Wellington Water

Water Shortage Risk Management Plan

(previously Drought Management Plan)

Wellington Metropolitan Area

Our water, our future.

Document History and Status

Revision	Date	Author	Reviewed by	Approved by	Status
A	22/12/21	Emma Benn (Connect Water)	Jon Reed (Connect Water) Julian Fyfe		Draft
B	16/3/2022	Geoff Williams			Draft
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H	9/2/2024	Geoff Williams, Sam Lister, Lars Fog	Water Shortage Risk Management Group	Sam Lister (DMG Chair)	Final
J	17/1/2025	Geoff Williams, Sam Lister, Ben Waters, Molly Callanan-Bartlett, Estee Smith	Laurence Edwards, Geoff Williams, Molly Callanan-Bartlett, Erin Ganley	Sam Lister (WSRMG Chair)	Final

Revision Details

Revision	Details
A	Initial draft completed by Connect Water
B	Updated draft with comments from Wellington Water
C	Updated draft
D	Updated draft with close out of final comments
E	Submitted to 3WDMC for approval, 9 June 2022
F	Amendments associated with 3WDMC approval on 9 June 2022
G	Amendments following SLT meeting (review FAQ alignment with website and Improvement Plan alignment with Statement of Intent)
H	Clarified definition of drought, reviewed risk indicator guideline values, updated Drought Management Group composition, expanded description of how water patrols will be used, added new section to describe general approach to applying risk mitigation measures, added non-residential restriction guidelines, updated FAQ's, other minor edits.

Revision	Details
J	Added additional risk indicators, updated risk thresholds, changed name of document from Drought Management Plan to Water Shortage Risk Management Plan, changed name of management group from Drought Management Group to Water Shortage Risk Management Group, updated expected demand reduction in Level 2 restrictions based on analysis of the 2023/24 summer.

Contents

1 Introduction

1.1 Regulatory context

There is no national regulatory requirement in New Zealand for water suppliers to provide a Water Shortage Risk Management Plan (WSRMP). However, it is noted that a drought management plan is a requirement in the Greater Wellington Regional Council (GWRC) Natural Resources Plan and will apply to future water take consents and renewals. Wellington Water also recognise that it is good practice to have a plan in place to appropriately manage water security risks to the wider community. This document is equivalent to a drought management plan but has been named more broadly to reflect that events other than droughts can cause water shortage risks, and that similar management responses are required to mitigate these risks.

This WSRMP has been developed based primarily on the regulatory framework in other jurisdictions such as the UK and Australia.

The resource consent to take water from the Hutt River at Kaitoke (WGN000199 [36617]) includes reference to a Drought Management Plan (DMP), and previously a Summer Water Demand Management Plan (SWDMP) and Hutt River Low Flow Management Plan (HRLFMP). This WSRMP is intended to supersede these previous documents for the purpose of the consent.

1.2 Droughts and water shortage risk

Droughts are naturally occurring events and are typically characterised by a prolonged period of abnormally low rainfall, leading to a shortage of water.

Droughts can be of differing duration and intensity, for instance a short (acute) event after a hot dry period, compared with a drought over several years (chronic) where persistent low rainfall may result in a lack of replenishment of water resources. Potential consequences of a drought depend on the severity and duration, and can include economic, environmental, social and public health impacts.

This document addresses how Wellington Water manages risks associated with water supply droughts and other events that cause similar water shortage risks. We define this broadly to include all situations where climate-related factors affect our ability to provide the community with a sufficient quantity of safe drinking water[1].

It should be noted that water supply droughts are not the same as agricultural droughts. In New Zealand, agricultural droughts refer to conditions that result in adverse plant responses, which can range from reduced crop and forage yields to total crop or forage failure. Due to the impact on agriculture, the Ministry for Primary Industries (MPI) declare when a dry period is classed as an adverse event and subsequently provide support[2]. This declaration takes into account the climatic conditions as well as a number of impact-based criteria.

[1] As per duties of drinking water suppliers outlined in the Water Services Act 2021 (s21-s26).

[2] NIWA https://niwa.co.nz/natural-hazards/hazards/droughts

1.3 Purpose of this Water Shortage Risk Management Plan

The purpose of the plan is to describe the actions Wellington Water takes when water shortage risks occur, or threaten to occur. It provides a framework for us to make the necessary decisions for the management of water resources and demand during conditions of elevated risk. There is inherent uncertainty with water shortage risks (particularly with droughts), so it is therefore not possible to be entirely prescriptive of the actions needed. However, this document sets out a framework of actions that will be considered in response to a range of different conditions.

The WSRMP has been developed for the Wellington metropolitan area and is applicable to the unique operating systems, climate and regulatory requirements.

This plan describes how Wellington Water manages both supply and demand during periods of elevated risk (e.g. summer months), based on indicators and guideline values, and applying a flexible risk-based approach. The plan:

- Provides a risk-based framework for the management of water resources to maintain the security of supply for the Wellington metropolitan area during periods of water shortage;
- Allows Wellington Water to maintain the risk of water supply shortfall as low as practicably possible within network, community expectation, and water resource constraints;
- Describes how Wellington Water will preserve and manage water sources as risk levels increase;
- Describes how residential and commercial users will be encouraged to conserve water and use it wisely;
- Outlines a plan for restricting the use of the municipal water supply when required to maintain security of supply;
- Identifies the demand reduction expected to be achieved through water use restrictions;
- Identifies actions that will be considered during periods of severe drought to maintain essential water services.

The Water Shortage Risk Management Plan has been developed with technical support from Connect Water.

2 Network overview

2.1 Our sources of water

The water supply to the four cities in the Wellington metropolitan area comes from three sources:

1. Headwaters of the Hutt River, abstracted from an intake at Kaitoke weir, stored in the Macaskill Lakes to supplement supply during summer and treated at the Te Marua Water Treatment Plant (WTP).
2. Wainuiomata and Orongorongo catchments, abstracted from river intakes and treated at the Wainuiomata WTP. The Wainuiomata WTP does not have stored water to supplement supply during summer.
3. Hutt Valley artesian system extracted from the Waiwhetu aquifer and treated primarily at the Waterloo WTP, although there is a standby WTP at Gear Island, Petone.

The breakdown of supply from each WTP on an annual basis is approximately:

- 45% from Te Marua WTP;
- 45% from Waterloo WTP; and
- 10% from Wainuiomata WTP of 10%.

Figure 2-1 shows the extent of the water supply network, including supply zones, treatment plants and the main distribution pipes, pumps and reservoirs. Further information on water sources and strategy relating to the water supply network can be found in the Regional Service Plan Part 2 – Three Waters Network.

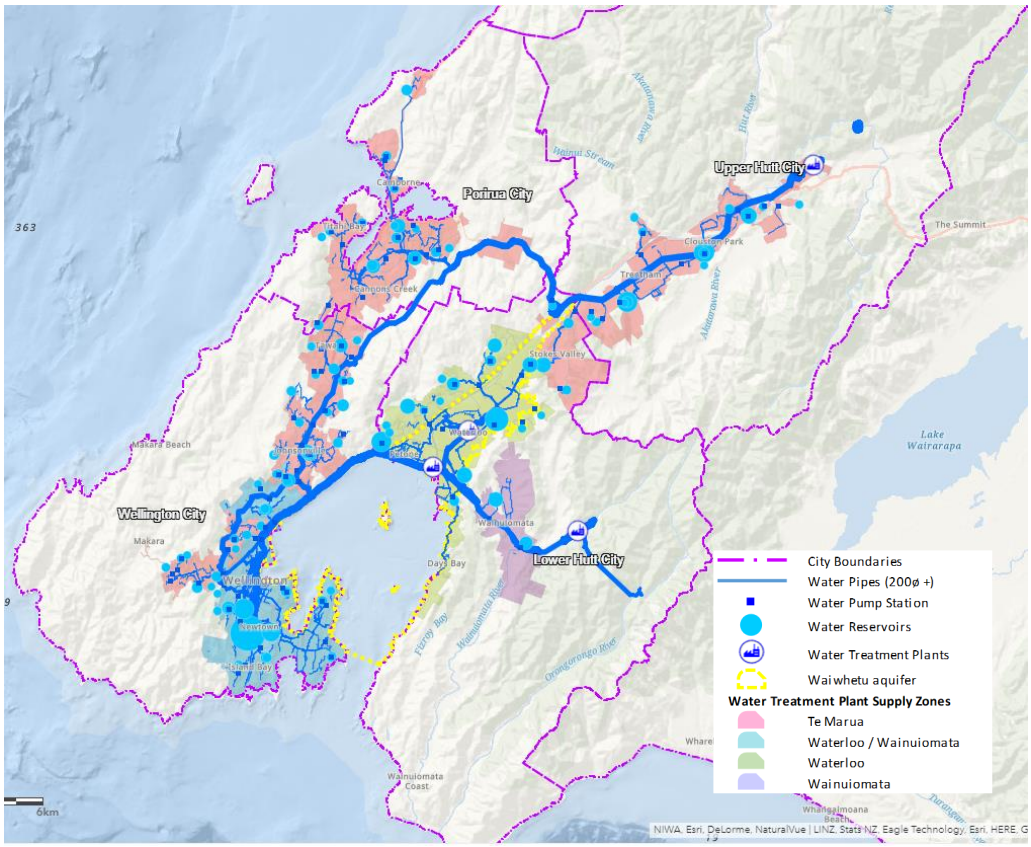


Figure 2-1. Wellington metropolitan water supply

An important aspect of the context for drought management in the Wellington metropolitan area is the relatively frequent rainfall experienced – even during summer. Development of the network since the 1890's recognises this and relies to a large extent on run-of-river supplies. The network is vulnerable to extended dry periods lasting longer than about 3 months. This is different to many water supplies around the world that experience multi-year droughts and rely on large storage volumes and/or water produced from non-rainfall dependent sources such as seawater desalination.

2.2 How droughts affect supply and demand

2.2.1 Water supply

All existing sources of water rely on rainfall at different times of the year to provide the required quantity of water for treatment and distribution to the community. The response to rainfall is different for each of these sources, and hence they demonstrate different types of drought vulnerability. The drought response for each type of source is described below.

Surface water sources – rivers respond relatively quickly to high or low rainfall situations. This means that the river flows can decline and also recover quickly. Abstraction volumes from the rivers are restricted by resource consent limits and reduce to zero as rivers recede. The Wainuiomata and Orongorongo rivers tend to recede more quickly than Te Awa Kairangi / Hutt River. This results in the Wainuiomata WTP having to shut down in the driest part of most summers.

Aquifer storage – water stored in the Waiwhetu aquifer responds more slowly to changes in rainfall compared with surface water sources. This is because there is a long lag time between rain falling in the catchment and percolating through to the aquifer system. The aquifer is used more during the summer as surface water source availability reduces. Abstraction averaging around 80 ML/d for 90 days can typically be sustained before the aquifer reaches safety levels set to minimise the risk of salt-water intrusion. Abstraction is reduced at this point.

Lake storage – Macaskill Lake storage is preserved as much as practicable during summer to make sure water is available should dry conditions persist for longer than expected. Abstraction from the lakes increases during a drought to supplement declining surface water supplies and aquifer storage. Enough water is stored in the lakes to provide an average of around 40 ML/d for 90 days.

2.2.2 Demand for water

We currently supply around 175 ML/d on average to Upper Hutt, Lower Hutt, Porirua and Wellington. In a typical summer this increases to an average of around 190 ML/d and a maximum of over 200 ML/d. High demands put increased pressure on water resources resulting in lower river and aquifer levels and an increase in use of stored water from the Macaskill lakes. This reduces drought resilience by reducing the volume of water available at the end of a dry summer when it is needed the most.

High demands also reduce the supply headroom, which can approach the capacity of the network. When this occurs, it becomes difficult to deliver the volume of water required. This increases the likelihood of otherwise minor operational issues causing an acute water shortage situation.

The water supply network currently serves a resident population of approximately 430,000 people. This is expected to grow to more than 580,000 people by 2050. Demand for water is expected to continue to grow unless demand management initiatives such as residential metering can improve water use efficiency.

2.2.3 Supply and demand balance

Wellington is fortunate in that regular rainfall typically occurs throughout the year – dry periods rarely extend longer than 1-2 months. Compared with other major cities, the Wellington

metropolitan water supply has very little storage and is therefore vulnerable to extended dry periods lasting 3 months or more.

While supply becomes limited during a drought, demand tends to increase. As a drought becomes more severe, demand can increase further as people use more water for garden watering and other outdoor uses. The balance between supply and demand is managed carefully to make sure there is a low risk of water shortage. This is achieved by initiating demand management and supply management actions at appropriate times during a drought. The different actions that can be implemented are outlined in Section 6.

3 Level of service

The water shortage Level of Service (LoS) describes the standard of service that water supply customers can expect to receive. Important aspects of the standard of service include the likelihood of water shortage occurring and/or the severity of restrictions that will be applied as supply availability reduces during a drought.

3.1.1 Likelihood of shortfall

Wellington Water's existing water shortage LoS is to provide sufficient water to meet normal demand except in events with a severity of greater than or equal to 1 in 50 years (assessed as an annual shortfall probability no greater than 2%). The LoS standard is an important measure of network performance as it signals the timing for major interventions such as constructing a new water source or initiating a large demand management programme. The LoS is adopted by GWRC as owner of the bulk water supply network, and is published in the GWRC Long Term Plan.

The combined effects of high growth, rising consumption and increased leakage has caused the water shortage risk of the water supply network to move outside the target level of service. This deviation is expected to continue until a major supply upgrade or demand reduction intervention is implemented (expected by 2030). Until this occurs, water use restrictions and other mitigation measures are expected to be required more frequently and/or with greater severity than normal.

3.1.2 Supply availability and minimum residential service standard

The water supply available for community consumption declines as a summer progresses and catchments become increasingly dry. The supply availability and corresponding maximum demand under four plausible scenarios is provided in Table 3-1[3].

[3] Application of a slight increase in water loss allowance for the late summer and extreme case scenarios reflects the potential for very dry ground to result in pipe movement and therefore increased leakage.

Table 3-1. Water supply availability and corresponding maximum demand

	Units	Best Case	Peak Period Typical Case	Later Summer Expected Worst Case	Extreme Case
Expected restriction level	Level	1	1-2	3	4
Total available supply (including network limitations)	ML/d	220	200	160	130
Max commercial demand	ML/d	37	37	39	39
Water loss allowance	ML/d	40	40	45	45
Max residential demand	ML/d	143	123	76	46
	L/person/d	310	265	165	100

Notes:

Best Case: Normal early summer supply with typical rainfall; no customer restrictions needed.
Peak Period Typical Case: Late January/early February supply; dry summer with reduced resources.
Late Summer Expected Worst Case: Late summer/early autumn supply after months of dry weather.
Extreme Case: Minimum reliable yield at the end of an extreme drought.

The above water supply availability scenarios have been used to determine household water availability for showers, laundry, and outdoor use, as detailed in the 3WDMC paper: Drought Customer Service Standard[4]. This is the basis for the residential service standards described in Table 3-2. The minimum residential service standard in an extreme case drought is 100L/p/d which is sufficient to meet basic health and sanitation needs[5].

Table 3-2 Residential service standards[4]

	Units	Best Case	Peak Period Typical Case	Later Summer Expected Worst Case	Extreme Case
Expected restriction level	Level	1	1-2	3	4
Max residential demand	ML/d	143	123	76	46
	L/person/d	310	265	165	100
	L/household/d	900	775	480	290
Daily showers	Minutes/person	4	4	4	2
Weekly laundry	Loads/household	10	10	9	3
	Loads/person	3	3	3	1
Weekly outdoor use	Minutes/household	180	120	0	0

[4] Refer 3WDMC paper: Drought Customer Service Standard (Wellington Water ref: ACT142-2083085261-2009)

[5] Note: the expected volume of water available to residential customers in an extreme drought is comparable with other utilities (e.g. South East Queensland Water Regulation 2016 which includes an essential minimum supply volume of 100L/p/d for residential and non-residential use).

For an earthquake emergency, a minimum residential service standard of 20L/p/d is adopted from the Sphere Standards[6] to allow for short-term survival, including drinking and food, basic hygiene practices, and basic cooking needs. This standard is significantly lower than the typical residential service standards, as well as the Extreme Case for drought used during less extreme conditions.

4 Preparing for a drought

It is rare for any two droughts to present in the same way. The approach taken at Wellington Water is to prepare and plan for a range of possibilities. We prepare for droughts or supply shortages by:

- Continuous monitoring of water supply/demand trends and any emerging risks.
- On-going engagement with the community about supply availability and the need for conservation.
- Operating the water supply network to maximise drought resilience during summer.
- Timely application of water use restrictions to reduce the risk of shortfall.
- Planning for extreme events and emergencies.
- Continuously improving our processes by learning from past events and the experiences of others.
- Documenting our approach in this WSRMP.
- Maintaining close alignment between the WSRMP and strategic planning processes used to assess the need for investment in major supply upgrades and demand management interventions.

5 Flexible and adaptive approach to managing risk

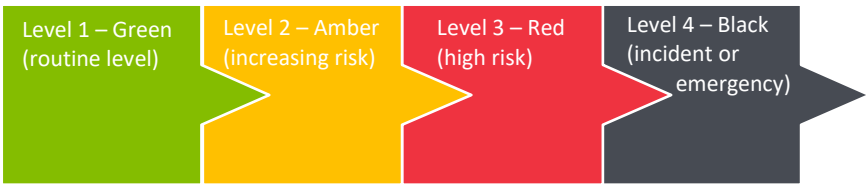
In a drought situation the severity of the drought is not known until after the event. For this reason we apply a flexible and adaptive approach to assessing risk. The key components of the risk assessment framework are:

- **Four levels of risk** (Level 1 - Green, Level 2 - Amber, Level 3 - Red and Level 4 - Black).
- **Drought risk indicator approach**, where guideline values and expert judgement are applied to a portfolio of risk indicators – rather than the use of inflexible trigger points.
- **Water Shortage Risk Management Group** (WSRMG) that meets regularly over summer months, reviews risk indicators and determines the overall level of risk. The group expands as needed to ensure resources and oversight are proportional to the level of risk.

[6] Reed, B. and Reed, B., 2013. Technical Notes on Drinking-Water, Sanitation and Hygiene in Emergencies: How much water is needed in emergencies. Prepared for WHO by WEDC, Loughborough University, UK.

5.1 Four levels of risk

Four ranges are used to describe the level of risk and therefore restrictions that are applied. The four levels are used to help guide our response and make sure a measured and proportional approach is applied as the risk of supply shortage increases. These are:



Risk Level 1 comes into effect automatically during daylight saving each year for the majority of the Wellington metropolitan area[7]. Level 2 and above is implemented as needed. Level 2 has been reached many times since 1985 (all occurring since 2008). Level 3 has only been reached once in 2013 when a drought occurred when only one of the Macaskill Lakes was available. Level 4 has not been reached to date and includes an incident management stage (managed internally) and an emergency stage (supported by external agencies).

5.2 Risk indicator approach

The risk management process provides a flexible framework of options that allow us to respond most effectively to a water supply shortage under a wide range of situations. Our risk management process has been developed for our region; it is relevant and realistic for our unique operating systems and circumstances.

We consider the development of a drought to have four key stages: normal, prolonged dry weather, actual drought and drought recovery. Each stage requires a different response, so guidelines are used to help identify when we should change from normal operation and take proportional action. Inevitably, this will lead to the introduction of demand management and supply management drought intervention measures. These guidelines are used to inform decision making so that measures are introduced in a timely fashion, but are appropriate and only implemented when they are required to manage the level of risk.

We have developed a risk assessment framework which has been continuously refined over the years. The framework has four risk levels (Green = level 1, Amber = level 2, Red = level 3, and Black = level 4) and guidelines around the appropriate timing for supply and demand interventions.

The risk indicators, guideline values and risk levels are applicable and appropriate for assessing water shortage risks and informing mitigation actions on a case-by-case basis. The key risk indicators and guideline values are outlined in Table 5-1. A dashboard is maintained to monitor the ongoing status of indicators and support communications (refer Appendix E).

For the Macaskill Lake Storage predictions, the 2% storage curve is used to evaluate the likelihood of storage reaching restriction or critical levels. However, additional probability curves for more severe droughts can be assessed and added to the WSRMP indicator dashboard as needed. The 1% storage curves from the Karaka model are already available on the WSRMP indicator dashboard.

These guidelines provide a framework for taking actions to balance supply and demand during a drought. As each drought is unique, the combination of factors needs to be considered. The relative importance of risk indicators changes depending on the situation. For this reason, a Water Shortage

[7] Except for Upper Hutt City which remains at Level 1 all year round.

Risk Management Group (WSRMG) has been established to review the individual risk indicators and make an overall assessment of the level of risk. It is important to note that drought response measures such as water use restrictions are linked to the level of risk, but that individual risk indicators are not. The risk indicator approach recognises that interactions between indicators is complex and dynamic, and therefore requires expert judgement to appropriately assess risk. This is also the reason values in Table 5-1 are referred to as “guidelines” rather than “triggers”. The composition of the WSRMG and roles/responsibilities is discussed in the following section.

Key risk indicators and guidance values are shown in Table 5.1, which is divided into primary and secondary indicators with an indication of importance for each drought indicator. The indicated importance may vary due to the complex interactions between the indicators. The WSRMG will evaluate these interactions as a whole to assess the overall risk. All drought indicators are lagging, except for the Macaskill Lake storage (predicted) and Weather forecast.

Table 5-1. Key risk indicators and guideline values applied within this Water Shortage Risk Management Plan

Risk Indicator	Description	Typical Level 1 (Green)	Typical Level 2 (Amber)	Typical Level 3 (Red)	Level 4 (Black)
Primary indicators					
Macaskill Lake storage (actual)	Percentage of remaining usable storage. The risk associated with the remaining storage volume varies as the summer progresses.	>80% for Aug-Dec >70% for Jan & Jul >60% for Feb & Jun >50% for Mar-May	<=80% for Aug-Dec <=70% for Jan & Jul <=60% for Feb & Jun <=50% for Mar-May	<=70% for Aug-Dec <=60% for Jan & Jul <=50% for Feb & Jun <=40% for Mar-May	<=30%
Water Treatment Plant headroom	Production surplus available today and minimum predicted in next 7 days (assuming no rain). If WTP headroom becomes too low then the risk of acute shortfall increases (i.e. unable to meet peak demand).	Production capacity >115% of demand	Production capacity <=115% of demand	Production capacity <=110% of demand	Production capacity <=105% of demand
Secondary indicators					
Macaskill Lake storage (predicted)	Probability curves for combined lake storage over the next three months based on the latest NIWA seasonal climate outlook and Karaka model prediction. This is used to assess the likelihood of the storage reaching restriction or critical levels.	Same guideline values as for actual Macaskill Lakes storage but using Karaka model 2% storage curve (or more severe curve if the current trend indicates this may be appropriate).	Same guideline values as for actual Macaskill Lakes storage but using Karaka model 2% storage curve (or more severe curve if the current trend indicates this may be appropriate).	Same guideline values as for actual Macaskill Lakes storage but using Karaka model 2% storage curve (or more severe curve if the current trend indicates this may be appropriate).	Same guideline values as for actual Macaskill Lakes storage but using Karaka model 2% storage curve (or more severe curve if the current trend indicates this may be appropriate).
Macaskill Lake net outflow	7-day average of net lake outflow (outflow less inflow). A high storage depletion rate is an indicator of elevated risk.	<25ML/d	>=25ML/d	>=50ML/d	N/A
River abstraction	14-day average combined abstraction from river intakes. River depletion is typically the first indicator of drought and increasing risk.	>80ML/d	<=80ML/d	<=40ML/d	0ML/d

Risk Indicator	Description	Typical Level 1 (Green)	Typical Level 2 (Amber)	Typical Level 3 (Red)	Level 4 (Black)
Waiwhetu aquifer level	Aquifer level measured at McEwan Park. Aquifer pumping is actively managed to prevent saline intrusion by keeping the pressure above predetermined safety limits.	>2.5mAD	<=2.5mAD	<=2.3mAD	<=2mAD
Water demand	7-day and 1-day average water demand is monitored to determine if consumption is within expectations. Higher than expected demand increases risk by depleting aquifer and lake storage at a greater rate. **Guideline values for this indicator assume Wainuiomata WTP is operational and delivering 15ML/d or more.** WTP headroom would take priority if this was not the case.	<180ML/d (7-day ave)	>=180ML/d (7-day ave) or >190ML/d (1-day ave)	>=190ML/d (7-day ave) or >=200ML/d (1-day ave)	>195ML/d (7-day ave) or >210ML/d (1-day ave)
Reservoir levels	All reservoirs are monitored remotely and have automated alarms set to warn Operations if low levels occur. The following reservoirs have additional oversight by the WSRMG because they are likely to shows signs of decline before others: Haywards, Ngauranga, Carmichael, Macalister Park, Omaroro, Gracefield, Ascot Park, Moores Valley.	No abnormal drawdown and recovering to typical levels each day	No abnormal drawdown and recovering to typical levels each day	No abnormal drawdown and recovering to typical levels each day	No abnormal drawdown and recovering to typical levels each day. Declining storage is an indicator to consider implementing emergency response measures to maintain supply to critical customers.
Macaskill Lake Geosmin	Not used for supply/demand risk. Geosmin is an aesthetic issue that can cause taste and odour complaints. Te Marua WTP can remove approximately 30ng/L through the treatment process. High values can result in a lake being taken offline temporarily – as long as this does not compromise the ability to meet demand.	Typically <30ng/L. Monitored to inform operations (WTP and customer centre).	Potential taste and odour complaints above 30ng/L. Monitored to inform operations (WTP and customer centre).	Potential taste and odour complaints above 30ng/L. Monitored to inform operations (WTP and customer centre).	Potential taste and odour complaints above 30ng/L. Monitored to inform operations (WTP and customer centre)

Risk Indicator	Description	Typical Level 1 (Green)	Typical Level 2 (Amber)	Typical Level 3 (Red)	Level 4 (Black)
Wainuiomata WTP production	Wainuiomata WTP has no raw water storage and is forced offline when the river supplies reach around 10ML/d. This increases demand on groundwater take, reduces WTP headroom and creates a step increase in the level of risk. The importance of this risk indicator depends on the impact of loss of production on WTP headroom and the current state of other sources (e.g. aquifer levels).	>20ML/d	<=20ML/d	<=12ML/d (i.e. potential loss of Wainuiomata WTP within the next 5 days)	N/A (typically off)
Network outages and emerging risks	Significant asset performance issues and emerging risks (e.g. critical treatment/distribution asset failure, increasing trend in cyanobacteria or associated toxins, etc).	Assessed on a case-by-case basis	Assessed on a case-by-case basis	Assessed on a case-by-case basis	Assessed on a case-by-case basis
Weather forecast	Forecast for significant rainfall (e.g. >50% chance or more of 10 mm rain within next 3 days) is used to inform the timing of interventions such as water use restrictions. This includes managing perception risks associated with poorly timed external communications.	Assessed on a case-by-case basis	Assessed on a case-by-case basis	Assessed on a case-by-case basis	Assessed on a case-by-case basis

Risk Indicator	Description	Typical Level 1 (Green)	Typical Level 2 (Amber)	Typical Level 3 (Red)	Level 4 (Black)
Leak repair performance	Not used for supply/demand risk. The size of the leak repair backlog and the average repair time is used to inform communications. Poor leak repair performance is acknowledged in our communications to limit credibility risk. Elevated supply/demand risk is also used to signal a need to improve leak repair performance where possible. It is noted however, that this is a complex area with many constraints, and short-term improvements in capability are typically not achievable.	Assessed on a case-by-case basis	Assessed on a case-by-case basis	Assessed on a case-by-case basis	Assessed on a case-by-case basis
NIWA Drought Index	NIWA New Zealand Drought Index (NZDI) for Wellington. Provides a nationally consistent approach to answering the question “how dry is it”? NIWA use four thresholds (0.75, 1.00, 1.25, 1.50, and 1.75) corresponding to dry, very dry, extremely dry, drought and severe drought respectively. The NZDI is not linked directly to water supply/demand risk, but provides additional information on the severity of the drought. This informs communications and timing of interventions.	<0.75	>=0.75	>=1.5	>=1.75
Time since last change	This indicator relates to practical considerations regarding council approvals and external communications.	Where possible risk levels are not changed more than once in a 2-week period, unless an extreme event has occurred.	Where possible risk levels are not changed more than once in a 2-week period, unless an extreme event has occurred.	Where possible risk levels are not changed more than once in a 2-week period, unless an extreme event has occurred.	Where possible risk levels are not changed more than once in a 2-week period, unless an extreme event has occurred.

5.3 Water Shortage Risk Management Group

A Water Shortage Risk Management Group (WSRMG) has been established to manage our response to water shortage risks as they develop. The membership of the group increases as the risk increases. The WSRMG meets on a regular basis during summer and has the following responsibilities:

- Monitor risk indicators, assess the level of risk and recommend changes to the risk level in a timely manner.
- Provide information and advice to support internal/external communications.
- Complete non-emergency post event reviews.
- Make sure that the Water Shortage Risk Management Plan is kept up-to-date to reflect ongoing improvements.

Table 5-2 shows how the composition of the WSRMG is expanded as risk increases. Depending on the context, additional members may join the group in the lead up to a change in risk level. The objective is to provide an appropriate level of escalation and resources as risk increases from Level 1 through to Level 3. Level 4 is an incident situation and will be managed through the Wellington Water Emergency Management Structure.

Table 5-2 Water Shortage Risk Management Group composition

Group	Level 1 – Routine restrictions (daylight savings odds/evens watering) Risk Management Group expands as risk level increases	Level 2 – Sprinkler & irrigation system ban	Level 3 – Residential outdoor water use ban (watering-can/bucket use only)	Level 4 – Incident or Emergency (refer Wellington Water Emergency Management Structure)
Network Management	Network Controller, Senior Production Controller	Head of Treatment Planning	Group Manager	
Risk and Comliance	Chief Advisor Drinking Water	Head of Risk and Assurance (or Incident Controller)	Chief Risk and Compliance Officer	
Network Development and Delivery	Programme Lead capital works (optional)	Facilities Engineering Lead		
Network Operations	Customer Services Engineer Team Leader Water Loss Management	Head of Customer Experience Head of Operations and Engineering	Group Manager	
Network Strategy and Planning	Principal Advisor Strategy, Senior Engineer (network specialist), Network Analyst	Head of Network Engineering	Group Manager	
Corporate Services	Marketing, Communications and Engagement Advisor, Senior Analyst Data Quality	Team Lead Communications and Engagement	Head of Communications and Engagement	

5.3.1 WSRMG roles and responsibilities

The Group Manager Network Management is accountable for treatment and delivery of safe drinking water. The key responsibilities within the WSRMG to support this outcome during a drought or supply shortage are:

- **Network Controller** – chair of WSRMG and responsible for decisions to change risk level (unless an incident has been declared), initiate requests to councils to impose restrictions through Bylaw provisions and notify SLT/councillors/client council representatives.
- **Head of Risk and Assurance** – monitor level of risk and declare an incident if Level 4 is required (as directed by the Incident Controller), or if considered appropriate for other reasons.
- **Incident Controller** – decides when /if it is appropriate to declare an incident and assumes responsibility for the management of any incidents.
- **Chief Advisor Drinking Water** – ongoing technical oversight.
- **Senior Engineer Network Engineering** – review/update risk indicator dashboard and draft initial risk assessment to inform WSRMG meetings.
- **Senior Production Controller** – implement water treatment plant supply strategy to optimise network performance for drought resilience, monitor network performance between WSRMG meetings and elevate issues as required.
- **Head of Treatment Planning** – communicate with GWRC environmental regulation on resource consent issues (e.g. aquifer discretionary use and emergency provisions in the Resource Management Act and Natural Resources Plan).
- **Team Leader Water Loss Management** – identifying and prioritising leak repairs, ensuring efficient water use, and supporting the overall goal of maintaining water supply during drought conditions.
- **Team Lead Communications and Engagement** – develop and deliver external communications including community engagement, notify Customer Hub of significant issues to support customer contact resolution, and notify Senior Internal Communications Advisor for communications to all staff.
- **Chief Risk and Compliance Officer** – communicate with Taumata Arowai in relation to Water Services Act requirements.
- **Other members** (including senior leadership) – provide advice and support from respective areas of the company to ensure: 1) risk assessments are tension from different perspectives, and 2) the level of support and resources is sufficient and proportional with the level of risk.

5.3.2 WSRMG meeting agenda

The standing agenda for WSRMG meetings will include the following:

1. Risk indicator dashboard – review status of risk indicators relative to guideline levels.
2. Looking ahead – other issues potentially affecting risk (e.g. outages for capital works/planned maintenance, adverse leakage trends, catchment management activities, adverse weather predictions, scenarios for any emerging risks, etc).
3. Determine overall risk level.
4. Mitigation measures – determine appropriate mitigation measures (network operations and maintenance and demand management), as well as key internal/external communication messages (refer WSRMP Section 6).
5. Agreed actions
6. Timing for next meeting

WSRMG meetings are held regularly over the summer period which is typically from October through to April. The timing for WSRMG meetings is adjusted as the risk level changes and may be monthly, weekly or daily if required.

5.3.3 When a drought becomes an incident or emergency

In a severe drought situation, all water sources would be in a vulnerable state and there would be a risk that demand could exceed the available supply. In this situation the Wellington Water Emergency Management Team (EMT) may be activated. The Incident Controller is part of the WSRMG and will decide if/when it is appropriate to declare an incident. If this occurs the Incident Controller assumes responsibility for managing the incident and will follow emergency management procedures. To maintain continuity, many of those involved in the WSRMG would also form part of the EMT.

Depending on the severity of the situation the EMT may request support from the Wellington Region Emergency Management Office (WREMO), including coordination and prioritisation of regional resources. If there is potential for a disruption to supply of 8 hours or more then Taumata Arowai will also be contacted as required by the Water Services Act.

6 Risk mitigation measures

There are a range of supply and demand side interventions available during a drought with the aim of balancing the constraints of the water source (supply side) with the needs of the community (demand side). This section outlines the different demand management and supply management actions available, and the timing of these actions.

6.1 Network operations and maintenance

This section outlines the actions we are taking, as a water supplier, to lead by example and minimise water demand.

6.1.1 Prioritise leak repairs

Leakage reduces network performance by contributing directly to baseline demand, leaving less water available for productive use. Some leakage is inevitable in any water distribution network, however the issue has become significant in the Wellington metropolitan area since 2015.

Leaks in the network are identified proactively through active leakage management techniques. This includes analysis of night flows to District Metered Areas (DMA), mass balances at zone or regional level and active leak detection using acoustic monitoring equipment (listening for leak noises), drone-based thermal imaging and other specialist techniques. Leaks are more difficult to locate during the summer when demand is high therefore year-round proactive leak detection is important.

Leaks are also identified reactively through community reports of visible leaks. Visible leaks have an additional negative impact on organisational credibility – especially when water use restrictions are in place and there are long delays in completing repairs.

Leaks should be repaired in a timely manner at all times, however during a drought there should be an increase in investment and reprioritising of resources to improve performance. It is acknowledged that the current level of resourcing and organisational capacity is insufficient to meet reasonable performance expectations.

We are committed to improving our leakage management practices so that leaks are identified and repaired within a reasonable time. We are also committed to building capacity to enable an increase in performance during droughts. There is not sufficient funding to achieve this in the current investment period (2021-23), however a case for additional funding is being prepared. The case will identify leakage performance targets and will be included in our advice supporting the next investment period starting in 2024.

6.1.2 Hydrant testing/network flushing

Testing of hydrants is required to make sure that they operate effectively. This requires running hydrants to waste for short periods while testing to ensure the required flow rate is achieved. Hydrants are also flushed periodically to remove sediment build-up in the pipe network. This activity will be put on hold (or be minimised) during increased risk levels and re-started once the risk returns to Level 1. The exception to this is essential flushing for water quality reasons in the event that the network becomes depressurised due to lack of supply. A lead time of approximately one day is required to implement the restriction on hydrant testing/network flushing.

6.1.3 Water patrols

Water patrols are used to remind people of the requirements of water supply bylaw restrictions where there are breaches. During Level 1 this is primarily reactive in response to reported breaches. During increased risk levels proactive water patrols are used to identify inappropriate water use and issue reminders. Table 6-1 shows how patrols are increased with the level of risk.

Table 6-1 Water patrols with increasing level of risk

Risk level	Type of patrol	Indicative weekly coverage	Engagement and enforcement options	Patrol resourcing (options to be considered, subject to funding availability)
Level 1	Reactive patrols for residential customers	None	Restriction reminder issued	Inhouse Operations
Level 2	Reactive patrols for residential customers plus proactive patrols for high usage residential zones	Up to 10% of network	Restriction reminder issued	Inhouse Operations Contracted security company
Level 3	Reactive patrols for residential customers plus proactive patrols for high usage residential zones Proactive non-residential water conservation engagements	Up to 20% of network	Restriction reminder issued Infringement notices for repeat offenders Non-residential water saving guidance	Re-prioritised inhouse resources (where practicable) Contracted security company
Level 4	Reactive patrols for residential and non-residential customers plus proactive patrols for high usage residential zones Proactive non-residential water conservation engagements	Up to 50% of network	Restriction reminder issued. Infringement notices and/or restricted supply for repeat offenders where required Non-residential water saving guidance	Re-prioritised inhouse resources (where practicable) Contracted security company Utilise leak detection resources Additional resources as directed by the Incident Controller

Water restriction patrols are managed by the Wellington Water's Network Operations Group (NOG). Reactive and proactive patrols are supported by approved Security Company contractors. Contract agreements for carrying out water restriction patrols are re-established annually prior to summer to enable Patrols to be activated and scaled up at relatively short notice when called upon in response to escalation of water demand, supply risks and restriction levels. Patrol resourcing can be extended through internal and other external means as the zone coverage increases. Options may include utilising leak detection inhouse and contract resources, providing communication packs and guidelines for wider operational teams, and expanding contracted security company resources. In an emergency, the support of contractor and consulting panel staff may also be considered.

Patrol areas are prioritised to focus on zones with high demand. The number of water restriction breaches encountered, and customer engagement feedback will also be used to inform patrol areas.

The lead time to implement water patrols is approximately seven days to allow for a contractor to set up the patrols.The Communications and Engagement team support the patrols by reviewing communication handout packs and ensuring integration with wider strategic communications. Patrol communications has a focus on education. Issuing of enforcement notices may be considered in the case of repeat offending or at Level 4, however enforcement notices can only be issued by staff with the appropriate Council authorised warrant and in accordance with relevant Council bylaws.

6.1.4 Supply management

Supply management actions are the measures that we can employ to maintain supply during a drought period, over and above the activities that we ordinarily undertake. During winter months water source selection is continuously and automatically adjusted to deliver water at the least cost. During summer we intervene with this optimisation system and manage supply selection according to the following priority:

1. Run-of-river surface water (maximise within consent limits).
2. Waiwhetu aquifer storage (operate as required within saline intrusion and annual water take consent limits).
3. Macaskill Lakes storage (minimise usage).

This approach to prioritise sources aims to meet demand by fully utilising river sources and minimising use of Macaskill lake storage. Since the duration of a drought cannot be predicted, lake storage used early in a drought cannot be recovered until the drought has ended. Preserving lake storage is therefore central to managing water sources during a drought.

Waiwhetu aquifer

As the most drought resilient water source, the Waiwhetu aquifer will act as a buffer against dry periods when surface water sources are at risk. The aquifer pressure is normally maintained above 2.3 mAD measured at the Petone/Seaview foreshore. Additional abstraction in the range 2.3-2.0 mAD is permitted in the resource consent, however operation in this range is only allowed at the discretion of the GWRC Manager Consents Management.

Operation of the Waiwhetu aquifer within the discretionary limit provides additional yield that will be essential in a severe drought, however it also requires an enhanced level of monitoring to make sure the risk of saline intrusion is managed appropriately. This additional water is only available if a Level 3 residential outdoor water use ban has been implemented and the indicators of saline intrusion risk are within safe limits. Detailed guidelines for operation of the Waiwhetu aquifer in the discretionary range have been jointly developed by Wellington Water and GWRC (refer Appendix B). A lead time of approximately 3 days is required from the submission of the request to the granting of approval. However, this is only an estimate, as the process has not been implemented before.

Macaskill Lakes

The Macaskill Lakes are typically our last supply-side measure during a drought. The two lakes have a combined useable capacity of 3,350 million litres, however the actual level in the lakes at the start of a drought depends on the health of Hutt River before the drought. As a drought proceeds, and run-of-river sources diminish, lake water is used progressively to supplement supply , with a lead time of approximately one day to increase the water intake from the lakes. The need to preserve lake storage is balanced against other options such as increasing water restrictions to make sure lake storage lasts for the duration of the drought. This is important as this is the only source of stored water and therefore cannot be recovered until the drought has ended.

Wellington Water uses a tool developed in partnership with NIWA to assesses thousands of potential scenarios of storage depletion. The tool, called the Karaka model, utilises the latest information from the NIWA seasonal climate outlook and determines the likelihood of Macaskill Lake storage reaching critical levels over the next three-month period (refer example dashboard in Appendix E). This is used as a leading indicator of how the drought may progress and supports timely interventions to minimise future risk.

Emergency water take

In an extreme drought situation Taumata Arowai may declare a drinking water emergency under the Water Services Act. If this occurred, then the Emergency Powers available include the ability to grant an exemption to Part 3 of the Resource Management Act (including restrictions relating to the take of water).

An alternative option for emergency water take is through the emergency provisions in the Resource Management Act (Section 330) followed by retrospective consent application under the Natural Resources Plan (rule WH.R1) to take water below minimum flows for the health needs of people in a community drinking water supply. Depending on the nature of the situation this option may be preferable.

The emergency take of water outside consent limits would only be considered as a last resort, where all practicable demand management measures were in place and there was imminent risk of supply shortfall. Preparations are made to enable emergency water use during Level 3, ensuring minimal lead time if emergency water is needed during Level 4.

6.2 Demand management actions

Demand side measures are implemented from the start of daylight saving and are adjusted depending on the level of risk assessed by the WSRMG. The demand management actions are discussed below and include both residential and non-residential water restrictions.

6.2.1 Residential water restrictions

Water restrictions are used to reduce overall water demand. Domestic water restrictions are introduced during the daylight saving period and increased as needed depending on the assessed level of risk. The assessed level of risk always includes uncertainty, and caution must be applied regarding how severe the remainder of the drought will be. Restrictions are therefore implemented more frequently than the 1 in 50-year level of service may otherwise imply. As a drought becomes more severe, restrictions of increasing severity are applied to prevent supply shortfall. Using this approach, a drought exceeding the LoS can be managed – although at a progressively reduced service standard. The stages of domestic water restrictions are described below.

- **Level 1 Alternative day water restrictions** – this means even numbered houses can use sprinklers and irrigation systems only on even numbered days between 6 – 8am and 7 – 9pm. The same rules apply for those who live in odd numbered houses on the odd numbered days. Handheld watering devices can be used at any time, on any day as long as they are attended.

- **Level 2 Sprinkler ban** – there is a ban on sprinklers, irrigation systems and unattended hosepipes for all households. Handheld watering devices can be used at any time, on any day as long as they are attended.
- **Level 3 Outdoor water use ban** – there is a ban on all residential outdoor water use (watering-can/bucket use only).
- **Level 4 Incident/Emergency** – this is an emergency situation and required as a last resort. Remaining supplies would be prioritised to sustain human health and maintain essential services.

Table 6-2 provides a summary of these restriction levels with an overview of the key residential actions to be implemented at each level. The current restriction levels and links to supporting resources are provided via the Wellington Water website - Residential water restrictions. Frequently asked questions (FAQs) regarding water restrictions are outlined in Appendix D.

Table 6-2. Summary of residential restrictions

Restrictions		Expected residential demand reduction (around half of total demand)	Notes
No restrictions	No restrictions implemented[8]	Normal demand (unrestricted)	Period of routine monitoring of water resources.
Level 1	Alternate day watering	Reduction in peak demand from smoothing garden watering across alternate days.	Awareness-raising of declining water resource situation to promote efficient use of water. Routine water conservation campaign with all customers.
Level 2	Sprinkler and irrigation system ban (including unattended hosepipes)	0% to 6% reduction on normal (unrestricted) summer demand*	Restrictions apply to domestic customers. Enhanced water conservation campaign with all customers. Benefit would depend on the level of community engagement applied.
Level 3	Residential outdoor water use ban (watering-can/bucket use only)	6% reduction on normal (unrestricted) summer demand**	Restrictions apply to domestic customers. Enhanced water conservation campaign with all customers. Benefit would depend on the level of community engagement applied.
Level 4 – Incident or emergency	Refer to Emergency Response Plan	As required to balance demand with supply availability – i.e. at or above the minimum residential service standard of 100L/p/d (refer Section 3.1.2)	Restrictions apply to domestic customers. Enhanced water conservation campaign with customers. Available supply may need to be rationed to achieve equitable distribution.
Lifting restrictions	All restrictions are lifted		Awareness-raising of improving water resource situation and lifting of restrictions.

* Wellington Water report *Retrospective Analysis of the 23/24 Summer* (internal reference: ACT2-1075091503-824) showed that around 5ML/d was saved over the 23/24 summer (i.e. around 3% of total demand or 6% of residential demand). Analysis of previous summers with restrictions in place did not show a consistent reduction. Long term water resource planning should not rely on this reduction being achievable in a typical Level 2 scenario.
** There is insufficient data available for Wellington Water to determine an appropriate value. The reduction in residential demand shown is based on UKWIR report *Review of 2022 Drought Demand Management Measures - Summary Report* (reference: 23/WR/02/18). Long term water resource planning should not rely on this reduction being achievable given the lack of evidence.

[8] Except for Upper Hutt City which has year-round alternate day watering.

6.2.2 Non-residential water restrictions

Implementing non-residential water restriction guidelines is an important part of managing demand during a drought as all consumers should take steps to reduce water use if there is a threat to the water supply. Whereas residential restrictions target the discretionary use of water, applying restrictions to non-residential consumers can result in economic impact. Non-residential water restrictions are therefore only applied when necessary to make sure that businesses can continue to operate for as long as possible.

There are cases where non-residential and residential restrictions can appear inconsistent. An example is the use of hosepipes to clean windows or buildings. While in a residential setting it is appropriate to minimise this activity during a drought, non-residential restrictions would mean that people who clean windows or wash houses for a living would not be able to operate their business. The overall water saved from limiting some of these non-residential activities (when water efficient equipment is used) can be relatively minor and out of proportion with the economic impact. Non-residential water restrictions aim to target discretionary or wasteful uses of water, while enabling businesses to continue to operate.

Rather than mandatory restriction for non-residential customers, Table 6-3 below highlights the Wellington Water guidelines for restrictions under risk levels 3 and 4. These guidelines were introduced and formally endorsed by our Client Councils in Jan 2024. The guidelines were re-endorsed in Nov 2024 by Council's and the option of making the guidelines legally enforceable under Councils bylaws was raised.

For the non-residential water restriction guidelines to be legally enforceable by Councils, each Council would be required to apply the applicable public notification, Chief Executive and and/or Councillor's approval processes as directed by existing policies and bylaws. Procedures and timelines for this differs between Councils however, a review of Client Council's bylaws suggests there are no issues that would prevent the guidelines becoming enforceable. Direction from the Nov 2024 Client Council Representatives (CCR) meeting was that, for the guidelines to be mandated and made enforceable, the non-residential water restrictions should be applied regionally and with rules consistent across Council. Consensus from CCRs as of Nov 2024 was for the guidelines to remain as guidelines only pending Local Water Done Well outcomes.

Table 6-3. Non-residential water restriction guidelines

Drought Risk Level	Interventions
Level 3 Guidelines	Businesses, council facilities, schools, hospitals, industry, nurseries, recreational clubs, farms and other non-residential water users are asked to: • Restrict outdoor water use to handheld devices fitted with appropriate trigger mechanism. • Operate a car wash only if it uses recycled water. • Not water or irrigate ornamental gardens and grassed areas at any time, other than by using a bucket or watering can. • Not water or irrigate sports fields, recreational clubs, commercial plants other than between 6-8 am and 7-9 pm. • Not irrigate paddocks at any time. • Not use hoses and sprinklers for water play toys (slip'n'slides, fountains etc.). Outdoor children's play pools are not to be used. • Building and construction, land development, subdivision activities, earthworks, roadwork may not use reticulated water unless recycled or reclaimed water is not available, and the water use is necessary to satisfy regulatory or statutory requirements (e.g., to meet conditions of a resource consent) and the site is attended. Water use is restricted to handheld hoses free from leaks and equipped with trigger devices. • Exterior Cleaning is only carried out by contractors who have committed to working in accordance with the Exterior Cleaning Association Code of Practice.

Drought Risk Level	Interventions
	Public venues such as the Wellington Regional Stadium and Basin Reserve are asked to reduce water used for irrigation as much as possible. There are no restrictions on lifeline infrastructure, animal welfare, vulnerable customers and for public health and safety customers.
Level 4 Guidelines	Businesses, council facilities, schools, hospitals, industry, nurseries, recreational clubs, farms and other non-residential water users are asked to **apply Level 3 restrictions above PLUS:** • Use of an outdoor hose or water blaster only for health, safety, emergency or biosecurity reasons • Reduce irrigation of sports fields and recreational club grounds to the minimum required to keep the turf alive. Reduced or no use of the grounds may be required. • Not irrigate commercial plants/crops at any time. • Pools – Restrict water use as well as topping up of public pools to that necessary for public health. • Not use outdoor showers. • Not top up or fill ponds, fountains and water features unless topping up is necessary to sustaining fish or bird life and only by watering can or bucket directly filled from a tap to fill the pond, fountain or water feature to their normal level. • Not clean vehicles or boats (except for the cleaning of the boat engine) unless using a commercial car wash facility that recycles water used, a bucket filled from the tap or is necessary for health, safety or biosecurity reasons. • Only clean food transport vehicles if using handheld hose with trigger nozzle or a watering can or bucket filled directly from a tap, or if using a commercial car wash facility that recycles water used. • Commercial nurseries may use micro sprays or drip systems only. Watering should be carried out in the morning avoiding the heat of the day. Public venues such as the Wellington Regional Stadium and Basin Reserve reduce irrigation to the minimum required to keep the turf alive. Reduced or no use of the grounds may be required. Commercial customers, such as food producers, tourism operators and venues (e.g., hotels, motels), events centres, food outlets, and large consumers, are asked to limit indoor water use. There are no restrictions on, lifeline infrastructure, animal welfare, vulnerable customers and for public health and safety customers.

Non-residential restrictions impact customers in different ways, and where necessary exemptions may need to be issued if non-residential water restrictions were to become legally enforced.

Exemptions could take the form of permitting a particular activity or exemptions provided for specific non-residential customers. What our customers could expect from an exemption system is outlined below:

- A transparent system that provides a consistent approach to evaluating whether and how water use restrictions will be implemented,
- A range of different types of exemptions will be available to suit the different requirements (e.g. discretionary universal exemptions and discretionary concessional exemptions),
- Individual customers will need to apply through the system to demonstrate they meet the rules or terms of conditions,
- Advance notice will be given to all customers to make sure they are aware– this enables contingency planning to minimise financial risks,
- Exemptions will be granted on a time basis, where practicable, with regular review.

6.3 Communications

6.3.1 Enhanced community engagement and conservation messaging

The level of engagement and communication on urgent water conservation and/or water restrictions depends on the risk of drought or acute water shortages. This is determined through modelling and advice given by the Drought Management Group.

Once the summer risk forecast has been assessed, an overarching Communications Strategy is created to respond to the risk and achieve specific, measurable objectives. This strategy is reviewed by council communications teams and relevant key external stakeholders and is approved by the Senior Leadership Team. Communications plans specific to each level are reviewed each year.

The Communications and Engagement team is accountable for delivering all messages to the community, working with subject matter experts across the organisation.

Our long-term strategy is to support water-efficient behaviour change to help manage demand. This includes raising awareness of how the network works, why we need water conservation and manage supply and demand, and using water restrictions as a demand management tool.

6.3.2 Internal and external communications process

The key aspects of the internal/external communications process are:

- A Comms representative should be present at every Water Shortage Risk Management Group meeting.
- Comms should engage with subject matter experts in the early stages of Summer Demand and Water Restrictions campaign development.
- Maintain clear responsibilities for information sharing, including:
    - Chair of the WSRMG (Network Controller) is responsible for requesting approval to implement/change the water restriction level from council officers with delegated authority[9]. It has been agreed with councils that such requests should include the words “immediate action is required” to trigger relevant Bylaw provisions.
    - Chair of the WSRMG (Network Controller) is responsible for informing the Wellington Water Senior Leadership Team, councillors, client council representatives and Wellington Water Comms following council approval to change the restriction level.
    - Wellington Water Comms is responsible for informing Council Comms, the Wellington Water Internal Comms Advisor and the Customer Hub of any changes to the restriction level.
    - Wellington Water Internal Comms Advisor is responsible for updating internal communications channels and informing internal staff of the water restriction changes via all staff email.
    - Customer Hub is responsible for responding to public enquiries.

6.3.3 Communication with Greater Wellington Regional Council

GWRC Environmental Regulation have requested visibility over Wellington Water decision-making processes around drought management – including when restrictions are put in place. This relates to

[9] Chief Executive for Wellington City and Porirua City, Infrastructure Manager for Hutt City and Upper Hutt City

discretionary aspects within water take consents where GWRC must determine if community impacts from water use restrictions are in proportion with environmental impacts. To support this request and increase transparency, Wellington Water provides the risk indicator dashboard described in Section 5.2 to GWRC consents weekly (refer example in Appendix E).

6.4 General approach to applying risk mitigation measures

Mitigation measures to maintain the supply/demand balance during a drought are applied progressively and in proportion with the level of risk. This applies to long term (chronic) droughts as well as short term (acute) water shortages. The general approach is the same in both cases, but the rate at which measures are applied will be appropriate for the situation. Table 6-4 shows key measures listed (with increasing severity) and the risk level that they will be introduced.

Table 6-4. Risk mitigation measures and level introduced

Measure	Level introduced
Monitor risk indicators continuously	Level 0
Summer water conservation campaign	Level 1
Manage network to conserve water and optimise for drought resilience	Level 1
Increase communication messaging – conserve water to prevent restrictions	Level 1
Residential sprinkler and irrigation system ban (via council bylaws)	Level 2
Increase communication messaging – conserve water to prevent restrictions increasing	Level 2
Residential outdoor water use ban (via council bylaws)	Level 3
Request residents and businesses urgently reduce consumption to prevent water supply emergency	Level 3
Augment water sources (if practicable)	Level 4 (Wellington Water incident)
Manage network to prioritise identified critical zones	Level 4 (Wellington Water incident)
As required, including ban on all non-essential water use (via council bylaws), emergency water take to prevent/minimise loss of supply, communication messaging reflecting emergency	Level 4 (emergency)

Table 6-5 provides additional detail on risk mitigation measures available. Level 4 measures have been split to show the different interventions expected depending on whether the situation is a Wellington Water incident or local/regional emergency. It is important to note that interventions shown in Table 6-5 are a guide. In an emergency any actions deemed necessary by the incident controller may be implemented.

The routine Level 1 – Green starts at the beginning of daylight savings each year, with communications for all levels (1 to 4) prepared in the preceding month. Transitioning between levels usually takes about seven days, but can be shortened to three days or less in urgent situations. The WSRMG monitors risks and meets bi-weekly during summer, with ad-hoc meetings as needed for updated or emerging risks.

Table 6-5. Additional detail on risk mitigation measures

Mitigation type	Action	Level 1	Level 2	Level 3	Level 4 – Incident or emergency
Network operations and maintenance	Leak repairs	Routine prioritisation	Increase capacity and prioritise visible leaks	Increase capacity and prioritise highly visible leaks	Increase capacity and prioritise highly visible leaks
	Hydrant flow testing	Normal operations	Cease	Cease	Cease
	Hydrant flushing	Normal operations	Cease unless required to reinstate a depressurised zone	Cease unless required to reinstate a depressurised zone	Cease unless required to reinstate a depressurised zone
	Water patrols	Reactive in response to reported breaches (refer Table 6-1)	Reactive and proactive patrols (refer Table 6-1)	Reactive and increased proactive patrols (refer Table 6-1)	Reactive and increased proactive patrols (refer Table 6-1)
	Supply prioritisation within consent limits	Optimiser controlled least cost operation	Prioritise sources in following order: 1. River supplies 2. Aquifer (remain above 2.3m at McEwan Park) 3. Macaskill Lakes	Prioritise sources in following order: 1. River supplies 2. Aquifer (may operate in discretionary range if approved by GWRC) 3. Macaskill Lakes	Prioritise sources in following order: 1. River supplies 2. Aquifer (may operate in discretionary range if approved by GWRC) 3. Macaskill Lakes If required operate network to prioritise supply to identified critical zones.
	Supply augmentation and/or emergency water take	Not required	Not required	Prepare to implement	Implement supply augmentation and/or emergency water take (if required and practicable)
Demand management	Residential	Routine restrictions (daylight savings odds/evens watering)	Sprinkler and irrigation system ban	Outdoor water use ban (watering-can/bucket use only) Communications messaging informed by target: 4 min showers, no more than 3 loads washing per person per week	Outdoor water use ban (watering can/bucket use only – unless advised otherwise by public notification) Communication messaging informed by target: 2 min showers, 1 load washing per person per week, flush for No. 2's only

Mitigation type	Action	Level 1	Level 2	Level 3	Level 4 – Incident or emergency
	Non-residential	Not applicable	Not applicable	Follow non-residential restriction guidelines to conserve water as much as practicable (refer Table 6-3)	Conserve water as much as practicable. May include a ban on all non-essential water use if required to prevent shortfall.
Communications		Routine water conservation campaign	Increase messaging to communicate restriction level and need to conserve water to prevent restrictions increasing	Increase messaging to communicate restriction level and need to conserve water to prevent emergency	Increase messaging to communicate highest restriction level

7 Post-drought actions

This section describes how we identify the end of a drought, and how the post-drought review process will be used to inform future drought management.

7.1 Identifying the end of a drought

A return to normal Level 1 conditions occurs when there has been sufficient rainfall to saturate the catchments, increase base flows in the rivers and generate an increasing trend in aquifer and lake storage. This usually occurs in March however can occasionally extend into April or May. Identifying the end of a drought is usually not ambiguous and is characterised by a return to normal weekly rainfall patterns. The Wellington metropolitan area has not experienced the multi-year droughts common in some parts of the world (e.g. Australia).

When the risk returns to Level 1, restrictions are typically lifted in one step with immediate effect – rather than stepping down risk levels incrementally.

7.2 Annual and post-event reviews

The WSRMG will complete an annual review at the end of each summer and/or a post-event review within 3 months of returning to risk Level 1. The purpose of these reviews is to assess the effectiveness of the WSRMP processes and build on lessons learnt. The agenda for the annual/post-event review includes the following:

1. Summary of key events
2. What worked well and what were the issues?
    - Risk indicators and dashboard – did we get the right signals?
    - WSRMG – did we have the right composition and were roles clear?
    - Were processes followed and were they adequate?
    - Interventions (supply management, restrictions, community engagement) – how effective were they?
3. Communications – were internal/external communications timely and appropriate?
4. WSRMG meeting frequency and standing agenda (refer Section 5.3.2) – could this be improved?
5. Lessons learnt from droughts in other areas
6. Looking ahead
    - What are we expecting next summer?
    - What can we do over winter to prepare?
    - When will be the WSRMG meet next?
7. Recommendations for improvements

Any recommendations for improvements to the WSRMP will be reviewed by the Water Shortage Risk Management Group and either implemented through operational processes or added to the improvement plan (refer Section 8.2).

If the event resulted in an incident being declared, then the EMT will determine if the Post Event Response Team (PERT) should be convened. If PERT is convened, then PERT will assume responsibility for completing the post-event review. Additional functions of PERT include identifying

short/long term options to resolve issues and maintain appropriate stakeholder communication during the review.

7.3 Record of water use restrictions

A record of water use restrictions is maintained as shown in Table 10 which includes detailed information on the implementation dates of water use restrictions, the specific restrictions imposed, and any adjustments made over time. Prior to 2007/08 there had not been a sprinkler or irrigation ban since 1985.

Table 7-1. Record of water use restrictions

Start	End	Restriction Level	FY Ending	Duration (days)	Responses taken, Lead time, and Comments
26/02/2008	9/04/2008	2	2008	43	
9/03/2013	16/03/2013	2	2013	7	Second year of lake remedial work
16/03/2013	9/04/2013	3	2013	24	Second year of lake remedial work, Kaitoke 400L/s consent utilised, WCC elected to turn off turf irrigation
7/03/2015	7/04/2015	2	2015	31	
30/11/2017	9/02/2018	2	2018	71	
14/02/2020	31/03/2020	2	2020	46	Initially ban reduced demand by around 10ML/d, rain on 17 and 18 Feb brought down demand by a further 10ML/d, rain and Covid-19 lockdown from 25 March saw demand drop significantly
13/02/2021	13/04/2021	2	2021	59	
22/01/2022	4/03/2022	2	2022	41	Very heavy rain in middle of summer including ex-tropical cyclone Dovi around 13 Feb 2022
26/01/2023	27/02/2023	2	2023	32	Lead time was 7 days to implement: Network/Hydrant Flushing Stopped, Sprinkler/Irrigation Ban, Water Patrols Cyclone Gabrielle caused heavy rain in middle of Feb
17/01/2024	8/05/2024	2	2024	112	Lead time was 7 days to implement: Network/Hydrant Flushing Stopped, Sprinkler/Irrigation Ban, Water Patrols Dry weather persisted through April
8/05/2024	15/05/2024	1	2024	7	L1 extended beyond normal daylight savings period to provide a gradual return to normal

8 Continuous improvement

This WSRMP is a living document, updated on an ongoing basis as new information becomes available. Updates and recommended improvements that are highlighted during the annual/post-event review and by the Post Event Response Team (PERT) should be incorporated throughout the document. Improvements that require scheduling for resource or timing considerations are described below and summarised in the Improvement Plan.

8.1 Areas for improvement

A review of this WSRMP was completed by Connect Water as part of the development of this WSRMP in 2022. This section identified the gaps and areas of improvement to inform an action plan for Wellington Water. The following points summarise the recommended areas for improvement:

8.1.1 Level of Service

The adequacy of the existing 1 in 50 year Level of Service (LoS) for water shortage risk was reviewed and although the 1 in 50 year Level of Service is maintained, the models as noted in the updated Section 5.2, can be analysed for higher levels of service (such as the 1 in 100 year LoS which is on the dashboard). While the modelled LoS assumes normal (unrestricted) demand continues until shortfall occurs, in practice restrictions are applied progressively to prevent shortfall. Risk management interventions aim to mitigate the possibility that the current event may be more severe than the design LoS.

Other water utilities tend to operate to higher Levels of Service for water shortage risk. For example, Watercare states a Level of Service equivalent to 1 in 200 years, water companies in the UK are required to move to a 1 in 500 year drought standard by 2038 and water utilities in South East Queensland are required to meet a (restricted) customer Level of Service in a 1 in 10,000 year drought event.

The adequacy of the existing drought standard was reviewed as well as the expected frequency, duration and severity of water use restrictions. A record of water restrictions was added to Section 7.3 showing the frequency, duration, and severity of water use restrictions historically.

A communication plan was developed to support consultation with the community about the risks and uncertainties regarding customer standards and customer expectations.

8.1.2 Active leakage control

It is acknowledged that the existing level of resourcing and organisational capacity for leak location and repair is insufficient to meet optimum performance expectations. Continued effort is maintained to reduce the leaks with reported leaks being triaged and assessed. There has been a large number of leaks resolved in 2024, with the number of active leaks reducing to approximately 1,078 in February 2025.

There is a continued need to be able to reprioritise resources and increase performance further during drought periods which requires sufficient funding to achieve this . Leakage performance targets are updated annually and included in our advice supporting the next investment period.

8.1.3 Water use restrictions and exemptions

This WSRMP identifies guidelines for non-residential water restrictions under risk levels 3 and 4. Non- residential customers will be encouraged to follow these guidelines as the risk level increases.

Work has been undertaken to improve and formalise the process for non-residential water restrictions as per the Non-Residential Water Efficiency Programme. Work is continued to develop a better understanding of non-residential opportunities for water demand reduction and how effect can be given to these.

Further development of these guidelines is recommended including consultation with affected parties to explore if they can be elevated to mandatory restrictions.

It is important to identify situations where exemptions to water use restrictions are appropriate. This could be through a combination of automatic exemptions for special categories of water use, or for companies that commit to work in accordance with industry standards that include sustainable water use and/or through a system to issue permits on a case-by-case basis.

8.1.4 Non-potable water sources

In some cases, it might be possible to provide sources of non-potable water so businesses can continue to operate during periods of restrictions. For example, non-potable water could be used for dust suppression at construction sites.

Some work has been undertaken in 2023 to identify alternative water sources for construction. However, further work will be undertaken to investigate the potential use of non-potable water sources be investigated to improve understanding of constraints and opportunities.

8.1.5 Network operations and maintenance

During a drought and when restrictions are imposed, it is important that customers see that Wellington Water is also using water efficiently. Key areas are covered in Section 6.1, however there is a lack of sufficient detail to ensure a consistent approach is applied. Lead times for implementation of water patrols have been added to Section 6.1.

It is recommended that additional detail is developed around how operational practices are changed as the risk level increases. This includes prioritising leak repairs, hydrant testing/network flushing, water patrols and supply management actions.

8.1.6 Emergency response planning

It is noted that a severe drought can become an incident and require management through the Emergency Operations Centre (refer Section 5.3.3). The existing emergency response procedure for this type is as per the Emergency Response Procedure – Loss of Water Supply.

8.1.7 Ongoing improvements

Annual reviews of the WSRMP document are undertaken by the Water Shortage Risk Management Group (WSRMG) which includes reflections on the past summer. Updates to this WSRMP and recommendations for improvement are incorporated as necessary.

Similarly if an incident occurs as the result of a drought, the Post Event Response Team (PERT) should complete a post-drought review as outlined in Section 7.2. Recommendations for improvements to the WSRMP will be reviewed by the Water Shortage Risk Management Group and either implemented immediately or added to the improvement plan in Section 8.2.

Connect Water reviewed and compared the drought response of other water utilities to inform development of this WSRMP (2022) based on the reports listed below[10].

- Recommendations of the Aurecon review of Watercare
- UK Water Industry Research – Managing through drought: code of practice and guidance for water companies on water use restrictions – 2013 (incorporating lessons from the 2011 – 12 drought)
- Water conservation in Greater Sydney

As part of the annual/post-drought review, the WSRMG will keep up to date on lessons learnt from other drought events.

[10] Connect Water technical memo: Drought Management Plan Review and Transferrable Lessons (Wellington Water ref: ACT77-877899820-249)

8.2 Improvement plan

Table 8-1 summarises the improvement opportunities that have been identified and the current status of each improvement item.

Table 8-1 Improvement plan review

Improvement area	Description	Status
Ongoing Improvements		
Annual/post-drought review	Various recommendations from the most recent Annual/post-drought review (refer WSRMG minutes).	WSRMP revised from the annual/post-drought review. Implement improvements before the next summer using existing operational resources and WSRMG oversight.
Active leakage control	Improve leak location and repair capability. Also develop additional capacity so that resources can be reprioritised to increase leak management performance during a drought.	Leak location and repair improved but requires ongoing investment as noted in Section 8.1.2.
Level of Service	Review adequacy of the existing drought resilience level of service and include description of the expected frequency, duration and severity of water use restrictions.	Updated as noted in Section 8.1.1 but ongoing consideration.
Non-residential water restrictions rebates and exemptions	Develop non-residential water restriction rebates and exemptions in relation to the risk levels 3 and 4 guidelines for non-residential water restrictions.	Work ongoing to improve and formalise the process for non-residential water restrictions as per the Non-Residential Water Efficiency Programme.
Non-potable water sources	Investigate the feasibility of making non-potable water available during drought events (e.g. for dust suppression).	Some work has been undertaken in 2023 to identify alternative water sources for construction. Planned for 2025/26.
Network operations and maintenance	Develop additional detail covering how operational practices are changed as the risk level increases. This includes prioritising leak repairs, hydrant testing/flushing, water patrols and supply management actions.	Updates to WSRMP as per Section 6.1.
Consultation with the community	A number of these improvements and opportunities require consultation and engagement with the community. This should be carried out in a coherent and structured way.	Enhanced community engagement and conservation messaging as per Section 6.3.1.
Completed Improvements		
Communicating risk and uncertainty	Develop a plan of how best to communicate levels of risk to the community.	Comms plan for acute and water restrictions completed and approved.
Emergency response planning	Review and update the emergency response procedure relating to a severe drought.	Emergency Response Procedure – Loss of Water Supply updated

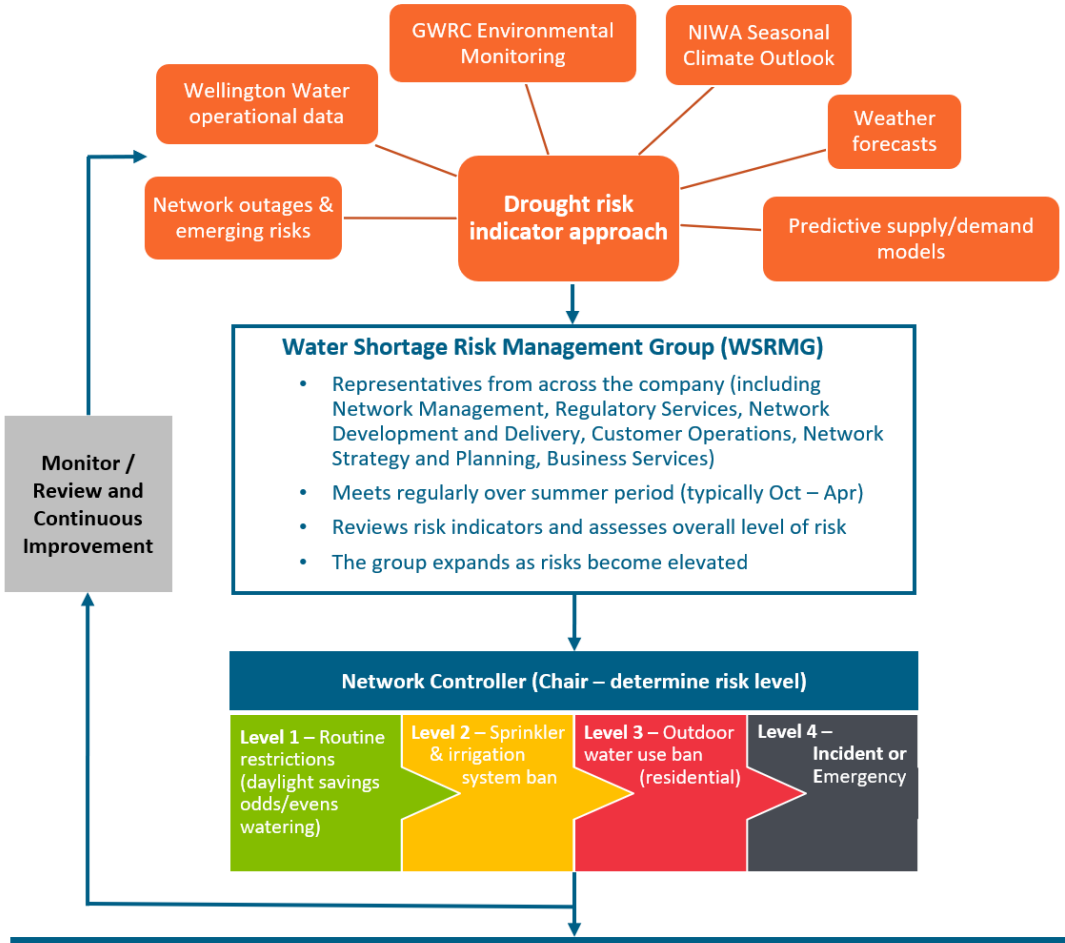
Annual/post-drought review	Various recommendations from the most recent Annual/post-drought review (refer WSRMG minutes).	Revision I of the Water Shortage Risk Management Plan

Appendix A: Water Shortage Risk Management Plan Process Overview

Wellington Water

Water Shortage Risk Management Plan Process Overview

An overview of the risk management framework used to manage water shortage risks



Actions/Responsibilities when risk level changes

Network Controller	Marketing, Communications and Engagement Advisor	Senior Production Controller	Head of Treatment Planning	Head of Risk and Assurance (or Incident Controller)	Chief Risk and Compliance Officer
Request Councils impose restrictions through Bylaw provisions. Notify SLT, councilors, and client council representatives.	External communications (media release and update internal and external comms channels).	Implement water treatment plant supply strategy to optimise network performance for drought resilience.	Communicate with GWRC Consents if required (e.g. aquifer discretionary use).	Monitor level of risk. If required an incident will be declared and the Emergency Operations Centre will be established.	Communicate with Taumata Arowai and GWRC if regulatory compliance may be compromised

Updated 31 January 2025

(Wellington Water ref: ACT0-1483891610-92).

Appendix B : Guideline for discretionary abstraction from the Waiwhetu aquifer

REFER WELLINGTON WATER REF FOR FULL DOCUMENT WITH APPENDICIES

(Wellington Water ref: ACT26-1350569271-1078).

Guideline for discretionary abstraction from the Waiwhetu aquifer Version 7: 5/11/2020

Purpose

This guideline describes the process that Wellington Water and Greater Wellington Regional Council expect to follow for operation of the Waiwhetu aquifer in the range 2.0-2.3m measured at the Petone/Seaview foreshore (referred to as the 'discretionary range'). Operation in this range is provided for in condition No. 8 of consent WGN970036 [33820 and 33821]. The intent of this condition is to manage saltwater intrusion risks. The condition states:

> 8.[3] If the 24 hour mean groundwater level at McEwan Park (site number 1428009) water level monitoring station, or any other official Wellington Regional Council water level monitoring station in the Petone and Seaview areas, is less than +2.3m relative to mean sea level, the permit holder may only abstract water at the discretion of the Manager, Consents Management, Wellington Regional Council. The permit holder shall notify the Manager, Consents Management immediately if the 24 hour mean 2.3m level is reached.

The purpose of this guideline is to improve clarity and decision-making efficiency when operation of the aquifer in the discretionary range is needed to maintain supply to the Wellington metropolitan area. This guideline does not cover all possibilities and does not commit Greater Wellington Regional Council or Wellington Water to any actions or timeframes.

Situations where discretionary abstraction may be required

Wellington Water aims to provide a safe water supply, minimise impacts on the environment and provide resilient networks to support the community. Loss of supply exposes the community to significant public health risks, so all practicable steps are taken to prevent this occurring. A risk management framework is used to assess the overall risk of supply shortfall and trigger appropriate interventions including demand management (refer ATTACHMENT 1). As the risk level increases there is a progressive increase in requirement for the community to reduce demand. This is achieved through water use restrictions and reinforced by community engagement (media releases, marketing, etc). The risk levels are:

Level 1 - Routine restrictions (daylight savings odds/evens watering)

Level 2 - Sprinkler & irrigation system ban

Level 3 - Outdoor water use ban (domestic only or total)

Level 4 - Emergency consents and rationing

The situations where discretionary use of the aquifer may be required and the approach to demand management is described in Table 1.

Table 1 Approach to demand management

Situation	Approach
1. Significant drought	Request discretionary use in combination with Level 3 restrictions (i.e. at least domestic outdoor water use ban).
2. Water shortage combined with significant community wide issue (e.g. pandemic lock-down, natural disaster, etc)	Request discretionary use with Level 2 restrictions (i.e. sprinkler and irrigation system ban) to prevent a more significant supply shortage occurring during a heightened level of community stress.
3. Major network outage or impairment	Consider on a case by case basis.

Moving to a domestic outdoor water use ban during a drought is a major step for Wellington Water and the community because the impacts are significant (i.e. gardens may die). This is considered an appropriate safeguard to ensure that discretionary abstraction is not over-used, and is only sought when there is a genuine need to protect the community water supply.

Discretionary abstraction from the aquifer also fits within a context of multiple sources of water used to meet system demand. During a drought when there is increased risk of supply shortfall, water sources will be prioritised in the following order:

i. Run-of-river surface water (maximise within consent limits)
ii. Waiwhetu aquifer (above 2.3m if possible, then discretionary)
iii. Macaskill Lakes (minimise use)

The above approach to prioritising sources aims to meet demand by fully utilising river sources and minimising use of Macaskill lake storage. The duration of a drought cannot be predicted so any lake storage used cannot be recovered until after the drought has ended. Preserving lake storage is therefore critical to preventing a more serious situation occurring.

Activation of the Community Infrastructure Resilience (CIR) network has not been considered here. CIR would only be available in an emergency situation which is beyond the scope of this guideline.

Saline Intrusion Risk Management Framework and HAMT

As aquifer pressures reduce, the risk of saline intrusion from the offshore part of the aquifer increases. Aquifer pressures are actively managed by Wellington Water through abstraction rate adjustment to meet consent requirements.

To address the need for greater clarity of expectations when operating the aquifer in the discretionary range, Greater Wellington Regional Council has prepared a saline intrusion risk management framework (refer ATTACHMENT 2). The framework describes risk indicators and required responses for both GWRC and Wellington Water. While compliance with the requirements of the framework is not mandatory, it represents mutually agreed good practice. Implementation of the framework is the responsibility of the **Hutt Aquifer Management Team (HAMT)** which has a key advisory, technical and science oversight function.

Information to be provided by Wellington Water

Wellington Water will work together with Greater Wellington Regional Council to implement the requirements of the Waihwetu Aquifer Saline Intrusion Risk Management framework.

Table 2 Information to be provided by Wellington Water summarises the information and supporting reports that will be provided by Wellington Water to the Greater Wellington Regional Council resource consent compliance officer as part of any request to abstract water from the Waiwhetu aquifer in the range 2.3-2.0m (measured at the Petone/Seaview foreshore).

Table 2 Information to be provided by Wellington Water

Information	Comment
1. Resource consent	Water permit WGN970036 [33820 – Waterloo, 33821 – Gear Island].
2. Request	Wellington Water requests permission from the Manager, Consents Management at Wellington Regional Council to abstract water from the Waiwhetu aquifer in the range 2.3-2.0m (measured at the Petone/Seaview foreshore). It is expected that this will be needed for a period of up to [insert timeframe] weeks. Note: this is permitted only at the discretion of the Manager, Consents Management (condition 8 of the resource consent).
3. Summer Demand Risk Assessment Report with the following. 3.1. Situation summary with overall level of risk 3.2. Water demand trend 3.3. Trends showing water available from all sources (Hutt, Wainuiomata/Orongorongo, Waiwhetu aquifer, Macaskill Lakes) 3.4. Description of network outages and emerging risks	Wellington Water to attach report. Additional commentary provided here if needed.
4. Hutt Aquifer Saline Intrusion Risk Management Report (prepared by the HAMT) containing the following. 4.1. Groundwater levels (foreshore and Taita Intermediate) 4.2. Onshore and offshore hydraulic gradients 4.3. Conductivity results 4.4. Water quality laboratory analyses	Wellington Water to attach report. Additional commentary provided here if needed.

4.5. Abstraction trends from Waterloo and Gear Island 4.6. Flow in the Hutt River at Taita Gorge 4.7. HADC model foreshore aquifer level predictions	
5. Water use restrictions in place and any changes expected.	Wellington Water to provide commentary.
6. Community engagement completed (type and frequency) and any changes expected.	Wellington Water to provide commentary.
7. What are the alternatives to operating the aquifer in the discretionary range and associated consequences (e.g. increase marketing to further reduce demand, use more lake storage with increased likelihood of a severe shortage if the drought continues, increase to total outdoor water use ban with impact on commercial businesses, increase to risk level 4 – water supply emergency notified to Regional Public Health and Territorial Authorities, etc)?	Wellington Water to provide commentary.
8. Is restriction of other users of the aquifer needed to protect the public supply? Note: there is a condition on all water permits in Lower Hutt which states there could be rostering or a requirement to reduce or cease their take if GWRC directs them to when the aquifer reaches 2.3m.	Wellington Water to provide commentary.
9. The requested timeframe for implementation (likely to be around 3 days)?	Wellington Water to provide commentary.
10. Recommendation from GWRC Environmental Science (supported by HAMT)	GWRC Environmental Science recommendation to Environmental Regulation.
11. Decision from Manager, Consents Management, Wellington Regional Council	GWRC Decision: abstraction from the Waiwhetu aquifer at foreshore levels of 2.3-2.0m for a period of up to [insert timeframe] weeks **is/is not** approved. Include additional requirements if necessary.

Considerations for Greater Wellington Regional Council

Greater Wellington Regional Council will manage the risk of aquifer saline intrusion using the conditions imposed in resource consents and the supported by the Waihwetu Aquifer Saline Intrusion Risk Management framework. A request by Wellington Water to operate the aquifer in the discretionary range will be compared against the requirements of the framework.

The HAMT will be convened and administered by GWRC to provide technical/science oversight and advice to support decision-making as necessary. It will comprise operational, technical and regulatory representatives from Wellington Water and GWRC. HAMT will be chaired by GWRC, and members will be confirmed annually prior to November. The scope and size of HAMT and the frequency of meetings will be scaled as needed depending on the issues to be addressed. External specialist advisors will be added to HAMT if/when required.

Appendix C : Water restriction communication graphics

Appendix D: Water restriction FAQs

Water Restriction Frequently Asked Questions (FAQs)

FAQ	1. Alternate day watering	2. Sprinkler and irrigation system ban	3. Outdoor water use ban (watering-can/bucket use only)	4. Incident or Emergency
Can I still water my garden?	Yes you can, but only every other day. If you live in an even numbered house, you can use sprinklers or irrigation systems only on even numbered days between 6-8am and 7-9pm. If you live in an odd numbered house, the same rules apply for odd numbered days. You can use handheld watering devices any time, on any day, so long as you don't leave them unattended.	Yes, you can still water your garden using a handheld device only, any time of day, so long as you don't leave it unattended. At Level 2 there is a ban on sprinklers and irrigation systems.	Yes, but only if you use a watering can or bucket and water by hand.	Yes unless advised otherwise by public notification, and then only if you use a watering can or bucket and water by hand.
Can I still wash my car?	Yes you can, — we recommend washing your car using a bucket and a trigger nozzle on a hose on the lawn so that any run-off is absorbed into the ground.	Yes you can, — we recommend washing your car using a bucket and a trigger nozzle on a hose on the lawn so that any run-off is absorbed into the ground.	No, unless you use water collected from your bath or shower and wash by hand.	No.
My neighbour is using their sprinkler – should they be?	Only if it is between 6-8am and 7-9pm, on odd/even days of the month (depending on their house number).	No. If you are concerned about your neighbour's watering, you can contact your local council.	No. If you are concerned about your neighbour's watering, you can contact your local council.	No.
The bowling club/sports club/council is still watering their lawn, is that right?	Water restriction levels 1, 2 and 3 apply to residential properties only. Unless advised otherwise they do not apply to sports clubs used by the public or commercial businesses, and in this situation they are exempt. Commercial businesses are directly responsible for their water consumption, most are metered and pay for the water they use. Some golf courses and sport grounds have their own bores that they get their water from, which means they are not using mains water. Councils take steps to conserve water during summer, such as watering at night so the soil better retains the moisture. Councils want to play their part in conserving water as much as possible, but at the same time they don't want our parks and gardens to die, as it would mean that the grass would need to be re-sown. This would put winter sports at risk and incur a significant cost to ratepayers to repair community assets. If you have any concerns about unattended watering please let us know or contact your local council.	Water restriction levels 1, 2 and 3 apply to residential properties only. Unless advised otherwise they do not apply to sports clubs used by the public or commercial businesses, and in this situation they are exempt. Commercial businesses are directly responsible for their water consumption, most are metered and pay for the water they use. Some golf courses and sport grounds have their own bores that they get their water from, which means they are not using mains water. Councils take steps to conserve water during summer, such as watering at night so the soil better retains the moisture. Councils want to play their part in conserving water as much as possible, but at the same time they don't want our parks and gardens to die, as it would mean that the grass would need to be re-sown. This would put winter sports at risk and incur a significant cost to ratepayers to repair community assets. If you have any concerns about unattended watering please let us know or contact your local council.	Water restriction levels 1, 2 and 3 apply to residential properties only. Unless advised otherwise they do not apply to sports clubs used by the public or commercial businesses, and in this situation they are exempt. Commercial businesses are directly responsible for their water consumption, most are metered and pay for the water they use. Some golf courses and sport grounds have their own bores that they get their water from, which means they are not using mains water. Councils take steps to conserve water during summer, such as watering at night so the soil better retains the moisture. Councils want to play their part in conserving water as much as possible, but at the same time they don't want our parks and gardens to die, as it would mean that the grass would need to be re-sown. This would put winter sports at risk and incur a significant cost to ratepayers to repair community assets. If you have any concerns about unattended watering please let us know or contact your local council.	In an extreme drought emergency there may be water restrictions for non-residential consumption. This is to make sure there is enough water to sustain human health and maintain essential services. The specific activities to be restricted will depend on the amount of water available at the time and will be advised by public notification.

FAQ	1. Alternate day watering	2. Sprinkler and irrigation system ban	3. Outdoor water use ban (watering-can/bucket use only)	4. Incident or Emergency
My business relies on outdoor water use (house cleaners, nurseries etc.), what can I do?	You can continue to operate as normal, however we ask that you are pragmatic and responsible when watering.	You can continue to operate as normal, however we ask that you are pragmatic and responsible when watering.	Unless advised otherwise you can continue to operate, however we ask that you keep water use to a minimum. Any exterior cleaning is to be carried out in accordance with the Exterior Cleaning Industry Association Code of Practice.	In an extreme drought emergency there will be water restrictions for non-residential purposes. This is to make sure there is enough water to sustain human health and maintain essential services. The specific activities to be restricted will depend on the amount of water available at the time and will be advised by public notification.
Why are there restrictions when we've had so much rain?	There are a number of reasons why outdoor water restrictions are in place. Demand for water during daylight saving months increases, as people use more water outdoors in their gardens. The warmer, drier conditions also means that river levels drop and supply from rivers goes down. There are a limited number of reservoirs in the metropolitan Wellington region (and we have two storage lakes at Te Marua), and once these are full it doesn't matter how much it rains during winter they cannot collect any more water. This stored water needs to last the whole summer. There may be necessary repair or upgrade work being done to some of our treatment plants to make sure we are able to supply safe drinking-water that can also impact on supply availability. Outdoor water restrictions are in place across Wellington, Lower Hutt and Porirua during daylight saving months, and all year round for Upper Hutt and South Wairarapa, to help conserve water in preparation for the peak of Summer, when we normally need to use water from the storage lakes (typically late Jan/Feb/March, and into April).	There are a number of reasons why outdoor water restrictions are in place. Demand for water during daylight saving months increases, as people use more water outdoors in their gardens. The warmer, drier conditions also means that river levels drop and supply from rivers goes down. There are a limited number of reservoirs in the metropolitan Wellington region (and we have two storage lakes at Te Marua), and once these are full it doesn't matter how much it rains during winter they cannot collect any more water. This stored water needs to last the whole summer. There may be necessary repair or upgrade work being done to some of our treatment plants to make sure we are able to supply safe drinking-water that can also impact on supply availability. Outdoor water restrictions are in place across Wellington, Lower Hutt and Porirua during daylight saving months, and all year round for Upper Hutt and South Wairarapa, to help conserve water in preparation for the peak of Summer, when we normally need to use water from the storage lakes (typically late Jan/Feb/March, and into April).	There are a number of reasons why outdoor water restrictions are in place. Demand for water during daylight saving months increases, as people use more water outdoors in their gardens. The warmer, drier conditions also means that river levels drop and supply from rivers goes down. There are a limited number of reservoirs in the metropolitan Wellington region (and we have two storage lakes at Te Marua), and once these are full it doesn't matter how much it rains during winter they cannot collect any more water. This stored water needs to last the whole summer. There may be necessary repair or upgrade work being done to some of our treatment plants to make sure we are able to supply safe drinking-water that can also impact on supply availability. Outdoor water restrictions are in place across Wellington, Lower Hutt and Porirua during daylight saving months, and all year round for Upper Hutt and South Wairarapa, to help conserve water in preparation for the peak of Summer, when we normally need to use water from the storage lakes (typically late Jan/Feb/March, and into April).	This situation is unlikely to occur unless we experience an extreme drought or a significant failure in the water supply system (e.g. unplanned water treatment plant outage).
Can the kids still play in the sprinkler?	Only between 6-8am or 7-9pm, on odd/even days of the month (depending on their house number).	No. Sprinkler use is banned. But you can spray them with a handheld hose – preferably using a trigger nozzle. Use of water balloons is also ok.	No. Sprinkler and hose use is banned.	No.

FAQ	1. Alternate day watering	2. Sprinkler and irrigation system ban	3. Outdoor water use ban (watering-can/bucket use only)	4. Incident or Emergency
Can I still fill my pool?	Yes.	Yes, but you must be holding the hose as it fills the pool – any unattended water use is not permitted. We ask that people are as pragmatic and responsible as possible and consider using public pools as an alternative.	No.	No.
Can I still waterblast my own home?	Yes.	Yes – assuming you are holding the waterblaster.	No.	No.
What are some other ways that I can water my garden?	You can water you garden with water collected from your bath or shower.	You can water you garden with water collected from your bath or shower.	You can water you garden with water collected from your bath or shower.	You can water you garden with water collected from your bath or shower.

Appendix E : Risk Indicator Dashboard

The live risk indicator dashboard is maintained in the Infrastructure Data reporting system.

Wellington Water ref: (e.g. for 2024/25 summer):
https://app.infrastructuredata.nz/WTD/Dashboards/2135?from=2024-10-01%2000:00&to=2025-05-01%2000:00

Example risk assessment dashboard

Example risk assessment dashboard (ctd)

Infrastructure Data

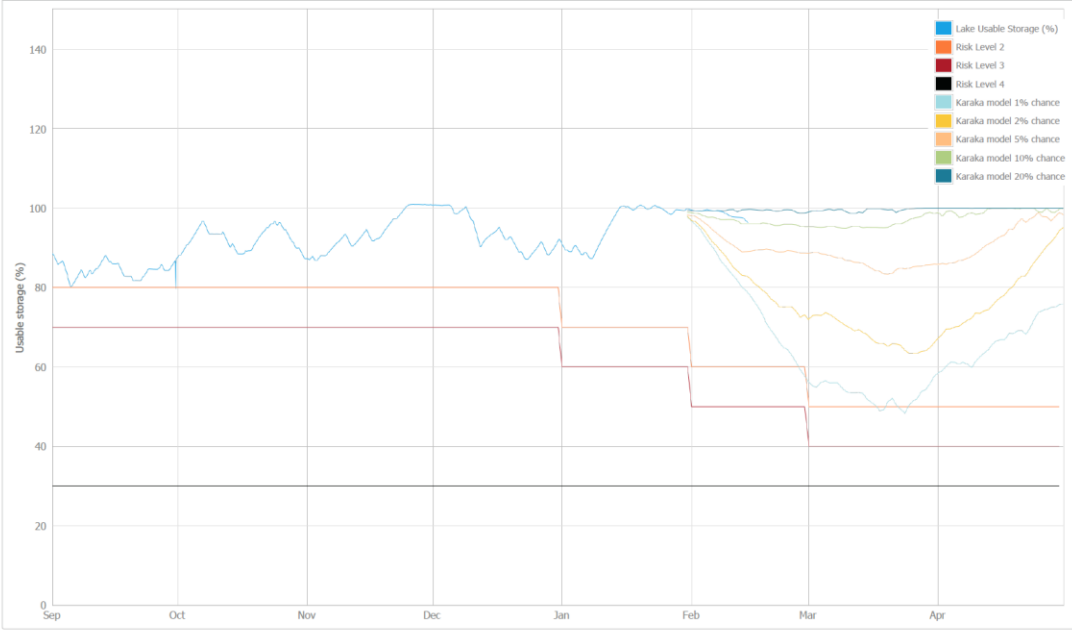
Wellington Water

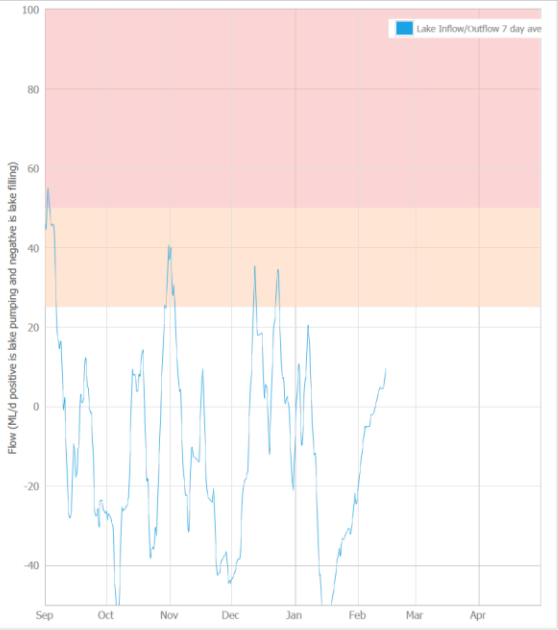
WW - Overview
Drought Management Plan - Wellington dashboard

Wellington Water
Page 2 of 3

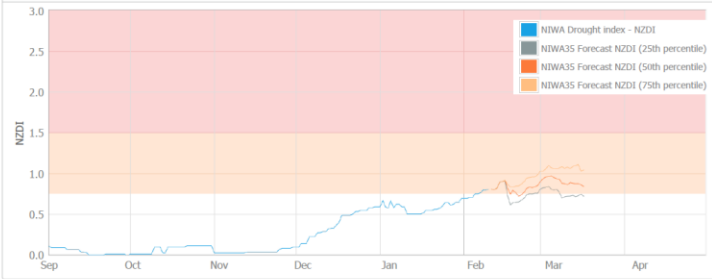
Covers the period of 01/09/2024 to 01/05/2025

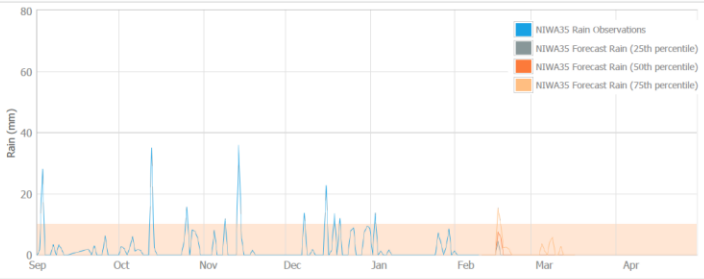
Macaskill Lake Storage and Karaka Model Prediction





NIWA Drought Index and sub-seasonal forecast for Lower Hutt





Link to NIWA Drought Forecasting Dashboard:
https://shiny.niwa.co.nz/drought-forecast/

Example risk assessment dashboard (ctd)

Infrastructure Data

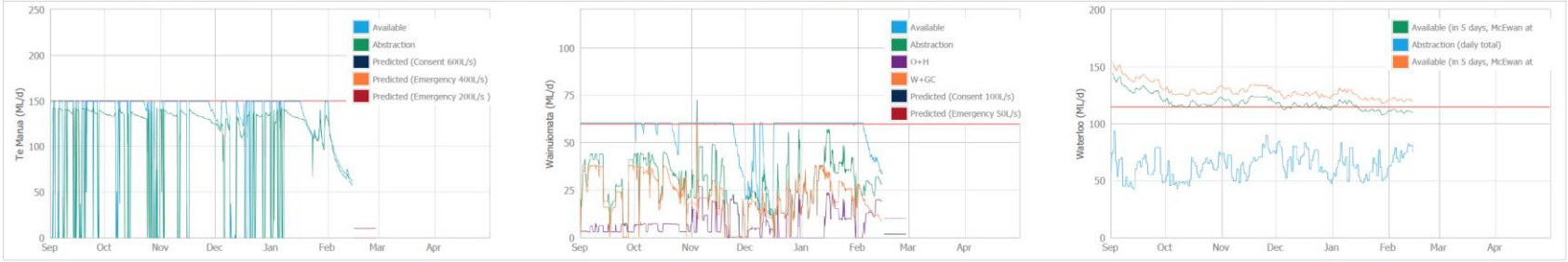
Wellington Water

WW - Overview
Drought Management Plan - Wellington dashboard

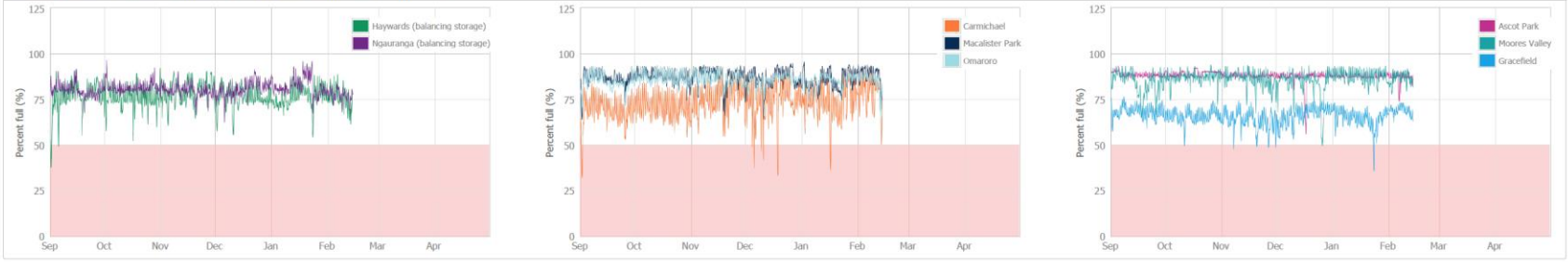
Wellington Water
Page 3 of 3

Covers the period of 01/09/2024 to 01/05/2025

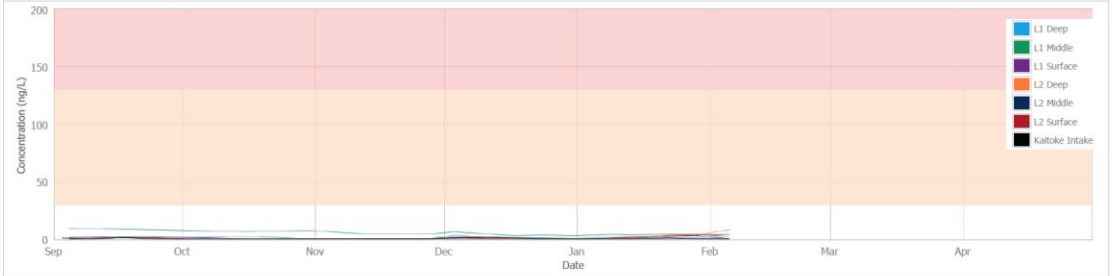
Source Availability and Model Prediction (assuming no rain) - PREDICTIONS BASSED ON RECESSION CURVES ARE UNDER CURRENTLY CONSTRUCTION



Indicator reservoir levels (initiate further investigaton if required)



Te Marua Lake Quality: Geosmin



Lake Quality Thresholds

Geosmin Levels
Geosmin is an aesthetic issue which can cause taste and odour complaints.
Te Marua WTP can treat approximately 30ng/L while still producing adequately.
If concentrations across the lake levels are too high then current protocol is to take the lakes offline, flush them out at affected level, and refill from the river again.
Due to lake size concentrations change dramatically vertically, thus it is possible to adequately use lake water from sections of lower concentrations of geosmin.

Appendix F : Water Restriction Exemptions (under development)

The Tables below outline the restriction levels implemented throughout a drought and example exemptions that may be developed further by Wellington Water. This table is under development and is not currently used during restriction periods. All text regarding example exemptions is based on UK best practice and require interpretation before being applied to the Wellington context.

Restriction level	Description	Summary of potential exemptions for consideration and consultation with the community
No restrictions	No restrictions implemented	None required
Level 1	Alternate day watering implemented	None required
Level 2	Sprinkler and irrigation system ban. Including irrigation systems and unattended hosepipes.	At Level 2 outdoor watering is permitted by hand (i.e. with a hosepipe or watering can). Potential cases for exemption include: On the grounds of disability. Use of approved drip or trickle irrigation systems that are fitted with pressure reducing valve (PRV) and timer. To water food crops at domestic premises or private allotments. To water newly laid turf for the first 28 days. To water newly brought plants for the first 14 days.
Level 3	Outdoor water use ban (watering-can/bucket use only)	At this stage all outdoor water use is banned for residential customers, apart from instances such as for health or safety purposes. Some restrictions may be introduced for non-residential customers, including exemptions.
Level 4 – Emergency	Refer to Emergency Response Plan	Major restrictions on all customers. Restrictions to a range of non-residential customers will be introduced.
Lifting restrictions	All restrictions are lifted	None required

Guidelines for non-residential water restrictions under risk levels 3 and 4 have been identified in Table 6-3 (Section 6.2.2). Potential exemptions to these restrictions should be developed. Some suggestions are provided, based on best practice followed by the UK water industry (UK Water Industry Research, 2013).

Non-residential Restriction Category	Potential exemptions for Wellington Water to consider	Notes
Watering of public gardens	Watering of public gardens with a very high amenity or similar values.	• Watering of public gardens may be possible with non-potable water, if this can be made available.
Watering outdoor plants and landscaping on non-residential premises	The purpose specified does not include watering plants that are: a. Grown or kept for sale or commercial use; or b. Part of a National Plant Collection or temporary garden or flower display	Other potential exemptions to consider: • Use of an approved drip or trickle irrigation system fitted with a PRV and timer • Watering newly-bought plants (potentially for a period of up to 28 days)
Filling or maintaining a non-residential swimming or paddling pool	The purpose does not include filling or maintaining a pool that: a) Is open to the public; b) Where possible necessary in the course of its construction; c) Is designed, constructed or adapted for use in the course of a programme of medical treatment; d) Is used for the purpose of decontaminating animals from infections or disease; e) Is used in the course of a programme of veterinary treatment; f) Where fish or other aquatic animals are being reared or kept in captivity; g) Is for use by pupils of a school for school swimming lessons.	Other potential exemptions to consider: • Swimming pools serving industrial training if this is considered justified • Swimming pools with covers; • Pools with religious significance; • Pools fitted with approved water conservation or recycling systems; • Pools that are subject to significant repair and renovation • Definition of a public pool, i.e. if it may only be used by paying members of an affiliated club or organisation.
Irrigation of sports grounds, playing fields and golf fairways	Potential exemptions to be considered for sports grounds and playing fields based on amenity and health and safety purposes.	• Non-potable water may be made available in order to enable sports grounds and playing fields • It may be important to continue to water sports ground to enable the grounds to be maintained and to protect the playing surfaces.

Non-residential Restriction Category	Potential exemptions for Wellington Water to consider	Notes
		• Note only the watering of golf fairways would be restricted, not greens • Sharing of best practice in terms of volumes required for watering
Cleaning of non-residential premises	a) Cleaning of any exterior part of a non-residential building or a non-residential wall for health or safety reasons b) Cleaning part of a building or structure for the removal of graffiti	Businesses which exist to clean residential or non-residential buildings using hosepipes could be exempt under a certain water efficiency threshold.
Filling or maintaining a pond, fountain, water features and outdoor aquariums (including wildlife ponds)	Potential exemptions for filling or maintaining a pond in which fish or other aquatic animals are being reared or kept in captivity.	Consider whether an exemption should be made for filling a pond using a hand-held container.
Watering of plants grown for commercial purposes (turf, nurseries, etc.)	Exemptions should be made for commercial growers who operate efficiently.	Non-potable water may be made available in order to enable the watering of plants for commercial purposes to continue.
Use of water in construction	a) Water used for the purposes of construction is exempt b) Suppressing dust where required to comply with Resource Consent conditions or for health and safety	Non-potable water may be made available for dust suppression at construction sites.
Cleaning of industrial plant	Cleaning of industrial plant using a hosepipe for health and safety reasons is exempt.	
Cleaning windows of non-domestic premises	a) Cleaning of windows using water-fed poles for window cleaning at height is permitted for health and safety purposes. b) Cleaning of windows for the removal of graffiti.	This exemption should also apply to businesses cleaning the windows of domestic premises.

Non-residential Restriction Category	Potential exemptions for Wellington Water to consider	Notes
Cleaning any vehicle, boat, aircraft or railway rolling stock (including washing of buses, taxis, food transport trucks, emergency services and garbage vehicles)	a) Cleaning vehicles for health or safety reasons b) Cleaning using low water use technologies c) For the purpose of the removal of graffiti d) For the purposes of bio-security	Consider an exemption for businesses who clean vehicles using hosepipes.
Commercial car washes (with different levels of water recycling)	a) Operating a mechanical vehicle-washer for health or safety reasons b) Operating a vehicle washer which recycle water	Vehicle washers that recycle water are likely to be more efficient than washing a vehicle by hand. Develop a minimum use / wash target that can receive an automatic exemption.
Irrigation of crops		Identify any customers which use mains water for the irrigation of crops and the potential impact of restrictions to this activity.
Cleaning hard surfaces and/or cleaning for health and safety purposes	a) Cleaning for health or safety purposes b) For the removal of graffiti	Consider a potential exemption where low water use technologies are used.

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