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: Professor James Johnston

Email address: jjohnston@casiltech.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?

X Yes ☐ No

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

CaSil Technologies Ltd

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 Ōhanga Māori**, suitable, or is there more we need to consider?

These are indeed suitable, but they essentially relate to the current situation in NZ.

The strengthening regional economies and te Ōhanga Māori is critically important in the current and further development and utilisation of NZ geothermal rsources.

CaSil Technologies Ltd has established and is nurturing a close association and working relationship with the Māori owners and operators of the Mokai (Tuaropaki Trust), Rotokawa (Tauhara North No 2 Trust), Kawerau (Ngati Tuwharetoa Geothermal Asset geothermal resources, and the Te-Pae-O-Waimihia Trust which is developing the He Ahi Eco-energy Park, Taupo.

World-leading innovation on a meaningful international scale is now essential. This must be pursued with vigour.

However, such innovation itself is only part of the story and must be accompanied by a strategy to implement and support the commercialisation pathway of these new innovations in NZ, otherwise they will be commercialised elsewhere by large international players. Innovation without effective implementation is useless.

Innovation carries risk. The NZ geothermal seems to be somewhat stymied here. Currently is appears there is little appetite for new innovations and associated risk by the major geothermal gentailers in NZ. They appear to consider and incorporate existing knowledge, designs, equipment, practices and operating procedures. Innovation does not appear to feature.

A transformative change now must be implemented to position NZ once again as a world leader here and not simply a follower as it currently is.

The involvement of new companies with new world-leading innovative technologies to increase, maximise and harness the full energy and mineral potential of NZ geothermal resources is now a critical pathway to implement and pursue with vigour.

Currently we are only accessing and harnessing part of the heat energy contained in the superheated water for electricity generation and very little is used for direct heating uses, due to silica scaling that has never been successfully addressed.

Example of a World-leading geothermal innovation

To illustrate this importance of world-leading innovation, we provide an example of a new transformational technology to harness full heat recovery, electricity generation and mineral extraction potential of the hot geothermal water, has been developed CaSil Technologies Ltd and demonstrated in NZ and Indonesian geothermal resources at small pre-commercial scale. This now needs to be implemented at full commercial scale operation. The pathway for such implementation is not clear in risk adverse environment that the NZ geothermal gentailers position themselves in.

Below are the substantial opportunities this new CaSil technology offers to the NZ and international geothermal industries:

- The complete elimination of silica scaling from existing hot geothermal water flows which enables the water to now cooled to unprecedented lower temperatures. Substantially more electricity can be generated from the water and more energy can be accessed for industrial and consumer heating than is possible by existing operational practices and procedures.
- The technology can be readily interfaced directly into existing geothermal piping and binary electricity generation infrastructure. Very little additional plant and equipment are required. The same production well, piping, binary cycle electricity generation infrastructure and reinjection wells are used.
- The regular plant shutdowns and the cost of mechanical and chemical cleaning of silica scale from binary plant heat exchangers, pipework and equipment, and the environmental consequences are avoided.
- The substantial cost of drilling new reinjection wells to replace those that are progressively blocked by silicas scaling are avoided.
- The unique silica-based product can be used in controlled nutrient release fertilisers to prevent excess nutrient run-off and pollution of surface waterways, thereby transforming the on-farm fertiliser practices.

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

Yes, these five goals are important. However they must be accompanied by definitive pathways to ensure they are pursued appropriately and met accordingly.

The goals of:

- Improving access to geothermal data and insights
- Ensuring regulatory and systems settings are fit for purpose
- Enabling place-based geothermal clusters

Are essentially operations based. They are necessary but will likely produce more of the same, by using the thinking, approaches and practices that are currently used. They should reduce the time for regulatory compliance to be met and the associated cost, thereby more readily facilitating the status quo approach.

The largest potential new opportunities for the NZ geothermal industry lie in:

- Advancing knowledge and uptake of geothermal technologies
- Driving science, research and innovation, including supercritical geothermal technology

These are critically important for achieving the vision, strategic outcomes and energy goal.

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

This is not clear. The nature and extent of the government interventions need to be more clearly defined.

Certainly, government intervention is required to considerably reduce the time and costs of regulatory compliance and securing the necessary permits.

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)?

The geothermal sector

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?

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

The major o[opportunity that has not been considered is the recovery of more heat energy and the and more binary cycle electricity generation from **existing** geothermal hot water flows from existing production wells and to existing reinjection wells. Currently due to silica scaling here, large amounts of heat energy in these hot water flows cannot be accessed and are wastefully disposed of back into the ground. The opportunity to recover dissolved minerals from the hot water is also lost.

Current reinjection temperatures can be up to about 150C In regards to heat recovery

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

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

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: