



Ball in downpipe rises to block pipe.



Drip filter in place.

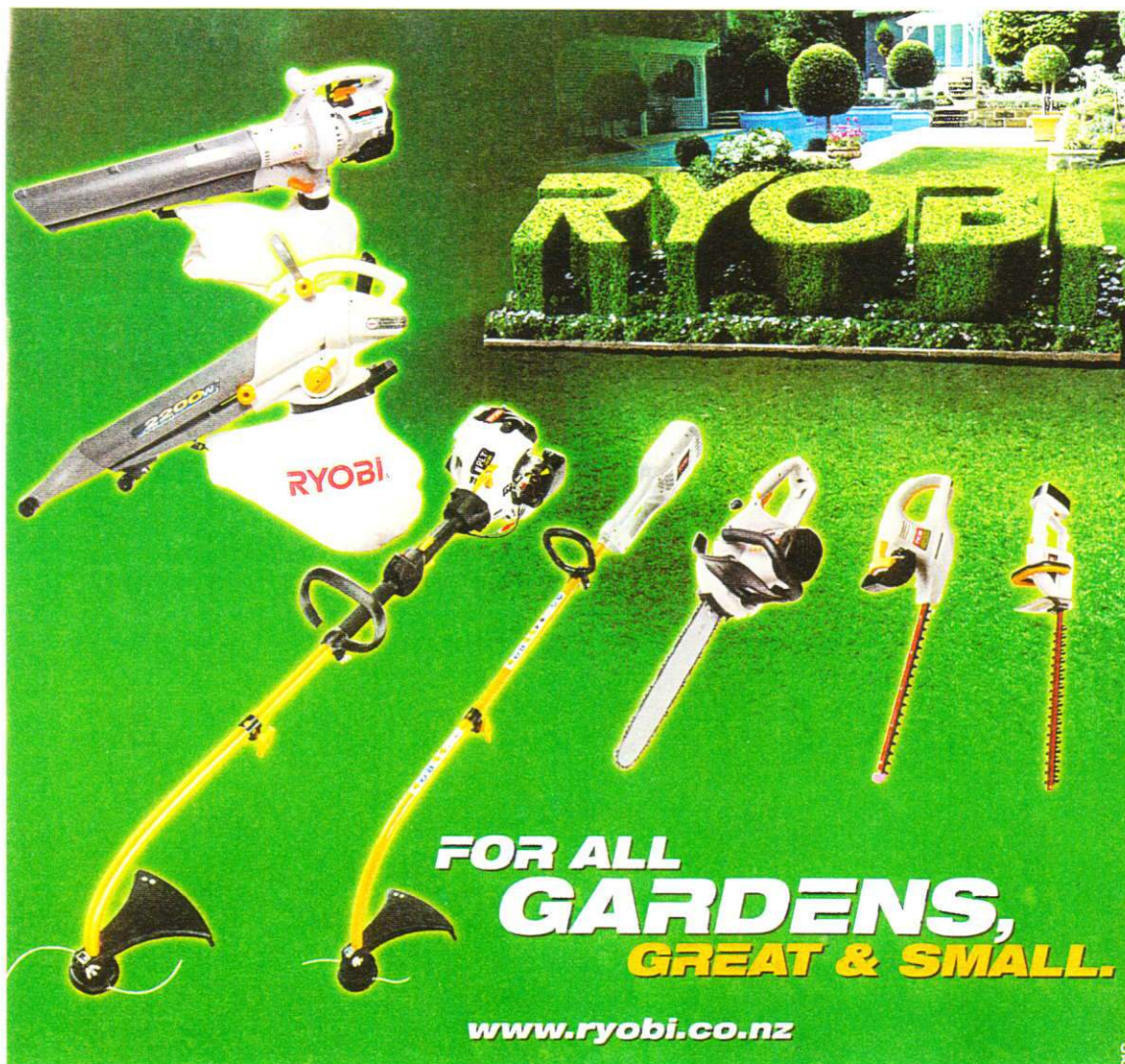


How ball blocks top of first flush diverter.

Annual Review of the Microbiological and Chemical Quality of Drinking Water in New Zealand has found regular concern about

the quality of drinking water that is self-supplied to homes. While drinking water quality improves around one percent a year, ap-

proximately 980,000 (24%) of New Zealanders are supplied with drinking-water that fails to comply bacteriologically with the New



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5016



Saw 30mm VC cylinder to size.



Bevel edge of cylinder.



Glue on cap.

Zealand standards for healthy water, both from small suppliers and self-supplied homes (about 13 percent of the population).

But with an increase in roof water likely, more people will pay attention to the new Health (Drinking Water) Amendment Act. This introduces a risk-management approach to drinking-water supplies. The Act seeks greater compliance with drinking water standards from small suppliers, greater coverage

of known official supplies on the Ministry of Health Drinking Water Register and sets out the maximum acceptable level of contaminants prescribed by drinking water standards. The Act comes into force on July 1 this year. The government announced the new legislation comes backed by funding of over \$150 million to assist drinking water suppliers and local government to ensure every New Zealander can access clean drinking water.

The main duty in the legislation is a requirement for drinking water suppliers to take all practicable steps to comply with the drinking water standards.

The government advisory on the Act stated that the legislation was aimed at suppliers that supply water to other properties through pipes or water tankers. Importantly for *Shed* readers, the drinking water Act does not apply to domestic household supplies if the house has its own water supply.

DO I NEED A CONSENT?

Exempt building work in the Building Act 2004 says that no consent is needed for tanks

- * not exceeding 35,000 litres capacity and supported directly by the ground; or
- * not exceeding 2000 litres capacity and supported not more than two metres above the supporting ground; or
- * not exceeding 500 litres capacity and supported not more than four metres above the supporting ground.

Local conditions will vary and all councils will have their own requirements. North Shore City Council says a building consent is needed for all household plumbing including rainwater collection systems that connect to the mains water system as backup and therefore require a backflow prevention device. Tanks larger than 6000 litres may need to meet certain criteria such as height in relation to boundaries.

Kapiti Coast District council says its ratepayers do not need a resource consent if the tank is lower than 2.4 metres, more than 1 metre off the boundary, 4.5 metres off the road margin, and the top area is less than eight square metres. It does advise ratepayers make sure supporting ground is stable enough to hold the weight (a litre of water weighs just over one 1kg, so a full 5000-litre tank weighs five metric tonnes).

Self-supply

It did not affect self-suppliers, that is, people or properties that obtain their own water from bores, rain-water tanks, or other such sources. "Self-suppliers" will continue to be governed primarily by the Building Act. The legislation also will not affect suppliers that supply a permanent population of less than around 16 people.

It signifies a move away from focusing on compliance or non-compliance. Suppliers are required to take all practicable steps to comply, and if the supplier is implementing a public health risk management plan, they are deemed to be taking all practicable steps to comply.

But if the roof rainwater will be a



Mesh filter in first flush diverter.



Second filter.

much bigger part of Kiwi life, the Ministry of Health pamphlet *Water Collection Tanks And Safe Household Water* has plenty of good advice. It obviously recognises the practicality of tank water supply for many people.

Filter

In one of the sections clearly geared

towards keeping household tank water safe drinking it points out that essential steps are:

- Use a water filter or point-of-use device. A water filter helps prevent contamination of your household water. It can be used to treat all household water and placed where all water entering the house passes through it, or can be used for just

one tap. It should be placed where you can get at it for inspection and cleaning. A water filter can remove tastes and smells, filter out harmful bugs and remove chemicals. Note: most filters will only do one or two of these. It is important to get the appropriate filter for your needs.

- Disinfect unsafe water. If you are unsure about the quality and

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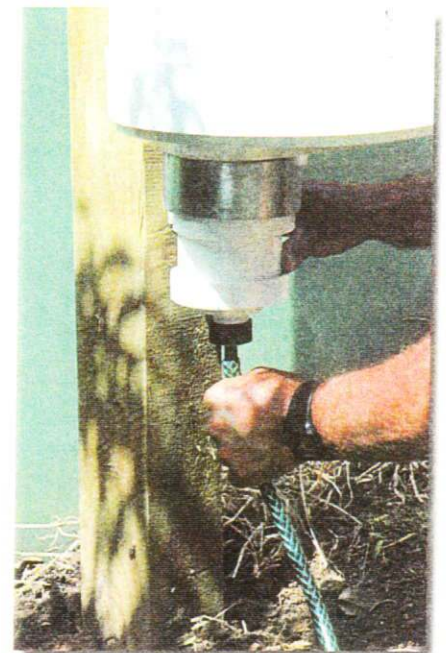
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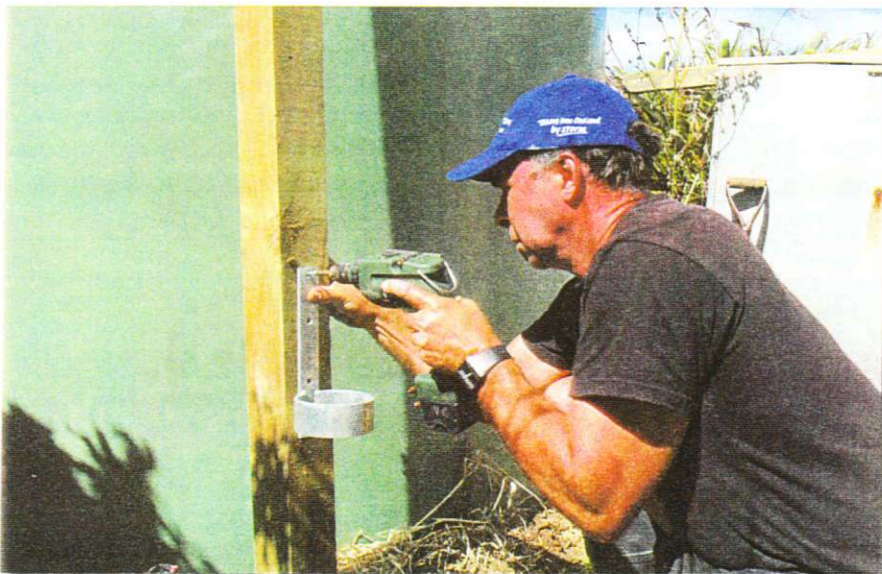
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Drip tap in place.



Hose drains first flush diverter.



Place tail of bracket upwards.

safety of your drinking water supply, you can disinfect the supply by using an approved filter or purifier, boiling the water for one minute (boiling is the simplest and the most effective method that will reliably kill *Cryptosporidium* parasites) and adding chlorine. Half a teaspoon of household bleach added to 10 litres of water kills most germs but some parasites will be resistant to chlorine disinfection.

Clean roof

A useful, practical exercise is what

COUNCILS

Councils vary in their enthusiasm for promoting rain water harvesting. While Rodney, Waitakere and North Shore offer tanks installation rebates to ratepayers, Auckland Regional Council and Auckland City both offer only developers incentives to install rainwater tanks and re-cycle water in non-potable uses. In Nelson, new rural residences are required to have a 23,000 litre water tank for fire fighting purposes and another minimum 15,000 litre tank for household water use. In the urban area (with access to the reticulated urban water supply) there is no requirement to install a tank. The incentive to install one "would be that water from the urban supply is metered and charged for, whereas water collected in a tank for irrigating gardens would not carry that charge," says council spokeswoman Debra Bradley.

Tasman District Council has similar provision for rural firefighting and domestic water supplies but does not offer any incentives or subsidies to install such systems. It does not (as yet) require new dwellings in reticulated (piped supply) areas to install rainwater collection systems.

In Marlborough, District Council mayor Alistair Sowman says, "Maybe it is time that we did look into the benefits of rainwater collection and perhaps formulate a policy, it wouldn't go amiss and on the surface has great potential." Invercargill City Council Water Services Manager Alister Murray did not believe domestic rain water harvesting would be anything but a short term help in alleviating the pressure on the city's water resource or in reducing demand. "Council is aware of it (rain water harvesting) but as yet doesn't have policy or is promoting it. The idea is good in principle but as soon as tanks are empty the demand would go back on the resource."

to do if there is evidence of heavy faecal contamination on your roof (you may have pigeons visiting often).

The exercise goes this way:

- disconnect the pipes that feed water to the tank.
- dislodge and remove the bird or animal droppings from the roof. Use a chlorine solution (half a teaspoon of household bleach added to 10 litres of water) to scrub and flush away the faecal material.
- use sufficient water to flush away the remaining material.
- reconnect the pipes that feed water to the tank.

If your gutters need cleaning:

- disconnect the pipes that feed water to the tank;
- remove any debris that has collected in the gutters;
- use clean water to flush the gut-



Water outlet floating takeoff.

ters of all dirt, animal droppings and paint flakes;

- reconnect the pipes that feed water to the tank.

What uses water?

Cleaning Teeth 5 Litres
 Shower An ordinary shower can use as little as one third the amount of water used in a bath. Be careful though, as a shower that lasts more than five minutes can use more water than a bath.

Bath 100 – 200 Litres

Toilet (Half Flush) 6 Litres

Garden Hose (On Full) 250 Litres Per 5 Minutes

Dish Washer Up to 25 Litres Per Wash

Washing Machine (Top Loading) 100 - 200 Litres (Front Loading) 70 - 85 Litres

Dripping Tap 60,000 Litres Per Year

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Spouting relief

Good rainwater collection can depend on spouting working well. Laurie Dee explores some of the problems and answers

Kiwi folklore dictates that "real blokes" should not read instructions, certainly not for something as simple as installing PVC spouting. Yet even "experts" can get it wrong. Your spouting might have "zero" fall or be filled with builder's rubbish. There could be too narrow a gap between the edge of the roof and the edge of the spouting. According to the professional advice of the manufacturers Marley in their installation guide, the roofing overhang should be not less than 30mm and not more than 50 mm.

There are some simple solutions for most spouting problems.

Problem: Insufficient access between the roof and the edge of the spouting for gutter cleaning.

Solution for clay or concrete tiles: Often you can lift the bottom edge of a perimeter tile and slide it back up under the tile above, giving you ample gutter access. You only need to create 2-3 of these entry points along each side of the house and you are ready to start gutter cleaning. My concern for clean gutters led to the invention of the gutter spade and various "hedgehog" spouting aids.

Solution for long-run metal roofing: Trimming the edge of the roof back is not hard if you have room to work and the right tools. An essential tool is a "nibbler" which can be hired. It operates like a jigsaw but has a hardened steel punch instead of a blade.

Nibblers can handle corrugations or angle folds relatively easily, producing an extremely clean cut. You will need safety glasses, ear protectors, leather gloves and an isolating

transformer plus a ladder and/ or scaffolding. Some nibblers are driven by compressed air. Tell the equipment hire people what you plan to do and let them advise you.

Problem: Gutter overflows in heavy rain but when you check it out the next day it's empty.

First possible cause: the gutter is installed too low. Stand back from the house and look for the edge of the roof. The spouting should hide it from view. If not, concentrate the hose on a section of roof and wait to see if the water spills into the gutter or overshoots it.

Solution: If the water is overshooting the gutter, you either have to raise the spouting or attach a deflector on the top edge of the spouting.

Second possible cause: PVC gutter creep. If you have a gable-ended house (spouting only on two sides) check for any signs of gutter creep, where the end of the gutter is no longer flush with the end of the roof. PVC spouting can expand on a hot day, hence the importance of installing spouting expansion joints. When PVC gutters stretch, the gutter brackets act like a ratchet system, so that when the gutter cools and contracts you often find the entire length of spouting has crept towards the downpipe. Over time, this movement can result in the downpipe being completely closed off.

Solution: Get a good grip on the spouting and pull it back. This may require two persons. I would recommend installing expansion joiners. Fit one every ten metres or every eight metres if the spouting is going to be painted. Remember not to cement the

two halves of the joiner together.

Sagging

Problem: the spouting is sagging and holding water.

Solution: The gutter brackets, or their absence, will almost certainly be the cause. The official guideline is to allow one bracket for every ½ metre of spouting. To replace or realign gutter brackets you will likely have to take down the spouting, or at least a section of it. If the spouting goes around the house, cut the spouting off near the corner. Try to make the cut as square as possible to make rejoining it later easier.

Unclipping PVC spouting is simpler if you have had experience installing it. Start unclipping the spouting from the back. The back lip of the spouting fits into a corresponding slot on each of the brackets. To pop the spouting lip out of the slot, use a narrow-bladed screwdriver or similar as a lever. Once you have unclipped the back half, the spouting will be left hanging on the ends of the brackets. By gently swinging the spouting up and over the brackets the front gutter clips should virtually unclip themselves. When reattaching the spouting, take special care to ensure the front of the spouting has properly locked on to each of the brackets before you start clipping up those at the back.

* Laurie Dee may be best known from a previous life in showbiz, notably on TV in the cop series *Mortimer's Patch*, in song and dance on *The Billy T James show* as well as in classic films such as *Sleeping Dogs*. But his father was an engineer and as well as studying agriculture, Laurie gained a trade certificate in engineering – a fitter and turner, no less. Turning to his roots in recent years, he became such an inventor (particularly of award-winning rainwater conservation products) that he figures in *Shed* columnist Jim Hopkins's honourable tome, *Inventions from the shed*. ▲

RAINWATER HARVESTING

<http://www.northshorecity.govt.nz/Water/Stormwater/stormwaterrainwater.htm>

<http://www.kapiticoast.govt.nz/sustainability/managingourwater/>

Ministry of Health, Water collection tanks and safe household water

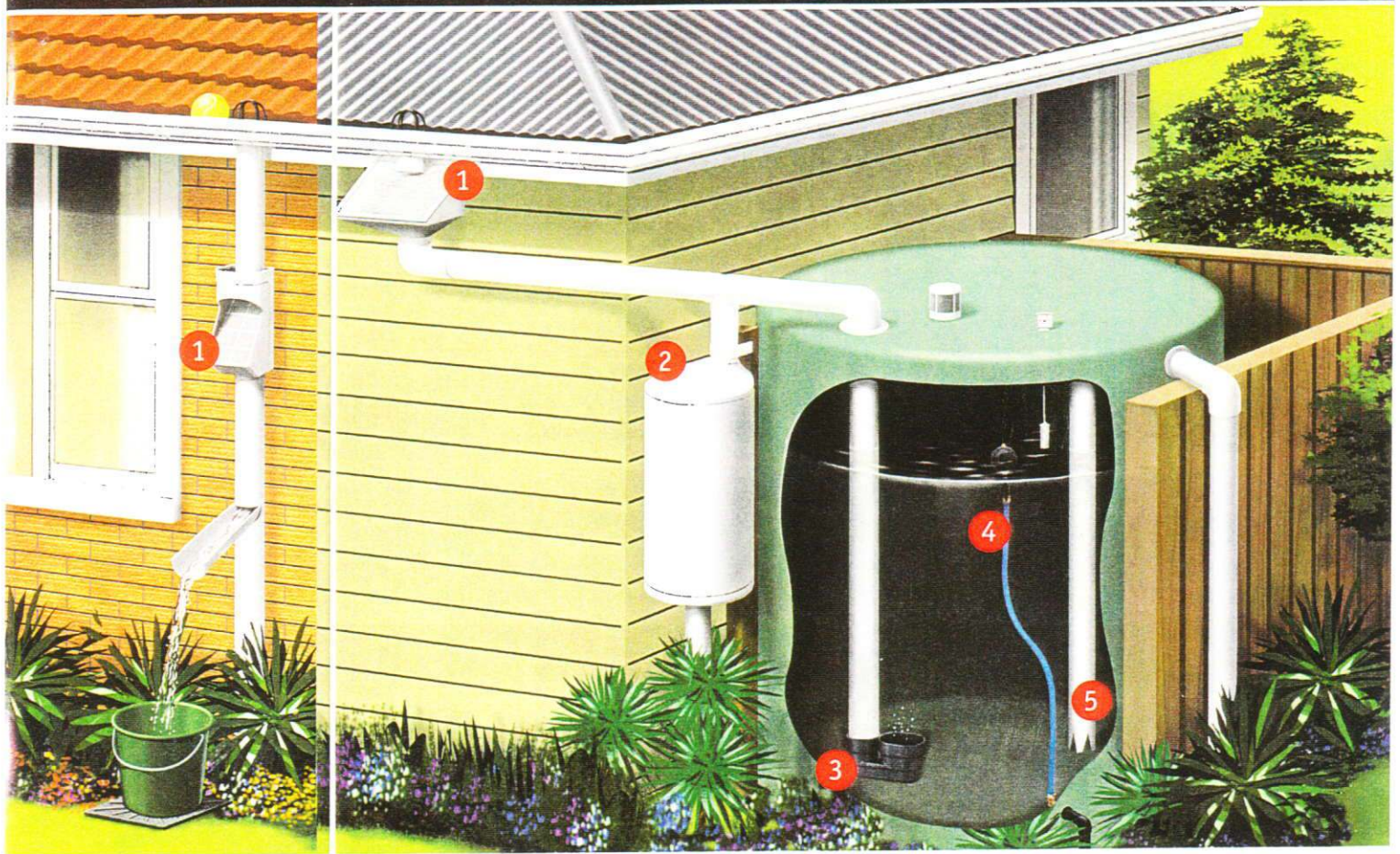
<http://www.healthed.govt.nz/uploads/docs/HE101480.pdf>

www.nelsoncitycouncil.co.nz www.rodney.govt.nz

http://en.wikipedia.org/wiki/Rainwater_harvesting

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- safe solutions for the collection, storage and distribution of rain water.



How safe is the water you are collecting?

When collecting rainwater as a partial or total source for a water supply, it is important the design of the system meets the need for potable (safe drinking) water.

Water collected from a roof and stored and distributed from a water tank, can contain a nasty range of pollutants that can

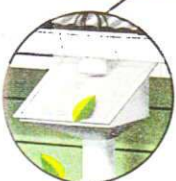
contaminate your water, eg. bacteria from bird droppings, insects, rotting debris, airborne dusts (containing heavy metals).

The Marley Rain Harvesting System comprises of a number of unique and cost effective components that are designed to work with the Marley range of spouting and downpipes to improve the quality of tank water.

1

Debris Diverter

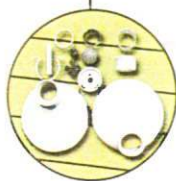
Prevents leaves and debris from being captured in the storage tank.



2

First Flush Diverter

Diverts the first flush of contaminated water away from the storage tank.



3

Calmed Inlet

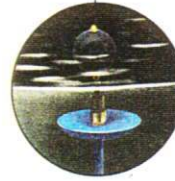
Allows water to enter the storage tank without disturbing the sediment in the bottom of the tank.



4

Floating Out-take

Suspended just below the water surface it draws off the cleanest water for use.



5

Tank Vacuum Kit

When the tank overflows the dirty ("Anaerobic Zone") water is sucked away from the bottom of the tank.



For further information: 0800 MARLEY (0800 627 539) www.marley.co.nz

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