



Drought Management Plan

PREPARED FOR KAIPARA DISTRICT COUNCIL | SEPTEMBER 2021



Revision Schedule

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1. Introduction

Kaipara District Council (KDC) has five water supply areas; Dargaville, Maungaturoto, Ruawai, Mangawhai and Glinks Gully. Each area has its own unique arrangement of raw water sources, with most being sourced from spring fed streams or bores (aquifer), with limited water storage dam supply in Dargaville and Maungaturoto.

The supply of raw water for Dargaville, Maungaturoto and Glinks Gully is predominantly spring fed streams which are heavily influenced by seasonal weather events, particularly summer drought events, resulting in limited raw water availability during the summer period.

The supply of raw water for Ruawai and Mangawhai is sourced from bores (aquifers) and have different challenges around water quality, risk of saline intrusion and sustainable extraction rates.

This Drought Management Plan (DMP) is designed to provide indicative actions required to maintain the appropriate level of service to the community, particularly during a drought event. The availability of the raw water supply is subject to many influencing factors including long-term rain forecasts, water table levels, extraction by other users, which may cause the responses given in this guide to be accelerated or slowed down on the advice of senior Council staff.

This plan also outlines the actions to be taken once the raw water supplies reduce to levels where restrictions need to be imposed. The management of the drought response sits with the Drought Management Response Team. The Response Team will make recommendations as to the appropriate level of response and the responsibility for approving the recommendations lies with the Chief Executive.

The DMP is a live document which requires regular review and updating to ensure the actions included remain current and are applicable to the changing climatic and regulatory environments.

This DMP replaces two existing DMPs for Dargaville and Maungaturoto, and incorporates the three water supply areas; Ruawai, Mangawhai and Glinks Gully, to create a singular DMP for drought management within the district.

This DMP also aligns the use of water use restriction levels to those used within the Whangarei and Far North District Councils, providing a uniform approach to drought event management across the region. The Water Use Restriction Levels are summarised in Table 1 and their implementation is further discussed in Section 3.1.

Table 1 Water Use Restrictions Levels

Level	Water Use Restrictions Summary
Level 1	No restrictions on the use of water. Communications on using water sensibly.
Level 2	Water use restrictions in place (e.g. no sprinklers)
Level 3	Water use restrictions in place. (e.g. no hoses or sprinklers)
Level 4	Full water use restrictions in place. Council Approved Essential use only.

An overview of the five communities within Kaipara District with water supply schemes is shown Figure 1.

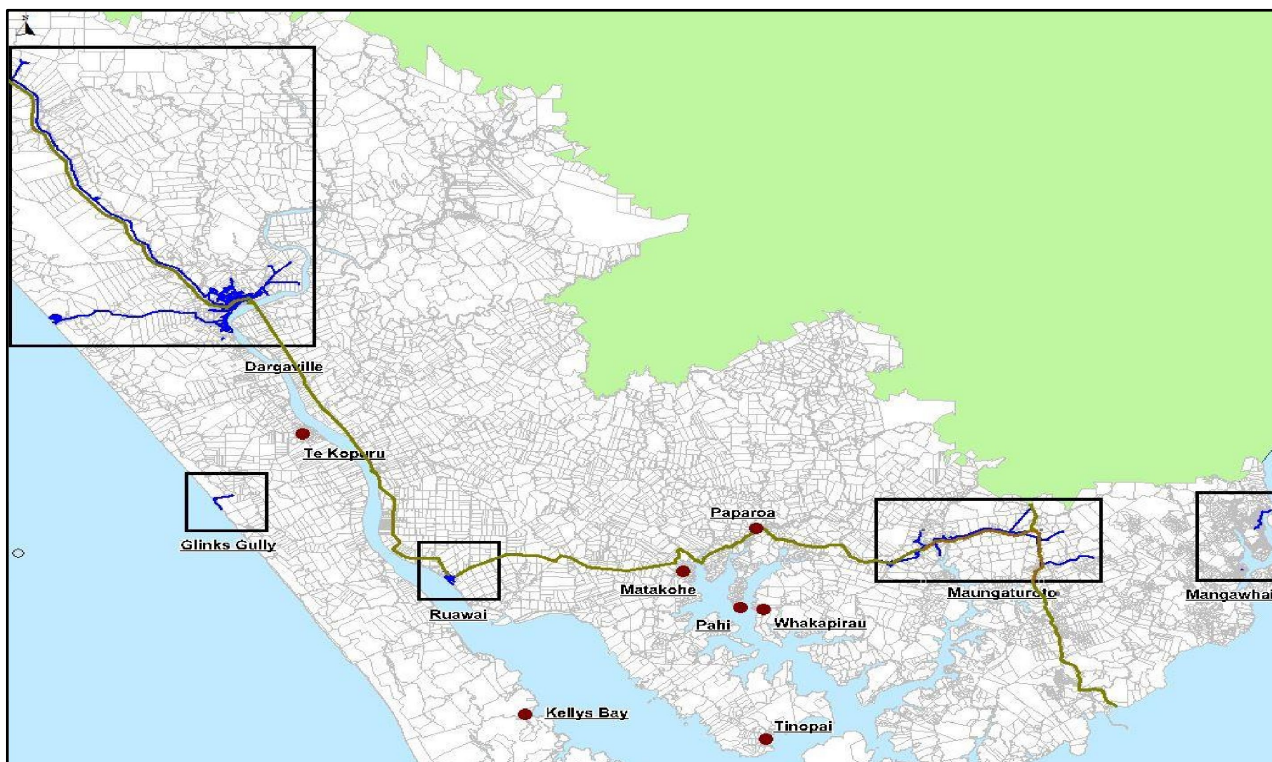


Figure 1: Location of Kaipara District Council (KDC) water supply areas

For background information on these five schemes and their consent requirements, history and current processes refer to Appendix G.

Each water supply is authorised by resource consents which govern the volume of take and pass forward flows (where applicable), which need to be maintained to manage environmental effects.

The volume / rate of take or pass forward flow consent requirements, generally form the basis of trigger points to inform the application of the water use restriction levels and corresponding restrictions. These are outlined in more detail in Section 3.

During periods of dry weather / low rainfall, river flows can drop relatively quickly, down to levels at which the consent requires the taking of water to be stopped. This may have significant adverse effects on the health and wellbeing on the public relying on those supplies for potable water use.

Historically, Water Shortage Directions (pursuant to Section 329 of the Resource Management Act 1991 (RMA)), have been requested under extreme drought conditions to manage the continuity of potable water supply under certain conditions.

Following the 2019/2020 drought and concern about the appropriateness of issuing water shortage directions to manage take limits for public water supplies, the NRC developed a memorandum of understanding (MOU) in collaboration with KDC, Far North District Council and Whangarei District Council. The MOU aims to ensure each district council's public water supply is managed during periods of low rainfall to achieve consent compliance without shutting it down or, if this is not achieved, to minimise the adverse environmental effects, and period and extent of consent non-compliance.

The MOU was signed by the CEOs of all four councils on 9 August 2021 and is attached in Appendix E

It is essential that if KDC believe that the available raw water supply volume is declining during a drought event towards a level considered to be insufficient to supply the Community, early consultation with NRC is required to explore opportunities to find alternative supplies or solutions.

2. Purpose

This plan provides indicative actions required to maintain an appropriate level of service to the community during times of water shortage / drought. It provides guidelines on appropriate management practices during such events, taking into account KDC's statutory obligation as a supplier of drinking water and resource consent holder.

The purpose of the DMP is to:

- Outline how the use of water from each of the Water Supply Areas will be regulated during periods of water shortage;
- Describe how the various raw water sources will be managed during times of water shortage;
- Identify actions that KDC will implement during periods of drought to maintain essential water services to ensure minimum health requirements; and
- Comply with existing resource consent conditions.

3. Drought Management Triggers and Restrictions

3.1. General

Water use restrictions can be considered a blunt instrument and should only be used when there are water shortage conditions. Demand management programmes, however, are ongoing and aim to continually improve the efficiency in which water is used by urban communities. Restriction rules are designed to reduce demand when water levels get low. They are temporary actions, which rely upon a reduction in discretionary demand such as outdoor water use.

3.2. Current Restrictions

The most efficient way to temporarily reduce water consumption in times of drought or water shortage is to introduce water use restrictions. Water use restrictions theoretically allow the water source to last longer under a variety of usage and drought scenarios. Under KDC's Water Supply Bylaw 2008, KDC has the legal power to determine, implement and enforce water use restrictions.

New Zealand water suppliers typically have a staged approach to water use restrictions, with the first stages involving a variety of garden watering restrictions and later stages including complete hosing bans. These restrictions target garden watering due to its high proportion of peak demands and discretionary nature during the summer months.

Typical restrictions and communications implemented by KDC in previous summers include:

- Sprinkler ban;
- Hosing ban;
- Advertisements in local papers and radio stations;
- Any leakages were responded to immediately; and
- Sign-boards placed in town.

3.3. General Restrictions

A summary of the water use restriction levels which can be applied to each of the water supply areas is included in Table 2. Detailed guidelines, including those for both residential and commercial premises, are provided in Appendix A.

Table 2: Water Use Restriction Levels

Level	Water Use Restrictions Summary
Level 1	No restrictions on the use of water. Communications on using water sensibly.
Level 2	Water use restrictions in place (e.g. no sprinklers)
Level 3	Water use restrictions in place. (e.g. no hoses, sprinklers or filling private swimming pools from mains supply)
Level 4	Full water use restrictions in place. Council Approved Essential use only.

The staged restriction approach is based on the severity of the water shortage, with each level incorporating a greater level of restriction with the aim of reducing demand.

Due to the delay that can occur between implementing restrictions and the reduction in demand, it is important that restrictions are imposed at the earliest signs that dry conditions are likely to continue and reduce the supply of raw water.

Restrictions alone will not result in any appreciable reduction in demand. Restrictions must be accompanied with a communications programme and monitoring of any restriction breaches.

It is noted that whilst restrictions will directly impact those connected to the public water supply system, there will be a consequential affect to those ratepayers on private water supplies, or those who use rainwater tanks as the sole source of water supply, or to those who are directly connected to the raw water supply pipelines.

As a drought event escalates and more severe water use restrictions are implemented, the public water supply will become less available to supply water tankers / tank fillers who would normally services these ratepayers. Consequently, the water tankers / tank fillers will be required to locate alternative water sources, potentially outside of the district, to provide continuity of service to these impacted ratepayers (and the water tankers / tank fillers customers).

Communications with affected stakeholders is outlined in the Water Use Restriction Levels and Actions tables for each water supply area in the following sections.

3.4. District Wide Restrictions

KDC can apply the above restrictions at a district wide level. The water use restriction levels are consistent with those outlined above (and detailed in each water supply areas relevant sections), however the specific flows and dates for each water supply area do not necessarily have to be met to trigger these water use restrictions.

The district wide restrictions are implemented due to a district wide mandate, where water shortage is occurring or predicted to occur through the district or region.

3.5. Dargaville Trigger Points and Restrictions

During December 2015 KDC introduced and implemented a four-stage restriction level based on three trigger points being either the:

1. Date;
2. Flow in the Kaihu River at the Gorge Recorder Site 46611; or
3. Water level at the Rotu intake.

The NRC continually monitors the flow at recorder site 46611 on the Kaihu River. River stage and flow information can be accessed here <http://www.nrc.govt.nz/Environment/River-and-rainfall-data/River-and-Rainfall-Data/>

This data is used to inform trigger point 2. Flow in the Kaihu River.

Figure 2 shows the daily average river flow at recorder site 46611 between June 2017 and May 2021 in relation to the consent limit.

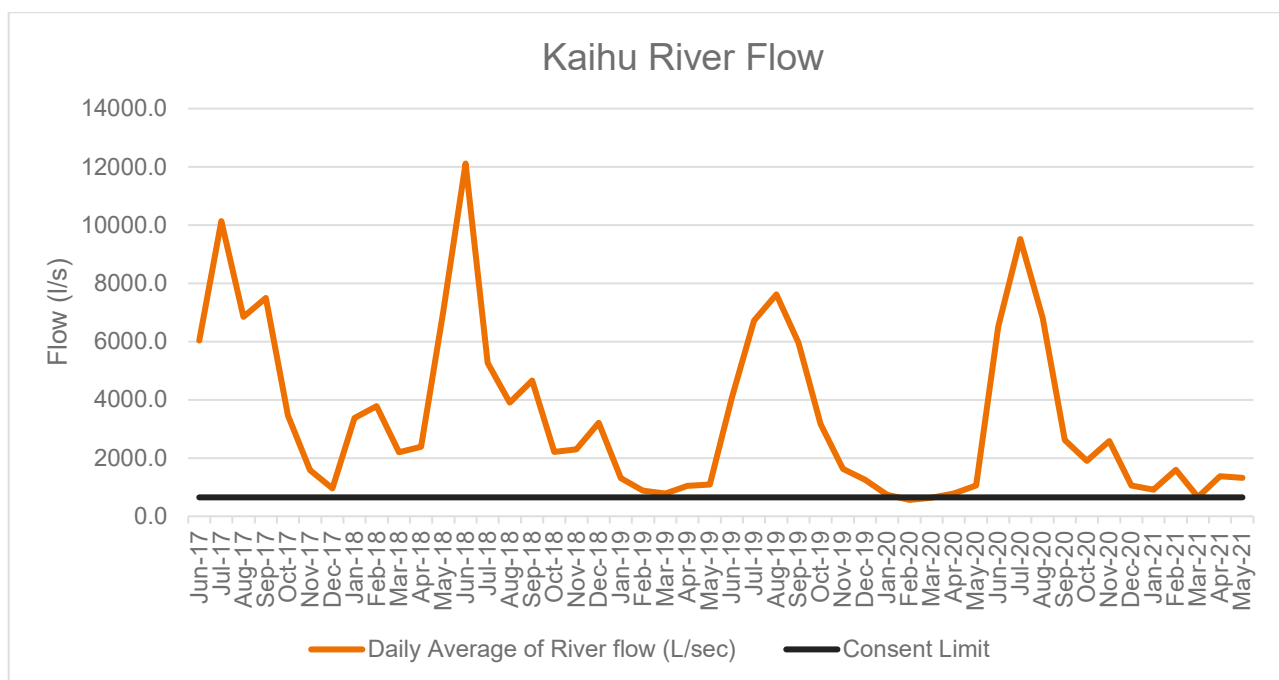


Figure 2: Kaihu River Flows at Recorder Site 46611 between June 2017 and May 2021

As expected, river flows reduce in summer conditions near to, or below the water take consent trigger value of 645 l/s, at which point, requires the releasing of water from the Waiatua dam, to enable the continued operation of the Rotu water intake. For more information on Dargaville consents and an overview of the current Dargaville water supply scheme, refer Appendix G.

The proposed trigger points, related water use restriction levels, community actions, KDC actions and KDC Communications and Operations staff actions relating to the Water Use Restriction Levels are described for Dargaville in Table 3 below.

Appendix C and D have been included to show the specific actions for KDC Communications and Operations staff that relate to each proposed Water Use Restriction Level.

Table 3: Dargaville Water Use Restriction Levels and Actions

Water Use Restriction Level	Date ¹	Flow in Kaihu River @ Gorge Recorder Site 46611	Water Level At Rotu Intake	Community Actions	KDC Communications ²	KDC Operations Staff
Business as Usual	-	> 1000 l/s	-	<ul style="list-style-type: none"> No restrictions in place Minimise losses and efficient use of water encouraged 		<ol style="list-style-type: none"> Monitor NIWA Seasonal Climate Outlook https://www.niwa.co.nz/climate/sco Monitor Kaihu River flow at Gorge Recorder Site http://www.nrc.govt.nz/Environment/River-and-rainfall-data/River-and-Rainfall-Data/ Any planned water intensive activity should be carried out at this time
1	1 Nov	< 1000 l/s	>100 mm	<ul style="list-style-type: none"> General water conservation awareness 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 1 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Advise water users of pending restrictions. 	<ol style="list-style-type: none"> Prepare to ramp up the Rotu take <ol style="list-style-type: none"> Inspect Rotu pump station - ensure pumps, valves are operational and can be brought on-line immediately Note flow meter reading Clear raw water in-take Monitor water usage at Water Treatment Plant (WTP) and dam levels on a daily basis Mamaranui booster pumpstation is managed with Rotu flows Ensure SCADA is recording WTP and Waiatua dam flows on continuous basis Notify Northland Regional Council (NRC) of Water Use Restriction Level 1 status
2		< 900 l/s	>100 mm	<ul style="list-style-type: none"> Notice to conserve water Sprinkler ban for gardens, lawns & private fields Irrigation systems ban for gardens, lawns & private fields 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 2 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper 	<ol style="list-style-type: none"> Continue to blend Waiparataniwha / Rotu takes Manage Waiparataniwha takes to maintain flow of water over weirs in compliance with condition 10 of consent AUT.030845.01.01

¹ Water Use Restriction Level 1 to start on 1 November regardless of flow in the Kaihu River.

² KDC Communications Manager is drafting templates for each of the Water Use Restriction Levels, a sample is attached under Appendix - B

Water Use Restriction Level	Date ¹	Flow in Kaihu River @ Gorge Recorder Site 46611	Water Level At Rotu Intake	Community Actions	KDC Communications ²	KDC Operations Staff
				<ul style="list-style-type: none"> No filling of public fountains from mains supply No water tanker or metered standpipes for construction water sourced from mains supply No watering of established municipal sports fields fed from mains supply 	<ul style="list-style-type: none"> b. Information boards are placed in strategic places within the community <ol style="list-style-type: none"> Media release of river levels, rainfall and dam levels <ol style="list-style-type: none"> KDC Communications Manager to publish media release Advise Silver Fern Farms / Kumara Processors of Water Use Restriction Status <ol style="list-style-type: none"> KDC Operations Engineer to communicate by email Fire Service and Rural Fire Service requested to stop practising and testing from live hydrants <ol style="list-style-type: none"> KDC Operations Engineer to contact Fire Service 	<ul style="list-style-type: none"> a. Adjust valves at raw water takes to maintain flow over weirs <ol style="list-style-type: none"> Monitor water usage at WTP and dam levels on a daily basis Backwash WTP filters Adjust Rotu Pump (one pump) as required to balance flows Monitor raw water supply at WTP Notify Northland Regional Council (NRC) of Water Use Restriction Level 2 status Water Operations Engineer to email: <ol style="list-style-type: none"> NRC Northland District Health Board (NDHB) Silver Fern Farms Kumara Processors
3		< 755 l/s)	>100 mm	<ul style="list-style-type: none"> Sprinkler ban for gardens, lawns & private fields Irrigation systems ban for gardens, lawns & private fields Hose ban for gardens, lawns & private fields, vehicle washing, building & paved area cleaning, flushing boat engines and commercial/industrial cleaning Water blasters ban for vehicle washing and building & paved area cleaning 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 3 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Media release <ol style="list-style-type: none"> KDC Communications Manager to publish media release Radio station advertising <ol style="list-style-type: none"> KDC Communications Manager to release 	<ol style="list-style-type: none"> KDC to engage with NRC to review current drought status and to assess the option to preserve water stored in the Waiatua Dam³ and to use the Ahikiwi take point⁴ Manage Waiparataniwha takes to maintain flow of water over weirs in compliance with condition 10 of consent AUT.030845.01.01 Water Operations Engineer to prepare note of all actions taken thus far as per the Drought Management Plan and send to NRC Begin road signage advertising Monitor water usage at WTP Notify Northland Regional Council (NRC) of Water Use Restriction Level 3 status

³ Condition 4 of the CON20110813401 requires water to be released from the Waiatua Dam at the same rate as water is extracted from Rotu.

⁴ KDC is proposing to apply for a consent condition change under Section 127 of the RMA to decouple the requirement to release water from the Waiatua Dam when the flow reduces below 815 l/s in the Kaihu River.

Water Use Restriction Level	Date ¹	Flow in Kaihu River @ Gorge Recorder Site 46611	Water Level At Rotu Intake	Community Actions	KDC Communications ²	KDC Operations Staff
				<ul style="list-style-type: none"> No filling of residential swimming pools / spa pools from mains supply No filling of water tanks from a registered water carrier with water sourced from mains supply No commercial vehicle washing and car washes from mains supply without water recycling Market gardens & plant nursery require an alternative water source other than council supply No filling of public fountains from mains supply No water tanker or metered standpipes for construction water No watering of established municipal sports fields fed from mains supply Silver Fern Farms to reduce water usage Kumara processors to reduce water usage 	<ol style="list-style-type: none"> Water Use Restriction Level 3 to front page of KDC website <ol style="list-style-type: none"> KDC Communications Manager to publish Request Silver Fern Farms and Kumara processors to reduce water usage <ol style="list-style-type: none"> KDC Operations Engineer to Communicate Advise car wash facility to reduce water usage <ol style="list-style-type: none"> KDC Operations Engineer to contact Advise water carriers to use alternate source <ol style="list-style-type: none"> KDC Operations Engineer to contact If the situation continues, KDC will advise commercial operations to close and will provide water supply to residents through water tankers depending on the availability of water in the region. Check dialysis patients <ol style="list-style-type: none"> KDC Communications Manager to check with Northland District Health Board 	<ol style="list-style-type: none"> Inspect the Dargaville water reticulation system for leaks and other water losses and promptly repairing or ceasing them if/when they are found Areas of public reticulation may be switched off for periods of time, standpipe supplies to be considered Prepare to install weir across Kaihu River <ol style="list-style-type: none"> Inspect site and ensure plant and material is on-site and all equipment is available to install weir The Drought Management Response Team (DMRT) is established if drought conditions are anticipated to become more severe and prolonged and there is a potential risk of inadequate water supply to service the community. DMRT to consider / prepare for the use of water tankers to supplement / replace the public water supply. DMRT to consider / instruct the closing of public facilities (toilets, showers and drinking fountains) DMRT to consider / instruct the closing of public pools. DMRT to consider / prepare for a declaration of Civil Defence Emergency. <p>If agreement is reached with NRC on retaining the water stored in the Waiatua Dam⁵ and the use of the Ahikiwi take point⁶.</p>

⁵ Condition 4 of the CON20110813401 requires water to be released from the Waiatua Dam at the same rate as water is extracted from Rotu.

⁶ KDC is proposing to apply for a consent condition change under Section 127 of the RMA to decouple the requirement to release water from the Waiatua Dam when the flow reduces below 815 l/s in the Kaihu River.

Water Use Restriction Level	Date ¹	Flow in Kaihu River @ Gorge Recorder Site 46611	Water Level At Rotu Intake	Community Actions	KDC Communications ²	KDC Operations Staff
						15. Continue sourcing water from Rotu 16. Install temporary weir on Kaihu River at Rotu 17. Bring on line the water take at Ahikiwi on the Kaihu River (Te Roroa Whatu Ora Trust consultation required) <ol style="list-style-type: none"> Inspect Ahikiwi pump station and ensure pump and valves are working; Clean the raw water take 18. Continue road signage advertising 19. Monitor water usage at WTP
4 ⁷		< 645 l/s	<100 mm	<ul style="list-style-type: none"> No gardens, lawns or private field watering, vehicle washing, building and paved area washing, flushing of boat engines or commercial/industrial cleaning water use Sprinkler ban Irrigations system ban Hose ban No filling of residential swimming pools / spa pools from mains supply No filling of water tanks from a registered water carrier with water sourced from mains supply Market gardens & plant nursery require an alternative 	1. Issue Community Notice – Water Use Restriction Level 4 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community 2. Media release <ol style="list-style-type: none"> KDC Communications Manager to publish media release (include tanker locations and process to access tankers) 3. Radio station advertising <ol style="list-style-type: none"> KDC Communications Manager to release (include tanker locations and process to access tankers) 4. Water Use Restriction Level 4 to front page of KDC website	1. Notify Northland Regional Council (NRC) of Water Use Restriction Level 4 status 2. Continue road signage advertising 3. Monitor water availability at WTP 4. Deploy water tankers to provide rationed water services to the community 5. Close public facilities (toilets, showers and drinking fountains) 6. Close public pools. 7. Declare a state of Civil Defence Emergency if deemed appropriate.

⁷ Water Use Restriction Level 4 to be implemented when the water level in the Kaihu River reduces to less than 100mm above the Rotu intake.

Water Use Restriction Level	Date ¹	Flow in Kaihu River @ Gorge Recorder Site 46611	Water Level At Rotu Intake	Community Actions	KDC Communications ²	KDC Operations Staff
				<p>water source other than council supply</p> <ul style="list-style-type: none"> Public Pools are closed. No filling of public swimming pools / spa pools from mains supply Public Facilities are closed (toilets, showers and drinking foundations) Commercial vehicle washing and car washes must use an alternative water source other than Council supply and use water recycling. No use of high-pressure water systems. No filling of public fountains from mains supply No water tanker or metered standpipes for construction No watering of municipal sports fields Silver Fern Farms to reduce water usage Kumara processors to reduce water usage 	<ul style="list-style-type: none"> a. KDC Communications Manager to publish <p>5. Advise car wash facility to halt water usage</p> <ul style="list-style-type: none"> a. KDC Operations Engineer to contact <p>6. Advise water carriers to use alternate source</p> <ul style="list-style-type: none"> a. KDC Operations Engineer to contact <p>7. Priority given to domestic water use, therefore Silver Fern Farms and Kumara Processors requested to stop using water</p> <ul style="list-style-type: none"> a. KDC Operations Engineer to Communicate <p>8. Check dialysis patients</p> <ul style="list-style-type: none"> a. KDC Communications Manager to check with Northland District Health Board 	

3.6. Maungaturoto Trigger Points and Restrictions

During December 2015 KDC introduced and implemented a four-stage restriction level based on three trigger points being the:

1. Flow in the Piroa Stream;
2. Available flow from Cattlemount; or
3. Cumulative annual usage of Brooklands Dam.

The proposed trigger points, related water use restriction levels, community actions, KDC actions and KDC Communications and Operations staff actions relating to the Water Use Restriction Levels are described for Maungaturoto in Table 4 below.

Table 4 Maungaturoto Water Use Restriction Levels and Actions

Water Use Restriction Level	Triggers			Community Actions	KDC Communications	KDC Operations Staff		
	Daily average flow in Piroa Stream ⁸ (l/s)	Brooklands Dam – Cumulative Annual Usage (m ³ /year)	Available Flow from Cattlemount (m ³ /day)			Piroa Stream	Brooklands Dam	Cattlemount/ Boar Hill Intakes
Business as usual	>30 l/s	<270,000	< 2650	<ul style="list-style-type: none"> No restrictions in place. <p>Minimise losses and efficient use of water encouraged</p>		Continue as normal.	Supply not needed. Monitor year to date water usage at Brooklands Dam.	Continue as normal.
1	30-19 l/s	<270,000	< 2650	<ul style="list-style-type: none"> General water conservation awareness. 	<ol style="list-style-type: none"> Issue Community Notice Water Use Restriction Level 1. <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper. Information boards are placed in strategic places within the community Advise water users of pending restrictions. Begin discussions with Fonterra on raw water availability. <ol style="list-style-type: none"> KDC Operations Engineer to communication by email 	<p>Check the filter screens at all intakes to ensure they are clear.</p> <p>Check intake pipes and areas where high breakages of pipes are known to occur to ensure minimal leaks are occurring.</p> <p>Monitoring downstream weir to ensure minimum levels of flows are still being achieved.</p> <p>Flow in stream to be monitored such that it does not fall below the 24hr daily average of 11l/sec.</p>	<p>Piroa stream generally gets dry first and hence monitor the stream flow.</p> <p>Begin discussions with dam owners on raw water availability.</p> <p>Confirm Brooklands Dam Intake operational – check filter screen for clogging and all pipes for breakages.</p> <p>Establish a date to bring in Brooklands supply – assume maximum period of 20 days before Piroa Stream flow reduces to 950m³/day.</p>	<p>Check the filter screens at all intakes to ensure they are clear.</p> <p>Check intake pipes and areas where high breakages of pipes are known to occur to ensure minimal leaks are occurring.</p>

⁸ Flow measurement is taken at weir, downstream of water extraction point.

Water Use Restriction Level	Triggers			Community Actions	KDC Communications	KDC Operations Staff		
	Daily average flow in Piroa Stream ⁸ (l/s)	Brooklands Dam – Cumulative Annual Usage (m ³ /year)	Available Flow from Cattlemount (m ³ /day)			Piroa Stream	Brooklands Dam	Cattlemount/ Boar Hill Intakes
							Monitor year to date water usage at Brooklands Dam.	
						General Actions 1. Notify Northland Regional Council (NRC) of Water Use Restriction Level 1 status 2. Monitor overall raw water availability and demand on daily basis and report to Operations Engineer.		
2	19 – 11 l/s	<270,000	<1000	1. Notice to conserve water 2. Sprinkler ban for gardens, lawns & private fields 3. Irrigation systems ban for gardens, lawns & private fields 4. No filling of public fountains from mains supply 5. No water tanker or metered standpipes for construction water sourced from mains supply 6. No watering of established municipal sports fields fed from mains supply	1. Issue Community Notice Water Use Restriction Level 2. <ul style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper. Information boards are placed in strategic places within the community 2. KDC Communications Manager to publish media release on river levels, rainfall and dam levels <ul style="list-style-type: none"> KDC Communications Manager to publish media release. 3. KDC Communications Manager to contact Fire Service and Rural Fire Service requested to stop practicing and testing from live fire hydrants. <ul style="list-style-type: none"> KDC Operations Engineer to contact Fire Service 4. Advise Fonterra that Piroa take has reduced operation and raw water supply may	Reduce water take to comply with minimum downstream 24hr average flow of 11 l/s and minimum downstream flow of 9 l/s.	Monitor pump station intake and dam level. Continue discussions with dam owners on raw water availability. Bring Brooklands Dam supply on line.	Check the filter screens at all intakes to ensure they are clear. Check intake pipes and areas where high breakages of pipes are known to occur to ensure minimal leaks are occurring.
	Level 2 is triggered when either the trigger of <i>Flow in Piroa stream</i> or <i>Available flow from Cattlemount</i> are reached.					General Action 1. Notify Northland Regional Council (NRC) of Water Use Restriction Level 2 status 2. Monitor overall raw water availability and demand on daily basis and report to Operations Engineer. 3. Water Operations Engineer to email: <ul style="list-style-type: none"> NRC Northland District Health Board (NDHB) Fonterra 		

Water Use Restriction Level	Triggers			Community Actions	KDC Communications	KDC Operations Staff		
	Daily average flow in Piroa Stream ⁸ (l/s)	Brooklands Dam – Cumulative Annual Usage (m ³ /year)	Available Flow from Cattlemount (m ³ /day)			Piroa Stream	Brooklands Dam	Cattlemount/ Boar Hill Intakes
					be restricted depending on Fonterra's demand. <ul style="list-style-type: none"> o KDC Operations Engineer to communicate by email 			
3	19 – 11 l/s	<270,000	<1000	<ol style="list-style-type: none"> 1. Sprinkler ban for gardens, lawns & private fields 2. Irrigation systems ban for gardens, lawns & private fields 3. Hose ban for gardens, lawns & private fields, vehicle washing, building & paved area cleaning, flushing boat engines and commercial/ industrial cleaning 4. Water blasters ban for vehicle washing and building & paved area cleaning 5. No filling of residential swimming pools / spa pools from mains supply 6. No filling of water tanks from a 	<ol style="list-style-type: none"> 1. Issue Community Notice Water Use Restriction Level 3. <ol style="list-style-type: none"> a. KDC Communications Manager to publish notice in local newspaper. b. Information boards are placed in strategic places within the community 2. Communicate with raw water farms supplies on reducing water usage. <ol style="list-style-type: none"> a. KDC Operations Engineer to communicate by email 3. Advise car wash facility to reduce water usage <ol style="list-style-type: none"> a. KDC Operations Engineer to contact 4. Advise water carriers to use alternative source <ol style="list-style-type: none"> a. KDC Operations Engineer to contact 5. KDC Communications Manager to publish media release on river levels, rainfall and dam levels. 	<p>Reduce water take to comply with minimum downstream 24hr average flow of 11 l/s and minimum downstream flow of 9 l/s.</p> <p>Apply for approval from NRC to reduce flow below 11 l/s by measuring downstream Dissolved Oxygen Levels.</p> <p>Continue usage at average daily year to date take.</p>	<p>Continue usage at the average daily year to date take</p> <p>Monitor pump station intake and dam level.</p> <p>Continue discussions with dam owners on raw water availability.</p>	<p>Check the filter screens at all intakes to ensure they are clear.</p> <p>Check intake pipes and areas where high breakages of pipes are known to occur to ensure minimal leaks are occurring.</p>

Water Use Restriction Level	Triggers			Community Actions	KDC Communications	KDC Operations Staff		
	Daily average flow in Piroa Stream ⁸ (l/s)	Brooklands Dam – Cumulative Annual Usage (m ³ /year)	Available Flow from Cattlemount (m ³ /day)			Piroa Stream	Brooklands Dam	Cattlemount/ Boar Hill Intakes
	Level 3 is triggered when both the trigger of <i>Flow in Piroa stream</i> and <i>Available flow from Cattlemount</i> are reached.			<p>registered water carrier with water sourced from mains supply</p> <p>7. No commercial vehicle washing and car washes from mains supply without water recycling</p> <p>8. Market gardens & plant nursery require written approval</p> <p>9. No filling of public fountains from mains supply</p> <p>10. No water tanker or metered standpipes for construction water</p> <p>11. No watering of established municipal sports fields fed from mains supply</p>	<p>a. KDC Communications Manager to publish media release</p> <p>6. KDC Communications Manager to organise radio advertising.</p> <p>7. Water Use Restriction Level 3 to front page of KDC website.</p> <p>8. Advise Fonterra that raw water supply is limited, and only certain volumes can be provided. This is dependent on the overall raw water availability.</p> <p>a. KDC Operations Engineer to communicate by email</p> <p>9. If the situation continues, KDC will advise commercial operations to close and will provide water supply to residents through water tankers depending on the availability of water in the region.</p> <p>10. Check dialysis patients</p> <p>a. KDC Communications Manager to check with Northland District Health Board</p>	<p>General Action</p> <ol style="list-style-type: none"> 1. Notify Northland Regional Council (NRC) of Water Use Restriction Level 3 status 2. Monitor overall raw water availability and demand on daily basis and report to Operations Engineer. 3. The Drought Management Response Team (DMRT) is established if drought conditions are anticipated to become more severe and prolonged and there a potential risk of inadequate water supply to service the community. 4. DMRT to consider / prepare for the use of water tankers to supplement / replace the public water supply. 5. DMRT to consider / instruct the closing of public facilities (toilets, showers and drinking fountains) 6. DMRT to consider / instruct the closing of public pools. 7. DMRT to consider / prepare for a declaration of Civil Defence Emergency. 		

Water Use Restriction Level	Triggers			Community Actions	KDC Communications	KDC Operations Staff		
	Daily average flow in Piroa Stream ⁸ (l/s)	Brooklands Dam – Cumulative Annual Usage (m ³ /year)	Available Flow from Cattlemount (m ³ /day)			Piroa Stream	Brooklands Dam	Cattlemount/ Boar Hill Intakes
4	<11 l/s Breaching consent limit	Dam water levels result in no water being able to be withdrawn	<1000	<ol style="list-style-type: none"> No gardens, lawns or private field watering, vehicle washing, building and paved area washing, flushing of boat engines or commercial/industrial cleaning water use Sprinkler ban Irrigation system ban Hose ban No filling of residential swimming pools from mains supply No filling of water tanks from a registered water carrier with water sourced from mains supply Market gardens & plant nursery require an alternative water source other than council supply Public Pools are closed. No filling of public swimming pools / spa pools from mains supply Public Facilities are closed (toilets, showers and drinking foundations) 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 4 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Media release <ol style="list-style-type: none"> KDC Communications Manager to publish media release (include tanker locations and process to access tankers) Radio station advertising <ol style="list-style-type: none"> KDC Communications Manager to release (include tanker locations and process to access tankers) Water Use Restriction Level 4 to front page of KDC website <ol style="list-style-type: none"> KDC Communications Manager to publish Advise car wash facility to may be requested to halt water usage <ol style="list-style-type: none"> KDC Operations Engineer to contact Advise water carriers to use alternate source <ol style="list-style-type: none"> KDC Operations Engineer to contact Priority given to domestic water use, therefore 	Ceased operation.	Ceased operation.	Ceased operation.
						General Action <ol style="list-style-type: none"> Notify Northland Regional Council (NRC) of Water Use Restriction Level 4 status Deploy water tankers to provide rationed water services to the community Close public facilities (toilets, showers and drinking fountains) Close public pools. Declare a state of Civil Defence Emergency if deemed appropriate. 		

Water Use Restriction Level	Triggers			Community Actions	KDC Communications	KDC Operations Staff		
	Daily average flow in Piroa Stream ⁸ (l/s)	Brooklands Dam – Cumulative Annual Usage (m ³ /year)	Available Flow from Cattlemount (m ³ /day)			Piroa Stream	Brooklands Dam	Cattlemount/ Boar Hill Intakes
				10. Commercial vehicle washing and car washes must use an alternative water source other than Council supply and use water recycling. No use of high-pressure water systems. 11. No filling of public fountains from mains 12. No water tanker or metered standpipes for construction 13. No watering of municipal sports fields	Fonterra requested to stop using water a. KDC Operations Engineer to Communicate 8. Check dialysis patients a. KDC Communications Manager to check with Northland District Health Board			

3.7. Ruawai Trigger Points and Restrictions

Ruawai water supply area has a four-stage restriction level based on one trigger point being:

1. Region wide water use restrictions.

The Ruawai borefield does not appear to have site specific criteria to manage the extraction of water from the underlying aquifer in times of drought.

The consent requires a regime that mitigates the risk of saltwater intrusion, a policy to promote water efficient use by water users, and a contingency plan to be implemented during times of water shortages.

There are a number of documents which have been produced to preserve the bores and to encourage sustainable water extraction from the Ruawai bore field. Two of the documents “Ruawai Drinking Water Supply, Water Safety Plan” & “Borefield Management Plan” govern the allowable flow rate and volumes extracted from the bores to manage the risk of saline intrusion and as the triggers outlined in these documents are reached, will instigate operational restrictions which are identified in these documents. These triggers are not suitable for use in this drought management application, as they are more aligned to saline intrusion risk and longer-term preservation of the water source.

To determine if drought related trigger points can be informed from a correlation between aquifer water levels and the Ruawai bore water depths, a high-level assessment has been undertaken between water level / depth data sourced from Northland Regional Council (NRC) and KDC.

NRC has a groundwater monitoring bore located on Wallace Road in Ruawai, to record aquifer water levels. This was commissioned, following a severe drought during 2009 that affected the northland region, with the intention to compare the current trend of aquifer water levels to that experienced during the 2009 drought recorded low, to provide a forewarning to similar conditions that may be approaching.

KDC record hourly incremental water depth measurements from both Bore 1 and Bore 2. This data is reported to NRC on a monthly basis. This data was extracted for a one-year period and graphed and overlaid on the Wallace Road NRC data for the equivalent period.

Figure 3 below shows the overlaid data. By observation there is very little correlation between the two datasets. This is complicated by the fact that the data sets are recorded at different datums, precluding direct comparison. Regardless of the different datum's, the temporal patterns did not appear to align between the two locations, and no correlation was determined.

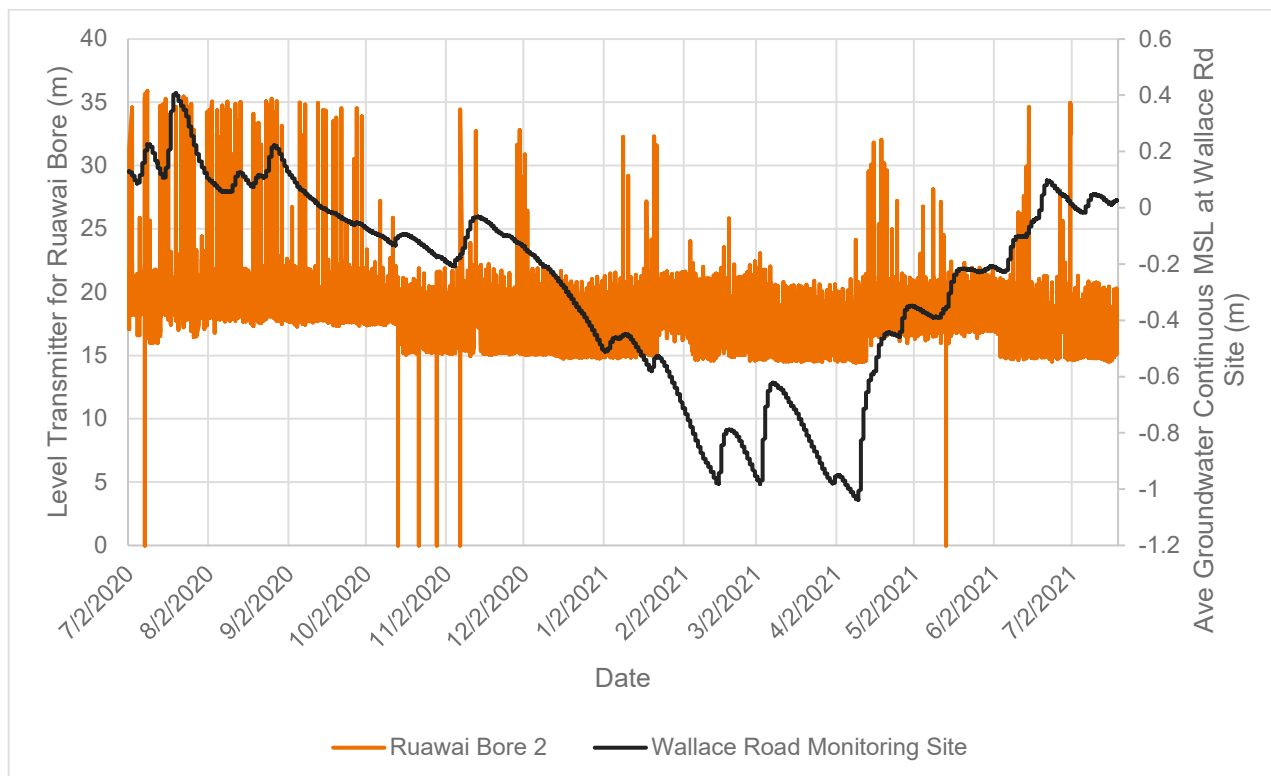


Figure 3: Ruawai Bore 2 water level compared to Wallace Road aquifer levels over 1 year

There has been no evidence of the Ruawai bores failing to supply the required quantity of water in previous drought periods, so it is likely the biggest risk to the Ruawai water supply is saline intrusion if the water table becomes too low.

A maximum drawdown level for the Ruawai bores could not be determined based on the aquifer data, so it is recommended the Ruawai drought trigger levels are instead aligned with the Region wide trigger levels (refer section 3.4).

Further monitoring of the aquifer at Wallace Road (NRC) and the Ruawai bores (KDC), with a common and clearly defined datum is recommended to support future analysis.

The drought management plan proposed trigger points, related water use restriction levels, community actions, KDC actions and KDC Communications and Operations staff actions relating to the Water Use Restriction Levels are described for Ruawai in Table 5 below.

Table 5: Ruawai Water Use Restriction Levels and Actions

Water Use Restriction Level	Region Wide Water Use Restriction level	Community Actions	KDC Communications ⁹	KDC Operations Staff
Business as Usual	-	<ul style="list-style-type: none"> No restrictions in place Minimise losses and efficient use of water encouraged 		<ol style="list-style-type: none"> Monitor NIWA Seasonal Climate Outlook https://www.niwa.co.nz/climate/sco Any water intensive activity planned activity should be carried out at this time
1	Level 1	<ul style="list-style-type: none"> General water conservation awareness No restrictions in place 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 1 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Advise water users of pending restrictions. 	<ol style="list-style-type: none"> Monitor water usage at Water Treatment Plant (WTP) on a daily basis Ensure SCADA is recording WTP on continuous basis Notify Northland Regional Council (NRC) of Water Use Restriction Level 1 status Refer to "Ruawai Drinking Water Supply, Water Safety Plan" & "Borefield Management Plan" to ensure the triggers described in the documents aren't reached
2	Level 2	<ul style="list-style-type: none"> Notice to conserve water Sprinkler ban for gardens, lawns & private fields Irrigation system ban for gardens, lawns & private fields No filling of public fountains from mains supply No water tanker or metered standpipes for construction water sourced from mains supply No watering of established municipal sports fields fed from mains supply 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 2 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Media release of bore water depths, rainfall and water usage <ol style="list-style-type: none"> KDC Communications Manager to publish media release Fire Service and Rural Fire Service requested to stop practising and testing from live hydrants 	<ol style="list-style-type: none"> Monitor water usage at WTP on a daily basis Monitor raw water supply at WTP Notify Northland Regional Council (NRC) of Water Use Restriction Level 2 status Water Operations Engineer to email: <ol style="list-style-type: none"> NRC Northland District Health Board (NDHB)

⁹ KDC Communications Manager is drafting templates for each of the Water Use Restriction Levels, a sample is attached under Appendix - B

Water Use Restriction Level	Region Wide Water Use Restriction level	Community Actions	KDC Communications ⁹	KDC Operations Staff
			a. KDC Operations Engineer to contact Fire Service	
3	Level 3	<ul style="list-style-type: none"> Sprinkler ban for gardens, lawns & private fields Irrigation system ban for gardens, lawns & private fields Hose ban for gardens, lawns & private fields, vehicle washing, building & paved area cleaning, flushing boat engines and commercial/industrial cleaning Water blaster ban for vehicle washing and building & paved area cleaning No filling of residential swimming pools / spa pools from mains supply No filling of water tanks from a registered water carrier with water sourced from mains supply No commercial vehicle washing and car washes from mains supply without water recycling Market gardens & plant nursery require written approval No filling of public fountains from mains supply No water tanker or metered standpipes for construction water No watering of established municipal sports fields fed from mains supply 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 3 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Media release <ol style="list-style-type: none"> KDC Communications Manager to publish media release Radio station advertising <ol style="list-style-type: none"> KDC Communications Manager to release Water Use Restriction Level 3 to front page of KDC website <ol style="list-style-type: none"> KDC Communications Manager to publish Advise car wash facility to reduce water usage <ol style="list-style-type: none"> KDC Operations Engineer to contact Advise water carriers to use alternate source <ol style="list-style-type: none"> KDC Operations Engineer to contact Check dialysis patients <ol style="list-style-type: none"> KDC Communications Manager to check with Northland District Health Board 	<ol style="list-style-type: none"> Water Operations Engineer to prepare note of all actions taken thus far as per the Drought Management Plan and send to NRC Begin road signage advertising Monitor water usage at WTP Notify Northland Regional Council (NRC) of Water Use Restriction Level 3 status Inspect the Ruawai water reticulation system for leaks and other water losses and promptly repairing or ceasing them if/when they are found The Drought Management Response Team (DMRT) is established if drought conditions are anticipated to become more severe and prolonged and there is a potential risk of inadequate water supply to service the community. DMRT to consider / prepare for the use of water tankers to supplement / replace the public water supply. DMRT to consider / instruct the closing of public facilities (toilets, showers and drinking fountains) DMRT to consider / instruct the closing of public pools. DMRT to consider / prepare for a declaration of Civil Defence Emergency.
4	Level 4	<ul style="list-style-type: none"> No gardens, lawns or private field watering, vehicle washing, building and paved area washing, flushing of boat engines or commercial/industrial cleaning water use 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 4 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper 	<ol style="list-style-type: none"> Cease all water extraction from the bores. Continue road signage advertising Notify Northland Regional Council (NRC) of Water Use Restriction Level 4 status Deploy water tankers to provide rationed water services to the community

Water Use Restriction Level	Region Wide Water Use Restriction level	Community Actions	KDC Communications ⁹	KDC Operations Staff
		<ul style="list-style-type: none"> • Sprinkler ban • Irrigation system ban • Hose ban • No filling of residential swimming pools / spa pools from mains supply • No filling of water tanks from a registered water carrier with water sourced from mains supply • Market gardens & plant nursery require an alternative water source other than council supply • Public Pools are closed. No filling of public swimming pools / spa pools from mains supply • Public Facilities are closed (toilets, showers and drinking foundations) • Commercial vehicle washing and car washes must use an alternative water source other than Council supply and use water recycling. No use of high-pressure water systems. • No filling of public fountains from mains supply • No water tanker or metered standpipes for construction • No watering of municipal sports fields 	<ul style="list-style-type: none"> b. Information boards are placed in strategic places within the community <ol style="list-style-type: none"> 2. Media release <ol style="list-style-type: none"> a. KDC Communications Manager to publish media release (include tanker locations and process to access tankers) 3. Radio station advertising <ol style="list-style-type: none"> a. KDC Communications Manager to release (include tanker locations and process to access tankers) 4. Water Use Restriction Level 4 to front page of KDC website <ol style="list-style-type: none"> a. KDC Communications Manager to publish 5. Advise car wash facility our water extraction from bores has halted <ol style="list-style-type: none"> a. KDC Operations Engineer to contact 6. Advise water carriers to use alternate source <ol style="list-style-type: none"> a. KDC Operations Engineer to contact 7. Check dialysis patients <ol style="list-style-type: none"> a. KDC Communications Manager to check with Northland District Health Board 	<ol style="list-style-type: none"> 5. Close public facilities (toilets, showers and drinking fountains) 6. Close public pools. 7. Declare a state of Civil Defence Emergency if deemed appropriate.

3.8. Mangawhai Trigger Points and Restrictions

Mangawhai water supply area has a four-stage restriction level based on two trigger points being either the:

1. Date; or
2. Average daily water take volume

The Mangawhai community historically only experiences water use restrictions and shortages over the peak summer period, from Christmas through to the end of the Easter weekend, due to the increase of population aligning with the traditional drought season. This has governed the trigger points with the dates corresponding with the summer period and the Average daily water take volume also increasing in large jumps to cater for the influx of holiday makers.

The drought management plan proposed trigger points, related water use restriction levels, community actions, KDC actions and KDC Communications and Operations staff actions relating to the Water Use Restriction Levels are described for Mangawhai in Table 6 below.

Table 6: Mangawhai Water Use Restriction Levels and Actions

Water Use Restriction Level	Date ¹⁰	Average daily water take volume (m3/d)	Community Actions	KDC Communications ¹¹	KDC Operations Staff
Business as Usual	Easter – 1 st Nov	<45 m ³ /day take ¹²	<ul style="list-style-type: none"> No restrictions in place Minimise losses and efficient use of water encouraged 		<ol style="list-style-type: none"> Monitor NIWA Seasonal Climate Outlook https://www.niwa.co.nz/climate/sco Any water intensive planned activity should be carried out at this time
1	1 st Nov	Over a 20% increase from the August Report Average Daily Volume	<ul style="list-style-type: none"> General water conservation awareness No restrictions in place 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 1 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Advise water users of pending restrictions. 	<ol style="list-style-type: none"> Monitor water usage at Water Treatment Plant (WTP) and bore levels on a daily basis Notify Northland Regional Council (NRC) of Water Use Restriction Level 1 status
2	1 st Dec	Over a 30% increase from the August Report Average Daily Volume	<ul style="list-style-type: none"> Notice to conserve water Sprinkler ban for gardens, lawns & private fields Irrigation system ban for gardens, lawns & private fields No filling of public fountains from mains supply 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 2 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Media release of bore water depth, rainfall and water usage 	<ol style="list-style-type: none"> Monitor water usage at WTP on a daily basis Monitor raw water supply at WTP Notify Northland Regional Council (NRC) of Water Use Restriction Level 2 status Liaise with consent nominated property owners regarding supply adequacy. Liaise with water carriers to confirm supplies throughout the critical summer period.

¹⁰ Water Use Restriction Level 1 to start on 1 November regardless of water depth of existing bore (m).

¹¹ KDC Communications Manager is drafting templates for each of the Water Use Restriction Levels, a sample is attached under Appendix - C

¹² The average daily take limit from Easter – 1 Nov in the event of lower groundwater levels during winter due to less recharge over dry periods.

Water Use Restriction Level	Date ¹⁰	Average daily water take volume (m3/d)	Community Actions	KDC Communications ¹¹	KDC Operations Staff
			<ul style="list-style-type: none"> No water tanker or metered standpipes for construction water sourced from mains supply No watering of established municipal sports fields fed from mains supply 	<ol style="list-style-type: none"> <ol style="list-style-type: none"> KDC Communications Manager to publish media release Fire Service and Rural Fire Service requested to stop practising and testing from live hydrants <ol style="list-style-type: none"> KDC Operations Engineer to contact Fire Service 	<ol style="list-style-type: none"> Water Operations Engineer to email: <ol style="list-style-type: none"> NRC Northland District Health Board (NDHB)
3	18 th Dec	Nearing the consent limit 75m ³ average daily take	<ul style="list-style-type: none"> Sprinkler ban for gardens, lawns & private fields Irrigation system ban for gardens, lawns & private fields Hose ban for gardens, lawns & private fields, vehicle washing, building & paved area cleaning, flushing boat engines and commercial/industrial cleaning Water blaster ban for vehicle washing and building & paved area cleaning No filling of residential swimming pools / spa pools from mains supply No filling of water tanks from a registered water carrier with water sourced from mains supply No commercial vehicle washing and car washes from mains supply without water recycling 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 3 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Media release <ol style="list-style-type: none"> KDC Communications Manager to publish media release Radio station advertising <ol style="list-style-type: none"> KDC Communications Manager to release Water Use Restriction Level 3 to front page of KDC website <ol style="list-style-type: none"> KDC Communications Manager to publish Advise car wash facility to reduce water usage <ol style="list-style-type: none"> KDC Operations Engineer to contact Advise water carriers to use alternate source <ol style="list-style-type: none"> KDC Operations Engineer to contact Check dialysis patients <ol style="list-style-type: none"> KDC Communications Manager to check with Northland District Health Board 	<ol style="list-style-type: none"> Notify Northland Regional Council (NRC) of Water Use Restriction Level 3 status Water Operations Engineer to prepare note of all actions taken thus far as per the Drought Management Plan and send to NRC Begin road signage advertising Monitor water usage at WTP Inspect the Mangawhai water reticulation system for leaks and other water losses and promptly repairing or ceasing them if/when they are found The Drought Management Response Team (DMRT) is established if drought conditions are anticipated to become more severe and prolonged and there a potential risk of inadequate water supply to service the community. DMRT to consider / prepare for the use of water tankers to supplement / replace the public water supply. DMRT to consider / instruct the closing of public facilities (toilets, showers and drinking fountains) DMRT to consider / instruct the closing of public pools. DMRT to consider / prepare for a declaration of Civil Defence Emergency.

Water Use Restriction Level	Date ¹⁰	Average daily water take volume (m3/d)	Community Actions	KDC Communications ¹¹	KDC Operations Staff
			<ul style="list-style-type: none"> Market gardens & plant nursery require written approval No filling of public fountains from mains supply No water tanker or metered standpipes for construction water No watering of established municipal sports fields fed from mains supply 		
4	25 th Dec – Easter	Exceeding the consent limit 75m ³ average daily take between 1 Dec – 31 March	<ul style="list-style-type: none"> No gardens, lawns or private field watering, vehicle washing, building and paved area washing, flushing of boat engines or commercial/industrial cleaning water use Sprinkler ban Irrigation system ban Hose ban Public Pools are closed. No filling of public swimming pools / spa pools from mains supply Public Facilities are closed (toilets, showers and drinking foundations) No filling of water tanks from a registered water carrier with water sourced from mains supply Market gardens & plant nursery require an alternative water source 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 4 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Media release <ol style="list-style-type: none"> KDC Communications Manager to publish media release (include tanker locations and process to access tankers) Radio station advertising <ol style="list-style-type: none"> KDC Communications Manager to release (include tanker locations and process to access tankers) Water Use Restriction Level 4 to front page of KDC website <ol style="list-style-type: none"> KDC Communications Manager to publish Advise car wash facility to halt water usage <ol style="list-style-type: none"> KDC Operations Engineer to contact Advise water carriers to use alternate source 	<ol style="list-style-type: none"> Notify Northland Regional Council (NRC) of Water Use Restriction Level 4 status. Halt extraction from the bores. Continue road signage advertising. Public reticulation turned off Deploy water tankers to provide rationed water services to users connected to the public water supply system. Close public facilities (toilets, showers and drinking fountains) Close public pools. Declare a state of Civil Defence Emergency if deemed appropriate.

Water Use Restriction Level	Date ¹⁰	Average daily water take volume (m3/d)	Community Actions	KDC Communications ¹¹	KDC Operations Staff
			<p>other than council supply</p> <ul style="list-style-type: none"> • No filling of public swimming pools / spa pools from mains supply • Commercial vehicle washing and car washes must use an alternative water source other than Council supply and use water recycling. No use of high-pressure water systems. • No filling of public fountains from mains supply • No water tanker or metered standpipes for construction • No watering of municipal sports fields 	<p>a. KDC Operations Engineers to contact</p> <p>7. Check dialysis patients</p> <p>a. KDC Communications Manager to check with Northland District Health Board</p>	

3.9. Glinks Gully Trigger Points and Restrictions

Glinks Gully water supply area has a four-stage restriction level based on two trigger points being either the:

1. Date;
2. Average daily water take volume

The Glinks Gully community is like Mangawhai in the fact it historically only experiences water use restrictions and shortages over the peak summer period, December to the end of the January. With an increase of population aligning with the traditional drought season it leads to water tankers being required yearly to continue to supply the area. The Glinks Gully trigger points correlates with this trend with the dates corresponding with the summer period and the average daily water take volume also increasing in large jumps to cater for the influx of holiday makers.

The drought management plan proposed trigger points, related water use restriction levels, community actions, KDC actions and KDC Communications and Operations staff actions relating to the Water Use Restriction Levels are described for Glinks Gully in Table 7 below.

Table 7: Glinks Gully Water Use Restriction Levels and Actions

Water Use Restriction Level	Date ¹³	Average daily water take volume (m ³ /d)	Community Actions	KDC Communications ¹⁴	KDC Operations Staff
Business as Usual	1st Feb - 31st Oct	≤Winter ¹⁵ Daily Volume	<ul style="list-style-type: none"> No restrictions in place Minimise losses and efficient use of water encouraged 		<ol style="list-style-type: none"> Monitor NIWA Seasonal Climate Outlook https://www.niwa.co.nz/climate/sco Any water intensive activity planned activity should be carried out at this time
1	1 st Nov	≤Winter Daily Volume	<ul style="list-style-type: none"> General water conservation awareness No restrictions in place 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 1 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Advise water users of pending restrictions. 	<ol style="list-style-type: none"> Monitor NIWA Seasonal Climate Outlook https://www.niwa.co.nz/climate/sco Monitor water usage at Water Treatment Plant (WTP) on a daily basis Ensure SCADA is recording WTP on continuous basis Notify Northland Regional Council (NRC) of Water Use Restriction Level 1 status From 1st Dec: <ol style="list-style-type: none"> Advise water users of pending restrictions if not already in Level 2. Liaise with water carriers to confirm supplies throughout the critical summer period. Flush supply line between the water take (galleries) and the treatment plant to clear any slit deposition and maximise flow capacity
2	1 st Dec	Over 10% increase of Winter Daily Volume	<ul style="list-style-type: none"> Notice to conserve water Sprinkler ban for gardens, lawns & private fields Irrigation system ban for gardens, lawns & private fields 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 2 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper 	<ol style="list-style-type: none"> Monitor NIWA Seasonal Climate Outlook https://www.niwa.co.nz/climate/sco Monitor water usage at WTP on a daily basis Notify Northland Regional Council (NRC) of Water Use Restriction Level 2 status Water Operations Engineer to email:

¹³ Water Use Restriction Level 1 to start on 1 November regardless of flow in the Tributary Stream.

¹⁴ KDC Communications Manager is drafting templates for each of the Water Use Restriction Levels, a sample is attached under Appendix - B

¹⁵ Winter Daily Average is the average daily flow from June to August of that year

Water Use Restriction Level	Date ¹³	Average daily water take volume (m ³ /d)	Community Actions	KDC Communications ¹⁴	KDC Operations Staff
			<ul style="list-style-type: none"> No filling of public fountains from mains supply No water tanker or metered standpipes for construction water sourced from mains supply No watering of established municipal sports fields fed from mains supply 	<ul style="list-style-type: none"> b. Information boards are placed in strategic places within the community 2. Media release of rainfall and water usage <ul style="list-style-type: none"> a. KDC Communications Manager to publish media release 3. Fire Service and Rural Fire Service requested to stop practicing and testing from live hydrants <ul style="list-style-type: none"> a. KDC Operations Engineer to contact Fire Service 	<ul style="list-style-type: none"> a. NRC b. Northland District Health Board (NDHB)
3	18 th Dec	Over 20% increase of Winter Daily Volume	<ul style="list-style-type: none"> Sprinkler ban for gardens, lawns & private fields Irrigation system ban for gardens, lawns & private fields Hose ban for gardens, lawns & private fields, vehicle washing, building & paved area cleaning, flushing boat engines and commercial/industrial cleaning Water blaster ban for vehicle washing and building & paved area cleaning No filling of residential swimming pools / spa pools from mains supply No filling of water tanks from a registered water carrier with water sourced from mains supply No filling of public fountains from mains supply No water tanker or metered standpipes for construction water 	<ul style="list-style-type: none"> 1. Issue Community Notice – Water Use Restriction Level 3 <ul style="list-style-type: none"> a. KDC Communications Manager to publish notice in local newspaper b. Information boards are placed in strategic places within the community 2. Media release <ul style="list-style-type: none"> a. KDC Communications Manager to publish media release 3. Radio station advertising <ul style="list-style-type: none"> a. KDC Communications Manager to release 4. Water Use Restriction Level 3 to front page of KDC website <ul style="list-style-type: none"> a. KDC Communications Manager to publish 5. Advise car wash facility to reduce water usage <ul style="list-style-type: none"> a. KDC Operations Engineer to contact 6. Advise water carriers to use alternate source <ul style="list-style-type: none"> a. KDC Operations Engineer to contact 	<ul style="list-style-type: none"> 1. Notify Northland Regional Council (NRC) of Water Use Restriction Level 3 status 2. Water Operations Engineer to prepare note of all actions taken thus far as per the Drought Management Plan and send to NRC 3. Begin road signage advertising 4. Monitor NIWA Seasonal Climate Outlook https://www.niwa.co.nz/climate/sco 5. Monitor water usage at WTP 6. Inspect the Glinks Gully water reticulation system for leaks and other water losses and promptly repairing or ceasing them if/when they are found 7. Areas of public reticulation may be switched off for periods of time, standpipe supplies to be considered 8. The Drought Management Response Team (DMRT) is established if drought conditions are anticipated to become more severe and prolonged and there a potential risk of inadequate water supply to service the community. 9. DMRT to consider / prepare for the use of water tankers to supplement / replace the public water supply.

Water Use Restriction Level	Date ¹³	Average daily water take volume (m ³ /d)	Community Actions	KDC Communications ¹⁴	KDC Operations Staff
				7. Check dialysis patients <ol style="list-style-type: none"> KDC Communications Manager to check with Northland District Health Board 	10. DMRT to consider / instruct the closing of public facilities (toilets, showers and drinking fountains) 11. DMRT to consider / instruct the closing of public pools. 12. DMRT to consider / prepare for a declaration of Civil Defence Emergency.
4	25 th Dec - 31 st Jan	>100m ³ /day	<ul style="list-style-type: none"> No gardens, lawns or private field watering, vehicle washing, building and paved area washing, flushing of boat engines or commercial/industrial cleaning water use Sprinkler ban Irrigations system ban Hose ban Public Pools are closed. No filling of public swimming pools / spa pools from mains supply Public Facilities are closed (toilets, showers and drinking foundations) No filling of water tanks from a registered water carrier with water sourced from mains supply No filling of public swimming pools / spa pools from mains supply No filling of public fountains from mains supply No water tanker or metered standpipes for construction Commercial vehicle washing and car washes must use an alternative water source other than Council supply and use 	1. Issue Community Notice – Water Use Restriction Level 4 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper 2. Media release <ol style="list-style-type: none"> KDC Communications Manager to publish media release (include tanker locations and process to access tankers) 3. Radio station advertising <ol style="list-style-type: none"> KDC Communications Manager to release (include tanker locations and process to access tankers) 4. Water Use Restriction Level 4 to front page of KDC website <ol style="list-style-type: none"> KDC Communications Manager to publish 5. Advise car wash facility to halt water usage <ol style="list-style-type: none"> KDC Operations Engineer to contact 6. Advise water carriers to use alternate source <ol style="list-style-type: none"> KDC Operations Engineer to contact 7. Check dialysis patients <ol style="list-style-type: none"> KDC Communications Manager to check with 	1. Notify Northland Regional Council (NRC) of Water Use Restriction Level 4 status 2. Halt extraction from ground water springs 3. Continue road signage advertising 4. Deploy water tankers to provide rationed water services to the community 5. Close public facilities (toilets, showers and drinking fountains) 6. Close public pools. 7. Declare a state of Civil Defence Emergency if deemed appropriate.

Water Use Restriction Level	Date ¹³	Average daily water take volume (m ³ /d)	Community Actions	KDC Communications ¹⁴	KDC Operations Staff
			water recycling. No use of high-pressure water systems. <ul style="list-style-type: none"> Market gardens & plant nursery require an alternative water source other than council supply 	Northland District Health Board	

4. Implementation

4.1. Drought Management Response Team

KDC has established the following Drought Management Response Team (DMRT) to be led by the Operations Manager. The Drought Management Response Team shall be convened on an 'as needed' basis to oversee the implementation of restrictions, review performance, conduct post event reviews and recommend any changes to the DMP.

The team consists of:

- Operations Manager – Overall responsibility for the DMP and reporting to the General Manager Infrastructure;
- Senior Infrastructure Officer – Responsible for liaising with contractors for operational changes to the water supply scheme and reporting to NRC and responsible for co-ordination of KDC responsibilities for implementing the DMP actions.
- General Manager Infrastructure Services
- Executive Team Representative
- Senior Communications Advisor
- Civil Defence Emergency Management Group Representative

The day-to-day operations of the DMP are run by the Operations Manager and the Senior Infrastructure Officer. They will determine when to engage the wider Drought Management Response Team, for example when in Water use restriction level 3 and when considering moving to Water use restriction level 4.

4.2. Authorising Provisions

In emergency situations KDC may impose water use restrictions in accordance with the Water Supply Bylaw 2008 and the provisions of the Local Government Act 2002.

4.3. Communications Plan

KDC will actively promote permanent water conservation measures and when required, the introduction of water use restrictions. To ensure effective communication is achieved a Communication Plan should be developed.

The Communication Plan should:

- Inform the community of the current water supply situation and the reasons for introducing water use restrictions;
- Provide an explanation of the water use restriction requirements;
- Provide an explanation of the enforcement procedures;
- Include an educational campaign to encourage water conservation practices; and
- Provide ongoing feedback to the community on the water supply situation.

It is anticipated that the Communication Plan would include:

- Advertising the restrictions in the local newspapers;
- Advertising the restrictions on local radio;
- Notices sent out with rates notices;
- Media releases;
- Electronic road signage on main highway traffic areas; and
- Signage in information centres, libraries, and public places.

Communication plans for the five water supply areas can be found in Appendix C.

4.3.1. Dargaville – Silver Fern Farms

KDC to communicate water use restriction levels to Silver Fern Farms via email. Also notify when water reductions are required during water use restriction Level 2.

4.3.2. Maungaturoto – Fonterra

KDC to begin discussions with Fonterra on raw water availability. When Level 2 is in place advise Fonterra that Piroa take has reduced operation and raw water supply may be restricted depending on Fonterra's demand. Finally advise Fonterra that raw water supply is limited and only certain volumes can be provided. This is dependent on the overall raw water availability.

4.3.3. Maungaturoto – Brooklands Dam

KDC will maintain regular contact with the Brooklands Dam owners. Year to date consumption should be monitored on a continual basis. Should Water Use Restriction Level 1 be triggered, discussions should commence with the Dam owners on overall water availability.

KDC have not used the Brooklands Dam supply over the past few years due to the low recovery rate of the dam following the 2018/19 drought.

4.3.4. Mangawhai Bore

KDC will supply details of the quantities of water pumped from the bore to the other bore users. This information will be supplied weekly, accompanied by water quality data which is supplied quarterly by 1 May, 1 August, 1 November, and 1 February. Should the other bore users be unable to fulfil their water requirements from the bore, KDC is responsible for supplying an alternative source to the user within 24 hours.

4.4. Monitoring Plans

The DMP must be responsive, effective and flexible. In order to achieve this, it is critical to monitor the water supply systems on a regular basis (from Water Use Restriction Level 1 onwards) to allow proper implementation of the Plan.

4.4.1. Dargaville Monitoring Plan

The following monitoring is proposed:

- Daily monitoring of demands;
- Daily monitoring of flows in the Kaihu River and levels in the Waiaua dam; and
- The impact of restrictions on consumption.

4.4.2. Maungaturoto Monitoring Plan

The following monitoring is proposed:

- Daily monitoring of demands;
- Daily monitoring of flows in the Cattlemount/Boar Hill intake and the Piroa Stream;
- Brooklands Dam year to date consumption levels; and
- The impact of restrictions on consumption.

4.4.3. Ruawai Monitoring Plan

The following monitoring is proposed:

- Daily monitoring of quantities of water taken;
- Static water level monitoring; and
- The impact of restrictions on consumption.

The monitoring data will be supplied to NRC annually.

4.4.4. Mangawhai Monitoring Plan

The following monitoring is proposed:

- Daily monitoring of quantities of water taken;
- Quarterly water quality sampling; and
- The impact of restrictions on consumption.

The monitoring data will be supplied to NRC and the other bore users every quarter.

4.4.5. Glinks Gully Monitoring Plan

The following monitoring is proposed:

- Weekly monitoring of pumping duration;
- Weekly monitoring of quantities of water pumped; and
- The impact of restrictions on consumption.

The monitoring data will be supplied to NRC annually.

4.5. Annual Review

At the beginning of the summer dry season (prior to November 1) the Operations Manager will organise and facilitate a meeting between KDC and NRC.

The meeting will address but not be limited to the following:

- Key staff introduced, staff changes highlighted and updated;
- Contact details collated and distributed;
- Climate outlook;
- Trigger levels and their suitability and relevance should be reviewed and updated as required;
- Effectiveness of KDC and Media Actions as described in Table 4-2 to 4-6 of this DMP;
- Results of any monitoring undertaken;
- Statutory requirements (changes or additions highlighted); and
- General expectations of all parties.

4.6. Licensed Water Cartage Operators

Only water cartage operators who are approved and registered with the Northland District Health Board will be permitted to cart / source / supply potable water from alternative water sources.

4.7. Post Drought Review and Continuous Improvement

This DMP reflects the current understanding and indicative actions required to manage and maintain an appropriate level of service to the community during time of water shortage / drought.

Following such an event, it is important to review the activities that were implemented, the outcomes that were achieved, and to identify any improvements that may be required to operational processes, communications, or to the DMP.

Ruawai Specific Improvements noted during the compilation of this DMP include:

- 1) Establishment of a common datum between NRC and KDC monitoring locations is recommended for ongoing water level comparisons and to support the setting of maximum water depth extractions within the Ruawai bores.
- 2) Implementation of improvements to the bore monitoring as presented in the "Ruawai Aquifer Saline Intrusion Risk Assessment" (LWP, May 2020) is recommended to provide additional controls on bore water extraction to manage the risk of saline contamination.

Appendices

We design with community in mind



Appendix A **Water Use Restriction Guidelines**

Water Use	Supply Route	Level 1	Level 2	Level 3	Level 4
Residential Saving Measures					
Garden Watering	Sprinklers	✓	x	x	x
	Irrigation Systems	✓	x	x	x
	Hand Held Hose (with automatic shut off)	✓	✓	x	x
	Bucket	✓	✓	✓	x
Vehicle Washing	Hand Held Hose (with automatic shut off)	✓	✓	x	x
	Water Blaster	✓	✓	x	x
	Bucket	✓	✓	✓	x
Swimming Pools	Filling from Mains Supply	✓	✓	x	x
	Filling via Water Tanker from alternate supply area	✓	✓	✓	✓
Building and paved area cleaning	Hand held hose (with automatic shut off)	✓	✓	x	x
	Water blaster	✓	✓	x	x
	Bucket	✓	✓	✓	x
Water Tanks	Registered Water Carrier	✓	✓	x	x
	Registered Water Carrier from Unrestricted supply	✓	✓	✓	✓
Flushing Boat Engines	With hose for no more than 2 minutes	✓	✓	x	x
	In bucket and recycle water	✓	✓	✓	x
Commercial and Industrial Saving Measures					
Gardens, Lawns and private fields	Sprinklers	✓	x	x	x
	Irrigation Systems	✓	x	x	x
	Hand held hose (with automatic shut off)	✓	✓	x	x
	Bucket	✓	✓	✓	x
	Efficient plant water as required	✓	✓	x	x

Water Use	Supply Route	Level 1	Level 2	Level 3	Level 4
Market Garden, Plant Nursery	From alternative water sources other than Council supply	✓	✓	✓	✓
Public Swimming Pools	Filling from mains	✓	✓	✓	x
Car washes and Commercial Vehicle Washing	Mains pressure water systems with no recycling	✓	✓	x	x
	High pressure water systems	✓	✓	✓	x
	Recycled water systems (from alternative water sources other than Council supply)	✓	✓	✓	✓
Public Fountains	Filling from mains	✓	x	x	x
Fire Fighting	Emergency use only	✓	✓	✓	✓
Cleaning Water	Hand Held hose (with automatic shut off)	✓	✓	x	x
	Water blaster or bucket	✓	✓	✓	x
Construction water	Water Tanker or Metered standpipes	✓	x	x	x
Municipal Sports Fields	Established fields fed from mains	✓	x	x	x
	Critical fields with approved watering plans	✓	✓	✓	x

Appendix B **Example Water Conservation Notices**

No Water
Restrictions

1

Use Water Sensibly



There are no restrictions on the use of water.

You may:

- ✓ Water your garden with a hose, sprinkler, irrigation system or watering can
- ✓ Use a hose, bucket or water blaster to wash vehicles, windows, buildings and paved areas
- ✓ Fill or top up a swimming pool from the mains water supply

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Appendix C Water Use Restriction Levels – KDC Communications Staff Tasks

C.1 Dargaville Communications Staff Tasks

Water Use Restriction Level	Date ¹⁶	Flow in Kaihu River @ Gorge Recorder Site 46611	Water Level At Rotu Intake	Community Actions	KDC Communications ¹⁷
Business as Usual	-	> 1000 l/s	-	<ul style="list-style-type: none"> No restrictions in place Minimise losses and efficient use of water encouraged 	
1	1 Nov	< 1000 l/s	>100 mm	<ul style="list-style-type: none"> General water conservation awareness No restrictions in place 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 1 <ul style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Advise water users of pending restrictions.
2		< 900 l/s	>100 mm	<ul style="list-style-type: none"> Notice to conserve water Sprinkler ban for gardens, lawns & private fields Irrigation system ban for gardens, lawns & private fields No filling of public fountains from mains supply No water tanker or metered standpipes for construction water sourced from mains supply No watering of established municipal sports fields fed from mains supply 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 2 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Media release of river levels, rainfall and dam levels <ol style="list-style-type: none"> KDC Communications Manager to publish media release Advise Silver Fern Farms / Kumara Processors of Water Use Restriction Status <ol style="list-style-type: none"> KDC Operations Engineer to communicate by email Fire Service and Rural Fire Service requested to stop practising and testing from live hydrants <ol style="list-style-type: none"> KDC Operations Engineer to communicate by email
3		< 755 l/s	>100 mm	<ul style="list-style-type: none"> Sprinkler ban for gardens, lawns & private fields Irrigation system ban for gardens, lawns & private fields Hose ban for gardens, lawns & private fields, vehicle washing, building & paved area cleaning, flushing boat engines and commercial/industrial cleaning 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 3 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Media release <ol style="list-style-type: none"> KDC Communications Manager to publish media release Radio station advertising <ol style="list-style-type: none"> KDC Communications Manager to release Water Use Restriction Level 3 to front page of KDC website <ol style="list-style-type: none"> KDC Communications Manager to publish

¹⁶ Water Use Restriction Level 1 to start on 1 November regardless of flow in the Kaihu River.

¹⁷ KDC Communications Manager is drafting templates for each of the Water Use Restriction Levels, a sample is attached under Appendix - B

Water Use Restriction Level	Date ¹⁶	Flow in Kaihu River @ Gorge Recorder Site 46611	Water Level At Rotu Intake	Community Actions	KDC Communications ¹⁷
				<ul style="list-style-type: none"> Water blaster ban for vehicle washing and building & paved area cleaning No filling of residential swimming pools / spa pools from mains supply No filling of water tanks from a registered water carrier with water sourced from mains supply No commercial vehicle washing and car washes from mains supply without water recycling Market gardens & plant nursery require written approval No filling of public fountains from mains No water tanker or metered standpipes for construction water No watering of established municipal sports fields fed from mains supply Silver Fern Farms to reduce water usage Kumara processors to reduce water usage 	<ol style="list-style-type: none"> Request Silver Fern Farms and Kumara processors to reduce water usage <ol style="list-style-type: none"> KDC Operations Engineer to Communicate Advise car wash facility to reduce water usage <ol style="list-style-type: none"> KDC Operations Engineer to Communicate Advise water carriers to use alternate source <ol style="list-style-type: none"> KDC Operations Engineer to Communicate If the situation continues, KDC will advise commercial operations to close and will provide water supply to residents through water tankers depending on the availability of water in the region. Check dialysis patients <ol style="list-style-type: none"> KDC Communications Manager to check with Northland District Health Board
4 ¹⁸		< 645 l/s	<100 mm	<ul style="list-style-type: none"> No gardens, lawns or private field watering, vehicle washing, building and paved area washing, flushing of boat engines or commercial/industrial cleaning water use Sprinkler ban Irrigations system ban Hose ban 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 4 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Media release <ol style="list-style-type: none"> KDC Communications Manager to publish media release (include tanker locations and process to access tankers) Radio station advertising <ol style="list-style-type: none"> KDC Communications Manager to release (include tanker locations and process to access tankers) Water Use Restriction Level 4 to front page of KDC website

¹⁸ Water Use Restriction Level 4 to be implemented when the water level in the Kaihu River reduces to less than 100mm above the Rotu intake.

Water Use Restriction Level	Date ¹⁶	Flow in Kaihu River @ Gorge Recorder Site 46611	Water Level At Rotu Intake	Community Actions	KDC Communications ¹⁷
				<ul style="list-style-type: none"> • No filling of residential swimming pools / spa pools from mains supply • No filling of water tanks from a registered water carrier with water sourced from mains supply • Market gardens & plant nursery require an alternative water source other than council supply • Public Pools are closed. No filling of public swimming pools / spa pools from mains supply • Public Facilities are closed (toilets, showers and drinking foundations) • Commercial vehicle washing and car washes must use an alternative water source other than Council supply and use water recycling. No use of high-pressure water systems. • No filling of public fountains from mains supply • No water tanker or metered standpipes for construction • No watering of municipal sports fields • Silver Fern Farms to reduce water usage • Kumara processors to reduce water usage 	<ul style="list-style-type: none"> a. KDC Communications Manager to publish <ol style="list-style-type: none"> 5. Advise car wash facility to may be requested to halt water usage <ul style="list-style-type: none"> a. KDC Operations Engineer to contact 6. Advise water carriers to use alternate source <ul style="list-style-type: none"> a. KDC Operations Engineer to contact 7. Priority given to domestic water use, therefore Silver Fern Farms and Kumara Processors may be requested to stop using water <ul style="list-style-type: none"> a. KDC Operations Engineer to Communicate 8. Check dialysis patients <ul style="list-style-type: none"> a. KDC Communications Manager to check with Northland District Health Board

C.2 Maungaturoto Communications Staff Tasks

Water Use Restriction Level	Triggers			Community Actions	KDC Communications
	Flow in Piroa Stream (l/s)	Brooklands Dam – Cumulative Annual Usage (m³/year)	Available Flow from Cattlemount (m³/day)		
Business as usual	>30 l/s	<270,000	< 2650	<ul style="list-style-type: none"> No restrictions in place. Minimise losses and efficient use of water encouraged. 	
1	30-19 l/s	<270,000	< 2650	<ul style="list-style-type: none"> General water conservation awareness. No restrictions in place. 	<ol style="list-style-type: none"> Issue Community Notice Water Use Restriction Level 1. <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper. Information boards are placed in strategic places within the community Advise water users of pending restrictions. Begin discussions with Fonterra on raw water availability. <ol style="list-style-type: none"> KDC Operations Engineer to communicate by email
2	19 – 11 l/s	<270,000	<1000	<ul style="list-style-type: none"> Notice to conserve water. Sprinkler ban for gardens, lawns & private fields Irrigation system ban for gardens, lawns & private fields No filling of public fountains from mains supply No water tanker or metered standpipes for construction water sourced from mains supply No watering of established municipal sports fields fed from mains supply 	<ol style="list-style-type: none"> Issue Community Notice Water Use Restriction Level 2. <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper. Information boards are placed in strategic places within the community KDC Communications Manager to publish media release on river levels, rainfall and dam levels <ol style="list-style-type: none"> KDC Communications Manager to publish media release. KDC Communications Manager to contact Fire Service and Rural Fire Service requested to stop practicing and testing from live fire hydrants. <ol style="list-style-type: none"> KDC Operations Engineer to contact Fire Service Advise Fonterra that Piroa take has reduced operation and raw water supply may be restricted depending on Fonterra's demand. <ol style="list-style-type: none"> KDC Operations Engineer to communicate by email

Water Use Restriction Level	Triggers			Community Actions	KDC Communications
	Flow in Piroa Stream (l/s)	Brooklands Dam – Cumulative Annual Usage (m³/year)	Available Flow from Cattlemount (m³/day)		
3	19 – 11 l/s	<270,000	<1000	<ul style="list-style-type: none"> • Sprinkler ban for gardens, lawns & private fields • Irrigation system ban for gardens, lawns & private fields • Hose ban for gardens, lawns & private fields, vehicle washing, building & paved area cleaning, flushing boat engines and commercial/industrial cleaning • Water blaster ban for vehicle washing and building & paved area cleaning • No filling of residential swimming pools / spa pools from mains supply • No filling of water tanks from a registered water carrier with water sourced from mains supply • No commercial vehicle washing and car washes from mains supply without water recycling • Market gardens & plant nursery require written approval • No filling of public fountains from mains supply • No water tanker or metered standpipes for construction water • No watering of established municipal sports fields fed from mains supply 	<ol style="list-style-type: none"> 1. Issue Community Notice Water Use Restriction Level 3. <ol style="list-style-type: none"> a. KDC Communications Manager to publish notice in local newspaper. b. Information boards are placed in strategic places within the community 2. Communicate with raw water farms supplies on reducing water usage. <ol style="list-style-type: none"> a. KDC Operations Engineer to communicate by email 3. KDC Communications Manager to publish media release on river levels, rainfall and dam levels. <ol style="list-style-type: none"> a. KDC Communications Manager to publish media release 4. KDC Communications Manager to organise radio advertising. 5. Water Use Restriction Level 3 to front page of KDC website. 6. Advise Fonterra that raw water supply is limited, and only certain volumes can be provided. This is dependent on the overall raw water availability. <ol style="list-style-type: none"> a. KDC Operations Engineer to communicate by email 7. If the situation continues, KDC will advise commercial operations to close and will provide water supply to residents through water tankers depending on the availability of water in the region. 8. Check dialysis patients <ol style="list-style-type: none"> a. KDC Communications Manager to check with Northland District Health Board .
	Level 3 is triggered when both the trigger of <i>Flow in Piroa stream</i> and <i>Available flow from Cattlemount</i> are reached.				

Water Use Restriction Level	Triggers			Community Actions	KDC Communications
	Flow in Piroa Stream (l/s)	Brooklands Dam – Cumulative Annual Usage (m³/year)	Available Flow from Cattlemount (m³/day)		
4	<11 l/s Breaching consent limit	Dam water levels result in no water being able to be withdrawn	<1000	<ul style="list-style-type: none"> No gardens, lawns or private field watering, vehicle washing, building and paved area washing, flushing of boat engines or commercial/industrial cleaning water use Sprinkler ban Irrigation system ban Hose ban No filling of residential swimming pools from mains supply No filling of water tanks from a registered water carrier with water sourced from mains supply Market gardens & plant nursery require an alternative water source other than council supply Public Pools are closed. No filling of public swimming pools / spa pools from mains supply Public Facilities are closed (toilets, showers and drinking foundations) Commercial vehicle washing and car washes must use an alternative water source other than Council supply and use water recycling. No use of high-pressure water systems. No filling of public fountains from mains No water tanker or metered standpipes for construction No watering of municipal sports fields 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 4 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Media release <ol style="list-style-type: none"> KDC Communications Manager to publish media release (include tanker locations and process to access tankers) Radio station advertising <ol style="list-style-type: none"> KDC Communications Manager to release (include tanker locations and process to access tankers) Water Use Restriction Level 4 to front page of KDC website <ol style="list-style-type: none"> KDC Communications Manager to publish Advise car wash facility to may be requested to halt water usage <ol style="list-style-type: none"> KDC Operations Engineer to contact Advise water carriers to use alternate source <ol style="list-style-type: none"> KDC Operations Eningeer to contact Priority given to domestic water use, therefore Fonterra may be requested to stop using water <ol style="list-style-type: none"> KDC Operations Engineer to Communicate Check dialysis patients <ol style="list-style-type: none"> KDC Communications Manager to check with Northland District Health Board.

C.3 Ruawai Communications Staff Tasks

Water Use Restriction Level	Region Wide Water Use Restriction level	Community Actions	KDC Communications ¹⁹
Business as Usual	-	<ul style="list-style-type: none"> No restrictions in place Minimise losses and efficient use of water encouraged 	
1	Level 1	<ul style="list-style-type: none"> General water conservation awareness No restrictions in place 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 1 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Advise water users of pending restrictions.
2	Level 2	<ul style="list-style-type: none"> Notice to conserve water Sprinkler ban for gardens, lawns & private fields Irrigation system ban for gardens, lawns & private fields No filling of public fountains from mains supply No water tanker or metered standpipes for construction water sourced from mains supply No watering of established municipal sports fields fed from mains supply 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 2 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Media release of bore water depths, rainfall and water usage <ol style="list-style-type: none"> KDC Communications Manager to publish media release Fire Service and Rural Fire Service requested to stop practising and testing from live hydrants <ol style="list-style-type: none"> KDC Operations Engineer to contact Fire Service
3	Level 3	<ul style="list-style-type: none"> Sprinkler ban for gardens, lawns & private fields Irrigation system ban for gardens, lawns & private fields Hose ban for gardens, lawns & private fields, vehicle washing, building & paved area cleaning, flushing boat engines and commercial/industrial cleaning Water blaster ban for vehicle washing and building & paved area cleaning No filling of residential swimming pools / spa pools from mains supply No filling of water tanks from a registered water carrier with water sourced from mains supply 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 3 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Media release <ol style="list-style-type: none"> KDC Communications Manager to publish media release Radio station advertising <ol style="list-style-type: none"> KDC Communications Manager to release Water Use Restriction Level 3 to front page of KDC website <ol style="list-style-type: none"> KDC Communications Manager to publish

¹⁹ KDC Communications Manager is drafting templates for each of the Water Use Restriction Levels, a sample is attached under Appendix - B

Water Use Restriction Level	Region Wide Water Use Restriction level	Community Actions	KDC Communications ¹⁹
		<ul style="list-style-type: none"> No commercial vehicle washing and car washes from mains supply without water recycling Market gardens & plant nursery require written approval No filling of public fountains from mains No water tanker or metered standpipes for construction water No watering of established municipal sports fields fed from mains supply 	<ol style="list-style-type: none"> Advise car wash facility to reduce water usage <ol style="list-style-type: none"> KDC Operations Engineer to contact Advise water carriers to use alternate source <ol style="list-style-type: none"> KDC Operations Engineer to contact Check dialysis patients <ol style="list-style-type: none"> KDC Communications Manager to check with Northland District Health Board
4	Level 4	<ul style="list-style-type: none"> No gardens, lawns or private field watering, vehicle washing, building and paved area washing, flushing of boat engines or commercial/industrial cleaning water use Sprinkler ban Irrigation system ban Hose ban No filling of residential swimming pools / spa pools from mains supply No filling of water tanks from a registered water carrier with water sourced from mains supply Market gardens & plant nursery require an alternative water source other than council supply No filling of public swimming pools / spa pools from mains supply Commercial vehicle washing and car washes must use an alternative water source other than Council supply and use water recycling. No use of high-pressure water systems. No filling of public fountains from mains supply No water tanker or metered standpipes for construction water No watering of municipal sports fields 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 4 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Media release <ol style="list-style-type: none"> KDC Communications Manager to publish media release (include tanker locations and process to access tankers) Radio station advertising <ol style="list-style-type: none"> KDC Communications Manager to release (include tanker locations and process to access tankers) Water Use Restriction Level 4 to front page of KDC website <ol style="list-style-type: none"> KDC Communications Manager to publish Advise car wash facility our water extraction from bores has halted <ol style="list-style-type: none"> KDC Operations Engineer to contact Advise water carriers to use alternate source <ol style="list-style-type: none"> KDC Operations Engineer to contact Check dialysis patients <ol style="list-style-type: none"> KDC Communications Manager to check with Northland District Health Board

C.4 Mangawhai Communications Staff Tasks

Water Use Restriction Level	Date ²⁰	Average daily water take volume (m3/d)	Community Actions ²¹	KDC Communications
Business as Usual	Easter – 1 Nov	<45 m ³ /day take ²²	<ul style="list-style-type: none"> No restrictions in place Minimise losses and efficient use of water encouraged 	
1	1 Nov	Over a 20% increase from the August Report Average Daily Volume	<ul style="list-style-type: none"> General water conservation awareness No restrictions in place 	2. Issue Community Notice – Water Use Restriction Level 1 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Advise water users of pending restrictions.
2	1 Dec	Over a 30% increase from the August Report Average Daily Volume	<ul style="list-style-type: none"> Notice to conserve water Sprinkler ban for gardens, lawns & private fields Irrigation system ban for gardens, lawns & private fields No filling of public fountains from mains supply No water tanker or metered standpipes for construction water sourced from mains supply No watering of established municipal sports fields fed from mains supply 	1. Issue Community Notice – Water Use Restriction Level 2 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community 2. Media release of bore water depth, rainfall and water usage <ol style="list-style-type: none"> KDC Communications Manager to publish media release 3. Fire Service and Rural Fire Service requested to stop practising and testing from live hydrants <ol style="list-style-type: none"> KDC Operations Engineer to contact Fire Service
3	18 Dec	Nearing the consent limit 75m ³ average daily take	<ul style="list-style-type: none"> Sprinkler ban for gardens, lawns & private fields Irrigation system ban for gardens, lawns & private fields Hose ban for gardens, lawns & private fields, vehicle washing, building & paved area cleaning, flushing boat engines and commercial/industrial cleaning Water blaster ban for vehicle washing and building & paved area cleaning 	1. Issue Community Notice – Water Use Restriction Level 3 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community 2. Media release <ol style="list-style-type: none"> KDC Communications Manager to publish media release 3. Radio station advertising <ol style="list-style-type: none"> KDC Communications Manager to release 4. Water Use Restriction Level 3 to front page of KDC website

²⁰ Water Use Restriction Level 1 to start on 1 November regardless of water depth of existing bore (m).

²¹ KDC Communications Manager is drafting templates for each of the Water Use Restriction Levels, a sample is attached under Appendix - B

²² The average daily take limit from Easter – 1 Nov in the event of lower groundwater levels during winter due to less recharge over dry periods.

Water Use Restriction Level	Date ²⁰	Average daily water take volume (m3/d)	Community Actions ²¹	KDC Communications
			<ul style="list-style-type: none"> No filling of residential swimming pools / spa pools from mains supply No filling of water tanks from a registered water carrier with water sourced from mains supply No commercial vehicle washing and car washes from mains supply without water recycling Market gardens & plant nursery require written approval No filling of public fountains from mains No water tanker or metered standpipes for construction water No watering of established municipal sports fields fed from mains supply 	<ul style="list-style-type: none"> a. KDC Communications Manager to publish <ol style="list-style-type: none"> Advise car wash facility to reduce water usage <ul style="list-style-type: none"> a. KDC Operations Engineer to contact Advise water carriers to use alternate source <ul style="list-style-type: none"> a. KDC Operations Engineer to contact Check dialysis patients <ul style="list-style-type: none"> a. KDC Communications Manager to check with Northland District Health Board
4	25 Dec	Water take exceeding 110m³/day	<ul style="list-style-type: none"> No gardens, lawns or private field watering, vehicle washing, building and paved area washing, flushing of boat engines or commercial/industrial cleaning water use Sprinkler ban Irrigations system ban Hose ban No filling of residential swimming pools / spa pools from mains supply No filling of water tanks from a registered water carrier with water sourced from mains supply Market gardens & plant nursery require an alternative water source other than council supply Public Pools are closed. No filling of public swimming pools / spa pools from mains supply Public Facilities are closed (toilets, showers and drinking foundations) Commercial vehicle washing and car washes must use an alternative water source other than Council supply and use water recycling. No use of high-pressure water systems. No filling of public fountains from mains supply No water tanker or metered standpipes for construction No watering of municipal sports fields 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 4 <ul style="list-style-type: none"> a. KDC Communications Manager to publish notice in local newspaper Media release <ul style="list-style-type: none"> a. KDC Communications Manager to publish media release (include tanker locations and process to access tankers) Radio station advertising <ul style="list-style-type: none"> a. KDC Communications Manager to release (include tanker locations and process to access tankers) Water Use Restriction Level 4 to front page of KDC website <ul style="list-style-type: none"> a. KDC Communications Manager to publish Advise car wash facility to halt water usage <ul style="list-style-type: none"> a. KDC Operations Engineer to contact Advise water carriers to use alternate source <ul style="list-style-type: none"> a. KDC Operations Engineer to contact Check dialysis patients <ul style="list-style-type: none"> a. KDC Communications Manager to check with Northland District Health Board

C.5 Glinks Gully Communications Staff Tasks

Water Use Restriction Level	Date ²³	Average daily water take volume (m3/d)	Community Actions	KDC Communications ²⁴
Business as Usual	1 Feb to 31 Oct	≤Winter ²⁵ Daily Volume	<ul style="list-style-type: none"> No restrictions in place Minimise losses and efficient use of water encouraged 	
1	1 Nov	≤Winter Daily Volume	<ul style="list-style-type: none"> General water conservation awareness No restrictions in place 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 1 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Advise water users of pending restrictions.
2	1 Dec	Over 10% increase of Winter Daily Volume	<ul style="list-style-type: none"> Notice to conserve water Sprinkler ban for gardens, lawns & private fields Irrigation system ban for gardens, lawns & private fields No filling of public fountains from mains supply No water tanker or metered standpipes for construction water sourced from mains supply No watering of established municipal sports fields fed from mains supply 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 2 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Media release of rainfall and water usage <ol style="list-style-type: none"> KDC Communications Manager to publish media release Fire Service and Rural Fire Service requested to stop practising and testing from live hydrants <ol style="list-style-type: none"> KDC Operations Engineer to contact Fire Service
3	18 Dec	Nearing the consent limit 75m³ average daily take	<ul style="list-style-type: none"> Sprinkler ban for gardens, lawns & private fields Irrigation system ban for gardens, lawns & private fields Hose ban for gardens, lawns & private fields, vehicle washing, building & paved area cleaning, flushing boat engines and commercial/industrial cleaning Water blaster ban for vehicle washing and building & paved area cleaning No filling of residential swimming pools / spa pools from mains supply 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 3 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Information boards are placed in strategic places within the community Media release <ol style="list-style-type: none"> KDC Communications Manager to publish media release Radio station advertising <ol style="list-style-type: none"> KDC Communications Manager to release Water Use Restriction Level 3 to front page of KDC website <ol style="list-style-type: none"> KDC Communications Manager to publish

²³ Water Use Restriction Level 1 to start on 1 November regardless of flow in the Tributary Stream.

²⁴ KDC Communications Manager is drafting templates for each of the Water Use Restriction Levels, a sample is attached under Appendix - B

²⁵ Winter Daily Average is the average daily flow from June to August of that year.

Water Use Restriction Level	Date ²³	Average daily water take volume (m3/d)	Community Actions	KDC Communications ²⁴
			<ul style="list-style-type: none"> No filling of water tanks from a registered water carrier with water sourced from mains supply No commercial vehicle washing and car washes from mains supply without water recycling Market gardens & plant nursery require written approval No filling of public fountains from mains No water tanker or metered standpipes for construction water No watering of established municipal sports fields fed from mains supply 	<ol style="list-style-type: none"> Advise water carriers to use alternate source <ol style="list-style-type: none"> KDC Operations Engineer to contact Check dialysis patients <ol style="list-style-type: none"> KDC Communications Manager to check with Northland District Health Board
4	25 Dec	Water take exceeding 110m ³ /day	<ul style="list-style-type: none"> No gardens, lawns or private field watering, vehicle washing, building and paved area washing, flushing of boat engines or commercial/industrial cleaning water use Sprinkler ban Irrigations system ban Hose ban No filling of residential swimming pools / spa pools from mains supply No filling of water tanks from a registered water carrier with water sourced from mains supply Market gardens & plant nursery require an alternative water source other than council supply Public Pools are closed. No filling of public swimming pools / spa pools from mains supply Public Facilities are closed (toilets, showers and drinking foundations) Commercial vehicle washing and car washes must use an alternative water source other than Council supply and use water recycling. No use of high-pressure water systems. No filling of public fountains from mains supply No water tanker or metered standpipes for construction No watering of municipal sports fields 	<ol style="list-style-type: none"> Issue Community Notice – Water Use Restriction Level 4 <ol style="list-style-type: none"> KDC Communications Manager to publish notice in local newspaper Media release <ol style="list-style-type: none"> KDC Communications Manager to publish media release (include tanker locations and process to access tankers) Radio station advertising <ol style="list-style-type: none"> KDC Communications Manager to release (include tanker locations and process to access tankers) Water Use Restriction Level 4 to front page of KDC website <ol style="list-style-type: none"> KDC Communications Manager to publish Advise car wash facility to halt water usage <ol style="list-style-type: none"> KDC Operations Engineer to contact Advise water carriers to use alternate source <ol style="list-style-type: none"> KDC Operations Engineer to contact Check dialysis patients <ol style="list-style-type: none"> KDC Communications Manager to check with Northland District Health Board

Appendix D **Water Use Restriction Levels – KDC Operations Staff Tasks**

D.1 Dargaville Operations Staff Tasks

Water Use Restriction Level	Date ²⁶	Flow in Kaihu River @ Gorge Recorder Site 46611	Water Level At Rotu Intake	KDC Operations Staff
Business as Usual	-	> 1000 l/s	-	<ol style="list-style-type: none"> 1. Monitor NIWA Seasonal Climate Outlook https://www.niwa.co.nz/climate/sco 2. Monitor Kaihu River flow at Gorge Recorder Site http://www.nrc.govt.nz/Environment/River-and-rainfall-data/River-and-Rainfall-Data/ 3. Any water intensive planned activity should be carried out at this time 4. UV Plant is operational
1	1 Nov	< 1000 l/s	>100 mm	<ol style="list-style-type: none"> 1. Prepare to ramp up the Rotu take <ol style="list-style-type: none"> a. Inspect Rotu pump station - ensure pumps, valves are operational and can be brought on-line immediately b. Note flow meter reading c. Clear raw water in-take 2. Monitor water usage at Water Treatment Plant (WTP) and dam levels on a daily basis 3. Maramanui booster pump station is managed with Rotu flows 4. Ensure SCADA is recording WTP and Waitua dam flows on continuous basis 5. Notify Northland Regional Council (NRC) of Water Use Restriction Level 1 status
2		< 900 l/s	>100 mm	<ol style="list-style-type: none"> 1. Continue to blend Waiparataniwha / Rotu takes 2. Manage Waiparataniwha takes to maintain flow of water over weirs in compliance with condition 10 of consent AUT.030845.01.01 <ol style="list-style-type: none"> a. Adjust valves at raw water takes to maintain flow over weirs 3. Monitor water usage at WTP and dam levels on a daily basis 4. Backwash WTP filters 5. Adjust Rotu Pump (one pump) as required to balance flows 6. Monitor raw water supply at WTP 7. Notify Northland Regional Council (NRC) of Water Use Restriction Level 2 status 8. Water Operations Engineer to email: <ol style="list-style-type: none"> a. NRC b. Northland District Health Board (NDHB) c. Silver Fern Farms d. Kumara Processors

²⁶ Water Alert Level 1 to start on 1 November regardless of flow in the Kaihu River.

Water Use Restriction Level	Date ²⁶	Flow in Kaihu River @ Gorge Recorder Site 46611	Water Level At Rotu Intake	KDC Operations Staff
3		< 755 l/s	>100 mm	<ol style="list-style-type: none"> 1. KDC to engage with NRC to review current drought status and to assess the option to preserve water stored in the Waiatua Dam 27 and use the Ahikiwi take point²⁸ 2. Manage Waiparataniwha takes to maintain flow of water over weirs in compliance with condition 10 of consent AUT.030845.01.01 3. Water Operations Engineer to prepare note of all actions taken thus far as per the Drought Management Plan and send to NRC 4. Begin road signage advertising 5. Monitor water usage at WTP 6. Notify Northland Regional Council (NRC) of Water Use Restriction Level 3 status 7. Inspect the Dargaville water reticulation system for leaks and other water losses and promptly repairing or ceasing them if/when they are found 8. Areas of public reticulation may be switched off for periods of time, standpipe supplies to be considered 9. Prepare to install weir across Kaihu River <ol style="list-style-type: none"> a. Inspect site and ensure plant and material is on-site and all equipment is available to install weir 10. The Drought Management Response Team (DMRT) is established if drought conditions are anticipated to become more severe and prolonged and there a potential risk of inadequate water supply to service the community. 11. DMRT to consider / prepare for the use of water tankers to supplement / replace the public water supply. 12. DMRT to consider / instruct the closing of public facilities (toilets, showers and drinking fountains) 13. DMRT to consider / instruct the closing of public pools. 14. DMRT to consider / prepare for a declaration of Civil Defence Emergency. <p>If agreement is reached with NRC on retaining the water stored in the Waiatua Dam ²⁹ and the use of the Ahikiwi take point³⁰:</p> <ol style="list-style-type: none"> 15. Continue sourcing water from Rotu 16. Install temporary weir on Kaihu River at Rotu 17. Bring on line the water take at Ahikiwi on the Kaihu River (Te Roroa Whatu Ora Trust consultation required) <ol style="list-style-type: none"> a. Inspect Ahikiwi pump station and ensure pump and valves are working; b. Clean the raw water take 18. Continue road signage advertising 19. Monitor water usage at WTP

²⁷ Condition 4 of the CON20110813401 requires water to be released from the Waiatua Dam at the same rate as water is extracted from Rotu.

²⁸ KDC is proposing to apply for a consent condition change under Section 127 of the RMA to decouple the requirement to release water from the Waiatua Dam when the flow reduces below 815 l/s in the Kaihu River.

²⁹ Condition 4 of the CON20110813401 requires water to be released from the Waiatua Dam at the same rate as water is extracted from Rotu.

³⁰ KDC is proposing to apply for a consent condition change under Section 127 of the RMA to decouple the requirement to release water from the Waiatua Dam when the flow reduces below 815 l/s in the Kaihu River.

Water Use Restriction Level	Date ²⁶	Flow in Kaihu River @ Gorge Recorder Site 46611	Water Level At Rotu Intake	KDC Operations Staff
4 ³¹		< 645 l/s	<100 mm	<ol style="list-style-type: none"> 1. Notify Northland Regional Council (NRC) of Water Use Restriction Level 4 status 2. Continue road signage advertising 3. Monitor water availability at WTP 4. Deploy water tankers to provide rationed water services to the community 5. Close public facilities (toilets, showers and drinking fountains) 6. Close public pools. 7. Declare a state of Civil Defence Emergency if deemed appropriate.

³¹ Water Use Restriction Level 4 to be implemented when the water level in the Kaihu River reduces to less than 100mm above the Rotu intake.

D.2 Maungaturoto Operations Staff Tasks

Water Use Restriction Level	Triggers			KDC Operations Staff			
	Flow in Piroa Stream (l/s)	Brooklands Dam – Cumulative Annual Usage (m ³ /year)	Available Flow from Cattlemount (m ³ /day)	Piroa Stream	Brooklands Dam	Cattlemount/Boar Hill Intakes	General Actions
Business as usual	>30 l/s	<270,000	< 2650	Continue as normal.	Supply not needed. 1. Monitor year to date water usage at Brooklands Dam.	Continue as normal.	-
1	30-19 l/s	<270,000	< 2650	1. Check the filter screens at all intakes to ensure they are clear. 2. Check intake pipes and areas where high breakages of pipes are known to occur to ensure minimal leaks are occurring. 3. Monitoring downstream weir to ensure minimum levels of flows are still being achieved. 4. Flow in stream to be monitored such that it does not fall below the 24hr daily average of 11l/sec.	1. Piroa stream generally gets dry first and hence monitor the stream flow. 2. Begin discussions with dam owners on raw water availability. 3. Confirm Brooklands Dam Intake operational – check filter screen for clogging and all pipes for breakages. 4. Establish a date to bring in Brooklandsk supply – assume maximum period of 20 days before Piroa Stream gets to 950m ³ /day. 5. Monitor year to date water usage at Brooklands Dam.	1. Check the filter screens at all intakes to ensure they are clear. 2. Check intake pipes and areas where high breakages of pipes are known to occur to ensure minimal leaks are occurring.	1. Notify Northland Regional Council (NRC) of Water Use Restriction Level 1 status 2. Monitor overall raw water availability and demand on daily basis and report to Operations Engineer.
2	19 – 11 l/s	<270,000	<1000	1. Reduce water take to comply with minimum	1. Monitor pump station intake and dam level. 2. Continue discussions with dam owners on	1. Check the filter screens at all intakes to ensure they are clear.	1. Notify Northland Regional Council (NRC) of Water Use Restriction Level 2 status

Water Use Restriction Level	Triggers			KDC Operations Staff			
	Flow in Piroa Stream (l/s)	Brooklands Dam – Cumulative Annual Usage (m³/year)	Available Flow from Cattlemount (m³/day)	Piroa Stream	Brooklands Dam	Cattlemount/Boar Hill Intakes	General Actions
	Level 2 is triggered when either the trigger of <i>Flow in Piroa stream</i> or <i>Available flow from Cattlemount</i> are reached.			downstream 24hr average flow of 11 L/sec and minimum downstream flow of 9l/sec.	3. raw water availability. Bring Brooklands Dam supply on line.	2. Check intake pipes and areas where high breakages of pipes are known to occur to ensure minimal leaks are occurring.	2. Monitor overall raw water availability and demand on daily basis and report to Operations Engineer. 3. Water Operations Engineer to email: a. NRC b. Northland District Health Board (NDHB) c. Fonterra
3	19 – 11 l/s	<270,000	<1000	1. Reduce water take to comply with minimum downstream 24hr average flow of 11 l/s and minimum downstream flow of 9 l/s. 2. Seek approval from NRC to reduce flow below 11 l/s by measuring downstream Dissolved Oxygen Levels. 3. Continue usage at average daily year to date take.	1. Continue usage at the average daily year to date take 2. Monitor pump station intake and dam level. 3. Continue discussions with dam owners on raw water availability.	1. Check the filter screens at all intakes to ensure they are clear. 2. Check intake pipes and areas where high breakages of pipes are known to occur to ensure minimal leaks are occurring.	1. Notify Northland Regional Council (NRC) of Water Use Restriction Level 3 status 2. Monitor overall raw water availability and demand on daily basis and report to Operations Engineer. 3. The Drought Management Response Team (DMRT) is established if drought conditions are anticipated to become more severe and prolonged and there a potential risk of inadequate water supply to service the community. 4. DMRT to consider / prepare for the use of water tankers to supplement / replace the public water supply. 5. DMRT to consider / instruct the closing of public facilities (toilets, showers and drinking fountains) 6. DMRT to consider / instruct the closing of public pools. 7. DMRT to consider / prepare for a declaration of Civil Defence Emergency.

Water Use Restriction Level	Triggers			KDC Operations Staff			
	Flow in Piroa Stream (l/s)	Brooklands Dam – Cumulative Annual Usage (m³/year)	Available Flow from Cattlemount (m³/day)	Piroa Stream	Brooklands Dam	Cattlemount/Boar Hill Intakes	General Actions
4	<11 l/s Breaching consent limit	Dam water levels result in no water being able to be withdrawn	<1000	Ceased operation.	Ceased operation.	Ceased operation.	<ol style="list-style-type: none"> 1. Notify Northland Regional Council (NRC) of Water Use Restriction Level 4 status 2. Deploy water tankers to provide rationed water services to the community 3. Close public facilities (toilets, showers and drinking fountains) 4. Close public pools. 5. Declare a state of Civil Defence Emergency if deemed appropriate.

D.3 Ruawai Operations Staff Tasks

Water Use Restriction Level	Region Wide Water Use Restriction Level	KDC Operations Staff
Business as Usual	-	<ol style="list-style-type: none"> 1. Monitor NIWA Seasonal Climate Outlook https://www.niwa.co.nz/climate/sco 2. Any water intensive planned activity should be carried out at this time
1	Level 1	<ol style="list-style-type: none"> 1. Monitor water usage at Water Treatment Plant (WTP) on a daily basis 2. Ensure SCADA is recording WTP on continuous basis 3. Notify Northland Regional Council (NRC) of Water Use Restriction Level 1 status 4. Refer to "Ruawai Drinking Water Supply, Water Safety Plan" & "Borefield Management Plan" to ensure the triggers described in the documents aren't reached
2	Level 2	<ol style="list-style-type: none"> 1. Monitor water usage at WTP on a daily basis 2. Monitor raw water supply at WTP 3. Notify Northland Regional Council (NRC) of Water Use Restriction Level 2 status 4. Water Operations Engineer to email: <ol style="list-style-type: none"> a. NRC b. Northland District Health Board (NDHB)
3	Level 3	<ol style="list-style-type: none"> 1. Water Operations Engineer to prepare note of all actions taken thus far as per the Drought Management Plan and send to NRC 2. Begin road signage advertising 3. Monitor water usage at WTP 4. Notify Northland Regional Council (NRC) of Water Use Restriction Level 3 status 5. Inspect the Ruawai water reticulation system for leaks and other water losses and promptly repairing or ceasing them if/when they are found 6. The Drought Management Response Team (DMRT) is established if drought conditions are anticipated to become more severe and prolonged and there a potential risk of inadequate water supply to service the community. 7. DMRT to consider / prepare for the use of water tankers to supplement / replace the public water supply. 8. DMRT to consider / instruct the closing of public facilities (toilets, showers and drinking fountains) 9. DMRT to consider / instruct the closing of public pools. 10. DMRT to consider / prepare for a declaration of Civil Defence Emergency.
4	Level 4	<ol style="list-style-type: none"> 1. Cease all water extraction from the bores. 2. Continue road signage advertising 3. Notify Northland Regional Council (NRC) of Water Use Restriction Level 4 status 4. Deploy water tankers to provide rationed water services to the community 5. Close public facilities (toilets, showers and drinking fountains) 6. Close public pools. 7. Declare a state of Civil Defence Emergency if deemed appropriate.

D.4 Mangawhai Operations Staff Tasks

Water Use Restriction Level	Date ³²	Average daily water take volume (m ³ /d)	KDC Operations Staff
Business as Usual	Easter – 1 Nov	<45 m ³ /day take ³³	<ol style="list-style-type: none"> 1. Monitor NIWA Seasonal Climate Outlook https://www.niwa.co.nz/climate/sco 2. Any water intensive planned activity should be carried out at this time
1	1 Nov	Over a 20% increase from the August Report Average Daily Volume	<ol style="list-style-type: none"> 1. Monitor water usage at Water Treatment Plant (WTP) and bore levels on a daily basis 2. Notify Northland Regional Council (NRC) of Water Use Restriction Level 1 status
2	1 Dec	Over a 30% increase from the August Report Average Daily Volume	<ol style="list-style-type: none"> 1. Monitor water usage at WTP on a daily basis 2. Monitor raw water supply at WTP 3. Notify Northland Regional Council (NRC) of Water Use Restriction Level 2 status 4. Liaise with consent nominated property owners regarding supply adequacy. 5. Liaise with water carriers to confirm supplies throughout the critical summer period. 6. Water Operations Engineer to email: <ol style="list-style-type: none"> a. NRC b. Northland District Health Board (NDHB)
3	18 Dec	Nearing the consent limit 75m ³ average daily take	<ol style="list-style-type: none"> 1. Notify Northland Regional Council (NRC) of Water Use Restriction Level 3 status 2. Water Operations Engineer to prepare note of all actions taken thus far as per the Drought Management Plan and send to NRC 3. Begin road signage advertising 4. Monitor water usage at WTP 5. Inspect the Mangawhai water reticulation system for leaks and other water losses and promptly repairing or ceasing them if/when they are found 6. The Drought Management Response Team (DMRT) is established if drought conditions are anticipated to become more severe and prolonged and there a potential risk of inadequate water supply to service the community. 7. DMRT to consider / prepare for the use of water tankers to supplement / replace the public water supply. 8. DMRT to consider / instruct the closing of public facilities (toilets, showers and drinking fountains) 9. DMRT to consider / instruct the closing of public pools. 10. DMRT to consider / prepare for a declaration of Civil Defence Emergency. 11.

³² Water Use Restriction Level 1 to start on 1 November regardless of water depth of existing bore (m).

³³ The average daily take limit from Easter – 1 Nov in the event of lower groundwater levels during winter due to less recharge over dry periods.

Water Use Restriction Level	Date ³²	Average daily water take volume (m3/d)	KDC Operations Staff
4	25 Dec	Water take exceeding 110m³/day	<ol style="list-style-type: none"> 1. Notify Northland Regional Council (NRC) of Water Use Restriction Level 4 status 2. Halt extraction from the bores 3. Continue road signage advertising 4. Public reticulation turned off 5. Deploy water tankers to provide rationed water services to users connected to the public water supply system 6. Close public facilities (toilets, showers and drinking fountains) 7. Close public pools. 8. Declare a state of Civil Defence Emergency if deemed appropriate.

D.5 Glinks Gully Operations Staff Tasks

Water Use Restriction Level	Date ³⁴	Average daily water take volume (m3/d)	KDC Operations Staff
Business as Usual	1 Feb – 31 Oct	≤Winter ³⁵ Daily Volume	<ol style="list-style-type: none"> 1. Monitor NIWA Seasonal Climate Outlook https://www.niwa.co.nz/climate/sco 2. Any water intensive activity planned activity should be carried out at this time
1	1 Nov	≤Winter Daily Volume	<ol style="list-style-type: none"> 1. Monitor NIWA Seasonal Climate Outlook https://www.niwa.co.nz/climate/sco 2. Monitor water usage at Water Treatment Plant (WTP) on a daily basis 3. Ensure SCADA is recording WTP on continuous basis 4. Notify Northland Regional Council (NRC) of Water Use Restriction Level 1 status 5. From 1st Dec: <ol style="list-style-type: none"> a. Advise water users of pending restrictions if not already in Level 2. b. Liaise with water carriers to confirm supplies throughout the critical summer period. c. Flush supply line between the water take (galleries) and the treatment plant to clear any slit deposition and maximise flow capacity
2	1 Dec	Over 10% increase of Winter Daily Volume	<ol style="list-style-type: none"> 1. Monitor NIWA Seasonal Climate Outlook https://www.niwa.co.nz/climate/sco 2. Monitor water usage at WTP on a daily basis 3. Notify Northland Regional Council (NRC) of Water Use Restriction Level 2 status 4. Water Operations Engineer to email: <ol style="list-style-type: none"> a. NRC b. Northland District Health Board (NDHB)
3	18 Dec	Over 20% increase of Winter Daily Volume	<ol style="list-style-type: none"> 1. Notify Northland Regional Council (NRC) of Water Use Restriction Level 3 status 2. Water Operations Engineer to prepare note of all actions taken thus far as per the Drought Management Plan and send to NRC 3. Begin road signage advertising 4. Monitor NIWA Seasonal Climate Outlook https://www.niwa.co.nz/climate/sco 5. Monitor water usage at WTP 6. Inspect the Glinks Gully water reticulation system for leaks and other water losses and promptly repairing or ceasing them if/when they are found 7. Areas of public reticulation may be switched off for periods of time, standpipe supplies to be considered 8. The Drought Management Response Team (DMRT) is established if drought conditions are anticipated to become more severe and prolonged and there a potential risk of inadequate water supply to service the community. 9. DMRT to consider / prepare for the use of water tankers to supplement / replace the public water supply. 10. DMRT to consider / instruct the closing of public facilities (toilets, showers and drinking fountains)

³⁴ Water Use Restriction Level 1 to start on 1 November regardless of water depth of existing bore (m).

³⁵ Winter Daily Average is the average daily flow from June to August of that year

Water Use Restriction Level	Date ³⁴	Average daily water take volume (m3/d)	KDC Operations Staff
			11. DMRT to consider / instruct the closing of public pools. 12. DMRT to consider / prepare for a declaration of Civil Defence Emergency.
4	25 Dec - 31 Jan	>100m ³ /day	1. Notify Northland Regional Council (NRC) of Water Use Restriction Level 4 status 2. Halt extraction from ground water springs 3. Continue road signage advertising 4. Deploy water tankers to provide rationed water services to the community 5. Close public facilities (toilets, showers and drinking fountains) 6. Close public pools. 7. Declare a state of Civil Defence Emergency if deemed appropriate.

Appendix E **Memorandum of Understanding**

Memorandum of Understanding

Operational Management Plan for Public Water Supply Approaching or Exceeding Resource Consent Take Limits

Between

**Northland Regional Council Far North District
Council, Kaipara District Council & Whangarei
District Council**

February 2021



This Memorandum of Understanding ("MOU") is agreed between the:

1. Northland Regional Council ("NRC")
2. Far North District Council ("FNDC")
3. Kaipara District Council ("KDC"); and
4. Whangarei District Council ("WDC")

Collectively referred to as "the councils".

Background

- A. Northland's three district councils operate multiple public water supplies in each of their districts. Each of those water supplies require and are authorised by a resource consent.
- B. Water supplies take water from rivers and streams, groundwater resources or a combination of both. Some water supplies include storage dams.
- C. Although overall Northland receives ample rainfall, that rainfall is not evenly spread across the region or throughout the year. During periods of dry weather/low rainfall rivers flows can drop relatively quickly down to the levels at which water take consents require the takes that they authorise to stop.
- D. Stopping the taking of water used for public water supplies, particularly those that rely on one source of water, could result in significant adverse effects on the health and wellbeing of the public relying on those supplies.
- E. Many Northland public water supplies require additional sources of water and significant infrastructure upgrades to increase their resiliency and enable them to meet their consent requirements during periods low rainfall. This will take time and significant investment. The challenge is greatest where the community served by the public water supply has a low average income. Nevertheless, to do little or nothing to improve public water supply resilience is unacceptable as it and fails to protect the environment and meet legal requirements.

1. Purpose

The aim of this MOU is to ensure each district council public water supply is managed during periods of low rainfall to achieve consent compliance without shutting it down or, if this not achieved, to minimise the adverse environmental effects, and period and extent, of consent non-compliance.

2. Nature of the understanding

- 2.1. The parties agree and acknowledge that this MOU does not create legal obligations between them. The MOU also does not alter the various obligations of New Zealand Law that each party is governed by and operates under including but not limited to the Local Government Act 2002 and Resource Management Act 1991.



- 2.2. This MOU does not bind the parties in any way in the performance of their respective capacities, duties or responsibilities, whether statutory, regulatory or contractual.

3. Principles

The councils agree on to the following guiding principles to achieve the purpose of the MOU:

- 3.1 The councils agree to work together constructively.
- 3.2 Each council acts in good faith and uses its best endeavours.

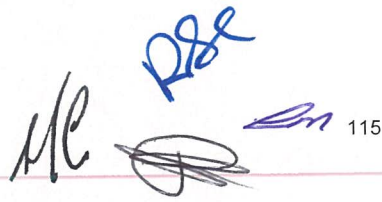
4. Roles and responsibilities/expectations

4.1. NRC will:

- i provide accurate and up-to-date information on river flows and groundwater levels relevant to each public water supply;
- ii consider the placement of Water Shortage Directions on a catchment area when, as a result of extreme dry conditions, water is required to be managed on a larger scale to ensure the adequacy of supply for public health and animal welfare; and
- iii when considering formal enforcement action in relation to consent non-compliance, take into account adherence to this MOU and whether or not there is an approved (budgeted) project in place for the water supply to increase the resilience of the water supply and, if there is a project, if the milestones for the project have been achieved.

4.2. Each district council will:

- i place appropriate levels of restrictions on their water supplies where groundwater and river levels are approaching low flows;
- ii minimise water losses through their water supply infrastructure and seek to look for reductions in. water use where possible through operational change(s);
- iii ensure an adequate response plan is in place to address water losses due to breaks and leaks in infrastructure;
- iv actively work with the largest water users of each of their water supplies to reduce their water use and require water use reduction plans for those users where appropriate;
- v undertake continuous monitoring of dissolved oxygen and temperature immediately downstream of the take points for their river water supplies when the rivers are flowing below consent limits;
- vi undertake continuous monitoring of groundwater level and conductivity from any bores deemed by the NRC to be at risk from saline intrusion; and
- vii make information during low flow events available to the regional council on a weekly basis. Information including but not limited to;



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updates on current restrictions, water demand, alternate supplies and water quality data.

4.3. Water shall only be taken under a consent from the locations normally authorised by the consent.

4.4. The consent holders will have plans in place to increase resilience on supplies to avoid exceeding consent low flow limits.

5. Commencement, review and variation

5.1. This MOU commences at the date on which the last council signs.

5.2. A review or variation of this MOU may be made if all councils agree it is needed.

5.3. This MOU will be reviewed every 2 - years following commencement, or at such time as agreed by all councils.

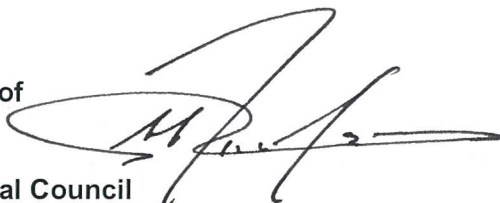
6. Issue resolution

6.1. All councils are committed to working in good faith to resolve any disagreements that may arise in relation to MOU.



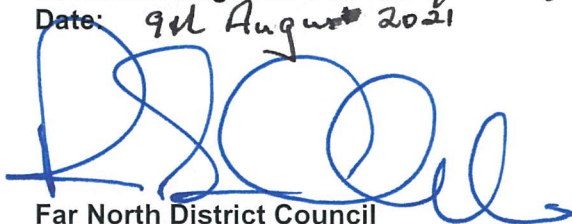
Executed as a Memorandum of Understanding

Signed on behalf of



Northland Regional Council

Date: 9th August 2021



Far North District Council

Date: 9 AUGUST 2021



Kaipara District Council

Date: 9 Aug 2021



Whangarei District Council

Date: 9/8/21

Appendix F **Water Take Consents**

F.1 Dargaville Consent

DUPLICATE

COPY FOR YOUR
INFORMATION

Resource Consent

*Pursuant to the Resource Management Act 1991, the Northland Regional Council
(hereinafter called "the Council") does hereby grant a Resource Consent to:*

KAIPARA DISTRICT COUNCIL, PRIVATE BAG 1001, DARGAVILLE 0340

To take water from the Kaihu River adjacent to Lot 1 DP 147873 Blk VII Kaihu SD (known as Rotu), at or about location co-ordinates 1669916E 6030993N, for public water supply purposes.

Note: All location co-ordinates in this document refer to Geodetic Datum 2000, New Zealand Transverse Mercator Projection.

Subject to the following conditions:

- 1 The rate of taking shall not exceed the following:
 - (a) 83 litres per second; nor
 - (b) 7,200 cubic metres per day, being any consecutive 24 hours; nor
 - (c) 2,628,000 cubic metres per year, being 1 July to 30 June.
- 2 The Consent Holder shall notify the Northland Regional Council's Monitoring Manager in writing each time that this consent is to be exercised, at least 5 working days beforehand.
- 3 The Consent Holder shall cease the exercise of this consent when the flow in the Kaihu River, as measured at the Northland Regional Council recorder site 46611 (Kaihu River at the Gorge), is at or less than 815 litres per second. This condition does not have effect if the consent is being exercised in accordance with Condition 4.
- 4 This consent may continue to be exercised when flows in the Kaihu River are at or below 815 litres per second if the Consent Holder releases water from the Waitatua dam under CON 8369. The volume of water taken from the Kaihu River during the exercise of CON 8369 shall be the same as that which is being released from the Waitatua dam. This condition shall cease to have effect immediately the Consent Holder ceases to release water from the Waitatua dam under CON 8369.

Advice Note: *The Regional Council Hydrology Department will advise the Consent Holder when the flow in the Kaihu River at NRC Recorder Site 46611 declines to 815 litres per second. This is to allow the Consent Holder to manage the rate of taking to comply with Conditions 3 and 4. The Council may undertake monitoring to determine compliance during this period.*

- 5 The Consent Holder shall notify the Northland Regional Council's Monitoring Manager in writing if this consent is to be exercised in accordance with Condition 4, at least 5 working days beforehand.
- 6 The Consent Holder shall install a meter that measures the volume of water taken in cubic metres. This meter shall:
- (a) Be able to provide data in a form suitable for electronic storage;
 - (b) Be suited to the qualities of the water it is measuring (such as temperature, algae content, and sediment content);
 - (c) Be sealed and as tamper-proof as practicable;
 - (d) Be installed at the location from which water is taken; and
 - (e) Have an accuracy within $\pm 5\%$.

At all times safe and easy access shall be provided to the meter for the purposes of undertaking visual inspections and water take measurements.

- 7 The Consent Holder shall, using the meter required by Condition 6, keep a record of the daily volume of water taken in cubic metres, including all nil abstractions. A copy of this record for the period 1 July to 30 June (inclusive) shall be forwarded each year to the Northland Regional Council's Monitoring Manager by the following 31 July. In addition, a copy of this record shall be forwarded immediately to the Council's Monitoring Manager on written request by that Manager. The records shall be in an electronic format that has been agreed to by the Northland Regional Council's Monitoring Manager.

Advice Note *If no water is taken during the period 1 July to 30 June (inclusive) then the Consent Holder is still required to notify the Northland Regional Council's Monitoring Manager in writing of the nil abstraction. Water use record sheets in an electronic format are available from the Regional Council's website at www.nrc.govt.nz/wur*

- 8 The Consent Holder shall verify that the meter installed to measure the volume of water taken is accurate. This verification shall be undertaken prior to 30 June:
- (a) Following the first taking of water; and
 - (b) At least once in every five years thereafter.

Each verification shall be undertaken by a person who, in the opinion of the Northland Regional Council's Monitoring Manager, is suitably qualified. Written verification of the accuracy of the meter shall be provided to the Northland Regional Council's Monitoring Manager by 31 July following the date of each verification.

- 9 A screening device shall be installed and maintained on the pump intake which shall limit the intake velocity across the screen to less than 0.3 metres/second. The screen shall have no holes or slots with a diameter or width greater than 2 millimetres.
- 10 The reticulation system and components shall be maintained in good working order to avoid or minimise leakage and wastage.
- 11 The Council may, in accordance with Section 128 of the Act, serve notice on the Consent Holder of its intention to review the conditions annually during the month of June for any one or more of the following purposes:
- (a) To deal with any adverse effects on the environment that may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; or
 - (b) To review the allocation of the resource; or
 - (c) To deal with leakage and/or wastage from the reticulation network.

The Consent Holder shall meet all reasonable costs of any such review.

Advice Note: *The Council may, in accordance with Section 128 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions any time for the following purposes:*

- (i) To provide for compliance with rules relating to water abstraction maximum or minimum levels or flows or rates of use of water in any regional plan that has been made operative since the commencement of the consent; or*
- (ii) To provide for compliance with any relevant national environmental standards that have been made; or*
- (iii) Where there are inaccuracies in the information made available with the application that materially influenced the decision on the application and where the effects of the exercise of consent are such that it is necessary to apply more appropriate conditions.*

- 12 For the purposes of the lapsing provisions of Section 125 of the Act, this consent shall not lapse until its expiry date.

EXPIRY DATE: 30 JUNE 2033

This consent is granted this Ninth day of February 2012 under delegated authority from the Council by:



**S J Savill
Consents Programme Manager –
Water and Waste**

Please note that the date of commencement for this resource consent is 9 February 2012.

Advice Note: *The Council may, if it issues a Water Shortage Direction under section 329 of the Act, require the Consent Holder to reduce the amount of water taken, and/or restrict the time(s) when water is taken, and/or impose a temporary cessation of taking of water.*

Please Quote File: APP.030845.01.01
STS:JOZ

Private Bag 9021
36 Water Street
WHĀNGĀREI 0148
New Zealand

5 February 2014

Kaipara District Council
c/o MWH NZ Ltd (A Cumberpatch)
PO Box 89
Hamilton 3200

Phone: 09 470 1200
Freephone: 0800 002 004
Environmental Hotline:
0800 504 639
Fax: 09 470 1202
Email: mailroom@nrc.govt.nz

www.nrc.govt.nz

Dear Sir

**NOTICE OF DECISION ON RESOURCE CONSENT APPLICATION APP.
030845.01.01 – DARGAVILLE WWTP**

Please find **enclosed** the Council's decision on the abovementioned application for resource consent.

You may lodge an objection in respect of this decision pursuant to Section 357A of the Resource Management Act ('the Act'). Any objection must be in writing and must set out the reasons for the objection. Any objection must be lodged with the Council within 15 working days of being served notice of this decision.

Alternatively, you may lodge an appeal against the whole or any part of the Council's decision directly to the Environment Court pursuant to Section 120 of the Act. Notice of the appeal must be in the prescribed form and must be lodged with the Environment Court and served on the Council within 15 working days of being served notice of this decision.

If you do not wish to lodge an objection or an appeal then you **may** undertake the activity authorised by this consent immediately (i.e. exercise the consent). It is important that you read and comply with all the conditions of consent, some of which may require you to notify the Council of certain matters or provide information before you commence the activity.

The Council has not yet calculated the final costs of processing your application. In the event that the costs exceed the initial deposit which you provided with your application then you will be invoiced separately for the additional costs.

Please note that the resource consent may attract a monitoring, administration and supervision fee for which you may be invoiced separately

Officers of the Council may also carry out site visits to monitor compliance with resource consent conditions. If you have any queries regarding the monitoring of your consent, please contact the Council's monitoring officer responsible for consent monitoring in your area.

If you have any other queries, please contact **Stuart Savill** at our Whāngārei office.

Yours faithfully



Joy Zylstra
Consents Team Administrator – Water and Waste



Resource Consent

Pursuant to the Resource Management Act 1991, the Northland Regional Council (hereinafter called "the Council") does hereby grant a Resource Consent to:

KAIPARA DISTRICT COUNCIL, PRIVATE BAG 1001, DARGAVILLE 0310

To take water from three intake structures on the Waiparataniwha Stream and its tributaries on Pt IC North 2B Opanake at or about location co-ordinates 2575683E 6604146N (Intake 1), 2576056E 6603968N (Intake 2) and 2576281E 6603892N (Intake 3), for the water supply of Dargaville and Baylys Beach communities, and properties within the Kaihu River Valley catchment, subject to the following conditions:

(Note: All location co-ordinates refer to Geodetic Datum 2000, New Zealand Transverse Mercator Projection)

- 1 The rate of taking shall not exceed an average of 4465 cubic metres per day, as calculated each calendar month.
- 2 The Consent Holder shall install a meter at the Ahikiwi booster pump station that measures the volume of water taken in cubic metres. The meter shall:
 - (a) be able to provide data in a form suitable for electronic storage;
 - (b) be suited to the qualities of the water it is measuring (such as temperature, algae content, and sediment content);
 - (c) be sealed and as tamper-proof as practicable; and
 - (d) have an accuracy within $\pm 5\%$.

At all times safe and easy access shall be provided to the meter for the purpose of undertaking visual inspections and water take measurements.

- 3 The Consent Holder shall install meters with an accuracy of $\pm 5\%$ at:
 - (a) the inflow point into the Dargaville Water Treatment Plant to measure the volume of water being received at the plant; and
 - (b) at each off take point between the location of the water takes and the meter required by Condition 2.

These meters shall be operated and maintained in accordance with the manufacturer's specifications.

- 4 The Consent Holder shall, at all times, provide safe and easy access to the meters required by Conditions 2 and 3 for the purposes of undertaking visual inspections of the meter and water take measurements.
- 5 The Consent Holder shall verify that the meter required by Conditions 2 and 3 are accurate. This verification shall be undertaken prior to 30 June:
- (a) following the first exercise of this consent; and
 - (b) at least once in every five years thereafter.

The verification shall be undertaken by a person, who in the opinion of the Regional Council's Monitoring Manager, is suitably qualified. Written verification of the accuracy shall be provided to the Regional Council's Monitoring Manager by 31 July following the date of verification.

- 6 Using the meters required by Conditions 2 and 3(a), the Consent Holder shall keep a record of the:
- (a) daily volume of water taken in cubic metres, including any nil abstractions;
 - (b) the calculated average daily take volume in cubic metres for the calendar month; and
 - (c) the daily inflow volume of water in cubic metres into the Dargaville water treatment plant.

A copy of the records shall be forwarded to the Regional Council's Monitoring Manager for each calendar month by the 15th of the following month. In addition, a copy of this record shall be forwarded immediately to the Regional Council's Monitoring Manager on written request by that Manager. The records shall be in an electronic format that has been agreed to by the Regional Council's Monitoring Manager.

- 7 Using the meters required by Condition 3(b), the Consent Holder shall on the 15th January and 15th July record the volume of water taken during the previous six month period at each off take point in cubic metres, including nil abstractions. A copy of this record shall be forwarded to the Regional Council's Monitoring Manager by the 15th of the following month.
- 8 No alteration shall be made to the screening device installed over each water intake, as at the date of commencement of this consent, that would either increase the velocity across the screen, or increase the diameter or width of the holes or slots of the screen.
- 9 All weir and intake structures shall be adequately maintained so that they operate effectively at all times, their structural integrity is not compromised and stream channel erosion is minimised.
- 10 There shall be no cessation of stream water flow over any of the three intake structures as a result of the exercise of this consent.

- 11 The Consent Holder shall by 1 June 2014 provide an operational Drought Management Plan for the water supply scheme covered by this consent to the Regional Council's Monitoring Manager for certification. The purpose of the Drought Management Plan is to provide for water demand during low flow conditions while ensuring compliance with the requirement of Condition 10.

The Drought Management Plan shall include, but not be limited to, the identification of set low flow trigger levels using the NRC Kaihu River Recorder Site 46611 to reduce the rate of taking from the Waiparataniwha Stream and bring alternate authorised takes into operation.

The Consent Holder shall review the Drought Management Plan after each occasion it is required to be implemented to adjust operational practices as necessary to ensure compliance with Condition 10. If the Drought Management Plan is amended then a copy shall be provided to the Regional Council's Monitoring Manager for certification.

- 12 The Consent Holder shall undertake a review of the monitoring records required to be kept in accordance with Conditions 6 and 7, and the general operation of the Waiparataniwha Stream water takes, for the period prior to 30 June 2018 and then at five yearly intervals thereafter. The review shall include but not be limited to an accurate assessment of:

- (a) the average and maximum daily take volumes;
- (b) the annual volume of raw water taken directly from the water supply pipeline for private property supply purposes; and
- (c) the annual volume of raw water lost from the pipeline through leakages between the Waiparataniwha Stream intakes and the Dargaville water treatment plant.

A written report detailing the results of this review and a trend analysis for the results shall be provided to the Regional Council's Monitoring Manager by 31 July following the review date. If the annual raw water loss from the pipeline through leakages is greater than 15 percent then a plan of action to reduce this loss shall also be provided.

- 13 The Consent Holder shall maintain its water supply reticulation network and treatment system so that it operates effectively at all times and the loss of water from the reticulation network and treatment system is, as far as is practicable, minimised. A record of all maintenance shall be provided to the Regional Council's Monitoring Manager immediately on written request by that manager.

- 14 The Regional Council may, in accordance with Section 128 of the Act, serve notice on the Consent Holder of its intention to review the conditions:

- (a) Annually during the month of August for any one or more of the following purposes:
 - (i) To deal with any adverse effects on the environment that may arise from the exercise of the consent and which it is appropriate to deal with at a later stage;
 - (ii) To deal with the efficient allocation of resources;

- (b) Within three months of the formal receipt of the report required by Condition 12.

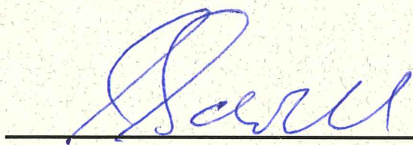
The Consent Holder shall meet all reasonable costs of any such review.

Advice Note: *The Regional Council may, in accordance with Section 128 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions any time for the following purposes:*

- (a) *To provide for compliance with rules relating to water abstraction maximum or minimum levels or flows or rates of use of water in any regional plan that has been made operative since the commencement of the consent; or*
- (b) *To provide for compliance with any relevant national environmental standards that have been made; or*
- (c) *Where there are inaccuracies in the information made available with the application that materially influenced the decision on the application and where the effects of the exercise of consent are such that it is necessary to apply more appropriate conditions.*

EXPIRY DATE: 30 JUNE 2048

This consent is granted this Fifth day of February 2014 under delegated authority from the Council by:



S J Savill
Consents Programme Manager –
Water and Waste

Advice Note: *The Regional Council may, if it issues a Water Shortage Direction under section 329 of the Act, require the Consent Holder to reduce the amount of water taken, and/or restrict the time(s) when water is taken, and/or impose a temporary cessation of taking of water.*



Resource Consent

Pursuant to the Resource Management Act 1991, the Northland Regional Council (hereinafter called "the Council") does hereby grant a Resource Consent to:

KAIPARA DISTRICT COUNCIL, PRIVATE BAG 1001, DARGAVILLE 0340

To install a removable temporary weir across the Kahui River adjacent to Lot 1 DP 147873 and Kaihu 2C Blk VII Kaihu SD, at or about location co-ordinates 1669924E 6030978N, for the public water supply of Dargaville township during low flow conditions.

Note: All location co-ordinates in this document refer to Geodetic Datum 2000, New Zealand Transverse Mercator Projection.

AUT.036573.01.01 To dam the Kaihu River.

AUT.036573.02.01 To install a weir structure on the bed and in the banks of the Kaihu River.

Subject to the following conditions:

1. The weir structure shall be located and constructed generally in accordance with the three **attached** authorised drawings
2. The Consent Holder shall notify the Council's Monitoring Manager in writing of the date that the weir structure on the bed and in the banks of the Kaihu River is to be constructed, at least 5 working days beforehand.
3. The Consent Holder shall notify the Council's Monitoring Manager in writing each time the weir boards across the Kaihu River are to be installed, at least 5 working days beforehand.
4. The weir boards across the Kaihu River shall only be installed when the water level of the Kaihu River is at or below 100 millimetres above the Consent Holder's "Rotu" water intake pipe, located approximately 10 metres up stream of the weir structure.
5. The weir boards across the Kaihu River shall be removed when the flow in the Kaihu River is sufficient to continuously maintain a water level greater than 100 millimetres above the Consent Holder's "Rotu" water intake pipe. This shall not include small one off rain events that have no permanent effect on river levels.

6. The weir boards across the Kaihu River shall be removed prior to any significant rain event that will rapidly increase river flows at the location of the weir and is predicted to occur with reasonable certainty.
7. All flows past the weir and its retaining structures in the river bank shall be effectively dissipated to minimise scouring of the streambed and erosion of the stream bank.
8. The weir structure shall be adequately maintained at all times and any defects that would compromise its integrity shall be promptly repaired using methods and materials designed for that purpose.
9. The Council may, in accordance with Section 128 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions annually during the month of May to deal with any adverse effects on the environment that may arise from the exercise of the consent and which it is appropriate to deal with at a later stage.;

The Consent Holder shall meet all reasonable costs of any such review.

Advice Note: *Adverse effects will also include fish passage past the weir.*

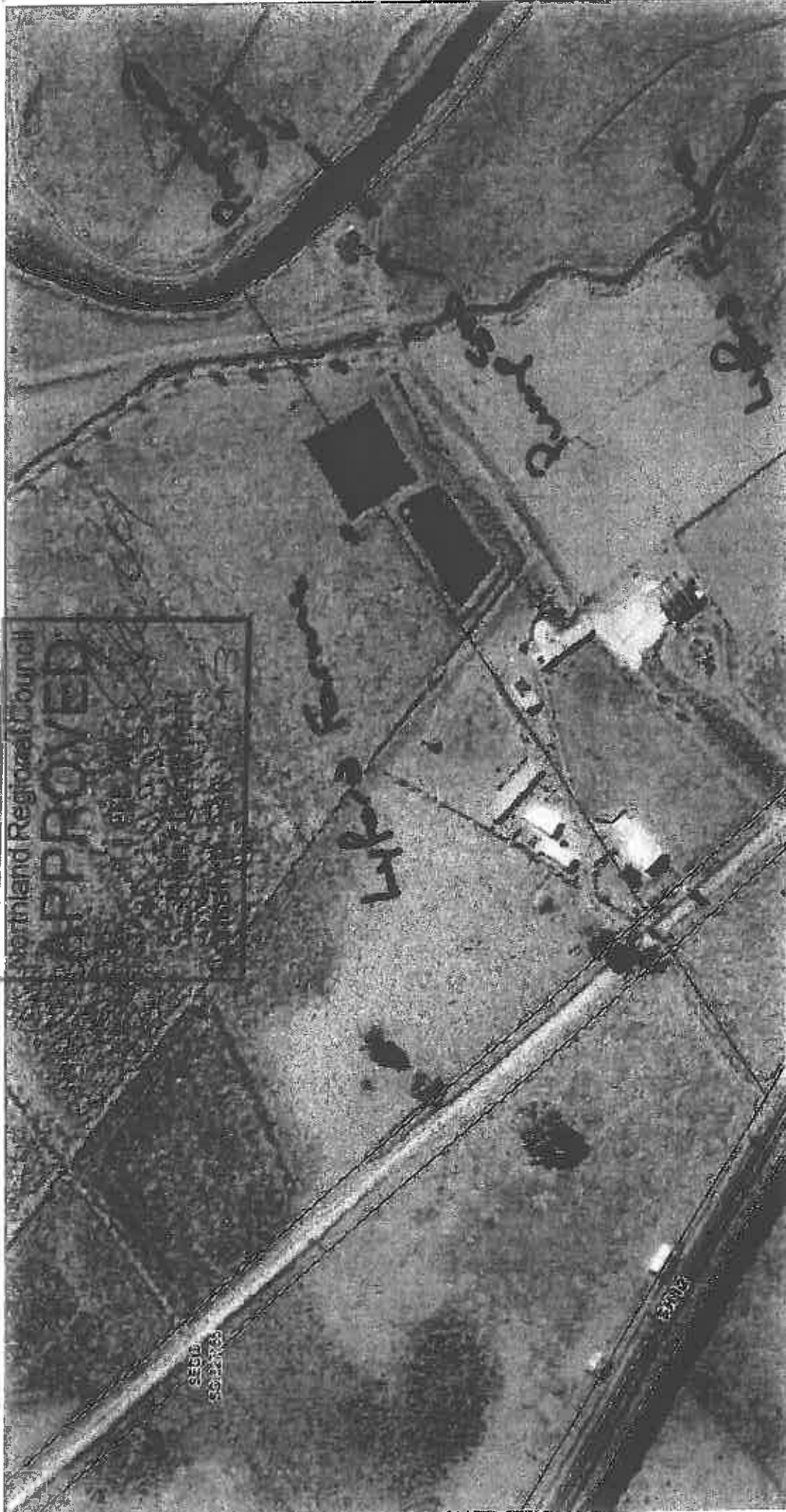
10. These consents shall not lapse until their expiry.

EXPIRY DATE: 30 JUNE 2033

This consent is granted this Eighteenth day of February 2014 under delegated authority from the Council by:



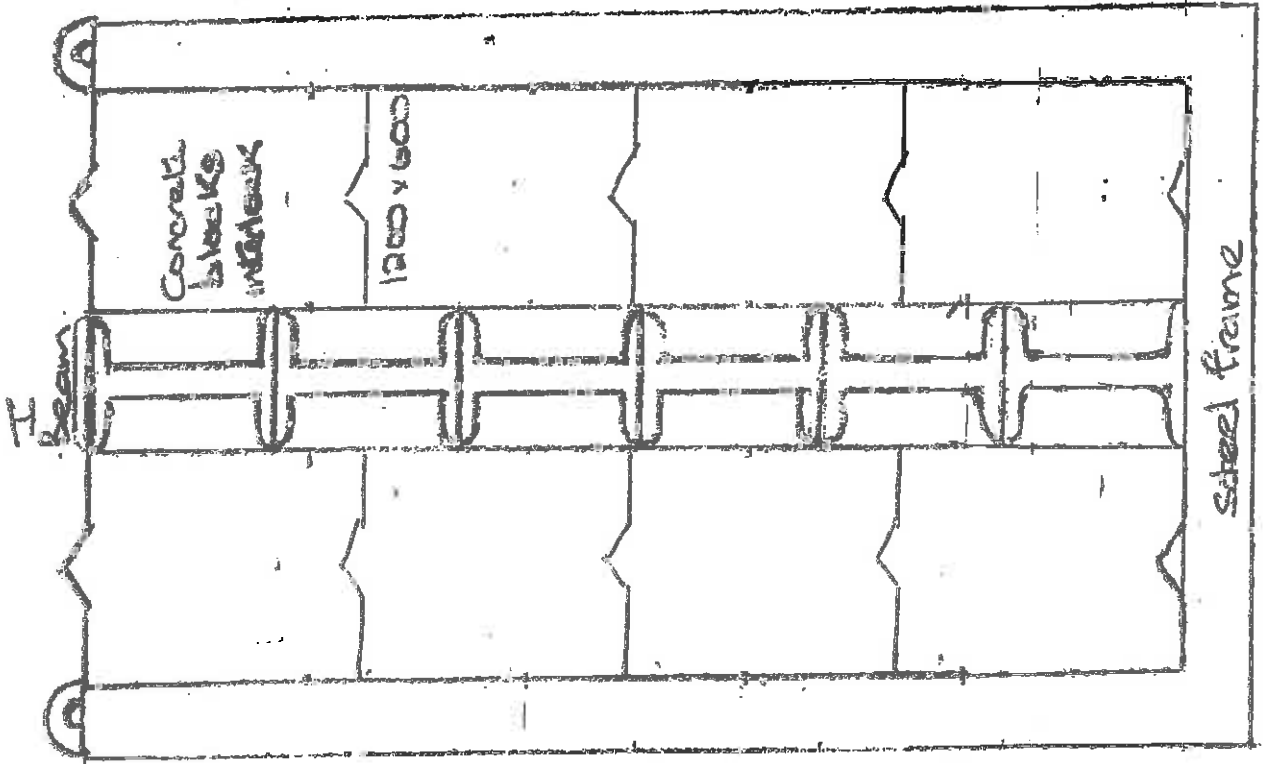
**S J Savill
Consents Programme Manager –
Water and Waste**



The information displayed has been taken from Kaipara District Council's databases and maps. It is made available in good faith but its accuracy or completeness is not guaranteed. Position of property boundaries is INDICATIVE only and must NOT be used for legal purposes. All services data should be verified before commencing work. Digital cadastral data supplied by Critchlow Associates Ltd. Sourced from Land Information New Zealand data. Crown Copyright Reserved.



Steel frame to hold concrete blocks 1.5 x 1.3 x 2.6 high.



Northland Regional Council
APPROVED
 18 FEB 2014
 Plan / Document
 Consent # 361013

Keir



Pile downstream
 side of steel
 frame.



Concrete
 Block

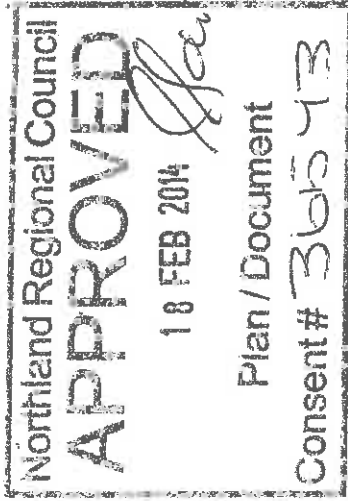
Beam 12.2m

1200 x 600

River

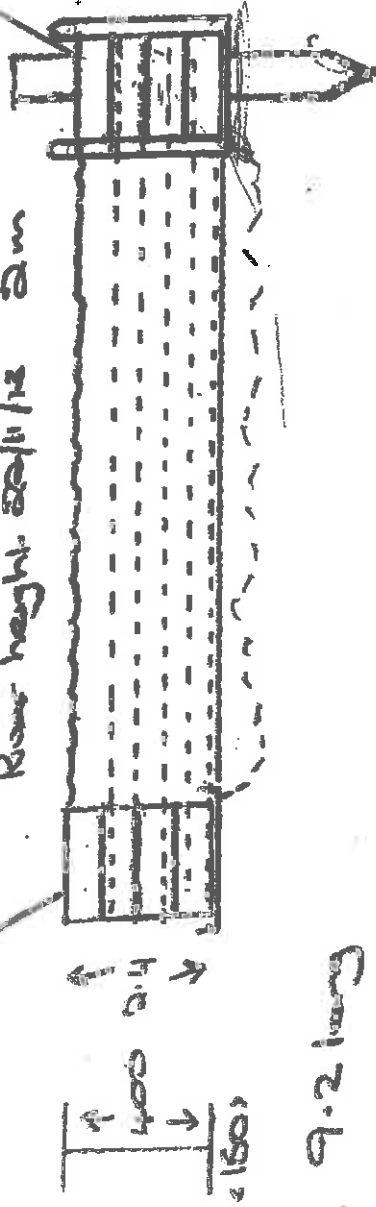
River bank

Water level approx 21.11/13
approx 2.400.



Either slope
approx 3-1

River height approx 2m



4" Concrete blocks
1200 x 600 interlock.
Steel frame to support
concrete blocks

Beams 9.2 long

9 Beams Cut 3 beams to 2.0
Weld to 6 beams = 12.2m

Steel beam support frames to be positioned either side of the creek.
Support pile to be installed on down side of creek.
Concrete blocks bonded into frame.

I beams sit between concrete blocks.

I beams, concrete blocks or block frame all have lifting eyes for removal.

Application Number: APP.036573.01.01

Application Type: Non Notified New

Applicant Name: Kaipara District Council

REASONS FOR THE DECISION

These consents are granted pursuant to Section 104B of the Resource Management Act 1991 (the Act). In reaching this decision, the Council has considered the matters outlined in Part 2 and Section 104 of the Act. It has been determined that:

- (1) The adverse effects of the proposed activities on the environment will be no more than minor;
- (2) The proposed activities are consistent with the relevant statutory planning documents and regulations; and
- (3) The granting of these resource consents achieves the purposes of the Act.

Summary of Activity

This proposal involves the construction of a temporary weir on the bed of the Kaihu River just downstream of the Consent Holder's Rotu water supply intake for Dargaville and Baylys Beach. The proposed weir is to be installed during extended low flow periods when the water level above the intake pipe drops to below 100 millimetres. This would normally occur when flows within the Kaihu River, as measured at the upstream NRC flow recorder site at the Gorge (NRC Recorder Site 46611), are at or about 540 litres per second. During such periods the intake pump starts sucking in air and its efficiency is affected. The use of the temporary weir will enable the Consent Holder to continue to provide an ongoing water supply to Dargaville and Baylys Beach during drought conditions.

Regional Plan Rule(s) Affected

The damming of surface water is a discretionary activity according to Rule 24.3.3 of the Regional Water & Soil Plan for Northland (RWSP).

The construction of a dam or weir structure on the bed of a river is a discretionary activity according to Rule 28.3.1 of the RWSP.

Actual and Potential Effects (Section 104(1)(a) of the Act)

The adverse effects on the environment of the activity have been determined to be no more than minor for the following reasons:

The weir structure involves the placement of interlocked concrete blocks within a steel frame within the bank on both sides of the Kaihu River into which a series of beams spanning the river are to be placed. All beams have lifting eyes for removal, and are able to be removed by excavator when river levels rise.

The retaining structures are located in the banks of the river, and it is intended that they remain in place when the boards are removed. A condition of consent has been imposed to ensure that both the weir and the retaining structure do not cause erosion of the bed and banks of the river. The applicant has indicated a willingness to remove the retaining structure should it cause adverse effects.

Fish movement over the weir will not be significantly impeded as water will still flow over and under the weir structure. The applicant has estimated that the velocity of water over the weir is in the order of 0.01 m/s. This is an order of magnitude less than the permitted activity criteria of a maximum velocity of 0.3 m/s across a water intake screen for the protection of juvenile fish. There may be a small drop off on the down side of the weir, but the applicant indicates that this will be minimal and should not affect fish movement. This matter has been discussed with Northland Fish and Game, and it has been agreed that there will be no adverse effect on trout movement, which live in the upper Kaihu River catchment.

The weir will create an obstacle to navigation along the river, but any use of the river by other than canoes or kayaks is considered unlikely, and as this section of the river is through farmland it is not regarded as a valuable recreational waterway at times of low flows. The applicant has discussed this matter with Sport Northland who advised that they were not aware of any recreational activities that took place in this area during low flow periods.

Local iwi have not raised any cultural or spiritual concerns about the proposed temporary weir, but have raised concerns about the quality of their drinking water. The applicant has discussed this matter with those concerned and intends to address this matter separately from this consent process, as it is not able to be resolved as part of this current application.

Relevant Statutory Provisions (Section 104(1)(b) of the Act)

The Council has determined that the activity, and the granting of this resource consent, is consistent with the objectives and policies contained in the Operative and Proposed Regional Policy Statements, and Chapters 6, 9, and 11 of the Regional Water and Soil Plan for Northland.

Te Iwi O Te Roroa has an iwi management plan relevant to the location of this activity which has been taken into account during the processing of this application. The resource consent for this weir is not contrary to the objectives and policies contained within the plan, and there are no identified customary activities which would be put at risk by the implementation of the proposal. The Te Roroa Claims Settlement Act 2008 also contains a number of specific areas of importance to iwi, but no areas identified in that document would be affected by this proposal.

In all the circumstances, the activities are consistent with the purpose and principles of the Act, as included at Part 2 of it.

Duration of the Consent

The expiry date of the two water consents for the water take at Rotu held by the Consent Holder is 30 June 2033. It is appropriate that a similar term is granted for this consent.

I confirm that these are the true and correct reasons for the decision to grant resource consent APP.036573.01.01:

**Name and Signature of
Authorised Person:**


.....
Stuart Savill
Consents Programme Manager – Water & Wastes

Date:

18 February 2014

F.2 Maungaturoto Consent



File: 9888
(01)
Change

Document Date: 01 July 2015

Resource Consent

*Pursuant to the Resource Management Act 1991, the Northland Regional Council
(hereinafter called "the Council") does hereby grant a Resource Consent to:*

KAIPARA DISTRICT COUNCIL, PRIVATE BAG 1001, DARGAVILLE 0340

To take water from three unnamed tributaries of the Pukekaroro Stream on Pt Lots 2 & 3 DP 28821 and Pt Allotment 111 Blk X Waipu SD, at or about location coordinates 1729754E 6004290N (locally known as "Boarhill Stream"); 1729917E 6004278N (locally known as "Cattlemount Stream"); and 1729924E 6004132N (locally known as "Cattlemount Spring"), for the Maungaturoto Public Water Supply system:

Note: All location co-ordinates in this document refer to Geodetic Datum 2000, New Zealand Transverse Mercator Projection.

Subject to the following conditions:

- 1 **The combined rate of taking from all three take points shall not exceed 2,650 cubic metres per day, being any 24 consecutive hours.**
- 2 The Consent Holder shall install a meter at the outlet of the balancing reservoir, located at or about location co-ordinates 1730160E 6004317N, to measure the volume of water taken in cubic metres. This meter shall:
 - (a) Be able to provide data in a form suitable for electronic storage;
 - (b) Be suited to the qualities of the water it is measuring (such as temperature, algae content, and sediment content);
 - (c) Be sealed and as tamper-proof as practicable; and
 - (d) Have an accuracy within $\pm 5\%$.

The Consent Holder shall notify the Regional Council's Monitoring Manager in writing as soon as the meter has been installed.

- 3 The Consent Holder shall install meters with an accuracy of $\pm 5\%$ at:
 - (a) The pipeline junction adjacent to Bridge 163, State Highway 12, on the Cattlemount/Boar Hill feeder line; and
 - (b) The raw water inlet to the Maungaturoto water treatment plant.

- 4 The Consent Holder shall, at all times, provide safe and easy access to the meters required by Conditions 2 and 3 for the purposes of undertaking visual inspections of the meter and water take measurements.
- 5 The meters required by Conditions 2 and 3 shall be operated and maintained in accordance with the manufacturer's specifications.
- 6 The Consent Holder shall verify that the meters required by Conditions 2 and 3 are accurate. This verification shall be undertaken prior to 30 June 2016 and then at five yearly intervals thereafter. Each verification shall be undertaken by a person who, in the opinion of the Council's Monitoring Manager, is suitably qualified. Written verification of the accuracy of the meter shall be provided to the Regional Council's Monitoring Manager by 31 July following the date of each verification.
- 7 Prior to 1 July 2015, the Consent Holder shall keep a record of the:
 - (a) Weekly, being every seven consecutive days, volume of water in cubic metres passing through the Cattlemount/Boar Hill feeder line using the meter required by Condition 3(a); and
 - (b) Daily volume of water in cubic metres into the Maungaturoto water treatment plant using the meter required by Condition 3(b).

A copy of these records for each calendar month shall be forwarded to the Regional Council's Monitoring Manager by the 15th of the following month. In addition, a copy of this record shall be forwarded immediately to the Regional Council's Monitoring Manager on written request by that Manager. The records shall be in an electronic format that has been agreed to by the Regional Council's Monitoring Manager.

- 8 From 1 July 2015, the Consent Holder shall, using the meter required by Condition 2, keep a record of the daily volume of water taken in cubic metres. A copy of these records for each calendar month shall be forwarded to the Regional Council's Monitoring Manager by the 15th of the following month. In addition, a copy of this record shall be forwarded immediately to the Regional Council's Monitoring Manager on written request by that Manager. The records shall be in an electronic format that has been agreed to by the Regional Council's Monitoring Manager.
- 9 From 1 July 2015, the Consent Holder shall keep a record for each calendar month of the volume of water in cubic metres:
 - (a) Passing through the Cattlemount/Boar Hill feeder line using the meter required by Condition 3(a); and
 - (b) Into the Maungaturoto water treatment plant using the meter required by Condition 3(b).

A copy of this record shall be forwarded immediately to the Regional Council's Monitoring Manager on written request by that Manager. The records shall be in an electronic format that has been agreed to by the Regional Council's Monitoring Manager.

- 10 The Consent Holder shall undertake a review for the period up to 30 June 2018 of the records required to be kept in accordance with Conditions 7, 8 and 9. This review shall thereafter be undertaken at five yearly intervals for the period up to 30 June of that year. The review shall include, but not be limited to, an accurate assessment of:
- (a) The annual volume of raw water taken directly from the water supply pipeline for private property supply purposes; and
 - (b) The annual volume of raw water lost from the pipeline through leakages between the location of the water takes and the Maungaturoto water treatment plant.

A written report detailing the results of this review and a trend analysis for the results shall be provided to the Regional Council's Monitoring Manager by 31 July following the review date. If the annual raw water loss from the pipeline through leakages is greater than 15 percent then a plan of action to reduce this loss shall also be provided.

Advice note: *In order to provide an overall assessment of the Maungaturoto Public Water Supply system, it is expected that this review and reporting will be carried out in tandem with the same review and reporting required for Consent 7582 (Piroa Stream Water Take).*

- 11 Prior to 1 August 2016, the Consent Holder shall install a pressure relief valve (or other appropriate infrastructure) on the water supply network so as to prevent the discharge of water supplied from the Brooklands Irrigation Scheme occurring from the balancing reservoir.
- 12 A screening device shall be installed on the end of the water intake pipes that limits the intake velocity across the screen to less than 0.3 metres per second and has no holes or slots with a diameter or width greater than 5 millimetres.
- 13 The Consent Holder shall maintain the water supply reticulation network and treatment system so that it operates effectively at all times and the loss of water from the reticulation network and treatment system is, as far as is practicable, minimised. A record of all maintenance shall be kept and forwarded to the Regional Council's Monitoring Manager immediately on written request by that manager.
- 14 If during the term of this consent, the balancing reservoir and the pipework from the three water intakes to the balancing reservoir are replaced, then the replacement reservoir and pipework shall be designed so that the overflow of excess water from the balancing reservoir is ceased and the excess water is allowed to flow past the intake structures from where it has been taken from. The Consent Holder shall notify the Regional Council's Monitoring Manager in writing of the proposed date that these works will commence at least one month beforehand.
- 15 Prior to 1 December 2014, the Consent Holder shall forward to the Regional Council's Monitoring Manager an operative Maungaturoto Water Supply System Management Plan that also includes the water supplied from the Brooklands Irrigation Scheme. This plan shall detail the management and operational methods undertaken so that the conditions of Consents 9888 and 7582 will be met, and shall include, as a minimum, the following for all water takes that are part of the supply scheme:

- (a) The configuration and prioritising of water sources during normal (non drought) conditions
- (b) The monitoring, management and maintenance requirements for each source, including:
 - (i) Maximum abstraction volumes
 - (ii) Minimum flow requirements
 - (iii) Stream flow monitoring procedures
 - (iv) Water abstraction volume monitoring methodology
 - (v) Water use records required
 - (vi) Structure (including meter) maintenance requirements and frequency
- (c) Raw water reticulation pipework design and connectivity for all the sources for this water supply, including overflow locations;
- (d) Leak detection measures and records;
- (e) A drought management plan, including, but not limited to, the following:
 - (i) General water conservation measures
 - (ii) Drought stream flow trigger levels and actions to be taken specific to each water source
 - (iii) Water restriction measures and procedures
 - (iv) Communications strategies
 - (v) Crisis management.
- (f) Contact details for key operational & maintenance personnel for the water supply system.

The exercise of these consents shall be undertaken generally in accordance with the operative Maungaturoto Water Supply System Management Plan. If the operative Maungaturoto Water Supply System Management Plan is amended, then a copy of the amended version shall be forwarded to the Regional Council's Monitoring Manager within one month of it becoming operational and shall become the operative version for compliance purposes.

- 16 The Regional Council may, in accordance with Section 128 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions annually during the month of April for any one or more of the following purposes:

- (a) To deal with any adverse effects on the environment that may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; or
- (b) To review the allocation of the resource.

The Consent Holder shall meet all reasonable costs of any such review.

Advice Note: The Council may, in accordance with Section 128 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions any time for the following purposes:

- (a) To provide for compliance with rules relating to maximum or minimum levels or flows or rates of use of water, minimum standards of water quality in any regional plan that has been made operative since the commencement of the consent; or
- (b) To provide for compliance with any relevant national environmental standards that have been made; or
- (c) Where there are inaccuracies in the information made available with the application that materially influenced the decision on the application and where the effects of the exercise of consent are such that it is necessary to apply more appropriate conditions.

EXPIRY DATE: 6 JUNE 2039

The original resource consent AUT.009888.01.01 dated 6 June 2014 was authorised by Stuart Savill, Consents Programme Manager – Water & Wastes under delegated authority from the Council. This change to consent conditions is granted this first day of July 2015 under delegated authority from the Council by:



Allan Richards
Consents Programme Manager – Coastal & Works

Advice Note: The Council may, if it issues a Water Shortage Direction under section 329 of the Act, require the Consent Holder to reduce the amount of water taken, and/or restrict the time(s) when water is taken, and/or impose a temporary cessation of taking of water.

Resource Consent

FILE: 7582
(01)
Replacement

Document Date: 16.07.2020

*Pursuant to the Resource Management Act 1991, the Northland Regional Council
(hereinafter called "the council") does hereby grant a Resource Consent to:*

KAIPARA DISTRICT COUNCIL, PRIVATE BAG 1001, DARGAVILLE 0340

To undertake the following activity adjacent to Sec 10 Blk X Waipu SD and Lot 4 DP 207528 (State Highway 1, Maungaturoto):

Note: All location co-ordinates in this document refer to Geodetic Datum 2000, New Zealand Transverse Mercator Projection.

AUT.007582.01.03 Take water from an unnamed tributary of the Piroa Stream, at or about location co-ordinates 1728730E 6006134N and 1728970E 6006033N, for the purposes of public water supply.

Subject to the following conditions:

- 1 The Consent Holder shall advise the Northland Regional Council's assigned monitoring officer when the water take from the site at at or about location co-ordinates 1728970E 6006033N is to commence for the first time, at least five days beforehand.
- 2 The rate of taking shall not exceed:
 - (a) 11.6 litres per second; nor
 - (b) 1000 cubic metres per day.
- 3 The Consent Holder shall maintain a meter that measures the volume of water taken in cubic metres. The meter shall:
 - (a) Be able to provide data in a form suitable for electronic storage and telemetry;
 - (b) Be suited to the qualities of the water it is measuring (such as temperature, algae content, and sediment content);
 - (c) Be sealed and as tamper-proof as practicable;
 - (d) Be installed at the location from which water is taken; and
 - (e) Have an accuracy within $\pm 5\%$.
- 4 The Consent Holder shall verify that the meter required by Condition 3 is accurate. This verification shall be undertaken prior to 30 June:
 - (a) Following the commencement of this consent; and

- (b) At least once in every five years thereafter.

Each verification shall be undertaken by a person, who in the opinion of Northland Regional Council's Compliance Manager, is suitably qualified. Written verification of the accuracy of the meter shall be provided to Northland Regional Council's assigned monitoring officer by 31 July following the date of each verification.

- 5 The Consent Holder shall install and maintain meters with an accuracy of $\pm 5\%$ at:
- (a) The pipeline junction adjacent to Bridge 163, State Highway 12, on the Piroa Stream feeder line. This meter shall be installed before 1 August 2021; and
 - (b) The raw water inlet to the Maungaturoto water treatment plant.
- 6 The meters required by Conditions 3 and 5 shall be operated and maintained in accordance with the manufacturer's specifications.
- 7 The Consent Holder shall provide safe and easy access to the meters required by Conditions 3 and 5 for the purposes of undertaking visual inspections of the meter and water take measurements.
- 8 The Consent Holder shall maintain a flow measuring device on the weir structure installed downstream of the take point at approximate location coordinates 1728727E 6006143N. The measuring device shall record, in litres per second, all flows up to 30 litres per second with an accuracy of $\pm 10\%$, at a minimum of 1 record every 15 minutes.
- 9 The exercise of this consent shall not result in the flow of the unnamed tributary of the Piroa Stream, as measured using the flow measuring device required by Condition 8, being reduced below the following:
- (a) An average of 11 litres per second per day, being midday to midday; and
 - (b) A minimum of 9 litres per second.
- 10 The following records shall be kept by the Consent Holder:
- (a) The maximum rate of taking and the daily volume of water taken in cubic metres using the meter required by Condition 3, including nil abstractions; and
 - (b) The average daily flow and minimum flow required by Condition 9 using the meter required by Condition 8.

Advice Note: *If no water is taken during the period 1 July to 30 June (inclusive) then the Consent Holder is still required to notify Northland Regional Council in writing of the nil abstraction. Water use record sheets in an electronic format are available from Northland Regional Council's website at www.nrc.govt.nz/wur.*

- 11 A copy of the records required by Condition 10 for each calendar month shall be forwarded to the Northland Regional Council's assigned monitoring officer by the 15th of the following month. In addition, a copy of these records shall be forwarded immediately to the Northland Regional Council's assigned monitoring officer on written request. The records shall be in an electronic format that has been agreed to by Northland Regional Council.
- 12 The Consent Holder shall keep a record for each calendar month of the volume of water in cubic metres:

- (a) Passing through the Piroa Stream feeder line using the meter required by Condition 5(a); and
- (b) Into the Maungaturoto water treatment plant using the meter required by Condition 5(b).

A copy of this record shall be forwarded immediately to the Northland Regional Council's assigned monitoring officer on written request. The records shall be in an electronic format that has been agreed to by Northland Regional Council.

- 13 The Consent Holder shall undertake a review of the records required to be kept in accordance with Conditions 10 and 12 up to 30 June 2023, and then at five yearly intervals thereafter for the period up to 30 June of that year. The review shall include, but not be limited to, an accurate assessment of:

- (a) The annual volume of raw water taken directly from the water supply pipeline for private property supply purposes; and
- (b) The annual volume of raw water lost from the pipeline through leakages between the location of the water takes and the Maungaturoto water treatment plant.

A written report detailing the results of this review and a trend analysis for the results shall be provided to the Northland Regional Council's assigned monitoring officer by 31 July following the review date. If the annual raw water loss from the pipeline through leakages is greater than 15 percent, then a plan of action to reduce this loss shall also be provided.

Advice note: *In order to provide an overall assessment of the Maungaturoto Public Water Supply system, it is expected that this review and reporting will be carried out in tandem with the same review and reporting required for Resource Consent AUT.009888.01 (Boar Hill and Cattlemount water takes).*

- 14 A screen device shall be maintained that limits the intake velocity across the screen to less than 0.3 metres/second and has no holes or slots with a diameter or width greater than 5 millimetres.
- 15 The intake structure shall be adequately maintained so that it operates effectively at all times, its structural integrity is not compromised, and streambed erosion is minimised.
- 16 The flow measurement device required by Condition 8, including the weir structure and surrounding stream bed, shall be regularly inspected and maintained to ensure that its accuracy and structural integrity are not compromised, and that it operates effectively at all times. The flow measurement device shall be calibrated annually in November by a suitably qualified person to verify accuracy prior to the summer months. A report detailing the maintenance undertaken and written verification of the accuracy shall be provided to the Northland Regional Council's assigned monitoring officer by 1 December each year.
- 17 The water supply reticulation network and treatment system shall be maintained in good working order to avoid or minimise leakage and wastage. A record of all maintenance shall be kept and forwarded to the Northland Regional Council's assigned monitoring officer immediately on written request.
- 18 The Consent Holder shall exercise this consent in accordance with the most recent version of the Maungaturoto Water Supply System Management Plan that also includes the water supplied from the Brooklands Irrigation Scheme. This plan shall detail the management and operational methods undertaken so that the conditions of Resource Consents AUT.009888.01 and AUT.007582.01 will be met, and shall include, as a minimum, the following for all water takes that are part of the supply scheme:

- (a) The configuration and prioritising of water sources during normal (non-drought) conditions;
- (b) The monitoring, management and maintenance requirements for each source, including:
 - (i) Maximum abstraction volumes;
 - (ii) Minimum flow requirements;
 - (iii) Stream flow monitoring procedures;
 - (iv) Water abstraction volume monitoring methodology;
 - (v) Water use records required;
 - (vi) Structure (including meter) maintenance requirements and frequency.
- (c) Raw water reticulation pipework design and connectivity for all the sources for this water supply, including overflow locations;
- (d) Leak detection measures and records;
- (e) A drought management plan, including, but not limited to, the following:
 - (i) General water conservation measures;
 - (ii) Drought stream flow trigger levels and actions to be taken specific to each water source;
 - (iii) Water restriction measures and procedures;
 - (iv) Communications strategies;
 - (v) Crisis management.
- (f) Contact details for key operational and maintenance personnel for the water supply system.

The exercise of this consent shall be undertaken generally in accordance with the operative Maungaturoto Water Supply System Management Plan. If the operative Maungaturoto Water Supply System Management Plan is amended, then a copy of the amended version shall be forwarded to the Northland Regional Council's assigned monitoring officer within one month of it becoming operational and shall become the operative version for compliance purposes.

19 The Northland Regional Council may, in accordance with Section 128 of the Act, serve notice on the Consent Holder of its intention to review the conditions annually during the month of September for any one or more of the following purposes:

- (a) To deal with any adverse effects on the environment that may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; or
- (b) To require telemetry of the water meter and weir recordings to Northland Regional Council; or
- (c) To review the allocation of the resource.

The Consent Holder shall meet all reasonable costs of any such review.

EXPIRY DATE: 31 MAY 2039

This consent is granted this Sixteenth day of July 2020 under delegated authority from the council by:



Stuart Savill
Consents Manager

F.3 Ruawai Consent

15-10-2000 10:00 AM
AUT. 0002-210-002

RUAHA WATER
TAKE

KAIPARA DISTRICT COUNCIL, PRIVATE BAG 1001, DARGAVILLE 0340

To take and use water for public water supply from up to three bores in the catchment of the Northern Wairoa River on Crown Land, at or about location co-ordinates:

1691928E 6000261N
1691995E 6000190N
1692124E 6000077N

(Note: all location co-ordinates referred to in this document are Geodetic Datum 2000, New Zealand Transverse Mercator Projection)

Subject to the following conditions.

- 1 The combined quantity taken from the bores shall not exceed:
 - (a) 450 cubic metres in any consecutive 24 hour period ; nor
 - (b) 73,000 cubic metres within each 12 month period between 1 April and 31 March.
- 2 The Consent Holder shall operate and maintain meters with accuracies of $\pm 5\%$ to measure the quantities of water taken from each bore. The meters shall be operated and maintained in accordance with the manufacturer's specifications. The Consent Holder shall, at all times, provide safe and easy access to these meters for the purposes of undertaking visual inspections of the meter and water take measurements.

Advice Note: The Ministry for the Environment has released the proposed National Environmental Standards for Water Measuring Devices (NES). The proposed NES sets out the minimum requirements for the measuring devices. The proposed NES requires that all measuring devices:

- *be able to continuously measure the amount of water taken;*
- *be capable of recording daily volume in cubic metres to an accuracy standard of ± 5 percent for pipes, and ± 10 percent for channels;*
- *be capable of providing output in a form suitable for electronic data storage;*
- *be appropriate to the qualities of the water it is measuring (including temperature and sediment content); and*
- *be sealed and as tamper proof as practicable.*

It is recommended that the Consent Holder considers the above proposed requirements when selecting a meter to be installed. Consideration of the above requirements will promote compliance with the NES in the event that the proposed NES becomes regulation.

- 3 To prevent saline contamination, the Regional Council reserves the right to require the Consent Holder to cease the taking of groundwater from any or all the bores at all such times as the chloride concentration in water delivered by any of the bores is measured by standard methods to be greater than 220 grams per cubic metre.
- 4 The Consent Holder shall monitor the exercise of this consent in accordance with the **attached** Monitoring Programme (Schedule A). The Consent Holder shall forward the results of all monitoring specified by the Monitoring Programme (Schedule A) to the Regional Council by 1 May each year, and also immediately on written request by the Regional Council.
- 5 The Consent Holder may, at any time after July 2010, apply to the Regional Council to amend any part of the Monitoring Programme (Schedule A). Any changes to the Monitoring Programme (Schedule A) shall only take effect after the written approval of the Regional Council has been obtained.
- 6 The Consent Holder shall keep records of the quantities of water taken daily from each of the bores. A copy of these records for the previous 12 month period (1 April to 31 March) shall be forwarded to the Regional Council by 1 May each year, and also immediately upon written request by the Regional Council.

Advice Note: In the event that no water is taken from any of the bores the Consent Holder is still requested to notify the Regional Council in writing of the NIL abstraction.

- 7 Easy access for water level monitoring shall be provided and maintained at all boreheads within the bore field to enable the measurement of static and pumping water levels in the bores.

- 8 The Consent Holder shall submit to the Regional Council for approval within 6 months of the date of commencement of this consent, a Management Plan for the water supply system. The Consent Holder shall implement the Management Plan following the approval by the Regional Council. The Management Plan shall cover all aspects of the water supply operation including, but not be limited to:

- (a) Details of the maintenance programme for the bores and screens;
- (b) A bore field pumping and monitoring regime that mitigates the risk of salt water intrusion. The pumping regime is to identify the maximum pump rates for each bore to ensure compliance with Condition 1 and Condition 3;
- (c) Policy to promote efficient use by water users (such as installation water saving devices, water storage); and
- (d) A contingency plan to be implemented during times of water shortages.

The Consent Holder may seek approval from the Regional Council to update the Management Plan at any time. Any update to the Management Plan shall only take effect after the approval of the Regional Council has been obtained.

The Regional Council shall only withhold its approval of the Management Plan, and any subsequent update, in the event that the Regional Council is not satisfied that the details of the Plan will achieve compliance with the conditions of this Consent.

- 9 The Regional Council may, in accordance with Section 128 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions of these consents annually during the month of August. The review may be initiated for any one or more of the following purposes:

- (a) To deal with any adverse effects on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage, or to deal with any such effects following assessment of the results of the monitoring of the consent and/or as a result of the Regional Council's monitoring of the state of the environment in the area;
- (b) To require the adoption of the best practicable option to remove or reduce any adverse effect on the environment;
- (c) To take into account any relevant national environmental standards;
- (d) To provide for compliance with rules in any regional plan that has been made operative since the commencement of the consent;
- (e) To deal with any inadequacies or inconsistencies the Regional Council considers there to be in the conditions of the consent, following the establishment of the activity the subject of the consent; and
- (f) To deal with any material inaccuracies that may in future be found in the information made available with the application. (Notice may be served at any time for this reason).

The Consent Holder shall meet all reasonable costs of any such review.

Advice Note: The Regional Council is in the process of reviewing its rules, policies and objectives relating to water allocation and water quantity management. In the event that this review results in changes to the current rules in the Regional Water and Soil Plan, this consent may be reviewed in accordance with this condition to ensure compliance.

EXPIRY DATE: 30 JUNE 2030

ISSUED at Whangarei this Twenty-second day of December 2009

Allan Richards

**Acting Consents Senior Programme
Manager**

SCHEDULE A

MONITORING PROGRAMME RESOURCE CONSENT 2187

Resource Consent **2187** shall be monitored in accordance with the following programme.

1.0 WATER USE RECORDS

The Consent Holder shall record the quantities of water taken from each bore on a daily basis.

The volumes shall be read from the water meters required to be installed by Condition 2.

The water use records shall be submitted to the Regional Council in electronic format in accordance with Condition 6.

2.0 WATER LEVEL RECORDS

The Consent Holder shall monitor and keep a written record of the static water level (SWL) in each bore monthly. The bores shall not be pumped for at least 5 hours prior to the SWL being measured and recorded.

All water levels shall be recorded in metres below the 'Top of Bore Casing', and shall be accurate to +/- 0.01 metres.

3.0 WATER QUALITY

A groundwater sample shall be collected from each bore twice per year during the months of January and August. The actual date of collection shall coincide with the Regional Council's monthly state of environment monitoring carried out in the area.

The samples shall be collected in accordance with the "New Zealand guidelines for collection of groundwater samples for chemical and isotopic analyses. 1999" and shall be analysed for chloride concentration and electrical conductivity.

A Telarc-registered laboratory shall carry out the analysis.

The Consent Holder may request that the Regional Council undertakes the water quality sampling and analysis on its behalf. The actual and reasonable cost of this sampling and analysis will be on-charged to the Consent Holder.

Groundwater sampling and analysis may also be required to be undertaken in accordance with the Ministry of Health requirements for drinking water suppliers.

4.0 REPORTING

The Consent Holder shall forward the results on all monitoring carried out in accordance with Sections 1.0 and 2.0 of this programme to the Regional Council by 1 May each year and immediately on written request by the Regional Council. The monitoring results shall be for the previous period 1 April – 31 March.

The Consent Holder shall forward the results of all groundwater quality monitoring carried out in accordance with section 3.0, and the results of any monitoring undertaken in accordance with the Ministry of Health requirements, to the Regional Council within one month of receipt of the results.

F.4 Mangawhai Consent

KAIPARA DISTRICT COUNCIL, PRIVATE BAG 1001, DARGAVILLE, 0300.

To take water from a bore in the catchment of Mangawhai Harbour on Lot 7 Part 5 DP 126655 Blk II Mangawhai SD, at location co-ordinates 1742800E 6004528N.

(Note: all location co-ordinates referred to in this document are Geodetic Datum 2000, New Zealand Transverse Mercator Projection)

For the supply of a campground, retirement village and other facilities at Mangawhai subject to the following conditions:

- 1 The quantity taken from the bore shall not exceed:
 - (a) within the period 1 December – 31 March:
 - (i) 110 cubic metres per day ; nor
 - (ii) average daily take of 75 cubic metres; nor
 - (iii) total take 9,075 cubic metres; nor
 - (b) within the period 1 April to 30 November;
 - (iv) 70 cubic metres per day; nor
 - (v) average daily take of 45 cubic metres; nor
 - (vi) total take 10,980 cubic metres; nor
 - (c) 20,055 cubic metres within the period 1 April – 31 March of each 12 month period.

Advice Note: For the purpose of this condition, a day is any consecutive 24 hour period.

- 2 The Consent Holder shall install and maintain a meter with an accuracy of $\pm 5\%$ to measure the quantities taken from the bore.
- 3 The Consent Holder shall install and maintain an alarm system on the bore that will notify the Consent Holder immediately upon any exceedence of the daily volume limits specified in Condition 1.

- 4 The Consent Holder shall keep records of the quantities of water taken daily from the bore. A copy of these records for the previous 12 month period (1 April to 31 March following) shall be forwarded to the Northland Regional Council by 1 May each year, and also immediately upon written request by the Northland Regional Council.
- 5 The Consent Holder shall forward the results of water quality sampling undertaken in accordance with the requirements set out in the Drinking Water Standards for New Zealand 2005, or any subsequent replacement standard agreed by the Northland Regional Council, to the Northland Regional Council within two weeks of its receipt by the Consent Holder.
- 6 The Consent Holder shall supply details of the quantities of water pumped weekly and any water quality sampling during the previous three month period, quarterly by 1 May, 1 August, 1 November and 1 February, to the following parties:

W & D Wilson
31 Te Kawa Road
Greenlane
Auckland 1005

J & F Bremner
30 Agrincourt Street
Glenfield
Auckland 1310

G & L Manning
16 B Oleander Road
Farm Cove
Pakuranga

- 7 In the event that the exercise of this consent results in a groundwater user identified in **Schedule 1** (attached) no longer being able to access or use groundwater from their existing water supply bore to meet their requirements as at the time of the date of commencement of this consent, the Consent Holder shall provide that user with an alternative supply of water of similar quality and quantity, to the satisfaction of the Northland Regional Council.

The alternative supply of water shall be made available to the groundwater user within 24 hours of being so notified to provide the water supply by the Northland Regional Council, and shall be provided at no cost to the groundwater user.

- 8 Easy access for a water level probe shall be provided and maintained at the wellhead to enable the measurement of static water levels in the bore.
- 9 The Northland Regional Council may, in accordance with Section 128 of the Act, serve notice on the Consent Holder of its intention to review the conditions of these consents annually during the month of May. The review may be initiated for any one or more of the following purposes:
 - (a) To deal with any adverse effects on the environment that may arise from the exercise of the consent and which it is appropriate to deal with at a later stage, or to deal with any such effects following assessment of the results of the monitoring of the consent and/or as a result of the Northland Regional Council's monitoring of the state of the environment in the area;
 - (b) To require the adoption of the best practicable option to remove or reduce any adverse effect on the environment;

- (c) To provide for compliance with rules in any regional plan that has been made operative since the commencement of the consent;
- (d) To deal with any inadequacies or inconsistencies the Northland Regional Council considers there to be in the conditions of the consent, following the establishment of the activity the subject of the consent; and
- (e) To deal with any material inaccuracies that may in future be found in the information made available with the application (notice may be served at any time for this reason).

The Consent Holder shall meet all reasonable costs of any such review.

EXPIRY DATE: 30 NOVEMBER 2025

Advice Note:

Although not a condition of the consent, it is recommended that the Consent Holder monitors and records the static water levels (SWL) in the production bore monthly throughout the entire calendar year. No pumping should occur at least 6 hours prior to recording the SWL.

Groundwater level monitoring by the Consent Holder is considered good practice. The monitoring can supply the Consent Holder with information on the natural groundwater variations in the production bore and indicate when bore maintenance or pump maintenance may be required.

ISSUED at Whangarei this Twenty-fourth day of April 2008

D L Roke
Consents Manager

SCHEDULE 1:**PROPERTIES TO BE PROVIDED WITH AN ALTERNATIVE WATER SUPPLY**

Valuation No	Property Address	Current Region Address	Current Owner(s)	DP	Type
1221/390	17 Margaret Street	224 Beach Road Campbells Bay North Shore Auckland	M A & P J Elgar & Ors	Lot 13 DP79019	Pump Bore
1221/37/401	254 Molesworth Drive	16 Penning Road Milford North Shore Auckland	T D Ballard N L Peters	Lot 1 DP206217	
1221/384	3 Margaret Street	P O Box 70088	A M Morgan	Lot 82 DP39205	Bore
1221/387	9 Margaret Street	59 Waipuna Road Maunu Est Whangarei	H L & J L Gray D B Quinn	Lot 10 DP79019	Bore
1221/370	262 Molesworth Drive	30 Agincourt Street Glenfield North North Shore Auckland	J A G & P F Bremner	Lot 77 DP39205	Well
1221/372	258 Molesworth Drive	C/O Dr J S Wakeman 113 Davis Street Hastings	Walter J Wilson David & Wilson & Ors	Lot 75 DP39205	Well

F.5 Glinks Gully Consent

Resource Consent

Change to Conditions

Document Date: 06.08.2018

*Pursuant to the Resource Management Act 1991, the Northland Regional Council
(hereinafter called "the council") does hereby grant a Resource Consent to:*

KAIPARA DISTRICT COUNCIL, PRIVATE BAG 1001, DARGAVILLE 0340

To undertake the following activities associated with a public water supply for Glinks Gully:

**AUT.007944.01.03 Take surface water from an unnamed tributary of the Tasman Sea
on Pt Allot 141 Blk V Kopuru SD, Map Reference P08:879-687.**

**AUT.007944.02.03 Take water from three bores on Lot 7 DP 261 Blk V Kopuru SD,
Map Reference P08:890-691.**

Subject to the following conditions:

- 1 The total quantity taken from the unnamed tributary and the bores shall not exceed 100 cubic metres per day.
- 2 Notwithstanding the rate specified in Condition 1, the Consent Holder shall comply with any water rationing plan (including possible cessation of take from the unnamed tributary, Map Reference P08:879-687) imposed by the Council to cater for severe drought conditions. This may take place when the flow in the stream, measured at the discharge onto the beach, (Map Reference P08:878-686) is less than or equal to 5 litres per second.
- 3 A screening device shall be installed and maintained on the intake from the stream and shall limit the intake velocity across the screen to less than 0.3 metres/second. The screen shall have no holes or slots with a diameter or width greater than 5 millimetres.
- 4 The Consent Holder shall supply to the council by 1 May each year, and immediately on written request by the council, details of the duration of pumping and quantities of water pumped weekly during the previous calendar year.
- 5 The council may in accordance with Section 128 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions of this consent. Such notice may be served annually during the month of May. The review may be initiated for any one or more of the following purposes:
 - (a) To deal with any adverse effects on the environment that may arise from the exercise of the consent and which it is appropriate to deal with at a later stage, or to deal with any such effects following assessment of the results of the monitoring of the consent and/or as a result of the council's monitoring of the state of the environment in the area.
 - (b) To require the adoption of the best practicable option to remove or reduce any adverse effect on the environment.

- (c) To deal with any material inaccuracies that may in future be found in the information made available with the application. (Notice may be served at any time for this reason.)
- (d) To change existing, or impose new limits on flow specified in Condition 2 of this consent.

The Consent Holder shall meet all reasonable costs of any such review.

EXPIRY DATE: 31 MAY 2022

Changes to CON20020794401 are granted this Sixth day of August 2018 under delegated authority from the council by:



Stuart Savill
Consents Manager

Appendix G Background Information on Public Water Supply Schemes

G.1 Dargaville Water Supply Scheme Description

Existing Resource Consent Requirement

The existing resource consent for the Waiparataniwha water takes (AUT.030845.01.01) requires the production of a Drought Management Plan (DMP). Condition 10 of that consent requires that:

“The DMP shall include, but not be limited to, the identification of a set low flow trigger levels using the Northland Regional Council (NRC) Kaihu River recorder site 46611 to reduce the rate of taking from the Waiparataniwha Stream and bring alternate authorised takes into operation”.

History of Water Supply and Demand

KDC operates a community water supply scheme for the Dargaville and Baylys Beach area. Historic documents indicate that the scheme was established to serve the residential population and commercial and industrial consumers within urban Dargaville. The major industrial consumers included a dairy factory (Northland Dairy Company Ltd) and a meat processing works (Lowe Walker Ltd). The scheme also supplied untreated raw water to many of the rural properties along the raw water supply line between the Waiparataniwha Stream intakes and the water treatment plant in Dargaville.

The dairy factory and meat processing works were historically the two major industrial water consumers in Dargaville. The 1994 meter reading records show that, combined, these plants consumed up to 50% of the total water treatment plant output on a day to day basis. However, when the dairy factory was closed in 1999, the overall water consumption dropped by 40%. The meat processing works is still in operation and is now owned by Silver Fern Farms.

The primary source of water supply for Dargaville has been from the three intakes on the tributaries of the Waiparataniwha Stream, which is a tributary of the Kaihu River. The three water takes (intakes) on the Waiparataniwha Stream and its tributary were constructed in the late 1950s and early 1960s and have been operated continuously since. The Waiparataniwha Stream takes operate under consent AUT.030845.01.01 that expires on 30 June 2048.

A secondary source of raw water was established from the Kaihu River at Ahikiwi, in order to supplement water supply during intermittent dry periods when demand for water has exceeded supply from the primary sources. The Ahikiwi take and pump station was commissioned in 1987. However, when the dairy factory was closed in 1999 and overall water consumption dropped by 40%, Ahikiwi was not utilised as a back-up supply by KDC. It is understood that by 2000 the intake pipe at Ahikiwi was sealed off and the centrifugal pump is no longer operated. KDC currently does not hold resource consent to take water from Kaihu River at Ahikiwi.

In 2000 a new water take was installed on the Kaihu River at Rotu, which is immediately upstream of the limit of tidal influence. The Rotu take was proposed in July 1994³⁶ as part of a broader strategy to provide greater security of supply for Dargaville. This strategy was implemented when the Northland Dairy Company was operating in Dargaville and the proposal was that the Rotu take would replace the take from Ahikiwi³⁷. The quality of water taken at Rotu was found to be inferior to that from the Waiparataniwha Stream due to a high suspended solids loading and other contaminants. The operation of the Rotu take was first consented in May 2001 under NRC resource consent NLD 97 8134. The Rotu take now operates under existing consent CON20110813401 which will expire on 30 June 2033.

As part of the Rotu water take, the Waiatua Dam was constructed in 1998 to supplement the take from the Kaihu River at Rotu during periods of low flow. Similar to the Rotu take, the strategy was implemented when the Northland Dairy

³⁶ Dargaville Water Supply – Options to meet future demand. Report prepared by Fraser Thomas Ltd, for Kaipara District Council, July 1994.

³⁷ Kaihu River abstraction, Rotu – Resource consent application, supporting information. Prepared by Duffill Watts & Kind Limited, for Kaipara District Council, 1997

Company was operating in Dargaville. The Waiatua Dam operates under an existing consent under NRC Resource Consent 8369 which will expire on 30 June 2033.

Current Water Supply Process

Overview

The primary raw water is sourced from the Waiparataniwha Stream at the southern end of the Kaihu forest. Water is collected via three coarse screen filter intake structures installed within the stream. Supplementary water supply is taken from the Kaihu River at Rotu and is used to supply water in dry periods. Currently, the volume of water abstracted from the Rotu take must be supplemented by discharging water from the Waiatua dam.

Water is gravity fed from these takes, with booster pump stations located at Mamaranui and Parore, to boost the raw water supply to the Dargaville Water Treatment Plant (WTP), located on Hokianga Road, where it is treated to a potable standard prior to distribution to consumers.

The Kaipara District Council has measures in place to monitor the performance of the different water supplies within the district. For Dargaville, the 2021 Long Term Plan target for average consumption of drinking water was 275l/person/day (based on the number of connections the source supplies)³⁸.

An overview diagram of the Dargaville Water Supply Scheme is provided below as Figure 4.

³⁸ Kaipara District Council (2021) *Long Term Plan Mahere Wā Roa 2021 – 2031*.

https://www.kaipara.govt.nz/uploads/LTP%202021to2031/KDC%20LTP%202021to2031_WEB%20Sml.pdf

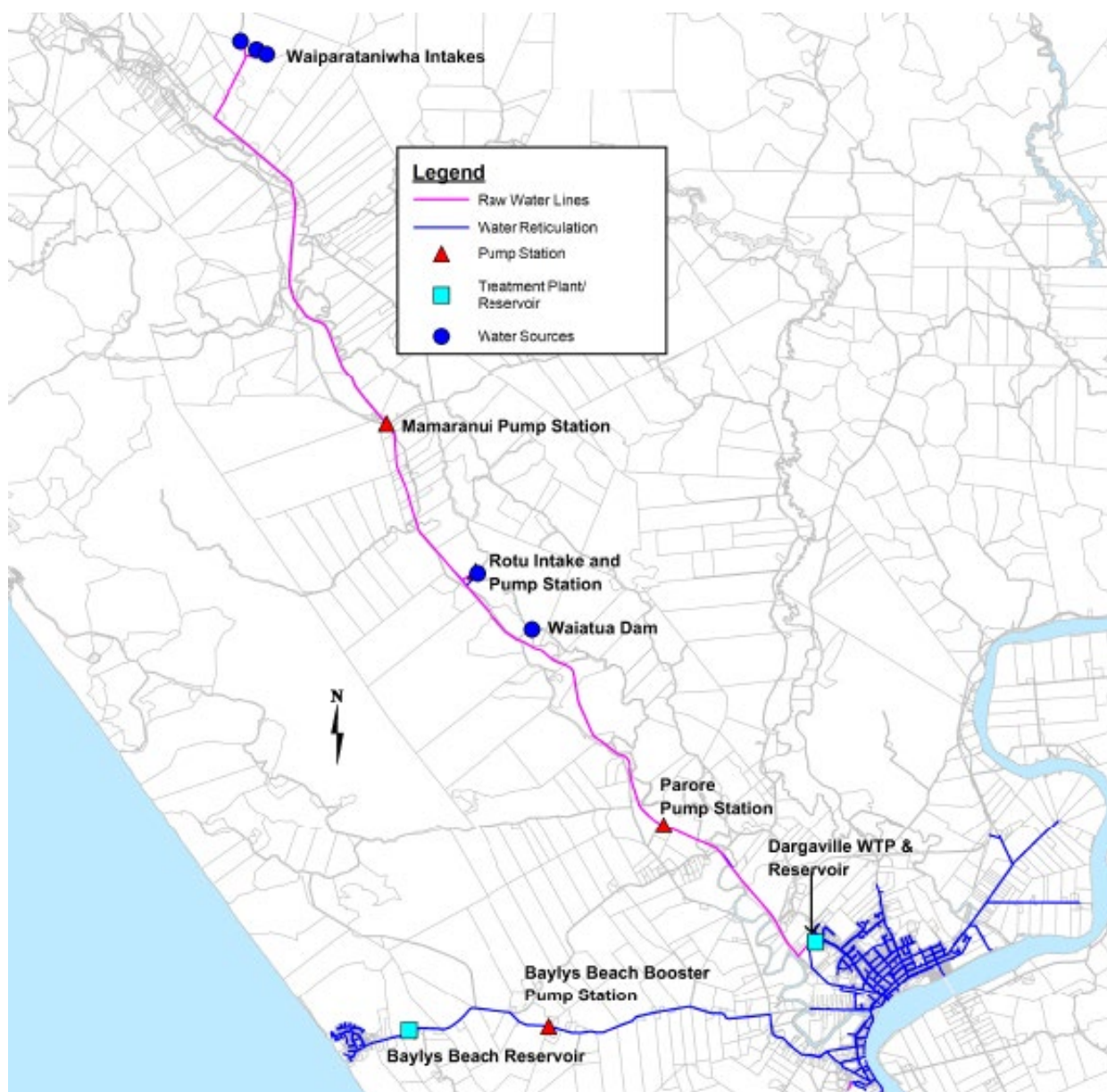


Figure 4 Dargaville Water Supply Scheme

Water Takes

Waiparataniwha Stream

The Waiparataniwha Stream has been the primary water source for the Dargaville water supply scheme for decades.

The intakes are located on the main branch and tributaries of the Waiparataniwha Stream. These intakes are located within KDC owned bush land approximately 2km east of the Kaihu River crossing at the Kaihu settlement off State Highway 12 (refer to Figure 5 below). Access to the site is via Kaihu Wood and Waipara Roads.

The three intakes are all similar in that they are concrete structures which span the full width of the stream, perpendicular to the stream's flow. All three intakes contain screens with an aperture size of 5mm.

The three tributaries converge below the intakes to form the main branch of the Waiparataniwha Stream which then flows southward into the Kaihu River.

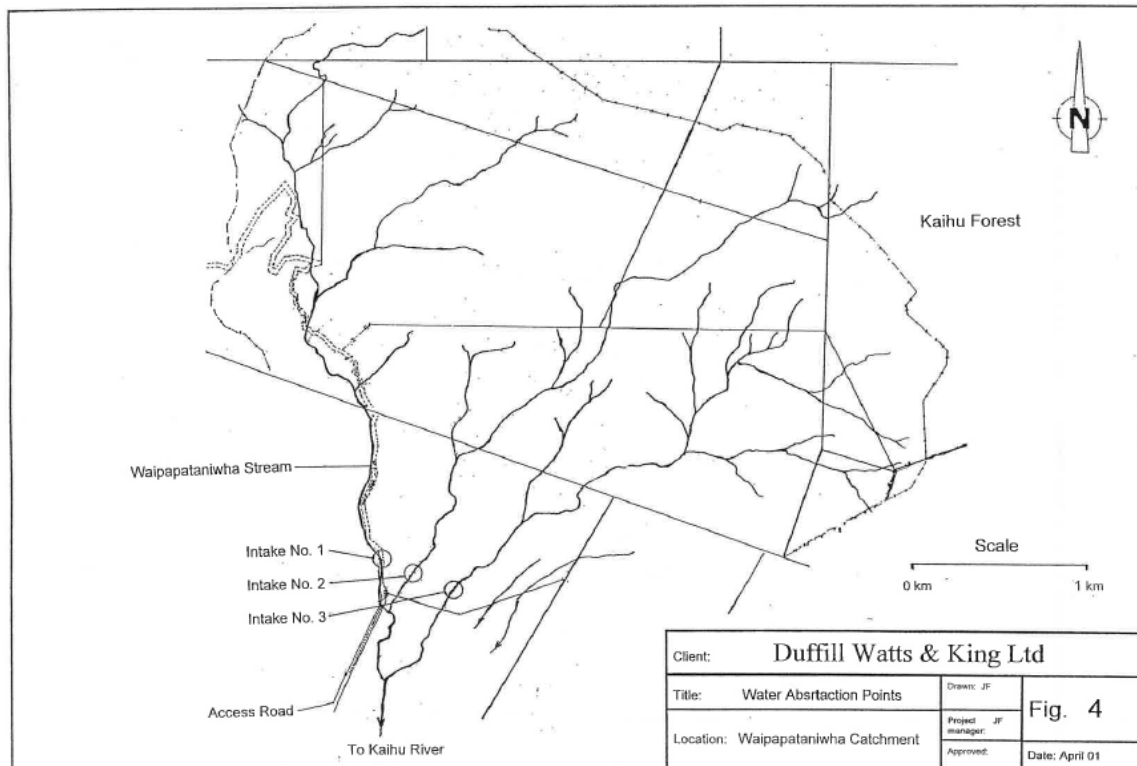


Figure 5 Location of the Waiparatanwha Stream takes (source: DWK, 2001)

Rotu Supplementary Supply

The Rotu abstraction point is located some 3km south of Mamaranui on the eastern bank of the Kaihu River.

The resource consent for the Rotu water take requires a 'release and take' approach of releasing water from the Waiatua Dam and taking this water from the Rotu abstraction site. The intention of this is to allow the take of water at Rotu at the same rate at which water is being released from the dam.

KDC hold existing resource consent CON20110813401 from NRC for the taking of no more than 7,200m³ of water per day from the Kaihu River adjacent to Lot 1 DP 147873 Blk VII Kaihu SD (known as Rotu), at or about location co-ordinates 1669916E 6030993N, for public water supply purposes.

In February 2014 KDC were granted consent (AUT.036573.01.01) to enable the temporary construction of a weir downstream of the Rotu intake to temporarily raise the level of the Kaihu River to enable the continued operation of the Rotu intake when river levels are less than 100mm above the water intake pipe. KDC proposed to construct a permanent abutment on the stream embankments as per the consent granted from NRC, but this project has not yet been implemented, and the temporary weir continues to be utilised as required.

Waiatua Dam Supplementary Supply

The Waiatua Dam is a storage dam constructed across the Waiatua Stream. Existing resource consent 98-8369 states that the dam can store up to 600,000m³ of water on the Waiatua Stream. However, the 2010 DMP states that the volume of the dam is 360,000 m³. Investigation is required to confirm the storage volume of the dam.

Dam levels are continuously monitored and recorded on SCADA. In 2013, under drought conditions, the Waiatua dam dropped from 85% capacity on 1 February to 38% capacity on 27 February. This rapid reduction in the level of the dam indicated that the dam supply cannot be relied upon to provide water to supplement the Rotu water intake for extended periods of time.

Silver Fern Farms Dargaville

Silver Fern Farms are New Zealand's leading procurer, processor, marketer and exporter of premium quality lamb, beef and venison. They operate 14 plants across New Zealand with 7,000 staff in the peak operation season. The freezing works at the Dargaville Silver Fern Farm processing site uses one third of Dargaville's water³⁹.

Silver Fern Farm's demand for water is seasonal with greatest demand occurring between September and December and low demand occurring between May and July.

The Annual Report for 2020 published by Silver Fern Farms indicates their water efficiency targets were not quite met. The 2020 operational efficiency target for water use across all processing sites was a 10% reduction in water use per kg of product produced since the 2016 'baseline'. To achieve this, water reduction targets were adopted into the operational plans for each of the processing sites, and capital investment was put into water efficiency devices such as sensor technology and infrastructure renewal. As at the 2020 Annual Report, a 7.7% reduction in total water use per kg of product had been achieved⁴⁰.

Table 8 summarises the current and projected water demand from Silver Fern Farms. Silver Ferns Farms aim for a 5% reduction year on year of water usage, which has been used to determine the projections for 2021.

Table 8 Silver Ferns Farms Current and Projected Water Demand

Period	Water Use (m ³ /day)		
	2019	2020	Projected 2021 (5% decrease from 2020)
Peak Daily	2,960	2,516	2,390
Average Daily based on Peak Weekly	1,099	910	865
Average Daily based on Peak Monthly	820	767	730

Monitoring Flows in the Kaihu River

The NRC continually monitors the flow in the Kaihu River at recorder site 46611. River stage and flow information can be accessed here <http://www.nrc.govt.nz/Environment/River-and-rainfall-data/River-and-Rainfall-Data/>

Figure 6 shows the daily average river flow at recorder site 46611 between June 2017 and May 2021.

³⁹ Stuff NZ: Dry weather brings toughest water restrictions in Northland. February 2021.

<https://www.stuff.co.nz/environment/300226725/dry-weather-brings-toughest-water-restrictions-in-northland>

⁴⁰ Silver Fern Farms. Annual Report 2020. http://www.silverfernfarms.coop/assets/AnnualReport/Annual-Report_2020_web.pdf

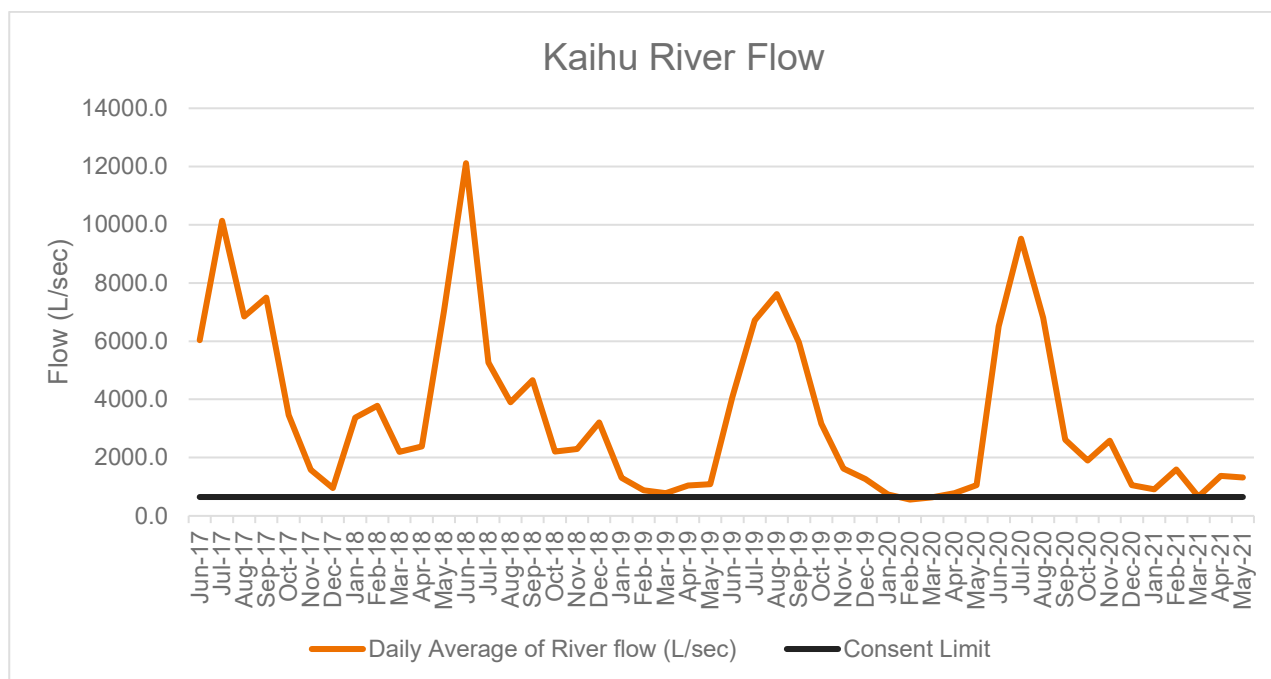


Figure 6 Kaihu River Flows at Recorder Site 46611 between June 2017 and May 2021

As expected, river flows reduce in summer conditions near to or below the trigger value of 645 l/s which requires the releasing of water from the Waiatua dam to enable the continued operation of the Rotu water intake.

G.2 Maungaturoto Water Supply Scheme Description

Existing Resource Consent Requirements

The existing resource consents for the Maungaturoto Water Supply (AUT.009888.0101-Pukekaroro and AUT.007582.01.02-Piroa) requires the production of a Drought Management Plan (DMP). Condition 15 (e) of the consent requires that

“Prior to 1 December 2014, the Consent Holder shall forward to the Regional Council's Monitoring Manager an operative Maungaturoto Water Supply System Management Plan that also includes the water supplied from the Brooklands Irrigation Scheme. This plan shall detail the management and operational methods undertaken so that the conditions of Consents 9888 and 7582 will be met, and shall include, as a minimum, the following for all water takes that are part of the supply scheme.”

“(e) A drought management plan, including, but not limited to, the following:

- i. General water conservation measures*
- ii. Drought stream flow trigger levels and actions to be taken specific to each water source;*
- iii. Water restriction measures and procedures*
- iv. Communication strategies; and*
- v. Crisis management.”*

The crisis management element is addressed in the KDC Emergency Response plan.

History of Water Supply and Demand

The raw water reticulation network is divided into four parts:

1. the pipeline from Cattlemount,
2. the pipeline from Piroa,
3. the Brooklands Dam pipeline, and
4. the combined raw water pipeline from the corner of SH12 and Brynderwyn Road to the Maungaturoto water treatment plant (WTP).

The Cattlemount pipeline and the combined raw water pipeline were installed in the late 1960s and are the oldest of the raw water lines. The majority of these pipes were made up of 200 mm diameter Asbestos Cement (AC).

The Piroa pipeline is a 100 mm diameter PVC pipe and was installed in the year 2000. The Brooklands Dam pipeline was built in 2009. This line is 180 mm diameter PE and is in excellent condition.

Given the age of the main 200 mm diameter AC raw water line, it is not operationally possible to operate the Piroa and Brooklands dam pump stations at the same time as this may lead to over-pressurisation and breakages in this pipeline resulting in no supply to the Maungaturoto Township and Fonterra Manufacturing Site.

All four pipelines have the same basic design with the pipe generally laid between 500 mm - 1,000 mm below ground level. The lines have a number of valves along the length of the pipeline for sections to be isolated and repairs completed.

Due to the hilly topography, the pipeline is located above ground at a number of points (stream crossings) along the route. Sections of pipe located above ground are constructed of spiral welded steel pipe.

The agreement between the KDC and the Brooklands Irrigation Scheme allows KDC to take up to 270,000 m³ per year from the dam. The pumps and pipeline constraints mean that this supply allows for a maximum of 1,200 m³/day to be supplied to the network.

Fonterra draws water from the raw water line just before the Maungaturoto WTP for up to 18 hours per day. During the remaining six hours, three hours during the morning and three hours at night, raw water is discharged to the Maungaturoto WTP to be treated for community supply.

There are three sources of water demand on the Maungaturoto water supply, residential (community), industrial (Fonterra – raw water) and agricultural (raw water) for irrigation and stock watering.

The average daily treated water output from the Maungaturoto WTP is 650 m³/day, rising to a peak demand of approximately 1,050 m³/day.

Approximately 20 farms are connected to the raw water lines. All these connections are metered and include backflow prevention devices. It is estimated that the peak raw water demand from these farms is approximately 39 m³/day. These numbers will not increase, as KDC will not make any further connections to the raw water supply.

Fonterra has an existing agreement with KDC to take raw water from the Maungaturoto water supply scheme prior to discharge to the Maungaturoto WTP. The demand for water from the Fonterra Manufacturing Site is summarised in the following section outlining the current water supply process for Maungaturoto.

Current Water Supply Process

Overview

The Maungaturoto water supply network is operated by KDC to provide treated water to Maungaturoto Township. The network also supplies raw water to Fonterra's Maungaturoto Manufacturing Site and a number of farming properties with raw water connections.

Figure 3-5 depicts the water supply network. Water is sourced from three locations, namely the intakes at Cattlemount / Boar Hill, the Piroa Stream intake and the Brooklands Dam.

The Brynderwyn Stream was historically used as an emergency source, however due to poor water quality, the consent for this source was allowed to lapse. This location is therefore no longer considered part of the water supply scheme.

During periods of low water demand and above normal stream flows the raw water is sourced from Cattlemount / Boar Hill and the Piroa Stream. When these two sources cannot meet demand, supplementary raw water is sourced from the Brooklands Dam.

The Kaipara District Council has measures in place to monitor the performance of the different water supplies within the district. For Maungaturoto, the 2021 Long Term Plan target for average consumption of drinking water was 340l/person/day (based on the number of connections the source supplies)⁴¹.

An overview diagram of the Maungaturoto Water Supply Scheme is provided below as Figure 7.

⁴¹ Kaipara District Council (2021) *Long Term Plan Mahere Wā Roa 2021 – 2031*.
https://www.kaipara.govt.nz/uploads/LTP%2020212031/KDC%20LTP%202021to2031_WEB%20Sml.pdf

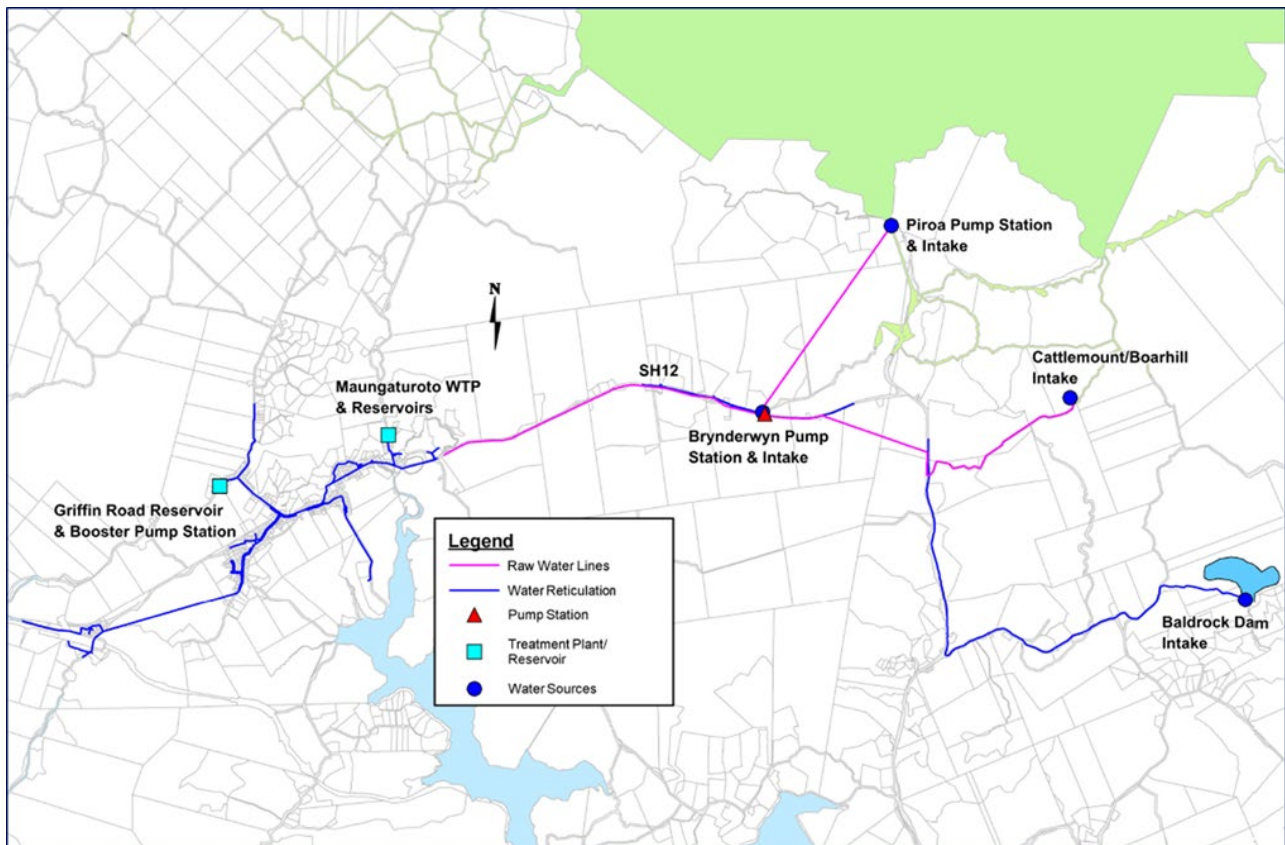


Figure 7 Maungaturoto Raw Water Supply

Water Takes

Cattlemount/Boar Hill

KDC is authorised to take up to 2,650 m³/day from three tributaries of the Pukekaroro Stream under resource consent AUT.009888.01.01. All three takes are gravity fed through a concrete weir structure having a 5 mm screen. Access from the nearest vehicular access point is via a narrow bush track that is cut into steep rock embankments for part of its length.

Each of the three weirs gravity feeds a balance reservoir through 150 mm diameter pipes. There are control valves on each line and water taken from each weir enters the system until the balancing reservoir is full. Once the balancing reservoir is full, and provided there is no raw water demand within the water supply scheme, water overflows the weirs and re-enters the main water body downstream of the confluence between Cattlemount and Boar Hill Stream i.e. remains in the catchment area.

Piroa Stream

KDC is authorised under resource consent AUT.007582.01.03 to take water from an unnamed tributary of the Piroa Stream. The rate of taking shall not exceed 1,000 m³/day nor 11.6 l/s, and may only occur when the flows in the Piroa Stream downstream of the extraction point, are greater than a minimum of 9 l/s or a daily average of 11 l/s, measured from midday to midday. The consent requires the flow of Piroa Stream to be measured and continuously recorded when flow of the stream (downstream of the extraction point) is under 30 l/s, to ensure the take amount is not going to result in residual flows below allowable limits ⁴². Water is pumped through two submersible pumps which operate on a duty/standby arrangement.

The submersible pumps lift the water from the pump chamber beside the stream into a buffering tank located slightly above the stream. From the buffering tank the water is pumped into the raw water network.

A v-notch weir is located immediately downstream of the water intake to record the continuation flow in the Piroa Stream. This is connected to a water supply telemetry system and is used to manage the abstraction rate to ensure flows in the stream are not reduced to below the consent minimum continuation flow (11 l/s).

Brooklands Dam

The Brooklands Dam (more commonly referred to as the Baldrock Dam) is a private 21 hectare irrigation reservoir created by the construction of an earth dam on private farm land to the east of Maungaturoto Township.

The volume of water that can be supplied by the dam to the network is restricted by the hydraulic capacity of the pipeline and the agreement between the KDC and the dam owners. These restrictions mean that this source alone cannot meet peak demand volumes.

Fonterra Maungaturoto

Fonterra's demand for water is seasonal with greatest demand occurring between September and December and low demand occurring between May and July.

The Fonterra Manufacturing Site produces whole milk powder, butter milk powder, casein, skim milk powder, and whey powder. During peak operation the Manufacturing Site is capable of processing 2,300,000 L of milk and buttermilk per day.

Fonterra undertakes audits of its water use efficiency, these audits include an assessment of the ratio of water consumed to milk produced. A best practice water efficiency target is 1.59 as the food safety requirements have changed considerably since the 1.02 score in 2015. The average score since April 2021 is 1.51 which suggests that the Manufacturing Site's current water efficiency is already better than best practice. Fonterra has been able to reduce water take on 2020 by at least 20% based on having a wetlands water recovery project on-line. Additional initiatives looking to save at least an additional 15% on daily take over the next year are being implemented.

Table 9 summarises the current and projected water demand from Fonterra.

Table 9: Fonterra Current and Projected Water Demand

Period	Water Use (m ³ /day)		
	2019	2020	Projected 2021
Peak Daily	3,025	2,456	2,000
Average Daily based on Peak Weekly	2,411	2,249	1,800
Average Daily based on Peak Monthly	2,368	2,090	1,800

G.3 Ruawai Water Supply Scheme Description

Existing Resource Consent Requirements

The existing resource consents for the Ruawai water takes (CON20010218701) requires a Management Plan for the water supply system. Condition 8 of the consent requires that:

“The Consent Holder shall submit to the Regional Council for approval within 6 months of the date of commencement of this consent, a Management Plan for the water supply system. The Consent Holder shall implement the Management Plan following the approval by the Regional Council. The Management Plan shall cover all aspects of the water supply operation including, but not be limited to:

- a) Details of the maintenance programme for the bores and streams;*
- b) A bore field pumping and monitoring regime that mitigates the risk of salt water intrusion. The pumping regime is to identify the maximum pump rates for each bore to ensure compliance with Condition 1 and Condition 3;*
- c) Policy to promote efficient use by water users (such as installation water saving devices, water storage); and*
- d) A contingency plan to be implemented during times of water shortages.”*

History of Water Supply and Demand

The original Ruawai WTP was constructed in 1970. Filters, aerators, pumps and electrical equipment at the plant were renewed in 1995. The plant was upgraded again in November 2011 to work towards meeting the DWSNZ 2005(08) and risks identified in the Ruawai WSP (April 2008). The reticulation network was constructed in 1996.

The three boreholes have historically been reported in below average condition. Borehole 1 was refurbished and the pump upgraded in August 2011. Borehole 2 was refurbished, and the pump upgraded in September 2012. After the refurbishments, both Boreholes 1 and 2 are in good condition⁴³. During the September 2012 inspection, the casing of Borehole 3 was found to have collapsed, which rendered the borehole unusable, and consequently Borehole 3 has been decommissioned.

Historically groundwater investigations have shown the bore water is high in iron and manganese, as well as being at risk of high levels of salt water intrusion. A Water Safety Plan was written in 2019 in response to potential water quality issues and should be referred to for water quality triggers and actions. A Borefield Management Plan is also in use for the Ruawai take to manage extraction rates and risk of saltwater intrusion.

Current Water Supply Process

Overview

The Ruawai water supply system services approximately 500 people. There are 251 connections to the scheme.

Raw water is drawn from two bores of varying depths located beside the Wairoa River on Stopbank Road and Westlake Street. Bore 2 is the primary duty bore, with bore 1 providing additional supply when required. Bore 3 is still in situ, however has been decommissioned. Ruawai has one treated water reservoir located at the Ruawai WTP with a total capacity of 350m³, constructed in 1970. It is designed to ensure a constant supply of water to both the water treatment facilities and the residents of Ruawai.

Ruawai is serviced by approximately 6.5km of pipeline network, which is fed by a single 150mm diameter pipeline from the WTP. Treated water is boosted from the WTP reservoir to the consumers via one of two pumps, operating in a duty/standby manner.

The Kaipara District Council has measures in place to monitor the performance of the different water supplies within the district. For Ruawai, the 2021 Long Term Plan target for average consumption of drinking water was 130l/person/day (based on the number of connections the source supplies)⁴⁴.

⁴³ Asset Management Plan 2015 Water Supply. Report prepared by Kaipara District Council, June 2015.

⁴⁴ Kaipara District Council (2021) *Long Term Plan Mahere Wā Roa 2021 – 2031*.
[https://www.kaipara.govt.nz/uploads/LTP%2020212031/KDC%20LTP%202021to2031_WEB\\$ml.pdf](https://www.kaipara.govt.nz/uploads/LTP%2020212031/KDC%20LTP%202021to2031_WEB$ml.pdf)

An overview diagram of the Ruawai Water Supply Scheme is provided below as Figure 8.



Figure 8 Ruawai Raw Water Supply

Water Takes

Bores

The three bores are located along the estuary in the catchment of the Northern Wairoa River on Crown Land. There are two water take conditions applied by the resource consent. The first states that the combined quantity taken from the bores shall not exceed 450 cubic meters in any consecutive 24hr period. In addition, the total water take shall not exceed 73,000 cubic meters within each 12 month period between 1 April and 31 March.

Meters with a $\pm 5\%$ accuracy are used to measure and record the combined quantity of water taken from the bores. Monitoring also occurs to ensure chloride concentrations are within the allowable limits. If too much saline water enters the bores, pumping must cease.

G.4 Mangawhai Water Supply Scheme Description

Existing Resource Consent Requirements

The existing resource consents for the Mangawhai water takes (CON20010803201) requires an alternative water supply plan to cater for other bore users in the event the water takes exceed the allowable limit, or severe drought conditions.

Condition 7 of the consent requires that:

*"In the event that the exercise of this consent results in a groundwater user identified in **Schedule 1** (attached) no longer being able to access or use groundwater from their existing water supply bore to meet their requirements as at the time of the date of commencement of this consent, the Consent Holder shall provide that user with an alternative supply of water of similar quality and quantity, to the satisfaction of the Northland Regional Council.*

The alternative supply of water shall be made available to the groundwater user within 24 hours of being so notified to provide the water supply by the Northland Regional Council, and shall be provided at no cost to the groundwater user."

History of Water Supply and Demand

The bore and council reticulation network were first introduced to Mangawhai in 2002, to supply potable water to the Mangawhai Campground. Since then, the supply has increased to a total of 18 connections to the council reticulation.

In previous summers the water provided by the bore has not been sufficient to supply the campground and other bore users over the summer period when the population increases. To maintain a level of service water has been tankered in from an external source.

Current Water Supply Process

Overview

Mangawhai has a small water supply scheme with 18 connections. The scheme primarily provides potable water source to the Mangawhai Heads Campground, Wood Street shops, public toilets and for community housing. The Mangawhai community has previously indicated that it did not want a public water scheme which Council accepted at the time.

Mangawhai's water is drawn from a bore and pumped to a single reservoir and treatment plant which was upgraded in 2017 and treats the supply with a cartridge filter, Sodium Hypochlorite & Sodium Hydroxide dosing, and UV treatment.

The 2021 Long Term Plan target for average consumption in of drinking water was 230l/person/day (based on the number of connections the source supplies and accounts for supplying the campground)⁴⁵.

An overview diagram of the Mangawhai Water Supply Scheme is provided below as Figure 9.

⁴⁵ Kaipara District Council (2021) *Long Term Plan Mahere Wā Roa 2021 – 2031*.

https://www.kaipara.govt.nz/uploads/LTP%2020212031/KDC%20LTP%202021to2031_WEB%20Sml.pdf

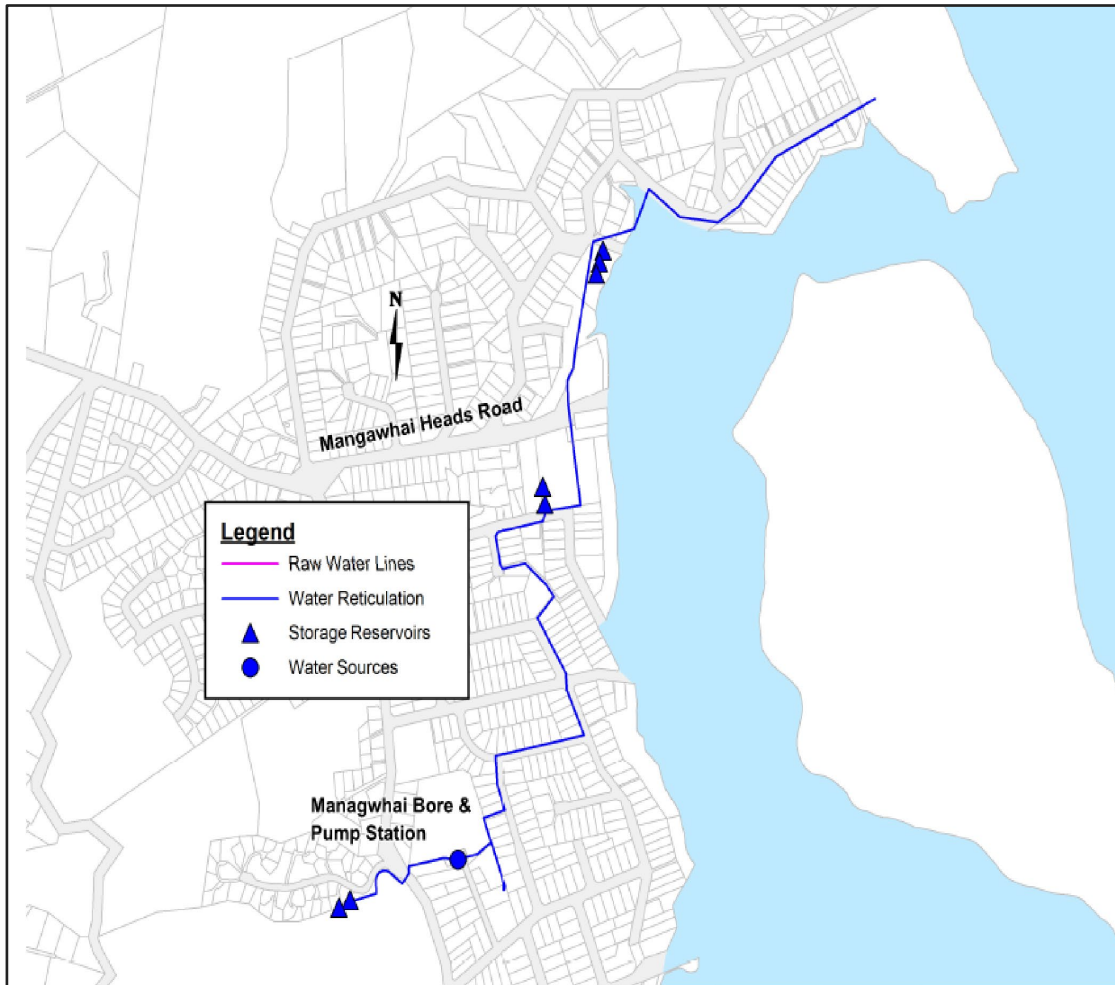


Figure 9 Mangawhai Raw Water Supply

Water Takes

Fagan Place Bore

The water take is from a single bore that was deemed too shallow to secure (less than 10m depth) when attempted in 2012. According to the DWSNZ 2005(08), the level of treatment may need to be increased to account for the unsecure bore conditions.

Council shares the bore with six other private water users. It is included in the Mangawhai water take consent that if Council's water use results in groundwater no longer being available for the six other users, the Council must provide the users with an alternative supply of water at similar quantity and quality.

G.5 Glinks Gully Water Supply Scheme Description

Existing Resource Consent Requirements

The existing resource consents for the Glinks Gully water takes (AUT.007944.01.03 and AUT.007944.02.03) requires a water rationing plan to cater for severe drought conditions. Condition 2 of the consent requires that:

“Notwithstanding the rate specified in Condition 1, the Consent Holder shall comply with any water rationing plan (including possible cessation of take from the unnamed tributary, Map Reference P08:879-687) imposed by the Council to cater for severe drought conditions. This may take place when the flow in the stream, measured at the discharge onto the beach, (Map Reference P08:878-686) is less than or equal to 5 litres per second.”

History of Water Supply and Demand

The Glinks Gully water supply system takes water from three groundwater springs inland from the community.

Historically, Glinks Gully had a secondary water source from an unnamed tributary adjacent to the Glinks Gully community; however this is no longer in use, due to the potential for contamination from an adjacent landfill. In previous summers the water provided by the groundwater springs alone has not been sufficient to supply the community over the summer period when the population increases, and water has been tankered in from an external source.

Current Water Supply Process

Overview

The Glinks Gully water supply system gets raw water from three groundwater springs located inland and upstream of the community, and supplies treated water to approximately 72 people. The stream that once discharged across the beach, is now piped so flow is no longer monitored at this point.

The raw water is gravity fed to the Glinks Gully WTP where it is received in a raw water reservoir fitted with a lime column to raise the pH. The treatment process consists of pressure sand filtration, four cartridge filters (two x 5 micron and two x 1 micron), two UV sterilizers (as of November 2008), pulse dosing pH correction and chlorine disinfection. The storage of treated water is provided by four x 23m³ concrete reservoirs. The water supply reticulation network is comprised of approximately 1.4kms of alkathene water main servicing up to 85 connections including a campground.

The Kaipara District Council has measures in place to monitor the performance of the different water supplies within the district. For Glinks Gully, the 2021 Long Term Plan target for average consumption of drinking water was 52l/person/day (based on the number of connections the source supplies)⁴⁶.

An overview diagram of the Glinks Gully Water Supply Scheme is provided below as Figure 10.

⁴⁶ Kaipara District Council (2021) *Long Term Plan Mahere Wā Roa 2021 – 2031*.

https://www.kaipara.govt.nz/uploads/LTP%2020212031/KDC%20LTP%202021to2031_WEB%20Sml.pdf

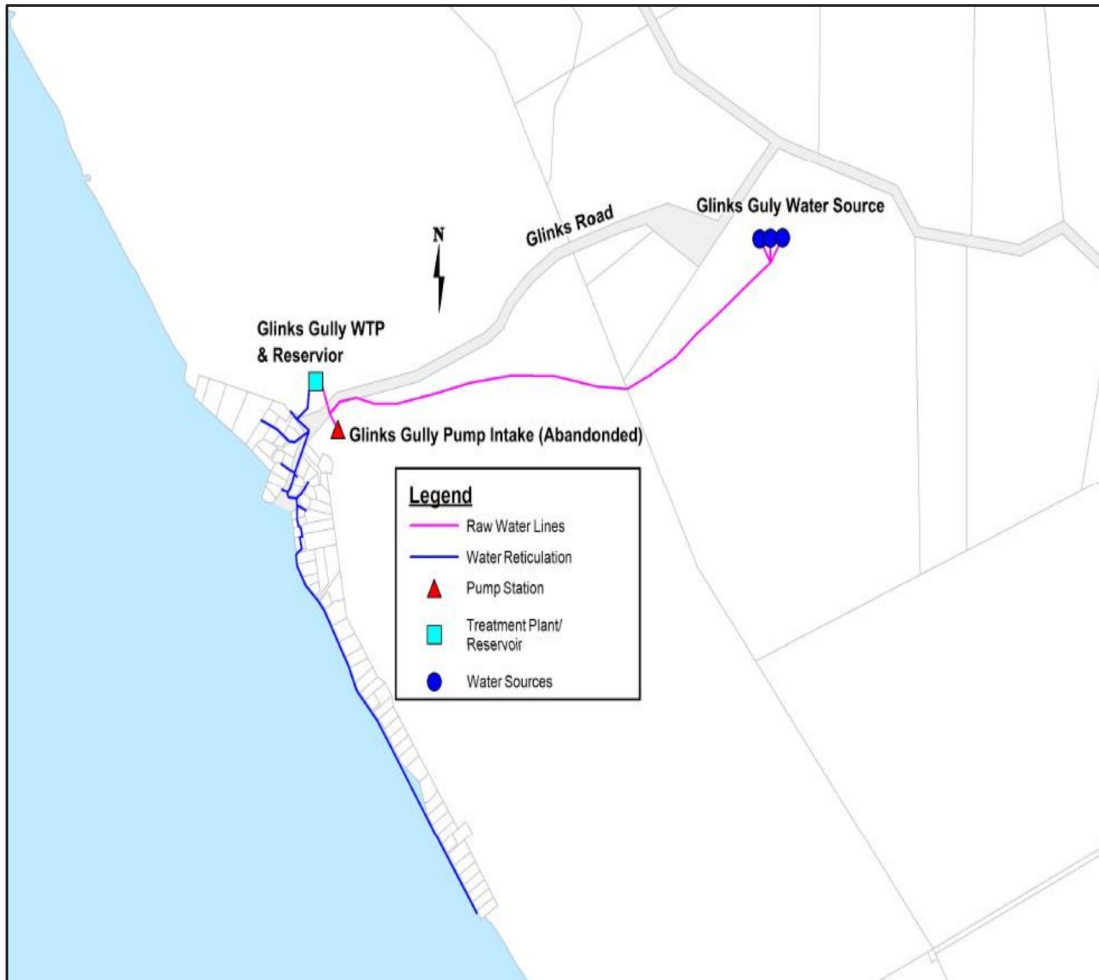


Figure 10 Glinks Gully Raw Water Supply

Water Takes

Spring Intakes

The raw water comes from three spring fed intakes near the intersection of Glinks and Redhill Roads, which run by gravity down to the bottom of Glinks Road where the treatment plant and storage tanks are located. There are no pumps in the reticulation system. Each year around the 1st of December arrangements are made for the main supply line to be flushed out to clear any build-up of silt deposits to ensure the supply line can operate at maximum capacity over the summer season.

Treatment and Storage

The water treatment plant is located by the Glinks Seaside Holiday Park. The treatment consists of coarse screens at the inlet, multimedia sand filters, micro filtration, UV disinfection, chlorine dosing and water acidity correction. The treated water then feeds into four 23m³ concrete reservoirs. These reservoirs are critical to the Glinks water supply, as the size of the raw water main transporting water from the spring intakes limits the extraction capacity, and the reservoirs are required to supplement the supply in peak periods.

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