Thames Coromandel District

Water Demand Strategy

November 2020

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1. Introduction

The Challenge

Water is one of our most precious resources – for our people and our wider environment. We need it for the health and wellbeing of our people and the environment needs it to sustain sensitive ecosystems and habitats.

However, our access to water is not limitless and we must not take it for granted. This resource is under pressure and we need to manage our demands on our water sources to ensure we have enough for our essential needs.

Like many other parts of the world, Thames-Coromandel is experiencing a change in historical climate patterns including more pronounced dry periods. This, together with increasing summertime populations, has led to an increase in the need to impose water restrictions – where limits are placed on how we can use water.

If we can better manage how we use our water and ultimately reduce the amount we actually need, we will reduce the frequency of water restrictions on our communities and reduce the risk of adverse impacts on the environment. This Water Demand Strategy sets out how we will all work together to reduce the demand we place on our precious water resource.

Our Water Sources

Whether we live in Thames-Coromandel all year round or only visit during our holidays, people enjoy the smaller scale of our communities, and it is a refuge for holiday makers from the large urban centres of Auckland and Hamilton.

Smaller scale communities present some particular challenges when it comes to water supply. Unlike large urban areas, where scale allows for a large interconnected network of water sources and supplies, Thames-Coromandel has a series of separate water supply systems, each serving a separate community. In total, Thames-Coromandel District Council operates eleven water supplies. Due to their physical separation, it is not practicable to connect these supplies up to allow the transfer water from one community to another. This means each community must rely solely on its own supply. The exception is when water is tankered in from other areas in times of severe water shortages – a costly and unsustainable measure.

Increasing Water Supply

With our existing water supplies under significant demand pressure over peak holiday periods, and the ongoing threat of climate change, there is a question about whether we should be investing in new additional supplies.

There are four main issues to consider here:

- Impact on the environment
- Lack of practicable additional supply options
- Cost to community
- Time.

Approximately 60% of the water supplies across our district take water directly from rivers or streams and approximately 40% source from groundwater via wells. The amount of water we can take from these sources is controlled by resource consents that have limits aimed at minimising the effects on the environment. These can include a requirement for minimum flows to be maintained in streams and rivers to preserve the habitats they

support – this limit how much water can be taken for the District's water supplies. The amount we take from groundwater through wells is also limited – if we take too much, salt water from the sea can intrude into the groundwater and make the resource unusable for years. Options to extend the volume of water taken from these existing supplies are limited as we would need to demonstrate that this would not have an adverse environmental impact.

Our use of the water available from these rivers, streams and groundwater sources could be augmented by introducing additional storage. This could be more storage reservoirs in our water supply networks or by damming the rivers and streams to create a reservoir at source. However, both these options remain susceptible to drought conditions. Dams can also have significant impacts on the environment making it difficult to gain the necessary consents.

New supplies would require significant investment. Typically, existing water supplies are those that have been the most cost effective to develop and have had the least impact on the environment. New supply options can be more complex or involve sources further afield, making them more expensive to develop and operate. For example, they may require longer water transmission pipelines with extra pumping stations to deliver the water to the communities they serve. Given that our permanent resident populations are relatively small and that peak demand on our water occurs during the summer months (when these populations increase with holiday makers). Funding this extra investment would raise questions about the economies of scale. i.e. building a very large water infrastructure capacity to meet a short-term demand.

Even if the environmental, feasibility and cost challenges above were overcome, bringing new supplies on line would take significant time.

Demand Management

The best option for Thames-Coromandel is to manage its water demand to ensure our water supplies are used effectively and efficiently and the need to impose water conservation measures is minimised. This will ensure that any financial investment in expanding water supply infrastructure is driven by growth in the district.

This Water Demand Strategy provides;

- further information on our water supplies across the Thames-Coromandel District and our use of that water
- describes our water management framework
- sets outs three programmes of demand management initiatives to help us conserve water and optimise our water demand.

Implementation of these initiatives will reduce the pressure on our current supplies and or avoid the need to pursue new additional water sources.

2. What is a Water Demand Strategy?

A secure freshwater supply is critical for the success, sustenance and livelihood of our communities. There can be a perception that water is an abundant resource and a risk that we take its availability for granted. With the impacts of climate change becoming more significant, we are likely to see more droughts and extreme weather and a growing pressure on our water supplies.

Balancing our communities' demand for water with what is available, particularly over our summer months, is a very significant challenge. Managing our water demand is therefore essential to ensuring an adequate supply for the needs of our communities.

A Water Demand Strategy is a plan of how water demand can be managed to achieve that balance of supply and demand through efficient water use.

The purpose of our Water Demand Strategy is to set out how we will work together to manage our water demand within the limits of its availability, using water effectively and efficiently and minimising the need for water restrictions. At this strategic level, the emphasis is on demand management initiatives for existing sources and supplies. The investigation and development of new supplies is outside the scope of a water demand strategy.

All parts of our community will have a role to play- from individual households to sports clubs, businesses and Council.

3. Water in the Thames-Coromandel District

3.1 Overview of our Water Supplies

Thames-Coromandel District Council maintains over 600 km of reticulated pipe work, the equivalent of Auckland to Wellington by road to provide water to ten communities (19,709 water connections) across the district. These communities have a permanent resident population of approximately 20,000 people but the population can increase to well over 40,000 people in the summer as holiday makers and others spend time in the district. In addition to households, this water also supplies numerous businesses and community facilities such schools and sports clubs. The communities with a Council water supply are shown in Figure 3.1.

Figure 3.1 Location of Thames-Coromandel District Water Supplies

Water is sourced from a combination of streams, rivers and groundwater aquifers and is treated to provide clean potable drinking water. An overview of our water supplies is provided in Table 3.1 below. This table indicates the level of stress placed on these supplies due to high demand and limitations on supply. These limitations typically relate to drought conditions reducing the amount of water that can be taken from the sources to supply the community. The impacts of drought on our water sources has seen water restrictions being put in place for most communities over the past few years. All our sources are under some level of stress, particularly those communities on the eastern seaboard that experience large increases in their summer population. For the 2019/ 2020 summer period, these communities had an average of 103 days of water restrictions.

Table 3.1 Overview of Thames-Coromandel District Water Supplies

	Communities	Water Sources	Type	Source	Metering Status	Level of Water Stress	Water Restrictions 2019/ 2020 Summer
1	Thames	Mangarehu Stream Kaureranga River	Urban	Surface	Yes	Min	None
2	Coromandel	Karaka and Waiau Streams	Urban	Surface	Yes	Low	176
3	Matarangi	Opitonui River	Urban	Surface	No	Med	67
4	Whitianga	Whangamororo River	Urban	Surface	Yes, only commercial properties	Med	174
5	Hahei	Groundwater bore	Urban	Groundwater	No	High	196
6	Tairua	Pepe Stream and Tributary	Urban	Surface	No	Med	56
7	Pauanui	Oturu Stream and groundwater bores	Urban	Surface and Groundwater	Yes	Med	48
8	Onemana	Groundwater bores	Urban	Groundwater	No	High	18
9	Whangamata	Groundwater bores	Urban	Groundwater	No	High	89

	Communities	Water Sources	Type	Source	Metering Status	Level of Water Stress	Water Restrictions 2019/ 2020 Summer
10	Thames Valley	Omahu, Apakura Matatoki Streams	Rural	Surface	Yes	High	365

3.2 Issues facing our Water Supplies

Issues across our existing water supplies that relate to water demand include;

1. Huge influx of tourist and holidaymakers to our district
2. Effects of drought conditions limiting our freshwater supplies
3. Loss of water from network in communities with older infrastructure.
4. Limits on the number of new developments that can be connected to our existing supplies.

As demand for water peaks, it can become more difficult for Council to match this with supply due to the limitations on the amount of water take allowed from our water sources.

Tourists and non-resident holidaymakers are the backbone of our district's economy, and it is important we manage our water demand to allow us to continue to enjoy the summer months without our water supplies coming under stress. Restricting water use comes at a high economic cost for our communities. In some cases, trucking water between communities has been employed as an emergency measure, with significant costs and limitations.

A proportion of the reticulation network that delivers water to our residents is aged and prone to leakages and can contribute to significant losses. Previous analysis has indicated this could be up to 40% combined in Thames and Coromandel. Thames and Coromandel townships typically have older pipes in their network and are therefore more susceptible to leakage. More recent communities on the eastern seaboard have younger water supply networks and will typically have a lower levels of system leakage and water loss.

4. Water Demand and Usage

4.1 Thames Coromandel Consumption Patterns –

Patterns in consumption across a day can be critical to the performance of a supply system. A typical individual's use over the day may include making a coffee in the morning, watering the garden during the day or having a bath before bed. In isolation, one individual in a population of 1000 does not have a significant impact. However, when 1000 individuals all take a shower or flush the toilet at the same time, a significant rise in demand is created that can increase the stress on the infrastructure supplying that water. Modern water systems must deal with this stress daily, and this is increased during the summer months as higher temperatures lead to increased water consumption.

Typically, most water providers use a measure called a Per Capita Consumption (PCC) to describe the 'average' consumption of a population based on the water produced and the usage that is billed. Consumption over the course of a day naturally varies around this average, much lower while we sleep and much higher while we are awake. It is often described as 'diurnal' in nature and ultimately has 2 peaks during the day similar to the graph below, with one in the morning and the second around the start of the evening.

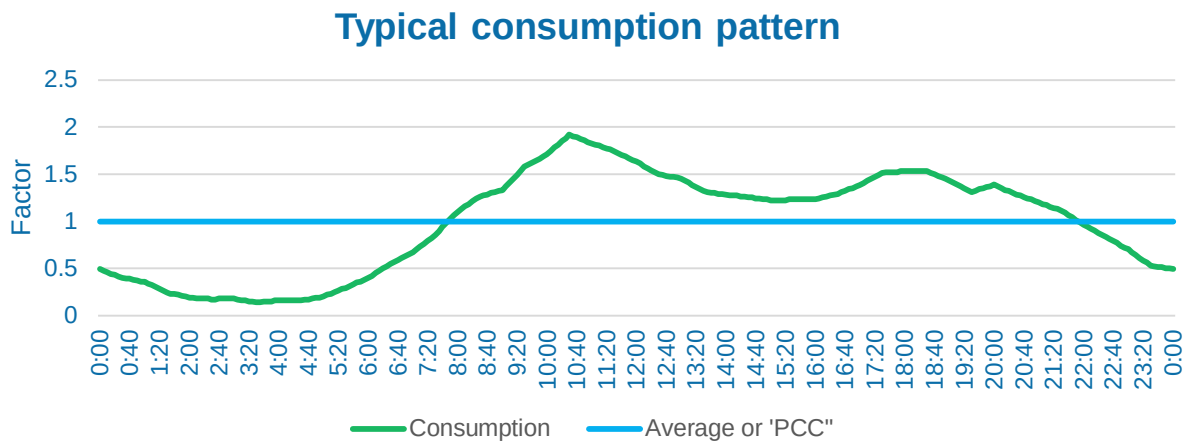

Figure 4.1 Example of Typical Water Consumption Pattern

This can mean that the peak demand can be 3 to 4 times higher than the average PCC which can affect the ability of a source to meet the instantaneous demand. Most water supply systems have a reservoir at the start of the system to compensate for this difference, however the most efficient way to reduce the impact of water shortages is to influence demand or consumption behaviour. Water providers use the period where consumption is less than the average in the morning to fill the reservoirs and storage assets available in the network ahead of the next day's consumption. As the seasons change, so does the way we use our water. Consumption may be prolonged or increased, reducing the time that the water providers have to prepare for the next day and the ability of the water sources to recharge with raw water.

In communities that are tourist destinations, a network that may be operated for 1000 residents during the winter season, now has to provide water for 2000 residents during the summer, all of them consuming water at a similar time in the morning and in the evening, varying around the average or PCC.

4.1.1 Usage Trends in Thames-Coromandel

The PCC in most westernised countries ranges from 100 – 180 l/hd/d (litres per head per day). By comparing the population of each serviced Thames-Coromandel community with the water production from their respective water sources, we can estimate the PCC for each community. Table 4.1.1 below shows the approximate PCC of each community during 2019/20 summer and the prior winter (Aug 2019). It also shows the percentage of properties with customer metering.

There is a noticeable increase in the PCC during the winter month of August which is thought to represent the permanent residents in the communities. Constraints on water production due to droughts, and hence availability for use, may also cap PCC rates over the summer. The values may also be influenced by some seasonally affected commercial users.

Table 4.1.1 Consumption Rates Across Thames-Coromandel District Supplies

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	Average PCC l / hd/day					
Community	Dec-19	Jan-20	Feb-20	Aug-19	Cust. Meter coverage	Water Restrictions 2019/ 2020 Summer
Thames	381	408	434	344	100%	0
Coromandel	398	422	418	491	100%	176
Matarangi	437	522	289	948	0%	67
Whitianga	225	213	190	452	0%*	174
Hahei	162	206	155	468	0%	196
Tairua	414	489	448	506	20%	56
Pauanui	261	356	254	NA	100%	48
Onemana	415	479	328	1129	0%	18
Whangamata	376	406	334	587	0%	89

NB Thames Valley is omitted from this table as it is primarily a rural water supply. *Commercial properties in Whitianga are metered

The general usage trends for the various communities in Thames-Coromandel show a reduced PCC during the summer months possibly due to water stress in the community. Water stress represents a period where the demand for water far exceeds the supply from the source often leading to water restrictions which effectively caps the PCC i.e. the summertime PCCs may not reflect the true demand for water over summer periods.

The data reflects that as the populations rise, therefore water production at the sources increases to meet the corresponding higher water demand. However, as the demand increases past the supply's design capacity, the source is no longer capable of meeting demand. As a result, it becomes necessary to introduce water conservation measures reducing usage to essential use only.

This can be seen to reduce the PCC in a number of the communities when compared to the winter consumption in August. Some communities have a PCC in excess of 1000 litres per head during the winter months, whereas in the summer it is around 400 litres per head per day. Thames and Coromandel remain consistent at around 400 litres per head throughout the year and this potentially indicates what the PCC of the communities would be if there were no water restrictions in place. For perspective, 1000 litres of water is equivalent to 28 showers or 13 baths.

Typically, lower consumption is observed in communities where meters have been installed on properties. This is partly due to meters enabling households to better understand how much water they are using. When metering is combined with charging for actual water used (volumetric charging), consumption can be lower due to the cost saving incentive (water in TCDC costs $1.37 per 1000 litres for ordinary users). This pattern is broadly observed for Thames-Coromandel in the August values which have not been influenced by water restrictions.

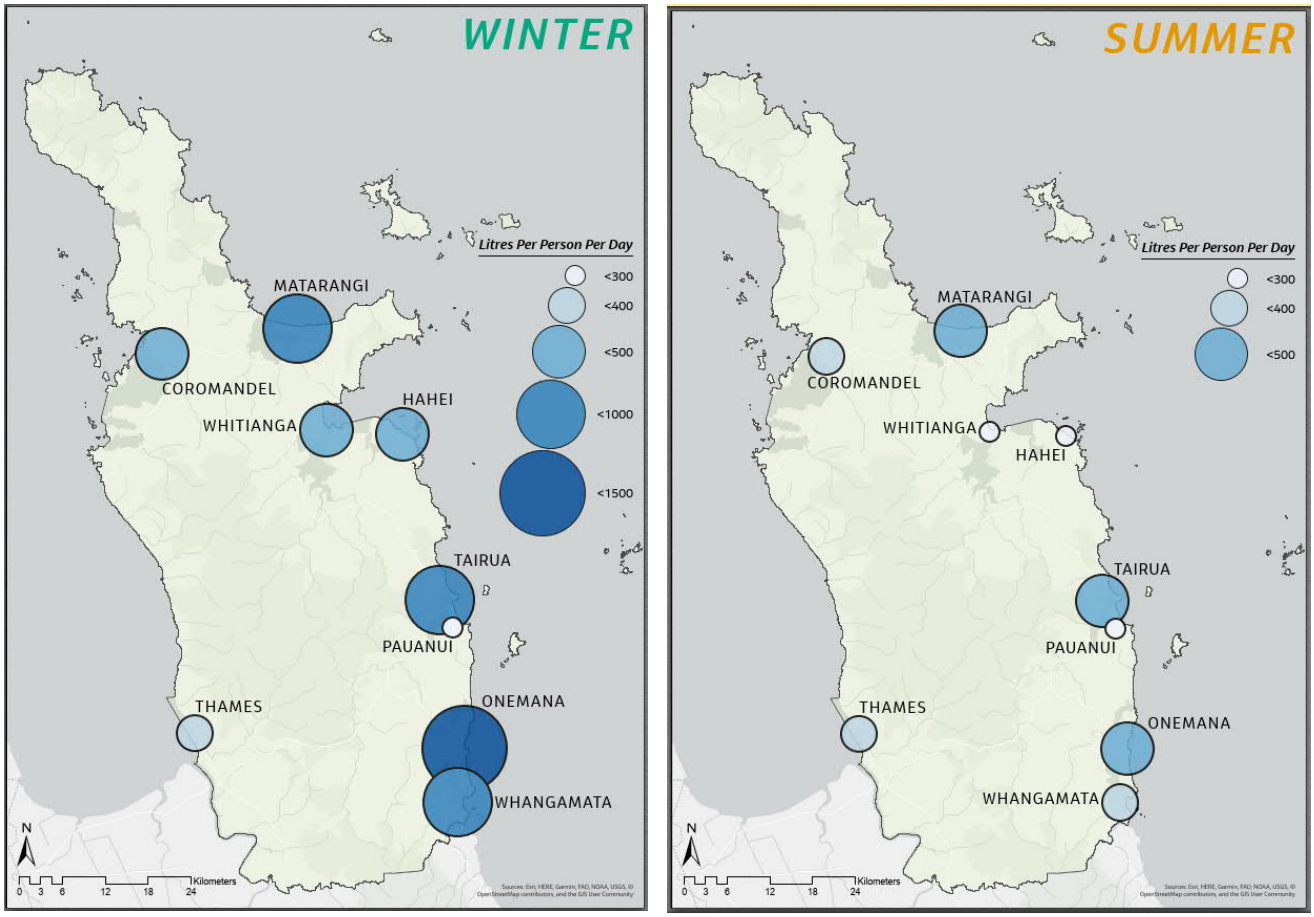

Figure 4.1.1 Water Consumption (PCC) in Winter (left) and Summer (right) for 2019/ 2020

4.1.2 Water Loss

Water lost from the supply network, sometimes referred to as Unaccounted For Water (UFW), generally comes in two forms – physical losses and apparent losses. Physical losses represent the loss of water from the network through bursts, leaks or wasteful practices. Apparent losses generally represent discrepancies between the measured amount of water being delivered to a supply system and the measured amount being consumed.

Physical losses from the network are generally higher in older infrastructure and expected with particular pipe materials like iron or asbestos cement. As the infrastructure ages, the connections between the pipeline sections become worn as the seals deteriorate over time and water begins to escape. Physical losses are therefore expected to be more prominent in the older communities such as Thames and Coromandel that have older networks. Conversely, water loss will be the lower in the eastern seaboard communities as this network is relatively new.

To better understand actual levels of loss requires metering across the supply network and at each point water is supplied to a user. The installation of metering at source and strategically in the network will help to understand legitimate consumption in the network and areas that demonstrate high uncounted for water loss.

5. Demand Management Framework

Our efforts to manage water consumption can be viewed within a framework of relevant legislation, regional plans and district council policy and bylaws. Key elements here are the Resource Management Act 1991 and our water take consents granted under it. In addition, the Local Government Act 2002 enables our Thames-Coromandel Water Supply Bylaw – Te Ture-a-Kaunihera mo Te Manawa Whenua 2019. These provide a basis on which we can take water and use water.

5.1 Resource Management Act

The amount of water we can take from our water sources is governed by resource consents that have conditions Council must comply with. Typically, these conditions are in place to safeguard the sustainability of the water source and to protect the wider environment they support. Council holds these consents under the framework of the 1991 New Zealand Resource Management Act. Resource consents for the Thames-Coromandel District are granted through Waikato Regional Council.

For water sources where we take water from a stream or a river, we need to make sure that we leave enough water for the natural environment that the stream or river supports. This might be a native fish species or a wetland habitat. In these situations, our resource consents will place limits on how much, and when, we can take water, in order to ensure the river or stream maintains a minimum flow.

Where we take our water supply from the groundwater using wells, we need to make sure this happens in a sustainable way that will allow us to continue using the groundwater over time. A particular risk for our coastal communities is saline intrusion. This is where too much freshwater is extracted from the groundwater and saltwater from the sea moves into the groundwater, making it unusable. In these situations, our resource consents seek to reduce the risk of this happening by placing limits on how much water we take and the rate at which we can take it. These limits also allow the ground water to have sufficient time to recharge naturally through rainwater.

5.2 Thames-Coromandel District Council Water Supply Bylaw – Te Ture-a-Kaunihera mo Te Manawa Whenua 2019

The overarching objective of this bylaw is to protect public health and the security of the public water supply.

Supporting this objective, the bylaw provides a mechanism for demand management and grants Council the following powers:

- authority to apply water restrictions for any specified period provided that adequate public notice is provided
- discretion to implement water metering and charges.

The bylaw also assigns water users the following responsibilities:

- they must take care to not allow water to run to waste from any pipe, tap, or other fitting or allow supply infrastructure to deteriorate to the point of leakage or wastage.
- they must maintain their water supply system and fittings adequately.

Failure to comply with the bylaw can result in an infringement notice or fine.

5.3 Metering and Charges

The bylaw distinguishes between ordinary and extraordinary users (defined as those users who use more than a typical household) and provides for extraordinary users to be normally metered and charged. Some extraordinary customers are further defined as large customers, as they use more than 50m^3/ day. These users are encouraged to adopt water conservation measures under a Water Supply Agreement Procedure. Although ordinary users will not normally be metered, Council has the right to introduce universal metering if this is deemed necessary.

The above options and powers around metering and charging provide tools that can be used to support demand management initiatives.

Table 5.3 below shows typical costs of water compared to a cup of coffee and demonstrates the relatively low cost of town supplied water.

Item	Unit Cost	Per Litre Cost	Per Cubic Metre Cost
Cafe Coffee (250ml)	$ 4.50	$ 18	$ 18,000
Typical Bottled Water (500ml)	$ 3.00	$ 6	$ 6,000
Typical Town Water		$ 0.003	$ 3.00*

*Approximate cost including annual fixed charges per cubic metre cost.

Table 5.3 Comparative cost of Water

5.4 Water Restrictions

The use of water conservation measures in the form of water restrictions is a regular occurrence over the summer months to alleviate strain on water supplies and to maintain compliance with resource consents limits. There are four levels of water conservation restrictions and these are illustrated in Figure 5.4.

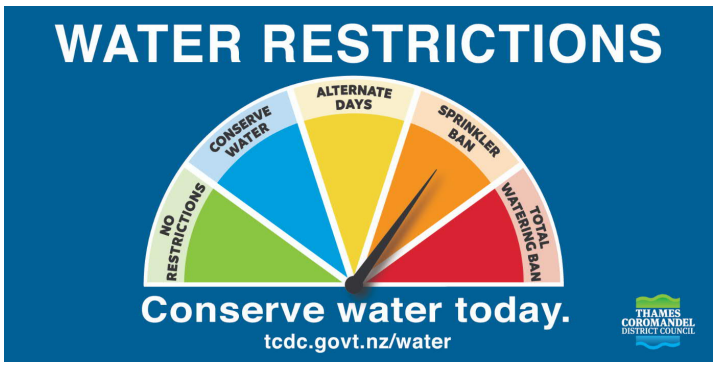

Figure 5.4 Water Conservation Levels in the Thames-Coromandel District

The four levels of restriction currently enforced by council, in decreasing severity are;

- **Total watering ban:** Savings are required immediately. All water use outside the house is banned. This includes watering lawns and gardens, washing cars, houses, and decks, filling paddling pools and playing under sprinklers.
- **Sprinkler Ban:** A total ban on the use of all sprinkler, unattended hoses and irrigation systems. Hand-held hoses can be used on alternate days: If your address is an even number you can use your hose on even numbered days, and vice versa for odd numbered houses.
- **Alternate Days:** The water supply is under pressure. Hoses, sprinklers and garden irrigation systems can only be used on alternate days. If your address is an even number you can use your hose on even numbered days, and vice versa for odd numbered houses.
- **Conserve Water:** Residents and holidaymakers are asked to keep using water carefully to ensure our supply continues.

Water restrictions are only used when necessary and allow Council to intervene when other water conservation and demand management actions are insufficient to maintain demand within the limits of supply. Under the Local Government Act 2002, council has an obligation to provide water services and maintain capacity. However, resource consent conditions can impose limits on how council responds to this obligation. Although water restrictions are most often used in response to drought conditions, they can also be used in other situations where water supply is challenged. For example, storm events can increase sediment in river and stream water sources, placing a higher burden on treatment processes and reducing our capacity to supply treated water.

6. Our Water Demand Strategies

Managing our water demand requires effort and action from all water users – Thames-Coromandel District Council, our residential users and our non-residential users.

Our Water Demand Strategy reflects this. It comprises a suite of initiatives across three programmes and sets out how these can be used to reduce our overall water use on a per capita basis. These programmes are founded on a demand management framework and informed by our understanding of water usage in Thames-Coromandel, the nature of our water users and the condition of our water supply networks.

Our strategy is summarised below and presented in the following sections.

Table 6.1 Water Demand Management Strategy Overview

Thames-Coromandel Water Demand Strategy	
Programmes	**Key Initiatives**
Programme A Council Water Demand Management	**A1** Water Supply System Leakage Reduction **A2** Facilities Management Water Conservation **A3** Operational Water Conservation **A4** Community Education
Programme B Residential Users Water Demand Management (including permanent residents and visitors)	**B1** Domestic Water Efficiency Self Audits **B2** Rainwater Storage **B3** Extension of Customer Metering
Programme C Non – residential Users Water Demand Management (including commercial/ industrial/ institutional users)	**C1** Water Efficiency Self Audits **C2** Extension of Customer Metering

6.1 Programme A – Council Water Demand Management

The Council Water Demand Management Programme focuses on those areas where Council has direct influence on water use and demand. This includes

- Council's water supply system and how it operates
- Council facilities and how they use water is used within these
- Council operational activities and how water is used in these activities
- Community education.

This programme sets out the leadership role Council will play in managing water demand.

6.1.1 A1 -Water Supply System Leakage Reduction

Initiative	A1 -Water Supply System Leakage Reduction
Objective	To reduce leakage and water loss from Council's water supply networks.
Description	Investigation, monitoring and repair of water supply infrastructure to ensure that system losses are minimised. This initiative initially targets the older townships of Thames, Coromandel and Thames Valley.
Benefit	Reducing water loss from the piped water supply networks will allow more water to be supplied to users and will demonstrate Council's responsible management of these assets.
Key Actions to continue	• Annual watermains renewals programme where older water infrastructure is progressively replaced • Repair of leaks as they are identified
Key Actions to commence	• Installation of network meters on all Council-operated water supplies to enable better understanding of leakage and loss in the networks and to identify most affected areas • Develop and implement an asset condition assessment programme to build better understanding of water network asset condition and better inform the annual watermain renewals programme • Publicise how the public can report leaks and wastage to the Council 24 hours a day, seven days a week on phone number (07) 868 0200.
Details	It is estimated that up to 40% of water is lost from the piped network in some communities. In others it is much less. The amount of water lost is influenced by the age of the water supply system – older pipes are more likely to have leaks than newer ones. For Thames-Coromandel, this means that the older townships of Thames and Coromandel typically have higher rates of water leakage than the other communities

Case Study – Thames Valley Water Project

The Thames Valley water supply project has been identified in the Council plans for a number of years. This project began in 2014 and is due to be completed by 2021. The supply's very old water pipes, some over 60 years old, are being replaced and meters are being installed in order to better identify leaks and better manage our precious water.

6.1.2 A2 – Facilities Management Water Conservation

Initiative	A2 – Facilities Management Water Conservation
Objective	Efficient water use across all Council owned and operated facilities.
Description	Water use at Council facilities will be assessed and monitored to identify opportunities for improvement in water use and efficiency
Benefit	Council is a major water user and improvements in water efficiencies at its facilities can have a significant impact in reducing water demand. Council action to use water more efficiently also demonstrates leadership in water conservation practices.
Key Actions to continue	• Incorporating sustainable practices into new facilities such as landscaping that minimises the need for irrigation and rainwater storage • Checking facilities for leaks • Retrofitting and replacing in existing developments as budgets allow.
Key Actions to commence	• Implementing a programme to review water consumption and water use practices across Council facilities • Use of water efficient fittings and fixtures in new developments • Showcase a Council facility as a demonstration/ case study of good water conservation practice.
Details	Council manages community facilities such as swimming pools, sports grounds, libraries, offices, depots, toilets and shower blocks across the Thames-Coromandel District. Collectively, they are a significant user of water.

6.1.3 A3 – Operational Water Conservation

Initiative	A3 – Operational Water Conservation
Objective	Water is used efficiently across all operations carried out by Council directly or through Council contractors.
Description	The activities Council carry out through its various operations, such as operations and maintenance of assets and construction, use significant amounts of water. Opportunities for optimising water conservation in these operational practices will be considered and promoted.
Benefit	Reduced use of water through Council operations and promotion of good water conservation practice across council staff and contractors.
Key Actions to continue	• Optimising irrigation of parks and reserves
Key Actions to commence	• Complete a progressive water efficiency review of high water use activities across Council operations such as construction site wash downs, fleet washing and irrigation and identify opportunities for improvements • Prioritise improvement opportunities into programme and implement • Incorporate clauses that promote water conservation into Council procurement contracts for construction and operations and maintenance
Details	Council and their contractors, carry out a range of operations such as; • maintenance of roads, parks and reserves • construction of new buildings and infrastructure • waste collection and management including wastewater treatment and refuse

Case Study

Some golf courses in the District are supplied with recycled wastewater for irrigation use. This helps council reduce consumption of the potable water supply and contributes water conservation at peak periods.

6.1.4 A4 – Community Education

Initiative	A4 – Community Education
Objective	Better community understanding of the pressures on our water sources and the role everyone can play in reducing demand through good water conservation practices.
Description	Water consumption on a per person basis across Thames-Coromandel communities is high. An education programme will be used to increase awareness of the problems high water use poses for the community and to show how consumers can reduce their water demand
Benefit	Community members actively engaged in water conservation and taking actions to reduce their water demand
Key Actions to continue	• Water status update reports broadcast on local radio stations, social media, and the Council website over summer periods • Use of clear 'traffic light' system to indicate water supply status and level of water restriction required to conserve water
Key Actions to commence	• Establish and support volunteer Water Conservation Champions in communities and schools who will promote water conservation awareness • Establish and implement a school education programme • Establish a programme of community workshops and events to demonstrate water conservation practices.
Details	Community education will raise awareness of why water conservation is important and provide the communities with knowledge and tools that they can use to reduce their water use. Information will include • Practical steps to conserve water use in the home and garden • How to check for leaks on private water supplies • The New Zealand Water Efficiency Labelling Scheme and use of energy and water efficient appliances • Economic benefits to reducing water use

6.2 Programme B – Residential Users Demand Management

The Residential Users Demand Management Programme aims to support our residential users in reducing their water demand. It is often our residential users who are most impacted by water restrictions and this provides them with a good incentive to look for ways to conserve water use. Typically, 60% of the water supplied to homes is used through showers, washing machines and toilets. This programme focuses on;

- Promoting domestic water efficiency audits to encourage the use of water efficient appliances and practices
- Rainwater storage
- Implementation of water charges on excessive water consumption

6.2.1 B1 – Domestic Water Efficiency Self-Audits

Initiative	B1 – Domestic Water Efficiency Self-Audits
Objective	Reduced average household demand for water.
Description	This initiative helps permanent resident households and absentee homeowners carry out self-audits to determine how water efficient they are and what actions they can take to maximise their water efficiency. Council will make self-audit check sheets available digitally online or in hard copy and provide guidance on how to carry out an audit.
Benefit	Increased efficiency of water use within households enabling improved demand management of summer peaks
Key Actions to continue	• No current action being undertaken.
Key Actions to commence	• Develop Domestic Water Efficiency Self-audit form and guidance notes • Place downloadable form on Council website • Develop and implement summer self-audit promotion programme
Details	The audits will identify sources of inefficiencies and potential water conservation measures to reduce consumption, including retrofits. They will also encourage the use of water efficient appliances and fittings in households and review practices such as garden irrigation and car washing. Promotion of these audits may include summer campaigns with Council staff engaging with the community at public events to demonstrate audits and their benefits. This could extend to establishing temporary water audit teams to work in communities over the summer months. Similar initiatives elsewhere have seen reduction of up to 15 – 45% in water usage

6.2.2 B2 – Rainwater Storage

Initiative	B2 – Rainwater Storage
Objective	Reduced average household demand through use of rainwater.
Description	Council will promote rainwater storage primarily be through publicising what this involves, and it is associated benefits.
Benefit	Reduced average household demand on Council water supply allowing supply to be conserved for potable drinking water needs.
Key Actions to continue	• General encouragement of rainwater storage.
Key Actions to commence	• Create and post rainwater storage promotional content for Council website. • Develop and implement promotion or incentive programme for households/businesses that choose to install onsite rainwater storage. • Identify sites that can be used as demonstration installations. • Review new builds building requirements to potentially include onsite rainwater storage system.
Details	Rainwater can be used for domestic activities not requiring potable water. A study of the reduction in water demand for Thames and Pauanui if rainwater was to be connected to toilets and washing machines and used for irrigation has shown that on average, a 40% annual reduction in drinking water use could be achieved for these communities. A rainwater harvesting system is relatively low cost with a low maintenance storage tank and pumping system. Although dependent on rainwater and susceptible to drought conditions, these systems can still delay the need for water restrictions.

6.2.3 B3 – Extension of Customer Metering

Initiative	B3 – Extension of Customer Metering
Objective	• Better understanding of actual water use and water loss and where water loss occurs. • Reduction in water use through financial incentivisation.
Description	Council will review the potential benefits of extending water metering to currently unmetered areas. As part of this review, consideration will be given to the potential for metering to support a water pricing model that encourages water conservation and enables financial incentivisation. The review would also consider the relative cost and benefits of any metering and its suitability on a scheme by scheme basis.
Benefit	Reduced water loss and reduced average household water demand.
Key Actions to continue	• Continuation of universal metering in Coromandel, Thames and Pauanui
Key Actions to commence	• Complete assessment of costs and benefits on extending metering to currently unmetered areas. • Assess the relative costs and benefits of metering and its suitability at a scheme level. • Review potential water charging regimes. • Assess merits of introducing smart metering. • Review of water pricing models.
Details	Water meters on our supply network can help us track leaks and monitor the condition of the network and most importantly, allow us to be more conscious of the amount of water we use. It also allows us to benchmark our water use and measure how effective our water conservation efforts are. Meters also allow water to be charged on the basis of what consumers actually use rather than a general charge. Currently, Council only has onsite water meters at properties in Coromandel, Thames, Thames Valley, Pauanui and commercial areas of Whitianga where water is charged at a flat usage rate or per cubic meter for water consumed. Implementing metering across the remaining unmetered townships in our district would be a significant project. Ultimately the purpose would be to incentivise water conservation. Council will review the costs and benefits of water metering to help make a decision on whether to extend metering to currently unmetered communities.

6.3 Programme C – Non- Residential Users Demand Management

The Non-Residential Programme targets a wide range of commercial and industrial premises and institutional buildings. It includes schools, shops, office blocks and manufacturing sites. This group of users is diverse with water consumption varying with the size and nature of the operation. This programme will focus on organisations that represent the larger water consumers in this group.

Under the Thames-Coromandel Water Supply Bylaw – Te Ture-a-Kaunihera mo Te Manawa Whenua 2019, these users would be defined as extraordinary supplies (using more water than a typical household) and some would be classified as Large Customers (using more than 50m^3/day). This bylaw allows Council to apply specific fees and charges to these users.

With the exception of some food processing and timber related activities, there are relatively few large industrial users of water in the District. The next largest consumers of water in this category comprise schools and other community facilities such as sports clubs and hospitals.

Council will review water consumption across the Non-Residential group of water users to determine the top 20 highest users. These users will become the initial focus of this programme. Over time, the programme can be extended to the subsequent tiers of water users where there is seen to be a benefit.

This programme comprises the following initiatives;

6.3.1 C1 – Water Efficiency Audits

Initiative	C1 – Water Efficiency Self-Audits
Objective	Reduced demand for water with the district's largest water users.
Description	This initiative provides high water users with tools, information and guidance that they can use to make their operations more water efficient. It promotes the efficient use of water and supports users to take action. Council will develop information sheets and a self-audit checklist which can be used by consumers to assess the scope for water efficiency improvements with their organisations. Council will promote the use of the audit checklist with high water users and be available to provide feedback and guidance on efficiency enhancements.
Benefit	Increased efficiency of water use with large water users.
Key Actions to continue	• No current action being undertaken.
Key Actions to commence	• Develop Large Customer Water Efficiency Self-audit form and guidance notes • Review water user information and prepare database of district's largest water users

Initiative	C1 – Water Efficiency Self-Audits
	• Segment water users by water usage and target 20 per year for self-audits starting from highest users.
Details	The self- audit will cover: • Quantification or estimation of water usage • The private physical water supply system (exterior and interior) within a property, including pipes and fittings, and the associated potential for leakage reduction or improved efficiency. • Activities that use water on the site and the practices around them such as irrigation, production processes and washing. • Feasibility of water conservation enhancements such as rainwater storage and water recycling • Water conservation awareness within the organisation.

6.3.2 C2 – Extension of Water Metering

Initiative	C2 – Extension of Water Metering
Objective	Reduced demand for water with the district's largest non-residential water users.
Description	Council will review the potential benefits of extending water metering to non-residential high water users in currently unmetered areas. Meters could be installed on a permanent basis for long term measurement or temporarily to allow users to better understand their water usage. Council will review the relative cost and benefits of any metering and its suitability. This initiative will allow further trialling of 'smart meters' (20% of Tairua has smart meters) which will provide a better understanding of usage patterns throughout any given period. As part of this review, consideration will be given to the potential for metering to support a water pricing model for high water users that encourages water conservation and enables financial incentivisation.
Benefit	Provides users with greater understanding of their actual water usage and enables a more accurate assessment of the potential for water efficiency improvements to reduce water demand.

	Charging for water use enables targeted financial incentivisation for reduced water consumption with high water users.
Key Actions to continue	• Consistent implementation of relevant sections of the Thames-Coromandel Water Supply Bylaw – Te Ture-a-Kaunihera mo Te Manawa Whenua 2019.
Details	The ability to measure the amount of water being used at any given site provides users with a much better understanding of their actual water usage. Water meters are the most common means for measurement of water supply and can be installed for each individual property or user. A number of Thames-Coromandel District communities have meters for all users within their community (known as universal metering). However, a number have of communities have no meters. The feasibility of installing new 'smart metering' can be investigated as part of this initiative. These meters store and transmit data at frequent intervals and help water users to identify consumption that is outside of their normal pattern, possibly indicating leakage. There are additional costs associated ongoing maintenance (battery replacement / meter replacement) and the costs associated with the internet connections.

7. Bringing Our Demand Strategy Into Action

This Water Demand Strategy will only be effective if the actions it is founded on are implemented and monitored for effectiveness.

Key actions from each initiative of our demand strategies are summarised below.

Table 7.1 Water Demand Strategy Actions

Programme	Initiative	Actions
Programme A – Council Water Demand Management Plan	**A1** Water Supply System Leakage Reduction	▪ Annual watermains renewals programme where older water infrastructure is progressively replaced ▪ Repair of leaks as they are identified ▪ Installation of network meters on all Council-operated water supplies to enable better understanding of leakage and loss in the networks and to identify most affected areas ▪ Develop and implement an asset condition assessment programme to build better understanding of water network asset condition and better inform the annual watermain renewals programme ▪ Publicise how the public can be report leaks and wastage to the Council 24 hours a day, seven days a week on phone number (07) 868 0200
	A2 Facilities Management Water Conservation	▪ Incorporating sustainable practices into new facilities such as landscaping that minimises the need for irrigation and rainwater storage ▪ Checking facilities for leaks ▪ Retrofitting and replacing in existing developments as budgets allow ▪ Implementing a programme to review water consumption and water use practices across Council facilities ▪ Use of water efficient fittings and fixtures in new developments ▪ Showcase a Council facility as a demonstration/ case study of good water conservation practice
	A3 Operational Water Conservation	▪ Optimising irrigation of parks and reserves ▪ Complete a progressive water efficiency review of high water use activities across Council operations such as construction site wash downs, fleet washing and irrigation and identify opportunities for improvements ▪ Prioritise improvement opportunities into programme and implement

		▪ Incorporate clauses that promote water conservation into Council procurement contracts for construction and operations and maintenance
	A4 Community Education	▪ Water status update reports broadcast on local radio stations, social media, and the Council website over summer periods. ▪ Use of clear 'traffic light' system to indicate water supply status and level of water restriction required to conserve water ▪ Establish and support volunteer Water Conservation Champions in communities and schools who will promote water conservation awareness ▪ Establish and implement a school education programme ▪ Establish a programme of community workshops and events to demonstrate water conservation practices
Programme B Residential Users Water Demand Management	**B1** Domestic Water Efficiency Self Audits	▪ Develop Domestic Water Efficiency Self-audit form and guidance notes ▪ Place downloadable form on Council website ▪ Develop and implement summer self-audit promotion programme
	B2 Rainwater Storage	▪ General encouragement of rainwater storage ▪ Create and post rainwater storage promotional content for Council website ▪ Develop and implement promotion programme ▪ Identify sites that can be used as demonstration installations
	B3 Extension of Customer Metering	▪ Continuation of universal metering in Coromandel, Thames and Pauanui ▪ Complete assessment of costs and benefits on extending metering to currently unmetered areas. ▪ Review potential water charging regimes ▪ Assess merits of introducing smart metering
Programme C Non – residential Users Water Demand Management	**C1** Water Efficiency Self Audits	▪ Develop Large Customer Water Efficiency Self-audit form and guidance notes ▪ Review water user information and prepare database of district's largest water users ▪ Segment water users by water usage and target 20 per year for self-audits starting from highest users.
	C2 Extension of Customer Metering	▪ Implementation of relevant sections of the Thames-Coromandel Water Supply Bylaw – Te Ture-a-Kaunihera mo Te Manawa Whenua 2019.

Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved
	24/6/20	Working Draft For Discussion Purposes Only				
B	8/7/20	Draft				
B2	16/7/20	Draft				
B3	30/7/20	Draft for Discussion Only				
B4	13/8/20	Draft for Discussion Only				
B5	2/9/20	Draft for Public Consultation				
B6						
B7						
B8						
B9	20/11/20	Final following public consultation	Jacobs	MT		