

South Taranaki Water Supplies
Monitoring Programme
Annual Report
2015-2016

Technical Report 2016-103

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Executive summary

The South Taranaki District Council (STDC) operates a total of 11 water treatment plants (WTP's) throughout the district. STDC holds 34 resource consents which include 317 conditions setting out the requirements that must be satisfied. STDC holds 15 consents to take water, ten consents to discharge to both land and water, and nine consents to construct and maintain in-stream structures.

Oaonui Water Supply Limited (OWSL) operates the Oaonui WTP. OWSL hold two resource consents which include a total of 15 conditions setting out requirements that must be satisfied. OWSL holds one consent to abstract water and one consent to maintain an in-stream structure.

The Nukumarū Water Scheme Society Incorporated (NWSSI) operates a rural water supply scheme. NWSSI holds one consent to take groundwater, this consent has seven conditions.

Cold Creek Water Supply Limited (CCWSL) operates a private WTP in the Cold Creek catchment. There are three consents associated with CCWSL's WTP with a total of 27 conditions. There is one consent to cover water abstraction, one to maintain an in-stream structure, and one to discharge treated backwash.

This report for the period July 2015 to June 2016 describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess the environmental performance of the four organisations during the period under review, and the results and environmental effects of their activities.

During the monitoring period, STDC demonstrated an overall high level of environmental performance.

During the monitoring period, OWSL demonstrated an overall good level of environmental performance.

During the monitoring period, NWSSI demonstrated an overall high level of environmental performance.

During the monitoring period, CCWSL demonstrated an overall good level of environmental performance.

During the 2015-2016 monitoring period the Council's monitoring programme included 14 inspections, the collection of ten water samples for physicochemical analysis, four biomonitoring surveys of receiving water, four fish surveys, and the review of abstraction data provided by the consent holders.

Chemical sampling of discharges and receiving waters, macroinvertebrate surveys and fish surveys, all indicated that the water supply schemes did not appear to be causing any significant adverse environmental effects.

During the monitoring period, STDC demonstrated an overall high level of environmental performance and a high level of administrative performance.

During the monitoring period, OWSL demonstrated an overall good level of environmental performance and a good level of administrative performance.

During the monitoring period, NWSSI demonstrated an overall high level of environmental and a good level of administrative performance.

During the monitoring period, CCWSL demonstrated an overall good level of environmental performance and a good level of administrative performance.

For reference, in the 2015-2016 year, 71% of consent holders in Taranaki monitored through tailored compliance monitoring programmes achieved a high level of environmental performance and compliance with their consents, while another 24% demonstrated a good level of environmental performance and compliance with their consents.

In terms of overall environmental and compliance performance by the consent holders over the last several years, this report shows that the consent holder's performance remains at a good or high level in the year under review.

During the monitoring period there were three incidents recorded in relation to activities covered by this report. None of these incidents resulted in any significant adverse environmental effects.

This report includes recommendation for the 2016-2017 year.

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1. Introduction

1.1 Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1 Introduction

This report is the Annual Report for the period July 2015 to June 2016 by the Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents held by the South Taranaki District Council (STDC), Nukumarū Water Scheme Society Incorporated (NWSSI), Oaonui Water Supply Limited (OWSL) and Cold Creek Water Supply Limited (CCWSL). STDC operates 11 water treatment plants (WTPs) and NWSSI, OWSL and CCWSL operate one water supply scheme each in the South Taranaki District.

This report covers the results and findings of the monitoring programme implemented by the Council in respect of the consents held by STDC, NWSSI, OWSL and CCWSL that relate to water supply schemes and WTP's within the South Taranaki District.

One of the intents of the *Resource Management Act 1991* (RMA) is that environmental management should be integrated across all media, so that a consent holder's use of water, air, and land should be considered from a single comprehensive environmental perspective. Accordingly, the Council generally implements integrated environmental monitoring programmes and reports the results of the programmes jointly. This report discusses the environmental effects of the Company's use of water, land and air, and is the 17th combined annual report by the Council for the water supply industry in the South Taranaki District.

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 RMA and the Council's obligations;
- the Council's approach to monitoring sites through annual programmes;
- the resource consents held by South Taranaki water supply consent holders
- the nature of the monitoring programme in place for the period under review; and
- a description of the activities and operations conducted at each consent holder's site(s).

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 2016-2017 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 *Resource Management Act 1991* (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 consent holders, this report also assigns a rating as to each organisation’s 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 the organisation’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 significant 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 in response to unauthorised incident reports, 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 in response to unauthorised incident reports. 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 in response to unauthorised incident reports. 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 2015-2016 year, 71% of consent holders in Taranaki monitored through tailored compliance monitoring programmes achieved a high level of environmental performance and compliance with their consents, while another 24% demonstrated a good level of environmental performance and compliance with their consents.

1.2 Process description

Details of the processes and resource consents of each WTP and supply scheme are given in Table 1

Table 1 South Taranaki water supplies resource consents and processes

Water Supply Scheme	Resource consent	Expiry	Activity	Process
Cold Creek WTP	1134-3 Take	2030	To take water from Cold Stream to supply the cold creek water supply scheme.	Raw water is abstracted from a weir on Cold Stream. The water is gravity fed to the treatment plant and is passed through a sand filter and then chlorinated (chlorine gas). The filter backwash discharges to Cold Creek via settling ponds. The filter is backwashed roughly once every nine hours. This plant was handed back from STDC to Cold Creek Water Supply Ltd in February 2015.
	6077-1 Discharge	2018	To discharge filter backwash water and supernatant from the Cold Creek WTP into the Cold Stream in the Taungatara catchment.	
	5454-1 Land Use	2018	To erect, place, use and maintain a water intake structure on the bed of Cold Creek in the Taungatara catchment for water abstraction purposes.	
Eltham WTP	0213-3 Take	2018	To take and use water from the Waingongoro River for municipal water supply purposes.	Raw water is abstracted from a pool (no weir) and piped to the treatment plant. Polyaluminium chloride (PACl) is added and the water passed through a clarifier and sand filters. The water is pH buffered (sodium bicarbonate) and chlorinated. Backwash from the filters is discharged via 1 of 2 settling ponds to a drain which flows to an unnamed tributary of the Waingongoro River.
	0989-3 Discharge	2029	To discharge reservoir contents from the Eltham water supply reservoir onto land adjacent to the Waingongoro River.	
	1810-3 Discharge	2017	To discharge up to 2,000 m ³ /day [50 L/s] of overflow and reservoir drainage water from the Eltham water supply reservoir into the Mangawharawhara Stream.	
	1811-3 Discharge	2017	To discharge up to 220 m ³ /day [20 L/s] of filter backwash from the Eltham WTP via a settling pond into an unnamed tributary of the Waingongoro River.	
Hawera WTP	0146-2 Take	2020	Take up and use water from the Kapuni Stream for municipal water supply purposes.	Raw water is abstracted from the Kapuni Stream and pumped to the WTP. It passes through grit tanks and a flocculant is added before it goes into a flocculation tank. It then is pumped through strainers before going through the membrane filters. The water is then pH adjusted using caustic soda, chlorinated, and fluoride added before going to the site reservoirs. Membrane backwash water is discharged via 2 settling ponds to the Kapuni Stream. The discharge water is dechlorinated and pH adjusted before it goes to the ponds.
	0933-3 Discharge	2023	To discharge up to 227 m ³ /day of settling pond supernatant from a WTP into the Kapuni Stream.	
	5596-1 Land Use	2017	To construct, place, use and maintain a weir and intake structure, and to maintain two existing intake structures in the Kapuni Stream for Hawera water supply.	
	7002-1 Take	2023	Take and use up to 4,320 m ³ /day of groundwater at a maximum rate of 50 L/s as a combined total from up to three water bores in a bore field at the Kapuni reservoir site.	
	7446-1 Discharge	2023	To discharge membrane backwash water and cleaning wastewater from the Kapuni WTP into the Kapuni Stream.	
	7413-1 Intake structure	2023	To erect, use and maintain a water intake structure on the bed of the Kapuni Stream.	
	7447-1 Outfall structure	2023	To install, use and maintain an outfall structure on the bank of the Kapuni Stream for the Kapuni WTP.	
Inaha WTP	1185-3 Take	2023	To take water from the Mangatoki Stream in the Waingongoro catchment for Inaha rural water supply purposes.	Raw water is abstracted from two intake structures (weirs) on the Mangatoki Stream and a single intake (no weir) on the Waingongoro River. Water is gravity fed and pumped to a settling pond and then to the treatment plant. PACl is added
	1186-3 Take	2023	To take water from the Waingongoro River for Inaha rural water supply purposes.	

Water Supply Scheme	Resource consent	Expiry	Activity	Process
Inaha WTP	3927-2 Discharge	2017	To discharge up to 228 m ³ /day of filter backwash to the Mangatoki Stream.	and the water is passed through two sand filters. The water is pH buffered (sodium bicarbonate) and chlorinated. Filter backwash is discharged to a small settling pond, then to an unnamed tributary of the Mangatoki Stream via a natural pond.
	3928-2 Discharge	2017	To discharge up to 3,060 m ³ /day of uncontaminated overflow water into the Mangatoki Stream.	
	4102-2 Land Use	2023	To maintain an existing low-level weir and fish pass across the Mangatoki Stream.	
	5365-1 Land Use	2017	To erect and maintain an intake structure (weir) on the bed of Mangatoki Stream.	
Opunake WTP	0232-4 Take	2030	To take and use water from the Waiaua River for Opunake town water supply purposes.	Water is abstracted from the true right bank of the Waiaua Stream (no weir) and enters a settling pond prior to being gravity fed to the treatment plant. PACl is added and the water passed through a sand filter and then chlorinated (chlorine gas). Accumulated solids from the settling pond are regularly removed. The plant has three sand filters that operate in parallel. Each of the filters backwashes (using chlorinated water) approximately once every 1-2 hours depending on river conditions. The filter backwash and reservoir overflow is discharged via a settling tank to the Waiaua Stream.
	5574-2 Discharge	2030	To discharge water treatment residuals, and pond drainage water from the Opunake WTP into the Waiaua River.	
	9473-1 Structure	2030	To construct, place and use a water intake structure on the bed of the Waiaua River for water abstraction purposes.	
Patea WTP	3388-3 Take	2028	To take and use groundwater from three bores (known as Bore 1, Bore 2 and Bore 4) for Patea Township water supply purposes.	Groundwater is pumped from bores 1, 2 and 4 and then sent to WTP at Egmont Road.
Pope WTP	See Waimate West 3911-2	2018	Up to 5 L/s is diverted to the Pope water supply from a larger take from the Otakeho Stream (Waimate West Scheme).	Up to 5 L/s of raw water is taken from the Otakeho-Mangawhero diversion pipeline and gravity fed to the Pope rural water supply. Water enters the WTP and is passed through a sand filter and then chlorinated (sodium hypochlorite). Treated water is stored in tanks adjacent to the WTP. The filter backwash is discharged to an unnamed tributary of the Mangawhero Stream via a small settling pond.
	4446-2 Discharge	2023	To discharge treated backwash water from the Pope Rural WTP into an unnamed tributary of the Mangawhero Stream.	
Rahotu WTP	3696-3 Take	2031	To take and use water from the Pungaereere Stream for the Rahotu community water supply.	Raw water is pumped from a pool in the Pungaereere Stream (no weir) to the adjacent treatment plant. Water is treated by clarification, microfiltration and sand filtration.
	6038-1 Discharge	2019	To discharge filter backwash water and settling tank waste from the Rahotu WTP into the Pungaereere Stream.	

Water Supply Scheme	Resource consent	Expiry	Activity	Process
Wai-inu Beach water supply	3770-3 Take	2028	To take and use groundwater for Wai-inu Beach water supply purposes.	Groundwater is pumped from a bore, chlorinated and then pumped to a reservoir for distribution.
Waimate West WTP	0634-3 Take	2023	To take water from the Mangawhero-iti Stream for the Waimate West water supply.	Raw water is diverted from the Otakeho and Mangawhero Streams to the Mangawhero-iti Stream. Water is then abstracted from the Mangawhero-iti Stream (all takes are via weirs) and gravity fed to the WTP. Up to 5 L/s from the Otakeho take is diverted to the Pope rural supply. When sufficient water can be abstracted from the other two streams in the scheme, water from the Mangawhero Stream is avoided due to its turbidity. PACI and flocculent are added and the water passes through a clarifier and sand filters. The water is pH buffered (soda ash) and chlorinated (chlorine gas). On average the clarifier is bled every six hours and each of the four filters are backwashed once per day. Clarifier bleed and filter backwash are discharged via one of two settling ponds to an unnamed tributary of the Mangawhero-iti Stream.
	0635-3 Take	2023	To take water from the Mangawhero Stream for the purpose of adding to the flow of the Mangawhero-iti Stream and providing water for the Waimate West water supply.	
	3911-2 Take	2018	To take water from the Otakeho Stream for the Pope and Waimate West water supply schemes.	
	0129-3 Discharge	2023	To discharge treated washwater from the Waimate water supply scheme into an unnamed tributary of the Mangawhero-iti Stream.	
	4826-2 Land use	2017	To erect and maintain an intake structure (weir) on the bed of the Otakeho Stream.	
	5451-1 Land use	2017	To erect and maintain an intake structure (weir) on the bed of the Mangawhero-iti Stream.	
	5452-1 Land use	2017	To erect and maintain an intake structure (weir) on the bed of the Mangawhero Stream.	
Waverley Water Supply	3313-3 Take	2022	To take and use groundwater from the "Fookes Street" bore (GND0244) and the "Chester Street" bore (GND0059) for municipal water supply purposes.	Groundwater is pumped from two bores, which tap a confined aquifer in the Whenuakura formation, to a reservoir for distribution. The water passes through a sand trap prior to being pumped to a reservoir for distribution. There is no treatment.
Waverley Beach water supply	9563-1 (not exercised) Permitted Activity Rule 46 used	2028	To take and use water groundwater for Waverley Beach water supply purposes.	Groundwater is pumped from a bore to a reservoir for distribution. It is not chlorinated.
Oaonui WTP	0231-3 Take	2018	To take up to 3,500 m ³ /day, at a maximum rate of 50 L/s, from the Oaonui Stream for a rural community water supply scheme and the Maui Production Station.	Raw water is abstracted from the Oaonui Stream (weir) and is piped to a settling pond. For 30 minutes per day, water is backflushed to the stream to remove sediment. Water from the pond is treated with chlorine prior to distribution. Chlorine dosing is automated according to the raw water abstraction rate and turbidity.
	Permitted Activity – discharge		Discharge accumulated solids from the race and settling pond.	
	5453-1 Land use	2018	To erect and maintain an intake structure (weir) on the bed of the Oaonui Stream.	
Nukumarū rural water supply	6451-1 Take	2039	To take up to 605 litres/day (7 L/s) from up to two bores.	Groundwater is pumped from a bore to a reservoir for distribution.

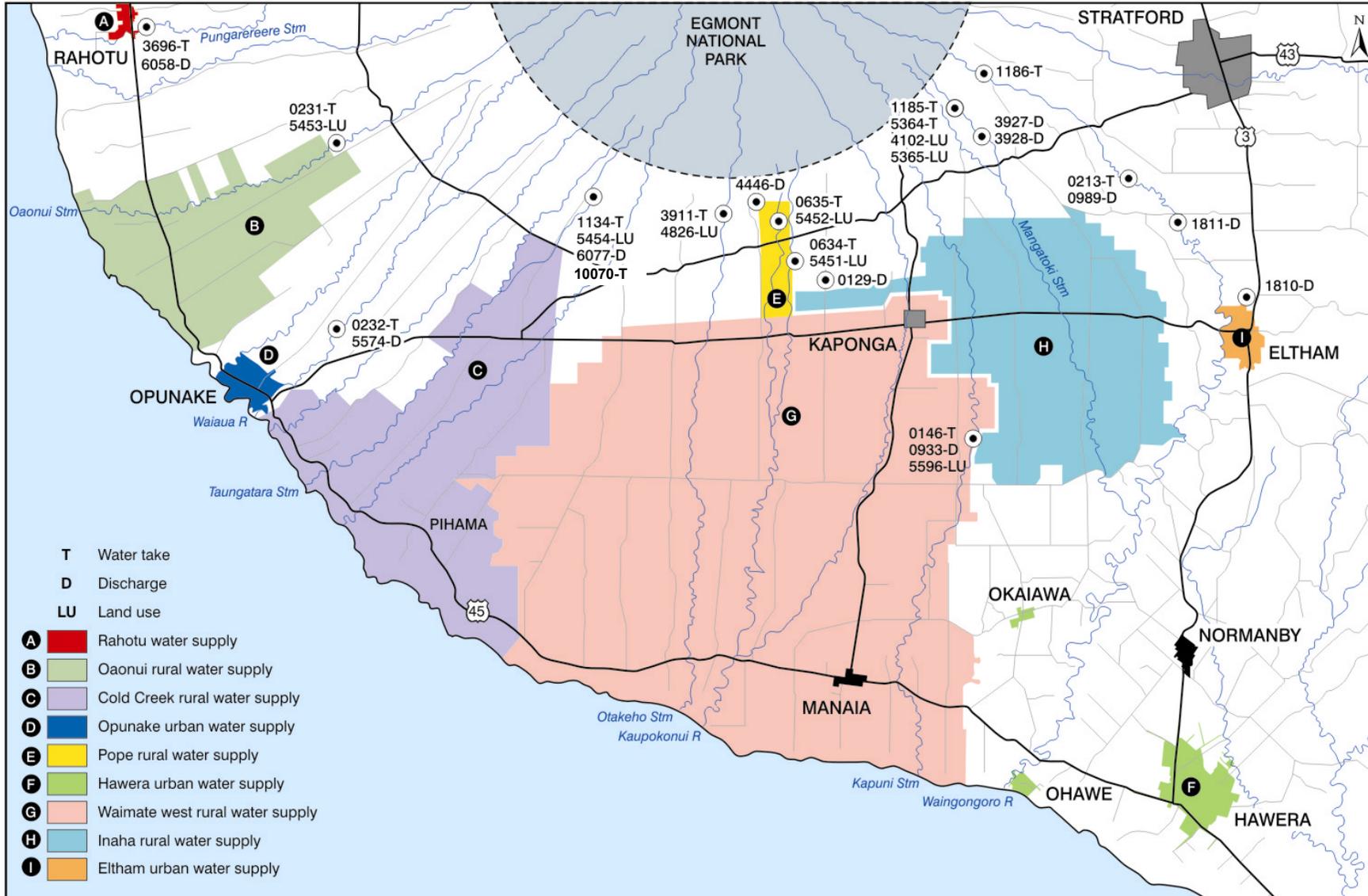


Figure 1 Location of STDC, CCWSL and OWSL resource consents

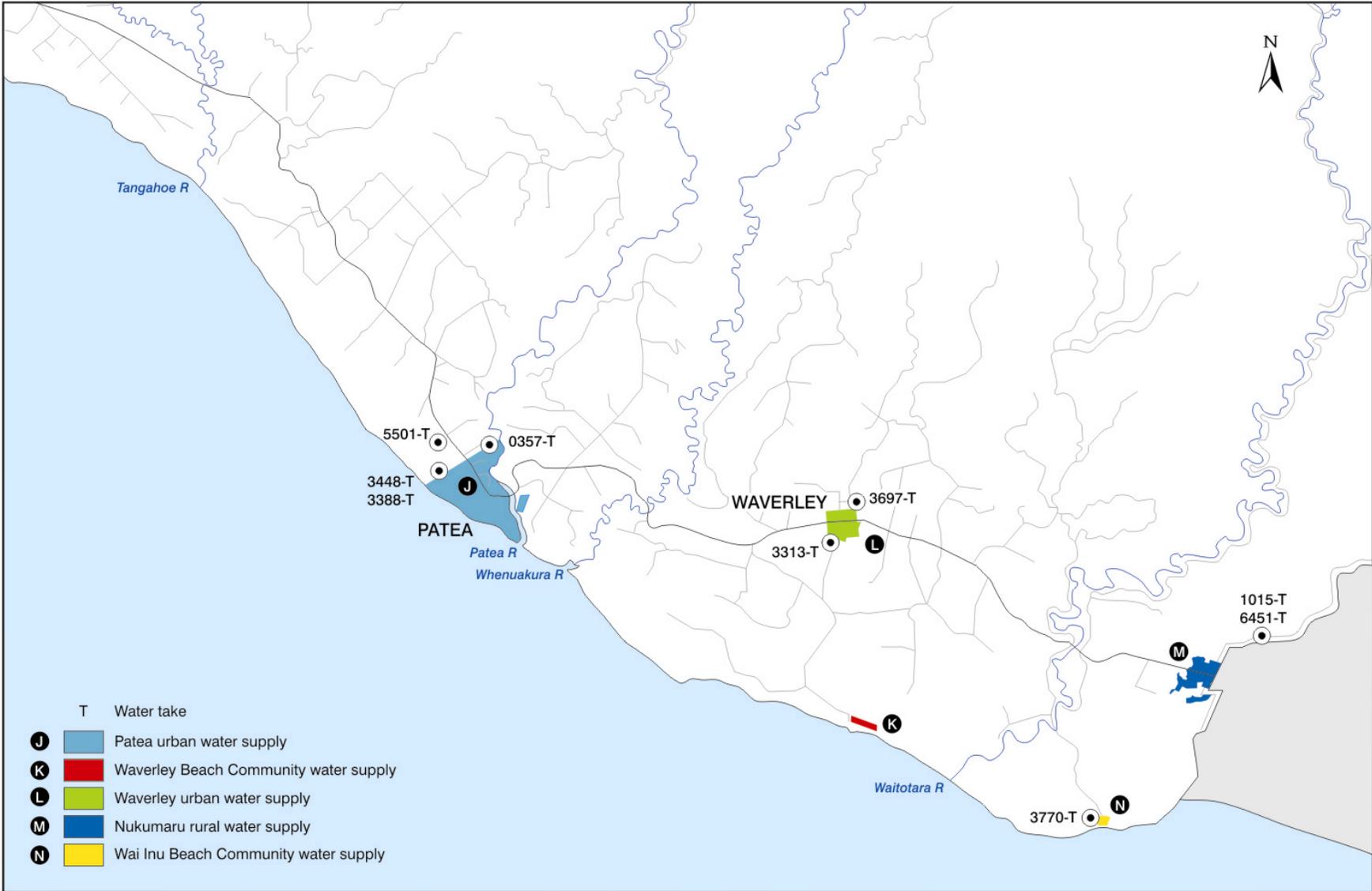


Figure 2 Location of STDC and NWWSI consents

1.3 Resource consents

STDC, OWSL, NWSSI and CCWSL hold various resource consents including water abstraction permits, discharge permits and land use consents for the various water supply plants and structures they operate. These resource consents are listed in Table 1 and their locations are shown in Figures 1 and 2. Copies of all resource consents held in relation to water supply plants and structures in the South Taranaki District are included in Appendix I.

1.3.1 Abstraction consents

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 resource consent or a rule in a regional plan, or it falls within some particular categories set out in Section 14.

All of the consent holders covered by this report hold water abstraction consents. There is a combined total of 18 consents of which STDC hold 15, CCWSL one, OWSL one and NWSSI one.

These consents were granted by the Council under Section 87 of the RMA and each contains special conditions that the consent holder must comply with.

These consents generally have consent conditions that:

- specify abstraction rates and/or daily volumes;
- set out requirements for the measurement of abstraction rates and/or volumes;
- specify data reporting requirements;
- conservation and leak detection reporting requirements; and
- set out lapse and review provisions.

Other requirements specific to individual consents include:

- in-stream flow recording (Cold Creek WTP, Waimate West WTP);
- essential use residual flow limits (Cold Creek WTP and Oaonui WTP);
- minimum residual flow limits (Mangawhero-iti – Waimate West WTP; and
- financial contributions (Oaonui WTP and Cold Creek WTP).

1.3.2 Landuse consents (structures)

Section 13(1)(a) of the RMA stipulates that no person may use, erect, reconstruct, place, alter, extend, remove or demolish any structure or part of any structure in, on, under, or over the bed of any lake or river, unless the activity is expressly allowed for by a resource consent, or a rule in a Regional Plan and in any relevant proposed regional plan.

There are a total of ten land use consents covered by this report that permit the installation of water abstraction or discharge structures. STDC hold nine consents, and CCWSL and OWSL hold one each.

These consents were granted by the Council under Section 87 of the RMA and each contains special conditions that the consent holder must comply with.

These consents generally have consent conditions that:

- require notification prior to works;
- require the adoption of best practice;
- require provision of fish passage;
- require minimisation of effects in receiving waters;
- limit time frames for any works undertaken; and
- set out lapse and review provisions.

1.3.3 Discharge consents

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.

There is a total of 12 consents covered by this report that permit the discharge of filter and membrane back wash to water. STDC hold ten discharge consents, and CCWSL and OWSL each hold one.

These conditions generally have consent conditions that:

- require the adoption of best practice;
- sets limits on contaminants in the discharge;
- limit effects in receiving waters; and
- set out lapse and review provisions.

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 2015-2016 monitoring programme for the water supply schemes in the South Taranaki District consisted of seven 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 reviews;

- renewals;
- new consents;
- advice on the Council's environmental management strategies and content of regional plans and;
- consultation on associated matters.

1.4.3 Site inspections

All of the WTPs were visited at least once with total of 14 inspections undertaken. The inspections focussed on intake structures, fish passage, abstraction metering, abstraction rates and plant discharges.

1.4.4 Chemical sampling

The Council undertook sampling of discharges from the Kapuni, Opunake, and Waimate West WTPs. Receiving water samples were also collected in relation to discharges from the Kapuni WTP.

1.4.5 Biomonitoring

Four macroinvertebrate surveys were undertaken in relation to the Kapuni, Waimate West, Cold Creek and Rahotu WTPs to determine effects upon the stream communities due to the discharge of filter backwash and/or abstractions.

Four fish surveys were undertaken in relation to the Oaonui, Waimate West and Cold Creek WTPs.

1.4.6 Hydrological surveys

Hydrological surveys were undertaken in order to check flows and maintain ratings curves.

1.4.7 Review of abstraction data

STDC, CCWSL, NWSSI and OWSL provided abstraction data to the Council throughout the monitoring year. This was reviewed by Council staff to ensure abstraction volumes and rates complied with consent conditions.

1.4.8 Review of reports required by consents

Water conservation and leak detection reports are required by consents held by OWSL, CCWSL and STDC. These are reviewed to ensure that each consent holder is minimising water usage.

2. Results

2.1 Inspections

Annual inspections generally focussed on instream structures, discharges, and water abstraction measurement equipment.

Eltham WTP (15 March 2016)

The northern backwash pond was dry whilst the south pond was discharging at less than 1 L/s. The discharge was clean and no issues were noted in the receiving water. The plants inflow meter was reading 135.9 m³/hour (37.75 L/s) at 9.16 am which was in compliance and matched the telemetered data. The intake screen was inspected and no issues were noted. The raw water settling pond below the intake was not in use and was dry.

Inaha WTP (15 March 2016)

Both Mangatoki intake weirs were inspected and the fish passes were working well. Some minor debris was cleared by STDC staff at the time of the inspection. The discharge ponds were inspected and it was found that the eastern pond was in use and discharging. The western pond was being dried out. There was some sediment accumulation in the receiving channel, but it was noted that road stormwater is also being directed to this area. The Mangatoki inflow meter was checked and it was found to be at 46.63 m³/hr which was in compliance and matched the telemetered data.

Waimate West WTP (15 March 2016)

The Mangawhero and Mangawhero-iti weirs were in good order and there was good flow in the fish passes. The Otakeho weir was working well despite the recent flood damage. Discussions were held about the consent requirement for accurate real time river flow measurement to be implemented at the Otakeho intake structure by 1 June 2017.

The discharge ponds were inspected and the north pond was discharging at approximately 1-2 L/s and a sample was taken. No issues were noted in regard to scour.

The Otakeho flow meter was inspected and it was found that the intake was 205.06 m³/hr which was in compliance and matched the telemetered data.

Pope WTP (15 March 2016)

The site now receives treated water from the Waimate West WTP into new reservoirs. No back washing occurs. The possibility of using the existing discharge consent for reservoir cleaning was discussed however this would require a change to the consents purpose.

Rahotu WTP (15 March 2016)

The site was discharging at the time of the inspection. The discharge appeared clear and no issues or effects were noted. The intake pipe appeared to working well and the flow meter was reading 4.2 m³/hr which was in compliance and matched the telemetered data.

Opunake WTP (15 March 2016)

The intake structure was inspected and no issues were noted. The flow meter read 43.2 m³/hr and this matched the telemetered data. A discharge sample was taken for the backwash ponds and the sample appeared clean and clear.

Hawera WTP (16 March 2016)

The intake structure appeared to be well maintained and there was good flow on the fish pass. The bore head works and meter appeared to be installed correctly and was well maintained. The bore flow meter indicated a 2.49 m³/hr take and this was in compliance and matched the telemetry. The total raw water abstraction was 363.71 m³/hr which matched telemetry and showed that the Kapuni Stream water take was in compliance with consent conditions. Neither backwash pond was discharging at the time.

Wai-inu Beach WTP (16 March 2016)

Abstractions were not occurring at the time. It was outlined that the plant is scheduled for an upgrade. No issues were noted.

Waverley Beach Water Supply (16 March 2016)

The consent for bore 2 (GND2224) had not been exercised. It was outlined that the produced water had taste and odour issues. The permitted activity take continued to be used for abstractions from bore 1 and no issues were noted.

Waverley Water Supply (16 March 2016)

Chester Street bore and Fookes Street: The head works and flow meters appeared to be installed correctly and were well maintained. These bores were not being used at the time and the meters read zero and this matched the telemetered data.

The headworks and flow meter at the Swinbourne Street bore appeared to be installed correctly and were well maintained. This bore was in use and the meter read 21.9 m³/hr and this complied with consent conditions and matched the telemetered data.

It was noted that the Waverley bores were not labelled very clearly as required by consent conditions. STDC staff undertook to rectify this and provide a photo once new labels were put on. It was discussed that labelling of all the STDC water supply bores might be useful for both Council and STDC staff.

Patea Water Supply (16 March 2016)

Bore 1 and 5: The head works and flow meters appeared to be installed correctly and were well maintained. These bores were not being used at the time. The meters read zero and this matched the telemetered data, however it was noted that the telemetered "zero" signal from Bore 1 was quite noisy when the bore is not being used.

Bore 4 was being used and the meter showed 19.6 m³/hour abstraction which was in compliance with consent conditions and matched the telemetry.

Cold Creek WTP (3 March 2016)

The weir and intake was inspected and found to be in good condition and the fish passage had good flow in it. The meters and loggers appeared to be functioning correctly and the readout said 173.55 m³/hr (48.7 L/s) which agreed with telemetered data and was in compliance with consent conditions.

The problems with the pressure transducer was discussed and it was outlined that the sensor will be housed in wider diameter pipe with a slotted intake at the bottom to allow for the free movement of water level.

Nukumaru water supply (15 July 2015)

The site was inspected and a flow meter reading was taken. No issues were noted and data records were requested.

Oaonui WTP (28 June 2016)

A site visit was made to conduct a compliance monitoring inspection. The weir was inspected and was found to be in good condition as was the fish passage which had good flow in it. The pond, meters and loggers appeared to be functioning correctly. Printouts from the last two days with hourly abstractions were provided and these were reviewed at the office. It was found that the daily volume was being complied with (based on measurements at the plant intake).

During the visit the upcoming consent application was briefly discussed and a stage logger was downloaded at the staff gauge upstream of the weir.

2.2 Results of discharge monitoring

2.2.1 Kapuni WTP

Discharge and receiving water samples were taken at the Kapuni WTP (Figure 3) on 11 November 2015 and 14 June 2016 and the results are presented in Tables 2 and 3 below.



Figure 3 Aerial photo showing locations of the Kapuni WTP, and relevant sampling sites

Table 2 Kapuni WTP sample results 17 November 2015

Parameter		Upstream (KPN000300)	Pond discharge (STW002080)	Downstream (KPN000301)	Consent limits for discharge
Free available chlorine	g/m ³	-	<0.1	-	<0.1
Conductivity	mS/m	11.5	16.1	11.5	-
Sodium	g/m ³	10.5	18.4	10.5	-
pH	pH	7.8	7.8	7.8	6-9
Suspended solids	g/m ³	-	15	-	20
Temperature	Deg C	15.6	17.3	15.5	-
Turbidity	NTU	1.1	-	6.1	-

Table 3 Kapuni WTP sample results 14 June 2016

Parameter		Upstream (KPN000300)	Discharge	Downstream (KPN000301)	Consent limits for discharge
Free available chlorine	g/m ³		<0.01		<0.1
Conductivity	mS/m	11.0	15.4	11.0	-
Sodium	g/m ³	11.4	17.3	11.1	-
pH	pH	7.7	7.9	7.8	6-9
Suspended solids	g/m ³		<2		20
Temperature	Deg C	11.3	13.3	11.4	-
Turbidity	NTU	7.5	0.14	1.7	-

All results were in compliance with consent conditions in regard to suspended solids, pH and free available chlorine.

While the consent does not limit sodium, it is of particular interest due to the use of chemicals such as sodium hypochlorite, sodium hydroxide and sodium bisulphate in the WTP process. Ballance Agri-Nutrients and Vector both have discharges to the Kapuni Stream, upstream of the WTP discharge, which have limits placed on them for sodium. The WTP discharge will continue to be regularly monitored for sodium to establish whether it is making a significant contribution to sodium loadings in the Kapuni Stream.

2.2.2 Opunake WTP

The filter backwash from the Opunake WTP is treated in ponds which discharge to a grassy drain. Generally the discharges soak to ground prior to entering the stream. A sample of the discharge was taken on 15 March 2016 and the results are shown in Table 4.

Table 4 Results of sampling at the Opunake WTP 15 March 2016

Parameter	Unit	STW0002073 Opunake WTP discharge	Consent limits
Free available chlorine	g/m ³	<0.01	<0.1
pH	-	7.5	6-9
Suspended solids	g/m ³	16	20
Temperature	Deg C	20.3	-

All samples were compliant with consent conditions. The stream was visually inspected and no effects were noted, nor expected when the high dilution rate is considered.

2.2.3 Waimate West WTP

A sample was collected from the settling pond discharge on 16 March 2016 and the results are presented below in Table 5. Suspended solids, pH and free available chlorine were in compliance with consent conditions.

Table 5 Results of sampling at the Inaha WTP 16 March 2016

Site	Unit	STW002069 WWWTP pond discharge	Consent limits
Free available chlorine	g/m ³	<0.01	<0.1
pH	-	7.7	6-9
Suspended solids	g/m ³	4	20
Temperature	Deg C	18.4	-

2.3 Discharge data review

STDC now monitors all its discharges on a monthly basis both visually for effects on the receiving environment and for concentrations of contaminants in the discharge. This data was accessed and reviewed and it was found that the results indicated that they were complying with consent conditions in regards to environmental effects and discharge limits.

2.4 Results of biomonitoring

2.4.1 Macroinvertebrate surveys

The Council's 'kick-sampling' technique was used to collect streambed macroinvertebrates and assess the impact of four WTPs in the period under review. These WTPs were Hawera WTP (Kapuni Stream), Rahoitu WTP (Pungaereere Stream), Cold Creek WTP (Cold Creek and Punehu Stream) and Waimate West WTP (Mangawhero-iti Stream).

This has provided data to assess any potential impacts the consented water abstraction and or backwash discharges may have had on the macroinvertebrate communities of

the stream. Samples were processed to provide number of taxa (richness), MCI, and SQMCI_s scores for each site.

The MCI is a measure of the overall sensitivity of the macroinvertebrate community to the effects of organic pollution in stony streams. It is based on the presence/absence of taxa with varying degrees of sensitivity to environmental conditions. The SQMCI_s takes into account taxa abundances as well as sensitivity to pollution. Significant differences in either the taxa richness, MCI or the SQMCI_s between sites may indicate the degree of adverse effects (if any) caused by water abstractions.

A copy of each report from the surveys is given in Appendix II and a summary of each report is given below

2.4.1.1 Kapuni Stream macroinvertebrate survey (Hawera WTP)

The Council's standard 'kick-sampling' technique was used on 21 March 2016 at two sites to collect streambed macroinvertebrates from the Kapuni Stream to determine if there had been any adverse effects on the macroinvertebrate community of the stream from Kapuni WTP backwash discharges. Samples were sorted and identified to provide number of taxa (richness), MCI and SQMCI_s scores for each site.

This survey was the sixth to follow full commissioning of the Kapuni WTP. The new discharge point is now located just upstream of the Skeet Road bridge, and the sampling sites were consequently changed, to enable monitoring of this new location. Site 1 has an extensive historical dataset, as a result of monitoring undertaken in relation to the Vector Kapuni and Ballance Agri-Nutrients Kapuni Ltd sites, located upstream. This dataset can also be used as a reference for site 2 (KPN000301), until a suitable data record has been established here. It should be noted however, that the monitoring undertaken in relation to the Vector Kapuni and Ballance Agri-Nutrients Kapuni Ltd sites is done so using slightly different methodology, which has the potential to produce lower taxa richness and higher MCI scores.

During this late summer macroinvertebrate survey, it was noted that the stream appeared to have been severely impacted by a recent flood event, with large volumes of substrate moving down the catchment. In addition, there was fine silt tied up in the substrate, especially at site 2, suggesting an erosion event in the National Park. The results of this survey indicated that the community at site 2, downstream of the discharge point, was in good health, and similar to that recorded upstream at site 1, upstream of the discharge point. There is no evidence to suggest that the discharge of filter backwash and settling tank sediment had resulted in an impact on the macroinvertebrate communities of the Kapuni Stream. This is despite the MCI score recorded downstream of the discharge being lower than the median score for the upstream site.

The macroinvertebrate communities of the Kapuni Stream contained significant proportions of 'sensitive' taxa at both sites and the communities were dominated by 'sensitive' taxa. Taxonomic richness (number of taxa) was high at the control site 1 and decreased only slightly at site 2 downstream of the discharge, although there were some changes in the presence/absence of a few taxa found as rarities (less than five individuals). Site 1 recorded a below average MCI score, which is considered a reflection of the long period of low flows that preceded this survey (60 days). The

minimal change in MCI and SQMCI_s scores from site 1 to site 2 was not an unexpected result considering the period of low flow that preceded this survey, and the influence of substrate mobilisation during the last flood. These results are certainly not an indication of any impacts from the Hawera WTP.

2.4.1.2 Waimate West WTP macroinvertebrate survey (Mangawhero-iti Stream)

October 2015

A spring macroinvertebrate survey was performed at four sites in the Mangawhero-iti Stream in relation to consented water abstraction by the Waimate West WTP. Taxa richnesses were moderate to high at the three impacted sites and similar to median values calculated from previous surveys. Control 'site 1' recorded moderately high taxa richness, although slightly lower than the median. There was a significant increase in MCI score between the observed and expected scores at site 1 and site 2 but no significant differences between the observed and expected scores at site 3 and site 4. There was a slight increase in SQMCI_s score between sites 1 and 2, otherwise MCI and SQMCI_s scores decreased with distance downstream, which is common for Taranaki ring plain streams. The MCI score recorded at site 1 was significantly higher (by 11 units) than the median recorded from previous surveys. The MCI scores recorded at site 2, 3 and 4 were not significantly different to median values calculated from previous surveys. Overall, there was no evidence that water abstraction from Mangawhero-iti Stream by the Waimate West WTP had significantly affected the freshwater macroinvertebrate communities downstream of the abstraction point since the previous survey.

February 2016

A summer macroinvertebrate survey was performed at four sites in the Mangawhero-iti Stream in relation to consented water abstraction by the Waimate West WTP. Taxa richnesses were moderate to high at the three impacted sites and similar to median values calculated from previous surveys at sites 3 and 4. Site 2 recorded a taxa richness substantially lower than the historical median. There was a significant increase in MCI score between the observed and expected scores at site 2 but no significant differences between the observed and expected scores at site 1, 3 and 4. There was a slight increase in MCI score between sites 1 and 2, otherwise MCI and SQMCI_s scores decreased with distance downstream, which is common for Taranaki ring plain streams. All sites recorded MCI scores that were similar to median values calculated from previous surveys. Overall, there was no evidence that water abstraction from Mangawhero-iti Stream by the Waimate West WTP had significantly affected the freshwater macroinvertebrate communities downstream of the abstraction point since the previous survey.

2.4.1.3 Cold Creek WTP macroinvertebrate survey (Cold Stream and Taungarata Stream)

17 December 2015

The Council's 'kick-sampling' technique was used at eight sites to collect streambed macroinvertebrates from the Cold Stream and Taungarata Stream in relation to the Cold Creek water supply scheme. This has provided data to assess any potential impacts the consented water abstraction and WTP 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_s scores for each site.

The abstraction of surface water particularly for extended periods of time may result in significant adverse effects on the macroinvertebrate communities living within a waterbody by potentially reducing flow velocities, wetted habitat area, and dissolved oxygen levels and increasing stream temperature, periphyton abundance, macrophytes, pH, and deposited sediment. This December 2015 survey was undertaken to monitor whether the operation of the Cold Creek water supply scheme was having an effect on the macroinvertebrate communities in the Cold Stream or Taungatara Stream downstream of the water take and discharge point under spring conditions. It was also undertaken to gain perspective on the overall catchment condition, including whether there were any impacts from the abstraction of water for pastoral irrigation downstream of SH45.

The macroinvertebrate communities recorded at the four Cold Stream sites comprised high proportions of 'sensitive' taxa and were also numerically dominated by 'sensitive' taxa. The composition of the communities at the Cold Stream sites reflected the cool, stony nature of the stream located in the upper mid-reaches of the catchment. This resulted in relatively high taxa richnesses, MCI and SQMCI_s scores at all sites.

Within this predominantly dairying catchment there was deterioration in macroinvertebrate health with decreasing altitude and distance from the National Park. However based on predictive values using distance from the National Park boundary, the rate of MCI decline in a downstream direction was significantly less than that predicted. MCI scores indicated that the stream communities were of fair to very good 'health' (TRC, 2015) and were similar to or above the biological health recorded at 'control' sites in similar streams at a comparative altitude elsewhere in the region. Overall, the results of this December 2015 survey of the Cold Stream and Taungatara Stream found no evidence that water abstraction from the Cold Stream by Cold Creek Community Water Supply Limited had had a significant effect on the freshwater macroinvertebrate communities downstream of the abstraction or discharge points, and that the overall catchment was in better than average condition, including downstream of the abstraction for pastoral irrigation.

2.4.1.4 Rahotu WTP macroinvertebrate survey (Pungaereere Stream)

29 January 2016

The Council's standard 'kick-sampling' technique was used at three established sites to collect streambed macroinvertebrates from the Pungaereere Stream. Samples were sorted and identified to provide number of taxa (richness), MCI and SQMCI_s scores for each site.

In general, the macroinvertebrate communities of the stream contained relatively high proportions of 'tolerant' taxa at all sites and the communities were generally dominated by similar numbers of 'sensitive' and 'tolerant' taxa. MCI and SQMCI_s scores indicated that the stream communities were of 'fair' health which was significantly lower compared with similar Taranaki rivers. There were minimal differences in the numerical abundances of the characteristic taxa accounting for the very similar SQMCI_s values through the short stream reach surveyed.

This late summer macroinvertebrate survey indicated that during a period of low recession flow of the stream there were no effects on the macroinvertebrate communities' compositions downstream of the abstraction or discharge beyond the

designated mixing zone. Very few significant changes in individual taxon abundances were recorded between sites through the stream reach surveyed.

2.4.2 Fish surveys

During the period under review the Council undertook three electric fishing surveys (in the Oaonui Stream, Mangawhero Stream and Cold Creek) and one spotlight survey in the Otakeho Stream. These were undertaken to assess the effects of instream structures and water abstractions.

A copy of each report from the surveys is given in Appendix II and a summary of each report is given below

2.4.2.1 Oaonui WTP electric fishing survey (Oaonui Stream)

31 March 2016

An electric fishing survey was conducted on 31 March 2016 at two sites. The first site was located immediately upstream of the Oaonui water supply weir, while the second site was located just downstream of the weir. Seine netting was also undertaken in the pool immediately downstream of the weir, and in the pool immediately upstream of the weir. Fish diversity was moderate upstream of the weir, but slightly lower downstream of the weir. Fish species recorded were similar both upstream and downstream of the weir, with the only difference being lamprey, with one ammocoete recorded upstream of the weir. No target species were recorded during this survey, these being torrentfish and inanga, although redfin bully, and the migrant invertebrate paratya shrimp, were both recorded upstream of the weir. Fish abundance was particularly high downstream of the weir, with the community heavily dominated by juvenile shortfin and longfin eel and juvenile redfin bully.

It was noted during this survey that flow downstream of the weir is severely impacted by the sluicing activities, with flow essentially stopping for a period following sluicing. The higher abundance of juvenile eel and redfin bully may be a direct reflection of the impacts of the sluicing activities, as juveniles of these species prefer to live in shallow riffles, precisely the type of habitat that remained when the headpond was filling. In addition, the other species that would be expected at this altitude do not prefer shallow water, and it is likely that their migration upstream will be inhibited by these sluicing activities, especially if the reduction of flow extends for an extended length downstream. When compared with the results from the nearby Manganui Stream, it is clear that the extremely high abundance of juvenile eel and redfin bully is not typical.

Previous surveys have failed to record torrentfish upstream of the weir, and this absence continued in the current survey. This may suggest that the fish pass is not working effectively, however this absence could also be attributed to the differences in habitat (particularly the proportion of riffle habitat) immediately upstream of the weir. In addition, torrentfish may be discouraged from migrating far up the Oaonui Stream through the reduced flow following sluicing, depending on how far downstream the impacts extend.

Previous surveys and visual assessment of the pass suggest that the pass itself is suitable to provide for the passage of the species considered likely to be migrating upstream at this point. This is confirmed by two surveys conducted since the fish pass was installed where inanga (an indicator species) were recorded in abundance

upstream of the weir for the first time (February 2003 and April 2004). Although inanga were not recorded at either site in the current survey, even when the seine net method was used, it does not mean that these fish were not present however. The absence of inanga may be associated more with the time of year the survey was undertaken and the location of the upstream site. Inanga migrate downstream in autumn to spawn in the lower tidal reach, and in most cases do not survive. Therefore, inanga will only be present in the surveyed reach during and in the months immediately following the spring whitebait migration. That said, a survey undertaken in the nearby Manganui Stream recorded an individual inanga, indicating that it would be reasonable to expect inanga in the Oaonui Stream in the vicinity of the weir. It is likely that the Oaonui water supply weir is currently not a barrier to fish, therefore compliance with fish passage requirements of resource consent 5453 is being achieved.

As monitoring of fish communities to date indicates that the fish pass is operating with reasonable success, the need to perform annual fish surveys is not required. Provided that regular inspection of the pass confirms that it is operating as required and being maintained, it is recommended that fish monitoring continue at the rate of once every three years. However, considerable thought needs to be applied to the current practice of sluicing the intake. It is likely that this practice is currently resulting in a significant reduction in flow for an extended reach downstream. This is likely to be influencing the fish community

2.4.2.2 Waimate West WTP electric fishing survey (Mangawhero Stream)

6 April 2016

A fish survey was conducted upstream and downstream of an STDC weir in the Mangawhero Stream weir on 6 April 2016. This survey used the electric fishing technique, although the effectiveness was reduced somewhat due to the natural iron oxide turbidity that is frequently present in the Mangawhero Stream, with visibility markedly reduced.

This is the third survey undertaken since a new fish pass was installed in 2007. In the Mangawhero Stream fish diversity was low both upstream and downstream of the weir, as has been recorded in previous surveys. This is likely to be related to the distance from the sea and the high altitude at which these sites are located, as fish diversity decreases with increasing altitude and distance inland. Fish communities were similar between the two sites and indicate that the STDC weir is generally not a barrier to the stronger climbing longfin eels, or trout. Although there may be times when trout are unable to negotiate the jump at the bottom of the old fish pass. Flows in the new pass may be too shallow at times and they are more likely to migrate pass the weir during floods, when passage for this strong swimming fish should be adequate.

Torrentfish (*Cheimarrichthys fosteri*) were not recorded in the current survey at either of the sites. These fish have been recorded downstream of the weir in the past but have not yet been recorded upstream of the weir. Torrentfish are moderate swimmers which can negotiate reasonably swift flows, however their climbing ability is poor to moderate. It is expected that the new fish pass is adequate to provide for the passage of torrentfish, however, the likelihood of recording torrentfish again at this altitude and distance from the coast is considered low.

Other species, particularly galaxiids such as koaro and shortjaw kokopu have been recorded in this reach in the past. However, these species have not been recorded here for over fifteen years, and it is likely that their populations are relatively sparse in the upper Mangawhero Stream. A visual assessment of the new fish pass indicates that there is no impediment to the passage of those galaxiids likely to be present at this altitude.

The monitoring of the Mangawhero Stream indicates that fish passage provided by the new fish pass is likely to provide fish passage for most fish present in this reach. This includes torrentfish, which were recorded on one previous occasion at this location.

2.4.2.3 Cold Creek WTP electric fishing survey (Cold Stream)

6 April 2016

Very low fish diversity was recorded in the Cold Stream, 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 Stream 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 in the vicinity of the water intake weir to date. Only the occasional longfin eel 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 Stream reduces the effectiveness of this technique, as the flow is too swift. This method should only be employed in an area of slower flow, if 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.

2.4.2.4 Waimate West WTP spotlighting survey (Otakeho Stream)

20 April 2016,

A spotlighting survey was undertaken at two sites in the Otakeho Stream, upstream and downstream of an STDC water intake weir. The purpose of the survey was to assess compliance with the fish passage condition of the consent held for this structure by STDC.

From the results of this survey, there is no indication that the weir presents a restriction to the passage of fish. Although only one species was recorded in the current survey, being koaro (*Galaxias brevipinnis*), they were of higher density upstream of the weir than downstream. This is the second consecutive record of a higher density upstream than downstream, indicating that the upgrade to the fish pass has resolved the possible restriction of fish passage suggested by earlier surveys.

In 2012, a visual assessment of the weir found that the new fish pass was carrying too much water, and that passage would be optimised if flows down the pass were reduced. Unfortunately, at the time of the current survey the fish pass contained little to no flow, due to gravels aggregating at the inlet to the fish pass and effectively blocking it off. Flow was reinstated during the survey by shifting some of the gravels.

As not all gravels were removed, the amount of flow moving down the pass was less than that in 2012, and appeared close to optimum for fish passage.

With regard to whether the weir meets the special condition of consent 4826, there is no evidence to indicate that the weir presents a restriction to the passage of fish. However, it is important that the consent holder regularly inspects the weir, especially after large floods, to ensure optimum flows are maintained down the fish pass.

2.5 Abstraction data

Data is collected from all consent holders, tabulated and archived in the Council's database. Below (Table 6) is a summary of data that shows the level of compliance with daily volumes, abstraction rates and data supply.

Table 6 Summary of abstraction data

Plant	Source	Records supplied on time?	Compliance with daily volumes	Compliance with abstraction rates	Completeness of data
Eltham	Waingongoro	Yes	N/A	100%	100%
Hawera	Kapuni	Yes	99%	99%	100%
	Kapuni bore	Yes	100%	100%	100%
Inaha	Mangatoki	Yes	100%	>99%	100%
	Waingongoro	Yes	100%	>99%	100%
Opunake	Waiaua	Yes	100%	100%	100%
Patea	Bore 1	Yes	100%	100%	100%
	Bore 4	Yes	N/A	99%	100%
	Bore 5	Yes	N/A	99%	100%
	Combined	Yes	100%	N/A	100%
Rahotu	Pungaereere	Yes	100%	100%	100%
Wai-inu	Wai-inu bore	Yes	100%	100%	100%
Waimate West	Mangawhero-iti	Yes	N/A	98%	100%
	Otakeho	Yes	N/A	100%	100%
	Mangawhero	Yes	N/A	99%	100%
Waverley	Chester St bore	Yes	100%	100%	100%
	Fookes St bore	Yes	100%	100%	100%
	Swinbourne St bore	Yes	100%	100%	100%
	Combined Waverley Take	Yes	100%	100%	100%
Waverley Beach	Bore 2	N/A	Not exercised	Not exercised	N/A
Cold Creek	Cold Creek	Yes	N/A	>99%	96%
Oaonui	Oaonui	Yes	100% of assessed data	n/a	74%**
Nukumarū	Nukumarū bore	No	100%	n/a	100%

Key: N/A= not applicable (not all consents require abstractions rate data or have daily volume limits)

** system failure plant caused data loss

2.6 Residual Flow data

Three consents have residual flow limits which for the most part trigger essential use of water only (for human or stock health). The table below identifies these consents and the residual flow requirements and assesses compliance.

Table 7 Residual flow assessment

Consent Holder	STDC	CCWSL	OWSL
River	Mangawhero-iti	Cold Creek	Oaonui Stream
Consent	0634-3	1134-3	0126-3
Limit type	Minimum flow	Essential use	Essential use
Residual flow limit	32 L/s	209 L/s	152 L/s
Method of assessment	Telemetered flow measurement	Telemetered flow measurement	TRC Gauging
Data supplied	Yes	Partial data supplied	N/A
Compliance with minimum flow	99%	N/A	N/A
Essential use when limit met	N/A	Yes	Limit not met when gauged

3. 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 the consent holders. 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 organisation 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).

In the 2015-2016 period, the Council was required to record incidents, in association with STDC's and CCWSL's conditions in resource consents or provisions in Regional Plans. It is noted that none of these incidents resulted in enforcement action.

10 August 2015 (STDC)

During routine monitoring it was found that on 9 and 10 August 2015 that the 121 L/s abstraction rate from the Mangawhero-iti was exceeded with rates of up to 158 L/s recorded on 15 minute observations. The consent holder was contacted and undertook to investigate and report back. The levels of abstraction fell back into compliance shortly after that. An explanation was received that the intake had become clogged with debris and the flow meter was producing erroneous results, a back up meter in the plant showed that the flow rate was around 83 L/s which was compliant with consent conditions. This explanation was accepted and no further action was taken.

30 January 2016 (CCWSL)

Self-notification was received that due to electronic failure the Cold Creek water supply reservoir had emptied and emergency taking of water was required to ensure supply. Due to the failure, measurement of the water take was not able to be undertaken during the period. An explanation was received and accepted and the site was compliant by 31 January 2016. Affected parties and submitters were contacted by the consent holder with information about the failure.

18 February 2016 (STDC)

Self-notification was received that due to flood conditions in the Otakeho Stream the water intake had become blocked and had reduced supply to the Waimate West WTP. As result water had to be abstracted from the Mangawhero-iti Stream at a rate that exceeded consent conditions for period of two days to re-fill the reservoir and meet water demand. STDC provided photographs of storm damage of the intake and data review showed that the residual flow on the Mangawhero-iti Stream remained above consent limits.

The increased abstraction was undertaken under Section 330 (emergency works) of the RMA. Due to the high flows in the stream at the time no environmental effects were anticipated and the stream did not go below the consent residual flow or 32 L/s.

4. Discussion

4.1 Discussion of site performance

4.1.1 STDC WTP's

Older resource consents require that records of daily volumes of water abstracted are to be provided. Some of the newer consents require 15 minute abstraction rates to be telemetered. STDC has been very proactive in having all abstraction data for all consents telemetered to Council's database regardless of whether consent conditions require it or not. As the data is supplied in a raw form this can result in apparent non-compliances as a result of various operational factors such as air being entrained in the flow meter due to pump starts, low water levels or blocked intakes.

There was one period of abstraction exceedance in the Mangawhero iti Stream as result of the Otakeho intake being damaged in a flood. This occurred during a period of high flow and no environmental effects were noted as a result of the emergency overtaking

Intake structures were inspected and found to be in good condition and no issues with fish passage were noted.

Reports required by consents 0146-2, 0232-4, 0634-3, 1185-3, 1186-3 and 3696-3 on efficient water use, leak detection and repair were submitted to the Council. All water abstraction records for the period were provided in timely manner.

Overall the performance of STDC's sites was high.

4.1.2 Cold Creek WTP

In terms of abstraction and discharges CCWSL performance was good. There was a short period of over abstraction as a result of plant failure and this also resulted in a short period of data loss. There were also issues in maintaining an accurate recording of flow in the Cold Stream. This issue arose originally when the pressure transducer in the stream failed and when replaced, there were difficulties with calibration. However it is noted that once the corrected offset is obtained, the existing data may be able to be re-aligned to accurately show the river's flow. The Council is working with the consent holder to rectify this.

Overall the performance of Cold Creek WTP was good.

4.1.3 Oaonui WTP

During the year under there was one issue in regards to data being lost when the consent holder was performing a system upgrade. The consent holder was advised to back up all data prior to any future upgrades.

Overall the performance of the Oaonui WTP site was good.

4.1.4 Nukumaru water supply

There were no exceedances in the daily volumes and water abstraction records for the period were provided in timely manner.

Overall the performance of the Nukumaru Water Supply site was good.

4.2 Environmental effects of exercise of consents

Filter backwash discharge sampling was conducted at the Kapuni, Waimate West and Opunake WTPs. The results indicated that the discharges were not likely to be causing any adverse environmental effects.

Macroinvertebrate surveys found no evidence of adverse effects in regards to abstraction or discharges associated with the Kapuni, Waimate West, Cold Creek or Rahotu WTPs.

Fish surveys indicated that at the sites surveyed, that fish passage was adequate. However it was noted that at the Oaonui weir there were potential issues in regards to the dropping of instream flows after intake sluicing during low flow periods.

There were two incidents in regards to exceedance of abstraction rates or daily volumes, both were of short duration and no effects were noted.

Overall the South Taranaki water supply consent holders demonstrated a good level of environmental performance.

4.3 Evaluation of performance

A tabular summary of the consent holder's compliance record for the year under review is set out in Tables 8-47.

4.3.1 Cold Creek WTP

Table 8 Summary of performance for Consent 1134-3

Purpose: To take water from Cold Stream to supply the Cold Creek water supply scheme		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Rate of abstraction shall not exceed 59 L/s and 69 L/s after 14 Jan 2016	Review of abstraction data	> 99% of assessed data
2. Measure and record abstraction volume and flow of stream	Data received - 99% complete for abstraction 77% complete for river flow	77%
3. Suitable format for water records	Records received	Yes
4. Measurements transmitted in 'real time' to Council	Data received	Yes
5. Documentation to show water measuring and recording equipment installed and operational	Record received	Yes
6. Notification to Council of equipment failure	Notification received	Yes

Purpose: To take water from Cold Stream to supply the Cold Creek water supply scheme		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
7. Measuring and recording equipment to be accessible	Inspection	Yes
8. Restrictions on abstraction when flow below 209 L/s	Data received during low flow periods	Yes
9. Intake screened	Inspection	Yes
10. Best practicable option to minimise environmental effects	Inspections and liaison with consent holder	Yes
11. Report annually on efficient water use, leak detection and repair	Report received	Yes
12. Annual payment of \$13,333 due by 1 September 2013, 2014 and 2015	Received	Yes
13. Review provision	Next option for review in June 2018	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		Good

Table 9 Summary of performance for Consent 5454-1

Purpose: To erect, place, use and maintain a water intake structure on the bed of Cold Creek 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 monitoring period	Yes
2. Structure to be constructed in accordance with application	Construction completed	Yes
3. Adoption of best practicable option to minimise adverse effects	No maintenance in monitoring period	Yes
4. Minimise area disturbed and reinstate areas disturbed	No maintenance in monitoring period	Yes
5. Major construction and maintenance to occur between 1 Nov and 30 Apr	No maintenance in monitoring period	Yes
6. No obstruction of fish passage	Inspection	Yes
7. Monitoring and reporting of adequacy of fish passage	Fish surveys scheduled for 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 before expiry	N/A

Purpose: To erect, place, use and maintain a water intake structure on the bed of Cold Creek for water abstraction purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
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

Table 10 Summary of performance for Consent 6077-1

Purpose: To discharge filter backwash water and supernatant from the Cold Creek WTP into the Cold Stream		
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	Yes
4. Limits on chlorine, suspended solids and pH in discharge	Not assessed this year	N/A
5. Review provision	No further provision for review	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

4.3.2 Eltham WTP

Table 11 Summary of performance for Consent 0213-3

Purpose: To take and use water from the Waingongoro River for municipal water supply purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Limit on abstraction volume and rate	Review of abstraction data provided - 100% compliance	Yes
2. Recording of abstraction data and provision of records to Council	Data received - 100% complete	Yes
3. Consent to be exercised in accordance with application	Inspection and liaison with consent holder	Yes
4. Quantification of reticulation system losses and reporting	Report received 1 March 2001	Yes
5. Investigation and report on blocking of intake	Report received 18 January 2002	Yes
6. Review of SC1 in 2002 to assess water conservation measures	Liaison with consent holders	N/A
7. Mitigation by riparian planting	Completed	Yes
8. Review provision	No further provision for review	N/A

Purpose: To take and use water from the Waingongoro River for municipal water supply purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
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

Table 12 Summary of performance for Consent 0989-3

Purpose: To discharge water from the Eltham water supply reservoir onto land adjacent to the Waingongoro River		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Best practicable option to prevent or minimise adverse effects	No discharge during period under review	N/A
2. Notification of discharge two days prior	No discharge during period under review	N/A
3. Volume of discharge not to exceed 5,000 m ³ once per year	No discharge during period under review	N/A
4. Discharge only when flows in Waingongoro > 1,050 L/s	No discharge during period under review	N/A
5. Discharge across land, no direct discharge	No discharge during period under review	N/A
6. Consent holder to reduce volume of sediment and silt in the discharge	No discharge during period under review	N/A
7. Suspended solids in discharge not to exceed 100 g/m ³	No discharge during period under review	N/A
8. Discharge not to have effects on receiving water	No discharge during period under review	N/A
9. Review provision	Review not required this period	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		N/A
Overall assessment of administrative performance in respect of this consent		N/A

Table 13 Summary of performance for Consent 1810-3

Purpose: To discharge overflow and reservoir drainage water from the Eltham water supply reservoir		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Approval required prior to emptying reservoir	No discharge during period under review	N/A
2. Periods when consent exercised minimised	No discharge during period under review	N/A
3. Minimise discharge of sediments when emptying reservoir	No discharge during period under review	N/A
4. Discharge not to cause certain effects in the receiving waters	No discharge during period under review	N/A
5. Limits on chlorine and suspended solids in the discharge	No discharge during period under review	N/A
6. Review provision	No further options for review prior to expiry	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		N/A
Overall assessment of administrative performance in respect of this consent		N/A

Table 14 Summary of performance for Consent 1811-3

Purpose: To discharge filter backwash from the Eltham WTP		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Proper and efficient maintenance of the settlement pond system	Inspection	Yes
2. Discharge not to cause certain effects in the receiving waters below the established mixing zone	Inspection	Yes
3. Limits on chlorine and suspended solids in the discharge	Review of consent holder sampling data	Yes
4. Review provision	No further options 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

4.3.3 Hawera WTP

Table 15 Summary of performance for Consent 0146-2

Purpose: To take and use water from the Kapuni Stream for municipal water supply purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Limit on abstraction volume and rate	Review of abstraction data provided	99%
2. Recording of abstraction data and provision of records to Council	Data received - 100% complete	Yes
3. Consent to be exercised in accordance with application documentation. Report on efficiency measures every two years	Report received	Yes
4. Reporting of events when abstraction is greater than 124.5 L/s	Data review	Yes
5. Mitigation by riparian planting	Total amount has been paid to the Taranaki Tree Trust	Yes
6. Preparation and maintenance of management plan for Kapuni Stream in conjunction with other users (within three months of granting)	Liaison with consent holder – Plan prepared in 2003 and updated in 2006	Yes
7. Annual leak detection and repair report	Report received	Yes
8. Point of abstraction	Inspection	Yes
9. Review provision	No further options 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

Table 16 Summary of performance for Consent 0933-3

Purpose: To discharge up to 227 m³/day of settling pond supernatant from a water treatment plant into the Kapuni Stream		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adoption of best practicable option	Inspections and liaison with consent holder	Yes
2. Exercise of consent in accordance with application documentation	Inspections and liaison with consent holder	Yes
3. Notification prior to exercise	Notification received	N/A
4. Permanent solution for treatment of wastes at time of upgrade in 2008	Backwash settling pond operating	Yes
5. Proper and efficient maintenance and operation of settlement system	Inspections and liaison with consent holder	Yes
6. Discharge not to have adverse effects on receiving waters	Inspection, sampling, macroinvertebrate and fish surveys	Yes

Purpose: To discharge up to 227 m³ /day of settling pond supernatant from a water treatment plant into the Kapuni Stream		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
7. Limits on certain parameters in the discharge	Sampling and review of consent holder data	Yes
8. Lapse provision	Not applicable – consent exercised	N/A
9. Review provision	Review not required this period	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

Table 17 Summary of performance for Consent 5596-1

Purpose: To construct, place, use and maintain two existing intake structures in the Kapuni Stream for the Hawera water supply		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Notification of Council prior to construction and maintenance works	No longer in use	N/A
2. Structure to be constructed in accordance with application	No longer in use	N/A
3. Construction not to occur between 1 May and 31 October	No longer in use	N/A
4. Adoption of best practicable option to minimise adverse effects on water quality	No longer in use	N/A
5. Minimise disturbance during construction and maintenance and reinstate disturbed areas	No longer in use	N/A
6. No refuelling on the streambed	No longer in use	N/A
7. No obstruction of fish passage	No longer in use	N/A
8. Maintenance of flow down fish pass to ensure fish passage	No longer in use	N/A
9. Structure not to cause erosion adjacent to or downstream of rock riprap ramp	No longer in use	N/A
10. Only material which makes up existing structure should be extracted from streambed during construction	No longer in use	N/A
11. Removal of streambed material for maintenance purposes only to occur between 1 November and 30 April	No longer in use	N/A
12. Removed material to be placed on banks of stream downstream of weir	No longer in use	N/A

Purpose: To construct, place, use and maintain two existing intake structures in the Kapuni Stream for the Hawera water supply		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
13. Structure to be removed when no longer required and area reinstated	Structure removed	Yes
14. Review provision	No further options for review prior to expiry	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		N/A
Overall assessment of administrative performance in respect of this consent		N/A

Table 18 Summary of performance for Consent 7002-1

Purpose: To take and use groundwater for municipal, rural, industrial, and recreational supply purposes (Hawera)		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Exercise of consent to be in accordance with application	Inspections of site and records	Yes
2. Notify the Council in writing at least seven days prior to exercise of consent	Notification received	Yes
3. Provide Council with results of pump testing prior to exercise of consent	Received	Yes
4. Abstraction not to exceed 4,320 m ³ /day	Review of abstraction data provided	100%
5. Abstraction not to cause a more than 10% drop in static water level by interference	Not assessed	N/A
6. Maintain records of the abstraction from each bore	Data received - 100% complete	Yes
7. Install device to record abstraction	Inspection and data received by Council	Yes
8. Consent holder to meet monitoring costs	Liaison with consent holder	Yes
9. Lapse provision	Not applicable – consent exercised	N/A
10. Review provision	Review not required this period	Yes
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

Table 19 Summary of performance for Consent 7413-1

Purpose: To erect, use and maintain a water intake structure on the bed of the Kapuni Stream		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Exercise of consent to be in accordance with application	Inspection	Yes

Purpose: To erect, use and maintain a water intake structure on the bed of the Kapuni Stream		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
2. Disturbance of riverbed between 1 November and 30 April only	N/A	N/A
3. Notification prior to works and maintenance	No maintenance during monitoring period	N/A
4. Area and volume of disturbance minimised	No maintenance during monitoring period	N/A
5. Minimise sediment entering stream	No maintenance during monitoring period	N/A
6. Structure removed and area reinstated when no longer required	Structure in use	N/A
7. Consent holder to monitor and maintain fish pass	Inspection	Yes
8. Procedure if archaeological remains discovered during construction	None found	N/A
9. Lapse provision	Not applicable – consent exercised	N/A
10. Review provision	Review not required this period	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

Table 20 Summary of performance for Consent 7446-1

Purpose: To discharge membrane backwash water and cleaning wastewater into the Kapuni Stream		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Best practicable option to minimise adverse effects	Inspection and liaison with consent holder	Yes
2. No adverse effects on receiving waters	Inspection, sampling, biomonitoring	Yes
3. Allowable increase in turbidity below mixing zone	Sampling	Yes
4. Levels of contaminants in discharge	Sampling and review of consent holder data	Yes
5. Lapse provision	Not applicable	N/A
6. Review provision	Review not required this period	Yes
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

Table 21 Summary of performance for Consent 7447-1

Purpose: To install, use and maintain an outfall structure on the bank of the Kapuni Stream		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Exercise of consent to be in accordance with application	Inspections	Yes
2. Disturbance of riverbed between 1 November and 30 April only	N/A	N/A
3. Notification prior to works and maintenance	N/A	N/A
4. Area and volume of disturbance minimised	N/A	N/A
5. Minimise sediment entering stream	N/A	N/A
6. Structure removed and area reinstated when no longer required	Structure in use	N/A
7. Procedure if archaeological remains discovered during construction	N/A	N/A
8. Lapse provision	Consent exercised	N/A
9. Review provision	Next scheduled in June 2017, if required	Yes
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

4.3.4 Inaha WTP

Table 22 Summary of performance for Consent 1185-3

Purpose: To take water from the Mangatoki Stream in the Waingongoro catchment for Inaha rural water supply purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adoption of best practicable option	Inspection and liaison with consent holder	Yes
2. Combined take not to exceed 29 L/s, or 2,504 m ³ /day	Review of abstraction records	100% (volume) > 99% (rate)
3. Gravity take preferential	Inspection and liaison with consent holder	Yes
4. Install and maintain water meter and data logger	Inspection and liaison with consent holder	Yes
5. Certification of water meter	NES verification	Yes
6. Notification of equipment failure	No notification received	N/A
7. Intake structure maintained, and removed if no longer required	Inspection	Yes

Purpose: To take water from the Mangatoki Stream in the Waingongo catchment for Inaha rural water supply purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
8. Water meter and data logger accessible to Council staff	Inspection	Yes
9. Suitable format of water records	Review of abstraction records	Yes
10. Water records to be transmitted in 'real time' to Council	Data received - 100% complete	Yes
11. Intake structure to be screened	Inspection	Yes
12. Intake structure not to block fish passage	Inspection	Yes
13. Leak detection and repair programme with annual report	Report received	Yes
14. Review provision	Next scheduled in June 2018, if required	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

Table 23 Summary of performance for Consent 1186-3

Purpose: To take water from the Waingongo River for Inaha rural water supply purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adoption of best practicable option	Inspection and liaison with consent holder	Yes
2. Exercise in accordance with application	Inspection and liaison with consent holder	Yes
3. Maximum abstraction 2,592 m ³ /day at 30 L/s	Review of abstraction data	100% (volume) > 99% (rate)
4. Measure and record abstraction rate and provide to Council	Data received - 100% complete	Yes
5. Maintain intake structure and remove when no longer required	Inspection and liaison with consent holder	Yes
6. Intake screened to avoid fish entrainment	Inspection	Yes
7. Intake structure shall not obstruct fish passage	Inspection	Yes
8. Report annually on efficient water use, leak detection and repair	Report received	Yes
9. Lapse provision	Not applicable – consent exercised	N/A

Purpose: To take water from the Waingongoro River for Inaha rural water supply purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
10. Review provision	Next scheduled in June 2018, if required	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

*National Water Metring Regulations

Table 24 Summary of performance for Consent 3927-2

Purpose: To discharge backwash wastes from the Inaha WTP into an unnamed tributary of the Mangatoki Stream		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Proper and efficient maintenance of the settlement pond system	Inspection	Yes
2. Discharge not to cause certain effects in the receiving waters	Inspection	Yes
3. Limits on chlorine and suspended solids in the discharge	Consent holder sample data reviewed	Yes
4. Review provision	No further options 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

Table 25 Summary of performance for Consent 3928-2

Purpose: To discharge uncontaminated overflow water from the Inaha rural WTP		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Proper and efficient maintenance of the settlement pond system	Inspection	Yes
2. Discharge not to cause certain effects in the receiving waters	Inspection	N/A
3. Review provision	No further options 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

Table 26 Summary of performance for Consent 4102-2

Purpose: To construct a low-level weir and fish pass across the Mangatoki Stream to improve water intake efficiencies		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adoption of best practicable option	No maintenance during period under review	N/A

Purpose: To construct a low-level weir and fish pass across the Mangatoki Stream to improve water intake efficiencies		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
2. Exercise of consent in accordance with application documentation	No maintenance during period under review	N/A
3. Notification of Council prior to exercise of consent	No maintenance during period under review	N/A
4. Notification of Council prior to major maintenance works	No maintenance during period under review	N/A
5. Adoption of best practicable option during maintenance works	No maintenance during period under review	N/A
6. River bed disturbance to be minimised during maintenance	No maintenance during period under review	N/A
7. No maintenance works between 1 May to 31 October	No maintenance during period under review	N/A
8. Structure to be properly maintained	Inspection	Yes
9. Structure not to impede fish passage	Inspection	Yes
10. Structure to be removed and area reinstated when no longer required	Structure in use	N/A
11. Lapse provision	Not applicable - consent exercised	N/A
12. Review provision	Next scheduled in June 2017, if required	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

Table 27 Summary of performance for Consent 5365-1

Purpose: To erect, place and maintain a low level intake weir in the Mangatoki Stream for Inaha rural water supply scheme purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Notification of Council prior to construction and maintenance works	No maintenance during period under review	N/A
2. Adoption of best practicable option to minimise adverse effects	No maintenance during period under review	N/A
3. No obstruction of fish passage	Inspection	Yes
4. Construction and maintenance to be in accordance with application	No maintenance during period under review	N/A
5. Maintain and operate safe structure	Inspection	Yes
6. Structure to be removed when no longer required and area reinstated	Structure in use	N/A
7. Review provision	No further options 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

4.3.5 Opunake WTP

Table 28 Summary of performance for Consent 0232-4

Purpose: To take and use water from the Waiaua River for Opunake town water supply purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Rate of take not to exceed 2,200 m ³ /day or 25.5 L/s	Review of abstraction data	100%
2. Take mainly through 'new' intake	Inspection and liaison with consent holder	Yes
3. Rate of take through old intake up to 3,650 m ³ /day or 42.2 L/s	No take through old intake	N/A
4. Notify Council if take occurs through old intake	No take through old intake occurred	N/A
5. Installation and maintenance of water meter and data logger	Inspection	Yes
6. Water meter certification	Site inspection and Resource Management (Measurement and Reporting of Water Takes) Regulations 2010 compliant	Yes
7. Notify Council of equipment failure	No equipment failure	N/A
8. Water meter and data logger accessible to Council staff	Inspection	Yes
9. Suitable format of records	Review of abstraction data	Yes
10. Data to be transmitted to Council in real time from 1 December 2013	Data received - 100% complete	Yes
11. Best practicable option to prevent or minimise adverse effects	Inspection and liaison with consent holder	Yes
12. Annual report on leak detection and water use efficiency	Report received	Yes
13. Lapse provision	Consent exercised	N/A
14. Review provision	Next scheduled in June 2018, if required	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

Table 29 Summary of performance for Consent 5574-2

Purpose: To discharge water treatment residuals and pond drainage water from the Opunake WTP into the Waiaua River		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Best practicable option to prevent or minimise adverse effects	Yes	Yes
2. Discharge not to exceed 120 m ³ /day	Not assessed	Not assessed
3. Not to give rise to effects in receiving waters	Inspection	Yes

Purpose: To discharge water treatment residuals and pond drainage water from the Opunake WTP into the Waiaua River		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
4. Limits on contaminants in discharge	Sampling and review of consent holder data	N/A
5. Lapse provision	Consent exercised	N/A
6. Review provision	Next scheduled in June 2018, if required	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

Table 30 Summary of performance for Consent 9473-1

Purpose: To construct, place and use a water intake structure on the bed of the Waiaua River for water abstraction purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Intake specifications	Inspection during construction	Yes
2. Notification prior to works	Notification received	Yes
3. Minimise river bed disturbance	Inspection during construction	Yes
4. Minimise sediment discharge to river	Inspection during construction	Yes
5. Ensure screen does not entrap fauna	Not yet assessed	N/A
6. No obstruction of fish passage	Inspection	Yes
7. Financial payment	Payment received	Yes
8. Procedures for archaeological finds	Nothing found	N/A
9. Remove structure when no longer required	Structure being used	N/A
10. Lapse condition	Consent exercised	N/A
11. Reviews June 2018 and June 2024	No review option this period	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

4.3.6 Patea WTP

Table 31 Summary of performance for Consent 3388-3

Purpose: To take and use groundwater from three bores (known as Bore 1, Bore 2 and Bore 4) for Patea Township water supply purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Total daily extraction not to exceed 1,125 m ³	Review of data	100%

Purpose: To take and use groundwater from three bores (known as Bore 1, Bore 2 and Bore 4) for Patea Township water supply purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
2. Each bore not to exceed certain abstraction rates	Review of data	> 99%
3. Bore 1 not to exceed 300 m ³ /day	Review of data	100%
4. Install flow meters	Inspection	Yes
5. Install data logger	Data received -100% complete	Yes
6. Inform Council of any equipment malfunction	Programme supervision	N/A
7. Provide access to equipment	Inspection	Yes
8. Adopt best practical option	Inspection	Yes
9. Measure level in Brannigan's bore	Groundwater level recorder installed	Yes
10. Consultations with Brannigan's bore owner if levels meet certain criteria	Liaison with consent holder – not necessary	N/A
11. Restrict use or provide water to Brannigan's bore owner if levels meet certain criteria	Liaison with consent holder – not necessary	Yes
12. Not to cause saltwater intrusion	Not assessed	N/A
13. Review provision	No further options 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

4.3.7 Pope WTP

Table 32 Summary of performance for Consent 4446-2

Purpose: To discharge treated backwash water from the Pope rural WTP		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adoption of best practicable option	Inspection and liaison with consent holder	Yes
2. Exercise in accordance with application	Inspection and liaison with consent holder	Yes
3. Maximum discharge of 6 m ³ /day at 5 L/s	Not assessed	N/A
4. Limits not to be exceeded in the discharge	Not exercised	N/A
5. Efficient operation	Inspection and liaison with consent holder	Yes
6. No effects on receiving water	Not assessed	N/A

Purpose: To discharge treated backwash water from the Pope rural WTP		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
7. Lapse provision	Not applicable – consent exercised	N/A
8. Review provision	Next scheduled in June 2017, if required	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

4.3.8 Rahoitu WTP

Table 33 Summary of performance for Consent 3696-3

Purpose: To take and use water from the Pungaereere Stream for the Rahoitu community water supply scheme		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Limit on abstraction volume and rate	Review abstraction data provided to Council	100%
2. Installation and maintenance of water meter and data logger	Inspection	Yes
3. Water meter certification	Meter verified	Yes
4. Notify Council of equipment failure	No equipment failure during period under review	Yes
5. Water meter and data logger accessible to Council staff	Inspection	Yes
6. Suitable format of records	Review of abstraction data	Yes
7. Data to be transmitted to Council in real time from 1 February 2014	Data received - 100% complete	Yes
8. Best practicable option to prevent or minimise adverse effects	Inspection and liaison with consent holder	Yes
9. Annual report on leak detection and water use efficiency	Report received	Yes
10. Lapse provision	Consent exercised	Yes
11. Review provision	No further options 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

Table 34 Summary of performance for Consent 6038-1

Purpose: To discharge filter backwash water and settling tank waste from the Rahotu WTP into the Pungaereere Stream		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Discharge not to cause certain effects in the receiving waters below the established mixing zone	Review of consent holder data	Yes
2. Limits on chlorine and pH in discharge	Review of consent holder data	Yes
3. Review provision	No further provision for review before 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

4.3.9 Wai-inu Beach water supply

Table 35 Summary of performance for Consent 3770-3

Purpose: To take and use groundwater for Wai-inu Beach water supply purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Limit on abstraction volume and rate	Review of abstraction data provided to Council	100%
2. Installation and maintenance of water meter and data logger	Logger and meter installed - data received	Yes
3. Water meter certification	Received	Yes
4. Notify Council of equipment failure	No equipment failure during monitoring period	Yes
5. Water meter and data logger accessible to Council staff	Inspection	Yes
6. Water records to be provided by 31 July each year	Data received - 100% complete	Yes
7. Best practicable option to prevent or minimise adverse effects	Inspection and liaison with consent holder	Yes
8. Lapse provision	Not applicable – consent exercised	N/A
9. Review provision	Review not required	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

4.3.11 Waimate West WTP

Table 36 Summary of performance for Consent 0129-3

Purpose: To discharge treated wash water from the Waimate water supply scheme into an unnamed tributary of Kelly's Creek		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adoption of best practicable option	Inspection and liaison with consent holder	Yes
2. Exercise in accordance with application	Inspection and liaison with consent holder	Yes
3. Maximum discharge rate 750 m ³ /day	Not assessed	N/A
4. Installation and maintenance of erosion protection structure	Not required as commissions discharges did not occur	Not required
5. Limits on discharge not to be exceeded	Sampling and review of consent holder data	N/A
6. Efficient operation of settling ponds	Inspection and liaison with consent holder	Yes
7. No effects on receiving water	Inspection and review of consent holder data	Yes
8. Lapse provision	Not applicable- consent exercised	N/A
9. Review provision	Next scheduled in June 2017, if required	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

Table 37 Summary of performance for Consent 0634-3

Purpose: To take water from the Mangawhero-iti Stream for the Waimate West water supply		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Max rate of abstraction 121 L/s	Review of abstraction data provided	98%
2. Limit on abstraction unless water is taken from Otakeho Stream at 85 L/s unless unable to achieve 85 L/s	Review of abstraction data provided	Yes
3. Installation of water meter and data logger and records of volumes abstracted	Inspections and abstraction data	Yes
4. Notification of installation of water meter and data logger	Received	Yes
5. Notification of equipment failure	No problems during monitoring period	Yes
6. Water meter and data logger accessible to Council	Inspections	Yes
7. Records of water taken in suitable format	Review of abstraction data provided	Yes

Purpose: To take water from the Mangawhero-iti Stream for the Waimate West water supply		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
8. Flow in Mangawhero-iti Stream downstream of intake to be maintained above 32 L/s	Data provided	99%
9. Flow of Mangawhero-iti Stream recorded when less than 500 L/s	Data provided	Yes
10. Measurements to be transmitted to Council in 'real time'	Data received - 100% complete	Yes
11. Staff gauge to be installed	Installed by Council	Yes
12. Sufficient stream flow measurements undertaken to maintain a 'rating curve'	Gauging undertaken by Council	Yes
13. Best practicable option to prevent or minimise adverse environmental effects	Inspections, data review	Yes
14. Annual report due 1 September	Report received	Yes
15. Five annual payments of \$30,600 due 2011 to 2015	Payments all received no more required	N/A
16. Review of consent conditions	Next scheduled during 2018, if required	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

Table 38 Summary of performance for Consent 0635-3

Purpose: To take water from the Mangawhero Stream to add to the flow of the Mangawhero-iti Stream for water supply purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Max rate of take 70 L/s	Review of abstraction data provided	98%
2. Scope of use	Review of abstraction data provided	Yes
3. Installation of water meter and data logger and records of volumes abstracted	Inspections and abstraction data	Yes
4. Notification of installation of water meter and data logger	Received	Yes
5. Notification of equipment failure	N/A	N/A
6. Water meter and data logger accessible to Council	Inspections	Yes
7. Records of water taken in suitable format	Review of abstraction data provided	Yes

Purpose: To take water from the Mangawhero Stream to add to the flow of the Mangawhero-iti Stream for water supply purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
8. Measurements to be transmitted to Council in 'real time'	Data received - 100% complete	Yes
9. Best practicable option to prevent or minimise adverse environmental effects	Inspections, data review	Yes
10. Review provision	Next scheduled in June 2018, if required	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

Table 39 Summary of performance for Consent 3911-2

Purpose: To take water from the Otakeho Stream for the Pope and Waimate West water supply schemes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Limit on abstraction rate	Review of abstraction data provided	99%
2. Installation of water meter and data logger and records of volumes abstracted	Inspections and abstraction data	Yes
3. Notification of installation of water meter and data logger	Received	Yes
4. Notification of equipment failure	N/A	Yes
5. Water meter and data logger accessible to Council	Inspections	Yes
6. Records of water taken in suitable format	Review of abstraction data provided	Yes
7. Best practicable option to prevent or minimise adverse environmental effects	Inspections, data review	Yes
8. Measurements to be transmitted to Council in 'real time'	Data received - 100% complete	Yes
9. Flows of less than 500 L/s recorded	Due June 2017	N/A
10. Review provision	Next scheduled in June 2018, if required	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

Table 40 Summary of performance for Consent 4826-2

Purpose: To place, use and maintain a water intake structure and associated structures on the bed of the Otakeho Stream		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Notification of Council prior to construction and maintenance works	No maintenance during period under review	N/A
2. Structure to be constructed in accordance with application	Construction completed	N/A
3. Adoption of best practicable option to minimise adverse effects on water quality	No maintenance during period under review	N/A
4. Minimise disturbance during construction and maintenance	No maintenance during period under review	N/A
5. Maintenance works to only occur between 1 April and 30 November	No maintenance during period under review	N/A
6. No obstruction of fish passage	Inspection and triennial fish surveys	Yes
7. Council Biologist to be present during construction of the fish pass	Biologist present	Yes
8. Structure to be removed when no longer required and area reinstated. Council to be notified prior to removal	Structure in use	N/A
9. Review provision	No further options 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

Table 41 Summary of performance for Consent 5451-1

Purpose: To erect, place, use and maintain a water intake structure on the bed of the Mangawhero-iti Stream 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 during period under review	N/A
2. Structure to be constructed in accordance with application documents	Construction completed	N/A
3. Adoption of best practicable option to minimise adverse effects on water quality	No maintenance during period under review	N/A
4. Minimise disturbance during construction and maintenance and reinstate disturbed areas	No maintenance during period under review	N/A
5. Maintenance works to only occur between 1 April and 30 November	No maintenance during period under review	N/A
6. No obstruction of fish passage	Inspection and triennial fish survey	Yes

Purpose: To erect, place, use and maintain a water intake structure on the bed of the Mangawhero-iti Stream for water abstraction purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
7. Monitoring programme to determine fish passage	Inspection and triennial fish survey	Yes
8. Structure to be removed when no longer required and area reinstated	Structure in use	N/A
9. Review provision	No further options for review prior to expiry	Yes
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

Table 42 Summary of performance for Consent 5452-1

Purpose: To erect, place, use and maintain a water intake structure on the bed of the Mangawhero Stream for water abstraction		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Notification of Council prior to construction and maintenance works	No maintenance during period under review	N/A
2. Structure to be constructed in accordance with application	Construction completed	N/A
3. Adoption of best practicable option to minimise adverse effects on water quality	No maintenance during period under review	N/A
4. Minimise disturbance during construction and maintenance and reinstate disturbed areas	No maintenance during period under review	N/A
5. No obstruction of fish passage	Inspection and triennial fish survey	Yes
6. Monitoring programme to determine fish passage	Inspection and triennial fish survey	Yes
7. Structure to be removed when no longer required and area reinstated	Structure in use	N/A
8. Review provision	No further options for review prior to expiry	Yes
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

4.3.13 Waverley water supply

Table 43 Summary of performance for Consent 3313-3

Purpose: To take and use groundwater from the Fookes, Chester and Swinbourne Street bores for Waverley municipal supply purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Combined take not to exceed 14.2 L/s or 900 m ³ /day	Review of abstraction data	100%
2. Daily maximum volume and abstraction limits for each bore	Review of abstraction data	100%
3. Bores to have permanent labelling	Inspections	Yes
4. Water meter and data logger installed and maintained on Chester and Fookes St bores	Inspections	Yes
5. Install and maintain equipment on Swinbourne St bore	Inspection	Yes
6. Install and maintain equipment on Swinbourne St bore	Inspection	Yes
7. Recording of abstraction data	Data received - 100% complete	Yes
8. Notice of installation of water measuring equipment	Notification received	Yes
9. Notification of non-operational measuring equipment	No problems during monitoring period	Yes
10. Best practicable option to prevent or minimise adverse effects	Inspections, review or data	Yes
11. No intrusion of salt water	Not assessed	N/A
12. Access to well provided for water measurement purposes	Inspections	Yes
13. Review of consent	Next scheduled in June 2016, if required	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

4.3.14 Waverley Beach water supply

Table 44 Summary of performance for Consent 9563-1

Purpose: To take and use water groundwater for Waverley Beach water supply purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Limit on abstraction rate	Not exercised	N/A
2. No intrusion of salt water	Consent not exercised	N/A

Purpose: To take and use water groundwater for Waverley Beach water supply purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
3. Bores to have permanent labels	Consent not exercised	N/A
4. Installation and maintenance of water meter and data logger	Consent not exercised	N/A
5. Water meter certification	Consent not exercised	N/A
6. Installation of water level monitoring devices	Consent not exercised	N/A
7. Water level certification	Consent not exercised	N/A
8. Water meter and data logger accessible to Council staff	Consent not exercised	N/A
9. Notify Council of equipment failure	Consent not exercised	N/A
10. Water records to be provided by 31 July each year	Consent not exercised	N/A
11. Best practicable option to prevent or minimise adverse effects	Consent not exercised	N/A
12. Lapse provision	Consent not exercised	N/A
13. Review provision	No review option this period	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		N/A
Overall assessment of administrative performance in respect of this consent		N/A

4.3.15 Oaonui WTP

Table 45 Summary of performance for Consent 0231-3

Purpose: To take and use water from the Oaonui Stream for a rural community water supply scheme and the Maui Production Station		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Limit on abstraction volume and rate	Review of abstraction data provided	100% of assessed data
2. Recording of abstraction data and provision of records to Council	Data received	74% data supplied
3. Promotion of water conservation and reporting	No longer required	N/A
4. Mitigation by riparian planting	Payments received	Yes
5. Provision for change or cancellation	No request for change or cancellation	N/A
6. 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		Good
Overall assessment of administrative performance in respect of this consent		Good

Table 46 Summary of performance for Consent 5453-1

Purpose: To erect, place, use and maintain a water intake structure on the bed of the Oaonui Stream 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 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
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		Good
Overall assessment of administrative performance in respect of this consent		High

4.3.16 Nukumarū water supply

Table 47 Summary of performance for Consent 6451-1

Purpose: To take and use groundwater from up to two bores for the purpose of supplying the Nukumarū community rural water scheme		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Exercise of consent to be in accordance with documentation supporting application	Inspection and liaison with consent holder	Yes
2. Limit on abstraction rate and volume	Review of abstraction data provided	100%
3. Installation of water meter	Inspection	Yes
4. Recording of abstraction data and provision of data to Council by 31 July each year	Data provided	Only daily averages provided

Purpose: To take and use groundwater from up to two bores for the purpose of supplying the Nukumarū community rural water scheme		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
5. Cost of monitoring to be borne by consent holder	Consent holder charged for monitoring	Yes
6. Lapse condition	Not applicable - consent exercised	N/A
7. Review provision	Next optional review June 2017, if required	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		Good

4.4 Summary of performance evaluation

During the monitoring period, STDC demonstrated an overall high level of environmental performance and a high level of administrative performance.

During the monitoring period, OWSL demonstrated an overall good level of environmental performance and a good level of administrative performance.

During the monitoring period, NWSSI demonstrated an overall high level of environmental and a good level of administrative performance.

During the monitoring period, CCWSL demonstrated an overall good level of environmental performance and a good level of administrative performance.

4.5 Recommendations from the 2014-2015 Annual Report

In the 2014-2015 Annual Report, it was recommended:

1. THAT monitoring of South Taranaki Water Supplies in the 2015-2016 year continue at the same level as in 2014-2015.
2. THAT the option for a review of resource consent 3313-3 in June 2016, as set out in condition 12 of the consent on the grounds that 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.

These recommendations were implemented.

4.6 Alterations to monitoring programmes for 2016-2017

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account the extent of information made available by previous authorities, its relevance under the RMA, its obligations to monitor discharges and effects under the RMA, and report 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 discharging to the environment.

It is proposed that for 2016-2017 the level of monitoring for the South Taranaki Water Supplies remain similar to that of 2015-2016. It is also recommended that whilst the level of monitoring remains the same that the combined programme be disbanded and each consent holder be monitored and reported on separately. A recommendation to this effect is attached to this report.

4.7 Exercise of optional review of consent

The following consents provide of optional reviews of the consent conditions in June 2017. Review conditions in each consent allows the Council to review the consent, for the purposes 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; and/or to require any data collected in accordance with the conditions of this consent to be transmitted directly to the Council's computer system, in a format suitable for providing a 'real time' record over the internet.

Table 48 Consents due for review in June 2017

Consent Holder	Consent No	Description	Review condition number	Review Date
Nukumarū Water Scheme Society Inc	6451-1	To take and use groundwater from up to two bores for the purpose of supplying the Nukumarū community rural water scheme	7	June 2017
South Taranaki District Council	0933-3	To discharge up to 227 m ³ /day of settling pond supernatant from a WTP into the Kapuni Stream	9	June 2017
South Taranaki District Council	0989-3	To discharge reservoir contents from the Eltham water supply reservoir onto land adjacent to the Waingongoro River	9	June 2017
South Taranaki District Council	3770-3	To take and use groundwater for Wai-inu Beach water supply purposes	9	June 2017
South Taranaki District Council	4102-2	To maintain an existing low-level weir and fish pass across the Mangatoki Stream in the Waingongoro catchment	12	June 2017
South Taranaki District Council	4446-2	To discharge treated backwash water from the Pope rural WTP into an unnamed tributary of the Mangawhero Stream in the Kaupokonui catchment	8	June 2017
South Taranaki District Council	7002-1	To take and use up to 4,320 m ³ /day of groundwater at a maximum rate of 50 L/s as a combined total from up to three water bores in a bore field at the Kapuni reservoir site for municipal, rural, industrial, and recreational supply purposes	10	June 2017
South Taranaki District Council	7413-1	To erect, use and maintain a water intake structure on the bed of the Kapuni Stream, including temporary damming and diversion during construction	10	June 2017
South Taranaki District Council	7446-1	To discharge membrane backwash water and cleaning wastewater from the Kapuni WTP into the Kapuni Stream	6	June 2017
South Taranaki District Council	7447-1	To install, use and maintain an outfall structure on the bank of the Kapuni Stream for the Kapuni WTP	9	June 2017

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 these review options.

5. Recommendations

1. That for 2016-2017 the level of monitoring for the South Taranaki Water Supplies consent holders remains similar to that of 2015-2016. It is also recommended that whilst the level of monitoring remains the same, that the combined programme be disbanded and each consent holder be monitored and reported on separately.
2. THAT the option for a review of resource consents 6451-1, 0933-3, 0989-3, 3770-3, 4102-2, 4446-2, 7002-1, 7413-1, 7446-1 and 7447-1 in June 2017, as set out in conditions of the consents on the grounds that 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.

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.
COD	Chemical oxygen demand. A measure of the oxygen required to oxidise all matter in a sample by chemical reaction.
Condy	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 20°C and expressed in mS/m.
DRP	Dissolved reactive phosphorus.
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.
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.
NH ₄	Ammonium, normally expressed in terms of the mass of nitrogen (N).
NH ₃	Unionised ammonia, normally expressed in terms of the mass of nitrogen (N).
NWMR	National Water Metering Regulations.
NNN	Nitrate-Nitrite Nitrogen.
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.
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.

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Appendix I

**Resource consents held by
STDC, CCWSL, OWSL and NWSSI**
(For a copy of the signed resource consent
please contact the TRC Consents department)

Cold Creek WTP (CCWSL)

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: 1 March 1999

Commencement Date: 1 March 1999

Conditions of Consent

Consent Granted: To erect, place, use and maintain a water intake structure on the bed of Cold Creek in the Taungatara catchment for water abstraction purposes

Expiry Date: 1 June 2018

Review Date(s): June 2001, June 2006, June 2012

Site Location: Cold Creek, Kiri Road, Opunake

Legal Description: SO 377 Pt Sec 5 Blk V Kaupokonui SD

Grid Reference (NZTM) 1686940E-5640150N

Catchment: Taungatara

Tributary: Cold Creek

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

General conditions

- a) That on receipt of a requirement from the Chief Executive, Taranaki Regional Council (hereinafter the Chief Executive), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) That unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) That the consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. That the consent holder shall notify the Taranaki Regional Council, at least 48 hours prior to the commencement and upon completion of the initial construction, and again prior to, and upon completion of, any subsequent maintenance works which would involve disturbance of, or the deposition to the riverbed or discharges to water.
2. That the stricture(s) authorised by this consent shall be constructed generally in accordance with the documentation submitted in support of the application and shall be maintained to ensure the conditions of this consent are met.
3. That during any construction or maintenance the consent holder shall adopt the best practicable option to avoid or minimise the discharge of silt or other contaminants into the water or onto the riverbed and to avoid or minimise the disturbance of the riverbed and any adverse effects on water quality.
4. That during any construction or maintenance the consent holder shall ensure that the area and volume of riverbed disturbance shall so far as is practicable, be minimised and any areas which are disturbed, shall so far as is practicable be reinstated.
5. That during any construction or maintenance the consent holder shall ensure that any disturbance of parts of the riverbed covered by water and/or any works which may result in downstream discolouration of water shall be undertaken only between 1 November and 30 April except where this requirement is waived by the written approval of the Chief Executive, Taranaki Regional Council.
6. That structure(s) which are the subject of this consent shall not obstruct fish passage.
7. That the consent holder shall develop and undertake a monitoring programme to determine the adequacy of fish passage as deemed necessary by the Chief Executive, Taranaki Regional Council, subject to section 35(2)(d) and section 36 of the Resource Management Act 1991. This monitoring information is to be forwarded to the Chief Executive, Taranaki Regional Council, upon request.

Consent 5454-1

8. That the structure(s) authorised by this consent shall be removed and the area reinstated, if and when the structure(s) are no longer required. The consent holder shall notify the Taranaki Regional Council at least 48 hours prior to structure(s) removal and reinstatement.
9. That the Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during the month of June 2001 and/or June 2006 and/or June 2012, for the purpose of ensuring that the conditions are adequate to deal with any significant adverse effects on the environment arising from the exercise of this consent, which either were not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 20 February 2014

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: 29 November 2002

Commencement Date: 29 November 2002

Conditions of Consent

Consent Granted: To discharge filter backwash water and supernatant from the Cold Creek water treatment plant into the Cold Stream in the Taungatara catchment

Expiry Date: 1 June 2018

Review Date(s): June 2006, June 2012

Site Location: State Highway 45, Rahotu

Legal Description: Lot 1 DP 16088 Blk V Kaupokonui SD

Grid Reference (NZTM) 1686823E-5639646N

Catchment: Taungatara

Tributary: Cold Creek

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

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council (hereinafter the Chief Executive), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. The discharge point shall be located at NZTM 1686823E- 5639646N.
2. The discharge rate shall not exceed 10 litres per second.
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. That the discharge quality shall not exceed the following limits at all times:

Suspended solids	20 gm ⁻³
pH	6.5-8.5
Free available chlorine	0.1 gm ⁻³

Consent 6077-1

5. 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 2006 and/or June 2012, 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.

Transferred at Stratford on 20 February 2014

For and on behalf of
Taranaki Regional Council

A D McLay
Director-Resource Management

Eltham WTP (STDC)

Water Permit

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

Name of
Consent Holder: South Taranaki District Council
Private Bag 902
HAWERA

Consent Granted
Date: 15 December 1999

Conditions of Consent

Consent Granted: To take and use water from the Waingongoro River for
municipal water supply purposes at or about GR:
Q20:188-014

Expiry Date: 1 June 2018

Review Date(s): June 2002, June 2006, June 2012

Site Location: Finnerty Road, Ngaere, Eltham

Legal Description: Pt 31 Lot 2 DP 2918 Blk V Ngaere SD

Catchment: Waingongoro

Consent 0213-3

General conditions

- a) That on receipt of a requirement from the General Manager, Taranaki Regional Council (hereinafter the General Manager), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) That unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) That the consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. THAT the consent allows the abstraction of:
 - a) 4020 cubic metres/day [47 litres/second] on an unrestricted basis; and
 - b) 1500 cubic metres/day [17 litres/second] on a restricted basis as per condition 6.
2. THAT the consent holder shall install and maintain, to the satisfaction of the General Manager, Taranaki Regional Council, a measuring device capable of recording daily rates of abstraction and shall make such records available to the General Manager, Taranaki Regional Council, upon request.
3. THAT the exercise of this consent shall be undertaken in general accordance with the information supplied in support of application 534, particularly regarding the promotion of the efficiency of use of the water, and the installation of a telemetry system at the water treatment plant.
4. THAT the consent holder shall quantify the reticulation system losses by 31 December 2000 and report the results to the General Manger, Taranaki Regional Council, by 28 February 2001.
5. THAT the consent holder shall investigate and report on the blocking of the intake, and options for addressing this; the report to be received by the General Manager, Taranaki Regional Council, not later than 10 months from the date the consent is granted.
6. THAT the Taranaki Regional Council by the agreement of the consent holder, shall review condition 1(b), pursuant to section 128 of the Resource Management Act 1991, by giving notice of review during the month of June 2002, for the purpose of assessing the success of consent holder 5437 in implementing water conservation measures in reducing plant water use and to demonstrate a need for the water.
7. THAT by the agreement of the consent holder, the consent holder shall mitigate the effects of the abstraction by donating \$10,000 [goods and services tax exclusive] to the Taranaki Tree Trust by 31 January 2000, for the purpose of providing riparian management in the Waingongoro catchment, in the reach above the Climie Stream, and in the Climie Stream catchment.

Consent 0213-3

8. THAT the Taranaki Regional Council may review, according to section 128 of the Resource Management Act 1991, any or all of the conditions of this consent by giving notice of review during June 2002 and/or June 2006 and/or June 2012, for the purpose of ensuring that the conditions are adequate to deal with any significant adverse effects on the environment arising from the exercise of this consent, which either were 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 15 December 1999

For and on behalf of
Taranaki Regional Council

General Manager

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

Name of
Consent Holder: South Taranaki District Council
Private Bag 902
HAWERA 4640

Decision Date: 5 November 2012

Commencement
Date: 5 November 2012

Conditions of Consent

Consent Granted: To discharge reservoir contents from the Eltham Water
Supply Reservoir onto land adjacent to the Waingongoro
River at or about (NZTM) 1708817E-5639437N

Expiry Date: 1 June 2029

Review Date(s): June 2017, June 2023

Site Location: Finnerty Road Ngaere Eltham

Legal Description: Lot 1 DP 11209 Blk V Ngaere SD
(Discharge source & site)

Catchment: Waingongoro

*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 adverse effects on the environment from the exercise of this consent including, but not limited to, ensuring the discharge occurs over a period in excess of 4 days.
2. The consent holder shall notify the Council of the intention to discharge at least 2 working days prior to discharge occurring. Notification shall include the consent number and a brief description of the activity consented and be emailed to worknotification@trc.govt.nz.
3. The volume of the discharge shall not exceed 5000 cubic metres and shall occur no more frequently than once every calendar year.
4. The discharge shall only commence when flows in the Waingongoro River at Eltham road are greater than 1050 litres per second.
5. All reservoir contents shall be directed over land before entering the Waingongoro River. There shall be no direct discharge to the Waingongoro River.
6. The consent holder shall, as far as practicable, reduce the volume of sediment and silt in the discharge before entering the Waingongoro River, including the off-site disposal of settled solids from the bottom of the reservoir.
7. The maximum concentration of the suspended solid contained in the discharge shall not exceed 100 gm⁻³.
8. After allowing for reasonable mixing, within a mixing zone extending 100 metres downstream of the discharge point, the discharge shall not, either by itself or in combination with other discharges, give rise to any or all of the following effects in the receiving water:
 - 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.

Consent 0989-3

9. 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 2017 and/or June 2023, 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 5 November 2012

For and on behalf of
Taranaki Regional Council

Director-Resource Management

TRK991810

DISCHARGE PERMIT

**Pursuant to the RESOURCE MANAGEMENT ACT 1991
a resource consent is hereby granted by the
Taranaki Regional Council**

Name of Consent Holder: SOUTH TARANAKI DISTRICT COUNCIL
PRIVATE BAG 902 HAWERA

Renewal Granted Date: 28 July 1999

CONDITIONS OF CONSENT

Consent Granted: TO DISCHARGE UP TO 2,000 CUBIC METRES/DAY [50 LITRES/SECOND] OF OVERFLOW AND RESERVOIR DRAINAGE WATER FROM THE ELTHAM WATER SUPPLY RESERVOIR INTO THE MANGAWHARAWHARA STREAM IN THE WAINGONGORO CATCHMENT AT OR ABOUT GR: Q20:220-976

Expiry Date: 1 June 2017

Review Date[s]: June 2005 and June 2011

Site Location: ELTHAM WATER SUPPLY RESERVOIR, ANDERSON ROAD, ELTHAM

Legal Description: PT SEC 10 BLK X NGAERE SD

Catchment: WAINGONGORO 350.000

Tributary: MANGAWHARAWHARA 350.040

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

TRK991810

General conditions

- a) That on receipt of a requirement from the General Manager, Taranaki Regional Council (hereinafter the General Manager), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) That unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) That the consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

- 1. THAT approval shall be obtained from the General Manager, Taranaki Regional Council, prior to emptying and cleaning of the reservoir.
- 2. THAT the consent holder shall minimise the periods when this consent is exercised.
- 3. THAT the consent holder shall observe all practicable measures to minimise the discharge of accumulated sediments in the reservoir to the receiving water when emptying and cleaning the reservoir.
- 4. THAT after allowing for a mixing zone of 25 metres downstream of the discharge, the discharge shall not give rise to any of the following effects in the tributary of the Mangawharawhara Stream:
 - i) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
 - ii) any conspicuous change in the colour or visual clarity;
 - iii) any emission of objectionable odour;
 - iv) the rendering of fresh water unsuitable for consumption by farm animals;
 - v) any significant adverse effects on aquatic life.
- 5. THAT the discharge shall not exceed the following limits at all times:
 - i) suspended solids 20 gm^{-3}
 - ii) free available chlorine 0.1 gm^{-3}
- 6. THAT the Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during the month of June 2005 and/or June 2011, for the purpose of ensuring that the conditions adequately deal with the environmental effects arising from the exercise of this 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 28 July 1999

For and on behalf of
TARANAKI REGIONAL COUNCIL

DIRECTOR—RESOURCE MANAGEMENT

TRK991811

DISCHARGE PERMIT

**Pursuant to the RESOURCE MANAGEMENT ACT 1991
a resource consent is hereby granted by the
Taranaki Regional Council**

Name of Consent Holder: SOUTH TARANAKI DISTRICT COUNCIL
PRIVATE BAG 902 HAWERA

Renewal Granted Date: 28 July 1999

CONDITIONS OF CONSENT

Consent Granted: TO DISCHARGE UP TO 220 CUBIC METRES/DAY [20 LITRES/SECOND] OF FILTER BACKWASH FROM THE ELTHAM WATER TREATMENT PLANT VIA A SETTLING POND INTO AN UNNAMED TRIBUTARY OF THE WAINGONGORO RIVER AT OR ABOUT GR: Q20:199-008

Expiry Date: 1 June 2017

Review Date[s]: June 2005 and June 2011

Site Location: ELTHAM WATER TREATMENT PLANT, FINNERTY ROAD, NGAERE

Legal Description: SEC 33 PT SEC 32 BLK V NGAERE SD

Catchment: WAINGONGORO 350.000

Tributary: UNNAMED TRIBUTARY

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

TRK991811

General conditions

- a) That on receipt of a requirement from the General Manager, Taranaki Regional Council (hereinafter the General Manager), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) That unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) That the consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

- 1. THAT the consent holder shall properly and efficiently maintain and operate the settlement pond system. The pond shall be cleaned out to the satisfaction of the General Manager, Taranaki Regional Council, by 16 August 1999.
- 2. THAT after allowing for a mixing zone of 25 metres downstream of the discharge, the discharge shall not give rise to any of the following effects in the tributary of the Waingongoro River:
 - i) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
 - ii) any conspicuous change in the colour or visual clarity;
 - iii) any emission of objectionable odour;
 - iv) the rendering of fresh water unsuitable for consumption by farm animals;
 - v) any significant adverse effects on aquatic life.
- 3. THAT the discharge shall not exceed the following limits at all times:
 - i) suspended solids 20 gm^{-3}
 - ii) free available chlorine 0.1 gm^{-3}
- 4. THAT the Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during the month of June 2005 and/or June 2011, for the purpose of ensuring that the conditions adequately deal with the environmental effects arising from the exercise of this 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 28 July 1999

For and on behalf of
TARANAKI REGIONAL COUNCIL

DIRECTOR—RESOURCE MANAGEMENT

Hawera WTP (STDC)

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

Name of
Consent Holder: South Taranaki District Council
Private Bag 902
HAWERA 4640

Change To
Conditions Date: 28 October 2008 [Granted: 7 June 2000]

Conditions of Consent

Consent Granted: To take and use water from the Kapuni Stream for
municipal water supply purposes at or about (NZTM)
1701447E-5630678N

Expiry Date: 1 June 2020

Review Date(s): June 2011

Site Location: Kapuni Stream, Palmer Road, Kapuni

Legal Description: Adjacent to Lot 1 DP 10570 & Lot 3 DP 10570 Blk XVI
Kaupokonui SD

Catchment: Kapuni

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. That the consent allows the abstraction of:
 - a) 10756.8 cubic metres/ day [124.5 litres/second] on an unrestricted basis; and
 - b) 1343.2 cubic metres/ day [15.5 litres/second] on a restricted basis as per condition 4.
2. The consent holder shall install and maintain, to the satisfaction of the Chief Executive, Taranaki Regional Council, a measuring device(s) capable of recording daily rates of abstraction and shall make such records available to the Chief Executive, Taranaki Regional Council, on a monthly basis.

Condition 3 [changed]

3. The exercise of this consent shall be undertaken in general accordance with the information supplied in support of applications 533 and 6128, particularly regarding the promotion of the efficiency of use of the water and reporting on efficiency measures every two years from the commencement of this consent.

Conditions 4 to 7 [unchanged]

4. That the water available under condition 1(b) shall only be used for those times where peak demand exceeds 124.5 litres/second. On each occasion that condition 1(b) is exercised, the consent holder shall, within seven days of the reduction of demand below 124.5 litres/second, provide a written report to the Chief Executive, Taranaki Regional Council, detailing the volumes of water abstracted, the time period during which the abstraction exceeded 124.5 litres/second, and the conservation measures adopted during that time.

Consent 0146-2

5. That, by the agreement of the consent holder, the consent holder shall mitigate the effects of the abstraction by donating a minimum amount of \$3,150 and a maximum of \$12,000 per annum [GST exclusive and inflation adjusted], with a total contribution not to exceed \$63,000 [GST exclusive and inflation adjusted] to the Taranaki Tree Trust, for the purpose of providing riparian management in the Kapuni Stream and its tributaries, preferably above Skeet Road.
6. The consent holder shall prepare and subsequently update and maintain a management plan for the Kapuni Stream between GR's: Q20:116-928 and Q20: 110-913, in conjunction with the other users, including but not restricted to the Natural Gas Corporation of New Zealand Limited and Petrochem Limited, to manage the abstraction of water from and discharge of contaminants to the Kapuni Stream. The management plan shall be submitted to the Chief Executive, Taranaki Regional Council, for approval within three months of the granting of the consent.
7. The consent holder shall undertake a leak detection and repair programme throughout the term of the consent within Hawera, Normanby, Okaiawa and Ohawe Beach townships and report on this programme annually to the Chief Executive, Taranaki Regional Council.

Condition 8 [new]

8. The point of abstraction shall remain at its current location [at or about GR: Q20:115-925 NZMSG] until the new intake to be constructed pursuant to resource consent 7413-1 is commissioned. At that time the point of abstraction shall be at the new intake [at or about 1701447E-5630678N NZTM].

Condition 9 [changed, previously condition 8]

9. The Taranaki Regional Council may review, according to section 128 of the Resource Management Act 1991, any or all of the conditions of this consent by giving notice of review during June 2011, 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 consent, which either were not foreseen at the time the application was considered or which it was not appropriate to deal with at the time, and for the purpose of assessing the implementation of the leak detection and repair programme specified in condition 7.

Signed at Stratford on 28 October 2008

For and on behalf of
Taranaki Regional Council

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: South Taranaki District Council
Private Bag 902
HAWERA 4800

Change To
Conditions Date: 1 February 2007 [Granted: 26 January 2006]

Conditions of Consent

Consent Granted: To discharge up to 227 cubic metres/day of settling pond supernatant from a water treatment plant into the Kapuni Stream at or about GR: Q20:112-916

Expiry Date: 1 June 2023

Review Date(s): June 2008, June 2011, June 2017

Site Location: Palmer Road, Kapuni

Legal Description: Lot 2 DP 3675 Lot 2 DP 10737 Lot 2 DP 15107 Blk XVI
Kaupokonui SD

Catchment: Kapuni

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

Conditions 1 to 3 – unchanged

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 adverse effects on the environment from the exercise of this consent.
2. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of application 4516. In the case of any contradiction between the documentation submitted in support of application 4516 and the conditions of this consent, the conditions of this consent shall prevail.
3. The consent holder shall notify the Chief Executive, Taranaki Regional Council, in writing at least seven days prior to the exercise of this consent.

Condition 4 – changed

4. The consent holder shall address the issue of a permanent solution for water treatment residuals with the construction of a new water treatment plant, planned for 2010.

Condition 5 to 9 – unchanged

5. The consent holder shall properly and efficiently maintain and operate the settlement facility to the general satisfaction of the Chief Executive, Taranaki Regional Council.
6. After allowing for a mixing zone of 25 metres downstream of the discharge, the discharge shall not give rise to any of the following effects in the Kapuni Stream:

Consent 0933-3

- i) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
- ii) any conspicuous change in the colour or visual clarity;
- iii) any emission of objectionable odour;
- iv) the rendering of fresh water unsuitable for consumption by farm animals; and
- v) any significant adverse effects on aquatic life.

7. The discharge quality shall not exceed the following limits at all times:

Component	Concentration
suspended solids	20 g/m ³
free available chlorine	0.1 g/m ³
pH	6.5 - 8.5

8. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
9. 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 2008 and/or June 2011 and/or June 2017, 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 1 February 2007

For and on behalf of
Taranaki Regional Council

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: South Taranaki District Council
Private Bag 902
HAWERA 4800

Change To
Conditions Date: 1 February 2007 [Granted: 19 May 2000]

Conditions of Consent

Consent Granted: To construct, place, use and maintain a weir and intake structure, and to maintain two existing intake structures in the Kapuni Stream for the Hawera water supply at or about GR: Q20:115-925

Expiry Date: 1 June 2017

Review Date(s): June 2005, June 2011

Site Location: Palmer Road, Kaponga

Legal Description: Crown land adjoining Lot 1 & Lot 2 DP 10570 Blk XVI
Kaupokonui SD

Catchment: Kapuni

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

Conditions 1 to 12 – unchanged

1. The consent holder shall notify the Taranaki Regional Council at least 48 hours prior to the commencement and upon completion of the initial construction and again prior to and upon completion of any subsequent maintenance works which would involve the disturbance of or deposition to the streambed or discharges to water.
2. The structures authorised by this consent shall be constructed generally in accordance with the documentation submitted in support of the application, and with the finalised engineering diagrams, and shall be maintained to ensure the conditions of this consent are met.
3. The structure authorised by this consent shall not be constructed during the period 1 May to 31 October.
4. The consent holder shall adopt the best practicable option to avoid or minimise the discharge of silt or other contaminants into water or onto the streambed and to avoid or minimise the disturbance of the streambed and any adverse effects on water quality.
5. The consent holder shall ensure that the area and volume of streambed disturbance shall, so far as is practicable, be minimised and any areas which are disturbed shall, so far as is practicable, be reinstated.
6. No refuelling of equipment or machinery shall take place on any area of the streambed.
7. The structures authorised by this consent shall be constructed so as not to obstruct the passage of fish.
8. The consent holder shall maintain, at all times, a sufficient flow down the fish pass to ensure that the passage of fish is not restricted.

Consent 5596-1

9. The structures authorised by this consent shall be constructed so as not to cause any erosion adjacent to or downstream of the rock riprap ramp.
10. That in the construction of the weir and intake structure the applicant shall extract from the streambed only the material that makes up the existing weir/rock ramp.
11. Any removal of streambed material from above the new weir and intake structure for maintenance purposes shall only occur between 1 November and 30 April.
12. Streambed material removed pursuant to condition 11 shall be placed on dry sections of the streambed or on the banks of the stream downstream of the weir and intake structure in such a way that it can re-enter the stream while minimising adverse effects on the stream.

Condition 13 and 14 [previously condition 14 and 15] - unchanged

13. The structures authorised by this consent shall be removed and the area reinstated, if and when the structures are no longer required. The consent holder shall notify the Taranaki Regional Council at least 48 hours prior to the structure[s] removal and reinstatement.
14. That the Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during June 2011, 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 consent, which either were 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 1 February 2007

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: South Taranaki District Council
Private Bag 902
HAWERA 4800

Consent Granted
Date: 2 November 2006

Conditions of Consent

Consent Granted: To take and use up to 4,320 m³/day of groundwater at a maximum rate of 50 l/s as a combined total from up to three water bores in a bore field at the Kapuni reservoir site for municipal, rural, industrial, and recreational supply purposes at or about GR: Q20:111-909

Expiry Date: 1 June 2023

Review Date(s): June 2011, June 2017

Site Location: Kapuni reservoir site, off 1054 Skeet Road, Kapuni

Legal Description: Lot 2 DP 6410 Blk XVI Kaupokonui SD

Catchment: Kapuni

Consent 7002-1

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. The exercise of this consent shall be undertaken in general accordance with the documentation submitted in support of application 4419 and shall ensure the efficient and effective use of water. In the case of any contradiction between the documentation submitted in support of application 4419 and the conditions of this consent, the conditions of this consent shall prevail.
2. The consent holder shall notify the Chief Executive, Taranaki Regional Council, in writing at least seven days prior to the exercise of this consent.
3. Prior to the exercise of this consent, the consent holder shall provide a report to Chief Executive, Taranaki Regional Council, detailing the results of pump testing (72-hour constant discharge at 50 l/s and recovery tests) of the bores used for water supply to show (1) that the abstraction is sustainable, and (2) the effects of the abstraction on flows in the Kapuni Stream.
4. The volume of groundwater abstracted shall not exceed 4,320 cubic metres per day at a rate not exceeding 50 litres per second as a combined total from the bores in the bore field.
5. The abstraction shall not cause more than a 10% lowering of the static water level by interference in any adjacent registered water bore located beyond the boundary of the bore field.
6. The consent holder shall maintain daily records of the abstraction from each bore including date, abstraction rate and daily volume, and pumping hours, and make these records available to the Chief Executive, Taranaki Regional Council, no later than 31 July of each year, or upon request.
7. Prior to the exercise of this consent the consent holder shall install groundwater monitoring piezometers between the Kapuni Stream and the boundary of the bore field for the purposes of monitoring groundwater levels.

Consent 7002-1

8. The consent holder shall install and maintain a measuring device approved by the Chief Executive, Taranaki Regional Council, on each bore for the purposes of accurately recording the abstraction of water.
9. This consent shall be subject to monitoring by the Taranaki Regional Council and the consent holder shall meet all reasonable costs associated with the monitoring.
10. This consent shall lapse on the expiry of five years after the date of commencement of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
11. 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 2011 and/or June 2017, 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 2 November 2006

For and on behalf of
Taranaki Regional Council

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: South Taranaki District Council
Private Bag 902
HAWERA 4640

Consent Granted
Date: 5 February 2009

Conditions of Consent

Consent Granted: To erect, use and maintain a water intake structure on the bed of the Kapuni Stream, including temporary damming and diversion during construction at or about (NZTM) 1701447E-5630678N

Expiry Date: 1 June 2023

Review Date(s): June 2011, June 2017

Site Location: Kapuni Stream, Palmer Road, Kapuni

Legal Description: Lot 1 DP 10570 Lot 1 DP 3675 Lot 3 DP 10570 Blk XVI
Kaupokonui SD

Catchment: Kapuni

Consent 7413-1

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. The exercise of this consent shall be undertaken in accordance with the documentation submitted in support of application 6131, in particular Drawing No. 80066/19. If there is any conflict between the documentation submitted in support of application 6131 and the conditions of this consent, the conditions of this consent shall prevail.
2. Any disturbance of parts of the riverbed covered by water and/or any works which may result in downstream discolouration of water shall be undertaken only between 1 November and 30 April, except where this requirement is waived in writing by the Chief Executive, Taranaki Regional Council.
3. The consent holder shall notify the Chief Executive, Taranaki Regional Council, in writing at least 48 hours prior to the commencement and upon completion of the initial installation and again at least 48 hours prior to and upon completion of any subsequent maintenance works which would involve disturbance of or deposition to the riverbed or discharges to water. Notification shall include the consent number and a brief description of the activity consented and be emailed to worknotification@trc.govt.nz. Notification by fax or post is acceptable only if the consent holder does not have access to email.
4. The consent holder shall ensure that the area and volume of riverbed disturbance shall, so far as is practicable, be minimised and any areas which are disturbed shall, so far as is practicable, be reinstated.
5. The consent holder shall take all reasonable steps to:
 - a. minimise the amount of sediment discharged to the stream;
 - b. minimise the amount of sediment that becomes suspended in the stream; and
 - c. mitigate the effects of any sediment in the stream.

Undertaking work in accordance with *Guidelines for Earthworks in the Taranaki Region*, by the Taranaki Regional Council, will achieve compliance with this condition.

Consent 7413-1

6. Except with the written agreement of the Chief Executive, Taranaki Regional Council, the structure authorised by this consent shall be removed and the area reinstated, if and when the structure is no longer required. A further resource consent may be required to authorise the removal of the structure, and the consent holder is advised to seek advice from the Council on this matter.
7. The consent holder shall monitor and maintain the fish pass, to ensure it performs as designed and allows for the effective passage of fish.
8. In the event that any archaeological remains are discovered as a result of works authorised by this consent, the works shall cease immediately at the affected site and tangata whenua and the Chief Executive, Taranaki Regional Council, shall be notified within one working day. Works may recommence at the affected area when advised to do so by the Chief Executive, Taranaki Regional Council. Such advice shall be given after the Chief Executive has considered: tangata whenua interest and values, the consent holder's interests, the interests of the public generally, and any archaeological or scientific evidence. The New Zealand Police, Coroner, and Historic Places Trust shall also be contacted as appropriate, and the work shall not recommence in the affected area until any necessary statutory authorisations or consents have been obtained.
9. This consent shall lapse on 31 March 2014, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
10. 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 2011 and/or June 2017, 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 5 February 2009

For and on behalf of
Taranaki Regional Council

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: South Taranaki District Council
Private Bag 902
HAWERA 4640

Consent Granted
Date: 13 March 2009

Conditions of Consent

Consent Granted: To discharge membrane backwash water and cleaning
wastewater from the Kapuni Water Treatment Plant into
the Kapuni Stream at or about (NZTM) 1700804E-
5628910N

Expiry Date: 1 June 2023

Review Date(s): June 2011, June 2017

Site Location: Skeet Road, Kapuni

Legal Description: Lot 1 DP 18183 Blk XVI Kaupokonui SD

Catchment: Kapuni

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

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 adverse effects on the environment from the exercise of this consent.
2. After allowing for reasonable mixing, within a mixing zone extending 25 metres downstream of the discharge point, the discharge shall not, either by itself or in combination with other discharges, give rise to any or all of the following effects in the receiving water:
 - 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.
3. After allowing for reasonable mixing, within a mixing zone extending 25 metres downstream of the of the discharge point, the discharge shall not give rise to an increase in the turbidity of the Kapuni Stream of more than 50%, as determined using NTU [nephelometric turbidity units].
4. Constituents of the discharge shall meet the standards shown in the following table.

<u>Constituent</u>	<u>Standard</u>
free available chlorine	Concentration not greater than 0.1 gm ⁻³
pH	Within the range 6.5 to 8.5
suspended solids	Concentration not greater than 20 gm ⁻³

This condition shall apply before entry of the treated wastewater into the receiving waters at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

Consent 7446-1

5. This consent shall lapse on 31 March 2014, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
6. 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 2011 and/or June 2017, 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 13 March 2009

For and on behalf of
Taranaki Regional Council

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: South Taranaki District Council
Private Bag 902
HAWERA 4640

Consent Granted
Date: 20 February 2009

Conditions of Consent

Consent Granted: To install, use and maintain an outfall structure on the bank of the Kapuni Stream for the Kapuni Water Treatment Plant at or about (NZTM) 1700804E-5628910N

Expiry Date: 1 June 2023

Review Date(s): June 2011, June 2017

Site Location: Skeet Road, Kapuni

Legal Description: Lot 1 DP 18183 Blk XVI Kaupokonui SD

Catchment: Kapuni

Consent 7447-1

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. The exercise of this consent shall be undertaken in accordance with the documentation submitted in support of application 6202, in particular Drawing No. 0652C010. If there is any conflict between the documentation submitted in support of application 6202 and the conditions of this consent, the conditions of this consent shall prevail.
2. Any disturbance of parts of the riverbed covered by water and/or any works which may result in downstream discolouration of water shall be undertaken only between 1 November and 30 April, except where this requirement is waived in writing by the Chief Executive, Taranaki Regional Council.
3. The consent holder shall notify the Chief Executive, Taranaki Regional Council, in writing at least 48 hours prior to the commencement and upon completion of the initial installation and again at least 48 hours prior to and upon completion of any subsequent maintenance works which would involve disturbance of or deposition to the riverbed or discharges to water. Notification shall include the consent number and a brief description of the activity consented and be emailed to worknotification@trc.govt.nz. Notification by fax or post is acceptable only if the consent holder does not have access to email.
4. The consent holder shall ensure that the area and volume of riverbed disturbance shall, so far as is practicable, be minimised and any areas which are disturbed shall, so far as is practicable, be reinstated.
5. The consent holder shall take all reasonable steps to:
 - a. minimise the amount of sediment discharged to the stream;
 - b. minimise the amount of sediment that becomes suspended in the stream; and
 - c. mitigate the effects of any sediment in the stream.

Undertaking work in accordance with *Guidelines for Earthworks in the Taranaki Region*, by the Taranaki Regional Council, will achieve compliance with this condition.

Consent 7447-1

6. Except with the written agreement of the Chief Executive, Taranaki Regional Council, the structure authorised by this consent shall be removed and the area reinstated, if and when the structure is no longer required. A further resource consent may be required to authorise the removal of the structure, and the consent holder is advised to seek advice from the Council on this matter.
7. In the event that any archaeological remains are discovered as a result of works authorised by this consent, the works shall cease immediately at the affected site and tangata whenua and the Chief Executive, Taranaki Regional Council, shall be notified within one working day. Works may recommence at the affected area when advised to do so by the Chief Executive, Taranaki Regional Council. Such advice shall be given after the Chief Executive has considered: tangata whenua interest and values, the consent holder's interests, the interests of the public generally, and any archaeological or scientific evidence. The New Zealand Police, Coroner, and Historic Places Trust shall also be contacted as appropriate, and the work shall not recommence in the affected area until any necessary statutory authorisations or consents have been obtained.
8. This consent shall lapse on 31 March 2014, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
9. 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 2011 and/or June 2017, 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 20 February 2009

For and on behalf of
Taranaki Regional Council

Director-Resource Management

Inaha WTP(STDC)

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

Name of Consent Holder: South Taranaki District Council
Private Bag 902
HAWERA 4640

Decision Date (Change): 29 May 2014

Commencement Date (Change): 29 May 2014 (Granted: 29 August 2006)

Conditions of Consent

Consent Granted: To take water from the Mangatoki Stream in the Waingongoro catchment for Inaha rural water supply purposes

Expiry Date: 01 June 2023

Review Date(s): June 2018

Site Location: Inaha water supply, 1551 Upper Palmer Road, Mahoe

Legal Description: Sec 24 Blk VII Kaupokonui SD Lot 2 DP 421857 Blk VIII Kaupokonui SD (Site of take)

Grid Reference (NZTM) 1700531E-5642453N and 1700921E-5641908N

Catchment: Waingongoro

Tributary: Mangatoki

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

General condition

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

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 adverse effects on the environment from the exercise of this consent.
2. The combined rate of taking shall not exceed 29 litres per second, and the volume taken in any 24 hour period ending at midnight (New Zealand Standard Time) shall not exceed 2504 cubic metres.
3. The consent holder shall use the gravity take preferentially over the pumped take. The pumped take may be used exclusively only when the gravity take is not operational due to maintenance, capital works or flood damage.
4. Before exercising this consent the consent holder shall install, and thereafter maintain a water meter and a datalogger at the site of taking (or a nearby site in accordance with Regulation 10 of the *Resource Management (Measurement and Reporting of Water Takes) Regulations 2010*. The water meter and datalogger shall be tamper-proof and shall measure and record the rate and volume of water taken to an accuracy of $\pm 5\%$. Records of the date, the time and the rate and volume of water taken at intervals not exceeding 15 minutes, shall be made available to the Chief Executive, Taranaki Regional Council at all reasonable times.

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.

Consent 1185-3.1

5. 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 and/or maintained in accordance with the manufacturer's specifications; and/or
 - (b) 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.
6. 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.
7. The intake structures shall be maintained to the satisfaction of the Chief Executive, Taranaki Regional Council. Once the abstraction licensed by this consent is no longer required, the consent holder shall remove the intake structure to the satisfaction of the Chief Executive, Taranaki Regional Council.
8. The water meter and datalogger shall be accessible to Taranaki Regional Council officers at all reasonable times for inspection and/or data retrieval. In addition the data logger shall be designed and installed so that Council officers can readily verify that it is accurately recording the required information.
9. 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;
 - (b) specifically record the water taken as 'zero' when no water is taken.
10. That measurements made in accordance with condition 4 be transmitted to Taranaki Regional Councils computer system to maintain "real time" records of the water taken, with a delay of no more than 2 hours.
11. The intake structures shall be screened to avoid the entrainment of fish.
12. The intake structure shall be maintained and operated so that the passage of fish is not obstructed.

Consent 1185-3.1

13. The consent holder shall promote the efficient use of water and undertake a leak detection and repair programme through out the term of the consent for the Inaha Water Supply Scheme and report on this programme annually for the duration of this consent.
14. 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 2011 and/or June 2018 for the purposes 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 29 May 2014

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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

Name of
Consent Holder: South Taranaki District Council
Chief Executive
Private Bag 902
HAWERA 4800

Consent Granted
Date: 29 August 2006

Conditions of Consent

Consent Granted: To take water from the Waingongoro River for Inaha rural
water supply purposes at or about GR: Q20:104-070

Expiry Date: 1 June 2023

Review Date(s): June 2011, June 2018

Site Location: Inaha Water Supply, Upper Palmer Road, Mahoe

Legal Description: Sec 15 Blk VIII Kaupokonui SD

Catchment: Waingongoro

Consent 1186-3

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

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 adverse effects on the environment from the exercise of this consent.
2. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of application 3450. In the case of any contradiction between the documentation submitted in support of application 3450 and the conditions of this consent, the conditions of this consent shall prevail.
3. The volume of water abstracted shall not exceed 2,592 cubic metres/day at a rate not exceeding 30 litres/second.
4. The consent holder shall install and operate a measuring device capable of accurately recording daily rates of abstraction and shall measure, record and make such records available to the Chief Executive, Taranaki Regional Council, upon request.
5. The intake structure shall be maintained to the satisfaction of the Chief Executive, Taranaki Regional Council. Once the abstraction licensed by this consent is no longer required, the consent holder shall remove the intake structure to the satisfaction of the Chief Executive, Taranaki Regional Council.
6. All intake structures shall be screened to avoid the entrainment of fish.
7. The intake structure shall be maintained and operated so that the passage of fish is not obstructed.
8. The consent holder shall promote the efficient use of water and undertake a leak detection and repair programme throughout the term of the consent for the Inaha Water Supply Scheme and report on this programme annually for the duration of this consent.

Consent 1186-3

9. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
10. 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 2011 and/or June 2018, 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 29 August 2006

For and on behalf of
Taranaki Regional Council

Director-Resource Management

TRK993928

DISCHARGE PERMIT

**Pursuant to the RESOURCE MANAGEMENT ACT 1991
a resource consent is hereby granted by the
Taranaki Regional Council**

Name of
Consent Holder: SOUTH TARANAKI DISTRICT COUNCIL
PRIVATE BAG 902 HAWERA

Renewal
Granted Date: 4 June 1999

CONDITIONS OF CONSENT

Consent Granted: TO DISCHARGE UP TO 3,060 CUBIC METRES/DAY OF UNCONTAMINATED OVERFLOW WATER FROM THE INAHA RURAL WATER SUPPLY TREATMENT PLANT VIA A SETTLEMENT POND INTO AN UNNAMED TRIBUTARY OF THE MANGATOKI STREAM AND THEN INTO THE MANGATOKI STREAM IN THE WAINGONGORO CATCHMENT AT OR ABOUT GR: Q20:110-030 and Q20:109-036

Expiry Date: 1 June 2017

Review Date[s]: June 2005 and June 2011

Site Location: INAHA WATER TREATMENT PLANT, PALMER ROAD, MAHOE

Legal Description: PT SEC 3 BLK VIII KAUPOKONUI SD

Catchment: WAINGONGORO 350.000

Tributary: MANGATOKI 350.010
UNNAMED TRIBUTARY

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

TRK993928

General conditions

- a) That on receipt of a requirement from the General Manager, Taranaki Regional Council (hereinafter the General Manager), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) That unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) That the consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

- 1. THAT the consent holder shall properly and efficiently maintain and operate the settlement pond system.
- 2. THAT after allowing for a mixing zone of 25 metres downstream of the discharge, the discharge shall not give rise to any of the following effects in the receiving waters:
 - i) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
 - ii) any conspicuous change in the colour or visual clarity;
 - iii) any emission of objectionable odour;
 - iv) the rendering of fresh water unsuitable for consumption by farm animals; and
 - v) any significant adverse effects on aquatic life.
- 3. THAT the Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during the month of June 2005 and/or June 2011, for the purpose of ensuring that the conditions adequately deal with the environmental effects arising from the exercise of this 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 4 June 1999

For and on behalf of
TARANAKI REGIONAL COUNCIL

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: South Taranaki District Council
Private Bag 902
HAWERA

Consent Granted
Date: 15 June 2005

Conditions of Consent

Consent Granted: To maintain an existing low-level weir and fish pass across the Mangatoki Stream in the Waingongoro catchment at or about GR: Q20:105-042

Expiry Date: 1 June 2023

Review Date(s): June 2011, June 2017

Site Location: Inaha Intake Site, Palmer Road, Mahoe, Stratford

Legal Description: Sec 24 Blk VII Kaupokonui SD

Catchment: Waingongoro

Tributary: Mangatoki

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

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 adverse effects on the environment from the exercise of this consent.
2. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of application 3451. In the case of any contradiction between the documentation submitted in support of application 3451 and the conditions of this consent, the conditions of this consent shall prevail.
3. The consent holder shall notify the Chief Executive, Taranaki Regional Council, in writing at least seven days prior to the exercise of this consent.
4. The consent holder shall notify the Chief Executive, Taranaki Regional Council, at least 48 hours prior to any maintenance works of the structure[s] or fish pass licensed by this consent which would involve disturbance of, or deposition to, the streambed or discharges to water.
5. The consent holder, during any maintenance works, shall adopt the best practicable option to avoid or minimise the discharge of silt or other contaminants into water or onto the streambed and to avoid or minimise the disturbance of the streambed and any adverse effects on water quality.
6. The consent holder, during any maintenance, shall ensure that the area and volume of river bed disturbance shall, so far as practicable, be minimised and any areas which are disturbed shall, so far as practicable, be reinstated.
7. No maintenance work shall be conducted during the period 1 May to 31 October unless waived in writing by the Chief Executive, Taranaki Regional Council.
8. The structure[s] authorised by this consent shall be maintained to ensure the conditions of this consent are met.

Consent 4102-2

9. The structure[s] authorised by this consent shall be constructed and maintained so as not to restrict the passage of native fish and trout, to the satisfaction of the Chief Executive, Taranaki Regional Council.
10. The structure[s] authorised by this consent shall be removed and the area reinstated, if and when the structure is no longer required. The consent holder shall notify the Taranaki Regional Council at least 48 hours prior to the removal of the structures and reinstatement of the area
11. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
12. 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 2011 and/or June 2017, 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 15 June 2005

For and on behalf of
Taranaki Regional Council

Director-Resource Management

TRK985365

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: SOUTH TARANAKI DISTRICT COUNCIL
PRIVATE BAG 902 HAWERA

Consent
Granted Date: 23 September 1998

CONDITIONS OF CONSENT

Consent Granted: TO ERECT, PLACE AND MAINTAIN A LOW LEVEL INTAKE
WEIR IN THE MANGATOKI STREAM FOR INAHA RURAL
WATER SUPPLY SCHEME PURPOSES AT OR ABOUT GR:
Q20:109-037

Expiry Date: 1 June 2017

Review Date[s]: June 2005 and June 2011

Site Location: MANGATOKI STREAM, PALMER ROAD, MAHOE

Legal Description: PT SECS 3 & 4 BLK VIII KAUPOKONUI SD

Catchment: WAINGONGORO 350.000

Tributary: MANGATOKI 350.010

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

TRK985365

General conditions

- a) That on receipt of a requirement from the General Manager, Taranaki Regional Council (hereinafter the General Manager), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) That unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) That the consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

- 1. THAT the consent holder shall notify the Taranaki Regional Council at least 48 hours prior to, and upon completion of, any major construction or maintenance works which might involve disturbance of, or discharges to, the stream.
- 2. THAT during any construction or maintenance work, the consent holder shall observe every practicable measure to prevent the discharge or placement of silt and/or organics and/or any other contaminant into the stream.
- 3. THAT any works or structure which are the subject of this consent shall not obstruct fish passage.
- 4. THAT the construction and maintenance of the weir shall be undertaken in general accordance with the information supplied in support of application 394.
- 5. THAT it is the responsibility of the consent holder to maintain and operate a safe structure, and the Taranaki Regional Council accepts no responsibility in this regard.
- 6. THAT the consent holder shall remove the weir and reinstate the area to a satisfactory standard, if and when the weir is no longer required.
- 7. THAT the Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during the month of June 2005 and/or June 2011, for the purpose of ensuring that the conditions adequately deal with the environmental effects arising from the exercise of this consent, which were not foreseen at the time the application was considered and which it was not appropriate to deal with at that time.

Signed at Stratford on 23 September 1998

For and on behalf of
TARANAKI REGIONAL COUNCIL

GENERAL MANAGER

Opunake WTP (STDC)

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

Name of
Consent Holder: South Taranaki District Council
Private Bag 902
HAWERA 4640

Decision Date: 30 July 2013

Commencement Date: 20 August 2013

Conditions of Consent

Consent Granted: To take and use water from the Waiaua River for Opunake town water supply purposes

Expiry Date: 1 June 2030

Review Date(s): June 2018, June 2024

Site Location: Opunake Water Supply Intake, Ihaia Road, Opunake

Legal Description: Sec 4 Blk X Opunake SD (Site of take & use)

Grid Reference (NZTM) 1678013E-5635411N

Catchment: Waiaua

*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 to section 36 of the Resource Management Act 1991.

Special conditions

1. Except as provided for in conditions 2 and 3 below, the rate of taking shall not exceed 2200 cubic metres per day or 25.5 litres per second.
2. The taking shall occur through the 'new' intake authorised by consent 9473-1 (NZTM 1678013E-5635411N), except that taking may instead temporarily occur through the 'old' intake (NZTM 1678426E-5635847N):
 - (a) prior to the new intake and associated treatment plant being commissioned; and
 - (b) at other times if the new intake is unable to be used.
3. When taking occurs through the old intake the rate of taking may be up to 3650 cubic metres per day and 42.2 litres per second if that rate necessary to mitigate the effects of high sediment load.
4. If taking occurs through the old intake the consent holder shall advise the Chief Executive, Taranaki Regional Council as soon as practicable. Advice shall be made by emailing worknotification@trc.govt.co.nz with appropriate details including the dates that taking occurred.
5. Before exercising this consent the consent holder shall install, and thereafter maintain a water meter and a datalogger at the site of taking. The water meter and datalogger shall be tamper-proof and shall measure and record the rate and volume of water taken to an accuracy of $\pm 5\%$. Records of the date, the time and the rate and volume of water taken at intervals not exceeding 15 minutes, shall be made available to the Chief Executive, Taranaki Regional Council at all reasonable times.

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.

Consent 0232-4

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 and/or maintained in accordance with the manufacturer's specifications; and/or
- (b) 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. The water meter and datalogger shall be accessible to Taranaki Regional Council officer's at all reasonable times for inspection and/or data retrieval.
9. 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.
10. From a date no later than 1 December 2013, the measurements made in accordance with condition 5 of this consent, 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.
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.

Consent 0232-4

13. This consent shall lapse on 30 September 2018, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
14. 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 2018 and/or June 2024, for the purposes of:
 - (a) discontinuing or amending the authorisation to take via the old intake; and/or
 - (b) 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 30 July 2013

For and on behalf of
Taranaki Regional Council

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: South Taranaki District Council
Private Bag 902
HAWERA 4640

Decision Date: 30 July 2013

Commencement Date: 30 July 2013

Conditions of Consent

Consent Granted: To discharge water treatment residuals, and pond drainage water from the Opunake Water Treatment Plant into the Waiaua River

Expiry Date: 1 June 2030

Review Date(s): June 2018, June 2024

Site Location: Opunake Water Treatment Plant, Ihaia Road, Opunake

Legal Description: Sec 4 Blk X Opunake SD (Discharge source & site)

Grid Reference (NZTM) 1677645E-5635245N

Catchment: Waiaua

*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 adverse effects on the environment from the exercise of this consent.
2. The discharge shall not exceed 120 cubic metres per day.
3. After allowing for reasonable mixing, within a mixing zone extending 10 metres downstream of the discharge point, the discharge shall not, either by itself or in combination with other discharges, give rise to any or all of the following effects in the receiving water:
 - 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.
4. Constituents of the discharge shall meet the standards shown in the following table.

Constituent	Standard
free available chlorine	Concentration not greater than 0.1 gm ⁻³
pH	Within the range 6.5 to 8.5
suspended solids	Concentration not greater than 50 gm ⁻³

This condition shall apply before entry of the treated wastewater into the receiving waters at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

5. This consent shall lapse on 30 September 2018, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

Consent 5574-2

6. 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 2018 and/or June 2024, 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 30 July 2013

For and on behalf of
Taranaki Regional Council

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: South Taranaki District Council
Private Bag 902
HAWERA 4640

Decision Date: 21 February 2013

Commencement Date: 21 February 2013

Conditions of Consent

Consent Granted: To construct, place and use a water intake structure on the bed of the Waiaua River for water abstraction purposes

Expiry Date: 1 June 2030

Review Date(s): June 2018, June 2024

Site Location: Opunake Water Treatment Plant, 470 Ihaia Road, Opunake

Legal Description: Sec 4 Blk X Opunake SD (Site of structure)

Grid Reference (NZTM) 1678013E-5635411N

Catchment: Waiaua

*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 [the Council] all the administration, monitoring and supervision costs of this consent, fixed in accordance to section 36 of the Resource Management Act.

Special conditions

1. The water intake structure shall:
 - a) have a 0.75 mm slot size wedge wire screen;
 - b) be 300 mm in diameter;
 - c) 1500 mm in length; and
 - d) the bottom of the screen to sit a nominal 225 mm above the existing riverbed.
2. The consent holder shall notify the Chief Executive, Taranaki Regional Council, in writing at least 48 hours prior to the commencement and upon completion of the initial installation and again at least 48 hours prior to and upon completion of any subsequent maintenance works which would involve disturbance of or deposition to the riverbed or discharges to water. Notification shall include the consent number and a brief description of the activity consented and be emailed to worknotification@trc.govt.nz. Notification by fax or post is acceptable only if the consent holder does not have access to email.
3. The consent holder shall ensure that the area and volume of riverbed disturbance shall, so far as is practicable, be minimised and any areas which are disturbed shall, so far as is practicable, be reinstated.
4. The consent holder shall take all reasonable steps to:
 - a. minimise the amount of sediment discharged to the river;
 - b. minimise the amount of sediment that becomes suspended in the river; and
 - c. mitigate the effects of any sediment in the river.

Undertaking work in accordance with *Guidelines for Earthworks in the Taranaki Region*, by the Taranaki Regional Council, will achieve compliance with this condition.

5. The consent holder shall ensure that the water intake structure is appropriately screened to avoid the entrapment of freshwater fauna. The maximum screen slot velocity shall be no more than 0.15 m/s at design capacity.
6. The water intake structure shall not obstruct fish passage.
7. To mitigate the adverse environmental effects of this consent the consent holder shall make a single payment of \$20,000 (excluding GST) to the Taranaki Regional Council as a financial contribution for the purpose of providing riparian planting and management in the Waiaua Stream catchment. The payment shall be made before 1 September 2013.

Consent 9473-1

8. In the event that any archaeological remains are discovered as a result of works authorised by this consent, the works shall cease immediately at the affected site and tangata whenua and the Chief Executive, Taranaki Regional Council, shall be notified within one working day. Works may recommence at the affected area when advised to do so by the Chief Executive, Taranaki Regional Council. Such advice shall be given after the Chief Executive has considered: tangata whenua interest and values, the consent holder's interests, the interests of the public generally, and any archaeological or scientific evidence. The New Zealand Police, Coroner, and Historic Places Trust shall also be contacted as appropriate, and the work shall not recommence in the affected area until any necessary statutory authorisations or consents have been obtained.
9. Except with the written agreement of the Chief Executive, Taranaki Regional Council, the structure authorised by this consent shall be removed and the area reinstated, if and when the structure is no longer required. A further resource consent may be required to authorise the removal of the structure, and the consent holder is advised to seek advice from the Council on this matter.
10. This consent shall lapse on 31 March 2018, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
11. 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 2018 and/or June 2024, 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 21 February 2013

For and on behalf of
Taranaki Regional Council

Director-Resource Management

Patea WTP (STDC)

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

Name of
Consent Holder: South Taranaki District Council
Chief Executive
Private Bag 902
Hawera 4640

Decision Date
(Change): 29 October 2014

Commencement Date
(Change): 29 October 2014 (Granted Date: 30 May 2012)

Conditions of Consent

Consent Granted: To take and use groundwater from three bores (known as Bore 1, Bore 4 and Bore 5) for Patea Township water supply purposes

Expiry Date: 01 June 2028

Review Date(s): June 2016, June 2022

Site Location: Egmont St & Taranaki Rd, Patea

Legal Description: Lot 1 DP 5899 (Bore 4)
Lot 1 DP 411166 (Bores 1 & 5)
Patea Dist Blk VI Carlyle SD

Grid Reference (NZTM) 1725370E - 5599180N (Bore 1)
1725010E - 5600000N (Bore 4)
1725360E - 5599180N (Bore 5)

Catchment: Patea
Unnamed Catchment 12

*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 total volume of groundwater taken from the three bores combined shall not exceed 1,125 cubic metres per day.
2. Subject to condition 3, the rate of take from each bore shall not exceed the maximum rate shown in the table below:

Bore #	Maximum rate
1	4.7 litres per second
4	10 litres per second
5	10 litres per second

3. The volume taken from Bore 1 shall not exceed 300 cubic metres per day unless either Bore 4 or Bore 5 is unable to be operated because of breakdown or is shut down for essential maintenance.
4. Before exercising this consent the consent holder shall install, and thereafter maintain a water meter and a datalogger on each bore. The water meters and dataloggers shall be tamper-proof and shall measure and record the rate and volume of water taken to an accuracy of $\pm 5\%$.

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.

5. Within 30 days of the installation of a water meter or datalogger, and at other times when reasonable notice is given, the consent holder shall provide the Chief Executive, Taranaki Regional Council with a document from a suitably qualified person certifying that:
 - a. water measuring or recording equipment required by the conditions of this consent has been installed and/or maintained in accordance with the manufacturer's specifications; and/or
 - b. water measuring or recording equipment required by the conditions of this consent has been tested and shown to be operating to an accuracy of $\pm 5\%$.
6. 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.
7. The water meter and datalogger shall be accessible to Taranaki Regional Council officer's at all reasonable times for inspection and/or data retrieval.

Consent 3388-3.1

8. 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 groundwater, including, but not limited to, the efficient and conservative use of water.
9. The consent holder shall measure and record the water level in the Brannigan bore (GND0076, located at grid reference 1725550E-5599498N) to an accuracy of ± 0.05 metres and at intervals not exceeding 15 minutes.
10. An accessible groundwater level indicator shall be installed on the Brannigan bore which shows when groundwater levels have reached 48 metres below ground level (mbgl). Should groundwater reach this level then consultation between the owner of the Brannigan bore and the consent holder shall occur and, if the bore owner requires it, the measures in condition 11 shall be implemented.
11. That the consent holder shall immediately restrict the exercise of this consent and/or provide a suitable unchlorinated alternative water supply for the Brannigan bore owner should the exercise of this consent restrict the use of the Brannigan bore.
12. The taking shall not cause the intrusion of salt water into any freshwater aquifer.
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 month of June 2016 and/or June 2022, for the purposes of:
 - a. 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; and/or
 - b. to require any data collected in accordance with the conditions of this consent to be transmitted directly to the Council's computer system, in a format suitable for providing a 'real time' record over the internet.

Signed at Stratford on 29 October 2014

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

Pope WTP (STDC)

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

Name of
Consent Holder: South Taranaki District Council
Private Bag 902
HAWERA 4640

Decision Date: 7 June 2011

Change To
Conditions Date: 7 June 2011 [Granted: 22 November 2000]

Conditions of Consent

Consent Granted: To take water from the Otakeho Stream for the Pope and
Waimate West water supply schemes at or about (NZTM)
1691940E-5639453N

Expiry Date: 1 June 2018

Review Date(s): June 2012

Site Location: Mangawhero Road, Kaponga

Legal Description: Sec 7 Blk VI Kaupokonui SD

Catchment: Otakeho

*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 [the Council] all the administration, monitoring and supervision costs of this consent, fixed in accordance to section 36 of the Resource Management Act.

Special conditions

1. The rate of taking shall not exceed 85 litres per second.
2. Before exercising this consent the consent holder shall install, and thereafter maintain a water meter and datalogger. The water meter and datalogger shall be tamper-proof and shall measure and record the rate and volume of water taken to an accuracy of $\pm 5\%$. Records of the date, the time and the rate and volume of water taken at intervals not exceeding 15 minutes.

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.

3. 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 and/or maintained in accordance with the manufacturer's specifications; and/or
 - (b) 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.
4. 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.
5. The water meter and datalogger shall be accessible to Taranaki Regional Council officers at all reasonable times for inspection and/or data retrieval.
6. 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 3911-2

7. 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.
8. From a date no later than 30 June 2012, the measurements made in accordance with condition 2 of this consent, 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, with a delay of no more than 2 hours.
9. The consent holder shall ensure that, before 1 June 2017, all flows of less than 500 litres per second past the intake structure, are measured and recorded to an accuracy $\pm 10\%$ at intervals not exceeding 30 minutes for a continuous period of at least 12 months.
10. 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 2012, 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 2011

For and on behalf of
Taranaki Regional Council

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: South Taranaki District Council
Private Bag 902
HAWERA 4800

Consent Granted
Date: 9 June 2006

Conditions of Consent

Consent Granted: To discharge treated backwash water from the Pope Rural Water Supply Treatment Plant into an unnamed tributary of the Mangawhero Stream in the Kaupokonui catchment at or about GR: P20:032-003

Expiry Date: 1 June 2023

Review Date(s): June 2011, June 2017

Site Location: Upper Mangawhero Road, Kaponga

Legal Description: Pt Lot 2 DP 7928 Blk VI Kaupokonui SD

Catchment: Kaupokonui

Tributary: Mangawhero 2

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

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 adverse effects on the environment from the exercise of this consent.
2. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of application 3452. In the case of any contradiction between the documentation submitted in support of application 3452 and the conditions of this consent, the conditions of this consent shall prevail.
3. The discharge shall not exceed 6 cubic metres per day, at a rate not exceeding 5 litres per second.
4. The discharge quality shall not exceed the following limits at all times:

Component	Concentration
free available chlorine	<0.1g/m ³
suspended solids	20 g/m ³
pH	6.5-8.5

5. The consent holder shall properly and efficiently maintain and operate the settling pond so as to meet the conditions of this consent.
6. After allowing for reasonable mixing, within a mixing zone extending 20 metres below the discharge point, the discharge shall not give rise to any of the following effects in the unnamed tributary of the Mangawhero 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.

Consent 4446-2

7. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
8. 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 2011 and/or June 2017, 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 9 June 2006

For and on behalf of
Taranaki Regional Council

Director-Resource Management

Rahotu WTP (STDC)

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

Name of Consent Holder: South Taranaki District Council
Private Bag 902
HAWERA 4640

Decision Date: 15 August 2013

Commencement Date: 15 August 2013

Conditions of Consent

Consent Granted: To take and use water from the Pungaereere Stream for the Rahotu community water supply

Expiry Date: 1 June 2031

Review Date(s): June 2019, June 2025

Site Location: State Highway 45, Rahotu

Legal Description: Lot 1 DP 15882 (Site of take & use)

Grid Reference (NZTM) 1669415E-5645831N

Catchment: Pungaereere

*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 rate of taking shall not exceed 180 cubic metres per day or 3 litres per second.
2. Before exercising this consent the consent holder shall install, and thereafter maintain a water meter and a datalogger at the site of taking (or a nearby site in accordance with Regulation 10 of the *Resource Management (Measurement and Reporting of Water Takes) Regulations 2010*). The water meter and datalogger shall be tamper-proof and shall measure and record the rate and volume of water taken to an accuracy of $\pm 5\%$. Records of the date, the time and the rate and volume of water taken at intervals not exceeding 15 minutes, shall be made available to the Chief Executive, Taranaki Regional Council at all reasonable times.

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.

3. 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 and/or maintained in accordance with the manufacturer's specifications; and/or
 - (b) 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.
4. 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.
 5. The water meter and datalogger shall be accessible to Taranaki Regional Council officer's at all reasonable times for inspection and/or data retrieval.
 6. 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 3696-3

7. From a date no later than 1 February 2014, the measurements made in accordance with condition 2 of this consent, 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.
8. 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.
9. 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.

10. This consent shall lapse on 30 September 2018, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
11. 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/or June 2025, for the purposes 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 15 August 2013

For and on behalf of
Taranaki Regional Council

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: South Taranaki District Council
Private Bag 902
HAWERA

Consent Granted
Date: 2 September 2002

Conditions of Consent

Consent Granted: To discharge filter backwash water and settling tank waste from the Rahotu Water Treatment Plant into the Pungaereere Stream at or about GR: P20:794-075

Expiry Date: 1 June 2019

Review Date(s): June 2007, June 2013

Site Location: State Highway 45, Rahotu

Legal Description: Lot 1 DP 15882 Blk I Opunake SD

Catchment: Pungaereere

Consent 6038-1

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council (hereinafter the Chief Executive), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. That after allowing for reasonable mixing, within a mixing zone extending 50 metres below the discharge point, the discharge shall not give rise to any of the following effects in the Pungaereere 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.
2. That the discharge quality shall not exceed the following limits at all times:

pH	6.5-8.5
Free available chlorine	0.1 gm ⁻³
3. 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 2007 and/or June 2013, 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 2 September 2002

For and on behalf of
Taranaki Regional Council

Director-Resource Management

Wai-inu Beach Water Supply (STDC)

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

Name of
Consent Holder: South Taranaki District Council
Private Bag 902
HAWERA 4640

Decision Date: 7 May 2012

Commencement
Date: 7 May 2012

Conditions of Consent

Consent Granted: To take and use groundwater for Waiinu Beach water
supply purposes at or about (NZTM) 1748362E-5586586N

Expiry Date: 1 June 2028

Review Date(s): June 2016, June 2022

Site Location: Nukumaru Domain Reserve, Waiinu Road, Waiinu Beach

Legal Description: Pt Sec 150 Waitotara Dist Blk XIV Wairoa SD
(Site of take & use)

Catchment: Waitotara

*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 volume of water taken shall not exceed 4 litres per second (346 m³/day).
2. Before exercising this consent the consent holder shall install, and thereafter maintain a water meter at the site of taking. The water meter shall be tamper-proof and shall measure and record the volume of water taken to an accuracy of $\pm 5\%$.

Note: Water meters 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 have a limited lifespan.

3. The consent holder shall provide the Chief Executive, Taranaki Regional Council with a document from a suitably qualified person certifying that water measuring equipment required by the conditions of this consent ('the equipment'):
 - (a) has been installed and/or maintained in accordance with the manufacturer's specifications; and/or
 - (b) 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;
 - (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.
4. 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.
 5. The water meter shall be accessible to Taranaki Regional Council officers at all reasonable times for inspection and/or data retrieval.
 6. The consent holder shall maintain a record of the water taken by recording the meter reading and the date of the reading at monthly intervals. This record shall be provided to the Chief Executive, Taranaki Regional Council, no later than 31 July of each year, or earlier upon request.

Consent 3770-3

7. 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.
8. This consent shall lapse on 30 June 2017, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
9. 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 2017 and/or June 2023, for the purposes of:
 - (a) 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; and/or
 - (b) to require any data collected in accordance with the conditions of this consent to be transmitted directly to the Council's computer system, in a format suitable for providing a 'real time' record over the internet.

Signed at Stratford on 7 May 2012

For and on behalf of
Taranaki Regional Council

Director-Resource Management

Waimate WTP (STDC)

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

Name of
Consent Holder: South Taranaki District Council
Private Bag 902
HAWERA 4640

Decision Date: 7 June 2011

Commencement
Date: 7 June 2011

Conditions of Consent

Consent Granted: To take water from the Mangawheroiti Stream for the
Waimate West water supply at or about (NZTM)
1694422E-5637449N

Expiry Date: 1 June 2023

Review Date(s): June 2018

Site Location: Rowan Road, Kaponga

Legal Description: Pt Sec 79 Blk X Kaupokonui SD

Catchment: Kaupokonui

Tributary: Mangawhero
Mangawheroiti

*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 Council all the administration, monitoring and supervision costs of this consent, fixed in accordance to section 36 of the Resource Management Act.

Special conditions

1. The rate of taking shall not exceed 121 litres per second [including any water that is taken from the Mangawhero Stream, in accordance with consent 0635, and discharged to the Mangawheroiti Stream].
2. No water shall be taken pursuant to this consent unless water is being concurrently taken from the Otakeho Stream at 85 litres per second. If, for a temporary period, the Otakeho Stream intake and diversion can not supply 85 litres per second, for example during maintenance, the consent holder shall immediately advise the Chief Executive, Taranaki Regional Council and this condition shall not apply.
3. Before exercising this consent the consent holder shall install, and thereafter maintain a water meter and datalogger. The water meter and datalogger shall be tamper-proof and shall measure and record the rate and volume of water taken to an accuracy of $\pm 5\%$. Records of the date, the time and the rate and volume of water taken at intervals not exceeding 15 minutes.

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 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 and/or maintained in accordance with the manufacturer's specifications; and/or
 - (b) 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.
5. 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.
6. The water meter and datalogger shall be accessible to Taranaki Regional Council officers at all reasonable times for inspection and/or data retrieval.

Consent 0634-3

7. 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.
8. The taking of water authorised by this consent shall be managed to ensure that the flow in the Mangawheroiti Stream, immediately downstream of the intake, is not less than 32 litres per second.
9. When the flow in the Mangawheroiti Stream is less than 500 litres per second the consent holder shall measure and record the flow of the Mangawheroiti Stream that passes downstream the intake to an accuracy of $\pm 10\%$ at intervals not exceeding 30 minutes.
10. From a date no later than 30 June 2012, the measurements made in accordance with conditions 3 and 9 of this consent, 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 past the intake, with a delay of no more than 2 hours.
11. The consent holder shall ensure that a staff gauge is installed and maintained to effectively display the water level at the weir to an accuracy of 0.005 m at all times when the flow is less than 500 litres per second.
12. If necessary to comply with condition 9, the consent holder shall ensure that sufficient stream flow measurements are undertaken to maintain a 'rating curve' that accurately translates the water level to stream flow over the weir.

Note: Work required by special condition 12 may be undertaken by the Taranaki Regional Council and all reasonable costs recovered from the consent holder through the annual compliance monitoring programme that is in place for the activity.
13. 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.
14. The consent holder shall, on an annual basis, provide a report detailing:
 - the work done to detect and minimise leaks within each of the areas supplied;
 - water use efficiency and conservation measures undertaken and planned for all users of the Waimate Water Supply Scheme area; and
 - water use benchmarking data for the region compared to water use for the Waimate Water Supply Scheme.

The report[s] shall be provided to the Chief Executive, Taranaki Regional Council before 1 September each year and cover the previous 1 July to 30 June period. The first report shall be provided by 1 September 2011.

Consent 0634-3

15. The consent holder shall make five annual payments of \$30,600 [GST exclusive] to the Taranaki Regional Council as a financial contribution in order to remedy or mitigate adverse effects on the environment. These payments shall be made no later than 1 September each year from 2011 to 2015.
16. 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 2018, 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 2011

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: South Taranaki District Council
Private Bag 902
HAWERA 4640

Decision Date: 7 June 2011

Commencement
Date: 7 June 2011

Conditions of Consent

Consent Granted: To take water from the Mangawhero Stream for the purpose of adding to the flow of the Mangawheroiti Stream and providing water for the Waimate West water supply at or about (NZTM) 1694040E-5640090N

Expiry Date: 1 June 2023

Review Date(s): June 2018

Site Location: Mangawhero Road, Kaponga

Legal Description: Sec 11 Blk VI Kaupokonui SD

Catchment: Kaupokonui

Tributary: Mangawhero

*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 [the Council] all the administration, monitoring and supervision costs of this consent, fixed in accordance to section 36 of the Resource Management Act.

Special conditions

1. The rate of taking shall not exceed 70 litres per second.
2. No water shall be taken pursuant to this consent unless water is concurrently being taken from the Otakeho and Mangawheroiti Streams, at 85 litres per second and 121 litres per second, respectively. If, for a temporary period, the Otakeho and Mangawheroiti Streams can not supply 85 litres per second and 121 litres per second respectively, for example during maintenance, the consent holder shall immediately advise the Chief Executive, Taranaki Regional Council and this condition shall not apply.
3. Before exercising this consent the consent holder shall install, and thereafter maintain a water meter and datalogger. The water meter and datalogger shall be tamper-proof and shall measure and record the rate and volume of water taken to an accuracy of $\pm 5\%$. Records of the date, the time and the rate and volume of water taken at intervals not exceeding 15 minutes.

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 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 and/or maintained in accordance with the manufacturer's specifications; and/or
 - (b) 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.
5. 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.

Consent 0635-3

6. The water meter and datalogger shall be accessible to Taranaki Regional Council officers at all reasonable times for inspection and/or data retrieval.
7. 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.
8. From a date no later than 30 June 2012, the measurements made in accordance with condition 3 of this consent, 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, with a delay of no more than 2 hours.
9. 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.
10. 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 2018, 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 2011

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: South Taranaki District Council
Private Bag 902
HAWERA 4640

Decision Date: 7 June 2011

Change To
Conditions Date: 7 June 2011 [Granted: 22 November 2000]

Conditions of Consent

Consent Granted: To take water from the Otakeho Stream for the Pope and
Waimate West water supply schemes at or about (NZTM)
1691940E-5639453N

Expiry Date: 1 June 2018

Review Date(s): June 2012

Site Location: Mangawhero Road, Kaponga

Legal Description: Sec 7 Blk VI Kaupokonui SD

Catchment: Otakeho

*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 [the Council] all the administration, monitoring and supervision costs of this consent, fixed in accordance to section 36 of the Resource Management Act.

Special conditions

1. The rate of taking shall not exceed 85 litres per second.
2. Before exercising this consent the consent holder shall install, and thereafter maintain a water meter and datalogger. The water meter and datalogger shall be tamper-proof and shall measure and record the rate and volume of water taken to an accuracy of $\pm 5\%$. Records of the date, the time and the rate and volume of water taken at intervals not exceeding 15 minutes.

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.

3. 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 and/or maintained in accordance with the manufacturer's specifications; and/or
 - (b) 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.
4. 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.
5. The water meter and datalogger shall be accessible to Taranaki Regional Council officers at all reasonable times for inspection and/or data retrieval.
6. 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 3911-2

7. 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.
8. From a date no later than 30 June 2012, the measurements made in accordance with condition 2 of this consent, 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, with a delay of no more than 2 hours.
9. The consent holder shall ensure that, before 1 June 2017, all flows of less than 500 litres per second past the intake structure, are measured and recorded to an accuracy $\pm 10\%$ at intervals not exceeding 30 minutes for a continuous period of at least 12 months.
10. 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 2012, 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 2011

For and on behalf of
Taranaki Regional Council

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: South Taranaki District Council
Private Bag 902
Hawera 4640

Decision Date
(Change): 24 November 2015

Commencement Date
(Change): 24 November 2015 (Granted Date: 12 June 2006)

Conditions of Consent

Consent Granted: To discharge treated washwater from the Waimate Water Supply Scheme into an unnamed tributary of Kellys Creek

Expiry Date: 1 June 2023

Review Date(s): June 2017

Site Location: Waimate Water Treatment Plant, 791 Rowan Road, Manaia

Legal Description: Pt Secs 78, 79 & 81 Blk X Pt Secs 1 & 2 Pt Stream Bed Blks VI & X Kaupokonui SD (Discharge source & site)

Grid Reference (NZTM) 1695480E-5636870N

Catchment: Kaupokonui

Tributary: Mangawhero
Kellys Creek

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

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

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 adverse effects on the environment from the exercise of this consent.
2. For a period not exceeding 40 days commencing in November or December 2015 this consent also authorises a discharge of water and contaminants from developing and testing of bores (GND5211 and GND1728). The consent holder shall advise the Chief Executive, Taranaki Regional Council of the date that this period is to commence by emailing worknotification@trc.govt.nz.
3. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted for this consent and any subsequent applications to change conditions. In the case of any contradiction between the documentation submitted in support of previous applications and the conditions of this consent, the conditions of this consent shall prevail.
4. The discharge shall not exceed 750 m³ per day, except in the following situations:
 - a) During plant start-up where the discharge shall not exceed 7,500 m³ per day for a one-off period of up to 10 days;
 - b) During clarifier drain-down where the discharge shall not exceed 1500 m³ per day, twice annually, for a maximum 24 hour period;
 - c) During sludge pond dewatering where the discharge shall not exceed 1000 m³ per day, once annually, for up to 14 days; and
 - d) During the period described in condition 2, when the discharge rate shall not exceed 2478 m³ per day.
5. The consent holder shall install and continually maintain an erosion protection structure generally in accordance with the plan prepared by CH2M Beca - Drawing No. W-DKC-0012, to ensure that the exercise of this consent does not cause any erosion or scour of the streambed.

Consent 0129-3.2

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

Constituent	Standard
free available chlorine	Concentration no greater than 0.1 g/m ³
suspended solids	Concentration no greater than 20 g/m ³
pH	Within the range 6.5 to 8.5
iron	Concentration no greater than 2 g/m ³
manganese	Concentration no greater than 1.3 g/m ³
ammonia	Concentration no greater than 0.025 g/m ³

This condition shall apply before entry of the treated stormwater into the receiving waters at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

7. The consent holder shall properly and efficiently maintain and operate the settling ponds so as to meet the conditions of this consent.
8. After allowing for reasonable mixing, being a mixing zone extending seven times width of the unnamed tributary of Kellys Creek at the point of discharge, any discharge of contaminants shall not give rise to any of the following effects in the unnamed tributary of Kellys Creek:
- any conspicuous change in the colour or visual clarity;
 - any emission of objectionable odour;
 - the rendering of fresh water unsuitable for consumption by farm animals;
 - any significant adverse effects on aquatic life.
9. 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 2011 and/or June 2017, 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 24 November 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: South Taranaki District Council
Private Bag 902
HAWERA 4640

Decision Date: 10 December 2010

Change To
Conditions Date: 10 December 2010 [Granted: 1 March 1999]

Conditions of Consent

Consent Granted: To place, use and maintain a water intake structure and associated erosion protection structures, including upgrading the intake structure and constructing a new fish pass, on the bed of the Otakeho Stream at or about (NZTM) 1691980E-5639445N

Expiry Date: 1 June 2017

Review Date(s): June 2011

Site Location: Upper Mangawhero Road, Riverlea

Legal Description: Section 7 Blk VI Kaupokonui SD [Site of structure]

Catchment: Otakeho

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

General conditions

- a) That on receipt of a requirement from the Chief Executive, Taranaki Regional Council [hereinafter the Chief Executive], the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) That unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) That the consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. The consent holder shall notify the Chief Executive, Taranaki Regional Council, in writing at least 48 hours prior to the commencement and upon completion of any construction and/or maintenance works which would involve disturbance of or deposition to the riverbed or discharges to water. Notification shall include the consent number and a brief description of the activity consented and be emailed to worknotification@trc.govt.nz.
2. The structure[s] authorised by this consent shall be constructed in accordance with the documentation submitted in support of applications 95/185, 542, and 6622 [specifically Drawing No. 80357] and shall be maintained to ensure the conditions of this consent are met.
3. During any construction or maintenance the consent holder shall adopt the best practicable option to avoid or minimise the discharge of silt or other contaminants into water or onto the riverbed and to avoid or minimise the disturbance of the riverbed and any adverse effects on water quality.
4. During any construction or maintenance the consent holder shall ensure that the area and volume of riverbed disturbance shall so far as is practicable, be minimised and any areas which are disturbed, shall so far as is practicable be reinstated.
5. During any construction or maintenance the consent holder shall ensure that any disturbance of parts of the riverbed covered by water and/or any works which may result in downstream discolouration of water shall be undertaken only between 1 November and 30 April except where this requirement is waived by the written approval of the Chief Executive, Taranaki Regional Council.
6. The structure[s] shall provide for the passage of fish to the satisfaction of the Chief Executive, Taranaki Regional Council as determined by a monitoring programme conducted by the Taranaki Regional Council at the consent holders expense.

Consent 4826-2

7. A Taranaki Regional Council Freshwater Biologist shall be present during the placement and concreting of rocks in the fish pass.
8. Except with the written agreement of the Chief Executive, Taranaki Regional Council, the structure[s] authorised by this consent shall be removed and the area reinstated, if and when the structure is no longer required. A further resource consent may be required to authorise the removal of the structure, and the consent holder is advised to seek advice from the Council on this matter.
9. The Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during the month of June 2001 and/or June 2005 and/or June 2011, for the purpose of ensuring that the conditions are adequate to deal with the any significant adverse effects arising from the exercise of this consent, which either were 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 10 December 2010

For and on behalf of
Taranaki Regional Council

Director-Resource Management

TRK995451

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: SOUTH TARANAKI DISTRICT COUNCIL
PRIVATE BAG 902 HAWERA

Consent
Granted Date: 1 March 1999

CONDITIONS OF CONSENT

Consent Granted: TO ERECT, PLACE, USE AND MAINTAIN A WATER INTAKE STRUCTURE AND ANCILLARY STRUCTURES ON AND OVER THE BED OF THE MANGAWHEROITI STREAM A TRIBUTARY OF THE MANGAWHERO STREAM IN THE KAUPOKONUI CATCHMENT FOR WATER ABSTRACTION PURPOSES AT OR ABOUT GR: P20:044-992

Expiry Date: 1 June 2017

Review Date[s]: June 2001, June 2005 and June 2011

Site Location: MANGAWHEROITI STREAM, ROWAN ROAD, KAPONGA

Legal Description: SO 10908 PT SEC 79 BLK X KAUPOKONUI SD

Catchment: KAUPOKONUI 355.000

Tributary: MANGAWHERO 355.010
MANGAWHROITI 355.014

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

TRK995451

General conditions

- a) That on receipt of a requirement from the General Manager, Taranaki Regional Council (hereinafter the General Manager), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) That unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) That the consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

- 1. THAT the consent holder shall notify the Taranaki Regional Council, at least 48 hours prior to commencement and upon completion of the initial construction, and again prior to, and upon completion of, any subsequent maintenance works which would involve disturbance of, or the deposition to the riverbed or discharges to water.
- 2. THAT the structure[s] authorised by this consent shall be constructed generally in accordance with the documentation submitted in support of the application and shall be maintained to ensure the conditions of this consent are met.
- 3. THAT during any construction or maintenance the consent holder shall adopt the best practicable option to avoid or minimise the discharge of silt or other contaminants into the water or onto the riverbed and to avoid or minimise the disturbance of the riverbed and any adverse effects on water quality.
- 4. THAT during any construction or maintenance the consent holder shall ensure that the area and volume of riverbed disturbance shall so far as is practicable, be minimised and any areas which are disturbed, shall so far as is practicable be reinstated.
- 5. THAT during any construction or maintenance the consent holder shall ensure that any disturbance of parts of the riverbed covered by water and/or any works which may result in downstream discolouration of water shall be undertaken only between 1 November and 30 April except where this requirement is waived by the written approval of the General Manager, Taranaki Regional Council.
- 6. THAT structure[s] which are the subject of this consent shall not obstruct fish passage.
- 7. THAT the consent holder shall develop and undertake a monitoring programme to determine the adequacy of fish passage as deemed necessary by the General Manager, Taranaki Regional Council, subject to section 35(2)(d) and section 36 of the Resource Management Act 1991. This monitoring information is to be forwarded to the General Manager, Taranaki Regional Council, upon request.
- 8. THAT the structure[s] authorised by this consent shall be removed and the area reinstated, if and when the structure[s] are no longer required. The consent holder shall notify the Taranaki Regional Council at least 48 hours prior to structure[s] removal and reinstatement.

TRK995451

9. THAT the Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during the month of June 2001 and/or June 2005 and/or June 2011, for the purpose of ensuring that the conditions are adequate to deal with any significant adverse effects on the environment arising from the exercise of this consent, which either were 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 1 March 1999

For and on behalf of
TARANAKI REGIONAL COUNCIL

DIRECTOR—RESOURCE MANAGEMENT

TRK995452

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: SOUTH TARANAKI DISTRICT COUNCIL
PRIVATE BAG 902 HAWERA

Consent Granted Date: 1 March 1999

CONDITIONS OF CONSENT

Consent Granted: TO ERECT, PLACE, USE AND MAINTAIN A WATER INTAKE STRUCTURE AND ASSOCIATED ANCILLARY STRUCTURES INCLUDING EROSION PROTECTION AND RIVER CONTROL WORKS UPSTREAM, AND A SWINGBRIDGE DOWNSTREAM, OF THE INTAKE STRUCTURE ON THE BED OF THE MANGAWHERO STREAM IN THE KAUPOKONUI CATCHMENT FOR WATER ABSTRACTION PURPOSES AT OR ABOUT GR: P20:041-016

Expiry Date: 1 June 2017

Review Date[s]: June 2001, June 2005 and June 2011

Site Location: MANGAWHERO STREAM, MANGAWHERO ROAD, KAPONGA

Legal Description: SO370 SEC 11 BLK VI KAUPOKONUI SD

Catchment: KAUPOKONUI 355.000

Tributary: MANGAWHERO 355.010

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

TRK995452

General conditions

- a) That on receipt of a requirement from the General Manager, Taranaki Regional Council (hereinafter the General Manager), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) That unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) That the consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

- 1. THAT the consent holder shall notify the Taranaki Regional Council, at least 48 hours prior to the commencement and upon completion of the initial construction, and again prior to, and upon completion of, any subsequent maintenance works which would involve disturbance of, or the deposition to the riverbed or discharges to water.
- 2. THAT the structure[s] authorised by this consent shall be constructed generally in accordance with the documentation submitted in support of the application and shall be maintained to ensure the conditions of this consent are met.
- 3. THAT during any construction or maintenance the consent holder shall adopt the best practicable option to avoid or minimise the discharge of silt or other contaminants into the water or onto the riverbed and to avoid or minimise the disturbance of the riverbed and any adverse effects on water quality.
- 4. THAT during any construction or maintenance the consent holder shall ensure that the area and volume of riverbed disturbance shall so far as is practicable, be minimised and any areas which are disturbed, shall so far as is practicable be reinstated.
- 5. THAT during any construction or maintenance the consent holder shall ensure that any disturbance of parts of the riverbed covered by water and/or any works which may result in downstream discolouration of water shall be undertaken only between 1 November and 30 April except where this requirement is waived by the written approval of the General Manager, Taranaki Regional Council.
- 6. THAT structure[s] which are the subject of this consent shall not obstruct fish passage.
- 7. THAT the consent holder shall develop and undertake a monitoring programme to determine the adequacy of fish passage as deemed necessary by the General Manager, Taranaki Regional Council, subject to section 35(2)(d) and section 36 of the Resource Management Act 1991. This monitoring information is to be forwarded to the General Manager, Taranaki Regional Council, upon request.
- 8. THAT the structure[s] authorised by this consent shall be removed and the area reinstated, if and when the structure[s] are no longer required. The consent holder shall notify the Taranaki Regional Council at least 48 hours prior to structure[s] removal and reinstatement.

TRK995452

9. THAT the Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during the month of June 2001 and/or June 2005 and/or June 2011, for the purpose of ensuring that the conditions are adequate to deal with any significant adverse effects on the environment arising from the exercise of this consent, which either were 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 1 March 1999

For and on behalf of
TARANAKI REGIONAL COUNCIL

DIRECTOR—RESOURCE MANAGEMENT

**Waverley Water Supply
(STDC)**

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

Name of Consent Holder: South Taranaki District Council
Private Bag 902
HAWERA 4640

Decision Date (Change): 23 January 2013

Commencement Date (Change): 23 January 2013 (Granted: 23 September 2010)

Conditions of Consent

Consent Granted: To take and use groundwater from the "Fookes Street" bore (GND0244) at or about (NZTM) 1739130E-5597816N, the "Chester Street" bore (GND0059) at or about (NZTM) 1740040E-5597843N and the "Swinbourne Street" bore (GND2242)) at or about (NZTM) 1739058E-5597248N for municipal water supply purposes at Waverley

Expiry Date: 1 June 2022

Review Date(s): June 2016

Site Location: Fookes Street, Chester Street & Swinbourne Street, Waverley

Legal Description: Pt Sec 31 SO 34857 Waverley Tn Belt (Fookes Street)
Sec 28 Waverley Tn Belt (Chester Street)
Pt Sec 32 SO 34857 Waverley Tn Belt (Swinbourne Street)(Site of takes)

Catchment: Whenuakura
Wairoa

*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 combined total volume of water taken from the 'Fookes Street' bore (GND0244), the 'Chester Street' bore (GND0059) and the 'Swinbourne Street' bore (GND2242) shall not exceed 900 cubic metres per day and the combined rate shall not exceed 14.2 litres per second.
- 2. The daily maximum take volume and abstraction rate from each individual bore shall not exceed the limits specified below:

Production bore ID	Maximum daily abstraction volume (cubic metres per day)	Maximum daily abstraction rate (litres per second)
Fookes Street (GND0244)	500	7.2
Chester Street (GND0059)	400	7.0
Swinbourne Street (GND2242)	890	10.3

- 3. The bores shall be easily identifiable by permanent labels, which may be welded or engraved on the casing, or on the equivalent fixed part of the well construction or associated building. The label shall show the bore number assigned by the Taranaki Regional Council (GND0244 at Fookes Street, GND0059 at Chester Street and GND2242 at Swinbourne Street).
- 4. Prior to the exercise this consent the consent holder shall install, and thereafter maintain a water meter and a datalogger on each bore. The water meters and dataloggers shall be tamper-proof and shall measure and record the rate and volume of water taken to an accuracy of $\pm 5\%$.

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 life-span.

- 5. Prior to the commencement of abstraction from the Swinbourne Street production bore, the consent holder shall in each bore, install and subsequently maintain equipment approved by the Taranaki Regional Council to measure and record the water level within each bore.
- 6. The consent shall, for each bore, maintain an abstraction record, including the date and time of abstraction, instantaneous rate and cumulative abstraction volume. The consent holder shall also maintain a record of water level in each bore, at intervals not exceeding 15 minutes, and include the date and time of measurement. All records shall be made available to the Chief Executive, Taranaki Regional Council in an approved format, by 31 July each year or earlier upon request.

Consent 3313-3

7. Within 30 days of the installation of a water meter or datalogger, and upon request, the consent holder shall provide the Chief Executive, Taranaki Regional Council with a document from a suitably qualified person certifying that:
 - a. water measuring or recording equipment required by the conditions of this consent has been installed and/or maintained in accordance with the manufacturer's specifications; and
 - b. water measuring or recording equipment required by the conditions of this consent has been tested and shown to be operating to an accuracy of $\pm 5\%$.
8. 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.
9. 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 groundwater, including, but not limited to, the efficient and conservative use of water.
10. The taking shall not cause the intrusion of salt water into any freshwater aquifer.
11. The consent holder shall ensure that there is access into the well that enables the measurement of static and pumping water levels.

Note: Compliance with this condition can be achieved with the existing wellhead configuration by allowing access to the well via the water level monitoring transducer installation tubing.

12. 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 2016 for the purposes of:
 - (a) 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; and/or
 - (b) to require any data collected in accordance with the conditions of this consent to be transmitted directly to the Council's computer system, in a format suitable for providing a 'real time' record over the internet.

Signed at Stratford on 23 January 2013

For and on behalf of
Taranaki Regional Council

Director-Resource Management

Waverley Beach Water Supply (STDC)

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

Name of
Consent Holder: South Taranaki District Council
Private Bag 902
HAWERA 4640

Decision Date: 1 May 2013

Commencement Date: 1 May 2013

Conditions of Consent

Consent Granted: To take and use water groundwater for Waverley Beach
water supply purposes

Expiry Date: 1 June 2028

Review Date(s): June 2016, June 2022

Site Location: Waipipi Road, Waverley

Legal Description: Pt Run 2 & 3 Blk XI Wairoa SD (Site of take)

Grid Reference (NZTM) 1739933E-5589679N

Catchment: Unnamed Stream 3

*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 total volume of water taken from the 'bore 2' (GND2224) shall not exceed 80 cubic metres per day at a rate not exceeding 1.5 litres per second.
2. The taking shall not cause the intrusion of saltwater into any freshwater aquifer.
3. The bores within the supply network shall be easily identifiable by permanent labels, which may be welded or engraved on the casing, or on the equivalent fixed part of the well construction or associated building. The numbering on the label shall be the bore number assigned by Taranaki Regional Council as follows:

Bore 1: GND1061

Bore 2: GND2224

4. Prior to exercising this consent the consent holder shall install, and thereafter maintain a water meter and a datalogger at the site of taking. The water meter and datalogger shall be tamper-proof and shall measure and record the rate and volume of water taken to an accuracy of $\pm 5\%$.

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.

5. Within 30 days of the installation of a water meter or datalogger, and at other times when reasonable notice is given, the consent holder shall provide the Chief Executive, Taranaki Regional Council with a document from a suitably qualified person certifying that:
 - a. water measuring or recording equipment required by the conditions of this consent has been installed and/or maintained in accordance with the manufacturer's specifications; and/or
 - b. water measuring or recording equipment required by the conditions of this consent has been tested and shown to be operating to an accuracy of $\pm 5\%$.
6. Prior to exercising this consent the consent holder shall install water level monitoring devices in each bore (GND1061 and GND2224). The water level monitoring devices shall be accurate to ± 0.05 metres and record levels at intervals not exceeding 15 minutes.

Consent 9563-1

7. Within 30 days of the installation of the water level monitoring devices, and at other times when reasonable notice is given, the consent holder shall provide the Chief Executive, Taranaki Regional Council with a document from a suitably qualified person certifying that:
 - a. water level monitoring devices required by the conditions of this consent have been installed and/or maintained in accordance with the manufacturer's specifications; and/or
 - b. water level monitoring devices required by the conditions of this consent have been tested and shown to be operating to an accuracy of ± 0.05 metres.
8. The water meter and datalogger shall be accessible to Taranaki Regional Council officer's at all reasonable times for inspection and/or data retrieval.
9. 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.
10. The consent shall maintain an abstraction record, including the date and time of abstraction, instantaneous rate and cumulative abstraction volume. The consent holder shall also maintain a record of water level in each bore, at intervals not exceeding 15 minutes, and include the date and time of measurement. All records shall be made available to the Chief Executive, Taranaki Regional Council in an approved format, by 31 July each year or earlier upon request.
11. At all times the consent holder shall adopt the best practicable option (BPO) to prevent or minimise any actual or likely adverse effect on the environment associated with the abstraction of groundwater, including, but not limited to, the efficient and conservative use of water.
12. This consent shall lapse on 30 June 2018, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
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 month of June 2016 and/or June 2022 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 1 May 2013

For and on behalf of
Taranaki Regional Council

Chief Executive

Oaonui WTP (OWSL)

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

Name of
Consent Holder: Oaonui Water Supply Limited
PO Box 3157
New Plymouth 4347

Decision Date
(Change): 17 November 2015

Commencement Date
(Change): 17 November 2015

Conditions of Consent

Consent Granted: To take and use water from the Oaonui Stream for a rural community water supply scheme and the Maui Production Station

Expiry Date: 1 June 2018

Site Location: Arawhata Road, Oaonui

Legal Description: Ngatitara 29 Blk VII Opunake SD (Site of take)

Grid Reference (NZTM) 1676540E-5640940N

Catchment: Oaonui

*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 volume of water extracted shall not exceed:
 - a) 4000 cubic metres per day until 30 April 2016; and
 - b) 3500 cubic metres per day after 30 April 2016;at a rate not exceeding 50 litres per second.
2. The resource consent holder shall maintain, to the satisfaction of the Chief Executive, Taranaki Regional Council, a measuring device capable of accurately recording daily rates of abstraction and shall measure, record and make such records available to the Chief Executive, Taranaki Regional Council, upon request.
3. When the flow in the Oaonui Stream, measured immediately below the intake point, is less than 152 litres/second, the taking of water shall be restricted to the minimum amount necessary to maintain the health of people and animals (i.e. garden watering and other non-essential uses are prohibited).
4. The resource consent holder shall promote the efficient use of water and undertake a leak detection and repair programme throughout the term of the consent for the Oaonui Rural Water Supply Scheme and report on this programme by 31 May 2001, 2002, 2003, 2006, 2012 to the Chief Executive, Taranaki Regional Council.
5. The consent holder shall mitigate the environmental effects of the taking by making annual payments of \$1000 (plus GST) to the Taranaki Regional Council as a financial contribution. The amount shall be adjusted annually according to the consumer price index, or similar index, to account for the effects of inflation.
6. The resource consent holder may apply to the Taranaki Regional Council for a change or cancellation of the conditions of this resource consent, in accordance with section 127(1)(a) of the Resource Management Act 1991, to take into account operational requirements or the results of monitoring.

Signed at Stratford on 17 November 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: Oaonui Water Supply Limited
R Stanley
P O Box 593
NEW PLYMOUTH

Consent Granted
Date: 1 March 1999

Conditions of Consent

Consent Granted: To erect, place, use and maintain a water intake structure on the bed of the Oaonui Stream for water abstraction purposes at or about GR: P20:865-031

Expiry Date: 1 June 2018

Review Date(s): June 2001, June 2006, June 2012

Site Location: Oaonui Stream, 685 Arawhata Road, Opunake

Legal Description: Lot 29 DP 682 Blk VIII Opunake SD

Catchment: Oaonui

Consent 5453-1

General conditions

- a) That on receipt of a requirement from the General Manager, Taranaki Regional Council (hereinafter the General Manager), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) That unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) That the consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. THAT the consent holder shall notify the Taranaki Regional Council, at least 48 hours prior to the commencement and upon completion of the initial construction, and again prior to, and upon completion of, any subsequent maintenance works which would involve disturbance of, or deposition to the riverbed or discharges to water.
2. THAT the structure[s] authorised by this consent shall be constructed generally in accordance with the documentation submitted in support of the application and shall be maintained to ensure the conditions of this consent are met.
3. THAT during any construction or maintenance the consent holder shall adopt the best practicable option to avoid or minimise the discharge of silt or other contaminants into the water or onto the riverbed and to avoid or minimise the disturbance of the riverbed and any adverse effects on water quality.
4. THAT during any construction or maintenance the consent holder shall ensure that the area and volume of riverbed disturbance shall so far as is practicable, be minimised and any areas which are disturbed, shall so far as is practicable be reinstated.
5. THAT during any construction or maintenance the consent holder shall ensure that any disturbance of parts of the riverbed covered by water and/or any works which may result in downstream discolouration of water shall be undertaken only between 1 November and 30 April except where this requirement is waived by the written approval of the General Manager, Taranaki Regional Council.
6. THAT structure[s] which are the subject of this consent shall not obstruct fish passage.
7. THAT the consent holder shall develop and undertake a monitoring programme to determine the adequacy of fish passage as deemed necessary by the General Manager, Taranaki Regional Council, subject to section 35(2)(d) and section 36 of the Resource Management Act 1991. This monitoring information is to be forwarded to the General Manager, Taranaki Regional Council, upon request.
8. THAT the structure[s] authorised by this consent shall be removed and the area reinstated, if and when the structure[s] are no longer required. The consent holder shall notify the Taranaki Regional Council at least 48 hours prior to structure[s] removal and reinstatement.

Consent 5453-1

9. THAT the Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during the month of June 2001 and/or June 2006 and/or June 2012, for the purpose of ensuring that the conditions are adequate to deal with any significant adverse effects on the environment arising from the exercise of this 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.

Transferred at Stratford on 19 October 2000

For and on behalf of
Taranaki Regional Council

Chief Executive

Nukumaru Rural Water Supply (NWSSI)

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

Name of
Consent Holder: Nukumarū Water Scheme Society Inc
P O Box 53
WAITOTARA

Consent Granted
Date: 20 October 2004

Conditions of Consent

Consent Granted: To take and use groundwater from up to two bores for the purpose of supplying the Nukumarū community rural water scheme at or about GR: R22:662-549

Expiry Date: 1 June 2039

Review Date(s): June 2010, June 2017, June 2025

Site Location: Pakaraka Road, Waitotara

Legal Description: Lot 1 DP 26645 Lot 1 DP 85667 Secs 8, 20 Blk V Secs 4, 20 Blk VI Pt Sec 4 Blk IX Nukumarū SD

Catchment: Waitotara

Tributary: Ohie

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. The exercise of this consent shall be undertaken in general accordance with the documentation submitted in support of application 3297 and shall ensure the efficient and effective use of water. In the case of any contradiction between the documentation submitted in support of application 3297 and the conditions of this consent, the conditions of this consent shall prevail.
2. The volume of groundwater abstracted shall not exceed 605 cubic metres per day at a rate not exceeding 7.0 litres per second.
3. The consent holder shall install and maintain a water meter approved by the Chief Executive, Taranaki Regional Council, for the purposes of accurately recording the abstraction of water.
4. The consent holder shall maintain weekly records of the abstraction including date, pumping hours and volume pumped, and make these records available to the Chief Executive, Taranaki Regional Council, no later than 31 July of each year, or upon request.
5. This consent shall be subject to monitoring by the Taranaki Regional Council and the consent holder shall meet all reasonable costs associated with the monitoring.
6. This consent shall lapse on the expiry of five years after the date of commencement of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

Consent 6451-1

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 2010 and/or June 2017 and/or June 2025, 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 20 October 2004

For and on behalf of
Taranaki Regional Council

Director-Resource Management

Appendix II

Biomonitoring and fish survey reports

To Job Manager, S Cowperthwaite
From Freshwater Biologist, B Jansma
File 03-02-005-15/01; 0933;
Report No BJ273
Doc No 1682541
Date 10 May 2016

Biomonitoring of the Kapuni Stream in relation to the Kapuni Water Treatment Plant, March 2016

Introduction

This survey of two sites in the Kapuni Stream was conducted to determine if there had been adverse effects related to the discharge of filter backwash and settling tank sediment from the Kapuni Water Treatment Plant. The survey fulfilled the biological monitoring requirements for this STDC consent monitoring programme in the 2015-2016 monitoring year. Results from surveys performed since the 2000-01 monitoring year are detailed in the references.

This survey was the seventh to follow commissioning of the Kapuni Water Treatment Plant in 2009. The new discharge point is now located just upstream of the Skeet Road bridge, and the sampling sites have consequently been changed, to enable monitoring of this new location.

At the time of the initial survey, no discharge of filter backwash and settling tank sediment had yet occurred from this new discharge point, and therefore that survey acted as a baseline survey, with which future surveys can be compared. The current survey is the sixth survey undertaken since the plant became fully operational.

Methods

The standard '400 ml kick-sampling' technique was used to collect streambed macroinvertebrates from two established sites in the Kapuni Stream in relation to the Kapuni Water Treatment Plant on 21 March 2016. This 'kick-sampling' technique is very similar to Protocol C1 (hard-bottomed, semi-quantitative) of the New Zealand Macroinvertebrate Working Group (NZMWG) protocols for macroinvertebrate samples in wadeable streams (Stark et al, 2001). The sites are described in Table 1 and Figure 1.

Samples were preserved with Kahle's Fluid for later sorting and identification under a stereomicroscope according to Taranaki Regional Council methodology using protocol P1 of NZMWG protocols for sampling macroinvertebrates in wadeable streams (Stark et al. 2001). Macroinvertebrate taxa found in each sample were recorded as:

R (rare)	= less than 5 individuals;
C (common)	= 5-19 individuals;
A (abundant)	= estimated 20-99 individuals;
VA (very abundant)	= estimated 100-499 individuals;
XA (extremely abundant)	= estimated 500 individuals or more.

Table 1 Biomonitoring sites in the Kapuni Stream in relation to the Kapuni Water Treatment Plant

Site No.	Site Code	Location
1	KPN000300	Approximately 30 metres upstream of Skeet Rd, upstream of the Kapuni water treatment plant discharge.
2	KPN000301	Approximately 30m downstream of Skeet Rd & 50m downstream of Kapuni water treatment plant discharge



Figure 1 Aerial photo showing the location of the old and new water treatment facilities, and relevant sampling sites.

Stark (1985) developed a scoring system for macroinvertebrate taxa according to their sensitivity to organic pollution in stony New Zealand streams. Highly 'sensitive' taxa were assigned the highest scores of 9 or 10, while the most 'tolerant' forms scored 1. Sensitivity scores for certain taxa have been modified in accordance with Taranaki experience. By averaging the scores obtained from a list of taxa taken from one site and multiplying by a scaling factor of 20, a Macroinvertebrate Community Index (MCI) value was obtained. The MCI is a measure of the overall sensitivity of macroinvertebrate communities to the effects of organic pollution. More 'sensitive' communities inhabit less polluted waterways.

A semi-quantitative MCI value (SQMCI_s) has also been calculated for the taxa present at each site by multiplying each taxon score by a loading factor (related to its abundance), totalling these products, and dividing by the sum of the loading factors (Stark, 1998 and 1999). The loading factors were 1 for rare (R), 5 for common (C), 20 for abundant (A), 100 for very abundant (VA) and 500 for extremely abundant (XA). Unlike the MCI, the SQMCI_s is not multiplied by a scaling factor of 20, so that its corresponding range of values is 20x lower.

Results and discussion

At the time of this mid-morning survey, there was a clear, uncoloured flow in the Kapuni Stream and the water temperature ranged from 18.0 to 18.3°C. The survey was performed during a moderate period of low flow, 32 days after a fresh in excess of three times median flow and also 7 times median flow, resulting in the survey being undertaken during low flows. The bed of the stream at both sites comprised predominantly cobbles, coarse gravel and boulders, with some fine gravel and sand. It was noted during this survey that the stream appeared to have been severely impacted by a recent flood event, with large volumes of substrate moving down the catchment. In addition, there was fine silt tied up in the substrate, especially at site 2, suggesting an erosion event in the National Park. Neither site supported much periphyton, with only a thin film of algae observed. Neither site enjoyed any shading from riparian vegetation.

It was noted during the March 2013 that a backwash discharge was causing notable discolouration downstream (Photo 1). No such discharge was observed during the current survey.



Photo 1 The backwash discharge entering the Kapuni Stream from the left, 13 March 2013

Macroinvertebrate communities

Previous biological surveys in the Kapuni Stream have generally recorded macroinvertebrate communities that would be expected in clean, mid-catchment ringplain streams. The communities have had moderate to relatively good numbers of taxa and moderately high MCI values. The results of previous surveys are summarised in Table 2, together with current results and for site 1 are illustrated in Figure 2. The full results of the current survey are presented in Table 3.

Table 2 Numbers of taxa and MCI values recorded in previous surveys performed in the Kapuni Stream in relation to the Kapuni WTP, together with current results

Site	Number of previous surveys	Numbers of taxa			MCI values		
		Median	Range	Current	Median	Range	Current
1	126	17	6-40	28	110	60-145	108
2	7	22	17-25	23	114	110-117	104

Site 1 - upstream of WTP discharge

This site has an extensive historical dataset, as a result of monitoring undertaken in relation to the Vector Kapuni and Ballance Agri-Nutrients Kapuni Ltd sites, located upstream. This dataset extends as far back as October 1982 and can also be used as a reference for results at site 2 (KPN000301), until a suitable data record has been established there. It should be noted however, that the monitoring undertaken in relation to the Vector Kapuni and Ballance Agri-Nutrients Kapuni Ltd sites is done so using slightly different methodology, which has the potential to produce lower taxa richness and higher MCI scores.

The macroinvertebrate community at site 1 (upstream of the water treatment plant) had a high richness of 28 taxa, which was significantly higher than the median richness of all surveys conducted at this site to date (Table 2). Six 'highly sensitive' taxa were found, indicative of generally high preceding physicochemical water quality conditions and good physical habitat. The faunal community was characterised by two of these 'highly sensitive' taxa ((extremely abundant mayfly (*Deleatidium*) and abundant *Beraeoptera* caddisfly); five 'moderately sensitive' taxa (*Coloburiscus* mayfly, elmid beetles, dobsonfly larvae (*Archichauliodes*), stony-cased caddisfly (*Pycnocentroides*) and crane fly (*Aphrophila*); and two 'tolerant' taxa, (*Hydropsyche* caddisfly and orthoclad midge larvae).

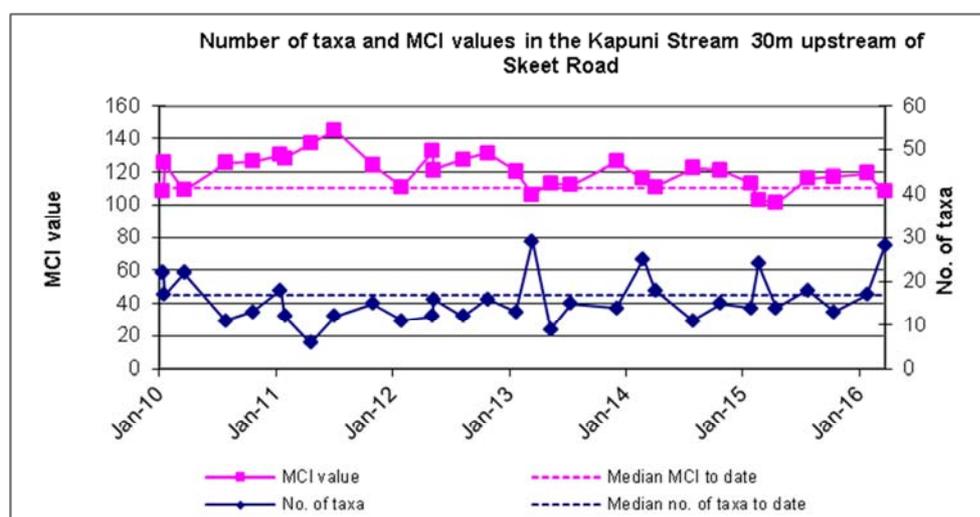


Figure 2 Numbers of taxa and MCI values in the Kapuni Stream upstream of Kapuni WTP

The increased proportion of 'sensitive' taxa (64% of taxa numbers) comprising this community was reflected in the MCI score of 108 units, which was an insignificant two units less than the median, and three units higher than that recorded in the previous survey (Figure 2, Table 2). This slight increase may be attributable to the shorter period of low flows that preceded this survey, compared to the previous survey, which was undertaken in very low flows. In addition, this score was slightly higher than the predicted score for this site (99 units), 19.1 km downstream of the National Park boundary (Stark and Fowles, 2009, Stark, 1998).

Table 3 Macroinvertebrate fauna of the Kapuni Stream in relation STDC Kapuni WTP sampled on 21 March 2016

Taxa List	Site Number	MCI score	1	2
	Site Code		KPN000300	KPN000301
	Sample Number		FWB16180	FWB16179
NEMERTEA	Nemertea	3	R	-
ANNELIDA (WORMS)	Oligochaeta	1	C	C
	Lumbricidae	5	R	-
MOLLUSCA	<i>Potamopyrgus</i>	4	C	R
EPHEMEROPTERA (MAYFLIES)	<i>Austroclima</i>	7	R	R
	<i>Coloburiscus</i>	7	A	A
	<i>Deleatidium</i>	8	XA	XA
	<i>Nesameletus</i>	9	C	C
	<i>Zephlebia group</i>	7	R	-
PLECOPTERA (STONEFLIES)	<i>Zelandoperla</i>	8	R	R
COLEOPTERA (BEETLES)	Elmidae	6	VA	A
	Hydraenidae	8	R	-
MEGALOPTERA (DOBSONFLIES)	<i>Archichauliodes</i>	7	A	C
TRICHOPTERA (CADDISFLIES)	<i>Hydropsyche (Aoteapsyche)</i>	4	VA	A
	<i>Costachorema</i>	7	R	C
	<i>Hydrobiosis</i>	5	C	C
	<i>Psilochorema</i>	6	R	-
	<i>Beraeoptera</i>	8	A	C
	<i>Olinga</i>	9	C	C
	<i>Pycnocentroides</i>	5	A	C
DIPTERA (TRUE FLIES)	<i>Aphrophila</i>	5	A	C
	Eriopterini	5	C	-
	<i>Maoridiamesa</i>	3	-	R
	Orthoclaadiinae	2	A	A
	<i>Polypedilum</i>	3	R	C
	Tanytarsini	3	C	R
	Empididae	3	R	R
	Muscidae	3	-	R
	<i>Austrosimulium</i>	3	R	R
	Tabanidae	3	R	-
No of taxa			28	23
MCI			108	104
SQMCIs			6.8	7.4
EPT (taxa)			13	11
%EPT (taxa)			46	48
'Tolerant' taxa		'Moderately sensitive' taxa	'Highly sensitive' taxa	

R = Rare C = Common A = Abundant VA = Very Abundant XA = Extremely Abundant

Site 2 - downstream of WTP

Taxa richness at site 2, 30m downstream of the water treatment plant discharge, was 23 taxa, slightly lower than that recorded at site 1 (Table 2). The difference in community composition between sites was relatively insignificant as in all but one instance it was due to the presence/absence of taxa found only as rarities (less than 5 individuals per taxon) at the upstream site when they were absent/present downstream. Five 'highly sensitive' taxa were present, with the community characterised by the same taxa as those dominant at site 1 with the exception of one 'highly sensitive' taxon (*Beraeoptera* caddisfly larvae) and three moderately sensitive taxa (dobsonfly larvae *Archichauliodes*, stony cased caddisfly *Pycnocentroides* and *Aphrophila* crane fly), all of which reduced in abundance to be 'common' at site 2 (Table 3). Due to a decreased proportion of 'sensitive' taxa in the community, the MCI score at site 2 (104 units) was four units lower than the score recorded at site 1 upstream, which is not a statistically significant result (Stark, 1998). This score was lower than (but not significantly so) the median of past scores from KPN00300 but lower than that recorded at this site during any previous survey (Figure 3). When the nature of the changes is considered, it is not considered indicative of impacts from the water treatment plant discharge. Because of the proximity of KPN000300 to this site, the historical data for this site can be used for comparison at this site, which was only sampled for the eighth time in this survey.

Only one significant change in individual taxon abundance was recorded between sites, reflecting the similarity in community composition. The reduced abundance of one 'tolerant' taxa at site 2 was reflected in the SQMCI's score, which increased by 0.6 unit, a statistically insignificant improvement (Table 3).

This is not an unexpected result considering the period of low flow that preceded this survey, and the likely lasting impacts of the flood that mobilised large amounts of substrate including fine silt. It is also not an indication of any impacts from the Hawera water treatment plant.

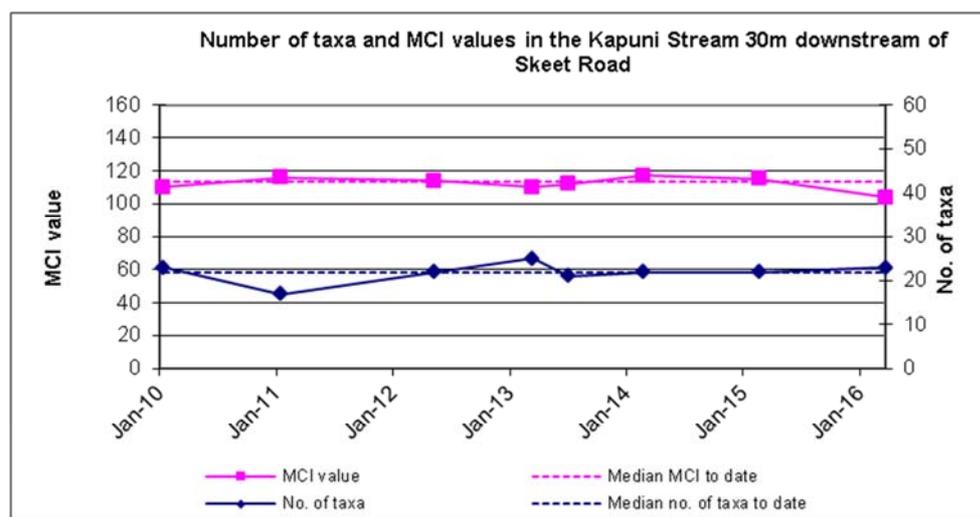


Figure 3 Numbers of taxa and MCI values in the Kapuni Stream downstream of Kapuni WTP

Summary and conclusions

The Council's standard 'kick-sampling' technique was used on 21 March 2016 at two sites to collect streambed macroinvertebrates from the Kapuni Stream to determine if there had been any adverse effects on the macroinvertebrate community of the stream from Kapuni

water treatment plant backwash discharges. Samples were sorted and identified to provide number of taxa (richness) and MCI and SQMCI_s scores for each site.

The MCI is a measure of the overall sensitivity of the macroinvertebrate community to the effects of organic pollution in stony streams. It is based on the presence/absence of taxa with varying degrees of sensitivity to environmental conditions. The SQMCI_s takes into account taxa abundance as well as sensitivity to pollution, and may reveal more subtle changes in communities, particularly if non-organic impacts are occurring. Significant differences in either the MCI or the SQMCI_s between sites indicate the degree of adverse effects (if any) of the discharges being monitored.

This survey was the sixth to follow full commissioning of the Kapuni Water Treatment Plant. The new discharge point is now located just upstream of the Skeet Road bridge, and the sampling sites were consequently changed, to enable monitoring of this new location. Site 1 has an extensive historical dataset, as a result of monitoring undertaken in relation to the Vector Kapuni and Ballance Agri-Nutrients Kapuni Ltd sites, located upstream. This dataset can also be used as a reference for site 2 (KPN000301), until a suitable data record has been established here. It should be noted however, that the monitoring undertaken in relation to the Vector Kapuni and Ballance Agri-Nutrients Kapuni Ltd sites is done so using slightly different methodology, which has the potential to produce lower taxa richness and higher MCI scores.

During this late summer macroinvertebrate survey, it was noted that the stream appeared to have been severely impacted by a recent flood event, with large volumes of substrate moving down the catchment. In addition, there was fine silt tied up in the substrate, especially at site 2, suggesting an erosion event in the National Park. The results of this survey indicated that the community at site 2, downstream of the discharge point, was in good health, and similar to that recorded upstream at site 1, upstream of the discharge point. There is no evidence to suggest that the discharge of filter backwash and settling tank sediment had resulted in an impact on the macroinvertebrate communities of the Kapuni Stream. This is despite the MCI score recorded downstream of the discharge being lower than the median score for the upstream site.

The macroinvertebrate communities of the Kapuni Stream contained significant proportions of 'sensitive' taxa at both sites and the communities were dominated by 'sensitive' taxa. Taxonomic richness (number of taxa) was high at the control site 1 and decreased only slightly at site 2 downstream of the discharge, although there were some changes in the presence/absence of a few taxa found as rarities (less than 5 individuals). Site 1 recorded a below average MCI score, which is considered a reflection of the long period of low flows that preceded this survey (60 days). The minimal change in MCI and SQMCI_s scores from site 1 to site 2 was not an unexpected result considering the period of low flow that preceded this survey, and the influence of substrate mobilisation during the last flood. These results are certainly not an indication of any impacts from the Hawera water treatment plant.

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Memorandum

To S Cowperthwaite, Scientific Officer
From B Jansma, Scientific Officer
Date 30 May 2016
Document No. 1692522
Report No. BJ277

Fish survey conducted in the Mangawhero Stream in relation to an STDC water supply weir for the Waimate West scheme, April 2016

Introduction

South Taranaki District Council (STDC) hold resource consents in relation to several rural water supply schemes. The monitoring programmes for these schemes include fish monitoring of a selection of the weirs each year. The programme for the 2015-2016 monitoring period included monitoring of the Mangawhero Stream weir. The consent relating to this weir is as follows:

5452 To erect, place, use and maintain a water intake structure and associated ancillary structures including erosion protection and river control works upstream, and a swing bridge downstream, of the intake structure on the bed of the Mangawhero Stream in the Kaupokonui Catchment for water abstraction purposes.

Special conditions under resource consent 5452 require that the water intake weir structure does not obstruct fish passage (special condition 6), and that the consent holder shall develop a monitoring programme to determine the adequacy of fish passage (special condition 7). The purpose of this monitoring programme is to assess compliance with special condition 6.

An electric fishing survey was performed on 6 April 2016 in the Mangawhero Stream, upstream (1 site) and downstream (1 site) of the STDC water supply weir to assess the effectiveness of fish passes installed on these weirs. The STDC weir in the Mangawhero Stream is located at an altitude of 440 m a.s.l. and is 0.5 metres high. Due to the high altitude, considerable distance inland from the sea and generally steep gradient in this stream, passage for weaker climbing fish is not considered necessary as these fish are unlikely to occur naturally at these sites. This was taken into account by STDC, who installed a v-notched rock ramp type fish pass at this weir in 1999, catering for moderate to strong climbing fish. However, due to the destructive floods that this stream frequently experiences, maintenance was regularly required, by placing rocks at the base of the fish pass in an effort to reduce a drop. These rocks were frequently washed away, and in April 2007, a new fish pass was installed on the true left bank. The new pass has a more gentle gradient while retaining a deeper channel, and ample area for climbing fish to negotiate. The old fish pass still remains also. The weir and fish passes are shown in Photo 1.

Previous fish surveys have been conducted in relation to the Mangawhero Stream diversion weir for the Waimate West Water Supply Scheme, most using the electric fishing survey

method. The 2013 survey was undertaken using the spotlighting method. Both methods have their advantages and disadvantages for determining fish populations. When all results are compiled from both survey methods it can provide comprehensive fish community data. The results of these past fish surveys are summarised in STDC water supply annual reports.



Photo 1 STDC weir, new fish pass (right of photo) and old fish pass (left of photo) in the Mangawhero Stream

Methods

In this survey two sites were sampled, one site upstream of the weir and one site downstream of the weir. The sites were surveyed using the electric fishing method, which employed a Kainga EFM machine. Those fish captured were identified and counted, where possible. Inevitably, some fish eluded capture, although some were identified before reaching cover. The length of each fish was estimated, following which they were released.

In general an electric fishing survey will survey a smaller area of stream than spotlighting. In this case, 80 m² of stream length was surveyed at site 1 (upstream of the weir), and 57 m² of stream length was surveyed at site 2 (downstream of the weir). Details of the sites surveyed are given in Table 1 and the location of sites surveyed in relation to the weir and fish pass are shown in Figure 1.

Table 1 Location of sites surveyed for fish in relation to the Mangawhero Stream water supply weir

Stream	Site code	Description	Altitude (m)	Distance Inland from sea (km)
Mangawhero Stream	MWR000138	40 m upstream of the STDC water supply weir	440	31.7
	MWR000141	50 m downstream of the STDC water supply weir	440	31.6

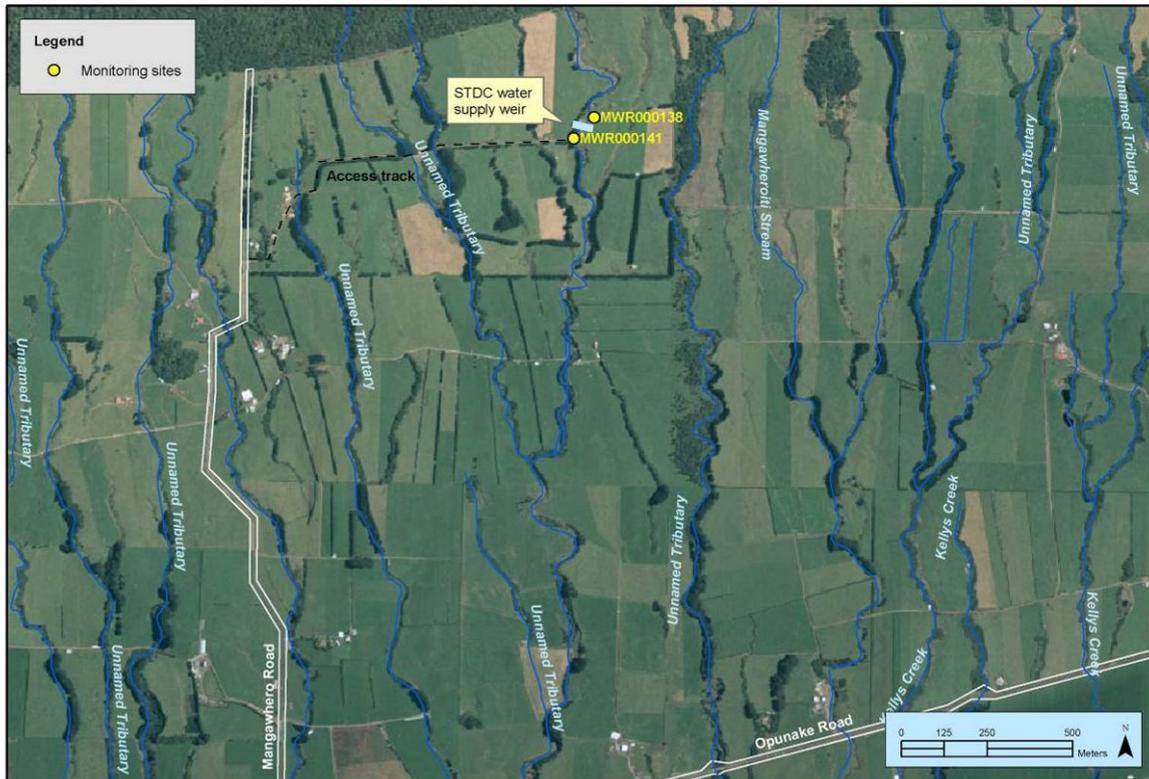


Figure 1 Location of sites surveyed in the Mangawhero Stream in relation to the Waimate West Water Supply weir and fish pass.

Results

It was noted during this survey that the natural iron oxide turbidity that is frequently present in the Mangawhero Stream was still present, but not to the same degree as that noted in the previous survey, when it was especially bad to the point where visibility was severely reduced, significantly reducing the effectiveness of the spotlighting technique. The results of the survey conducted in the Mangawhero Stream are presented in Table 2. Fish species recorded in previous surveys at these sites are also included in Table 2 for comparison.

Table 2 Fish species recorded in the Mangawhero Stream upstream and downstream of the water supply weir together with results of past surveys; P=present.

Fish species recorded	MWR000138 (u/s)		MWR000141 (d/s)	
	2016 survey	Previous surveys (8)	2016 survey	Previous surveys (8)
Longfin eel		P	2	P
Brown trout	1	P		P
Koaro		P		P
UID eel	1	P		P
UID galaxiid		P		
Torrentfish		-		P
Freshwater crayfish	3		3	
Total abundance of fish	2	-	2	-
Total no. of fish species	2	3	1	4

It was also noted during this survey that the stream had recently experienced a significant flood, with significant disturbance of the streambed, and flood debris left high on the bank. This was confirmed by the landowner, who indicated that the flood had occurred about one week previous.

The diversity (number of fish species) of fish in the communities at both sites was low during this survey, similar to previous surveys where the highest number of fish species recorded in any survey was 4. Diversity was higher upstream than downstream of the weir, although abundance of fish was the same (Table 2). It is possible that other fish were present, but that the naturally elevated turbidity resulted in them not being observed. Eels (*Anguilla* sp.) and brown trout (*Salmo trutta*) were recorded upstream of the weir, but only longfin eel (*Anguilla dieffenbachii*) were recorded downstream. Previous results have frequently recorded both species upstream of the weir, suggesting that these fish have been able to negotiate the old fish pass.

Since 1998, nine fish surveys (including the current survey) have been conducted in relation to the Mangawhero Stream water supply weir. This includes two surveys prior to the old fish pass being installed, four surveys after the old fish pass was installed but prior to the installation of the new fish pass, and three surveys after the new pass was installed. This provides sufficient data to assess compliance with special condition 6 of resource consent 5452, by comparing baseline fish communities with communities since the new fish pass was installed. Species richness recorded to date is presented in Figure 2. Unfortunately, previous reports included unidentified eel as a separate species. This is not strictly correct, and should only have occurred when no other eel species were recorded. Therefore, Figure 2 in the current report differs slightly from that presented in previous reports, with a lower species richness in the earlier (1998 & 1999) surveys.

Figure 2 shows the diversity recorded at sites above the weir (blue bars) and below the weir (red bars). The graph indicates that both before and after the fish pass was installed, diversity was low but is generally similar upstream and downstream of the weir. Fish diversity is generally lower in areas of high altitude or distance inland such as the location of this weir, as many of New Zealand's native fish need to migrate between the sea and freshwater to complete their life cycle, and therefore penetration inland varies with the swimming and climbing abilities of each species. As a result, fish diversity generally decreases as distance inland from the coast and altitude increases.

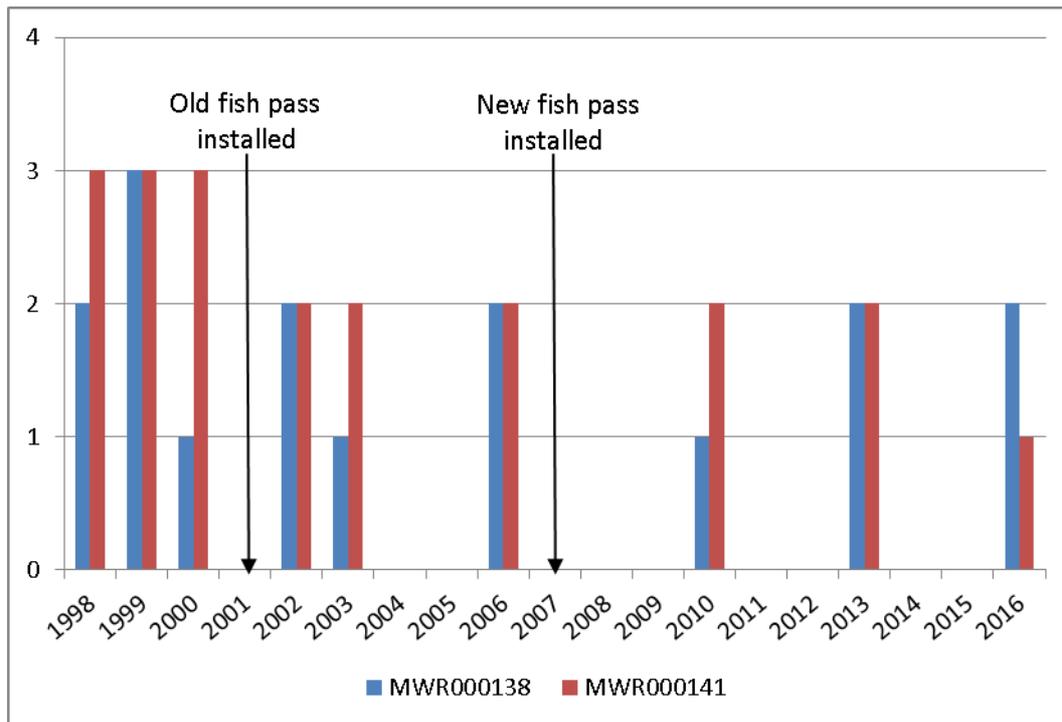


Figure 2 Diversity of fish (number of fish species) recorded in surveys conducted in the Mangawhero Stream since 1998. Blue = above weir; Red = below weir

Torrentfish (*Cheimarrichthys fosteri*) were not recorded in the current survey at either site. These fish have been recorded downstream of the weir in the past but have not yet been recorded upstream of the weir. Torrentfish are moderate swimmers, which can negotiate reasonably swift flows, however their climbing ability is poor to moderate. It is expected that the new fish pass is adequate to provide for the passage of torrentfish, however, the likelihood of recording torrentfish again at this altitude and distance from the coast is considered low.

Over the last fifteen years there has been a lack of species recorded in this reach of the Mangawhero Stream, with longfin eel being the only migratory species recorded. It appears that the galaxiids recorded in the past, including koaro and shortjaw kokopu, were not present in high abundance. When a population is not abundant, they are at greater risk of bed disturbing floods, as the loss of one or two individuals could represent a large proportion of the population. The current survey noted that a significant flood had preceded it, and this may have impacted on the galaxiid populations. It is likely that galaxiids are still present, although not in high abundance. A visual assessment of the new fish pass indicates that there is no impediment to the passage of those galaxiids likely to be present at this altitude.

Conclusions

A fish survey was conducted upstream and downstream of an STDC weir in the Mangawhero Stream weir on 6 April 2016. This survey used the electric fishing technique, although the effectiveness was reduced somewhat due to the natural iron oxide turbidity that is frequently present in the Mangawhero Stream, with visibility markedly reduced.

This is the third survey undertaken since a new fish pass was installed in 2007. In the Mangawhero Stream fish diversity was low both upstream and downstream of the weir, as has been recorded in previous surveys. This is likely to be related to the distance from the sea and the high altitude at which these sites are located, as fish diversity decreases with increasing altitude and distance inland. Fish communities were similar between the two sites and indicate that the STDC weir is generally not a barrier to the stronger climbing longfin eels, or trout. Although there may be times when trout are unable to negotiate the jump at the bottom of the old fish pass, and flows in the new pass may be too shallow at times, they are more likely to migrate pass the weir during floods, when passage for this strong swimming fish should be adequate.

Torrentfish (*Cheimarrichthys fosteri*) were not recorded in the current survey at either site. These fish have been recorded downstream of the weir in the past but have not yet been recorded upstream of the weir. Torrentfish are moderate swimmers which can negotiate reasonably swift flows, however their climbing ability is poor to moderate. It is expected that the new fish pass is adequate to provide for the passage of torrentfish, however, the likelihood of recording torrentfish again at this altitude and distance from the coast is considered low.

Other species, particularly galaxiids such as koaro and shortjaw kokopu have been recorded in this reach in the past. However, these species have not been recorded here for over fifteen years, and it is likely that their populations are relatively sparse in the upper Mangawhero Stream. A visual assessment of the new fish pass indicates that there is no impediment to the passage of those galaxiids likely to be present at this altitude.

Summary and recommendations for further monitoring

The monitoring of the Mangawhero Stream indicates that fish passage provided by the new fish pass is likely to provide fish passage for most fish present in this reach. This includes torrentfish, which were recorded on one previous occasion at this location.

If regular inspections of the fish pass confirm that it is operating as required and being maintained, it is recommended that the fish monitoring be conducted once every three years as per the scheduled monitoring programme currently implemented.

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Memorandum

To Scott Cowperthwaite, Job Manager
From Bart Jansma, Scientific Officer – Freshwater Biology
Document No. 1695392
Report No. BJ278
Date 7 June 2016

Fish survey conducted in the Cold Stream in relation to a STDC water supply weir, April 2016

Introduction

South Taranaki District Council (STDC) hold resource consents in relation to several rural water supply schemes. The monitoring programmes for these schemes include fish monitoring of a selection of the weirs each year. The programme for the 2015-2016 monitoring period included monitoring of the Cold Creek weir. The consent relating to the Cold Creek Water Supply Scheme is as follows:

5454 To erect, place, use and maintain a water intake structure on the bed of Cold Creek in the Taungatara Catchment for water abstraction purposes

Special conditions under resource consents 5454 require that the water intake weir structure does not obstruct fish passage, and that the consent holder shall develop a monitoring programme to determine the adequacy of fish passage. The purpose of this monitoring programme is to assess compliance with said conditions.

The weir in the Cold Stream is 1 metre high and located at an altitude of 350 m a.s.l. A fish pass was installed at this weir in 1999, and comprised of a “natural looking stream” channel of concrete and rocks, catering for trout and native fish of moderate climbing ability. Some modifications to this weir and fish pass were made in 2016. The weir and fish pass are shown in Photo 1.



Photo 1 Cold Stream weir and fish pass, 2016.

Four fish surveys have previously been conducted in relation to the Cold Stream diversion weir for the Cold Creek Water Supply Scheme, three by electric fishing, one by spotlighting. The results of these surveys are presented in reports referenced at the end of this report.

Methods

In this survey two sites were sampled, one site upstream of the weir and one site downstream of the weir, using the electric fishing method. This method involves the use of a Kainga EFM machine, which creates an electric field in the water. Fish are temporarily stunned by this charge, and they are collected with a scoop-net or the current sweeps them into a pole net set immediately downstream of the reach being fished. Those fish captured were identified and counted, where possible. Inevitably, some fish eluded capture, although some were identified before reaching cover. The length of each fish was estimated, following which they were released.

In general an electric fishing survey will survey a smaller area of stream than spotlighting. In this case, 25 meters of stream length was surveyed at site 1 (upstream of the weir), and 44 meters of stream length was surveyed at site 2 (downstream of the weir). Details of the sites surveyed are given in Table 1 and the location of sites surveyed in relation to the weir and fish pass are shown in Figure 1.

Table 1 Location of sites surveyed for fish in the Cold Stream in relation to the Cold Creek water supply weir

Site	Site code	Description	Area surveyed (m ²)	Altitude (m)	Distance Inland from sea (km)
1	CLD000175	Immediately upstream of the water supply weir	50	350	19.6
2	CLD000179	Approximately 1.4km downstream of the water supply weir	78	340	18.5

Results

The results of the survey conducted in the Cold Stream on 6 April 2016 are presented in Table 2. Fish species recorded in the previous surveys at these sites are also included for comparison.

The diversity (number of fish species) of fish in the communities at both sites was low during this survey, the same as found in the previous surveys. Brown trout (*Salmo trutta*) were the main species recorded in this survey, with the only other species recorded being longfin eel (*Anguilla dieffenbachii*), with one very large female recorded in a deep pool within the downstream survey reach. The length of this eel was estimated, as it was not captured. Trout were slightly more abundant upstream of the weir where 11 trout were observed.

Overall, the trout recorded in the Cold Stream represented at least three years of recruitment, with numerous sizes recorded (Table 2, Photo 2). This provides a good indication that the fish pass on the weir is providing adequate passage for trout. Eight trout were recorded downstream of the weir, and previous surveys closer to the weir have found that there is no aggregation of trout immediately below the weir.

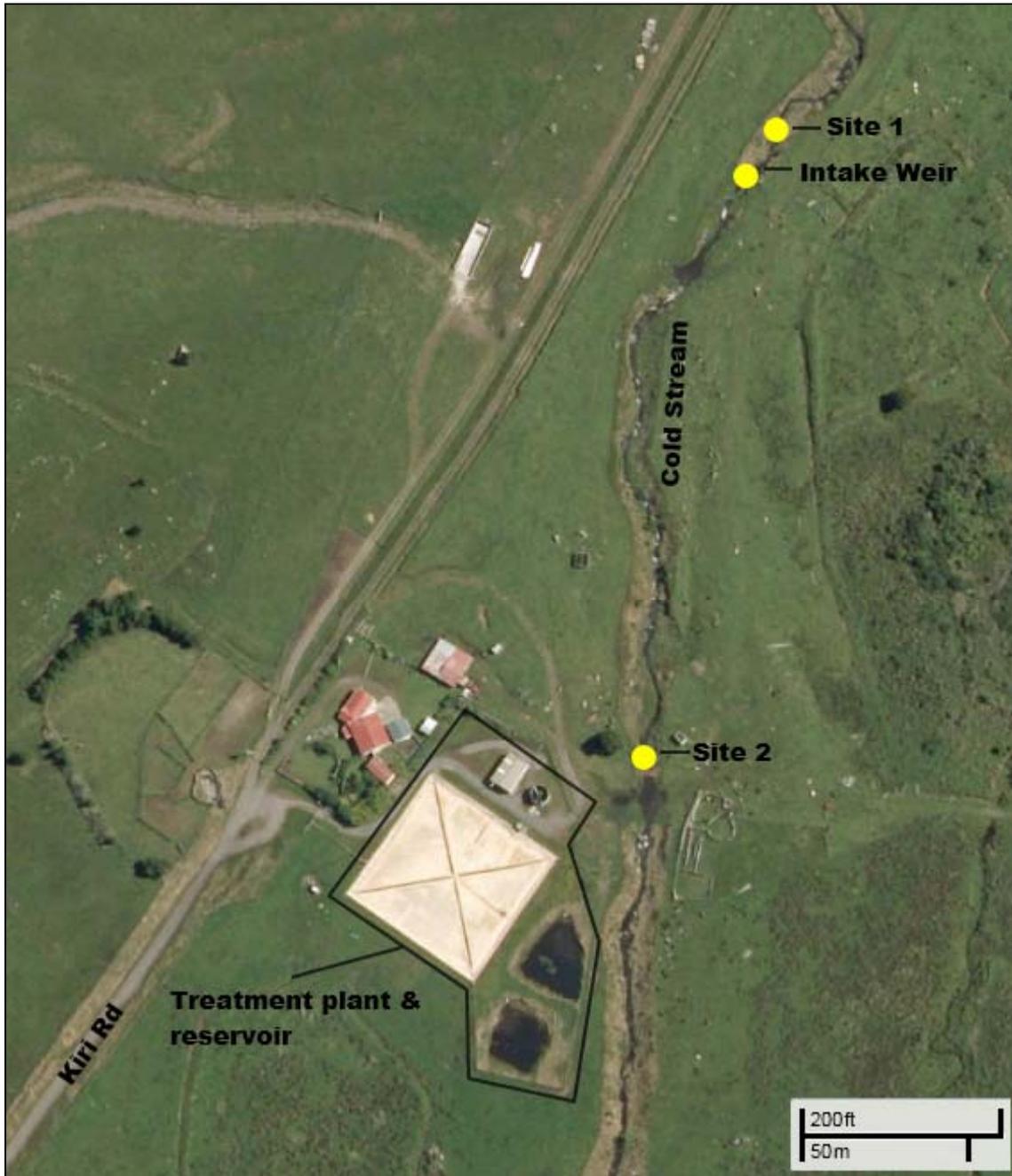


Figure 1 Location of sites surveyed in the Cold Stream in relation to the Cold Creek Water Supply weir and fish pass.

Table 2 Fish species recorded in the Cold Stream upstream and downstream of the Cold Creek water supply weir together with results of past surveys. The numbers in brackets indicate the size range recorded (mm).

Fish species recorded	Site 1 (U/S)	Site 2 (D/S)	Previously recorded upstream	Previously recorded downstream
Brown trout	11 (60-250)	8 (60-180)	✓	✓
Longfin eel	-	1 (1100)	✓	✓
Total abundance of fish	11	9	-	-
Total no. of fish species	1	2	2	2

The ages of the trout observed, with the majority of fish being less than two years old, suggests that this stream provides important spawning and rearing habitat and therefore is important for recruitment to the Taungatara Stream sports fishery.

A search on the NIWA fish database (New Zealand Freshwater Fish Database (NZFFDB)), which generally contains most fish monitoring results conducted within New Zealand, indicated only a few additional surveys in the Cold Stream, all of which had similar fish communities to that recorded by TRC surveys in recent years. However, an electric fishing survey conducted in September 1994 by the Department of Conservation did record one longfin eel.

The weir and fish pass received some maintenance in 2016, with the removal of vegetation and improvement of the channel. A visual assessment of the pass concluded that the weir and fish pass was unlikely to present a barrier to those species likely to be present at this altitude. Other than the occasional longfin eel, no native fish have been recorded in this stream to date. The 2013 survey opted for the spotlighting method, as this can be a more effective method for recording certain native species. Unfortunately, the flow conditions were such that this method was not very effective. It was concluded that this method should only be used in this stream in areas of slower flow, if they exist in the Cold Stream.



Photo 2 Trout recorded upstream of the Cold Stream weir, 6 April 2016.

Conclusions

An electric fishing survey was conducted on 6 April 2016 upstream and downstream of the Cold Stream weir (Cold Creek water supply scheme).

Very low fish diversity was recorded in the Cold Stream, 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 Stream 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 in the vicinity of the water intake weir to date. Only the occasional longfin eel 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 Stream reduces the effectiveness of this technique, as the flow is too swift. This method should only be employed in an area of slower flow, if 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.

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Memorandum

To Scott Cowperthwaite, Job Manager
From Bart Jansma, Scientific Officer – Freshwater Biology
Document No. 1695697
Report No. BJ279
Date 7 June 2016

Fish survey conducted in the Oaonui Stream in relation to a STDC water supply weir, March 2016

Introduction

South Taranaki District Council (STDC) holds resource consents in relation to several rural water supply schemes. The monitoring programmes for these schemes include fish monitoring of a selection of the weirs each year. The programme for the 2015-2016 monitoring period included monitoring of the Oaonui Stream weir. The consent relating to the Oaonui Water Supply Scheme is as follows:

5453 To erect, place, use and maintain a water intake structure on the bed of the Oaonui Stream for water abstraction purposes

Special conditions under resource consents 5453 require that the water intake weir structure does not obstruct fish passage, and that the consent holder shall develop a monitoring programme to determine the adequacy of fish passage. The purpose of this monitoring programme is to assess compliance with said conditions.

The weir associated with the Oaonui Water Supply scheme is 1.6 metres high. A fish pass was installed on this weir in April 2002. Prior to the installation of the fish pass, the 1.6 metre high weir presented a barrier to all except the best climbing species of native fish. The fish pass has withstood floods well, and when inspected in 2016, appeared to be in good condition (Photo 1).

The fish pass was designed and installed by the consent holder in conjunction with supervision and advice from the Taranaki Regional Council. The pass is designed for the passage of native fish. Trout passage was not considered as the stream is not a significant trout fishery, and this made the pass easier to design and install. Fish and Game Taranaki were consulted to gain their approval to confine the fish pass to a native pass only.

Several fish surveys have previously been conducted in relation to the Oaonui Water Supply weir, using two survey methods – night spotting and electric fishing. Both methods have their advantages and disadvantages for determining fish populations. When used together these methods can provide comprehensive fish community data. The results from surveys performed previously are discussed in various reports listed in the references in this report.



Photo 1 Oaonui Water Supply weir and fish pass, March 2016

Methods

In this survey two sites were sampled, one site upstream of the weir and one site downstream of the weir, using the electric fishing method. This method involves the use of a Kainga EFM machine, which creates an electric field in the water. Fish are temporarily stunned, and they are collected with a scoop-net or the current sweeps them into a pole net set immediately downstream of the reach being fished. Those fish captured were identified and counted, where possible. Inevitably, some fish eluded capture, although some were identified before reaching cover. The length of each fish was estimated, following which they were released.

In general an electric fishing survey will survey a smaller area of stream than spotlighting. In this case, 12 meters of stream length was surveyed at site 1 (upstream of the weir), and 7 meters of stream length was surveyed at site 2 (downstream of the weir). Details of the sites surveyed are given in Table 1, and the location of sites surveyed in relation to the weir and fish pass are shown in Figure 1. Included in Table 1 are the details for a site in the Manganui Stream, a tributary of the Oaonui Stream. This site was surveyed on 22 April 2016, and provides some additional perspective.

During the Oaonui Stream survey, the pool immediately below the weir and the pool immediately above the weir were surveyed using a seine net. This method involved dragging a net through the pool, in an effort to catch fish that prefer this type of habitat. This was done in an effort to establish whether inanga or smelt were present in these pools.

Table 1 Location of sites surveyed for fish in relation to the Oaonui water supply weir

Site	Site code	Description	Area surveyed (m ²)	Altitude (m)	Distance Inland from sea (km)
1	OAN000278	50 metres upstream of water intake weir	28	140	13.2
2	OAN000280	50 metres downstream of water intake weir	49	140	12.9
3	MGU000720	120 metres upstream of farm bridge	n/a	90	10.4

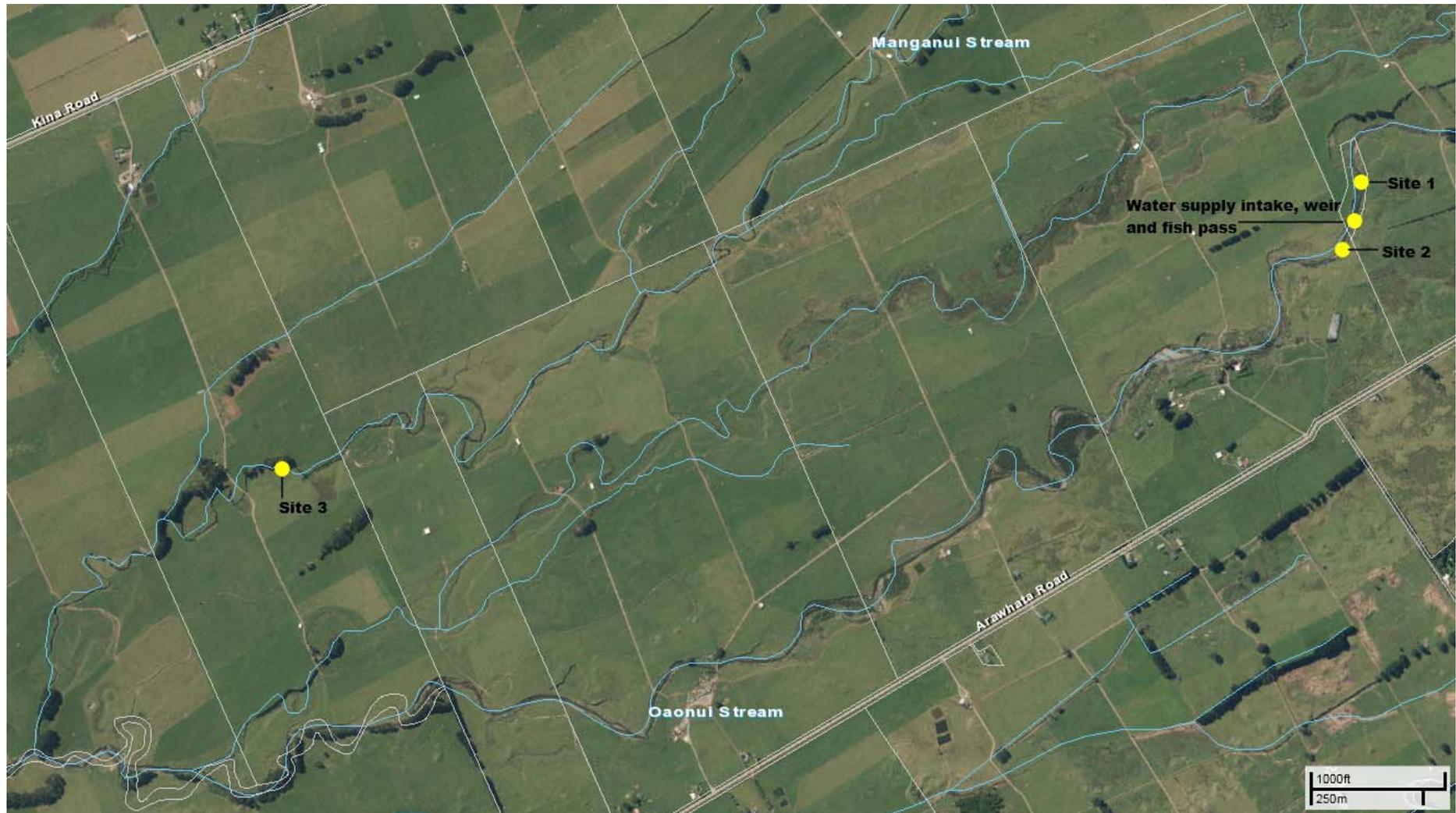


Figure 1 Location of water supply weir and sites surveyed in the current survey

Results

The results of the survey conducted in the Oaonui Stream on 31 March 2016 are presented in Table 2. Included are the results from the Manganui Stream survey, undertaken on 22 April 2016. Fish species recorded in previous surveys in the Oaonui Stream are also included in Table 2 for comparison. With the exception of a number of juvenile bully, no fish were collected by seine netting either site.

Table 2 Fish species recorded in the Oaonui Stream upstream and downstream of the water supply weir together with results of past surveys

Fish species recorded	OAN000280 (D/S)	OAN000170 (U/S)	Previously recorded downstream	Previously recorded upstream	Manganui Stream (MGU000720)
Longfin eel	12	16	✓	✓	17
Shortfin eel	31	18	✓	✓	2
Torrentfish	-	-	✓	✓	-
Giant kokopu	-	-	✓	-	-
Shortjaw kokopu	-	-	-	✓	-
Lamprey	-	1	-	✓	2
Inanga	-	-	✓	✓	1
Smelt	-	-	✓	-	-
Redfin bully	41	17	✓	✓	1
Common bully	-	-	✓	✓	-
UID bully	1	1			-
UID eel	11	5			9
Shrimp			✓	✓	2
Freshwater crayfish			✓	✓	1
Total abundance of fish	96	58	-	-	32
Total no. of fish species	3	4	8	8	5

A notable observation made during this survey was the effect on the flow downstream of the weir when the intake area is sluiced. To ensure that the intake valve is kept clear of sediment, once a day the intake is closed and the sluice gate is opened. This results in significant flow down the sluice gate, which flushes away the sediment that has accumulated around the intake pipe. During the current survey, the sluicing activity resulted in a significant reduction in water level in the head pond above the weir, and when the sluice gate was closed, it took some time for the headpond to fill. This amounted to a significant reduction in flow downstream of the weir, with the river draining to the point of there being essentially no flow until the weir began spilling again. This is well illustrated in Photo 2.

Species diversity was moderate upstream of the weir (four species), but slightly lower downstream (three species). The abundance of fish was higher downstream of the weir compared to the upstream site (Table 2). Redfin bully were most abundant downstream of the weir, although previous surveys have recorded good populations of this species further upstream (Jansma, 2013) indicating no barrier to their passage. Also particularly abundant were shortfin eels, and to a lesser degree longfin eels (Figure 2). It should be noted that the majority of these fish were juvenile. This higher abundance of juvenile eel and redfin bully may be a direct reflection of the impacts of the sluicing activities. Juveniles of these species prefer to live in shallow riffles, precisely the type of habitat that remained when the headpond was filling. In addition, the other species that would be expected at this altitude do not prefer shallow water, and it is likely that their migration upstream will be inhibited by these sluicing activities, especially if the reduction of flow extends for an extended length

downstream. When compared with the results from the nearby Manganui Stream, it is clear that the extremely high abundance of juvenile eel and redfin bully is not typical.



Photo 2 The Oaonui Stream in normal flow (top) and following slicing (bottom)

Previous surveys have not recorded torrentfish upstream of the weir, and this absence continued in the current survey. It is unclear what is contributing to this absence, although it should also be noted that torrentfish are rarely recorded immediately downstream of the weir. Torrentfish, along with inanga (*Galaxias maculatus*), are good indicator species for determining the successfulness of this fish pass as both are swimming fish (and therefore relatively poor climbers) which naturally occur at this altitude and distance inland from the coast, provided no barriers exist in the Oaonui Stream between the coast and the survey areas. If they are able to negotiate the pass, then all other fish species (generally better climbers) should also be able to successfully pass over the weir via the fish pass. Both of these species may be discouraged from migrating into the reach of the Oaonui Stream affected by the slicing activities.

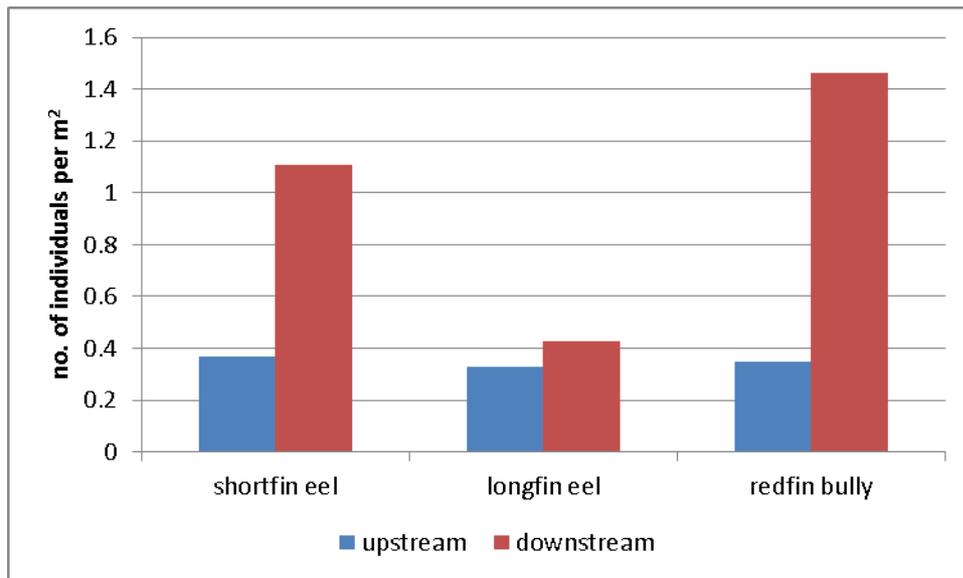


Figure 2 Density of three species recorded upstream and downstream of the weir, March 2016.

A search on the NIWA fish database (New Zealand Freshwater Fish Database (NZFFDB)), which generally contains most fish monitoring results conducted within New Zealand, indicated only a few additional surveys in the Oaonui Stream, all of which had similar fish communities to that recorded by TRC surveys in recent years. However, an electric fishing survey conducted in March 1982 by NIWA recorded one torrentfish at Wiremu Road, well upstream of the Oaonui water supply weir. This is an interesting result, as the weir existed well before this survey was conducted (the scheme has been operating since 1935).

In previous surveys (February 2003 and April 2004), inanga were recorded both upstream and downstream of the weir, and in February 2003 inanga were recorded in abundance (approximately 50 individual fish sighted) upstream of the weir. This indicates that inanga are able to negotiate the new fish pass. Inanga are swimming fish, and are renowned as having a poor swimming ability, thus are easily hindered by instream obstacles. Their presence upstream of the weir would suggest that most if not all other species of native fish would be capable of negotiating the fish pass (the pass has been designed to provide wetted margins to accommodate for climbing species, visible in Photo 1).

Although inanga were not recorded at either site in the current survey, even when the seine net method was used, it does not mean that these fish were not present however. The absence of inanga may be associated more with the time of year the survey was undertaken and the location of the upstream site. Inanga migrate downstream in autumn to spawn in the lower tidal reach, and in most cases do not survive. Therefore, inanga will only be present in the surveyed reach during and in the months immediately following the spring whitebait migration. That said, the survey undertaken in the Manganui Stream recorded an individual inanga, indicating that it would be reasonable to expect inanga in the Oaonui Stream in the vicinity of the weir.

The common bully (*Gobiomorphus cotidianus*) was recorded both upstream and downstream previous surveys. However, this species was not recorded in the current survey. As in past surveys, the redfin bully (*Gobiomorphus huttoni*) was recorded at all sites.

Conclusions

An electric fishing survey was conducted on 31 March 2016 at two sites. The first site was located immediately upstream of the Oaonui Water Supply weir, while the second site was located just downstream of the weir. Seine netting was also undertaken in the pool immediately downstream of the weir, and in the pool immediately upstream of the weir. Fish diversity was moderate upstream of the weir, but slightly lower downstream of the weir. Fish species recorded were similar both upstream and downstream of the weir, with the only difference being lamprey, with one ammocoete recorded upstream of the weir. No target species were recorded during this survey, being torrentfish and inanga, although redfin bully, and the migrant invertebrate paratya shrimp, were both recorded upstream of the weir. Fish abundance was particularly high downstream of the weir, with the community heavily dominated by juvenile shortfin and longfin eel and juvenile redfin bully. It was noted during this survey that flow downstream of the weir is severely impacted by the sluicing activities, with flow essentially stopping for a period following sluicing. The higher abundance of juvenile eel and redfin bully may be a direct reflection of the impacts of the sluicing activities, as juveniles of these species prefer to live in shallow riffles, precisely the type of habitat that remained when the headpond was filling. In addition, the other species that would be expected at this altitude do not prefer shallow water, and it is likely that their migration upstream will be inhibited by these sluicing activities, especially if the reduction of flow extends for an extended length downstream. When compared with the results from the nearby Manganui Stream, it is clear that the extremely high abundance of juvenile eel and redfin bully is not typical.

Previous surveys have failed to record torrentfish upstream of the weir, and this absence continued in the current survey. This may suggest that the fish pass is not working effectively, however this absence could also be attributed to the differences in habitat (particularly the proportion of riffle habitat) immediately upstream of the weir. In addition, torrentfish may be discouraged from migrating far up the Oaonui Stream through the reduced flow following sluicing, depending on how far downstream the impacts extend.

Previous surveys and visual assessment of the pass suggest that the pass itself is suitable to provide for the passage of the species considered likely to be migrating upstream at this point. This is confirmed by two surveys conducted since the fish pass was installed where inanga (an indicator species) were recorded in abundance upstream of the weir for the first time (February 2003 and April 2004). Although inanga were not recorded at either site in the current survey, even when the seine net method was used, it does not mean that these fish were not present however. The absence of inanga may be associated more with the time of year the survey was undertaken and the location of the upstream site. Inanga migrate downstream in autumn to spawn in the lower tidal reach, and in most cases do not survive. Therefore, inanga will only be present in the surveyed reach during and in the months immediately following the spring whitebait migration. That said, a survey undertaken in the nearby Manganui Stream recorded an individual inanga, indicating that it would be reasonable to expect inanga in the Oaonui Stream in the vicinity of the weir. It is likely that the Oaonui Water Supply weir is currently not a barrier to fish, therefore compliance with fish passage requirements of resource consent 5453 is being achieved.

As monitoring of fish communities to date indicates that the fish pass is operating with reasonable success, the need to perform annual fish surveys is not required. Provided that regular inspection of the pass confirms that it is operating as required and being maintained, it is recommended that fish monitoring continue at the rate of once every three years. However, considerable thought needs to be applied to the current practice of sluicing the

intake. It is likely that this practice is currently resulting in a significant reduction in flow for an extended reach downstream. This is likely to be influencing the fish community of this reach, and potentially inhibiting the passage of fish upstream to the weir.

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Memorandum

To S Cowperthwaite, Scientific Officer
From B Jansma, Scientific Officer
Document 1696339
Report No. BJ280
Date 8 June 2016

Fish survey in the Otakeho Stream, in relation to the STDC water intake weir, April 2016

South Taranaki District Council (STDC) hold resource consents in relation to several water supply schemes. The monitoring programmes for the weirs used by these schemes include fish monitoring of a selection of the weirs each year. The Otakeho Stream was monitored in the 2015-2016 monitoring period.

The relevant consent relating to the Otakeho Stream weir is as follows:

4826 To place, use and maintain a water intake structure and associated erosion protection structures, including upgrading the intake structure and construction of a new fish pass, on the bed of the Otakeho stream

A special condition of this consent states that the structure[s] which are the subject of this consent shall provide for the passage of fish to the satisfaction of the Chief Executive of the Taranaki Regional Council. It is to assess compliance with this consent condition that the current survey was undertaken.

The weir in the Otakeho Stream is 2m high, and used for water supply purposes. A fish pass was installed on the weir in 1999, but was extensively damaged by floods. An attempt to replace this fish pass led to the weir and intake structure being potentially compromised. As a result, STDC replaced much of the entire structure and installed a new fish pass in early 2011 (Photo 1). As required by consent, a Regional Council Freshwater Biologist was onsite to ensure rock placement in the pass was appropriate ().



Photo 1 The upgraded Otakeho Stream weir, 6 May 2011.

The Taranaki Regional Council has previously conducted several fish surveys in the Otakeho Stream, both upstream and downstream of the weir. The results are held in the Council database ESAM, and discussed in various reports referenced below. The surveys employed one of two methods – night spotting and electric fishing. Both methods have their advantages and disadvantages for determining fish populations. When all results are compiled from both survey methods it can provide comprehensive fish community data.



Photo 2 TRC biologist placing rocks in the steepest section of the new fish pass

Methods

In this survey two sites were sampled, one site upstream of the weir and one site downstream of the weir. The sites were surveyed using the spotlighting method, which employed hand held spotlights powered by 12 volt, 7amp hour batteries, with observed fish captured using hand held scoop nets where possible. Those fish captured were counted and identified where possible, with their size estimated. Downstream, a reach of approximately 100m was surveyed, while upstream a 90 metre reach was surveyed. This equated to approximately 410m² being surveyed upstream and 500 m² being surveyed downstream

Details of the sites surveyed are given in Table 1 and the location of sites surveyed in relation to the weir and fish pass are shown in Figure 1.

Table 1 Location of sites surveyed for fish in relation to the STDC weir on the Otakeho Stream

Stream	Site No.	Site code	Description	Altitude (m)	Distance Inland from sea (km)
Otakeho Stream	1	OTK000177	Downstream of STDC weir	410	21.3
	2	OTK000173	Upstream of STDC weir	420	21.4

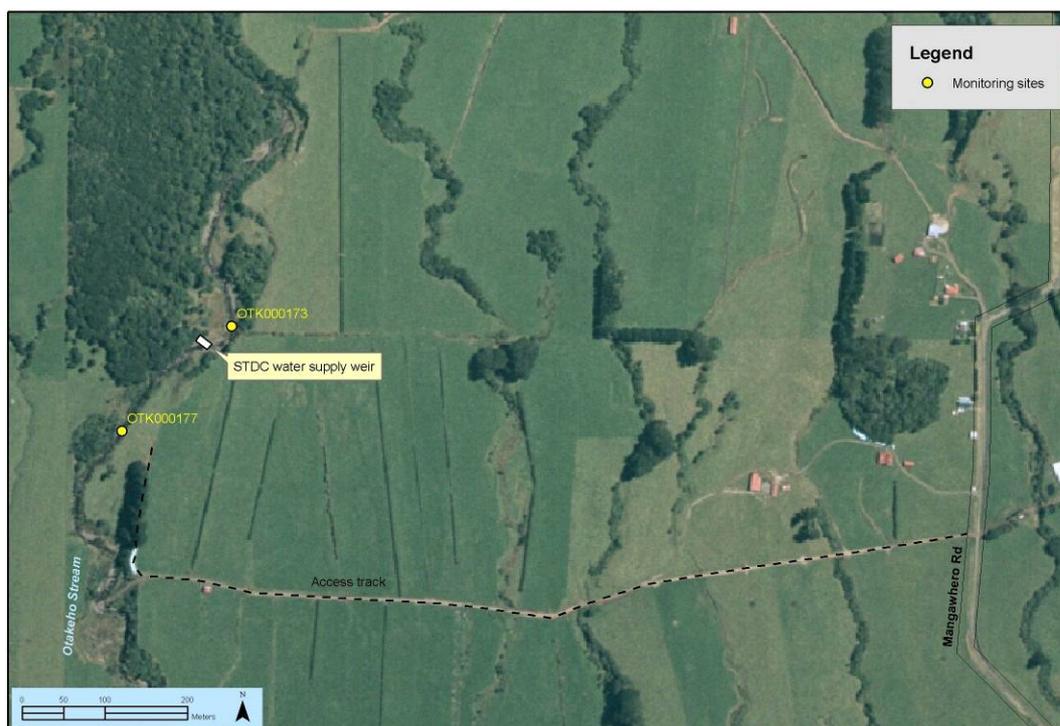


Figure 1 Location of sites surveyed in the Otakeho Stream in relation to the Waimate West Water Supply weir and fish pass, 20 April 2016

Results

The results of the survey conducted in the Otakeho Stream on 20 April 2016 are presented in Table 2. Included in this table is a summary of results from previous surveys.

Table 2 Fish species recorded in the Otakeho Stream upstream and downstream of the Otakeho Stream Weir

Species	Downstream of weir (OTK000177)			Upstream of weir (OTK000173)		
	Number	Number/m ²	Previous surveys	Number	Number/m ²	Previous surveys
Longfin eel <i>Anguilla dieffenbachii</i>	-	-	✓	-	-	✓
Shortfin eel <i>Anguilla australis</i>	-	-	✓	-	-	
Redfin Bully <i>Gobiomorphus huttoni</i>	-	-	✓	-	-	
Brown trout <i>Salmo trutta</i>	-	-	✓	-	-	✓
Koaro <i>Galaxias brevipinnis</i>	4	0.0080	✓	7	0.0171	✓
Shortjaw kokopu <i>Galaxias postvectis</i>	-	-		-	-	✓
Torrentfish <i>Cheimarrichthys fosteri</i>	-	-	✓	-	-	
UID trout	-	-		-	-	
UID galaxiid	-	-		-	-	
UID eel	-	-		-	-	
No. of species	1		6	1		4

All of the koaro observed downstream of the weir were located in a side channel, away from the main flow. Upstream of the weir, where flow was constrained within one main channel, they were observed in the areas of slower deeper flow. It was also observed that the Otakeho Stream had experienced a significant flood about eight days previously and that there had been some erosion of the true left bank upstream of the weir.

Discussion

Low species richness was recorded during the current survey, with only one species recorded in total. Although this is very low, it is not cause for concern, as the altitude of the

sites surveyed would restrict the fish populations to those who are good climbers. The large flood that preceded this survey may also have had a deleterious impact on the fish communities. The majority of species previously recorded downstream of the weir were recorded at lower altitudes, and some species would not be expected to be present at the weir e.g. shortfin eel, torrentfish and redfin bully.

Prior to the upgrade to the weir and fish pass, surveys showed that there was a higher density of species such as koaro and brown trout downstream of the weir, when compared with upstream. The 2012 survey was the first to be undertaken following the upgrade works, and recorded a higher density of koaro upstream than downstream, indicating that the upgrade to the fish pass had improved fish passage, although this survey was undertaken shortly after the works. This means that it could have also been argued that the fish previously present below the weir emigrated downstream, to escape the disturbance caused by the upgrade works. Although the current survey did not record many fish, koaro were found to be more than twice as abundant upstream of the weir than downstream.

In 2012, a visual assessment of the weir found that the new fish pass was carrying too much water (Photo 1), and that passage would be optimised if flows down the pass were reduced. Unfortunately, at the time of the current survey the fish pass contained little to no flow, due to gravels aggregating at the inlet to the fish pass and effectively blocking it off (Photo 3, Photo 4). Flow was reinstated during the survey by shifting some of the gravels. As not all gravels were removed, the amount of flow moving down the pass was less than that in 2012, and appeared close to optimum for fish passage.

With regard to whether the weir meets the fish passage requirements of consent 4826, there is no evidence to indicate that the weir presents a restriction to the passage of fish. However, it is recommended that the consent holder be reminded of their responsibilities relating to maintaining optimum flow down the fish pass. Their maintenance regime may need to increase the focus on inspections following large floods.



Photo 3 The inlet to the fish pass blocked by gravels, 20 April 2016.



Photo 4 The fish pass with minimal flow, 20 April 2016.

Summary

On 20 April 2016, a spotlighting survey was undertaken at two sites in the Otakeho Stream, upstream and downstream of an STDC water intake weir. The purpose of the survey was to assess compliance with the fish passage condition of the consent held for this structure. STDC holds this consent.

From the results of this survey, there is no indication that the weir presents a restriction to the passage of fish. Although only one species was recorded in the current survey, being koaro (*Galaxias brevipinnis*), they were of higher density upstream of the weir than downstream. This is the second consecutive to record a higher density upstream than downstream, indicating that the upgrade to the fish pass has resolved the possible restriction of fish passage suggested by earlier surveys.

In 2012, a visual assessment of the weir found that the new fish pass was carrying too much water, and that passage would be optimised if flows down the pass were reduced. Unfortunately, at the time of the current survey the fish pass contained little to no flow, due to gravels aggregating at the inlet to the fish pass and effectively blocking it off. Flow was reinstated during the survey by shifting some of the gravels. As not all gravels were removed, the amount of flow moving down the pass was less than that in 2012, and appeared close to optimum for fish passage.

With regard to whether the weir meets the special condition of consent 4826, there is no evidence to indicate that the weir presents a restriction to the passage of fish. However, it is important that the consent holder regularly inspects the weir, especially after large floods, to ensure optimum flows are maintained down the fish pass.

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To Scott Cowperthwaite, Job Manager
From Bart Jansma and Brooke Thomas, Scientific Officers
Report No. BT058
Date 05 May 2016
Doc number 1669593

Biomonitoring of the Cold Stream and Taungatara Stream in relation to the Cold Creek Water Supply Scheme, December 2015

Introduction

Cold Creek Community Water Supply Limited holds consent to abstract water from the Cold Stream to supply the Cold Creek Water Supply Scheme. It also has consent to discharge filter backwash water and supernatant from the Cold Creek Water Treatment Plant into the Cold Stream in the Taungatara catchment. The consents relevant to this biomonitoring survey are summarised in Table 1 below:

Table 1 Summary of consents held by Cold Creek Community Water Supply Limited which are of relevance to this biological survey

Consent no.	Purpose
1134-3	To take water from Cold Stream to supply the Cold Creek Water Supply Scheme
5454-1	To erect, place, use and maintain a water intake structure on the bed of Cold Creek in the Taungatara Catchment for water abstraction purposes
6077-1	To discharge filter backwash water and supernatant from the Cold Creek water treatment plant into the Cold Stream in the Taungatara catchment

This inaugural spring biological survey was the first of two scheduled in the Taungatara catchment in the 2015-2016 monitoring year. The intention of these surveys is to monitor the health of the macroinvertebrate communities in the Cold Stream and Taungatara Stream in relation to any effects of water abstraction by Cold Creek Community Water Supply Limited, while also to gain a perspective of the overall health of the catchment. Whether this level of monitoring will continue will be reviewed following the 2016-2017 period.

Methods

This biomonitoring survey was undertaken at eight sites on 17 December 2015 (Table 2 and Figure 1). Four of the eight sites surveyed were in the Cold Stream and the remaining sites were in the Taungatara Stream (Figure 1). The four sites surveyed on the Cold Stream included; a control site directly upstream of the intake weir (site C1), a primary impact site approximately 50 metres downstream of the intake weir (site C2), a site 30 m downstream of the Cold Creek Water Supply Scheme discharge (Site C3), and a site below the intake weir and discharge point, immediately upstream of the confluence with the Taungatara Stream (site C4). The four sites surveyed in the Taungatara Stream included; a site at Wiremu Road (site T1), a site 50m downstream of Eltham Road (site T2), a site at State Highway 45 (T3) and a site approximately 500m further downstream of State Highway 45, and downstream of an abstraction point for pastoral irrigation (site T4).

Table 2 Biomonitoring sites in the Cold Stream and Taungatara Stream relating to the Cold Creek Water Supply Scheme

Stream	Site No.	Site code	Location	Elevation (m asl)	Distance from source- NPK boundary (km)
Cold Stream	C1	CLD000175	Upstream of Cold Creek Water Supply scheme intake	350	1.0
	C2	CLD000177	50m downstream of Cold Creek Water Supply scheme intake	345	1.1
	C3	CLD000180	30m downstream of Cold Creek Water Supply scheme discharge	325	1.40
	C4	CLD000600	Immediately upstream of confluence with Taungatara Stream	170	6.73
Taungatara Stream	T1	TNG000200	At Wiremu Road	240	4.84
	T2	TNG000350	50m downstream of Eltham Road	120	11.50
	T3	TNG000900	At State Highway 45	20	20.52
	T4	TNG000920	Approximately 400m downstream of State Highway 45	20	20.85

The standard '400 ml kick-sampling' technique was used to collect streambed macroinvertebrates from all sites. The 'kick-sampling' technique is very similar to Protocol C1 (hard-bottomed, semi-quantitative), of the New Zealand Macroinvertebrate Working Group (NZMWG) protocols for macroinvertebrate samples in wadeable streams (Stark *et al.*, 2001).

Samples were preserved with Kahle's Fluid for later sorting and identification under a stereomicroscope using protocol P1 of NZMWG protocols for sampling macroinvertebrates in wadeable streams (Stark *et al.* 2001). Macroinvertebrate taxa found in each sample were recorded as:

R (rare)	= less than 5 individuals;
C (common)	= 5-19 individuals;
A (abundant)	= estimated 20-99 individuals;
VA (very abundant)	= estimated 100-499 individuals;
XA (extremely abundant)	= estimated 500 individuals or more.

Stark (1985) developed a scoring system for macroinvertebrate taxa according to their sensitivity to organic pollution in stony New Zealand streams (MCI). Highly 'sensitive' taxa were assigned the highest scores of 9 or 10, while the most 'tolerant' forms scored 1 and 0.1 in hard bottomed and soft bottomed streams respectively. The sensitivity scores for certain taxa found in hard bottomed streams have been modified in accordance with Taranaki experience. After extensive use of the MCI, categories were assigned to the sensitivity scores, to clarify their 'relative' sensitivity e.g. taxa that scored between 1 and 4 inclusive are considered tolerant (see Table 3). A difference of 11 units or more in MCI values is considered significantly different (Stark 1998).

By averaging the scores obtained from a list of taxa taken from one site and multiplying by a scaling factor of 20, a Macroinvertebrate Community Index (MCI) value was obtained. The MCI is a measure of the overall sensitivity of macroinvertebrate communities to the effects of organic pollution. More 'sensitive' communities inhabit less polluted waterways.

A semi-quantitative MCI value (SQMCI_s) has also been calculated for the taxa present at each site by multiplying each taxon score by a loading factor (related to its abundance), totalling these products, and dividing by the sum of the loading factors (Stark 1998 and 1999). The loading factors were 1 for rare (R), 5 for common (C), 20 for abundant (A), 100 for

very abundant (VA) and 500 for extremely abundant (XA). Unlike the MCI, the SQMCI_s is not multiplied by a scaling factor of 20, so that its corresponding range of values is 20x lower. A difference of 0.9 units or more in SQMCI_s is considered significantly different (Stark, 1998).

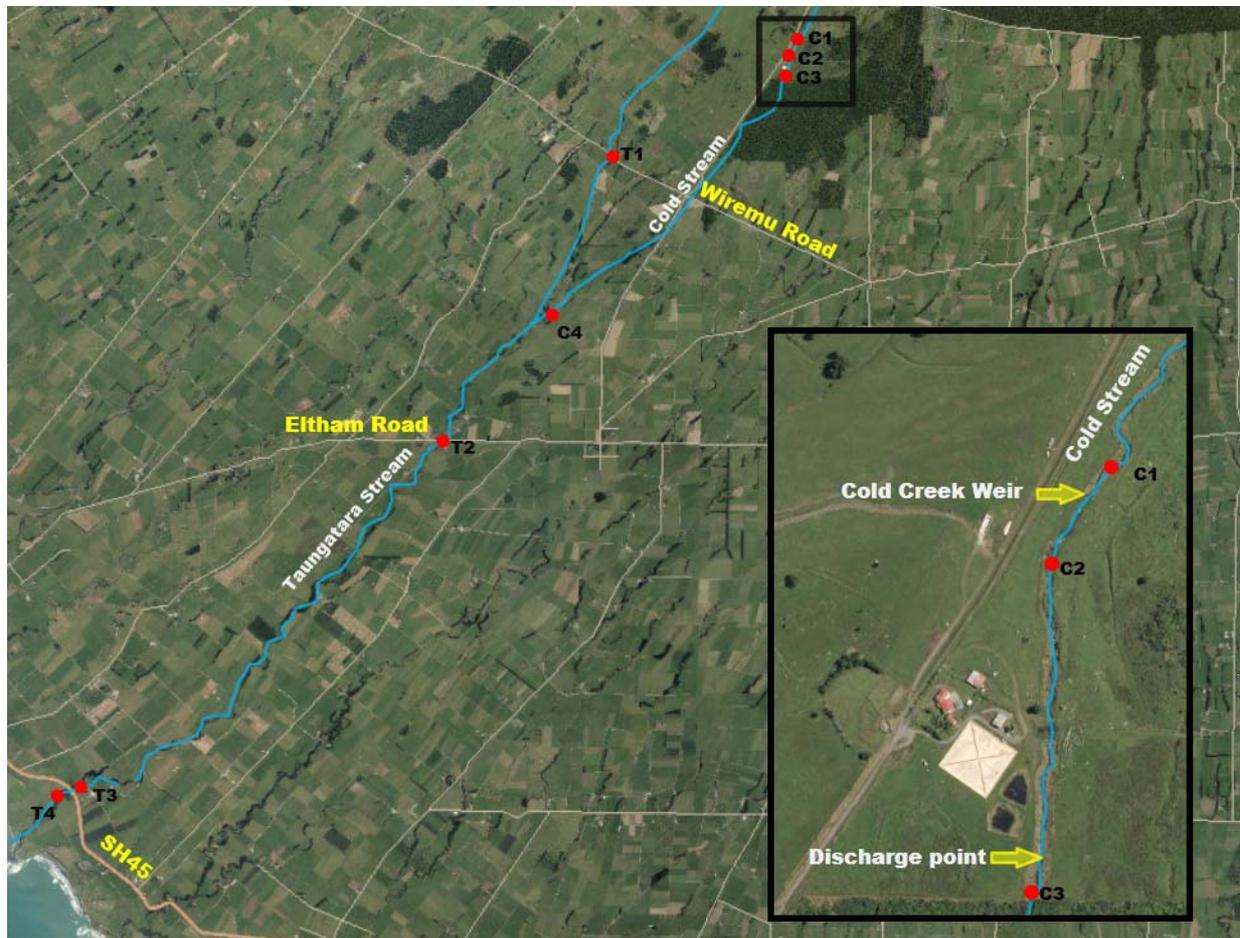


Figure 1 Biomonitoring sites related to the Cold Creek Water Supply Scheme on the Cold Stream and Taungatara Stream.

Results

Site habitat characteristics and hydrology

This December 2015 survey followed a period of 19 days since a fresh in excess of three times median flow and a period of 32 days since a fresh in excess of seven times median flow, as indicated by the nearby Punehu Stream flow recorder.

Water temperatures in the Cold Stream ranged between 8.0°C and 13.0 °C. There was an uncoloured, clear and swift flow at all four sites on the Cold Stream. The substrate comprised predominantly of cobbles, gravels and sand at all sites. Sites C2 and C4 also recorded boulders. There were slippery mats of periphyton at sites C1, C2 and C3 and patchy mats of periphyton at site C4. There were no macrophytes, moss or overhanging vegetation at any of the four sites and all sites were unshaded.

Water temperatures in the Taungatara Stream ranged between 11.7°C and 16.0 °C. There was an uncoloured, clear and swift flow at sites T1, T2 and T4 on the Taungatara Stream. Site T3 had an uncoloured, cloudy and swift flow. The substrate comprised predominantly of boulders, cobbles, gravels and sand at all sites. Site T2 also recorded some silt. There were

slippery mats of periphyton at sites T1 and T3 and patchy mats at T2 and T4. Patchy filamentous periphyton was also recorded at T4. There were no macrophytes recorded at any of the four sites. There was patchy moss recorded at sites T1 and T4 but none recorded at sites T2 and T3. There was overhanging vegetation at all sites. Site T3 was partially shaded while the remaining three sites were completely unshaded.

Macroinvertebrate communities

Table 3 summarises the results of the current macroinvertebrate survey. Comparative data for sites in similar streams are presented in Table 4. A table of predicted MCI scores using an equation obtained from Stark and Fowles (2009) that examines the relationship between MCI score and distance from the Egmont National Park boundary is presented in Table 5. The full results from the current survey are given in Table 6 and Table 7.

Table 3 Number of taxa, MCI and SQMCI_s in the Cold Stream and Taungatara Stream, December 2015

Site No.	No. taxa	MCI value	SQMCI _s value
C1	32	119	7.2
C2	33	118	7.4
C3	30	129	7.4
C4	21	119	6.8
T1	29	111	6.7
T2	27	116	6.4
T3	19	84	6.8
T4	21	103	6.6

Table 4 Range and median number of taxa, MCI values and SQMCI_s scores for control sites rising in the National Park at varying altitudes ((TRC, 1999 (updated 2015)).

Altitude (m asl)		No. of taxa	MCI value	SQMCI _s value
0-24	No. Samples	383	383	293
	Range	4-31	53-118	1.6-7.8
	Median	20	90	4.0
80-124	No. Samples	213	213	146
	Range	2-36	50-136	1.8-7.7
	Median	17	102	5.0
155-199	No. Samples	396	396	293
	Range	1-38	64-160	1.9-8.0
	Median	21	108	6.0
200-249	No. Samples	360	360	218
	Range	5-37	73-148	1.6-7.7
	Median	23	101	5.0
300-349	No. Samples	202	202	144
	Range	4-38	75-143	1.7-7.9
	Median	24	119	7.0
350-399	No. Samples	177	177	124
	Range	8-39	100-147	3.9-8.4
	Median	25	129	7.0

Table 5 Predicted MCI scores for streams arising inside Egmont National Park using an equation that examines the relationship between MCI score and distance from Egmont National Park boundary ($MCI=127.255-1.503 \cdot D_s$) (from Stark and Fowles (2009)).

Site	MCI score obtained from current survey	Predicted MCI scores with distance from source (D_s)
C1	119	126
C2	118	126
C3	129	125
C4	119	117
T1	111	120
T2	116	110
T3	84	96
T4	103	96

Table 6 Macroinvertebrate fauna of the Cold Stream in relation Cold Creek Water Supply Scheme sampled on 17 December 2015

Taxa List	Site Number	MCI score	C1	C2	C3	C4
	Site Code		CLD000175	CLD000177	CLD000180	CLD000600
	Sample Number		FWB15377	FWB15378	FWB15379	FWB15380
NEMATODA	Nematoda	3	R	R	-	-
ANNELIDA (WORMS)	Oligochaeta	1	C	R	C	R
	Lumbricidae	5	R	R	C	-
MOLLUSCA	<i>Potamopyrgus</i>	4	R	R	R	R
CRUSTACEA	Isopoda	5	-	R	-	-
	Talitridae	5	-	R	-	-
EPHEMEROPTERA (MAYFLIES)	<i>Austroclima</i>	7	-	R	-	C
	<i>Coloburiscus</i>	7	C	A	A	XA
	<i>Deleatidium</i>	8	XA	XA	XA	XA
	<i>Nesameletus</i>	9	C	-	R	R
PLECOPTERA (STONEFLIES)	<i>Acroperla</i>	5	R	R	R	-
	<i>Austroperla</i>	9	R	R	R	-
	<i>Megaleptoperla</i>	9	A	A	C	C
	<i>Stenoperla</i>	10	C	A	C	-
	<i>Zelandobius</i>	5	A	C	R	R
	<i>Zelandoperla</i>	8	R	-	C	-
COLEOPTERA (BEETLES)	Elmidae	6	VA	VA	A	A
	Hydraenidae	8	C	C	C	C
	Ptilodactylidae	8	A	C	C	-
MEGALOPTERA (DOBSONFLIES)	<i>Archichauliodes</i>	7	-	-	R	C
TRICHOPTERA (CADDISFLIES)	<i>Hydropsyche (Aoteapsyche)</i>	4	-	-	-	A
	<i>Costachorema</i>	7	C	A	A	A
	<i>Hydrobiosis</i>	5	C	C	C	-
	<i>Hydrochorema</i>	9	R	R	-	-
	<i>Neurochorema</i>	6	R	-	-	-
	<i>Hydropsyche (Orthopsyche)</i>	9	C	C	C	-
	<i>Psilochorema</i>	6	R	R	R	-
	<i>Beraeoptera</i>	8	A	VA	A	R
	<i>Confluens</i>	5	-	-	-	C
	<i>Helicopsyche</i>	10	-	R	R	-
	<i>Olinga</i>	9	-	-	R	C
	<i>Pycnocentria</i>	7	C	C	C	-
	<i>Pycnocentroides</i>	5	-	-	R	VA
DIPTERA (TRUE FLIES)	<i>Aphrophila</i>	5	A	A	C	A
	Eriopterini	5	C	C	C	-
	<i>Maoridiamesa</i>	3	A	A	A	VA
	Orthoclaadiinae	2	A	A	A	-
	<i>Polypedilum</i>	3	R	R	-	-
	Tanytarsini	3	C	R	-	-
	Empididae	3	-	R	-	-
	Muscidae	3	R	-	R	R
	Acarina	5	R	R	-	R
No of taxa			32	33	30	21
MCI			119	118	129	119
SQMCI			7.2	7.4	7.4	6.8
EPT (taxa)			17	16	18	12
%EPT (taxa)			53	48	60	57
'Tolerant' taxa		'Moderately sensitive' taxa		'Highly sensitive' taxa		

R = Rare C = Common A = Abundant VA = Very Abundant XA = Extremely Abundant

Table 7 Macroinvertebrate fauna of the Taungatara Stream in relation Cold Creek Water Supply Scheme sampled on 17 December 2015

Taxa List	Site Number	MCI score	T1	T2	T3	T4
	Site Code		TNG000200	TNG000350	TNG000900	TNG000920
	Sample Number		FWB15381	FWB15382	FWB15383	FWB15384
NEMERTEA	Nemertea	3	-	-	R	-
ANNELIDA (WORMS)	Oligochaeta	1	R	R	C	R
MOLLUSCA	<i>Potamopyrgus</i>	4	R	R	R	A
EPHEMEROPTERA (MAYFLIES)	<i>Austroclima</i>	7	A	R	-	C
	<i>Coloburiscus</i>	7	VA	A	A	C
	<i>Deleatidium</i>	8	XA	XA	XA	XA
	<i>Nesameletus</i>	9	A	C	-	R
PLECOPTERA (STONEFLIES)	<i>Megaleptoperla</i>	9	R	R	-	-
	<i>Zelandobius</i>	5	R	-	-	-
	<i>Zelandoperla</i>	8	R	R	-	-
COLEOPTERA (BEETLES)	Elmidae	6	VA	VA	A	C
	Hydraenidae	8	A	R	-	-
MEGALOPTERA (DOBSONFLIES)	<i>Archichauliodes</i>	7	A	A	C	A
TRICHOPTERA (CADDISFLIES)	<i>Hydropsyche (Aoteapsyche)</i>	4	C	A	A	VA
	<i>Costachorema</i>	7	C	R	C	C
	<i>Hydrobiosis</i>	5	C	A	A	A
	<i>Neurochorema</i>	6	R	-	-	R
	<i>Psilochorema</i>	6	-	R	-	R
	<i>Beraeoptera</i>	8	VA	A	-	R
	<i>Confluens</i>	5	R	R	-	-
	<i>Helicopsyche</i>	10	-	R	-	-
	<i>Olinga</i>	9	A	R	-	-
	<i>Oxyethira</i>	2	-	-	-	R
	<i>Pycnocentroides</i>	5	XA	XA	VA	VA
DIPTERA (TRUE FLIES)	<i>Aphrophila</i>	5	C	R	C	C
	Eriopterini	5	R	-	-	-
	Hexatomini	5	R	-	-	-
	<i>Chironomus</i>	1	-	-	R	-
	<i>Maoridiamesa</i>	3	C	C	A	A
	Orthoclaadiinae	2	R	R	A	A
	<i>Polypedilum</i>	3	R	R	R	-
	Tanypodinae	5	-	R	-	-
	Tanytarsini	3	-	-	A	C
	Empididae	3	-	R	-	-
	Muscidae	3	R	R	C	-
	<i>Austrosimulium</i>	3	R	-	R	R
	Tanyderidae	4	R	-	-	-
No of taxa			29	27	19	21
MCI			111	116	84	103
SQMCIs			6.7	6.4	6.8	6.6
EPT (taxa)			15	15	6	11
%EPT (taxa)			52	56	32	52
'Tolerant' taxa		'Moderately sensitive' taxa		'Highly sensitive' taxa		

R = Rare C = Common A = Abundant VA = Very Abundant XA = Extremely Abundant

Cold Stream

Site C1

A high community richness of 32 taxa was found at site C1 (Table 3 and Table 6), seven taxa more than the median richness found at similar sites elsewhere in the region (Table 4). The macroinvertebrate community comprised a significant proportion of 'sensitive' taxa (75%), which was reflected by the 'good' MCI score of 119 units. This MCI score was lower than the median MCI score (by 10 units) for 'control' sites in similar streams at comparative altitudes (Table 4). The MCI score was also lower (by 7 units) than the predicted MCI scores based on distance from the Egmont National Park boundary (MCI score 126 units) (Table 5).

The community at this site was characterised by two 'tolerant' taxa (orthoclad midges and chironomid midge (*Maoridiamesa*), three 'moderately sensitive' taxa (stonefly (*Zelandobius*), elm mid beetles and crane fly (*Aphrophila*)) and four 'highly sensitive' taxa (mayfly (*Deleatidium*), stonefly (*Megaleptoperla*), toe-winged beetle (Ptilodactylidae) and smooth cased caddis (*Beraeoptera*)) (Table 6).

The numerical dominance of several 'sensitive' taxa resulted in a high SQMCI_s score of 7.2 units, which was slightly higher (by 0.2 unit) than the median score for 'control' sites in similar streams at this altitude (Table 4).

Site C2

A high community richness of 33 taxa was found at site C2 (Table 3 and Table 6), one taxon more than found at site C1, and nine taxa more than the median richness found at similar sites at comparable altitudes (Table 4). The macroinvertebrate community comprised a significant proportion of 'sensitive' taxa (76%), which was reflected by the 'good' MCI score of 118 units, and was an insignificant 1 unit less than that recorded at the upstream 'control' site. This MCI score was slightly lower (by 1 unit) than the median MCI score for 'control' sites in similar streams at comparative altitudes (Table 4) and lower (by 6 units) than the predicted MCI scores based on distance from the Egmont National Park boundary (MCI score 126 units) (Table 5).

The community at this site was characterised by two 'tolerant' taxa (orthoclad midges and chironomid midge (*Maoridiamesa*), four 'moderately sensitive' taxa (mayfly (*Coloburiscus*), elm mid beetles, free-living caddis (*Costachorema*) and crane fly (*Aphrophila*)) and four 'highly sensitive' taxa (mayfly (*Deleatidium*), stoneflies (*Megaleptoperla*) and (*Stenoperla*) and smooth cased caddis (*Beraeoptera*)) (Table 6).

The numerical dominance by several 'sensitive' taxa resulted in a high SQMCI_s score of 7.4 units, which was slightly higher (by 0.2 unit) than at the upstream 'control' site C1 and slightly higher (by 0.4 unit) than the median score for 'control' sites in streams at comparable altitudes (Table 4).

Site C3

A high community richness of 30 taxa was found at site C3 (Table 3 and Table 6), six taxa more than the median richness found at similar sites elsewhere in the region (Table 4), and a similar number of taxa to that found upstream at sites C1 and C2. The macroinvertebrate community was again comprised of a significant proportion of 'sensitive' taxa (86%), which was reflected in the 'very good' MCI score of 129 units, the highest score of any of the sites sampled on the Cold Stream. This score was a substantial 10 units higher than the median MCI score for 'control' sites in similar streams at comparative altitudes (Table 4), but similar to the predicted

MCI scores based on distance from the Egmont National Park boundary (MCI score 125 units) (Table 5).

This community was characterised by seven taxa in total, all of which were also characteristic to site C2. The three taxa characteristic to site C2 (but not site C3) included; one 'moderately sensitive' taxon (crane fly (*Aphrophila*)), and two highly sensitive' taxa (stoneflies (*Megaleptoperla*) and (*Stenoperla*)) (Table 6).

The numerical dominance by several 'sensitive' taxa resulted in a high SQMCI_s score of 7.4 units, which was slightly higher (by 0.2 unit) than at the upstream 'control' site C1 and slightly higher (by 0.4 unit) than the median score for 'control' sites in streams at comparable altitudes (Table 4).

Site C4

A moderate community richness of 21 taxa was found at site C4 (Table 3 and Table 6), the same number as the median richness found at similar sites elsewhere in the region (Table 4), but 9 to 11 taxa less than that recorded at the three sites upstream. The macroinvertebrate community again comprised a significant proportion of 'sensitive' taxa (76%), which was reflected in the 'good' MCI score of 119 units. This score was a significant (Stark, 1998) 11 units higher than the median MCI score for 'control' sites in similar streams at comparative altitudes (Table 4), but similar to the predicted MCI scores based on distance from the Egmont National Park boundary (MCI score 117 units) (Table 5). This MCI score was the same as the MCI score recorded at 'control' site C1 (Table 3 and Table 6).

The community at this site was characterised by two 'tolerant' taxa (net-building caddis (*Aoteapsyche*) and chironomid midge (*Maoridiamesa*)), five 'moderately sensitive' taxa (mayfly (*Coloburiscus*), elm mid beetles, free-living caddis (*Costachorema*), stony cased caddis (*Pycnocentredes*) and crane fly (*Aphrophila*)) and one 'highly sensitive' taxon (mayfly (*Deleatidium*))(Table 6).

The numerical dominance by several 'sensitive' taxa was tempered by the dominance of one 'tolerant' taxon which resulted in a moderately high SQMCI_s score of 6.8 units, which was slightly lower (by 0.4 unit) than at the upstream 'control' site C1 but substantially higher (by 0.8 unit) than the median score for 'control' sites in similar streams at this altitude (Table 4).

Taungatara Stream

Site T1

A high community richness of 29 taxa was found at site T1 (Table 3 and Table 7), six taxa more than the median richness found at similar sites elsewhere in the region (Table 4). The macroinvertebrate community comprised a significant proportion of 'sensitive' taxa (69%), which was reflected by the 'good' MCI score of 111 units. This MCI score was higher than the median MCI score (by 10 units) for 'control' sites in similar streams at comparative altitudes (Table 4). However the MCI score was lower (by 9 units) than the predicted MCI scores based on distance from the Egmont National Park boundary (MCI score 120 units) (Table 5).

The community at this site was characterised by four 'moderately sensitive' taxa (mayflies (*Austroclima*) and (*Coloburiscus*), elm mid beetles and stony cased caddis (*Pycnocentredes*)), and five 'highly sensitive' taxa (mayflies (*Deleatidium*) and (*Nesameletus*), hydraenid beetles and smooth cased caddisflies (*Beraeoptera* and *Olinga*)) (Table 7).

The numerical dominance by 'sensitive' taxa resulted in a high SQMCI_s score of 6.7 units, which was substantially higher (by 1.7 units) than the median score for 'control' sites in similar streams at this altitude (Table 4).

Site T2

A high community richness of 27 taxa was found at site T2 (Table 3 and Table 7), two taxa less than found at site T1, and 10 taxa more than the median richness found at similar sites (Table 4). The macroinvertebrate community comprised a significant proportion of 'sensitive' taxa (70%), which was reflected in the 'good' MCI score of 116 units, and was an insignificant 5 units more than recorded upstream at site T1. This MCI score was significantly higher (by 14 units) than the median MCI score for 'control' sites in similar streams at comparative altitudes (Table 4) and higher (by 6 units) than the predicted MCI scores based on distance from the Egmont National Park boundary (MCI score 110 units) (Table 5).

The community at this site was characterised by one 'tolerant' taxon (net-building caddis (*Aoteapsyche*)), five 'moderately sensitive' taxa (mayfly (*Coloburiscus*), elm mid beetles, dobsonfly larvae (*Archichauloides*), stony cased caddis (*Pycnocentroides*) and free-living caddis (*Hydrobiosis*)) and two 'highly sensitive' taxa (mayfly (*Deleatidium*) and smooth cased caddis (*Beraeoptera*)) (Table 7).

The numerical dominance by several 'sensitive' taxa resulted in the SQMCI_s score of 6.4 units, which was slightly lower (by 0.3 unit) than at site T1 upstream and substantially higher (by 1.4 units) than the median score for 'control' sites in similar streams at this altitude (Table 4).

Site T3

A moderate community richness of 19 taxa was found at site T3 (Table 3 and Table 7), similar to the median richness found at comparable sites elsewhere in the region (Table 4), but slightly lower than that found upstream at sites T1 and T2. The macroinvertebrate community comprised a significant proportion of 'tolerant' taxa (58%), which was reflected by the 'fair' MCI score of 84 units, the lowest score of any of the sites sampled on the Taungatara Stream and Cold Stream. This score was a 6 units lower than the median MCI score for 'control' sites in similar streams at comparative altitudes (Table 4) and significantly (Stark, 1998) lower (by 12 units) than the predicted MCI scores based on distance from the Egmont National Park boundary (MCI score 96 units) (Table 5). This MCI score was also significantly (Stark, 1998) lower than that recorded at sites T1, T2 and T4 (by 27, 32 and 19 units respectively).

The community at this site was characterised by four 'tolerant' taxa (net-building caddis (*Aoteapsyche*), orthoclad midges and chironomid midges (*Maoridiamesa*) and (*Tanytarsini*)), four 'moderately sensitive' taxa (mayfly (*Coloburiscus*), elm mid beetles, free-living caddis (*Hydrobiosis*) and stony cased caddis (*Pycnocentroides*)) and one 'highly sensitive' taxon (mayfly (*Deleatidium*)) (Table 7).

The numerical dominance by several 'sensitive' taxa resulted in the SQMCI_s score of 6.8 units, which was slightly higher than the two upstream sites T1 and T2 (by 0.1 unit and 0.4 unit respectively) and substantially higher (by 2.8 units) than the median score for 'control' sites in similar streams at this altitude (Table 4).

Site T4

A moderate community richness of 21 taxa was found at site T4 (Table 3 and Table 7), similar to the median richness found at comparable sites elsewhere in the region (20 taxa) (Table 4). The macroinvertebrate community comprised a substantial proportion of 'sensitive' taxa (62%), which was reflected in the 'good' MCI score of 103 units. This score was a significant (Stark, 1998) 13 units higher than the median MCI score for 'control' sites in similar streams at comparative altitudes (Table 4), and higher than the predicted MCI scores based on distance from the Egmont National Park boundary (MCI score 96 units) (Table 5). This MCI score was however lower than that recorded upstream at 'control' site T1 (by 8 units) (Table 3 and Table 7).

The community at this site was characterised by four 'tolerant' taxa (snail (*Potamopyrgus*), net-building caddis (*Aoteapsyche*), orthoclad midges and chironomid midges (*Maoridiamesa*)), three 'moderately sensitive' taxa (dobsonfly larvae (*Archichauloides*), free-living caddis (*Hydrobiosis*) and stony cased caddis (*Pycnocentroides*)) and one 'highly sensitive' taxon (mayfly (*Deleatidium*))(Table 7).

The numerical dominance by several 'sensitive' taxa resulted in the SQMCI_S score of 6.6 units, which was similar to the three upstream sites on the Taungatara Stream but substantially higher (by 2.6 units) than the median score for 'control' sites in similar streams at this altitude (Table 4).

Discussions and conclusion

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_S scores for each site.

The MCI is a measure of the overall sensitivity of the macroinvertebrate community to the effects of organic pollution in stony streams. It is based on the presence/absence of taxa with varying degrees of sensitivity to environmental conditions. The SQMCI_S takes into account taxa abundances as well as sensitivity to pollution. Significant differences in either the taxa richness, MCI or the SQMCI_S between sites may indicate the degree of adverse effects (if any) caused by water abstractions.

The abstraction of surface water particularly for extended periods of time may result in significant adverse effects on the macroinvertebrate communities living within a waterbody by potentially reducing flow velocities, wetted habitat area, and dissolved oxygen levels and increasing stream temperature, periphyton abundance, macrophytes, pH, and deposited sediment. This December 2015 survey was undertaken to monitor whether the operation of the Cold Creek Water Supply Scheme was having an effect on the macroinvertebrate communities in the Cold Stream or Taungatara Stream downstream of the water take and discharge point under spring conditions. It was also undertaken to gain perspective on the overall catchment condition, including whether there were any impacts from the abstraction of water for pastoral irrigation downstream of SH45.

The macroinvertebrate communities recorded at the four Cold Stream sites comprised high proportions of 'sensitive' taxa and were also numerically dominated by 'sensitive' taxa. The composition of the communities at the Cold Stream sites reflected the cool, stony nature of the stream located in the upper mid-reaches of the catchment. This resulted in relatively high taxa richnesses, MCI and SQMCI_s scores at all sites.

Taxa richnesses were high in the Cold Stream and above median scores at sites C1, C2 and C3 when comparing to control sites at similar altitudes (Table 4). Site C4 had slightly lower taxa richness than that recorded by the three upstream sites, however was similar to the median score based on streams at a similar altitude. MCI scores were reflective of 'good' (sites C1, C2 and C4) to 'very good' (C3) macroinvertebrate community health in the Cold Stream and at sites C1, C2 and C3 were similar to median scores for streams at a comparable altitude. At Site C4 the MCI score was significantly higher than the median score for 'control' sites in similar streams at comparative altitudes but was similar to the predicted score based on distance from the National Park boundary. While sites C1, C2 and C4 recorded very similar MCI scores, site C3 recorded a MCI score significantly (Stark, 1998) higher than that recorded by site C2 and substantially higher than that recorded by sites C1 and C4. All SQMCI_s scores recorded in the cold stream were similar to or above the median SQMCI_s scores for 'control' sites in similar streams at comparative altitudes and were not significantly different from one another.

Alike the Cold Stream, the macroinvertebrate communities recorded at the four Taungatara Stream sites comprised high proportions of 'sensitive' taxa and were also numerically dominated by 'sensitive' taxa. The 'highly sensitive' mayfly taxon (*Deleatidium*) was extremely abundant at all four sites and the 'moderately sensitive' stony cased caddis (*Pycnocentroides*) was very abundant to extremely abundant at the four sites. The composition of the communities at the Taungatara Stream sites reflected the cool, stony nature of the stream.

Taxa richnesses were moderate (T3 and T4) to high (T1 and T2) in the Taungatara Stream and similar to or above medians at all sites when compared to control sites at similar altitudes (Table 4). MCI scores were reflective of 'fair' (site T3) to 'good' (sites T1, T2 and T4) macroinvertebrate community health in the Taungatara Stream. MCI scores at sites T2 and T4 were significantly higher than median scores for streams at comparable altitudes, while T1 recorded a MCI score insignificantly higher and T3 a MCI score insignificantly lower than median scores. All SQMCI_s scores recorded in the Taungatara stream were substantially higher than the median SQMCI_s scores for 'control' sites in similar streams at comparative altitudes and were similar to one another.

MCI and SQMCI_s scores from the eight sites surveyed on the Cold Stream and Taungatara Stream indicated that 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. Typically MCI scores deteriorate with decreasing altitude and with distance away from the National park as a result of cumulative affects from dairying and industry on physicochemical water quality. As expected there was a significant decrease in MCI score within the catchment between site C1 (1 km below the National Park boundary) and site T4, (nearly 21 km below the National Park boundary), however the MCI rate of decline was significantly lower than predicted (16 MCI units compared with 30 MCI units) (Stark and Fowles, 2009). Three of the eight sites surveyed recorded MCI scores significantly (Stark, 1998) higher than median values and none of the eight sites recorded MCI scores significantly lower than median values, when comparing to similar streams at comparative altitudes. SQMCI_s scores were relatively similar between all of the eight site surveyed, with

the only substantial difference occurring between site T2 on the Taungatara Stream, which had a substantially lower score than that recorded by sites C2 and C3 on the Cold Stream. In addition SQMCI_s scores were all near to or above the scores recorded by 'control' sites in similar streams at comparative altitudes elsewhere in the region.

Results from the current survey indicated no major impact on the macroinvertebrate health at site T4 as a result of the water abstraction immediately upstream. The MCI score at site T4 was reflective of 'good' macroinvertebrate health, the same as that recorded upstream at sites T1 and T2. Site T3 however recorded an MCI score reflective of 'fair' macroinvertebrate health and was the only site to record an MCI score significantly lower than the predicted MCI value (by 12 MCI units). In addition the MCI recorded at this site was significantly lower than the MCI scores recorded at sites T1, T2 and T4 on the Taungatara Stream. There is the potential that the surrounding (primarily dairying) land use, upstream of this site have impacted on macroinvertebrate health at this site, although this is not reflected in the results from the other Taungatara stream sites. It is more likely that this result is related to subtle changes in habitat.

Within this predominantly dairying catchment there was deterioration in macroinvertebrate health with decreasing altitude and distance from the National Park. However based on predictive values using distance from the National Park Boundary, the rate of MCI decline in a downstream direction was significantly less than that predicted. MCI scores indicated that the stream communities were of fair to very good 'health' (TRC, 2015) and were similar to or above the biological health recorded at 'control' sites in similar streams at a comparative altitude elsewhere in the region. Overall, the results of this December 2015 survey of the Cold Stream and Taungatara Stream found no evidence that water abstraction from the Cold Stream by Cold Creek Community Water Supply Limited had had a significant effect on the freshwater macroinvertebrate communities downstream of the abstraction or discharge points, and that the overall catchment was in better than average condition, including downstream of the abstraction for pastoral irrigation.

Summary

- A spring macroinvertebrate survey was performed at four established sites in the Cold Stream and four new sites in the Taungatara stream in relation to consented water abstraction and discharge by Cold Creek Community Water Supply Limited. This survey has provided data to assess the health of the macroinvertebrate communities in the Cold Stream and Taungatara Stream.
- Taxa richnesses were moderate to high in the Cold Stream and Taungatara Stream and were either near to or above the richnesses recorded at 'control' sites in similar streams at comparative altitudes elsewhere in the region.
- All sites in the Cold Stream and Taungatara Stream recorded MCI scores that were near to or above median values recorded by 'control' sites in similar streams at comparative altitudes. The MCI scores recorded in the Cold Stream sites were very similar to one another with the exception of site C3 which had a MCI significantly higher than that recorded at site C2 and substantially higher than that recorded at sites C1 and C4. The MCI scores recorded at site T1 and T2 on the Taungatara Stream were similar to one another whereas site T3 recorded a MCI score significantly lower than the remaining four sites and site T4 had a significantly lower MCI score than that recorded at site T2. The 'highly sensitive' mayfly taxon (*Deleatidium*) was extremely abundant at all of the eight sites surveyed.
- SQMCIs scores were all near to or above the scores recorded by 'control' sites in similar streams at comparative altitudes elsewhere in the region. SQMCIs scores were relatively similar between all of the eight sites surveyed, with the only substantial difference occurring between site T2 on the Taungatara Stream, which had a substantially lower score than that recorded by sites C2 and C3 on the Cold Stream.
- Within this predominantly dairying catchment there was deterioration in macroinvertebrate health with decreasing altitude and distance from the National Park. However based on predictive values using distance from the National Park Boundary, the rate of MCI decline in a downstream direction was significantly 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 Stream or discharge to the Cold Stream had significantly affected the freshwater macroinvertebrate of the Cold Stream 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.

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To Job Manager, Scott Cowperthwaite
From Scientific Officer, Darin Sutherland
Doc # 1666700
Report No DS042
Date April 2016

Biomonitoring of the Pungaereere Stream in relation to the abstraction of water and the backwash discharge from the South Taranaki District Council Rahoitu water supply, January 2016

Introduction

The South Taranaki District Council ('STDC') owns and operates the Rahoitu Water Supply Scheme which involves the abstraction of water from the Pungaereere Stream and discharge of filter backwash into that stream. Special condition one of consent 6038 (to discharge backwash), requires that the activity shall not have significant adverse effects on aquatic life, habitats and ecology in the receiving water.

Subsequently, to assess compliance, biological surveys have been carried out in the Pungaereere Stream on three previous occasions since the consent was issued in September 2000 (see References). This report presents the results of the single summer survey programmed for the 2015-2016 period.

Methods

The standard '400 ml kick sampling technique' was used to collect streambed (benthic) macroinvertebrates and algae from three established sites upstream and downstream of the Rahoitu water supply treatment plant abstraction and backwash discharge (Figure 1), on 29 January 2016. These sites were established at the time of the initial survey performed in February 2000 with surveys repeated in January 2003, February 2008 and January 2013.

These sites were:

Site No	Site code	GPS location	Location	Elevation (m asl)
1	PNG000195	E1669439 N5645804	u/s of WTP abstraction and filter backwash discharge	45
2	PNG000197	E1669398 N5645822	15 m d/s of WTP abstraction and filter backwash discharge	45
3	PNG000200	E1669349 N5645803	SH45	45

This 'kick-sampling' technique is very similar to Protocol C1 (hard-bottomed, semi-quantitative) of the New Zealand Macroinvertebrate Working Group (NZMWG) protocols for macroinvertebrate samples in wadeable streams (Stark et al, 2001).

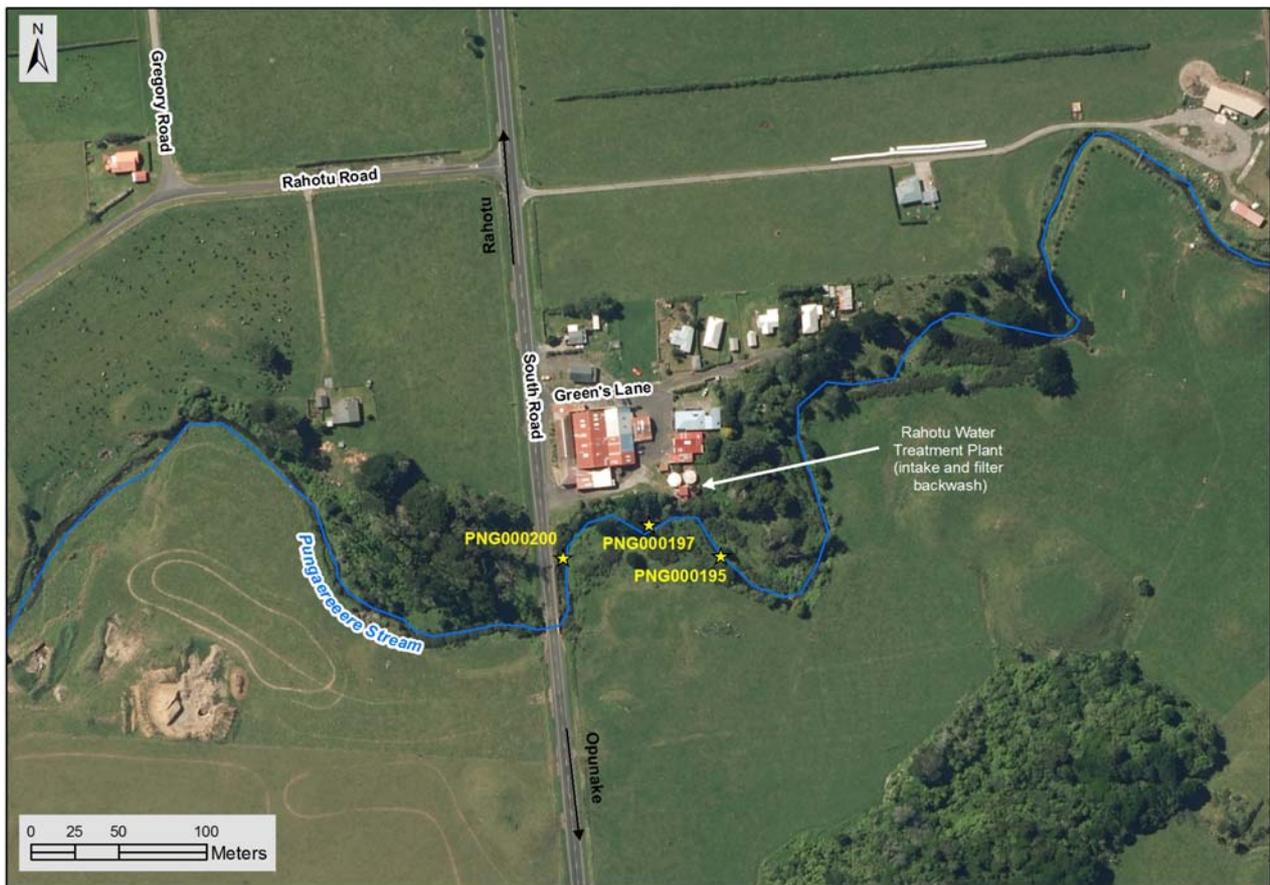


Figure 1 Biomonitoring sites in the Pungaereere Stream in relation to the Rahunu water supply

Samples were preserved with Kahle's Fluid for later sorting and identification under a stereomicroscope according to Taranaki Regional Council methodology using protocol P1 of NZMWG protocols for sampling macroinvertebrates in wadeable streams (Stark et al, 2001). Macroinvertebrate taxa found in each sample were recorded as:

R (rare)	= less than 5 individuals;
C (common)	= 5-19 individuals;
A (abundant)	= 20-99 individuals;
VA (very abundant)	= 100-499 individuals;
XA (extremely abundant)	= 500 or more individuals.

Macroinvertebrate Community Index (MCI) values were calculated for taxa present at each site (Stark 1985) with certain taxa scores modified in accordance with Taranaki experience.

A semi-quantitative MCI value, SQMCI_s (Stark, 1999) has also been calculated for the taxa present at each site by multiplying each taxon score by a loading factor (related to its abundance), totalling these scores, and dividing by the sum of the loading factors. The loading factors were 1 for rare (R), 3 for common (C), 5 for abundant (A), 100 for very abundant (VA), and 500 for extremely abundant (XA).

Results

Site habitat characteristics and hydrology

This early summer survey was performed under low flow, 10 days after a fresh in excess of both 3 times and 7 times median flow (flow gauging at the Kapoiaia River). The survey followed a relatively dry late spring period with two significant river freshes recorded over the preceding month.

The water temperatures during the survey were in the range 23.2-24.7 °C. Water levels were low and water speed was swift. The water was uncoloured and clear. The substrate at all three sites comprised cobble/ coarse gravel.

Site 1 had slippery algal mats and patchy filamentous algae. There were patchy leaves on the streambed. Site 2 had widespread algal mats patchy filamentous algae. Site 3 had widespread periphyton mats and patchy filamentous mats. There were also patchy leaves on the streambed.

Macroinvertebrate communities

Four previous biomonitoring surveys had been undertaken at these three sites (located at an altitude of 45 m asl). The results of these surveys are summarised in [Table 1](#) and the results of the current survey are presented in [Table 2](#).

Table 1 Summary of macroinvertebrate taxa numbers and MCI values for the previous surveys performed between February 2000 and January 2013

Site No.	No of surveys	No of taxa			MCI value			SQMCI _s value		
		Median	Range	Jan 2016	Median	Range	Jan 2016	Median	Range	Jan 2016
1	4	22	20-23	24	77	70-82	81	3.1	2.2-4.9	4.7
2	4	23	20-25	25	76	72-82	84	3.2	2.6-4.9	4.1
3	4	23	21-27	24	77	70-83	86	3.2	3.0-4.8	4.2

Site 1 (30m u/s of intake)

A moderate macroinvertebrate community richness of 21 taxa was found at site 1 ('control' site) at the time of the early summer survey ([Table 2](#)).

The MCI score of 81 units indicated a community of 'fair' biological health which was not significantly different (Stark, 1998) to the median MCI score of 77 units. The SQMCI_s score of 4.7 units was higher than the median SQMCI_s score of 3.1 units ([Table 1](#)).

The community was characterised by two 'tolerant' taxa [snails (*Potamopygus*) and midges (Tanytarsini)] and one 'moderately sensitive' taxon [caddisfly (*Pycnocentroides*)] ([Table 2](#)).

Site 2 (30m d/s of intake/filter backwash discharge)

A moderate macroinvertebrate community richness of 20 taxa was found at site 2 ('primary impacted' site) at the time of the early summer survey ([Table 2](#)).

The MCI score of 84 units indicated a community of 'fair' biological health which was not significantly different (Stark, 1998) to the median MCI score of 76 units. The SQMCI_s score of 4.1 units was higher than the median SQMCI_s score of 3.2 units ([Table 1](#)).

The community was characterised by two 'tolerant' taxon [snails (*Potamopygus*) and one 'moderately sensitive' taxon [caddisfly (*Pycnocentroides*)] ([Table 2](#)).

Site 3 (SH45, d/s of intake/filter backwash)

A moderate macroinvertebrate community richness of 21 taxa was found at site 3 ('secondary impacted' site) at the time of the early summer survey ([Table 2](#)).

The MCI score of 86 units indicated a community of 'fair' biological health which was not significantly different (Stark, 1998) to the median MCI score of 77 units. The SQMCI_s score of 4.2 units was higher than the median SQMCI_s score of 3.2 units ([Table 1](#)).

The community was characterised by three 'tolerant' taxa [Oligochaete worms, snails (*Potamopygus*), and caddisfly (*Hydropsyche/Aoteapsyche*)] and one 'moderately sensitive' taxon [caddisfly (*Pycnocentroides*)] ([Table 2](#)).

Table 2 Macroinvertebrate fauna of the Pungaereere Stream in relation to STDC Rahotu Water Supply sampled on 22 January 2013

Taxa List	Site Number	MCI score	1	2	3
	Site Code		PNG000195	PNG000197	PNG000200
	Sample Number		FWB16008	FWB16009	FWB16010
PLATYHELMINTHES (FLATWORMS)	<i>Cura</i>	3	R	-	R
NEMERTEA	Nemertea	3	R	R	C
ANNELIDA (WORMS)	<i>Oligochaeta</i>	1	C	A	VA
	Lumbricidae	5	-	R	-
MOLLUSCA	<i>Ferrissia</i>	3	R	-	-
	<i>Physa</i>	3	-	-	R
	<i>Potamopyrgus</i>	4	VA	XA	XA
CRUSTACEA	<i>Paracalliope</i>	5	R	C	-
EPHEMEROPTERA (MAYFLIES)	<i>Austroclima</i>	7	A	C	R
	<i>Deleatidium</i>	8	A	C	C
COLEOPTERA (BEETLES)	Elmidae	6	R	R	A
	Ptilodactylidae	8	-	-	R
MEGALOPTERA (DOBSONFLIES)	<i>Archichauliodes</i>	7	A	A	A
TRICHOPTERA (CADDISFLIES)	<i>Hydropsyche (Aoteapsyche)</i>	4	A	A	VA
	<i>Hydrobiosis</i>	5	A	C	A
	<i>Oxyethira</i>	2	R	R	-
	<i>Pycnocentropes</i>	5	XA	VA	XA
DIPTERA (TRUE FLIES)	<i>Aphrophila</i>	5	R	R	C
	<i>Maoridiamesa</i>	3	-	R	R
	Orthocladiinae	2	A	A	A
	<i>Polypedilum</i>	3	R	-	-
	Tanytarsini	3	VA	A	A
	Dolichopodidae	3	-	R	-
	Empididae	3	C	R	C
	Ephydriidae	4	-	-	R
	Muscidae	3	R	-	R
	<i>Austrosimulium</i>	3	C	A	C
No of taxa			21	20	21
MCI			81	84	86
SQMCI _s			4.7	4.1	4.2
EPT (taxa)			5	5	5
%EPT (taxa)			24	25	24
'Tolerant' taxa		'Moderately sensitive' taxa		'Highly sensitive' taxa	

R = Rare C = Common A = Abundant VA = Very Abundant XA = Extremely Abundant

Discussion and conclusions

This fifth survey of the macroinvertebrate fauna of the lower reaches of the Pungaereere Stream in the vicinity of the Rahotu supply water treatment plant, found no significant recent impacts of the abstraction of water nor the discharge of filter backwash wastes on the macroinvertebrate communities.

There were no significant decreases for any of the macroinvertebrate indices examined at the two potentially impacted sites compared with the control site. Taxa richnesses were very similar, the two potentially impacted sites had higher MCI scores than the 'control' site and SQMCI_s scores were also very similar for all three sites.

The MCI scores were indicative of 'fair' stream biological health and scores were significantly lower than predicted for ringplain sites at an equivalent altitude (102 units). The results were relatively typical of biological communities present under low flow conditions in the lower reaches of a seepage-fed ring plain stream rising below the National Park boundary (TRC, 1999 (updated 2015)) and similar to communities found by four previous summer surveys of this reach of the stream since 2000.

Most of the 'tolerant' taxa are commonly associated with extensive periphyton cover, a feature of the substrate of the lower reaches of ringplain rivers and streams during warmer, low flow summer conditions. Numerically, the most dominant taxa were a combination of 'tolerant' and 'moderately sensitive' taxa. This accounted for the moderate SQMCI_s values which had a very narrow range of 4.1 to 4.7 units (Table 2). Very few significant changes in individual taxon abundances were recorded between sites which also were reflected in the very narrow range of SQMCI_s values.

Overall, the results of this January 2016 macroinvertebrate survey indicated that the abstraction of water nor the discharge of filter backwash wastes from the Rahotu supply water treatment had not had any recent significant detrimental effects on the macroinvertebrate communities of the Pungaereere Stream.

Summary

The Council's standard 'kick-sampling' technique was used at three established sites to collect streambed macroinvertebrates from the Pungaereere Stream. Samples were sorted and identified to provide number of taxa (richness) and MCI and SQMCI_s scores for each site.

The MCI is a measure of the overall sensitivity of the macroinvertebrate community to the effects of organic pollution in stony streams. It is based on the presence/ absence of taxa with varying degrees of sensitivity to environmental conditions. The SQMCI_s takes into account tax abundance as well as sensitivity to pollution, and may reveal more subtle changes in communities, particularly if non-organic impacts are occurring. Significant differences in either the MCI or SQMCI_s between sites may indicate the degree of adverse effects (if any) of the abstractions or discharges being monitored.

In general, the macroinvertebrate communities of the stream contained relatively high proportions of 'tolerant' taxa at all sites and the communities were generally dominated by similar numbers of 'sensitive' and 'tolerant' taxa. MCI and SQMCI_s scores indicated that the stream communities were of 'fair' health which was significantly lower compared with similar Taranaki rivers. There was minimal differences in the numerical abundances of the characteristic taxa accounting for the very similar SQMCI_s values through the short stream reach surveyed.

This late summer macroinvertebrate survey indicated that during a period of low recession flow of the stream there were no effects on the macroinvertebrate communities' compositions downstream of the abstraction or discharge beyond the designated mixing zone. Very few significant changes in individual taxon abundances were recorded between sites through the stream reach surveyed.

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