WAIMAKARIRI
DISTRICT COUNCIL

Land and Water Committee

Agenda

Tuesday 20 April 2021

1pm

Function Room
Rangiora Town Hall
303 High Street
Rangiora

Members:

Cr Sandra Stewart (Chairperson)
Cr Neville Atkinson
Cr Kirstyn Barnett
Cr Al Blackie
Cr Niki Mealings
Cr Paul Williams

The Chairperson and Members
LAND AND WATER COMMITTEE

AGENDA OF THE LAND AND WATER COMMITTEE TO BE HELD IN THE FUNCTION ROOM, RANGIORA TOWN HALL, 303 HIGH STREET, RANGIORA ON TUESDAY 20 APRIL 2021 AT 1PM.

Recommendations in reports are not to be construed as Council policy until adopted by the Council

BUSINESS

Page No

1 APOLOGIES

2 CONFLICTS OF INTEREST

Conflicts of interest (if any) to be reported for minuting.

3 CONFIRMATION OF MINUTES

3.1 Minutes of a meeting of the Land and Water Committee held on Thursday 16 February 2021

4-10

RECOMMENDATION

THAT the Land and Water Committee:

(a) **Confirms**, as a true and correct record, the circulated Minutes of the meeting of the Land and Water Committee held on 16 February 2021.

4 MATTERS ARISING

5 DEPUTATION/PRESENTATIONS

Nil.

6 REPORTS

6.1 Results of the 2020 private wells study for nitrate – Cust and Eyreton – Sophie Allen (Water Environment Advisor)

11-15

THAT the Land and Water Committee:

(a) **Receives** report No. 210316043773.

(b) **Notes** the findings of the 2020 study, with one well was above the nitrate Maximum Acceptable Value (MAV) (DWSNZ 2005, amended 2018). The majority (63%) of the 18 wells in Eyreton and Cust were above half of the MAV (5.65 mg/L).

(c) **Notes** that the median nitrate concentration for Cust, as sampled in the 2020 study, would not meet the proposed limit of a median of 5.65 mg/L nitrate-nitrogen in Plan Change 7 of the Land and Water Regional Plan for private water supply wells.

(d) **Notes** that Waimakariri District Council and Environment Canterbury staff will continue to raise awareness of the health impacts of high nitrates, and to encourage private well owners to test water regularly, including with the publication of a 'managing a private well supply' pamphlet for the District.

(e) **Notes** that in the draft Long Term Plan, WDC proposes to repeat this study in spring 2021 (with 10 wells in Eyreton, 10 wells in Cust, and 20 wells in areas yet to be determined). Well owners from the 2019 and 2020 sample rounds will be approached for repeat annual sampling, to allow for assessment of trends over time.

(f) **Notes** that trends for nitrate concentration over time are not able to be concluded from data for only two years.

(g) **Circulates** this report to the Council, community boards and Waimakariri Water Zone Committee for information.

7 MATTERS FOR INFORMATION

7.1 Canterbury Biodiversity Champions Meeting 9 April Agenda and Presentation

RECOMMENDATION
THAT Item 7.1 be received for information.

8 PORTFOLIO UPDATES

8.1 Biodiversity – Councillor Sandra Stewart

8.2 Land based Indigenous Reserves (Including River Margins) – Councillor Al Blackie

9 QUESTIONS

10 URGENT GENERAL BUSINESS

NEXT MEETING

The next meeting of the Land and Water Committee is scheduled for 1pm, Tuesday 18 May 2021 in the Function Room, Rangiora Town Hall.

BRIEFING

Review of Cam River Enhancement Fund projects – S Allen (Water Environment Advisor)

WAIMAKARIRI DISTRICT COUNCIL

MINUTES OF THE MEETING OF THE LAND AND WATER COMMITTEE HELD IN THE FUNCTION ROOM AT THE RANGIORA TOWN HALL, 303 HIGH STREET, RANGIORA ON THURSDAY 16 FEBRUARY 2021 COMMENCING AT 1PM.

PRESENT

Councillors S Stewart (Chairperson), N Atkinson, K Barnett, A Blackie, N Mealings, P Williams, J Ward and Mayor D Gordon.

IN ATTENDANCE

G Cleary (Manager Utilities and Roading), C Brown (Manager Community and Recreation), S Allen (Water Environment Officer), K Steel (Ecologist – Biodiversity), and T Künkel (Governance Team Leader).

1 APOLOGIES

There were no apologies.

2 CONFLICTS OF INTEREST

There were no conflicts of interest declared.

3 CONFIRMATION OF MINUTES

3.1 **Minutes of a meeting of the Land and Water Committee held on Thursday 10 December 2020**

Moved: Councillor Stewart Seconded: Councillor Blackie

THAT the Land and Water Committee:

(a) **Confirms**, as a true and correct record, the circulated Minutes of the meeting of the Land and Water Committee held on 10 December 2020.

CARRIED

4 MATTERS ARISING

Nil.

5 DEPUTATION/PRESENTATIONS

Nil.

Unconfirmed

6 REPORTS

6.1 Cam River Enhancement Fund Projects Update – S Allen (Water Environment Advisor)

S Allen provided a brief summary of recent progress made with the Cam River Enhancement Fund projects. She highlighted the following:

- The bank stabilisation work that would be carried out along the North Brook.
- The Drainage Maintenance and Minor Works in Waterways Consent was granted in December 2020, which would now enable the Council to proceed with the Cam River Enhancement Fund projects.
- The proposed creation of sediment traps, drainage wetlands and the bank stabilisation project to be carried out along the Tuahiwi Stream in 2021. The three existing sediment traps would also be cleaned. Staff had been advised by a Te Ngāi Tūāhuriri Rūnanga representative, that the Tuahiwi Stream was actually named Waituere Stream and documentation would therefore be amended accordingly.
- An Environment Assessment Notice template and flowchart for the Use of Consent had been prepared, with the first works anticipated to be carried out in April and May 2021. There were multiple and approval notification requirements.
- Staff were preparing an Environmental Assessment Notice for each project, which included supplying Erosion and Sediment Control Plans, Contaminated Land Assessments, and Cultural Management Assessments where required.

Councillor Atkinson believed that Te Ngāi Tūāhuriri Rūnanga should be formally consulted on the name of the Tuahiwi Stream and therefore suggested that the matter be raised at the next Mahi Tahi Committee meeting.

Councillor Stewart recalled that there had previously been a report to the Utilities and Roading Committee regarding naming of the Tuahiwi Stream. She requested staff to refer to the said report. G Clearly confirmed that no documentation would be amended prior to liaising with the Rūnanga.

Councillor Atkinson questioned the 30 working days notification timeframe for notifying the Te Ngāi Tūāhuriri Rūnanga regarding consents. S Allen explained that this notification timeframe referred only to the type of minor works to be done within an area with spring base flow.

Councillor Williams enquired if samples would be taken from the sediment while cleaning the sediment traps, as to ascertain if any heavy metals or other toxins were present in the waterway. S Allen advised that the 2018 monitoring of the sediment traps was done by a Masters student. However, due to the Covid epidemic it may be difficult to find a willing student.

Councillor Williams asked if it would be possible to determine a baseline prior to the work being carried out, because it would be important for the Council to be able to prove, that the work carried out made a difference. G Clearly advised that the matter would be investigated.

In response to a question regarding the bank stabilisation project, S Allen confirmed that the Council had approached the owner again, however, the Council had again been denied access.

Moved: Councillor Stewart Seconded: Councillor Williams

THAT the Land and Water Committee:

(a) **Receives** report No. 210203017399.

Unconfirmed

(b) **Notes** that there were existing budget allocations in 2020-21 and 2021-22 financial years for the Cam River Enhancement Fund.

(c) **Notes** the Cam River Enhancement Fund projects of sediment trap and drainage wetlands installation, sediment trap emptying, and bank reshaping to be carried out for 2020-21.

(d) **Circulates** this report to the Rūnanga Liaison Group, the Waimakariri Water Zone Committee, the Mahi Tahi Committee, the Kaiapoi-Tuahiwi Community Board and the Rangiora-Ashley Community Board for information.

CARRIED

Councillor Stewart noted that the Council had been waiting a long time for the Drainage Maintenance and Minor Works in Waterways Consent. The consent meant that the Council would finally be able to proceed with the Cam River Enhancement Fund projects. She concurred with Councillor Williams, that baseline was important for accurate future monitoring to prove value of ratepayers money.

7 PORTFOLIO UPDATES

7.1 Biodiversity – Councillor S Stewart

- The Council had applied for funding to the Freshwater Improvement Fund for various work to be done as part of the Cam River Enhancement Projects.
- She ttended the first Biodiversity Champions of Canterbury meeting at Ecan. It was envisaged that the meetings would provide a platform for members to share knowledge and skills to enhance biodiversity in the region.
- Plan Change 7 Ecan's Officers Report had been released and there were some challenging changes advocated by Ecan. She encouraged all elected members to attend the hearing to be held on 26 February 2020.
- CWMS Waimakariri Zone Committee – The possibility of establishing a Biodiversity Community Trust for the Waimakariri District was being discussed and the Committee was asking for nominations.

7.2 Land based Indigenous Reserves (Including River Margins) – Councillor A Blackie

- Attended the Te Kōhaka o Tūhaitara Trust Open Day which went was well attended.
- The preliminary designs for the Mahinga Kai area in the Red Zone in Kaiapoi had been discussed at the Mahi Tahi Committee meeting.
- There had been problems at the Kaiapoi wharf with young people causing disturbances to members of the public and businesses. The Council was however dealing with the matter. The Mayor would be meeting the with the Canterbury District Commander to discuss the problems being experienced in Kaiapoi.

8 QUESTIONS

Nil.

9 URGENT GENERAL BUSINESS

Nil.

Unconfirmed

NEXT MEETING

The next meeting of the Land and Water Committee was scheduled to be held at 1:00pm, Tuesday 16 February 2021 in the Function Room, Rangiora Town Hall.

THERE BEING NO FURTHER BUSINESS THE MEETING CLOSED AT 1.30PM

_____

Chairperson

_____

Date

BRIEFING

Cam River Freshwater Improvement Fund application for the Cam River Enhancement Projects – S Allen (Water Environment Advisor)

Unconfirmed

WAIMAKARIRI DISTRICT COUNCIL

REPORT FOR INFORMATION

FILE NO and TRIM NO:	WAT-10-14-01 / 210316043773
REPORT TO:	Land and Water Committee
DATE OF MEETING:	20 April 2021
FROM:	Sophie Allen – Water Environment Advisor
SUBJECT:	Results of the 2020 private well study for nitrate - Cust and Eyreton

SIGNED BY:
(for Reports to Council, Committees or Boards)

Department Manager

pp Chief Executive

1. SUMMARY

1.1 Waimakariri District Council (WDC), alongside Environment Canterbury and Canterbury District Health Board, have been recommended in the Zone Implementation Programme Addendum (ZIPA) to develop a programme for testing and reporting of water quality in private drinking water supply wells.

1.2 This report summarises the findings of the WDC private well study for 2020, and compares to results from the 2019 pilot study of the same wells. Nitrate and other chemical parameters were sampled in 19 wells in total; nine in Cust and 10 in Eyreton.

1.3 There was a decrease in the nitrate mean and median from 2019 to 2020 in both Cust and Eyreton samples. This could be due to higher precipitation prior to the 2019 study than for the 2020 study. Increase precipitation leads to increased leaching of nitrate to groundwater. It is not possible to conclude any long-term trend in nitrate levels from only two data points for each well.

1.4 In the 2020 sampling round, one well to the east of Cust measured 17.5 mg/L nitrate-nitrogen. This is above the Maximum Acceptable Value (MAV) set for nitrate in the New Zealand Drinking-water Standards for New Zealand (DWSNZ 2005, amended 2018). It should be noted that private wells do not need to comply with the DWSNZ, however are used for guidance values in this report. This well was also found to be over the MAV in the 2019 pilot study, and has been confirmed to not be in current domestic use, with no one living at the house.

1.5 The majority (63%) of the 19 wells sampled in Eyreton and Cust were above half of the MAV (5.65 mg/L) for nitrate-nitrogen. The median nitrate concentration for Cust, as sampled in this pilot study would not meet the proposed limit of a median of 5.65 mg/L nitrate-nitrogen (half of the MAV) in Plan Change 7 of the Land and Water Regional Plan for private water supply wells. In 2020, Eyreton samples would meet the proposed limit of a median of 5.65 mg/L nitrate-nitrogen, noting the exclusion of one sample as its elevated levels of nitrate was known prior to the commencement of the study.

1.6 Similarly to 2019 study results, in 2020 only weak correlation between increasing well depth and decreasing nitrate level was found. However the study was of a small sample size, and a larger study would provide better statistical analysis.

1.7 Other chemical parameters analysed in this pilot study are not presented in this report for brevity, however no other results were over any MAV. Microbiological testing was not carried out due to the risk of contaminating a sample if not trained appropriately.

1.8 This nitrate pilot study is intended be repeated in spring 2022 with the same wells, (10 wells in Eyreton, 10 wells in Cust), and an additional 20 wells from two other groundwater areas in the District, with the purpose of allowing for assessment of trends over time. Well owners from the 2019 and 2020 sample rounds will be approached again for repeat annual sampling.

1.9 A pamphlet about managing a private well water supply has been produced by Waimakariri District Council, with the support of the groundwater team at Environment Canterbury.

Attachments:

i. Managing a Private Well Supply Booklet A5 (TRIM 201207166358)

2. RECOMMENDATION

THAT the Land and Water Committee:

(a) **Receives** report No. 210316043773.

(b) **Notes** the findings of the 2020 study, with one well was above the nitrate Maximum Acceptable Value (MAV) (DWSNZ 2005, amended 2018). The majority (63%) of the 18 wells in Eyreton and Cust were above half of the MAV (5.65 mg/L).

(c) **Notes** that the median nitrate concentration for Cust, as sampled in the 2020 study, would not meet the proposed limit of a median of 5.65 mg/L nitrate-nitrogen in Plan Change 7 of the Land and Water Regional Plan for private water supply wells.

(d) **Notes** that Waimakariri District Council and Environment Canterbury staff will continue to raise awareness of the health impacts of high nitrates, and to encourage private well owners to test water regularly, including with the publication of a 'managing a private well supply' pamphlet for the District.

(e) **Notes** that in the draft Long Term Plan, WDC proposes to repeat this study in spring 2021 (with 10 wells in Eyreton, 10 wells in Cust, and 20 wells in areas yet to be determined). Well owners from the 2019 and 2020 sample rounds will be approached for repeat annual sampling, to allow for assessment of trends over time.

(f) **Notes** that trends for nitrate concentration over time are not able to be concluded from data for only two years.

(g) **Circulates** this report to the Council, community boards and Waimakariri Water Zone Committee for information.

3. BACKGROUND

3.1 Drinking-water safety is the joint responsibility of territorial authorities, the Regional Council (Environment Canterbury) and the local health board (Canterbury District Health Board). Environment Canterbury manages the quality at source. Territorial Authorities, such as WDC, manage the quality of water coming out of the tap. For public supplies, this is through management of the supply, storage and distribution network. For private supplies, this is through the issuing of a resource consent for new developments (which will specify how water is to be sourced) and issuing of a building consent for new dwellings which confirms that the water is potable at the time of issuing the consent. The District Health Board manages the impact of the water quality on public health, and can give advice on the health impacts of water quality.

3.2 A pilot study of nitrate levels in private wells in the Cust and Eyreton areas was carried out in late 2019, and again in late 2020, by WDC for nitrate and a range of other chemical parameters. Refer to Maps 1 and 2 for the definition of the Cust and Eyreton sampling areas. The purpose of the study is to work towards implementing the Zone Implementation Programme Addendum (ZIPA) Recommendation 3.16, adopted by Council in December 2018.

3.3 Recommendation 3.16 states 'That Environment Canterbury, Waimakariri District Council and Canterbury District Health Board work together to:

a. Develop a programme for testing and reporting of water quality in private drinking water supply wells, and

b. Raise awareness of health impacts from high nitrates in drinking water.'

3.4 Cust and Eyreton were recommended as the two areas for the pilot study due to previous high nitrate levels reported in Environment Canterbury monitoring wells and reports from private well owners. Nitrate levels have been reported to Council in 2018, by private well owners in the Eyreton area, that were close to the Maximum Accepted Value (MAV) of 11.3 mg/L of nitrate-nitrogen as defined in the Drinking-water Standards for New Zealand.

Map 1: Cust private well sampling area for groundwater within the Waimakariri Water Zone, as defined in the Zone Implementation Programme Addendum (ZIPA).

Map 2: Eyreton private well sampling area for groundwater within the Waimakariri Water Zone, as defined in the Zone Implementation Programme Addendum (ZIPA)

4. ISSUES AND OPTIONS

Nitrate limits

4.1. The median nitrate concentration for Cust, as sampled in the study would not meet the proposed limit of a median of 5.65 mg/L nitrate-nitrogen in Plan Change 7 of the Land and Water Regional Plan for private water supply wells. The nitrate-nitrogen median measured for Cust was 7.11 mg/L, a slight decrease from 7.38 mg/L in 2019 (see Figure 1). Eyreton wells sampled had a median of 5.01mg/L down from 6.96 mg/L in the 2019 study. The Eyreton median excludes a well that was already known to have a high nitrate level, to avoid sampling bias of results. Note that wells were selected based on a geographic spread over an area and range of well depths.

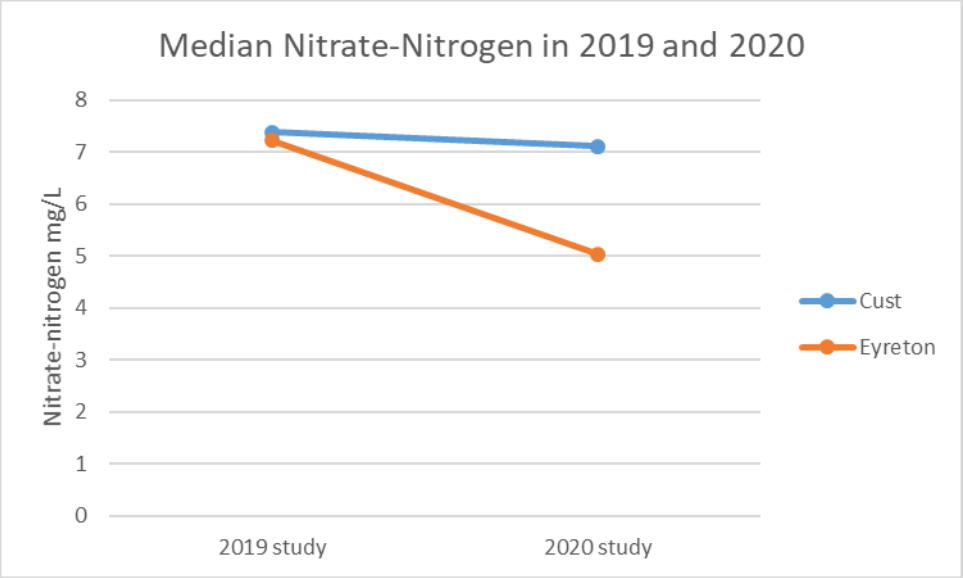


Figure 1: Median for Nitrate-nitrogen (mg/L) levels in private wells in Cust (9 wells) and Eyreton (9 wells). Note that the Eyreton results excludes a well that was already known to have a high nitrate level, to avoid sampling bias of results.

4.2. One well was measured over the MAV for nitrate, and 18 wells were below the MAV. It is likely that there are other private wells, not sampled in this pilot study, that exceed the nitrate MAV in some wells in Cust and Eyreton, however this proportion has not been estimated in this study. Environment Canterbury has modelled that up to an estimated 75 private wells could be exceeding the MAV for nitrate within the Waimakariri Water Zone (ZIPA, December 2018). Due to this risk of nitrate levels over the MAV in private wells, WDC, together with Environment Canterbury and Community Public Health, will continue to raise awareness of the health impacts of nitrate, and the need for regular testing of well water.

Engagement with Private Well Supply Owners

4.3. WDC staff have collaborated with Environment Canterbury for the production of a well testing advice brochure (Attachment i), which advises on testing of water, as well as mapping indicative areas where issues such as high nitrate and arsenic could be an issue for proposed new wells. This brochure has been finalised and distribution has commenced, such as for the provision of Land Information Memoranda (LIMs) for prospective owners of property with a private well supply.

Sample collection

4.4. Although efforts were made to select private wells randomly based on geographic spread over the Cust and Eyreton areas and for a range of depth, there is likely to have been some selection bias of the wells. Some areas of Cust have reticulated water, and therefore were not included in the study area.

4.5. All study participants from 2019 were willing to have repeat sampling of their wells in 2020. This was likely to be due to the signalling from WDC that the 2019 pilot study was likely to be extended to annual sampling. This repetitive sampling of the same wells will allow for better assessment of trends over time.

Trend Analysis

4.6. It is not possible to assess trends in nitrate concentration from only two data points for each well (see Figures 3 and 4). Nitrate leaching into groundwater is known to increase due to higher precipitation levels. Precipitation records for Rangiora and Kaiapoi show that 2019 was wetter than 2020, which may be a factor in the slightly lower nitrate-nitrogen levels measured in most wells in 2020 (see Figure 2). The 2020 study was conducted slightly earlier (Oct-Nov) than in 2019 (Nov-Dec) in order to avoid any clash with the busy build-up to Christmas. Therefore there may be some seasonal variation captured in the data. Future studies will be planned for the same time period of October-November to minimise the effect of seasonal variation on results.

Figure 2: Moving rainfall average for Rangiora, with above average rainfall in 2019, and below average in 2020.

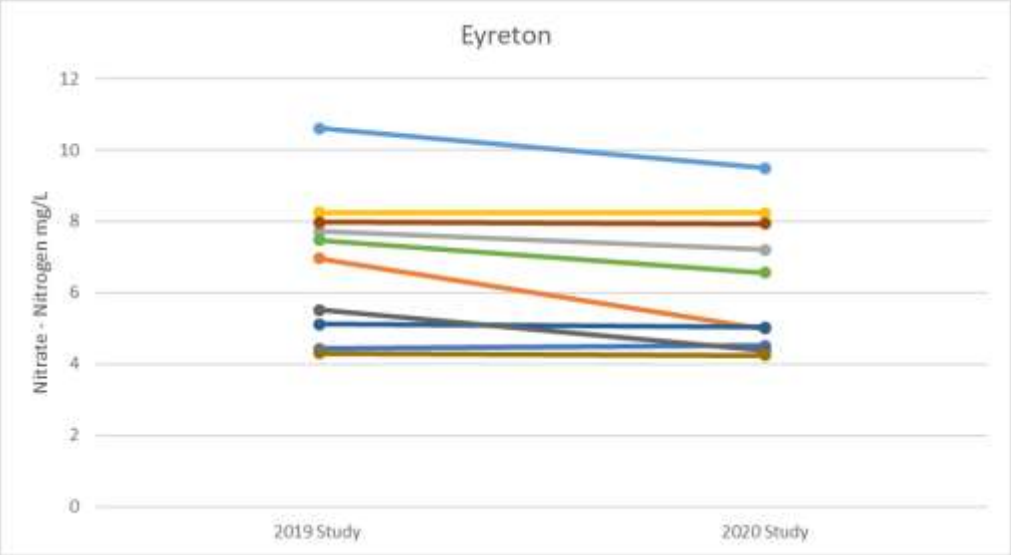


Figure 3: Individual Eyreton well results for the 2019 and 2020 studies

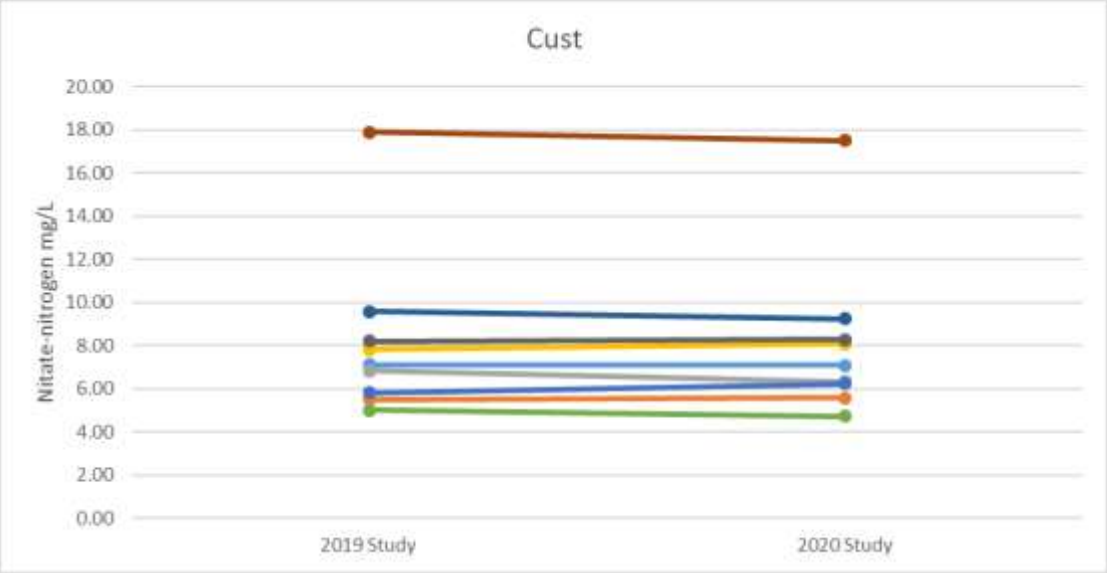


Figure 4: Individual Cust well results for the 2019 and 2020 studies

Well depth

4.7. As per the 2019 pilot study, the highest nitrate-nitrogen concentration in 2020 was found in a shallow well (7.6m deep). Increasing well depth, however, was found to have only a weak correlation with decreasing nitrate (R^2= 0.1128), noting the limited sample size of the study (see Figure 5).

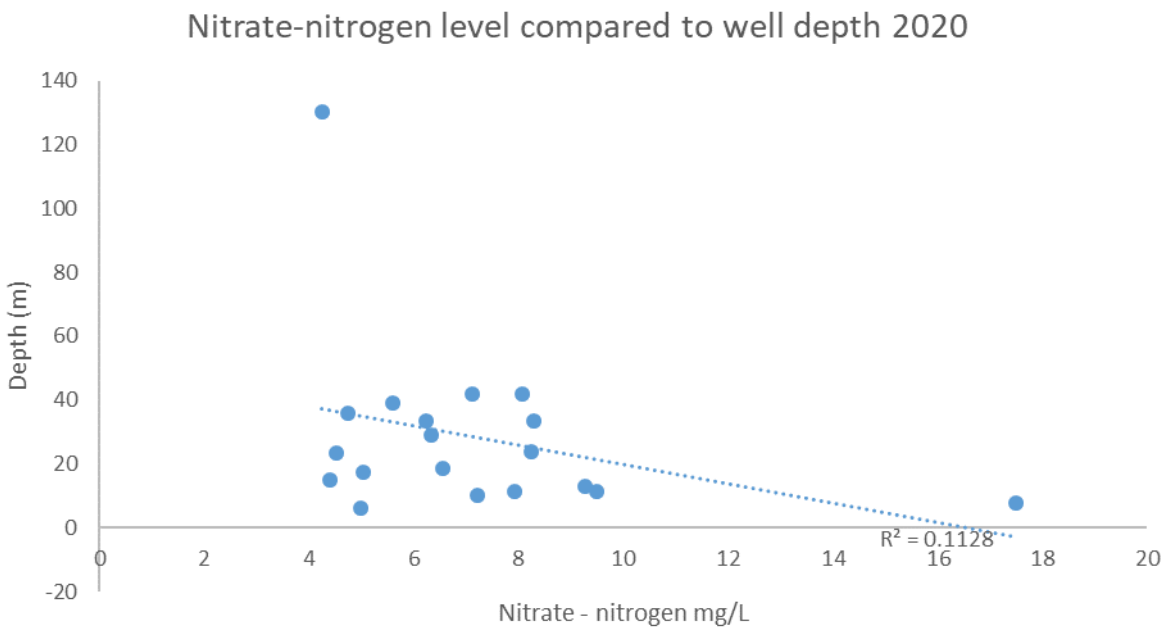


Figure 5: Nitrate-nitrogen level (mg/L) plotted against depth of private wells (m) - Eyreton and Cust 2020 study results.

Next steps

4.8. Well owners who took part in the study have been contacted by WDC to communicate test results and advised to contact a water treatment specialist if over a MAV.

4.9. It was intended that this pilot study would test the sampling methodology for a potential wider and more extensive private well sampling programme of 180 wells in 2020-21 onwards (see Appendix 1). Some refine of sampling methodology was able to carried out in the 2020 study, however further refinement and discussion with Environment Canterbury around cost-sharing is now proposed for 2021-22. If cost-sharing and technical support could be obtained, WDC staff would recommend a roll-out of a more extensive programme in 180 wells from 2022-23 onwards.

4.10. The Water Services Bill, if passed into law as currently drafted by Parliament, would see the role of Territorial Authorities taking on responsibility to support private well owners with supplies that are shared between households to be compliant with the Drinking Water Standards for New Zealand. Individual water supplies (i.e. non-shared supplies), are proposed to remain the responsibility of the landowner in the current draft of the Water Services Bill.

4.11. The Management Team have reviewed this report and support the recommendations.

5. COMMUNITY VIEWS

5.1. Groups and Organisations

5.1.1. Eyreton residents with elevated nitrate levels expressed a desire for wider testing to be carried out, and for private well owners in the area to be alerted of the possibility of elevated nitrate levels.

5.1.2. Participants of the study have received water sample results for their well, and support where required for water treatment advice.

5.2. **Wider Community**

5.2.1. A WDC media release about the results of the 2020 study is planned shortly, to be timed with when the 'Managing a Private Well Supply' pamphlet is stocked at Council service centres. Occasional questions about private well water quality have been received by WDC staff in response to the nitrate private well study, and due to newspaper headlines about water quality issues in Canterbury in general.

6. IMPLICATIONS AND RISKS

6.1. **Financial Implications**

6.1.1. The cost of the 2020 study was $3,168 for laboratory analyses and courier costs. The laboratory analyses included a range of chemical contaminants, which have not been reported here, however provide important information about water quality in private wells. There is a budget allocation in 2021-22 of $10,000 for ZIPA recommendation 3.16 that is sufficient for a repeat of a WDC-led pilot study in Cust, Eyreton and an additional two areas (yet to be determined).

6.2. **Community Implications**

6.2.1. A study of nitrate levels in private wells in the Waimakariri District, gives the best outcomes for the community. This is particularly if the study targets areas where nitrate levels are potentially high. This is because currently water quality testing by private well owners is discretionary, and results are not required to be shared with Council unless as a condition for a subdivision or building consent. Due to this situation, there is limited information of the level of nitrates in private wells, with no analysis of trends over time.

6.3. **Risk Management**

6.3.1. The risk that private well owners in the Cust and Eyreton areas could be consuming water that has elevated nitrate levels over the MAV has been confirmed by this pilot study (1 of the 19 wells was over the MAV), however this well is not currently used for domestic consumption. The results of this study will be used to advise private well owners, and thereby reduce the risk of high nitrate levels.

6.4. **Health and Safety**

6.4.1. There are no specific health and safety considerations for this report.

7. CONTEXT

7.1. **Policy**

7.1.1. This matter is not a matter of significance in terms of the Council's Significance and Engagement Policy.

7.2. **Legislation**

7.2.1. Health Act 1956 and Drinking-water Standards for New Zealand (2005, amended 2018) set the Maximum Allowable Value (MAV) for nitrate-nitrogen in drinking water at 11.3 mg/L.

7.3. **Community Outcomes**

7.3.1. There is a healthy and sustainable environment for all

7.3.1.1. Cultural values relating to water are acknowledged and respected.

7.3.1.2. Harm to the environment from the spread of contaminants into ground water and surface water is minimised.

7.4. **Delegations**

7.4.1. No delegations apply to this report, as this report is for information only.

Managing a Private Water Supply Well

Contents

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

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

Managing an Existing Private Well

Water quality monitoring and management

While all the steps included within this brochure are designed 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.

Sampling for microbiological contaminants

Microbiological contaminants are microscopic bugs – viruses, bacteria or other organisms – that can lead to illness. There are a wide variety of these organisms that can affect drinking water, and 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 manage the risks from microbiological contaminants. 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).

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.

Sampling vs Treatment

If you opt to rely on sampling rather than treatment to manage the microbiological safety of your well, 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. The Environment Canterbury 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.

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 are common 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 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.

Taking a water sample at a wellhead

How do you test for chemical contaminants?

If possible, we recommend that you do a full chemical test when you purchase a property or drill a new well as an initial screening for contaminants. 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.

The Ministry of Health has information on registered 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). 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.

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 standard test suite can be found here:

https://www.waimakariri.govt.nz/services/water-services/water-supply/drinking-water-testing

Maximum acceptable values for microbiological and chemical parameters

The following table explains the MAV (maximum acceptable values), GV (guideline 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:

https://www.health.govt.nz/publication/drinking-water-standards-new-zealand-2005-revised-2018

Parameter	MAV	Notes
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 through activities 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	0.2 mg/L GV 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 GV can cause laundry staining 0.10 mg/L GV can cause taste issues	
Other (Heavy metals, organic chemicals etc)	Seek specialist advice, depending on parameter detected	

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 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 below:

Contaminant Type	Common Treatment Methods	Relevant Standards
Microbiological, as indicated by *E. coli* or total coliforms.	Filtration followed by UV disinfection	Australian / New Zealand Standards: • AS/NZS 4348:1995 and AS/NZS 3497:1998 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
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.

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.

Good design of your wellhead can protect against contamination

Well head protection

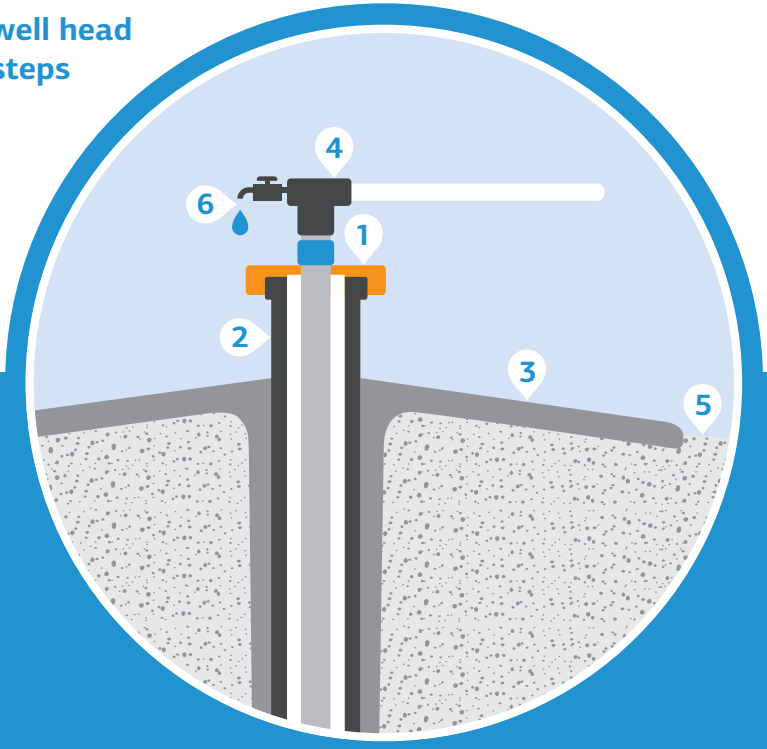
There are generally two ways that your well head could lead to contamination of your supply:

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

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.

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

Ensure the well casing is elevated at least half a metre above the ground surface

3. Concrete apron

Seal between the well casing and the surrounding ground with a concrete apron. if you're drilling a new well, install a bentonite seal around the casing.

4. Back-flow preventer

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

5. Area around well

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

6. Sample point

Have your groundwater supply tested if you suspect a problem with the water quality.

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 possible, as a well-managed public water supply will be safer than a private well. You should contact Waimakariri District Council 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 represents 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 www.eplan.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 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"): https://www.ecan.govt.nz/do-it-online/resource-consents/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'.

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 web site (https://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) and the local health board (Canterbury District Health Board). 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, WDC manages the quality of the water coming out of the tap. This is through management of the supply, storage and distribution network.

For private supplies, WDC 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.

District Health Board:

Manage the impact of the water quality on public health, and can give advice on the health impacts of water quality.

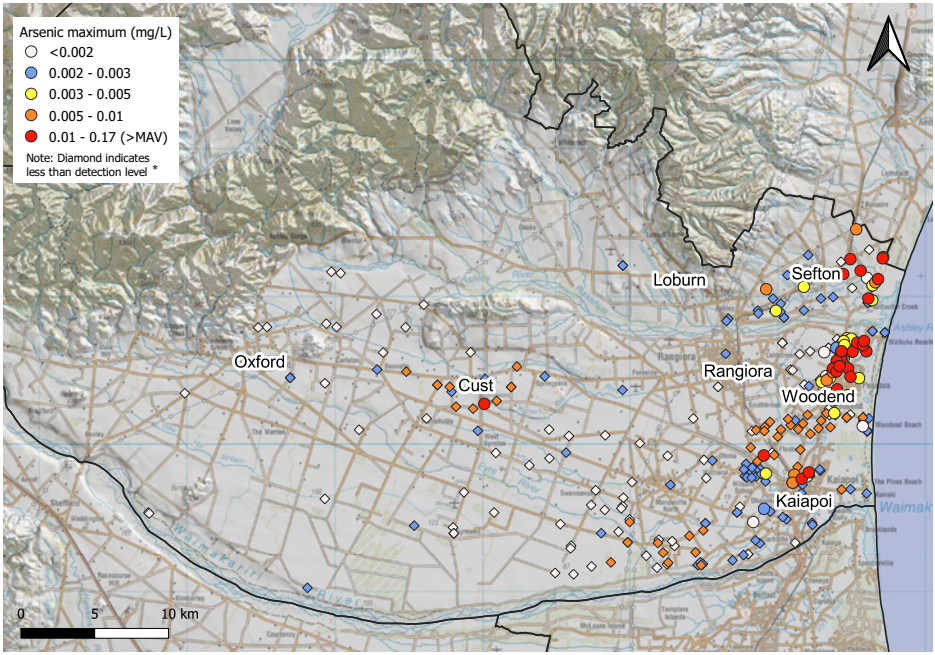
Waimakariri District groundwater quality maps:

This information is to illustrate the likely groundwater quality that might be found. 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 January 1990 and June 2020. 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, provided by Environment Canterbury on 23/06/2020.

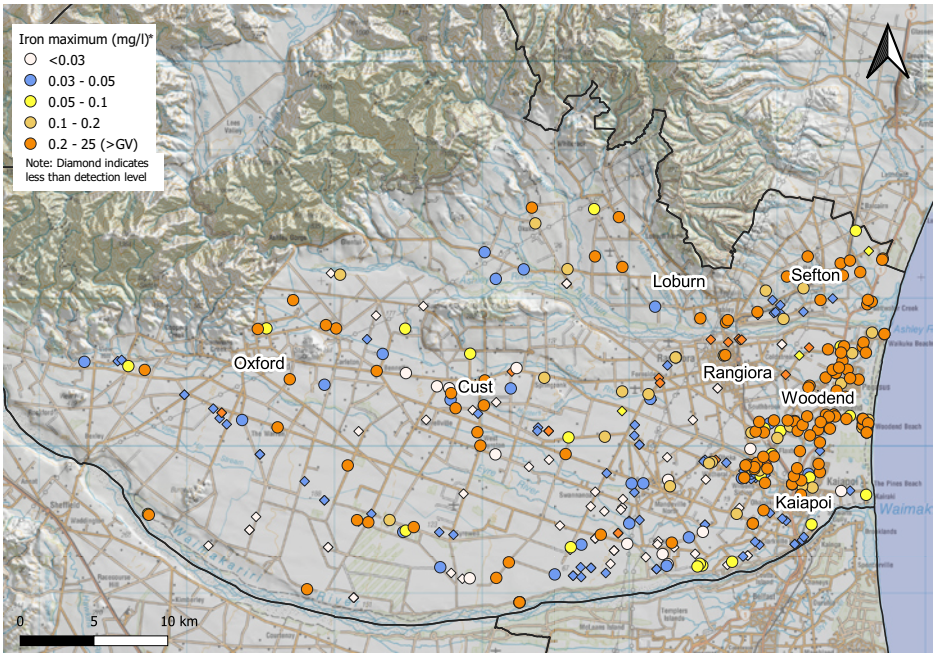
The Maximum Acceptable Value (MAV) and Guideline Value (GV) are set by the Drinking Water Standards for New Zealand (2005, amended 2018). If a MAV is exceeded, this means that the water is considered unsafe to drink. If a GV is exceeded, this means that there may be some aesthetic issues with the water.

Arsenic Maximum

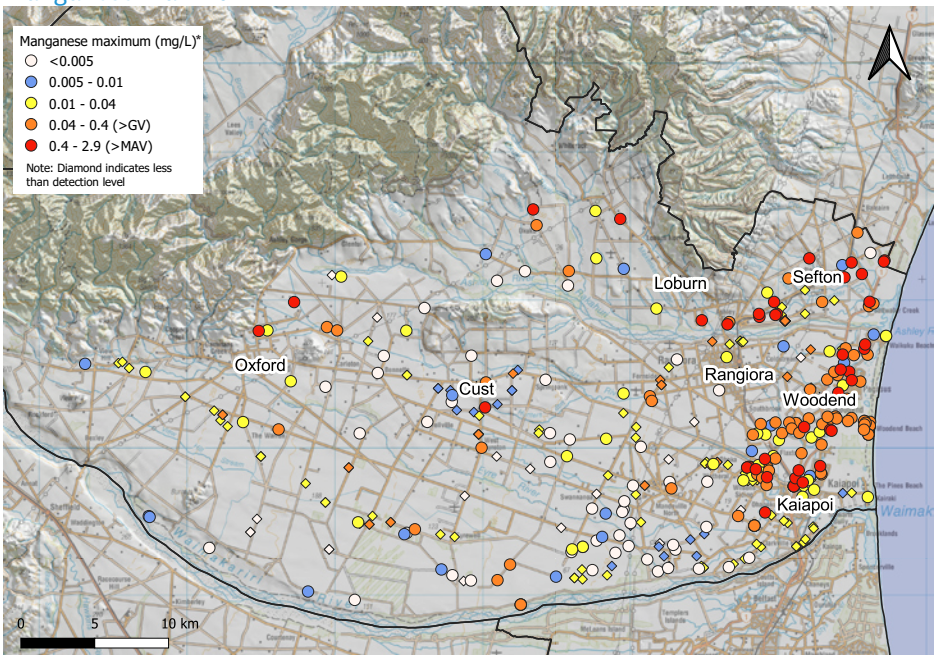


* Detection level is the lowest amount in a sample that the laboratory process can detect. Detection levels can change depending on the analysis technique.

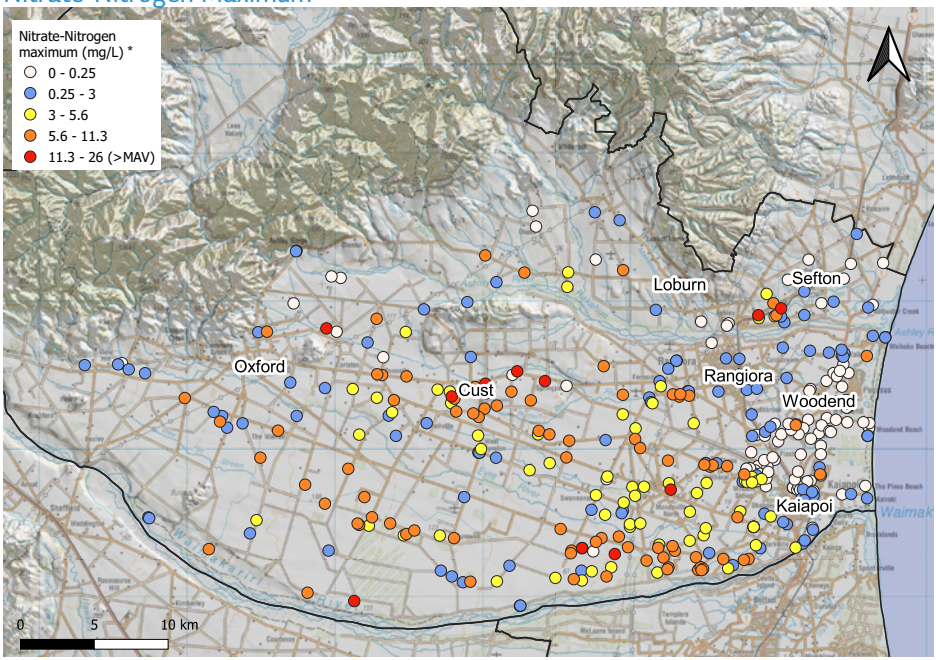
Iron Maximum



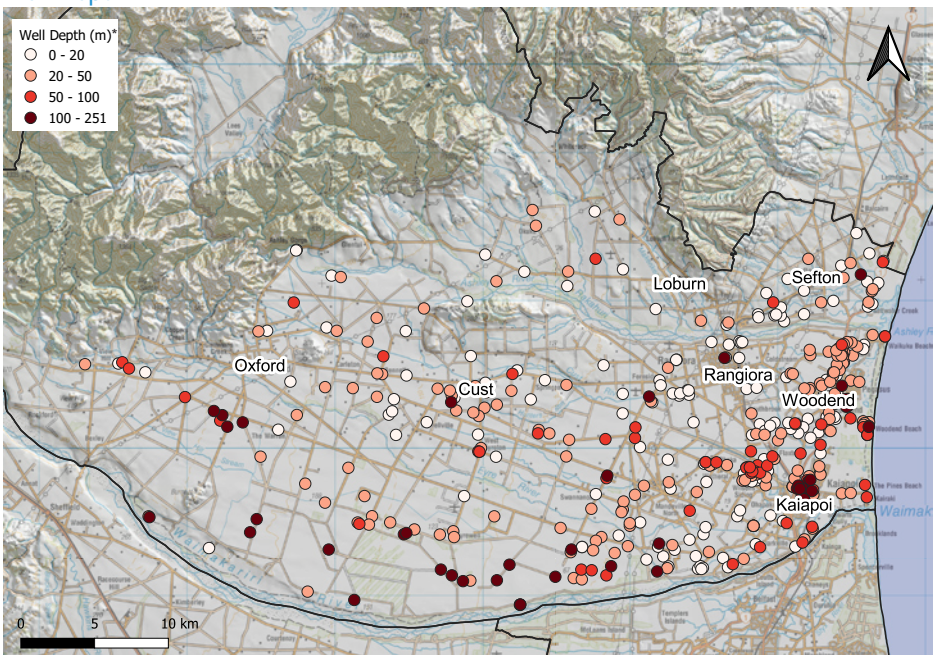
Manganese Maximum



Nitrate-Nitrogen Maximum



Well Depth



For more information please contact

Sophie Allen
Water Environment Advisor

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

201207166358

Find out more at waimakariri.govt.nz

Agenda

Canterbury Biodiversity Champions

Date: Friday 9 April 2021

Time: 10:00 am – 12:00 pm

Venue: Teams Meeting Online only – refer to the meeting invite for the link to join

Attendees:

- Barbara Gilchrist – Councillor, Timaru District Council
- Fabia Fox – Councillor, Waimate District Council
- Lan Pham – Councillor, Environment Canterbury (Chair)
- Lynda Murchison – Councillor, Hurunui District Council
- Lynette Lovett – Councillor, Ashburton District Council
- Mary Holloway – Councillor, Hurunui District Council
- Murray Lemon – Councillor, Selwyn District Council
- Pauline Cotter – Councillor, Christchurch City Council
- Robby Roche – Councillor, Kaikōura District Council
- Sandra Stewart – Councillor, Waimakariri District Council
- Anne Munro – Councillor, Mackenzie District Council

Apologies:

- Colin Wollstein – Councillor, Waitaki District Council

Support: Maree Willetts, Zoë Buxton (Environment Canterbury)

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1. Confirmation of agenda
2. District Plan reviews
3. Fit for Future CWMS Work Programmes
4. Regional approach information project
5. Shared regional approach to biodiversity advocacy

Agenda Item 2 – Territorial Authority District Plan Reviews

District Plan Review Timeline

1. Information below is to the best knowledge of Environment Canterbury Planning Section and may not be fully up to date.

Territorial Authority	District Plan operative	District Plan review (as at 26 March 2021)
Kaikōura	Operative June 2008	Rolling review of KDP has commenced. Natural hazards plan change notified March 2021. No further plan changes yet considered by KDC
Hurunui	Review completed 2016	Indicated no plan review prior to RMA system reform
Waimakariri	Operative 2005	Plan review underway. ECan has been provided with a draft plan under pre-notification consultation. Public notification is expected mid-2021
Christchurch	Operative 2016	Working on series of plan changes
Selwyn	Partially operative 2008	Publicly notified in October 2020. Hearing expected to commence mid-2021
Ashburton	Operative August 2014	Indicated no plan review prior to RMA system reform
Timaru	Operative 2005	Draft district plan released for public consultation in October 2020. Notification is expected mid-2021
Mackenzie	Operative 2004	Currently considering plan review
Waimate	Operative 2014	Currently considering plan review
Waitaki	Operative 2014	Plan review underway

Canterbury Biodiversity Champions 2021

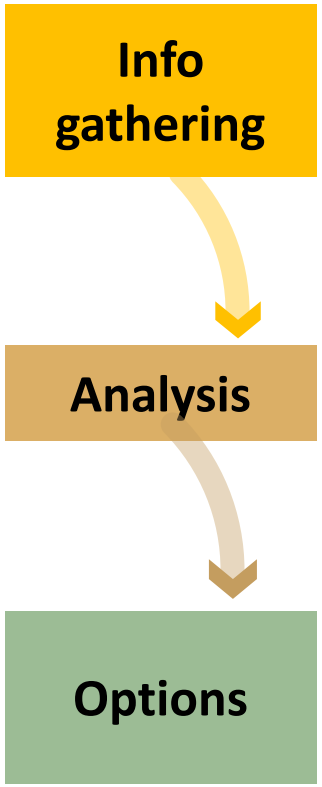
Today's meeting:

- Fit for Future – Work Programmes
- Regional approach information project
- Biodiversity Advocacy
  - Within Council
  - With the community

Fit for Future Work Programmes

- Actions to meet CWMS 2025 goals
- Ecosystem Health and Biodiversity target
- Co-designed by TA and ECan staff to inform LTP discussions

Regional approach – information gathering project



1. Outline Local Govt. biodiversity reqs.
2. Identify current priorities and actions

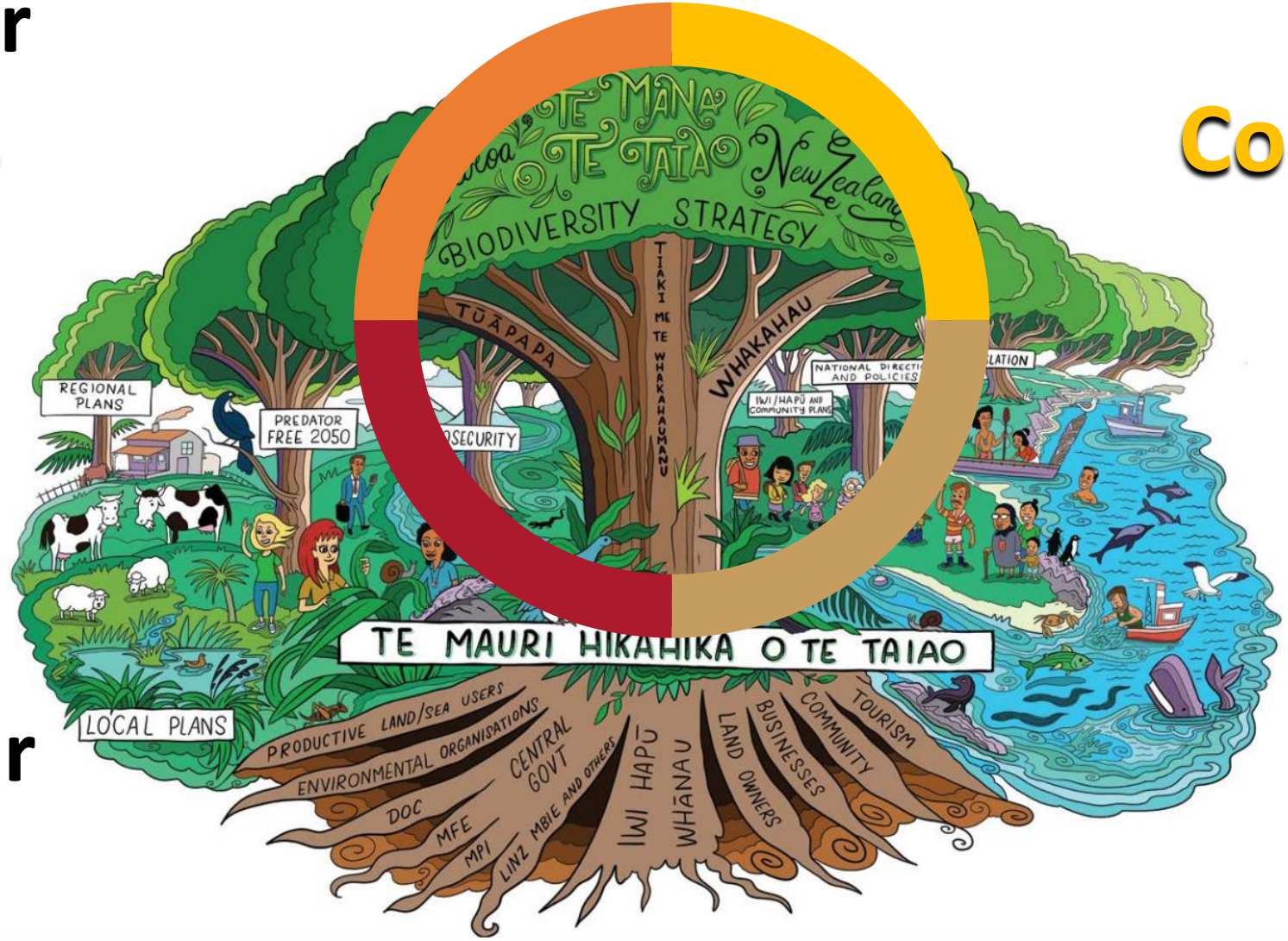
Determine ‘Gap’

Highlight opportunities for regional approach

Biodiversity Advocacy

Within our
Councils

With our
Communities



Within our
Region

Within
NZ

Biodiversity Advocacy

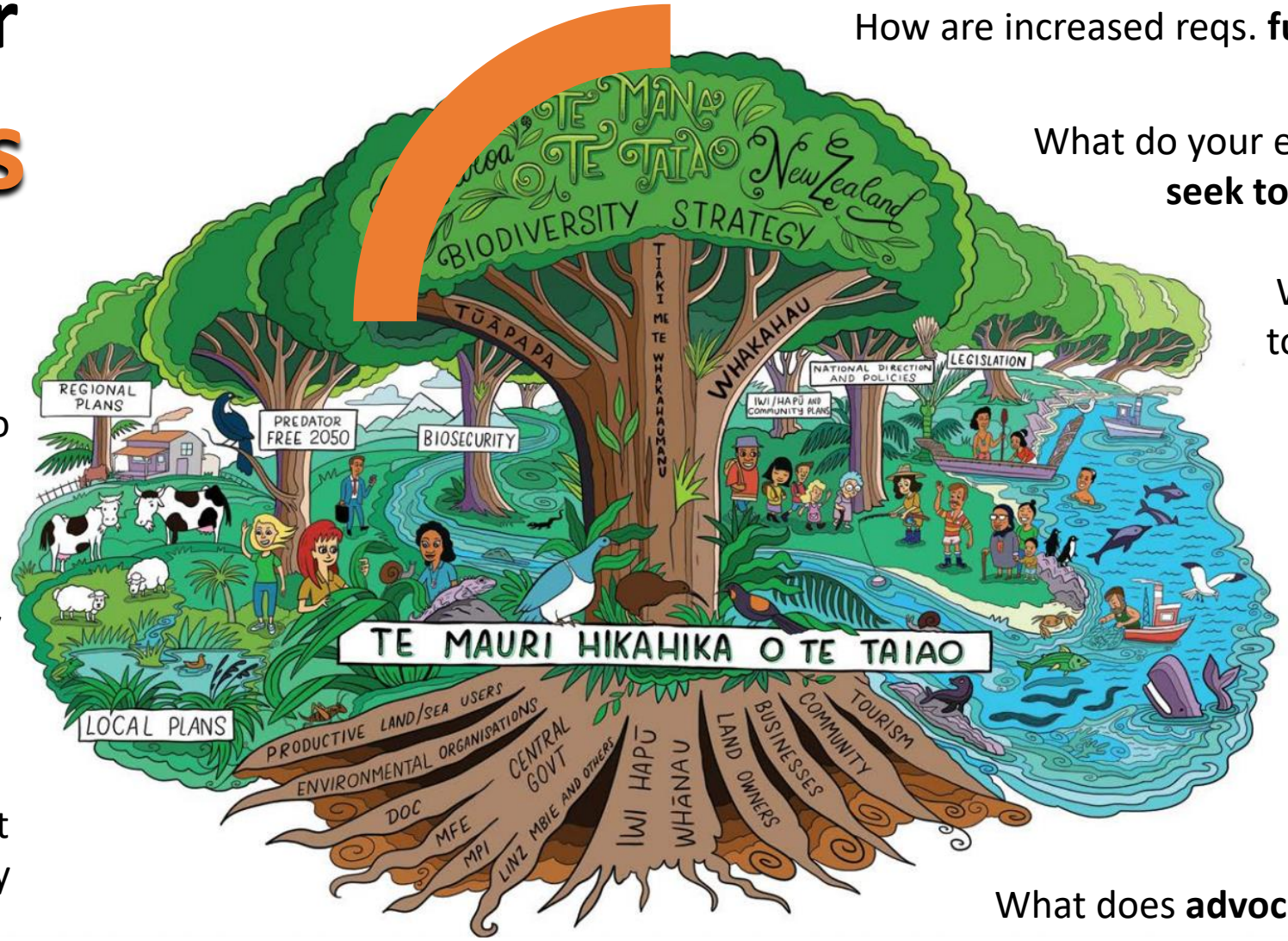
Within our Councils

Implementation through **LTPs**:

- NPSIB
- Te Mana o Te Taiao

Technical and **steering** support for the Canterbury Biodiversity Strategy

Regional alignment from local government addressing Biodiversity



How are increased reqs. **funded** at your Council?

What do your existing provisions **seek to achieve**?

What are the **road-blocks** to addressing biodiversity?

What **mechanisms** are in place to discuss biodiversity?

How are you **supported by staff?**

What does **advocacy look like** to you?

Biodiversity Advocacy

Actions our communities experience

Education and **awareness**

SNA Identification

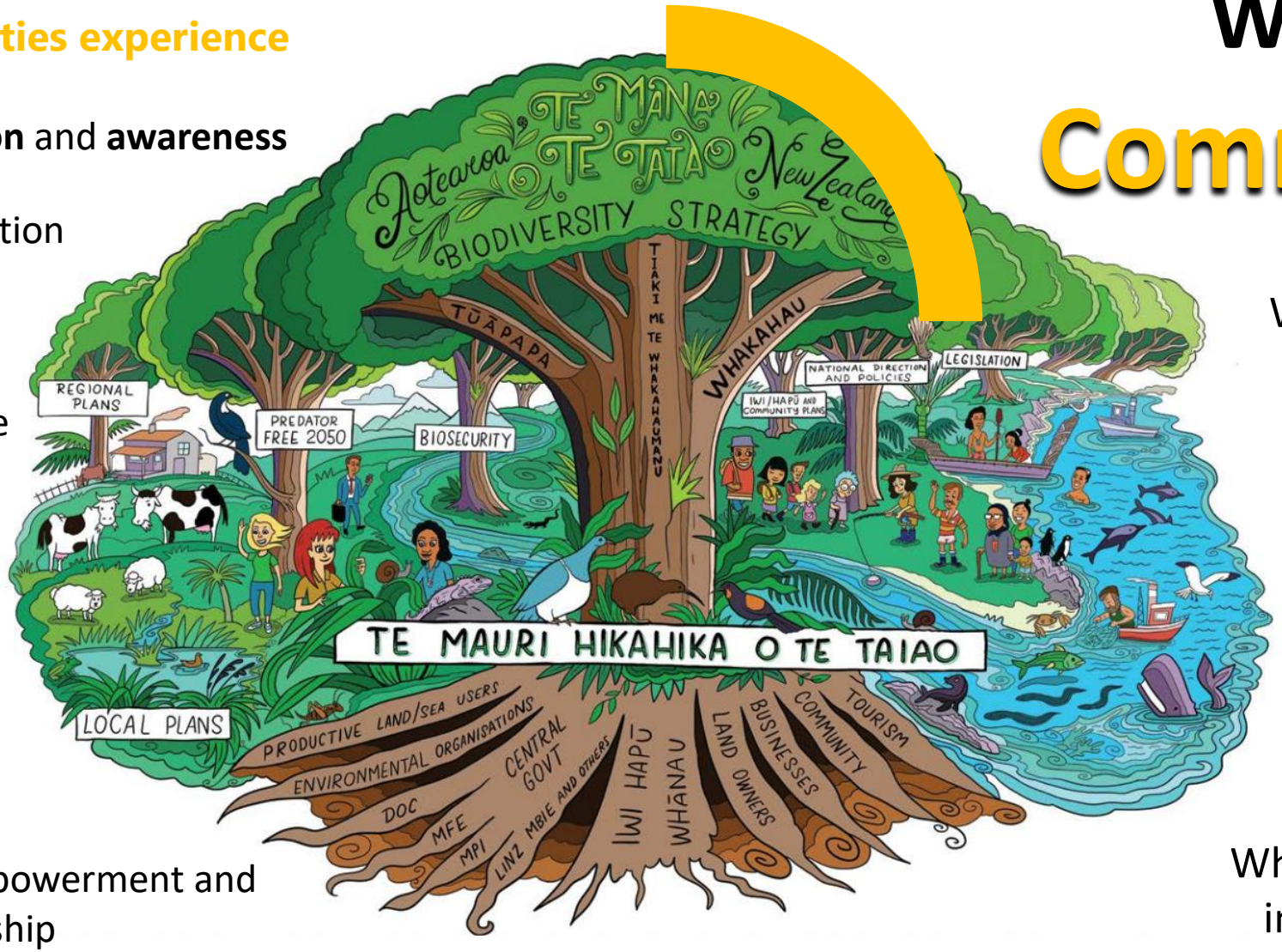
Activity **compliance**

Project and programme **co / delivery**

Connection to **thriving** native **ecosystems**

Reporting against progress / decline

Mana whenua empowerment and ownership



With our Communities

What does **success in our role** look like in the community?

What is our **community asking for**? (in relation to biodiversity)

What needs to **change** in our community?

Biodiversity Advocacy

Within our Region

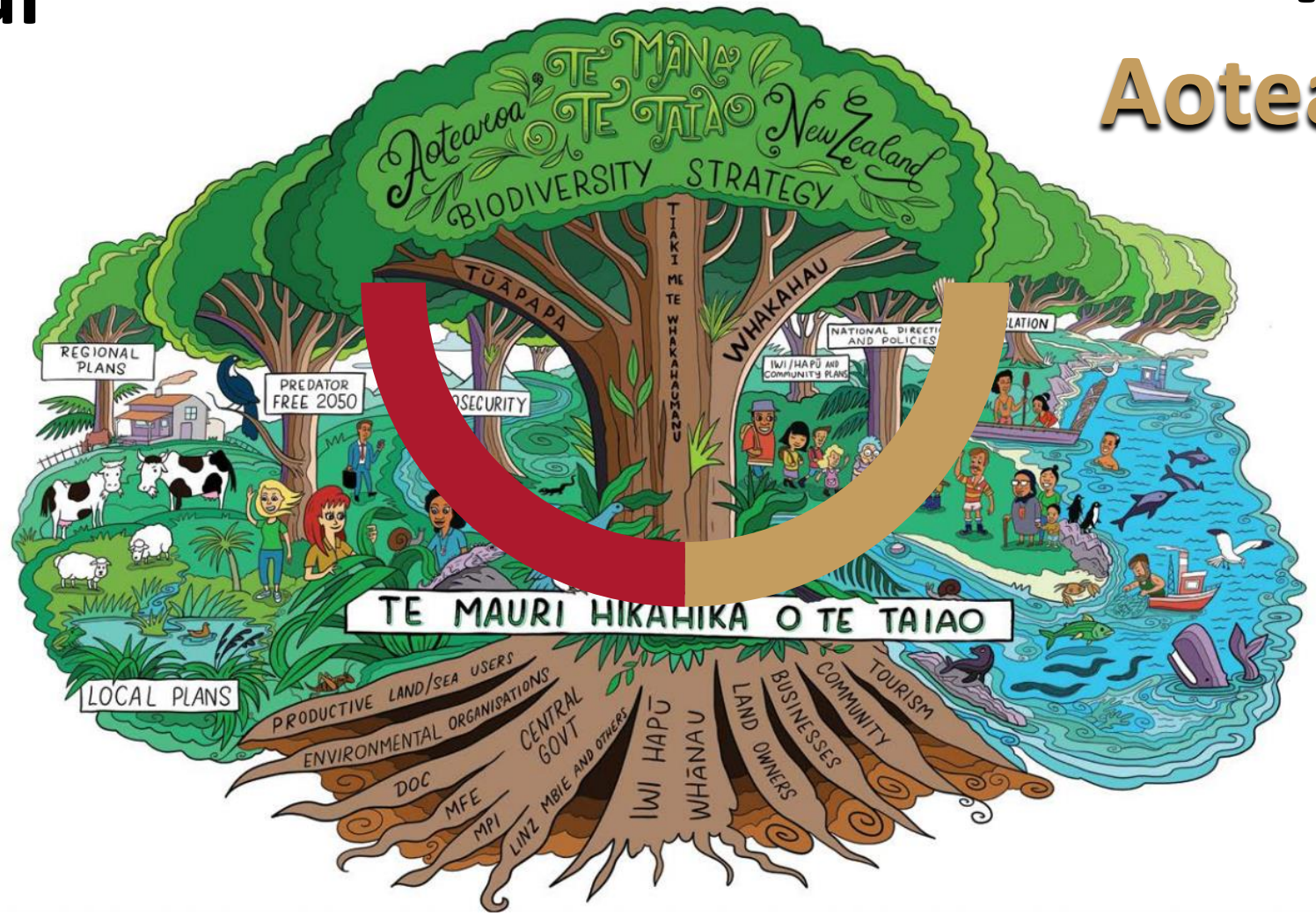
Spatial tools

Shared regional **advice and information**

Joint District Council: projects programmes approaches

NPSIB and **CBS** implementation

Celebrating success



Within Aotearoa / NZ

Joint funding bids

Influencing **research and development** opportunities

Industry support opportunities

What else?