NZGA
New Zealand
Geothermal Association

ACTION PLAN 2018-2019

GEOHEAT STRATEGY FOR AOTEAROA NZ

FOREWORD

On behalf of the New Zealand Geothermal Association, it is with pleasure that I introduce you to this Geoheat Strategy Action Plan for 2018 and 2019.

The Geoheat Strategy seeks real gains in the short to medium term by increasing primary geothermal energy use and, importantly, creating the jobs that come with those uses. While the Strategy's objectives and actions are specific and focused, it is designed to be flexible to enable us to react and respond to opportunities as work under the Strategy proceeds. The development of targeted action plans under the Strategy is a key part of this flexible approach, and to achieving the outcomes sought. This is the first Action Plan to be released.

Working with our various partners, we will continue to drive this Strategy forward for the benefit of all New Zealanders. Please join with the New Zealand Geothermal Association, share the vision, and become involved in actively growing direct geothermal use.

Stephen Daysh
Chair – Geoheat Strategy Governance Group
President – New Zealand Geothermal Association

REALISING GEOTHERMAL POTENTIAL

EXECUTIVE SUMMARY

This Action Plan is a companion document to the Geoheat Strategy for Aotearoa NZ, 2017–2030. It is a tool to drive activity under the overall guidance of the Geoheat Strategy. The intention is to produce an updated Action Plan every 2 to 3 years, to ensure that activity under the Strategy is deliberate, effective and targeted.

This Action Plan identifies an overarching objective:

Objective:

Three new medium to large scale (minimum 30 jobs) direct geothermal projects are committed and in development by December 2019.

Four key priority actions are identified to be driven by the Strategy Coordinator through 2018 – 2019:

2018 – 2019 Priority Actions:

1. Develop a stocktake of supply side assets, infrastructure and geothermal resources to create a communicable picture of geothermal opportunities in New Zealand.
2. Target commercial and industrial scale projects on brownfield sites where geothermal capacity exists.
3. Undertake domestic and international market analysis for large heat users.
4. Develop market value propositions for geothermal heat suppliers.

In support of these key priority tasks, the Geoheat Strategy Action Group will advance a range of other complementary activity, coordinated by the New Zealand Geothermal Association. These activities are identified and prioritised.

This Action Plan also reports on progress made during the establishment phase of the Strategy, including the establishment of the Geoheat Strategy Governance Group, confirmation of resources to coordinate and deliver the Strategy, and the establishment of the Geoheat Strategy Action Group.

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Bibliographic Reference

Climo, M., Blair, A., Carey, B., Bendall, S., 2018, Action Plan 2018–2019; Geoheat Strategy for Aotearoa NZ., New Zealand Geothermal Association

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Acknowledgement to Duncan Graham, Brian Carey and GNS Science for photographs used in the publication:

Front Cover – Geothermal Reboiler Steam Plant supplying Miraka at Mokai

P3 – Paper machine at Asaleo Care in Kawerau

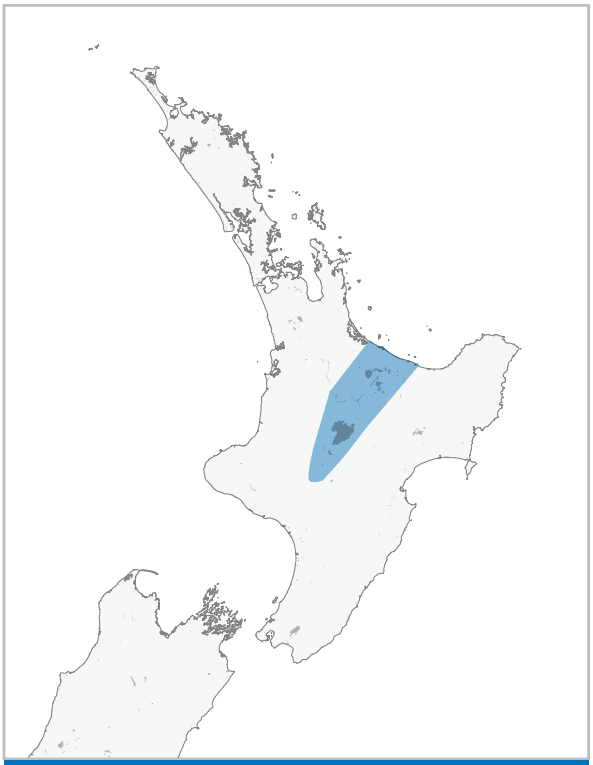
P5 – Ngāti Tūwharetoa Geothermal Assets Reboiler Steam Plant supplying Asaleo at Kawerau

Back Cover – Geothermal energy heats the PlentyFlora green houses at Horohoro.

PURPOSE

This 2018–2019 Action Plan is the first to be prepared after the June 2017 release of the Geoheat Strategy for Aotearoa NZ, 2017–2030. Its purpose is to review the effectiveness of prior activity under the Geoheat Strategy, and to set out a targeted two year plan to effectively advance the goals of the Strategy.

It is envisaged that there will be a number of Action Plans released through the course of strategy implementation, likely every 2 to 3 years. Each Action Plan will have the dual role of assessing the effectiveness of prior activity and directing future actions. This approach will ensure that strategy implementation is effective, nimble, accountable, and able to respond to changing circumstances and new opportunities.



TAUPO VOLCANIC ZONE: The focus area for the 2018–2019 Action Plan

OVERVIEW: GEOHEAT STRATEGY FOR AOTEAROA NZ, 2017–2030

With its origins in a paper and keynote address at the 2012 New Zealand Geothermal Workshop, The Geoheat Strategy for Aotearoa NZ, 2017–2030 was launched in 2017 as an initiative of the Geothermal Association of New Zealand, with support from GNS Science.

The Strategy set two overarching goals for geothermal direct use in New Zealand:

1. Annual direct primary geothermal energy use has increased by 7.5 PJ in new projects in the period 2017–2030; and
2. Geothermal direct use business operations are employing (directly and indirectly) an additional 500 people associated with new projects in the period 2017–2030.

The Strategy was launched by Andrew Bloomer, President of the New Zealand Geothermal Association at its seminar, held at Wairakei on the 27 June 2017. In support of the launch, a presentation and video were prepared by GNS Science.

The full strategy document and associated resources are available for download from www.nzgeoheat.nz.

EFFECTIVENESS REVIEW: 2017–2018

PROGRESS REPORT

The Geoheat Strategy identified five key actions as being necessary to build the foundation for successful strategy implementation. Progress under each of these actions is reported below.

PRIORITY ACTION 1:

STATUS ACHIEVED

ESTABLISH GEOHEAT STRATEGY GOVERNANCE GROUP

The Governance Group was established during the second quarter of 2017, with the inaugural meeting held on 21 August 2017. Founding members comprised Andrew Bloomer (then NZGA President), Stephen Daysh (Mitchell Daysh), Taparoto Nicholson (Te Puia), Mike Dunstall (Contact Energy) and Andrea Blair (GNS Science). The group will provide ongoing governance support for the Strategy Coordinator and will meet every six months or otherwise as needed. The Governance Group reports activity to the New Zealand Geothermal Association Board.

PRIORITY ACTION 2:

STATUS ACHIEVED

STRATEGY COORDINATION

A Geothermal Business Development Lead (BDL) for the Bay of Connections (BoC) was appointed in December 2017. Their primary focus is to drive investment and growth in geothermal direct use projects in the BoC area, which essentially encompasses the Taupo Volcanic Zone. The activities of the BDL are very well aligned with the Geoheat Strategy coordination requirements, enabling strategy coordination to be delivered through the performance of the BDL duties. The role has been resourced for 24 months through contributions from MBIE, the Bay of Connections, Industry contributions and the New Zealand Geothermal Association.

PRIORITY ACTION 3:

STATUS ACHIEVED

ESTABLISH GEOHEAT STRATEGY ACTION GROUP

This Geoheat Strategy Action Group is established and began operating with 20 people on the email contact list. The first formal meeting of the group occurred on the 26 January 2018. Involvement in this group will be dynamic and the New Zealand Geothermal Association will keep members aware that this group is open for participation in support of the work of the Strategy Coordinator and strategy implementation activity.

PRIORITY ACTION 4:

STATUS IN PROGRESS

ESTABLISH A CENTRE FOR GEOTHERMAL DIRECT USE ADVOCACY AND ACTIVITY

A 'virtual' direct use geothermal research and advisory hub is being established as an online presence through web pages on the New Zealand Geothermal Association website. The NZGA has agreed to be the host. Resourcing is needed to develop and maintain the hub.

PRIORITY ACTION 5:

STATUS ACHIEVED

IDENTIFY AND PRIORITISE WORK PLAN FOR IMPLEMENTATION OF STRATEGY ACTIONS

An objective and four priority actions for the 2018–2019 period have been identified and are outlined in the new section of this Action Plan. The draft work plan tabulated in the Geoheat Strategy has also been reprioritised in this Action Plan for the 2018 and 2019 period.

2018–2019 ACTIONS TO GROW DIRECT GEOTHERMAL USE IN NEW ZEALAND

The Geoheat Strategy launch and establishment phase has been an undeniable success. With resources now dedicated towards growing direct use in New Zealand, the primary focus for activity under the Geoheat Strategy for 2018 and 2019 is to convert this momentum into tangible projects.

ACTION PLAN OBJECTIVE

Three new medium to large scale (minimum 30 jobs) direct geothermal projects are committed and in development by December 2019.

The fundamental driver for the next two years is to develop new projects. With some early runs on the board in terms of geothermal heat utilised and jobs created, successes can be celebrated and shared, and momentum can continue to be built. Activity will be focused on existing brownfield developments, where geothermal capacity can be readily utilised and new opportunities quickly created.

PRIORTY ACTIONS FOR 2018 AND 2019

These priority actions aim to achieve the objective through attracting potential users and converting interest into investment.

PRIORITY ACTION 1:

Action: STOCKTAKE OF RESOURCES

Description: Develop a stocktake of supply side assets, infrastructure and geothermal resources to create a communicable picture of geothermal opportunities in New Zealand.

Approach: Compile information on accessible geothermal heat, but also people, expertise, raw materials and other resources that can contribute towards the realisation of geothermal opportunities. In support of the approach to secure early wins, a particular focus will be given to existing developed resources (brownfield sites) in the Taupo Volcanic Zone.

PRIORITY ACTION 2:

Action: TARGETED ACHIEVABLE PROJECTS

Description: Target commercial and industrial scale projects on brownfield sites where geothermal capacity exists in association with an existing project and/or a resource consent for the extraction of geothermal heat.

Approach: Focus on the rapid evaluation of potential opportunities and the pursuit of a small number of strong probabilities. Businesses, entities and/or consent holders with access to geothermal capacity will initially be identified, and approached to determine interest and capacity to engage with potential heat users. Where a strong opportunity is identified, potential heat users will be connected with suppliers. Early relationship development and opportunity exploration support will be provided where necessary.

PRIORITY ACTION 3:

Action: MARKET ANALYSIS

Description: Undertake domestic and international market analysis for large heat users.

Approach: In collaboration with geothermal fluid/heat suppliers, New Zealand Trade and Enterprise and the Ministry of Business, Innovation and Employment, identify domestic and international investment targets with high potential. Focus effort on identified targets and leverage networks to identify specific industries, investors and potential partners that could directly use geothermal resources as part of their business.

PRIORITY ACTION 4:

Action: CONNECT SUPPLIERS AND TARGETS

Description: Develop market value propositions for geothermal heat suppliers.

Approach: Support identified geothermal heat supplies to pitch the value of geothermal heat and what they can offer to domestic and international businesses. Access central government support mechanisms and resources as appropriate.

SUPPORTING WORK STREAMS

In addition to the priority actions, which will be driven by the Strategy Coordinator, this section lists activities that will be implemented by the Geoheat Strategy Action Group across a range of areas, including funding, awareness, expertise, policy, market and technology.

In the development of the Geoheat Strategy, these action areas were identified as barriers to the development of direct geothermal energy use in New Zealand, and were flagged during strategy development as action areas.

The action areas have been split into two categories:

1. **Ongoing activity** – business as usual, or needs to be maintained to build critical mass. Able to be undertaken by interested individuals or organisations.
2. **Beyond 2019** – less urgent, more complex and/or requiring substantial funding, or currently beyond the mandate of individuals/interested organisations.

Activity in the supporting work streams can be initiated and progress made at any time, should a champion/group step forward who is willing to drive an action area.

ONGOING ACTIVITY

Action Areas / Activity		Description
1	**Action Groups**	**Maintain** and grow clusters of 'like minds' to assist with growth of geothermal energy use. Strive for a united, connected and cooperative industry to affect far greater change than individual efforts.
2	**Network & Connect**	**Maintain** and grow connections and networks to raise the geothermal profile. Establish services and mechanisms to provide interaction between potential geothermal heat users and heat suppliers.
3	**Māori Economic Development**	**Connect** with Māori economic interests and entities to explore geothermal direct use opportunities. Explore opportunities for Māori knowledge, resources and people to contribute to research, science, technology and economic development using geothermal direct use.
4	**Engage Expertise**	**Identify** consultants with expertise to assist in the development of geothermal energy projects. Prepare a database of the willing.
5	**Showcase**	**Actively** showcase existing success stories in geothermal energy use to increase awareness and stimulate further development. Share information. By sharing lessons learned, future projects can learn from and build on past successes. Success breeds success. Collect data that enables effective monitoring of the strategy goals.
6	**How-to Guide**	**Develop** a 'how-to' reference guide. Particularly at the smaller scale, the complexity of developing a geothermal use can be a significant barrier. Plain language advice and information on regulatory requirements, technology and resource information could assist to reduce these barriers.

BEYOND 2019

	Activity	Description
1	**Best Practice Resource Utilisation**	**Establish** a 'best practice' resource for the direct use of geothermal resources. Ensuring that all users are operating to industry and regulatory standards will protect the resource and the reputation of the sector.
2	**Data**	**Establish** a system that enables geothermal direct use data across New Zealand to be captured, that improves data quality, and that is regularly updated. Geothermal developments require good knowledge of the resource in order to answer project feasibility questions, assess environmental effects and reduce commercial risk. Access to such data will remove the need for developers to develop their own (reducing costs and uncertainty), and allow those interested to view potential opportunities.
3	**Project Feasibility**	**Create** tools and information to aid in feasibility studies, particularly for small to medium enterprises, who are less likely to have this expertise in-house. Whether to use geothermal energy in favour of another energy source becomes a question of economics and feasibility — access to tools, information, and assistance to answer feasibility questions can encourage more business to go geothermal.
4	**Payback**	**Establish** a toolkit that allows for payback calculations to be made. Payback periods can assist decision making when adopting new technologies. These calculations can be complex; access to tools and assistance to calculate pay back periods for geothermal energy could encourage more businesses to go geothermal.
5	**Greenfield Development**	**Link** greenfield developers with potential heat users. Greenfield sites have unproven geothermal resources, with little or no existing resource use. These resources offer potential future energy supplies in support of economic development, but are farther from business, infrastructure and market realisation.
6	**Incentives**	**Create** incentives for the uptake of geothermal direct use development. Assist businesses to actively pursue geothermal opportunities to the broader benefit of New Zealand; where this results in the displacement of fossil fuel use and increased competitiveness for New Zealand businesses.
7	**Logistics and Infrastructure**	**Advocate** for improved infrastructure. Direct use geothermal energy is not transportable over large distances (i.e. more than 30 km); strategic transportation connections for products to reach markets for areas rich in geothermal energy opportunities will boost the competitiveness of businesses seeking to utilise this resource.
8	**Policy Alignment**	**Improve** policy alignment in regards to geothermal energy use. Regulatory barriers, particularly for small- to medium-scale developments, can be reduced through improved Policy Statements, Regional Plans, and to some extent, District Plans. There is also more potential for enabling non- regulatory documents, such as Energy Strategies.
9	**Strategy Consultation**	**Engage** in a five-yearly consultation process to update and refresh the Geoheat Strategy and priority action areas. Ongoing market development and growing awareness of geothermal opportunities will result in changing business environments and markets. It is imperative that the strategy remains current and responsive to market/industry needs.

GLOSSARY OF TERMS USED

BDL: Geothermal Business Development Lead for the Bay of Connections, who was appointed in December 2017.

BoC: Bay of Connections, Regional Development Agency for the Bay of Plenty and the Taupo District.

Direct Use: Refers to the use of geothermal energy directly as heat. Essentially this is any application of geothermal energy use other than converting it to electricity.

Geothermal Energy: Heat energy sourced from the ground.

NZGA: New Zealand Geothermal Association

PJ: Peta Joule, a unit of energy equal to 10^{15} Joules. A larger scale glasshouse (approx. 12 ha) might use less than 0.3 PJ / annum.

Primary Geothermal Energy: The total amount of geothermal energy supplied to a process. This will be greater than the actual amount of energy consumed in the process.

Strategy Coordinator: Role established under the Geoheat Strategy for Aotearoa NZ, 2017 – 2030 to drive strategy implementation. This role is initially being delivered through the Business Development Lead.

REFERENCES AND RELATED DOCUMENTS

The following documents and resources can be accessed from www.nzgeoheat.nz.

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