

## **MAKING POLICY AND REGULATIONS RAIN TANK FRIENDLY**

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### **ABSTRACT**

Recently, New Zealand observed the severity of droughts across the Tasman and counted itself lucky that its rainfall is higher and its rainfall patterns more predictable. If anything there is complacency in the community about our water availability which is counter to the idea of conservation. This lack of concern is however not universal. Many water retailers and wholesalers are recognising a number of factors which impact on reticulated water supply, such as population growth, climate change and perturbations and higher water demand with larger standard of living expectations. They recognise the need for significant upgrading to water supply and treatment plants over the next couple of decades unless water demand from reticulated supply is reduced.

There are many technological improvements available to assist in water conservation, at the home, neighbourhood and regional scale. In particular one addition to New Zealand homes, the raintank, would make a significant difference to the amount of water required, saving significant amounts of mains water through supplementing non-potable supplies.

Given the immediate improvement in water demand management that could be achieved using raintanks, Beacon Pathway in collaboration with Watercare Services Ltd., undertook an investigation into the course of action required to achieve the mandatory installation of raintanks in new homes. The outcome was focussed on the Auckland Region but also considered water conservation nationally and in forward thinking councils in other regions. The study found that water conservation is poorly represented in legislation and that while related policy initiatives are being undertaken in some places, certainty in achieving solutions such as the inclusion of raintanks in new builds is best achieved through legislation. Currently this legislative pathway is complex, with none of the three key pieces of legislation providing a straight route to mandatory measures.

### **KEYWORDS:**

Water; conservation; raintanks; policy; regulation.

### **INTRODUCTION**

This study explores the gap between the aspiration and the current situation for the mandatory installation of a raintank to supply non-potable uses in all new residential buildings. It attempts to identify the optimum process that can be applied across the Auckland region for removing impediments and amending policy, legislation and regulations to provide for rain tanks mandatory provision and has included consideration of relevant legislation, regulations and policy at all levels.

New Zealand does not have the same legislative environment as Australia, nor the same degree of imperative with respect to water shortages; however there are still many other primary drivers for greater water resource conservation in the Auckland and New Zealand context, being:

- The anticipated need to upgrade to accommodate, for example, in Auckland alone by 2026, a further water resource capacity of 80,000m<sup>3</sup>/day to 100,000m<sup>3</sup>/day. With water conservation measures the cost associated with those infrastructure developments could be substantially delayed despite impending population growth. (Watercare Services Ltd, 2006.)
- Reducing energy requirements associated with providing water to potable standard, only about 3% of which is used for drinking
- Water security caused by weather perturbations and climate change
- Managing times of peak use and low rainfall, building further resilience into the system
- A need to show leadership in moderating resource use, being a good global citizen in times of increasing global water scarcity.

Many New Zealanders are familiar with on-site water supply, given their continued wide-spread use in rural areas. In urban areas on-site water supply can augment a reticulated supply through harvesting of water in rain tanks or recycling water after use in showers and laundries. Of the two options we anticipate that using a rain tank as an auxiliary water source would be the easier option to apply widely and would save the greater amount of reticulated water. It is estimated that using tank water for non-potable uses such as toilets and laundries would result in large savings in household water demand. For example the Beacon NOW Home® uses 66% less potable water than the average in the Auckland region, due to the inclusion of a rain tank to supply non-potable uses, accepting that the Now Home tank is larger than that being suggested in this study (Jacques, 2007).

The goal is to have the provision and use of urban rain tanks included in all new homes so that there is a strong signal to the market that there is certainty around the need for this product. It is anticipated that this will in turn drive some innovation in this product sector in New Zealand to provide for a range of raintanks suitable for small urban sections and apartments.

The study confined its brief to the use of raintanks for non-potable uses only to avoid any health related concerns.

## **RELEVANT LEGISLATION, POLICY AND REGULATION**

### **The Building Act and Code**

The Building Act 2004 is the legislation that governs the building industry in New Zealand. The Act aims to improve control of, and encourage better practices in, building design and construction. The Building Act 2004 repealed the Building Act 1991 and dissolved the Building Industry Authority, which had regulated the building industry under the 1991 Act. Administration of the Building Act then shifted to the Department of Building and Housing, which was established on 1 November 2004. The Act's new purpose and principles includes requirements for sustainable development and for buildings to help people stay safe, healthy and comfortable. Clause 4(2)(o) states "the need to facilitate the efficient use of water and water conservation in buildings. No specific detail is given within the Act on how the sustainable development principles would be achieved - that would be expected to become more apparent in the Building Code.

Incorporation of specific sustainable development interventions in the Building Code would be the most comprehensive way to address issues of sustainable development in homes throughout the country. The Code requires performance standards to be achieved rather than specific approaches to be taken. It will, however, within the Building Code Compliance and Handbook documents (Section 22 of the Building Act), indicate "acceptable solutions" which could include a specific intervention that if followed will assist or ensure compliance, depending on the circumstance. A direct reference to the use of rain tanks would only be included within the provisions of the Building Code if it was an acceptable solution to meet a performance standard.

The Building Act and Building Code have potential for the adoption of performance standards which could include rain tanks as an acceptable solution as a means to reduce the carbon footprint of a

building, or possibly to meet water performance standards relating to the level of supply of potable water or alternatively supplementary supply from a non-potable source. While this would not provide for mandating the use of rain tanks in new homes, it would give considerable encouragement for their uptake across the country. A performance standard at the level proposed for the UK of 125 liters/person/per day for domestic household use would drive the uptake of water conservation measures and give support to the mandatory inclusion of raintanks for new homes.

### **The Resource Management Act**

The RMA (1991) is a means of planning how people use, develop and protect natural and physical resources. The Act places emphasis on the effect a proposed activity will have or might have on the environment and has in practice been less concerned with the conservation/preservation of the resource itself.

Water issues tend to be focussed on ensuring water quality in contributing and receiving waters. Hence the traditional focus has been on stormwater issues and the allocation, mainly rural, of freshwater resources as opposed to municipal water supply and demand management. Consequently in the Auckland region where rain tanks have been proposed, it has mainly been related to stormwater detention rather than to supplementing supply. The issue of water conservation and how that will be addressed, if it is to be considered under the RMA (1991), needs to be subject to a Section 32 analysis which assesses benefits and costs with a focus on environmental outcomes. Generally RMA measures such as District Plan Changes can be a long, time consuming and often costly process and to be successful a good case must be made.

The RMA lays out a guiding principle that must be applied in all resource management frameworks, including:

- National Policy Statements – e.g. the NZ Coastal Policy Statement.
- Regional Policy Statements and the Regional Coastal Plan.
- Optional Regional Plans – on water, land and air.
- District Plans – which are also not to be inconsistent with the regional policy statement and plans.

There is minimal national focus on water conservation for domestic supply. The dominant focus of central government demonstrated through the “Water Programme of Action” has been on rural water abstraction and water quality. The Ministry for the Environment (MfE), are in the process of developing a National Policy Statement under the RMA on water. Beacon strongly believes that this focus should be extended to water conservation of domestic supply, giving weight to the use of raintanks and other water conservation devices.

At the regional level a Regional Policy Statement (RPS) is required to comment on managing the use, development and protection of the natural and physical resources of the region. It sets in place the policy for promoting the sustainable management of these resources. Currently Auckland Regional Council (ARC) is preparing amendments to the RPS but they do not include water supply issues. Regional Councils are also required to do a full review of the RPS every 10 years and are in the process of scoping the review providing an opportunity to raise the issue of water supply and urban water use. If water conservation issues were considered under the RPS the case would need to be made under section 32 of the RMA (1991). The benefit of influencing the ARPS is that the requirements will filter down into District Plan revisions where rules relating to rain tank useage could be made. A good case would need to be made relating to the management of a progressively scarce resource and the impacts of future further abstraction for domestic use.

Each Territorial Authority produces its own plan under the RMA (1991) which is the over-arching planning tool under their jurisdiction. All Auckland councils have their plans in place but a number are considering plan changes, requiring a section 32 analysis and being subject to public consultation.

To date Kapiti Coast District Council (KCDC) appears to be the only council that has introduced the mandatory requirement for rain tanks for water conservation. Others have introduced rain tanks for stormwater management; a more frequently considered issue with more obvious local environmental effects. The policy initiative was triggered by the report “Whose water is it? The sustainability of urban water systems on the Kapiti Coast”. (PCE, 2001). The report summary states: “Low rainfall, very high per capita usage and a heavy reliance on a single source of supply, the Waikanae River, have created a water crisis on the Kapiti Coast. Simple engineering solutions, such as tapping into new and more remote sources of supply, are no longer appropriate - the solutions must meet the public health needs of growing communities, support commercial development and provide for the ecological health of the environment.”

Since then Kapiti has introduced the mandatory requirement for rain tanks for water conservation through a Section 32 analysis and plan change notification and consultation process where the mandatory inclusion of rain tanks as a water conservation measure is being included as a “Rule” in the District Plan. This is triggered when there is an application for land use change or sub-division. To achieve that plan change KCDC has had a high level of public consultation processes, identification of the issues in the Long Term Council Community Plan (LTCCP) process under the Local Government Act, a Sustainable Management of Water Strategy, newsletters and fact sheets, all of which have prepared the community for mandatory water conservation measures within the District Plan. In making their case for a plan change the council primarily considered resiliency of the system, especially in the light of climate shocks and water use efficiency, using non-potable water where appropriate. Current water supply can meet potable and hygiene requirements but cannot always supply outdoor needs. The message is clear that using rain tanks will help decouple demand from growing population and provide more surplus of supply during dry events.

Objectives, policies methods/rules for addressing sub-division and development activities should be contained in the District Plan. In Auckland one organisation could prepare a Private Plan Change and submit it to each of the local councils to gain consistency across the region.

There are also other documents such as Codes of Practice or Engineering Standards (see Section 4) which are outside of the plan but describe “acceptable solutions” for engineering works associated with sub-division or development activities. Councils can impose conditions on the resource consent using the Code of Practice as a reference document which then become enforceable through the consent process. While this gives a way of introducing rain-tanks into the consenting process, their application would still need justification within the District Plan for them to be an acceptable solution within a Code of Practice and associated Engineering Standards that could sustain legal challenge.

### **The Local Government Act, 2002**

The Local Government Act 2002 (LGA) could address urban rain tanks via the wider sustainability issues of the four well beings of cultural, social, environmental and economic.

Section 10 of the Act states that the purpose of local government is to:

- *Enable democratic local decision-making and action by, and on behalf of, communities; and*
- *Promote the social, economic, environmental and cultural well-being of communities, in the present and for the future.*

Under the LGA, there is a requirement for territorial authorities to undertake regular Water and Sanitary Services Assessments (WASSAs). This is an assessment that once prepared requires public consultation for feedback. The LGA explicitly integrates water, wastewater and stormwater issues in new “Water Assessment” provisions.

The WASSA requires councils to describe the means by which water is obtained by residents and communities and also the extent to which water will be supplied by the territorial authority. The assessment must take account of:

- the quality and adequacy of supply of the drinking water available within the community;
- the quality and quantity of wastewater discharged from reticulated sewerage or a sewage treatment system; and
- a statement of current and estimated future demands for water services within its district.

Although the Act states that the assessment must be undertaken from “time to time”, it appears that generally Councils have included it as part of their LTCCP preparation (thus subject to a three yearly review).

### **The Health Act**

Health issues are sometimes cited as reasons why raintanks should not be encouraged. However given that the suggestion is only to use raintanks for non-potable uses, our discussions with the Ministry of Health and the Auckland Regional Public Health Service (ARPHS) indicate that the Health Act (1956) is unlikely to offer any legislative barriers relating to a policy of mandating for rainwater tanks. Drinking water standards only apply to reticulated supply and have no bearing on rainwater tank quality. It is also noted that all non-drinking water pipes should be coloured purple and non-potable water taps labelled as such.

### **Engineering Standards**

In addition to legislative requirements there are several “levels” of engineering standards and different types of engineering guidelines and manuals used throughout the Auckland region and other parts of New Zealand. They give guidance on “how to build”. They are not RMA or Building Act documents but local council infrastructure standards and can be changed by resolution of council. They are normally referred to in the District Plan (e.g. the development must comply with the council engineering standards) but the standards themselves are not part of the plan. In general, the different levels of engineering type standards can be summarised as:

- Council Engineering Manuals/Standards
- Verification Methods and Acceptable Solutions
- Information Pamphlets and Brochures
- Practice Notes/Design Guidelines

In the Auckland region, there are a number of engineering guidelines and standards in the market place. While most guidelines/standards follow similar themes, their sizing and installation details vary. While they can’t of themselves provide for the mandatory use of rain tanks they can positively influence their use. Hence to ease the uptake of rainwater tanks and for overall consistency, especially in Auckland, it is recommended that:

- For consistency across the region, one common urban rainwater tank guideline is produced from the existing Waitakere, North Shore, Auckland and Rodney Council Practice Notes/Design Guidelines documents (Section 4.3.2 above). However, it is noted that councils will still need to have their own specific documents for individual issues such as the Auckland City Councils Development Contribution Rebate Programme for Rainwater Tanks.
- Feedback from councils indicates that they prefer to keep these rainwater tank guideline documents outside of the more formal “Council Engineering Manual/Standards” for ease of altering them and using them as a working document. Also, the Engineering Manual/Standards are only for public infrastructure and do not apply for what will probably be individual privately owned infrastructure (household rain water tanks).
- The legal and practical issues around installation, inspection/approval and ongoing maintenance of private infrastructure (individual household rain tanks) be closely examined in light of any potential risks to council in planning their own public infrastructure system based on performance of private infrastructure. (This is an issue several councils are currently trying to address. The answer is not simple. How can a council ensure maintenance of private infrastructure?)

- From examination and discussion with local and Australian examples, it is suggested that the one area lacking in New Zealand documents relates to specific plumbing requirements. Most of the guideline/design documents produced to date have been produced by engineers for engineering design issues. However, the installation of rain tanks is primarily a plumbing issue rather than a design engineering professional task. (The design sizing of the rain tank is more of an engineering issue, especially when trying to incorporate both stormwater and water supply benefits to get maximum value). For instance, Sydney Water has a specific guideline just for plumbers. Hence, it is recommended that:
  - a. An assessment is made of the different approval processes such as the “Producer Statements – Construction Review”, PS4 by Chartered Professional Engineers, the PS3 drain layer approval or Council in-house building inspectors. (NSCC experience to date has been that the requirement for a PS4 has not worked well), and
  - b. To aid the plumbers approval process, a plumbing information guideline/practice note be produced, in association with the Master Plumbers Association.
- Such plumbing guidelines are developed to sit outside the AS/NZS 3500 Plumbing and Drainage (2003) Standard for the near future, similar to plumbing guidelines produced by Sydney Water. This is because any formal changes to the AS/NZS standard would need to be done in agreement with both Australian and New Zealand bodies and is a formal time consuming exercise. Changes to the AS/NZS standard could be a subsequent stage of the rainwater tank guidelines development process.
- Note that all electrical work, such as connecting of the pump, needs to be carried out by a registered electrician and needs a “Certificate of Compliance” from a registered electrician.

### **Consenting Processes**

There are two types of consents which are relevant to the residential built environment: resource and building consents.

Resource consents are required when development infringes a rule set down in the district plan. Some ways to avoid the need for resource consents in relation to rain tanks are:

- Installing a rain tank which does not contravene Maximum Building Coverage, Height-to-Boundary, Outdoor Living Space, Stormwater management Area, Front Yard or other Yard Rules.
- Ensure plans avoid modifications to a watercourse.
- Ensure rain tanks are not installed within 20m of a stream.
- Avoid rain tanks on steep slopes.
- Avoid the need to remove vegetation.

In practice this means it is easier to install rain tanks on larger sites. Previous work undertaken by Beacon Pathway Limited<sup>1</sup> has identified the desirability (and relative ease) of amending District Plans to exclude rainwater tanks (within certain size constraints) from basic District Plan provisions such as Building Coverage, Yard and Boundary rules – in the same way that generally garden sheds are currently excluded from these rules.

In relation to building consents an issue previously identified in Beacon research was the occasional lack of synergy between various departments within councils. It is critical that the consenting arm of the council with a strong focus on building quality does not work against the strategy arm which may have a greater focus on sustainable development. It is critical that all the required technical documents are easily available to ensure support of the consent process.

That being the case:

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<sup>1</sup> Easton et al (2006) Local Council Barriers to Sustainable Building Auckland City Council Case Study. Report PR200 for Beacon Pathway Limited

- Rain tanks for new builds would be included as part of the overall building consent in the plumbing and drainage requirements. Hence there does not need to be a separate building consent for rain tanks.
- We recommend managing the Building Consent process for urban rain tanks through “plumbing & drainage” rather than “producer statements” as rain tanks are a plumbing issue rather than an engineering producer statement issue. The plumber would take responsibility for that aspect of the building consent.

**CONCLUSION**

Watercare Services Ltd has identified the requirement for a major water supply addition or upgrade in 2026. This will be expensive and the costs will be impacted on by unknown factors such as the price of “carbon” associated with the energy required in the delivery and treatment of water to a potable standard. There are also climate uncertainties and sound sustainability issues associated with the need to conserve water. Supplementing supply through the use of rain tanks is a safe, effective way of dramatically reducing the need for extra reticulated systems, at least pushing out the need for them well beyond the present anticipated date.

In order to achieve a greater uptake of rain tank use, there needs to be a far greater awareness and appreciation - both fiscal and ecological - within the community of the need for sound water conservation strategies. There is a strong case to take the issue through the various legislative processes under the RMA and LGA. In addition the principles relating to sustainability in the Building Act needs to be given effect by a Code which specifies “acceptable solutions” which drives sustainability, including water conservation. There is also a raft of non-statutory design guidelines which are often used successfully to promote certain approaches and which achieve them without statutory backing if employed with the understanding that these can be challenged. Ultimately the approach that KCDC has taken provides the most certainty. Their approach has been threefold:

- to identify the issues and undertake consultation through the LTCCP,
- development and use of strategic and operational documents which clearly identify conservation benefits and that demonstrate the technical requirements for rain tanks in new build situations
- incorporating rain tanks as a rule under the District Plan, triggered by an application for a sub-division.

Other policy instruments will also need to be included: for example economic incentives should favour the use of rain tanks, and there should be sufficient education and information about the benefits of water conservation.

The maintenance of rain tanks, given that they are private rather than public infrastructure, needs to be addressed. Mechanisms similar to those employed by some local councils to ensure the regular maintenance of private septic tank systems should be investigated for suitability in their application to rainwater tanks.

**Table 1**

**Key regulatory processes to influence the take up of rain tanks are:**

<b>Process</b>	<b>Scale of Influence</b>	<b>Likely Timeline</b>	<b>Priority</b>	<b>Likelihood of success</b>
Building Code	National	12 months in current review	High	Dependent on involvement in code review and degree of interaction with DBH.
National Policy	National	1-3 years	Medium	Low to medium but

Statement				dependent on the strength of interaction with MfE.
Regional Policy Statement	Auckland Region	Revised RPS due in 2009 but would take several more years to filter through to implementation	High	Medium to high, needs good collaboration with ARC.
District Plan Changes	Local or potentially pan-regional	2-3 years but would benefit from RPS or other policy work to set the scene	Medium	Needs community backing so success would require education and good consultation
LGA	Local	Next CCP revisions are in 2 years. They would set the scene for District Plan changes, may take 5+ years for take up	Medium	Strong consultation and education required
Non-statutory approaches such as Codes of Practice	Local or Regional	1+ years	Medium to High but generally in addition to regulatory backing	Medium but eventually require regulatory backing to sustain and ensure legal challenges can be withheld.

This issue is much like a jigsaw where several components need to fit together. No one step will give the certainty that urban rain tanks will be mandated for within the Auckland region for water conservation. The different components include:

- Making it easy through standardised guidelines
- Approaching the legislative process through a Building Code imperative with stated acceptable solutions
- Finding the appropriate interception of RMA levels of statements and plans, strengthened through LGA assessments and consultative processes.

## ACKNOWLEDGEMENTS

The support of Watercare Services Ltd. is acknowledged for this study.

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