

Submitting Monitoring Plans and Incident Notification Protocols for Approval



Purpose

This document has been developed to provide guidance on what to submit to SA Health for approval to meet requirements of *the Safe Drinking Water Act 2011*. It is intended for use by drinking water providers developing a custom Risk Management Plan.

Introduction

The *Safe Drinking Water Act 2011* (the Act) commenced on 1 March 2013. Drinking water providers that were operating before the commencement of the Act have until the transitional date of 1 March 2014 to have a Risk Management Plan (RMP) in place.

Under Section 14 of the Act you are required to submit the following sections of your RMP to SA Health for approval:

- a monitoring program consisting of
 - operational monitoring (inspection and maintenance) AND
 - verification monitoring (water quality)
- an incident identification and notification protocol

This information should be extracted from your RMP

Note that the full RMP you produce will contain much more information than just these sections. Further assistance can be obtained from the Water Quality Unit at SA Health if required.

In order for us to assess that both your monitoring program and incident identification and notification protocol are adequate for your drinking water supply, we also require you to submit a description and/or diagram of the water supply that includes details of all water treatment and disinfection processes. Extract this information from your RMP.

Email, post or fax your submission to SA Health.

Water Quality Unit
Public Health
Department for Health and Ageing
PO Box 6, Rundle Mall
ADELAIDE SA 5000

Telephone: 8226 7100
Fax: 8226 7102
Email: waterquality@health.sa.gov.au
www.sahealth.sa.gov.au/safedrinkingwateract

Two examples are used throughout this document to illustrate what information is required by SA Health to facilitate approval. No unusual hazards are identified in these examples. However, in some cases site specific hazards may be present and identified and the resulting monitoring plans and incident notification protocol could be more complex than those illustrated.

Description of Drinking Water Supply System and Hazard Identification

The first part of your RMP will be a description of the system of supply from catchment to consumer. For submission to SA Health, a flow chart or simple diagram (hand drawn or computer generated) clearly showing the supply system from catchment to tap is sufficient. This information will assist us in approving your monitoring program and incident identification and notification protocol. For submission, your diagram or flow chart should include:

- Catchment details with any unusual hazards identified
 - Unusual hazards are those that are not generally found in all drinking water supplies and do not include general health related chemicals or faecal contamination
 - Examples include storage of fuels or mining activity
- Details of any treatment and disinfection
- Details of any storage
- Details of the distribution system

To assist you, SA Health has used two example standard drinking water supply systems to illustrate the minimum information required for a flow chart (Figure 1 and 2) or a diagram (Figure 3 and 4) of your system.

Example 1: Surface Water Supply

- Surface water is collected in a dam
- Dam water is treated via flocculation and sand filtration
- Treated water is transferred to a holding tank and disinfected with UV and chlorine
- Drinking water is distributed to consumers via a distribution system as required

Example 2: On-Supply of mains water

- Water is extracted from a SA Water mains distribution pipe
- Water is transferred to a storage tank and chlorinated
- Drinking water is distributed to consumers in a town via a distribution system plumbed into customer homes

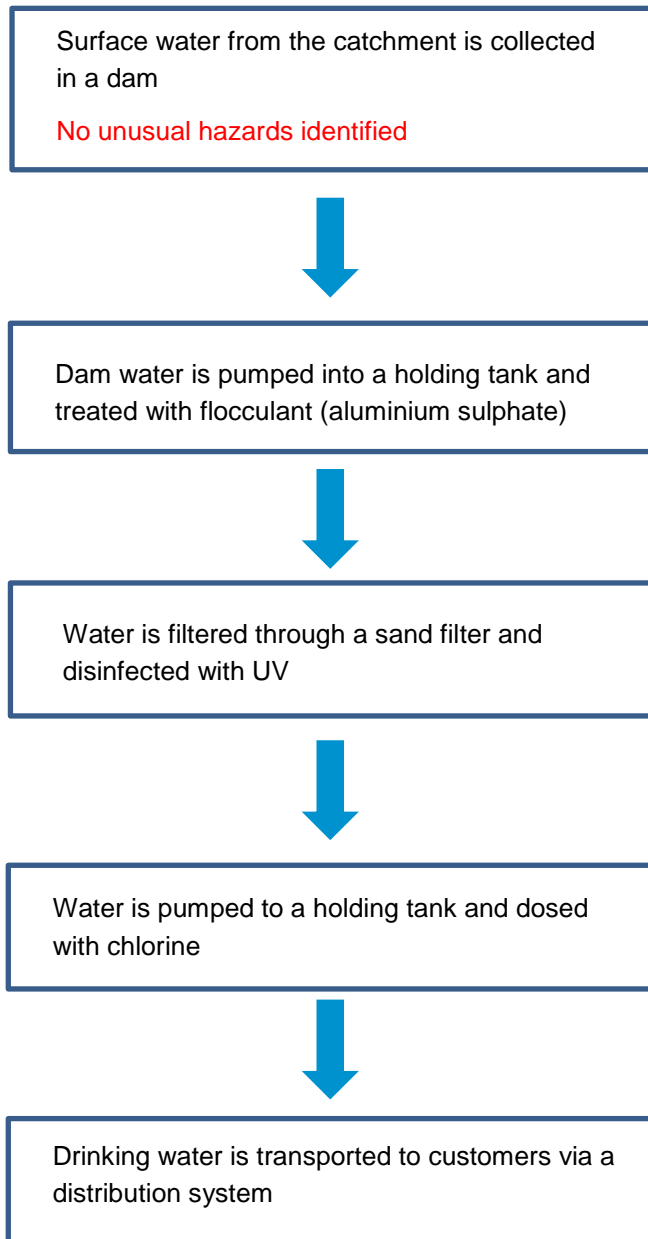


Figure 1 Flow chart of surface water supply

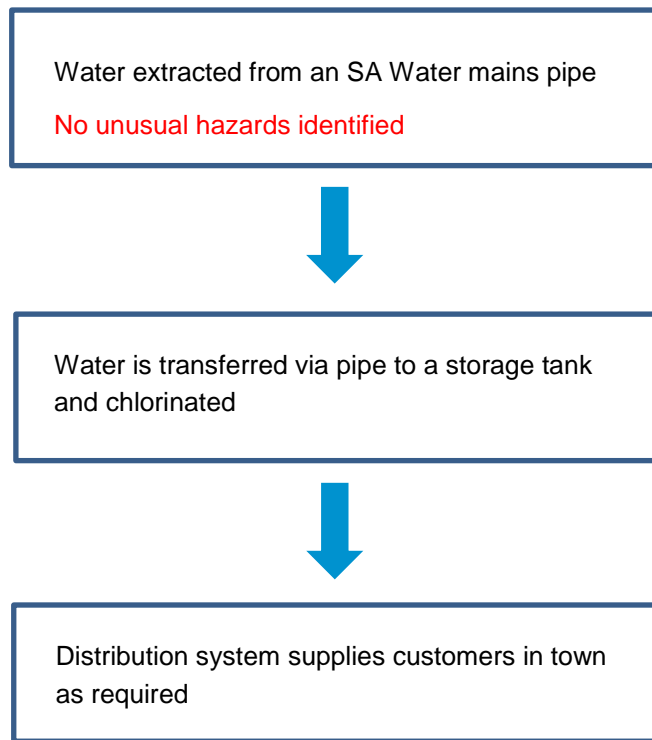


Figure 2 Flow chart for on-supply of mains water

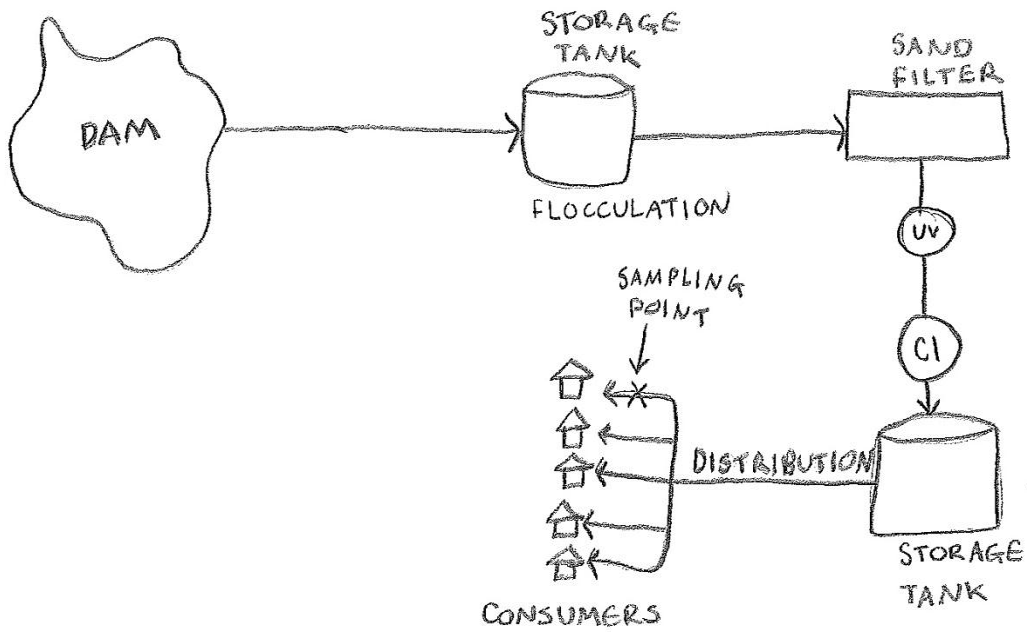


Figure 3 Surface water supply diagram

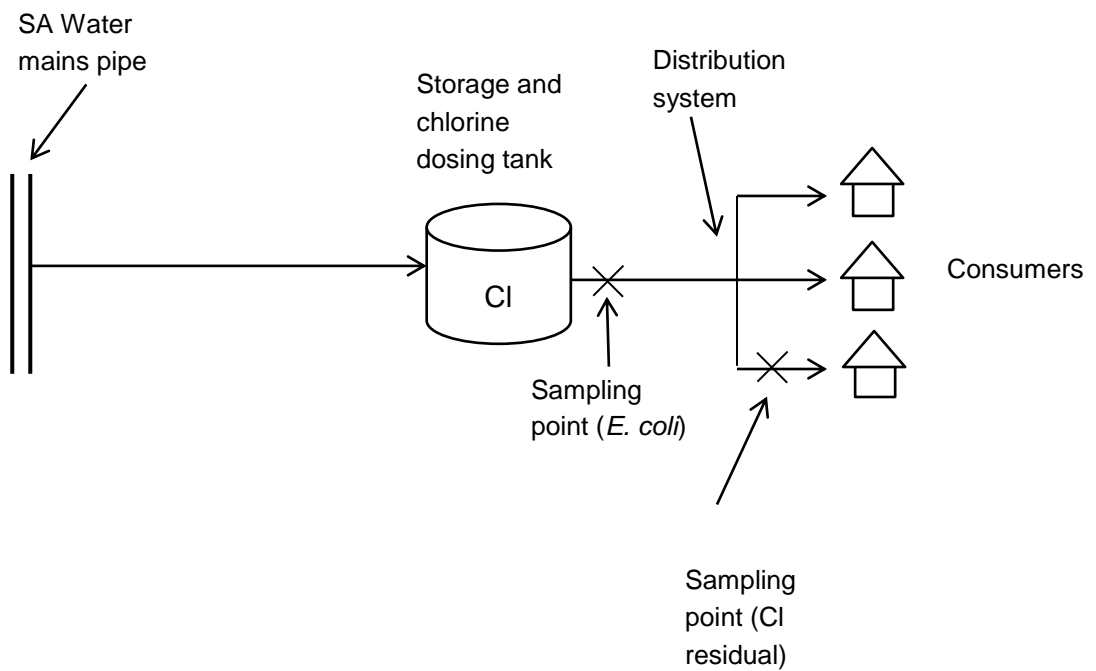


Figure 4 Mains water on-supply diagram

Monitoring Program- Operational Monitoring

Developing an Operational Monitoring Plan Step by Step:

- Identify preventative measures in place
- Work out what can be monitored for each preventative measure to demonstrate that it is working - this is called operational monitoring
- Plan when monitoring for each preventative measure will take place and at what frequency
- Record and document each preventative measure

Preventative measures

In the previous section the drinking water supply was documented from catchment to tap and potential hazards were identified. The next step is to identify ways to prevent or eliminate (where possible) these hazards-also called preventative measures. Preventative measures may be the same for a number of hazardous events and can take a number of forms. These measures can prevent the hazard from entering the drinking water supply or reduce/remove it if present in the drinking water. Examples include:

Supply description	Hazardous event	Examples of preventative measures
Surface water (dam)	Cows and humans in catchment	<ul style="list-style-type: none">• Protect catchment area• Filtration to remove disease causing organisms from the water
On-supply of mains water	Animals entering storage tank	<ul style="list-style-type: none">• Prevent access to storage tank ensuring tank is fully sealed

Operational monitoring

Putting in preventative measures is important, however it is equally important to make sure that they are working and doing what they are designed to do. For example, a UV disinfection unit will help reduce microbial contamination in the drinking water but if it is not checked regularly the lamp may not be working and no one will find out until the next service date. Frequencies should be set as appropriate. Examples of operational monitoring include:

Supply description	Examples of preventative measures	Operational Monitoring	Frequency
Surface water (dam)	<ul style="list-style-type: none"> Restrict animal and human access to catchment 	<ul style="list-style-type: none"> Visually inspect the catchment and ensure fences are in good repair 	<ul style="list-style-type: none"> Seasonal
	<ul style="list-style-type: none"> sand filtration 	<ul style="list-style-type: none"> Turbidity of filtered water 	<ul style="list-style-type: none"> Continuous (preferable) or daily
	<ul style="list-style-type: none"> UV disinfection 	<ul style="list-style-type: none"> UV dose 	<ul style="list-style-type: none"> Continuous
	<ul style="list-style-type: none"> Chlorination 	<ul style="list-style-type: none"> Chlorine residual 	<ul style="list-style-type: none"> Continuous or daily
On supply of mains water	<ul style="list-style-type: none"> Prevent animal access to storage tank 	<ul style="list-style-type: none"> Visually inspect the tank ensuring it is sealed and animal access is not possible 	<ul style="list-style-type: none"> 6 monthly
	<ul style="list-style-type: none"> Chlorination 	<ul style="list-style-type: none"> chlorine residual 	<ul style="list-style-type: none"> continuous or daily

Monitoring Program: Verification Monitoring

Verification monitoring:

- Is the final check that the drinking water supply is operating effectively and the water produced is of drinking water quality.
- Requires certain indicators of water quality to be tested at the point of supply.
 - Monitoring will always include testing for *E. coli*, the presence of which is indicative of faecal contamination
 - For surface or groundwater supplies monitoring will always include health related chemicals. A list of these can be found on the Safe Drinking Water Act website
 - Additional monitoring will be system specific and dependent on additional hazards identified in your initial risk assessment

What to test for?

Supply description	Hazards identified	Hazardous event	Risk	Verification monitoring
Surface water (dam)	Animals in catchment	Faecal contamination of water supply	Short term illness from ingesting water	• <i>E. coli</i>
	Chemicals in the catchment	Chemical spill leading to contamination of water supply	Illness from ingesting water	• Health related chemicals
On supply of mains water	Animals in storage tank	Faecal contamination of water supply	Short term illness from ingesting water	• <i>E. coli</i>

How often to test?

Frequency of testing is dependent on a number of supply and consumer specific factors, including:

- The extent of hazards identified
- The extent of catchment protection
- The extent of the preventative measures put in place
- The vulnerability of the population supplied
- The size of the population supplied
- Whether the water is being supplied to a regulated premise

Example	Parameter	Frequency	Compliance achieved
Surface water (dam)	<i>E. coli</i>	Monthly	0 per 100 ml
	Health related chemicals	Annual	< ADWG values
On supply of mains water	<i>E. coli</i>	Monthly - quarterly	0 per 100 ml

Consolidated Monitoring Plan

Submit a combined operational and verification monitoring plan for approval. See examples below.

Example 1 – Surface water (dam) supply

Monitoring parameter	Frequency
Operational Monitoring	
Inspection of the catchment for sources of contamination	Seasonal
Filtered water turbidity	Continuous (preferable) or daily
UV dose	Continuous
Chlorine residual	Continuous (preferable) or daily
Verification Monitoring	
<i>E. coli</i>	Monthly
Health related chemicals	Annually

Example 2 – On-supply of mains water

Monitoring parameter	Frequency
Operational Monitoring	
Visually inspect the tank ensuring it is sealed and animal access is not possible	6 monthly
Chlorination	Continuous or daily
Verification Monitoring	
<i>E. coli</i>	Monthly

Incident Identification and Notification Protocol

An incident identification and notification protocol outlines incidents that may occur based on your water supply, and criteria for reporting the incident. Many incidents are predictable and in most cases prompt action can prevent incidents causing a significant risk to human health. On reporting, SA Health will provide assistance to guide you through an incident to ensure the best outcome for human health.

To generate an incident identification and notification protocol, refer to your monitoring program to determine which items to include.

- List the water quality parameters you are monitoring in your verification monitoring protocol.
- List any parameters in your operational monitoring program that would cause health concern if not maintained.
- For each parameter listed, determine the criteria that would trigger an event.
- All treatment failures should be included.
- For each event, define how it will be notified to SA Health, including the time frame for notification to occur.

Examples are given below:

Incident identification and notification for Example 1 - Surface water (dam) supply

Parameter	Criteria	Notification Requirements
<i>E.coli</i>	Any detection of <i>E. coli</i> in a 100 ml water sample	Immediate notification to SA Health by telephone and within 24 hrs by submission of the incident notification form
Health related chemicals	Any exceedance of the ADWG values for chemicals monitored	Immediate notification to SA Health by telephone and within 24 hrs by submission of the incident notification form
turbidity	Filtrate turbidity is above set maximum	Immediate notification to SA Health by telephone and within 24 hrs by submission of the incident notification form
UV failure	Any failure of the UV unit	Immediate notification to SA Health by telephone and within 24 hrs by submission of the incident notification form
Chlorination	Chlorine over-dose determined by chlorine residual (>5 mg/L) Chlorine failure resulting in loss of chlorine residual	Immediate notification to SA Health by telephone and within 24 hrs by the submission of the incident notification form.
Contamination in catchment	Suspected contamination of source water due to human or animal	Immediate notification to SA Health by telephone and within 24 hrs by submission of the

Parameter	Criteria	Notification Requirements
	activities in catchment	incident notification form
Undefined incident	Any other incident (not defined above) or where specific concerns exist over the quality of the drinking water supply	Immediate notification by telephone to SA Health and within 24 hrs by the submission of the incident notification form

Incident identification and notification protocol for Example 2 - On-supply of mains water

Parameter	Criteria	Notification Requirements
<i>E.coli</i>	Any detection of <i>E. coli</i> in a 100 ml water sample	Immediate notification to SA Health by telephone and within 24 hrs by the submission of an incident notification form.
Contamination of water supply	Suspected contamination of drinking water supply due to dead animal in storage tank	Immediate notification to SA Health by telephone within 24 hrs by the submission of the incident notification form
Chlorination	Chlorine over-dose determined by chlorine residual (>5 mg/L) Chlorine failure resulting in loss of chlorine residual	Immediate notification to SA Health by telephone and within 24 hrs by the submission of the incident notification form.
Undefined incident	Any other incident (not defined above) or where specific concerns exist over the quality of the drinking water supply	Immediate notification to SA Health by telephone and within 24 hrs by the submission of the incident notification form