



Dargaville Drought Management Plan

Prepared for Kaipara District Council by MWH

December 2016



MWH



Kaipara te Oranganui

**KAIPARA
DISTRICT**

Two Oceans Two Harbours

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1 Introduction

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”.

In addition to this requirement, the west coast of the Kaipara District and the Dargaville area specifically, has experienced significant drought conditions over the summers of 2012/2013 and 2013/2014. These drought conditions have led to serious water shortages in the raw water supplies for the Dargaville Water Supply Scheme and required Kaipara District Council (KDC) to implement a range of water saving measures including community notices and liaison with industry to reduce water demand. These recent experiences have been used to inform the development of this DMP alongside information contained within the previous version of the DMP¹ (that is now outdated).

2 Purpose

The purpose of the DMP is:

- To outline how the use of water from the Dargaville water supply scheme will be regulated during periods of water shortage;
- To describe how the various Dargaville raw water sources will be managed during times of water shortage;
- To identify actions that KDC will implement during periods of drought to maintain essential water services to ensure minimum health requirements; and
- To comply with existing resource consent conditions.

3 Dargaville Water Supply Scheme Description

3.1 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, 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.

¹ Kaipara District Council: Dargaville Water Supply System – Drought Management Plan. April 2010. CPG New Zealand Limited.

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 centrifugal pump was decommissioned and the intake pipe at Ahikiwi sealed off. KDC currently does not hold resource consent to take water from the 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 1994² 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 Ahikiwi³. 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 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.

² Dargaville Water Supply – Options to meet future demand. Report prepared by Fraser Thomas Ltd, for Kaipara District Council, July 1994.

³ Kaihu River abstraction, Rotu – Resource consent application, supporting information. Prepared by Duffill Watts and Kind Limited, for Kaipara District Council, 1997

3.2 Current Water Supply Process

3.2.1 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 Waitatua Dam.

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

An overview diagram of the Dargaville Water Supply Scheme is provided below as Figure 3-1.

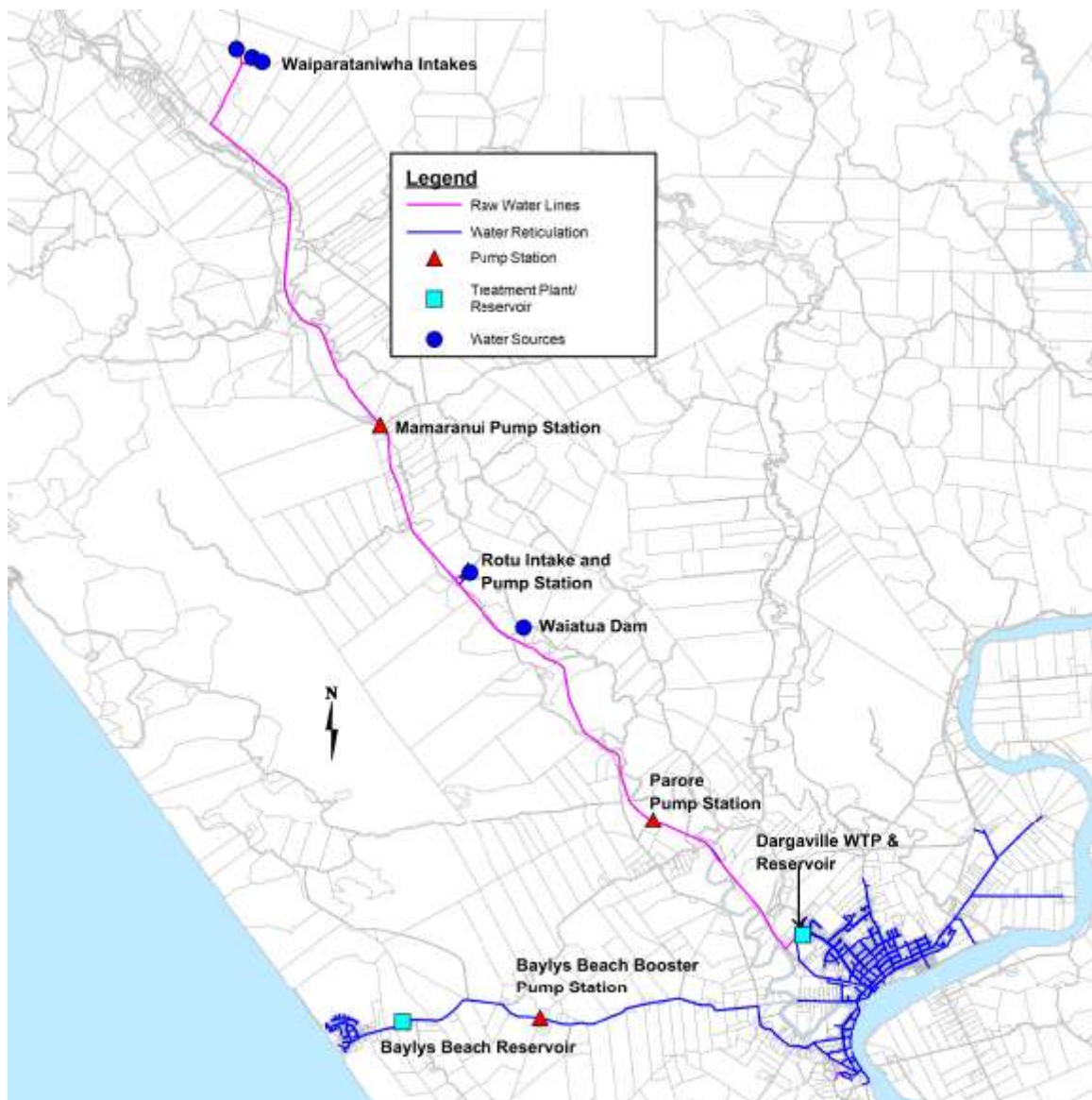


Figure 3-1: Dargaville Water Supply Scheme

3.2.2 Water Takes

3.2.2.1 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 3-2 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.

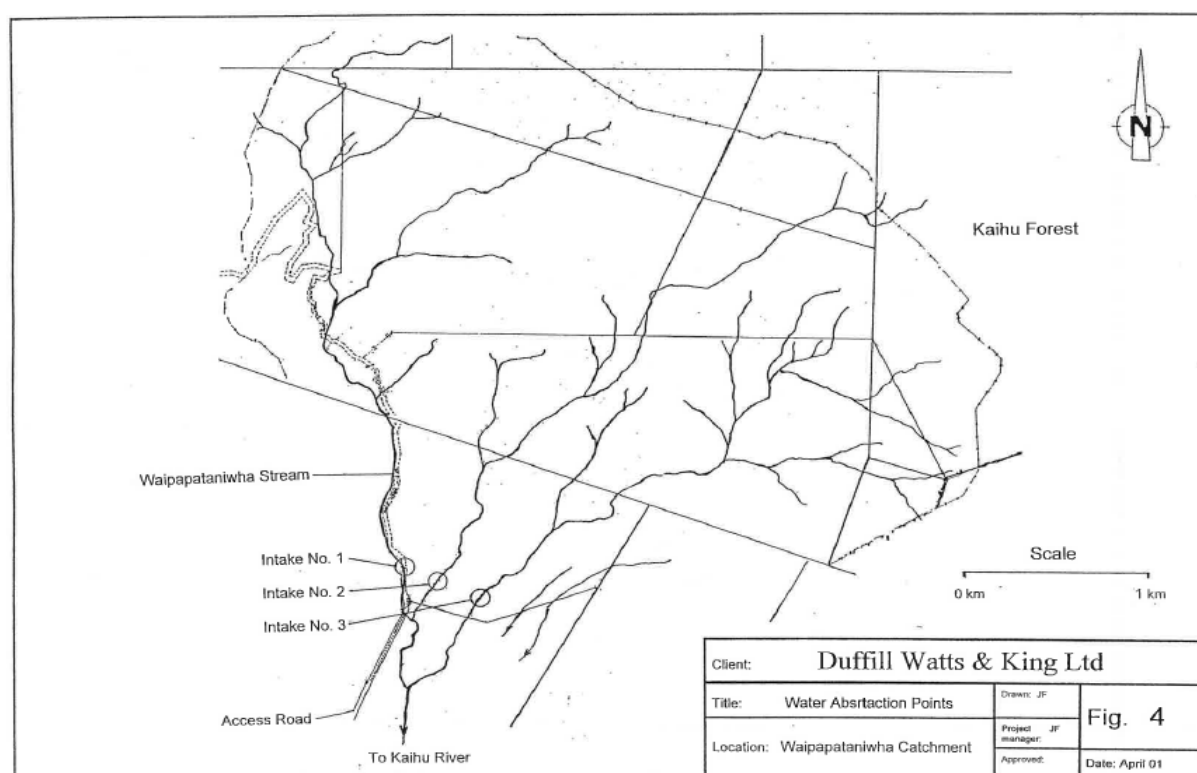


Figure 3-2: Location of the Waiparataniwha Stream takes (source: DWK, 2001)

3.2.2.2 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 was 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 is proposing to construct permanent abutments on the stream embankments as per the consent granted from NRC. This will enable the centre portion of the weir to be installed and removed as per the current consent conditions in relation to the relative height of the water level above the water intake pipe.

3.2.2.3 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 360,000m³. KDC is currently undertaking an investigation 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 01 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.

3.3 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 3-3 shows the daily average river flow at recorder site 46611 between November 2011 and September 2015.

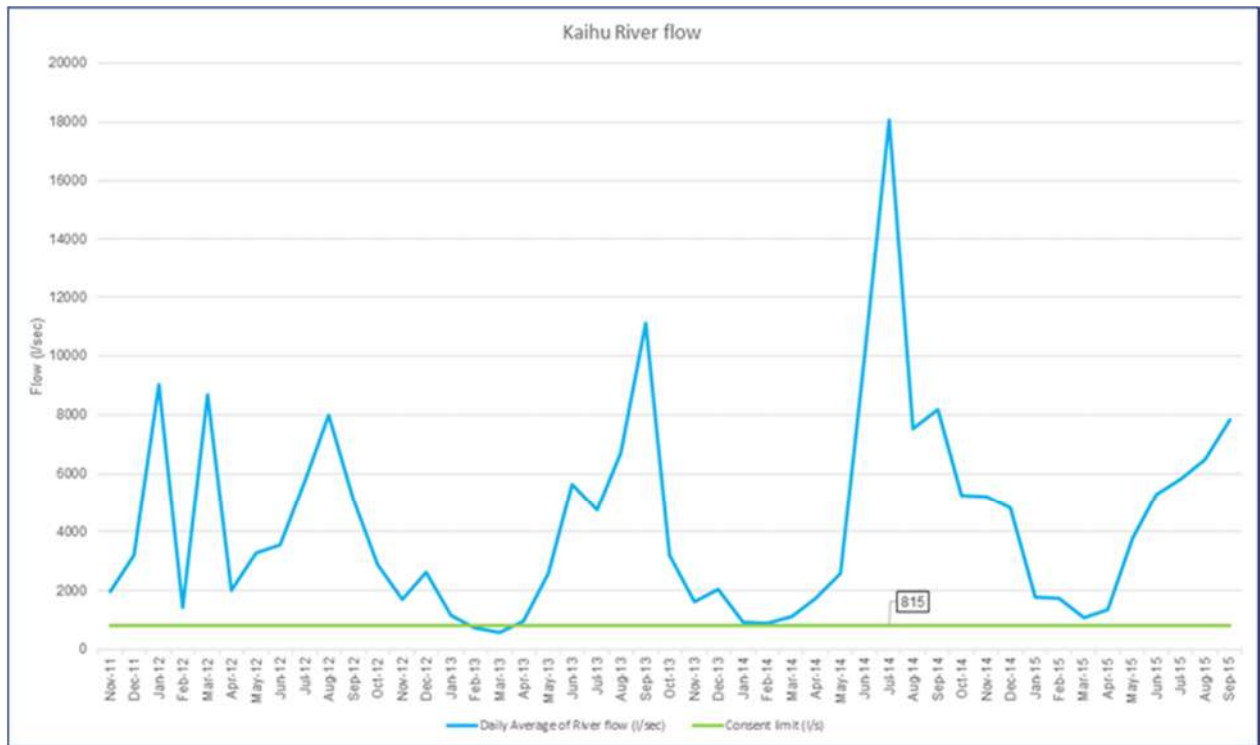


Figure 3-3: Kaihu River Flows at Recorder Site 46611 between November 2011-September 2015.

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

4 Drought Management Triggers and Restrictions

4.1 General

Water restrictions can be considered a blunt instrument and should only be used when there are water shortage conditions whereas demand management programmes 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.

4.2 Current Restrictions

The most efficient way to temporarily reduce water consumption in times of drought or water shortage is to introduce water restrictions. Water 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 restrictions.

New Zealand water suppliers typically have a staged approach to water 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.

During the 2012/2013 and 2013/2014 summers KDC implemented the following restrictions:

- Sprinkler ban;
- Hosing ban;
- Advertisements in local papers and radio stations;
- Discussions with Silver Fern Farms to reduce their water usage;
- All water carriers were directed to source water from Ruawai;
- Any leakages were responded to immediately; and
- A letter drop to residents (Water Restriction Notice) and sign-boards placed in town.

4.3 Water Shortage Directions

During the last two summers, the NRC has issued Water Shortage Directions pursuant to Section 329 of the Resource Management Act 1991 (RMA). The Water Shortage Directions have been requested under extreme drought conditions. A copy of the Water Shortage Directions are included as Appendix A. These Water Shortage Directions have generally allowed:

- 1 The ability for KDC to continue to take water at the Rotu intake when the flow in the Kaihu River at recorder site 46611 is at or below 645L/s without the need to release water from the Waiatua Dam;
- 2 Use of the 'Ahikiwi water take' in the Kaihu River upstream of the water intake for the Rotu intake; and
- 3 The ability to continue to take water from the Waiparataniwha Stream.

The Water Shortage Directions have been subject to KDC:

- 1 Ensuring that the combined maximum rate that water is taken from the Kaihu River via the Ahikiwi and Rotu water intakes does not exceed 83L/s;
- 2 Implementing effective water conservation measures and restrictions on users of the Dargaville water supply, including promoting and publishing the need to conserve water and restricting water use for non-essential activities including, but not limited to, garden watering, washing of cars and water blasting;

- 3 Inspecting the Dargaville water reticulation system for leaks and other water losses and promptly repairing or ceasing them if/when they are found; and
- 4 Providing reports to the NRC on the water conservation measures and restrictions it has implemented and the outcome of its inspections on the Dargaville water reticulation system.

4.4 Proposed Trigger Points and Restrictions

From December 2015 it is proposed that KDC introduces and implements a five stage restriction level based on four 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 proposed trigger points, related restrictions, community actions, KDC actions and KDC communications operations staff actions relating to the Water Alert Levels are described in Table 4-1 below. The KDC Communications Manager is drafting templates for each of the Water Alert, a sample is attached under Appendix B.

Appendix C and D have been included to show the specific actions for KDC communications and operations staff that relate to each proposed Water Alert Level.

Table 4-1: Water Alert Levels and Restrictions

Trigger Level	Date ⁴	Flow in Kaihu River at Gorge Recorder Site 46611	Water Level At Rotu Intake	Community Actions	KDC Communications ⁵	KDC Operations Staff
Business as Usual	-	>1000L/s	-	- No restrictions in place; and - Minimise losses and efficient use of water encouraged.		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 activity planned should be carried out at this time; 4 Ensure Rotu raw water take is shut off; and 5 UV Plant is optional.
1	01 Nov	<1000L/s	>100 mm	- General water conservation awareness; and - No restrictions in place.	1 Issue Community Notice – Water Alert Level 1: a) KDC Communications Manager to publish notice in local newspaper.	1 Prepare to bring on line the Rotu take: a) Inspect Rotu pump station - ensure pumps, valves are operational and can be brought on-line immediately; b) Note flow meter reading; and c) Clear raw water in-take. 2 Monitor water usage at Water Treatment Plant (WTP) and dam levels on a daily basis; 3 Ensure SCADA is recording WTP and Waitatua Dam flows on continuous basis; and

⁴ Water Alert Level 1 to start on 01 November regardless of flow in the Kaihu River.

⁵ KDC Communications Manager is drafting templates for each of the Water Alert, a sample is attached under Appendix - B

Trigger Level	Date ⁴	Flow in Kaihu River at Gorge Recorder Site 46611	Water Level At Rotu Intake	Community Actions	KDC Communications ⁵	KDC Operations Staff
						4 Notify Northland Regional Council (NRC) of Water Alert Level 1 status.
2		<900L/s	>100mm	- Notice to conserve water; and - No sprinkler notice.	1 Issue Community Notice – Water Alert Level 2: a) KDC Communications Manager to publish notice in local newspaper. 2 Media release of river levels, rainfall and dam levels: a) KDC Communications Manager to publish media release. 3 Advise Silver Fern Farms / Kumara Processors of Water Alert Status: a) KDC Operations Engineer to communicate by email. 4 Fire Service and Rural Fire Service requested to	1 Start 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: 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 Start UV at WTP; 5 Backwash WTP filters; 6 Start Rotu Pump (one pump); 7 Monitor raw water supply at WTP; 8 Notify Northland Regional Council (NRC) of Water Alert Level 2 status; and 9 Water Operations Engineer to email: a) NRC; b) Northland District Health Board (NDHB); c) Silver Fern Farms; and d) Kumara Processors.

Trigger Level	Date ⁴	Flow in Kaihu River at Gorge Recorder Site 46611	Water Level At Rotu Intake	Community Actions	KDC Communications ⁵	KDC Operations Staff
					stop practising and testing from live hydrants: a) KDC Communications Manager to contact Fire Service.	
3		<755L/s)	>100mm	- Sprinkler ban; - Hose ban; - Silver Fern Farms to reduce water usage; - Kumara processors to reduce water usage; - Water carriers to utilise alternative source; and - Car wash facilities to	1 Issue Community Notice – Water Alert Level 3: a) KDC Communications Manager to publish notice in local newspaper. 2 Media release: a) KDC Communications Manager to publish media release. 3 Radio station advertising: a) KDC Communications Manager to release. 4 Water Alert Level 3 to front page of KDC website:	1 Request Water Shortage Direction from NRC to circumvent Condition 4 of CON20110813401 ⁶ (to preserve water stored in the Waitatua Dam) and to use the Ahikiwi take point ⁷ ; 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 Alert Level 3 status; 7 Inspect the Dargaville water reticulation system for leaks and other water losses and promptly

⁶ Condition 4 of the CON20110813401 requires water to be released from the Waitatua Dam at the same rate as water is extracted from Rotu.

⁷ 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 Waitatua Dam when the flow reduces below 645 L/s in the Kaihu River.

Trigger Level	Date ⁴	Flow in Kaihu River at Gorge Recorder Site 46611	Water Level At Rotu Intake	Community Actions	KDC Communications ⁵	KDC Operations Staff
				reduce water consumption.	a) KDC Communications Manager to publish. 5 Request Silver Fern Farms and Kumara processors to reduce water usage: a) KDC Operations Engineer to communicate. 6 Advise car wash facilities to reduce water usage: a) KDC Communications Manager to contact. 7 Advise water carriers to use alternate source: a) KDC Communications Manager to contact.	repairing or ceasing them if/when they are found; and 8 Prepare to install weir across Kaihu River: a) Inspect site and ensure plant and material is on-site and all equipment is available to install weir.
4 ⁸		<645L/s	<100mm	- Sprinkler ban; - Hose ban;	1 Issue Community Notice – Water Alert Level 4: a) KDC Communications Manager to publish	1 Should Water Shortage Direction be obtained, continue sourcing water from Rotu; 2 Install temporary weir on Kaihu River at Rotu;

⁸ Trigger level 4 to be implemented when the water level in the Kaihu River reduces to less than 100mm above the Rotu intake.

Trigger Level	Date ⁴	Flow in Kaihu River at Gorge Recorder Site 46611	Water Level At Rotu Intake	Community Actions	KDC Communications ⁵	KDC Operations Staff
				- Silver Fern Farms to reduce water usage; - Kumara processors to reduce water usage; - Water carriers to utilise alternative source i.e. Ruawai; - Car wash facilities to stop washing; and - No pool filling⁹.	notice in local newspaper. 2 Media release: a) KDC Communications Manager to publish media release. 3 Radio station advertising: a) KDC Communications Manager to release. 4 Water Alert Level 4 to front page of KDC website: a) KDC Communications Manager to publish. 5 Letter drop to all KDC customers detailing restrictions: a) KDC Communications Manager to co-ordinate. 6 Request Silver Fern Farms and Kumara	3 Prepare to bring on line the water take at Ahikiwi on the Kaihu River (Te Roroa Whatu Ora Trust consultation required): a) Inspect Ahikiwi pump station and ensure pump and valves are working; and b) Clean the raw water take. 4 Prepare tankers (to be used if required); 5 Continue road signage advertising; 6 Monitor water usage at WTP; 7 Notify Northland Regional Council (NRC) of Water Alert Level 4 status; and 8 Inspect the Dargaville water reticulation system for leaks and other water losses and promptly repairing or ceasing them if/when they are found. Should the water level at Rotu intake drop to a level that compromises the ability to abstract water at Rotu the following actions should be undertaken: 1 Bring on line the water take at Ahikiwi on Kaihu River;

⁹ Refers to public and private pools and spa pools.

Trigger Level	Date ⁴	Flow in Kaihu River at Gorge Recorder Site 46611	Water Level At Rotu Intake	Community Actions	KDC Communications ⁵	KDC Operations Staff
					processors to further reduce water usage: a) KDC Operations Engineer to communicate. 7 Advise car wash facilities to stop washing: a) KDC Communications Manager to contact. 8 Advise water carriers to use alternate source: a) KDC Communications Manager to contact. 9 Priority given to domestic water use, therefore Silver Fern Farms and Kumara Processors may be requested to significantly reduce or stop using water: a) KDC Operations Engineer to Communicate. 10 Check dialysis patients:	2 Tankers to transport potable water from nearby areas to strategic locations in Dargaville; 3 Tankers to be available to cart treated water from WTP to the community (if required); 4 Continue road signage advertising; 5 Monitor water usage at WTP; 6 Areas of public reticulation may be switched off for periods of time, standpipe supplies to be considered; and 7 Inspect the Dargaville water reticulation system for leaks and other water losses and promptly repairing or ceasing them if/when they are found.

Trigger Level	Date ⁴	Flow in Kaihu River at Gorge Recorder Site 46611	Water Level At Rotu Intake	Community Actions	KDC Communications ⁵	KDC Operations Staff
					a) KDC Communications Manager to Check with Northland District Health Board.	

Figure 4-1 illustrates the historical flow in the Kaihu River during the 2012/2013 drought with the various restrictions implemented during that period. By way of comparison, the various Water Alert levels described in [Table 4-1](#) have been overlaid over the same period. This analysis shows that Water Alert Level 2 was reached on 17 January and Water Alert Level 3 at the end of January 2013. On 13 February the takes from the Waiparataniwha Stream were switched off and the Rotu take was brought online to solely supply the Dargaville water supply system. On 01 February the dam level was 85% and by 27 February it was 38%. A Water Shortage Direction from the NRC was granted on 27 February. Water Alert Level 5 was not triggered during the 2012/2013 drought event.

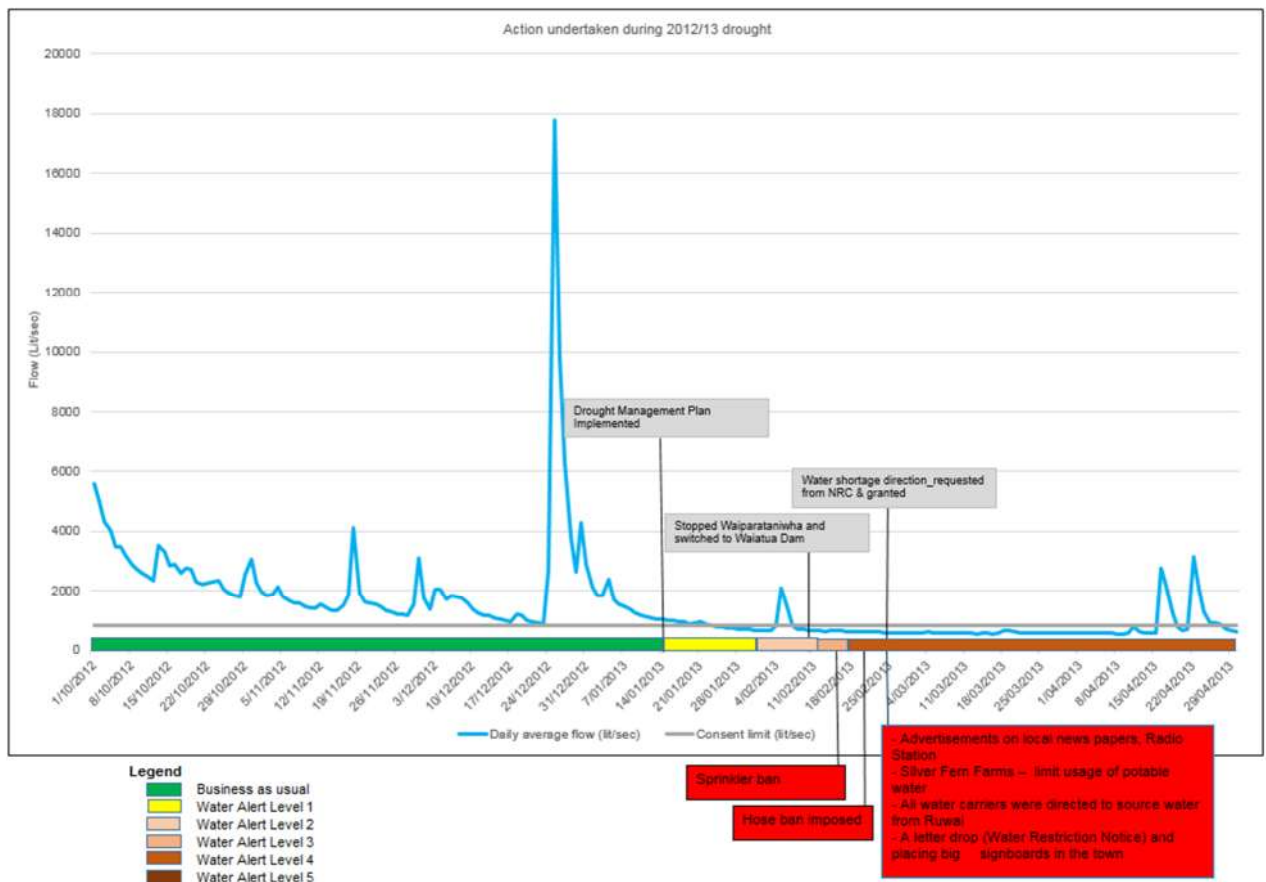


Figure 4-1: Actions Undertaken During 2012/2013 Drought

As an example, Figure 4-2 illustrates the anticipated actions during the upcoming 2015/2016 summer period based on a combination of monitored flows in the Kaihu River based on actual data until 17 October 2015. From this date onwards the Figure has been created by using flow data from the 2012/2013 period. Based on this data, the following dates trigger the various Water Alert Levels – 1 (01 November), 2 (17 January), 3 (24 January) at which point the Waitua Dam release may commence. The further triggering of Water Alert Level 4 is based upon the water level above the Rotu intake dropping to less than 100mm (at which point the temporary weir can be installed). This is estimated to occur in mid-February (although this parameter of height above Rotu intake was not monitored in 2012/2013).

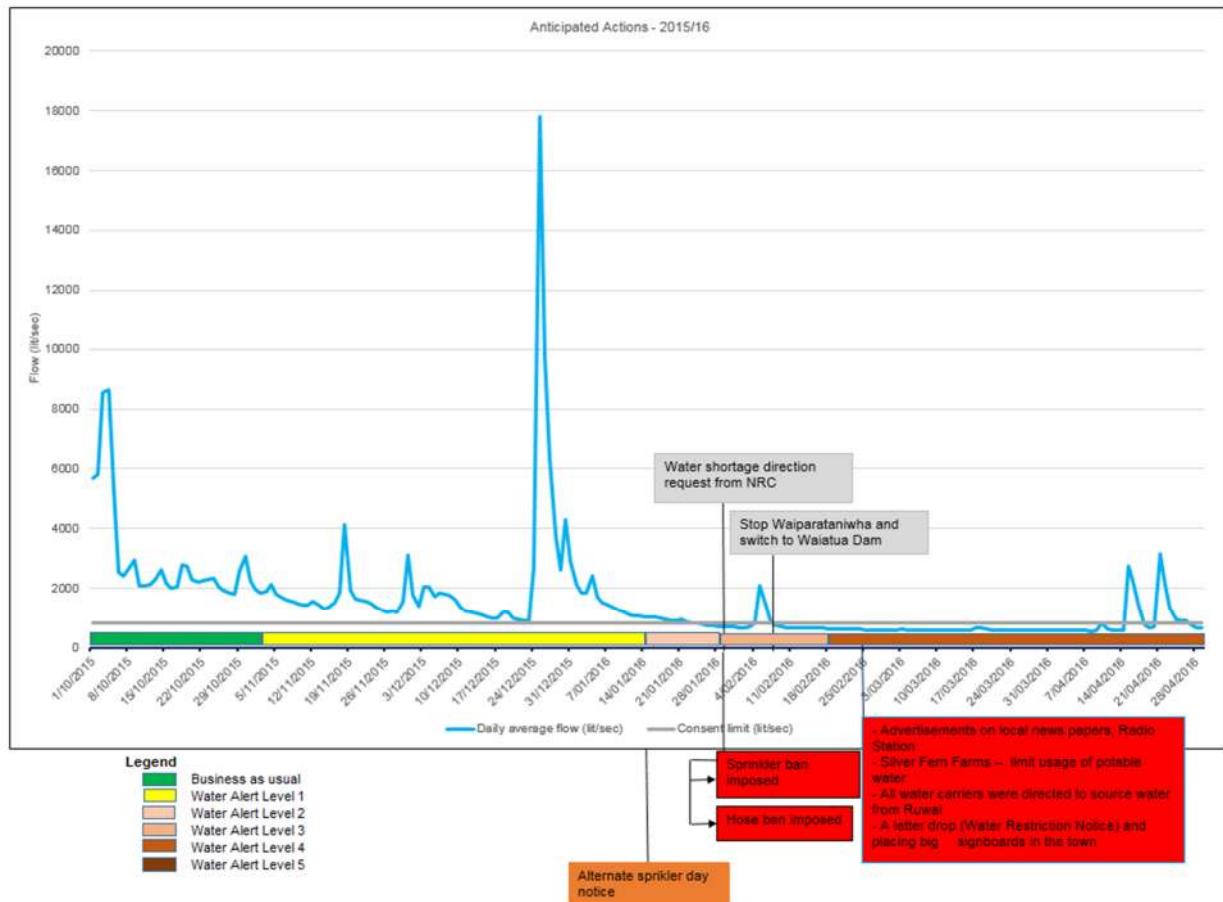


Figure 4-2: Anticipated Actions for 2015/2016 Summer Period

5 Implementation

5.1 Drought Management Response Team

KDC has established the following Drought Management Response Team (DMRT) to be led by the Water Services 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:

- Water Services Manager – Overall responsibility for the DMP and reporting to the General Manager Infrastructure;
- Planning and Design Engineer – Responsible for co-ordination of KDC responsibilities for implementing the DMP actions; and
- Operations Engineer – Responsible for liaising with contractors for operational changes to the water supply scheme and reporting to NRC.

The Drought Management Response Team members are shown in the organisation chart in Figure 5-1.

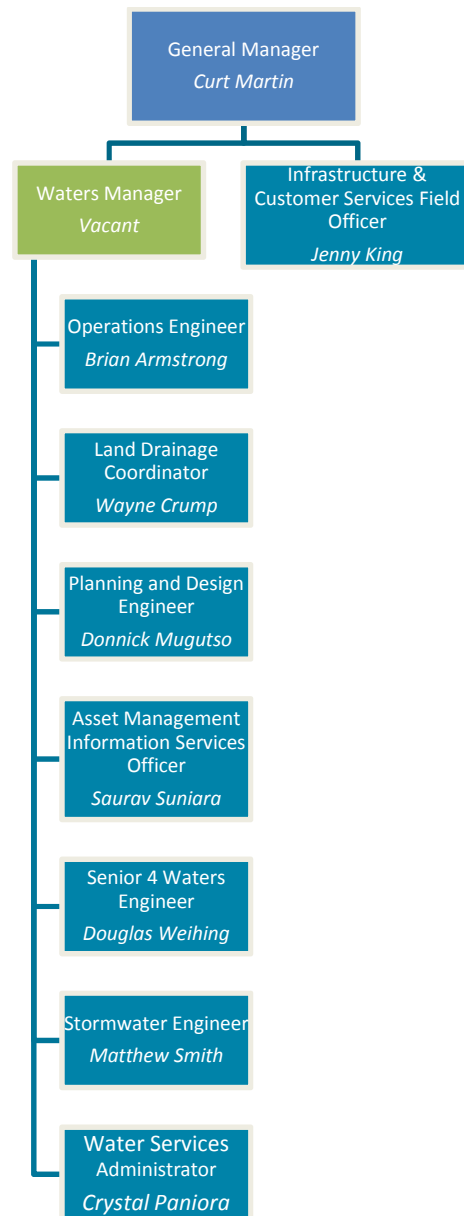


Figure 5-1: KDC Water Services Organisation Chart

5.2 Authorising Provisions

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

5.3 Communications Plan

KDC will actively promote permanent water conservation measures and when required, the introduction of water 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 restrictions;
- Provide an explanation of the water 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 may include:

- Advertising the restrictions in the local newspapers;
- Advertising the restrictions on local radio;
- Direct mail;
- 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.

5.4 Monitoring Plan

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 Alert Level 1 onwards) to allow proper implementation of the Plan.

The following monitoring is proposed:

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

5.5 Annual Review

At the beginning of the summer dry season (prior to 01 November) the Water Services 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;
- Contact details collated and distributed;
- Climate outlook;
- Trigger levels in the Kaihu River;
- Effectiveness of KDC and Media Actions as described in Table 4-1 of this DMP;

- Results of any monitoring undertaken;
- Statutory requirements (changes or additions highlighted); and
- General expectations of all parties.

Appendix A Water Shortage Directions

Water Shortage Direction

Pursuant to Section 329 of the Resource Management Act 1991

Issued To: Kaipara District Council
Private Bag 1001
Dargaville 0340

Flows in the Kaihu River are at such low levels that the Northland Regional Council considers that a serious temporary water shortage exists within the main stem of the Kaihu River.

As a consequence the following direction is issued in relation to the taking of water from the Kaihu River.

The Kaipara District Council may:

- (a) Continue to take water to supply Dargaville under resource consent AUT.008134.01.02 (CON20110813401) when flow in the Kaihu River at the Northland Regional Council recorder site 46611 ("Kaihu River at the Gorge") is at or below 815 litres per second without the need to release water from the Waitatua Dam;
- (b) Use the "Ahikiwi water intake" in the Kaihu River upstream of the water intake for resource consent AUT.008134.01.02 ("the Rotu water intake"); and
- (c) Continue to take water from the Waiparataniwha Stream under resource consent AUT.030845.01.01 for the supply of water to communities in the areas between the take source and "the Rotu water intake";

subject to the Kaipara District Council:

- 1. Ensuring that the combined maximum rate that water is taken from the Kaihu River via the Ahikiwi and Rotu water intakes does not exceed 83 litres per second.
- 2. Implementing effective water conservation measures and restrictions on users of the Dargaville water supply, continuing promoting and publishing the need to conserve water and restricting water use for non-essential activities including, but not limited to, garden watering, washing of cars and water blasting.
- 3. Inspecting the Dargaville water reticulation system for leaks and other water losses, and promptly repairing or ceasing them if/when they are found.
- 4. Providing an up-to-date report to the Northland Regional Council by 22 April 2014 on further water conservation measures and restrictions it has implemented, and the outcome of its inspections of the Dargaville water reticulation system.
- 5. Informing the Northland Regional Council when the continuation flow requirement for the Waiparataniwha Stream water take (Condition 10 of AUT.030845.01.01) cannot be met.

This notice shall expire 14 days after its issue.

Issue Date: 11 April 2014

Note: This notice may be amended, revoked, or renewed by the Northland Regional Council at any time. Should the low flows in the Kaihu River Catchment continue, it is likely that this notice will be renewed. Terms and conditions may change upon renewal.



Colin Dall
Consents/Monitoring Senior Programme Manager
Northland Regional Council

Water Shortage Direction

Pursuant to Section 329 of the Resource Management Act 1991

Flows in the Kaihu River are at such low levels that the Northland Regional Council considers that a serious temporary water shortage exists within the main stem of the Kaihu River.

As a consequence the following direction in relation to the taking of water from the Kaihu River is issued.

The Kaipara District Council may:

- a. Continue to take water to supply Dargaville under Resource Consent CON20110813401 when flow in the Kaihu River at the Northland Regional Council recorder site 46611 ("Kaihu River at the Gorge") is at or below 815 litres per second without the need to release water from the Waiatua Dam, and
- b. Use the "Ahikiwi water intake" in the Kaihu River upstream of the water intake for Resource Consent CON20110813401 ("the Rotu water intake"),

subject to the Kaipara District Council:

1. Implementing effective water conservation measures and restrictions on users of the Dargaville water supply, including promoting and publishing the need to conserve water and restricting water use for non-essential activities including, but not limited to, garden watering, washing of cars and water blasting.
2. Inspecting the Dargaville water reticulation system for leaks and other water losses and promptly repairing or ceasing them if/when they are found.
3. Providing a report to the Northland Regional Council by 6 May 2013 on the water conservation measures and restrictions it has implemented and the outcome of its inspections of the Dargaville water reticulation system.
4. Ensuring that combined maximum rate that water is taken from the Kaihu River via the Ahikiwi and Rotu water intakes does not exceed 83 litres per second.

This notice shall expire 14 days after its issue.

Issue Date: 29 April 2013

Note: This notice may be amended, revoked, or renewed by the Northland Regional Council at any time. Should the low flows in the Kaihu River Catchment continue it is likely that this notice will be renewed. Terms and conditions may change upon renewal.



Colin Dall
Consents/Monitoring Senior Programme Manager
Northland Regional Council

Appendix B Example Water Conservation Notices

Water Conservation

The drier weather is upon us and Council is urging all residents to think about conserving water.

Everyone can help save water by using some of the following tips:

- not using garden sprinklers
- using hoses to a minimum
- avoiding washing vehicles
- not filling swimming pools
- checking that taps are not dripping.

For more information and tips on saving water visit our website www.kaipara.govt.nz or contact the

Appendix C Water Alert Levels – KDC Communications Staff Tasks

Trigger Level	Date ¹⁰	Flow in Kaihu River at Gorge Recorder Site 46611	Water Level At Rotu Intake	Community Actions	KDC Communications
Business as Usual	-	>1000L/s	-	- No restrictions in place; and - Minimise losses and efficient use of water encouraged.	
1	01 Nov	<1000L/s	>100mm	- General water conservation awareness; and - No restrictions in place.	1 Issue Community Notice – Water Alert Level 1: a) KDC Communications Manager to publish notice in local newspaper.
2		<900L/s	>100mm	- Notice to conserve water; and - No sprinkler notice.	1 Issue Community Notice – Water Alert Level 2; a) KDC Communications Manager to publish notice in local newspaper. 2 Media release of river levels, rainfall and dam levels; a) KDC Communications Manager to publish media release. 3 Advise Silver Fern Farms / Kumara Processors of Water Alert Status; a) KDC Operations Engineer to communicate by email. 4 Fire Service and Rural Fire Service requested to stop practising and testing from live hydrants; a) KDC Communications Manager to contact Fire Service.
3		<755L/s)	>100mm	- Sprinkler ban; - Hose ban; - Silver Fern Farms to reduce water usage;	1 Issue Community Notice – Water Alert Level 3; a) KDC Communications Manager to publish notice in local newspaper. 2 Media release;

¹⁰ Water Alert Level 1 to start on 1 November regardless of flow in the Kaihu River.

Trigger Level	Date ¹⁰	Flow in Kaihu River at Gorge Recorder Site 46611	Water Level At Rotu Intake	Community Actions	KDC Communications
				- Kumara processors to reduce water usage; - Water carriers to utilise alternative source; and - Car wash facility to reduce water consumption.	a) KDC Communications Manager to publish media release. 3 Radio station advertising; a) KDC Communications Manager to release. 4 Water Alert Level 3 to front page of KDC website; a) KDC Communications Manager to publish. 5 Request Silver Fern Farms and Kumara processors to reduce water usage; a) KDC Operations Engineer to Communicate. 6 Advise car wash facility to reduce water usage; a) KDC Communications Manager to contact. 7 Advise water carriers to use alternate source; a) KDC Communications Manager to contact.
4 ¹¹		<645 L/s	<100mm	- Sprinkler ban; - Hose ban; - Silver Fern Farms to reduce water usage; - Kumara processors to reduce water usage; - Water carriers to utilise alternative source i.e. Ruawai;	1 Issue Community Notice – Water Alert Level 4 ; a) KDC Communications Manager to publish notice in local newspaper. 2 Media release; a) KDC Communications Manager to publish media release. 3 Radio station advertising; a) KDC Communications Manager to release. 4 Water Alert Level 4 to front page of KDC website; a) KDC Communications Manager to publish. 5 Letter drop to all KDC customers detailing restrictions;

¹¹ Trigger level 4 to be implemented when the water level in the Kaihu River reduces to less than 100mm above the Rotu intake.

Trigger Level	Date ¹⁰	Flow in Kaihu River at Gorge Recorder Site 46611	Water Level At Rotu Intake	Community Actions	KDC Communications
				- Car wash facility to stop washing; and - No pool filling¹².	a) KDC Communications Manager to co-ordinate. 6 Request Silver Fern Farms and Kumara processors to further reduce water usage; a) KDC Operations Engineer to Communicate. 7 Advise car wash facility to reduce water usage; a) KDC Communications Manager to contact. 8 Advise water carriers to use alternate source; a) KDC Communications Manager to contact. 9 Priority given to domestic water use, therefore Silver Fern Farms and Kumara Processors may be requested to stop using water; a) KDC Operations Engineer to Communicate. 10 Check dialysis patients; a) KDC Communications Manager to Check with Northland District Health Board.

¹² Refers to public and private pools and spa pools.

Appendix D Water Alert Levels – KDC Operations Staff Tasks

Trigger Level	Date ¹³	Flow in Kaihu River at Gorge Recorder Site 46611	Water Level At Rotu Intake	KDC Operations Staff
Business as Usual	-	>1000L/s	-	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 activity planned activity should be carried out at this time; 4 Ensure Rotu raw water take is shut off; and 5 UV Plant is optional.
1	01 Nov	<1000L/s	>100mm	1 Prepare to bring on line the Rotu take: a) Inspect Rotu pump station - ensure pumps, valves are operational and can be brought on-line immediately; b) Note flow meter reading; and c) Clear raw water in-take. 2 Monitor water usage at Water Treatment Plant (WTP) and dam levels on a daily basis; 3 Ensure SCADA is recording WTP and Waiatua dam flows on continuous basis; and 4 Notify Northland Regional Council (NRC) of Water Alert Level 1 status.
2		<900L/s	>100mm	1 Start 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: 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;

¹³ Water Alert Level 1 to start on 1 November regardless of flow in the Kaihu River.

Trigger Level	Date ¹³	Flow in Kaihu River at Gorge Recorder Site 46611	Water Level At Rotu Intake	KDC Operations Staff
				4 Start UV at WTP; 5 Backwash WTP filters; 6 Start Rotu Pump (one pump); 7 Monitor raw water supply at WTP; 8 Notify Northland Regional Council (NRC) of Water Alert Level 2 status; and 9 Water Operations Engineer to email: a) NRC; b) Northland District Health Board (NDHB); c) Silver Fern Farms; and d) Kumara Processors.
3		<755L/s	>100mm	1 Request Water Shortage Direction from NRC to circumvent Condition 4 of CON20110813401 ¹⁴ (to preserve water stored in the Waiatua Dam) and to use the Ahikiwi take point; 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 Alert 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; and 8 Prepare to install weir across Kaihu River:

¹⁴ Condition 4 of the CON20110813401 requires water to be released from the Waiatua Dam at the same rate as water is extracted from Rotu.

Trigger Level	Date ¹³	Flow in Kaihu River at Gorge Recorder Site 46611	Water Level At Rotu Intake	KDC Operations Staff
				a) Inspect site and ensure plant and material is on-site and all equipment is available to install weir.
4 ¹⁵		<645L/s	<100mm	- Should Water Shortage Direction be obtained, continue sourcing water from Rotu; - Install temporary weir on Kaihu River at Rotu; - Prepare to bring on line the water take at Ahikiwi on Kaihu River (Te Roroa Whatu Ora Trust consultation required): - Inspect Ahikiwi pump station and ensure pump, valves are working; and - Clean the raw water take. - Prepare tankers (to be used if required); - Continue road signage advertising; - Monitor water usage at WTP; - Notify Northland Regional Council (NRC) of Water Alert Level 4 status; and - Inspect the Dargaville water reticulation system for leaks and other water losses and promptly repairing or ceasing them if/when they are found. Should the water level at Rotu intake drop to a level that compromises the ability to abstract water at Rotu the following actions should be undertaken: - Bring on line the water take at Ahikiwi on Kaihu River; - Tankers to transport potable water from nearby areas to strategic locations in Dargaville;

¹⁵ Trigger level 4 to be implemented when the water level in the Kaihu River reduces to less than 100mm above the Rotu intake.

Trigger Level	Date ¹³	Flow in Kaihu River at Gorge Recorder Site 46611	Water Level At Rotu Intake	KDC Operations Staff
				3 Tankers to be available to cart treated water from WTP to the community (if required); 4 Continue road signage advertising; 5 Monitor water usage at WTP; 6 Areas of public reticulation may be switched off for periods of time, standpipe supplies to be considered; and 7 Inspect the Dargaville water reticulation system for leaks and other water losses and promptly repairing or ceasing them if/when they are found.