
MINUTES
of the
OPERATIONS COMMITTEE MEETING
held
9.30 am, Thursday, 20 February 2020
at
Tasman Council Chamber, 189 Queen Street, Richmond

Present: Deputy Mayor Cr S Bryant (Chair), Cr C Mackenzie (Deputy Chair), Mayor T King, Crs D McNamara, C Butler, D Ogilvie, M Greening, T Tuffnell, C Hill, A Turley, T Walker, K Maling and D Wensley

In Attendance: Community Development Manager (S Edwards), Activity Planning Manager (D Fletcher), Programme Delivery Manager (R McGuigan), Transportation Manager (J McPherson), Utilities Manager (M Schruer), Executive Assistant (C Vass) and Executive Assistant to the CEO (H Simpson)

Part Attendance: Engineering Services Manager (R Kirby), Environment and Planning Manager (D Bush-King), Reserves and Facilities Manager (R Hollier), Community Relations Manager (C Choat), Customer Service Manager (S Westley), Resource Scientist (Dr B Simmonds), Science Officer (M Westley), Policy Planner (D Worthy), Resource Scientist (A MacKenzie)

1 OPENING, WELCOME

Deputy Mayor, Stuart Bryant welcomed everyone to the meeting. He asked the Councillors to direct any questions through the Chair.

2 APOLOGIES AND LEAVE OF ABSENCE

Moved Cr Mackenzie/Cr McNamara
OCC20-02-1

Recommendation

That apologies be accepted for Mayor King for lateness.

CARRIED

3 PUBLIC FORUM

Mr Murray Dawson said that he was speaking on behalf of Lew Solomon, who he said had emailed Councillors prior to the meeting on the subject of nitrate levels in water. Mr Dawson said that action was required by the Council citing a Danish study that he said had identified a correlation between increased nitrate levels in water and cancer. He suggested that the Freshwater Land Advisory Group (FLAG) for the Waimea Plains be reactivated.

Councillor Butler joined the meeting at 9.43am.

Cr Dana Wensley read out a statement on behalf of Jean Gorman. A copy of that statement was tabled and is attached to the minutes. Cr Wensley asked for her support to be noted of the comments made by Mr Gorman.

4 DECLARATIONS OF INTEREST

No declarations were made

5 LATE ITEMS

Nil.

6 CONFIRMATION OF MINUTES

**Moved Cr Tuffnell/Cr Turley
OCC20-02-2**

That the minutes of the Operations Committee meeting held on Thursday 21 November 2019 be confirmed as a true and correct record of the meeting.

CARRIED

7 REPORTS OF COMMITTEE

Nil

8 PRESENTATIONS

8.1 Richmond Aquatic Centre - Vaughan Hope and Crystal Gaiger

Speaking with the aid of a power point presentation, Vaughan Hope provided an update to the Council on the recent activity of the Richmond Aquatic Centre. Crystal Gaiger was also in attendance to answer question. Mr Hope's presentation covered the following topics:

- Visitor numbers
- Community outreach
- Sponsored swimming lessons
- School swimming lessons
- Tasman Magic Academy
- Our senior community

- Actively engaging youth
- Focus for the next 12 months
- Customer feedback

The Council thanked Mr Hope and Ms Gaiger for their presentation.

In response to a question, Mr Hope said that the reach of the Aquatic Centre stretched across the District. He said that staff were already proactively working with communities in Golden Bay, Motueka and St Arnaud.

The Council asked whether the swimming programme included a water safety component and were advised that this was the case with school swimming lessons which occurred in the pool and at the beach. Mr Hope said that staff wanted to put more thought into how they could expand water safety beyond school aged children, to reach boat owners and general water users.

Responding to a question, Mr Hope said that primarily schools using the centre were in the Tasman region but that there were a number of schools in Nelson using its programmes. He took an action to report back on actual figures to the next Committee meeting.

The Council asked whether there was any longer term projection beyond the twelve month focus. Mr Hope said that building relief would be a focus as the building continued to age. He said that trends within the aquatic and fitness environment tended to start overseas and change quickly, meaning that by the time centres in New Zealand had invested there was an emerging new trend.

9 REPORTS

9.1 Chairman's Report

The Chairman presented his report which was taken as read.

Chairman Bryant acknowledged the statement read during the public forum by Cr Wensley on behalf of Jean Gorman and the growing congestion around Wensley Road was discussed.

Chairman Bryant presented a photograph of the Dart Ford. In response to a question, the Chair confirmed that there was not currently a warning sign at the ford but that this had been requested. A depth gauge had been installed and staff were waiting for the signs to arrive.

**Moved Cr Wensley/Cr Walker
OCC20-02-3**

**That the Operations Committee receives the Chairman's Report ROC20-02-2
CARRIED**

Cr Hill joined the meeting at 10.13am

9.2 Community Development Operations Update Report

Community Development Manager, Susan Edwards provided an update to the Council on the Motueka Library Project. She said that the project board were working with the community and

were making good progress on the project. The next stage will be to work with iwi on the cultural elements of the new library.

The Council asked and were advised that information on maintenance and projected revenue in relation to the Richmond Aquatic Centre would be brought back to the Council through the Long Term Plan 2021-2031 and Activity Management Plan processes.

In response to a question about the Motueka Quay project, Reserves and Facilities Manager, Richard Hollier said that information on the scope of the project would be circulated to Councillors and to the Motueka Community Board.

Mr Hollier said that staff were looking at designs to replace the toilets at North Street Beach Reserve in Motueka. When asked about the Trewavas Street walkway, Mr Hollier said that there were currently no plans to widen the walkway and that use of the grassed area on either side would continue.

In response to a question about incidents that had occurred at library sites, Ms Edwards advised that health and safety matters were reported to the Full Council through the Chief Executive's report. She said that managers also reported incidents that had occurred in their departmental areas to standing committees through their managers' reports.

The Council commended customer service for the service they provide and the positive feedback received. Ms Westley said that any Councillors who wished to spend some time in customer services to listen to the nature of calls received and how these were responded to, were welcome to do so and should contact her to arrange a time to do this.

The Council enquired and were advised that updates on the libraries and customer services activities operations are being reported to the Operations Committee at alternate meetings. Ms Edwards said that this was because reporting on each activity at six weekly intervals would mean that there may not be much new information to report.

In response to a question, Ms Edwards advised that personal safety alarms were available in service centres and libraries, and were available to staff and councillors. Responding to a follow up question, she said that staff did receive training on how to respond to challenging customers, which included managing conflict and deescalating difficult situations, and that this training could be offered to Councillors in a separate session.

**Moved Cr Wensley/Cr Maling
OCC20-02-4**

That the Operations Committee receives the Community Development Operations Update Report ROC20-02-3.

CARRIED

The meeting adjourned at 10.43am for morning tea and was reconvened at 11.00am.

9.3 Waimea Plains Nitrate Supplementary Data: Land-Use, Soil and Groundwater Properties

Resource Scientist, Dr Bernard Simmonds and Science Officer, Melanie Westley gave a short presentation, speaking to a series of power point slides. The balance of the report was taken as read and the Chairman invited questions to staff.

The Council asked that the presentation be circulated to councillors and made publically available on the Council's website following the meeting.

Responding to a question, Ms Westley said that it is unknown when historic levels of nitrate would be diminished and that even having ceased contributing land use practices it was not possible to determine an exact timeline.

Mayor King joined the meeting at 11.20am.

The Council discussed whether there was more work that could be undertaken to reduce this risk. Dr Simmonds said that staff were proactively working with land owners and that their practices to reduce nitrate levels were generally excellent. The Council reiterated that it felt it had a duty to continue to look at ways to mitigate the risks to people in the District from high levels of nitrates.

The meeting adjourned at 11.30am and was reconvened at 11.44am. Mayor King left the meeting before it reconvened.

**Moved Cr Tuffnell/Cr Mackenzie
OCC20-02-5**

**That the Operations Committee receives the Waimea Plains Nitrate Supplementary Data: Land-Use, Soil and Groundwater Properties Report ROC20-02-4.
CARRIED**

Cr Hill left the meeting at 11.50am.

9.4 Riwaka, Brooklyn and Motueka Air Quality Monitoring 2019

This report was taken as read. Policy Planner, Diana Worthy and Resource Scientist, Anna Mackenzie were present to answer questions from the Council.

The Council asked why Riwaka and Brooklyn had been targeted as opposed to other areas. Ms Worthy said that in terms of compliance, larger numbers of complaints were received in these areas. She said that staff would look to roll out this monitoring in other townships.

The Council thanked staff for the comprehensive work they had undertaken. Ms Worthy noted that one of the recommendations from NIMA (National Institute of Water and Atmospheric Research) was to further investigate outdoor burning in those rural areas.

Ms Worthy noted that the Richmond Airshed Emissions Inventory had just been received and will be made available to Councillors via email and made public on the Council's website.

**Moved Cr McNamara/Cr Ogilvie
OCC20-02-6**

That the Operations Committee receives the Riwaka, Brooklyn and Motueka Air Quality Monitoring 2019 Report ROC20-02-5.

CARRIED

9.5 Engineering Services Activity Report

Activity Planning Manager, Dwayne Fletcher, Transportation Manager, Jamie McPherson, Programme Delivery Manager, Russell McGuigan and Team Leader, Stormwater and Waste Management, David Stephenson were present to speak to the report and take questions from the Council.

Cr Hill returned to the meeting at 12.10pm.

Mr Fletcher, asked that the Council receive the submission from Tasman District Council to the Government's Health Committee on the Taumata Arowai – The Water Services Regulator Bill which will establish the 3 Water Regulator in New Zealand.

Mr Fletcher spoke to the Activity Planning Report and in particular to the Richmond Network Operating Framework which is a transport project partnered with the New Zealand Transport Authority reviewing the total transport network operations in Richmond. Mr Fletcher also advised that consultation approval will be sought in April for the Active Transport Strategy, and staff will hold a workshop with Councillors before then so staff can seek Councillor feedback on the draft.

In response to a request, Mr Fletcher confirmed that once the Motueka Stormwater and Catchment River Modelling was completed, a workshop would be arranged with the Community Boards and the Council. This will include addressing what assumptions were made around climate change and sea level rise.

Cr Wensley left the meeting at 12.40pm

Mr McGuigan presented the programme delivery schedule and was pleased to report that some of the Council projects were being completed ahead of the deadline. The Council congratulated the engineering team on the completion of projects ahead of schedule and the professional and collaborative approach taken with the contractors.

Mr McGuigan outlined the challenges with the Bateup Road project. He noted that staff are working with the contractor to deliver a road to the required standards. He noted that the budget for the project was \$4.8 million and that the final cost is \$5.1 million. The cost overrun is largely due to scope changes on the project, mainly relating to driveway changes and drainage.

Staff noted that there had been a recording of E.coli in the Upper Takaka drinking water and appropriate response actions have occurred, including contacting residents. Staff also noted that the new wastewater dump site in Motueka is receiving a high amount of use.

The Council requested more information on the recycling of plastics. David Stephenson said that a presentation on the National Launch of results of Rethinking Rubbish and Recycling Research will be given at the Strategy and Policy Committee Meeting on the 27 February 2020.

Moved Cr Ogilvie/Cr Maling

OCC20-02-7

That the Operations Committee:

- 1. receives the Engineering Services Activity Report ROC20-02-6; and**
- 2. approves the submission to the Health Committee on the Taumata Arowai – The Water Services Regulator Bill; and**
- 3. agrees for the Engineering Services Manager to make changes to the submission referred to in resolution 2 for minor edits and to reflect any changes sought by the committee; and**

4. **endorses the Tasman District Council submission on the Government’s proposal to amend the waste disposal levy (as attached to this report, dated 31 January 2020 and submitted by the Engineering Services Manager under delegated authority).**

CARRIED

9.6 Customer Service Requests

This report was taken as read. Engineering Services Manager, Richard Kirby and Customer Services Manager, Suzanne Westley were present to respond to questions from the Council.

The Council thanked staff for their comprehensive report. They asked whether there was any plan to have a more integrated customer service request system with a view to improving the handling of and responsiveness to requests from customers. Mr Kirby advised that the Chief Information Officer was working with staff to look into a more integrated system that could be used across the various functions of the Council that would enable staff to streamline management of customer requests.

**Moved Cr Ogilvie/Cr Mackenzie
OCC20-02-8**

That the Operations Committee receives the Customer Service Requests Report ROC20-02-7;

CARRIED

10 CONFIDENTIAL SESSION Nil

The meeting concluded at 1pm.

Date Confirmed:

Chair:

From Jean Gorman

Great Taste Trail and other Bike Tracks.

Hi there,

The other day, Radio NZ was talking about the number of ACC claims for older people on bikes and all the blame was on those getting injured. I think that signage on the bike trails has a role to play here.

I am nearly seventy and have biked all my life, I usually travel at about 30 kph. This is not walking pace and signs do have to be put up well in advance and in large enough print to be read from a distance. There are lost bikers all over the district, who have lost the trail. Often they end up on SH6 or worse, on the Appleby Highway.

Signs need to be put up to assist bikes to get back onto the Bike Trail. Three examples: at the dairy at the junction of Ranzau and Hope Main Road; the Brightwater Motel where River Rd comes into SH6 and Robinson Rd to help to get bikes back onto the trail in Lord Rutherford Rd South for the Wakefield section.

In Richmond, specifically, there is a danger spot where the cycle route from Brightwater suddenly ends, opposite Beach Rd. There is no warning of this. The first time I biked along it, I couldn't believe it when confronted by a pavement edge and passing logging truck. The knee specialist tells me I will recover. There is no indication as to where the bike track goes. Family groups of bikers are often found crossing straight across to Beach Road at a nasty, busy intersection.

Wensley Road is another disaster waiting to happen. All along the straight part there is a green section of road for bikes. Then there is the chicane, brow of a hill and intersection with Waverly road. At this point the bike track has completely disappeared. Not only that, but parking is permitted, forcing bikes out into the stream of traffic. What are bikes supposed to do? Bike tracks can't be intermittent. Cars cannot be permitted to park on bike tracks. Cars have traditionally had the right to park on roads. This is going to have to change if there is going to be room on roads for increased traffic, bikes and, in some towns, scooters. May I suggest that the bike track is led through the cemetery, or West Ave, Cautley St, Hunt, Bell and into town via Cambridge Street?

In Wakefield, the start of the new Belgrove section of Bike Track from Pigeon Valley Bridge to Belgrove still needs a relevant map. The map there is of Wakefield, not the new track.

I reiterate that signs are very important to the safe functioning of a bike network. They need to be timely – well before turnings or danger points and in large enough print to be understood at ten to twenty metres. I understand that there is not the money to pay for signs, but this small cost must be weighed against the high cost of injuries to cyclists and even fatalities.

Table it.

- Improvements to Wensley Rd need to be treated as a matter of priority.
- Not scheduled until 2028.
- If we don't fix our local roads to prioritise active transport & make it safe for people to walk & cycle then we will never solve the transport problem.

Waimea Plains Nitrate: Soil and Groundwater 2020

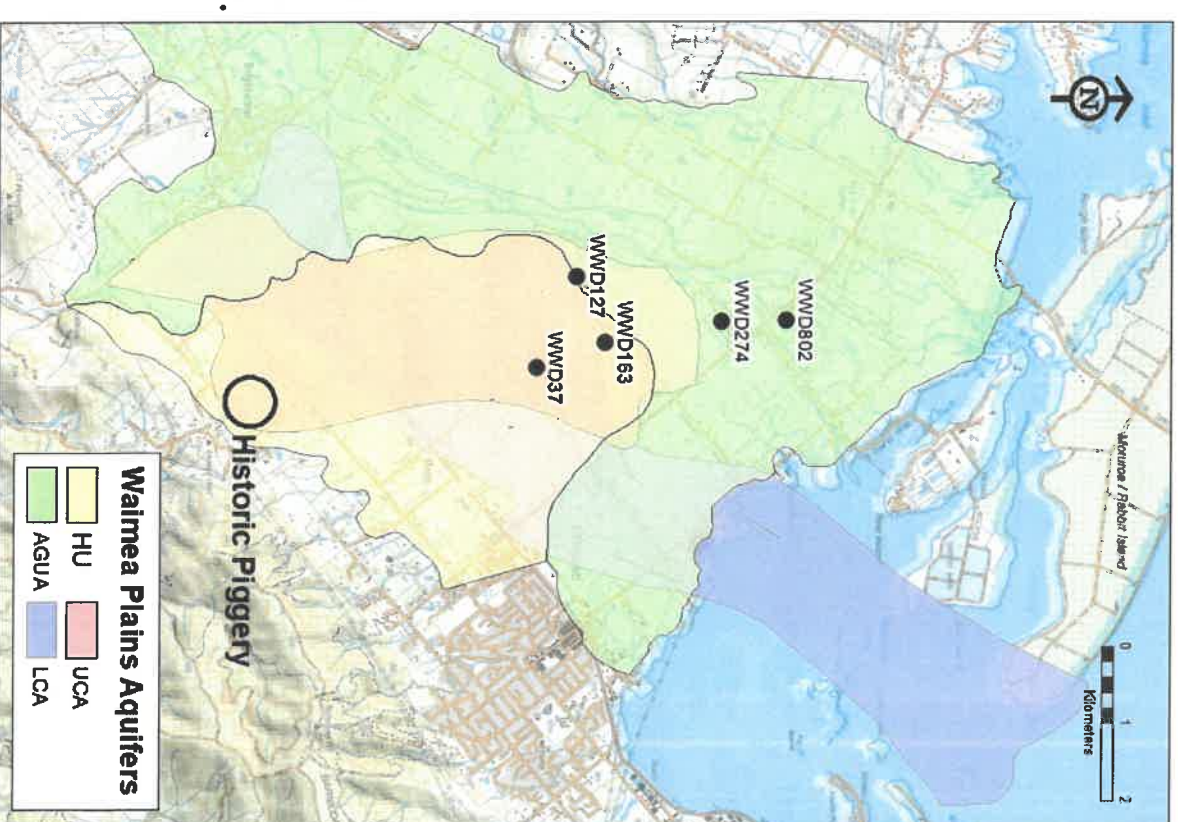
Dr Bernard Simmonds, Resource Scientist – Land
Melanie Westley, Science Officer – Groundwater

Purpose of the Survey

- Elevated nitrate concentrations are present in parts of the Waimaea Plains groundwater. The source of nitrates is likely to be from a historic point source and from diffuse inputs from current land use practices.
- To better understand the potential effects from land use practises, a soil survey was undertaken. The survey identified land uses with a high risk for nitrate leaching losses from soil to groundwater on the eastern Waimaea Plains.

Background

- Overall, much of the Waimea Plains has low nitrate concentrations in the groundwater.
- Monitoring has confirmed elevated nitrate concentrations in parts of the Waimea Plains.
- Currently, highest nitrate concentrations are between Bartlett Road and Ranzau Road (where the UCA discharges into the AGUA).
- Source of nitrates is likely to be a combination of:
 - Historic point source associated with the piggery plume.
 - Unquantifiable nitrate inputs from diffuse sources across the Waimea Plains above recharge areas for the aquifers.

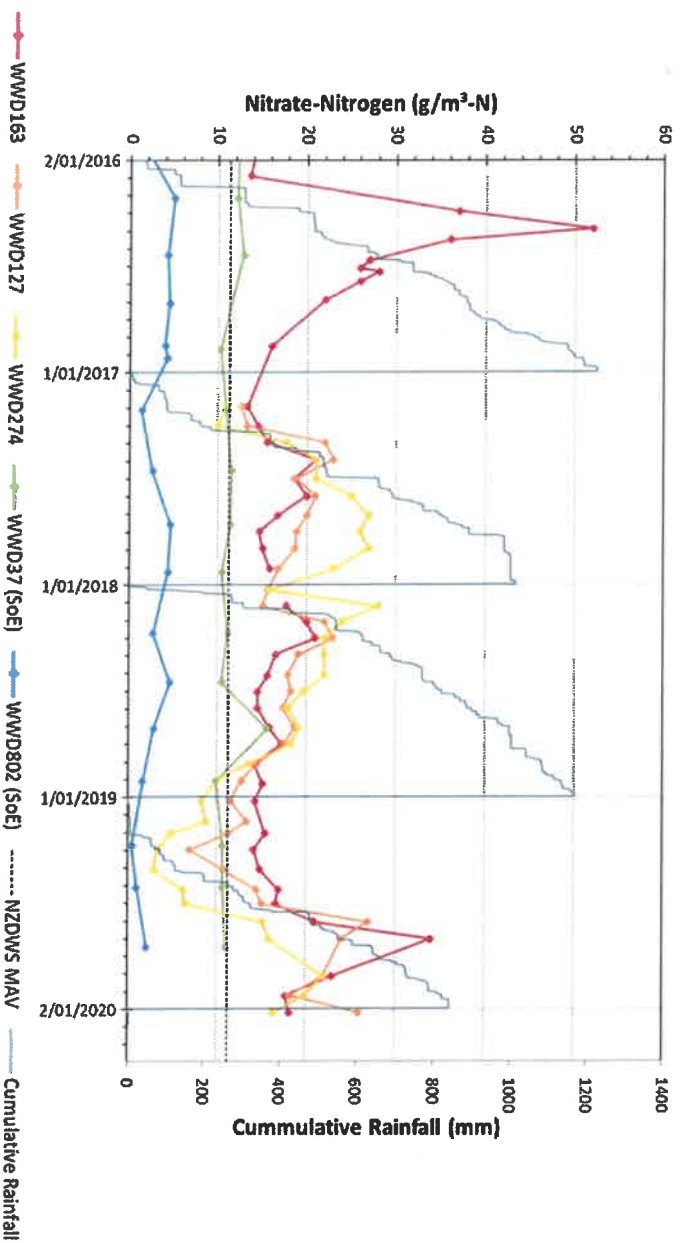


Historic Groundwater Monitoring

- Five synoptic surveys (between 1986 to 2016) tracked the plume of elevated nitrate concentrations northwards across the Waimea Plains.
- 1986 – nitrate highest in recharge areas near the piggery location.
- 2016 – nitrate highest at Bartlett Road and Ranzau Road. This is where the UCA and AGUA merge together.
- Plume of historic nitrate concentration decreasing over time. The relative contributions of the historic piggery plume and current land use inputs vary over time and are not well understood or easily measured.

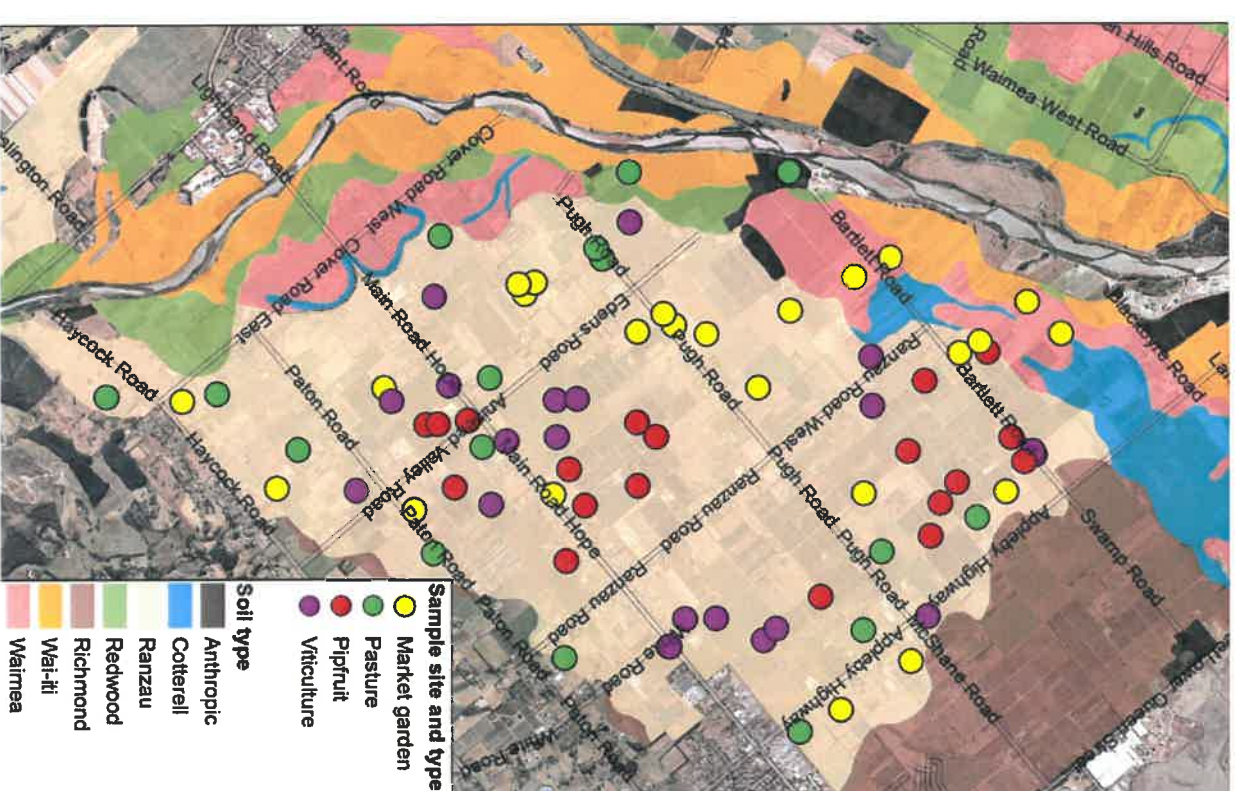
Historic Groundwater Monitoring Monitoring cont.

- Monthly monitoring from 2017 to present to monitor nitrate concentrations in the Bartlett and Ranzau Road area.



Methodology - Soils

- Sample area = stony/shallow soils under high intensity production (permeable, well drained properties)
- Four largest agricultural land uses chosen (covers 80% of survey area)
- Eighty sites randomly selected (waypoint generator)
- Topsoil (7.5-17.5cm) and subsoil (30-40cm) samples collected. Subsoil depth corresponds to gravel.
- Tests for various nutrients, carbon, extractable mineral components, heavy metals and pH.
- Statistical software tested differences between land uses



Soils in the survey area

- Ranzau ‘very stony’ = 951 ha
- Ranzau ‘moderately stony’ = 556 ha
- Also Wai-iti and Waimaea ‘shallow’ or ‘stony’
- Versatile soils with irrigation

Have high potential for nutrient leaching

- Well drained
- Rapid permeability/high hydraulic conductivity
- Low plant-available water holding capacity

Ranzau “Very Stony” example

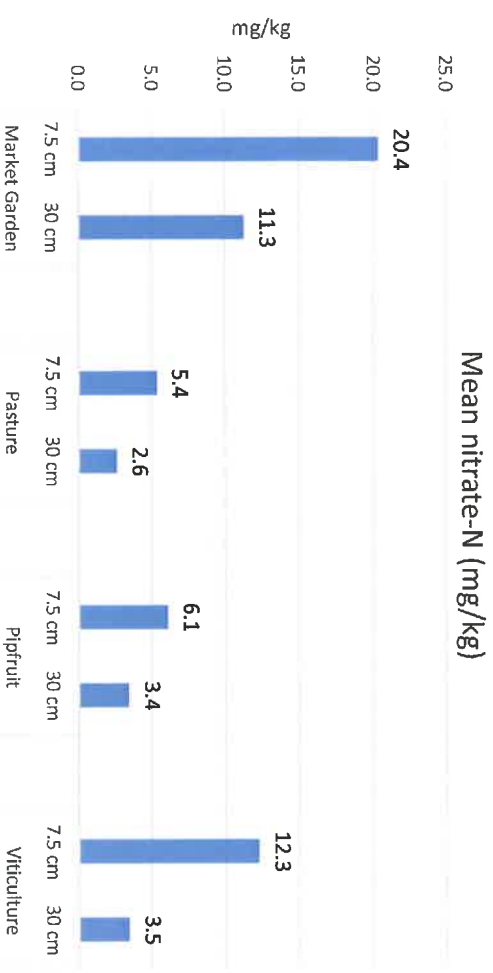


Results: Soil nitrate

- Topsoil
- MG significantly higher than PAS and PIP, but not VIT.

Subsoil

- MG higher than all land uses.



7.5 cm sample depth		Statistics		
Land use type	Sample Size	Mean	Standard Deviation	Individual 95% CI for Mean
Market Garde	25	20.386	24.356	(10.332, 30.439)
Pasture	16	5.3920	3.4559	(3.505, 7.2336)
Pipfruit	19	6.1119	2.9826	(4.6743, 7.5495)
Viticulture	20	12.273	11.271	(6.9977, 17.548)

30 cm sample depth		Statistics		
Land use type	Sample Size	Mean	Standard Deviation	Individual 95% CI for Mean
Market Garde	23	11.302	11.780	(6.2082, 16.396)
Pasture	16	2.6477	1.3747	(1.9152, 3.3802)
Pipfruit	19	3.4240	1.5812	(2.6618, 4.1861)
Viticulture	20	3.4520	1.8784	(2.5729, 4.3311)

Nitrate in subsoil is expected to be at higher risk of leaching if outside of plant uptake zone.

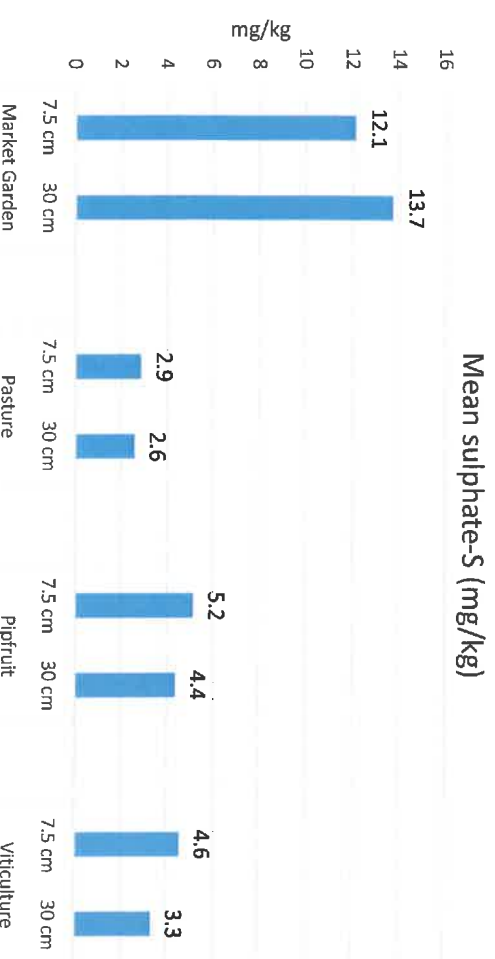
Soil fertility indicators: Sulphate-S

Topsoil

- MG significantly higher than PAS and VIT, but not PIP.

Subsoil

- MG significantly higher than PAS and VIT, but not PIP.



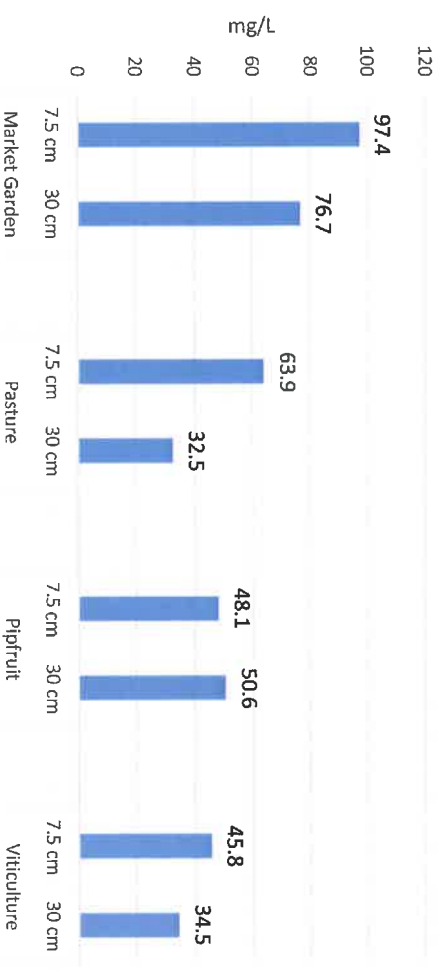
7.5 cm sample depth		Statistics		
Land use type	Sample Size	Mean	Standard Deviation	Individual 95% CI for Mean
Market Garde	25	12.12	11.794	(7.2515, 16.989)
Pasture	16	2.875	1.4083	(2.1246, 3.6254)
Pipfruit	19	5.1579	4.7054	(2.8900, 7.4258)
Viticulture	20	4.55	3.1702	(3.0663, 6.0337)

30 cm sample depth		Statistics		
Land use typ	Sample Size	Mean	Standard Deviation	Individual 95% CI for Mean
Market Garde	23	13.217	14.381	(6.9986, 19.436)
Pasture	12	2.5833	1.5643	(1.5894, 3.5772)
Pipfruit	19	4.3684	3.8472	(2.5141, 6.2227)
Viticulture	18	3.3333	1.6088	(2.5333, 4.1334)

Nitrate and sulphate were correlated in topsoils. This suggests they are applied together or at similar times.

Soil fertility indicators: Olsen P

Olsen P (mg/L)



Topsoil

- MG significantly higher than PIP and VIT, but not PAS.

Subsoil

- MG higher than VIT

No correlation between Olsen P and Nitrate-N

7.5 cm sample depth		Statistics		
Land use type	Sample Size	Mean	Standard Deviation	Individual 95% CI for Mean
Market Garde	23	97.391	53.549	(74.235, 120.55)
Pasture	10	63.9	73.969	(10.986, 116.81)
Pipfruit	14	48.143	38.075	(26.159, 70.126)
Viticulture	13	45.769	44.636	(18.796, 72.742)

30 cm sample depth		Statistics		
Land use type	Sample Size	Mean	Standard Deviation	Individual 95% CI for Mean
Market Garde	17	81.588	58.965	(51.271, 111.91)
Pasture	10	32.5	50.300	(-3.4822, 68.482)
Pipfruit	16	50.563	60.646	(18.246, 82.879)
Viticulture	16	24.688	33.751	(6.7026, 42.672)

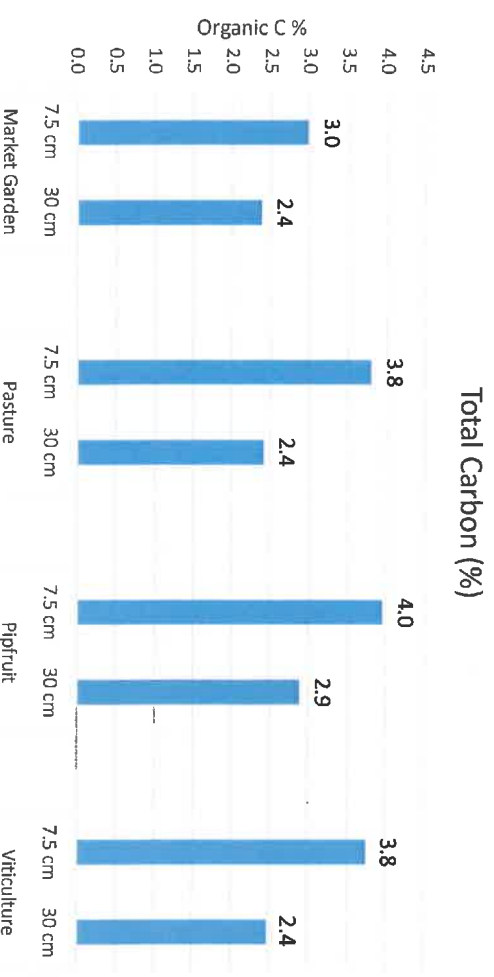
Soil biological indicators: Total carbon

Topsoil

- MG significantly lower than PAS, PIP and VIT.

Subsoil

- No differences detected.



7.5 cm sample depth		Statistics		Individual	
Land use type	Sample Size	Mean	Standard Deviation	95% CI for Mean	
Market Garde	25	2.9831	0.76538	(2.6671, 3.2990)	
Pasture	16	3.8046	0.74786	(3.4061, 4.2031)	
Pipfruit	19	3.9574	1.0860	(3.4340, 4.4808)	
Viticulture	20	3.7503	0.99829	(3.2831, 4.2175)	

30 cm sample depth		Statistics		Individual	
Land use type	Sample Size	Mean	Standard Deviation	95% CI for Mean	
Market Garde	24	2.4144	0.54662	(2.1836, 2.6452)	
Pasture	16	2.4148	0.57762	(2.1070, 2.7226)	
Pipfruit	19	2.8879	0.78858	(2.5078, 3.2680)	
Viticulture	20	2.3692	0.72706	(2.0289, 2.7095)	

Tillage decreases SOM. Decreased SOM means poor water storage, and less ability for soil microbes to extract C to immobilise N unused by plants.

Soil biological indicators:

AMN

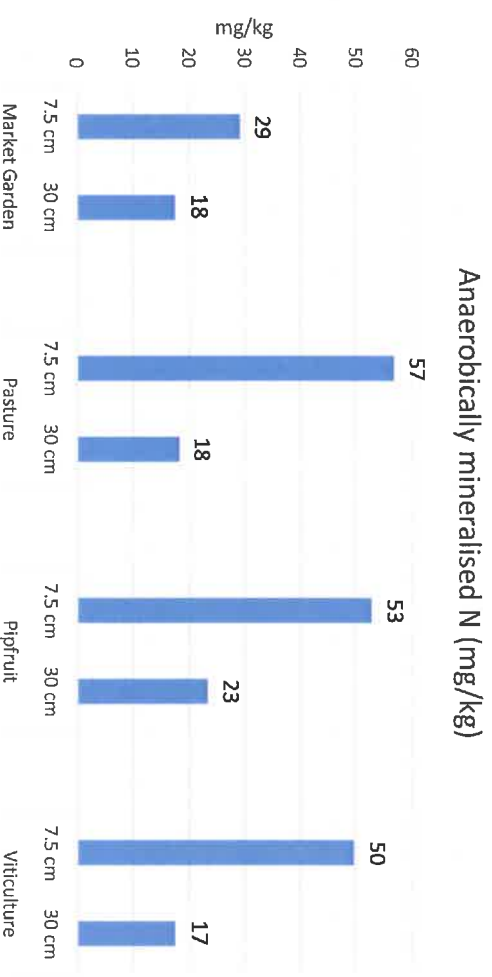
Topsoil

- MG significantly lower than PAS, PIP and VIT.

Subsoil

- No differences detected.

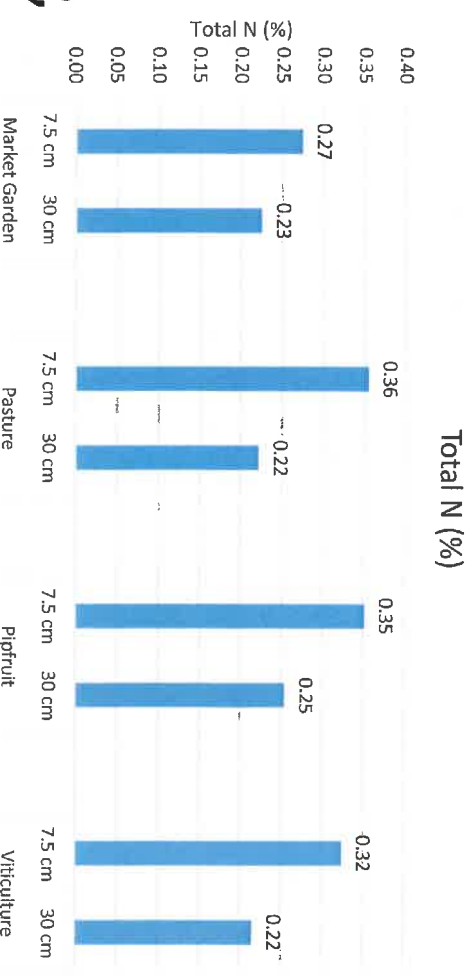
AMN indicates soil Org-N availability and microbial biomass. All land uses had low AMN (ideal 100-150 mg/kg) = organic N availability, low plant available N storage, and microbial activity.



7.5 cm sample depth		Statistics		Individual	
Land use type	Sample Size	Mean	Standard Deviation	95% CI for Mean	
Market Garde	25	29.204	11.992	(24.253, 34.154)	
Pasture	16	56.887	20.133	(46.158, 67.615)	
Pipfruit	19	52.860	12.188	(46.986, 58.734)	
Viticulture	20	49.687	21.987	(39.397, 59.978)	

30 cm sample depth		Statistics		Individual	
Land use type	Sample Size	Mean	Standard Deviation	95% CI for Mean	
Market Garde	24	18.107	7.6444	(14.879, 21.335)	
Pasture	16	18.248	5.6910	(15.216, 21.281)	
Pipfruit	19	23.281	11.747	(17.619, 28.943)	
Viticulture	20	16.571	5.1259	(14.172, 18.970)	

Soil biological indicators: Total N



- Topsoil
- MG significantly lower than PAS and PIP, not VIT.

Subsoil

- No differences detected.

Total N = all N in soil (includes organic).
Around 98% of soil N is in organic matter,
hence similarity to TC results.

Land use type	Sample Size	Statistics		
		Mean	Standard Deviation	Individual 95% CI for Mean
Market Garde	25	0.27437	0.06506	(0.24751, 0.30122)
Pasture	16	0.35636	0.06571	(0.32135, 0.39138)
Pipfruit	19	0.35172	0.09451	(0.30617, 0.39727)
Viticulture	20	0.32450	0.07371	(0.29000, 0.35900)

Land use type	Sample Size	Statistics		
		Mean	Standard Deviation	Individual 95% CI for Mean
Market Garde	24	0.22612	0.04736	(0.20612, 0.24612)
Pasture	16	0.22220	0.05138	(0.19482, 0.24958)
Pipfruit	19	0.25402	0.06251	(0.22390, 0.28415)
Viticulture	20	0.20940	0.05211	(0.18502, 0.23379)

Summary findings - Soil

Topsoil

- MG had higher soil nitrate (and other nutrient) levels, and low SOM, nitrogen storage and AMN compared to other land uses. These conditions are not favourable for retaining N near the surface.

Subsoil

- MG had 3-4x higher nitrate than other land uses. Subsoils are stony, permeable and prone to excessive drainage and leaching. The subsoil depth is close to the rooting depths of many vegetable types and represents a potential depth limit for vegetable N uptake.

Conclusions

Market gardens appeared to be more intensively fertilised compared to the other systems. The lack of SOM, coupled with well-drained soil properties and high nitrate levels (particularly at subsoil depths) makes market gardening a higher risk land use for nitrate leaching on the Waimea Plains.

Groundwater where the UCA discharges into the AGUA (Bartlett Road and Ranzau Road) is particularly vulnerable to elevated nitrate concentrations. Elevated nitrate concentrations associated from the historic plume enter into the AGUA in this area which can mask unquantified leaching from current overlying land practices.

Next Steps / Timeline

- Key landowners on the Waimea Plains have been contacted to discuss the findings from this report and land management practices on their properties. These discussions are ongoing.
- Knowledge gap on if the area around the historic piggery continues to release nitrate. An investigation has been planned in winter 2020 to quantify the present risk to groundwater from the ex-piggery site.
- Knowledge is needed of when leaching occurs, and the rainfall volume and intensity which caused the leaching. Landcare Research have been measuring the water characteristics on the Waimea Plains soil. The findings are expected to be available in mid-late 2020 and will improve understanding of leaching rates in the soil.

More data needed

- There is a lot of interpretation being made from that single, monthly monitoring bore around Ranzau/Bartlett Roads. The addition of several more monthly/weekly bore stations around this area would provide more information and allow comparisons to be made.
- If we determine there is still intact piggery waste under the ex-piggery site, two new bores, one above and the other below the site would be a simple (non-invasive) way of testing any changes in groundwater contaminant properties.

