Cold Creek Community Water Supply Ltd Monitoring Programme Annual Report 2019-2020

Technical Report 2020-65

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[1], Kiri Road, in the Taungatara catchment. The report for the period July 2019 to June 2020 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 an overall good level of environmental performance.

The Council's monitoring programme for the year under review included five inspections, one discharge sample, three river gaugings, two eight-site macroinvertebrate surveys and a review of water abstraction and stream flow data.

The monitoring showed that CCCWSL compiled with consent conditions in regards to discharge standards and abstraction rates. By comparison with previous years, the monitoring indicated an improvement with administration and environmental performance. There were no unauthorised incidents recording non-compliance in respect of this consent holder during the period under review.

The summer macroinvertebrate survey found a deterioration at site C3 and lower than usual SQMCI scores at the three upstream sites. At the time there was not sufficient evidence to suggest that this was entirely attributable to CCWSL's actives.

Biannual macroinvertebrate surveys will continue to determine if this is an emergent trend of decline at the site.

Based on the current survey results, the overall condition of the Taungatara Stream was either similar to or better than what would be expected of a ring plain stream.

During the year, CCCWSL demonstrated a good level of environmental performance and high level of administrative performance with resource consents.

For reference, in the 2019-2020 year, consent holders were found to achieve a high level of environmental performance and compliance for 81% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 17% of the consents, a good level of environmental performance and compliance was achieved.

This report includes recommendations for the 2020-2021 year, including a recommendation relating to an optional review of consent 1134-3.2

[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 2019 to June 2020 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 third annual report to be prepared by the Council to cover the 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 in the Company's site/catchment.

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 2020-2021 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 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 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.

For reference, in the 2019-2020 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.

1.2 Process description

Cold Creek Community Water Supply Ltd (CCCWSL) covers 7,700 ha. It includes about 15 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 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 Creek. Water usage includes irrigation, dairy shed operations stock watering and domestic use.

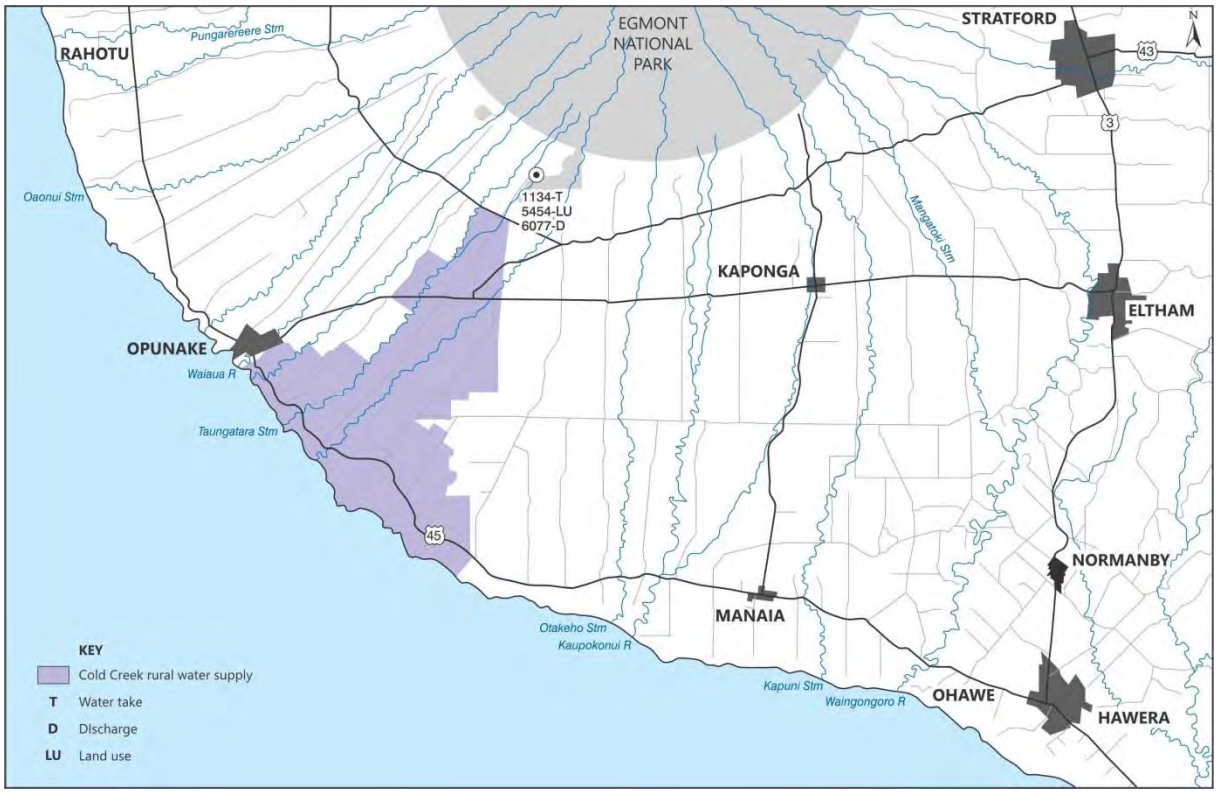

Figure 1 CCCWSL's water service area

Photo 1 CCCWSL's weir and intake screen

1.3 Resource consents

The Company holds three resource consent,s 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 in Appendix I, as are copies of all permits held by the Company during the period under review.

Table 1 Resource consents held by CCCWLS

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	03 Dec 2015	June 2021	01 Jun 2030
Water discharge permits				
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
Land use permits				
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

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. 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, a total of four hydrological inspections of the site were undertaken to check CCCWSL's stage recording equipment. During three 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 17 June 2020 to conduct a compliance monitoring inspection. The abstraction rate was 33 L/s which was compliant and matched telemetered data. 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 looked to be performing as required (peer review by biologist). There were no obvious maintenance or erosion issues at the scheme. The backwash ponds were inspected and the backwash water appeared clean and clear. Neither ponds were discharging. No effects were noted in receiving waters upon inspection.

2.2 Discharge and receiving water monitoring

One discharge sample was taken during the monitoring period.

Table 2 Results of CCCWSL filter backwash discharge (site STW002067)

Parameter	Free Chlorine	pH	Suspended solids	Turbidity
Units	**g/m³**	**pH**	**g/m³**	**FNU**
29 June 2020	<0.07	7.9	8	9.1
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 during the sampling visit.

CCCWSL undertook self-monitoring of their backwash discharge into the Cold Creek. The results, given in Table 3, show that CCCWSL were compliant throughout the monitoring year for suspended solids, pH and free available chlorine.

Table 3 CCCWSL backwash self-monitoring discharge sampling

Date	Suspended solids g/m³	pH	Free available chlorine g/m³
18-Jun-20	<5	7.5	<0.04
May-20*	-	-	-
21-Apr-20	<5	7.2	0.04
05-Mar-20	<5	7.4	0.07
03-Feb-19	<5	7.1	<0.04
07-Jan-20	<5	7.5	0.06
18-Dec-19	8	7.5	0.06
05-Nov-18	<5	7.5	0.04
14-Oct-19	<5	7.1	0.06
03-Sep-19	<5	6.9	0.09
06-Aug-19	<5	7.1	<0.04
09-Jul-18	<5	7.1	<0.04
Consent limits	20	6-9	0.1

*Samples were not taken due to COVID-19 lockdown restrictions.

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 99% of the data collected.

2.4 Hydrological inspections

CCCWSL provides telemetered river level data via a PT and fixed staff gauge in the stream.

During three of the hydrological 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 to assess the effects (if any) on stream aquatic communities as result of CCCWSL's abstractions, structures and discharges.

Electric fishing surveys are completed biennually and was not competed this monitoring period.

2.5.1 Macroinvertebrate survey 7 January 2020

The Council's 'kick-sampling' technique was used at eight sites to collect streambed macroinvertebrates from the Cold Stream and Taungatara Stream in relation to the Cold Creek Water Supply Scheme. 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.

Taxa richness was moderate for the four sites surveyed in the Cold Stream (18-22 taxa). All sites recorded slightly lower numbers of taxa in comparison to site medians. The macroinvertebrate communities recorded at the four Cold Stream sites comprised high proportions of 'sensitive' taxa and were numerically dominated by 'sensitive' taxa. MCI scores recorded in the Cold Stream were not significantly different to one another and were all reflective of 'very good' macroinvertebrate health. These MCI scores were similar to their respective site medians and were also similar to the predicted values based on distance away from the National Park. The MCI scores recorded at sites C1, C2 and C3 were not significantly different to the median

MCI values for 'control' sites at similar altitudes, while the MCI score recorded at site C4 was significantly higher. SQMCI scores were similar between all four sites, and were all reflective of 'very good' macroinvertebrate community health. All four sites recorded SQMCI scores that were similar to site medians. SQMCI scores recorded in the Cold Stream were also similar to the median SQMCI scores for 'control' sites in similar streams at comparative altitudes. These results indicate that the overall condition of the stream was either similar to or better than what would be expected of a ring plain stream arising in the National Park. Results also indicate that the operation of the Cold Creek Water Supply Scheme has not significantly impacted upon the macroinvertebrate communities of the Cold Stream.

Taxa richness was moderate to moderately low for the four sites surveyed in the Taungatara Stream (15-17 taxa). The macroinvertebrate communities recorded at the four Taungatara Stream sites comprised high proportions of 'sensitive' taxa and were numerically dominated by 'sensitive' taxa. The composition of the communities at the Taungatara Stream sites reflected the cool, stony nature of the stream. MCI scores recorded in the Taungatara Stream were reflective of 'very good' to 'fair' macroinvertebrate health. Upstream sites T1 and T2 recorded similar MCI scores, both reflective of 'very good' macroinvertebrate health, while the MCI scores at sites T3 and T4 were significantly lower and were reflective of 'good' and 'fair' macroinvertebrate health. In comparison to site medians sites T1 and T2 recorded significantly higher MCI scores, while the MCI score at site T3 was equal to the median and site T4 was slightly lower than the site median. In comparison to the predicted MCI scores based on distance away from the National Park, sites T1, T2 and T3 all recorded higher scores (site T2 significantly), while the MCI recorded at site T4 was equal to the predicted value. In comparison to the MCI scores recorded by 'control' sites in streams at comparable altitudes, sites T1, T2 and T3 all recorded significantly higher MCI scores while site T4 recorded a slightly higher score. SQMCI scores were reflective of 'very good' macroinvertebrate community health at sites T1 and T2, 'good' health at site T3 and 'fair' health at site T4. In comparison to site medians, SQMCI scores were lower at all sites (sites T2 and T4 both significantly). However, in comparison to the median SQMCI scores for 'control' sites in similar streams at comparative altitudes all four sites recorded higher scores (sites T1 and T3 both significantly). In the current survey, there was a significant decline of 1.1 units between sites T1 and T2; however, the SQMCI score recorded at site T3 was similar to that recorded at site T1. The decline at site T2 can predominantly be attributed to a significant increase in the abundance of two 'tolerant' taxa, likely the result of subtle habitat differences between sites. Site T4 recorded the lowest SQMCI score, significantly lower than the scores recorded at sites T1 and T3, but not significantly different to that recorded at site T2. The significant decrease in SQMCI score of 1.5 units between sites T3 and T4 can be predominantly attributed to the significant increase of two 'tolerant' taxa at site T4 (chironomid midges (Orthocladiinae) and (*Maoridiamesa*)). The increase of these taxa is likely to coincide with an increase of filamentous periphyton at this site, which in turn could be linked to the water abstraction above the site but also to the reduced shading at this site in comparison to the upstream site, T3. The insignificant decrease in MCI score between sites T3 and T4, together with subtle habitat differences between the sites makes it difficult to ascertain any significant effects from the water abstraction upstream of site T4 on the macroinvertebrate communities of the Taungatara Stream. MCI and SQMCI scores from the four sites surveyed on the Taungatara Stream indicated that the overall condition of the stream was similar to or better than what would be expected of a ring plain stream arising in the National Park.

Overall, there was no indication that the operation of the Cold Creek Water Supply Scheme had negatively affected the macroinvertebrate communities of the Cold Stream or Taungatara Stream. In addition, there was no strong 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 similar to or better than what would be expected of ring plain streams arising in the National Park.

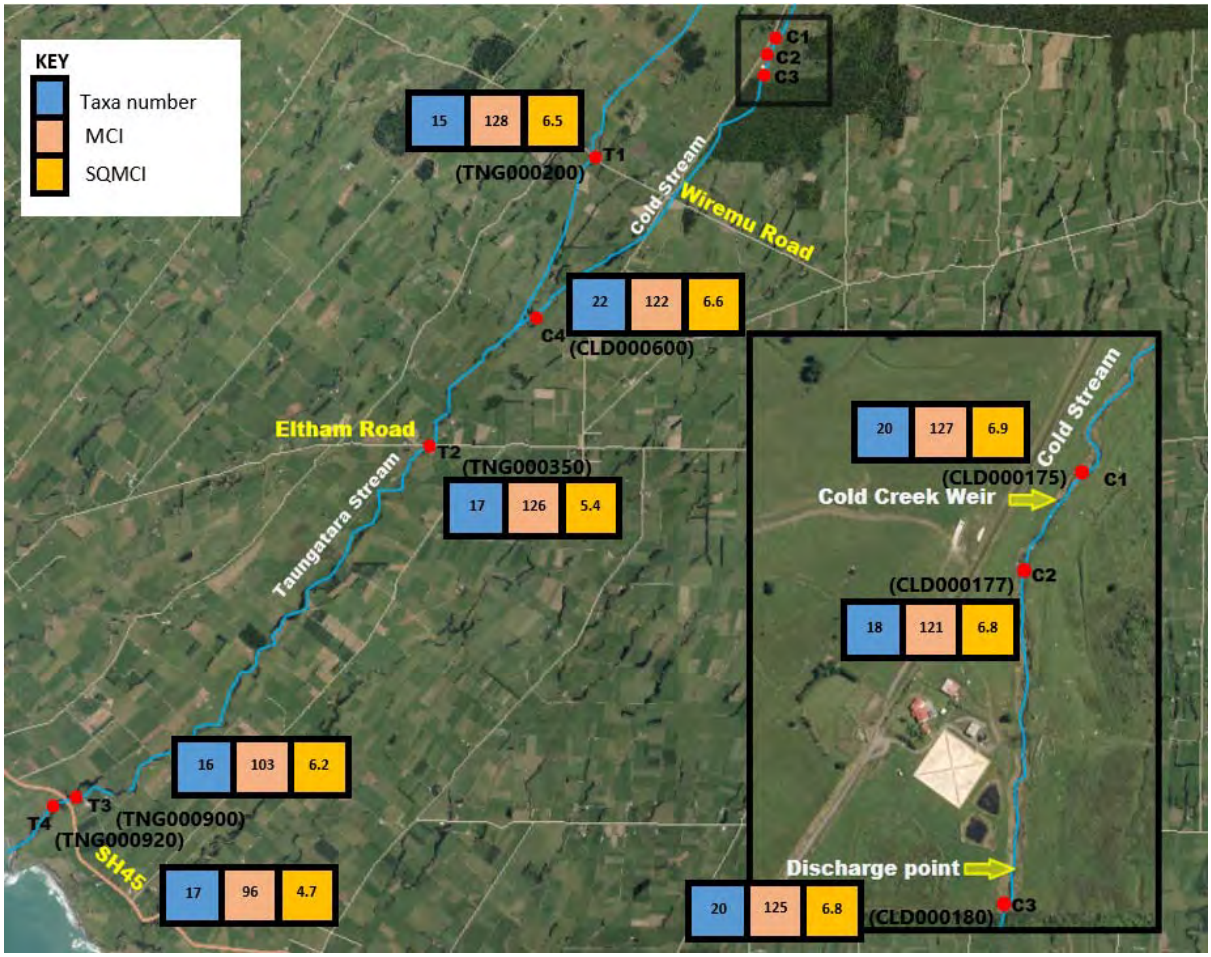

Figure 2 Location of biomonitoring sites in the Cold Stream and Taungatara Stream in relation to the Cold Creek water supply scheme with taxa number, MCI scores and SQMCI scores for each site (7 January 2020)

2.5.2 Macroinvertebrate survey 18 March 2020

The Council's 'kick-sampling' technique was used at eight sites to collect streambed macroinvertebrates from the Cold Stream and Taungatara Stream in relation to the Cold Creek Water Supply Scheme. 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 and abstraction 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 scores 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.

Taxa richness was moderate at the four sites surveyed in the Cold Stream (19-21 taxa), but slightly lower than site medians. Macroinvertebrate communities comprised high proportions of 'sensitive' taxa and were

numerically dominated by 'sensitive' taxa. The MCI scores recorded in the Cold Stream were reflective of 'very good' macroinvertebrate community health at sites C1 and C2, and 'good' health at sites C3 and C4. The MCI scores recorded at sites C1 and C2 were the same, while the MCI score recorded at site C3 was lower than that recorded at site C4 and significantly lower than the scores recorded at the two upstream sites. Site C3 recorded the lowest MCI score for the site to date and given the deterioration from the upstream sites C1 and C2, was indicative of a significant decline in macroinvertebrate 'health' downstream of the water treatment plant discharge. MCI scores were the same as the predicted scores based on distance from the National Park at sites C1, C2 and C4, but significantly lower at site C3 (by 16 MCI units). SQMCI scores were reflective of 'good' macroinvertebrate community health at sites C1 and C2, 'fair' health at site C3 and 'very good' health at site C4. The SQMCI scores recorded at sites C1, C2 and C3 were not significantly different to one another, while the SQMCI score recorded at site C4 was significantly higher than the scores recorded at the three upstream sites. SQMCI scores were lower at all three sites in comparison to respective site medians and previous survey results (significantly so at sites C1, C2 and C3). Both sites C1 and C2 recorded the lowest SQMCI scores for these sites to date.

Taxa richness was moderate to moderately low for the four sites surveyed in the Taungatara Stream (15-24 taxa) and was generally similar to respective site medians. The macroinvertebrate communities recorded in the Taungatara Stream comprised high proportions of 'sensitive' taxa and were numerically dominated by 'sensitive' taxa. The composition of the communities at the Taungatara Stream sites reflected the cool, stony nature of the stream. MCI scores decreased in a downstream direction. Site T1 recorded 'very good' macroinvertebrate health, sites T2 and site T3 'good' health, and site T3 'fair' health. The MCI score recorded at site T1 was significantly higher than the scores recorded at the three downstream sites. There were no significant differences in MCI score between sites T2 and T3 or sites T3 and T4, however the MCI score recorded at site T2 was significantly higher than that recorded at site T4, reflective of the progressive decrease in MCI score recorded in a downstream direction. MCI scores were not significantly different to predicted scores based on distance away from the National Park, nor were they significantly different to historic site medians. SQMCI scores were reflective of 'excellent' macroinvertebrate community health at site T1, 'good' health at sites T2 and T3, and 'fair' health at site T4. SQMCI scores decreased in a downstream direction with a significant decline of 1.3 units between sites T1 and T2 and a further significant decline of 1.5 units between sites T3 and T4. The SQMCI score recorded at site T4 was the lowest recorded for the site to date and lower than that recorded at the three upstream sites. The significant decrease in SQMCI score between sites T3 and T4 has likely coincided with an increase of filamentous periphyton and the silt coating present at this site, which in turn could be linked to the water abstraction above the site. However, the insignificant decrease in MCI score between sites T3 and T4, together with subtle habitat differences between the sites (including reduced shading at site T4), makes it difficult to ascertain any significant effects from the water abstraction upstream of site T4 on the macroinvertebrate communities of the Taungatara Stream. MCI and SQMCI scores from the four sites surveyed on the Taungatara Stream indicated that the overall condition of the stream was similar to or better than what would be expected of a ring plain stream arising in the National Park.

Overall, while the results indicated no immediate impacts of the scheme's water abstraction on the biological communities of this reach of the Cold Stream, a significant deterioration in MCI and decrease in SQMCI score downstream of the water treatment plant discharge between sites C2 and C3 was indicative of localised impacts over a short reach of the Cold Stream. There was some evidence that abstraction for pastoral irrigation above site T4 may have impacted on the macroinvertebrate communities at site T4, however the extent to which this has occurred could not be determined due to habitat differences between sites, in particular to a reduction in shading at site T4. Finally, based on the current survey results, the overall condition of the Taungatara Stream was either similar to or better than what would be expected, while the Cold Stream recorded mixed results, with deterioration noted at site C3 and lowered SQMCI scores at the three upstream sites. Despite this, the overall rate of decline within the catchment based on distance away from the National Park was very similar to what would be expected of a comparable ring plain stream.

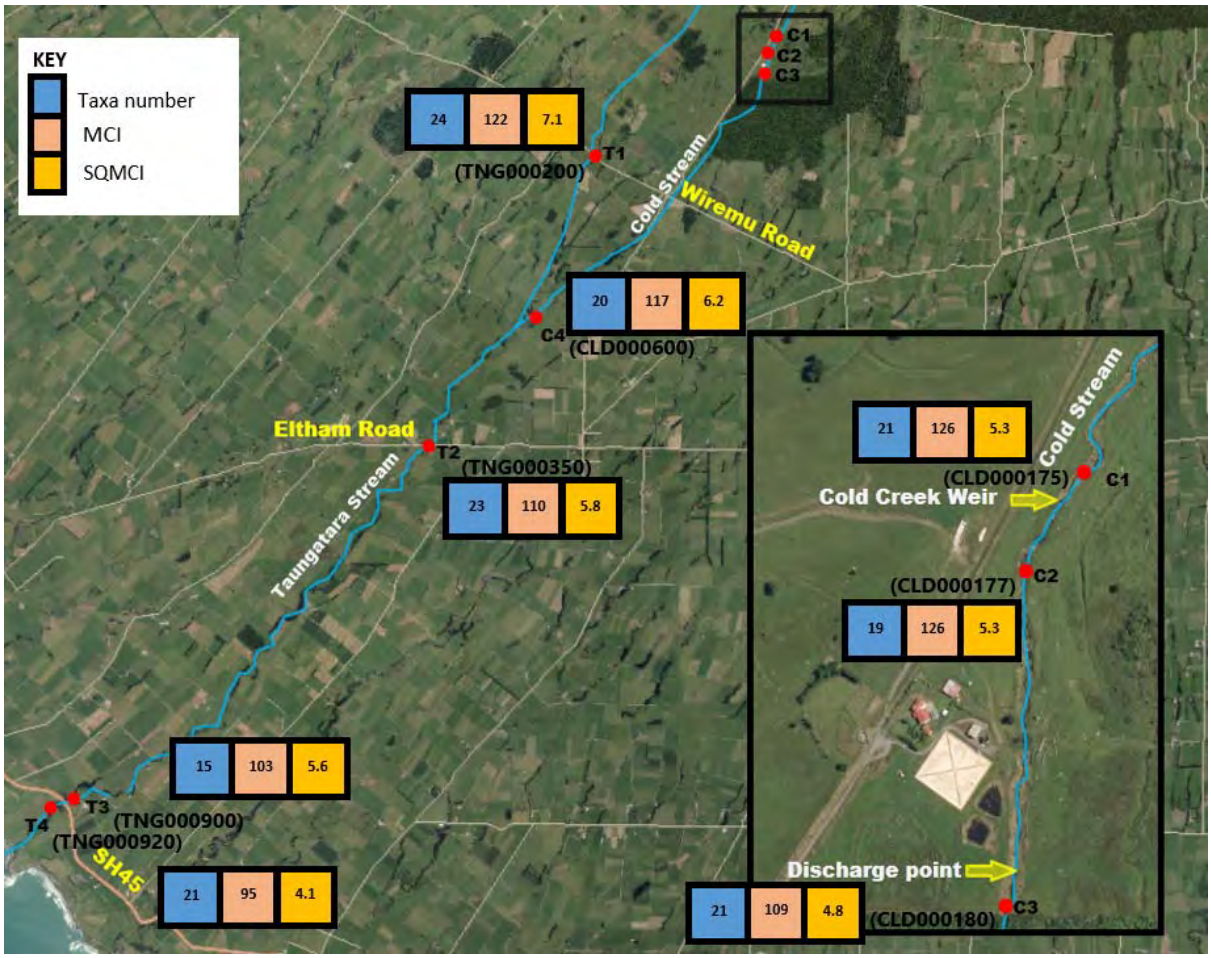

Figure 3 Location of biomonitoring sites in the Cold Stream and Taungatara Stream in relation to the Cold Creek water supply scheme with taxa number, MCI scores and SQMCI scores for each site (18 March 2020)

2.6 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 courses 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 2019-2020 period, the Council was not required to undertake significant additional investigations and interventions, or record incidents, in association with the Company's conditions in resource consents or provisions in Regional Plans.

3 Discussion

3.1 Discussion of site performance

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

Abstraction data was telemeted with no loss of data and discharge sampling data was received.

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. While the results of the summer macroinvertebrate survey indicated no immediate impacts of the scheme's water abstraction on the biological communities there was a significant deterioration in MCI and decrease in SQMCI score downstream of the water treatment plant discharge. At the time there was not sufficient evidence to suggest that this was entirely attributable to CCCWSL's actives. Biannual macroinvertebrate surveys will continue to determine whether this is an emergent trend of decline at the site.

All other 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	Not exercised	N/A
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 and logger documents received	Yes
7. Notification to Council of equipment failure	Data review	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	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** **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 in June 2022	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. 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. Monthly discharge sampling with limits on chlorine, suspended solids and pH	Monthly sampling data received	Yes
6. Review provision	No further provision for review	N/A
7. Notify council of any changes to processes or operations	No changes made	Yes
8. Review provision	Next option for review in June 2022	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		**Good** **High**

N/A = not applicable

3.4 Recommendations from the 2018-2019 Annual Report

In the 2018-2019 Cold Creek Water Supply Annual Report, it was recommended:

1. THAT monitoring of CCCWSL in the 2019-2020 year continues at the same level as in 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.

This recommendation was implemented with a reduction to four instead of five.

3.5 Alterations to monitoring programmes for 2020-2021

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 2020-2021 that monitoring of CCCWSL remain unchanged from that of 2019-2020 with the exception of a reduction of macroinvertebrate sampling sites to three sites, twice a year.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the sites 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 2020-2021.

3.6 Exercise of optional review of consent

Resource consent 1134-3.2 provides for an optional review of the consent in June 2021. Condition 13 allows the Council to review the consent, if there are grounds that (note to author-note the grounds for review that are set out in the consent).

Based on the results of monitoring in the year under review, and in previous years as set out in earlier annual compliance monitoring reports, it is considered that there are no grounds that require a review to be pursued or grounds to exercise the review option.

4 Recommendations

1. THAT in the first instance, monitoring of consented activities at CCCWSL in the 2020-2021 year continue at the same level as in 2019-2020 with the exception of a reduction in biomonitoring sites inspections 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 2020-2021, 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 2021, 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.

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 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)

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