

Water Supply Management Plan – Template Form

NSW Health recommends that you have a management plan for your water supply, to prevent contamination and protect water quality from the water source to the consumer.

Your management plan should address three key questions of risk assessment:

- **What problems could occur between the water source and the consumer? (i.e. understanding your water supply)**
- **How can they be prevented or fixed? (i.e. protecting your water supply, treating the water, and providing warnings)**
- **How do you know that the problem has been prevented or fixed? (i.e. monitoring)**

When you start to check your water supply system, these three stages of risk assessment are useful questions to ask. They will help to apply these Guidelines more directly to your system.

The management plan for your water supply should set out how you:

- assess and protect the quality of the source water;
- assess water quantity requirements
- make sure treatment processes are appropriate, maintained and working properly;
- regularly test to assess water quality;
- make the water supply safe if contamination has occurred;
- ensure that consumers are warned and/or provided with safe drinking water (e.g. by using boiled or bottled water) if the normal supply is found to be unsatisfactory or quality cannot be guaranteed.

The plan should be kept in a central place that is easily accessible to staff.

The plan should be a working document. You should review your water supply regularly, for example any new hazards identified due to observations, equipment checks, or monitoring should be included and reviewed in the identification and control of hazards section of the plan.

Organisational details

In the table below include all relevant details of your business/community.

Table 1. Organisational details

Name of property/business or community	
Owner/occupier or Manager	
Contact details	

Description of system

In the box on page 5 draw a simple drawing (this could be a flow chart or diagram) to describe your water supply showing:
(see example on next page)

1. Water supply system; including the water source, pumps, storage, treatment, pipelines etc.
e.g. showing the actual flow of the system from catchment to consumer.
2. Identify hazards: e.g. flood areas, contaminated sites, animal grazing/holding areas, wastewater system, septic tanks, septic trenches etc. (see common contaminants table on page 33 of the Private Water Supply Guidelines for information on potential hazards).
3. Document uses of the water supply: drinking, food preparation, bathing, clothes washing, irrigation etc.
e.g Dam water for laundry and toilet flushing, rainwater for drinking, kitchen and washing.

Figure 1. Example Drawing of System

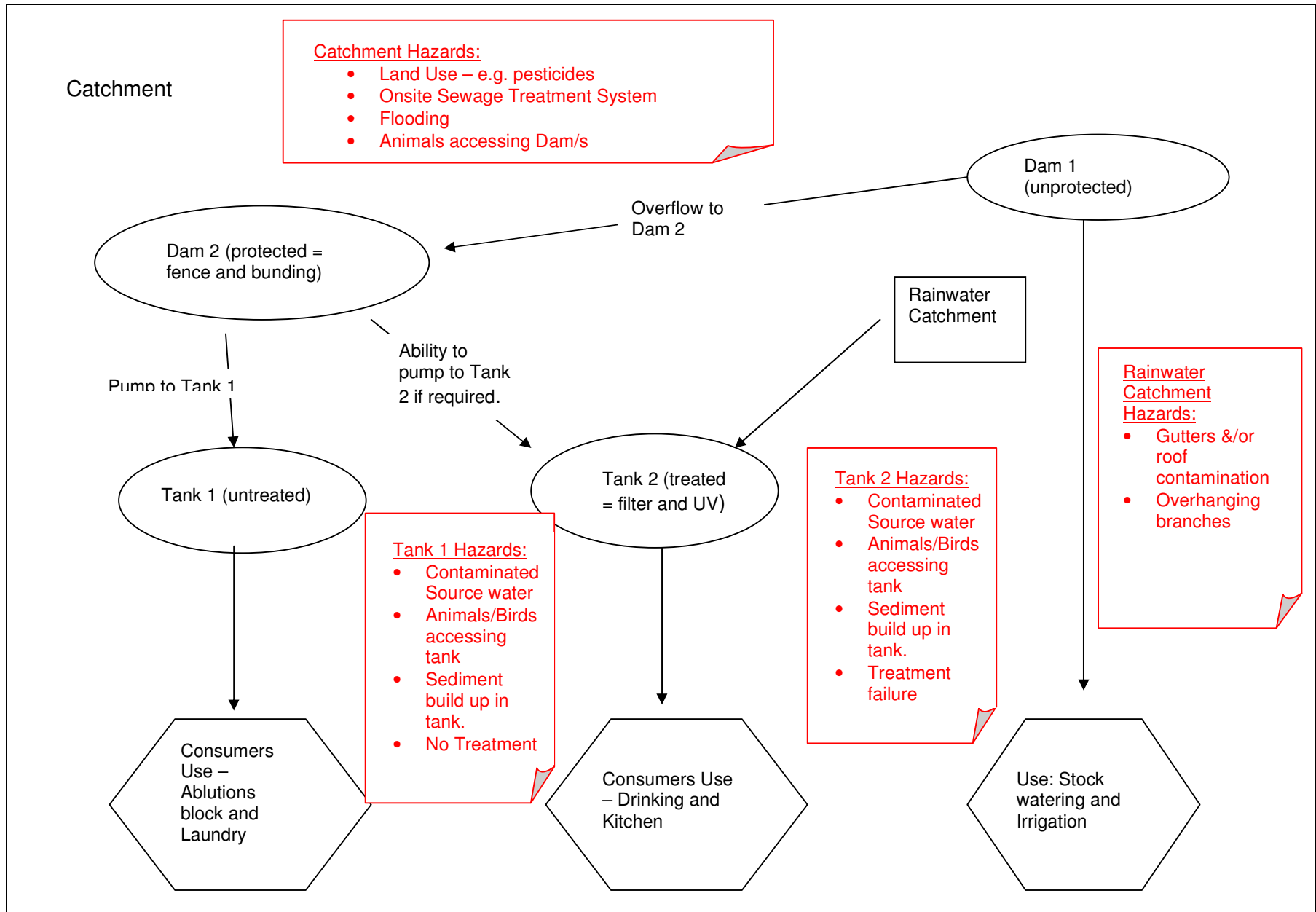


Figure 2: Drawing of system



Water Quantity

4. To determine your water quantity requirements; you will need to estimate the population, storage capacity, expected volume (over 12 month period) and the average use of water per person.

The average household use in Australia is 260 litres (L) per person per day (160 L of this is for internal household use)

- 100 L per day is the minimum for drinking and cooking and normal hygiene needs (includes laundry)
- 50 L a day will meet drinking, cooking and basic hygiene needs (includes laundry), and
- 20 L a day will meet drinking, cooking and hand washing but is not enough for laundry or bathing (NHMRC, 2005).

Table 2 Water Quantity

Population Served (Maximum)	Estimated Average Usage (per person per day)	Estimated Usage (population per annum)	Storage Capacity (litres)	Expected Water Supply Volume (annual)	Is the Water supply sufficient?
A	B	C	D	E	Yes, if C is less than E
20	100 L (20 drinking/cooking 80 other uses)	730000 L (730 kilolitres (kL))	2 x 100 000 L (100 kL)	1580 L (1.58 kL) rainwater 600 kL river water Total = 601.58 kL	No, Need to supplement water supply by carting water.

e.g. for rainwater tank 1584.6 mm average annual rainfall convert to metres (m) multiplied by roof collection area in $m^2 = m^3 = L$
 1584.6 mm divided by 1000 to convert to m = 1.58 m, 1.58 m multiplied by roof collection area 1000 $m^2 = 1580 m^3$

For mean annual rainfall in your area go to: <http://www.bom.gov.au/weather/nsw/>

Identification and control of hazards

5. Assess risks to the water supply system

Use the table below to help you assess the risk of a hazard affecting your water supply - what is the likelihood and effect of the hazards affecting the water supply?

Table 3. Assessing Risk

		Effect →			
		Insignificant	Minor	Moderate	Major
Likelihood ↓	Almost certain	Low	Medium	High	High
	Likely	Low	Medium	Medium-High	<i>High</i>
	Moderately Likely	Low	Low-Medium	Medium	High
	Unlikely	Low	Low	Medium	Medium-High
	Rare	Low	Low	Low-Medium	Medium

e.g If a hazard is moderately likely such as runoff from a neighbouring farm into a surface water supply (dam) and potentially could cause major illness then the risk would be high

Use the table below to list the identified hazards (from your drawing/diagram). Consider

6. The risk (likelihood and effect) of the hazard affecting your supply – see Table 3 for risk assessment.
Note: Insufficient water supply could also be a hazard.
7. Is the hazard under control?
8. If the hazard is under control, list what control measures are in place? e.g. regular maintenance, filtration, chlorination and/or UV treatment.
9. If the hazard is not under control, what could be done to improve water safety?
10. Prioritise those hazards that need the most urgent attention. (e.g. something that happens a lot and/or could cause significant illness)

Table 4. Identification and control of hazards

Source of Hazard	Type of Hazard	What is the risk of the hazard affecting the safety of the supply?	Is this Hazard under control?	Control Measures / Corrective Action	If hazard is not under control, what could be done to improve water safety?	Priority / Action
<i>Rainwater Catchment - Roof and gutters build up of organic matter – leaves/dirt</i>	<i>Potential microbiological contamination</i>	<i>Medium</i>	<i>Yes</i>	<ul style="list-style-type: none"> • <i>Regular inspection and cleaning of roof and gutters</i> • <i>First flush device installed.</i> 		
<i>Surface Water Storage (Dam) – access to water from animals, runoff from local farming land use.</i>	<i>Potential microbiological contamination</i>	<i>High</i>	<i>No (if there is heavy rainfall runoff could contaminated supply)</i>	<ul style="list-style-type: none"> • <i>Fencing of storage</i> 	<ul style="list-style-type: none"> • <i>Chlorination of supply</i> • <i>Install bunding around dam.</i> <i>(when these control measures have been installed they should be noted in the control measure/corrective action column)</i> 	<ul style="list-style-type: none"> • <i>NEEDS URGENT ATTENTION</i> <i>Supply outlets should be signposted that water should be boiled prior to drinking.</i>

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Responsibility / Frequency for system monitoring and maintenance

In the table below list the roles and responsibilities, frequency and contact details of the person responsible for monitoring and regular maintenance of your water supply.

Table 5: System monitoring and maintenance

Role and responsibilities	Frequency	Person responsible	Contact details (including after hours)
<i>Checking catchment - roof and gutters.</i>	<i>(monthly)</i>		
<i>Checking treatment systems – chlorinators, UV systems, filters.</i>	<i>(monthly)</i>		
<i>Sampling of water supply.</i>	<i>(monthly for microbiology and annual for chemistry)</i>		

System operation and maintenance

11. Document procedures for operation and maintenance of pumps, chlorination systems, filtration etc.
(Include copies of manufacturers operation manuals and recommended procedures.)

12. List manufacturer and supplier of pumps, filters, chlorine etc.

Table 6. System operation and maintenance

System	Manufacturer	Contact Details

Contingency Plan

13. Document contingency plans for system failures or insufficient water supply (warning signs, supply of carted water etc.)

Table 7. Contingency plan

Contamination / Problem Identified	Investigation	Actions
<i>Assessment of water supply shows high risk of microbiological contamination</i>	<i>Storage (dam) not protected from surface water run off</i>	<ul style="list-style-type: none"> • <i>Signpost all outlets that water supply may be contaminated</i> • <i>Review control measures</i> • <i>Test water for microbial contamination</i>
<i>Microbiological contamination of supply (E. coli found in monthly sample)</i>	<i>Chlorinator not working</i>	<ul style="list-style-type: none"> • <i>Signpost all outlets that water supply should not be drunk</i> • <i>Advise residents to boil water or seek an alternative supply e.g. bottled water</i> • <i>Contact Chlorinator supplier for maintenance</i> • <i>Review chlorinator maintenance program</i>
<i>Algae scum evident in surface water supply</i>	<i>Possible toxic species.</i>	<ul style="list-style-type: none"> • <i>Signpost all outlets that water supply should not be drunk or used for bathing</i> • <i>Tank in fresh water from a potable supply or provide bottled water for residents</i> • <i>Check with Local Public Health Unit or Council for advice on management of algal problem.</i>

14. Record contact details in case of an emergency and local repair contractors.

Table 8. Emergency contacts

Emergency Contacts	Name	Contact Details
Public Health Unit		
Local Council		
Tank Cleaner		
Water Carter		
Chlorine Supplier		

Monitoring

15. Keep a record of:

- visual inspection notes
- all results of microbiological and chemical testing
- the posting of warning signs
- all maintenance to the water system (filter change, addition of chlorine, tank flush or desludge etc).

Table 9. Monitoring

Date	Notes e.g. Observations of system, equipment checks, chlorine readings, filter changes, any adverse events, rainfall observations, warnings issued etc...

Note: Any observations that could affect the quality of your water supply should be included and reviewed in the identification and control of hazards section of the plan.