



Guidelines for Development in Geothermal Areas

Draft Outline and Process for
Developing the Guidelines

September 2023



Introduction

This document provides a draft outline of content for guidelines Rotorua Lakes Council is currently preparing for development in geothermal areas. An outline of the process used to develop the guidelines is also provided.

Draft Purpose

The draft purpose of the guidelines is primarily to assist those wishing to undertake developments (principally building works) in geothermal areas to comply with the Building Act, regional and district plans and geothermal bylaw requirements relating to the management of geothermal risks, but ultimately to design their developments in a way that:

- ✓ keeps people safe, healthy and comfortable
- ✓ doesn't exacerbate the geothermal risks to neighbours
- ✓ doesn't damage the geothermal system
- ✓ is appropriately durable to geothermal environments

It is also hoped that the implementation of these guidelines will:

- Enhance awareness amongst those undertaking developments, right from the beginning, about the types of geothermal hazards and risks relevant to development.
- Provide greater certainty for those undertaking developments about how to comply with the various types of building regulation applying to manage geothermal risks
- Help to share learnings and best practice for managing geothermal risks
- Result in additional data that will assist to refine management approaches to geothermal risks.

In & Out of Scope

The following sets out what is presently considered 'in' and 'out' of scope of the guidelines, as well as those topics that we are 'unsure'. We will continue to refine this throughout the project.

In scope

- Providing clear pathways for compliance (as much as possible) with respect to management geothermal risks under building act, bylaw & RMA plans and their potential replacements.
- Providing guidance on management for heat for healthy living environment
- Development in all geothermal systems in district (not just the Rotorua Geothermal System).
- Development that may need to consider geothermal risks even if not considered to be located in geothermal systems e.g. for durability or because geothermal system may not be accurate for hazard purposes.
- Enhancing awareness of types of geothermal hazards.
- Explaining the regulatory framework.
- Documenting existing practice as a starting point.
- Potential commissioning of expert advice to improve practice.
- Inclusion of info about how development design can also assist to protect values of geothermal system where possible (although not focus) e.g. through setbacks from surface features, maintenance of geothermal vegetation.

- Mitigation of hazards associated with geothermal infrastructure with respect to surrounding landuse.

Out of scope:

- Take and use of the geothermal resource e.g. for heating.
- Management of geothermal infrastructure itself e.g. monitoring, maintenance and methods for capping of wells.
- Reviewing geothermal bylaw.
- District Plan Change.

Unsure

- Systems and processes for collecting data from site investigations (there is recognition that this would be very valuable but may need to be considered as a separate project).
- Hau kainga perspectives on hazard identification and mitigation. This is identified as important, recognising that the areas with the greatest potential for risks include the traditional Māori villages. However, it is likely to need to be progressed as a second stage to allow sufficient time for engagement while also meeting the project timeframes of providing guidance in time for when PC9 is operative. It was noted that regional plan and systems management plan are already putting significant pressure for engagement are already significant engagement demands.
- Health and Safety for Site Investigation

Draft Outline of Content

The anticipated content of the guidelines is as follows:

1. Introduction

- Purpose of guidelines
- When to use this guideline (what types of development, where)
- How to use these guidelines
- Limitations

2. Contextual information

- Types of Geothermal Hazards and Risks to Development
 - Geothermal Eruptions
 - Surface Features
 - Geothermal gases
 - Hot Ground
 - Unstable (Corrosive) Ground
 - Bores and geothermal infrastructure
- Regulatory Framework for Managing Geothermal Risks to Development
 - Building Act & Building Code
 - District Plan
 - Regional Plan
 - RMA Reform
 - Rotorua Geothermal Bylaw
 - Engineering Standards

(This contextual information will go broader than the scope of the guidelines to point readers to where to go for information relating to e.g. capping of wells, abandoned wells).

3. Hazard Identification

- a. Introduction - how the approach identified here links to regulatory requirements to identify hazards
- b. Step-by-Step process (flowchart for identifying level of investigation required and methods of investigation depending on the type of development, past investigation undertaken and potential hazard potential factors, using the following hazard-info sources)
 - i. Use of existing information
 1. Property file information
 2. GNS and other hazard reports
 3. Geyserview – bore, geothermal feature data
 4. Historical photos
 5. Walkover - Signs of weathering on structures, bores, geothermal features, vegetation
 6. Prevailing wind and influence on corrosion
 7. Well drillers (?)
 - ii. Site investigation
 1. Gas and temperature reading/monitoring methods
 2. Soil logging signatures
- c. Expertise Required – what constitutes a suitably qualified and experienced person
- d. Peer Review
- e. Risks (Health and Safety) associated with site testing (?)
- f. Lodging of data gathered (?)
- g. Verification during ground improvements
- h. Matauranga Maori approaches (potentially integrate into above discussion)
- i. Appendix - Templates for hazard identification reports needed for NH-R8 and Building consent applications

4. Risk Mitigation

For each type of mitigation explain when may need to consider (link to hazard identification), options and where to find further information. Drafting to be 'performance based' like building code.

- a. Site layout
 - i. Bore setbacks and bore access
 - ii. Setbacks from surface features
 - iii. Impervious surfaces and surface treatment
 - iv. Avoidance of confined outdoor spaces
- b. Building design for management of gas (membrances, ventilation, venting, utility entrances and other penetrations, additions)
- c. Building design for durability
- d. Building design for heat
- e. Stormwater management

- f. Monitoring
- g. Traditional kainga practices (and their relevance today) – potentially integrate into above (?)
- h. Case Studies?

Process

The planned process for developing the guidance and indicative timeframes are as follows:

- 1. Commission Legal Opinion (April – May 2023)** (complete)
- 2. Scoping Workshop (August 2023)** (complete)
 - Attendees:
 - Council planning representatives
 - Council land development engineering representatives
 - Council Building Team Manager and geotech technical reviewer
 - Independent Planner
 - Local geo-professionals
 - Bay of Plenty Regional Council representatives
- 3. Document Existing Practice**
 - Use interviews to document existing practice in relation to:
 - a. Stream A – Hazard identification (September)
 - b. Stream B – Mitigation (October)
 - c. Stream C – Hau Kainga / Mātauranga Māori hazard identification and mitigation (begin October) - likely to be initial engagement only
- 4. Workshop to discuss Existing Practice and Improvements – Hazard Identification** (early October)
 - Same attendees as above
- 5. Workshop to discuss Existing Practice and Improvements – Hazard mitigation** (late October)
 - Attendees to be confirmed
- 6. Potentially commission additional research** (November-December)
- 7. Write up draft practice note for consultation** (November-December)
- 8. First Review** (January – Mid February)
 - Internal Council review (building incl technical reviewer, policy planning, resource consents, compliance, Council exec team)
 - BOPRC
 - External advisor with experience lodging building consent.
 - Person with knowledge traditional Māori village practice

9. Legal review (January – Mid February 2024)

10. Wider review

Provide practice note to other stakeholders to review e.g. other architectural firms/draftspersons

11. Sign off by Building Manager, Planning and Development Manager (Mid-March 2024)