Agenda for a meeting of the Waters Governance Board to be held via Audio Visual Conference on **TUESDAY, 15 MARCH 2022** commencing at **10.00am**.

GJ Ion
CHIEF EXECUTIVE

TERMS OF REFERENCE AND DELEGATION

Reports to:	The Council
Chairperson:	Mr David Wright
Membership:	Mr Garth Dibley Ms Rukumoana Schaafhausen Mr Gavin Ion (Chief Executive) Ms Jackie Colliar (Board Intern)
Meeting frequency:	Monthly
Quorum:	A majority of members (excluding the Board Intern)

The Waters Governance Board is a subordinate decision-making body of the Waikato District Council established under Schedule 7 of the Local Government Act 2002.

Purpose and Terms of Reference:

1. To provide governance and oversight of the development and implementation of the Council contract with Watercare Services Limited ('Watercare').
2. To ensure the activity goals are clearly established, and strategies are in place for achieving them.
3. To establish policies for strengthening the performance of the water activity including ensuring management and the contractor are proactively seeking to build the business through innovation, initiative, technology, new products and the development of its business capital.
4. To monitor the performance of management through the Chief Executive.
5. To ensure high standards of health & safety are maintained by management and Watercare and undertaking appropriate due diligence.
6. To decide on whatever steps are necessary to protect the Council's financial position and the ability to meet its debts and other obligations when they fall due, and ensuring that such steps are taken.
7. To ensure the water activity's financial statements are true and fair and otherwise conform to law.
8. To ensure the water activity adheres to high standards of ethics and corporate behavior.
9. To ensure the water activity has appropriate risk management/regulatory compliance policies in place.
10. To look to improve environmental outcomes from this activity.
11. To consider kaitiakitanga as part of decision-making.
12. To monitor and ensure Watercare are meeting their obligations.
13. To report to Council twice yearly on progress with Waters' Management.
14. To provide innovation and ideas that could improve profitability, service levels or environmental outcomes.

15. To hold Watercare to account over the delivery of the operational and capital programmes.
16. To work with Council to agree the overall funding requirements of the business.
17. To undertake any other matters considered relevant by the Board or referred to the Board by the Council.

The Board is delegated the following powers to act:

- Agree the form of the transactional arrangement with Watercare.
- Negotiate with Watercare and recommend to Council the final, or any amended, contract value for waters management.
- Conclude the contract (after Council approval of contract value) and terms and conditions, including any amendments, with Watercare.
- Ensure that transitional contract requirements are met by Watercare and Council.
- Hold Watercare to account for their performance at all levels.
- Monitor and oversee the performance of staff and Watercare in terms of the water activity.
- Consider and ensure improvements or innovation are implemented by Watercare or through the Chief Executive as appropriate.
- Approve changes to the operation of the contract with Watercare.
- Develop strategies to improve contractual performance or to improve business practices.
- Recommend to Council infrastructure strategy and Asset Management Plans for adoption.
- Develop an annual works programme (operating and capital) and submit to council for final approval.
- Approve alterations and transfers within the programme of capital and operational works as prepared for the Long Term Plan and Annual Plan, subject to the overall scope of the programme remaining unchanged and the programme remaining within overall budget.
- Set and ensure Watercare's adherence to health and safety requirements, and wellbeing practices.
- Set and maintain standards of ethics and corporate behavior.
- Consider development opportunities for the Waters' business.
- Define and set levels of service for Waters' management now and in the future.
- Responsible for the financial performance of the contract and operation.
- Approve and/or amend existing or new contracts relating to the delivery of three waters' services and operation unless additional funding by the Council is required or the approval or amendment is inconsistent with Council Policy.
- Recommend to Council any new or additional funding requirements over and above that contained within the Long Term Plan.
- Develop plans to improve the overall resilience of the Waters' networks and allow for growth.

- Consider the impact of growth on the Waters' infrastructure.
- Implement and monitor the risk management framework for the waters' management and activity.
- Approve the annual and half yearly financial statements for the Waters' operation and provide any relevant commentary to the Council.
- Annually review the Board composition, structure and succession and make recommendations to council on these matters.
- Ensure the Waters' business delivered by Watercare provides value for the community in terms of the four wellbeings.
- Determine the approach for resource consent applications for the Waters' business, and monitor progress of those applications on behalf of the Council.
- Review and monitor existing strategic resource consents.
- Ensure that Kaitiakitanga and environmental outcomes are key decision making considerations for the Board.
- Uphold the vision and strategy of the Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010.

Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

Open

To	**Waters Governance Board**
Report title	**Register of Interests**

1. Executive summary
Whakaraapopototanga matua

A copy of the Register of Interests is attached for the Board's information. The register will be updated following receipt of information during the year.

2. Staff recommendations
Tuutohu-aa-kaimahi

THAT the Register of Interests be received.

3. Attachments
Ngaa taapirihanga

Register of Interests – Water Governance Board

Date:	Tuesday, 15 March 2022
Report Author:	Matt Horsfield, Democracy Advisor.
Authorised by:	Gaylene Kanawa Democracy Team Leader

Register of Interests – Waters Governance Board

Ruku Schaafhausen

Companies and Trusts	Te Waharoa Investments Ltd AgResearch Miro Hautupua Ltd Contact Energy Ltd Kaitaki Guardian Services Ltd
Community organisations	Equippers Trust Tindall Foundation Princes Trust New Zealand
Other appointments	Chair, Freshwater Iwi Leaders Group
Property within the District	Nil
Any other interests	Nil

Garth Dibley

Companies and Trusts	Water New Zealand – Director
Community organisations (membership)	Electricity Networks Association – member E-Charge working group – MfE member
Other appointments	Director of Smartco Infratec NZ Ltd – Chairperson
Property within the District	Yes - Tamahere
Any other interests	Nil

David Wright

Companies and Trusts	Director, David Wright Limited Trustee, Tervuren Trust Trustee, Solomon Islands Tourism Infrastructure Development Fund (Incorporated) Chair of Waimea Water Ltd Chair, Solomon Islands Airport Corporation Limited Haapa Research Limited Interim Chief Executive Officer – Central Economic Development Agency
Community organisations	Chair, Tokelau Renewable Energy Steering Group
Other appointments	Chair, Central Air Ambulance Rescue Limited Chair, Search and Rescue Services Limited
Property within the District	Nil
Any other interests	Nil

Gavin Ion

Companies and Trusts	Trustee and Beneficiary in a family trust
Community organisations	Member Swimming Waikato Technical Panel Member Swimming New Zealand Technical Advisory Committee Chairperson Swimming Waikato Member of the Waikato Regional Sports Facility Plan Steering Group Member of Institute of Directors Member of International City Managers' Association Member of Chartered Accountants of Australia and New Zealand Member of Business Leaders Health & Safety Forum Steering Group RMA Commissioner Member of the Waikato Regional Leadership Group
Other appointments	Chief Executive, Waikato District Council Director, Waikato Local Authority Shared Services Limited Chair, Audit & Risk Committee (WLASS)
Property within the District	Nil
Any other interests	Nil

Jackie Colliar

Companies and Trusts	Te Whakakitenga O Waikato Inc Member of Te Arataura
Community organisations	Nil
Other appointments	Trustee and Chair of Taniwha Marae Trustee (Taniwha Marae Representative) – Nga Muke Development Trust Waipa District Council – Co-Governance Committee Waikato Regional Council – Co-Governance Committee Waikato River Authority Board Member Director – WEL Networks
Property within the District	Nil
Any other interests	Employee of Hamilton City Council Project Lead for the Subregional Three Waters project on behalf of Future Proof Project Manager of the Hamilton Waikato Metro Wastewater Detailed Business Case Project

Open – Information only

To	**Waters Governance Board**
Report title	**Confirmation of Minutes**

1. Purpose for the meeting
Te Take moo te puurongo

To confirm the minutes for the meeting of Waters Governance Board held on Tuesday, 1 February 2022.

2. Staff recommendations
Tuutohu-aa-kaimahi

THAT the minutes for a meeting of the Waters Governance Board held on Tuesday, 1 February 2022 be confirmed as a true and correct record.

3. Attachments
Ngaa taapirihanga

Attachment 1 – WGB Minutes – 1 February 2022

Date:	Tuesday, 15 March 2022
Report Author:	Matt Horsfield, Democracy Advisor
Authorised by:	Gaylene Kanawa, Democracy Team Leader.

MINUTES for a meeting of the Waters Governance Board Meeting of the Waikato District Council held via audio-visual conference on **TUESDAY, 1 FEBRUARY 2022** commencing at **10.00am**.

Present:

Ms R Schaafhausen (Chair)
Mr D Wright
Mr G Dibley
Mr GJ Ion (Chief Executive, Waikato District Council) (*until 12:27pm*)`
Ms J Colliar (Intern)

Attending:

Cr E Patterson

Ms J Pickrang (Taumata Arowai)

Mr R MacCulloch (General Manager Service Delivery)
Ms C Nutt (Waters Contract Relationship Manager)
Mr K Martin (Waters Manager)
Mr J Ebenhoh (Planning and Policy Manager)
Ms C Wratt (Principal Planner)
Ms L Cilliers (Management Account)
Ms Z Al-Khaleefa (Three Waters Contract Engineer)
Mr M Horsfield (Democracy Advisor)

Mr M Telfer (Watercare)
Mr A Boldero (Watercare)
Mr D Hurdle (Watercare)

APOLOGIES AND LEAVE OF ABSENCE

There were no apologies.

CONFIRMATION OF STATUS OF AGENDA ITEMS

Resolved: (Mr Wright/Mr Ion)

THAT the agenda for a meeting of the Waters Governance Board Meeting held on Tuesday, 1 February 2022 be confirmed and all items therein be considered in open meeting with the exception of those items detailed at agenda item 7 which shall be discussed with the public excluded.

CARRIED **WGB2202/02**

DISCLOSURES OF INTEREST

Ms Schaafhausen advised the Board that she was appointed to the Three Waters Transition Unit and that she will step down as Chair of the Waters Governance Board but remain on the Board.

Mr Wright advised the Board that he was appointed as the Interim Chief Executive of Horowhenua District Council and noted the removal of Interim Chief Executive Officer – Central Economic Development Agency from the Register of Interests.

ACTION: Democracy Team to update the register of interest to the changes to Mr Wright's roles.

CONFIRMATION OF MINUTES

Resolved: (Mr Ion/Mr Dibley)

THAT the minutes for the meeting of the Waters Governance Board Meeting held on Tuesday, 14 December 2021 be confirmed as a true and correct record.

CARRIED **WGB2202/03**

REPORTS

Actions Register
Agenda Item 5

The Waters Contract Relationship Manager and Mr Telfer noted the following:

- Resource Consent Status Overview – Draft report was ready, however the release of the district plan will mean the report requires revisions and be presented during the March meeting. Noted it was important to include where unbudgeted funds are coming and the effects on other projects that are being substituted.

Resolved: (Mr Ion/Mr Wright)

THAT the Actions Report be received.

CARRIED **WGB2202/04**

Drinking Water Standards & Compliance Requirements – Small Water Schemes
Agenda Item 6.1

Ms Pickrang provided a verbal report and noted the following matters:

- Taumata Arowai was currently undertaking public consultation, seeking feedback for a number of documents relating to three waters.
- 97% of District Councils were registered in Hinekorako – a self-service online portal for drinking water suppliers and laboratories.
- 30% of District Council supplies had been verified by Hinekorako.
- Unregistered drinking water suppliers had three years to register with Taumata Arowai.
- There was a focus on a cultural shift which was wide reaching, from water safety plans to continuous risk management planning.
- Water suppliers must prepare and implement a source water risk management plan as part of their drinking water safety plan. To identify hazards and reduce and manage risks.
- Taumata Arowai will provide information to local authorities on the location of drinking water abstractions points for verification.
- Drinking water suppliers were currently confirming information with Taumata Arowai, which will include a number of aspects such as Source ID and Source Water Type.
- Taumata Arowai wastewater and stormwater functions will not commence until October 2023, to ensure they can prioritise drinking water regulation.
- Drinking water suppliers had a responsibility to make sure the water they provide is safe.
- If the public believe their drinking water may not be safe, they can notify Taumata Arowai through Hinekorako.
- In the situation where a drinking water supplier proposes to stop supplying drinking water to consumers, or where there is a significant problem with their ability to keep doing so safety, the supplier must notify Taumata Arowai.

- During a drinking water emergency, Taumata Arowai can exercise special powers and work with suppliers and other agencies to make the water safe as quickly as possible – both for water quantity and water quality.

- There had been drinking water quantity emergency exercises, with plans for a water quality emergency exercise.

- Is there obligation for a territorial authority to take on a small water scheme? There needs to be an assessment completed, but yes there is an obligation. Obligation may be transferred to the new three waters authority.

- Question raised regarding what approach had Taumata Arowai undertaken to get feedback for acceptable solutions from small and private water suppliers. Taumata Arowai had spread the net wide, with webinars operated through Water NZ and trying to work as many channels possible.

- There will be financial assistance for Maraes to meet the new standards for registered suppliers.

ACTION: Council to circulate the link of the Taumata Arowai webinars to the community.

- Council does not have a stocktake of small water schemes (and their condition) within the district.

ACTION: Staff to build a register of small water schemes in the district.

Resolved: (Mr Ion/Mr Wright)

THAT the verbal report from Ms Pickrang be received.

CARRIED **WGB2202/05**

Proposed District Plan Verbal Presentation
Agenda Item 6.2

The Principal Planner noted the following matters:

- Proposed District Plan (PDP) implemented the National Planning Standards. This included a different structure, definitions, zone names, maps and colours and symbols, designations and also removed parking requirement.

- The Proposed District Plan has primacy over strategic directions.

- There were a number of new zone categories introduced. There were special purpose zones added for areas such as the Corrections zone and Mercer Airport zone.

- Commercial Zone – Key issue was to protect industrial land for industrial purposes.

- Future urban zone – Indicates those areas that are suitable for urban development once constraints or timing is resolved. Similar to the rural zone, needs Schedule 1 plan change to change zoning.

- Medium density residential zone – new for the district. Enables increased density in and around town centres. Three residential units per site were permitted for Tuakau, Pokeno, Te Kauwhata, Huntly, Ngaruawahia and Raglan.

- Rural Zone – Enable farming andseasonal worker accommodation for sites over 20ha. Increased size of minor residential units 120m^2. Focus on high quality soils in terms of subdivision provisions.

- Zoning patterns – Modest extension to most towns and includes new special purpose zones.

- Tangata Whenua - There were now five chapters incorporating Tangata Whenua within in the district plan. This includes the Tangata Whenua Chapter, Maaori Land, Maaori values and Maatauranga Maaori, Te Ture Whaimana and Sites and Area of Significance to Maaori.

- Natural Hazards – Modest changes to the notified version. Deletion of the Coastal Sensitivity Area from the rural coastal areas.

- Significant Natural Areas (SNA) – Panel had taken the SNA off the district plan maps, but retains the mapping for areas which had been verified, have a covenant or were publicly owned.

- Enabling Infrastructure – Recognises rhe importance of regionally significant infrastructure. There were 10 infrastructure chapters.

- Enabling Infrastructure – Resource Consent was required for stormwater ponds or wetlands that serve more than one sites, outfall structure located within identified areas for example.

- Infrastructure and Landuse – Service connections for infrastructure. All new lots created must be designed and located so that provisions are made for service connections up to the boundary, such as wastewater.

- Wastewater discharge to land – Permitted on large land lots.

- Appeals for the PDP will close on the 22nd March 2022.

ACTION: Report to come to the Water Governance Board understanding the implications proposed changes within the District Plan on three waters.

- Wet Industries – Very few rezonings for industrial zones. The District Plan decision doesn't make any distinction between wet or dry industries.

Resolved: (Mr Wright/Mr Ion)

THAT the Proposed District Plan decisions presentation be received.

CARRIED **WGB2202/06**

Three Waters Governance Report - January 2022Agenda Item 6.3

Mr Telfer noted the following matters:

- Health & Safety – No injuries had been recorded. Health & Safety focus for January 2022 was hydration in heat and driving speeds, with good results. Mates in Construction was scheduled to meet with field staff in December 2021, but this had been deferred to a later date. Watercare had reviewed their criticality of all staff relating to Omicron, to minimise interaction with the wider team. Field teams had been split into three groups (North, Central & South). Plans were underway for how work will be managed with reduced staff.

- Looking at getting the abatement notice for Meremere Wastewater Treatment Plant lifted, with the consent for the plant making progress.

- Barrier installation for all reservoirs had been completed. Work was underway to install cathodic protection for the reservoir tanks.

- Working with Watercare Auckland for the installation of the wastewater meter at the Pukekohe plant.

- New water restriction approach methodology (more proactive approach) had been put in place and is going well.

- All performance results were achieved in January 2022.

- Department of Internal Affairs projects going well.

- The demolition of the Hopuhopu Water Treatment plant begins today, and due to be completed by the 15th February 2022. No concern had been raised.

- Stormwater – Noted it was important to enforce he relationship with development engineers and Watercare, and the transition to swales instead of hard piping and maintenance. Swale can look untidy if not maintained. Full costs need to be included in the Long Term Plan for maintenance of systems such as swales.

- If quarter to a half of staff weren't available due to self-isolation, is there a plan to maintain critical services with limited staff? Watercare had been in discussions with Sydney Water to hear from their experience. Work would be restricted to reactive works in this situation, and utilising resources from Watercare Auckland.

- Rapid Antigen Testing – Will they be an option? Watercare was looking to source the tests. Water NZ is collated the detail of all critical workers within the water business so that rapid antigen tests can be made available to all critical workers.

ACTION: Mr Telfer to provide further information regarding Rapid Antigen Testing for staff before they come onto the workplace.

- Question raised regarding whether Watercare offers safety workshops for staff when they return to work after the holiday break. Mr Boldero confirmed that staff do attend safety start-up workshops upon returning to work.

- Had there been any contract work undertaken regarding delays and additional costs for projects?

ACTION: Mr Telfer to provide further information regarding the impacts on projects for additional costs and delays due to COVID.

- Concern noted whether staff in the Waikato would be redirected to Auckland, when Waikato is already reduced due to Covid and self-isolation.

- Complex meter project – Were there other areas in the district other than Raglan where complex meters exist? Majority of complex works were now in Ngaruawahia and Huntly, and it was planned to have the project completed by July 30 2022, however there were often challenges with land owners for entry to properties.

- Raglan Wastewater Overflow Incident – Initially crew flushed the line to remove blockage, however the overflow returned two weeks later. There was a significant amount of fats in the line that required additionally jetting. The pipe was now on a routine schedule. The property does have an invert on the pipe, but its not the cause of the overflow.

- What is Council doing to educate the community to conserving water? There is a series of posts on social media regarding water conservation. A video is also on the Council website to locate and check water leaks.

- What is low-risk compliance? Its different for every wastewater plant, for Raglan, its suspended solids, and for Huntly its nitrogen and suspended solids.

Resolved: (Mr Ion/Mr Wright)

THAT the Three Waters Governance Report – January 2022 be received.

CARRIED **WGB2202/07**

Stormwater Update - January 2022Agenda Item 6.4

Mr Telfer noted the following matters in relation:

- Consent Compliance – 2022 Stormwater Report completed and submitted to Waikato Regional Council in October 2021. No feedback had been received from Waikato Regional Council.

- Compliance summary – Increase of average compliance rating increased from 75% to 76%. It is tracking in the right direction., Once projects begin, compliance will increase.

- Abatement notice in Raglan – Cambrae Flood mitigation is the only outstanding item.

- Port Waikato had significant coastal erosion issues. Community considered lack of stormwater management was an issue which was not supported in the peer review. Currently scheduling in maintenance works. The village had a high water table that provides difficulties.

- Pokeno – Updated the hydraulic model shows flooding was an issue – all upper catchment development needs to manage flows to 80% of pre-development.

- Huntly – Local pond had several complaints due to the aesthetic and smell. Watercare had met with community representatives. Positive response from proposed work at Hakanoa Street. Hakanoa stream erosion project had been awarded and will commence in the near future with construction budgeted in the Long Term Plan for 2022/23. Stormwater Asset Condition CCTV programming had commenced – renewal programme was needed once CCTV completed.

- Raglan – Abatement notice will be closed out once Cambrae Road flooding project was completed. Awaiting finalized design from Stantec before applying for consent to undertake construction. Property owners appear happy with the outcome. Business case for updated catchment management plan in Raglan was drafted and tendered. Community meeting undertaken with Waikato Regional Council in attendance at the end of January 2022.

- Watercare development of engineering standards – First draft complete and currently in use. Update currently being completed.

- Council and Watercare presented to the Three Waters Waters Steering Committee November 2021.

- Level of service document – scope still being defined.

- Stormwater process and tools review – Initial flow charts had been completed – work continuing before presenting to the wider team.

- Water quality investigation about to commence, and had been awarded and contract signed.

- Current consent – How do the current provisions of the current consent compare to how it stacks up with the current consent standards today? Consents reference Waikato Regional Council's urban sensitive design, which were considered best practice. However enforcement was challenging.

- Consent requirement currently are fairly loose. Design standards tend to be removed when there are physical constraints in retro fitting. Existing stormwater infrastructure is a major factor in poor stormwater quality.

- Noted that further cooperation with Hamilton City Council and Waipa District Council would be beneficial for education and other areas.

- May need to look at how to embrace the requirements from Taumata Arowai, which remain unclear, so work was not wasted to meet new regulations.

- Concern noted regarding spending when assets will be transferred to the new three waters entity, however work must continue to deal with immediate growth.

Resolved: (Mr Ion/Mr Wright)

THAT the Stormwater Update - January 2022 presentation be received.

CARRIED **WGB2202/08**

EXCLUSION OF THE PUBLIC
Agenda Item 7

Resolved: (Mr Ion/Ms Schaafhausen)

THAT the public be excluded from the following parts of the proceedings of this meeting.

The general subject of each matter to be considered while the public is excluded, the reason for passing this resolution in relation to each matter, and the specific grounds under section 48(1) of the Local Government Official Information and Meetings Act 1987 for the passing of this resolution are as follows:

General subject of each matter to be considered	Reason for passing this resolution in relation to each matter	Ground(s) under section 48(1) for the passing of this resolution
PEX Item 1 Confirmation of Minutes	**Good reason to withhold exists under Section 6 or Section 7 Local Government Official Information and Meetings Act 1987**	**Section 48(1)(a)**

PEX Item 2 Action Register		
PEX Item 3.1 Waters Financial Results to 31 December 2021		

This resolution is made in reliance on section 48(1)(a) of the Local Government Official Information and Meetings Act 1987 and the particular interest or interests protected by Section 6 or Section 7 of that Act which would be prejudiced by the holding of the whole or relevant part of the proceedings of the meeting in public, as follows:

Item No.	Section	Interest
PEX Item 1 Confirmation of Minutes		**Refer to the previous Public Excluded reason in the agenda for this meeting.**
PEX Item 2 Action Register		**Refer to the previous Public Excluded reason in the agenda for this meeting.**
PEX Item 3.1 Waters Financial Results to 31 October 2021	**7 (2) (b)**	**Protect Information where the making available of the information:**
	7 (2) (b) (ii)	**Would be likely unreasonably to prejudice the commercial position of the person who supplied or who is the subject of the information; or**
		Enable any local authority holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations); or
	7 (2) (i)	**Prevent the discourse or use of official information for improper gain or improper advantage.**
	7 (2) (j)	

AND THAT Mr Telfer and Mr Hurdle be permitted to remain at this meeting, after the public has been excluded, because of her knowledge of Watercare. This knowledge, which will be of assistance in relation to the matter to be discussed, is relevant to that matter because of Watercare's role and responsibility for those matters.

CARRIED **WGB2202/09**

Mr Ion left meeting during the above item at 12:27PM.

Resolutions WGB2202/10 – WGB2202/13 are contained in the public excluded section of these minutes.

Having resumed open meeting and there being no further business the meeting was declared closed at 1:01pm.

Minutes approved and confirmed this day of 2022.

Rukumoana Schaafhausen
CHAIRPERSON

Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

Open – Information only

To	**Waters Governance Board**
Report title	**Actions Register**

1. Purpose of the report
Te Take moo te puurongo

To update/inform the Waters Governance Board on actions following the Waters Governance Board meeting held on Tuesday, 1 February 2022.

2. Staff recommendations
Tuutohu-aa-kaimahi

That the Waters Governance Board receives the Action Register.

3. Attachments
Ngaa taapirihanga

Attachment 1 – Action Register

Date:	Tuesday, 15 March 2022
Report Author:	Gavin Ion, Chief Executive

Waters Governance Board
Actions Register

OPEN MEETING

Meeting Date	Action	To Action	When	Status
20/11/19	The Board to be provided with: ▪ The proposed Te Kauwhata water take consents strategy.	Carole Nutt	Next update March 2022	Update paper included in March Agenda
2/11/21	Resource Consent Status Overview Report to be delivered to the Board regarding options to bring Huntly Wastewater Treatment into compliance.	Watercare	March 2022	Short term options have been considered ahead of full upgrade budgeted for later years in the LTP. Paper included in March Agenda
1/2/22	Disclosure of Interest Democracy Team to update the register of interest to the changes to Mr Wright's roles.	Democracy	March 2022	Register has been updated
1/2/22	Council to circulate the link of the Taumata Arowai webinars to the community.	Carole Nutt	March 2022	A link to Taumata Arowai's webinar for whānau, hapū, and iwi Māori has been shared with Council's Iwi and Community Partnership Manager to distribute to the appropriate parties. Council has created a Taumata Arowai section on our external website under including a link to the Taumata Arowai website where the public can access the suite of information including both past and future webinars. Various information on Three Waters Reform including Taumata Arowai and proposed new standards out for consultation have been circulated to the those in the community subscribed to receive the 'Waikato District News' via email (currently 5,000 members).

Waters Governance Board
Actions Register

Meeting Date	Action	To Action	When	Status
1/2/22	Staff to build a register of small water schemes in the district.	Carole Nutt	May 2022	Contact has been made with a variety of internal council staff and external organisations in an attempt to identify small waters schemes not on public water supply. To-date we have identified 30 halls, 27 maraes, 10 schools and a number of others. Through the Waikato Regional Council online database we have identified 437 water take consents with the vast majority being categorised as agricultural dairy farming and not necessarily for potable use.
1/2/22	Mr Telfer to provide further information regarding Rapid Antigen Testing for staff before they come onto the workplace.	Mr Telfer, Watercare	March 2022	Included in Governance report for March Agenda
1/2/22	Mr Telfer to provide further information regarding the impacts on projects for additional costs and delays due to COVID.	Mr Telfer, Watercare	March 2022	Under the renewals work, the initial supply chain challenges were addressed by advancing procurement early. For procurement not yet secured we are seeing cost increases associated with material supply and securing specialist labour. The price of polyethylene pipe is coupled to the rising cost of petroleum and imported valves and fittings have also increased in value. Watercare are continuing to monitor impacts of Covid.

Open

To	**Waters Governance Board**
Report title	**District Plan Presentation - Ohinewai**

1. Purpose of the report
Te Take moo te puurongo

Council's Principal Planner Carolyn Wratt will take the Board through a presentation on the Ohinewai provisions following the Environment Court issuing its determination that resolves the appeal to the Proposed District Plan.

2. Staff recommendations
Tuutohu-aa-kaimahi

That the District Plan Presentation – Ohinewai is received.

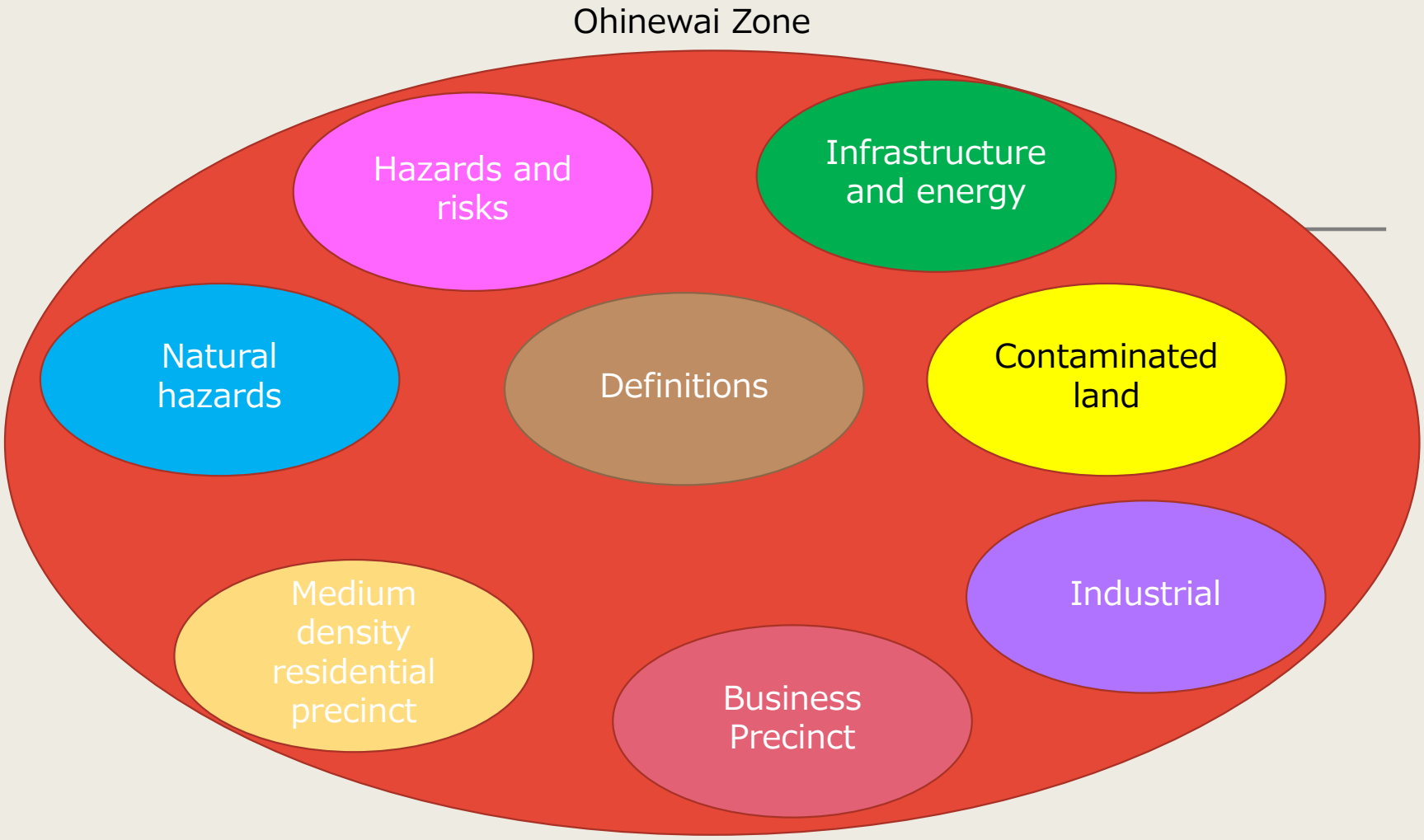
3. Attachments
Ngaa taapirihanga

Attachment 1 – Ohinewai Operative Presentation

Date:	15 March 2022
Report Author:	Keith Martin, Waters Manager
Authorised by:	Gavin Ion, Chief Executive

Ohinewai operative provisions

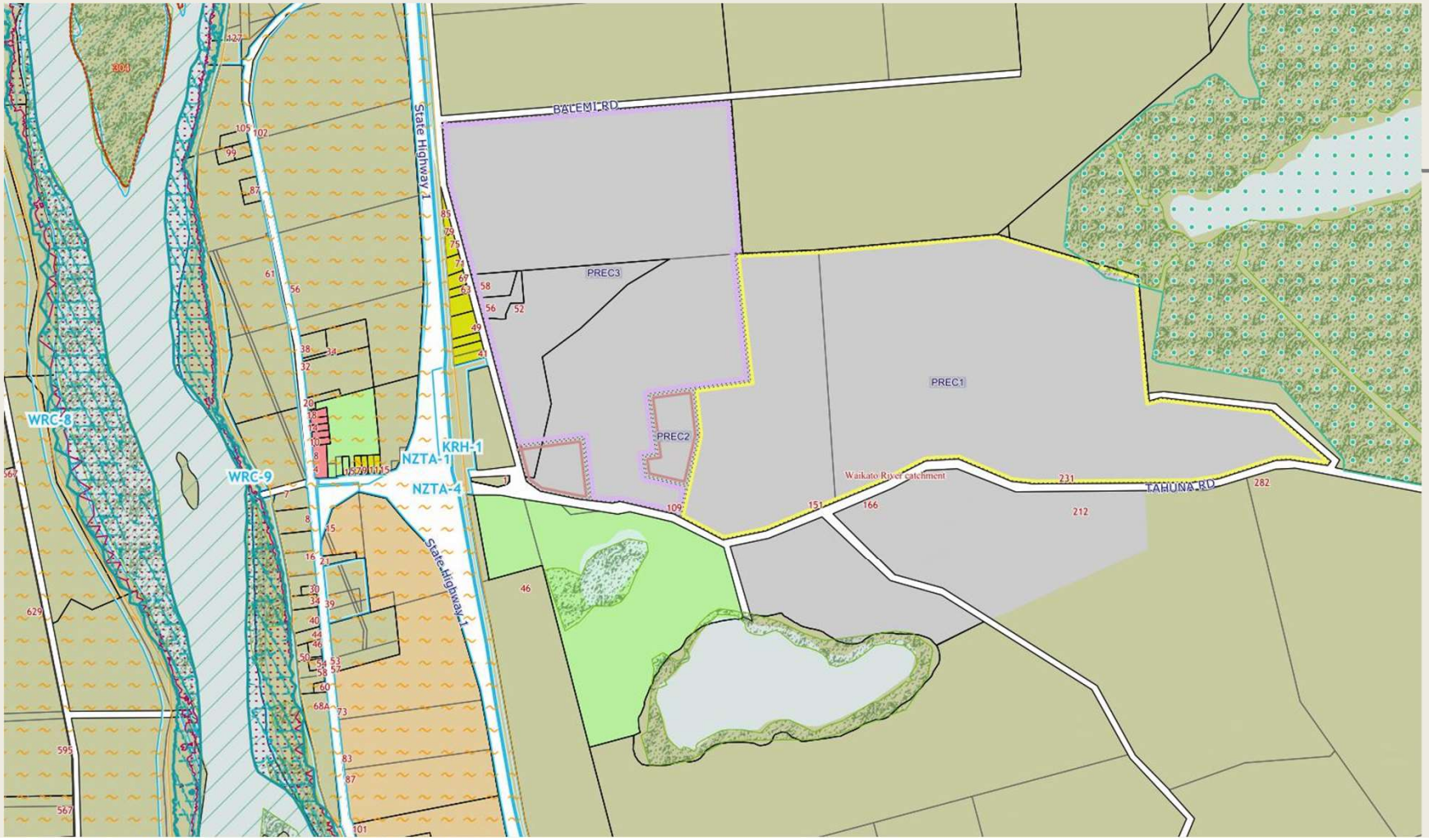
3 March 2022



Structural things to note

- The provisions in this zone are self-contained and do not rely on any other chapters in the District Plan.
- There will be inconsistencies with the rest of the decision notified January 2022
- All objectives and policies are to be achieved together and there is no hierarchy between them
- Is not 100% compliant with National Planning Standards – it is a hybrid approach

Extent of Ohinewai

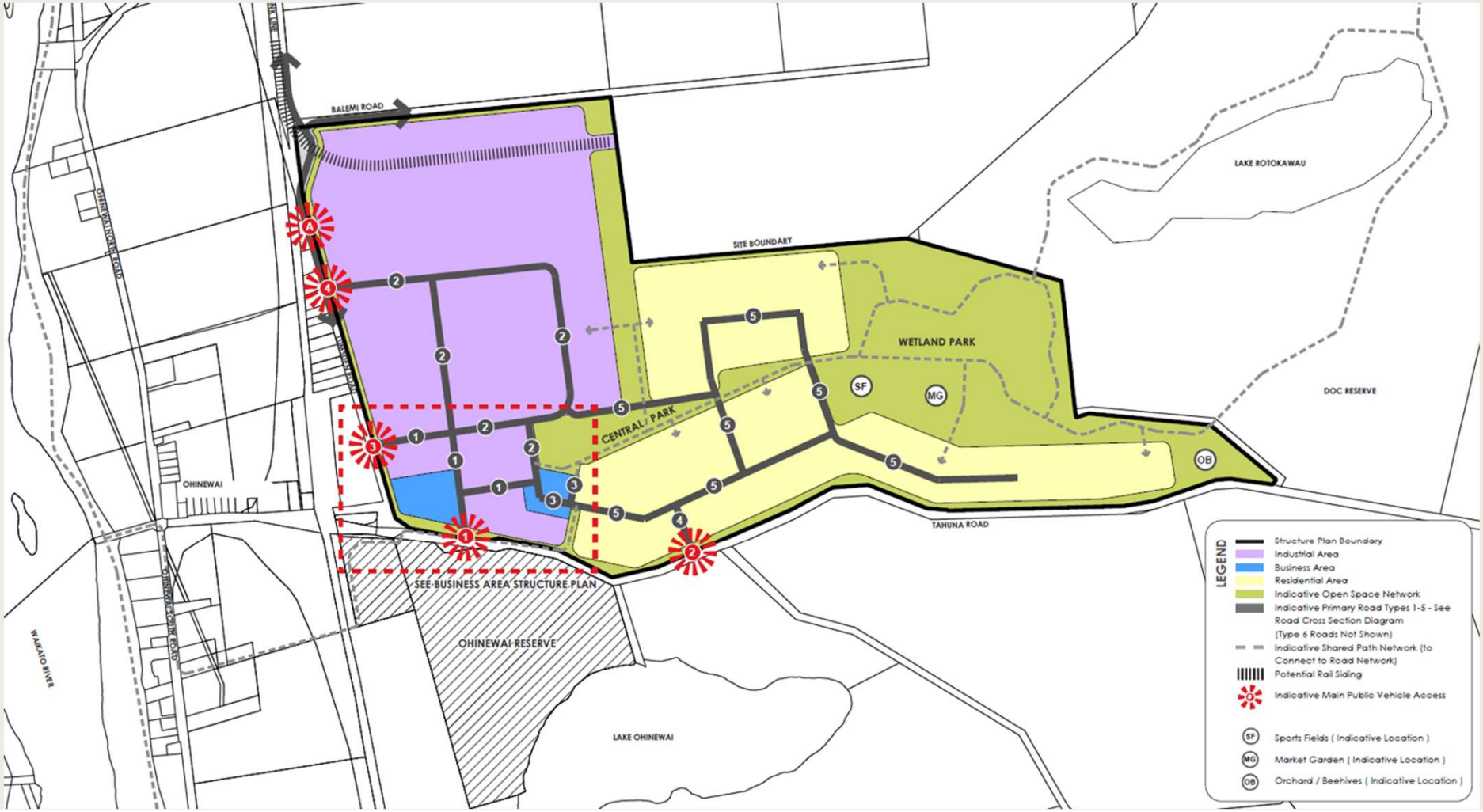


Precinct 1: Ohinewai medium density residential

Precinct 2: Ohinewai business precinct

Precinct 3: Ohinewai industrial precinct

One structure plan to rule them all



Business area structure plan

Staging plan

Ohinewai zone

8 objectives

OHI-O1 Well-functioning urban environment integrated with Ohinewai West and Huntly

OHI-O2 Outlines the types of activities

OHI-O3 Vision and Strategy

OHI-O4 Accessible community facilities and public open spaces

Ohinewai zone

OHI-O5 Transport, water, wastewater and stormwater, Waikato Expressway, North Island Main Trunk line

OHI-O6 Indigenous biodiversity and ecosystems

OHI-O7 Existing rural character and high level of amenity of development

OHI-O8 Minimise reverse sensitivity

Delivering the structure plan

OHI-P2 Development must be in general accordance with the structure plan for certain features:

- location and function of access points
- functions of the internal road network and shared path network
- the areas of the open space network

Delivering the structure plan

OHI-P2 Recognises that minor variation is acceptable for:

- The location of the internal road network and shared path network
- Buildings and community infrastructure
- The boundaries of open space areas
- The rail siding

Standard for subdivision in all precincts that the proposal must be in general accordance with the structure plan

Staging and sequencing

Very strong policy direction for this: the staging of subdivision, development and infrastructure must follow the sequencing set out on Figure OHI-3 Staging Plan and Table OHI-1 and Table OHI-2

Table OH1.1 Infrastructure upgrades

Table OHI.2 Three waters

Upgrade or infrastructure required	Staging and sequencing

3 waters

Very strong objective and policy direction that development MUST be serviced for three waters and it be available prior to development

Table OH1-2 is key as this sets out the timing and expectations for servicing for 3 waters

Water

- This was a key issue
- Initial industrial development in Factory Stages F1 and F2 can have onsite water supply.
- Strong policy direction: All development must be connected to a reticulated public water supply
- Plant must comply with all conditions

Wastewater

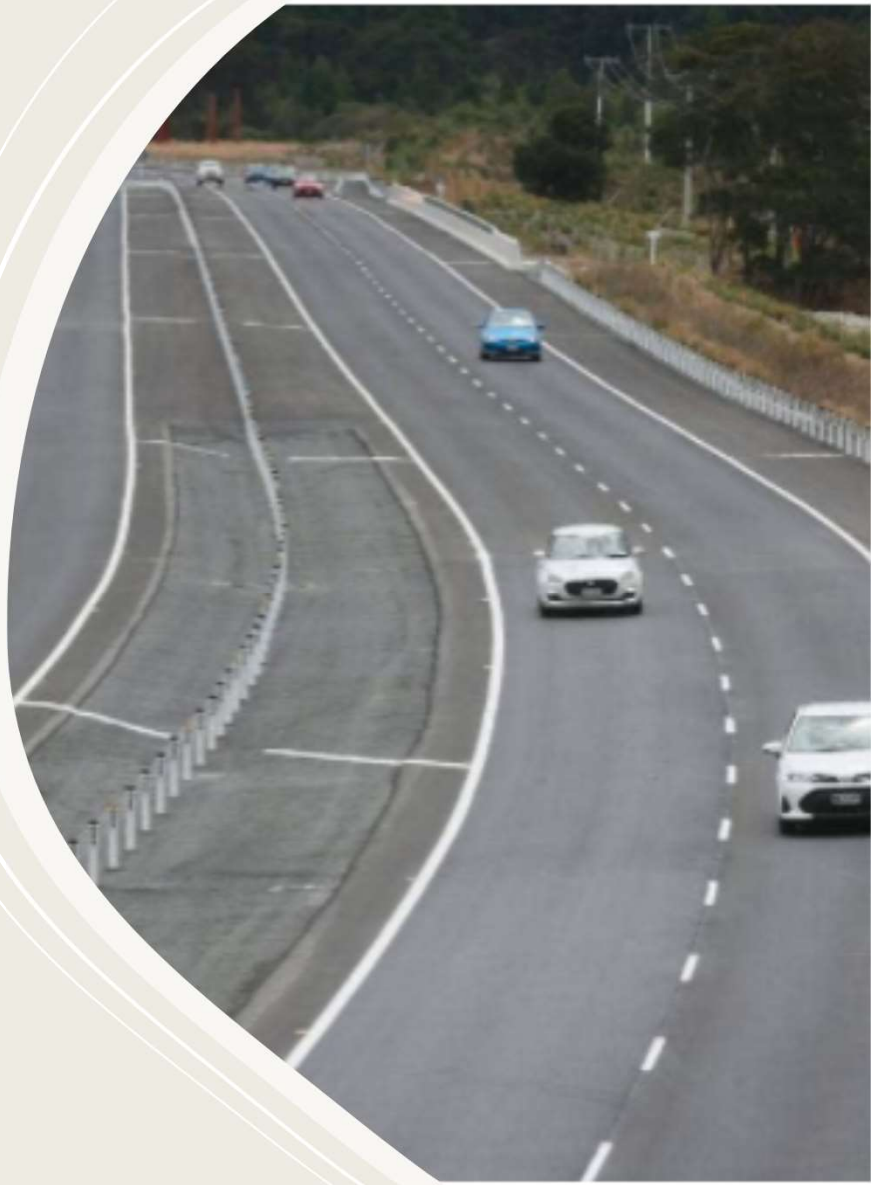
- Key issue particularly for Waikato-Tainui
- Initial subdivision and development in Factory Stages F1 and F2 must have onsite treatment and disposal of wastewater.
- Strong policy direction: Avoid development not connected to a public reticulated wastewater network
- Plant must be able to accommodate the development, be consented and comply with all conditions

Stormwater

- Stormwater management avoids any discharges to the existing regional drainage system
- Initial Factory stages F1 and F2 which temporarily discharge stormwater into the Balemi Drain
- Beyond F1 and F2 stormwater disposal via the Wetland Park and /or Central Park to Lake Rotokawau
- Permitted land use standard requires a 2 step treatment train, with the first step being onsite

Transport

- Features prominently in objectives and policies
- Walking, cycling and connectivity
- Public transport
- Waikato expressway
- Rail siding
- Community severance
- OHI- Table 1 contains 15 transport upgrades of varying scale



Transport

- Residential precinct - maximum of 100 vehicle movements per site per day, max 15% HVM
- Business precinct - maximum of 300 vehicle movements per site per day, max 15% of HVM
- Industrial precinct - maximum of 250 vehicle movements per site per day and max 15% HVM.
- Simple and broad ITA

Definitions

Adopts the National Planning Standards definitions, but there are inconsistencies with the January decision

Infrastructure and energy

Simplified version of the infrastructure and energy chapters

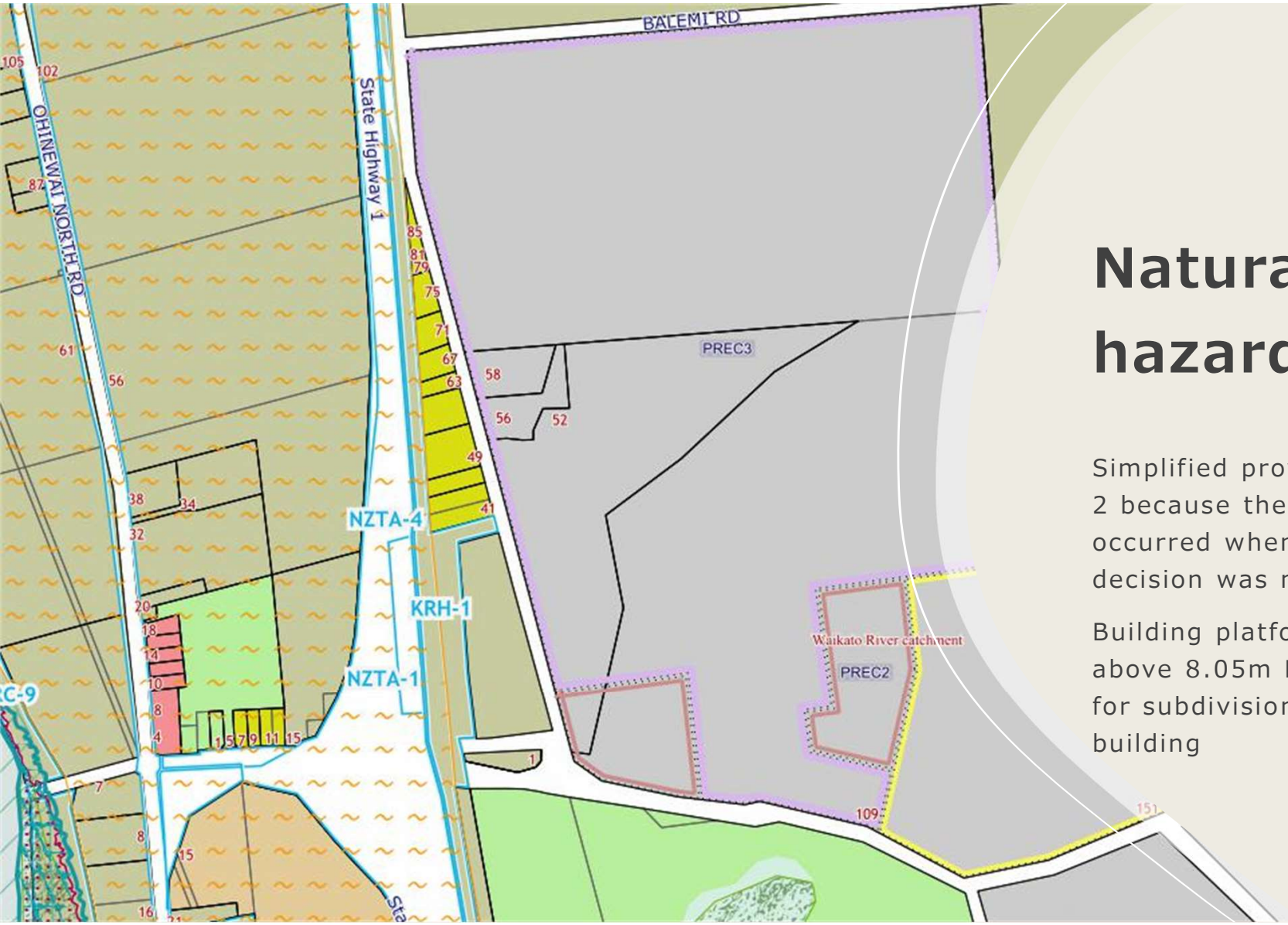
Single chapter

- Rules applying to all infrastructure
- Electrical distribution
- Electricity generation
- Liquid fuels and gas
- Meteorological
- Telecommunications and radiocommunications
- Water, wastewater and stormwater
- Transportation.

Hazards and risks

Focus on Major Hazard facility which lists a number of activities in the definition e.g:

- Manufacturing and associated storage of hazardous substances (including industries manufacturing agrochemicals, fertilisers, acids / alkalis or paints).
- The storage/use of more than 100,000L of petrol.
- The storage/use of more than 50,000L of diesel.
- The storage/use of more than 6 tonnes of LPG.
- Timber treatment.
- Polymer foam.



Natural hazards

Simplified provisions from Stage 2 because the hearing hadn't occurred when the Ohinewai decision was notified

Building platform must be above 8.05m RL Moturiki Datum for subdivision, but 8.35m for building

Medium density residential precinct

OHI-P1 a variety of housing typologies in a compact urban form, including standalone residential units, apartments, terrace housing and duplexes, at a range of price points, enabling those working in Ohinewai to live there

PREC-P1 minimum net density of 30 residential units per hectare (excluding roads and open space)

Strong policy directive to restrict the establishment of commercial or industrial activities unless there is a strategic or operational need

Medium density residential precinct

PERMITTED

Construction of a new residential unit

Home occupation

Community activity

Homestay up to 4 visitors

Childcare up to 4

CONSENT REQUIRED

Multi-unit development of >3 RDIS (no minor units)

Retirement village

Corner shop

Neighbourhood park

Residential design standards

Max height 8.5m

Impervious surfaces 70%

Daylight angles 4m + 45°

Building coverage 50%

Setbacks:

- 3m normal
- 15m Tahuna Road
- 15m GRUZ General Rural Zone

Minimum floor levels

Two step treatment train for stormwater

Vacant lot minimum 300m^2 but must confirm that 30 residential unit/ha is being achieved

> than 3 lots must include an Ecological Rehabilitation and Management Plan

Business precinct

2 areas:

- A neighbourhood centre on between the industrial and medium density residential precincts; and
- A service centre on the intersection of Tahuna and Lumsden Roads

Intention:

- Provides small scale local convenience retail and services to meet the day-to-day needs
- The service centre provides for transport-oriented facilities and community facilities
- Emergency service facilities
- Minimise any adverse economic effects on the Huntly Town Centre.

Business precinct

PERMITTED

Commercial activities:

- Individual retail units <400m^2
- Supermarket < 1000m^2
- Offices < 200m^2
- Total for commercial activities < 2,500m^2

Service station

Public transport facility

Emergency services facilities

Community facilities

Business design standards

Max height 12m

Impervious surfaces 70%

Daylight angles 3m + 45° but only with the road or the residential precinct

Building coverage 50%

Setbacks:

- 15m Lumsden Road
- 3m Residential precinct

Minimum floor levels

Two step treatment train for stormwater

Minimum 225m^2 subdivision

Industrial precinct purpose

Recognition as strategically important industrial area

Purpose:

- provide for a range of general industrial and other compatible activities that can operate in proximity to more sensitive zones
- Enable industrial development within the Ohinewai industrial precinct to provide for industrial growth and employment activities and all the effects that go with it
- Enables public transport and multi-modal non-motorised transport and reduces reliance on private car trips

Industrial activities

No permitted activities other than buildings

RDIS activities:

- Industrial activity
- Trade and industry training
- Truck stop
- Office ancillary to industrial activity
- Food outlet <200m^2
- Ancillary retail < 10% of all buildings onsite
- Residential unit for a caretaker or security <70m^2

Everything else: DIS

Industrial precinct form

Max height 17.5m

Impervious surfaces 70%

Daylight angles 3m + 45° but only with the road or any other precinct

Setbacks:

- 15m Lumsden and Tahuna Roads
- 3m from all other precincts

Minimum floor levels

Two step treatment train for stormwater

Minimum 1000m^2 subdivision

Other things to note

- The provisions are deemed to be operative under section 86F(1)(b), but clause 17 approval still to be done
- A couple of privately owned sites for sale
- At some point a plan change will need to be done to integrate and make the provisions consistent
- Completely separate to the fast track consenting process for the foam factory

Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

Open – Information only

To	**Waters Governance Board**
Report title	**Three Waters Governance Report – March 2022**

1. Purpose of the report
Te Take moo te puurongo

To update the Waters Governance Board of the current workstreams, key matters and metrics under the three waters operational and maintenance agreement with Watercare Serviced Ltd.

2. Executive summary
Whakaraapopototanga matua

Please refer to the Highlights and Lowlights summary section in the attached report prepared by Watercare Services Ltd.

3. Staff recommendations
Tuutohu-aa-kaimahi

That the Three Waters Governance Report – March 2022 is received

4. Attachments
Ngaa taapirihanga

Attachment 1 – Waikato DC Three Waters Governance Report – March 2022

Date:	15 March 2022
Report Author:	Carole Nutt, Waters Contract Relationship Manager
Authorised by:	Gavin Ion, Chief Executive

WAIKATO DC

THREE WATERS GOVERNANCE REPORT

MARCH 2022

Mathew Telfer
Operation Manager
Watercare Waikato
March 2022

1. Highlights and lowlights

- There were no recordable injuries or lost time in January and February (When this report was produced).
- The Meremere Wastewater Membrane Bioreactor Plant is operational, building biomass, and is undergoing process performance testing. The December sampling results were submitted to the Regional Council to request the abatement notice to be lifted. Additional reporting has been requested, and once provided, the lifting of the abatement notice will progress.
- Two performance measures were not achieved in January, but the year-to-date results are achieved in all areas.
- The Control value to Synlait was activated twice in the period shutting off their discharge. This is as designed and was due to a failure of the Pokeno rising main and the power outages due to the cyclone. The engagement, coordination, and communication with Sylait during both events were positive.
- Drone Leak detection was planned in February but due to a lack of communication to the communities of Meremere and Te Kawhata. This resulted in a number of complaints from the community. The inspections have been put on hold until this is addressed with Councils support.

2. Health and Safety

2.1. What we've seen this month

- There was no Lost Time Injury (LTI) and 0 Restricted Duties Injury (RDI) involving Watercare employees in January and February (When this report was produced).
- There were zero recordable injuries involving contractors in January and February (When this report was produced).
- The focus for the month in January was Heat and hydration and Drug and alcohol awareness in February; we also continue to focus on reducing speed events.
- Due to the emergence of Omicron, the networks and productions teams have implemented isolation tactics to reduce the risk of multiple team members being impacted at the same time.
- Five weeks (1 per week) of Rapid antigen tests (RAT) have been provided to critical staff and staff that engage with them. This supports identifying staff who may be infectious as early as possible to reduce the risk of spread throughout the team.
- To date, we have one confirmed case and two staff identified as close contacts. Close contacts can work after completing a daily RAT before going to work on top of the testing required by health authorities.

2.2. Looking ahead

- We will continue to monitor the progress of the Omicron variant to ensure we have sufficient staff to operate critical functions throughout the outbreak.
- The ‘Mates in Construction’ toolbox talk will be held in March based on availability and Covid impacts

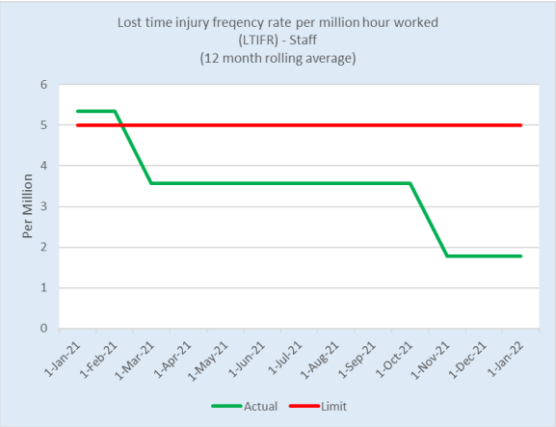
2.3. Critical risks

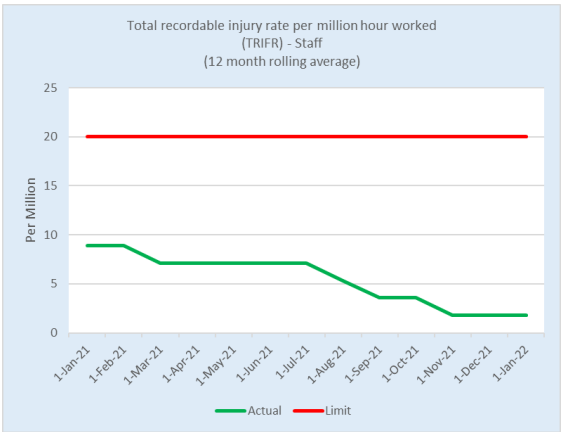
Watercare is assessing one of our critical risks each month (excludes Nov and Dec) as per the schedule below. January assessment is appendix 1.

	Review Date		Review Date
Working in confined spaces	May 2021	Working with fixed plant and equipment	February 2022
Working with mobile plant	June 2021	Working in or near live traffic (includes road corridors, construction and operational sites)	March 2022
Driving / using vehicles	July 2021	Working at Height	April 2022
Working alone or isolated	August 2021	Working around waterbodies	May 2022
Working with hazardous materials	September 2021	Digging and working in excavations (includes tunnelling)	June 2022
Working with suspended loads	October 2021	Working with flammables or in explosive/flammable areas	July 2022
Working with or near live energy (electrical, mechanical, pneumatic, hydraulic, etc)	January 2022		

2.4. January metrics

- There were no significant events in January or February when this report was produced. Year to date, the results are positive.





3. Operations

3.1. Treatment

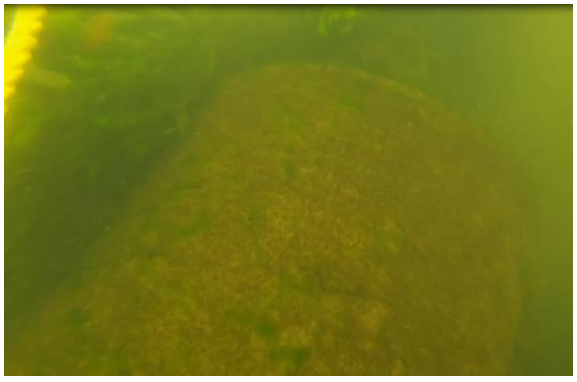
- PAC dosing has been implemented at the Ngaruawahia and Huntly WTP's. The dose rate is varied to suit the conditions to minimise negative taste issues.
    - New staffing changes have been implemented, with two new Process Engineer/Technician's joining the team in January 2022
- Huntly WTP Clear Water pumps had multiple faults in the month, and the team has worked to resolve each failure. This included replacing all galvanised steel pipework with new fabricated stainless steel and replacing both pumps and motors, both suction legs and foot valves, and both VSD units.




Pump

Galvanised pipe replacement

- The dive team was called in to clean the Huntly WTP raw water intake screen. Low river level, high ambient temperature, and sunlight contributed to the faster than normal growth of algae and accumulation of sand layer on the screen.




Before cleaning.

After cleaning

- Raglan WTP final commissioning of the two new filters, control valves, and installation of the filter cartridges is on hold until the summer water demand reduces to allow for downtime.
- Ngaruawahia WTP dose pump installation has made good progress. Commissioning is planned for mid-February and will be dependent on some treated water transfer from the Huntly Network to maintain reservoir levels.

- The upgraded Meremere WWTP plant is operating well under Watercare management with the process overviewed by Rhiannan Rollitt. Power outages and flow variations have tested the understanding of the new processes.
- Te Kauwhata WWTP Plant upgrade project phase 1 continues to progress the UV installation with contract staff on-site following the Christmas / New Year break.

3.2. Networks

- Complex Meter Project – Outstanding agreements for Huntly and Ngaruawahia have been collected, and Pipescape can continue with work on these properties. Works are progressing as planned.
- The RTU project is making satisfactory progress and is on track. As-Built drawings and the final design packages (12 & 13) are due for completion by mid-Feb. The level 1 Functional Descriptions are presently being developed for WWTP sites. A kick-off meeting was held in the last week of January for the Franklin portion of the upgrade works with Neo, ADR, McKay, and Watercare.
- WWPS Upgrades – New pumps and pipework have been installed in Rayner Rd PS, Great South Rd PS, and Speirs Rd PS. This is part of the ongoing asset remediation project, and further WWPS's will be addressed in the coming months. The new pumps have an increased pump capacity which will allow them to cope better in high flow events.
- The installation of the cathodic protection has been completed at Hopuhopu and connection boxes are fitted in all steel reservoirs. The work is expected to be completed by the end of March. The maintenance shutdowns are still being planned and due to be completed once the summer demand decreases.
- Faults of significance – A significant weather event (Cyclone Dovi) on Sunday 13th Feb caused large-scale power outages. Over 60 pump stations in Raglan, Ngaruawahia, and Huntly were without power. Portable generators were used at key pump stations and ensured the sewer system functioned with no overflows occurring. Power was gradually restored to all the sites over a 36 hr period, although key urban locations had power reinstated after only several hours. A SCADA outage also occurred, impacting remote access, so the team had to work at the treatment plant where the base stations were located. McKay and WDC IT staff restored SCADA functionality at approximately 9 pm 13/02.

3.3. Stormwater

- Current Raglan abatement notice work is still ongoing. WRC has approved the latest proposed option (a combination of pipe and open channel) for Cambrae Road, the final outstanding item on the abatement notice. Stantec is undertaking the redesign and will apply for consent in early 2022. Redesign delivery is expected next week. Procurement will follow on from this.
- We are awaiting feedback from WRC on the annual report.
- Stantec has commenced assisting Watercare's SW deliverables being:
    - Level of service (10% complete)
    - Mapping of SW systems (10% complete)
    - Finalising the design guideline (35% complete)
    - Graphical responsibilities delineation (95% complete)
- WSL is currently undertaking business cases for capital works projects across the District. These include:
    - Hakanoa Open Channel rehabilitation (Huntly) – awarded to WSP

- Water Quality investigations (District-wide) – awarded to WSP
- Water Quality improvements in Raglan (retrofitting water treatment devices) – Tenders due in 2 weeks
- Upgrade works for existing SW assets (Tuakau) – Draft business case underway

- WSL and WDC agreed in principle that SW assets in R.O.W's that benefit multiple properties should be publically owned and managed.
- WSL is undertaking sediment and shellfish testing in the Raglan Harbour – Sampling completed – awaiting a report from T+T.
- Opportunity for waterway rehabilitation in Pokeno being investigated after property owner contacted WDC to discuss options.

4. Planning and project delivery

4.1. Infrastructure Planning

There are several work packages for the Watercare Professional Engineering services panel in progress, including.

- Raglan WS model options assessment – draft report reviewed
- The Raglan WW model - has been finalised with WDC population data and system performance analysis completed. We are awaiting updated data from Nero PS before progressing option development.
- The Central Waikato WS model system performance assessment was completed, and the option development is underway.

Installation of permanent rain gauges in WDC's townships is completed for all six sites. The remaining task is to connect to the SCADA system.

Internally staff worked on/with:

- Continuing work with Watercare's Auckland staff on the Infor asset management system.

4.2. Development and growth

- Further discussions with WDC and Washer Rd Horotiu Developer revolving around WW pump station is required to service the area. The developer has been provided a proposal which includes a temporary pump station.

4.3. Project delivery

- Ngāruawāhia Pipeline Stage 1 is underway on-site to upgrade the rising main across the Waikato River Bridge. The project forms the main part of the current wastewater network upgrades programme. The scaffolding is complete, and flows will be diverted into a temporary line in early February to enable the existing main to be taken down.

Waikato River Bridge DIA Works -

The scaffolding is complete under the existing asbestos cement wastewater main

- The Tuakau Interceptor Pump Station Upgrade and Pokeno to Tuakau pipeline are on hold pending a review.
- The POAL WWPS – The earthworks are underway to install the wet-well chambers; installing the storm tanks will follow.

Earthworks at the new Horotiu Ports of Auckland Wastewater Pump Station

- Te Kauwhata Reservior preload is complete and awaiting stable settlement results. The construction of the access will commence once the land boundary adjustment is complete.

Te Kauwhata Reservior- Preload for Reservoir 1

4.3.1. Network Renewals

- Water Network Renewals are well underway. The Raglan-bulk main installation will complete in February 2022. Huntly Harris Streat work has restarted with tie-in works underway. The Tuakau works will follow.

4.3.2. Pond Desludging (DIA funded)

- Desludging works continue at Ngāruawāhia WWTP. The dry solids percentage continues to meet targets.

4.4. Treatment plant upgrade programme

- Raglan WTP Upgrade – Mechanical installation is complete. Commissioning will be complete in March once the peak demand drops.
- Ngaruawahia WTP Upgrade – Contract Award is scheduled for February following the price review.
- Whangamarino WTP 4.5MLD Upgrade – The desludging of Pond 1 is complete; the pipework and an embankment repair are to follow. The fabrication of the Biological Activated Carbon filter is complete, and the foundation work is ready for a February delivery.

Whangamarino WTP – Pond 1 Sludge dried and cleared

New BAC Filter

- Te Kauwhata WWTP Phase 1 upgrade – Work is well underway; the UV lamps are due to be commissioned in February along with the driver units.

Te Kauwhata WWTP – New UV Treatment System

- Te Kauwhata WWTP Phase 2 –Stage 2 The enabling and foundation works will commence in February and are scheduled to complete in June 2022. The Tender for the above groundworks will be issued in mid-February for pricing. Peter Crabb will present the current status for the Te Kawhata wastewater plant update, tendering and procurement approach at the Watercare Governance meeting in March.

5. Compliance

5.1. January results and actions

- All compliance reports for Wastewater were submitted to Waikato Regional Council during the second week of February 2022.
- Monthly testing from the Post UV sample points at Huntly and Ngāruawāhia WWTPs was missed in January 2022 by the laboratory due to an IT/administration error. Lab staff reports a manual check occurs while the error is investigated and rectified.
- Draft Drinking Water Quality Assurance Rules Gap analysis is underway, including reviewing source treatment distribution requirements with Watercare Auckland.
- The formal registration of migrated data from Drinking Water Online to Taumata Arowai's Hinekōrako system is underway and awaiting a system change to reflect Watercare's operator role for WDC.
- The Lutra ID system trial is progressing at the Meremere WWTP consent reporting. Operational requirements are being provided to Lutra to create within ID. Lutra reports that Lab data transfers between ID and Watercare Lab are being implemented.
- 2020-21 audit reports for Meremere WWTP discharge consent received from WRC requiring actions to be taken to ensure discharge parameters are within the new AUTH142286 consented limits.

Consent #	Site	Compliance Status	Comments
971390	Raglan WWTP	Low-Risk non-compliance	Formal Warning received for TSS and FC non-compliances noted during the 2020-21 compliance monitoring period. Draft audit response letter forwarded to WDC.
117991	Te Kauwhata WWTP	Significant Non-compliance	Formal Warning- Historic non-compliances. TK WWTP upgrade in progress.
119647	Huntly WWTP	Low-Risk Non-compliance	Formal Warning- NH4N non-compliances. Huntly WWTP pond desludging completed in October 2021. Huntly WWTP requires an upgrade to address the non-compliances.

5.2. Abatement notices

- Meremere WWTP is now operating under the new tighter consent limits. The contract works are complete, and the plant is under Watercare Operations control. Results demonstrating the plant's compliance will be submitted to the Regional Council for January and February, requesting the abatement notice be lifted.
- A capital solution for the Te Kauwhata WWTP is currently in design to address the abatement notice. See above section 5.4 Treatment plant upgrade programme for the latest works update.
- The Raglan stormwater Discharge Consent has an Abatement Notice for the 2018/2019 compliance period highlighting non-compliances. See above section 4.3 Stormwater for the latest works update.

6. Customer

6.1. Service and billing

- First Raglan invoicing for January 2022 under new cycle, usually invoiced in December.
- Increase in queries and applications for new connections and allocation in rural areas

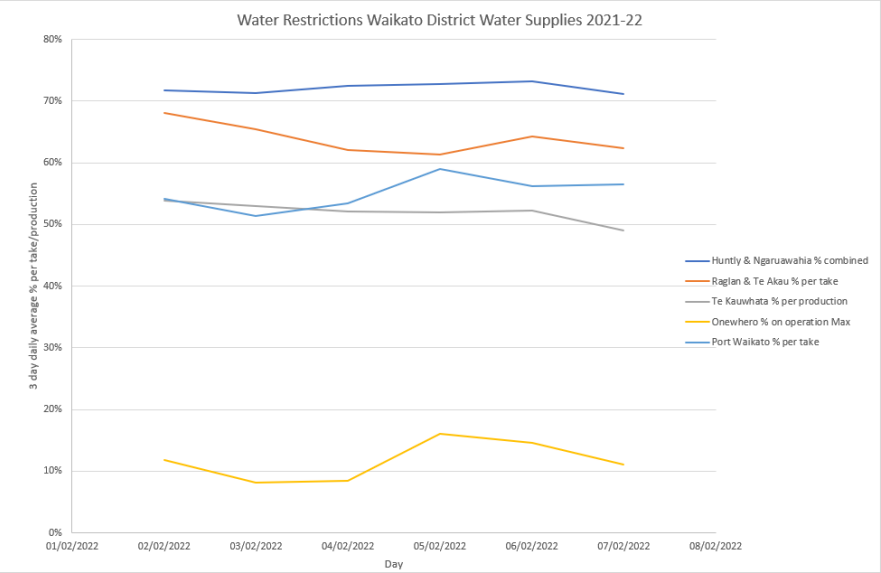
6.2. Complex water meter installation project

- Pipescape continues to work through sites; a few owners with access and contact information for owners have caused delays.
- Planned site visits to obtain contact information for owners who do not have current contact information or have not replied to letters.

Complex Water Meter installation progress (Jan 2022)	Count of Property ID	%
Meter installed	113	64%
Owner signed agreement, waiting for all to hand over to contractors	27	15%
Contacted owner and waiting on returned signed agreement	13	7%
In progress to install by Contractor	13	7%
To visit property for owner contact	10	6%
Grand Total	**176**	**100%**

6.3. Water restrictions

- The new approach to water restrictions has been trialed this summer, and the results have been positive. Conservations messaging has continued throughout summer, but no further restrictions except in the areas supplied by Hamilton were required. This was based on a source supply management approach. Level one restrictions are set at 80% of available demand.



*Example of the weekly reporting – monitored daily with a three day average.

7. Strategic resource consents.

Raglan WWTP resource consent application preparation

- An earlier postponed site visit to subject sites was undertaken in January by sub-surface drip (SDI) advisors. Information gathered will assist in business case preparation.
- WDC Water Department Staff presented a paper to the ELT in January. This paper sought to inform the ELT of theoretical SDI potential within public land (Wainui Reserve) as part of a land discharge solution.
- Balanced feedback was received where it was identified that:
    - public consultation on this opportunity would need to take place before WDC finalised its position, and;
    - WGB and Councillor input was also needed for decision-making.
- An accompanying WGB paper addresses this.

Te Kauwhata WWTP resource consent application preparation

- It was necessary to postpone the planned Mangere Innovation Centre visit in January. This will be re-scheduled if possible. All guests were understanding and supportive of this change in plans.
- Progress toward appointing a key agency (Te Huia Resources Ltd) for project steering has commenced.
- This resource will be needed to:
    - assist WDC Pouhono Iwi ki te Haapori and the project team when engaging, and;
    - ensure that project processes are aligned with River and Tainui environmental legislation requirements.
- This project team set-up will ensure that:
    - Sam Toka (as WDC Manager/overseer) receives necessary advice to make any key decisions, and that;
    - Key partners (hapū and wider groups) are well supported.

8. Key performance indicators

KPI – description	**Results**	**Target 2021/2022**
		Water
The extent to which the Council's drinking water supply complies with Part 4 of the drinking water standards (bacteria compliance criteria).	18	18
The extent to which the Council's drinking water supply complies with Part 5 of the drinking water standards (bacteria compliance criteria).	15	15

Attendance for urgent call-outs: from the time that Council receives a notification to the time that service personnel reaches the site.	Year to date - 42	≤ 60 mins
Resolution of urgent call-outs: from the time that Council receives a notification to the time that service personnel confirms resolution of the fault or interruption.	Year to date - 95	≤ 120 mins
Attendance for non-urgent call-outs: from the time that Council receives a notification to the time that service personnel reaches the site	Year to date - 1	≤ 3 days
Resolution of non-urgent call-outs: from the time that Council receives a notification to the time that service personnel confirms resolution of the fault or interruption.	Year to date - 1	< 3 days
The total number of complaints related to Water services received by Council (expressed per 1000 connections to the networked reticulation system):	Year to date Result – 9.99	≤ 22/1000
		Wastewater
The number of dry weather sewage overflows from Council's system (expressed per 1000 sewage connections to that sewage system.) - Non-sensitive receiving environments	Year to date Result – 1.05	≤ 2/1000
The number of dry weather sewage overflows from Council's system (expressed per 1000 sewage connections to that sewage system.) - Sensitive receiving environments	Year to date Result – 0.08	≤ 2/1000
Attendance time: from the time that Council receives a notification to the time that service personnel reaches the site.	Year to date Result – 44	≤ 60 mins
Resolution time: from the time that Council receives a notification to the time that service personnel confirms resolution of the blockage or other fault.	Year to date Result – 113	≤ 240 mins
The total number of complaints received by Council about any of the following (expressed per 1000 connections to the sewage system):	Year to date Result – 3.67	≤ 10/1000
		Stormwater
The number of Stormwater flood/blockage events that affected habitable floors (expressed per 1000 connections):	Year to date Result – 0	< 5

The total number of complaints received by Council about the performance of the stormwater system (expressed per 1000 connections):	Year to date Result – 0.35	< 1.25
Level of compliance, number of the following, Abatement, infringement notices, enforcement orders or convictions	2020/21 - 0 (1 existing Abatement from 2018/19)	0
		Health and Safety
Safety: Lost time injury frequency rate (LTIFR) per million hours worked	1.78	≤ 5
Safety: Total recordable injury frequency rate (TRIFR) per million hours worked	1.78	≤ 20
Safety: 100% of Notifiable (or serious non-notifiable) Events reported to WDC within 2 hours of the occurrence	100% No events YTD	100%
Safety: 100% of Notifiable Event reports supplied to WDC within 21 business days	100% No events YTD	100%
Safety – the percentage of complaints resolved within ten working days	100%	95%
Safety- Health and safety Audit programme and action plan completed (6 monthly and then annually)	100%	1
Safety - All site emergency plans to be drilled six-monthly as per drill schedule	100%	> 100%
Safety - Monthly Health and safety meeting held with all workers	1	> 90%
Safety-Critical risk audit to be conducted by HSW BP Bi-monthly	100%	1

Safety -Actions required to be closed within one month	100%	> 90%

Appendix 1

Critical Risk Review – Working with or near live energy

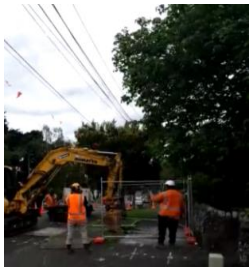
Working With or Near Live Energy:
Work being carried out near hazardous energy.
Electrical – Equipment or circuitry operated by electricity.
Mechanical – Operated by a machine or machinery.
Pneumatic – Containing or operated by air or gas under pressure.
Hydraulic - denoting or relating to a liquid moving in a confined space under pressure.

Hazards include:
- Overhead and underground services such as electricity, gas, telecommunications, wastewater, and water mains.
- Electrical equipment, supply and power lines.
- Hydraulic and pneumatic plant and equipment

Watercare examples include:
- Teams work in residential areas near overhead power lines.
- Powered tools are used to dig or cut through cement or dirt.
- Live cables are found underground in proximity to Watercare assets.
- Watercare Operational and Construction sites utilise powered plant and equipment in different environments and climate.
- Sites have switchboards which vary in size and voltage levels.

What it looks like for Watercare
Working with or near live energy is a daily activity for Watercare. For the teams working away from our plants and assets, service strikes are regular, although none have resulted in injury.
On our plants and assets, failed and incorrect isolations have occurred a small number of times in the past 12 months, again without injury.
It is considered likely that one of our staff or contractors will sustain an injury if improvement does not occur.

Potential Harm:
- Any work done near a live electric line carries a risk of electric shock and severe burns.
- Arc flash (release of energy) can result in blast injuries, lung injuries, raptured eardrums etc.
- Ignition of fires or explosions due to ignition of flammable or explosive materials.
- Lacerations or penetrations from high pressure liquid



Controls currently in place:
Isolation
- Isolation procedures as part of the HSW Management system
- Hazardous energy is isolated, locked out and tagged out (LOTO).
- Safety signs are displayed where live energy is present on our sites

Service Identification
- Planning - Before You Dig, GIS, P&ID, as-builts
- On site – Potholing, hydrovac, GPR

Training & Competency
- WSL HSW Induction Requirements
- WSL Permit to Work and Isolation Training
- Issue of site-specific work permits

This critical risk is an area for improvement and focus in the first half of this year. Areas requiring attention are:
- Accurate and complete drawings and diagrams for all Watercare assets
- Review of isolation and LOTO procedures
- Review of site safety procedures and PPE
- Continue to work with industry to improve service identification procedures including correct locations and the use of technology

Attachment One – Watercare Critical Risks					
		Review Date			**Review Date**
	Working with flammables or in explosive/flammable areas	July 2022		Working with suspended loads	October 2021
	Working with hazardous materials	September 2021		Working in or near live traffic (includes road corridors, construction and operational sites)	March 2022
	Working with fixed plant and equipment	February 2022		Digging and working in excavations (includes tunnelling)	June 2022
	Working alone or isolated	August 2021		Working in confined spaces	May 2021
	Working around waterbodies	May 2022		Working with or near live energy (electrical, mechanical, pneumatic, hydraulic, etc)	January 2022
	Driving / using vehicles	July 2021		Working with mobile plant	June 2021
	Working at Height	April 2022			

Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

Open

To	Waters Governance Board
Report title	Te Ākau Water Supply Options Assessment

1. Purpose of the report
Te Take moo te puurongo

To present an assessment to the Water Governance Board of the Te Ākau water supply scheme options going forward.

AND

To seek WGB support on continuing to provide Te Akau South residents with a council supplied water supply

AND

Upon further engagement being completed with Horongarara Community Group (HGC), Te Akau South residents and IWI/Hapu, bring to the Water Governance Board the preferred future water supply option to enable a final solution to be authorised.

2. Executive summary
Whakaraapopototanga matua

The Te Ākau bore is currently out of commission due to failure of the bore pump. As a temporary solution, treated water is currently transported from Raglan by tanker and delivered to the Te Ākau Reservoir for distribution to Te Ākau residents.

The Te Akau South Water Treatment Scheme is one of three small water schemes (Te Ākau, Port Waikato and Onewhero as displayed below) under the ownership and management of WDC whose water supplies have been considered for decommissioning. Within the LTP, a $750K budget has been provided to decommission the schemes.

The HGC has provided feedback that the Te Akau South community would not favour having the WTP and reticulated water network decommissioned and has sought to be actively involved in considerations and options for water supply.

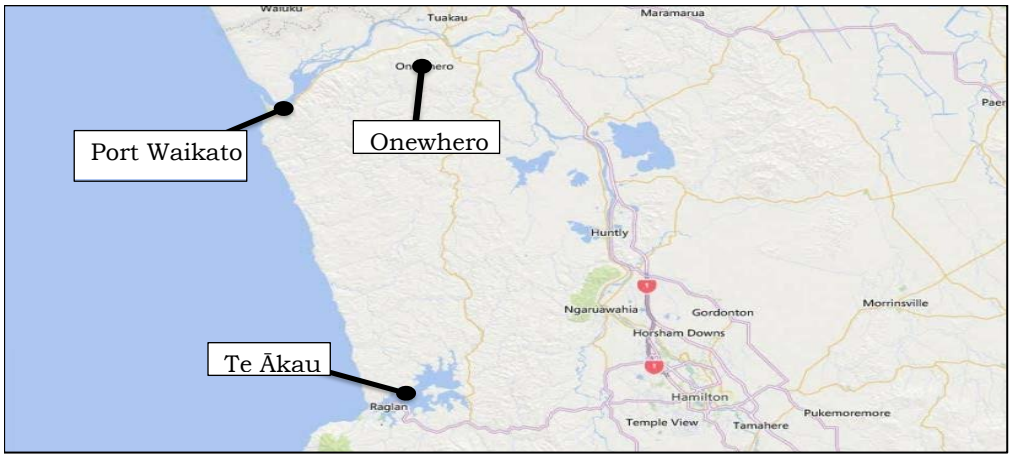


Figure 1: Port Waikato, Onewhero and Te Ākau small water supply scheme locations

Four options are being considered to provide safe drinking water to the community of Te Ākau South:

- Option 1: Household rainwater tanks
- Option 2: Re-establish the existing bore and upgrade the Water Treatment Plant (WTP)
- Option 3: Tanker water from Raglan WWTP to Reservoir
- Option 4: Pipe water under the harbour from the Raglan supply scheme

After further consideration and change in regulatory environment, the preferred option is option2, the re-establishment of the existing bore and upgrade the Water Treatment Plant (WTP). This option best delivers on the communities aspirations for the provision of safe drinking water and under the new drinking water rules set by Taumata Arowai, provides for the best outcome for the Te Akau South community and WDC.

3. Staff recommendations
Tuutohu-aa-kaimahi

That the Water Governance Board recommends to Council that:

a. Community engagement is conducted with all stakeholders on the 4 options to finalise the preferred option

b. Upon the community confirming the preferred option, should Option 2 or 4 be adopted as the preferred solution, that a new business case is developed to enable a capital funding request for the 2022-23 financial year.

c. As Horongarara Community Group (HGC) has indicated that the community is strongly likely to confirm that Option 2 will be preferred, WDC drill a replacement bore and assess the raw water quality and conduct a detailed design of the WTP upgrade to determine necessary new equipment while retaining all compliant infrastructure concurrently as the business case is developed.

4. Background
Koorero whaimaarama

4.1 Background

Te Ākau Water Treatment Plant (WTP) is owned by Council. A desktop options study has been completed with technical support from Beca Ltd (Beca) to summarise requirements and estimate the cost of upgrading this WTP to meet the Drinking Water Standards for New Zealand (Draft) 20 December 2021 (the Standards) and the Draft Drinking Water Quality Assurance Rules 20 December 2021 (the Rules). The Standards and the Rules are currently out for consultation and so may change.

In April 2021, Lutra prepared an audit report for this water supply to compare it to the revisions that were anticipated to the Drinking-water Standards for New Zealand 2005 (amended 2018) (DWSNZ) at the time. The key recommendations were:

- Install validated UV disinfection to provide a total of 4 log protozoa removal through the WTP
- Replace hydrochloric acid and sodium hypochlorite dosing systems to improve dose control and to provide a more consistent residual in network
- Install instrumentation, valves and control for a run-to-waste system
- Install instrumentation and equipment for improving resilience and health and safety
- Specify data monitoring and reporting frequency for compliance

Since Lutra made these recommendations, the draft Standards and Rules have come out and so the requirements to meet these documents have been reviewed as well as consideration of a few alternative upgrade options.

4.2 Purpose

The purpose of this report is to enable the WGB to support the communities desire to maintain a council supplied water scheme and agree to amending that WDC position that was that the WTP and network should decommissioned and the recommended position should be that the Te Akau South WTP and network should be maintained.

A high-level summary of the four upgrade options that Council have identified and the capital and operational costs of these options:

- Option 1: Household rainwater tanks
- Option 2: Re-establish the existing bore and upgrade the WTP
- Option 3: Tanker water
- Option 4: Pipe water under the harbour from the Raglan supply scheme

Option	Estimated Capital Cost (expected accuracy range -30% to +50%)	Estimated Operational Cost (expected accuracy range -30% to +50%)
1 – Rainwater tanks at each household	$580,000 (Includes filtration and UV treatment at each household) plus Decommissioning cost for WTP	.
2- Bore reinstatement and WTP upgrade	$540,000	~$30,000 / annum (2021 Lutra report estimate)
3 – Tankered water	Decommissioning cost for WTP (one off opex cost)	$105,000 – 120,000 / annum
4 – Piped water	$3 million to $6 million plus decommissioning cost for WTP	Pumping cost plus percentage of Raglan WTP opex

4.3 Te Ākau Water Supply

Existing Infrastructure

The Te Ākau WTP supplies water to 25 properties (26 water meters as one property has two meters) with approximately 18 rateable dwellings. The scheme is currently closed to new connections. Should option 2 or 4 be selected, there is the opportunity to expand the scheme to other residents.

The existing infrastructure consists of:

- A single bore ~76 m deep with a submersible pump, housed in a concrete chamber
- Raw water flow meter
- Manual divert to waste
- Two parallel streams of two stage cartridge filtration (20 and 5 micron)
- A single 1 micron cartridge filter
- Sodium hypochlorite dosing (200 L drum, on small bund with Qdos peristaltic pump)
- Hydrochloric acid dosing (40 L drum, in bund with Qdos peristaltic pump)
- Treated water storage in a 45 m^3 timber reservoir
- Treated water flow meter
- Post reservoir Chlorine and pH analysers
- Post reservoir turbidimeter
- Gravity flow through reticulation
- No onsite generator
- No PLC or HMI
- Data logging is taken by handheld devices or manual instruments and recorded by operator
- No known alarms

Water Quality

Beca have indicated that the water quality data taken in 2021 indicated that there may be surface water entering the bore and this provides further justification as to the need to re-establish the bore. However, from the information available, it is difficult to know what the likely raw water quality will be when the bore is re-established. There may be other sources of contamination into the source water.

A closer review of raw water quality is recommended. This should be done as part of the bore being re-established.

Current Issues

The main issue with the current plant is that only 2 log protozoa removal is provided in the treatment process. This level of treatment is not sufficient to meet the ne drinking water rules.

Under Taumata Arowai's draft requirements there are two ways for Council to prove that Te Ākau WTP meets requirements; compliance with the Drinking Water Acceptable Solution for Spring and Bore Drinking Water Supplies (called the Acceptable Solution from this point on) or compliance with the Rules. Ideally compliance with the Acceptable Solution would be achieved as it has been designed as a practical and cost-effective way for small suppliers to meet the requirements and provide safe drinking water. However, to use the Acceptable Solution, raw water turbidity must not exceed 1 NTU at any time and there is a risk that this is not possible with this supply. Therefore, for the purposes of the Beca assessment, it was assumed that the upgrade must be complaint with the Rules (T2 treatment rules). This is only applicable to Option 2.

Another key issue with the current scheme is the visible holes and cracks in the existing bore as well as the unsealed cable glands reported by Lutra. Council have seen a deterioration in raw water quality as a result of these issues at the bore. For these reasons, the cost of re-establishing the bore is included in Option 2

5. Discussion and analysis
Taataritanga me ngaa tohutohu

5.1 Options
Ngaa koowhiringa

Design Basis

Table 5-1 summarises the flow through the WTP used as design flows for the assessment.

Table 5-1: Design Basis

Parameter	Value	Source
Current average daily flow	**7.35 m³/d**	Lutra report 2021, derived from data
Current maximum daily flow	**40.2 m³/d**	Lutra report 2021, derived from data

Option 1: Household Rainwater Tanks

For this option the existing WTP would be decommissioned, and rainwater tanks would be installed at each household. According to the Council Water Demand Management Plan 2021 there are 26 households served by this scheme. If rainwater tanks were installed to supply more than one property, the rainwater tank systems would be designed to meet the requirements of Taumata Arowai's Drinking Water Acceptable Solution for Roof Water Supplies which was released January 2022 and is currently out for consultation.

Beca have not aimed to comply with these guidelines as the supply for single household rainwater systems only were costed which would be regulated under the Building Act 2004. Allowance for cartridge filtration and UV treatment at each household has been made.

If this option is selected, the rain water tank assets would be covered off by Waikato District Council, ongoing maintenance and operational costs would be transferred over to property owners.

As part of this option, under section 131 of the Local Government Act 2002 Council is required to undertake a binding referendum with the affected residents and 75% of voters must support the proposal for Council to be able to decommission the WTP. It is estimated this would cost approximately $30,000 to conduct the referendum. No budget has been allowed for this.

It is assumed that existing reticulation would remain in the ground and that isolation at each house would be carried out.

Benefits:

- Likely to be a small reduction in stormwater flows for connected households

Social Challenges:

- Change in perspective for customers to a rainwater source
- Large rainwater tanks required to be effective which customers may not accept or have suitable space to install
- Risk of running out of water during dry periods with high cost of tanker supply to fill if required

Sustainability:

- Recent comparison studies Beca conducted have indicated that rainwater supply to households will have a significantly higher carbon impact than the local reticulated water supply.

Exclusions:

- Supply is not able to supply 1 in 100-year drought LoS yield

Environmental

- Areas of special significance could be jeopardised with the associated earthworks required for the placement of water tanks

Challenging geological conditions on some sites means water tanks cannot be placed in a location that allows roof water to be caught

Option 2: Re-establish the Existing Bore and Upgrade the WTP

This upgrade option would first include capping the existing bore and redrilling a new bore with the aim that consistently high-quality raw water could be achieved. As described in the "Current Issues" section, some of the raw water quality data indicates that surface water may be entering the bore and the 2021 Lutra report commented on visible holes and cracks. Other issues such as iron and ammonia may not be resolved by re-establishing the existing bore or construction of a new bore.

A third-party report commissioned by HGC written by Mike Ormsby confirms the methodology toward drilling a new bore well, ideally 20-30m to the north of the existing well.

Once the bore has been re-established, monitoring and testing will be required. The duration of this testing will be dependent on how consistent the water quality appears to be, but it should be completed over a number of months, and it should capture a storm period. This will offer a good understanding of the type of treatment that will be suitable. For the purposes of the Beca assessment, it is assumed that the raw water quality achieved (we have historical records to make this assumption) after re-establishing the bore is suitable for cartridge filter and UV treatment. Should it be established this is not the case, additional considerations have been addressed below.

The WTP upgrade would include:

- Automation of the run to waste system by installing an electrical actuator on the existing valve, a second actuated valve and a raw water turbidimeter (assume no pipework changes are required, raw water turbidimeter likely installed as part of the bore testing)
- Duty/standby cartridge filter and UV package plant
- Replacement sodium hypochlorite storage and dosing package
- CO2 dosing as an alternative to hydrochloric acid (safer and easier to operate, pH correction may not be required)
- Pre reservoir chlorine and pH analyser for dose control
- New Kingfisher RTU, software and radio telemetry

A few key assumptions have been made for this option:

- Consistently high-quality raw water (including low turbidity and high UVT) can be obtained with the re-establishment of the bore.
- The upgraded WTP can fit within the existing shed and an extension or replacement is not required (even for continuity of supply during construction).
- No changes to intake and reticulation pipework.
- Run to waste pipework can be reused with new actuated valves and turbidimeter installed. Existing discharge point is assumed to be adequate; capacity, consent and environmental effect have not been reviewed.
- Assume WTP can connect to Watercare's existing telemetry network.
- Assume adequate power supply (mains power stated in Lutra report).

- No generator required but a plug for a portable generator is recommended. Requirement for a permanent generator should be reviewed.
- Chemical storage and delivery not reviewed. A review of good practice and the Health and Safety at Work (Hazardous Substances) Regulations 2017 should be completed. There is some uncertainty on the seismic suitability of the sodium hypochlorite package assumed.
- Some of existing equipment may be able to be reused but before an assessment has been completed. Beca have assumed that replacement of the chemical storage and dosing systems as well as filters is required.
- The cost of potential replacement of the existing bore pump (if required) has not been considered.

As stated in the "Current Issues" section, based on the turbidity data available it has been assumed that this upgrade will not be able to be completed to the Acceptable Solution and instead the T2 Rules will have to be met. However, if turbidity is greatly reduced with the bore re-establishment, then meeting the Acceptable Solution may be possible. This would reduce reporting requirements and mean that a Water Safety Plan is not required (however appropriate risk assessment is still necessary).

Option 3: Tanker Water

Council are currently tankering water to the community. The cost for the existing tankered water supply, when annualised is indicated to be between $105,000 – 120,000per annum.

This option is not considered sustainable long term for the following reasons:

- Tankering water has a very large carbon impact for continued supply due to the vehicle emissions from transport of large quantities of water.
- It can be more difficult for a tankered water supply to respond to changes in demand if the contactor has limited vehicle numbers or is at capacity.
- Tankered costs will increase as fuel price increases which is currently very volatile
- The supply providing water needs to have sufficient capacity at peak demand to meet the additional needs.
- The community would prefer not to have trucks use the single narrow access road.

Option 4: Pipe Water Under the Harbour from the Raglan Supply Scheme

In order to confirm that a directionally drilled piped solution is not viable a high-level study was conducted by Beca.

Through experience and after a cursory look at historic pipelines of similar scale installed by construction partners in Auckland, Beca indicated that the cost would be in the order of $3 million to $6 million for a single 100NB pipe.

The following reasons are likely to push the cost closer to the maximum of this range:

- The sensitive environment at the exit of the potential pipeline.
- Difficult to consent this activity into the Te Akau area which is mainly comprised of protected natural land. (Although noted that the proposed directionally drilled option minimises disturbance).
- Areas of significance in the Te Akau area
- The coastal area being a high erosion hazard zone which will likely necessitate additional Geotechnical studies and design
- A very long drill length at over 1km required to drill from a potential allowable location in Raglan
- Highly specialised equipment for a directional drill of this length.
- Since it is expected that the ground conditions in Raglan/Te Ākau are likely to provide challenges such as rock layers.

The complexity, cost and small scale of the supply indicate that this option offers the worst economic solution.

5.2 Financial considerations
Whaiwhakaaro puutea

Summary

No business case currently exists that approves the use of capital for option 2 or 4. Option 3 is currently being delivered under Opex to deliver the required levels of service whilst the final solution is being developed. Option 3 has $750,000 opex budget for the decommissioning of the Te Akau and two other small water schemes. Opex funds cannot be utilised to fund a capital project so no transfer of the decommissioning budget can be transferred to option 2 or 4.

Table 5-2 summarises the high-level cost estimates for the options above. A more detailed breakdown of these estimates is included in the Beca report.

Table 5-2: Summary of Cost Estimates

Option	Estimated Capital Cost (expected accuracy range -30% to +50%)	Estimated Operational Cost (expected accuracy range -30% to +50%)
1 – Rainwater tanks at each household	$580,000 (Includes filtration and UV treatment at each household) plus Decommissioning cost for WTP	$Landowners cost

Option	Estimated Capital Cost (expected accuracy range -30% to +50%)	Estimated Operational Cost (expected accuracy range -30% to +50%)
2- WTP reinstatement and upgrade	$540,000	~$30,000 / annum (2021 Lutra report estimate)
3 – Tankered water	Decommissioning cost for WTP (one off opex cost)	$105,000 – 120,000 / annum
4 – Piped water	$3 million to $6 million plus decommissioning cost for WTP	Pumping cost plus percentage of Raglan WTP opex

General Estimate Assumptions

The estimate is based on the design, assumptions and exclusions outlined in the Beca report

This estimate is based on concept design information. The estimate is deemed to be a Class 5 estimate in terms of the AACE Cost Estimate Classification System guidelines. The expected accuracy range of the estimate is -30% to +50%.

Ongoing operational costs would be subsidised through the District Wide targeted water supply rate currently set at $293.10 as a fixed annual rate plus $2.10 per cubic meter used (GST inclusive). Note only 18 of the 25 connected properties are being charged the fixed rate as not all properties have a building registered as a separately used or inhabited part of a rating unit (SUIP) triggered through the building consent process. Enquires are being made as to how Council can identify any unconsented buildings to ensure all properties receiving a water supply pay for the service appropriately.

The scheme is currently a closed scheme, meaning Council does not allow new connections. If the plant is upgraded, this may allow for other unconnected properties to connect.

The development of the business case for the preferred option will consider the impact on the fixed annual rate and per cubic meter rate as being sufficient to support the preferred option.

5.3 Legal considerations
Whaiwhakaaro-aa-ture

Council has requirements under the Local Government Act to provide clean drinking water as noted in section 134 of the Local Government Act 2002.

Although, 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 based on community feedback received.

Should the scheme instead be handed to the community, 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.

5.4 Strategy and policy considerations
Whaiwhakaaro whakamaaherehere kaupapa here

The report and recommendations are consistent with the Council's policies and strategy for the small water schemes. Council wishes to ensure that residents of Te Ākau are supplied with safe drinking water in the best manner for the community.

The community has expressed their desire to continue with raw water sourced from the bore and treated and conveyed as already established.

5.5 Maaori and cultural considerations
Whaiwhakaaro Maaori me oona tikanga

As part of our engagement, WDC wish to specifically address with Iwi/Hapu the four options, not only from a level of service perspective but from that of Mana Whenua and specific areas of significance.

Section 6.2 captures the groups with which Council will engage going forward.

5.6 Climate response and resilience considerations
Whaiwhakaaro-aa-taiao

The decisions sought by, and matters covered in, this report are consistent with the Council's Climate Response and Resilience Policy and Climate Action Plan and aims to support resilience in the water supply to the Te Ākau community.

5.7 Risks
Tuuraru

There is the risk that the bore cannot be re-established or that the raw water quality after re-establishing the bore is still not suitable for cartridge filter and UV treatment. The current draft Rules state that less than 5 NTU is required for cartridge filter and UV systems. In practice an even lower turbidity is likely required for compliance. If high quality raw water cannot be achieved, more advanced and more expensive treatment such as membrane treatment would be required to provide safe drinking water.

This risk is considered low given past utilisation history.

6. Significance and engagement assessment
Aromatawai paahekoheko

6.1 Significance
Te Hiranga

The decisions and matters of this report are assessed as of moderate significance, in accordance with the Council's Significance and Engagement Policy.

The following criteria are particularly relevant in determining the level of significance for this matter:

- The degree to which the issue has a financial impact on Council or the rating levels (both targeted and general) of its communities. *Reference relevant criteria from the Policy*.
- The likely impact on present and future interests of the community, recognising Maaori Tikanga (culture values) and their relationship to land and water.
- The community interest is likely to be high.
- The likely consequences are controversial of option 2 is not short listed and enacted.

6.2 Engagement
Te Whakatuutakitaki

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

Stakeholder	
Internal	-
Community Boards/Community Committees	Te Ākau / Port Waikato Rep Richard Thompson thompson07@xtra.co.nz 0272047928
• Other community groups	Horongarara Community Group Committee *(met with on 27 May 2021 at Council office and by Teams on 18 January 2022 and 18 February 2022. Staff and HGC have had ad hoc engagement with on matters relating to bore, generally via email, to provide information in support of discussions raised in the meeting listed above)*
Waikato-Tainui / Local iwi / Hapū	Waikato Tainui: Taroi Rawiri Environment Manager Taroi.rawiri@tainui.co.nz 021802232 Kahurimu Flavell

Stakeholder	
	Iwi Engagement Officer Kahurimu.flavell@tainui.co.nz
Households	Once way forward established, consult with Landowners (*met with Te Ākau South community 30 May 2021 stating that an investigation is underway and highlighted no definitive long term solution or position was made. Have had 2 further meetings with members of the Horongarara Community Group Committee, as mentioned and outlined in the executive summary*)
Business/Other	Fire & Emergency NZ *(met with on 13 April 2021 at Council office and subsequent correspondence with in relation to use and access of hydrant)*

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.

The following community engagement has occurred thus far for this scheme:

Waikato District Council (Council) have been engaging with the Te Ākau community through the Horongarara Community Group Committee across the last few months. We have summarised some of the key community viewpoints from our meetings below.

18 January 2022 - Council and Horongarara Community Group Committee meeting 1

- Shifting to a rainwater supply would be a high-cost downgrade of the supply. This option is not supported by the community and is not believed to be a viable option
- The area is designated as an extreme fire risk area. Letter from Te Akau Chief Fire Officer states "Fire hydrant is of utmost importance to community". This fire-hydrant can only be supplied through option 2 or 3.
- Geography 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. This may affect a piped solution as in option 4.
- Ecological value of area seen as the jewel in the crown of the Whaingaroa catchment.
- Community shared some possible treatment system upgrade solutions prepared by one of the community residents.
- For more details see WDC and Horongarara Community Group Committee meeting 1 minutes attached

18 February 2022 - Council and Horongarara Community Group Committee meeting 2

- Point clarified: If bore water is continued as raw water source, the bore water will be retested, and new samples taken. Previous sampling will not make up the analysis as it was taken from an operational perspective rather than that of WTP design
- Community presented a stock take of existing plant componentry including reference to age & photos of existing equipment.
- Community presented a PowerPoint presentation illustrating that providing water tanks to residents for rainwater collection was problematic given site access, SNA, Coastal Hazard & Extreme Fire Risk designations
- Community commissioned a quote for bore re-establishment and shared it for council and Watercare's use if desired. Bore reinstatement estimated at ~$48 000.
- For more details see WDC and Horongarara Community Group Committee meeting 2 minutes attached

7. Next steps
Ahu whakamua

After reviewing the costs and the high carbon impact of the other options, coupled with the higher community acceptance of Option 2, The following next steps are recommended:

- Engagement as per section 6.2 of the report to determine all parties' views
- That analysis on raw water be carried out to understand the changes that have occurred as the bore has deteriorated. This may provide some indication of the raw water quality that is possible once the bore has been re-established. This would provide more certainty for the design of option 2.
- Watercare prepare a detailed design for the reinstatement and upgrade of the WTP.
- That Watercare assess the design against the new Standards and Rules to understand the requirements for documentation and monitoring.
- Council Waters team to prepare costing and funding arrangements for upgrades.
- Seek approval from Council for capital funding

8. Confirmation of statutory compliance
Te Whakatuuturutanga aa-ture

As required by the Local Government Act 2002, staff confirm the following:

The report fits with Council's role and Committee's/Community Board's Terms of Reference and Delegations. *Refer to the Governance Structure*	Confirmed
The report contains sufficient information about all reasonably practicable options identified and assessed in terms of their advantages and disadvantages (*Section 5.1)*.	Confirmed
Staff assessment of the level of significance of the issues in the report after consideration of the Council's Significance and Engagement Policy (*Section 6.1)*.	Medium
The report contains adequate consideration of the views and preferences of affected and interested persons taking account of any proposed or previous community engagement and assessed level of significance (*Section 6.2)*.	Confirmed
The report considers impact on Maaori (*Section 5.5*)	Confirmed
The report and recommendations are consistent with Council's plans and policies (*Section 5.4)*.	Confirmed
The report and recommendations comply with Council's legal duties and responsibilities (*Section 5.3)*.	Confirmed

9. Attachments
Ngaa taapirihanga

Attachment 1 – Beca Report

Attachment 2 – WDC and Horongarara Community Group Committee meeting 1 minutes

Attachment 3 – WDC and Horongarara Community Group Committee meeting 2 minutes

Attachment 4 – HGC commissioned bore report

Date:	15 March 2022
Report Authors:	Hermanus Kruger, (Beca employee seconded to Waikato District Council) Keith Martin, Waikato District Council
Authorised by:	Gavin Ion, Chief Executive

Te Ākau Water Supply Options Assessment

Prepared for Waikato District Council
Prepared by Beca Limited

1 March 2022

Creative people together transforming our world

Contents

Appendices

Revision History

Revision Nº	Prepared By	Description	Date
A	Lisa Mace	Options Report	01-03-2022

Document Acceptance

Action	Name	Signed	Date
Prepared by	Lisa Mace		01-03-2022
Reviewed by	Philip la Roche		01-03-2022
Approved by	Claire Scrimgeour		01-03-2022
on behalf of	Beca Limited		

Executive Summary

Four options were considered to provide safe drinking water to the community of Te Ākau:

- Option 1: Household rainwater tanks
- Option 2: Redrill the existing bore and upgrade the Water Treatment Plant (WTP)
- Option 3: Tanker water from Raglan WWTP to Reservoir
- Option 4: Pipe water under the harbour from the Raglan water supply

The table below outlines the cost estimates for these options. The upgrade costs for option 2 were estimated based on a worst-case scenario with very few pieces of equipment reused.

Option	Estimated Capital Cost (expected accuracy range -30% to +50%)	Estimated Operational Cost (expected accuracy range -30% to +50%)
1 – Rainwater tanks at each household	$580,000 (Includes filtration and UV treatment at each household) plus Decommissioning cost for WTP	$48,000 / annum
2- Redrill bore and WTP upgrade	$540,000	~$30,000 / annum (2021 Lutra report estimate)
3 – Tankered water	Decommissioning cost for WTP	$105,000 – 120,000 / annum
4 – Piped water	$3 million to $6 million plus Decommissioning cost for WTP	Pumping cost plus percentage of WTP OPEX

We expect that the total (opex and capex) cost of Option 2 to be lower than Option 1. Further, Option 1 provides a lower level of service, and the risk of quality reduction if roof maintenance is not done and does not offer the level of monitoring and assurance provided by a community supply. Although a reasonable capital cost is expected to be required for Option 2, the operational cost is estimated to be the lowest of the options. The likelihood that some componentry can be reused with the upgrade may further reduce the cost of option 2 further. Tanker water to the community is not seen as a long-term solution due to the cost and environmental footprint and piping water under the harbour from the Raglan supply is not a cost-effective solution for this small community.

1 Introduction

1.1 Background

Te Ākau Water Treatment Plant (WTP) is owned by Waikato District Council (WDC / Council). A desktop options study has been completed by Beca Ltd (Beca) to summarise requirements and estimate the cost of upgrading this WTP to meet the Drinking Water Standards for New Zealand (Draft) December 2021 (the Standards) and the Draft Drinking Water Quality Assurance Rules 20 December 2021 (the Rules). The Standards and the Rules are currently out for consultation and so may change.

In April 2021, Lutra prepared an audit report for this water supply to compare it to the revisions that were anticipated to the Drinking-water Standards for New Zealand 2005 (amended 2018) (DWSNZ) at the time. The key recommendations were:

- Install validated UV disinfection to provide a total of 4 log protozoa removal ,
- Replace hydrochloric acid and sodium hypochlorite dosing systems to improve dose control and to provide a more consistent residual in the network
- Install instrumentation, valves and control for a run-to-waste system
- Install instrumentation and equipment for improving resilience and health and safety
- Specify data monitoring and reporting frequency for compliance

Since Lutra made these recommendations, the draft Standards and Rules have come out and so the requirements to meet these documents have been reviewed as well as consideration of a few alternative upgrade options developed in consultation between Council and Watercare.

Appendix H from the Waikato District Water Demand Management Plan (May 2021) has also been a source of some background information about this supply.

1.2 Purpose

The purpose of this report is to provide a high-level summary of the four upgrade options that Council have identified and the capital and operational costs of these options:

- Option 1: Household rainwater tanks
- Option 2: Redrill the existing bore and upgrade the WTP
- Option 3: Tanker water from Raglan WWTP to Reservoir
- Option 4: Pipe water under the harbour from the Raglan water supply

The Lutra report included a full audit of compliance against the changes that were anticipated to the DWSNZ at that time. The draft Standards and Rules have since been released; however, this assessment has not included a thorough review of these documents in relation to things like documentation and monitoring requirements. This assessment has been focused on significant capital work associated with meeting the bacteriological and protozoa requirements.

2 Te Ākau Water Supply

2.1 Existing Infrastructure

The Te Ākau WTP serves a small community of approximately 25 households. The existing infrastructure consists of:

- A single 125m deep bore cased to ~78 m with a submersible pump set at ~60m depth, housed in a concrete chamber
- Raw water flow meter
- Manual divert to waste
- Two parallel streams of two stage cartridge filtration (20 and 5 micron)
- A single 1 micron cartridge filter
- Sodium hypochlorite dosing (200 L drum, on small bund with Qdos peristaltic pump)
- Hydrochloric acid dosing (40 L drum, in bund with Qdos peristaltic pump)
- Treated water storage in a 45 m^3 timber reservoir
- Treated water flow meter
- Post reservoir Chlorine and pH analysers
- Post reservoir turbidimeter
- 15 000L holding tank
- Gravity flow through reticulation
- No onsite generator
- No PLC or HMI
- Data logging is taken by handheld devices or manual instruments and recorded by operator
- No known alarms

Understanding of the existing infrastructure comes predominantly from the 2021 Lutra report as a site visit was not completed.

2.2 Water Quality

Water quality data that we are confident are representative of the source water prior to the recent shut down was not available for review as part of this assessment. We offer the following commentary on the results used for the basis:

- The large range in raw water alkalinity (300 – 389 mg/L as CaCO3) and hardness (17.8 – 280 mg/L as CaCO3) values indicate that there may be surface water entering the bore at some times, it would be valuable to compare the raw water data with rainfall events for future data to see if the same trend is presented.
- Of the 16 raw water E.coli sample' data, the average was 4.3 MPN/100 mL and the maximum was 20 MPN/100 mL. Without seeing the median value, or the full set of data, it is difficult to know if E. coli is common in the raw water, or if there have been a few instances of E. coli being present (potentially tied to the surface water ingress above).
- If an upgrade including UV treatment is included, then fouling of the lamps should be considered. Hardness above 200 mg/L as CaCO3 (a maximum value of 280 mg/L as CaCO3 was measured) and total iron above 0.2 mg/L (a maximum value of 5.6 mg/L was measured) can cause fouling of UV.

- The 8 samples for raw water pH ranged from 7.3 – 8.6 showing reasonable variation. There was much more data for treated water pH and the 5th to 95th percentiles were 7.10 - 7.87 which indicates that the pH correction generally works well. Previous reporting indicated that the large number of spikes in treated water pH are likely due to the manual operation of the pH correction system which means that adjustment of the dose rate does not always occur as quickly as would be seen in an automated system.
- Raw water iron concentrations are high with an average of 1.93 mg/L and a minimum of 0.172 mg/L. This is likely to result in dirty water events which may cause complaints as well as precipitating on the quartz sleeve of a UV unit if installed. Total iron of less than 0.2 mg/L is generally recommended for reducing the precipitation on UV however as this is close to the minimum value measured, there is a risk that redrilling the bore will not reduce total iron.
- Raw water turbidity was not included in the Lutra report however a summary of treated water turbidity from 2015 – 2021 was included. Generally, treated water turbidity was low with an average of 0.42 NTU and a 95th percentile of 0.53 NTU. However, the maximum value of 33 NTU shows that turbidity can be high. Without more information, it is clear whether this maximum value is a common occurrence or it was a single outlier that may be due to a recording error, recent bore deterioration or a particular incident. More investigation into this is required before the treatment type is selected. We also note that the 2021 Water Safety Plan states that the bore water has turbidity of 3.19 NTU. It is assumed that this is an average value but it is not clear the period of time that data has been averaged for.
- Raw water total ammoniacal nitrogen exceeds the guideline value which will increase the chlorine requirements to provide a residual, and may cause taste issues.
- The time period for the recent raw water data is limited

The water quality data does indicate that there may be surface water entering the bore and this provides further justification as to the need to redrill the bore. However, from the information available, it is difficult to know what the likely raw water quality will be when the bore is redrilled. There may be other sources of contamination into the source water.

A closer review of raw water quality is recommended. This should be done after the bore has been redrilled. We understand that there is some risk of saline intrusion from the adjacent Whāingaroa Harbour (Raglan).

2.3 Current Issues

The main issue with the current plant is that only 2 log protozoa removal is provided in the treatment process. This level of treatment is not sufficient to meet the Rules.

Under Taumata Arowai's draft requirements there are two ways for Council to prove that Te Ākau WTP meets requirements; compliance with the Drinking Water Acceptable Solution for Spring and Bore Drinking Water Supplies (called the Acceptable Solution from this point on) or compliance with the Rules. Ideally compliance with the Acceptable Solution would be achieved as it has been designed as a practical and cost-effective way for small suppliers to meet the requirements and provide safe drinking water. However, to use the Acceptable Solution, raw water turbidity must not exceed 20 NTU at any time and there is a risk that this is not possible with this supply. Therefore, for the purposes of this assessment, we have assumed that the upgrade must be complaint with the Rules (T1 treatment rules). This is only applicable to Option 2.

Another key issue with the current scheme is the visible holes and cracks in the existing bore as well as the unsealed cable glands reported by Lutra. Council have seen a deterioration in raw water quality as a result of these issues at the bore and some of the water quality data summarised in Section 2.2 also indicates this. For these reasons, the cost of redrilling the bore is included in Option 2.

3 Upgrade Options

3.1 Design Basis

Table 3-1 summarises the flow through the WTP. The Lutra report found an average flow of 7.35 m³/d with a summer peak of 40.2 m³/d. These flows have been assumed as the design flows for this assessment.

We note that the peak flow in the Lutra report is significantly higher than the 16 m³/d stated in the WDC Water Demand Management Plan and that the existing consent is for an even higher flow of 68 m³/d. However, a capacity of 40.2 m³/d has been assumed at this stage and this seems to be a reasonable peak flow rate for 26 households.

The bold values have been used in this options assessment.

Table 3-1: Design Basis

Parameter	Value	Source
Current average daily flow	**7.35 m³/d**	**Lutra report 2021, derived from data**
Current maximum daily flow	**40.2 m³/d**	**Lutra report 2021, derived from data**
Peak summer demand	16 m³/d	WDC Water Demand Management Plan 2021, current plant capacity and consent
Supply capacity	68 m³/d	WDC Water Demand Management Plan 2021, current plant capacity and consent
Instantaneous maximum	48 L/min / 0.8 L/s	To meet supply capacity above

3.2 Option 1 - Household Rainwater Tanks

For this option the existing WTP would be decommissioned, and rainwater tanks would be installed at each household. According to the WDC Water Demand Management Plan 2021 there are 25 households served by this scheme. If rainwater tanks were installed to supply more than one property the rainwater tank systems would be designed to meet the requirements of Taumata Arowai's Drinking Water Acceptable Solution for Roof Water Supplies which was released in January 2022 and is currently out for consultation.

We have not aimed to comply with these guidelines as the supply for single household rainwater systems only were costed which would be regulated under the Building Act 2004. Allowance for cartridge filtration and UV treatment at each household has been made.

It is assumed that existing reticulation would remain in the ground and that isolation at each house would be carried out.

Benefits

- Likely to be a small reduction in stormwater flows for connected households

Social Challenges:

- Change in perspective for customers to use rain water sources
- Large rainwater tanks required to be effective which customers may not accept or have suitable space to install
- Risk of running out of water during dry periods with high cost of tanker supply to fill if required

Sustainability:

- Recent comparison studies Beca conducted have indicated that rainwater supply to households will have a significantly higher carbon impact than the local reticulated water supply.

Exclusions:

- Assessment of cost of initial fill of rainwater tanks with tankered water
- Assessment of cost or requirement for geotechnical assessments for individual households
    - Additional civil or retaining works required due to geotechnical assessment results
- Supply is not able to supply 1 in 100-year drought LoS yield
- Consenting costs and legal and regulatory aspects were not reviewed.

We note that Council has requirements to provide clean drinking water as noted in section 134 of the Local Government Act 2002

3.3 Option 2 - Redrill the bore and upgrade the WTP

3.3.1 Overview

This upgrade option would first include re-establishing the existing bore by redrilling it and installing a new casing with the aim that consistently high-quality raw water could be achieved. As described in Section 2.2, some of the raw water quality data indicates that surface water may be entering the bore and the 2021 Lutra report commented on visible holes and cracks. Issues such as iron and ammonia may not be resolved by redrilling the bore.

Once the bore has been redrilled, monitoring and testing will be required. The duration of this testing will be dependent on how consistent the water quality appears to be, but it should be completed over a number of months and it should capture a storm period. This will offer a good understanding of the type of treatment that will be suitable. For the purposes of this assessment, it is assumed that the raw water quality achieved after redrilling the bore is suitable for cartridge filter and UV treatment however there is a significant risk that this will not be the case, and this is discussed further below.

The WTP upgrade would include:

- Automation of the run to waste system by installing an electrical actuator on the existing valve, a second actuated valve and a raw water turbidimeter (assume no pipework changes are required, raw water turbidimeter likely installed as part of the bore testing)
- Duty/standby cartridge filter and UV package plant
- Replacement sodium hypochlorite storage and dosing package
- CO_2 dosing as an alternative to hydrochloric acid (safer and easier to operate, pH correction may not be required)
- Pre reservoir chlorine and pH analyser for dose control
- New Kingfisher RTU, software and radio telemetry

A few key assumptions have been made for this option:

- Consistently high quality raw water (including low turbidity and high UVT) can be obtained with the redrill of the bore.
- The upgraded WTP can fit within the existing shed and an extension or replacement is not required (even for continuity of supply during construction).
- No changes to intake and reticulation pipework.
- Run to waste pipework can be reused with new actuated valves and turbidimeter installed. Existing discharge point is assumed to be adequate; capacity, consent and environmental effect have not been reviewed.
- Assume can connect to existing telemetry network.
- Assume adequate power supply (mains power stated in Lutra report).
- No generator required but a plug for a portable generator is recommended. Requirement for a permanent generator should be reviewed.
- Chemical storage and delivery not reviewed. A review of good practice and the Health and Safety at Work (Hazardous Substances) Regulations 2017 should be completed. There is some uncertainty on the seismic suitability of the sodium hypochlorite package assumed.
- Some of existing equipment may be able to be reused an assessment has not been completed. We have assumed that replacement of the chemical storage and dosing systems as well as filters is required.
- The cost of potential replacement of the existing bore pump (if required) has not been considered.

As stated in Section 2.3, based on the turbidity data available it has been assumed that this upgrade will not be able to be completed to the Acceptable Solution and instead the T1 Rules will have to be met. However, if turbidity is greatly reduced for the redrilled bore then meeting the Acceptable Solution may be possible. This would reduce reporting requirements and mean that a Water Safety Plan is not required (however appropriate risk assessment is still necessary).

3.3.2 Risk

There is the risk that the raw water quality after redrilling the bore is still not suitable for cartridge filter and UV treatment. The current draft Rules state that less than 20 NTU is required for cartridge filter and UV systems however in practice an even lower turbidity is likely required for compliance. If high quality raw water cannot be achieved, more advanced and more expensive treatment such as membrane treatment would be required to provide safe drinking water. This potential outcome should be considered.

3.4 Option 3 - Tanker water from Raglan WWTP to Reservoir

Council are currently tankering water to the community. The cost for the existing tankered water supply, when annualised is indicated to be between $105,000 – 120,000 per annum.

This option is not considered sustainable long term for the following reasons:

- Tankering water has a very large carbon impact for continued supply due to the vehicle emissions from transport of large quantities of water.
- It can be more difficult for a tankered water supply to respond to changes in demand if the contactor has a limited number of vehicles and is at capacity.
- Tankered costs will increase as fuel price increases which is currently very volatile
- The supply providing water needs to have sufficient capacity at peak demand to meet the additional needs.

3.5 Option 4 - Pipe Water Under the Harbour from the Raglan Supply Scheme

In order to confirm that a directionally drilled piped solution is not viable a high-level study has been done.

Through experience and after a cursory look at historic pipelines of similar scale installed by construction partners in Auckland it is indicated that the cost would be in the order of $3 million to $6 million for a single 100NB pipe.

The following reasons are likely to influence the cost and feasibility:

- The sensitive environment at the exit of the potential pipeline.
- Difficult to consent this activity into the Te Ākau area which is mainly comprised of protected natural land (although noted that the proposed directionally drilled option minimises disturbance).
- Areas of significance in the Te Ākau area
- The coastal area being a high erosion hazard zone which will likely necessitate additional Geotechnical studies and design
- A very long drill length at over 1km required to drill from a potential allowable location in Raglan
- Highly specialised equipment for a directional drill of this length.
- Since it is expected that the ground conditions in Raglan/Te Ākau are likely to provide challenges such as rock layers.

The complexity, cost and small scale of the supply indicate that this option offers the worst economic solution.

4 Cost Estimates

4.1 Summary

Table 4-1 summarises the high-level cost estimates for the options above. A more detailed breakdown of these estimates is included in Appendix A.

Table 4-1: Summary of Cost Estimates

Option	Estimated Capital Cost (expected accuracy range -30% to +50%)	Estimated Operational Cost (expected accuracy range -30% to +50%)
1 – Rainwater tanks at each household	$580,000 (Includes filtration and UV treatment at each household) plus Decommissioning cost for WTP	$48,000 / annum
2- Redrill bore and WTP upgrade	$540,000	~$30,000 / annum (2021 Lutra report estimate)
3 – Tankered water	Decommissioning cost for WTP	$105,000 – 120,000 / annum
4 – Piped water	$3 million to $6 million plus Decommissioning cost for WTP	Pumping cost plus percentage of WTP OPEX

4.2 General Estimate Assumptions

- The estimate is based on the design and assumptions outlined in this report
- All quantities and dimensions in the estimate are approximate
- It is assumed that a robust and competitive tendering process will be followed and that a minimum of 3 competitive tenders (where possible) are received for the project as part of the agreed procurement process
- It is assumed that all works are carried out during normal daytime working hours
- It is assumed that the contractor will have unobstructed access to the whole site throughout the construction phase
- The estimates assume that the proposed work can be consented
- Contingency allowance has been included at 30% for concept level design. No detailed risk analysis has been carried out. Please note that the above contingency allowances exclude changes in scope beyond what is generally described in these estimates. We recommend that the Client hold a separate project contingency budget for this if this risk is deemed likely.
- The allowance for Professional Fees includes for the cost of engineering and design, construction monitoring and providing technical support during the construction phase. Please note that the allowances for Professional Fees in the estimates are typical allowances included for comparative purposes - a work breakdown or fee estimate has not been prepared.
- The estimate is based on rates and prices current as of February 2022 and no allowance has been included for increases in the costs of labour, materials or plant beyond this date.
- Estimate range is an indication of the degree to which the final cost outcome for a given project will vary from the estimated cost – it is not an additional Contingency.
- This estimate is based on concept design information. The estimate is deemed to be a Class 5 estimate in terms of the AACE Cost Estimate Classification System guidelines. The expected accuracy range of the estimate is -30% to +50%.

4.3 Exclusions

- Land purchase has not been included for any of the options.
- Demolition and decommissioning of the existing plant, building and pipework has not been included for any options.
- Consenting and legal costs.
- Goods and Services Tax (GST).
- Construction escalation beyond date of estimate.
- Foreign Exchange rate fluctuations and costs.
- Staged or phased handover or commissioning.
- Client-owned project-related costs.
- Cost of community engagement if required for consenting.
- Incurred costs to date.
- Fast-track or accelerated programme.
- Geotechnical treatment or ground improvement beneath structures.
- Cost of maintaining water supply level of service and keeping the plant operational during tie-ins and commissioning of the new equipment.
- Power supply network upgrade.
- Any future impact of extraordinary global events (such as the current COVID-19 outbreak).
- The cost of potential replacement of the existing bore pump (if required) has not been considered.

4.4 Cost Estimation Risks

Key risks with a potential cost effect include:

- Uncertainty of bore water quality, and significant risk that issues including iron and ammonia will not be resolved.
- Design development.
- Client-driven scope changes.
- Cost escalation.
- Procurement and staging.
- Location and contractor availability.
- Project delays due to further Covid-19 outbreaks.
- There may be risks and opportunities other than those described above that are not yet identified and have therefore not yet been considered during cost estimation.

4.5 Estimate Limitations

- This estimate is solely for our Client use for the purpose for which it is intended in accordance with the agreed scope of work. It may not be disclosed to any person other than the Client and any use or reliance by any person contrary to the above, to which Beca has not given its prior written consent, is at that person's own risk.
- The purpose of the estimate is to provide Council with indicative capital construction costs to help with feasibility assessment, budgeting for the project and to select an option for detailed design by Watercare.
- The high-level estimate presented in this report is typically developed based on extrapolation of recent similar project pricing, budget quotes for some equipment items, industry unit rates, and Beca's general experience. The concept estimate is based on incomplete design and other information. While a contingency allowance has been included in the estimate to cover design development, further investigation and design work is recommended. A detailed design should be undertaken if a more reliable estimate is required.

5 Comparison

We expect that the total (opex and capex) cost of Option 2 to be lower than Option 1. Further, Option 1 provides a lower level of service, and the risk of quality reduction if roof maintenance is not done and does not offer the level of monitoring and assurance provided by a community supply. Although a reasonable capital cost is expected to be required for Option 2, the operational cost is estimated to be the lowest of the options. The likelihood that some componentry can be reused with the upgrade may further reduce the cost of option 2. Tanker water to the community is not seen as a long-term solution due to the cost and environmental footprint and piping water under the harbour from the Raglan supply is not a feasible or cost-effective solution for this small community.

6 Next Steps

We recommend the following next steps

- Further analysis on raw water is recommended to understand the changes that have occurred as the bore has deteriorated. This may provide some indication of the raw water quality that is possible once the bore has been redrilled. This would provide more certainty on the viability of Option 2. Redrilling in order to take samples may be required.
- If an upgrade design is prepared, that it be assessed against the new Standards and Rules to understand the requirements for documentation and monitoring.

We note that, in the finalised Standards and Rules, there may be changes which could affect the options listed in this report.

A

Appendix A – Cost Estimates

Item	QTY	UNIT	RATE	TOTAL	Comment
Tank Cost and delivery and sand base	26	LS	$ 8,050	$ 209,300	25000L tank
Pump and base	26	LS	$ 1,300	$ 33,800	
Connection to roof and collection system	26	LS	$ 1,000	$ 26,000	
Inlet, outlet valve and connections	26	LS	$ 800	$ 20,800	
Cartridge filter and UV system complete with labour for installation	26	LS	$ 6,300	$ 163,800	
Plumbing Labour	26	LS	$ 2,500	$ 65,000	
Electrical Labour	26	LS	$ 1,100	$ 28,600	
Commissioning	1	LS	$ 2,000	$ 2,000	
Subtotal				**$ 549,300**	
Construction contingency	5%	%	$ 549,300	$ 27,465	
Total				**$ 578,765**	
Rounding	1	LS	$ 1,235		
Total (Rounded)				**$ 580,000**	

Exclusions:
- All exclusions as per report
-OPEX for replacement of UV lamps and cartridge filters over time

OPEX			PER household	Total
Pump size		kW	0.75	
Hours operating/day		hours	0.5	
Electricity use/annum		kWh	136.875	
Unit cost of electricity		$/kWh	0.25	
Cost/annum	26		$ 34	$ 889.69
Annual Cleaning				
Cleaning Cost/annum	26		$1,800.00	$ 46,800.00
Maintenance total annualised			$1,834.22	$47,689.69
Rounding	1	LS	$ 310.31	
Total (Rounded)				**$ 48,000**
			per household	total

Item	QTY	UNIT	RATE	TOTAL	Comment
Re-established bore	1	LS	$ 50,000	$ 50,000	Quote from DCN Drilling
Monitoring and testing of new bore	1	LS	$ 10,000	$ 10,000	Allowance for sampling, raw water turbidimeter to be installed (cost below)
Run to waste valves	2	LS	$ 10,000	$ 20,000	New valves to run to waste on high turbidity, pipework existing
Raw water turbidimeter	1	LS	$ 10,000	$ 10,000	To stop and start run to waste, including installation
Cartridge filter and UV system	2	LS	$ 20,000	$ 40,000	Filtec's Viqua Pro20 duty/stnadby, two stage filtration and UV, supply only
Hypo doing package	1	LS	$ 20,000	$ 20,000	Grundfos dosing station complete with 200 L vessel, plastic retaining bund, DDA FCM pump, supply only
CO2 dosing	1	LS	$ 25,000	$ 25,000	Allowance, set rate not automated
Pre reservoir chlorine and pH analyser	1	LS	$ 15,000	$ 15,000	Supply and installed
Pipework and installation	1	LS	$ 25,000	$ 25,000	Connections to and from cartidge filter/UV package
Controls and software	1	LS	$ 30,000	$ 30,000	Allowance for Kingfisher RTU in cabinet with battery and software
Telementry	1	LS	$ 10,000	$ 10,000	Trio radio
Commissioning	1	LS	$ 10,000	$ 10,000	
Subtotal				**$ 265,000**	
P&G and margin	30%	%	$ 265,000	$ 79,500	
Subtotal				**$ 344,500**	
Design and supervision	20%	%	$ 344,500	$ 68,900	
Subtotal				**$ 413,400**	
Design and estimating contingencies	20%	%	$ 413,400	$ 82,680	
Construction contingency	10%	%	$ 413,400	$ 41,340	
Total				**$ 537,420**	
Rounding	1	LS	$ 2,580		
Total (Rounded)				**$ 540,000**	

Exclusions:
- intake and reticulation pipework, assume existing can be reused and only replacement of treatment plant pipework is included
-assume part of Watercare telementry network
-assume no generator required
-assume adequate power supply (mains power stated in Lutra report)
-chemical storage and delivery not reviewed
-have not completed a review of run to waste location (capacity, consent and environmental effect)
- new dosing pumps have been assumed although it may be possible to reuse the existing Qdos pumps

MEETING MINUTES

Te Akau South Water Supply

18 January 2022

9:00 – 10:30 am

Meeting called by	Horongarara Community Group (Te Akau South)/ Waikato District Council
Attendees	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)
Apologies	-
Location	MS Teams - Online

Summary of Meeting

Agenda Topic	Discussion
Water Reform *(Keith Martin)*	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. Bore supply has been discontinued based on water quality and the bore itself. Currently Council is tankering water to the community. 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. Requirement of regulator re Drinking Waters rules.
Waters Governance Board Report *(Hermanus Kruger)*	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. Report publicly available on Council website.

Current state of play. Bore and water sampling, tinkering *(Mat Telfer)*	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. Interim solution to ensure we could continue to operate the network was the water tankering option that is currently in place. 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. This combined with water quality issues, decision made to tanker water. 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.
Transferring water supply to individual rainwater tanks *(Anaru Wilson)*	A brief report was presented containing information that should be incorporated into any desktop assessment that may be undertaken. 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 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. 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. Ecological value of area seen as the jewel in the crown of the Whaingaroa catchment. 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. 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. Believe there is hidden costs in progressing any work for individual rainwater tanks due to multi level planning requirements & geotechnical expense.

	Designated extreme fire risk. Letter from Te Akau Chief Fire Officer states "Fire hydrant is of utmost importance to community". 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). This option is not supported by the community or believed to be a viable option. Considering the topical geographics of terrain and other factors mentioned above, it would be difficult to achieve a rainwater solution. Copy of presentation attached.
Treatment option *(Owen Mooney)*	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. Note the current system does not appear to be designed with Taumata Arowai standards. 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. Treatment systems diagram shared and individual treatment components/process steps explained (refer to presentation for overview) 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 Proposed solution assumes acceptable delivery of water from the bore (repaired or new); assumes a telemetry system to reduce need for onsite personnel. High level capex cost estimate of $20k for new equipment.
General Discussion	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. 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. Council: Labour and milage is expensive, need to manage risk, public health and reporting requirements so sometimes despite good telemetry

	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.

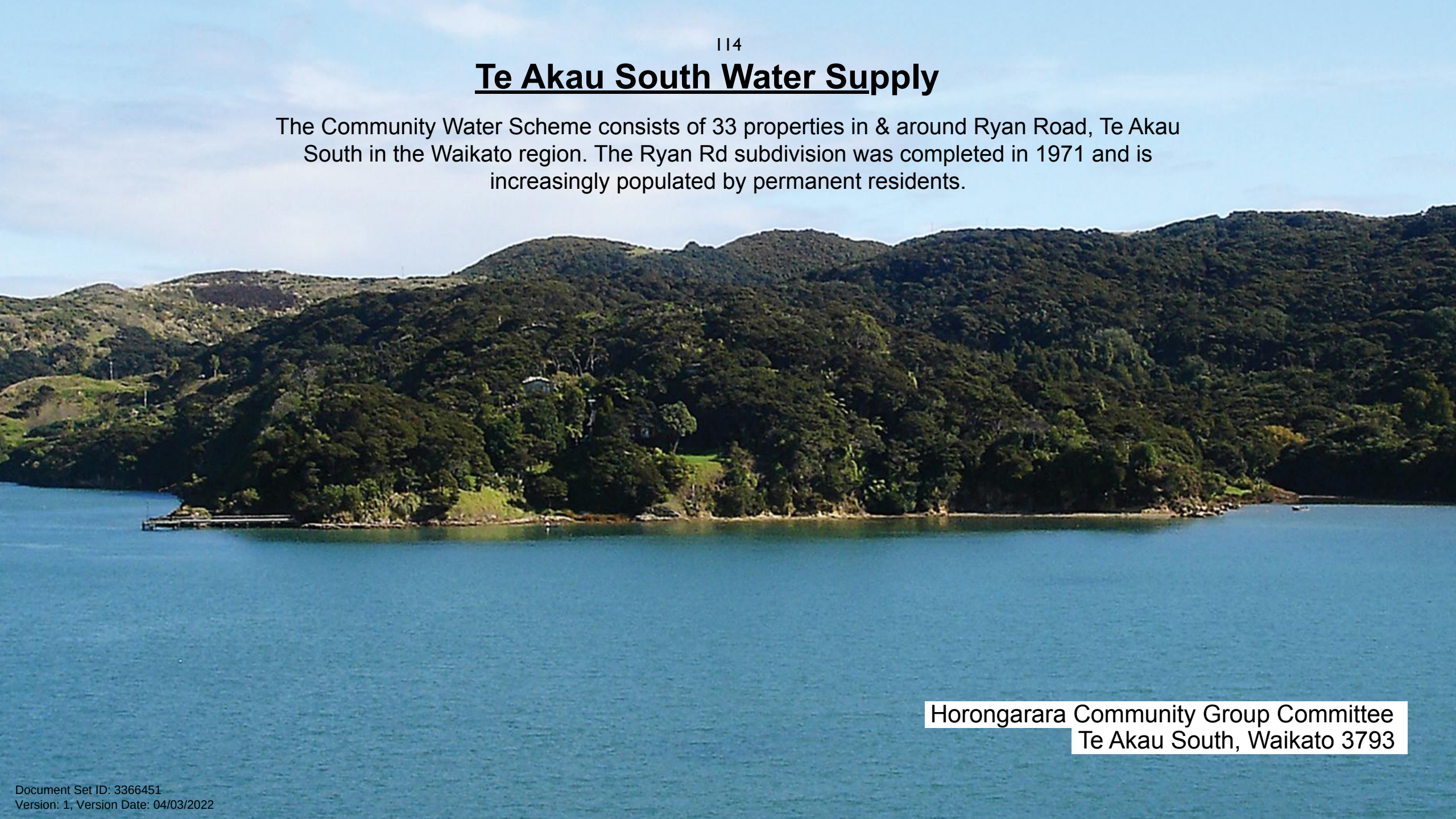
	To consider how we upspeak the current infrastructure rather than build a completely new solution. Community members in meeting are passionate about topic, offer their services and networks, want to be a part of process to reach a solution. Council have a lot of legislation and internal policy process to adhere to and may not be able to progress as fast as a private entity. 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. 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. Council will need to engage with the wider community to ensure they are informed and that individual views heard.

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

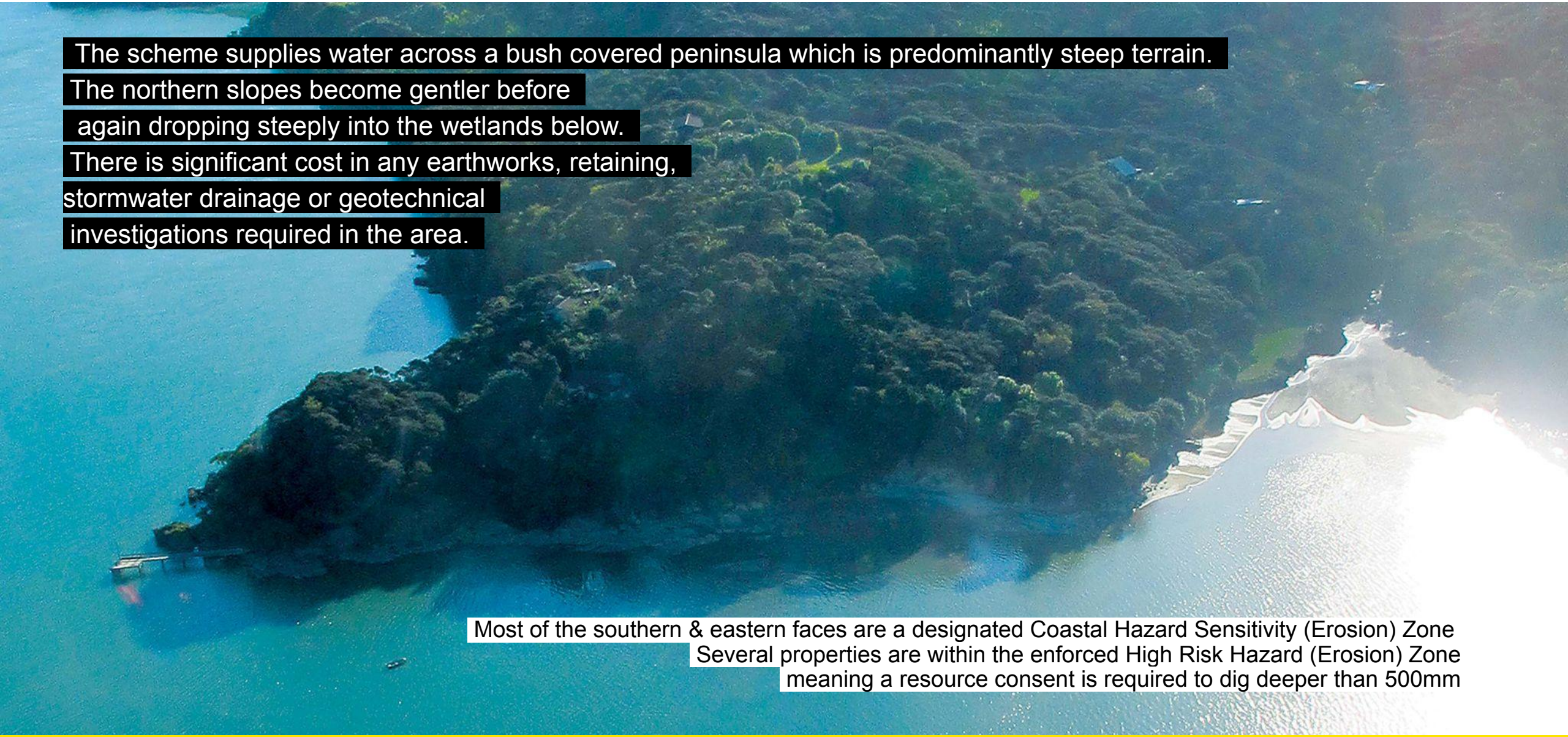
WDC 17.8.2018 : Onewhero & Te Akau Water Supply Options.

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.

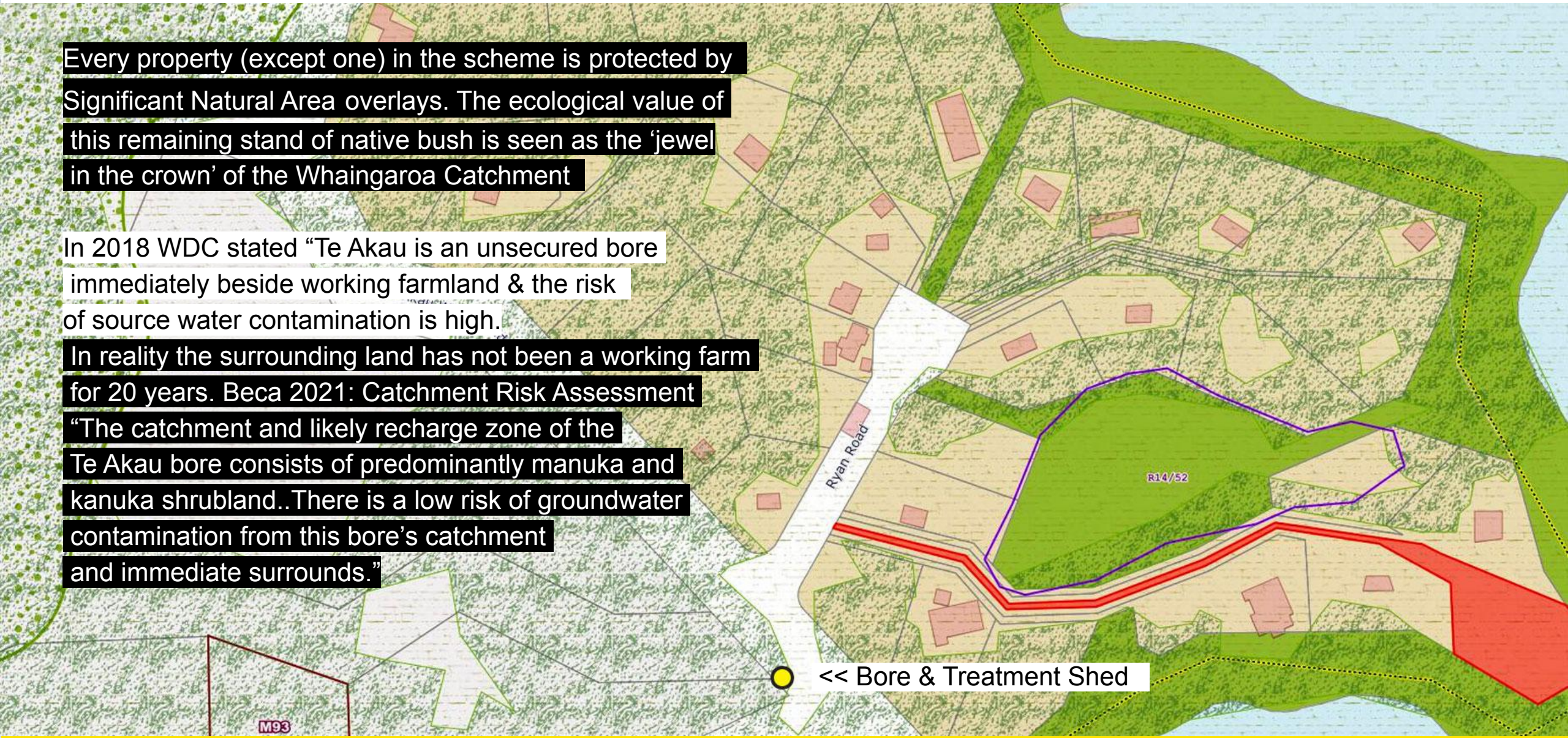
Most of the southern & eastern faces are a designated Coastal Hazard Sensitivity (Erosion) Zone
Several properties are within the enforced High Risk Hazard (Erosion) Zone
meaning a resource consent is required to dig deeper than 500mm

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 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.

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

Document Set ID: 3366451
Version: 1, Version Date: 04/03/2022

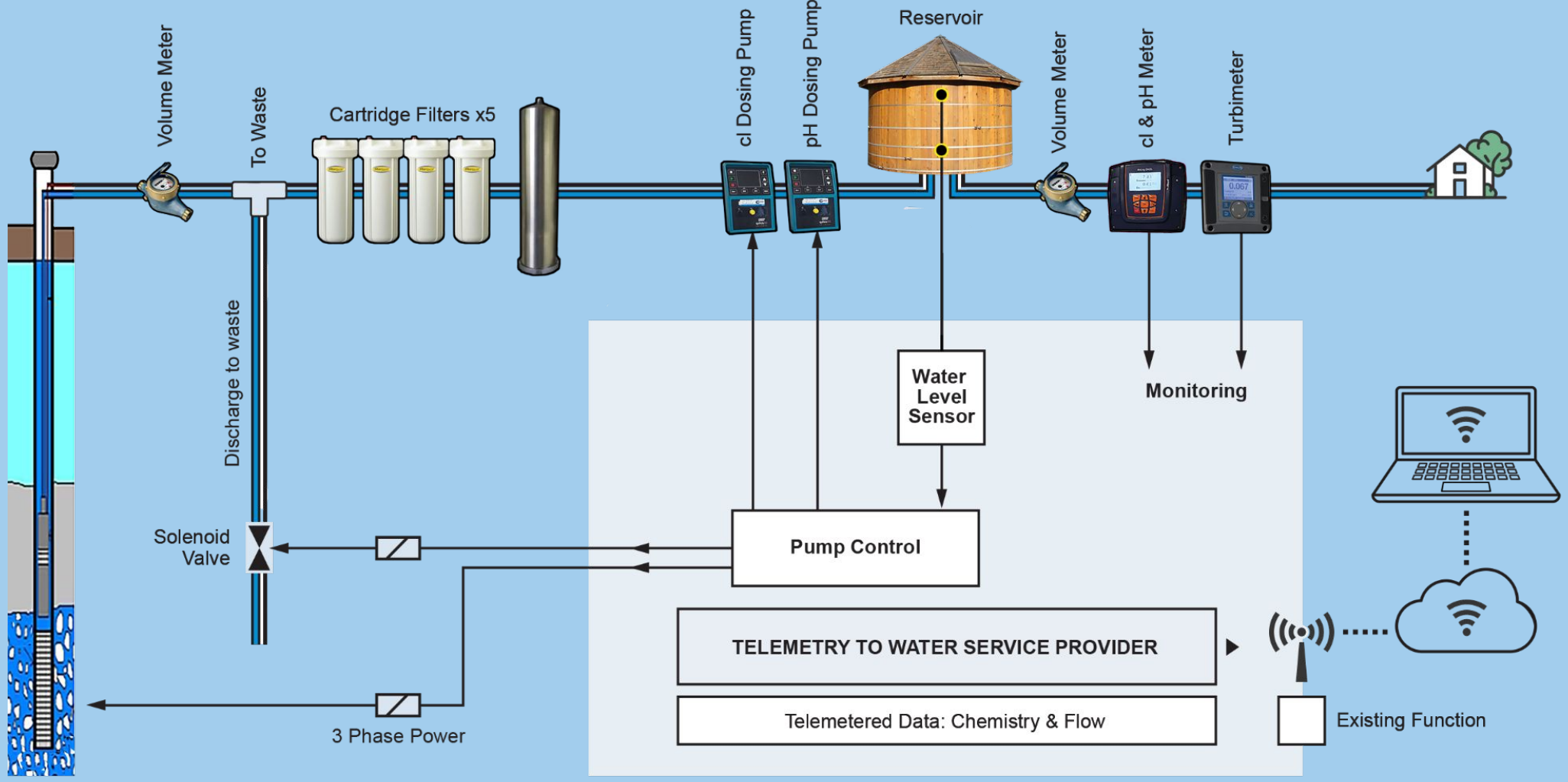
Components of the Te Akau South Water Supply:

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 <u>Treatment Process</u> – 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 125

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.

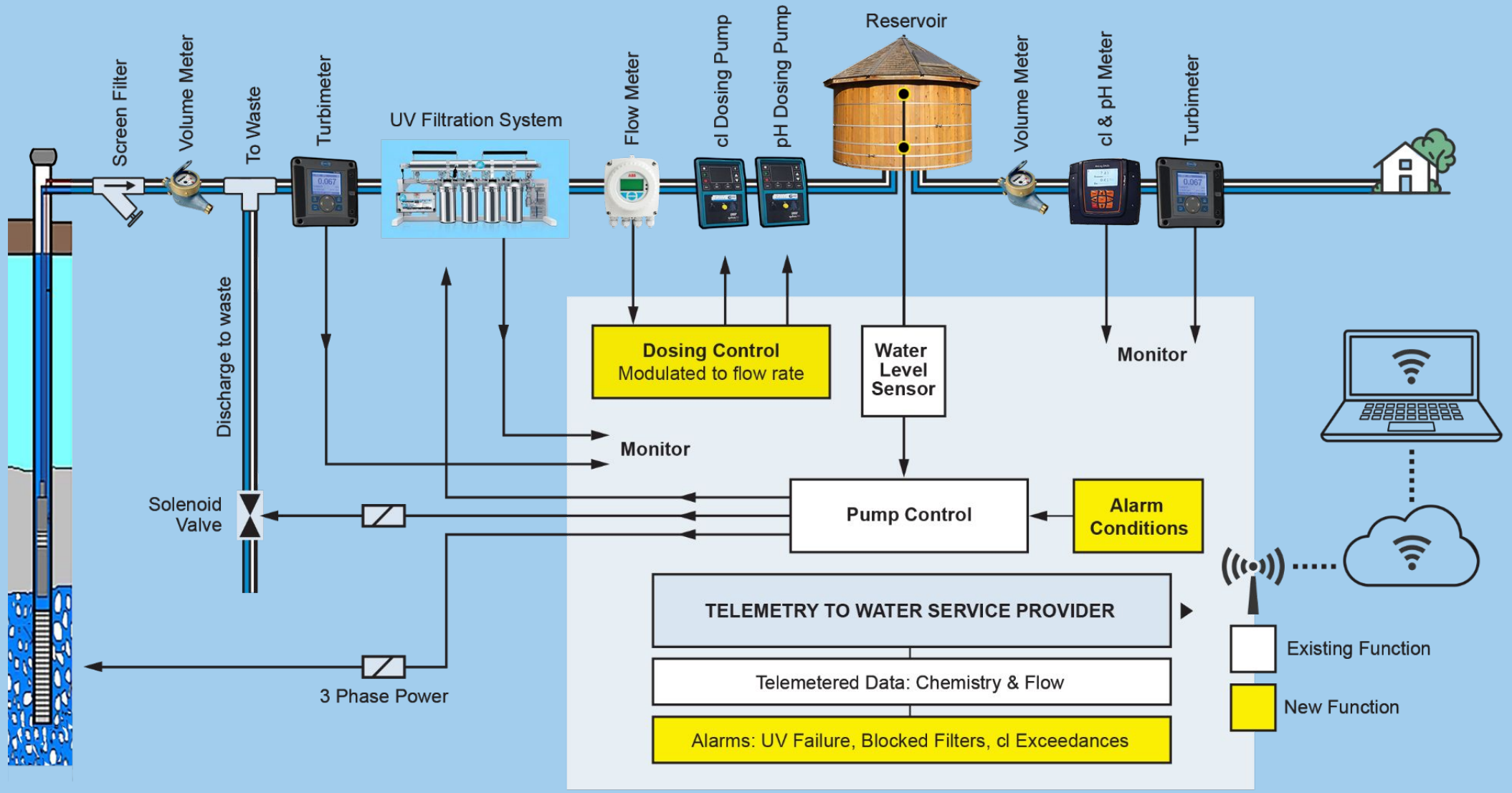
Treatment System Design: HCG Committee Brief

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.

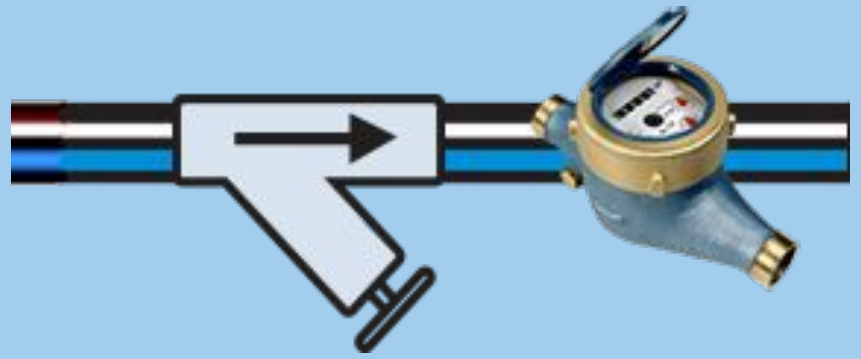
Treatment Design Option

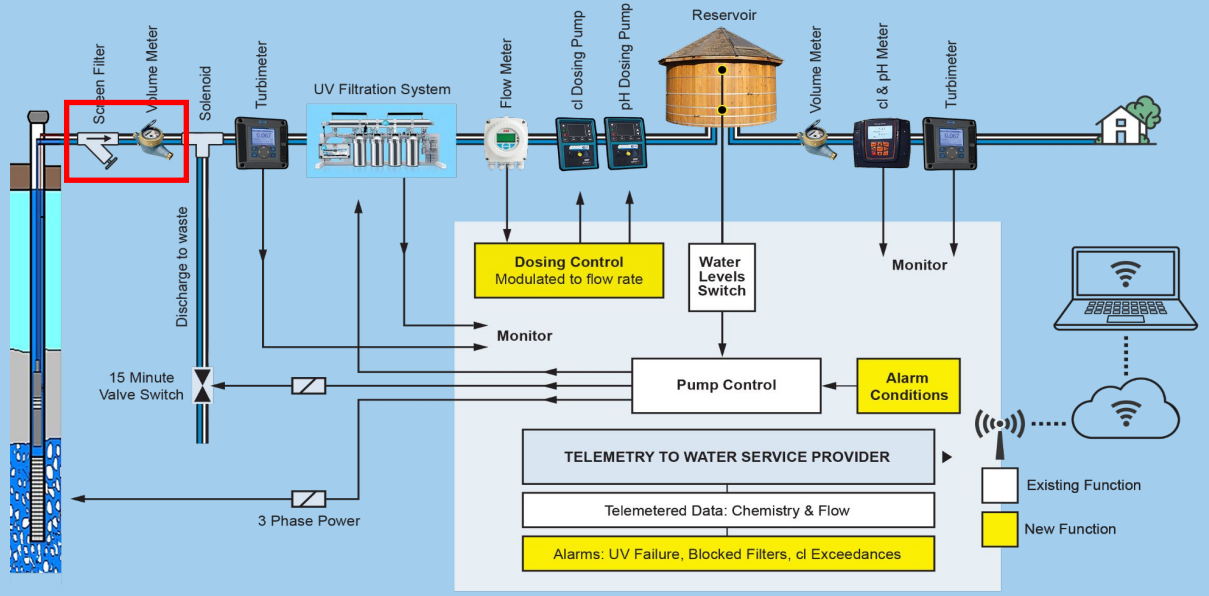
*This solution requires further investigation with suitably qualified parties to ensure it is fit for purpose



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.

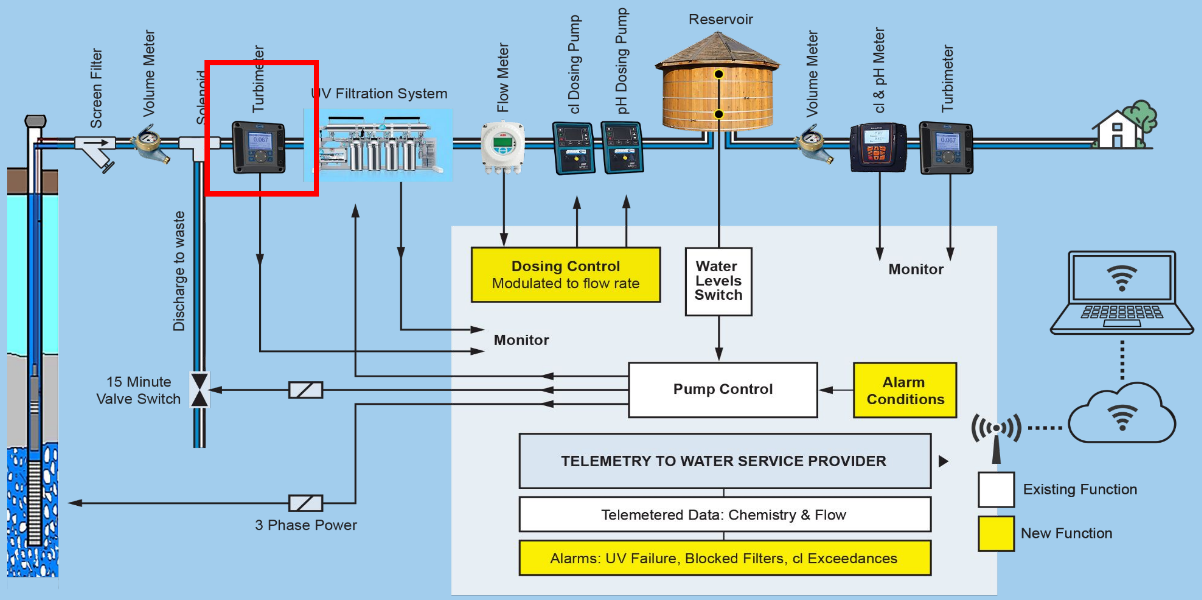
A simple Screen Filter would address this & cleaning the filter would become a light maintenance duty. The Screen Filter would also reduce the replacement times for other filters.

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.

This solution requires further exploration with suitably qualified parties to ensure it is fit for purpose

Monitoring the turbidity inflow

Turbidimeter



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

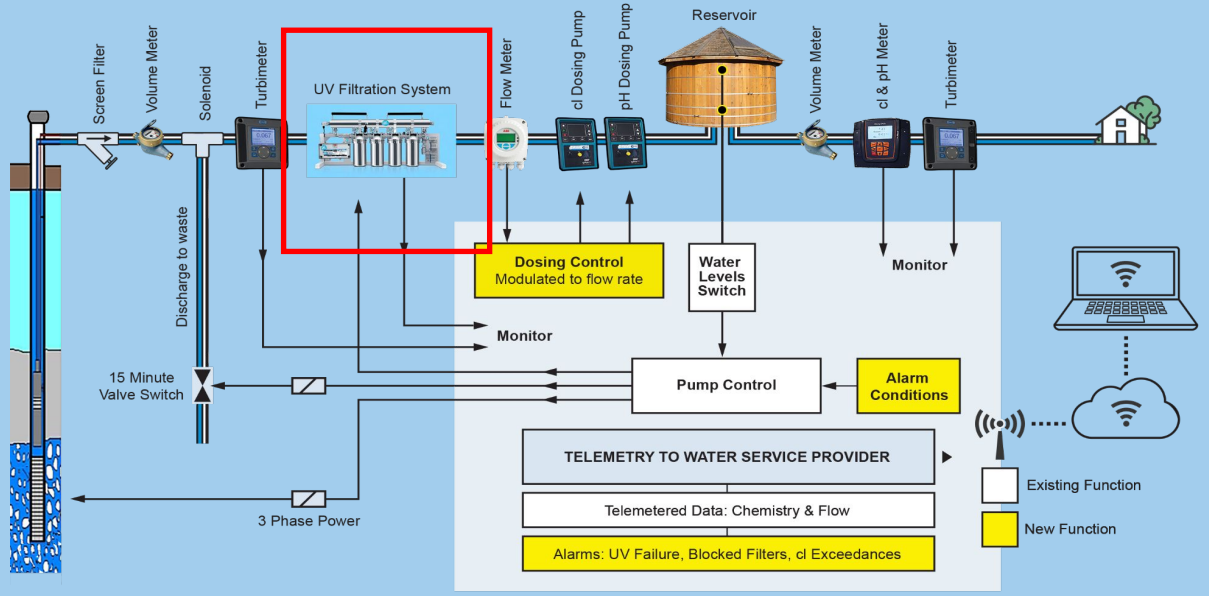
Source water turbidity must be measured after the point of abstraction and before treatment either continuously or daily <20 NTU at all times

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

This solution requires further exploration with suitably qualified parties to ensure it is fit for purpose

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).

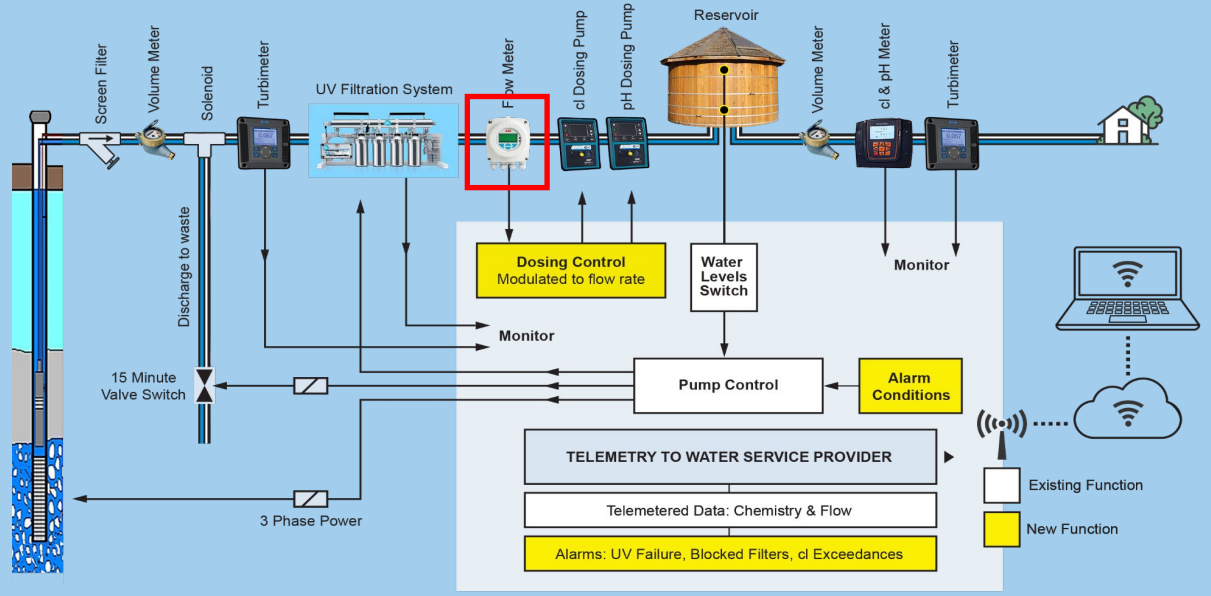
The filters have differential pressure meters as per the EN837.1 European standard and also comply with Taumata Arowai: Section 6.3

Te Akau South Water Supply

This solution requires further exploration with suitably qualified parties to ensure it is fit for purpose

Measuring treated water flow rate

Flow Rate Meter

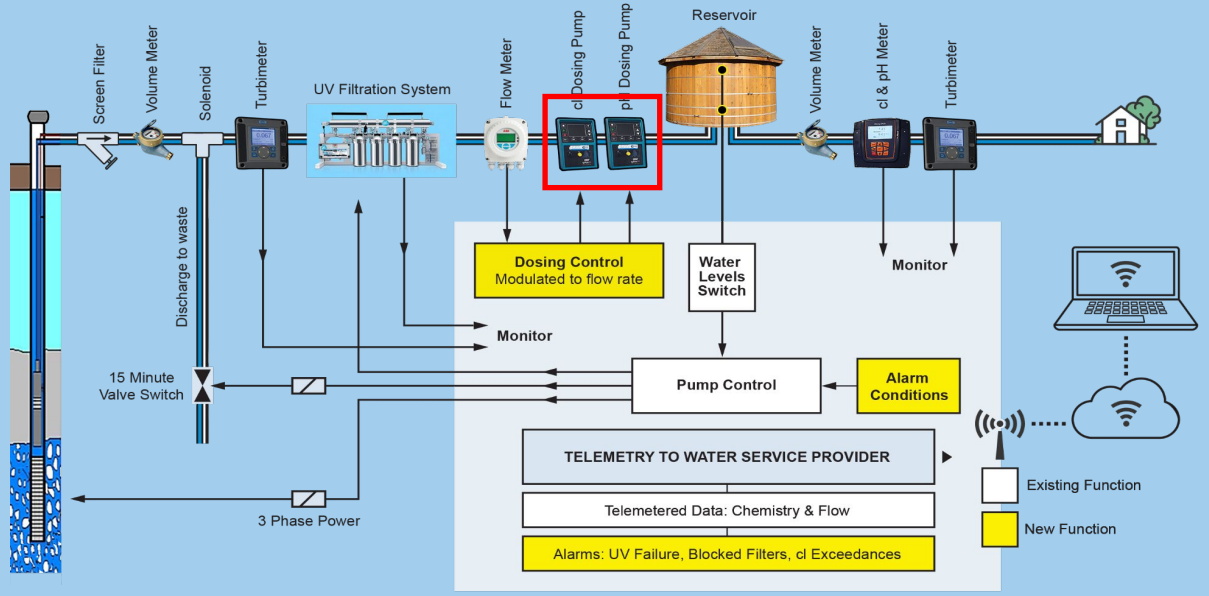


A Flow Rate Meter is currently installed on site & measures the flow rate in real-time displaying it in units of litres p/second including total volume.

This solution requires further exploration with suitably qualified parties to ensure it is fit for purpose

Chemical treatment

Cl & pH Dosing Pumps



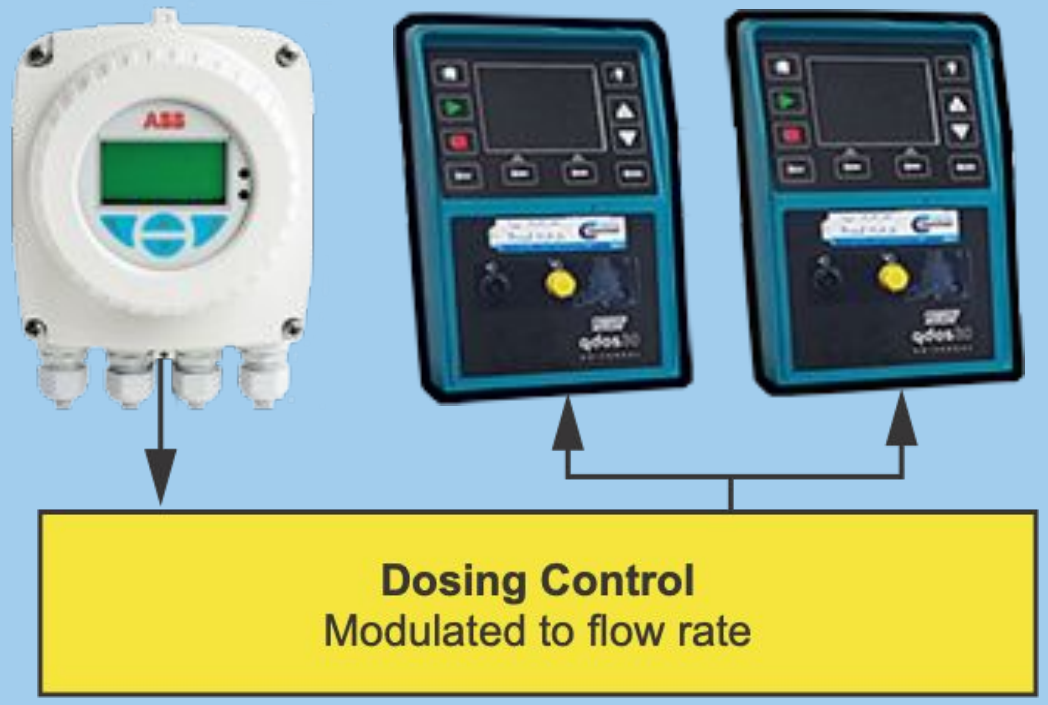
Previously installed were two qdos Dosing Pumps used to provide chlorine and pH correction recently removed from site. These devices use peristaltic pumps that deliver dosing with the flow rate control input manually set.

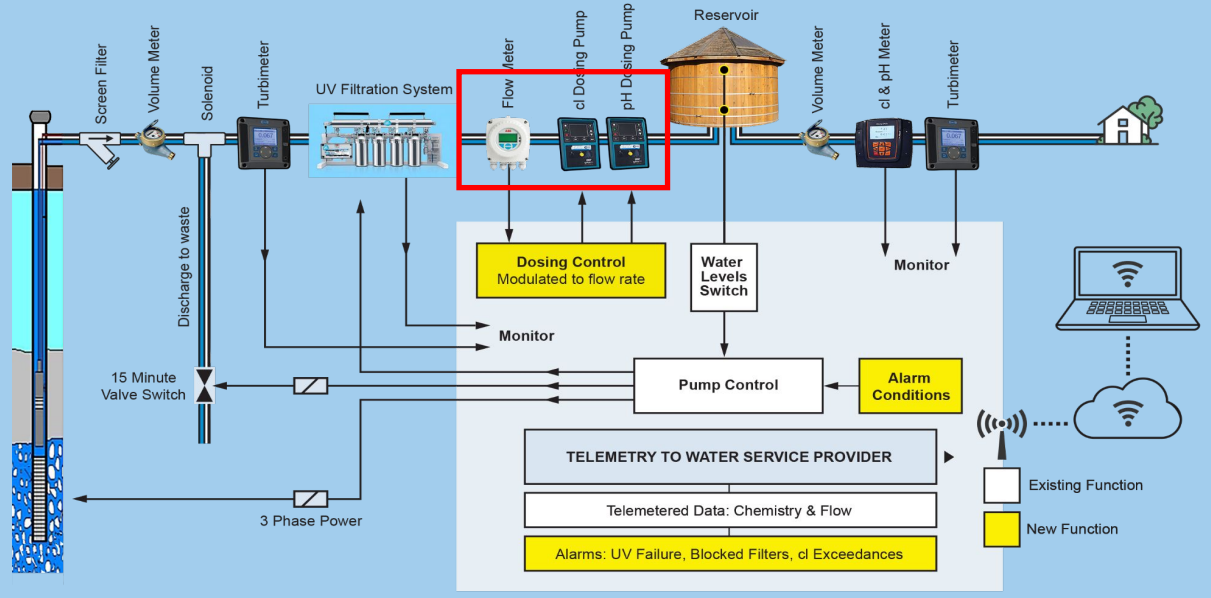
This solution requires further exploration with suitably qualified parties to ensure it is fit for purpose

Dosing Control System

Flow Rate Meter

Cl & pH Dosing Pumps





This is a local control function

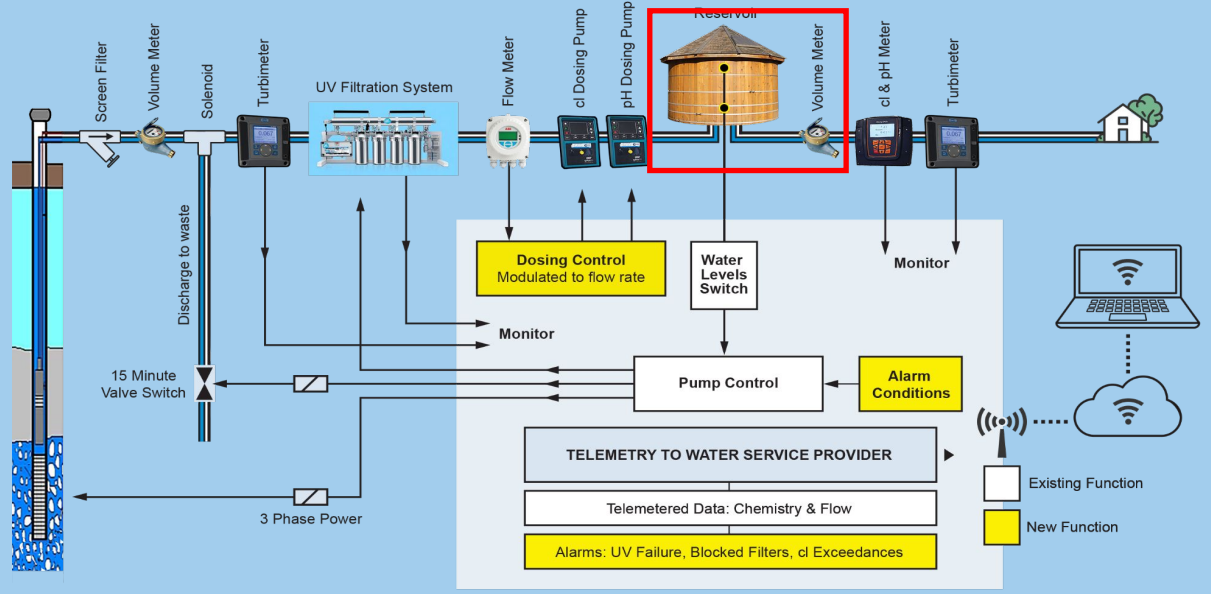
Dosing control can be achieved by using the Flow Rate Meter to control the previously installed Dosing Pumps. The correct dosing will be achieved, regardless of water flow, ensuring correct chemical balance at all times.

This solution requires further exploration with suitably qualified parties to ensure it is fit for purpose

Reservoir and Volume meter

Reservoir

Volume Meter



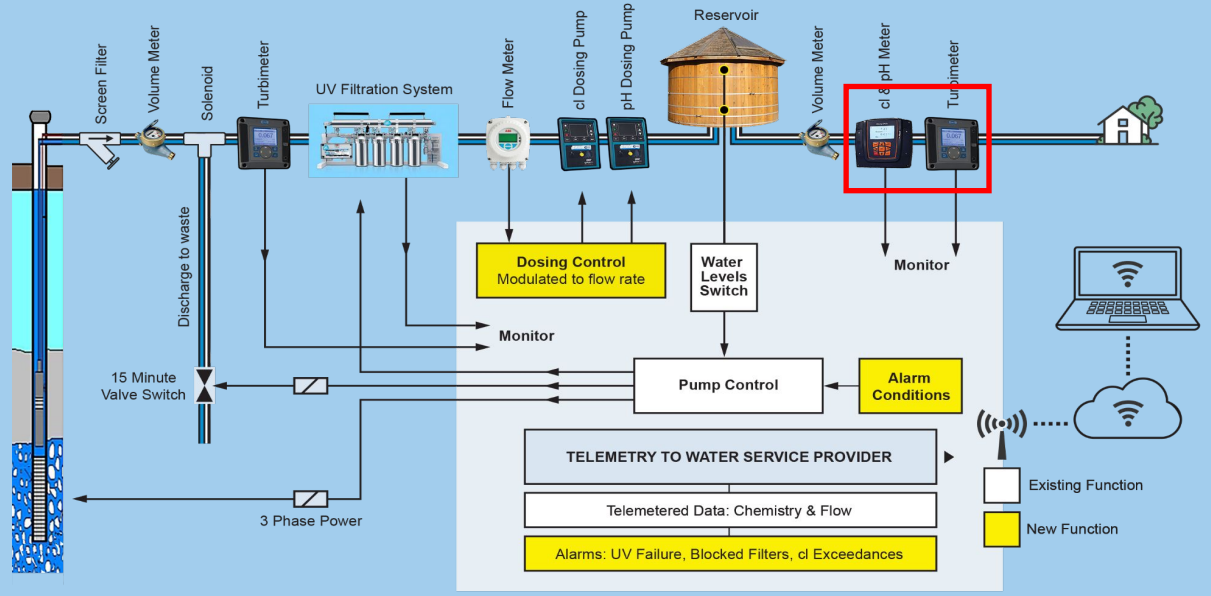
There is a Volume Meter next to the reservoir to monitor Community consumption.

This solution requires further exploration with suitably qualified parties to ensure it is fit for purpose

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.

This solution requires further exploration with suitably qualified parties to ensure it is fit for purpose

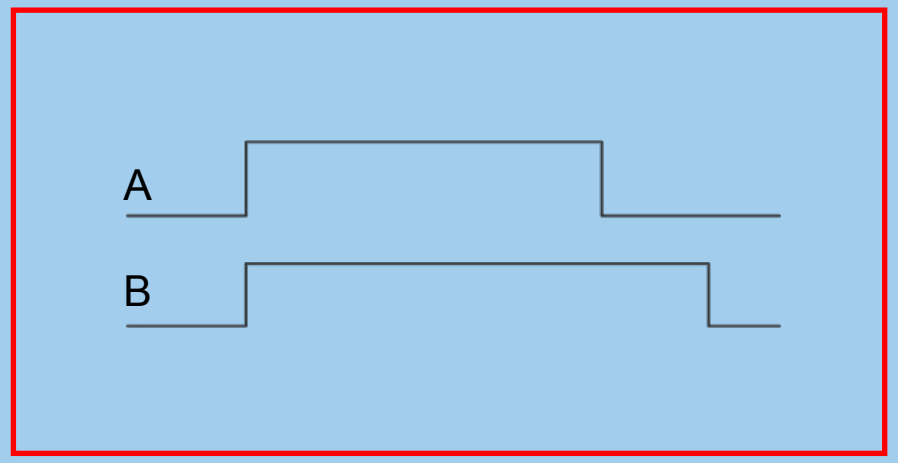
Document Set ID: 3365451
Version: 1, Version Date: 04/03/2022

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.



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.

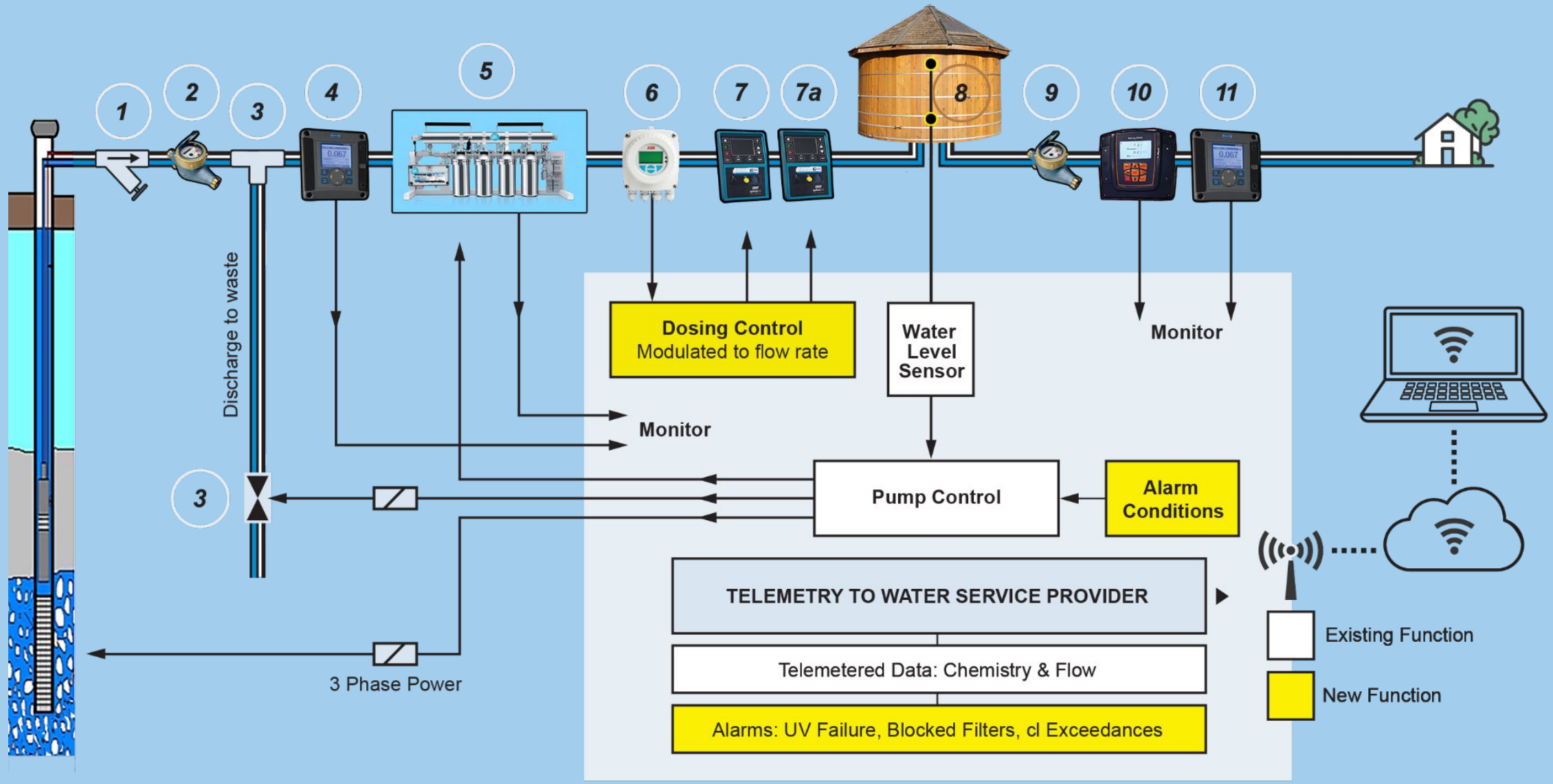
Currently the system telemeters data but there are no remote controls.

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

This solution requires further exploration with suitably qualified parties to ensure it is fit for purpose

Treatment Design Option

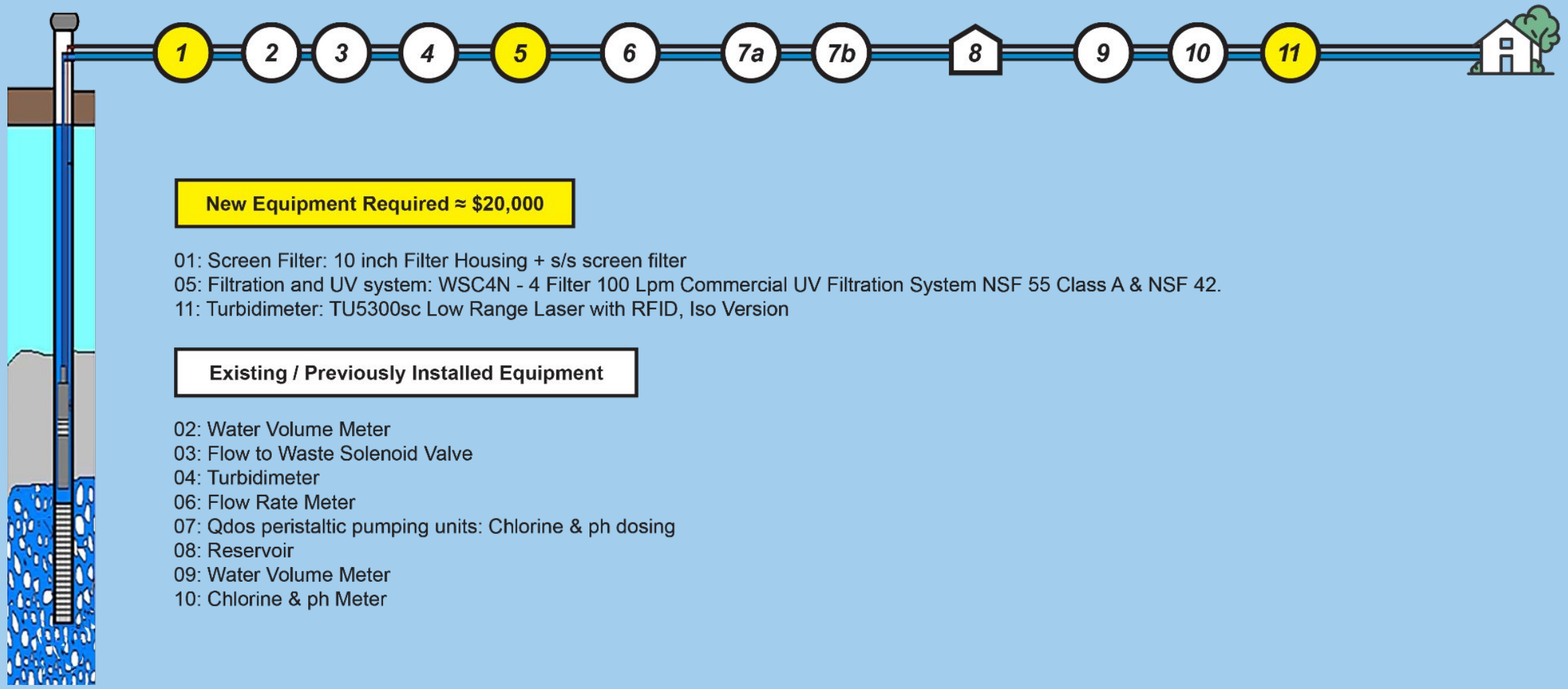
*Components numbered for the System Upgrade Estimate of plant required on the following page (15).



This solution requires further exploration with suitably qualified parties to ensure it is fit for purpose

Document Set ID: 8366451
Version: 1, Version Date: 04/03/2022

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



New Equipment Required ≈ $20,000

01: Screen Filter: 10 inch Filter Housing + s/s screen filter
05: Filtration and UV system: WSC4N - 4 Filter 100 Lpm Commercial UV Filtration System NSF 55 Class A & NSF 42.
11: Turbidimeter: TU5300sc Low Range Laser with RFID, Iso Version

Existing / Previously Installed Equipment

02: Water Volume Meter
03: Flow to Waste Solenoid Valve
04: Turbidimeter
06: Flow Rate Meter
07: Qdos peristaltic pumping units: Chlorine & ph dosing
08: Reservoir
09: Water Volume Meter
10: Chlorine & ph Meter

This solution requires further exploration with suitably qualified parties to ensure it is fit for purpose

End

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

January 2022

Document Set ID: 3366451
Version: 1, Version Date: 04/03/2022

MEETING MINUTES

Te Akau South Water Supply	**18 February 2022** 9:30 – 10:30 am

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

Summary of Meeting

Agenda Topic	**Discussion**
Last Meeting Review ***(Keith Martin)***	**Reviewed last meeting where the Te Akau South Community group presented information in relation the water supply for the Te Akau South Scheme. The residents were concerned WDC had formed a consensus that the Te Akau water supply would be disestablished, and residents issued with water tanks for the purposes of collecting rainwater. The HCG presented a PowerPoint highlighting an WTP upgrade option to reach compliance based on assumed suitable source water. Also a PowerPoint illustrating that providing water tanks to residents for rainwater collection was problematic given site access, SNA, Coastal Hazard & Extreme Fire Risk designations. Geotechnical engineering would also be extensive given the terrain & difficulty of retrofitting established properties with the tank(s) required. The HCG highlighted they felt this was a downgrade in the supply.** **Currently Council is tankering water to the community while issues encountered with the bore are investigated due to unexplained chlorate and bromate exceedances.** **Council raised the prospect of piping water across the harbour from Raglan as an option to explore.**

	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.
Waters Governance Board Report *(Keith Martin)*	**It is planned to deliver the business case to the WGB on 15 March. The BC is to include an option to continue with a bore as the raw water source and upgrade of the WTP to meet the new drinking water rules. The Te Akau South Community Board desire is to continue with a bore supply** **The aim of the business case is to seek recommendation that we can engage with the community on the options (continue with tankered supply, New bore and WTP, disestablish and provide rain water storage tanks to each connected supply or supply via a pipe laid across the harbour) and seek the communities views on the favored option, recommend that we commit to technical design and recommend that we seek sources of funding and that we understand that CAPEX and OPEX costs**
LGIOMA *(Keith Martin)*	**Discussed current LGIOMA request and sought the Te Akau South Community group rationale. HCG are seeking information relating to the results and procedures followed in the WSL bore investigations. They had been told at a community meeting 31 May 2021 that WDC/WSL would make this information freely available.** **Simon Jordan shared that for future health and safety it was important to identify the root cause of the issues encountered. The HCG's own investigations indicate the Chlorate & Bromate exceedances were caused by issues with water flow rate resulting in dosing anomalies. Mathew Telfar responded that WSL had also come to the same conclusion after initially suspecting raw material quality as a possible cause.** **HCGC to will consider with an abbreviated request taking into consideration the time constraint concerns of WDC. WDC will continue to process request unless we receive a request to stop from solicitor. WDC currently preparing time and cost estimate**
Current state of play. ***(Keith Martin and Anaru Wilson)***	**If bore water is continued as raw water source, the bore water will be retested, and new samples taken. Previous sampling will not make up the analysis as it was taken from an operational perspective rather than that of WTP design.** **Current costings and estimates based on as if new for the purposes of desk top costing. A more detailed costing will include any existing plant in the future should that plant be acceptable to reuse. Anaru Wilson provided a power point of potential new bore location and stock take of existing plant componentry including reference to age & photos of existing equipment. Future design may or may not incorporate existing plant. Some plant may be suitable for reuse, other pieces of plant whilst functional may not be acceptable from a holistic perspective when design takes into account district standardization, communication capability with systems and critical spares.**

	Anaru advised that he had supplied the original bore logs and had the costs of a new bore estimated at $48,000
Current Charging (Keith Martin/ Carole Nutt)	**Fixed charges can only be charged to SUP. We have 18 properties contributing to fixed charges (repays capital costs) and 26 water meters on 25 properties who are charged based on volumetric use (this pays for treatment and O&M). Those in the community without consented dwellings but with a water meter are not paying fixed charges.**
Treatment option and General Discussion (All)	**Options to consider: long term tankering as currently occurring, pipe under the harbour, bore supply, private rain tanks. We need to consider all options in the long list, some will be quickly discounted. Anaru to provide contact details of a Raglan based professional with local knowledge who has recently undertaken a project in Wellington piping water under the harbour there. The HCG has investigated this in order to help those working on the high-level BC to expedite the time required on this study including costs.** **We have until 2024 until we move to Entity B. Our future approach will have this in mind as we continue to provide safe drinking water to the Te Akau Community** **Te Akau is currently a closed scheme. There are a few more properties that may want to connect in future. Council informed the HCG that new connections from the 33 properties covered by the scheme are now restricted and new connections will not presently be allowed to connect on application.** **Depending on Waters Governance Board direction, it may need to go to Council especially if capital costs are required.** **Council will need to engage with the wider community to ensure they are informed and that individual views heard. This will include Hapu and Iwi engagement.**

Actions

What	Who	When	Status
Source age and operational condition of current infrastructure components where recorded separately and share with Community Group	**Watercare**	**31 January 2022**	**Outstanding**

Parameters of the options analysis shared with Community Group ahead of being presented in a formal report prior to costing.	**WDC**	**As developed**	**Open**
Engagement with wider community	**WDC**	**At such time, relevant information available**	**Open**
Minutes from 18 Janauary to be made publicly available through Council website.	**WDC**	**31 January 2022**	**Completed**
Meeting to be set up regularly to review progress	**WDC/ HCG**	**18 February 2022**	**Open**

The Te Akau South Water Supply

Additive Options to Treatment System Upgrade:
Existing & recently removed plant (2021)

Te Akau South plant upgrade:

Original Lutra High Level workings: 14.12.2021 report to Waters Governance Board

Plant Upgrade with Online Monitoring: • Coarse Pre-filter; • Cartridge Filtration system; • Sodium hypochlorite dosing system; • Raw water UVT meter; • SCADA HMI; • Historian; • Telemetry; • Full automatic control via PLC	**Plant Upgrade with Online Monitoring:** • 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
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
• No end user sampling point that remotely measures FAC and pH daily • No reservoir installed • No on-site storage - Disallows guarantee of	• No end user sampling point that remotely measures FAC and pH daily • No measurement of free available chlorine (FAC) 30 min after treatment

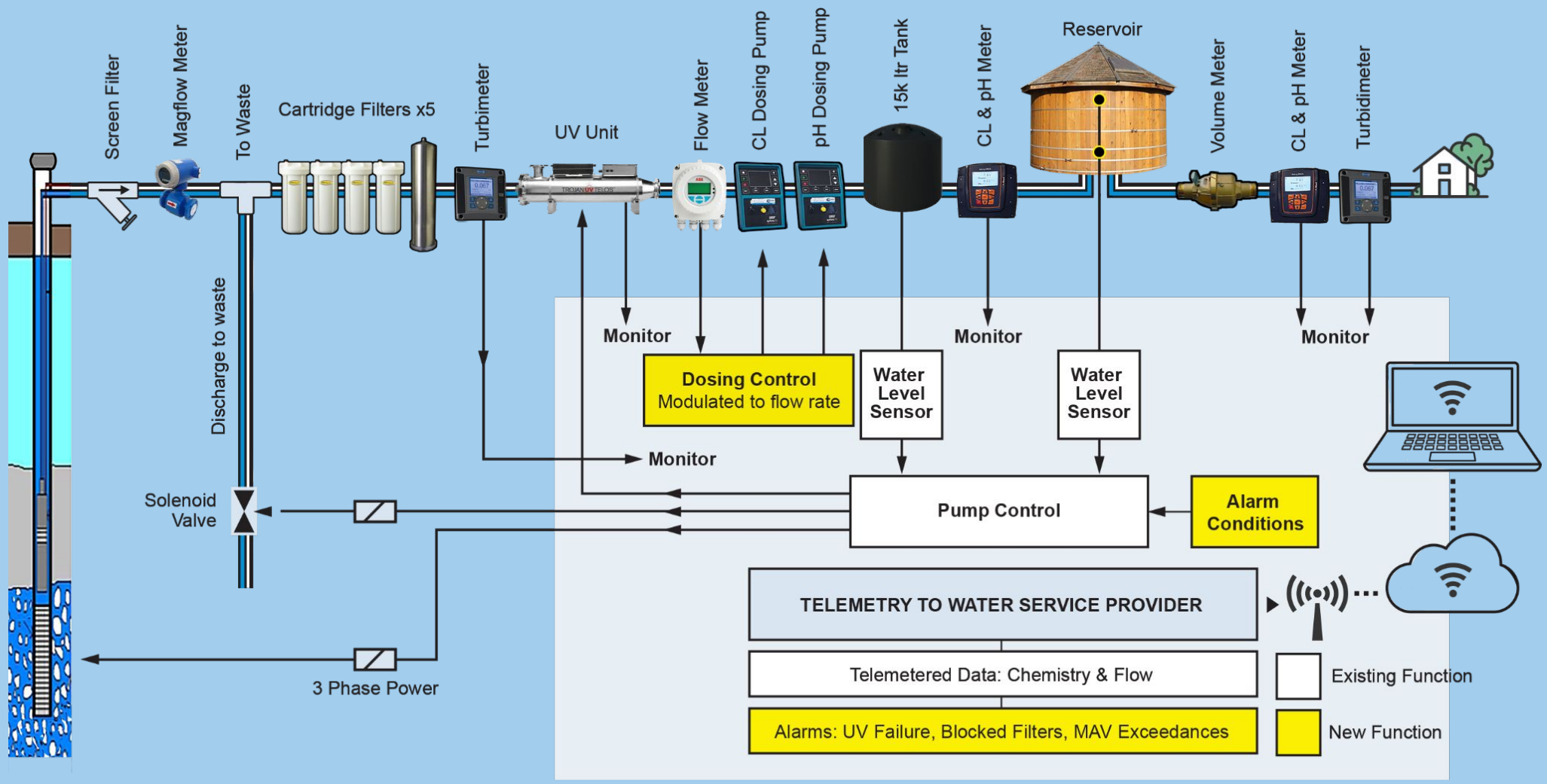
- Sodium Hypochlorite: Utilise previous Qdos Pump #1 ?
- Hydrochloric Acid: Utilise previous Qdos Pump #2 ?
- SCADA HMI & Historian: WSL Existing System ?

- New Bore estimate $48k

- Line of sight available to Distribution System endpoint
- FAC sampling utilising existing tank prior to reservoir?

Compliant Treatment System

*Design sketch showing existing 15000 litre tank utilised for FAC monitoring prior to pumping to Reservoir



New Equipment Required

Turbidimeter
UV Unit
CL & pH Meter
S/S Screen Filter
Magflow Meter

Current: New 2021

Turbidimeter
Flow Meter
CL & pH Meter
15000 ltr Tank

Current: Older than 2021

Solenoid Valve (2020)
Reservoir
Volume Meter
Cartridge Filter Housings

Removed 2021: New 2019

CL Dosing Pump
pH Dosing Pump

Plant: Currently On-site

Te Akau South Treatment Shed

- Treatment shed is fit for purpose with plumbing & wiring installed.

★ Currently <u>in</u> use

Plant: Currently On-site

Te Akau South Treatment System

- Hach 1720E Turbidimeter: **New 2021**
- Hach SC200 Meter: **New 2021**

★ Currently <u>in</u> use.

Plant: Currently On-site

Te Akau South Treatment System

- ProMinent diaLog DACb CL & pH Meter: **New 2021**

★ Currently <u>in</u> use.

Plant: Currently On-site

Te Akau South Transfer Tank

- 15,000 litre holding tank: **New 2021**
- Tanker unloads into this tank prior to water being pumped to the Reservoir.

★ Currently <u>in</u> use.

Plant: Currently On-site

Te Akau South Reservoir

- 45,000 litre timber storage reservoir.
- Water level sensors fitted.
- Mechanical insert meter.
- Constructed 1993.

★ Currently <u>in</u> use

Plant: Currently On-site

Te Akau South Treatment System

- Grundfos Pump: **New 2021**

★ Currently <u>in</u> use.

Plant: Currently On-site

Te Akau South Treatment System

- ABB Flow Meter: **New 2021**

★ Currently in use.

Plant: Currently On-site

Te Akau South Treatment System

- Solenoid valve (to waste): **New 2020**
- 4x Filterpure jumbo cartridge filter housings fitted with pressure gauges. These housed 2x20 micron & 2x5 micron cartridge filters.
- 1x Stainless Filter Housing (1 micron). Pressure gauge installed post filtration*

❑ Currently <u>not</u> in use.

Plant: Currently On-site

Te Akau South Treatment System

- * Stainless 1 micron housing: *photo #**A***
- This was taken off-site in April 2021 & then replaced: *photo #**B***

❑ Currently <u>not</u> in use.

HORONGARARA COMMUNITY GROUP (HCG) COMMITTEE

Plant: Recently removed from site

Te Akau South Treatment System

- 2x Qdos 30 (Universal) dosing pumps
- These were installed in 2019 & taken off-site in 2021.

❑ Currently <u>not</u> in use:

Endpoint monitoring

Te Akau South Water Supply Distribution Network

Distribution System End Point →

Approx. 300m from Reservoir Meters

Te Akau South Water Supply

HORONGARARA COMMUNITY GROUP (HCG) COMMITTEE

Plant: Currently On-site

Te Akau South Distribution System

- Distribution Endpoint
- Outside 561 Te Akau Wharf Road

★ Currently in use: Manual Sampling.

Plant: Currently On-site

Te Akau South Treatment System

- QTECH Datran Components onsite.
- ★ Telemetry Control: Currently <u>in</u> use

Plant: Currently On-site

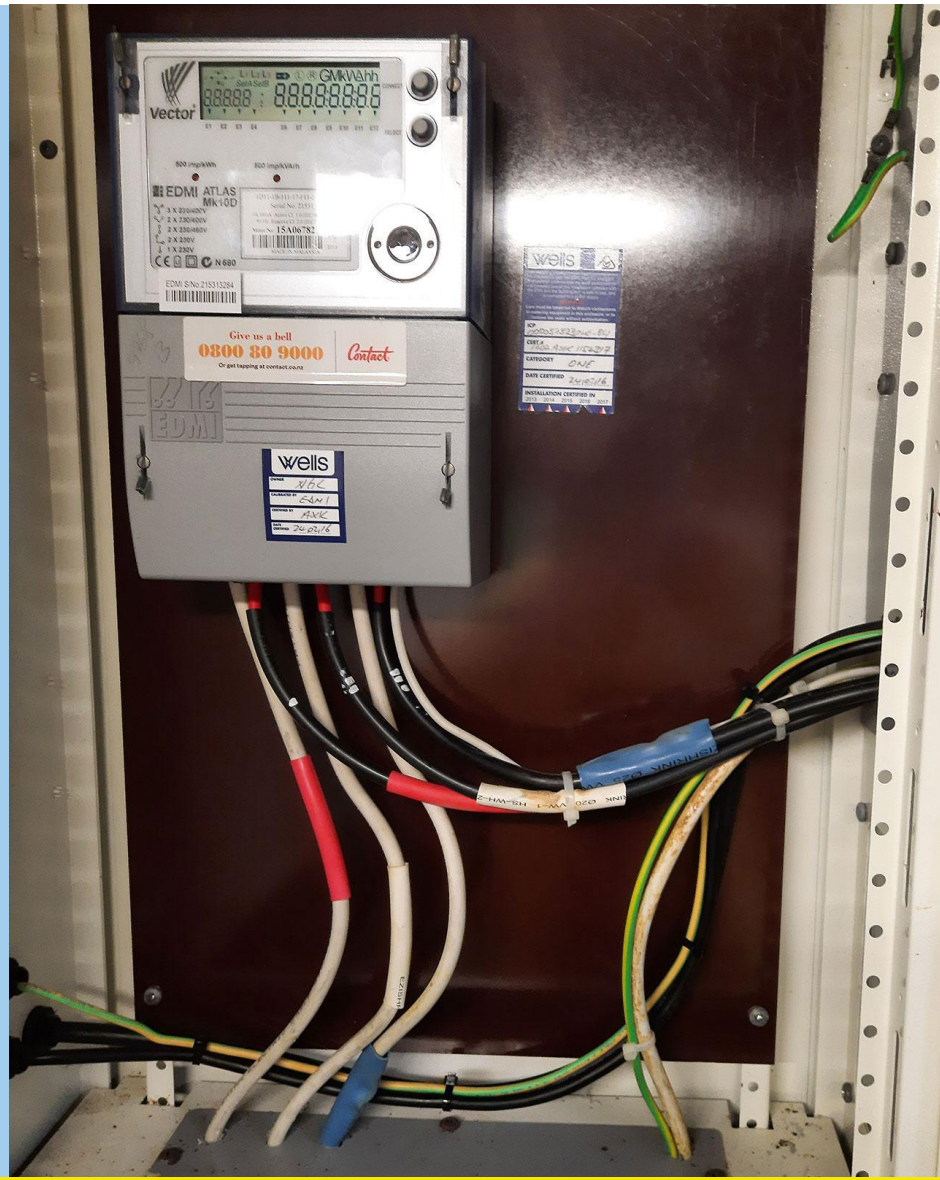
Te Akau South Treatment System

- The 3 phase unit, required to power the submersible pump, was removed from site in 2021.

❑ 3 Phase unit: Currently <u>not</u> in use: Whereabouts unknown.

- Existing onsite power unit (pictured).

★ Power unit: Currently <u>in</u> use.



Plant: Currently On-site

Te Akau South Treatment System

- Hach CL17 Chlorine Analyser.

❑ Currently <u>not</u> in use.

Plant: Removed from site

Te Akau South Bore Supply

- Submersible Pump
- This was taken off-site on July 27, 2021 for investigation.
- WSL contractors pledged to inform HCG of the result within a few days however we have not been contacted since.

❑ Currently <u>not</u> in use: Whereabouts unknown.

End

MIKE ORMSBY
WELL DRILLING & MAINTENANCE

20th January, 2022

Re: TE AKAU SOUTH BORE WELL

To whom it may concern

When I was approached in May 2021, by the Community Group from Te Akau South, I was the Owner & Managing Director of Barham United Welldrillers Ltd. I had owned and operated Barham United for 47 years specialising in drilling and maintaining water bores (making up 95% of our work). In late 2021 I sold Barham United to Dirk & Jeannie Hermsen (+family) and they are continuing with the business model. My involvement is currently in an advisory capacity as they pick up where I left off.

Te Akau South Bore Well: Timeline

Barham United first drilled the well in 1993 and from our records I provide the following.

Drilled:	December 1993
Bore hole dia:	100mm
Bore hole depth:	125m
Cased to:	78m
Pump set at:	60m
Flow when drilled at 70m	5m3/hr

It appears the only service work carried out subsequently was in December 1998 when the submersible pump and rising main were lifted and an alkathene rising main was added.

One attempt only was made to withdraw the submersible pump for maintenance in May 2018 by contractors from Pump & Electrical Ltd (P&E). The attempt was made by hand & abandoned when the pump met resistance and P&E decided to not risk breaking it off down the well.
Barham was asked to provide the water supplier with a plan & estimate to lift the pump and carry out basic service & maintenance of the bore well. Using a light crane we were confident there would be low risk of losing the pump down the well & to ensure continuance of supply we confirmed the reservoir was within range of the pump & hose from a water tanker at the time.

We didn't hear anything further about this service proposal presented on 4th April, 2018. We became involved again when Anaru Wilson, Chairman of the Community Group at Te Akau, contacted us in May 2021.

At this point we were informed that the WDC had abruptly closed down the Bore Supply in April and were currently tankering water into the Community. This was surprising as the supply had proven to be trouble free in all the time when the Community Group co-managed it with the WDC previously.

The "Te Akau Water Treatment Plant – Chlorate and Bromate Non-Compliances and Operational Limitations Update" report was shared with us for an overview. The report stated that "The bore has been poorly designed and at present due to the angle of the bore, the bore pumps are unable to be removed for maintenance". We found this to be highly questionable.

- I visited the site on 19th May and while the concrete bore head cover had slumped this did not affect the bore hole itself. I saw no obvious reason why the pump couldn't be lifted. Asked if Barham would be available to conduct an independent assessment, I let Anaru know that we would need a key to the shed so we could power the pump to check the flow & water condition first. We would also need to bring a light crane onsite to lift the pump to inspect.

We were next contacted by Anaru requesting that I oversee the P&E (contracted by Watercare) attempt to lift the pump. I contacted Nick at P&E to make sure they put bore cleaner down the well (to help loosen the pump) and Nick confirmed 3 phase power was available onsite so we could run the pump first to also help free it further.

- I revisited the site on 27th July to work with P&E staff to lift the pump. We found that the 3 phase power unit had since been removed so we couldn't run the pump first. We then proceeded to lift the pump without issue using P&E's hiab crane.
- We found the pump inlet to be very badly blocked by strips of electrical tape that had been used to secure the power cables to the riser main. This would have made achieving any constant water flow rates near impossible.
- There was a build up of a sharp crystalised black material on the stainless-steel wire rope and it is obvious that these were the black particles found in the water meter. At the time I suspected it could have been manganese however the water sampling result appeared to rule this out.
- It didn't appear to be on the steel well casing and the particles were breaking off the stainless steel wire safety rope and floating in the water. The particles didn't resemble flakes of bore casing as they were the wrong colour & structure.
- I would suggest there is a mineral in the water that built up on itself over a long period of time. It adhered to the wire rope and then broke off in small pieces & floated free.
- The alkathene rising main, stainless steel safety line & all the electrical cable appeared to be in good working condition but the top approx. 2m of the well casing is badly corroded. This requires the repair which is to be expected for a 30 year old casing in a coastal environment.
- The pump was taken away by P&E to be inspected but they didn't inform me of the results as indicated.

Barham provided the Community Group with a report of the investigation which outlined best practice regarding the next steps of the investigation on 2nd August.

The report concluded it was essential to completely flush the bore with an airline & pump clean for at least 24hours before any water sampling or further camera work was undertaken. This report with priced recommendations was forwarded to Watercare and the WDC. We didn't hear back until a further P&E report was sent back with mention of a cctv investigation along with water sampling results from Davies in late November. We were not contacted to collaborate regarding this further investigation as had been promised to the Community Group by WDC / Watercare in May.

Observations

In line with best practice I find it hard to understand why the well was not flushed clean & surged to try and clean the well casing prior to sampling. The water supply should have been fully redeveloped to a clean flow first. I also don't see any value in putting a camera in a bore hole when the water supply has not been fully developed to clean. A water analysis was completed but the sample logs haven't been provided with this to establish the testing protocol. I note the bottom remark on the analysis confirms the sample was still slightly discoloured with some sediment present. This indicates proper preparation of the sampled flow wasn't undertaken.

- As a result I question the accuracy of the latest round of water sampling. The alkalinity, iron, sodium, turbidity & free carbon dioxide counts could all be attributed to free particles in the unflushed well. The total undissolved solids figure reinforces this perspective.
- I also suggest the latest cctv camera work will also be inconclusive without proper preparation.
- My opinion is that if the initial 2018 service & maintenance recommendations were undertaken at the time the subsequent problems with the supply could have been avoided.
- Unfortunately while investigations have been commissioned into the bore further qualified work by experienced professionals is required to ascertain the true state of the bore.

Steps now required for a professional investigation of the Bore.

1. The new tank in front of the bore well needs to be shifted to provide access.
2. The top 2m of the well casing needs to be repaired.
3. A drilling rig needs to be set up over the well.
4. The well needs to be checked for all depths.
5. The well needs to be
    A. Flushed clean to a depth of 125m.
    B. The water supply developed.
    C. The well needs to be chemically treated with bore cleaning agent.
    D. The inside of the casing needs to be cleaned with a surge block.
    E. Redevelop the water supply to a clear & clean flow using an air compressor.
    F. Repeat the above if necessary.
    G. Install & set submersible pumping equipment to enable pumping for 3-4 days to test water flow & take a number of samples.

- At this point the bore could be accurately evaluated to establish the state of the bore & the quality of its water supply.

Recommendation

I note that work has been undertaken & cost incurred to investigate the state of the bore well to date. Unfortunately this hasn't been undertaken to a thorough degree and the conclusions therefore unreliable. Due to the current positioning of the 15,000 litre holding tank access to the bore well is difficult & considerable work and expense is now required to undertake a conclusive investigation into reinstating the existing bore supply.

In light of this my recommendation is for the water supplier to now direct their focus & expenditure toward drilling a new bore well, servicing and maintaining it in the future. Ideally this would be 20-30m to the north of the existing well & I note that from the WDC / Watercare Infrastructure planning maps that there is area available for this.

Photos attached.

Sincerely,

Mike Ormsby
Welldrilling & Maintenance Consultant.

Mikeormsby2020@gmail.com
P. 027.4555974

Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

Open

To	**Waters Governance Board**
Report title	**Water Filling Stations**

1. Purpose of the report
Te Take moo te puurongo

To seek approval from the Waters Governance Board to create three permanent filling stations across the Waikato District in line with the Taumata Arowai draft standards.

2. Executive summary
Whakaraapopototanga matua

A requirement in the draft new water standards is to eliminate water hydrant use except in delivering three waters and fire fighting services to the community. This supports the commitment to ensure all communities have access to safe drinking water every day. This requirement will prohibit the use of standpipes across the Waikato District and the recommended alternative is for the use of permanent filling stations.

3. Staff recommendations
Tuutohu-aa-kaimahi

That the Waters Governance Board:

a. **approves the establishment of three permanent filling stations across the Waikato District in line with the Taumata Arowai draft standards utilising the existing 2021/22 budget in the Long Term Plan of $468,000 (code 1WA11230); and**

b. **assessment of additional sites including possible relocation of the temporary filling station to another location is carried out where funding allows for.**

4. Background
Koorero whaimaarama

Refer to attached Business Case prepared by Watercare.

5. Discussion and analysis
Taataritanga me ngaa tohutohu

Refer to attached Business Case prepared by Watercare.

5.1 Options
Ngaa koowhiringa

Refer to attached Business Case prepared by Watercare that discussions mobile filling stations versus permanent filling stations and why standpipes will not be an acceptable option going forward.

5.2 Financial considerations
Whaiwhakaaro puutea

The project is budgeted in the 2021-31 Long Term Plan and allowed for the setup of three permanent filling stations including telemetry equipment association with access, recording usage at an estimated cost of $468,000.

5.3 Legal considerations
Whaiwhakaaro-aa-ture

Under draft new drinking water standards, Taumata Aroawi proposes to eliminate water hydrant use except in delivering three waters and fire fighting services to the community. This requirement will prohibit the current use of standpipes across the Waikato District and therefore creates a need for an alternative method for the likes of water carriers to access water.

5.4 Strategy and policy considerations
Whaiwhakaaro whakamaaherehere kaupapa here

The report and recommendations are consistent with the Council's requirement to provide safe drinking water and remove the risk of contamination.

The establishment of three permanent water filling stations is consistent planned works in the 2021-31 Long Term Plan.

5.5 Maaori and cultural considerations
Whaiwhakaaro Maaori me oona tikanga

Iwi and hapu will be included in the district wide communications noting that the change is driven by legislative requirements.

5.6 Climate response and resilience considerations
Whaiwhakaaro-aa-taiao

Restricting the use of water hydrants to only those permitted under proposed new standards and installing a digital access and recording system for billing should help to reduce theft and encourage responsible use of water.

5.7 Risks
Tuuraru

The project looks to remove risk of containimation from the incorrect use of standpipes from water hydrants.

6. Significance and engagement assessment
Aromatawai paahekoheko

6.1 Significance
Te Hiranga

The decisions and matters of this report are assessed as of moderate significance to the small number of businesses who legally access water from hydrants. It will likely have a moderate to high significance to any properties located in the vicinity of the proposed filling station sites.

6.2 Engagement
Te Whakatuutakitaki

Engagement with current permitted water users and those around possible locations for appropriateness of site will be required.

Highest level of engagement	**Inform** ✓	**Consult** ✓	**Involve** ✓	**Collaborate** ☐	**Empower** ☐
Tick the appropriate box/boxes and specify what it involves by providing a brief explanation of the	Site considerations and engagement likely to include safety, vehicle movements, noise, other users of the site (e.g. weekend markets in Ngaruawahia), accessibility to permitted users business locations and so forth.				

tools which will be used to engage (refer to the project engagement plan if applicable).	In addition to affected parties, industry and district-wide communication on the subject will be carried out to inform everyone of the changes.

State below which external stakeholders have been or will be engaged with:

Planned	In Progress	Complete	
☐	✓	☐	Internal
☐	☐	☐	Community Boards/Community Committees
✓	☐	☐	Waikato-Tainui/Local iwi and hapuu
✓	☐	☐	Affected Communities
☐	✓	☐	Affected Businesses
☐	☐	☐	Other (Please Specify)

7. Next steps
Ahu whakamua

Identifying appropriate locations for the filling stations through stakeholder engagement and site factors along with procurement of equipment.

8. Confirmation of statutory compliance
Te Whakatuuturutanga aa-ture

As required by the Local Government Act 2002, staff confirm the following:

The report fits with Council's role and the Waters Governance Board's Terms of Reference and Delegations.	Confirmed
The report contains sufficient information about all reasonably practicable options identified and assessed in terms of their advantages and disadvantages (*Section 5.1)*.	Confirmed
Staff assessment of the level of significance of the issues in the report after consideration of the Council's Significance and Engagement Policy (*Section 6.1)*.	Moderate

The report contains adequate consideration of the views and preferences of affected and interested persons taking account of any proposed or previous community engagement and assessed level of significance (*Section 6.2)*.	In Progress
The report considers impact on Maaori (*Section 5.5*)	Not applicable
The report and recommendations are consistent with Council's plans and policies (*Section 5.4)*.	Confirmed
The report and recommendations comply with Council's legal duties and responsibilities (*Section 5.3)*.	Confirmed

9. Attachments
Ngaa taapirihanga

Attachment 1 – Watercare Waikato – Permanent Filling Stations

Date:	15 March 2022
Report Author:	Carole Nutt Waters Contract Relationship Manager
Authorised by:	Gavin Ion Chief Executive

Watercare Waikato

Permanent Filling Stations

Date: 1/03/2022
Version: 0.1
Status: Final

Prepared by: Mathew Telfer

Document Purpose:

- To request approval for the creation of three permanent filling stations across the Waikato District in line with the Taumata Arowai draft standards.

Raised by

Name	Functional area	Facility/ asset/ Location	Driver	Priority	Business owner rep supporting need
Mathew Telfer	Watercare	WDC District	Compliance	Medium	WDC

Distributed to: Water Governance Board, Keith Martin, Carole Nutt

1 Recommendation

This Business case outlines the scope for the installation of three Permanent filling stations and further assessment of suitable sites for two additional permanent filling stations. This is due to the unknown costs associated with site preparation; all areas excluding Horotui will be included in the site identified. If funds are available, they will be allocated for the additional two sites.

Due to the short timeframe to align with the new Taumata Arowai requirements, it is recommended that $486,000 (exclusive of GST) be approved for the proposed work.

2 Introduction

Taumata Arowai is the new water services regulator for Aotearoa, New Zealand. Committed to ensuring all communities have access to safe drinking water every day. A requirement in the draft standard is to eliminate water hydrant use except in delivering three waters and fire fighting services to the community. This requirement will prohibit the use of standpipes across the Waikato District.

The alternative is for the use of permanent filling stations.

Rule Number	Requirement	Assurance/ Monitoring	Compliance period
D3.6	Access to a water network through use of a standpipe is not permitted except by Fire and Emergency New Zealand, other emergency services, the water supplier or authorised contractors to the water supplier where it is reasonably necessary to access the network for the operation of the drinking water supply.	Assurance	1 year

The reason for the change and challenges with hydrant use include:

- Risk of contamination
- Manual data entry and difficulty in billing tanker operators
- Hydrant use by non-registered Watercare tanker operators
- Incorrect use and damage to hydrants

3 Background

Across the Waikato district, access to water via hydrants is through an approval process managed by Watercare Services. There are currently seven designated filling sites (Appendix 2) across the district, including Pokeno, which has a mobile water filling station. The locations are specified to ensure sufficient water pressure to fill tankers without impacting customers.

There are several considerations associated with permanent filling stations to ensure they are appropriately located to deliver the services to the customers. These include sufficient pressure in the network, safe parking for multiple trucks, noise control, reducing any impact of residents or businesses within the area of the filling station.

An alternative to permanent filling stations is to continue to utilise the mobile filling station(s) as an interim measure if there is not sufficient time or budget available to cover the entire district. This does not mitigate a number of the issues detailed above.

Engagement with the industry on the change and the new filling station locations will be required to ensure a smooth transition and compliance in the future. It will be included in industry and district-wide communication with the support of the WDC communications team.

4 Discussion

The assessment of the high volume sites based on information provided by current tanker operators (Appendix 1) was used to determine the areas requiring permanent filling stations. The figures used are based on total flow reporting on individual standpipes spread by a percentage provided by the tanker operator. This means we do not have a clear understanding of the water take from each site. The permanent filling stations will resolve this issues.

The proposal is to install three budgeted permanent filling stations and include two additional sites assessment which can be included in the current budget if funds are available. The existing mobile station will be relocated from Pokeno to Raglan if funding allows for additional permanent filling stations within the proposed budget.

The current designated filling sites at Horotiu and Taupiri will no longer operate, and the volume is expected to redirect to Ngaruawahia or Hamilton.

The proposed locations are:

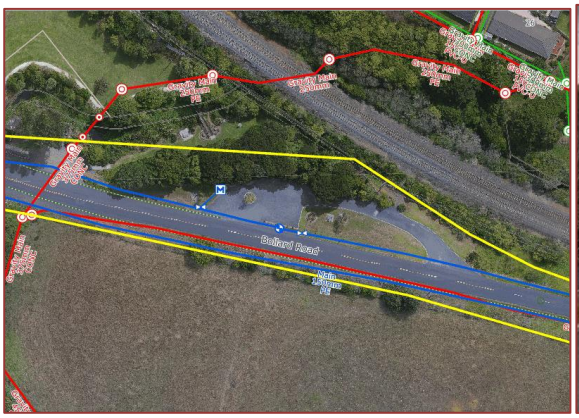
1. Ngaruawahia - Permanent
2. Huntly - Permanent
3. Pokeno/Tuakau - Permanent

- To be included in the site assessment
  Raglan (the alternative is the relocation of existing mobile unit)
  Te Kauwhata

The system is proposed to be connected to the Watercare card approval and billing system initially to achieve Taumata Arowai timeframes but with the option to support a provider change in the future.

Due to the complexity of identifying appropriate locations for the filling stations, the WDC roading Alliance has been approached to help identify suitable sites. The actual installation of the filling stations is to a standard design once the locations are confirmed.

Examples of the preferred site that meets the requirements for a permanent filling station have been identified in Tuakau and Ngaruawahia, subject to further assessment. These sites include a suitably sized water main, off-road parking, and no private dwellings within the immediate area.



The existing site at Ngaruawahia would require additional work to ensure the site is suitable for a permanent filling station, including paving the area and working with the community about other users of the site e.g. a weekend market.

5 Operational philosophy

The permanent tanker filling stations will ensure the safety of our water supply is maintained and can only be accessed by operators contracted with Waikato District with the use of a swipe key. This system has the following features and benefits:

- Powered by permanent supply and battery backup system
- Controlled fill rate to avoid water hammer/hydraulic shock
- Usage data is tracked in real-time
- Accurate billing of water use

6 Procurement strategy

The site preparation and construction of permanent stations will go through the engagement of existing service providers for direct commission.

7 Budget allocation

$486k is budgeted in 2021/22 for three tanker filling stations, including telemetry; under budget 1WA11230.

Permanent filling station estimated costs	Cost ($)
Procurement and installation of permanent filling station	180,000
Location identification, approval and improvements	306,000
Total	486,000

8 Appendix

1. Assessment of high use sites.

Company Name *(removed for privacy reasons)*	Ngaruawahia	Huntly	Raglan	Te Kauwhata	Horotiu	Taupiri
(Has five standpipes)	17%	17%	17%	17%	17%	17%
	25%	25%	25%	0%	25%	0%
	0%	100%	0%	0%	0%	0%
	12%	12%	0%	52%	12%	12%
	20%	20%	10%	10%	20%	20%
	35%	30%	35%	0%	0%	0%
(testing fire services/pressure)	0%	0%	0%	0%	0%	0%
	10%	0%	90%	0%	0%	0%
	10%	20%	10%	20%	20%	20%
	0%	0%	0%	100%	0%	0%
	20%	20%	20%	0%	20%	20%
	17%	17%	17%	17%	17%	17%
	17%	17%	17%	17%	17%	17%
	20%	20%	10%	10%	20%	20%
	17%	17%	17%	17%	17%	17%
	0%	100%	0%	0%	0%	0%
	0%	0%	0%	100%	0%	0%
	0%	100%	0%	0%	0%	0%
	10%	10%	40%	0%	30%	10%
	230%	525%	308%	360%	215%	170%

Company Name *(removed for privacy reasons)*	Ngaruawahia (Consumption m3)	Huntly (Consumption m3)	Raglan (Consumption m3)	Te Kauwhata (Consumption m3)	Horotiu (Consumption m3)	Taupiri (Consumption m3)	Total Take m3
	49	49	49	49	49	49	294
	49	49	49	49	49	49	296
	11	11	11	11	11	11	68
	113	113	113	113	113	113	676
	14	14	14	14	14	14	86
	484	484	484	0	484	0	1,934
	0	9	0	0	0	0	9
	32	32	0	139	32	32	268
	8	8	4	4	8	8	40
	101	87	101	0	0	0	289
	0	0	0	0	0	0	4
	258	0	2319	0	0	0	2,577
	0	0	0	0	0	0	0
	0	0	0	11	0	0	11
	723	723	723	0	723	723	3,615
	0	0	0	0	0	0	0
	0	0	0	0	0	0	0
	99	99	50	50	99	99	497
	17	17	17	17	17	17	100
	0	313	0	0	0	0	313
	0	0	0	646	0	0	646
	0	4	0	0	0	0	4
	6	6	24	0	18	6	61
	0	2	0	0	2	0	3
	0	0	0	0	0	0	0
Total	1964	2020	3958	1103	1619	1122	11791

*Figures not accurate per site because they represent the total use from standpipes per operator spread based on a percentage figure in the top table. The percetnance is provided by the operators.

2. Current Hydrant take Location maps

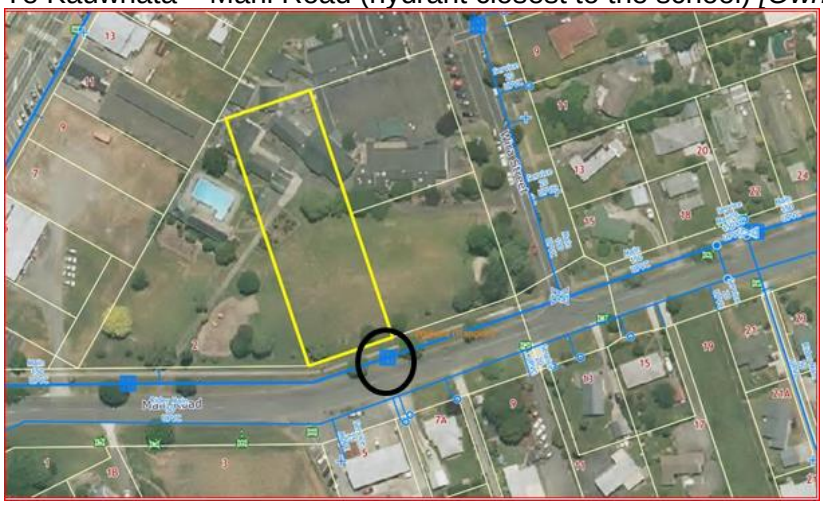
Horotiu – Horotiu Road *[Owner –Privately owned]*

Huntly – George Drive *[Owner –Privately owned]*

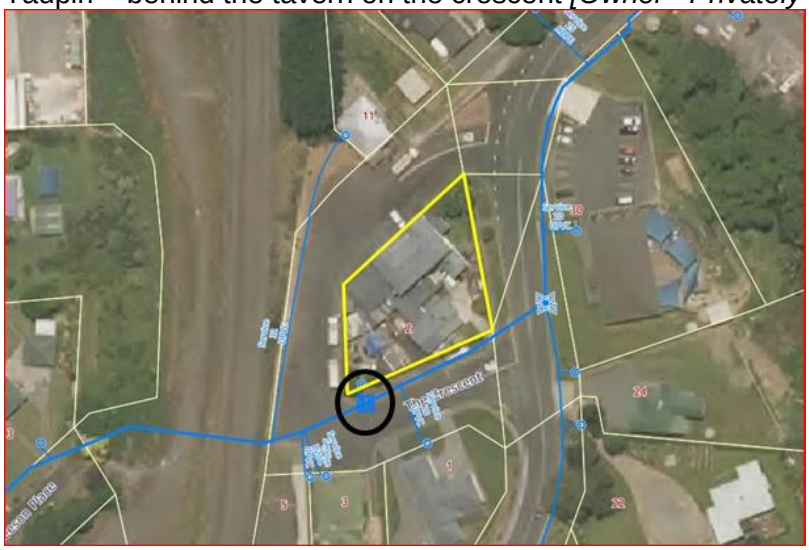
Ngaruawahia – corner of Durham St and Eyre St *[Owner – Road]*

Raglan — 18a/b East Street *[Owner – Department of Conservation- Cemetery]*

Te Kauwhata – Mahi Road (hydrant closest to the school) *[Owner –Ministry of Education]*



Taupiri – behind the tavern on the crescent *[Owner –Privately owned]*



Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

Open

To	Water Governance Board
Report title	Huntly Wastewater Treatment Plant Upgrade

1. Purpose of the report
Te Take moo te puurongo

To inform the Water Governance Board that the Huntly wastewater treatment plant (WWTP) is non-compliant in consented discharge limits for ammoniacal nitrogen. The purpose of the report is to advise the Waters Governance Board of the options available to bring the WWTP into regulatory compliance.

2. Executive summary
Whakaraapopototanga matua

The current resource consent for the Huntly WWTP expires in 2029. The WWTP is achieving consented discharge limits for pH, total phosphorus, Total Nitrogen (TN), cBOD5, Total Suspended Solids (TSS), and E-coli; however it was non-compliant for the ammoniacal nitrogen 7 out of 12 months in 2020/21. This increases non-compliance from 1 out of 12 months in the previous year.

Waikato Regional Council (WRC) has issued Waikato District Council a Formal Warning in line with the WRC infrastructure teams compliance and enforcement strategy.

To meet compliance, the plants process flow can amended to resolve non-compliant consented discharge limits for ammoniacal nitrogen. Watercare have recommended temporarily taking 2-3 aerators offline, undertake another pond survey to understand DO distribution and assess whether this improves nitrification processes in the ponds and implementation of a Moving Bed Biofilm Reactor (MBBR) bolt-on side stream to provide additional nitrification capacity at the plant which has unbudgeted Capex implications of $1 million.

Beyond resource consent compliance, the Huntly WWTP has significant future stresses. The Sleepyhead development has been through the Environmental Court has been awarded Ohinewai operative approval within the District Plan. The approval states that development beyond the initial industrial stage must be serviced for three waters, and it be available prior to the wider development.

A significant plant upgrade, being a Bardenpho Activated Sludge with MBR and UV, is included in the current Long Term Plan (LTP) in the 2026-2028 financial years to meet growth and comply with likely new consent conditions. The current Huntly WWTP consent expires in 2029, and the upgrade is designed with the Sleepyhead and a proposed Kianga Ora development in mind.

As the Sleepyhead development timing does not align itself to the funding for future upgrade in the LTP. The Board would need to seek Councils approval to bring forward the LTP budget from the 2026 -2028 financial years to 2023-2025 if Council was to deliver on an upgrade to the Huntly WWTP that was ready in time to meet the Sleepyhead Development and to meet the current requirements (and potential new requirements) of the resource consent. Sleepyhead have indicated they would like to be ready by 2024.

Council will work with WRC to determine WRC's position around compliance and timing for Council to bring forward the funding in the LTP and deliver the Huntly WWTP upgrade earlier.

Funding for the for the WWTP upgrade will be by the way of debt incurred by Council through the LTP and by contributions from the Sleepyhead negotiated through a Development Agreement.

3. Staff recommendations
Tuutohu-aa-kaimahi

That the Waters Governance Board:

a. **Recommends that Council continue consultation and engagement with Iwi in relation to the Huntly wastewater treatment plant upgrade and determine what kaitiakitanga and environmental expectations are required to be meet as part of the plant upgrade**

b. **notes that within Watercare's Huntly Wastewater Treatment Plant Compliance Upgrade report, toxicity in the influent wastewater may be inhibiting nitrification in ponds with the most likely sources for toxicity being the landfill leachate or septage that Huntly wastewater treatment plant receives.**

c. **Approves the recommendation that the following influent sources should be tested for toxicity:**

- **Raw influent**
- **Landfill leachate**
- **Septage pond outlet**

d. **Recommends that if toxicity tests indicate higher strength parameters than expected, that the Huntly wastewater treatment plant proposed Bardenpho Activated Sludge with Membrane Bioreactor and Ultraviolet is reviewed to ensure that the proposed plant can treat both the effects of toxicity and the new load and flows received from developmental growth to maintain treatment parameters to within likely new resource consent limit.**

e. **Notes that a Moving Bed Biofilm Reactor solution has been identified as a short-term solution being able to provide the necessary treatment and that supply and installation is estimated at $1 million. No funding solution is provided.**

f. **Recommends that Council does not continue exploring the opportunity to add an Moving Bed Biofilm Reactor upgrade of the Huntly wastewater treatment plant as proposed by Watercare as the impact of the Sleepyhead Development needs to be incorporated into the wastewater treatment plants's design and compliance future.**

g. **Recommends that Council explores the opportunity to bring forward a funding solution for the plant upgrade identified as Bardenpho Activated Sludge with Membrane Bioreactor and Ultraviolet.**

h. **Recommends entering commercial discussions with Sleepyhead through an Agreement to enable Sleepyhead to contribute to a share of the plants cost based on the plants treatment capacity and to explore the opportunity to bring the allocated funding within the Long Term Plan forward.**

i. **Recommends that Council liaise with Waikato Regional Council about the long-term solution for the plant and its timing in respect to resource consent compliance.**

4. Background
Koorero whaimaarama

The Huntly WWTP is achieving consented discharge limits for pH, total phosphorus, Total Nitrogen (TN), cBOD5, Total Suspended Solids (TSS), and E-coli; however it was non-compliant for the ammoniacal nitrogen 7 out of 12 months in 2020/21 compared with non-compliance of 1 out of 12 months in the previous year.

Waikato Regional Council has issued Waikato District Council a Formal Warning in line with the WRC infrastructure teams compliance and enforcement strategy.

With the Operative Ohinewai Zone approved within the District Plan and Sleepyhead's development authorised to continue, Council and the Board now have the requirement to consider how this development is incorporated to councils plans and the infrastructure required to support it.

5. Discussion and analysis
Taataritanga me ngaa tohutohu

Ensuring kaitiakitanga and environmental outcomes are key decision-making considerations for Board and Council. Iwi consultation has formed part of the Environments Court consultation to achieve Sleepyheads outcome. One very specific (amongst many) condition is that 3 waters MUST be available prior to development. Water was a key issue for the environmental Court. As part of their decision, Initial industrial development in Factory Stages F1 and F2 can have onsite wastewater however all development must avoid not being connected to a public reticulated wastewater network and plant must be able to accommodate the development, be consented and comply with all conditions. IWI/Hapu have trusted the Environmental Court in that Councils Infrastructure will deliver on kaitiakitanga.

Iwi/Hapu have not yet been made aware of the Huntly WWTP non-conformance through formal liaison. With Te Ture Whaimana oTe Awa o Waikato being at the forefront of the conversation, the Board and Council needs to ensure that Iwi and Hapu are maintained and that they are at the forefront of the conversation and development plans going forward.

Watercare has undertaken a review of the current WWTP performance, including looking at pond profiles for DO, pH, TAN, and NO3-N and a review of the pond retention time (HRT).

It found that:

- High DO concentrations were observed at both upper and mid-depths in pond 1. Aerobic conditions were also maintained at the lowest depth.
- Power supply to the current plant is limited and any changes to the plant need to live within the existing supply envelope. Any new development would upgrade the power supply as part of any rebuild program.
- To deliver power required by any new plant as part of an upgrade to the existing plant, 2-3 mechanical aerators could be taken out of service without detriment to treatment performance. The energy the aerators consumed could then be provided to other future processes and services onsite.

- For the existing WWTP to be able to meet resource consent conditions, further treatment may be required. A bespoke MBBR for nitrification is suggested so it can operate within the site's power capacity and should provide the necessary amount of nitrification to maintain TAN compliance at Huntly WWTP until the plant is replaced.

With the Sleepyhead development now approved, it appears that continuing to upgrade the existing plant is futile as the treatment process required to address the new load and flow is significantly different than current. It would not make prudent financial sense or value to the ratepayer to continue down this line of investigation.

The Sleepyhead development now needs to be considered alongside resource consent compliance when considering the plant. In isolation, actions taken to bring the existing WWTP back into resource consent compliance would be different without considering the impacts of the Sleepyhead development.

WRC will have to be consulted on the options and the Board's preferences. A key outcome will be the ability to align a Development Agreement with Sleepyhead and Councils ability to bring forward funding in the LTP.

5.1 Options
Ngaa koowhiringa

Staff have assessed that the solutions outlined in the Watercare Huntly WWTP Compliance Upgrade paper and recommend that sampling for toxicity is continued with to ensure any future process and treatment design is able to treat this waste and ensure final treated effluent is maintained with potentially new and more rigorous future resource consent conditions.

As part of the 3 Waters Reform, Council received funding from the Department of Internal Affairs to de-sludge the ponds. The desludging has recently been completed for Pond 1 and has improved the HRT by increasing the water volume of the pond, and therefore it may have improved nitrification as well. We are still awaiting to see results given this is a recent activity.

Removing 2 or 3 Aerators from service will enable Watercare to understand DO distribution and assess whether this improves nitrification processes but will not provide long term benefit as we are recommending the new plant is bought forward and the old plant decommissioned. Therefore, the benefit, which was power saving to enable a MBBR to be installed, is redundant.

Simultaneously, influent sources will be tested for toxicity to determine if the toxicity in the influent wastewater is inhibiting nitrification in ponds.

Watercare have suggested that a business case could be developed to support the upgrade of the WWTP to include a side stream (only treating the amount of wastewater necessary to meet the consent requirements rather than all the plant flow) fixed-film solution as they can be integrated relatively easily into a pond-based WWTP. This option is costed at $1million. As the MBBR is not able to be incorporated into the future plant design consisting of Bardenpho Activated Sludge with MBR and UV, the investment in the MBBR would be lost when the plant is upgraded in 2029 (or earlier).

As the planned upgrade for 2027/2028 completion would not utilise any assets developed as part of Watercare's recommended short term MBBR solution, it is being recommend declining any short-term upgrade as it has significant unbudgeted Capex implications.

The most favoured option is for Council to continue working with Sleepyhead to finalise the terms of a Development Agreement including contribution to the Bardenpho Activated Sludge with MBR and UV upgrade and bringing forward the balance of funds allocated in the outer financial years in the LTP to the 2023 to 2025 financial years to coincide with Sleepyhead's development timetable.

5.2 Financial considerations
Whaiwhakaaro puutea

Should the side stream MBBR plant be required, determined by confirmation of toxicity in one or more of the influents, the capital required to provide the plant has not been budgeted for. This funding requirement in the middle of the plant's life was not anticipated. A business case, supported by the Board, would need to be put to Council, requesting capex funding of $1million. With Council's current financial position and debt cap, this request would be likely met with a unfavourable outcome.

Testing influent for toxicity forms part of operational duties and is immaterial to the operational and maintenance budget. This should be continued with as business as usual.

With the approval of the Ohinewai operative plan, the Huntly WWTP cannot accept flows from this development unless the WWTP is made compliant. To accommodate existing flow and new flow through Growth, a significant rebuild and upgrade of the plant is required. A new plant has been designed and the costs incorporated into the LTP. The new plant will accommodate the load, flow and resource consent compliance conditions as well as protect and enhance kaitiakitanga.

	Location	PR Number	Growth %	LOS %	Renewal %	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
5	Huntly	1WW10610	33.33%	33.33%	33.33%	-	-	-	-	14,426,943.63	15,076,156.12	17,108,159.77

Funding of $47 million Capex for the plant upgrade has been allocated based in the resource consent expiry in 2029 and the upgrade was timed to coincide with renewed resource consent. Council could explore the opportunity of bringing this funding forward with Sleepyhead providing funding contributions based on the load and flow the plant receives. With limited negotiation at this time, no development agreement has yet been entered into with Sleepyhead.

5.3 Legal considerations
Whaiwhakaaro-aa-ture

Staff confirm that the staff recommendation complies with the Council's legal and policy requirements.

5.4 Strategy and policy considerations
Whaiwhakaaro whakamaaherehere kaupapa here

The report and recommendations are consistent with the Council's policies, plans and prior decisions. It also takes into consideration the Proposed District Plan that is believed to become the operative plan in the near future.

5.5 Maaori and cultural considerations
Whaiwhakaaro Maaori me oona tikanga

Significant consultation with Mana Whenua will be required to enable the Bardenpho Activated Sludge with MBR and UV upgrade to be progressed. This engagement will be initiated upon the Board support and approval to upgrade the plant. This engagement will build upon the engagement already established through the Sleepyhead proposed zone change and now concentrate more heavily on Te Ture Whaimana o Te Awa o Waikato.

5.6 Climate response and resilience considerations
Whaiwhakaaro-aa-taiao

The decisions sought by, and matters covered in, this report are consistent with the Council's Climate Response and Resilience Policy and Climate Action Plan.

5.7 Risks
Tuuraru

The project removes risk of treatment and process failure of the Huntly WWTP that could otherwise result in significant environmental and public health issues.

This paper looks to support the Sleepyhead development. Sleepyhead have already advised that significant delays to the provision of water infrastructure beyond their development plan timetable could result in the Sleepyhead Development Board recommending that the development be delayed. This would have significant economic and social implications within the Waikato District.

6. Significance and engagement assessment
Aromatawai paahekoheko

6.1 Significance
Te Hiranga

The decisions and matters of this report are assessed as of high significance in terms of matters that would activate a trigger in the Council's Significance and Engagement Policy. Active engagement is required as this is a technical solution to maintain the existing level of service and incorporate growth into the district.

6.2 Engagement
Te Whakatuutakitaki

Highest level of engagement	Inform	Consult	Involve	Collaborate	Empower
	☐	☐	☐	✓	☐
Tick the appropriate box/boxes and specify what it involves by providing a brief explanation of the tools which will be used to engage (refer to the project engagement plan if applicable).	*Whilst a new plant was anticipated and included in the Long-Term Plan and timed with the renewal of the resource consent in 2029, it was not anticipated that the plant would not meet current resource consent compliance in the short term. WRC has issued a noncompliance warning letter wish requires WDC to act and bring the plant back into consent conditions.*				

State below which external stakeholders have been or will be engaged with:

Planned	In Progress	Complete	
✓	☐	☐	Internal
✓	☐	☐	Community Boards/Community Committees
✓	☐	☐	Waikato-Tainui/Local iwi and hapuu
✓	☐	☐	Affected Communities
✓	☐	☐	Affected Businesses
☐	✓	☐	Other (Please Specify) Sleepyhead

7. Next steps
Ahu whakamua

Engage with local Iwi/Hapu.

Test Toxicity of influent.

Ensure proposed plant consisting of Bardenpho Activated Sludge with MBR and UV is still the most suitable design for the future flows.

Considerations must take into account kaitiakitanga when evaluating plant design as well as scientific results and potential future resource consent parameters and conditions.

Refine plant upgrade price estimates, ensuring funding allocation is still appropriate and representative.

Engage with WRC on compliance issues and proposed upgrade to obtain their acceptance of existing conditions of the plant and their acceptance and approval of the proposed upgrade plan and timetable.

Work with the finance team on understanding the process, constraints and requirements to bring LTP funding forward

Continue to work with Sleepyhead Development to negotiate and agree acceptable terms for a Development Agreement that supports the need for Sleepyhead to contribute to the costs directly associated with the provision of 3 waters infrastructure.

8. Confirmation of statutory compliance
Te Whakatuuturutanga aa-ture

As required by the Local Government Act 2002, staff confirm the following:

The report fits with Council's role and Water Governance Board Terms of Reference and Delegations. *Refer to the Governance Structure*	Confirmed
The report contains sufficient information about all reasonably practicable options identified and assessed in terms of their advantages and disadvantages (*Section 5.1)*.	Confirmed
Staff assessment of the level of significance of the issues in the report after consideration of the Council's Significance and Engagement Policy (*Section 6.1)*.	High
The report contains adequate consideration of the views and preferences of affected and interested persons taking account of any proposed or previous community engagement and assessed level of significance (*Section 6.2)*.	Confirmed
The report considers impact on Maaori (*Section 5.5*)	Confirmed
The report and recommendations are consistent with Council's plans and policies (*Section 5.4)*.	Confirmed
The report and recommendations comply with Council's legal duties and responsibilities (*Section 5.3)*.	Confirmed

9. Attachments
Ngaa taapirihanga

Attachment 1 – Huntly WWTP Compliance Upgrades

Attachment 2 – Formal Warning Letter

Date:	15 March 2022
Report Author:	Keith Martin, Waters Manager
Authorised by:	Gavin Ion Chief Executive

Watercare Waikato

Huntly WWTP Compliance Upgrades

Date: 17/01/2022
Version: 0.1
Status: Final

Prepared by: Richard Pullar

Document Purpose:

- To provide background on Huntly WWTP relating to non-compliance and discuss actions to rectify those non-compliances.

Raised by

Name	Functional area	Facility/ asset/ Location	Driver	Priority	Business owner rep supporting need
Richard Pullar	Watercare	Huntly WWTP	Compliance	Medium	WDC

Distributed to: Water Governance Board, Keith Martin, Carole Nutt

1 Introduction

The Huntly WWTP is achieving consented discharge limits for pH, total phosphorus, Total Nitrogen (TN), cBOD5, Total Suspended Solids (TSS), and E-coli; however it was non-compliant for the ammoniacal nitrogen 7 out of 12 months in 2020/21. This increases non-compliance from 1 out of 12 months in the previous year. This paper discusses the preferred short and long-term upgrade options to address the non-compliance issue. The paper also considers some aspects of the expected growth in the catchment in the coming years.

2 Background

The existing Huntly Wastewater Treatment Plant process involves mechanical screening, oxidation ponds, UV treatment, and wetlands prior to a pumped discharge to the Waikato River.

A significant plant upgrade is included in the current LTP from the existing plant to an MBR plant in 2025-2028 financial years to meet growth and comply with likely new consent conditions. The current consent expires in 2029, and significant growth is expected, especially with the Ohinewai development and a proposed Kianga Ora development.

Watercare has undertaken an options study for the ultimate plant upgrade; the options considered were:

- Bardenpho Activated Sludge with Clarifiers, Disc filters and UV;
- Bardenpho Activated Sludge with MBR and UV;
- Bardenpho Activated Sludge with MABR, Disc filters and UV and
- MBBR with DAF, Disc filters and UV.

The recommended option was Bardenpho Activated Sludge with MBR and UV;

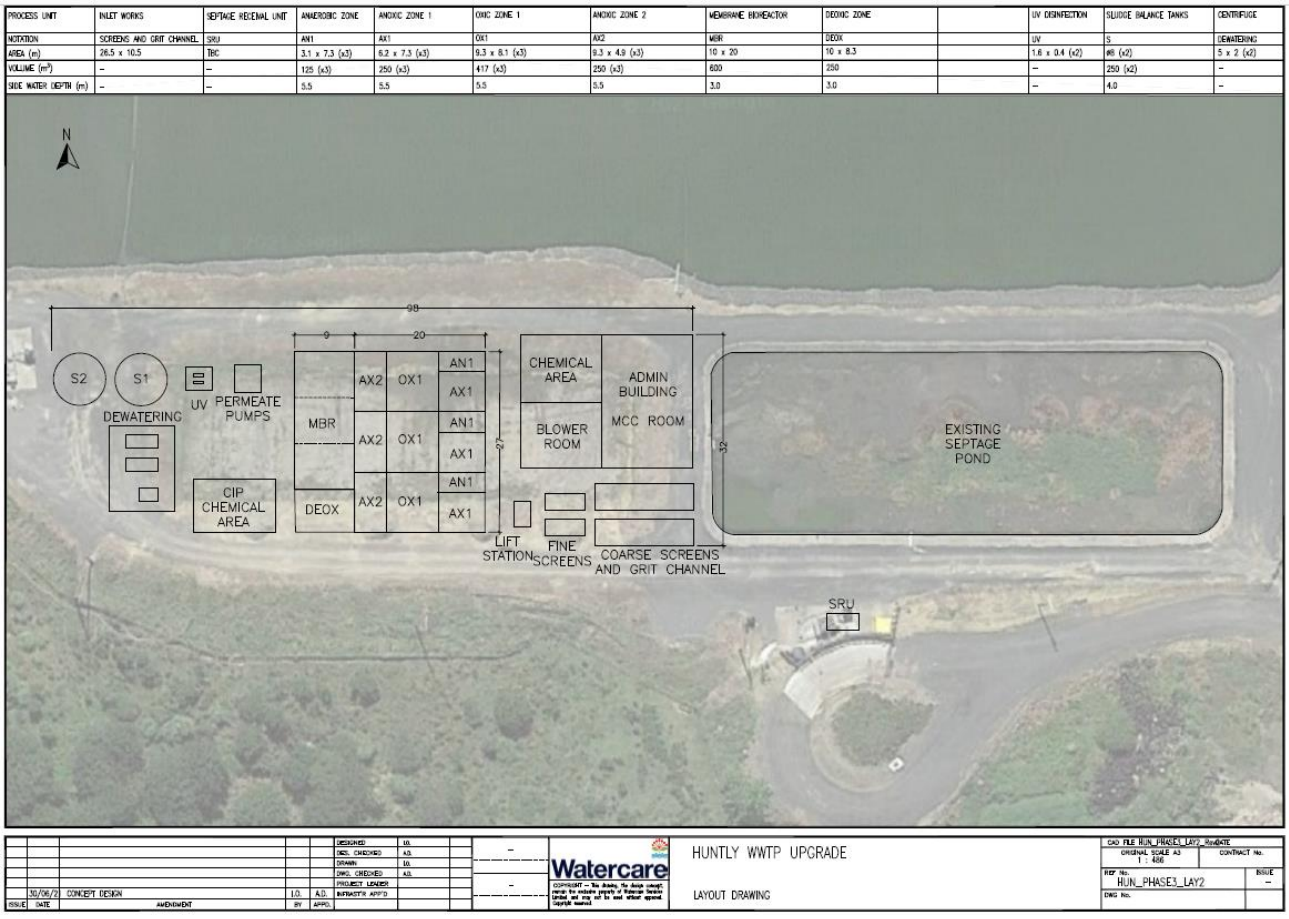


Figure 1: Proposed layout of Huntly WWTP MBR

Watercare has also undertaken a review of the current plants performance, including looking at pond profiles for DO, pH, TAN, and NO3-N and a review of the pond retention time (HRT).

It found that:

- High DO concentrations were observed at both upper and mid-depths in pond 1. Aerobic conditions were also maintained at the lowest depth. It is likely that 2-3 mechanical aerators can be taken out of service without detriment to treatment performance. There is currently a limit to the available power supply at this site, so this would increase the available power supply, which could be dedicated to other processes and services onsite.
- High DO concentrations were observed at both upper and mid-depths. Aerobic conditions were also maintained at the lowest depth. It is likely that 2-3 mechanical aerators can be taken out of service without detriment to treatment performance. This will increase the available power supply, which can be dedicated to other processes and services onsite.
- Further treatment is required before the full plant upgrade for current consent conditions to be met. A review of several options suggested that power supply will limit the type of solutions available for implementation. A bespoke MBBR for nitrification can be designed to meet the site's power capacity and should provide the necessary amount of nitrification to maintain TAN compliance at Huntly WWTP until the plant is replaced.

The 2020/21 Huntly WW Annual Compliance is attached in appendix A.

3 Discussion

Pond 1 is fully aerobic; approximately 2-3 mechanical aerators can be shut off to provide power supply capacity to be devoted to other processes onsite. It is recommended that two aerators in the first phase be taken out of service, and a pond profile be completed after 1-2 weeks of operation. Provided that DO's are acceptable, then the third aerator, as shown in Figure 2 can be taken out of service. This should free up approximately 12 kW of power for other services onsite.

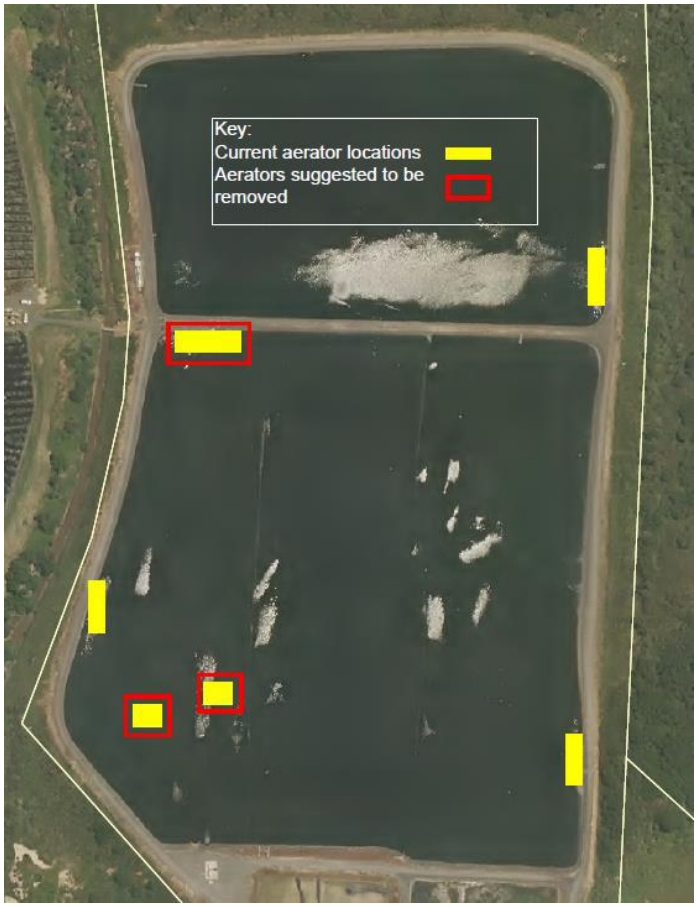


Figure 2: Recommended aerator operation

The desludging recently completed for Pond 1 has improved the HRT by increasing the water volume of the pond, and therefore it may have improved nitrification as well.

Toxicity in the influent wastewater may be inhibiting nitrification in Ponds. Typically, toxic chemicals which are inhibitory usually reduce the growth rate of nitrifying bacteria, therefore, making the population of nitrifiers smaller or less active. Based on the types of influent sources, the most likely sources for toxicity would be the landfill leachate or septage that Huntly WWTP receives. This needs to be investigated with a toxicity test. As the plant cannot stop receiving these waste streams, if toxicity is the underlying issue, the plant will need additional treatment to become compliant with TAN in the current plant.

The following influent sources should be tested for toxicity:

- Raw influent
- Landfill leachate
- Septage pond outlet

A solution for further nitrification is a bolt-on system installed next to the ponds. The following fixed-film solutions were investigated as a side stream system (only treating the amount of wastewater necessary to meet the consent requirements rather than all the plant flow) as they can be integrated relatively easily into a pond-based WWTP:

- Package Rotating Biological contractor (RBC)
- Package Moving Bed Biofilm Reactor (MBBR)
- Membrane Aerated Biofilm Reactor (MABR)

The study recommended the MBBR solution was identified as being able to provide the necessary treatment while not exceeding the power supply limitation. The approximate cost for an MBBR system supply and installation is estimated at $1 million.

4 Recommendation

1. A decision is needed about this viability of bringing forward the MBR solution from 2025 to 2028. Bringing the full upgrade forward will impact the need to install interim compliance-focused systems e.g. the MBBR, and will enable growth. This decision will be driven by confidence in the development occurring and the timing.

2. If the focus is on meeting compliance until the plant is in place 2025-2028, then Watercare could temporarily take 2-3 aerators offline and undertake another pond survey to understand DO distribution and assess whether this improves nitrification processes in the ponds.

   Watercare would undertake toxicity testing on the three influent sources.

   WDC and Watercare consider funding and implementation of a Moving Bed Biofilm Reactor (MBBR) bolt-on side stream to provide additional nitrification capacity at the plant.

CONSENT SUMMARY REPORT

Waikato District Council

Watercare
An Auckland Council Organisation

Data Summary	Jun-2021	RC119647 - Huntly

Inflow Summary Reporting	m^3
Average Daily Inflow	1,896
Max Daily Inflow	5,640
Average Monthly Total	57,770
Max Monthly Total	81,314
Annual Inflow Total	693,241
PWWF/ADWF Ratio	3.0

Outflow Summary Reporting	Daily Limit - 11500 m3
Average Daily Flow	209
Max Daily Flow	4,599
90th Percentile Daily Flow	219
Average Monthly Total	6,308
Max Monthly Total	45,086
Annual Outflow Total	75,692

Discharge Monthly Tests		Consent Limits		Trigger Limit		Measured		Compliance	
Parameters	Unit	Median	90%ile	Median	90%ile	Median	90%ile	Median	90%ile	
pH		9.0		8.5		7.7				
CBOD5	g/m3	30.0	60.0			6.2	11.0	0 / 11	0 / 11	Compliant
Ammonical Nitrogen	g/m3	10.0	20.0			11.2	24.9	7 / 12	4 / 12	X
Total Nitrogen	g/m3	25.0				19.6		3 / 12		Compliant
Total Nitrogen (Summer Limit Dec-May)	g/m3	20.0				5.8		1 / 6		Compliant
Total Phosphorus	g/m3	8.0				2.9		0 / 12		Compliant
Total Phosphorous (Summer Limit Dec-May)	g/m3	8.0				1.2		0 / 6		Compliant
Total Suspended Solids	g/m3	30.0	100.0			26.0	74.7	4 / 12	0 / 12	Compliant
E.Coli	CFU/100ml	126.0				1.6		7 / 54		Compliant

Combined Discharge	Unit	Consent Limit	Trigger Limit	Measured	Compliance	
Summer TN (Huntly & Ngaruawahia)	kg/day	57		32.79	0 / 6	Compliant
Summer TP (Huntly & Ngaruawahia)	kg/day	17.3		0.37	0 / 6	Compliant

File No: 60 28 01A
Document No: 23084441
Enquiries to: Edward Prince

Waikato REGIONAL COUNCIL
Te Kaunihera ā Rohe o Waikato

Private Bag 3038
Waikato Mail Centre
Hamilton 3240, NZ

waikatoregion.govt.nz
0800 800 401

20 December 2021

Keith Martin
Waikato District Council
15 Galileo Street
Ngaruawahia 3720

Dear Keith

FORMAL WARNING – HUNTLY WWTP, AUDIT 2020-21

In response to the continued non-compliance at Huntly WWTP, and in particular this year for ammoniacal nitrogen non-compliance, Waikato Regional Council is issuing Waikato District Council a Formal Warning in line with the infrastructure teams compliance and enforcement strategy.

The formal warning relates to the period covered by the annual audit from 1 July 2020 to 30 June 2021 and this warning will remain on file and will be taken into consideration in any future enforcement action.

If you require any further clarification or information pertaining to this issue, please do not hesitate to ask.

Yours faithfully

Edward Prince

Ed Prince
Resource Officer, Infrastructure

Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

Open

To	**Waters Governance Board**
Report title	**Exclusion of the Public**

1. Staff recommendations Tuutohu-aa-kaimahi

THAT the public be excluded from the following parts of the proceedings of this meeting.

The general subject of each matter to be considered while the public is excluded, the reason for passing this resolution in relation to each matter, and the specific grounds under section 48(1) of the Local Government Official Information and Meetings Act 1987 for the passing of this resolution are as follows:

General subject of each matter to be considered	Reason for passing this resolution in relation to each matter	Ground(s) under section 48(1) for the passing of this resolution
Item number PEX 1 Confirmation of Minutes Item PEX 2.1 Actions Register Item PEX 3.1 Raglan Wastewater Treatment Plant Consent Application Preparation Project - Discharge Option Item PEX 3.2 Te Kauwhata Water Association Water Take Consent Renewal Progress Update Item PEX 3.3 North Waikato Radio Telemetry Upgrade	Good reason to withhold exists under Section 6 or Section 7 Local Government Official Information and Meetings Act 1987	Section 48(1)(a)

Item PEX 3.4 Waters Financial Results to 28 February 2022		

This resolution is made in reliance on section 48(1)(a) of the Local Government Official Information and Meetings Act 1987 and the particular interest or interests protected by Section 6 or Section 7 of that Act which would be prejudiced by the holding of the whole or relevant part of the proceedings of the meeting in public, as follows:

Item No.	Section	Interest
Item PEX 1 Confirmation of Minutes	**7(2)(a)**	**Refer to the previous Public Excluded reason in the agenda for this meeting.**
Item PEX 2 Actions Register	**7(2)(a)**	**Refer to the previous Public Excluded reason in the agenda for this meeting.**
Item PEX 2.3 Raglan Wastewater Treatment Plant Consent Application Preparation Project - Discharge Option	**7(2)(c)(i)**	**Protect information which is subject to an obligation of confidence or which any person has been or could be compelled to provide under the authority of any enactment, where the making available of the information — would be likely to prejudice the supply of similar information, or information from the same source, and it is in the public interest that such information should continue to be supplied.**
	7(2)(i)	**To enable negotiations to carry on without prejudice or disadvantage.**
	7(2)(j)	**To prevent use of the information for improper gain or advantage.**
Item PEX 3.2 Te Kauwhata Water Association Water Take Resource Consent Renewal Progress Update	**7 (2) (b) (II)**	**To protect information that would otherwise unreasonably prejudice a person's commercial position.**

	7 (2) (c) (I)	**Protect information which is subject to an obligation of confidence or which any person has been or could be compelled to provide under the authority of any enactment, where the making available of the information — would be likely to prejudice the supply of similar information, or information from the same source, and it is in the public interest that such information should continue to be supplied.**
	7 (2) (c) (II)	**To protect information that is subject to an obligation of confidence and to protect the public interest.**
	7 (2) (I)	**To enable negotiations to carry on without prejudice or disadvantage.**
Item PEX 3.3 North Waikato Radio Telemetry Upgrade	**7 (2) (b) (II)**	**To protect information that would otherwise unreasonably prejudice a person's commercial position.**
	7 (2) (h)	**To enable commercial activities to be carried out without prejudice or disadvantage.**
	7 (2) (j)	**To prevent use of the information for improper gain or advantage.**
Item 3.4 Waters Financial Results to 28 February 2022	**7 (2) (b) (II)**	**To protect information that would otherwise unreasonably prejudice a person's commercial position.**
	7 (2) (J)	**To prevent use of the information for improper gain or advantage.**

2. Attachments

There are no attachments for this report.

Date:	15 March 2022
Report Author:	Matt Horsfield. Democracy Advisor
Authorised by:	Gaylene Kanawa, Democracy Team Leader