Cold Creek Community Water Supply Ltd

Monitoring Programme

Annual Report

2021-2022

Technical Report 2022-39

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Taranaki Regional Council

Taranaki Regional Council
Private Bag 713
Stratford

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Executive summary

The Cold Creek Community Water Supply Ltd (CCCWSL) operates a rural water supply scheme located on Cold Stream, Kiri Road, in the Taungatara catchment. The report for the period July 2021 to June 2022 describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess CCCWSL's environmental and consent compliance performance during the period under review. The report also details the results of the monitoring undertaken and assesses the environmental effects of CCCWSL's activities.

During the monitoring period, CCCWSL demonstrated a high level of environmental performance and high level of administrative performance.

CCCWSL holds three resource consents, which include a total of 24 conditions setting out the requirements that they must satisfy. CCCWSL holds one consent to allow it to take and use water, one consent to discharge filter backwash and one consent to maintain a weir.

The Council's monitoring programme for the period under review included one inspection, one discharge sample, three river gaugings, two macroinvertebrate surveys, one fish survey and a review of water abstraction and stream flow data.

The monitoring showed that CCCWSL complied with consent conditions in regards to discharge standards and abstraction rates. There were no unauthorised incidents recording non-compliance in respect of this consent holder during the period under review.

The results of the biomonitoring surveys and the fish survey found no evidence of adverse environmental effects as a result of the discharge, intake weir and fish pass structure or the water abstraction.

For reference, in the 2021-2022 year, consent holders were found to achieve a high level of environmental performance and compliance for 88% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 10% of the consents, a good level of environmental performance and compliance was achieved.

In terms of overall environmental and compliance performance by the consent holder over the last several years, this report shows that the consent holder's performance is high.

This report includes recommendations for the 2022-2023 year.

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1 Introduction

1.1 Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1 Introduction

This report is for the period July 2021 to June 2022 by the Taranaki Regional Council (the Council) describing the monitoring programme associated with resource consents held by the Cold Creek Community Water Supply Ltd (CCCWSL) associated with the operation of a rural water supply scheme situated on Kiri Road, Opunake.

This report covers the results and findings of the monitoring programme implemented by the Council in respect of the consents held by CCCWSL that relate to abstractions and discharges of water in the Taungatara catchment. This is the fifth annual report to be prepared by the Council to cover CCCWSL's water abstractions and structures. Previously this activity was reported in the joint South Taranaki Water Supplies report.

1.1.2 Structure of this report

Section 1 of this report is a background section. It sets out general information about:

- consent compliance monitoring under the *Resource Management Act 1991* (RMA) and the Council's obligations;
- the Council's approach to monitoring sites though annual programmes;
- the resource consents held by CCCWSL in the Taungatara catchment;
- the nature of the monitoring programme in place for the period under review; and
- a description of the activities and operations conducted at the CCCWSL site.

Section 2 presents the results of monitoring during the period under review, including scientific and technical data.

Section 3 discusses the results, their interpretations, and their significance for the environment.

Section 4 presents recommendations to be implemented in the 2022-2023 monitoring year.

A glossary of common abbreviations and scientific terms, and a bibliography, are presented at the end of the report.

1.1.3 The Resource Management Act 1991 and monitoring

The RMA primarily addresses environmental 'effects' which are defined as positive or adverse, temporary or permanent, past, present or future, or cumulative. Effects may arise in relation to:

a. the neighbourhood or the wider community around an activity, and may include cultural and social-economic effects;
b. physical effects on the locality, including landscape, amenity and visual effects;
c. ecosystems, including effects on plants, animals, or habitats, whether aquatic or terrestrial;
d. natural and physical resources having special significance (for example recreational, cultural, or aesthetic); and
e. risks to the neighbourhood or environment.

In drafting and reviewing conditions on discharge permits, and in implementing monitoring programmes, the Council is recognising the comprehensive meaning of 'effects' in as much as is appropriate for each activity. Monitoring programmes are not only based on existing permit conditions, but also on the obligations of the RMA to assess the effects of the exercise of consents. In accordance with Section 35 of the RMA, the Council undertakes compliance monitoring for consents and rules in regional plans, and maintains an overview of the performance of resource users and consent holders. Compliance monitoring, including both activity and impact monitoring, enables the Council to continually re-evaluate its approach and that of consent holders to resource management and, ultimately, through the refinement of methods and considered responsible resource utilisation, to move closer to achieving sustainable development of the region's resources.

1.1.4 Evaluation of environmental and administrative performance

Besides discussing the various details of the performance and extent of compliance by the consent holders, this report also assigns a rating as to each Company's environmental and administrative performance during the period under review. The rating categories are high, good, improvement required and poor for both environmental and administrative performance. The interpretations for these ratings are found in Appendix II.

For reference, in the 2021-2022 year, consent holders were found to achieve a high level of environmental performance and compliance for 88% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 10% of the consents, a good level of environmental performance and compliance was achieved.[1]

1.2 Process description

Cold Creek Community Water Supply Ltd's (CCCWSL) rural water supply scheme covers 7,700 ha. It supplies water to around 15 dairy farms, 20,000 cows, 350 people as well as a number of smaller farms (Figure 1). Water is abstracted from the Cold Stream via gravity fed intake screen on a weir (Photo 1). The water is passed to a treatment plant where it is filtered and then chlorinated. The sand filter is backwashed approximately every nine hours to settling ponds that discharge back into Cold Stream. Water usage includes dairy shed operations, stock watering, and domestic use.

[1] The Council has used these compliance grading criteria for more than 18 years. They align closely with the 4 compliance grades in the MfE Best Practice Guidelines for Compliance, Monitoring and Enforcement, 2018

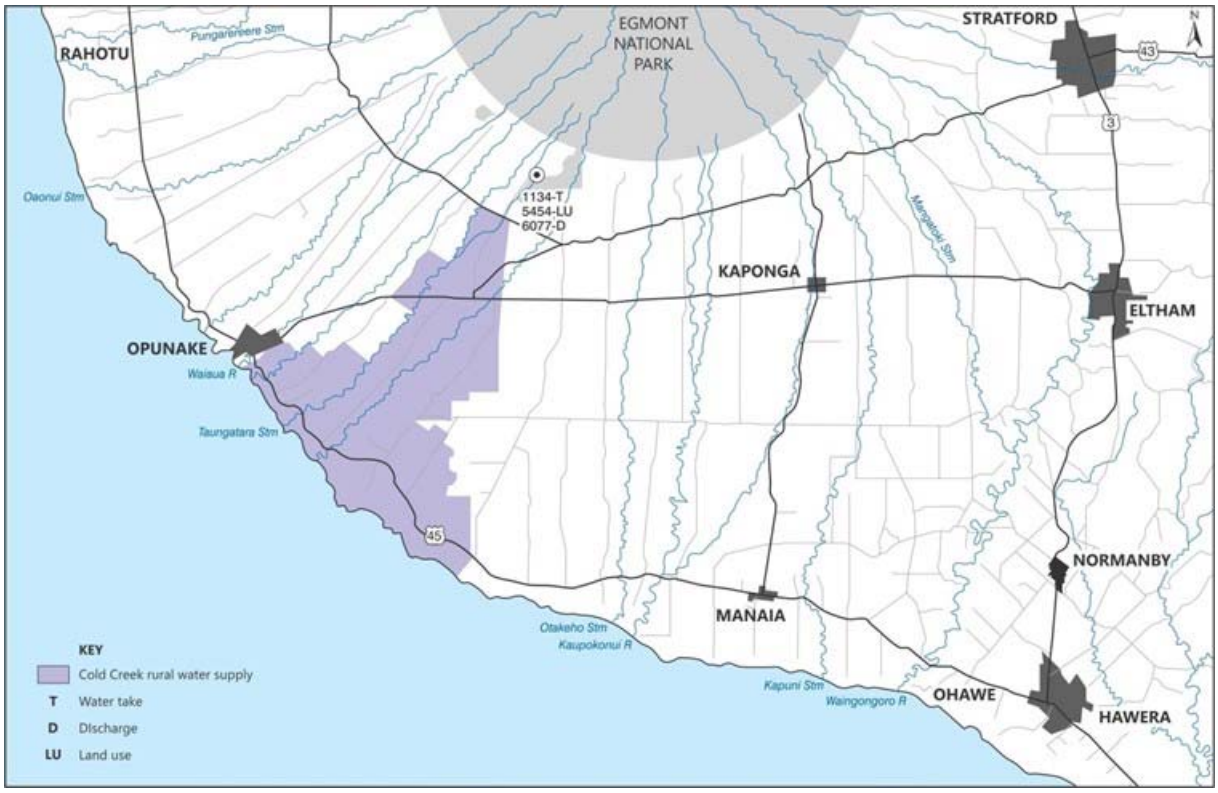

Figure 1 CCCWSL's water service area

Photo 1 CCCWSL's weir and intake screen

1.3 Resource consents

CCCWSL holds three resource consents the details of which are summarised in Table 1 below. Summaries of the conditions attached to each permit are set out in Section 3 of this report.

A summary of the various consent types issued by the Council is included in Appendix I, as are copies of all permits held by CCCWSL during the period under review.

Table 1 Resource consents held by CCCWSL

Consent number	Purpose	Granted	Review	Expires
Water abstraction permit				
1134-3.2	To take water from Cold Creek to supply the Cold Creek Water Supply Scheme	Dec 2015	June 2024	June 2030
Water discharge permit				
6077-2.0	To discharge filter backwash water and stormwater from the Cold Creek water treatment plant into the Cold Creek	June 2018	June 2022	June 2030
Land use permit				
5454-2.0	To dam water with a weir and water intake structure in the Cold Creek for water abstraction purposes	June 2018	June 2022	June 2030

1.4 Monitoring programme

1.4.1 Introduction

Section 35 of the RMA sets obligations upon the Council to gather information, monitor and conduct research on the exercise of resource consents within the Taranaki region. The Council is also required to assess the effects arising from the exercising of these consents and report upon them.

The Council may therefore make and record measurements of physical and chemical parameters, take samples for analysis, carry out surveys and inspections, conduct investigations and seek information from consent holders.

The monitoring programme for the CCCWSL site consisted of five primary components.

1.4.2 Programme liaison and management

There is generally a significant investment of time and resources by the Council in:

- ongoing liaison with resource consent holders over consent conditions and their interpretation and application;
- discussion over monitoring requirements;
- preparation for any consent reviews, renewals or new consent applications;
- advice on the Council's environmental management strategies and content of regional plans; and
- consultation on associated matters.

1.4.3 Site inspections

The CCCWSL site was visited on one occasion to conduct an annual inspection to assess compliance with regard to their consent conditions for the abstraction of and discharge to water. The main points of interest were the water intake structure, including the intake screen, weir and fish pass, the plant processes with potential or actual discharges to receiving watercourses, including contaminated storm water and process wastewaters. The information being collected by CCCWSL was identified and accessed, so that performance in respect to the operation, internal monitoring, and supervision could be reviewed by the Council. The neighbourhood was surveyed for environmental effects.

1.4.4 Review of abstraction and discharge data supplied by CCCWSL

Water abstraction rates and discharge quality was supplied by CCCWSL and reviewed by Council staff.

1.4.5 Biomonitoring and fish surveys

Two three-site macroinvertebrate surveys were undertaken to assess the impact of the water abstraction and discharges in the reticulated supply area.

Electric fishing surveys are completed triennially, with one undertaken in the 2021-2022 monitoring period.

1.4.6 Hydrological inspections and residual flow assessment

Hydrological inspections of the site were undertaken to check CCCWSL's stage recording equipment. During three of these inspections, gauging's were undertaken to measure the flow in Cold Stream to enable the maintenance of a rating curve and to ensure compliance with the residual flow consent condition.

2 Results

2.1 Annual inspection

The site was visited on 2 March 2022. The abstraction rate was not able to be obtained as the Council officers did not have access to the building, however based on the telemetered data received by Council, the abstraction rate at the time of the inspection was 181 m^3/h. A sample was collected from each pond and a chlorine test was performed on the larger pond that was discharging back into the Cold Stream. The weir was checked and no issues were noted. The intake was screened and the fish pass appeared to be working effectively. No erosion or scour was noted on the stream bed around the structure.

2.2 Discharge and receiving water monitoring

Two discharge samples were collected during the monitoring period, as shown in Table 2.

Table 2 Results of CCCWSL filter backwash discharge on 2 March 2022

Parameter	Free Chlorine	pH	Suspended solids	Turbidity
Units	**g/m³**	**pH**	**g/m³**	**FNU**
STW002066	0.05	7.2	< 3	1.83
STW002067	-	7.8	3	1.85
Consent limit	*0.1*	*6-9*	*20*	-

The discharge was found to be compliant with consent limits and no visual effects were noted in the receiving environment.

CCCWSL undertook self-monitoring of their backwash discharge into the Cold Stream. The results, given in Table 3, show that CCCWSL were generally compliant throughout the monitoring year for suspended solids, pH and free available chlorine, except for the sample collected on 13 May 2022, where elevated levels of suspended sediments was recorded. This was due to the sampling occurring close to the stormwater entry point, so had elevated levels of surface run-off in the sample.

Table 3 CCCWSL backwash self-monitoring discharge sampling

Date	Suspended solids g/m³	pH	Free available chlorine g/m³
04 Jun 2021	6	7.2	0.04
14 Jul 2021	6	7.3	0.05
05 Aug 2021	<5	7.0	0.04
01 Sep 2021	6	7.1	0.05
14 Oct 2021[2]	11	7.5	0.09
24 Nov 2021	<5	7.7	0.04
05 Jan 2022	<5	7.6	0.07
22 Feb 2022	<5	7.3	0.04
12 Apr 2022	9	7.2	0.06
13 May 2022	**83**	7.2	0.04
Consent limits	20	6-9	0.1

[2] Sampled in storm conditions

2.3 Results of abstraction monitoring

CCCWSL recorded their water abstraction which was telemetered to the Council and reviewed for compliance. During the period under review CCCWSL complied with their normal operational abstraction limit of 69 L/s for 99.6% of the time. There were two occasions when CCCWSL were required to use their exceptional use limit of 79 L/s due to the reservoir levels falling below 80%. In both these instances CCCWSL advised Council and affected parties of this requirement, as per their consent conditions. Figure 2 shows CCCWSL's abstraction for the 2021-2022 monitoring period.

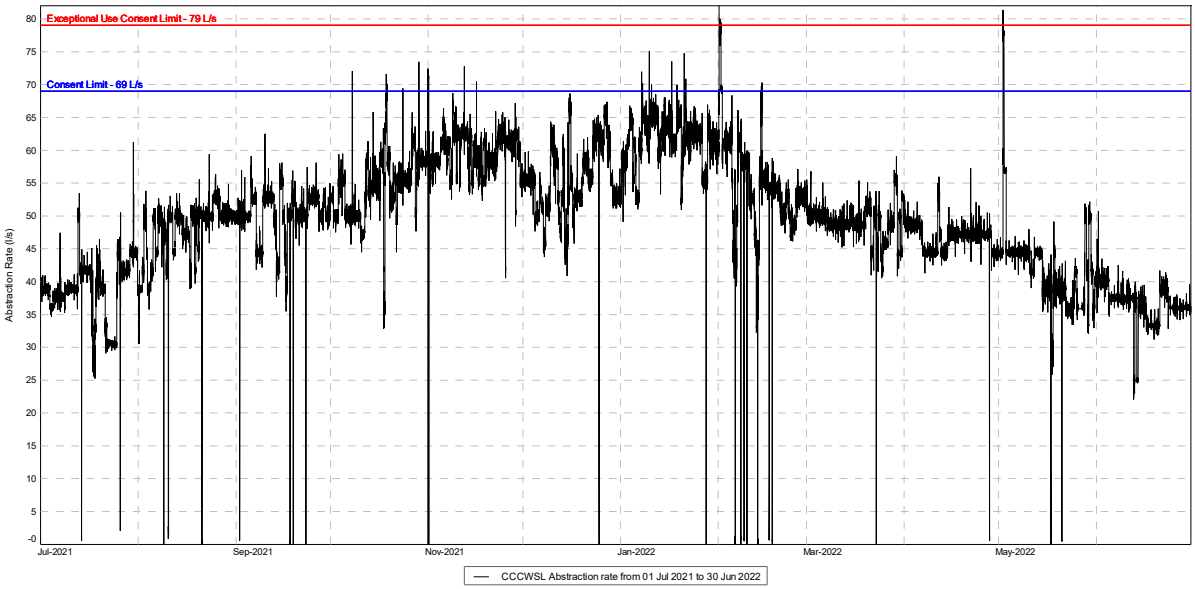

Figure 2 CCCWSL abstraction rates for 2021-2022

2.4 Hydrological inspections and residual flow assessment

CCCWSL provides telemetered river level data via a pressure transducer, which is related back to a fixed staff gauge in the stream.

During three hydrological inspections the Cold Stream was gauged to maintain a rating curve to determine the residual flow (as required by consent conditions).

Special condition 9 of 1134-3.2 requires CCCWSL to introduce conservation measures when the flow in the Cold Stream immediately downstream of the intake point is less than 209 L/s. This requires that the taking of water be restricted to the minimum amount necessary to maintain the health and welfare of people and animals (i.e. garden watering and other non-essential uses are prohibited). As shown in Figure 3, during the monitoring period under review, the residual flow did not fall below the 209 L/s conservation trigger.

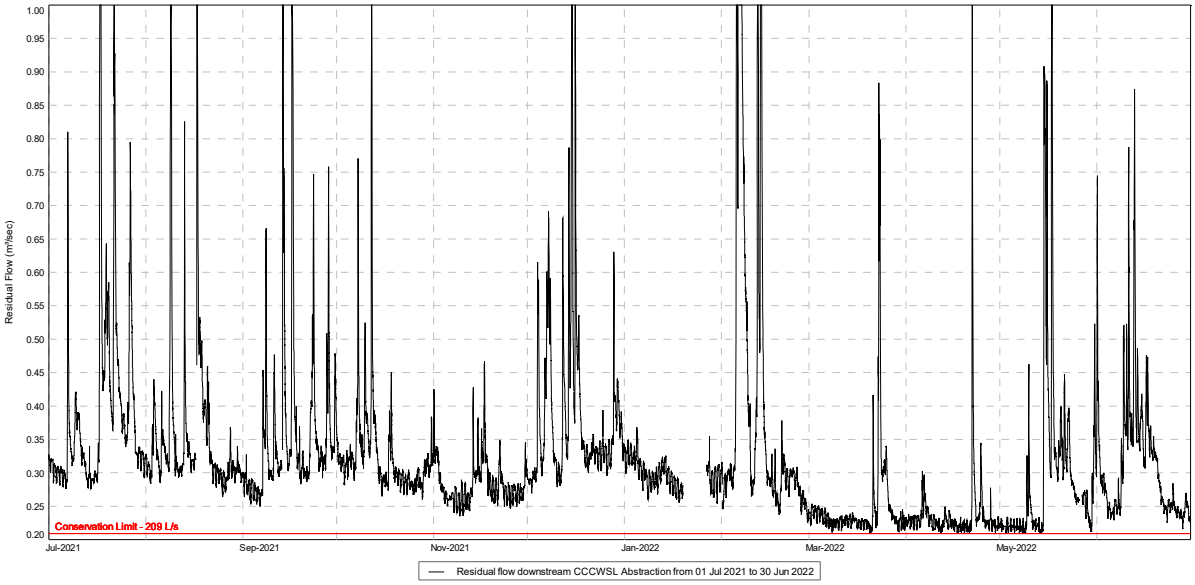

Figure 3 CCCWSL residual flow compliance for 2021-2022

2.5 Biomonitoring surveys

Council undertook two, three-site, macroinvertebrate surveys to assess the potential effects on stream aquatic communities as result of CCCWSL's abstractions, structures and discharges.

The Council's 'kick-sampling' technique was used at three sites on 27 October 2021 and 1 February 2022 to collect streambed macroinvertebrates from the Cold Stream in relation to the Cold Creek water supply scheme. This provided data to assess any potential impacts the consented water abstraction and water treatment plant discharges may have had on the macroinvertebrate communities of this stream. Samples were processed to provide number of taxa (richness), MCI, and SQMCI scores for each site.

The MCI is a measure of the overall sensitivity of the macroinvertebrate community to the effects of organic pollution in stony streams. It is based on the presence/absence of taxa with varying degrees of sensitivity to environmental conditions. The SQMCI takes into account taxa abundances as well as sensitivity to pollution. Significant differences in either the taxa richness, MCI or the SQMCI between sites may indicate the degree of adverse effects (if any) of the discharges or abstraction being monitored. The abstraction of surface water, particularly for extended periods of time, may result in significant adverse effects on the macroinvertebrate communities living within a waterbody by potentially reducing flow velocities, wetted habitat area, and dissolved oxygen levels and increasing stream temperature, periphyton abundance, macrophytes, pH, and deposited sediment.

2.5.1 27 October 2021

Taxa richness was moderate to moderately high at the three sites surveyed in the Cold Stream (Figure 4). Site C1 recorded the same number of taxa as recorded previously, while sites C2 and C3 recorded higher richness (by five taxa). Site C3 recorded 10 taxa less than that previously recorded. The macroinvertebrate communities comprised high proportions of 'sensitive' taxa and were numerically dominated by 'sensitive' taxa, which reflected the cool, stony nature of the stream located in the upper mid-reaches of the catchment.

MCI values recorded in the Cold Stream were reflective of 'very good' macroinvertebrate health. MCI scores decreased in a downstream direction, with the MCI score recorded at site C1 substantially higher than that recorded downstream at site C3. This decrease is indicative of a deterioration in macroinvertebrate community health, which may be associated with the water treatment plant discharge. However, given that

there were no significant differences in MCI scores between the three sites, and no significant differences in SQMCI scores between the three sites surveyed, there was no strong evidence that discharges to the Cold Stream had significantly affected the freshwater macroinvertebrate communities at site C3.

The SQMCI scores recorded at all sites were indicative of 'excellent' macroinvertebrate community health. The recorded SQMCI scores at sites C1 and C2 were both the highest scores recorded for these sites to date, while site C3's score was equal highest recorded score. The SQCMI scores were higher than those recorded by the previous survey at all three sites.

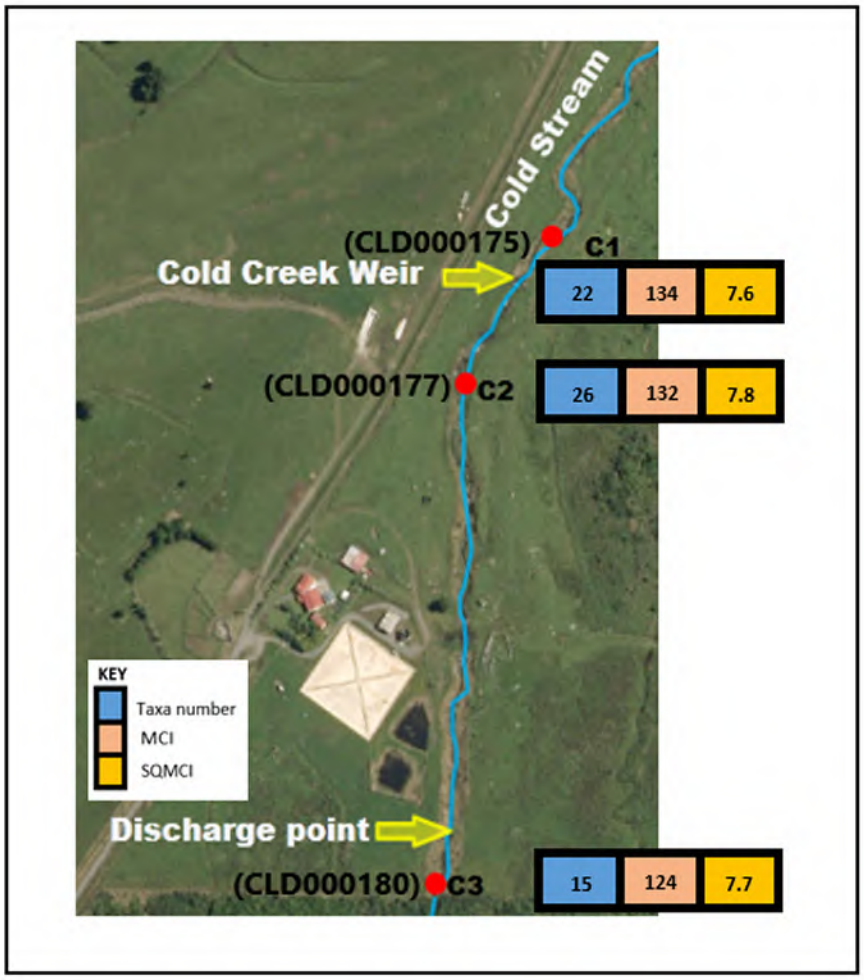

Figure 4 Location of biomonitoring sites in the Cold Stream in relation to the Cold Creek water supply scheme with taxa number, MCI scores and SQMCI scores for each site, October 2021

2.5.2 1 February 2022

Taxa richness was moderate at the three sites surveyed in the Cold Stream (Figure 5). Sites C2 and C3 recorded numbers of taxa that were within the previously recorded range, while site C1 recorded the lowest taxa richness for this site to date. In comparison to the previous survey, taxa richness was slightly lower at sites C1 and C2 and slightly higher at site C3. Taxa richness was lower than site medians at all three sites.

MCI values recorded in the Cold Stream were reflective of 'very good' macroinvertebrate health. MCI scores decreased in a downstream direction, with the MCI score recorded at site C3, nine units lower than that recorded upstream at site C1. This was similar to that recorded in the summer and spring 2021 surveys and an improvement from the two surveys prior to that, which recorded significant decreases between sites C1 and C3.

Given that there were no significant differences in MCI or SQMCI scores between all three sites there was no strong evidence that water abstraction from the Cold Stream or discharge to the Cold Stream had significantly affected the freshwater macroinvertebrate communities of this stream.

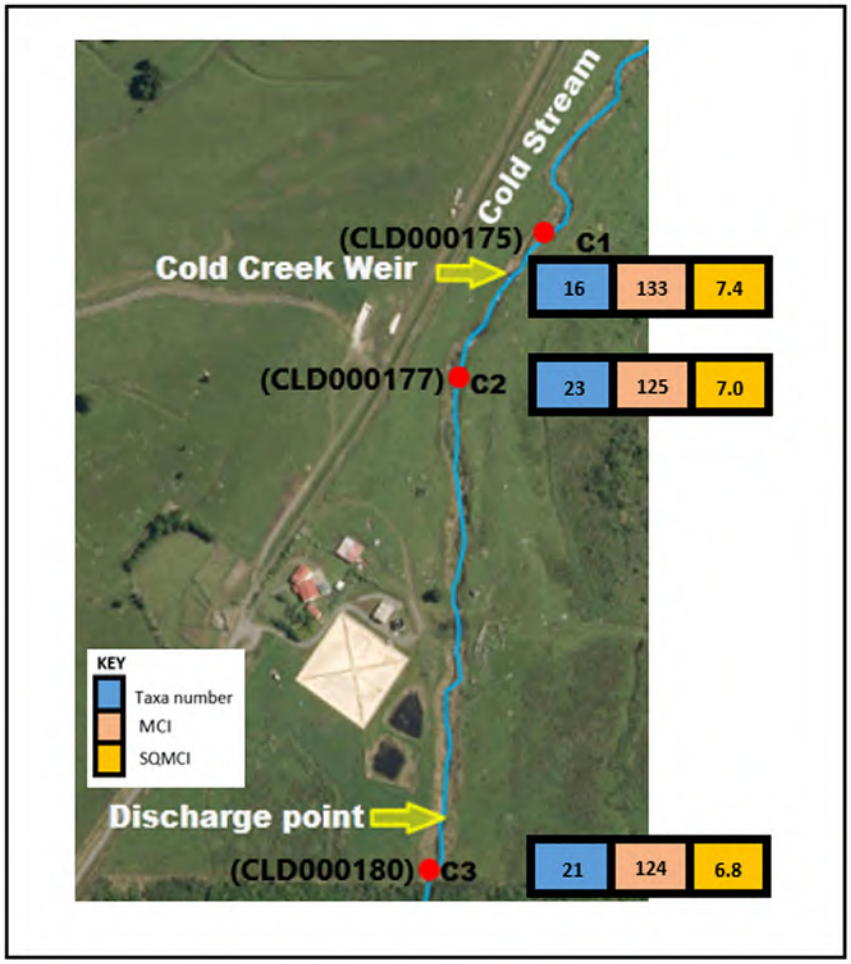

Figure 5 Location of biomonitoring sites in the Cold Stream in relation to the Cold Creek water supply scheme with taxa number, MCI scores and SQMCI scores for each site, February 2022

2.6 Fish Survey

An electric fishing survey was conducted on the 26th and 27th of January 2022 at two sites in the Cold Stream to assess the fish communities and to check for compliance with the fish passage consent condition held for the weir.

The diversity of fish species in the communities at both sites was low during this survey, the same as found in previous surveys. Brown trout were the main species recorded in this survey, with the only other species being Koaro (*Galaxias brevipinnis)* and an unidentified eel (*Anguilla spp.)*

Trout were slightly more abundant upstream of the weir, where 36 trout were observed, compared to 22 downstream. Overall, the trout recorded in the Cold Stream represented at least three years of recruitment, with numerous sizes recorded. The ages of the trout observed, also suggests that this stream provides important spawning and rearing habitat and therefore is important for recruitment to the Taungatara Stream sports fishery. This provides a good indication that the fish pass on the weir is providing adequate passage for trout.

This survey confirmed that the structure was unlikely to present a barrier to those species likely to be present at this altitude, with good populations of brown trout found upstream and downstream of the weir. It is recommended that fish monitoring continues on a three yearly basis, using the electric fishing method.

2.7 Incidents, investigations, and interventions

The monitoring programme for the year was based on what was considered to be an appropriate level of monitoring, review of data, and liaison with CCCWSL. During the year matters may arise which require additional activity by the Council, for example provision of advice and information, or investigation of potential or actual causes of non-compliance or failure to maintain good practices. A pro-active approach, that in the first instance avoids issues occurring, is favoured.

For all significant compliance issues, as well as complaints from the public, the Council maintains a database record. The record includes events where the individual/organisation concerned has itself notified the Council. Details of any investigation and corrective action taken are recorded for non-compliant events.

Complaints may be alleged to be associated with a particular site. If there is potentially an issue of legal liability, the Council must be able to prove by investigation that the identified individual/organisation is indeed the source of the incident (or that the allegation cannot be proven).

In the 2021-2022 period, the Council was not required to undertake significant additional investigations and interventions, or record incidents, in association with CCCWSL's conditions in resource consents or provisions in Regional Plans.

3 Discussion

3.1 Discussion of site performance

No issues were noted with CCCWSL's weir, intake or fish pass and the discharge ponds appeared to be functioning well.

Abstraction data was telemetered to Council and discharge sampling data was received.

During the 2021-2022 monitoring period CCCWSL undertook several measures to minimise leaks and promote water conservation. This included the replacement of old water meters with newer ones and investigating the use of digital technologies that will allow for remote monitoring of water usage by consumers. CCCWSL also oversaw, and significantly subsidised, the purchase of 30,000 L tanks for on farm storage for a number of consumers.

3.2 Environmental effects of exercise of consents

No effects as a result of abstraction or discharges were noted during the annual inspection. The intake and fish pass were maintained in a manner that provided for fish passage.

The results of the biomonitoring surveys found no evidence of effects as a result of discharges, structures or water abstraction.

3.3 Evaluation of performance

A tabular summary of the CCCWSL compliance record for the year under review is set out in Table 4, Table 5, and Table 6.

Table 4 Summary of performance for Consent 1134-3.2

Purpose: ***To take water from Cold Creek to supply the Cold Creek Water Supply Scheme***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Rate of abstraction during normal operations shall not exceed 69 L/s	Review of abstraction data	99% compliance
2. Criteria and requirements for taking above 69 L/s	Exercised	Notification received
3. Measure and record abstraction, stream flow, and reservoir level	Data received	Yes
4. Suitable format for water records	Records received	Yes
5. Measurements transmitted in 'real time' to Council	Data received	Yes
6. Documentation to show water measuring and recording equipment installed and operational	Meter NES verified	Yes
7. Notification to Council of equipment failure	Liaison with consent holder	Yes

Purpose: *To take water from Cold Creek to supply the Cold Creek Water Supply Scheme*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
8. Measuring and recording equipment to be accessible	Inspection	No – Building was locked, so equipment could not be checked.
9. Restrictions on abstraction when flow below 209 L/s	Liaison with consent holder	Yes
10. Intake screened	Inspection	Yes
11. Best practicable option to minimise environmental effects	Inspections and liaison with consent holder	Yes
12. Report annually on efficient water use, leak detection and repair	Report received	Yes
13. Review provision	Next option for review - June 2024	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**High** **High**

N/A = not applicable

Table 5 Summary of performance for Consent 5454-2.0

Purpose: *To erect, place, use and maintain a water intake structure on the bed of Cold Creek in the Taungatara Catchment for water abstraction purposes*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Maintain the weir so that it remains fit for purpose	Inspection	Yes
2. Minimise riverbed disturbance and reinstate areas disturbed	Inspection	Yes
3. No obstruction of fish passage	Inspection	Yes
4. Review provision	Next option for review - June 2025	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**High** **High**

N/A = not applicable

Table 6 Summary of performance for Consent 6077-2

Purpose: *To discharge filter backwash water and supernatant from the Cold Creek WTP into the Cold Creek*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Best practicable option to minimise adverse effects	Inspection	Yes
2. Limit on discharge rate	Inspection	Yes
3. Discharge not to cause certain effects in the receiving waters	Inspection and biomonitoring	Yes
4. Limits on chlorine, suspended solids and pH in discharge	Sampling and self-monitoring	Yes
5. Monthly discharge sampling with limits on chlorine, suspended solids and pH	Monthly sampling data received	Yes
6. Notify council of any changes to processes or operations	No changes made	Yes
7. Review provision	Next option for review - June 2025	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**High** **High**

During the year, CCCWSL demonstrated an overall high level of both environmental performance and administrative compliance with the resource consents as defined in Appendix II.

3.4 Recommendations from the 2020-2021 Annual Report

In the 2020-2021 Annual Report, it was recommended:

1. THAT in the first instance, monitoring of consented activities at CCCWSL in the 2021-2022 year continue at the same level as in 2020-2021 with the exception of a reduction in biomonitoring by reducing the number of biomonitoring sites in the macroinvertebrate surveys from eight to three.
2. THAT should there be issues with environmental or administrative performance in 2021-2022, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.
3. THAT the option for a review of resource consent in June 2022, as set out in condition 13 of the consent, not be exercised, on the grounds that the current conditions are adequate to deal with any adverse effects on the environment arising from the exercise of the consents.

Recommendations one and three were implemented, while it was not considered necessary to carry out additional investigations or monitoring as per recommendation two.

3.5 Alterations to monitoring programmes for 2022-2023

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;
- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;
- the record of administrative and environmental performances of the consent holder; and
- reporting to the regional community.

The Council also takes into account the scope of assessments required at the time of renewal of permits, and the need to maintain a sound understanding of industrial processes within Taranaki exercising resource consents.

There are no planned changes for the 2022-2023 monitoring programme.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2022-2023.

4 Recommendations

1. THAT in the first instance, monitoring of consented activities at CCCWSL in the 2022-2023 year continue at the same level as in 2021-2022.
2. THAT should there be issues with environmental or administrative performance in 2022-2023, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

Glossary of common terms and abbreviations

The following abbreviations and terms may be used within this report:

Biomonitoring	Assessing the health of the environment using aquatic organisms.
Conductivity	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 25°C and expressed in µS/cm.
DO	Dissolved oxygen.
DRP	Dissolved reactive phosphorus.
FNU	Formazin nephelometric units, a measure of the turbidity of water.
Fresh	Elevated flow in a stream, such as after heavy rainfall.
g/m^3	Grams per cubic metre, and equivalent to milligrams per litre (mg/L). In water, this is also equivalent to parts per million (ppm), but the same does not apply to gaseous mixtures.
Incident	An event that is alleged or is found to have occurred that may have actual or potential environmental consequences or may involve non-compliance with a consent or rule in a regional plan. Registration of an incident by the Council does not automatically mean such an outcome had actually occurred.
Intervention	Action/s taken by Council to instruct or direct actions be taken to avoid or reduce the likelihood of an incident occurring.
Investigation	Action taken by Council to establish what were the circumstances/events surrounding an incident including any allegations of an incident.
Incident register	The incident register contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan.
L/s	Litres per second.
m^2	Square Metres.
MCI	Macroinvertebrate community index; a numerical indication of the state of biological life in a stream that takes into account the sensitivity of the taxa present to organic pollution in stony habitats.
Mixing zone	The zone below a discharge point where the discharge is not fully mixed with the receiving environment. For a stream, conventionally taken as a length equivalent to 7 times the width of the stream at the discharge point.
µS/cm	Microsiemens per centimetre.
NTU	Nephelometric Turbidity Unit, a measure of the turbidity of water.
pH	A numerical system for measuring acidity in solutions, with 7 as neutral. Numbers lower than 7 are increasingly acidic and higher than 7 are increasingly alkaline. The scale is logarithmic i.e. a change of 1 represents a ten-fold change in strength. For example, a pH of 4 is ten times more acidic than a pH of 5.
Pressure transducer (PT)	Device for measuring water depth.
Physicochemical	Measurement of both physical properties (e.g. temperature, clarity, density) and chemical determinants (e.g. metals and nutrients) to characterise the state of an environment.

Resource consent	Refer Section 87 of the RMA. Resource consents include land use consents (refer Sections 9 and 13 of the RMA), coastal permits (Sections 12, 14 and 15), water permits (Section 14) and discharge permits (Section 15).
RMA	*Resource Management Act 1991* and including all subsequent amendments.
SS	Suspended solids.
Supernatant	The liquid lying above a solid residue after crystallisation; precipitation centrifugation; or other process.
SQMCI	Semi quantitative macroinvertebrate community index.
Temp	Temperature, measured in °C (degrees Celsius).
Turb	Turbidity, expressed in NTU or FNU.

For further information on analytical methods, contact an Environment Quality Manager.

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Appendix I

Resource consents held by CCCWSL

(For a copy of the signed resource consent
please contact the TRC Consents department)

Water abstraction permits

Section 14 of the RMA stipulates that no person may take, use, dam or divert any water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or it falls within some particular categories set out in Section 14. Permits authorising the abstraction of water are issued by the Council under Section 87(d) of the RMA.

Water discharge permits

Section 15(1)(a) of the RMA stipulates that no person may discharge any contaminant into water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or by national regulations. Permits authorising discharges to water are issued by the Council under Section 87(e) of the RMA.

Air discharge permits

Section 15(1)(c) of the RMA stipulates that no person may discharge any contaminant from any industrial or trade premises into air, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations. Permits authorising discharges to air are issued by the Council under Section 87(e) of the RMA.

Discharges of wastes to land

Sections 15(1)(b) and (d) of the RMA stipulate that no person may discharge any contaminant onto land if it may then enter water, or from any industrial or trade premises onto land under any circumstances, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations. Permits authorising the discharge of wastes to land are issued by the Council under Section 87(e) of the RMA.

Land use permits

Section 13(1)(a) of the RMA stipulates that no person may in relation to the bed of any lake or river use, erect, reconstruct, place, alter, extend, remove, or demolish any structure or part of any structure in, on, under, or over the bed, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations. Land use permits are issued by the Council under Section 87(a) of the RMA.

Coastal permits

Section 12(1)(b) of the RMA stipulates that no person may erect, reconstruct, place, alter, extend, remove, or demolish any structure that is fixed in, on, under, or over any foreshore or seabed, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations. Coastal permits are issued by the Council under Section 87(c) of the RMA.

Water Permit

Pursuant to the Resource Management Act 1991
a resource consent is hereby granted by the
Taranaki Regional Council

Name of Consent Holder:	Cold Creek Community Water Supply Limited 2 Havelock Street Opunake 4616
Decision Date (Change):	3 December 2015
Commencement Date (Change):	14 January 2016 (Granted Date: 10 July 2013)

Conditions of Consent

Consent Granted:	To take water from Cold Stream to supply the Cold Creek Water Supply Scheme
Expiry Date:	1 June 2030
Review Date(s):	June 2018, June 2021, June 2024, June 2027
Site Location:	620 Kiri Road, Opunake
Legal Description:	Pt Secs 4 & 5 Blk V Kaupokonui SD (Site of take)
Grid Reference (NZTM)	1686870E-5639970N
Catchment:	Taungatara
Tributary:	Cold Stream

For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document

General condition

a. The consent holder shall pay to the Taranaki Regional Council all the administration, monitoring and supervision costs of this consent, fixed in accordance with section 36 of the Resource Management Act 1991.

Special conditions

1. Subject to condition 2 below the rate of taking shall not exceed 69 litres per second.

2. The rate of taking may be higher than 69 litres per second over specific 14 day periods provided that:

   (a) due to unusually high demand resulting from extreme weather conditions, the consent holder can not maintain the reservoir above 80% full while taking at a rate of 69 litres per second;
   (b) the rate of taking is the minimum necessary maintain the reservoir above 80% full;
   (c) the rate of taking does not exceed 79 litres per second;
   (d) before taking water under this condition the consent holder advises the Chief Executive, Taranaki Regional Council, Te Korowai o Ngāruahine Trust and Fish and Game New Zealand of the date that the specific 14 day period will commence; and
   (e) the advice given in accordance with (d) above includes specific information about water demand and weather conditions supporting the need for the additional water.

   The advice required by this condition shall be given by email to worknotification@trc.govt.nz and to an email address as advised to the consent holder by each of Te Korowai o Ngāruahine Trust and Fish and Game New Zealand.

3. The consent holder shall:

   (a) measure and record, using a tamper-proof device, the volume of water taken at intervals not exceeding 15 minutes to an accuracy of ± 5%; and

   (b) determine the flow in Cold Stream immediately downstream of the intake at intervals not exceeding 15 minutes to an accuracy of ± 10%;

   (c) measure and record the reservoir level in a form that enables the Chief Executive, Taranaki Regional Council to determine compliance with conditions 2(a) and 2(b) above.

   Note: *Water meters and dataloggers must be installed, and regularly maintained, in accordance with manufacturer's specifications in order to ensure that they meet the required accuracy. Even with proper maintenance water meters and dataloggers have a limited lifespan.*

4. The records of water taken shall:

   (a) be in a format that, in the opinion of the Chief Executive, Taranaki Regional Council, is suitable for auditing; and

   (b) specifically record the water taken as 'zero' when no water is taken.

5. The measurements made in accordance with condition 3, in a format to be advised by the Chief Executive, Taranaki Regional Council, shall be transmitted to the Taranaki Regional Council's computer system to maintain a 'real time' record of the water taken and the flow immediately downstream of the intake.

6. The consent holder shall provide the Chief Executive, Taranaki Regional Council with a document from a suitably qualified person certifying that water measuring and recording equipment required by the conditions of this consent ('the equipment'):

   (a) has been installed in accordance with the manufacturer's specifications and/or current industry standards;

   (b) is being operated and maintained in accordance with the manufacturer's specifications and/or current industry standards; and/or

   (c) has been tested and shown to be operating to an accuracy of ± 5%.

   The documentation shall be provided:

   (i) within 30 days of the installation of a water meter or datalogger;

   (ii) at other times when reasonable notice is given and the Chief Executive, Taranaki Regional Council has reasonable evidence that the equipment may not be functioning as required by this consent; and

   (iii) no less frequently than once every five years.

7. If any measuring or recording equipment breaks down, or for any reason is not operational, the consent holder shall advise the Chief Executive, Taranaki Regional Council immediately. Any repairs or maintenance to this equipment must be undertaken by a suitably qualified person.

8. All measuring and recording equipment required by the conditions of this consent ('the equipment') shall be accessible to Taranaki Regional Council officers at all reasonable times for inspection and/or data retrieval. In addition, the equipment shall be designed and installed so that Taranaki Regional Council officers can readily verify that it is accurately recording the required information.

9. When the flow in Cold Stream immediately downstream of the intake point is less than 209 litres/second, the taking of water shall be restricted to the minimum amount necessary to maintain the health and welfare of people and animals (i.e. garden water and other non-essential uses are prohibited).

10. The consent holder shall ensure that the intake is screened to avoid fish entering the intake or being trapped against the screen.

11. At all times the consent holder shall adopt the best practicable option to prevent or minimise any actual or likely adverse effect on the environment associated with the abstraction of water, including, but not limited to, the efficient and conservative use of water.

12. The consent holder shall, on an annual basis, provide a report detailing:
    - the work done to detect and minimise leaks;
    - water use efficiency and conservation measures undertaken; and
    - water use benchmarking data for the region and how the area supplied by this consent supplied compare.

    The report(s) shall be provided to the Chief Executive, Taranaki Regional Council before 31 August each year and cover the previous 1 July to 30 June period.

13. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the months of June 2018 and/or June 2021 and/or June 2024 and/or June 2027, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 3 December 2015

For and on behalf of
Taranaki Regional Council

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A D McLay
Director - Resource Management

Land Use Consent

Pursuant to the Resource Management Act 1991
a resource consent is hereby granted by the
Taranaki Regional Council

Name of Consent Holder:	Cold Creek Community Water Supply Limited 2 Havelock Street Opunake 4616
Decision Date:	7 June 2018
Commencement Date:	7 June 2018

Conditions of Consent

Consent Granted:	To dam water with a weir and water intake structure in the Cold Stream for water abstraction purposes
Expiry Date:	1 June 2030
Review Date(s):	June 2019 and at 3-yearly intervals thereafter
Site Location:	620 Kiri Road, Te Kiri
Grid Reference (NZTM)	1686868E-5639969N
Catchment:	Taungatara
Tributary	Cold Stream

For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document

General condition

a. The consent holder shall pay to the Taranaki Regional Council all the administration, monitoring and supervision costs of this consent, fixed in accordance with section 36 of the Resource Management Act 1991.

Special conditions

1. The consent holder shall maintain the weir so that it remains sound and fit for purpose.

2. The consent holder shall repair any erosion or scour of the river bed or banks caused by the weir and take reasonable steps to stop it recurring.

3. The weir shall not obstruct fish passage.

4. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2019 and at 3-yearly intervals thereafter, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 7 June 2018

For and on behalf of
Taranaki Regional Council

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A D McLay
Director - Resource Management

Discharge Permit

Pursuant to the Resource Management Act 1991
a resource consent is hereby granted by the
Taranaki Regional Council

Name of Consent Holder:	Cold Creek Community Water Supply Limited 2 Havelock Street Opunake 4616
Decision Date:	7 June 2018
Commencement Date:	7 June 2018

Conditions of Consent

Consent Granted:	To discharge filter backwash water and stormwater from the Cold Creek water treatment plant into the Cold Stream
Expiry Date:	1 June 2030
Review Date(s):	June 2019 and at 3-yearly intervals thereafter
Site Location:	620 Kiri Road, Te Kiri
Grid Reference (NZTM)	1686820E-5639648N
Catchment:	Taungatara
Tributary:	Cold Stream

For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document

General condition

a. The consent holder shall pay to the Taranaki Regional Council all the administration, monitoring and supervision costs of this consent, fixed in accordance with section 36 of the Resource Management Act 1991.

Special conditions

1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any actual or likely adverse effect on the environment associated with the discharge of contaminants from the site.

2. The discharge rate shall not exceed 60 cubic metres per day.

3. That after allowing for reasonable mixing, within a mixing zone extending 25 metres below the discharge point, the discharge shall not give rise to any of the following effects in the Cold Stream:

   (a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
   (b) any conspicuous change in the colour or visual clarity;
   (c) any emission of objectionable odour;
   (d) the rendering of fresh water unsuitable for consumption by farm animals;
   (e) any significant adverse effects on aquatic life, habitats, or ecology.

4. Constituents of the discharge shall meet the standards shown in the following table.

Constituent	Standard
pH	Within the range 6.0 to 9.0
suspended solids	Concentration not greater than 20 gm^{-3}
Free available chlorine	Concentration not greater than 0.1 gm^{-3}

5. The consent holder shall sample the discharge at least once per month. The sample shall be analysed for:
   - Suspended solids;
   - Free available chlorine; and
   - pH.

   The results of the sampling shall be provided to the Chief Executive Taranaki Regional Council upon request.

6. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes to the processes or operations undertaken at the site. Any such change shall then only occur following receipt of any necessary approval under the Resource Management Act, 1991. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and be emailed to consents@trc.govt.nz.

7. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2019 and at 3-yearly intervals thereafter, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 7 June 2018

For and on behalf of
Taranaki Regional Council

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A D McLay
Director - Resource Management

Appendix II

Categories used to evaluate environmental and administrative performance

Categories used to evaluate environmental and administrative performance

Environmental performance is concerned with actual or likely effects on the receiving environment from the activities during the monitoring year. Administrative performance is concerned with the Company's approach to demonstrating consent compliance in site operations and management including the timely provision of information to Council (such as contingency plans and water take data) in accordance with consent conditions.

Events that were beyond the control of the consent holder and unforeseeable (that is a defence under the provisions of the RMA can be established) may be excluded with regard to the performance rating applied. For example loss of data due to a flood destroying deployed field equipment.

The categories used by the Council for this monitoring period, and their interpretation, are as follows:

Environmental Performance

High: No or inconsequential (short-term duration, less than minor in severity) breaches of consent or regional plan parameters resulting from the activity; no adverse effects of significance noted or likely in the receiving environment. The Council did not record any verified unauthorised incidents involving environmental impacts and was not obliged to issue any abatement notices or infringement notices in relation to such impacts.

Good: Likely or actual adverse effects of activities on the receiving environment were negligible or minor at most. There were some such issues noted during monitoring, from self-reports, or during investigations of incidents reported to the Council by a third party but these items were not critical, and follow-up inspections showed they have been dealt with. These minor issues were resolved positively, co-operatively, and quickly. The Council was not obliged to issue any abatement notices or infringement notices in relation to the minor non-compliant effects; however abatement notices may have been issued to mitigate an identified potential for an environmental effect to occur.

For example:

- High suspended solid values recorded in discharge samples, however the discharge was to land or to receiving waters that were in high flow at the time;
- Strong odour beyond boundary but no residential properties or other recipient nearby.

Improvement required: Likely or actual adverse effects of activities on the receiving environment were more than minor, but not substantial. There were some issues noted during monitoring, from self-reports, or during investigations of incidents reported to the Council by a third party. Cumulative adverse effects of a persistent minor non-compliant activity could elevate a minor issue to this level. Abatement notices and infringement notices may have been issued in respect of effects.

Poor: Likely or actual adverse effects of activities on the receiving environment were significant. There were some items noted during monitoring, from self-reports, or during investigations of incidents reported to the Council by a third party. Cumulative adverse effects of a persistent moderate non-compliant activity could elevate an 'improvement required' issue to this level. Typically there were grounds for either a prosecution or an infringement notice in respect of effects.

Administrative performance

High: The administrative requirements of the resource consents were met, or any failure to do this had trivial consequences and were addressed promptly and co-operatively.

Good: Perhaps some administrative requirements of the resource consents were not met at a particular time, however this was addressed without repeated interventions from the Council staff. Alternatively

adequate reason was provided for matters such as the no or late provision of information, interpretation of 'best practical option' for avoiding potential effects, etc.

Improvement required: Repeated interventions to meet the administrative requirements of the resource consents were made by Council staff. These matters took some time to resolve, or remained unresolved at the end of the period under review. The Council may have issued an abatement notice to attain compliance.

Poor: Material failings to meet the administrative requirements of the resource consents. Significant intervention by the Council was required. Typically there were grounds for an infringement notice.