

Open Meeting

To	Waters Governance Board
From	Keith Martin Waters Manager
Date	30 November 2021
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Chief Executive Approved	Y/N
Reference #	WGB2021
Report Title	Small water schemes

I. EXECUTIVE SUMMARY

This report provides an overview of the required upgrades and costs to meet the draft drinking water standards as at March 2021. All costs and the scope of upgrades will need to be updated to determine, at minimum, the concept level design and monitoring requirements. Further this would allow quantity surveyor verified concept level costs to be determined for budgeting purposes before any upgrade or changeover to individual household level private water supply systems may be actioned.

I.1 SMALL WATER SCHEMES OVERVIEW

There are three small water schemes: Te Ākau, Port Waikato and Onewhero (as displayed below) under the ownership and management of Council. All three schemes will not be compliant with the draft Drinking Water Standards for New Zealand (DWSNZ) being formalised by Taumata Arowai currently.



Figure I: Port Waikato, Onewhero and Te Ākau small water supply scheme locations

All three schemes are closed schemes and do not allow additional connections. Therefore no capacity upgrades are planned now or in the future.

All three schemes require upgrading to meet the DWSNZ or one of the Taumata Arowai “acceptable solutions”.

As an alternative to upgrading the water treatment plants, Council may choose to decommission the small water schemes and provide each house currently connected to the water network with its own water tank and water pump. A referendum to shut down the small water schemes would be required. A referendum requires 75% of supplied owners to agree to have the scheme shut down which is unlikely to occur at this time.

It should be noted that under Water Reform, any private small water supply supplying drinking water to two or more houses may be handed over to council, should the private water scheme choose not to maintain the scheme to the new drinking water rules.

Council met with the Te Ākau community 30 May regarding the need to change the current system (bore supplied raw water) over to treated chlorinated tankered water being supplied to the reservoir. At this time the community was informed that an investigation was underway around future treatment and supply options, but no mention of the current recommended way forward was made. No engagement with local Iwi or Hapu and no engagement with the Port Waikato or Onewhero supplied property owners has occurred at this time. Council plan to complete community and IWI/Hapu engagement as part of the recommendations made within this report.

2. RECOMMENDATION

THAT the small waters schemes report be received;

AND THAT the Waters Governance Board approve reallocation of some of the \$750K budget for the three schemes previously assigned to decommission the schemes be reassigned to engage a consultant to conduct a concept design for a Taumata Arowai “acceptable solution” for each scheme. That a quantity surveyor approved cost for the three options, upgrade, tankered supply or changeover to individual household private supply (e.g. roof water) be determined.

AND FURTHER THAT the Waters Governance Board approve liaison with communities to acquire feedback on a way forward once costs of options are received.

AND FURTHER THAT the results of these engagements and costing shall be presented to the Water Governance Board to determine a preferred way forward for each scheme in a future meeting.

3. BACKGROUND AND FURTHER DETAIL ON SMALL WATER SCHEMES

3.1 TAUMATA AROWAI'S STANCE ON SMALL WATER SCHEMES AS AOTEAROA'S INDEPENDENT WATER SERVICES REGULATOR

Taumata Arowai was elevated on 15 November 2021 to its full role as independent water services regulator for Aotearoa, replacing the previous responsibilities of the Ministry of Health, under the Water Services Act 2021.

Taumata Arowai have outlined the following regarding small water schemes:

“For drinking water suppliers, we are keeping our messages simple. You have a duty to ensure the drinking water you provide is safe.

“Because smaller suppliers serve a smaller population (less than 500 people) and are less complex, there are mechanisms built into the legislation to provide a pragmatic approach to managing their risks. One of these mechanisms is called Acceptable Solutions.

“Applying an Acceptable Solution is a way for small suppliers to ensure they are providing safe drinking water in a practical and cost-effective way” Mr Bayfield said that small suppliers could include a community water scheme, a farm providing water to several households, a marae, community hall, rural school or holiday homes sharing the same water supply.

“During the initial years, we will provide information and guidance to smaller suppliers on what solutions including the Acceptable Solutions could look like for the diverse types of water supply arrangements that exist. We will seek input into the development of that guidance and Acceptable Solutions through reference groups and open consultation.

“The door will also be open to the development of new Acceptable Solutions over time, so that modern technology and approaches to supplying safe drinking water can be accommodated

3.2 THREE SCHEMES OVERVIEW

There are three small water schemes: Te Ākau, Port Waikato and Onewhero (as displayed below) under the ownership and management of Council. Table 1 presents a summary of the characteristics of each scheme

Table 1: Port Waikato, Onewhero and Te Ākau small water supply scheme characteristics

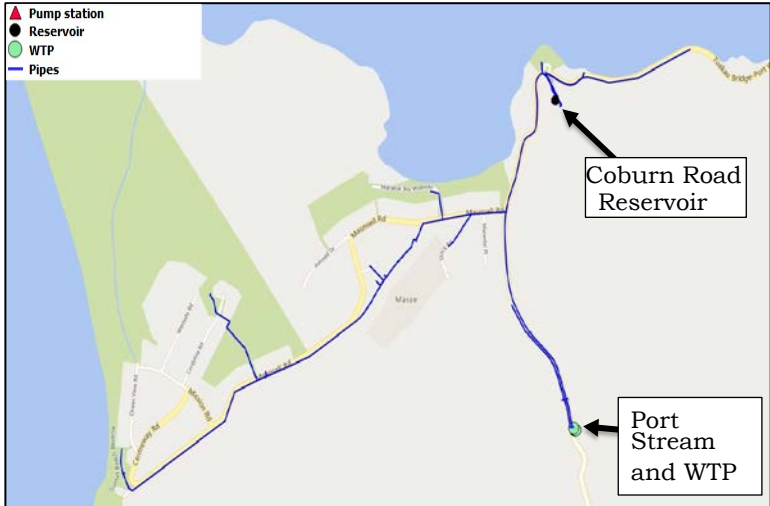
Very small water schemes	Port Waikato	Onewhero	Te Ākau
Water source limit and consent	200 m ³ /day until 2051	No consent (Permitted water take activity)	68 m ³ /day until 2024
Water source	Waikato River	Onewhero Spring	Bore (out of commission and currently water is being tankered to the reservoir)
Properties supplied	20 properties including a daycare, campground and marae	13	26
Existing storage capacity	46 m ³	0 m ³ (Will require a reservoir installation in future)	45 m ³
Existing WTP capacity	148 m ³ /day	65 m ³ /day	68 m ³ /day

Very small water schemes	Port Waikato	Onewhero	Te Ākau
Existing treatment process units	Chemical dosing, clarification, filtration and UV disinfection.	Cartridge filter, Media Filter (Akdolit), Chlorination	Cartridge Filtration, Chlorination.

3.3 PORT WAIKATO AND ONEWHERO

Port Waikato sits at the mouth of the Waikato River. From aerial photography the village appears to contain around 100 houses, however the water supply network supplies 20 properties including a daycare, campground and marae.

Onewhero is a small rural village around seven km south-west from Tuakau, across the Waikato River. The water system supplies only 13 properties.



Port Waikato system



Onewhero system

3.3.1 Current status

The existing water treatment infrastructure for both schemes have sufficient design capacity to meet existing peak day demands, Port Waikato water treatment plant is currently operating at around 50% of the design capacity and Onewhero is currently operating at around 35% of the design capacity.

3.3.1 Water take and consent

The existing water take consent for Port Waikato (expiry 2051) is significantly higher than historic demands. Onewhero does not have a water take consent as it falls within the allowable volume for a permitted activity under the Regional Plan.

Table 01: Port Waikato supply statistics (m³/day)

	Average day treated demand (m ³ /day)	Peak day treated demand (m ³ /day)	Treated Peak day factor	Connections	Average demand (L/conn/day)
2016/17	18	50	2.78	17	1,084
2017/18	22	60	2.73	17	1,323
2018/19	33	80	2.42	17	1,924
2019/20	38	80	2.11	17	2,264

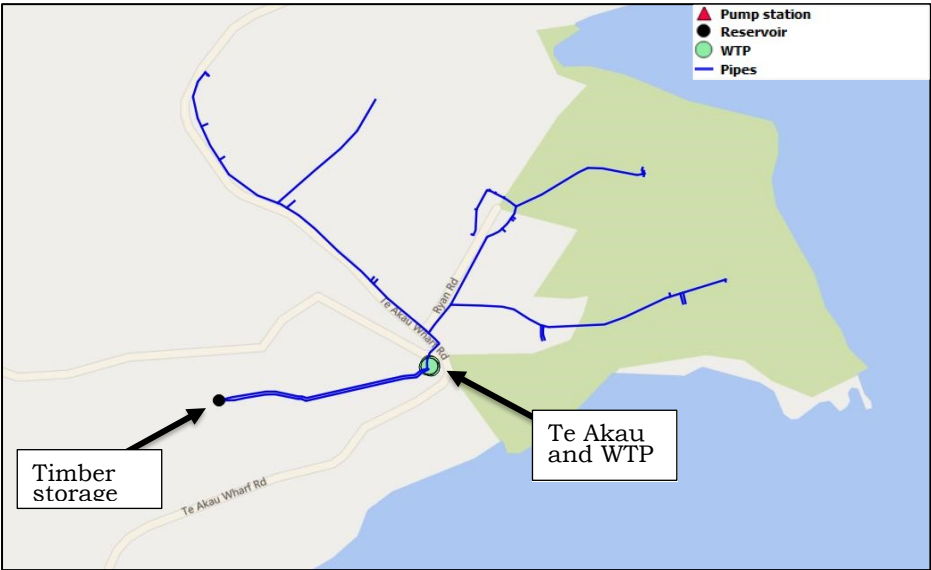
Table 02: Onewhero supply statistics (m³/day)

	Average day treated demand (m ³ /day)	Peak day treated demand (m ³ /day)	Treated Peak day factor	Connections	Average demand (L/conn/day)
2016/17	2.3	15	6.52	12	194
2017/18	1.9	15	7.89	12	157
2018/19	2.4	10	4.17	12	202
2019/20	2.0	15	7.50	13	152

3.4 TE ĀKAU SCHEME

3.4.1 Overview

Te Ākau is a small village on the northern side of the Raglan Harbour (Whāingaroa), across from Raglan itself. The water system supplies 26 properties.



Te Ākau system

3.4.2 Current status

Te Ākau bore is out of commission due to failure of the bore pump. Treated water is currently transported from Raglan by tanker and delivered to the Te Ākau Reservoir for distribution to Te Ākau residents. Options for repair or replacement of the bore pump are currently under review.

3.4.3 Water take and consent

The existing water take consent for Te Ākau (expiry 2024) is significantly higher than historic demands as displayed in table 03 which gives an indication of the scale of the supply.

Table 03: Te Ākau supply statistics (m³/day)

	Average day treated demand (m ³ /day)	Peak day treated demand (m ³ /day)	Treated Peak day factor	Connections	Average demand (L/conn/day)
2015/16	5.1	20	3.92	Incomplete	
2016/17	3.2	16	5.00	23	138
2017/18	3.6	15	4.17	26	140
2018/19	5.9	16	2.71	26	228
2019/20	7.5	15	2.00	26	287

The Te Ākau consent is due to expire in 2024. Te Ākau is currently operating at around 20% of the design capacity.

3.5 MOST RECENT ASSESSMENT OF POTENTIAL UPGRADES AND COST TO MEET DWSNZ

Watercare engaged Lutra to conduct an assessment of each plant and Table 2 summarises the three water schemes, the upgrades required to meet the draft DWSNZ (as at March 2021) for each scheme and a concept level desktop based indicative cost for the proposed upgrade at +50% - 50% accuracy (for comparison purposes). Reassessment of costs will need to be done prior to long term cost planning. A high level assessment of the upgrade options (whose high level costs are displayed) was conducted by the WDC Water team in order to compare the level of treatment and monitoring to

the most recent Taumata Arowai Acceptable treatment levels. The shortfall of the presented and priced systems is presented in Table 2.

Table 2: Small water schemes current known upgrade requirements and high level comparative cost

Very Small Schemes	Port Waikato	Onewhero	Te Ākau
Existing WTP capacity	148 m ³ /day	65 m ³ /day	68 m ³ /day
Treatment upgrade for quality	<p>Plant Upgrade with Online Monitoring:</p> <ul style="list-style-type: none"> • Post-filtration online UVT meter; • pH monitoring at the outlet, next to the chlorine dose point; • Pressure monitoring at the filter outlet. • SCADA HMI; • Historian; • Telemetry; • Full automatic control via PLC 	<p>Plant Upgrade with Online Monitoring:</p> <ul style="list-style-type: none"> • Coarse Pre-filter; • Cartridge Filtration system; • Sodium hypochlorite dosing system; • Raw water UVT meter; • SCADA HMI; • Historian; • Telemetry; • Full automatic control via PLC 	<p>Plant Upgrade with Online Monitoring:</p> <ul style="list-style-type: none"> • Raw water UVT meter; • Validated duty/standby UV reactors; • New sodium hypochlorite system; • New hydrochloric acid dosing; • SCADA HMI; • Historian; • Telemetry; • Full automatic control via PLC
Minimum ±50% High level NPV cost to upgrade provided by 3 Lutra reports¹	CAPEX: \$280 K OPEX: \$35 K pa NPV: \$720 K	CAPEX: \$2607 K OPEX: \$25 K pa NPV: \$560 K	CAPEX: \$270 K OPEX: \$30 K pa NPV: \$630 K + \$50K additional cost to reinstall water bore Currently under tanker supply which is the lowest cost short term solution
Critical shortfall items from Taumata Arowai Acceptable Solutions (for current Lutra pricing above)	<ul style="list-style-type: none"> • No end user sampling point that remotely measures FAC and pH daily • No measurement of free available chlorine (FAC) 30 min after treatment • No Turbidity measurement post treatment • No Clarification process 	<ul style="list-style-type: none"> • No end user sampling point that remotely measures FAC and pH daily • No reservoir installed • No on-site storage <ul style="list-style-type: none"> - Disallows guarantee of 30 min chlorine contact time before distribution 	<ul style="list-style-type: none"> • No end user sampling point that remotely measures FAC and pH daily • No measurement of free available chlorine (FAC) 30 min after treatment

¹ Provided prices are for comparison purposes only and more accurate prices will need to be investigated prior to long term budget planning.

Table 3 summarises the essential investigations and actions required to make an informed decision on the way forward for each of the three small water schemes. Table 3 further summarises the critical liaison that needs to be done irrespective of the way forward presented and the feedback provided will inform the final way forward decided upon by the Water Governance Board in a future meeting.

Table 3: Recommended liaison and action for the three WDC small water schemes

Very Small Schemes	Port Waikato	Onewhero	Te Ākau
Recommended liaison	High level liaison regarding maintaining water supply with community and relevant local Iwi/Hapu	High level liaison regarding maintaining or removing water supply with relevant local Iwi/Hapu	High level liaison regarding maintaining or removing water supply with community and relevant local Iwi/Hapu
Recommended action	<p>1. Assess and price the cost of upgrading the system to exactly meet the Taumata Arowai “Acceptable Solution”</p> <p>4. Determine the cost to users if scheme is upgraded</p> <p>Add to annual/long term plan for upgrade for compliance.</p> <p>Inform community of plan</p> <p>Add cost to upgrade the scheme to long term plan.</p>	<p>1. Assess and price the cost of upgrading the system to exactly meet the Taumata Arowai “Acceptable Solution” for Spring and Bore Drinking Water Supplies.</p> <p>2. Assess price of a tankered solution.</p> <p>3. Assess the cost to decommission the scheme and install a compliant system in each household. (Would require a referendum with 75% householder approval)</p> <p>4. Determine the cost to users if scheme is upgraded, replaced with tankered water or closed</p> <p>Determine option that offers the highest security at the lowest price to council and users.</p> <p>Engage with community regarding the council’s selected preferred solution and other options.</p> <p>Present results to WGB, determine way forward and update long term plan.</p>	<p>1. Assess and price the cost of upgrading the system to exactly meet the Taumata Arowai “Acceptable Solution” for Spring and Bore Drinking Water Supplies.</p> <p>2. Assess price of a tankered solution.</p> <p>3. Assess the cost to decommission the scheme and install a compliant system in each household. (Would require a referendum with 75% householder approval)</p> <p>4. Determine the cost to users if scheme is upgraded, replaced with tankered water or closed</p> <p>Determine option that offers the highest security at the lowest price to council and users.</p> <p>Engage with community regarding the council’s selected preferred solution and other options.</p> <p>Present results to WGB, determine way forward and update long term plan.</p>
Additional investigations required for each scheme	<p>1. Assess state of network and suitability to install necessary network monitoring.</p> <p>2. Assess state of reservoirs and install reservoir at Onewhero</p> <p>Use the result of the above investigations to help inform decisions, monitoring and network upgrade and maintenance requirements.</p>		

4. CONSIDERATION

4.1 FINANCIAL

Under the Long Term Plan 2021-31 we have budgeted an operational cost to decommission each scheme and no allowance has been made for capital expenditure for upgrades or potential increased operating costs to ensure proposed new compliance standards are met.

Recovery of spend to continue providing a public supply may be done through a district wide rate, a separate targeted consumption rate or a separate capital works targeted rate for each of the schemes.

Under water reform the recovery of this spend under a location specific targeted rate becomes uncertain due to the likely desire for new entities to have a blanket consumption rate for all regions under their purview.

4.2 LEGAL

Should the closing of one of the water supply schemes be proposed there is a 15+ month process involved with a referendum to gain approval from the community to do so with the possibility of the process not succeeding.

This process is outlined here:

Process	Completed by	Estimated time (minimum)
Options analysis to establish the status of the water supply and budgetary requirement for an upgrade with various feasible treatment options.	Watercare and WDC	Two months
Decision to close water supply based on the above option analysis.	Water Governance Board	One month
Review the likely effect of the closure on: <ul style="list-style-type: none"> The public health of the community; and The environment in the district of that community; 	Waikato DC and Watercare Waikato	Two months
Consultation with Medical Health Officer with the above documentation.	WDC, Watercare and Ministry of Health	Two months
Alternative water supply assessments and consultation with Medical Health Officer Compare the quality and adequacy of the existing water service with the likely quality and adequacy of the alternative service referred	WDC and Watercare	Three months
Consultation with stakeholders	WDC and Watercare	One month
Document preparation and Consultation with communities	WDC and Watercare	One month
Document Preparation for referendum with the help of electoral officer.	WDC	One month
Voting Period for referendum	WDC	One month

Process	Completed by	Estimated time (minimum)
Voting Close and inform the outcome to public	WDC	Two weeks
Any other unforeseen delays between the above steps.		One month

4.3 ENGAGEMENT AND EXTERNAL STAKEHOLDERS

The following external stakeholders will be engaged with (where engagement has already occurred in-part it is stated):

Stakeholder	Te Ākau	Port Waikato	Onewhero
Internal			
Community Boards/Community Committees	Te Ākau / Port Waikato Rep Richard Thompson thompson07@xtra.co.nz 0272047928		Onewhero Community Board Rep Kandi Ngataki kandi4onewherotuakau@gmail.com 0212468475
Other community groups	Horongarara Community Group Committee <i>(met with on 27 May at Council office and have had ad hoc engagement with on matters relating to bore)</i>	-	-
Waikato-Tainui / Local iwi / Hapū		Waikato Tainui: Taroi Rawiri Environment Manager Taroi.rawiri@tainui.co.nz 021802232 Waikato Tainui Kahurimu Flavell Iwi Engagement Officer Kahurimu.flavell@tainui.co.nz	
Households	Once way forward established, consult with Landowners <i>(met with Te Ākau South community 30 May stating that an investigation is underway and highlighted no definitive long term solution or position was made)</i>	Once way forward established, consult with Landowners	Once way forward established, consult with Landowners
Business/Other	Fire & Emergency NZ <i>(met with on 13 April at Council office and subsequent correspondence with in relation to</i>	-	-

Contact will be made with the above groups including Iwi/Hapū and identification of additional interested parties will occur.

Council, including our Pouhono Iwi ki te Haapori (Iwi and Community Partnerships Manager) will engage with these groups and with the relevant community boards/committees. This engagement will include discussing options such as upgrade, tankered supply or individual supply with decommission of a scheme to gain feedback.

Where the recommended outcome is no level of service change, engagement may not be required.

5. CONCLUSIONS

The three Council managed small water schemes, Te Ākau, Onewhero and Port Waikato, require an infrastructure change or upgrade in order to meet the proposed Drinking Water standards New Zealand (DWSNZ). An assessment of the current information available regarding the changes needed to meet these standards has yielded the following conclusions:

- Under the Long Term Plan 2021-31 we have budgeted an operational cost to decommission each scheme and no allowance has been made for Capital expenditure for upgrades.
- The costs for upgrades or changes currently available is incomplete and requires a concept level investigation and design.
- Taumata Arowai will mandate that should the WTP and network schemes be maintained, they must be upgraded to meet the minimum treatment and conveyancing standards and the minimum daily sampling requirements undertaken.
- Further work is required to determine of the option that offers the best balance of cost and security of water supply.
- Liaison with the relevant communities and Iwi or Hapū groups is required if a change in the level of supply is proposed.