Consultation submission form

From the Ground Up – A draft strategy to unlock New Zealand's geothermal potential

How to submit using this form

This form is used to provide feedback on the document *From the Ground Up – A draft strategy to unlock New Zealand's geothermal potential*.

When completing this submission form, please provide reasons explaining your answers. Your feedback provides valuable information and will inform decisions about the final geothermal strategy.

You can submit this form by 5pm, 12 September 2025 by:

- Emailing to resourcesfeedback@mbie.govt.nz with the subject line 'Submission on a draft geothermal strategy' or
- Posting to:
  Submission on a draft geothermal strategy
  Resource Policy
  Ministry of Business, Innovation and Employment
  PO Box 1473
  Wellington 6140

Your feedback will contribute to further development of a geothermal strategy for New Zealand. It will also become official information, which means it may be requested under the Official Information Act 1982 (OIA).

The OIA specifies that information is to be made available upon request unless there are sufficient grounds for withholding it. If we receive a request, we cannot guarantee that feedback you provide us will not be made public. Any decision to withhold information requested under the OIA is reviewable by the Ombudsman.

Submitter information

The Ministry of Business, Innovation and Employment (MBIE) would appreciate if you would provide some information about yourself. If you choose to provide information in the section below, it will be used to help MBIE understand how different groups view the draft geothermal strategy. Any information you provide will be stored securely.

A. About you

Name: Jonathan Bacon

Email address: Jonathan.Bacon@Jacobs.com

B. Are you happy for MBIE to contact you if we have questions about your submission?

☒ Yes ☐ No

C. Are you making this submission on behalf of a business or organisation?

☒ Yes ☐ No

If yes, please tell us the title of your company/organisation:

Jacobs New Zealand Limited

D. Privacy information

☐ The Privacy Act 2020 applies to submissions. Please check the box if you do not wish your name or other personal information to be included in any information about submissions that MBIE may publish.

☐ MBIE may upload submissions, or a summary of submissions, received to MBIE's website at www.mbie.govt.nz. If you do not want your submission or a summary of your submission to be placed on our website, please check the box and type an explanation below:

I do not want my submission placed on MBIE's website because… [insert reasoning here]

E. Confidential information

☐ I would like my submission (or identifiable parts of my submission) to be kept confidential and have stated my reasons and ground under section 9 of the Official Information Act that I believe apply, for consideration by MBIE.

If you have checked this box, please tell us what parts of your submission are to be kept confidential.

From the Ground Up – A draft strategy to unlock New Zealand's geothermal potential

The Government is developing a geothermal strategy for New Zealand to provide a focused pathway to geothermal leadership and growth and unlock the potential of our geothermal resources across a broad range of applications.

New Zealand's geographical location has given us a unique geothermal advantage, and New Zealand has been a global leader in geothermal development since the late 1950s. Geothermal contributes nearly one-fifth of our annual electricity generation, is a strong tourism attraction, and geothermal heat and steam are utilised both directly and indirectly in industrial, commercial and residential applications.

However, despite our world-class resource, geothermal development faces some barriers, including high upfront drilling costs, fragmented access to data, complex and dated regulatory settings and the scale of the sector. New technologies, such as supercritical geothermal, are also on the horizon. In order to drive the energy resilience, regional development, economic growth and climate leadership, deliberate and coordinated action is required.

The draft strategy sets out a vision for New Zealand to be a global leader in sustainable geothermal development. Three interconnected strategic outcomes, centred around being a world-leader in geothermal innovation, accelerating energy resilience, and strengthening regional economies and te Ōhanga Māori, have been identified to guide action and focus. Five action plan goals have been identified to guide the Government's approach, underpinned by a draft action plan. The draft strategy also includes an energy-focused goal to double the use of geothermal energy by 2040.

We are seeking feedback on the draft strategy, particularly whether the proposed direction, ambition and outcomes, and accompanying action plan, capture the necessary government intervention and priorities. We are also interested in views about how the wider geothermal sector can contribute to unlocking our geothermal potential.

Please see the draft geothermal strategy for more information, available on our website:

https://www.mbie.govt.nz/have-your-say/consultation-on-a-draft-geothermal-strategy-for-new-zealand

Questions for the consultation

1. Are the three strategic outcomes of the strategy, centred around world-leading geothermal innovation, accelerating energy resilience and strengthening regional economies and te **Ō**hanga M**ā**ori, suitable, or is there more we need to consider?

The three strategic outcomes of the strategy are great to broadly define the way the industry should move into the future. Geothermal has always been a great IP export to the world and helps to build our technical credibility. There is a growing need for NZ to keep this position and in the expanding world of geothermal into unconventional areas (EGS and AGS) and supercritical we are at risk of no longer leading, so an intervention is necessary to keep our industry at the forefront.

Holistically NZ is also facing growing electricity demand which will continue to grow. Wind and solar are great cost effective ways of adding electricity to the grid, but they do not provide the 24/7 baseload electricity that other renewables such as hydro and geothermal can produce. The scope for hydro growth in NZ is limited due to the larger scale needed and impact to the environment, so the opportunity for geothermal growth is abundant.

Thirdly ensuring that the geothermal growth benefits regional economies and the Māori economy. Geothermal energy has had a profound impact in the areas developed in NZ currently. Taupo, Rotorua and Northland (Ngawha) all have developed industries centred around geothermal that benefit the local economy in creating and sustaining local jobs, lowering local electricity prices and bringing tourism to the region.

2. Do the five overarching action plan goals capture the areas that are most important for achieving the vision, strategic outcomes and energy goal?

NZ has for 50 years had a strong industry (dominantly private sector) exporting geothermal services internationally which provides for robustness in the local industry through skill development, sheer workforce numbers to help NZ deliver our locally sporadic mega projects, bringing new ideas and technologies back to NZ, while providing valuable export earnings and being a major element of NZ's development assistance program outside the Pacific. To give some scale of what this international industry does, we estimate that our company's geothermal teams have had major involvements in about 25% of the World's geothermal developments and those projects are now avoiding 12 million tonnes of CO_2 generation per year (similar magnitude to NZ's net CO_2 emissions).

To be frank, the local NZ Industry has often stagnated over the decades, and it is through private sector companies such as Jacobs and its predecessors that new ideas from international developments have been brought back to NZ, or have directly provided the skills needed to rapidly scale up to develop projects. This import of international knowledge and skills from the private sector is a key pillar of the industry and is not recognized in the present draft strategy, which appears to have been developed based on discussions predominantly with entities operating almost exclusively within the Taupō geothermal zone.

The draft strategy's key elements of new technology and fostering development strongly engaging with Māori can also provide valuable new opportunities for international engagement and market development. International projects are often facing social challenges and the NZ ownership / stakeholder partners / sustainability models that are often Māori-led could be an additional opportunity for the export of NZ ideas and services, and possibly investments.

Alongside this export sector is our university level training capability which has significantly assisted the development of geothermal skills globally which has resulted in enduring linkages between the NZ industry and those in many countries in Asia, Africa and Latin America. Despite recent severe decline of NZ based students passing through local geothermal tertiary courses, the NZ industry has fortunately been able to secure human resources from the global regions to progress current local developments. Whilst we now have a much more diverse geothermal workforce, we are not training NZ students in any significant number (close to zero) and this also limits the growth opportunity for Māori and Pacifica students to step into the industry in support of the initiatives outlined in this draft strategy.

We suggest this sector could be represented as additional or expanded Action Plan Goals – i.e. Supporting the export of NZ grown services through being a recognized global geothermal leader, and the local growth of our educational base for sustainable human capability.

3. Does the proposed action plan correctly capture the necessary government interventions and priorities?

The concept of improving access to geothermal data is a positive move. Data that is collected with government fund support, particularly Earth Science NZ and Universities should be fully publicly available to enable industry and other researchers to leverage data. The present "publication" of publicly funded data in form of interpretive academic papers is completely inadequate and restrictive. Actual data should be available in a form that can be re-modelled and integrated with additional data (both local and global). As there is a significant amount of learning as technology evolves, this needs to be applied retrospectively for data in government owned institutions : e.g. ESNZ (formerly GNS Science) holds previously government funded databases for gravity and resistivity (several methods including MT) that are treated as an asset to be leveraged for commercial gain rather than a wider public good, which is the case in other jurisdictions such as Australia, USA and Canada. These publicly available data sets will be important as we start to consider some of the new geothermal technologies such as EGS.

Cross-cutting the Action Plan Goals of improving data access, regulatory settings and advancing knowledge, is a need to improve our visibility of the pipeline of geothermal opportunities and projects. Whilst a geothermal resource inventory may be developed to provide an aspirational assessment of geothermal potential, this is typically science based with only a cursory lens of technical, financial and enviro-social feasibility. What is needed for more realistic and in-depth planning is a more robust view of actual development potential and the status of developments along what is typically a 5-10 year timeframe from early exploration to energy use. The Waikato Regional Council has already identified the UNFC system as being suitable for assessing project maturity and conducted a preliminary geothermal inventory in that region. A UNFC assessment was also previously completed for assessing supercritical geothermal potential at a national scale. UNFC can also be applied to other energy projects including solar, wind and hydro, and could form a much more robust national inventory. We observe that during the 2024 power pricing crisis the NZ Government were unable to answer the question of what the credible pipeline is for near-term new generation projects. A UNFC-type inventory for NZ would completely address this.

To enable NZ to be a world-leader in geothermal innovation there is a logical step between hydrothermal and supercritical that has been overlooked. This is discussed more in question 6, but the role of unconventional geothermal is thriving in the USA with both EGS and AGS playing a significant role in the growth of geothermal. The technical and financial viability appears to be increasingly sound and is providing significant growth opportunities.

In order to enable EGS as a viable option in NZ this will need to be reviewed from a regulatory standpoint given that "fracking" is often a critical component. Best practice can be taken from some of the projects Jacobs has already had involvement in the North American market, to ensure robust monitoring programs to reduce any impacts on local communities.

4. Is the role for the sector clear? How can the wider geothermal sector play a role (e.g. are there specific actions that the sector could own)?

As described above, the private services sector can play a major role and will "own" the actions it needs to take in order to grow and assist the local geothermal development ecosystem and export opportunities. This sector can probably play a bigger role within NZ. The skill base available in the private sector complements that of the current Gentailers and can support Māori initiatives to take more control of geothermal on their rohe without having to call on Gentailer capacity for early development activity.

The NZ education sector, with some modest increase in base funding, is fully capable of supporting growth of new students with both basic and specialized skills, provided that the industry can signal solid employment opportunities and a pipeline that will attract young talent. The hub of

experience in the private sector in Auckland has already played a significant role in supporting post graduate courses in particular at Auckland University – bringing a valuable applied and global experience that complements pure academic learning. However, this can be more attractive to NZ students with a stronger visible pipeline.

5. Does the strategy and proposed action plan create the right settings to enable tāngata whenua to realise their aspirations for geothermal resources in their rohe?

Engaging young Māori in the industry and particularly in skilled areas such as geothermal resource exploration, evaluation and sustainability is at present a missed opportunity. This could help much better mutual understanding between Māori and Pakeha world views of geothermal sustainability and use and thereby find ways for acceptable use of these natural resources.

Government support for Māori to understand the opportunity under their rohe (considering all geothermal use types including emerging low temperature and EGS) could be help enable development by those who ultimately control access to much of the energy sources in NZ.

Data collected under public funding for such Māori initiatives should also be public, just as if it were funded for ESNZ or any others to conduct exploration. This is important for improving the collective understanding of geothermal systems and their development for everyone's benefit, while the geothermal taonga itself remains.

6. Are there opportunities for our geothermal sector that we haven't considered?

The government has recently committed funds to the development of supercritical which fits strongly within the 3 strategic outcomes of the strategy. EGS however is another technological advancement which is progressing even more swiftly overseas (specifically in the United States) which may have a place in New Zealand as well. EGS or Enhanced Geothermal Systems is an unconventional geothermal development that creates or enhances a reservoir through stimulation. Contrary to supercritical, the technological advancement of EGS projects is already available. For example, Fervo, a leading EGS developer (and a client of Jacobs), as part of their "Project Red" has reached technology readiness level 9 as defined by the US Department of Energy, which defines a technology that has been proven to work in its actual operational environment. Our company is already closely connected with this industry in the USA and can be a key player to support NZ in keeping pace with global advances.

We consider that as the technology evolves there are likely to be ample opportunities to apply EGS methods in a variety of forms to the NZ situation. This has the potential to deliver useable MW much faster than the supercritical strategy could alone, and is also likely to bring drilling and other technologies to NZ that will be important for any supercritical development in future.

Similar to supercritical, with relatively low cost, government backed exploration a few promising regions could be identified to "enable place-based EGS geothermal clusters."

Jacobs is currently working with a number of US developers and companies transitioning from Oil and Gas to assist them in the development of EGS projects that range from small developments (~4-5MW) up to Giga-Projects (1.5GW+). We feel that through companies such as Jacobs, the

expertise to evaluate EGS is already within New Zealand and at close reach globally, and this may be another stream for the government to back in the near future.

7. Are there challenges for our geothermal sector that we haven't considered?

Due to the size of New Zealand and the scale of geothermal there has always been a cyclical nature of geothermal projects and expertise locally (see more in point 2). This has historically been offset with many of the NZ service providers in the geothermal industry assisting on overseas projects.

Although this challenge has not specifically been mentioned in the strategy, the strategic outcomes and action plan goals do importantly talk to the benefit of upskilling the NZ geothermal sector to continue to be world-leaders in the geothermal space. To enable this MFAT has enabled a continued presence in the international geothermal community through many "aid" or development sector projects assisting in knowledge transfer to various countries.

This also continues to provide valuable marketing for the geothermal expertise in NZ and keep NZ aware and educated on developments throughout the world in the geothermal space.

8. Are there any other things that the strategy should include or exclude?

The previous answers provide any additional items we view would be appropriate to add to the strategy.

Thank you

Thanks for your feedback, we really appreciate your insight. It helps us establish a long-term strategic approach to unlock the potential of our geothermal resources in a sustainable manner.

To help us continue to develop a geothermal strategy for New Zealand, we would appreciate any additional suggestions or comments you may have.

Please leave your feedback here:

We suggest that there could be more engagement with the private sector in future when developing the strategy. We can bring additional perspectives, global knowledge, and additional resources for assisting the growth of geothermal development in NZ.