

Domestic water supply for Christchurch

Questions that should be addressed

- 1) water use drinking food prep personal washing car washing gardening (lawns)
- 2) water supply artesian, domestic rainfall grey water
- 3) amounts of each type available (needs quantification)
- 4) do we need same quality for all uses
- 5) how do we control domestic use showers plumbing styles and their relation to amounts used
- 6) what pressure is needed for domestic supply
- 7) pumping costs

I have read the draft Water Supply Strategy 2008. It covers well most of the topics of interest. The document is generally good so my comments will be directed to those aspects where I think it can be improved. That it will read like sustained criticism should therefore be taken in a positive rather than a negative sense. For the non-specialist reader the use of the term “drinking water” is confusing as the document is concerned with the city’s (and Banks peninsular) piped water supply as a whole. It would help many readers if the use of this term were to be clarified.

You refer (p ii and elsewhere) to the size of the “bucket”. This gives the impression that the water is a fixed resource whereas it is actually a flow that is liable, as is clearly recognized in other parts of the document, to variation. The magnitude and limitations of the inflow are not clearly discussed (incidentally the map (fig 8 p20) is well nigh unreadable). The only indication of a limitation is in figs 9,10 that show an anticipated abstraction cap. The basis upon which the cap is estimated is not discussed. It would help the general understanding if this were done.

The Strategy presupposes a growth of the city. While this is also a part of the overall planning for the City the question has, I believe, not been asked whether growth is the appropriate path for the City. In all the strategy documents I have seen Growth is assumed

While the basic strategy refers to long term as 30 years it is good to see that in some respects (eg figs 9 and 10) a longer term is considered. However “sustainability” implies a very much longer time period and we should perhaps think further out

The draft (P16) give the consumption of water as 430 L /person/ day of which 57% is domestic (245L/p/d). This raises two questions that are not addressed. According to the CCC website document (“waterwise”) 10% of this is used in kitchens (24.5L).

The point is made that Christchurch water use per capita is higher than most other cities but I could not find a section indicating that work has been done to find out why.

It has always intrigued me that city water supply is always supplied at (and in many cases treated to) a safe drinking standard when in fact the fraction that is related to drinking and food preparation is not more than 5%

While Christchurch is fortunate in having a water supply that is inherently potable (and is therefore not treated) this will not necessarily be the case in the future and is not the case for Banks peninsula.

One of the questions that has long concerned me is “is it necessary to treat all the water supply to potable standard when only a small fraction is used for drinking and food preparation.

This is recognized in 4.3.3 (p21) but I think the “waste” is

greater than is implied by “sometimes”. I would suggest that “frequently” is a more accurate description of the situation. This appears to be recognized in 7.3.2.6 Can we hear more about “third pipe systems”. I assume that such a system provides two qualities of water one of which is potable. Is it possible to provide one pipe with water that is not quite potable and a local household polishing stage for a small quantity of drinking quality.

The suggested policy options (7.3 p28) sound good. I am not an enthusiast for direct subsidies because they tend to be ineffective to that part of the community who do not have the basic funds (eg \$1000 off the cost of a SWH system is only of use to the person who has the other \$4000-\$6000). However an indirect financial reward for reducing the “cost” to the city and contributing to sustainability via rates reductions for dwellings with water saving measures such as rain water tanks and grey water systems might be more acceptable though even this is likely to be a “landlord” benefit rather than a “user” benefit. I would support a charging system for water supply that allowed a baseline supply funded by rates with an excess use charge. Again there will be complications making this a user benefit rather than a property owner benefit. (Question is all of ChCh domestic supply individually metered?) There could be questions of social equity (eg the singly occupied dwelling vs the family home with 4 or 5 children who need washing and whose sports gear needs washing frequently, the keen vegetable gardener who uses water in a way that adds sustainability in another way and which incidentally does not impose a consequential waste water load. It might even be worth doing a study of the value to the Council of various measures and finding out if any are of sufficient value that the Council can give away things like like rainwater tanks and low-flow shower heads.

An aspect of water conservation that I have a long-standing interest in is domestic plumbing.

In this respect I fully support 7.3.2.5 (p30)

According to the figures in “waterwise” 20 % (ca 50 L/p/d)of domestic water use is in toilets. I’m not sure how much is saved by dual flush toilets but given that they are hardly any more costly than single flush I cannot see that this should not be the subject of regulation. (Question: how much saving can be achieved before consequences such as lack of flushing water appear in the sewerage system?)

There has over the past few years been a trend towards higher pressures in domestic hot water systems. There are definite deficiencies in the older header tank systems in which fluctuations in flow, in say a shower, are induced by the turning on or off of other taps in the system. While this problem can be alleviated and even avoided by suitable plumbing layout, good performance requires more thought with low pressure systems.

The trend to higher pressures (up to 500 kPa) in hot water systems has had other consequences, in particular much greater flows of water are possible in showers with the result that conservation oriented users now fit restrictors and low flow shower heads to prevent water waste.

My experience is that lower pressure such as the so-called medium-pressure systems are more than adequate in well designed domestic layouts

Many house designs have hot water taps far from the storage cylinders (or water heaters) with the consequence that significant quantities water have to be run off before hot water appears at the tap. This is both a waste of water and of energy. Again this wastage can be avoided by appropriate house design and plumbing layout that not only save water and energy but also provide greater convenience. In thirty years of

“professional” association with domestic hot water supply I have encountered only one set of house plans that included a water piping diagram! While I am not a fan for over-regulation I am sure that some of these characteristics can be avoided by better education of designers and plumbers.

The Council should consider running (or sponsoring) short courses for both house designers and plumbers (green plumber).

Finally can I make a plea that it is not enough simply to have a good strategy document. This strategy contains many good ideas but they will only happen if the Council actually does something about implementing it.