NEW ZEALAND'S REGULATORY AND PLANNING FRAMEWORK FOR GEOTHERMAL RESOURCE USE

D. Kissick[1], S. Bendall[1]
M. Climo[2]

[1] TRAVERSE ENVIRONMENTAL,
PO BOX 245, TAUPO 3351
NEW ZEALAND

[2] BRIDGER CONSULTING,
PO BOX 36-118, CHRISTCHURCH 8146
NEW ZEALAND

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New Zealand can design an optimised framework for the use and development of supercritical geothermal resources to ensure the resource is managed in a sustainable and nationally consistent way, while enabling a potentially game-changing contribution to New Zealand's clean energy future.

AOTEAROA'S NEXT GENERATION OF RENEWABLE EARTH ENERGY

Supercritical geothermal resources (4 to 10 km depth, >400°C) offer significant reserves of sustainable, indigenous energy aligned with New Zealand's goal for being "carbon zero" by 2050, but there are many scientific, technical and societal challenges to resolve. The research undertaken through the Geothermal: The Next Generation programme will find and characterise New Zealand's supercritical geothermal resources in support of future exploration, drilling, development and deployment.

As part of this programme, a review of the regulatory and planning framework for geothermal resources was undertaken to provide a strong basis to inform an optimal planning framework to enable supercritical geothermal development, while achieving sustainable resource management requirements.

CONSENTING FOR GEOTHERMAL PROJECTS

Consenting and permitting of geothermal projects requires the navigation of a complex framework of interconnected national, regional and district policy statements, plans and other legislation (***Figure 1***).

In New Zealand, geothermal resources are treated as water resources, and their use is predominantly governed by broad environmental resource management legislation.

The Resource Management Act 1991 (RMA) is the overarching legislation for the management of effects on the environment, with the concepts of sustainable management, integrated management of resources and public participation at its core. The purpose of the RMA is to promote the sustainable management of natural and physical resources.

The RMA requires that no one may take, use, dam or divert water (including geothermal water), heat or energy from the material surrounding geothermal water, unless expressly allowed by a national environmental standard, a rule in a regional plan or a resource consent. An exception to this is provision for use in accordance with tikanga Māori for the communal benefit of the tangata whenua of the area, where there are no adverse effects on the environment.

STATUTORY FRAMEWORK

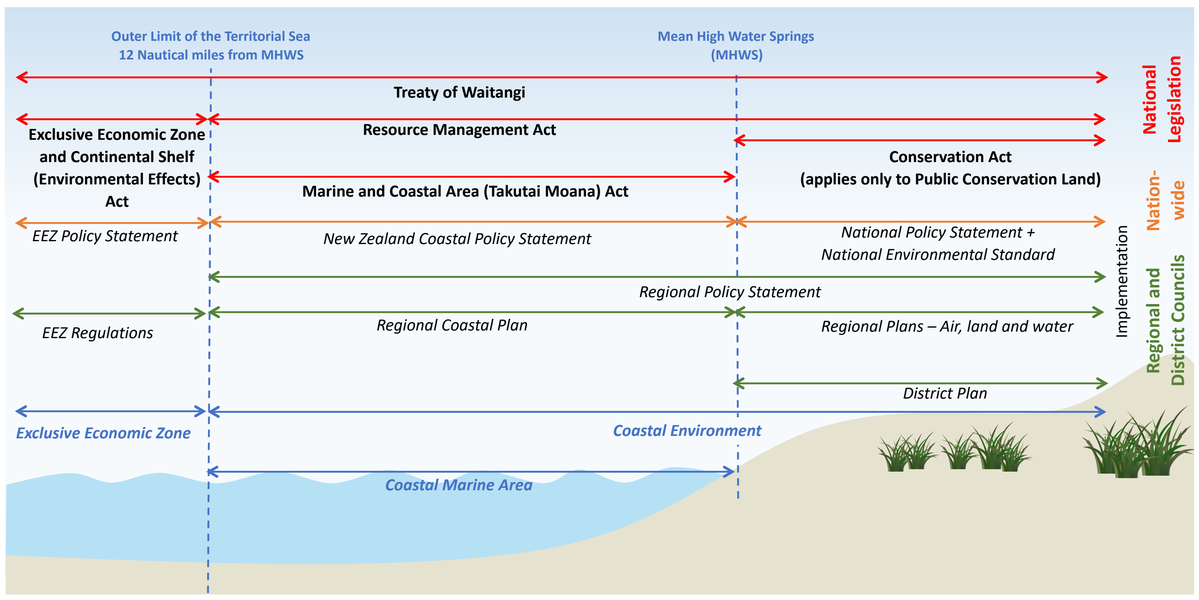

Figure 1. *New Zealand's Environmental Statutory Framework (Source: Traverse Environmental Ltd)*

ENVIRONMENTAL LEGISLATION

In addition to the RMA, environmental legislation of relevance when considering the use and development of geothermal resources includes:

- **Conservation Act** (1987) – applies to land within the Public Conservation Estate managed by the Department of Conservation
- **Marine and Coastal Area (Takutai Moana) Act** (2011) – applies to the area between mean high water spring (MHWS) and the outer limit of the territorial sea (12 Nautical Miles from MHWS)
- **Exclusive Economic Zone and Continental Shelf (Environment Effects) Act** (2012) – applies to the sea, seabed and subsoil 12 to 200 Nautical Miles from MHWS

CLIMATE, ENERGY & MINERAL LEGISLATION

Legislation related to climate, energy and minerals are also potentially relevant to the use of geothermal resources including:

- **Energy Efficiency and Conservation Act** (2000) – promotes energy efficiency, energy conservation and the use of renewable energy sources
- **Climate Change Response Act** (2002) – the legal framework to enable NZ to meet its international obligations under the UN Convention and the Kyoto Protocol and the Emissions Trading Scheme.
- **Crown Minerals Act** (1991) – promotes the prospecting and exploration for, and mining of Crown-owned minerals for the benefit of NZ

RMA DOCUMENT HIERARCHY

The RMA is enacted through a series of related and interconnected national, regional and district-level policy statements, plans, and standards (***Figure 2***).

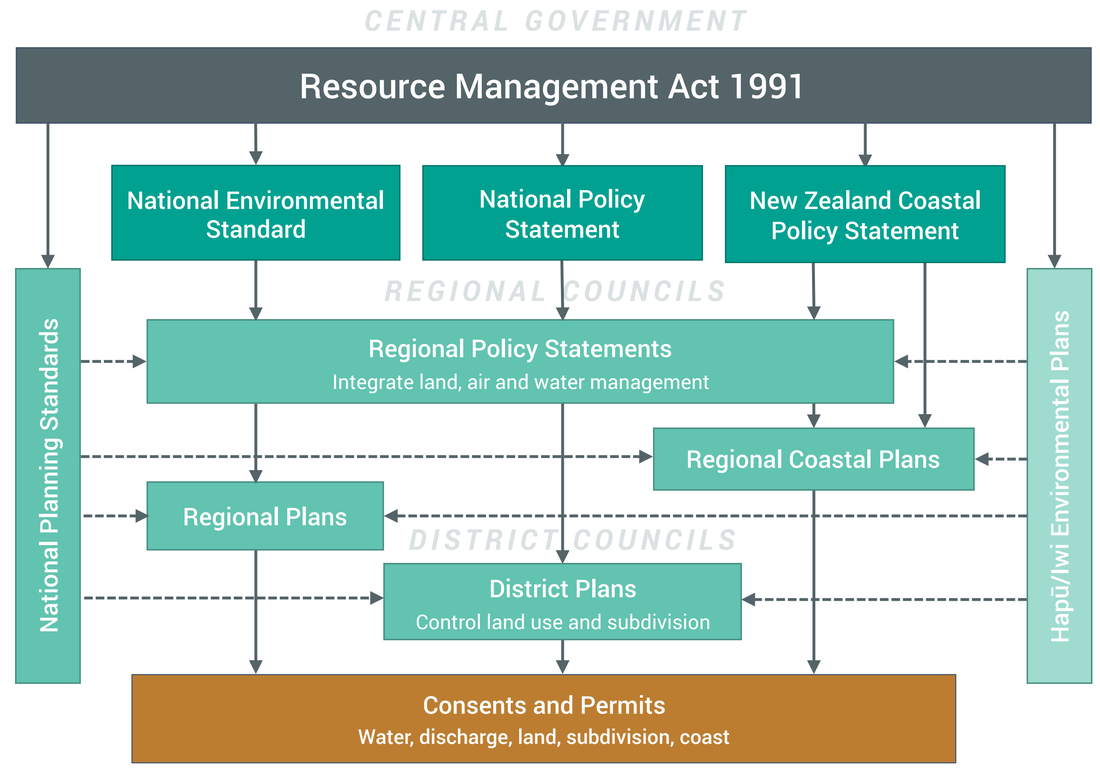

Figure 2. *Resource Management Document Hierarchy (Source: Traverse Environmental Ltd)*

NEXT STEPS

This work will inform analysis on the suitability of New Zealand's existing planning framework for managing the potential future use of supercritical geothermal resources.

The use of hotter, deeper supercritical needs an optimal planning framework to enable this development, while achieving sustainable resource management requirements.