



***Greenearth  
Energy Ltd.***

***Quarterly Activities  
Report  
30 June 2013***

***Energy Security in a  
Carbon Constrained World***

# Corporate Directory

## Corporate Directory

### Directors

Robert J. Annells (Non-Executive Chairman)  
John T. Kopcheff (Non-Executive Director)  
Samuel Marks (Managing Director)

### Company Secretary

Robert Smith

### Registered Office

Level 14  
500 Collins Street  
Melbourne Victoria 3000

Telephone: (03) 9620 7299

Facsimile: (03) 9629 1624

### Securities Exchange

Australian Securities Exchange Limited  
Level 45, South Tower, Rialto  
525 Collins Street  
Melbourne Victoria 3000  
ASX code: GER

### Auditors

Pitcher Partners

### Legal Advisors

Baker & McKenzie

### Bankers

Westpac Banking Corporation

### Address for Correspondence

P.O. Box 24  
Collins Street West  
Victoria 8007

Email: [greeneearth@greeneearthenergy.com.au](mailto:greeneearth@greeneearthenergy.com.au)

Web site: [www.greeneearthenergy.com.au](http://www.greeneearthenergy.com.au)

### Share Registry

Computershare Investor Services Pty. Ltd.  
Yarra Falls 452 Johnston Street  
Abbotsford Victoria 3067  
(03) 9415 5000



# *Greenearth Energy Ltd.*

## *Energy Security in a Carbon Constrained World*

### *Highlights*

- NewCO<sub>2</sub> Fuels (NCF) team prepare to initiate testing on Technology Demonstrator;
- Energy Efficiency business establishes industry partners and product development; and
- Geelong Geothermal Power Plant awaits funding feedback from ARENA.





# *Greenearth Energy Ltd.*

## *Energy Security in a Carbon Constrained World*

### *Introduction*

The last quarter held mixed emotions for myself, the other Directors and the Greenearth Energy team with the continued progress of the business being very positive, yet the passing of Mr Mark Miller bringing a sombre end to the financial year.

Further to our announcement on the 11th June, our former Managing Director and champion of the Geothermal sector in Australia, Mark Miller, passed away on the 7th June after a hard fought battle with cancer over the past 18 months. Mark was not only a valued member of the Greenearth Energy management team during my recent tenure, he laid the foundations for our geothermal business with his years of hard fought toil and expertise in the sector to create the opportunities for the Geelong Geothermal Power Project, along with Latrobe Valley initiatives. The responses to his passing from shareholders, business partners, fellow CEO's of geothermal companies and governing bodies was overwhelming and we have passed these messages onto his family. Mark passed away far too young and he will be sorely missed.

From an operational perspective, the last quarter continued to see positive steps forward in the restructure of the business, and an ongoing view to look for growth and short-term cash-flow gains within the group. This focus on growth included the hiring of a business development resource in the Energy Efficiency business, along with a trip to Israel for myself and our Chief Operating Officer of Energy Efficiency, Mr Urbain du Plessis.

The trip to Israel was a great success, creating many future opportunities for Greenearth. The trip included spending hands-on time with the team at NewCO<sub>2</sub> Fuels, visiting new and prospective business partners for the Energy Efficiency business and coincided with Mr du Plessis spending a week with the Metrolight team and their partners to understand current and future product development, which is very exciting. This was my second visit to Israel and I continue to be amazed and impressed with the capabilities of the country and potential for ongoing relationships with Greenearth and our businesses.



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***Introduction cont.***

The last 12 months saw a re-focusing of the group across the board and I am very pleased with the results. The team has reduced operating costs while continuing to develop the key business units of NewCO<sub>2</sub> Fuels, Energy Efficiency and Geothermal. Reductions in expenditure, along with the re-focus on core businesses has established a solid platform for growth in 2013/14 and beyond.

Thank you for your continued support as shareholders, we are looking forward to an exciting new financial year on all fronts.

The following pages outline the progress achieved during the quarter under each business unit.

SIGNED ON BEHALF OF GREENEARTH ENERGY LTD



Samuel Marks  
Managing Director  
Greenearth Energy Limited  
31 July 2013



# Greenearth Energy Ltd.

## Energy Security in a Carbon Constrained World

### **NewCO<sub>2</sub> Fuels**

The past quarter was a hive of activity for the NewCO<sub>2</sub> Fuels ("NCF") business. It consisted of visits of the Israeli management team to Australia and China, along with Greenearth's management team spending time in Israel. The technical team continued to focus on on-going development whilst there was a combined effort of the three management teams of NCF, Erdi Group and Greenearth working on the marketing and development of the commercialisation plan. This included the launch of NCF's new website: <http://www.newco2fuels.co.il/>.

As outlined in the introduction, as part of the two week visit I dedicated part of this trip to visit the new offices of NCF in Rehovot, along with the testing facilities in the Solar Testing Facility and an afternoon in the laboratories of the Weizmann Institute. Whilst we were in Israel, we also facilitated senior members of some of Australia's largest Energy companies and Engineering consulting firms through tours, introductions and updates on the NCF project in the NCF offices, along with the Solar Testing Facility. We are very enthusiastic about what we saw and the continuing results of the NCF team.

On the technical development aspect, the last three months saw the team at NCF continue to make fantastic progress on the development of the "proof of concept" or technology demonstrator model, along with development in the laboratory. This technology demonstrator is a small scale prototype, due for completion towards the end of this calendar year and has been developed to prove the technology works not only in the laboratory, but also on a larger scale, under actual solar conditions and at an industrial design and device level. The technology demonstrator testing facility is now in its last stage of construction with testing starting in the next quarter. In the meantime NCF has successfully set up its system and control instruments and tested some of the solar components to ensure the sun's energy is captured in the most effective way.

The other area of keen interest is of the technical team successfully overcoming one of its main challenges of the entire project, the requirement to be able to convert CO<sub>2</sub> and H<sub>2</sub>O into syngas and synthetic fuels on a large scale via securing a cost-effective, fast way to produce the core chemical reaction chambers. During the last quarter, a solution was found which was able to satisfy the demanding criteria. After an extended period of design and experiments, initial testing was completed on the actual chambers in order to verify this solution, its compliance to the performance criteria, failure modes and also to define its optimal operating conditions.

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## NewCO<sub>2</sub> Fuels

To date, the team has tested multiple chambers and are happy to report that good chemical performance has been achieved with this cost-effective solution.

Pictured below are some of the developments and visitors within the past three months:

**NCF's team working on the assembly of the technology demonstrator**



**Solar mirror that is used to concentrate the solar energy**



**Victorian Deputy Premier Peter Ryan and David Southwick MP with CEO David Banitt at the Solar Testing Facility in July**





# *Greenearth Energy Ltd.*

## *Energy Security in a Carbon Constrained World*

### *NewCO<sub>2</sub> Fuels Joint Venture*

In 2011 Greenearth Energy secured an exclusive worldwide Research and License Agreement for a revolutionary technology that has the ability to convert CO<sub>2</sub> emissions to fuel. The group's investment is represented by a 50% ownership in NewCO<sub>2</sub> Fuels Ltd (Israel). As described in the June 2012 annual report, an option deed has been entered into, which grants Erdi Fuels Pty Ltd the right to acquire the group's 50% ownership of NewCO<sub>2</sub> Fuels Ltd, and the option fee payable to Greenearth Energy has been discounted to an advance amount of \$2 million, payable in instalments over a 21 month period commencing in June 2012. The group would retain an ongoing royalty stream (of 42.5%), should the option be exercised.

The CO<sub>2</sub> to fuel conversion technology concept, successfully developed in Israel by Professor Jacob Karni and his group at the Weizmann Institute of Science, and proven in subsequent extensive laboratory trials, involves a new method of using concentrated solar energy for the dissociation of carbon dioxide (CO<sub>2</sub>) to carbon monoxide (CO) and oxygen.

The same system can also dissociate water (H<sub>2</sub>O) to hydrogen (H<sub>2</sub>) and oxygen, at the same time it dissociates the CO<sub>2</sub>. The CO, or the mixture of CO and H<sub>2</sub> (called Syngas) can then be used as gaseous fuel (e.g. in power plants), or converted to liquid fuel (e.g. methanol or other transportation fuels), which has the potential to be stored, transported and used in motor vehicles. The oxygen produced can be used in the combustion of the clean fuel, or elsewhere.



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### **Greenearth Energy Efficiency**

Greenearth Energy Efficiency ("GEE") is a business unit focused on the integration of energy efficiency technologies into the Industrial, Warehouse and Manufacturing sector across Asia. The core current product focus is on energy efficient lighting. The GEE strategy of developing relationships with the OEM industry for utilizing Metrolight technology in their products, whilst also creating a rapidly growing demand for Metrolight equipped products with end-users, is developing well. The product base continues to be received particularly keenly in sectors where facilities operate continuously and high standards are applied such as the food and beverage industries.

The final quarter of 2012/13 was a very positive period for GEE. The team saw progress on many fronts including the execution of key orders, strengthening of operational and business development capabilities and the continual proof of the compelling case for this business in Australia and New Zealand. The highlights of the quarter included our COO, Urbain du Plessis and myself spending a week with the Metrolight team in their head office in Israel.

The week long visit to Metrolight's headquarters, along with a visit to their software technology partner, was extremely beneficial. Both teams continue to develop the information sharing opportunities around customers and products and GEE was also given the opportunity to review the latest R&D efforts due for release in the latter half of 2013. The current range of products under development are extremely impressive and will have a great impact on our current and future customer base. Upon testing and trials, GEE will look to bring these products to our region and release more details in due course.

On a GEE strategic front, the business continued to grow our offering to our blue-chip customer base, with the last quarter seeing progress across the development of new industry partners which would assist both the industry partners and GEE to provide new and improved opportunities to the joint customers. These developments will be announced in due course, however feedback from current and prospective customers to-date have been positive on these initiatives, ensuring barriers to entry are not only reduced, but there is additional direct benefit for our customers upfront, and over the life of our products.

The platform for growth has been established for the GEE business over the past 12 months and we are looking forward to increased performance within this subsidiary. The team is continuing to develop exciting opportunities and compelling results for our customer base, along with our industry partners here and overseas.



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### **Geothermal Energy**

The past quarter unfortunately saw management within Greenearth effectively 'biding' our time on both the Geothermal projects for the Geelong Geothermal Power Project (GGPP) and our Latrobe Valley Consortium (LVC) as we awaited two key pieces of feedback for these consortiums, along with continued discussion with the local state government on Geothermal prospects within Victoria.

As noted in the last quarterly report, the Greenearth team submitted the initial Expression of Interest (EOI) in March 2013 to the Federal Government's Emerging Renewables Program ('ERP'). Although we have been given the chance to respond to minor queries from the administration team within Australian Renewable Energy Agency (ARENA) during this quarter, we are awaiting formal feedback in relation to whether this EOI has been successful, and if so, will progress to the detailed submission to request funding to assist on the furthering of the GGPP.

The second application to ARENA is under the LVC consortium, now led by Monash University. This application is to develop an innovative geoscience program in the Latrobe Valley within Monash Universities Latrobe Valley campus and working together with their Underworld Geodynamics Software modelling team and eResearch Centre at the Clayton Campus. The project will integrate advanced and emerging geological, geophysical and petrophysical technologies to understand the potential native productivity of the region and the potential to enhance this through stimulation.

The ongoing discussions with the Victorian Government, specifically the Department of Primary Industries, pertains to legislated requirements of the Geothermal Energy Resources Act 2005 and the renewal process for Geothermal leases. As noted in the prior report, Greenearth Energy submitted three renewal proposals of all our current exploration permits as follows:

- Geothermal Exploration Permit 10 - for a period of 5 years located in the greater Geelong / Anglesea region
- Geothermal Exploration Permit 12 - for a period of 5 years located in the Latrobe Valley region
- Geothermal Exploration Permit 13 - for a period of 5 years located in the Latrobe Valley region

We are currently awaiting a response from the Department of Primary Industries.



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### ***Geelong Geothermal Power Project (GEP 10)***

Background on the project:

Upon submission of the Expression of Interest (EOI) for funding in March 2013 via the Australian Renewable Energy Agency (ARENA), GER received formal notification from the Victorian Government that we had successfully been given an extension of time to raise the additional funding required to match the \$25million grant under the ETIS grant. This is a key step towards bringing the GGPP to fruition and has subsequently provided the opportunity to prepare a second Expression of Interest to the federal government under its \$3.2 billion ARENA, as a part of its Clean Energy Future package.

Greenearth had previously applied for funding towards the testing and development of a geothermal well in withing the GEP 10 permit zone under the Australian Government's \$126 million Emerging Renewables program, however this was unsuccessful due to various factors which we are looking to rectify in this new application to ARENA during the 3rd quarter of this year (February 2013).

In November 2011 Greenearth Energy successfully concluded negotiations with the Victorian State Government and executed the \$25 million funding agreement for the GGPP. The \$25 million Victorian Government grant funding was initially awarded in December 2009 under the government's Energy Technology Innovation Strategy (ETIS). The funding was awarded to assist two stages of the GGPP development, the first being \$5 million towards establishing Proof-of-Resource, with a further \$20 million awarded for Stage 2 being a grid connected 12MWe hot sedimentary aquifer (HSA) geothermal energy demonstration plant.

Subsequently, project partners have been developed including Alcoa of Australia, Leighton Contractors, Holcim Australia and Lakes Oil N.L.



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### ***Latrobe Valley Region (GEP 12/GEP 13)***

A consortium was formed in November 2012 to develop the funding application for submission to the \$3.2 billion Australian Renewable Energy Agency (ARENA) to utilise Victoria's / Australia's best geoscience bodies to assess the potential productivity of geothermal reservoirs prior to drilling expensive deep wells. It has the potential to, if successful, reduce exploration drilling risk and address one of the biggest challenges facing the geothermal industry.

The consortia is lead by Monash University, along with a team including leading experts from University of Melbourne, Intrepid Geophysics, and supporting roles from the University of Adelaide, ANU and the Institute of Earth Science and Engineering (IESE) University of Auckland New Zealand. Greenearth Energy (exploration permit holder), has taken a more minor role in this project however will continue to work with the consortium through-out the life of the project.

This updated consortium has the opportunity to combine some of the top academics and newest technologies across the geothermal industry with the intent being to develop long term benefits not only for Greenearth Energy, yet also the geothermal industry across Australia. The project will be focused on the Latrobe Valley.

The Project will focus on Victoria's Latrobe Valley where work by Greenearth Energy and the University of Melbourne has previously suggested a significant new geothermal province close to transmission infrastructure.

The Latrobe Valley is an exciting geothermal prospect as thick insulating coals overly the hot sediments. An innovative geoscience program will integrate advanced and emerging geological, geophysical and petrophysical technologies to understand the potential native productivity and the potential to enhance this through stimulation. Matrix, fracture and fault permeability will be differentiated. An advanced uncertainty analysis, will be developed to quantify uncertainties. Success will lead to greater exploration success for the Australian geothermal industry and a decision regarding a deep well in the Latrobe Valley.

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### Other

Greenearth Energy continues to receive monthly installments from Erdi Fuels Pty Ltd, as detailed in the 30 June 2012 Annual Report and referred to on page 7 of this report. These cash inflows, identified as financing cashflows at item 1.12 in the quarterly cashflow report, together with operating receipts collected by Greenearth Energy Efficiency, will enable the business to continue to execute our strategy.

### Significant Changes in the State of Affairs

There were no significant changes during the relevant period that have not been previously disclosed.



At the date of this report, Greenearth Energy has approximately 1,143 shareholders, with a issued capital structure of:

Total Listed Ordinary Shares	118,801,598
Total Unlisted Options	13,000,000

SIGNED ON BEHALF OF GREENEARTH ENERGY LTD.

A handwritten signature in blue ink, appearing to read 'S. Marks'.

Samuel Marks  
**Managing Director**  
**Greenearth Energy Limited**  
31 July 2013

*The images contained in this document are of a generic nature and are not intended to be representative of specific locations.*