

# MEETING MINUTES

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Te Akau South Water Supply

18 January 2022

9:00 – 10:30 am

<b>Meeting called by</b>	Horongarara Community Group (Te Akau South)/ Waikato District Council
<b>Attendees</b>	Te Akau South Community represented by: Anaru Wilson (Chairman for Horongarara Community Group), Simon Jordan (Resident), Owen Mooney (Engineer/Resident) WDC represented by: Keith Martin, Carole Nutt, Zinab Al-Khaleefa, Hermanus Kruger (Beca), Matt Telfer (Watercare)
<b>Apologies</b>	-
<b>Location</b>	MS Teams - Online

## Summary of Meeting

Agenda Topic	Discussion
Water Reform <i>(Keith Martin)</i>	<p>Introduction of Taumata Arowai who is now the regulator of water in NZ. Under Taumata Arowai, there has been change to the drinking water regulation and proposed changes to Drinking Water Standards.</p> <p>Bore supply has been discontinued based on water quality and the bore itself. Currently Council is tankering water to the community.</p> <p>From Waters Reform perspective, we have to determine what is happening from this point on, discuss with the community what the options are and how we go forward.</p> <p>Requirement of regulator re Drinking Waters rules.</p>
Waters Governance Board Report <i>(Hermanus Kruger)</i>	<p>A report was presented to the Waters Governance Board in December 2021 on the small water schemes including Te Akau South. A high level assessment was carried out to get an indication of options; note assessment was carried out prior to the proposed new standards. Report has gaps and was written as an initial assessment of the requirements to deliver drinking water, to the new regulatory standards, to the small supply catchments.</p> <p>Report publicly available on Council <a href="#">website</a>.</p>

<p>Current state of play. Bore and water sampling, tinkering <i>(Mat Telfer)</i></p>	<p>In 2021 issues in treatment were identified including large amount of debris believed to be casing from the bore itself. The bore cover had slumped and there was a risk to the continuity of supply from a detailed assessment of the bore, including removing the bore pump.</p> <p>Interim solution to ensure we could continue to operate the network was the water tankering option that is currently in place.</p> <p>CCTV was carried out on bore itself, pump was removed. The CCTV, indicated concerns around the bore itself and possible failure points within the bore casing.</p> <p>This combined with water quality issues, decision made to tanker water.</p> <p>Last assessment of bore showed high turbidity and quite a bit of rusting on lining of bore. To continue bore supply, will need to weigh up relining and repair of bore versus putting in a new bore.</p>
<p>Transferring water supply to individual rainwater tanks <i>(Anaru Wilson)</i></p>	<p>A brief report was presented containing information that should be incorporated into any desktop assessment that may be undertaken.</p> <p>33 properties in the Te Akau South Water Supply Scheme situation in and around Ryan Road, Te Akau South. Increasingly populated by permanent residents. Historically only used about 20% of capacity, think this will increase</p> <p>Community Group referred to 2018 Council Infrastructure Committee report. Report recommended option 3 as preferred option (individual water tanks). Horongarara Community Group highlights the initial financial calculations were based off 20 properties rather than 33 therefore inflating costs.</p> <p>Geographics of area discussed noting there are some areas designated coastal hazard sensitivity (erosion) zone and several properties within the enforced high risk hazard (erosion) zone meaning a resource consent would be required for any earthworks accompanied by a geotechnical engineering report.</p> <p>Ecological value of area seen as the jewel in the crown of the Whaingaroa catchment.</p> <p>Council report stated unsecured bore immediately beside working farmland and the risk of source water contamination is high – in reality the surrounding land has not been a working farm for 20 years.</p> <p>Horongarara Paa was notified as a Maaori site of significance in 2018 and is listed as an archaeological site. There are deep cultural factors to consider regarding excavation also.</p> <p>Believe there is hidden costs in progressing any work for individual rainwater tanks due to multi level planning requirements &amp; geotechnical expense.</p>

	<p>Designated extreme fire risk. Letter from Te Akau Chief Fire Officer states “Fire hydrant is of utmost importance to community” .</p> <p>Shifting to a rainwater supply would be a high cost downgrade of the supply. Likely to incur considerable costs per annum (conservative estimate \$5,700 to \$7,000 per property per annum).</p> <p>This option is not supported by the community or believed to be a viable option.</p> <p>Considering the topical geographics of terrain and other factors mentioned above, it would be difficult to achieve a rainwater solution.</p> <p>Copy of presentation attached.</p>
<p>Treatment option (<i>Owen Mooney</i>)</p>	<p>A high level report was presented on a possible treatment system design (post bore) that focused on minimizing site visits and complying with Taumata Arowai requirements.</p> <p>Note the current system does not appear to be designed with Taumata Arowai standards.</p> <p>Looking at taking what we currently have and upgrading to meet the new requirements and additional mechanism to ensure the quality of the water remains fit for purpose and costs minimised.</p> <p>Treatment systems diagram shared and individual treatment components/process steps explained (refer to presentation for overview)</p> <p>Current system had a non-compliant chemical imbalance of the treated water (Chlorate and Bromate exceedance), this has been attributed to a pump failure. There was also mention of high turbidity affecting the filters. Problem identified at the point of dosing. Solution provided</p> <p>Proposed solution assumes acceptable delivery of water from the bore (repaired or new); assumes a telemetry system to reduce need for onsite personnel.</p> <p>High level capex cost estimate of \$20k for new equipment.</p>
<p>General Discussion</p>	<p>Horongarara Community Group aims to reduce on going operational costs, have tried to reduce the site visits by using a Scada system. Haven’t taken into account depreciation yet.</p> <p>Site visits – Community looking at ways to reduce physical visits to once a month. There is a registered water taxi from Raglan to Te Akau South available for use. Bore location is 800 m from boat ramp.</p> <p>Council: Labour and milage is expensive, need to manage risk, public health and reporting requirements so sometimes despite good telemetry</p>

systems, physical attendance on site could be more rigorous to ensure any public health risks are mitigated/managed.

Treatment system design focused on maintaining a bore supply while minimizing costs.

Options to consider: long term tankering as currently occurring, pipe under the harbour, bore supply, private raintanks. We need to consider all options in the long list, some may be quickly discounted.

The Horongarara Community Group believes a pipe across the harbour is not viable in the context of the existing scheme alone and does not expect this to be included in future options assessments. This is due to High Risk Erosion Designated on the immediate foreshore ruling out any infrastructure/pipes in this zone and assumed cost however are not opposed to the option being considered.

We have until 2024 until we move to Entity B. It is likely the Entity will take on community views but will be unlikely to carry out co-management of services; it is expected Entity B will deliver the service themselves with a strong focus on public health.

Community Group looking to work with WDC/Watercare team to identify the parameters prior to brief being issued to anyone to work on.

Hermanus (Beca) resource acting for WDC available to 31 March, we have this resource through Water Reform stimulus funding.

Presentations to be shared on provision that the community is seeking further information on some points, the information in the presentation is not a finalised position.

Te Akau is currently a closed scheme. There are a few more properties that may want to connect in future.

Resource consent is due for renewal in 2023. Timing works well when considering capacity and supply source.

Protecting water source is high on agenda of Taumata Arowai, particularly in light of Havelock North.

Because of significant natural area, there would be a lot of clearing of tree debris from roofs when considering catchment risk and contamination into raintanks.

Catchment risk assessment undertaken by Beca. Have a good catchment, favorable aquifer.

National Freshwater Standards scheme under consultation in relation to raw water source – still to be finalized and have the ability to submit on proposed standards.

	<p>To consider how we upspeak the current infrastructure rather than build a completely new solution.</p> <p>Community members in meeting are passionate about topic, offer their services and networks, want to be a part of process to reach a solution.</p> <p>Council have a lot of legislation and internal policy process to adhere to and may not be able to progress as fast as a private entity.</p> <p>Next steps, Council to prepare an update to the Waters Governance Board and include both presentations. Council to look at infrastructure suggested in treatment system to ensure it is current. Depending on Waters Governance Board direction, it may need to go to Council especially if capital costs are required.</p> <p>Anaru requested the team representing Council and Watercare are able to flesh out and verify parameters of the options brief before it being presented in a formal report to the Board or Council. Keith mentioned Initial reports likely to have a desktop estimate. Anaru wants to test input data to ensure it is reasonable.</p> <p>Council will need to engage with the wider community to ensure they are informed and that individual views heard.</p>
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## Actions

What	Who	When
Source age and operational condition of current infrastructure components where recorded separately and share with Community Group	Watercare	31 January 2022
Parameters of the options analysis shared with Community Group ahead of being presented in a formal report prior to costing.	WDC	As developed
Engagement with wider community	WDC	At such time, relevant information available
Minutes from this meeting to be made publicly available through Council website.	WDC	31 January 2022
Meeting to be set up regularly to review progress	WDC/ HCG	18 February 2022

# Te Akau South Water Supply

The Community Water Scheme consists of 33 properties in & around Ryan Road, Te Akau South in the Waikato region. The Ryan Rd subdivision was completed in 1971 and is increasingly populated by permanent residents.



Horongarara Community Group Committee  
Te Akau South, Waikato 3793

# WDC current preferred option: Community Rainwater Tanks

## WDC 17.8.2018 : Onewhero & Te Akau Water Supply Options.

1. *5.1 Financial. Option 2. Table 2.2:* Upgrade the Treatment Supply est. \$349,000.00  
This high level figure factored \$150,000.00 for project management & plant costs were high.
2. *5.1 Financial. Option 3. Table 3.2:* Rain Water Storage & Treatment
3. WDC est. \$314,000.00 based on **20** households in the scheme @ **\$15,700.00**
4. WDC informed HCG pre 2018 that the scheme is made up of **33** properties.
5. WRC resource consent for the water supply confirms **33** make up the scheme.
6. Adjusted WDC estimate: **33 x 15,700.00 = \$518,100.00**

Based on the original under estimated infrastructure report, WDC identified **Option 3.** as it's preference. HCG seeks to clarify & share information that will also reveal significant hidden costs in this option.

# Horongarara Point: Te Akau South

The scheme supplies water across a bush covered peninsula which is predominantly steep terrain.

The northern slopes become gentler before again dropping steeply into the wetlands below.

There is significant cost in any earthworks, retaining, stormwater drainage or geotechnical investigations required in the area.

Most of the southern & eastern faces are a designated Coastal Hazard Sensitivity (Erosion) Zone  
Several properties are within the enforced High Risk Hazard (Erosion) Zone  
meaning a resource consent is required to dig deeper than 500mm



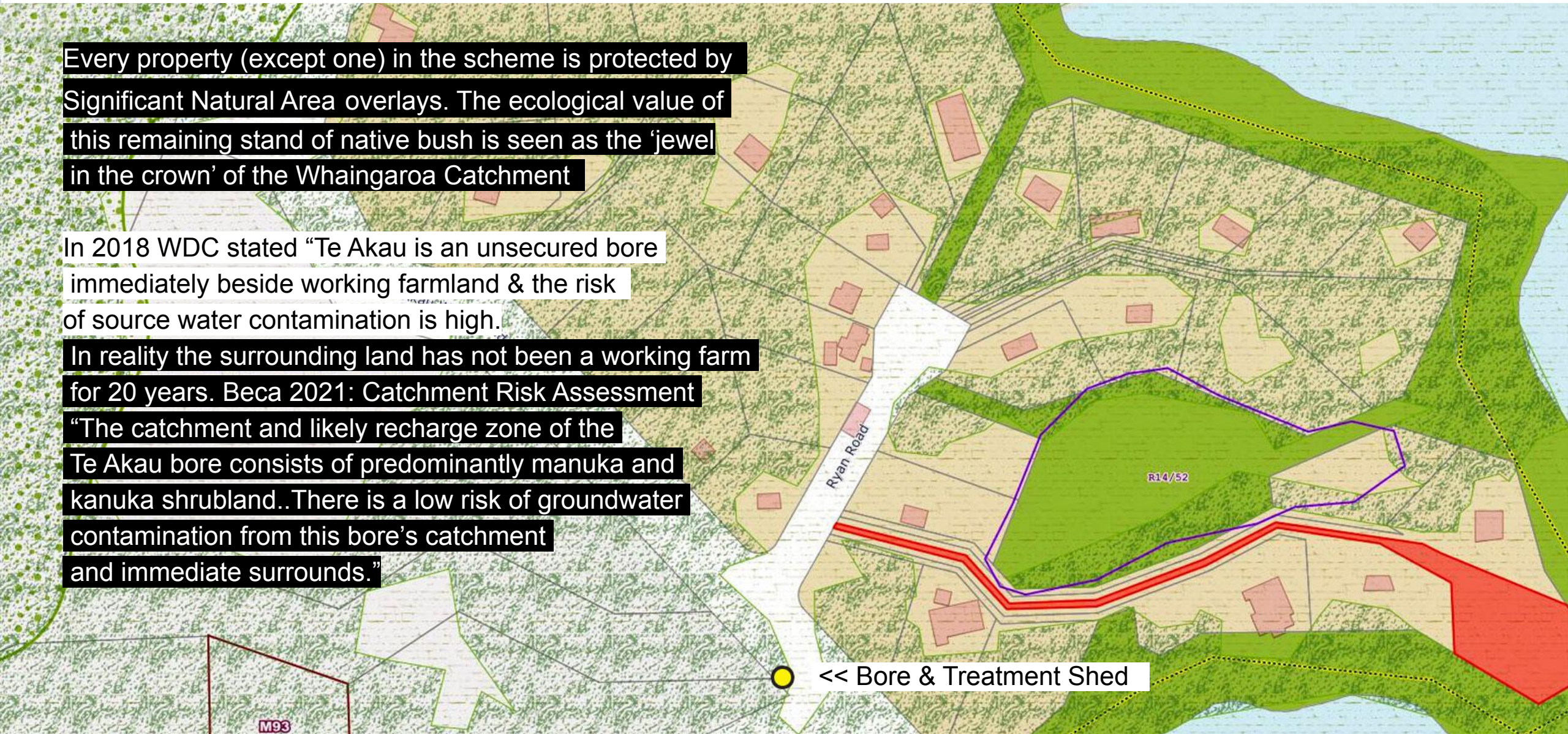
# The Ryan Rd Subdivision is a Significant Natural Area,

Every property (except one) in the scheme is protected by Significant Natural Area overlays. The ecological value of this remaining stand of native bush is seen as the 'jewel in the crown' of the Whaingaroa Catchment

In 2018 WDC stated "Te Akau is an unsecured bore immediately beside working farmland & the risk of source water contamination is high.

In reality the surrounding land has not been a working farm for 20 years. Beca 2021: Catchment Risk Assessment

"The catchment and likely recharge zone of the Te Akau bore consists of predominantly manuka and kanuka shrubland..There is a low risk of groundwater contamination from this bore's catchment and immediate surrounds."



# features a Maaori Site of Significance

Horongarara Paa was notified as a Maaori Site of Significance in 2018 & is listed as Archaeological site: R14/52.

The area is waahi tapu for Ngati Tahinga whose people inhabited the area in pre European Aotearoa.

The Horongarara Community Group has members in and closely involved with this iwi. The HCG identifies itself as caretakers of our natural environment with positive support & guidance from Kaumatua Russell Riki regarding maoritanga.

The combination of Significant Natural Area & Coastal Hazard restrictions along with combined with cultural factors will require multi level planning prior to the clearing of any tree or excavating within the majority of properties on the Scheme. HCG recommends speaking with planners & iwi prior to seriously considering *Option 3* any further.



## & is a designated Extreme Risk ( Fire ) Zone.

“The settlement at Te Akau South is built close together and it’s not inconceivable that we would lose the whole settlement if we could not have a continued firefighting effort. We hope that you can see why this hydrant is of utmost importance for us and the safety of the affected community”

Mike Crosbie CFO: Te Akau Volunteer Fire Brigade



# The Rainwater Tank option is a high cost downgrade of the supply

It is questionable whether the *Option 3*. risk matrix reduces compared with Bore Supply.

Beyond the costs of installing the catchment & mini treatment systems required, a shift to rainwater tanks will incur considerable ongoing expense. M.O.H guidelines recommend an annual clean of the tanks.

For 25,000 ltr tanks Allens United have estimated \$1800 p/a for each clean/refill & 3-4 refills per annum for a 3 person household.

A conservative projection suggests these costs to be between \$5700 - \$7000 per property p/a.

It is unsure what measures would be required to dispose of the residual water fouled during the cleaning process, representing further hidden cost.



## ***Option 3. Community Rainwater Tanks***

**END**

# The Te Akau South Water Supply

Assessment and Review.

High Level Treatment System Design.

\*This is a high level design based on available information at the time. Further sharing of relevant details from the WDC will enable higher resolution to be achieved in the design.

**OWEN MOONEY**

MSc M.I.E.E Chartered Engineer (UK)

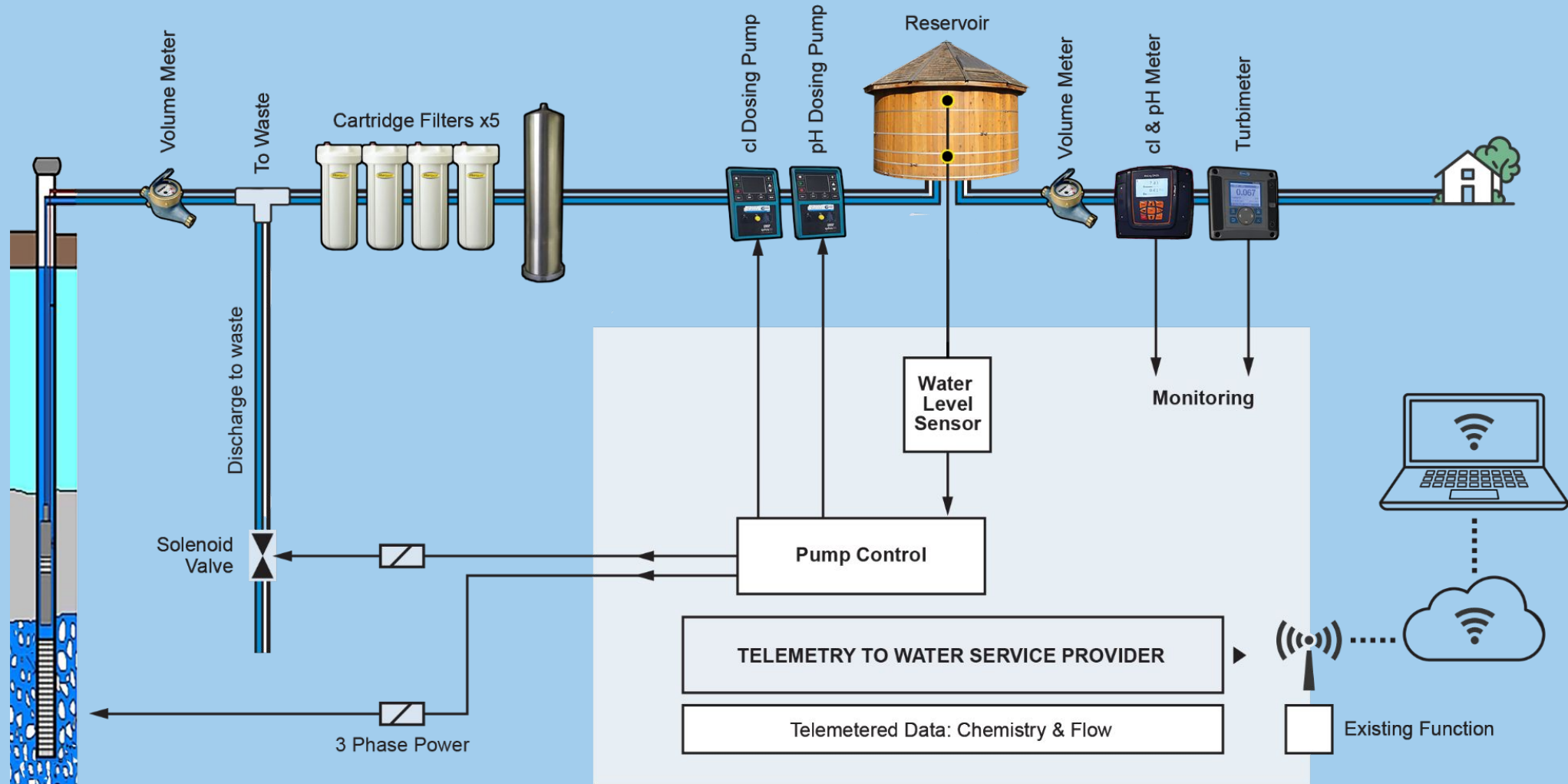
January 2022

## Components of the Te Akau South Water Supply:

Previously properties in the Te Akau South scheme were provided with water from a bore managed by the Waikato District Council. This involved three components:

1. The Aquifer – A body of rock and/or sediment (in this case sandstone) that holds groundwater.
  2. The Extraction Process - A bore well lined with a steel sleeve utilising a submersible pump.
  3. The Treatment Process – The processing of the extracted water to a suitable standard, storage in a reservoir, and reticulated delivery.
- ❖ Each of these has an effect on the end product. This document primarily refers to the Treatment Process – past and proposed.

# Treatment System Prior to 6.4.2021



***While water quality was monitored there appears to have been no on-site diagnostic capability to identify or correct treatment errors. This includes partial failure with multiple mechanisms possibly at risk in the system.***



# Chlorate & Bromate exceedance issues

In late 2020 non-compliant chemical imbalance of the treated water was reported.

- This has been attributed to a pump failure.
- There was also mention of high turbidity affecting the filters.

There is no reason to believe that the lithography feeding the well would suddenly produce high levels of chlorate or bromate. Likewise there is no possibility of these chemicals emanating from the well casing or any other source. The only possible source is the dosing pumps.

Assessment: *The most likely cause of a Chlorate & Bromate exceedance:*

***There were partial failures which resulted in a significant drop in water flow rate.***

***This resulted in a high mismatch between the dosing flow and the water flow.***

***There was no immediate diagnostic tool to detect this & the telemetered data indicated the end result of treatment only.***

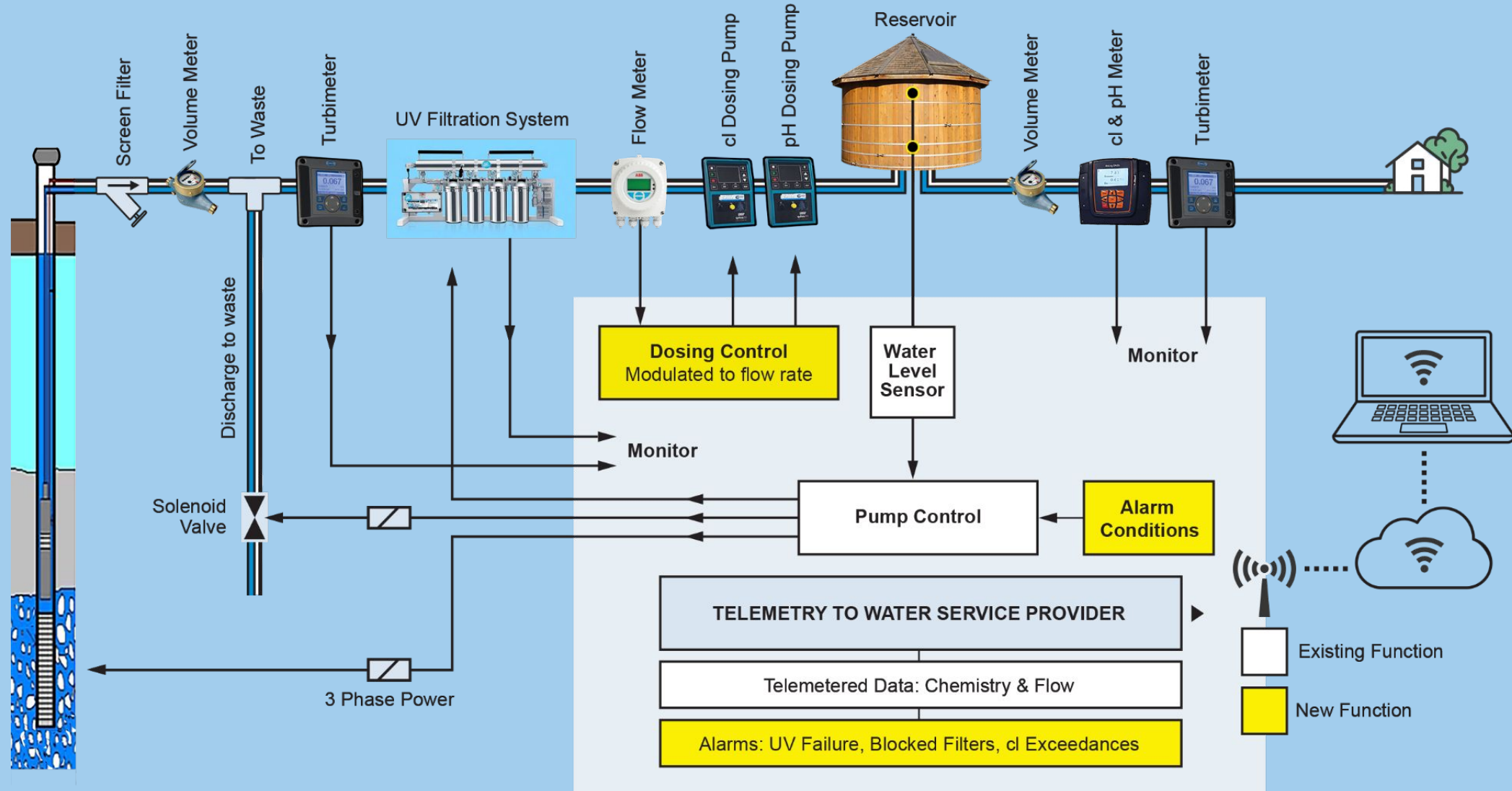
# Treatment System Design: HCG Committee Brief

Investigate a Treatment System for Te Akau South that:

- Is compliant with Taumata Arowai Acceptable Solutions ( Sept 2021 ).
- Assumes acceptable delivery of water from the bore.
- Incorporate ( where possible ) existing or previously installed assets.
- Minimizes health risk in the supply of water to the Community.
- Maximizes remote network condition monitoring.
- Minimizes the frequency of site visits by the Water Supplier.

# Treatment Design Option

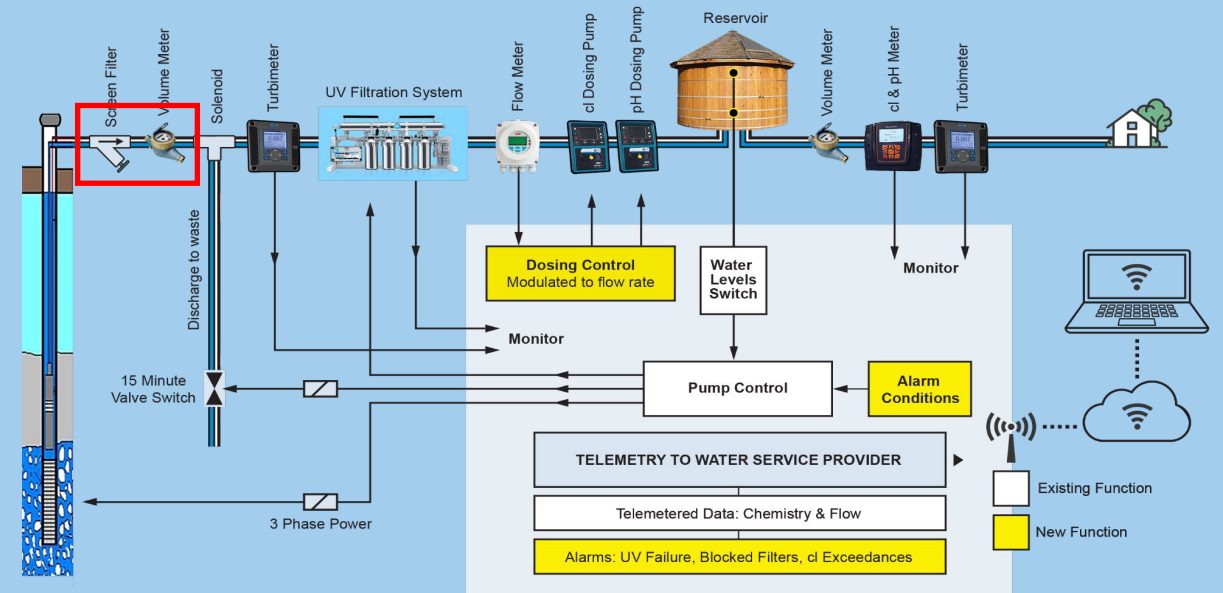
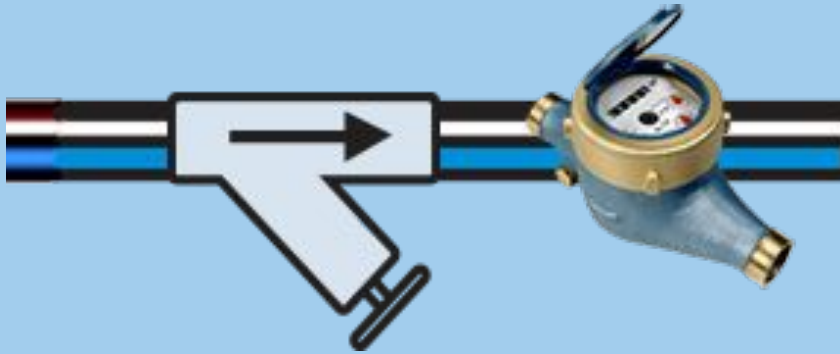
\*This solution requires further investigation with suitably qualified parties to ensure it is fit for purpose



Existing Function  
New Function

# Protecting the water meter

Screen Filter & Volume Meter



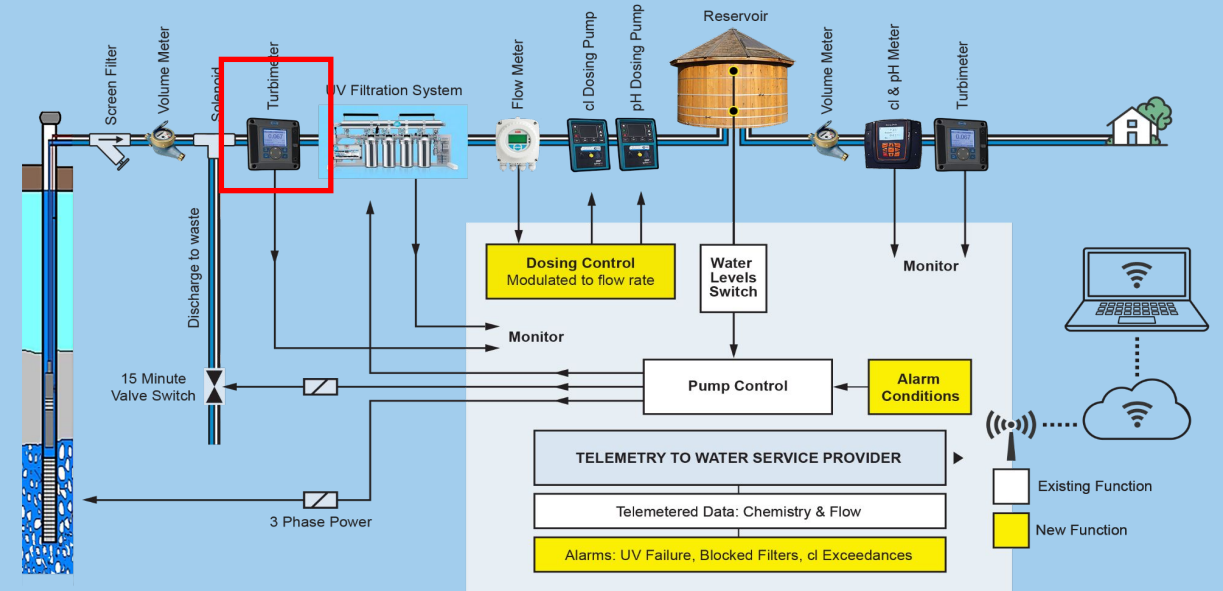
There was previously a Volume Meter used to monitor the water extraction. This is a requirement for WRC Resource Consent (recently removed). Unidentified particles had been found impacting this Meter.

A simple Screen Filter would address this & cleaning the filter would become a light maintenance duty. The Screen Filter would also reduce the replacement times for other filters.

**Note:** There may be other options available e.g. Magnetic Flow Meters. We intend performing a cost/benefit analysis as this technology may also reduce site visit requirements via remote monitoring that provides historicized data.

# Monitoring the turbidity inflow

Turbidimeter



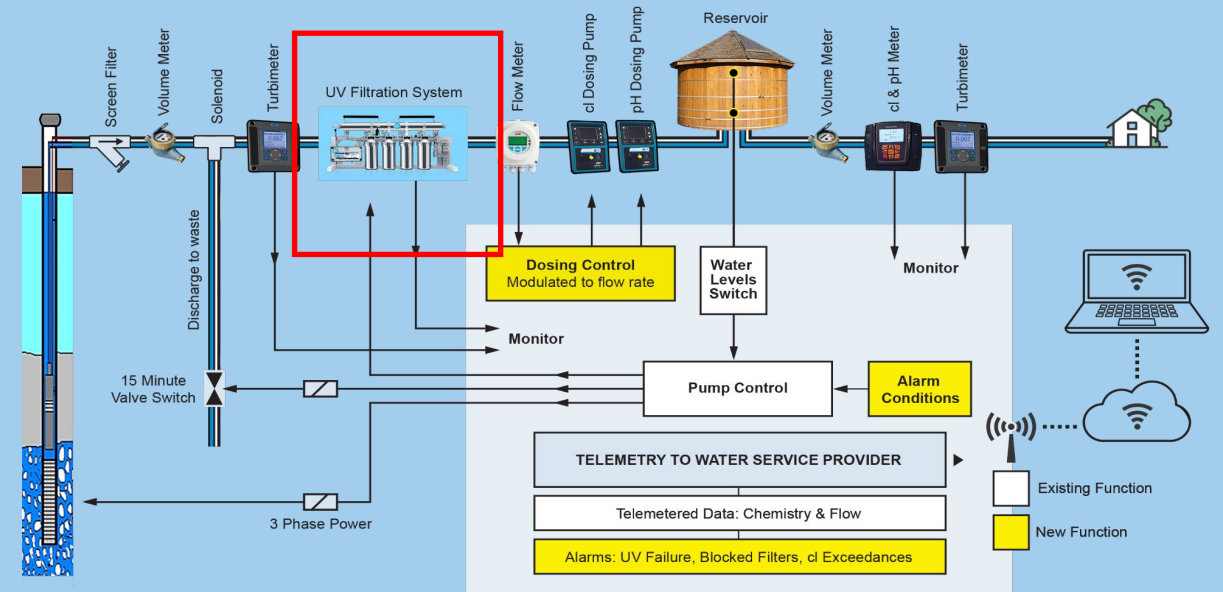
Monitoring the inflow Turbidity achieves compliance with the Taumata Arowai Document Section 8 Item SB2

*Source water turbidity must be measured after the point of abstraction and before treatment either continuously or daily <20 NTU at all times*

Use of telemetered turbidity at this point will remove the need for daily visits.

# Filtering and UV sterilisation

## Filtration & U.V Sterilisation Unit



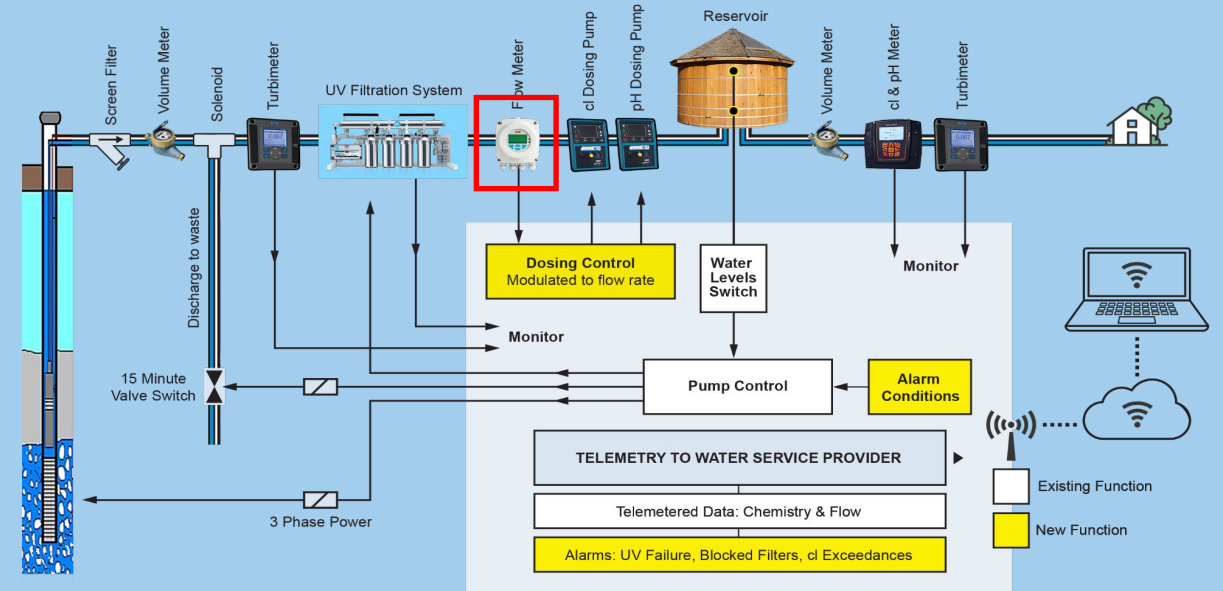
This sterilization unit is compliant with NSF/ANSI 55 for Class A systems. (Taumata Arowai Acceptable Solutions: Section 6.3).

The unit features both physical Filters plus UV sterilisation with a flow up to 100 l/min. This exceeds the flow rate of the previous pump used (80 l/min).

The filters have differential pressure meters as per the EN837.1 European standard and also comply with Taumata Arowai: Section 6.3

# Measuring treated water flow rate

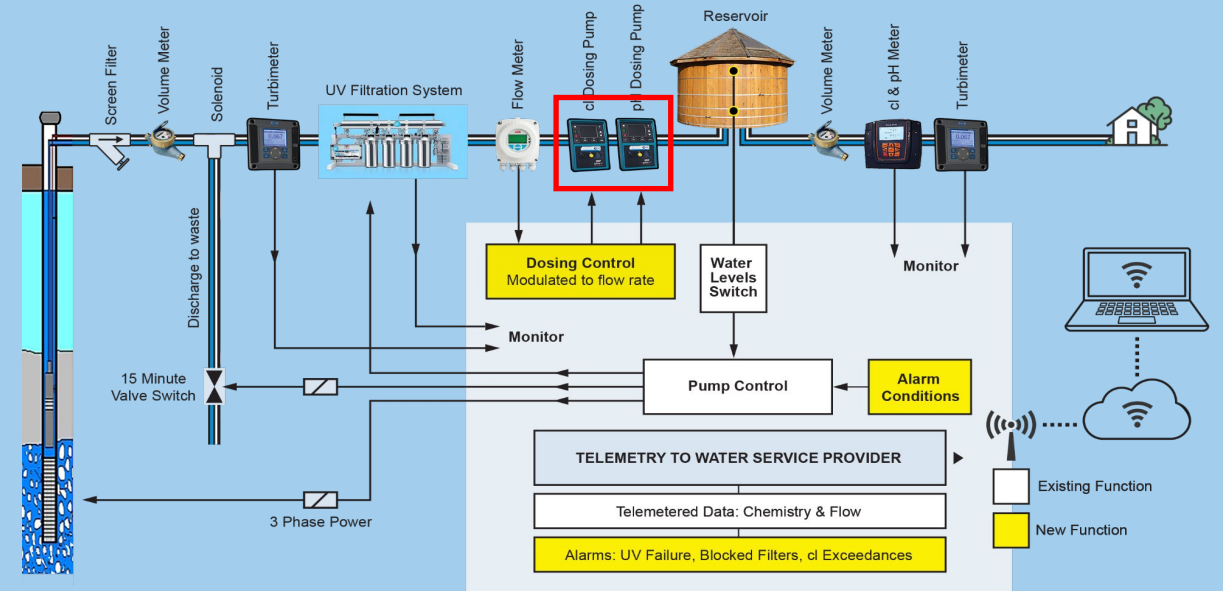
Flow Rate Meter



A Flow Rate Meter is currently installed on site & measures the flow rate in real-time displaying it in units of litres p/second including total volume.

# Chemical treatment

## Cl & pH Dosing Pumps



Previously installed were two qdos Dosing Pumps used to provide chlorine and pH correction recently removed from site. These devices use peristaltic pumps that deliver dosing with the flow rate control input manually set.

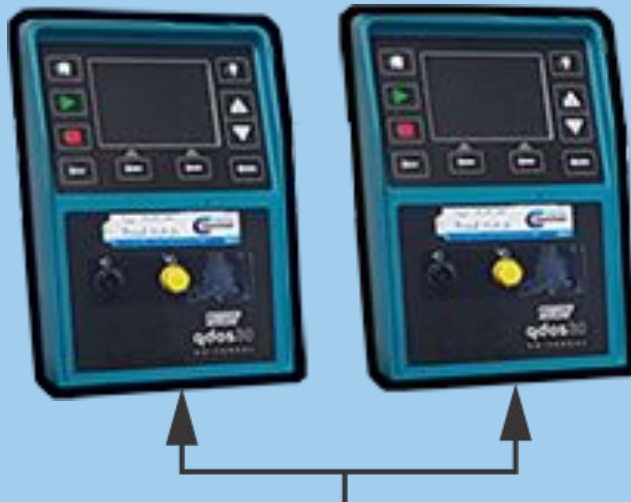


# Dosing Control System

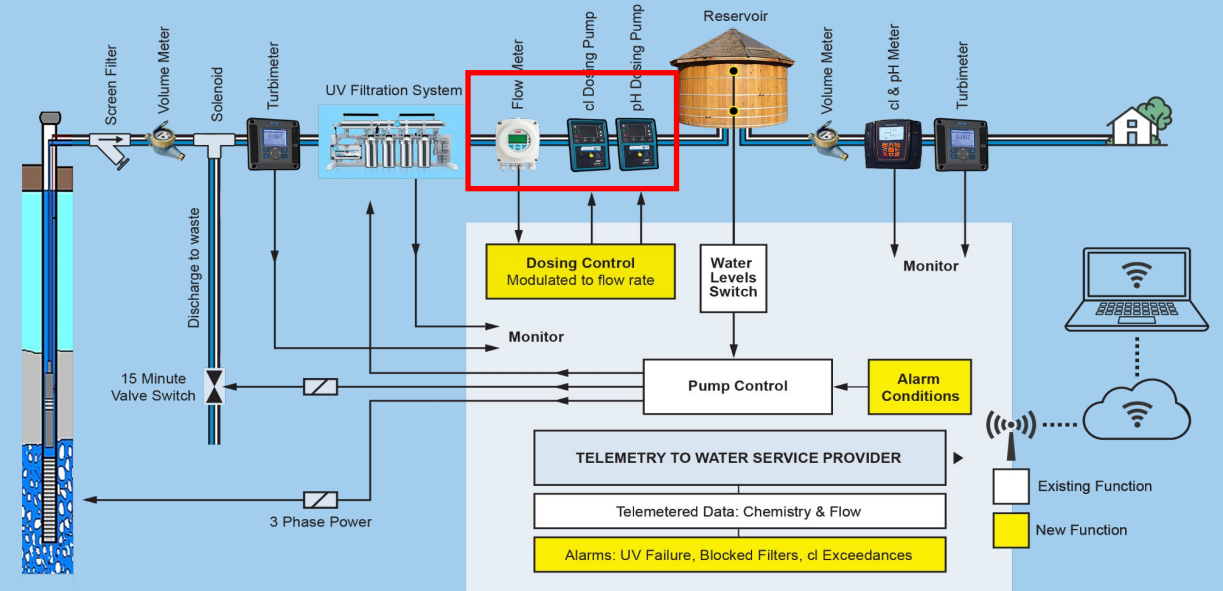
Flow Rate Meter



Cl & pH Dosing Pumps



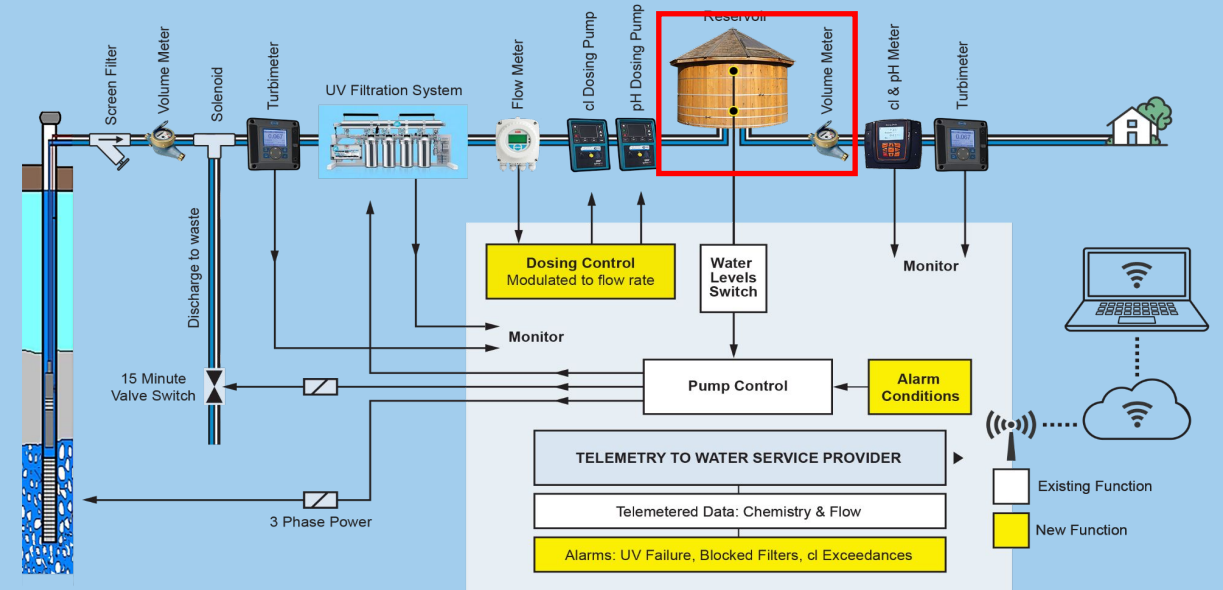
**Dosing Control**  
Modulated to flow rate



This is a local control function

Dosing control can be achieved by using the Flow Rate Meter to control the previously installed Dosing Pumps. The correct dosing will be achieved, regardless of water flow, ensuring correct chemical balance at all times.

# Reservoir and Volume meter



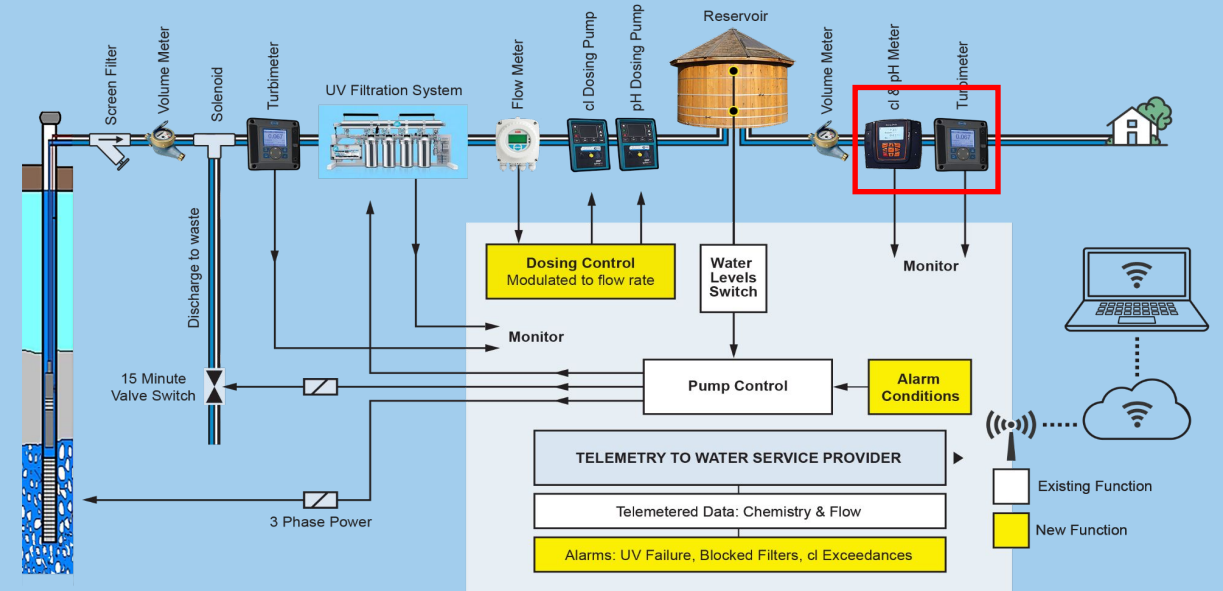
There is a Volume Meter next to the reservoir to monitor Community consumption.

# Water quality metering

*Turbidimeter*



*Cl & PH meter*



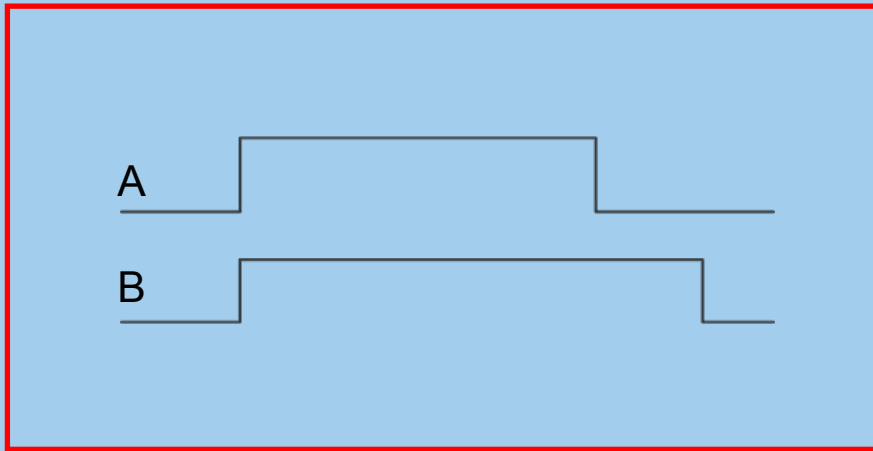
A Turbidimeter along with a Cl & PH meter are currently installed onsite and are compliant with Taumata Arowai Acceptable Solutions.

# Telemetry and controls

## All telemetered data should be historicized

In addition to water quality, the flow rate should also be telemetered providing a valuable diagnostic tool

To illustrate this, consider the two plots of water delivery shown below. The top plot (A) shows the normal flow while filling the reservoir. The bottom plot (B) shows lower flows at a longer period signaling a partial failure.



This data would enable the operators to anticipate partial failures and provide more accurate fault diagnosis

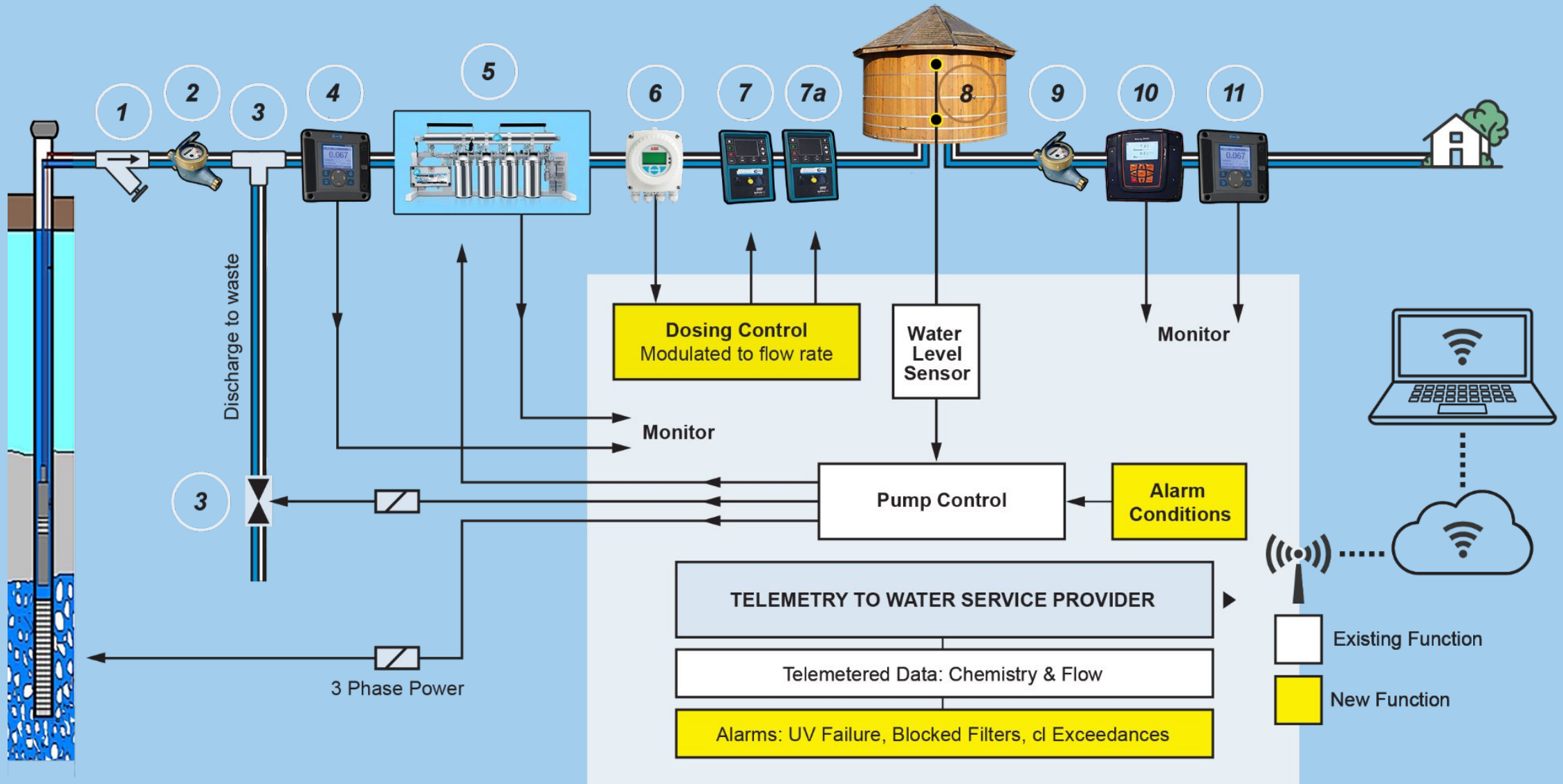
## The following controls are recommended:

1. The ability to stop and hold pumping in urgent situations.
2. The ability to restart the pumping cycle regardless of current reservoir water level. eg. prior to a planned power outage.
3. There may be additional control features to follow on further investigation.

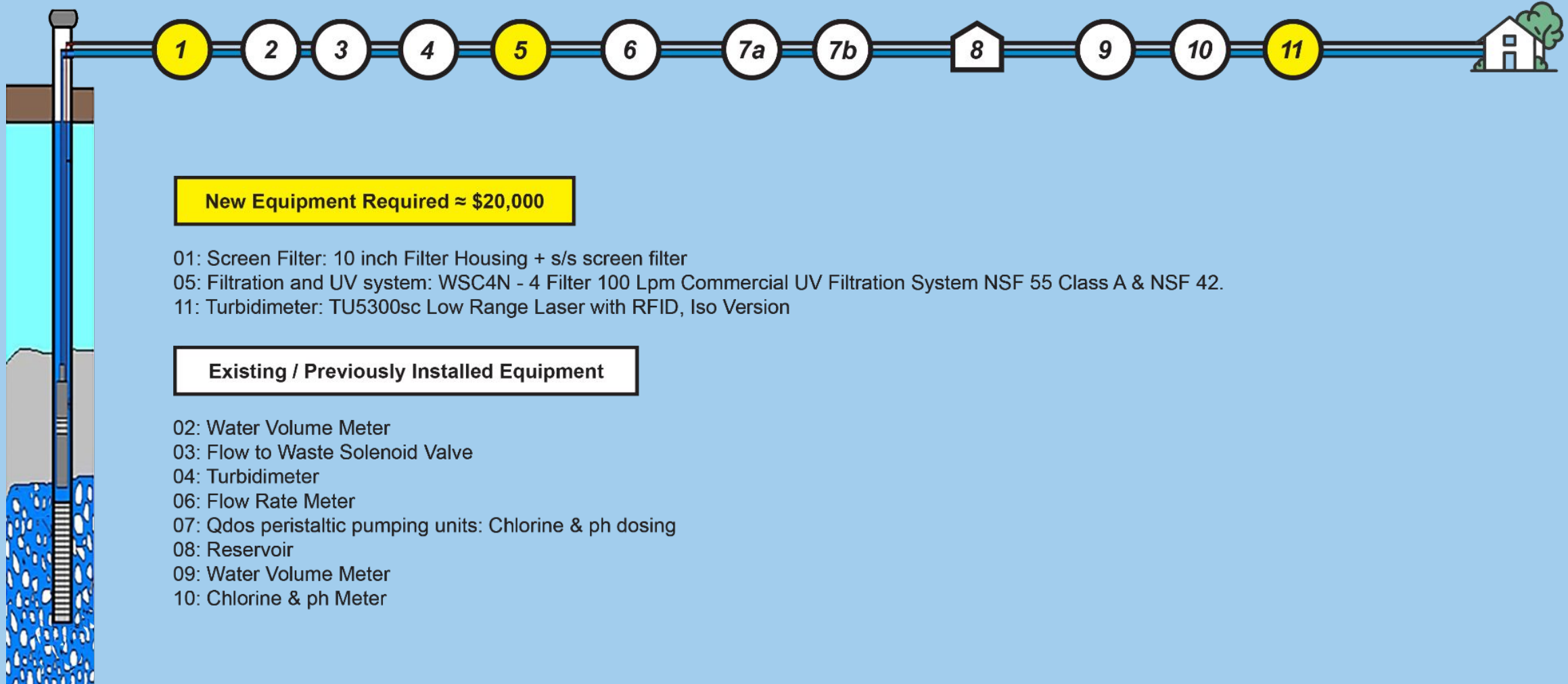
Currently the system telemeters data but there are no remote controls.

# Treatment Design Option

\*Components numbered for the System Upgrade Estimate of plant required on the following page (15).



# Treatment Option Components. *Existing Te Akau South Assets incorporated into the design*



# End

**OWEN MOONEY**  
MSc M.I.E.E Chartered Engineer (UK)  
January 2022