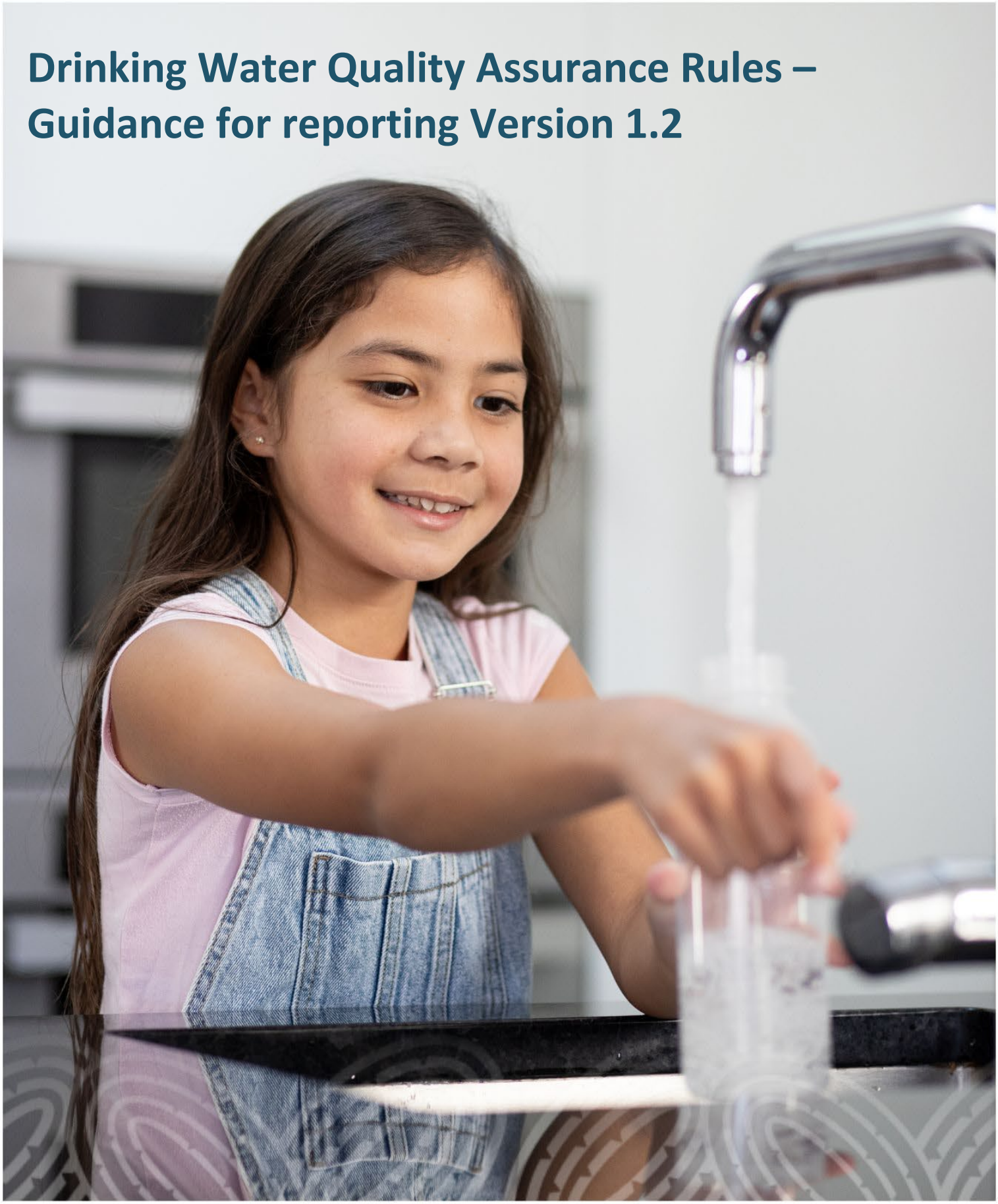
Water Services Authority
Taumata Arowai

Drinking Water Quality Assurance Rules – Guidance for reporting Version 1.2



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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. We have produced this guidance to help you to meet your reporting requirements under the Rules. This guidance does not cover all scenarios and is not a substitute for legal advice. This guidance provides examples of good practice and contains general technical guidance which needs to be interpreted and applied by the drinking water supplier in the context of the supplies they own and/or operate. The reporting requirements in the Rules are independent of the broader powers of the Water Services Authority - Taumata Arowai (the Authority) to obtain information from suppliers under the Water Services Act 2021.

If you have any questions with respect to reporting, please email opssupport@taumataarowai.govt.nz.

What are my reporting responsibilities as a drinking water supplier?

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. We require you to report a limited subset of data in connection with monitoring obligations, assurance activities, and the overarching obligation to provide safe drinking water.

Your reporting requirements are determined by your supply characteristics and the Rules modules that you demonstrate compliance against. The Rules set out your minimum requirements based on supply type and population served. There are three 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.
- **Non-reporting rules** are rules which suppliers do not report against, these are typically similar to assurance rules, but there is no need for the Authority to collect data on these rules.

It is also 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 whether your supply meets requirements with aspects of legislation, including the Rules.

You must identify each rule that applies to your supply. You must assess whether you and your supply complied with the requirement and provide a statement of compliance (e.g. TRUE or FALSE) and the extent of any non-compliance.

Additional guidance for very small communities, small supplies and medium supplies on how and why to comply with the Rules may be found here – For drinking water suppliers

How often do I need to report and when?

The General Rules module contains the reporting requirements for suppliers. Reporting is only required against those rules which apply to the supply. If you are unsure whether a rule needs to be reported on, you may contact opssupport@taumataarowai.govt.nz. Reporting requirements vary by which Rules modules a supply follows as shown in the table below.

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)	Annually (rule G1)	No
S2, T2, D2 (Level 2 Modules)	Quarterly (rule G2.1)	Annually (rule G2.2)
S3, T3, D3 (Level 3 Modules)	Monthly (rule G3) Annually (rule G4)	Annually (rule G5)

2. Updates and improvements

Original version

"Drinking Water Quality Assurance Rules Reporting Guidelines Version 1.0"

Previous version/s

"Drinking Water Quality Assurance Rules Reporting Guidelines Version 1.1"

What changed in Version 1.1?

- 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 Rules summary list to better align with the Rules.
- Where rules have been clarified, these changes are included in the Rule Summary List.

Current Version

"Drinking Water Quality Assurance Rules Reporting Guidelines Version 1.2"

What changed in Version 1.2?

- Updated to reflect changes to the Drinking Water Quality Assurance Rules.

- Moved guidance on rules for small and medium supplies to website.
- Corrections and changes to Version 1.1.
- Included guidance on new webform for quarterly reporting on level 2 rules.
- Reframed guidance as frequently asked questions.
- 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 data dictionary has been incorporated into this file to explain the columns.

3. What tools are available for reporting?

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).

As of 2025, a webform has been developed for suppliers' quarterly reports on level 2 rules and for annual reporting on level 1 and 2 rules. This webform is discussed more below.

Who can report using the webform and how do I access it?

Webforms can be accessed through the Reporting section in the Hinekōrako supplier portal.

Webforms do not currently have functionality to receive samples/monitoring results; this will be looked at for future improvement.

For full details on how to submit DWQAR reporting via the webform, refer to our Hinekōrako guide.

How do I report using Excel?

The following Excel templates are available for download:

- Rules Excel template (Reporting on rule compliance and reporting sampling/monitoring results)
- Annual Assurance Excel template (Reporting on rule compliance – for assurance rules only)

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

How do I report using Application Programming Interface (API)?

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. Each person who will report using the API requires a personal API key. This key is generated from the Reporting section in the Hinekōrako supplier portal.

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 opssupport@taumataarowai.govt.nz.

4. How do I report?

A data structure for reporting compliance ensures data quality and reliability. The report structure is shown in the figure below along with a summary of each level of the data structure. You submit reports for each relevant reporting period and include reporting against all the relevant reporting rule IDs for that reporting period.

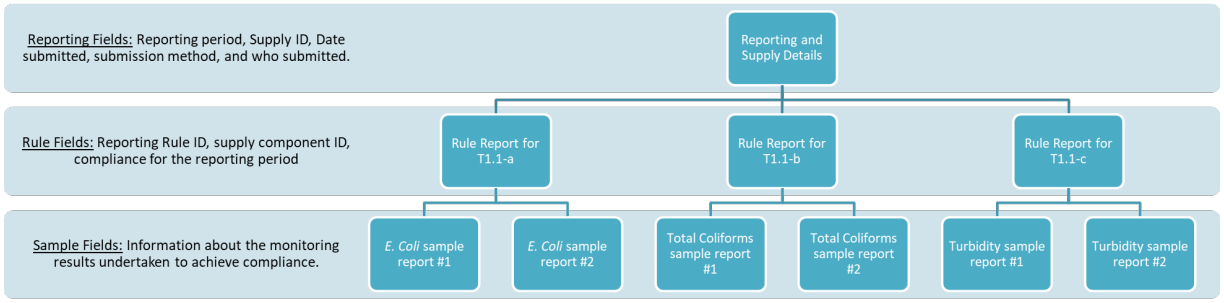
We recommend submitting one report per supply, if you choose to submit multiple reports for the same reporting period, the file names must be different for each report.

For smaller suppliers - a webform is the simplest and easiest method for reporting.

For larger suppliers - API is generally the most efficient way for a supplier with large supplies to submit regular reports to the Authority. This option is one of the more complex options and requires an initial investment in setting up systems and processes.

For all suppliers – at times all suppliers may need to use Excel reporting templates and upload completed reports to Hinekōrako. The rest of this guidance is focused mainly on how to report using excel and the people involved in developing API reports.

The data structure is the same no matter the reporting method as shown below.



What do I need to tell you about my report, supply, and myself?

Within the report data structure each report contains a header with the following fields which apply to the whole report. This data must be reported.

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

How do I report on my compliance with the Rules?

The next level of the report data structure enables suppliers to report on compliance with legislative requirements in the Rules. A Rules summary list (see Section 9: Rules-as-code) of reporting rule IDs summarises each legislative requirement. Example 4.1 below shows the reporting rule IDs for rule T1.1.

Example 4.1

Compliance with rule T1.1 must be reported to the Authority every year for those supplies that follow the T1 Rule module. There are three determinands that must be tested for in rule T1.1, so the rule has been assigned three reporting rule IDs, one for each determinand / legislative reference.

- T1.1-a for reporting whether the supplier monitored *E. coli* at least every three months
- T1.1-b for reporting whether the supplier monitored total coliforms at least every three months
- T1.1-c for reporting whether the supplier monitored turbidity at least every three months.

What exactly needs to be reported?

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

Field Name	Example	Description
`rule_id`	"T1.1-a"	Also, reporting rule ID, or rule ID. An identifier referencing a specific requirement in the Rules. (e.g. T1.1-a)
`supply_component_id`	"TP04026"	The Hinekōrako code of the supply component referencing a source abstraction point, a treatment plant, or a distribution zone.
`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. Must be > 0 when complies_with_rule is "FALSE" and 0 when complies_with_rule is "TRUE".
`notes`	"plain text notes"	Notes about non-compliance/s
`samples`	[List of samples]	An optional array of samples if appropriate

Who determines my compliance with the Rules?

You must determine whether you complied with each relevant legislative requirement and report the outcome of that determination through the corresponding reporting rule ID.

How often must I determine compliance against the Rules?

You must determine compliance during each compliance period.

How do I report compliance against the Rules?

You must make statements of compliance for each relevant reporting rule ID for each of your supply and/or supply component for the reporting period. For each reporting period, you may report on any or all applicable reporting rule IDs per supply component. If you did not comply with the reporting rule ID at any point within a reporting period, you must report "complies_with_rule" as FALSE. See Example 4.2 below.

Example 4.2

A treatment plant needed to comply with the T1 rules module. The compliance period for T1.1 is three months, and the reporting period is one year. There are four compliance periods in the reporting period of one year. T1.1 requires 3 monthly sampling for turbidity. However, a supplier only took one sample for turbidity in August. For the annual report, the supplier must report T1.1-c to be "FALSE" for "complies_with_rule" and "3" for "non_compliant_periods". The same supplier met their requirements to sample for *E. coli* and total coliforms every 3 months. For the annual report, the supplier must report T1.1-a and T1.1-b to be "TRUE" for "complies_with_rule" and "0" for "non_compliant_periods".

What should I check before I submit a report?

- Ensure that the Reporting Rule ID and supply component ID match. For example, a treatment rule must be reported against a treatment plant.
- If a Reporting Rule ID has a compliance period and a FALSE is reported, then “non_compliant_periods” must be a whole number greater than 0 but not greater than the number of compliance periods in the reporting period for that Reporting Rule ID.
- If a rule does not have a compliance period, but the rule was not met, a “FALSE” must be reported. However, the “non_compliant_periods” field may be reported as a “1”, as this field cannot be left blank.
- Check for typing errors, like a zero “0” instead of the letter “O” or vice versa.
- Check you don’t repeat statements of compliance for the same supply component within the same reporting period.
- Check that your supply ID and supply component IDs are correct.

What records should I keep to show whether I complied with the Rules?

A statement of compliance should be supported by evidence and record-keeping to show that compliance was achieved as we may ask you to produce evidence that a supply complies with a rule. Notebooks, digital records, calculations, and laboratory records may all be used to support compliance statements.

Do you want all my records?

No, only a simple statement of compliance and how many compliance periods were non-compliant within the reporting period.

What do you use the Notes field for?

Text may be added to briefly describe non-compliance in the notes section; these are primarily for the supplier’s use. We do not regularly review notes a supplier makes in this field, though they may be used to better understand non-compliance.

Do I need to notify the Authority of MAV exceedances and safety issues when I’m already reporting non-compliance?

Rules reporting does not satisfy supplier duties to notify the Authority 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.

How do I report my monitoring results?

Where a monitoring rule requires sampling, the test results are to be recorded and reported against the relevant reporting rule ID. For every sample that needs to be reported on, the following fields are available.

Field Name	Example	Description
rule_id	"T1.1-a"	The Reporting Rule ID a sample was obtained to comply with.
supply_component_id	"TP04026"	The Hinekōrako code of the supply component you obtained the sample from. The type of supply component must align with the reporting rule ID. For example, S2.1-a and S2.1-b should be reported against a source.
external_sample_id	"your sample id here"	The laboratory sample ID which establishes a digital chain of custody to the sample and test results you report. Samples taken for analysis by non-laboratories (e.g. for FAC or turbidity using handhelds) should be recorded along with a sample ID.
sample_date	"2023-02-20"	The date the sample was taken from the location / supply component specified.
parameter_determinand	"Manganese"	The name of the parameter or determinand for which the test result "value" corresponds to, this should align with monitoring requirement from the reporting rule ID. See the Parameter determinand list in Section 9 for a list of acceptable names and units for parameters and determinands.
value_prefix	"<"	The ">" (greater than) or "<" (less than) signs are available for when a lab result exceeds the upper limit or the detection limit of a test. Leaving the field blank or entering "=" is accepted to mean "equals to".
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 in Section 9 for accepted units.
complies_with_rule	TRUE	For drinking water samples taken from treatment plants and distribution zones, report "TRUE" if the sample value is less than the MAV, otherwise "FALSE". For water samples taken from source water abstraction points, report "TRUE" always, as source samples cannot be non-compliant.
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.

Do I have to report on all sample results, including operational samples, which are not taken for compliance purposes?

Only drinking water samples taken for purposes of compliance with the Rules must be reported. Non-drinking water samples, e.g. process samples or other samples used for operational purposes should not be reported.

How do I know if my sample is not compliant?

Drinking water samples are non-compliant if the determinand tested for in the sample exceeds a MAV. Source water samples should be reported as compliant even if they exceed the MAV, as the source water is not typically used as drinking water without further treatment.

Are samples expected for all reporting rule IDs?

No. Samples are not expected to be reported for assurance or non-reporting rules. Some monitoring rules and their Reporting Rule IDs may have a requirement for monitoring of a parameter or determinand to meet a limit (e.g. T2.6), but no requirement for sampling itself. Samples should NOT be reported against these Reporting Rule IDs.

Samples are not expected to be reported for monitoring rules which require assessment of continuous monitoring data to determine compliance.

If I tested any samples for a monitoring rule, like T1.2, do I need to report the results of this monitoring?

Some monitoring rules may have sampling requirements depending on characteristics of a supply or based on supplier choice. If samples are taken for one of these monitoring rules, like rule T1.2, the sample results must be reported under the relevant Reporting Rule ID.

If I didn't take any samples for a monitoring rule, like T1.2, do I need to report on compliance with the rule?

Yes, you need to report that you complied with the requirement to take samples where a chemical presents a risk to the supply. In this case you would be confirming there are no chemical risks to your supply. See the Rules guidance for more information on how to interpret these types of Rules.

Can I use data from continuous monitoring instruments instead of taking grab samples to meet monitoring requirements in the level 1 and level 2 Rules (e.g. turbidity monitoring at my treatment plant)?

Where continuous monitoring is not required but is available, values from continuous monitors may be used to demonstrate compliance with requirements and submitted as test results in samples reporting. "Grab" samples of electronic data should be representative of the continuous monitoring data. Continuous monitors used for this purpose must be calibrated and verified according to manufacturer specifications.

Do you have an example of how I can report via the Excel template?

The following is an example of a six-monthly report for a small, networked supply assessing compliance with Level 1 Rule modules. The report below shows that a turbidity sample was missed for one of two quarterly compliance periods within the six-month reporting period.

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	

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. Submission of this additional sampling is good practice.

How do I report monthly on weekly requirements?

Where the sampling frequency is weekly, but the compliance period is monthly, and a minimum number of samples per week is required, the supplier can choose how to address incomplete weeks at the beginning or end of each month. This choice may depend on the supplier's sampling plan and schedule. The choice should be consistently applied and ensure that if the sampling frequency is not met that a non-compliance is reported.

How do I correct my reporting?

You may resubmit reports to correct errors and omissions. We retain all reports, whether submitted via API, excel, or webform, in a central database, and we use the most recently submitted report against each Reporting Rule ID for a given reporting period (report period start and end dates), supply ID, and supply component ID. You may correct an API report with an excel or webform report and vice versa.

We perform data quality checks on API and Excel submissions which you may read more about in section 9. Data Quality Checks.

You have the following options for correcting reports:

- Amend and resubmit the whole report.
- Submit a report with only the Reporting Rule IDs that need to be corrected, and any samples associated with that Reporting Rule ID for the reporting period.

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.

How often do I report on monitoring rules?

G1, G2.1, G3, and G4 set the reporting requirements for 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 failed due to errors or the reports were late or missed, these Reporting Rule IDs must be reported as “FALSE”.

How often do I report on assurance rules?

G2.2 and G5 set the reporting requirements for applicable assurance rules. Only supplies demonstrating compliance with level 2 and level 3 rules report on assurance rules, which are relevant to their supply, annually.

How do I report on the General Rules module?

General rules are considered assurance rules for reporting purposes and have an annual reporting period. Only supplies required to report on assurance rules need report on the General Rules module.

Do all rules need to be reported on?

Only rules which have reporting periods should be reported on. The Rules summary list may be used to find which rules need to be reported for your supply and how frequently.

My supply circumstances have changed, what should I do?

A supplier may need to adjust how they report part way through the year.

The reasons for this may include:

- An increase or decrease in the baseline population supplied.
- A new source or treatment plant has been commissioned or decommissioned.
- Changes to distribution zones.

In these cases, and others, it’s best to get in touch with opssupport@taumataarowai.govt.nz to work through a practical approach to managing your reporting obligations.

Do I need to report on rules G1, G2.1, G2.2, G3, G4, and G5?

Yes, if applicable, 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.

How do I comply with rules G6, G7, G8, G9, G10, G11, and G12?

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”.

6. General Rules for Continuous Monitoring

I don't have continuous monitoring, do I need to comply with or report on G12, G13, G14, G15, G16, and G17?

No, only supplies with continuous monitoring used to demonstrate compliance with the Rules need to follow these Rules as they apply.

How do I comply with rule G13?

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 ID in a supply.

Averaging up to one minute of data to generate data points is allowed; however, taking a maximum or minimum value may be more conservative depending on the rules being monitored for ensuring water is always meeting appropriate limits. We recommended that a consistent approach is used to store data from all continuous monitors used in a water supply, particularly those used to monitor compliance.

Do you have any examples of supplies which may or may not comply with rule G13?

The following examples for reporting on G13 are applicable to supplies which elect the T3 rule module. These are examples only and the "TRUE" scenario represents some best practice principles.

- 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).

How do I comply with and report on rule G14?

This rule is 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:

> *For D3 Distribution System Rules, like D3.19, which may require the generation of continuous monitoring data, that data must not be interrupted for more than 3 consecutive hours in any 1-day compliance period, for compliance to be achieved.*

Do you have any examples of supplies which may or may not comply with rule G14?

- 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.

How does compliance with G14 affect compliance with other rules which require continuous monitoring?

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 over the compliance period for which data loss occurred.

If water is being treated in large supplies, you must be continuously monitoring your supply. If a continuous monitor fails, you have limited assurance that the treatment processes are working effectively. It is good practice to run-to-waste or shutdown processes when the monitoring of processes fail. Backup generators and dual validation of monitoring is also good practice and can be beneficial in ensuring the highest quality water is delivered to consumers at all times.

How do I comply with and report on rule G15?

See "How do I comply with and report on rule G13?" This rule has a requirement of 30 minutes as opposed to 1 minute. This rule is individually reported against for each distribution zone and source which has requirements to continuously monitor to demonstrate compliance with a Rule.

How do I comply with and report on rule G16?

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.

How do I comply with and report on rule G17?

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.

7. 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.
- S3.3 allows for reporting continuous monitoring from combined sources as per footnote 39, this should be reported using the Supply Component ID of the water treatment plant.
- If the source water is Class 2, 3 and 4 and online analysers for compliance with this rule were installed in the middle of the calendar year and not the beginning of the calendar year (1 January) the supplier needs to report FALSE for these Rule IDs (i.e., S3.3-cond, S3.3-ph, S3.3-turb) for the annual report correspondent to the year the analysers were installed. You should include a note with the date the continuous monitoring analysers were installed. In the next annual report, you will be able to report compliance with these Rule IDs for the whole calendar year.
- Source water samples taken for a determinand according to rule S3.3 cannot be used for compliance with rules T3.92 and T3.93 even if the WTP has no treatment to remove that determinand. This is because even a water treatment tank can change the water quality as solids settle and can also be stirred and released in high concentration by some treated water pumps (mostly if the tank is not cleaned as frequently as necessary).

- The reporting period for S3.4 is one year. The sample needs to be taken within ten years of the end of a reporting period. "Every ten years" does not mean that you have ten years to take the first sample.

- - Example "TRUE" scenario: Potassium - S3.4-pota annual report is 1-Jan-23 to 31-Dec-23 and a sample was taken on 2-Feb-14. 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 (the full names from the parameter and determinand list, not the abbreviations) 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 needs to only be reported for sources that have been identified as medium or high risk from the assessment required by S3.7.
- S3.9 needs to 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).

Water sources should not be deactivated every time the supplier changes the water source being used, but rather when there is a major change (e.g., a source has been decommissioned for a year due to construction works or permanently decommissioned).

If an abstraction point from a water source is not used but is available for emergency use only, the registration in Hinekōrako must be updated to reflect that.

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 non-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 supply complies with G17 when online instruments fail, the supplier can report G14 as compliant.
- 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.

Do not report on any of the bacterial rules if no bacterial disinfection treatment is installed.

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.
- 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.

If you change the number of UV log credits the UV units are set up to deliver you will need to adjust reporting on rules T3.85 to T3.91 accordingly, e.g. from 3 log to 4 log credits. Only report on T3.85 to T3.91 based on either 3 or 4 log credits (it is the supplier's choice). Do not report on the same rule twice for the same reporting period. In the month the change occurred, add a note to the monthly report advising of the change in log credits and the date this change occurred.

In the event that you do not comply with one of the rules T3.85 to T3.91 based on 4 log credits for example, but the UV units were still providing 3 log credits, report non-compliance and add a note to the report stating UV units did not provide 4 log credits but provided a minimum of 3 log credits during the non-compliant days.

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 the supplier has not finished their 12-month sampling programme for T3.93:
You will not have the final categorisation of each determinand. The supplier can categorise each determinand based on your results so far in order to report the sample results under the appropriate Rule ID.
Include each Rule ID that is applicable to your supply in the “Reports” tab and report “TRUE” or “FALSE” based on being compliant with the 12-month sampling programme (described in T3.92) so far or not.

If the supplier has finished their 12-month sampling programme for T3.93:
Categorise all determinands, and if you are sampling them as per Table 33, report “TRUE” for all the applicable Rule IDs in the “Reports” tab.

After 15 samples over 12 months (rule T3.92), if determinands previously classified as Standard has its annual sample result > 50% of the MAV, then it should be re-classified as Elevated and start being sampled monthly. A determinand classified as Elevated can be reclassified as Standard at any time according to T3.92 if 15 samples over 12 months return results < 50% of the MAV.

- 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.

T3.96 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 T3.96 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 the Authority. A public notice was issued. Additional testing showed an initial peak of chlorine in the reservoir and distribution system which declined after 5 days.
  - 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.

T3.97 if no cyanobacteria were identified in the water source to trigger cyanotoxins testing, you should report TRUE. If the cyanobacteria risk is classified as low (e.g., a deep bore with a sanitary bore head), you may decide this rule is not applicable to your supply and choose not to include it in your annual report.

Distribution System Rules

D3.2 Report “TRUE” if a survey of backflow risks to a distribution system to determine medium and high-risk sites to assess the adequacy of backflow protection across the distribution system was undertaken at least once in the last 5 years ending on 31 December.

D3.3 Report “FALSE” if the survey required under D3.2 identifies any unacceptable risks at a point of supply (or if you become aware of such risks by other means) or a testable backflow prevention device failed its annual test and such risks have not been addressed within a reasonable timeframe as per D3.3.

D3.4 Report “TRUE” if all identified testable backflow prevention devices according to rule D3.4 have been tested at least annually. The failure of a test/state of repair thereafter is not part of D3.4 but is covered under D3.3.D3.19 and D3.29 monitoring rules are reported monthly. All other rules in the D3 module are reported annually.

- Report rules against each distribution zone.
- Samples taken to evaluate D3.19 should be reported under D3.20 annually as D3.20 is the rule that requires the samples to be taken.
- D3.19 requires assessment against limits and whether the samples taken under D3.20 or continuous monitoring under D3.25 and any other information the supplier has that those limits have been met.
- Report all *E. coli* samples taken from the distribution zone at any time during the compliance period against D3.29

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

If hypochlorite solution is dosed in a distribution zone by means of a booster chlorine dosing station, then the supplier should take samples for chlorate as part of the monitoring of risks in their supply in the distribution zone. These samples need not be submitted to us.

8. Rules-as-code

What is rules-as-code?

Rules-as-code is a concept which ensures that legislation is able to be logically mapped and readable by a computer. This approach better enables automation, which has multiple benefits to larger suppliers when reporting to us.

What is the Rule Summary List?

The Rule Summary List (.xlsx) contains a summarised version of the rules which you can apply filters to quickly identify the rule IDs/legislative requirements you need to report on for your supply and supply components for given rule modules.

What is the 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 (.xlsx) contains the following detail on Parameters and Determinands.

Column	Definition
ID	A lower case identifier for each of the parameters and determinands that are reported under the Rules, which can be used to identify the legislative requirement being reported on. They are utilised in the Reporting Rule IDs after a hyphen as the following examples illustrate: T1.1-a
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.

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 Reporting Rule IDs submitted for a component ID, our system will take the most recently submitted report for a given *Reporting Start Date* and *Reporting End Date.*
- For Reporting Rule IDs submitted in the same report, our system will check whether a rule ID has been submitted more than once for the same supply component.

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 opssupport@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

Error log

The ID for dichloroacetic acid is dcca and should have been dcaa, however, we cannot make the correction at this time. This is only used when reporting against dichloroacetic acid. Continue to use the reporting rule ID D3.22-dcca, as stated in the Rule Summary List, when applicable to a supply.