



WYONG SHIRE COUNCIL

Guidelines for the Installation of
Rainwater Tanks on
Residential Properties

Plumbing Requirements

Information for
rainwater tank suppliers
and plumbers

Plumbing for Rainwater Tanks

A Guide for Rainwater Tank Suppliers and Plumbers

1 Introduction

Rainwater tanks can make an important contribution towards reducing the demand for water. However, certain requirements are necessary to protect reticulated potable water and wastewater systems and to ensure public health is not compromised.

In line with NSW Health recommendations, Wyong Shire Council does not recommend the use of rainwater tanks for drinking purposes where a reticulated drinking water supply is available to the customer.

Wyong Council has certain powers over plumbing and drainage work on private property and in association with other Water Authorities has developed the following guide on the technical and regulatory requirements for plumbing to and from rainwater tanks. This is to ensure that the rainwater service cannot accidentally backflow into the potable water main or be cross-connected to the potable water supply within the property. Any cross connection would change the quality of the drinking water.

Wyong Shire Council has the responsibility to ensure that the quality of water supplied to customers is maintained at drinking water quality standards. As part of this guide, you will find the details of requirements that must be met when installing potable top up for rainwater tanks, drawings of the system and fact sheets that your customers can obtain from Wyong Shire Council Offices.

You can obtain more information on rainwater tanks from the NSW Health web site, www.health.nsw.gov.au/public-health/ehb/water/rainwater.html or by phoning Wyong Shire Council on 4350 5555.

Rainwater uses

Rainwater can provide an alternative source for the following:

- Toilet flushing
- Residential garden irrigation
- Washing cars
- Filling ornamental ponds
- Washing machine
- Topping up swimming pools.

Where there is reticulated drinking (potable) water NSW Health does not advise using rainwater for:

- Drinking
- Cooking or other kitchen purposes
- Personal washing, such as baths, showers, hand basins and bidets

2 The Guidelines

Application

These guidelines only apply to the plumbing of rainwater tanks that collect water from the roof of residential properties.

The guidelines do not apply to:

- Rainwater tanks that are not connected to the internal building plumbing and do not have “top up” from the reticulated potable supply.
- Tanks that collect bore water or ground water runoff are outside the scope of these Guidelines.

Rainwater tanks on commercial and industrial properties need to comply with *AS 3500.1 The National Plumbing and Drainage Code* and the *New South Wales Code of Practice Plumbing and Drainage*.

Approval to Install a Rainwater Tank

Under the provisions of WSC’s DCP 100 – Quality Housing, all new dwellings are required to be fitted with a rainwater tank of at least 5,000 litre capacity, plumbed to the toilets and washing machine. Details to be submitted with the DA for the new dwelling.

No formal application to proceed with the installation of a rainwater tank is required provided that the tank does not exceed 10,000 litres in capacity, is not buried in the ground and is installed as a retrofit installation to an existing dwelling connected to Council’s town water supply.

The NSW government has amended it’s State Environmental Planning Policy (SEPP 4) so that rainwater tanks with a capacity of 10,000 litres or less do not require local council approval provided they meet the conditions outlined in SEPP 4.

The Installation of rainwater tanks with a capacity in excess of 10,000 litres will require Wyong Council approval before works can be undertaken.

Rainwater tanks are not permitted to be built over a Wyong Council maintenance structure or within any Wyong Council easement, regardless of tank size.

Tanks not connected to the plumbing

Wyong Council’s approval to proceed is not needed unless the tank size is more than 10,000 litres. If the tank is more than 10,000 litres Wyong Council needs to assess whether the tank conforms to the applicable development consent conditions. This is the same requirement as for any Construction Certificate for building works.

Wyong Council requirements

Below is a summary of Wyong Council requirements regarding plumbing for rainwater tanks for residential customers. **NOTE:** Words in *italics* are defined in Section 4.

- a) Wyong Council must be informed of all rainwater tank installations so that the water meter can be replaced with another containing a *Backflow Prevention Device*. This may be done as part of the development application procedure (for new dwellings) or through the 'Rainwater Tank Rebate Application Form' for retrofitting existing dwellings.
- b) There must be no *Direct Connection* between the rainwater tank and Wyong Council's reticulated water supply.
- c) Rainwater tanks may be "topped-up" from Wyong Council water supply for retrofitting of existing dwellings connected to Council water supply system. No application is necessary however a 'Rainwater Tank Rebate' form is to be completed and forwarded to Council as this is defined as an *Indirect Connection*.
- d) Top up pipework shall be 20mm nominal size. Where mains pressure is greater than 500kpa, a 500Kpa pressure limiting valve must be installed to ensure that the water pressure to other customers is not compromised and that flow demands on the water supply system are reduced. Float valves and/or solenoid valves may be used to control the drinking water top up;
- e) Rainwater tanks particularly those underground are to be located such as to prevent overflows from any sewer surcharge gullies entering the rain water tank and associated overflow pipework.
- f) The overflow pipework from rainwater tanks should provide a continuous fall to the stormwater system and the discharge point invert level must be above the 1% flood level as determined by Council. It must not discharge to Wyong Council's sewerage system.

There should be no other connections to the overflow pipework such as surface water inlets. This is to prevent foreign matter entering the overflow pipework and flowing back into the rainwater tank. To achieve this some underground rainwater tanks may be required to be located partially out of the ground and landscaped accordingly.

- g) Where a higher risk is assessed Wyong Council may require the property owner to install a higher hazard *Backflow Prevention Device* such as a *Reduced Pressure Zone Device RPZ* at the property owner's cost. There are regulatory requirements associated with registration and regular servicing of such devices.
- h) In certain circumstances, Wyong Council can refuse to allow a connection from its system to the rainwater tank;
- i) For any plumbing work the licensed plumber must also submit a Certificate of Registration to Wyong Council and the customer at the completion of the work.
- j) A minimum roof area catchment of 100m² shall be provided for every 5,000 litres of rainwater storage.

3 Connecting Properties to rainwater

Rainwater tank plumbing

Administrative requirements

- 1 For retrofitting existing dwellings with rainwater tanks of less than 10,000 litres connected to Council water supply:
 - No formal application required.
 - A 'Rainwater Tank Rebate' application is to be lodged after completion of the work.
- 2 For tanks installed as part of a new dwelling:
 - Development Consent is obtained for the dwelling, including the rainwater tank installation.
 - The plumber is required to apply to Wyong Council for a permit to do the work as they would when connecting any house service.
 - Wyong Council's Plumbing Inspector must be contacted when work is completed to carry out a final inspection on the property before the Final Certificate is issued.

Regulatory requirements

- All plumbing work is to be carried out or supervised by a licensed plumber in compliance with these Guidelines and AS 3500 The National Plumbing and Drainage Code.
- Under no circumstances is there to be a direct connection between the rainwater service and the drinking water service.
- An air gap in accordance with AS 3500 is required on all rainwater tanks that are topped up by Council's Water Supply.
- The air gap on all rainwater tanks must be aboveground at a location which provides the householder with visible flow detection during top up. Submerged inlets on below ground tanks are not allowed.
- The air gap must provide a minimum unobstructed vertical distance of 80mm between the maximum top water level of the rainwater tank and the drinking water inlet.

Figure 1 provides a typical drawing of DCP 100 Quality Housing Plumbing Requirements for Above Ground rainwater tanks with an *Indirect Connection* to the drinking water supply.

Figure 2 provides a cross section of a typical above ground rainwater tank with drinking water top up at 20% full.

Figure 3 provides a cross section of a first flush device.

Figure 4 provides a diagram for the plumbing configuration for rain water tanks in urban areas with reticulated supply.

a) **Water Meters**

Integral Dual Check Valves will be installed by Wyong Shire Council to all properties with a 20-25mm water meter where a rainwater storage tank is installed. Property owners will be requested to advise Wyong Council when a rain water tank is installed at their properties for an Integral Dual Check Valve meter to be fitted free of charge.

20-25mm Water Meters with Integral Dual Check Valves

The Integral Dual Check Valves are built into the meters and will provide back flow protection to the water supply system. There are no changes needed to the water service installation requirements as the Integral Dual Check Valve meters are of the same length as existing meters.

Meters with Integral Dual Check valves are able to be identified by the additional digit added to the first two digits of their serial no. ie, 20mm meters will be prefixed 21 and 25mm meters will be prefixed 26. The Check valves will also be visible at the end of the meter.

To arrange for a replacement meter with an integral dual check valve contact Wyong Shire Council on 4350 555 or simply submit a 'Rainwater Tank Rebate' form. All new applications from January 1 2003 will have integral dual check valve meters installed as part of the water service installation.

b) **Backflow prevention (see previous Regulatory Requirements in relation to "air gaps")**

Check that the following backflow prevention is in place:

Above Ground Rainwater Tanks:

Check Wyong Shire Council has replaced the existing meter with one containing an inbuilt dual check valve for 20-25mm meters.

Check that the air gap provides a minimum of 80mm unobstructed vertical distance between the maximum top water level of the rainwater tank and the drinking water inlet.

Check that the air gap is located above ground and such as to provide the householder with a visible means of flow detection during tank top up.

Below Ground Rainwater Tanks:

Check air gap requirements as above for aboveground tanks.

Check water meter requirements as above for aboveground tanks.

Check overflow pipework requirements in relation to preventing foreign matter flowing back into the tank (see previous Wyong Council requirements).

c) **Pipes and Labelling**

- Pipe materials for rainwater supply plumbing need to be approved products and be clearly and permanently identified "RAINWATER". This can be done for below ground pipe by using identification tape (made in accordance with AS2648) or for above ground pipes by using adhesive pipe markers (made in accordance with AS1345).

- Signs must comply with the requirements of Australian Standard AS1319, labelled “RAINWATER”.
- Every rainwater tank outlet should be labelled “RAINWATER” on a metallic sign in accordance with AS 1319.

d) **Proximity to other services**

Rainwater supply plumbing must be separated from any parallel drinking water service as follows:-

Above ground pipes

- Any rainwater supply plumbing installed above ground must be a minimum of 100mm away from any drinking water pipe.

Below ground pipes

- Any rainwater supply plumbing installed below ground must be a minimum of 300mm away from any drinking water pipe.

e) **Approved Materials**

Materials used in the rainwater tank plumbing must comply with AS/NZS 3500 Part 1 Water Supply Section 2 Materials and Products.

Approved materials are those which have gone through the Product Approval Process and have had a license granted to mark the product accordingly. The certifying body provides the manufacturer with the following marks to indicate the product are approved:

- ✓ ✓ ✓ ✓ ✓ The Standards mark compliance.
- W The Water Mark compliance.
- TT Type Tested compliance.

f) **Top Up Service**

The pipework on the drinking water supply must be 20NB from Council's meter to the rainwater tank inlet valve.

g) **Flow rate**

An approved stop cock and 500Kpa pressure limiting valve (where mains pressure is above 500kpa) are to be installed before the float and/or solenoid valve to limit flows into the tank.

Note: Wyong Council will generally allow an *Indirect Connection* between the tank and the reticulated water supply as long as the requirements outlined in 3a) to g) above are met.

This is subject to a disclaimer that, Wyong Council is not responsible for any water collected in a rainwater tank.

4 Definitions

Above Ground Rainwater Tank

A tank collecting roofwater only which is either:

- Fully above the ground surface or
- Is at least half above the ground surface and
 - with at least a quarter of the base of the tank visible and
 - where the view of and access to the inlet pipe, air gap and overflow pipe is unobstructed.

Above ground rainwater tanks should have no possibility of receiving ground water surface run off, eg on a sloping site.

Backflow Prevention Device

A water fitting, to prevent the reverse flow of water from a potentially polluted source into a potable water supply system. All *Backflow Prevention Devices* need to comply with AS/NZS 2845.1.

Below Ground Rainwater Tank

A tank collecting roofwater only which is either:

- Fully or partially underneath the ground surface and
- Where the view of and access to any inlet pipe or overflow pipe is obscured by the ground surface or something similar eg rockery or garden bed.

Connection

See Direct Connection or Indirect Connection.

Direct Connection (not permitted)

(between a rainwater tank and the Wyong Council supply)

- where a pipe containing water from Wyong Council's reticulated supply is directly connected into a tank or pipe containing water from a rainwater tank or
- where the outlet of a pipe containing Wyong Council's reticulated supply is submerged beneath the surface of water from a rainwater tank.

This situation, due to a potential risk of backflow of tank water into the reticulated supply, is expressly prohibited by Wyong Shire Council.

Indirect Connection

(between a rainwater tank and the Wyong Shire Council supply)

- where the outlet of a pipe containing water from the Wyong Council reticulated supply is separated from the water in the rainwater tank by a visible air gap so there is no possibility of the rainwater backflowing into Wyong Council's supply.

Non-testable Dual Check Valve (DCV)

A device to prevent backflow caused by backpressure, which incorporates two independently operating force loaded non-return valves.

Reduced Pressure Zone (RPZ)

A Backflow Prevention Device for high risk connections.

Standard Connections

These are connection of 20mm – 25mm pipes.

Testable Double Check Valve (TDCV)

A device to prevent backflow caused by back pressure, and which has two independently operating force loaded non-return valves and incorporates specific test points for in-service testing.

Visible Air Gap

The unobstructed vertical distance through the free atmosphere between the lowest opening of a water service pipe or fixed outlet supplying water to a fixture or receptacle and the highest possible water level of such fixture or receptacle.

5 References

- a) NSW Code of Practice Plumbing and Drainage (Edition No 2) July 1999
- b) AS/NZS 3500 National Plumbing & Drainage Code
- c) NSW State Environmental Planning Policy (SEPP) 4
- d) National Environmental Health Forum (1998) Guidance on the use of rainwater tanks, NEHF Monographs, Water Series No 3.
- e) NSW Health Circular 2002/1 – Use of rainwater tanks where a reticulated potable water supply is available.
- f) WSC DCP 100 – Quality Housing.

Further Information

For further information on these guidelines please contact Wyong Shire Council on 4350 5555.

FIGURE 1

DCP 100 Quality Housing Rainwater Storage Tanks

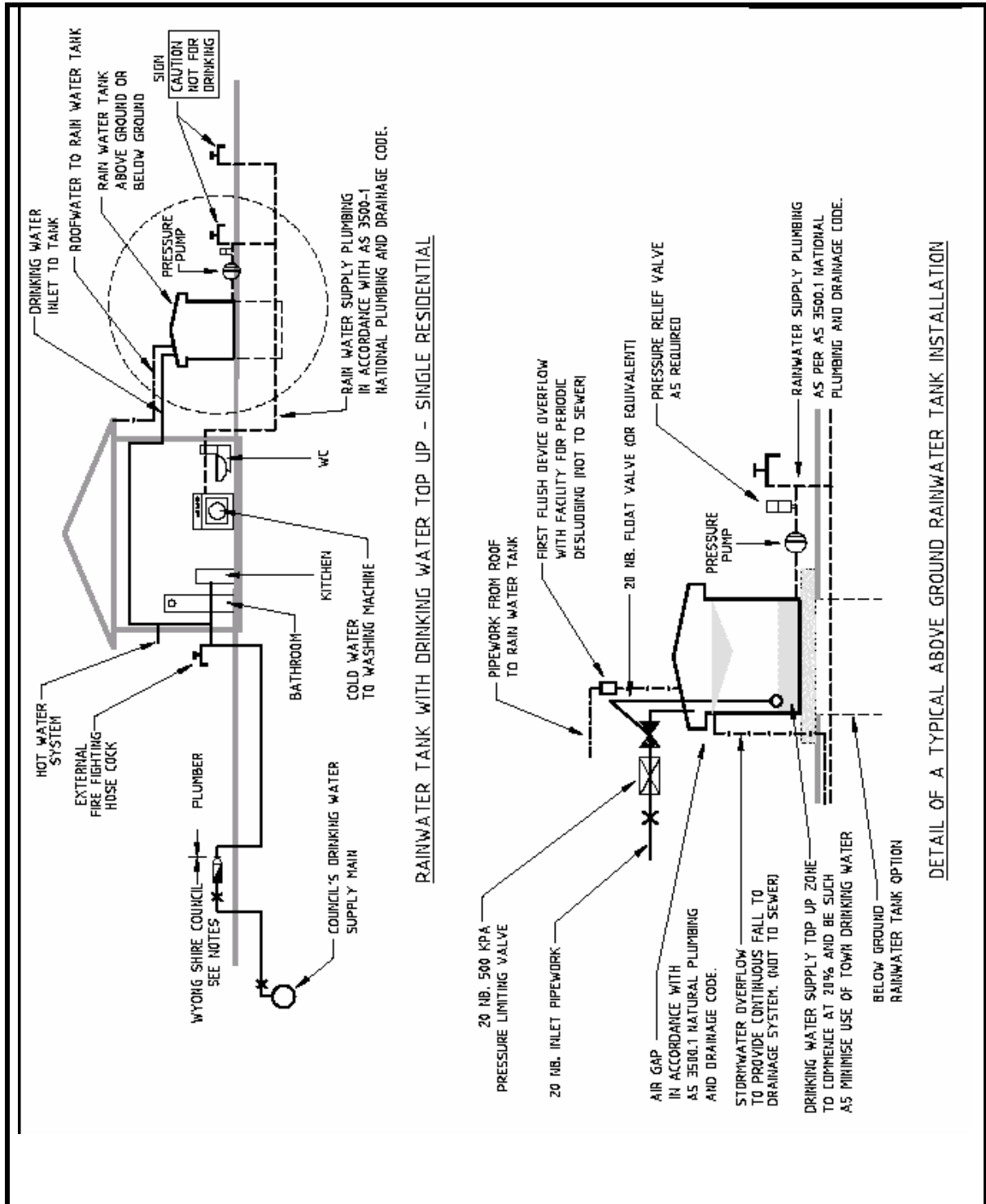


FIGURE 1 Cont.

- NOTES:**
1. RAINWATER TANKS OF AT LEAST 5000 LITRES (10,000 IS RECOMMENDED) ARE REQUIRED FOR NEW DWELLING HOUSES.
 (b) A MINIMUM ROOF AREA CATCHMENT OF 100m² SHALL BE PROVIDED FOR EVERY 5000 LITRES OF RAINWATER STORAGE.
 2. THE RAINWATER SUPPLY PLUMBING IS TO BE CONNECTED TO THE COLD WATER WASHING MACHINE TAP, WC'S AND AT LEAST TWO EXTERNAL GARDEN TAPS.
 3. AN AIR GAP IS REQUIRED ON ALL INSTALLATIONS. THE AIR GAP SHALL PROVIDE A MINIMUM 80mm UNOBSTRUCTED VERTICAL DISTANCE BETWEEN THE MAXIMUM TOP WATER LEVEL OF THE RAINWATER TANK AND THE DRINKING WATER INLET AND SHALL BE LOCATED ABOVE GROUND AT A LOCATION WHICH PROVIDES THE HOUSEHOLDER WITH VISIBLE FLOW DETECTION DURING TANK TOP UP.
 4. DIRECT INTERCONNECTIONS ARE NOT ALLOWED BETWEEN WYONG SHIRE COUNCIL'S DRINKING WATER SUPPLY AND THE RAIN WATER SUPPLY.
 5. AN EXTERNAL HOSE COCK ON THE DRINKING WATER SUPPLY IS REQUIRED FOR FIRE FIGHTING.
 6. THE DRINKING WATER INLET TO TANK SHALL INCLUDE AN APPROVED STOP VALVE AND WHERE MAINS PRESSURE IS GREATER THAN 500 KPA A 500 KPA PRESSURE LIMITING VALVE MUST BE INSTALLED.
 7. FLOAT VALVES AND/OR SOLENOID VALVES MAY BE USED TO CONTROL THE DRINKING WATER INLET. ALL SUCH IN LINE DEVICES SHALL BE INSTALLED WITH CONNECTIONS TO PERMIT THE REMOVAL AND REPLACEMENT OF THE DEVICE.
 8. ALL PLUMBING WORKS ARE TO BE CARRIED OUT BY LICENSED PLUMBERS IN ACCORDANCE WITH AS 3500.1 NATIONAL PLUMBING & DRAINAGE CODE.
 9. WYONG SHIRE COUNCIL ARE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF WATER SERVICES UP TO AND INCLUDING THE METER. ON RAINWATER TANK INSTALLATIONS THIS WILL INCLUDE THE DUAL CHECK VALVE AT THE METER.











<u>LEGEND</u>	
 DUAL CHECK VALVE FLOW METER	 STOP COCK
 PRESSURE RELIEF VALVE	 500 KPA PRESSURE LIMITING VALVE
 PUMP	 FLOAT VALVE
 DRINKING WATER SUPPLY PIPES	 GARDEN TAP
 RAINWATER SUPPLY PIPES	
 STORMWATER PIPES	

FIGURE 2

Cross Section of a Typical Rainwater Storage Tank with Drinking Water Top up

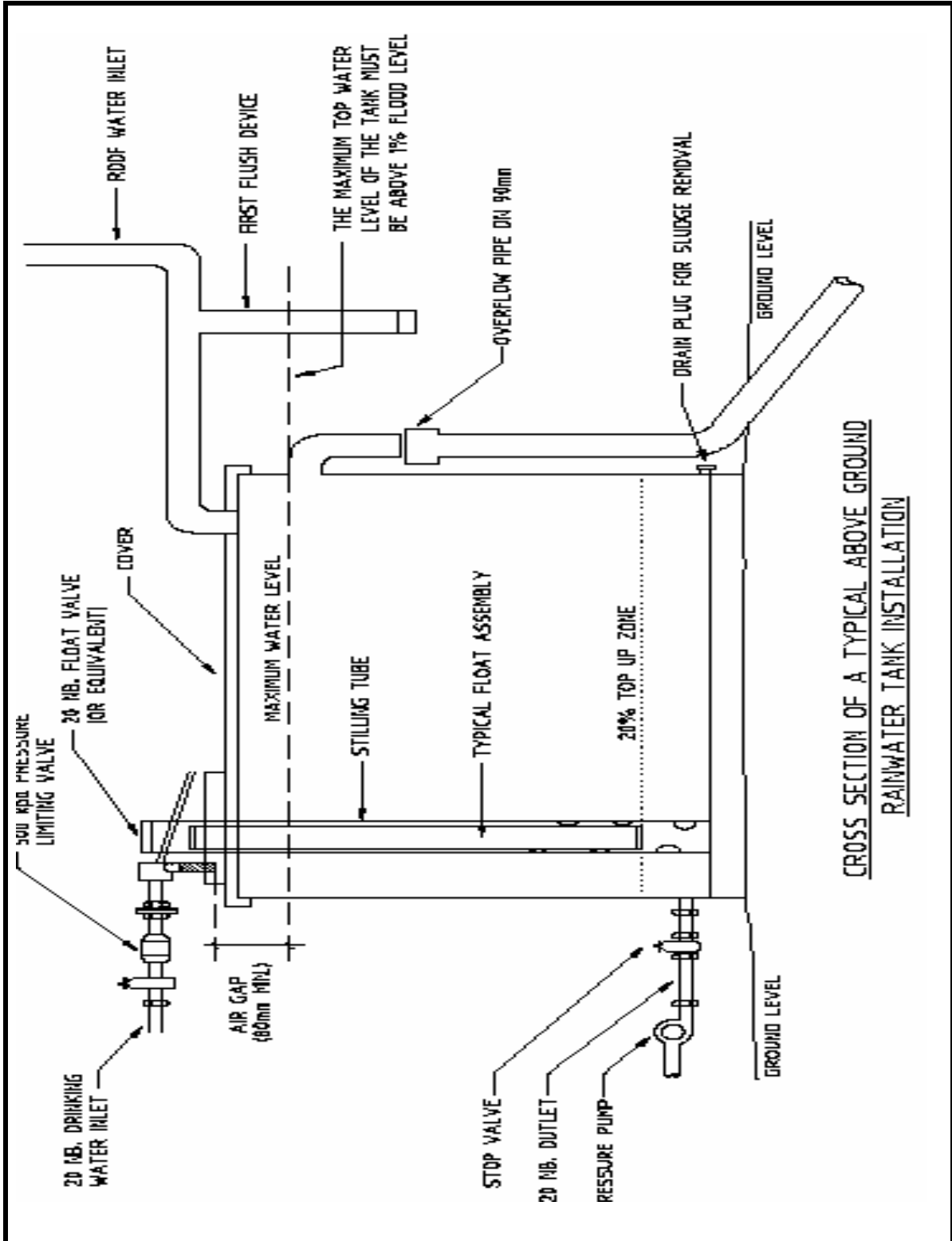


FIGURE 3

Cross Section of a First Flush Device

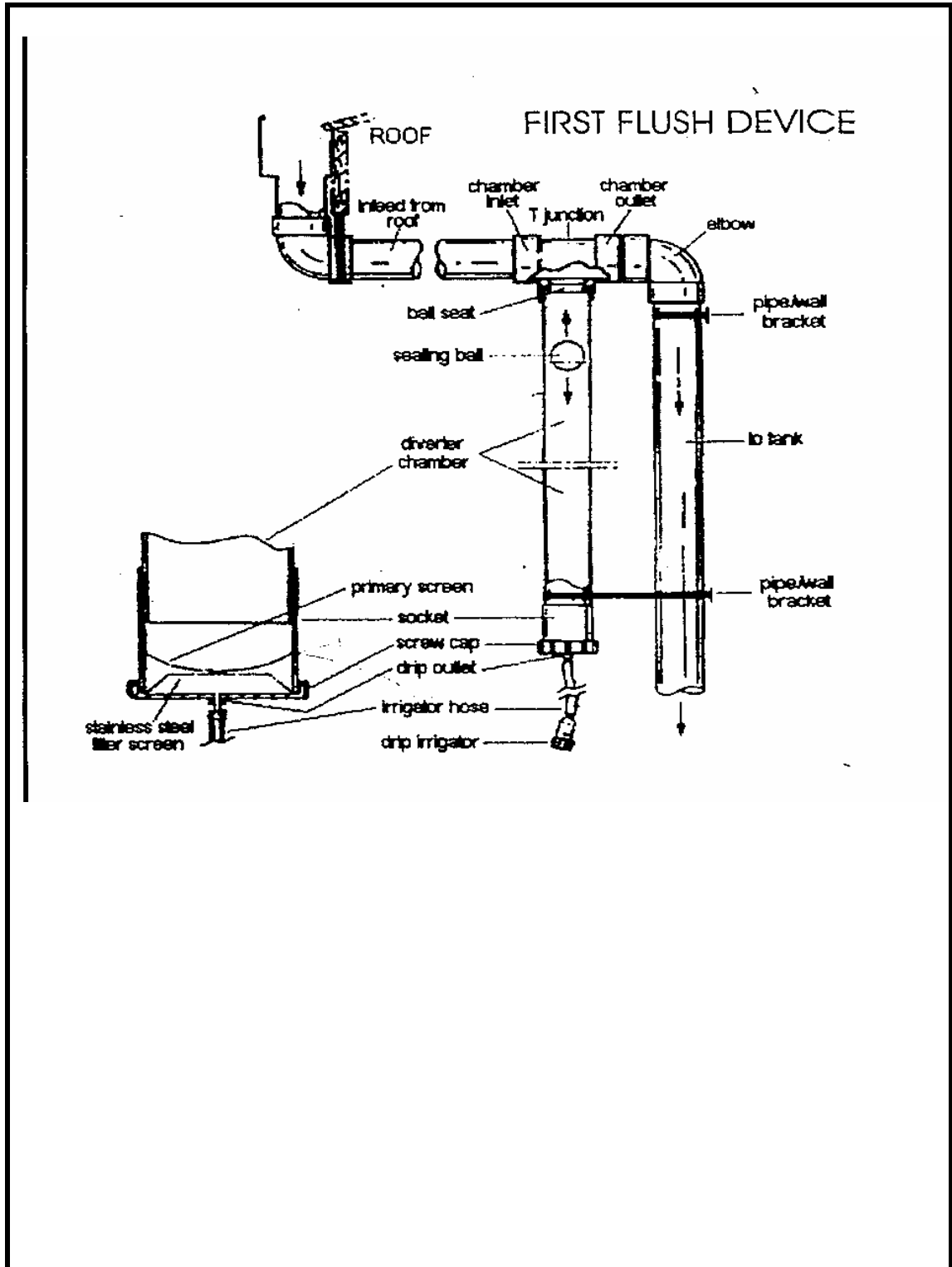
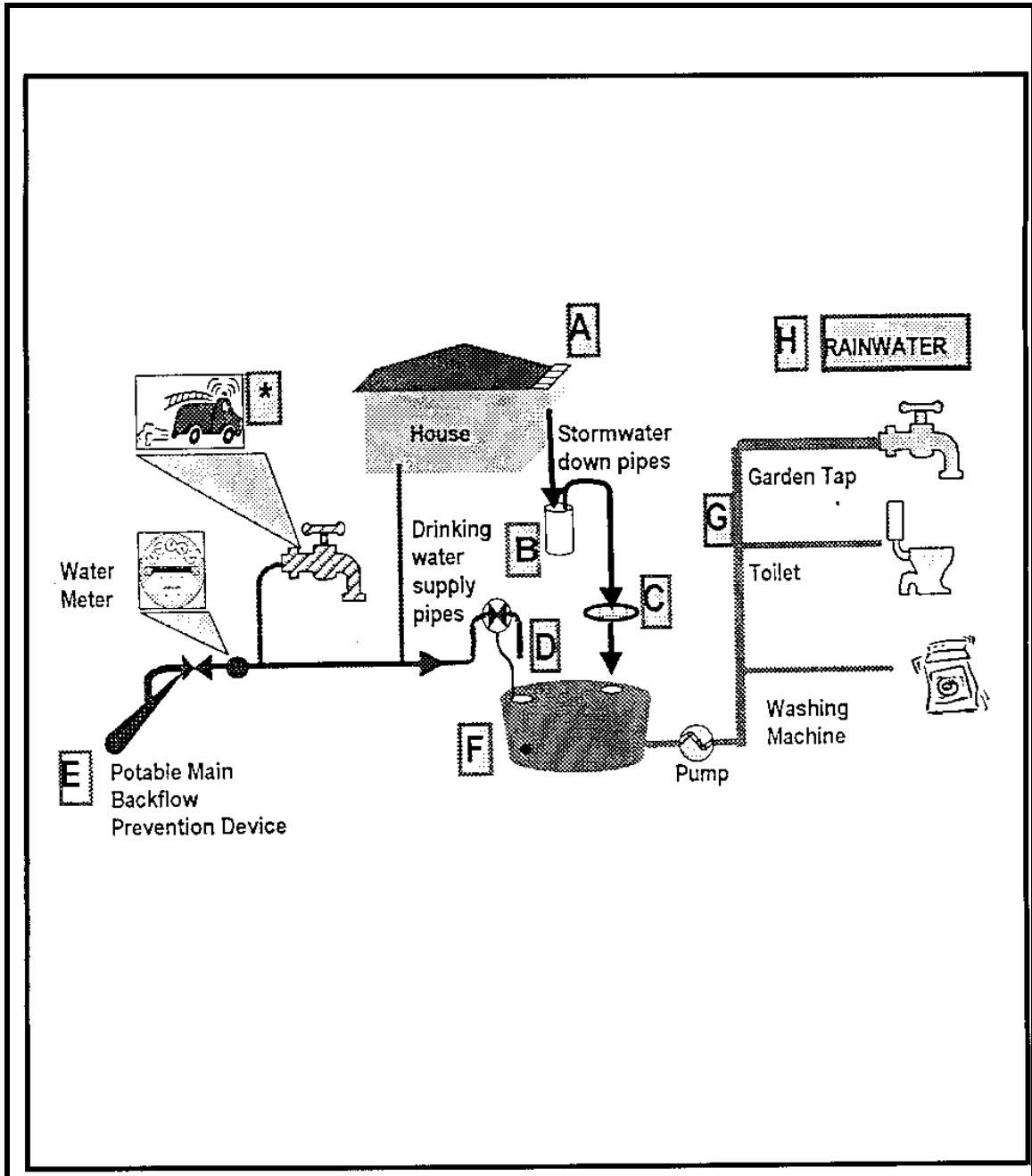


FIGURE 4

Plumbing Configuration for Rain Water Tanks in Urban Areas with Reticulated Supply



*External mains tap, required for house fire fighting.

Key to BASIC RISK CONTROL MEASURES	
A	Gutter screen
B	First flush device
C	Fine screen (mosquito)
E	Back flow prevention
F	Tank de-sludging
G	Use of approved materials

D	Air gap above tank (top up valve)	H	Signage
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