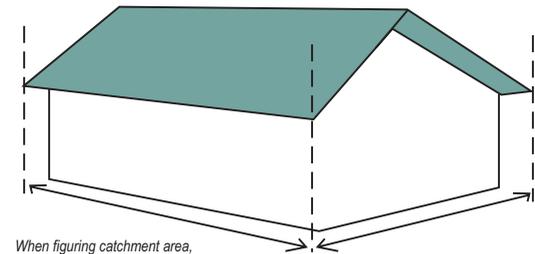




How much rainfall can you collect?

The amount of rainfall you can collect is dependent on the size of the surface area and the amount of rainfall.

To calculate this, multiply the length by the width of the collection area (e.g. your roof) to give you the area, then multiply the area by the annual rainfall. The annual rainfall for Waitakere City is 1200mm.



When figuring catchment area, measure at ground level below the edges of the roof.

For example, the amount of rain water falling on a 150 m² roof in a location with average annual 1200mm rainfall = 150 m² x 1200 mm/year = 180 m³/year = 180,000 litres/year = average of 500 litres/day.

Typically, 80% to 90% of this volume is collected, with 10% to 20% lost through evaporation and spillage.

Types of barrels and tanks

Larger rain tanks are available which have a 'silo' shape. Relatively small tank volumes can provide significant quantities of water for use around the house. A typical house roof and 200 litres of tank storage can provide up to half of the average toilet water use.



The installation of a 4,500 litre tank for collecting rainwater from a typical 150 m² roof can reduce peak stormwater flows by 20% - 35%.

Rainwater Barrels

Small roof areas 30m², or less, can be easily adapted to collect rainwater in barrels. These are typically 240 litres and are reasonably priced.



Do you need a building consent?

A building consent is generally not required for garden irrigation rain tanks. **A building consent is required for all household plumbing.** This includes rainwater collection systems that:

- Connect to the mains water system as backup and therefore require a backflow prevention device
- Exceed 25,000 litres capacity and are supported directly by the ground

Building Consent is required for tanks - whether plumbed to the house or not - that:

- Exceed 2,000 litres capacity and are supported not more than 2 metres above the ground
- Exceed 500 litres capacity and not supported more than 4 metres above the ground

Tanks larger than 6,000 litres may require a **resource consent**. Please check with our Consent Services division.

All **plumbing** must be carried out by a registered plumber and must comply with the New Zealand Building code. No fees are charged for building or "minor works" consents for rainwater tanks.

What size tank is needed?

Water use in litres/day
125
225
325

	200	1,000	3,000	4,500	9,000	Rain tank capacity (in litres)
125	50%	80%	95%	100%	100%	Average yearly % of water supplied (for 150 m ² roof area)
225	40%	65%	85%	90%	100%	
325	35%	50%	70%	80%	90%	

When installing a rainwater system, please ensure that:



"Not Suitable for Drinking" signage is fixed next to all rainwater system faucets.



Backflow prevention devices are installed to stop possible mains water contamination.

Using rainwater - checklist:

Roof:

- Use safe, lead-free roof paint (check your old paint for lead through your public health service)

Tank:

- Regularly check your tank and ensure the lid is secured to prevent insects, rodents, animals and children getting in.
- Periodically clean your tank and gutters to ensure they are clear of debris, leaves & dirt.
- Ensure light is excluded from penetrating your tank to prevent growth of algae.
- Consider installing primary screening and first flush diverters to improve your rainwater quality.
- Consider chlorinating the tank water annually to reduce contamination.

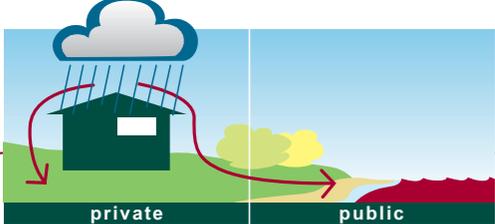
Please note:

If there are any changes in the colour or odour of your rainwater, contact your local public health service and avoid using the water for watering vegetable gardens.

Source: North Shore City Council. Using Rainwater brochure. Printed on recycled paper with mineral free inks.



For more information on using Rainwater or for a Rainwater Tank Subsidy application please call the Council's Call centre on 839-0400 or visit our website www.waitakere.govt.nz



Stormwater can cause flooding, erosion and long-term environmental damage.

At Waitakere City Council we're upgrading our public stormwater systems, building stormwater ponds, filtering our drains and improving the quality of stormwater that flows onto our streams and beaches. To make a real difference everyone needs to take responsibility for stormwater on their property.

At Waitakere City Council we encourage you to adopt environmentally friendly stormwater practices in and around your home.

Why use rainwater?

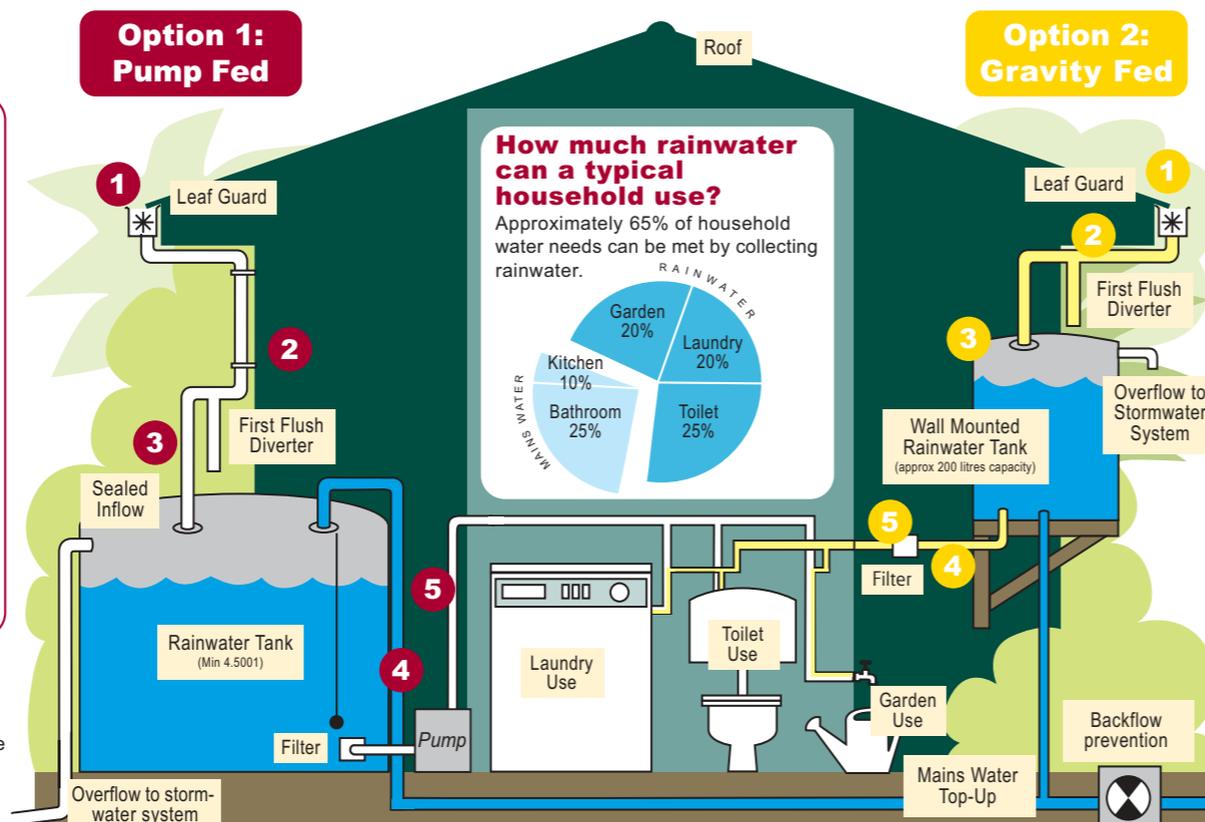
People have relied on rainwater for household, landscape and agricultural water uses for centuries. As communities have become larger and more centralised, community water treatment and distribution systems have gradually replaced the collection of rainwater as our primary water supply.

As we have begun to understand the need for sustainable use of water worldwide, there has been a renewed interest in collecting rainwater.

Using rainwater:

- Reduces demand for mains water supply and you save on your water rates
- Reduces flooding by providing temporary storage for rainwater
- Reduces wet weather sewage overflows
- Reduces pollution of our beaches and waterways

Water tank retro fitting where mains water supply available



Health Warning

The city's public water supply should still be used for drinking, food preparation and kitchen use. For rainwater to be safe for drinking it must be appropriately treated.

For further information, please contact Ecowater.

Rainwater Uses:

Water your garden – **building consent not required**

Garden, laundry and toilet gravity system with mains top-up (backflow preventer required) – **building consent required**

Water your garden and supply laundry and toilet (no mains top-up) – **building consent required**

Garden, laundry and toilet boosted (pump) system with mains top-up (backflow preventer required) – **building consent required**

Components of a rainwater system:

Roof

Rainwater can be collected from iron roofing, clay tiles and slates. It is important that no lead is used as roof flashing or gutter solder as the slightly acidic quality of rain can dissolve the lead and contaminate water supply.

Gutters and downpipes

Seamless extruded aluminium, galvanised steel or PVC are commonly recommended for use as gutters and downpipes. Gutters and downpipes must be properly sized, sloped and installed to maximise the quantity of rainwater collected. The connection between the downpipes and the storage tank is generally made of PVC pipe.

Leaf guards are primary screening devices to prevent leaves and other debris entering the rainwater collection system.

First flush diverters

The first flush devices are designed to divert the first part of the rainfall that picks up most of the dirt, debris and contaminants (e.g. bird droppings), from entering the rain tank. It does this by diverting the first water into a separate small chamber. Typically 40 litres for every 100 m² of roof area is diverted. Once the chamber has filled, the rest of the water flows to the downpipe connected to the rainwater tank. The small chamber has a small tube in the base that allows it to empty before the next rain event.

First flush diverters are optional for non-drinking water use.

Storage tanks

above ground, below ground, or wall mounted (just under the gutter).

There are a lot of options available in tank materials (e.g. plastic, steel, concrete and fiberglass). The tank should have a durable, watertight, opaque exterior and a clean, smooth interior. A tight fitting top cover is required to prevent evaporation, mosquito breeding and keep insects, rodents, birds, and children out of the tank. It is best to locate the tank in a cool place, out of sunlight so that algae does not grow. A suitable overflow outlet and access for cleaning is also important. The tank should be placed high enough for gravity to convey the water, or be fitted with a pump.

The rainwater tank size will depend on: the *volume* of water needed; the *amount* and pattern of rainfall; the *area* of the collection surface; and the *security* of the supply needed.

Pipes

the delivery system for the collected rainwater.

Effective plumbing is important for efficient rainwater collection and to protect your household or mains water supply from contamination. Debris needs to be diverted and backflow preventers may need to be installed. We recommend that all plumbing be carried out by a qualified plumber. You are required to meet recognised plumbing standards.

Water treatment for non-potable (non-drinking) use

Additives for settling sediments or buffering pH and simple filters are optional treatments for non-potable (non-drinking) use of rainwater. Fine filters and microbiological disinfection are only necessary for potable use, that is drinking water. It is important to note that water quality may be affected by dirt, rust, scale, bird and rodent droppings and airborne bacteria may still enter the tank even when primary screening and first flush diverters are in place. Even for non-drinking uses, sedimentation of suspended solids inside the tank and further filtration is often a good idea. Fine filters may be installed prior to the end use e.g. at the washing machine and toilet cistern. Simple cartridge filters similar to those used for domestic swimming pools or hot tubs are suitable (e.g. 80 micron washable filters). For best results follow the instructions for operation, maintenance and replacement of the filters. Before making a decision about what water treatment methods to use, have your water tested by an approved laboratory and consult with Consent Services or your public health service.