

# Palmerston North City Council submission on Taumata Arowai Rules

28 March 2022

## 1 Introduction

Thank you for the opportunity to submit on the proposed rules for Taumata Arowai under the following areas:

1. Drinking Water Standards
2. Drinking Water Quality Assurance Rules
3. Drinking Water Aesthetic Values
4. Drinking Water Acceptable Solution for Roof Water Supplies
5. Drinking Water Acceptable Solution for Spring and Bore Drinking Water Supplies
6. Drinking Water Acceptable Solution for Rural Agricultural Water Supplies
7. Drinking Water Network Environmental Performance

Palmerston North City Council (PNCC) owns and operates urban water supplies for Palmerston North, Ashhurst, Bunnythorpe and Longburn, providing water 24 hours a day, 7 days a week to some 80,000 people. Water underpins everything we do, from the health of our communities to the economic development of our city. The availability of safe, secure water supplies is critical to our success and growth.

We're committed to meeting the requirements for full compliance against current and future regulations. We have a strong track record with respect to compliance, having achieved full compliance with the Drinking Water Standards for the last two reporting years covered by MidCentral District Health Board. We have a funded programme of works to deliver on future improvements as part of our Long Term Plan, and our vision for the sustainable growth of our city. Palmerston North water in particular has consistently performed well, with high resident satisfaction rates and an award for the best-tasting water in New Zealand in 2016. Our Turitea Water Treatment Plant is accredited under ISO9001; an achievement in line with our vision of "Small City Benefits, Big City Ambition".

We have a strong partnership with Rangitāne o Manawatū and are working towards embedding the principles of Te Mana o te Wai into management of our water resources.

We are supportive of the work that Taumata Arowai is doing to raise the bar in drinking water regulation across New Zealand. In recent years there have been several high profile incidents that have reminded everyone how important it is that consumers can rely on their water being safe to drink.

Detailed feedback on the most significant changes proposed is given in the following pages.



## 2 Drinking Water Standards

### 2.1 Maximum Acceptable Values (MAVs)

#### 2.1.1 Aluminium

Parameter	Current MAV	Proposed MAV
Aluminium	None	1 mg/L

PNCC doses aluminium (in the form of Poly Aluminium Chloride) at the Turitea Water Treatment Plant for the Palmerston North water supply and actively monitors concentrations in the distribution system.

We **support** the introduction of a MAV for aluminium.

We **support** that this MAV be set at the proposed level of 1.0 mg/L. Concentrations reported on the Palmerston North network are well below the MAV. We believe it is set at an appropriate level to allow potential impacts on public health to be addressed.

We **request** that the Drinking Water Standards specify the test to be used to determine compliance, for example whether this measurement is dissolved aluminium or total. Leaving this key piece of information out of the standards would lead to a lack of clarity.

We note the existing GV<sup>1</sup> for aluminium is 0.1 mg/L for aesthetic reasons and that this is proposed to be retained.

#### 2.1.2 Nitrite, Long-Term

Parameter	Current MAV	Proposed MAV
Nitrite, long-term	0.2 mg/L	None
Nitrite, short-term	3.0 mg/L	3.0 mg/L

We **support** the temporary removal of a long-term MAV for nitrite given the uncertainty of information and the advice from the WHO<sup>2</sup>.

We **request** that Taumata Arowai give urgency to reviewing short-term and long-term limits for nitrites and nitrates.

<sup>1</sup> Guideline Value

<sup>2</sup> World Health Organisation

### 2.1.3 Perchlorate

Parameter	Current MAV	Proposed MAV
Perchlorate	None	0.08 mg/L

We **oppose** the introduction of a MAV for perchlorate on the basis of advice we've received from our laboratory services contractor that there are no available laboratories currently testing for perchlorate in water (only in dairy products). Further, the advice we received is that because these are unstable compounds, laboratories may be disinclined or unable to achieve accreditation to test for them. We see no benefit in having tests completed that are not accredited.

We are conscious of the need to test for disinfection byproducts, and are generally supportive of moves by Taumata Arowai to increase surveillance in this area. However, we do not feel that it is practical to introduce a requirement that we cannot meet through lack of ability to assess compliance.

Further to the above, we are informed that testing for chlorate in water is available at Eurofins or WaterCare. Our current laboratory services contractor is CEL (Central Environmental Laboratories), based in Palmerston North. They won this contract in a competitive process which included a local supplier premium. As well as the economic benefit of having these services available locally, there is a practical benefit as well. Reduced travel time for samples between collection and analysis reduces the chance of false readings or samples arriving out of specification and unable to be tested.

### 2.1.4 PFHxS + PFOS, PFOA

Parameter	Current MAV	Proposed MAV
PFHxS + PFOS	None	0.00007 mg/L
PFOA	None	0.00056 mg/L

We **request more information** on the proposed MAVs for these compounds:

We note that there is no WHO GV to support either of the proposed MAVs, and that they have been adopted from the Australian Drinking Water Guidelines. We request more information on their applicability in the New Zealand context.

We would like to know what, if any, treatment options there may be if these compounds were to be found in any of our water supply bores.

We would like clarification on the implications of non-compliance with the proposed MAVs.

### 2.1.5 1080

Parameter	Current MAV	Proposed MAV
<b>1080 (long-term)</b>	0.0035 mg/L	0.0035 mg/L
<b>1080 (short-term)</b>	None	0.0035 mg/L

We **support** the introduction of a short-term MAV for 1080 to strengthen provisions for protecting water supply catchments.

We control pests and predators in our Turitea Reserve water supply catchment using a pest control contractor, Daniel Ritchie Contracting. We do not use, and have never used, 1080 for this. The topography of and access to our catchment is such that bait stations can be placed manually. Brodifacoum is the poison used. Tararua Forest Park is located to the south of the Turitea Reserve, but is distant from the water supply catchment. Although the Department of Conservation carry out drops of 1080 further south in the park, this is far enough away from our environs that there is no risk of contamination.

Most of the Turitea water supply catchment is indigenous forest in Council ownership. There is no known use of 1080 on land within or adjacent to the catchment. Horizons Regional Council carries out pest control activities on land outside our catchment, but Brodifacoum and cyanide are the only poisons used, and as the land is outside the water supply catchment there is no risk of contamination.

We are aware that Health Protection Officers have responsibility for approving the use of verotoxins such as 1080, controlling and monitoring their use closely.

We believe that the best way to ensure there continues to be no risk of 1080 contamination in our catchment is to actively prevent its use. We accept, however, that testing to confirm its absence could be considered good practice, and would provide further reassurance to consumers.

### 2.1.6 Radiological Determinands

Parameter	Current MAV	Proposed MAV
<b>Total alpha activity</b>	0.1 Bq/L (excluding radon)	0.5 Bq/L (excluding radon)
<b>Total beta activity</b>	0.5 Bq/L (excluding <sup>40</sup> K)	1.0 Bq/L (excluding <sup>40</sup> K)

We **support** the raising of these MAVs to bring them in line with the revised WHO<sup>3</sup> GVs. We currently test for alpha and beta activity, as required under the Drinking Water Standards, and all recent results have been below the detection limit. We do not believe there is a risk of radioactive compounds in our water supplies, or that raising this MAV would negatively impact public health.

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<sup>3</sup> World Health Organisation





Treatment Systems	T
Distribution Systems	D
General	G
Water Carriers	WC
Planned Temporary Event	PTE

We **support** the rules being divided into separate modules according to complexity:

Simple	1
Moderate	2
Complex	3

We note that small supplies must demonstrate compliance against Moderate rules, and large supplies must demonstrate compliance against Complex rules.

We **support** suppliers being able to opt for a higher complexity of rules to demonstrate compliance at a more detailed level. We have two supplies that would be categorised as Small with their current official populations but may find it clearer and easier to demonstrate compliance against Complex rules for all four of our supplies, particularly in the case of network operations.

### 3.1.3 Compliance and Reporting

We **support** the introduction of Assurance Rules that require water supplies to demonstrate compliance annually, for example by providing a distribution zone sampling plan (which is produced annually by our laboratory services contractor and checked internally before implementation).

### 3.1.4 Source Water – Sanitary Bore Heads

Item	Current	Proposed
<b>Prevention of surface water intrusion into bore headworks</b>	Secure Bore Status as a mechanism to demonstrate protection from protozoa	Class 1-4 and sanitary bore head requirements

We **support** the ability to demonstrate that a bore head is sanitary and can be considered Class 1 under S3 (Complex Source) rules in order to remove the need for protozoa treatment. Our bores have secure bore status under the current rules. We have a programme of work underway to ensure that this is maintained.

### 3.1.5 Source Water - Monitoring

Item	Proposed
<b>Bromide</b>	Monthly sampling
<b>TOC<sup>6</sup></b>	Monthly sampling
<b>Conductivity</b>	Continuous sampling
<b>pH</b>	Continuous sampling
<b>Turbidity</b>	Continuous sampling

We **support** in principle the requirement for monthly sampling of bromide and Total Organic Carbon in source waters to better understand the risks, at least for the first year to gather information before reducing sampling requirements where appropriate dependent on risk. We calculate that the additional cost for this would be:

- 200 hours of staff time/year
- \$6,500 of analysis costs/year

We **support** the requirement for continuous sampling of conductivity, pH and turbidity in source waters. The following table shows which we already measure using online instrumentation at 1-minute intervals, with data saved in our telemetry database:

Source	Turbidity	pH	Conductivity
<b>Turitea Dam</b>	Yes	Yes	No
<b>Ashhurst Bore</b>	Yes <sup>7</sup>	Yes <sup>8</sup>	No
<b>Bunnythorpe Bore</b>	Yes	Yes	No
<b>Keith St Bore 1</b>	No	No	No

<sup>6</sup> Total Organic Carbon

<sup>7</sup> After reservoir at filter station.

<sup>8</sup> Recorded on Depolox at site; not currently trended on SCADA but can be added.

Source	Turbidity	pH	Conductivity
Keith St Bore 2	No	No	No
Longburn Bore	Yes	Yes	No
Papa-i-oea Park Bore 1	Yes <sup>9</sup>	No	No
Papa-i-oea Park Bore 2		No	No
Papa-i-oea Park Bore 3		No	No
Roberts Line Bore 1	No	No	No
Roberts Line Bore 2	No	No	No
Takaro Bore	No	No	No

It could cost up to \$20,000 to install continuous monitoring at sources where this is currently not a requirement. The total capital investment for this additional monitoring could be \$200,000. To fully scope and cost improvements would take time and cost in itself. Added to this is the financial and delivery risk associated with procuring equipment and resources in the current environment. COVID-19, growth and investment in our sector, and high demands on a small number of suppliers is causing large, unpredictable cost fluctuations.

### 3.1.6 Source Water - Classification

Item	Current	Proposed
Source waters for Level 3 (complex) supplies	Risk assessed and treatment requirements determined through Catchment Risk Assessments (CRAs)	Source waters categorised into four categories to determine level of protozoa treatment required

We **support** the categorisation of source waters into four categories to determine protozoa treatment requirements. This is similar to the current practice of assessing catchments with the Catchment Risk Assessment process, under which they were assigned requirements for log credits (normally 3 or 4 depending on the catchment).

<sup>9</sup> Combined for all bores (prior to UV)

### 3.1.7 Treatment – Monitoring

Item	Proposed
<b>FACE</b>	Continuous monitoring
<b>T<sub>10</sub> contact time</b>	Continuous monitoring
<b>C.t value</b>	Continuous monitoring

We **support** the requirement for continuous monitoring of FACE (where there is not an exemption to use monochloramine as disinfectant residual). This is already in place at the Turitea Water Treatment Plant on our Palmerston North supply.

We **support** the requirements to monitor contact time and C.t value continuously but would like clarification on whether this applies to treatment plants discharging directly into the reticulation without storage (as is the case for our Palmerston North bores).

### 3.1.8 Treatment – Protozoal Compliance

We **support** the ability to achieve 4 log credits under Coagulation, Flocculation, Sedimentation and Filtration Rules. The Turitea Water Treatment Plant on our Palmerston North water supply currently achieves 4 log credits, with 0.5 log credits coming from enhanced filtration. Restructuring the rules to make them simpler makes sense in this context, and this simplification won't require any changes to what we are currently doing.

### 3.1.9 Treatment – Chemical Compliance

Item	Current	Proposed
<b>Additional monitoring</b>	Priority classes assigned e.g. P2	Typical Value method

We **support** the use of the Typical Value method to assess whether additional chemical determinands must be monitored regularly.

### 3.1.10 Treatment – Disinfection By-products

Item	Proposed
<b>Chlorate, Perchlorate monitoring</b>	Weekly if sodium hypochlorite used

We **support** the requirement to monitor chlorate weekly if sodium hypochlorite is used.

We **oppose** the introduction of a MAV for perchlorate on the basis of advice we've received from our laboratory services contractor that there are no available laboratories currently testing for perchlorate in water (only in dairy products). Further, the advice we received is that because these are unstable compounds, laboratories may be disinclined or unable to achieve accreditation to test for them. We see no benefit in having tests completed that are not accredited.

We are conscious of the need to test for disinfection byproducts, and are generally supportive of moves by Taumata Arowai to increase surveillance in this area. However, we do not feel that it is practical to introduce a requirement that we cannot meet through lack of ability to assess compliance.

Further to the above, we are informed that testing for chlorate in water is available at Eurofins or WaterCare. Our current laboratory services contractor is CEL (Central Environmental Laboratories), based in Palmerston North. They won this contract in a competitive process which included a local supplier premium. As well as the economic benefit of having these services available locally, there is a practical benefit as well. Reduced travel time for samples between collection and analysis reduces the chance of false readings or samples arriving out of specification and unable to be tested.

### **3.1.11 Distribution – Residual Disinfection**

We **support** residual disinfection becoming mandatory for all supplies, to ensure that water remains safe for consumers even after it has been through the distribution system, and to provide a barrier against contamination in the network. We currently have residual disinfection on all our supplies, for these reasons.

We **propose** that the use of monochloramines as residual disinfectant be included in the Drinking Water Quality Assurance Rules. Currently, monochloramines are used as residual disinfectant at our Palmerston North bore stations with permission granted previously by the Drinking Water Assessor. This practice has been adopted because our current water supply bores discharge directly into the network, without contact time available to achieve breakpoint chlorination and use Free Available Chlorine (FAC). PNCC is working towards achieving break-point chlorination in all zones. This would require sufficient contact time to be available at each bore, with the provision of large aboveground contact tanks or reservoirs. Given the urban nature of the environment around our Palmerston North bores, it could take some five years to scope solutions, negotiate with landowners if necessary, work through a legal process and complete construction. At some locations this may prove practically impossible. The ability to use monochloramines ensures we remain compliant. We understand that there are other locations around the country in a similar position, with sources discharging directly into the network. See Section 2.1.3 for further feedback.

### 3.1.12 Distribution - Backflow Protection

Item	Proposed
<b>Backflow prevention programme</b>	Prepare and provide annually
<b>Backflow survey</b>	Assess premises at least 5-yearly; report annually
<b>Testing of backflow prevention devices</b>	Annually
<b>Register of testable backflow prevention devices</b>	Keep and provide annually
<b>Access to network</b>	Restrict access of the network via standpipe to FENZ, other emergency services, the water supplier or authorised contractors

We **support** the above requirements for demonstrating management of the risk of backflow on distribution systems. We have an active backflow protection programme that already addresses most of the above concerns and are in the process of making further improvements.

We **support** there being a nationally consistent rule to protect water supplies against the risk of contamination through unsafe practices accessing hydrants or other parts of the network. Access to our networks is now strictly controlled. Contractors are rarely given access, and in such cases must use standpipes with testable backflow prevention. We control this through our Water Supply Bylaw and communicate with existing or new contractors wishing to access our networks. Enquiries normally come to the Service Manager – Water, our Development team or our Network Operations team.

### 3.1.13 Facilities Operation, Maintenance and Disinfection (Storage Reservoirs)

Item	Proposed
<b>Water Storage Management Plan</b>	Water suppliers with storage facilities within distribution system must prepare a Water Storage Management Plan
<b>Reservoir inspections</b>	Requirement to inspect annually

Item	Proposed
<b>Disinfection procedures</b>	Water Suppliers must prepare and use written disinfection procedures for storage facilities consistent with best practice
<b>Disinfection</b>	New storage facilities and existing ones drained for maintenance must be cleaned and disinfected prior to use
<b>Foreign materials</b>	Materials used during inspection, maintenance or other activities (including divers’ suits, ROVs <sup>10</sup> ) must be made from materials acceptable for contact with potable water and suitable for disinfection
<b>Testing</b>	After full or partial draining of storage facilities, they must be refilled with potable water and tested for <i>E. coli</i> , total coliforms and residual disinfectant

We **support** the above measures becoming compliance requirements. This represents good practice, and almost all measures are already being followed.

### 3.1.14 Distribution - Water Main Hygiene Procedures

We **support** the proposed requirements for hygiene on new and repaired water mains. We strive to follow best practice to protect our networks. We have existing flushing and disinfection procedures that cover our network in general, as well as specific plans that are in existence or created at the time for major operations. These are normally communicated to external parties through our Development team, our Network Operations team, or our Project Management Office. Only internal staff or Approved Contractors are permitted to work on our water supply networks. On 10 January 2022 our new Infrastructure Unit structure took effect. One of the prime reasons for this restructure was to move all 3 Waters staff into a standalone group, refining team structures and clarifying reporting lines. Positions have been created in our Network Operations team for a Quality Manager (already appointed) and a Compliance Testing Officer. This will strengthen our ability to properly document our processes, make improvements where necessary and clearly communicate our requirements to external contractors.

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<sup>10</sup> Remotely Operated Vehicles

### 3.1.15 Distribution – Residual Disinfection, DBPs and Plumbosolvency

We **support** the proposed Assurance Rules for disinfection by-products (DBPs). We believe that increased surveillance of disinfection by-products will help to ensure there are no deleterious effects on health. We calculate that the additional cost for this would be:

- 200 hours of staff time/year
- \$38,000 of analysis costs/year

We **support** the proposed Assurance Rules for plumbosolvent metals (such as lead). The events in Otago raised the levels of concern in the industry and community about lead in particular; increased surveillance in the network will help alleviate this. We calculate that the additional cost for this would be:

- 40 hours of staff time/year
- \$2,000 of analysis costs/year

### 3.1.16 Distribution – Sampling Frequency for FAC, pH, DBPs and Plumbosolvent Metals

We **support** the increased monitoring frequencies proposed for FAC and pH on distribution systems, and where necessary will install additional continuous monitoring on our networks. Currently, continuous monitoring is only carried out on water leaving treatment plants. Residual disinfectant and pH are sampled on distribution systems when bacteriological samples are taken, rather than on a continuous.

We **support** the increased monitoring frequencies proposed for Disinfection By-Products (DBPs) and plumbosolvent metals over an initial 12-month period to assess the extent of any issues. We **propose** that following this, requirements should be reviewed and where appropriate amended based on the level of risk. Currently, there is no requirement to monitor either of these groups of compounds on distribution systems. We regularly sample our sources for plumbosolvent metals. In the past we have sample for disinfection byproducts at some locations, but this was discontinued following confirmation that there was no issue.



## 4 Drinking Water Aesthetic Values

### 4.1.1 Chlorine

Parameter	Current GV	Proposed Aesthetic Value
Chlorine	0.6 to 1.0 mg/L	0.3 to 0.6 mg/L (as Cl <sub>2</sub> )

We **support** the lowering of the low end of the acceptable range for FAC (Free Available Chlorine) for aesthetic reasons from 0.6 to 0.3 mg/L.

We **oppose** the lowering of the high end of the acceptable range for FAC from 1.0 mg/L to 0.6 mg/L. Precise control of FAC at all points in the network is difficult to achieve in practice. We believe it is more important to ensure that the FAC is above the minimum of 0.2 mg/L at all times to protect public health. If the maximum aesthetic value is lowered to 0.6 mg/L, water leaving the treatment plant would need to have a lower chlorine concentration, giving less assurance of maintaining residual disinfection for all consumers at all times.

We **support** the requirement for disinfectant residual to be Free Available Chlorine (FAC), given that we can apply for an exemption to use monochloramines as disinfectant residual for our Palmerston North water supply bores at least as an interim measure.

### 4.1.2 Iron

Parameter	Current GV	Proposed Aesthetic Value
Iron	0.2 mg/L	≤ 0.3 mg/L

We **support** the raising of this value from 0.2 to 0.3 mg/L.

We **support** the use of “≤” (here and elsewhere) to make it clear that this is a maximum.

### 4.1.3 Temperature

Parameter	Current GV	Proposed Aesthetic Value
Temperature	Should be acceptable to most consumers, preferably cool	Preferably not more than 15°C

We **support** the introduction of a temperature value to make this measure less subjective.

We **propose** the word “preferably” be removed as this makes it difficult to assess objectively. It would be easier for water suppliers to understand their obligations if there was one value, even if it was raised, or if a mean, median or percentile measure was used.

We **request more information** on where this is proposed to be measured, and what the acceptable procedure for doing so may be.

## 5 Drinking Water Acceptable Solution for Roof Water Supplies

Currently, our Parks & Reserves Group manage one system for collection of roof water, at Arapuke Forest Park. This is not provided for potable use, so there is no immediate need to make use of this Acceptable Solution.

We **request more information** on what level of consultation there has been with the Department of Conservation, Te Araroa Trust and other organisations that may be providing drinking water in remote locations.

## 6 Drinking Water Acceptable Solution for Spring and Bore Drinking Water Supplies

We will demonstrate compliance for its water supplies against the relevant Drinking Water Standards, Quality Assurance Rules, Aesthetic Values and Network Environmental Performance criteria rather than using the alternative of an Acceptable Solution. For this reason, we are not submitting on this proposal.

## 7 Drinking Water Acceptable Solution for Rural Agricultural Water Supplies

We do not own or operate any water supplies that would come under the definition of Rural Agricultural. For this reason, we are not submitting on this proposal.

## 8 Drinking Water Network Environmental Performance

### 8.1.1 Overall

We **support** the proposed environmental performance measures. Protection of te taiao (the environment) for our communities is of prime importance to us. Data for many of the measures are already collected and reported on. In partnership with mana whenua, we are building the principles of Te Mana o te Wai into what we do as providers of 3 Waters services.

We note that some of the proposed measures are already reported on, in the same or near form, to other organisations (for example the DIA<sup>11</sup> or Water NZ<sup>12</sup>). We propose that in such cases, rather than duplication of work effort, reporting is to only one authority. This would reduce the time and

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<sup>11</sup> Department of Internal Affairs

<sup>12</sup> Water New Zealand

cost involved in gathering and providing information at our end, and for the information to be analysed and reported on by the various regulators or interested parties.

We **support** the staged approach being taken, with three tranches of measures to be introduced, so that any additional resource requirements in terms of time and cost are effectively managed.

## 9 Conclusion

Thank you again for the opportunity to provide feedback on this major step forward for drinking water quality in New Zealand. We are passionate about providing high quality, safe drinking water to our communities. This is shown in our daily commitment to continuous improvement, as well as our achievement of full compliance with the Drinking Water Standards for the last two reporting years covered by MidCentral District Health Board. Palmerston North water in particular has consistently performed well, with high resident satisfaction rates and an award for the best-tasting water in New Zealand in 2016. Our Turitea Water Treatment Plant is accredited under ISO9001; an achievement in line with our vision of “Small City Benefits, Big City Ambition”.

We are well placed to continue to be fully compliant. We realise that the new regulations will require improvements to be made across all supplies and all water suppliers. As you can see from our submission, we are generally supportive of the proposed changes. The only exceptions are:

- Perchlorates. We oppose the introduction of a MAV because we do not know of a laboratory which can test for it in water and therefore have no way to demonstrate compliance.
- Aesthetic value for chlorine. We oppose the reduction of the upper limit for FAC from 1.0 to 0.6 mg/L because we feel this could present a risk to public health.

The areas where we request more information before giving a conclusive opinion are detailed in the above submission.

We are supportive of the direction in which Taumata Arowai are leading the sector and we are committed to the journey. There are some existing approved budgets in our Long Term Plan that have been included to address signalled changes to regulations, or are for work already planned that aligns with those changes. The full cost of meeting the new requirements, however, is not fully funded and will need to be considered alongside the other needs of our water supplies as well as balanced with other community needs. We would like to work with Taumata Arowai to develop a roadmap with identified timelines for meeting compliance and look forward to improving outcomes for our communities together.

Heather Shotter

**Chief Executive**

