SUBMISSION ON

Draft Geothermal Strategy

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To: Ministry of Business, Innovation & Employment
Name of Submitter: Horticulture New Zealand
Supported by: Pukekohe Vegetable Growers Association, Tomatoes NZ, Vegetables NZ Inc.

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Horticulture™ New Zealand
Ahumāra Kai Aotearoa

OVERVIEW

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Our submission

Horticulture New Zealand (HortNZ) thanks the Ministry of Business, Innovation & Employment (MBIE) for the opportunity to submit on the draft Geothermal Strategy for New Zealand and welcomes any opportunity to continue to work with MBIE and to discuss our submission.

The details of HortNZ's submission and decisions we are seeking are set out in our submission below.

PART 1

HortNZ's Role

Background to HortNZ

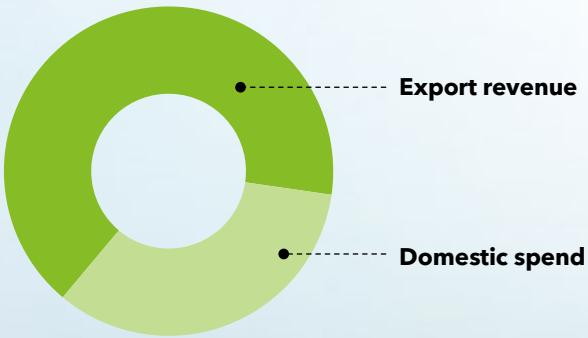
HortNZ represents the interests of approximately 4,300 commercial fruit and vegetable growers in New Zealand who grow around 100 different fruits and vegetables. The horticultural sector provides over 40,000 jobs.

There are approximately 80,000 hectares of land in New Zealand producing fruit and vegetables for domestic consumers and supplying our global trading partners with high quality food.

It is not just the direct economic benefits associated with horticultural production that are important. Horticulture production provides a platform for long term prosperity for communities, supports the growth of knowledge-intensive agri-tech and suppliers along the supply chain, and plays a key role in helping to achieve New Zealand's climate change objectives.

The horticulture sector plays an important role in food security for New Zealanders. Over 80% of vegetables grown are for the domestic market and many varieties of fruits are grown to serve the domestic market.

HortNZ's purpose is to create an enduring environment where growers prosper. This is done through enabling, promoting and advocating for growers in New Zealand.



Industry value $7.54bn
Farmgate value $4.89bn
Export revenue $4.99bn
Domestic spend $2.55bn

Source: HortNZ Annual Report 2025

PART 2

Executive Summary

Support for the Geothermal Strategy

HortNZ strongly supports the development of a Geothermal Strategy for New Zealand (referred to in this submission as "the strategy"), particularly given the potential for geothermal energy use in the greenhouse vegetable industry.

Geothermal energy has promising potential as an alternative energy source for those North Island greenhouse businesses which are exposed to increasing fuel costs, the declining availability of natural gas and the costs of the Emissions Trading Scheme (ETS). In particular, the potential to capture and use CO_2 from geothermal to boost crop performance is attractive because access to CO_2 is one of the main draw cards of natural gas.

Greenhouses are a form of climate adaptation for our food system. Crops grown indoors are less vulnerable to adverse weather events. They provide a year-round supply of healthy vegetables for New Zealand consumers, alongside an export component.

HortNZ supports the Government's focus on both low-temperature and higher-temperature energy options. Geothermal energy can be used for heating even from relatively low-temperature resources, which are found all over New Zealand.

Who bears the risk?

Missing from the strategy is discussion of the risk of investigating potential geothermal energy sources, and who should bear that risk. It costs millions of dollars to drill without certainty that an appropriate source of energy will be located. The Government needs to **mitigate the risk of geothermal projects** to enable the use of this energy source. Government-backed insurance schemes are a common and successful approach in other countries. If not an insurance scheme, the Government could mitigate the risk by taking on responsibility for drilling and auctioning off access to the resource. It is unlikely that industry will take on the risk of exploration without government backing because of the scale of costs and uncertainty involved.

Policies sought

HortNZ seeks the following policy outcomes to boost the use of geothermal:

- Establish a Government insurance programme to mitigate the financial risk of geothermal exploration,
- Develop policy guidelines or planning standards for local authorities to aid with consenting,
- When a sector strategy implementation group is established, ensure the horticulture industry is represented in its membership,

- Provide financial incentives including grants, tax rebates, low interest loans and government guarantees to assist capital investment in geothermal technology, and

- Develop geospatial information about geothermal suitability, and ground source heat pump suitability more specifically, and make it publicly available.[1]

New Zealand's national energy strategy

Geothermal is one of a suite of possible energy sources that will meet Zealand's growing energy demand. The national strategy for geothermal should sit within a national, enduring energy strategy. While MBIE was progressing work on a National Energy Strategy as recently as 2024, it is not yet publicly available. HortNZ's vision is that the national strategy will consider how much energy New Zealand will need into the future, which energy resources we already have, the resilience of those resources, and a plan to meet projected demand if not already covered by existing resources.

[1] Glassey, Phil. (2023) "Planning for Group Source Heat Pumps".

PART 3

Submission

1. Greenhouses and geothermal energy

There is exciting potential for the use of geothermal energy to heat greenhouses to grow fruits and vegetables. Growing indoors, also known as covered cropping, is what allows New Zealanders to buy tomatoes, cucumbers, capsicum, courgettes, eggplants, leafy greens and herbs year-round. Greenhouse growers even out the supply of fresh produce, extending the availability of seasonal crops when outdoor cropping is challenging.

1.1. Covered crops for climate adaptation

An increase in covered cropping will be essential to adapt the food production system to the variable weather that comes with a changing climate while still producing enough food for New Zealand's population. Indoor growing systems are less vulnerable to environmental conditions and pressures such as significant weather events. During Cyclone Gabrielle, 80% of the tomatoes grown outdoors for processing were destroyed, whereas the supply of indoor grown greenhouse tomatoes was relatively unaffected.[2]

1.2. Domestic and export value of greenhouse-grown crops

The greenhouse fruit and vegetable industry contributes $120 million to New Zealand's GDP, based on farmgate value of $295 million.[3] Greenhouse-grown fresh tomatoes alone have a farmgate value of over $151.8 million.[4] Fresh tomatoes had a $6.9 million export value in the 2024/25 financial year, up from $5.6 million in 2023/24.[5]

Since August 2024, tomatoes cannot be imported from Australia due to Tomato Brown Rugose Fruit Virus, a biosecurity threat to our local industry. This is why a reliable domestic supply of fresh produce is so necessary – to feed our population when shocks like biosecurity threats or supply chain disruptions affect imports. Given New Zealand's geographic isolation and the perishable nature of fresh vegetables, only a small fraction of the vegetables grown in New Zealand greenhouses could be imported. As such, the New Zealand population is reliant on New Zealand growers.

1.3. The need for greenhouse energy transition

Greenhouse growers who use fossil fuels for heating pay into the Emissions Trading Scheme (ETS) under the category of industrial process heat. ETS costs, rapidly increasing energy prices, and the declining availability of natural gas are all compounding to create an urgent need to transition to alternative energy sources. Energy costs account for 30-40% of growers' overheads, so a less expensive option is highly desirable.[6]

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[2] Tomatoes NZ, personal communication with General Manager.
[3] Chris Nixon and Dr. Daniel Pumbudi. (2018). "Valuing covered crops: A national perspective". NZIER report prepared for Tomatoes NZ and Vegetables New Zealand.
[4] Tomatoes NZ. Annual Report 2025.
[5] Tomatoes NZ. Annual Report 2025.
[6] GNS Science. "Geothermal Grown Crops: Decarbonising covered crops with low temperature geothermal resources". Accessed 12/09/25.

However, some growers are already exiting the market rather than changing their energy source. The area of indoor growing has decreased by 30% since 2012.[7] Business closures are driven by rising input costs (including energy), lack of succession and the cost of compliance. The cost for a greenhouse grower to switch to a renewable energy source is roughly $500,000-$1 million per hectare, depending on the fuel type,[8] which is prohibitively expensive, particularly for small and medium-sized growers. Even when businesses stay open, they may be turning off their heat or turning the temperature down due to energy costs which reduces yields and shrinks the seasonal window in which they can operate. To maintain a resilient, year-round supply of fresh vegetables for New Zealanders, the greenhouse growing sector needs support for energy transition.

1.4. Future use of geothermal for greenhouses

Geothermal is a promising future alternative energy source because of its low ongoing costs after the upfront capital expenditure to connect to the energy source.

Using geothermal heat for greenhouses is a highly efficient use of the energy resource because:

- Greenhouse crops are valuable on the domestic and export markets,
- Growing creates jobs, providing economic benefits,
- Growing vegetables benefits New Zealand by providing healthy, nutritious food to New Zealanders, and
- The technology is energy efficient and can become even more efficient with technological advancement.

Growers are concerned that the electrical grid will not be able to handle the vast load of all industries trying to electrify at once, so an alternative heat source is attractive. There are multiple ways to heat a greenhouse with geothermal energy. One option is a ground source heat pump, which can use geothermal resources from 10-40°C, so the technology is well-suited to low temperature geothermal systems like the Tauranga system[9] but can be used across most of New Zealand. They are already in use in New Zealand at locations like Christchurch Airport and the Environment Canterbury Council buildings, as noted in this consultation document. Higher temperature resources of 40-100°C can be used directly at a lower cost to users because the heat is piped directly to a greenhouse, and no ground source heat pump is required.

Low-temperature geothermal resources are more widespread than high-temperature sites, meaning they can support a greater number of businesses and locations across New Zealand. To maximise the benefits of geothermal energy for economic growth and regional development, government investment and strategy must give adequate attention to low-temperature resources.

As described in the consultation document, industry groups and GNS (now Earth Sciences New Zealand) are developing a new web-based tool to help greenhouse growers switch

[7] United Fresh and Plant & Food Research. Fresh Facts 2024. (p. 47)
[8] Vegetables NZ, Inc. estimate
[9] Bay of Plenty Regional Council. (2023). *Tauranga Geothermal System Science summary report*.

to geothermal heating.[10] The project, Decarbonising Covered Crops with Geoheat, will provide valuable data to make more informed choices to access geoheat in geothermally active areas with a web-based tool covering geology, hydrology and economics to access.

Industry groups, including HortNZ, Vegetables NZ and Tomatoes NZ welcome any opportunity to work with Central Government to get the settings right to enable access to geothermal energy for our sector.

1.5. Mitigating the financial risk of investigating geothermal

This section responds to the following discussion question:

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

Missing from the draft strategy is discussion of the risk of investigating potential geothermal energy sources, and who should bear that risk. When investigating for geothermal resources, developers must spend millions of dollars to drill without certainty about the subsurface or what energy resources they will or will not find.[11] Even where mapping is comprehensive, drilling is required to check the temperature of the water at a site and the flow rate.

In other countries, including France, Germany, Iceland, the Netherlands and Switzerland, governments provide insurance for these explorations to reduce the risk. The Netherlands provides a particularly useful model, which has been used extensively for greenhouse horticulture. If the New Zealand government is serious about unlocking geothermal potential, we need a **Government-backed risk insurance scheme**. This is a key policy recommendation of the International Energy Agency's 2024 report *The Future of Geothermal Energy*, which urges governments to, "Design risk mitigation schemes for early-stage project development".[12]

Other options used by governments to mitigate risk include grants for drilling, subsidised loans and public resource assessments gained through geophysical/geochemical surveys to increase confidence about where resources are located.[13]

Alternatively, the New Zealand Government could take on responsibility for drilling and then raise capital by auctioning off the rights to geothermal access. Either way, it is unlikely that industry will take on the risk of exploration without government backing because of the scale of costs and uncertainty involved. If expanding the availability and use of geothermal energy is a matter of national importance for our national energy security, it makes far more sense for the Government to take a lead than to place all the risk on small businesses like greenhouse growers.

[10] Grower2Grower. (15 January 2025). "Web based tool to help growers switch to geothermal heating".
[11] Boissavy, Christian. (2021). Report reviewing existing insurance schemes for geothermal. European Union.
[12] IEA. (2024). The Future of Geothermal Energy. (p. 11)
[13] IEA. (2024). The Future of Geothermal Energy. (p. 23)

2. Discussion questions

This section responds directly to the remaining consultation questions in the draft *Geothermal Strategy*.

Q. 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?

AGREE

These are suitable outcomes.

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

PARTIALLY AGREE

HortNZ supports these five goals; however, there is an opportunity to add a sixth goal for "Risk Mitigation". A dedicated goal for "Risk Mitigation" would enable the Government to address the unique risk profile of investigations for geothermal energy, which is key to unlocking finance, investment and uptake.

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

2.1. Industrial allocation

One of the proposed actions is to, "Explore whether ETS industrial allocation settings are acting to limit uptake of geothermal heat". **Industrial allocation is not the barrier** for uptake of geothermal energy by the greenhouse growers of tomatoes, capsicums and cucumbers who receive industrial allocation. The main barriers are the risk and cost of investigating geothermal energy potential and the stranded assets that would be left behind if they moved operations to a region with available geothermal resources. The cost of using fossil fuels is already driving growers to look to alternative energy sources, and frequent tinkering with industrial allocation settings only creates market uncertainty.

A steady phase-down of industrial allocation as currently prescribed in the Climate Change Response Act (CCRA) 2002 will incentivise fuel switching. However, sudden recalculations of industrial allocation are unhelpful because they are difficult to plan or budget for, and changes to the CCRA to remedy this problem would be welcome. Investment in decarbonisation requires cost-benefit analysis against known costs. The financial value of the free industrial allocation received by growers is far less than the investment required to switch fuels. As such, industrial allocation is not a barrier; rather, it buys the industry time until alternative energy sources are economically viable.

HortNZ strongly supports decarbonisation, including through geothermal energy use where that is the best option, but this will only be possible with the right settings that de-risk the transition to geothermal.

2.2. Other actions

Consenting conditions could become a major barrier to the use of geothermal energy, since councils may not currently have policy frameworks in place to support geothermal use. The Government should develop policy guidelines or planning standards for local authorities to aid with consenting.

HortNZ seeks that when a sector strategy implementation group is established, the horticulture industry should be represented in its membership.

Additional actions should include:

- Providing financial incentives including grants, tax rebates, low interest loans and government guarantees to assist capital investment in geothermal technology.
- Developing geospatial information about geothermal suitability and ground source heat pump suitability more specifically and make it publicly available.[14]

Q. 4	Is the **role for the sector** clear?

The parts of this strategy that will be delivered by industry and the parts that are Government responsibility could be more specific.

Q. 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?

HortNZ supports the role of tāngata whenua in geothermal development. There is potential for Māori investment and partnership in geothermal energy for greenhouse vegetable production, especially given the trend of increasing Māori participation in horticulture.[15] The Gourmet Mōkai glasshouse, located in the Tūaropaki geothermal ecosystem, is an example of the potential for Māori development of geothermal energy to support horticultural production, as described in the discussion document (p. 10).

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

We support the recognition of the potential for geothermal to provide low-emissions heat, electricity and captured CO_2 to greenhouses, including the case studies in the strategy about the web-based tool to help greenhouse growers assess and adopt low-temperature geothermal heating and the Geothermal Food Systems project.

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

The strategy and Government funding should include support for opportunities for low-heat, as well as high-heat, geothermal. Low-heat technologies will be suitable in many more locations, even in areas not typically thought of as geothermal areas. Low-heat applications of geothermal heating can reduce reliance on imported fossil fuels,

[14] Glassey, Phil. (2023) "Planning for Group Source Heat Pumps".
[15] Berl, HortNZ. (2025). *Māori in horticulture*.

improving New Zealand's energy resilience. Government funding toward geothermal use should not be overly restricted to particular technologies, or else it could hinder innovation.

3. Case studies

Case Study: Gourmet Mokai

New Zealand Gourmet uses geothermal heat exchange for greenhouse heating at their Gourmet Mokai site, which is northwest of Taupō in the Waikato region.[16] Gourmet Mokai provides a case study for possible future use of geothermal resources.

Gourmet Mokai employs 100 staff, growing 4,275 tonnes of tomatoes and 900 tonnes of capsicums per annum for domestic and export markets.[17]

Gourmet Mokai uses high-temperature geothermal with two heat exchangers. The system works by running a pipe from the valve on a well from the geothermal reservoir. Geothermal water comes from the well at 50 bar and 250°C and is fed through a heat exchanger where the water from the greenhouse heating system is heated up to 90°C.

The geothermal water is then discharged back into the reservoir, at a cooler temperature. Gourmet Mokai takes the water out of the reservoir at approximately 250°C and returns it at 90°C.

The heating pipes, full of hot water, run along the floor of the glasshouse. The heat from the pipes is then radiated to the air, heating the whole glasshouse and keeping the plants warm. Different systems could be used on other greenhouse sites.

Abundant energy has allowed this glasshouse site to produce consistent high volumes of high-quality product for export, as well as for the New Zealand market.

Case Study: Ground Source Heat for a Greenhouse

The Energy Efficiency and Conservation Authority (EECA) is running a Regional Energy Transition Accelerator (RETA) programme to develop decarbonisation roadmaps for each region.[18] Their Bay of Plenty (BOP) workstream has modelled the use of ground source heat pumps for a 3.2 ha Whakatane greenhouse.[19]

The modelling showed that drawing 15°C groundwater, the heat pump could heat water to 65°C to heat the greenhouse. With 30°C groundwater temperature, the capital cost to install the technology would decrease 40% as less equipment would be required. With 30°C groundwater, annual energy costs would be 44% less, which

[16] New Zealand Gourmet. "Gourmet Mokai Ltd".
[17] New Zealand Geothermal Association. "Action Plan 2024-2025: Geoheat Strategy for Aotearoa NZ".
[18] Carey, et al. Regional energy transition accelerator – Bay of Plenty – Geothermal Energy Assessment. GNS Science. 2024.
[19] New Zealand Geothermal Association. "Action Plan 2024-2025: Geoheat Strategy for Aotearoa NZ".

shows the potential cost savings of establishing over existing low temperature geothermal systems.

Ground source heat pumps are more efficient than air source heat pumps, especially when accessing geothermally enhanced groundwater. The EECA RETA BOP report noted, "The low temperature geothermal resource in and around Tauranga represents an opportunity that has not been fully realised…energy efficiency opportunities could further attract economic investment to the region, especially for sectors such as the covered crop growers."[20]

4. New Zealand's national energy strategy

Geothermal is one of a suite of possible energy sources that will meet Zealand's growing energy demand. The national strategy for geothermal should sit within a national, enduring energy strategy. While MBIE was progressing work on a National Energy Strategy as recently as 2024, it is not yet publicly available. HortNZ's vision is that the national strategy will consider how much energy New Zealand will need into the future, which energy resources we already have, the resilience of those resources, and a plan to meet projected demand if not already covered by existing resources.

[20] Carey, et al. Regional energy transition accelerator – Bay of Plenty – Geothermal Energy Assessment. GNS Science. 2024. (p. 50)