

# DAINTREE LIVING FACTSHEET

## Water Sources (beta ver. 1.0)

You have three main options for obtaining potable water: rain, stream/creek, and bore sources. Many people use a combination of these.



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### Related Factsheets

**Waste Management** (pdf, [file size]) *Grey water systems, composting, recycling non-organics, e-waste options, creative reuse, burning or, as a last resort, the dump.*

**Toilet Systems** (pdf, [file size]) *Location, budget, power requirements, water supply, and maintenance for composting, waste water, and septic systems.*

**Gardening** (pdf, [file size]) *Rainforest garden challenges, soil nutrition, what to plant, fauna, water, and weeds.*

**Erosion** (pdf, [file size]) *Land clearing and habitat fragmentation; weather, wind and rain; regeneration.*

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## Water table and rainfall fluctuations

While the ecological impact of creek and bore water extraction in the Daintree is still poorly understood, excessive extraction will have an adverse effect on the ecosystem. The Daintree Futures Study recommends **no more than one domestic bore per 5 ha or extraction point** property from perennial streams and no more than one extraction point per ephemeral stream. Conserving water will reduce the amount of water you need and minimize the cost (and complexity) of the system you require.

Annual as well as seasonal water tables and rainfall rates vary considerably. Consequently, storage needs to be considered.

## Contamination

If you or your neighbours (upslope of you) have an existing septic system, consider getting a soil and water test done on the property. You want to make sure that your creek, ground water and/or bore water aren't contaminated.

## Pumps

If you want mains pressure you will need to use a pump and factor that into your power needs. Try to harness gravity by positioning your tank at least 10 meters higher than the house. Even if you need to pump the water into the tank from a bore, creek or a lower tank source, **periodic pumping will require less power than an on-demand pumping**. If you are lucky enough to be using permanent creek water, you may be able to avoid using power altogether by using a hydraulic ram pump.

## Bore Pumps

Your best option is a solar driven bore pump using a "Mono" style pump. They are not cheap but so long as the bore water level controls are in good order (we suggest doubling them up) then

they are incredibly reliable, silent, but of course don't work at night or in very overcast weather. You can mount the panels on a post in a clearing as close to the bore as possible, and you will definitely need a large capacity elevated header tank. Unless you fit a "tank full" sensor (turn the pump off) you can run the overflow water into a separate tank for the garden or as a backup.

A solar bore pump and tank. The tank elevation is adequate to give useable water pressure. The panel array is adjustable – and the 3 panels at the base are to boost output during overcast weather. Control electronics (in their own sealed enclosure) are in the white box. This is a Lorenz system (mono-pump). The bore is immediately below the box.

The advantage with Mono-style pumps is that they require no valves (and are lubricated by the water). The disadvantage is that should the “bore empty” sensor fail – the pump will run dry and be destroyed – doubling up on the bore sensor is a very good idea!

The other advantage, is that they can pump from considerable depths and don't need priming.



Other pump types. Centrifugal bore pumps (which are somewhat cheaper) require a foot valve but DO require a 240V supply and a control box. They don't require priming either – but all bore pumps require some form of inlet filter.

We also suggest taking the supply water from the middle of the tank and having a second 'Emergency' line from the bottom, with a tap on it. That way, if you accidentally run out of water (leave a hose running for example) and its overcast, you still have a half-tank reserve. It's saved us many times.



Safety arrangement – the water supply is taken from the middle of the tank (“Upper”). A second supply line (“Emergency”) is taken from the bottom – and has an easy to reach tap at ground level – if you have a serious water issue – you have lost only ½ your tank of water. Don't forget to turn the emergency valve off after it's all fixed!!

You can also use this arrangement on rainwater tanks too.

If black polythene water pipes travel overland through forest, rodents – especially white-tailed rats

and Melomys - will chew them. This can be avoided by using pipe 50mm or larger in diameter which seems too wide for the rodent's jaws. Best bury the pipes in a very shallow trench.

Cover joiners in the pipe with rocks, as rodents will find the occasional gnaw on these surfaces impossible to resist. What appears to attract them is the residual substances from your sweat; wiping the pipe thoroughly with methylated spirit (or diesel) with a saturated rag is an effective deterrent.

## Stream/Creek Sources

*If you intend using stream/creek water for any purpose OTHER than domestic or stock you will need to contact the Department of Natural Resources and Mines (DNRM) in Mareeba to authorize and issue a permit. ???*

Positioning your house below the stream/creek can provide you with a ready source of gravity fed water that can be stored in tanks before use.

Even a small spring (weeping rock) can supply a surprising amount of water. However, a collection funnel made with quick setting cement is necessary [more details on how to do this ??].

For slow moving permanent streams, a suitably installed hydraulic ram can pump water more than 30 metres to a gravity-feed tank. Rams are relatively cheap, highly reliable and simple to install. [The supply pipe to the ram must be of a large diameter (50mm) and the pipe immediately connecting the ram should be of steel or something that can take the pressure shocks (ref).

## Bores

**Existing Bores** Odd, large diameter plastic pipes sticking out of the ground or the remains of black plastic irrigation pipes may lead to an existing bore covered in vegetation.. If the bore is readily accessible and you want to use the water (even for irrigation), drilling contractors can test for source capacity. The bore will need to be 'blown' to get, maybe years of detritus (and dead cane toads), out of it. You will also need to drop a weighted float down the bore to find out its depth. You will probably have to rebuild the top of the bore as well.

Nowadays, all drilling contractors are required to submit a 'bore log' to Dept Water in Mareeba – from which you can obtain a copy of your bore log (if one was ever submitted). It contains a great deal of information.

Get a water test done (this should be an annual assessment). Cairns Water has a water testing laboratory to check potable water quality - and they supply the sample bottles.

Your bore liner pipe should be at least 400 mm above the ground level so that mud and debris (and cane toads) can't get into the bore. A cement collar at ground level will protect this pipe.

**New Bores** Contact your local Council Office for underground water licensing and construction requirements.

Most of the bore water available here comes from the catchment on the east side of the main mountain range which flows through a sub-surface aquifer down to the ocean. The water table depths can fluctuate considerably during the year depending on rainfall, pumping rate, and the subsurface geology. Consequently bore depths of 50 meters or more are not uncommon, especially on ridge lines. Bore water here appears to be exceptionally clean - at least if you don't have upslope neighbours with a septic tank.

## Rainfall Sources

Average rainfall here ranges from two to six meters per year with just 250 mm from June to

October. There is considerable variation in rainfall even within the area .. and some areas in the northern section of Cow Bay receive far less rain than, say the Cooper Creek area. Because of climate change – it is hard to predict how our rainfall patterns will change, but change they will.

## Filters

Leaves will lead to impurities in your **rain water catchment**. Installing leaf guards in your guttering and leaf catchers at the end of drains will reduce cleaning and the need to clear overhanging vegetation. There are also simple overflow techniques that dump the first 10 litres of roof flow tank which contains most of the trash from your roof before letting water into the tank so the remaining flow is pretty clean. Make sure that your tank has screens – to stop visitors and stray leaves.

For **stream/creek sources** consider a settling tank (approximately 200litres) to filter the considerable mud that will otherwise enter the water line. A simple gauze filter at the intake will stop detritus such as quandong seeds entering that could plug the line. The settling tank must have a large drain tap at the bottom to allow the mud to be washed out. The inlet water line should then be positioned about halfway up the tank and the outlet near the top to allow clean water to flow to your home. Thoroughly washed out blue plastic drums are excellent for that purpose, and seem to be readily available.

*- Austrop Foundation*

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