Managing a Private Water Supply Well

WAIMAKARIRI DISTRICT COUNCIL

waimakariri.govt.nz

This brochure provides information for private water supply well owners in the Waimakariri District, to help ensure the water supplied to their home is safe to drink.

Managing the water supply for yourself, your family and others is a significant responsibility and it is important that you consider this information.

Contents

Domestic self-supply or drinking-water supplier?

The Water Services Act (2021) lays out the duties of those who own or operate a drinking-water supply.

In the August 2025 amendments to the Water Services Act (2021), household supplies (also called shared domestic supplies or domestic self-supplies) that provide water to 25 people or fewer are no longer considered drinking-water suppliers and do not need to register with the Water Services Authority—Taumata Arowai. A domestic self-supplier is not a drinking-water supplier and does not have any legal duties under the Water Services Act (2021).

Other types of non-domestic supplies that serve 25 or fewer people still need be registered by November 2028 to ensure public health is appropriately safeguarded. This includes unregistered supplies:

- that provide drinking water to buildings used by the community or public (e.g. marae and community halls)
- managed by businesses that supply drinking water as part of their operations.

If the drinking-water supply situation is not covered under the 'domestic self-supply' definition, it is recommended that the property owner or organisation responsible for providing drinking-water confirm with the Water Services Authority—Taumata Arowai whether they meet the Water Services Act (2021) definition of a 'drinking-water supplier'.

Drinking-water suppliers have compliance obligations under the Water Services Act (2021) including ensuring the drinking-water supplied is compliant with the Drinking Water Standards for New Zealand and meets the legal definition of 'safe'. Other obligations include the duties to register the supply and prepare, and put into practice, a drinking-water safety plan and a source water risk management plan. Drinking-water suppliers have until November 2028 to register any unregistered supplies and until November 2030 to meet the full legal responsibilities for these supplies (the fundamental responsibility to supply safe drinking water already applies).

Any drinking water supplier with new supplies set up since the Water Services Authority—Taumata Arowai was established on 15 November 2021 must be registered and meet all relevant legal responsibilities from the time they are established.

Drinking-water suppliers who are responsible for drinking-water supplies providing drinking-water to less than 500 people, or for farm use, are eligible to adopt an 'Acceptable Solution' as the means of meeting many of the requirements of the Water Services Act (2021). Acceptable Solutions are not applicable for domestic self-suppliers, however could be useful for guidance, or if intending to become a drinking-water supplier.

The Water Services Authority—Taumata Arowai website provides further details regarding the 'Acceptable Solutions' available for different drinking-water supply arrangements including mixed-use rural, small to medium networks, and self-supplied buildings.

Further information regarding duties of drinking-water suppliers under the Water Services Act (2021) and the 'Acceptable Solutions' can be obtained from the Water Services Authority—Taumata Arowai website: **taumataarowai.govt.nz**

Managing an existing private well

Microbiological contaminants

Microbiological contaminants are microscopic bugs – bacteria, protozoa, viruses or other organisms – that can lead to illness. There are a wide variety of these organisms that can affect drinking-water, but we can't test for all of them.

Instead, we usually test for one bacteria, *E. coli*, which is a good indicator that water has been contaminated with faecal material. If *E. coli* is present in the water, there is a good chance that other harmful organisms are also present, and the water should not be considered safe to drink.

Total coliforms is another indicator organism. While in itself it does not present a safety risk, it is a sign of living organisms in the water and indicates that the supply may not be secure from microbiological contamination.

Microbiological contaminants can come from waste disposal, septic systems, or grazing animals.

Regular testing of your water for *E. coli* is a good way to help understand the risks of microbiological contamination. However, even wells that have had no *E. coli* in the past, can become contaminated at any time as conditions underground or on the surface change, for example after a rainfall event or a flood, or a change in land use in the surrounding area.

Water quality monitoring and management

While all the steps included within this brochure are provided to minimise the risk of contaminants entering your water supply, this risk can never be eliminated entirely.

It is therefore important that you monitor your water quality to ensure that it is free of contaminants, and you consider the need for treatment to further reduce this risk.

The most common chemical contaminants in Canterbury groundwater are:

- **Nitrate:** high nitrate concentrations in groundwater are generally caused by farming activities or wastewater disposal.
- **Arsenic:** Arsenic occurs naturally in parts of Canterbury. It can also come from old sheep dips, pesticides, or industry.
- **Iron and manganese:** These metals naturally occur in groundwater. They can cause nuisance staining of sinks and laundry, and at higher concentrations, manganese can pose a health threat.
- **Cadmium, lead, and other heavy metals:** These metals are seldom detected in groundwater unless there is a contamination source nearby, such as industry or a landfill.
- **Organic chemicals:** These include petrochemicals, industrial solvents, pesticides, and a range of other man-made chemicals. As with heavy metals, they are seldom found in groundwater unless there is a source nearby.

Maps for areas of high arsenic, iron, manganese and nitrate are provided at the back of the document.

Treatment and well depth

As a general rule, the deeper the well, the lower the risk of contamination. However, no well can be considered completely safe from contamination, regardless of depth.

Therefore, by far **the best way to manage the risk of microbiological contamination is to provide treatment.** That way you can be confident that your water is safe, regardless of whether conditions change without your knowledge.

Positive E.coli result?

If you don't have treatment to manage the microbiological safety of your well, you should sample and test your well regularly. Any positive *E. coli* result should trigger the need to install treatment, and water should be boiled before drinking until a suitable treatment system can be installed.

Chemical contaminants

There are many chemicals that can contaminate groundwater and many industrial or agricultural activities that could be a source of chemical contaminants. Environment Canterbury's website has a contaminated land tool, the Listed Land Use Register, that can help you identify whether any of these activities have been carried out on or near your property.

Taking a water sample at a wellhead

How to test your water?

For peace of mind home-owners should consider undertaking microbial testing every three months and chemical testing annually. Records of test results are important and should be kept together in a safe place.

If possible, we recommend that you carry out microbiological and chemical testing when you purchase a property or drill a new well as an initial screening for contaminants, or right after a large rainfall event when temporary contamination can occur.

It is prudent to do a follow up test 6–12 months after the initial test to see if anything has come through after more regular use of the well that may not have shown up in the initial test and to account for seasonal fluctuations.

Choose a laboratory experienced in analysing water in your area and ask for an estimate of the work to be done.

Sample containers and instructions on how to correctly take drinking water samples should be provided by the laboratory.

The Water Services Authority—Taumata Arowai has information on accredited laboratories—**hinekorako.taumataarowai.govt.nz/publicregister/laboratories/**

Most recognised laboratories will offer a standard test suite for parameters to look for in drinking-water.

The results of the tests are compared to the Drinking Water Standards for New Zealand, in particular the Maximum Acceptable Values (the MAV). You can also contact laboratories for advice on water analysis and interpretation.

What if something is elevated?

If anything is found at a concentration greater than the MAV, the water should not be consumed and a suitable treatment system used or an alternative source found.

Domestic self-suppliers are not required to demonstrate on-going compliance against the Drinking Water Standards for New Zealand, but are strongly encouraged to do so.

If something is found at a concentration less than the MAV but more than 50% of the MAV, then more regular testing should be carried out to track whether the concentration increases over time. The testing should be done approximately quarterly to capture any seasonal variations.

The Waimakariri District Council's standard test suite can be found here:

waimakariri.govt.nz/services/3-waters/water-supply/private-bore-water-supplies

If you are concerned about the quality of your drinking-water supply, contact a Health Protection Officer at your local public health unit or Waimakariri District Council.

Maximum Acceptable Values for microbiological and chemical parameters

The following table explains the MAV (maximum acceptable values), AV (aesthetic values) and health consequence of some common contaminants to be mindful of:

To determine what the MAV of a certain parameter is, the Drinking Water Standards for New Zealand should be referred to:

www.legislation.govt.nz/regulation/public/2022/0168/latest/whole.html

Parameter	MAV	Health Considerations
E. coli	<1 per 100mL	Any trace of *E. coli* indicates that the water has been affected by faecal contamination and is not safe to drink.
Total Coliforms	No MAV	There is no MAV for total coliforms, as total coliforms alone are not considered unsafe. However, they are an indicator of living organisms in the water supply, and suggest that the supply is not secure and is at risk of microbiological contamination occurring in the future.
Nitrate	50 mg/L as nitrate (NO_3^-) Note: this is equivalent to 11.3 mg/L as nitrate-nitrogen. It is important when looking at results to understand which unit has been used to avoid confusion.	Sometimes high amounts of nitrate can enter groundwater from sources such as fertilisers, animal wastes, unreticulated sewage disposal and industrial and food processing waste. Nitrate levels above the MAV can pose a risk to babies less than six months old who are formula fed, or the unborn foetus of pregnant women. Adults with rare metabolic disorders may also be at risk.
Arsenic	0.01 mg/L	Arsenic can be naturally occurring in some groundwater sources, or can be introduced as a result of some industrial activities. Long term exposure to arsenic above the MAV can lead to cancer and skin lesions.
Iron	0.3 mg/L AV can cause laundry staining and other aesthetic issues	Iron and manganese are more likely to cause aesthetic (taste, odour, staining) issues rather than health issues, but still need to be considered to avoid these aesthetic problems.
Manganese	0.4 mg/L MAV. 0.04 mg/L AV can cause laundry staining 0.10 mg/L AV can cause taste issues	
Other (heavy metals, organic chemicals etc)	Seek specialist advice, depending on parameter detected	

Should you need any advice interpreting your test results please contact the Waimakariri District Council.

Treatment systems

Most of the contaminants that you might find in your private well can be treated.

It is important that:

1. You purchase the right kind of treatment system for the contaminants you have found in your water or are concerned about.
2. The treatment system meets the right standards so that you know it can be relied upon.

Some basic guidance is given in the table below:

Contaminant Type	Common Treatment Methods	Relevant Standards
Microbiological, as indicated by *E. coli* or total coliforms	Filtration followed by UV disinfection	New Zealand Standard: • AS/NZS 3497:1998 A1 Or equivalent international standards such as: • NSF/ANSI 55-2002 Class A • DVGW Technical Standard W294 • oNORM M5873-1
Nitrate or Arsenic	Reverse Osmosis/Ion Exchange	No Australian/New Zealand standard – seek specialist water treatment advice
Iron, Manganese or other	Seek specialist advice	

Note that some filters may only treat taste aspects, but not provide microbiological treatment. Make sure that your treatment system is fit for purpose.

Monitoring of turbidity levels is recommended prior to installing a UV disinfection unit. High turbidity can affect UV treatment, and may also need specific filtration treatment.

Ensure that maintenance records are kept, particularly of dates when servicing is carried out. This allows you to check you are meeting the recommended frequency for your water treatment system.

It should also be noted that treatment systems will only remain effective if they are maintained correctly. You should ensure regular maintenance is carried out as per the equipment supplier's recommendations.

Well head protection

There are generally two ways that contaminants could enter the water supply via the well head:

1. Contaminated surface water entering down the outside of the well casing, **or**
2. Contaminants entering via the well head structure itself.

Good design of your wellhead can protect against contamination

These risks can be managed as follows:

- Grouting: The outside of the well casing should be grouted to ensure that the water from the surface cannot travel down the outside of the casing. This should ideally be done at the time of drilling, but if you are not sure if this has been done, this can be done retrospectively by a drilling company.
- Casing: The well casing should extend above the ground surface to ensure that surface runoff water cannot flow directly into the top of the well.
- Concrete Apron: A concrete apron should be constructed that ensures that water flows away from the well casing itself and does not pond around the well head.
- Backflow Preventer: A backflow preventer should be installed on the well head to stop any potential contaminants from travelling back down the well riser into the aquifer.
- Fencing: The land surrounding the well head should be fenced off to prevent livestock from accessing this immediate area. It is recommended that at least a 5m perimeter surrounding the well be fenced off.
- Maintenance: Ensure that the condition of the well head protection is maintained over time.

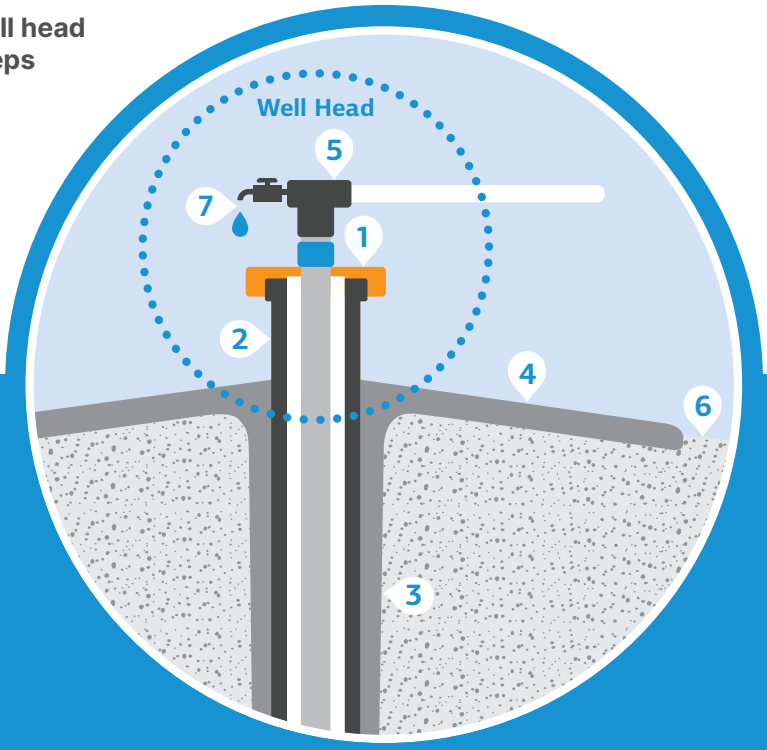
What is a backflow prevention device?

Backflow prevention devices stop contaminated water from flowing back into the household water supply.

Examples of activities which may require backflow prevention are:

- You use water for washing equipment like vehicles or machinery that has been exposed to chemicals.
- You operate appliances that require high water pressure.
- You mix water with other substances on your property.
- You have a cross connection of your private water supply (e.g. well/tank) to pipes that are also connected to the public supply.

For a secure well head follow these steps



1. Well cap

Install a secure well cap and seal between the casing and any hoses or cables going down the well.

2. Well casing (above ground)

Ensure the well casing is elevated at least half a metre above the ground surface or above the 100 year flood level (whichever is highest).

3. Well casing (below ground)

Install a bentonite seal around the casing.

4. Concrete apron

Seal between the well casing and the surrounding ground with a concrete apron.

5. Back-flow preventer

Install a back-flow preventer to stop contaminants siphoning back into your well.

6. Area around well

Keep the area around the well head clear of animals, pesticides, fertilisers, compost and rubbish.

7 Sample point

Have your groundwater supply tested regularly and following any large rainfall events or change in land use activities.

Tank maintenance

Tank maintenance

Ensure that the tank lid is secure, with no gaps for dust or insects and other vermin to get in. Check that any connecting pipes or hoses are protected from stock being able to damage them. In the cooler months, ensure that pipes are adequately protected from freezing. Check that future access for maintenance is not blocked when planting any trees nearby.

Cleaning and disinfecting your tank

The Council recommends you inspect your tank annually, and clean it out if necessary.

Ideally tank cleaning should be carried out by tank cleaning contractors. A Google search should direct you to tank cleaning providers in your area.

WARNING: If you enter the tank to clean it, please ensure there is adequate ventilation and another person is present. Please exercise due care in using ladders to gain access to the tank, as these can be treacherous when wet.

Steps to clean and disinfect your tank:

1. Turn off the water supply into the tank.
2. Drain the tank completely.
3. Clean out the inside of the tank of all accumulated matter.
4. Liberally spray chlorine-based bleach product over the internal floor and walls of the tank.
5. Check the strength of chlorine in bleach.
   Assuming it is 4% sodium hypochlorite; refill the tank adding 0.3 litres of chlorine bleach per 1000 litres (220 imperial gallons) of tank volume.
6. Allow this water to stand in the tank for at least 30 minutes.
7. Drain the tank completely flushing with clean water.
8. Refill the tank with fresh water.

The use of chlorine bleach in steps 4 and 5 will ensure that the tank is adequately sterilised and suitable for holding drinking water. It is important that the tank is completely drained at step 6 as the strong chlorine concentration will make the water extremely unpleasant to drink.

For more information on water collection tanks and safe household water, please refer to this Ministry of Health factsheet **healthed.govt.nz/products/water-collection-tanks-and-safe-household-water**

Remember, you plan to drink the water at the completion of the cleaning so be very careful with the cleanliness of all items entering the tank.

For more information on tank disinfection, read the report 'Household Water Supplies'. This is available online at: **phfscience.nz/digital-library/household-water-supplies-the-selection-operation-and-maintenance-of-individual-household-water-supplies/**

Drilling a new private well

Planning a new well

If you have a property that has no water supply, the first thing to consider is whether you can connect to a public supply, or whether you will need to provide your own source of water.

It would always be recommended to connect to the public supply if this is feasible, as a well-managed public water supply will be safer than a private well. You should contact Waimakariri District Council on 0800 965 468 (0800WMKGOV) to see if a connection to the public supply is possible.

If a connection to a public supply is not possible, then the next best source of water may be from a well (depending on the area and availability of good groundwater sources).

Determining where a good source may be found

You will have a higher chance of finding a good groundwater source if there is evidence of other nearby properties with good wells in the area. There are a few places you can look to help inform yourself of where water sources have been found, and the suitability of the water for drinking:

- Drillers: Local drilling contractors will likely have knowledge on where suitable water sources have been found.
- This brochure: Included in the back of this brochure are maps of the Waimakariri District showing where key chemical parameters have been found in water sources, and at what level. While each value presented may only represent the sample at a particular time, this should give some idea of what contaminants may be more or less likely to be found in a given area.
- Well search database: You can look at bore logs using the Environment Canterbury Well Search database to see what depth water has been found at, and potentially water quality information.
- Local knowledge: Get to know your neighbours and ask how they source their water, and whether they have any water quality results from their own supply.
- Flood levels: A well may be more prone to contamination during a flood event. You should plan your well so that it is not located in a flood prone area, as this could put the well at additional risk if it becomes inundated.
- Surrounding sources of contamination: Think about where your well is located in relation to other activities that may introduce contaminants into the groundwater system.

Common ways this could occur are via septic tanks, historic contaminated sites, ponds, or any other farming or industrial activity or process that may cause contaminants to be discharged to ground. It is advisable to avoid wells in the vicinity of these types of activities, or if these activities have existed, to ensure the well is located upstream from them.

As a very general rule of thumb, groundwater follows surface topography and flows downhill, but this may vary near rivers or where the topography is complex.

Checking consenting requirements

The Land and Water Regional Plan (published by Environment Canterbury) is the key document that sets out where bores can and can't be drilled, whether a consent is needed to drill the well, and whether water can be taken from the well as a permitted activity without a consent, or whether a consent is required.

A link to the full Land and Water Regional Plan document can be found at **ecan.govt.nz**

Key sections are:

- 5.103 – 5.110: Sets out requirements for drilling wells.
- 5.113 - 5.114: Sets out requirements to be allowed to take groundwater without the need for a consent.

Drilling a well

Once you have decided where you want your well, what depth you are targeting, and what the consenting requirements are, you will need to engage a driller. It is important that whoever does this is suitably qualified and experienced, and that care is taken during the drilling process.

Rule 5.103 of the Land and Water Regional Plan (LWRP) states that installing a bore or gallery is a permitted activity if:

- the bore or gallery is installed by a member of the Canterbury Regional Council (CRC) bore installers programme; and
- all the other conditions of rule 5.103 of the LWRP are met.

A list of drillers on the CRC bore drillers programme can be found here (follow link then click tab "current members of the CRC bore installers programme"): **ecan.govt.nz/your-region/your-environment/water/crc-bore-installers-programme/**

Well head protection

Once you have a well drilled, you then need to consider the well head arrangement and how this is managed to protect your water supply from potential contamination.

Information on well head protection is included in 'Managing an Existing Private Well' earlier in this document.

Purchasing a property with a private well

What to consider when purchasing a new property?

Anyone purchasing a new property should enquire about the water supply. You can request a LIM from Waimakariri District Council, which will include whatever information Council holds on the water supply.

In order to gain more knowledge on the water supply, it is recommended that further questions be asked from the seller, such as:

- Does the water come from a public supply or a private well?

If the answer is that it is from a private well then the following information should be obtained:

- How deep is the well?
- Is the well head sealed, and the surrounding area fenced to protect it from livestock?
- Is the water from the well pumped to a tank, and what is the condition of the tank?
- What type of treatment system do they have (if any) and has it been regularly maintained?
- How regularly is the well tested, and are the results available?
- What state is the well in? Are there any records of maintenance of the well or pump?
- Does the well have an Environment Canterbury well number? If so, additional information about the well may be available through the Well Search page on Environment Canterbury's website: **ecan.govt.nz/data/well-search/**

Answers to these questions will help you to determine how safe the water supply is. If the seller is not able to demonstrate that the water is safe and that sufficient treatment is in place, the need for any upgrades to the water supply should be considered before making an offer on the property.

Who to contact for further information?

Drinking-water safety is the joint responsibility of the territorial authority (Waimakariri District Council), the Regional Council (Environment Canterbury), Community and Public Health (Te Mana Ora) and the Water Services Authority—Taumata Arowai. Please refer below for which agency to contact for different issues or questions:

Environment Canterbury:

Manages the quality of both surface and ground water quality in the water body or aquifer. This is

achieved by managing who can take water from the ground or a surface water body, and what can be discharged into or onto the ground or land/water surface.

They hold information on existing bores such as depth, yield and in some cases quality.

Waimakariri District Council:

For public supplies, Waimakariri District Council manages the quality of the water coming out of the tap. This is through management of the source, treatment, storage and distribution network.

For private supplies, Waimakariri District Council ensures that there is a potable water supply, through the issuing of a resource consent for subdivision of land (which will specify how water is to be sourced) and issuing of a building consent for new dwellings. These however only confirm that there is a potable water source at the time of issuing the consent.

Community and Public Health, Te Mana Ora:

Provides advice regarding the impacts of water quality on public health.

Water Services Authority—Taumata Arowai:

The Water Services Authority—Taumata Arowai is responsible for drinking water regulation related activities in New Zealand/Aotearoa.

Waimakariri District groundwater quality maps

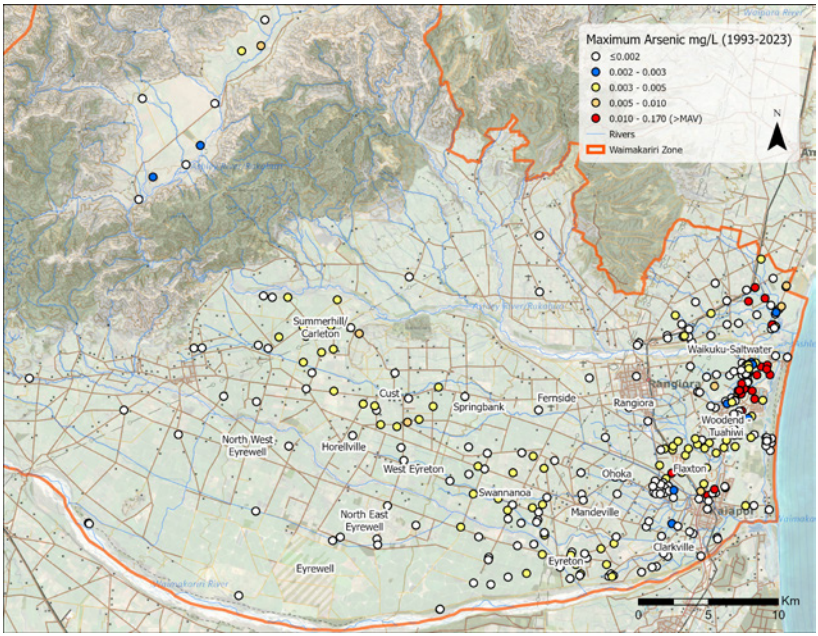
This information is to illustrate the likely groundwater quality that might be found in the area. However water quality in your well may vary from the information provided and groundwater quality also changes over time.

The data included in these groundwater quality maps is limited to the maximum contaminant result for each well sampled, between 1993-2023. Wells included are within the Waimakariri District, for any well use, all depths, active and inactive wells.

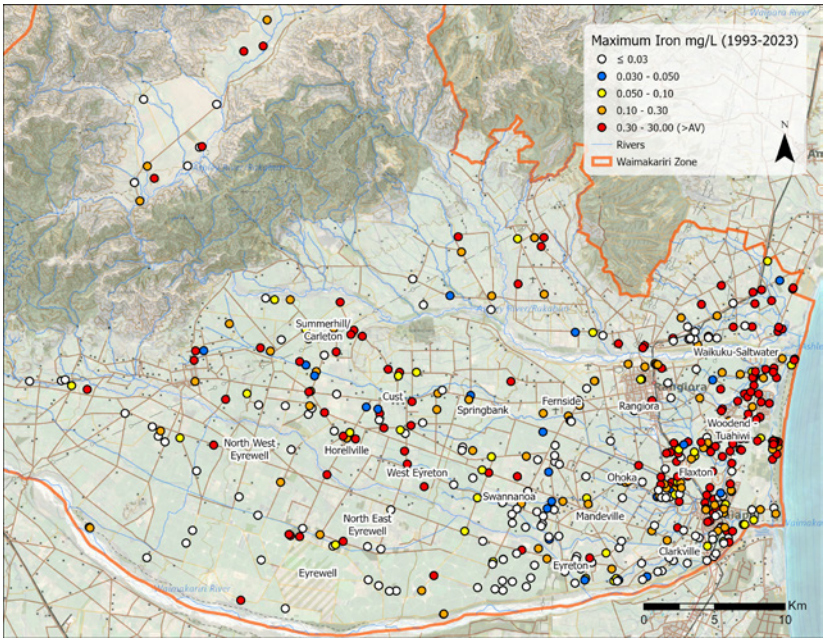
The data is limited to that in the Environment Canterbury groundwater quality database or the Waimakariri District Council source database.

The Maximum Acceptable Value (MAV) and Aesthetic Values (AV) are set by the Water Services (Drinking Water Standards for New Zealand) Regulations 2022. If a MAV is exceeded, this means that the water is considered unsafe to drink. If an AV is exceeded, this means that there may be some aesthetic issues with the water such as taste or discolouration.

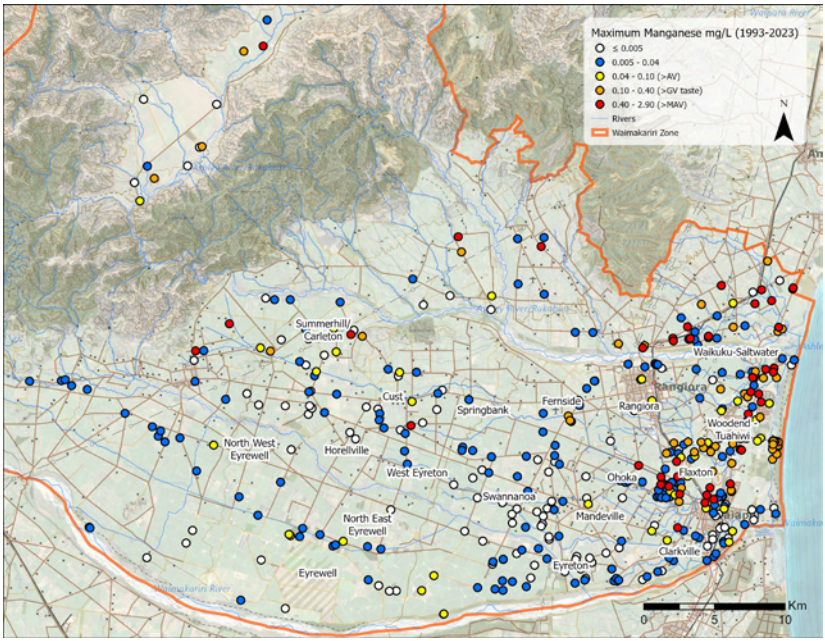
Arsenic maximum



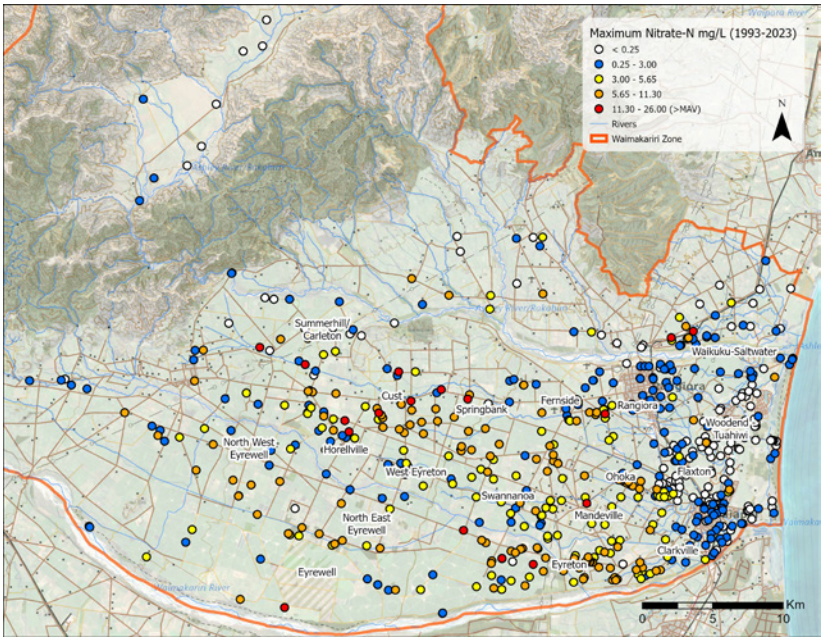
Iron maximum



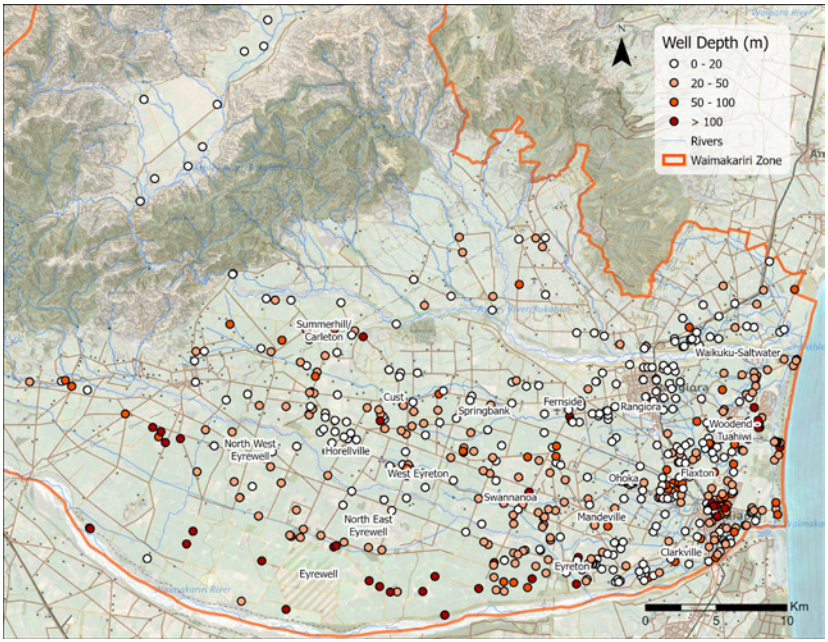
Manganese maximum



Nitrate-Nitrogen maximum



Well depth



For more information please contact

Water Environment Advisor

Waimakariri District Council
Phone: 0800 965 468 (0800 WMK GOV)
Email: office@wmk.govt.nz

230912141978 - QD 3Waterside 002 - Version 1 - December 2025

Find out more at waimakariri.govt.nz