

Cold Creek Community
Water Supply Ltd
Monitoring Programme
Annual Report
2018-2019

Technical Report 2019-44

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Executive summary

The Cold Creek Community Water Supply Ltd (CCCWSL) operates a rural water supply scheme located on Cold Stream¹, Kiri Road, in the Taungatara catchment. The report for the period July 2018 to June 2019 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 the CCCWSL's activities.

CCCWSL holds three resource consents, which include a total of 27 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.

During the monitoring period CCCWSL demonstrated a good level of environmental performance.

The Council's monitoring programme for the year under review included, 10 inspections, one discharge sample, four river gaugings, two eight-site 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, however during the monitoring period it was noted that instream stage and flow data was not being recorded as per consent conditions. A review of the data found that there had been issues in regards to, equipment management, and data loss due to power and internet outages. While it is recognised that loss of power/internet service is beyond the control of CCCWSL, their system does not provide for any type of onsite data logging to retain data during utility service outages.

The summer macroinvertebrate survey found a lower than expected MCI score at site C3, and the cause of this was not ascertained. Unfortunately the upstream control site, C1 was not accessible for comparison. At the time there was not sufficient evidence to suggest that this was entirely attributable to CCCWSL's activities, and it was noted that some stock may have accessed the stream recently. Biannual macroinvertebrate surveys will continue to determine whether this is a one-off event or an emergent trend of decline at the site.

All other results (seven sites) of the biomonitoring surveys found no evidence of effects as a result of discharges, structures or water abstraction.

During the year, CCCWSL demonstrated a good level of environmental performance, however an improvement in the level of administrative performance is required.

For reference, in the 2018-2019 year, consent holders were found to achieve a high level of environmental performance and compliance for 83% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 13% 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 has reduced.

This report includes recommendations for the 2019-2020 year.

¹ Cold Stream is otherwise known as Cold Creek. For the purposes of this report all references to the water body in question will be using the former, or 'Cold Creek'.

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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 2018 to June 2019 by the Taranaki Regional Council (the Council) describing the monitoring programme associated with resource consents held by 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 second 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 through 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 by CCCWSL.

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 2019-2020 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' inasmuch 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 CCCWSL, this report also assigns them a rating for their environmental and administrative performance during the period under review.

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 CCCWSL'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 was 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.

For reference, in the 2018-2019 year, consent holders were found to achieve a high level of environmental performance and compliance for 83% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 13% of the consents, a good level of environmental performance and compliance was achieved.²

1.2 Process description

Cold Creek Community Water Supply Ltd (CCCWSL) covers 7,700 Ha, it includes about 150 dairy farms, 20,000 cows, 350 people and a number of smaller farms (Figure 1). Water is abstracted from the Cold Creek via gravity fed intake screen on a weir (Photo 1). The water is passed to the 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 Creek. Water usage includes irrigation, dairy shed operations stock watering and domestic use.

² The Council has used these compliance grading criteria for 15 years. They align closely with the 4 compliance grades in the MfE Best Practice Guidelines for Compliance, Monitoring and Enforcement, 2018

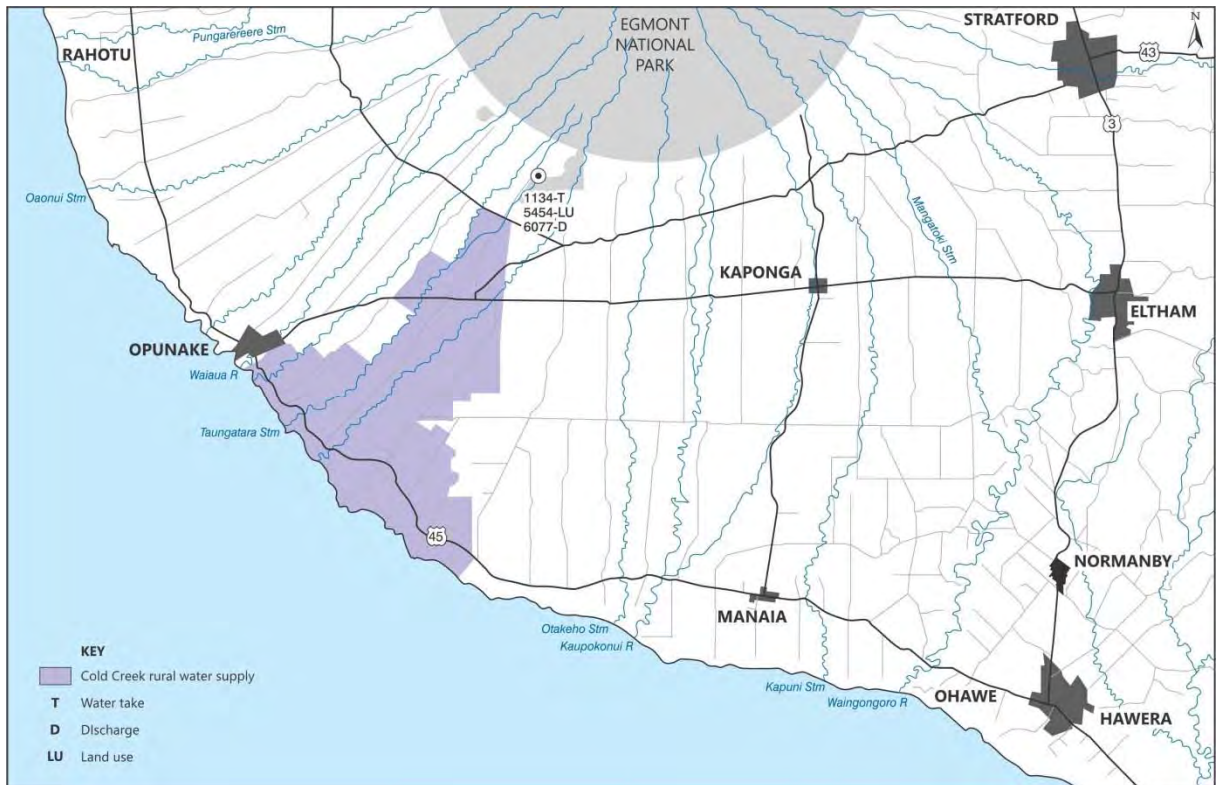


Figure 1 CCCWSL's water service area



Photo 1 CCCWSL's weir and intake screen

1.3 Resource consents

The CCCWSL hold three resource consents, the details of which are summarised in the table 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 Appendix I, as are copies of all permits held by CCCWSL during the period under review.

Table 1 Resource consents held by CCCWLS

Consent No.	Purpose	Granted	Next Review	Expiry Date
<i>Water abstraction permit</i>				
1134-3.2	To take water from Cold Creek to supply the Cold Creek Water Supply Scheme	03 Dec 2015	June 2021	01 Jun 2030
<i>Land use permit</i>				
5454-2.0	To dam water with a weir and water intake structure in the Cold Creek for water abstraction purposes	07 Jun 2018	June 2022	01 Jun 2030
<i>Water discharge permit</i>				
6077-2.0	To discharge filter backwash water and stormwater from the Cold Creek water treatment plant into the Cold Creek	07 Jun 2018	June 2022	01 Jun 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;
- in 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. With regard to consents for the abstraction of or discharge to water, the main points of interest were plant processes with potential or actual discharges to receiving watercourses, including contaminated stormwater and process wastewaters. Sources of data being collected by CCCWSL were identified and accessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council. The neighbourhood was surveyed for environmental effects.

1.4.4 Review of data supplied by CCCWSL

Abstraction, river flow and water usage data supplied by CCCWSL via telemetry was audited and reviewed by Council staff.

1.4.5 Biomonitoring

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

1.4.6 Hydrological inspections

During the period under review, total of nine hydrological inspections of the site were undertaken to CCCWSL's stage recording equipment. During four of these inspections, gaugings were undertaken to determine the flow in Cold Creek to maintain a rating curve.

2 Results

2.1 Annual Inspection

The site was visited on 19 June 2019 to conduct a compliance monitoring inspection. The staff gauge was inspected and found to be reading 300 mm which matched the pressure transducer's (PT's) reading and the telemetered data. The intake and fish pass was inspected and no issues were noted. The backwash ponds were inspected and the backwash water appeared clean and clear. Both ponds were discharging at a slow rate. A sample was taken from the north pond (south pond discharge was not accessible) and was found to be compliant with consent conditions. No effects were noted in receiving waters upon inspection.

2.2 Discharge sampling

One discharge sample was taken during the monitoring period.

Table 2 Results of CCCWSL filter backwash discharge (site STW002066)

Parameter	Free Chlorine	pH	Suspended solids	Turbidity
Units	g/m ³	pH	g/m ³	NTU
19 June 2019	<0.1	7.1	<3	2.4
<i>Consent limit</i>	<i>0.1</i>	<i>6-9</i>	<i>20</i>	<i>-</i>

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

2.3 Results of abstraction and residual flow monitoring

CCCWSL collected water abstraction and Cold Creek flow data. This data was telemetered to the Council and reviewed for compliance. During the period under review CCCWSL provided a data set of abstraction rates and was found to comply with the normal operational abstraction limit of 69 L/s for 100% of the data collected. However, 36 days of data was missing due to power and internet service outages. In the two major data drop outs, the data could not be restored as the data logger is in a control room in Opunake and not at the site itself. Therefore disruption of transmission often results in loss of data. The Council advised CCCWSL to install a logger on-site to prevent further data losses during loss of power or transmission services. At the time of writing this report there had been no further data losses.

2.4 Hydrological inspections

CCCWSL also provides telemetered river level data via a PT and fixed staff gauge in the stream. Due to CCCWSL's poor performance in regard to maintaining the PT in the last monitoring period, the previous report recommended that Council staff visit the site on monthly basis to check the PT to ensure it was being maintained and measuring the river level accurately. This was implemented and the site was visited on nine occasions to inspect the PT and compare readings between the staff gauge and the PT's digital display. Some issues were noted in regard to dampness in the control box and that the calcium salt based desiccant being used to combat dampness was inadequate. A silica-gel based desiccant was subsequently used and this appeared to address the problem. In all inspections it was found that the PT was reading within +/-0.1% of the physical staff gauge.

During four of the inspections Cold Creek was gauged to maintain a ratings curve to determine residual flow (as required by consent conditions).

When the flow in Cold Creek immediately downstream of the intake point is less than 209 L/s, consent conditions require that 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 watering and other non-essential uses are prohibited).

During the monitoring period the residual flow did not drop below the 209 L/s conservation trigger.

2.5 Biomonitoring surveys

Council undertook two, eight-site, macroinvertebrate surveys and one, two-site electric fishing survey to assess the effects (if any) on stream aquatic communities as result of CCCWSL's abstractions, structures and discharges.

2.5.1 Macroinvertebrate survey 8 January 2019

The Council's 'kick-sampling' technique was used at eight sites to collect streambed macroinvertebrates from the Cold Creek and Taungatara Stream in relation to Cold Creek Water Supply Ltd (Figure 2). This has provided data to assess any potential impacts the consented water abstraction and water treatment plant discharges may have had on the macroinvertebrate communities of these streams, while also providing a perspective of the overall condition of the catchment. 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 nutrient pollution in streams. It is based on the presence/absence of taxa with varying degrees of sensitivity to pollution. The SQMCI takes into account taxa abundance as well as sensitivity to pollution, and may reveal more subtle changes in communities. Significant differences in either the MCI or the SQMCI between sites indicate the degree of adverse effects (if any) of the discharges being monitored and enable the overall health of the macroinvertebrate communities to be determined.

MCI values recorded in the current survey have been compared with the previous survey results, the median for the site, the predicted score based on distance from the National Park and the 'control' MCI scores based on data collected from comparable streams at similar altitudes across the region.

MCI scores recorded in four sites in the Cold Creek were reflective of 'very good' macroinvertebrate health. These MCI scores were not significantly different to the median values recorded for each site or to predicted MCI scores based on distance from the National Park. In comparison to the median MCI value for 'control' sites at similar altitudes, the MCI score recorded at site C4 was significantly higher, while those recorded at the remaining three sites were similar to respective medians. Taxa richness recorded in the Cold Creek was within the range of what has previously been recorded at sites C1, C2 and C3, while site C4 recorded the lowest richness for the site to date. SQMCI scores were variable between the four sites, with both sites C2 and C4 recording SQMCI scores significantly lower than respective medians. In comparison to 'control' sites at comparable altitudes, only site C2 recorded an SQMCI score that was significantly lower than the median.

MCI scores recorded at the four sites monitored in the Taungatara Stream were reflective of 'good' macroinvertebrate health. In comparison to the historical medians for each site, sites T2, T3 and T4 recorded similar values, while site T1 recorded an MCI significantly lower than the historical median for the site. In comparison to predicted MCI values based on distance from the National Park site T1 recorded a significantly lower score and site T4 recorded a significantly higher score. Sites T2 and T3 recorded scores that were not significantly different to predicted scores. In comparison to the medians for 'control' sites at comparable streams at a similar altitude, all for sites recorded higher scores, with sites T2 and T4 both recording significantly higher scores. Taxa richness recorded in the Taungatara Stream was also within the range of what has previously been recorded, and was higher or equal to that recorded in the previous survey. SQMCI scores were variable in the Taungatara Stream and were highest at site T1. There were no

significant differences in SQMCI scores between sites T2, T3 and T4. There were also no significant differences in SQMCI score between the current survey results and the median scores recorded for each site.

Within this predominantly dairying catchment there was general deterioration in macroinvertebrate health with decreasing altitude and distance from the National Park and based on predictive values using distance from the National Park Boundary, the rate of MCI decline in a downstream direction was less than the predicted value when comparing the most upstream site (C1) to the furthestmost downstream site (T4).

Overall, there was no evidence that water abstraction from the Cold Creek or discharge to the Cold Creek had significantly affected the freshwater macroinvertebrates of the Cold Creek or Taungatara Stream. In addition, there was no evidence that abstraction for pastoral irrigation above site T4 had impacted on the macroinvertebrate communities at site T4. Finally, based on the current survey results the overall condition of the catchment was generally similar to or better than what would be expected of ring plain streams arising in the National Park.

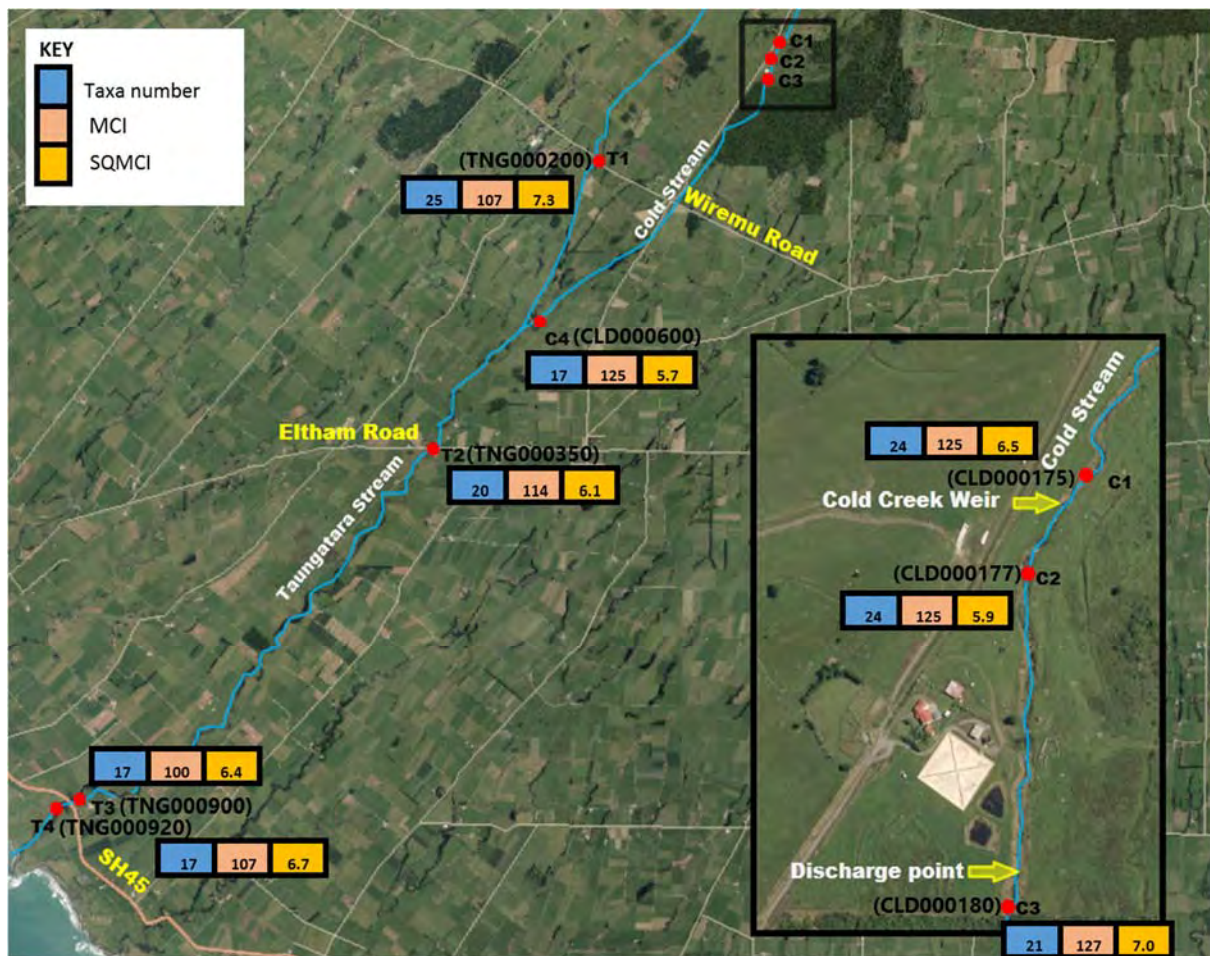


Figure 2 Location of biomonitoring sites in the Cold Creek and Taungatara Stream in relation to the Cold Creek water supply scheme with taxa number, MCI scores and SQMCI scores for each site (8 January 2019)

2.5.2 Macroinvertebrate survey 5 March 2019

MCI scores recorded in three sites in the Cold Creek were reflective of 'good' to 'very good' macroinvertebrate health. The MCI scores recorded at sites C2 and C4 in the Cold Creek were not significantly different to the median values recorded for each site, however the MCI recorded at site C3 was significantly lower (by 13 units). In addition, the MCI score recorded for site C3 was also significantly lower than the predicted MCI score based on distance from the National Park (by 11 units). Site C2 and site C4,

however, both recorded MCI scores that were similar to predicted scores based on distance from the National Park. In comparison to the median MCI values for 'control' sites at similar altitudes, the MCI scores recorded for all three sites were not significantly different to their respective medians. Taxa richness was moderate for the three sites surveyed in the Cold Creek (21-26 taxa). All sites recorded higher numbers of taxa in comparison to the previous survey. SQMCI scores were variable between the three sites, with both sites C2 and C3 recording SQMCI scores significantly lower than their respective medians. In comparison to 'control' sites at comparable altitudes, site C2 and C3 recorded significantly lower SQMCI scores while site C4 recorded a significantly higher SQMCI score. At site C3, the current survey results are suggestive of possible impacts from the water treatment plant discharges. Site C3, just 300m below site C2 recorded a substantial 10 unit decrease in MCI score and a significant 0.9 unit decrease in SQMCI score. In addition, the MCI score recorded for site C3 was significantly lower than the median for the site, and significantly lower than the predictive MCI score based on distance from the National Park.

MCI scores recorded at the four sites monitored in the Taungatara Stream were reflective of 'fair' to 'good' macroinvertebrate health. In comparison to the historical medians for each site, sites T1 and T4 recorded similar MCI values, while sites T2 and T3 recorded values significantly lower than their historical medians (by 19 and 15 units respectively). In comparison to predicted MCI values based on distance from the National Park, sites T1 and T3 recorded slightly lower scores, while site T2 recorded a significantly lower score. Site T4 recorded a slightly higher score. In comparison to the medians for 'control' sites at comparable streams at a similar altitude, site T1 recorded a significantly higher MCI score while the three downstream sites recorded similar MCI scores. Numbers of taxa were moderate in the Taungatara Stream, and were similar, in comparison to previous survey results. All sites recorded numbers of taxa that were within the range of what has previously been recorded. SQMCI scores were variable in the Taungatara Stream and were highest at site T3. There were no significant differences in SQMCI scores between sites T1, T3 and T4, however, the SQMCI score recorded at site T2 was significantly lower than that recorded at sites T1 and T3. The SQMCI scores recorded at sites T1 and T2 were the lowest scores recorded for these sites to date. In addition, the SQMCI scores recorded at sites T1, T2 and T4 were all significantly lower than the median scores recorded for each site to date.

Overall, there was some indication that the water treatment plant discharge may have impacted on the macroinvertebrate communities at site C3. There was no evidence that water abstraction from the Cold Creek had significantly affected the freshwater macroinvertebrates of the Cold Creek, however, as site C1 was not sampled this conclusion is based on very limited data. In addition, there was no evidence that abstraction for pastoral irrigation above site T4 had impacted on the macroinvertebrate communities at site T4. Finally, based on the current survey results the overall condition of the catchment was generally similar to or slightly better than what would be expected of ring plain streams arising in the National Park.

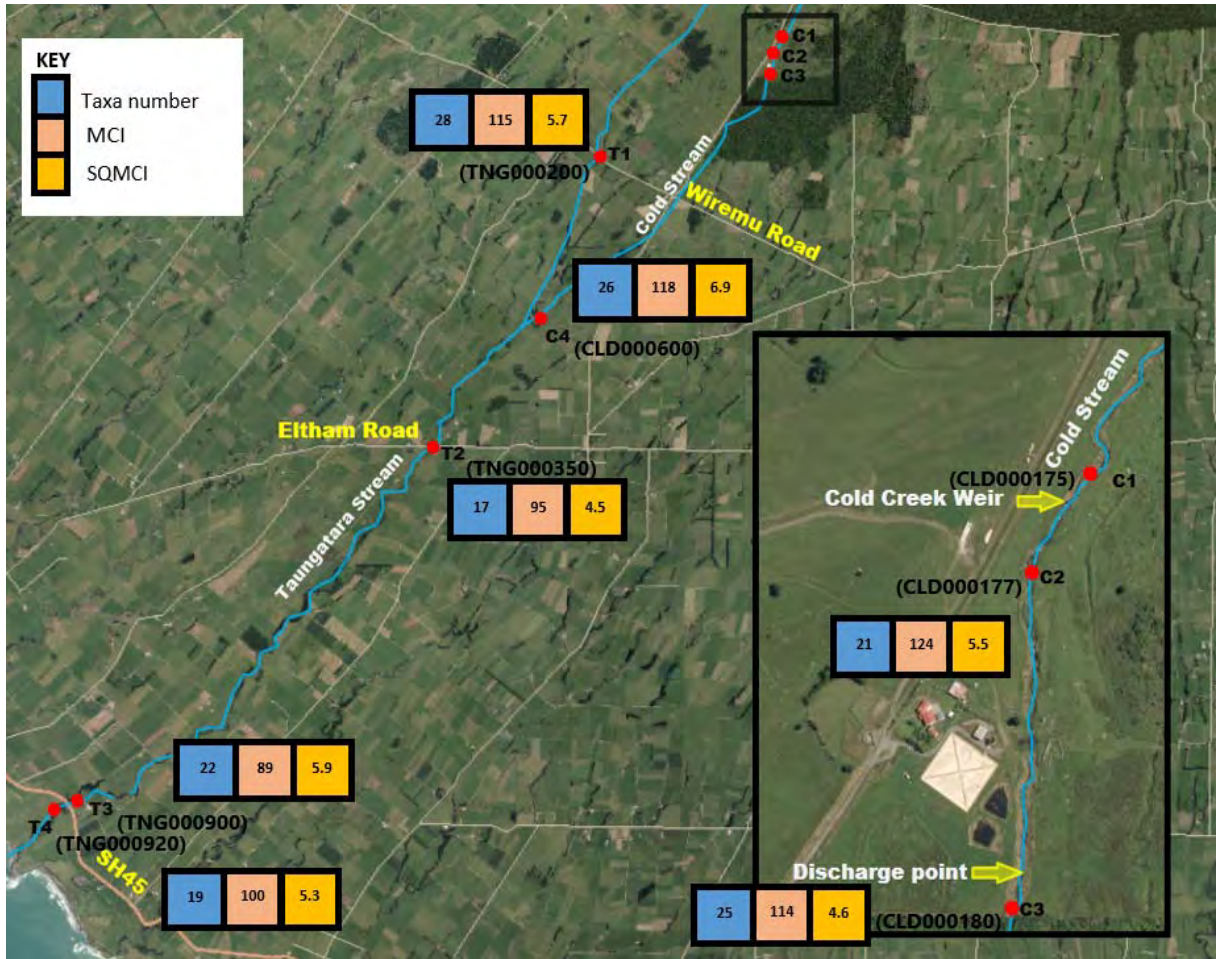


Figure 3 Location of biomonitoring sites in Cold Creek and Taungatara Stream in relation to the Cold Creek water supply scheme with taxa number, MCI scores and SQMCI scores for each site (5 March 2019)

2.5.3 Electric fishing survey 7 March 2019

An electric fishing survey was conducted on 7 May 2019 upstream and downstream of the Cold Creek weir (Cold Creek water supply scheme, Figure 4). Very low fish diversity was recorded in the Cold Creek, but good populations of brown trout were found upstream and downstream of the weir, indicating that the fish pass was providing adequate passage for these fish. It was interesting to note that the brown trout population consisted largely of juveniles, indicating that Cold Creek provides important spawning and juvenile rearing habitat, which in turn supports the Taungatara Stream brown trout sports fishery.

Very few native fish have been recorded in this stream near the water intake weir to date. Only the occasional longfin eel or Koaro has been recorded, indicating that there are few native fish present in this reach. Although the spotlighting method can be effective for recording native species such as shortjaw kokopu, the flow conditions in the Cold Creek reduces the effectiveness of this technique, as the flow is too swift. This method should be employed in an area of slower flow when this exists in this reach.

It is concluded that the weir and fish pass do not present a barrier to those fish likely to inhabit the stream at this altitude. Future monitoring should continue on a three yearly basis, using the electric fishing method.

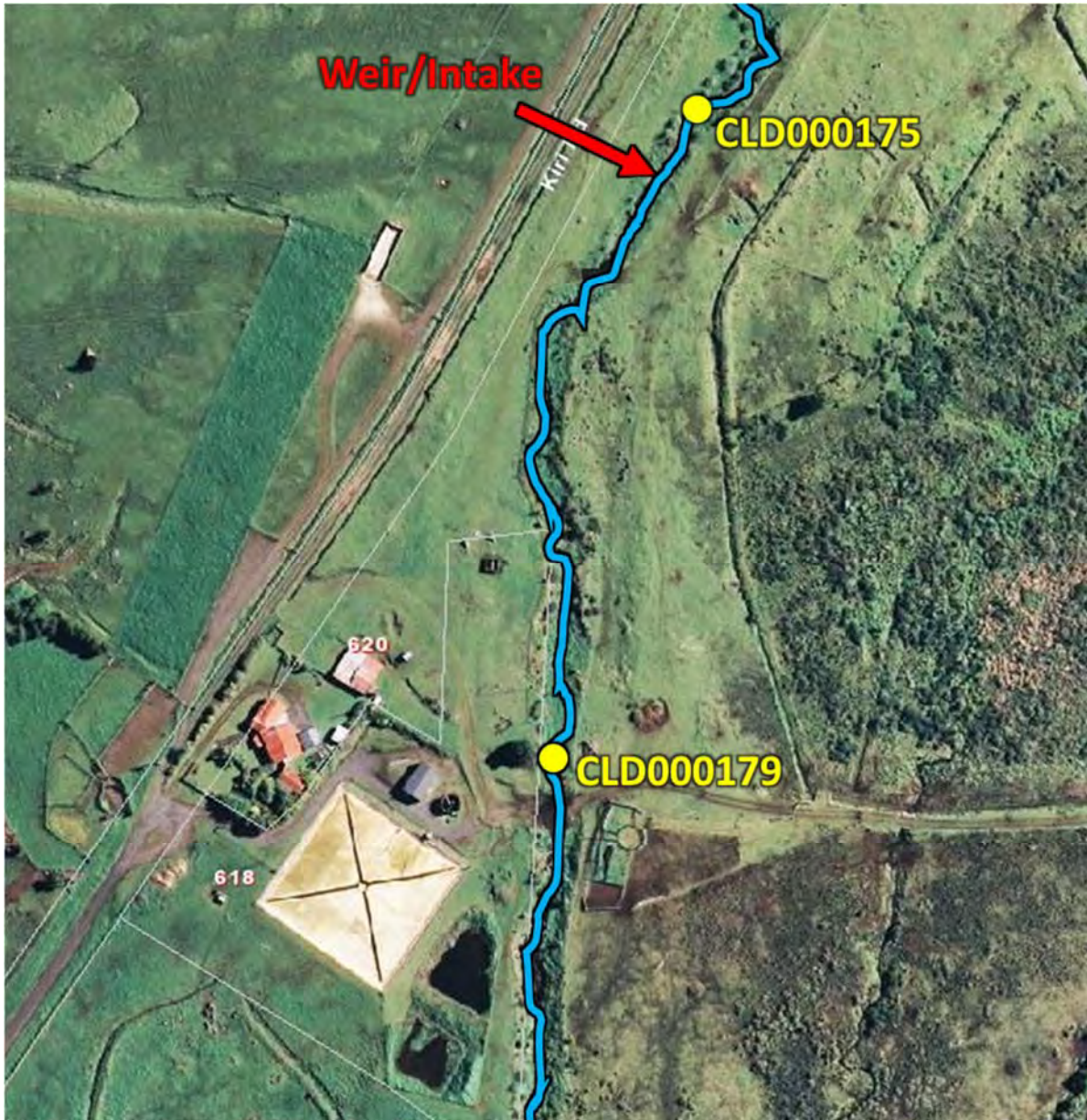


Figure 4 Location of electric fishing sites in Cold Creek

2.6 Investigations, interventions, and incidents

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 courses of non-compliance or failure to maintain good practices. A pro-active approach that in the first instance avoids issues occurring is favoured.

The Council operates and maintains a register of all complaints or reported and discovered excursions from acceptable limits and practices, including non-compliance with consents, which may damage the environment. The incident register includes events where the company concerned has itself notified the Council. The register contains details of any investigation and corrective action taken.

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 company is indeed the source of the incident (or that the allegation cannot be proven).

Table 3 below sets out details of any incidents recorded, additional investigations, or interventions required by the Council in relation to the CCCWSL's activities during the 2018-2019 period. This table presents details of all events that required further investigation or intervention regardless of whether these were found to be compliant or not.

Table 3 Incidents, investigations, and interventions summary table

Date	Details	Compliant (Y/N)	Enforcement Action Taken?	Outcome
31 August 2018	Loss of data telemetry due to loss of internet service-notified	N	Abatement notice and 14 day letter	Telemetry restored 15 September 2018. ~15 days data lost
24 February 2019	Loss of data telemetry due to loss of power service-notified	N	14 day letter-abatement notice in place	Larger UPS installed at site
05 March 2019	MCI score for the site immediately downstream of the water supply scheme indicated possible impact from activities of CCCWSL	Y	None as there was no evidence that the water abstraction from the scheme had significantly affected the freshwater macroinvertebrates of the Cold Creek.	Monitoring scheduled for 2019/20.

3 Discussion

3.1 Discussion of site performance

Issues around data loss was noted during year due to cessation of internet service and power outages. Outages in services are beyond CCCWSL's control, however due the fact the data is logged remotely (rather than on-site) presents the risk of data loss during such events.

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

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 manner that provided for fish passage, however some work may be required in the future to ensure this continues. The summer macroinvertebrate survey found a lower than expected MCI score at site C3, and the cause of this was not ascertained. Unfortunately the upstream control site, C1 was not accessible for comparison. At the time there was not sufficient evidence to suggest that this was entirely attributable to CCCWSL's activities, and it was noted that some stock may have accessed the stream recently. Biannual macroinvertebrate surveys will continue to determine whether this a one-off event or an emergent trend of decline at the site.

All other results (seven sites) 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

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	100% of assessed data
2. Criteria and requirements for taking above 69 L/s	Not exercised	N/A
3. Measure and record abstraction, stream flow, and reservoir level	Data received -90% complete	No
4. Suitable format for water records	Records received	Yes
5. Measurements transmitted in 'real time' to Council	Data received- outages noted	No
6. Documentation to show water measuring and recording equipment installed and operational	Meter and logger documents received	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?
7. Notification to Council of equipment failure	Notification not received, discovered at data review	No
8. Measuring and recording equipment to be accessible	Inspection	Yes
9. Restrictions on abstraction when flow below 209 L/s	No low flow period noted	N/A
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 in June 2021	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 Improvement required

N/A = not applicable

Table 5 Summary of performance for Consent 5454-1

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. Notification of Council prior to construction and maintenance works	No maintenance in period under review	N/A
2. Construction and maintenance to be in accordance with application	No maintenance in period under review	N/A
3. Adoption of best practicable option to minimise adverse effects on water quality	No maintenance in period under review	N/A
4. Minimise riverbed disturbance and reinstate areas disturbed	No maintenance in period under review	N/A
5. Major maintenance to occur between 1 November and 30 April	No maintenance in period under review	N/A

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?
6. No obstruction of fish passage	Inspection and triennial fish survey	Yes
7. Monitoring and reporting of adequacy of fish passage	Fish surveys scheduled for once every three years	Yes
8. Structure to be removed when no longer required and area reinstated	Structure in use	N/A
9. Review provision	No further option for review prior to expiry	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

N/A = not applicable

Table 6 Summary of performance for Consent 6077-1

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. Location of discharge point	Inspection	Yes
2. Limit on discharge rate	Inspection	Yes
3. Discharge not to cause certain effects in the receiving waters	Inspection and biomonitoring	Possible effects at site C1
4. Limits on chlorine, suspended solids and pH in discharge	Sampling	Yes
5. Review provision	No further provision for review	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		Good
Overall assessment of administrative performance in respect of this consent		High

During the year, CCCWSL demonstrated a good level of environmental performance however an improvement in the level of administrative performance is required with the resource consents as defined in Section 1.1.4.

3.4 Recommendation from the 2017-2018 Annual Report

In the 2017-2018 Cold Creek Water Supply Annual Report, it was recommended:

1. THAT monitoring of CCCWSL in the 2018-2019 year continues at the same level as in 2017-2018 with the addition of monthly on-site equipment inspections.
2. THAT should there be issues with environmental or administrative performance in 2018-2019, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

This recommendation was implemented in full.

3.5 Alterations to monitoring programmes for 2019-2020

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.

It is proposed that for 2019-2020 that monitoring of CCCWSL remain unchanged from that of 2018-2019 with the exception of a reduction of hydrological inspections to five per year.

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 2019-2020.

4 Recommendation

1. THAT monitoring of CCCWSL in the 2019-2020 year remain unchanged from that of 2018-2019 with the exception of a reduction of hydrological inspections to five per year.
2. THAT should there be issues with environmental or administrative performance in 2019-2020, 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:

Conductivity	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 25°C and expressed in mS/m.
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.
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.
mS/m	Millisiemens per metre.
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.
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	<i>Resource Management Act 1991</i> and including all subsequent amendments.
SS	Suspended solids.
Supernatant	The liquid lying above a solid residue after crystallization, precipitation, centrifugation, or other process.
SQMCI	Semi quantitative macroinvertebrate community index.

Temp Temperature, measured in °C (degrees Celsius).
Turb Turbidity, expressed in NTU.

*an abbreviation for a metal or other analyte may be followed by the letters 'As', to denote the amount of metal recoverable in acidic conditions. This is taken as indicating the total amount of metal that might be solubilised under extreme environmental conditions. The abbreviation may alternatively be followed by the letter 'D', denoting the amount of the metal present in dissolved form rather than in particulate or solid form.

For further information on analytical methods, contact a Science Services 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)

Consent No.	Purpose	Granted	Next Review	Expiry Date
<i>Water abstraction permit</i>				
1134-3.2	To take water from Cold Creek to supply the Cold Creek Water Supply Scheme	03 Dec 2015	June 2021	01 Jun 2030
<i>Land use permit</i>				
5454-2.0	To dam water with a weir and water intake structure in the Cold Creek for water abstraction purposes	07 Jun 2018	June 2022	01 Jun 2030
<i>Water discharge permit</i>				
6077-2.0	To discharge filter backwash water and stormwater from the Cold Creek water treatment plant into the Cold Creek	07 Jun 2018	June 2022	01 Jun 2030

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.

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.

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 $\pm 5\%$; and
 - (b) determine the flow in Cold Stream immediately downstream of the intake at intervals not exceeding 15 minutes to an accuracy of $\pm 10\%$;
 - (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.

Consent 1134-3.2

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 $\pm 5\%$.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.

Consent 1134-3.2

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

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

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.

<u>Constituent</u>	<u>Standard</u>
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.

Consent 6077-2.0

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

A D McLay
Director - Resource Management

