

Tawhiti Catchment

Monitoring Programme

Annual Report

2021-2022

Technical Report 2022-19



Working with people | caring for Taranaki

Taranaki Regional Council
Private Bag 713
Stratford

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Executive summary

The Tawhiti Stream catchment, east of Hawera, is the location of several industries that include an abattoir and meat processing plant, a by-products rendering plant, and a trout hatchery. The companies that run these industries hold a number of resource consents to allow abstraction of water, discharge of water and stormwater to the stream, discharge of emissions into the air, disposal of paunch material to land, and use and maintenance of a dam structure. This report for the period July 2021 to June 2022 describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess the companies' environmental and consent compliance performance during the period under review, and the results and effects of the companies' activities.

Twelve resource consents are held by the companies, which include a total of 102 conditions setting out the requirements that they must satisfy.

The Council's monitoring programme included site inspections, the collection of discharge water samples, and sampling of the receiving water body for physico-chemical analysis. A hydrometric station is maintained on the stream for the continuous measurement of flow rate and temperature.

During the monitoring period, Silver Fern Farms Ltd demonstrated a high level of environmental performance and good level of administrative performance.

Silver Fern Farms Ltd holds six resource consents, to allow it to maintain a dam and to take water from the Tawhiti Stream; to discharge to the stream and to land; and to discharge emissions into the air.

A stormwater system upgrade commenced during the 2020-2021 monitoring period and was completed in the current reporting period. A draft stormwater management plan relating to the upgraded system was provided in October 2021, however at the time of writing a finalised version of this plan had not been provided to the Council.

Abstraction volumes complied with the consent limit, and inspections and sampling demonstrated compliance with their consents.

During the period under review, there were no unauthorised incidents reported in relation to activities at the site.

During the monitoring period, Graeme Lowe Protein Ltd demonstrated a high level of environmental performance and high level of administrative performance.

Graeme Lowe Protein Ltd holds four resource consents, to allow it to take from and discharge to the Tawhiti Stream, and to discharge emissions into the air.

In general, compliance monitoring indicated that the consent holder was meeting the requirements of their consents.

During the period under review, there were no unauthorised incidents reported in relation to activities at the site.

During the monitoring period, Taranaki Fish and Game Council demonstrated a high level of environmental performance and high level of administrative performance.

Taranaki Fish and Game Council holds two resource consents, to allow it to take and use water from, and discharge to the Tawhiti Stream. Four inspections were conducted during the review period, which indicated that contaminants in the discharge to the Tawhiti Stream were minimal and had no significant environmental effect.

During the period under review, there were no unauthorised incidents reported in relation to activities at the site.

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

Physico-chemical surveys of Tawhiti Stream, carried out on four occasions in dry and wet weather conditions during the review period, showed no adverse effect on the stream as the result of activities at the sites of Silver Fern Farms Ltd, Graeme Lowe Protein Ltd and Taranaki Fish and Game.

This report contains recommendations for the 2022-2023 year.

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1 Introduction

1.1 Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1 Introduction

This report is the Annual Report for the period July 2021 to June 2022 by the Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents held by three companies¹ in the Tawhiti Stream catchment near Hawera.

This report covers the results and findings of the monitoring programme implemented by the Council in respect of the consents held by those industries that relate to abstractions of and discharges to water and emissions to air from these sites within the Tawhiti catchment. The report combines the results for Silver Fern Farms Ltd, Graeme Lowe Protein Ltd and Taranaki Fish and Game Council trout hatchery.

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 industries' use of water, land, and air, and is the eleventh combined annual report by the Council for the Tawhiti catchment. Silver Fern Farms and Graeme Lowe Protein, which are included in the Tawhiti catchment report, were previously reported on individually.

1.1.2 Structure of this report

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

- consent compliance monitoring under the RMA and the Council's obligations;
- the Council's approach to monitoring sites through annual programmes;
- the resource consents held by the companies in the Tawhiti catchment¹;
- the nature of the monitoring programme in place for the period under review; and
- a description of activities and operations conducted in the Tawhiti catchment.

Sections 2 to 4 present and discuss the results of monitoring for the three Companies during the period under review, including scientific and technical data, the interpretation of the results, and their significance for the environment.

Section 5 presents results of receiving environment monitoring in the Tawhiti Stream. Recommendations to be implemented in the 2022-2023 monitoring period are made for each industry, with a summary provided in **Section 6**.

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

¹ Activities of resource consents that are not covered by the Tawhiti Stream Resource Consents Monitoring Programme, for Fonterra Whareroa Dairy Factory and South Taranaki District Council Hawera Landfill, are included in other monitoring programmes carried out by the Council.

1.1.3 The Resource Management Act (1991) and monitoring

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

- a. the neighbourhood or the wider community around an activity, and may include cultural and socio-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);
- e. risks to the neighbourhood or environment.

In drafting and reviewing conditions on discharge permits, and in implementing monitoring programmes, the Taranaki Regional 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. Compliance monitoring, including both activity and impact monitoring, enables the Council to continually re-evaluate its approach and that of consent holders to resource management and, ultimately, through the refinement of methods and considered responsible resource utilisation, to move closer to achieving sustainable development of the region's resources.

1.1.4 Evaluation of environmental and administrative performance

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

For reference, in the 2021-2022 year, consent holders were found to achieve a high level of environmental performance and compliance for 88% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 10% of the consents, a good level of environmental performance and compliance was achieved.²

1.2 Resource consents

The resource consents of the industries monitored are listed in Table 1. Details of these consents are also summarised in each section specific to the industry under discussion, and copies of the resource consents are given in Appendix I.

² The Council has used these compliance grading criteria for more than 18 years. They align closely with the 4 compliance grades in the MfE Best Practice Guidelines for Compliance, Monitoring and Enforcement, 2018

Table 1 Resource consents for industrial activities in the Tawhiti catchment

Consent holder	Consent number	Purpose	Granted	Review	Expires
<i>Water abstraction permits</i>					
Silver Fern Farms Ltd	1091-4	To take water from the Tawhiti Stream	2013	N/A	2028
Graeme Lowe Protein Ltd	7610-2	To take water from the Tawhiti Stream	2013	N/A	2028
Taranaki Fish and Game	0523-3	To take water from the Tawhiti Stream	2010	N/A	2028
<i>Water discharge permits</i>					
Silver Fern Farms Ltd	1103-4	To discharge water from condenser cooling to the Tawhiti Stream	2013	N/A	2028
	5598-2	To discharge stormwater to the Tawhiti Stream	2010	N/A	2028
Graeme Lowe Protein Ltd	1104-4	To discharge stormwater to the Tawhiti Stream	2010	N/A	2028
	7611-2	To discharge water from condenser cooling to the Tawhiti Stream	2013	N/A	2028
Taranaki Fish and Game	7546-1	To discharge water from a trout hatchery to the Tawhiti Stream	2010	N/A	2028
<i>Air discharge permits</i>					
Graeme Lowe Protein Ltd	4033-6	To discharge emissions to air	2010	N/A	2028
Silver Fern Farms Ltd	5599-2	To discharge emissions to air	2010	N/A	2028
<i>Discharges of waste to land</i>					
Silver Fern Farms Ltd	4832-2	To discharge paunch waste to land	2010	N/A	2028
<i>Land use permits</i>					
Silver Fern Farms Ltd	4995-2	To use and maintain a dam structure on the Tawhiti Stream	2013	N/A	2028

1.3 Monitoring programme

1.3.1 Introduction

Section 35 of the RMA sets out 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 inspection, conduct investigations, and seek information from consent holders.

The monitoring programme for the Tawhiti catchment consisted of five primary components.

1.3.2 Programme liaison and management

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

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

1.3.3 Site inspections

All sites were scheduled for inspection in the monitoring programme. These inspections are detailed in the relevant sections related to each industry. With regard to consents for the abstraction of or discharge to water, the main points of interest were; plant processes with potential or actual discharges to receiving watercourses, including contaminated stormwater and process wastewaters. Air inspections focused on plant processes with associated actual and potential emission sources and characteristics, including potential odour, dust, noxious or offensive emissions. Sources of data being collected by the consent holder were identified and accessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council. The neighbourhood was surveyed for environmental effects.

1.3.4 Chemical sampling

The Council undertook sampling of both discharges from industrial sites and the water quality in the receiving Tawhiti Stream catchment. The locations of these sites are shown in Figure 1.

The programme specified that the discharges from the meat processing plant, rendering plant, and trout hatchery were to be monitored, together with four sites in the Tawhiti receiving waters. The samples were analysed for those parameters that are listed in Table 2.

1.3.5 Fish survey

A fish community survey is undertaken in Tawhiti Stream triennially in order to assess the performance of the fish pass at the water abstraction weir. The third triennial survey was scheduled to be undertaken in the 2019-2020 monitoring period, but was deferred until the 2020-2021 monitoring period as a result of an unauthorised discharge of ammonia which impacted upon the fish communities of the Tawhiti Stream. The survey is next scheduled to be undertaken in 2022-2023.

1.3.6 Abstraction, flow and water temperature monitoring

Silver Fern Farms Ltd provided the Council with daily abstraction rates as per condition 2 of consent 1091-3 until October 2012, when telemetry of abstraction data directly to Council was established. Graeme Lowe Protein also provided the Council with daily abstraction rates as per condition 2 of consent 7610-1 until 30 April 2013, after which time telemetry of abstraction data directly to Council was established.

A hydrological recording station with telemetry is located in the Tawhiti Stream immediately downstream of the Silver Fern Farms site at Tawhiti Road to assess flow volumes. The hydrometric station is required to be maintained under consent 1103-4 and consent 7611-2 (held by Silver Fern Farms Ltd and Graeme Lowe Protein Ltd) which provide for the discharge of cooling water from the meat processing and rendering plants, respectively.

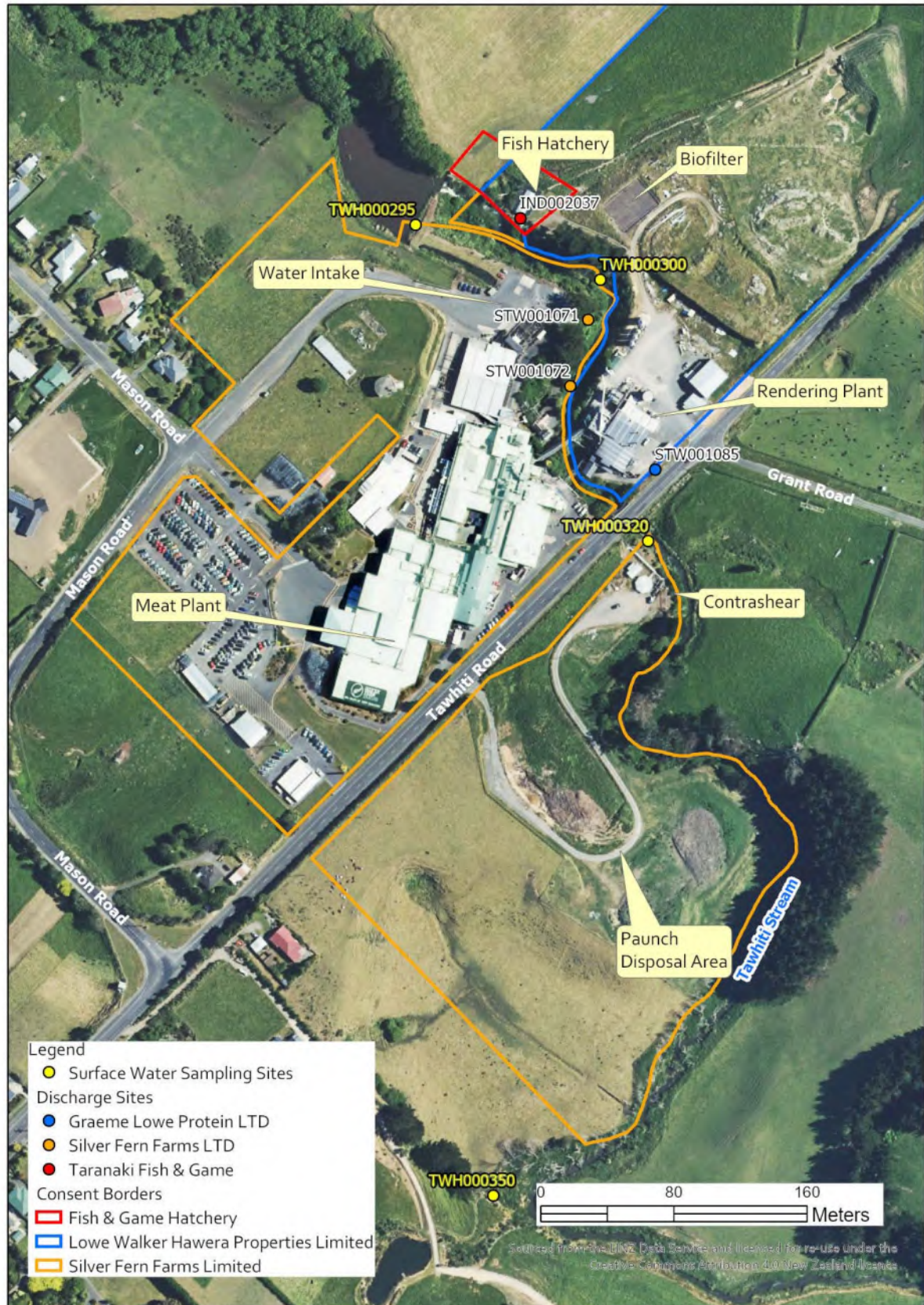


Figure 1 Industrial sites and physicochemical monitoring sites in the Tawhiti catchment

Table 2 Schedule of chemical analyses for water quality monitoring in the Tawhiti Stream

Site Location	Number of samples	Temp	Cond	pH	NH ₄	SS	BOD (total)	Turb	NNN	DRP	O&G
Tawhiti Stream											
Upstream of industrial discharge pond outlet	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	
100m upstream of Tawhiti Rd.	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Culvert on Tawhiti Rd.	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	
300 m downstream of Tawhiti Rd.	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Silver Fern Farms											
Stormwater upstream discharge	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Stormwater downstream discharge	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Graeme Lowe Protein											
Stormwater discharge	4	✓	✓	✓	✓	✓	✓	✓		✓	✓
Taranaki Fish & Game											
Hatchery water discharge	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Key: Temp = temperature; Cond = conductivity; Turb = turbidity; SS = suspended solids; BOD = biochemical oxygen demand; NH₄ = ammonia; NO₃ = nitrate; NNN=total nitrogen; DRP = dissolved reactive phosphorus; O&G = oil and grease. Sites given in *italics* are provisional.

2 Silver Fern Farms Ltd

2.1 Process description

Silver Fern Farms Ltd (Silver Fern Farms) operates a meat processing plant at Tawhiti Road, Hawera. The plant processes beef (including slaughter, dressing and cold store operations) for export and domestic markets. Throughput of beef peaks at approximately 1,000 animals per day.

Paunch and stockyard solids are piped under Tawhiti Road to an area of land adjacent to the plant. The solids are separated using two (2 mm) rotating milli-screens in series. Screened material containing 15-20% solids is piled on land to compost. The disposal area is bunded and leachate is drained to a clay-lined collection lagoon which is periodically pumped to trade waste via the milli-screens. The stream bank is planted to treat any groundwater seepage, and to control erosion. At six-monthly to annual intervals, the stabilised solids are spread thinly to dry.

Odours can arise due to turning of deposited material. Care is exercised with regards to appropriate weather conditions when turning and levelling of the deposited material. Silver Fern Farms notes that any odorous material uncovered is immediately recovered and operations cease.

Waste from meat processing, some of it treated by dissolved air floatation (DAF), is transferred under Tawhiti Road to an effluent balance tank. This tank also receives process waste from the Graeme Lowe Protein rendering plant, milli-screen liquids and paunch composting leachate, and domestic wastes (after screening) from both plants and from a residential subdivision on Mason Road. The combined wastes are pumped through a dedicated pipeline to Hawera wastewater treatment plant, and upon completion of treatment is then discharged via an ocean outfall under consent 5079-1, held by South Taranaki District Council. Therefore, no wastewater discharges occur to the Tawhiti Stream at the Silver Fern Farms site. A contingency pond is available should Silver Fern Farms' access to the Hawera township sewage system be interrupted. It is sized to allow for the complete wash-down of the plant in the event that a plant shut-down is required.

Stormwater from the site is discharged to the Tawhiti Stream via two outfalls. The main outlet (for all except the livestock entry area), which combines with the old cooling water outfall, has a cage trap to remove large debris. An upgrade to the stormwater system was completed during the period under review. A holding pond has been installed to allow diversion of the stormwater from the Tawhiti Stream as required. An automated monitoring system to control the diversion of stormwater was also installed as a component of the upgrade.

A fish pass was constructed down the true-left side of the weir in April 1999. The fish pass consists of rough concrete with cobbles and boulders fixed into place. A shallow notch was cut in the crest of the weir to ensure that there would always be a flow of water down the channel. The area around the intake structure needs frequent maintenance to control weed growth, which can result in screen blockage.

The layout of the plant can be seen in Figure 1.

2.2 Results

2.2.1 Water

2.2.1.1 Inspections

The Silver Fern Farms site in Hawera was visited on six occasions during the 2021-2022 monitoring period. These routine inspections were conducted on 14 July, 8 August and 15 December 2021 and 6 April, 27 May, and 21 June 2021.

Stormwater drains

All stormwater drains on site visually appeared satisfactory at the time of the inspections. Discharges from the drains were not observed to have visual effect on the Tawhiti Stream.

During the period under review works to upgrade the stormwater system have been progressing, including the installation of a holding pond to allow diversion of stormwater from the Tawhiti Stream as required. A block valve has been installed to allow for stormwater discharge to be manually stopped if required. An automated monitoring system has been installed which can divert stormwater to holding ponds, trade waste or to discharge. Work with STDC to minimise stormwater volumes from the Mason Road area is continuing.

Truck-wash

The truck-wash was in use on only one occasion, when all effluent from the truck-wash was entering the sump and flowing to the effluent treatment system across the road. However, on 6 April 2022 and 27 May 2022 evidence of overland flow of truck-wash effluent from a previous use was observed. On 6 April 2022 it was observed that this had tracked to and entered a stormwater drain.

Paunch management

The management of the paunch area is checked at each inspection and an assessment of odours is made.

On all inspections the paunch area appeared to be well managed. There was local paunch/composting odour around and directly downwind of the paunch disposal area (not beyond the boundary) on most occasions. The leachate receiving pond had adequate storage capacity.

Dam and intake structures

Generally, inspections have found the intake to be clear of aquatic weeds, operating well with no blockages occurring in the monitoring year under review. However, a more detailed inspection in the 2020-2021 monitoring year highlighted some maintenance issues with the fish pass, including undercutting at the base of the pass, high flow velocities and accessibility for comprehensive inspection. Following this, an inspection plan had been put in place to modify conditions at the weir to allow for an effective inspection. This was undertaken on 19 April 2022. However, the modification of flow condition was not entirely successful and allowed for only a partial inspection of the fish pass, as the flow had spread over the entire width of the fish pass before reaching its base. Further work to inspect the bottom of the fish pass is planned using an underwater camera when water clarity permits.

2.2.1.2 Water abstraction

Under condition 4 on consent 1091-4, Silver Fern Farms is required to install and maintain water meters and dataloggers to measure and record, to an accuracy of $\pm 5\%$, the rate and volume of water taken for general purposes, and for cooling. Condition 8 requires that the records of water taken be transmitted directly to the Council's computer system, in a format suitable for 'real time' record over the internet.

Also, under the *Resource Management (Measurement and Reporting of Water Takes) Regulations 2010*, Silver Fern Farms was required by 10 November 2012 to take continuous measurements and keep daily records of volume taken, and thereafter supply by 31 July each year the record for the preceding 1 July to 30 June period.

Suitable flow meters were already installed, and appropriate data transmission and recording systems in place, when consent 1091-4 was issued and when the Regulations came into force. Fifteen minute average flow values are recorded.

The telemetered abstraction record, from July 2021 to June 2022 is presented in Figure 2.

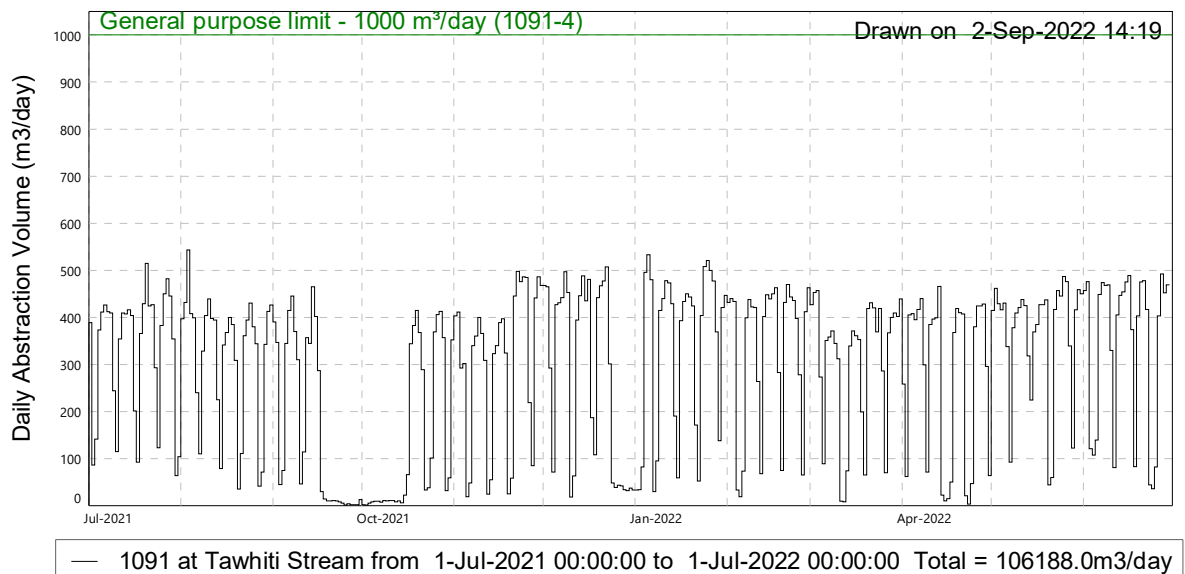


Figure 2 Daily water abstraction by Silver Fern Farms, July 2021-June 2022, m³

The record shows that the limit of 3,500 m³/day on maximum abstraction rate was complied with throughout the monitoring period. The recorded total volume abstracted in 2021-2022 was 106,188 m³, a decrease of 10% from the previous year. The maximum recorded daily volume was 543 m³, on 4 August 2021, which is in compliance with the daily limit of 1,000 m³ on maximum volume that is allowed to be taken for general use purposes, other than cooling.

2.2.1.3 Results of discharge monitoring

The discharge and receiving water body sites are described in Table 3 and shown in Figure 1.

Table 3 Sampling sites for Silver Fern Farms (Hawera)

Site Code	Number	Location	NZTM
TWH000295	1	Outlet of ponded area, upstream of plant	E1711202 N5618450
TWH000300	2	Approx 100 m ³ u/s Tawhiti Road, opposite trout hatchery	E1711313 N5618417
STW001071		Main stormwater discharge from truck wash facility	E1711306 N5618393
STW001072		Stormwater discharge and hide cooler discharge	E1711295 N5618353
TWH000320	3	Just below Tawhiti Road culvert, u/s of solid waste area	E1711342 N5618260
TWH000350	4	Approx. 300 m d/s of Tawhiti Road, d/s of solid waste area	E1711249 N5617867

In the 2021-2022 period, samples of both the main (STW001071) and the minor (STW001072) stormwater discharges were collected and analysed for biological oxygen demand (BOD), ammonia-N, dissolved reactive phosphorus, conductivity, pH, turbidity, suspended solids, visible hydrocarbons and temperature.

³ u/s – upstream, d/s – downstream

The results are presented in Table 4 and Table 5. In previous years, samples of the condenser discharge were also taken. However, with the installation of the new condenser system there is no longer a condenser discharge.

Table 4 Physico-chemical results for Silver Fern Farms main drain stormwater samples for 2021-2022 (TRC site code STW001071). Bold indicates a consent non-compliance

Date	BOD ₅ g/m ³	Conductivity μS/cm @ 25°C	Ammonia g/m ³ -N	DRP g/m ³ -P	Suspended solids g/m ³	Oil & Grease g/m ³	pH	Turbidity FNU	Temp °C
09 Aug 2021	4	451	0.145	< 0.004	23	< 4	7.1	19.2	9.4
15 Dec 2021	10	797	4	0.043	8	< 4	7.3	7.1	17.5
Consent limits	-	-	-	-	100	15	6-9	-	-

* = pass for visual and hydrocarbon odour so not tested

Table 5 Physico-chemical results for Silver Fern Farms stormwater samples for 2021-2022 (TRC site code STW001072)

Date	BOD ₅ g/m ³	Conductivity μS/cm @ 25°C	Ammonia g/m ³ -N	DRP g/m ³ -P	Suspended solids g/m ³	Oil & Grease g/m ³	pH	Turbidity FNU	Temp °C
09 Aug 2021	1.8	241	0.072	0.024	40	< 4	7.4	27	8.4
Consent limits	-	-	-	-	100	15	6-9	-	-

* = pass for visual and hydrocarbon odour so not tested

Suspended solids, oil and grease and pH were found at levels within those required by consent 5598-2 in the four samples collected.

The discharge from the main stormwater drain (site STW001071) was composed largely of spillover from the water delivery channel. Ammonia concentrations at site STW001071 were substantially elevated on 15 December 2021. Furthermore, conductivity was elevated at this site on both sampling occasions.

Impacts on the receiving environment are discussed in Section 5.

2.2.1.4 Fish survey

The triennial fish survey was scheduled to be undertaken in the 2019-2020 monitoring year. However, as a result of an unauthorised discharge into the Tawhiti Stream, which impacted significantly upon the fish communities, the survey was deferred until the 2020-2021 monitoring period. Results of the survey are discussed in detail in the 2020-2021 Tawhiti Catchment technical report.

2.2.2 Air

2.2.2.1 Inspections

The Silver Fern Farms site in Hawera was visited six times in 2021-2022 with the purpose of monitoring compliance with resource consent 5599-1 to discharge to air. These inspections were carried out in conjunction with inspections of the plant processes and discharges to water covered in section 2.2.1.1.

A number of sources of emissions to air exist at the site. These include the stockyards, truck wash, hide bins and ammonia condenser systems, paunch disposal and contingency pond, and the paunch contrashear. Areas within the blood transfer system also have the potential for odours.

Odours were observed around the stockpile of paunch on all of the six inspections, though odours were not detected beyond the property boundary on any occasion.

2.3 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 holder. During the year matters may arise which require additional activity by the Council, for example, provision of advice and information, or investigation of potential or actual causes of non-compliance or failure to maintain good practices. A pro-active approach, that in the first instance avoids issues occurring, is favoured.

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

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

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

2.4 Discussion

2.4.1 Discussion of plant performance

Silver Fern Farm's environmental performance during the 2021-2022 period was high. However, administrative performance was rated only as good, due to delays in finalising a stormwater management plan following completion of the stormwater system upgrade.

The on-site management and operation of the Hawera meat plant site was generally satisfactory. With regard to the stormwater systems. Significant improvements had occurred from the previous two monitoring periods when multiple unauthorised incidents relating to the stormwater systems were recorded. However, during two inspections evidence of prior overland flow of effluent from the truck-wash into the stormwater system was observed. Bunding to prevent stormwater ingress from Mason Road into the truck-wash was constructed to help prevent future occurrences of the truck-wash overflowing.

An upgrade to the stormwater system commenced in 2020-2021. As a result of this upgrade, it was agreed that an update to the stormwater management and contingency plan would not be required until the new system was operational. However, the upgrade project took longer than anticipated due to COVID restrictions and delays in availability of materials. A draft Stormwater Management Plan was received in October 2021, which included a section covering the updated contingency plan. At the time of writing, a final version of the Plan had not been provided to Council as Silver Fern Farms are waiting for the finalised version of the operational manual for the new stormwater isolation system.

For water abstraction, there was full compliance with the limit on maximum daily rate taken from Tawhiti Stream during the period under review. The telemetry system for delivery of abstraction data to Council that was installed in October 2012 was maintained.

2.4.2 Environmental effects of exercise of consents

Routine physicochemical monitoring did not show any significant adverse impacts from activities on the site.

The triennial fish survey was undertaken in 2020-2021. The assessment of the barrier to fish passage presented by the weir was hindered by low numbers and diversity of fish caught during the survey. The results of the survey were inconclusive, and further work to more fully assess the effects of the weir is ongoing.

With regard to the discharge of odour, it should be noted that the facility's location increases risk of odour events, as it is located within a sheltered valley. When atmospheric conditions are calm and clear, there is a high potential for emissions to hang over the site and intensify rather than disperse any odour.

Encroachment of residential development towards the facility has aggravated the situation. The Council did not receive any odour complaints during the monitoring period under review. Localised odours were detected in the paunch disposal area during all inspections in 2021-2022, however, objectionable or offensive odour from the meat processing plant was found not to extend beyond the site boundary.

2.4.3 Evaluation of performance

A tabular summary of Silver Fern Farms' compliance record for the year under review is set out in Table 7 to Table 12. The environmental performance of Silver Fern Farms Hawera site since 2010 is summarised in Table 12.

Table 6 Summary of performance for Consent 1091-4

Purpose: To take water from a dam and intake structure on the Tawhiti Stream for general use in a meat processing plant and for cooling purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Limit on abstraction volume	Metering by consent holder and telemetry of data to Council	Yes
2. Limit on volume not used for cooling	Metering by consent holder	Yes
3. Limit on volume used for cooling, all to be returned to Tawhiti Stream	Metering by consent holder and inspection	Yes
4. Installation of meters and loggers	Inspection	Yes
5. Certification of meters	Receipt of certification	Yes
6. Actions on failure of monitors	Receipt of notification, inspections	N/A
7. Monitors to be accessible	Inspections	Yes
8. Provision of records	Receipt of records as required	Yes
9. Use of best practicable option	Inspections and liaison	Yes
10. Optional review provision	No further review provision	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

N/A = not applicable

Table 7 Summary of performance for Consent 1103-4

Purpose: To discharge cooling water from a meat processing plant into the Tawhiti Stream		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Limit on volume discharged	Not monitored during period under review, as under limit on condition 4	N/A
2. Limit on temperature increase in Tawhiti Stream, with GLP discharge	Not monitored during period under review, as under limit in condition 3	N/A
3. Trigger volume for temperature monitoring	Inspection	N/A
4. Trigger volume for flow metering	Inspection	N/A
5. Trigger volume for suspension of temperature and flow monitoring	Metering by consent holder, inspection	N/A
6. Methodology for temperature and flow metering	Assessment of records received by Council	N/A
7. Actions on failure of monitors	Inspections	N/A
8. Monitors to be accessible	Inspections	N/A
9. Maintenance of hydrometric station on Tawhiti Stream	Inspections	Yes
10. No contaminant other than heat	Inspections and sampling by Council	Yes
11. Notification of exceedance of volume trigger	Receipt of notification, inspections	N/A
12. Adoption of best practicable option	Inspections and liaison	Yes
13. Provision for lapse of consent	Consent exercised	N/A
14. Optional review provision	No further review provision	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

N/A = not applicable

Table 8 Summary of performance for Consent 4832-2

Purpose: To discharge screened paunch and stockyard solids onto and into land by spreading and composting in the vicinity of the Tawhiti Stream in the Tangahoe catchment		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Maximum volume of discharge 4,500 tonnes/year	Inspections of site, Provision of consent holder's records	Yes
2. Consent holder to maintain records of volume disposed	Request for provision of data	Yes

Purpose: To discharge screened paunch and stockyard solids onto and into land by spreading and composting in the vicinity of the Tawhiti Stream in the Tangahoe catchment		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
3. Consent holder to adopt best practicable option to prevent or minimise adverse effects	Inspections of site	Yes
4. Bunding of areas used for stockpiling and stabilisation to ensure no run-off to Tawhiti Stream	Inspections of site	Yes
5. No direct discharge of contaminants from storage pond to Tawhiti Stream	Inspections	Yes
6. Run-off from storage pond pumped to wastewater holding tank	Inspections	Yes
7. Management plan for paunch disposal area to be maintained	Update received July 2022	Yes
8. Optional review provision	No further review provision	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

N/A = not applicable

Table 9 Summary of performance for Consent 4995-2

Purpose: To use an existing 6 metre high concrete and earth dam and associated intake structure to dam and divert the Tawhiti Stream		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Fish pass as certified by Council	Inspection and fish surveys- fish pass considered adequate by Council (letter dated 27 August 1999). Fish survey undertaken March 2020	Yes
2. Maintenance of structure	Inspection	Yes – pending follow-up inspection to assess current condition
3. Optional review provision	No further review provision	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

N/A = not applicable

Table 10 Summary of performance for Consent 5598-2

Purpose: To discharge stormwater from a meat processing plant into the Tawhiti Stream in the Tangahoe catchment		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Consent holder to adopt best practicable option to prevent or minimise adverse effects	Inspections	Yes
2. Catchment area not to exceed 3.8 ha	Inspections	Yes
3. Hazardous substances contained	Inspections	Yes
4. Concentrations of contaminants in discharge	Sampling	Yes
5. Effects on receiving water	Sampling and inspections	Yes
6. Maintenance of contingency plan	Received November 2010. Draft plan received October 2021	Yes – although final plan not yet provided
7. Maintenance of stormwater plan	Received February 2010. Draft plan received October 2021	Yes - although final plan not yet provided
8. Notification of changes to processes	Inspections and liaison with consent holder	Yes
9. Review of consent	No further review provision	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

N/A = not applicable

Table 11 Summary of performance for Consent 5599-2

Purpose: To discharge emissions into the air from meat processing operations and associated activities		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adopt best practicable option	Inspections of site	Yes
2. Consent holder to minimise emissions and impacts	Inspections of site	Yes
3. Discharge not to give rise to objectionable odour beyond boundary	Inspections of site	Yes
4. Paunch management plan	Received July 2022	Yes
5. Consultation over significant proposed changes	Liaison during visits. No significant changes undertaken during year	Yes
6. Optional review provision	No further review provision	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

N/A = not applicable

Table 12 Evaluation of environmental performance of Silver Fern Farms Hawera over time

Year	Consent no	High	Good	Improvement req	Poor
2010-2012	1091	1			
	1103	N/A			
	4832	1			
	4995	1			
	5598	1			
	5599		1		
2012-2014	1091	1			
	1103	1			
	4832	1			
	4995	1			
	5598	1			
	5599	1			
2014-2015	1091	1			
	1103	1			
	4832	1			
	4995	1			
	5598	1			
	5599	1			
2015-2016	1091	1			
	1103	1			
	4832	1			
	4995	1			
	5598	1			
	5599	1			
2016-2017	1091	1			
	1103	1			
	4832	1			
	4995	1			
	5598	1			
	5599	1			
2017-2018	1091	1			
	1103	1			
	4832	1			
	4995	1			
	5598	1			

Year	Consent no	High	Good	Improvement req	Poor
	5599	1			
2018-2019	1091	1			
	1103	1			
	4832	1			
	4995	1			
	5598		1		
	5599	1			
2019-2020	1091	1			
	1103	1			
	4832	1			
	4995	1			
	5598				1
	5599	1			
2020-2021	1091	1			
	1103	1			
	4832	1			
	4995	1			
	5598				1
	5599	1			
2021-2022	1091	1			
	1103	1			
	4832	1			
	4995	1			
	5598	1	1		
	5599	1			
Totals		55	2	0	2

During the period under review, Silver Fern Farms demonstrated a high level of environmental performance and a good level of administrative performance with the resource consents as defined in Appendix II.

2.4.4 Recommendations from the 2020-2021 Annual Report

It was recommended in the 2020-2021 monitoring period:

1. THAT monitoring undertaken for the Silver Fern Farms Ltd site in Hawera in the 2021-2022 year continue at the same level as in 2020-2021, with the exception of fish passage monitoring.
2. THAT additional inspections and monitoring of juvenile fish are undertaken in 2021-2022 in order to assess whether the weir and intake structure of Silver Fern Farms Ltd is presenting a barrier to fish passage.

3. THAT should there be issues with environmental or administrative performance in 2021-2022, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.
4. THAT the option for a review of resource consents 1091-4, 1103-4, 4832-2, 4995-2 and 5599-2 in June 2022, not be exercised, on the grounds that there are currently no unforeseen adverse environmental effects that require a review.
5. THAT the option for a review of resource consent 5598-2 in June 2022, as set out in condition 9 of the consent, be exercised, if there are grounds that the alterations to the stormwater system have resulted in adverse environmental effects.

These recommendations were carried out in full in 2021-2022.

2.4.5 Alterations to monitoring programme for 2022-2023

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

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

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

It is proposed that for 2022-2023, a similar level of monitoring is maintained. A recommendation to this effect is attached to this report.

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

2.5 Recommendations

1. THAT monitoring undertaken for the Silver Fern Farms Ltd site in Hawera in the 2022-2023 year continue at the same level as in 2021-2022, with the exception of fish passage monitoring.
2. THAT additional inspections and monitoring of juvenile fish are undertaken in 2022-2023 in order to assess whether the weir and intake structure of Silver Fern Farms Ltd is presenting a barrier to fish passage.
3. THAT should there be issues with environmental or administrative performance in 2022-2023, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

3 Graeme Lowe Protein Ltd

3.1 Process description

Figure 1 shows the Graeme Lowe Protein Ltd (Graeme Lowe Protein) site in detail, highlighting the rendering and blood processing areas referenced in this document, as well as the location of sampling sites in the Tawhiti Stream and the previous stormwater sampling site.

Prior to September 2014, Graeme Lowe Protein undertook a range of animal processing at its site, including rendering, gel bone processing and blood processing. The plant operation was then scaled down to blood processing only and washing/storage/transfer of offal from the adjacent meat processing plant of Silver Fern Farms.

Since November 2014, the plant has processed up to 25 tonne/day of blood, mainly from the adjacent meat plant, but also from outside the Taranaki region. Fully enclosed blood storage tanks, with air extraction to the bio-filter via a wet scrubber, were installed.

After offal rendering ceased, the plant was changed from a load-in to a load-out facility for offal from the adjacent Silver Fern Farms plant. Initially, the offal was stored in one tonne bins, awaiting transfer by road to Okaiawa approximately six times per day. Edible offal, comprising bone and meat trimmings, went to Taranaki Bio-Extracts Ltd (TBE). Inedible offal, comprising washed gut and the external trimmings, went to Taranaki By-Products Ltd (TBP). An extraction system to vent and treat air from the offal storage building by wet scrubber and bio-filter was installed. In October 2015, a new load-out process was instituted, with an automatic system for filling self-contained 40 tonne load-out bins. New augers for conveying offal were installed, and the load out area was concreted to improve access for trucks.

Water use is for gut washing, blood processing (mainly to wash tanks), the pack tower air scrubber and the blood air scrubber.

Blood processing

Blood processing begins with collection in the slaughtering area. Raw blood is predominantly received from the neighbouring Silver Fern Farms meat processing plant. Raw blood may also be received from licensed meat plants (Silver Fern Farms Takapau, Waitotara) and also via Taranaki By-Products in response to emergency break-downs at those plants.

All blood processed on site is aged prior to heat coagulation and drying. Ageing of blood, before heat coagulation and separation of liquids from the blood solids, is known to increase product yield. This reduces the amount of liquid discharged to the effluent treatment plant.

The blood is dried in a steam-heated rotary disc dryer. Installation of this dryer late in 2012 enabled introduction of a high technology meal-bagging system (total capture of dust). The rotary disc dryer also allowed direct ducting of exhaust gases from the dryer via a shell-and-tube condenser and a water scrubber, then a further "pack tower" water scrubber, before entering the bio-filter.

Edible white fat recovery took place alongside the existing rendering plant.

Stormwater is collected in perimeter drains. Areas with the potential for contamination are bunded with stormwater directed to the process wastewater waste-stream.

All process wastewater is discharged to Hawera municipal wastewater treatment plant.

Biofilter

In June 2009, Graeme Lowe Protein commissioned a bark bio-filter for treatment of process air from potentially odorous sources. The system is 20 m by 25 m in area with a bark media depth of 1,300 mm, and

is designed to extract 22,750 m³/h at a loading rate of 35 m³/h. The bio-filter is located about 100 m northwest of the plant.

Graeme Lowe Protein has targeted the principal sources of hot odour, being: both render vessels and associated decaners, rotary screens and liquid phase tanks; the blood dryer exhaust and decanter; the low temperature rendering condenser air discharge; and hydrolyser exhaust air. New blood tanks installed during the 2014-2015 period and the offal storage area were connected to the bio-filter.



Photo 1 The bio-filter at Graeme Lowe Protein

3.2 Results

3.2.1 Water

3.2.1.1 Inspections

Routine monitoring inspections were performed on five occasions during the 2021-2022 monitoring period. These routine inspections were conducted on 8 August and 15 December 2021 and 6 April, 27 May, and 21 June 2022. Sampling was not undertaken during this monitoring period as no discharge was occurring at the time of the inspections.

On each visit, the inside of the plant and surrounds including the blood store, tallow and meal load-out areas, the stormwater catchments and trade waste area, and the bio-filter were inspected. An odour survey around the site was conducted on each occasion.

In general the site was found to be tidy and complying with consent conditions during inspections. On 17 August 2021 a small amount of rendering product had spilled earlier in the day. This had been contained and disposed of appropriately. During the final three inspections, higher than typical volumes were being

processed at the site due to a fire at another rendering facility in the region. This did not impact the ability to comply with consent conditions at the time of the inspections.

3.2.1.2 Water abstraction

Under condition 4 on consent 7610-2, Graeme Lowe Protein is required to install and maintain water meters and dataloggers to measure and record, to an accuracy of $\pm 5\%$, the rate and volume of water taken for general purposes, and for cooling. Condition 8 requires that the records of water taken are to be transmitted directly to the Council's computer system, in a format suitable for 'real time' record over the internet.

Also, under the *Resource Management (Measurement and Reporting of Water Takes) Regulations 2010*, Graeme Lowe Protein was required by 10 November 2012 to take continuous measurements and keep daily records of volume taken, and thereafter supply by 31 July each year the record for the preceding 1 July to 30 June period.

Suitable flow meters were already installed, and appropriate data transmission and recording systems in place, when consent 7610-2 was issued and when the Regulations came into force. Fifteen-minute average flow values are recorded.

The telemetered record, from 1 July 2021 to June 2022 is presented in Figure 3.

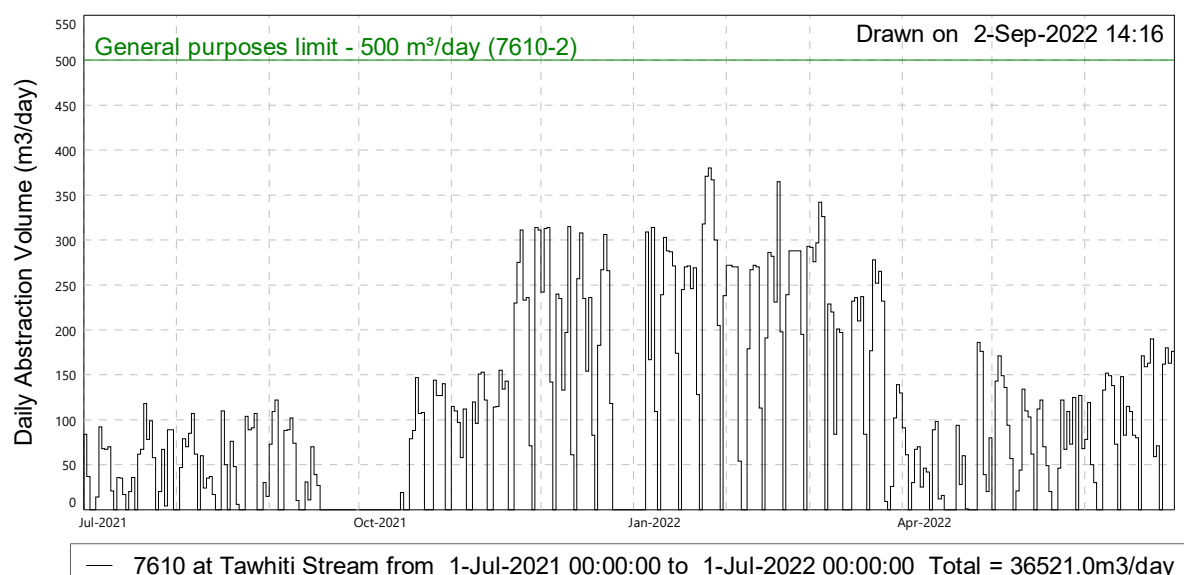


Figure 3 Daily water abstraction by Graeme Lowe Protein, July 2021 – June 2022, m³

The record shows that the limit of 3,000 m³/d on maximum abstraction rate was complied with throughout the monitoring period. The recorded total volume abstracted in 2021-2022 was 36521 m³. During the period under review, the daily maximum volume of 500 m³ that is allowed to be taken for general purposes, other than cooling, was not exceeded.

3.2.2 Air

3.2.2.1 Inspections

Inspections with regard to air discharges were conducted in conjunction with the inspections for plant processes and discharges to water.

During each inspection particular attention is given to the rendering and blood processing areas to ensure compliance with resource consent conditions, and to ensure any potential off-site odours are prevented and to determine potential for offsite effects.

Odours were not noticeable beyond the boundary of the property during any of the five inspections undertaken in the period under review.

3.3 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 holder. During the year matters may arise which require additional activity by the Council, for example, provision of advice and information, or investigation of potential or actual causes of non-compliance or failure to maintain good practices. A pro-active approach, that in the first instance avoids issues occurring, is favoured.

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

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

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

3.4 Discussion

3.4.1 Discussion of plant performance

During inspections site management was generally found to be satisfactory throughout the monitoring period under review.

During review of the data in the 2017-2018 monitoring period, it was noted that the daily water take exceeded the limit allowable for general purposes (consumptive) use on several occasions. This appeared to be caused by a problem with the water metering equipment recording higher than actual volumes, and not recording as zero when no water was taken. The equipment was serviced and appears to currently be recording correctly. Following this, the consent holder was directed to have the equipment in question certified before 3 September 2018. Instead, the datalogger was replaced, which allowed Graeme Lowe Protein to view their water take data and help to prevent a recurrence of this issue. The daily water take breached the maximum limit for general purposes use by more than 5% on only one occasion in 2018-2019. Compliance has been maintained since the 2019-2020 monitoring period.

An updated environmental plan covering the required stormwater management plan, air discharge management plan and contingency plan was received by Council in July 2020.

3.4.2 Environmental effects of exercise of consents

Although Graeme Lowe Protein now holds permits to discharge both condenser cooling water and stormwater to the Tawhiti Stream, all process water and stormwater with potential to contain contaminants is currently directed to the wastewater stream which is discharged to the Hawera wastewater treatment plant.

There were no odour complaints by members of the public during the period under review, and odour was not noticeable beyond the boundary at the time of any of the six inspections. The cessation of offal processing, improved blood delivery, and a new offal load-out process reduced the potential for odour emissions.

3.4.3 Evaluation of performance

A summary of Graeme Lowe Protein's compliance record for the year under review is set out in Table 13 to Table 16. The environmental performance since 2010 is summarised in Table 17.

Table 13 Summary of performance for Consent 1104-4

Purpose: To discharge stormwater from buildings and paved areas at the site of a rendering facility into the Tawhiti Stream		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Best practicable option to prevent or minimise adverse effects	Inspections	Yes
2. Stormwater catchment area <1.9 ha	Inspections	Yes
3. Appropriate storage of hazardous substances	Inspections	Yes
4. Discharge limits	Samples not collected during period under review	N/A
5. No effects upon receiving water following mixing	Inspections and sampling	Yes
6. Maintenance of contingency plan	Update received July 2020	Yes
7. Prepare and maintain stormwater management plan	Update received July 2020	Yes
8. Notification of event that may have adverse effect on water quality downstream	Receipt of notification	N/A
9. Notification of changes to processes or activities	Receipt of notification	N/A
10. Optional review provision	No further review provision	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

N/A == not applicable

Table 14 Summary of performance for Consent 4033-6

Purpose: To discharge emissions to air from rendering operations and associated activities		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adopt best practicable option to minimise discharge to air	Inspections	Yes
2. No objectionable or offensive odours beyond the site boundary	Inspections.	Yes
3. Preparation of Air Discharge Management Plan	Update received July 2020	Yes
4. Emissions to be treated by bio-filter	Inspections	Yes
5. Consent holder to minimise emissions and impacts of contaminants	Inspections	Yes
6. Discharge not to give rise to dust	Inspections	Yes
7. Optional review provision on environmental effects	No further review provision	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

N/A == not applicable

Table 15 Summary of performance for Consent 7610-2

Purpose: To take water from a dam and intake structure on the Tawhiti Stream for cooling and general use at a rendering plant		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Limit on abstraction volume	Metering by consent holder and telemetry of data to Council	Yes
2. Limit on volume not used for cooling	Metering by consent holder	Yes
3. Limit on volume used for cooling, all to be returned to Tawhiti Stream	Metering by consent holder and inspection	Yes
4. Installation of meters and loggers	Inspection	Yes
5. Certification of meters	Receipt of certification	Yes
6. Actions on failure of monitors	Receipt of notification, inspections	Yes
7. Monitors to be accessible	Inspections	Yes
8. Provision of records	Receipt of records as required	Yes

Purpose: To take water from a dam and intake structure on the Tawhiti Stream for cooling and general use at a rendering plant		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
9. Use of best practicable option	Inspections and liaison	Yes
10. Optional review provision	No further review provision	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

N/A = not applicable

Table 16 Summary of performance for Consent 7611-2

Purpose: To discharge cooling water from a rendering plant into the Tawhiti Stream		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Limit on volume discharged	Not monitored as consent not exercised	N/A
2. Limit on temperature increase in Tawhiti Stream, with GLP discharge	Not monitored as consent not exercised	N/A
3. Trigger volume for temperature monitoring	Not monitored as consent not exercised	N/A
4. Trigger volume for flow metering	Not monitored as consent not exercised	N/A
5. Trigger volume for suspension of temperature and flow monitoring	Not monitored as consent not exercised	N/A
6. Methodology for temperature and flow metering	Not monitored as consent not exercised	N/A
7. Actions on failure of monitors	Not monitored as consent not exercised	N/A
8. Monitors to be accessible	Not monitored as consent not exercised	N/A
9. Maintenance of hydrometric station on Tawhiti Stream	Inspections	N/A
10. No contaminant other than heat	Not monitored as consent not exercised	N/A
11. Notification of exceedance of volume trigger	Not monitored as consent not exercised	N/A
12. Review of monitoring programme, with Iwi, upon exercise of consent	Not applicable, as consent not exercised	N/A
13. Adoption of best practicable option	Not monitored as consent not exercised	Yes
14. Provision for lapse of consent		N/A
15. Optional review provision	No further review provision	N/A

Purpose: <i>To discharge cooling water from a rendering plant into the Tawhiti Stream</i>		
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

N/A = not applicable

Table 17 Evaluation of environmental performance of Graeme Lowe Protein over time

Year	Consent no	High	Good	Improvement req	Poor
2010-2012	1104	1			
	4033	1			
	7610	1			
	7611	N/A			
2012-2014	1104	1			
	4033			1	
	7610	1			
	7611	N/A			
2014-2015	1104	1			
	4033		1		
	7610	1			
	7611	N/A			
2015-2016	1104	1			
	4033	1			
	7610		1		
	7611	N/A			
2016-2017	1104	1			
	4033	1			
	7610	1			
	7611	N/A			
2017-2018	1104	1			
	4033	1			
	7610		1		
	7611	N/A			
2018-2019	1104	1			
	4033	1			
	7610		1		
	7611	N/A			

Year	Consent no	High	Good	Improvement req	Poor
2019-2020	1104	1			
	4033	1			
	7610	1			
	7611	N/A			
2020-2021	1104	1			
	4033	1			
	7610	1			
	7611	N/A			
2021-2022	1104	1			
	4033	1			
	7610	1			
	7611	N/A			
Totals		25	4	1	

During the period under review, overall, Graeme Lowe Protein demonstrated a high level of environmental and high level of administrative performance with the resource consents as defined in Appendix II.

3.4.4 Recommendations from the 2020-2021 Annual Report

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

1. THAT monitoring of consented activities at the Graeme Lowe Protein Ltd site in the 2021-2022 period continue at the same level as in 2020-2021.
2. THAT should there be issues with environmental or administrative performance in 2021-2022, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.
3. THAT the option for a review of resource consents in June 2022 not be exercised, on the grounds that there are no unforeseen adverse environmental effects resulting from the exercise of the consents.

These recommendations were implemented in the 2021-2022 monitoring period.

3.4.5 Alterations to monitoring programme for 2022-2023

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

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

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

It is proposed that for 2022-2023, a similar level of monitoring to 2021-2022 is maintained. A recommendation to this effect is attached to this report.

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

3.5 Recommendations

1. THAT monitoring of consented activities at the Graeme Lowe Protein Ltd site in the 2022-2023 period continue at the same level as in 2021-2022.
2. THAT should there be issues with environmental or administrative performance in 2022-2023, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

4 Taranaki Fish and Game Council Trout Hatchery

4.1 Process description

The Taranaki Fish and Game Council (Taranaki Fish and Game) trout hatchery is situated beside the Tawhiti Stream about 2 km north west of Hawera. The trout hatchery has been operating on its present site since 1980. The hatchery received 3,000 eyed rainbow trout ova in 2021-2022. As trout in the outside raceways grow, they are progressively released into Department of Conservation approved lakes and rivers. The average annual production from the hatchery is about 2,000 rainbow trout, with about 700 fish held in the hatchery through to an age of 17 months.

The trout hatchery is situated in a section of Tawhiti Stream where water quality is monitored to assess compliance with resource consent conditions for Silver Fern Farms and Graeme Lowe Protein. A number of water quality parameters are monitored at four sites on the Tawhiti Stream, with one site upstream of the hatchery intake and three sites downstream of the hatchery discharge. Currently, water is diverted from the Tawhiti Stream at a location immediately upstream of Silver Fern Farms' water supply weir (Figure 1). Three 100 mm diameter PVC slotted pipes are submerged in Silver Fern Farms' water supply dam; water is then gravity fed to the hatchery. The water is discharged back into Tawhiti Stream at about 60 m downstream of the diversion point. The hatchery outflow pipe-work is configured so that all troughs and raceways discharge to a common silt trap.

The silt, fish faecal matter and uneaten trout food that accumulates on the floor of the fingerling troughs and outside raceways is cleaned out periodically. Water levels are drawn-down, the discharge pipe is closed, and the sluiced material is diverted via the 700-litre silt trap to a series of three small settling/soakage ponds located to the side of the hatchery building (Photograph 2). The accumulated solids are disposed of off site.



Photo 2 The settling system at Taranaki Fish and Game trout hatchery

4.2 Results

4.2.1 Water

4.2.1.1 Inspections

Four compliance monitoring inspections of the Taranaki Fish and Game trout hatchery site were conducted during 2021-2022. Inspections focused on tank cleaning and the discharge to the Tawhiti Stream. Effluent sampling was undertaken in combination with the sampling of discharges from Silver Fern Farms and Graeme Lowe Protein on two occasions. Inspections were undertaken on 8 August and 15 December 2021 and 27 May and 21 June 2022.

The site was manned during the inspection on 8 August 2021, and unmanned at the time of the three remaining inspections. The water intake structure was clear of obstructions. No discharge was occurring at the time of inspection on 8 August 2021 and 27 May 2022, and the discharge appeared clear on the two other occasions.

4.2.1.2 Results of discharge monitoring

The results of chemical monitoring of the discharge from Taranaki Fish and Game's trout hatchery discharge pipe for 2021-2022 are presented in Table 18. Samples were obtained on the two occasions when discharge was occurring.

Table 18 Physico-chemical results for Taranaki Fish and Game trout hatchery (Hawera) discharge pipe samples for 2021-2022 (TRC site code IND002037)

Date	BOD ₅ g/m ³	Conductivity μS/cm @ 25°C	Unionised ammonia g/m ³ -N	Ammonia g/m ³ -N	DRP g/m ³ -P	Suspended Solids g/m ³	pH	Turbidity NTU	Temp °C
15 Dec 2021	2.9	223	0.00066	0.063	0.074	36	7.4	20	19.6
21 Jun 2022	0.9	269	0.00069	0.058	0.013	24	7.8	14.2	9.7

Considering the rate of discharge from this discharge point, and the degree of assimilation available in the Tawhiti Stream, it is considered that this discharge would not have caused a noticeable increase in these parameters in the receiving water body. This was confirmed by visual inspection during sampling.

Impacts on the receiving environment are discussed in Section 5.

4.3 Investigations, interventions, and incidents

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

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

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

In the period under review, it was not necessary for the Council to undertake significant additional investigations and interventions, or record incidents, in association with Taranaki Fish and Game conditions in resource consents or provisions in Regional Plans.

4.4 Discussion

4.4.1 Discussion of plant performance

The environmental performance of the trout hatchery run by Taranaki Fish and Game during the period under review has been high. In the 2021-2022 period, there were no incidents recorded by the Council that were associated with the Taranaki Fish and Game trout hatchery site. The management of the site has generally been good with no issues arising during the period. However an escape occurred during the period under review, with only about 800 fish remaining when adipose fin clipping occurred.

In 2010, Taranaki Fish and Game installed a three-pond settling system to remove suspended material that is produced when the fingerling troughs and outside raceways are cleaned. This has improved the quality of the discharge to the Tawhiti Stream during cleaning operations.

4.4.2 Environmental effects of exercise of consents

Water quality data collected for the receiving waters of Tawhiti Stream suggests that there have been no significant adverse effects as a result of the activities of the Taranaki Fish and Game trout hatchery (in combination with discharges from Silver Fern Farms and Graeme Lowe Protein) during the period under review.

4.4.3 Evaluation of performance

A tabular summary of Taranaki Fish and Game's compliance record for the period under review is set out in Table 19 and Table 20. A summary of the environmental performance of Taranaki Fish and Game since 2010 is given in Table 21.

Table 19 Summary of performance for Consent 0523 -3

Purpose: To take and use water from the Tawhiti Stream in the Tangahoe catchment for trout hatchery purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Volume of water taken not to exceed 11.4 L/sec	Not monitored during period under review	N/A
2. Adopt best practicable option	Inspection	Yes
3. Intake structure to be screened	Inspections	Yes
4. Optional review provision	No further review provision	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

N/A == not applicable

Table 20 Summary of performance for Consent 7546-1

Purpose: To discharge water containing contaminants into the Tawhiti Stream in the Tangahoe catchment from a trout hatchery facility		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adopt best practicable option	Inspections of site	Yes
2. Effects not to occur in receiving waters beyond the established mixing zone	Inspection and chemical sampling of receiving water	Yes
3. Prohibition on chemicals except potassium permanganate	Inspection and chemical sampling of discharge	Yes
4. No water through-flow during salt treatment	Inspections	Yes
5. Notification of events that may cause adverse effect on water quality	Liaison with consent holder	N/A
6. Optional review provision	No further review provision	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

N/A == not applicable

Table 21 Environmental performance of Taranaki Fish and Game Council over time

Year	Consent no	High	Good	Improvement req	Poor
2010-2012	0523	1			
	7546	1			
2012-2014	0523	1			
	7546	1			
2014-2015	0523	1			
	7546	1			
2015-2016	0523	1			
	7546	1			
2016-2017	0523	1			
	7546	1			
2017-2018	0523	1			
	7546	1			
2018-2019	0523	1			
	7546	1			
2019-2020	0523	1			
	7546	1			
2020-2021	0523	1			

Year	Consent no	High	Good	Improvement req	Poor
	7546	1			
2021-2022	0523	1			
	7546	1			
Totals		20			

During the period under review, the Taranaki Fish and Game demonstrated a high level of environmental and high level of administrative performance with the resource consents as defined in Appendix II. Inspections and water quality surveys were conducted, which indicated that contaminants in the discharge to the Tawhiti Stream were minimal and had no significant environmental effect.

4.4.4 Recommendations from the 2020-2021 Annual Report

The 2020-2021 Annual Report recommended:

1. THAT monitoring of abstraction to and discharges from Taranaki Fish and Game trout hatchery in the 2021-2022 year continue at the same level as in 2020-2021.
2. THAT should there be issues with environmental or administrative performance in 2021-2022, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.
3. THAT the option for a review of resource consents in June 2022 not be exercised, on the grounds that there are no unforeseen adverse environmental effects arising from the exercise of the consent.

These recommendations were followed.

4.4.5 Alterations to monitoring programme for 2022-2023

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

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

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

In the case of the Taranaki Fish and Game trout hatchery, the monitoring programme for 2021-2022 was unchanged from that of 2020-2021. It is now proposed that for 2022-2023, a similar level of monitoring is maintained. A recommendation to this effect is attached to this report.

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

4.5 Recommendation

1. THAT monitoring of abstraction to and discharges from Taranaki Fish and Game trout hatchery in the 2022-2023 year continue at the same level as in 2021-2022.
2. THAT should there be issues with environmental or administrative performance in 2022-2023, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

5 Tawhiti Stream Receiving Environment

5.1 Stream flow and stream temperature

Stream flow

Silver Fern Farms and Graeme Lowe Protein are required by consents 1103-4 (Silver Fern Farms) and 7611-2.1 (Graeme Lowe Protein) to jointly install and maintain a hydrological recording station on the Tawhiti Stream immediately downstream of the Silver Fern Farms and Graeme Lowe Protein sites, to measure and record the flow of the Tawhiti Stream. An appropriate station was installed in 2011, prior to the granting of consents 1103-4 and 7611-2.1.

The hydrograph for 2021-2022 is given in Figure 4.

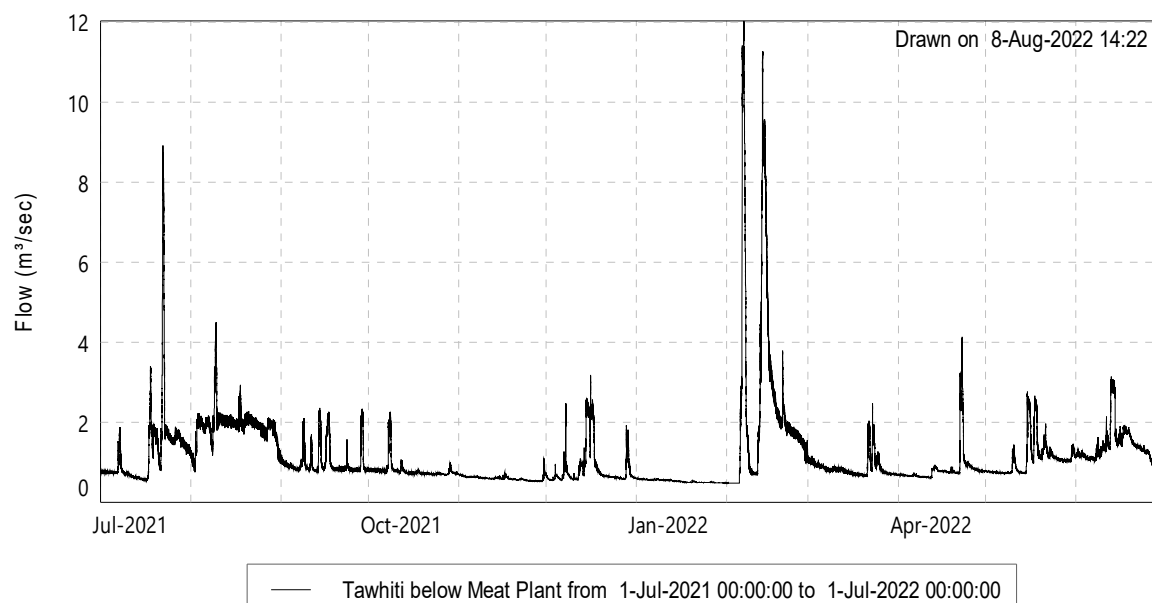


Figure 4 Flow (m³/s) in the Tawhiti Stream measured below the abstraction point of Silver Fern Farms from 1 July 2021 to 30 June 2022

The median recorded flow for the period under review was 797 L/s. The minimum recorded flow was 476 L/s, on 4 February 2022 at 0655 NZST.

Stream temperature

Silver Fern Farms and Graeme Lowe Protein are required by resource consents 1103-4 (Silver Fern Farms) and 7611-2.1 (Graeme Lowe Protein) to measure and record the temperature of their respective cooling water discharges, and of the Tawhiti Stream above and below the discharge point(s). The records must be transmitted directly to Council. These requirements may be suspended if the rate of cooling water discharge is below specified volumes for an extended period of time.

Silver Fern Farms has been discharging less than 100 m³/day of cooling water since the condenser cooling water system was decommissioned in December 2004, and Graeme Lowe Protein has not been discharging cooling water since the consent renewal in 2013. The Council has not required the temperature of cooling water or of the Tawhiti Stream above the discharge point to be monitored, but has required the continuation of temperature monitoring below the discharge point, at the Tawhiti Road Hydrometric Station.

The telemetered temperature record, from July 2021 to June 2022 is presented in Figure 5.

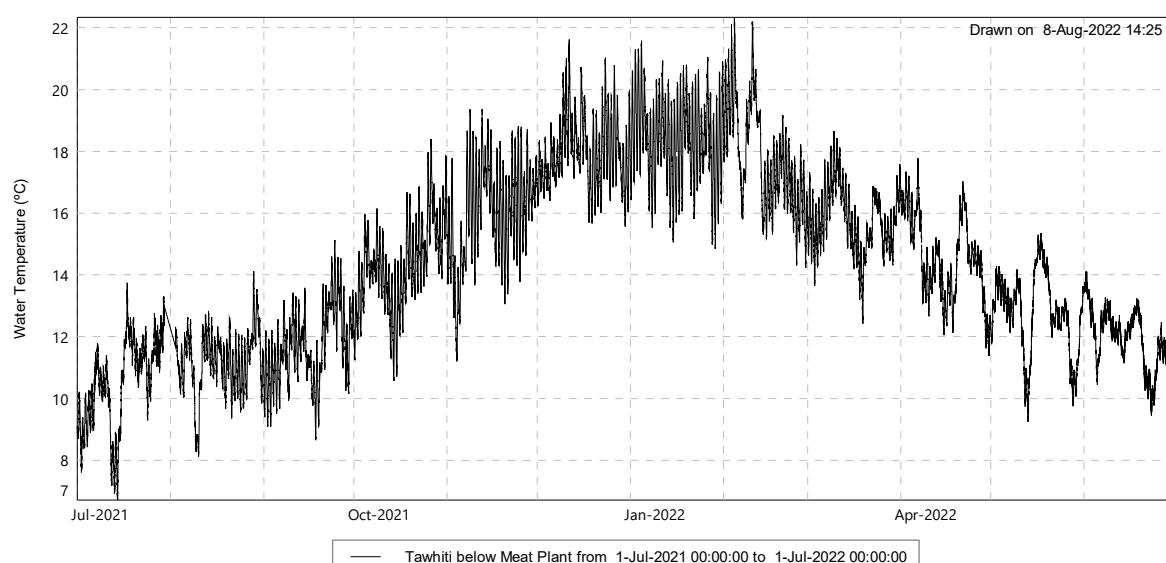


Figure 5 Temperature of Tawhiti Stream at Tawhiti Road, July 2021 – June 2022, °C

The recorded median temperature was 13.8°C. The maximum temperature recorded was 22.3 °C, on 4 February 2022 at 1545 NZST. The minimum temperature recorded was 6.7°C on 14 July 2021 at 0845 NZST. Temperature exceeded 20°C on 34 days, between 9 December 2021 and 11 February 2021, for periods of up to 17.5 hours (10 and 11 February 2022).

5.2 Results of physicochemical monitoring

The Tawhiti Stream was sampled at four sites, upstream and downstream of the various discharges, on four occasions in 2020-2021. The sites were sampled in accordance with the monitoring programme requirements allowing possible impacts from stormwater discharge and solid waste disposal practices to be assessed. The receiving water body is sampled for Silver Fern Farms, Graeme Lowe Protein and the Taranaki Fish and Game Council trout hatchery because all three sites discharge within the same reach of the Tawhiti Stream. The three sites therefore have the potential to discharge with combined effect and consequently are assessed in conjunction with each other.

Consents 5598-2 (Silver Fern Farms), 1104-4 (Graeme Lowe Protein) and 7546-1 (Taranaki Fish and Game Council) all contain conditions stating that the stream must not be made unsuitable for consumption by farm animals and that there must be no adverse effects on aquatic life.

Table 22 outlines the acceptable levels of contaminants for the protection of aquatic systems.

Table 22 Contaminant trigger levels drawn from the ANZECC Water Quality Guidelines for Fresh and Marine Waters, 2000

Contaminant	Acceptable levels for the protection of aquatic ecosystems	Acceptable level for stock drinking water
Biological oxygen demand (g/m ³)	Less than 2	-
Conductivity (mS/m @ 20°C) [µS/cm @ 25°C]	A change of less than 50 [587]	Less than 373 [4301]
Ammonia (g/m ³)	Less than 2.2	-
Nitrate/nitrite nitrogen (g/m ³)	Less than 1.5-4.0	-
pH	In the range of 6.6-8.0	-

Table 23 gives the results of the receiving water surveys at the pond outlet upstream of industrial discharge (TWH000295), 100 m upstream of Tawhiti Road (TWH000300), the culvert on Tawhiti Road (TWH000320), and 300 m downstream of Tawhiti Road (TWH000350). Refer to Table 3 for an explanation of sampling sites. It is noted that site TWH000300 was not sampled due to access difficulties in May and June 2022.

Table 23 Results of receiving water sampling conducted during 2021-2022

Date	Site	Time NZST	BOD ₅ g/m ³	Conductivity μ S/cm@ 25°C	NH ₄ g/m ³ N	NNN g/m ³ N	DRP g/m ³ P	SS g/m ³	pH	Turbidity FNU	Temp °C
09 Aug 2021 Flow 3817 L/s	1	09:50	1.6	243	0.068	2.1	0.025	48	7.3	26	9.4
	2	10:00	1.6	242	0.067	2.1	0.024	54	7.4	31	8.3
	3	11:45	1.7	244	0.074	2.1	0.028	46	7.4	31	8.4
	4	12:00	1.9	241	0.070	2.1	0.028	48	7.4	35	8.3
15 Dec 2021 Flow 2345 L/s	1	08:57	3.1	225	0.075	1.15	0.075	70	7.3	31	18.1
	2	11:30	2.4	230	0.065	1.17	0.075	85	7.6	32	19.9
	3	09:25	2.6	226	0.072	1.15	0.074	85	7.6	36	18.5
	4	09:47	2.8	226	0.072	1.17	0.076	79	7.6	41	18.6
27 May 2022 Flow 1084 L/s	1	09:01	< 0.4	274	0.035	2.6	0.015	20	7.6	13.9	9.7
	2	N/S									
	3	09:41	< 0.4	273	0.032	2.6	0.015	21	7.4	14	9.8
	4	10:05	< 0.4	283	0.034	2.6	0.014	19	7.4	13.9	9.6
21 Jun 2022 Flow 1440 L/s	1	10:30	0.9	268	0.028	2.8	0.011	16	7.5	13.2	9.4
	2	N/S									
	3	11:07	0.6	267	0.025	2.9	0.013	27	7.7	18.8	9.6
	4	11:21	0.5	275	0.022	2.8	0.012	27	7.7	14.4	9.7

N/S = not sampled

Sampling results show little variation in the tested parameters within the monitored reach of the Tawhiti Stream on the routine monitoring occasions. Variation between sampling occasions related largely to recent rainfall events in the catchment. All parameters, with the exception of biochemical oxygen demand, fell within the ANZECC guidelines for the protection of aquatic ecosystems on routine monitoring occasions during the year under review.

Total BOD was generally lower throughout the sampled reach than has been observed in previous monitoring years. On 15 December 2021 and 21 June 2022, as has been observed in some previous surveys, total BOD was higher at site 1 (upstream of all discharges) than the three downstream sites. The reason for this decrease in BOD remains unexplained.

5.3 Discussion of receiving environment monitoring results

The concentrations of most tested parameters were found to be similar between sites and generally within the ANZECC water quality guidelines. Total BOD in the Tawhiti Stream is occasionally elevated, and on some occasions it has been noted to decrease throughout the sampling reach. Total BOD exceeded the 2 g/m³ guideline at all four sites on one sampling occasion during the 2021-2022 year. On 15 December 2021, the ammonia in the discharge from Silver Fern Farms was substantially elevated, however there was no appreciable impact on the stream on this occasion.

The BOD in the discharge from the fish hatchery was at similar levels to those recorded in the Tawhiti Stream. Ammonia in this discharge also tends to be at higher levels than are recorded in the Tawhiti

Stream. However, the absolute levels of ammonia in the discharge are low and no appreciable impact on the instream ammonia is recorded.

6 Summary of recommendations

Silver Fern Farms Ltd

1. THAT monitoring undertaken for the Silver Fern Farms Ltd site in Hawera in the 2022-2023 year continue at the same level as in 2021-2022.
2. THAT additional inspections and monitoring of juvenile fish are undertaken in 2022-2023 in order to assess whether the weir and intake structure of Silver Fern Farms Ltd is presenting a barrier to fish passage.
3. THAT should there be issues with environmental or administrative performance in 2022-2023, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

Graeme Lowe Protein Ltd

1. THAT monitoring of consented activities at the Graeme Lowe Protein Ltd site in the 2022-2023 period continue at the same level as in 2021-2022.
2. THAT should there be issues with environmental or administrative performance in 2022-2023, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

Taranaki Fish & Game (trout hatchery)

1. THAT monitoring of abstraction to and discharges from Taranaki Fish and Game trout hatchery in the 2022-2023 year continue at the same level as in 2021-2022.
2. THAT should there be issues with environmental or administrative performance in 2022-2023, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

Glossary of common terms and abbreviations

The following abbreviations and terms are used within this report:

Biomonitoring	Assessing the health of the environment using aquatic organisms
BOD	Biochemical oxygen demand. A measure of the presence of degradable organic matter, taking into account the biological conversion of ammonia to nitrate
BODF	Biochemical oxygen demand of a filtered sample
Bund	A wall around a tank to contain its contents in the case of a leak
cfu	Colony forming units. A measure of the concentration of bacteria usually expressed as per 100 millilitre sample
Condy	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 25°C and expressed in $\mu\text{S}/\text{cm}$
FNU	Formazin nephelometric units, a measure of the turbidity of water
fresh	Elevated flow in a stream, such as after heavy rainfall
g/m^3	Grammes per cubic metre, and equivalent to milligrammes 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
Incident register	The Incident Register contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan
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
MALF	Mean annual low flow
mS/m	Millisiemens per metre
$\mu\text{S}/\text{cm}$	Microsiemens per centimetre
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)
NO_3	Nitrate, normally expressed in terms of the mass of nitrogen (N)
NTU	Nephelometric Turbidity Unit, a measure of the turbidity of water

O&G	Oil and grease, defined as anything that will dissolve into a particular organic solvent (e.g. hexane). May include both animal material (fats) and mineral matter (hydrocarbons)
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
Resource consent	Refer Section 87 of the RMA. Resource consents include land use consents (refer Sections 9 and 13 of the RMA), coastal permits (Sections 12, 14 and 15), water permits (Section 14) and discharge permits (Section 15)
RMA	Resource Management Act 1991 and including all subsequent amendments
SS	Suspended solids
Temp	Temperature, measured in °C (degrees Celsius)
Turb	Turbidity, expressed in FNU

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

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

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Appendix I

Resource consents held by industries in the Tawhiti Stream catchment

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

Water abstraction permits

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

Water discharge permits

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

Air discharge permits

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

Discharges of wastes to land

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

Land use permits

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

Coastal permits

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

Silver Fern Farms Ltd

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

Name of
Consent Holder: Silver Fern Farms Limited
PO Box 941
Dunedin 9054

Decision Date 18 March 2013

Commencement Date 18 March 2013

Conditions of Consent

Consent Granted: To take water from a dam and intake structure on the
Tawhiti Stream for general use in a meat processing plant
and for cooling purposes

Expiry Date: 1 June 2028

Review Date(s): June 2022

Site Location: Tawhiti Road, Hawera

Grid Reference (NZTM) 1711265E-5618342N

Catchment: Tangahoe

Tributary: Tawhiti

*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 3,500 cubic metres per day.
2. The volume of water used for general purposes (that is, for purposes other than cooling) shall not exceed 1,000 cubic metres per day.
3. The volume of water used for cooling shall not exceed 2,500 cubic metres per day. All used cooling water shall be returned to the Tawhiti Stream in accordance with consent 1103-4.
4. Before exercising this consent, the consent holder shall install, and thereafter maintain water meters and dataloggers. The water meters and dataloggers shall be tamper-proof and shall separately measure and record, to an accuracy of $\pm 5\%$, the rate and volume of water taken for:
 - (a) general purposes (condition 2); and
 - (b) cooling water (condition 3).

Records of the date, the time and the rate and volume of water taken for each use, at intervals not exceeding 15 minutes shall be kept and provided to the Chief Executive, Taranaki Regional Council in accordance with condition 8.

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 $\pm 5\%$.

The documentation shall be provided:

- (i) within 30 days of the installation of a water meter or datalogger;
- (ii) at other times when reasonable notice is given and the Chief Executive, Taranaki Regional Council has reasonable evidence that the equipment may not be functioning as required by this consent; and
- (iii) no less frequently than once every five years.

Consent 1091-4

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 meters and dataloggers shall be accessible to Taranaki Regional Council officers at all reasonable times for inspection and/or data retrieval.
8. The records of water taken shall:
 - (a) be transmitted directly to the Council's computer system, in a format suitable for providing a 'real time' record over the internet;
 - (b) be in a format that, in the opinion of the Chief Executive, Taranaki Regional Council, is suitable for auditing; and
 - (c) specifically record the water taken as 'zero' when no water is taken.
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 taking 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 2015 and/or June 2016 and/ or June 2022 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.

Transferred at Stratford on 26 November 2018

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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

Name of
Consent Holder: Silver Fern Farms Limited
PO Box 941
Dunedin 9054

Decision Date 18 March 2013

Commencement Date 18 March 2013

Conditions of Consent

Consent Granted: To discharge cooling water from a meat processing plant
into the Tawhiti Stream

Expiry Date: 1 June 2028

Review Date(s): June 2022

Site Location: Tawhiti Road, Hawera

Grid Reference (NZTM) 1711295E-5618303N

Catchment: Tangahoe

Tributary: Tawhiti

*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 cooling water discharged shall not exceed 2,500 cubic metres per day.
2. The discharge, in combination with the discharge authorised by consent 7611-2 (Graeme Lowe Protein Limited), shall not alter the ambient temperature of the receiving water by more than 3 degrees Celsius or cause it to exceed 25 degrees Celsius, as determined by simultaneous measurements immediately upstream and 150 metres downstream of the point of discharge.
3. From the date that the discharge first exceeds 100 m³ per day, the consent holder shall measure and record the temperature, to an accuracy of ± 0.1 °C, of the:
 - (a) cooling water discharge;
 - (b) Tawhiti Stream immediately upstream of the discharge point; and
 - (c) Tawhiti Stream 150 metres downstream of the discharge point.

Records of the date, the time and the water temperature at intervals not exceeding 15 minutes, shall be kept and provided to the Chief Executive, Taranaki Regional Council in accordance with condition 6.

Note: To avoid duplication this equipment may be installed and maintained jointly with the holder of Consent 7611-2 (Graeme Lowe Protein Limited)

4. From the date that the discharge first exceeds 100 m³ per day, the consent holder shall install, and thereafter maintain a water meter and datalogger that measures and records the rate and volume of cooling water discharged, to an accuracy of $\pm 5\%$. Records of the date, the time and the rate and volume of cooling water discharged at intervals not exceeding 15 minutes shall be kept and provided to the Chief Executive, Taranaki Regional Council in accordance with condition 6.

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 Chief Executive, Taranaki Regional Council may suspend the requirements for measuring and recording specified in condition 3 and/or condition 4 if the rate of discharge of cooling water is less than 100 m³/day for an extended period of time. The measuring and recording required by these conditions must resume before the discharge exceeds 100 m³/day again.
6. The records of cooling water discharged, and temperature monitoring, shall:
 - (a) be transmitted directly to the Council's computer system, in a format suitable for providing a 'real time' record over the internet; and
 - (b) be provided in a format that, in the opinion of the Chief Executive, Taranaki Regional Council, is suitable for auditing.

Consent 1103-4

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 meters, dataloggers and temperature sensors shall be accessible to Taranaki Regional Council officers at all reasonable times for inspection and/or data retrieval.
9. Before exercising this consent, the consent holder shall install (in conjunction with Graeme Lowe Protein Limited), and thereafter maintain a hydrological recording station immediately downstream of the Silver Fern Farms Limited site to measure and record the flow of the Tawhiti Stream. The cost of installation and maintenance shall be met by the consent holders.
10. The discharge authorised by this consent shall contain no added contaminant other than heat when compared with the water abstracted by the consent holder under resource consent 1091-4.
11. The consent holder shall notify the Chief Executive, Taranaki Regional Council as soon as practicable if the volume discharged is to exceed 100 m³/day. Notification shall include the date and reason for the discharge, and shall be emailed to worknotification@trc.govt.nz.
12. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
13. This consent shall lapse on 31 March 2018, unless the consent is given effect to before the end of that period of 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 2015 and/or June 2016 and/ or June 2022 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.

Transferred at Stratford on 26 November 2018

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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

Name of
Consent Holder: Silver Fern Farms Limited
PO Box 941
Dunedin 9054

Decision Date: 24 August 2010

Commencement Date: 24 August 2010

Conditions of Consent

Consent Granted: To discharge screened paunch and stockyard solids onto
and into land by spreading and composting in the vicinity of
the Tawhiti Stream in the Tangahoe catchment

Expiry Date: 1 June 2028

Review Date(s): June 2022

Site Location: Tawhiti Road, Hawera

Grid Reference (NZTM) 1711349E-5618167N

Catchment: Tangahoe

Tributary: Tawhiti

*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 maximum volume of paunch and stockyard solids to be discharged to land at the paunch disposal area shall not exceed of 4,500 tonnes in any processing year (1 October to 30 September).
2. The consent holder shall keep records of the volumes of paunch and stockyard solids discharged to land. These records shall be made available to the Chief Executive of Taranaki Regional Council upon request.
3. 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.
4. All areas used for the stockpiling and stabilisation of screened paunch and stockyard solids shall be bunded or run-off from these areas shall be diverted by a drain to the storage pond in order to ensure that no run-off from these areas enters the Tawhiti Stream.
5. There shall be no direct discharge of contaminants from the storage pond into the Tawhiti Stream.
6. Run-off stored in the storage pond will be pumped to the wastewater holding tank for treatment along with other effluent produced at the meat processing plant.
7. The consent holder shall prepare and thereafter maintain a management plan for the paunch and stockyard disposal area that, to the satisfaction of the Chief Executive of the Taranaki Regional Council, details how paunch disposal is to be managed to ensure there is no discharge of contaminants from this area into the Tawhiti Stream. The plan shall include but not necessarily be limited to:
 - a) Description of disposal areas and buffer zones;
 - b) Application rate and method;
 - c) Depth and frequency of coverage;
 - d) Composting management;
 - e) Prevention of run-off to the stream;
 - f) Minimisation of groundwater seepage to the stream; and
 - g) Contingency procedures.

Consent 4832-2

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 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.

Transferred at Stratford on 26 November 2018

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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

Name of
Consent Holder: Silver Fern Farms Limited
PO Box 941
Dunedin 9054

Decision Date: 18 March 2013

Commencement Date: 18 March 2013

Conditions of Consent

Consent Granted: To use an existing 6 metre high concrete and earth dam and associated intake structure to dam and divert the Tawhiti Stream

Expiry Date: 1 June 2028

Review Date(s): June 2022

Site Location: Tawhiti Road, Hawera

Grid Reference (NZTM) 1711196E-5618439N (Intake structure)
1711218E-5618472N (Dam)

Catchment: Tangahoe

Tributary: Tawhiti

*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 dam shall include a concrete overflow channel that is roughened and has rocks fixed within it in a manner that, the Chief Executive, Taranaki Regional Council, has certified as providing passage for the migratory fish species that are likely to be present.
2. The structure licensed by this consent shall be maintained, to the satisfaction of the Chief Executive, Taranaki Regional Council. The dam shall remain the responsibility of the consent holder and be maintained so that:
 - a) it does not become blocked and at all times allows the free flow of water over it;
 - b) the integrity of the structure is protected;
 - c) fish passage is not impeded; and
 - d) any erosion, scour or instability of the stream bed or banks that is attributable to the structure authorised by this consent is remedied by the consent holder.
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 months 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.

Transferred at Stratford on 26 November 2018

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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

Name of
Consent Holder: Silver Fern Farms Limited
PO Box 941
Dunedin 9054

Decision Date: 27 July 2010

Commencement Date: 27 July 2010

Conditions of Consent

Consent Granted: To discharge stormwater from a meat processing plant into the Tawhiti Stream in the Tangahoe catchment

Expiry Date: 1 June 2028

Review Date(s): June 2022 and/or within 3 months of receiving a notification under special condition 8

Site Location: Tawhiti Road, Hawera

Grid Reference (NZTM) 1711288E-5618349N

Catchment: Tangahoe

Tributary: Tawhiti

*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 stormwater discharge shall be from a catchment area on the site not exceeding 3.8 hectares.
3. Any significant volumes of hazardous substances (e.g. diesel fuel, hydrochloric acid and sulphuric acid) on site shall be:
 - a) contained in a double skinned tank, or
 - b) stored in a dedicated bunded area with drainage to sumps, or to other appropriate recovery systems, and not directly to the site stormwater system.
4. Constituents of the discharge shall meet the standards shown in the following table.

<u>Constituent</u>	<u>Standard</u>
pH	Within the range 6.0 to 9.0
suspended solids	Concentration not greater than 100 gm ⁻³
oil and grease	Concentration not greater than 15 gm ⁻³

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

5. 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.
6. The consent holder shall maintain a contingency plan. The contingency plan shall be adhered to in the event of a spill or emergency and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, detail measures and procedures to be undertaken to prevent spillage or accidental discharge of contaminants not authorised by this consent and measures to avoid, remedy or mitigate the environmental effects of such a spillage or discharge.

7. The consent holder shall maintain a stormwater management plan. This plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council document how the site is to be managed in order to minimise the contaminants that become entrained in the stormwater. The plan shall include but not necessarily be limited to:

- a) the loading and unloading of materials;
- b) maintenance of conveyance systems;
- c) general housekeeping; and
- d) management of the interceptor system.

A Stormwater Management Plan template is available in the Environment section of the Taranaki Regional Council's web site www.trc.govt.nz.

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

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:

- a) during the month of June 2016 and/or June 2022; and/or
- b) within 3 months of receiving a notification under special condition 8 above;

for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 26 November 2018

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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

Name of
Consent Holder: Silver Fern Farms Limited
PO Box 941
Dunedin 9054

Decision Date: 31 August 2010

Commencement Date: 31 August 2010

Conditions of Consent

Consent Granted: To discharge emissions into the air from meat processing operations and associated activities

Expiry Date: 1 June 2028

Review Date(s): June 2022

Site Location: Tawhiti Road, Hawera

Grid Reference (NZTM) 1711249E-5618267N (Meat Processing Site)
1711306E-5618098N (Paunch Disposal Site)

*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 consent holder shall minimise the emissions and impacts of contaminants discharged into air from the site by:
 - a) the selection of the most appropriate process equipment;
 - b) process control equipment and emission control equipment;
 - c) the methods of control;
 - d) supervision and operation;
 - e) the proper and effective operation, supervision, maintenance and control of all equipment and processes; and
 - f) the proper care of all stock on the site.
3. The discharges authorised by this consent shall not give rise to an odour at or beyond the boundary of the site that is offensive or objectionable.
4. The consent holder shall prepare and thereafter maintain a management plan for the paunch disposal area that, to the satisfaction of the Chief Executive of the Taranaki Regional Council, details how paunch disposal is to be managed to ensure there is no offensive and objectionable odour beyond the boundary of the site.
5. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes to the processes or operations undertaken at the site, or the chemicals used or stored on site, that could alter the nature of the discharge. Any such change shall then only occur following receipt of any necessary approval under the Resource Management Act. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and be emailed to worknotification@trc.govt.nz.

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 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.

Transferred at Stratford on 26 November 2018

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

Graeme Lowe Protein Ltd

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

Name of
Consent Holder: Graeme Lowe Protein Limited
P O Box 505
HAWERA 4640

Decision Date: 22 September 2010

Commencement
Date: 22 September 2010

Conditions of Consent

Consent Granted: To discharge stormwater from buildings and paved areas at the site of a rendering facility into the Tawhiti Stream and into an unnamed tributary of the Tawhiti Stream at or about (NZTM) 1711317E-5618356N

Expiry Date: 1 June 2028

Review Date(s): June 2016, June 2022 and/or within 3 months of receiving a notification under special condition 9

Site Location: Tawhiti Road, Hawera

Legal Description: Lots 2-4 DP 20278 Blk VI Hawera SD

Catchment: Tangahoe

Tributary: Tawhiti

*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 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 stormwater discharge shall be from a catchment area on the site not exceeding 1.9 hectares.
3. Any significant volumes of hazardous substances [e.g. sodium metabisulphite, sodium hypochlorite and sulphuric acid] on site shall be:
 - a) contained in a double skinned tank, or
 - b) stored in a dedicated bunded area with drainage to sumps, or to other appropriate recovery systems, and not directly to the site stormwater system.
4. Constituents of the discharge shall meet the standards shown in the following table.

<u>Constituent</u>	<u>Standard</u>
pH	Within the range 6.0 to 9.0
suspended solids	Concentration not greater than 100 gm ⁻³
oil and grease	Concentration not greater than 15 gm ⁻³

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

5. 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.
6. The consent holder shall maintain a contingency plan. The contingency plan shall be adhered to in the event of a spill or emergency and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, detail measures and procedures to be undertaken to prevent spillage or accidental discharge of contaminants not authorised by this consent and measures to avoid, remedy or mitigate the environmental effects of such a spillage or discharge.

Consent 1104-4

7. Within three months of the commencement of this consent, the consent holder shall prepare and maintain a stormwater management plan. This plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council document how the site is to be managed in order to minimise the contaminants that become entrained in the stormwater. The plan shall include but not necessarily be limited to:
- a) the loading and unloading of materials;
 - b) maintenance of conveyance systems;
 - c) general housekeeping; and
 - d) management of the interceptor system.

A Stormwater Management Plan template is available in the Environment section of the Taranaki Regional Council's web site www.trc.govt.nz.

8. If, as a consequence of the activity authorised by this consent, an event occurs that may have a significant adverse effect on water quality at the registered drinking-water supply abstraction point for Fonterra [grid ref: 1712833E-5616248N] the consent holder shall, as soon as reasonably practicable, telephone the Taranaki Regional Council and Fonterra and notify them of the event.
9. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes to the processes or operations undertaken at the site, or the chemicals used or stored on site, that could alter the nature of the discharge. Any such change shall then only occur following receipt of any necessary approval under the Resource Management Act. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and be emailed to worknotification@trc.govt.nz.
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:
- a) during the month of June 2016 and/or June 2022; and/or
 - b) within 3 months of receiving a notification under special condition 9 above;

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 22 September 2010

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: Graeme Lowe Protein Limited
P O Box 505
HAWERA 4640

Decision Date: 16 November 2010

Commencement
Date: 16 November 2010

Conditions of Consent

Consent Granted: To discharge emissions into the air from rendering
operations and associated activities at or about (NZTM)
1711318E-5618468N

Expiry Date: 1 June 2028

Review Date(s): June 2016, June 2022

Site Location: Tawhiti Road, Hawera

Legal Description: Lot 1 DP 20278 Blk VI Hawera SD & Pt Lot 2 DP 3291 Blk
VI Hawera SD

*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

General

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. There shall be no objectionable or offensive odour to the extent that it causes an adverse effect at or beyond the boundary of the site.

Note: For the purposes of this condition:

- The consent holder's site is defined as Lot 1 DP 20278 Blk VI Hawera SD& Pt Lot 2 DP 3291 Blk VI Hawera SD; and
 - Assessment under this condition shall be in accordance with the Good Practice Guide for Assessing and Managing Odour in New Zealand, Air Quality Report 36, Ministry for the Environment, 2003.
3. Within three months of the granting of consent, the consent holder shall prepare an Air Discharge Management Plan for the site that, to the satisfaction of the Chief Executive of the Taranaki Regional Council, details how discharges to air from the site will be managed to ensure compliance with conditions 2 and 6. The plan shall include but not necessarily be limited to;
 - a) A description of the environmental effects being managed;
 - b) The identification of key personnel responsible for managing and implementing the management system for mitigating adverse effects;
 - c) A description of the activities on site and describe the main potential sources of odour emissions;
 - d) A description of storage and treatment procedures(including specification of storage times and preservative dosing concentrations) for ensuring that only high quality raw material is processed;
 - e) The identification and description of the odour and dust mitigation measures in place;
 - f) The identification and description of relevant operating procedures and parameters that need to be controlled to minimise emissions;

- g) A description of contingency procedures for addressing emergency situations at the plant (such as equipment failure or spillage of raw material or chemicals) which could result in a discharge to air of odorous emissions that are offensive and objectionable beyond the boundary of the plant;
- h) A description of monitoring and maintenance procedures for managing the odour mitigation measures including record keeping of control parameters and maintenance checks; and
- i) Details of staff training proposed to enable staff to appropriately manage the odour mitigation measures.

Thereafter, an updated plan shall be submitted to the Chief Executive of the Taranaki Regional Council every two years.

Process control

- 4. Emissions from all concentrated sources of odour relating to the rendering and blood processing activities undertaken on site, in particular from equipment used in the cooking, pressing and drying processes, must be treated in the biofilter prior to discharge.
- 5. The consent holder shall minimise the emissions and impacts of contaminants discharged into air from the site by:
 - a) the selection of the most appropriate process equipment; and
 - b) the proper and effective operation, supervision, maintenance and control of all equipment and processes.

Dust

- 6. The discharges authorised by this consent shall not give rise to suspended or deposited dust at or beyond the boundary of the site that, in the opinion of at least one enforcement officer of the Taranaki Regional Council, is offensive or objectionable. For the purpose of this condition, discharges in excess of the following limits are deemed to be offensive or objectionable:
 - a) dust deposition rate 0.13 g/m²/day; and/or
 - b) suspended dust level 3 mg/m³.

Review

7. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 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 16 November 2010

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: Graeme Lowe Protein Limited
P O Box 505
HAWERA 4640

Decision Date: 11 April 2013

Commencement Date: 11 April 2013

Conditions of Consent

Consent Granted: To take water from a dam and intake structure on the
Tawhiti Stream for cooling and general use at a rendering
plant

Expiry Date: 1 June 2028

Review Date(s): June 2015, June 2016, June 2022

Site Location: Tawhiti Road, Hawera

Legal Description: Lots 2-4 DP 20278 Blk VI Hawera SD (Site of take)

Grid Reference (NZTM) 1711265E-5618342N

Catchment: Tangahoe

Tributary: Tawhiti

*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 3,000 cubic metres per day (34.7 litres per second).
2. The volume of water used for general purposes (that is, for purposes other than cooling) shall not exceed 500 cubic metres per day.
3. The volume of water used for cooling shall not exceed 2,500 cubic metres per day. All used cooling water shall be returned to the Tawhiti Stream in accordance with consent 7611-2.
4. Before exercising this consent, the consent holder shall install, and thereafter maintain water meters and dataloggers. The water meters and dataloggers shall be tamper-proof and shall separately measure, to an accuracy of ± 5 , and record the rate and volume of water taken for:

(a) general purposes (condition 2); and

(b) cooling water (condition 3).

Records of the date, the time and the rate and volume of water taken at intervals not exceeding 15 minutes shall be kept and provided to the Chief Executive, Taranaki Regional Council in accordance with condition 8.

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 $\pm 5\%$.

The documentation shall be provided:

- (i) within 30 days of the installation of a water meter or datalogger;
- (ii) at other times when reasonable notice is given and the Chief Executive, Taranaki Regional Council has reasonable evidence that the equipment may not be functioning as required by this consent; and
- (iii) no less frequently than once every five years.

Consent 7610-2

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 meters and dataloggers shall be accessible to Taranaki Regional Council officer's at all reasonable times for inspection and/or data retrieval.
8. The records of water taken shall:
 - (a) be transmitted directly to the Council's computer system, in a format suitable for providing a 'real time' record over the internet;
 - (b) be in a format that, in the opinion of the Chief Executive, Taranaki Regional Council, is suitable for auditing; and
 - (c) specifically record the water taken as 'zero' when no water is taken.
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 taking 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 2015 and/or June 2016 and/or June 2022 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 11 April 2013

For and on behalf of
Taranaki Regional Council

Chief Executive

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

Name of
Consent Holder: Graeme Lowe Protein Limited
PO Box 449
Hastings 4156

Decision Date
(Change): 3 May 2018

Commencement Date
(Change): 3 May 2018 (Granted Date: 11 April 2013)

Conditions of Consent

Consent Granted: To discharge cooling water from a rendering plant to the
Tawhiti Stream

Expiry Date: 1 June 2028

Review Date(s): June 2022

Site Location: Tawhiti Road, Hawera

Grid Reference (NZTM) 1711295E-5618303N

Catchment: Tangahoe

Tributary: Tawhiti

*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 cooling water discharged shall not exceed 2,500 cubic metres per day.
2. The discharge, in combination with the discharge authorised by consent 1103-4 (Silver Fern Farms Limited), shall not alter the ambient temperature of the receiving water by more than 3 degrees Celsius or cause it to exceed 25 degrees Celsius, as determined by simultaneous measurements immediately upstream and 150 metres downstream of the point of discharge.
3. From the date that this consent is first exercised, the consent measure and record the temperature, to an accuracy of ± 0.1 °C, of the:
 - (a) cooling water discharge;
 - (b) Tawhiti Stream immediately upstream of the discharge point; and
 - (c) Tawhiti Stream 150 metres downstream of the discharge point.

Records of the date, the time and the water temperature at intervals not exceeding 15 minutes, shall be kept and provided to the Chief Executive, Taranaki Regional Council in accordance with condition 6.

Note: To avoid duplication this equipment may be installed and maintained jointly with the holder of Consent 1103-4 (Silver Fern Farms Limited).

4. Before exercising this consent, the consent holder shall install, and thereafter maintain a water meter and datalogger that measures and records the rate and volume of cooling water discharged to the Tawhiti Stream, to an accuracy of $\pm 5\%$. Records of the date, the time and the rate and volume of cooling water discharged at intervals not exceeding 15 minutes shall be kept and provided to the Chief Executive, Taranaki Regional Council in accordance with condition 6.

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 Chief Executive, Taranaki regional Council may suspend the requirements for measuring and recording specified in condition 3 and/or condition 4 if there is to be no discharge of cooling water for an extended period of time. The monitoring and recording required by these conditions must resume before the discharge recommences.

Consent 7611-2.1

6. The records of cooling water discharged and temperature monitoring, shall:
 - (a) be transmitted directly to the Taranaki Regional Council's computer system, in a format suitable for providing a 'real time' record over the internet; and
 - (b) be provided in a format that, in the opinion of the Chief Executive, Taranaki Regional Council, is suitable for auditing.
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 meters, dataloggers and temperature sensors shall be accessible to Taranaki Regional Council officer's at all reasonable times for inspection and/or data retrieval.
9. Before exercising this consent, the consent holder shall install (in conjunction with Silver Fern Farms Limited), and thereafter maintain a hydrological recording station immediately downstream of the Graeme Lowe Protein Limited site to measure and record the flow of the Tawhiti Stream. The cost of installation and maintenance shall be met by the consent holder.
10. The discharge authorised by this consent shall contain no added contaminant other than heat when compared with the water abstracted by the consent holder under resource consent 7610-2.
11. The consent holder shall notify the Chief Executive, Taranaki Regional Council before this consent is first exercised. Notification shall include the time and date the discharge is to commence, and shall be emailed to worknotification@trc.govt.nz.
12. When the consent is exercised the consent holder shall, in consultation with Ngati Ruanui Iwi, review the environmental monitoring that is being undertaken on the Tawhiti Stream and ensure that additional monitoring is undertaken if it is needed to determine the effects of the exercise of this consent on stream ecology. Monitoring that may be undertaken to determine effects on stream ecology may include at least one of:
 - Macroinvertebrate Community Index (MCI);
 - Fish surveys including use of trapping, identifying and counting; and
 - Other methods that may be agreed between the consent holder and Ngati Ruanui.

Frequency of monitoring shall be determined at the time.

13. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
14. This consent shall lapse on 30 June 2023, unless the consent is given effect to before the end of that period of the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

Consent 7611-2.1

15. 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 2015 and/or June 2016 and/or June 2022 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 3 May 2018

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

Taranaki Fish and Game Council

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

Name of
Consent Holder: Taranaki Fish & Game Council
P O Box 4152
WANGANUI 4541

Decision Date: 29 July 2010

Commencement
Date: 29 July 2010

Conditions of Consent

Consent Granted: To take and use water from the Tawhiti Stream in the
Tangahoe catchment for trout hatchery purposes at or
about (NZTM) 1711249E-5618475N

Expiry Date: 1 June 2028

Review Date(s): June 2016, June 2022

Site Location: Tawhiti Road, Hawera

Legal Description: Pt Lot 2 DP 3291 Blk VI Hawera SD

Catchment: Tangahoe

Tributary: Tawhiti

*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 volume of water taken shall not exceed 11.4 litres per second.
2. 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 it.
3. The consent holder shall ensure that the intake structure is screened and designed to avoid fish entering the intake.
4. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2016 and/or June 2022, 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 July 2010

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: Taranaki Fish & Game Council
P O Box 4152
WANGANUI 4541

Consent Granted
Date: 1 April 2010

Conditions of Consent

Consent Granted: To discharge water containing contaminants into the
Tawhiti Stream in the Tangahoe catchment from a trout
hatchery facility at or about (NZTM) 1711201E-5618461N

Expiry Date: 1 June 2028

Review Date(s): June 2016, June 2022

Site Location: Tawhiti Road, Hawera

Legal Description: Pt Lot 2 DP 3291 Blk VI Hawera SD

Catchment: Tangahoe

Tributary: Tawhiti

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 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. That allowing for a mixing zone of 25 metres, the discharge shall not give rise to any 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 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.
3. No additional chemical except potassium permanganate at a rate no higher than 20 ml/300 litres of water shall be added to the water abstracted [as described in the application].
4. No water through-flow shall be provided to those troughs receiving salt treatment.
5. If, as a consequence of the activity authorised by this consent, an event occurs that may have a significant adverse effect on water quality at Fonterra's registered drinking-water supply abstraction point [grid ref: 1711488E-5614967N] the consent holder shall, as soon as reasonably practicable, telephone the Taranaki Regional Council and [Fonterra Co-operative Group] and notify them of the event.
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 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 April 2010

For and on behalf of
Taranaki Regional Council



Director-Resource Management

Appendix II

Categories used to evaluate environmental and
administrative performance

Categories used to evaluate environmental and administrative performance

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

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

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

Environmental Performance

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

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

For example:

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

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

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

Administrative performance

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

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

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

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

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