

# Keeping your geothermal well fit for purpose and safe

### Using the geothermal resource

There are several geothermal systems in the Bay of Plenty Region, including the Rotorua geothermal system which is shallow, hot and pressurised. In Rotorua this resource is used for bathing, domestic and commercial space heating, wellness services and traditional cultural practices.

Some of these uses require geothermal wells to extract the geothermal fluid and/or heat. There are about 140 resource consents for using geothermal energy in Rotorua (and about 300 operating wells). There are also many abandoned or decommissioned wells.

### Can anyone use geothermal energy?

Under the Resource Management Act 1991 resource consents are required from Bay of Plenty Regional Council (BOPRC) to build a geothermal well.

A resource consent is also needed for the taking of geothermal fluid and/or heat from a geothermal well, and for the discharge of that fluid by reinjection, or to land or water.

Uses in accordance with tikanga Maori for the benefit of tangata whenua of an area, and where there is no adverse effect (eg. steam boxes), do not need a resource consent from BOPRC.

### Are there risks in using geothermal wells?

There are three types of geothermal wells that are used in Rotorua, including production and injection wells, and down-hole heat

exchangers. Any geothermal well can create health and safety risks.

Risks include uncontrolled discharge of hot water and steam, poisonous gases such as H<sub>2</sub>S (hydrogen sulphide) and well blowouts. These can damage property and can cause serious injury or death.

Uncontrolled or inefficient use can also have adverse effects on the sustainability of the geothermal system and surface features.

### How do I manage these risks?

Building geothermal wells to best practice standards and keeping them in good condition keeps people safe.

Correctly constructed wellheads are also needed to monitor the use of geothermal fluid and downhole temperatures and pressures. We need this data to help us understand the system, to use it wisely and to protect special features like Pohutu Geyser.

### What things do I need to consider when building and maintaining my well?

Several regulations require well owners and drillers to follow best practice standards when building and maintaining geothermal wells:

- The Geothermal Regulations 1961 (administered by WorkSafe NZ)
- Rotorua Lakes Council (RLC) Geothermal Bylaw 2016
- BOPRC resource consents under the Resource Management Act 1991

The Health and Safety at Work Act 2015 manages risks in the workplace (eg. while working on geothermal wells, or commercial premises with a well).

### So what are the best practice standards?

As the well owner, you are responsible for ensuring your well is built and maintained to best practice standards and for keeping records of any maintenance.

Best practice for shallow geothermal wells (generally <150m) is outlined in WorkSafe NZ's Geothermal Health and Safety Guidelines for Shallow Geothermal Wells (see [www.worksafe.govt.nz](http://www.worksafe.govt.nz))

Best practice for deep wells is outlined in the Code of Practice for Deep Geothermal Wells 2014.

### What are the key elements of a safe well?

The guideline covers things like:

- A properly designed wrought cross tee
- Fit for purpose maintained steel master valves
- No gas or fluid leaks or excessive corrosion
- A pressure gauge (for pressurised wells)
- Visible casing and crack free grout
- Clear labelling of the well number
- Fencing (eg. keep people safe from hot pipes)
- Access for quenching
- Casing in good condition

## How do I know if my well is safe?

If you think your well may not be safe or up to best practice standards you should get it checked by a suitably qualified person (ie. an audit). They will check your wellhead and equipment to see if it has been safely built to best practice as in the guidelines above. Over 2015-18 BOPRC audited all consented geothermal wells in Rotorua. If your well was not audited at this time, contact BOPRC or RLC for advice about whether an audit is needed and how we can help.



*Example of a well-designed well head*

## What will a well check or audit cost me?

If this is your first audit for an existing well, it will be free and covered by BOPRC and RLC. You should contact us to arrange this. However as the well owner you will have to pay for any materials or work required on your well.

You should then get the condition of your well checked regularly by a suitable qualified person as part of your ongoing maintenance programme. This will be at your own cost.

## What happens if my well is not up to standard?

Following the audit, you will get a copy of the report, which will explain any issues with the well. If the issues are severe, and/or life threatening, the councils will require you to fix them immediately. If the issues are less severe, you will be given a reasonable timeframe to address the issues as part of your regular maintenance schedule.

Your well will need to meet best practice when you come to renew your consent (ie. when your current resource consent expires).

## Who can I go to for help to make my well safe?

Only suitably qualified, experienced people should work on geothermal wellheads. They should be able to document their experience, have a high work standard, hold relevant qualifications and be committed to operate to best practice standards. Contact staff at the BOPRC, RLC or WorkSafe NZ for advice if you are unsure.

## What happens if I don't do the repairs required to make my well safe?

You will be given a reasonable timeframe to carry out any repairs. But we need to keep people and property safe, so if you don't make repairs within the timeframes, the councils will send you a warning. If you still don't make your well safe, enforcement action might need to be taken.

Keeping your wells fit for purpose and keeping people safe is a priority and we can provide advice to you if you need it.

## Closing down or abandoning a well

There is a correct way to safely abandon geothermal wells when they are no longer in use. This requires a suitably qualified expert and is outlined in the Health and Safety Guidelines for Shallow Geothermal Wells.

### For more information:



#### Bay of Plenty Regional Council

**Phone:** 0800 884 880

**Pollution Hotline:** 0800 884 883

**Email:** [info@boprc.govt.nz](mailto:info@boprc.govt.nz)

**Website:** [www.boprc.govt.nz](http://www.boprc.govt.nz)



#### Rotorua Lakes Council

**Phone:** 073484199

**Website:** [www.rotorualakescouncil.nz](http://www.rotorualakescouncil.nz)



#### WorkSafe NZ

**Phone:** 0800 030040

**Website:** [www.worksafe.govt.nz](http://www.worksafe.govt.nz)