East Harbour Energy Ltd
PO Box 11-595, Manners St
Wellington 6142, New Zealand
Tel: 64-274-771 009
Fax: 64-4-385 3397
E-mail: brian.white@eastharb.co.nz
www.nzgeothermal.org.nz

Newsletter March 2012

Welcome to the March 2012 issue of the newsletter. It's set out as follows:

President's Report

Welcome to another NZGA Newsletter packed with a lot of information and updates on the New Zealand and increasingly global geothermal scene.

Brian White has provided some information on the call for volunteers to participate (and in some cases to lead) the various interest groups that NZGA has committed to launching. This is a practical way to build a stronger and more beneficial Association. Please consider joining one of the Interest Groups. A form has been provided to send to anne.phiri@eastharbour.co.nz but if you have queries contact Brian White. Brian White's email is brian.white@eastharbour.co.nz.

Under Brian Carey's leadership the Geothermal Heat Pump Association has got underway.

NZGA, jointly with the IGA Western Pacific Regional Branch, is hosting a Resource Assessment Seminar in Taupo from 11-14 June 2012.

The University of Auckland has set the dates for its Geothermal Workshop 19-21 November 2012.

The last NZGA Board meeting was kindly hosted at Whakarewarewa Thermal Village thanks to Julia Schuster-Rika. Julia is an Observer on the Board now and the

broadening of NZGA's focus to include geothermal tourism interests is a positive move.

Enjoy the Newsletter and feel free to contribute to the next one via Connie connie.crookshanks@eastharbour.co.nz

Spence McClintock
March 2012

Geothermal News /Articles

NZ News

International recognition for NZ geothermal expertise (Oct 2011) - New Zealand was accepted as a member of the International Partnership for Geothermal Technology (IPGT). This follows a long period of advocacy for membership by NZGA and a number of our members. The IPGT seeks to develop advanced, cost-effective geothermal energy technologies through international research co-operation. While the Partnership has a strong interest in EGS development, the research has broad applicability through all of geothermal development. The recognition of NZ's geothermal research programmes will allow scientists to collaborate with an elite group of researchers in the United States, Australia, Switzerland and Iceland. New Zealand was formally admitted to the IPGT in Melbourne on 16 November 2011. Further details **here**.

Aid boost for geothermal study (Nov 2011) - Geothermal energy has been given a boost with 25 new scholarships available next year for international postgraduate students to study the subject at The University of Auckland. The scholarships are being funded by the New Zealand Ministry of Foreign Affairs and Trade's Aid Programme. Of the 25 scholarships about half will be for Indonesians - building on the close cooperation between the two countries in the field of geothermal energy. Further information **here** and **here**.

Specific geothermal aid through the World Bank (Nov 2011) – The New Zealand Ministry of Foreign Affairs has reviewed opportunities to invest in a variety of aid programs internationally through New Zealand Aid. One option taken up recently is to invest in Indonesian geothermal development through a programme of funding developed as part of the World Bank investment through Pertamina Geothermal Energy (PGE). The $10.3million grant will particularly target capacity building preparing Indonesia for a more active development programme in future. Geothermal investment will significantly decrease Indonesia's reliance on coal-based power generation, which will reduce local and global environmental pollution.[Connie put link to Energy news story here]

The grant leverages advantage from a US$300million World Bank loan directed through PGE for projects at Ulubelu and Lahendong. The preparation for the

geothermal project was funded by a grant from the Government of the Netherlands that was administered by the World Bank. Further information **here**.

Following formalization of arrangements, Migara Jayawardena of the World Bank, visited New Zealand in December to build relationships with MFAT counterparts and to advise New Zealand companies of the opportunities for them in working alongside PGE.

Air New Zealand signs MOU with biofuel company Licella (Dec 2011) - Air New Zealand today announced it has signed a Memorandum of Understanding (MOU) with Licella Pty Ltd to examine the development and commercialisation of a process to convert woody biomass into sustainable biofuel in New Zealand.

Licella has developed a unique process using a Catalytic Hydro Thermal Reactor (Cat-HTR) which converts woody materials and other bio-mass into a high quality bio-crude oil. Under the MOU Air New Zealand and Licella will jointly explore the potential of the technology to produce sustainable aviation biofuel in New Zealand.

Air New Zealand has been at the forefront of aviation's drive to create sustainable second-generation aviation biofuels which can be used as alternatives to the existing fossil based aviation fuels. The airline played an important role in the certification of sustainable aviation biofuels, with the data collected from the airline's biofuel test flight in 2008 contributing to the certification of second-generation biofuels. Further details **here**.

Geothermal New Zealand (Update from Mike Allen) - The collaborative efforts to increase the opportunities for the New Zealand geothermal industry to play a broader role in international geothermal developments has been continuing over the last few months. Following a visit to Japan in September, participation at the ***GRC meeting in San Diego*** provided an excellent opportunity to reinforce international links and promote Geothermal New Zealand and its initiatives. The annual Geothermal Workshop in Auckland allowed additional exposure to international participants and also the opportunity to meet with the wide number of Kiwis already heavily involved in developments globally.

A visit to Jakarta in December saw meetings with all the key private sector players and interaction with **Pertamina Geothermal**, who then visited New Zealand in late January. The Indonesian market has set aggressive targets (around 4,000MW) of new geothermal development. New Zealand consultants continue to have a high level of engagement in the Indonesian (and Philippine) geothermal markets, though Geothermal New Zealand would like to broaden the scope of participation to include construction and contracting aspects of projects also. A two day meeting in early February brought together a group from the industry and a number representing Australasian investment and banking interests. These discussions have provided additional impetus, helping to define a more formal structure for Geothermal New Zealand as it moves forward. In response to meetings held with Pertamina Geothermal during their recent visit, a further trip to Indonesia took place in late February. A further trade mission to Indonesia will take place in April.

Revised collateral material, including specific background on many of the 33 participating organisations, has been produced and can be viewed at **www.geothermalnewzealand.com**

Tikitere Plant one step closer (Dec 2011) – In December, the Overseas Investment Office approved an application by Tikitere Limited Partnership to invest in the development of a geothermal power station near Tikitere. The $200 million geothermal project is a partnership between a New Zealand subsidiary of American geothermal technology company Ormat Technology Limited and three local iwi trusts (Paehinahina Mourea Trust, the Manupirua Ahu Whenua Baths Trust and Tiki Tere Trust). Although very early in the process, plans indicate that Ormat would develop the site and run the 45MW power station, situated on 900ha between Lake Rotoiti and State Highway 30, transferring total ownership of the station to the trusts after 14 years. Further details **here**.

Miraka Official Opening (Dec 2011) – The state-of-the-art $90 million plant, 30km northwest of Taupo - in operation since August - was officially opened on Saturday 3 December. The plant produces whole milk powder for overseas markets using renewable steam and electricity from the nearby Mokai geothermal field developed by Tuaropaki Power Company. The plant employs 30 people. It is already over 80% of capacity, in line with plans. The plant has a capacity to process 210 million litres of milk per year turning out 8 tonnes of whole milk powder per hour. The two major shareholders are the Tuaropaki Trust, which owns the land where the plant is sited and Wairarapa Moana Incorporation, which runs around 10,000 dairy cows on land it owns at Pouakani near Mangakino. Other shareholders suppliers include Waipapa 9 Trust, Hauhungaroa Partnership, Tauhara Moana Trust and Huiarau Farms. More details **here.** See also **Miraka media release.**

Mighty River signs geothermal development agreements (Nov 2011) - Mighty River Power has signed agreements with two Maori landowners to investigate and

develop a geothermal power station on the Taheke field, 20 kilometres North East of Rotorua. The agreement provides for initial exploration and a feasibility study of the geothermal resource and for long-term co-ownership of any subsequent developments. Exploration drilling is expected to start within the next 12 months, subject to consenting arrangements. This Taheke development is known as Te ia a Tutea. Further details **here**.

Note that Contact Energy has previously signed an agreement with Taheke 8C and Adjoining Blocks Incorporation and has drilled 3 exploration wells in the Taheke field. Further details **here**.

Ngati Tuwharetoa Geothermal Assets aims to increase generation and boost forestry with new Kawerau offtake (January 2012) - Ngati Tuwharetoa Geothermal Assets says its bid to double its geothermal off-take from the Kawerau geothermal field will boost electricity generation and expand the region's forestry industry. The company, owned by the Ngati Tuwharetoa Settlement Trust, is currently allowed to extract 45,000 tonnes of geothermal fluid each day. It has applied to take an additional 45,000 tonnes, to supply steam to customers for drying and electricity generation. Strettons, a Taupo accounting firm, and managers for NTGA are leading the application process for NTGA. They advise the consents would not provide a "big bang" of development but would promote the optimisation of existing generation and industrial sites, and see the region ready to substantially lift log processing volumes.

The application was lodged in August and seeks a 35-year term to ensure that the iwi and users can make a sufficient recovery from subsequent investments. The process has been held up as the Bay of Plenty Regional Council has requested additional technical information involving reservoir models. Further details **here**.

Good progress on the Tasman Ormat Power Project - Good progress is being made on the construction of the Tasman Ormat Power Project (or TOPP1 as it is known at Tasman). This is a 25 MW gross/20MW net geothermal project both based around the on-going energy needs at the Norske Skog Tasman mill at Kawerau, coupled with a desire of the steamfield direct heat supplier, Ngati Tuwharetoa Geothermal Assets, to make better use of their discharged brine. NTGA decided to collect brine currently discharging to the Tarawera River and this gave them an opportunity to either use it themselves or offer the heat to NST for power generation. There is some similarity to the Wairakei Binary project where collection and transport of brine for reinjection enabled construction of a binary plant for attractive rates of return. Two additional reinjection wells are being drilled for the TOPP1 project. At Kawerau, some brine will continue to be discharged to the river, although brine at higher temperatures can be reinjected.

TOPP1 Geothermal Steam Separator

Civil Construction Works at the Station Site

TOPP1 consists of an Ormat Energy Conversion unit which will exchange heat with steam and brine to provide energy to the motive fluid to drive two separate turbines which in turn will drive one common generator. The existing TA3 generator in the mill will have geothermal steam diverted from it to the new plant so its generation will drop back from 8 or 9 MW to around 5 MW.

Civil work is well advanced and Ormat equipment is already arriving at site. Commissioning of the plant is scheduled to begin in December 2012.

Contact invests in the care and sustainability of its steamfield - Geothermal development is Contact Energy's generation priority. As part of the Te Mihi project, the company is currently building a new 166 MW geothermal power station near Wairakei and is also investing in a range of other works to enhance the future sustainability of the Wairakei geothermal resource.

These investments include installing a new biological treatment facility (the bioreactor) to remove hydrogen sulphide from the Wairakei power station's cooling water and further development of the Wairakei steamfield.

To reduce Contact's impact on the Waikato River and the enhance operation of the Wairakei steamfield, work is also taking place to increase the number of reinjection wells in the steamfield. This will allow Contact to reinject more separated geothermal water back into the reservoir rather than discharging it into the river. Further reinjection will mean a cleaner operation, reduced mineral discharges to the Waikato River and enhanced sustainability of the resource as the reinjected geothermal water should, over time, help to create more pressure support in the geothermal reservoir.

Contact is also increasing the number of production wells to meet the needs of powering the Te Mihi power station, once completed.

The reinjection and production well development will be followed by the construction of new separator plants and steam transmission pipelines to ensure that enough geothermal fluid from the steamfield is supplied to the new Te Mihi power station as well as Contact's existing Wairakei and Poihipi Road stations.

For more information on these projects see Contact's industry update at the **2011 New Zealand Geothermal Workshop.**

Ngatamariki Update - In 2010 Mighty River Power was granted resource consent for development of the Ngatamariki Geothermal Field, located 17km NE of Taupo. Following a detailed assessment of development options, the project was approved in July last year, and preparations began for the construction of an 80MW four unit Ormat binary plant.

The Iceland Drilling Company was subsequently contracted to supply the rig for the Ngatamariki drilling program, and in September 2011 the hydraulic drilling rig Týr (DrillMec HH-300) arrived in New Zealand. Following a four well monitoring program as part of the Ngatamariki resource consent, drilling of the first injection well for the development commenced on the 30th of December 2011.

Enabling site works (access road, water supply and switchyard platform) commenced in mid 2011 and were completed in January 2012. The main power station site was handed over to Ormat, the EPC (engineering, procurement, construction) contractor responsible for the main power plant, in November 2011. Earthworks are progressing to plan and foundation work commenced in February 2012. The final plant handover will take place on 30 June 2013, with half of the station potentially generating electricity in early 2013.

International News

NICTA leads $5m geothermal 'big data' analytics initiative - NICTA (National ICT Australia Ltd) is leading a multimillion dollar, ICT-enabled, geothermal energy initiative announced by the Australian Centre for Renewable Energy (ACRE).

NICTA's research capabilities in machine learning and in the increasingly significant area of big data analytics will be used to locate geothermal energy sources deep beneath the surface of the Earth. NICTA is leading a team of university experts from four states to find better, automated ways to define geothermal targets, using machine learning techniques and advanced data analytics instead of wells. More details **here**.

NICTA will search for "hot rocks" suitable for developing geothermal energy and has received a $5 million boost under the Federal Government's $126 million Emerging Renewables Program. NICTA has established what it calls the Data Fusion and Machine Learning for Geothermal Target Exploration initiative which will look at improving ways of automating the process of locating 'hot rocks.' More **here**.

GDA delivers Kenyan first - **Geothermal Development Associates** (GDA) has successfully commissioned the Wellhead Geothermal Power Plant at Eburru in Kenya for KenGen – the Kenya Electricity Generating Company. This plant is a KenGen first and generates up to 2.52 MW. GDA engineers have worked closely with KenGen engineers and operators and Civicon construction crews to complete the commissioning and performance testing. GDA designed the plant and the steamfield, and supplied all of the major equipment. GDA also manufactured auxiliary equipment in-house to minimize installation time, including the lube oil system, turbine control valve assembly, compressed air system, fire pump skid, emergency power system, and plant control system. The equipment and materials were shipped from the US to Kenya in 11 shipping containers one month ahead of schedule.

KenGen is the leading electric power generation company in Kenya, producing about 80% of the electricity consumed in the country. They currently own and operate multiple geothermal power stations at Olkaria with a total capacity of 150 MW.
Full story **here**.

Moving ahead – US Geothermal - Debating how the US geothermal industry can best take advantage of California's renewable energy rules, and working for extending the geothermal federal tax credit, were the two hot topics at the fourth annual **Geothermal Energy Association** Finance Forum in San Francisco, California recently.

While analysts projected continued growth for the industry in the US and worldwide, the industry still struggles with the overall poor economy and federal and state policies that don't match industry development needs. Much of the talk at the forum centered about imbalanced government policy in the US at the state and federal levels. One problem was that California's transmission processes and utility attainment does not match the long lead times for geothermal projects, despite the state requiring a large amount of new renewable energy production in the future.

At the federal level, there are clear concerns about the Renewable Electricity Production Tax Credit for geothermal projects, set to expire in December, 2013. California requires itself to have at least one-third of its energy coming from renewable sources by 2020. Additionally, the state's climate law will need further renewable energy use by 2030. Discussion has also focused on the merits of a California geothermal task force, similar to the one in Hawaii, to look at how to improve the sector and make further recommendations. Further details **here**.

Note - A total of 43 operating geothermal power plants with an installed capacity of nearly 1,800 megawatts are in California, about two-thirds of the total United States' geothermal generation. Further details **here**.

Full Steam ahead for MRP's Hudson Ranch - U.S. based geothermal development firm EnergySource LLC announced last week both "the successful electrical grid synchronisation of its newly completed Hudson Ranch I geothermal power plant, as well as outstanding well field test results. Mighty River Power has a minority share in the project. The plant ran at full capacity of 49.9 megawatts and will now begin a month of commissioning trials. Mighty River development general manager Mark Trigg says the project has achieved a significant milestone achieving grid synchronisation and running at full capacity just 21 months after construction commenced. Further details **here**.

Note that Mighty River Power has been stretched by its geothermal investments both locally and internationally. Mighty River Power says its capacity to invest in new projects will be limited until the completion of its Ngatamariki geothermal development in 2013. The government-owned generator says its commitment to the project, coupled with the US$250 million it has earmarked for investment overseas with GeoGlobal Energy LLC, will limit the pace of its international geothermal development short-term. [Reference http://www.energynews.co.nz/news/geothermal/7657/mighty-river-capex-constrained-by-ngatamariki-gge-commitments]

Panax in research partnership - Geothermal developer Panax has signed a two year research partnership with the University of Melbourne which it says will help it deliver a long-term commercial solution for its Penola project in south-east South Australia. ASX listed Panax has issued a statement saying it has signed a Letter of Intent to collaborate with the University of Melbourne, which will give researchers access in and around Panax's deep geothermal well, Salamander-1. The partnership also gives university researchers access to the Australian Geophysical Observing

System, a $23 million integrated infrastructure platform founded by AuScope that will provide data to facilitate the better long term management of geothermal resources.

Petratherm plans clean energy precinct - Adelaide-based and ASX-listed geothermal developer Petratherm says it plans a 600 megawatt "clean energy precinct" around the location of its Paralana geothermal joint venture in the South Australian outback. Petratherm said it will invest $1.5 million in the precinct, which would include gas, wind and solar generation capacity. At a later stage the company says it will add a geothermal connection. The precinct is designed to produce power for the significant mining operations which are expected to be developed in the area in the next five years.

Australian Conventional Geothermal Development Alliance seeking expressions of interest - Interest is sought in drilling appraisal and production wells at joint geothermal projects by Green Rock Energy and Pacific Hydro in South and Western Australia. The Australian Conventional Geothermal Development Alliance (ACGDA) is currently seeking **Expressions of Interest** from suitably qualified parties interested in joining the alliance partners in drilling appraisal and production wells at either or both of the geothermal projects during 2012.

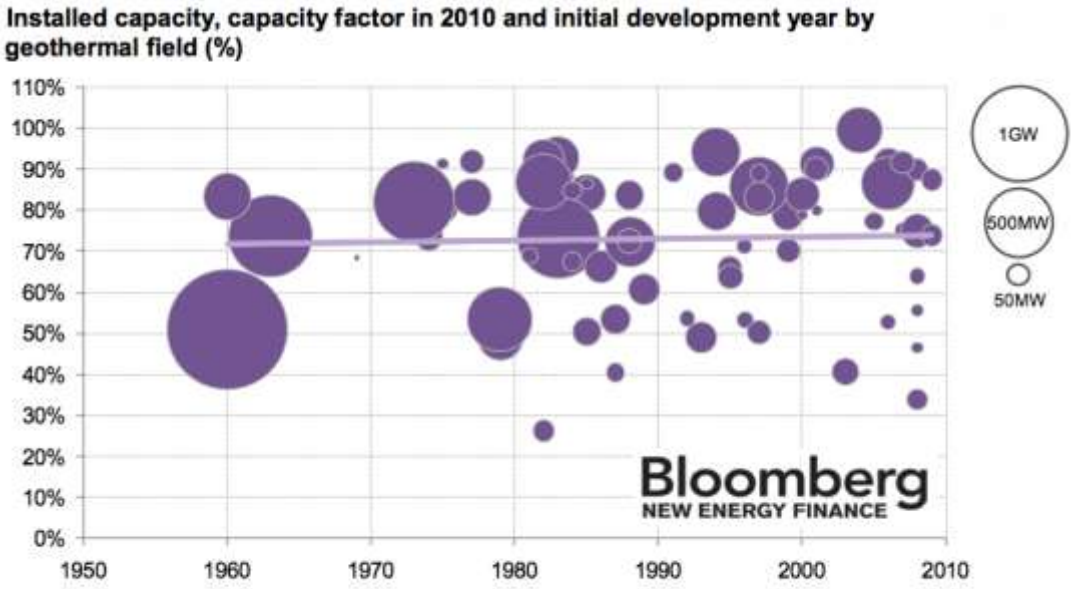
If the geothermal resource is proven, the partners plan to commence the preparation of a front-end engineering design (FEED) for an initial 25-50 MW binary geothermal development and if feasible, commence power plant construction.

This opportunity may potentially be suitable for existing power producers (IPP's), drilling companies wishing to vertically integrate their activities, resource companies interested in hedging their exposure to future carbon policies, or equity investors interested in gaining exposure to the Australian renewable energy sector.

The Mid West and Great Artesian Basin Geothermal Power Projects are located in two large geological basins, the North Perth and the Great Artesian basins respectively. These basins have been demonstrated to contain significant reserves of hot geothermal fluids over an extensive area and have been successfully exploited in the Great Artesian Basin by an operating geothermal power plant in South West Queensland, since the 1990's.

Recent Bloomberg study on geothermal power plant capacity factors - A recent study by Bloomberg New Energy Finance looks at the capacity factors of geothermal power plants world-wide and shows they are not as high as they theoretically could be, but still remain an important and valid base-load capacity source of power generation. Released to subscribers in October, Bloomberg New Energy Finance (BNEF) released a research note on Geothermal Plant Performance, asking the question if the high capacity factors stated by the industry are a fact, or more a matter of fiction. The findings are interesting, not only for the geothermal industry that sees its high capacity factors as one of the key selling arguments. While the research shows that geothermal energy is still a very favorable base-load capacity

energy source for utilities world-wide, capacity factors are often not as high as they theoretically could be.



Source: Bloomberg New Energy Finance Note: Light purple line is trendline showing unweighted average capacity factor as a function of initial development year.

Building on the vast resources collected over the year, the research done by Bloomberg New Energy Finance for this study is quite thorough and looked at 71 geothermal fields globally. For a global average, BNEF quotes a capacity factor of 73% and correctly notes that developers use much higher capacity factors for their project finance models. Further details **here**.

*[**Editor's note**: It will be useful to counter this view with some firm New Zealand statistics. There will be some examples like the generation from Ohaaki that apparently support a lower capacity factor, but offsetting this are the high factors achieved for more recent power stations.]*

Reasons to support Geothermal Energy – a USGEA Report - A recent document published by the U.S. Geothermal Energy Association (GEA) gives ten reasons for answering the question on why to support geothermal energy. In a recent support document, the U.S. Geothermal Energy Association (GEA) published ten reasons for answering the question on "why (to) support geothermal energy". There are some questions that are clearly focusing on issues in the United States, the overall reasoning should provide a good basis for some of the discussions many of us promoting geothermal.

Board and Executive Officer Update

Most updates have been inserted into the body of the newsletter.

Board Matters

At the Board meeting in February a decision was made to continue with affiliation to the Royal Society of New Zealand despite subscription increases. There will be an important debate around the broad issue of 'sustainability' this year that may have implications for the geothermal industry.

The Board also agreed to support the 2012 New Zealand Geothermal Workshop up to Bronze level sponsorship. The November Workshop run by the University of Auckland is one of the Premier events in the New Zealand geothermal calendar. There are no financial links between the Workshop and the NZGA other than our sponsorship of the event.

It was agreed to support the resource assessment workshop (now entitled From Start to Steam) being developed by GNS Science. This will effectively be the NZGA Seminar for 2012, and there is an agreement for profit sharing involving both NZGA and the Western Pacific Branch of the IGA. There is more about this later on in the newsletter. We encourage people to attend this, and companies to consider sponsoring the event.

Impetus was given to the establishment of Interest Groups, with several Board members putting their names forward to lead these groups. One particular group that came in for discussion was the Heat Pump interest group which GNS Science has been actively championing as an extension of their Low Enthalpy Geothermal programme. The Board gave special support to this group and agreed to affiliation with the Climate Control Companies Association in order to bring some of CCCA's initiatives around quality control and training to support this fledgling industry. There is more discussion on this later on.

It is timely that the geothermal drilling code and regulations be reconsidered. The drilling code (a leading document for its time) was developed in 1991, while the Geothermal Energy Regulations were developed in 1961 (though subsequently modified). It was agreed that the NZGA could, as a neutral body drive a review of aspects of these, partly with a view to greater alignment of reporting across code, regulations and consents, but also with a view to updating in terms of modern practice and alternative types of development. The review will come under the "Generation and Industrial Use" interest group.

The NZGA Treasurer (Marcel Manders) reported that accounts were looking relatively healthy ("unlikely to dip into reserves") even though there has been a lot of activity in recent months. This has been helped by early invoicing and prompt payment of Corporate, Institutional and individual membership subscriptions.

Elections to the NZGA Board

Following the board elections last year, Cito Gazo of CRL Energy/Energy Federation has retired and Sadiq Zarrouk of the University of Auckland has come onto the Board. We would like to thank Cito for his service, and all those who made themselves available for Board roles. We look forward to Sadiq's involvement on the Board.

The Board had decided that it will support geothermal tourism as a component of its interests. As a result Julia Schuster-Rika who is general manager at **Whakarewarewa** has been seconded on to the Board in an Observer role to take these interests forward.

Note that we do have a policy of rotating one third of the Board every year, largely to ensure continuity. The by-laws also set a limit of two 3-year terms of service. Information on where **Board members are in terms of their service** is now shown on the website.

NZGA Special Interest Groups

For some time NZGA has wanted to allow members a greater focus on areas of particular interest. We want to tailor the Association to meet the needs and interests of our members. An outcome of the AGM in November is a recommendation that we proceed with the development of these interest groups on a voluntary basis. A number of Board members have already put their hands up to lead some of these groups. We now want to outline groupings of interests to our members, and to encourage you to identify whether you want to take 'no role', a 'passive role' or an 'active role' in any of these.

The broad groupings we have identified currently are as follows:

- Generation and Industrial Use – Chris Mann will lead.
- Tourism – Julia Schuster-Rika will lead.
- Heat Pumps and Smaller Scale Direct Use – Brian Carey assisted by Rick Smith will lead Heat Pump aspects. Direct Use needs a leader.
- Environment, Legislation and Regulation – Tricia Scott will lead.
- Service Providers and Finance – a grouping partly with Geothermal New Zealand in mind – needs a leader.
- Education and R&D – Juliet Newson and Sadiq Zarrouk will lead.
- Iwi and Landowners – there are obvious interests but this group will also be responsible for cultural input into the World Geothermal Congress 2015 – needs a leader/facilitator.

The NZGA Board has decided that the groups should be left to evolve in structure and communications as they choose, but leaders will report at Board meetings when there will be opportunity for cross-pollination of ideas to make these more effective. The NZGA website will be restructured to bring these interests to the fore, and

groups will be responsible for the content and for keeping the content relevant and up to date.

[Editor's note - Please make your views on/interest in the proposed Special Interest Groups known to us – see 'Seeking Your Views' below.]

Geothermal Heat Pumps – Special Interest Group

Focusing on one of these groups, Brian Carey and a small team linked to GNS Science have been making great strides with the development of a geothermal heat pump group. A geothermal heat pump working party has been established from industry participants and has met a number of times to develop a path forward. Jill Ansell-Douglas of Warmtec Ltd is Secretary for the Group.

This recently led to the development of a charter which has seen the Geothermal Heat-pump Association of New Zealand (GHANZ) form as a sub-group of NZGA. In turn, NZGA has affiliated with the **Climate Control Companies Association** (CCCA) in order to bring to GHANZ their advocacy, training, regulation and licensing initiatives for a range of HVAC and refrigeration interests. GHANZ members are now working on a number of fronts to gel aspects of administration, training and promotion. The NZGA Executive Officer is looking to adjust the NZGA website for the use of this and other interest groups.

Consequently, this particular "Interest" group will be highly structured, but is still very much open to any NZGA members with an interest in geothermal heat pumps. By comparison, some other groups may take the form of a loose working committee.

SEEKING YOUR VIEWS

It is now up to NZGA members to get on board the various groups. Currently we have no restrictions on how many groups you can be involved in. The NZGA membership application form has been modified so you can indicate your level of interest (none, observe, want to be active, ready to lead) in the various sectors.

We would like you to fill in the form, if any or all of the groups are of interest to you. And while you are at it, if you think any of your contact details may have changed since joining NZGA, please let us know. The form can be sent to **anne.phiri@eastharbour.co.nz**

Link to the form **here**. Feel free to offer any further thoughts that you may have in an e-mail when you send in your form.

New Feature – Geothermal Tourism

At the November 2011 AGM it was announced that ***Julia Schuster-Rika*** (General Manager at **Whakarewarewa, The Living Thermal Village**) would be co-opted onto the NZGA Board to look after geothermal tourism aspects for a year. In an effort to promote geothermal linked tourism activities we will use this new feature in the

Newsletter to promote new initiatives. In a later issue of the newsletter this year we will hear from Julia on her views of the potential that NZ's geothermal resources present in terms of tourism attractions.

An Update from Julia – Julia Schuster-Rika comes from a mining background in Australia, but has recently returned to her home at Whakarewarewa. This village brings together aspects of tourism and geothermal through giving access to a living village in a geothermal setting.

A good proportion of visitors to New Zealand come to see geothermal attractions. The bulk of tourists come from Australia, with China dominating numbers beyond that. Attractions include the environment, culture, then health and spa interests. Numbers were good through and after the Rugby World Cup, but peak season is normally October to April. The Polynesian Spa is an example of a site that does well during winter months because of the attraction of hot bathing in winter.

There is a geothermal Earth Science Facility in the Whakarewarewa village, which is a joint venture between Whakarewarewa Thermal Village Tours and GNS Science, that juxtaposes traditional views of geothermal with modern scientific thought. This could help make links between residents/visitors and scientific/engineering ideas and careers.

There is a keenness by iwi for wider development of geothermal resources, with opportunities to link to tourism.

The tourism industry is helped by having Prime Minister John Key as the Minister of Tourism.

Te Ara Ahi - Go Thermal By Bike - Te Ara Ahi will be a two day Great Ride that will extend 74 kms from Rotorua to the thermal area of Orakei Korako on the Waikato River. This Grade 2 trail will take in the best of Rotorua's thermal activitity and be suitable for all levels of cyclists. For further details of what can been seen on the route (plus a map and photographs) see http://nzbybike.com/te-ara-ahi-go-thermal-by-bike/.

Meetings – Recent and Planned

Recent Meetings

NZGA Annual General Meeting (AGM) November 2011 – Report Back

The NZGA AGM was held back in November 2011 and coincided with the Geothermal Workshop – "*Geothermal - Energy for the Future*" at the University of Auckland, 21-23 Nov. Key points to note that emerged from the AGM are as follows:

- **NZGA Special Interest Groups in the planning phase** - In the year ahead, the NZGA Board will be looking to develop a number of Special Interest Groups within NZGA – the first off the rank is 'Geothermal Heat Pumps'. Further

details will emerge throughout the year as we identify and prioritise topic areas and establish group conveners.

- **The World Geothermal Congress 2015 meetings** – the meetings held in November 2011 were highlighted. Further details later in this newsletter here - **World Geothermal Congress 2015 Melbourne - UPDATE**

- **NZGA Lapel Badges now available** - the NZGA now has NZGA lapel badges (as seen at last year's NZ Geothermal Workshop). These are available to NZGA members - please contact the ***Executive Officer*** for details on how you can get your badge.

NZGA Board Meeting, February 2012

An NZGA Board meeting was held in the Whakarewarewa Thermal Village office, Rotorua on 28 February 2012. Most matters are dealt with elsewhere in this newsletter.

The Board changes after the AGM, so this was the first meeting for Sadiq Zarrouk (University of Auckland), and for Julia Schuster-Rika (Whakarewarewa) who had agreed to host the meeting.

Submissions – Recent and Planned:

Recent Submissions

NZGA have developed a submission on the **Technical Guide** that was drafted to support the implementation of the National Policy Statement (NPS) on Renewable Electricity Generation. The Guide provides local authorities with direction on implementing the NPS, focusing particularly on regional and district policy and plan making. It aims to help resource management decision-makers and relevant stakeholders understand the policy intent of the NPS.

The NZGA submission is available on the **NZGA web-site**.

Planned Submissions

Northland Regional Council released a Draft New Regional Policy Statement for Northland for public feedback in October 2011. The period for feedback ran from 20 October to 9 December 2011. The Council plan to review the feedback from this process until May 2012, and will then revise the draft, and develop a Proposed RPS for further consultation, from about June 2012. The draft RPS documents are available on the **Key Documents** page.

Training Update

2012 Geothermal Short Courses

The Institute of Earth Science and Engineering is offering introductory courses in geosciences, geochemistry and a field trip to the TVNZ.

Courses are expected to take place in April 2012, with registrations due before 2 March. For course descriptions and to register, please refer to the **website.** For enquiries and assistance please contact Rachel Fenton, Training and Marketing Manager, IESE on email: r.fenton@auckland.ac.nz

Events

Past Events – Report Backs and Updates

NZGA Seminar 12 October 2011, Taupo NZCEC – Report Back

Brian Carey with assistance from Claude Bannwarth and the staff of GNS Science arranged the NZGA Seminar with the theme "Geothermal Energy – It's amazing what you can do directly". The venue was a marquee beside the new New Zealand Clean Energy Centre on the outskirts of Taupo, which served very well despite the weather. The focus was geothermal direct use including use of geothermal heat pumps, with two sessions on each of these topics.

Speakers and presentations were very good and helped to draw attendees from outside the usual NZGA audience. A total of 80 paying registrants attended. Many of these stayed on for the Energising Geothermal Workshop on the following day. Power point presentations have been added to the NZGA website and these provide valuable insight into some of the large-scale (and small-scale) direct use developments over the last year or two. See http://www.nzgeothermal.org.nz/workshop_papers.html

Energising Geothermal Workshop 13 October 2011, Taupo NZCEC – Report Back

This Workshop timing was related to the Rugby World Cup and came under a broad New Zealand marketing initiative directed at both locals and visitors for the Cup. The event was well-attended. NZGA Executive Officer, Brian White, chaired the session through the morning until the time for a field trip to Mokai.

The event was well-supported by Government representatives and members with an interest in the initiatives related to Geothermal New Zealand (see Mike Allen's earlier update). This gave an opportunity for a presentation by Mike Allen and Chris Mulcare, which was then followed up by a meeting between government representatives for coordination purposes.

Hon Wayne Mapp attended a function in the evening helping to make further connections through the industry. For NZCEC, this was followed by a further day on bioenergy. Together, these energy events gave NZCEC a good profile in renewable energy areas in which they want to focus longer term. For all who attended the

Workshop, it provided great networking opportunities and a wide briefing on geothermal initiatives.
See http://www.cleanenergyexpo.co.nz/energising-geothermal-workshop-papers-xidc93386.html

New Zealand Geothermal Workshop 21-23 November 2011, Auckland – Report Back

The NZ Geothermal Workshop (New Zealand's longest running Energy conference) is the premier event in the geothermal calendar. The theme for the November 2011 event was "***Geothermal Energy of the Future***". As usual, the event was well-attended with 190 delegates. People who had attended the GRC meeting in the US or the Australian geothermal conference during the previous week commented on the very upbeat views of attendees, brought about by the dynamic nature of the New Zealand market.

The organisers have returned to an emphasis on papers to be entered in formal proceedings. The exception to this were the NZGA 'Industry Update' sessions on the last day with a view to frank presentations.

The Ministry of Foreign Affairs and Trade took the opportunity to make key announcements to the geothermal community around scholarships and targeted aid through the World Bank highlighted earlier in this newsletter.

Attendees were provided with a memory stick with presentations that will be valuable for them. The papers are now also available through the **IGA website**. Most of the Update presentations are available through the **NZGA website**.

Forthcoming Events/Conferences 2012

From Start to Steam – Geothermal workshop, Taupo, 11-14 June 2012

Registrations open 12 April 2012

The resource assessment workshop will be run as a joint NZGA Seminar and IGA Western Pacific Regional Branch event. Note that if you are an NZGA member then you are also an IGA member so are eligible for the US$100 discount. More **here.**

Annual New Zealand Geothermal Workshop, 19-21 November 2012

Details of this Workshop will be available on the **NZGA website,** and will have a permanent domain name very soon. The Association is keen to facilitate a greater number of engineering and alternative papers to help balance the past prevalence of science and resource-based papers presented at the event. The New Zealand geothermal community has diverse interests and ideally all of these should be reflected at the Workshop and in its Proceedings. Workshop organisers are fully behind this diversification, so it is up to you to input papers. Start planning now.

If you would like to discuss any aspects of the workshop please contact **Sadiq Zarrouk**.

Other Events

World Geothermal Congress 2015 Melbourne - UPDATE

NZGA together with the Australian Geothermal Energy Association and the Australian Geothermal Energy Group (collectively known as the Australian and New Zealand Geothermal Energy Associations or ANGEA) jointly won a bid to host the next World Geothermal Congress to be held in 2015. The intention is to hold the conference in Melbourne while field trips will be held in New Zealand and Australia. An accidental feature of the planned dates is that it spans ANZAC day on the ANZAC centenary, so we will look at how to take advantage of that. Now:

- All agreements are in place,
- The Organising Committee together with Arinex has been actively working through the Master Plan and Budget,
- Milestone funding requirements for IGA have been met, and
- The first combined OC/IGA Steering Committee meeting has been held (on 15 November 2011) to agree the Master Plan and Budget, and settle other issues.

In coming months there will be some closer interaction with the IGA Steering Committee, and concepts will be crystallised further. One of the immediate steps will be a first announcement, which you can expect in the next few weeks.

One of the greater needs will be the securing of major sponsorship to alleviate costs. Obviously all companies need to start thinking how they will use this global conference in this region to maximise marketing benefits, while facing all their other costs.

NZGA Action Plan: (last updated March 2012)

The New Zealand Geothermal Association seeks to assist and promote geothermal interests through a range of means that are put forward by its members and agreed by the Board. These actions are set out is an Action Plan developed on an annual basis. Current status of this Action Plan is shown in the table following.

Action	Comments	Status
HIGH PRIORITY		
Government Lobbying and Raised Public Awareness	NZGA should meet with interested Government ministers and officials, highlighting growth opportunities across Cabinet.	Now seeking meetings with Ministers. Executive Officer has met with MED officials
Submissions on Policy	NZGA will make relevant submissions in response to government consultation documents e.g. climate change regulations, etc	21/2/12 NZGA submitted improvements to an EECA Guidance report on the NPS on Renewable Electricity Generation.
Review of Training Requirements	Information and Education Subcommittee should meet to set its own terms with a view to high level direction for NZGA, and to develop broad industry training strategies. Training and currency of information is critical in an expanding industry with ongoing development. This applies to electricity generation, heat supply and heat pump applications. It covers tertiary and trades development.	Juliet developing a paper

Geothermal Interest Groups	Geothermal is a broad topic and our members have specific interests within this. Various interests are to be grouped around NZGA Board members who will look at taking these interests forward for the benefit of the sector.	Several meetings have been held to formalise groupings. Interest Groups are being initiated through this newsletter. See the separate discussion about the Heat Pump group as part of one sector
Position Statement	NZGA should review its high level messages	Review has commenced
New Zealand Inc Initiatives	There are great opportunities for international growth and NZGA can facilitate some of the efforts aimed at a more integrated approach and assist with provision of useful information.	NZGA continues to support Geothermal New Zealand as it firms up structure and as it researches the key markets for its potential services.
INTERMEDIATE PRIORITY		
Website Update	The website will be continually updated to include latest studies and information. Some of the tasks below reflect current weaknesses in the website and NZGA's knowledge base. This is one of the principal means by which we educate the public and inform our own members.	The site is continuously updated.
Annual NZGA Seminar and the New Zealand Geothermal Workshop	These will be the premier national industry events for information dissemination and networking. NZGA should lobby for the production of proceedings or for the publishing of papers on the Stanford website	Proceedings and papers will be produced for the Workshop. The NZGA Seminar was run in conjunction with the inaugural Energising Geothermal Workshop organised by the New Zealand Clean Energy Centre. The 2011 NZ Geothermal Workshop was a successful event held in Auckland. The June 2012 From Start to Steam Workshop will be the 2012 NZGA Seminar.
World Geothermal Congress 2015	NZGA should provide necessary support for the joint NZ/Aus World Geothermal Congress 2015	Preparations are underway. The first joint Organising Committee/IGA Steering Committee meeting was held in Melbourne November 2011. There is a need to secure additional sponsorship to reduce registration costs.
Geothermal Short Courses	Short courses can give a broad overview of geothermal energy for consenting agencies, developers and other interested parties. This assists development directly. Policy and industry overview meetings are still required	Short courses have been arranged through the University of Auckland and advertised on the NZGA website.
Broadening Geothermal Base to Tourism	Our members include landowners and varied businesses including tourism. This aspect should be more prominent.	Julia Schuster-Rika has been seconded on to the Board to help further this interest group.
Awards	A function of NZGA is to recognise significant achievement by members. One aspect of this is awarding of Life Memberships	Board has followed a process that has seen Colin Harvey and Richard Glover elected to Life Membership.
Geothermal Drilling Report	Continuing a suite of geothermal reports, a report will be prepared on geothermal drilling and well design outlining current practice, costs, differences between conventional fields and EGS developments, new areas of development and issues to be addressed by industry	MB Century has been collecting data and progressing this report on a voluntary basis.
Development Guideline Report	While large generators can handle their issues, there may be a large number of issues faced by small generators. This will provide a beginners guideline to geothermal development.	
Geothermal Heat Pump Studies	Heat pumps are now entering the New Zealand market. Initial indications are that, for large domestic loads (including water heating) and above, this option is competitive with other common heating options so could be a significant contributor to our national energy future. There is still a need for resource information in the top 100m around NZ. Efforts should also be directed at raising the profile to help with uptake.	GNS Science is reporting on Heat Pumps as part of their Low Enthalpy research program. Heat pumps were covered in the NZGA Seminar. A geothermal heat pump group is being established with NZGA cooperation. GHANZ is one of the first established interest groups under NZGA. NZGA has now affiliated with Climate Control Companies Association to bring benefits of training and quality control to GHANZ
Memorabilia and Industry Archive Facilitation	It is recognised that key information and equipment could be lost if an industry archive is not established. The NZGA should facilitate discussions to collect and preserve this pioneering material.	No progress.
Science and Innovation Fair	This is a 2012 event directed at schools in the Taupo region that could help direct young people into engineering/science, for which alignment with industry is wanted	

Membership

NZGA individual membership currently stands at 338. NZGA is grateful for the support of its Corporate and Institutional members in helping the Association's work on behalf of the wider geothermal industry. For a list of these industry supporters see http://www.nzgeothermal.org.nz/about.html#supporters.

Further details on Membership can be found **here** on the NZGA web-site.

Individual membership

The NZGA currently has 338 individual members (compared with 297 at the time of the AGM in November) with varying degrees of involvement in the geothermal sector in New Zealand. We have actively been following up members for subs payments and deleting people who no longer wished to remain members. Individual subscription is only NZ$100/year/person (including GST).

For a membership form (which now lets you identify interest areas too) see **here**.

Western Pacific Regional Branch Membership

The Board encourages members to consider the voluntary membership of the WPRB of the International Geothermal Association. This can be done by contacting Jim Lawless (***JLawless@clear.net.nz***). Currently there is a one-off joining fee of only NZ$7.

Corporate and Institutional Membership

Memberships at this level are tiered – Platinum, Gold, Silver and Bronze - and members logo's are shown on the web-site against their membership level (see **here**). Links to member's respective websites are shown and we show member profiles on each of these companies. If your company is involved in the geothermal industry, and so benefits from the long term advocacy and coordination of the NZGA, then we would encourage you to contact the ***Executive Officer*** or other Board Members about your support role.

Recent changes to corporate membership:

Membership Level	Organisation
Silver	Hot Rock Ltd and Bosch have increased level from Bronze to Silver level
Silver	New Silver members: Cheal, Beca and McConnell Dowell
Bronze	New Bronze members: Downer, HERA (through a reciprocal membership arrangement with NZGA), Dobbie Engineers, Alstom, SGS, Norske Skog Tasman

The NZGA would like to thank all of its members for their ongoing support of this industry.

Membership Fees - Reminder

A gentle reminder that ***Membership fees are now due.*** As an Association, we are relying on Member's fees to be able to function. Please make a point of paying outstanding invoices within the next couple of weeks. Please also take an opportunity to update or confirm your contact details.

NOTE - Those in possession of unpaid invoices by the end of July will regrettably have their Membership terminated.

Keeping in touch

A note to all members – if your contact details change for any reason, please advise us of your new contact details as soon as possible. Email the Executive Officer.

NZGA Newsletter Survey

The NZGA Board is interested in feedback on the Newsletter. Below find a link to a simple survey (7 questions) to allow you to express like or dislike and to comment / make suggestions.

Click **here** to access the survey

Use of and contributions to this Newsletter

NZGA produces this Newsletter primarily for the benefit of it members and also for the wider public. We are happy for the material in the newsletter to be used but ask that the NZGA Newsletter be acknowledged as the source.

We are always keen to promote our members and their project activities – please contact us with your news, vacancies or useful materials.

Thank you.

Brian White	Spence McClintock	Colin Harvey
Executive Officer	President	Past President