

ANZCO Foods Eltham Ltd
Monitoring Programme
Annual Report
2021-2022

Technical Report 2022-45



Taranaki Regional Council
Private Bag 713
Stratford

ISSN: 1178-1467 (Online)
Document: 3083726 (Word)
Document: 3151512 (Pdf)
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Executive summary

ANZCO Foods Eltham Ltd (the Company) operates a meat processing plant located at Eltham, in the Waingongoro catchment. Until May 2014, the site was known as Riverlands Eltham. The plant has an associated wastewater treatment system from which treated effluent is disposed of either to land or to surface water.

This report covers the Company's processing season from October 2021 to September 2022 and describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess the Company's environmental performance during the period under review. The report also details the results of the monitoring undertaken and assesses the environmental effects of the Company's activities.

During the monitoring period, the Company demonstrated a good level of environmental performance and improvement required in the level of administrative performance.

The Company held eight resource consents during the review period, which included a total of 91 conditions setting out the requirements that the Company must satisfy. The Company held one consent to allow it to take and use water, two consents to discharge effluent and stormwater into the Waingongoro River, two consents to discharge effluent and solids to land, two consents for structures in watercourses, and one consent to discharge emissions into the air at the plant site.

Monitoring is carried out by both the Company and the Council. The Company monitors water abstraction rate, effluent flow rate and composition, receiving water quality, odour at the plant boundaries, effluent loadings and soil and herbage for irrigation areas. The Council undertakes inspections of the plant site and irrigation areas. Monitoring includes effluent quality checks and inter-laboratory comparisons, water quality, air quality and biological monitoring.

The Council's monitoring programmes for the period under review included three inspections, 57 groundwater and 48 surface water samples collected for physicochemical analysis, two biomonitoring surveys of receiving waters and review of Company data.

The abstraction of water from the Waingongoro River was not found to have any adverse effect on the river and the physicochemical monitoring of the river showed compliance with consent conditions.

The biomonitoring surveys did not identify any detrimental impact on the river caused by discharges from the meat processing plant to water.

During the 2020-2021 monitoring period, 58% (296,909 m³) of the total plant effluent (514,132 m³) was sprayed onto grazed pasture. The irrigation occurred over 32 weeks between October 2021 and 7 June 2021. The data that would enable compliance with the limit on nitrogen loading to be assessed was not provided due to staffing issues. Compliance with the daily discharge limits could also not be assessed.

The groundwater monitoring programme indicates that irrigation of effluent by the Company has had a measureable effect on localised groundwater quality over time. Some improvement can be seen in regard to nitrate concentrations in groundwater over the last few years in response to recent mitigation measures undertaken by the Company. It is noted that there is an increase in the nitrate+nitrite concentration in one of the bores at the Paulwell farm site. This will be investigated further during the 2022-2023 year.

With regard to emissions to air over the 2021-2022 period, no incidents were recorded.

During the year, the Company demonstrated a good level of environmental performance and an improvement was required in their administrative performance with the resource consents as defined in Appendix II. There are some on-going issues with the supply of reports and/or data in a timely manner and some improvement required under consent 5569-1 in environmental performance, relating to nitrate concentrations in groundwater.

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 Company over the last few years, this report shows that the Company's performance has remained at a good level, with some improvement required in their administrative performance.

It is noted that the Company's own monitoring year runs from 1st October to 30th September and they struggle to meet the reporting timeframes required by their consent conditions. As a first step in aiming to bring about an improvement in administrative performance, it is proposed that the consent monitoring and reporting requirements in consents 5437-3.1, 5736-2 and 7487-1 be reviewed with the Company. This review will ensure that the requirements are clear, consistent, achievable, measurable and enforceable.

This report includes recommendations to be implemented during the 2022–2023 monitoring period, including recommendations relating to the review of consents 5437-3.1, 5736-2, and 7487-1.

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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 ANZCO Foods Eltham Ltd (the Company). The Company operates a meat processing plant situated on London Street, Eltham within the Waingongoro catchment. The period being reviewed in this report coincides with the killing season and the Company's financial year.

The Company held eight resource consents relating to the Company's surface water take and discharges to water, land, and air during the reporting period. The consents include a number of special conditions which set out specific requirements the Company must satisfy.

This report covers the results and findings of the monitoring programme implemented by the Council in respect of the consents held by the Company.

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 is the 30th combined annual report and the 33rd water-related report by the Council and its predecessors for the Company.

1.1.2 Structure of this report

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

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

1.2 Process description

The meat processing plant is situated in the Waingongoro catchment, on the outskirts of Eltham in South Taranaki (Figure 1). There has been a meat processing plant on the site since about 1894.

The meat processing plant has the capacity to process about 200,000 beef units and 120,000 calves per year. The beef season runs from early October to mid-July, peaking between January and May depending on livestock availability. Generally, peak kill occurs earlier and is higher in dry seasons owing to the reduced availability of stock feed. Calves are slaughtered between July and September. The majority of the processed output is exported. There are no fellmongery or rendering facilities. Blood and renderable material are taken off-site for processing.

Water for plant operation is abstracted from the Waingongoro River and also taken from the Eltham town supply. The river abstraction point is situated at the upstream boundary of the site, immediately above the confluence with a small tributary that runs past the stockyards. The water taken from the river augments the supply of potable water from the municipal system.

¹ The Council has used these compliance grading criteria for more than 18 years. They align closely with the 4 compliance grades in the MfE Best Practice Guidelines for Compliance, Monitoring and Enforcement, 2018

Wastewater is derived from four sources: killing, gutting (paunch material), processing, and the stockyards. On-site wastewater treatment comprises of solids separation, followed by biological degradation.

Paunch contents are segregated by 'dry dumping' into hoppers, dewatered, and trucked off-site for use in vermiculture. Liquid effluent from paunch opening areas and the stockyards is passed through a 0.5 mm rotary screen. The screened solids are disposed of with the paunch material. All red meat streams are discharged to a sump through a coarse bar screen and pumped through a rotary screen. The separated solids are de-watered in a press and removed daily to an off-site rendering plant. The remaining liquid is then combined with the screened paunch/stockyard effluent and is discharged to the lagoon system. All blood is transported off-site for processing, which was an operational change that commenced in the 2018-2019 year.

The on-site treatment system consists of eight lagoons in series with a total volume of about 40,000 m³. The first five (ponds 1, 2, 3, 3A and 4), about 20,000 m³ in volume, are anaerobic. The sixth (pond 5) is an aerated facultative lagoon, about 3 m in depth, with aeration capacity of 44 kW. The seventh (pond 6), about 4.8 m in depth, is for settling and allows some denitrification. The final lagoon (pond 7) is shallow, with a maximum depth of 1.5 m and an area of 0.76 ha.

Effluent from the final lagoon is discharged either to land by irrigation or to the Waingongoro River during times of high flow. The disposal system is managed so as to maximise discharge to land, thereby minimising any potential adverse effects on the river.

The current irrigation area is a dairy farm immediately across the river from the plant that is accessed from Lower Stuart Road. The area irrigated increased progressively, from 60 ha when the reticulation system was commissioned in January 2001, to 265 ha in 2012-2013.

An additional area (Paulwell Farm) has also been equipped and irrigation is planned to commence during the 2021-2022 monitoring year.

When effluent is discharged to the river, it is through a variable-rate pump via a pipe that projects over the river by about one third of its width. Flow is measured at a v-notch weir above the pipe inlet and is recorded electronically.

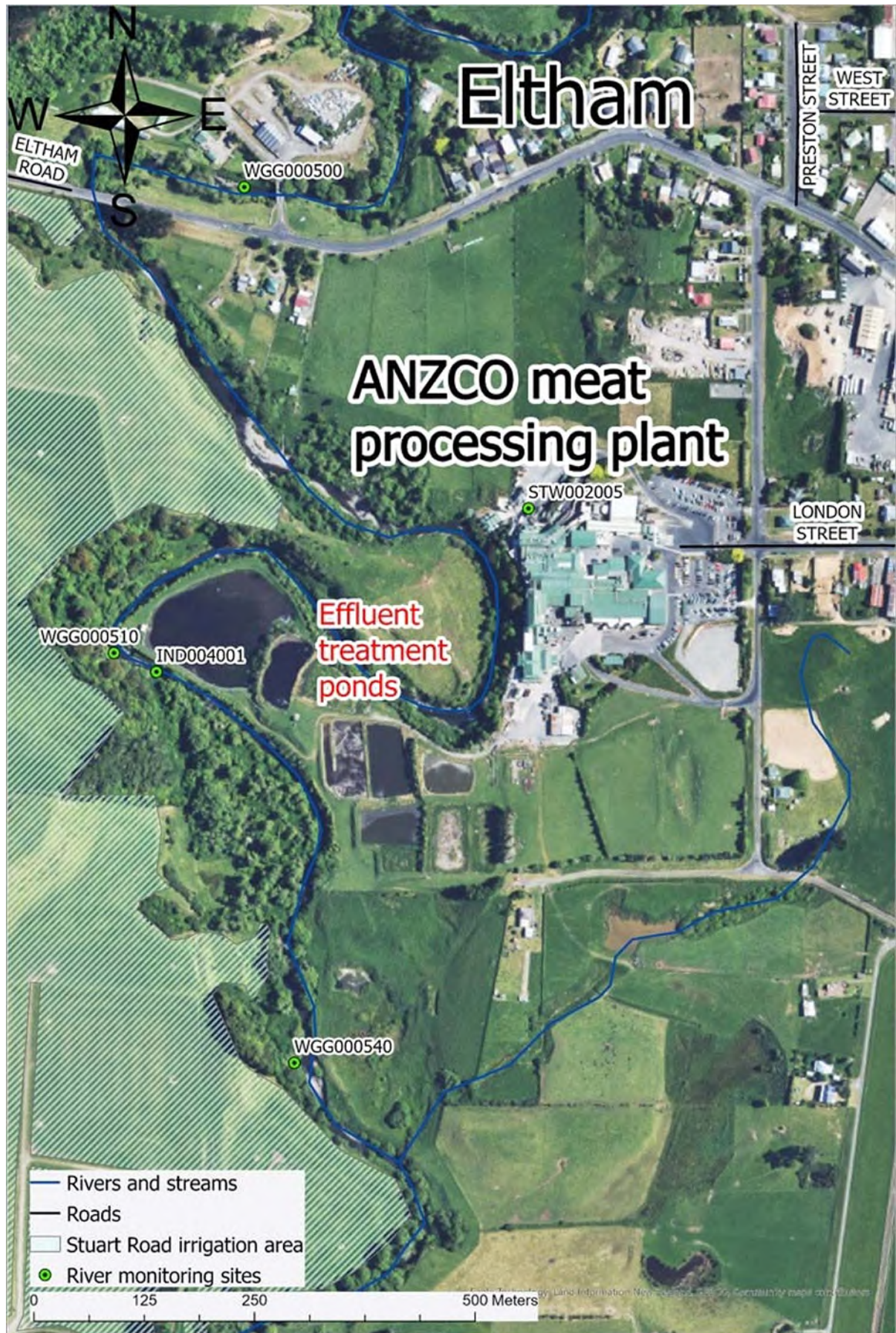


Figure 1 The Company's meat processing plant location

1.3 Resource consents

The Company holds eight resource consents that are monitored under this programme, the details of which are summarised in Table 1 below. Summaries of the conditions attached to each permit are set out in Section 3 of this report.

It is noted that the Company also holds an additional consent (7487-1, shaded in the table below) for a discharge to land at the Paulwell Farms site on Eltham Road. This consent also has an opportunity for review in June 2023, and with the likely commencement of the wastewater irrigation at this location, it is appropriate consider whether the conditions of this consent should be reviewed to ensure consistency with the conditions of consent 5736-2. This is discussed further in Section 3.6.

A summary of the various consent types issued by the Council is included in Appendix I, as are copies of all permits held by the Company during the period under review.

Table 1 Summary of resource consents held by the Company

Consent number	Purpose	Granted	Review	Expires
<i>Water abstraction permits</i>				
5437-3.1	To take and use water from the Waingongoro River	13/10/2017	June 2023	01/06/2029
<i>Water discharge permits</i>				
1968-4	To discharge stormwater into the Waingongoro River	09/07/2012	June 2023	01/06/2029
2039-4.1	To discharge treated wastewater into the Waingongoro River	13/10/2017	June 2023	01/06/2029
<i>Air discharge permit</i>				
4644-3	To discharge emissions to air	05/05/2016	June 2023	01/06/2035
<i>Discharges of waste to land</i>				
5569-1	To discharge up to 3,500 m ³ of treated wastewater by irrigation onto and into land (Stuart Road)	23/12/1999	-	01/06/2026
5736-2	To discharge up to 3,500 m ³ of treated wastewater by irrigation onto and into land (Eltham Road)	09/07/2012	June 2023	01/06/2026
7487-1	To discharge anaerobic pond solids and paunch solids onto and into land and contaminants to air in the Waingongoro catchment at or about (NZTM) 1708439E-5635064N, 1710226E-5634406N and 1712433E-5635858N	17/10/2010	June 2023	01/06/2026
<i>Land use permits</i>				
5739-2	To erect, place and maintain a pipeline under the bed of the Waingongoro River	02/05/2017	June 2023	01/06/2035
6455-1	To erect, place and maintain a culvert in and to realign, an unnamed tributary of the Waingongoro River	20/09/2004	-	01/06/2023

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 in relation to the meat processing plant is undertaken by the Company and the Council and is outlined below.

1.4.2 Monitoring by the Company

Monitoring undertaken by the Company consists of four primary components outlined below.

1.4.2.1 Water abstraction

The volume of water abstracted from the Waingongoro River is monitored continuously and is provided directly to the Council electronically. A record is kept of the volume of water taken from the Eltham town supply.

1.4.2.2 Discharge to Waingongoro River

Wastewater discharge rate to the river is monitored continuously and is provided directly to the Council electronically. The chemical composition of the discharge and the receiving water upstream and downstream is monitored as prescribed by the Council. The frequency of chemical monitoring is at least weekly.

The chemical composition of wastewater is monitored at several points within the wastewater treatment system, as part of the management of that system. The Company makes a financial contribution to Council for riparian planting and management in the Waingongoro catchment, which aids in the ongoing protection and enhancement of the water course and its ecosystems.

1.4.2.3 Discharge to land

Wastewater discharge rate to land is monitored continuously and provided to the Council upon request. The chemical composition of the discharge and the soil, herbage and adjacent surface waters of the irrigation areas are monitored as prescribed by the Council, or as required in the Company's Effluent Management Plan. An assessment of the results is also provided in the Company's annual environmental monitoring report. Some of the data that should be reported to the Council and the full environmental monitoring report was not provided for the period under review (see Section 1.4.3.2). It is understood that this was due to staffing issues and is being addressed with the Company.

1.4.2.4 Odour surveys

Odour surveys are carried out at four points around the plant boundary at approximately weekly intervals. The frequency may be increased if significant odour is detected.

1.4.3 Monitoring by Taranaki Regional Council

The consent monitoring programme for the Company's site undertaken by the Council consists of six primary components as described below.

1.4.3.1 Programme liaison and management

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

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

1.4.3.2 Review of the Company's monitoring data

The monitoring data gathered by the Company is provided to the Council and reviewed to determine compliance with resource consent conditions, and to assess trends in water usage, in wastewater discharge volume and composition and effects on the Waingongoro River, land irrigation areas, and in odour generation. There is a large amount of data that is collected and reviewed by the Council in order to assess consent compliance. This summarised in Table 2.

Table 2 Data provision requirements and data that has been reviewed for the year under review

Information to be provided	To be reported	Where monitoring and data provision requirement specified	Usual means of provision of data	Data available for review
Date, time, rate and volume of discharge of wastewater to the Waingongoro River (15 minute intervals, $\pm 5\%$ accuracy)	Within 2 hours of being recorded	Conditions of wastewater discharge consent 2039-4.1	Electronically, transmitted daily	Yes
Discharge water quality and flow. Weekly grab samples	Not specified	Management plan required by condition 6 of consent 2039-4.1	Emailed. Data provided annually or on request	Yes
Receiving water quality and flow. Weekly grab samples	Not specified	Management plan required by condition 6 of consent 2039-4.1	Emailed. Data provided annually or on request	Yes
Results of odour surveys. Weekly air surveys	To be reported monthly	Management plan required by condition 7 of consent 4644-3.0	Emailed	Yes, but not provided monthly
Date, time, rate and volume of abstraction from the Waingongoro River (15 minute intervals, $\pm 5\%$ accuracy)	Within 2 hours of being recorded	Special conditions of abstraction consent 5347-3.1	Electronically, transmitted daily	Yes

Information to be provided	To be reported	Where monitoring and data provision requirement specified	Usual means of provision of data	Data available for review
Annual report on compliance with condition 6 and water conservation measures etc	31 May each year	Condition 8 of consent 5437-3.1	emailed	Provided July 2022. Next due 31 May 2023
<ul style="list-style-type: none"> Daily volume discharged in cubic metres; Date, time and location of the discharge within the discharge area and the depth of application; Total nitrogen applied to any application area in kilograms; Any incidents or equipment malfunctions that resulted or could have resulted in variances from predicted discharge quality or quantity; The discharge area where crops are harvested; The date of harvesting for each area and the weight of dry matter removed; and The nitrogen content of the dry matter removed. 	These records are to be submitted to TRC upon request and be contained within the annual report.	Management plan required by condition 2 of consent 5569-1 and condition 9 of consent 5736-2	Specified data email to Council	No

Information to be provided	To be reported	Where monitoring and data provision requirement specified	Usual means of provision of data	Data available for review
<p>The annual report will contain:</p> <ul style="list-style-type: none"> • The results of wastewater, groundwater and soil samples taken; • A map showing the location of the soil samples; • The nitrogen budget outlining all input and output quantities and qualities; • A record of any complaints received about the discharge; • The results of any self-compliance assessment; and • Any remedial measures taken by ANZCO in relation to any complaints received or any potential non-compliance. 	<p>Annual compliance report will be prepared and provided to TRC by the 30th October each year.</p>	<p>Management plan required by condition 2 of consent 5569-1 and condition 9 of consent 5736-2</p>	<p>Annual report and specified data email to Council</p>	<p>No</p>

Conditions of consent require a number of data streams and reports to be made available to the Council at different times throughout the year. It is noted that the consents have been issued over a period of time, and that the monitoring and reporting requirements across the suite of consents could be better aligned.

As a first step in aiming to bring about an improvement in administrative performance, it is proposed that the monitoring and reporting requirements be reviewed with the Company. As a first step in aiming to bring about an improvement in administrative performance, it is proposed that the consent monitoring and reporting requirements in consents 5437-3.1, 5736-2 and 7487-1 be reviewed with the Company. This review will ensure that the requirements are clear, consistent, achievable, measurable and enforceable. Site inspections

An officer of the Council visits the plant on three occasions. The main points of interest are the water abstraction system, plant processes with potential or actual discharges to receiving watercourses, including

contaminated stormwater and process wastewaters, and sources of emission to air. The land used for irrigation is also inspected for any signs of ponding or adverse effects from the discharge and the neighbourhood is surveyed for environmental effects, particularly odour.

1.4.3.3 Physicochemical monitoring

A number of sampling surveys are undertaken each year. The surveys have been established to monitor compliance and environmental effects, if any, from the wastewater and stormwater discharges to the Waingongoro River and the wastewater discharges to land. The monitoring surveys that are in place in respect of the discharge to water are outlined in Section 1.4.3.3.1 and those in place in respect of discharges to land are outlined in Section 1.4.3.3.2. The location of surface water and groundwater monitoring sites are displayed in Figure 2 and Figure 3. Figure 2 shows the sites that are monitored for discharges to land and water in the vicinity of the Company's site and Stuart Road. Figure 3 shows the sites that are monitored for discharges to land at Paulwell Farm. The shading indicates the consented areas used for wastewater irrigation.

Descriptions of each site are summarised in Table 3, Table 4, and Table 5.

1.4.3.3.1 Monitoring of discharges to water, surface water

Routine monitoring by the Council is undertaken on two occasions each year in relation to the discharge of stormwater (STW002005) and wastewater (IND004001) to the Waingongoro Stream. At the time of these surveys up to seven surface water sites are sampled as outlined in Table 3.

Stormwater discharge sampling is from a stormwater drain located directly above the weir on the Waingongoro River, to ensure any stormwater that is discharged meets consent requirements.

The four primary sites that are sampled in relation to the consent conditions on the wastewater discharge to the river discharge are also used to carry out inter-laboratory comparison exercises, which are generally carried out concurrently with the full surface water surveys.

With respect to site WGG000620, this site was added to the monitoring programme following agreement with submitters at the pre-hearing meeting on 18 June 2012 about replacement of consent 2039. The purpose of the monitoring at this site is to assess nutrient attenuation.

Table 3 Surface water monitoring site details, discharges to water

Site	Type	Eastings	Northings	Description
IND004001	Discharge (consent)	1710611	5634427	Sampled from the pond sump prior to discharging to the river
STW002005	Stormwater (consent 1968)	1710939	5634565	Culvert situated upstream of weir, 5-10 m before entering the receiving waters
WGG000500	Upstream control (all discharges)	1710576	5634824	At Eltham Rd bridge, above all site activities
WGG000510	Impact (stormwater), control (wastewater)	1710574	5634444	Approximately 65 m upstream of the wastewater discharge and ~580 m downstream of the stormwater discharge
WGG000540	Downstream impact	1710727	5634084	400 m downstream of the wastewater discharge location
WGG000620	Downstream impact	1710708	5632961	2.5 km downstream of discharge location

Additional monitoring may be carried out if any breach of consent conditions occurs, or if there is a significant difference between the inter-laboratory results provided by the Company and the Council's surface water monitoring results.

1.4.3.3.2 Monitoring of discharges to land, groundwater and surface water

Groundwater in the vicinity of the wastewater irrigation areas on Lower Stuart Road is monitored approximately quarterly at 9 sites for any effects on the aquifer and nearby shallow surface water resources. The farm supply well GND1189 was removed from the programme in the 2020-2021 year as the well is no longer in use as a water supply source due to elevated nitrates. The last sample collected from this bore was in September 2020. Three surface water sites are also sampled at the time of these surveys to assess whether the discharges to land are resulting in any effects in the surface water running through the irrigation area. The sites associated with these surveys are shown in Figure 2 and the site details are outlined in Table 4.

Monitoring surveys are also undertaken approximately quarterly in relation to the consent for the irrigation of wastewater at Paulwell Farm. This monitoring includes three groundwater monitoring sites and four surface water monitoring sites. The sites associated with these surveys are shown in Figure 3 and the site details are outlined in Table 5.

Table 4 Monitoring site details for the Stuart Road irrigation area

Site	Type	Eastings	Northings	Description	bore/well depth
GND1189	Old unlined supply well	1709868	5634097	Well 1, 83 Lower Stuart Rd, Eltham	6.3
GND1196	Monitoring bore	1709272	5634442	Monitoring bore A, Lower Stuart Rd, Eltham	8.5
GND0849	Up gradient – not genuine monitoring bore install	1709130	5636145	Upper Stuart Rd, Eltham	14.9
GND1187	Supply well – Potable (three houses)	1710269	5633127	205 Lower Stuart Rd, Eltham	6.7
GND1188	Supply well	1709623	5633310	200 Lower Stuart Rd, Eltham	27.0
GND1197	Monitoring bore	1709520	5633783	Monitoring bore B, Lower Stuart Rd, Eltham	9.1
GND1198	Monitoring bore	1710088	5634327	Monitoring bore C, Lower Stuart Rd, Eltham	8.6
GND1306	Old supply well	1709547	5634072	Well 2, Lower Stuart Rd, Eltham	7.2
GND1344	Monitoring bore	1710054	5633834	Monitoring bore D2, Lower Stuart Rd, Eltham	8.8
GND1345	Monitoring bore	1709444	5632453	Monitoring bore E, Lower Stuart Rd, Eltham	8.8
WGG000657	Up gradient	1709599	5634635	Lower Stuart Road culvert	-
WGG000660	Impact	1709984	5634044	800 m upstream of Lower Stuart Road culvert	-

Site	Type	Eastings	Northings	Description	bore/well depth
WGG000663	Impact	1709513	5633289	1.8 km downstream of WGG000657, above dairy ponds	-

Table 5 Monitoring site details for the Paulwell Farm irrigation area

Site	Type	Eastings	Northings	Description	bore/well depth
GND3116	Impact monitoring bore	1708237	5635121	BH01, north western	10.3
GND3117	Impact monitoring bore	1708488	5634823	BH02, central	10.3
GND3118	Impact monitoring bore	1708720	5634807	BH03, eastern	10.3
WGG000708	Up gradient (in buffer area)	1707983	5635243	80 m downstream of Eltham/Opunake Road	-
WGG000712	Impact (central)	1708395	5634453	Entrance to piped section at Paulwell/Hawkes boundary	-
WGG000715	Impact (southern boundary)	1708736	5634745	80m downstream of old effluent ponds.	-
WGG000716	Impact (southern boundary)	1708620	5634451	Entrance to piped section at Paulwell/Hawkes boundary	-

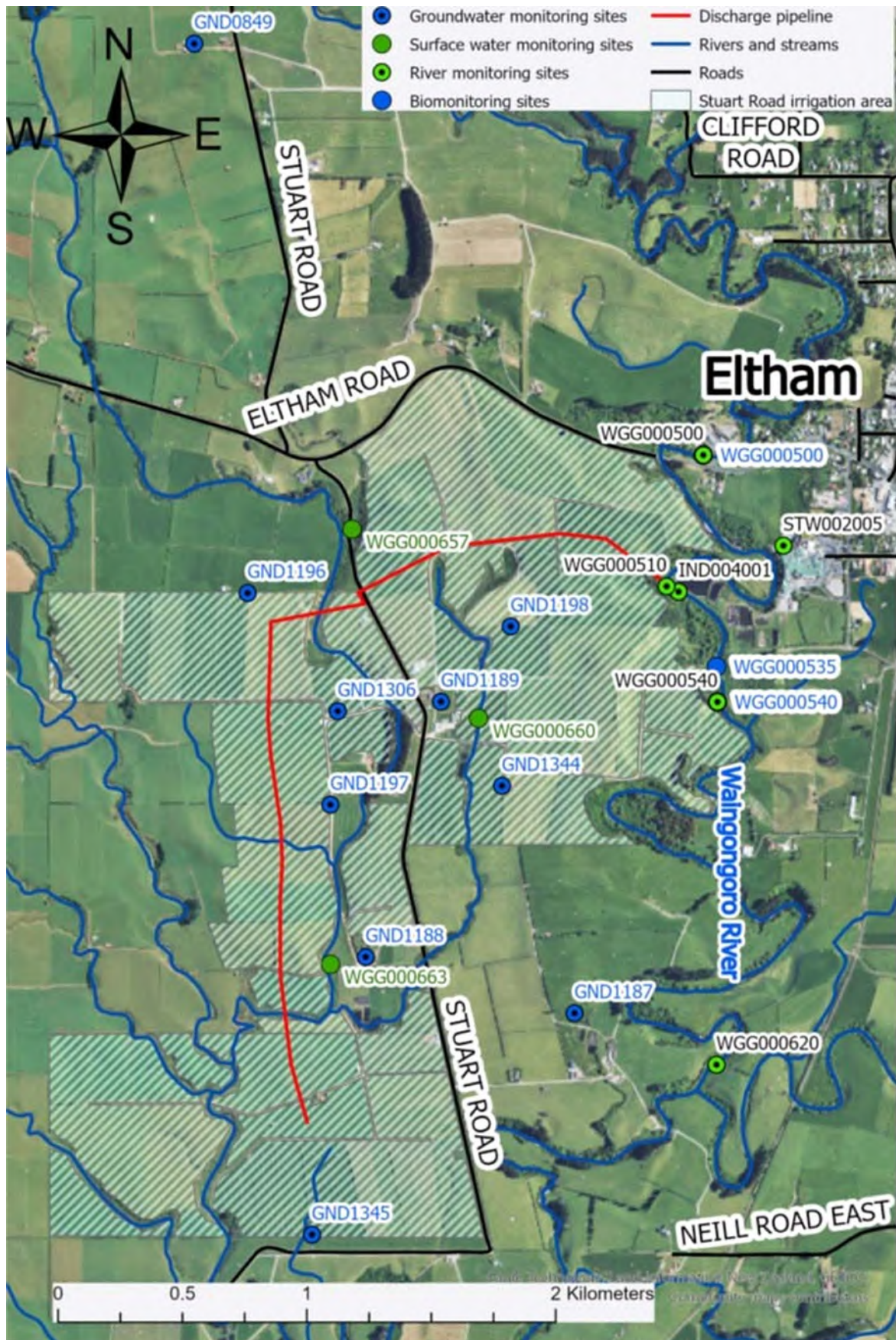


Figure 2 Groundwater and surface water monitoring locations – Plant site and Stuart Road irrigation area

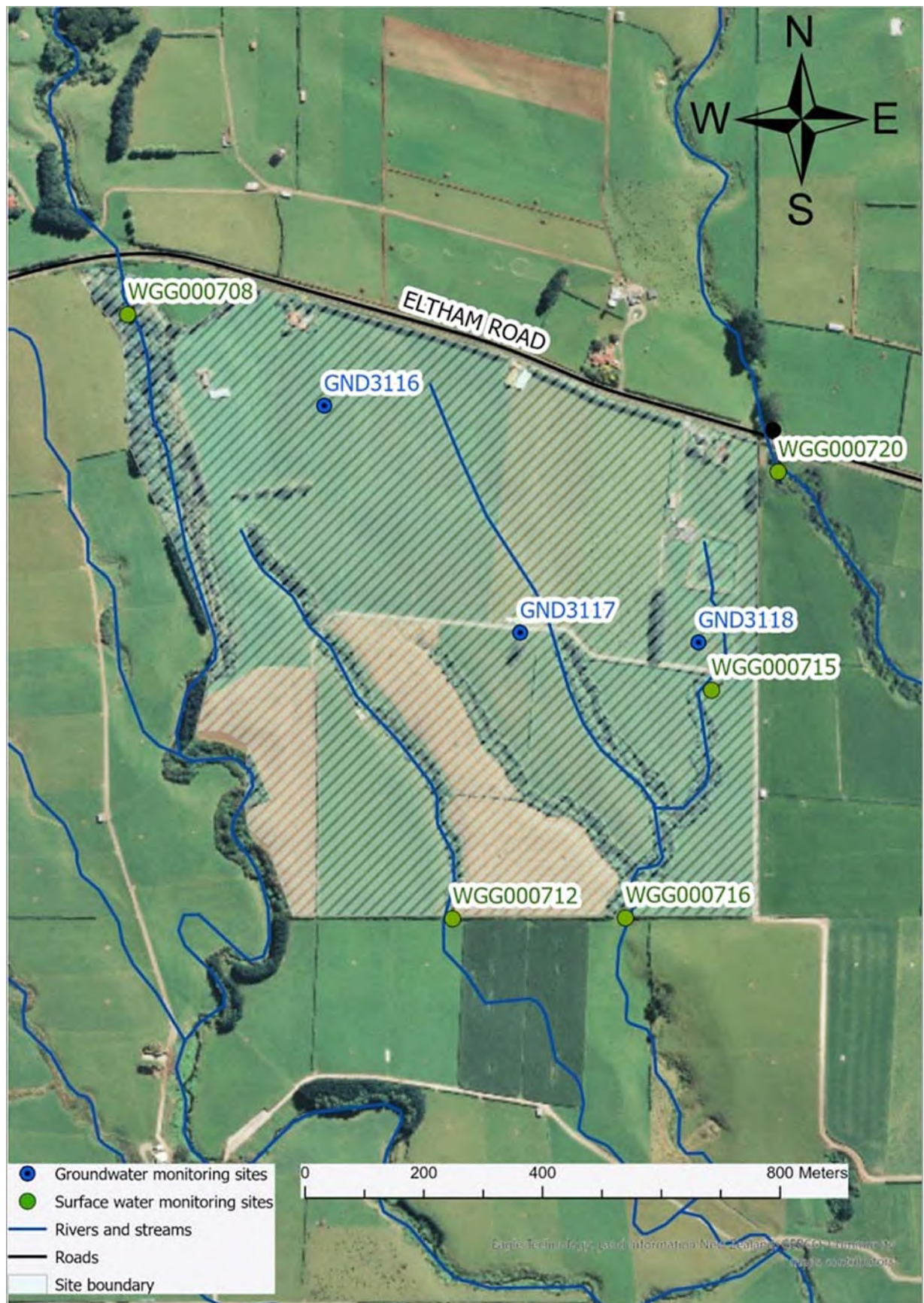


Figure 3 Groundwater and surface water monitoring locations – Paulwell Farm, Eltham Road

1.4.3.4 Biomonitoring surveys

Surveys of streambed macroinvertebrates and algae collected from several sampling sites in the Waingongoro River are carried out on a biannual basis, during spring and during summer/autumn under low flow conditions. An additional survey may be carried out if a particularly low receiving water flow coincides with high kill rate at the plant.

Biological surveys determine whether or not the discharge of stormwater and treated wastewater from the site has had a detrimental effect upon the communities of the stream. Biomonitoring site details are summarised in Table 6 and locations are displayed on Figure 1.

Table 6 Biomonitoring site details

Site No	Site code	Grid reference	Location
1	WGG000500	E1710576 N5634824	Eltham road bridge (upstream of discharge)
2	WGG000535	E1710725 N5634193	Approximately 300 m downstream of the discharge
3	WGG000540	E1710727 N5634084	Approximately 200 m downstream of rail bridge and approximately 400 m downstream of discharge

1.4.3.5 Water level monitoring station

The Council maintains a water level monitoring station on the Waingongoro River at Eltham Road, about 900 m above the river discharge point. Data from the station includes river level, river flow and temperature. Data is telemetered to the Council.

The information from flow is useful in the management of the Company's discharge to the river in terms of estimating available dilution.

2 Results

2.1 Inspections

During the period under review, the Council carried out three inspections in relation to the Company's activities. These inspections were carried out around the production facilities and Stuart Road irrigation site on 30 September 2021, 18 May 2022 and 5 September 2022.

No significant odour was detected during any inspection or at any designated monitoring site beyond the plant boundary. There were no ponding issues noted at the irrigation sites.

All storm water drains, swales and collection sumps inspected were found to be running clear.

The blood, offal and paunch areas were surveyed during each inspection and found to be tidy.

No significant issues were identified during inspections and the facilities appeared tidy and well-managed.

At the inspection on 30 September 2021, the inspecting officer was informed that environmental consultants have been engaged in preparation for the consent renewal process. It is noted that the discharge to land consents expire on 1 June 2026 and that the water abstraction and discharge consents expire on 1 June 2029.

At the time of the inspection on 18 May 2022 it was noted that, to date, no wastewater had been discharged at the Paulwell Farm site. The new holding pond was partially full of stormwater and this was clear and uncoloured. All pond aerators were operating. The final pond level was very high and discharging to land at 137 m³/hr (set point 50% - 38 L/s).

At the inspection on 5 September 2022 it was noted that, as per condition 3 of consent 6455, notice had previously been given advising of the need to undertake works to remove a large tree stump, willows and accumulated silt that had been deposited up against the stream culvert. The potential for adverse effects from this work was assessed at the time of the inspection and were deemed to be minimal.

2.2 Provision of consent holder data

The consent holder provides data on abstraction volumes, discharge rates and effluent quality on a regular basis as laid out in the various management plans, or at the request of the Council. Any changes to the irrigation and discharge systems, are also provided. During the monitoring period there were no changes to the discharge systems or related issues reported:

The data provided by the Company that has been reviewed by the Council is summarised below.

2.2.1 Abstraction data

Abstraction of water from the Waingongoro River is permitted under consent 5437-3.1. The Company is permitted to take up to 1972 m³ per day at a rate of up to 22.8 L/s. Data is to be recorded electronically at 15 minute intervals, to an accuracy of $\pm 5\%$. This data is provided daily to the Council for assessment.

The daily abstraction volumes and abstraction rate records for the period under review are given in Figure 4 and Figure 5 respectively.

The daily abstraction limit was complied with throughout the period under review. The maximum daily volume abstracted was 1,851 m³ on 21 January 2022.

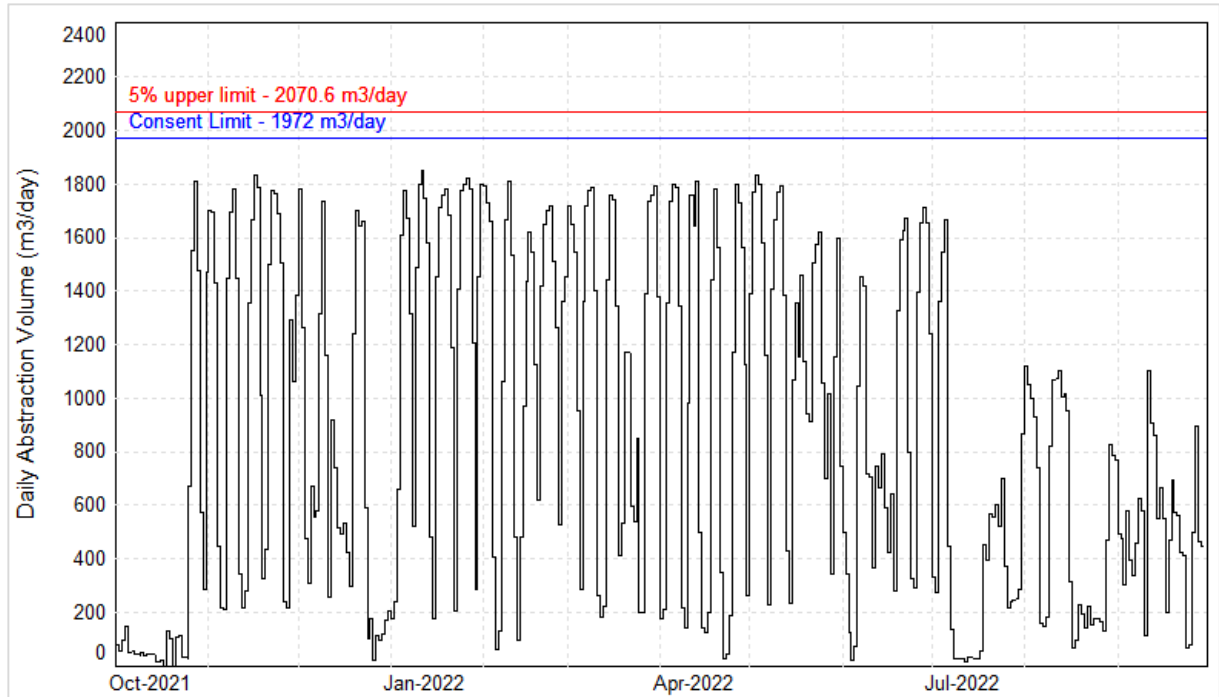


Figure 4 Daily abstraction volume, electronic record

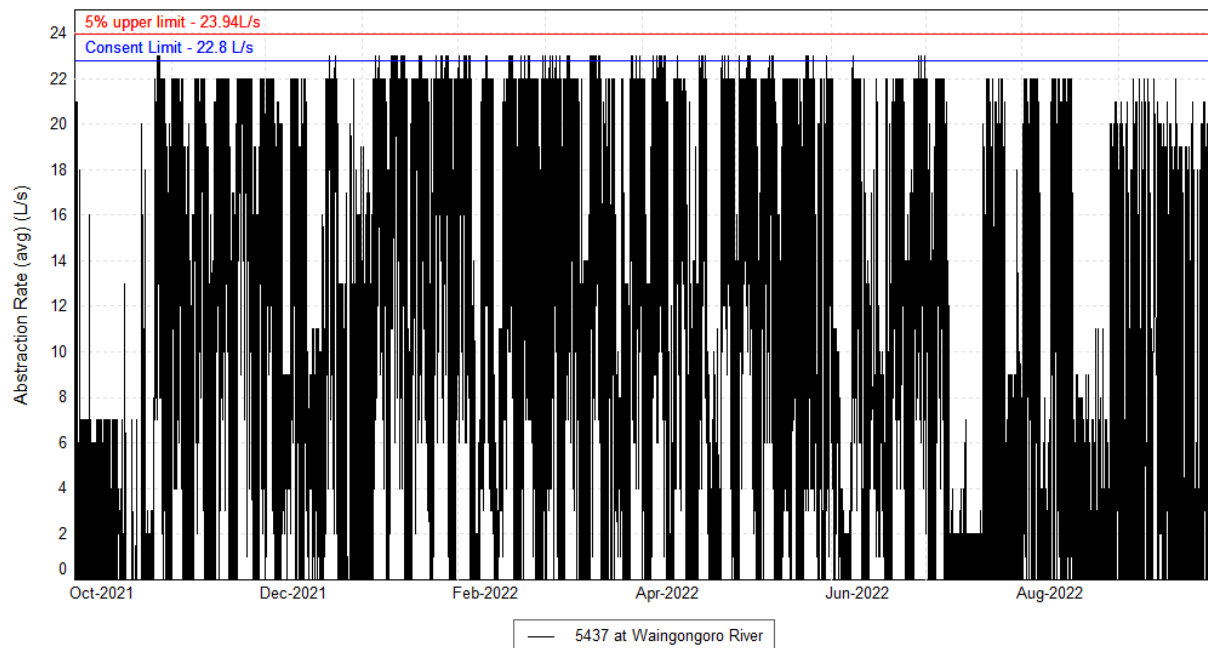


Figure 5 Abstraction rate, electronic record

The abstraction rate limit of 22.8 L/s was exceeded on 121 occasions during the period under review. However, on all occasions the marginal exceedance of the abstraction rate was reported as 23 L/s and was within the permitted measurement error of the recording device.

The Company also provided a report for the year under review that included the weekly volumes abstracted and the weekly volumes of water taken from the municipal supply, which is also sourced from the Waingongoro River. This data has been used to show the approximate monthly abstraction volumes from the river and the town supply as displayed in Figure 6. During the period from the week ending 4 October 2021 and the week ending 3 October 2022 a total of 456,884 m³ of water was used at the site, with 271,405

m³ abstracted from the Waingongoro River under consent 5437-3.1, and 185,479 m³ sourced from the Eltham town water supply.

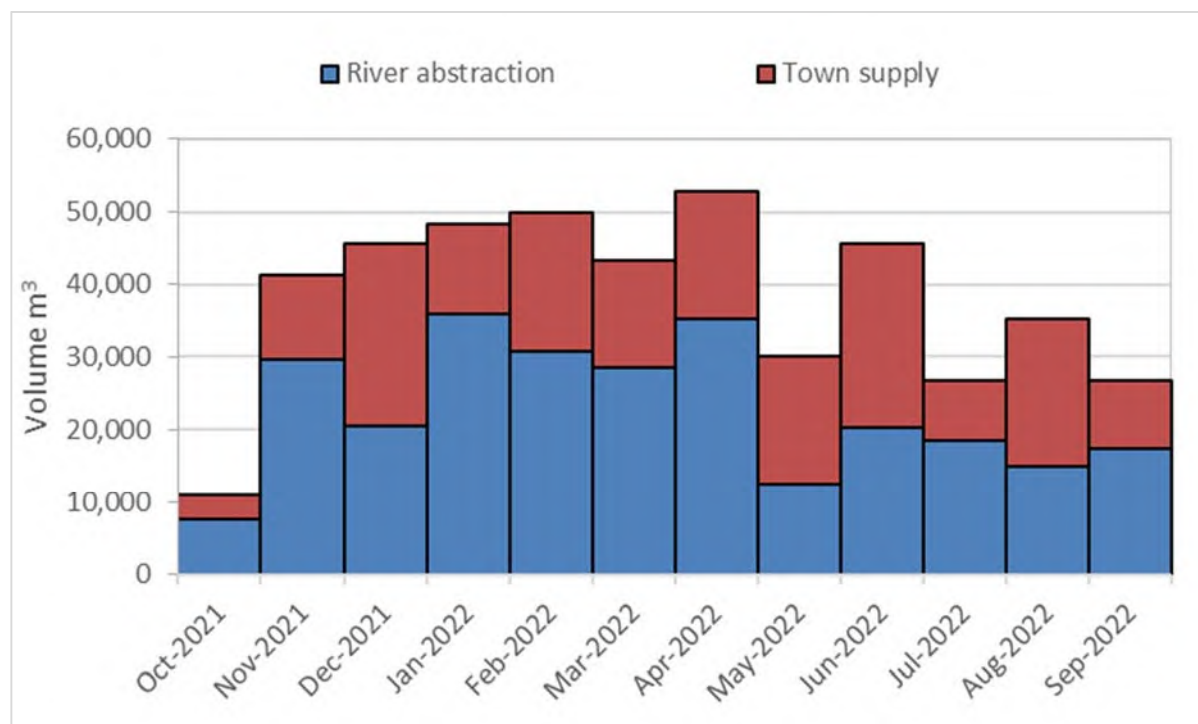


Figure 6 River abstraction and municipal water supply volumes from October 2021 to September 2022

The Company is also required to provide a water use report under the requirements of Consent 5437. The report summarises the results of data collected and provides the details of any water conservation measures undertaken during the previous year. The report that was required by May 2021 was provided after this date, but included the data to 5 July 2022. This expanded date range resulted in the data required by May 2022 being provided early enough to be incorporated into the 2020-2021 Annual Report.

2.2.2 Discharge data

The three consents that the Company holds to provide for the discharge of effluent from the site contain a number of consent requirements that work together to ensure that any environmental effects from the discharge are minimised. One of the ways in which this is to be achieved is by compatible consent conditions that requires that the discharge to land is maximised thereby minimising the discharge to the river. The management plans required by the consents need to detail how the discharges to the river will be minimised and the discharges to land maximised.

In addition to this, the discharge to the river is limited to 3,500 m³ per day and 81 L/s and the rate of discharge to land is limited to 3,500 m³ per day.

2.2.2.1 Discharge of treated wastewater to the river, Consent 2039-4

Discharge to the river should only occur when discharges to land cannot occur. Discharges to land are controlled by the Management, with the objective of minimising discharges to the Waingongoro.

At these times, there is likely to be higher flow in the river, providing dilution of the discharge. During low flow periods discharge occurs to land via the irrigation system.

In the period under review, based on the daily data provided to Council via telemetry, a total of 213,736 m³ of effluent was discharged to the river under consent 2039-4 between 1 October 2021 and 30 September 2022. Figure 7 shows that the daily discharge limit of 3,500 m³/day was complied with. A comparison of the

daily discharge data from the Company and the flow in the Waingongoro River at Eltham Road shows that the discharges to the river occurred at times when there was above median flow in the river. The 15 minute average discharge rates were also well below the maximum permitted rate Figure 8.

The maximum daily discharge of 3,076 m³ was recorded on 19 August 2022 and the maximum average rates over a 15 minute interval of 55 L/s were recorded on 18 and 19 August 2022.

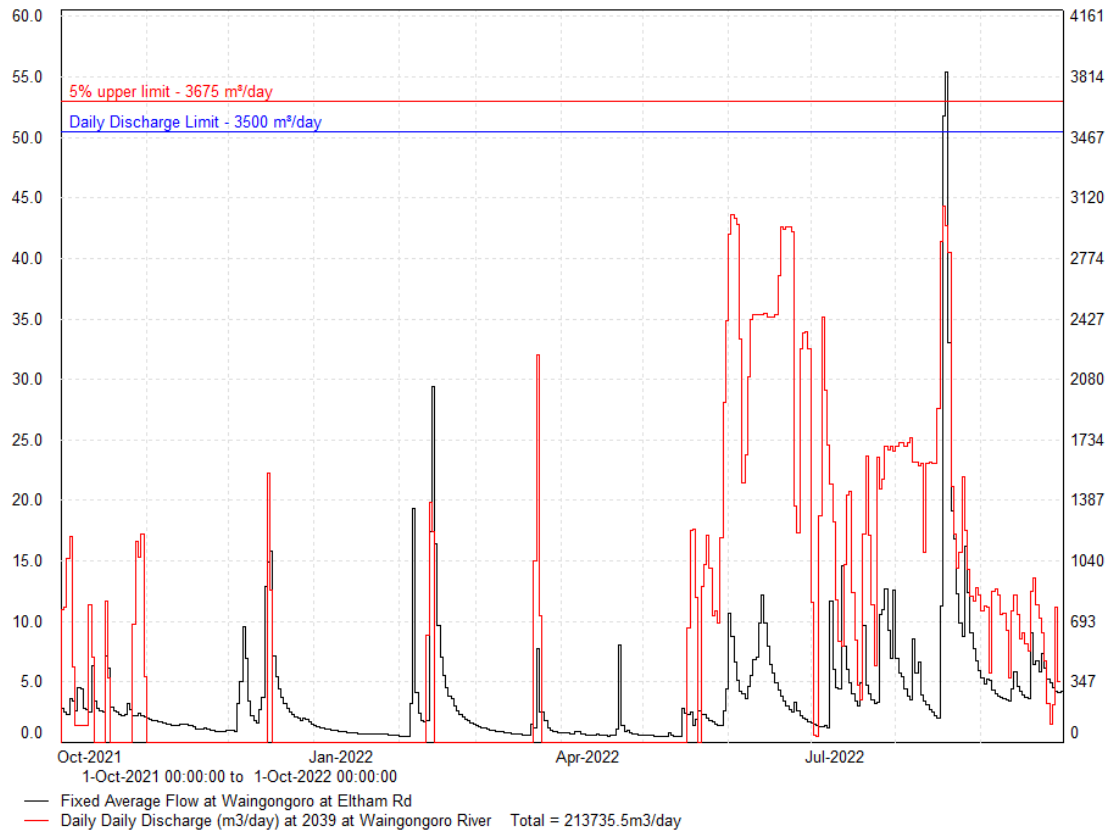


Figure 7 Daily effluent discharge to the Waingongoro River and river flow at Eltham Road

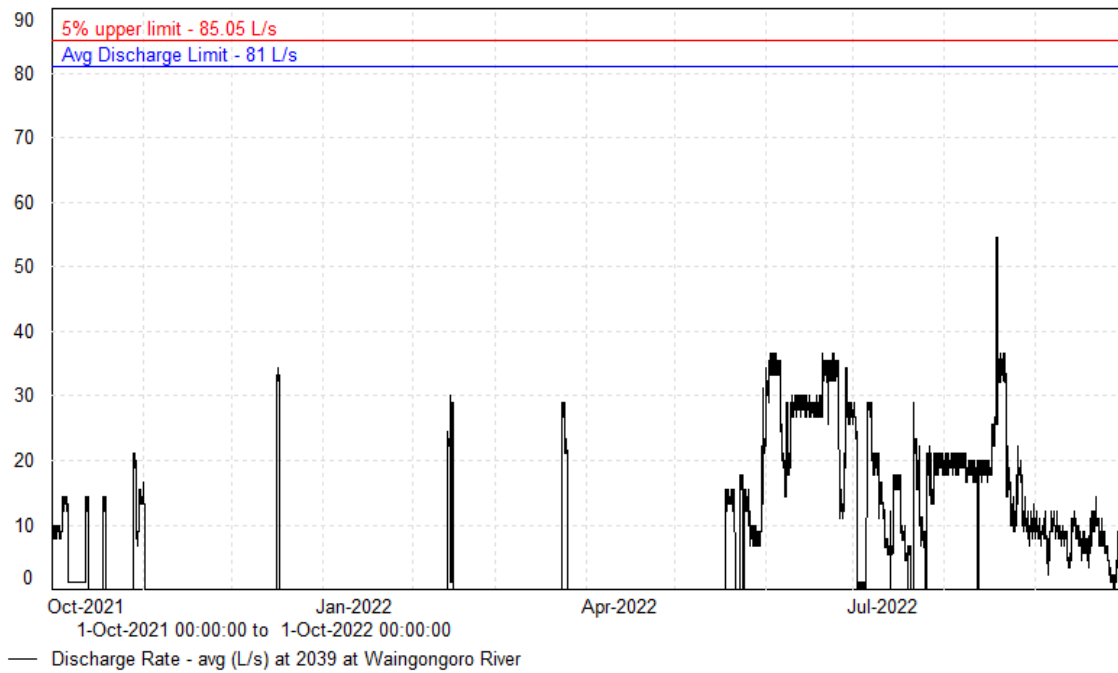


Figure 8 Effluent discharge rate to the Waingongoro River, 15 minute average

The volume of effluent irrigated onto land is currently provided in terms of a weekly volume, as is the total effluent discharged from the plant. During the monitoring period a total of 217,223 m³ of effluent was discharged to the river, which equated to 42% of the total effluent discharged during the monitoring period (514,132 m³). This is in comparison to the 20-21 year in which 37% of the effluent was discharged to the river. During the monitoring period, average river flows were significantly higher than mean flows recorded historically from 1974 to date during December 2021 and February and August 2022 (Figure 9). Conversely, river flows were significantly lower during May 2022.

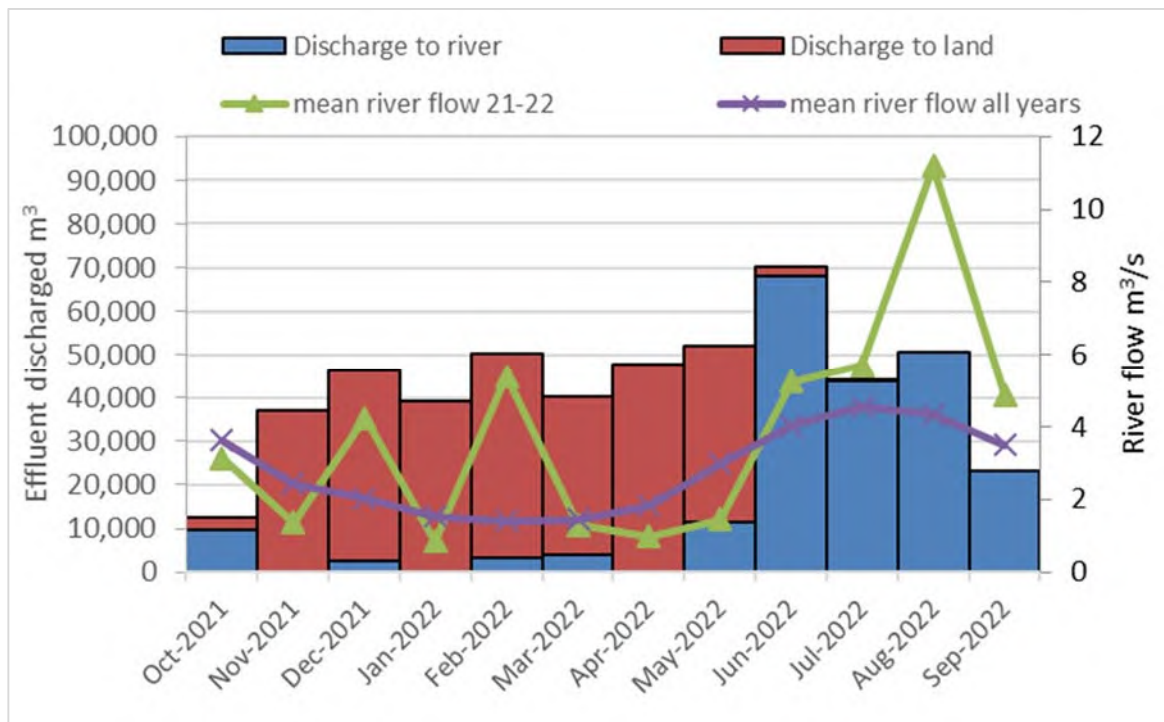


Figure 9 Effluent discharged to land and to the river

Routine water quality monitoring by the Council was undertaken on 17 June 2022 and 5 October 2022 in relation to river discharge consent conditions. Inter-laboratory comparison were also carried out concurrently. The results of this monitoring are provided in Section 2.3.1, Table 9.

2.2.2.2 Discharge of stormwater to the river Consent 1968-4

Stormwater is discharged directly to the river. Restrictions on the quality of the stormwater and any consequential impacts on the river are covered by consent conditions. The Company does not currently undertake any self-monitoring with respect to this discharge.

2.2.2.3 Discharge of treated wastewater to land data, consents 5569-1 and 5736-2

The reporting requirements for the self-monitoring data collected by the Company in relation to the discharge of effluent to land are specified in the Effluent Management Plan, which has been written to meet the spray irrigation management plan requirements of the consent. The plan states the self-monitoring data that will be collected, and also states that the data will be reported to the Council in the form of an Annual Compliance Report by 30 October each year. The Annual Compliance Report for the period under review has not been received due to staffing issues, however, weekly discharge volumes and the nitrogen concentration of weekly grab samples from pond 7 were provided.

Discharge data was not provided by the Company when requested, and the annual compliance report was not received. It cannot be confirmed if all discharge to land occurred under consent 5569-1 or whether some discharge occurred under consent 5736-2.

Between November 2021 and mid May 2022 the Company predominantly discharged to land and between July 2022 and October 2022, the Company solely discharged to the river. During the remaining months, discharge occurred to both the river and to land (Figure 9).

In summary, a total of 296,909 m³ or 58% of total discharge was irrigated to land during the monitoring period.

2.2.2.3.1 Effluent and nitrogen loading application rates.

The Company monitors the volume of effluent pumped from the plant for discharge to land and uses this to calculate the volume of effluent irrigated to each paddock, using the area of the paddock and an assumed standard application depth of 45 mm. Nitrogen loadings are then calculated using the weekly total nitrogen value per hectare.

The consent requires that effluent application rates not exceed 300 kg per hectare per year. The information provided by the Company to date for the period under review is insufficient to confirm compliance with this consent condition. It is also noted that this does not take account of any dairy shed effluent or fertiliser that may also be applied. It is proposed that this be addressed in the consents that have an opportunity for review in June 2023, or in the re-issued consents for those expiring in June 2026.

The data provided shows that irrigation to land was undertaken between October 2021 and July 2022 across 32 weeks of the year. A total of 296,909 m³ of effluent was irrigated, which accounted for 58% of the total effluent discharged over the review period. This represents a total of 32,512 kg of nitrogen, which is similar to the amount that was applied last year. During the last three years the total nitrogen discharged has decreased significantly from previous years. The significant reduction in nitrogen is a result of blood being transported off-site for processing from the 2018-2019 year rather than being treated on-site through the settlement pond system and discharged onto land up until the 2017-2018 year.

2.3 Results of receiving environment monitoring

To monitor for any significant impacts downstream of the river discharge site, water quality parameters are monitored at various locations along the river. Groundwater and surface water monitoring is also undertaken at and around any site receiving discharge to land. Inspections are undertaken at the site, adjoining areas and any discharge locations where impacts could potentially occur.

2.3.1 Surface water monitoring undertaken by the Council

Surface water quality sampling in relation to the river discharge for the period was undertaken on 17 June 2022 and 5 October 2022 at five sites.

Two sites are located upstream of the discharge (WGG000500 and WGG000510), one site at the discharge location (IND004001) and two sites located downstream of the discharge (WGG000540 and WGG000620). Black disc measurements were also taken upstream and downstream of the discharge to assess compliance with the requirements of consent 2039-4.1. Stormwater sampling was undertaken by the Council, during the sampling rounds. Sampling was not undertaken during or immediately following any heavy rainfall periods when stormwater runoff would be at its highest.

The results of surface water sampling undertaken by the Council are presented in Table 7 and Table 8 and are presented against results undertaken during the previous reporting period on 25 June 2021 and 30 September 2021.

Water quality monitoring is also undertaken weekly by the Company during periods of discharge to the river and is discussed in Section 2.3.2. As a quality assurance measure surface water quality monitoring by the Council is undertaken in conjunction with the weekly surface water monitoring undertaken by the Company. A comparison of the data is discussed in Section 2.3.1 and the data is displayed in Table 9.

Limits have been set on some water quality parameters in the river after adequate mixing has occurred. A summary of these limits are as follows:

- Filtered carbonaceous biological oxygen demand (CBOD) must not exceed 2 g/m³;
- Dissolved oxygen (DO) must remain above 6 g/m³; and
- Maximum total ammonium concentration for a given pH must remain below the concentrations indicated in Table 1 of the discharge consent 2039-4.1.

The monitoring programme was carried out as per the requirements of the consent conditions and associated discharge management plans. Results indicate that phosphorus, nitrogen and ammonium have all been significantly diluted by the time they reach the downstream monitoring location. Dissolved reactive phosphorus (DRP) concentrations are approximately three times higher downstream of the site in comparison to those upstream (Figure 10). All water quality limits were met during the period. Inspections undertaken by Council officers downstream of the discharge site indicated that there were no visible impacts on the river from the discharge.

A reduced suite of parameters are also analysed as part of the Council's scheduled State of Environment Monitoring (SEM) programme for the Waingongoro River during both low and high flow conditions. This data may be used as a comparator when appropriate.

Table 7 Surface water quality results 2021

Surface water monitoring 2020-2021	Site	Limit	Discharge	Stormwater	Upstream		Downstream		Discharge	Stormwater	Upstream		Downstream	
			IND004001	STW002005	WGG000500	WGG000510	WGG000540	WGG000620	IND004001	STW002005	WGG000500	WGG000510	WGG000540	WGG000620
	Sample		TRC212146	TRC212148	TRC212144	TRC212145	TRC212147	TRC212149	TRC212981	TRC212983	TRC212978	TRC212980	TRC212982	TRC212984
	Date	-	25 Jun 2021						30 Sep 2021					
Parameter	Time	-	9:20	10:05	11:15	9:35	9:50	11:40	8:20	9:00	10:55	8:30	8:40	12:05
Total alkalinity	g/m ³ as CaCO ₃	-	730	-	-	-	-	-	270	-	-	-	-	-
Electrical conductivity	µS/cm	-	1,833	268	129	129	136	138	868	199	129	130	129	131
PH	pH	-	8.1	7.2	7.8	6.8	7.3	7.2	8.2	7.1	7.4	7.3	7.3	7.4
Temperature	° C	-	10	15.5	10.2	9.9	9.9	10.3	13	14.1	11.4	10.6	11	11.6
Dissolved oxygen	g/m ³	<6	1.02	-	11.35	11.29	11.34	11.11	0.84	-	11.27	11.16	11.22	11.2
Dissolved oxygen saturation	%	-	9	-	-	100.9	101.2	100.2	5.8	-	104.9	102.9	103.4	104.6
Dissolved calcium	g/m ³	-	18.6	-	-	-	-	-	16.7	-	-	-	-	-
Total calcium	g/m ³	-	20	-	-	-	-	-	16.7	-	-	-	-	-
Chloride	g/m ³	-	71	-	12.2	12.6	12.9	13	45	-	12.2	11.2	12.2	11.9
Dissolved potassium	g/m ³	-	50	-	-	-	-	-	17.4	-	-	-	-	-
Total potassium	g/m ³	-	50	-	-	-	-	-	18	-	-	-	-	-
Dissolved magnesium	g/m ³	-	5.6	-	-	-	-	-	4.6	-	-	-	-	-
Total magnesium	g/m ³	-	6.7	-	-	-	-	-	4.6	-	-	-	-	-
Dissolved sodium	g/m ³	-	122	-	-	-	-	-	60	-	-	-	-	-
Nitrate and nitrite as N (NNN)	g/m ³ N	-	8.2	-	1.98	1.98	2.1	2.1	10.4	-	1.93	1.98	1.99	1.97
Nitrite	g/m ³ N	-	4.0	-	0.004	0.005	0.023	0.03	1.1	-	0.007	0.01	0.007	0.012
Nitrate	g/m ³ N	-	-	-	1.97	1.98	2.00	2.1	-	-	1.92	1.97	1.98	1.95
Total kjeldahl nitrogen	g/m ³ N	-	166	-	-	-	-	-	62	-	-	-	-	-
Total nitrogen	g/m ³	-	174	-	-	-	-	-	72	-	-	-	-	-
Free Ammonia as N	g/m ³	-	3.3	0.0032	0.0002	0.00002	0.0017	0.0011	1.68	0.0015	0.00008	0.00057	0.00021	0.00045
Total Ammoniacal-N	g/m ³	-	135	0.69	0.015	0.022	0.51	0.42	49	0.48	0.017	0.134	0.048	0.09
Dissolved reactive phosphorus	g/m ³ P	-	20	<0.004	0.016	0.014	0.078	0.073	5.5	<0.004	0.018	0.03	0.023	0.028
Total phosphorus	g/m ³	-	22	-	-	-	-	-	7.4	-	-	-	-	-
Sulphate	g/m ³	-	12	-	-	-	-	-	11.7	-	-	-	-	-
Total biochemical oxygen demand (BOD)	g O ₂ /m ³	-	27	1.4	<0.4	<0.8	<0.8	<0.8	16	1.5	0.5	0.8	<0.8	<0.8

Surface water monitoring 2020-2021	Site		Discharge	Stormwater	Upstream		Downstream		Discharge	Stormwater	Upstream		Downstream	
		Limit	IND004001	STW002005	WGG000500	WGG000510	WGG000540	WGG000620	IND004001	STW002005	WGG000500	WGG000510	WGG000540	WGG000620
	Sample		TRC212146	TRC212148	TRC212144	TRC212145	TRC212147	TRC212149	TRC212981	TRC212983	TRC212978	TRC212980	TRC212982	TRC212984
	Date	-	25 Jun 2021						30 Sep 2021					
Parameter	Time	-	9:20	10:05	11:15	9:35	9:50	11:40	8:20	9:00	10:55	8:30	8:40	12:05
Dissolved C-biochemical oxygen demand (CBOD)	g O ₂ /m ³	>2	15.1	-	-	<1.0	<1.0	<1.0	3.2	-	-	<1.0	<1.0	<1.0
Chemical oxygen demand (COD)	g O ₂ /m ³	-	300	-	-	-	-	-	88	-	-	-	-	-
Escherichia coli	/100 ml	-	62,000	23	230	300	550	180	900	200	230	330	300	300
Enterococci	/100 ml	-	3,300	3	41	65	65	30	50	10	12	25	27	18
Suspended solids	g/m ³	-	68	25	7	7	7	6	32	18	3	3	<3	7
Turbidity	FNU	-	-	-	-	-	-	-	19.6	14.4	1.56	1.64	1.4	1.66
Black disc	m	-	-	-	1.5	-	-	1.48	-	-	1.45	-	-	1.56
Oil and grease	g/m ³	-	9	<5	-	-	-	-	5	<4	-	-	-	-
Sodium absorption ratio (dissolved)	-	-	6.4	-	-	-	-	-	3.4	-	-	-	-	-
Potassium absorption ratio	(mmol/L)0.5	-	1.5	-	-	-	-	-	0.6	-	-	-	-	-

Table 8 Surface water quality results 2022

Surface water monitoring 2021-2022	Site		Discharge	Stormwater	Upstream		Downstream		Discharge	Stormwater	Upstream		Downstream	
		Limit	IND004001	STW002005	WGG000500	WGG000510	WGG000540	WGG000620	IND004001	STW002005	WGG000500	WGG000510	WGG000540	WGG000620
	Sample		TRC226765	TRC226767	TRC226763	TRC226764	TRC226766	TRC226768	TRC228274	TRC228276	TRC228271	TRC228273	TRC228275	TRC228277
	Date	-	17 June 2022						5 Oct 2022					
Parameter	Time	-	9:40	10:10	10:30	09:50	10:00	11:40	8:25	9:00	9:20	8:35	8:45	9:40
Total alkalinity	g/m ³ as CaCO ₃	-	280	-	-	-	-	-	240	-	-	-	-	-
Electrical conductivity	µS/cm	-	1219	227	121	124	130	138	914	215	130	130	132	135
PH	pH	-	7.7	6.9	7.1	7.6	7.5	7.2	8.1	7.2	7.6	7.6	7.6	7.6
Temperature	° C	-	12.3	13.4	12.2	11.6	11.6	10.3	10.7	11.8	11.2	11.1	11.1	11.4
Dissolved oxygen	g/m ³	<6	6.13	-	10.69	10.92	10.87	11.11	N/D	-	10.78	10.85	10.83	10.65
Dissolved oxygen saturation	%	-	61.2	-	-	102	101.5	100.2	N/D	-	100.8	101.1	100.9	99.6
Dissolved calcium	g/m ³	-	16.4	-	-	-	-	-	14.9	-	-	-	-	-
Total calcium	g/m ³	-	16.8	-	-	-	-	-	15.1	-	-	-	-	-
Chloride	g/m ³	-	73	-	13.8	13.8	14.0	13	49	-	12.1	12.3	12.2	13.2
Dissolved potassium	g/m ³	-	43	-	-	-	-	-	18.4	-	-	-	-	-

Surface water monitoring 2021-2022	Site		Discharge	Stormwater	Upstream		Downstream		Discharge	Stormwater	Upstream		Downstream	
		Limit	IND004001	STW002005	WGG000500	WGG000510	WGG000540	WGG000620	IND004001	STW002005	WGG000500	WGG000510	WGG000540	WGG000620
	Sample		TRC226765	TRC226767	TRC226763	TRC226764	TRC226766	TRC226768	TRC228274	TRC228276	TRC228271	TRC228273	TRC228275	TRC228277
	Date	-	17 June 2022						5 Oct 2022					
Parameter	Time	-	9:40	10:10	10:30	09:50	10:00	11:40	8:25	9:00	9:20	8:35	8:45	9:40
Total potassium	g/m ³	-	43	-	-	-	-	-	18.6	-	-	-	-	-
Dissolved magnesium	g/m ³	-	5.2	-	-	-	-	-	4.1	-	-	-	-	-
Total magnesium	g/m ³	-	5.6	-	-	-	-	-	4.3	-	-	-	-	-
Dissolved sodium	g/m ³	-	102	-	-	-	-	-	54	-	-	-	-	-
Nitrate and nitrite as N (NNN)	g/m ³ N	-	36	-	1.96	1.96	-	2.1	19.4	-	2.1	2.1	2.2	2.1
Nitrite	g/m ³ N	-	34	-	0.005	0.005	0.159	0.03	0.52	-	0.006	0.007	0.009	0.011
Nitrate	g/m ³ N	-	-	-	1.95	1.95	1.99	2.1	-	-	2.1	2.1	2.2	2.1
Total kjeldahl nitrogen	g/m ³ N	-	70	-	-	-	-	-	67	-	-	-	-	-
Total nitrogen	g/m ³	-	105	-	-	-	-	-	86	-	-	-	-	-
Free Ammonia as N	g/m ³	-	0.63	0.00146	0.00006	0.00019	0.0022	0.0011	1.6	0.0021	0.00015	0.00019	0.00100	0.00074
Total Ammoniacal-N	g/m ³	-	61	0.84	0.02	0.025	0.30	0.42	67	0.63	0.018	0.023	0.122	0.09
Dissolved reactive phosphorus	g/m ³ P	-	15.5	< 0.004	0.010	0.014	0.074	0.073	7.2	<0.004	0.011	0.012	0.023	0.018
Total phosphorus	g/m ³	-	18.3	-	-	-	-	-	8.2	-	-	-	-	-
Sulphate	g/m ³	-	13.5	-	-	-	-	-	15.6	-	-	-	-	-
Total biochemical oxygen demand (BOD)	g O ₂ /m ³	-	159	1.4	1.1	0.8	< 0.8	<0.8	30	0.9	<0.4	1.2	1.9	0.9
Dissolved C-biochemical oxygen demand (CBOD)	g O ₂ /m ³	>2	6.1	-	-	1.0	< 1.0	<1.0	1.9	-	-	<1.0	<1.0	<1.0
Chemical oxygen demand (COD)	g O ₂ /m ³	-	170	-	-	-	-	-	118	-	-	-	-	-
Escherichia coli	/100 ml	-	9,000	70	260	310	420	180	500	<10	300	440	520	380
Enterococci	/100 ml	-	260	70	60	210	320	30	180	10	16	19	18	14
Suspended solids	g/m ³	-	55	30	12	7	6	6	38	44	6	4	4	4
Turbidity	FNU	-	40	30	4.4	4.1	4.8	-	30	22	1.86	1.40	2.1	2.2
Black disc	m	-	-	-	0.95	-	-	1.48	-	-	1.58	-	-	1.45
Oil and grease	g/m ³	-	8	7	-	-	-	-	<4	<4	-	-	-	-
Sodium absorption ratio (dissolved)	-	-	5.6	-	-	-	-	-	3.2	-	-	-	-	-
Potassium absorption ratio	(mmol/L)0.5	-	1.4	-	-	-	-	-	0.6	-	-	-	-	-

Key N/D Not determined, field error

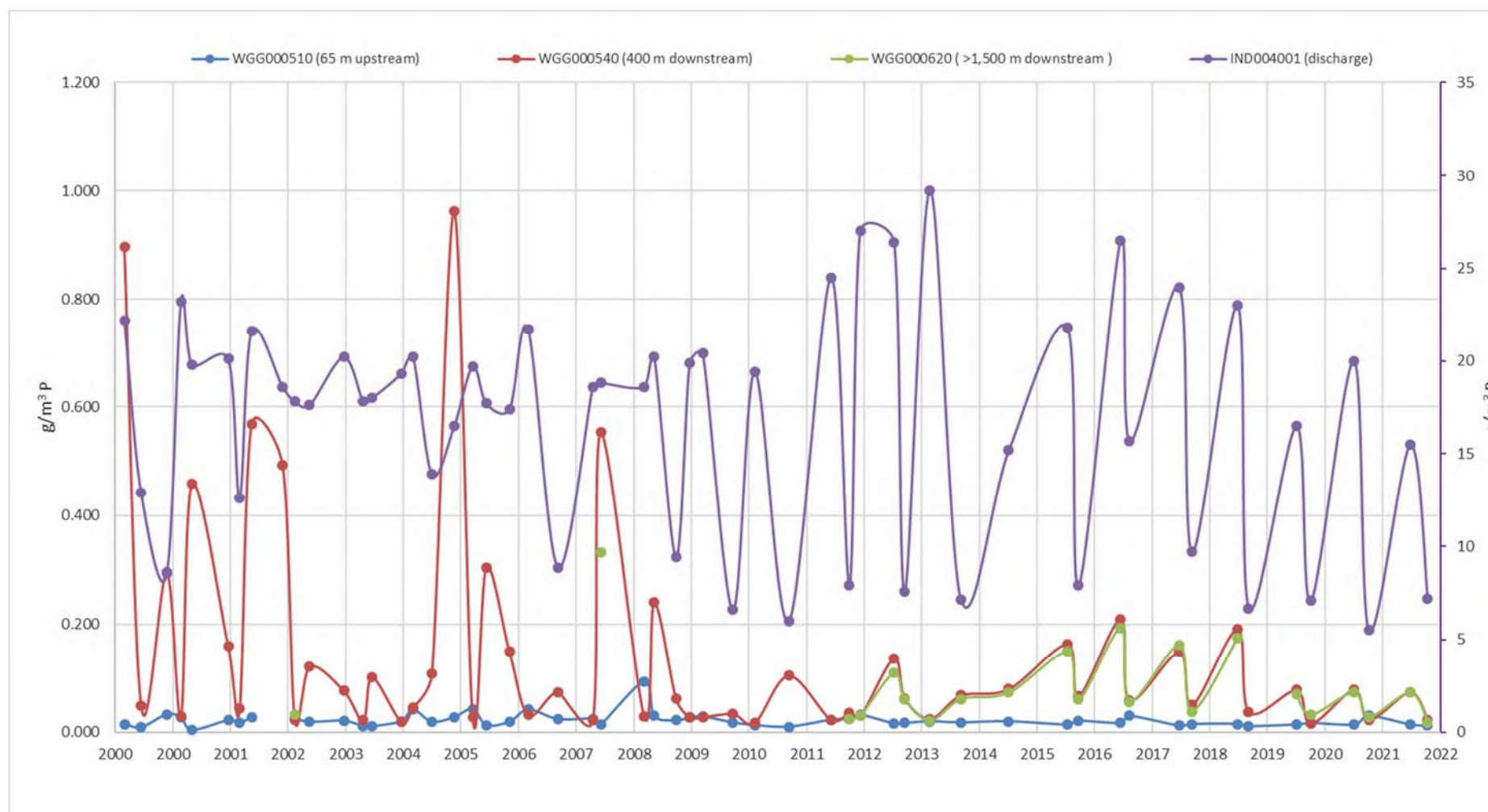


Figure 10 Dissolved reactive phosphorus concentrations

Table 9 Inter-laboratory comparison results June 2022 and October 2022

Surface water monitoring 2020-2021	Site	Discharge		Upstream		Downstream		Discharge		Upstream		Downstream	
		IND004001		WGG000510		WGG000540		IND004001		WGG000510		WGG000540	
	Sample	TRC	ANZCO	TRC	ANZCO	TRC	ANZCO	TRC	ANZCO	TRC	ANZCO	TRC	ANZCO
	Date	17 Jun 2022						12.3					
Parameter	Time	9:40		9:50		10:00		8:25		8:35		8:45	
PH	pH	7.7	7.7	7.6	7.6	7.5	7.6	8.1	7.7	7.6	7.7	7.6	
Temperature	°C	12.3	12.3	11.6	11.5	11.6	11.6	10.7	10.8	11.1	10.9	11.1	10.9
Total Ammoniacal-N	g/m ³	61	67	0.025	0.08	0.30	0.36	67	62	0.018	0.03	0.023	0.13
Chemical oxygen demand	g O ₂ /m ³	170	158	-	-	-	-	118	88	-	-	-	-
Dissolved oxygen	g O ₂ /m ³	6.13	6.49	10.92	11.01	10.87	11.04	N/D	5.52	10.85	9.38	10.83	9.22
Suspended solids	g/m ³	55	70	7	-	6	-	30	20	4	-	4	-

2.3.2 Surface water monitoring undertaken by the Company

Monitoring of a reduced suite of analytes is undertaken by the Company weekly and analysed in their on-site laboratory. It is noted that no data was provided for the period 5 October 2021 to 25 October 2021 or for the week ending 18 July 2022, although there was 5,315 m³ and 6,588 m³ of effluent respectively discharged to the river during these periods.

Downstream dissolved oxygen (DO) concentrations are displayed in Figure 11 and indicate that DO remained above the 6 g/m³ limit during periods of discharge.

Downstream ammonium (NH₄) and pH are displayed in Figure 12. The highest ammonium concentrations can be seen downstream between late May and September 2022. Concentrations increase as river flows increase within the catchment and during periods of discharge to the river. The increases are likely a result of a combination of both the increased runoff from the surrounding catchment, which is predominantly rural in nature, due to winter rainfall and the commencement of discharge to the river by the Company. The data provided indicated that there was no discharge from the site during the week ending 13 January, when the reported river sample contained an increased concentration of ammonium. The maximum pH recorded during the year under review was 8.0. According to Table 1 of consent 2039-4.1, this would limit the maximum ammonium concentration permitted at the time of this discharge to 1.27 g/m³N. This was the lowest limit that applied during the year under review. It can therefore be concluded that the monitoring data provided by the Company indicates that the ammonia limit was complied with throughout the year under review.

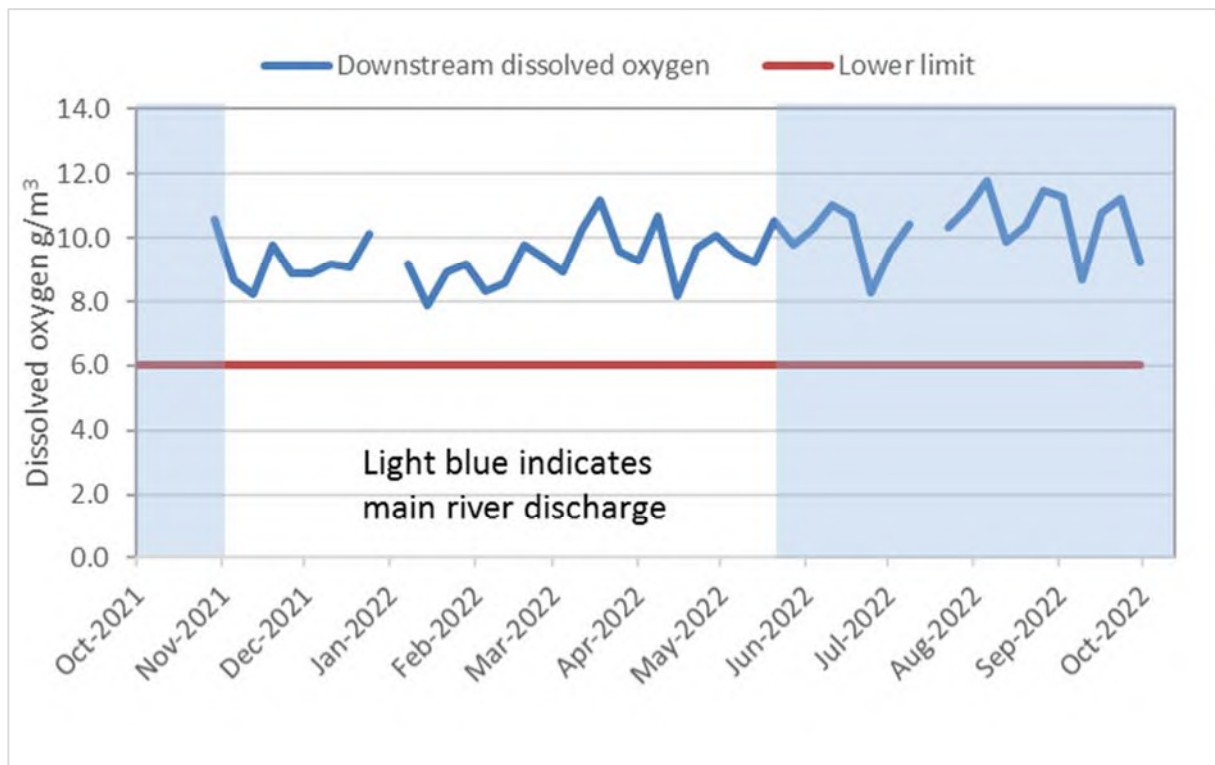


Figure 11 Dissolved oxygen concentrations downstream of discharge

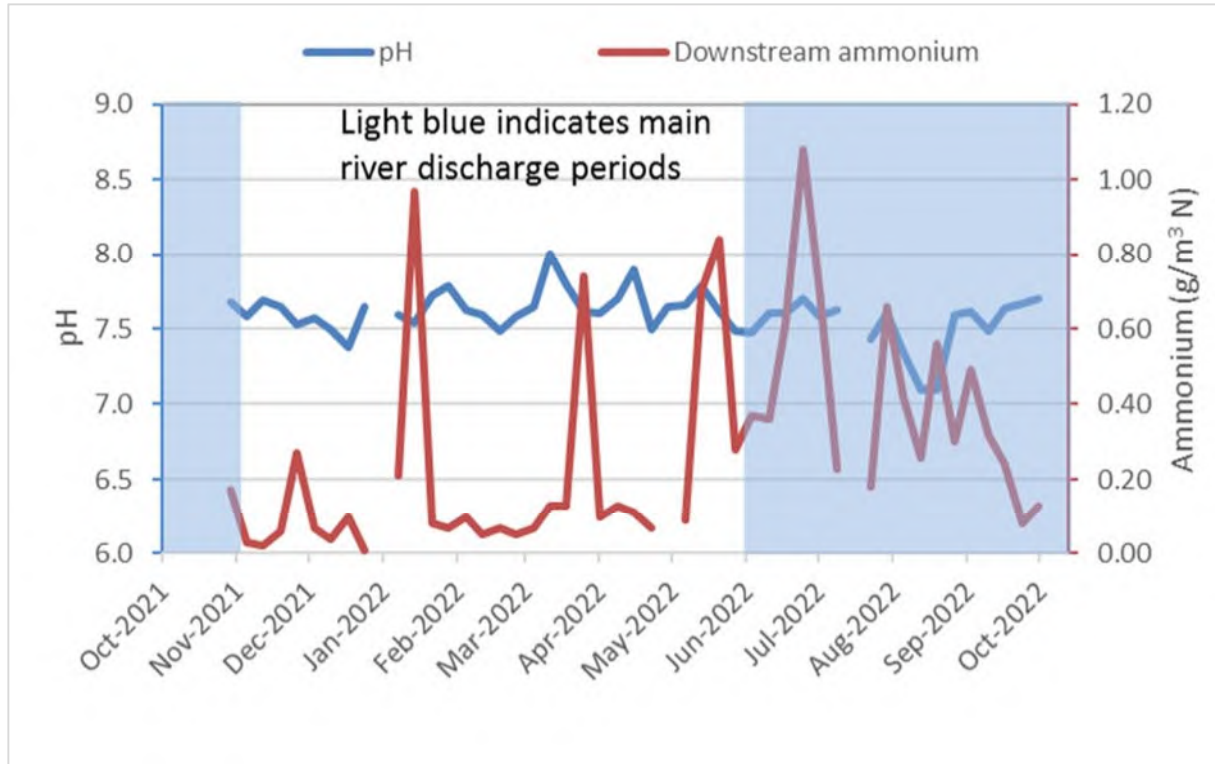


Figure 12 Ammonium and pH concentrations downstream of discharge

Results from the inter-laboratory comparisons undertaken on 17 Jun 2022 and 5 Oct 2022 are displayed in Table 9. There are some minor differences (generally >5%) seen between results reported by the Company's on-site laboratory and the Council. These differences seen between soluble analytes may be a result of the heterogeneity of the fluids sampled, which are collected at the same time but side by side. The discrepancies in temperature readings suggest that the temperature probes may require calibration, as the Council's equipment is regularly calibrated. The small discrepancies between pH (which is a time sensitive parameter) may be a consequence of samples being analysed outside of recommended laboratory holding times. Samples collected by the Council are sent off-site for analysis and therefore can easily exceed the recommended maximum holding time of eight hours. The differences between results are not environmentally significant.

2.3.3 Discharge to land

Discharge to land by irrigation is permitted under consent 5569-1 (Stuart Road irrigation area) and 5736-2 (Paulwell Farm irrigation area). Limits have been set on the daily rate of discharge and the effects of odour and spray drift on the land irrigated and surrounding the activity. The Company is also required to provide a management plan that details how the discharge and any effects will be monitored and (where feasible) minimised. The Council was informed that it was ANZCO's intention to commence irrigation at the Paulwell Farm area during the year under review, and therefore this element of monitoring programme in place for the Company's activities commenced in November 2021. The sampling is undertaken to assess any impacts from irrigation on shallow water resources at each of these irrigation areas.

Water quality monitoring in the vicinity of the discharges to land irrigated under consent 5569-1 (Stuart Road irrigation area) is undertaken by the Council at approximately quarterly intervals at nine groundwater monitoring sites and three shallow surface water monitoring sites. Results from sampling undertaken between October 2021 and September 2022 for surface water monitoring sites are displayed in Table 10 to Table 12 and for groundwater monitoring sites in Table 17 to Table 25.

Water quality monitoring in the vicinity of the discharges to land irrigated under consent 5736-2 (Paulwell Farm irrigation area) was undertaken by the Council at quarterly intervals at three groundwater monitoring sites and four shallow surface water monitoring sites. Results from sampling undertaken between September 2021 and October 2022 for surface water monitoring sites for surface water monitoring sites are displayed in Table 13 to Table 16 and for groundwater monitoring sites in Table 26 to Table 28.

Insufficient discharge data was provided to confirm whether all discharges occurred under consent 5569-1, or whether discharges to Paulwell Farms under consent 5736-2 commenced as planned during the period under review.

During the period under review irrigation to land occurred for 33 weeks between the week ending 12 November 2021 and the week ending 11 July 2022 with the greatest volume of discharge occurring between November and May 2021.

2.3.3.1 Surface water quality monitoring relating to the irrigation areas

Stuart Road irrigation area

Surface water monitoring is undertaken at three sites WGG000657, WGG000660 and WGG000663 in the vicinity of the Stuart Road irrigation discharge site. Site WGG000657 is upstream of any irrigated land and sites WGG000660 and WGG being located within the irrigation zone (Figure 2). Results are displayed in Table 10, Table 11, and Table 12. Highlighted columns indicate the period irrigation was to land. Results indicate there have been no changes in the surface water quality and consequently no adverse effect occurred at the time of any of the surveys undertaken in the review period.

Table 10 Surface water quality results WGG000657, Stuart Road irrigation area

Sample details	Units	WGG000657				
		TRC212542	TRC213919	TRC225363	TRC226568	TRC228076
Date	Collected	21-Sep-21	24-Nov-21	16-Feb-22	24-May-22	14-Sep-22
Parameter	Time	13:40	13:00	11:20	13:50	13:20
PH	pH	6.8	7.4	7.0	7.2	7.4
Electrical conductivity	$\mu\text{S}/\text{cm}@25^\circ$	214	175	213	182	198
Temperature	$^\circ\text{C}$	12.5	14.3	16.2	12.7	12.3
Turbidity	FNU	4.3	3.5	2.2	4.0	4.4
Dissolved reactive phosphorus	$\text{g}/\text{m}^3 \text{ P}$	0.005	0.007	0.008	< 0.004	0.005
Total ammoniacal-N	g/m^3	<0.010	< 0.010	0.012	0.022	0.017
Free ammonia as N	$\text{g}/\text{m}^3 \text{ N}$	<0.000015	< 0.00007	0.00003	0.00008	0.00011
Nitrate and nitrite as N	$\text{g}/\text{m}^3 \text{ N}$	4.0	1.15	3.6	2.0	2.9
Nitrate	$\text{g}/\text{m}^3 \text{ N}$	4.0	1.15	3.6	2.0	2.9
Nitrite	$\text{g}/\text{m}^3 \text{ N}$	0.004	0.003	0.005	0.007	0.004

Table 11 Surface water quality results WGG000660, Stuart Road irrigation area

Sample details	Units	WGG000660				
		TRC212533	TRC213909	TRC225354	TRC226558	TRC228067
Date	Collected	21-Sep-21	24-Nov-21	16-Feb-22	24-May-22	14-Sep-22
Parameter	Time	9:55	08:50	08:50	10:45	09:40
PH	pH	6.9	7.3	6.9	7.4	7.5
Electrical conductivity	$\mu\text{S}/\text{cm}@25^\circ$	235	238	242	240	233
Temperature	$^\circ\text{C}$	12.3	13.6	15.5	12.9	11.5
Turbidity	FNU	1.8	1.04	1.36	1.41	1.65
Dissolved reactive phosphorus	$\text{g}/\text{m}^3 \text{ P}$	0.005	0.005	0.009	0.005	< 0.004
Total ammoniacal-N	g/m^3	0.03	0.027	0.032	0.048	0.031
Free ammonia as N	$\text{g}/\text{m}^3 \text{ N}$	0.000052	0.00013	0.00008	0.00028	0.0002
Nitrate and nitrite as N	$\text{g}/\text{m}^3 \text{ N}$	3.6	2.4	3.4	3.3	3.6

Sample details	Units	WGG000660				
		TRC212533	TRC213909	TRC225354	TRC226558	TRC228067
Date	Collected	21-Sep-21	24-Nov-21	16-Feb-22	24-May-22	14-Sep-22
Parameter	Time	9:55	08:50	08:50	10:45	09:40
Nitrate	g/m ³ N	3.6	2.4	3.4	3.3	3.6
Nitrite	g/m ³ N	0.004	0.005	0.006	0.007	0.003

Table 12 Surface water quality results WGG000663, Stuart Road irrigation area

Sample details	Units	WGG000663				
		TRC212540	TRC213917	TRC225361	TRC226566	TRC228074
Date	Collected	21-Sep-21	24-Nov-21	16-Feb-22	24-May-22	14-Sep-22
Parameter	Time	12:05	11:15	10:25	12:40	11:45
PH	pH	6.9	7.5	7.1	7.2	7.2
Electrical conductivity	µS/cm@25°	193	202	197	197	207
Temperature	°C	12.8	15.5	15.1	12.4	12.2
Turbidity	FNU	5.8	5.2	2.9	5.9	4.5
Dissolved reactive phosphorus	g/m ³ P	0.006	0.008	0.006	0.005	0.006
Total ammoniacal-N	g/m ³	<0.010	0.018	< 0.010	0.025	0.026
Free ammonia as N	g/m ³ N	<0.000017	0.00016	< 0.00004	0.00008	0.00009
Nitrate and nitrite as N	g/m ³ N	3.0	2.6	2.6	2.7	3.0
Nitrate	g/m ³ N	3.0	2.6	2.6	2.7	3.0
Nitrite	g/m ³ N	0.003	0.003	0.004	0.009	0.005

Historically an increase in nitrate and nitrite as N concentrations can be observed in WGG000657 and WGG000660, located to the east and in the centre of the irrigation site respectively (Figure 12). Results indicate there are no significant seasonal changes in nitrogen concentrations at the site. The local shallow groundwater resources, which have also been shown to be impacted, are the primary source of baseflow to the streams. Therefore the slight increase seen historically in WGG000657 and the more significant increase observed in WGG000660 over time, are likely a direct response to irrigation at the site.

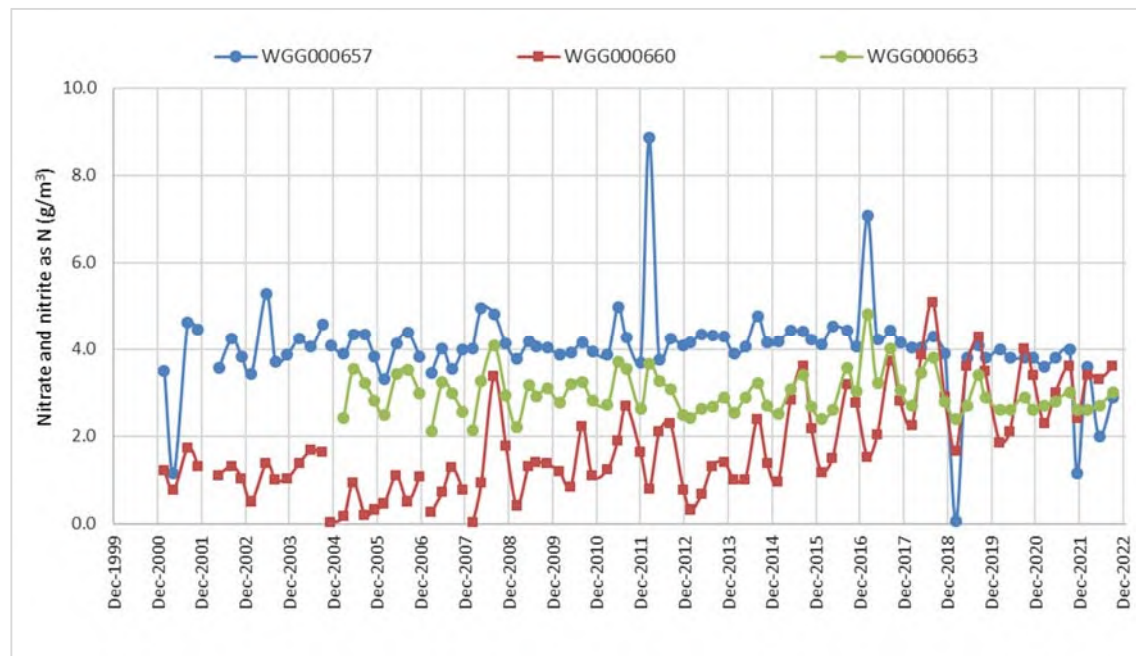


Figure 13 Nitrate and nitrite as N concentrations in surface water 1999-2022, Stuart Road irrigation area

More recently, since 2017, the nitrate and nitrite as N concentrations in WGG000657 and WGG000663 are exhibiting a slight decreasing trend whilst concentrations in WGG000660 continue to increase. The decreasing changes are likely a response to measures undertaken by the Company to reduce the nitrogen

concentrations in the wastewater discharged (for example, transporting blood offsite for processing). The increasing changes will require further investigation

Paulwell Farm irrigation area

Baseline surface water quality sampling was undertaken at five sites in November 2020 and three sites in March 2021, with routine compliance monitoring at four sites commencing at the start of the period under review. The data, presented in Table 13 to Table 16, will be compared to the data that is collected following the start of irrigation at this location, in light of the irrigation loading data, once this is made available to Council.

Table 13 Surface water quality results WGG000708, Paulwell Farm irrigation area

Sample details	Units	WGG000708				
		-	TRC213936	TRC225629	TRC226954	TRC227793
Date	Collected	Sep-21	25 Nov 2021	04 Mar 2022	04 Jul 2022	02 Sep 2022
Parameter	Time	-	14:00	11:40	12:50	12:30
PH	pH	-	7.5	7.6	7.6	7.5
Electrical conductivity	$\mu\text{S}/\text{cm}@25^\circ$	-	153	142	145	152
Temperature	$^\circ\text{C}$	-	17.0	14.2	11.2	12.1
Turbidity	FNU	-	2.2	1.78	4.2	3.2
Dissolved reactive phosphorus	$\text{g}/\text{m}^3 \text{ P}$	-	0.019	0.011	0.01	0.014
Total ammoniacal-N	g/m^3	-	0.033	< 0.010	0.017	0.026
Free ammonia as N	$\text{g}/\text{m}^3 \text{ N}$	-	0.00035	< 0.00010	0.00013	0.00017
Nitrate and nitrite as N	$\text{g}/\text{m}^3 \text{ N}$	-	1.76	1.85	2.1	2.6
Nitrate	$\text{g}/\text{m}^3 \text{ N}$	-	1.75	1.84	2.1	2.6
Nitrite	$\text{g}/\text{m}^3 \text{ N}$	-	0.011	0.003	< 0.002	0.003

Table 14 Surface water quality results WGG000712, Paulwell Farm irrigation area

Sample details	Units	WGG000712				
		-	TRC213937	TRC225628	TRC226953	TRC227792
Date	Collected	Sep-21	25 Nov 2021	04 Mar 2022	04 Jul 2022	02 Sep 2022
Parameter	Time	-	13:20	10:45	12:30	11:40
PH	pH	-	7.3	7.2	7.3	7.1
Electrical conductivity	$\mu\text{S}/\text{cm}@25^\circ$	-	187	175	176	182
Temperature	$^\circ\text{C}$	-	13.9	14.5	12.3	13.0
Turbidity	FNU	-	13.7	7.7	5.0	4.0
Dissolved reactive phosphorus	$\text{g}/\text{m}^3 \text{ P}$	-	< 0.004	< 0.004	< 0.004	< 0.004
Total ammoniacal-N	g/m^3	-	0.017	< 0.010	< 0.010	0.011
Free ammonia as N	$\text{g}/\text{m}^3 \text{ N}$	-	0.0001	< 0.00005	< 0.00005	0.00003
Nitrate and nitrite as N	$\text{g}/\text{m}^3 \text{ N}$	-	2.8	2.7	3.3	4.0
Nitrate	$\text{g}/\text{m}^3 \text{ N}$	-	2.8	2.7	3.3	4.0
Nitrite	$\text{g}/\text{m}^3 \text{ N}$	-	0.003	0.003	0.004	0.002

Table 15 Surface water quality results WGG000715, Paulwell Farm irrigation area

Sample details	Units	WGG000715				
		-	TRC213938	TRC225627	TRC226952	TRC227791
Date	Collected	Sep-21	25 Nov 2021	04 Mar 2022	04 Jul 2022	02 Sep 2022
Parameter	Time	-	creek dry	no flow	11:20 ^a	09:55
PH	pH	-	-	-	7.0	6.8
Electrical conductivity	$\mu\text{S}/\text{cm}@25^\circ$	-	-	-	192	237
Temperature	$^\circ\text{C}$	-	-	-	12.6	13.5
Turbidity	FNU	-	-	-	3200	2.6

Sample details	Units	WGG000715				
		-	TRC213938	TRC225627	TRC226952	TRC227791
Date	Collected	Sep-21	25 Nov 2021	04 Mar 2022	04 Jul 2022	02 Sep 2022
Parameter	Time	-	creek dry	no flow	11:20 ^a	09:55
Dissolved reactive phosphorus	g/m ³ P	-	-	-	< 0.004	< 0.004
Total ammoniacal-N	g/m ³	-	-	-	< 0.010	0.036
Free ammonia as N	g/m ³ N	-	-	-	< 0.00003	0.00006
Nitrate and nitrite as N	g/m ³ N	-	-	-	2.6	5.8
Nitrate	g/m ³ N	-	-	-	2.6	5.8
Nitrite	g/m ³ N	-	-	-	< 0.002	0.008

Key: a The water in the tributary was stagnant, sediment likely to have been disturbed during sampling

Table 16 Surface water quality results WGG000716, Paulwell Farm irrigation area

Sample details	Units	WGG000716				
		-	TRC213939	TRC225626	TRC226951	TRC227790
Date	Collected	Sep-21	25 Nov 2021	04 Mar 2022	04 Jul 2022	02 Sep 2022
Parameter	Time	-	13:00	10:30	11:50	11:25
PH	pH	-	7.4	7.3	7.4	7.3
Electrical conductivity	µS/cm@25°	-	200	194	201	204
Temperature	°C	-	13.8	14.2	12.1	13.0
Turbidity	FNU	-	5.7	5.2	11.8	6.4
Dissolved reactive phosphorus	g/m ³ P	-	< 0.004	0.004	0.007	0.004
Total ammoniacal-N	g/m ³	-	0.011	< 0.010	0.023	0.011
Free ammonia as N	g/m ³ N	-	0.00007	< 0.00006	0.00013	0.00005
Nitrate and nitrite as N	g/m ³ N	-	2.6	2.9	3.4	4
Nitrate	g/m ³ N	-	2.6	2.9	3.4	4
Nitrite	g/m ³ N	-	0.003	0.003	0.006	0.007

2.3.3.2 Groundwater quality monitoring

Stuart Road irrigation area

Groundwater monitoring was undertaken at quarterly intervals at 9 sites². Results are displayed in Table 17 to Table 25.

Table 17 Groundwater sampling undertaken by the Council at GND1196, Stuart Road irrigation area

Sample details	Units	GND1196				
		TRC212538	TRC213915	TRC225359	TRC226564	TRC228072
Date	-	21-Sep-21	24-Nov-21	16-Feb-22	24-May-22	14-Sep-22
Parameter	Time	11:05	10:15	09:50	11:50	10:55
PH	pH	6.6	7.0	6.7	6.7	6.7
Electrical conductivity	µS/cm@25°	197	202	200	201	206
Temperature	°C	13.6	13.7	13.6	13.3	13.5
COD	g/m ³	<6	10	< 6	< 6	8
Calcium	g/m ³	12.2	10.8	10.8	10.2	10.2
Magnesium	g/m ³	4.5	4.6	4.4	4.4	4.7
Potassium	g/m ³	5.9	6	5.6	5.9	6.1
Chloride	g/m ³	20	21	21	22	21

² Due to elevated nitrates in GND1189, the use of this water supply ceased and the pumping equipment was removed. Therefore monitoring of the bore ceased. The last sample was collected in September 2019.

Sample details	Units	GND1196				
		TRC212538	TRC213915	TRC225359	TRC226564	TRC228072
Date	-	21-Sep-21	24-Nov-21	16-Feb-22	24-May-22	14-Sep-22
Parameter	Time	11:05	10:15	09:50	11:50	10:55
Sodium	g/m ³	18	19	17.5	17.9	18.9
Total ammoniacal-N	g/m ³	<0.010	<0.010	<0.010	<0.010	<0.010
Free ammonia as N	g/m ³ N	<0.000010	<0.00003	< 0.000012	< 0.000012	< 0.000012
Nitrate and nitrite as N	g/m ³ N	2.7	2.8	2.8	2.8	2.5
Nitrate	g/m ³ N	2.7	2.8	2.8	2.8	2.5
Nitrite	g/m ³ N	<0.002	<0.002	<0.002	<0.002	<0.002

Table 18 Groundwater sampling undertaken by the Council at GND1197, Stuart Road irrigation area

Sample details	Units	GND1197				
		TRC212539	TRC213916	TRC225360	TRC226565	TRC228073
Date	-	21-Sep-21	24-Nov-21	16-Feb-22	24-May-22	14-Sep-22
Parameter	Time	11:40	11:30	10:15	12:30	11:15
PH	pH	6.5	6.6	6.3	6.4	6.8
Electrical conductivity	µS/cm@25°	345	337	300	322	314
Temperature	°C	13.6	13.8	14.1	14.2	13.8
COD	g/m ³	<6	6	< 6	< 6	< 6
Calcium	g/m ³	19.8	18.6	15.6	15.7	15.2
Magnesium	g/m ³	7.8	7.7	6.2	6.5	6.8
Potassium	g/m ³	8.6	8.5	10.2	10.7	9.4
Chloride	g/m ³	33	32	28	31	28
Sodium	g/m ³	31	29	26	27	29
Total ammoniacal-N	g/m ³	<0.010	< 0.010	< 0.010	< 0.010	< 0.010
Free ammonia as N	g/m ³ N	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000017
Nitrate and nitrite as N	g/m ³ N	12.4	13.1	9.3	9.9	9.7
Nitrate	g/m ³ N	12.4	13.1	9.3	9.9	9.7
Nitrite	g/m ³ N	<0.002	< 0.002	< 0.001	< 0.002	< 0.002

Table 19 Groundwater sampling undertaken by the Council at GND1198, Stuart Road irrigation area

Sample details	Units	GND1198				
		TRC212534	TRC213911	TRC225255	TRC226560	TRC228068
Date	-	21-Sep-21	24-Nov-21	16-Feb-22	24-May-22	14-Sep-22
Parameter	Time	10:20	09:15	09:10	10:55	10:05
PH	pH	6.5	6.8	6.5	6.5	6.9
Electrical conductivity	µS/cm@25°	236	231	227	229	251
Temperature	°C	13.4	13.5	14.2	13.6	13.5
COD	g/m ³	>6	7	< 6	< 6	< 6
Calcium	g/m ³	14.2	12.0	12.0	11.8	13.0
Magnesium	g/m ³	6.3	6.0	5.6	5.9	6.5
Potassium	g/m ³	4.3	4.2	4.2	4.6	4.8
Chloride	g/m ³	27	25	25	26	27
Sodium	g/m ³	22	21	21	22	22
Total ammoniacal-N	g/m ³	<0.010	< 0.010	< 0.010	< 0.010	< 0.010
Free ammonia as N	g/m ³ N	<0.000010	< 0.000016	< 0.000010	< 0.000010	< 0.000019
Nitrate and nitrite as N	g/m ³ N	6.8	5.7	5.9	6.0	7.2
Nitrate	g/m ³ N	6.8	5.7	5.9	6.0	7.2
Nitrite	g/m ³ N	<0.002	< 0.002	< 0.002	< 0.002	< 0.002

Table 20 Groundwater sampling undertaken by the Council at GND1344, Stuart Road irrigation area

Sample details	Units	GND1344				
		TRC212532	TRC213908	TRC225353	TRC226557	TRC228066
Date	-	21-Sep-21	24-Nov-21	16-Feb-22	24-May-22	14-Sep-22
Parameter	Time	9:30	09:40	08:30	10:30	09:30
PH	pH	6.9	6.9	6.9	6.9	7.0
Electrical conductivity	$\mu\text{S}/\text{cm}@25^\circ$	266	23.9	289	271	252
Temperature	$^\circ\text{C}$	13.2	14.2	14.7	14.1	13.7
COD	g/m^3	10	25	18	35	38
Calcium	g/m^3	14	12.1	14.7	13.6	12.3
Magnesium	g/m^3	7.2	7.0	7.6	7.7	6.9
Potassium	g/m^3	7.2	8.2	8.3	7.5	7.5
Chloride	g/m^3	24	22	32	26	23
Sodium	g/m^3	23	23	24	23	22
Total ammoniacal-N	g/m^3	0.68	1.20	0.86	0.74	1.06
Free ammonia as N	$\text{g}/\text{m}^3 \text{ N}$	0.00131	0.0024	0.00175	0.00140	0.0029
Nitrate and nitrite as N	$\text{g}/\text{m}^3 \text{ N}$	0.46	0.133	0.62	1.52	0.020
Nitrate	$\text{g}/\text{m}^3 \text{ N}$	0.45	0.123	0.61	1.51	0.010
Nitrite	$\text{g}/\text{m}^3 \text{ N}$	0.01	0.011	0.006	0.016	0.009

Table 21 Groundwater sampling undertaken by the Council at GND1345, Stuart Road irrigation area

Sample details	Units	GND1345				
		TRC212536	TRC213913	TRC225357	TRC226562	TRC228070
Date	-	21-Sep-21	24-Nov-21	16-Feb-22	24-May-22	14-Sep-22
Parameter	Time	13:10	12:40	10:55	13:30	12:40
PH	pH	6.3	6.5	6.3	6.2	6.3
Electrical conductivity	$\mu\text{S}/\text{cm}@25^\circ$	295	310	262	301	274
Temperature	$^\circ\text{C}$	13.7	13.9	13.9	13.8	13.8
COD	g/m^3	<6	< 6	< 6	8	< 6
Calcium	g/m^3	16.1	14.9	12.9	12.9	11.5
Magnesium	g/m^3	8.6	9.3	7.5	7.9	6.9
Potassium	g/m^3	5.3	5.8	5.5	5.5	4.9
Chloride	g/m^3	30	32	27	31	27
Sodium	g/m^3	25	26	25	25	25
Total ammoniacal-N	g/m^3	<0.010	< 0.010	< 0.010	< 0.010	< 0.010
Free ammonia as N	$\text{g}/\text{m}^3 \text{ N}$	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Nitrate and nitrite as N	$\text{g}/\text{m}^3 \text{ N}$	9.7	11.7	8.5	10.0	7.8
Nitrate	$\text{g}/\text{m}^3 \text{ N}$	9.7	11.7	8.5	10.0	7.8
Nitrite	$\text{g}/\text{m}^3 \text{ N}$	<0.002	< 0.002	< 0.002	< 0.002	< 0.002

Table 22 Groundwater sampling undertaken by the Council at GND0849 (control site, Stuart Road irrigation area)

Sample details	Units	GND0849				
		TRC212543	TRC213920	TRC225364	TRC226569	TRC228077
Date	-	21-Sep-21	24-Nov-21	16-Feb-22	24-May-22	14-Sep-22
Parameter	Time	14:10	12:45	11:50	14:10	14:00
PH	pH	6.4	6.9	6.2	6.5	6.9
Electrical conductivity	$\mu\text{S}/\text{cm}@25^\circ$	181	165	180	168	198
Temperature	$^\circ\text{C}$	13	14.8	14.6	12.8	11.7
Total ammoniacal-N	g/m^3	<0.010	< 0.010	< 0.010	< 0.010	< 0.010
Free ammonia as N	g/m^3	<0.000010	< 0.00003	< 0.000010	< 0.000010	< 0.000018
Nitrate and nitrite as N	$\text{g}/\text{m}^3 \text{ N}$	5.2	4.0	5.7	4.6	6.3

Sample details	Units	GND0849				
		TRC212543	TRC213920	TRC225364	TRC226569	TRC228077
Date	-	21-Sep-21	24-Nov-21	16-Feb-22	24-May-22	14-Sep-22
Parameter	Time	14:10	12:45	11:50	14:10	14:00
Nitrate	g/m ³ N	5.2	4.0	5.7	4.6	6.3
Nitrite	g/m ³ N	<0.002	< 0.002	< 0.002	< 0.002	< 0.002

Table 23 Groundwater sampling undertaken by the Council at GND1187, Stuart Road irrigation area

Sample details	Units	GND1187				
		TRC212535	TRC213912	TRC225356	TRC226561	TRC228069
Date	-	21-Sep-21	24-Nov-21	16-Feb-22	24-May-22	14-Sep-22
Parameter	Time	12:30	12:15	10:40	13:10	12:15
PH	pH	6.6	7.0	6.6	6.7	6.6
Electrical conductivity	µS/cm@25°	254	274	259	275	266
Temperature	°C	14.6	14.6	13.2	13.2	13.0
Total ammoniacal-N	g/m ³	<0.010	< 0.010	< 0.010	< 0.010	< 0.010
Free ammonia as N	g/m ³	<0.000012	< 0.00003	< 0.000010	< 0.000012	< 0.000011
Nitrate and nitrite as N	g/m ³ N	4.2	4.9	4.9	4.5	3.5
Nitrate	g/m ³ N	4.2	4.9	4.9	4.5	3.5
Nitrite	g/m ³ N	<0.002	< 0.002	< 0.002	< 0.002	< 0.002

Table 24 Groundwater sampling undertaken by the Council at GND1188, Stuart Road irrigation area

Sample details	Units	GND1188				
		TRC212541	TRC213918	TRC225362	TRC226567	TRC228075
Date	-	21-Sep-21	24-Nov-21	16-Feb-22	24-May-22	14-Sep-22
Parameter	Time	12:15	11:45	10:25	13:20	12:00
PH	pH	6.5	6.8	6.3	6.8	6.9
Electrical conductivity	µS/cm@25°	285	293	277	267	266
Temperature	°C	14.9	14.2	14.4	14.6	13.9
Total ammoniacal-N	g/m ³	<0.010	< 0.010	< 0.0010	< 0.010	< 0.010
Free ammonia as N	g/m ³	<0.000010	< 0.000017	< 0.000010	< 0.000018	< 0.00003
Nitrate and nitrite as N	g/m ³ N	10.5	12.9	6.9	7.4	6.0
Nitrate	g/m ³ N	10.5	12.9	6.9	7.4	6.0
Nitrite	g/m ³ N	<0.002	< 0.002	< 0.002	< 0.002	< 0.002

Table 25 Groundwater sampling undertaken by the Council at GND1306, Stuart Road irrigation area

Sample details	Units	GND1306				
		TRC212537	TRC213914	TRC225358	TRC226563	TRC228071
Date	-	21-Sep-21	24-Nov-21	16-Feb-22	24-May-22	14-Sep-22
Parameter	Time	10:45	09:50	09:20	11:40	10:20
PH	pH	6.3	6.7	6.7	6.5	6.7
Electrical conductivity	µS/cm@25°	337	324	269	319	358
Temperature	°C	13.6	13.8	14.9	13.6	13.6
Total ammoniacal-N	g/m ³	<0.010	< 0.010	0.018	< 0.010	< 0.010
Free ammonia as N	g/m ³	<0.000010	< 0.000012	0.000025	< 0.000010	< 0.000014
Nitrate and nitrite as N	g/m ³ N	11.4	10.7	9.3	9.8	12.2
Nitrate	g/m ³ N	11.4	10.7	9.3	9.8	12.2
Nitrite	g/m ³ N	<0.002	< 0.002	< 0.002	< 0.002	< 0.002

The results indicate that there are no significant observable differences between the concentrations of analytes reported during periods of irrigation to land (highlighted columns) and periods of discharge to the river. On the whole, the concentrations of most analytes appear to have remained relatively stable over the review period. Although it must be noted that whilst the nitrate levels remain stable they are still very high.

Paulwell Farm irrigation area

Baseline groundwater quality sampling was undertaken at three sites in March 2021 in relation to the Paulwell Farm site. Routine monitoring, at approximately quarterly intervals, commenced at the start of the period under review as it was expected that the use of this additional irrigation area would begin during the 2021-2022 year. The results are presented in Table 26 to Table 28. The baseline data will be used for comparison to the data that is collected following the start of irrigation at this location.

Table 26 Groundwater sampling undertaken by the Council at GND3116, Paulwell Farm irrigation area

Sample details	Units	GND3116				
		-	TRC213933	TRC225625	TRC226950	TRC227789
Date	-	Sep-21	25 Nov 2021	04 Mar 2022	04 Jul 2022	02 Sep 2022
Parameter	Time	-	11:50	11:00	12:25	12:10
PH	pH	-	6.9	6.4	6.4	6.3
Electrical conductivity	µS/cm@25°	-	254	216	223	231
Temperature	°C	-	14.6	14.4	14.3	14.5
COD	g/m ³	-	< 6	< 6	< 6	< 6
Calcium	g/m ³	-	18.3	14.0	13.9	13.4
Magnesium	g/m ³	-	6.8	7.2	7.2	7.2
Potassium	g/m ³	-	6.7	5.1	5.7	7.2
Chloride	g/m ³	-	21.0	18.9	19.3	19.3
Sodium	g/m ³	-	19.9	13.9	14.5	13.4
Total ammoniacal-N	g/m ³	-	< 0.010	< 0.010	< 0.010	< 0.010
Free ammonia as N	g/m ³ N	-	< 0.00002	< 0.000010	< 0.000010	< 0.000010
Nitrate and nitrite as N	g/m ³ N	-	4.0	4.2	5.9	7.1
Nitrate	g/m ³ N	-	4.0	4.2	5.9	7.1
Nitrite	g/m ³ N	-	< 0.002	< 0.002	< 0.002	< 0.002

Table 27 Groundwater sampling undertaken by the Council at GND3117, Paulwell Farm irrigation area

Sample details	Units	GND3117				
		-	TRC213934	TRC225624	TRC226949	TRC227788
Date	-	Sep-21	25 Nov 2021	04 Mar 2022	04 Jul 2022	02 Sep 2022
Parameter	Time	-	13:45	10:10	11:45	11:00
PH	pH	-	6.5	6.6	6.4	6.7
Electrical conductivity	µS/cm@25°	-	324	267	369	247
Temperature	°C	-	14.5	14.7	15.1	14.7
COD	g/m ³	-	6	< 6	10	< 6
Calcium	g/m ³	-	20.0	18.6	19.1	15.3
Magnesium	g/m ³	-	9.5	8.7	10.8	6.5
Potassium	g/m ³	-	11.2	8.7	12.6	7.3
Chloride	g/m ³	-	17.4	16.2	23	15.3
Sodium	g/m ³	-	21.0	20.0	19.5	21.0
Total ammoniacal-N	g/m ³	-	0.92	0.39	1.75	< 0.010
Free ammonia as N	g/m ³ N	-	0.00081	0.00043	0.00127	< 0.000013
Nitrate and nitrite as N	g/m ³ N	-	0.048	0.110	0.113	0.730
Nitrate	g/m ³ N	-	0.043	0.106	0.095	0.730
Nitrite	g/m ³ N	-	0.005	0.004	0.018	< 0.002

Table 28 Groundwater sampling undertaken by the Council at GND3118, Paulwell Farm irrigation area

Sample details	Units	GND3118				
		-	TRC213935	TRC225623	TRC226948	TRC227787
Date	-	Sep-21	25 Nov 2021	04 Mar 2022	04 Jul 2022	02 Sep 2022
Parameter	Time	-	10:30	09:45	11:30	10:10
PH	pH	-	7.1	7.2	7.4	7.2
Electrical conductivity	$\mu\text{S}/\text{cm}@25^\circ$	-	202	206	205	213
Temperature	$^\circ\text{C}$	-	14.6	14.6	14.0	13.9
COD	g/m^3	-	< 6	< 6	< 6	6
Calcium	g/m^3	-	7.5	8.9	8.3	8.4
Magnesium	g/m^3	-	5.1	6.2	5.7	5.8
Potassium	g/m^3	-	6.2	5.8	6	6.3
Chloride	g/m^3	-	19.3	19.7	18.6	19.9
Sodium	g/m^3	-	23	23	23	24
Total ammoniacal-N	g/m^3	-	0.61	0.54	0.66	0.66
Free ammonia as N	$\text{g}/\text{m}^3 \text{ N}$	-	0.00197	0.0025	0.0042	0.0025
Nitrate and nitrite as N	$\text{g}/\text{m}^3 \text{ N}$	-	0.076	0.003	< 0.002	0.005
Nitrate	$\text{g}/\text{m}^3 \text{ N}$	-	0.075	< 0.002	< 0.002	0.002
Nitrite	$\text{g}/\text{m}^3 \text{ N}$	-	< 0.002	< 0.002	< 0.002	0.002

2.3.3.3 Nitrogen in groundwater

Stuart Road irrigation area

An increase in the concentration of nitrate and nitrite as N can be seen in some bores (GND1198, GND1189, GND1306, GND1197 and GND1345) over time when looking at the long term data (Figure 14). In contrast, the up-gradient control bore GND0849, which provides an indication of concentrations outside the area of effects, has exhibited a decrease in concentrations since monitoring commenced.

GND1344 located in the east of the irrigation site, although exhibiting significantly lower and decreasing concentrations of nitrogen than the other bores Groundwater at this site has also been impacted by the discharge of organic rich effluent, resulting in high chemical oxygen demand (COD) at this site (Table 21). COD is a measure of the capacity of the groundwater to consume oxygen during the decomposition of organic matter. The decreasing nitrogen indicates that denitrification is occurring in GND1344. That is, microbial processes in the groundwater are consuming oxygen and converting nitrate to nitrogen gas, which is released into the atmosphere.

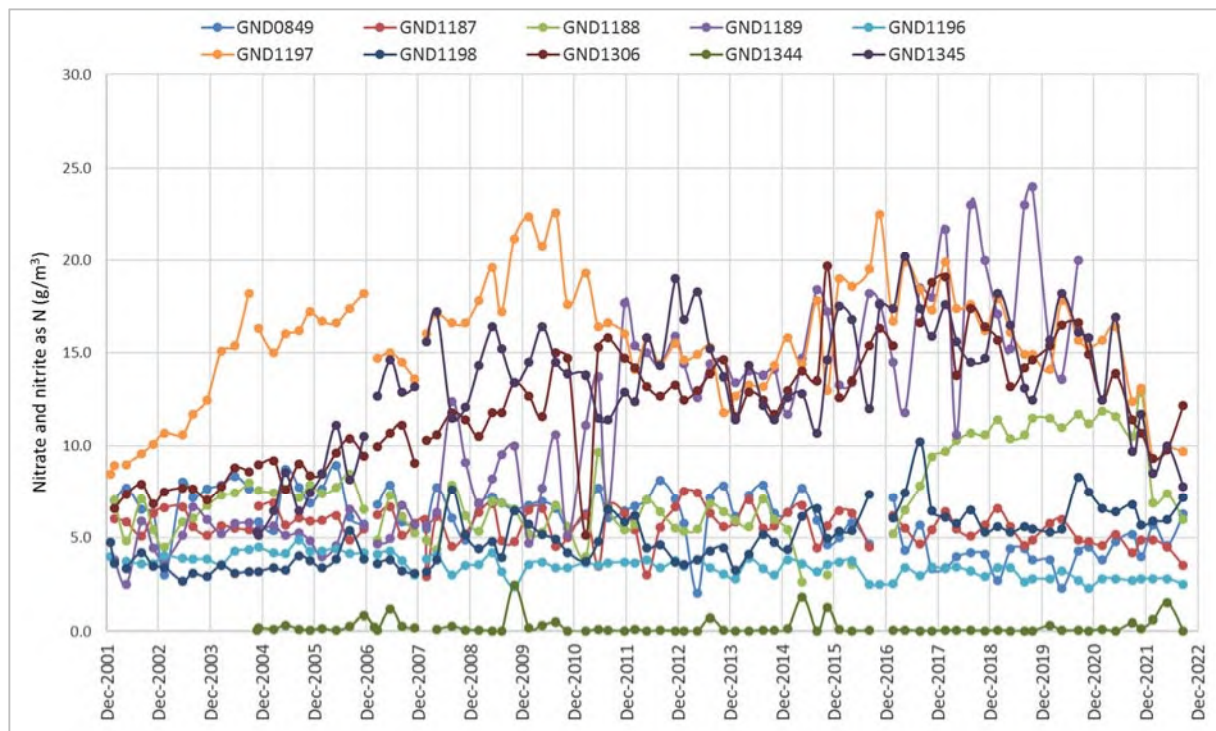


Figure 14 Nitrate and nitrite as N concentrations in groundwater 2001-2022, Stuart Road irrigation area

More recently, since 2016, a slight decrease in nitrate and nitrite as N concentrations can be seen in some bores (GND1345, GND1306, GND1197 and GND1187) whilst others (GND1306, GND1189 and GND1188) continue to show an increase or appear to have stabilised (GND1196, and GND1198). It is noted however, that there was a marked reduction in the nitrate and nitrite nitrogen of the groundwater in bore GND1188 in the three samples collected at the end of the period under review. The up-gradient control bore GND0849 has shown a very slight, decline since monitoring began also shows a slightly increasing trend since 2016. This may be a response to other land uses (predominantly dairy) in the vicinity of the bore.

The improvements seen recently in GND1345, GND1306 and GND1197 (Figure 15) may be a response to the reduced nitrogen loadings in the wastewater following the decision to transport blood offsite for processing. However, an increase in the irrigation area as a result of utilising the Paulwell Farm irrigation area could also be a factor.

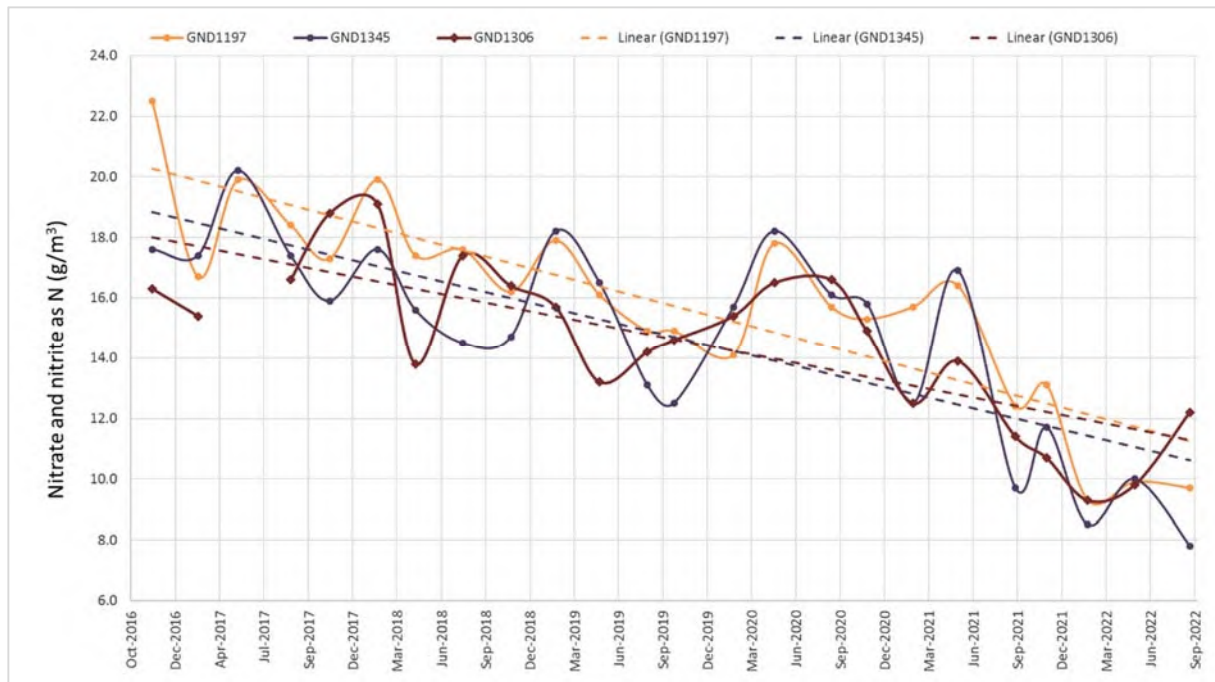


Figure 15 Decreasing nitrate and nitrite as N concentrations in groundwater 2016-2022, Stuart Road irrigation area

In the Council's 2021-2022 Annual report it was stated that the nitrate concentrations in GND1345, GND1306, GND1197, GND1189 and GND1188 all exceed the recommended limit of 11.3 mg/L (as N) for drinking water. The nitrate concentrations found in these bores between 1 October 2021 and 30 September 2022 are summarised in Table 29. Due to high nitrates in GND1189, this well is no longer used for supply, has had the pumps removed and is no longer sampled in the monitoring programme

Table 29 Summary of nitrate+nitrite nitrogen concentration in selected Stuart Road irrigation are bores

	GND0849 (control)	GND1345	GND1306	GND1197	GND1188
Number of samples	4	4	4	4	4
Range (g/m ³ N)	4.00-6.30	7.80-11.7	9.30-12.2	9.30-13.1	6.00-12.9
Median (g/m ³ N)	5.15	9.25	10.25	9.80	7.15
No samples exceeding DWS	0	1	2	1	1

Paulwell Farm irrigation area

An increase in the concentration of nitrate and nitrite as N can be seen, most notably in bore GND3116 (Figure 16). The nitrate and nitrite N concentration in the other two bores is relatively low for groundwater underlying an agricultural area.

A summary of the nitrate and nitrite as N concentrations for the samples collected to date are summarised in Table 30.

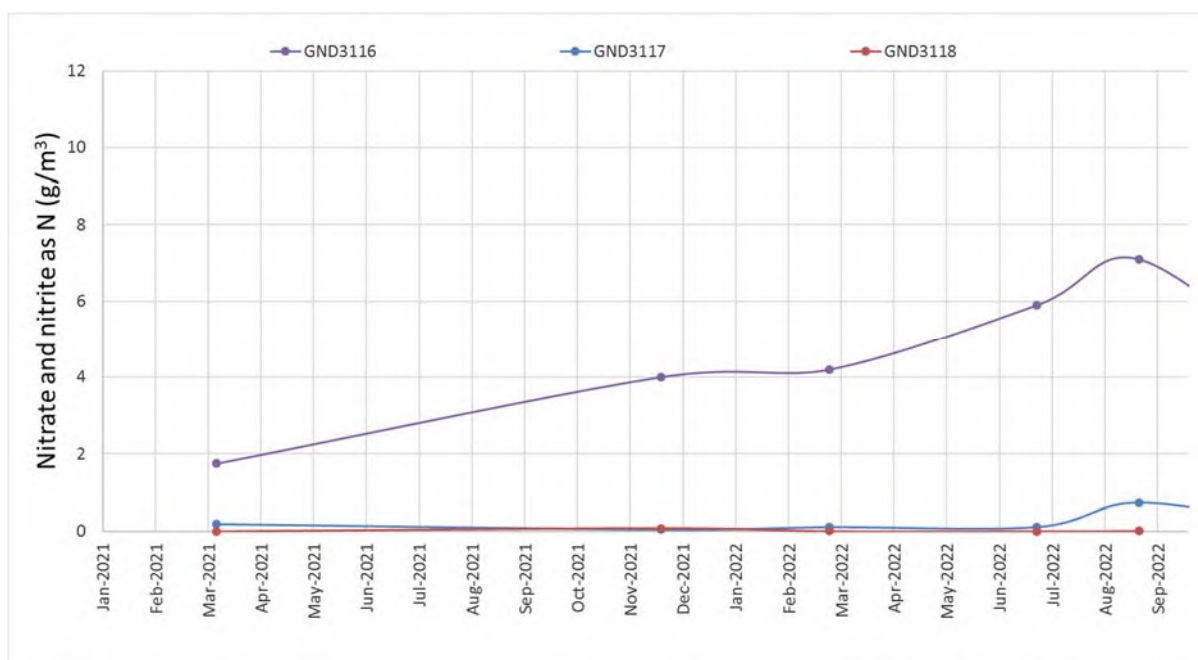


Figure 16 Nitrate and nitrite as N concentrations in groundwater 2021-2022, Paulwell Farm irrigation area

Table 30 Summary of Paulwell Farm groundwater nitrate+nitrite nitrogen concentrations

	GND3116	GND3117	GND3118
Number of samples	6	6	6
Range (g/m ³ N)	1.75-7.1	0.048-0.73	<0.002-0.76
Median (g/m ³ N)	4.20	0.113	0.003
No samples exceeding DWS	0	0	0

2.3.4 Biological surveys

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

The MCI is a measure of the overall sensitivity of the macroinvertebrate community to the effects of organic pollution in stony streams. It is based on the presence/absence of taxa with varying degrees of sensitivity to environmental conditions. The SQMCI_s takes into account taxa abundance as well as sensitivity to pollution, and may reveal more subtle changes in communities. It may be the more appropriate index if non-organic impacts are occurring.

Significant differences in either the MCI or the SQMCI_s between sites indicate the degree of adverse effects (if any) of the discharges being monitored.

January 2022 (Spring Survey)

Macroinvertebrate taxa richness was moderate for all three sites. Site 1 (the control site) had a taxa richness equal to site 2 (primary impact site) and four more than site 3 (secondary impact site). Taxa richness remained comparable to historic medians by 0-4 taxa. Given the moderate taxa richness present at all three sites and some of the high taxa abundances (e.g. very or extremely abundant *Deleatidium* at the impact sites) there was little evidence to suggest that the discharge was having any acute toxic effects.

The MCI scores indicated 'good' health at sites 1 and 3 and 'fair' health at site 2. There was a significant decline between site 1 and 2 by 11 units, but not site 3 which differed by only 1 unit to that of the 'control'

site. The SQMCI scores indicated that sites 1 and 2 were in 'very good' health while site 3 was in 'excellent' health. There were no significant differences between sites. Considering the close proximity of site 2 and 3 to each other and their respective distance from site 1 it's unlikely that nutrient enrichment would be affecting one site but not the other.

No heterotrophic growths were recorded indicating that discharges from ANZCO were not causing high levels of dissolved organic compounds in the Waingongoro River downstream of the discharge, which was consistent with the macroinvertebrate indices.

April 2022 (Summer Survey)

Macroinvertebrate richness was moderate for all three sites and differed by only one taxon between the three sites. Taxa richness at all three sites was slightly lower than historic medians by 1-5 taxa. Given the moderate taxa richness present at all three sites and some of the high taxa abundances there was little evidence to suggest that the discharge was having any acute toxic effects.

The MCI scores indicated 'good' health at sites 1 and 2 and 'very good' at site 3. There was a significant decline between site 1 and 2 by 11 units, but not site 3 which differed by only 3 units to that of the 'control' site. Sites 1 and 3 also had scores significantly higher than historic medians. All sites had scores significantly higher than the previous spring survey, a surprising result as summer results are typically poorer than spring results. Considering the close proximity of site 2 and 3 to each other and their respective distance from the discharge it's unlikely that nutrient enrichment would be affecting one site but not the other. SQMCI scores indicated that sites 1 and 3 were in 'excellent' health, the highest category possible, while site 2 was in 'very good' health. There were no significant differences between the 'control' and 'impact' sites though site 3 was significantly better than site 2.

No heterotrophic growths were recorded indicating that discharges from ANZCO were not causing high levels of dissolved organic compounds in the Waingongoro River downstream of the discharge, which was consistent with the macroinvertebrate indices.

Summary

Overall, the results of the January 2022 and April 2022 macroinvertebrate surveys indicated that the discharge of waste from the ANZCO meatworks had not had any recent significant detrimental effects on the macroinvertebrate communities of the Waingongoro River.

Copies of biomonitoring reports for this site are available from the Council upon request.

2.3.5 Soil and herbage monitoring

In the past, Industrial Chemistry Services have undertaken soil and herbage sampling and analysis on behalf of the Company.

The Effluent Management Plan specifies the soil parameters that will be monitored on a monthly basis at a depth of 75-150 mm and those that will be monitored on a six monthly basis at a depth of 0-75 mm. The plan also specifies the parameters that will be monitored at the time of the quarterly herbage monitoring.

This results of this sampling for the period under review have not been provided to Council.

2.3.6 Air

The discharge of emissions to air is permitted under consent 4644-3 for emissions relating to meat processing and associated activities at the premises.

2.3.6.1 Inspections

The Company undertakes weekly walkovers of the site and the Council undertakes additional air surveys during site inspections and in response to any public complaints. The results of the odour surveys for the months of November 2021 to October 2022 were provided to Council. Odour survey information was not provided for October 2021.

During the period under review there were no incidents reported by the public and no significant odours detected by the Company or the Council during inspections.

Surveys undertaken by the Company reported the following:

- Slight occasional wafts (level 1) were reported during some of the weekly odour surveys across some months;
- There were no odours detected at any time that were at level 2 (slight but constant odour) or higher; and
- When slight odours were reported they were noted to be emanating from either the ponds, yards or the trucks on site.

Surveys undertaken by the Council during the quarterly site inspections reported no significant odour was detected during any inspection or at any designated monitoring site beyond the plant boundary.

2.4 Investigations, interventions and incidents

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

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

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

Table 31 below sets out details of any incidents recorded, additional investigations, or interventions required by the Council in relation to the Company's 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.

In the 2021-2022 period, the Council was not required to undertake significant additional investigations and interventions, or record incidents, in association with the Company's conditions in resource consents or provisions in Regional Plans. However, administrative oversights again occurred as a result of staff shortages at the site.

The annual compliance report, including the daily discharge volume, location of the discharges, application rates, any harvesting of crops, and dry matter removed, soil and herbage sampling results and self-compliance assessment due by 30 October 2022 was not provided.

The administrative oversights we understand to be the result of staff shortages. In the 2020-2021 Annual Report the administrative compliance evaluation was assessed as "good" to reflect non-compliances relating to data provision and annual evaluation and reporting of self-monitoring data. The continuation of

administrative oversights has resulted in the administrative compliance evaluation being assessed as "improvement required" to reflect the on-going nature of these non-compliances.

Table 31 Incidents, investigations, and interventions summary table

Date	Details	Compliant (Y/N)	Enforcement Action Taken?	Outcome
17/11/2021	Annual compliance report required by consent 5569-1 and the Effluent Management Plan was not provided	N	Administration performance rating reduced	Council working with the consent holder to investigate alternative means of data provision

It is proposed that this will be addressed going forward by establishing and agreeing effective data reporting processes with the consent holder. It is recommended that the conditions of the consent be reviewed and / or varied as required to align with any changes in these practices.

3 Discussion

3.1 Discussion of site performance

Inspections

Regular inspections of the site were undertaken by a Council Officer to assess compliance with consent conditions. During the inspections the site was found to be tidy and being well managed.

Surface water abstraction

During the monitoring year, the Company met the abstraction rate limits of their surface water abstraction consent.

Discharge to water

In general, discharges to water were compliant with consent conditions.

DRP concentrations recorded in sites monitored downstream of the Company's discharge were significantly higher than those monitored upstream. No measurable impacts on the macroinvertebrate communities were observed downstream of the site during either biomonitoring survey. Stormwater sampling was undertaken as part of the surface water sampling programme.

Discharge to air

For the discharge to air, compliance with consent conditions was achieved. Inspection of the site and odour surveys were carried out by the consent holder and Council's officers. No complaints were received from the public.

Discharge to land

For the discharge to land, the disposal of treated wastewater was generally well managed. Sampling undertaken reported no observable significant changes in groundwater or surface water quality during the period under review. Compliance with consent conditions was achieved with the following exception.

Historical data indicate there may be some long term effects on groundwater and shallow surface water quality over time as a result of irrigation of effluent to land. This is discussed further in the next section. The Company have improved the management of nitrogen at the site resulting in a reduction of loading to the paddocks over time (Table 32). The slight reduction in nitrogen concentrations (improvement) seen in some bores over recent years may be a direct result of these measures. However, due to the slow movement of groundwater it may be several years before any significant improvement in nitrogen concentrations can be seen across the whole site.

Table 32 Nitrogen irrigated to the paddocks since 2016-2017 period

Period	Kg nitrogen	Period	Kg nitrogen
2021-2022	32,512	2018-2019	37,269
2020-2021	32,924	2017-2018	52,030
2019-2020-	30,294	2016-2017	66,081

Provision of data

In regard to administrative performance, issues were identified in respect of the timely provision of data and/or reports that were summarised in Table 2 and are required either:

- Directly by the conditions of the consent;
- By the Company's Management Plans; or

- To determine compliance with the conditions of the consents, as assessed in Table 34, Table 36, Table 37, and Table 38.

3.2 These issues will be addressed with the consent holder during the 2022/2023 monitoring year. Environmental effects of exercise of consents

Surface water abstraction

During the monitoring year, 271,405 m³ of water use on-site was sourced from the Waingongoro River under consent 5437-4, and 185,479 m³ was sourced from the Eltham municipal water supply between October 2020 and September 2021. There were no recorded or observable impacts to the river as a result of the abstraction and all relevant conditions were complied with.

Discharge to water

The results of January 2021 (spring) and March 2021 (summer) macroinvertebrate surveys indicated that the discharge of treated wastewater and uncontaminated stormwater discharges from the Company's site had not had any detrimental effect on the macroinvertebrate communities of the Waingongoro River beyond consented limits. No observable impacts were noted during inspection and all prescribed surface water quality limits were met.

DRP concentrations recorded in sites monitored downstream of the Company's discharge are significantly higher than those monitored upstream. To date, increased concentrations downstream do not appear to have had any detrimental effects on macroinvertebrate communities.

Discharge to air

Some slight occasional wafts of odour were reported during some of the weekly inspections undertaken by the Company. These events did not result in objectionable or offensive odours beyond the site boundary. No complaints were received by the Council from the public regarding any odours or emissions to air.

Discharge to land

Historic data (from 2001) indicates that nitrate concentrations have increased significantly in some bores and at one surface water monitoring site over time. Five of the bores began exhibiting nitrate concentrations that exceed the New Zealand guidelines for nitrate in drinking water at various times between 2003 and 2019. The impacts appear to have been localised to the centre of the irrigated area and the retirement of the old unlined well (GND1189) as a water supply source.

Changes in operational practices have resulted in reducing nitrate concentrations in some bores, which combined with the slow movement of groundwater, may improve the capacity for attenuation of nitrate.

During the period under review, four of the thirty six groundwater samples collected returned results that were above the drinking water standard. In comparison, during the 2020-2021 year 13 of the 36 samples collected exceeded this value.

In terms of more recent trends (since 2016), the groundwater results remained relatively stable in four of the bores, with trends of decreasing nitrate nitrogen concentrations evident in four of the bores.

In the Company's 2020-2021 Annual Report it was stated that the Company had plans to commence irrigation at Paulwell Farm under Consent 5736-2 during the 2021-2022 season, extending the area under irrigation to alleviate the impacts on groundwater at the site. Although the irrigation infrastructure has been installed at Paulwell Farm, it has yet to be confirmed whether irrigation has commenced at this location.

3.3 Evaluation of performance

A tabular summary of the consent holder's compliance record for the year under review is set out in Table 33 to Table 40. A summary of the consent holder's environmental performance ratings from 2014 to date is set out in Table 41 for comparison.

Table 33 Summary of performance for consent 1968-4

Purpose: To discharge stormwater from various locations at a meat processing plant site into the Waingongoro River		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adopt best practicable option	Site inspection – checking that standard operating procedures to achieve compliance with conditions are followed	Yes
2. Limit on catchment area	Site inspection	Yes
3. Concentration limits upon potential contaminants in discharge	Stormwater sampling	Yes
4. Controls on effect of discharge in receiving water	Inspection, river sampling and bio-monitoring	Yes
5. Maintenance of and adherence to contingency plan	Plan received, approved 11 September 2008. Updated Plan received 12 February 2015	Yes
6. Maintenance of and adherence to stormwater management plan	Receipt and certification of Plan. Plan received, approved 11 September 2008. Updated Plan received 12 February 2015	Yes
7. Consultation over significant proposed changes	Liaison during visits. No significant changes undertaken during year	N/A
8. Optional review provision re environmental effects	Next review date June 2023, or within 3 months of notification under condition 7	N/A
Overall assessment of environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

Table 34 Summary of performance for consent 2039-4.1

Purpose: To discharge treated wastewater into the Waingongoro River		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Limits of discharge rates and volumes	Review of electronic data provided to Council	Yes
2. Concentration limits upon potential contaminants in discharge	Chemical sampling and biomonitoring	Yes
3. Notification of significant proposed changes	Inspections and receipt of notification. No significant changes undertaken during year	Yes
4. Installation of meter and datalogger	Inspection and receipt of data	Yes

Purpose: To discharge treated wastewater into the Waingongoro River		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
5. Provision of records within two hours of being recorded	Records received	Partial compliance. Records provided daily
6. Activities to be exercised in accordance with a certified management plan that must address specified matters	Inspections and liaison and receipt of Company reports	Yes
7. Review and update of management plan	Plan received by Council and approved in 1997. Most recent update Sept 2003 approved by Council	N/A
8. Option for review of wastewater plan	No review sought by either Council or Company. Not requested	N/A
9. Provision of reviewed plans to specified submitters on consent application	No plan updates received or requested	N/A
10. Designated staff member	Officer introduced to Council	Yes
11. Adopt the best practical option (bpo)	Review of management plan and inspections	Yes
12. Donation to Taranaki Tree Trust		N/A
13. Provide a report investigating dissolved reactive phosphorus DRP	Report previously provided	N/A
14. Optional review following receipt of DRP report	No review was invoked	N/A
15. Optional review provision re environmental effects	Next consideration June 2023	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

Table 35 Summary of performance for consent 4644-3

Purpose: To discharge emissions into the air arising from meat processing and associate activities		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Discharge to take place from authorised area – map attached to the consent	Inspection by Council	Yes
2. Discharge to take place as described in application	Inspection by Council	Yes
3. Consultation over significant proposed changes	On-going liaison. No significant changes undertaken during year	N/A

Purpose: To discharge emissions into the air arising from meat processing and associate activities		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
4. Adopt best practicable option (BPO) to prevent or minimise adverse effects	Liaison with Company and inspection by Council	Yes
5. Minimise emissions and effects by most appropriate equipment and operational controls	Inspection by Council	Yes
6. No offensive or objectionable odour beyond boundary	Odour surveys by both Company and Council, and keeping of complaints record	Yes
7. Provision of and adherence to air quality management plan	Plan received by Council and approved in 1997. Most recent update received 11 February 2015	Yes
8. Optional review provision re environmental effects	Option not available. Next review date 1 June 2023.	N/A
Overall assessment of environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

Table 36 Summary of performance for consent 5437-3.1

Purpose: To take and use water from the Waingongoro River for use in a meat processing plant		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Limit on maximum abstraction rate	Continuous flow metering by consent holder	Yes
2. Installation of flow meter and provision of records	Inspection, review of data	Yes
3. Certification of flow meter	Receipt of certification. (Provided 17 November 2019)	Yes
4. Reporting of monitoring equipment faults	Inspection, receipt of reports	Yes
5. Access to metering system	Inspection	Yes
6. Formatting of records to be transmitted within two hours of being recorded	Inspection, and review of data received. Data received daily	Partial compliance. Records provided daily
7. Adopt best practicable option for conservation of water	Site inspection – checking that standard operating procedures to achieve compliance with conditions are followed	Partially assessed as compliant. Usual waste minimisation report within the Company's annual report not available
8. Annual report on water use and recycling by 31 May each year	Review of report provided 20 January 2022. Noted that timing does not align well with the operating season of the consent holder	Yes
9. Intake screened and designed to protect fish	Inspection	Yes

Purpose: To take and use water from the Waingongoro River for use in a meat processing plant		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
10. Intake modifications not to affect juvenile fish	Inspection	N/A
11. Donation to Council for riparian protection	Confirmation with Council finance dept. that donation received	Yes
12. Optional review provision re environmental effects	Next review date June 2023	N/A
Overall assessment of environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		Good

Table 37 Summary of performance for consent 5569-1

Purpose: To discharge up to 3500 cubic/metres/day of treated wastewater from meat processing and associated activities by irrigation onto and into land, and to discharge emissions into the air in the vicinity of various unnamed tributaries of the Waingongoro River		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. System to be operational by 15 February 2001	Irrigation commenced January 2001	N/A
2. Provision of spray irrigation management plan	Plan received by Council and approved in 2001. Most recent update received 6 September 2019	Yes
3. Plan to be followed	Liaison, inspections and review of monitoring reports provided	Monitoring reports not provided
4. Optional review of management plan	Not invoked	N/A
5. Designated staff member	Part of Company Technical Manager's job description	Yes
6. Prohibition of untreated blood	Inspections	Yes
7. No offensive or objectionable odour beyond boundary	Inspections and complaint register	Yes
8. No spray drift beyond boundary	Inspections, and complaint register	Yes
9. Biosolids/sludge from aerobic ponds only	Inspections. No bio-solids/sludge discharged on Stuart Road property	N/A
10. Limit on sodium adsorption ratio	Sampling by Council officers	Yes
11. Prohibition of ponding and run-off	Inspections	Yes
12. Spray buffer zones	Inspections	Yes
13. Limit on nitrogen application rate to 300 kg/ha/year	Monitoring by Company data not provided for review by Council.	Data not provided for review by Council

Purpose: To discharge up to 3500 cubic/metres/day of treated wastewater from meat processing and associated activities by irrigation onto and into land, and to discharge emissions into the air in the vicinity of various unnamed tributaries of the Waingongoro River		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
14. Provisions for contamination of groundwater or water supply	Monitoring by Council	Nitrate decreasing in some bores, but still elevated
15. Maintenance of monitoring bores	Inspection and sampling	Yes
16. Baseline and operational monitoring	Soil, herbage and water quality sampling by the Company	Data not provided for review by Council
17. Optional review provision for operational requirements	Not sought by Company	N/A
18. Optional review provision to assess design of treatment/disposal system	Option no longer available	N/A
19. Optional review provision re environmental effects	Options no longer available. Consent expires June 2026	N/A
Overall assessment of environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		Good Improvement required

Table 38 Summary of performance for consent 5736-2

Purpose: To discharge treated wastewater from meat processing and associated activities by irrigation onto and into land, and to discharge the associated emissions into the air at or about (NZTM) 1708468E-5634921N		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Discharge only from pond 6 or 7		N/A
2. No offensive or objectionable odour beyond boundary		N/A
3. No spray drift beyond boundary		N/A
4. Limit on sodium adsorption ratio		N/A
5. Prohibition of ponding and run-off		N/A
6. Spray buffer zones		N/A
7. Limit on Nitrogen application rate		N/A
8. Provisions for contamination of groundwater or water supply		N/A

Purpose: To discharge treated wastewater from meat processing and associated activities by irrigation onto and into land, and to discharge the associated emissions into the air at or about (NZTM) 1708468E-5634921N		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
9. Provision of wastewater irrigation management plan		N/A
10. Review of plan following a request from the Council		N/A
11. Plan to be provided to third parties for review		N/A
12. Designated staff member		Yes
13. Adopt best practicable option (bpo) to prevent or minimise adverse effects		N/A
14. Maintenance of monitoring bores	Bores installed in during 2020-2021 year	N/A
15. Monitoring of surface waters to be undertaken downstream	Chemical and microbiological monitoring by Council	N/A
16. Baseline and operational monitoring of herbage, soil and water	Water monitoring by Council. No records of soil or herbage monitoring on file to date	N/A
17. Annual report on compliance with Waste Water Irrigation Management Plan and consent, annually by 1 July	Annual report not received. However, no evidence to confirm irrigation has commenced	N/A
18. Optional review provision re environmental effects	Next review date June 2023	N/A
Overall assessment of environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		N/A

Table 39 Summary of performance for consent 5739-2

Purpose: To erect, place and maintain a pipeline under the bed of the Waingongoro River		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Requirement if changes to structure required	Receipt of notification	N/A
2. Maintain and review Contingency Plan for pipeline failure	Contingency Plan in place dated July 2017	Yes
3. Requirement for maintenance of structure	Inspection of structure	Yes
4. Optional review provision re environmental effects	Next review data June 2023	N/A

Purpose: To erect, place and maintain a pipeline under the bed of the Waingongoro River		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
Overall assessment of environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

Table 40 Summary of performance for consent 6455-1

Purpose: To erect, place and maintain a culvert in, and to realign, an unnamed tributary of the Waingongoro River for site access purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adopt best practicable option (BPO) to avoid or minimise adverse effects	Liaison with Company and inspection of structure	Yes
2. Construction and maintenance in accordance with documentation	Inspection by Council	Yes
3. Notification prior to and after works	Notification in September 2022	Yes
4. Timing of maintenance works	Liaison with Company and inspection	Yes
5. Riverbed disturbance and reinstatement	Inspection by Council	Yes
6. Lapse of consent if not exercised	Consent exercised	N/A
7. Optional review provision re environmental effects	Option not available. Consent expires June 2023	N/A
Overall assessment of environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

Table 41 Evaluation of environmental performance since 2014

Year	Consent no	High	Good	Improvement required	Poor
2020-2021	1968-4	1	-	-	-
	2039-4.1	1	-	-	-
	4644-3	1	-	-	-
	5437-3.1	1	-	-	-
	5569-1	1	-	-	-
	5736-2	1	-	-	-
	5739-2	-	1	-	-
	6455-1	1	-	-	-
2019-2020	1968-4	1	-	-	-
	2039-4.1	1	-	-	-
	4644-3	1	-	-	-

Year	Consent no	High	Good	Improvement required	Poor
	5437-3.1	1	-	-	-
	5569-1	-	1	-	-
	5736-2	Not exercised			
	5739-2	1	-	-	-
	6455-1	1	-	-	-
2018-2019	1968-4	1	-	-	-
	2039-4.1	-	-	1	-
	4644-3	1	-	-	-
	5437-3.1	1	-	-	-
	5569-1	-	1	-	-
	5736-2	Not exercised			
	5739-2	1	-	-	-
	6455-1	1	-	-	-
2017-2018	1968-4	1	-	-	-
	2039-4.1	1	-	-	-
	4644-3	1	-	-	-
	5437-3.1	1	-	-	-
	5569-1	-	-	1	-
	5604-1	Consent no longer required			
	5736-2	Not exercised			
	5739-2	1	-	-	-
	6455-1	1	-	-	-
2016-2017	1968-4	-	1	-	-
	2039-4	1	-	-	-
	4644-3	1	-	-	-
	5437-3	1	-	-	-
	5569-1	-	-	1	-
	5604-1	1	-	-	-
	5736-2	Not exercised			
	5739-1	1	-	-	-
	5739-2	1	-	-	-
	6455-1	1	-	-	-
	7487-1	Not exercised			
2015-2016	1968-4	1	-	-	-
	2039-4	1	-	-	-
	4644-2	1	-	-	-

Year	Consent no	High	Good	Improvement required	Poor
	4644-3	1	-	-	-
	5437-3	-	1	-	-
	5569-1	-	-	1	-
	5604-1	-	1	-	-
	5736-2	Not exercised			
	5739-1	1	-	-	-
	6455-1	1	-	-	-
	7487-1	Not exercised			
2014-2015	1968-4	1	-	-	-
	2039-4	1	-	-	-
	4644-3	1	-	-	-
	5437-3	1	-	-	-
	5569-1	-	1	-	-
	5604-1	1	-	-	-
	5736-2	Not exercised			
	5739-1	1	-	-	-
	6455-1	1	-	-	-
	7487-1	Not exercised			
Totals		43	7	3	0

During the year, the Company demonstrated a good level of environmental performance and an improvement was required in their administrative performance with the resource consents as defined in Appendix II. There are some on-going issues with the supply of reports and/or data in a timely manner and improvement required under consent 5569-1 in environmental performance, relating to nitrate concentrations in groundwater.

Since 2014 the Company has generally maintained either a good or high level of environmental and administrative performance with resource consents.

3.4 Recommendations from the 2020-2021 Annual Report

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

1. THAT monitoring of water abstraction and discharges in relation to the meat processing plant of ANZCO Foods Eltham Ltd in the 2021-2022 year continue at the same level as in 2020-2021.

The recommendation above as implemented during the period under 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, the programme remains unchanged. A recommendation to this effect is attached to this report.

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

3.6 Exercise of optional review of consent

Resource consents 1968-4, 2039-4.1, 4644-3, 5437-3.1, 5736-2 and 5739-2 each provide for an optional review of the consent in June 2023, as does consent 7487-1. As outlined previously (Section 1.3), this consent covers discharges to land at the same location as consent 5736-2.

Conditions 8, 15, 8, 12, 18, 4, and 11 of consents 1968-4, 2039-4.1, 4644-3, 5437-3.1, 5736-2, 5739-2 and 7487-1 respectively all allow the Council to review the consent, if there are grounds, 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. It is noted in Section 3 of the RMA, the meaning of effect includes past, present, future, cumulative and potential effects.

In addition to this:

- condition 8 of consent 1968-4 also allows the Council to review the consent within 3 months of receiving a notification under special condition 7 (notification of changes that could alter the nature of the discharge);
- conditions 15 of consent 2039-4.1 and condition 12 of consent 5347-3.1 both allow the Council to review the conditions of the consent at this time (June 2023) to require any data collected in accordance with the conditions of this consent to be transmitted directly to the Council's computer system, in a format suitable for providing a 'real time' record over the internet;

Based on the results of monitoring in the year under review, and in previous years as set out in earlier annual compliance monitoring reports, it is considered that there are no grounds that require a review to be pursued in relation to the conditions of consents 1968-4, 5739-2 or consent 4644-3.

Based on the results of monitoring in the year under review, and in previous years as set out in earlier annual compliance monitoring reports, it is considered that there are grounds for a review of consents 2039-4.1, 5437-3.1, 5736-2 and 7487-1 to be considered, due to on-going issues with monitoring and reporting requirements.

In the case of consent 5437-3.1, the timing of the transmission of data to the Council and the reporting timeframe on the reporting of compliance and water conservation measures required by conditions 6 and 8, in relation to the reporting requirements that are contained within consent 2039-4.1 (discharge to the Waingongoro River) present issues around assessing the environmental effects from a freshwater contaminant accounting perspective. It is therefore proposed that conditions 6 and 8 of consent 5437-3.1

be amended. It is also proposed that condition 12 of 5437-3.1 be amended to provide an opportunity for review that aligns with next review of consent 2039-4.1 and the expiry of consents 5569-1, 5736-2, and 7487-1, that is June 2026.

In the case of consents 2039-4.1, 5736-2, and 7487-1, the conditions specify the content of the various management plans that relate to the management, monitoring and reporting on the discharges. Each of these plans is required in order to satisfy a requirement that the plan shall detail methods and procedures undertaken by the consent holder to ensure that the conditions of this consent are met and can be shown to be met. There is also a common specified intent in consents 2039-4.1, 5736-2 (with a review opportunity) and consent 5569-1 (which does not have a review opportunity, but expires on 1 June 2026). This is that the objective of the plans shall be to minimise discharges to the Waingongoro River and maximise discharges to land. The consents also contain requirements to adopt the best practicable option to prevent or minimise adverse effects on the environment.

The lack of clarity and consistency in the management, monitoring and reporting requirements make demonstrating that the conditions of the consents have been met problematic, including those related to the requirement of minimising effects.

It is therefore proposed that the Council considers reviewing these consents and working with the consent holder to ensure that any replacement conditions are clear, consistent, achievable, measurable and enforceable. Preliminary discussion have been held with the Company in relation to the possibility of amending the timeframes on the delivery of reports to better align with each other and with the Company's operating year being October to September.

In relation to the Paulwell Farm consents 5736-2, and 7487-1, it has been found that there is an increasing concentration of nitrogen in the groundwater at site GND3116. It is also noted that the consent does not specify any additional sources of nitrogen discharged (for example fertiliser applications) must also be taken into account when assessing compliance with the nitrogen application limits. It is therefore proposed that this requirement be incorporated into the consent during the review.

4 Recommendations

1. THAT monitoring of water abstraction and discharges in relation to the meat processing plant of ANZCO Foods Eltham 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 consideration should be given to the inclusion of consent 7487-1 in this programme in the 2023-2024 year.
4. THAT the option for a review of resource consents 1968-4, 2039-4.1, 4644-3 and 5739-2 in June 2023, as set out in conditions 8, 8 and 4 of the consent, not be exercised, on the grounds that at this time the conditions are considered adequate to deal with any actual or potential adverse effects on the environment arising from the exercise of this resource consent.
5. THAT the option for a review of resource consents, 5437-3.1, 5736-2 and 7487-1 in June 2023, as set out in conditions 15, 12, 18, and 11 of the consents, be exercised, on the grounds that the conditions are not considered adequate to deal with any actual or potential adverse effects on the environment arising from the exercise of this resource consent, including cumulative effects.

Glossary of common terms and abbreviations

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

Biomonitoring	Assessing the health of the environment using aquatic organisms.
BOD	Biochemical oxygen demand. A measure of the presence of degradable organic matter, taking into account the biological conversion of ammonia to nitrate.
BODF	Biochemical oxygen demand of a filtered sample.
Bund	A wall around a tank to contain its contents in the case of a leak.
CBOD	Carbonaceous biochemical oxygen demand. A measure of the presence of degradable organic matter, excluding the biological conversion of ammonia to nitrate.
cfu	Colony forming units. A measure of the concentration of bacteria usually expressed as per 100 millilitre sample.
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 $\mu\text{S}/\text{cm}$.
DCAD	Dietary cation-anion difference. Calculated by adding together the milliequivalents of dietary cations (sodium + potassium) and subtracting the sum of the milliequivalents of dietary anions (chloride + sulphur).
DO	Dissolved oxygen.
DRP	Dissolved reactive phosphorus.
E.coli	Escherichia coli, an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 millilitre sample.
Ent	Enterococci, an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 millilitre of sample.
F	Fluoride.
FC	Faecal coliforms, an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 millilitre sample.
FNU	Formazin nephelometric units, a measure of the turbidity of water
Fresh	Elevated flow in a stream, such as after heavy rainfall.
$\text{g}/\text{m}^2/\text{day}$	grams/metre ² /day.
g/m^3	Grams per cubic metre, and equivalent to milligrams per litre (mg/L). In water, this is also equivalent to parts per million (ppm), but the same does not apply to gaseous mixtures.
Incident	An event that is alleged or is found to have occurred that may have actual or potential environmental consequences or may involve non-compliance with a consent or rule in a regional plan. Registration of an incident by the Council does not automatically mean such an outcome had actually occurred.
Intervention	Action/s taken by Council to instruct or direct actions be taken to avoid or reduce the likelihood of an incident occurring.

Investigation	Action taken by Council to establish what were the circumstances/events surrounding an incident including any allegations of an incident.
Incident Register	The Incident Register contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan.
L/s	Litres per second.
m ³	Cubic Metres.
MCI	Macroinvertebrate community index; a numerical indication of the state of biological life in a stream that takes into account the sensitivity of the taxa present to organic pollution in stony habitats.
mS/m	Millisiemens per metre.
Mixing zone	The zone below a discharge point where the discharge is not fully mixed with the receiving environment. For a stream, conventionally taken as a length equivalent to 7 times the width of the stream at the discharge point.
µS/cm	Microsiemens per centimetre.
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).
NNN	Nitrate and nitrate combined, expressed in terms of the mass of nitrogen (N).
NO ₃	Nitrate, normally expressed in terms of the mass of nitrogen (N).
NTU	Nephelometric Turbidity Unit, a measure of the turbidity of water.
O&G	Oil and grease, defined as anything that will dissolve into a particular organic solvent (e.g. hexane). May include both animal material (fats) and mineral matter (hydrocarbons).
PM ₁₀ , PM _{2.5} , PM _{1.0}	Relatively fine airborne particles (less than 10 or 2.5 or 1.0 micrometre diameter, respectively).
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	<i>Resource Management Act 1991</i> and including all subsequent amendments.
SS	Suspended solids.
SQMCI	Semi quantitative macroinvertebrate community index.
Temp	Temperature, measured in °C (degrees Celsius).
Turb	Turbidity, expressed in NTU.
UI	Unauthorised Incident.

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

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Appendix I

Resource consents held by ANZCO Foods Eltham Ltd

(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: Riverlands Eltham Limited
P O Box 124
ELTHAM 4353

Decision Date: 9 July 2012

Commencement
Date: 9 July 2012

Conditions of Consent

Consent Granted: To discharge stormwater from various locations at a meat processing plant site into the Waingongoro River at or about (NZTM) 1710920E-5634567N

Expiry Date: 1 June 2029

Review Date(s): June 2017, June 2023, and/or within 3 months of receiving notification under special condition 7

Site Location: London Street, Eltham

Legal Description: Lot 1 DP 11593 [Discharge source & site]

Catchment: Waingongoro

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

General condition

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

Special conditions

1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
2. The stormwater discharged shall be from a catchment area not exceeding 1.8 hectares
3. Constituents of the discharge shall meet the standards shown in the following table.

Constituent	Standard
pH	Within the range 6.0 to 10
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.

4. After allowing for reasonable mixing, within a mixing zone extending 20 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.
5. The consent holder shall maintain a contingency plan that details measures and procedures to be undertaken to prevent spillage or any discharge of contaminants not authorised by this consent. The contingency plan shall be followed in the event of a spill or unauthorised discharge and shall be certified by the Chief Executive, Taranaki Regional Council as being adequate to avoid, remedy or mitigate the environmental effects of such a spillage or discharge.
6. The consent holder shall maintain a stormwater management plan that documents how the site is to be managed to minimise the contaminants that become entrained in the stormwater. This plan shall be followed at all times, shall be certified by the Chief Executive, Taranaki Regional Council, and 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.

7. 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 1991. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and be emailed to consents@trc.govt.nz.
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:
 - a) during the month of June 2017 and/or June 2023 and/or
 - b) within 3 months of receiving a notification under special condition 7 above;for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 9 July 2012

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: Riverlands Eltham Limited
PO Box 124
Eltham 4353

Decision Date
(Review): 13 October 2017

Commencement Date
(Review): 13 October 2017 (Granted Date: 9 July 2012)

Conditions of Consent

Consent Granted: To discharge treated wastewater into the Waingongoro River

Expiry Date: 1 June 2029

Review Date(s): June 2023, June 2026

Site Location: London Street, Eltham

Grid Reference (NZTM) 1710612E-5634427N

Catchment: Waingongoro

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

General condition

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

Special conditions

1. The discharge shall not exceed 3500 cubic metres per day and the rate of discharge shall not exceed 81 litres per second.
2. After allowing for reasonable mixing, within a mixing zone extending 100 metres downstream of the discharge point, the discharge shall not give rise to any of the following effects in the receiving water:
 - (a) a reduction in the dissolved oxygen concentration below 6 gm⁻³;
 - (b) the concentration of total (un-ionised and ionised) ammonia nitrogen as gm⁻³ nitrogen exceeding the values given in Table 1 below for the corresponding pH;
 - (c) the concentration of filtered carbonaceous Biochemical Oxygen Demand (20 °C, 5-day test) exceeding 2 gm⁻³;
 - (d) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
 - (e) any conspicuous change in the colour or visual clarity;
 - (f) any emission of objectionable odour;
 - (g) the rendering of fresh water unsuitable for consumption by farm animals;
 - (h) any significant adverse effects on aquatic life, habitats, or ecology; and
 - (i) a decrease in water clarity of greater than 33% as determined using the standard black disc measurement.
3. The consent holder shall advise the Taranaki Regional Council prior to making any change in the processes undertaken at the site which could significantly alter the nature of the discharge. The advice shall be given by emailing consents@trc.govt.nz.
4. Before exercising this consent the consent holder shall install, and thereafter maintain a meter and a datalogger at the site of discharge. The meter and datalogger shall be tamper-proof and shall measure and record the rate and volume of the discharge to an accuracy of $\pm 5\%$, at intervals not exceeding 15 minutes. Records of the date, the time and the rate and volume the discharge, shall be made available to the Chief Executive, Taranaki Regional Council on request.
5. The records of water discharged 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 discharged as 'zero' when no water is discharged; and
 - c) be transmitted to the Taranaki Regional Council's computer system within two hours of being recorded.

6. Subject to the other conditions this consent, this consent shall be exercised in accordance with a 'Wastewater Disposal Management Plan' (the 'Management Plan') that has been approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity. The Management Plan shall detail the management of the discharge in combination with the land disposal authorised by consents 5569-1 and 5736-2 (Joblin Farm and Paulwell Farm), and the methods and procedures undertaken by the consent holder to ensure that the conditions of this consent are met and can be shown to be met. It shall address but not necessarily be limited to the following matters:
 - (a) monitoring the water quality and rate of the discharge;
 - (b) monitoring the water quality and flow in the receiving water;
 - (c) management of the wastewater treatment system;
 - (d) minimisation of phosphorous and nitrogen in the wastewater discharge and how this is being achieved;
 - (e) treatment and disposal of screenings and oxidation pond sludges;
 - (f) criteria for the use of spray irrigation or discharge to surface water;
 - (g) reporting on the exercise of the consent; and
 - (h) methods and procedures utilised to minimise the discharge to the Waingongoro River, and the effects of that discharge, and to maximise the discharge to land.
7. Within three months of the granting of this consent, the consent holder shall update and review the management plan required by condition 6 and resubmit the plan for certification by the Chief Executive, Taranaki Regional Council.
8. Within one months notice given by the Taranaki Regional Council, the consent holder shall review the management plan required by condition 6 and resubmit the plan for certification by the Chief Executive, Taranaki Regional Council.
9. A copy of any reviewed Plan, as per conditions 7 and 8, shall be provided to the Department of Conservation and Fish and Game New Zealand (Taranaki Region), for the Taranaki Regional Council to take into account any comments received (within a two week timeframe from when the Plan was provided).
10. The consent holder shall designate an officer with the necessary qualifications and/or experience to manage the wastewater system. The officer shall be regularly trained on the content and implementation of the wastewater disposal management plan, and shall be advised immediately of any revision or additions to the management plan.
11. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
12. The consent holder shall mitigate the effects of the discharge by making annual payments of \$9000 (GST exclusive) to the Taranaki Regional Council as a financial contribution for the purpose of providing riparian planting and management in the Waingongoro River catchment excluding that area being irrigated under consent 5569. The amount to be paid shall be adjusted annually according to the consumer price index, or similar index, to account for the effects of inflation, and be made no later than 1 September each year.

13. Before 31 December 2013 the consent holder shall engage a suitably qualified independent person to prepare a report investigating Dissolved Reactive Phosphorus (DRP) in the discharge and options for reducing it. The report shall include, but not necessary be limited to:
 - (a) Details the DRP levels in the discharge and its potential environmental effect on the Waingongoro River;
 - (b) Benchmarking of DRP levels with other discharges of a similar nature;
 - (c) Options for further reducing DRP levels; and
 - (d) The feasibility of implementing DRP reduction options.
14. The Council may, pursuant to section 128 of the Resource Management Act 1991, review any or all of the conditions of this consent by giving notice of review within 60 days of receiving a report required by condition 13 for the purpose of requiring specific conditions to reduce the levels of Dissolved Reactive Phosphorus (DRP) in the discharge.
15. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2017 and/or June 2023 and/or June 2026 for the purposes of:
 - (a) ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time; and/or
 - (b) to require any data collected in accordance with the conditions of this consent to be transmitted directly to the Council's computer system, in a format suitable for providing a 'real time' record over the internet.

Signed at Stratford on 13 October 2017

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

Table 1: Maximum total ammonia concentration in the Waingongoro River for a given pH

pH of receiving water	Total Ammonia (gm ⁻³)	pH of receiving water	Total Ammonia (gm ⁻³)	pH of receiving water	Total Ammonia (gm ⁻³)
		7.1	2.96	8.1	1.09
		7.2	2.81	8.2	0.935
		7.3	2.65	8.3	0.795
		7.4	2.47	8.4	0.673
6.5	3.48	7.5	2.28	8.5	0.568
6.6	3.42	7.6	2.07	8.6	0.480
6.7	3.36	7.7	1.87	8.7	0.406
6.8	3.28	7.8	1.66	8.8	0.345
6.9	3.19	7.9	1.46	8.9	0.295
7.0	3.08	8.0	1.27	9.0	0.254

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

Name of
Consent Holder: ANZCO Foods Limited
PO Box 124
Eltham 4353

Decision Date: 5 May 2016

Commencement Date: 5 May 2016

Conditions of Consent

Consent Granted: To discharge emissions into the air arising from meat processing and associated activities at the factory premises

Expiry Date: 1 June 2035

Review Date(s): June 2023, June 2029

Site Location: 75 London Street, Eltham

Grid Reference (NZTM) 1710980E-5634465N

Catchment: Waingongoro

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

General condition

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

Special conditions

1. This consent authorises emissions only from the area shown on the attached map.
2. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of the original application for this consent and any subsequent applications to change conditions. In the case of any contradiction between the documentation submitted in support of previous applications and the conditions of this consent, the conditions of this consent shall prevail.
3. Prior to undertaking any alterations to the plant, processes or operations which may significantly change the nature or quantity of contaminants emitted from the site, the consent holder shall consult with the Chief Executive, Taranaki Regional Council, and shall obtain any necessary approvals under the Resource Management Act 1991.
4. 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 resource consent.
5. The consent holder shall minimise the emissions and impacts of contaminants discharged into air from the site by:
 - a) the selection of the most appropriate process equipment;
 - b) process control equipment and emission control equipment;
 - c) the methods of control;
 - d) supervision and operation; and
 - e) the proper and effective operation, supervision, maintenance and control of all equipment and processes at all times.
6. The discharges authorised by this consent shall not give rise to any odour at or beyond the boundary of the site that is offensive or objectionable.
7. The site shall be operated in accordance with an 'Odour Management Plan' prepared by the consent holder and approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity. The plan shall detail how the site will be managed to achieve compliance with the conditions of this consent and shall address, as a minimum:
 - a. possible sources of objectionable air discharge;
 - b. air emissions control; and
 - c. air monitoring.

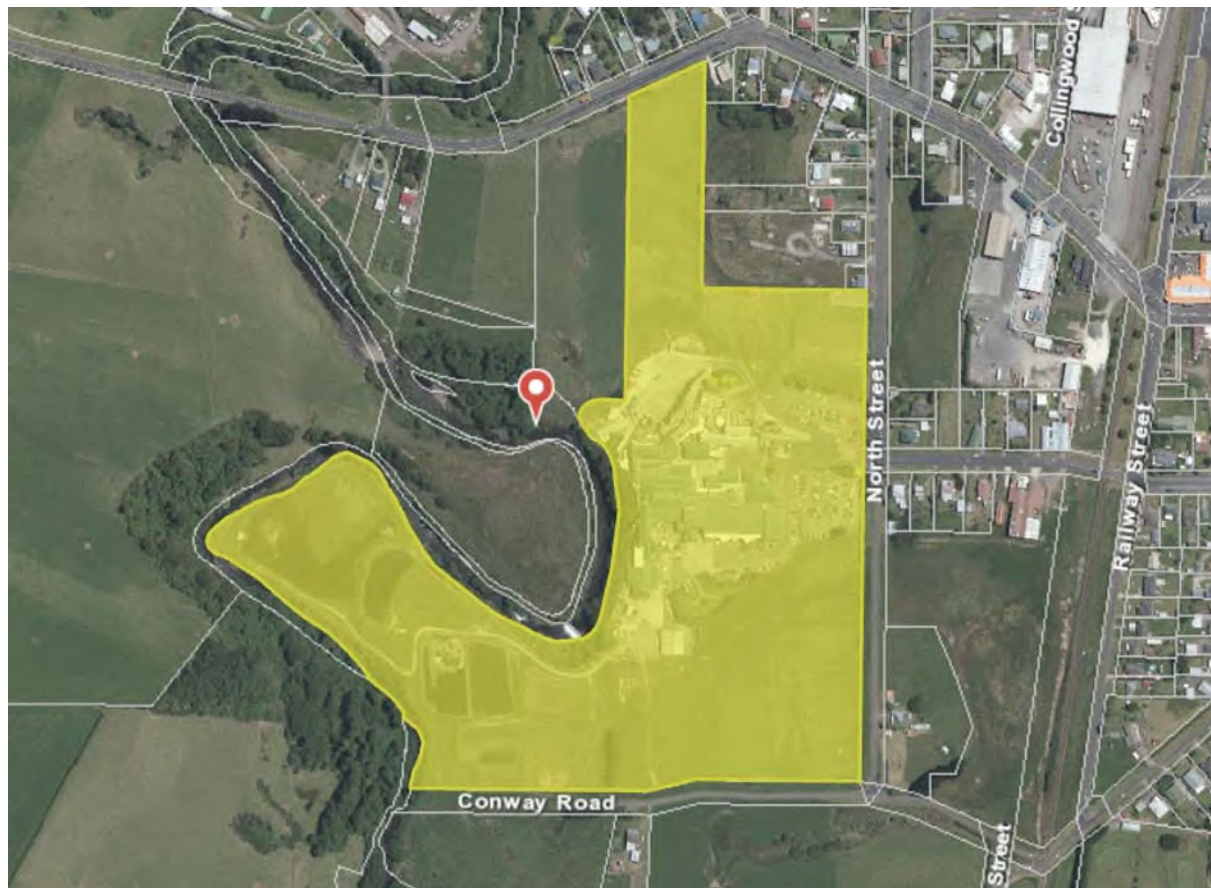
Consent 4644-3.0

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 2023 and/or June 2029, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 5 May 2016

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management



Area in which emissions are authorised by this consent.

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

Name of
Consent Holder: Riverlands Eltham Limited
PO Box 124
Eltham 4353

Decision Date
(Review): 13 October 2017

Commencement Date
(Review): 13 October 2017 (Granted Date: 9 July 2012)

Conditions of Consent

Consent Granted: To take and use water from the Waingongoro River for
use in a meat processing plant

Expiry Date: 1 June 2029

Review Date(s): June 2023

Site Location: London Street, Eltham

Grid Reference (NZTM) 1710920E-5634567N

Catchment: Waingongoro

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

General condition

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

Special conditions

1. The volume of water taken shall not exceed 1972 cubic metres per day (22.8 litres per second).
2. Before exercising this consent the consent holder shall install, and thereafter maintain a water meter and a datalogger at the site of taking. The water meter and datalogger shall be tamper-proof and shall measure and record the rate and volume of water taken to an accuracy of $\pm 5\%$. Records of the date, the time and the rate and volume of water taken at intervals not exceeding 15 minutes, shall be made available to the Chief Executive, Taranaki Regional Council at all reasonable times.

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

3. The consent holder shall provide the Chief Executive, Taranaki Regional Council with a document from a suitably qualified person certifying that water measuring and recording equipment required by the conditions of this consent ('the equipment'):
 - (a) has been installed and/or maintained in accordance with the manufacturer's specifications; and/or
 - (b) has been tested and shown to be operating to an accuracy of $\pm 5\%$.

The documentation shall be provided:

- (i) within 30 days of the installation of a water meter or datalogger;
 - (ii) at other times when reasonable notice is given and the Chief Executive, Taranaki Regional Council has reasonable evidence that the equipment may not be functioning as required by this consent; and
 - (iii) no less frequently than once every five years.
4. If any measuring or recording equipment breaks down, or for any reason is not operational, the consent holder shall advise the Chief Executive, Taranaki Regional Council immediately. Any repairs or maintenance to this equipment must be undertaken by a suitably qualified person.
5. The water meter and datalogger shall be accessible to Taranaki Regional Council officers at all reasonable times for inspection and/or data retrieval.
6. The records of water taken shall:
 - a) be in a format that, in the opinion of the Chief Executive, Taranaki Regional Council, is suitable for auditing;
 - b) specifically record the water taken as 'zero' when no water is taken; and
 - c) be transmitted to the Taranaki Regional Council's computer system within two hours of being recorded.

Consent 5437-3.1

7. At all times the consent holder shall adopt the best practicable option to prevent or minimise any actual or likely adverse effect on the environment associated with the taking of water, including, but not limited to, the efficient and conservative use of water.
8. The consent holder shall annually investigate and report on compliance with condition 6 including water conservation measures, plant water recycling and reuse. The report to be received by the Chief Executive, Taranaki Regional Council, by 31 May each year.
9. The consent holder shall ensure that the intake is screened and designed to avoid fish entering the intake or being trapped against the screen.
10. The consent holder shall ensure that no modification is made to the intake that in any way could increase the likelihood of juvenile fish entering the intake or being trapped against the screen.
11. The consent holder shall mitigate the effects of the discharge by making annual payments of \$5000 (GST exclusive) to the Taranaki Regional Council as a financial contribution for the purpose of providing riparian planting and management in the Waingongoro River catchment excluding that area being irrigated under consent 5569. The amount to be paid shall be adjusted annually according to the consumer price index, or similar index, to account for the effects of inflation, and be made no later than 1 September each year.
12. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2017 and/or June 2023 for the purposes of:
 - (a) ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time; and/or
 - (b) to require any data collected in accordance with the conditions of this consent to be transmitted directly to the Council's computer system, in a format suitable for providing a 'real time' record over the internet.

Signed at Stratford on 13 October 2017

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: Riverlands Eltham Limited
P O Box 124
ELTHAM

Change To
Conditions Date: 15 December 2000 [Granted: 23 December 1999]

Conditions of Consent

Consent Granted: To discharge up to 3500 cubic metres/day of treated wastewater from meat processing and associated activities by irrigation onto and into land, and to discharge emissions into the air, in the vicinity of various unnamed tributaries of the Waingongoro River and the Waingongoro River [area bounded by following GRs]:

Q20:186-932	Q20:189-962	Q20:198-962	Q20:195-966
Q20:200-969	Q20:210-962	Q20:209-954	Q20:203-954
Q20:202-940	Q20:191-931		

Expiry Date: 1 June 2026

Review Date(s): June 2002, June 2004, June 2006, June 2008, June 2013, June 2018

Site Location: Lower Stuart Road, Eltham

Legal Description: Lot 1 DP 11593 & Lot 2 DP 12254 Ngaere SD [plant site]
Pt Sec 51 Blk XIII Ngaere SD
Lot 1 DP 3895 & Pt Sec 51 Blk XIII Ngaere SD
Pt Sec 38 Blk IX Ngaere SD
Sec 47 Blk IX Ngaere SD
Lot 1 DP 7965 & Pt Sec 38 Blk IX Ngaere SD
Lot 1 DP 3463 & Lot 2 DP 16398 & Pt Sec DP 3535 Blk IX Ngaere SD
Lot 1 DP 16398 Blk IX Ngaere SD
Lot 2 DP 17749 Blk IX Ngaere SD
Pt Sec 39 Blk IX Ngaere SD
Lot 1 DP 5241 Blk IX Ngaere SD
Pt Sec 40 Blk IX Ngaere SD

Catchment: Waingongoro

Tributary: Various unnamed

General conditions

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

Special conditions

Irrigation system

- 1. The irrigation system shall be installed and operational by 15 February 2001.

Management Plan

- 2. Prior to the exercise of this consent, the consent holder shall provide a spray irrigation management plan, to the approval of the General Manager, Taranaki Regional Council, outlining the management of the system, which shall demonstrate ability to comply with consent conditions and shall address the following matters:
 - (a) designated application areas;
 - (b) selection of appropriate irrigation 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 runoff and ponding;
 - (h) minimisation and control of odour effects offsite;
 - (i) operational control and maintenance of the spray irrigation system;
 - (j) monitoring of the effluent [physicochemical];
 - (k) monitoring of soils and herbage [physicochemical];
 - (l) monitoring of groundwater beneath and beyond the irrigated area [physicochemical];
 - (m) remediation measures;
 - (n) mitigation measures including screening of any storage facilities and riparian planting;
 - (o) reporting monitoring data;
 - (p) monitoring of the Waingongoro River and relevant tributaries;
 - (q) procedures for responding to complaints; and
 - (r) notification to the council of non-compliance with the conditions of this consent.

The objective of the plan shall be to minimise discharges to the Waingongoro River under consent 2039 and maximise discharges to land.

- 3. The consent shall be exercised in accordance with the procedures set out in the spray irrigation management plan, and the consent holder shall subsequently adhere to and comply with the procedures, requirements, obligations and other matters specified in the management plan, except by the specific agreement of the General Manager, Taranaki Regional Council. In the case of any contradiction between the management plan and the conditions of this resource consent, the conditions of this resource consent shall prevail.

Consent 5569-1

4. The spray irrigation management plan described in special condition 2 of this consent shall be subject to review upon two months notice by either the consent holder or the Taranaki Regional Council.
5. 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 spray irrigation management plan, and shall be advised immediately of any revision or additions to the spray irrigation management plan.

Odour and spray effects

6. No raw or untreated animal blood shall be discharged.
7. There shall be no offensive or objectionable odour at or beyond the boundary of the property or properties on which spray irrigation is occurring.
8. There shall be no spray drift as a result of the irrigation of treated wastewater at or beyond the boundary of the property or properties on which spray irrigation is occurring.

Land effects

9. The discharge of biosolids or sludge from the wastewater treatment system as a result of the exercise of this consent shall only take place from aerated or aerobic ponds or the oxidation pond.
10. The sodium absorption ration [SAR] of the wastewater shall not exceed 10.
11. There shall be no ponding of wastewater, and/or any direct discharge to a watercourse due to the exercise of this consent.
12. The edge of the spray zone shall be at least:
 - a) 20 metres from the banks of any watercourse;
 - b) 50 metres from any bore, well or spring actively used for water supply purposes;
 - c) 20 metres from any public road;
 - d) 20 metres from any property boundary that is not part of the irrigation area, unless the written approval of the landowner has been obtained to allow the discharge at a lesser distance;
 - e) 150 metres from any dwellinghouse [except that listed in condition 12(f)] unless the written approval of the occupier has been obtained to allow discharge at a closer distance; and
 - f) 300 metres from the boundary of the property described as Lot 1 DP 17749 Blk IX Ngaere SD, unless the written approval of the occupier has been obtained to allow the discharge at a closer distance.
13. The effluent application rate shall not exceed 300 kg nitrogen/ha/year. This condition shall be reviewed in accordance with condition 18 to assess the possible reduction of the loading rate.
14. That should monitoring of the discharge under conditions 13, 15 and 16 indicate contamination of local groundwater or a water supply from the roof of a dwellinghouse as a result of the exercise of this consent the consent holder shall:
 - a) undertake appropriate remedial action as soon as practicable as described in the spray irrigation management plan prepared under condition 2, or other such action reasonably required by the General Manager, Taranaki Regional Council;
 - b) shall review the spray irrigation management plan and incorporate such reasonable modifications as are considered necessary by the General Manager, Taranaki Regional Council; and
 - c) where water supplies are significantly affected, immediately provide alternative supplies as reasonably required by the General Manager, Taranaki Regional Council.

Monitoring

15. The consent holder shall site, install and maintain to the satisfaction of the General Manager, Taranaki Regional Council, monitoring bores for the purpose of determining groundwater quality in the vicinity of the discharge.
16. The consent holder shall undertake such baseline and operational monitoring of the activities licensed by this consent as deemed reasonably necessary by the General Manager, Taranaki Regional Council.

Review

17. The consent holder may apply to the Taranaki Regional Council for a change or cancellation of the conditions of this consent, in accordance with section 127(1)(a) of the Resource Management Act 1991, to take account of operational requirements, the results of monitoring, or irrigation scheme expansion.
18. The Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during June 2002 and June 2004, for the purpose of assessing the need to increase the land area of the scheme, reduce nitrogen loading to land and/or increase treatment at the wastewater treatment system to reduce the nitrogen concentration of the effluent.
19. The Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during June 2002, June 2004, June 2006, June 2008, June 2013 and/or June 2018, for the purpose of ensuring that the conditions are adequate to deal with any significant adverse effects on the environment arising from the exercise of this consent, which either were not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 15 December 2000

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: Riverlands Eltham Limited
P O Box 124
ELTHAM 4353

Decision Date: 9 July 2012

Commencement
Date: 9 July 2012

Conditions of Consent

Consent Granted: To discharge treated wastewater from meat processing and associated activities by irrigation onto and into land, and to discharge the associated emissions into the air at or about (NZTM) 1708468E-5634921N

Expiry Date: 1 June 2026

Review Date(s): June 2017, June 2023

Site Location: Paulwell Farm, Eltham Road, Eltham

Legal Description: Lot 2 DP 13131 Blk IX Ngaere SD [Discharge site]

Catchment: Waingongoro

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

General condition

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

Special conditions

1. The discharge of wastewater as a result of the exercise of this consent shall only take place from either pond 6 or 7.
2. The discharge authorised by this consent shall not give rise to an odour at or beyond the boundary of the property boundary that is offensive or objectionable.
3. There shall be no spray drift, as a result of the irrigation of treated wastewater, at or beyond the property boundary.
4. The sodium adsorption ratio (SAR) of the wastewater shall not exceed 15.
5. There shall be no ponding of wastewater for more than three hours, and/or any overland flow of wastewater to a watercourse due to the exercise of this consent.
6. The edge of the spray zone shall be at least:
 - (a) 20 metres from the water's edge in any watercourse, and outside of the riparian buffer zone as specified in the riparian management plan supplied by the applicant;
 - (b) 50 metres from any bore, well or spring actively used for water supply purposes;
 - (c) 20 metres from any public road;
 - (d) 20 metres from any property boundary that is not part of the irrigation area, unless the written approval of the landowner has been obtained to allow the discharge at a lesser distance;
 - (e) 150 metres from any dwelling house unless the written approval of the occupier has been obtained to allow discharge at a closer distance;
 - (f) 45 metres from any milking shed.
7. The Total Nitrogen applied to any hectare of land shall not exceed:
 - (a) 600 kilograms in any 12-month period for 'cut and carry areas'; or
 - (b) 300 kilograms in any 12-month period for any other land (including grazed pasture).

For the purposes of this consent 'cut and carry areas' is land that is not grazed and any vegetation is routinely cut and removed.

8. Should monitoring of the discharge under conditions 15 and 16 indicate, in the opinion of the Chief Executive, Taranaki Regional Council, contamination of local groundwater or a water supply from the roof of a dwelling house as a result of the exercise of this consent the consent holder shall:

- (a) undertake appropriate remedial action as soon as practicable as described in the wastewater irrigation management plan prepared under condition 9, or other such action reasonably required by the Chief Executive, Taranaki Regional Council;
 - (b) shall review the wastewater irrigation management plan and incorporate such reasonable modifications as are considered necessary by the Chief Executive, Taranaki Regional Council; and
 - (c) where water supplies are significantly affected, immediately provide alternative supplies as reasonably required by the Chief Executive, Taranaki Regional Council.
9. Subject to the other conditions this consent, this consent shall be exercised in accordance with a 'Wastewater Irrigation Management Plan' (the 'Management Plan') that has been approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity. The Management Plan shall detail methods and procedures undertaken by the consent holder to ensure that the conditions of this consent are met and can be shown to be met, and shall address but not necessarily be limited to the following matters:
- (a) designated application areas and buffer zones for streams and the property boundary;
 - (b) selection of appropriate irrigation methods for different types of terrain;
 - (c) application rate and duration;
 - (d) application frequency and nitrogen loading rate;
 - (e) farm management and operator training;
 - (f) soil and herbage management;
 - (g) prevention of runoff and ponding;
 - (h) minimisation and control of offsite odour and spray drift effects;
 - (i) operational control and maintenance of the spray irrigation system;
 - (j) monitoring of the effluent (physicochemical);
 - (k) monitoring of soils and herbage (physicochemical);
 - (l) monitoring of groundwater beneath and beyond the irrigated area (physicochemical);
 - (m) monitoring of local water supplies and remediation;
 - (n) mitigation measures including riparian planting to be undertaken according to the riparian management plan supplied by the applicant;
 - (o) reporting monitoring data;
 - (p) monitoring of the tributaries draining the property;
 - (q) procedures for responding to complaints; and
 - (r) notification to the council of non-compliance with the conditions of this consent;
 - (s) procedures for recording maintenance and repairs; and
 - (t) procedures for draining and flushing the irrigation mainlines and laterals to prevent anaerobic conditions.

An objective of the plan shall be to minimise discharges to the Waingongoro River under consent 2039 and maximise discharges to land.

10. The consent holder shall review the Management Plan, required by condition 9, and submit it for certification within 3 months of receiving such a request from the Chief Executive, Taranaki Regional Council.

11. A copy of the reviewed Management Plan shall be provided to the Department of Conservation and Fish and Game New Zealand (Taranaki Region), for the Taranaki Regional Council to take into account any comments received (within a two week timeframe from when the Plan was provided).
12. The consent holder shall designate an officer with the necessary qualifications and/or experience to manage the wastewater irrigation system. The officer shall be regularly trained on the content and implementation of the wastewater irrigation management plan, and shall be advised immediately of any revision or additions to the wastewater irrigation management plan.
13. 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.
14. Prior to the exercise of this consent, the consent holder shall after consultation with the Chief Executive, Taranaki Regional Council, install a minimum of three groundwater monitoring bores. The bores shall be at locations and to depths, that enable monitoring to determine any change in groundwater quality resulting from the exercise of this consent. The bores shall be installed in accordance with NZS 4411:2001 and all associated costs shall be met by the consent holder.
15. The consent holder shall undertake surface water monitoring that is certified by the Chief Executive, Taranaki Regional Council as being adequate to determine any change in surface water quality resulting from the exercise of this consent
16. The consent holder shall undertake such baseline and operational monitoring of the activities licensed by this consent that may be fixed in accordance with section 36 of the Resource Management Act 1991. Baseline monitoring shall include, but not be limited to, sampling herbage, soil, surface water and groundwater. Operational monitoring shall include, but not be limited to spray drift characterisation.
17. The consent holder shall, after the consent is exercised, annually by 1 July, provide to the Chief Executive, Taranaki Regional Council a written report on the implementation of the Wastewater Irrigation Management Plan required in condition 9, and compliance with this consent.
18. 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 2017 and/or June 2023, for the purpose of ensuring that the conditions are adequate to deal with any significant adverse effects on the environment arising from the exercise of this consent, which either were not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 9 July 2012

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: Riverlands Eltham Limited
PO Box 124
Eltham 4353

Decision Date: 2 May 2017

Commencement Date: 2 May 2017

Conditions of Consent

Consent Granted: To use a pipeline under the bed of the Waingongoro River

Expiry Date: 1 June 2035

Review Date(s): June 2023, June 2029

Site Location: 75 London Street, Eltham

Grid Reference (NZTM) 1710634E-5634514N

Catchment: Waingongoro

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

General condition

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

Special conditions

1. This consent authorises the ongoing use of the pipeline structure existing at the time the application for this consent was lodged, and as described in the application. Any change to the nature or scale of the structure may therefore need to be authorised by a formal process in accordance with the Resource Management Act, 1991.
2. The consent holder shall maintain and regularly review a 'Contingency Plan' that details measures and procedures that will be undertaken in the event of pipeline failure or any escape of contaminants from the pipeline. The plan shall be approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity as being adequate to avoid, remedy or mitigate the environmental effects of such an event.
3. The consent holder shall maintain the structure in a safe and sound condition such that it continues to function effectively.
4. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month June 2023 and/or June 2029, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 2 May 2017

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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

Name of
Consent Holder: Riverlands Eltham Limited
P O Box 124
ELTHAM

Consent Granted
Date: 20 September 2004

Conditions of Consent

Consent Granted: To erect, place and maintain a culvert in, and to realign, an unnamed tributary of the Waingongoro River for site access purposes at or about GR: Q20:209-962

Expiry Date: 1 June 2023

Review Date(s): June 2011, June 2017

Site Location: Lower London Street, Eltham

Legal Description: Lot 3 DP 1622 Lots 5-7 14 DP 1623 Lot 1 DP 11593 Sec 101 Eltham Vill Sett Blk X Ngaere SD

Catchment: Waingongoro

General conditions

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

Special conditions

- 1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
- 2. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of application 3311. In the case of any contradiction between the documentation submitted in support of application 3311 and the conditions of this consent, the conditions of this consent shall prevail.
- 3. The consent holder shall notify the Chief Executive, Taranaki Regional Council, in writing at least 48 hours prior to the commencement and upon completion of the initial installation and again at least 48 hours prior to and upon completion of any subsequent maintenance works which would involve disturbance of or deposition to the riverbed or discharges to water.
- 4. Once initial work is complete, any further instream works shall take place only between 1 November and 30 April inclusive, except where this requirement is waived in writing by the Chief Executive, Taranaki Regional Council.
- 5. The consent holder shall ensure that the area and volume of riverbed disturbance shall, so far as practicable, be minimised and any areas which are disturbed shall, so far as practicable, be reinstated.
- 6. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
- 7. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2011 and/or June 2017, for the purpose of ensuring that the conditions are adequate to deal with

Consent 6455-1

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

Signed at Stratford on 20 September 2004

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: Riverlands Eltham Limited
P O Box 124
ELTHAM 4353

Decision Date: 17 September 2010

Commencement
Date: 17 September 2010

Conditions of Consent

Consent Granted: To discharge anaerobic pond solids and paunch solids
onto and into land and contaminants to air in the
Waingongoro catchment at or about (NZTM)
1708439E-5635064N, 1710226E-5634406N and
1712433E-5635858N

Expiry Date: 1 June 2029

Review Date(s): June 2017, June 2023

Site Location: Lower Stuart Road, Eltham Road & Anderson Road,
Eltham

Legal Description: Lot 1 DP 11593 Lot 3 DP 1622 [Discharge Source]

Part of Lots 1 & 3 DP 399595, Lot 1 DP 13131 Pt Sec 21
Blk IX Ngaere SD, Pt Lot 2 DP 13131 Pt Sec 21,22 Block IX
Ngaere SD, Pt Sec 38 Blk IX SD, Lot 1 DP 7965 and Part of
Sec 38 Blk IX SD, Lot 1 DP 3463 Blk IX Ngaere SD, Lot 2
DP 16398 Blk IX Ngaere SD and Part Sec of DP 3535 Blk
IX Ngaere SD, Lot 2 DP 17749 Blk IX Ngaere SD, Pt Sec 39
IX Ngaere SD, Lot 1 DP 5241 Blk IX Ngaere SD, Pt Sec 40
Blk IX Ngaere SD [Discharge Sites]

Catchment: Waingongoro

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

General condition

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

Special conditions

Exercise of Consent

1. The discharge of anaerobic pond solids and paunch solids to land shall only occur within the boundaries of the disposal sites authorised by this consent i.e. within the areas shaded on the plan attached.
2. The consent holder shall keep a record of:
 - The volume of anaerobic pond solids and/or paunch solids discharged to land;
 - The date of disposal;
 - The area of disposal;
 - Nitrogen loading calculations [which demonstrate compliance with special condition 6].

These records shall be made available to the Chief Executive of Taranaki Regional Council upon request.

3. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
4. No anaerobic pond solids, paunch solids, or water which has been in contact with the deposited solids, shall enter surface water.
5. The disposal of anaerobic pond solids and paunch solids to land shall not occur within:
 - 25 metres of a watercourse [whether flowing continuously or intermittently];
 - 20 metres of any property boundary;
 - 50 metres of a water supply well or spring actively used for potable supply;
 - 150 metres of any residential dwelling [unless written approval has been obtained from the owner/occupier to dispose closer].
6. Over any 12 month period the total nitrogen application rate shall not exceed:
 - 300 kg of plant available nitrogen per hectare [of land used for disposal] for grazing areas; and
 - 600 kg plant available nitrogen per hectare [of land used for disposal] for cut-and-carry areas.

Consent 7487-1

7. The discharges authorised by this consent shall not give rise to any odour at or beyond the boundary of the disposal sites that is offensive or objectionable.
8. The consent holder shall prepare and thereafter maintain a management plan that, to the satisfaction of the Chief Executive of the Taranaki Regional Council, details how the disposal of anaerobic pond solids and paunch solids to land will be managed to ensure that the conditions of this consent will be met. The plan shall include but not necessarily be limited to:
 - a) A description of disposal areas and buffer zones;
 - b) The application rate and method;
 - c) The depth and frequency of coverage;
 - d) Details of composting management;
 - e) Methods for preventing run-off to surface water;
 - f) Methods for determining compliance with nitrogen loading conditions;
 - g) How leaching to groundwater will be minimised;
 - h) Methods for minimisation and control of odour effects offsite;
 - i) Contingency procedures; and
 - j) Monitoring and reporting methods [undertaken by the consent holder].
9. The consent holder shall maintain a permanent record of any complaints received alleging adverse effects from or related to the exercise of this consent. This record shall include the following, where practicable:
 - a) the name and address of the complainant, if supplied;
 - b) date, time and details of the alleged event;
 - c) weather conditions at the time of the alleged event [as far as practicable];
 - d) investigations undertaken by the consent holder in regards to the complaint and any measures adopted to remedy the effects of the incident/complaint; and
 - e) measures put in place to prevent occurrence of a similar incident.

The consent holder shall make the complaints record available to officers of Taranaki Regional Council, on request.

The consent holder shall notify the Chief Executive, Taranaki Regional Council, or his delegate, of any complaints received, which relate to the exercise of this permit, within 24 hours of being received.

At the grant date of this consent, the Council's phone number is 0800 736 222 [24 hr service].

Lapse and review dates

10. This consent shall lapse on 30 September 2015, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

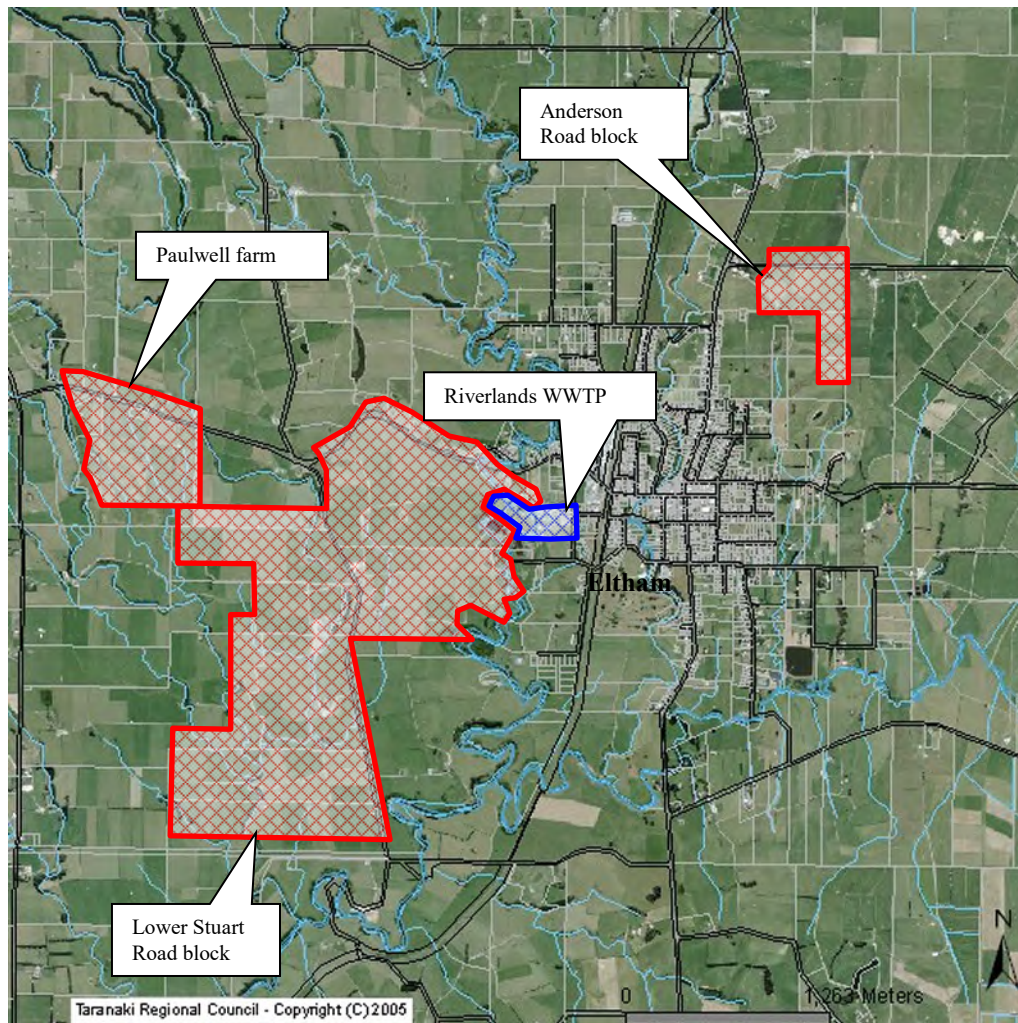
Consent 7487-1

11. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2017 and/or 2023 for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 17 September 2010

For and on behalf of
Taranaki Regional Council

Director-Resource Management



Plan attached: Aerial photo illustrating the site areas for land disposal relative to the Wastewater Treatment Plant.

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.

