Silver Fern Farms Ltd Waitotara

Monitoring Programme

Annual Report

2021-2022

Technical Report 2022-47

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Taranaki Regional Council

Taranaki Regional Council
Private Bag 713
Stratford

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Executive summary

Silver Fern Farms Ltd (Silver Fern Farms) operates a meat processing plant located on Wai-inu Beach Road, Waitotara in the Waitotara catchment. This report, for the period 1 October 2021 to 30 September 2022 coincides with the processing season. It describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess Silver Fern Farms' environmental and consent compliance performance during the period under review. The report also details the results of the monitoring undertaken and assesses the environmental effects of Silver Fern Farms' activities.

During the monitoring period, Silver Fern Farms demonstrated a good level of environmental performance and an improvement is required in the level of administrative performance.

Silver Fern Farms holds five resource consents, which include a total of 51 conditions setting out the requirements that they must satisfy. Silver Fern Farms holds resource consents to allow it to take and use groundwater and spring water, to discharge wastes by spray irrigation to land, to discharge stormwater and cooling water to an unnamed tributary of the Waitotara River, and to discharge emissions into the air. A review of the consent for the discharge of wastewater to land (consent 2260-3) was initiated in June 2022 as per the recommendations of the 2020-2021 Annual Report.

The Council's monitoring programme for the year under review included four inspections, and the collection of four wastewater and 28 groundwater samples for physicochemical analysis. Silver Fern Farms supplied records of their own monitoring, as well as records of the volume of water abstracted and the volume of wastewater discharged.

No breaches of the daily abstraction limits were recorded during the monitoring period. There were also no exceedances in the groundwater abstraction rate that were above the permitted measurement error of the metering devices. However compliance of the abstraction rate from the spring could not be assessed due to a lack of data. The continued required accuracy of the water level data could also not be assessed. No enforcement action has been taken as both Silver Fern Farms and the Council have been affected by problems with the monitoring, recording and/or telemetry equipment in recent years. The Council is working with Silver Fern Farms to bring about the necessary improvements. The Council is also continuing to work with Silver Fern Farms to ensure that there are adequate validation and/or verification procedures in place to confirm the accuracy of the groundwater level measuring devices complies with the requirements of the groundwater abstraction consent.

There were no issues found in relation to the discharges to air from either the plant site or the irrigation activities.

There was a spill on site that resulted in an unauthorised discharge of a cleaning product from the site that reached surface water. Although there was no evidence of any significant adverse effects as a result of the spill, the contingency plan in place for the site was not followed. An infringement notice was issued.

During the year, Silver Fern Farms demonstrated an overall good level of environmental performance and an improvement was required in the administrative performance with the resource consents as defined in Appendix II. The Council is continuing to work with Silver Fern Farms to ensure that appropriate and sustainable abstraction records are maintained and provided to Council, and that the management plans include the required information such that they can be certified by Council. A review of consent 2260-3.1 was initiated during the period under review. This is to ensure that the conditions are adequate to deal with any adverse effects (including potential effects) on the environment, arising from the exercise of this consent. This review was initiated due to the elevated nitrate concentrations found in the vicinity of the Longview Farm irrigation area.

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.

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

This report includes 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 for the period October 2021 to September 2022 by the Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents held by Silver Fern Farms Ltd (Silver Fern Farms). Silver Fern Farms operates a meat processing plant situated on Wai-inu Beach Road at Waitotara, in the Waitotara catchment. The monitoring period coincides with the plant's processing season.

The report includes the results and findings of the monitoring programme implemented by the Council in respect of the consents held by Silver Fern Farms that relate to abstraction of water, discharge of wastes by spray irrigation to land, discharge of stormwater and cooling water in the Waitotara catchment, and the air discharge permit held by Silver Fern Farms to cover emissions to air from the site.

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 Silver Fern Farm's use of water, land and air, and is the twenty-eighth combined annual report by the Council for this meat processing plant.

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 though annual programmes;
- the resource consents held by silver Fern Farms in the Waitotara catchment;
- the nature of the monitoring programme in place for the period under review; and
- a description of the activities and operations conducted at the Silver Fern Farms' site.

Section 2 presents the results of monitoring during the period under review, including scientific and technical data.

Section 3 discusses the results, their interpretations, and their significance for the environment.

Section 4 presents recommendations to be implemented in the 2022-2023 monitoring year.

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

1.1.3 The Resource Management Act 1991 and monitoring

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

a. the neighbourhood or the wider community around an activity, and may include cultural and social-economic effects;
b. physical effects on the locality, including landscape, amenity and visual effects;
c. ecosystems, including effects on plants, animals, or habitats, whether aquatic or terrestrial;

d. natural and physical resources having special significance (for example recreational, cultural, or aesthetic); and
e. risks to the neighbourhood or environment.

In drafting and reviewing conditions on discharge permits, and in implementing monitoring programmes, the Council is recognising the comprehensive meaning of 'effects' inasmuch as is appropriate for each activity. Monitoring programmes are not only based on existing permit conditions, but also on the obligations of the RMA to assess the effects of the exercise of consents. In accordance with Section 35 of the RMA, the Council undertakes compliance monitoring for consents and rules in regional plans, and maintains an overview of the performance of resource users and consent holders. Compliance monitoring, including both activity and impact monitoring, enables the Council to continually re-evaluate its approach and that of consent holders to resource management and, ultimately, through the refinement of methods and considered responsible resource utilisation, to move closer to achieving sustainable development of the region's resources.

1.1.4 Evaluation of environmental and administrative performance

Besides discussing the various details of the performance and extent of compliance by the 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.

1.2 Process description

The meat processing plant was constructed in 1987 within pastoral lands beside Wai-inu Beach Road, approximately 3.5 km south of Waitotara and 3 km north of Wai-inu Beach. The location of the plant site is shown in Figure 1 and the areas where irrigation is permitted are shown in Figure 2. The nearest dwellings are farmhouses, situated about 900 m to the north and 1.2 km to the south-east. The Waitotara River is located approximately 450 m to the north of the plant.

The plant primarily slaughters and processes sheep and lambs, but is also capable of handling bobby calves and goats. During March 2019 operations were reduced from 7 days to 5 days a week. The majority of the processed output is exported. There are no fellmongery or rendering facilities, with all blood and renderable material taken off-site for processing.

Figure 1 Location of Silver Fern Farms Waitotara meat processing plant showing irrigation areas and groundwater monitoring points

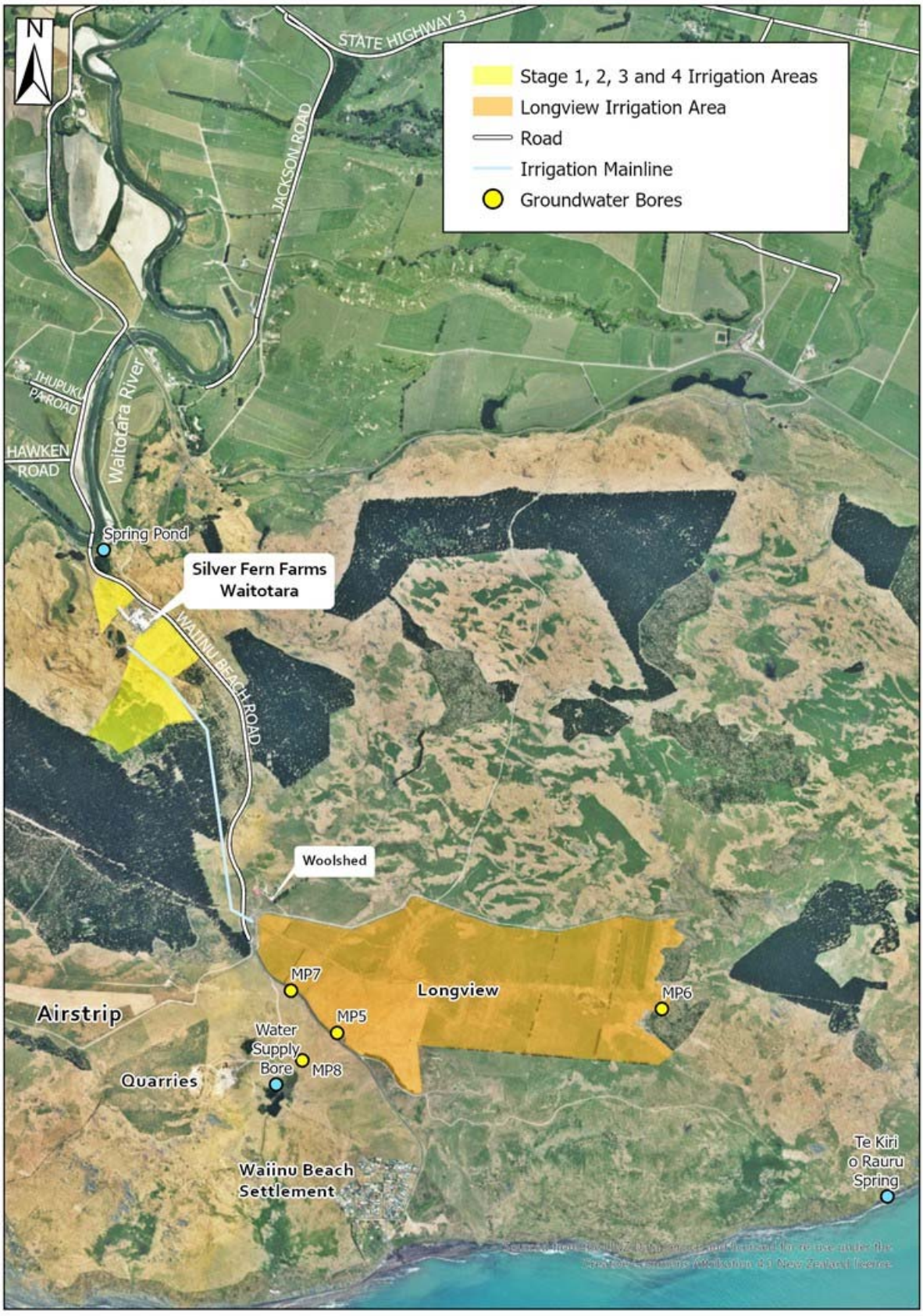

Figure 2 Location of Silver Fern Farms Waitotara meat processing plant showing irrigation areas and groundwater monitoring points

Ownership of the plant has changed twice. The original owner, Waitotara Meat Company, merged with Richmond Ltd in October 1999, which in turn amalgamated with PPCS Ltd in December 2004. PPCS Ltd was rebranded Silver Fern Farms Ltd in June 2008.

1.2.1 Water abstraction

The plant's water usage is proportional to the number of stock being processed through any particular period and the maximum daily water usage follows the same pattern as daily stock kill rate.

Water for operation of the plant is taken from two sources. Water of high quality is drawn from a deep aquifer via bores at the plant site (consent 2261-3.1). Water of lesser quality (high hardness and elevated nitrates) is piped from springs near the Waitotara River (consent 10256-1.0).

Three bores, each with the capacity to pump 770 m^3/d, pump from a depth of 122 to 140 m. Two bores are pumped at any one time, with the other being a reserve supply. The aquifer is recharged by rainfall/riverbed infiltration in the hill country north of Waitotara. Aquifer analysis undertaken by Silver Fern Farms, and checked by the Council, shows that the maximum sustainable yield is 3,000 m^3/d.

A secondary supply, for stock and yard washing purposes, is drawn at a rate of up to 350 m^3/d from springs which arise beside the Waitotara River. This is piped approximately 400 m to the plant across Wai-inu Beach Road.

1.2.2 Discharges to land

Wastewater derives primarily from two sources: the plant and the stockyards. Plant wastewater consists of wash-water from the washing of carcasses, pelts and offal, and from cleansing of process areas. Wastewater is produced from the external yards as a result of washing incoming stock, stockyard washings and of discharge from the truck-wash facility.

After primary treatment by screening, the wastewater is stored in two holding ponds before discharge onto land by spray irrigation. Screenings from inside the processing plant are taken off site for rendering. Screenings from the external yard areas, truck wash and sheep dip are spread mechanically on to the irrigation areas.

The sludge from the wastewater storage ponds is removed periodically. The sludge is stored on the edge of the pond to dewater. It is then transferred to the bunded holding area below the ponds to stabilise. Sludge remains in this area for several years before it is spread onto land.

The irrigation area was increased to a total area of 110.5 ha in January 2013. An area of 19.3 ha adjacent to the plant that was owned by Silver Fern Farms was irrigated by 15 independently controlled fixed sprinkler networks. However, the land around the Waitotara site has not been used since March 2019, with all wastewater irrigation occurring on Longview Farm. An area of 91.2 ha on the farm of Longview Ltd, at a location about 2 km away towards the coast along Wai-inu Beach Road, was irrigated by one of three rotary boom travelling irrigators. Reticulation is by a ring main, around which a travelling irrigator is rotated manually according to weather conditions and wastewater availability. Irrigator run lengths are about 400 m, with a wetted width of 45 m, giving an area of about 1.8 ha per application. An independent automated control system is in place for control of spray drift towards Wai-inu Beach. The reticulation system has been designed to enable the addition of future pipework to service additional consented land that is yet to be developed for irrigation. The areas that are consented for irrigation, but that do not have irrigation infrastructure are shown in Figure 3.

The land that is irrigated is largely undulating stabilised sand dunes, with an overlay of free draining yellow brown soils of very low natural fertility, that frequently have periods of soil moisture deficit. Properly managed, the irrigation system is expected to increase nutrient and moisture levels and moisture retention ability of the land while minimising the effect on groundwater quality.

The discharge of stormwater and wastewater is primarily managed by Silver Fern Farms Waitotara via the Wastewater Management Plan, which defines operational, monitoring and reporting procedures. The plan is essentially 'response driven' in that changes in operation of the treatment system are made in response to regular performance evaluations based on monitoring results.

Figure 3 Wastewater irrigation areas and discharge area nomenclature

1.2.3 Discharges to air

The sources of aerial emission from the plant are a boiler for hot water production, the stockyards, the wastewater ponds, the wastewater irrigation system, and miscellaneous plant processes.

1.3 Resource consents

Silver Fern Farms currently holds five resource consents, the details of which are summarised in Table 1 below. Copies of all permits held by Silver Fern Farms during the period under review are included in Appendix I.

Table 1 Consents held by Silver Fern Farms in relation to their Waitotara site

Consent number	Purpose	Granted	Review	Expires
Water abstraction permits				
2261-3.1	To take groundwater from three bores in the vicinity of the Waitotara River for meat processing purposes	2016	2028	2034

Consent number	Purpose	Granted	Review	Expires
10256-1.0	To take and use water from a spring for non-potable plant processes	2016	2025	2040
Water discharge permits				
5027-2	To discharge stormwater, defrost water and evaporative cooling water from a meat processing plant site into an unnamed tributary of the Waitotara River	2010	-	2028
Air discharge permit				
4629-3.1	To discharge emissions into the air from various activities associated with meat processing operations	2017	2028	2034
Discharges of waste to land				
2260-3.1	To discharge to land wastewater by spray irrigation, stockyard solid wastes and stabilised sludges by spreading, from meat processing operations in the vicinity of the Waitotara River, including associated discharges to air [currently under review]	2017	2025	2034

Silver Fern Farms was notified of the Councils intention to review consent 2260-3.1 in June 2022 as per the recommendations in the 2020-2021 Annual Report.

The review of the conditions is underway, with the specific conditions to be added or amended being:

- Addition of a condition defining and prohibiting ponding of wastewater should be added, separate from the requirement of the ILMP to address ponding. The ILMP should still require that the consent holder considers how to comply with this condition.
- Addition of a condition to specifically address remediation measures as currently required to be addressed in the ILMP by condition 5 (m). This should specifically require that remediation measures are required to address both short-term events and long term trends in contaminant levels to retain suitability of the area (including both groundwater and soil) for existing potential uses. A suggested mechanism for achieving this is via a remediation plan for the site and irrigation areas (including triggers for action, actions (including management and investigation actions), target outcomes and interim triggers and outcomes). This plan should be linked to irrigation management in the ILMP as specified under condition 5 (e). However, Council considers that this is currently inadequately covered in the ILMP and therefore suggests that this should be a separate plan to reinforce the importance of this component.
- An amendment to condition 15 extending the requirement to notify STDC of potential impacts upon the Wai-inu Beach municipal water supply to include chronic long term trends in contaminants as well as discrete events.
- Addition of a condition setting a contaminant limit for nitrate concentrations in groundwater, at the maximum allowable level permitted in the NZ drinking water standards. Should these standards change, a plan to reduce nitrate concentrations within 5 years (or agreed timeframe) should be prepared. Any plan should be supplied and certified by Council within 6 months of a change occurring to the NZ drinking water standards.
- Addition of a condition specifying limits on COD, as a contaminant of concern in the wastewater irrigation areas. This condition will also require the consent holder to send samples to an accredited laboratory or to undertake inter-laboratory comparisons with the Council.

- An amendment to condition 14 to require daily discharge volumes to be supplied to Council in a format suitable for providing a 'real time' record over the internet as per condition 16 (c).

1.4 Monitoring programme

1.4.1 Introduction

Section 35 of the RMA sets obligations upon the Council to gather information, monitor and conduct research on the exercise of resource consents within the Taranaki region. The Council is also required to assess the effects arising from the exercising of these consents and report upon them.

The Council may therefore make and record measurements of physical and chemical parameters, take samples for analysis, carry out surveys and inspections, conduct investigations and seek information from consent holders.

Monitoring at Silver Fern Farms' meat processing plant is carried out by both Silver Fern Farms and the Council. The purposes of monitoring are:

- to determine compliance with conditions on resource consents;
- to determine the effects on surface waters and groundwater, and air quality from the exercise of the resource consents; and
- to provide information for management of the wastewater disposal system.

The monitoring programme has developed with experience in operation of the plant. A comprehensive wastewater management plan has been prepared which specifically addresses monitoring of discharges to land.

1.4.2 Monitoring by Silver Fern Farms

Monitoring undertaken by Silver Fern Farms covers two main areas as described below.

Water abstraction

Silver Fern Farms monitors the volume of water abstracted. Groundwater level monitoring was instituted as a requirement of consent 9608, held by DR Wilson for abstraction of groundwater at a location across the Waitotara River for irrigation of pasture land. Consent 9608 requires that abstraction ceases if the water levels in the Silver Fern Farms supply bores GND0585 and GND1195 fall below 104 and 109 m respectively.

Consent 2261-3.1 requires that the Company record continuous water level data, to an accuracy of ±10 mm in a dedicated monitoring bore and any operational abstraction bores.

The telemetry of abstraction rate and of bore water level was commissioned on 24 September 2014. Continuous level monitoring data is recorded for the abstraction bores GND0230, GND0585, GND1195 and monitoring bore GND2593. The issues with the transmission of data that followed due to the reliability of the mobile telecommunications network in the area have been resolved by transitioning to the use of the Company's SCARDA system for the capturing and reporting of the data. However, there are on-going issues with the reliability of the groundwater level monitoring data and the reporting of the 'real time' abstraction data from the spring. The Council is working with Silver Fern Farms to ensure that these monitoring and reporting issues are resolved.

Level loggers are also installed in water quality monitoring bores GND0686 and GND3071. These are manually downloaded by Council staff.

The accurate water level information is necessary in order to inform the sustainability report that the Silver Fern Farms is required to provide on a three yearly basis (condition 12 of consent 2261-3.1). This report is next due prior to 30 September 2023.

Irrigation system management

The irrigation system is managed through monitoring and control of volumes of wastewater applied to 65 runs across 19 paddocks at Longview Farm. Results of irrigation monitoring are reported to the Council annually. It is noted that prior to March 2019 irrigation also occurred on 23 irrigation fields at the plant site.

In October 2009, Silver Fern Farms commenced monitoring the chemical composition of wastewater irrigated, on a monthly basis. This information is used mainly for more accurate measurement of nitrogen loadings on irrigation areas.

If soil analysis indicates an imbalance in soil nutrients as a result of the wastewater applied, then Silver Fern Farms is required, under a legal agreement with Longview Farm, to apply the appropriate supplementary corrective fertilisers. In order to more accurately estimate the total nitrogen loads at both of the irrigation areas records are maintained by Silver Fern Farms of the nitrogen content in any fertiliser applied to the Waitotara wastewater irrigation blocks. Longview Limited provide Silver Fern Farms with records of any nitrogen-based fertiliser that has been applied to the Longview Farm blocks utilised for wastewater irrigation.

The records kept include the name of fertiliser used, the rate applied (kg N/ha), the irrigation block this has been applied to, and the date of application. The additional nitrogen load from any fertiliser applications are also reported to Council.

Application of solids

Stockyard solids are applied to Stages 2 to 4 at the plant site in 4 m^3 loads every 1 to 3 days. Records are maintained of each application, with the total solids and total nitrogen concentrations determined four times per year in February, April, June, and December to allow the nutrient loadings to be calculated.

Stabilised sludge from ponds is also applied to Stages 2 to 4 at the plant site. Records are kept of the volume of material spread to land, and the total nitrogen and dry matter of the material is determined.

Soil analysis

Soil of the irrigated areas is tested biennially to determine top-dressing requirements for pasture nutrients and maintenance of soil structure. Samples are analysed for pH, Olsen phosphate, potassium, sulphate sulphur, calcium, magnesium, sodium, total nitrogen, ammoniacal nitrogen and nitrate nitrogen.

1.4.3 Monitoring by the Council

The consent monitoring programme for Silver Fern Farms' site undertaken by the Council consists of four primary components as described below.

Programme liaison and management

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

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

Review of Silver Fern Farms monitoring data

Monitoring data gathered by Silver Fern Farms are reviewed to determine compliance with resource consent conditions and to assess trends in water usage, groundwater levels, and in wastewater volumes and land

application. During the year under review, Silver Fern Farms and the Council were working towards getting systems in place to allow the 15 minute abstraction and water level data to be transmitted electronically to the Council daily. The remaining data is to be forwarded to the Council before 30 November each year, as per the Irrigation Land Management Plan.

Site inspections

An officer of the Council visits the Waitotara plant site at approximately quarterly intervals. Inspections are made of the water abstraction system, stockyards, truck wash, processing facilities, boiler, blood and offal holding areas, and wastewater treatment and waste disposal systems. An off-site odour assessment is conducted in the vicinity of the plant and irrigation areas. Monitoring results, irrigation records and activities which may influence plant wastewater quality are discussed. The site neighbourhood is surveyed for environmental effects.

Hydrological inspections are scheduled to be undertaken every two months to check accuracy and calibration of groundwater level sensors, download the level data from bores GND0686 and GND3071 and assess the telemetry of water level and abstraction data. During the year under review, fewer site visits were undertaken due to staffing issues. This resulted in a loss of data between June and December 2022.

Chemical sampling

The composition of wastewater irrigated and groundwater around irrigation areas is monitored quarterly. The wastewater is analysed to determine its organic and mineral strength, particularly for calculation of nitrogen loading on irrigation areas. Groundwater at seven locations, comprising six monitoring bores and a spring (Te Kiri o Rauru Spring), is analysed to determine the effects of irrigation on water quality, particularly on nitrate concentration.

2 Results

2.1 Water

2.1.1 Inspections

An officer of the Council carried out four routine inspections of Silver Fern Farms site during the 2021-2022 monitoring period. The inspections took place on 27 October and 9 December 2021 and 7 April and 4 August 2022. Each inspection by an officer of the Council is usually conducted in conjunction with a Silver Fern Farms employee.

Particular attention is given to the following items:

- water supply (bores and spring)
- wastewater treatment system
- land irrigation system
- by-product load-out and truck-wash areas
- chemical and fuel/oil storage areas
- stormwater/road drains
- domestic sewage disposal

Site management was generally found to be good and no significant environmental issues were noted. Matters were discussed at the time of the first two inspections during the year under review, and these are outlined below.

27 October 2021

The factory irrigation system was discussed during the inspection. The Silver Fern Farms representative advised that the valves were seized on the irrigation system surrounding the plant and that this areas had only been used for the spreading of solids in recent times. During this seasons shut down the Longview Farms irrigation system was being automated and the following year (the 2022 shutdown) Silver Fern Farms was intending to get the factory irrigation areas operational again. The inspecting officer was informed that the wastewater ponds were unlined and that Silver Fern Farms was planning to get one pond lined next year and the other lined the following year. At the factory site, smoke testing of the wastewater system had been undertaken and this confirmed that there was no wastewater getting into the stormwater system. Cameras had been used in the stormwater drains, as it had been identified that there were drains that were not on the site plan. These would be added to the computer-aided design drawings. Details of the recommended changes to the stormwater system would be provided to the Council and the Stormwater Management Plan would be updated. One of the drains to be diverted to the wastewater system was part of sub-catchment A at the rear of the site. At the time of inspection cleaning of the exterior of the buildings and roofs was taking place. This was resulting in a discharge to the stormwater system and road side drain, but the discharge was not reaching the sampling point at WTT000437. The discharge was clean and clear, free of scums, sheens and odours. A waste container was located in a sub-catchment area draining to stormwater that was found to contain material from the roof cleaning. A layer of residual rendering type material was present at the base of the container and it was identified that there was at risk of a discharge to stormwater. Silver Fern Farms undertook to have the container removed and placed in an area that drains to the wastewater system.

9 December 2021

It was noted that both wastewater ponds had storage available but they were reasonably full due to the recent poor weather not allowing irrigation to occur. Irrigation was occurring on Longview Farm. At the time of the inspection the irrigator was 2 hours into its run. There was deep ponding of effluent noted in a low point in the

paddock, and it was noted that recent rainfall may have contributed to this. The matter was raised with a Silver Fern Farms staff member, who was also surprised to see ponding in the sandy bottomed paddock. This was discussed and it was noted that best practice suggests that irrigation should not be undertaken with wet ground conditions. The area was re-inspected after two hours later. The irrigator was still in operation and the ponding had been absorbed by the soil. Silver Fern Farms undertook to investigate further to meet best practice.

2.1.2 Results of water abstraction monitoring

Process water for the site is drawn from three groundwater bores (GND0230, GND0585 and GND1195) and a spring via separate pumps. Consent 2261-3.1 covers the abstraction from the groundwater bores. The daily volume limit is 1,300 m^3 (15.0 L/s), at a maximum rate of 20 L/s. Consent 10256-1.0 covers the abstraction from the spring, with a daily volume limit of 350 m^3 at a maximum rate of 4.4 L/s.

Under the *Resource Management (Measurement and Reporting of Water Takes) Regulations 2010*, and consent 2261-3.1, Silver Fern Farms was required by 10 November 2014 to take continuous measurements and keep daily record of volume taken. Thereafter Silver Fern Farms was required to make the records available to the Council at all reasonable times, and to supply the record for the preceding 1 July to 30 June period by 31 July each year. In the case of the abstraction from the spring, the consent requires that the data shall be transmitted directly to the Council.

2.1.2.1 Groundwater abstraction

Silver Fern Farms installed new meters for each of the water abstraction pumps, with telemetry to Council from 24 September 2014. Previously, weekly records had been kept. The meters are calibrated every five years by a suitably qualified independent person.

Total daily abstraction volumes for the 2021-2022 monitoring period are shown in Figure 4 and Figure 10.

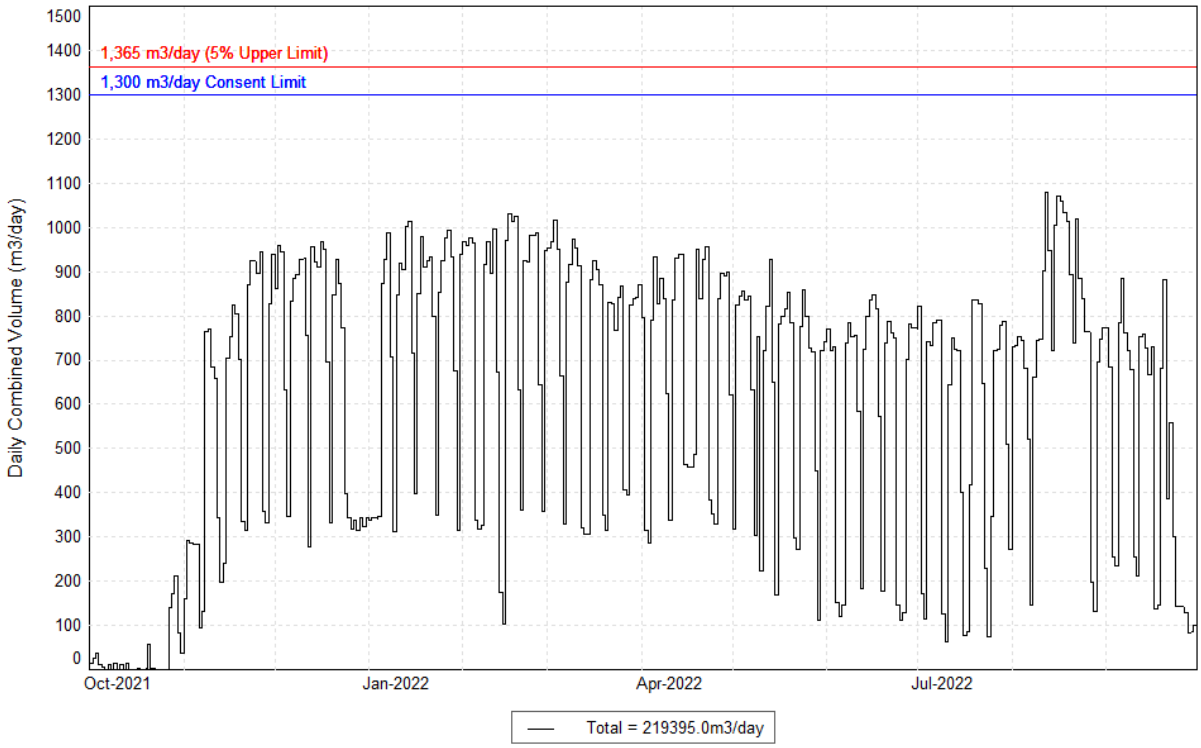

Figure 4 Daily abstraction volume under consent 2261-3, October 2021 to September 2022

The daily abstraction rate from the groundwater bores was within the limit of 1,300 m^3/d set on consent 2261-3.1, throughout the monitoring period.

The total volume abstracted over the 12-month period ending 30 September 2021 was approximately 253,347 m^3 195,983 m^3, of which 219,395 m^3 was taken from the deep aquifers (consent 2261-3) and 33,952 m^3 from the spring beside the Waitotara River (consent 10256-1).

Monthly maximum total instantaneous abstraction rates (L/s) for 2021-2022 are presented in Table 2, with the monthly average values for comparison. During the year under review the maximum instantaneous abstraction limit of 20 L/s was exceeded on a number of occasions. However, the flow meters have an accuracy of ± 5%. Three flowmeters are grouped together, therefore error propagation methods are used to give a combined accuracy of ± 9% for the total rate of take for the three flowmeters. This was complied with throughout the 2021-2022 year.

Table 2 Monthly average and maximum 15 minute average groundwater abstraction rates 2021-2022, 2261-3

Month	Average daily abstraction (L/s)	Maximum total 15 minute average abstraction (L/s)	Number of days per month total 15 minute average abstraction limit exceeded	
			Over limit (20.0 L/s)	Over limit+9% (22.0 L/s)
October 2021	6.76	20.78	5	0
November 2021	19.79	20.56	15	0
December 2021	19	20.22	4	0
January 2022	18.83	20.11	1	0
February 2022	18.56	19.11	0	0
March 2022	18.54	18.78	0	0
April 2022	18.57	18.89	0	0
May 2022	18.68	19.67	0	0
June 2022	18.68	19.11	0	0
July 2022	17.33	19.03	0	0
August 2022	18.49	19.01	0	0
September 2022	17.22	19.12	0	0

The consent also requires the provision of a report assessing the sustainability of the aquifer that Silver Fern Farms is abstracting from on a three yearly basis. The next report, utilising the data up to 30 June 2023, is due by 30 September 2023.

2.1.2.2 Groundwater level monitoring

As outlined in Section 1.4.2, consent 2261-3.1 requires that Silver Fern Farms record continuous water level data, to an accuracy of ±10 mm in a dedicated monitoring bore (GND2593) and any operational abstraction bores. The current operational abstraction bores are GND0230, GND0585, and GND1195.

The abstraction rate and water level data provided for the year under review is shown in Figure 5, Figure 6 and Figure 7.

At GND0230, when abstraction is occurring from this bore the water level reduces by approximately 4 m to approximately 31 meters below ground level (mbgl), and generally recovers soon after the abstraction from this bore has ceased. It is noted that in May 2022 there are a number of occasions, when there is no reported abstraction occurring from this bore, on which the water level drops by approximately 80 m to

100.7 to 100.8 mbgl. This indicates that the water level in this aquifer may be affected by abstractions from the other bores at this time.

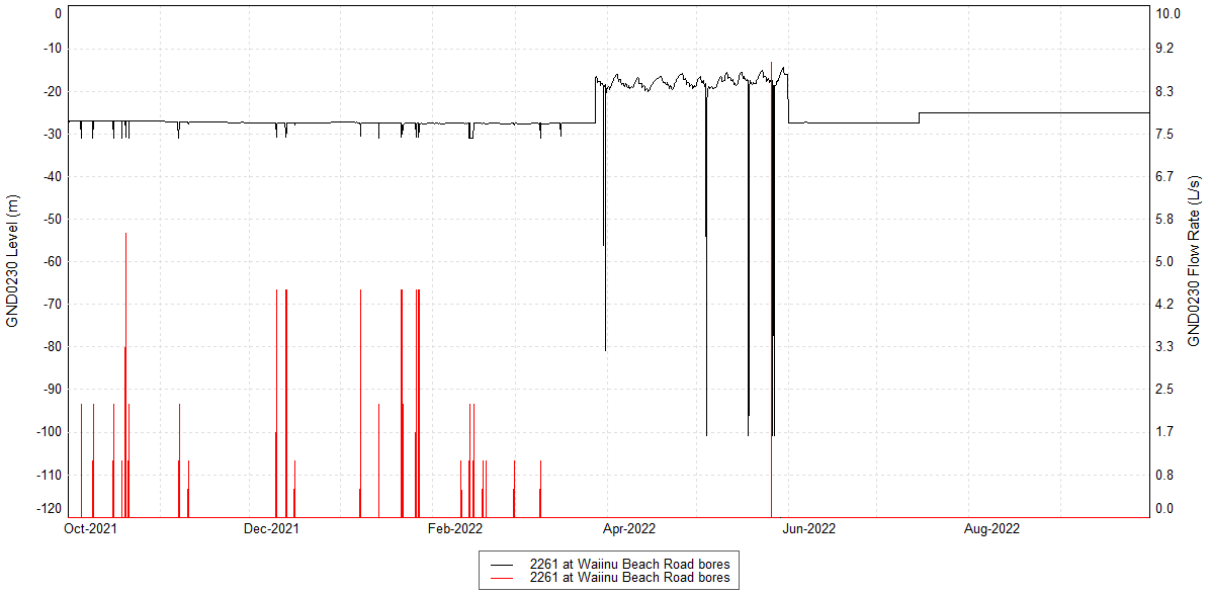

Figure 5 Water level and abstraction rate at GND0230

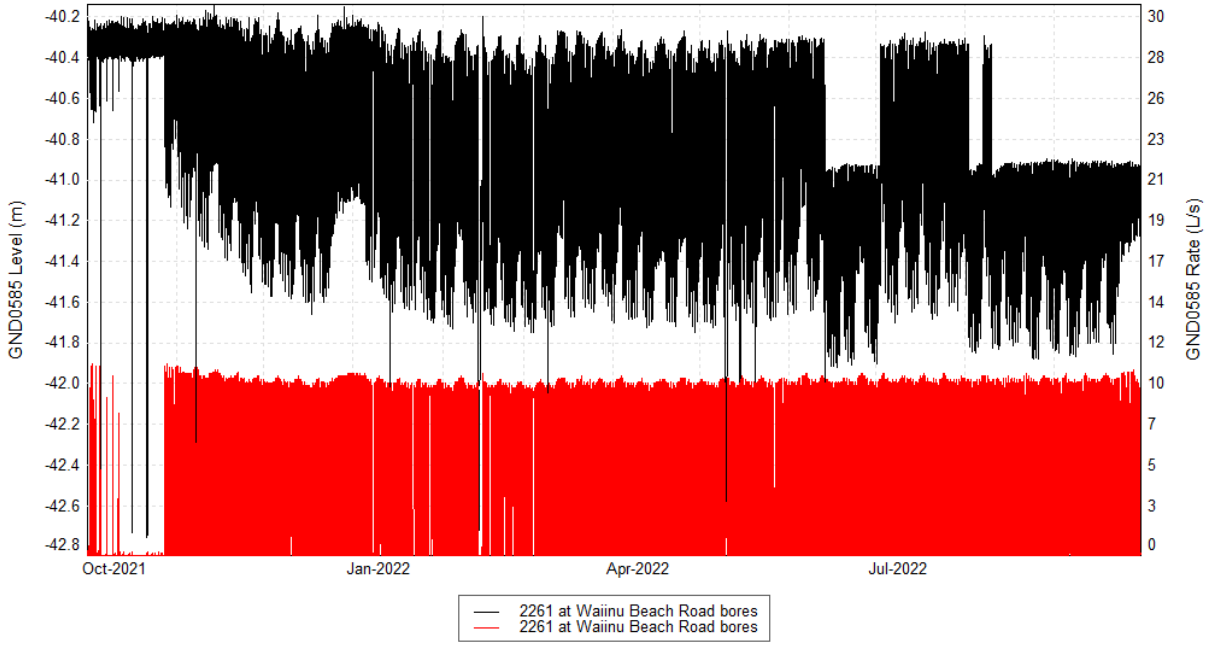

Figure 6 Water level and abstraction rate at GND0585

At GND0585, the water level in the bore typically changes by no more than 1.4 m during periods of abstraction.

At GND1195, the data provided indicated that the water level was static at 99.7 m between 1 October 2021 and 28 March 202, following which there was a data gap of approximately two and a half months. The minimum groundwater level recorded during abstraction was 106.5 mbgl. The highest groundwater level that was recorded between periods of abstraction was 55.9 mbgl. The data indicates that the minimum groundwater level recorded may be limited by the depth of placement of the level logger in this bore.

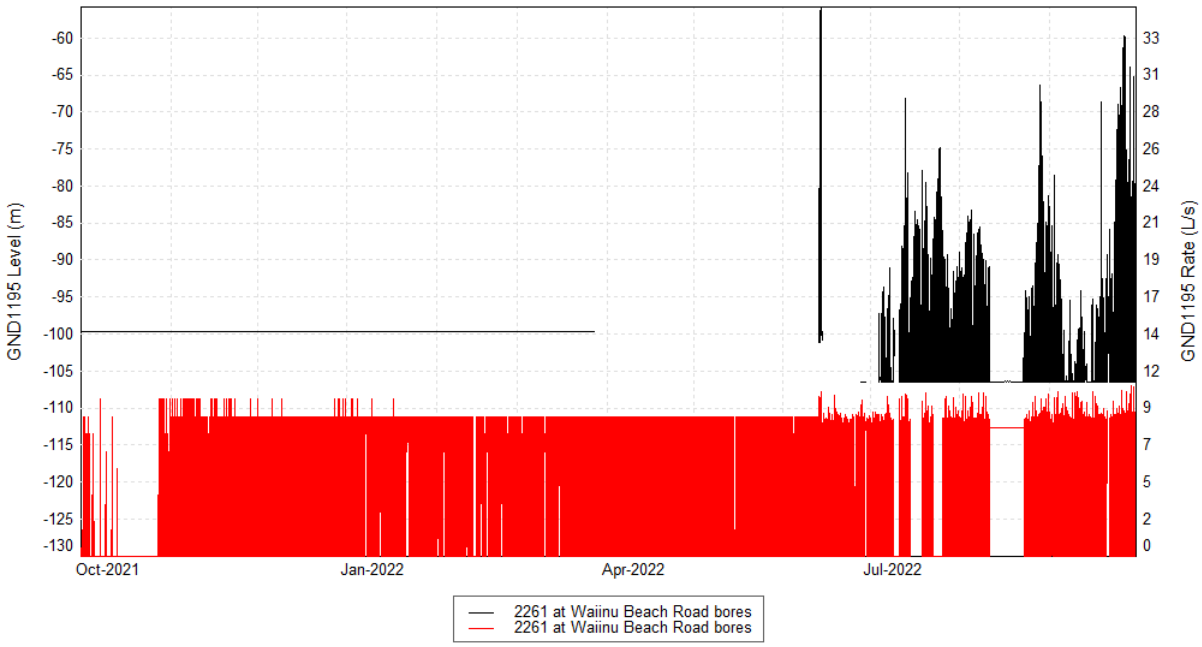

Figure 7 Water level and abstraction rate at GND1195

The groundwater level at the monitoring bore GND2593 is shown in Figure 8 , and the Council's data for the water level monitoring in the water quality bores GND0686 and GND3071 are shown in Figure 9. Long term data from these monitoring sites will aid in determining any consistent reductions in groundwater level that may occur if the abstraction rates are not sustainable.

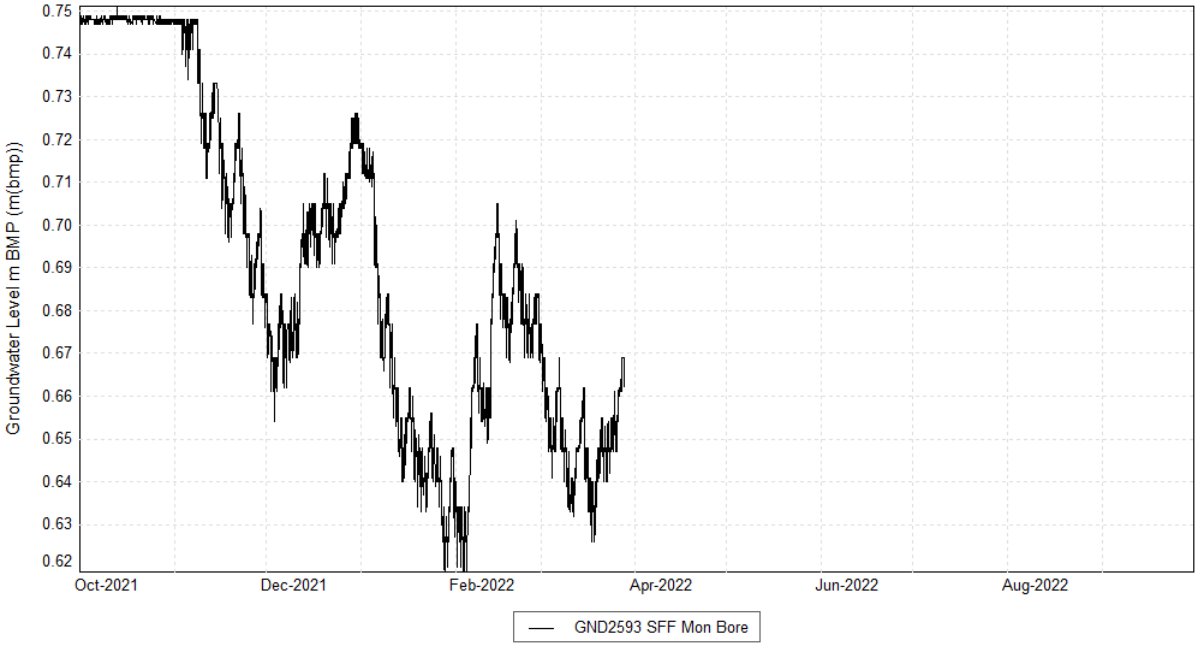

Figure 8 Water level at monitoring bore GND2593

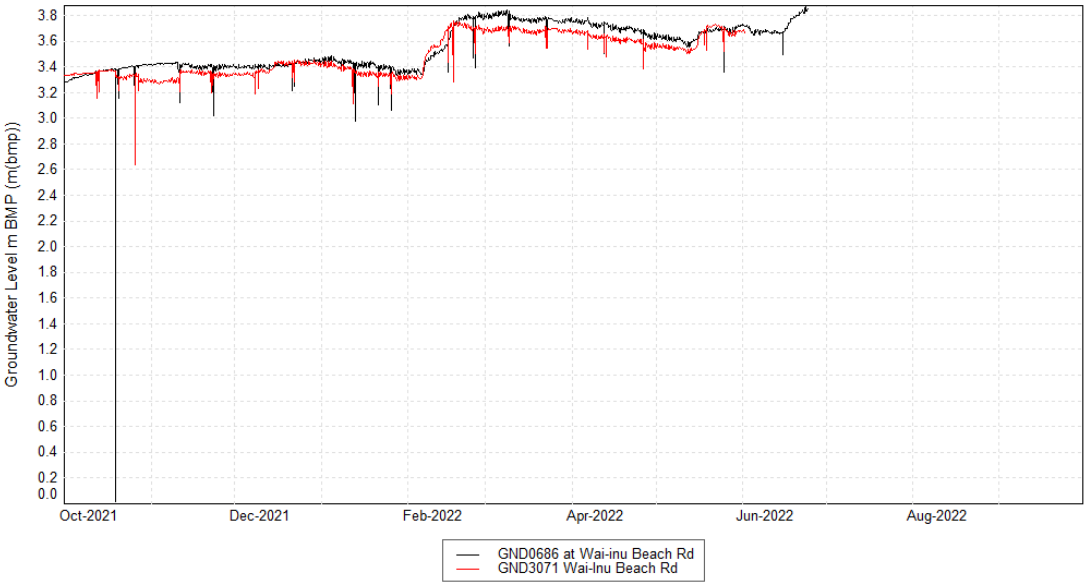

Figure 9 Water level at water quality monitoring bores GND0686 and GND3071

2.1.2.3 Spring

The maximum abstraction from the spring was no more than 299 m^3/day, well within the consented limit of 350 m^3/day. Like the production bores, the pump has been configured to only pump up to the maximum consented rate. The abstraction rate recorded up to 2 October 2021 was measured using a Council logger and telemetry system. This unit failed and the abstraction rate data from this time until the end of the monitoring period is a daily average based on the manually recorded daily take. Following the failure of this logger, the conditions relating to the recording and provision of data to the Council were not being complied with. The Company is in the process of restoring a suitable recording and reporting system. The new recording system was commissioned in November 2022, with the Company working on the provision of data.

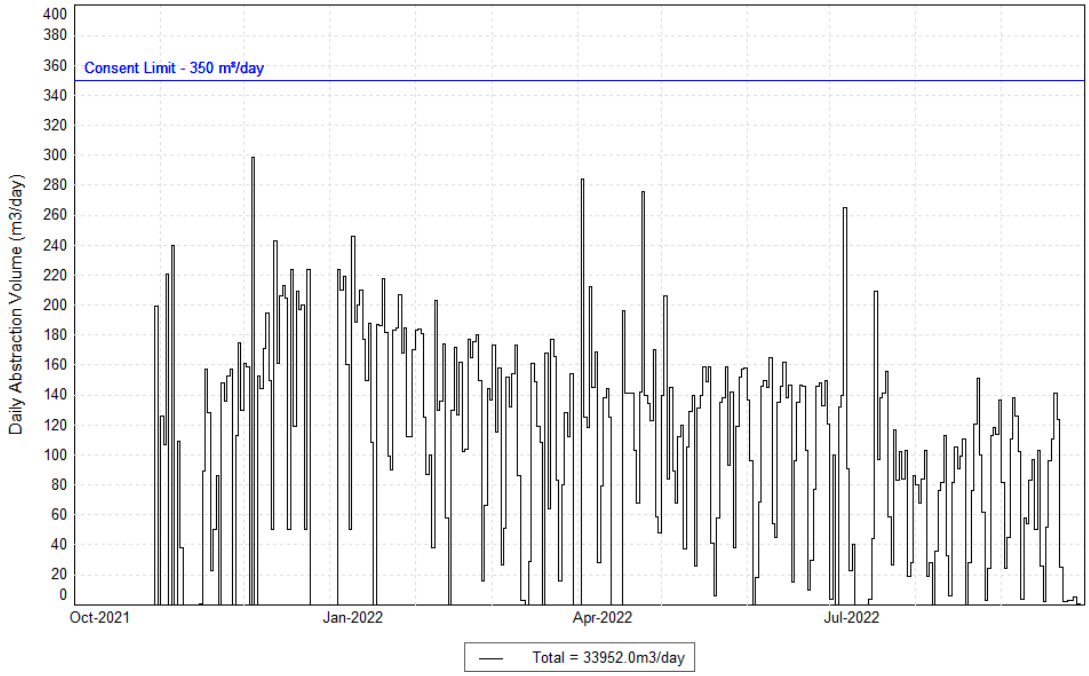

Figure 10 Daily abstraction volume under consent 10256-1, October 2021 to September 2022

2.1.3 Results of discharge monitoring

2.1.3.1 Wastewater monitoring

Irrigation volumes

Records of the volume of wastewater irrigated at Silver Fern Farms' site have been supplied by Silver Fern Farms in accordance with the Wastewater Management Plan. The reported total volume irrigated for the 12 month period ending 30 September 2022 was approximately 124,990 m^3, an increase of 22% from 2020-2021.

As in previous years, there is a reduced amount of wastewater irrigated when this is compared to the volume abstracted. Some of the reasons put forward by Silver Fern Farms for the difference in the volumes abstracted and discharged are;

- Not all waste streams are directed to wastewater for disposal, for example domestic sewage;
- Loss of boiler-generated steam to atmosphere;
- Discharged as defrost or cooling water;
- Residual water held within storage tanks.

Wastewater composition

The results from chemical monitoring of wastewater irrigated are given in Table 3. Samples were taken from a tap that was installed on the irrigation line in the pump shed beside Pond 2 (site code IND003001). The results of monitoring of Pond 2 are used below, as this is the regular wastewater holding pond, with Pond 1 only used in the event of an emergency (i.e. a problem with the irrigators or plant which results in the need to hold wastewater for a period of time).

Table 3 Chemical monitoring results for the irrigation pond 2021-2022

Parameter	Units	27 Oct 2021	21 Dec 2021	07 Apr 2022	04 Aug 2022
Time	NZST	09:20	10:30	09:00	09:45
Temperature	°C	19.6	26.3	22.8	11.4
Conductivity, 25°C	µS/cm	1,191	1,606	1,424	1,573
pH	pH units	7.5	7.2	7.3	7.4
Suspended solids	g/m^3	182	210	400	108
COD	g/m^3	300	510	790	180
Total nitrogen	g/m^3N	82	115	94	94
Ammonia nitrogen	g/m^3N	74	87	84	89
Nitrate + Nitrite	g/m^3N	0.05	0.04	< 0.02	0.13
Chloride	g/m^3	77	79	78	81
Total phosphorus	g/m^3P	8.7	19.7	17.4	15.4
Sodium	g/m^3	89	107	106	105
Potassium	g/m^3	26	107	98	108
Calcium	g/m^3	22	26	30	26
Magnesium	g/m^3	4.4	6.2	6.7	5.7

Parameter	Units	27 Oct 2021	21 Dec 2021	07 Apr 2022	04 Aug 2022
SAR	-	0.8	3.0	2.0	3.0
KAR	-	4.5	4.9	4.6	4.8
E. coli	MPN/100 mL	306	> 242,000	1,935,000	10,500

In general, the strength of the irrigated wastewater, in terms of mineral and nitrogen content (conductivity and total nitrogen), was similar to that of the previous several monitoring years. The organic strength, represented by chemical oxygen demand (COD), showed some variation, which may be related to the amount of blood present at the time of sampling.

It is noted that the annual average of the 11 samples collected by Silver Fern Farm that are used to calculate the irrigation loadings below was 94 g/m^3 N. This compares well to the average value of 96 g/m^3 for the four samples collected by Council over the same period. This indicates that there is unlikely to be any significant discrepancy in the self-monitoring data.

Nitrogen loading

Nitrogen loading on the irrigation areas is expressed as kilograms of nitrogen per hectare per year (kgN/ha/y). On the basis of the reported irrigation volumes and wastewater total nitrogen concentrations, as provided by Silver Fern Farms, the nitrogen loading for the fields on Longview Farm in 2021-2022 ranged from 3 to 241 kgN/ha/y. No wastewater irrigation occurred on 7 of the irrigation runs.

Adjacent to the plant nitrogen loading ranged from 2 to 17 kg/ha/y, which was all from the discharge of stockyard solids. There were no discharges of wastewater or stockyard solids to four fields. A more even distribution of the nitrogen loading was achieved in the year under review when compared to the previous year when there was no irrigation or solids disposal on eleven fields.

The loadings did not exceed the operational target of 300 kgN/ha/y on any field during the period under review.

2.1.3.2 Groundwater monitoring

The locations of the eight groundwater monitoring points (MPs) are depicted in Figure 1 and Figure 2 and described in Table 4. The four points near the plant are positioned approximately in a straight line running upslope (southward) from the Waitotara River towards the wetland which used to receive overflow from the wastewater holding ponds (pre 1999). The remaining points are downslope of the Longview Farm irrigation area.

MP1 is the spring from which water is drawn for stock and yard washing. The other five monitoring points (MP2- 6) are piezometer bores which are located at the periphery of irrigation areas.

MP7 and MP8 were installed in November 2019 to comply with an abatement notice requiring compliance with consent 2260-3.1. This consent required monitoring that included, the drilling and monitoring of bores down gradient of monitoring bore MP5 (GND0686). These bores were installed downslope of the Longview irrigation area specifically to assess the risk to the Wai-inu Beach municipal water supply.

Table 4 Groundwater monitoring sites

Name	Site Code	Location	Bore depth (mbgl)	Grid reference, NZTM	
MP1	GND1124	Spring N (downgradient) of Stage 1 irrigation area, adjacent to Waitotara River	-	1747905	55892552
MP2	GND000097	Piezometer, N (downgradient) corner of Stage 2 irrigation area	5.0	1748176	5588876
MP3	GND000098	Piezometer, S (upgradient) corner of Stage 2 irrigation area	5.8	1748231	5588618
MP4	GND000099	Piezometer, NE (downgradient) of Stage 3/4 irrigation area, adjacent to wetland	11.6	1748351	5588498
MP5	GND0686	Piezometer, W (downgradient) of Longview irrigation area	6.0	1749098	5586785
MP6	GND2510	Piezometer, SE (downgradient) of Longview irrigation area	9.0	1750792	5586905
MP7	GND3070	Piezometer, W (downgradient) of Longview irrigation area	8.8	1748863	5587001
MP8	GND3071	Piezometer, W (downgradient) of Longview irrigation area and MP5. 180 m upslope of the Wai-inu Beach municipal water supply bore.	12.0	1748921	5586644

The summary of chemical analysis results for the quarterly samples taken from the eight groundwater monitoring points is given in Table 5 and Table 6. No samples were obtained from MP7 during the period under review due to the bore being dry on all sampling occasions.

Table 5 Water quality results for monitoring bores at Silver Fern Farms, October 2021 to September 2022

Date	Site	Water level	Temperature	Conductivity 25°C	pH	COD	Ammoniacal nitrogen	Unionised ammonia	Nitrate + Nitrite	Chloride	Calcium	Magnesium	Potassium	Sodium	*E. coli*
		m	°C	µS/cm		g/m^3	g/m^3N	g/m^3 N	g/m^3 N	g/m^3	g/m^3	g/m^3	g/m^3	g/m^3	MPN /100 mL
27 Oct 2021	MP1	-	16.2	678	7.4	12	4.3	0.039	3.5	46	65	9.5	26	37	50
	MP2	2.94	15.5	599	7.5	14	< 0.010	-	5.6	17.7	78	6.9	38	17	< 1
	MP3	2.96	14.8	508	7.7	14	< 0.010	-	2.6	20	69	4.7	14.5	24	< 1
	MP4	5.68	15.7	461	7.7	12	< 0.010	-	7.6	17.6	63	4.1	6.9	25	< 1
21 Dec 2021	MP1	-	16	654	7.5	8	5.0	0.056	3.4	47	62	8.3	25	33	39
	MP2	3.00	16.5	564	7.6	12	< 0.010		5.5	19.1	76	6.7	39	16.8	< 1
	MP3	1.00	15.5	615	7.7	10	< 0.010		5.4	28	84	5.7	17	26	< 1
	MP4	6.86	16.3	463	7.8	8	< 0.010		7	15.5	62	4.3	7.5	26	< 1
7 Apr 2022	MP1	-	16.6	624	7.7	6	4.8	0.088	3	47	59	7.6	24	35	42
	MP2	5.90	16.7	629	8.0	8	< 0.010		5.2	17.1	87	7.3	37	18.5	< 1

Date	Site	Water level	Temperature	Conductivity 25°C	pH	COD	Ammoniacal nitrogen	Unionised ammonia	Nitrate + Nitrite	Chloride	Calcium	Magnesium	Potassium	Sodium	*E. coli*
		m	°C	µS/cm		g/m³	g/m³N	g/m³ N	g/m³ N	g/m³	g/m³	g/m³	g/m³	g/m³	MPN /100 mL
	MP3	5.90	16.5	535	8.1	11	0.024		8.1	24	75	5.3	14.1	21	< 1
	MP4	3.00	15.3	466	8.1	9	< 0.010		4.6	22	61	4.1	8.5	23	< 1
4 Aug 2022	MP1	-	15.5	668	7.5	13	6.0	0.064	4.1	47	62	7.9	25	37	40
	MP2	2.10	15.2	588	7.6	8	< 0.010	-	4.2	15.2	77	6.2	33	14.9	26
	MP3	N/R	15.1	507	7.7	10	< 0.010	-	9.9	22	69	5.1	13.1	16.4	1
	MP4	N/R	15.5	442	7.8	< 6	< 0.010	-	6.1	16	60	3.9	7.1	20	< 1

Key: N/R – not recorded

Table 6 Water quality results for monitoring bores on the Longview irrigation area from October 2021 to September 2022

Date	Site	Water level	Temperature	Conductivity 25°C	pH	COD	Ammonia	Nitrate + Nitrite	Chloride	Calcium	Magnesium	Potassium	Sodium	*E. coli*
		m	°C	µS/cm		g/m³	g/m³N	g/m³ N	g/m³	g/m³	g/m³	g/m³	g/m³	MPN/ 100 mL
27 Oct 2021	MP5	4.73	15.6	679	7.6	7	< 0.010	13.3	40	97	11.2	1.82	23	< 1
	MP6	6.15	15.3	1052	7.4	< 6	< 0.010	3.1	149	142	13.1	3.2	52	< 1
	MP8	4.78	15	720	7.6	< 6	< 0.010	7.4	39	98	12.4	2.3	39	< 1
21 Dec 2021	MP5	4.68	15.9	695	7.8	< 6	< 0.010	21	40	103	11.9	1.76	24	< 1
	MP6	6.6	16.4	1126	7.5	6	0.023	3.2	170	192	14.2	3.6	52	< 1
	MP8	5.78	17.6	720	7.8	< 6	< 0.010	8	39	92	11.6	2.2	36	< 1
7 Apr 2022	MP5	N/R	15	703	8	< 6	< 0.010	17.2	36	104	11.9	1.69	25	< 1
	MP6	7.6	15.8	1158	7.9	< 6	0.014	3.2	176	167	15.5	3.5	54	< 1
	MP8	4.4	15.6	725	8	< 6	< 0.010	8.1	42	103	12.5	2.4	38	1
4 Aug 2022	MP5	N/R	15.4	802	7.7	< 6	< 0.10	22	47	115	12.3	1.96	24	< 1
	MP6	N/R	15	1101	7.6	6	< 0.010	4.5	152	148	13.6	3.1	46	< 1
	MP8	N/R	15.5	789	7.6	< 6	< 0.010	8.5	43	101	12.1	2.4	40	< 1

Key: N/R – not recorded

The parameters of most interest with regard to the operation of the wastewater disposal system and the monitoring of its effects on the surrounding environment are the nitrogen species (nitrate and ammonia), the organic strength (COD), and the conductivity. Figure 11, Figure 12, and Figure 13 show how the levels of

conductivity, ammonia and nitrate, respectively, have varied through time (January 1994 to January 2021) for groundwater at the six MPs.

The spring water at MP1 is likely to be subject to the effects of activities at the surface, such as local farming, and particularly the irrigation of wastewater by Silver Fern Farms. In 2021-2022, the nitrate concentration did not show significant seasonal variation, with low levels of between 2.9 and 3.5 g/m^{3}N (Figure 14). The Silver Fern Farms self-monitoring results are in a similar range, being between 2.8 and 4.4 g/m^3. It is noted that during the year under review, the total coliforms in the samples collected by Silver Fern Farms were found to be greater than 200 cfu/100 ml between January and September 2022. In the 2020-2021 year nine of the 10 samples collected also contained greater than 200 cfu/100 ml of total coliforms.

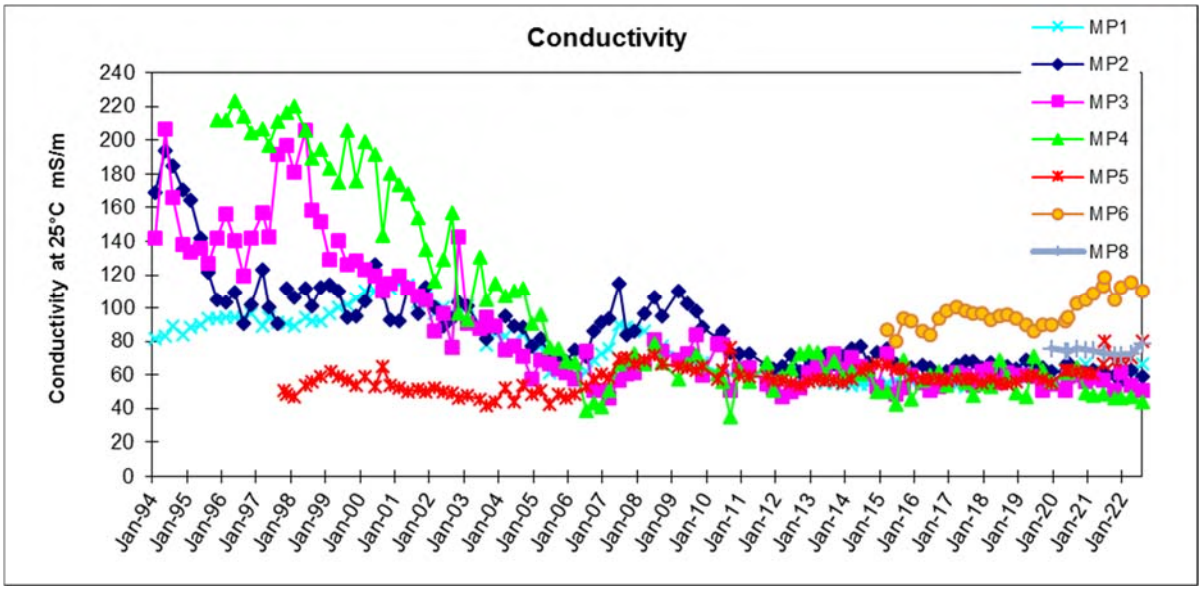

Figure 11 Conductivity at groundwater monitoring points, 1994-2022

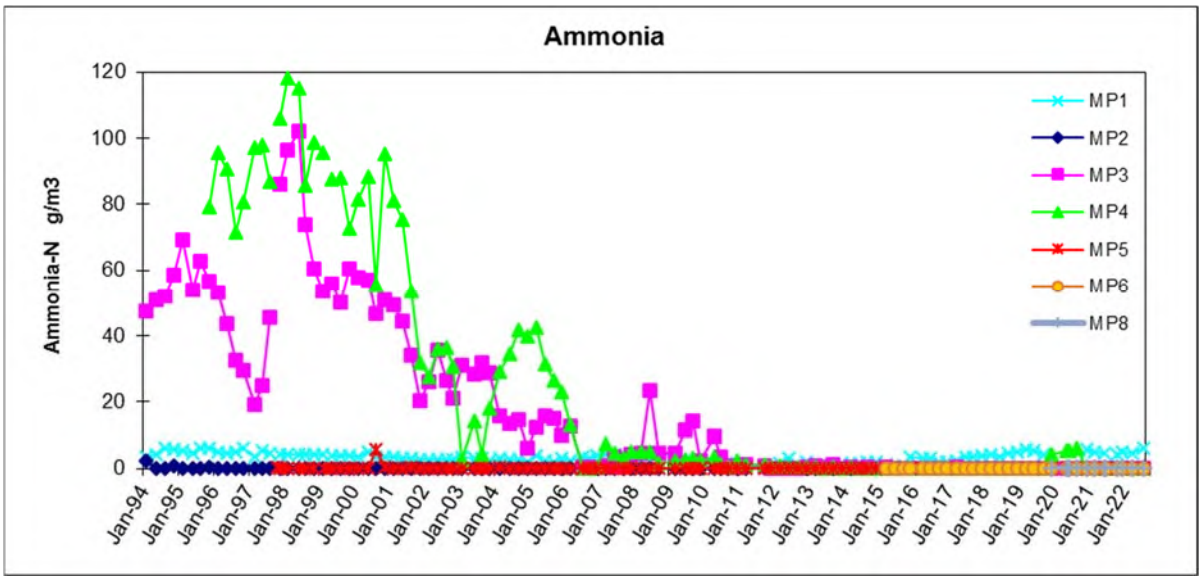

Figure 12 Ammonia at groundwater monitoring points, 1994-2022

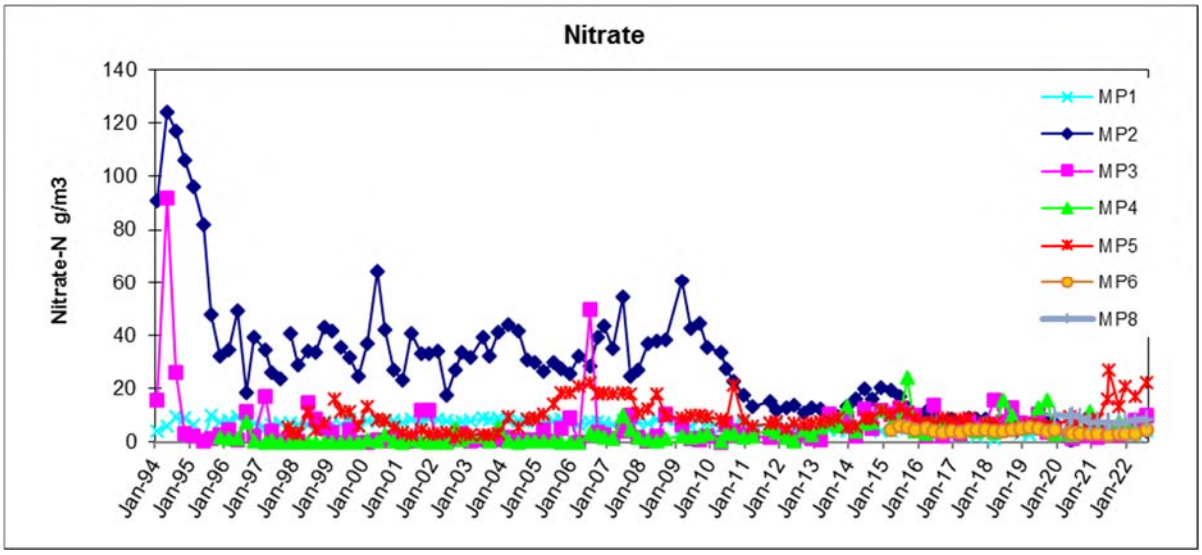

Figure 13 Nitrate at groundwater monitoring points, 1994-2022

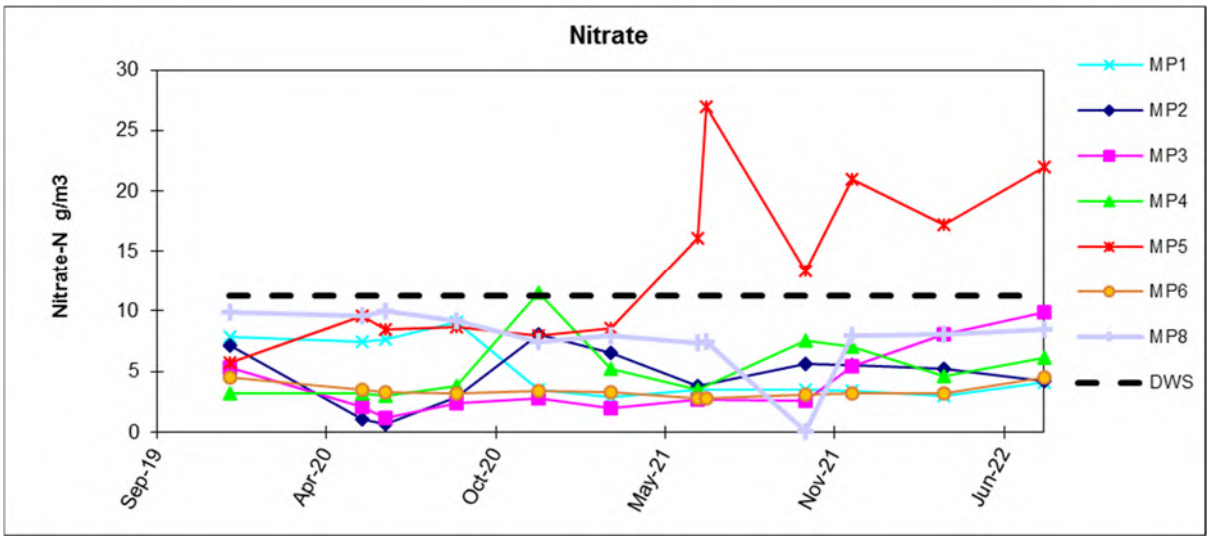

Figure 14 Nitrate at groundwater monitoring points in the 2019-2022 monitoring years. The black line represents the drinking water standard for nitrate

Waitotara bores

Historically, the groundwater quality at MP2 appeared to respond relatively quickly to changes in wastewater loading on the Stage 2 irrigation area, consistent with rapid wastewater infiltration through approximately 2 m of sandy soil to the underlying water table. The significant fall in nitrate concentration during the 2010-2011 monitoring period in MP2, was in response to reduced irrigation volumes. During the period of reduced irrigation on the paddocks in the vicinity of the factory site (2011-2019 years), the nitrate concentration ranged between about 10 and 20 g/m^{3}N. The nitrate nitrogen concentration in this bore reduced again following the suspending of wastewater irrigation on the paddocks at the factory site in at the end of the 2018-2019 season. No wastewater irrigation has occurred on the paddocks at the factory site from the 2019-2020 season onwards. During the current monitoring period levels in MP2 were below 6 g/m^{3}N (Figure 14). Again, the results of the self-monitoring undertaken by Silver Fern Farms have found a similar nitrate concentration to be present in the groundwater collected from this bore. The levels of ammonia present have continued to be very low, indicating almost complete nitrification in aerobic soil.

At MP3, up-gradient of stage 2 area and down gradient of Stage 4, the effects of wastewater disposal via the old soakage trench and wetland have been apparent in the historical results. The improvement in water

quality is attributed to the soakage trench and wetland no longer being used for discharge. The reduction is also consistent with the movement of wastewater through saturated soil, such as would occur below a soakage trench or wetland. After development of Stage 4 irrigation area in January 2013, nitrate concentration had lifted, with seasonal variation from 2 to 15 g/m^{3}N, and generally peaking in winter. During the year under review, Council monitoring found that the nitrate concentration ranged from 2.6 g/m^{3}N in October 2021, increasing to 9.9 g/m^{3}N in August 2022. This in contrast to the 2020-2021 year when the nitrate concentration at MP3 over the monitoring period was below 3 g/m^{3}N. The monthly sampling undertaken by Silver Fern Farms indicated that the drinking water standard of 11.3 g/m^{3}N was exceeded in the sample collected from this bore on 11 March 2022 (14.8 g/m^{3}N).

Historically, the effects of wastewater disposal have been recorded at MP4, the site closest to the wetland. The concentrations of several groundwater parameters (sodium, potassium, alkalinity and chloride) were similar to those in the wastewater itself, until after disposal of wastewater to the area ceased in 1999. Subsequently, nitrate concentrations were generally low, with a gradual increase after the development of Stage 4 irrigation area in January 2013. Nitrate concentrations during the period under review complied with the NZ drinking water standard. The monthly sampling undertaken by Silver Fern Farms showed similar concentrations to those recorded by the Council, with no drinking water standard exceedances found.

Although the nitrate concentrations have decreased substantially in MP3 since the early 1990s, there had been occasions in the 2017-2019 years when the drinking water standard was exceeded. This was a cause for concern as it represented an adverse impact on the groundwater quality in the vicinity of the plant. In the 2019-2022 monitoring years, there has been only one breach of the NZ drinking water standard in bores MP4 (15 December 2020). Although wastewater has not been applied to these areas in the 2019-2020 year onwards, stockyards solids and stabilised sludge are still applied to this area.

Longview Farm bores

Groundwater quality at MP5, downslope of the western side of Longview Farm irrigation area, was monitored for two years before irrigation commenced there in January 1999, and showed considerable variation in nitrate concentration (4 to 16 g/m^{3}N) during that period. During the period under review the nitrate nitrogen concentration ranged between 13.3 and 22 g/m^{3}N. This is following the large spike recorded in July 2021 of 27 g/m^{3}N. It is noted that during the year under review, according to the records provided by Silver Fern Farms, the there was little, if any, irrigation on the paddocks immediately up gradient of this bore (paddocks O and P). However, it is noted that the soil is very sandy under the irrigation areas and up to 210 kgN/ha/y was applied to irrigation runs further up gradient. Silver Fern Farms collected 23 samples from this bore during the year under review, only three of which returned results that were below the drinking water standard. The highest nitrate nitrogen concentration reported by Silver Fern Farms was 24 g/m^3 on both 27 July and 12 August 2022.

MP6 was established on 1 February 2015 in the new irrigation area on the south-eastern side of Longview Farm, where irrigation commenced in September 2012. Conductivity was higher than at the other groundwater monitoring sites, reflecting closer proximity to the sea. Nitrate concentration has remained moderately low and steady at between 2.8 to 6.0 g/m^{3}N since monitoring commenced. During the year under review, the Council and Silver Fern Farms found that concentrations were in the range 3.1 to 4.5 g/m^{3}N.

Bore MP7 did not intercept water when it was drilled in 2019 and has remained dry or with insufficient water to collect a sample during the period under review. Monitoring of this bore will continue to determine whether seasonal fluctuations in water level occur.

Bore MP8 has been sampled approximately quarterly by the Council and approximately monthly by Silver Fern Farms, since the 2019-2020 year. In the 2020-2021 year Silver Fern Farms recorded nitrate concentrations of up to 11.4 g/m^{3}N, in exceedance of the drinking water standard of 11.3 g/m^{3}N. As a

result, Silver Fern Farms increased the sampling frequency for this bore to approximately fortnightly, with 23 samples collected during the year under review. Data provided to the Council indicated that the nitrate nitrogen concentration recorded by Silver Fern Farms was generally in the range 6 to 10 g/m^{3}N. Monitoring undertaken by Council found that the nitrate nitrogen concentration of the groundwater collected from this bore was in the range 7.4 to 8.5 g/m^{3}N during the year under review.

2.1.3.3 Te Kiri o Rauru spring

When consent was sought from STDC in the 2011-2012 monitoring year to provide for extension to the irrigation area on Longview Farm, consultation with tangata whenua, Ngaa Rauru Kiitahi, raised a concern about potential effect of the irrigation on a sacred spring, Te Kiri o Rauru, that is situated at the coast approximately 1,350 m from the nearest part of the wastewater application area.

In response, Silver Fern Farms undertook to monitor the quality of water from the spring. Three monthly sampling, for turbidity, total coliforms and total nitrogen analysis, was initiated at the site identified by Te Kaahui o Rauru representative Dallas McLeod (Site Code GND2531). The spring constitutes seeps at the base of an 8-10 m high shellrock face over a distance of about 100 m at the shore.

To provide comprehensive background information, a sample of the spring taken by Silver Fern Farms on 24 September 2012 was analysed by the Council for a wide range of physicochemical parameters. Another sample, taken on 16 December 2012 about 30 m west of the first sampling site, which had been covered by sand, was analysed by Council for microbiological quality. The results of this comprehensive background information is given in the 2012–2013 Annual Report.

During the period under review Silver Fern Farms collected samples approximately quarterly. It was noted that the samples could not be sampled aseptically due to low flow, and the samples were collected from pooling water below the spring. A summary of results is given in Table 8 below.

Table 7 Chemical composition of Te Kiri o Rauru Spring

Parameter		Range 2021-2022	Range 2020-2021
Total nitrogen	g/m^3	<2.5 – 4 (<3)	<5
Total coliforms	Cfu/100ml	<1- >200	<1-50 (16)
Turbidity	NTU	0.35 – 1.6 (0.95)	0.1-2.8 (1)

Average of all samples is shown in brackets.

Sample results showed no indication that the spring had been influenced by the wastewater irrigation, with generally low total coliform and low total nitrogen values in all samples. On one occasion the sample had elevated total coliforms and turbidity, however, it was reported that the sample was not collected aseptically. Other than on this occasion, water quality was similar to 2020-2021.

2.2 Air

2.2.1 Inspections

The sources of aerial emission from the plant are a boiler for hot water production, the stockyards, the wastewater ponds, the wastewater irrigation system, and miscellaneous plant processes. Routine inspections of the site were conducted on four occasions, as described in section 2.1.1: 27 October and 9 December 2021 and 7 April and 4 August 2022.

In general the site was found to be well managed with regard to odours. Odours were not noticeable beyond the site boundary during any of the inspections. On 9 December it was found that very light waste

water odours noted when directly around the ponds. Both ponds had storage available but were reasonably full due to the recent poor weather not allowing irrigation to occur. This indicated that the wastewater may have degraded in the pond, but there were no resultant off site effects.

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 Silver Fern Farms. 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.

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

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

Table 8 below sets out details of any incidents recorded, additional investigations, or interventions required by the Council in relation to Silver Fern Farms activities during the 2021-2022 period. This table presents details of all events that required further investigation or intervention regardless of whether these were found to be compliant or not.

Table 8 Incidents, investigations and interventions summary table

Date	Details	Compliant (Y/N)	Enforcement Action Taken?	Outcome
11 Feb 2022	Self notification was received concerning a chemical discharge at a meat processing plant at Waitotara.	N	Y	Investigation found that approximately 10-15 litres of 'ENFORCE™' was spilt on site the previous evening, as a result of cleaning contractor decanting the chemical for their work. Initial reports advised that no chemical had discharge into any waterbody. However, a subsequent report advised that a discharge into a nearby tributary had occurred. A full incident report was received from Silver Fern Farms. The contingency plan was not followed and an infringement notice was issued

On 11 February 2022 notification was received that a spill had occurred at the site. Silver Fern Farms' report covering the investigation of the incident was provided on 18 March 2022. This investigation found that the spill was likely to have occurred late the previous day. The cleaning contractors were decanting directly from an intermediate bulk container (IBC) as the attached decanting machine was broken. This was in contravention of site operating procedures. The contract staff did not inform Silver Fern Farms of the spillage. Once identified, absorbent materials were applied to the affected area and the main stormwater discharge pipe to the roadside drain was blocked with a bung to mitigate any more release to the environment. Additionally, an earth bund was constructed at the end of the roadside drain before flow is diverted under the road to the unnamed tributary of the Waitotara River. The Taranaki Regional Council were notified of the incident via the pollution hotline. However, it is noted that Silver Fern Farms stated that the discharge had not reached the receiving water. pH monitoring was undertaken along the roadside

stormwater drain, unnamed tributary of the Waitotara River and at the confluence to the Waitotara River on the day of the incident. This showed that the discharge was outside the permitted range. There was foaming in the immediate vicinity of the discharge into the unnamed tributary however, this extended less than 10 m from the discharge pipe. A sample of the discharge was collected on 11 February 2022, however no receiving water samples were collected as there were insufficient bottles on site. Sampling was undertaken on 14 February 2022. No samples were collected from the unnamed tributary up stream of the discharge. This is in contravention of the site Contingency Plan. Corrective actions were put in place to prevent a reoccurrence. An infringement notice was issued. Silver Fern Farms was subsequently instructed to include certain specific improvements to the site Stormwater Management Plan as this is the document that covers the contingency plan requirements of the consent. Although the revision of the Stormwater Management Plan had not been completed by the end of the year under review, revised version of the plan received in November 2022. This did not contain the requested improvements. Council has continued to follow this up with Silver Fern Farms. A plan dated 10 February 2023 contained all of the required amendments.

3 Discussion

3.1 Discussion of site performance

Inspections of Silver Fern Farms' site during the 2021-2022 review period found that the site was generally well managed, although a number of issues did arise during the year under review.

Silver Fern Farms complied with the daily abstraction limits for both the groundwater and surface water abstraction consents. The rate of take from the bores exceeded the consent limit on several occasions between October 2021 and January 2022, however, at no time was the exceedance greater than the permitted measurement error. The take rate from the spring could not be assessed due to the long gap in the data between the failure of the Council's logging system and the commissioning of the replacement system installed by Silver Fern Farms. The replacement system was commissioned in November 2022, with the Company working on the provision of data.

The abstraction consent also requires that Silver Fern Farms record continuous water level data, to an accuracy of ±10 mm in a dedicated monitoring bore and any operational abstraction bores. During the year under review, Silver Fern Farms began reporting this data to the Council in order to resolve the on-going issues that had been affecting the data measuring, recording and transmission system that the Council put in place. This system relied on the cellular network, which proved to be unreliable in the vicinity of the plant site. Council will now be working with Silver Fern Farms to ensure that the appropriate calibration and/or verification processes are in place to confirm compliance with the requirements on the consent in relation to the accuracy of the data. A recommendation to this effect is attached to this report.

With regard to the discharge of stormwater there was a discharge of ENFORCE™ to land that, when it rained, was washed into the receiving water via the stormwater system. An infringement notice was issued and Silver Fern Farms was asked to make improvements to the contingency measures contained in the Stormwater Management Plan. A plan containing all but one of the required amendments was received on 14 December 2022. Follow-up of this matter is continuing.

With regard to the discharge of wastewater, the disposal systems were found to be operated and maintained in a satisfactory manner over the majority of 2021-2022 period. However, the nitrate concentrations in the groundwater on the Longview wastewater irrigation area continue to cause concern as discussed under the next section detailing the environmental effects of exercising the consent (Section 3.2).

During the 2020-2021 year, the *E. coli* and nitrate levels in bores MP5 and MP8 (down-gradient of MP5), combined with the proximity to the Wai-inu Beach municipal water supply bore and the application of synthetic nitrogen fertiliser at Longview Farm, led to the Council invoking condition 6 of consent 2260-3.1. This required Silver Fern Farms to review their Irrigation Management Plan (IMP) within two months, with a view to reducing nitrogen loadings in the area. An extension was granted to allow Silver Fern Farms to consult with Longview Farm on changes to the IMP. During this time, the ponding at Longview was also noted. Silver Fern Farms were subsequently asked to review the adequacy and application of measures to prevent and mitigate ponding of wastewater in their irrigation areas as a part of the review of the IMP. A further extension of time was granted to allow this to be incorporated into the review. Silver Fern Farms were asked to ensure that operators were complying with the requirements of the IMP and to maintain records to demonstrate compliance with the IMP. Improvements have been made to the plan in three subsequent revised versions, including the version of the plan received in November 2021. However, Council still has concerns about the adequacy of this plan, particularly the lack of mitigation measures proposed by the plan. During the year under review, the nitrate nitrogen concentration in MP5 continued to exceed the drinking water standard in all samples collected by Silver Fern Farms and the Council, and contained an *E. coli* concentration of greater than 201 cfu/100 ml in one of the samples collected by Silver Fern Farms. At MP8, all samples complied with the drinking water standard for nitrate nitrogen in both sets of samples.

E. coli was detected in three samples collected by Silver Fern Farms, however it was noted that in one of these cases, cross contamination from MP5 may have occurred. Short term ponding was also found at one inspection during the period under review.

In the 2018-2019 period Silver Fern Farms had been directed to include measures to prevent further increases to groundwater nitrate levels in bores MP3 and MP4 in the annual review of the Integrated Management Plan. Sampling by both the Council and Silver Fern Farms showed that during 2019-2020, nitrate concentrations in these bores decreased substantially from 2018-2019. However, a spike in nitrate concentrations in MP4 was again recorded during the 2020-2021 year. In the year under review, Council monitoring did not record any exceedances of the drinking water standard at either of these bores. However, monitoring undertaken by Silver Fern Farms found an exceedance of the standard on one occasion at MP3.

In June 2022, Silver Fern Farms was notified of the Council's intent to review the conditions of the consent to discharge wastewater, stockyard solid wastes and stabilised sludge to land to ensure that the conditions are adequate to address the potential effects of the discharge. The review process was continuing the time of writing this report.

Nitrogen loadings to irrigation areas remained below Silver Fern Farms' operational target of 300 kg/ha/y during the 2021-2022 monitoring period.

In terms of improvements at the site the Council was informed that Silver Fern Farms was intending to:

- get the factory irrigation areas operational during the 2022 shutdown period,
- line one of the unlined wastewater ponds during the 2022 shutdown period and to line the other pond in the 2023 shutdown period,
- inform Council of the of the recommended changes to the site drainage following the use of cameras to identify stormwater drains that were not on the site plans,
- divert one of the stormwater drains from part of sub-catchment A at the rear of the site to the wastewater system, and.
- update the stormwater management plan to show the additional new information

Silver Fern Farms had also undertaken smoke testing of the wastewater system and this confirmed that there was no wastewater getting into the stormwater system

3.2 Environmental effects of exercise of consents

Effects on the aquifer from the abstraction of groundwater have been difficult to assess due the difficulties that have arisen with the monitoring, recording and transmission of the data required by the abstraction consent. Silver Fern Farms has now installed a system that has replaced the Council's monitoring equipment. With the more reliable capturing and transmission of the groundwater level data, the focus will now move towards ensuring that there data of the required accuracy to support the evaluation in the three yearly aquifer sustainability report.

Effects on groundwater quality in the vicinity of this site were varied, but have shown significant improvement with reference to historical results. This has mostly been addressed through the extension of the irrigation disposal system, which reduced the nitrogen loadings. Despite the improvement that has occurred since the early 1990s, more recent results show increasing nitrate concentrations at site MP4 and to a lesser extent MP3, as shown in Figure 14. Although wastewater has not been applied to these areas since 2019, stockyards solids and stabilised sludge are still applied to this area. Silver Fern Farms monitoring of the new bore, MP8, found *E. coli* in the groundwater. Additionally nitrate concentrations in this bore were recorded by the Council as up to 10 g/m^{3}N, and monitoring by Silver Fern Farms recorded concentrations as high as 9.8 g/m^{3}N. During the period under review, nitrate concentrations of up to 24 g/m^{3}N have been recorded in the up gradient impact bore MP5, which is on the down gradient boundary of the irrigation

area. The high nitrate concentrations have exceeded the drinking water standard of 11.3 g/m^{3}N throughout the monitoring period at this bore. This is a significant cause for concern given proximity to the Wai-inu Beach municipal water supply bore. The Council is continuing to work with the consent holder to investigate the causes of the elevated nitrates. In addition to this Council implemented the recommendation from the 2020-2021 annual Report, to exercise the optional review of consent 2260-3.1 to ensure that the consent conditions are adequate to deal with any adverse environmental effects arising from the exercise of the consent.

Monitoring of Te Kiri o Rauru Spring, situated over a kilometre down gradient of the irrigation extension, to satisfy concerns of tangata whenua continued in 2021-2022 and indicated no impact to the spring.

No adverse effects on the surrounding environment were found during routine monitoring as a result of the discharge of stormwater or the water abstraction from Silver Fern Farms Waitotara site in the 2021-2022 period.

Photographs in the incident investigation report relating to the spill of ENFORCE™ showed foaming in the tributary below the discharge pipe that did not extend beyond the permitted mixing zone. Sampling undertaken four days after the discharge showed that there were no significant adverse effects at this time. It is noted, however, that there was no sample collected in the tributary upstream of the discharge to compare with the downstream sample.

In terms of environmental effects from the discharge of emissions to air, localised odours were noted at times during inspections. The odours were not objectionable nor were they detected beyond the boundary. No complaints were received from residents at the Wai-inu Beach Settlement during the period under review.

3.3 Evaluation of performance

A tabular summary of the consent holder's compliance record for the year under review is set out in Tables 10-14.

Table 9 Summary of performance for consent 2260-3.1

Purpose: ***To discharge to land wastewater by spray irrigation, stockyard solid wastes and stabilised sludge by spreading, from meat processing operations in the vicinity of the Waitotara River, including associated discharges to air***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Stockyards solid waste discharge rate not to exceed 28 m^3/7 days, wastewater not to exceed 1,700 m^3/day	Site inspections and data provided	Yes
2. Discharge to occur in agreed disposal areas	Site inspections and information provided	Yes
3. No offensive or objectionable odour beyond the boundary of the property	Site inspections and complaints register	Yes
4. Discharge not to result in spray drift beyond the boundary of the property	Site inspections and complaints register	Yes
5. Preparation of Integrated Management Plan (IMP)	Plan received with consent application 26/12/2015	Yes

Purpose: *To discharge to land wastewater by spray irrigation, stockyard solid wastes and stabilised sludge by spreading, from meat processing operations in the vicinity of the Waitotara River, including associated discharges to air*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
6. IMP to be reviewed annually by 31 December; or upon two months' notice by either party	Liaison with consent holder	Review invoked, plan received 28 April 2021. Discussions on plan content continuing
7. Designated officer to manage spray irrigation system according to IMP	Liaison with consent holder	Yes
8. Consent holder to undertake a monitoring programme to monitor risk to Wai-inu Beach municipal water supply	Received	Yes
9. Adopt best practicable option to prevent or minimise adverse environmental effects	Site inspections and sampling	No – ongoing impact on groundwater. Consent review in progress
10. Sodium adsorption ratio not to exceed 15	Sampling	Yes
11. Discharge not to result in wastewater reaching surface water	Site inspections and sampling	Yes
12. Contaminants not to be discharged within certain areas	Inspection	Yes
13. Discharge not to occur within 20 m of new roads	No new roads in area	N/A
14. Consent holder to keep records of rate and volume of discharge	Records provided	Yes
15. Council and STDC to be notified if an event occurs that may have adverse effect on Wai-inu Beach municipal water supply	No events occurred	Yes
16. Review of consent	Review in progress	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**Good** **Improvement required**

N/A = not applicable

Table 10 Summary of performance for consent 2261-3.1

Purpose: *To take ground water from three groundwater bores in the vicinity of the Waitotara River for meat processing purposes*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Limit on maximum abstraction rate	Metering by consent holder and review of records by Council	Yes
2. Labelling of bores	Site inspection by Council	Yes
3. Installation and operation of monitoring equipment	Site inspection and receipt of monitoring records.	Yes
4. Keeping and provision of monitoring records	Receipt of records by Council	Yes
5. Certification of monitoring equipment	Receipt of certificate dated October 2019	Yes
6. Actions upon breakdown of monitoring equipment	Notification received	Yes
7. Continuous record of groundwater level monitoring to be maintained in a monitoring bore, to an accuracy of ±10mm, from 31 August 2017	Inspection by Council. Extension granted until 31 October 2017	Yes
8. Continuous record of groundwater level monitoring to be maintained in all abstraction bores, to an accuracy of ±10mm, from 31 August 2017	Inspection by Council. Measurement by consent holder and review of records by Council	Continuous record not available for GND1195. Accuracy of measurement to be confirmed
9. Access to monitoring equipment	Site inspection	Yes
10. Adoption of best practicable option and efficient use	Site inspections and liaison with consent holder	Yes
11. Backflow protection	Records provided and site inspection	Yes
12. Provisions of triennial report on sustainability of aquifer	Received 24 September 2020. Next Due by 30 September 2023	N/A
13. Optional review provision re environmental effects	Next option for review within 3 months of report required by condition 12	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**Good**
Overall assessment of administrative performance in respect of this consent		**Improvement required**

N/A = not applicable

Table 11 Summary of performance for consent 4629-3.1

Purpose: ***To discharge emissions into the air from various activities associated with meat processing operations***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Emissions to be generally of the nature and scale described in the application	Site inspections	Yes
2. Best practicable option to prevent or minimise adverse effects	Site inspections	Yes
3. Discharge not to give rise to offensive or objectionable odour at or beyond the site boundary	Site inspections, complaints register	Yes
4. Discharge to be smoke free	Site inspections	Yes
5. Review of consent conditions	Next optional review June 2028	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 Summary of performance for consent 5027-2

Purpose: ***To discharge stormwater, defrost water and evaporative cooling water from a meat processing plant site into an unnamed tributary of the Waitotara River***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Best practicable option	Site inspections and chemical sampling	Discharge of ENFORCE™ to the stream
2. Limits on catchment area of site	Site inspections	Yes
3. Containment of hazards	Site inspections	Yes
4. Limits on pH, oil and grease and suspended solids	Site inspections and chemical sampling	pH limit exceeded at time of the unauthorised discharge

Purpose: *To discharge stormwater, defrost water and evaporative cooling water from a meat processing plant site into an unnamed tributary of the Waitotara River*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
5. Discharge shall not give rise to effects on stream beyond mixing zone	Site inspections and chemical sampling	Photograph provided by Silver Fern Farms indicated that foaming from spill limited to within the mixing zone – no sample taken at this time. Sampling four days after the spill showed no on-going effect
6. Provide, maintain and adhere to a contingency plan	Council records and site inspections. Plan updated 13 January 2023. Further improvement required	Plan not complied with at time of spillage. Improvements to plan requested. Infringement notice issued
7. Provide, maintain and adhere to stormwater management plan	Council records and site inspections. Plan updated 13 January 2023	Yes
8. Notification on changes on site	Not required during monitoring period	N/A
9. Review of consent conditions	Not scheduled for consideration during year under review. Next consideration June 2022	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**Good** **Improvement required**

N/A = not applicable

Table 13 Summary of performance for consent 10256-1.0

Purpose: *To take and use water from a spring for non-potable plant purposes*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Limit on maximum abstraction rate (L/s) and volume (m^3/day)	Metering by consent holder and review of records by Council	Abstraction rate records (L/s) not available
2. Installation and operation of monitoring equipment	Site inspection and receipt of monitoring records	Yes
3. Certification of monitoring equipment	Receipt of certificate dated June 2021	Yes
4. Actions upon breakdown of monitoring equipment	Notification received	Yes

Purpose: *To take and use water from a spring for non-potable plant purposes*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
5. Access to monitoring equipment	Site inspection	Yes
6. Keeping and transmission of 'real time' monitoring records	Receipt of records by Council	Continuing to work on data recording and transmission issues with the Company
7. Lapse of consent	Consent exercised	N/A
8. Optional review provision re environmental effects	Not scheduled for consideration during year under review. Next optional review June 2022	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**Good** **Improvement required**

N/A = not applicable

During the year, Silver Fern Farms demonstrated an overall good level of environmental performance and an improvement was required in the administrative performance with the resource consents as defined in Appendix II. The Council is continuing to work with Silver Fern Farms to ensure that appropriate and sustainable abstraction records are maintained and provided to Council and that the management plans include the required information such that they can be certified by Council. A review of consent 2260-3.1 was initiated during the period under review to ensure that the conditions are adequate to deal with any adverse effects (including potential effects) on the environment arising from the exercise of this consent.

Table 14 Evaluation of environmental performance over time

Year	Consent no	High	Good	Improvement required	Poor
2009-10	2260-2	1	-	-	-
	2261-2	1	-	-	-
	4629-2	1	-	-	-
	5027-1	1	-	-	-
2010-11	2260-2	1	-	-	-
	2261-2	1	-	-	-
	4629-2	1	-	-	-
	5027-2	1	-	-	-
2011-12	2260-2	1	-	-	-
	2261-2	1	-	-	-
	4629-2	1	-	-	-
	5027-2	1	-	-	-
2012-14	2260-2	1	-	-	-
	2261-2	1	-	-	-

Year	Consent no	High	Good	Improvement required	Poor
	4629-2	1	-	-	-
	5027-2	-	1	-	-
2014-15	2260-2	-	1	-	-
	2261-2	-	-	1	-
	4629-2	1	-	-	-
	5027-2	1	-	-	-
2015-16	2260-2	-	1	-	-
	2261-2/3	-	-	1	-
	4629-2	1	-	-	-
	5027-2	1	-	-	-
2016-17	2260-3	-	1	-	-
	2261-3	1	-	-	-
	4629-3	-	1	-	-
	5027-2	1	-	-	-
	10256-1	1	-	-	-
2017-18	2260-3	-	1	-	
	2261-3	-	1	-	-
	4629-3	1	-	-	-
	5027-2	1	-	-	-
	10256-1	1	-	-	-
2018-19	2260-3	-	-	1	-
	2261-3	-	1	-	-
	4629-3	1	-	-	-
	5027-2	1	-	-	-
	10256-1	1	-	-	-
2019-2020	2260-3	-	-	1	-
	2261-3	-	1	-	-
	4629-3	1	-	-	-
	5027-2	1	-	-	-
	10256-1	1	-	-	-
2020-2021	2260-3	-	1	-	-
	2261-3	-	1	-	-
	4629-3	1	-	-	-
	5027-2	1	-	-	-
	10256-1	-	1	-	-
Totals		30	11	3	0

3.4 Recommendations from the 2020-2021 Annual Report

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

1. THAT in the first instance, monitoring of consented activities at Silver Fern Farms Ltd 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.
3. THAT the annually reviewed integrated land management plan considers how to further prevent increases to nitrate in groundwater.
4. THAT the new bore MP7 should continue to be monitored to detect whether water is present in this bore seasonally and that should water be present, physicochemical monitoring should be undertaken.
5. THAT the option for a review of resource consent 2260-3.1 in June 2022, as set out in condition 16 of the consent, be exercised, on the grounds of ensuring that consent conditions are adequate to prevent adverse environmental effects from occurring.
6. THAT the option for a review of resource consents 2261-3.1, 4629-3.1 5027-2 and 10256-1.0 in June 2022, as set out in consent conditions, not be exercised, on the grounds that current conditions are adequate.

Recommendations 1, 2, 4 and 5 were implemented.

Recommendation 3 was not fully addressed by the review of the ILMP undertaken by Silver Fern Farms, but this will be resolved during the consent review.

3.5 Alterations to monitoring programmes 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 that the monitoring programme for Silver Fern Farms remains largely unchanged from that of 2021-2022. Continued surveillance of the new bore MP7 will determine whether water is present in this bore seasonally; and should water be present in this bore then monitoring will be undertaken.

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

4 Recommendations

1. THAT in the first instance, monitoring of consented activities at Silver Fern Farms Ltd 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.
3. THAT the annually reviewed integrated land management plan considers how to further prevent increases to nitrate in groundwater.
4. THAT the new bore MP7 should continue to be monitored to detect whether water is present in this bore seasonally and that should water be present, physicochemical monitoring should be undertaken.
5. THAT Council continue to work with Silver Fern Farms to develop appropriate systems to ensure that the abstraction and water level data complies with the conditions of the consent.

Glossary of common terms and abbreviations

The following abbreviations and terms may be used within this report:

BOD	Biochemical oxygen demand. A measure of the presence of degradable organic matter, taking into account the biological conversion of ammonia to nitrate.
COD	Chemical oxygen demand. A measure of the oxygen required to oxidise all matter in a sample by chemical reaction.
Conductivity	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 25°C and expressed in in µS/cm.
g/m^3	Grams per cubic metre, and equivalent to milligrams per litre (mg/L). In water, this is also equivalent to parts per million (ppm), but the same does not apply to gaseous mixtures.
Incident	An event that is alleged or is found to have occurred that may have actual or potential environmental consequences or may involve non-compliance with a consent or rule in a regional plan. Registration of an incident by the Council does not automatically mean such an outcome had actually occurred.
Intervention	Action/s taken by Council to instruct or direct actions be taken to avoid or reduce the likelihood of an incident occurring.
Investigation	Action taken by Council to establish what were the circumstances/events surrounding an incident including any allegations of an incident.
Incident Register	The Incident Register contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan.
KAR	Potassium adsorption ratio. A measure of the suitability of water use in agricultural irrigation, as determined by the concentrations of solids dissolved in the water.
L/s	Litres per second.
mbgl	Meters below ground level, m
mS/m	Millisiemens per metre.
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).
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.
SAR	Sodium adsorption ratio. A measure of the suitability of water use in agricultural irrigation, as determined by the concentrations of solids dissolved in the water.

SS	Suspended solids.
STDC	South Taranaki District Council.
Temp	Temperature, measured in °C (degrees Celsius).
UI	Unauthorised Incident.
µS/cm	Microsiemens per centimetre.

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

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Taranaki Regional Council 1994, Waitotara Meat Company Resource Consent Monitoring Programme Annual Report 1993/94, Technical Report 94-42.

Taranaki Regional Council 1993, Waitotara Meat Company Resource Consent Monitoring Programme Annual Report 1992-93, Technical Report 93-67.

Taranaki Regional Council 1992, Waitotara Meat Company Resource Consent Monitoring Programme Annual Report 1991/92, Technical Report 92-33.

Taranaki Regional Council 1991, Waitotara Meat Company Resource Consent Monitoring Programme Annual Report for 1990/91, Technical Report 91-23.

Taranaki Regional Council 1990, Waitotara Meat Company Monitoring Programme-Annual Report for 1989/90, Technical Report 90-44.

Appendix I

Resource consents held by Silver Fern Farms Ltd (Waitotara)

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

Water abstraction permits

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

Water discharge permits

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

Air discharge permits

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

Discharges of wastes to land

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

Land use permits

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

Coastal permits

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

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:	13 September 2017
Commencement Date:	13 September 2017

Conditions of Consent

Consent Granted:	To discharge to land wastewater by spray irrigation, stockyard solid wastes and stabilised sludge by spreading, from meat processing operations in the vicinity of the Waitotara River, including associated discharges to air
Expiry Date:	1 June 2034
Review Date(s):	June 2022 and at 3-yearly intervals thereafter
Site Location:	Waiinu Beach Road, Waitotara
Grid Reference (NZTM)	1747946E-5588813N (Pond 1) 1747993E-5588722N (Pond 2) 1748071E-5588544N (Area 1) 1749151E-5586993N (Area 2)
Catchment:	Waitotara

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

General condition

a. The consent holder shall pay to the Taranaki Regional Council all the administration, monitoring and supervision costs of this consent, fixed in accordance with section 36 of the Resource Management Act 1991.

Special conditions

1. The discharge of stockyards solid waste shall occur by spreading at a rate not exceeding 28 cubic metres over any 7-day period, and the discharge of wastewater shall occur by spray irrigation at a rate not exceeding 1700 cubic metres/day.

2. The discharges authorised by this consent shall only occur on the 'disposal areas' shown in Figure 1 attached.

3. The discharge shall not result in odour that is offensive or objectionable beyond the boundary of the disposal areas shown in Figure 1 attached.

4. The discharge shall not result in spray drift beyond the boundary of the disposal areas.

5. The consent holder shall manage the site in accordance with an 'Integrated Management Plan' (IMP) prepared by the consent holder and approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity. The IMP shall detail the management of the spray irrigation and solid waste management system at the site to achieve compliance with the conditions of this consent. An objective of the IMP shall be to keep the annual nitrogen loading from wastewater, stockyards solids and solid organic waste material discharged on the 'disposal areas' to 300 kg/ha or less. The IMP shall address the following matters, as a minimum:

    a) designated disposal areas;
    b) selection of appropriate irrigation and spreading methods for different types of terrain;
    c) application rate and duration;
    d) application frequency;
    e) farm management and operator training;
    f) soil and herbage management;
    g) prevention of ponding, runoff and spray drift;
    h) minimisation and control of odour effects offsite;
    i) operational control and maintenance of the spray irrigation system;
    j) monitoring of the wastewater (physicochemical);
    k) monitoring of soils and herbage (physicochemical);
    l) monitoring of groundwater beneath the irrigated area (physicochemical);
    m) remediation measures;
    n) contingency events;
    o) reporting monitoring data;
    p) procedures for responding to complaints; and
    q) notification to the Council of non-compliance with the conditions of this consent.

6. The *IMP* described in special condition 5 of this consent shall be subject to review upon two months notice by either the consent holder or the Taranaki Regional Council. Further, the consent holder shall review the *IMP* annually and shall provide the reviewed plan to the Chief Executive, Taranaki Regional Council, by 31 December.

7. The consent holder shall designate an officer with the necessary qualifications and/or experience to manage the spray irrigation system. The officer shall be regularly trained on the content and implementation of the *IMP* and shall be advised immediately of any revision or additions to the *IMP*.

8. The consent holder shall undertake a monitoring programme that identifies and monitors the risk to the Waiinu Water Supply provided by the bore located at approximate grid reference 1748791E-5586518 (NZTM) resulting from the exercise of this consent. The programme of monitoring shall be submitted to the Chief Executive, Taranaki Regional Council for certification before 31 December 2017 and shall include as a minimum, the drilling and monitoring of bores down gradient of the MP5 (GND0686) monitoring bore at locations and depths determined after consultation with the Chief Executive, Taranaki Regional Council.

9. 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 of the discharge on the environment.

10. The sodium adsorption ratio (SAR) of the wastewater shall not exceed 15.

11. The discharge shall not result in any wastewater reaching surface water, any subsurface drainage system or any adjacent property.

12. No contaminants shall be discharged within:

    (a) 25 metres of any surface water body; or
    (b) 25 metres of any fenced urupa (burial ground) without the written approval of the relevant Iwi; or
    (c) subject to condition 13 below, 20 metres from any public road;
    (d) 50 metres of any bore, well or spring used for water supply purposes; or
    (e) 150 metres of any dwelling that is not owned by the consent holder, or any marae, unless the written approval of the owner and occupier has been obtained to allow the discharge at a closer distance.

13. Where any new public road is established that shares a boundary with a disposal area, there shall be no discharge to land within 20 metres of the road surface until the shelter vegetation on that boundary is at least two metres high. Once the shelter vegetation exceeds two metres in height, the discharge may occur no less 10 metres from the road surface.

14. The consent holder shall keep records of the rate and volume of wastewater and stockyards solid waste discharged to an accuracy of ±5%, including, but not limited to the:

    (a) effluent type (e.g. liquid, slurry, solid);
    (b) source of any solid waste;
    (c) location and area (ha) of application of wastewater and/or solid waste; and
    (d) date each site location received the wastewater and/or solid waste application.

15. 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 Waiinu Beach [Map Ref: 1748791E-5586518 (NZTM)] the consent holder shall, as soon as reasonably practicable, telephone the Taranaki Regional Council and South Taranaki District Council and notify them of the event.

16. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2022 and at 3-yearly intervals thereafter, for the purposes of:

    (a) ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time; and/or

    (b) setting limits for any contaminant if the concentration of that contaminant in groundwater at a disposal area is increasing at a rate that could make it unsuitable for any existing potential use; and/or

    (c) requiring any data collected in accordance with the conditions of this consent to be transmitted directly to the Taranaki Regional Council's computer system, in a format suitable for providing a 'real time' record over the internet.

Transferred at Stratford on 26 November 2018

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

Advice Note (included at the request of DITAG)
The consent holder's attention is drawn to MPI's "New Zealand Code of Practice for the Design and Operation of Farm Dairies (NZCP1) which restricts:

- *The discharge of specified wastes to land used for grazing of milking animals; and*
- *The use of feed from land which has had specified wastes applied to it.*

Should you require further information, please contact a Dairy Industry Technical Advisory Group (DITAG) representative ***or*** *visit http://www.foodsafety.govt.nz/elibrary/industry/dairy-nzcp1-design-code-of-practice/amdt-2.pdf (specifically section 4.4 Disposal of effluent and other wastes and section 5.8 Purchased Stock Food) or contact an operation dairy processing company regarding conditions of supply.*

Figure 1: Approximate locations of 'Disposal Areas for the stockyards solid waste and wastwater spray irrigation

Water Permit

Pursuant to the Resource Management Act 1991
a resource consent is hereby granted by the

Name of Consent Holder:	Silver Fern Farms Limited PO Box 941 Dunedin 9054
Decision Date:	23 August 2016
Commencement Date:	23 August 2016

Conditions of Consent

Consent Granted:	To take groundwater from three bores in the vicinity of the Waitotara River for meat processing purposes
Expiry Date:	1 June 2040
Review Date(s):	June 2022 and every six years thereafter and in accordance with special condition 13
Site Location:	Waiinu Beach Road, Waitotara
Grid Reference (NZTM)	1747961E-5588986N 1748173E-5588850N 1748280E-5588815N
Catchment:	Waitotara

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

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General condition

a. The consent holder shall pay to the Taranaki Regional Council all the administration, monitoring and supervision costs of this consent, fixed in accordance with section 36 of the Resource Management Act 1991.

Special conditions

1. The total rate of taking shall not exceed 20 litres per second and the total volume taken in any 24 hour period ending at midnight (New Zealand Standard Time) shall not exceed 1,300 cubic metres.

2. All bores shall be easily identifiable by permanent labels, which may be welded or engraved on the casing, or on the equivalent fixed part of the well construction or associated building. The numbering on the label shall be the bore number assigned by the Taranaki Regional Council.

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

   Note: Water meters must be installed, and regularly maintained, in accordance with manufacturer's specifications in order to ensure that they meet the required accuracy. Even with proper maintenance water meters have a limited lifespan.

4. The records of water taken shall:

   a) be in a format that, in the opinion of the Chief Executive, Taranaki Regional Council, is suitable for auditing;
   b) specifically record the water taken as 'zero' when no water is taken; and
   c) for each 12-month period ending on 30 June, be provided to the Chief Executive, Taranaki Regional Council within one month after end of that period.

5. The consent holder shall provide the Chief Executive, Taranaki Regional Council with a document from a suitably qualified person certifying that water measuring equipment required by the conditions of this consent ('the equipment'):

   a) has been installed and/or maintained in accordance with the manufacturer's specifications; and/or
   b) has been tested and shown to be operating to an accuracy of ± 5%.

   the documentation shall be provided:

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

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. Before 31 August 2017 the consent holder shall ensure that a continuous record of groundwater level data is maintained by installing an automatic groundwater level recording device in to a dedicated monitoring bore. The device shall measure and record the water level at intervals not exceeding 15 minutes to an accuracy of ± 10 mm and be tamper-proof.

8. Before 30 August 2017 the consent holder shall, unless it is not practically achievable in a particular case, ensure that a continuous record of groundwater level data is maintained by installing an automatic groundwater level recording device into any operational groundwater abstracting bore. The device shall measure and record the water level at intervals not exceeding 15 minutes to an accuracy of ± 10 mm and be tamper-proof.

9. The water meters and data loggers shall be accessible to Taranaki Regional Council officers at all reasonable times for inspection and/or data retrieval.

10. At all times the consent holder shall take all practicable steps to take and use water efficiently and generally prevent or minimise any adverse effects on the environment including as minimum, by ensuring that the minimum amount of water necessary for the purpose is taken.

11. The consent holder shall ensure that the bores and associated pipework are designed and configured in such a way that no water from any source can re-enter any bore.

12. Before 30 September 2020 and every three years thereafter an assessment of the sustainability of the aquifer shall be undertaken and be provided in the form of a report to the Chief Executive, Taranaki Regional Council. The report shall include as a minimum:

    i) A borefield description;
    ii) A description of the on site water use, water sources and discharges;
    iii) All groundwater level data, abstraction data and groundwater quality data collected to 30 June of that year (*Monitoring data is to be presented in tables and graphical format, raw data in appendix, summary data in text);*
    iv) A discussion on groundwater levels, observed trends and the aquifers response to abstraction;
    v) A discussion on groundwater quality and the results of any groundwater quality analysis;
    vi) An assessment of the impacts; including the capacity of the aquifer to sustain the demands on it.

    Note: This assessment may be undertaken by the Taranaki Regional Council or a suitably qualified and experienced groundwater professional on behalf of the consent holder.

13. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review:

    a. during the month of June 2022 and every six years thereafter; and/or
    b. within 3 months of the submittal of a report required under special condition 12 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:	13 September 2017
Commencement Date:	13 September 2017

Conditions of Consent

Consent Granted:	To discharge emissions into the air from various activities associated with meat processing operations
Expiry Date:	1 June 2034
Review Date(s):	June 2022, June 2028
Site Location:	Waiinu Beach Road, Waitotara
Grid Reference (NZTM)	1748090E-5588905N (approximate centre of site)

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

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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. This consent authorises emissions to air from activities on the site (as shown in Appendix One) generally of the nature and scale described in the application for this consent.

2. The consent holder shall 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 resource consent.

3. The discharges authorised by this consent shall not give rise to any odour at or beyond the site boundary (as shown in Appendix One) of the site that is offensive or objectionable.

4. Any discharge from the factory site shall be free of smoke.

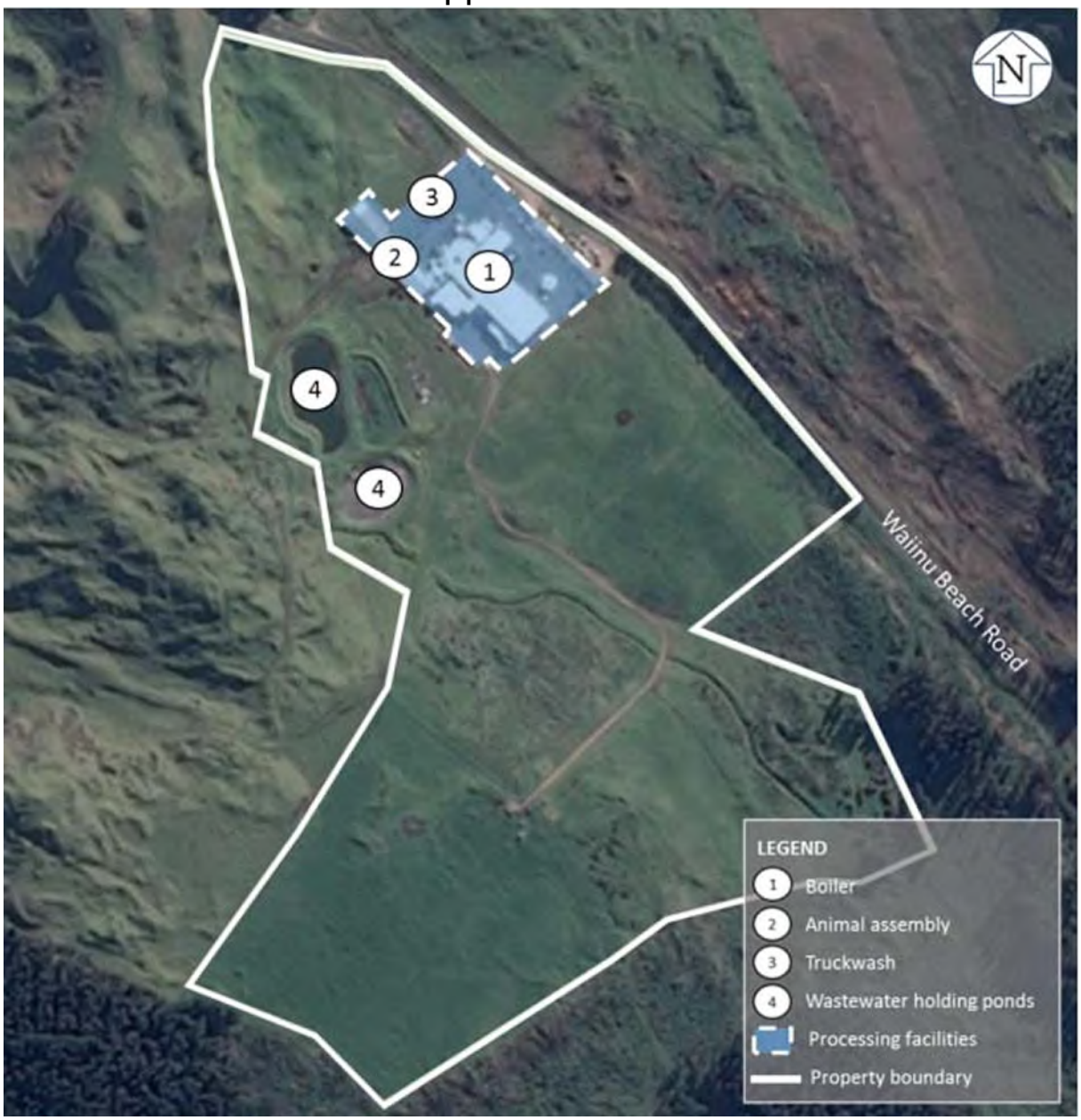
5. The Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during the month of June 2022 and/or June 2028, for the purpose of ensuring that that conditions are adequate to deal with any adverse effects of the abstraction on the environment arising from the exercise of this consent, which were not foreseen at the time the application was considered and which it was not appropriate to deal with at that time.

Transferred at Stratford on 26 November 2018

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

Appendix One



Area of discharge bounded by the white line

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:	8 November 2010
Commencement Date:	8 November 2010

Conditions of Consent

Consent Granted:	To discharge stormwater, defrost water and evaporative cooling water from a meat processing plant site into an unnamed tributary of the Waitotara River
Expiry Date:	1 June 2028
Review Date(s):	June 2022
Site Location:	Waiinu Beach Road, Waitotara
Grid Reference (NZTM)	1748084E-5589290N
Catchment:	Waitotara

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

General condition

a. The consent holder shall pay to the Taranaki Regional Council all the administration, monitoring and supervision costs of this consent, fixed in accordance with section 36 of the Resource Management Act 1991.

Special conditions

1. The 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 2.3 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.

Constituent	Standard
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 30 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

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:	14 December 2016
Commencement Date:	14 December 2016

Conditions of Consent

Consent Granted:	To take and use water from a spring for non-potable plant purposes
Expiry Date:	1 June 2040
Review Date(s):	June 2022 and at 3-yearly intervals thereafter
Site Location:	Waiinu Beach Road, Waitotara
Grid Reference (NZTM)	1747918E-5589220N
Catchment:	Waitotara

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

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General condition

a. The consent holder shall pay to the Taranaki Regional Council all the administration, monitoring and supervision costs of this consent, fixed in accordance with section 36 of the Resource Management Act 1991.

Special conditions

1. The rate of taking shall not exceed 4.4 litres per second, and the volume taken in any 24 hour period ending at midnight (New Zealand Standard Time) shall not exceed 350 cubic metres.

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

   Note: Water meters and dataloggers must be installed, and regularly maintained, in accordance with manufacturer's specifications in order to ensure that they meet the required accuracy. Even with proper maintenance water meters and dataloggers have a limited lifespan.

3. The consent holder shall provide the Chief Executive, Taranaki Regional Council with a document from a suitably qualified person certifying that water measuring and recording equipment required by the conditions of this consent ('the equipment'):

   (a) has been installed and/or maintained in accordance with the manufacturer's specifications; and/or

   (b) has been tested and shown to be operating to an accuracy of ± 5%.

   The documentation shall be provided:

   (i) within 30 days of the installation of a water meter or datalogger;

   (ii) at other times when reasonable notice is given and the Chief Executive, Taranaki Regional Council has reasonable evidence that the equipment may not be functioning as required by this consent; and

   (iii) no less frequently than once every five years.

4. If any measuring or recording equipment breaks down, or for any reason is not operational, the consent holder shall advise the Chief Executive, Taranaki Regional Council immediately. Any repairs or maintenance to this equipment must be undertaken by a suitably qualified person and a maintenance report provided to the Chief Executive, Taranaki Regional Council within 30 days of the work occurring.

5. Any water meter or datalogger shall be accessible to Taranaki Regional Council officers at all reasonable times for inspection and/or data retrieval. In addition the data logger shall be designed and installed so that Taranaki Regional Council officers can readily verify that it is accurately recording the required information.

6. The records of water taken:

   (a) be in a format that, in the opinion of the Chief Executive, Taranaki Regional Council, is suitable for auditing;

   (b) specifically record the water taken as 'zero' when no water is taken; and

   (c) be transmitted directly to the Taranaki Regional Council's computer system, in a format suitable for providing a 'real time' record over the internet.

7. This consent shall lapse on 31 December 2021, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

8. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2022 and at 3 yearly intervals thereafter 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

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.