



Water Services Authority
Taumata Arowai

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Water Services (Drinking Water Quality Assurance) Rules 202-

These rules are made under section 49 of the Water Services Act 2021 by the Chief Executive of the Water Services Authority—Taumata Arowai acting under delegated authority after consultation in accordance with section 53 of that Act.

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Drinking Water Quality Assurance Rules

1 Title

This is the Water Services (Drinking Water Quality Assurance) Rules 202-.

2 Commencement

These Rules come into force on [date].

3 Interpretation

In these compliance rules, unless the context otherwise requires,—

Act means the Water Services Act 2021

annulus means the void between a bore hole and the bore casing

apron (bore) means an impervious ground covering, typically concrete, which prevents ingress of surface water into the bore

barrier means a process or infrastructure which prevents or reduces the likelihood of contamination of a drinking water supply

benthic cyanobacterial mat means a collective mass of cyanobacteria that forms on the bottom surface of a water body

bore means a piped or encased hole constructed to access groundwater

building means a stand-alone structure where drinking water is provided. A building does not include a structure where only non-potable water is provided for other uses

C.t value means the product of the concentration (C) of a disinfectant and the contact time (t) required to control micro-organisms

compliance period means the time over which compliance is assessed, usually 1 day, 1 month or 1 year

contact time means the hydraulic residence time of a disinfection process

T₁₀ (contact time) means the effective contact time, which is the time it takes 10% of the volume of a unit to pass through a tank

cross connection means any actual or potential connection between a drinking water supply and stormwater, wastewater, or other infrastructure

designated UV validation standard means one of the following:

- (a) NSF/ANSI 55 Class A (for populations of up to 5000):
- (b) USEPA Ultraviolet Disinfection Guidance Manual:
- (c) DVGW Technical Standard W294-1:2023-12:
- (d) ÖNORM M 5873-1: 2020 01 01:
- (e) DIN 19294-1:2020-08:
- (f) ÖNORM M5873 (if installed before 1 January 2020)

determinand has the meaning set out in the Water Services (Drinking Water Standards for New Zealand) Regulations 2022

differential pressure means the difference in pressure between two given points, for example, on the inlet and outlet of a filter

direct filtration means a treatment process which consists of coagulation, flocculation, and filtration, without a sedimentation process before filtration.

direct integrity test means a physical test applied to a membrane unit to identify and isolate one or more leaks that could result in contamination of the filtrate

disinfection by-product or DBP means a substance formed in drinking water as a result of a disinfection process

distribution system means all components (for example, buildings, storage tanks, electrical equipment, reticulation, pumps, instrumentation, etc) of a drinking water supply used to transmit drinking water to consumers or other drinking water suppliers

distribution zone means all or part of a distribution system which contains water of a similar character, often defined as a bounded geographic area, every drinking water supply with a distribution system has at least one distribution zone

duty (UVI) sensor means the duty (on-line) UV sensor installed in a UV unit that monitors UV intensity during UV equipment operations

FAC means free available chlorine, which is the chlorine present in chlorinated water in the form of hypochlorous acid and hypochlorite ion.

FACE means free available chlorine equivalent, which is the FAC concentration that would have the same disinfecting power as the chlorine solution would have at pH 8

filtrate means water, other than wash water, leaving a filter

inactivate means a mechanism which inhibits the reproduction of a micro-organism

log credit means a method for determining a treatment level based on a log-scale control of the target micro-organism

MAV means maximum acceptable value, which has the meaning set out in the Water Services (Drinking Water Standards for New Zealand) Regulations 2022

NTU means nephelometric turbidity unit which is a unit of measurement for turbidity

(oo)cysts is the collective term for oocysts and cysts. A *Cryptosporidium* oocyst is a thick-walled structure within which *Cryptosporidium* zygotes develop and that serves to transfer the organism to new hosts

ozone residual means the ozone remaining after disinfection has been achieved

planktonic cyanobacteria means cyanobacteria which are freely floating in a body of water

pore size means the nominal or absolute size of the holes or apertures in a thin layer of continuous medium (for example, a membrane filter)

property means a separate rating unit as defined by the Rating Valuations Act 1998 or a separate rating area under the Local Government (Rating) Act 2002

recycled water means water, usually discharged from a treatment process which is returned to the start of the treatment process (i.e., recycled)

reduction equivalent dose means a dose value for UV systems derived from a UV-dose response curve determined during UV unit validation

reference (UVI) sensor means a calibrated sensor used to check the validation of the duty sensor

reporting period means the time that compliance reporting must cover and may include one or more compliance periods, reporting periods differ depending on the Rules modules being reported against

residual disinfection means a disinfectant, typically chlorine, remaining in the water after it leaves a treatment plant to act as a barrier to recontamination of water in a distribution system

surface water means a body of water that is open to atmosphere, whether running (streams and rivers) or quiescent (lakes, reservoirs, impoundments and ponds)

UV means ultraviolet light

UV dose means the amount of UV radiation emitted into water within a UV reactor calculated by the UV intensity multiplied by the exposure time, usually measured in mJ/cm^2

UVI means UV intensity, which is the intensity of UV radiation, usually measured in mW/cm^2

UVT means UV transmittance, which is a measure of the amount of ultraviolet light (typically measured at 254 nm) that passes through water

waste stream means a flow of water from a drinking water treatment plant that is not intended for further treatment or use as drinking water

4 Compliance rules

- (1) In accordance with section 49 of the Act, these compliance rules set out requirements relating to the performance of functions or duties by drinking water suppliers under Part 2 of the Act.
- (2) The *Drinking Water Quality Assurance Rules* is set out in Schedule 1.
- (3) Except as otherwise provided by the Act, drinking water suppliers must comply with all applicable rules in Schedule 1 for the relevant drinking water supply category.

5 Categories of drinking water supply

- (1) In these Rules, the following categories of drinking water supply apply:
 - (a) **Very small communities** are drinking water supplies of any configuration or arrangement that provide drinking water to a population of up to 25 people and in circumstances when the population supplied fluctuates, the population supplied may increase to up to 50 people for up to 60 days in any 12-month period.
 - (a) **Networked supplies** are drinking water supplies that provide drinking water via a distribution system at a pressure and volume to meet consumer demand, or at a restricted flow and volume and may include storage facilities within the network to buffer demand.
 - (b) **Self-supplied buildings** are drinking water supplies which provide drinking water to up to ten buildings on one site (within the boundaries of one property, or within the boundaries of two or more properties with common ownership arrangements) and provide water to more than 25 people.
 - (c) **Water carrier services** are drinking water supplies that involve the transport of drinking water in a vehicle or vessel with a water tank (for example, a truck, trailer, or rail wagon) and supply to consumers or other drinking water suppliers, often to a storage tank on a property.
 - (d) **Water carrier supplies** are drinking water supplies that provide water specifically to fill tanker vehicles that are owned or operated by a water carrier service.
 - (e) **Community drinking water stations** are drinking water supplies that provide drinking water from a single point of supply to a community who collect the water in containers but does not include public taps or container filling stations that are connected to a Networked Supply (for example, community taps that provide water which is chlorinated and then de-chlorinated).

- (2) For networked supplies and self-supplied buildings, the following subcategories of drinking water supply are:
- (a) **Small** means drinking water supplies with a population of 26-100 people.
 - (a) **Medium** means drinking water supplies with a population of 101-500 people.
 - (b) **Large** means drinking water supplies with a population of more than 500 people.

6 Applicable Rules modules

- (1) Drinking water suppliers must comply with the following Rules modules in the *Drinking Water Quality Assurance Rules* in Schedule 1 according to the relevant category of drinking water supply:
- (a) Very small communities – VSC
 - (b) Networked supplies:
 - (i) Small – $G + S1 + T1 + D1 + VP$
 - (ii) Medium – $G + S2 + T2 + D2 + VP$
 - (iii) Large – $G + S3 + T3 + D3$
 - (c) Self-supplied buildings:
 - (i) Small – $G + S1 + T1 + VP$
 - (ii) Medium – $G + S2 + T2 + VP$
 - (iii) Large – $G + S3 + T3$
 - (d) Water carrier services – $G + WC$
 - (e) Water carrier supplies – $G + S1 + T1$
 - (f) Community drinking water stations – $G + S1 + T1$
- (2) For the avoidance of doubt, a drinking water supplier may comply with a higher Rules module for source water, treatment or distribution, but must comply with all of the rules in the higher Rules module.

7 Representative sampling

- (1) For the purpose of the level 3 source water rules, **representative sampling** means the sampling of one bore that is representative of two or more bores that access the same aquifer.
- (2) Representative sampling must meet the following requirements—
- (a) the drinking water supplier can demonstrate that the bore that is sampled is representative of the bores that are not sampled; and
 - (b) the representative nature of the sampled bore is re-established at least every five years or after significant seismic activity; and
 - (c) the assessment and reassessments are undertaken by a suitably qualified and experienced person and recorded in writing.

8 Level 3 source water classes

For the purpose of the level 3 Rules modules, the following source water classes apply:

- (1) **Class A** is groundwater abstracted from a depth of greater than 30 metres below ground level (with depth measured from ground level to the top of the upper most screen), and abstracted via a sanitary bore head, that meets the following requirements:
 - (a) the drinking water supplier must demonstrate that—
 - (i) no *E. coli* or total coliforms has been detected from monitoring over the previous three years with 12 samples taken per year evenly spaced over the year; and
 - (ii) an enteric viral indicator monitoring programme, including a written report prepared by an independent suitably qualified and experienced person, demonstrates that a health-outcome target of 1 enteric viral infection/10,000 people/year can be achieved and maintained for the supply:
 - (b) an assessment must be undertaken immediately if any monitoring result (including from source water rules monitoring) indicates that—
 - (i) *E. coli* or total coliforms have been detected; or
 - (ii) enteric viral indicators have been detected at a level that demonstrates that the health-outcome target of 1 enteric viral infection/10,000 people/year cannot be achieved; or
 - (iii) the integrity of the groundwater has been compromised:
 - (c) the assessment must—
 - (i) determine the likely cause; and
 - (ii) identify any actions that need to be taken to protect public health; and
 - (iii) include an investigative sampling programme based on the sampling requirements in (a) for the determinand not met and any other determinands deemed appropriate; and
 - (iv) determine whether the source water still meets the criteria for Class A or reassessment is required to determine the appropriate source water class.
- (2) If a drinking water supplier does not have the required monitoring data to demonstrate that source water is Class A, **Class A (Interim)** status can be applied to achieve Class A status by meeting the following requirements:
 - (a) the drinking water supplier must demonstrate that, after 52 weeks,—
 - (i) no *E. coli* or total coliforms have been detected after consecutive daily monitoring for 36 days, followed by weekly monitoring for the remainder of the 52 weeks; and
 - (ii) an enteric viral indicator monitoring programme, including a written report prepared by an independent suitably qualified and experienced person, demonstrates that a health-outcome target of 1 enteric viral infection/10,000 people/year can be achieved and maintained for the supply:

- (b) an assessment must be undertaken immediately if any monitoring result (including from source water rules monitoring) indicates that—
 - (i) *E. coli* or total coliforms have been detected; or
 - (ii) enteric viral indicators have been detected at a level that demonstrates that the health-outcome target of 1 enteric viral infection/10,000 people/year cannot be achieved; or
 - (iii) the integrity of the groundwater has been compromised:
 - (c) the assessment must—
 - (i) determine the likely cause; and
 - (ii) identify any actions that need to be taken to protect public health; and
 - (iii) include an investigative sampling programme based on the sampling requirements in rule 8(1)(a) for the determinand not met and any other determinands deemed appropriate:
 - (d) if Class A status cannot be established within 24 months of being classified as a Class A (Interim) source, the source water must be classified as Class B or Class C.
- (3) **Class B** is groundwater abstracted from a depth of greater than 30 metres below ground level (with depth measured from ground level to the top of the upper most screen) and abstracted via a sanitary bore head that meets the following requirements:
 - (a) the drinking water supplier must demonstrate that no *E. coli* or total coliforms has been detected from monitoring over the previous three years with 12 samples taken per year evenly spaced over the year:
 - (b) an assessment must be undertaken immediately if any monitoring result (including from source water rules monitoring) indicates that—
 - (i) *E. coli* or total coliforms have been detected; or
 - (ii) the integrity of the groundwater has been compromised:
 - (c) the assessment must—
 - (i) determine the likely cause; and
 - (ii) identify any actions that need to be taken to protect public health; and
 - (iii) include an investigative sampling programme based on the sampling requirements in (a) for the determinand not met and any other determinands deemed appropriate; and
 - (iv) determine whether the source water still meets the criteria for Class B or reassessment is required to determine the appropriate source water class.
- (4) If a drinking water supplier does not have the required monitoring data to demonstrate Class B source water, **Class B (Interim)** status can be applied to achieve Class B status by meeting the following requirements:
 - (a) the drinking water supplier must demonstrate that, after 52 weeks, no *E. coli* or total coliforms have been detected after consecutive daily monitoring for 36 days, followed by weekly monitoring for the remainder of the 52 week period:

- (b) an assessment must be undertaken immediately if any monitoring result (including from source water rules monitoring) indicates that—
 - (i) *E. coli* or total coliforms have been detected; or
 - (ii) the integrity of the groundwater has been compromised:
 - (c) the assessment must—
 - (i) determine the likely cause; and
 - (ii) identify any actions that need to be taken to protect public health; and
 - (iii) include an investigative sampling programme based on the sampling requirements in rule 8(3)(a) for the determinand not met and any other determinands deemed appropriate:
 - (d) if Class B status cannot be established within 24 months of being classified as a Class B (Interim) source, the source water must be classified as Class C.
- (5) **Class C** is—
- (a) groundwater abstracted from a depth of greater than 10m below ground level including groundwater abstracted from greater than 30m that is not class A or B (with depth measured from ground level to the top of the upper most screen); or
 - (b) roof collected water; or
 - (c) spring water that is not under the influence of surface water; or
 - (d) Class D surface water, spring water or groundwater (abstracted from a depth of less than 10m) that has a low level of protozoa contamination risk based on an assessment carried out at least every five years and recorded in a written report prepared by a suitably qualified and experienced person.
- (6) **Class D** is—
- (a) surface water that is not Class C; or
 - (b) spring water that is not Class C; or
 - (c) groundwater that is not Class A, Class A (Interim), Class B, Class B (Interim) or Class C.

9 Requirements for a sanitary bore head

A bore head is a sanitary bore head for the purpose of Level 3 Rules Modules if all the following criteria are met:

- (a) the bore head is installed above ground:
- (b) the bore is installed in an area of ground that is not below the surrounding ground level such that ponding could occur around the bore head during rainfall:
- (c) the annulus of the casing is sealed, taking into account the formation that the bore has been installed in, to prevent the ingress of surface water via the outside of the casing and the bore is grouted below ground to an appropriate depth:
- (d) a concrete apron is installed around the bore head, extending at least 1 metre from the centre of the bore in all directions from the casing and sloping away from the casing so that any water on the concrete apron and surrounding ground surface is carried away from the bore:

- (e) all openings into the bore (for cables etc) are sealed and watertight to prevent access from water and vermin-proofed to prevent access by small animals etc:
- (f) all air vents and any other openings that are not watertight must be screened to prevent access by small animals, face downwards, and be elevated at least 0.5 metres above the surrounding ground level:
- (g) reasonable security measures are in place to protect the bore head from unauthorised access or interference:
- (h) if the bore head is in an area where livestock are present, it must be fenced to exclude those animals from an area extending at least five metres from the bore head:
- (i) a mechanism prevents backflow at the bore head:
- (j) the bore head is inspected monthly for damage or defects and records kept of all inspections for at least five years.

10 Revocation and transitional provisions

- (1) The *Drinking Water Quality Assurance Rules 2022* are revoked from [date].
- (2) [transitional provision to be inserted]

Schedule 1

Drinking Water Quality Assurance Rules 2025

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G General Rules module**G.RR Reporting rules**

Rule number	Requirement	Parameters
G.RR.1	Drinking water suppliers demonstrating compliance against level 1 monitoring rules modules must report annually— (a) the test results required under each monitoring rule; and (b) the supply component ID, sample ID, sample date and test results for each sample analysed by or on behalf of the supplier for compliance with these rules; and (c) where continuous monitoring has been used in place of grab sampling— (i) any determinand(s) that did not comply with the relevant rule; and (ii) the details of a non-compliance with the rule, including duration, time and date; and (d) within 40 working days of the end of each compliance year; and (e) in an approved form.	Rule type: Non-reporting
G.RR.2	Drinking water suppliers demonstrating compliance against level 2 monitoring rules must report quarterly for rules with a one-month or three-month compliance periods and annually for rules with a one-year compliance period— (a) whether the supply complied with each monitoring rule or not for the compliance period; and (b) the number of compliance periods that each rule was not complied with; and (c) the supply component ID, sample ID, sample date and test results for each sample analysed by or on behalf of the supplier for compliance with these rules; and (d) where continuous monitoring has been used in place of grab sampling— (i) any determinand(s) that did not comply with the relevant rule; and (ii) the details of any non-compliance with the rule, including duration, time and date; and	Rule type: Non-reporting

	(e) within 20 working days of the end of each quarter for rules with a one-month or three-month compliance period; and (f) within 40 working days of the end of each year for rules with one-year compliance periods; and (g) in an approved form.	
G.RR.3	Drinking water suppliers demonstrating compliance against level 2 assurance rules must report annually— (a) whether the supply complied with each assurance rule for the compliance year; and (b) within 40 working days of the end of each compliance year; and (c) in an approved form.	Rule type: Non-reporting
G.RR.4	Drinking water suppliers demonstrating compliance against level 3 monitoring rules that require continuous monitoring must report monthly— (a) whether the supply complied with each monitoring rule for the month; and (b) for every non-compliance— (i) the number of days that the rule was not complied with; and (ii) the date and duration of the non-compliance; and (iii) the extent of the non-compliance; and (c) within 20 working days of the end of each reporting period; and (d) in an approved form.	Rule type: Non-reporting
G.RR.5	Drinking water suppliers demonstrating compliance against level 3 monitoring rules that require grab samples must report <u>monthly for rules with a one-month reporting period and annually for rules with a one-year reporting period</u>— (a) whether the supply complied with each rule or not for the compliance period; and (b) <u>the number of compliance periods that each rule was not complied with; and</u> (c) the supply component, sample ID, sample date and the sample test result for each sample analysed by or on behalf of the supplier for compliance with these rules; and (d) within 20 working days of the end of each month for rules with a one-month reporting period; and (e) within 40 working days of the end of each year for rules with a one-year reporting period; and (f) in an approved form.	Rule type: Non-reporting

G.RR.6	Drinking water suppliers demonstrating compliance against level 3 assurance rules must report monthly for assurance rules with a one-month reporting period and annually for assurance rules with a one-year reporting period— (a) whether the supply complied with each assurance rule during each compliance period; and (b) within 20 working days of the end of the compliance period for assurance rules with a one-month reporting period; and (c) within 40 working days of the end of each compliance period for assurance rules with a one-year reporting period; and (d) in an approved form.	Rule type: Non-reporting
G.RR.7	Drinking water suppliers demonstrating compliance against level 1, level 2, and level 3 Rules modules must indicate in each report— (a) the start and end dates of reporting period (for example, the first and last day of the month, quarter, or year); and (b) the supply ID of the supply being reported on; and (c) the Rules modules the supplier has elected to comply with for the duration indicated on the report; and (d) the rule numbers that each reported result relates to; and (e) the date the report was submitted; and (f) the name and email of the person submitting the report.	Rule type: Non-reporting

G.SM Sampling and monitoring rules

Rule number	Requirement	Parameters
G.SM.1	All samples collected from drinking water supplies for monitoring that are analysed by laboratories, must be labelled with— (a) the unique sample identifier; and (b) the supply ID and, where applicable, the supply component ID (for example, source, treatment plant, distribution zone or Water Carrier Service identifier ID) from which the sample was collected; and (c) the time that the sample was collected; and (d) the date that the sample was collected.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

G.SM.2	Reasonably practicable steps must be taken to ensure that— (a) samples for <i>E. coli</i> , total coliforms, or other microbiological contaminants are delivered to a laboratory within 24 hours of the sample being collected; and (b) samples are at a water temperature that is no higher than the water temperature at the time of sampling but above zero degrees Celsius.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
G.SM.3	All water samples that are analysed by a laboratory and are used to demonstrate compliance with these Rules must be— (a) analysed by a laboratory accredited by IANZ for the type of analysis being undertaken; and (b) collected according to any instructions and specifications provided by the laboratory.	Rule type: Non-reporting
G.SM.4	Equipment used for the analysis of single samples/grab samples to demonstrate compliance with these Rules, must be calibrated/verified in accordance with the instrument manufacturer's specified procedures and frequency.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

G.CH Capability and hygiene rules

Rule number	Requirement	Parameters
G.CH.1	All work (planned or unplanned) on a drinking water supply must be completed by suitably trained or experienced personnel.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
G.CH.2	A hygiene code of practice must be prepared and implemented for people working on or visitors to, a drinking water supply and must include— (a) maintenance of personal hygiene at all times; and (b) prohibition of people working on, or visitors to, a water system who are experiencing any gastrointestinal illness; and (c) protection of the work site, materials, and tools from contamination; and (d) how all reasonable steps will be taken to minimise the entry of contamination into the water supply during any activity.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

G.CM Continuous monitoring rules

Rule number	Requirement	Parameters
G.CM.1	Continuous on-line monitoring equipment used to demonstrate compliance with these Rules must— (a) be calibrated in accordance with the instrument manufacturer's specified procedures and frequency; and (b) have calibration verified in accordance with the instrument manufacturer's specified procedures.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
G.CM.2	Continuous monitoring equipment that is used to demonstrate compliance must be configured to record data at the following intervals for continuous monitoring rule requirements: (a) five minutes for FAC and fluoride analysers where the minimum cycle time specified by the manufacturer exceeds one minute; (b) one minute for all other determinands in level 2 and level 3 treatment rules; (c) 30 minutes for all determinands in level 3 source water rules and level 3 distribution rules.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
G.CM.3	Where continuous monitoring is used to demonstrate compliance with level 3 source water rules or level 3 distribution rules and continuously monitored data cannot be recorded— (a) test results from grab samples may be used to verify compliance with relevant water quality thresholds where one grab sample may be used to account for up to 24 hours of lost continuous monitoring data for a period of up to 48 hours; and (b) if a grab sample used to supplement continuous monitoring data fails to meet the continuous monitoring limit, the rule must be considered non-compliant for the day.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
G.CM.4	When continuous monitoring is used to demonstrate compliance with level 3 treatment rules and continuously monitored data cannot be recorded—	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

	(a) test results from grab samples may be used to verify compliance with relevant water quality thresholds where one grab sample may be used to account for up to 60 consecutive minutes of lost continuous monitoring data; and (b) if a grab sample used to supplement continuous monitoring data fails to meet the continuous monitoring limit, the supply must be considered non-compliant with the relevant rule for the day.	
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VSC Very Small Communities Rules module

[Placeholder]

S1 Level 1 Source Water Rules module

[Placeholder]

T1 Level 1 Treatment Rules module

[Placeholder]

D1 Level 1 Distribution System Rules module

[Placeholder]

S2 Level 2 Source Water Rules module

[Placeholder]

T2 Level 2 Treatment Rules module

[Placeholder]

D2 Level 2 Distribution System Rules module

[Placeholder]

VP Varying Populations Rules module

[Placeholder]

S3 Level 3 Source Water Monitoring Rules module

S3.CR Source water common rules

Rule number	Requirement	Parameters
S3.CR.1	The source water class of each source of a drinking water supply must be determined— (a) based on the source water classes set out in rule 8 and recorded in writing; and (b) by a suitably qualified and experienced person.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

S3.AB Class A and Class B source water rules

Rule number	Requirement	Parameters
S3.AB.1	(a) Each bore must meet the requirements for a sanitary bore head set out in rule 9. (b) A sanitary bore head must be demonstrated to meet the requirements by a written assessment from a suitably qualified and experienced person every five years.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
S3.AB.2	Representative sampling may be used to demonstrate compliance if— (a) the source water is or is being determined to be, Class A, Class A (Interim), Class B or Class B (Interim); and (b) the representative sampling meets the requirements for representative sampling set out in rule 7.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
S3.AB.3	Each groundwater source must be monitored at least twice every month for the following: (a) <i>E. coli</i>; (b) total coliforms.	Rule type: Monitoring Compliance period: 1 month Reporting period: 1 month
S3.AB.4	Class A and Class A (Interim) groundwater sources must be monitored for evidence of viral contamination at the frequency determined by the enteric viral indicator monitoring programme prepared for the supply under rule S3.CR.1 and rule 8.	Rule type: Monitoring Compliance period: 1 year Reporting period: 1 year
S3.AB.5	Each groundwater source must be monitored at least every month for the following: (a) iron; (b) manganese; (c) nitrate.	Rule type: Monitoring Compliance period: 1 month Reporting period: 1 month

S3.AB.6	Each groundwater source or the water from a combination of groundwater sources must be monitored continuously for the following: (a) conductivity: (b) pH: (c) turbidity.	Rule type: Monitoring Compliance period: 1 day Reporting period: 1 month
S3.AB.7	Each groundwater source must be monitored at least annually for the following: (a) alkalinity: (b) antimony: (c) arsenic: (d) boron (e) cadmium: (f) chloride: (g) chromium: (h) copper: (i) fluoride (j) hardness (k) lead: (l) mercury: (m) nickel: (n) sodium: (o) sulphate.	Rule type: Monitoring Compliance period: 1 year Reporting period: 1 year
S3.AB.8	Any determinands identified as presenting a risk to the supply, or found to exceed 50% of their MAV in source water samples (excluding those in rules S3.AB.3, S3.AB.5 and S3.AB.6), must be monitored at least every month until 12 consecutive monthly test results from source water samples are less than 50% of the MAV or are at a level considered not to present a health risk if they do not have a MAV.	Rule type: Monitoring Compliance period: 1 month Reporting period: 1 month
S3.AB.9	Each groundwater source must be monitored at least every 10 years for the following radiological and chemical determinands: (a) gross alpha activity: (b) gross beta activity: (c) potassium 40.	Rule type: Non-reporting

S3.CD Class C and Class D source water rules

Rule number	Requirement	Parameters
S3.CD.1	Each source water or the combined water from multiple sources must be monitored continuously for the following: (a) conductivity: (b) pH: (c) turbidity.	Rule type: Monitoring Compliance period: 1 day Reporting period: 1 month
S3.CD.2	Each source water must be monitored at least twice every month for the following: (a) <i>E. coli</i> : (b) total coliforms.	Rule type: Monitoring Compliance period: 1 month Reporting period: 1 month
S3.CD.3	Each source water must be monitored at least every month for the following: (a) iron: (b) manganese: (c) nitrate: (d) colour.	Rule type: Monitoring Compliance period: 1 month Reporting period: 1 month
S3.CD.4	Each source water must be monitored at least annually for the following: (a) alkalinity: (b) antimony: (c) arsenic: (d) boron: (e) cadmium: (f) chloride: (g) chromium: (h) copper: (i) fluoride: (j) hardness: (k) lead: (l) mercury: (m) nickel: (n) sodium: (o) sulphate.	Rule type: Monitoring Compliance period: 1 year Reporting period: 1 year

S3.CD.5	Any determinands identified as presenting a risk to the supply or found to exceed 50% of their MAV in source water samples (excluding those in rules S3.CD.1, S3.CD.2 and S3.CD.3) must be monitored at least every month until 12 consecutive monthly test results from source water samples are less than 50% of the MAV or are at a level considered not to present a health risk if they do not have a MAV.	Rule type: Monitoring Compliance period: 1 month Reporting period: 1 month
S3.CD.6	(a) Each Class C source water that meets rule 8(5)(d) and Class D source water must be assessed to determine— (i) whether it has high, medium, low or no likelihood for the presence of planktonic and/or benthic cyanobacteria; and (ii) when cyanobacteria are most likely to be present. (b) The assessment must be undertaken by a suitably qualified and experienced person, recorded in writing and renewed every five years.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
S3.CD.7	Source waters that have a medium or high likelihood of planktonic cyanobacteria must be either— (a) monitored for cyanobacteria biovolume during the period that cyanobacteria are likely to be present (including October to May)— (i) weekly if the source has been assessed as having high likelihood in rule S3.CD.6; or (ii) monthly if the source has been assessed as having medium likelihood in rule S3.CD.6; or (b) treated using a cyanotoxin removal treatment process.	Rule type: Monitoring Compliance period: 1 month Reporting period: 1 month
S3.CD.8	Source waters that have a medium or high likelihood of benthic cyanobacteria must be— (a) assessed during the period that cyanobacteria are likely to be present (including October to May) for benthic mat coverage each week; and (b) if benthic mat coverage exceeds 5% or floating mats are observed on the water surface, either— (i) monitored for cyanobacteria biovolume in the source water— a. weekly if the source has been assessed as having high likelihood in rule S3.CD.6; or b. monthly if the source has been assessed as having medium likelihood in rule S3.CD.6; or	Rule type: Monitoring Compliance period: 1 month Reporting period: 1 month

	(ii) treated using a cyanotoxin removal treatment process.	
S3.CD.9	Source waters that have a cyanobacteria biovolume exceeding 0.25 mm ³ /L must be monitored for cyanotoxins after treatment.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

T3 Level 3 Treatment Rules Module

T3.BV Bacteria and virus treatment rules

T3.BV.C Bacteria and virus treatment common rules

Rule number	Requirement	Parameters
T3.BV.C1	All drinking water supplied must pass through a treatment plant and fully comply with the relevant bacteria and virus monitoring rules to provide an effective barrier to bacterial and viral contaminants each day.	Rule type: Assurance Compliance period: 1 day Reporting period: 1 month
T3.BV.C2	For Class B, Class B (Interim), Class C and Class D source waters, one or more of the following treatment options must be used to demonstrate bacteria and virus barrier compliance: (a) FAC: (b) ozone: (c) UV light.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
T3.BV.C3	Drinking water leaving a treatment plant must be continuously monitored for the following: (a) FAC at a point after which chlorine has been well-mixed: (b) pH at a point after which chlorine has been well-mixed: (c) turbidity. <i>Note: This rule does not apply to Self-supplied Buildings.</i>	Rule type: Non-reporting
T3.BV.C4	Drinking water leaving a treatment plant must meet the following limits: (a) FACE of not less than 0.2 mg/L: (b) pH of between 6.5 and 8 for at least 95% of the time the plant is producing drinking each day: (c) turbidity less than 5NTU. <i>Note: This rule does not apply to Self-supplied Buildings.</i>	Rule type: Monitoring Compliance period: 1 day Reporting period: 1 month

T3.BV.F Free Available Chlorine rules

Rule number	Requirement	Parameters
T3.BV.F1	Drinking water treated by FAC treatment processes must be continuously monitored for the following: (a) turbidity,— (i) after the outlet of the contact tank; or (ii) before the lime is dosed, where lime is used for post-treatment pH adjustment: (b) FAC, after the outlet of the contact tank: (c) pH, after the outlet of the contact tank: (d) FACE (calculated): (e) flow, at— (i) the outlet of the contact tank; or (ii) the inlet of the contact tank; or (iii) a calculated outlet flow based on inlet flow and contact level change if a high-level outlet weir is installed): (f) contact tank level, if used to determine T_{10} contact time and C.t value: (g) T_{10} contact time: (h) C.t value.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
T3.BV.F2	Drinking water treated by FAC leaving the treatment plant must meet the following requirements: (a) chlorine C.t value must be at least 15 min.mg/L for at least 95% of the time the plant is producing drinking water each day: (b) T_{10} contact time must be demonstrated to be of at least 5 minutes: (c) turbidity must be less than 1.0 NTU for at least 95% of the time the plant is producing drinking water each day: (d) turbidity must not exceed 2.0 NTU for more than 15 consecutive minutes.	Rule type: Monitoring Compliance period: 1 day Reporting period: 1 month

T3.BV.Z Ozone rules

Rule number	Requirement	Parameters
T3.BV.Z1	Drinking water treated by ozone treatment processes must be continuously monitored for the following:	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

	(a) ozone residual at the outlet of the contact tank (alternative monitoring sites may be used if the drinking water supplier can demonstrate that they improve the accuracy of the monitoring information): (b) turbidity at a point immediately before or after the contact tank: (c) flow at the— (i) outlet of the contact tank; or (ii) inlet of the contact tank, if a high-level outlet weir is installed: (d) temperature of water leaving the contact tank: (e) the water level in the contact tank: (f) T_{10} contact time: (g) C.t.	
T3.BV.Z2	The following requirements must be met for turbidity and ozone: (a) turbidity of water leaving the contact tank must not exceed 5.0 NTU for the duration of any consecutive 15-minute period: (b) an ozone C.t value of at least 1.2 min.mg/L for at least 95% of the time the plant is producing drinking water each day.	Rule type: Monitoring Compliance period: 1 day Reporting period: 1 month

T3.BV.U UV rules

Rule number	Requirement	Parameters
T3.BV.U1	UV units must be validated to (and operated within the specifications of) a designated UV validation standard.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
T3.BV.U2	Drinking water treated by UV light must be continuously monitored for the following: (a) UVT, at a point where water enters or leaves the UV unit(s), except UV units validated to NSF/ANSI 55 - Class A: (b) turbidity, at a point where water enters or leaves the UV unit(s), including upstream filter monitoring if there is no other process between the filters and the UV unit(s): (c) UVI or UV dose, at the same point in the UV unit as that used for certification/validation:	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

	(d) flow, at a point representative of water entering or leaving the units, which meets the relevant certification/validation requirements.	
T3.BV.U3	Water flow rate must be within the UV unit's certified flow range for at least a minimum RED dose of 40 mJ/cm ² (or equivalent) for the log credits claimed for at least 95% of the time the UV unit is operating each day.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
T3.BV.U4	A reduction equivalent dose of not less than 40 mJ/cm ² (or equivalent) must be achieved for not less than 95% of the time the plant is producing drinking water each day.	Rule type: Monitoring Compliance period: 1 day Reporting period: 1 month
T3.BV.U5	The reduction equivalent dose delivered by a UV unit must not be less than 40 mJ/cm ² (or equivalent) for the duration of any consecutive 15-minute period.	Rule type: Monitoring Compliance period: 1 day Reporting period: 1 month
T3.BV.U6	Turbidity of water entering the UV unit(s) when it is in service must not exceed 5.0 NTU for the duration of any consecutive 15-minute period.	Rule type: Monitoring Compliance period: 1 day Reporting period: 1 month
T3.BV.U7	UV units validated to USEPA UVDGM must calculate dose using— (a) UVI and flow, if set-point dose approach is used; or (b) UVI, flow, and UVT, if calculated dose approach used.	Rule type: Non-reporting
T3.BV.U8	UV units validated to DVGW; ÖNORM; or DIN must— (a) use monitored flow for UVI control; or (b) be run at full power; and (c) UVI and UVT must be more than the validated value for the respective flow.	Rule type: Non-reporting
T3.BV.U9	UV units validated to NSF/ANSI 55 – Class A must generate a fault when any parameter exceeds the validated value.	Rule type: Non-reporting
T3.BV.U10	UVI sensors must meet the following requirements: (a) duty UVI sensors must be— (i) checked at least every month against the reference sensor; and (ii) replaced if the difference between the duty and reference readings exceeds the manufacturer's specified limits:	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

	(b) a reference UVI sensor must— (i) have been purchased in the last 12 months; or (ii) be standardised at least annually in accordance with the USEPA UVDGM or other traceable procedure: (c) after 12 months of use, the reference sensor can be used as a duty sensor and a new standardised sensor must be used as a reference sensor.	
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T3.PZ Protozoa treatment rules

T3.PZ.C Protozoa treatment common rules

Rule number	Requirement	Parameters
T3.PZ.C1	All drinking water supplied must— (a) pass through a treatment plant; and (b) if Class C or Class D source water is used, fully comply with the relevant protozoa monitoring rules to provide an effective barrier to protozoal contaminants each day.	Rule type: Assurance Compliance period: 1 day Reporting period: 1 month
T3.PZ.C2	The following minimum levels of protozoa treatment must be met by treatment processes based on the source water class determined in rule 8: (a) Class A: 0-log (protozoa treatment not required): (b) Class A (Interim): 0-log (protozoa treatment not required): (c) Class B: 0-log (protozoa treatment not required): (d) Class B (Interim): 0-log (protozoa treatment not required): (e) Class C: 3-log: (f) Class D: 4-log.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
T3.PZ.C3	Class C and Class D source water must be treated to control protozoa to the level determined in rule T3.PZ.C2 by one or more of the following treatment processes: (a) coagulation and direct filtration (2.5-log): (b) coagulation, flocculation, sedimentation (includes dissolved air floatation), and filtration (3.0-log to 4-log): (c) cartridge filtration (2.0-log): (d) membrane filtration (up to 4.0-log): (e) ozone (0.25 to 3.0-log): (f) ultraviolet light (up to 4.0-log).	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

T3.PZ.C4	Where multiple treatment processes are used to meet log credit requirements, cumulative log credits can be calculated if the processes include— (a) one filtration process recognised under rule T3.PZ.C3(a) to (d); and (b) one disinfection process recognised under rule T3.PZ.C3(e) or (f).	Rule type: Non-reporting
T3.PZ.C5	The following requirements apply to recycled water: (a) untreated waste streams must not be recycled to the head of the plant: (b) water from rapid media filters that is diverted during restart (often referred to as ‘filter to waste’) may be retained and used for filter backwash or recycled with other waste streams: (c) water that is recycled from a treatment process must— (i) be returned to the intake of the plant so that it undergoes the full treatment process; and (ii) undergo effective solids liquid separation of waste streams prior to recycling; and (iii) have turbidity monitored to demonstrate that the recycled water has received effective solids/liquid separation; and (iv) not detrimentally affect treatment processes downstream of the recycling return point; and (v) be subject to flow equalisation so that— a. the mean total recycled water return rate does not exceed 10% of the plant inflow; or b. the volumetric ratio of recycle water to raw water does not exceed 10% prior to the first treatment barrier; and c. the 30-minute rolling average recycle rate does not exceed 10% for 95% of the time; and d. the 30-minute rolling average rate does not exceed 15% for more than 15 minutes.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
T3.PZ.C6	The turbidity of filtered water leaving any filter must be lower than the water entering that filter while it is in service.	Rule type: Non-reporting

T3.PZ.D Coagulation and direct filtration rules [2.5-Log]

Rule number	Requirement	Parameters
T3.PZ.D1	Filtration must be of a rapid media design (pressure or gravity).	Rule type: Non-reporting
T3.PZ.D2	The turbidity of filtered water must be continuously monitored on the outlet of each filter while it is in service.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
T3.PZ.D3	The turbidity of filtered water leaving any filter must not exceed the following limits: (a) 0.3 NTU for more than 5% of the time the filter is in operation each day; (b) 0.5 NTU for the duration of any consecutive 15-minute period in each day.	Rule type: Monitoring Compliance period: 1 day Reporting period: 1 month

T3.PZ.F Coagulation, flocculation, sedimentation and filtration rules [3-Log]

Rule number	Requirement	Parameters
T3.PZ.F1	Filtration must be of a rapid media design (pressure or gravity).	Rule type: Non-reporting
T3.PZ.F2	The turbidity of filtered water must be continuously monitored on the outlet of each filter while it is in service.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
T3.PZ.F3	The turbidity of filtered water leaving any filter must not exceed the following limits: (a) 0.3 NTU for more than 5% of the time the filter is in operation each day; (b) 0.5 NTU for the duration of any consecutive 15-minute period in each day.	Rule type: Monitoring Compliance period: 1 day Reporting period: 1 month

T3.PZ.F Coagulation, flocculation, sedimentation and filtration rules [3.5-Log]

Rule number	Requirement	Parameters
T3.PZ.F4	Filtration must be of a rapid media design (pressure or gravity).	Rule type: Non-reporting
T3.PZ.F5	The turbidity of filtered water must be continuously monitored on the outlet of each filter while it is in service.	Rule type: Assurance Compliance period: 1 year

		Reporting period: 1 year
T3.PZ.F6	The turbidity of filtered water leaving any filter must not exceed the following limits: (a) 0.15 NTU for more than 5% of the time the filter is in operation each day: (b) 0.5 NTU for the duration of any consecutive 15-minute period in each day.	Rule type: Monitoring Compliance period: 1 day Reporting period: 1 month

T3.PZ.F Coagulation, flocculation, sedimentation and filtration rules [4-Log]

Rule number	Requirement	Parameters
T3.PZ.F7	Filtration must be of a rapid media design (pressure or gravity).	Rule type: Non-reporting
T3.PZ.F8	The turbidity of filtered water must be continuously monitored on the outlet of each filter while it is in service.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
T3.PZ.F9	The turbidity of filtered water leaving any filter must not exceed the following limits: (a) 0.1 NTU for more than 5% of the time the filter is in operation each day: (b) 0.3 NTU for the duration of any consecutive 15-minute period in each day.	Rule type: Monitoring Compliance period: 1 day Reporting period: 1 month

T3.PZ.X Cartridge filtration rules [2-Log]

Rule number	Requirement	Parameters
T3.PZ.X1	The following requirements must be met where cartridge filtration is used: (a) pumps must not be connected directly to the discharge side of any cartridge filter: (b) where pumping occurs after filtration, the filtrate must first discharge directly to a tank: (c) differential pressure must be measured across each cartridge filter and must not exceed the cartridge filter manufacturer's specifications: (d) the flow through any filters, measured on the inlet or outlet of each filtration housing, must be within the manufacturer's design specifications for the treatment processes at all times:	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

	(e) the minimum differential pressure must always exceed the differential pressure established at commissioning with a new cartridge: (f) individual cartridges must be able to be clearly identified in relation to the manufacturer and the part number that relates to the validation/certification.	
T3.PZ.X2	The turbidity of filtered water from each filter housing must— (a) be continuously monitored on the combined inlet to the process; and (b) be continuously monitored on the outlet of each filtration housing.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
T3.PZ.X3	The turbidity of filtered water from each filter housing must— (a) not exceed 1.0 NTU for more than 5% of the time the filter is in operation each day; and (b) not exceed 1.0 NTU for the duration of any consecutive 15-minute period; and (c) not exceed the turbidity of the cartridge feed water for the duration of any consecutive 15-minute period (exceedances of not more than 2% are allowable to take account of measurement accuracy).	Rule type: Monitoring Compliance period: 1 day Reporting period: 1 month
T3.PZ.X4	Each filtration cartridge must have a certified cryptosporidium (oo)cyst removal efficiency of at least 3-log and be certified/validated to one of the following: (a) the USEPA (2010) Long Term 2 Enhanced Surface Water Treatment Rule: Toolbox Guidance Manual Part 8: Bag and Cartridge Filters: (b) the (oo)cyst reduction conditions of Drinking Water Treatment Units: Health effects, NSF/ANSI 53 (NSF, ANSI 2002).	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

T3.PZ.M *Membrane (microfiltration/ultrafiltration) filtration rules [up to 4-Log]*

Rule number	Requirement	Parameters
T3.PZ.M1	The following requirements must be met where membrane filtration is used: (a) direct integrity tests must be performed on each membrane filtration unit at least daily if the	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

	membrane filtration unit has been in service at any point during the day (midnight to midnight): (b) direct integrity tests must be performed on any membrane unit that has been out of service for maintenance, or any other reason, for more than 6 hours before the unit is returned to service: (c) direct integrity tests must be performed on any membrane unit if the turbidity of filtrate from that unit exceeds 0.1 NTU for more than 15 minutes: (d) no membrane unit may be used if it has failed its direct integrity test: (e) turbidity of filtered water of each membrane unit (rack, train or cell) must be continuously monitored.	
T3.PZ.M2	Filtered water from each membrane unit must not exceed the following limits: (a) 0.1 NTU for more than 15 consecutive minutes: (b) 1.0 NTU at any time.	Rule type: Monitoring Compliance period: 1 day Reporting period: 1 month
T3.PZ.M3	Membranes must be certified/validated/verified to comply with <i>NSF/ANSI 61: Drinking Water System Components – Health Effects and NSF/ANSI 419 Public Drinking Water Equipment Performance – Filtration or equivalent</i>.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
T3.PZ.M4	Membranes must be operated— (a) to achieve only the log credits that validation specifies; and (b) according to the operational requirements under which the membranes have been validated; and (c) so that when a direct integrity test is undertaken, a 3µm hole affects the membrane filtration unit's response to the test.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

T3.PZ.Z Ozone rules [0.25 to 3.0-Log]

Rule number	Requirement	Parameters
T3.PZ.Z1	Drinking water treated by ozone disinfection must be continuously monitored for the following: (a) ozone residual at the outlet of the contact tank (alternative monitoring sites may be used if the drinking water supplier can demonstrate that they improve the accuracy of the monitoring information):	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

	(b) turbidity at a point immediately before or after the contact tank: (c) flow at the— (i) outlet of the contact tank; or (ii) inlet of the contact tank, if a high-level outlet weir is installed: (d) temperature of water leaving the contact tank: (e) the water level in the contact tank: (f) T₁₀ Contact Time: (g) C.t.	
T3.PZ.Z2	The flowing requirements must be met where ozone disinfection is used: (a) turbidity of water leaving the contact tank must not exceed 5.0 NTU for the duration of any consecutive 15-minute period: (b) the C.t and water temperature required for the log credit claimed (see Table 1) must be achieved for more than 95% of the time the plant is producing drinking water to be distributed to consumers each day: (c) the C.t and water temperature must not be less than 80% of the values required for the log credit claimed (see Table 1) for the duration of any consecutive 15-minute period.	Rule type: Monitoring Compliance period: 1 day Reporting period: 1 month

Table 1: C.t values (min.mg/L) for cryptosporidium inactivation by ozone valid for ozone concentrations in the range 0.2-5.0mg/L

Log credit	Water temperature (°C)*					
	*C.t values between the indicated temperatures may be determined by interpolation					
	1	5	10	15	20	25
0.25	5.8	4.0	2.5	1.6	1.0	0.6
0.5	12	7.9	4.9	3.1	2.0	1.2
1.0	23	16	9.9	6.2	3.9	2.5
1.5	35	24	15	9.3	5.9	3.7
2.0	46	32	20	12	7.8	4.9
2.5	58	40	25	16	9.8	6.2
3.0	69	47	30	19	12	7.4

T3.PZ.U UV rules [up to 4-Log]

Rule number	Requirement	Parameters
T3.PZ.U1	UV units must be validated to meet the protozoa log credits required from the UV unit and operated within the specifications of a designated UV validation standard.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
T3.PZ.U2	Drinking water treated by UV light must be continuously monitored for the following: (a) UVT, at a point where water enters or leaves the UV unit except UV units validated to NSF/ANSI 55 - Class A: (b) turbidity, at a point before the water enters or leaves the UV unit(s), including upstream filter monitoring if there is no other process between the filters and the UV unit(s): (c) UVI or UV dose, at the same point in the UV unit as that used for certification/verification: (d) flow, at a point representative of water entering or leaving the units, which meets the relevant certification/validation requirements.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
T3.PZ.U3	Water flow rate must be within the UV units certified flow range for the claimed log credit at least 95% of the time the UV unit is operating each day.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
T3.PZ.U4	A reduction equivalent dose of not less than that the validated dose for the log credits claimed must be achieved for not less than 95% of the time the plant is producing drinking water each day	Rule type: Monitoring Compliance period: 1 day Reporting period: 1 month
T3.PZ.U5	The reduction equivalent dose delivered by a UV unit must not be less than the validated dose for the protozoa log credits claimed for the duration of any consecutive 15-minute period.	Rule type: Monitoring Compliance period: 1 day Reporting period: 1 month
T3.PZ.U6	Turbidity of water entering the UV unit(s) when it is in service must not exceed 5.0 NTU for the duration of any consecutive 15-minute period.	Rule type: Monitoring Compliance period: 1 day Reporting period: 1 month
T3.PZ.U7	UV units validated to USEPA UVDGM must calculate dose using— (a) UVI and flow, if set-point dose approach is used; or	Rule type: Non-reporting

	(b) UVI, flow, and UVT, if calculated dose approach used.	
T3.PZ.U8	UV units validated to DVGW; ÖNORM; or DIN must— (a) use monitored flow for UVI control; or (b) be run at full power; and (c) UVI and UVT must be more than the validated value for the respective flow.	Rule type: Non-reporting
T3.PZ.U9	UV units validated to NSF/ANSI 55 – Class A must generate a fault when any parameter exceeds the validated value.	Rule type: Non-reporting
T3.PZ.U10	UVI sensors must meet the following requirements: (a) duty UVI sensors must be— (i) checked at least every month against the reference sensor; and (ii) replaced if the difference between the duty and reference readings exceeds the manufacturer’s specified limits: (b) a reference UVI sensor must— (i) have been purchased in the last 12 months; or (ii) be standardised at least annually in accordance with the USEPA UVDGM or other traceable procedure: (c) after 12 months of use, the reference sensor can be used as a duty sensor and a new standardised sensor must be used as a reference sensor.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

T3.CH Chemical monitoring rules

Rule number	Requirement	Parameters
T3.CH.1	Any chemical dosed into the drinking water supply must be demonstrated to be safe for use in drinking water by either— (a) a certificate of analysis for each batch used including the following information: (i) an analysis of all chemicals and potential impurities in the product: (ii) the purity of each chemical by mass or volume (ppm, concentration or percentage); or	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

	(b) a certificate of compliance to the agreed chemical standard.	
T3.CH.2	(a) A schedule of all chemicals that are used for treatment in the drinking water supply must be prepared. (b) The schedule must identify which of those chemicals have a MAV.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
T3.CH.3	Water must be monitored (excluding chlorine and fluoride) at a point after the treatment processes (including contact tanks) each month for— (a) chemicals on the schedule prepared in rule T3CH.2 that have a MAV; and (b) chemicals that may be formed in the treatment process.	Rule type: Monitoring Compliance period: 1 month Reporting period: 1 month
T3.CH.4	Water leaving the treatment plant must be monitored monthly at a point directly after the final treatment process (including contact tanks) for determinands identified in source water monitoring that exceed 50% of their MAV in source water or are at a level considered to present a health risk if they do not have a MAV.	Rule type: Monitoring Compliance period: 1 month Reporting period: 1 year
T3.CH.5	Where sodium hypochlorite solution is used for disinfection, water leaving the treatment plant must be monitored for chlorate at least every week.	Rule type: Monitoring Compliance period: 1 month Reporting period: 1 month
T3.CH.6	If fluoride is added as part of the treatment process, it must be monitored continuously after the fluoride chemical is fully mixed.	Rule type: Monitoring Compliance period: 1 day Reporting period: 1 month

T3.CY Cyanotoxin monitoring rules

Rule number	Requirement	Parameters
T3.CY.1	When cyanobacteria are identified in Class C or Class D source water at levels that exceed the limits set out in rule S3.CD.9 or if a treatment process is being used to remove cyanotoxins from source water, water leaving the treatment plant must be monitored monthly for the following cyanotoxins: (a) anatoxins: (b) cylindrospermopsins: (c) microcystins/nodularins: (d) saxitoxins.	Rule type: Monitoring Compliance period: 1 month Reporting period: 1 month

T3.CY.2	If monitoring test results from rule T3.CY.1 exceed 25% of the MAV for any of anatoxins, cylindrospermopsins, microcystins/nodularins and saxitoxins, water leaving the treatment plant must be monitored at the following frequencies: (a) every two weeks if any of the above cyanotoxins are between 25% and 50% of the respective MAV: (b) weekly if any of the above cyanotoxins are between 51% and 70% of the respective MAV (c) twice weekly if any of the above cyanotoxins are between 71% and 85% of the respective MAV: (d) daily if any of the above cyanotoxins are between 86% and 100% of the respective MAV.	Rule type: Monitoring Compliance period: 1 month Reporting period: 1 month
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D3 Level 3 Distribution Rules Module

D3.PM Pressure monitoring rules

Rule number	Requirement	Parameters
D3.PM.1	Continuous monitoring for pressure must be installed in all supplies (except trickle feed supplies)— (a) in each distribution zone at a site that is representative of normal distribution zone pressure; and (b) at a site that is representative of the lowest pressure within the distribution zone.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
D3.PM.2	Supply pressure must be— (a) at least 150 kPa for 85% of each day; and (b) no lower than 100 kPa at any time.	Rule type: Monitoring Compliance period: 1 month Reporting period: 1 month

D3.BF Backflow protection rules

Rule number	Requirement	Parameters
D3.BF.1	A written backflow prevention programme to protect a distribution system against the risk of backflow must be— (a) developed; and (b) implemented; and (c) recorded in writing.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

D3.BF.2	A survey of backflow risks to each distribution zone must be undertaken at least once every five years to— (a) determine medium and high-risk sites; and (b) assess the adequacy of backflow protection across the distribution system.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
D3.BF.3	Where backflow requirements at a point of supply are deemed inadequate, the drinking water supplier must— (a) notify the local authority with details of the situation and risk; and (b) determine the type of backflow device that should be installed at the point of supply; and (c) ensure the appropriate backflow device is installed in a timeframe commensurate with the risk but as soon as reasonably practicable.	Rule type: Non-reporting
D3.BF.4	All testable backflow prevention devices installed at a point of supply specifically to protect a distribution system (generally boundary devices) must be tested at least annually.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
D3.BF.5	A drinking water supplier must maintain a register of all points of supply with testable backflow protection devices for each distribution zone, including at least the following information: (a) location; (b) device type; (c) assessed risk level; (d) test results.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
D3.BF.6	A drinking water supplier must not permit access to a distribution system through use of a standpipe, except by any of the following people: (a) employees of the supplier; (b) agents or contractors of the supplier carrying out reasonably necessary work on the supply; (c) Fire and Emergency New Zealand; (d) other emergency services.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

D3.HP New and repaired watermains hygiene procedures

Rule number	Requirement	Parameters
D3.HP.1	Before carrying out or commissioning repairs to pipes in a distribution system, a drinking water supplier must— (a) undertake a risk assessment to determine the risk of contamination of the distribution zone; and (b) determine procedures required to minimise the risk; and (c) record (a) and (b) in writing.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
D3.HP.2	All materials used in construction and repairs in a distribution system must— (a) be free of visible contamination; and (b) remain protected from contamination until installation.	Rule type: Non-reporting
D3.HP.3	All tools contacting any part of a distribution system must be adequately disinfected— (a) prior to commencing work; and (b) after contact with soil or backfill material.	Rule type: Non-reporting
D3.HP.4	Disinfection of mains pipes must follow best management practices including but not limited to methods such as tablet, slug, spray chlorination, or equivalent.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
D3.HP.5	Standard operating procedures for planned and unplanned repairs in a distribution system must be— (a) developed; and (b) implemented; and (c) recorded in writing.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

D3.FO Facilities operation / maintenance and disinfection rules

Rule number	Requirement	Parameters
D3.FO.1	A drinking water storage management plan for a distribution system that includes storage must— (a) be developed; and (b) be implemented; and (c) be recorded in writing; and	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

	(d) include at least the following— (i) minimum and maximum operating levels: (ii) target turnover rates: (iii) inspection: (iv) security measures: (v) protection from contamination: (vi) cleaning.	
D3.FO.2	Inspections of drinking water storage facilities in a distribution system must be carried out at least annually, and— (a) identify of any points of potential ingress by contaminants; and (b) identify any signs of actual security breaches and contamination incidents; and (c) be recorded in writing.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
D3.FO.3	Disinfection procedures for drinking water storage facilities that are consistent with industry best management practices must be— (a) developed; and (b) implemented; and (c) recorded in writing.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
D3.FO.4	All new drinking water storage facilities, and existing storage facilities that have been drained for maintenance purposes, prior to being brought (back) into use, must be— (a) cleaned; and (b) disinfected; and (c) tested for <i>E. coli</i>.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
D3.FO.5	Divers' suits, rafts, remotely operated vehicles and other materials used during inspection, maintenance or other activities inside drinking water storage facilities must be made from materials acceptable for contact with drinking water and suitable for disinfection.	Rule type: Non-reporting
D3.FO.6	All equipment and materials entering drinking water storage facilities must be disinfected immediately prior to entry according to industry best management practices.	Rule type: Non-reporting

D3.RD Residual disinfection / disinfection byproducts and plumbosolvent metals rules

Rule number	Requirement	Parameters
D3.RD.1	FAC monitoring in a distribution zone must be undertaken in compliance with— (a) rules D3.RD.3, D3.RD.4 and D3.RD.5 for grab sampling; or (b) rules D3.RD.3, D3.RD.6, D3.RD.7 and D3.RD.8 for continuous monitoring.	Rule type: Non-reporting
D3.RD.2	A sampling plan for disinfection, disinfection by-products and plumbosolvent metals in a distribution system must— (a) be prepared; and (b) be implemented; and (c) be recorded in writing; and (d) include— (i) a system map indicating sampling locations; and (ii) response procedures to be followed when sample test results do not meet prescribed levels.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
D3.RD.3	FAC must be maintained in each distribution zone to meet the following limits— (a) FAC is at least 0.2mg/L in more than 85% of grab samples; or (b) FAC is at least 0.2 mg/L for more than 85% of each day for all continuous monitoring; and (c) FAC is no less than 0.1 mg/L at all times for grab samples or continuous monitoring.	Rule type: Monitoring Compliance period: 1 month Reporting period: 1 month
D3.RD.4	Drinking water suppliers using grab sampling must prepare a FAC sampling schedule for each distribution zone to meet the following sampling frequencies: (a) for a distribution zone population of <25,000,— (i) at least 12 samples analysed each month; and (ii) no more than 96 hours elapsed between consecutive samples; and (iii) samples collected on at least five different days of the week:	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

	(b) for a distribution zone population of 25,001-50,000,— (i) at least 16 samples analysed each month; and (ii) no more than 72 hours elapsed between consecutive samples; and (iii) samples collected on at least six different days of the week: (c) for a distribution zone population of 50,001-100,000,— (i) at least 20 samples analysed each month; and (ii) no more than 48 hours elapsed between consecutive samples; and (iii) samples collected on at least six different days of the week: (d) for a distribution zone population of >100,000,— (i) 24 samples analysed each month; and (ii) no more than 48 hours elapsed between consecutive samples; and (iii) samples collected on seven different days of the week.	
D3.RD.5	Routine sampling sites for monitoring for compliance with rules D3.RD.3 and D3.RD.4 must be located to— (a) adequately represent water quality across a distribution zone; and (b) include both peripheral and central locations in the distribution zone; and (c) include areas with higher risk of deterioration in drinking water quality occurs and population density is highest.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
D3.RD.6	Continuous monitoring analysers for FAC must be installed in at least the following places in each distribution zone: (a) the point where drinking water is provided to a distribution zone, for example, a reservoir outlet or bulk point of supply: (b) a point in the supply main near to— (i) the centre of the distribution zone; or (ii) the extremity of the distribution zone.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
D3.RD.7	The number of continuous monitoring analysers for FAC installed in each distribution zone must be at least—	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

	(a) two analysers per zone for a zone population up to 25,000; or (b) three analysers per zone for a zone population of 25,001-100,000; or (c) four analysers per zone for a population up to >100,000.	
D3.RD.8	The representative nature of the continuous monitoring results in a distribution zone must be confirmed by the following requirements: (a) at least four FAC and pH samples analysed each month: (b) samples are taken during at least four different weeks of each month: (c) all samples are taken from the outer extent of the distribution zone at times of normal demand.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
D3.RD.9	Drinking water in each distribution zone must be monitored at least every three months for the following: (a) chloroform: (b) bromodichloromethane: (c) dibromochloromethane: (d) bromoform: (e) dichloroacetic acid: (f) trichloroacetic acid.	Rule type: Monitoring Compliance period: 1 year Reporting period: 1 year
D3.RD.10	Monitoring for disinfection by-products must be undertaken and meet the following requirements for each distribution zone: (a) sampling sites must represent both peripheral and central locations of the distribution zone: (b) following a positive result, additional monitoring must be undertaken to understand the conditions and circumstances that lead to disinfection by-product formation: (c) if after two years consecutive quarterly samples are less than 50% of the MAV, monitoring may reduce to one per year: (d) if any annual sample exceeds 50% of a MAV, monitoring must return to at least quarterly.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
D3.RD.11	The following monitoring must be undertaken for plumbosolvent metals in each distribution zone: (a) drinking water in each distribution zone must be monitored in the first six months of the year and last six months of the year for the following:	Rule type: Monitoring Compliance period: 1 month Reporting period: 1 year

	(i) antimony: (ii) cadmium: (iii) chromium: (iv) copper: (v) lead: (vi) mercury: (vii) nickel: (viii) zinc: (b) despite (a), any determinand that exceeds 50% of its MAV must be monitored monthly: (c) if (b) applies and after 12 consecutive monthly samples are less than 50% of the MAV, monitoring may return to six-monthly.	
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D3.MM Microbiological monitoring rules

Rule number	Requirement	Parameters
D3.MM.1	A sampling plan for microbiological monitoring in a distribution system must— (a) be developed; and (b) be implemented; and (c) be recorded in writing; and (d) include— (i) a system map indicating sampling locations; and (ii) a response plan for positive test results.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
D3.MM.2	Drinking water suppliers must prepare a microbiological determinands sampling schedule for each distribution zone to meet the following sampling frequencies: (a) for a distribution zone population of <25,000,— (i) four samples per month; and (ii) with maximum interval between samples of nine days; and (iii) with a minimum number of five days of the week used: (b) for a distribution zone population of 25,001-50,000,— (i) four sample per month; and	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

	(ii) with a maximum interval between samples of nine days; and (iii) a minimum number of six days of the week used (including at least two Saturdays and two Sundays sampled each year): (c) for a distribution zone population of 50,001-100,000,— (i) eight samples per month; and (ii) with a maximum interval between samples of five days; and (iii) with a minimum number of seven days of the week used (at least three Saturdays and three Sundays sampled each year): (d) for a distribution zone population of >100,000,— (i) 12 samples per month; and (ii) with a maximum interval between samples of three days; and (iii) a minimum number of seven days of the week used (including at least four Saturdays and four Sundays sampled each year).	
D3.MM.3	Drinking water in each distribution zone must be monitored according to the schedule prepared for rule D3.MM.2 for the following microbiological determinands: (a) <i>E. coli</i>: (b) total coliforms:	Rule type: Monitoring Compliance period: 1 month Reporting period: 1 month
D3.MM.4	Routine sampling sites for microbiological monitoring must be located to adequately represent water in a distribution system, including— (a) drinking water leaving storage facilities; and (b) entry points for drinking water from other drinking water suppliers.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year
D3.MM.5	Samples for microbiological monitoring in a distribution system must be collected according to written sampling protocols prepared by the drinking water supplier or the laboratory undertaking the sample analysis.	Rule type: Assurance Compliance period: 1 year Reporting period: 1 year

WC Water Carrier Service Rules module
[Placeholder]

Made at Wellington on [insert date].

Allan Prangnell
Chief Executive
Water Services Authority—Taumata Arowai

Explanatory note

This note is not part of the drinking water acceptable solution but is intended to indicate its general effect.

These compliance rules, which comes into force on [date] provide Rules modules based on scale, complexity and risk for drinking water suppliers to follow as part of meeting their duties under the Act.

The classes of drinking water supply that these Rules apply to are very small communities with under 25 people, small networked supplies with 25-100 people, medium networked supplies with 100-500 people, large networked supplies with over 500 people, self-supplied buildings and water carriers.

Rules modules are prescribed according to the class of supply. Rules modules generally cover source water rules, treatment rules and distribution rules.

The previous compliance rules made under the Act, the *Drinking Water Quality Assurance Rules 2022*, is revoked and replaced by these Rules.

This is secondary legislation issued under the authority of the Legislation Act 2019 .	
Title	Water Services (Drinking Water Quality Assurance) Rules 202-
Principal or amendment	Principal
Consolidated version	No
Empowering Act and provisions	Water Services Act 2021 Section 49
Replacement empowering Act and provisions	
Maker name	Water Services Authority—Taumata Arowai
Administering agency	Water Services Authority—Taumata Arowai
Date made	[day month year] <i>[Insert date of signing/approval]</i>
Publication date	Click or tap to enter a date <i>[Insert date first published/made available]</i>
Notification date	Click or tap to enter a date <i>[Insert date notified. If there is no requirement to notify, state "Not applicable"]</i>
Commencement date	[day month year] <i>[Insert commencement date. If there are multiple commencement dates, give the first one. If commencement is on date of an event, state the event and update with the specific date once the event has occurred]</i>
End date (when applicable)	Click or tap to enter a date
Consolidation as at date	Not applicable
Related instruments	