0	276.1	
15	Temple Bar	530,426	5,403,592	Vertical	353	150.0	150.0	299.0	
16	Epping	533,251	5,382,606	Vertical	215	138.0	138.0	288.0	
17	The Quoin (Charlton1)	545,174	5,339,821	Vertical	242	102.0	102.0	134.0	Abandoned
18	Charlton2	545,174	5,339,821	Vertical	242	-	0.0	250.6	Diamond drilled from surface
19	Lemont	547,437	5,322,898	Vertical	333	96.0	96.0	246.2	
20	Woodsdale	552,007	5,296,499	Vertical	365	102.0	102.7	252.7	
21	Kingston	547,791	5,383,093	Vertical	287	90.5	90.5	235.4	
22	Tiberias	531,690	5,301,300	Vertical	437	102.4	102.4	252.6	
23	Tunbridge	529,875	5,339,428	Vertical	252	102.3	102.3	252.3	
24	Macquarie	526,048	5,359,621	Vertical	295	102.5	102.5	223.7	
25	Nicholas (AGD66)	587,849	5,401,256	Vertical	398	-	0.0	249.7	Diamond drilled from surface
26	Frankford	490,171	5,416,602	Vertical	289	102.0	102.0	251.6	
27	Westbury	485,940	5,396,730	Vertical	233	102.0	102.0	252.0	
28	Perth	513,500	5,399,080	Vertical	200	102.0	102.0	252.7	
29	Numamura	528,262	5,415,737	Vertical	727	60.0	59.2	249.7	
30	Bangor	508,572	5,440,427	Vertical	204	102.0	102.0	252.2	
31	Swan3	588,108	5,359,271	Vertical	126	150.0	150.0	200.0	
32	Bluestone Tier	571,901	5,300,093	Vertical	353	102.0	102.0	252.5	
34	Runnymede	546,175	5,280,238	Vertical	247	85.3			
38	Sorell	550,181	5,260,122	Vertical	50	94.0			
39	University Farm	534,378	5,261,742	Vertical	43	90.0			
40	Native Hut	530,061	5,284,634	Vertical	378	102.0			
41	Oatlands	530,498	5,320,450	Vertical	559	83.0			
42									

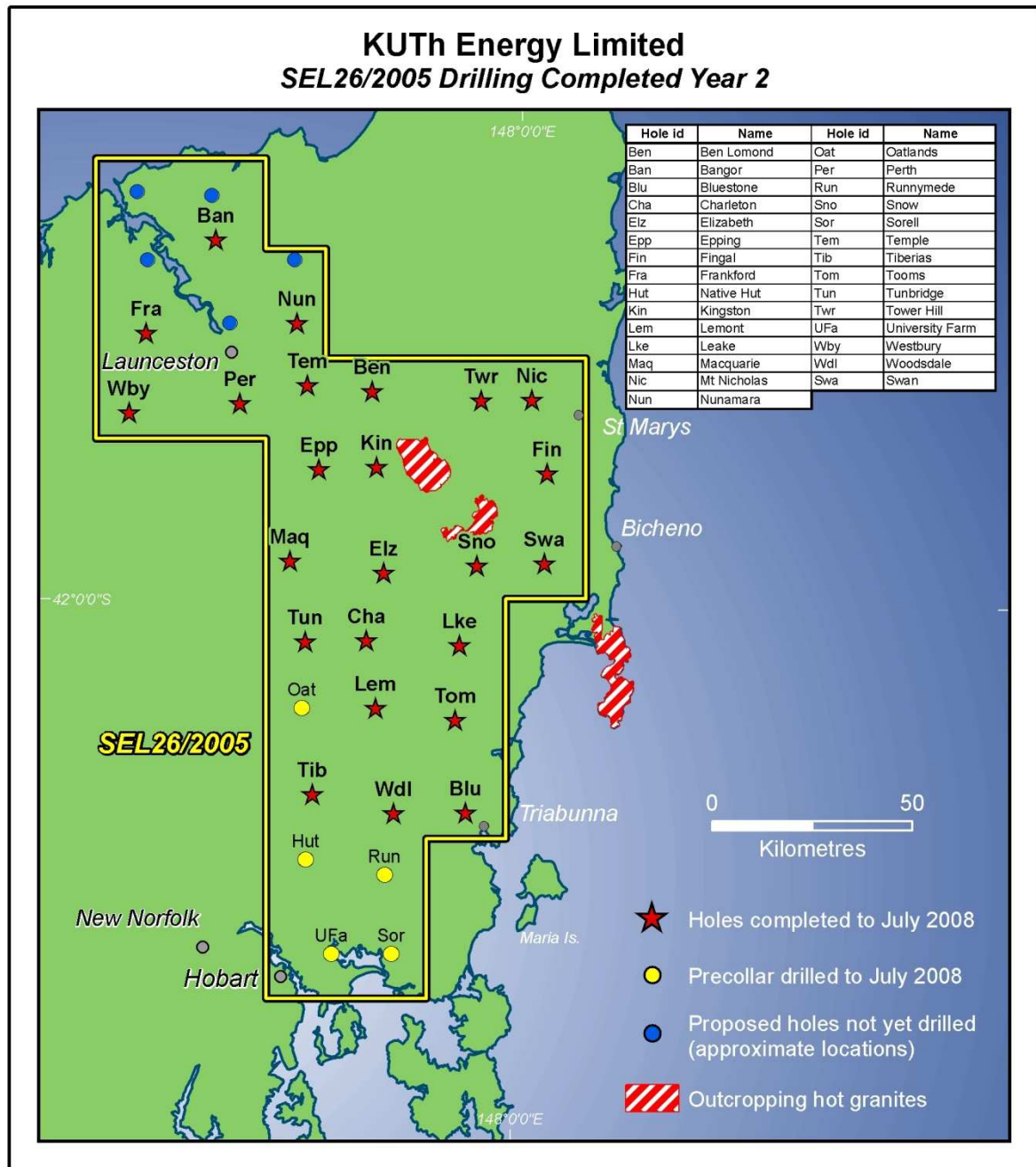


Figure 8. SEL26/2005 drilling completed Year 2, to July 2008.

7.2.3 Thermal probing and rock conductivity measurements

Thermal contractors Hot Dry Rocks Pty Ltd were engaged to undertake down-hole temperature logging and measurement of thermal conductivity of cores, which together enabled them to calculate the heat flows at the drill holes.

As drilling introduces heat into the system and disturbs the hydrological regime at the site, holes are left for a minimum of two months after drilling before final down-hole temperature measurements are undertaken. Delays in contractor availability meant that the first eight holes were equilibrated for three months after drilling. However a 'preliminary' down-hole measurement is done after 4-6 weeks, in order to determine where conductivity samples of the core need be taken.

Down hole temperature logging

Holes were logged using a thermistor, a type of resistor that relies on the change in resistance to measure temperature changes. Each hole was sampled at one metre increments. Results are presented as tables of temperature recorded per metre down-hole and as graphs of geothermal gradients in Appendix 6. Twelve drill holes had all data read and measured at the time of writing of this report.

Thermal conductivity measurement

A report by thermal consultant Hot Dry Rocks Pty Ltd notes:

Thermal conductivity is the physical property that controls the rate at which heat energy flows through a material in a given thermal gradient. In the S.I. system of units, it is measured in Watts per metre-Kelvin (W/mK). In the earth, thermal conductivity controls the rate at which temperature increases with depth for a given heat flow. The thermal conductivity distribution within a section of crust must be known in order to calculate crustal heat flow from temperature gradient data, or to predict temperature distribution from a given heat flow.

Thermal conductivity measurements were made on core specimens using a steady state divided bar apparatus calibrated for the range 1.4–9.8 W/mK. Thermal conductivity is sensitive to temperature, in general decreasing as temperature increases. The measurements contained in this report were made within $\pm 2^\circ\text{C}$ of 30°C .

Further details of methodology are contained in the conductivity reports from Hot Dry Rocks Pty Ltd, in Appendix 7. During drilling, approximately 0.5m of core from every core tray was securely wrapped in 'Glad Wrap' to prevent drying-out, as the inherent moisture of the rock is a contributor to overall thermal conductivity. Later, from the down-hole temperature logs, a piece of core that had been wrapped was selected from appropriate depths for the measurement of thermal conductivity.

A summary of results to date is given in Table 2. The results for Jurassic dolerite are low (relatively poor thermal conductivity) and are typical for that rock type. The results for the Mathinna Group sediments are relatively high (higher thermal conductivity) and this is influenced by several factors, including a significant quantity of quartz-rich sediments (greywackes) included in the samples, silicification of some sections and, probably most significantly, the fact that there is a strong foliation parallel to the direction of measurement in the samples measured.

In retrospect, it was realised that the holes had probably deviated and drilled down the foliation, so did not capture a greater range of cleavage-to-core angles in the deformed sediments. Therefore these measurements, although valid for the particular core measured, are probably not typical of the Mathinna Group either in the area or more widely. At the time

of writing, tests are being carried out on the conductivity of the same core samples, measured perpendicular to the cleavage.

Table 2: Thermal conductivity values for drill holes in eastern Tasmania

Hole ID	Thermal conductivity#		Lithology
	Maximum W/mK	Minimum W/mK	
Snow	1.99	2.25	Jd
Lake Leake	1.96	2.18	Jd
Elizabeth	1.99	2.27	Jd
Tooms	1.82	2.07	Jd
Temple Bar	2.28	2.49	Jd
Ben Lomond	3.87	4.41	Sm
Tower Hill	4.06	5.23	Sm
Epping	1.87	2.18	Jd

Lithologies: Jd = Jurassic dolerite; Sm = Silurian Mathinna Group sediments

Values have an average error margin of up to +/-10%

7.2.4 Heat flow calculation

From a report by Hot Dry Rocks Pty Ltd:

Heat flow is a power unit expressed at surface (mW/m^2) and is a function of heat generated within the crust plus heat conducted from the mantle.

The principle aim of geothermal exploration is to locate anomalously high temperatures at an economically and technically viable drilling depth. Temperatures are usually expressed at the surface in the form of heat flow units (mW/m^2) and it is generally assumed that heat is transported to the surface by conductive means.

In a conductive heat regime the temperature T , at depth z is equal to the surface temperature T_0 plus the product of heat flow Q and thermal resistance R , such that:

$T = T_0 + QR$, where $R = z / (\text{average thermal conductivity between the surface and } z)$.

Consequently the most highly prospective regions for geothermal exploration are those that have geological units of sufficiently low conductivity (high thermal resistance) in the cover sequence combined with high heat flow.

Heat flow is a product of temperature gradient and rock thermal conductivity and is therefore a modelled value (not directly measured). Consequently, the modelling of heat flow is a precision skill that requires a detailed understanding of physical conditions in the bore and the physical properties of the rocks; including advective processes that may influence bore temperature (such as ground water flow) and the temperature dependence of conductivity.

HDRPL utilises its own 1D Heat Flow Modelling Software for the modelling of both advective influences and temperature dependence. The results of 1D heat flow modelling should be treated with caution when extrapolating data spatially over considerable distance.

The results received at the time of writing are presented in Table 3 and shown in Figure 9. Reports on heat flow are presented in Appendix 8.

Table 3: Surface heat flow values for eastern Tasmania

Hole ID	Location		Dominant lithology	Equilibrated surface heat flow# mW/m ²
	Northing	Easting		
Snow	5,358,389	572,873	Jd	92.0
Lake Leake	5,338,586	568,510	Jd	92.0
Elizabeth	5,356,701	549,501	Jd	94.0
Tooms	5,319,894	567,354	Jd	96.0
Temple Bar	5,402,059	530,426	Jd	87.0
Ben Lomond	5,402,059	546,613	Sm	97.0
Tower Hill	5,399,699	573,964	Sm	83.0
Epping	5,382,606	533,251	Jd	62.0§

Lithologies: Jd = Jurassic dolerite; Sm = Silurian Mathinna Group sediments

All holes are vertical and equilibrated for 3 months after drilling

Values have an average error margin of < 2.5 mW/m²

§ Heat flow in base of hole (268m) 92.0 mW/m²

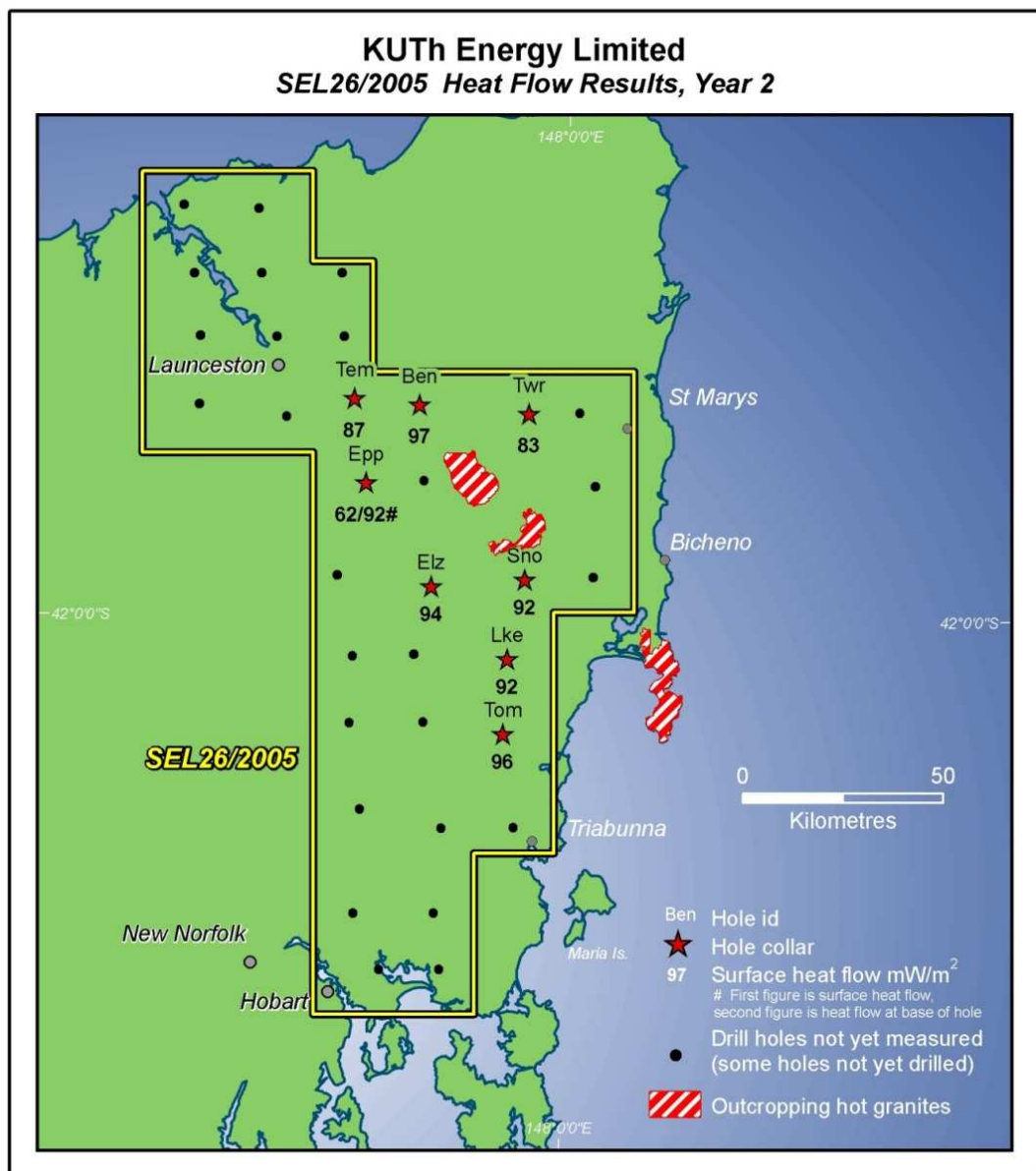


Figure 9. SEL26/2005 heat flow results to July 2008.

7.2.5 Discussion

The heat flow results received to date are very encouraging. Any result $>90 \text{ mW/m}^2$ could be considered indicative of a strong thermal source at depth; however no inference can be made as to the temperature at depth, or the depth of the source. The results obtained to date, being four undoubtedly $>90 \text{ mW/m}^2$, one more probably of that magnitude at the bottom of the hole and a further two results between 83 and 87 mW/m^2 vindicate KUTH Energy's exploration model and gives strong impetus to the search for geothermal 'hot rock' energy in eastern Tasmania.

Thermal consultants Hot Dry Rocks Pty Ltd stated that the results for the Elizabeth, Tooms, Lake Leake and Snow holes are within the range of values commonly reported in many parts of the Cooper Basin, South Australia and recently reported for the Adelaide Fold and Thrust Belt (South Australia). Further, these are a consistent cluster of strong results and over-lie the area where the granitoids are interpreted to be between 3 and 5km deep – ideal for an EGS geothermal project – see Figure 10.

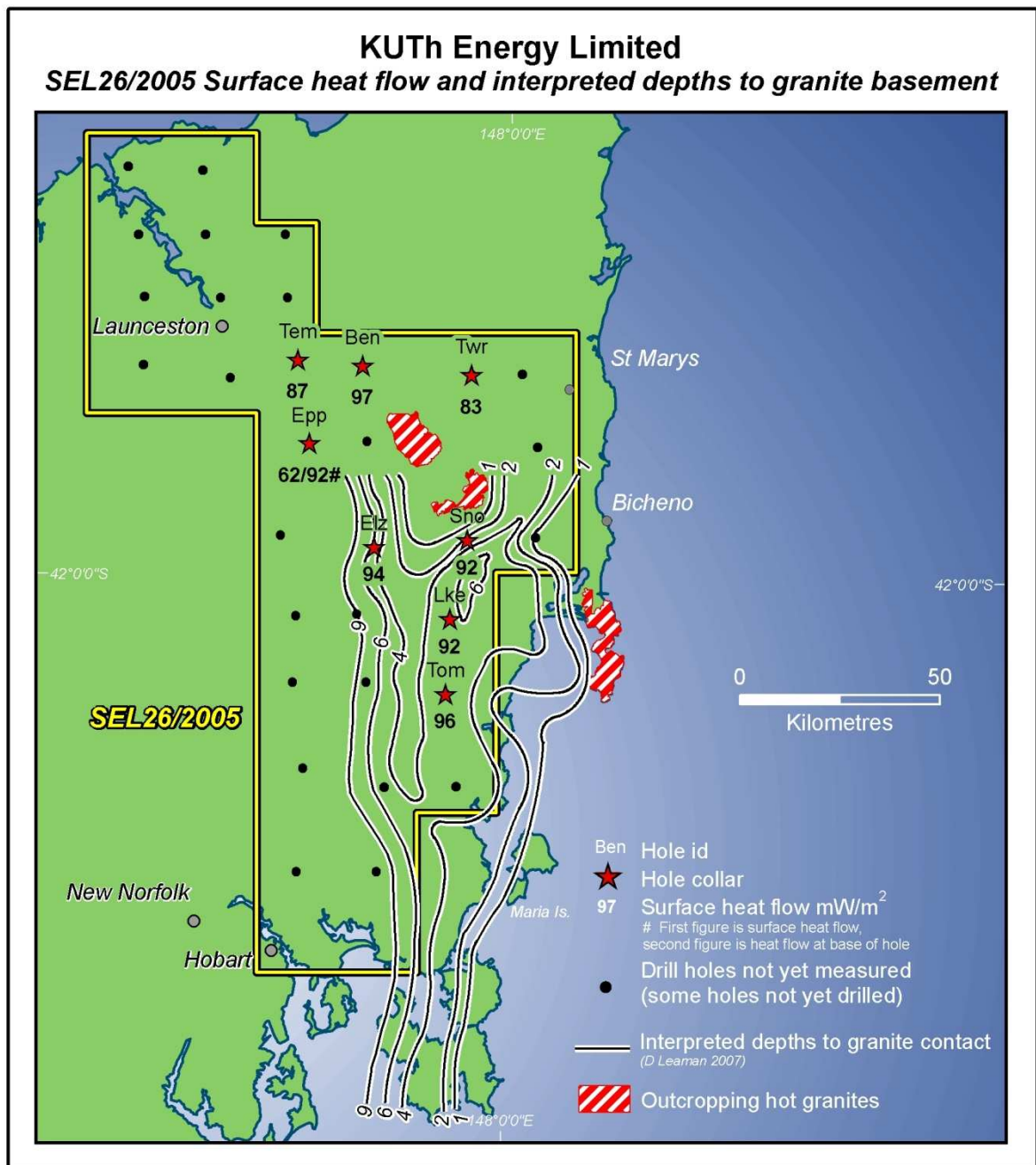


Figure 10. SEL26/2005 heat flow results to July 2008 plotted against contours of interpreted depth to basement.

Figure 11, supplied by HDRPL, illustrates the distribution of heat flow data modelled in the report for these 4 drill holes (see Appendix 8) (orange polygon) with respect to those values presently available for all of Australia within the Global Heat Flow Database. Values modelled in the report for these holes are all within the top 17% of heat flow values for Australia in the Global Heat Flow Database.

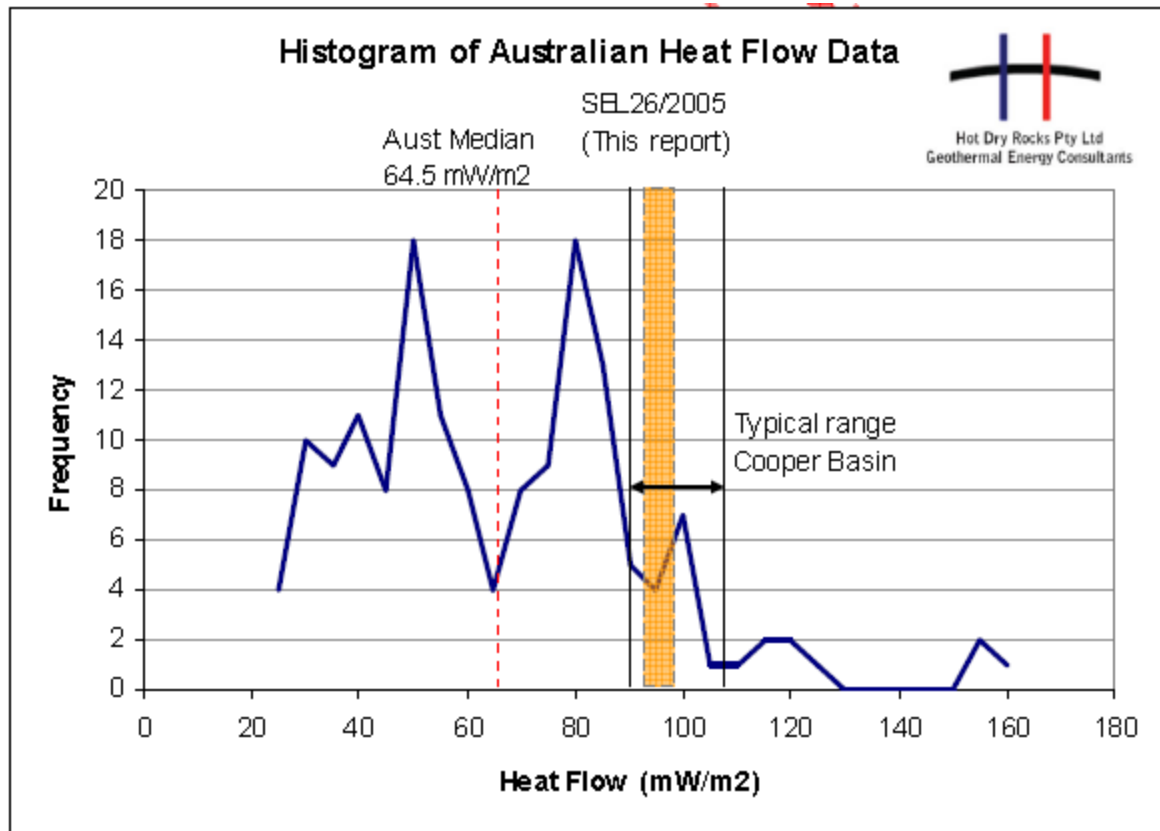


Figure 11. Distribution of Australian heat flow data, with the range of values south of Rossarden/Storeys Creek plotted (supplied by HDRPL)

7.3 Magneto telluric (MT) survey

As foreshadowed in the First Annual Report, a MT survey on the tenement was initiated on the tenement. Unfortunately a contractor was not available in time for the work to be completed and reported on during the second year and results and interpretation will be presented in the Third Annual report for the tenement.

Natural source MT is a passive surface measurement of the earth's natural electrical (E) and magnetic (M) fields. MT measures the changes of E+M response with respect to time for frequencies between 0.001Hz to 10kHz. This information is used to derive the resistivity structure of the subsurface. MT has a great depth of penetration (>10km), light weight equipment, and very low environmental impact.

It was decided to first undertake two orientation lines to see how well the geothermal targets would respond to MT and in particular to acquire basic information such as acquisition times (directly related to the lowest frequency required to reach 5km depth of investigation), acquisition rate, problems with the equipment, interpretation/inversion methods, sources of interference (such as the BassLink DC transmission cable under Bass Strait), and logistics.

The northern line will investigate the Tamar Conductivity Zone (TCZ) first delineated by a regional MT survey conducted in the 1980s by Hermanto (University of Tasmania PhD thesis). This line is 42km long (43 stations at 1km spacing) striking 70° ENE and starts approximately 8km west of Exeter. The line starts on Permian sediments (light blue in Figure 12) and crosses into recent sediments and Jurassic dolerite (orange Figure 12) in the Tamar River Valley. The last 20 km (20 stations) on the east are over folded Devonian-Silurian Mathinna Beds (purple Figure 12). Also at its eastern end, the TCZ line traverses out of SEL26/2005 into minerals exploration tenements controlled by Beaconsfield Gold NL. Permission to conduct the MT survey over this ground was granted by Beaconsfield Gold NL.

The central eastern MT line (Figure 13) investigates a zone where the Devonian granite plutons are modelled to be below 3-5km of insulating sediments, co-incident with high (>90mW/m²) bore hole heat flows, west of Swansea. Figure 14 shows the broad crustal structure according to Leaman's model at 5,360,000mN. It is entirely on Jurassic dolerite, which provides a semi-uniform resistive layer 100-300m thick. In total the southern line is 54km long and trends ~110° following the Lake Leake Road for good access. It leaves the main road at the boundary of a large State Reserve and traverses to the south of the Reserve. At its eastern end, the central-eastern line traverses off SEL26/2005 onto a mineral exploration tenement controlled by Mineral Ventures Pty Ltd, a subsidiary of KUTh Energy Limited. These extensions are required technically so that the requisite depth can be 'seen' in the central part of the survey, where the features of most interest lie.

At the time of writing of this report, the station locations have been determined using various GIS databases, including threatened native species and other areas/points with high conservation values and with extensive consultation with MRT. The planning and discussion process has taken approximately two months. A trained botanist will be part of the survey team and will be able to shift final station locations to take account of particular botanical occurrences at the time of the survey. Landowners have been contacted and access permissions gained.

The survey is scheduled to commence late July 2008 and is expected to take up to six weeks.

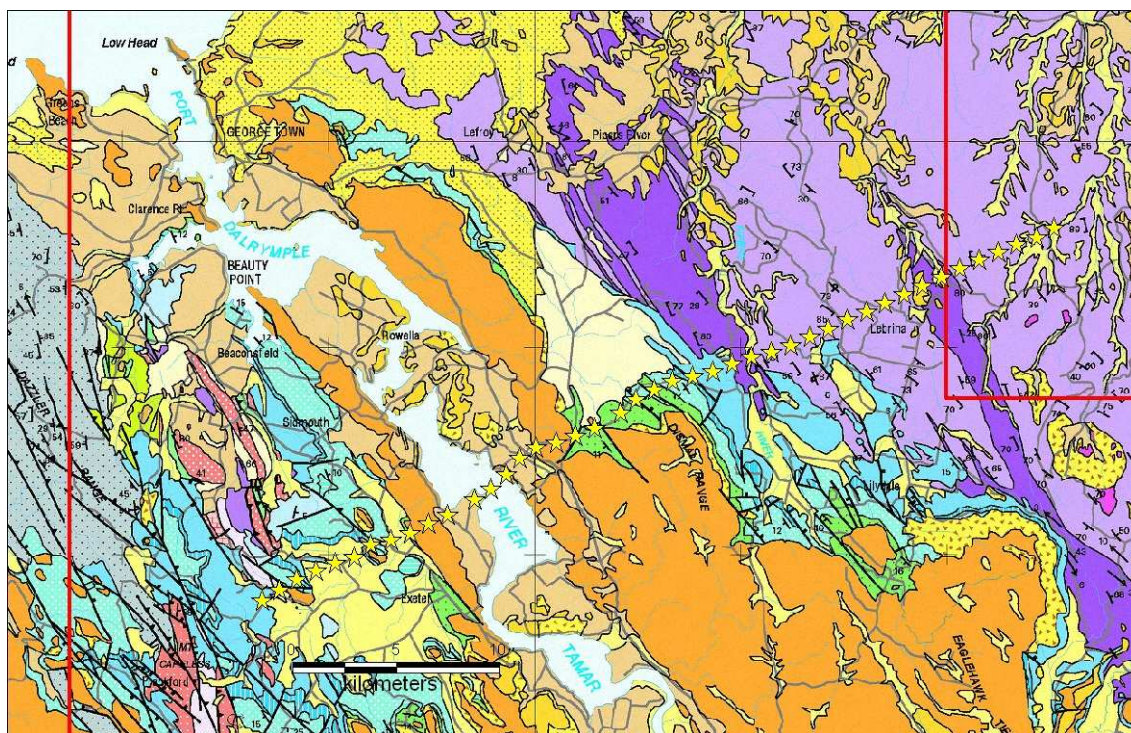


Figure 12 Proposed station locations for MT survey over Tamar Valley. Red outline is SEL26/2005.

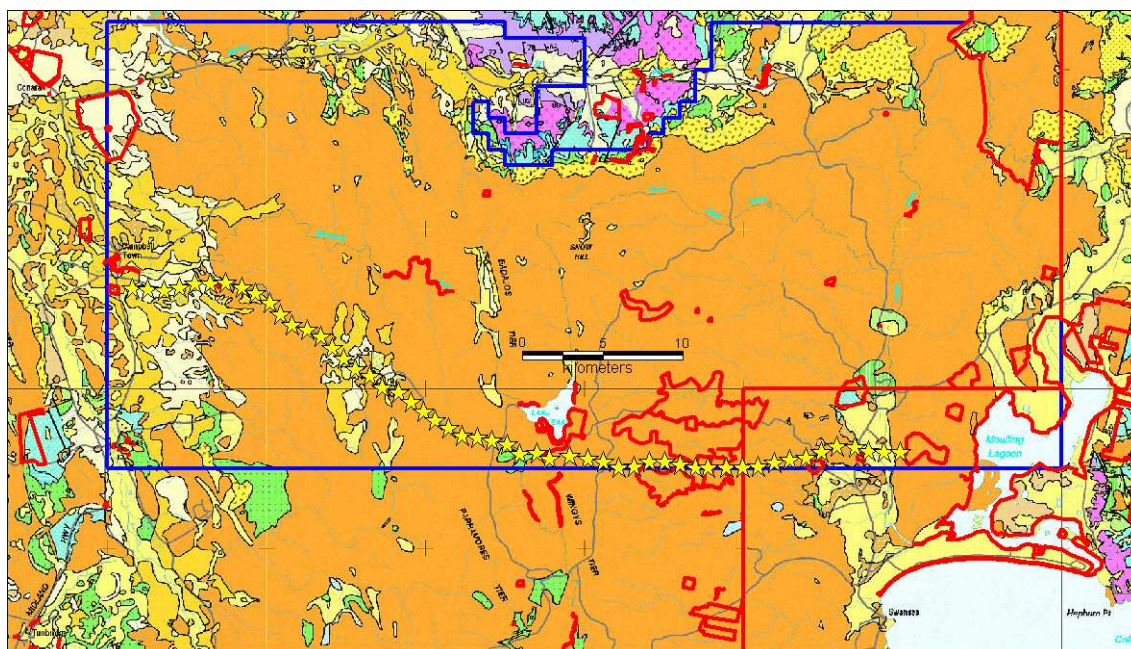


Figure 13 Proposed station locations for MT survey over Central Eastern Tasmania. Red outline is SEL26/2005, including internally excluded areas; blue outline is SEL68/2007 held by Mineral Ventures Pty Ltd.

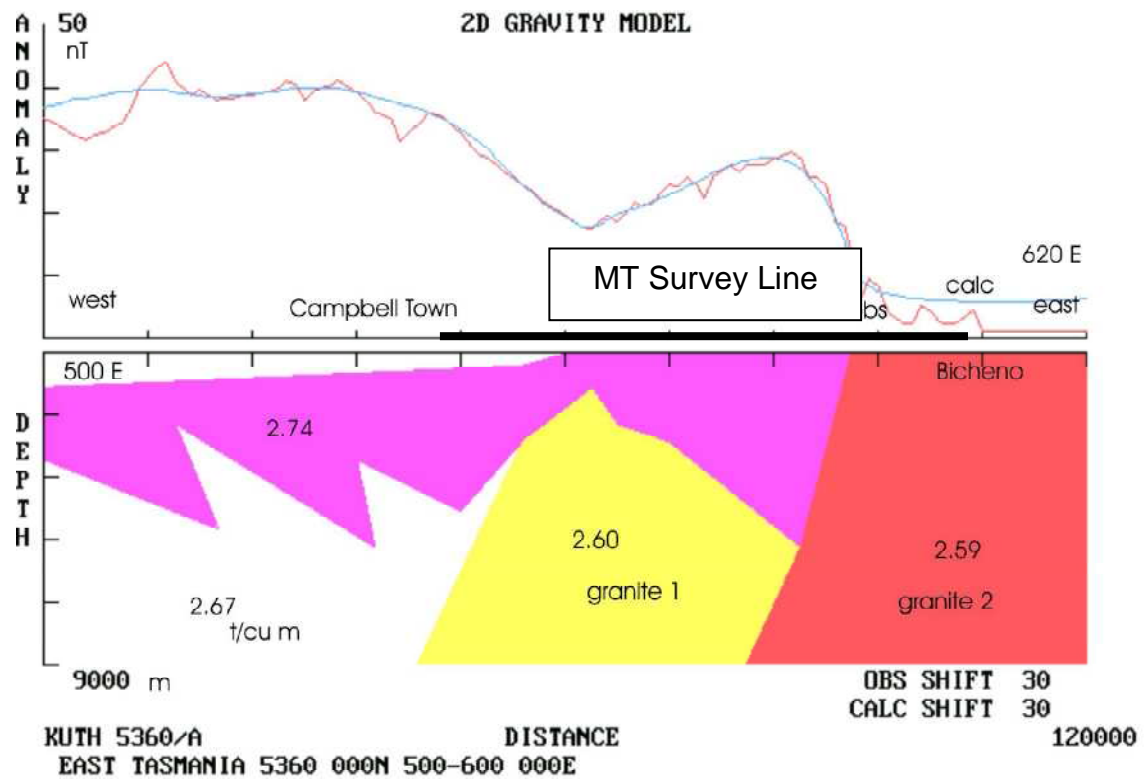


Figure 14. Leaman (2007)'s model for section 5,360,000N, showing location of MT survey.

8 PROPOSED WORK

The following work program is scheduled to be undertaken in Year three of the SEL:

Magneto-telluric surveys

The orientation MT survey referred to above will be completed in year three of the tenement, at a total cost of approximately \$100,000. Depending on the success or otherwise of the orientation survey, a follow-up survey will be done, expanding on the orientation lines both on the 'Tamar Conductivity Zone target and the 'hot granites' target. This follow-up work may comprise up to 250 stations and cost up to \$200,000.

Shallow drilling

The shallow drilling programme will continue, with approximately seven additional holes to be drilled in the current programme. These are expected to cost in the order of a further \$300,000.

Deep drilling

Given that the heat flows and granite distributions in the central east of the lease are looking very favourable, KUTh would like to move to model the temperature of the basement rocks, in order to plan a 'production well' to approximately 5,000m depth for 2010, assuming an appropriate drill rig becomes available. However to do this, the thermal conductivity characteristics of the rock column above the granites in central eastern Tasmania need to be known with greater certainty. As the majority of this rock column would consist of Mathinna Group sediments, and as these are not exposed in central eastern Tasmania, the company does not have sufficient confidence to predict the thermal conductivities involved and hence cannot yet model the temperature of the basement.

The company plans to drill a slimline (HQ/NQ) drill hole in central eastern Tasmania, positioned to intersect the maximum depth of Mathinna Group sediments, in order to measure thermal conductivities of the rock types intersected (and down-hole temperature). To this end, cross sections to approximately 10km depth are being compiled to plan a location where Parmeener Super Group and Jurassic dolerite cover is thinnest, so a drill hole to a certain depth will intersect the maximum thickness of Mathinna Group sediments.

The slimline hole will be drilled to >1,000m and will be temperature logged and sampled for thermal conductivity. The cost is expected to be at least \$500,000.

The above work is expected to cost a minimum of \$1,000,000 if able to be implemented in full.

The geophysical works are expected to have minimal environmental impact. The shallow drilling program will be conducted via a program submitted to MRT for approval. Notwithstanding that this type of drilling is little different from mineral exploration type shallow drilling, as discussed with MRT officers, the work proposal will pro-actively address risks anticipated in the program and where necessary, state how those risks will be mitigated. Environmental impacts will be kept to the minimum possible for the type of work. Rehabilitation of drill sites will occur in line with current good practice.

9 ENVIRONMENTAL

As drill locations were flexible enough to be moved to take advantage of sites already suitable (rather than needing to bulldoze new drill pads), ground disturbance was minimal considering the very large programme undertaken. Landowner and MRT wishes also influenced site location. Where sumps needed to be dug for diamond drilling, topsoil was stockpiled separately from the other material.

Disturbed areas were rehabilitated progressively during the year and drill sumps filled in using the stockpiled spoil, with original topsoil and seeds being the final layer. Landowners were consulted after rehabilitation in respect of their satisfaction. In one case, the company agreed to fund a fence around a rehabilitated and reseeded drill site, to keep stock off the new vegetation. Before-and-after images of a number of drill pads are presented in Appendix 9.

10 EXPENDITURE STATEMENT

Expenditure, exclusive of GST, for the 12 months ending 6 July 2008 was:

	\$
Administration	-1,962.57
Geology	193,505.36
Geophysics - magnetics	248.77
Geophysics - gravity	49,611.34
Geophysics - geothermal	37,099.29
Geophysics - MT	9,090.91
Land access costs	1,656.13
Site preparation	11,712.00
Percussion drilling	483,566.00
Diamond drilling	529,724.08
Rehabilitation	16,136.13
Health & safety	1,039.30
Power & energy studies	11,118.41
TOTAL	1,342,545.15

The negative figure for Administration reflects a re-imburement of tenement fees over-charged the previous year.

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12 KEYWORDS

SEL26/2005
KUTh Exploration Pty Ltd
geothermal
geothermal exploration
engineered geothermal systems
EGS
hot rocks
thermally anomalous granite
deep drilling
diamond drilling
percussion drilling
gravity
magneto tellurics
MT
temperature profile
heat flow
thermal conductivity
aquifers
basement
granite
dolerite
Parmeener Supergroup
Mathinna Supergroup
Tamar Conductivity Zone