

40. ECO – INFO

RAINWATER STORAGE AND USE

July 2006

In Australia water is a valuable commodity. The use of rainwater tanks is an efficient means of reducing the use of expensive potable water as well as controlling and using rainwater. Rainwater can provide a renewable supply of natural, soft, clear and odourless water that can be used for a range of purposes including, washing, bathing, laundry and gardening.

As of January 1, 2003, all new dwelling houses must be fitted with a rainwater storage facility(ies) with a total minimum capacity of 5,000 litres. Specific conditions are outlined in the Development Control Plan 100 – Quality Housing for the setup and plumbing of the system. Approval will be given as part of the Development Consent for the residence.

No development application or approval is required for the installation of water storage facilities up to 10,000 litres in capacity, where fitted to existing dwellings and sited directly on the ground or on a concrete slab.

WATER QUALITY

Rainwater collected in tanks generally contains few chemicals. However, there may be contamination of water by airborne contaminants in major urban centres and coastal areas.

The microbiological quality of rainwater collected in domestic tanks may be lower than that of many mains water supplies. However, providing systems are well maintained the risk of harmful organisms being present is low.

IS THE WATER SAFE TO DRINK?

The use of rainwater for drinking purposes is not recommended. Accordingly, the provision of clear signage adjacent to the taps is recommended advising against the use of rainwater from the storage unit for drinking purposes.

HOW CAN WATER QUALITY BE PROTECTED?

The provision of good quality water depends on correct design and installation followed by sensible maintenance of the rainwater tank and catchment area. The collection of rainwater involves “**LOW** maintenance **NOT NO** maintenance”.

WATER STORAGE

Water storage is not limited to traditional external tanks. Designs are available incorporating storage in guttering systems, boundary fences, cisterns and built into the structural components of a building.

Water storage is available in a wide range of materials including galvanised, Aquaplate™, or zincalume steel, concrete, fibreglass or plastic. All of these materials can be suitable providing the tanks have been manufactured specifically for the collection of rainwater.

- There have been some reports that water collected from metal roofs can react with steel tanks to cause corrosion
- Some types of tanks should be washed or flushed before use. The manufacturer should be able to provide advice on whether this may be necessary.

When installed, the tank should be covered and every access point except the inlet and overflow should be sealed to prevent contamination. The inlet should incorporate a mesh cover and a strainer to keep out materials such as leaves and to prevent the access of mosquitoes and other insects. The overflow should also be covered with an insect-proof screen.

THE CATCHMENT

In general, house and shed roofs are used as catchment areas. Rainwater can be collected from most types of roof, providing they have not been painted with lead-based paints or coated with bitument-based materials. Some types of new tiles and freshly applied acrylic paints may affect the colour or taste of rainwater and the first few run-offs may need to be discarded.

As a precaution the use of pesticide-treated timbers should be avoided in roof catchments, also, if possible, rainwater should not be collected from parts of roofs incorporating flues from wood burners.

Overflows or discharge pipes from roof mounted appliances such as evaporative air conditioners or hot water systems should not be permitted to discharge onto the roof catchment area.

STORAGE SETUP

First flush devices prevent the first portion of roof run-off from being collected and will reduce the amounts of debris such as leaves etc. that can accumulate on roofs from being washed into tanks. The provision and use of these devices is mandatory for all rainwater tanks installed in accordance with Development Control Plan 100 – Quality Housing. (refer to Figure 2)

All tanks shall be fitted with “Backflow Prevention” devices. Australian Standard 3500 requires any property with an alternate source of water supply in addition to the towns water supply to be fitted with backflow prevention devices. The backflow prevention device shall be installed at the water meter at the property boundary to protect the Water Authority’s potable water (Containment Protection refer to Figure 3). An additional device shall be installed at the back-up supply to the rainwater storage tank, i.e. a “registered air gap” or “double check valve” shall be provided (Zone Protection – refer to Figure 3). This will protect the residents of the property where installation takes place.

MAINTENANCE

Roof catchments should be kept clean and clear of leaves and debris. Gutters should be regularly inspected and cleaned if necessary.

All screens should be cleaned regularly. Tanks should not be allowed to become breeding sites for mosquitoes. If mosquitoes are detected in a tank, the entry point should be located and closed. For most types of tanks mosquito breeding can be stopped by adding 2-3 tablespoons of domestic kerosene.

Tanks should be examined for accumulation of sludge at least every 2-3 years. If sludge covering the bottom of the tank is evident it should be removed by siphon or by complete emptying of the tank. Professional tank cleaners can be contracted.

DISINFECTION

Regular disinfection should not be necessary. If it is suspected however, that water in the tank is contaminated rainwater can be chlorinated using 40mL of liquid sodium hypochlorite or 7grams of granular calcium hypochlorite per 1000 litres of water (approx. 5mg/L chlorine).

SIZE OF TANKS

If installed in accordance with Development Control Plan 100 – Quality Housing, rainwater tanks of at least 5,000 litres (10,000 is recommended) are required for new dwelling houses. The tank/s must have sufficient capacity and be connected so as to supplement water for toilet flushing, garden irrigation, laundry and external taps. Such tanks will have to be plumbed into mains water to top them up during times of low rainfall. Supplemental inflow should not be undertaken until the tank is at least 80% empty. This allows for the tank to buffer stormwater flows to local drainage.

REGULATIONS

Where the construction of a new residential dwelling is proposed, details of the proposed rainwater tank are required to be submitted to

Council at the time of lodgement of the development application.

Where rainwater tanks are proposed to be installed as an ancillary feature to an existing residential dwelling, Council's Exempt Development Chapter (Chapter 85 of DCP 2005) and State Environmental Planning Policy N^o. 4 exempts them from the need for Council approval. This allows tanks up to 10,000 litres in size provided that a minimum passing area of 450mm is provided to the boundary, and the height of the tank does not exceed 3 metres.. Any tanks of a larger size or outside this criteria, will be subject to lodgement of a development application to be determined by Council prior to installation.

PUMPS

Submersible pumps are recommended as the water within the tank(s) provides insulation to mask pump noise. Any pump external to the tank is to be enclosed in a noise attenuating enclosure and not create a noise problem. The pump must not be audible at the nearest residential property boundary between the hours of 8.00pm and 7.00am Monday to Saturday and 8.00pm to 8.00am on Sundays.

WHERE CAN I GET ADDITIONAL INFORMATION?

Your local Public Health Unit can provide information on water quality and health (under 'H' in Telstra White Pages or at <http://www.health.nsw.gov.au/public/phus/phus.html>).

If you have specific health concerns you should discuss these with your family doctor.

More detail about managing and using rainwater tanks can be found in the book '**Guidance on the Use of Rainwater Tanks**', published by the National Environmental Health Forum in 1998 (ISBN 0642320160). This is available from AusInfo Bookshops (0292428500) and copies can be printed from the NSW Health Website: <http://www.health.nsw.gov.au/public-health/ehb/water/rainwater.html>.

Enquiries about the installation of rainwater storage facilities in Wyong Shire can be directed to Council's Customer Service Centre on ph: 4350 5555.

Many analytical laboratories can advise on chemical, microbiological and algal testing of water. If you wish to have some water tested your local Public Health Unit can help you find an accredited laboratory or search in the Yellow Pages under "Analysts".

Figure 1: Cross section of a rainwater storage tank

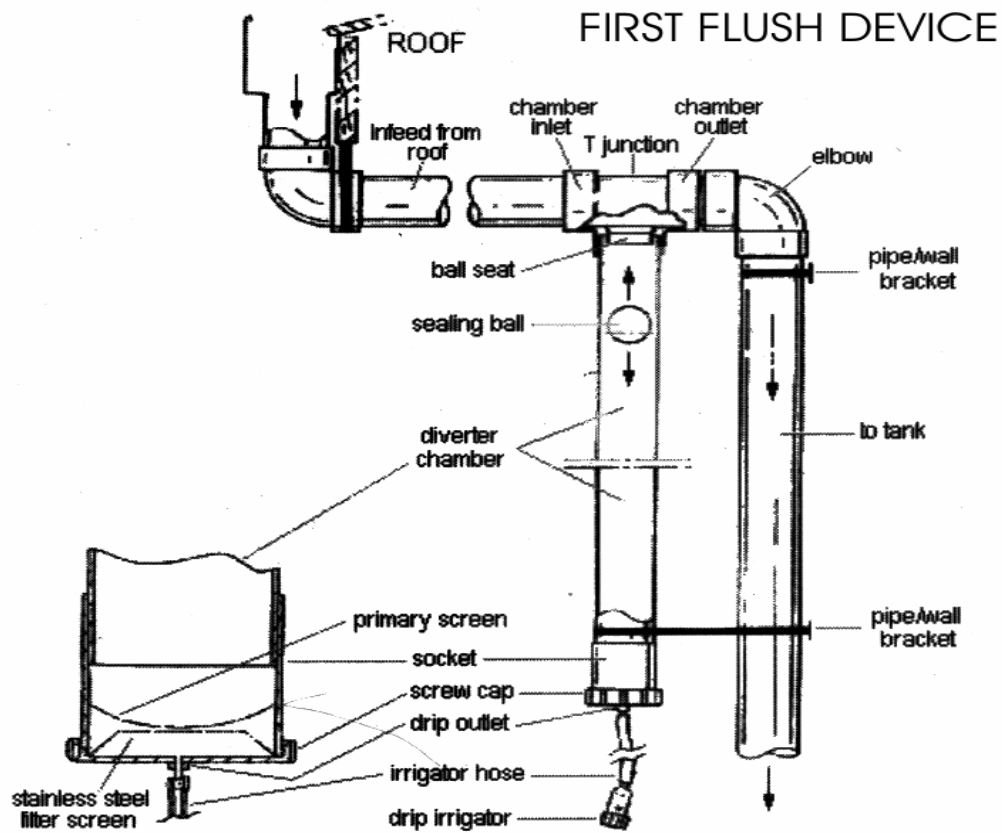
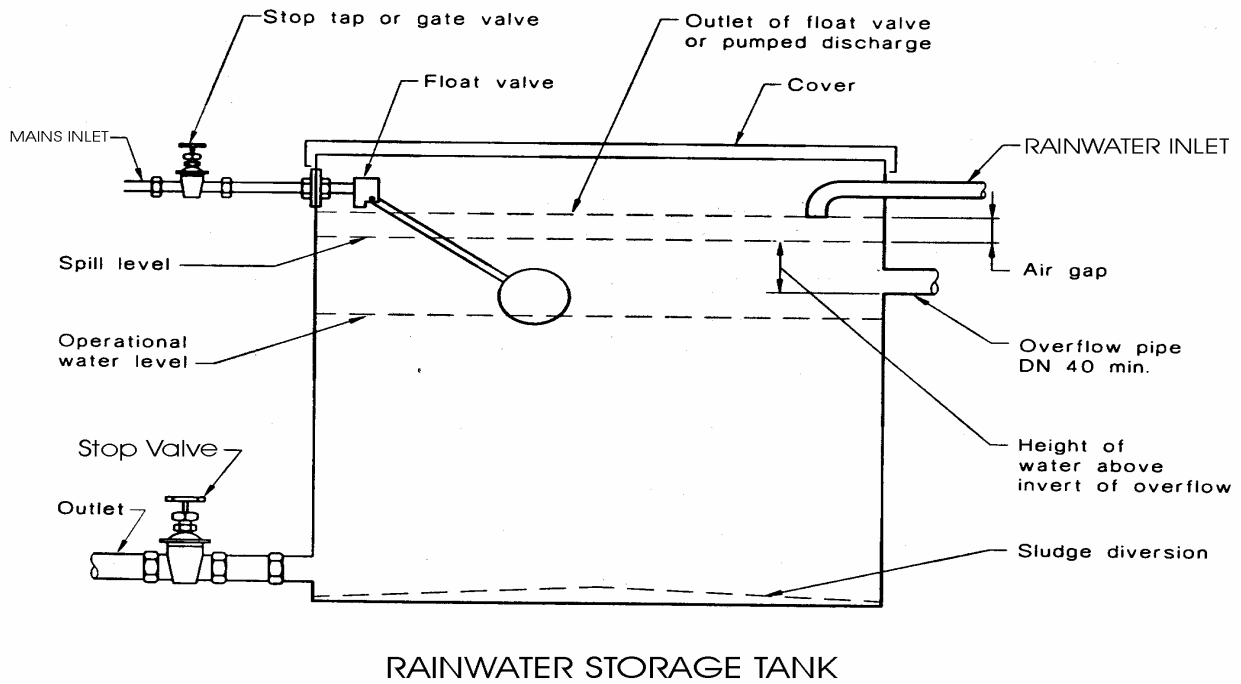


Figure 2: Cross section of a first flush device

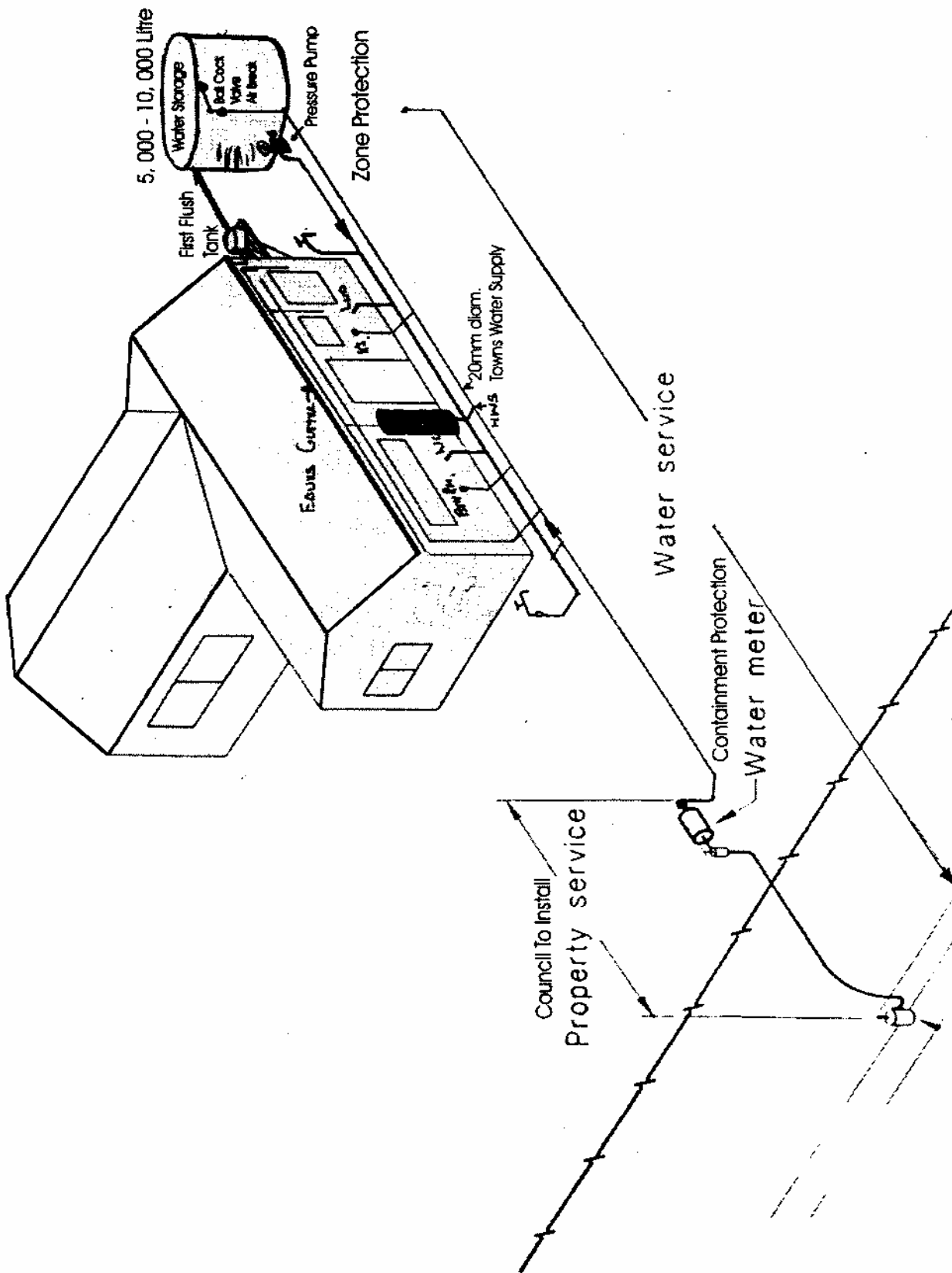


Figure 3: Service pipe layout for Tank connection