From: official information
Sent: Friday, 9 July 2021 15:52
To: [redacted]
Cc: official information
Subject: Response - LGOIMA 21195 - [redacted] - Taitua Arboretum Additional Fluoride Free Water Supply
Attachments: Attachment A_Taitua Water Supply Diagrams and Photo.pdf

Kia Ora,

This email provides the response to your request for information under Section 10 of the Local Government Official Information and Meetings Act 1987. Specifically, you requested:

"…a full account of what has been installed, perhaps with diagrams of the new system, the test points along the system, and what is being doing to remedy this situation".

HCC response is as follows:

Taitua Arboretum Non-Fluoridated Drinking Water Supply System

Please refer to **attachment A** for visual diagram and photographs of the Taitua Arboretum site including images of the newly installed treatment system as well as images showing the location of the sampling sites along the system.

1. Bore shed – replaced existing smaller shed for increased bore security
2. Bore pump – refurbished to improve bore head protection and pump operation
3. Pre-treatment storage reservoir (35,0000 Litres) – refurbished Timbertank with new lining and roof to exclude environmental contamination
4. Treatment plant shed – built to replace small metal cabinet that previously housed cartridge filters and UV
5. Treatment pumps – 2 new pumps to draw water into treatment system from the reservoir
6. Cartridge filters – increased from 3 filters to 5 to improve filtration and particle removal. The new cartridge filters contain the following media (in order):
   - 80 micron stainless steel screen;
   - 50 micron pleated cartridge;
   - 20 micron pleated cartridge;
   - 5 micron pleated cartridge;
   - 1 micron poly spun cartridge;
   - 1 micron poly spun cartridge.
7. UltraViolet (UV) Disinfection Unit – changed to a *Viqua Pro30* ultraviolet treatment system which is NSF (National Sanitation Foundation) validated as per the Drinking Water Standards of New Zealand 2005 (Revised 2018).
8. Treated water distribution system – pipework has been replaced within the treatment system and from the treatment system to the treated water taps, including the non-fluoridated public tap. After treatment the pipe divides into two lines. One line supplies the non-fluoridated public tap, the other line supplies the reservoir tap and then the house.
9. Untreated water distribution system - untreated water is drawn from a second outlet in the pre-treatment reservoir to supply the Taitua Arboretum workshop shed and hose down area, the inside of the public toilets, and a 10,000 litre storage tank that supplies the Taitua Arboretum and farm.

Sampling sites along the system
The following sample taps are installed on the water supply system

a) Bore (raw water from bore)
b) Pre-filter (raw water from pre-treatment reservoir)
c) Post-filter (partially treated water)
d) Post-UV (treated water immediately after UV unit)
e) Reservoir tap (treated water tap next to reservoir)
f) Arboretum house (treated water - outside garden tap)

g) Non-fluoridated public tap (treated water tap on outside of toilet block)

An IANZ accredited laboratory undertake sampling and analysis as part of the Taitua Arboretum water supply monitoring plan.

What is being doing to remedy this situation?
HCC requires that 3 days of clearance monitoring be undertaken before returning water supply components to service after significant upgrades or maintenance. Following the completion of upgrade physical works, clearance monitoring of the newly commissioned treatment system at Taitua Arboretum commenced on 24 February 2021.

Unfortunately, elevated levels of Heterotrophic plate counts (HPC) have prevented HCC from returning the supply to service (please see **attachment B** for monitoring results). The initial closure of the Taitua additional water supply was due to the presence of E.coli and total coliforms which are indicators that the water was not safe to drink. These bacteria have not been detected in the current clearance monitoring programme.

However, elevated levels of HPC can be an indicator of contamination and of treatment effectiveness and they typically found in larger numbers in the environment. These are not a direct indicator of the presence of pathogenic bacteria but are an effective risk indicator for contamination in a water supply. The HPC monitoring results continue to be very high following treatment in the Taitua water supply which means that HCC cannot guarantee that the supply is operating effectively or that the water is safe to drink.

The following is a description of the actions have been taken, in consultation with both Council and external technical experts on water treatment and supply, UV disinfection and the microbiology of HPC's, to investigate the potential cause of these HPC's to try and rectify the issue:

- on-going communication with the supplier and review of UV outputs and laboratory data. The supplier found no significant issues with installation or operation and suggested replacing downstream pipework;
- Sample tap spouts were truncated shortly after installation to improve sterilisation of sample point and reduce risk of biofilm development;
- Reservoir inspection identified some re-accumulation of sediment however UV transmittance and turbidity have been at levels that would not impact UV performance;
- Review of other chemical parameters in the water to confirm they are below levels that would interfere with UV disinfection as per the manufacturers UV manual (please refer to **attachment C** for the Manufacturers UV Manual);
- Inspection and replacement of cartridge filters to ensure they were seated correctly and not unduly fouled;
- Replacement of UV lamps and sleeves and regular inspection – no issues identified with sleeve fouling and parts were found to be genuine. Data outputs from UV are recorded on a SD card and have been consistent with appropriate UV treatment;
- Repeated disinfection and flushing of the treatment system as per manufacturers' instructions;
- Disinfection and thorough flushing of entire system from cartridge filters to public tap;
- Each time the UV system is brought back into service, the system has been chlorinated, and UV lamp and sleeves changed;
- Replacement of entire length of pipe work from UV to treated water tap and the pipe to the house, followed by thorough disinfection;
- Sampling and analysis issues were ruled out by undertaking monitoring for environmental HPC's on the sample (agar plate exposure to air while sampling with water blanks), as well split sampling and analysis investigation involving the laboratory and another independent organisation undertaking sampling and sending the samples to both our current laboratory and the independent laboratory;
- Proposed purchase of UV reference sensor to validate performance of the UV intensity meter.
- Previous UV system to be serviced and temporarily installed to monitor impacts on bacteria counts. This previous UV system is not validated under the DWSNZ.

You have the right to seek an investigation and review by the Ombudsman of this decision. Information about how to make a complaint is available at www.ombudsman.parliament.nz or freephone 0800 802 602.

Kind Regards,

Tatiyana | Official Information & Legal Support Advisor
Legal Services & Risk | People and Organisational Performance

Email: officialinformation@hcc.govt.nz

Hamilton City Council
Te kaunihera o Kirikiriroa

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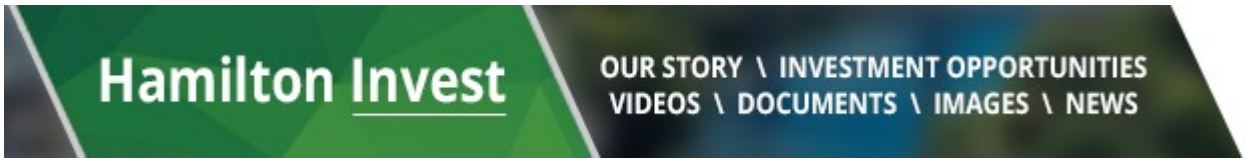

From: [redacted]
Sent: Friday, 11 June 2021 12:34 pm
To: Ashanti Neems <Ashanti.Neems@hcc.govt.nz>
Cc: Angela O'Leary <Angela.OLeary@council.hcc.govt.nz>; Sarah Thomson <Sarah.Thomson@council.hcc.govt.nz>; Pat McNair [redacted]>
Subject: Re: Taitua Arboretum Additional Fluoride Free Water Supply

Hi Ashanti

I have copied the Chair and Deputy Chair of the Infrastructure & Operations Committee into this email, so they are aware of the now long-standing issues with the Taitua clean water supply.

This is getting really silly. It seems preposterous that a fully brand new system, costing over $150,000, is still giving high HPC levels. It is now well over 15 months since we have been able to get water from that tap.

Surely the UV system, being brand new, is able to destroy all bacteria coming through it, and if not, the supplier should be held to account, and quickly replace it.

Can you please provide a full account of what has been installed, perhaps with diagrams of the new system, the test points along the system, and what is being doing to remedy this situation.

Regards
[redacted]

On 10/06/2021 3:16 pm, Ashanti Neems wrote:

> Kia ora,
>
> My apologies for the delay in providing this update to you. I have been away on personal leave and was hoping to be the bearer of good news. Unfortunately, this has not transpired. Last week, clearance monitoring results returned elevated HPC levels in the water supply again. The team are now working through the unusual variables that are being detected post UV treatment of the supply. This means that the supply continues to remain closed.
>
> I will be the first to acknowledge that this is frustrating to all parties and I can assure you that the team are exhausting all options to identify why this is occurring.
>
> I again apologise for the delay in the update and will be in contact again in due course.

Kind regards,

Ashanti Neems
Performance & Support Manager – City Waters (Kaitohu Taapuhipuhi) | Infrastructure Operations

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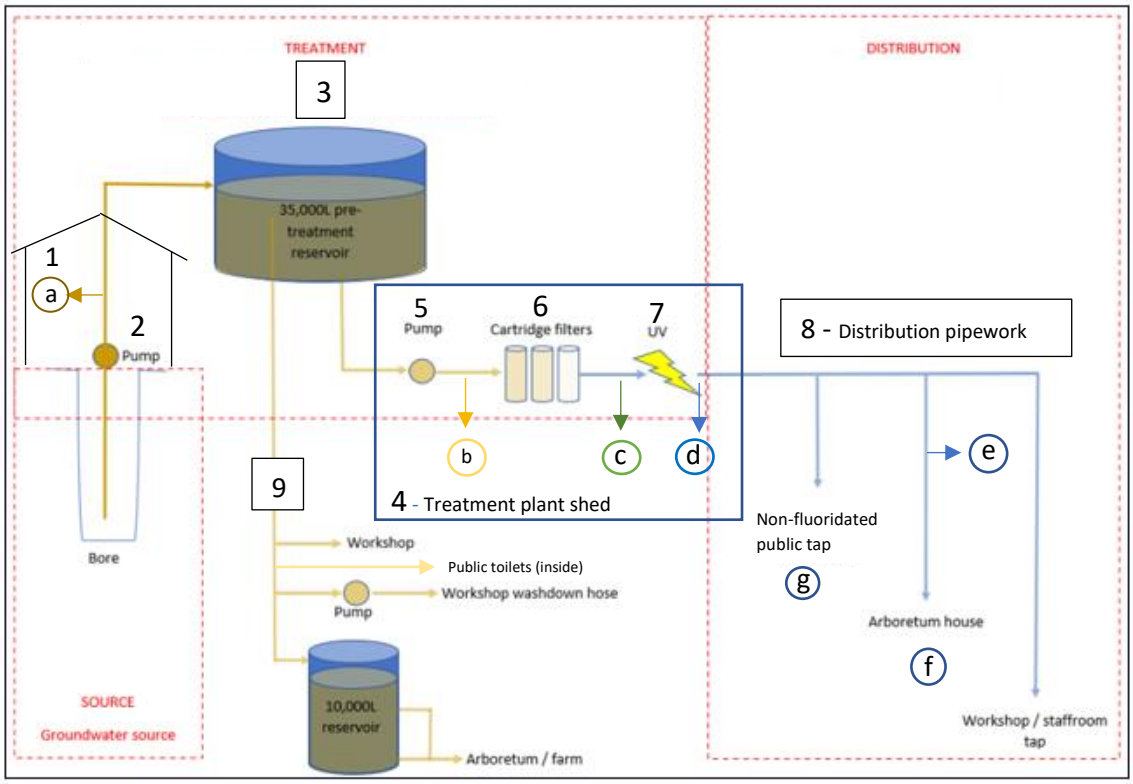
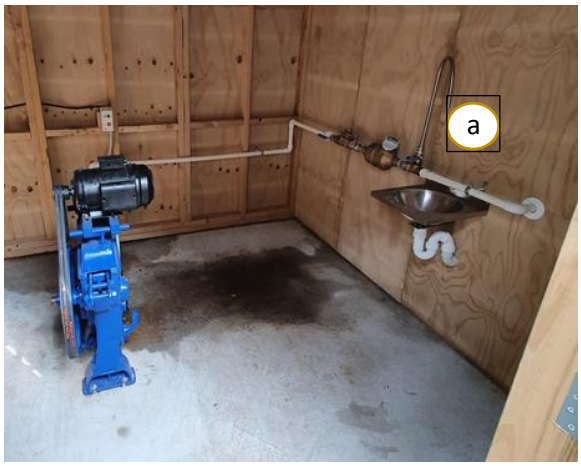
Attachment A_Taitua Arboretum Additional Water Supply Diagrams and Photos

Taitua Arboretum – site layout



Water supply schematic

Attachment A_Taitua Arboretum Additional Water Supply Diagrams and Photos



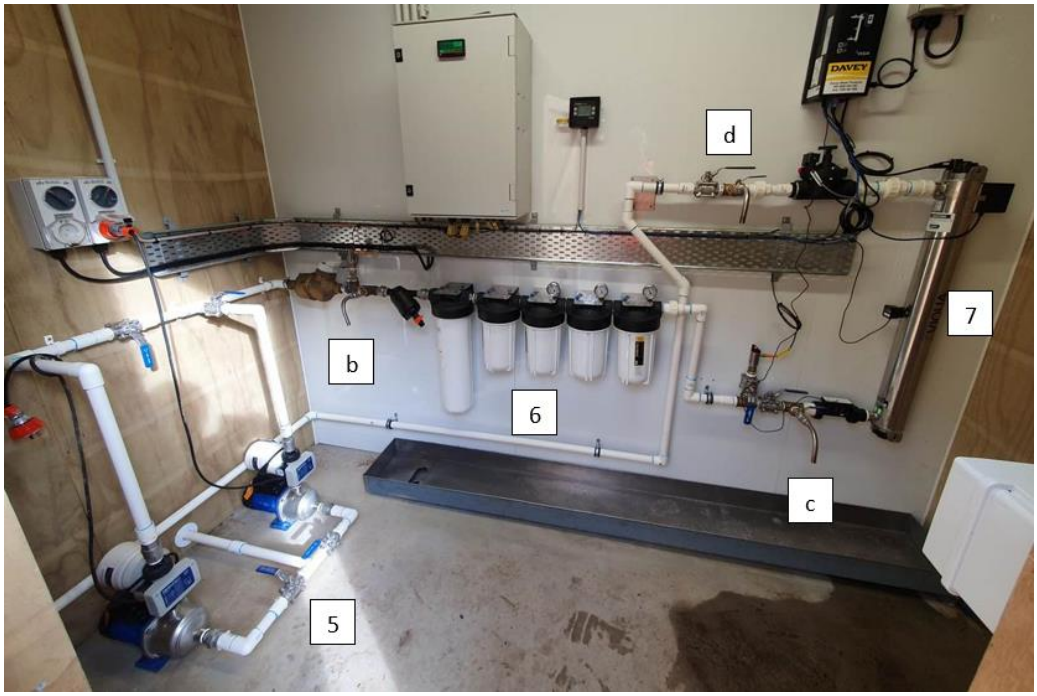
Bore Shed

1 New bore shed
Refurbished bore pump
New pipe work

a Bore sample point – only operable while pump running

2 **Pre-Treatment Reservoir**

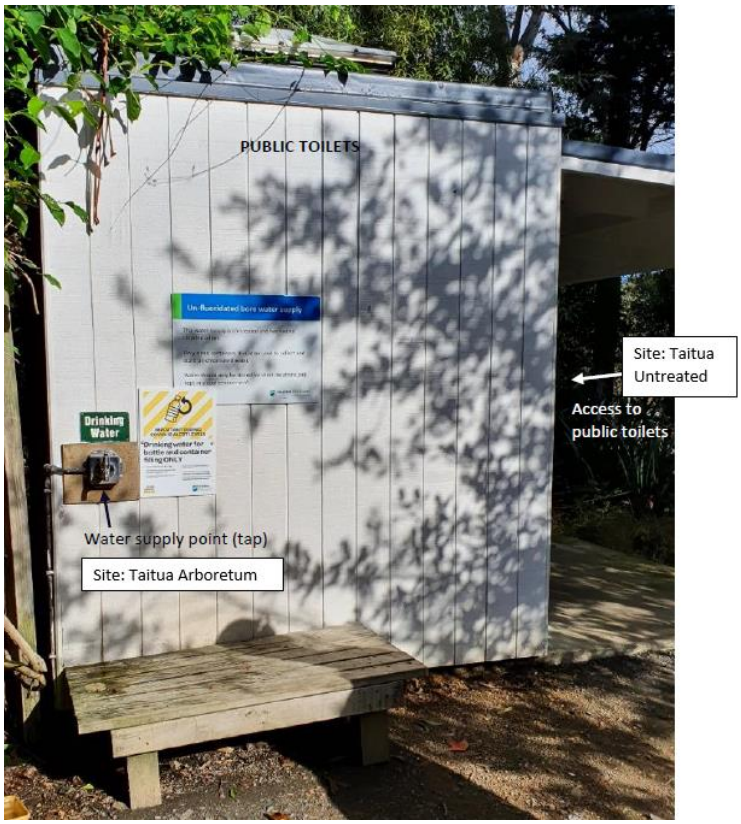
Inspected and cleaned
New liners
New roof



4 - **Treatment Plant Shed** – new shed, equipment and plumbing

Attachment A_Taitua Arboretum Additional Water Supply Diagrams and Photos

e) Reservoir tap (treated water) – replaced



(g) Non-fluoridated public tap – new pipework from treatment system