

## Newsletter July 2012

Welcome to the July 2012 issue of the newsletter.

### President's Report

Welcome to another NZGA newsletter. Since our last newsletter the Geothermal Association continues to gain momentum in two key areas, our reputation offshore and the growth of participation in working groups.

The various interest groups are progressing at different rates depending on the energy and drive coming from the membership. Again I would encourage you to join an interest group and compare information and ideas with others. Details for the current team leaders are set out in this newsletter. Contact them to express your interest.

The Geothermal New Zealand initiative has facilitated increasing off shore interest. Recent visiting parties from Indonesia, Japan, Chile and soon Mexico have all come to see New Zealand geothermal capability first hand. From my interactions with these groups, and feedback from others, they have been impressed by what they see.

Brian White and I met with Energy Minister Phil Heatley this month. The Minister was complimentary on the progress geothermal developments have been making in New Zealand and the vital role geothermal plays in the energy mix. He was also supportive of the concept of some form of Government support for WGC 2015 and the possibility that jointly with MED we may expand some of our resource material that will be useful for land owners and prospective developers.

Finally some news on two special New Zealand geothermal identities, Colin Harvey has retired from GNS. Colin will still be involved with NZGA and his role on the IGA Board but he has retired from his role at GNS. I suspect Colin will still continue to work behind the scenes promoting geothermal as he does so well. And finally, some sad news on the passing of Alistair McLachlan, one of New Zealand's true geothermal pioneers.

Spence McClintock  
July 2012

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## Feature Article - Electricity demand and further geothermal growth

Geothermal electricity generation is one of the most attractive forms of generation currently available in New Zealand: renewable, low emissions, low unit cost, base load, independent of weather, indigenous “fuel”, benefits for Maori – and geothermal generation options remain at and near the front of the queue for new developments. However, one of the greatest constraints on growth in geothermal electricity generation in New Zealand is the lack of electricity demand growth over recent years. Given that this demand has such a key role, I have had a quick look at this.

Just to recap, existing generators build new plant:

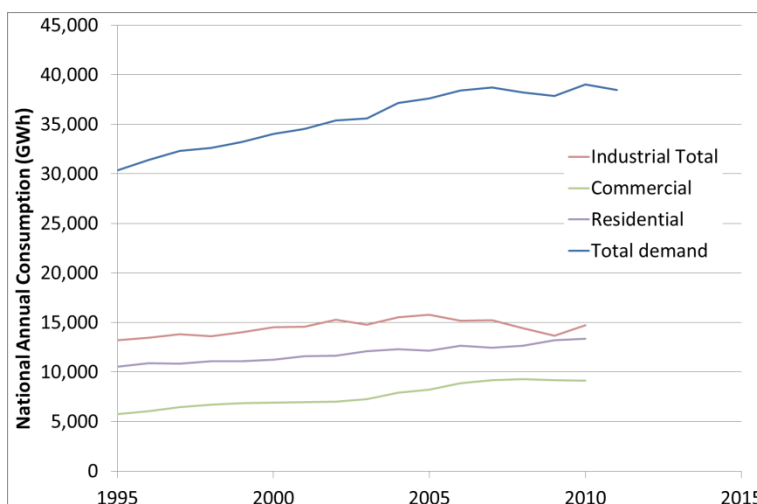
- to meet growing demand,
- to help build reserves if these appear insufficient,
- overseas, to assist with fuel substitution policies (e.g. renewable energy standards or nuclear or fossil-fuel substitution), or
- with a view to offsetting upcoming retiring plant.

If the generators build more than the necessary amount then they risk displacing their own existing generation or suppressing the price of electricity through stiff competition which changes the economics of the project. Small generators or lines companies are often more focused on niche embedded opportunities so are not as constrained. All generators like to have some consented projects in their back pocket ready for action.

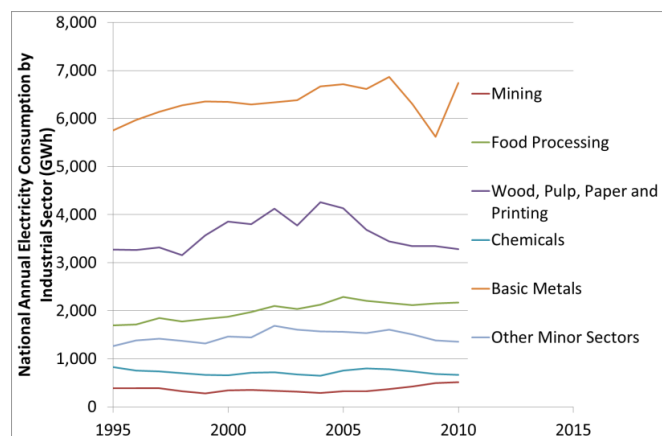
For the last few years, the generators have pointed out that electricity demand has been flat. Despite this, there has been ongoing investment in new plant, particularly geothermal plant. This has had the effect of building up reserves. However dry year reserves are now up near the highest levels since the current market was established. The amount of generation available has helped to suppress spot market prices, as competition to dispatch increased. The reserve levels are now similar to a period shortly after market establishment when competition levels were so high that eventually TransAlta was forced out of the market. Generator/retailers would be reluctant to see much more generation growth that was not offset by retirements or new demand growth.

What about retirements? Of course the major possibility on the horizon is the retirement of Huntly units. This 1000MW coal/gas-fired power station is close to retirement now. Genesis has announced retirement plans starting with Unit 3 at the end of this year, but has also reconsented the station through to 2038 as a back-up option. Huntly has been a useful component of the New Zealand generation scene, and if demand were to surge (say due to the introduction of electric vehicles) then we may be very grateful that Huntly could be fired up and ready.

So what about demand? What has been happening there? The following graph shows that electricity demand has truly flattened from about 2007 (and projections based on the year to March 2012 look very like 2011 figures). Breaking this down further, domestic demand has continued to climb linearly, commercial demand flattened from around 2007 and industrial demand has generally declined since 2005. The flat commercial scene may well be due to



the global financial crisis which dates from 2007. The industrial scene may also be related to this, though some sectors have shown weakness for much longer. The big industrial stories in the New Zealand market are told by our aluminium smelter, wood products and to a lesser extent food processing (our meat and dairy industry). I have been separately advised that the effect of the Christchurch earthquakes has been to reduce Christchurch demand by 50 GWh in 2010 and 330 GWh in 2011.

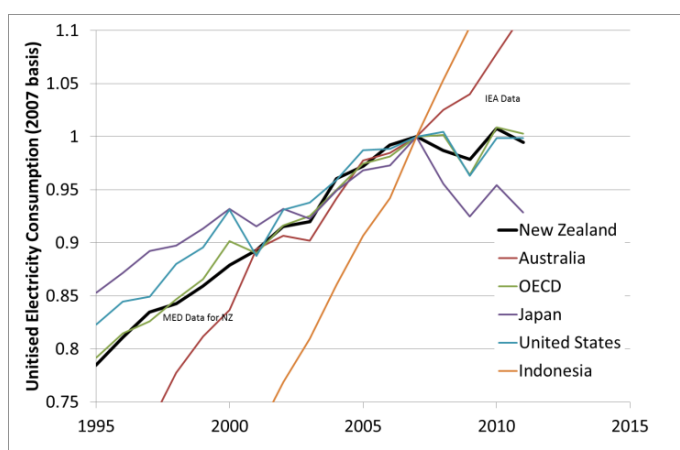


For aluminium, there was a transformer failure in 2008 followed by a decision to restrict production in 2009 due to low commodity prices internationally, but since then demand has picked up. The dip was certainly noticeable, and will reappear from 2012 because the smelter reduced production by 15% (closed its 4<sup>th</sup> potline) in April for similar reasons to 2009. The wood story is a little different. Wood processing picked up

significantly through the early 2000s but peaked in 2004 and has been in decline since, this despite a “wall of wood” that could be processed. Mills have been going out of business. Our food processing has also been in decline since 2005. A quick look at stock numbers shows the legendary 60 million sheep have dropped to 32 million (by 2010), with a step drop from 40 million commencing in 2007, while for every 17 sheep lost from the national herd there is a gain of 2 dairy cattle (for the last 15 or 20 years). But thinking a little further, our aluminium, wood and food are all international trading commodities for which demand and price will be a function of the global financial market status.

As I prepared this article on New Zealand demand, I came across a [similar article](#) from Australia also describing flat or declining demand there within the National Electricity Market (NEM) (which excludes Western Australia and Northern Territory) over the same time period. This was put down to the Global Financial Crisis, various forms of embedded generation, energy efficiency measures, response to electricity price and some local disasters – all of which could apply to New Zealand.

I then looked more widely and found that the flat electricity demand is actually a feature of many developed economies. Developing economies are bucking the trend, probably driven by the demand created by increasing access to electricity. The following graph shows demand curves (which I have unitised by dividing the demand in any year by the country's demand in 2007) for some other economies. New Zealand's flat demand since 2007 is not unique and is almost the norm!



Note that in this graph, Australia's electricity demand appears to be steadily increasing despite the earlier article about the flat behaviour of the NEM. This can be attributable to Australia's two speed economy with significant growth outside the NEM and especially in Western Australia, largely associated with mining.

While there are similarities in government policies across many countries, my own suspicion is that the global financial crisis has a far greater impact on demand than other factors. For New Zealand, it is affecting the demand for our goods and services so leading to a plateauing or decrease in production.

The effect of flat electricity demand now will be a short term reduction in the construction of new stations. The New Zealand geothermal industry is pro-active in addressing this coming hiatus in generation construction. Efforts are being directed to offer geothermal and construction skills (and investment) in the international markets, particularly developing economies such as Indonesia where electricity demand continues to grow and geothermal potential is huge. Nationally we are looking at moving along the value chain through manufacture of turbines for binary cycle plant, whether for the domestic or international markets. While the domestic electricity market may be flat, there is still a need for other forms of energy. Thus we have seen investment in major heat plant such as the Miraka milk drying plant at Mokai, the SCA tissue plant at Kawerau and the Tenon kilns at Tauhara. This is supported by a research effort by GNS Science into low enthalpy direct use. Further research is directed towards value propositions around the biota within thermal fluids, while previous research has covered the possible recovery of minerals from the fluids. Specific research is directed at the possibility of a bio-refinery producing transport fuels from biomass assisted by geothermal heat at Kawerau. And we have geothermal tourism as another valuable use of geothermal resources. There are many examples of how geothermal can add value and stimulate investment and growth.

A thought before I leave this: geothermal energy should be part of the solution to the energy needs of our developing economy. Where electricity demand decreases due to efficiency gains then that is a valid solution also to be encouraged, but where electricity demand decreases because our economy is struggling, then we need increased electricity demand as an indicator of a restored and growing economy.

The end result is that instead of just holding our breath and wishing and hoping for a return to growing electricity demand, we should be looking:

- to the state of global markets and the efforts of our Ministers to open up new trade markets for our products, from which we can expect to see major new growth in demand for products and for the energy to produce these, for which new generation will be required,
- to international geothermal development opportunities as a means of maintaining a steady workflow, and
- to opportunities to diversify geothermal use away from electricity into other profitable areas.

It is from this that ongoing geothermal industry growth and overall economic development will result.

Brian White  
Executive Officer  
New Zealand Geothermal Association

## Geothermal News /Articles

### NZ News

**MRP says geothermal better price than wind** – Mighty River Power expects electricity costs from its latest geothermal development near Taupo to be lower than normal for new geothermal power stations, and well below the assumed cost of new wind farms. ***The \$466 million Ngatamariki geothermal plant is expected to come online in mid-2013.*** In an update on its development projects, the company said it expected the \$466 million Ngatamariki plant, with an installed generating

capacity of 82 megawatts, to produce electricity "with a real long run marginal cost that is less than market estimates of \$80 to \$85 per megawatt hour". [More here](#).

**Long-serving geothermal energy specialist retires** - NZ geothermal energy scientist Colin Harvey retired at the end of June after a 40-year career in the geothermal industry. Colin is a life member of NZGA and has made a significant contribution to the industry both in New Zealand and abroad. During his time in the industry Colin has seen geothermal generation grow from 4 to 13% and firmly believes that this can jump to 20%. In a parting interview at GNS Science Colin said he had never seen the sector in a stronger state. GNS has around 40 staff focussed on geothermal activities at present but interestingly newest recruits have been sourced from overseas. This is despite NZ's leading Universities offering both graduate and post graduate geothermal courses. [See more on Colin's interview here on the GNS web-site](#).

**Geothermal pioneer dies aged 71** - Taupo geothermal pioneer Alistair McLachlan will be remembered for his passion for geothermal power alongside his dogged stubbornness and relentless determination. At his funeral at St Paul's Union Church on Saturday, 700 friends and family paid their last respects to the former Wairarapa farmer-turned-orchid grower and private geothermal power station owner.

In the late 1980s, he began to use geothermal energy on his 180-hectare Taupo sheep farm to grow roses and orchids for export. The heat source created "artificial monsoon" conditions in which the flowers thrived. Geothermal engineer and close friend Mike Glucina said McLachlan worked tirelessly to promote and protect the region's geothermal resources, and also encourage local iwi to set up their own power generation projects.

In 1988, consents, water rights, energy licenses were awarded, and a contract signed with Mercury Energy to become a joint partner in the \$78 million 50-megawatt power station on Poihipi Rd, 10 kilometres west of Taupo. The deal included McLachlan providing farm land and Mercury contributing towards funding the development of the power station, which was imported from California, Glucina said. It was the first privately owned geothermal power station in New Zealand when commissioned in 1997, and was able to produce power at a fraction of the cost of gas fired facilities. "It was a geothermal industry milestone," Glucina said. "Alistair had great pride of what had been achieved, and deservedly so."

**New geological map of Hawke's Bay and Central North Island** - A new geological map of the Hawke's Bay and central North Island area is the final in a series of updated geological maps for New Zealand. The map and text describe the geology of an area that lies close to a tectonic plate boundary, stretching from the central North Island volcanic plateau and the lowlands of the Manawatu region, eastwards across the ranges into Hawke's Bay. [For the QMAPs text and maps see this link](#) and [for the full article see here on the GNS web-site](#).

**Leapfrog & GNS Science sign agreement** - ARANZ Geo Limited, developer of the 3D geological modeling software Leapfrog Geothermal, announced today an agreement with GNS Science, New Zealand's leading provider of earth, geoscience and isotope research and consultancy, to provide training and consultancy services to support users of Leapfrog Geothermal software throughout the world. [More here](#) and [here](#). Press release [here](#).

**Progress at Contact Energy Te Mihi Plant** - Contact has installed the first of two new generators at the new Te Mihi geothermal power station near Taupo. Te Mihi will eventually replace the Wairakei power station. The two generator station (total 166 MW) is scheduled for commissioning in mid-2013, though first power may be possible at the end of this year. Transpower and its contractors have also started work connecting Te Mihi to the national grid and re-directing a line to the Poihipi power station around the new site. The new transmission towers are expected to be up by the end of August.

Contact has been drilling wells to create additional production and reinjection capacity to provide greater flexibility to support the three power stations which draw fluid from the Wairakei steamfield - Wairakei, Te Mihi, and Poihipi. Twenty-three wells are planned for the project, including 12 new production wells and 11 injection wells. To date eight new producers and 10 injection wells have been completed. In the future it is expected that on-going drilling will be undertaken in order to sustain production and injection capacity. MB Century is spending \$42 million importing a new rig to New Zealand and has signed a 30-month contract to drill geothermal wells for Contact. The unit is a DrillMec HH350-B, known as rig-32, and can drill to about 4,500 metres. The rig is scheduled to arrive in New Zealand next month with drilling to begin towards the end of the year. [Source: Energy News].

**HERA hosts successful AGGAT Workshop** - A technical workshop on Above Ground Geothermal and Allied Technologies (AGGAT) was hosted by HERA on 22nd March 2012 at HERA House. Fifty-four representatives from industry and research attended this event. The workshop commenced with informative presentations from Mike Allen (Geothermal NZ) on a collaborative NZ Inc approach to Geothermal and Colin Harvey (GNS) on New Zealand's geothermal history and capabilities. For the original HERA article [see here](#).

**HERA leads on AGGAT Funding Application** - A significant collaborative effort by Industry and researchers resulted in HERA submitting a funding application on 4th April to the Ministry of Science and Innovation (MSI) under the High Value Manufacturing Services (HVMS) category, to fund a comprehensive 4 year Above Ground Geothermal and Allied Technology (AGGAT) research programme. The programme is a concerted approach being led by a consortium of researchers and industry partners with a proactive interest in AGGAT technology and supported by strong co-funding contributions. The application has been filed through the Targeted Research Investment Mechanism under the investment priority of Geothermal Engineering. [More here](#). To get involved or for more information, please [contact](#) HERA Industry Development Manager, Mr. Nick Inskip.

**NZer's head off on a USA Geothermal Roadtrip – travelling to learn** - A delegation of New Zealand companies interested in the geothermal market visited numerous sites in the US recently. The US is the world's largest user of geothermal energy. The delegation was led by Heavy Engineering Research Association Industry Development Manager Nick Inskip and commenced with the Geothermal Energy Association (GEA) Geothermal Showcase Conference in Washington DC. The trip also took in the sights of Mechanical Solutions Inc. in New Jersey; the United Technologies Research Centre (UTRC) in Connecticut; The Rocky Mountain Oilfield Testing Centre in Casper, Wyoming and then to Reno, Nevada to visit with Electratherm; geothermal technology site developer and operator Ormat and then geothermal developer Geothermal Development Associates, who the delegation had previously met at the Geothermal Showcase. From Reno, the delegation flew to Los Angeles and visited Energent, located in Santa Ana. At Energent, the delegates were met by the CEO and management team and were able to look at their innovative multiphase turbine.

A more detailed note on the trip is available [here on the HERA web-site](#). A key lesson emerged from the trip and that was the need for NZ delegations to travel in order to learn and see the developments first hand.

**Geothermal New Zealand (Update from Mike Allen)** – The activities under Geothermal New Zealand have been continuing with a strong emphasis on building the opportunities under the MOU signed with Pertamina Geothermal Energy (PGE) during the PM and Minister Tim Groser's visit to Jakarta in April. Site visits have been undertaken by those looking at power plant possibilities and GNS and the Geothermal Institute have continued to develop their particular relationships with PGE. Several staff from PGE attended the Start to Steam workshop in Taupo and this gave them an opportunity to meet more from the NZ geothermal industry and to visit power plants in operation and under development. The focus is now on looking at the opportunities with PGE to structure some near term developments of additional facilities in their existing fields.

Bernard Hill had the opportunity to spend some time in Chile to better understand the market there. Mike Allen had a brief visit to Japan during which he caught up with recent developments around the



FIT for geothermal and government funds that are to be made available for exploration and plant development. Though a permitting period of 4 to 5 years is seen as likely, there are a number of projects under consideration. Last week a workshop, opened by Minister McCully, was held in Manila and the Geothermal Institute, IESE and Mike Allen presented on a number of topics to a large audience of enthusiastic geothermal practitioners. The visit also provided an opportunity for meetings with many of those involved in the industry in the Philippines.

Geothermal New Zealand will be holding a meeting in Taupo at the Energy Centre on 3<sup>rd</sup> August to address issues around membership, the future programme and updates on recent activities. Contact [info@geothermalnewzealand.com](mailto:info@geothermalnewzealand.com) for more information.

See also this [NZ Herald article](#) from April 16<sup>th</sup> on the geothermal opportunity in Indonesia. The article notes Mike Allen's involvement history in the area

## Situations Vacant (2 vacancies on offer)

### Sinclair Knight Merz (SKM) seek new staff in a growing sector

— As interest grows in the geothermal sector in New Zealand and internationally, SKM, leading geothermal and engineering consultants are seeking individuals to fill three new roles in their Auckland Office as follows:



- Senior Geothermal Geologist
- Senior Geothermal Reservoir Engineer
- Geothermal Geophysicist

Click [here](#) to view job description. **Applications close at 9am, on 31 July 2012.**

For more information on each position please visit the [SKM Careers web-site](#) and enter the appropriate reference number. For a confidential discussion contact Lissa Carthew on +64 (0)9 928 5813 or by email on [LCarthew@globalskm.com](mailto:LCarthew@globalskm.com)

### Waikato Regional Council seek a Senior Resource Officer - Geothermal

- The Waikato Regional Council Energy Programme require a Senior Resource Officer to undertake processing, supervision and monitoring of resource consents for the Energy sector, particularly those relating to geothermal energy.



Key aspects of the role include:

- consent evaluation and reporting (including presenting at consent hearings)
- monitoring, auditing and reporting of resource consent compliance including site inspections
- managing the activities of five "peer review panels" which oversee the operations on each of the five developed geothermal systems in the region, including the management of resulting information/data
- managing day to day operational and compliance issues, particularly in relation to the large geothermal operations in the region
- establishing constructive working relationships with key external and internal clients and colleagues.

You require a relevant tertiary qualification in science, and at least five years experience in a relevant field. Proven knowledge of the RMA, familiarity with the resource consent process, along with excellent planning and organisation skills are required. Previous experience in the Energy sector, particularly geothermal, is highly desirable.

**Applications close: Wednesday, 01 August 2012; Role description #: 2211242; P: +64 7 859 0814**

## International News

**AU Geothermal Energy and Water use Report (Waterlines report No 72 - February 2012)** – A recent report has been completed for the AU National Water Commission and is available for viewing into the use of water in geothermal energy projects. The report indicates that Australia could potentially produce energy from a variety of geothermal systems including:

- non-conventional engineered geothermal systems (EGS)
- hot sedimentary aquifer (HSA) developments
- shallow systems such as low enthalpy aquifers
- ground source heat pump applications.

Geothermal projects require access to water during several stages of their development and operation. Currently, some exploration and development activity is occurring in areas of low water supply and/or high water demand.

However, water resources, and in particular groundwater resources, are still to be quantified in many parts of Australia. Access rights to water for geothermal applications will therefore require careful management and discussion by both water planners and the geothermal industry.

The report is not a detailed technical report. It is predominantly intended for water planners and others with an interest in the water and energy industries, to provide a baseline of information for consideration in water management and planning decisions. Key findings as follows:

- Australia lacks conventional hydrogeothermal resources yet has excellent potential for significant energy production from deep non-conventional HSA and EGS developments.
- Geothermal legislation is subject to the provisions of water legislation in most jurisdictions. If implemented appropriately, the existing arrangements can manage geothermal project water issues.
- Where geothermal schemes recirculate working fluid in their operations, water supply and security issues are similar to those facing other sectors.
- The geothermal industry is distinctly different to the mining, oil and gas industries in terms of its potential impacts on water supply. Operations either have limited potential for the transmission of impacts towards the surface or do not involve fracture stimulation.
- Where geothermal power plants have limited access to water, this factor combined with a hot climate, will require innovative power plant cooling systems.

See the report [here](#).

**Tax benefits to be introduced for Australian geothermal explorers** - Exposure draft legislation released in May 2012 will allow Australian geothermal explorers to access immediate tax write offs and deductions for exploration expenses in certain circumstances. The new rules will apply to assets first used after 1 July 2012, and will give geothermal exploration entities the same ability to claim immediate tax deductions and depreciation on certain assets as miners and other exploration companies in Australia.

The current wording of the applicable legislation (which has not kept up with the technological advances made in mining over the past few decades) allowing immediate tax deductions and depreciation does not encompass geothermal exploration activity. The introduction of the draft legislation follows the Australian Federal Government's announcement in March 2011 that it would adopt the Policy Transition Group's recommendations in relation to Australia's new resource taxation arrangements. [More here](#).

**Deep geothermal can provide 20% of UK electricity needs** - The UK's deep geothermal resources could provide 9.5GW of baseload renewable electricity, equivalent to nearly nine nuclear power stations, according to a new report. The Geothermal Energy Potential - Great Britain and Northern Ireland report, produced by engineering consultants *Sinclair Knight Merz (SKM)* in



association with the Renewable Energy Association (REA), focuses on the Renewable Obligation Banding Review. [More here.](#)

**Green Rock grant for WA Geothermal** - Australian hydrocarbons and geothermal developer Green Rock Energy has received confirmation of state funding of \$5.38 million for its Mid West geothermal power project. The company received notice for funding earlier this week from Western Australian government's Low Emissions Energy Development (LEED) fund. [More here](#) and [here](#).

**Geothermal permits given up** - After spending \$11 million over four years on exploring its geothermal permits, ASX listed Central Petroleum has relinquished its rights to what the company now considers non-core assets. Central Petroleum says the decision was taken as a result of an asset portfolio review, with the focus now on a conventional oil discovery at Surprise in the Amadeus Basin. The company says it canvassed expressions of interest for both farm-in and acquisition opportunities as an alternative to relinquishment, but received no interest from the market. \$11 million was spent over four years on the permits, with \$7 million spent in the first two years.

**Japan seeks to increase cooperation on Indonesian development** - Japan expresses its commitment to help in cooperation of geothermal development in Indonesia through the Japan Bank for International Cooperation (JBIC). Japan is seeking to increase its cooperation with Indonesia in the field of geothermal energy development as part of efforts to find energy sources to meet its needs. [More here.](#)

**Japan to set clean-energy subsidies** - Japan is set to announce incentives for renewable-energy generation and is expected to endorse the rates proposed by a government panel. The decision is needed for Japan to start a so-called feed-in tariff program on July 1 to increase clean-energy use following the March 2011 nuclear accident. The five-member panel in late April proposed tariffs for solar, wind, biomass, geothermal and small hydropower and the ministry sought public opinions until June 1. Trade Minister Yukio Edano said he will endorse the tariffs recommended by the panel for all five types of clean energy. The industry minister's confirmation will mark the final step in setting the tariffs that will be good until March 2013. The minister will set the terms and rates paid each year. ***For geothermal, the panel suggested 27.30 yen a kilowatt-hour for plants with the capacity of 15,000 kilowatts or more and 42 yen for smaller plants, both for 15 years.*** [More here.](#)

**Pertamina Geothermal Energy (PGE) prepares a globally unprecedented expansion of geothermal renewable energy with assistance from the World Bank and the Government of New Zealand** - Pertamina Geothermal Energy (PGE) has launched a globally-unprecedented 1000-megawatt geothermal energy investment program, with assistance from the Government of New Zealand and the World Bank. The Government of New Zealand is providing a US\$6.95 million technical assistance grant, while the World Bank is extending US\$300 million in financing to develop 150 megawatts for Sumatra and Sulawesi. [More here.](#)

**UK, Iceland sign Energy Agreement paving the way for geothermal** - Geothermal power from Icelandic volcanoes could supply electricity to the UK under a new Memorandum of Understanding. The UK and Iceland have signed an agreement that could pave the way for geothermal power from Iceland's volcanoes to supply electricity to the UK. The news came as UK Energy Minister Charles Hendry visited the Hellisheidi geothermal field, located on an active volcanic ridge in the south west of the country. [More here.](#)

## Resource News

**Strategic Research Priorities for Geothermal Technology (heating & cooling) and Geothermal Electricity are now online** - *Strategic Research Priorities for the Geothermal Electricity* presents the vision of the European geothermal electricity industry. It completes the *Strategic Research Priorities for Geothermal Technology (heating & cooling)*. Starting with the present situation, the vision sets out in global terms how geothermal stakeholders see the future

development of their industry. It reflects the basic features of geothermal electricity production, the way the systems are expected to evolve and how the industry and associated stakeholders should evolve to make it happen. *Strategic Research Priorities for Geothermal Electricity* aims to draw a realistic picture of how a European Geothermal Electricity production industry can be built, which will effectively lead towards developing a reliable and sustainable source of energy and providing numerous jobs for all kinds of qualifications across the area.

The Renewable Heating and Cooling Platform's Geothermal Technology Panel has published the [Strategic Research Priorities for Geothermal Technology](#) (heating & cooling) and the [Strategic Research Priorities for the Geothermal Electricity](#) (TP Geoelec). Access the resources through these links.

[New geothermal library online](#) - The Geothermal Resources Council (GRC) in the U.S. has launched [GRC Online Library](#). This new valuable resource "contains approximately 33,000 records on all aspects of geothermal energy, including exploration, reservoir engineering, power plant design and operation, direct use, geothermal heat pumps, regulatory issues, energy policy, energy markets, news briefs, and more".

## Board and Executive Officer Update

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

### Board Matters

A Board meeting was hosted by Parsons Brinckerhoff in Auckland in May.

The annual Board election process is under way, and this year we will have to go to elections because of the number of candidates for available positions. Gina Rangi has chosen not to restand, but the other candidates for the 4 spaces are: Brian Carey (restanding) (GNS Science), Chris Mann (restanding) (Materials Technology Ltd), Jane Brotheridge (Sinclair Knight Merz), Kevin McLoughlin (Tauhara North No 2 Trust), Tricia Scott (restanding) (NZ Environmental) and Wolfgang Scholz (Heavy Engineering Research Association). Details and invitation to vote have been sent to members by the Secretary, Andy Bloomer.

Interest groups are being progressed in order to develop linkages and mobilise members. Some reports from groups are included in this newsletter. Julia Schuster-Rika has left New Zealand for Australia, so the Board decided to invite Tim Cossar who is CEO at Te Puia, Rotorua (but recently CEO of the Tourism Industry Association NZ) to represent geothermal tourism interests.

The NZGA Treasurer (Marcel Manders) reported that the Association was in a reasonably positive position financially.

### NZGA Board Members

[NZGA Board members are listed here on the NZGA web-site.](#)

### NZGA Special Interest Groups – Interest Group Updates

The NZGA Education & R&D Committee is interested in facilitating the formation of other Interest Groups of our members. The broad groupings currently identified as NZGA Interest Groups are as follows:

Interest Group	Leader(s)
Generation and Industrial Use	Chris Mann assisted by Greg Moore
Tourism	Tim Cossar
Heat Pumps and Smaller Scale Direct Use - Heat Pump aspects	- Brian Carey assisted by Rick Smith

- Direct Use	- <b>Leader required</b>
Environment, Legislation and Regulation	Tricia Scott
Service Providers and Finance – a grouping partly with New Zealand geothermal export interests in mind.	Alex Daniels
Education and R&D	Juliet Newson & Sadiq Zarrouk
<ul style="list-style-type: none"> <li>- Structural Geology and Geothermal Geomechanics (SGGG) Interest Group.</li> <li>- Geothermal Reservoir Modelling Interest Group.</li> </ul>	<ul style="list-style-type: none"> <li>- Irene Wallis</li> <li>- Juliet Newson.</li> </ul>
Iwi and Landowners – there are obvious interests but this group will also be responsible for cultural input into the World Geothermal Congress 2015.	<b>Leader required</b>

*[Editor Notes - 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. If you have any comments or views you would like to share wrt the proposed Special Interest Groups please contact the Executive Officer. For a summary of the decisions on the NZ Geothermal Interest Groups and who is involved see the March 2012 Issue of the NZ Geothermal Newsletter.*

*If you are interested in leading or taking a role in the Interest Groups listed please contact the Executive Officer]*

## Interest Group Updates

### Generation and Industrial Use Interest Group

A number of indications of support from individuals and generation companies have been received. We are now in the process of contacting these individuals to agree on a way forward. Contact Chris Mann, Group leader at [ChrisM@mtlnz.co.nz](mailto:ChrisM@mtlnz.co.nz)

One of the first projects moving ahead under this group is the review of geothermal drilling code and regulations.

### Geothermal Heat-pump Association of New Zealand (GHANZ) / Interest Group

The Geothermal Heat-pump Association of New Zealand (GHANZ) is continuing to grow with 27 active members from across the geothermal and related industries. GHANZ recently formed as a sub-group of NZGA with the goal of promoting the use and development of geothermal heat pumps (also known as ground source heat pumps) in New Zealand.

The GHANZ website (hosted by NZGA) is now live and can be accessed here: [www.ghanz.org.nz](http://www.ghanz.org.nz). The website contains general information on geothermal heat pumps and the role of GHANZ, including the GHANZ charter and membership lists.

In the coming months GHANZ will be hosting a series of regional meet-ups in Auckland, Wellington and Dunedin to bring together professionals from across the industry including installers, architects, engineers and planners. The meetings will seek to promote and showcase geothermal heat pump technology and its potential for New Zealand.

A joint Australia New Zealand Standard for geothermal heat pumps is also in development. Lyall Smith (Central Heating NZ) is the GHANZ representative on the Standards Committee which held an inaugural meeting in May 2012. A written draft will be made publically available for comment, with a completed standard expected in early 2014.

Membership to GHANZ is open and free to any current member of the NZGA, and membership of NZGA is a prerequisite for membership of GHANZ.

### Environment, Legislation and Regulation Interest Group

The NZGA has identified the need for an Interest Group to reflect, review and have input on environmental matters which are relevant to its core role, which is *'To promote the reasonable and appropriate use of Geothermal with a focus on New Zealand and international linkages'*. Tricia Scott has offered to lead the Environmental Group for the NZGA for the first 'chapter'. This idea is a seed at the moment and we will need three to six others to get a mix of perspectives and skills to identify specific policy documents or matters where we could provide useful input. The key word for the Environmental Interest Group will be 'appropriate' (as highlighted above). One of the first tasks on our list will be to review and comment on the Northland Regional Policy Statement, which is currently in the pre-consultation phase, with notification scheduled for September 2012 (2 months away). Another task will be input into the "sustainability" paper being prepared by the Royal Society of New Zealand. Any members who would like to be part of the inaugural Environmental Interest Group please email Tricia at: [tricias@nzenvironmental.co.nz](mailto:tricias@nzenvironmental.co.nz)

### Service Providers and Finance Interest Group

Alex Daniels of MacDow, who is currently based at the Te Mihi Geothermal Power Project in Taupo, has offered to lead the Service Providers and Finance Interest Group. Looking at the NZGA membership make-up, it appears that a number of members fall into this category. Bearing in mind the various confidentiality and commercial issues that service providers and contractors need to be mindful of, Alex is happy to organize an informal catch up in Taupo, open to anyone interested in participating in this group. If you are interested, please contact Alex directly at [alexander.daniels@macdow.co.nz](mailto:alexander.daniels@macdow.co.nz).

### Education and R&D Committee (consisting of two Interest Groups)

#### • Structural Geology and Geothermal Geomechanics (SGGG) Interest Group

There have been moves to establish a Structural Geology and Geothermal Geomechanics (SGGG) working group. This aims to bring together those in the geothermal community actively working on structure, stress and rock mechanics related topics in New Zealand. The organiser and contact person is Irene Wallis ([irene.wallis@mightyriver.co.nz](mailto:irene.wallis@mightyriver.co.nz)).

#### • Geothermal Reservoir Modelling Interest Group

Dr Juliet Newson is proposing a Reservoir Modelling Interest Group. Reservoir modelling is a rapidly evolving specialty, and the aim is to stimulate discussion and exchange ideas on topics that are of practical interest to those working in this field, and to conduct workshops on specialized aspects of modelling. The contact person is [juliet.newson@contactenergy.co.nz](mailto:juliet.newson@contactenergy.co.nz)

In response to these proposals, the New Zealand Geothermal Workshop in November this year (see Events Section) will include special sessions on both topics (*structural geology and geothermal geomechanics* and *geothermal reservoir modelling*). The sessions will be a launch of both of the interest groups. The NZGA Education & R&D Committee is interested in facilitating the formation of other interest groups of our members.

### SEEKING YOUR INVOLVEMENT

The NZGA Interest Groups are *for members by members* and their success will be driven by your involvement. Currently there are 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.



If any or all of the groups are of interest to you fill in the form – it may even be time for you to update your contact details anyway. The completed form can be sent to [anne.phiri@eastharbour.co.nz](mailto: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.

## Regular Feature – Geothermal Tourism

In April, Brian White attended the West Australian Geothermal Energy Symposium (WAGES) in Perth. During this symposium there were several presentations by Charles Davidson of the Peninsula Hot Springs located on the Mornington Peninsula south of Melbourne. This is a geothermal spa and bathing facility developed since 1998 around a dedicated 640 m deep well yielding 54°C water. Similar developments would be possible over any of New Zealand's sedimentary basins with wells a little over 1 km deep, the key to development being "location, location, location" backed up by strong marketing. Since the first stage was completed, Peninsula Hot Springs visitor numbers have climbed so that it now competes with visitor numbers for Te Puia in Rotorua or Hanmer (around 500,000 visitors per year). With adult tickets typically in the \$20-\$50 range plus extras plus food and beverage, the cost of a well is quickly recovered.

The [Tourism Action Plan](#) from Victoria is of interest when we consider the huge potential for geothermal tourism within New Zealand.

## Meetings – Recent and Planned

### Recent Meetings

On 19 July, Spence McClintock and Brian White met with Hon Phil Heatley, Minister of Energy and Resources to brief him on the NZ geothermal industry and to hear his position on geothermal development. He was very positive about geothermal resources as they firmly move New Zealand towards its renewable energy goals without significant difficulty. There will be a number of areas of follow-up from this meeting.

## Submissions – Recent and Planned:

### Recent Submissions

NZGA has just produced a 'Geothermal Position Statement' to replace a statement prepared 6 years ago – the New Zealand geothermal scene has moved on in a big way! This runs through our status and ways forward and can be used for general briefings. [\[See here\]](#)

### Planned Submissions

Shortly, the Environment and Legislation Interest Group will be leading the submission on the Northland Regional Policy Statement (RPS). This RPS will complete reviews of Policy Statements affecting all of the known high temperature geothermal fields in New Zealand. In turn, these establish the 'consentability' of geothermal developments with a view to future growth.

This Interest Group and others will also be participating in a Royal Society paper looking at broad issues of sustainability.

## Education and Training Update

### Education

**University of Auckland** - Record numbers of applications were received for the Geothermal Postgraduate Certificate course this year. This year there will be more than 30 students attending the course from 16<sup>th</sup> July – 15<sup>th</sup> November. For information about the course contact Dr Sadiq Zarrouk ([s.zarrouk@auckland.ac.nz](mailto:s.zarrouk@auckland.ac.nz)). Eighteen Master and six PhD students are enrolled in geothermal geoscience or engineering at The University of Auckland.



***University of Auckland 2011 PG Certificate in Geothermal Students and staff during a field trip.***



**University of Canterbury** - The University of Canterbury Geothermal Programme is now fully integrated from the undergraduate to graduate level. Since introducing their 3rd year Water and Geothermal Systems course in 2011, there have been 140 students complete the course with 10 students being offered Summer Research Scholarships (in partnership with GNS Science and Mighty River Power Ltd.) and most continuing on to MSc level. There are currently 15 PhD and MSc students across the disciplines of Geothermal Geoscience and Engineering. Students have presented papers at the Stanford Geothermal Workshop, the Geothermal Research Council, the NZ Geothermal Workshop, AGU and the upcoming Goldschmidt conference.

**Victoria University** - Colin Wilson, PhD student Sarah Milichich, and other colleagues are working on a detailed U-Pb dating study which will provide a first-order picture of subsidence rates in the TVZ. Terry Seward and Bruce Mountain (GNS) are working on various aspects of water-rock interaction and antimony behaviour in hydrothermal solutions.

## **Training**

### **2012 Geothermal Short Courses**

**Geothermal Short Course – The Basics** Friday, 16 November 2012 at the University of Auckland - A one-day course covering a basic understanding of geothermal science, technology and environmental issues. It is suitable for participants who deal with planning, conservation or business activities associated with geothermal activity and the geothermal industry.

For more details and to register attendance, please visit the [NZGW](http://nzgw.co.nz) website or contact [Rachel Fenton](mailto:rachel.fenton@nzgw.co.nz) for enquiries and assistance.

## **Events**

### **Auckland IET Local Network Breakfast Meeting (25<sup>th</sup> July 2012)**

Geothermal power generation started in New Zealand in 1958 at Wairakei. At the time this was only the second large scale geothermal power plant in the world. New Zealand currently has over 700MW of installed generation (about 13% of the country's energy supply) with an additional 1000MW on the horizon.



New Zealand Engineers and Scientists are considered to be world leaders in the field of Geothermal Power Generation. This presentation will be given by Aaron Hochwimmer and Tracy Mills from SKM New Zealand. Auckland is the Global Centre of Excellence for SKM's geothermal power business. The presentation will cover the current and future steam field and power plant developments with a brief overview of the technology used and the issues that need to be addressed.

Speakers:

- **Aaron Hochwimmer** : Aaron is an associate of SKM and a chartered professional engineer with 14 years' experience. Prior to joining SKM Aaron was a project engineer on both the Kawerau and Nga Awa Purua geothermal power plant projects recently developed and commissioned in New Zealand.
- **Tracy Mills** : Tracy is an associate of SKM and a geothermal process engineer with 28 years' experience in thermal power engineering. For the last 20 years, he has developed geothermal energy sector experience over a broad range of engineering areas on projects in New Zealand, Kenya, Nicaragua, the Philippines, Indonesia, Russia and elsewhere.

**Date:-** 25th July 2012

**Venue:-** Alexandra Park  
Raceway - Hobson Room

**Programme**

06:40 - Tea & Coffee  
07:00 - Cooked Buffet Breakfast  
07:45 - Presentation  
08:30 - Questions  
08:45 - Tea Coffee - mix & mingle  
09:00 - Event ends

**Attendance Fee:-** \$25

Guests, \$10 Students

*In order to gauge the level of interest for this please email Frank Lewis immediately if you plan to attend. We need over 40 to break even.*

To make a booking please email: [franklewis@theiet.org](mailto:franklewis@theiet.org) and pay the attendance fee directly into **KiwiBank 38-9009-0641382-00 Institution of Engineering and Technology**

Please include your name in the Payee Section of the transfer. For other possible payment methods please email Frank. All our Network events are open to members and non-members alike.

## 34<sup>th</sup> New Zealand Geothermal Workshop 2012

New Zealand's longest running energy conference, the **New Zealand Geothermal Workshop**, will be held at the Aotea Centre, Auckland, from 19<sup>th</sup> – 21<sup>st</sup> November. Organisers have received a record number of abstracts for the workshop with more than 100 submissions, and are expecting 200 to 250 delegates from New Zealand and around the world.

Authors are reminded that the deadline for full manuscripts is **30<sup>th</sup> July**. This year there will be four industry sponsored awards for best papers in different categories.

For more information on the workshop visit [www.geothermalworkshop.co.nz](http://www.geothermalworkshop.co.nz). For enquiries, please contact Dr Sadiq Zarrouk ([s.zarrouk@auckland.ac.nz](mailto:s.zarrouk@auckland.ac.nz)).

## Past Events – Report Backs and Updates

### See the April 2012 Newsletter for the following event Report Backs

- **NZGA Seminar 12 October 2011, Taupo NZCEC – Report Back**
- **Energising Geothermal Workshop 13 October 2011, Taupo NZCEC – Report Back**
- **New Zealand Geothermal Workshop 21-23 November 2011, Auckland – Report Back**

### West Australian Geothermal Energy Symposium, Perth, 2-4 April - Report Back

Brian White, NZGA Executive Officer, was sponsored to attend the WAGES conference to give a keynote update on the New Zealand geothermal scene, but with a focus on direct use. The symposium was followed up with a field trip covering several direct use applications around Perth

which is underlain by warm aquifers. Typical applications include swimming pool and space heating, but there are plans for a deeper hotter project to be used for a super-computer cooling function for the Pawsey Centre.

A surprising feature of the developments in Western Australia is the common problems that they have with reinjection wells with scaling and clogging. There is a substantial geothermal consulting base in Perth, and it would be useful to tap in to this for low temperature projects in New Zealand.

### **From Start to Steam – Geothermal workshop, Taupo, 11-14 June - Report Back**

Over 100 participants from countries as far away as Japan and Ecuador descended on Taupo in June 2012 for the “From Start to Steam” joint workshop between the New Zealand Geothermal Association and the International Geothermal Association, Western Pacific Regional Branch. The workshop was organised, underwritten and hosted by GNS Science.

The workshop attracted participants with a diverse range of experience and expertise from students to science and engineering professionals. The delegates came from around the Pacific including Indonesia, Papua New Guinea, Vietnam, Chile and Australia, with a strong contingent of Kiwis present.

The workshop sought to convey the complexity of the process of geothermal development, from the conception through to plant design, feasibility analysis and implementation.

The first three days of the workshop included presentations from well experienced geothermal experts on topics ranging from studying environmental hazards to exploratory drilling, and well testing to environmental monitoring and economic assessment.

Participants shared in a workshop dinner at the Hilton Lake Taupo Hotel on the Wednesday evening and on Thursday a field trip day gave them an opportunity to view some geothermal sites in New Zealand. Participants visited Waiotapu Thermal Wonderland, an operating geothermal drilling rig (MB Century Rig 27) and a geothermal power station under construction at Te Mihi, and the Nga Awa Purua Geothermal Power Station.

The workshop was a resounding success with very positive feedback. GNS Science is already preparing for other geothermal workshops in the future.



Photo: Participants at the separator station at Nga Awa Purua.

See also this [‘Scoop’ story](#) on the event in the mainstream media.

## **How to Mitigate Environmental Impacts of Geothermal Development, Taupo, 15-16 Jun 2012 – Report Back**

The International Energy Agency Geothermal Implementing Agreement and GNS Science delivered a workshop in June 2012 at their Wairakei Research Centre. The workshop, entitled “Mitigating Environmental Impacts of Geothermal Development” was attended by 30 professionals from Indonesia, Ecuador and New Zealand.

Presenters at the workshop included professionals from New Zealand, the United States, Japan and Iceland. The topics covered included sustainability, surface features, protected areas, induced seismicity and subsidence. A field trip at the end of day two visited the Wairakei Terraces, the Wairakei Thermal Valley, Spa Valley and Crown Road subsidence bowls and the Otumuheke Spring.

The workshop offered practical options for environmental impact mitigation, case studies and discussion forums on issues and management strategies, as well as looking into future research needs.



Photo: Participants at Wairakei Research Centre



Photo: Wairakei Terraces

## **3D geological modelling for the geothermal industry and more – Leapfrog Geothermal – Report Back**

3D geological modelling software developed here in New Zealand is growing in popularity both in New Zealand and overseas.

Leapfrog Geothermal an innovative 3D modelling and visualisation software developed specifically for the geothermal industry. It provides a 3D interface for visualisation of geothermal data along with tools to create models of field geology, including stratigraphy and structure, rock properties and reservoir parameters.

GNS Science and ARANZ Geo Ltd have been working together for the past four years to develop quality geothermal modelling software. They recently signed an agreement to work in partnership to provide training and consultancy services to users of Leapfrog Geothermal.

A recent training course in Indonesia was facilitated by GNS Science in conjunction with the Geothermal Research Centre of Gadjah Mada University in Yogyakarta, Indonesia. The training course provided three days of training with the Leapfrog Geothermal software for 14 participants. Samantha Alcaraz and Angela Prieto from GNS Science led the training sessions.

"It was a very good opportunity for not only improving their skills, but also building co-operation between New Zealand and Indonesia," Prieto said.



Photo: Participants at Gadjah Mada University in Yogyakarta, Indonesia

## Forthcoming Events/Conferences 2012

### Annual New Zealand Geothermal Workshop, 19-21 November 2012 - "Geothermal – Electricity and more"

NZGW 2012 will be held at the Aotea Centre in central Auckland and is expected to attract more than 200 local and international delegates to the annual conference. With the theme of **"Geothermal – Electricity and More"** the keynote speakers include Kevin Brown, Ian Johnston, Gudmundur Omar Fridleifsson and Joseph Moore. There are still opportunities to sponsor the event including being part of the exhibition hall.

For full details of the workshop see - <http://www.geothermalworkshop.co.nz>. If you would like to discuss any aspects of the workshop please contact [Sadiq Zarrouk](#).

## Other Events

### World Geothermal Congress 2015 – UPDATE

There has been little to report since the last newsletter. Committee members have been working through details of field trips and short courses, and the overall theme has been discussed. The IGA has already transferred Fellowship funds to Arinex (the conference organisers) for later distribution.

It is expected that the first notice for WGC 2015 will come shortly after the next Organising Committee meeting later in July.

### NZGA Action Plan: (last updated July 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 in an Action Plan developed on an annual basis. Current status of this Action Plan is shown in the table following.

Action	Comments	Status
<b>HIGH PRIORITY</b>		
Government Lobbying and Raised Public Awareness	NZGA should meet with interested Government ministers and officials, highlighting growth opportunities across Cabinet.	Executive Officer has met with MED and MFAT officials EO and President have met with Minister of Energy and Resources Hon Phil Heatley. They plan further meetings with other MPs
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. EO has subsequently worked on NPS Guideline content with Contact and MRP who are working directly with EECA. Environment Regulation and Legislation interest group will take the lead on Northland RPS submission and input into RSNZ sustainability paper.
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 have been initiated. See the separate discussion about the Heat Pump group as part of one sector
Position Statement	NZGA should review its high level messages	Completed
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. Very strong links to Indonesia are being developed.
<b>INTERMEDIATE PRIORITY</b>		
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	The June 2012 From Start to Steam Workshop was the 2012 NZGA Seminar. Details in this newsletter. 2012 NZ Geothermal Workshop is now being advertised through the website and emails. Details in this newsletter.
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. A short course will be held before the NZGW
Broadening Geothermal Base to Tourism	Our members include landowners and varied businesses including tourism. This aspect should be more prominent.	An Observer position has been established on 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 is 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.	MED and Minister for Energy and Resources have been approached to fund this work.
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 2011 NZGA Seminar. A geothermal heat pump group (GHANZ) has been established with NZGA cooperation. 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	

## Other bits and pieces

**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.

## Membership

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

As of July 2012, the NZGA has 350 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](mailto: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
<b>Bronze</b>	New Bronze members: SGS New Zealand Ltd, Page and MacRae Ltd, Fitzroy Engineering Group Ltd, Geothermal Institute, Napier Engineering and Contracting.  IESE has withdrawn.

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

## Membership Fees

Thanks to all members for paying your fees. As you know, it's what keeps us solvent! We have been chasing up people for payment, but our bylaws state that membership shall be lost if subscriptions are not paid before 30 July in a year. Please email the [Executive Officer](#) if you need to make some arrangements.

## 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](#).

## **Use of and contributions to this Newsletter**

NZGA produces this Newsletter primarily for the benefit of its 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  
Executive Officer

Spence McClintock  
President

Colin Harvey  
Past President