Drinking Water Quality Assurance Rules – Guidance for reporting

Version 1.1

Contents

1. Overview and purpose of this guidance

The Drinking Water Quality Assurance Rules (the Rules) set the minimum requirements for monitoring and treatment of drinking water supplies. This includes testing water samples and ensuring that systems, processes, and monitoring equipment are working effectively.

Following public consultation in early 2022, new Drinking Water Standards, Drinking Water Quality Assurance Rules, and Aesthetic Values were published and came into effect on 14 November 2022.

Following publication of the Rules, we published Rule Clarifications on our website to give more clarity on how the Rules may be applied or interpreted when interpretation or application issues emerge. We update the clarifications when issues surface with how suppliers are interpreting the rules.

We have produced this guidance to help you to meet your reporting requirements under the Rules. It provides clarity on what data needs to be reported, and how. This should be read with the Rules and rule clarifications.

Additional guidance is also provided in step-by-step video webinars (links to these can be found in the 'How to report data' section of this guidance).

If you identify any inconsistencies with the Rules or rule clarifications, please email info@taumataarowai.govt.nz.

This guidance may not cover all scenarios and is not a substitute for legal or technical advice.

Supplier reporting responsibilities

All registered drinking water suppliers must ensure the water they supply is safe and that it complies with legislative requirements, including the reporting requirements of the Rules. This guidance provides additional detail on how you can report in accordance with the requirements of the Rules.

Reporting is only required in relation to a limited subset of the overall monitoring data collected by suppliers in connection with monitoring obligations, assurance activities, and the overarching obligation to provide safe drinking water. The reporting requirements in the Rules are independent of the broader powers of Taumata Arowai to obtain information from suppliers under the Water Services Act 2021

Reporting requirements are determined by your supply characteristics and the Rule modules that you demonstrate compliance against. The Rules set out the minimum requirements based on supply type and population served. There are two kinds of rules to be aware of:

- monitoring rules which are based on monitoring water quality to determine if limits are being met using grab samples, continuous monitoring equipment, or any other means necessary
- assurance rules which require reporting on activities designed to provide confidence in processes and monitoring procedures.

We depend on good information from suppliers to help ensure everyone in New Zealand has access to safe drinking water every day. It is your responsibility to ensure that the information you provide is complete and accurate.

It is essential that you review and keep your registration details in Hinekōrako up to date before submitting reporting data. Your registration details may be used to assess compliance with aspects of legislation, including for compliance with the Rules. You must assess if each applicable rule has been satisfied and report a true/false outcome accordingly. If you have a question on whether you have complied with a rule, contact us for clarification. Some examples are provided in the guidance.

Rule modules and reporting requirements

The Rules consist of rule modules and sets of rules within each of those modules.

Reporting requirements are organised by rule module in the first five General Rules. Some rules do not need to be reported against. Most rules are required to be reported against either monthly, quarterly, six-monthly, or annually as set out in the General Rules module. The following is a summary of reporting requirements by rule module.

- Supplies following level 3 modules (serving >500 people) report monthly within 10 working days of the end of each month (see rule G3 and tables 5, 6, and 7 in the Rules).
- Supplies following level 2 modules (serving 101 – 500 people) report quarterly within 20 working days of the end of each quarter (see rule G2 and table 4 in the Rules).
- Supplies following level 1 modules (serving 26 – 100 people) report six monthly within 20 working days of the end of June and the end of December (see rule G1 and table 3 in the Rules).
- Supplies following level 1, 2, and 3 modules also report annually within 40 working days of the end of each calendar year on certain matters (see rules G4 and G5 in the Rules). Note: Rule G5 does not stipulate "working" days, but suppliers may interpret "within 40 days" to be "within 40 working days".

A summary of reporting requirements for monitoring rules and assurance rules is provided in the table below for all rule modules.

Rule Module/s	Monitoring Rule Reporting Required	Assurance Rule Reporting Required
VSC (Very Small Communities)	No	No
WC (Water Carrier Services)	Not applicable	No
TDWS (Temporary Drinking Water Supplies)	No	No
VP (Varying Population)	No	Not applicable
S1, T1, D1 (Level 1 Modules)	Yes: • Six monthly reporting (Rule G1) • Annual reporting (Rule G4)	No
G, S2, T2, D2 (Level 2 Modules)	Yes: • Quarterly Reporting (Rule G2) • Annual reporting (Rule G4)	Yes, annually (Rule G5) *Note: All applicable assurance rules for a supply using G, S2, T2, and D2 rule modules.*
G, S3, T3, D3 (Level 3 Modules)	Yes: • Monthly Reporting (Rule G3) • Annual Reporting (Rule G4)	Yes, annually (Rule G5) *Note: All applicable assurance rules for a supply using G, S3, T3, and D3 rule modules*

2. How to report

You can report in Hinekōrako via an Excel template upload, or from your monitoring and assurance software (e.g. Infrastructure Data, WaterOutlook) using our web-based Application Programming Interface (API).

We realise that small suppliers may not have monitoring and assurance software and recommend reporting via the Excel template to structure your reporting data.

Reporting via Excel upload

The following Excel templates are available for download:

- Rules Excel template
- Annual Assurance Excel template

The completed template can be uploaded through Hinekōrako. The Excel templates provide a structure for reporting in the absence of monitoring and assurance software.

The webinar video below shows how to report on Rules via Excel Upload.

The video covers the following steps:

1. Download the Template.
2. 'Here's one we created earlier'.
3. Go to Hinekōrako Reporting page.
4. Upload Excel Report.
5. View successful upload within Reporting Log.

- Rules reporting with Excel webinar

For guidance on the resolution of errors encountered when reporting with Excel see Excel warnings and errors in section 9.

Reporting via API from Infrastructure Data or WaterOutlook

If you use monitoring and assurance software, you may be able to automatically report to us via a web-based Application Programming Interface (API). Currently, popular software programmes Infrastructure Data and WaterOutlook support reporting via an API.

The webinar videos below show how to generate an API Key in Hinekōrako to report via API from Infrastructure Data or WaterOutlook.

The video covers the following steps:

1. Go to Hinekōrako Reporting page.
2. Generate API Key.
3. Explanation that this API Key is like a password and shouldn't be regenerated.
4. Monitoring and assurance software provider demonstration of submitting to Taumata Arowai.

- Rules reporting with Excel and Infrastructure Data webinar

- Rules reporting with Excel and WaterOutlook webinar

Instructions on how to enter this API Key and report via an API are available for Infrastructure Data and WaterOutlook.

If you use different software which you would like to report from, please contact info@taumataarowai.govt.nz.

For guidance on the data quality checks that are performed on API and Excel submissions see section 9. Data Quality Checks.

3. Updates and improvements

Since the release of the initial guidance on reporting in early 2023, we have listened to feedback and made changes to the process to reduce ambiguity in reporting. This guidance replaces the previous "Drinking Water Quality Assurance Rules Reporting Guidelines Version 1.0" document. When fully implemented these changes will help to improve data collection and quality.

New features include:

- introduction of an updated Rule Summary List, which is a codified list of Reporting Rule IDs and a summary of the requirements for reporting against each of those
- a new Parameters and Determinands list provides the names and IDs for each parameter and determinand to assist suppliers in checking this field on sample reports
- a function which allows suppliers to confirm that the units reported for a specific parameter or determinand are appropriate
- a new column ("Rule Applies") indicates whether a Reporting Rule ID applies to a rule module.
- a new column ("Report Supply Level") indicates whether a Reporting Rule ID must be submitted for each relevant supply component within a supply or for the whole supply
- corrections and changes to the Rule Summary List to better align with the Rules
- where rules have been clarified, these changes are included in the Rule Summary List.

Rule Summary List

The Rule Summary List (.csv) contains the following detail for each Reporting Rule ID:

Column	Definition
ID	The Reporting Rule ID (e.g. T1.8-ecol*)*, referred to in API and Excel error messages as the 'Rule ID'. Note these may differ from the Rule Number where there is more than one reporting requirement for a rule.
Rule Module	The Rule Module for this Reporting Rule ID (e.g. T1)
Rule Number	The Rule Number for this Reporting Rule ID (e.g. T1.8)

Column	Definition
Level	The Level this Reporting Rule is associated with (e.g. 1, 2 or 3)
Parameter Determinand ID	If applicable to a Reporting Rule ID, an ID for the parameter or determinand (see the below parameter and determinands definition)
Type	For the purposes of reporting, the Reporting Rule ID is treated as a monitoring, continuous monitoring, or assurance rule
Log	The log credit associated with the T3 Rule as described in the Rules (e.g. 2.5-log)
Compliance Period	The length of time over which compliance with a rule is to be assessed by the supplier, as specified in the Rules. For example, compliance period for T1.8 is 6 months. See section 3.1 of the Rules.
Reporting Period	Reporting periods are the intervals over which reporting is required. For example: 1. Supplies demonstrating compliance against the level 1 Rules have a reporting period of six months and report a limited set of compliance data every six months. 2. Supplies demonstrating compliance against level 2 Rules have a reporting period of three months and report a limited set of compliance data every three months. 3. Supplies demonstrating compliance against the level 3 Rules have a reporting period of 1 month and report a limited set of compliance data each month. 4. Additional annual reporting is required by general rules G4 and G5. As described in 3.1 of the Rules and general rules G1, G2, G3, G4, and G5.
Report Timeframe	A supplier must report within this many working days from a reporting period ending. As described in rules G1, G2, G3, G4, and G5 of the Rules.
Sampling Frequency	The frequency at which samples must be taken to comply with the reporting requirements. Note: many Rules describe more complex sampling requirements than is summarised in this Rule Summary List.
Duration Between Samples	The time interval between successive samples. Note: many Rules describe more complex sampling requirements than is summarised in the Rule Summary List.
Determinand Check	Enables quality checking on how the parameter determinand field of samples can be utilised for each Reporting Rule ID. The following are the possible values and what they mean: 0 - No determinand check implemented for this Reporting Rule ID 1 - The parameter determinand field of any samples submitted under this Reporting Rule ID must be blank 2 - The parameter determinand field of any samples submitted under this Reporting Rule ID must be filled in with an appropriate value (for most Reporting Rule IDs this can be found in the Parameters and Determinands, csv).
Unit Check	Enables quality checking on how the unit field for a sample report can be utilised for each Reporting Rule ID. Acceptable units can be found in the units column of the Parameters and Determinands dataset. The following are the possible values and what they mean: 0 - No unit check 1 - Unit must match an acceptable unit for the parameter/determinand this Reporting Rule ID represents.

Column	Definition
Sample Reporting	Indicates how a supply should report against a Reporting Rule ID. This column is currently a guide only. The following are the possible values and what they mean: 1 - This Reporting Rule ID does not expect samples 2 - This Reporting Rule ID does expect samples 3 - This Reporting Rule ID may include samples Any samples which may be taken to demonstrate compliance with this Reporting Rule ID should be supplied against the relevant Reporting Rule ID.
Report Supply Level	This column indicates if the Reporting Rule ID should be reported against a supply component or the supply itself. The following are the possible values and what they mean: 0 - The Reporting Rule ID must be against a supply component and so the supply_component_id must have a value 1 - The Reporting Rule ID must be against a supply and so the supply_component_id must be left blank
Minimum Buildings	Indicates the minimum number of buildings this Reporting Rule ID applies to when reporting against Self Supplied Buildings (See Footnote 23 in the Rules).
Rule Applies	Some G and VP Reporting Rule IDs are only required to be reported by supplies that are reporting against certain modules. This column indicates which Rule Modules a Reporting Rule ID is applicable to.

Parameter/Determinand list

This list contains:

- all parameters and determinands referenced in the Rules and Drinking Water Standards.
- MAV limits with unit requirements.
- Aesthetic Value limits (min and max, where applicable) and units for aesthetic values.
- Notes and sources along with links to those sources are given.

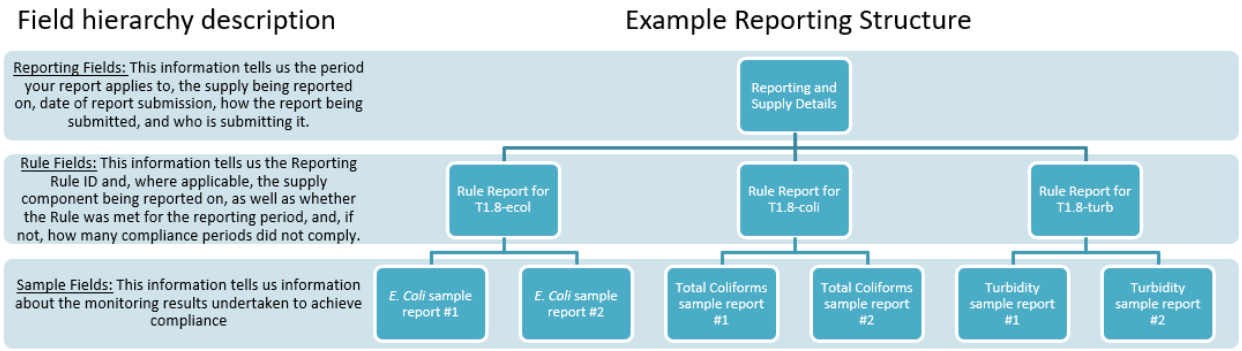
The Parameters and Determinands (.csv) contains the following detail on Parameters and Determinands:

Column	Definition
ID	A two to four character lower case identifier for each of the parameters and determinands that are reported under the Rules. They are utilised in the Reporting Rule IDs after a hyphen as the following examples illustrate: T3.1-**fac** S3.3-**anti** VSC.1-**ecol**
Title	The parameter or determinand title as described in the associated source document
Type	A flag indicating either “Parameter” or “Determinand”
Value Prefix	Relates directly to the value in MAV column and indicates how that value should be comparatively utilised. Possible values are <, >, = or blank. Blank and = are the same.

MAV	The Maximum Acceptable Value as described in the associated source document.
Unit	Relates directly to the value in MAV column and indicates the unit associated with the MAV value.
AV Value Min	Relates to the aesthetic values listed in the Aesthetic Values for Drinking Water Notice.
AV Value Max	Relates to the aesthetic values listed in the Aesthetic Values for Drinking Water Notice.
Units	The acceptable units for reporting samples with a parameter/determinand.
Description	As described by the associated source document
Notes	Any notes relating to the parameter or determinand in the associated source document
Source	The title of the publication which is the source of the values for the parameter or determinand
Link	A web link to the source publication as indicated by the Source column.

4. Report data structure

To ensure data quality and reliability, there is a data structure of core fields. Reporting is by Supply, Reporting Rule ID, then Sample as depicted in the figure below. A report will need to be submitted for each relevant reporting period and include reporting against all the relevant Reporting Rule IDs for that reporting period. This data structure is summarised below, but can also be reviewed in both the Excel Templates or (for the API only) "sample-report-structure.json".



Reporting fields

Each report contains a header with the following fields. These fields apply to the whole report.

Field Name	Example	Description
`external_report_id`	"your report id here"	The ID of the report in the suppliers' systems
`reporting_period_start`	"2023-01-01"	The reporting period start date
`reporting_period_end`	"2023-12-31"	The reporting period end date
`supply_id`	"AHA300"	The Hinekōrako code of the Supplier
`date_submitted`	"2024-01-30"	The date the report was submitted
`source_system`	"Water Software Ltd"	The system that was the source of the report
`email`	"contact@example.com"	A supplier contact email for report
`name`	"Person who submitted"	A contact person for report
`rules`	[List of rules]	The rules being reported against

Many of the Rules have multiple requirements. To enable reporting against specific requirements of each Rule, Reporting Rule IDs have been developed.

Where Rules only have one Reporting Rule ID and this is the same as the Rule number, e.g. S1.3.

Other Rules have multiple Reporting Rule IDs which begins with the rule number and has a suffix to indicate the specific requirement to report against.

Example: The Rule T1.8 and Table 10, shown below, must be reported, according to Rule G1 and Table 3 below, to Taumata Arowai every six months for those supplies that follow the T1 Rule module.

T1.8	Water leaving the treatment plant must be monitored for the determinands and at the frequencies set out in Table 10.	Monitoring

Table 10. T1 Treatment plant monitoring determinands.

Determinands	Sampling frequency
E. coli[18]	Every 3 months
Total coliforms	Every 3 months
Turbidity	Every 3 months

Rule Number	Requirement
G1.	Drinking water suppliers demonstrating compliance against level 1 Rules must report to Taumata Arowai the water quality monitoring information set out in table 3.

Table 3. Reporting requirements for level 1 Rules.

Rule Number	Parameter	Compliance period	Reporting period[8]
T1.8	*E. coli*, total coliforms	3 Months	6 Months
T1.8	Turbidity	3 Months	6 Months
D1.1	*E. coli*, total coliforms	3 Months	6 Months

There are three determinands that must be tested for in Rule T1.8 (see Table 10), so the rule has been assigned three Reporting Rule IDs, one for each determinand:

- T1.8-coli for total coliforms reporting
- T1.8-ecol for *E. coli* reporting
- T1.8-turb for turbidity reporting.

Rule T1.8 has three Reporting Rule IDs which will need to be submitted for each treatment plant registered in the supply. Each reporting period is six months so there are a total of two compliance periods in each reporting period.

Rule fields

For every Reporting Rule ID that needs to be reported on, the following fields are available:

Field Name	Example	Description
`rule_id`	"T1.8-coli"	The rule identifier if appropriate, i.e., Reporting Rule ID
`supply_component_id`	"TP04026"	The Hinekōrako code of the supply component
`complies_with_rule`	true	Statement of compliance, either "true" for compliant or "false" for non-compliant
`non_compliant_periods`	0	The number of non-compliant periods within a reporting period
`notes`	"plain text notes"	Notes about non-compliance/s
`samples`	[List of samples]	An optional array of samples if appropriate

The "rule_id" is where the Reporting Rule ID is to be reported.

- Most Reporting Rule IDs require reporting against a supply component ID, some do not. See the "Report Supply Level" column in the Rule Summary List of the Rules for which Reporting Rule IDs need to include a supply_component_id. There are three types of supply component IDs, which can be found in Hinekōrako within your supply details:
    1. Source IDs are a letter (usually S, G, or R) followed by a unique numerical code related to source water abstraction points of a supply. For example, S00010 could be a supply component ID for an abstraction point from a surface water source and G00011 could be a supply component ID for an abstraction point from a groundwater source.
    2. Treatment Plant IDs are two letters (TP) followed by a unique numerical code related to individual treatment plants of a supply. For example, TP000510 could be a supply component ID for a treatment plant.

3. Distribution Zone IDs are generally the supply ID with a set of letters on the end. For example, if the supply ID were BTW001, BTW001MO could be a supply component ID for a distribution zone of the supply.

- It is your responsibility to determine whether your supply complied with each relevant Reporting Rule ID during the monitoring period. A statement of compliance should be supported by evidence to show that compliance was achieved. We may ask you to produce evidence that a supply complies with a rule. Careful consideration should be given to compliance with rules. Each rule should be read as it is and if there is any doubt as to whether the supply complied with a rule, we are able to assist. It is expected that upon our request you will be able to provide a rationale and evidence to demonstrate whether compliance was achieved.
- If you did not comply with the rule at any point within a reporting period, you must report "complies_with_rule" as false. If a false is reported, then "non_compliant_periods" must be a whole number greater than 0. You must report how many compliance periods the supply was non-compliant for the given Reporting Rule ID within the reporting period. An example of this is given below in "Sample reporting" section.
- Notes may be added to briefly describe non-compliance. **Important:** Rules reporting does not satisfy supplier duties to notify Taumata Arowai of drinking water safety issues or non-compliance with Drinking Water Standards under the Water Services Act 2021. For example, a separate notification through Hinekōrako would be expected at the time of significant non-compliance where drinking water may be or is unsafe or a test result exceeds a MAV.

A tabulated list of Reporting Rule IDs is included in the Rule Summary List along with some additional information which users of the Rules may find useful for understanding what needs to be reported against. Additional guidance on how specific Reporting Rule IDs within each rule module are reported is also described in more detail in the final sections of this guidance.

Sample fields

For every sample that needs to be reported on, the following fields are available.

Field Name	Example	Description
external_sample_id	"your sample id here"	An identifier for the sample's laboratory ID
sample_date	"2023-02-20"	The date the sample was taken
parameter_determinand	"Manganese"	A description of the determinand being sampled. This is necessary for some Reporting Rule IDs and not required for Reporting Rule IDs which have a suffix, e.g. "-fac"
value_prefix	"<"	To be used when a result exceeds the upper limit of a test or the detection limit of a test. Accepted values are '<', '>', '=' and blank.
value	0.0001	The sample value as measured by a lab
unit	"mg/L"	The unit of the sample value. See the "parameter_determinand" list for accepted units.
complies_with_rule	true	Report "true" if the sample value is less than the MAV, otherwise "false".
source_class	"1"	Required only when reporting against Reporting Rule IDs S3.3, S3.4, and S3.5, valid values are "1", "2", "3", "4" and blank

notes	"plain text notes"	An optional set of notes associated with the sample

Where a monitoring rule requires sampling, the test results are to be recorded and reported against the relevant Reporting Rule ID and the following applies:

- sample values should be the actual laboratory/test results rather than a pass/fail against a limit
- the ">" or "<" signs are available for when a lab result uses these symbols
- samples are not expected to be reported for monitoring rules which require assessment of continuous monitoring data to determine compliance
- samples are not expected to be reported for assurance rules
- the "Sample Reporting" column in the Rule Summary List shows the Reporting Rule IDs where sample results are expected.
  - where monitoring rules require sampling to be undertaken, the test result from sampling must be reported against the relevant Reporting Rule ID (Example: T1.8-ecol requires the reporting of *E. coli* sample results.)
  - where monitoring rules don't explicitly require sampling, samples should not be reported against the relevant Reporting Rule ID (Example: T2.3 does not require any sampling to be undertaken.)
  - some monitoring rules may have sampling requirements depending on characteristics of a supply or supplier choice. If samples are taken for one of these monitoring rules, the sample results must be reported under the relevant Reporting Rule ID (Example: T2.22). Some of these monitoring rules relate to cyanotoxins, chemical monitoring based on chemicals used in the treatment process, event-based sampling, etc.
  - some monitoring rules and their Reporting Rule IDs may have a requirement for monitoring of a parameter or determinand to meet a limit (Example: T2.9), but no requirement for sampling itself. Samples should not be reported against these types of Reporting Rule IDs, rather they may be reported against the Reporting Rule ID that requires the samples to be taken (Example: turbidity samples under Rule module T2 should be submitted against T2.1-turb not T2.9). If the limit of one of these types of Rules is met based on all available evidence, the Rule may be deemed to comply. If you know of the limit being exceeded at times (regardless of sampling being undertaken to comply with other Rules) then the Rule should be reported as false.
- Samples should be reported as a false if they exceed a MAV. Where no MAV exists then the samples should be reported as true. A Rule report may be true, while a sample may be false. An example report is given below which shows how this works in practice.

Example Excel report

The following is an example of a six-monthly report for a small, networked supply assessing compliance with Level 1 Rule modules.

Section 2: Rule Reports

Rule ID	Supply Component ID	Complies With Rule	Non Compliant Periods	Notes
T1.8-coli	TP0001	TRUE	0	
T1.8-ecol	TP0001	TRUE	0	
T1.8-turb	TP0001	FALSE	1	Sample missed in first compliance period (Ja
D1.1-coli	TP0001	TRUE	0	
D1.1-ecol	TP0001	TRUE	0	

The report above shows that a turbidity sample was missed for one of two quarterly compliance periods within the six-month reporting period. Samples also need to be submitted and an example samples report which aligns with the above rule report is given below.

Rule ID	Supply Component ID	External Sample ID	Sample Date	Parameter/Determinand	Value Prefix	Value	Unit	Complies With Rule	Source Class	Notes
T1.8-coli	TP0001	Test0001	5/01/2023		<	1	MPN/100mL	TRUE		
T1.8-ecol	TP0001	Test0002	5/01/2023		<	1	MPN/100mL	TRUE		
D1.1-coli	TP0001	Test0003	10/03/2023		<	1	MPN/100mL	TRUE		
D1.1-ecol	TP0001	Test0004	10/03/2023		<	1	MPN/100mL	TRUE		
T1.8-coli	TP0001	Test0005	11/04/2023		<	1	MPN/100mL	TRUE		
T1.8-ecol	TP0001	Test0006	11/04/2023		<	1	MPN/100mL	TRUE		
T1.8-turb	TP0001	Test0007	11/04/2023		=	0.5	NTU	TRUE		
D1.1-coli	TP0001	Test0008	5/05/2023		=	50	MPN/100mL	TRUE		see NOT-00000001
D1.1-ecol	TP0001	Test0009	5/05/2023		=	10	MPN/100mL	FALSE		see NOT-00000001
D1.1-coli	TP0001	Test0010	7/05/2023		<	1	MPN/100mL	TRUE		see NOT-00000001
D1.1-ecol	TP0001	Test0011	7/05/2023		<	1	MPN/100mL	TRUE		see NOT-00000001
D1.1-coli	TP0001	Test0012	8/05/2023		<	1	MPN/100mL	TRUE		see NOT-00000001
D1.1-ecol	TP0001	Test0013	8/05/2023		<	1	MPN/100mL	TRUE		see NOT-00000001
D1.1-coli	TP0001	Test0012	9/05/2023		<	1	MPN/100mL	TRUE		see NOT-00000001
D1.1-ecol	TP0001	Test0013	9/05/2023		<	1	MPN/100mL	TRUE		see NOT-00000001

- The above Excel samples report shows that only one sample for turbidity was taken during the six months, this aligns with the corresponding rule report. The samples also show a positive *E. coli* was reported. A brief note about what happened is given ("see NOT-00000001" which refers to an example notification ID the supplier and the laboratory would have needed to submit to us for the detection of *E. coli* in drinking water). It is also clear from the report that the supplier undertook additional sampling in response to the contamination event to ensure the water was safe to drink.
- **Important:** Rules reporting does not satisfy supplier duties to notify Taumata Arowai of drinking water safety issues or non-compliance with Drinking Water Standards under the Water Services Act 2021. For example, a separate notification through Hinekōrako would be expected at the time of significant non-compliance where drinking water may be or is unsafe or a test result exceeds a MAV.

Comparing values being reported under samples against a MAV

Samples that do not exceed a MAV may be reported as true for meeting sample compliance.

Samples that do not exceed a MAV meet one of the following logical conditions:

- Condition 1: For all samples with a value prefix of <, the value must be equal to or less than the MAV.
- Condition 2: For *E. coli* samples with a blank or = value prefix, the value must be less than the MAV.
- Condition 3: For all other samples with a blank or = value prefix, the value must be less than or equal to the MAV.

All other samples that do not meet the above conditions will be interpreted conservatively by us as exceeding the MAV, reporting errors aside.

Substitution of grab samples with continuous monitoring

If any monitoring is done continuously for Rules which specify grab samples (e.g. turbidity for T1.8), a "grab" sample taken at regular intervals may be taken from the read out of the continuous monitoring instrument and reported as samples. Several G rules (G12, G13, G15, G16) may become applicable if continuous monitoring is done. "Grab" samples of electronic data are to be representative of the continuous monitoring data. Where there are periods of non-compliance, this should be reflected in the data reported.

5. General Rules

The guidance in this and the following sections has been developed to ensure consistent reporting against the Rules. These sections contain detailed guidance on specific aspects of reporting each rules module.

Reporting principles

All general rules are considered assurance rules for reporting purposes and have an annual reporting period for supplies demonstrating compliance with level 2 and level 3 rules.

G1, G2, G3, and G4 set the reporting requirements against applicable monitoring rules. If all reporting requirements have been met, the Reporting Rule ID may be reported as “true” for “complies_with_rule”. If reports were late or missed, these Reporting Rule IDs must be reported as “false”.

G5 sets the reporting requirements for applicable assurance rules.

Important: All relevant assurance rules must be followed regardless of reporting requirements.

Rule-by-rule guidance

Examples below indicate when a Reporting Rule ID should be reported as true or false. This compliance assessment must be decided by the supplier while considering the circumstances of each potential non-compliance.

G1, G2, G3, G4, and G5 Rules

Reporting “true” acknowledges a supplier has reported according to the requirements in each of these Rules for the whole supply. They do not need to be reported for each supply component. The supply component field should be left blank.

G6, G7, G8, G9, G10, G11, and G12 Rules

Reporting “true” acknowledges that processes in place are being verified and recorded and the requirements of the Rules are being met. If verification repeatedly indicates the process is failing, e.g. more than once, the Reporting Rule ID should be reported as "false”.

G13 Rule

Reporting “true” acknowledges that all instruments and systems which continuously monitor against treatment rules are setup to obtain new, updated readings at least every one minute. Data integrity from the instrument to the compliance calculation must be maintained. Lost/missing/lack of data does not necessarily mean non-compliance with this Rule. This Rule is individually reported against every treatment plant in a supply. The following examples for reporting on G13 are applicable to supplies which elect the T3 rule module.

- Example “False” scenario: A supply would not comply with this Rule if a continuous monitor being used to monitor compliance communicated information to a SCADA or other data repository every 15 minutes.
- Example “False” scenario: A supply would not comply with this Rule if instruments or data systems were averaging data over more than one minute, e.g., applying a 5-minute signal average.
- Example “False” scenario: A supply would not comply with this Rule if, prior to calculating compliance with a continuous monitoring rule, software calculates a moving average of greater than 1 minute, and that moving average is used to calculate compliance. This is not a true reflection of the instrument data.
- Example “True” scenario: A supply may comply with this rule if:

- All continuous monitoring for a treatment plant was setup in a way that the instruments send an instantaneous reading to a data repository every one minute while the process being monitored was in use for production of drinking water; and
- The data repository is setup to store the incoming data at one-minute intervals; and
- Compliance reporting of continuous monitoring rules are based off the instrument data while the processes being monitored is contributing to drinking water production; and
- Averaging up to one minute is performed (taking a maximum or minimum value may be more conservative depending on the rules being monitored); and
- Holding values is performed when cleaning, verifying, or calibrating instruments, noting other general rules may be breached if a sample is not taken for periods of longer than 15-30 minutes; and
- Data is not assessed for compliance when the process being monitored continuously is not used in the production of drinking water, including when valve positions and flow metering confirms run-to-waste is active or other situations where water being sampled is not being supplied as drinking water (cleaning processes, backwashes, etc).

G14 Rule

About missing data records due to failures of instrumentation and systems. This Rule is individually reported against treatment plants and distribution zones which have elected, or are required to report against, level 3 Rule modules.

- There is an apparent discrepancy between Rules G14 and G15 in the Rules when continuous monitoring of the distribution system is chosen as an alternative to sampling FAC. A clarification has been issued to provide direction for suppliers in how to interpret this rule for distribution system monitoring.
- Example “False” scenario: An instrument used to demonstrate compliance with a rule in the distribution failed to collect data for two days and the data was lost and is unable to be recovered.
- Example “True” scenario: All instruments used to demonstrate compliance with a rule in a treatment plant met the Rule and data is stored on an appropriate repository.
- This Rule influences other Rules the instrument is being used to monitor against T3 and D3 continuous monitoring rules. If this Rule does not comply for one or more monitoring instruments, the monitoring rules (reported under associated Reporting Rule IDs) which depend on this/these instrument/s must also be reported as false due to data loss along with the number of non-compliant periods. In other words, if you don’t have the right amount of data, you do not comply with the relevant rule.

G15 Rule

Similar to G13, but only has a requirement of 30 minutes as opposed to 1 minute. See examples for Rule G13. This Rule is individually reported against for each distribution zone and source which has requirements to continuously monitor to demonstrate compliance with a Rule.

G16 Rule

Reporting “true” acknowledges where continuous monitoring of FAC is chosen for compliance in a distribution zone, the instrument accounts for the effect on the FAC reading if changes in pH and temperature occur. This Rule needs to be reported for any distribution zones which use continuous monitoring equipment to demonstrate compliance with rules requiring monitoring of FAC.

- The distribution zone includes the point at which treated water leaves the treatment plant.
- Membrane type probes which have an internal buffer to hold the pH around the electrodes constant would usually comply with this Rule. These probes are usually compensated for temperature. pH is not necessarily required to be directly measured for compliance with this rule if a membrane type probe is used.
- Open electrode type probes which do not have an internal buffer, would generally need a pH and temperature input. A calculation would be performed within the analyser to display FAC.

G17 Rule

Reporting "true" acknowledges that processes in place are being verified and recorded and the requirements of the Rules are being met. If verification repeatedly indicates the process is failing, e.g. more than once, the Reporting Rule ID should be reported as "false". For reporting purposes this is considered an assurance rule and does not require samples to be reported.

6. Level 1 Rules

Source Water Rules

Level 1 source water monitoring Reporting Rule IDs which are relevant to the source water/s of the supply have an annual reporting period. The reporting requirements for S1.1 and S1.2 rules depend on the source being reported against.

- There is no need to report on Reporting Rule IDs that do not apply to a source.
- Example: If supply's source is surface or ground water, reporting includes all Reporting Rule IDs beginning with S1.1, but does not need to include reporting on any Reporting Rule ID associated with rule S1.2 which applies to roof water sources.

For determinands which require a sampling frequency of every three years, compliance may be achieved for the calendar year if a sample has been taken in the three calendar years prior to the report being submitted.

- If the supply complies with the Reporting Rule IDs which require sampling every three years and a sample has not yet been reported in the last three calendar years, a sample needs to be reported.
- Exception: If any sample result from a determinand that is required to be sampled every three years has been shown to be above 50% of the MAV, more samples must be reported (see footnote 15 in the Rules).

Level 1 source water assurance rules are not reported but are required to be followed if the rule module is required for a supply.

- Cyanotoxins can create a serious risk to public health in source water and drinking water supplies. We encourage you to seek support if you suspect cyanobacteria may be affecting your source water or are uncertain.
- We may ask for additional reporting against assurance rules at any time.

Where additional sampling is required due to footnote 15, additional sampling should be submitted as samples in accordance with requirements.

Treatment Rules

All level 1 treatment Reporting Rule IDs, T1.8-coli (total coliforms), T1.8-ecol (*E. coli*), and T1.8-turb (turbidity), are reported every six months.

- Each six monthly report must include reports for each of the Reporting Rule IDs above.
- If samples have been tested for the right determinand at the right frequency then the Reporting Rule ID may be reported as "true", regardless of whether the sample exceeds the MAV.
- At least six sample reports must be submitted to comply with all the Reporting Rule IDs above: a sample for each Reporting Rule ID from each three month compliance period (1 sample x 3 rules x 2 compliance periods = six samples per reporting period)

Level 1 treatment assurance rules are not reported but are required to be followed if the rule module is required for a supply.

- We may ask for additional reporting against assurance rules at any time.

Distribution System Rules

Two Reporting Rule IDs, D1.1-coli (total coliforms) and D1.1-ecol (*E. coli*), are reported every six months.

- Each six monthly report should include reports for each of the Reporting Rule IDs above.
- If samples have been tested for the right determinand at the right frequency then the Reporting Rule ID may be reported as true, regardless of whether the sample exceeds the MAV.
- At least 4 sample reports must be submitted to comply with both Reporting Rule IDs above: a sample for each Reporting Rule ID from each three month compliance period (1 sample x 2 rules x 2 compliance periods = 4 samples per reporting period).

One Reporting Rule ID, D1.1-chem, has an annual reporting period and samples may or may not be reported.

- See the parameter and determinand list for acceptable names for parameters and determinands and know what result to submit for each Reporting Rule ID.
- Example “True” scenario: A supplier has tested for lead and copper twice annually. These were the only determinands identified to pose a potential risk to consumers in their drinking water safety plan. All four test results obtained have been submitted as samples under D1.1-chem.
- Example “False” scenario: A supplier has identified several determinands (lead, copper, zinc) which may pose a risk to consumers in their drinking water safety plan. The supplier has not tested for the determinands during the year.

Level 1 Distribution assurance rules are not reported but are required to be followed if the rule module is required for a supply.

7. Level 2 Rules

Source Water Rules

All level 2 source water monitoring Reporting Rule IDs which are relevant to the source water/s of the supply have an annual reporting period.

The reporting requirements for S2.1 and S2.2 rules depend on the source.

- There is no need to report on Reporting Rule IDs that do not apply to your source.
- Example: If supply’s source is surface or ground water, reporting includes all Reporting Rule IDs beginning with S2.1 but does not need to include reporting on any Reporting Rule ID associated with Rule S2.2 which applies to roof water sources.

If the supplier knows that a determinand exceeds 50% of its MAV, more samples must be reported under S2.3.

- If the determinand being sampled for at increased frequency already has a Reporting Rule ID under S2.1 or S2.2 Rules, submit samples under their respective Reporting Rule IDs. Example: If manganese is found to be above 50% of its MAV for a groundwater source, submit additional samples under the Reporting Rule ID S2.1-mang.
- If the determinand being sample for is something other than that identified under S2.1 or S2.2 Rules, submit under S2.3.
- See the parameter and determinand list for acceptable names and units to enter for samples reported.
- This rule requires a determinand to be named, the Reporting Rule ID is non-specific and not linked to a single determinand, but samples are expected if the supplier has taken any samples in their source water.

For determinands which require a sampling frequency of every three years, compliance may be achieved for the calendar year if a sample has been taken in the three calendar years prior to the report being submitted.

- If the supply complies with the Reporting Rule IDs which require sampling every three years and a sample has not yet been reported in the last three calendar years, a sample needs to be reported.
- Exception: If any sample result from a determinand that is required to be sampled every three years has been shown to be above 50% of the MAV, more samples must be reported.

All level 2 source water assurance rules which are relevant to the source water/s of the supply have an annual reporting period.

- Cyanotoxins can create a serious risk to public health in source water and drinking water supplies, we encourage you to seek additional support if you suspect cyanobacteria may be affecting your source water or are uncertain.
- Reporting Rule ID S2.4 must be reported against each source registered in Hinekōrako.
- Reporting Rule ID S2.5 only needs to be reported for sources registered in Hinekōrako which are indicated to be medium or high risk for the presence of cyanobacteria. Example scenarios for reporting S2.5 are given below.
  - Example “True” scenario: A source is characterised by a source water risk management plan as medium risk. The supplier has a written cyanobacteria/cyanotoxin response plan.
  - Example “False” scenario: A source which is at risk from cyanobacteria has not been characterised by a supplier.
  - Example “False” scenario: A supplier has characterised their source as high risk and understand they need a plan, but a cyanobacteria/cyanotoxin response plan has not been written.
- Reporting Rule ID S2.6 only needs to be reported if a supplier becomes aware of the presence of cyanobacteria in one of their source waters.
- Reporting Rule ID S2.7 must be reported against each source registered in Hinekōrako.

Treatment Rules

Footnote 23 allows for self-supplied buildings which provide water to a single building to not be chlorinated nor comply with T2.18 through T2.21.

A limited set of monitoring Reporting Rule IDs, T2.2, T2.9, T2.13, T2.19, and T2.21, must be reported every three months.

- Read the published Rule Clarifications and report according to the Table 4 in that Level 2 Rules clarification.
- The Reporting Rule IDs for the three monthly reporting do not require samples themselves being submitted. Samples are reported under T2.1 annually.
- Reporting Rule IDs T2.9 and T2.13 should be read as the water complying with a limit. Example scenarios for T2.9 and T2.13 are given below.
  - Example “True” scenario (T2.9): All samples, including any continuous monitoring, for turbidity have results less than 5 NTU.
  - Example “False” scenario (T2.9): Three turbidity samples are taken, one during each month of the quarter. One monthly sample exceeds 5 NTU, but the other two monthly samples are less than 5 NTU. The report of T2.9 is reported as false with 1 non-compliant period.

- Example “False” scenario (T2.9): A supply is continuously monitored for turbidity. The continuous turbidity data shows the limit of 5 NTU was exceeded during one compliance period, however, no samples from T2.1 exceed 5 NTU. The rule compliance is reported as false with 1 non-compliant period in the quarterly report.
- Example “False” scenario (T2.9): The supply is not monitored for turbidity. The rule compliance is reported as false with 3 non-compliant periods in the quarterly report.
- Example “True” scenario (T2.13): The supplier takes 1 UVT sample in a quarter that meets the UVT requirements of the UV units. All available evidence, including UVT online monitoring and alarms where available, suggests the UVT requirements are always met. All 3 compliance periods are compliant for the quarterly report, the rule is reported as true.
- Example “False” scenario (T2.13): The supplier does not know the UVT limit specified by the manufacturer to achieve an appropriate level of disinfection to provide safe water at all times. The rule compliance is reported as false with 3 non-compliant periods in the quarterly report.
- Example “False” scenario (T2.13): The supplier takes 3 UVT samples in a quarter, 2 samples meet the UVT requirements of the UV units and 1 sample does not. The rule compliance is reported as false with 1 non-compliant period in the quarterly report.

All other monitoring rules, including T2.1, T2.22, T2.23, and T2.25 require sampling for several parameters and determinands at various frequencies. Samples must be reported against the relevant Reporting Rule IDs for this Rule. These monitoring Reporting Rule IDs are reported on an annual basis.

- There are multiple Reporting Rule IDs for reporting against Rule T2.1, one for each of the determinands and parameters that rule T2.1 requires sampling for.
  - See the parameter and determinand list to match the suffix to the parameter and determinand name and know what result to submit for each Reporting Rule ID.
- For reporting UVI or UV dose (at the reactor), report on either T2.1-UVI or T2.1-dose, respectively.
- For reporting against any chemical used in the treatment process (excluding FAC and fluoride), report on T2.1-trea.
  - Samples may or may not be reported depending on chemicals added to the treatment plant from rule T2.22
  - Samples for T2.22 should be reported under the Reporting Rule ID T2.1-trea.
- T2.1-flow may not be reported if footnote 26 in the Rules applies to the UV reactor.
- T2.1-fluo may not be reported if fluoride is not dosed.
- T2.23 should report any samples that are taken for events which may rapidly introduce high concentrations of chemicals into the water at the source or treatment plant. Example scenarios for T2.23 are given below.
  - Example “True” scenario: No events occur which would require sampling.
  - Example “True” scenario: A dosing pump for hypochlorite was calibrated incorrectly. Testing shows the MAV for chlorine was exceeded; the incident was notified to Taumata Arowai. A public notice was issued. Additional testing showed an initial peak of chlorine in the reservoir and distribution system which declined after 5 days. All additional samples were reported under T2.1-trea for the annual report.
  - Example “False” scenario: A can of paint is accidentally tipped into a raw water storage reservoir. The supplier does not sample for volatile and semi-volatile organic compounds and any other chemicals potentially in the paint.
  - Example “False” scenario: Council staff report a bypass valve was opened at a treatment plant accidentally which allowed a small amount of raw water to bypass treatment for three days. A risk assessment assessed the risk as low, but no bacterial or FAC testing was ordered to determine the level of microbial contamination that could have occurred.

All level 2 treatment assurance rules have an annual reporting period.

- The assurance rules provide suppliers with some instructions to ensure their filtration, UV, and, if needed, chlorine barriers are providing an effective multi-barrier approach.
- T2.12, T2.14, T2.18, and T2.20 are clarified to be assurance rules (see the Rule Clarifications webpage). These Rules have an annual reporting period.

Distribution System Rules

A limited set of monitoring Reporting Rule IDs for the D2 rule module have a three month reporting period.

- D2.1-ecol (*E. coli*), D2.1-coli (total coliforms) must be submitted quarterly. Samples are required to be submitted quarterly.
- D2.5 (free available chlorine/FAC) is about meeting the limits set in the rule. No FAC samples are required in the quarterly report.

All other monitoring Reporting Rule IDs for the D2 rule module have an annual reporting period.

- D2.1-fac is where all FAC samples should be submitted annually.
- Samples for determinands other than *E. coli* and total coliforms must be reported as samples under their respective Reporting Rule ID. For example, lead would be reported under D2.1-lead.

Level 2 Distribution assurance rules have an annual reporting period along with monitoring rules and any samples which were not reported three monthly.

8. Level 3 Rules

Source Water Rules

All Level 3 Source Rules have an annual reporting period.

- Samples taken for the purpose of Class 1 status need not be reported as S3.2 covers this assessment through an assurance rule. However, you may report all samples taken from a source under the following Reporting Rule IDs: S3.3-ecol and S3.3-coli.
- Samples submitted under S3.3, S3.4, and S3.5 Rules and their associated Reporting Rule IDs require the submission of the source class field. Enter the class of the source in this field for all samples submitted against these Rules.
- Classes 2, 3, and 4 sources must be continuously monitored when abstracting.
  - S3.3c-cond, S3.3c-ph, and S3.3c-turb have an annual reporting period.
  - No samples are reported against Reporting Rule IDs which require continuous monitoring.
  - Where samples are taken to replace continuous monitoring according to footnote 41 in the Rules, these are not required to be reported.
- Class 1 and Interim Class 1 must sample for conductivity, pH, and turbidity under Table 18 in the Rules at varying frequency depending on variability of results. These grab sample results should be reported as samples against S3.3-cond, S3.3-ph and S3.3-turb. These Reporting Rule IDs have an annual reporting period.
- S3.6 allows for risk-based sampling of other potential contaminants in their source water. Results from samples must be submitted with this Rule if taken, the determinand and parameter names and units must be used in reporting the samples. Example scenarios for S3.6 are given below.

- Example “True” scenario: The source water risk management plan has identified potential chemical risks and all contaminants identified have been sampled for during the course of the year. Samples are reported against Reporting Rule ID S3.6. Samples reported must have the parameter determinand field filled in so it is clear what is being reported. See the list of acceptable names/titles in the Parameter / Determinand List attached to this guidance.
- Example “False” scenario: The Source Water Risk Management Plan did not assess chemical risks to source water.
- Example “False” scenario: The supplier does not have a source water risk management plan.
- Example “False” scenario: The supplier has a source water risk management plan, identified potential chemical risks, but did not take any samples for those chemicals.

For S3.7, S3.8, and S3.9 assurance rules, the supplier is expected to undertake a risk assessment which classifies their sources as low, medium, or high risk. These rules are reported against each relevant source supply component.

- S3.7 should be assessed for compliance and reassessed on an annual basis for any source registered in Hinekōrako which was active during the reporting period.
- S3.8 need only be reported for sources that have been identified as medium or high risk from the assessment required by S3.7.
- S3.9 need only be reported for sources where a water supplier becomes aware of the presence of cyanobacteria in the source water during the reporting period (e.g. annually).

Treatment Rules

- A select number of continuous monitoring rules which assess continuous monitoring against limits are reported monthly.
- All other Rules have an annual reporting period.
- Many of the rules in this module rely on tables which have multiple requirements.
  - To more easily report compliance with each of these requirements, multiple Reporting Rule IDs are associated with these tables and Rules.
  - Due to the complexity of these tables, some of these Reporting Rule IDs don’t always match the Rule type, the compliance period, or the reporting period of their respective Rule.
    - The structure of the Rules Summary List attached to this guidance will guide the next revision of the Rules to clarify these anomalies.
- Continuous monitoring Reporting Rule IDs are standard in this section.
  - Samples are not expected to be reported for continuous monitoring rules.
  - Suppliers are expected to continuously monitor according to the G Rules that apply.
  - In general, continuous monitoring rules have one day compliance period and either monthly or annual reporting periods.
  - If data is lost and a continuous monitor does not comply with G14, then any Reporting Rule ID which relies on the lost continuous monitoring data is also not compliant for the day. If a calculation cannot be made due to data loss and non-compliance with G14, the Reporting Rule ID associated with the calculation is non-compliant for the day.
    - The exception to this rule is: if a grab sample is obtained within 30 minutes of the data loss occurring, rule G17 allows for the replacement of a continuous 30-minute period of continuous monitoring data. The 30-minute period may extend either side from the time the sample was taken. Records are to be kept of these samples, but these samples do not need to be reported.

- If a continuous monitoring rule is not compliant for one or more compliance periods (i.e., one day) then the rule is to be reported as false for the reporting period.
    - The scale of non-compliance may be reported by stating the number of non-compliant periods.

Bacterial rules

A supplier must submit rule reports on at least one of the bacterial rule ID sets which are given below.

- **Set 1: Chlorine (rules section 4.10.1.1)**
    - The Reporting Rule IDs associated with T3.1, e.g. T3.1-c.t (C.t), T3.1-fac (FAC) T3.1-face (FACE), etc., all refer to the respective requirements in Table 19.
- **Set 2: Chlorine dioxide (rules section 4.10.1.2)**
    - The Reporting Rule IDs associated with T3.7, e.g. T3.7-t10 (T10 contact time), T3.7-flow (Flow), etc., all refer to the respective requirements in Table 20.
    - The reference in rule T3.7 incorrectly refers to Table 19, this reference is clarified to be Table 20.
- **Set 3: Ozone (rules section 4.10.1.3)**
    - The Reporting Rule IDs associated with T3.12, e.g. T3.12-ozon (Ozone), T3.12-leve (level of water in the contact tank, if used), etc., all refer to the respective requirements in Table 21
- **Set 4: UV light (rules section 4.10.1.4)**
    - The Reporting Rule IDs associated with T3.15, e.g. T3.15-dose, T3.15-turb, T3.15-UVT, etc., all refer to requirements in Table 22.
    - Either T3.15-dose or T3.15-uvi must be reported on (not both).
    - T3.15-dose, T3.15-uvi, T3.15-uvt, T3.15-turb, and T3.15-flow are all continuously monitored parameters with daily compliance periods.
    - T3.15-sens is a monthly monitoring rule to report that UVI sensor checking is occurring. This is a monthly requirement, has a monthly compliance period, and has an annual reporting period. Example scenarios for T3.15-sens are given below.
    - Example “True” scenario: Monthly sensor checks on every UV reactor occur each month of the year. Sensors were replaced appropriately.
    - Example “False” scenario: A sensor check was not undertaken for one month on one reactor. The rule is reported as false with 1 non-compliant period for the reporting period.
    - Example “False” scenario: No records are kept regarding sensor checks, so evidence cannot be provided to substantiate compliance with this rule.

If you choose to submit reports on more than one of the sets above, you only need to comply with one.

Our expectation is that if a barrier exists, it should be operated to meet compliance requirements for that barrier in accordance with the principle of having a multi-barrier approach.

Protozoal rules

You must submit rule reports on one or more protozoa rule ID sets (sets given below).

- Protozoa log credits are only achieved if the processes comply with all Rules and Reporting Rule IDs which apply to those processes.
- The sum of the protozoa log credits achieved by all treatment processes must meet the Rule T3.22.

- Compliance with Rule T3.22 means that a drinking water supplier must have protozoa barriers in place that are able to supply the log credits. Determination of compliance with this Rule is your responsibility.
- The plant must have enough protozoa log credits to treat all source water / treatment plant relationships registered in Hinekōrako to comply during a compliance period.
- If a source is not used, the relationship may be deactivated and reactivated when in use. The source may also be deactivated.

- Where multiple sets of Rules could apply to a given treatment process, it is preferable if you only report on the Reporting Rule IDs which pertain to the set of rules which you have elected to comply with for the reporting period. For example: if using Coagulation, flocculation, and direct filtration, only report on Section 4.10.2.2 (2.5-log), 4.10.2.3 (3-log), or 4.10.2.4 (3.5-log), not all of them.

You may report on all treatment processes available at each plant.

- We expect that if a barrier to protozoa exists, it should be operated to meet compliance requirements for that barrier, regardless of whether it is used for compliance with T3.22.
  - Some processes, like recycling backwash water, can degrade raw water quality and result in serious risk to public health if not managed well. Operating media filters according to the Rules is good practice even if turbidity limits cannot be reliably achieved to provide protozoa log credits.

There are assurance rules which state that “all water passing through the treatment plant must pass through” a given process. Example scenarios for these types of rules, e.g. T3.23, T3.26, T3.30, etc., are given below.

- Example “True” scenario: A process which is required for compliance with achieving protozoa log credits is not bypassed and operating.
- Example “False” scenario: A process is bypassed partially or in full and that process is required to achieve the protozoal log credits required for the sources to the treatment plant.
- Example “False” scenario: A process which is required for compliance purposes fails to operate while water is passing through it and the water goes on to be used for drinking water.

Not all sets of protozoal rules may be combined to achieve the required protozoa log credits, i.e., one set may be incompatible with another set due to process limitations or other factors. Guidance on this is outlined for each set of protozoal Reporting Rule ID sets below.

There are several Reporting Rule IDs with a suffix of “-sers” this is for the service state monitoring on filters. This is a continuously monitored rule with a 1-day compliance period and an annual reporting period.

There are assurance Reporting Rule IDs under some monitoring rules, particularly where tables contain several requirements.

- Reporting Rule IDs with the suffix “-recy” refer to the “Process Limitations” where recycle is allowed in the applicable tables in the rules.
  - Reporting against Reporting Rule IDs with a suffix of “-recy” is only required if a recycle stream is present.
  - These Reporting Rule IDs are continuously monitored, have a daily compliance period and an annual reporting period.
  - A Rules Clarification on recycle streams has been issued.
  - *Example* “True” scenario: A recycle stream meets all the requirements in the process limitations in the Table 24.
  - *Example* “False” scenario: A recycle stream has no continuous turbidity monitoring.
  - *Example* “False” scenario: A recycle stream has no continuous flow monitoring and no separate treatment that achieves effective solids/liquid separation.
  - *Example* “False” scenario: A recycle stream returns recycled backwash water from rapid media filters to a location downstream of coagulation and flocculation.

  - Example “True” scenario: A recycle stream exceeds 10% of the plant inflow at times and has a separate clarifier to achieve effective solids/liquid separation. Flow and turbidity are both continuously monitored on the recycle stream. The turbidity monitoring is setup in a way that the supplier can be assured effective solids/liquid separation is occurring when the recycle stream is contributing to the total plant flow.

- Reporting Rule IDs with the suffix “-lmts” refer to “Process Limitations” in the applicable tables in the Rules, but do not include recycling requirements if present in a table. (Recycling requirements are reported under Reporting Rule IDs with the suffix “-recy” as described above.)
  - These Reporting Rule IDs are considered assurance rules with an annual compliance period and annual reporting period and must be reported for compliance.
- Reporting Rule IDs with the suffix “-cert” refer to “Validation/Certification” requirements in the applicable tables in the Rules.
  - These Reporting Rule IDs are considered assurance rules with an annual compliance period and annual reporting period and must be reported for compliance.
  - Example “True” scenario: A supplier maintains documentation of certification and/or validation, the certificate states the operational requirements of the process. All requirements in a table under “Validation/Certification” can be evidenced as complying.
  - Example “False” scenario: Membranes are required to achieve the required protozoa log credits. The membranes do not meet the conditions under “Membrane Validation/Certification in Table 29 of the Rules.
  - Example “False” scenario: A UV unit which is used to achieve the required protozoa log credits does not meet the conditions under “UV certification/validation” in Table 32 of the Rules.
  - Example “False” scenario: No documentation is available for a UV unit to determine how many protozoa log credits the unit can achieve or the conditions under which it achieves it.

The protozoa Reporting Rule IDs sets for each protozoal rules sections in the Rules are given below with guidance on how to report.

- Set 1 (Rules section 4.10.2.1): Coagulation, Flocculation, and Sedimentation without Filtration [0.5-log]
  - This set may only be used in series with sets 12 (Ozone) and 13 (UV).
- Sets 2 (Rules section 4.10.2.2), 3 (Rules section 4.10.2.3), and 4 (Rules section 4.10.2.4): Coagulation, Flocculation, and Direct Filtration
  - Set 2 achieves [2.5-log], Set 3 achieves [3-log], or Set 4 achieves [3.5-log]
  - Where water flow splits, enters multiple filters of the same type operating in parallel, and then recombine back together before further treatment or distribution, these must be reported as a single process, e.g. if one filter is non-compliant with a rule - the whole process is non-compliant with that rule for that day. The current reporting structure does not permit reporting against individual filters. A note may be made to give additional context to the non-compliance, e.g. “1 of 6 filters failed – T3.35 turbidity exceeded 0.1 NTU for 10% of day on filter 5”.
  - Protozoal log credit from Sets 2, 3, and 4 cannot be combined with each other.
  - The process of coagulation, flocculation, and direct filtration may only be combined with Sets 8, 10, 11, 12, and/or 13.
  - Rules T3.29 and T3.33 are clarified to be monitoring rules with one day compliance periods. These have an annual reporting period.
- Sets 5 (Rules section 4.10.2.5), 6 (Rules section 4.10.2.6), and 7 (Rules section 4.10.2.7): Coagulation, Flocculation, Sedimentation, and Filtration
  - Set 5 achieves [3-log], Set 6 achieves [3.5-log], or Set 7 achieves [4-log]

- Where water flow splits, enters multiple filters of the same type operating in parallel, and then recombine back together before further treatment or distribution, these must be reported as a single process, e.g. if one filter is non-compliant with a rule - the whole process is non-compliant with that rule for that day. The current reporting structure does not permit reporting against individual filters. A note may be made to give additional context to the non-compliance, e.g. “1 of 6 filters failed – T3.39 turbidity exceeded 0.3 NTU for 10% of day on filter 5”.
- Protozoa log credit from Sets 5, 6, and 7 cannot be combined with each other for a single process.
- The process of coagulation, flocculation, sedimentation, and filtration may only be combined with protozoal credit from Sets 8, 10, 11, 12, and/or 13.

- Set 8: Second Stage Filtration [0.5-log] (Rules section 4.10.2.8)
  - Protozoa log credits may only be combined with one of the following sets: 2, 3, 4, 5, 6, or 7.
- Set 9: Slow Sand Filtration [2.5-log] (Rules section 4.10.2.9)
  - Protozoa log credits may only be combined with Sets 10, 11, 12, and/or 13.
- Set 10: Cartridge Filtration [2-log] (Rules section 4.10.2.10)
  - Protozoa log credits from this set of Reporting Rule IDs may only be combined with Sets 12 and 13.
  - If cartridge filtration is combined with other filtration-based sets this will be considered second-stage filtration (see Set 8).
- Set 11: Membrane Filtration [up to 4-log] (Rules section 4.10.2.11)
  - Reporting Rule ID T3.74 is clarified to be a monitoring rule with a compliance period of 1 day. This is not a continuous monitoring rule. Samples are not expected to be submitted. The reporting period is annually. If one membrane unit fails to perform a direct integrity test daily, the Reporting Rule ID must be reported as false for the reporting period and give number of non-compliant periods, i.e., number of days. Notes may be used to give additional detail to the failure, e.g. “one of four racks missed the DIT for a day", "A DIT was not completed in the 10 minutes the rack was in service for the day.”
  - Reporting Rule ID T3.78 has been clarified in the Rule Clarifications.
- Set 12: Ozone Disinfection [up to 3-log] (Rules section 4.10.2.12)
- Set 13: Ultraviolet Light Disinfection [up to 4-log] (Rules section 4.10.2.13)
  - When multiple reactors are used in parallel: If any reactor fails to achieve a limit more than 5% of the time it operates during the day, then the whole process must be reported as non-compliant for the day. Alternatively, the compliant percentage of total production volume through all UV reactors may be used to calculate whether the whole process does or does not comply with the 95% criteria for the day.
  - T3.91-sens is a monthly monitoring rule to report that UVI sensor checking is occurring. This is a monthly requirement, has a monthly compliance period, and is reported annually. Example scenarios for T3.91-sens are given below.
  - Example “True” Scenario: Monthly sensor checks on every UV reactor occur each month of the year. Sensors were replaced appropriately.
  - Example “False” Scenario: A sensor check was not undertaken for one month on one reactor. Compliance with T3.91-sens is reported as not complying for the reporting period with 1 non-compliant period.
  - Example “False” Scenario: No records are kept regarding sensor checks, so evidence cannot be provided to substantiate compliance with this rule. Compliance with T3.91-sens is reported as not complying for the reporting period with 12 non-compliant periods.

Chemical rules

Section 4.10.3 in the Rules combined with Rules T3.92 and T3.93 require the initial collection of samples to establish ranges of determinands present in the treated water, as well as ongoing sampling requirements.

- The results from all chemical tests for under T3.92 and T3.93 must be submitted as samples in Reporting Rule ID T3.93-stan (if the determinand did not exceed 50% of the MAV) or T3.93-elev (if the determinand exceeded 50% of the MAV). The first annual report will be expected to have much more monitoring than future annual reports.
- If a chemical found in Table 34 is dosed, it is expected typical ranges will be established for the determinands listed.
- Continuous monitoring is required for FAC and Fluoride and reporting for this requirement may be done under T3.93-fac and T3.93-fluo, respectively.

  It is expected that these analysers are maintained and verified according to manufacture specifications and applicable G rules apply.

For reporting against Reporting Rule ID T3.96, see guidance above on Reporting Rule ID T2.23 in the Level 2 Treatment Rules section.

Distribution System Rules

D3.19 and D3.29 monitoring rules are reported monthly.

- Report against D3.19-cont if continuous monitoring is elected.
- Report against D3.19-grab if grab sample monitoring is elected.
- Report against each distribution zone.
- Report all samples taken from the distribution zone at any time during the compliance period.

Level 3 Distribution assurance rules have an annual reporting period along with monitoring rules, and any associated samples, which were not reported monthly.

9. Data Quality Checks

The following checks may be undertaken to quality assure reported data and help ensure samples and related fields are only being reported when they are required.

- For Reporting Rule IDs, our system will check whether the rule *ID* is correct for what is being reported.
- For Reporting Rule IDs, the rule set *Level* will be checked against the supply population to ensure that the correct rules are being reported on.
- For Reporting Rule IDs, the *Reporting Period* will be checked against the rule to ensure that it is correct.
- For Reporting Rule IDs, the *Reporting Timeframe* will be checked against the rule to ensure to that it is correct.
- For samples against a Reporting Rule ID where *Determinand Check* is equal to 1, the "parameter_determinand" field must be blank. (Where a Reporting Rule ID is specific to a parameter or determinand, the supplier should not need to fill out the "parameter_determinand" in the reporting of the sample, as this field will be assumed from the Reporting Rule ID.)
- For samples against a Reporting Rule ID where *Determinand Check* equals 2, the supplier should fill out the "parameter_determinand" for the sample. If the Parameter/Determinand being reported on exists in the Parameter/Determinand List they should use the ID or Title from that list.
- If *Sample Reporting* for a Reporting Rule ID is equal to 2, any reports against the Reporting Rule ID should also contain samples to demonstrate compliance against the rule. If no samples are reported the "complies_with_rule" field should be set to false.
- If *Sample Reporting* for a Reporting Rule ID is not equal to 2 or 3, any reports against the Reporting Rule ID must not contain samples.
- Supply level Reporting Rule IDs (where *Report Supply Level* equals 1) are only to be reported against a supply. For supply level Reporting Rule IDs, the "supply_component_id" field must be left blank as the report level "supply_id" field will be sufficient for reporting on the whole supply.
- A supply can contain multiple supply components. Supply component Reporting Rule IDs (where *Report Supply Level* equals 0) must be submitted for every applicable component with the "supply_component_id" field filled in.
- Supply component Reporting Rule IDs (where *Report Supply Level* equals 0), the "supply_component_id" will be checked against our database to ensure that the correct rules are being reported on for the component type (Source, Treatment or Distribution).

Excel warnings and errors

Below are the errors that may be displayed if the Excel submission fails, together with guidance on how to update the template prior to re-submitting.

Error	Steps to correct
Rule [ ] and [ ] combination is not in Section 2: Rule Reports	Ensure the Reporting Rule ID and Supply Component ID pairing for the sample is in Section 2: Rule Reports on the Reports tab
Row [ ]: [ ] is not valid. Please enter a valid Value Prefix	Ensure the Value prefix is either blank, '>','<' or '='. A blank Value Prefix is the equivalent to '='
Unit is required	Ensure a unit is entered against the sample

Please enter a valid number for Value	Ensure the entered value is a number
Row [ ]: [ ] is not valid. Please enter a valid Source Class	Ensure Source Class is either blank, or '1', '2', '3' or '4'
Non Compliant Periods is required	Under Section 2: Rule Reports on the Reports tab the number of Non Compliant Periods must be entered for each Rule ID
Rule ID is required; please enter an existing rule id	Ensure a Reporting Rule ID is entered for the sample
Rule ID:[ ]; Supply Component ID: [ ]; External Sample Id: [ ] - A rule sample must have a unit value.	Ensure a unit is entered against the sample
Complies With Rule is required	Ensure Complies With Rule is set to either 'TRUE' or 'FALSE' for each sample
The following Supply Component IDs are invalid: [ ]	Ensure the Supply Component ID matches the Supply Component ID on the Hinekōrako Supply Details page (Sources, Treatment Plants and Distribution Zones). Note this differs from the Supply ID.
Please enter a valid number for Non Compliant Periods	Ensure only numbers are entered under Non Compliant Periods under Section 2: Rule Reports
Supply ID in Excel file does not match the Supply entered in Hinekōrako.	Ensure the Supply ID under Section 1: Supplier/Report Details matches the Supply ID on the Hinekōrako Supply Details page
Please enter true/false for Complies With Rule	Ensure Complies With Rule is set to either 'TRUE' or 'FALSE' for each sample
Value is required	Ensure the sample has a number entered for the value
Form is incorrect. Please use the correct template	There is a problem with the formatting of the submitted template. Download and complete the latest template from Hinekōrako and resubmit the report.
Form is incorrect	There is a problem with the formatting of the submitted template. Download and complete the latest template from Hinekōrako and resubmit the report.
Supply Component ID is required	Ensure the Supply Component ID matches the Supply Component ID on the Hinekōrako Supply Details page (Sources, Treatment Plants and Distribution Zones). Note this differs from the Supply ID.
Sample Date is required	Ensure the sample has a valid date entered under 'Sample Date'
Rule ID: [ ]; Supply Component ID: [ ]; External Sample Id: [ ] - A rule sample must have a sample_date value	Ensure the sample has a valid date entered under 'Sample Date'

The following Rule IDs are invalid: [ ]	Ensure the Reporting Rule IDs contained in the report are valid. Valid Reporting Rule IDs can be found in the reporting guidance.
External Rule ID is required	Ensure the External Rule ID is entered under Section 1: Supplier/Report Details
Please enter a valid date for Sample Date	Ensure the sample has a valid date entered under 'Sample Date'
An unexpected error has occurred. Please contact the Help Desk.	This is usually a result of an invalid Excel template being submitted. In the first instance download and complete the latest template from Hinekōrako and resubmit the report. If problems continue, please email info@taumataarowai.govt.nz.
Date Submitted is required	Ensure the Date Submitted under Section 1: contains a valid date
Rule ID: [ ]; Supply Component ID: [ ]; External Sample Id: [ ] - A rule sample must have a complies_with_rule value.	Ensure Complies With Rule is set to either 'TRUE' or 'FALSE' for each sample
File has failed malware/virus scanning	The submitted template has failed malware/virus scanning. This may be due to the template containing a macro or links to external sources. In the first instance download and complete the latest template from Hinekōrako and resubmit the report. If problems continue, please email info@taumataarowai.govt.nz.
please enter a valid date for Reporting Period End	Ensure a valid date is entered under Reporting Period End under Section 1: Supplier/Report Details
Rule ID: [ ]; Supply Component ID: null; External Sample Id: [ ] - A rule sample must have a supply component id value.	Ensure the sample contains a valid Supply Component ID. Supply Component IDs can be viewed on the Hinekōrako Supply Details page (Sources, Treatment Plants and Distribution Zones).
Passed Excel configuration validation but failed data and business rule validation: A rule sample must have a value supplied.	Ensure the sample has a number entered for the value
reporting_period_start must be before reporting_period_end	Ensure that the Reporting Period Start is a valid date, prior to the Reporting Period End under Reporting Period End under Section 1: Supplier/Report Details
Passed Excel configuration validation but failed data and business rule validation - reporting_period_start must be before reporting_period_end	Ensure that the Reporting Period Start is a valid date, prior to the Reporting Period End under Reporting Period End under Section 1: Supplier/Report Details
A report must have a reporting_period_end value.	Ensure a valid date is entered under Reporting Period End under Section 1: Supplier/Report Details