South Taranaki Water Supplies Monitoring Programme Annual Report 2016-2017

Technical Report 2017-16

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Taranaki Regional Council
Private Bag 713
STRATFORD

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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.

This report for the period July 2016 to June 2017 describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess the environmental performance of STDC 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 2016-2017 monitoring period the Council's monitoring programme included ten inspections, the collection of nine water samples for physicochemical analysis, two biomonitoring surveys of receiving water, two fish surveys, and a review of abstraction, stream flow and discharge data provided by the consent holder.

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 good level of administrative performance. There were some issues in regard to the measurement of bore and stream levels during the period under review.

For reference, in the 2016-2017 year, consent holders were found to achieve a high level of environmental performance and compliance for 74% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 21% of the consents, a good level of environmental performance and compliance was achieved.

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

During the monitoring period no incidents were recorded in relation to activities covered by this report.

This report includes recommendation for the 2017-2018 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 2016 to June 2017 by the Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents for 11 water treatment plants (WTP's) 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 South Taranaki District Council (STDC), that relate to water supply schemes and WTP's that they operate.

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 19th 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 STDC
- 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 2017-2018 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 STDC, this report also assigns a rating as to STDC'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 2016-2017 year, consent holders were found to achieve a high level of environmental performance and compliance for 74% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 21% of the consents, a good level of environmental performance and compliance was achieved.

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
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.	
	1811–4 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.	

Water Supply Scheme	Resource consent	Expiry	Activity	Process
	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 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.
	1186-3 Take	2023	To take water from the Waingongoro River for Inaha rural water supply purposes.	
	3927-2 Discharge	Expired- S124	To discharge up to 228 m^3/day of filter backwash to the Mangatoki Stream.	
	3928-2 Discharge	Expired- S124	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.	

Water Supply Scheme	Resource consent	Expiry	Activity	Process
	9473-1 Structure	2030	To construct, place and use a water intake structure on the bed of the Waiaua River for water abstraction purposes.	Structure consists of stainless steel meshed intake tube set in concrete in the bed of the stream. Water enters the tube and flows into a wetwell buried under the river bank. Water is then pumped to the WTP.
Patea WTP	3388-3 Take	2028	To take and use groundwater from three bores (known as Bore 1, Bore 4 and Bore 5) for Patea Township water supply purposes.	Groundwater is pumped from bores 1, 2 and 4 and then sent to reticulation. There is an option to chlorinate the water if necessary.
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 and membrane filtration.
	6038-1 Discharge	2019	To discharge filter backwash water and settling tank waste from the Rahotu WTP into the Pungaereere Stream.	
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. 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.
	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.	

Water Supply Scheme	Resource consent	Expiry	Activity	Process
	3911-2 Take	2018	To take water from the Otakeho Stream for the Pope and Waimate West water supply schemes.	PACl 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.
	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.

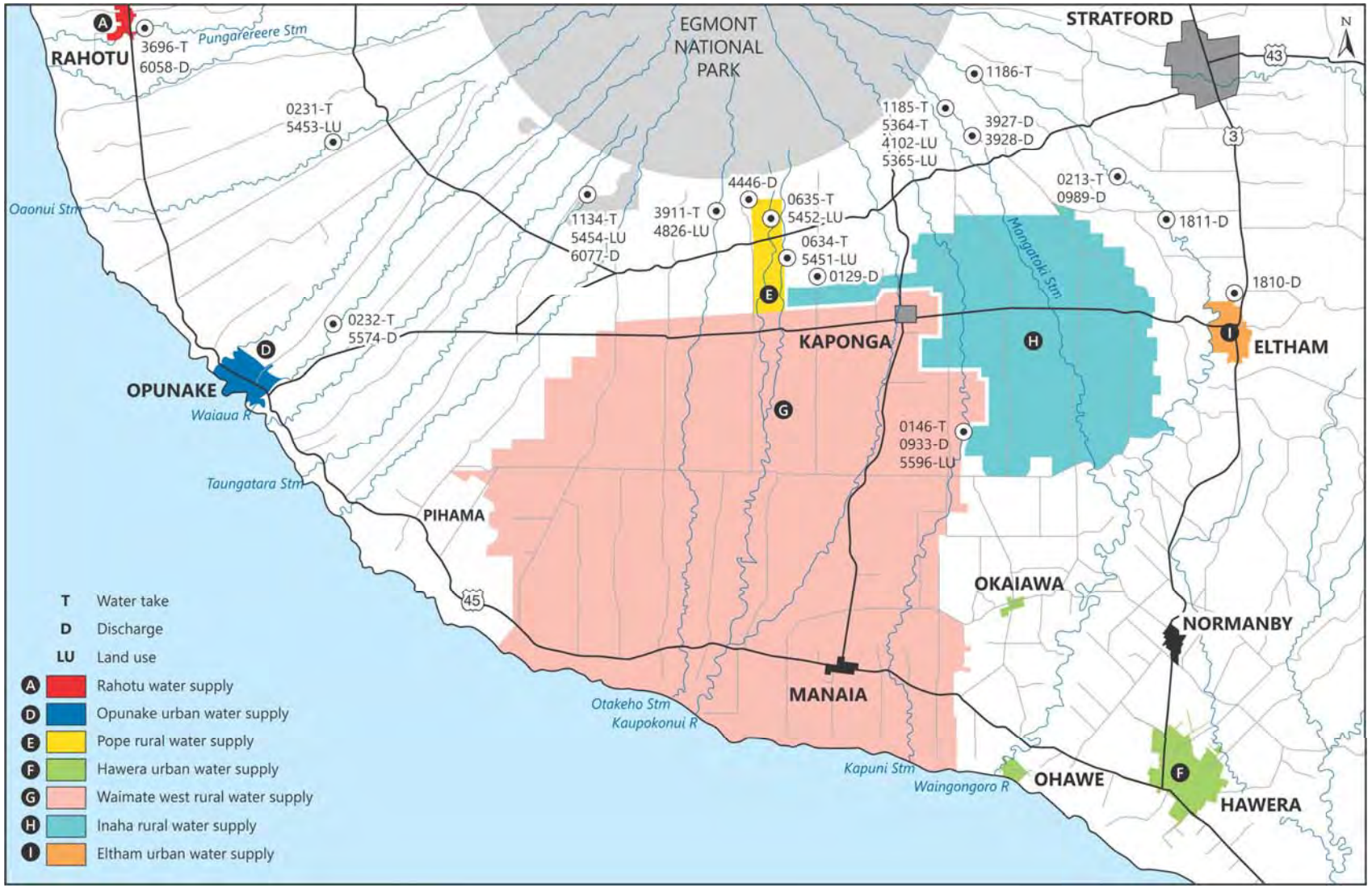

Figure 1 Location of STDC central and western resource consents

Figure 2 Location of STDC's southern consents

1.3 Resource consents

STDC holds various resource consents including water abstraction permits, discharge permits and land use consents for 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.

STDC holds 15 consents to abstract water. These consents were granted by the Council under Section 87 of the RMA and each contains special conditions STDC 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 induvial consents include:

- in-stream flow recording (Mangawhero-iti – Waimate West WTP);
- minimum residual flow limits (Mangawhero-iti – Waimate West WTP)
- financial contributions (Mangawhero-iti – Waimate West WTP).

1.3.2 Land use 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 nine land use consents covered by this report that permit the installation of water abstraction or discharge structures.

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. STDC hold ten discharge consents.

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.

This summary of consent conditions may not reflect the full requirements of each condition. The consent conditions in full can be found in the resource consent s which are appended to this report.

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 2016-2017 monitoring programme for STDC's water supply schemes 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 during the monitoring period, with total of 11 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, Eltham, and Rahotu WTPs. Receiving water samples were also collected in relation to discharges from the Kapuni WTP.

1.4.5 Biomonitoring

Macroinvertebrate surveys were undertaken in relation to the Hawera and , Waimate West WTPs to determine effects upon the stream communities due to the discharge of filter backwash and/or abstractions.

Two fish surveys were undertaken in relation to the Inaha and Waimate West WTP's.

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 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 STDC. These are reviewed to ensure that the 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 2017)

The south backwash pond was dry whilst the north pond was discharging at less than 0.5/L sec. The discharge was clean and no issues were noted in the receiving water. A discharge sample was taken. The plants inflow meter was reading 189.9 m^3 /hour (52.5 L/s) which was in compliance and matched the telemetered data. The intake screen was inspected and no issues were noted. The settling pond below the intake was not in use and was dry.

Inaha WTP (15 March 2017)

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. The Mangatoki inflow meter was checked and it was found to be at 53 m^3 /hr (14.7 L/s) which was in compliance and matched the telemetered data.

Waimate West WTP (15 March 2017)

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.

The discharge ponds were inspected and the north pond was discharging at approximately 1 L/s and no issues were noted in regard to scour or effects on the receiving water.

Discussions were held in regard to the river armouring required by consent conditions and it was outlined that as the high volume discharges required by plant commissioning did not and would not occur, that there was no longer any need for the armouring and that a consent variation would be applied for. The variation could also remove the provision for the high volume commissioning output and discharge of groundwater bore development water (which never occurred).

The Otakeho flow meter was inspected and it was found that the intake was 257.06 m^3 /hr (71.44 L/s) which was in compliance and matched the telemetered data.

The Mangawhero-iti abstraction meter was inspected and found that the abstraction rate was 404.93 m^3 /hr (121.48 L/s) which was in compliance and matched the telemetered data.

Rahotu WTP (26 April 2017)

The site was discharging at the time of the inspection. The discharge appeared clear and no issues or effects were noted. A sample of the discharge was taken. The intake pipe appeared to be working well and the flow meter was reading 5.6 m^3/hr which was in compliance and matched the telemetered data.

Opunake WTP (26 April 2017)

The intake structure was inspected and no issues were noted. Cement had recently been spread over the armouring to stabilise the rocks around the wet well. It was outlined that new intake screen had been installed, which was identical to the previous screen but had been strengthened to provide more resistance to impacts from flood debris. The abstraction flow meter read 56 m^3/hr and this matched the telemetered

data. Discharge was occurring from the north pond however this was soaking into the ground in the grassy channel and not entering the stream.

Hawera WTP (8 June 2017)

The Kapuni Stream was at moderate flow, clear and uncoloured. The Kapuni Stream abstraction rate was 404 m^3/hr (within consent conditions) and no issues were noted with intake structure. There was no abstracting from the groundwater bore at the time of the inspection. Samples were taken of the backwash discharge (northern pond) and the stream. The discharge had a free available chlorine level of 0.03 mg/L (compliant with consent conditions).

Wai-inu Beach WTP (8 June 2017)

The bore and chlorine dosing shed was inspected and there was a flow meter at the point of abstraction, however it was noted that data being supplied to Council is from a another meter (telemetered) situated at the water tanks. The pump was not operating as the reservoir tanks were full.

Waverley Beach Water Supply (8 June 2017)

The existing bore (permitted use) and plant was inspected. The log inside the building was inspected and no exceedances with regional rules were noted.

Waverley Water Supply (8 June 2017)

Chester Street bore GND0059 was operating and discharging at 13.76 m^3/hr which was within consent conditions. Swinbourne & Fookes Street bores were not in operation and no issues were noted.

Patea Water Supply (8 June 2017)

Bore 4 was running and abstracting 17.92 m^3 /hr which was well within consent conditions. Bores 1 and 5 were not in service. All flows are being metered at the point of abstraction.

2.2 Results of discharge monitoring

Three WTP's were sampled during the monitring period. Council staff also reveiwed data collected by STDC as part of their self monitoring.

2.2.1 Kapuni WTP

Discharge and receiving water samples were taken at the Kapuni WTP (Figure 3) on 18 August 2016 and 8 June 2017 and the results are presented in Tables 2 and 3 below.

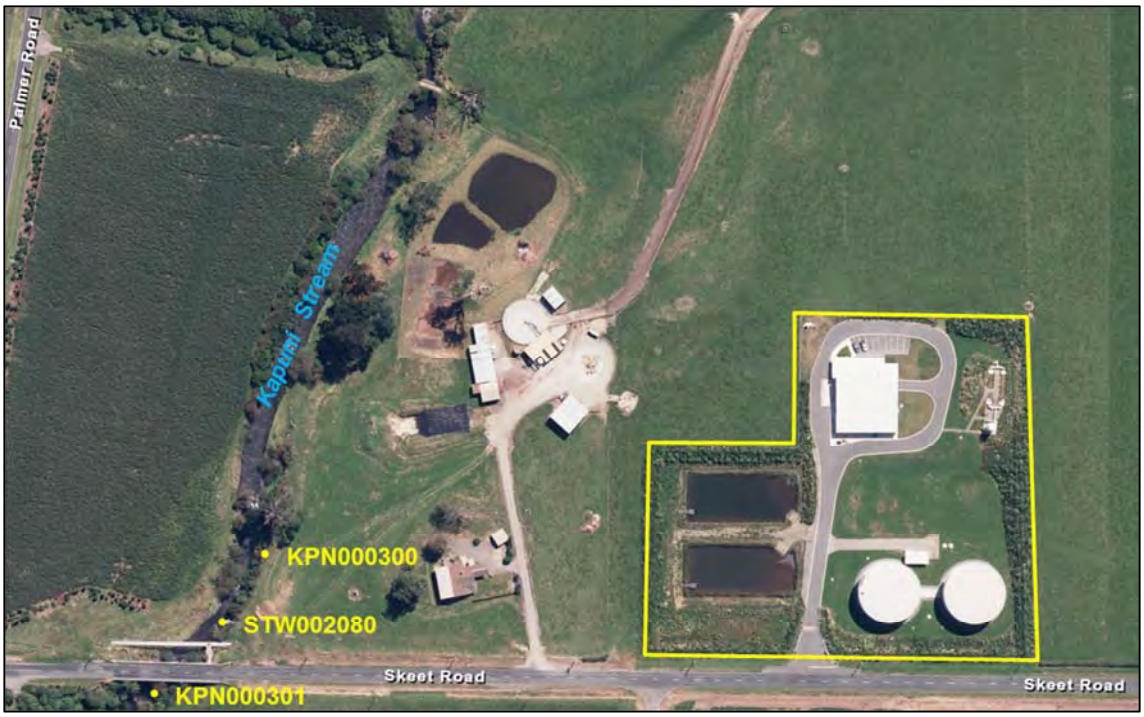

Figure 3 Aerial photo showing locations of the Kapuni WTP, and relevant sampling sites

Table 2 Kapuni WTP sample results 18 August 2016

Parameter		Upstream (KPN000300)	Pond discharge (STW002080)	Downstream (KPN000301)	Consent limits for discharge
Free available chlorine	g/m^3	-	0.02	-	<0.1
Conductivity @ 20°C	mS/m	11.0	16.6	11.0	-
Sodium	g/m^3	9.6	19.8	9.6	-
pH	pH	7.6	7.9	7.6	6-9
Suspended solids	g/m^3	-	12	-	20
Temperature	Deg C	10.8	13.3	10.8	-
Turbidity	NTU	1.8	-	2.4	-

Table 3 Kapuni WTP sample results 8 June 2017

Parameter		Upstream (KPN000300)	Discharge	Downstream (KPN000301)	Consent limits for discharge
Free available chlorine	g/m^3	-	<0.01	-	<0.1
Conductivity @ 20°C	mS/m	11.3	21.4	11.4	-
Sodium	g/m^3	10.3	35.7	10.2	-
pH	pH	7.7	9.2	7.8	6-9
Suspended solids	g/m^3	-	9	-	20

Parameter		Upstream (KPN000300)	Discharge	Downstream (KPN000301)	Consent limits for discharge
Turbidity	NTU	2.0		2.2	-
Temperature	Deg C	11.0	11.2	11.0	-

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 Eltham WTP

The filter backwash from the Eltham 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 16 March 2017 and the results are shown in Table 4.

Table 4 Results of sampling at the Eltham WTP

Parameter	Unit	STW0002072 Eltham WTP discharge	Consent limits
Free available chlorine	g/m^3	<0.1	<0.1
pH	-	7.4	6-9
Suspended solids	g/m^3	3	20
Temperature	Deg C	13.3	-

The sample results 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 Rahotu WTP

A sample was collected from the settling pond discharge on 26 April 2017 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 Rahotu WTP

Site	Unit	STW002069 Rahotu WTP discharge	Consent limits
Free available chlorine	g/m^3	0.05	<0.1
pH	-	7.5	6-9
Suspended solids	g/m^3	4	20

Site	Unit	STW002069 Rahotu WTP discharge	Consent limits
Conductivity @ 20°C	mS/m	19.8	-

2.3 Discharge data review

STDC now monitors all of 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 two WTPs in the period under review. These WTPs were the Waimate West WTP (Mangawhero-iti Stream) and the Hawera WTP (Kapuni 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 2017 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.

This survey was the seventh to follow full commissioning of the Kapuni WTP. The 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 the previous 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. This was again apparent in the current survey, but to a lesser degree. There was fine silt tied up in the substrate, primarily at site 2 (possibly related to the backwash discharge), but more likely related to an

erosion event in the National Park. The results of this survey indicate that the community at site 2, downstream of the discharge point, was in good health, and similar to that recorded 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 illustrated by the MCI score recorded downstream of the discharge being equal to 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 moderate at the control site 1 and increased only slightly at site 2 downstream of the discharge, although there were some changes in the presence/absence of a few taxa mainly found as rarities (less than 5 individuals). Site 1 recorded an average MCI score, despite the period of low flows that preceded this survey (30 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 and fine silt. These results are not an indication of any impacts from the Hawera water treatment plant.

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

12 December 2016

A spring macroinvertebrate survey was performed at four sites in the Mangawhero-iti Stream in relation to consented water abstraction by the Waimate West Water Supply Scheme (WWWSS). Taxa richnesses were moderate to high at the three impacted sites and similar to median values calculated from previous surveys at sites 2 and 3. Site 4 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 WWWSS had significantly affected the freshwater macroinvertebrate communities downstream of the abstraction point since the previous survey.

14 February 2017

A summer macroinvertebrate survey was performed at four sites in the Mangawhero-iti Stream in relation to consented water abstraction by the WWWSS. Taxa richnesses were moderate at the three impacted sites and lower than median values calculated from previous surveys. Taxa richness at sites 1 and 2 were the lowest recorded to date. There was a significant increase in MCI score between the observed and expected scores at sites 2 and 3 but no significant differences between the observed and expected scores at site 1. There was a significant decrease in MCI score between the observed and expected scores at site 4. Site 1 recorded its lowest MCI score to date, which was significantly lower than that recorded at site 2 and lower than that recorded at site 3. Excluding site 1 MCI and $SQMCI_s$ scores decreased with distance downstream, which is common for Taranaki ring plain streams. Site 4 also recorded its lowest MCI score to date. MCI and $SQMCI_s$ scores recorded at all four sites were not significantly different to median values calculated from previous survey. Overall, there was no evidence that water abstraction from Mangawhero-iti Stream by the WWWSS had significantly affected the freshwater macroinvertebrate communities downstream of the abstraction point since the previous survey.

2.4.2 Fish surveys

During the period under review the Council undertook fish surveys in the Mangawhero-iti and Mangatoki Streams. 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 Mangatoki Stream – electric fishing

A fish survey was conducted on 23 May 2017 upstream and downstream of two STDC water supply weirs in the Mangatoki Stream (Inaha water supply). The survey was undertaken using the electric fishing methodology and found that diversity was low, typical of the high altitudes where these weirs are located. Juvenile brown trout were recorded upstream of both weirs, and this indicates that adult trout are able to pass both the Mangatoki Stream weirs, most likely when the stream is in higher flow, as this is when adult trout migrate up to spawn. Native fish were not recorded in abundance in the stream, making the assessment of fish pass effectiveness for native fish difficult. Previous surveys in the Mangatoki Stream have also found a paucity of native species, and this is considered to be directly related to downstream barriers, primarily the Normanby Weir, and the presence of an abundant brown trout population. An inspection of the weirs and fish passage provisions determined that it was unlikely that they constitute a barrier to those fish able to migrate to this point in the stream.

It is recommended that future monitoring be performed in three years time (subject to any changes within the catchment i.e. removal of downstream barriers or degradation/improvement of current fish passage facilities), to better document the native fish community upstream and downstream of these weirs, especially since there appears to be considerable habitat available in this stream for native fish.

2.4.2.2 Mangawhero iti Stream- spotlighting survey

On 8 June 2017 a night spotlighting survey was undertaken at six sites in the Mangawhero-iti Stream, two upstream and four downstream of a 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, and to assess the fish communities downstream of the weir in relation to the residual flow provisions of the water abstraction consent. Between 300 and 390 m^2 was surveyed at each site, while a small area was also surveyed (non-quantitatively) upstream of the National Park boundary.

From the results of this survey, it appears that the Mangawhero-iti Stream supported a depauperate fish community. Only three fish species were recorded downstream of the weir (longfin eels, redfin bully, brown trout), with two species recorded upstream (longfin eel, brown trout). Crayfish were present at all sites. This depauperate species richness was also reflected in fish abundance, with only six eels recorded over the six sites, and only three redfin bully, all at one site. Upstream of the weir, no fish were recorded at site 1 near the park boundary, although a brief survey upstream of the National Park boundary did observe two brown trout. Brown trout were the most abundant species recorded during this survey, with twelve individual fish recorded.

It is unclear what has caused this depauperate community. It is possible that it is related to the historical variability in flow caused by the water intake, and as such subsequent surveys may record a recovery in fish communities with the renewal of the consent, although the residual flow for this reach is very low (32 litres/sec). Should the flow in the Mangawhero-iti Stream drop as low as 32 litres per second on a number of consecutive days, the potential chronic impacts on fish communities caused by warming of the water and loss of habitat could be sufficient to cause fish to emigrate out of the Mangawhero-iti, and may even lead to their death. It must also be acknowledged that the influence of brown trout on native fish can also be significantly deleterious, due to this species being territorial and an effective predator.

Due to the low numbers of fish recorded in this survey, it is not possible to make any conclusions regarding whether the weir and fish pass presents a restriction to the passage of fish. The previous survey concluded

that the fish pass is likely to provide adequate passage for most migrant native fish, provided there is a consistent flow of water in the fish pass at all times. On the other hand, adult trout are unlikely to be able to negotiate the pass, and as such the fish pass does not strictly meet full compliance with consent conditions. However, when the fish pass was originally designed, it was considered that it need only provide passage for native fish, as the practical limitations of the site, and increased cost of providing trout passage was considered to be unreasonable. Nevertheless, providing passage for trout should not be reconsidered if fish passage at this weir is reviewed in the future. This is because the Mangawhero iti is located in the headwaters of the Mangawhero Stream and Kaupokonui River, both valued angling streams. Passage for adult trout would allow access to spawning areas upstream of the weir.

Considering the flow in the fish pass has been variable and can get very low, it is possible that there have been deleterious impacts on the native fish and trout communities in much of the reach between the weir and the confluence with the next major tributary downstream. However, the suppressing influence of brown trout may also be having an affect, although similar catchments with brown trout have been found to have a more extensive native fish community. It is difficult at this stage to explain the reduced abundance or absence of redfin bully, torrentfish, common bully and kokopu species in this reach, and reduced species richness and abundance upstream. Subsequent monitoring, both environmental and ecological, may provide a better understanding of what is causing such a depauperate community in the Mangawhero-iti Stream.

2.5 Data Review

Data is collected from STDC and 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 data review

Plant	Source	Data type	Records on time?	Compliance with daily volumes	Compliance with abstraction rates	Completeness of data
Eltham	Waingongoro	Abstraction	Yes	N/A	>99%	100%
Hawera	Kapuni	Abstraction	Yes	100%	100%	>99%
	Kapuni bore	Abstraction	Yes	100%	100%	100%
Inaha	Mangatoki	Abstraction	Yes	100%	99%	100%
	Waingongoro	Abstraction	Yes	100%	>99%	100%
Opunake	Waiaua	Abstraction	Yes	100%	100%	100%
Patea	Bore 1	Abstraction	Yes	100%	100%	100%
	Bore 4	Abstraction	Yes	N/A	99%	100%
	Bore 5	Abstraction	Yes	N/A	99%	100%
	Combined	Abstraction	Yes	99%	N/A	100%
Rahotu	Pungaereere	Abstraction	Yes	100%	100%	100%
Wai-inu	Wai-inu bore	Abstraction	Yes	100%	100%	100%
Waimate West	Mangawhero-iti	Abstraction	Yes	N/A	99%	100%
		Stream flow	Yes	Yes	N/A	Yes
	Otakeho	Abstraction	Yes	N/A	100%	100%
		Stream flow	No	N/A	N/A	<25%
	Mangawhero	Abstraction	Yes	N/A	99%	100%

Plant	Source	Data type	Records on time?	Compliance with daily volumes	Compliance with abstraction rates	Completeness of data
Waverley	Chester St bore	Abstraction	Yes	100%	100%	100%
		Level	Yes	N/A	N/A	100%
	Fookes St bore	Abstraction	Yes	100%	100%	100%
		Level	Yes	N/A	N/A	25%**
	Swinbourne St bore	Abstraction	Yes	100%	100%	100%
		Level	Yes	N/A	N/A	100%
	Combined Waverley	Abstraction	Yes	100%	100%	100%
Waverley Beach	Bore 2	Abstraction	N/A	Not exercised	Not exercised	N/A

Key: N/A= not applicable (not all consents require abstractions rate data or have daily volume limits)
** Bore generally not in service during period under review

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 2016-2017 period, the Council was not required to record incidents, in association with STDC's conditions in resource consents or provisions in Regional Plans.

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. During the monitoring period no exceedances of abstraction rates or volumes were noted. It was noted that bore level recording at the Fookes Street bore in Waverley was not in operation as per consent conditions due to a lightening strike however this has since been rectified.

Stream level recording the Otakeho Stream was installed as per consent conditions however due to ongoing issues with flood damage the full year of data required by consent conditions was not collected. STDC is currently working to address this.

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 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.

Overall the STDC demonstrated a high 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 7-46.

4.3.1 Eltham WTP

Table 7 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	>99% compliance
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
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**High** **High**

Table 8 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

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?**
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 9 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

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?**
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 10 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	Sampling and review of consent holder 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**

4.3.2 Hawera WTP

Table 11 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

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?**
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 12 Summary of performance for Consent 0933-3

Purpose: *To discharge up to 227 m^3 /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 and macroinvertebrate surveys	Yes
7. Limits on certain parameters in the discharge	Sampling and review of consent holder data	Yes

Purpose: *To discharge up to 227 m^3 /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?**
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 13 Summary of performance for Consent 5596-1 (to 1 June 2017)

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	Structure removed	N/A
2. Structure to be constructed in accordance with application	Structure removed	N/A
3. Construction not to occur between 1 May and 31 October	Structure removed	N/A
4. Adoption of best practicable option to minimise adverse effects on water quality	Structure removed	N/A
5. Minimise disturbance during construction and maintenance and reinstate disturbed areas	Structure removed	N/A
6. No refuelling on the streambed	Structure removed	N/A
7. No obstruction of fish passage	Structure removed	N/A
8. Maintenance of flow down fish pass to ensure fish passage	Structure removed	N/A
9. Structure not to cause erosion adjacent to or downstream of rock riprap ramp	Structure removed	N/A
10. Only material which makes up existing structure should be extracted from streambed during construction	Structure removed	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?**
11. Removal of streambed material for maintenance purposes only to occur between 1 November and 30 April	Structure removed	N/A
12. Removed material to be placed on banks of stream downstream of weir	Structure removed	N/A
13. Structure to be removed when no longer required and area reinstated	Structure removed	Yes
14. Review provision	No further options for review	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 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

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?**
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 15 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
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 16 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 17 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	None found	N/A
8. Lapse provision	Consent exercised	N/A
9. Review provision	Next scheduled in June 2017, if required	Yes

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?**
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 Inaha WTP

Table 18 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
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	Review in June 2018 not required. No further option for review	N/A

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?**
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 1186-3

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?**
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
10. Review provision	Review in June 2018 not required. No further option 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**

Table 20 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 21 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 22 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
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	No further option 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**

Table 23 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

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?**
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**

4.3.4 Opunake WTP

Table 24 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 water through 'new' intake except during maintenance works	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 meter compliant with NWMR	Yes
7. Notify Council of equipment failure	No equipment failure noted	N/A

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?**
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	Review in June 2018 not required. No further option 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**

Table 25 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
4. Limits on contaminants in discharge	Review of consent holder data	N/A
5. Lapse provision	Consent exercised	N/A
6. Review provision	Review in June 2018 not required. No further option 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**

Table 26 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	Review in June 2018 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**

4.3.5 Patea WTP

Table 27 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%
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

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?**
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**

4.3.6 Pope WTP

Table 28 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	No longer exercised	N/A
2. Exercise in accordance with application	No longer exercised	N/A
3. Maximum discharge of 6 m^3/day at 5 L/s	No longer exercised	N/A
4. Limits not to be exceeded in the discharge	No longer exercised	N/A
5. Efficient operation	No longer exercised	N/A
6. No effects on receiving water	No longer exercised	N/A
7. Lapse provision	No longer exercised	N/A

Purpose: *To discharge treated backwash water from the Pope rural WTP*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
8. Review provision	No longer exercised	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**

4.3.7 Rahotu WTP

Table 29 Summary of performance for Consent 3696-3

Purpose: *To take and use water from the Pungaereere Stream for the Rahotu 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 30 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	Sampling and 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**

4.3.8 Wai-inu Beach water supply

Table 31 Summary of performance for Consent 3770-3

Purpose: *To take and use groundwater for Wai-inu Beach for 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

Purpose: *To take and use groundwater for Wai-inu Beach for 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**

4.3.9 Waimate West WTP

Table 32 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 commissioning discharges did not occur	Not required
5. Limits on discharge not to be exceeded	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	No further option 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**

Table 33 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	99%

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?**
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
8. Flow in Mangawhero-iti Stream downstream of intake to be maintained above 32 L/s	Data provided	100%
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	Review in June 2018 not required. No further option 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**

Table 34 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	99%
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
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	Review in June 2018 not required. No further option 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**

Table 35 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

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?**
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 for one year prior to June 2017	Data received	No data incomplete
10. Review provision	Review in June 2018 not required. No further option 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		**Good**

Table 36 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

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?**
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 37 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
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

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?**
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 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**

4.3.10 Waverley water supply

Table 39 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 each bore	Inspections	Yes
5. Install and maintain level recording equipment on each bore	Inspection	Yes
6. Record water level in each bore	Inspection and data review	No- Fookes St data incomplete
7. Recording of abstraction and level data	Data received - 85% complete	85%
8. Notice of installation of water measuring equipment	Notification received	Yes
9. Notification of non-operational measuring equipment	Review of notifications received	No- no notification of Fookes St level recording fault received.
10. Best practicable option to prevent or minimise adverse effects	Inspections, review or data	No
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	No further option for review	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**High** **Improvement required**

4.3.11 Waverley Beach water supply

Table 40 Summary of performance for Consent 9563-1

Purpose: *To take and use 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
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**

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

4.4 Recommendations from the 2015-2016 Annual Report

In the 2015-2016 Annual Report, it was recommended:

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.

These recommendations were implemented.

4.5 Alterations to monitoring programmes for 2017-2018

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 2017-2018 the level of monitoring for the South Taranaki Water Supplies remain similar to that of 2016-2017.

4.6 Exercise of optional review of consent

The following consents provide of optional reviews of the consent conditions in June 2018. 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 41 Consents due for review in June 2018

Consent No	Description	Next Review Date
0232-4	To take and use water from the Waiaua River for Opunake town water supply purposes	June 2018
0634-3	To take water from the Mangawhero-iti Stream for the Waimate West water supply	June 2018
0635-3	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	June 2018
1185-3.1	To take water from the Mangatoki Stream in the Waingongoro catchment for Inaha rural water supply purposes	June 2018
1186-3	To take water from the Waingongoro River for Inaha rural water supply purposes	June 2018
5574-2	To discharge water treatment residuals, and pond drainage water from the Opunake Water Treatment Plant into the Waiaua River	June 2018
9473-1	To construct, place and use a water intake structure on the bed of the Waiaua River for water abstraction purposes	June 2018

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..

5 Recommendations

1. THAT for 2017-2018 the level of monitoring for the STDC Water Supplies remains similar to that of 2016-2017.
2. THAT the option for a review of resource consents 0232-4, 5574-2, 9473-1, 0634-3, 0635-3, 1185-3, and 1186-3 in June 2018, not be based on the results of monitoring in the year under review, and in previous years as set out in earlier annual compliance monitoring reports.

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.
SQMCI	Semi quantitative macroinvertebrate community index; a numerical indication of the state of biological life in a stream that takes into account the sensitivity *and abundance* 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 2010.
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

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

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

*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 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.

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

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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.

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

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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

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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

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. 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.

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

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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

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

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:

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

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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:	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

*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 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. 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.

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.

13. That following any necessary repair work to the two existing intake structures, they shall be valved off and retained for emergency use only.

14. 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.

15. That the Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during June 2005 and/or 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 19 May 2000

For and on behalf of
Taranaki Regional Council

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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 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 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

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 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.

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

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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

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 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.

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

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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

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. 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.

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 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.

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

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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

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 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.

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

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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 Chief Executive Private Bag 902 HAWERA 4800
Consent Granted Date:	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 at or about GR: Q20:107-039
Expiry Date:	1 June 2023
Review Date(s):	June 2011, June 2018
Site Location:	Inaha Water Supply, Upper Palmer Road, Mahoe
Legal Description:	Sec 24 Blk VII Kaupokonui SD
Catchment:	Waingongoro
Tributary:	Mangatoki

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. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of application 3449. In the case of any contradiction between the documentation submitted in support of application 3449 and the conditions of this consent, the conditions of this consent shall prevail.

3. The volume of water abstracted shall not exceed 1,122 cubic metres/day at a rate not exceeding 13 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. The 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.

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

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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 (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 ± 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.

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 ± 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.

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

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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

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. 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.

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

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Director-Resource Management

TRK993927

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 228 CUBIC METRES/DAY OF BACKWASH WASTES FROM THE INAHA RURAL WATER SUPPLY TREATMENT PLANT INTO AN UNNAMED TRIBUTARY OF THE MANGATOKI STREAM IN THE WAINGONGORO CATCHMENT AT OR ABOUT GR: Q20:110-030
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 UNNAMED TRIBUTARY	350.010

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

TRK993927

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 tributary of the Mangatoki 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; and
   v) any significant adverse effects on aquatic life.

3. THAT the discharge quality shall not exceed the following limits at all times:

suspended solids	20	gm^{-3}
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 4 June 1999

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

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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

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. 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.

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

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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

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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 ± 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.

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 ± 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.

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

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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.

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

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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.

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

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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 ± 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 ± 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.

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

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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 ± 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 ± 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.

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 ±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

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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

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. 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	$<0.1 g/m^3$
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.

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

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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 ± 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 ± 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.

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

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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

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. 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

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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 m^3/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 ± 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 ± 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.

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

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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 ± 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 ± 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.

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 ±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.

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

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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 ± 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 ± 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.

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

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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 ± 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 ± 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.

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 ±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

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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):	15 May 2013
Commencement Date (Change):	15 May 2013 (Granted: 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, Rowan Road, Manaia
Legal Description:	Pt Sec 79 Blk X Kaupokonui SD (Discharge source & site)
Grid Reference (NZTM)	1695477E-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. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of applications 3445 and 7390. In the case of any contradiction between the documentation submitted in support of applications 3445 and 7390 and the conditions of this consent, the conditions of this consent shall prevail.

3. The discharge shall not exceed 750 m^3 per day, except in the following situations:

   a) During plant start-up where the discharge shall not exceed 7,500 m^3 per day for a one-off period of up to 10 days;
   b) During clarifier drain-down where the discharge shall not exceed 1500 m^3 per day, twice annually, for a maximum 24 hour period; and
   c) During sludge pond dewatering where the discharge shall not exceed 1000 m^3 per day, once annually, for up to 14 days.

4. 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.

5. 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

6. The consent holder shall properly and efficiently maintain and operate the settling ponds so as to meet the conditions of this consent.

7. 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:

    a) any conspicuous change in the colour or visual clarity;
    b) any emission of objectionable odour;
    c) the rendering of fresh water unsuitable for consumption by farm animals;
    d) any significant adverse effects on aquatic life.

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 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 May 2013

For and on behalf of
Taranaki Regional Council

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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.

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

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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 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 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.

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

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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 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 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.

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

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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 ± 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.

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 ± 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

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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 ± 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 ± 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.

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

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Chief Executive

Appendix II

Biomonitoring and fish survey reports

To	Scott Cowperthwaite, Scientific Officer
From	Bart Jansma, Scientific Officer
Document	1146113
Report No.	BJ292
Date	27 July 2017

Fish survey conducted in the Mangawheroiti Stream in relation to a STDC water supply weir, Waimate West scheme, June 2017

Introduction

South Taranaki District Council (STDC) hold resource consents in relation to several rural water supply schemes. The monitoring programmes for the weirs used by these schemes include fish monitoring of a selection of the weirs each year, with the goal of monitoring each weir once every three years. The Mangawheroiti Stream was surveyed in the 2016-2017 monitoring period. Consents relating to the Waimate West Rural Water Supply Schemes (Mangawheroiti Stream) are as follows:

5451 To erect, place, use and maintain a water intake structure and ancillary structures on and over the bed of the Mangawhero-iti Stream a tributary of the Mangawhero Stream in the Kaupokonui catchment for water abstraction purposes.

0634 To take water from the Mangawheroiti Stream for the Waimate West water supply

A special condition of resource consent 5451 requires 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 and is a scheduled component of the monitoring programme for the 2016-2017 monitoring year.

Photo 1 Mangawheroiti Stream weir and fish pass

A special condition of resource consent 0634 requires that the taking of water shall be managed to ensure that the flow downstream of the intake is not less than 32 litres per second. A flow of 32 litres per second equates to 21% of the mean annual low flow, a flow so low that there is potential for significant adverse effects downstream of the intake. Should the flow in the Mangawheroiti Stream drop as low as 32 litres per second on a number of consecutive days, the potential chronic impacts on fish communities caused by warming of the water and loss of habitat could be sufficient to cause fish death or emigration. Therefore, an extensive

monitoring programme has been developed, which will attempt to quantify the effects of such a low flow in the Mangawheroiti Stream. The fish monitoring component is complemented by water temperature monitoring at three sites, and macroinvertebrate monitoring at four sites twice a year. During the 2016-17 monitoring period, a spotlighting fish survey was performed at six sites in the Mangawheroiti Stream.

The weir in the Mangawheroiti Stream is 2.3 m high and located at an altitude of 340 m a.s.l. A new fish pass was installed at the STDC weir on the Mangawheroiti Stream in the 2004-2005 monitoring year. This fish pass is located on the true right bank of the Mangawheroiti Stream and consists of a ramp with small rocks concreted into it. This fish pass replaces the old ineffective stepped fish pass which was present on the left side of the weir. The weir and fish pass are shown in Photo 1 and Photo 2. At the time of installation it was considered too difficult and expensive to provide for the passage of adult trout, and therefore this pass was only designed to provide for the passage of native fish.

Photo 2 Fish pass on STDC weir in the Mangawheroiti Stream

Six previous fish surveys have been conducted in relation to the Mangawheroiti Stream diversion weir for the Waimate West Water Supply Scheme, using electric fishing and night-spotting methods. Both fish survey methods have their advantages and disadvantages for determining fish populations. When used together these methods can provide comprehensive fish community data. The results of these previous fish surveys are summarised in previous annual reports. The current survey is the second to cover six sites, as a focus on the downstream catchment was considered appropriate, considering the revised consent conditions.

Methods

Six sites were sampled in this survey conducted on 8 June 2017, two sites upstream of the weir, and four sites downstream of the weir. The sites were surveyed using the spotlighting method, which employed hand held spotlights powered by 12 volt, 7amp hour batteries. All observed fish were captured using hand held scoop nets where possible. Those fish captured were counted and identified where possible, with their size estimated. Those fish not captured were identified as close to species level as possible, with an estimated length recorded. The area surveyed at each site varied from 300 m^2 to 390 m^2. The location of sites surveyed in relation to the weir and fish pass are shown in Figure 1 and the details of the sites surveyed are given in Table 1. During the current survey, a non-quantitative survey was also undertaken upstream of the National Park boundary above site 1. This survey consisted of a brief scan of two small pools only.

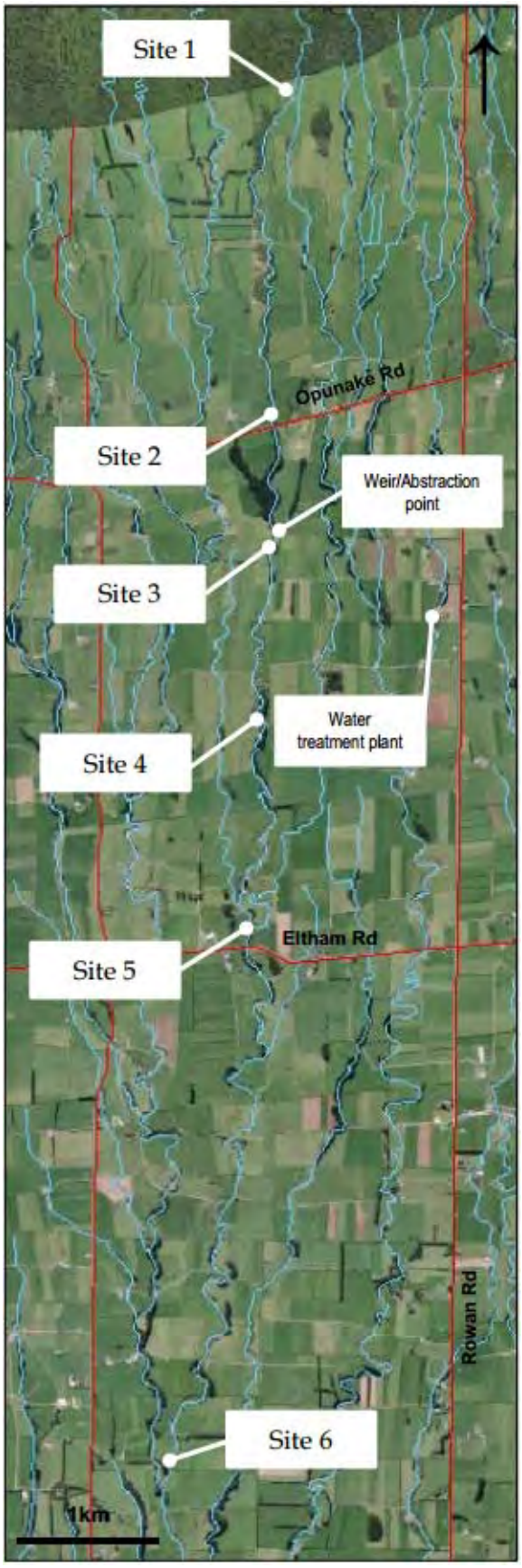

Figure 1 Location of sites surveyed in the Mangawheroiti Stream in relation to the Waimate West Water Supply weir and fish pass.

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

Site	Site Code	Description	Altitude (m)	Distance Inland From Sea (km)	Area Surveyed (m^2)
1	MWI000015	At National Park boundary	470	31.9	320
2	MWI000150	At Opunake Road	370	29.0	340
3	MWI000174	Just downstream of intake weir	345	28.3	390
4	MWI000200	1.4km downstream of weir	300	26.9	320
5	MWI000346	Eltham Road – 3.3km downstream of weir	260	25.0	350
6	MWI000490	Upstream of Mangawhero confluence – 8.3km downstream of weir	178	20.0	300

Results

The results of the survey conducted in the Mangawheroiti Stream are presented in Table 2. Previous results are also included, although it should be noted that these previous results come from a mix of electric fishing and spotlighting surveys. Table 3 presents the density of fish per site, as number of each species per square metre surveyed.

Table 2 Fish species recorded in the Mangawheroiti Stream upstream and downstream of the Waimate West water supply weir together with results of past surveys (P = Present).

Fish species recorded	Upstream of park boundary	Site 1		Site 2		Site 3		Site 4		Site 5		Site 6	
		Current survey	Previous surveys	Current survey	Previous surveys	Current survey	Previous surveys	Current survey	Previous surveys	Current survey	Previous surveys	Current survey	Previous surveys
Longfin eel *Anguilla dieffenbachii*	-	-	-	2	P	1	P	1	P	-	P	1	P
Shortfin eel *Anguilla australis*	-	-	-	-	-	-	-	-	-	-	-	-	P
UID eel *Anguilla sp.*	-	-	-	-	-	-	-	-	-	-	-	-	-
Koaro *Galaxias brevipinnis*	-	-	-	-	-	-	P	-	-	-	-	-	-
Shortjaw kokopu *Galaxias postvectis*	-	-	-	-	-	-	P	-	-	-	-	-	-
Redfin bully *Gobiomorphus huttoni*	-	-	-	-	-	-	-	-	-	3	P	-	-
Torrentfish *Cheimarrichthys fosteri*	-	-	-	-	-	-	-	-	-	-	P	-	-
Brown trout *Salmo trutta*	2	-	-	3	P	1	P	1	P	4	P	1	-
UID Trout Salmonid species	-	-	-	-	-	-	-	-	-	1	-	1	-
Freshwater crayfish *Paranephrops planifrons*	1	2	P	19	P	5	P	2	-	8	P	1	P
Freshwater shrimp *Paratya sp.*	-	-	-	-	-	-	-	-	-	-	-	P	-
Total abundance of fish	2	0	-	5	-	2	-	2	-	2	-	3	-
Total no. of fish species	1	0	0	2	2	2	4	2	2	8	4	2	2

Table 3 Number of fish per square metre at each site, during the current survey.

	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6
Area fished (m^2)	320	340	390	320	350	300
Longfin eel	0	0.0059	0.0026	0.0031	0	0.0033
Shortfin eel	0	0	0	0	0	0
UID eel	0	0	0	0	0	0
Koaro	0	0	0	0	0	0
Shortjaw kokopu	0	0	0	0	0	0
Redfin bully	0	0	0	0	0.0086	0
Torrentfish	0	0	0	0		0
Brown Trout	0	0.0088	0.0026	0.0031	0.0114	0.0033
UID Trout	0	0	0	0	0.0029	0.0033
Freshwater crayfish	0.0063	0.0559	0.0128	0.0063	0.0229	0.0033

Previous surveys have noted that flows below the intake weir on the Mangawheroiti were likely to be highly variable and may not provide sufficient water for fish to move through the 3.5 km reach between the confluence with the next major tributary downstream and the weir. In addition, it was noted that a consistent flow is unlikely to be provided down the fish pass at all times and that the low residual flow was likely to be having an impact on the fish communities in this reach of stream. It is understood that STDC have made a number of management improvements to the scheme and since the renewal of the consent, management of the flow downstream of the weir has improved, ensuring flows are in excess of the minimum flow of 32 l/sec at all times.

The diversity (number of fish species) of fish in the communities at all sites was low during this survey. Longfin eels (*Anguilla dieffenbachii*) were recorded at sites 2, 3, 4 & 6, while no shortfin eel (*Anguilla australis*) were recorded. Redfin bully were recorded at site 5 only. Brown trout were recorded both upstream and downstream of the weir, with the only survey reach not to record brown trout being site 1, although they were recorded by a brief survey undertaken further upstream in the National Park. This represents an increase from that recorded in the previous survey, which only recorded brown trout at one site (site 2). Of note was a large brown trout (450mm) recorded at site 6. This fish may have migrated into the lower reaches of the Mangawheroiti Stream to spawn.

The previous survey failed to record longfin eel upstream of the weir and didn't record redfin bully (*Gobiomorphus huttoni*) at any site; hence the current results indicate a slight improvement. However, the numbers of longfin eel and redfin bully is lower than what would be expected as both are fairly ubiquitous species in Taranaki, especially at lower altitudes. An interesting dynamic to the redfin bully results was that all three individuals were large gravid females. There is no obvious explanation for the apparent absence of male redfin bully, although it is possible that these fish were under cover, preparing a nest for spawning.

Density calculations have been included (Table 3) to allow a comparison between sites, and between subsequent surveys. This will allow an assessment of any change in fish communities over time. For this reason, freshwater crayfish were also included, as this species can also show change with variations in the flow regime. It should be noted that this comparison can only be made between surveys using the same survey technique, as abundance results differ markedly between electric fishing and spotlighting surveys. Unfortunately, the depauperate results of the current survey pre-empt any useful inter-site analysis of this density data, and there is not yet sufficient historical data to facilitate a temporal analysis.

Koaro (*Galaxias brevipinnis*) and shortjaw kokopu (*Galaxias postvectis*) have both been recorded immediately downstream of the weir in the past, and both species are strong climbers and would be able to pass the weir via the fish pass. It is likely that these species are present in the upper catchment although it

is possible that they have a reduced abundance due to the predominance of trout throughout the catchment. Brown trout are territorial, and also predate upon juvenile koaro and kokopu.

Brown trout populations are established both upstream and downstream of the weir, as confirmed by the current survey. It is considered that the upstream population is self sustaining, as the fish pass is unlikely to provide passage for adult trout. Adult trout generally require a water depth of greater than 15 cm to pass and this is currently not provided by the fish pass. By not providing access for adult trout, the fish pass is not considered adequate to ensure strict compliance with consent conditions. However, when the fish pass was originally designed, it was considered that it need only provide passage for native fish, as the practical limitations of the site, and increased cost of providing trout passage was considered to be unreasonable.

However, should fish passage at this weir be reviewed in the future, the passage of trout should be considered. This is because the Mangawheroiti Stream is a tributary of the Mangawhero Stream, located in the headwaters of the Kaupokonui River. Both the Mangawhero Stream and Kaupokonui River have been identified in the Regional Fresh Water Plan for Taranaki as being valued angling rivers. Due to the presence of a barrier to trout passage in the Kaupokonui River, just upstream of the Mangawhero Stream confluence (the Glenn Road weir), the Mangawhero catchment effectively forms the headwaters of the lower Kaupokonui River. Adult trout migrate upstream to spawn, and the fact that the Mangawheroiti Stream fish pass does not provide for the passage of adult trout to the headwaters, there is large area of potentially suitable spawning trout spawning habitat which is unavailable.

Considering the flow in the fish pass has been variable and can get very low, it is possible that there have been deleterious impacts on the native fish and trout communities in much of the reach between the weir and the confluence with the next major tributary downstream. However, the suppressing influence of brown trout may also be having an affect, although similar catchments with brown trout have been found to have a more extensive native fish community. It is difficult at this stage to explain the reduced abundance or absence of redfin bully, torrentfish, common bully and kokopu species in this reach, and reduced species richness and abundance upstream. Subsequent monitoring, both environmental and ecological, may provide a better understanding of what is causing such a depauperate community in the Mangawheroiti Stream.

Summary

On 8 June 2017 a night spotlighting survey was undertaken at six sites in the Mangawheroiti Stream, two upstream and four downstream of a 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, and to assess the fish communities downstream of the weir in relation to the residual flow provisions of the water abstraction consent. Between 300 and 390 m^2 was surveyed at each site, while a small area was also surveyed (non-quantitatively) upstream of the National Park boundary.

From the results of this survey, it appears that the Mangawheroiti Stream supported a depauperate fish community. Only three fish species were recorded downstream of the weir (longfin eels, redfin bully, brown trout), with two species recorded upstream (longfin eel, brown trout). Crayfish were present at all sites. This depauperate species richness was also reflected in fish abundance, with only six eels recorded over the six sites, and only three redfin bully, all at one site. Upstream of the weir, no fish were recorded at site 1 near the park boundary, although a brief survey upstream of the National Park boundary did observe two brown trout. Brown trout were the most abundant species recorded during this survey, with twelve individual fish recorded.

It is unclear what has caused this depauperate community. It is possible that it is related to the historical variability in flow caused by the water intake, and as such subsequent surveys may record a recovery in fish communities with the renewal of the consent, although the residual flow for this reach is very low (32 litres/sec). Should the flow in the Mangawheroiti Stream drop as low as 32 litres per second on a number of consecutive days, the potential chronic impacts on fish communities caused by warming of the water and

loss of habitat could be sufficient to cause fish to emigrate out of the Mangawheroiti, and may even lead to their death. It must also be acknowledged that the influence of brown trout on native fish can also be significantly deleterious, due to this species being territorial and an effective predator.

Due to the low numbers of fish recorded in this survey, it is not possible to make any conclusions regarding whether the weir and fishpass presents a restriction to the passage of fish. The previous survey concluded that the fish pass is likely to provide adequate passage for most migrant native fish, provided there is a consistent flow of water in the fish pass at all times. On the other hand, adult trout are unlikely to be able to negotiate the pass, and as such the fish pass does not strictly meet full compliance with consent conditions. However, when the fish pass was originally designed, it was considered that it need only provide passage for native fish, as the practical limitations of the site, and increased cost of providing trout passage was considered to be unreasonable. Nevertheless, providing passage for trout should not be reconsidered if fish passage at this weir is reviewed in the future. This is because the Mangawheroiti is located in the headwaters of the Mangawhero Stream and Kaupokonui River, both valued angling streams. Passage for adult trout would allow access to spawning areas upstream of the weir.

Considering the flow in the fish pass has been variable and can get very low, it is possible that there have been deleterious impacts on the native fish and trout communities in much of the reach between the weir and the confluence with the next major tributary downstream. However, the suppressing influence of brown trout may also be having an affect, although similar catchments with brown trout have been found to have a more extensive native fish community. It is difficult at this stage to explain the reduced abundance or absence of redfin bully, torrentfish, common bully and kokopu species in this reach, and reduced species richness and abundance upstream. Subsequent monitoring, both environmental and ecological, may provide a better understanding of what is causing such a depauperate community in the Mangawheroiti Stream.

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To	Scott Cowperthwaite, Scientific Officer
From	Bart Jansma, Scientific Officer
Document No.	1907796
Report No.	BJ293
Date	31 July 2017

Fish survey conducted in the Mangatoki Stream in relation to STDC water supply weirs – May 2017

Introduction

An electric fishing survey was performed in the Mangatoki Stream upstream and downstream of the two STDC weirs used to divert water for the Inaha water supply scheme. The weir (downstream of Upper Palmer Road) was installed in 1999 and is 1.5 m high with a roughened artificial stream channel fish pass (Figure 1). This pass is approximately 7 m long and runs down the left bank of the Mangatoki Stream, providing for the passage of both native fish and trout. The weir upstream of Upper Palmer Road is 0.8m high, and contains a fish pass similar in construction to the new weir (Figure 2). A fish survey was conducted at three sites; upstream, between and downstream of these weirs on 23 May 2017 assess the effectiveness of the fish passes.

Figure 1 Weir downstream of Upper Palmer Road, in the Mangatoki Stream

Figure 2 Weir upstream of Upper Palmer Road, in the Mangatoki Stream

Methods

Three sites were sampled, comprising a site downstream of the lower weir, a site between the two weirs (upstream of the lower weir and downstream of the upper weir), and a site upstream of the upper weir. The electric fishing survey was conducted using the standard backpack electric fishing machine. A handheld stop-net was used to capture fish in the sampled reach, which were then collected in a bucket to be identified, length estimated and counted. Details of the sites surveyed are given in Table 1.

Table 1 Location of sites surveyed for fish in relation to STDC water supply weirs

Stream	Site code	Description	Altitude (m)	Distance Inland from sea (km)
Mangatoki Stream	MTK000053	Downstream of lower Inaha supply weir	430	48.3
	MTK000052	Downstream of top weir but upstream of lower weir	460	49.4
	MTK000048	Upstream of top Inaha supply weir	450	49.5

Results

The results of the fish survey conducted in the Mangatoki Stream on 23 May 2017 are given in Table 2. Fish species recorded in previous surveys at these sites, or sites of similar altitude in the Mangatoki Stream are also shown in Table 2. Other fish recorded in the Mangatoki Stream (at lower altitudes) include koaro, redfin bully, shortfin eel and common bully.

Table 2 Fish species recorded in the Mangatoki Stream upstream and downstream of the new Inaha water supply weir together with results of past surveys; (size range (mm))

Site	Brown trout	Unidentified trout	Longfin eel	Freshwater Crayfish
MTK000048 (u/s of upper weir)	3 (90-220)	-	-	-
MTK000052 (u/s of lower weir)	3 (95-250)	-	-	3
MTK000053 (d/s of lower weir)	-	1 (100)	-	-
Previous surveys at similar altitude	P	-	P	P

Very low species richness was recorded in the Mangatoki Stream during the current survey, and all previous surveys undertaken at these sites. Only one fish species was recorded at each site (brown trout (Table 2)). This species is able to form self sustaining populations upstream of most structures. However, in this case, because of the limited adult trout habitat present upstream, it is considered likely that adult trout migrated past the weir, from the lower Mangatoki Stream or Waingongoro River, to spawn in the headwaters. Therefore, the presence of juvenile brown trout both upstream and downstream of the weir suggests that the fish pass provides adequate passage for adult trout during high flows, which is when adults migrate upstream to spawn.

The lack of native fish species is not unusual for sites at this altitude and distance inland with an abundant trout population, despite the fact that fish habitat was plentiful both upstream and downstream of the weirs, with good overhead cover, undercut banks and substrate. Previous surveys have also recorded few native fish species at these sites. Their absence is likely related to the influence of barriers to fish passage located downstream, and the presence of brown trout. The Normanby weir is located downstream, and is considered to be the main barrier to fish passage in this catchment, as there is little to no provision for fish passage at present. Furthermore, this weir was used to divert water for electricity generation between 1902-1967, and when operating would divert 100% of the flow. This, coupled with the lake of passage at the weir, may have lead to a depauperate native fish community upstream of the weir. This can reduce native fish recruitment through reduced levels of pheromones being released by adult fish. It is thought that pheromones play an important part in directing upstream migration of some native fish.

Overall, it is considered that the weirs and fish passage provisions on the Mangatoki Stream are unlikely to present a barrier to those fish able to migrate to this point in the stream.

Conclusions

A fish survey was conducted on 23 May 2017 upstream and downstream of two STDC water supply weirs in the Mangatoki Stream (Inaha water supply). The survey was undertaken using the electric fishing methodology and found that diversity was low, typical of the high altitudes where these weirs are located. Juvenile brown trout were recorded upstream of both weirs, and this indicates that adult trout are able to pass both the Mangatoki Stream weirs, most likely when the stream is in higher flow, as this is when adult trout migrate up to spawn. Native fish were not recorded in abundance in the stream, making the assessment of fish pass effectiveness for native fish difficult. Previous surveys in the Mangatoki Stream have also found a paucity of native species, and this is considered to be directly related to downstream barriers, primarily the Normanby Weir, and the presence of an abundant brown trout population. An inspection of the weirs and fish passage provisions determined that it was unlikely that they constitute a barrier to those fish able to migrate to this point in the stream.

It is recommended that future monitoring be performed in three years time (subject to any changes within the catchment i.e. removal of downstream barriers or degradation/improvement of current fish passage facilities), to better document the native fish community upstream and downstream of these weirs, especially since there appears to be considerable habitat available in this stream for native fish.

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To	Job Manager, S Cowperthwaite
From	Freshwater Biologist, B Jansma
Report No	BJ294
Doc No	1908921
Date	2 August 2017

Biomonitoring of the Kapuni Stream in relation to the Hawera Water Treatment Plant, February 2017

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 Hawera Water Treatment Plant. The survey fulfilled the biological monitoring requirements for this STDC consent monitoring programme in the 2016-2017 monitoring year. Results from surveys performed since the 2000-01 monitoring year are detailed in the references.

This survey was the eighth to follow commissioning of the Hawera 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 seventh 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 Hawera Water Treatment Plant on 22 February 2017. 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 Hawera Water Treatment Plant

Site No.	Site Code	Location
1	KPN000300	Approximately 30 metres upstream of Skeet Rd, upstream of the Hawera water treatment plant discharge.
2	KPN000301	Approximately 30m downstream of Skeet Rd & 50m downstream of Hawera 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 20.3 to 20.5°C. The survey was performed during a moderate period of low flow, 29 days after a fresh in excess of three times median flow and 30 days after flows exceeded seven 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 there was fine silt tied up in the substrate, especially at site 2, suggesting an erosion event in the National Park. It was noticeably worse at site 2, and this may be due to the backwash discharge from the water treatment plant. 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 Hawera WTP, together with current results

Site	Number of previous surveys	Numbers of taxa			MCI values		
		Median	Range	Current	Median	Range	Current
1	135	17	6-40	19	110	60-145	109
2	8	22	17-25	22	113	104-117	110

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 19 taxa, which was similar to the median richness of all surveys conducted at this site to date (Table 2). Four 'highly sensitive' taxa were found, indicative of generally high preceding physicochemical water quality conditions and good physical habitat. The faunal community was characterised by one of these 'highly sensitive' taxa ((extremely abundant mayfly (*Deleatidium*)); one 'moderately sensitive' taxon (*Costachorema* caddisfly) and three 'tolerant' taxa, (*Hydropsyche* caddisfly and midge larvae (*Maoridiamesa* and orthoclads)).

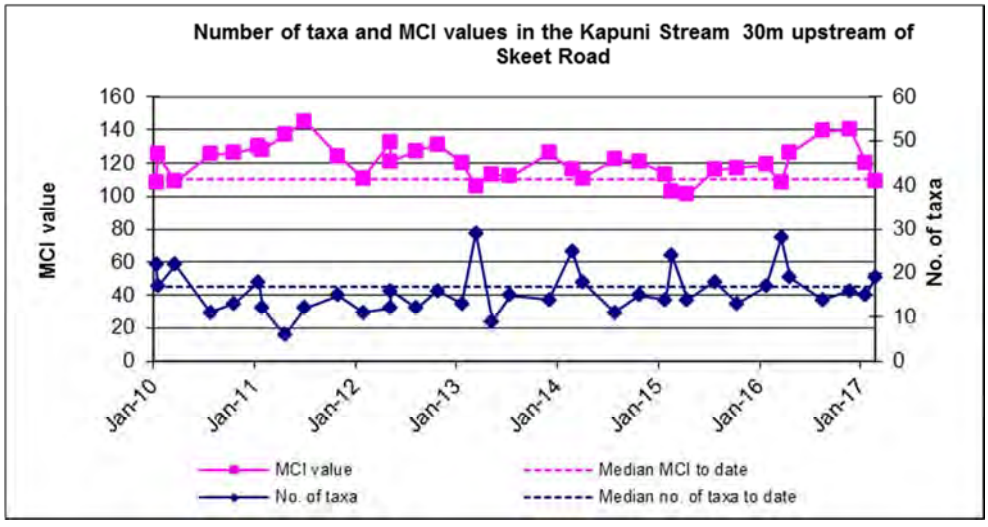

Figure 2 Numbers of taxa and MCI values in the Kapuni Stream upstream of Hawera WTP

The moderate proportion of 'sensitive' taxa (63% of taxa numbers) comprising this community was reflected in the MCI score of 109 units, which was an insignificant one unit less than the median, and similar to that recorded in the most recent preceding surveys (Figure 2, Table 2). This result was also only one unit higher than that recorded in the last water treatment plant survey, which is likely a reflection of the similar flow conditions that preceded the surveys, with both the current and previous surveys being undertaken in low flows. The current score is ten units 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 Hawera WTP sampled on 22 February 2017

Taxa List	Site Number	MCI score	1	2
	Site Code		KPN000300	KPN000301
	Sample Number		FWB17110	FWB17111
MOLLUSCA	*Potamopyrgus*	4	R	R
EPHEMEROPTERA (MAYFLIES)	*Austroclima*	7	R	-
	Coloburiscus	7	R	R
	Deleatidium	8	XA	XA
	Nesameletus	9	C	A
PLECOPTERA (STONEFLIES)	*Zelandobius*	5	-	R
	Zelandoperla	8	R	R
COLEOPTERA (BEETLES)	Elmidae	6	A	A
MEGALOPTERA (DOBSONFLIES)	*Archichauliodes*	7	R	C
TRICHOPTERA (CADDISFLIES)	*Hydropsyche (Aoteapsyche)*	4	A	C
	Costachorema	7	C	C
	Hydrobiosis	5	C	A
	Beraeoptera	8	R	R
	Olinga	9	-	C
	Pycnocentrodes	5	R	R
DIPTERA (TRUE FLIES)	*Aphrophila*	5	C	R
	Eriopterini	5	-	C
	Maoridiamesa	3	A	R
	Orthocladiinae	2	A	R
	Polypedilum	3	-	C
	Tanytarsini	3	R	R
	Empididae	3	R	-
	Ephydridae	4	-	R
	Austrosimulium	3	R	-
	Tanyderidae	4	-	R
		No of taxa	19	22
		MCI	109	110
		SQMCIs	7.4	7.7
		EPT (taxa)	10	11
		%EPT (taxa)	53	50
'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 22 taxa, slightly more than that recorded at site 1 (Table 2). The difference in community composition between sites was relatively insignificant as in all but three instances 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 (*Nesameletus* mayfly) and one 'moderately sensitive' taxon (*Hydrobiosis* caddisfly larvae) which increased in abundance and three tolerant taxa which reduced in abundance (*Hydropsyche* caddisfly larvae, *Maoridiamesa* and orthoclad midge larvae) (Table 3). Due to a similar proportion of 'sensitive' taxa in the community, the MCI score at site 2 (110 units) was only one unit higher 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 an improvement on 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 ninth time in this survey.

Although there were five significant changes in individual taxon abundance recorded between sites, they were largely suggestive of an improvement in water quality, and therefore not of concern. The reduced abundance of two 'tolerant' taxa at site 2 was reflected in the $SQMCI_S$ score, which increased by 0.3 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 fact that the catchment appears subject to significant substrate movement (including significant volumes of fine silt) during floods. It is also not an indication of any impacts from the Hawera water treatment plant.

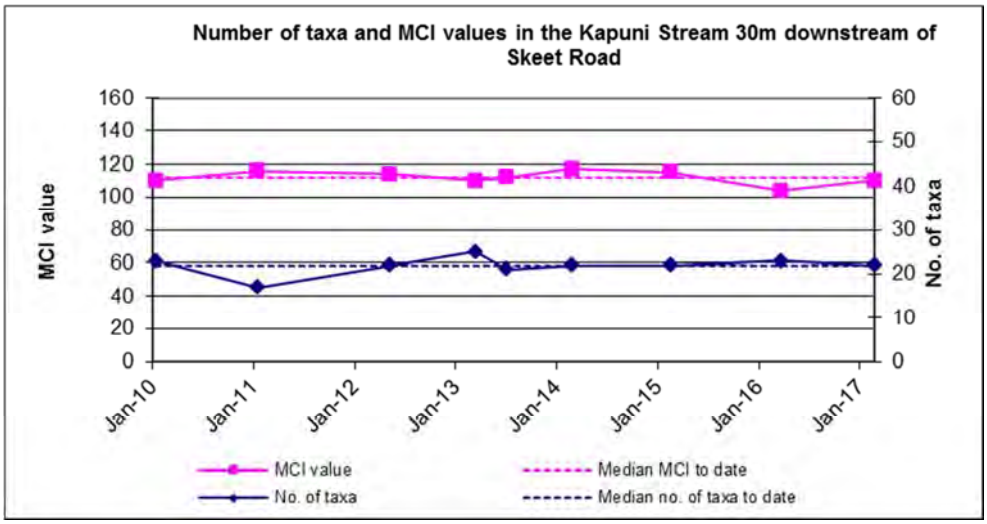

Figure 3 Numbers of taxa and MCI values in the Kapuni Stream downstream of Hawera WTP

Summary and conclusions

The Council's standard 'kick-sampling' technique was used on 22 February 2017 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 Hawera 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 seventh to follow full commissioning of the Hawera Water Treatment Plant. The 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 the previous 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. This was again apparent in the current survey, but to a lesser degree. There was fine silt tied up

in the substrate, primarily at site 2 (possibly related to the backwater discharge), but more likely related to an erosion event in the National Park. The results of this survey indicate 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 illustrated by the MCI score recorded downstream of the discharge being equal to 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 moderate at the control site 1 and increased only slightly at site 2 downstream of the discharge, although there were some changes in the presence/absence of a few taxa mainly found as rarities (less than 5 individuals). Site 1 recorded an average MCI score, despite the period of low flows that preceded this survey (30 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 and fine silt. These results are not an indication of any impacts from the Hawera water treatment plant.

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To Job Manager, Scott Cowperthwaite
From Scientific Officer, Brooke Thomas
Report No BT067
Document No 1799794
Date 23 January 2017

Biomonitoring of the Mangawheroiti Stream in relation to the South Taranaki District Council's Waimate West Water Supply Scheme, December 2016

Introduction

The South Taranaki District Council ('STDC') owns and operates the Waimate West Water Supply Scheme (WWWSS) which involves the abstraction of water from three streams; the Mangawheroiti Stream, the Mangawhero Stream and the Otakeho Stream. This scheme provides water for dairy farms, industry, and domestic use. The main intake for the WWWSS is on the Mangawheroiti Stream. However, the flow in Mangawheroiti Stream is supplemented by water diverted into it from the Mangawhero Stream upstream of the intake.

Consent 0634-3 authorises the taking of water from the Mangawheroiti Stream for the water supply scheme. This consent contains a Special Condition (8) that requires STDC to ensure that a minimum flow of 32 litres per second (0.032 m^3/s) is provided at all times immediately downstream of the intake structure.

This biological survey was the first of two programmed for the 2016-2017 monitoring period, the inaugural survey having been performed in January 2012. The intention of these surveys is to monitor the health of the macroinvertebrate communities in the Mangawheroiti Stream in relation to any effects of water abstraction by the WWWSS.

Methods

This spring survey was undertaken on 12 December 2016 at four sites on the Mangawheroiti Stream; a control site upstream of the intake weir (site 1), a primary impact site approximately 40 metres downstream of the intake weir (site 2), a secondary impact site nearly three kilometres downstream of that intake (site 3) and a tertiary impact site approximately 8.3 kilometres downstream of the intake and 340 metres upstream of the confluence with the Mangawhero Stream (site 4) (Table1, Figure 1).

Table 1 Biomonitoring sites in the Mangawheroiti Stream in relation to the WWWSS.

Site	Site code	GPS location	Location	Elevation (m asl)	Distance from NPk boundary (km)
1	MWI000170	E1694422 N5637468	Upstream of the intake weir	340	3.6
2	MWI000174	E1694425 N5637409	Approximately 40 metres downstream of the water intake	340	3.7
3	MWI000330	E1694186 N5635091	Approximately 3 km downstream of the water intake (580 metres upstream of Eltham Road bridge)	270	6.5
4	MWI000490	E1693732 N5631251	Approximately 8.3 km downstream of the water intake (340 metres upstream of confluence with the Mangawhero Stream)	180	11.9

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).

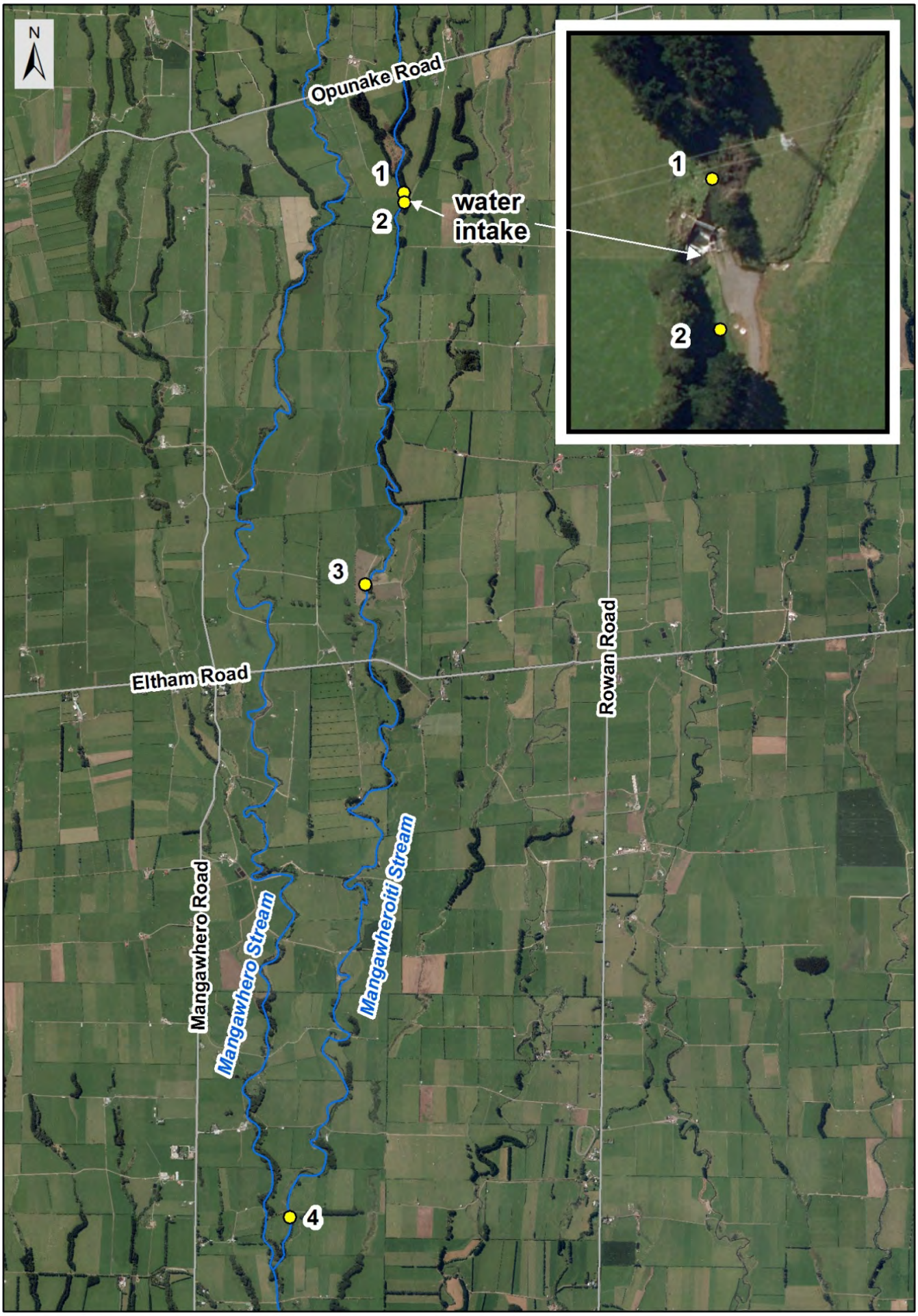

Figure 1 Biomonitoring sites related to the WWWSS intake on the Mangawheroiti Stream.

Results

Site habitat characteristics and hydrology

This December 2016 survey followed a period of 14 days since a fresh in excess of three times median flow, and 27 days since a fresh in excess of seven times median flow. In the four weeks prior to this survey, the flow in the Mangawheroiti Stream upstream of the intake weir ranged between 283 L/s and 3888 L/s. The residual flow at the time of the survey was around 183 L/s.

Water temperatures ranged between 12.9°C and 14.3 °C. The flow was uncoloured, clear, low and steady at all sites. Substrate comprised predominantly of cobbles and gravels with some boulders and sand at all sites. Some silt was also noted at the downstream sites 3 and 4.

There were slippery mats and patchy filaments of periphyton at site 1 and site 2 and patchy mats and patchy filaments at sites 3 and 4. A small number of macrophytes were recorded growing at the edges and on the bed of the stream at site 3. No macrophytes were recorded growing at any of the other sites. All sites had patchy moss, wood and leaves except site 3, which had moss only. Sites 1, 2 and 4 had partial bed shading from overhanging vegetation while site 3 had no shading.

Macroinvertebrate communities

A summary of the results from previous surveys and the current survey is presented in Table 2.

Table 2 Summary of macroinvertebrate taxa numbers, MCI and $SQMCI_S$ values for the previous surveys performed between January 2012 and February 2016 and the current survey.

Site	Number of previous surveys	Numbers of taxa			MCI values			$SQMCI_S$		
		Median	Range	Current Survey	Median	Range	Current Survey	Median	Range	Current Survey
1	9	31	25-38	32	129	121-140	121	7.3	6.2-7.5	7.6
2	9	34	25-37	32	127	122-131	129	7.2	7.0-7.7	7.5
3	9	27	20-45	26	113	105-129	114	6.4	4.8-8.0	6.8
4	9	26	20-30	19	98	95-101	100	4.1	3.7-5.3	5.4

A table of predicted MCI scores using equations obtained from Stark and Fowles (2009) that examine the relationship between MCI score and altitude and MCI score and distance from the Egmont National Park boundary are presented in Table 3. The macroinvertebrate fauna recorded by the current survey at each of the four sites are presented in Table 4.

Table 3 Predicted MCI scores for streams arising inside Egmont National Park using equations that examine the relationship between MCI score and altitude (MCI=84.427 + 0.1028A) and MCI score and distance from Egmont National park boundary (MCI=131.717-25.825*$\log_{10}$(D)) (from Stark and Fowles (2009)).

Site	MCI score obtained from current survey	Predicted MCI scores	
		Altitude	Distance
1	121	119	117
2	129	119	117
3	114	112	111
4	100	103	104

Table 4 Macroinvertebrate fauna recorded at four sites in the Mangawheroiti Stream in relation to the WWWSS

water abstraction, 12 December 2016

Taxa List	Site Number	MCI score	1	2	3	4
	Site Code		MWI000170	MWI000174	MWI000330	MWI000490
	Sample Number		FWB16275	FWB16276	FWB16277	FWB16278
ANNELIDA (WORMS)	Oligochaeta	1	R	R	R	VA
	Lumbricidae	5	R	-	-	-
MOLLUSCA	*Potamopyrgus*	4	R	-	R	VA
EPHEMEROPTERA (MAYFLIES)	*Austroclima*	7	R	A	A	C
	Coloburiscus	7	VA	A	VA	R
	Deleatidium	8	XA	XA	XA	XA
	Neozephlebia	7	-	R	-	-
	Nesameletus	9	C	C	A	-
	Zephlebia group	7	C	C	-	-
PLECOPTERA (STONEFLIES)	*Acroperla*	5	R	-	-	-
	Austroperla	9	R	R	-	-
	Megaleptoperla	9	C	C	R	-
	Spaniocerca	8	R	-	-	-
	Stenoperla	10	-	R	-	-
	Zelandobius	5	R	-	C	C
	Zelandoperla	8	R	C	R	-
COLEOPTERA (BEETLES)	Elmidae	6	C	A	VA	A
	Hydraenidae	8	C	A	A	C
MEGALOPTERA (DOBSONFLIES)	*Archichauliodes*	7	C	C	A	C
TRICHOPTERA (CADDISFLIES)	*Hydropsyche (Aoteapsyche)*	4	-	R	A	XA
	Costachorema	7	R	C	A	C
	Hydrobiosis	5	C	C	C	A
	Hydrobiosella	9	R	R	-	-
	Hydropsyche (Orthopsyche)	9	C	C	-	-
	Plectrocnemia	8	-	R	-	-
	Psilochorema	6	-	R	-	-
	Beraeoptera	8	C	C	R	-
	Oeconesidae	5	R	-	-	-
	Olinga	9	R	R	R	-
	Pycnocentria	7	-	R	R	-
	Pycnocentrodes	5	R	-	A	C
DIPTERA (TRUE FLIES)	*Aphrophila*	5	C	C	A	C
	Eriopterini	5	R	R	R	R
	Hexatomini	5	-	R	-	-
	Maoridiamesa	3	C	A	VA	C
	Orthocladiinae	2	C	C	A	A
	Polypedilum	3	C	C	-	-
	Tanypodinae	5	-	R	-	-
	Tanytarsini	3	-	-	R	C
	Empididae	3	R	-	-	-
	Muscidae	3	-	-	R	R
	Austrosimulium	3	R	C	-	-
	Tabanidae	3	-	-	R	-
	No of taxa		32	32	26	19
	MCI		121	129	114	100
	SQMCIs		7.6	7.5	6.8	5.4
	EPT (taxa)		19	20	14	8
	%EPT (taxa)		59	63	54	42

'Tolerant' taxa | 'Moderately sensitive' taxa | 'Highly sensitive' taxa

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

Site 1 (upstream of intake weir)

A macroinvertebrate community richness of 32 taxa was found at site 1 ('control' site) at the time of the survey which was one taxon more than the median number recorded for the site (median taxa richness 31; Table 2) and five more than the previous sample (taxa richness 27; Figure 2).

The MCI score of 121 units indicated a community of 'very good' biological health which was an insignificant (Stark, 1998) 8 units lower than the median value calculated from previous surveys at the same site (median MCI score 129 units; Table 2) and an insignificant 3 units lower than the previous survey score (MCI score 124 units). The current MCI score was higher than the predicted MCI scores based on altitude (MCI score 119 units) and distance (MCI score 117 units) (Table 3). The $SQMCI_s$ score of 7.6 units was slightly higher than the median value calculated from previous surveys at the same site and was similar to the previous survey score ($SQMCI_s$ score 7.5 units).

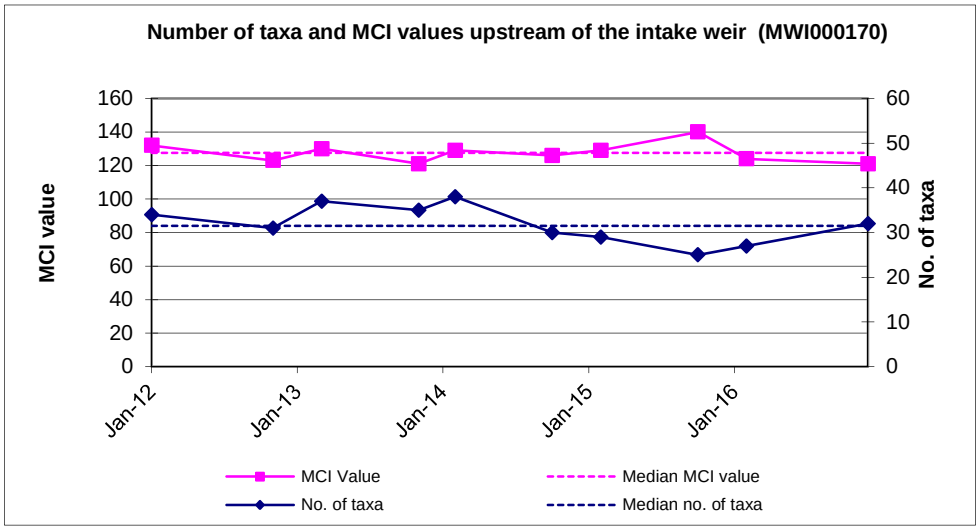

Figure 2 Number of taxa and MCI values upstream of the intake weir (MWI000170).

The macroinvertebrate community was characterized by one 'highly sensitive' taxon; [mayfly (*Deleatidium*)] and one 'moderately sensitive' taxon [mayfly (*Coloburiscus*)] (Table 4).

Site 2 (40 m downstream of intake weir)

A macroinvertebrate community richness of 32 taxa was also found at site 2 ('primary impacted' site) at the time of the survey which was two taxa less than the median number recorded for the site (median taxa richness 34; Table 2). It was also six taxa more than the previous sample (taxa richness 26; Figure 3).

The MCI score of 129 units indicated a community of 'very good' biological health which was not significantly different (Stark, 1998) to the median value calculated from previous surveys at the same site (median MCI score 127 units; Table 2) and was slightly below the previous survey score (Figure 2). The MCI score was also higher than the predicted MCI scores based on altitude (MCI score 119 units) and significantly (Stark, 1998) higher than the predicted MCI score based on distance (MCI score 117 units) (Table 3). The $SQMCI_s$ score of 7.5 units was slightly higher than the median value calculated from previous surveys at the

same site and was slightly above the score from the previous survey ($SQMCI_s$ score 7.2 units).

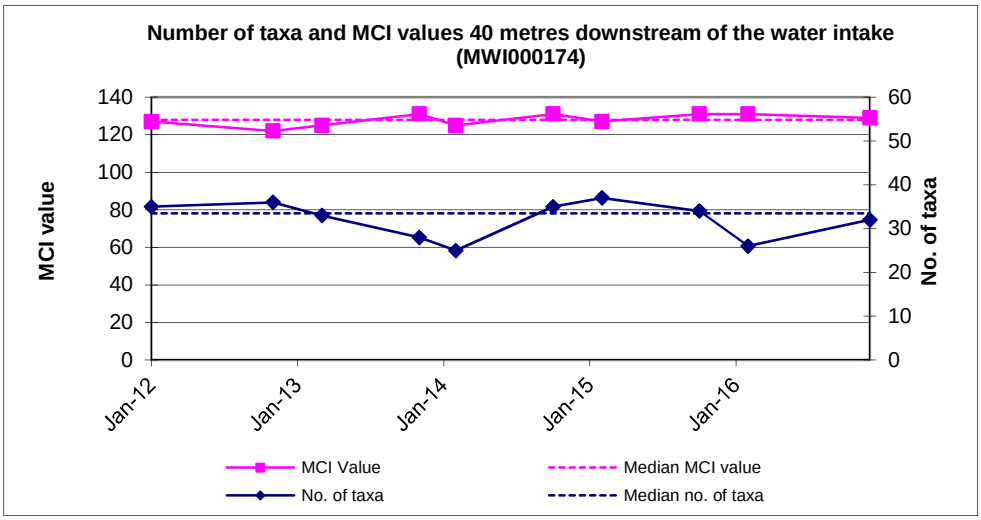

Figure 3 Number of taxa and MCI values 40 metres downstream of the water intake (MWI000174).

The community was characterised by two 'highly sensitive' taxa; [mayfly (*Deleatidium*) and hydraenid beetles], three 'moderately sensitive' taxa; [mayflies (*Coloburiscus*) and (*Austroclima*) and Elmid beetles] and one 'tolerant' taxon; [chironomid midge (*Maoridiamesa*)] (Table 4).

Site 3 (approximately 3 km downstream of the intake)

A macroinvertebrate community richness of 26 taxa was found at site 3 ('secondary impacted' site) at the time of the survey which was one taxon less than the median number recorded for the site (Table 2) and one taxon less than the previous sample (taxa richness 27; Figure 4).

The MCI score of 114 units indicated a community of 'good' biological health and was 1 unit more than the median value calculated from previous surveys and 9 units more than the previous survey score (MCI score 105 units; Figure 4). There were no significant differences (Stark, 1998) between the current MCI score and the predicted MCI scores based on altitude (MCI score 112 units) and distance (MCI score 111 units) (Table 3). The $SQMCI_s$ score of 6.8 units was slightly higher than the median value calculated from previous surveys at the same site (median $SQMCI_s$ score 6.4 units) and significantly higher than the previous survey score ($SQMCI_s$ score 5.0 units).

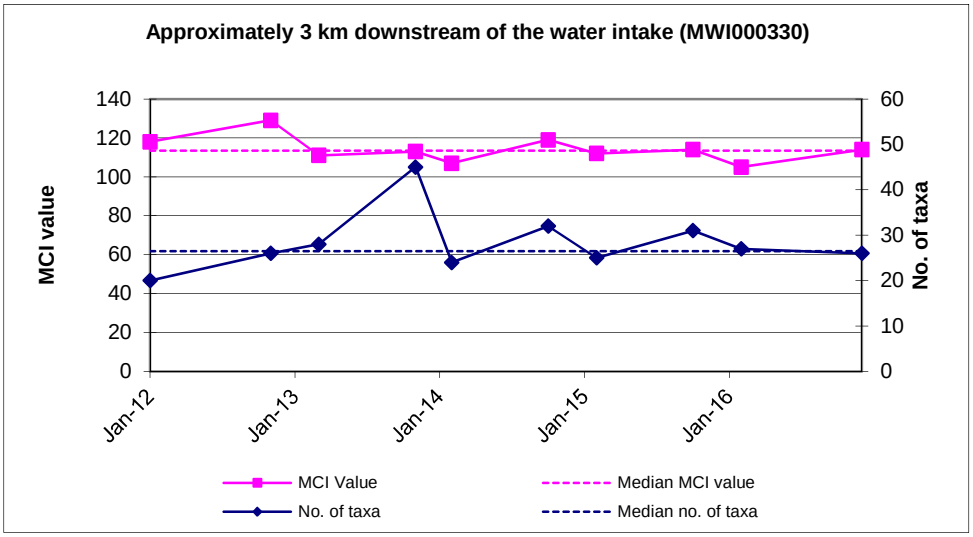

Figure 4 Number of taxa and MCI values approximately 3 km downstream of the water intake (MWI000330).

The community was characterised by three 'highly sensitive' taxa; [mayflies (*Deleatidium*) and (*Nesameletus*) and hydraenid beetles], seven 'moderately sensitive' taxa; [mayflies (*Coloburiscus*) and (*Austroclima*), elmid beetles, dobsonfly larvae (*Archichauliodes*), cranefly (*Aphrophila*) and caddisflies (*Pycnocentrodes*) and (*Costachorema*)], and three 'tolerant' taxa; [orthoclad midges, chironomid midge (*Maoridiamesa*) and net-building caddis (*Aoteapsyche*)] (Table 4).

Site 4 (approximately 8 km downstream of the intake weir)

A moderately low macroinvertebrate community richness of 19 taxa was found at site 4 ('tertiary impacted' site) at the time of the survey which was the lowest taxa richness to be recorded at this site to date. It was also lower than the median number recorded for the site (median taxa richness 26; Table 2) and five taxa less than the previous sample (taxa richness 24; Figure 5).

The MCI score of 100 units indicated a community of 'good' biological health which was slightly above the median value calculated from previous surveys at the same site (Table 2) and was two units more than the previous survey score (MCI score 98 units; Figure 5). There were no significant differences (Stark, 1998) between the current MCI score and the predicted MCI scores based on altitude (MCI score 103 units) and distance (MCI score 104 units) (Table 3). The $SQMCI_s$ score of 5.4 units was substantially higher than the median value calculated from previous surveys at the same site (median $SQMCI_s$ score 4.1 units; Table 2) and substantially higher than the previous survey score ($SQMCI_s$ score 4.1 units).

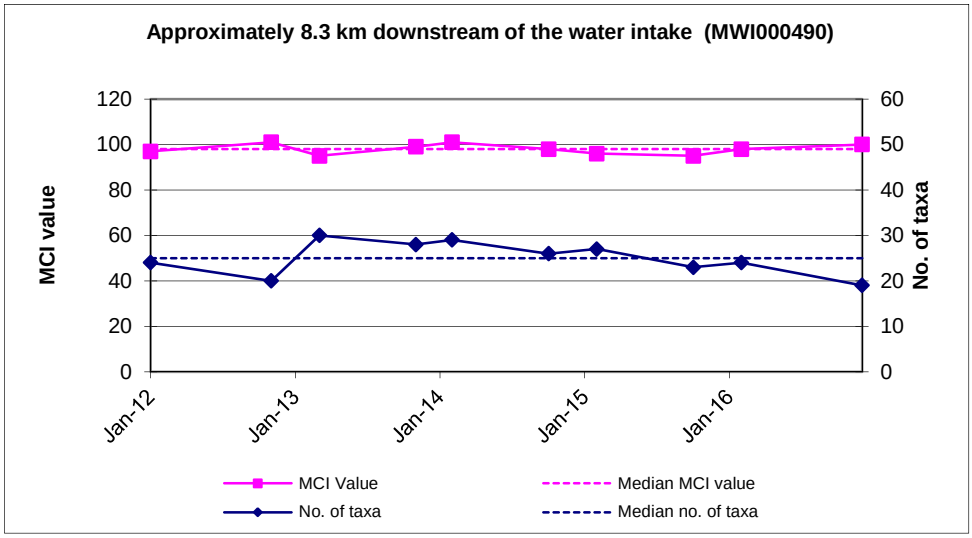

Figure 5 Number of taxa and MCI values approximately 8.3 km downstream of the water intake (MWI000490).

The macroinvertebrate community was characterised by four 'tolerant' taxa; [oligochaete worms, snails (*Potamopyrgus*), net-building caddis (*Aoteapsyche*) and orthoclad midges], two 'moderately sensitive' taxa [elmid beetles and free-living caddis (*Hydrobiosis*)] and one 'highly sensitive' taxon; [mayfly (*Deleatidium*)] (Table 4).

Discussion and conclusions

The Council's 'kick-sampling' technique was used at four sites to collect streambed macroinvertebrates from the Mangawheroiti Stream in relation to the STDC WWWSS. This has provided data to assess any potential impacts the consented water abstraction 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.

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 2016 survey was undertaken to monitor whether the operation of the WWWSS was having an effect on the macroinvertebrate communities in the Mangawheroiti Stream downstream of the water take under spring conditions.

The macroinvertebrate communities recorded at sites 1 and 2 comprised high proportions of 'sensitive' taxa and were also numerically dominated by 'sensitive' taxa. The composition of the communities at both sites reflected the partially shaded, relatively cool, stony nature of the stream located in the upper mid-reaches of the catchment. This resulted in high MCI and

$SQMCI_s$ scores at both sites. There were no significant differences in MCI score between the current survey and previous summer survey. There were also no significant differences in the macroinvertebrate indices between site 1 and site 2 in the current survey therefore there was no evidence that water abstraction had a detrimental impact on the macroinvertebrate community at site 2.

At site 3, situated approximately 3 kilometres downstream of the water intake, the macroinvertebrate community again comprised a reasonably high proportion of 'sensitive' taxa (69%) which was reflected in the MCI score of 114 units and $SQMCI_s$ score of 6.8 units. This MCI score was not significantly different to the predicted scores for altitude and distance from the National Park boundary (Stark and Fowles, 2009), and consistent with the median MCI score calculated from previous surveys at the site. However, the MCI score at site 3 was significantly lower than the MCI score at site 2 and lower than that recorded at site 1. This result reflected the differences in site location within the catchment but can also be attributed to the increased cover of nuisance periphyton recorded at this site. In the current survey site 4, situated approximately 8.3 km downstream of the water intake, had the lowest taxa richness, MCI and $SQMCI_s$ scores. This community was however still numerically dominated by 'sensitive' taxa (63%) although had more 'tolerant' taxa than the upstream sites. There was a decrease in MCI and $SQMCI_s$ scores between sites 3 and 4 which was consistent with what is typically found in Taranaki ring plain streams with the health of macroinvertebrate communities decreasing downstream as a result of the cumulative impacts of agricultural discharges. The results of the current survey at the site were consistent with expected values and excluding a substantial increase in $SQMCI_s$ score not significantly different to the previous survey results.

The overall MCI score decline of 21 units between sites 1 and 4 over a stream distance of 8.3 km equated to a rate of decline of 2.5 units/km, which was higher than the predicted rate of 1.6 units/km for the equivalent reach of a National Park sourced stream (Stark and Fowles, 2009). However it was lower than the rate (3.1 units/km) found by the previous summer survey (February, 2016) and found by the previous spring survey (in October 2015) (5.4 units/km). The rate of decline between sites 3 and 4 (over the stream length of 5.4 km) of 2.6 units/km was 1.9 MCI units/km higher than predicted for those equivalent reaches, indicative of moderate deterioration in macroinvertebrate community health in the lower to mid-reaches of the Mangawheroiti Stream.

Overall, the results of this spring survey found no evidence that water abstraction from the Mangawheroiti Stream by WWWSS had had a significant effect on the freshwater macroinvertebrate communities downstream of the abstraction point. Macroinvertebrate indices did decrease from site 2 to site 4 which would most likely be due to the negative effects of agricultural discharges on the macroinvertebrate stream communities.

Summary

- A spring macroinvertebrate survey was performed at four sites in the Mangawheroiti Stream in relation to consented water abstraction by the Waimate West Water Supply Scheme.

- Taxa richnesses were moderate to high at the three impacted sites and similar to median values calculated from previous surveys at sites 2 and 3. Site 4 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 Mangawheroiti Stream by the WWWSS had significantly affected the freshwater macroinvertebrate communities downstream of the abstraction point since the previous survey.

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To	Job Manager, Scott Cowperthwaite
From	Scientific Officer, Brooke Thomas
Document	1865366
Date	22 May 2017

Biomonitoring of the Mangawheroiti Stream in relation to the South Taranaki District Council's Waimate West Water Supply Scheme, February 2017

Introduction

The South Taranaki District Council ('STDC') owns and operates the Waimate West Water Supply Scheme (WWWSS) which involves the abstraction of water from three streams; the Mangawheroiti Stream, the Mangawhero Stream and the Otakeho Stream. This scheme provides water for dairy farms, industry, and domestic use. The main intake for the WWWSS is on the Mangawheroiti Stream. However, the flow in Mangawheroiti Stream is supplemented by water diverted into it from the Mangawhero Stream upstream of the intake.

Consent 0634-3 authorises the taking of water from the Mangawheroiti Stream for the water supply scheme. This consent contains a Special Condition (8) that requires STDC to ensure that a minimum flow of 32 litres per second (0.032 m^3/s) is provided at all times immediately downstream of the intake structure.

This biological survey was the second of two programmed for the 2016-2017 monitoring period, the inaugural survey having been performed in January 2012. The intention of these surveys is to monitor the health of the macroinvertebrate communities in the Mangawheroiti Stream in relation to any effects of water abstraction by the WWWSS.

Methods

This summer survey was undertaken on 14 February 2017 at four sites on the Mangawheroiti Stream; a control site upstream of the intake weir (site 1), a primary impact site approximately 40 metres downstream of the intake weir (site 2), a secondary impact site nearly three kilometres downstream of that intake (site 3) and a tertiary impact site approximately 8.3 kilometres downstream of the intake and 340 metres upstream of the confluence with the Mangawhero Stream (site 4) (Table 1, Figure 1).

Table 1 Biomonitoring sites in the Mangawheroiti Stream in relation to the WWWSS.

Site	Site code	GPS location	Location	Elevation (m asl)	Distance from NPk boundary (km)
1	MWI000170	E1694422 N5637468	Upstream of the intake weir	340	3.6
2	MWI000174	E1694425 N5637409	Approximately 40 metres downstream of the water intake	340	3.7
3	MWI000330	E1694186 N5635091	Approximately 3 km downstream of the water intake (580 metres upstream of Eltham Road bridge)	270	6.5
4	MWI000490	E1693732 N5631251	Approximately 8.3 km downstream of the water intake (340 metres upstream of confluence with the Mangawhero Stream)	180	11.9

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).

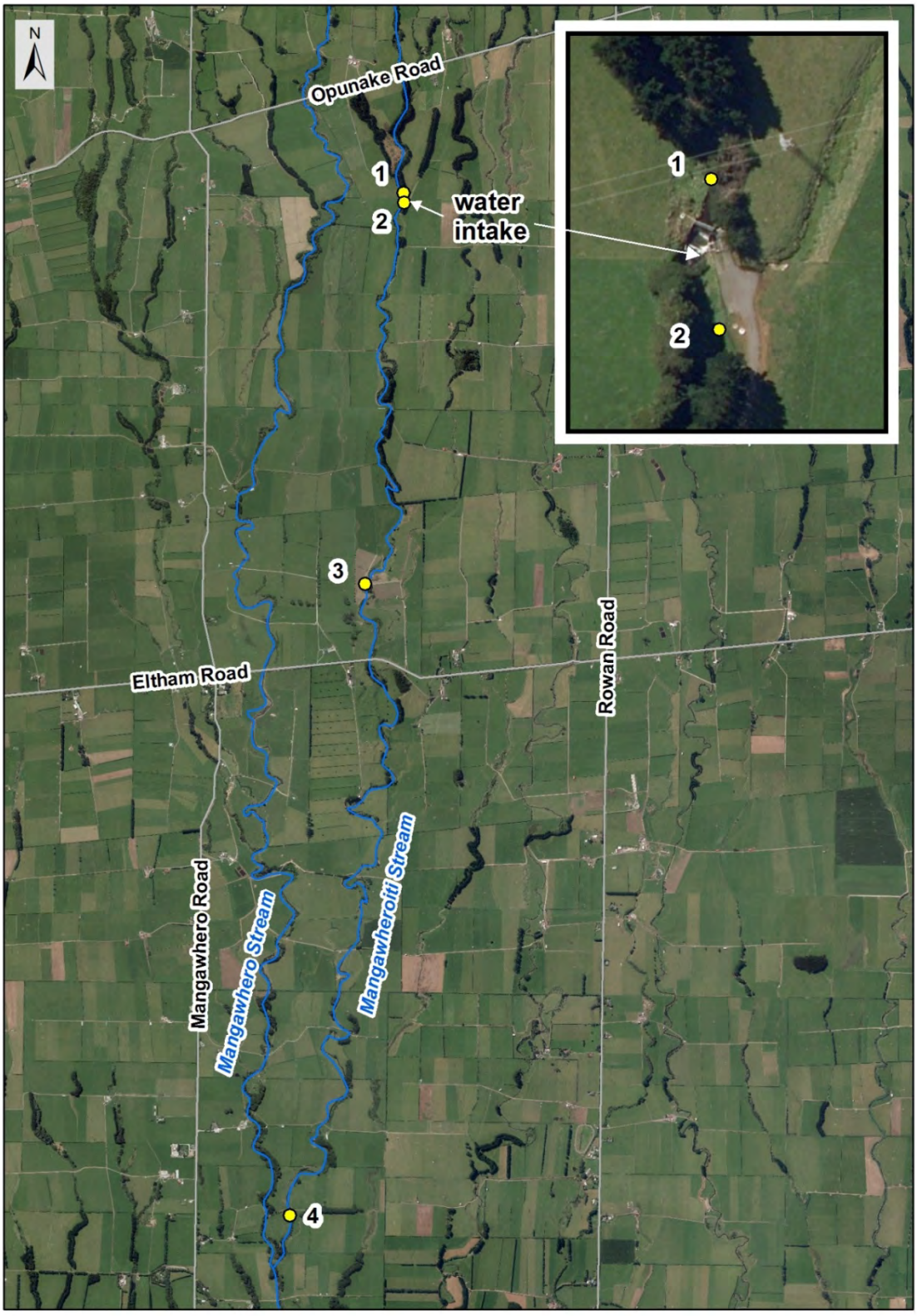

Figure 1 Biomonitoring sites related to the WWWSS intake on the Mangawheroiti Stream.

Results

This February 2017 survey followed a period of 22 days since a fresh in excess of three times and seven times median flow. In the four weeks prior to this survey, the flow in the Mangawheroiti Stream upstream of the intake weir ranged between 188 L/s and 8002 L/s. The residual flow at the time of the survey was around 101 L/s.

Water temperatures ranged between 14.9 °C and 17.7 °C. The flow was uncoloured, clear, low and steady at all sites. Substrate comprised predominantly of cobbles and gravels with some boulders and sand and silt at all sites.

There were slippery mats of periphyton at site 1 and site 2 and patchy mats and patchy filaments at site 3. At site 4 there were widespread mats and patchy filaments of periphyton. No macrophytes were recorded growing at any of the four sites. All sites had patchy moss, wood and leaves except site 4, which had moss and leaves only. Sites 2 and 4 were partially shaded while sites 1 and 3 had no shading.

Macroinvertebrate communities

A summary of the results from previous surveys and the current survey is presented in Table 2.

Table 2 Summary of macroinvertebrate taxa numbers, MCI and $SQMCI_s$ values for the previous surveys performed between January 2012 and December 2016 and the current survey.

Site	Number of previous surveys	Numbers of taxa			MCI values			$SQMCI_s$		
		Median	Range	Current Survey	Median	Range	Current Survey	Median	Range	Current Survey
1	10	32	25-38	22	128	121-140	119	7.4	6.2-7.5	7.2
2	10	34	25-37	22	128	122-131	130	7.3	7.0-7.7	7.9
3	10	27	20-45	22	114	105-129	123	6.4	4.8-8.0	6.2
4	10	25	19-30	21	98	95-101	91	4.3	3.7-5.4	5.1

A table of predicted MCI scores using equations obtained from Stark and Fowles (2009) that examine the relationship between MCI score and altitude and MCI score and distance from the Egmont National Park boundary are presented in Table 3. The macroinvertebrate fauna recorded by the current survey at each of the four sites are presented in Table 4

Table 3 Predicted MCI scores for streams arising inside Egmont National Park using equations that examine the relationship between MCI score and altitude (MCI=84.427 + 0.1028A) and MCI score and distance from Egmont National park boundary (MCI=131.717-25.825*$\log_{10}$(D)) (from Stark and Fowles (2009)).

Site	MCI score obtained from current survey	Predicted MCI scores	
		Altitude	Distance
1	119	119	117
2	130	119	117
3	123	112	111
4	91	103	104

Table 4 Macroinvertebrate fauna recorded at four sites in the Mangawheroiti Stream in relation to the WWWSS water abstraction, 14 February 2017

Taxa List	Site Number	MCI score	1	2	3	4
	Site Code		MWI000170	MWI000174	MWI000330	MWI000490
	Sample Number		FWB17046	FWB17047	FWB17048	FWB17049
PLATYHELMINTHES (FLATWORMS)	*Cura*	3	-	-	-	R
ANNELIDA (WORMS)	Oligochaeta	1	C	-	R	A
MOLLUSCA	*Potamopyrgus*	4	R	R	-	VA
	Sphaeriidae	3	-	-	-	R
EPHEMEROPTERA (MAYFLIES)	*Austroclima*	7	C	R	C	C
	Coloburiscus	7	A	A	A	R
	Deleatidium	8	VA	XA	VA	VA
	Nesameletus	9	A	VA	VA	C
	Zephlebia group	7	R	R	-	-
PLECOPTERA (STONEFLIES)	*Austroperla*	9	R	-	-	-
	Megaleptoperla	9	C	C	R	-
	Stenoperla	10	-	R	-	-
	Zelandoperla	8	R	C	R	-
COLEOPTERA (BEETLES)	Elmidae	6	C	A	A	C
	Hydraenidae	8	A	A	A	-
	Hydrophilidae	5	-	-	R	-
MEGALOPTERA (DOBSONFLIES)	*Archichauliodes*	7	C	C	C	-
TRICHOPTERA (CADDISFLIES)	*Hydropsyche (Aoteapsyche)*	4	C	R	A	VA
	Costachorema	7	R	C	C	C
	Hydrobiosis	5	C	C	C	C
	Hydrobiosella	9	R	R	-	-
	Neurochorema	6	-	-	R	-
	Hydropsyche (Orthopsyche)	9	-	R	-	-
	Psilochorema	6	-	-	R	-
	Beraeoptera	8	-	-	R	-
	Olinga	9	-	-	R	-
	Pycnocentrodes	5	-	-	R	C
	Triplectides	5	-	R	-	-
DIPTERA (TRUE FLIES)	*Aphrophila*	5	A	A	C	C
	Maoridiamesa	3	R	R	A	C
	Orthocladiinae	2	R	-	VA	R
	Polypedilum	3	R	R	-	-
	Tanytarsini	3	-	-	-	C
	Empididae	3	-	-	-	R
	Ephydridae	4	-	-	-	R
	Austrosimulium	3	R	R	-	R
	Tanyderidae	4	-	-	-	R
	No of taxa		22	22	22	21
	MCI		119	130	123	91
	SQMCIs		7.2	7.9	6.2	5.1
	EPT (taxa)		12	14	14	8
	%EPT (taxa)		55	64	64	38

'Tolerant' taxa | 'Moderately sensitive' taxa | 'Highly sensitive' taxa

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

Site 1 (upstream of intake weir)

A macroinvertebrate community richness of 22 taxa was found at site 1 ('control' site) at the time of the survey which was 10 taxa less than the median number recorded for the site (median taxa richness 32; Table 2) and nine less than the previous sample (taxa richness 31; Figure 2). It was also the lowest number of taxa recorded at this site to date (Figure 2).

The MCI score of 119 units indicated a community of 'good' biological health which was an insignificant (Stark, 1998) 9 units lower than the median value calculated from previous surveys at the same site (median MCI score 128 units; Table 2) and an insignificant 2 units lower than the previous survey score (MCI score 121 units). The current MCI score was the same as the predicted MCI scores based on altitude (MCI score 119 units) and slightly greater than that based on distance (MCI score 117 units) (Table 3). It was however the lowest MCI score recorded to date for this site (Figure 2). The $SQMCI_S$ score of 7.2 units was slightly lower than the median value calculated from previous surveys ($SQMCI_S$ score 7.4 units) and slightly lower than the the previous survey score ($SQMCI_S$ score 7.6 units) (Thomas, 2017).

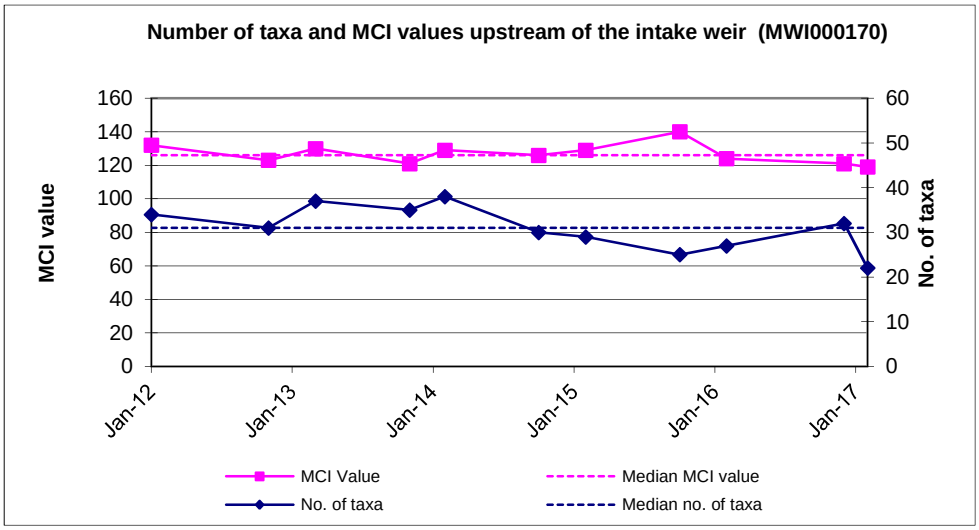

Figure 2 Number of taxa and MCI values upstream of the intake weir (MWI000170).

The macroinvertebrate community was characterized by three 'highly sensitive' taxa; [mayflies (*Deleatidium*) and (*Nesameletus*) and hydraenid beetles], and two 'moderately sensitive' taxa; [mayfly (*Coloburiscus*) and cranefly (*Aphrophila*)] (Table 4).

Site 2 (40 m downstream of intake weir)

A macroinvertebrate community richness of 22 taxa was also found at site 2 ('primary impacted' site) at the time of the survey which was 12 taxa less than the median number recorded for the site (median taxa richness 34; Table 2). It was also 10 taxa less than the previous sample (taxa richness 32; Figure 3) and the lowest number of taxa recorded at this site to date.

The MCI score of 130 units indicated a community of 'very good' biological health which was not significantly different (Stark, 1998) to the median value calculated from previous surveys at the same site (median MCI score 128 units; Table 2) and was slightly above the previous survey score (Figure 3).

The MCI score was significantly (Stark, 1998) higher than the predicted MCI scores based on altitude (MCI score 119 units) and distance (MCI score 117 units) (Table 3). The $SQMCI_S$ score of 7.9 units was slightly higher than the median value calculated from previous surveys ($SQMCI_S$ score 7.3 units) and was slightly above the score from the previous survey ($SQMCI_S$ score 7.5 units) (Thomas, 2017).

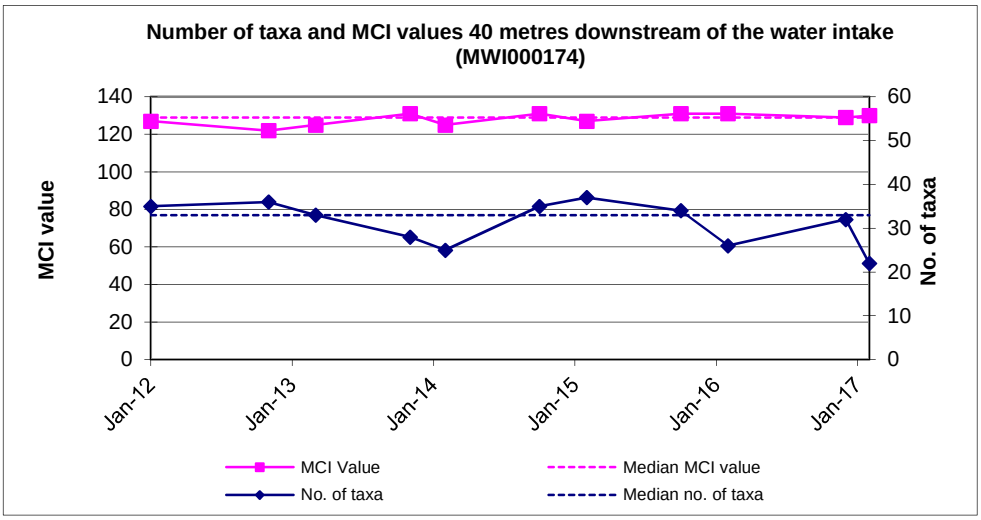

Figure 3 Number of taxa and MCI values 40 metres downstream of the water intake (MWI000174).

The community was characterised by three 'highly sensitive' taxa; [mayflies (*Deleatidium*) and (*Nesameletus*) and hydraenid beetles], and three 'moderately sensitive' taxa; [mayfly (*Coloburiscus*), elmid beetles and cranefly (*Aphrophila*)] (Table 4).

Site 3 (approximately 3 km downstream of the intake)

A macroinvertebrate community richness of 22 taxa was also found at site 3 ('secondary impacted' site) at the time of the survey which was five taxa less than the median number recorded for the site (Table 2) and four taxa less than the previous sample (taxa richness 26; Figure 4).

The MCI score of 123 units indicated a community of 'very good' biological health and was 9 units more than the median value calculated for the site and 9 units more than the previous survey score (MCI score 114 units; Figure 4).

The current MCI score was significantly (Stark, 1998) higher than the predicted MCI scores based on altitude (MCI score 112 units) and distance (MCI score 111 units) (Table 3). The SQMCIS score of 6.2 units was slightly lower than the median value calculated from previous surveys at the same site (median SQMCIS score 6.4 units) and slightly lower than the previous survey score (SQMCIS score 6.8 units) (Thomas, 2017).

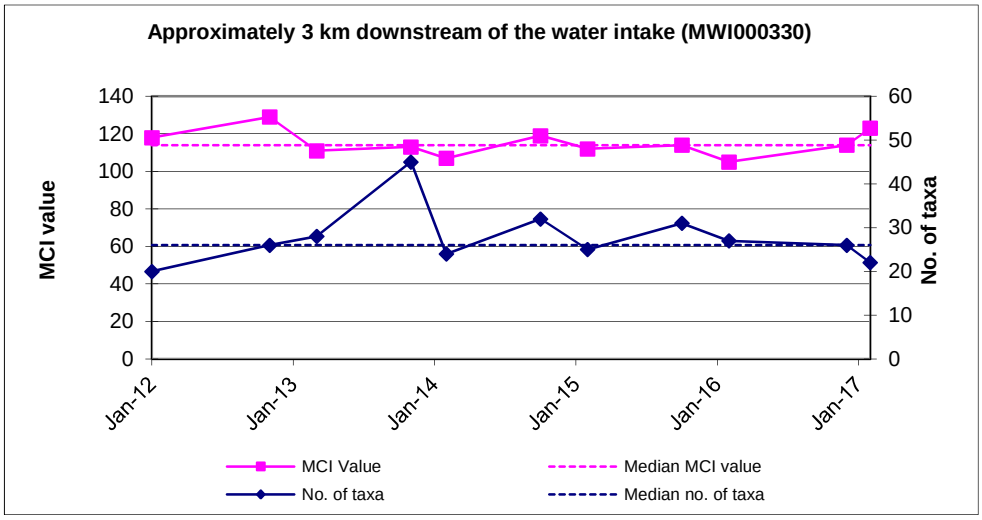

Figure 4 Number of taxa and MCI values approximately 3 km downstream of the water intake (MWI000330).

The community was characterised by three 'highly sensitive' taxa; [mayflies (*Deleatidium*) and (*Nesameletus*) and hydraenid beetles], two 'moderately sensitive' taxa; [mayfly (*Coloburiscus*) and elmid beetles], and three 'tolerant' taxa; [orthoclad midges, chironomid midge (*Maoridiamesa*) and net-building caddis (*Hydropsyche-Aoteapsyche*)] (Table 4).

Site 4 (approximately 8 km downstream of the intake weir)

A macroinvertebrate community richness of 21 taxa was found at site 4 ('tertiary impacted' site) at the time of the survey which was one taxon less than that recorded by the three upstream sites. It was also slightly lower than the median number recorded for the site (median taxa richness 25; Table 2) but two taxa more than the previous sample (taxa richness 19; Figure 5).

The MCI score of 91 units indicated a community of 'fair' biological health which was below the median value calculated from previous surveys at the same site (by 7 MCI units) (Table 2), and 9 units lower than the previous survey score (MCI score 100 units; Figure 5). This MCI score was also the lowest recorded for this site to date (Table 2) and significantly (Stark, 1998) lower than the predicted MCI scores based on altitude (MCI score 103 units) and distance (MCI score 104 units) (Table 3). The $SQMCI_S$ score of 5.1 units was higher than the median value calculated from previous surveys at the same site (median $SQMCI_S$ score 4.3 units; Table 2) but slightly lower than the previous survey score ($SQMCI_S$ score 5.4 units) (Thomas, 2017).

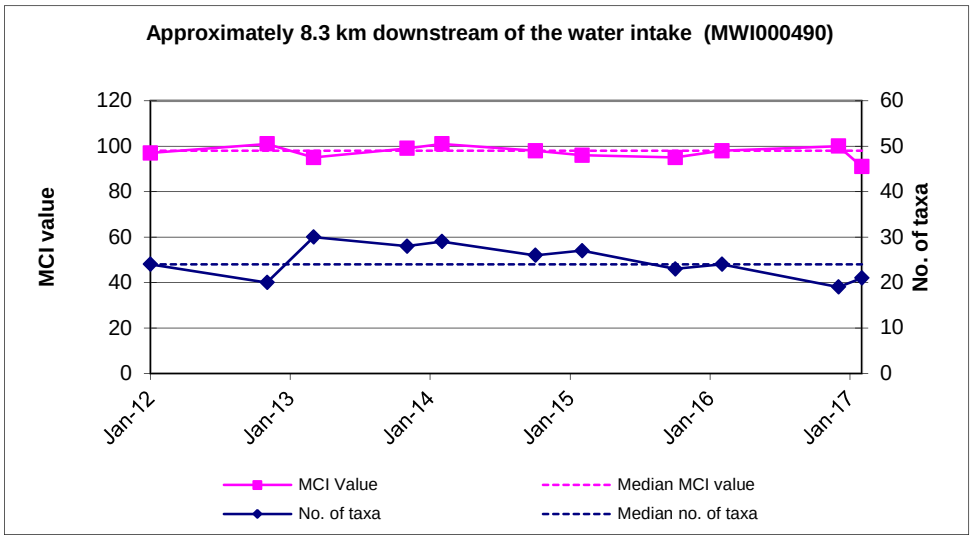

Figure 5 Number of taxa and MCI values approximately 8.3 km downstream of the water intake (MWI000490).

The macroinvertebrate community was characterised by three 'tolerant' taxa; [oligochaete worms, snails (*Potamopyrgus*) and net-building caddis (*Hydropsyche-Aoteapsyche*)] and one 'highly sensitive' taxon; [mayfly (*Deleatidium*)] (Table 4).

Discussion and conclusions

The Council's 'kick-sampling' technique was used at four sites to collect streambed macroinvertebrates from the Mangawheroiti Stream in relation to the STDC WWWSS. This has provided data to assess any potential impacts the consented water abstraction 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.

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 February 2017 survey was undertaken to monitor whether the operation of the WWWSS was having an effect on the macroinvertebrate communities in the Mangawheroiti Stream downstream of the water take under summer conditions.

The macroinvertebrate communities recorded at sites 1 and 2 comprised high proportions of 'sensitive' taxa and were also numerically dominated by 'sensitive' taxa. The composition of the communities at both sites reflected the relatively cool, stony nature of the stream located in the upper mid-reaches of the catchment. This resulted in reasonably high MCI and $SQMCI_s$ scores at both sites. There were no significant differences in MCI score between the current survey and previous spring survey, and no significant difference between the median MCI values and current MCI values for both sites. However, 'control' site 1 recorded its lowest MCI score to date and was a significant 11 units lower than that recorded downstream at site 2. It was noted, at the time of the current survey, that a stand of pine trees on the true left bankside of site 1 had recently been felled, leaving the site completely unshaded, potentially resulting in subtle habitat changes at this site. There was no evidence however, that water abstraction had a detrimental impact on the macroinvertebrate community at site 2.

At site 3, situated approximately 3 kilometres downstream of the water intake, the macroinvertebrate community again comprised a high proportion of 'sensitive' taxa (82%) which was reflected in the MCI score of 123 units and the $SQMCI_s$ score of 6.2 units. The MCI score was significantly (Stark, 1998) higher than the predicted scores for altitude and distance from the National Park boundary (Stark and Fowles, 2009), and higher than the median MCI score calculated from previous surveys at the site. As expected the MCI score at site 3 was slightly lower than the MCI score at site 2 but slightly higher than that recorded at site 1. In the current survey site 4, situated approximately 8.3 km downstream of the water intake, had the lowest taxa richness, MCI and $SQMCI_s$ scores. Unlike the three upstream sites the community was numerically dominated by 'tolerant' taxa (57%). The MCI score recorded at site 4 was significantly (Stark, 1998) lower than that recorded at the three upstream sites. Typically in Taranaki ring plain streams the health of macroinvertebrate communities decreases downstream because of the cumulative impacts of agricultural discharges. The results of the current survey at the site were consistent with this.

The overall MCI score decline of 28 units between sites 1 and 4 over a stream distance of 8.3 km equated to a rate of decline of 3.4 units/km, which was higher than the predicted rate of 1.6 units/km for the equivalent reach of a National Park sourced stream (Stark and Fowles, 2009). It was also higher than the rate (2.5 units/km) found by the previous spring survey (December, 2016) and found by the previous summer survey (in February 2016) (3.1 units/km). The rate of decline between sites 3 and 4 (over the stream length of 5.4 km) of 5.9 units/km was 5.2 MCI units/km higher than predicted for those equivalent reaches, indicative of increased deterioration in macroinvertebrate community health in the lower to mid-reaches of the Mangawheroiti Stream.

Overall, the results of this summer survey found no evidence that water abstraction from the Mangawheroiti Stream by WWWSS had had a significant effect on the freshwater macroinvertebrate communities downstream of the abstraction point. Macroinvertebrate indices did decrease from site 2 to site 4 which would most likely be due to the negative effects of agricultural discharges on the macroinvertebrate stream communities.

Summary

- A summer macroinvertebrate survey was performed at four sites in the Mangawheroiti Stream in relation to consented water abstraction by the Waimate West Water Supply Scheme.
- Taxa richnesses were moderate at the three impacted sites and lower than median values calculated from previous surveys. Taxa richness at sites 1 and 2 were the lowest recorded to date.
- There was a significant increase in MCI score between the observed and expected scores at sites 2 and 3 but no significant differences between the observed and expected scores at site 1. There was a significant decrease in MCI score between the observed and expected scores at site 4.
- Site 1 recorded its lowest MCI score to date, which was significantly lower than that recorded at site 2 and lower than that recorded at site 3. Excluding site 1 MCI and $SQMCI_s$ scores decreased with distance downstream, which is common for Taranaki ring plain streams. Site 4 also recorded its lowest MCI score to date.
- MCI and $SQMCI_s$ scores recorded at all four sites were not significantly different to median values calculated from previous surveys.
- Overall, there was no evidence that water abstraction from Mangawheroiti Stream by the WWWSS had significantly affected the freshwater macroinvertebrate communities downstream of the abstraction point since the previous survey.

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