

## WELLINGTON DISTRICT OF NZ MĀORI COUNCIL SUBMISSION ON ‘FROM THE GROUND UP - A DRAFT STRATEGY TO UNLOCK NEW ZEALAND’S GEOTHERMAL POTENTIAL’

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Tēnā koutou

### Summary of Considerations

1. A focus on **supercritical (deep drilling >3.5 to 6km, > 400°C) resources** overlook **low enthalpy** opportunities
2. **Low enthalpy** initiatives offer accessible, lower investment development pathways to **Maori** landowners with geothermal resources
3. More provision **for direct heat use** – not only electricity. Heat for horticulture, schools, hospitals etc.
4. Place-based energy clusters need to address **overlapping Māori landowner interests**, in accordance with tikanga
5. **Data systems** for managing and accessing resource information – very important. Data collected by government, industry, local govt. agencies need an independent body to hold and make data available
6. Geothermal **Centre of Excellence (GCE)** – include academic, vocational and Māori knowledge pathways to enhance research and services to support geothermal initiatives. Importance of building scientific, technical and mātauranga Māori knowledge and capabilities
7. **Government investment** is key to successful development, for low enthalpy, conventional power generation and enhanced (supercritical) initiatives
8. Government investment to realize geothermal benefits of renewable energy and climate resilience and to build confidence for **international interests: investment**, knowledge, data centres.
9. **Regulatory systems** - must be adaptable to accommodate new ventures, applications and technologies.
10. Geothermal is our renewable energy future – we need investment, energy resilience, sustainability analysis

## 11. THE WELLINGTON DISTRICT NZMC SUPPORTS “FROM THE GROUND UP” STRATEGY

The Wellington District, NZ Māori Council supports the aspiration of the Government to unlock our geothermal potential through better data management, resource delineation, promotion of innovative technologies and regulatory processes to facilitate applications profiled in MBIE’s draft geothermal strategy.

The strategy to explore for and develop supercritical heat is expected to require drilling from >3.5 to 6 km depth, to tap resources of >400°C. Conventional geothermal wells are 1.5-2.5 km deep and typically tap conditions of 200 - 300 °C. Low enthalpy heat requires shallow wells, nominally 300-500 metre depth, and temperatures up to 150 °C, with potential to produce -megawatts of power using binary ORC technology.

## 12. HEADING IN THE RIGHT DIRECTION

While the draft is heading in the right direction, the focus on the supercritical heat initiative fails to provide for investment in low enthalpy heat: i.e., shallow wells to utilise heat and energy, and risk de-railing many other positive aspirations if the supercritical project runs into unforeseen difficulties or fails to resolve key issues (e.g. resource understanding, heat mining, fluid management / material science and plant design / utilisation) and utilisation is significantly delayed or economically unobtainable

Low enthalpy system accesses geothermal power and heat from shallow drilling, at temperatures below 150 °C. It is a lower cost, lower risk alternative to supercritical geothermal exploration. Low enthalpy offers benefits of being part of NZ's transition to net zero (noting from GNS insight that 8% of our CO2 emissions are industrial heat) and a locally-sourced energy source which increases regional resilience.

A disproportionate focus on supercritical heat means New Zealand risks not achieving the necessary investment in wider and readily achievable energy security initiatives, and opportunities for promoting regional development and the participation of Māori and their communities.

NZMC agrees that New Zealand has a unique geothermal advantage, but a lack of investment and resourcing in key areas, e.g., maintaining technical excellence and enhancing system knowledge, has diminished NZ's leadership.

Geothermal energy contributes one-fifth of NZ's annual electricity generation, and is a strong tourism attraction. Geothermal heat and steam are utilised for industrial, commercial and residential applications.

### FIVE ACTION PLANS GOALS AND THREE STRATEGIC OUTCOMES

The 5 action plan goals:

Improve access to geothermal data	Regulatory systems fit for purpose	Advance knowledge and uptake of geothermal technologies	Enabling place-based geothermal clusters	Driving science, research, innovation, with supercritical geothermal energy
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#### Draft Action Plan

Horizon 1, Establish a data baseline geothermal data, leading to drilling for supercritical geothermal energy	Horizon 2 Central repository for geothermal data - with funding investment for 2 <sup>nd</sup> supercritical well.	Horizon 3. Potential Crown-led exploration - leading to technologies to install supercritical power station.
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The five action plan goals and action plans are of intense interest to Māori, as tāngata whenua and kaitiaki of the geothermal taongas, landowners and investors. The goals and horizons need more detail. The investment in low-enthalpy heat and exploration should be given greater priority, with plans to proceed with supercritical exploration to be in parallel with the data plans and horizons.

## 13. MĀORI TREATY CLAIMS TO GEOTHERMAL RESOURCES

Currently, the Waitangi Tribunal is in Stage 3 of the Wai 2358 inquiry, which focuses on Māori rights and interests in geothermal resources, as well as Crown policies and practices in respect of those resources.

This stage of the inquiry is currently in the hearing phase, meaning that no reports have been published detailing the findings; however, there are key issue questions that this stage of the inquiry seeks to answer.

· Issue question 1: What Māori rights and interests in geothermal resources are guaranteed and protected by the Treaty of Waitangi?

· Issue question 2: Is the current law in respect of geothermal resources consistent with the principles of the Treaty of Waitangi?

· Issue question 3(a): If the current law in respect of geothermal resources is not consistent with Treaty principles, what recommendations should be made for the reform of the current law? What other recommendations (if any) should be made?

A principle of the Treaty that customary authority lies with hapū. Therefore policy that is consistent with this principle requires assurance that hapū, Māori landowners have access to resources to ensure development opportunities are obtainable.

· Issue question 3(b): If the Tribunal finds in answer to issue question 1 that Māori as at 1840 exercised tino rangatiratanga in relation to geothermal resources and in accord with their unique tikanga, what reform is required to the law (if any) to provide for the exercise of that tino rangatiratanga and to recognise their unique tikanga with respect to those resources?

## A. THREE STRATEGIC OUTCOMES

### THE THREE STRATEGIC OUTCOMES ARE:

- i. Extend New Zealand's position as a world-leader in geothermal innovation
- ii. Accelerate energy resilience through the development of increased electricity generation and harnessing geothermal heat to support New Zealand's energy transition.
- iii. Strengthen regional economies and te Ōhanga Māori by advancing geothermal development in collaboration with tangata whenua, and unlock industrial growth, tourism and trade to support the goal of doubling exports.

### Options that support Māori interests:

- Recovery of geothermal leadership will require a **partnership between Government, the private sector and Māori enterprises.**
- **Māori landowners** with geothermal resources are unable to develop resources because of lack of access to capital for investment.
- **Re place-based clusters and overlapping Māori interests requires a sound long-term plan and work.** There are many situations of recognition of adjacent landowners. Clarification for managing overlapping interests should be led by a representative group of Māori experts in tikanga and science.
- Government investment is a key to achieving geothermal energy goals
- **Application to non-electricity outcomes, including direct use of heat, needs to be informed, information shared, and opportunities expanded.**
- **Direct use of geothermal energy can be achieved at lower levels of capital investment.** These less capital-intensive opportunities allow domestic and international investment.
- Non-electricity applications generally provide greater regional and te Ohanga Māori [Māori Economy] **benefits including jobs creation**, and can be expected to enhance tourism and down-stream industries.
- The dominance of geothermal energy being used to produce electricity has **crowded out potential smaller players and in particular Māori enterprises.**

- The value of **renewable energy** is implicit. A more explicit development of climate resilience and sustainability benefits should be included with analysis of the economic and resilience benefits long term

#### **14. DO THE FIVE OVERARCHING ACTION PLAN GOALS CAPTURE THE AREAS THAT ARE MOST IMPORTANT FOR ACHIEVING THE VISION, STRATEGIC OUTCOMES AND ENERGY GOAL?**

##### **(1) IMPROVING ACCESS TO GEOTHERMAL DATA AND INSIGHTS**

- Good quality geoscience and **engineering data is integral to good decision-making**, and at an early stage can attract investment, advance a resource assessment, **de-risk high-cost drilling**, provide data for preliminary steam field and plant design, or show a geothermal resource is not prospective for power, but may have **attributes suited to (lower temperature) direct use**.
- **Detailed geological data, geophysical surveys and exploration drilling**, help in **identifying potential geothermal reservoirs and understanding their properties** (e.g., porosity, permeability). Geoscience and reservoir data represents a significant investment in exploration and development.
- Data collected by the New Zealand Government from the 1950's provided insight and confidence to progress all geothermal power developments in New Zealand. The **data should be collated and publicly available, as should data collected through past New Zealand funded research** (assuming reasonable opportunity afforded to publish findings in scientific literature), to ensure data is not 'lost' to otherwise inaccessible personal / researcher databases.
- The coordinator of the database should be industry-focused, and **arguably independent of those providing advice to identify data gaps**, for fostering competition or "unlocking" commercial opportunities.
- Reference to "real-time" geothermal data reflects information obtained during drilling operations, well testing or plant operation, which is likely to be confidential to the developer / operator.
- The cost of acquiring data is such that only wealthy investors can participate in exploration of geothermal opportunities. **This has resulted in the many Māori entities from not being able to participate in geothermal investments.**
- A publicly available database could be administered by a Crown Research Institute or, preferably, a geothermal body (i.e., a **NZ Centre of Excellence**) **dedicated to supporting geothermal initiatives in New Zealand**, capability building etc, who is not challenged by commercial objectives.
- **There should be a legislative requirement that if the information is not used within a specified time period that it can be made open access to other parties.** This would avoid the unnecessary cost of repeat exploration by other potential development parties.
- **Geothermal exploration data should be collected as part of a resource consent.**

##### **(2) ENSURING REGULATORY AND SYSTEM SETTINGS ARE FIT FOR PURPOSE**

- Existing regulatory frameworks in New Zealand have supported numerous conventional geothermal power ("flash-type" and ORC-binary power, injection) and related initiatives, and numerous novel direct uses (ranging from horticulture, prawn-farming, timber and materials processing, Silicon-Lithium extraction etc). We concur, future applications related to new technologies and uses will likely eventuate, and the **regulatory framework must be adaptable to accommodate new ventures and applications**. Māori as tangata whenua are essential partners and have a key advisory role in the process.
- **Regulatory processes should be streamlined, ambiguities removed, and administrative process improved**, ensuring geothermal sustainable development.

**(3) Identification of 'significant' surface manifestations has received considerable attention from Māori and regional authorities - including for protection**

**(4) Advancing knowledge and uptake of geothermal technologies**

- The MBIE draft strategy makes a brief mention to a “durable talent pipeline” - although it is not a ‘regulatory’ or ‘system setting’ issue - it is a stand-alone concern. We concur, that a **well-structured academic programme to grow New Zealand trained geoscience and engineering talent**, integrated with expertise from overseas, provides technical continuity and opportunity to expand insight and capability.
- **Vocational training** for geothermal services industries needs to be provided within a Centre of Excellence
- A reinvigorated geothermal programme, via a NZ **Geothermal Centre of Excellence affiliated with a degree-awarding tertiary institution (such as Univ. Auckland), but ideally with a campus in Taupo or Rotorua** (near to the geothermal industry), would be a great boost, and would revive our international profile. Training should also accommodate Māori perspectives, and pathways for Māori youth to learn specialist skills that can be applied to geothermal exploration, drilling, plant operations and field management practices.
- Strong international partnerships should be encouraged,
- The value of **collaborative relationships across the sector, government and tāngata whenua** - this might be better achieved via a specific (funded) support role (or “geothermal ambassador”) under the umbrella of the NZ Geothermal Association (NZGA).
- More could be done to **facilitate space heating initiatives, utilizing near-ground surface heat flow, for schools, hospitals and airports.**
- We envisage **Māori would have a key role hosting, sharing insight through teaching and research initiatives, and guiding the establishment, evolution and impact of such an institution.**

#### **(5) ENABLING PLACE-BASED GEOTHERMAL CLUSTERS**

- Regional energy clusters can drive innovation, investment and numerous community benefits. We appreciate the role that the New Zealand Government can play and their commitment to **fund and enable coordination and collaboration between landowners, tāngata whenua, local authorities, industry and developers.**
- There are **numerous undeveloped geothermal resources and areas of anomalous heat flow** across our country, often co-located with areas suited to forestry, agriculture/horticulture and other farming activities, with good access / points of electrical transmission, and nearby urban areas / infrastructure (such as near Rotorua, Kawerau and Taupo), where large industrial scale applications (e.g. data centres, H<sub>2</sub>-generation or other industrial applications may be feasible. **Māori as tāngata whenua, landowners and kaitiaki are logical partners and co-developers in such initiatives and can be expected to have key development roles.**
- Place based geothermal clusters would provide **targeted funding for a durable talent training pipeline, especially regarding matauranga Māori cultural values.** This would support the idea that training should accommodate Māori perspectives.
- Management of **overlapping interests** of Māori landowners to be addressed in accordance with tikanga

#### **(6) DRIVING SCIENCE, RESEARCH AND INNOVATION**

- We commend the significant commitment to the supercritical geothermal exploration project, which will require additional innovation and development of technologies for management of super-high temperature/pressure fluids, material science, drilling technologies, plant design and operations
- A supercritical resource may extend beneath several administrative jurisdictions, **Māori interests and properties with potentially impacted land-owners**, and the consenting process will require attention, regarding fluid extraction, disposal and impacts on the environment and existing users of the geothermal resources, and potentially impacted and/or interested communities
- In addition to a theoretical supercritical development, there is a necessity for significant **research and development of applications for low temperature resources that occur across the entire country**, with many having significant development potential (including the Tauranga geothermal system, Hauraki Plains, East Coast, Taranaki and West Coast).

**(7) NZMC AND LOCAL MĀORI CAN WORK WITH GOVERNMENT ON GEOTHERMAL INVESTMENT AND DEVELOPMENT ACTIONS.**

**DOES THE PROPOSED ACTION PLAN CORRECTLY CAPTURE GOVERNMENT INTERVENTIONS AND PRIORITIES?**

- It does not meld industry expertise with Māori needs, or clearly recognise those realistic opportunities that can be expected to have near-term success (such as low temperature, and targeted small-modest scale power initiatives)
- The supercritical project) will not realise their potential for many years
- In the short-term, the Government could prioritise Māori-coordinated regional power developments, such as those in the NE of Rotorua, the Horohoro-Haparangi-Atiamuri area in Waikato, or the West Coast South Island.
- The draft strategy does not adequately address training and a pipeline for technical expertise.

**ENABLING TĀNGATA WHENUA TO REALISE THEIR ASPIRATIONS FOR GEOTHERMAL RESOURCES IN THEIR ROHE?**

- The strategy recognises tangata whenua / **Māori have had limited opportunity to access and utilise past resource data, or the financial ability to engage consultants to conduct geoscience** / resource delineation surveys, or fund expensive investigative drilling, planning or feasibility studies.
- Provide for Māori geothermal research and development interests, and pathway for investment and support.

**FURTHER OPPORTUNITIES FOR THE GEOTHERMAL SECTOR**

- **Further opportunities for geothermal policy:**
  - i. Fit-for-purpose regulatory environment includes meaningful and effective engagement, contribution / roles and responsibilities for Māori -as tangata whenua to engage, support and assist with technical advice.
  - ii. Expertise and knowledge that sits with Regional Councils is not well represented in the Strategy.
  - iii. Training and education for geothermal technical expertise needs to be better addressed. There is a particularly relevant opportunity for a ‘**Centre of Excellence**’ partnership that is in proximity to geothermal geographically. A **business plan for building knowledge capability** for industry development needs to be resourced and prepared and for a partnership between **Māori resource owners and Toi Ohumai, the Rotorua Polytech, along with an academic collaborator.**
  - iv. System delineation - a dedicated government agency particularly for low - moderate temperature resources.
  - v. There are key areas of research that warrant attention, including: gas management, investment in enhance drilling technologies, down-hole sensors by New Zealand engineering experts).
  - vi. Research and an updated Code of Practice for Deep Drilling would have an international impact
  - vii. The roles of NZTE, MFAT and other NZ Government agencies offer an opportunity to engage internationally and have a meaningful influence, and provide a pathway for investment in New Zealand, and commercial opportunities for our experts around the World.

No reira, ngā mihi nui ki a koutou

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