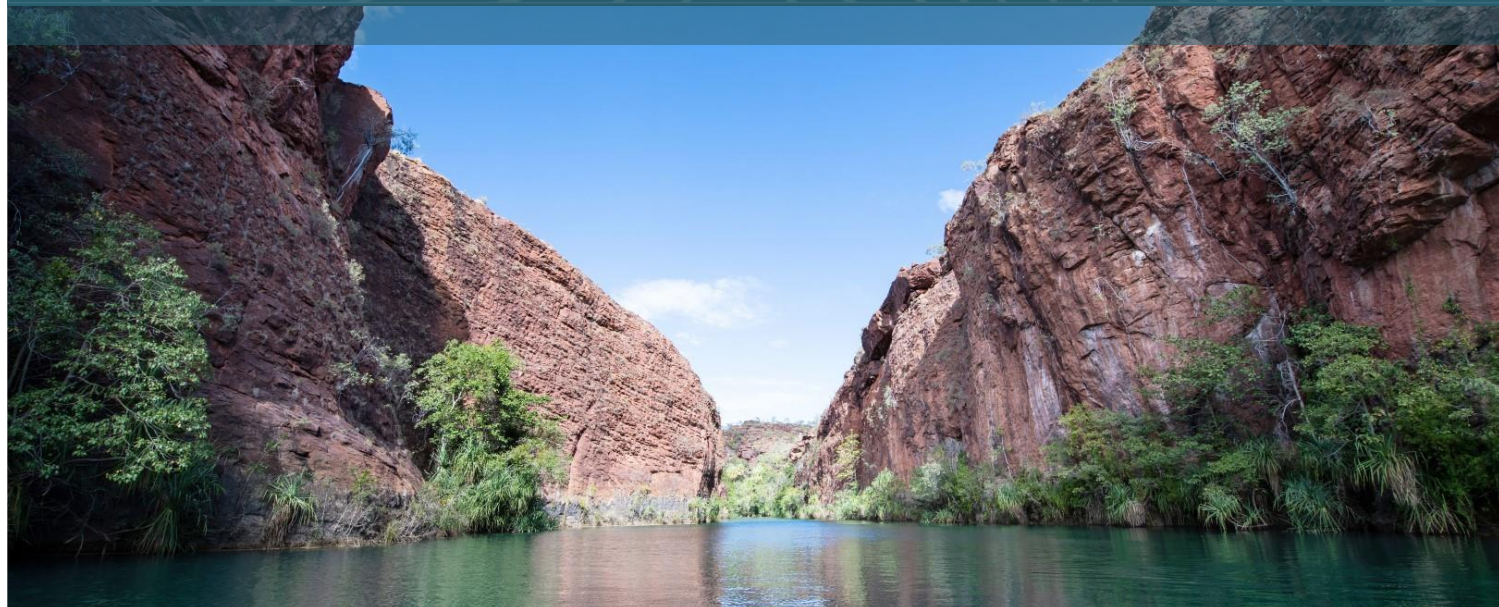




**Queensland  
Government**

Department of Regional Development,  
Manufacturing and Water



# Guideline for the preparation, review and audit of drinking water quality management plans

Including Supporting Information

**Version 3, 1 October 2022**

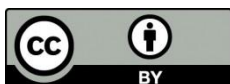
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This publication has been compiled by Water Supply Regulation of Water Operations and Systems, Department of Regional Development, Manufacturing and Water.

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# Version history

Version	Updates
V1 2010	Original published version
V2 2018	Version with inclusion of cyber security information following recommendations from the Queensland Audit Office and in consultation with providers.
V3 2022	<p>Latest revised version. The Guideline Development Advisory Group was engaged in late 2020 and throughout 2021 to assist in reviewing all sections of the document. The group included representatives from the Department's Water Supply Regulation team, Water Industry Policy, Queensland Health, large and small regulated entities (such as councils, distributor-retailers), industry representatives (such as Queensland Water Directorate) and other stakeholders (such as auditors). This review resulted in a major revision of the guideline, however the core information on what must be included in a DWQMP is largely unchanged. Various sections and text from the previous version of the guideline have either been reworded, deleted or re-located to the Appendices. New information has also been added to help explain and simplify existing guidance material.</p> <p>Note, this latest version does not include any substantial changes to the regulatory approach for Drinking Water Quality Management Plans (DWQMP).</p>

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## Appendices

<b>Appendix A</b>	<b>Preparation of a DWQMP: examples and supporting information</b>
<b>Appendix B</b>	<b>DWQMP reviews: example checklist</b>
<b>Appendix C</b>	<b>DWQMP audits: examples and supporting information</b>
<b>Appendix D</b>	<b>Drinking water service annual reports: examples and supporting information</b>
<b>Appendix E</b>	<b>Terms and Definitions</b>

# Disclaimer

The provisions of the *Water Supply (Safety and Reliability) Act 2008* and other relevant legislation prevail to the extent of any inconsistency with this guideline.

Drinking water service providers should obtain their own legal and specialist technical advice about whether their actions will meet the requirements of relevant legislation and are appropriate in their particular circumstances. When using the example tables, checklists and other matters referred to in this guideline, it is the responsibility of each provider to consider whether there are any matters beyond those contained in this guideline which may be of relevance to their services.

# 1. Introduction

[Drinking water services](#) are regulated in Queensland under the *Water Supply (Safety and Reliability) Act 2008* (the Act) and the *Public Health Act 2005*. The regulatory framework is primarily aimed at the protection of public health through the delivery of safe drinking water. To help achieve this, registered [drinking water service providers](#) (providers) must have an approved [Drinking Water Quality Management Plan \(DWQMP\)](#) relevant to their current drinking water service(s) that document how they manage the safety of drinking water supplied to their customers. Providers must comply with their approved DWQMP including the conditions placed upon the plan as part of its approval.

Guidance about DWQMP preparation, audit reports and reviews is made by the chief executive, or a delegate thereof, of the Department of Regional Development, Manufacturing and Water (as the [regulator](#)) pursuant to section 571 of the Act.<sup>1</sup> This guideline supersedes the previous guidelines about preparing DWQMPs (DNRME 2018), the [DWQMP review and audit guideline](#) (DNRME 2019) as well as the [DWQMP report: Guidance Note](#) (DNRME 2018) and several other support documents and templates published by the regulator.

The Act prevails to the extent of any inconsistency between the guideline and the Act or other legislation which applies to providers. The Act and other Queensland legislation can be accessed at [www.legislation.qld.gov.au](http://www.legislation.qld.gov.au).

## 1.1 Purpose of the guideline

The purpose of this guideline is to provide guidance to Queensland drinking water service providers in relation to various matters under the Act.

It incorporates guidance about:

- Drinking Water Quality Management Plan (DWQMP) preparation<sup>2</sup>
- DWQMP audits and audit reports<sup>3</sup>
- DWQMP reviews<sup>4</sup>
- [Drinking water service annual report](#) preparation<sup>5</sup>
- Other information relevant to drinking water service providers.

## DWQMP preparation (and amendments)

Providers are required to prepare their DWQMPs (and any application for DWQMP amendments) in accordance with this DWQMP guideline.<sup>6</sup> The guideline refers to the matters that the Act requires must be included in a DWQMP,<sup>7</sup> and guidance on how to meet these requirements. It also outlines how to apply to the regulator for the approval of a DWQMP (or the amendment of an existing DWQMP) and the conditions that may be applied to an approval.<sup>8</sup> The regulator will consider applications for approval (and

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<sup>1</sup> Section 571 of the Act provides that 'the regulator' may make guidelines about matters including about preparing a DWQMP. Section 10 of the Act provides that the chief executive is 'the regulator'.

<sup>2</sup> Section 571(1)(b) of the Act.

<sup>3</sup> Section 571(1)(e) of the Act.

<sup>4</sup> Section 571(1)(j) of the Act.

<sup>5</sup> Section 142 of the Act.

<sup>6</sup> Sections 95(3)(a) and 100(3) of the Act.

<sup>7</sup> Section 95(3)(b) to (h) of the Act.

<sup>8</sup> Sections 95 and 100 of the Act.

amendment) of DWQMPs on their merits and is open to a provider demonstrating a different approach to meeting the Act's requirements.

The guideline also contains best practice recommendations for safe drinking water supply in Queensland. This advice has been primarily derived from the [Australian Drinking Water Guidelines \(ADWG\)](#) (NHMRC 2011). The ADWG is a reference document on what defines safe, good quality water, how it can be achieved and how it can be assured. It provides a framework for good management of drinking water quality risks and is regularly updated to address emerging drinking water quality threats and risk management trends in the water industry.

Providers are encouraged to consider and adopt the ADWG framework in their DWQMPs to demonstrate their continued commitment to achieving drinking water service industry best practice.

A copy of the ADWG, is available on the National Health and Medical Research Council (NHMRC) website at [www.nhmrc.gov.au](http://www.nhmrc.gov.au).

## Implementing the approved DWQMP

The approved DWQMP must be regularly reviewed to ensure it remains relevant in regard to the operation of the water service provided and audited to assess the provider's compliance with the DWQMP and its conditions. This guideline includes information for providers and auditors about the statutory requirements for reviews and audits of approved DWQMPs. Both activities contribute to the continuous improvement of the approved DWQMP.

The guideline also provides guidance on the preparation of [Drinking water service annual reports](#) (annual reports) and information to assist providers in addressing the regulatory requirements for these reports.

## 1.2 What is a DWQMP?

The DWQMP is a risk-based management plan to ensure the safety of drinking water supplied to provider's customers. A DWQMP can be a single document or may comprise a set of documents, and may include operational and maintenance procedures, corporate documents, forms and/or support programs.

DWQMPs are part of a proactive approach to managing human health risks associated with drinking water supply systems and is intended to be a living document that is routinely reviewed and updated to reflect changes in infrastructure and operating environments.

Successful development of the DWQMP relies upon methodically applying the principles of hazard identification, risk assessment, identification of critical control points, preventive measures corrective actions and the preparation of operation and verification monitoring programs.

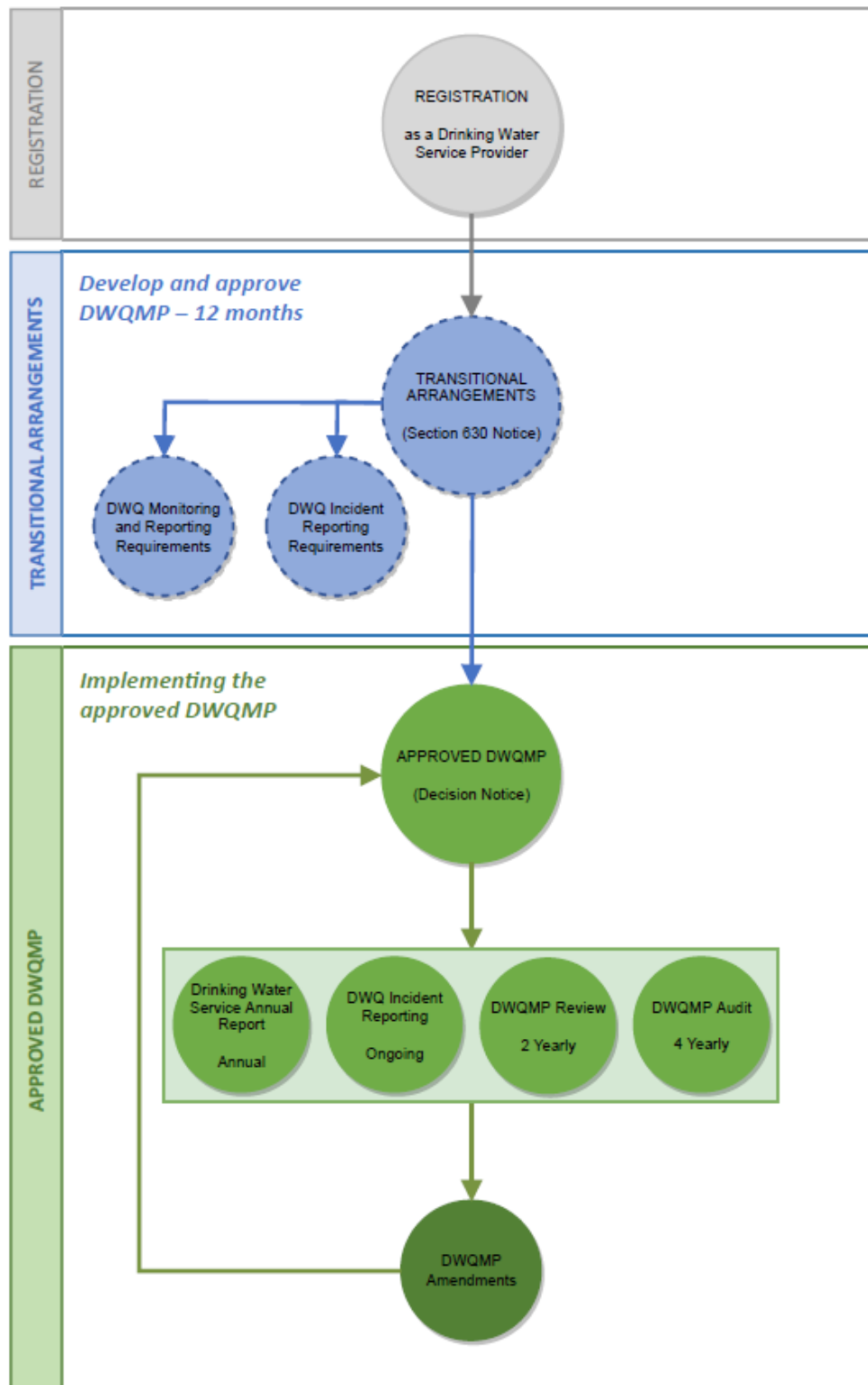
Successful implementation of the DWQMP necessitates ensuring an awareness of the contents of the plan amongst key personnel and operating the water supply in accordance with the approved plan. Key personnel should have the ability to identify emerging hazards and instances where risks become uncontrolled and are able to implement appropriate corrective action.



### 1.3 Who must have an approved DWQMP?

Registered service providers supplying drinking water in Queensland must have an approved DWQMP for their services and must comply with that DWQMP and any conditions of its approval.<sup>9</sup> An overview of the process from registering as a drinking water service provider through to implementing the approved DWQMP is provided in Figure 1.

**Figure 1: Flow diagram showing the process from registration as a drinking water service provider, to the transitional arrangements during the development/approval of the DWQMP, to implementing the approved DWQMP**



<sup>9</sup> Sections 92 and 93 of the Act.

## Registration

Registered water service providers could include, for example local governments, water authorities or other entities that own infrastructure for supplying water, for which a charge is intended to be made.<sup>10</sup>



Note, not all entities that own infrastructure for supplying drinking water are required to be registered under the Act. For example, because of exceptions in the Schedule 3 definition of ‘[water service](#)’, entities that supply water for mining purposes, guests and employees at a resort or consumers via a body corporate owned operation, are not required to be registered as a provider and are therefore not required to have an approved DWQMP under the Act. The water supplies operated by these entities may be subject to regulation under other legislation, for example, the *Public Health Act 2005*.

Similarly, food businesses such as bottled or packaged water manufacturers and drinking water carriers are exempt from the application of the Act because these entities are regulated under the *Food Act 2006*.

The Act definitions for relevant terms used in this document can be found in Schedule 3 of the Act as well as [Appendix E](#) of this guideline.

For further information about registration as a water service provider, refer to [www.business.qld.gov.au](http://www.business.qld.gov.au).

## Transitional arrangements

A newly registered drinking water service provider has 12 months from the date of their registration to have an approved DWQMP in place.<sup>11</sup> During this time, providers will likely be subject to water quality monitoring and reporting pursuant to a notice issued by the regulator under [section 630](#) of the Act (which will remain in force until the provider has an approved DWQMP).<sup>12</sup>

When assessing a provider’s application for approval of a DWQMP, the matters which the regulator will consider, when determining whether it meets the Act’s requirements, include how the plan addresses the matters referred to in this guideline (refer to [section 3](#)).<sup>13</sup>

## Approved DWQMP

Once the DWQMP has been approved by the regulator, providers must review and audit the plan at the intervals stated in the [decision notice](#) approving the DWQMP. The ‘decision notice’ is the document that records the regulator’s reasons for imposing conditions attaching to the DWQMP.<sup>14</sup> Refer to [section 4.5](#) and [section 4.6](#) of this guideline for further information.

As shown in Figure 1.1, the activities undertaken to implement the approved DWQMP (regular reviews and audits of DWQMPs, [drinking water service annual reports](#) or [reportable incidents and events](#)<sup>15</sup>) may identify the need for changes to the approved DWQMP to ensure the ongoing safety of the drinking water supply. In these instances, a provider must prepare a proposed amendment of their DWQMP and apply to the regulator for approval of the amended plan.<sup>16</sup>

DWQMP supporting documents, like procedures, contact details, chemical lists and sub-plans will change during the life of the approved DWQMP. Providers can avoid frequently requiring the regulator’s approval of DWQMP amendments by referring to supporting documents in a way that will not require changing the DWQMP itself when those supporting documents are updated (e.g., as appendices).

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<sup>10</sup> Section 20 of the Act.

<sup>11</sup> Section 628(4) of the Act (subject to section 628(5)).

<sup>12</sup> Sections 628 to 630 of the Act.

<sup>13</sup> Section 98(2)(b) of the Act.

<sup>14</sup> Section 99 of the Act.

<sup>15</sup> Section 102 of the Act

<sup>16</sup> Section 100 of the Act.

## 2. Legislative Framework

The Act is the primary legislation regulating water supply services in Queensland. The purpose of the Act is to provide for the safety and reliability of water supply. In the context of drinking water, the Act achieves its purpose by providing for a drinking water quality regulatory framework for the protection of public health and the interests of providers' customers. For further information on the regulatory framework refer to: [www.business.qld.gov.au](http://www.business.qld.gov.au)

The chief executive (Director-General) of the Department of Regional Development, Manufacturing and Water is 'the [regulator](#)' for the purposes of the drinking water provisions in the Act.<sup>17</sup> The Act requires a provider to obtain the regulator's approval for its DWQMP and to comply with its DWQMPs.<sup>18</sup> The Act also requires a provider to obtain the regulator's approval for amendments to its DWQMPs.<sup>19</sup> The regulator may decide to approve or refuse to approve a DWQMP, or to approve it subject to conditions.<sup>20</sup>

In considering an application from a provider for approval of its DWQMP, the regulator must have regard to the matters referred to in section 98(2) of the Act which include this guideline about preparing a DWQMP ([section 3](#)).

The regulator is also authorised under the Act to direct providers to do or not to do things necessary to protect public health with respect to drinking water.<sup>21</sup> [Queensland Health's](#) advice is usually sought before exercising these powers.



Note, it is an offence under section 92 of the Act for a provider to carry out a drinking water service unless there is an approved DWQMP in place. Newly registered drinking water service providers have 12 months from the date of registration to have an approved DWQMP in place.

Section 93 of the Act also states it is an offence for a provider to not comply with an approved DWQMP and the conditions of the plan.

Some aspects of drinking water quality are also regulated by Queensland Health under the *Public Health Act 2005* and the Public Health Regulation 2018. This Act and the regulation (administered by Queensland Health) are co-regulatory statutes for drinking water service delivery and drinking water quality, meaning that providers must also consider both in regard to their compliance with Queensland's drinking water regulatory framework.

Queensland Health plays a key role in providing health advice for reportable drinking water [incidents and events](#). The *Public Health Act 2005* gives Queensland Health powers to order providers to take certain actions, when there is a risk to public health.



Note, under section 57E of the *Public Health Act 2005*, it is an offence for a provider to supply drinking water that the provider knows or reasonably ought to know, is unsafe.

<sup>17</sup> Section 10 of the Act. The regulator's powers may also be exercised by any officers of the department who have been delegated those powers under section 15 of the Act.

<sup>18</sup> Sections 92 and 93 of the Act.

<sup>19</sup> Sections 99A and 100 of the Act.

<sup>20</sup> Section 99 of the Act.

<sup>21</sup> Sections 435 to 437 of the Act.

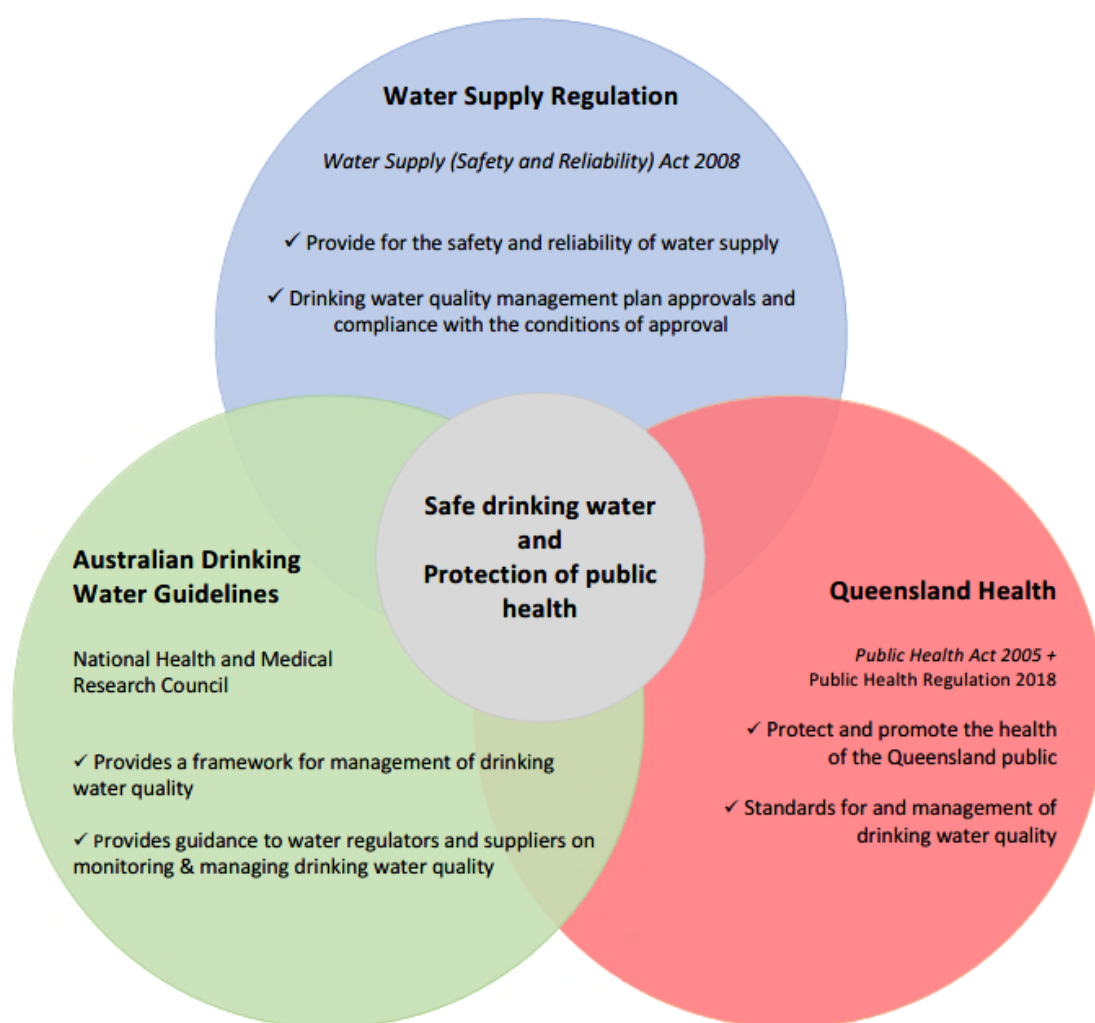
The ‘[water quality criteria](#)’ are defined in Schedule 3 of the Act and include the standards for the quality of drinking water which are prescribed in the Public Health Regulation 2018.<sup>22</sup> The ‘water quality criteria’ prescribed by section 52 of the Public Health Regulation 2018 are consistent with the guideline values in the [ADWG](#).

A broad overview of the relationship between state legislation and the ADWG is provided in Figure 2.

The *Public Health Act 2005* and the Public Health Regulation 2018 are accessible online at: [www.legislation.qld.gov.au](http://www.legislation.qld.gov.au).

A copy of the ADWG is accessible online at: [www.nhmrc.gov.au](http://www.nhmrc.gov.au).

**Figure 2: Relationship between state legislation and the ADWG**



<sup>22</sup> See the definition of ‘water quality criteria’ in Schedule 3 of the Act and section 52 of the Public Health Regulation 2018.

### 3. How to prepare a DWQMP

This section provides guidance on how to prepare a DWQMP, including guidance as to what the regulator considers should be incorporated to ensure the plan meets the requirements of the Act. The provider is responsible for all costs associated with preparing and maintaining the currency of its DWQMP.

When seeking approval, providers must be able to demonstrate how their proposed DWQMP (or amendment) complies with the Act. This may be done by addressing the 'Steps to meet the Act's requirements' referred to in the tables provided in this guideline. To achieve this, providers are to include sufficient supporting information to show how each requirement has been met. Supporting information may include water quality data, schematics<sup>23</sup>, flow diagrams, screen shots, pictures, photographs, and references/links to related documents such as procedures, protocols, and other organisational plans.

Whilst the DWQMP should align with the principles of the [ADWG](#), other useful information sources include:

- Water Research Australia Limited (2015) Good Practice Guide to the Operation of Drinking Water Supply Systems for the Management of Microbial Risk Second Edition at: [www.waterra.com.au](http://www.waterra.com.au)
- Water Industry Operators Association of Australia (WIOA) practical guides for water service operators at: [www.wioa.org.au](http://www.wioa.org.au)
- Australian Water Association (2020) Source Water Protection Statement - (Water Quality) at: [www.awa.asn.au](http://www.awa.asn.au).

Refer to [Appendix A](#) of this guideline for additional guidance including examples of what could be included in the DWQMP to address the Act requirements and relevant guideline sections.

#### 3.1 What to include in the DWQMP

Subsection 95(3) of the Act sets out the mandatory requirements for a DWQMP. Table 1 lists these mandatory requirements and the corresponding guideline sections they relate to.

Table 1: DWQMP Act requirements and corresponding guideline sections

Act requirements	Refer to guideline section(s)
<i>95(3) The Drinking water quality management plan must—</i>	
<i>(a) be prepared in accordance with the guideline, if any, made by the regulator about preparing the plan; and</i>	This is the guideline to which the Act refers
<i>(b) state the registered services to which the plan applies; and</i>	3.1.1 Registered service details

<sup>23</sup> Note, there are some schematics that are required to be included in the DWQMP. Refer to section 3.1.2 for further information.

Act requirements	Refer to guideline section(s)
(c) <i>include details of the infrastructure for providing the services; and</i>	3.1.2 Infrastructure details for providing the service
(d) <i>identify the hazards and hazardous events the drinking water service provider considers may affect the quality of water to which the services relate; and</i>	3.1.3 Information gathering for hazard identification – catchment characterisation and water quality data
	3.1.4 Methodology for hazard identification and risk assessment
	3.1.5 Hazard identification
(e) <i>include an assessment of the risks posed by the hazards and hazardous events; and</i>	3.1.6 Risk assessment
(f) <i>demonstrate how the drinking water service provider intends to manage the risks posed by the hazards and hazardous events; and</i>	3.1.7 Preventive measures
	3.1.8 Documented procedures
	3.1.9 Information management and record keeping
	3.1.10 Risk management improvement program (RMIP)
	3.1.11 Management of incidents and emergencies
(g) <i>include details of the operational and verification monitoring programs under the plan, including the parameters to be used for indicating compliance with the plan and the water quality criteria<sup>24</sup> for drinking water</i>	3.1.12 Operational and verification monitoring programs



Note, In the following sections (3.1.1 to 3.1.12), the matters listed under column one “**Steps to meet the Act’s requirements**” is considered the minimum amount of information that must be included in the DWQMP.

Guidance on how a provider may address these requirements in their plans is detailed under column two “**Ways this can be demonstrated in the DWQMP**”. Note, providers only need to include information that is relevant to their drinking water service.

<sup>24</sup> [Water quality criteria](#) – as defined in schedule 3 of the Act

### 3.1.1 Registered service details

The DWQMP must contain the registered service details. When stating the relevant drinking water services, the DWQMP should include the details of the relevant provider and other entities involved in providing the service, and clearly identify the [drinking water schemes](#), zones or districts and/or the communities to which the DWQMP applies.

Stakeholders whose activities could affect the quality of the drinking water or who could be affected by the decisions and activities of the service, should also be identified in the DWQMP.

#### Act requirement:

***Section 95(3)(b) – state the registered services to which the plan applies.***

#### Steps to meet the Act's requirements

##### **Providers name and unique identification number**

The DWQMP must clearly identify the registered drinking water service provider and if applicable, other entities that are involved in providing the drinking water service(s).

The drinking water service provider's name must be the same as that provided on the Notice of Registration, issued by the regulator.

#### Ways this can be demonstrated in the DWQMP

- Include the provider's name (registered company, business, and trading name as applicable).
- Include the provider identification number (SPID).



Note, the SPID is the unique number generated when registering as a drinking water service provider and it is stated in the provider's 'Notice of Registration', issued by the regulator.

- Include the company/business name of other entities involved in providing the drinking water service and describe their roles, if applicable.

For example, include the infrastructure owner's name, [bulk water provider's](#) name, the name of an entity contracted to operate the infrastructure or manage the service delivery for the provider (i.e., a [prescribed related entity](#) or [operating agent](#) whose details were provided when registering the service provider<sup>25</sup>).



Refer to [Schedule 3](#) of the Act for definitions of the terms 'prescribed related entity' and 'operating agent'

<sup>25</sup> Section 12(3)(d) of the Act.

## Steps to meet the Act's requirements

### Providers contact details

The DWQMP must include the contact details of the registered provider.

### Drinking water schemes and key stakeholders

The DWQMP must clearly identify the communities, areas, or locations to which drinking water is supplied.

The DWQMP must contain details of key stakeholders and their relevance for each drinking water scheme.

## Ways this can be demonstrated in the DWQMP

- Include the registered providers contact details.  
This should include the provider's registered business physical address and mailing address as well as the chief executive officer/organisational head and the nominated operational officer's position title and contact details (e.g., email address)
- Include the same level of contact details for all other entities involved in providing the drinking water service, if applicable (e.g., the infrastructure owner, bulk water provider, operating agent etc).
- Include or describe the experience and/or qualifications of the persons (e.g., operational officer(s), operating agent etc.) engaged in the operation of the providers drinking water service.<sup>26</sup>



Note, drinking water service providers must ensure that there are persons engaged in the operation of the provider's drinking water service who have appropriate experience and/or qualifications.

### Drinking water schemes / customers supplied

- State the names of each [drinking water scheme](#) and/or communities within the [declared service area\(s\)](#) to which the drinking water service is provided. This may include communities that are serviced within different water zones or districts.



Note, a link to the declared service area maps published on the providers website could be included in the DWQMP to help illustrate the location of schemes within these areas.

For further information and application of the terms [drinking water scheme](#) and [declared service areas](#), refer to [Appendix E](#).

<sup>26</sup> Section 104 of the Act. Note, at the time of publication there are no requirements prescribed by regulation.



## Steps to meet the Act's requirements

## Ways this can be demonstrated in the DWQMP

- Include industrial customers who use large volumes of water, if applicable (e.g., mining, power generation companies, agriculture etc.).
- Include any other customers you supply large volumes of water to, if applicable (e.g., providing a [bulk water service](#), supplying large quantities of water to another registered service provider etc.). Refer to Schedule 3 of the Act for definition of the term 'bulk water service'.
- Clearly identify customers that are connected to the drinking water service and not receiving treated drinking water, if applicable (i.e., customers receiving untreated water prior to the water treatment plant ([WTP](#)) or before primary disinfection). State or explain whether or not they are covered by the DWQMP.



Note, details about [non-potable](#) water supplies outside of the drinking water service may be included in the DWQMP, but are not required.

### **Key Stakeholders**

- Provide a list of key stakeholders (from source to tap), describe their relevance to the drinking water service(s) and confirm their business and emergency contact details are held and maintained by the provider.
- Examples of key stakeholders include:
  - upstream providers and landholders whose activities may have an impact on source water quality
  - significant catchment users and/or managers
  - major downstream providers and customers
  - vulnerable customers (e.g., hospitals, aged care facilities, schools and childcare centres).

## Steps to meet the Act's requirements

### Population and connection statistics

The DWQMP must include the most currently available population statistics and customer connections for each scheme and community.

## Ways this can be demonstrated in the DWQMP



Note, for large entities this information could be provided as the type and number of vulnerable customers.

See Queensland Health's [Drinking water advisories – Guidelines and templates](#) document for further information on vulnerable customers.

- suppliers of essential services and/or products (e.g., an organisation or sole supplier in a small town providing vital chemicals, equipment, maintenance services etc)
- other customers, particularly relating to drinking water advisories and service changes or disruptions
- key internal organisation units relevant to drinking water supply
- regulatory agencies and statutory authorities (e.g., the regulator, Queensland Health, Department of Environment and Science, [water authorities](#)/boards etc).

- Include the most recent population statistics (i.e., number of people) for each [drinking water scheme](#) and/or community supplied with drinking water. This may include populations that are serviced within different water zones or districts.
- State the information source or describe the method used to determine or calculate population numbers.



Note, population numbers are required for calculate the *E. coli* verification monitoring frequencies.

Reliable sources of population information can be accessed from the Australian Bureau of Statistics (ABS) <https://www.abs.gov.au/> and the Queensland Government Statisticians Office (QGSO) <https://www.qgso.qld.gov.au>.

### Steps to meet the Act's requirements

### Ways this can be demonstrated in the DWQMP

- Include the number of customer connections for each drinking water scheme (or water zone/district) and/or community supplied.
- Include information about sudden changes in population numbers (i.e., increases as a result of regular/annual community events).



Note, you can refer to your organisations annual performance reporting data, [key performance indicators](#) (KPI) for number of connected properties.

### 3.1.2 Infrastructure details for providing the service

The DWQMP must contain details of the infrastructure for providing the drinking water services. When including those details, the DWQMP should demonstrate the provider has an acceptable understanding of each scheme and its operation by providing sufficient information on the infrastructure for providing the drinking water service. This is a critical first step for identifying the hazards and hazardous events that can compromise drinking water quality and ensuring that risks are addressed.

Infrastructure includes all assets used to deliver the drinking water service, from catchment to consumer, including sources, equipment, plant, fixtures, and fittings used in, or for:

- Source water management and extraction
- Water treatment processes
- Disinfection processes
- Supply distribution and reticulation to customers.

#### Act requirement:

***Section 95(3)(c) – include details of the infrastructure for providing the services.***

#### Steps to meet the Act's requirements

##### **Infrastructure description, process and schematics**

The DWQMP must contain a current description of the infrastructure used for supplying the drinking water services and include a schematic for each drinking water scheme identifying all relevant infrastructure components from the source to the customer's supply point.

#### Ways this can be demonstrated in the DWQMP

- Describe the operation of all key infrastructure and treatment processes for each [drinking water scheme](#) from the catchment to the consumer, including (if relevant):
  - Source water management and extraction
  - Water treatment processes
  - Disinfection processes
  - Supply distribution and reticulation to customers
- Provide schematic diagrams for each drinking water scheme that includes:
  - the overall drinking water service (from catchment to consumer) and
  - each water treatment plant/facility, if applicable.



Note, refer to [Appendix A](#) for example schematics that illustrate the overall drinking water service and a water treatment plant (process steps)

## Steps to meet the Act's requirements

The infrastructure description must contain details of the sources of water and intake infrastructure and equipment for each drinking water scheme, if applicable.

## Ways this can be demonstrated in the DWQMP

- The description and/or schematics should also include details on the following if applicable:
  - when [multiple providers](#) are involved in supplying drinking water (such as [distributor retailers](#) and [bulk water provider](#)), provide a summary of the infrastructure operated by the other entities and how this impacts your service



Note, for distributor retailers, bulk water providers and [South-east Queensland councils](#), the description of other entities infrastructure should be an overview summary (it is not necessary to include a high level of detail).

Refer to [Appendix E](#) for an example of where multiple providers are involved in supplying drinking water.

- where the responsibility for the water supply changes (for example, from a bulk water provider to a distributor-retailer, or from the infrastructure owner to the [operating agent](#)).
- details of any connected customers who do not receive treated drinking water (i.e., customers receiving untreated water prior to the [WTP](#) or before primary disinfection).

### **Source water management and extraction**

- Provide details of all existing water sources and intake infrastructure and equipment (including details of [emergency supplies](#)/back-up water sources or [contingency supplies](#)) for each [drinking water scheme](#).



Note, include information about source water emergency or contingency supplies that are either available or planned if/when usual supplies are compromised (e.g., during events or disasters). Refer to [Appendix E](#), [emergency supply](#) and [contingency supply](#) definitions for further information.

## Steps to meet the Act's requirements

## Ways this can be demonstrated in the DWQMP

Details should include, if applicable:

- Surface water sources

The locations and the type of intake structures (e.g., flexible, fixed, portable, multiple off take level capability, protection from debris and flood damage etc).

- [Groundwater](#) sources

The locations, types of groundwater extraction and aquifer description (e.g., great artesian basin (GAB), sub-artesian, shallow/surface recharge, confined/unconfined etc).

If available, hydrological profile, bore construction and condition details, bore depth diameter, casing material and age, aquifer contamination prevention at the bore-head, pump flow rates etc.



Note, as much information as possible should be provided for aquifers and bores, however if only limited information exists, this should be stated/explained in the DWQMP.

The date of the source data as well as a statement in the plan about undertaking ongoing reviews to update this information, is a good practice.

- Seawater sources (i.e., for [desalination](#))

The locations, type and length of all seawater offshore intake(s).



Note, the guideline requirement for the description of source water and intake infrastructure is not applicable for [distributor-retailers](#) and [South-east Queensland councils](#).

The infrastructure description must contain details of the water treatment processes used for each drinking water scheme.

### **Water treatment processes**

- Include schematic diagrams (e.g., process flow diagrams) for each scheme's water treatment plant/facility.



Note, annotated schematics or diagrams can be used for the water treatment process description(s) if the information provided contains sufficient detail to address the guideline requirements. Refer to [Appendix A](#) for further information and examples.

- Provide details of the water treatment processes used for each [drinking water scheme](#) (including details of processes used for treatment of [emergency](#) or [contingency supplies](#)). Details should include, if applicable:
  - water treatment plant capacity and typical daily demand or annual water usage (e.g., in ML per day or per annum)
  - all water treatment plant process step components including each protective barrier
  - chemical dosing equipment and locations
  - all water storages and reservoirs
  - pumps and related equipment
  - major valves and by-passes used to mitigate supply risks
  - critical and operational control points
  - all quality control monitoring sites, including details of telemetric monitoring (i.e., what does the system monitor and are there alarms).



Note, examples of treatment of emergency or contingency supplies (i.e., available or planned during events/disasters) could include, use of back-up power generation, short term use of emergency treatment processes, equipment or a temporary water treatment facility etc.

## Steps to meet the Act's requirements

The infrastructure description must contain details of the disinfection processes used for each drinking water scheme.

## Ways this can be demonstrated in the DWQMP

### Disinfection processes

- Provide details of the disinfection processes used for each [drinking water scheme](#) (including details of processes used for disinfection of [emergency](#) or [contingency supplies](#)).



Note, drinking water schemes that do not use disinfection practices must provide an explanation in the DWQMP as to why no disinfection is used and address the risks in the risk assessment and risk management improvement program (RMIP).

Details should include, if applicable:

- location of primary disinfection points and any re-chlorination or other disinfection facilities
- type of disinfection (e.g., sodium hypochlorite, chlorine gas, calcium hypochlorite, ultra-violet light etc)
- dose rate and dosing arrangements (e.g., fixed, flow-paced, residual analyser etc)
- describe the process monitoring for disinfection (i.e., on-line or manual), including:
  - the availability of duty/stand-by arrangements
  - alarms
  - auto shut-off arrangements (e.g., critical limits).



Note, examples of disinfection of emergency or contingency supplies (i.e., available or planned during events/disasters) could include, use of back-up power generation, short term use of emergency processes, equipment, facilities etc.



## Steps to meet the Act's requirements

The infrastructure description must contain details of the extent, characteristics, and operation of the supply distribution and reticulation systems for each drinking water scheme.

## Ways this can be demonstrated in the DWQMP

### **Supply distribution and reticulation to customers**

- Provide details of the extent, characteristics, and operation of the supply distribution and reticulation systems for each [drinking water scheme](#) (including details of infrastructure used for distribution of [emergency](#) or [contingency supplies](#)). Details should include, if applicable:
  - information about the water storages, reservoirs and their condition, such as:
    - reservoir name(s)
    - reservoirs age and size including service capacity (e.g., number of days' supply for community serviced)
    - type (e.g., concrete, steel etc)
    - details of roof and vermin proofing
  - pipe materials, approximate proportion of total length of each pipe material and age range of the reticulated network(s)
  - areas where dead ends and potential long detention periods occur or could be expected, including how this is managed/monitored
  - areas where low pressure occurs or could be expected including how this is managed/monitored
  - number and location of pump stations/facilities
  - information about the operation of critical valves in the distribution system and how they are used to manage water quality.



Note, examples of disinfection of emergency or contingency supplies (i.e., available or planned during events/disasters) could include, use of back-up power generation, short term use of emergency processes, facilities, equipment etc.

### Steps to meet the Act's requirements

The infrastructure description must contain details of any variations to key processes in each drinking water scheme.

### Ways this can be demonstrated in the DWQMP

#### **Process variations**

- Provide details of any variations to key processes in each [drinking water scheme](#) (including details of process variations used during [emergency](#) or [contingency supplies](#)). Details should include, if applicable:
  - a description of the process changes (e.g., bypassing a water source, treatment, disinfection, or distribution process step)
  - information on the type and the availability of stand-by equipment
  - information on any known alternative process variations, measures, changes during use of emergency or contingency supplies.

### 3.1.3 Information gathering for hazard identification – catchment characterisation and water quality data

The DWQMP must identify the hazards and hazardous events the drinking water service provider considers may affect the quality of the water to which the services relate. To enable this, a number of information gathering activities should be undertaken (where relevant) to fulfil this legislative requirement including:

- Catchment characterisation and source water quality hazards
- Water quality data review

Gathering information is an essential part of identifying hazards in the drinking water service. The process begins with collecting data and developing an understanding of what may be affecting the water quality in the system(s). To support this understanding, it is important that critical information on catchment characteristics and water quality data, for each drinking water service, are provided in the DWQMP.

#### Catchment characteristics and source water quality hazards

Catchments are an integral component of the water supply system. They are dynamic systems, so information must be reviewed periodically to identify the long and short-term changes and the associated impact on drinking water quality. Undertaking catchment characterisation and acquiring source water quality data are necessary steps in the identification of hazards in the drinking water service.

Knowledge of catchment characteristics and source water quality data can inform better catchment management. Better catchment management coupled with the adoption of a preventative risk management approach can improve drinking water safety and inform infrastructure and treatment requirements. It will also permit providers to identify changes in their catchments over time which can inform hazard identification, risk assessment and identifying and actioning improvements to operations and practices to assure the water quality.

The protection of source waters from preventable or manageable hazards is essential, as the level of treatment, required to produce safe drinking water largely depends on the quality of the source water used. Undertaking a catchment characterisation, whether by conducting sanitary surveys and monitoring activities through sample collection or via a desktop exercise, will provide a better understanding of the impacts of identified hazards on water quality and help prioritise management strategies for the evaluated risks.

Some changes to catchments and raw water quality may be beyond the control of a provider, particularly where a change or an event occurs outside its area of responsibility. Changes may relate to climate, economic and population growth, industrial, mining, urban and farmland use, recreational and/or natural disasters. Wherever possible, the focus should be on continual improvement in understanding changes and preventing contamination in the catchment rather than to rely on downstream control. Refer to the [ADWG](#) for more information on catchment management and source water protection.<sup>27</sup>

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<sup>27</sup> This guideline incorporates updates which will be included in the [ADWG](#) in late 2022.

Sources of useful information include, but are not limited to:

- Mapping data (e.g., land use, hydrology, topography, soils, geology, climate/rainfall, catchments/sub-catchments etc)
- Local government records (e.g., locations of septic tanks, animal feedlots, sewage treatment plants etc)
- Sanitary surveys, within the scheme area and/or undertaken by an upstream provider (providers may wish to refer to the *Manual for the Application of Health-Based Targets for Drinking Water Safety* at: [www.wsaa.asn.au](http://www.wsaa.asn.au) and the ADWG at: [www.nhmrc.gov.au](http://www.nhmrc.gov.au))
- Water Monitoring Information Portal (WMIP) publishes data on water quality parameters (e.g., pH, turbidity, conductivity) at certain locations in its water monitoring network including surface water and [groundwater](http://www.water-monitoring-information.qld.gov.au) sites (refer to the Queensland Governments WMIP at: [www.water-monitoring-information.qld.gov.au](http://www.water-monitoring-information.qld.gov.au)).

Additional guidance and examples to assist with catchment characterisations are also provided in [Appendix A](#).

Where [multiple providers](#) are involved in supplying drinking water, catchment characterisations may not be required in the DWQMP. For example, providers that only undertake distribution services, such as distributor retailers and some [South-East Queensland Councils](#), are not required to undertake catchment characterisations. However, each provider needs to understand the impacts of the other entities' water quality being received.

**Act requirement:**

***Section 95(3)(d) – identify the hazards and hazardous events the drinking water service provider considers may affect the quality of the water to which the services relate.***

**Steps to meet the Act's requirements**

**Catchment characteristics**

The DWQMP must contain sufficient information about the characteristics for each source water's catchment area(s), including details of land use and likely contaminants from these activities for each [drinking water scheme's](#) catchment area.

The current level (e.g., category) of catchment protection for each water source must be documented in the DWQMP.

**Ways this can be demonstrated in the DWQMP**

- Include maps and a description of the source water's catchment area(s), for example:
  - location of the water sources and raw water intakes
  - surface water sources (streams, rivers, dams, other surface water storages)
  - catchments and sub-catchments
  - [groundwater](#) sources
  - groundwater recharge areas
  - topography
  - geology and soils

## Steps to meet the Act's requirements



## Ways this can be demonstrated in the DWQMP

- climatic and seasonal variations (including rainfall events, cyclones, flooding, bushfires, drought etc)
- predominant vegetation types
- competing water uses
- Describe the type and intensity of each land use activity in the catchment (including its proximity to drinking water sources) and any catchment protection measures, or catchment investment programs used to reduce water quality risks (e.g., bank stabilisation, farm based best management plans, stormwater management improvements etc.).



Note, for information on environmentally relevant activities within the catchment (identified under the *Environmental Protection Act 1994*), providers can consult with the Department of Environment and Science).

- Identify and describe all potential contaminant sources within the catchment areas, such as:
  - rural and urban settlements
  - human recreational activities
  - agricultural, dairy, and animal husbandry
  - land clearing
  - mining, quarrying and other industries
  - sewage treatment plants and septic tanks
  - any other environmentally relevant activities identified under the *Environmental Protection Act 1994*
  - other known or planned/future activities, which may adversely impact catchment water quality.
  - historical contaminated sites (e.g., closed landfill sites).

Steps to meet the Act's requirements	Ways this can be demonstrated in the DWQMP
	<ul style="list-style-type: none"> <li>• Categorise each catchment based on the best knowledge available at the time (e.g., 'well protected', 'moderately protected', 'poorly protected' or 'unprotected') and describe the rationale used for the categorisation process.</li> </ul> <div data-bbox="718 488 1391 672">  Note, refer to <a href="#">Appendix A</a> for guidance and examples on catchment characterisations and existing catchment protections.         </div>
<p><b>Source water quality hazards</b></p> <p>The DWQMP must describe the source water quality for <a href="#">each drinking water scheme</a> to identify the hazards and adequately inform the risk assessment.</p>	<ul style="list-style-type: none"> <li>• Describe the source water quality hazards for each water source (e.g., bacteria, viruses, protozoa, blue-green algae, pesticides, herbicides, elevated levels of naturally occurring fluoride, metals, ash, radioactive substances and contaminants of emerging concern, such as PFAS etc.)</li> </ul> <p>Include information on specific events, e.g., flooding, bushfires and chemical spill contamination events.</p> <div data-bbox="718 1070 1391 1344">  Note: Source water quality data can be referenced here to support the description of source water quality hazards. Refer to the guideline requirement titled <a href="#">Water quality data review</a> under section 3.1.3.         </div> <ul style="list-style-type: none"> <li>• If there are information gaps in the source water quality data available, actions planned to reduce gaps in monitoring data and catchment water quality assessment information should be included in the DWQMP's Risk Management Improvement Program (RMIP). Refer to <a href="#">section 3.1.10</a>.</li> <li>• Assessed long-term source water quality data should be provided to reliably determine seasonal and inter-annual trends. Where there is insufficient data available for trend analysis, further data collection is required.</li> </ul>

## Water quality data

Providers must include sufficient information in their DWQMP, to enable a valid hazard identification and risk assessment process to be conducted. An interpretive analysis of at least the most recent five years of water quality data must be provided in the DWQMP. Any format that readily allows the reader to gain an understanding of the water quality over time (e.g., acceptable formats could include summary statistics, trends, data analysis, presentations, graphs, statements and/or SCADA screen shots, if available).

When a new DWQMP is being developed, all water quality data held for each source of water, treatment plant commissioning and final drinking water supplied to customers, must be analysed. The analysis process turns the collected data into useful information that assists in identifying and better understanding the hazards associated with the water supply.

For existing approved DWQMPs, this task should be incorporated into the regular review of the plan. The interpretive analytical summaries of historical water quality data may also need to be reviewed following an incident or emergency event, particularly where longer-term impacts may be indicated, e.g., significant bushfires in the catchment.

Data sources may include:

- Historical water quality data, including from source water, operational and verification monitoring, water quality incidents/hazardous events, investigative monitoring, inspections and field audits
- For new providers, water quality data obtained pursuant to the regulator's notice issued under [section 630](#) of the Act
- Published water quality data emanating from surveys conducted by the Commonwealth, state or research organisations and the Water Monitoring Information Portal (WMIP) at: [www.water-monitoring-information.qld.gov.au](http://www.water-monitoring-information.qld.gov.au)
- Historical public and consumer complaints

Water quality parameters to be considered when collecting information about the drinking water service depend on the source water type, catchment characteristics and the impacts of specific land uses. Data should be reviewed periodically, particularly following a change in catchment conditions or land use, customer complaints, incidents and other hazardous or natural events, such as heavy rainfall, flooding or bushfires. Any change in source water quality will result in changes in operational water quality management practices.

When [multiple providers](#) are involved in supplying drinking water (e.g., a [bulk water provider](#) or [distributor-retailer](#)), an overview of water quality information upstream and downstream of the provider is required in the DWQMP. Providers need to work collaboratively to ensure that data and information are shared effectively.

**Act requirement:**

***Section 95(3)(d) – identify the hazards and hazardous events the drinking water service provider considers may affect the quality of the water to which the services relate.***

**Steps to meet the Act's requirements**

**Water quality data review**

The DWQMP must include sufficient water quality information on the monitoring undertaken in the source water, treatment, and distribution systems for each [drinking water scheme](#).

An analysis and interpretation of the relevant water quality information, including the physical, chemical and microbial data and a description of the potential water quality issues for each [drinking water scheme](#) must be provided.

Where [multiple providers](#) are involved in the supply of drinking water, the DWQMP must include relevant, available, water quality information on the immediate upstream systems (e.g., a [bulk water provider](#)) or immediate downstream systems (e.g., a [distributor-retailer](#)).

**Ways this can be demonstrated in the DWQMP**

- Provide a summary of the water quality data for each [drinking water scheme](#) (or zone/district). Include sufficient information for each component of the drinking water service (i.e., source water, treatment and distribution).
- For example, information may include:
  - parameters tested (microbial, chemical, physical)
  - period or frequency of sampling
  - monitoring locations (source water, treatment, and distribution)
  - number of samples collected over a stated timeframe
  - summary statistics (e.g., maximum, minimum, average, standard deviation, percentile etc)



Note, for further information on which summary statistics are most appropriate and how to best evaluate results, refer to the ADWG.

- [ADWG](#) health guideline limits and other relevant guideline limits (e.g., ADWG aesthetic values) including any exceedances of these values
- type of laboratory used for testing (i.e., in-house testing, NATA accredited laboratory)



Note, the level of monitoring and the amount of data collected must be sufficient to identify all likely hazards to inform the risk assessment process.



Steps to meet the Act's requirements	Ways this can be demonstrated in the DWQMP
	<ul style="list-style-type: none"> <li>• Categories of water quality indicators should include: <ul style="list-style-type: none"> <li>– bacteria, viruses, protozoa, other microorganisms</li> <li>– major ions</li> <li>– pH, hardness and alkalinity</li> <li>– salinity</li> <li>– turbidity</li> <li>– naturally occurring organics</li> <li>– volatile and non-volatile chemicals</li> <li>– metals and radionuclides</li> <li>– algal counts</li> <li>– disinfectant residuals</li> <li>– parameters added or formed due to storage and treatment processes (e.g., disinfection by-products, chlorates, chlorites, trihalomethanes, manganese etc).</li> </ul> </li> </ul> <div data-bbox="767 1155 815 1196">!</div> <p>Note, water quality indicators must be specific to the type of water source, catchment, land uses and treatment processes.</p>
<p><b>Relevance and integrity of data</b></p> <p>Water quality data and other related information documented in the DWQMP must be relevant and accurate to the current drinking water service operations.</p>	<ul style="list-style-type: none"> <li>• Discuss the reliability of the data collected for each <a href="#">drinking water scheme</a>. This should include: <ul style="list-style-type: none"> <li>– quality assurance systems and programmes</li> <li>– use of in-house testing kits and staff skills</li> <li>– transport arrangements for off-site data analysis</li> <li>– NATA accredited laboratory used for testing</li> <li>– contractor/consultant used for data collection/analysis</li> <li>– potential effect on data integrity due to changes in the catchments, water sources, treatment processes or sampling methodology during the monitoring period.</li> </ul> </li> </ul>

### Steps to meet the Act's requirements

#### Water quality complaints

A summary and appraisal of water quality complaints related to each [drinking water scheme](#) must be included in the DWQMP.

### Ways this can be demonstrated in the DWQMP

- Information may include, but is not limited to:
  - the nature of the complaints by category (e.g., dirty water, suspected illness, taste/odour)
  - categorising affected customers (e.g., vulnerable customers such as immune-compromised people, children, elderly and pregnant women etc.)
  - frequency of occurrence
  - likely cause of the complaints (e.g., mains break, WTP malfunction, rain event)
  - outcomes/recommendations of complaint investigations.

### 3.1.4 Methodology for hazard identification and risk assessment

Providers must describe the methodology they use for their hazard identification and risk assessment processes. Using a structured and consistent methodology is important, as it ensures issues are not overlooked and areas of considerable risk are identified so that the appropriate prioritised risk management actions and preventive measures can be determined.

Information on the team involved in hazard identification and risk assessment must also be detailed in the DWQMP. The identification of hazards and hazardous events as well as the assessment of the risks, should be undertaken by a team of key staff and stakeholders who have the relevant skills and experience to fully assess the known and potential hazards that may affect drinking water quality.

Team members may include management, finance, operational and maintenance staff, laboratory staff, contractors, other stakeholders and consumer groups. Where the required expertise is not available within your organisation, providers could seek the assistance of other drinking water service providers and/or external consultants. For health-related advice, providers can approach the relevant Queensland Health Public Health Units for assistance.

#### Act requirement:

***Section 95(3)(d) – identify the hazards and hazardous events the drinking water service provider considers may affect the quality of the water to which the services relate.***

#### Steps to meet the Act's requirements

##### Methodology

The hazard identification and risk assessment methodology used for each [drinking water scheme](#) must be documented in the DWQMP and include the:

1. description of the methodology used that is appropriate for managing risks to public health,
2. definitions of likelihood, consequence and risk level used, and
3. explanation of the acceptable risk level and the rationale for this selection.

#### Ways this can be demonstrated in the DWQMP

1. Provide a description of the methodology used.

The selected risk methodology should focus on assessing risks to public health and safety for the serviced community. However operational, political or financial risks may also need to be considered as these influence organisational capability and priority for mitigating identified risks.



Note, the methodology should be a recognised public health risk methodology, such as the framework in the [ADWG](#). Other acceptable frameworks would also include HACCP or ISO 22000/31000. Refer to table A-6.1 to A-6.5 under [Appendix A](#) for other examples.

2. Provide the definitions for likelihood, consequence or impact of risks and the risk level used, such as a qualitative risk analysis matrix table.

## Steps to meet the Act's requirements

### Hazard identification and risk assessment team

The DWQMP must detail the key staff and stakeholders actively involved in the hazard identification and risk assessment processes (including the approval of the final assessments), as well as their role and rationale for inclusion.

## Ways this can be demonstrated in the DWQMP

3. Describe the risk level acceptable to the provider and the rationale for selecting this risk level.



Note, refer to [Appendix A](#) (Hazard identification and risk assessment for further information about likelihood, consequence, acceptable risk level and example of a risk matrix table).

- If applicable, details of the risk assessment methodology should also identify and describe:
  - where different risk assessment methodologies are used for different [drinking water schemes](#), an explanation as to why,
  - the treatment performance (validated or assumed) for each barrier and the risk mitigation rationale.
- Include details of the people involved in hazard identification and risk assessment processes. Information on these teams should include, for example:
  - The position titles of key staff and stakeholders who were/are part of the hazard identification and risk assessment teams.
  - A description of their roles, responsibilities, and a rationale for their inclusion in the process (e.g., knowledge and experience in operating your [drinking water schemes](#), scientific knowledge, consultant etc).
  - How the hazard identification and risk assessment process was conducted (e.g., workshop, interviews, data analysis, consultation with public health units, upstream providers, technical experts, chemical suppliers or other relevant stakeholders).

## Steps to meet the Act's requirements

## Ways this can be demonstrated in the DWQMP

- When the hazard identification and risk assessment was undertaken and how often it will be reviewed.
- Include details (position titles) of the executive officer(s) ([CFO](#), [COO](#), [CEO](#)), who are responsible for accepting and/or supporting risk assessment outcomes.



Note: a provider's executive officer(s) need to be aware of and support the outcomes of the risk assessment, as they may require an organisational commitment to provide the required human and financial resources to ensure they are successfully implemented within the nominated timeframes.

### 3.1.5 Hazard identification

Adoption of a risk-based approach that includes the identification of the known and potential hazards and hazardous events, associated with a drinking water service, from catchment to consumer, is essential. The likelihood and consequence of all identified hazards on drinking water quality and human health must be documented in the DWQMP.

In the context of this guideline, the following [ADWG](#) definitions for hazard and hazardous event are referenced:

- A **hazard** is a biological chemical, physical or radiological agent that has the potential to cause harm.
- A **hazardous event** is an incident or situation that can lead to the presence of a hazard (what can happen and how) (ADWG, 2011).

As part of the hazard identification process, the catchment characterisation, water quality data, treatment performance data as well as target, alert and critical limit operational criteria, must be reviewed. A structured approach is important to identify all potential hazards and hazardous events to ensure that information on new or changing hazards can be incorporated within the DWQMP over time.

Where [multiple providers](#) are involved, each provider's DWQMP, must include the hazards and hazardous events identified by the other entities. To ensure consistency between DWQMPs and to minimise duplication, this information should be given to all providers (and catchment stakeholders) involved in the supply of water from catchment to consumer. Providers should keep their downstream counterparts informed of potential hazards that may be in the water they receive, to ensure customer protection.

#### Act requirement:

***Section 95(3)(d) – identify the hazards and hazardous events the drinking water service provider considers may affect the quality of the water to which the services relate.***

#### Steps to meet the Act's requirements

##### **Hazard identification process**

The DWQMP must describe the processes used to identify hazards and hazardous events.

#### Ways this can be demonstrated in the DWQMP

- Describe the processes used to identify hazards and hazardous events for the schemes within the drinking water service.

For example, conducting workshops, the method for undertaking regular reviews of hazards, the process used to analyse new and historical catchment and water quality data (including drinking water incidents and events) and the likely hazards associated with each operational step in the water service.

## Steps to meet the Act's requirements

### Hazards and hazardous events

The DWQMP must document the hazards and hazardous events and the sources of the hazards and hazardous events that could adversely affect water quality in each [drinking water scheme](#).

This includes those known to be, or potentially could be, associated with:

- water sources and catchments
- sourcing infrastructure
- treatment and disinfection processes, and
- treated water storages and distribution systems.

## Ways this can be demonstrated in the DWQMP



Note, there are several external and nationally recognised resources (such as the [ADWG](#)) which address hazard identification including examples of hazards, hazardous events, and their potential sources. Refer to [Appendix A](#) and [section 10](#) of this guideline for a list of references.

### Water sources and catchments

- Include details of the hazards and hazardous events related to water sources and catchment activities, for example:
  - high levels of pathogens (e.g., bacteria, protozoa and viruses)
  - polluted discharges (e.g., human and industrial waste)
  - contaminated surface runoff
  - mining activities and tailings dam/wastewater releases
  - agriculture (e.g., pesticide, herbicide and fertiliser use)
  - pastoral, dairy and intense feed lot activities
  - pest species control/poison baiting programmes
  - natural disasters and events (e.g., bush fires/firefighting activities, flooding, severe storms, drought etc)
  - poor water quality of [emergency](#) water sources or alternative/[contingency supplies](#)
  - lack of or no availability of emergency water source supplies/contingency supplies (e.g., related to drought/longer dry seasons, climate variability)
  - high levels of naturally occurring substances (e.g., fluoride, bromides, heavy metals and radionuclides)
  - human access to and recreational use of catchment storages

## Steps to meet the Act's requirements

## Ways this can be demonstrated in the DWQMP

- any actual or potential sewage discharges (e.g., sewer pump station overflows) or recycled water use within the catchment
- other land uses, such as landfill, forestry, chemical industries, quarrying, roads and urban development
- earthworks, riparian restoration
- algal blooms, within source water storages
- potential spillages and/or accidents in catchment
- residence time, short circuiting and stratification of source water storages
- recycled water intended to augment a supply of drinking water.



Note, for further information about the use of recycled water in Queensland refer to [www.business.qld.gov.au](http://www.business.qld.gov.au) or the [Recycled water management plan and validation guidelines](#).

### **Sourcing infrastructure**

- Include details of the hazards and hazardous events related to sourcing infrastructure, for example:
  - source water intakes (e.g., intake type, operation, draw-off points etc)
  - source water pumps and pipeline (e.g., chokes, leaks, breaks, power supply issues, security concerns, water quality issues in long distance raw water pipelines etc).
  - bores (e.g., susceptibility to surface water ingress and other aquifer contamination, age of bore and its reliability, issues with bore construction, long pipelines, security concerns, outdated survey data/information on aquifers etc).



## Steps to meet the Act's requirements

## Ways this can be demonstrated in the DWQMP

### Treatment and disinfection processes

- Include the hazards and hazardous events likely to impact treatment and disinfection processes, for example:
  - current treatment plant(s) design capacity limitations considering forecasted population changes (i.e., supply vs demand)
  - plant/equipment failure and/or no critical spares or stand-by equipment readily available
  - treatment plant component capacity exceedances (e.g., chemical dosing pump at maximum dose rate is insufficient)
  - target, alert and critical limit excursions
  - inadequacies/gaps in required treatment processes
  - use of chemicals in treatment steps and issues with storage of chemicals
  - disinfection by-product formation (e.g., THMs) and chemical breakdown products (e.g., chlorates)
  - no or inadequate disinfection processes, disinfection overdosing/underdosing
  - natural disasters.
  - [reportable incidents and events](#)
  - critical equipment and chemical supply issues (e.g., resulting from transportation problems, impurities in treatment chemicals, equipment or chemical shortages with suppliers).

### Treated water storages and distribution systems

- Include the hazards and hazardous events likely to impact treated water storages and distribution systems, for example:
  - treated water storage contamination from vermin (e.g., as a result of poor condition of reservoirs, inadequate vermin proofing and/or contaminated water ingress points)
  - equipment failure and/or no critical spares or stand-by equipment readily available

Steps to meet the Act's requirements	Ways this can be demonstrated in the DWQMP
	<ul style="list-style-type: none"> <li>– operational performance excursions</li> <li>– service capacity limitations of current infrastructure (e.g., reservoirs, trunk mains)</li> <li>– pressure fluctuations, backflow/old cross-connections</li> <li>– disinfectant residual in network (e.g., low residual resulting in contamination from bacteria or opportunistic pathogens)</li> <li>– re-chlorination facilities and disinfection by-products</li> <li>– balance tanks/storages, retention times and condition</li> <li>– water quality issues in long distance delivery mains,</li> <li>– inadequate maintenance practices or procedures</li> <li>– asset management, aging or poor condition of infrastructure.</li> </ul>
<p><b>Hazards and hazardous events related to other entities systems</b></p> <p>When multiple providers are involved in supplying a water service, the DWQMP must include the hazards and hazardous events and the sources of the hazards and hazardous events, which the provider believes could adversely affect water quality in each <a href="#">drinking water scheme</a>.</p>	<ul style="list-style-type: none"> <li>• Include details of the hazards and hazardous events related to other entities operations (e.g., other providers), either upstream or downstream of the drinking water service such as: <ul style="list-style-type: none"> <li>– land use, catchment characteristics, water quality</li> <li>– water treatment plant discharges</li> <li>– sewage effluent discharges, septic effluent seepage</li> <li>– re-chlorination facilities and disinfection by-product formation (e.g., THMs) and chemical breakdown product (e.g., chlorates)</li> <li>– balance tanks/storages, retention times and condition</li> <li>– long delivery mains, aging and/or poor condition of infrastructure</li> </ul> </li> </ul>

Steps to meet the Act's requirements	Ways this can be demonstrated in the DWQMP
	<ul style="list-style-type: none"> <li>– potential low-pressure areas and cross-connections</li> <li>– impact of using <a href="#">emergency</a> or <a href="#">contingency supplies</a> managed by another entity (e.g., varying water source availability or quality).</li> </ul> <div data-bbox="778 533 817 564">!</div> <p>Note, if information from other providers is not readily available and/or shared, you should (to the best of your knowledge) include the hazards and hazardous events from the other entities system that you believe could impact your drinking water service.</p>
<p><b>Whole of system hazards</b></p> <p>Whole of service hazards and hazardous events must be documented for each <a href="#">drinking water scheme</a> in the drinking water service.</p>	<ul style="list-style-type: none"> <li>• Include the hazards and hazardous events, that if they occur, are likely to affect the whole drinking water service and/or each <a href="#">drinking water scheme</a>, for example: <ul style="list-style-type: none"> <li>– workforce structure and resourcing/funding for staff, expertise and skills retention (e.g., insufficient personnel or no back up for critical roles, inadequacies in capability and/or training required)</li> <li>– natural disasters, events and pandemics (e.g., bush fires, flooding, severe storms, drought)</li> <li>– physical security and cyber security vulnerabilities, threats and breaches (e.g., intentional or unintentional interference and access of systems/information, out of date or inadequate system security)</li> <li>– lack of processes (and documentation) for drought, asset management and infrastructure planning for drinking water.</li> </ul> </li> </ul> <div data-bbox="778 1657 817 1688">!</div> <p>Note, sensitive cyber security information in the DWQMP can be included as an appendix and easily redacted from all DWQMPs accessible by the public or other entities.</p> <p>Refer to <a href="#">Appendix A</a> for further information and guidance on hazards and hazardous events related to cyber security threats.</p>

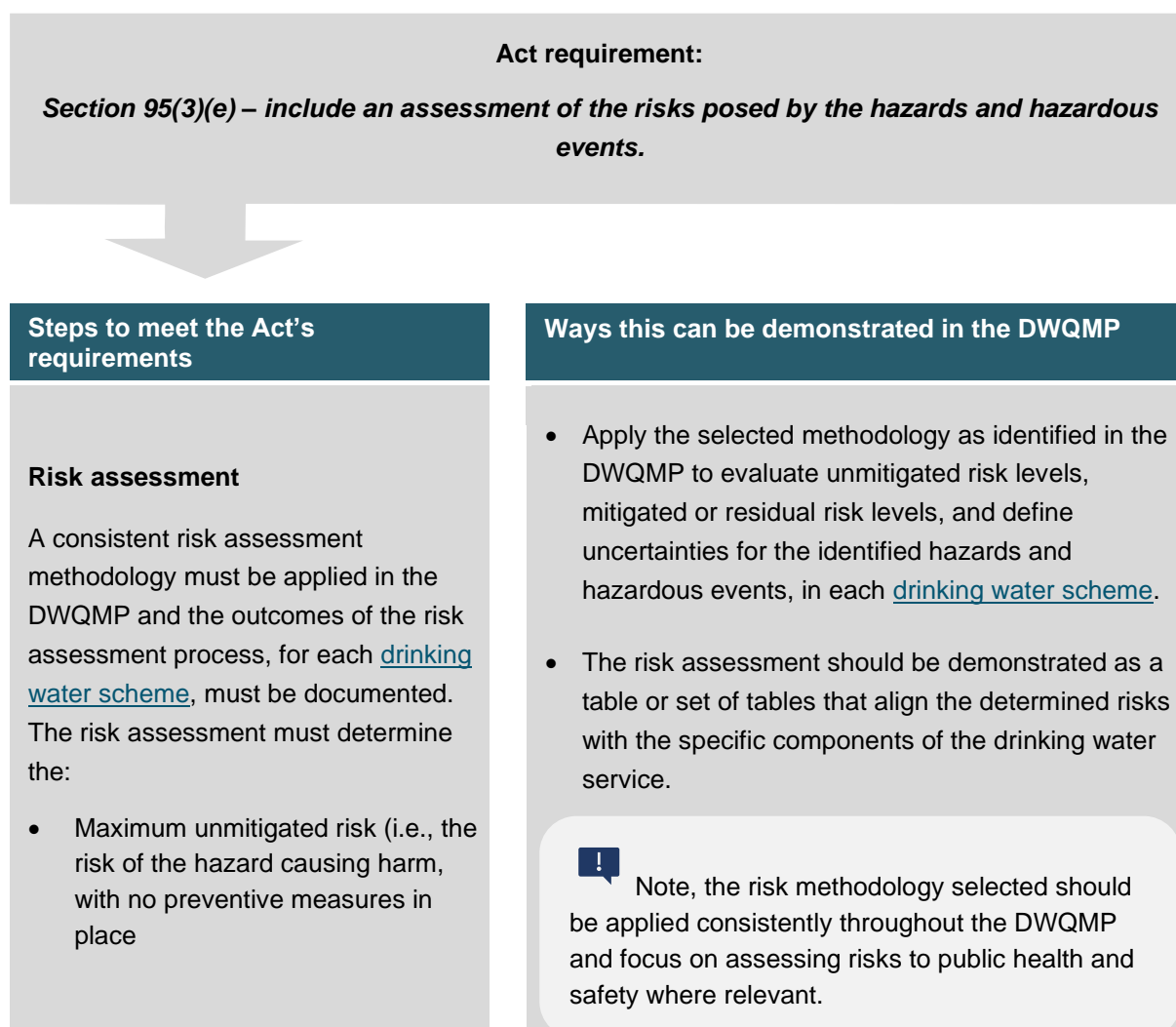
### 3.1.6 Risk assessment

Following the identification of the hazards and hazardous events for each [drinking water scheme](#), an assessment of the risks posed by these hazards must be provided in the DWQMP. This must include each component of the drinking water supply system and the application of an appropriate and consistent risk assessment methodology (refer to [section 3.1.4](#)). In the context of this guideline, the following [ADWG](#) definitions are used:

- **Risk** is the likelihood of identified hazards causing harm in exposed populations in a specified timeframe, including the severity of the consequences (ADWG, 2011).
- A **preventive measure** is defined as, any planned action, activity or process that is used to prevent hazards from occurring or reduce them to acceptable levels (ADWG 2011).

These risks must be considered with and without existing preventive measures in place to determine 'significant risks' and set priorities for risk management. The risk management process enables a provider to establish the level of risk it is willing to accept.

There are a range of existing risk identification and management methodologies that could be used to form the basis of the DWQMP such as ADWG, HACCP, ISO 22000:2018 or AS ISO 31000:2018. Any risk management methodology framework can be used for the DWQMP, as long as it meets the requirements of the Act.



### Steps to meet the Act's requirements

- Mitigated or residual risk (i.e., the risk of the hazard causing harm, with preventive measures in place and optimally implemented, and
- Any uncertainties/level of confidence in the risk assessment and performance of the preventive measure.

### Ways this can be demonstrated in the DWQMP

- The risk assessment should detail and include:
  - an assessment of all known significant and potentially significant hazards and hazardous events identified through the hazard identification step
  - if the residual risk is acceptable or unacceptable
  - an explanation for excluding a likely hazard from the risk assessment due to it being deemed 'insignificant'
  - the uncertainty/level of confidence in the risk assessment (this should be improved and verified over time, as more data is collected).



Note, for further information on risk assessments and examples for risk methodologies, measures of likelihood, consequence and uncertainty refer to [Appendix A](#).

### Unacceptable risks

The DWQMP must document what the acceptable level of risk is, and how the provider intends to manage all unacceptable risks.

Each unacceptable risk must have the proposed preventive measures, which will reduce it to an acceptable risk. Unacceptable risks must be prioritised for improvement, according to their potential to cause harm to a consumer.

- For each unacceptable risk provide the proposed preventive measures for reducing that risk and assign a priority for implementing those measure e.g., short-term, medium-term, and long-term actions in the DWQMP's risk management improvement program (RMIP).



Note, refer to [section 3.1.10](#) for information on RMIP requirements.

- If the provider determines the residual risk is unacceptable and no further preventive measures can be applied (i.e., the risk is considered to be as low as currently achievable), they should identify this risk, previous attempts to mitigate it in the risk assessment of the plan and provide a strategy to address it in the longer term.

### Steps to meet the Act's requirements

#### **Risks from other entities**

Where the risks are not under the direct control of the provider, the DWQMP must document how these risks will be managed.

### Ways this can be demonstrated in the DWQMP

- Describe how upstream or downstream entities were consulted or involved in the risk assessment process.
- Consider and document any known risks from the other entity that may impact on the drinking water service.
- Include the effectiveness of mitigation strategies for known risks not under the provider's direct control (i.e., the effectiveness of existing communication strategies, contractual arrangements or agreements).

### 3.1.7 Preventive measures

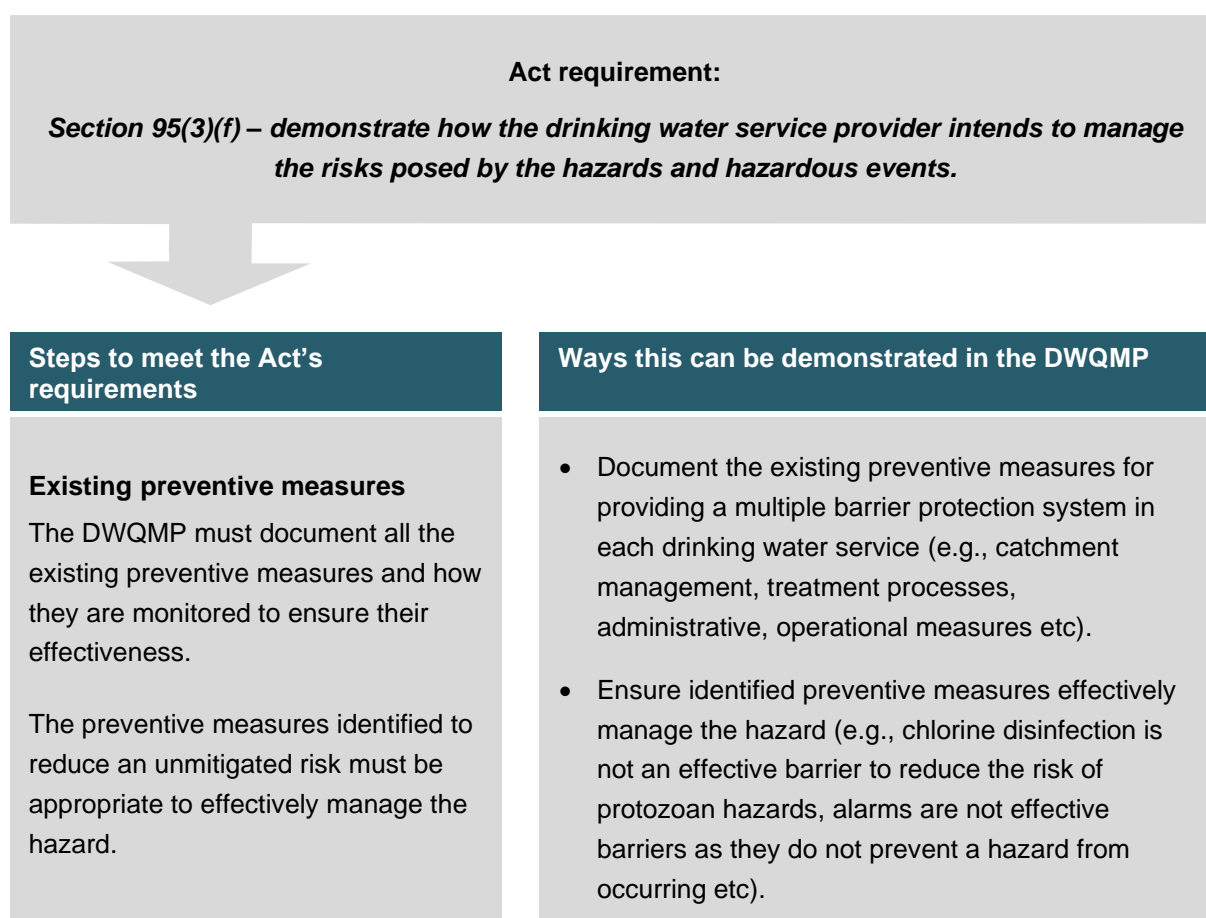
The DWQMP must demonstrate how the provider intends to manage the risks posed by the hazards and hazardous events. As part of meeting this requirement, the DWQMP should include information about existing preventative measures and additional proposed preventative measures.


Preventive measures are actions, activities and processes used to prevent hazards and hazardous events from occurring or reduce these risks to acceptable levels. All existing preventive measures that contribute to eliminating or reducing risks to acceptable levels must be identified and assessed in the DWQMP.

From a risk management perspective, managing hazards upstream is preferred. These management strategies may be more cost-effective as well (e.g., ensuring better management of onsite wastewater systems versus costly upgrades at the water treatment plant).

Where the expertise is not readily available, expert advice may also be sought from consultants, Queensland Health and other providers (e.g., large councils and [distributor-retailers](#)).

Where additional preventive measures are required, factors such as level of risk, benefits, effectiveness, cost and community expectations should be considered. Preventive measures often require considerable expenditure and improvements may need to be prioritised and implemented over time.



Steps to meet the Act's requirements	Ways this can be demonstrated in the DWQMP
	<ul style="list-style-type: none"> <li>Describe the processes used to monitor and evaluate the effectiveness of existing preventive measures intended to reduce unmitigated risks (this could be through operational monitoring and/or the operational activities detailed in procedures or program).</li> </ul> <div data-bbox="735 533 1394 763">  Note, providers can also approach the relevant Queensland Public Health Unit to discuss the results of public health related risks identified in the risk assessments. </div>
<p><b>Additional proposed preventive measures</b></p> <p>The DWQMP must document additional proposed preventive measures or actions to be taken by the provider to achieve acceptable residual risks in the short and longer-term.</p>	<ul style="list-style-type: none"> <li>Provide the additional preventive measures proposed for mitigating unacceptable risks to a drinking water service in the DWQMP's risk assessment tables and/or RMIP.</li> <li>Additional proposed preventative measures can be short and/or long-term. These measures are dependent on the risk level and complexity of installing and implementing the measures, including the associated costs.</li> <li>Short-term measures could include, for example: <ul style="list-style-type: none"> <li>replacement of stand-alone equipment with truly set duty/standby equipment</li> <li>enhancing operational procedures</li> <li>reviewing and improving monitoring practices and optimising monitoring equipment set points etc.</li> <li>providing structured operator training and skills development programs</li> <li>updating information management and reporting processes, and</li> <li>engaging external expertise for managing highly technical equipment and processes.</li> </ul> </li> </ul>



### Steps to meet the Act's requirements

### Ways this can be demonstrated in the DWQMP

- Long-term measures could include, for example:
  - alternative/new water sourcing arrangements (e.g., [emergency](#) or [contingency supplies](#))
  - significant infrastructure or telemetry upgrades, capital works programs (e.g., replacement or addition of treatment steps, constructing new or significant refurbishment of reservoirs, water network reconfiguration and significant or expensive operational changes etc)
  - enhancing workforce composition, by addressing water quality and management skills gaps, via organisational restructuring, recruitment and succession planning.

### 3.1.8 Documented procedures

The DWQMP must demonstrate how the provider intends to manage the risks posed by the hazards and hazardous events. As part of meeting this requirement, the DWQMP should include information about procedures for the preventative measures listed in the risk assessment (and the process for their development and maintenance).

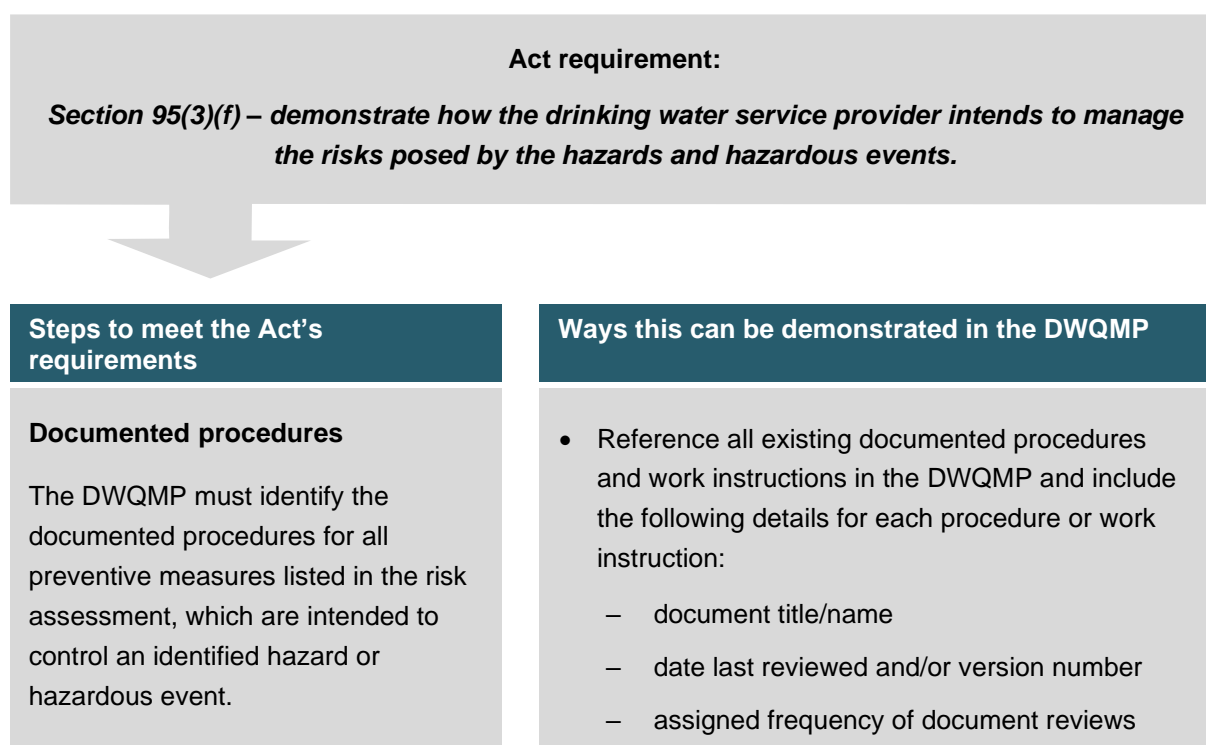
Documented standard operating procedures help ensure the day-to-day activities of the drinking water service are performed correctly and consistently. Procedures should demonstrate how the preventive measures will be implemented and maintained to manage risks posed by the identified hazards and hazardous events.



The content of the procedures is not approved by the regulator, when deciding an application for approval of a new or amended DWQMP. However, the regulator may request a copy of a procedure to help understand how the provider is managing drinking water service risks and tasks. Situations where this may occur include:

- During the assessment of a new or amended DWQMP application
- Following submission of a regular audit report
- As part of an incident or event management process.
- Procedures identified by the provider as requiring development or review and updating, must be documented in the RMIP with an assigned target completion date.

Operational staff must be trained to fully understand all procedures they are required to implement in their day to day drinking water service work activities. Similarly, staff must be informed and/or re-trained after procedural updates are made and following erroneous actions that caused a [reportable incident or event](#) to occur, to ensure they understand the changes, the revised work practices and/or organisational expectations and requirements.

Refer to [Appendix A](#) for additional guidance and examples.



Steps to meet the Act's requirements	Ways this can be demonstrated in the DWQMP
	<ul style="list-style-type: none"> <li>– staff position responsible for reviewing and implementing the procedure</li> <li>– where the procedure is kept in the organisation</li> </ul> <ul style="list-style-type: none"> <li>• Providers may include their procedures/work instructions in their DWQMP, e.g., as appendices.</li> </ul> <div data-bbox="734 577 1388 801">  Note, if procedures/work instructions are included in the appendices of a DWQMP, this may require the plan to be amended and approved each time these procedures are updated. </div>
<p><b>Development and review</b></p> <p>The DWQMP must document the process for developing and maintaining the currency of the documented procedures.</p> <p>New, required procedures must be included in the DWQMP RMIP with assigned target completion and implementation dates</p>	<ul style="list-style-type: none"> <li>• Include a section in the DWQMP that describes the processes for developing new procedures and reviewing and updating existing procedures, including the assigned frequency of review</li> <li>• Include all the procedures identified in the risk assessment or DWQMP review processes, as required to be developed, in the DWQMP RMIP</li> <li>• Include the procedures identified as requiring updating in the short term in the DWQMP RMIP and provide realistic target completion and implementation dates.</li> </ul> <div data-bbox="734 1406 1388 1630">  Note, documented procedures must be reviewed regularly to ensure that they maintain currency and are relevant to the activity to which they relate. </div>


### 3.1.9 Information management and record keeping

The DWQMP must demonstrate how the provider intends to manage the risks posed by the hazards and hazardous events. As part of meeting this requirement, the DWQMP should describe the information management and record keeping systems relevant to the drinking water service.

Information or data, relating to drinking water quality, mandatory reports and other related documents must be appropriately managed, so that they are readily accessible, accurate, reliable and contemporary. Document security is a primary consideration, particularly for digital data collection systems and records. Records can be requested by the regulator at any time and must be made available on request.<sup>28</sup>



<sup>28</sup> Section 13 of the Act.

Steps to meet the Act's requirements	Ways this can be demonstrated in the DWQMP
<p><b>Accessible and current</b></p> <p>The system(s) used to manage information related to drinking water must be periodically reviewed to ensure appropriate accessibility and the currency of the relevant documents is maintained.</p>	<ul style="list-style-type: none"> <li>• Describe the processes for information retrieval and include the location of data, responsible staff positions and/or business units</li> <li>• Describe the document control processes to ensure information is kept current.</li> </ul>
<p><b>Retention times</b></p> <p>Documents and records related to drinking water must be retained to satisfy all legal requirements.</p>	<ul style="list-style-type: none"> <li>• Describe the document retention times for the different types of information and archiving arrangements.</li> <li>• <a href="#">The Water Retention and Disposal Schedule QDAN 738 v1</a>, specifies the required retention periods for water data and information.</li> </ul> <div data-bbox="735 913 1394 1283"> <p> Note: This could be addressed by a statement in the DWQMP explaining the service provider has document retention and archiving procedures and practices in place. These practices must comply with relevant State and Commonwealth legislative provisions and external auditing requirements.</p> </div>

### 3.1.10 Risk management improvement program (RMIP)

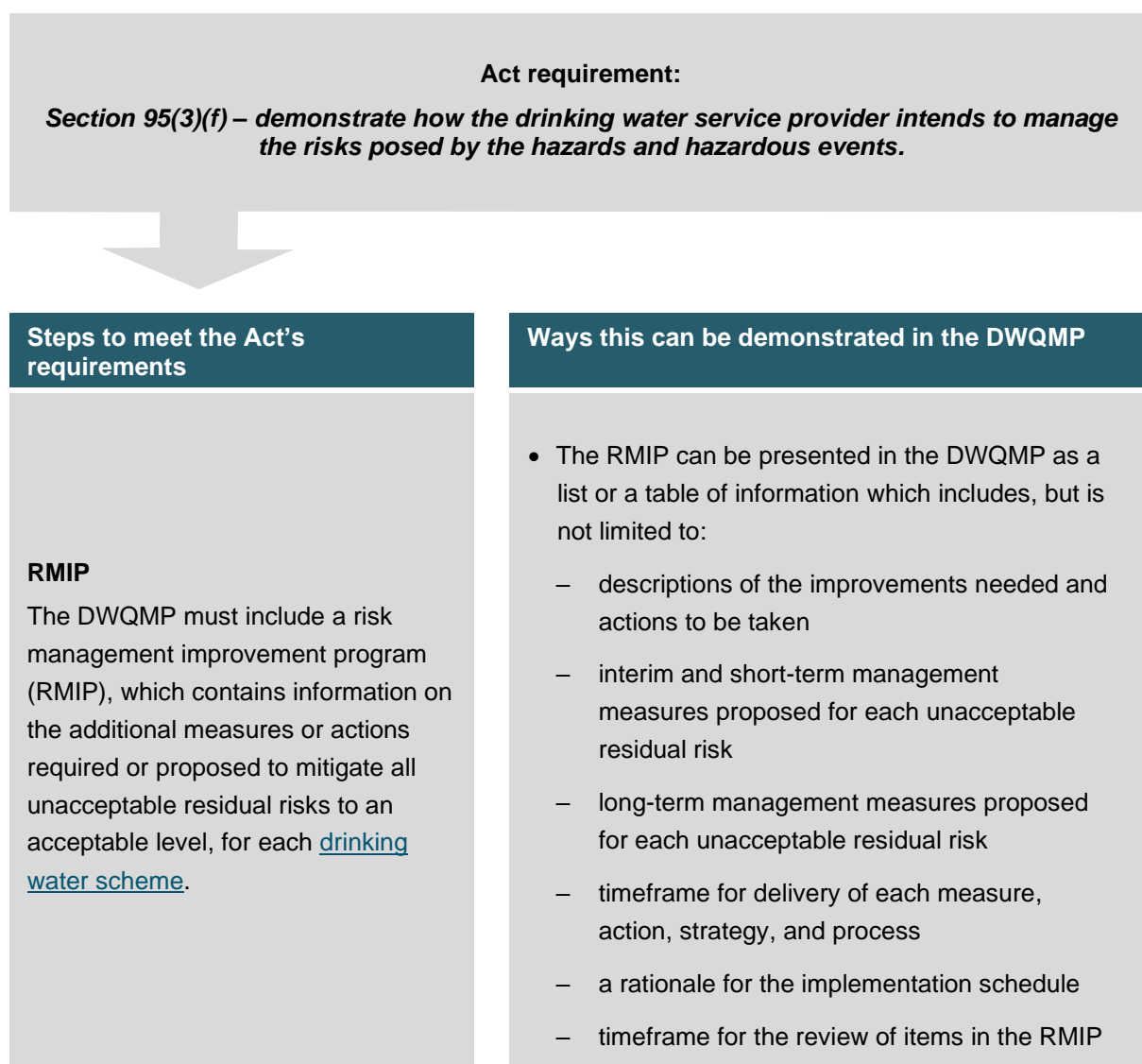
The DWQMP must demonstrate how the provider intends to manage the risks posed by the hazards and hazardous events. As part of meeting this requirement, the DWQMP should include information about the providers RMIP.

The RMIP is a mechanism for the provider to demonstrate to the regulator how it will address any current unacceptable residual risks as well as potential future unacceptable risks in DWQMP amendments.

As many improvements will be phased in over time, a provider needs to categorise the implementation of these risk mitigation measures as interim, short-term and/or long-term and state the implementation timeframes.

Providers should include as much detail as possible of the proposed improvement measures in their RMIP, as well as any potential funding sources as this information may be useful to support external funding or grant applications.

Refer to [Appendix A](#) for further supporting information and examples.



## Steps to meet the Act's requirements

## Ways this can be demonstrated in the DWQMP



Note: the RMIP should be reviewed in a timely manner giving consideration to the target dates and provide reasons for any target dates that have not been met.

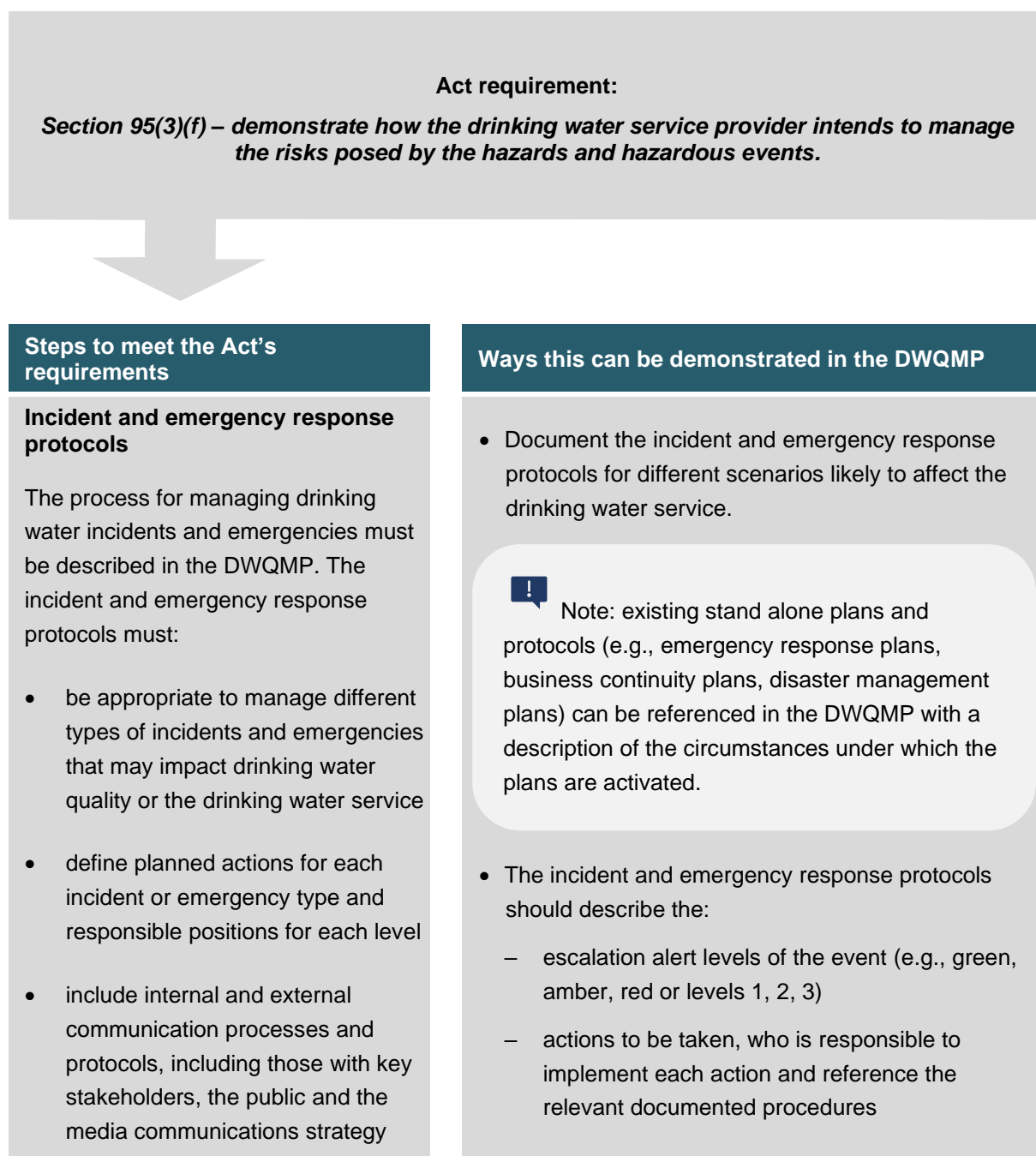
For example, a good internal practice could be to include the review of RMIP items as a compulsory standard agenda item at team meetings.

- availability of funding (yes/no/pending),
- positions responsible for delivering the RMIP items
- a statement of endorsement or commitment by the providers executive officer(s) to support the outcomes of the RMIP.

### 3.1.11 Management of incidents and emergencies

The DWQMP must demonstrate how the provider intends to manage the risks posed by the hazards and hazardous events. As part of meeting this requirement, the DWQMP should describe the processes for managing drinking water incidents and emergencies and the protocols for both internal and external communications.

Effective incident and emergency response and communication protocols are essential to protect public health and to maintain community confidence in drinking water services.





- describe how incidents and emergencies are debriefed and amend existing protocols, to improve planning and preparedness for future incidents and emergencies.

- processes for contacting customers and vulnerable groups, during incidents and emergencies, including the internal communication protocols and systems used to maintain customer information and
- protocols for communication with different internal and external stakeholders/organisations, including the regulator and Queensland Health Public Health Units.
- The incident and emergency response protocols should also describe the processes for:
  - debriefing
  - providing ongoing training to employees
  - frequency of re-sampling
  - incident investigation and how corrective actions and preventive measures are implemented and
  - revising emergency protocols as necessary.
- Include as a minimum, the protocols for responding to the following [reportable incidents and events](#) (i.e. noncompliance with [water quality criteria](#)<sup>29</sup>):
  - detection of *Escherichia coli* (*E. coli*)
  - detection of pathogens (i.e., disease-causing microorganisms including bacteria, viruses, protozoa)
  - detection of a physical or chemical parameter that exceeds a health guideline value in the [ADWG](#)
  - detection of a parameter with an interim health guideline value that has been established by Queensland Health



Note, the outcome of discussions and details of the interim limit should also be documented in the DWQMP.

<sup>29</sup> [Water quality criteria](#) – as defined in Schedule 3 of the Act

## Steps to meet the Act's requirements

## Ways this can be demonstrated in the DWQMP

- an “Event”, that has happened to the service, which is unable to be controlled using the approved DWQMP and which may adversely impact water quality, public health or the supply of drinking water (e.g., cyclone, other significant rain event/flood, power outage without emergency generation equipment, cyber security or other security breach/attack and key equipment failure)



Note, for guidance on communicating with the public about drinking water incidents and events (e.g., boil water alerts), refer to the Queensland Health [Drinking water advisories – Guidelines and templates](#).

- detection of a parameter with an aesthetic guideline value, but used as an indicator or a surrogate of other hazards (e.g., turbidity)
- detection of a parameter with no guideline value in the ADWG and which may adversely impact public health (e.g., chlorate)
- inability to sample, test or record water quality data (e.g., laboratory errors, flooding or bushfires preventing sample collection or transportation of samples to a laboratory etc.)
- detection of radioactivity that exceeds gross alpha or gross beta screening values in the ADWG.



Note, for providers who already have approved DWQMPs, you will find definitions for the term's 'incident' and 'event' (reportable to the regulator) detailed in your latest [decision notice](#).

For further information about reporting drinking water incidents and events (noncompliance with water quality criteria), refer to [www.business.qld.gov.au](http://www.business.qld.gov.au) or the [Water quality and reporting guideline](#).

Steps to meet the Act's requirements	Ways this can be demonstrated in the DWQMP
<p><b>Local and district disaster management plans</b></p> <p>Link or align the DWQMP incident and emergency response with local and/or district disaster management plans.</p>	<ul style="list-style-type: none"> <li>• Details of the providers Local Disaster Management Group (LDMG) should be referenced in the incident and emergency response protocol.</li> <li>• A contact for the provider who will liaise with the regulator should also be provided in the response protocol.</li> </ul>
<p><b>Multiple providers</b></p> <p>When <a href="#">multiple providers</a> are involved in supplying the drinking water service, the DWQMP must explain how incidents and emergencies are managed between these entities (e.g., <a href="#">bulk water providers</a>, <a href="#">distributor-retailers</a> etc).</p>	<ul style="list-style-type: none"> <li>• Provide sufficient information detailing the collaborative communication arrangements used for managing incidents and emergencies, for example: <ul style="list-style-type: none"> <li>– communication protocols</li> <li>– emergency response plans, protocols and procedures</li> <li>– incident reporting and management practices and procedures</li> <li>– relationship between each providers monitoring programs</li> <li>– individual and joint response measures and actions</li> <li>– incident debriefing processes between the multiple providers.</li> </ul> </li> </ul>

### 3.1.12 Operational and verification monitoring programs

The DWQMP must include details of the operational and verification monitoring programs including the parameters to be used for indicating compliance with the plan and the [water quality criteria](#)<sup>30</sup> for drinking water. To meet this requirement, the DWQMP should include sufficient information to demonstrate that the provider has appropriate operational and verification monitoring in place.

**Operational monitoring** is undertaken to ensure the effectiveness of the operation of the preventive barriers. **Verification monitoring** is undertaken to ensure compliance with 'water quality criteria' of the treated water provided to customers.

The parameters, locations and frequency of monitoring for both operational and verification monitoring, must be linked to the potential hazards and risks identified for each scheme within the drinking water service.

The operational and verification monitoring programs contained in the DWQMP must address all hazards and risks identified through the risk assessment that may impact on each drinking water scheme associated with the service to protect public health.

The [ADWG](#) also provides information on the types of parameters, monitoring methodology, sampling locations and sampling frequency that should be considered, along with guideline values that should be achieved. The ADWG can be accessed online at [www.nhmrc.gov.au](http://www.nhmrc.gov.au).

#### Act requirement:

***Section 95(3)(g) – include details of the operational and verification monitoring programs under the plan including the parameters to be used for indicating compliance with the plan and the water quality criteria for drinking water.***

#### Steps to meet the Act's requirements

##### **Operational and verification monitoring programs**

The DWQMP must contain details of the operational and verification monitoring programs and detail how the monitoring is appropriate to manage the risks posed by the hazards and hazardous events.

#### Ways this can be demonstrated in the DWQMP

- Include sufficient information in the DWQMP detailing **both** the operational and verification monitoring programs for each [drinking water scheme](#). These monitoring programs should be detailed in tables or described.



Note: The monitoring should be sufficient to assess and confirm the performance of relevant preventive measures.

<sup>30</sup> [Water quality criteria](#) – as defined in Schedule 3 of the Act

The verification monitoring program must detail how the monitoring is appropriate to verify compliance with '[water quality criteria](#)<sup>31</sup>' and provide confidence to the consumers of the water.



Note, the monitoring programs should complement operating manuals, documented procedures, and schedules used by operators.

Refer to [Appendix A](#) for further information and example tables for operational and verification monitoring.

- The operational and verification monitoring programs should include the following information:
  - parameters being tested/monitored
  - location and frequency of monitoring (e.g., real-time with alarms, daily, weekly, event based, etc)



Note, the frequency of monitoring must be sufficient for the size and complexity of the scheme and consider the level of risk identified during the risk assessment process. The frequency of verification monitoring must comply with s52 of the Public Health Regulation 2018.

- sampling/monitoring method (e.g., grab sample, online etc)
- description of and rationale for the parameters selected for each treatment process or activity
- for operational monitoring include the operational target, alert and critical limit monitoring criteria and the rationale for these selections
- for verification monitoring include the [water quality criteria](#) or action level



Note, the verification monitoring program must be appropriate to assess and confirm compliance with the '[water quality criteria](#)'.

<sup>31</sup> [Water quality criteria](#) – as defined in Schedule 3 of the Act

## Steps to meet the Act's requirements

## Ways this can be demonstrated in the DWQMP

- responsible position for monitoring
- qualifications and/or training of staff required to undertake the monitoring
- equipment and facilities used for testing (e.g., in-house test kits), the transportation arrangements (e.g. road, plane both) and laboratory used (e.g. NATA accredited laboratory, other Council's laboratory)



Note, using an in-house *E. coli* test kit is an option if providers do not have ready access to laboratory facilities.

The common *E. coli* test methods described in the [ADWG](#) (including both enumeration and presence/absence forms of the methodologies) are recommended.

- how water quality results are interpreted and communicated and the process for long-term evaluation of trends
- onsite response for exceedances (of [water quality criteria](#) and operational criteria) including actions or link to procedures, as well as internal and external communication protocols (e.g., with [bulk water providers](#) or regulatory agencies).

## 4. Approval of the DWQMP

A newly registered drinking water service provider has a 'transitional period' of 12 months from the date of registration to have an approved DWQMP in place.<sup>32</sup>

During this time, the provider will likely be subject to water quality monitoring and reporting requirements pursuant to a notice issued by the regulator under [section 630](#) of the Act (which will remain in force until the provider has an approved DWQMP).<sup>33</sup>

Once a provider has an approved DWQMP, the plan will require review and where necessary, amendment to reflect changes and improvements and to ensure the plan remains relevant to the current drinking water service and its operation.

A provider's application for approval of a newly developed DWQMP, or amendment to an existing DWQMP, will be considered against the Acts requirements and how the matters referred to in this guideline have been addressed.

### 4.1 How to apply

To apply for approval of a DWQMP, or DWQMP amendment, a provider must submit an application, which includes a completed and signed application form along with copies of all other relevant documentation that form part of the DWQMP<sup>34</sup>. Applications which do not meet those requirements cannot be processed. Refer to the guidance material on the departments website to ensure your application contains all necessary information and avoid any delays in processing.

A copy of the application forms (including instructions and guidance notes) are available online at [www.business.qld.gov.au](http://www.business.qld.gov.au). Refer to:

- [Drinking water quality management plan approval application: Form WSR505](#)  
(Including, [Explanatory notes and instructions](#))
- [Drinking water quality management plan amendment application: Form WSR506](#)  
(Including, [Explanatory notes and instructions](#))

### 4.2 Assessment process

When considering the application, the regulator must have regard to the following:<sup>35</sup>

- the documents received as part of the DWQMP and any additional information given to the regulator in response to an 'information requirement' (see section 4.3 of this guideline)
- this guideline
- any advice obtained by the regulator from an '[advisory council](#) or other entity'<sup>36</sup> the regulator considers appropriate
- the '[water quality criteria](#)' for drinking water<sup>37</sup>

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<sup>32</sup>Section 628(4) of the Act unless the drinking water service relates to stored water which includes recycled water.

<sup>33</sup> Sections 628 to 630 of the Act.

<sup>34</sup> Section (95)(2)(b) of the Act states that the application must be accompanied by the fee prescribed under a regulation. However, currently there is no prescribed fee for an application for the DWQMP.

<sup>35</sup> Section 98(2) of the Act.

<sup>36</sup> Section 97 of the Act

<sup>37</sup> [Water quality criteria](#) – as defined in Schedule 3 of the Act.

## 4.3 Information requirement notice

The regulator must be satisfied that the DWQMP is prepared in accordance with this guideline and is adequate to protect public health.

If additional information about the DWQMP is necessary to decide the application, the regulator may require the provider to give additional information about the DWQMP by issuing an 'information requirement notice' (IRN).<sup>38</sup>

If the provider fails, without reasonable excuse, to comply with the IRN within the reasonable period stated in the notice, the application is taken to be withdrawn.<sup>39</sup>

## 4.4 Timeframes for the decision

The regulator is required to consider each application and decide to approve, with or without conditions, or refuse to approve, the DWQMP:<sup>40</sup>

- if an information requirement (IRN) is not made in relation to the plan—within three months of receiving the plan
- if an information requirement (IRN) is made in relation to the plan—within three months of the requirement being complied with.

Proposed DWQMPs should be submitted by newly registered drinking water service providers as early as possible so that there is enough time for the regulator to consider the plan (and request and consider further information if required) within the 12-month transitional period.



It is an offence under section 92 of the Act for a registered drinking water service provider to carry out a drinking water service without an approved DWQMP if more than 12 months have passed since its registration.

## 4.5 Communication of regulator's decision

The regulator is required to provide a notice of the decision ([decision notice](#)) within 10 business days after deciding an application for a DWQMP.

- Notice of the decision will be provided if the regulator approves the application without conditions.<sup>41</sup>
- An information notice will be provided if the regulator approves the application with conditions or refuses the application.<sup>42</sup>

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<sup>38</sup> Section 96(1) of the Act.

<sup>39</sup> Section 96(2) of the Act.

<sup>40</sup> Section 98(1) of the Act.

<sup>41</sup> Section 99(1)(a) of the Act.

<sup>42</sup> Section 99(1)(b) of the Act.



## 4.6 Decision notices (information notices and notices)

The information the regulator will include in the [decision notice](#) is shown in Table 2.

Table 2: Content of decision notices

Matters included	Details
Name of the provider	The decision notice will identify: <ul style="list-style-type: none"><li>the provider in relation to the decision being made</li><li>the date the notice is given.</li></ul>
Power to give notice	The decision notice will state whether it is a notice issued under section 99(1)(a) (without conditions) or an information notice issued under section 99(1)(b) (refusal or approval with conditions).
Decision made	The decision notice will state the decision and the date it was made.
Decision maker	The decision notice will include the name of the regulator's delegate (if relevant).
Reasons for imposing conditions/refusing application	The decision notice will include the reasons for the decision, including the findings of fact and the evidence or other material on which the findings were based. <sup>43</sup>
The approved DWQMP	The decision notice will state the documents that are considered part of the 'approved DWQMP'.
Drinking water scheme details	<p>The decision notice will list the name of each <a href="#">drinking water scheme</a> covered by the approved DWQMP.</p> <p>These names are to be used when compiling the <a href="#">Drinking water service annual reports</a>, and for reporting drinking water quality <a href="#">incidents and events</a> (which is required as a condition of approval).</p>
Conditions	<p>The decision notice will state the conditions of approval imposed by the regulator.<sup>44</sup></p> <p>Providers should ensure they read and familiarise themselves with these conditions.</p> <p>The conditions may relate to:</p> <ul style="list-style-type: none"><li>reporting requirements for drinking water quality <a href="#">incidents and events</a>, and detection of parameters with no 'water quality criteria'<sup>45</sup></li></ul>

<sup>43</sup> Section 27B of the *Acts Interpretation Act 1954*.

<sup>44</sup> Section 99(2)(a) of the Act.

<sup>45</sup> Water quality criteria – as defined in Schedule 3 of the Act.

Matters included	Details
	<ul style="list-style-type: none"> <li>• detection of parameters when water research activities are undertaken</li> <li>• conditions deemed necessary by the regulator to protect public health</li> <li>• periodic reports containing a summary of water quality monitoring results</li> <li>• progress on a risk management improvement program (i.e., status report on the measures and actions)</li> <li>• timing of particular actions and measures etc (e.g., bringing forward a measure identified in the risk management improvement program)</li> <li>• specific requirements (e.g., providing required information by a certain timeframe).</li> </ul>
Regular reviews intervals	The decision notice will state the minimum regular review intervals at which providers must review the DWQMP. This is typically every 2 years (but not less than 1 year). <sup>46</sup>
Regular audit intervals	The decision notice will state the minimum regular audit intervals at which providers must complete the audit of the DWQMP. This is typically every 4 years (but not less than 2 years). <sup>47</sup>
Due dates	The decision notice will state the intervals (i.e., due dates) for the next DWQMP review and audit.
Internal review of decision	The decision notice will state how to apply for an internal review of the decision. <sup>48</sup>

## 4.7 Approval

The regulator considers the DWQMP as well as additional information provided in response to any information requirement/s.<sup>49</sup> The regulator is also required to consider these guidelines, advice provided under section 97 of the Act and the [water quality criteria](#) for drinking water.<sup>50</sup>

When assessing the DWQMP, the regulator considers whether it addresses the requirements set out in section 95(3) of the Act and whether its implementation will protect public health.

When assessing the DWQMP, the regulator may request copies of documents referred to in the plan, to ensure their implementation is appropriate for the protection of public health. For example, the DWQMP might refer to mains break repair procedures to demonstrate how they manage the risks posed by the relevant hazards and hazardous events. The provider remains responsible for ensuring the

<sup>46</sup> Sections 99(2)(b) and (3) of the Act.

<sup>47</sup> Section 99(2)(c) and (4) of the Act.

<sup>48</sup> Chapter 7 of the Act applies to the internal review of decisions.

<sup>49</sup> Section 98(2)(a) of the Act.

<sup>50</sup> Section 98(2)(b) to (d) of the Act.

appropriate procedures are in place for the drinking water service and approval of the DWQMP does not amount to approval of supporting documents referenced in the plan if those documents are not part of the plan itself (even if they have been amended to address concerns about the content of the plan). The [decision notice](#) will identify which documents form part of the DWQMP.

An approved DWQMP will also be checked by the regulator through the activities undertaken to implement the approved DWQMP (i.e., [Drinking water service annual reports](#), DWQMP audit reports etc). Refer to [Section 5](#) for more information.

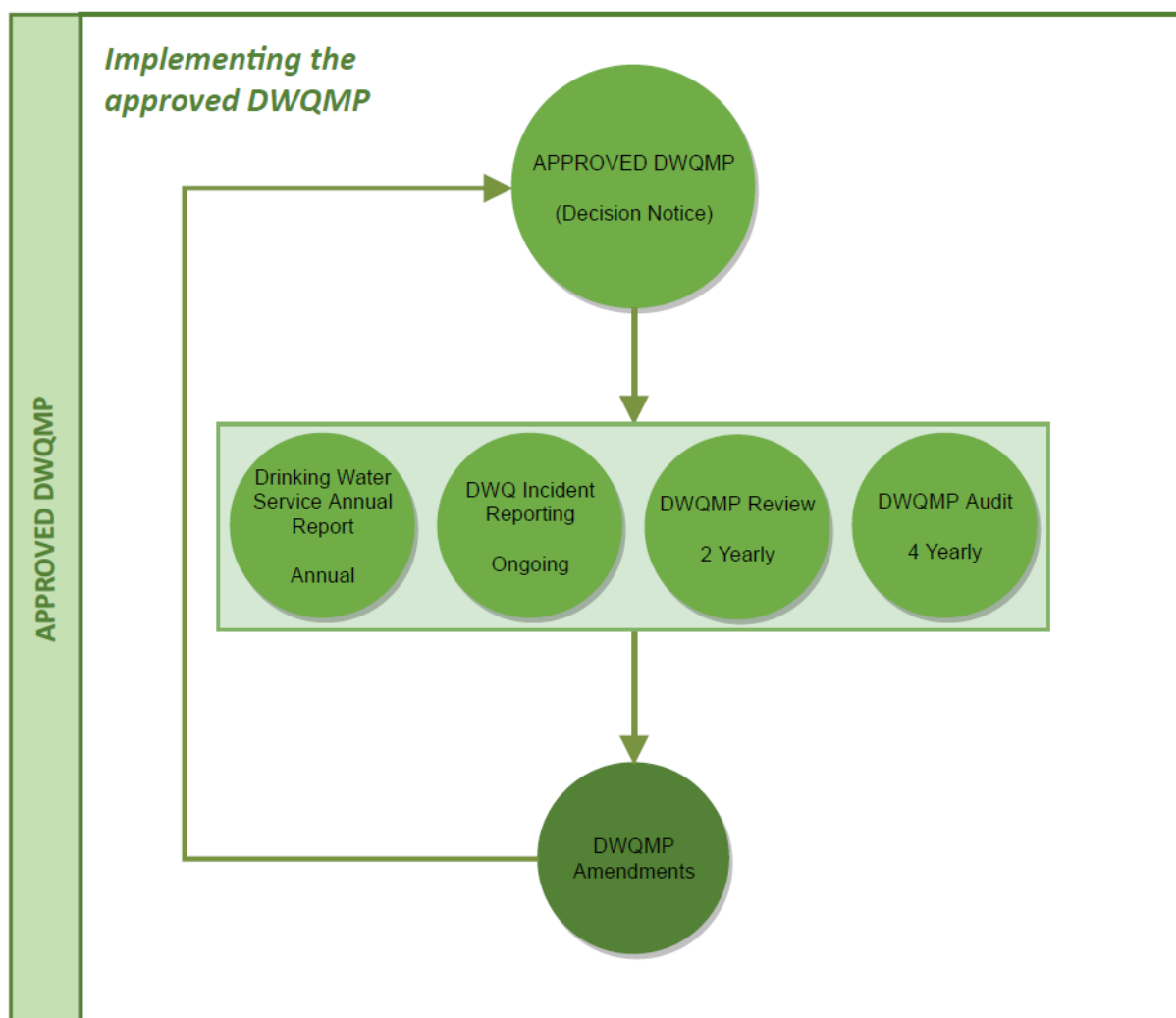
## 4.8 Seeking internal review of the decision

If the DWQMP is refused by the regulator, or the applicant disagrees with the conditions stated in the 'decision notice', the applicant may seek internal review of the decision under Chapter 7 of the Act. The 'decision notice' provides information about the internal review process.

## 5. Implementing an approved DWQMP

Once a DWQMP is approved by the regulator, the provider will need to undertake the activities of implementing the approved DWQMP. The below figure (Figure 3) provides an overview of these activities. Frequencies for reviews and audits are typically every 2 and 4 years respectively as outlined in the latest [decision notice](#).

Figure 3: Flow diagram showing the activities undertaken by providers with an approved DWQMP



DWQ- Drinking water quality



Note, the provider is responsible for all costs associated with maintaining the currency of the approved DWQMP, engagement of third-party consultants and preparing the required reports.

Sections 6 to 9 of this guideline provide further guidance on the activities that must be undertaken to implement the approved DWQMP including how to prepare [Drinking water service annual reports](#), undertake DWQMP amendments, as well as regular reviews and audits of DWQMPs in accordance with the timeframes stated in the 'decision notice' approving the DWQMP. For further information on these activities, refer to:

- Section 6 – [DWQMP reviews](#)
- Section 7 – [DWQMP audits](#)
- Section 8 – [DWQMP amendments](#)
- Section 9 – [Drinking water service annual report](#)



Note, guideline sections 6, 7 and 9 are presented in the same format as the information in section 3. Tables contain two columns with the matters listed under column one “**Steps to meet the Act’s requirements**” being considered the minimum amount of information that must be included.

Guidance on how a provider may address these requirements is then detailed under column two “**Ways this can be demonstrated**”.

## 5.1 Compliance with the approved DWQMP

Providers must comply with the approved DWQMP. Failure to comply with the approved DWQMP is an offence under subsection 93(a) of the Act.

Compliance with the approved DWQMP will be checked by the regulator through [reportable incidents and event](#), [Drinking water service annual reports](#), DWQMP audit reports, on-site support visits/assessments and other government agency advice. Noncompliance with an approved DWQMP will arise if a provider:

- does not implement the actions documented in its DWQMP; or
- undertakes activities that are not included in its approved DWQMP.

If a provider proposes to amend its approved DWQMP, the provider should be prepared to operate under the proposed changes if/when the proposed amendments are approved by the regulator.

## 5.2 Compliance with the conditions of the approved DWQMP

A provider’s DWQMP can be approved with conditions by the regulator. These conditions are set out in the provider’s latest ‘decision notice’ (relating to the DWQMP’s initial approval or a subsequent approved amendment).

The provider must comply with the conditions of the approved DWQMP. Failure to comply with the conditions of the approved DWQMP is an offence under subsection 93(b) of the Act.

Refer to [section 4.6](#) of this guideline for the types of conditions that can be imposed on an approved DWQMP.

## 5.3 Continual improvement

The success of a DWQMP depends on how well it is implemented as part of the day-to-day operations of the water supply system. A provider should ensure that its drinking water service is working towards improving its ability to ensure a consistently safe water supply. Continual improvement can range from small improvements and/or efficiencies in daily operations of the drinking water service to large scale organisational changes. The regulator strongly recommends that continual improvement practices are driven at each level of the organisation, from operational or field staff to executive staff.

Executive staff are encouraged to maintain oversight of the drinking water service and be routinely involved in the review, audit and performance processes. Systemic issues should be identified by the executive and addressed. Similarly, technical staff should be aware of scientific and technological advances in drinking water management and how they can be incorporated into the DWQMP. Improvements are typically recorded using the risk management improvement program (RMIP) to track progress over time. See [Appendix A](#) for further information on RMIPs.

## 6. DWQMP Reviews

The approved DWQMP is a 'living document' and must be regularly reviewed in accordance with the timeframes stated in the [decision notice](#) approving their DWQMP.<sup>51</sup> The purpose of the review is to ensure the plan remains relevant to the operation of the drinking water service.<sup>52</sup> Reviews contribute to the continuous improvement of the approved DWQMP and are typically undertaken by staff involved in the operation of the drinking water service, with or without the assistance of a consultant.



Not reviewing an approved DWQMP in accordance with the decision notice is an offence under section 106(1) of the Act.

In addition to the mandatory review dates specified in the 'decision notice', it is best practice for providers to undertake reviews before and after an audit is conducted. For example, conducting a review (voluntarily) with sufficient time prior to the audit date, and seeking necessary approvals from the regulator for amendments, enables a provider to be audit-ready. Once the amended DWQMP has been approved by the regulator, providers can then be confident that their DWQMP accurately reflects their current drinking water service so that the audit is likely to provide more beneficial findings. Furthermore, a review undertaken (voluntarily) after an audit is conducted enables the provider to address the findings from the audit and seek the regulator's approval of relevant DWQMP amendments.

It can be a challenge for some providers when the DWQMP audit and review dates specified in the 'decision notice' are at the same time. If this occurs, the provider should plan in advance for both requirements and it is preferable that the DWQMP audit is conducted first to inform the DWQMP review. Any concerns with due dates should be discussed first with the regulator.

Providers must also include the outcomes of the DWQMP review in their [Drinking water service annual report](#) and how they have addressed any matters raised in the review.<sup>53</sup>

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<sup>51</sup> Section 106(1) of the Act.

<sup>52</sup> Section 106(2) of the Act.

<sup>53</sup> Section 142(3)(c) of the Act.

**Act requirements:**

**Section 106 – a provider must regularly review the DWQMP in accordance with the [decision notice](#) to ensure the plan remains relevant having regard to the operation of the drinking water service.**

**Section 107 – if a review indicates a DWQMP needs to be changed.**

**Steps to meet the Act's requirements**

**Undertake reviews**

The DWQMP must be regularly reviewed in accordance with the 'decision notice'.

The purpose of the review is to ensure the plan remains relevant having regard to the operation of the water service provided by the drinking water service provider.<sup>54</sup>

**Ways this can be demonstrated in the DWQMP review**

- Some of the matters to consider when undertaking a review include:
  - management and operation of the drinking water service, including changes in the catchment, supply system and process flow diagrams or schematics
  - procedures and processes
  - risk assessment, including identified hazards, hazardous events and preventive measures
  - monitoring programs (operational and verification)
  - implementation of improvement actions identified in the RMIP
  - performance of process controls and verification monitoring results
  - outcomes of [reportable incidents and events](#) and emergency investigations and responses
  - water quality related customer complaints
  - audit results
  - any concerns from the regulator or changes to regulatory and formal requirements.



Note, the DWQMP review checklist in [Appendix B](#) can be used by providers to help record plan reviews.

<sup>54</sup> Section 106 of the Act.



## Steps to meet the Act's requirements

### Amending the DWQMP following the review

Within 30 business days after the review ends, the provider must amend the DWQMP to reflect the changes to the operation of the water service and apply to the regulator for approval of the amended plan<sup>55</sup>

## Ways this can be demonstrated in the DWQMP review

- Providers should retain records of DWQMP reviews for the regulator's purposes (to ensure compliance with section 106) and for audit purposes. Records of the DWQMP reviews should capture:
  - the date of the review and who was involved
  - any decisions made during the review that identify required improvements to the DWQMP.



Note, these records may be used by auditors or the regulator to verify that reviews were undertaken at the intervals specified in the [decision notice](#).

- Refer to [section 8](#) of this guideline for information on DWQMP amendments following a review.
- When seeking approval of a DWQMP amendment, describe the outcomes of the review and how any issues were addressed in the [Drinking water service annual report](#) for the relevant financial year. Refer to [section 9](#) of this guideline for information on Drinking water service annual reports.

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<sup>55</sup> Section 107 of the Act.

## 7. DWQMP audits

An audit assesses a provider's compliance with its approved DWQMP. Providers are required to have their DWQMP audited in accordance with the timeframes stated in the [decision notice](#) approving the DWQMP.<sup>56</sup> Not ensuring that an audit is conducted of an approved DWQMP is an offence under section 108 of the Act.<sup>57</sup>

The Act provides for who may audit a DWQMP. A provider's own employees are not permitted to undertake an audit and neither may a person employed in operating the provider's infrastructure.<sup>58</sup>

The purpose of undertaking the DWQMP audit is to inform the regulator about how the provider is complying with its approved DWQMP and any conditions of the approved DWQMP. Additionally, the DWQMP audit assesses if data provided to the regulator is accurate and the relevance of the approved DWQMP to the drinking water service(s) being provided at the time of audit.<sup>59</sup>

A DWQMP audit report must be prepared and be given to the regulator in accordance with section 108 of the Act.<sup>60</sup> The regulator will assess the audit report and may discuss the findings with the auditor, provider or both.

Any findings of noncompliance with the DWQMP or its conditions should be addressed as soon as possible by the provider. The regulator may request the provider to show how it plans to address the findings from a DWQMP audit.<sup>61</sup>

### 7.1 Drinking water service provider requirements

The provider is responsible for appointing an appropriately qualified auditor. Providers must engage an auditor well before the due date for the audit, to ensure it is completed within the interval specified in the [decision notice](#). It is recommended that auditors are appointed a minimum of three months prior to the audit due date.

Providers must give the auditor and any person employed or authorised by the auditor free and uninterrupted access to the infrastructure and any records relating to the infrastructure. Providers should ensure their key personnel are available onsite on the audit day/s and provide true and accurate information to the auditor. On the day/s when the audit is being undertaken all relevant documents must be made available for the auditor to inspect (e.g., approved DWQMP, data, records, reports, etc. that demonstrate implementation of the DWQMP).

The auditor engaged by a provider must meet the certification or qualification requirements of the Act.<sup>62</sup>

Exemplar Global manages a national certification scheme for Water Quality Management Systems (WQMS) auditors, which is consistent with the risk management framework set out in the [ADWG](#). The regulator recognises this certification satisfies requirements under the Act.<sup>63</sup> For further information, including the names, locations, certifications and other qualifications held by WQMS certified auditors, refer to Exemplar Global's website: [www.exemplarglobal.org](http://www.exemplarglobal.org).

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<sup>56</sup> Section 99(2)(b) of the Act

<sup>57</sup> Section 108(1) of the Act

<sup>58</sup> Section 108(2) of the Act

<sup>59</sup> Section 108(3) of the Act

<sup>60</sup> Section 108(1)(b) and (c) of the Act

<sup>61</sup> Section 13 of the Act

<sup>62</sup> Section 108(2)(b) of the Act

<sup>63</sup> Section 108(2)(b)(i) of the Act

An uncertified person may carry out an audit if the regulator is satisfied that their qualification is at least equivalent to certification.<sup>64</sup>






Providers are encouraged to contact the regulator if the limited number of certified auditors is making compliance with the requirements of the Act challenging.

Steps to meet the Act's requirements	Ways this can be demonstrated in the DWQMP audit
<p><b>Undertake audits</b></p> <p>The provider must ensure that DWQMP audits are undertaken in accordance with the intervals specified in the most recent <a href="#">decision notice</a> relating to their DWQMP.<sup>65</sup></p>	<ul style="list-style-type: none"> <li>Providers are to arrange for audits of their DWQMP to be conducted prior to the due date stated in their most recent 'decision notice' for the decision.</li> </ul> <div data-bbox="762 779 805 822" data-label="Image"> </div> <p>Note, providers should engage an auditor to conduct their DWQMP audit with enough time before the due date to avoid noncompliance because of unforeseen delays e.g., due to limited auditor availability, pandemic or other travel restrictions etc.</p> <ul style="list-style-type: none"> <li>Where a 'decision notice' specifies that the review and audit are to be completed prior to the same date, it is recommended that the audit is completed first and with enough time before the review of the DWQMP so that the findings of the audit can be considered as part of the DWQMP review.</li> </ul>
<p><b>Appoint an auditor</b></p> <p>The provider must appoint an auditor who is not its employee or employed in operating its infrastructure, and who:<sup>66</sup></p> <ul style="list-style-type: none"> <li>is certified under the <a href="#">Drinking Water-Quality Management System Auditor Certification Scheme</a> to conduct an audit of the type, to which the audit and report relates; or</li> </ul>	<ul style="list-style-type: none"> <li>If the auditor is not certified through Exemplar Global, the provider should contact the regulator prior to engaging the intended auditor, to confirm whether the regulator is satisfied of the suitability of the person's qualifications.</li> <li>The auditors are to be independent of the activity being audited, free from bias and conflicts of interest, and able to maintain an objective view to ensure the findings are evidence based.</li> </ul>

<sup>64</sup> Section 108(2)(b)(ii) of the Act.




<sup>65</sup> Section 108(1)(a) of the Act.

<sup>66</sup> Section 108(1) and (2) of the Act.

Steps to meet the Act's requirements	Ways this can be demonstrated in the DWQMP audit
<ul style="list-style-type: none"> <li>• has a qualification the regulator is satisfied is at least equivalent to that certification.</li> </ul>	<div data-bbox="718 302 1396 526">  <p>Note, the auditors are to adhere to the code of conduct related to their auditor certification. Refer to ISO 19011:2018 Guidelines for auditing management systems.</p> </div>
<p><b>Drinking water service provider statutory declaration</b></p> <p>The provider must complete the drinking water service provider statutory declaration.<sup>67</sup></p> <p>The declaration must state that the provider:</p> <ul style="list-style-type: none"> <li>• has not knowingly given any false or misleading information to the auditor; and</li> <li>• has given all relevant information to the auditor.</li> </ul>	<ul style="list-style-type: none"> <li>• The provider's statutory declaration is to be completed and signed by an executive officer or equivalent (e.g., <a href="#">CEO</a>) of the provider/organisation.</li> </ul> <div data-bbox="718 728 1396 862">  <p>Note, refer to schedule 3 of the Act for definition of the term executive officer.</p> </div> <ul style="list-style-type: none"> <li>• Signing the statutory declaration is best done at the closing meeting, after the conclusion of the onsite audit. However, if further information needs to be provided after the onsite audit, the statutory declaration is to be signed after all relevant information is submitted to the auditor.</li> </ul>
<p><b>Submit the final audit report</b></p> <p>The provider must ensure that a copy of the final audit report is given to the regulator by someone other than the drinking water service provider, within 30 business days after the relevant audit is completed.<sup>68</sup></p>	<ul style="list-style-type: none"> <li>• The provider should review the audit report and if necessary, resolve any misunderstanding or inaccuracies with the auditor in a timely manner, to ensure any necessary changes do not impact on the submission timeframe for the final audit report.</li> <li>• The best approach is for the auditor to submit the final audit report to the regulator, accompanied by the provider's and the auditor's statutory declarations</li> </ul> <div data-bbox="718 1534 1396 1870">  <p>Note, the audit is considered completed when the onsite audit has occurred, and any additional relevant information has been received by the auditor (<a href="#">audit completion</a>). A copy of the audit report and the two required, signed statutory declarations must be given to the regulator, within 30 business days of this date.</p> </div>

<sup>67</sup> Section 109 of the Act.

<sup>68</sup> Section 108(1)(c) of the Act.

Steps to meet the Act's requirements	Ways this can be demonstrated in the DWQMP audit
	<ul style="list-style-type: none"> <li>Submission through email is preferred at <a href="mailto:drinkingwater.reporting@rdmw.qld.gov.au">drinkingwater.reporting@rdmw.qld.gov.au</a>.</li> </ul> <div data-bbox="708 394 1378 546">  Note, the final audit report may also be submitted by another entity that is not the provider. </div>
<p><b>Audit report available for inspection or purchase</b></p> <p>The provider must, during business hours, keep a copy of their DWQMP audit report available for inspection or for purchase at a reasonable cost, by the public, at its office and/or another place the provider considers appropriate.<sup>69</sup></p>	<ul style="list-style-type: none"> <li>A copy of the audit report is to be available for inspection or purchase by the public at the providers office or another place the provider considers appropriate, during office hours on business days.</li> </ul> <div data-bbox="708 810 1378 1048">  Note, before providers make the audit report accessible by the public or other entities, you should ensure any sensitive cyber security information is redacted or removed. </div>
<p><b>Audit outcomes</b></p> <p>Providers must address any areas of noncompliance with its DWQMP.<sup>70</sup></p>	<ul style="list-style-type: none"> <li>Following an audit, the regulator may require providers to give information (e.g., in the form of an action plan)<sup>71</sup> outlining actions, responsibilities and implementation timeframes to address the noncompliances and opportunities for improvement (OFI) identified in the audit report and include these in the providers RMIP.</li> </ul> <div data-bbox="708 1429 1378 1729">  Note, include the details of the audit findings, OFIs and recommendations in the <a href="#">Drinking water service annual report</a> for the relevant financial year.  Refer to <b>Section 9</b> of this guideline for information on Drinking water service annual reports. </div>

<sup>69</sup> Section 575 of the Act.

<sup>70</sup> Section 93 of the Act.

<sup>71</sup> Section 13 of the Act

## 7.2 Role of the Auditor

The auditor should give the provider adequate notification prior to requiring access to infrastructure and records. Auditors will record evidence to justify their determinations, such as details of the approved DWQMP(s), records viewed, with whom they spoke, and infrastructure/scheme components sighted.

Auditors will use a mix of evidence that is appropriate in the circumstances; consider the auditable elements (refer to [section 7.2.1](#)) and reflect the operation of each [drinking water scheme](#), relative to the requirements of the version of the approved DWQMP being implemented at the time. Audit findings are usually based on a sample of available information, as it may not be practical for the auditor to (for example) sight all records or visit all drinking water infrastructure or schemes.

The scope of the audit must:<sup>72</sup>


- assess the accuracy of monitoring and performance data given to the regulator under the plan
- assess the provider's compliance with the DWQMP and the conditions placed on the approved plan
- assess the relevance of the DWQMP to the drinking water service being implemented, that is, the relevance of the version of the approved DWQMP for the drinking water service being provided at a particular point in time, since the previous DWQMP audit was conducted.

The provider must ensure that the auditor considers any versions of the DWQMP which have applied since the last audit when assessing relevance to the drinking water service. For example, if an amendment to the DWQMP was approved during a four-year period between audits, the audit is required to assess the relevance of each of the two versions of the DWQMP to the drinking service (for the period each version applied).

Steps to meet the Act's requirements	Ways this can be demonstrated in the DWQMP audit
<p><b>Methodology</b></p> <p>Audits must be conducted using an appropriate methodology (for example see ISO 19011:2018 – Guidelines for auditing management systems).</p>	<ul style="list-style-type: none"><li>• The regulator considers that on-site audits are required, in order to address the matters provided for in section 108(3), (although it may not be practical for the auditor to physically attend every drinking water scheme during every audit).</li><li>• The use of technology, such as drones, remotely operated telemetry devices and other surveillance equipment could be utilised as part of the audit.</li><li>• Where a provider has a large number of widely dispersed schemes, the provider should determine which schemes are to be audited in each audit cycle, to ensure the auditor can make a valid determination of the provider's compliance with the Act and compliance with its approved DWQMP(s).</li></ul>

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<sup>72</sup> Section 108(3) of the Act.

Steps to meet the Act's requirements	Ways this can be demonstrated in the DWQMP audit
	<ul style="list-style-type: none"> <li>All schemes must be audited over two consecutive audit cycles.</li> </ul> <div data-bbox="730 389 1386 629">  Out of scope - the auditor is not required to assess whether the provider's DWQMP has been prepared in accordance with the Act and this guideline. </div>
<p><b>Approved version</b></p> <p>The audit must be conducted on the approved version(s) of the DWQMP.</p>	<p>The approved version(s) of the DWQMP is defined as:</p> <ul style="list-style-type: none"> <li>The current approved DWQMP when assessing the relevance of the plan, and</li> <li>all versions of the DWQMP approved by the regulator since the last audit e.g., if the plan was amended once between audits, both versions of the DWQMP are to be assessed, so that a provider's compliance with the Act over the full period between audits is assessed.</li> </ul>
<p><b>Criteria</b></p> <p>The audit must assess compliance against the matters specified in sections 108(3) of the Act and the audit report must be prepared in accordance with this guideline<sup>73</sup>.</p>	<ul style="list-style-type: none"> <li>The key documents against which the audit evidence is assessed to determine the provider's compliance are: <ul style="list-style-type: none"> <li>records of the monitoring and performance data given to the regulator under the approved DWQMP(s)</li> <li>the provider's approved DWQMP(s) as described in the <a href="#">decision notice</a>, and</li> <li>the 'decision notice' issued to the provider by the regulator, under section 99 of the Act (which contains the conditions of the approved DWQMP).</li> </ul> </li> </ul>

<sup>73</sup> Sections 108(3)(a), (b) and (c) of the Act

## 7.2.1 Auditable elements


The audit must assess whether the provider has complied with the auditable elements of its approved DWQMP(s) during the interval since the last audit or if no audit has been conducted, when the plan was first approved ([auditable timeframe](#)).

The auditable elements comprise the matters referred to in section 108(3) for that period, which involve an assessment of whether:<sup>74</sup>

1. the monitoring and performance data given to the regulator under the DWQMP is accurate,
2. the provider has complied with the DWQMP and its conditions,
3. the DWQMP is relevant to the provider's drinking water service.

Providers and auditors should immediately advise the regulator of any noncompliances<sup>75</sup>, discovered during an audit, which may have a serious adverse impact on public health. The regulator can be contacted via the drinking water quality incident hotline, 1300 596 709 and in writing via email at [drinkingwater.reporting@rdmw.qld.gov.au](mailto:drinkingwater.reporting@rdmw.qld.gov.au). Details of the facts and circumstances that gave rise to the noncompliance will then be further sought by the regulator.

For further information on reporting drinking water incidents refer to [www.business.qld.gov.au](http://www.business.qld.gov.au).

Steps to meet the Act's requirements	Ways this can be demonstrated in the DWQMP audit
<p><b>Data accuracy</b></p> <p>The audit must assess the accuracy of the monitoring and performance data given to the regulator as outlined in the approved DWQMP(s)</p>	<ul style="list-style-type: none"><li>• Assessment of whether the monitoring and performance data submitted by the provider to the regulator is accurate and complete. This cross checking could include sighting of, for example:<ul style="list-style-type: none"><li>– verification monitoring results generated as per the approved DWQMP(s)</li><li>– data provided in the <a href="#">Drinking water service annual reports</a></li><li>– data provided to the regulator as part of a periodic reporting condition.</li></ul></li></ul> <div><p> Note, data verification could involve comparison of laboratory data with data in the provider's records over the same period.</p></div>

<sup>74</sup> Section 108(3) of the Act.

<sup>75</sup> Section 102 and 102A of the Act



## Steps to meet the Act's requirements

### Compliance with the DWQMP

The audit must assess the provider's compliance with their approved DWQMP and any conditions of the plan.

## Ways this can be demonstrated in the DWQMP audit

- Assessment of compliance with the approved DWQMP(s) and any conditions placed on the approved plans, should include implementation of:
  - preventive measures for managing hazards and hazardous events
  - currency and availability of operational and maintenance procedures
  - incident and emergency management protocols
  - operational and verification monitoring programs
  - the RMIP
  - reviews undertaken and [incidents and events](#) reported
- Assessment should also consider whether the provider is maintaining records according to the systems described in the DWQMP.




Note, the conditions of an approved DWQMP can be found in the [decision notice](#). Audits must assess compliance against the conditions stated in this notice.

- When assessing compliance with the DWQMP(s), the audit report should refer to the relevant section of the plan and/or conditions.




Note, the audit is not required to assess compliance with the provisions of the Act. It is limited to assessing compliance with the DWQMP and its conditions.




Steps to meet the Act's requirements	Ways this can be demonstrated in the DWQMP audit
<p><b>DWQMP relevance</b></p> <p>The audit must assess the relevance of the DWQMP to the provider's drinking water service operation.</p>	<ul style="list-style-type: none"> <li>Assess whether the information in the approved DWQMP being audited is relevant and reflects the circumstances for each <a href="#">drinking water scheme</a>, at the time of the audit. This includes for example: <ul style="list-style-type: none"> <li>service description and details of infrastructure (including schematics/process flow diagrams)</li> <li>catchment characteristics and water quality data</li> <li>hazard identification, risk assessment and preventive measures</li> <li>outcomes from any incident management activities which required a change to the preventive measures</li> <li>implementation of the RMIP</li> <li>operational and verification monitoring programs.</li> </ul> </li> </ul> <div data-bbox="730 1041 1388 1355"> <p> Note, if the approved DWQMP does not reflect the current circumstances (for each scheme audited), the audit report should identify opportunities for improvement (OFI) / recommendations in relation to how the plan could be made more relevant.</p> </div>
<p><b>Compliance with guidelines</b></p> <p>The Act requires that the audit report is prepared in accordance with guidelines made by the regulator<sup>76</sup></p>	<ul style="list-style-type: none"> <li>This is the guideline to which the Act refers.</li> </ul>

<sup>76</sup> Section 108(3)(c) of the Act.


## 7.2.2 Audit report requirements

The audit report should clearly express the auditor's opinion in respect of the findings of the audit. The provider should discuss the report findings with the auditor and resolve any misunderstandings or inaccuracies early enough to enable the report to be submitted on time.

Steps to meet the Act's requirements	Ways this can be demonstrated in the DWQMP audit report
<p><b>Audit details</b></p> <p>The audit report must include details of the audit.</p>	<ul style="list-style-type: none"> <li>The audit report includes the following details about the audit: <ul style="list-style-type: none"> <li>the name of the auditor (or audit team) and qualifications</li> <li>name of the provider and the drinking water schemes being audited</li> <li>methodology used to conduct the audit</li> <li>details of the documents, records and any other evidence used to assess compliance</li> </ul> </li> </ul> <div data-bbox="724 954 1383 1151"> <p> Note, document details should include the name, date or version number of each document/record.</p> </div> <ul style="list-style-type: none"> <li>audit agenda</li> <li><a href="#">auditable timeframe</a></li> <li>the approval date(s) of the DWQMP(s) being audited</li> <li>the date(s) the onsite audit was conducted</li> <li>the date the audit report was completed.</li> </ul>
<p><b>Assessment of auditable elements</b></p> <p>The audit report must include the assessment of the auditable elements</p>	<ul style="list-style-type: none"> <li>The audit report includes the assessment of the auditable elements as identified in <a href="#">section 7.2.1</a> including: <ul style="list-style-type: none"> <li>assessment of accuracy of data provided to the regulator during the <a href="#">auditable timeframe</a> (e.g., water quality data, <a href="#">reportable incident and event</a>, data published in the <a href="#">Drinking water service annual reports</a> etc.)</li> </ul> </li> </ul>

Steps to meet the Act's requirements	Ways this can be demonstrated in the DWQMP audit report
	<ul style="list-style-type: none"> <li>– assessment of compliance with all versions of the DWQMP approved since the last audit and the conditions of those plans</li> <li>– assessment of relevance of the current, approved DWQMP.</li> </ul> <div data-bbox="710 510 1394 795">  Note, if the approved DWQMP does not reflect the current circumstances, the audit report should include information on how the plan could be made more relevant to the providers drinking water service operations. </div>
<p><b>Noncompliances</b></p> <p>The audit report must include all identified noncompliances with the DWQMP and its conditions.</p>	<ul style="list-style-type: none"> <li>• All identified noncompliances from the audit are to be documented in the audit report.</li> </ul> <div data-bbox="710 965 1369 1167">  Note, an action plan that outlines the actions taken or to be taken to address noncompliances must be provided to the regulator. </div>
<p><b>Opportunities for improvement/recommendation</b></p> <p>Identify areas for improvements and/or recommendations in the audit report.</p> <p>These will assist providers when undertaking regular reviews of the approved DWQMP as per section 106 of the Act.</p>	<ul style="list-style-type: none"> <li>• All identified opportunities for improvement (OFI) and/or recommendations from the audit are to be documented in the report.</li> </ul> <div data-bbox="710 1368 1369 1615">  Note, OFIs/recommendations are the opinion of the auditor and can be used as discussion points between providers and the regulator after an audit. </div>
<p><b>Signed auditor statutory declaration</b></p> <p>The auditor must complete and sign the auditor's statutory declaration.<sup>77</sup></p>	<ul style="list-style-type: none"> <li>• The auditor's declaration states: <ul style="list-style-type: none"> <li>– the auditor's certification, qualifications and experience relevant to the audit</li> </ul> </li> </ul>

<sup>77</sup> Section 109 of the Act.

Steps to meet the Act's requirements	Ways this can be demonstrated in the DWQMP audit report
	<ul style="list-style-type: none"> <li>– that the auditor has not knowingly included any false, misleading, or incomplete information in the report</li> <li>– that the auditor has not knowingly failed to reveal any relevant information or document to the regulator;</li> <li>• The auditor's declaration certifies: <ul style="list-style-type: none"> <li>– the report addresses the relevant matters for the evaluation and is factually correct and</li> <li>– the opinions expressed in it are honestly and reasonably held.</li> </ul> </li> </ul> <div data-bbox="708 801 1385 1227"> <p> Note, providers should ensure their organisations statutory declaration has been signed by an <a href="#">executive officer</a> or equivalent (e.g., <a href="#">CEO</a>) and given to the auditor. Refer to <a href="#">section 7.1 (providers statutory declaration)</a> of this guideline for further information.</p> <p>Refer to <a href="#">Appendix C</a>, for example statutory declaration templates for providers and auditors.</p> </div>
<p><b>Submitting the audit report</b></p> <p>The final audit report must be submitted to the regulator within 30 business days after the relevant audit is completed.<sup>78</sup></p>	<ul style="list-style-type: none"> <li>• The auditor (or someone other than the provider) gives the regulator a copy of the audit report along with the two required signed statutory declarations (i.e., one signed by the auditor and one by the provider) within 30 business days after the audit is completed (<a href="#">audit completion</a>).</li> <li>• Submission through email is preferred at <a href="mailto:drinkingwater.reporting@rdmw.qld.gov.au">drinkingwater.reporting@rdmw.qld.gov.au</a>.</li> </ul>

<sup>78</sup> Section 108(1)(c) of the Act

## 8. DWQMP amendments

Amending a DWQMP where necessary ensures that the plan accurately reflects the drinking water service as well as reflecting the providers' efforts towards continual improvement of the drinking water service.

Amendments to the DWQMP can be made in the following ways:

a. Amendment with regulator agreement (minor amendments) – Section 99A of the Act

An amendment with regulator agreement (minor amendment) can be used to correct minor errors in the plan that are not considered a change of substance. It can also be used to record a change of name or change of ownership of the provider. A change which affects the quality of water provided or adversely changes the risk profile is not considered a minor change. There are no formal application forms or timeframes associated with an amendment by regulator agreement.

b. Amendment application – Section 100 of the Act

The provider voluntarily proposes to amend its DWQMP and applies to the regulator for approval of those amendments. The same provisions of the Act apply to a provider's amendment application/regulator's decision making as apply in relation to the preparation and approval of the DWQMP.<sup>79</sup> Providers should refer to the relevant parts of this guideline ([section 3](#) and [section 4](#)) when preparing an application for an amendment.

c. Amendment application following a review of the DWQMP – Section 107 of the Act

The provider amends its DWQMP following a DWQMP review and applies to the regulator for approval of those amendments. The same provisions of the Act apply to a provider's amendment application/regulator's decision making as apply in relation to the preparation and approval of the DWQMP.<sup>80</sup> Providers should refer to the relevant parts of this guideline ([section 3](#) and [section 4](#)) when preparing an application for an amendment.

The regulator must give the provider a [decision notice](#) about their application made under section 100 or section 107 of the Act. The 'decision notice' will communicate the regulator's decision to either approve the amendment application (with or without conditions) or to refuse the application to amend the DWQMP.

Where the regulator is not satisfied that a provider's proposed changes are adequate to protect public health, the regulator may decide to refuse the application for amendment and issue a show cause notice under section 101 of the Act relating to the proposed required amendment of the DWQMP in a stated way within a specified timeframe.



Providers are to submit the amended DWQMP to the regulator for approval using the DWQMP amendment application form (if required) and provide two copies of the amended plan (one with tracked changes and one with all changes accepted).

A copy of the amendment application form is available online at [www.business.qld.gov.au](http://www.business.qld.gov.au)

The DWQMP amendment application can be submitted by email to:  
[drinkingwater.reporting@rdmw.qld.gov.au](mailto:drinkingwater.reporting@rdmw.qld.gov.au)

<sup>79</sup> Section 100(3) of the Act.

<sup>80</sup> Section 107(4) of the Act.

## 9. Drinking water service annual report

When a provider has an approved DWQMP, they must prepare a publicly available [Drinking water service annual report](#)<sup>81</sup> for each financial year after the DWQMP was approved. The report must be submitted to the regulator within 120 business days from the end of the financial year<sup>82</sup>.



Not providing a Drinking water service annual report to the regulator is an offence under subsection 142(2) of the Act.

A Drinking water service annual report must include the following:<sup>83</sup>

- any information about compliance which the regulator requires under a report requirement<sup>84</sup>
- the actions the provider took to implement the DWQMP
- the outcome of any review of the DWQMP in the financial year and how the provider has addressed matters raised in the review
- the outcome of any audit of the DWQMP in the financial year and a summary of its findings and any recommendations
- details of any information the provider gave the regulator under sections 102 ([notice of noncompliance with water quality criteria](#)) and 102A (notice of prescribed incidents<sup>85</sup>) in the financial year
- details of the provider's compliance with 'water quality criteria' for drinking water
- details of any complaints to the provider about the provider's drinking water service.

It is important that the Drinking water service annual report contains factual and accurate information as this provides transparency for the customers and can help demonstrate the provider's continual commitment to the supply of a safe and reliable drinking water service.

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<sup>81</sup> The '[Drinking water service annual report](#)' is the report required under section 142 of the Act

<sup>82</sup> Section 142(2)(a) and (2)(b) of the Act

<sup>83</sup> Section 143(3) of the Act.

<sup>84</sup> Section 141(1) and (2)(a) of the Act.

<sup>85</sup> Note, at the time of publication there are no incidents prescribed under a regulation.

## 9.1 Drinking water service annual report requirements




A list of the Act requirements related to sections 142(3) and how they can be demonstrated in the Drinking water service annual report is provided below.

<b>Act requirements:</b>  <b><i>Section 142 – the report must state or include all the matters listed under section 142(3)(a) – (g)</i></b>  <b><i>Section 575(1)(f) and 575A – providers must keep the reports available for inspection, purchase and must publish the reports online.</i></b>	
<b>Steps to meet the Act's requirements</b>	<b>How can this be addressed or demonstrated in the report?</b>
<b>Report requirement notice</b> The Drinking water service annual report must include the information required under the latest <a href="#">Report requirement notice</a> <sup>86</sup> .	<ul style="list-style-type: none"><li>• Ensure that any additional requirements set out in the latest <a href="#">Report requirement notice</a> are included in the Drinking water service annual report.</li></ul>
<b>DWQMP implementation</b> The Drinking water service annual report must include the actions the provider took to implement the approved DWQMP <sup>87</sup> .  In addressing this, review and continually update all RMIP items, for each <a href="#">drinking water scheme</a> .	<ul style="list-style-type: none"><li>• Describe how the approved DWQMP was used to operate the drinking water service. In addressing this consider the following:<ul style="list-style-type: none"><li>– how key actions were undertaken to implement the DWQMP, such as:<ul style="list-style-type: none"><li>• <a href="#">DWQMP review outcomes</a></li><li>• <a href="#">DWQMP audit findings</a></li><li>• <a href="#">Compliance with water quality criteria</a> (i.e., verification monitoring)</li><li>• <a href="#">Notices of noncompliance with water quality criteria</a> (i.e., managing drinking water quality incidents and events).</li><li>• <a href="#">Customer complaints</a></li></ul></li><li>– how relevant staff were made aware of the DWQMP (e.g., training, documented procedures etc).</li></ul></li></ul>


<sup>86</sup> Section 142(3)(a) of the Act

<sup>87</sup> Section 142(3)(b) of the Act



Steps to meet the Act's requirements	How can this be addressed or demonstrated in the report?
	<ul style="list-style-type: none"> <li>• Conduct an annual internal review of the RMIP and amend the program as items progress or are completed. For example: <ul style="list-style-type: none"> <li>– newly identified improvements or risk mitigation measures are to be added to the RMIP</li> <li>– where necessary, existing RMIP items are to be updated with revised target dates for completion.</li> </ul> </li> </ul> <div data-bbox="746 645 1380 846">  <p>Note: target dates for RMIP items that have not been met, must be identified and include a statement explaining the delay and a new target date for completion.</p> </div> <ul style="list-style-type: none"> <li>– RMIP items are to remain in the DWQMP until they have been completed and (if required) the risk assessment updated.</li> </ul> <div data-bbox="746 1037 1380 1272">  <p>Note: once completed RMIP items (used to reduce unacceptable risks to acceptable risk levels) must be included in the risk assessment as a preventive measure and then the hazard re-evaluated.</p> </div>
<p><b>DWQMP review outcomes</b></p> <p>The report must include the outcome of any review of the DWQMP in the financial year and how the provider has addressed matters raised in the review<sup>88</sup>.</p>	<ul style="list-style-type: none"> <li>• If a review was not conducted or required during the relevant financial year, this should be stated in the report. For example, “No review was required or conducted during the relevant financial year 01/07/YYYY to 30/06/YYYY”</li> <li>• If a review was undertaken during the financial year, provide a summary of the outcome of the review and how any issues/changes raised in the review were or are being actioned.</li> </ul> <div data-bbox="746 1731 1380 1888">  <p>Note, for an example of how this information can be presented in the report, refer to <a href="#">Appendix D</a>.</p> </div>

<sup>88</sup> Section 142(3)(c) of the Act

Steps to meet the Act's requirements	How can this be addressed or demonstrated in the report?
<p><b>DWQMP audit findings</b></p> <p>The report must include a summary of the findings and recommendations of any audit report that was prepared in the financial year<sup>89</sup>.</p>	<ul style="list-style-type: none"> <li>• If an audit was not conducted or required during the relevant financial year, this should be stated in the report. For example, “No audit was required or conducted during the relevant financial year 01/07/YYYY to 30/06/YYYY”.</li> <li>• If an audit was undertaken during the relevant financial year, provide a summary of <ul style="list-style-type: none"> <li>– the audit findings including any noncompliances, recommendations, and opportunities for improvement from the audit report, and</li> <li>– the actions or proposed actions to address any noncompliances, recommendations, and opportunities for improvement identified in the audit.</li> </ul> </li> </ul> <div data-bbox="707 907 1382 1088">  Note, for an example of how this information can be presented in the report, refer to <a href="#">Appendix D</a>. </div>
<p><b>Compliance with water quality criteria</b></p> <p>The report must include the details of compliance with <a href="#">water quality criteria</a> for drinking water<sup>90</sup>.</p>	<ul style="list-style-type: none"> <li>• Include a summary of the following information to demonstrate implementation of the DWQMPs verification monitoring program, (and where relevant the operational monitoring program), to achieve compliance with ‘water quality criteria’<sup>91</sup> for drinking water: <ul style="list-style-type: none"> <li>– drinking water scheme name</li> <li>– water quality parameters tested</li> <li>– statistical analysis summary (e.g., minimum, maximum, average, percentiles)</li> <li>– number of samples per parameter required to be collected as stated in the approved plan</li> <li>– actual number of samples collected</li> <li>– ‘water quality criteria’ for drinking water (e.g., <a href="#">ADWG</a> health guideline values, the standards prescribed under the <i>Public Health Act 2005</i> etc.)</li> </ul> </li> </ul>

<sup>89</sup> Section 142(3)(d) of the Act

<sup>90</sup> Section 142(3)(f) of the Act

<sup>91</sup> [Water quality criteria](#) – as defined in Schedule 3 of the Act

## Steps to meet the Act's requirements

## How can this be addressed or demonstrated in the report?

- operational targets, alerts and critical limits (where relevant)
- number of non-compliant samples (e.g., verification monitoring results that did not meet the 'water quality criteria', number of times operational critical limits were exceeded etc.)
- commentary on any discrepancy between the number of samples required to be collected and tested and the actual number of samples collected and tested
- linkages and commentary on the non-compliant samples and the [incidents and/or events](#) reported to the regulator.




Note, a summary of the implementation of the operational monitoring program should be included (where relevant) to help demonstrate the effectiveness of the verification monitoring program.

- To demonstrate implementation of the verification monitoring program, include information on compliance with section 52(4) of the Public Health Regulation 2018 in relation to *E. coli* i.e., 98 per cent of samples taken in a rolling 12-month period should contain no *E. coli* ([98% annual value](#)).




Note: re-samples for *E. coli* do not count towards the '[98% annual value](#)' (i.e., do not include any re-samples as part of the routine samples collected each month).

Refer to [Appendix D](#) for example tables and *E. coli* calculations for the purposes of section 52(4) of the Public Health Regulation 2018.

Steps to meet the Act's requirements	How can this be addressed or demonstrated in the report?
<p><b>Notices of noncompliance with water quality criteria</b></p> <p>The report must include details of the <a href="#">notices of noncompliance with water quality criteria</a> (drinking water quality incidents and events) reported to the regulator in the relevant financial year.<sup>92</sup></p>	<ul style="list-style-type: none"> <li>• Provide details of the drinking water quality <a href="#">incidents and events</a> reported to the regulator during the relevant financial year including any open ongoing incidents. For example, details should include: <ul style="list-style-type: none"> <li>– date the incident/event occurred</li> <li>– drinking water scheme name/location</li> <li>– parameter or issue</li> <li>– immediate corrective actions taken, and</li> <li>– preventative actions taken or proposed to mitigate the risk of the incident/event reoccurring.</li> </ul> </li> </ul>
<p><b>Customer complaints</b></p> <p>The report must include details of any customer complaints to the provider about the water quality of the drinking water service.<sup>93</sup></p>	<ul style="list-style-type: none"> <li>• Provide a summary of the water quality complaints received from customers of the drinking water service, which includes the following details: <ul style="list-style-type: none"> <li>– drinking water scheme name</li> <li>– nature of the complaints by category (e.g., dirty water, suspected illness, taste/odour)</li> <li>– commentary on any complaints that relate to <a href="#">reportable incidents and events</a></li> <li>– response to complaints (optional).</li> </ul> </li> </ul> <div data-bbox="715 1312 1374 1742"> <p> Note, the number of customer complaints received during the reporting period should be the same as that reported in your organisations annual performance reporting data, <a href="#">key performance indicators</a> (KPI).</p> <p><a href="#">Bulk water providers</a> who do not provide water directly to customers do not have to include this section in their DWQMP report.</p> </div>

<sup>92</sup> Sections 102, and 142(3)(e) of the Act.

<sup>93</sup> Section 142(3)(g) of the Act.

Steps to meet the Act's requirements	How can this be addressed or demonstrated in the report?
<p><b>Submitting a Drinking water service annual report</b></p> <p>The Drinking water service annual report must be submitted to the regulator within 120 business days after the financial year ends.<sup>94</sup></p>	<ul style="list-style-type: none"> <li>• A copy of the Drinking water service annual report (in either Word format or pdf) is to be submitted to the regulator within 120 business days after the end of the relevant financial year.</li> <li>• Submission through email is preferred at <a href="mailto:drinkingwater.reporting@rdmw.qld.gov.au">drinkingwater.reporting@rdmw.qld.gov.au</a>.</li> </ul>
<p><b>Publishing a Drinking water service annual report</b></p> <p>Providers must keep a copy of the Drinking water service annual report available for inspection or for purchase by the public and must also publish the report on the provider's website.<sup>95</sup></p>	<ul style="list-style-type: none"> <li>• A copy of the Drinking water service annual report is to be: <ul style="list-style-type: none"> <li>– made available for inspection or purchase (at a reasonable cost), at the providers office and/or another place the provider considers appropriate (during office hours on business days), and</li> <li>– published on the provider's website.<sup>96</sup></li> </ul> </li> <li>• Providers should aim to publish the Drinking water service annual report within 60 business days after submission to the regulator.</li> </ul> <div data-bbox="705 1061 1388 1447"> <p> Note, before you publish or make the reports accessible by the public or other entities you should ensure any sensitive cyber security information is redacted or removed.</p> <p>For example, cyber security information could be included as an appendix in the report, so it is easily removed when required.</p> </div>

<sup>94</sup> Section 142(2)(b) of the Act

<sup>95</sup> Sections 575(1)(f) and 575A of the Act.

<sup>96</sup> Subject to section 575A of the Act which relates to cybersecurity information.

# 10. References

AS ISO 31000:2018 Risk management - Guidelines, [www.iso.org/standard/65694.html](http://www.iso.org/standard/65694.html)

Australian Government, Australian Signals Directorate, Australian Cyber Security Centre, Supervisory Control and Data Acquisition SCADA, [www.cyber.gov.au/acsc/view-all-content/glossary/supervisory-control-and-data-acquisition-scada](http://www.cyber.gov.au/acsc/view-all-content/glossary/supervisory-control-and-data-acquisition-scada)

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Exemplar Global, [www.exemplarglobal.org](http://www.exemplarglobal.org)

Hazard Analysis Critical Control Points Australia (HACCP), [www.haccp.com.au](http://www.haccp.com.au)

ISO 19011:2018 Guidelines for auditing management systems, [www.iso.org/standard/70017.html](http://www.iso.org/standard/70017.html)

ISO 22000:2018 Food safety management systems – Requirements for any organisation in the food chain, [www.iso.org/standard/65464.html](http://www.iso.org/standard/65464.html)

National Association of Testing Authorities NATA, [www.nata.com.au](http://www.nata.com.au)

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# Appendices

<a href="#"><u>Appendix A</u></a>	Preparation of a DWQMP: examples and supporting information
<a href="#"><u>Appendix B</u></a>	DWQMP reviews: supporting information
<a href="#"><u>Appendix C</u></a>	DWQMP audits: supporting information
<a href="#"><u>Appendix D</u></a>	Drinking water service annual report: supporting information
<a href="#"><u>Appendix E</u></a>	Terms and definitions

# Appendix A Preparation of a DWQMP: examples and supporting information

## A-1 How to begin

Drinking water service providers are encouraged to review, prepare and amend their DWQMP internally. Where staff capacity exists, this is best done by assembling a relevant team that can methodically workshop the DWQMP's requirements and issues. Team members should include staff from all facets of the provider's water service operations, including managers, water treatment plant operators, monitoring staff, tradespersons, maintenance crew, laboratory officers, IT staff and contractors.

Engaging with external stakeholders and consumer groups to address specific health focus areas, such as the relevant Queensland Health public health unit, hospital and other institutional water operatives, on-supplying your water to its vulnerable customers, is highly recommended. Financial and engineering staff may also assist with asset management, infrastructure condition assessments, forward planning and budgeting. Engaging with other relevant agencies value adds to your datasets (e.g., agencies which hold hydrological and raw water quality data and if applicable, upstream water and sewerage service providers). It is important that providers record information about the teams involved in the development or review/amendment of their DWQMPs as well as details about key meeting dates and outcomes.

Where the required expertise is not available within your organisation, providers could seek assistance from other drinking water service providers and/or external experts/consultants. If the provider is in a Queensland Water Regional Alliance group, it is prudent for member providers to work together when reviewing and amending their DWQMPs. This helps support future operational resource sharing and cost efficiencies and achieve (as much as possible) infrastructure and operational consistency over time.

As an external expert may not have the depth of understanding of your drinking water service that your relevant staff have, it is important that key staff actively communicate with experts when they are engaged. If providers do engage an external expert/consultant to prepare and/or amend the DWQMP, ensure that your key staff have an active role in its review and preparation, as there is a risk of creating a plan that is not consistent with your current drinking water service operation and its performance or which does not account for local operational knowledge, financial challenges and logistical constraints.

To enable a new DWQMP to be prepared with ease and efficiency, the following information should be collated prior to commencing the preparation of the new plan:

- details of each drinking water scheme, including source waters, infrastructure schematics and 'as constructed' drawings, water treatment processes, reticulation network specifications, type and number of connections, etc.
- Records and statistical analyses of all available water quality data, from catchment to consumer. This data may have been collected as a result of monitoring required by the regulator, pursuant to a notice issued under [section 630](#) of the Act, at the time the provider was registered as a service provider and/or from independent water quality monitoring or catchment assessments, before or after registration as a service provider.
- details of all incidents and events that occurred in the operation of the drinking water service since registration as a service provider, including water treatment failures, supply chain interruptions and exceedances of the [water quality criteria](#) for drinking water<sup>97</sup>.

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<sup>97</sup> [Water quality criteria](#) – as defined in Schedule 3 of the Act

If you are amending an approved DWQMP, you should have a copy of or access to all existing, relevant documentation and information, such as:

- details of each drinking water scheme, including source water(s), infrastructure schematics and 'as constructed' drawings, water treatment processes, reticulation network specifications, type and number of connections, etc.
- historical water quality data from source water to consumer, operational and verification monitoring schedules and outcome records, operational risk assessments, operation and maintenance manuals, RMIP records, [KPI](#) and system performance records, corporate procedures and forms and if available, catchment assessments, sanitary survey reports, cyber security exercises and assessments and any other documented information about your drinking water service operation provided by the regulator, Queensland Health or industry experts/consultants.
- details of all incidents and events that occurred, including water treatment failures and exceedances of the [water quality criteria](#) for drinking water<sup>1</sup>, the immediate remedial corrective actions taken and the preventive measures taken or proposed to prevent or minimise the likelihood of the incident or event recurring
- details of your most recent DWQMP audit findings, including identified noncompliances, recommendations and opportunities for improvement
- Infrastructure and other asset inspection and condition reports
- Staff training and professional development records, including records of certificates held by operators
- the record of customer complaints about your drinking water service
- records of key contacts and stakeholders, such as goods and services providers, vulnerable customers and community groups, regulators and other reporting agencies, including disaster management groups.

Ideally, a provider's record system should be adequate to capture all the historical water quality and operational monitoring data, as well as the relevant organisational information required for developing and amending the DWQMP. Once this information has been collated, workshops should be conducted with key personnel to discuss the DWQMP requirements, as defined in [Section 3](#) of this guideline.

Best results may be achieved by holding progressive, issue specific workshops with key personnel responsible for managing, operating and supporting each component of the DWQMP, e.g., catchment management and source water quality; infrastructure description, operation, condition, maintenance and planning; storage and reticulation, including water quality monitoring and asset maintenance; hazard identification and risk assessment; incident and event management; record keeping and IT systems; and planning, procurement and grant funding.

Unless the provider operates a very small drinking water service, reviewing, preparing and amending the DWQMP will take some time to complete, which is why it is important to plan well ahead for this exercise. The process is best managed as a project, with designated timelines and milestones, rather than as something done haphazardly, as time permits.

Generally, providers who have an approved DWQMP should commence reviewing their plan not less than three months before the next due by review date stated in their existing DWQMP's approval notice, to ensure the plan can be properly amended and endorsed by the provider's management, before being given to the regulator with an application for its approval. Providers who are preparing their first DWQMP, should ensure the development of their plan is commenced at least six months before the

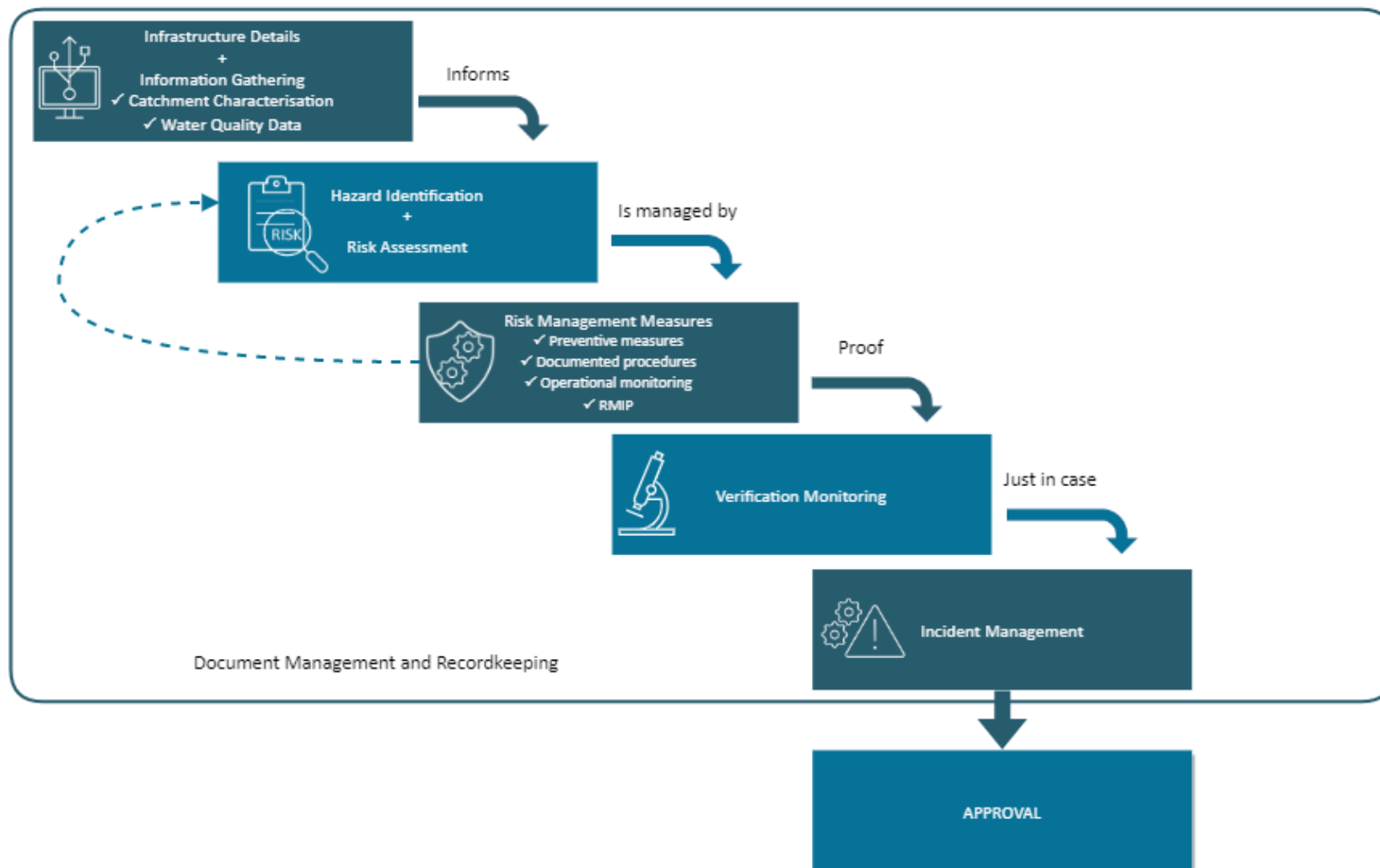
expiry of the 12 month's grace period afforded by the Act, for the development and subsequent regulator approval of this plan.

Getting the DWQMP right should save a provider time in the future, through easier implementation and clearer service operator understanding of the plan's requirements and objectives, which should lead to less incident and events occurring and when such do occur, more rapid remediation of the cause, as well as reduced noncompliance arising from DWQMP audits and less time spent by both the provider and the regulator, during the related approval process.

## A-2 Contents of the DWQMP

The following section provides examples and further supporting information on the content of a DWQMP. The different components that make up a DWQMP are illustrated in Figure A-2.1 below.

Figure A-2.1: Overview of DWQMP contents and how they are linked



## A-3 Registered service details

When addressing the requirement in section 95(3)(b) of the Act, information on the registered drinking water service and key stakeholders, can be provided as a statement and/or may be presented in tables. For example, the following fictitious information in tables A-3.1 and A-3.2 are possible ways a small provider's drinking water scheme details could be recorded in the DWQMP.

**Table A-3.1: Provider contact details**

Entity and SPID	Type of contact	Contact name, position and experience or qualifications water operations	Contact details (phone, email)
<i>In this scenario the following fictitious information relates to a small sized provider (&lt;1000 people) and is provided here as an example only.</i>			
Smallville Regional Council SPID - XXX	Registered drinking water service provider	John Smith, CEO	1800 111 222 (Council phone number) enquires@smallvillerc.qld.gov.au (Council email)
		Jan Ford, Manager Water and Sewerage Operations  Certificate IV Water Operations and 8 years' experience in the water industry	7777 6666 manager@smallvillerc.qld.gov.au
Little Valley Co-operative Ltd.	Operating agent and infrastructure owner	Tom West, Managing Director Operations  Diploma in Water Operations and 15 years' experience in the water industry	3333 5555 md@littlevalleycoop.org.au

**Table A-3.2: List of providers drinking water supplies**

Scheme name, zone or district area	Operator name	Communities serviced	Current population serviced
<i>In this scenario the following fictitious information relates to a small sized provider (&lt;1000 people) and is provided here as an example only.</i>			
<i>Provider name: Smallville Regional Council</i>			
Smallville Water Supply	Smallville Regional Council	Smallville	500
Little Valley Water Supply	Little Valley Co-operative Ltd.	Little Valley Township Torvale	150 200

An example of information to be provided on key stakeholders involved in drinking water quality management is provided in Table A-3.3.

**Table A-3.3: Key stakeholders involved in drinking water quality management**

Scheme name, zone or district area	Stakeholder name	Relevance	Emergency contact details
<i>The following fictitious information relates to a small sized provider (&lt;1000 people) and is provided here as an example only.</i>			
<i>Provider name: Smallville Regional Council</i>			
Smallville Water Supply	Big Fish Dam Group	Upstream bulk raw water provider	1234 5678
	Smallville Cotton Pty. Ltd.	Large commercial customer	2345 6789
	Smallville Hospital Smallville Aged Care Smallville State School	Vulnerable customers	A list of the contact details for these stakeholders is kept on the Smallville Regional Councils stakeholder register on the XX document management system.
	Water Chemicals Pty. Ltd. Metro Plumbing Services Smallville Electrical etc.	Key businesses providing services and/or supplier of materials/equipment	
	Smallville	Residential and commercial customers (communities serviced)	Council's rates database and billing section records.
Little Valley Water Supply	Little Valley Co-operative Ltd.	Operating agent and owner of Little Valley WTP	3333 5555 md@littlevalleycoop.org.au
	Small Mining Company	Large commercial customer	9876 5432
	Little Valley Community Health Centre Country Road State School etc	Vulnerable customers	A list of the contact details for these stakeholders is kept on the Smallville Regional Councils stakeholder register on the XX document management system.
	Country Electrical Valley Pipes and Services	Key businesses providing services and/or supplier of materials/equipment	
	Little Valley Township Torvale	Residential and commercial customers (communities serviced)	Council's rates database and billing section records.
All schemes	Water Supply Regulation	Water Supply Regulator	3333 4444
	Mylocal Public Health Unit	Queensland Health Department	3444 5555

## A-4 Infrastructure details for providing the service

### Infrastructure description

When addressing the requirement in section 95(3)(c) of the Act, information on all components from source water to consumer as well as the key infrastructure used for supplying the drinking water services must be provided as a comprehensive and current description. For details about what to include in this description, refer to the information under guideline [section 3.1.2 – infrastructure details for providing the service](#).

### Schematics

The DWQMP must include a current and representative schematic for each drinking water scheme which includes and identifies all the infrastructure components of the scheme from the source water to the customer. For the definition of 'drinking water scheme' refer to [Appendix E](#).

Schematics (and written descriptions) must also identify source water supplied to customers in the drinking water service area that are not treated and/or disinfected.

Examples of schematics for the overall layout of a drinking water scheme are provided in Figures A-4.2 and A-4.3. Water treatment process schematics may also be presented in the DWQMP, similar to the example provided in Figure A-4.4.



Note, all figures provided in this supporting information are examples only and may assist providers in developing their own drinking water schematics to address this criterion. It is the responsibility of the service provider to ensure the legislative requirements are met.

Figure A-4.2: Overall drinking water service (catchment to consumer) for a medium/large provider

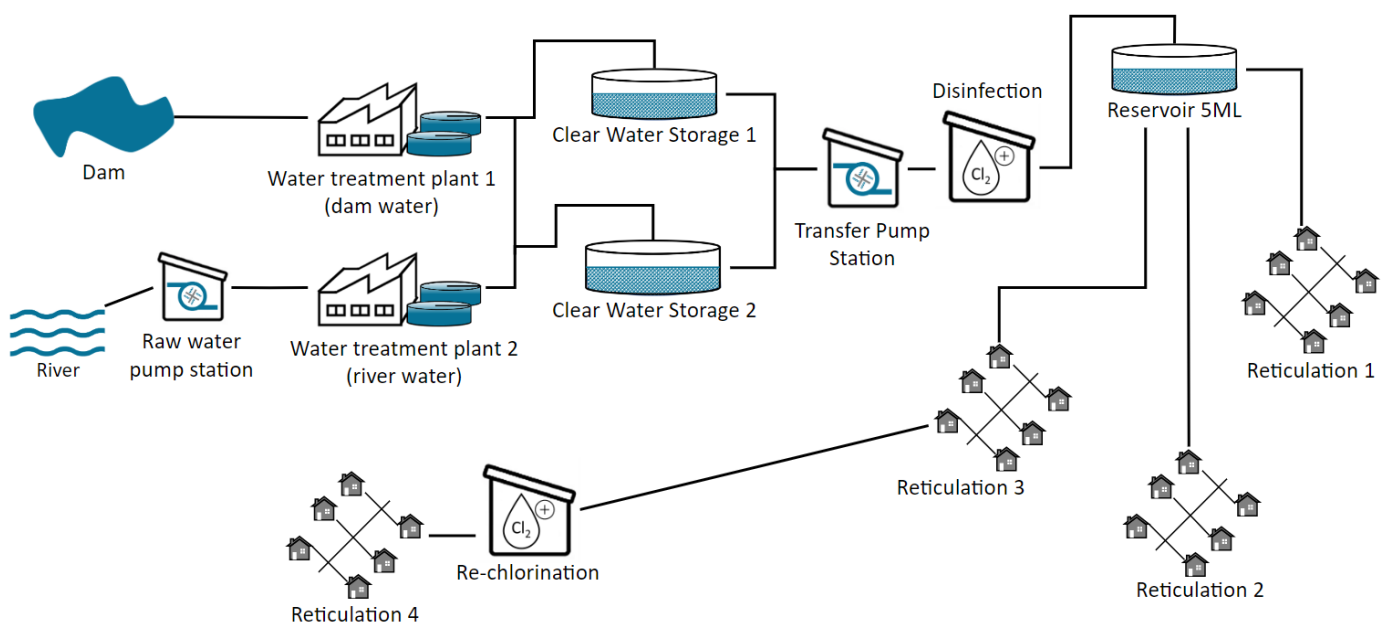




Figure A-4.3: Overall drinking water service (catchment to consumer) for a small provider

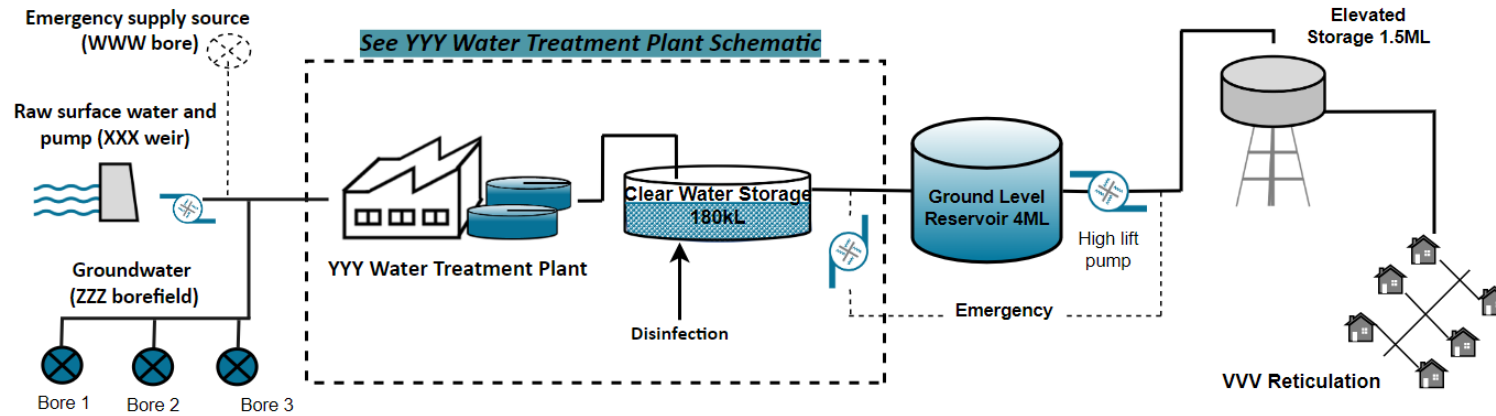
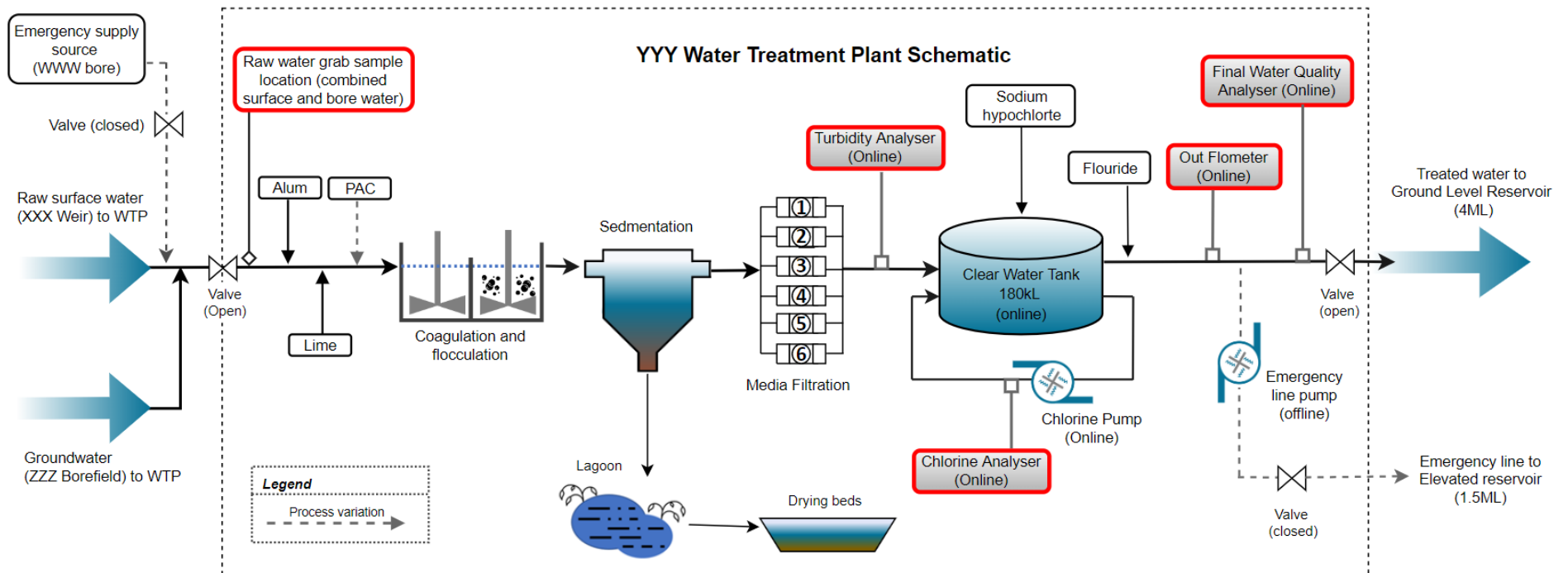


Figure A-4.4: Water treatment plant schematic for a small facility



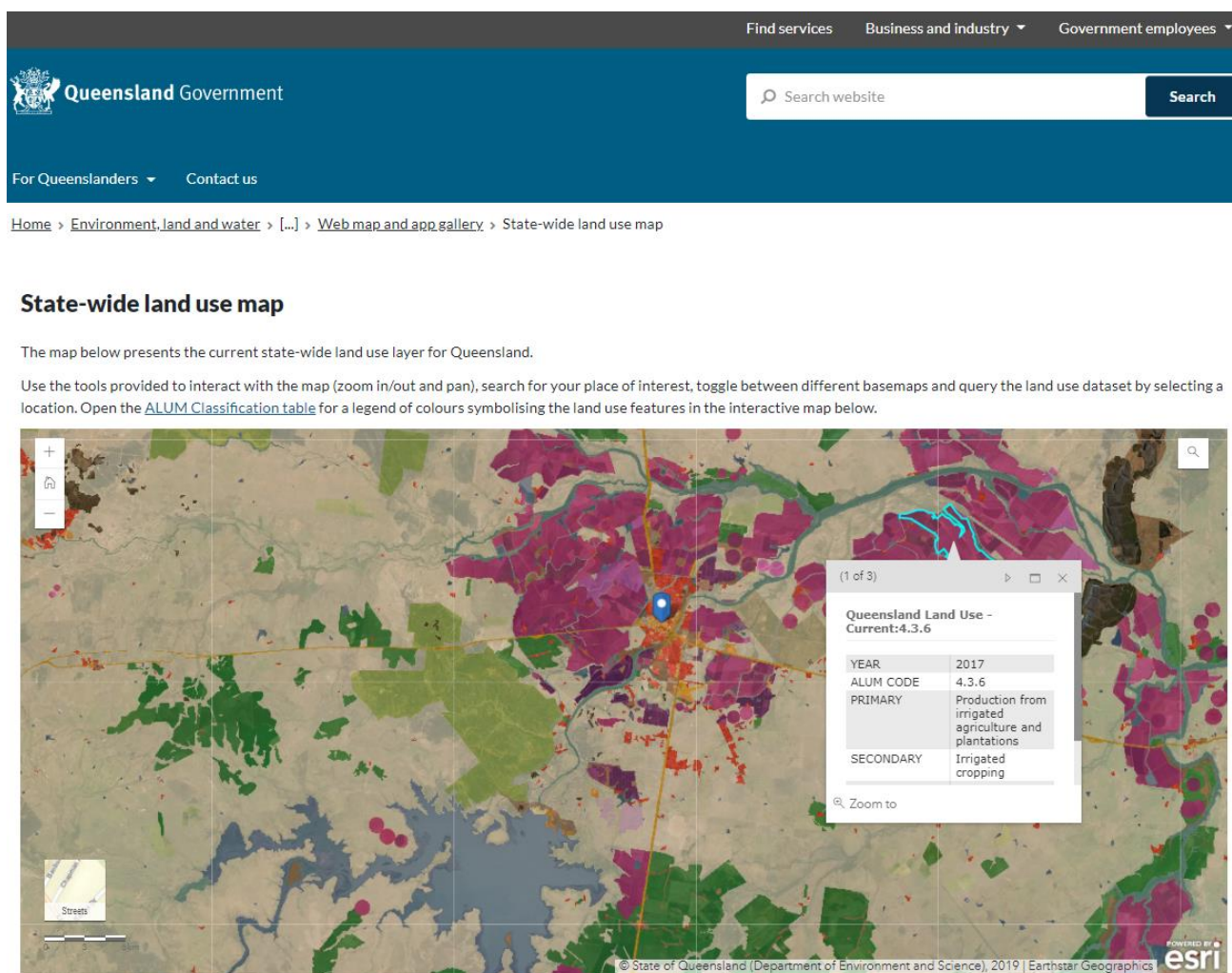
## A-5 Information gathering for hazard identification – catchment characterisation and water quality data

### Catchment characteristics

When addressing the requirement in section 95(3)(d) of the Act consideration should be given to how the catchment characteristics relate to the source water quality in terms of topography, geology/soil, vegetation, wildlife, land use, as well as climatic and seasonal variations. Information should be presented as a summary description and include maps, tables and/or other illustrations.

Queensland state-wide land use maps can be accessed online at: [www.qld.gov.au](http://www.qld.gov.au) or through other land use mapping websites and/or interactive tools.

Figure A-5.1: Example map showing the current state-wide land use layers



## Catchment contamination and protection

When addressing the requirement in section 95(3)(d) of the Act, source water catchments should be further characterised by identifying the sources of microbial and non-microbial contamination, as well as the intensity and proximity of the contamination to the raw water intake.

When including the information on catchment contamination and protection, this may be presented in the DWQMP, similar to the example provided in Table A-5.1.

**Table A-5.1 Summary of catchment contamination sources and existing protection**

Potential sources of contamination	Intensity of contamination (e.g., high, medium, low)	Proximity to WTP intake	Existing barriers / protection
<i>The following information is provided as examples only.</i>			
<i>Sewage treatment plant (STP) outfall</i>	<i>High</i>	<i>2kms upstream from WTP intake - direct discharge to riverine source water</i>	<i>River edge vegetation along entire length from STP outfall to WTP intake STP has secondary treatment</i>
<i>Stock animals (cattle)</i>	<i>High</i>	<i>0 meters – stock has access to source water</i>	<i>None. Riverbank is eroded</i>
<i>Winery</i>	<i>Low</i>	<i>10km upstream from WTP intake – runoff into dam that periodically releases into river</i>	<i>100 ML dam, controlled releases</i>
<i>Insert details of other contamination sources</i>			

Note: The protection of source waters from preventable or manageable hazards is essential, as the level of treatment, expertise and ultimately costs required to produce safe drinking water largely depends upon the quality of the source water used.

For further information on source water assessments and vulnerability assessment categories for drinking water sources, refer to the *Manual for the Application of Health-Based Targets for Drinking Water Safety* at: [www.wsaa.asn.au](http://www.wsaa.asn.au) and the ADWG at: [www.nhmrc.gov.au](http://www.nhmrc.gov.au).

## Source water quality hazards

Providers with existing treatment plants may have already obtained knowledge of hazards in their water sources. By adopting a preventive risk management approach, providers must continue to improve their understanding of the water supply systems they operate. This includes understanding changes to their catchments over time, reviewing the collected information and capturing new and/or changed risks, identifying and actioning improvements to operations and practices to assure the water quality.

If there is insufficient information or gaps in the source water quality data available, further targeted monitoring and analysis of the source water will be required. For example, initial data reviews or assessments could be desktop based, with further detailed analysis undertaken as more data is collected over time.

Data must also be periodically reviewed to consider new hazards and information and to identify the long and short-term variations and their impacts on water quality. For example, information on specific events, such as PFAS contamination or natural events, such as heavy rainfall and bushfires may be required.

Sources of useful information and reference material include:

- Australian Drinking Water Guidelines at: [www.nhmrc.gov.au](http://www.nhmrc.gov.au)
- *Manual for the Application of Health-Based Targets for Drinking Water Safety* at: [www.wsaa.asn.au](http://www.wsaa.asn.au)
- Water Works, Technical Publication of the Water Industry Operators Association of Australia at: [www.wioa.org.au](http://www.wioa.org.au)
- Fact Sheet, Disability-adjusted life years (DALYs): What are they and how are they used? at: [www.gldwater.com.au](http://www.gldwater.com.au)
- Treatment requirements for Australian source water to meet health-based targets at: [www.waterra.com.au](http://www.waterra.com.au)
- WaterVal, Streamlining Technology Validation at: [www.waterra.com.au](http://www.waterra.com.au)

## Water quality data

When addressing the requirement in section 95(3)(d) of the Act, water quality data may be presented in tables similarly to the examples provided in Tables A-5.2, A-5.3 and A-5.4 or as graphical representations of the data.

Analysis of at least the preceding five years of water quality data is usually required to provide an adequate dataset for a justifiable risk assessment of the drinking water service. This data should be drawn from source (raw) water, operational and verification monitoring water quality results.

## Source water monitoring data

A sound knowledge of raw water quality is needed to determine the water treatment barriers and processes required to manage all potential hazards posed to safe drinking water. The data also helps inform providers of seasonal changes and fluctuations associated with extreme weather events and natural disasters/emergencies.

## Operational monitoring data

Operational water quality data is necessary to continuously evaluate and validate the performance of the water treatment process steps. Appropriate sample and test site selection is key to achieving a meaningful operational dataset and at a minimum, requires pre- and post-critical and operational control barrier monitoring. Proper collation and recurrent analysis of this data enables targeted, timely maintenance of plant and equipment and evidenced based planning.

## Verification monitoring data

An adequate dataset of sample and test results in the distribution system is necessary to verify that safe drinking water is continually supplied to customers. Appropriate, system representative monitoring sites, at treated water storages and throughout the reticulation, are required to ensure the provider can be confident all customers are continually receiving safe drinking water and enable prompt response to system failure, breaks and monitored parameter excursions from the provider's target water quality values.

## Customer complaints

An example table for presenting water quality complaints information in a DWQMP (for small sized providers) is provided in Table A-5.5.

Online sensory equipment/telemetry can greatly assist real time evaluation, swift response and correction of system excursions, equipment/infrastructure failure and evidence driven to address customer complaints.

**Table A-5.2**      **Example table – summary of source water quality data**

Enter source name and type Example: Big Fish Dam (surface water)							
Parameter	Sampling location(s)	Time period	No. of samples	Summary of results			Comments
				Maximum value	Average value	Minimum value	
The following information is provided as examples only.							
E. coli							
Turbidity (NTU)							
pH							
Iron							
Manganese							
Aluminium							
Algae (by type)							
Fluoride							
Heavy metals (list all types)							
- Insert type 1							
- Insert type 2							
- Insert type 3							
Arsenic							
Cyanide							
Selenium							
Nitrates							
Radionuclides							

Pesticides (list all types)							
Insert type 1							
Insert type 2							
Insert type 3							
Insert other parameters monitored....							

**Note: separate tables should be used for each source**

**Table A-5.3**      **Example table – summary of treated water data (e.g., water treatment plant)**

Enter treatment facility name and location Example: Smallville Water Treatment Plant, 1 Country Lane, Smallville										
Parameter	Sampling location(s)	Time period	No. of samples	Summary of results				ADWG guideline value	No. that exceed ADWG value	Comment
				Average value	Minimum value	Maximum value	95th percentile			
The following information is provided as examples only.										
E. coli										
Turbidity										
pH										
Water temperature										
Iron										
Manganese										
Aluminium										
Disinfection residual										
Disinfection by-products (DBP)										
- DBP type 1										
- DBP type 2 etc										
Algal toxins										
Fluoride										
Heavy metals (list all types)										
- Insert type 1										
- Insert type 2 etc										
Arsenic										
Cyanide										



Selenium										
Nitrates										
Radionuclides										
Pesticides (list all types)										
- Insert type 1										
- Insert type 2 etc										
Insert other parameter monitored....										

*Note: 95<sup>th</sup> percentile is a statistical calculation that indicates the value at which 95% of all measurements fall below. A provider's summary of water quality results could alternatively be presented as percentiles. The ADWG suggests calculating the 95<sup>th</sup> percentile is the most useful method of determining compliance with a chemical health guideline value. For further information refer to the ADWG, section 10.3.*

**Table A-5.4**      **Example table – summary of reticulated water quality data**

Example: Scheme A – 2 Sunshine Street, Smallville										
Parameter	Sampling location(s)	Time period	No of samples	Summary of Results				ADWG guideline value	No. that exceed ADWG value	Comment
				Average value	Minimum value	Maximum value	95 <sup>th</sup> percentile			
The following information is provided as examples only.										
E. coli										
Turbidity										
pH										
Iron										
Manganese										
Aluminium										
Disinfection residual										
Disinfection by-products (DBP)										
- DBP type 1										
- DBP type 2 etc										
Algal toxins										
Fluoride										
Heavy metals (list all types)										
- Insert type 1										
- Insert type 2 etc										
Arsenic										
Cyanide										
Selenium										

Nitrates										
Radionuclides										
Pesticides (list all types)										
- Insert type 1										
- Insert type 2 etc										
Insert other parameters monitored....										

*Note: 95<sup>th</sup> percentile is a statistical calculation that indicates the value at which 95% of all measurements fall below. A provider's summary of water quality results could alternatively be presented as percentiles. The ADWG suggests calculating the 95<sup>th</sup> percentile is the most useful method of determining compliance with a chemical health guideline value. For further information refer to the ADWG, section 10.3.*

**Table A-5.5**      **Example table – Water quality complaints**

Year	No. of water quality complaints	Frequency of occurrence	Vulnerable customers	Nature of complaint / reason (by category)	Likely sources and causes of issue / complaint	Outcomes / actions taken
<i>The following information is provided as examples only.</i>						
20XX	X	<i>X water quality complaints per 1000 connections</i>	<i>e.g., immuno-compromised people, children, elderly, pregnant women or no vulnerable customers identified etc.</i>	<i>e.g., dirty water, suspected illness, taste/odour etc.</i>	<i>e.g., mains break, WTP malfunction, rain event etc</i>	<i>e.g., details of the outcomes and recommendations of complaint investigations</i>

Figure A-5.2. Example graph – Source water quality data, turbidity (5 years)

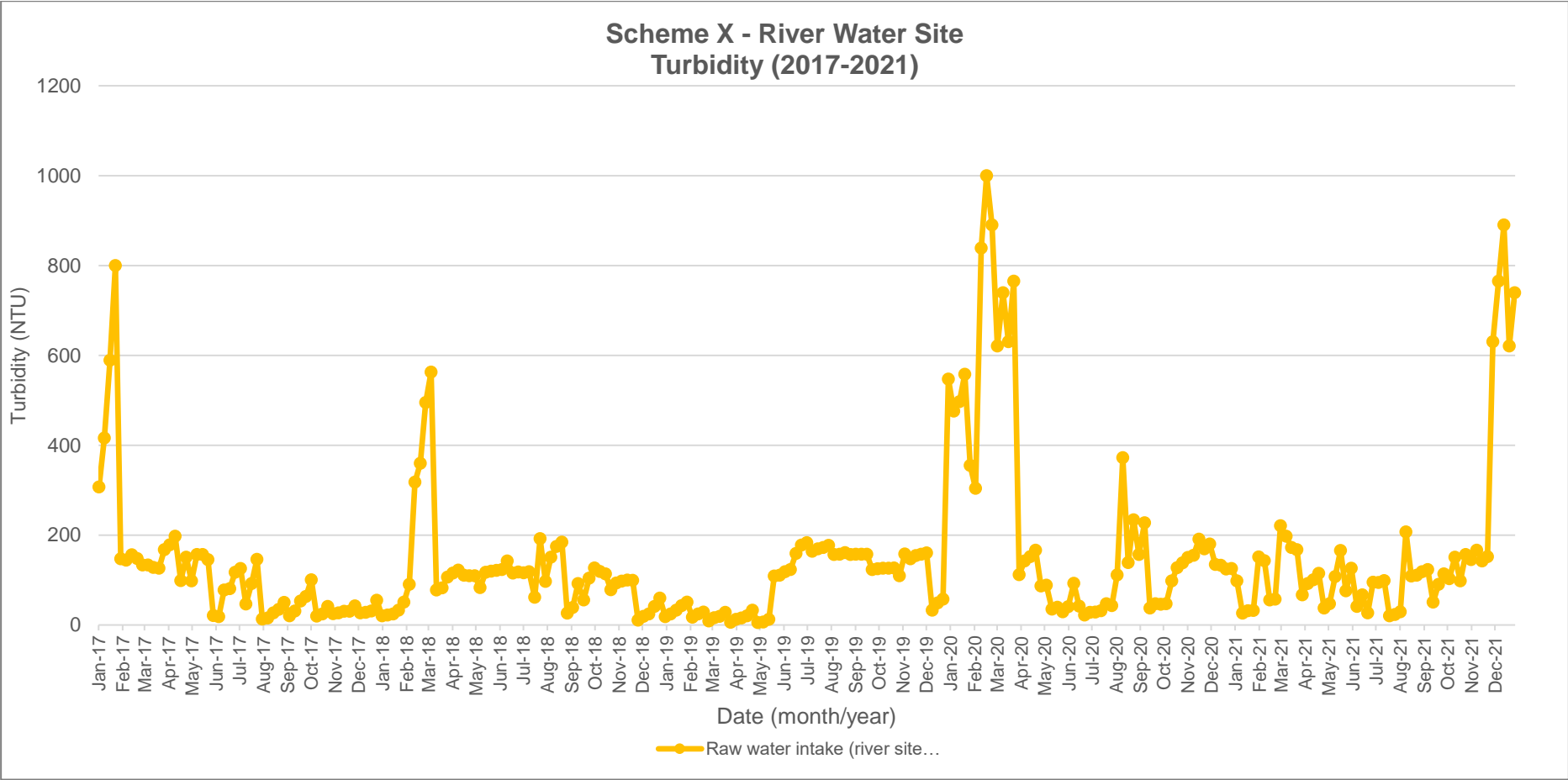


Figure A-5.3. Example graph – Source water quality data, pH (5 years)

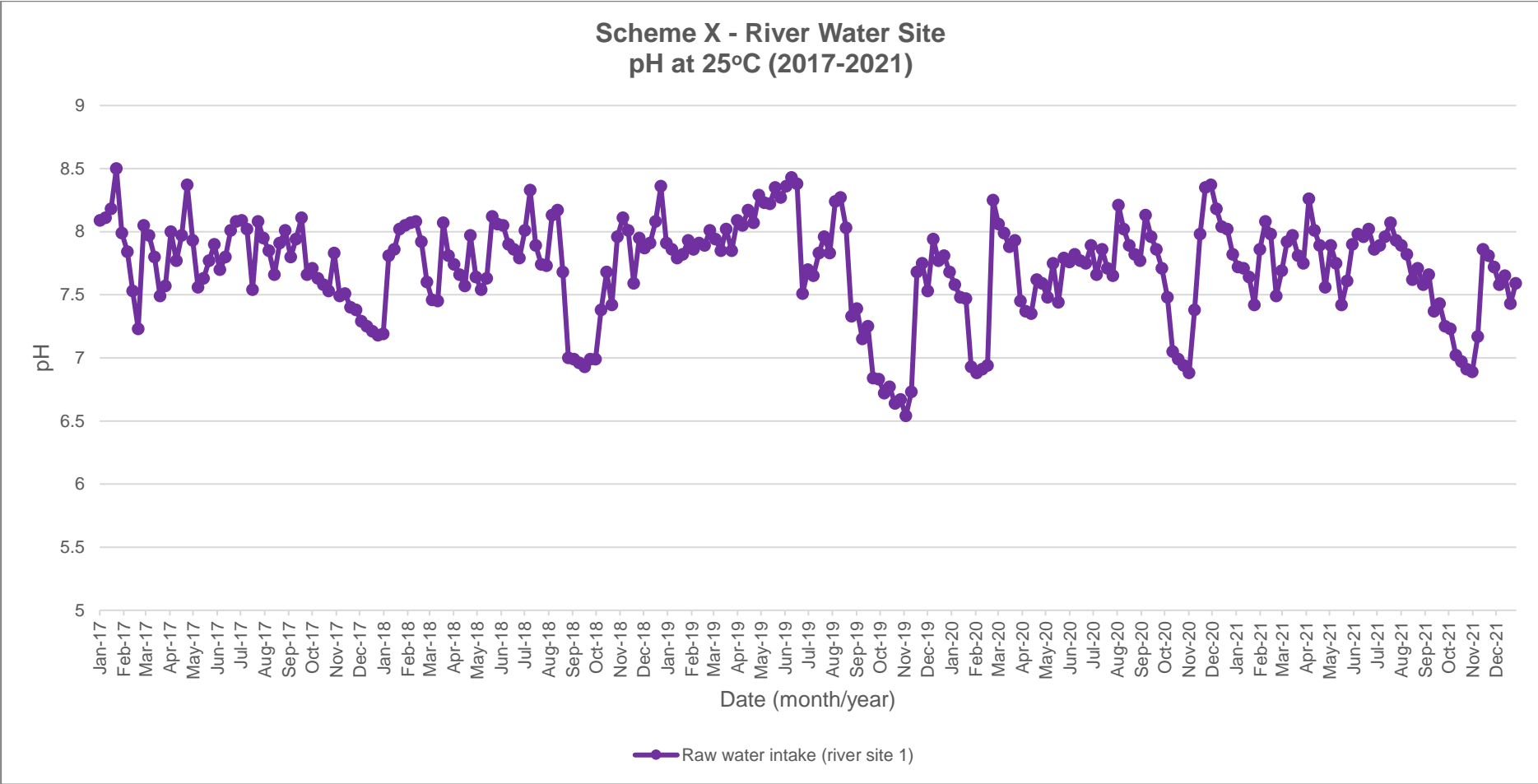


Figure A-5.4. Example graph – Source water quality data, fluoride (5 years)

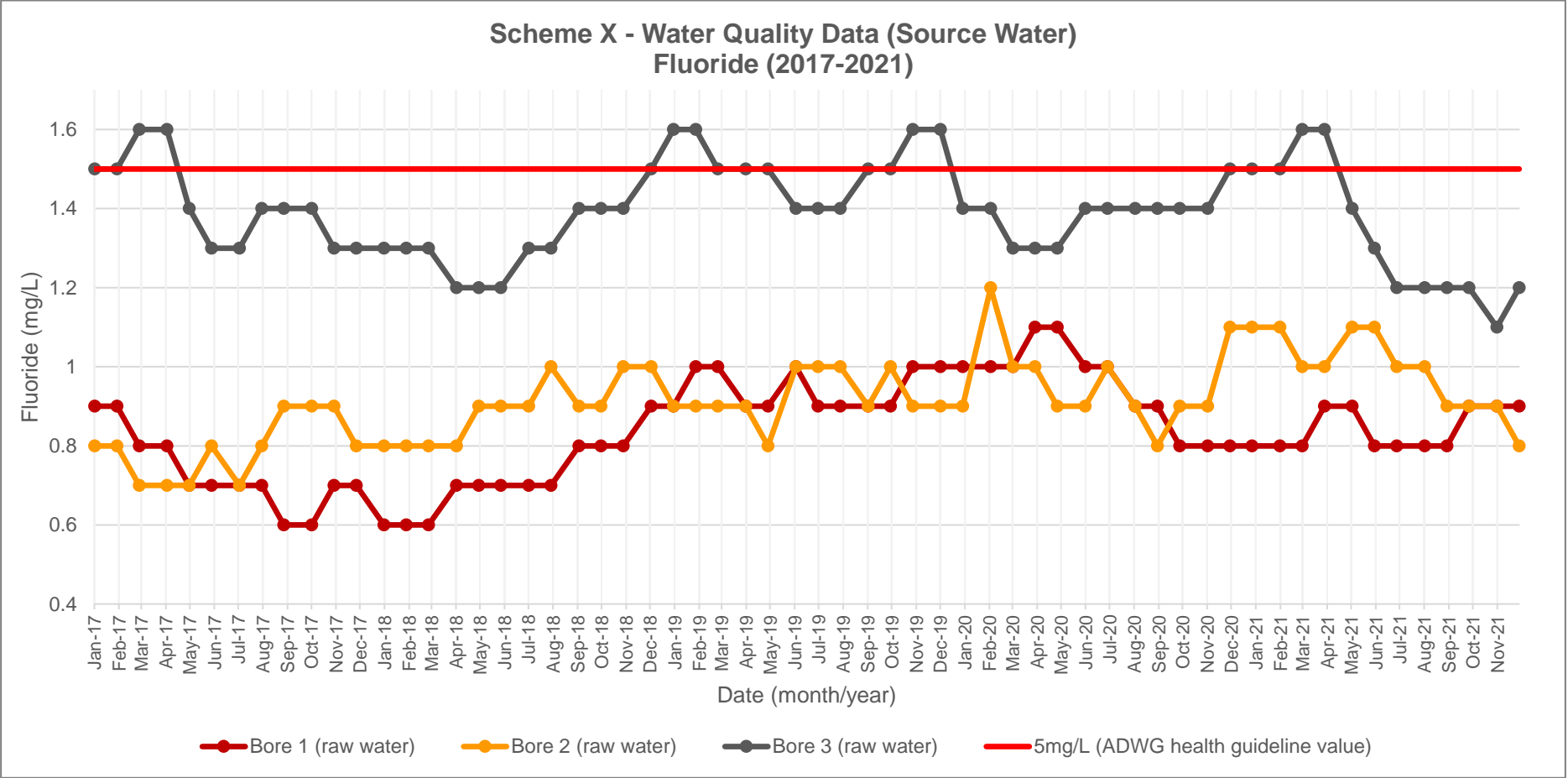
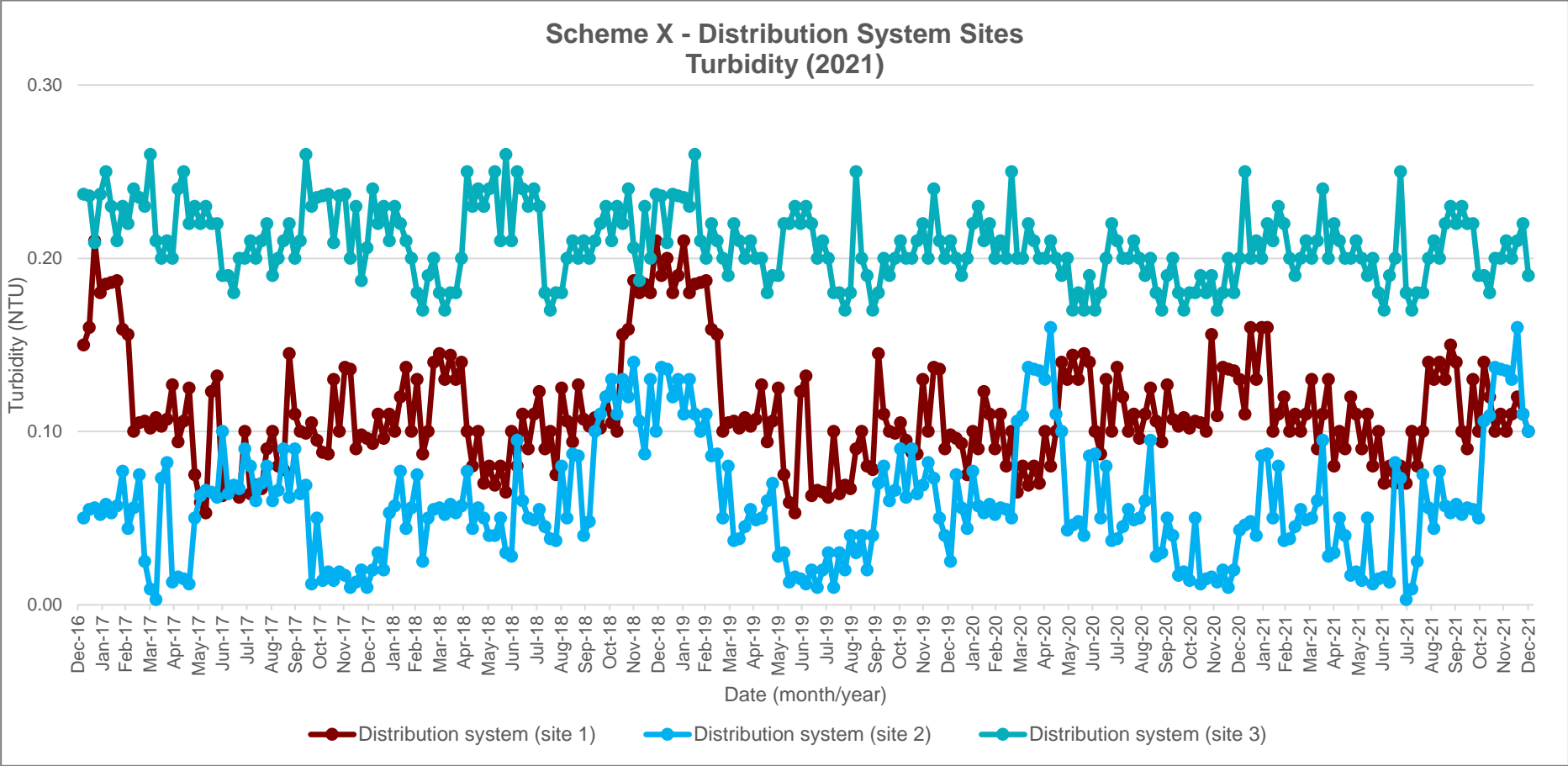


Figure A-5.5. Example graph – Reticulated water quality data, turbidity (5 years)





## A-6 Hazard identification and risk assessment

### Hazard identification

Hazard identification is addressed in several external, nationally recognised resources. For example, the [ADWG](#) provides examples of potential hazards and sources of hazards as well as examples of hazardous events and their potential sources (refer to the ADWG, appendices AI.2 to AI.4).

### Cyber security hazards and hazardous events

Cyber-security related threats and breaches and information technology risks related to drinking water are required to be integrated into the existing risk management framework of drinking water services. As such these hazards are to be included in a provider's DWQMP as whole of service hazardous events.

Examples of the types of cyber security (and physical security) hazards and hazardous events that should be considered in the DWQMP include:

- Intentional and/or unintentional interference and disruption of information and systems
- Unauthorised access to information (e.g., physical security breach)
- Abuse or corruption of data
- Theft of information
- Critical assets not identified due to lack of asset management and/or governance
- Protective technology not being kept up to date
- Inability to detect if a cyber security event has occurred
- Poor access control and identity management

Identified cyber/physical security threats and breaches must be included in the DWQMP risk assessment and treated like all other whole of service hazardous events by determining the maximum risk, identifying the preventive measures in place to manage the threats/breaches and then determining the residual risk.

### Public release of cyber security information

Schedule 3 of the Act defines 'cyber security information' as information that could be used to interfere with, damage, disrupt or destroy:

- d. an electronic system owned or controlled by the State or a provider, including, for example, a system used for the delivery of a sewerage service or a water service; or
- e. data owned or controlled by the State or a provider.

The Act requires a provider to keep its DWQMP available for inspection (along with the other documents stated in section 575 of the Act) and to publish certain documents on its website (including its drinking water service annual reports and audit reports).

The release of highly sensitive cyber security information relating to a drinking water service and therefore, the safety of the community's water supply, can create public safety and security risks. Hence, the Act permits a provider to redact or remove cyber security information from its publicly available documents.



Note, before you publish or make these documents available for inspection and/or purchase you should ensure any sensitive cyber security information is redacted or removed. For example, providers could put cyber security information in the appendices of their DWQMP and other related reports (so it is easy to remove when required).

## Methodology

There are a range of existing risk identification and management methodologies that could be used to form the basis of the DWQMP risk assessment, such as ADWG, HACCP, AS ISO 22000-2018 or AS ISO 31000:2018. Any risk management methodology framework can be used for the DWQMP, as long as it meets the requirements of section 95(3)(d) of the Act. However, the DWQMP must identify the chosen methodology and it should be consistently applied for each drinking water scheme.

Examples of the likelihood, consequence or impacts of risks, a risk analysis matrix, acceptable risk levels and uncertainty of hazards are provided in Tables A-6.1 to A-6.5. These tables refer to information sourced from the ADWG.



Note, the following tables are examples only. It is the responsibility of the service provider to ensure the legislative requirements are met.

## Other examples of descriptors for likelihood and consequence

Table A-6.1 Examples of qualitative measures of likelihood

Likelihood	Description
Very likely	Occurs more often than once per week (52/yr)
Likely	Occurs more often than once per month (12/yr) and up to once per week (52/yr)
Unlikely	Occurs more often than once every five years and up to once per year
Rare	Occurs less than or equal to once every five years

Table A-6.2 **Examples of qualitative measures of consequence or impact**

Consequence	Description
Catastrophic	Potential acute, widespread health impact, e.g., declared illness outbreak expected
Significant	Potential acute, widespread health impact expected
Moderate	Potential isolated health impact or widespread aesthetic impact expected or is a repeated breach of a chronic health parameter
Minor	Potential localised aesthetic impact, isolated exceedance of chronic health parameter

## Example risk analysis matrix

The level of risk for each hazard or hazardous event can be estimated by identifying the likelihood of occurrence and evaluating the severity of consequences if the hazard were to occur.

Table A-6.3 **Example of a qualitative risk analysis matrix – level of risk**

		Potential severity rating			
		Minor	Moderate	Significant	Catastrophic
Likelihood severity occurs	Very Likely	Moderate	High	Extreme	Extreme
	Likely	Low	Moderate	High	Extreme
	Unlikely	Very Low	Low	Moderate	High
	Rare	Very Low	Very Low	Low	Moderate

## Examples for acceptable risk levels

After completing the initial risk assessment, each risk needs to be reviewed to verify it has been reduced to an acceptable level. Providers must indicate the level of risk they consider acceptable, that is, at which level they would take no actions to further reduce the risk.

**Table A-6.4** Example descriptions for defined acceptable risk levels

Risk level	Description
Very low risk	Acceptable - Manage for continuous improvements
Low risk	Acceptable - Manage for continuous improvements
Moderate risk	Unacceptable - Implement corrective actions immediately, longer term risk reduction measures may be implemented within a reasonable timeframe
High risk	Unacceptable - Implement corrective actions immediately, longer term risk reduction measures need to be a priority
Extreme risk	Unacceptable - Implement corrective actions immediately, implementation of longer-term risk reduction measures given top priority.

## Examples of the degree of uncertainty

Evaluating the sources and types of uncertainty associated with the hazards can assist in understanding the limitation of the hazard identification and risk assessment. The risk assessment process should identify the uncertainties and/or the level of confidence in the assessment of each risk and factor these into its operational decisions. Table A-6.5 provides example descriptions for the degree of uncertainty.

**Table A-6.5** Examples of degree of uncertainty

Uncertainty	Description
Certain	There is five years of continuous daily monitoring data, which has been trended and assessed. The processes involved are thoroughly understood.
Confident	There is five years of recurrent, scheduled monitoring data, including for the duration of seasonal events, which has been collated and assessed. There is a good understanding of the processes involved.
Reliable	There is at least a year of recurrent, scheduled monitoring data available, which has been assessed and there is a good understanding of the processes involved.
Estimate	There is limited monitoring data available and there is a reasonable understanding processes involved.
Uncertain	There is limited or no monitoring data available and the processes are not well understood.

## Assessment of maximum risk

For all hazards and hazardous events, maximum risk (e.g., the risk from an uncontrolled hazard) must first be assessed. This helps to put into perspective the implications to the health of the population if the hazard is not removed or controlled. An assessment of maximum risk indicates the consequence of the preventive measures failing. It allows prioritisation of risks and assists with the development of emergency and incident plans if major treatment components or barriers fail. It also helps to establish the critical preventive measures across the service to guide appropriate operational procedures and monitoring and ensure these critical measures are continuously effective. Where there is insufficient data or information to complete a reliable assessment, this should be highlighted as an uncertainty, discussed in the RMIP and the risk should be ranked as a high priority option being considered.

## Existing preventive measures

All existing preventive risk management measures need to be listed in the risk assessment. Existing preventive measures include all actions, barriers or processes currently in place to reduce the maximum risk. They include all treatment steps, operational procedures, internal organisational measures, such as infrastructure improvements, existing workforce skills and knowledge, information management, incident and emergency management protocols and actions by external organisations or stakeholders. These preventive measures must be measures that are **currently implemented**.



Note, water quality monitoring alone is not a preventive measure. Monitoring as a preventive measure must be linked to a corresponding action for it to be listed as a preventive measure. For example, maintenance and flushing of the mains followed by *E. coli* monitoring.

## Assessment of residual risk

The residual risk is determined once existing preventive measures have been applied. An assessment of residual risk indicates the effectiveness of the existing preventive measures. For example, if the residual risk is calculated as 'high', further preventive measures (system improvements) to control that hazard or hazardous event are necessary and must be provided as an risk management improvement program (RMIP) item in the DWQMP. For example, a disinfection only scheme has a high maximum protozoa risk. To adequately control this hazard and reduce the residual risk, the provider would need to identify an additional, appropriate barrier, such as ultra-filtration and/or UV light treatment is necessary.

Residual risk is determined using the same methodology as the initial maximum risk assessment, however, changes to the assessed likelihood should result in a lower risk level.

Where a hazard cannot be controlled by existing treatment barriers and processes, the provider will be carrying an unacceptable risk and must have planned and ideally, short term preventive measures to eliminate or mitigate the risk of that hazard causing harm documented in the DWQMP's RMIP. The provider is liable if hazards with an assigned unacceptable residual risk ranking cause harm to consumers, so the time taken to reduce this risk is critical.

Where hazards cannot be directly controlled by a provider (i.e., it is outside their area of jurisdiction), their DWQMP should contain information about how the risks of these hazards causing harm are managed, such as through inter-service contracts, agreements, consultations and other arrangements, which specify the quality of water to be supplied and provide assurance all likely hazards have been controlled by the supplying entity.



Note, providers should aim to ensure all hazards have an acceptable level of risk.

## Risks managed by other entities

Where risks arise from other entities systems or activities, the risk assessment should (if relevant):

- Consider the risk assessment results from the other entities
- Be evaluated in the context of the risks and the measures in place by both the provider and the other entities
- Include maximum and residual risks from the other entities that impact on the service
- Include an assessment of the methodology adopted from the service.

# A-7 Risk assessment table

The results of the risk assessment can be presented in the DWQMP as a table similar to Table A-7.1 below.




Note, the actions listed in the last column of table A-7.1 should be captured in the Risk Management Improvement Program (RMIP).

Table A-7.1 Example table of hazard identification, risk assessment and uncertainty

Scheme component / sub-component	Risk ID number	Hazard	Hazardous event	Maximum risk			Existing preventive measures / barriers	Residual risk			Uncertainty	Comments (Proposed further risk reduction actions / RMIP reference #)
				Consequence	Likelihood	Risk level		Consequence	Likelihood	Risk level		

## A-8 Documented procedures

The following table A-8.1 lists examples of potential documented procedures. When including this information in the DWQMP it may be presented as a list or table similar to the example provided below. To document the process used to review and update these procedures, this information could be included as a written statement.

 Note, the list of procedures in Table A-8.1 are examples only. It is the responsibility of the provider to ensure the legislative requirements are met.

**Table A-8.1** Example of existing documented procedures

Link to preventive measure in the risk assessment	Procedure Title	Date last reviewed	Frequency of review	Responsible position for review and implementation
<i>The following information is provided as examples only</i>				
<i>Example: this could be a reference to an item number in the risk assessment table</i>	PR13: Inspection and maintenance of plant and equipment.	01/01/2023	1 year	Water Operations Officer
	PR15: Calibration procedures to ensure control of monitoring equipment.	01/01/2023	1 year	Maintenance Officer
	PR08: Quality assurance and validation procedures for sampling	01/07/2023	1 year	Water Operations Officer
	PR09: Procedures for performance evaluation and recording of results	01/07/2022	2 years	Water Operations Officer
	PR11: Communication protocols, including procedures for internal and external notifications	01/11/2022	1 year (sooner if required)	Water Operations Officer
	PR07: Procedures for collection, preservation and transport of samples	01/07/2023	1 year	Water Operations Officer



	PR18: Inspections of raw water sources and storages for sources of contamination (animals, birds, drainage inflows)	01/03/2022	2 years	Maintenance Officer
	PR02: Checking the integrity of groundwater bores and protection of bores from surface contamination	01/03/2022	2 years	Maintenance Officer
	PR03: Inspection and cleaning of water storages;	01/07/2023	1 year	Maintenance Officer
	PR10: Procedure for evaluating chemicals, materials and suppliers	01/11/2022	1 year (sooner if required)	Water Operations Officer
	PR16: Procedure for corrective action in response to water quality criteria noncompliance or customer complaints	01/03/2023	1 year (sooner if required)	Water Operations Officer
	PR05: Procedures for the repair and maintenance of water mains	01/03/2022	2 years	Water Operations Officer
	<b><i>Under development</i></b> PRXX: Cyber security incident response procedure	NA	1 year	Manager Water Operations
<i>Insert</i>				

## A-9 Risk management improvement program (RMIP)

The RMIP may be presented in the DWQMP in any form that is suitable, provided that the requirements in section 95(3)(f) of the Act are met. Table A-9.1 is an example table that can be used to document the measures, actions and strategies of the RMIP. A written statement could be included to document the organisations executive officer's endorsement or commitment of support for the outcomes of the RMIP.

**Table A-9.1** Example of Risk Management Improvement Program

Scheme name / component	Description of risk or hazard / hazardous event	Improvement measures / actions and timeframe for delivery		Rational for implementation schedule	Availability of funding / resources / estimated cost	Responsible position
		Interim and/or short-term  (e.g., interim = <3 months, short-term = >6 months)	long-term (e.g., >1 year)			
The following information is provided as examples only						
Scheme A Filtration	Insufficient filter capacity resulting in shorter run times during episodes of higher turbidity in the raw water leading to break-through. Requires additional filters in the treatment process.	<b>Interim target date: XX/XX/2023</b> More frequent backwashing and updating operational procedure to reflect change (refer to XX procedure) <b>Short-term target date: XX/XX/2023</b> Demand management strategy/measures implemented (refer to XX procedure)	<b>Target date: XX/XX/2024</b> Purchase and install additional filter units (Refer to Councils infrastructure improvement program, Appendix XX)	Very high priority – based on residual risk level determined from the risk assessment. Measures/actions able to be implemented in the interim and short-term while infrastructure improvement works are completed.	\$750,000 (fully funded) State government XX funding program contribution – 45% or ~\$350,000 (approved) Council contribution – 55% or ~\$400,000 (approved)	Interim – Manager Water Operations Short-term – Manager Water Operations Long-term – Manager Asset Services
Scheme B Disinfection/ Reticulation	Low residuals allowing microbial re-growth in the reticulated network. Requires new re-chlorination point in the distribution system.	<b>Interim target date: XX/XX/2023</b> Flush mains on a schedule rather than ad-hoc. schedule developed and included in operator task list (refer to XX work instruction once updated) <b>Short-term target date: XX/XX/2023</b> Operate town reservoir at lower level to reduce residence times (refer to XX procedure once updated)	<b>Target date: XX/XX/2024</b> Purchase and install re-chlorination facility at town reservoir outlet (Refer to Councils infrastructure improvement program, Appendix XX)	Very high priority – based on existing residual risk level in the risk assessment. Interim and short-term measures able to be implemented while funding for new infrastructure is secured and project works are undertaken	\$65,000 (not fully funded) State gov XX program application submitted. 80% or \$52K subsidy requested (pending approval) Council contribution – 20% or \$13K (funding commitment confirmed)	Interim – Water Quality Officers Short-term – Manager Water Operations Long-term – Manager Asset Services

Scheme name / component	Description of risk or hazard / hazardous event	Improvement measures / actions and timeframe for delivery		Rational for implementation schedule	Availability of funding / resources / estimated cost	Responsible position
		Interim and/or short-term (e.g., interim = <3 months, short-term = >6 months)	long-term (e.g., >1 year)			
All schemes  Catchment characterisation and water quality data	Information gaps and/or insufficient data available on catchment and source water quality hazards. Further targeted monitoring and detailed analysis of catchments/source water required as more data is collected over time.	<b>Interim target date: XX/XX/2023</b>  Desktop based initial data reviews and assessments undertaken.	<b>Target date: XX/XX/2024</b>  1. Collect more data over 12-month period to help identify the sources of microbial and non-microbial contamination.  2. Engage consultant to undertake water source and water treatment assessments.	High priority – based on uncertainty level in the risk assessment.  Improvement actions required to better inform the hazard identification and risk assessment processes.	\$45,000 (fully funded)  100% of cost funded by Council (approved)  Internal resources required: - Water Quality Officers (35% FTE) - Supervisor (10% FTE)	Interim – Manager and Water Operations team  Long-term – 1. Water Quality Officers 2. Manager Water Operations
All schemes  Preventive measures  Documented procedures	Documented procedures for implementing current preventive risk management measures are outdated or do not exist.  Process needed to ensure document relevance and accuracy is managed.	<b>Interim target date: XX/XX/2023</b>  Identify outdated procedures, then update, obtain approval and implement  <b>Short-term target date: XX/XX/2023</b>  Identify new procedures needed, then develop, obtain approval and implement	<b>Target date: XX/XX/2024</b>  Implement document management system and assign responsible officer to ensure documents are reviewed in accordance with assigned schedule.	High priority – based on large number of outdated / non-existent procedures  Interim and short-term measures needed to ensure old procedures are updated and new are implemented.	100% of cost fully funded by Council (approved)  Internal resources required: - Water Operations team	Interim and short-term – Manager and Water Operations team  Long-term – Manager Water Operations
<i>Insert</i>						

*Note: other examples of interim could be within the current financial year, short-term by the end of the next financial year and long-term within 3 to 5 years.*

## Timeframe / target dates for RMIP implementation

The priority and timeframes for implementation of measures or actions should specify whether implementation will be in the short term or the long term. The following list of examples are actions that should ideally occur within a short timeframe:

- Replacement of equipment
- Operational procedures
- Improving workforce awareness or use of external expertise
- Information sharing processes

Longer term timeframes can be assigned to the following actions:

- Alternative sourcing arrangements
- Infrastructure upgrades
- Workforce composition
- Skills gaps and training needs (as well as ensuring that contractors and/or new staff have appropriate skills and knowledge)
- Training and skills development
- Improving water quality management skills in the organisation through recruitment succession planning, mentoring etc
- Ensuring that staff are made fully aware of their responsibilities to drinking water quality (e.g., through position descriptions)

## Other actions and measures

The items that should be included in the risk management improvement program are not limited to the management of unmitigated and unacceptable risks. Other measures or actions for improving the management of the drinking water service should be documented here and these items can include:

- Eliminate high uncertainties identified from the risk assessment
- Operational monitoring and process control improvements
- Water quality performance enhancements
- Planned new infrastructure, infrastructure upgrades and refurbishment
- Required infrastructure, system and/or procedural upgrades following an incident or event
- Addressing recommendations and opportunities for improvement identified during an audit or the findings of a regular DWQMP review
- Customer complaint management and performance strategies
- Structured staff training, skills and knowledge development

## Funding availability

The RMIP should also include information on any limitations and availability of funding for required measures or actions.

It is recognised that for various reasons or external factors beyond the control of the provider, that implementing some improvement measures, particularly those requiring a significant financial investment, will be a challenge.

The provider is responsible for ensuring that funding or commitments to funding for any measures or actions identified in the RMIP are undertaken through its organisational budgeting and other financial processes. This is an important issue for providers, as the RMIP will be assessed by the regulator as part of the DWQMP approval process and the timing for and where applicable, the reasons for deferring implementing planned preventive measures or actions will be a decision-making consideration.

If no funding is available in the short to medium term, alternatives to achieve the planned outcomes should be considered and documented in the RMIP. The regulator may choose to place conditions on the approval of the DWQMP (e.g., progress reports) relating to the measures, strategies or actions detailed in the RMIP.



Note, State funding of any proposed preventive measure or action documented in the RMIP is a separate matter. The regulator's consideration of the RMIP does not commit the State to funding any measures or actions within the RMIP program.

## A-10 Operational and verification monitoring

Information on the operational and verification monitoring for each drinking water scheme, can be provided as a statement and/or may be presented in a way similar to Tables A-10.1 and A-10.2. A written description or statement could be included to describe the qualifications and training of staff required to undertake the monitoring, how the water quality results are interpreted and the process for long term evaluation of trends.

**Table A-10.1** Example table for operational monitoring

Process step, location in system		Parameter	Associated hazard	Sampling		Target	Critical limits	Actions if operational limits exceeded	Rationale	Responsible position
				Frequency	Method					
The following information is provided as examples only and relates to a small provider										
The guideline requirements state – Include the parameters being tested and the location of monitoring		Include the hazards or indicators identified in risk assessment	Include details on the: - frequency, sampling, method, equipment / facilities used, external lab transport arrangements		Include details on the - operational target, alert and critical limit monitoring criteria and selection rationale - onsite response for exceedances, internal and external communication protocols.			Include description and rationale for parameters selected. Include rationale for the selection of operational limits	Include position details of officer(s), who undertake monitoring	
Chlorine disinfection, WTP	Free and Total chlorine	Bacteria, viruses	Daily - Continuous (real time with alarms)	Online chlorine analyser	Free Cl <sub>2</sub> >1-2 mg/L	Free Cl <sub>2</sub> <0.2 mg/L  Total Cl <sub>2</sub> >5mg/L	Refer to SOPs for: • Chlorine disinfection (Appendix Z) • External Comms protocol (Appendix Y)	Example: Confirm Cl (free) target range achieved and total chlorine critical limits not exceeded.  Chlorine residual set to achieve minimum C.t requirement based on maximum flow and minimum storage times.  24hr alarm if chlorine residual is outside set limits for maintaining integrity of water quality during operational process and reticulation.	Water and Sewerage Operators	
			2 x Weekly	Grab sample (Handheld instrument - digital)						
Insert.....										

**Table A-10.2** Example table for verification monitoring

Parameter	ADWG	Associated	Sampling			Response to exceedances	Rationale	Responsible position
	health limit	hazard	Location	Frequency	Method			
The following information is provided as examples only and relates to a small provider								
The guideline requirements state –  Include the parameter being tested and the hazards or indicators for the risks identified during the risk assessment process			Include details on the:  - Location, frequency, sampling/monitoring method, equipment and facilities used for testing, transportation arrangements if an external laboratory is used			Include details on the onsite response for exceedances, internal and external communication protocols.	Include the rationale for the parameters selected for each treatment process or activity. The frequency must:  - comply with the PHR  - be sufficient for the size and complexity of the schemes and consider the level of risk identified during the risk assessment process	Include position details of officer(s) who undertake monitoring
E. coli	NA	Bacteria	<u>Scheme A</u> 1. Town 1	Weekly + 1 x monthly	Grab samples tested in house using Colilert  (Includes 1 x monthly grab sample sent via flight to NATA lab – QHFSS, Brisbane)	Refer to procedures for: <ul style="list-style-type: none"><li>Incident Management Plan (App. X)</li><li>Communications Protocol (App. W)</li></ul> (i.e., includes notifying the regulator and completing incident reporting forms, following operational procedure for booster disinfection, flushing mains etc.)	Example: Monitoring and reporting on E. coli is a requirement under the Public Health Regulation 2005 (PHR).  The monitoring frequency for E. coli undertaken in Schemes A and B, exceeds the minimum frequency stated in the PHR.  E. coli is monitored as a marker for the presence of faecal contamination and the possible presence of microbial pathogens. It is currently the best verification indicator available for faecally related microbial quality.  Sampling locations selected in the distribution system are the most appropriate representative sites of the quality of water that is supplied to customers.  Sampling frequency increases in response to reportable incidents and events, flooding and other emergency situations and following repair work or interruptions to supply.	Water and Sewerage Operators
			<u>Scheme B</u> 1. Town 2 2. Town 3	2 x Monthly (1 in each town) + 1 x quarterly, alternating each town	Grab samples tested in house using Colilert  (Includes 1 x quarterly grab sample sent via flight to NATA lab – QHFSS, Brisbane)			

Parameter	ADWG health limit	Associated hazard	Sampling			Response to exceedances	Rationale	Responsible position
			Location	Frequency	Method			
Free and Total Chlorine	5mg/L	Bacteria, viruses	<u>Scheme A</u> 2. Town 1	2 x Daily (am and pm)	Grab sample tested in house using Palintest photometer DPD test	Refer to procedures for: <ul style="list-style-type: none"> <li>Incident Management Plan (App. X)</li> <li>Communications Protocol (App. W)</li> </ul> <i>(i.e., includes notifying the regulator when free chlorine is &lt;0.2 mg/L and total chlorine is &gt;5 mg/L, completing incident reporting forms, following operational procedure for booster disinfection, flushing)</i>	Example: Confirms free chlorine residual operational target range for the distribution systems is achieved.  Various locations in the reticulation system selected by careful monitoring design.  Sampling locations selected in the distribution system are the most appropriate representative sites to ensure chlorine residual is sufficient through-out the network.  Test of the quality of water that is supplied to customers.  Sampling frequency increases in response to reportable incidents and events, flooding and other emergency situations and following repair work or interruptions to supply.	Water and Sewerage Operator
			<u>Scheme B</u> 1. Town 2 2. Town 3	2 x Daily (1 in each town)	Grab samples tested in house using Palintest photometer DPD test			
Fluoride	1.5mg/L	Fluoride	<u>Scheme A</u> 1. Town 1	Annually	Grab samples sent via flight to NATA lab – QHFSS, Brisbane	Refer to procedures for: <ul style="list-style-type: none"> <li>Incident Management Plan (App. X)</li> <li>Communications Protocol (App. W)</li> </ul> <i>(i.e., includes notifying the regulator and completing incident reporting forms, following operational procedure corrective actions)</i>	Example: Confirms if levels of naturally occurring fluoride are below the ADWG health guideline limit.  The monitoring frequency assigned for Scheme A is infrequent, based on analysis of ten years of fluoride data for its catchment and water supply system, which indicates fluoride concentrations are always well below ADWG health guideline values. Frequency to be reviewed if fluoride is detected at levels close to or above ADWG health guideline values.  Fluoride poses a high risk in Scheme B. The assigned monitoring frequency is based on ten years of fluoride data indicating distribution system concentrations continually exceed ADWG health guideline values.  Sampling locations in the distribution system are the most appropriate, representative sites of the quality of water that is supplied to customers.	Water and Sewerage Operator
			<u>Scheme B</u> 1. Town 2 2. Town 3	Monthly in each town	Grab samples sent via flight to NATA lab – QHFSS, Brisbane			
Insert.....								

QHFSS – Queensland Health Forensic and Scientific Services



## Appendix B DWQMP reviews: supporting information

### B-1 Example DWQMP review checklist template

The following checklist is a guide to assist providers with ensuring all steps that are relevant to the review process have been completed. (Note, the use of this template is optional and providers should ensure that the checklist used is appropriate for its DWQMP review).

<b>Review date or period:</b>					
<b>Team members / positions:</b>					
<b>DWQMP sections and areas to consider</b>	<b>Yes / No</b>	<b>Type of change</b> (e.g., positive/ negative/ neutral)	<b>Action required</b> (e.g., consider changes to risk assessment, DWQMP document, monitoring etc.)	<b>Who will action?</b>	<b>Timeframe</b>
<b>Registered service details</b>					
<ul style="list-style-type: none"> <li>Have any of the provider contact details changed?</li> <li>Do the scheme details (including water zones or districts), still apply?</li> <li>Have the number of communities serviced or extent of the service area changed?</li> <li>Has the population size changed and does the plan include details of sudden population changes (e.g., increases as a result of regular community events/shows)?</li> <li>Have the number of connections changed?</li> <li>Has the list of key stakeholders (including list of vulnerable customers) changed?</li> </ul>					
<b>Details of infrastructure for providing the service</b>					
<ul style="list-style-type: none"> <li>Do the schematics accurately reflect all the components, processes and linkages, from catchment to consumer?</li> <li>Do any of the system description details require updating?</li> </ul>					

DWQMP sections and areas to consider	Yes / No	Type of change (e.g., positive/negative/ neutral)	Action required (e.g., consider changes to risk assessment, DWQMP document, monitoring etc.)	Who will action?	Timeframe
<ul style="list-style-type: none"> <li>Is the design treatment capacity sufficient for population/demand projections that can be serviced?</li> <li>Have new chemicals been introduced into the treatment process or the dosing points re-located?</li> <li>Have monitoring and telemetry systems been checked and/or changed?</li> <li>Have low pressure areas in the distribution system changed?</li> <li>Have any reservoirs undergone refurbishment or has reservoir capacities changed?</li> <li>Have there been any problems with infrastructure or equipment breakdown or deterioration?</li> </ul>					
<b>Information gathering for hazard identification– catchment characterisation and water quality data</b>					
<ul style="list-style-type: none"> <li>Has current water quality data been collated, analysed and trended, including for source water, treatment processes and distribution.</li> <li>Have there been changes to the source water quality, hazards or characteristics?</li> <li>Have there been any changes to the output quality?</li> <li>Does water quality data indicate that the level of risk has changed for certain hazards?</li> <li>Has operational monitoring data identified any poorly functioning treatment processes?</li> <li>Has there been any significant development or land use changes in the catchment?</li> <li>Has the nature or frequency of any water quality complaints changed?</li> <li>Has there been any occurrence of suspected illness following a customer complaint about water quality?</li> </ul>					

DWQMP sections and areas to consider	Yes / No	Type of change (e.g., positive/negative/ neutral)	Action required (e.g., consider changes to risk assessment, DWQMP document, monitoring etc.)	Who will action?	Timeframe
<b>Hazard identification, risk assessment and methodology</b>					
<ul style="list-style-type: none"> <li>Have the personnel (position) responsible for hazard identification and risk assessment changed?</li> <li>Have any new or emerging hazards or hazardous events been identified?</li> <li>Is the risk assessment methodology still considered appropriate?</li> <li>Have new risk management strategies been implemented?</li> <li>Do any new risk management strategies require new assessment of residual risk?</li> <li>Has an acceptable, residual risk level been clearly defined?</li> <li>Has the providers executive officer(s) endorsed current/revised risk assessment outcomes?</li> </ul>					
<b>Preventive measures</b>					
<ul style="list-style-type: none"> <li>Do the existing preventive measures/strategies still effectively manage the hazards to achieve the desired water quality outcomes?</li> <li>Have the processes used to monitor and evaluate the effectiveness of existing preventive measures changed?</li> <li>Has the effectiveness of any new preventive measures/strategies or infrastructure upgrades been evaluated?</li> </ul>					
<b>Documented procedures</b>					
<ul style="list-style-type: none"> <li>Do the procedures and practices reflect current operations?</li> <li>Is there a need to create new procedures (e.g., operation and maintenance procedures)?</li> <li>Have procedures that are identified as 'required' been included in the RMIP?</li> </ul>					

DWQMP sections and areas to consider	Yes / No	Type of change (e.g., positive/negative/ neutral)	Action required (e.g., consider changes to risk assessment, DWQMP document, monitoring etc.)	Who will action?	Timeframe
<ul style="list-style-type: none"> <li>Have records related to associated procedures been kept?</li> <li>Have training records been maintained?</li> <li>Is training appropriate for current practices/systems, as it currently exists?</li> </ul>					
<b>Information management and record keeping</b>					
<ul style="list-style-type: none"> <li>Are staff using current versions of documents?</li> <li>Are the information management, record keeping and reporting processes, being used appropriately?</li> </ul>					
<b>Risk management improvement program (RMIP)</b>					
<ul style="list-style-type: none"> <li><b><i>Review the status of all actions in the improvement program.</i></b></li> <li>Were actions in the program completed in the timeframe outlined in the RMIP?</li> <li>Did the program outlined in the DWQMP achieve the intended outcomes?</li> <li>Does the program require updating to manage risks effectively, including measures for newly identified risks?</li> <li>Are all unacceptable risks included in the RMIP and do all of these risks have a remedial action item and completion date?</li> <li>Has availability of funding changed (e.g., recent funding applications been approved)?</li> <li>Has the providers executive officer(s) endorsed the RMIP (to support current/revised outcomes)?</li> </ul>					
<b>Management of incidents and emergencies</b>					
<ul style="list-style-type: none"> <li>Is the process for managing drinking water incidents and emergencies still appropriate for the drinking water service?</li> <li>Do internal and external communication process and protocols work effectively?</li> </ul>					

DWQMP sections and areas to consider	Yes / No	Type of change (e.g., positive/negative/ neutral)	Action required (e.g., consider changes to risk assessment, DWQMP document, monitoring etc.)	Who will action?	Timeframe
<ul style="list-style-type: none"> <li>Is the list of people to be contacted during emergencies up to date including the local disaster management group contacts?</li> <li>Is staff training for incidents and emergencies up to date?</li> <li>Have incident and excursion records identified changes in risks and hazards?</li> </ul>					
<b>Operational monitoring</b>					
<ul style="list-style-type: none"> <li>Have changes to the infrastructure or processes resulted in a need to revise the monitoring program?</li> <li>Are the range and frequency of parameters being tested appropriate and sufficient to assess and confirm the performance of relevant preventive measures?</li> <li>Are the established corrective actions and controls actively applied as in the DWQMP and still appropriate?</li> <li>Have monitoring records been maintained?</li> <li>Is monitoring equipment being calibrated?</li> </ul>					
<b>Verification monitoring</b>					
<ul style="list-style-type: none"> <li>Have changes to the infrastructure resulted in a need to revise the monitoring program?</li> <li>Are the range and frequency of parameters being tested appropriate and sufficient for the size and complexity of the schemes?</li> <li>Are the established corrective actions and regulator notifications actively applied as described in the DWQMP?</li> <li>Are the corrective actions and notifications still appropriate?</li> <li>Have monitoring records been maintained?</li> <li>Have <a href="#">ADWG</a> health guideline values changed for any parameters?</li> </ul>					

DWQMP sections and areas to consider	Yes / No	Type of change (e.g., positive/ negative/ neutral)	Action required (e.g., consider changes to risk assessment, DWQMP document, monitoring etc.)	Who will action?	Timeframe
<ul style="list-style-type: none"> <li>Have long-term evaluation of trends in water quality results been undertaken?</li> <li>Have the arrangements for monitoring, transport arrangement for off-site analysis, or testing laboratory changed?</li> </ul>					
<b>Other areas</b>					
<ul style="list-style-type: none"> <li>Have there been any changes in regulations, legislation or formal requirements?</li> <li>Have there been organisational structure changes that may impact risk management?</li> <li>Are critical personnel appropriately qualified or require additional training?</li> <li>Do the audit outcomes recommend changes to the DWQMP or related processes?</li> <li>Do the audit outcome recommendations need to be included in the RMIP?</li> </ul>					

## B-2 Example of using the DWQMP review checklist

[Appendix B](#) provides an example scenario using fictitious information relating to how a provider could use the questions in the DWQMP review checklist.

### Box B-2.1 – DWQMP review question example



**Question: Do the schematics accurately reflect all the components, processes, and linkages from catchment to consumer?**

*Note, the information provided here is an example only.*

Sunland Regional Council have selected an internal team made up of operators to review their approved DWQMP. This review team decided they should walk-through the supply system from the intake point, at the source to the final product (water treatment plant outlet) and key locations in the distribution (reservoirs, booster pump stations, re-chlorination points etc). As part of this walk-through process, it became clear the review should also be considering the catchment, distribution and each treatment step, including chemicals dosed, dosing locations and monitoring points and parameters.

As part of the review the team must also assess whether the schematic in the DWQMP is current and accurate. Their review identifies the following change and the potential impacts from the change which must then be assessed:

- Dosing of chlorine in the clarifier has been added as an additional process. This change may contribute to the potential formation of disinfection by-products as chlorine is added prior to filtration. As a result, the risk assessment must include this hazard and hazardous event.

Additionally, the monitoring program will need to be adjusted to allow for verification testing of disinfection by-products, which could be through testing for trihalomethanes as an indicator.

This change to process is a significant change and so the DWQMP will need to be updated and an amendment application submitted to the regulator. The team will now assign who is responsible for undertaking this action and the timeframe for completing it.

# Appendix C DWQMP audits: supporting information

## C-1 DWQMP audit process checklists

### Provider's checklist

The following checklist is a guide to assist providers ensure all steps that are relevant to the audit process have been completed.

#### Box C-1.1 – Audit process checklist

- ☐ Audit has been undertaken within the required timeframe
- ☐ An appropriately qualified auditor has been selected and engaged
- ☐ Informed the regulator immediately of any noncompliance identified during the audit that was likely to have had an imminent and serious adverse impact on public health (if not already done by the auditor)
- ☐ Statutory declarations have been signed by the auditor and executive officer
- ☐ Audit report has been submitted to the regulator by the auditor within 30 business days of the audit's completion along with the signed statutory declarations
- ☐ An action plan has been developed, where noncompliances have been identified in the audit report
- ☐ Audit report has been made available for public inspection
- ☐ Audit findings have been included in the DWQMP (annual) report
- ☐ Executive officer/senior management have been informed about audit findings

### Auditor's checklist

The following checklist should be used by the auditor to ensure all steps relevant to the audit are undertaken.

#### Box C-1.2 – Auditor checklist

- ☐ Declaration of any conflict of interest to provider prior to engagement has been made
- ☐ Undertaken the audit in accordance with this guideline
- ☐ Informed the regulator immediately of any noncompliance identified during the audit that was likely to have had an imminent and serious adverse impact on public health
- ☐ Prepared an audit report in accordance with this guideline
- ☐ Signed a statutory declaration
- ☐ Submitted the report and signed statutory declaration within 30 business days of completing the audit



## C-2 Example declaration templates for the DWQMP audit

### Statutory declaration by the auditor

The following template is provided as an example statutory declaration for auditors.

<p style="text-align: center;"><i>Oaths Act 1867</i></p> <p style="text-align: center;">Statutory Declaration</p> <p>QUEENSLAND</p> <p>TO WIT</p> <p>I, &lt;&lt;insert name of the auditor making the declaration&gt;&gt; of &lt;&lt;insert address&gt;&gt;, in the State of Queensland do solemnly and sincerely declare that:</p> <p>&lt;&lt;insert name of drinking water service provider&gt;&gt; engaged me to undertake an audit of its drinking water quality management plan for the audit period ending &lt;&lt;insert year of audit&gt;&gt; and to prepare this audit report dated &lt;&lt;insert date&gt;&gt;.</p> <p>My qualifications and experience relevant to the audit are as follows:</p> <p>&lt;&lt;insert details&gt;&gt;</p> <p>I am certified under the Exemplar Global Drinking Water-Quality Management System Auditor Certification Scheme.</p> <p>I have not knowingly included any false, misleading or incomplete information in the audit report.</p> <p>I have not knowingly failed to reveal any relevant information or document to the regulator.</p> <p>I certify that:</p> <p>the report addresses the relevant matters for evaluation and is factually correct; and</p> <p>the opinions I have expressed in the report are honestly and reasonably held.</p> <p>And I make this solemn declaration conscientiously believing the same to be true, and by virtue of the <i>Oaths Act 1867</i>.</p> <p>&lt;&lt;signature&gt;&gt;</p> <p>Taken and declared at &lt;&lt;insert town or city and suburb where declaration signed&gt;&gt; this &lt;&lt; insert date&gt;&gt; of &lt;&lt;insert month&gt;&gt; 20 &lt;&lt;insert year&gt;&gt;, before me</p> <p>&lt;&lt;signature of person before whom the declaration is made – to be signed by a person who is able to witness a Statutory Declaration under the <i>Oaths Act 1867</i> – e.g., Justice of the Peace, Commissioner for Declarations&gt;&gt;</p> <p><b>Justice of the Peace/Commissioner for Declarations</b></p>
---

## Statutory declaration by the drinking water service provider

The following template is provided as an example statutory declaration for service providers.

*Oaths Act 1867*

### Statutory Declaration

QUEENSLAND

TO WIT

I, <<insert name of the person making the declaration on behalf of the drinking water service provider>> of <<insert address>>, in the State of Queensland do solemnly and sincerely declare that:

I am the <<insert position title of person authorised to sign this declaration on behalf of the drinking water service provider>> of <<insert provider's registered legal name and CAN/ABN number (if applicable)>>.

<<insert name of drinking water service provider>> engaged <<insert name of auditor>> to undertake an audit of its drinking water quality management plan for the audit period ending <<insert year of audit>> and to prepare this audit report dated <<insert date>>.

During the course of this regular audit, officers and employees of <<insert drinking water service provider name>>:

have not knowingly given any false or misleading information to <<insert name of auditor>>; and

have given all relevant information to <<insert name of auditor>>.

And I make this solemn declaration conscientiously believing the same to be true, and by virtue of the *Oaths Act 1867*.

<<signature>>

Taken and declared at <<insert town or city and suburb where declaration signed>> this <<insert date>> of <<insert month>> 20 <<insert year>>, before me

<<signature of person before whom the declaration is made – to be signed by a person who is able to witness a statutory declaration under the *Oaths Act 1867* – e.g., Justice of the Peace, Commissioner for Declarations>>

**Justice of the Peace/Commissioner for Declarations**

# Appendix D    Drinking water service annual report: supporting information

## D-1 How to Begin

The Drinking water service annual report is best prepared internally. Where staff capacity exists, assemble a team consisting of relevant staff that can workshop the report's requirements and issues. Ideally, your organisation's record keeping should be adequate to have captured all the water quality data and implementation processes that have occurred throughout the year, thus making light work of preparing the report and enabling its submission well before the due date.

You may engage external experts to prepare the report, but you will need to ensure that the report accurately reflects your current drinking water service and its performance. An external expert may not have the same level of detail that relevant staff have about your service and may not produce a report that will be as beneficial to your organisation as one produced internally.

To enable the Drinking water service annual report to be prepared with ease and efficiency, collect and locate the following information before you start to write your report:

- (i) a copy of the current approved version of your DWQMP
- (ii) the status of your risk management improvement program (RMIP) (outlined in your approved DWQMP) implementation
- (iii) your verification monitoring data obtained during the reporting period. This data should directly relate to your verification monitoring program described within your approved DWQMP
- (iv) details of all incidents that occurred over the reporting period including incidents that were reported to the regulator
- (v) any reviews undertaken for the approved DWQMP over the reporting period, including reports produced
- (vi) any audits undertaken for the approved DWQMP over the reporting period, including reports produced.

## D-2 Contents of the Drinking water service annual report

Information to include in the Drinking water service annual report must be for the reporting period, which is the financial year to which the report relates. The following sections provide examples of the contents of the Drinking water service annual report.

### Introduction

This section sets the scene for the report, as it is a public document being produced for your internal and external stakeholders. The introduction might include:

- provider's name
- provider's identification number (SPID)
- reporting period
- what the report contains.

Box D-2.1 provides an example of how the introduction can be presented.

#### Box D-2.1 – Example introduction

This is the Drinking water service annual report for Happy Shire Council (HSC) for the financial year 2023–24.

HSC is a registered provider with identification (SPID) number 999. HSC is operating under an approved DWQMP (date approved 01/07/2022) to ensure consistent supply of safe quality drinking water in order to protect public health. This is done through proactive identification and minimisation of public health related risks associated with drinking water.

This Drinking water service annual report includes:

- the activities undertaken over the financial year in operating our drinking water service
- drinking water quality summary
- summary of our performance in implementing our approved DWQMP.

This report is submitted to the Regulator to fulfil our regulatory requirement and is also made available to our customers through our website or for inspection upon request at the HSC office.

### Summary of scheme(s) operated

This section of the report informs the stakeholder about the context of your drinking water scheme(s). Information can be presented using Table D-2.1 below. The table is also included in the template. If required, add more rows in the template to include all schemes.

**Table D-2.1 Example: Summary of schemes**

Scheme name	Water source	Treatment processes	Treatment capacity	Towns supplied
<i>The following information is provided as examples only</i>				
ABC scheme	Happy river	Coagulation, flocculation, clarification, filtration, chlorination and fluoridation	2 ML/day	A Town B Town C Town
XYZ scheme	Bore X Bore Y Bore Z	Aeration and chlorination	0.5 ML/day	X Town Y Town

## DWQMP implementation

### Box D-2.2 – Example DWQMP implementation

Water (and waste) staff met every month to discuss water (and sewerage) issues. This provided the opportunity to refer to the approved DWQMP and emphasised the importance of operating under the plan. The monthly meetings were chaired by the Manager, Water and Waste Services.

During the reporting period, a new senior water operator was recruited. His role in relation to implementing the DWQMP was discussed by the Manager at the November XXXX monthly meeting. As part of council's induction program, any new incoming water staff are made aware of the approved DWQMP, a summary of which is part of the induction package.

## Operational and verification monitoring – water quality information and summary

To meet the requirements of this section, the table formats provided in Table D-2.2 and D-2.3 and Graph D-2.4 can be used to present the summary and analysis of water quality data.

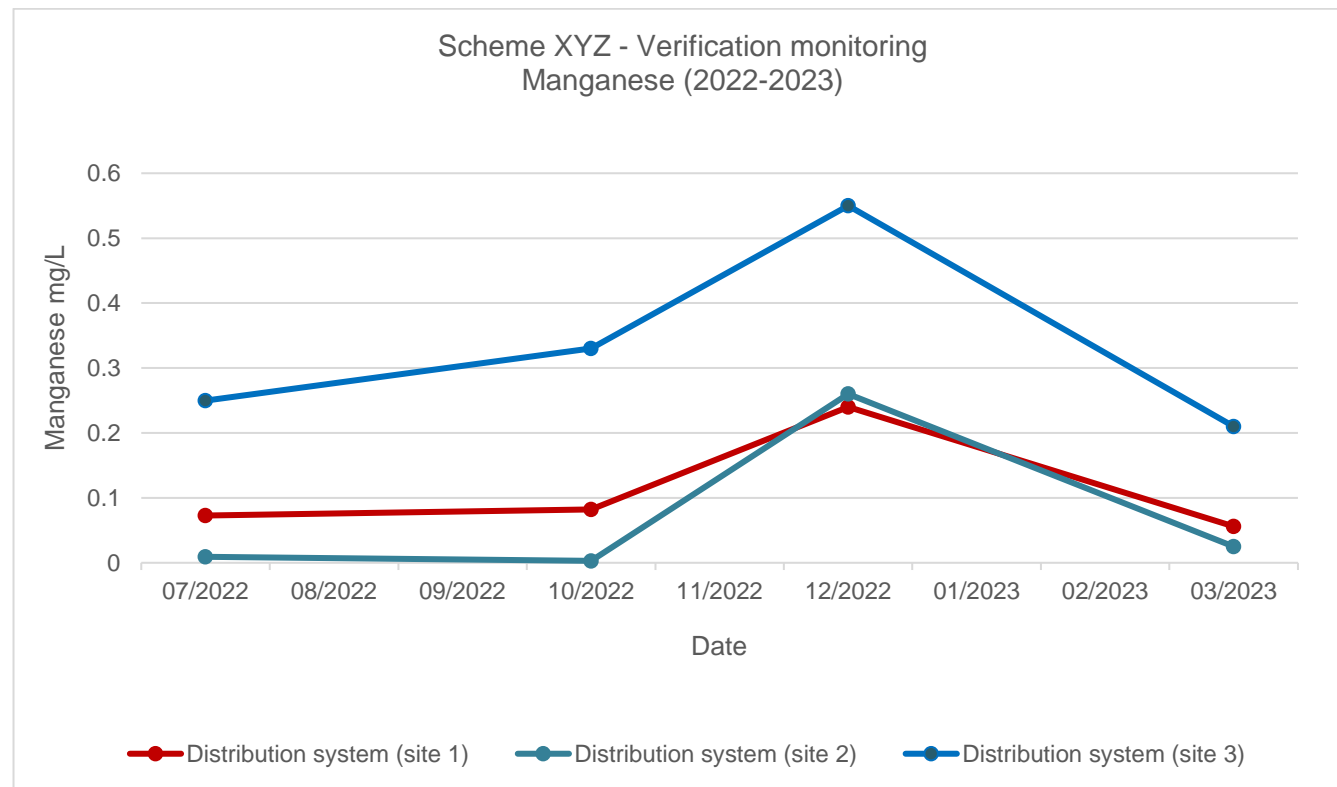
**Table D-2.2 Example: Drinking water quality performance – Operational monitoring**

Scheme name	Parameter	No. of sample required to be collected (as per approved DWQMP)	No. of samples actually collected and tested	Operational criteria	No. of non-compliant samples (i.e., did not meet operational criteria)	Comments
<i>The following information is provided as examples only</i>						
XYZ scheme	Free chlorine	52 per year	52	Critical limits: <0.5 mg/L and >5 mg/L	## (DD/MM/YYYY)	Insert

**Table D-2.3 Example: Drinking water quality performance - Verification monitoring**

Scheme name	Parameter	No. of sample required to be collected (as per approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (e.g. ADWG health guideline value)	No. of non-compliant samples	Comments
<i>The following information is provided as examples only</i>						
XYZ scheme	Manganese	4 per year  (Refer to Graph D-2.4 – statistical analysis summary)	4	<0.5 mg/L	1 (DD/MM/YYYY)	Manganese non-compliant sample was not reported to the regulator as it was discovered during review of water quality data for this report. Responsibility to review water quality data on receipt from laboratory has been allocated to operations supervisor so non-compliant samples are reported and acted on as soon as possible.
ABC scheme	<i>E. coli</i>	60 per year	58	<1 CFU / 100mL	2 (DD/MM/YYYY) (DD/MM/YYYY)	Two weekly samples for <i>E. coli</i> were collected but not tested due to lack of flights to take the samples to the laboratory. Non-compliant <i>E. coli</i> samples were reported to the regulator DD/MM/YYYY and DD/MM/YYYY.

Graph D-2.4 Example: Drinking water quality performance - Verification monitoring (manganese)





For the purpose of this report, the *E. coli* compliance with the annual value can be presented using the format provided in Table D-2.5. A copy of this spreadsheet can also be accessed online at [www.rdmw.qld.gov.au](http://www.rdmw.qld.gov.au).

Table D-2.5 Example: *E. coli* compliance with annual value

Drinking water scheme name: ABC Scheme												
Year:	2022 – 2023											
Month	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	10	10	10	10	10	9	10	10	10	10	10	10
No. of samples collected in which <i>E. coli</i> is detected (i.e., a failure)	0	0	0	0	0	1	0	0	0	0	0	0
No. of samples collected in previous 12-month period	120	120	120	120	120	119	119	119	119	119	119	119
No. of failures for previous 12-month period	0	0	0	0	0	1	1	1	1	1	1	1
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	99.2%	99.2%	99.2%	99.2%	99.2%	99.2%	99.2%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

The annual value for *Escherichia coli* is calculated for each month and must not be detected in at least 98% of the samples reviewed.

Example calculation:

$$\% \text{ of samples that comply for the month December 2023} = \frac{119 \text{ sample no } E.coli \text{ detected in previous 12 month period}}{120 \text{ samples collected in previous 12 mnth period}} \times 100\% = 99.2\%$$

## Incidents reported to the regulator

Example Table D-2.6 can be used to present the summary of reporting to the regulator (i.e., drinking water quality incidents and events).

**Table D-2.6** Example: Incidents reported to the regulator

Incident/ Event date	Scheme / location	Parameter / issue	Immediate corrective actions and Preventive actions
<i>The following information is provided as examples only</i>			
2 January 2022	ABC scheme / (Water treatment plant tap)	Chlorine pump failure	<b>Immediate:</b> back up pump was put online. Parts were ordered/delivered and broken pump fixed. <b>Preventive:</b> the maintenance schedule for all critical assets was revised.
3 June 2022	XYZ scheme (X town, site 1)	<i>E. coli</i>	<b>Immediate:</b> mains network was flushed and re-samples in the affected areas collected with no further detections of <i>E.coli</i> <b>Preventive:</b> The standard operating procedures on pipe repairs and flushing were revised.
22 June 2022	XYZ scheme (Y town, 2ML reservoir tap)	<i>E. coli</i>	<b>Immediate:</b> reservoir chlorine levels increased, and re-samples for <i>E.coli</i> collected at the reservoir and 3 sites in the distribution system. <b>Preventive:</b> Reservoir fully inspected and hole in roof repaired.

## Customer complaints

Example Table D-2.7 can be used to present the summary of different categories of customer water quality complaints.

**Table D-2.7** Example: customer complaints about water quality

Scheme name	Nature of complaint	Complaints related to reportable incidents	Comments
<i>The following information is provided as examples only</i>			
ABC scheme	e.g., 0 suspected illness, 3 dirty water, 1 taste/odour, 1 other etc.	e.g., 2	e.g., 2 of 3 complaints about dirty water relate to incident reported to regulator on DD/MM/YYYY.
XYZ scheme	e.g., 1 dirty water, 6 taste/odour	e.g., 6	e.g., all taste and odour complaints related to manganese incident DWI-XXX-XXXX reported to the regulator on DD/MM/YYYY
TOTAL NUMBER COMPLAINTS – 11			

## Response to customer complaints (optional)

Box D-2.3 shows an example of how to describe your responses to complaints. Explaining your responses to complaints is optional, however, as this report is a public document it is an opportunity to describe your responses to customers.

### Box D-2.3 – Example customer complaint(s) and providers response

#### Category: Dirty water

The dirty water complaints were a result of a burst on a large diameter water main. The reticulation crew conducted the repair whilst following work practices aimed at protecting the water quality at all times, as well as managing storage levels in the affected reservoirs to ensure no one was without water. The area was flushed to remove the dirty water and achieve adequate chlorine residual results. The flushing targeted specific areas such as dead-end mains, where it was anticipated the dirty water would not be flushed through normal use. All customers who reported a complaint were advised of the reasons for the dirty water and were requested to allow the main a short period of time to settle.

#### Category: Taste and odour

The taste and odour complaints received are usually related to algal blooms in the water supply dam. When reported by customers or detected by the water operators, we investigate the issue to devise a prompt resolution, which may include changing water source, altering the depth of the offtake, dosing powdered activated carbon, or flushing the reticulation. Investigation of each complaint found no public health risks.

## DWQMP Review Outcomes

Example Table D-2.8 can be used to present the summary of the review outcomes and actions.

Table D-2.8 Example: DWQMP review outcomes

Review component	Findings	Outcomes	Status of actions	Responsible officer / position
<i>The following information is provided as examples only</i>				
<b>Review Date: DD/MM/YYYY</b>				
Service description	No changes	Not applicable	Not applicable	Not applicable
Details of infrastructure	A new 2 ML reservoir and chlorine booster station has been added in the XY town zone.	Schematic and infrastructure information needs to be updated in the approved DWQMP.	The schematic and infrastructure information was updated on DD/MM/YY	Infrastructure Engineer and Water Services Manager
Catchment characteristics and water quality data	Additional monitoring being undertaken to further investigate source water	Level of catchment protection table to be added, additional source	New data has been collated and catchment protection table created. Data	Water Services Manager and Water Quality Officer

Review component	Findings	Outcomes	Status of actions	Responsible officer / position
<i>The following information is provided as examples only</i>				
	hazards and level of catchment protection. New set of water quality data is available for past two years.	water assessment information to be included and existing water quality analysis table needs to be updated.	analysis will be undertaken, and the catchment characterisation and water quality sections updated by DD/MM/YY.	
Hazard identification and risk assessment	With the new chlorine booster station, there is a risk of chlorine overdosing. This hazardous event should be assessed for risk and preventive measures identified and implemented.	The risk assessment needs to be updated.	The date for the risk assessment review workshop has been agreed for DD/MM/YY.	Risk Management Team
Documented procedures	The maintenance schedule should include the new chlorine booster equipment. New chlorination critical control point operating limits are needed for the new supply configuration	The maintenance schedule needs to be revised.  Critical control point limits for chlorination in O&M manual require review	The maintenance schedule has been revised.  Chlorination critical control point target, alert and critical limits in procedure XXXX changed to address needs of new chlorine booster and supply configuration.	Infrastructure Engineer
Information management & record keeping	No changes	Not applicable	Not applicable	Not applicable
Risk management improvement program	A number of improvement actions have been implemented and some are in progress.	The risk management improvement program needs to be revised.	The risk management improvement program will be updated at the risk review workshop on DD/MM/YY.	Risk Management Team

Review component	Findings	Outcomes	Status of actions	Responsible officer / position
<i>The following information is provided as examples only</i>				
Management of incidents & emergencies	No changes	Not applicable	Not applicable	Not applicable
Operational monitoring	There should be daily free chlorine monitoring at the new chlorine booster station and weekly inspections of the dosing equipment.	The operational monitoring program needs to be revised.	The operational monitoring program has been revised.	
Verification monitoring	No changes	Not applicable	Not applicable	Not applicable
Other	None	Not applicable	Not applicable	Not applicable

## DWQMP audit findings

The audit findings and any recommendations and/or opportunities for improvement can be provided as described in the example shown in Box D-2.4 and Table D-2.9.

### Box D-2.4 – Example DWQMP audit findings

The first regular audit of HSC's DWQMP was undertaken in August 2023, through the engagement of Qualified Consultants Pty Ltd, who are Exemplar Global certified drinking water quality management system auditors. The auditor submitted the audit report to the regulator on 30 August 2023.

The purpose of the audit was to:

- verify the accuracy of monitoring and performance data given to the regulator under the plan
- assess compliance with the plan and its conditions
- assess the relevance of the plan to the drinking water service.

A summary of the auditor's findings includes:

- there was no major noncompliance to impact public health
- data supplied to the regulator under the approved plan was accurate
- HSC is overall complying with the plan and its conditions
- the plan remains largely relevant to the water scheme, with a few changes required
- the water supply schematic is out of date as a new reservoir and chlorine booster station have been installed
- the operational monitoring plan does not adequately capture the new chlorine booster station component
- the risk register does not include risks resulting from the upgrade to infrastructure



Table D-2.9 Example: DWQMP audit findings and status

Item	Recommendation / Opportunity for improvement (OFI)	Action	Status of actions	Responsible officer / position
<i>The following information is provided as examples only</i>				
Update the water supply schematic to include the recent changes to infrastructure	Recommendation	The schematic should be updated.	Completed. The schematic was updated on DD/MM/YY.	Infrastructure Engineer
Revise the operational monitoring plan to include the testing and inspections to undertake for the new reservoir and chlorine booster station	Recommendation	The operational monitoring plan should be revised.	Completed. The operational monitoring plan was revised on DD/MM/YY.	Water Quality Officer
Revise the risk register to assess hazards and hazardous events relevant to recent infrastructure changes	Recommendation	The risk team should convene to revise the risk register.	Completed. The risk team met on DD/MM/YY to discuss the risk register changes.	Risk Assessment Team
Provide the opportunity for operators to complete Certificate III in water operations.	OFI	Approve training budget, get operators enrolled.	Training budget has been approved by the Director. Enrolment is in progress.	Water Services Manager

## Risk Management Improvement Program

The current status of the improvement actions should be included in the report. Table D-2.10 provides an example of how the information can be presented. Further columns and rows in the template can be added as required to convey more information which may be of benefit to the provider, its customers and/or stakeholders.

**Table D-2.10** Example: Risk management improvement program implementation status

Scheme name	Ref	Component	Improvement actions	Target date	Actions taken to date	Status (and revised target date)	Responsible officer / position
<i>The following information is provided as examples only</i>							
XYZ scheme	WQ1	Reservoir	Repair the damage to service reservoir 1 roof.	March 2025	Temporary repair in place to mitigate contamination. Waiting on R4R response on grant funding to permanently repair	In progress March 2026	Operations Supervisor
XYZ scheme	AU1	Filtration	Recommendation item 1.1 from internal audit conducted on 01/04/24. Purchase and install turbidity meter to test for filtered water turbidity daily.	December 2024	Recommendation accepted Turbidity meter installed on filter unit	Completed	Operations Supervisor
XYZ scheme	WQ2	Treatment	Adjust SCADA alarm settings to match critical control point levels in O&M manual and train operators on changes to SCADA.	January 2026	SCADA alarm settings adjusted Still need to give awareness session to operators on new alarm settings and required response to alarms	In progress January 2026	Communications Engineer/Project Manager
XYZ scheme	WQ4	Whole of scheme	Operators to be formally trained and hold an appropriate water operators' certificate.	July 2025	This is delayed due to late enrolment for course with TAFE. The next available course is in Nov 16 and the operators will be enrolled to undertake it as priority	Not completed November 2025	Human Resource Manager



## Appendix E Terms and definitions

### E-1 Examples to help illustrate the meaning of terms used in this guideline

#### Drinking water scheme

For the purposes of this guideline, a 'drinking water scheme' comprises infrastructure components owned by a provider that form all or part of a drinking water service that supplies a community or communities. A drinking water service may consist of one or more drinking water schemes.

For example, drinking water schemes may include:

- one or more raw water sources of various types (e.g., dams, weirs, rivers, creeks, bores, ocean)
- one water treatment plant providing water to multiple reticulation systems
- multiple water treatment plants providing water to a single reticulation system
- one reticulation system that may include multiple interconnected communities.

The final determination of a drinking water scheme is left to providers. However, the sum of each drinking water scheme must equate to the provider's full drinking water service provision area.

Where a provider is having some difficulty establishing drinking water schemes, two examples are provided below:

- **Box E-1.1 is an example of a single drinking water scheme operated by a single provider.**

Note, in metropolitan regions, where areas of service can be less distinct, a scheme may be defined as all the treatment components and interconnected communities.

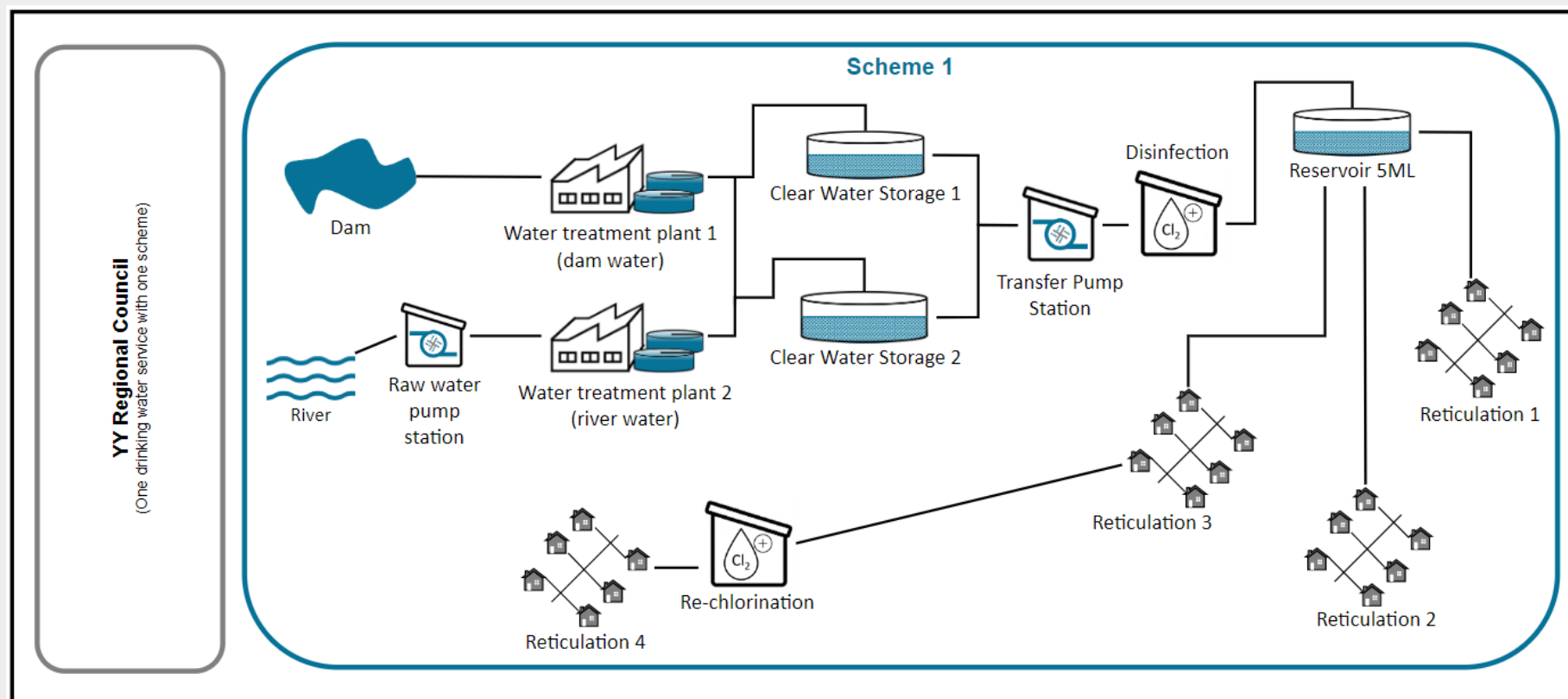
- **Box E-1.2 is an example of several drinking water schemes operated by a single provider.**

Note, in regional/rural areas, where individual towns are distinctly separated, each town with its own drinking water service should be classed as a scheme.

## Box E-1.1 – Single drinking water scheme operated by a single provider

In this scenario, the provider's drinking water service is comprised of one drinking water scheme which has two treatment facilities and sources water from both a dam and a river to supply four separate reticulation systems. The components are inter-connected and integrated and are therefore considered to be one drinking water scheme.

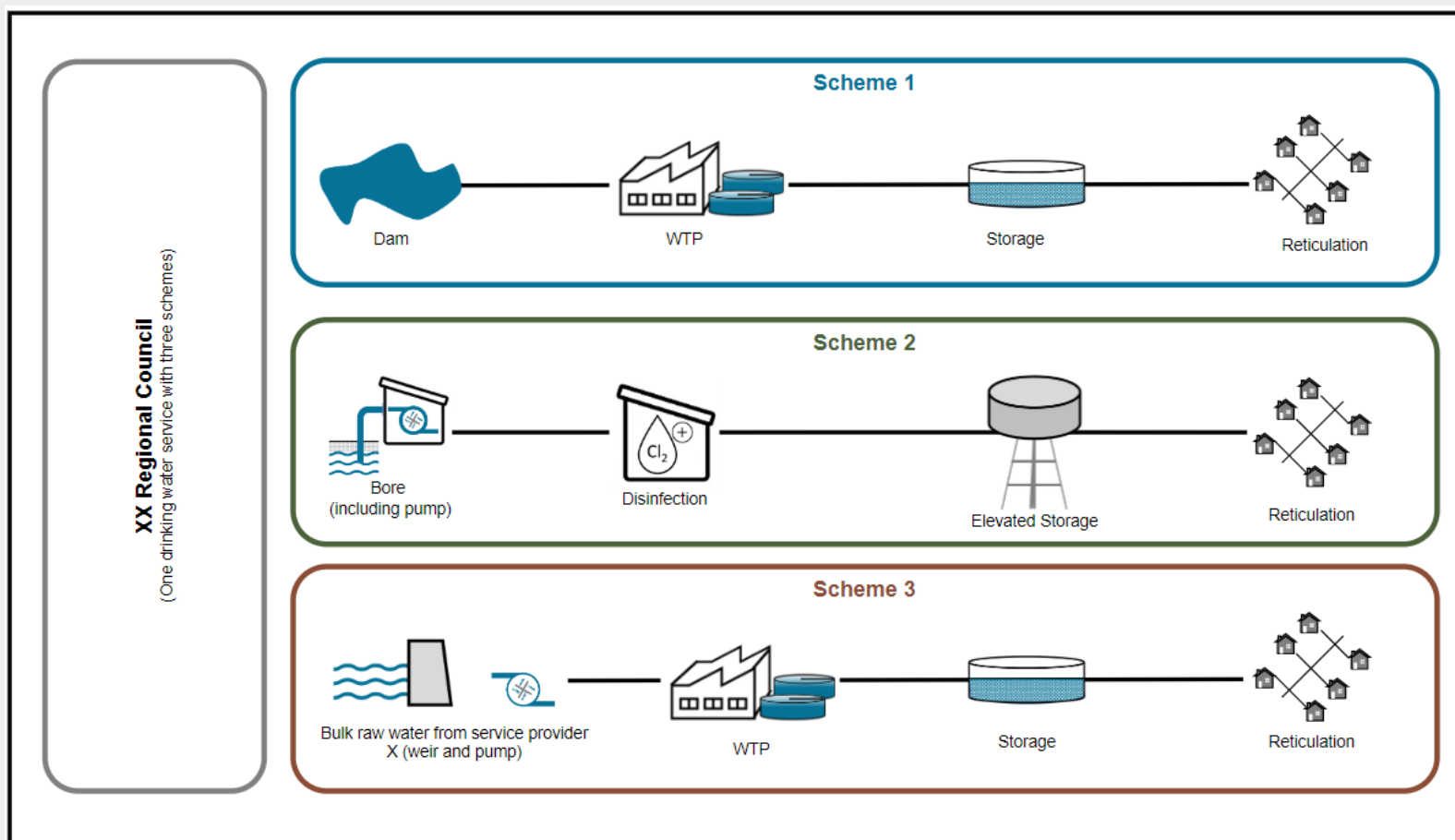
**Figure E-1: Example overall diagram of a provider's drinking water service with a single drinking water scheme**



## Box E-1.2 – Several drinking water schemes operated by a single provider

In this scenario, the provider's drinking water service is comprised of three drinking water schemes (which are individual towns that are distinctly separated), Each town, with its own drinking water service (catchment to tap) is considered to be a separate scheme. This is most likely to be representative of the drinking water services provided in regional/remote areas of Queensland.

**Figure E-2: Example overall diagram of a provider's drinking water service with several drinking water schemes**

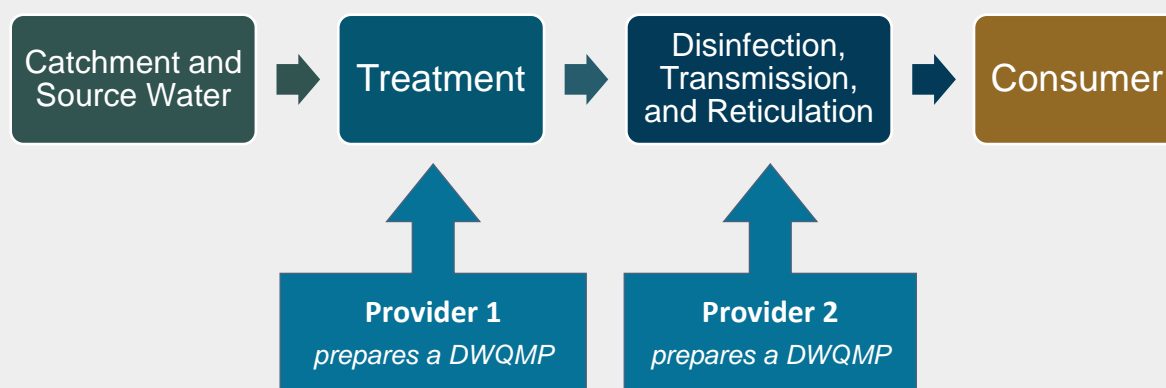


### Box E-1.1 – Multiple providers involved in supplying drinking water

In this scenario, the supply of drinking water to consumers involves multiple providers, with each provider responsible for different components of the service.

**Provider 1** supplies bulk treated water to **Provider 2** for further disinfection and then distribution of drinking water to consumers. The Act requires that each provider must prepare a DWQMP that relates to their respective drinking water service.

**Figure E-3: Example of multiple providers involved in supplying drinking water (catchment to consumer)**



## Declared service areas

In May 2019, legislative amendments were made to the Act requiring all local governments to declare, by Council resolution, their areas for reticulated water and sewerage services. This required declaring who the providers are for the water and/or sewerage services which may include Councils, distributor-retailers and privately owned providers<sup>98</sup>.

Previously this was optional, and some local governments may have already declared the service areas including publishing the notice of the declaration<sup>99</sup> as well as the declared service area maps<sup>100</sup>.



Note, it is a requirement under section 163 of the Act that the local government maintains a copy of the maps for the service areas and update them at least annually. The maps must show the limit of the service area and the location of the service provider's infrastructure.

<sup>98</sup> See section 161 of the Act

<sup>99</sup> See section 162 of the Act

<sup>100</sup> See section 163 of the Act

## E-2 Terms and their meaning

Definitions from the Act, commonly used acronyms within this guideline and other terms from various water industry sources are defined below in Table E-2.1.

Note, providers should always refer to the Act for the meaning of any legislative terms used. The terms included in the below table are provided here for your convenience.

**Table E-2.1:** List of terms and their meaning

Term, acronym, title	Meaning
95 <sup>th</sup> percentile	<p>95<sup>th</sup> percentile is a statistical calculation that indicates the value at which 95% of all measurements fall below. Water quality results could be presented as percentiles in the DWQMP.</p> <p>The ADWG suggests calculating the 95<sup>th</sup> percentile is the most useful method of determining compliance with a chemical health guideline value. For further information refer to the ADWG, section 10.3 which can be accessed online at: <a href="http://www.nhmrc.gov.au">www.nhmrc.gov.au</a>.</p>
98% annual value	<p>The term '98% annual value' in this guideline means the requirement under section 52(4) of the Public Health Regulation 2018.</p> <p>If the quality of drinking water has been tested for <i>Escherichia coli</i> for at least 1 year under this section—</p> <ul style="list-style-type: none"> <li>(a) each month, the samples taken to test for <i>Escherichia coli</i>, other than resamples, during the preceding 1-year period must be reviewed; and</li> <li>(b) <i>Escherichia coli</i> must not be detected in at least 98% of the samples reviewed.</li> </ul> <p>The regulation can be accessed online at: <a href="http://www.legislation.qld.gov.au">www.legislation.qld.gov.au</a></p>
Act	<p><i>Water Supply (Safety and Reliability) Act 2008</i></p> <p>The purpose of the Act in relation to drinking water is to provide for the safety and reliability of water supply which is primarily achieved through a regulatory framework for providing water and sewerage services (including functions and powers of service providers), drinking water quality as well as protecting the interests of customers of service providers.</p> <p>The Act can be accessed online at: <a href="http://www.legislation.qld.gov.au">www.legislation.qld.gov.au</a></p>
Advisory council	<p>Means an advisory council established under section 570 of the Act.</p>
ADWG	<p>Australian Drinking Water Guidelines</p> <p>The ADWG incorporate the Framework for the Management of Drinking Water Quality based on the 12 elements and provides guidance on what constitutes good quality drinking water.</p> <p>The ADWG can be accessed online at: <a href="http://www.nhmrc.gov.au">www.nhmrc.gov.au</a>.</p>

Term, acronym, title	Meaning
approved DWQMP	Has the same meaning as in the Act. Refer to Schedule 3. Means a drinking water quality management plan approved by the regulator under chapter 2, part 4, division 1.
Artesian water	Means water that occurs naturally in, or is introduced artificially into, an aquifer, which if tapped by a bore, would flow naturally to the surface. Refer to Schedule 4 in the <i>Water Act 2000</i> which can be accessed online at: <a href="http://www.legislation.qld.gov.au">www.legislation.qld.gov.au</a>
Audit completion	In the context of this guideline 'audit completion' means the audit is considered completed when the onsite audit has occurred, and any additional relevant information has been received by the auditor. Refer to section 7 (DWQMP audits) of this guideline for further information.
Auditable timeframe	In the context of this guideline 'auditable timeframe' means the: <ul style="list-style-type: none"> <li>period of time from when the last DWQMP audit was completed to when the current audit is conducted, or</li> <li>if no DWQMP audit has previously been undertaken, the period of time from when the plan was first approved to when the first audit is conducted.</li> </ul>
Bulk water provider	The term 'bulk water provider' in this guideline means an entity registered as a service provider under section 20 of the Act who provides a bulk water service (e.g., Seqwater).
Bulk water service	Has the same meaning as in the Act. Refer to Schedule 3. Means the supply of large quantities of water other than as an irrigation service.
C.t	Concentration (C) contact time (t) The product of residual disinfectant concentration (in mg/L) and the corresponding disinfectant contact time (in minutes). <sup>101</sup>
CEO	Chief Executive Officer The highest-ranking executive or administrator in charge of the management of an organisation.
CFO	Chief Financial Officer A senior officer of a company that is assigned the primary responsibility for managing the company's finances.
Chief executive (of the department)	In the context of this guideline, the chief executive refers to the Director-General of the Department of Regional Development, Manufacturing and Water who is 'the <a href="#">regulator</a> ' for the purposes of the drinking water provisions in the Act. Refer to section 10 of the Act.
Contingency supply	The term 'Contingency supply' in this guideline refers to a planned response to increase the likelihood that the expected demands of the town will be met when 'usual' supplies are compromised (for example during drought or during infrastructure breakdown). The

<sup>101</sup> Definition from the [ADWG](#) (Glossary)

Term, acronym, title	Meaning
	contingency supply augments the towns' water supply, either temporarily or permanently. Examples include new bore, temporary desalination plant, accessing a local waterhole, short-haul/low volume water carting. <sup>102</sup>
COO	Chief Operating Officer A senior officer in a company in charge of its daily operations.
Corrective actions	Corrective actions are those taken immediately (without reasonable delay) to prevent hazards from reaching end users for example: <ul style="list-style-type: none"> <li>actions taken following noncompliance with water quality criteria (<a href="#">reportable incidents and events</a>)</li> <li>procedures to be followed when monitoring result indicate a deviation occurs from acceptable criteria.<sup>103</sup></li> </ul>
Critical Control Point	A point, step or procedure at which control can be applied and which is essential to prevent or eliminate a hazard or reduce it to an acceptable level. <sup>104</sup>
Critical limit	A prescribed tolerance that must be met to ensure that a critical control point effectively controls a potential health hazard; a criterion that separates acceptability from unacceptability <sup>105</sup> .
Cyber security	Measures used to protect the confidentiality, integrity and availability of systems, devices and the information residing on them. <sup>106</sup> For further information refer to <a href="http://www.cyber.gov.au">www.cyber.gov.au</a> .
Decision notice	The term 'Decision notice' in this guideline refers to both the 'Notice of the decision' (approval of the DWQMP without conditions) and 'Information notice for the decision' (approval of the DWQMP with conditions) as stated under section 99 of the Act. Also refer to section 4.6 of this guideline.
Declared service area	The term 'Declared service area' in this guideline refers to 'service area' as defined under Schedule 3 of the Act. An area declared under section 161 for either or both of the following– <ul style="list-style-type: none"> <li>(a) a retail water service to customers</li> <li>(b) a sewerage service to customers.</li> </ul> Also refer to <a href="#">Appendix A5.1</a> in this guideline.
Department	The Department of Regional Development, Manufacturing and Water.
Department of Environment and Science	Means the department and regulatory agency in which the <i>Environmental Protection Act 1994</i> is administered.

<sup>102</sup> Definition from the 'KPIs for annual performance reporting for Qld urban water service providers, Definitions guide, Version 2 (May 2022)'

<sup>103</sup> Definition from the [ADWG](#) (Glossary)

<sup>104</sup> Definition from the [ADWG](#) (Glossary)

<sup>105</sup> Definition from the [ADWG](#) (Glossary)

<sup>106</sup> Definition from the Australian Cyber Security Centre (ACSC) Glossary

Term, acronym, title	Meaning
Desalination water	In the context of this guideline 'desalination water' refers to water sourced from desalination processes and is not confined to marine desalination, unless specifically stated. <sup>107</sup>
<i>Disaster Management Act 2003</i>	The Act provides for matters relating to disaster management in the state of Queensland. The Act can be access online at: <a href="http://www.legislation.qld.gov.au">www.legislation.qld.gov.au</a>
Disaster management group	The state group, district groups or local groups responsible for managing, responding and recovery to disaster events in their area. For further information refer to <a href="http://www.disaster.qld.gov.au">www.disaster.qld.gov.au</a> .
Disaster management plan	Plans about disaster management (prevention, preparedness, response and recovery) developed at local, district and state levels. For further information refer to <a href="http://www.disaster.qld.gov.au">www.disaster.qld.gov.au</a> .
Distribution system	Has the same meaning as in the Act. Refer to Schedule 3. Means the infrastructure for: (a) the transmission of water; or (b) the reticulation of water; or (c) water treatment or recycling
Distributor-retailer	Has the same meaning as in the Act. Refer to Schedule 3. Means a distributor-retailer established under the 2009 restructuring Act, section 8. Refer to the <i>South-east Queensland Water (Distribution and Retail Restructuring) Act 2009</i> which can be accessed online at: <a href="http://www.legislation.qld.gov.au">www.legislation.qld.gov.au</a>
Drinking water	Has the same meaning as in the Act. Refer to Schedule 3. Means water, for human consumption, intended primarily as water or drinking, whether or not the water is used for other purposes. Drinking water does not include: (a) water that is food as defined under the <i>Food Act 2006</i> ; or (b) water taken or supplied for domestic purposed under the <i>Water Act 2000</i> .
Drinking water advisories	A drinking water advisory is a communication between a drinking water service provider and members of the public about an <a href="#">incident or event</a> that has, or could potentially have, an adverse impact on drinking water quality. Further information can be accessed online at: <a href="http://www.health.qld.gov.au">www.health.qld.gov.au</a>
Drinking water advisories – Guidelines and templates	Prepared by Queensland Health this document provides information to drinking water service providers about drinking water advisories. The document can be accessed online at: <a href="http://www.health.qld.gov.au">www.health.qld.gov.au</a>

<sup>107</sup> Definition from the 'KPI annual performance reporting for Qld urban water service providers, Definitions guide, Version 2 (May 2022)'



Term, acronym, title	Meaning
Drinking Water Quality Management System Auditor Certification Scheme	Has the same meaning as in the Act. Refer to Schedule 3. Means the scheme relating to the conduct of audits of drinking water service providers and developed by other entities. Auditors are to be certified under this scheme to conduct an audit of the type to which the audit and report relates. Further information on the certification scheme can be accessed online at: <a href="http://www.exemplarglobal.org">www.exemplarglobal.org</a>
Drinking water scheme	The term 'drinking water scheme' in this guideline means infrastructure owned by a provider for single or multiple combinations of the individual components of treatment, transmission, or reticulation of drinking water supply, or the storage of recycled water to augment a drinking water supply. Refer to <a href="#">Appendix A5.1</a> of this guideline.
Drinking water service	Has the same meaning as in the Act. Refer to Schedule 3. Means a water service that is: (a) the treatment, transmission or reticulation of water for supply as drinking water; or (b) water collection in a water storage, if the water in the storage— (i) includes recycled water; and (ii) is used to augment a drinking water supply
Drinking water service annual report	The 'Drinking water service annual report' is the report required under section 142 of the Act. (The report was previously called a 'Drinking water quality management plan report'). Note, the 'Drinking Water Quality Management Plan Report: Guidance note and template (DNRME 2018)' has been superseded by this guideline.
Drinking water service provider	Has the same meaning as in the Act. Refer to Schedule 3. Means a water service provider for a drinking water service.
DWQMP	Drinking Water Quality Management Plan Means a plan about the storage, treatment, transmission or reticulation of water for drinking by a drinking water service provider.
DWQMP audit report	Drinking water quality management plan audit report A DWQMP audit report is the report prepared by an auditor following an audit of the providers DWQMP. The report must be prepared and given to the regulator in accordance with section 108(1)(b) and (c) of the Act. Note, the 'Drinking Water Quality Management Plan Review and Audit Guideline (DNRME 2019)' has been superseded by this guideline.

Term, acronym, title	Meaning
DWQMP: guidance notes and template for drinking water service providers (DEWS 2011)	This document has been superseded by this guideline.
DWQMP report: Guidance note (DNRME 2018)	This document has been superseded by this guideline.
DWQMP report template (DNRME 2018)	This document has been superseded by this guideline.
DWQMP review and audit guideline (DNRME 2019)	This document has been superseded by this guideline.
<i>E. coli</i>	<i>Escherichia coli</i> Bacterium found in the gut, used as an indicator of faecal contamination of water. <sup>108</sup>
Emergency supply	The term 'Emergency supply' in this guideline means a planned response that is temporary and is required to provide sufficient supply to meet highly restricted demand. It is implemented when there is a low likelihood that 'usual' supplies will be able to meet expected demands or when there are inadequate supplies to meet demands. Examples include long distance/high volume carting water, low quality feed water sources (e.g., local waterhole) with high treatment costs, temporary desalination plant that has capacity to supply only highly restricted demand. Typically requires significant expenditure of resources. <sup>109</sup>
Excursion (including operational excursion)	When a parameter goes outside identified limits. These limits may include alert levels, critical limits or water quality criteria.
Executive officer	Has the same meaning as in the Act. Refer to Schedule 3. Executive officer, of a corporation, means a person who is concerned with, or takes part in, the corporation's management, whether or not the person is a director or the person's position is given the name of executive officer.
Groundwater	The meaning of 'groundwater' in this guideline refers to 'underground water' as defined in Schedule 3 of the Act. Means water that is— (a) artesian water; or (b) subartesian water.
HACCP	Hazard Analysis and Critical Control Point HACCP is an internationally recognised risk management system used extensively in the food industry.
Hazard	A biological, chemical, physical or radiological agent that has the potential to cause harm. <sup>110</sup>

<sup>108</sup> Definition from the [ADWG](#) (Glossary)

<sup>109</sup> Definition from the 'KPI annual performance reporting for Qld urban water service providers, Definitions guide, Version 2 (May 2022)'

<sup>110</sup> Definition from the [ADWG](#) (Glossary)

Term, acronym, title	Meaning
Hazardous event	An incident or situation that can lead to the presence of a hazard (what can happen and how). <sup>111</sup>
KPI	<p>Key performance indicator</p> <p>Has the same meaning as in the Act. Refer to Schedule 3.</p> <p>For a provision about a relevant service provider, means</p> <p>(a) a measure of the efficiency and effectiveness of the delivery of services; or</p> <p>(b) data that, when combined, provides a measure of the efficiency and effectiveness of the delivery of services.</p> <p>For further information about KPIs and annual performance reporting refer to <a href="http://www.rdmw.qld.gov.au">www.rdmw.qld.gov.au</a> and the <a href="#">KPI for annual performance reporting, Definitions guide</a>.<sup>112</sup></p>
Large service provider	<p>Has the same meaning as in the Act. Refer to Schedule 3.</p> <p>(a) a service provider primarily providing bulk water services; or</p> <p>(b) for a retail water service or sewerage service—a service provider with more than 25 000 connections to a registered service; or</p> <p>(c) for a drinking water service that is the reticulation of water and is not a retail water service—a service provider with more than 25 000 connections to a registered service; or</p> <p>(d) for an irrigation service—a service provider with:</p> <p>(i) more than 500 users; and</p> <p>(ii) a volume throughput, in any of the last five financial years, of more than 10 000ML</p>
Medium service provider	<p>Has the same meaning as in the Act. Refer to Schedule 3.</p> <p>(a) for a retail water service or sewerage service—provider with more than 1000 but not more than 25000 connections to a registered service; or</p> <p>(b) for a drinking water service that is the reticulation of water and is not a retail water service—a service provider with more than 1000 but not more than 25 000 connections to a registered service; or</p> <p>(c) for an irrigation service—as service provider with:</p> <p>(i) more than 100 but not more than 500 users; and</p> <p>(ii) a volume throughput, in any of the last financial years, of more than 10 000ML</p>
Multiple providers	<p>The term ‘multiple providers’ in this guideline means the provision of drinking water that involves more than one drinking water service provider.</p> <p>For example, in South-East Queensland the supply of drinking water to consumers (catchment to tap) can involve bulk providers,</p>

<sup>111</sup> Definition from the [ADWG](#) (Glossary)

<sup>112</sup> ‘KPI annual performance reporting for Qld urban water service providers, Definitions guide, Version 2 (May 2022)’

Term, acronym, title	Meaning
	distributor-retailers, South-East Queensland councils etc. with each provider responsible for different components of the service. The Act requires that each registered provider must prepare a DWQMP that relates to their respective drinking water service.
Must	In the context of this guideline, provision of information that is referred to as 'must' is considered mandatory and is the minimum amount of information required.
NATA	National Association of Testing Authorities NATA is the recognised national accreditation authority for analytical laboratories and testing service providers in Australia. NATA accredits organisations to perform testing and inspection activities for their products and services.
NHMRC	National Health and Medical Research Council NHMRC is a statutory authority of the Australian Government responsible for medical research and maintaining the ADWG through a rolling review process to ensure the framework for management of drinking water quality remains up to date and evidence-based.
Non-potable	In term 'non-potable' in this guideline means water that has been removed from the source and is not intended for use as a drinking water supply, whether it is treated or not. Non-potable water is not for drinking purposes. <sup>113</sup>
Notice of noncompliance with water quality criteria	Means the approved form required under section 102(3) of the Act regarding noncompliance with <a href="#">water quality criteria (reportable incidents and events)</a> . The drinking water service provider must, unless the provider has a reasonable excuse, give the regulator notice of the following in the approved form as soon as practicable— (a) the noncompliance and the circumstances that gave rise to the noncompliance; (b) any action taken, or to be taken, by the provider to correct the noncompliance; (c) the measures the provider will take to prevent the noncompliance in the future. The approved forms can be found online at: <a href="http://www.business.qld.gov.au">www.business.qld.gov.au</a>
Notice of prescribed incident	Means the approved form(s) required under section 102A(3) of the Act. <sup>114</sup>
Notice of registration	Means the written notification from the regulator about an entity's registration as a water and/or sewerage service provider under section 20 of the Act.

<sup>113</sup> Definition from the 'KPI annual performance reporting for Qld urban water service providers, Definitions guide, Version 2 (May 2022)'

<sup>114</sup> Note, at the time of publication there are no incidents prescribed under a regulation.

Term, acronym, title	Meaning
	The regulator must give notice of the registration to the applicant as stated under section 22(2)(b) of the Act.
Operating agent	Has the same meaning as in the Act. Refer to Schedule 3. For a service provider, see section 12(3)(d)– when the service provider appoints another entity (an operating agent) to operate the infrastructure for the service provider.
Operational monitoring	The planned sequence of measurements and observations used to assess and confirm that individual barriers and preventive strategies for controlling hazards are functioning properly and effectively. <sup>115</sup>
OFI	Opportunity for improvement Areas for improvement identified during a DWQMP audit and documented in the audit report.
Pathogens	A disease-causing organism (e.g., bacteria, viruses and protozoa) <sup>116</sup>
PFAS	Per- and polyfluoroalkyl substances Health Based Guideline Values and a Fact Sheet on Per-fluoroalkyl and poly-fluoroalkyl substances (PFAS) can be found in the ADWG.
Potable water	The term 'potable water' in this guideline means water that is intended for use as a drinking water supply, whether it is treated or not. Potable water quality should materially meet the most current version of the ADWG. <sup>117</sup>
Preparing a DWQMP: supporting information (DEWS 2010)	This document has been superseded by this guideline.
Prescribed incident	Has the same meaning as in the Act. Refer to Schedule 3. Means an incident prescribed under a regulation. <sup>118</sup>
Prescribed related entity	Has the same meaning as in the Act. Refer to Schedule 3. An entity (the prescribed related entity) that is prescribed under a regulation as a related entity of the relevant infrastructure owner.
Preventive measures	Any planned action, activity or process that is used to prevent hazards from occurring or reduce them to acceptable levels. <sup>119</sup>
Provider	In this guideline 'provider' means drinking water service provider.
<i>Public Health Act 2005</i>	An Act to protect and promote the health of the Queensland public. Refer to part 9 of the <i>Public Health Act 2005</i> .
Public Health Regulation 2018	Prescribes standards for the quality of water and requirements for the management of the quality of water. This includes the quality standard for drinking water and the quality standard for recycled water intended to augment a supply of drinking water.

<sup>115</sup> Definition from the [ADWG](#) (Glossary)

<sup>116</sup> Definition from the [ADWG](#) (Glossary)

<sup>117</sup> Definition from the 'KPI annual performance reporting for Qld urban water service providers, Definitions guide, Version 2 (May 2022)'

<sup>118</sup> Note, at the time of publication there are no incidents prescribed under a regulation.

<sup>119</sup> Definition from the [ADWG](#) (Glossary)

Term, acronym, title	Meaning
Public Health Units (Queensland Health)	<p>Refer to section 52 and 53 of the Public Health Regulation 2018.</p> <p>Public health units are units within the department of Health (Queensland Health) that are located across the state. They provide health services focused on protecting health, preventing disease, illness, injury and promoting health and wellbeing at a population or whole of community level.</p> <p>Further information can be accessed online at: <a href="http://www.health.qld.gov.au">www.health.qld.gov.au</a></p>
Publish	<p>Has the same meaning as in the Act. Refer to Schedule 3.</p> <p>(a) for a document other than a notice, means to publish the document on the internet, free of charge, as soon as practicable; or</p> <p>(b) for a notice, means to publish the notice—</p> <p>(i) if a provision states the way the notice must be published- in the way stated in the provision; or</p> <p>(ii) if a provision does not state the way the notice must be published- in a newspaper circulating generally throughout the Area for which the notice is published.</p>
QHFSS	<p>Queensland Health Forensic and Scientific Services</p> <p>An organisation with facilities/laboratories that provides testing/analytical services in forensic, public and environmental health.</p>
Queensland Health	<p>Means the health department which the <i>Public Health Act 2005</i> and Public Health Regulation 2018 is administered.</p>
Queensland Prevention, Preparedness, Response and Recovery Disaster Management Guideline	<p>This document provides guidance to local, district and state disaster management stakeholders with regard to their functions, obligations and legislative requirements under the <i>Disaster Management Act 2003</i>.</p> <p>The document can be accessed online at: <a href="http://www.disaster.qld.gov.au">www.disaster.qld.gov.au</a></p>
Recycled water	<p>The term 'recycled water' in this guideline refers to recycled water that is used to augment a drinking water supply.</p> <p>For further information about the use of recycled water in Queensland refer to <a href="http://www.business.qld.gov.au">www.business.qld.gov.au</a> and the <a href="#">Recycled water management plan and validation guidelines</a>.</p>
Registered service	<p>Has the same meaning as in the Act. Refer to Schedule 3.</p> <p>For a service provider, means a water or sewerage service for which the service provider is registered.</p>
Regulator	<p>The chief executive of the department is 'the regulator' under the Act. Refer to section 10 of the Act.</p> <p>The chief executive of the department, as the regulator, has delegated certain powers under the Act to the officers of the Department of Regional Development, Manufacturing and Water. Refer to section 15 of the Act.</p>

Term, acronym, title	Meaning
Relevant infrastructure	Has the same meaning as in the Act. Refer to section 20(1)(c)(i). For registration of service providers, an entity (the relevant infrastructure owner) who is the owner of one or more elements of infrastructure (the relevant infrastructure) for supplying a water or sewerage service for which a charge is intended to be made.
Report requirement notice	Has the same meaning as in the Act. Refer to sections 141(1) and 141(2)(a). The term 'Report requirement notice' in this guideline is the written notice given to a provider by the regulator, under section 141(2)(a), stating that information about compliance with the approved DWQMP must be included in the providers Drinking water service annual report.
Reportable incidents and events  (noncompliance with water quality criteria)	The term 'reportable incidents and events' in this guideline refers to a 'noncompliance with water quality criteria' as stated under section 102 of the Act and noncompliance with a 'prescribed incident' <sup>120</sup> as stated under section 102A of the Act. A 'noncompliance with water quality criteria' is reportable to the regulator via the drinking water quality incident hotline, 1300 596 709 and by giving notification to the regulator in the approved forms. The approved forms can be found online at: <a href="http://www.business.qld.gov.au">www.business.qld.gov.au</a> . For the definition of ' <a href="#">water quality criteria</a> ' refer to Schedule 3 of the Act.
Reticulated water service	Has the same meaning as in the Act. Refer to section 161(10). (a) Means a water service that is the reticulation of water; but (b) does not include— (i) an irrigation service or bulk water service in any area; or (ii) the supply of recycled water in any area.
Risk	The likelihood of a hazards causing harm in exposed populations in a specified timeframe, including the magnitude of that harm. (severity of the consequences). <sup>121</sup>
RMIP	Risk Management Improvement Program RMIP is a mechanism for provider's to demonstrate to the regulator how current unacceptable residual risks (and potential future unacceptable risks) will be addressed/managed. Refer to <a href="#">section 3.1.10</a> and <a href="#">Appendix A</a> of this guideline.
Sanitary survey	A review of the water sources, facilities, equipment, operation and maintenance of a public water system to evaluate its adequacy for producing and distributing safe drinking water. <sup>122</sup>

<sup>120</sup> Note, at the time of publication there are no incidents prescribed under a regulation.

<sup>121</sup> Definition from the [ADWG](#) (Glossary)

<sup>122</sup> Definition from the [ADWG](#) (Glossary)



Term, acronym, title	Meaning
	For further information refer to the <i>Manual for the Application of Health-Based Targets for Drinking Water Safety</i> at: <a href="http://www.wsaa.asn.au">www.wsaa.asn.au</a> and the ADWG at: <a href="http://www.nhmrc.gov.au">www.nhmrc.gov.au</a>
SCADA	Supervisory Control and Data Acquisition A control system architecture comprising computers, networked data communications and graphical user interfaces for high-level supervision of machines and processes.
Section 630 notice	The term 'Section 630 notice' in this guideline refers to a written notice given to a drinking water service provider under section 630(2) about the provision of water quality monitoring and reporting required until a provider has an approved DWQMP in place.
Service provider	Has the same meaning as in the Act. Refer to Schedule 3. Means a water service provider or a sewerage service provider
Should	In the context of this guideline, the use of the term 'should' indicates information that is considered when addressing the requirements stated in this guideline. Information stated in the guideline as a 'should' is not intended to be a definitive list and it is the responsibility of the provider to ensure that sufficient, relevant information is provided.
Small service provider	Has the same meaning as in the Act. Refer to Schedule 3. (a) for retail water service or sewerage service—a service provider with 1000 or less connections to a registered service; or (b) for a drinking water service that is the reticulation of water and is not a retail water service—a service provider with 1000 or less connections to a registered service; or (c) for an irrigation service—a service provider with: (i) 100 or less users; or (ii) a volume throughput, in any of the last five financial years, of 10000ML or less; or (d) for a water service other than a water service mentioned in paragraph (a), (b) or (c), a service provider: (i) with not more than 500 customers; and (ii) that mainly provides drainage services or water for domestic purposes or for watering stock.
South-East Queensland council	In this guideline 'South-East Queensland council' means a registered drinking water service provider in South-East Queensland (who is not a distributor-retailer).
<i>South-East Queensland Water (Distribution and Retail Restructuring) Act 2009</i>	This Act only applies to certain drinking water service providers within South-East Queensland. The general provisions for distributor-retailers within the South-East Queensland region, are outlined in this Act as well as the application of particular



Term, acronym, title	Meaning
	provisions under the <i>Water Supply (Safety and Reliability) Act 2008</i> .
	The Act does not affect the obligation of South-East Queensland drinking water service providers to have an approved DWQMP.
Spot audit	Has the same meaning as in the Act. Refer to Schedule 3. Means an audit conducted under section 110 of the Act.
Surface water	All water naturally open to the atmosphere (e.g., rivers, streams, lakes). <sup>123</sup>
Subartesian water	Has the same meaning as in the Act. Refer to Schedule 3. Means water that occurs naturally in, or is introduced artificially into, an aquifer, which if tapped by a bore, would not flow naturally to the surface.
Verification monitoring	Used to confirm product quality at the point of supply, compliance with 'water quality criteria' and to identify deficiencies in existing preventative/control measures. It is an assessment of the performance of the scheme.
<i>Water Act 2000</i>	The Act provides for the sustainable management of the State's water resources, sustainable and secure supply and demand management in SEQ and the management of impacts on underground water by the resource sector.  This Act deals with planning and allocation of water entitlements as well as the obligation on service providers to manage the state's water resources sustainably and efficiently.  In this Act, the efficient use of water considers both the volume and quality of water required for particular circumstances.
Water authority	Has the same meaning as in the Act. Refer to Schedule 3. Means a water authority established under the <i>Water Act 2000</i> (e.g., Mount Isa Water Board, Gladstone Area Water Board).
<i>Water Fluoridation Act 2008</i> and Water Fluoridation Regulation 2020	The Act and Regulation provide a regulatory framework for the fluoridation of public potable water supplies.  The Act and regulation can be accessed online at: <a href="http://www.legislation.qld.gov.au">www.legislation.qld.gov.au</a>
Water Fluoridation Code of Practice 2021	The aim of The Water Fluoridation Code of Practice is to help public potable water suppliers meet regulatory requirements and to help them achieve best practice in the design, installation and operation of fluoridation facilities in Queensland. The code can be accessed online at: <a href="http://www.health.qld.gov.au">www.health.qld.gov.au</a>
Water Industry Operator Certification Framework 2018: Drinking Water, Wastewater, Recycled Water	Prepared by the Queensland Water Directorate (qldwater) acting as secretariat for the Water Industry Operator Certification Taskforce (WIOCT), the framework "provides a set of nationally consistent criteria that define and recognise the minimum level of

<sup>123</sup> Definition from the [ADWG](#) (Glossary)

Term, acronym, title	Meaning
	<p>competency and capability required by those Operators who manage the treatment of water, wastewater and/or recycled water to ensure that the final product does not have an adverse impact on public health or the environment, and that its quality is fit for purpose and safe to use".</p> <p>The national framework is intended for use by all owners and/or operators of systems that treat and supply drinking water and with certification can provide assurance to regulators, communities and the users of drinking water that operators are competent to manage the drinking water service and effectively respond to water quality risks and incidents.</p>
Water Quality and Reporting guideline for a drinking water service	<p>The guideline provides information on the 'water quality criteria' for drinking water in Queensland and reporting drinking water quality incidents.</p> <p>The guideline can be accessed online at: <a href="http://www.rdmw.qld.gov.au">www.rdmw.qld.gov.au</a></p>
Water quality criteria	<p>'Water quality criteria' means the water quality criteria for drinking water, as defined in Schedule 3 of the Act and a health guideline value provided in the most current version of the Australian Drinking Water Guidelines (ADWG).</p> <p>Water quality criteria for drinking water, means all of the following:</p> <ul style="list-style-type: none"> <li>(i) the standards for the quality of drinking water prescribed in the regulation under the <i>Public Health Act 2005</i> (Note, this is in section 52 of the Public Health Regulation 2018, which can be accessed online at: <a href="http://www.legislation.qld.gov.au">www.legislation.qld.gov.au</a>)</li> <li>(ii) the criteria stated in a guideline, if any, made by the regulator about the quality of drinking water (Refer to the Water Quality and Reporting guideline for a drinking water service, which can be accessed online at: <a href="http://www.rdmw.qld.gov.au">www.rdmw.qld.gov.au</a>)</li> <li>(iii) the criteria for the quality of drinking water stated in a condition applying to a drinking water quality management plan. (Note, these are stated in the providers <a href="#">decision notice</a> for approving the DWQMP)</li> </ul>
Water Retention and Disposal Schedule QDAN 738 v1	<p>An authorisation under s.26 of the <i>Public Records Act 2002</i> for the disposal of records related to the management of water and applies to records created in any format.</p> <p>The document can be accessed online at: <a href="http://www.forgov.qld.gov.au">www.forgov.qld.gov.au</a></p>
Water service	<p>Has the same meaning as in the Act. Refer to Schedule 3.</p> <p>1. Water service means—</p>

Term, acronym, title	Meaning
	<p>(a) water harvesting or collection, including, for example, water storages, <a href="#">groundwater</a> extraction or replenishment and river water extraction; or</p> <p>(b) the transmission of water; or</p> <p>(c) the reticulation of water; or</p> <p>(d) drainage, other than stormwater drainage; or</p> <p>(e) water treatment or recycling.</p> <p>2. For chapter 2, part 3, the term does not include a service supplied by infrastructure, if—</p> <p>(a) the infrastructure is used solely for mining purposes; or</p> <p>(b) the service is used only by—</p> <p>(i) the owner of the infrastructure or the owner's guests or employees including, for example, guests at a resort; or</p> <p>(ii) if the owner of the infrastructure is a body corporate for a community titles scheme, however described, established under an Act—the occupants of lots in the scheme.</p> <p>Examples of body corporates for community title schemes—</p> <ul style="list-style-type: none"> <li>• a body corporate under the <i>Body Corporate and Community Management Act 1997</i></li> <li>• a community body corporate or a precinct body corporate under the <i>Mixed Use Development Act 1993</i></li> <li>• the primary thoroughfare body corporate or the principal body corporate under the <i>Sanctuary Cove Resort Act 1985</i></li> </ul>
Water service provider	<p>Has the same meaning as in the Act. Refer to Schedule 3.</p> <p>Means a person registered under Chapter 2, part 3 as a service provider for a water service.</p>
WTP	<p>Water treatment plant</p> <p>WTP is defined as a facility that houses a combination of processes such as filtration, coagulation, pH correction, disinfection, softening and advanced treatment process (such as reverse osmosis) used to make the water fit for purpose.</p>

Department of Regional Development,  
Manufacturing and Water  
GPO Box 2247, Brisbane, Queensland 4001  
13 QGOV (13 74 68)  
[info@rdmw.qld.gov.au](mailto:info@rdmw.qld.gov.au)  
**[rdmw.qld.gov.au](http://rdmw.qld.gov.au)**



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