

## Due Diligence and Valuation Report

Arrowhead Code: 83-01-01  
 Coverage initiated: 07 February 2010  
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 Fair share value bracket: AS\$36.4c to AS\$96.4c<sup>i</sup>  
 Share price on date: AS\$5.1c<sup>ii</sup>

### Analyst

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### Market Data

52-Week Range:	AS\$1.3c - AS\$5.8c <sup>iii</sup>
Average Daily Volume:	532,774 <sup>iv</sup>
Market Cap. on date:	AS\$27.75MM

### Financial Forecast Data (in AS\$)

	'11E	'12E	'13E	'14E	'15E	'16E	'17E
High profit/(loss) MM	(26.1)	(8.4)	57.7	74.3	71.8	100.1	105.4
High EPS cents	(4.80)	(1.54)	10.61	13.65	13.19	18.40	19.36
Low profit/(loss) MM	(26.1)	(8.4)	27.2	37.2	37.4	43.1	47.0
Low EPS cents	(4.80)	(1.54)	5.00	6.84	6.87	7.93	8.63

### Fiscal Year (FY)

1<sup>st</sup> October – 30<sup>th</sup> September

### Summary

Earth Heat Resources Ltd (EHR) is a renewable energy company, focusing on acquisition and development of green assets, predominantly in the geothermal energy segment for electricity generation and sale. The portfolio of company comprises approximately 180MW of geothermal developments in Argentina, Africa and Australia, with non-core oil and gas holdings in USA.

Earlier called Fall River Resources Limited, the company changed its name to Earth Heat Resources Limited in July, 2010. This reflects the company's transformation to a pure geothermal player by



Company: Earth Heat Resources Limited.  
 Tickers: ASX: EHR  
 Headquarters: Adelaide, Australia  
 MD/CEO: Mr. Torey Marshall  
 Website: [www.earthheat.com.au](http://www.earthheat.com.au)

disposing off its non-core assets. In the FY2010, EHR's projects were in initiation phase and hence there was no operating revenue during the period. However, reduction of liabilities (AS\$2.2M) resulting from disposal of USA Oil and Gas assets and a debt restructure, led to a net profit of AS\$2.19M.

In July 2010, the government of Argentina awarded the tender to EHR Joint Venture to develop a 30MW geothermal project in the Neuquen Province called Copahue. The Federal government could purchase the power in a price range of US\$100-US\$120/MWh when it becomes operational.

The company has a very low risk profile compared to its peers in Australia. The Copahue project has a high maturity and associated low geothermal risk compared to its peers (*See Project Risk Section on page 12 for details*). The project has a full historic pre-feasibility study, 4 deep wells, very high temps at shallow depth (235°C at 600m), transmission lines within 30m of old pilot plant and attractive guaranteed off take pricing.

EHR has also entered into an agreement to explore and develop a major geothermal resource in the Djiboutian Rift Valley, with a total estimated capacity of 150MW (full field development). In Oct 2010, EHR signed a memorandum of understanding with Electricite' de Djibouti and the Ministry of Natural resources to develop a 50MW geothermal plant during the first phase.

Arrowhead believes that EHR has enormous growth potential with a low risk profile. Based on intrinsic revenue capacity of the Copahue Project and Fiale Project, Arrowhead believes that EHR's fair share value lies in the AS\$36.4c to AS\$96.4c<sup>v</sup> bracket.

## Company Presentation

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Earth Heat Resources, formerly Fall River Resources Limited, is an Australian based company focused on the acquisition and development of green assets for electricity generation and sale. EHR has transformed itself into a "New Energy" company in the past year and started focusing on the geothermal energy sector. It has already secured exploration licenses in Australia, East Africa and Argentina with East Africa being the most strategic region.

Following the new strategy, the company has undertaken a rationalization of its non-core assets including the sale of the West Florence oil and gas assets to Adelaide Energy Ltd. Further, the company continues to pursue an agreement with its joint venture partner and operator to convert its interest in Baxter project (oil asset) to a royalty. EHR is currently in a transition phase where it is transforming into wholesale energy generating company. Its main projects in Argentina and Djibouti are in the development stage and will take three to five year for completion. Considering the operational position of the company, it has been incurring losses for last three financial years. Although, the company recorded Profit after tax of AS\$2.2M in FY10, it was primarily due to the liabilities reduction arising from disposal of its non-core operations. We believe that the company's exploitation programs will start generating revenues from FY2013 and until then it will continue spending on development work and incur losses.

EHR is trying to position itself amongst the top tier of independent developers in the geothermal energy sector and be the first listed company in Australia to achieve this feat.

### **EHR's Asset Portfolio includes<sup>vi</sup>**

EHR is pursuing exploration and development work at various locations. Its asset portfolio comprises three projects:

**Australia** - Earth Heat holds 100% interest in eleven geothermal exploration licences ('GELs') covering circa 16,850km in South Australia (currently suspended).

**Copahue Project** – This project is based in Argentina. It comprises an initial 30MW geothermal development, with the potential for significant expansion. Development of Copahue is anticipated to provide first power production and revenue within four years and Earth Heat has the right to earn up to 87.5% of the Project by funding various stages of development.

**Fiale Project** – This project, based in East Africa, is the most ambitious project of the company. In the initial instance, it will have a development capacity of 150MW. Earth Heat will develop the project in three tranches, the first tranche being to develop 50MW plant, the exploitation work for which has been commenced.

For more detail on Assets see *Company Projects* section of this report.

### **EHR's portfolio and company premiums**

- EHR's has a high quality projects portfolio with a potential to establish 180MW of geothermal power puts it in advantageous position. Further, being a green power company is an additional advantage.
- EHR is pursuing low risk projects which would potentially double or triple the cash flows with a projected IRR of more than 25%.
- EHR is developing a unique geothermal project in Argentina which would have an average purchasing price of US\$120/MW compared to Australian projects which yield US\$60-US\$85/MW
- Djibouti (where the company plans to develop 150MW geothermal power capacity) is a region with high potential. Djibouti is entirely reliant on diesel power generation that reportedly costs it up to 24 US Cents per KWh. Geothermal energy provides a cost effective and environmental friendly alternative to it. Considerable expansion is underway in the country, with new infrastructure promoting additional state and private enterprise investment, projected to lift power demand strongly over the next 20 years.
- The geothermal project have long life cycle of more than 30 years with low annual operating cost of about US\$30/MW

- The financing of both the projects is significantly easier than projects in Australia. The maturity of each allows senior debt financing to be pursued virtually immediately, which in turn reduces the dilution through equity raisings.
- The company has a reputable management with demonstrable track records in growing a business. Mr. Torey Marshall, the current Managing Director of the business has a broad based technical knowledge in this field. He is a geologist and has under his belt a track record of successful execution of various exploration programs (some resulting in discoveries), in a number of different areas. EHR should significantly benefit from Mr. Torey's experience in core operations of the company.

#### **EHR portfolio company risk**

- EHR is currently in a very initial stage of its lifecycle. All of its projects are in development stage with nearest implementation expected to occur in three to four years from now. Failure in planned execution remains a concern.
- There are significant risks associated with the financing of the project. All the projects need a significant development capital outlay during the installation of project. EHR's prospects are significantly linked to identifying funding sources for its projects.

#### **EHR Corporate Strategy<sup>vii</sup>**

EHR is pursuing a strategy to position itself amongst the top tier of independent developers in the geothermal energy sector. It aims to harness the geothermal power particularly in emerging economies where it does not have to compete with existing and pre-established infrastructure. Following steps have been undertaken by the company toward the accomplishment of its objective:

- Expects to commence bankable feasibility studies for Argentina in Q1 2011 for its 30MW project and install full capacity by 2015.
- Plans to commence pre-feasibility studies for Djibouti in Q1 2011, complete the banking feasibility studies by early 2012 and bring the plant into full operation by 2014.
- Conclude a financing to the amount of US\$50M by debt and equity, in addition to a listing on a secondary exchange.
- Execution of contingent business development projects by Mid year by further expansion in its core areas of interest of circa 1000MW total capacity.

#### **Geographical Strategy and Reach<sup>viii</sup>**

##### **Australia**

Earth Heat Resources, formerly Fall River Resources Limited, entered the Australian Geothermal energy market through acquisition of Earth Heat Australia Pty Ltd, which holds a strategic position with several geothermal exploration licenses in South Australia. EHR intends to be the first commercially producing geothermal company in Australia. In April 2010, the company announced that in addition to its existing eight geothermal exploration licenses (GEL), it had been offered for grant three further licenses totaling the Company's South Australia portfolio to 11 GELs.

##### **Argentina**

The company entered Argentina through a JV with a private Canadian entity, which provides for 87.5% share in the project earnings. The company intends to use the knowledge and experience from this Copahue project to implement it in other global projects.

##### **Djibouti**

The company entered the African market through a JV with Djibouti Ministry of Energy and Natural Resources and Electricite' de Djibouti for Fiale geothermal development project, a major geothermal resource in the Rift valley in Africa.

##### **Other East African Countries**

After detailed analysis and research on geothermal, coalbed methane and alternative energy opportunities EHR believes that the African continent provides a leading area of interest for future expansion. Apart from Djibouti, the company is targeting power deficient countries of Kenya and Botswana in this region.

## Key trends in Geothermal Energy market

### Sector trends: Geothermal Power Market

The global geothermal power market has grown at a CAGR of 20% between 2005 and 2010 as per IGA estimates. The highest capacity addition occurred in US, Indonesia, Iceland, New Zealand and Turkey. IGA has forecasted that it is estimated to grow at a CAGR of 12% in the next five years reaching at a capacity of 18,500 MW from the current capacity of 10,715 MW. As of early 2010, nearly 200 projects were under way in 15 U.S. states—which could result in at least 7.8 GW of new capacity—and much more capacity is in project pipelines around the globe.

For more detail on trends see *Products and Marketing* section on page 7 of this report.

### Key variables in determining EHR's revenue estimates

- Probable Geothermal capacity in MW from both Argentina (Copahue) and Djibouti (Fiale) Projects
- Operating Efficiency of the plants during the course of operation
- Selling price per MWh
- Exchange rate

For more detail on key variables see *Key Variable Analysis* section of this report.

## News<sup>ix</sup>

- **Earth Heat to develop major geothermal resource in the Rift Valley** (October 22, 2010)  
Earth Heat Resources Limited ('Earth Heat'), an ASX listed New Energy Company announced that it has entered into an agreement to explore and develop a major geothermal resource in the Rift Valley in Africa. A Joint Venture Agreement ('JV') has been signed with the Djibouti Ministry of Energy and Natural Resources and Electricite de Djibouti in relation to the Fiale Geothermal Development Project ('Fiale Project'), located in the Lake Assal region of Djibouti. The Fiale area is prospective for a development of up to 150MW in the initial instance EHR to develop the Fiale Project in three tranches, the first tranche being to develop and install a 50MW plant.
  - **Earth Heat to acquire and exploit African Assets** (August 3, 2010)  
After considerable negotiation Earth Heat Resources Limited (ASX : EHR - formerly Fall River Resources) has entered into a series of arrangements via a Heads of Agreement ('HOA'), that enable it to:
    - Lodge certain applications for geothermal exploration areas in Kenya, consequent upon discussions with the Mines Ministry;
    - Continue to progress access of identified highly prospective geothermal tenements in Djibouti;
    - Assume the right to continue a number of filed exploration applications in Botswana for coal bed methane opportunities.
- EHR will issue 9,125,000 fully paid shares to acquire the data and intellectual property pertaining to these projects which will be subject to escrow; one half of the shares for a period of one year and the remaining half for two years. EHR has also agreed in principle with engaging Mr. David Anderson, a well known African mining identity and South Africa resident, to manage and facilitate EHR's African projects.
- **Company Rebranding** (July 24, 2010)  
Fall River Resources Limited ('Fall River' or 'the Company'), an ASX listed New Energy Company, announced that it has received requisite approvals to change its name to Earth Heat Resources Ltd ('Earth Heat'). Trading under the new ASX code of 'EHR' will commence today. This rebranding strategy is part of the Company's transformation to focus on appropriate subsurface investments which include renewable, specifically geothermal, projects.

- **Fall River Resources Limited To Sell Interest In West Florence Project To Adelaide Energy Ltd.**  
(Jun 23, 2010)  
Fall River Resources Limited announced that it has signed a Letter of Agreement to sell its interest in the West Florence Project to Adelaide Energy Limited. Under the terms of the Agreement, ADE agreed to acquire Fall River's 25% working interest (WI) in Florence, located in Colorado USA, for AUD75,000, to be paid in its entirety within one month of the Agreement being signed by all parties. The 25% WI was acquired by Fall River in January 2007 and is part of a Joint Venture with Adelaide Energy Ltd, Strata-X Inc., and North American Oil & Gas.
- **Fall River Resources to Participate in 30MW Geothermal Development Project-** (May 13, 2010)  
The Board of Fall River Resources Limited ("Fall River" or "the Company", ASX : FRV), is pleased to announce that it has signed a Heads of Agreement ("the Agreement") to farmin to the Copahue Geothermal Development Project ("Copahue" or "the Project"), located in Argentina. Copahue comprises an identified initial 30 MW geothermal development with possibilities for significant expansion. Four geothermal wells drilled to a maximum depth of 1400m have previously demonstrated individual well capacity can exceed 7 MW pa. Hot, dry vapour (steam) reservoirs – with temperatures of 235°C at 600m, associated with the Copahue volcanic complex provide the geothermal heat source.
- **Fall River Resources (now EHR) applies for three new geothermal applications in South Australia**  
(February 16, 2010)  
Fall River Resources Limited announced that it has applied for three new geothermal applications in South Australia. When granted, these, coupled with the Company's eight other GELs, provide a contiguous cover of circa 13,000 km<sup>2</sup> of what it considers to be a very strategic portion of the South Australian Heat Flow anomaly.

### Listing Information

Earth Heat Resources Ltd is an Australian listed company (Australian Securities Exchange: EHR.AX) with its Headquarters in Adelaide, Australia, with one more office in Canada.

### Major Shareholders<sup>x</sup>

Name of the holder	Shares Held (in M)	% of Shares Outstanding
Directors	~194	~39%
Luxor Assets Pty Ltd	~68	~13%
1147 Pty Ltd	~16.1	~3%

Source: Company presentation

### Contacts

Earth Heat Resources Limited, Registered and Principal office – Level 7, Ferrari House, 28-30 Grenfell St, Adelaide SA 5000

Email: [info@earthheat.com.au](mailto:info@earthheat.com.au); Website: [www.earthheat.com.au](http://www.earthheat.com.au)

## Management and Governance<sup>xi</sup>

The management team at EHR comprises experienced professional with a proven track record.

### **Dr Raymond Shaw**

**Chairman**

Dr Raymond Shaw is a geologist and geophysicist with more than 30 years' experience in the resources, energy sector including the oil, gas and coal industries. He commenced his professional career as a petroleum explorationist with Shell Development Australia in Perth, prior to working for various consulting groups including the Swiss based international consulting firm Petroconsultants SA, as resident director based in Singapore and responsible for its Far East operations.

### **Mr Torey Marshall**

**Managing Director**

Mr Torey Marshall is a geologist with broad based technical and business development experience in the minerals, petroleum and geothermal sectors. This has resulted in the successful execution of various exploration programs (some resulting in discoveries), in a number of different areas. Having worked extensively as an exploration geoscientist, his skills have been considerably expanded to include senior management experience of various private and public (unlisted) companies.

### **Alexander Rose-Innes**

**Executive Director**

Mr Alexander Rose-Innes, a portfolio manager for long / short equities and global macro funds has extensive experience in the equity capital markets of Australia. With a strategic focus on the resources sectors of the ASX, JSE and FTSE markets, Alexander has a deep knowledge of African politics and business including a wide variety of contacts through his macroeconomic research that guides investment decisions. Appointed in July 2010, he will be responsible for Business Development and Finance. Alexander is currently employed as a Macroeconomic Analyst and Portfolio Manager at Coldstream Investment Holdings where he maintains a balanced portfolio of equities, derivatives, bonds and commodities.

### **Norman J Zillman**

**Non-Executive Director**

Norman Zillman is a professional geologist (B.Sc. Geology and B.Sc.Hons. Botany University of Queensland) with more than 40 years experience in minerals, petroleum, coal, coal bed methane and geothermal exploration and production in Australia and international markets. Norm was also non-executive Chairman and a Founder of Blue Energy Limited (BUL), Hot Rock Limited (HRL) and a Director and Founder of Planet Gas Limited (PGS). Norm is a member of Australasian Institute of Mining and Metallurgy (Aust.I.M.M) and the Petroleum Exploration Society of Australia (PESA).

### **Mal Lucas-Smith**

**Company Secretary**

Mr. Mal Lucas-Smith has over 40 years experience in finance, executive and non executive management, property development, corporate secretarial and administrative services. During that period he spent 12 years with State Bank of New South Wales and 18 years with the property finance and the property joint venture divisions of Australian Guarantee Corporation Limited, at the time a listed subsidiary of Westpac Bank.

### **Stephen Pearce**

**Non-Executive Director**

Mr Pearce is a practising lawyer who specialises in corporate and securities work in Vancouver, British Columbia. Stephen serves as a director and/or officer of the following mainly resource related public companies: Neodym Technologies Inc. (NEX-V) (Director, Corporate Secretary), Sable Resources Ltd. (TSX-V) (Director, Corporate Secretary), Flying A Petroleum Ltd. (TSX-V), Sunorca Development Corp. (CSNX) and Golden Goliath Resources Ltd (TSX-V) (Director, Corporate Secretary).

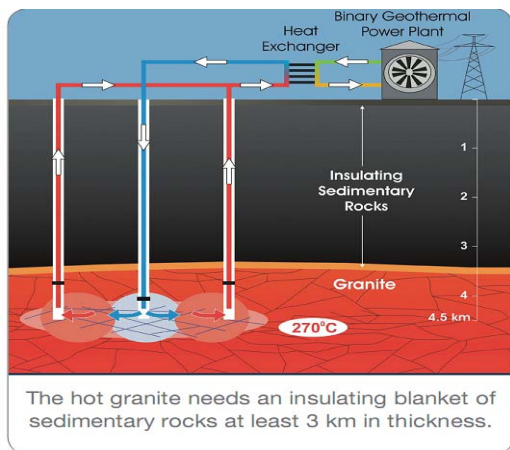
## Products and Marketing

### Geothermal Energy - Sector Overview

#### Definition

Geothermal energy is produced by extracting the natural, internal heat of the earth to create electricity. Heat is naturally generated in special granite rocks located deep below the Earth's surface and is trapped there by layers of insulating sedimentary rocks. These are also known as Hot Dry Rocks (HDR), Hot Fractured Rocks (HFR) or Enhanced Geothermal Systems (EGS).

1. Wells are drilled to a depth of 3-5 kilometres below the surface to locate the heat-producing granite.
2. Water is then pumped down into the wells and through cracks in the rocks.
3. The water is heated to a temperature of up to 300°C and pumped back to the surface where the heat is used to drive a turbine and produce electricity.
4. The water used is then recycled.



Source: Courtesy of Geodynamics Limited

#### Global growth patterns

In 2005, there was 8,933 MW of geothermal power installed capacity in 24 countries, generating 55,709 GWh per year of green power, according to the International Geothermal Association. As per IGA estimates, 10,715 MW generation capacity is on line in 2010 generating 67,246 GWh. This represents a 20% increase in geothermal power on line between 2005 and 2010. IGA projects this will grow to 18,500 MW by 2015, which based upon the large number of projects under consideration appear reasonable if not conservative.

The increase in the installed capacity (MW) and the percentage growth for Top 5 countries is as follows

Rank	Countries	Increased MW's during 2005-2010
1	US	530
2	Indonesia	400
3	Iceland	373
4	New Zealand	193
5	Turkey	62

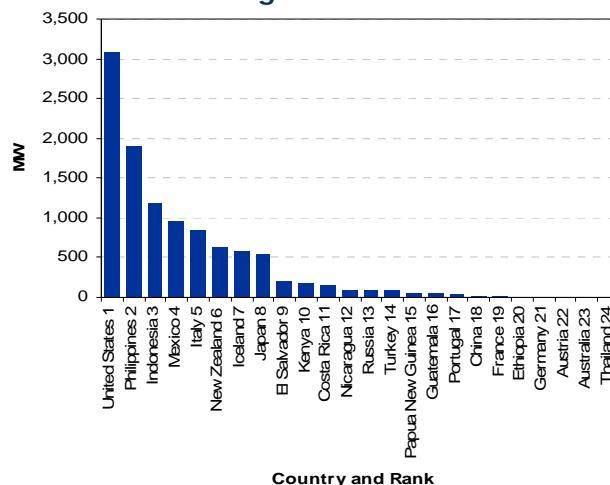
Source: Geothermal Energy: International Market Update, Geothermal Energy Association

Rank	Countries	% CAGR 2005-2010
1	Germany	96%
2	Papua-New Guinea	56%
3	Australia	49%
4	Turkey	32%
5	Iceland	23%

Source: Geothermal Energy: International Market Update, Geothermal Energy Association and Arrowhead Research

As of early 2010, nearly 200 projects were under way in 15 U.S. states which could result in at least 7.8 GW of new capacity and much more capacity is in project pipelines around the globe. As many as 70 nations had projects under development as of May 2010. At least 11 countries that did not have operating geothermal power plants by early 2010, all in Europe and the Americas, are projected to add capacity by 2015, with the global total reaching 18.5 GW. Additional projects are being planned or are under way in East Africa's Rift Valley, in Kenya and in Eritrea, Ethiopia, Tanzania, and Uganda.

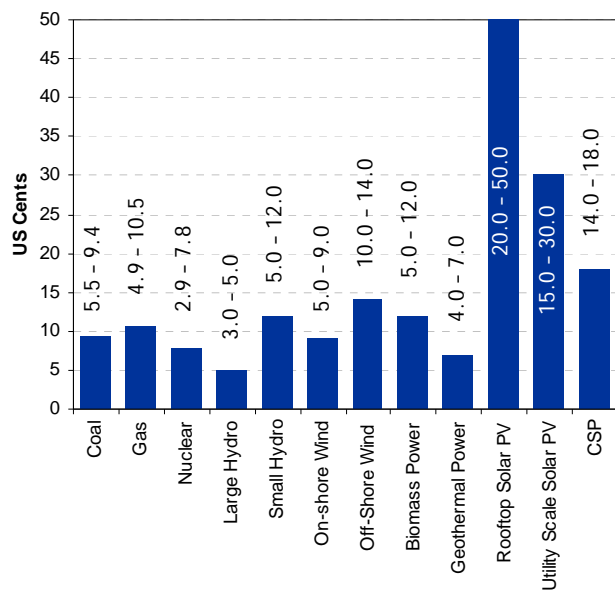
#### Countries Generating Geothermal Power in 2010



Source: Geothermal Energy: International Market Update, Geothermal Energy Association

### Low cost Advantage

With the recent development in technology geothermal energy is becoming more cost-competitive with conventional (except nuclear) and renewable sources (except large hydro) of energy. Geothermal power plants are characterized by high investments (exploration, drilling, and installation) but once geothermal power plant is built operational and maintenance costs are fairly low. This property of geothermal energy makes it highly desirable in the areas which are feasible.



Source: Renewables Global Status Report, 2010, Pacifcorp data and World Nuclear Association study

According Renewables Global Status Report to the ring to the By 2009, over 85 countries had some kind of policy target, up from 45 countries in 2005. Many national targets are for shares of renewable in total electricity production, typically 5-30 percent, but range as high as 90 percent. Other targets are for shares of total primary or final energy supply (typically 10-20 percent), specific installed capacities of various technologies, or total amounts of energy production from renewables. Most recent targets aim for 2020 and beyond. Europe's target (20 percent of final energy by 2020) is prominent among OECD countries. Among developing countries, examples include Brazil (75 percent of electricity by 2030), China (15 percent of final energy by 2020), India (20 GW solar by 2022), and Kenya (4 GW of geothermal by 2030). Many targets also exist at the state, provincial, and local levels.

### EHR Geothermal Markets

#### Australia:

Australia's geothermal resources are plentiful and fall into two categories: hydrothermal (from hot groundwater) and hot fractured rock. The Australian Geothermal Energy Association estimates Australia's industry could potentially provide up to 2,200 megawatts (MW) of electricity by 2020. The Australian geothermal industry is still in its development phase and the only working power station so far can be found in Birdsville Queensland. It uses hot water from the Great Artesian Basin and is rated at 120 kilowatts.

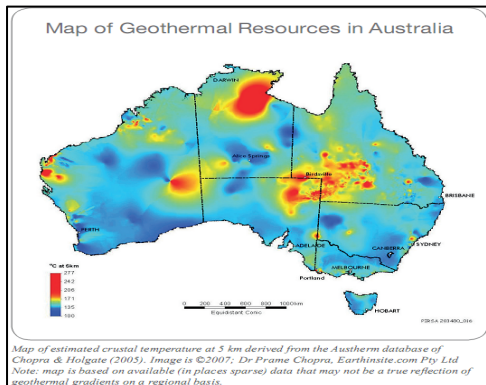
Currently approximately 48 companies nationally have applied for 400 licences to work on geothermal exploration in Australia. Only a small number of geothermal companies have commenced drilling and exploration and several of these expect to have working hot rocks geothermal generators working within the next 2 - 5 years. Once fully established, geothermal energy will have the capacity to provide clean, continuous and reliable power to homes and businesses.

According to estimates from Geoscience Australia, hot rocks within five kilometres of the earth's surface contain energy sufficient to deliver 2.6 million years worth of energy to Australia, based on the nation's total current energy supply. If just one per cent of this energy could be tapped, it would be the equivalent of 26,000 times Australia's annual power consumption.

The future success of geothermal power in Australia is dependent upon government policies to support the development and deployment of these emerging technologies. This funding will enable geothermal to set up infrastructure, such as grid connections and compete with more carbon-intensive energy sources, like fossil fuels. Work needs to be undertaken to ensure that network access arrangements do not discriminate against more remote locations of this technology source. By 2050 geothermal energy could reduce Australia's emissions by avoiding approximately 25% of today's electricity generation emissions.

Outlook: The Government's Renewable Energy Target (RET) of 20% by 2020 supports growth in Australia's renewable energy sector by encouraging uptake of the cheapest available energy sources currently available (i.e. wind and biomass). In the longer term, a carbon price will make carbon intensive fossil fuels more expensive and clean renewable energy

attractive. However, baseload renewable energy like geothermal misses out in the short term.



**East Africa:**

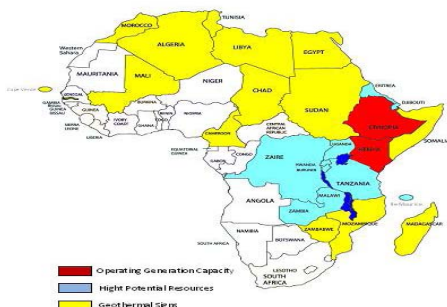
The potential geo-thermal capacity in East African countries is estimated to be 10,000 to 11,000MW by African Energy Commission. Djibouti’s potential capacity is estimated to be 230-860MW. East Africa is power deficient region with only 5-10% of rural households having access to electricity. Electricity generation is dominated by hydro and thermal power plants. So far only Kenya (167 MW) and Ethiopia (7.2 MW) use geothermal energy in East Africa. There are plenty of untapped geothermal opportunities in this region.

**Estimated potential capacity in East Africa**

Country	Capacity Estimate (in MW)
Kenya	>4,000
Ethiopia	>5,000
Djibouti	230 – 860
Uganda	450
Tanzania	230 – 460
Rwanda	170 – 300

Source: AFREC Presentation

**Africa - Geothermal energy potential**



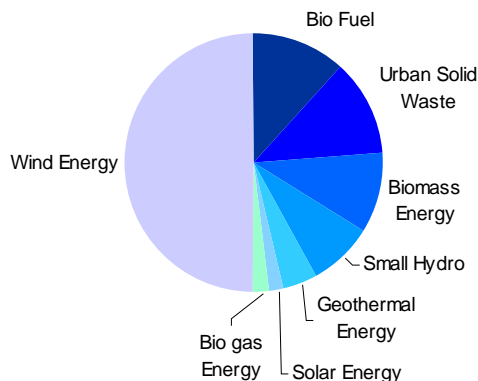
Source: AFREC Presentation

However, there are certain challenges in geothermal energy development in East Africa. Some of those are listed below:

- High initial cost and lack of suitable financing mechanism;
- Risk associated with finance and investment;
- Inadequate human resource and technology expertise;
- Poor information and resource database; and
- Lack of appropriate institutional and coordination mechanism.

**Argentina**

Argentina has significant geothermal potential, mostly along the huge Andes mountain range, on the western border of the country but geothermal energy is not used for electricity generation as frequently as for other purposes like snow melting. Natural gas with 50.8%, followed by 34.3% from oil, has the highest percentage of the total energy supply of Argentina. In 2002, the share of all renewable energy supply was 11.4 % of the total energy supply which is not insignificant. In 2009, the federal secretariat of energy launched the Green Program to make it compulsory for the wholesale electric market to purchase 1000 MW from renewable energy generators. Below is the composition of 1,000 MW.



Source: The GENREN program, Argentina

Arrowhead believes EHR has enormous growth potential considering the demand condition in EHR’s market and the penchant for green energy across the globe.

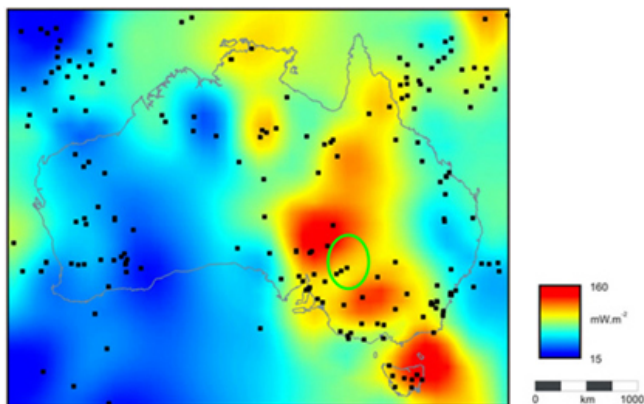
## Company Projects<sup>xii</sup>

### Australia

Earth Heat holds 100% interest in eleven geothermal exploration licences ('GELs') covering circa 16,850km in South Australia, in an area of higher heat flow which is known as the South Australian Heat Flow Anomaly ('SAHFA').

All of EHR's South African assets are located in an area of higher heat flow which is known as South Australian Heat Flow Anomaly (SAHFA). The SAHFA is a corridor through the eastern-central part of the Australian continent as shown in the figure where heat-producing rocks in the crust contain relatively high concentrations of radiogenic isotopes of uranium, potassium and thorium. The natural radioactive decay of these rocks produces high heat flow.

The location of the projects has additional advantage in terms of adjacent major roads and power corridors and accessibility round the year from Adelaide.



### Copahue Project - Argentina

Project Summary	
Initial Capacity	30MW
Estimated Project Cost	US\$ 100M
EHR's share	Up to 87.5%
Expected Project Life	30 years
Expected IRR	25%
Expected Commencement	2015

In May 2010, Earth Heat signed a Heads of Agreement (HOA) to farm-in to the Copahue Geothermal Development Project in Argentina, which comprises of an identified initial 30MW geothermal development with the potential for significant expansion. Development of Copahue is anticipated to provide first power production and revenue within

four years and Earth Heat has the right to earn up to 87.5% of the Project by funding various stages of development.

#### Highlights of Agreement

- Copahue comprises an identified initial 30MW geothermal development with possibilities for significant expansion
- Four geothermal wells drilled to a maximum depth of 1400m have previously demonstrated individual well capacity can exceed 7MW pa
- Hot, dry vapour (steam) reservoirs - with temperatures of 235°C at 600m, associated with the Copahue volcanic complex provide the geothermal heat source
- Development anticipated to provide first power production and revenue within 4 years
- Veracity of project previously demonstrated via historical drilling and small pilot plant
- Offtake sales price for electricity supported by Argentinean Government stimulus package (up to US\$120 MWh)
- Earth Heat to have the right to earn up to 87.5% of the Project by funding various stages of development

A full pre-feasibility study completed by the Japanese international corporation shows that an area covering approximately 4 km around the pivot power plant had the potential to support an initial 30 MW power station, with individual wells capable of producing more than 7 MW. Numerous shallow gradient holes and subsequent studies indicated that the geothermal potential resources could support over 100MW of power generation on the basis that these reservoirs extend over an area of 30 KM or more. A key element of the Copahue Project is that it has previously had a small scale geothermal pilot plant installed and operating, supplying a small nearby town in the 1990's. As a result, significant infrastructure is already in place at the site.

In an endeavor to support its renewable energy policy, the Argentinean government has agreed to guarantee the purchase price for electricity generated through geothermal technology at a rate between US\$100 - US\$120 MWh in comparison to Australian average price of US\$70 - US\$85 per MWh. Existing power lines running adjacent to the power plant provide potential to supply electricity to end users, including the mine operators, at a premium over and above the rate guaranteed by the government.

On a basic business model, this project may generate gross revenue in excess of US\$ 33m per annum for the initial 30MW base case, while over the 30 year project life; IRR in excess of 25% may be generated. (Source: company annual report)

EHR is required to undertake a minimum expenditure of US\$15M during the first two years. Total project cost is estimated to be around US\$100M

### Work till date

The project area has been the site of geothermal exploration and development activities since the 1970s. This work has included a number of superficial and shallow exploratory surveys (geology, geochemistry, geophysics and temperature gradient drilling). Four deep wells, reaching depths of as much as 1,414 m have also been drilled in the area. These wells have demonstrated the presence of a commercially exploitable, vapor-dominated geothermal reservoir within at least a part of the project area.

One of the wells (COP-1) was used to supply a pilot power plant, with a capacity of slightly less than one MW for a period of several years. The most recent well (COP-4) was drilled to supply a district heating system at Termas de Copahue; a pipeline was constructed from the well field for this system which is no longer in use. Aside from the spa at Termas de Copahue, there is no exploitation of the Copahue geothermal resource at present.

### Africa – Fiale Project

EHR entered into an agreement to explore and develop a major geothermal resource in the Rift valley in Africa. A Joint Venture Agreement ('JV') has been signed with the Djibouti Ministry of Energy and Natural Resources and Electricite' de Djibouti in relation to the Fiale Geothermal Development Project. Considered to be one of the most strategic geothermal opportunities within the Africa Rift Valley, Lake Assal is an area of recent volcanic activity, known from drilling in the 1980s and has recently come under intense focus of international geothermal power players.

#### Highlights of Agreement

- Binding term sheet signed for development of a large geothermal field in Djibouti
- The Fiale area is prospective for a development of up to 150MW in the initial instance

- EHR to develop the Fiale Project in three tranches, the first tranche being to develop and install a 50MW plant
- Accompanying Power Purchase Agreement ('PPA') to be agreed subject to full documentation
- Advancing discussions with a major international finance house on full funding for the development
- A two reservoir field containing a shallow hot water reservoir suitable for a binary plant (approx 600m) and a deeper steam reservoir
- Temperatures recorded of up to 359 °C at 2000m (commonly >250C at 1000m)
- Field characterised by fumaroles and free flowing hot vapour and steam
- Maximum productivity recorded to date of around 180tn/h
- Recent pre-feasibility study completed

Management believes that the lack of energy resources in emerging African countries is seriously hindering development and growth in countries. Botswana, Kenya and Djibouti are amongst the countries identified as providing the greatest immediate opportunities for a major expansion in geothermal projects (in terms of potential installed capacity), and gas fired power generation.

The first tranche will involve four stages:

- **Stage 1:** To define a suitable area for development-This will include geological and geophysical review, engineering studies, identification of drilling locations and tendering and permitting.
- **Stage 2:** Drilling Operations-This will involve drilling and evaluation of reservoir.
- **Stage3:** Bankable feasibility study and debt financing-
- **Stage4:** Construction of plant capable of producing 50MW and commissioning

### Work till date

Six wells have already been drilled to date, though by a previous operator. By the mid of 2012 50MW capacity is planned to be online, giving an energy output of ~420,000 MWh, when operating at a maximum efficiency of 97%. After the first tranche is fully operational, the exploitation program for the second tranche (50MW) will begin.

## Project Risk Profile Analysis

We believe that EHR has a very low risk profile compared to its peers in Australia. The Copahue project has a low project maturity and associated geothermal risk compared to its peers. The Copahue project has a full historic feasibility study, 4 deep wells, very high temp at shallow depth (235°C at 600m), transmission lines within 30m of old pilot plant and attractive guaranteed off take pricing. This is in sync with the company’s robust business model to pursue LOW RISK investments and convert them into MATURE projects capable of generating business value.

### Peer Risk Analysis

We have evaluated the risk profile of the EHR compared with the geothermal players in Australia. We identified the risk as Low/Medium/High and assigned a score of 1/2/3 respectively based on the risk profile of the major projects pursued by the companies. The important risk categories considered for the study include

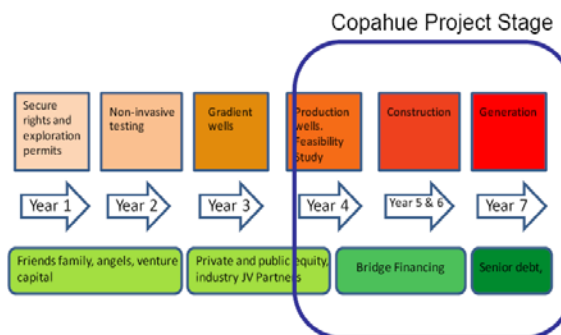
- Project Maturity Risk: LOW - Near feasibility; HIGH- Proof of Concept Stage
- Financing Risk: LOW - Near negotiations / lower exploration capex; HIGH - Funding need for exploration or no well known funding sources.
- Geothermal Type Risk: LOW - Volcanic ; HIGH - HDR/EGS
- Resource Characteristics Risk: LOW - High temperature at lower depths with high pressure; HIGH – Lower temperature at higher depths.

The individual risk parameters and the underlying rationale for the scores are discussed in the subsequent sections.

### Peer Risk Profile

Company	Total Risk Score	Project Stage Risk	Financing Risk	Geothermal Type Risk	Resource Characteristics Risk
EHR	1.1	1.0	1.6	1.0	1.0
GDY	1.8	2.0	1.0	3.0	1.0
GHT	2.4	3.0	2.0	3.0	1.0
GRK	2.6	3.0	3.0	2.0	2.0
GER	2.4	3.0	2.0	2.0	2.0
HRL	2.0	2.0	2.0	2.0	2.0
KEN	2.6	3.0	3.0	2.0	2.0
PAX	1.4	1.0	2.0	2.0	1.0
PTR	2.0	2.0	2.0	2.0	2.0
TEY	2.4	2.0	3.0	3.0	2.0

## Copahue Risk Assessment



### Project Stage Risk –LOW

- Full feasibility study was completed by the Japanese International Cooperation Agency (JICA) in 1992.
- The Australian peers are mostly in the exploration and proof of concept stage. Most of the Australian peers are yet to prove sustainable production through pilot projects. There is currently no equivalent volcanic geothermal project in Australia comparable to Copahue project.

### Financing/Capex Risk- LOW

- While the drilling cost is nominally about US\$1.7M to US\$3.0M for the Copahue project it is about US\$14M- US\$25M for HDR projects in Australia depending on the depth.
- The company has received letters of support for financing construction and development of Copahue (Argentina) from Inter American Development Bank and FMO (Netherlands Development Bank).

### Geothermal Type Risk- LOW

- Dry steam vapor dominated reservoir with a natural reservoir. The production has been demonstrated by historical production of steam.
- The Australian projects need nominal fluids injected before extraction to sustain production.

### Resource Characteristics Risk- LOW

- World class vapour based reservoir discovered by steam at surface high temperature over 235°C at shallow depths with favorable chemical characteristics. It has a thick reservoir at least 600m thick at a shallow depth of 600 – 900m below surface extending to at least 1400m depth.
- The HDR projects in Australia require a reservoir to be created until a depth of 3000 to 5000m.

## Djibouti Risk Assessment

### Project Stage Risk –LOW

- The pre-feasibility study was completed recently.

### Financing/Capex Risk- MEDIUM

- Although the Djiboutian (& East African), financings are not widely marketed the company has received significant expressions of debt finance (mezzanine and senior), interest from
  - FMO (Netherlands Development Bank)
  - DEG (German Development Bank)
  - ADB (African Development Bank)
  - IFC (International Finance Corporation)

### Geothermal Type Risk- LOW

- A two reservoir field containing a shallow hot water reservoir suitable for a binary plant (approx 600m) and a deeper steam reservoir.
- Field characterised by fumaroles and free flowing hot vapour and steam

### Resource Characteristics Risk- LOW

- Temperatures have been recorded up to 359 °C at 2000m (commonly >250°C at 1000m).

## Risk Parameters – Definition <sup>xiii</sup>

### Project Stage Risk

The different stages in a project are

- **Confirmation Stage**-Geothermal reservoirs are typically discovered by accident through mineral exploration or by visible surface evidence such as hot pools or geysers. Exploratory slim-hole wells are drilled to map the reservoir. The confirmation stage ends with an independent consultant’s report verifying the existence of the reservoir and the minimum MW it can support.
- **Drilling and Feasibility Study Stage**- At least three production size wells are drilled. These are 12 inches in diameter and 500 to 3,000m deep. Wells cost between US\$3M and US\$6M on each, depending on depth, site access, and earth conditions (rig and crew US\$65k-US\$80k per day for 45-90 days). This stage ends with a feasibility study by independent consultants. The study more practically defines the map, size, and flow

rates and adds an economic feasibility assessment.

- **Construction Stage**- A positive feasibility study is the first domino that enables permitting, which enables a long-term 20 years or more) PPA with the local grid operator, which enables debt financing, which enables the equity financing. A geothermal plant will take 18 months to begin power generation after the drilling program is complete

We consider a project to be of lower risk profile if the drilling is complete and a feasibility study has been conducted as the uncertainty regarding the sustainability of the project reduces significantly.

### Project Financing Risk

The financing risk of the projects are evident in both the exploration and construction phase.

The funding for exploration is generally available through through private offering or JV partners or endowments provided by government. The funding is given to the them in stages contingent upon the success of the previous phases.

The construction capital expenditure is availed through mezzanine and development banks depending up the geography and risk profile of the project.

We consider a project to be of lower risk profile if the feasibility study has been conducted and the exploration capital expenditure is low.

### Geothermal Type Risk

Today only naturally occurring hot water & steam from hydrothermal sources is being utilized for power generation economically. Exploitation of other types of energy still requires technological advancements for techno-economic viability.

Geothermal power plants are divided into the following types depending on the different fluids from wells:

Superheated steam type: Dry steam resources are rare but are the simplest and least costly to develop. Naturally occurring steam can be used in a standard steam turbine to generate electricity. The steam produced from geothermal wells is fed directly to the steam turbine using insulated pipelines.

Hot water type: Liquid dominated resources are more common. If resource temperatures are fairly high (> 1700C), the liquid can be partially flashed to steam in

a tank maintained at a much lower pressure, for use in a steam turbine. If temperatures are moderate (100°C to 180°C), the heat in the liquid can be used to vaporise a secondary organic working fluid, and produce power using a binary cycle plant.

We consider a project to be of lower risk profile if it is based on a Dry steam vapor dominated natural reservoir compared to an Enhanced Geothermal System (EGS).

## Geothermal Resource Risk

For a geothermal energy development project to be commercially viable, the parameters listed below have to lie within acceptable ranges.

- **Temperature**– Useful geothermal temperatures ranges from 100°C C for Geothermal Heat Pumps (GHPs) to more than 300°C for electricity generation. In general, the higher the temperature the better the economics for generating electricity.
- **Energy Production Rates** – The amount of energy that can be economically extracted from geothermal the fluid’s temperature, flow rate, and the energy conversion technique. The useful output per well can range from a few kilowatts for shallow low-temperature wells to tens of megawatts for deep high-temperature, highly productive wells.
- **Well Depth** – The deeper a geothermal well, the more it costs. However, wells as deep as 3,000m can be drilled economically, provided that the energy production rates from the wells are high. Well in use range in depth from 60 to 3,000 m.
- **Energy Transport**– Electricity can be transported over long distances. Thus, a geothermal power plant can serve distant customers. Hot water can be transported over moderate distances (typically 1 to 2km, put up to 50km if the system capacity is very large), depending on resource and end-use temperatures, terrain conditions, and local climatic conditions. Geothermal steam must be used within one to two kilometers of the production wells

We consider a project to be of lower risk profile if the temperature is high and available at lower depths.

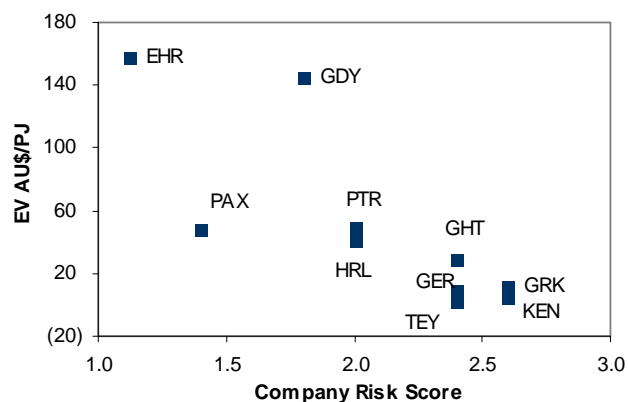
## Peer Valuation and Risk Profile

We have also evaluated the companies based on the value per geothermal resource and the risk profile.

Enterprise Value per Peta Joule of Resource has been used. AU\$/PJ has been used as a proxy for the valuation measure.

The Risk Profile has been assessed as a weighted blended score based on the project maturity risk (40% weightage), financing risk (20%), geothermal type risk (20%) and geothermal resource characteristic risk (20%). The individual risk score have been provided in the risk profile table in the Peer Risk Profile table in the previous section.

### Valuation Vs Risk Profile Chart



### Valuation Vs Risk Profile

Company	Total Risk Score	Enterprise Value/ Resource (AS\$/PJ)	Enterprise Value (AS\$m)	Total Resource (PJ)
EHR	1.1	157.2	27.2	172,985 <sup>xiv</sup>
GDY	1.8	145.1	35.5	244,400
GHT	2.4	29.5	3.0	100,800
GRK	2.6	11.3	9.7	857,000
GER	2.4	9.7	2.5	260,000
HRL	2.0	41.3	7.4	179,300
KEN	2.6	4.2	1.4	329,000
PAX	1.4	48.2	16.0	332,000
PTR	2.0	49.0	11.3	230,000
TEY	2.4	2.2	1.9	850,000

The analysis clearly indicates our assertion that EHR commands a significant premium compared to its peers considering the low risk profile of its projects. We believe that EHR would move in to the next valuation bracket as it has moved into the final stage of implementing its geothermal projects.

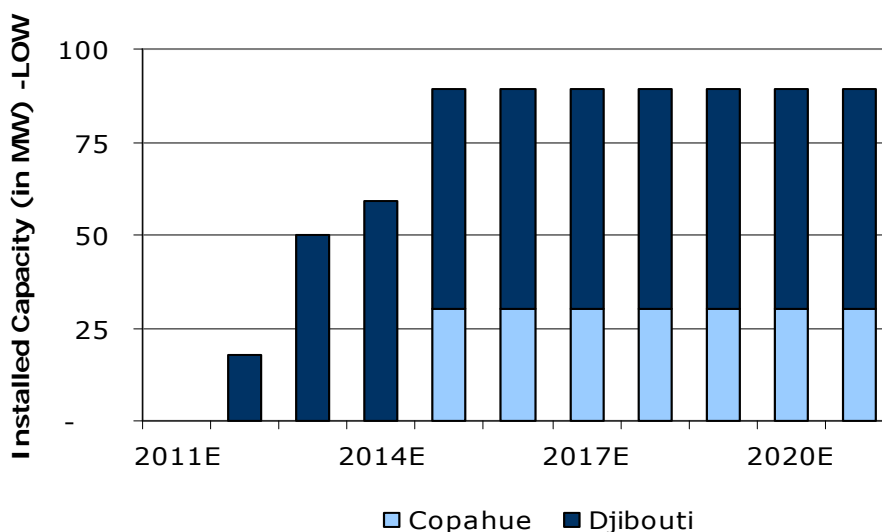
Company	Ticker	Major Projects	Project Stage	Temp @/Depth	Resource Characteristics	EGS/HSA/Volcanic	Financing Information
Earth Heat resource	EHR	Copahue Project - Argentina	'Commence bankable feasibility studies for Argentina February 2011. Full feasibility study was completed by the Japanese International Cooperation Agency (JICA) in 1992	Temperature 230-250°C .Drilling has shown the reservoir to be at least 600 m thick, extending from about 600-900 m depth below the ground surface to at least 1,200 m	35-40 bar-g typical of a vapor-dominated geothermal systems	Occurs within a volcanic terrane formed by several stages of volcanic activity,	Received letters of support for financing construction and development of Copahue (Argentina) from Inter American Development Bank and FMO (Netherlands Development Bank).
Earth Heat resource	EHR	Djibouti Project	Pre-feasibility study was completed recently	Recorded up to 359 °C at 2000m (commonly >250°C at 1000m).	Field characterised by fumaroles and free flowing hot vapour and steam	Volcanic	Commence pre-feasibility studies for Djibouti February 2011
Geodynamics	GDY	Cooper Basin, Southern Australia	Development of a Commercial demonstration EGS geothermal power plan	278°C at 4,900m, 252°C at 4,350m and 130-150°C at 2,200m.		EGS/HFR	
Geothermal Res.	GHT	Frome , Southern Australia	Comprehensive project plan prepared for the Frome project proof of concept drilling.	185 to 190°C at 4000m depth.	Granite Density range from 2.64 to 2.76 g/cm3	EGS	
Green Rock Energy	GRK		Expect to be making significant progress in H1 2011 towards the definition of drilling targets.	125°C for HSA and 150°C for EGS @ max. depth of 5,000 m depth	Simple quartz-water mix in the ratio 95:05, with 0.75% total coal	Primarily a (HSA) target	
Greenearth Energy	GER	Geelong, Victoria	Proof of Concept: Exp. Commencement Date: H2 2010 (subject to funding availability)	150-180°C at 3000-4000 m depth	Heat Flow- 90mW/m2	Hot Sedimentary Aquifers (HSA's)	In late 2009 Greenearth Energy was awarded Australian Government (\$7m) and Victorian Government (\$5m+\$20m) grants for the GGPP totaling \$32m.
Hot Rock	HRL	Koroit, Victoria	Proceeding into a two well Proof of Concept drilling and testing program at the Koroit HSA resource in 2011	Well temperatures range from 126°C to 152°C b/w 2400m to 3700m in VIC. 171°C at 4000m in Panax	kH values of 10Dm + can be reasonably expected from primary permeability	Potential for the development of HSA	
KUTH Energy	KEN	Tasmania, Queensland, Vanuatu	Drill target/design and planning/EIS - H1 2011, Power Production in 2013	150°C – 220°C- at minimum predicted depth to top-reservoir is 3200m at Mt Nicholous	Density, Granite : 2,580kg/m3 cutt off at Mt Nicholous	EGS, Volcanic	
Panax Geothermal	PAX	Copper Basin - Australia , Indonesia, India	Penola Demonstration plant could become first grid connected geothermal power plant in Australia (late 2011);	(150-200°C at depth 3,500m to 4,000m) - Penola Project	flow of '150 – 175 l/sec	Owens the only 2 HSA "Measured Geothermal Resources" in Australia	Awarded \$7 million GDP grant from Commonwealth Govt. for Penola
Petratherm	PTR	Paralana Project	De-risking project through main fracture stimulation in March 2011	Measured Temp. = 176°C at 3672 m; Extrapolated bottom hole temp. is 190 ±2 °C at 4000m depth. [Paralana 2]	Heat production 10-12 μW/m3,	EGS, HSA & Volcanic	Three major JV involved in its projects in Australia and Spain >awarded two major Federal government grants \$7m GDP and \$62.8m REDP for its Paralana project –enabling a forward development path for commercial demonstration
Torrens Energy	TEY	Parachilna	Results of the AGL funded Barossa Project heat-flow drilling completed last quarter. Recordings are anomalously high but below what would currently be viable for an Australian play.	Modeled temperatures of ~240°C at 4,500m were validated	Initial heat flow of 115mW/m2 was independently verified for Melkor 1, at a depth of 1,007m.	EGS	To date Torrens Energy has spent \$9.72m on exploration, of which \$3.1m has been received from the Australian Government REDI (below) and PACE grants. In addition \$0.9m has been received from AGL on funding the Barossa Project resulting in net Company expenditure of approximately \$5.7m

## Key variable analysis for Revenue Forecast

The key variables are the main quantifiable variables which influence the valuation of the company. Key variables can be exogenous (exchange rate, product price, etc.) or endogenous (production rates, costs of production) to the company performance. A low and high forecast is determined by Arrowhead for each variable. Each of the variables is considered independently for the purpose of this report because the final goal of the Arrowhead Due Diligence and Valuation Report is to state what the company is worth *at least* and *at most*.

### Variable 1 – Geothermal Power capacity of both the projects

Based on company reports, Arrowhead forecasts that Argentina project will be online with an installed capacity of 30MW by 2015 and Tranche 1 operations at Djibouti with an installed capacity of 50MW will be online in 2013.



### Variable 2 – Operating Efficiency of the plants

We forecast that conversion efficiency would be 95% for both the projects at lower end of forecasts while a prudent high estimate would be 97%.

### Variable 4 – Price per MWh

We have forecasted a price range of US\$100 – US\$120 for Argentina project, supported by the guarantee provided by Argentina government, therefore is the base case. Our forecast for Africa project is US\$80 at the lower end and US\$100 at the higher end.

### Variable 5 – Currency movement between the AS\$/ US\$ pair

Arrowhead forecasts AS\$/ US\$ pair to trade at parity for the valuation horizon, a comfortably low estimate, whereas a prudent high estimate would be 1.4. The company is expect its revenues in USD and bulk of the contractor costs would be priced in US\$ aside from country personnel expenses which would be priced in local currency.

## Value

The Fair Market Value for all of EHR shares stands at AS\$197.9M to AS\$524.6M.

The Fair Market Value for a publicly traded share stands AS\$36.4c to AS\$96.4c

### EHR Resources Balance Sheet Forecast

<b>CONSOLIDATED BALANCE SHEET</b>	<i>all figures in '000 AS\$, unless stated differently</i>		<i>Low bracket estimates</i>					
<i>year beginning Oct 1st</i>	<b>2011E</b>	<b>2012E</b>	<b>2013E</b>	<b>2014E</b>	<b>2015E</b>	<b>2016E</b>	<b>2017E</b>	<b>2018E</b>
Total Current Assets	94,187	105,811	27,051	37,793	58,945	70,210	85,222	104,024
Total Non-current As	2,684	122,681	228,679	235,143	276,392	273,266	270,244	267,323
<b>TOTAL ASSETS</b>	<b>96,871</b>	<b>228,493</b>	<b>255,730</b>	<b>272,936</b>	<b>335,337</b>	<b>343,475</b>	<b>355,466</b>	<b>371,346</b>
Total Current Liabiliti	25,321	145,329	145,337	125,346	150,355	115,364	80,374	45,385
Total Non-current Lia	-	-	-	-	-	-	-	-
<b>TOTAL LIABILITIES</b>	<b>25,321</b>	<b>145,329</b>	<b>145,337</b>	<b>125,346</b>	<b>150,355</b>	<b>115,364</b>	<b>80,374</b>	<b>45,385</b>
Total Shareholder's	71,550	83,163	110,393	147,590	184,982	228,111	275,092	325,962
<b>TOTAL LIABILITIES &amp; EQUITY</b>	<b>96,871</b>	<b>228,493</b>	<b>255,730</b>	<b>272,936</b>	<b>335,337</b>	<b>343,475</b>	<b>355,466</b>	<b>371,346</b>

### Important information on Arrowhead methodology

The principles of the valuation methodology employed by Arrowhead BID are variable to a certain extent depending on the subsectors in which the research is conducted, but all Arrowhead valuation research possesses an underlying set of common principles and a generally common quantitative process.

With Arrowhead Commercial and Technical Due Diligence, Arrowhead extensively researches the fundamentals, assets and liabilities of a company, and builds solid estimates for revenue and expenditure over a coherently determined forecast period.

Elements of past performance such as price/earning ratios, indicated as applicable, are present mainly for reference purposes. Still, elements of real-world past performance enter the valuation through their impact on the commercial and technical due diligence.

Elements of comparison such as multiple analyses may be to some limited extent integrated in the valuation on a project-by-project or asset-by-asset basis. In the case of this EHR report, cash-flow forecasts are derived from the expected advertising revenue in coming years, with a high discount applied.

### Arrowhead BID Fair Market Value Bracket

The Arrowhead Fair Market Value is given as a bracket. This is based on quantitative key variable analysis, such as key price analysis for revenue and cost drivers or analysis and discounts on revenue estimates for projects, especially relevant to those projects estimated to provide revenue near the end of the chosen forecast period. Low and high estimates for key variables are produced as a tool for valuation.

In principle, an investor who is comfortable with the high brackets of our key variable analysis will align with the high bracket in the Arrowhead Fair Value Bracket, and likewise in terms of low estimates. The investor will also take into account the company intangibles – as presented in the first pages of this document for the analysis on strengths and weaknesses and on other essential company information. These intangibles serve as supplementary factors for adding or subtracting a premium in the investor's own analysis.

The bracket should be understood as a tool provided by Arrowhead BID for the reader of this report and the reader should not solely rely on this information to make his decision on any particular security. The reader must also understand that global capital markets contain inefficiencies, especially in terms of information, and that, on the other hand, corporations and their commercial and technical positions evolve rapidly: this present edition of the Arrowhead valuation is for a short to medium-term alignment analysis (one to twelve months). The reader should refer to important disclosures on page 19 of this report.

### **Information on EHR valuation**

**EHR valuation methodology:** The Arrowhead fair valuation for EHR is based on the discounted cash flow (DCF) method of both the Copahue and Fiale Project. The cash flow projections are derived using DCF.

**Time horizon:** The time period chosen for valuation is ~132 months (2011-2021). While revenue is expected to ramp up significantly during the period 2014-16 due to the discount factor used, the later years are heavily discounted and have a marginal effect on the valuation. They are included to present a full project cycle situation.

### **Underlying Business Plan:**

EHR is pursuing a strategy to position itself amongst the top tier of independent developers in the geothermal energy sector. It aims to harness the geothermal power particularly in emerging economies where it does not have to compete with existing and pre-established infrastructure. Following steps have been undertaken by the company toward the accomplishment of its objective:

- Expects to commence bankable feasibility studies for Argentina in Q1 2011 for its 30MW project and install full capacity by 2015.
- Plans to commence pre-feasibility studies for Djibouti in Q1 2011, complete the banking feasibility studies by early 2012 and bring the plant into full operation by 2014.
- Conclude a financing to the amount of US\$50M by debt and equity, in addition to a listing on a secondary exchange.
- Execution of contingent business development projects by Mid year by further expansion in its core areas of interest of circa 1000MW total capacity.

**Terminal Value:** Terminal value is estimated to depend on a terminal growth rate of 0%, representing the maturity, technology change and prospective competitiveness in the business.

**Prudential nature of valuation:** It should be noted that this Arrowhead Fair Value Bracket estimate is a relatively prudential estimate, the reasonable production from one of these assets, if completed, is heavily discounted (see Key Variables section). The valuation also discounts the eventuality of any of EHR's projects, which would be developed by the projects.

### **Key variables in determining EHR's revenue estimates**

- Probable Geothermal capacity in MW from both Argentina (Copahue) and Djibouti (Fiale) Projects
- Operating Efficiency of the plants during the course of operation
- Selling price per MWh
- Exchange rate

For more detail on key variables see *Key Variable Analysis* section of this report.

## Analyst certifications

I, Thomas Renaud, certify that all of the views expressed in this research report accurately reflect my personal views about the subject security and the subject company.

## Important disclosures

Arrowhead Business and Investment Decisions, LLC received fees in 2010 from Earth Heat for researching and drafting this report and for a series of other services to Earth Heat including distribution of this report and networking services. Neither Arrowhead BID nor any of its principals or employees own any long or short positions in Earth Heat.

Aside from certain reports published on a periodic basis, the large majority of reports are published by Arrowhead BID at irregular intervals as appropriate in the analyst's judgment.

Any opinions expressed in this report are statements of our judgment to this date and are subject to change without notice.

This report was prepared for general circulation and does not provide investment recommendations specific to individual investors. As such, any of the financial or other money-management instruments linked to the company and company valuation described in this report, hereafter referred to as "the securities", may not be suitable for all investors.

Investors must make their own investment decisions based upon their specific investment objectives and financial situation utilizing their own financial advisors as they deem necessary. Investors are advised to gather and consult multiple sources of information while preparing their investment decisions. Recipients of this report are strongly advised to read the *Information on Arrowhead Methodology* section of this report to understand if and how the Arrowhead Due Diligence and Arrowhead Fair Value Bracket integrate alongside the rest of their stream of information and within their decision taking process.

Past performance of securities described directly or indirectly in this report should not be taken as an indication or guarantee of future results. The price, value of, and income from any of the financial securities

described in this report may rise as well as fall and may be affected by simple and complex changes in economic, financial and political factors.

Should a security described in this report be denominated in a currency other than the investor's home currency, a change in exchange rates may adversely affect the price of, value of, or income derived from the security.

This report is published solely for information purposes, and is not to be considered as an offer to buy any security, in any state.

Other than disclosures relating to Arrowhead Business and Investment Decisions, LLC, the information herein is based on sources we believe to be reliable but is not guaranteed by us and does not purport to be a complete statement or summary of the available data.

Arrowhead Business and Investment Decisions, LLC is not responsible for any loss, financial or other, directly or indirectly linked to any price movement or absence of price movement of the securities described in this report.

## Valuation

Figures are in thousands AS\$, unless indicated otherwise.

### WACC

Risk-free rate	5.57%	xv
Beta	1.77	xvi
Risk premium	4.0%	xvii
Additional Risk Premium	0.0%	xviii
Cost of Equity	12.7%	
Terminal Growth Rate	0%	xix

### KEY VARIABLES

	Geothermal Power Capacity 2011-2021	Sale Price US\$/MWhr vehicles 2011-2021	AS\$/US\$ exchange rate
Max value	<i>Please refer to Key Variables section</i>		
Min value			

Time Period -->	0.75	1.75	2.75	3.75	4.75	5.75	6.75	7.75	8.75	9.75
Year beginning 1 <sup>st</sup> Oct.	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E
<b>FCFE (High)</b>										
Net cash from operation	(1,140)	(8,385)	61,733	81,805	79,533	109,240	114,402	119,643	124,438	128,790
Capital Expenditure	(25,000)	(120,000)	(110,000)	(14,000)	(49,000)	(6,000)	(6,000)	(6,000)	(6,000)	(6,000)
Net Equity/ Debt Addition	95,000	20,000	20,000	-	45,000	(15,000)	(15,000)	(15,000)	-	-
Free Cash Flow to Equity	68,860	(108,385)	(28,267)	67,805	75,533	88,240	93,402	98,643	118,438	122,790
Discount Factor	0.91	0.81	0.72	0.64	0.57	0.50	0.45	0.40	0.35	0.31
Present Value of FCF	62,975	(87,991)	(20,371)	43,378	42,896	44,485	41,800	39,187	41,768	38,440
<b>FCFE (Low)</b>										
Net cash from operation	(1,140)	(8,385)	31,231	44,733	45,142	52,255	56,002	59,790	63,096	65,921
Capital Expenditure	(25,000)	(120,000)	(110,000)	(14,000)	(49,000)	(6,000)	(6,000)	(6,000)	(6,000)	(6,000)
Net Equity/ Debt Addition	95,000	20,000	20,000	-	45,000	(15,000)	(15,000)	(15,000)	-	-
Free Cash Flow to Equity	68,860	(108,385)	(58,769)	30,733	41,142	31,255	35,002	38,790	57,096	59,921
Discount Factor	0.91	0.81	0.72	0.64	0.57	0.50	0.45	0.40	0.35	0.31
Present Value of FCF	62,975	(87,991)	(42,353)	19,661	23,365	15,757	15,664	15,410	20,135	18,759

### ARROWHEAD FAIR VALUE BRACKET

	High	Low	
Terminal Value (TV)	1,000,210	490,830	
Present Value of TV	277,959	136,402	
Present Value of FCF	246,567	61,381	
Present Value of FCF + TV	<b>524,526</b>	<b>197,783</b>	
+ Cash	157	157	xx
<b>Equity Value Bracket</b>	<b>524,683</b>	<b>197,940</b>	
Shares on issue ('000)	544,200	544,200	xxi
<b>Fair Share Value Bracket</b>	<b>AS\$ 0.964</b>	<b>AS\$ 0.364</b>	<i>Undiluted</i>
Current Market Price	AS\$ 0.051	AS\$ 0.051	
Current Market Cap. (AS\$)	27.75 MM	27.75 MM	
<b>Target Market Cap. Bracket (AS\$)</b>	<b>524.683MM</b>	<b>197.94MM</b>	

## Notes

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- i Arrowhead Business and Investment Decisions Fair Value Bracket - AFVBTM. See information on valuation on pages 17-20 of this report and important disclosures on page 19 of this report.
- ii Source: Bloomberg as of 7<sup>th</sup> February 2011
- iii 52 weeks to 7<sup>th</sup> February 2011. Source: Source: Bloomberg as of 03<sup>rd</sup> February 2011
- iv 3 months to 7<sup>th</sup> February 2011. Source: <http://finance.yahoo.com/q?s=EHR.AX&q1=1>
- v Arrowhead Business and Investment Decisions Fair Value Bracket - AFVBTM. See information on valuation on pages 17-20 of this report and important disclosures on page 19 of this report.
- vi Source: <http://www.earthheat.com.au/projects.php>.
- vii Source: Earth Heat Progress on Key Issues
- viii Source: <http://www.earthheat.com.au/projects.php>.
- ix Source: <http://www.earthheat.com.au/asxannouncements.php>
- x Source: Presentation Brief - Aug 17 2010
- xi Source: <http://www.earthheat.com.au/boardandmanagement.php>
- xii Source: <http://www.earthheat.com.au/projects.php>.
- xiii Source: Arrowhead estimate of 'Heat in Place' for both the projects based on volumetric method. It is a potential variable and is subject to the company publishing a competent person compliant number, as have their peers, for accurate comparison.
- xiv Source: <http://www.earthheat.com.au/projects.php>.
- xv Source: Bloomberg as of 7<sup>th</sup> February 2011
- xvi Source: Arrowhead BID estimate.
- xvii Source: Arrowhead BID estimate.
- xviii Source: Arrowhead BID estimate.
- xix Source: Arrowhead BID estimate.
- xx Approximate cash position on 30 September 2010 Source: Company fillings