



## **GUIDELINES FOR THE INSTALLATION OF RAINWATER TANKS IN RETICULATED WATER SERVICE AREAS**

### **INTRODUCTION**

Council supports and encourages the use of rainwater tanks by residents in its reticulated water service areas because:

- They can help in the preservation of our environment by conserving the water resource. The need for development of new water supply sources can thus be deferred.
- They can help in the preservation of our environment by reducing the impact and severity of stormwater runoff flows from built-up areas.
- They provide some additional security to consumers during periods when the reticulated supply may need to be interrupted for maintenance or repair.
- There can be cost savings to both the consumer and Council resulting from a reduced demand by consumers for treated water.

### **PURPOSE AND APPLICABILITY OF GUIDELINES**

These Guidelines are provided for the information and guidance of property owners who are considering installing a rainwater tank. They apply to both new and existing residences and cover installation, use and the necessary ongoing monitoring and maintenance requirements for rainwater tanks.

These Guidelines are not a standalone document. They provide supplementary information to, and should be read in conjunction with, the following three documents;

1. **“Council Policy: Rainwater Tank Systems (Using Roof Water) in Reticulated Water Service Areas, Emerald, Comet and Gemfields.**
2. **“Guidance on Use of Rainwater Tanks, Environmental Health Council 2004”**
3. **“Standard Australia HB230-2006 Rainwater Tank Design and Installation Handbook First Edition – January 2006”**

### **SUGGESTED USES FOR WATER FROM RAINWATER TANKS**

The suggested uses for rainwater include;

- Toilet Flushing
- Laundry Use ( Cold Water on Washing Machine Tap ONLY); and,
- Garden Watering, Car Washing and all other External Outdoor Uses.

## HOW YOUR TANK WORKS AND HELPS TO PRESERVE OUR ENVIRONMENT

Your rainwater tank works by:

- Harvesting and putting to use the rainwater that falls upon your roof; and,
- Capturing and withholding from the stormwater system, some of the roof water that would otherwise be conveyed to it.

Therefore, the more rainwater that can be captured and used – in lieu of the treated town supply – the greater the environmental and cost benefits of your rainwater tank.

Consumers should see reduced water bills to the extent that rainwater replaces treated town water. The Council should also see a reduced cost if less treated water needs to be produced and distributed to consumers. There are also environmental and cost benefits that will result from reduced stormwater flows. Indirectly, these Council benefits are a benefit to the consumer and the whole community.

To ensure that these environmental and cost benefits are maximised, it is best that:

- Tank water be used in preference to treated town water as much as possible consistent with Council's Policy on suggested uses; and,
- Your tank is provided with a back-up connection to the treated town water supply system to ensure that it continues to provide a service during periods of extended dry weather.

It is preferable that tank water be connected to your toilet, cold water washing machine tap and to all the outlets that provide water for external uses – garden watering, car washing etc. This will maximise the potential for the replacement of the town supply with water from the rainwater tank. **However, it should be noted that after a tank is installed it is vital that consumers continue to minimise water usage (particularly garden watering and other external uses). If consumers fail to exercise the same vigilance and restraint and the tank simply becomes an extra source of supply, the potential environmental benefits are lost.**

The purpose of the back-up connection to your tank is not to keep your tank full, but to ensure that it does not completely empty during dry periods. This backup feature is important as it allows rainwater tanks to continuously serve vital internal fixtures (i.e. toilet flushing, etc).

The back-up connection to your tank will need to be equipped with a special valve which will operate somewhat like a toilet cistern valve. This valve would be fully open at say 10% of storage, topping up the tank from the reticulated supply until it has reached, say 20% full. The rate at which this topping up occurs should not exceed 6 litres/minute. At 20% full, the valve would shut. The available storage for harvesting rainwater would then be the remaining 80% of the tank volume. The valve must comply with Australian Standard AS/NZS 1910.

In almost all cases, it will be necessary for a household pressure system incorporating a pump and pressure vessel to be installed in conjunction with the rainwater tank. This will ensure that water from the tank is available at a suitable rate and pressure. The installation of this pressure pump will require the services of a properly qualified and licensed electrician.

## **NO INTERCONNECTION WITH MAINS WATER SUPPLY**

Council have a public health responsibility to protect the integrity of the existing reticulated water supply system. As such, there must be no possibility that water from a rainwater tank can “back-flow” or be siphoned into the treated town water supply. This means that there must be no physical interconnection (cross-connections) between the treated town water supply system and the tank water supply system. An air gap (100mm is recommended) must be provided at the inlet point of the back-up supply to the tank. The existence of this air gap needs to be readily verifiable by inspection.

For an existing dwelling, all services and outlets connected to the rainwater tank supply must be disconnected from the reticulated supply before being connected to the rainwater tank supply. This work requires Plumbing and Drainage Approval from Council and must be performed by a Licensed Plumber.

## **SELECTION OF RAINWATER TANK**

It is important that you select the right size and type of rainwater tank to suit your needs. As a general guide a minimum size of about 4,000 to 5,000 litres is suggested. If garden watering is not intended, a smaller 2000 to 3,000 litre minimum size may suffice. However, all things being equal, the larger the tank the greater the potential benefits.

The selection of tank size and type is ultimately a matter for the resident (owner) to decide. There are many factors that you may need to take into account in making this determination. Further information on the selection and installation of rainwater tanks is contained in the Standard Australia HB 230-2006 Rainwater Tank Design and Installation First Edition – January 2006 or contact Council’s Plumbing Inspector.

## **COUNCIL APPROVALS**

Before you purchase or install a rainwater tank, you should check with Council whether there are any regulations about their installation and use and whether there are any approvals that first need to be obtained:-

- **Building Approval** - In general, no building approval is necessary for a cylindrical ground level rainwater tank of less than 10,000 litres capacity and of less than 2.1 metres overall height. This is provided the tank is installed within the boundary set back distances that apply to buildings. Tanks that will require building approval before works can proceed are those that:
  - are slimline, rectangular or oval shaped;
  - are to be installed on an elevated stand or below the ground;
  - do not conform with the above capacity, height and location limits; or,
  - involve the construction of other works which may entail building approval (i.e. retaining walls, etc)

Obtaining a building approval entails you (or your agent) making an application to a Private Building Certifier or to Council. The Certifier or Council will assess whether the following aspects of the rainwater tank conform to the building regulations:

- Structural stability;
- Overflow discharges to stormwater system;
- Design of roof gutter and down pipes;
- Siting of the tank on the property; and,
- Whether your pump (if required) is sited so as not to cause noise nuisance to neighbouring properties or whether any noise minimisation measures need to be implemented.

Larger sized tanks and/or load-bearing underground tanks may require the services of a structural or geotechnical engineer.

If you decide to install a prefabricated underground tank, it will need to be certified to Australian Standard AS/NZA1546.1 (collection well only) to ensure its watertightness.

The Building Services Authority maintains a register of accredited certifiers or you can look under 'Building Surveyors' in the Yellow Pages.

**Plumbing and Drainage Approval.** In all cases, plumbing and drainage approval of your installation will be required.

Obtaining a plumbing and drainage approval entails you or your agent making a Plumbing and Drainage Compliance Assessment Application and submitting it to Council.

In all cases you should first check with Council what approvals are necessary before you act to purchase or install a rainwater tank.

## **PLUMBING WORK**

All plumbing work entailed in the installation of your rainwater tank should be performed by properly qualified and licensed tradespersons in accordance with any applicable conditions of approval and in accordance with the relevant Parts of the Australian Standard AS/NS 3500.

## **SCHEMATIC PLAN OF A TYPICAL INSTALLATION**

Figure 1 as illustrated on the Rainwater Tank Installation Guidelines Fact Sheet is a schematic plan which illustrates a typical installation for cylindrical rainwater tank installed at ground level. This is the type of installation that is most commonly adopted. You may however decide that an underground tank is best suited to your requirements. The Notes that are included on Figure 1 apply equally to both types of installation. Figure 2, also illustrated on the Rainwater Tank Installation Guidelines Fact Sheet, show a typical layout for an in ground rainwater tank installation.

## **PERFORMANCE MONITORING AND MAINTENANCE REQUIREMENTS**

The main aim of maintenance procedures should be to keep all components of the system clean and operational and to minimise the risk of contamination of the stored water and reduce the quantity of dust and other foreign matter that is washed into the tank. The procedures should also ensure that your statutory obligations for mosquito prevention are met. To this end, the following maintenance operations are necessary:

- Roof gutters and the inlet screen to the rainwater tank should be checked periodically (every 2 to 3 months is suggested) to remove leaves and other debris. It is recommended that gutter guards be fitted to those parts of the roof catchment that supply rainwater to the tank. At the same time, it is recommended that the mosquito-proof screens fitted over all points of entry to the tank be checked for integrity and repaired as necessary.
- If a 'first flush diverter' device is fitted, it should be periodically checked and cleaned in accordance with its manufacturer's recommendations.
- Periodically (every 2 to 3 years is suggested – more frequently if sediment is evident in the flow of water from the tank) the sludge and other foreign matter which will build up on the floor of the tank should be removed. De-sludging may be accomplished without

anyone entering the tank by means of a siphon hose fitted with an inverted funnel at its end moved across the floor of the tank. If leaves and other coarser debris are present in the sludge, the hose will need to be at least 50 mm in diameter. The organic material removed from the tank during cleaning operations may be disposed of in the garden by spreading and digging into garden beds.

- Where cleaning necessitates entering the tank, care should be taken that the inside of the tank is properly ventilated and that at least a second person always remains in attendance outside the tank. Advice should first be sought from the Queensland Department of Industrial Relations – Workplace Health and Safety Division about working in confined spaces. Preferably, a professional tank cleaner (they are listed in the Yellow Pages) should be engaged when entry to the tank is necessary. For illumination inside the tank a battery lantern should be used, not a flame type lantern or an electric extension. Special care should be exercised if any chemical compounds are used for repairs or cleaning inside the tank.
- Care should be exercised that water discarded during cleaning operations is directed away from buildings and the tank's foundations and that no nuisance is caused to neighbouring properties by run-off or ponded water. Any sludge or sediment removed from the tank should not be directed into the stormwater drainage system.
- The float operated cistern valve should be checked by a licensed plumber every two years to ensure that its operation remains satisfactory, it does not leak, and that the float continues to operate the valve at the required levels. Any repairs or adjustments found to be necessary shall be performed by a Licensed Plumber.
- Do not apply paints or coatings to the roof catchment area without first checking that they are appropriate. Look for warnings and observe manufacturer's recommendations. If in doubt, check with the manufacturers for suitability for use with rainwater tank installations.

## **FURTHER INFORMATION AND ADVICE**

Additional advice on performance monitoring and maintenance requirements for rainwater tanks is contained in;

- Queensland Health – Rainwater Tanks Guide to Prevention of Mosquito Breeding.
- Or contact:
- Emerald Shire Council Plumbing Inspector.