DH Lepper Trust (Piggery)

Monitoring Programme

Annual Report

2021-2022

Technical Report 2022-52

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Taranaki Regional Council

Taranaki Regional Council
Private Bag 713
Stratford

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Executive summary

DH Lepper Trust (the Company) operates a "farrow to finish" piggery breeding and fattening unit located on 541 Mountain Road Lepperton, in the Waiongana catchment.

During the monitoring period, DH Lepper Trust Piggery demonstrated a high level of environmental performance and high level of administrative performance.

The facility includes a solids composting process and an anaerobic biogas digester that generates about half of the total electricity usage for the site. Effluent from the piggery is now largely irrigated to land, a recent innovation in effluent management on the site. This report for the period July 2021 to June 2022 describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess the Company's environmental and consent compliance performance during the period under review. The report also details the results of the monitoring undertaken and assesses the environmental effects of the Company's activities.

The Company holds two resource consents, which include a total of 34 conditions setting out the requirements that the Company must satisfy. Resource consent 0715-4.1 allows the discharge of treated effluent to land and the Waiongana Stream, and consent 5206-2.1 allows for the discharge of piggery related emissions to air at this site.

The Council's monitoring programme for the year under review included four inspections and the collection of wastewater and receiving water samples for physicochemical analysis.

The monitoring showed that the wastewater and receiving water samples were well within the consented limits and the discharge has little, if any effect on the Waiongana Stream and surrounding environment. There were no unauthorised incidents recording non-compliance in respect of this consent holder during the period under review.

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

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

This report includes recommendations for the 2022-2023 year.

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1 Introduction

1.1 Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1 Introduction

This report is for the period July 2021 to June 2022 by the Taranaki Regional Council on the monitoring programme associated with resource consents held by DH Lepper Trust. The Company operates a piggery situated on 541 Mountain Road Lepperton, in the Waiongana catchment.

The report includes the results and findings of the monitoring programme implemented by the Council in respect of the consents held by the Company that relate to discharges of treated effluent to water and land within the Waiongana catchment, and the air discharge permit held by the Company to cover emissions to air from the site.

One of the intents of the *Resource Management Act 1991* (RMA) is that environmental management should be integrated across all media, so that a consent holder's use of water, air, and land should be considered from a single comprehensive environmental perspective. Accordingly, the Council generally implements integrated environmental monitoring programmes and reports the results of the programmes jointly. This report discusses the environmental effects of the Company's use of water, land and air, and is the 18th combined annual report by the Council 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 though annual programmes;
- the resource consents held by the Company in the Waiongana catchment;
- the nature of the monitoring programme in place for the period under review; and
- a description of the activities and operations conducted in the Company's site/catchment.

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' in as much 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] 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

1.2 Process description

The Trust operates a 'farrow to finish' piggery breeding and fattening unit. The approximate weights and numbers of the pigs are shown in Table 1 and the location of the piggery, land and wastewater treatment system within the Lepperton Township are shown in Figure 1.

The pigs are housed in purpose-built sheds with controlled heating and ventilation systems that regulate the internal environment to optimise conditions for stock production.

A feed mill located on site mixes the majority of the piggery's food requirements with grains and feed supplements. Recycled local waste food supplies, including waste bread, waste sausages and chicken by-products from local suppliers, are mixed to produce a protein meal for the stock.

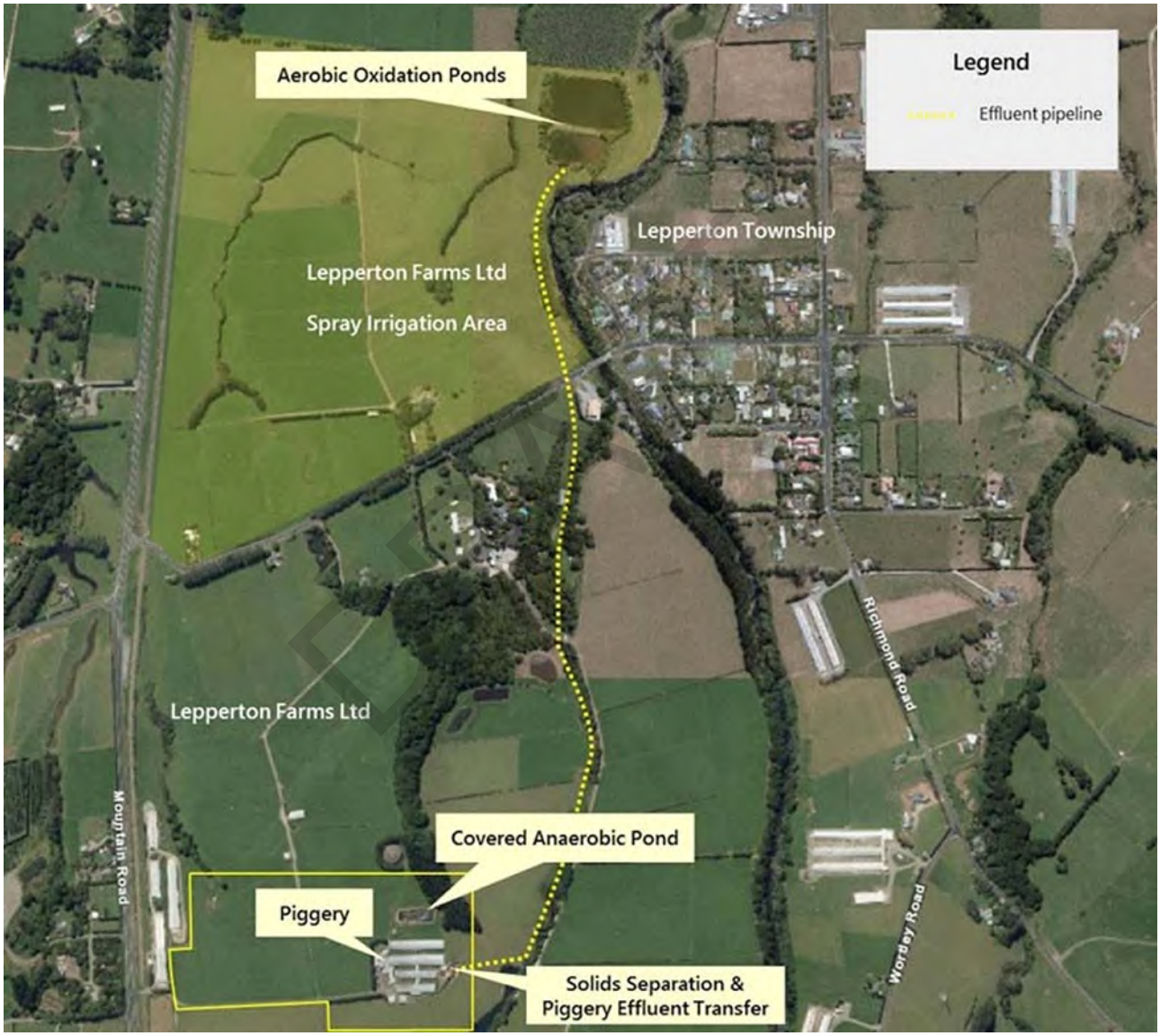

Figure 1 Location of DH Lepper Trust piggery, oxidation ponds, and Lepperton Township.

Table 1 Piggery composition as at 30 June 2022.

Type of pigs	No of pigs	Average weight kg	Total weight kg	50 kg Equivalent pigs
Sows	322	205	66,010	1,320.2
Gilts	43	142	6,106	176.3
Finishers	449	69	30,981	619.62
Growers	898	48	43,104	862.08
Stores	503	26	13,078	261.56
Weaners (5 – 8 weeks)	810	12	9,720	194.4
Suckers	678	2.1	1,423.8	28.476
Boars	8	220	1,760	35.2
Total	**3,711**			**3,498**

Stock holding pens are washed down on a daily basis and the waste conveyed through pipes to a central collection tank. From this point, all waste material is channeled through a solids separator (contra shear screen) which provides primary treatment by separating out the solid component from the piggery slurry.

Solid waste is stored in three large bins prior to being mixed at a ratio 1:1 with sawdust. This mixture is then transferred to a large covered compost bunker where over a 40 day period it is aerated and heated to 70°C until well composted. The composting process elevates the temperature which kills harmful pathogens as well as helping to stabilise the product. The forced aeration provides oxygen for bacterial action. The final product is bagged and sold commercially as a soil conditioner.

After solids have been removed, the piggery wastewater drains to a liquids sump and is pumped to the inlet of the covered anaerobic pond.

Biogas is produced from the covered anaerobic pond digestive process and captured and stored beneath the plastic cover on the pond. The biogas (approximately 200 m^3 of gas daily) is compressed and forced through a hydrogen sulphide scrubber, powering a six-cylinder biogas engine that drives a 40 kilowatt generator, which generates half of the piggery's electricity needs.

Partially digested effluent from the covered anaerobic pond is gravity-fed via a pipeline directly to the off-site treatment ponds, approximately 1.5 km away. The ponds are located on the true left bank of the Waiongana Stream near Lepperton.

Bacteria present in the two off-site treatment ponds break-down the contents of the effluent further.

The consent holder discharges treated water from the final aerobic pond to land via spray irrigation or periodically during high river flows, into the neighboring Waiongana Stream in compliance with the conditions of Consent 0715-4.1.

1.3 Resource consents

The Company holds two resource consents the details of which are summarised in Table 2 below. Summaries of the conditions attached to each permit are set out in Section 3 of this report.

Table 2 Summary of consents held by the DH Lepper Trust piggery.

Consent number	Purpose	Granted	Review	Expires
Air discharge permit				
5206-2.1	To discharge emissions to air from a piggery operation and associated practices.	13 November 2008	No further review	1 June 2026
Discharges of waste permit				
0715-4.1	To discharge treated piggery effluent from an oxidation pond system to land and into the Waiongana Stream during high flow conditions.	29 Sep 2015	June 2023	1 June 2026

1.4 Monitoring programme

1.4.1 Introduction

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

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

The monitoring programme for the piggery consisted of three primary components.

1.4.2 Programme liaison and management

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

- ongoing liaison with resource consent holders over consent conditions and their interpretation and application;
- 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 Site inspections

The piggery site was visited four times during the monitoring period. With regard to consents for the discharge to water or land, the main points of interest were plant processes with potential or actual discharges to receiving watercourses, including contaminated stormwater and process wastewaters.

The piggery was also visited on two other separate occasions, to monitor and collect wastewater discharge samples from the site and water quality samples upstream and downstream of the discharge point and mixing zone. Sources of data being collected by the Company were identified and assessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council.

Air inspections focused on plant processes with associated actual and potential emission sources and characteristics, including potential odour, dust, noxious or offensive emissions. This included the commencement of the first stage of the spray irrigation to land, which required an Irrigation and Odour Management Plan prior to commencement. Sources of data being collected by the Company were identified and assessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council. The neighbourhood was surveyed for environmental effects.

1.4.4 Chemical sampling

The Council undertook sampling of both the discharges from the site and the water quality upstream and downstream of the discharge point and mixing zone.

The piggery discharge was sampled on one occasion, and the sample was analysed for conductivity, chloride, turbidity, suspended solids, BOD_5 (total carbonaceous) and temperature.

The discharge was also analysed for nitrogen and potassium on both of the occasions to determine the nutrient value for land irrigation purposes. The Waiongana Stream, upstream and downstream of the discharge point, was sampled on two occasions, and the samples analysed for conductivity, chloride, turbidity, suspended solids, BOD_5 (filtered carbonaceous), ammonia-N, DRP and temperature.

The locations of the water sampling locations are illustrated in Figure 2 and detailed in Table 3. Water quality sampling is generally performed by starting at the upstream monitoring site (WGA000361), followed by the piggery wastewater discharge (PGP002002), then sampling at the downstream monitoring site (WGA000363). Wastewater discharge samples are collected from the pond edge as near as possible to the discharge outlet.

Table 3 Location of sampling sites in the Waiongana Stream.

Site	Location	Site code	GPS reference
Waiongana Stream upstream	Approx. 100 m u/s discharge	WGA000361	N1704439 E5676128
Piggery pond treated effluent	Final pond treated effluent	PGP002002	N1704469 E5676209
Waiongana Stream downstream	100 m d/s of discharge – true left bank	WGA000363	N1704466 E5676274

Figure 2 Location of sampling sites.

2 Results

2.1 Water

2.1.1 Inspections

03 August 2021

An inspection was conducted on this date due to an issue occurring with the solid press on the previous night. A small overflow was confirmed, however, this was confined to the concreted area and did not pose a risk to surface water systems. Very little odour was noted on site. An odour inspection was also carried out in the irrigation and storage pond area, no odour was noted in the vicinity of this site. Lepperton township was also checked for odours. No odours were detected beyond the boundary of the site. Compliance at time of inspection.

10 December 2021

During this inspection, all water drained clean under farming sheds. The Company were making progress on upgrades of plywood drainage system. The methane gas generator was producing at 27 Kilowatts. Odour was observed in the immediate vicinity of the piggery but not extending past the boundaries. Air sparge to compost was operating as normal. Compliance at time of inspection.

05 April 2022

During this inspection, no overflows of piggery effluent were noted in bunded areas. Odour was present onsite but localised to immediate vicinity of piggery, no offsite odours were noted. Weak odour was noted downwind of pig farm at waterway. The treatment ponds were high with pond one discharging to pond two. No land based irrigation was observed. Compliance at time of inspection.

30 June 2022

During this inspection, no runoff was observed offsite or past bunded areas. There was some ponding of water beneath pig pens, with recent heavy rainfall likely a contributing factor. The methane generator was not running at time of inspection and the methane pit was half full with some water present atop cover. Odour was localised to immediate vicinity of piggery. The effluent ponds were full but not discharging to the stream. Compliance at time of inspection.

2.1.2 Wastewater trends

Wastewater quality data recorded for the piggery treatment system between May 2011 and June 2022 have been summarised in Table 4 below. This covers the period since dairy wastes were removed from the system.

Table 4 Summary of the treated wastewater analysis results 2011 – 2022.

Parameter	Unit	Number of samples	Range	
Conductivity @ 25°C (Since June 2018)	mS/m	7	245	340
pH	pH	30	7.7	8.4
Carbonaceous BOD_5	g/m^3	30	32	240
Ammoniacal nitrogen	g/m^3	23	72	367
Turbidity	NTU	30	18	530
Suspended solids	g/m^3	30	49	350

Parameter	Unit	Number of samples	Range	
Chloride	g/m^3	29	230	408
Total nitrogen (N)	g/m^3	13	98	289
Dissolved Reactive Phosphorous DRP (since June 2018)	g/m^3	8	23	29
Total Potassium (K)	g/m^3	13	200	288

Trends in various parameters are graphed in Figure 3 – Figure 7. Please note collection methods for conductivity and phosphorous changed in June 2018 and results before that have been excluded in Table 4.

A marked improvement in terms of median wastewater concentrations were apparent for carbonaceous BOD_5 (Figure 3) and suspended solids (Figure 6) following the removal of dairy wastes from the treatment system, although the concentrations for the parameters remain typical of piggery pond treated wastewater which is particularly high in nutrient levels.

For context with respect to the these nutrient levels, sampling of the final aerobic pond wastewater discharge for nutrients was carried out on thirteen separate occasions during 2013-2022 monitoring period. This was undertaken to evaluate the following nutrients: nitrogen (N), phosphorus (P) and potassium (K) when spray irrigation of effluent to land commenced.

More recently the nitrogen, potassium and phosphorus nutrient levels have continued to be evaluated as spray irrigating treated effluent to land has now commenced.

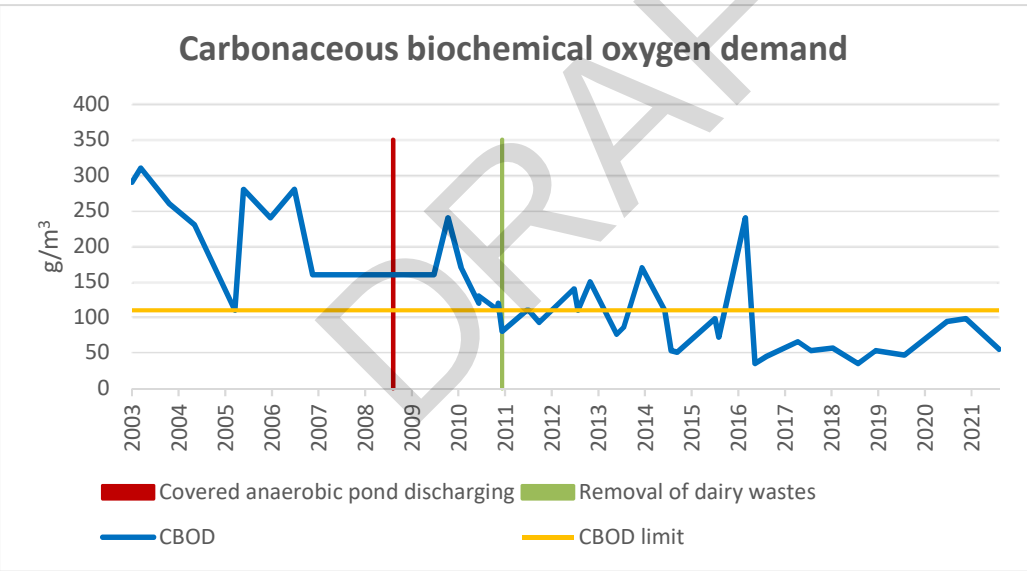

Figure 3 Median wastewater carbonaceous biochemical oxygen demands levels, g/m^3 2003-2022.

Since the wastewater system upgrade in 2008 and the removal of dairy shed effluent in 2011 the observed $CBOD_5$ concentrations in the discharge have been steadily decreasing. The odd spike, as seen in 2016 has been reported. Results from the 2020-2021 monitoring period indicate a slight increase concentration trend as shown in Figure 3[2]. Results from 2021-2022 monitoring period then indicate a slight decrease in concentration from the previous monitoring year.

[2] Note that the CBOD level of 110 g/m^3 has recently been removed from the consent conditions

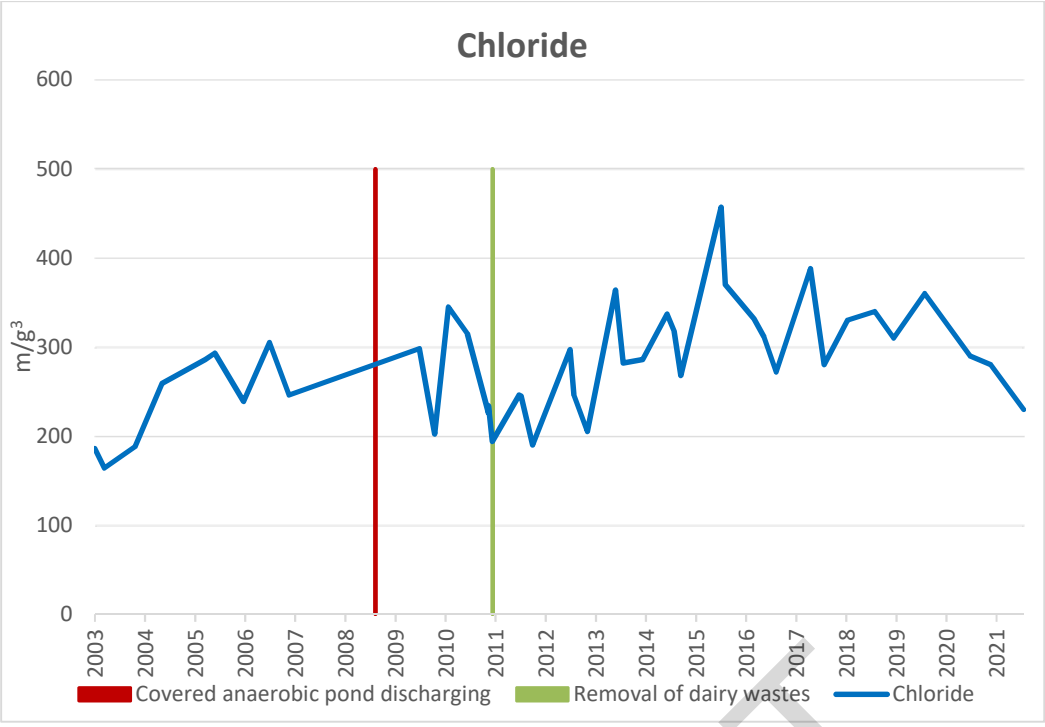

Figure 4 Median wastewater chloride levels, g/m^3, 2003-2022.

Chloride levels (Figure 4) have increased since 2011. However, since the 2015-2016 monitoring period, the results may indicate a slight plateau in values. Monitoring results from 2020-2022 indicate a decrease in chloride concentrations.

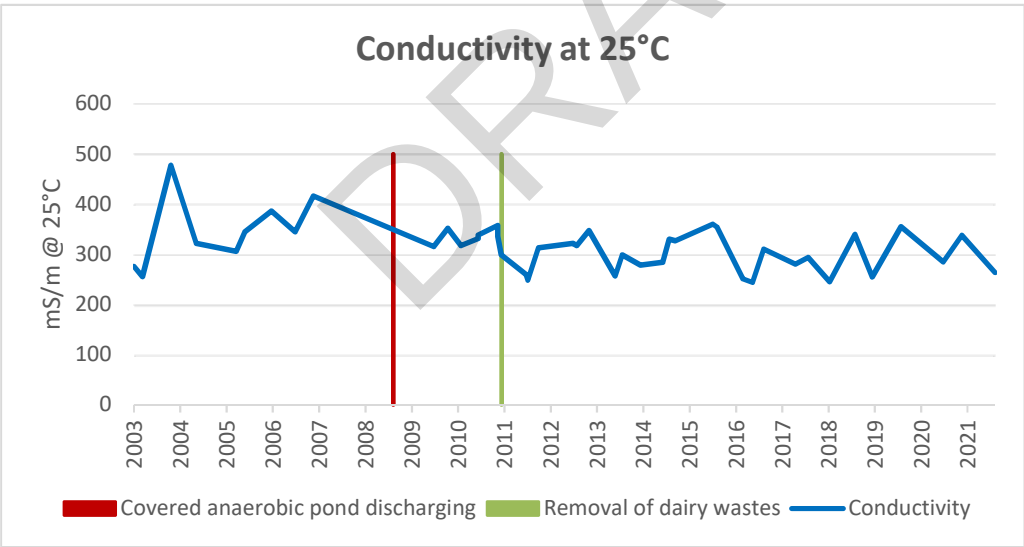

Figure 5 Median wastewater conductivity measurements mS/m 2003-2022 at 25°C

Conductivity[3] measurements appear to be stable over time as observed in Figure 5. With a range from 244-355 ms/m @25°C since the 2011-2012 monitoring year.

[3] In June 2018 a change in laboratory provider occurred, resulting in a slight change to the units used for conductivity. In this graph, the units mS/m at 25°C are used, and all previous results have been converted to this unit. Therefore, there may be differences between conductivity data presented in the current report when compared with reports prior to the 2019-2020 monitoring year.

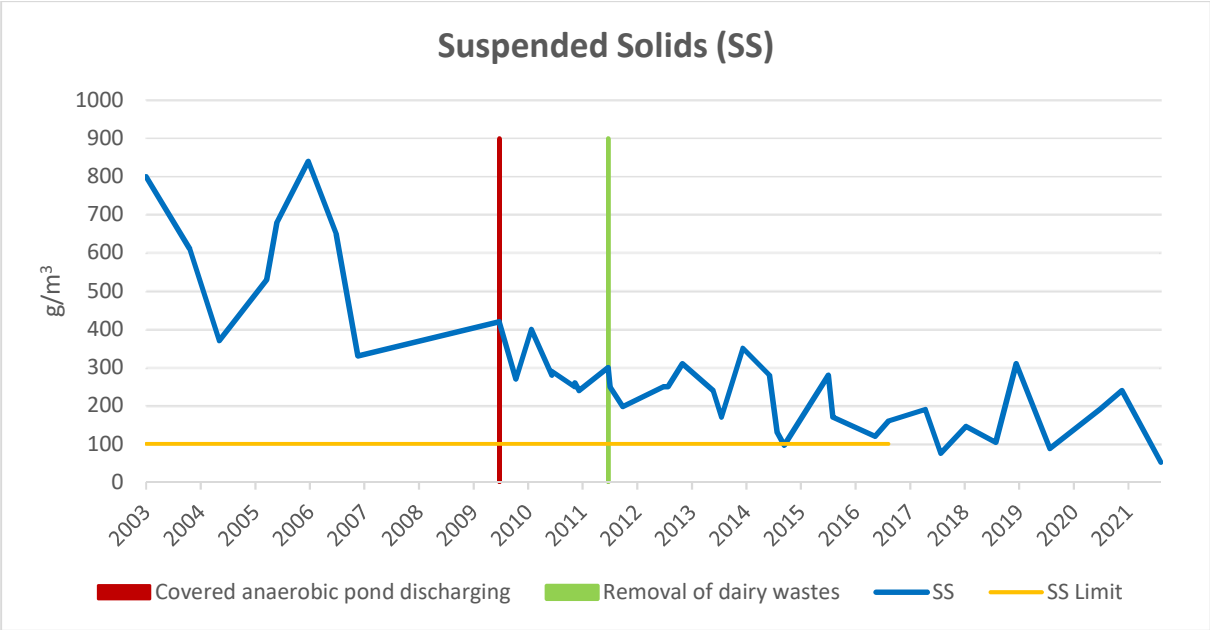

Figure 6 Wastewater suspended solids levels, g/m^3, 2003-2022

Suspended solids measurements appear to be stable over time as observed in Figure 6[4]. The 2022 value displays the lowest concentration of suspended solids at 52 g/m^3 since reporting began in 2003.

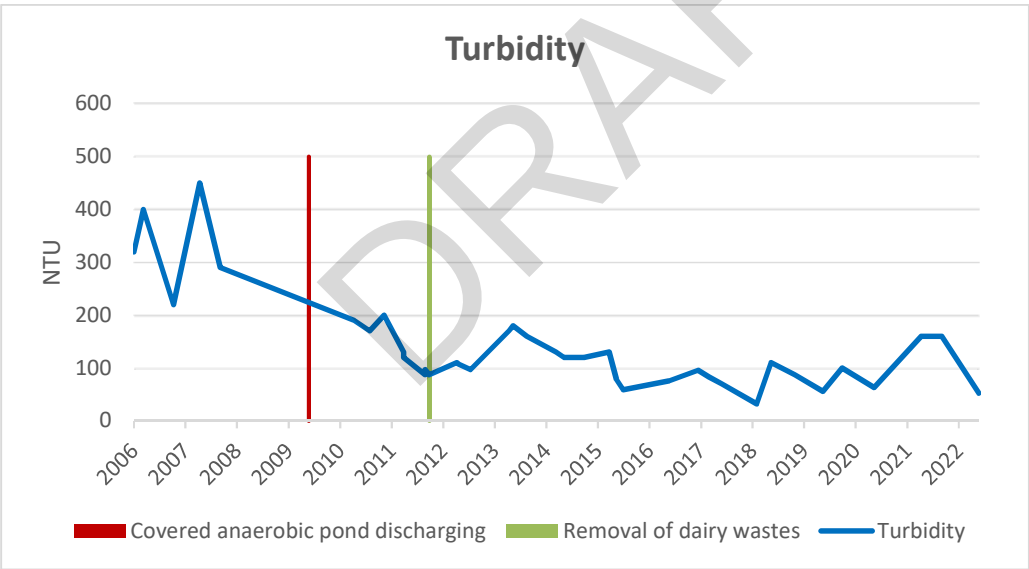

Figure 7 Wastewater turbidity levels, NTU, 2003-2022

Turbidity measurements of the effluent indicate an initial decrease in concentration and being relatively stable in recent times as indicated in Figure 7. However, in the 2020-2021 period it has shown to have slightly increased compared to past years. This slight increase is discontinued in 2022 with turbidity values decreasing to 52 NTU.

[4] Note that the suspended solids limit of 100 g/m^3 has recently been removed from the consent conditions

2.1.3 Results of discharge and receiving water monitoring

During the monitoring period, samples were collected on one occasion from three sites as shown in Table 5. Typically, the consent holder will notify the Council when the discharge to water is being exercised as per consent 0714-4.0 conditions 15 to 17.

The results of the samples analysed are provided in Table 5 below.

Table 5 Results of the receiving water compliance survey of 12 October 2021.

Site		WGA000361	PGP002002	WGA000363	Consent
Parameter	**Unit**	**Upstream**	**Discharge**	**Downstream**	**Limit**
Time	NZST	10:05	10:00	10:15	
Temperature	°C	11.9	15.8	11.9	
Conductivity @ 25°C	mS/m	6.5	338	9.4	
Chloride	g/m³	6.2	280	8.4	
pH	pH	6.9	8.1	7.2	
BOD_5 (total carbonaceous)	g/m³	-	98	-	
BOD_5 (carbonaceous filtered)	g/m³	1.5	-	1.6	
Ammoniacal nitrogen	g/m³N	0.20	220	2.0	
Un-ionised ammonia	g/m³N	0.00038	8.7	0.0064	0.025 g/m³ (d/s)
Dissolved reactive phosphorus	g/m³P	0.032	28	0.24	
Suspended solids	g/m³	25	240	27	
Turbidity	NTU	15.2	160	15.7	
Nitrogen (TKN)	g/m³	-	260	-	
Nitrogen (TN)	g/m³	-	260	-	
Potassium (TP)	g/m³	-	260	-	
Appearance		Turbid Brown	Turbid Brown	Turbid Brown	

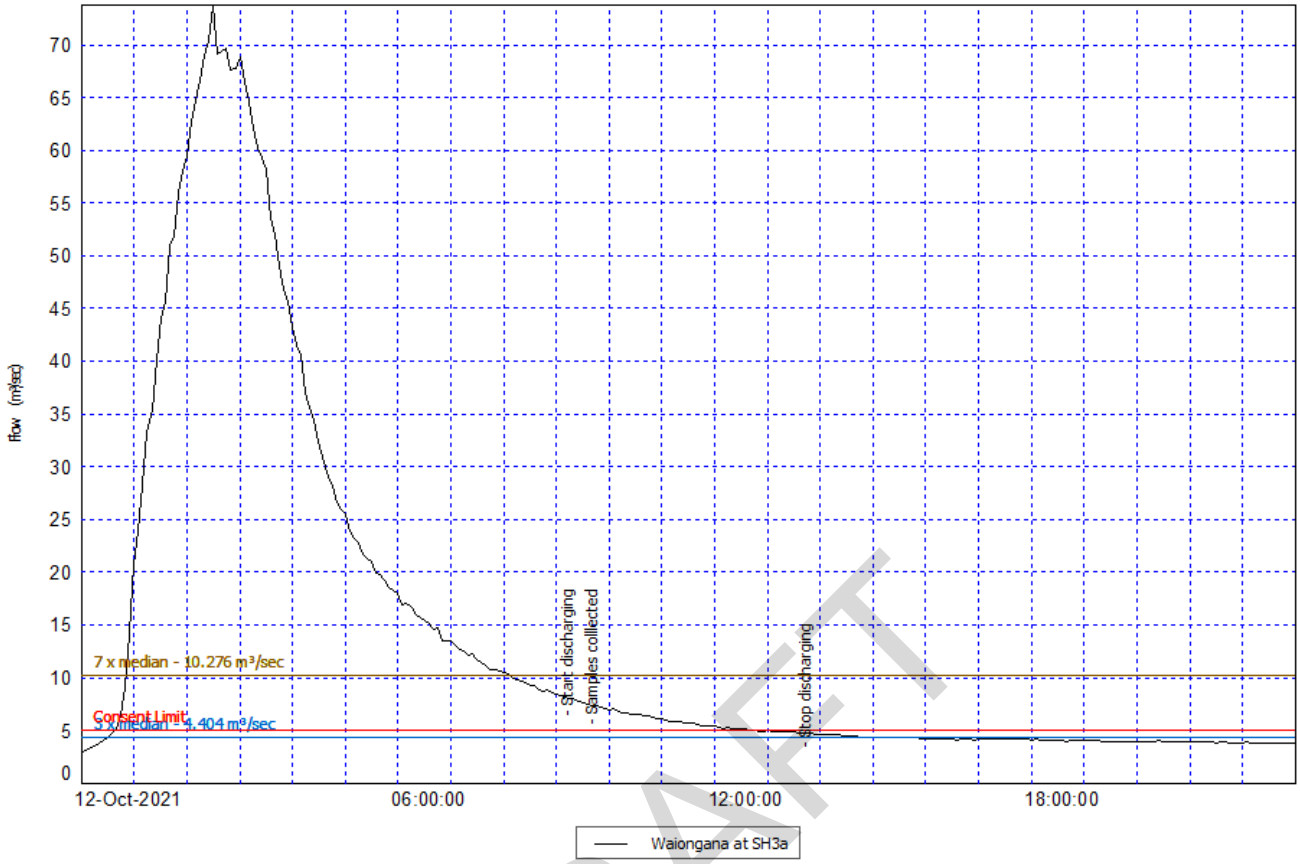

Figure 7 Flow data recorded for the Waiongana Stream during the discharge of wastewater from Leppers piggery, commencing 12 October 2021 at 0935 hrs and finishing 12 October 2021 at 1400 hrs

Based on flow data at the time of sampling the dilution rate was about 1 part effluent to 402 parts receiving water and therefore well in compliance with Special Conditions 15 and 16 at the boundary of the mixing zone at the time of the survey.

The discharge had minimal impact on the receiving water in terms of pH, conductivity, turbidity, un-ionised ammonia N and suspended solids at the boundary of the mixing zone. A slight increase occurred for ammoniacal nitrogen with the concentration ranging from 0.20 g/m^{3}N at the upstream site, to 2.0 g/m^{3}N below the discharge. The visual assessment in relation to compliance with Special Condition 11(e) indicated no change in the visual clarity or colour of the receiving waters at the boundary of the mixing zone.

At the time of the survey, the piggery pond treated wastewater quality (Table 6) was similar to that previously recorded in terms of pH, conductivity and chloride levels. BOD_5 was recorded at 98 g/m^3 at the discharge. Suspended solids and turbidity of the discharge had decreased compared to previous years in the discharge.

The discharge was also sampled to evaluate the nutrient (nitrogen and potassium) levels in the effluent for land irrigation purposes when not discharging to water.

Table 6 Results of final effluent pond variability at discharge point and at pump station on 30 June 2022.

Site		PGP002002	PGP000000
Parameter	Unit	Discharge point	Pump station
Time	NZST	11:30	12:00
Temperature	°C	9.9	10.4
Conductivity @ 25°C	mS/m	264	266
Chloride	g/m³	230	230
pH	pH	8.4	8.3
BOD_5 (total carbonaceous)	g/m³	55	32
BOD_5 (carbonaceous filtered)	g/m³	-	-
Ammoniacal nitrogen	g/m³N	191	187
Un-ionised ammonia	g/m³N	7.6	6.6
Dissolved reactive phosphorus	g/m³P	27	29
Suspended solids	g/m³	68	49
Turbidity	NTU	52	56
Nitrogen (TKN)	g/m³	210	210
Nitrogen (TN)	g/m³	210	210
Potassium (TP)	g/m³	200	200
Appearance		Turbid Brown	Turbid Brown

A survey was conducted to indicate the variability of analytes at the point of discharge in the final pond and at the pump station in the final pond.

2.1.4 Treated effluent discharge records

The consent holder provides data on treated wastewater discharges to the Waiongana Stream upon request, or as required. This data is presented in Table 7 below.

Table 7 Discharge records of piggery treated wastes to the Waiongana Stream 2021-2022

Discharge date	Duration (approx. hours)	Stream flow above 5 m³/s
18 July 2021	27.5	Yes
17 August 2021	21.5	Yes
23 September 2021	18.5	Yes
4 October 2021	6	Yes
12 October 2021	4.4	Yes
13 November 2021	31.25	Yes
6 December 2021	29.3	Yes
14 December 2021	29.25	Yes
20 May 2022	4.5	Yes
02 June 2022	28.5	Yes

Discharge date	Duration (approx. hours)	Stream flow above 5 m^3/s
Total discharge hours	**200.7**	

These records indicate that the treated effluent discharge into the Waiongana Stream was well managed and that good wastewater dilution ratios had been maintained and were compliant with special condition 16 of consent 0715-4.1.

The discharge records indicated that all discharges had occurred when the river flow was above the consented 5 m^3/s.

The Waiongana Stream hydrology displays a natural rapid rise and fall (typical of Taranaki ring plain streams) which allows for a limited window of opportunity when treated wastewater can be discharged above the minimum consent limit. The consent holder has access to the Taranaki Regional Council web site (www.trc.govt.nz), which provides current river flow and water levels for the Waiongana Stream recorded at SH3A at the time of discharging.

The consent holder also has access to the Council's Hydrotel text messaging service and is notified automatically when the Waiongana Stream flow exceeds 5 m^3/s (i.e. when discharge to stream is allowed) and again when the stream flow recedes back to minimum consent conditions.

The Council's telemetered hydrology station is approximately 4 km upstream from the piggery discharge point.

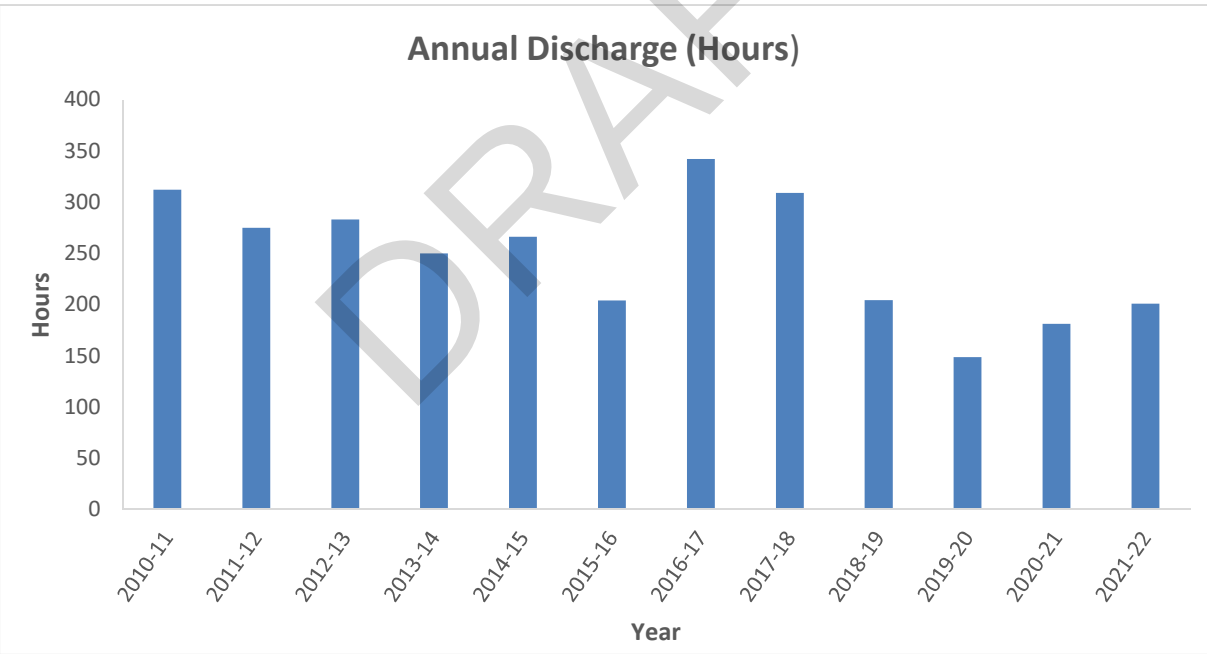

Figure 8 Yearly discharge hours

In terms of the average discharge volume, over the past thirteen years this was calculated to be 12,751 m^3 per annum (253 average discharge hours x 14 L/s discharge flow rate). If the current monitoring period discharge volume (10,115 m^3) was compared to this average, the volume discharged decreased by 20.7% when compared to the long term average. This reduction in part is due to the introduction of land based disposal.

For the 2021-2022 monitoring period there was a slight increase in the volume of treated wastewater discharged into the Waiongana Stream compared to the previous year. Overall the volume is relatively low compared to earlier years, with a combined total of 10,115 m^3 discharged to water this season. Irrigation to

land in preference to discharging to water has significantly decreased the volume of wastewater discharged to water. However, the stream volume this season had been higher than the past, resulting in more discharge hours.

2.1.5 Discharge to land monitoring

Approximately 4551.4 m^3 of treated effluent from the final pond had been spray irrigated to 25 ha of land.

An estimation for the nitrogen (TN) discharged to land, based on the sampling results represented in Table 5 shows the result of 260 g/m^3. Therefore, the nitrogen application rate discharged to land equates to approximately 47.3 kg/ha, well below the consented condition of 200 kg/ha over any 12 month period.

An estimation for potassium (TK) discharged to land, based on the sampling results represented in Tables 5 shows the averaged result of 260 g/m^3. Therefore, the potassium application rate discharged to land equates to approximately 47.3 g/ha well below the consented condition of 100 kg/ha over any 12 month period.

The Land Disposal Options Report (LDOR) supplied in May 2021 details preferred land application rates and area for the Company. This report notes that the Company is still learning the volume they can irrigate to land to mitigate elevated K levels. The full LDOR report is attached in the appendix.

Inspections found that no effluent had been discharged within 25 m of waterways, nor were there any issues of odour or ponding related to spray irrigation activities.

2.1.6 Implementation plan

The implementation of the land based irrigation system, as supplied by the consent holder is to be phased in over the following five years.

Year 1 2017-2018

- Consents to land, water and air were granted.
- Study the consent conditions and begin consultation with management and staff of the dairy farm.

Year 2 2018-2019

- A pump shed at the bottom ponds housing the pump and equipment was installed.
- A power cable was installed and connected to the pump shed.
- The spray irrigation mainline and hydrants are constructed.
- Acquire the irrigator.
- Commence irrigation on the north western area of the bottom block.

Year 3 2019-2020

- Review the programme with management and staff of the dairy farm and progressively expand the existing mainline to cover the total bottom block.

Year 4 2020-2021

- With the dairy farm management and staff, review the bottom block operation and plan the top block irrigation system.
- Provide a Land Disposal Options Report (LDOR) to Council.

Year 5 2021-2022

- Undertake trials to evaluate the effects of spreading anaerobic effluent onto pastures on the top block. This will include assessing the effects of different effluent application rates on dairy cow grass grazing and odour levels.

Year 6 2022-2023

- Build a storage pond/tank.
- Purchase and install a pumping station.
- Purchase an irrigator and pipeline.

The staged introduction of the effluent application plan is proposed to slowly introduce the changes to the dairy farm management and associated staff. This is suggested to incorporate the effluent spreading program into the dairy cows' paddock rotation. If it is rushed and there are any negative reactions to it, the whole discharge to land may be at risk.

When the effluent spreading project is operational, the Trust is planning to approach neighbouring farmers to discuss the possibility of entering into a commercial arrangement to spread the effluent on their farms. If this is successful there could be a point in time when all the effluent is discharged to land.

The implementation plan is well on target up to year 5 (2021-2022). Irrigation lines are to be extended and the consent holder provided a Land Disposal Options Report (LDOR) to Council in year 4 (2020-2021).

The Company states from the report that they are still in the process of increasing their discharge to land area if practicable.

Figure 9 Pump shed on the final aerobic pond for spray irrigating treated piggery effluent to land.

Figure 10 Covered anaerobic digester pond capturing methane for power production.

Figure 11 Piping and hydrants locations of the bottom block with current and proposed piping extension

Total area of land available to receive the discharge to land;

- Top Block = 17.7 ha
- Bottom Block = 29.0 ha
- Total area = 46.7 ha
- Less set back areas from drains = 5.0 ha
- Total area available to receive effluent = 41.7 ha

2.2 Air

2.2.1 Inspections

Air inspections were carried out in conjunction with all the general compliance monitoring inspections.

During the monitoring period there were no odour complaints concerning the piggery emissions from the ponds system, and routine inspections found no objectionable odours offsite. The covered anaerobic pond has had a significant effect in reducing odour.

Operations at the piggery had previously resulted in some odour travelling off site from the ponds system from time to time prior to installation of the covered anaerobic pond. As the piggery wastewater treatment ponds are located near a residential area in the Lepperton Township, there is no real buffer zone for odours that are a result of general piggery operations.

The Council uses FIDOL factors and scales to rate odour observations. The five FIDOL factors used are frequency, intensity, duration, offensiveness and location.

Frequency:

- How many times the odour is detected during the investigation.

Intensity:

- Perceived strength or concentration of the odour.
- Does not relate to degree of pleasantness or unpleasantness.
- Assessed subjectively using 0-6 scale (ambient).
    0. *Not detectable - no odour*
    1. *Very weak - odour detected but may not be recognisable*
    2. *Weak - odour recognisable (i.e. discernible)*
    3. *Distinct - odour very distinct and clearly distinguishable*
    4. *Strong - odour causes a person to try to avoid it*
    5. *Very strong - odour overpowering and intolerable*
    6. *Extremely strong - pungent, highly offensive, overpowering and intolerable*

Duration:

- The lengths of time people are exposed to odour.
- During an investigation how long does the odour persist?

Offensiveness:

- A rating of an odour's pleasantness or unpleasantness ("hedonic tone").
- This does not necessarily have the same meaning as offensiveness in the RMA or consent condition.
- A subjective assessment which can vary between individuals, but which must also be based for compliance purposes on a 'typical 'response.

Location:

- Where the odour is detected from.
- Note type of area (for example, agricultural, residential, or industrial).

The RMA requires that there should be no offensive or objectionable odour beyond the boundary of the farm.

2.3 Incidents, investigations, and interventions

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 individual/organisation is indeed the source of the incident (or that the allegation cannot be proven).

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

3 Discussion

3.1 Discussion of site performance

In 2015, Consent 0715 was renewed to allow the Trust to continue until 2026 to discharge treated piggery effluent from an oxidation pond treatment system into the Waiongana Stream during fresh (high flow) conditions. The renewed consent also provided for disposal of the effluent to land through a spray irrigation system that was to be constructed during the term of the consent. The renewed consent requires that, within a five year period, approximately 40% of the treated effluent, which was being discharged entirely into the Waiongana Stream, be spray irrigated to land, and that full disposal to land then be instigated. Consent 5206-2.1 was changed to provide for the discharge of emissions to air from the application of effluent to land.

Consent 0715-4.1 limits the piggery to its existing size, in terms of 50 kg pig-equivalents, requiring no more than 3,529 50 kg equivalents. The consent also requires that the final effluent must be treated in a system of oxidation ponds involving at least one anaerobic pond and two aerobic ponds for control of odour.

An effluent irrigation system of minimum area 25 ha/m was installed by June 2020, with discharge to land maximized and discharge to water minimized. The calculated volume of effluent discharged to Waiongana Stream was higher than the previous year, as irrigating to land had ceased due to investigating the relationship between waste water applied to land and animal health. However, overall the discharge to the Waiongana Stream is below the average value and low compare to historic data.

Under the two consents, the Trust is required to provide to the Council for approval, management plans on the operation of the dual disposal system (Piggery Effluent Disposal Management Plan), protection of soil (Effluent Irrigation Management Plan), and control of odour (Odour Management Plan). Further, a Land Disposal Options Report, which will detail the feasibility of disposing all of the effluent to land, was provided in May 2021 and highlighted the effluent irrigation management plan for the upcoming seasons. The report states that nitrate disposal will be reduced by 92-98% and potassium will also be reduced. The Company also states they are still learning the volumes they can irrigate to land whilst minimizing potassium levels, and possibly need twice the current available area to successfully do so. The Effluent Plans and Options Report are to be provided to Fish and Game New Zealand for comment.

DH Lepper Trust was nominated for an environmental award under the 'Business section' for the following criteria:

- Takes food wastes from other industries that would otherwise have gone to landfill.
- Works closely with the Atawhai Local Trust and has work available for those with special needs.
- Methane from off the digester produces 40 kw electricity providing heating for the piggery.

For the 2021-2022 period, records of pig numbers and effluent discharges were provided, as required. The piggery size and number of 50 kg equivalents remain mainly unchanged and met the consent limit.

The Waiongana Stream flow was above the minimum rate required on each discharge occasion.

Inspections of the piggery found the production facility and effluent treatment system to be operated in accordance with best practice, with no significant generation of odour.

3.2 Environmental effects of exercise of consents

The discharge of wastewater to Waiongana Stream was not recorded to have any impact on visual clarity, either outside or inside the mixing zone, because of the highly turbid state of the stream at the times of the discharge. Given the high flow conditions and relativity small increase in nutrients observed downstream, post the discharge, environmental effects of the discharge are considered to be negligible.

There is no indication that any individual point-source discharge is having a significant effect on the ecology of Waiongana Stream, although the combined effect of several farm oxidation pond discharges is likely to have an impact. For this reason, Council has signaled to farmers of the region that, as a general rule, farm effluent must be discharged to land (TRC 2017).

It is noted that consent 0715-4.1 was drafted to provide for the establishment of a dual land/water effluent disposal system. The objective is progressively increasing the proportion discharged to land, and a requirement to investigate discharge completely to land, thereby reducing and potentially eliminating any environmental effects on the stream.

In regard to air emissions from the piggery and effluent treatment system, there were no incidents related to odours beyond the site boundary. Inspections by Council found local odour around the effluent drains and collection area.

3.3 Evaluation of performance

A tabular summary of the consent holder's compliance record for the year under review is set out in Tables 8-10.

Table 8 Summary of performance for consent 0715-4.1.

Purpose: ***To discharge treated piggery effluent to land and water from an oxidation pond treatment system***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Maximise discharge to land and minimised discharge to water	Monitoring inspections	Yes
2. Effluent generated from allowable pig numbers	Monitoring inspections and consent holder data	Yes
3. Adopt best practical option to minimise environmental effects	Monitoring inspections	Yes
4. Effluent treated via appropriate pond system	Monitoring inspections and sampling	Yes
5. Discharge from the aerobic ponds only	Monitoring inspections	Yes
6. No overflows from the effluent disposal system	Monitoring inspections	Yes
7. Provide sufficient storage for effluent	Monitoring inspections	Yes
8. Minimise solids from first to second pond	Monitoring inspections and sampling	Yes
9. Operation and discharge in accordance with consent	Monitoring inspections and sampling	Yes
10. Maintain records of discharge to land and water	The consent holder to provide when requested by Council	Yes
11. Consent to be exercised in accordance of the Piggery Effluent Disposal Plan	Draft Plan to be submitted to Council	Yes

Purpose: *To discharge treated piggery effluent to land and water from an oxidation pond treatment system*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
12. Consent to be exercised in accordance with the Effluent Irrigation Management Plan	Draft Plan to be submitted to Council	Yes
13. Land Disposal Options Report	Plan to be submitted to Council	N/A
14. All plans and reports to be supplied to Fish and Game	In progress	In progress
15. Discharge rate not to exceed 16 L/s	Monitoring inspections indicate 14 L/s	Yes
16. Discharge only when river conditions allow	Consent holder's discharge records and monitoring	Yes
17. Location of discharge point	Monitoring inspections	Yes
18. Safe access to sampling point	Monitoring inspections and sampling	Yes
19. Maximum concentrations in receiving water	Monitoring inspections and sampling	Yes
20. Even effluent application to land	Monitoring inspections and sampling	Yes
21. No effluent ponding on land	Monitoring inspections and sampling	Yes
22. Limits on potassium applied to land	Monitoring inspections and sampling	Yes
23. Limits on total nitrogen applied to land	Monitoring inspections and sampling	Yes
24. No discharge within 25 m of surface water	Monitoring inspections and sampling	Yes
25. Notification of unauthorised effluent discharge	Monitoring and self-notification	Yes
26. Review of consent	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**

N/A = not applicable

Table 9 Summary of performance for consent 5206-2.1.

Purpose: *To discharge emissions into the air from a pig farming operation and associated practices including solids composting, effluent treatment and other waste management activities*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Total allowable number of pigs on site	Monitoring inspections and consent holder records	Yes
2. Adopt best practical option to minimise adverse effects on the environment	Monitoring inspections and consent review process	Yes
3. Consultation and approval prior to alterations to plant and equipment	Monitoring inspections and consent review process	Yes
4. Minimisation of emissions and impacts	Monitoring inspections	Yes
5. Offensive objectionable odour at site boundary not permitted	Monitoring inspections	Yes
6. Deemed objectionable odour to be offensive	Monitoring inspections	Yes
7. Odour management plan	Plan to be submitted to Council	Yes
8. Review of consent conditions	No further review	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

N/A = not applicable

Table 10 Evaluation of environmental performance over time.

Year	Consent no	High	Good	Improvement req	Poor
2010	0715	1	-	-	-
	5205	1	-	-	-
	0188	1	-	-	-
2011	0715	-	1	-	-
	5205	-	1	-	-
	0188	-	1	-	-
2012	0715	1	-	-	-
	5205	1	-	-	-
	0188	1	-	-	-

Year	Consent no	High	Good	Improvement req	Poor
2013	0715		1	-	-
	5205	1	-	-	-
	0188	1	-	-	-
2014	0715	1	-	-	-
	5205	1	-	-	-
	0188	1	-	-	-
2015	0715	1	-	-	-
	5205	1	-	-	-
	0188	1	-	-	-
2016	0715	1	-	-	-
	5205	1	-	-	-
	0188	1	-	-	-
2017	0715	1	-	-	-
	5205	1	-	-	-
	0188	1	-	-	-
2018	0715	1	-	-	-
	5205	1	-	-	-
	0188	1	-	-	-
2019	0715	1			-
	5206	1			
2020	0715	1			
	5206	1			
2021	0715	1			
	5206	1			
2022	0715	1			
	5206	1			
Totals		31	4	0	0

During the year, the Trust demonstrated a high level of environmental and a high level of administrative performance with the resource consents as defined in Appendix II.

3.4 Recommendations from the 2020-2021 Annual Report

1. THAT in the first instance, monitoring of consented activities at D H Lepper Trust Piggery in the 2021-2022 year continue at the same level as in 2020-2021 period.
2. THAT should there be issues with environmental or administrative performance in 2021-2022, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

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

4 Recommendations

1. THAT in the first instance, monitoring of consented activities at D H Lepper Trust Piggery in the 2022-2023 year continue at the same level as in 2021-2022 period.
2. THAT should there be issues with environmental or administrative performance in 2022-2023, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

Glossary of common terms and abbreviations

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

Biomonitoring	Assessing the health of the environment using aquatic organisms.
BOD_5	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.
$CBOD_5$	Carbonaceous biochemical oxygen demand. A measure of the presence of degradable organic matter, excluding the biological conversion of ammonia to nitrate.
COD	Chemical oxygen demand. A measure of the oxygen required to oxidise all matter in a sample by chemical reaction.
Conductivity	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 25°C and expressed in µS/cm.
Cu*	Copper.
Cumec	A volumetric measure of flow- 1 cubic metre per second (1 m^3s^{-1}).
DO	Dissolved oxygen.
DRP	Dissolved reactive phosphorus.
Fresh	Elevated flow in a stream, such as after heavy rainfall.
$g/m^2/day$	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^2	Square 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.

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).
NO_3	Nitrate, normally expressed in terms of the mass of nitrogen (N).
NTU	Nephelometric Turbidity Unit, a measure of the turbidity of water.
pH	A numerical system for measuring acidity in solutions, with 7 as neutral. Numbers lower than 7 are increasingly acidic and higher than 7 are increasingly alkaline. The scale is logarithmic i.e. a change of 1 represents a ten-fold change in strength. For example, a pH of 4 is ten times more acidic than a pH of 5.
Physicochemical	Measurement of both physical properties (e.g. temperature, clarity, density) and chemical determinants (e.g. metals and nutrients) to characterise the state of an environment.
Resource consent	Refer Section 87 of the RMA. Resource consents include land use consents (refer Sections 9 and 13 of the RMA), coastal permits (Sections 12, 14 and 15), water permits (Section 14) and discharge permits (Section 15).
RMA	*Resource Management Act 1991* and including all subsequent amendments.
SS	Suspended solids.
Temp	Temperature, measured in °C (degrees Celsius).
Turb	Turbidity, expressed in NTU or FNU.

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

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Appendix I

Resource consents held by The Company

(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:	Lepperton Farms (2021) Limited	
Decision Date (Change):	23 January 2018	
Commencement Date (Change):	23 January 2018	(Granted Date: 29 September 2015)

Conditions of Consent

Consent Granted:	To discharge treated piggery effluent from an oxidation pond treatment system to land and into the Waiongana Stream during fresh (high flow) conditions
Expiry Date:	1 June 2026
Review Date(s):	June 2023
Site Location:	Manutahi Road, Lepperton
Grid Reference (NZTM)	1704471E-5676221N (Water) 1703992E-5675964N (Land)
Catchment:	Waiongana

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

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Please quote our document number in your reply

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 shall be exercised in a manner that ensures, to the greatest extent practicable, the discharge of treated effluent to land is maximised and the discharge to water minimised.

2. The effluent discharged shall be from piggery of no more than 3529 (50 kg) pig equivalents.

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 of the discharge on the environment.

4. All effluent generated at the piggery site shall be treated in a system of oxidation ponds, involving at least one anaerobic pond and two aerobic ponds.

5. Any discharge shall be from the aerobic pond on site.

6. There shall be no overflow of effluent from any part of the effluent disposal system.

7. The consent holder shall ensure that at all times, while complying with the other requirements of this consent, there is sufficient storage available in the effluent treatment system for any reasonably likely inflow, so that there is no unauthorised discharge to land or water.

8. A flow control structure, such as a 'tee-piece' pipe or other baffle system that achieves the same outcome, shall be maintained and operated on the outlet of the first oxidation pond so as to minimise the movement of solids from the pond**.**

9. The effluent treatment system and disposal system shall be operated and maintained to ensure compliance with the conditions of this consent. Operation and maintenance shall include as a minimum:

    (a) vegetation control on and around the storage facility;
    (b) desludging;
    (c) ensuring that there is adequate freeboard in ponds to allow for contingencies such as a pipe blockage; and
    (d) cleaning, repairing and generally ensuring the integrity of the:
        (i) irrigator;
        (ii) stormwater diversion;
        (iii) sand trap;
        (iv) piping;
        (v) pump(s);
        (vi) pond wall; and
        (vii) fences.

10. The consent holder shall keep accurate records of effluent application to land and water, including, as a minimum, the:

    (a) type of effluent (e.g. solid, liquid);
    (b) volume of effluent applied;
    (c) rate and duration of application;
    (d) loading of potassium and nitrogen over the discharge area;
    (e) paddock and area (ha) that the effluent was applied to;
    (f) date the paddock received effluent;
    (g) wind direction;
    (h) any odour from the land application;
    (i) any complaints received, including dates and times; and
    (j) date, duration (start and finish times), rate and volume of the discharge to the Waiongana Stream.

    This information shall be provided to the Taranaki Regional Council upon request.

11. From 1 November 2016 and subject to the other conditions of this consent, this consent shall be exercised in accordance with a *Piggery Effluent 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 how the consent holder will manage the dual discharge to ensure that adverse environmental effects are avoided as far as practical, and consent conditions are met and can be shown to be met. It shall address as a minimum:

    (a) methods and procedures for maximising the discharge of contaminants to land;
    (b) methods and procedures for minimising the discharge of contaminants to the Waiongana Stream;
    (c) the staged implementation of the discharge to land, including the amount of discharge and area of land for disposal at each stage;
    (d) monitoring the quality and rate of the discharge;
    (e) monitoring the quality and flow of the Waiongana Stream;
    (f) management of the wastewater treatment system;
    (g) minimisation of potassium, nitrogen and phosphorus in the wastewater discharge and how this is being achieved;
    (h) methods for determining the amount of nitrogen and potassium discharged to land; and
    (i) reporting on the exercise of the consent.

12. From 1 November 2016, and subject to the other conditions this consent, this consent shall be exercised in accordance with an Effluent Irrigation Management Plan ('EIMP') that has been approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity. The EIMP shall detail how the application of effluent will be managed to ensure that the soil moisture deficit in not exceeded on high risk soils or soils with slopes of more than 7 degree and effluent will be retained in the top 300 mm for low risk soils including, as a minimum, details of:

    (a) area(s) to be irrigated and the method of irrigation;
    (b) evapotranspiration and available water holding capacity of the soil(s) over the irrigated area;
    (c) how irrigation will be scheduled to maximise the benefits of evapotranspiration and minimise subsurface drainage;
    (d) how available soil water will be determined;
    (e) how water is to be applied as uniformly as practicable over the irrigated area, and the uniformity of application demonstrated; and
    (f) information to be provided to the Taranaki Regional Council to enable compliance to be checked.

    Note: The 'Effluent Irrigation Management Plan' may be combined with the 'Piggery Effluent Disposal Management Plan' required by condition 11.

13. Before 1 June 2021, the consent holder shall provide a *Land Disposal Options Report* (LDOR) to the Chief Executive, Taranaki Regional Council. The purpose of the LDOR is to detail the feasibility of disposing all of the effluent to land. The report will include, as a minimum:

    (a) details of the proportion of contaminants that have been discharged to land to date;
    (b) a general assessment of the efficacy of land disposal based on experience at the site taking into account such matters as cost and environmental benefits;
    (c) an assessment of the land area that would be needed to dispose of all the effluent to land; and
    (d) identification of specific areas of land that could be used for expanded land disposal.

14. Plans and reports submitted to the Chief Executive, Taranaki Regional Council in accordance with conditions 11, 12 and 13 shall also be provided to Fish and Game New Zealand at the same time. Any comments made by Fish and Game New Zealand within 15 working days of receiving a plan or report may be taken into account by the Chief Executive, Taranaki Regional Council when determining if the plan or report meets the requirements of this consent.

Discharge to water conditions

15. The rate of the discharge to water shall not exceed 16 litres/second.

16. The discharge from the pond to the Waiongana Stream shall occur only when the flow in the Waiongana Stream measured at the Taranaki Regional Council SH3A monitoring site is greater than 5 cubic metres per second.

17. The discharge point into the Waiongana Stream shall be located at (NZTM) 1704471E–5676221N. This point of discharge shall be beneath the surface of the receiving water.

18. The consent holder shall ensure that there is always clear and safe access to a point where the effluent from the final pond can be sampled.

19. The discharge shall not cause the maximum concentration of any constituent shown in the following table to be exceeded in the receiving water more than 50 metres downstream of the discharge to the receiving water.

Constituent	Maximum Concentration
Unionised ammonia	0.025 gm^{-3}
Filtered carbonaceous BOD_5	2.0 gm^{-3}

Discharge to land conditions

20. From 1 June 2020, the consent holder shall ensure that effluent application to land is as evenly as practicable over an area of no less than 24.6 hectares.

21. Discharges to land shall not result in effluent ponding on the surface that remains for more than 30 minutes.

22. Over any 12 month period the amount of potassium (K) applied to land as a result of the discharge shall not exceed 100 kg per hectare.

23. Over any 12 month period the amount of Total Nitrogen (N) applied to land as a result of the discharge shall not exceed 200 kg per hectare.

24. The discharge authorised by this consent shall not occur within 25 metres of any surface water body.

25. Where, for any cause (accidental or otherwise), untreated or partially treated effluent associated with the consent holder's operations escapes to surface water, the consent holder shall:
    (a) immediately notify the Taranaki Regional Council on Ph. 0800 736 222 (notification must include either the consent number or farm dairy number); and
    (b) stop the discharge and immediately take steps to control and stop the escape of untreated or partially treated effluent to surface water; and
    (c) immediately take steps to ensure that a recurrence of the escape of untreated or partially treated effluent to surface water is prevented; and
    (d) report in writing to the Chief Executive, Taranaki Regional Council, describing the manner and cause of the escape and the steps taken to control it and to prevent it reoccurring. The report shall be provided to the Chief Executive within seven (7) days of the occurrence.

26. 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 2021 and/or June 2023, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time, including consideration, following receipt of the report required by condition 13, of the feasibility of expanding the irrigation area to dispose of all effluent to land.

Transferred at Stratford on 31 January 2022

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:	Lepperton Farms (2021) Limited	
Decision Date (Change):	8 September 2015	
Commencement Date (Change):	29 September 2015	(Granted Date: 13 November 2008)

Conditions of Consent

Consent Granted:	To discharge emissions into the air from a pig farming operation and associated practices including solids composting, effluent treatment system, effluent application to land and other waste management activities
Expiry Date:	1 June 2026
Site Location:	Mountain Road, Lepperton
Grid Reference (NZTM)	1703992E-5675964N (Land & air) 1704041E-5674835N (Air)

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

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www.facebook.com/TaranakiRegionalCouncil twitter.com/TaranakiRC
Please quote our document number in your reply

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 number of pigs (equivalent 50 kg per pig) on the property at any one time shall not exceed 3529 pig equivalents.

2. Notwithstanding any other condition of this consent, 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 actual or likely adverse effect on the environment associated with the discharge of contaminants from the site.

3. Prior to undertaking any alterations to the piggery unit's processes, operations, equipment or layout, 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 and its amendments.

4. 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) the proper and effective operation, supervision, maintenance and control of all equipment and processes; and
(e) the proper care of all pigs on the site.

5. The discharges authorised by this consent shall not give rise to an odour at or beyond the property boundary that is offensive or objectionable.

6. For the purposes of condition 5, an odour shall be deemed to be offensive or objectionable if:

   (a) it is held to be so in the opinion of an enforcement officer of the Taranaki Regional Council, having regard to the duration, frequency, intensity and nature of the odour; and/or
   (b) an officer of the Taranaki Regional Council observes that an odour is noticeable, and either it lasts longer than three (3) hours continuously, or it occurs frequently during a single period of more than six (6) hours; and/or
   (c) no less than three individuals from at least two different properties, each declare in writing that an objectionable or offensive odour was detected beyond the boundary of the site, provided the Council is satisfied that the declarations are not vexatious and that the objectionable or offensive odour was emitted from the site at the frequency and duration specified in (b). Each declaration shall be signed and dated and include:
      i. the individuals' names and addresses;
      ii. the date and time the objectionable or offensive odour was detected;
      iii. details of the duration, frequency, intensity and nature of the odour that cause it to be considered offensive or objectionable;
      iv. the location of the individual when it was detected; and
      v. the prevailing weather conditions during the event.

7. Prior to any discharge in accordance with consent 0715-4, the consent holder shall provide an Odour Management Plan which details to the satisfaction of the Chief Executive of Taranaki Regional Council how odorous emissions beyond the property boundary will be minimised. The plan shall include:

   (a) A definition of the environmental effects being managed by the plan and the objective sought in relation to this effect;
   (b) Identify key personnel responsible to managing the effect;
   (c) Describe the activities on the site and describe the main potential sources of odour emissions;
   (d) Identify and describe methods of mitigation and operating procedures including the dewatering of the anaerobic pond or during control contingency discharge events;
   (e) Monitoring methods including record keeping of maintenance and control parameters, any odour complaints received and weather conditions present at time of complaints.

   Thereafter, the piggery and associated waste management practices shall be operated in accordance with the plan.

8. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2016 and/or June 2020, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 31 January 2022

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

Appendix II

Categories used to evaluate environmental and administrative performance

Categories used to evaluate environmental and administrative performance

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

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

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

Environmental Performance

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

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

For example:

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

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

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

Administrative performance

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

Good: Perhaps some administrative requirements of the resource consents were not met at a particular time, however this was addressed without repeated interventions from the Council staff. Alternatively adequate reason was provided for matters such as the no or late provision of information, interpretation of 'best practical option' for avoiding potential effects, etc.

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

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