# Māori participation in New Zealand geothermal energy development

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# Tangata Whenua - Māori

Members of Te Kapa Haka o Te Whanau-a- Apanui. Credit: Martin Hunter / Getty

# Kaitiakitanga - Guardianship

***Māori are tangata whenua. Not people in the land or over the land, but people of it.*** *(Jackson, 1993:71)*

Ngātoroirangi Rock Carving, Mine Bay, Lake Taupo. Credit: Flickr by Abaconda Management Group/ CC BY-SA 2.0

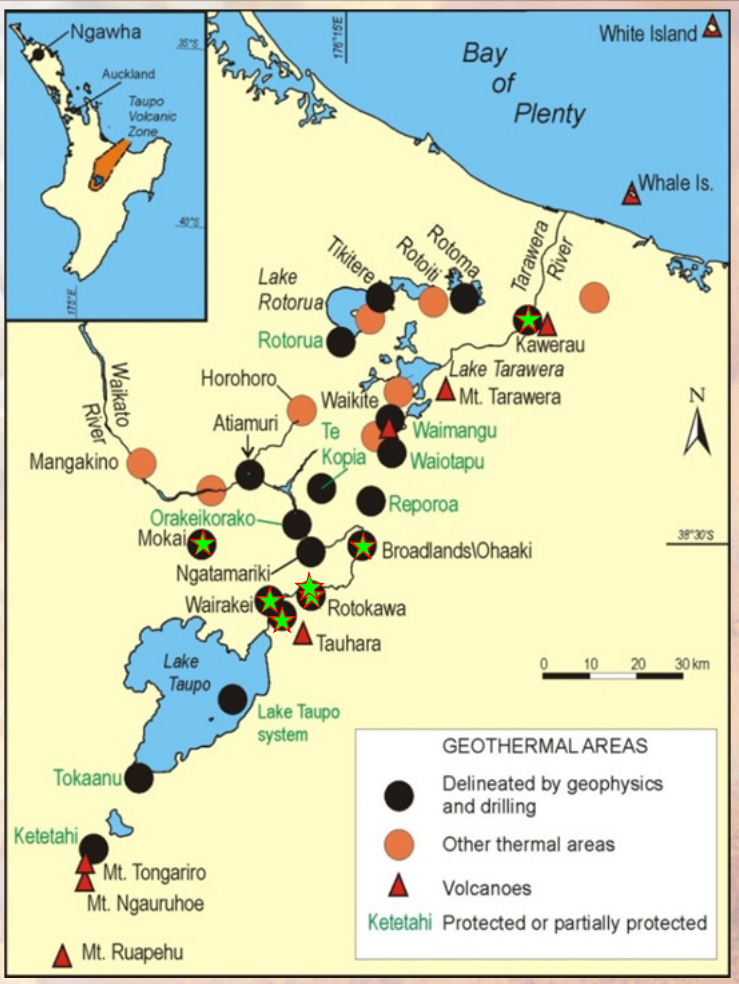
# Access

Waikato River Credit: Art Grumble

# Use

- Geothermal Classification System
  - Development
  - Limited
  - Protected
- Balances the differing ways in which communities value geothermal resources


Circa 1960's



# Success

**Successful developments demand;**

- **Strong relationships between landowners and developers**
- **A win-win proposition for sustainability**
- **Commercial benefits all stakeholders**
- **Understanding the other parties key drivers (and limits)**
- **Community support**
- **Genuine engagement**

# Success

- National interest energy security, strong economy, environment, cultural identity, health and well-being of population
- National interest = Government involvement
- Government involvement and support of geothermal industry eg. Funding for exploratory drilling to de-risk projects for developers, research, etc.
- Critical success factor and enabler for recent geothermal development in NZ

# Levels of engagement

- Consideration
- Consultation
- Passive Participation - Beneficiary
- Active Participation – Partner or Sole developer

# Active Participation: Tauhara North Number 2 Trust

- Ngāti Tahu – Ngāti Whaoa
- 326ha
- 827 owners
- Mighty River Power (MRP) development partner
- Total installed capacity 256.5MW

# Power Station

**Nga Awa Purua**

- 140 MW
- Commissioned 2010
- 21 months from initial earthworks to feeding the electricity grid
- Cost NZ$430M
- Sumitomo EPC contract
- Largest single shaft , triple flash, geothermal turbine in the world (Fuji Electric)
- 45,000t/day fluid, ~75% reinjection
- TN2T equity partner in the power station (35%) through active investment
- ~3% of NZ's total electricity needs, ~140,000 homes

# Steam Supply

**Rotokawa**

- 34.5 MW, binary plant (Ormat), commissioned 1997, 210 GWh, ~23,000 households
- Powerstation owned and operated by MRP
- Fluid supplied by Rotokawa Joint Venture (50:50 TN2T and MRP

**Ngatamariki**

- 82 MW, worlds largest binary plant (Ormat), commissioned 2013, 700GWh ~80,000 households
- Cost NZ$466M
- Powerstation owned and operated by MRP
- Fluid supplied by Rotokawa Joint Venture

# Benefits

- **Annual dividend return on substantial investment**
- **From 2007 to 2014 the Trust distributed $4.1M –**

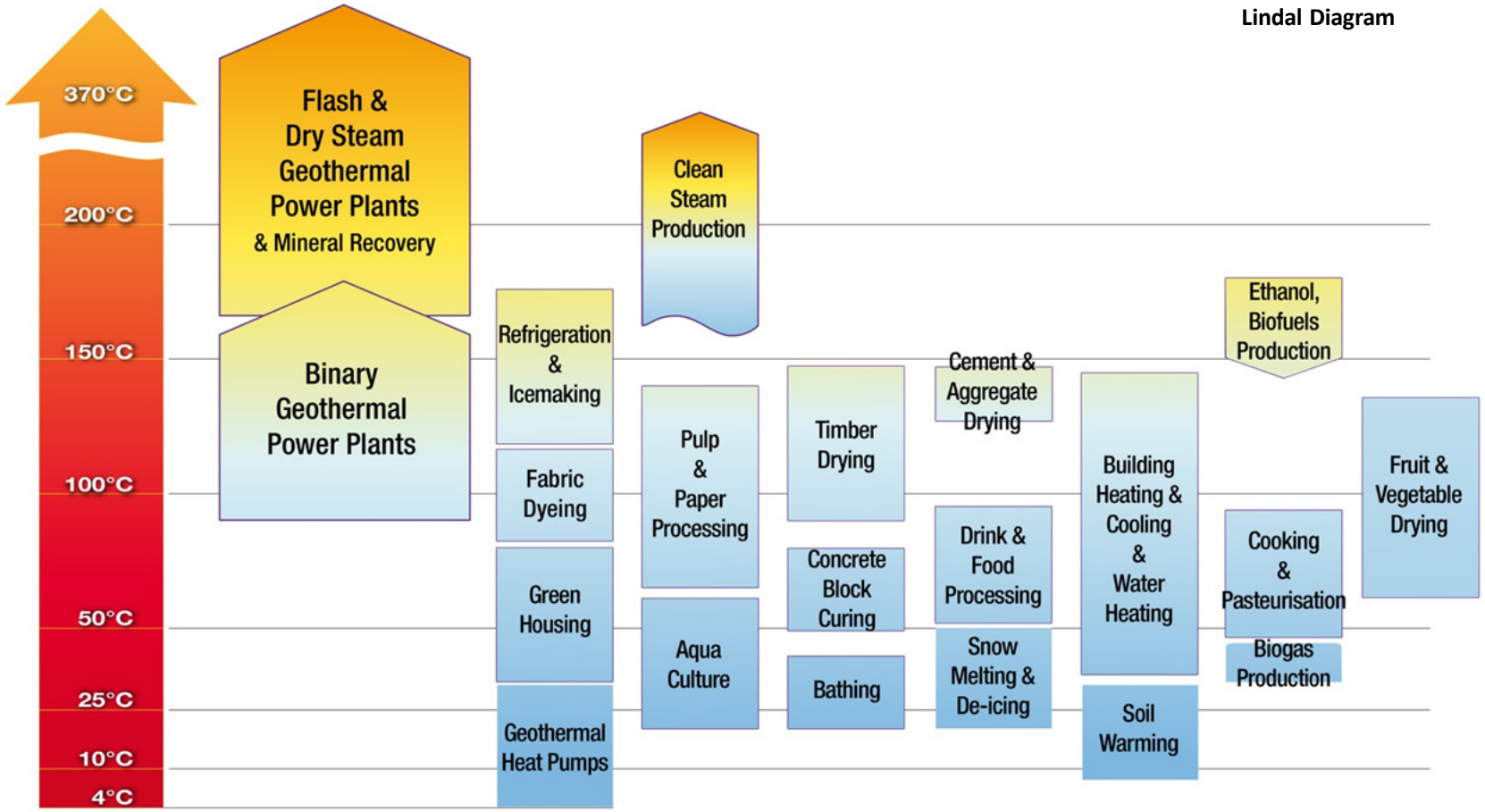
  **$2.9M Health and $1.2M Education**
- **Grants: Education, Health, Funeral, Marae, Sports and Cultural**

***Ka ora te iwi, ka ora te tangata***

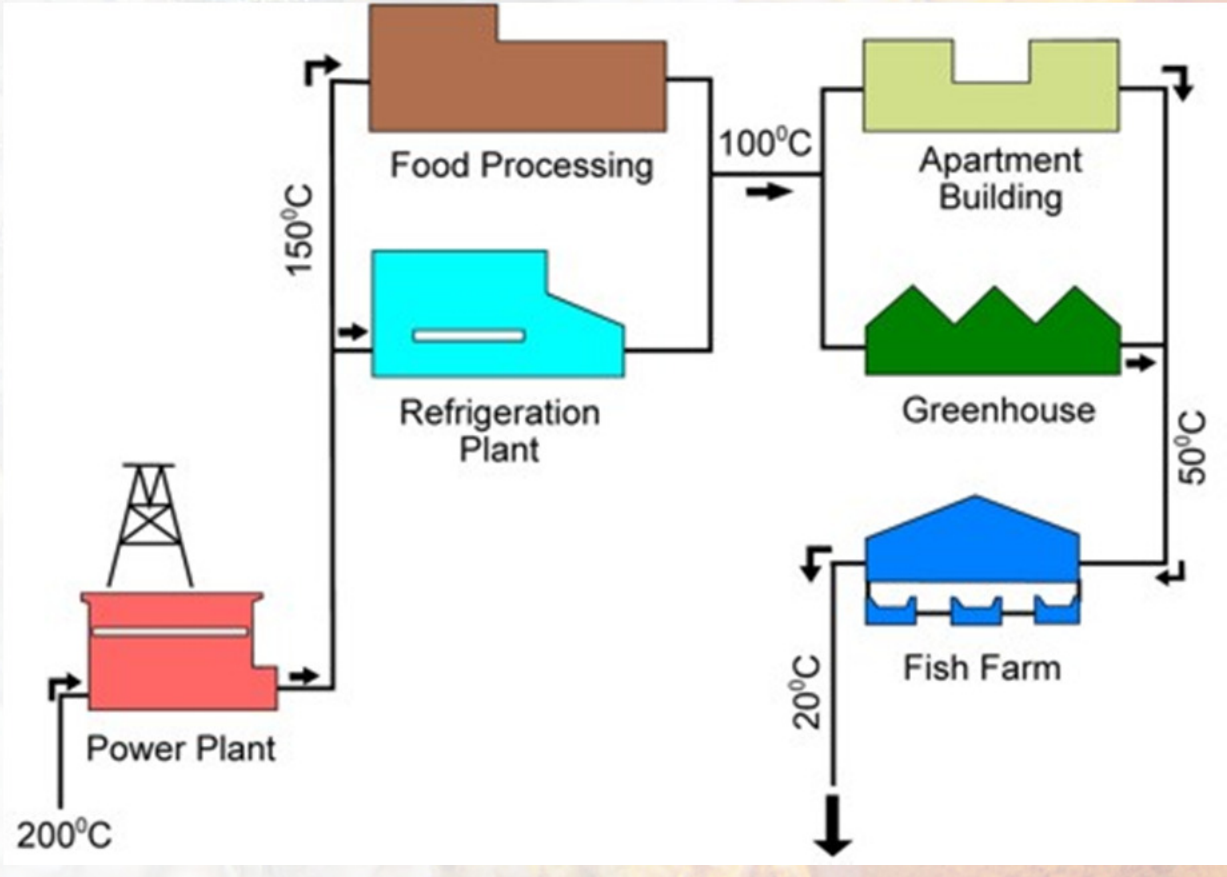
*Well-being for the tribe, well-being for the people*




# Direct Use

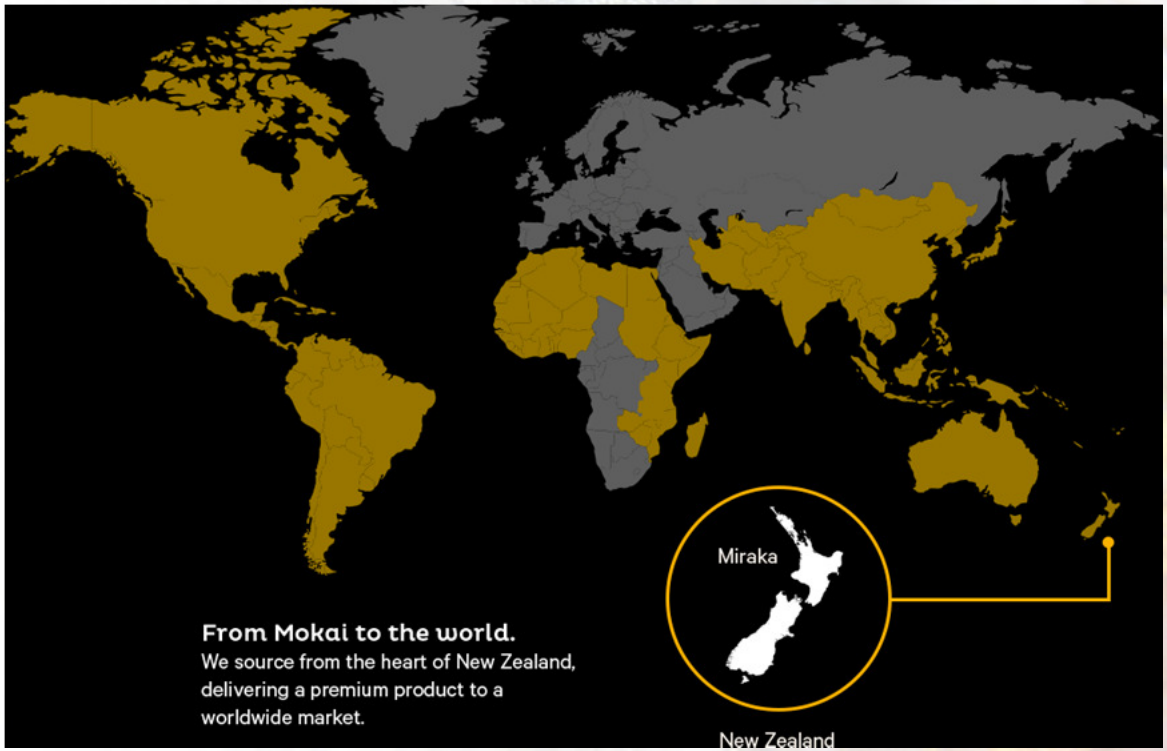

Lindal Diagram
370°C
200°C
150°C
100°C
50°C
25°C
10°C
4°C
Flash & Dry Steam Geothermal Power Plants & Mineral Recovery
Binary Geothermal Power Plants
Refrigeration & Icemaking
Fabric Dyeing
Green Housing
Geothermal Heat Pumps
Clean Steam Production
Pulp & Paper Processing
Aqua Culture
Timber Drying
Concrete Block Curing
Bathing
Cement & Aggregate Drying
Drink & Food Processing
Snow Melting & De-icing
Building Heating & Cooling & Water Heating
Soil Warming
Ethanol, Biofuels Production
Cooking & Pasteurisation
Biogas Production
Fruit & Vegetable Drying

# Cascade Use


Food Processing
150°C
100°C
Apartment Building
Refrigeration Plant
Greenhouse
50°C
Power Plant
200°C
20°C
Fish Farm

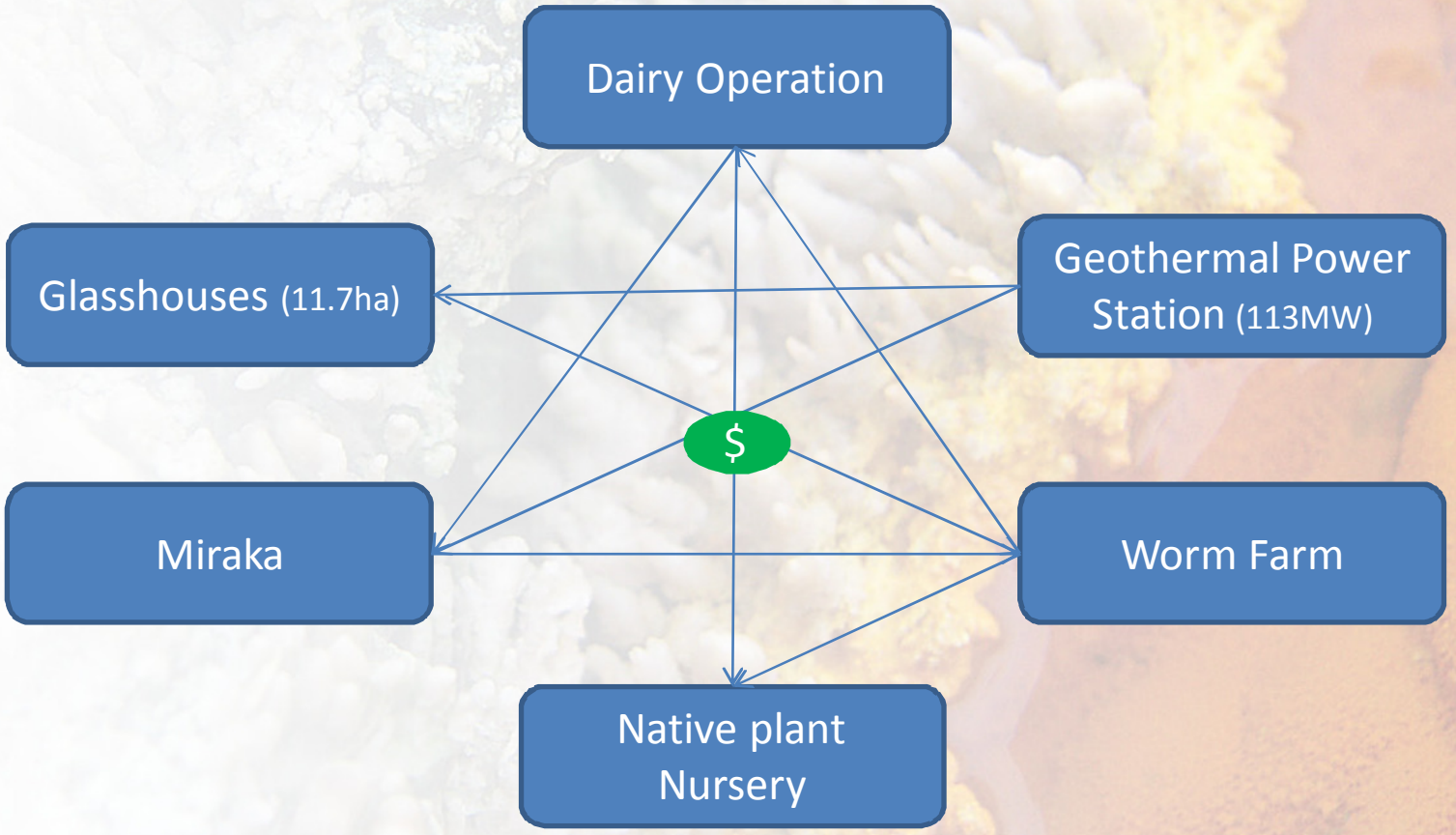
# Direct Use Options


# Active Participation: Miraka




# Integrated Use - Tuaropaki

*"We will act as a beacon of hope and prosperity for our people"*



# Integration

# Questions?