Stanley Bros Trust (Piggery)

Monitoring Programme
Annual Report
2023/24
Technical Report 2024-70

Taranaki
Regional Council

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Taranaki Regional Council
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Executive summary

The Stanley Bros Trust (the Company) operates a piggery located on the corner of 4833 South Road and 24 Arawhata Road, Opunake in the Arawhata catchment. The piggery is a breeder, grower, and finishing operation with the capacity of up to 5,381 pigs and piglets at any one time, the treated effluent from which is discharged to land and emissions of odour to air.

This report for the period July 2023 to June 2024 describes the monitoring programme implemented by 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.

During the monitoring period, Stanley Bros Trust demonstrated a good level of environmental and administrative performance.

The Company holds two resource consents, which include a total of 21 conditions setting out the requirements that the Company must satisfy. The Company holds one consent to discharge piggery effluent to land and one consent to discharge emissions into the air at this site.

The Council's monitoring programme for the year under review included three inspections, four effluent monitoring surveys, and three surface water monitoring surveys, with samples from four sites collected for physicochemical analysis. Odour surveys were also undertaken during inspections. Data was supplied by the Company and reviewed by the Council.

The monitoring showed that the company was compliant with their resource consent. By comparison with previous years, the monitoring indicated an improvement. There was one unauthorised incident recording non-compliance in respect of this consent holder during the period under review.

An abatement notice was issued requiring the installation of piezometers to occur by 1 May 2024. There was a delay due to weather constraints and the contractor's availability. An agreement was made between the company and the Council that they would be installed as soon as possible; they were installed the week of 17 June 2024.

The Company are currently carrying less pigs than their consented allowance and have no plans to increase stock numbers, citing instability within the pork industry. Therefore, the Company was unable to discharge effluent to the consented 100ha of cut and carry pasture this monitoring period, with just 84.4ha utilised for cut and carry operations. The impact of this on the environment is minor due to the piggery being compliant with their nutrient loading on the 81.3ha used.

In terms of environmental performance and administrative performance by the consent holder, over the last several years, this report shows that the consent holder's performance is improving.

For reference, in the 2023/24 year, consent holders were found to achieve a high level of environmental performance and compliance for 864 (89%) of a total of 967 consents monitored through the Taranaki tailored monitoring programmes, while for another 75 (8%) of the consents a good level of environmental performance and compliance was achieved. A further 26 (3%) of consents monitored required improvement in their performance, while the remaining two (<1%) achieved a rating of poor.

This report includes recommendations for the 2024/25 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 2023 to June 2024 by the Council on the monitoring programme associated with resource consents held by Stanley Bros Trust Piggery (the Company). The Company operates a piggery situated on the corner of 24 Arawhata Road, and 4833 South Road (State Highway 45), Opunake, in the Arawhata 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 discharge of water within the Arawhata catchment, and the air discharge permit to cover emissions to air from the site. This report is the 4th annual report to be prepared by the Council to cover the Company's air and land discharges and their effects.

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 *Resource Management Act 1991* (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 Arawhata 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 2024/25 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 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 2023/24 year, consent holders were found to achieve a high level of environmental performance and compliance for 864 (89%) of a total of 967 consents monitored through the Taranaki tailored monitoring programmes, while for another 75 (8%) of the consents a good level of environmental performance and compliance was achieved. A further 26 (3%) of consents monitored required improvement in their performance, while the remaining two (<1%) achieved a rating of poor. [1]

1.2 Process description

The Company own and operate a piggery located on the corner of 24 Arawhata Road and 4833 South Road (State Highway 45), Opunake. The piggery and surrounding land owned by the Company covers 133ha. They are a breeder, grower and finishing operation capable of holding up to a maximum of 5,381kg pig equivalents onsite at any one time. The discharge is made up of effluent and wash water from the piggery operation.

Up until early October 2018 the site operated as a piggery and dairy farm with 270 dairy cows. In October 2018 the dairy herd was sold and only a small amount of grazing stock remain on the farm.

The existing piggery is made up of seven purpose-built piggery sheds, which are ventilated with roof fans and side vents. The sheds are in good condition, with impervious wall cladding. The floor is impervious with concrete, wooden slats, and plastic flooring panels. The layout of the sheds is generally across the prevailing winds and there are side ventilation exhausts with automatic control. The configuration and locality of the sheds (along with the exhaust stacks) generally enhance dispersion of odours and dust from the sheds.

Pens are flushed daily with water and the effluent is pumped to a series of storage ponds before land application. Pond 1 has a storage capacity of 24,500m^3 and pond 2 has a storage capacity of 19,320m^3. The ponds are stirred as effluent is applied to land through numerous methods, which are described later in this report. Approximately 18m^3 of effluent and wastewater is discharged onto land on a daily basis over

[1] The Council has used these compliance grading criteria for more than 20 years. They align closely with the 4 compliance grades in the MfE Best Practice Guidelines for Compliance, Monitoring and Enforcement, 2018

approximately 84ha. Since the closure of the dairy shed, effluent volume has reduced by 60%, increasing available storage to up to three months, if conditions are not right for irrigation.

The Company undertook 'cut and carry' operations during this monitoring period, producing maize silage, grass silage, hay and haylage. Effluent is applied after harvesting to maintain soil fertility for future crops.

The existing piggery, ponds, and irrigation areas in relation to the property are shown in Figure 1 and Figure 2.

Figure 1 Location of Stanley Bros Trust Piggeries current buildings and effluent ponds

Figure 2 Stanley piggeries in relation to the Arawhata Stream and Unnamed Tributaries

1.3 Resource consents

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

A summary of the various consent types issued by the Council are 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 Stanley Bros piggery

Consent number	Purpose	Granted	Review	Expires
Air discharge permit				
5251-2.2	To discharge emissions into the air from pig farming operations and associated effluent treatment and waste management activities	2019	June 2027	2030
Discharges to land permit				
10671-1	To discharge piggery effluent onto land by spray irrigation	2019	June 2027	2030

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 Company site 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 Company's site was visited on three occasions during the monitoring period. With regard to consents for the discharge of piggery effluent to land, the main points of interest were plant processes with potential or actual discharges to land, including contaminated storm-water and process wastewaters. Air inspections focused on plant processes with associated actual and potential emission sources and characteristics, including potential odour, noxious or offensive emissions. Sources of data being collected by the Company were identified and accessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council. The neighbourhood was surveyed for environmental effects.

1.4.4 Chemical sampling

The Council undertook sampling of the effluent collection and irrigation pond. In addition, surface water samples were collected from the Arawhata Stream and associated unnamed tributary on four occasions. The analytes tested for in the effluent pond and surface water samples include the following:

- Effluent pond analytes: Temperature, pH, electrical conductivity (EC), chloride, nitrate + nitrite nitrogen, total nitrogen, total kjeldahl nitrogen (TKN), total sodium, total phosphorus, total potassium, sodium absorption ratio (SAR), total calcium and total magnesium.
- Arawhata Stream analytes: Temperature, pH, electrical conductivity (EC), chloride, nitrate + nitrite nitrogen, chloride, total potassium, dissolved reactive phosphorus (DRP), free ammonia, total ammoniacal nitrogen and total biochemical oxygen demand ($TBOD_5$).

The Council also undertook odour surveys to assess ambient air quality in the neighbourhood during inspections.

2. Results

2.1 Inspections

Inspections were undertaken on 14 September 2023, 27 November 2023 and 25 June 2024. Inspections undertaken assessed the functionality of onsite features with the potential to have negative effects on the environment. Effluent collection points, bunding and swale drains, effluent ponds, effluent spreading, site maintenance and odour assessments were all checked and undertaken during regular compliance monitoring inspections.

Throughout the 2023/24 monitoring year the effluent ponds were observed at low levels, with ample storage capacity still available. Upgrades were made to the effluent system, which included the installation of a bigger stirrer and a new progressive cavity mono pump. This ensures the same effluent delivery flow anywhere on the farm. To add to this, a new pump shed was also built.

An abatement notice was issued following the September inspection, as discussed in section 2.4

Inspections showed that the site was well maintained with the sand trap, ring drains and storm water collection areas all found in good working condition. The site maintained an overall clean appearance with no visible environmental impacts noted. No overflows of any contaminants were noted during any of the inspections.

Odour surveys were undertaken on all of the inspections. No objectionable odour was noted beyond the site boundaries.

2.2 Results of discharge monitoring

2.2.1 Effluent monitoring

The Council sampled the irrigation pond (PGP001003) on four occasions in the 2023/24 monitoring period. The analysis of the samples is provided in the following Table 2.

Table 2 Irrigation pond effluent sample 2023/24 results

PGP001003	Collected	14 September 2023	27 November 2023	06 March 2024	25 June 2024
Parameter	Time (NZST)	3.25pm	12.50pm	10.20am	12.25am
Temperature	°C	15.9	18.4	17.2	16.2
pH	pH Units	8.0	6.5	6.9	6.7
Electrical Conductivity (EC)	mS/m	713	848	443	618
Chloride	g/m³	280	460	176	270
Nitrate-N + Nitrite-N	g/m³	<0.10	0.15	<0.10	<0.10
Total Nitrogen	g/m³	940	1880	610	1180
Total Kjeldahl Nitrogen (TKN)	g/m³	940	1880	610	1180
Total Sodium	g/m³	121	240	87	139
Total Phosphorus	g/m³	140	540	168	450
Total Potassium	g/m³	450	470	270	420
Sodium Absorption Ratio (Total)		2.7	2.6	1.5	2.5
Total Calcium	g/m³	99	410	160	132
Total Magnesium	g/m³	30	123	61	62

2.2.2 Surface water monitoring

In lieu of groundwater monitoring, four surface water monitoring locations were established on the Stream and associated unnamed tributary.

The four sites are provided in the following Figure 3:

- ARW000070 is located slightly offsite, to the northwest of the Company site. The stream is full of macrophyte vegetation with minimal to no shading. This is monitored to assess pre-irrigation area surface water quality (control site).
- ARW000954 is located on the eastern side of the Company site, up gradient of site irrigation areas. This stream is an unnamed tributary of the Arawhata Stream. It was originally assessed to provide pre-irrigation area surface water conditions (control site). Refer to notes in section 3.2.
- ARW000984 is located in the central area of the site, within the irrigation areas, just after the confluence with the main stem of the Arawhata Stream. The aim of this site is to assess for any effect associated with the irrigation areas on the surface water body.
- ARW000999 is located at the mouth of the Arawhata Stream, on the coast. This location seeks to assess the combined effect of the irrigation areas on the unnamed tributary and the main stem of the Arawhata Stream, prior to discharging into the Tasman Sea.

Figure 3 Surface water sampling locations

Surface water monitoring was undertaken on three occasions by the Council in the 2023/24 monitoring period. Trend results from 2021-2024 are displayed in Figures 4-6 below.

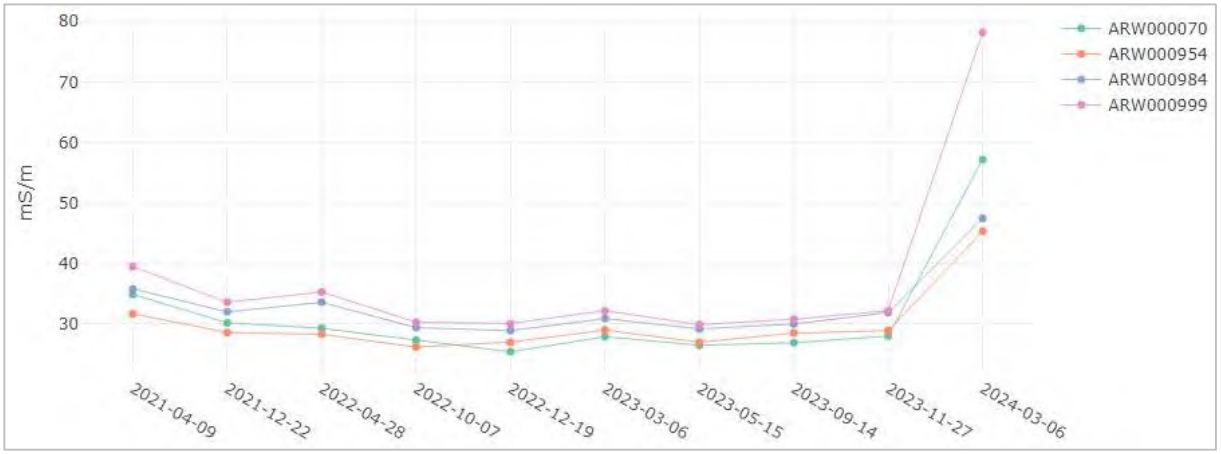

Figure 4 Conductivity trend from April 2021 to March 2024.

Conductivity has remained at low levels throughout the surface water monitoring. There was an increase in the March 2024 sample results, notably an increase of 40mS/m at ARW000999 (downstream location). This increase is likely a result of the unusually low rainfall in the region, which has reduced the natural mixing and dilution of stream water.

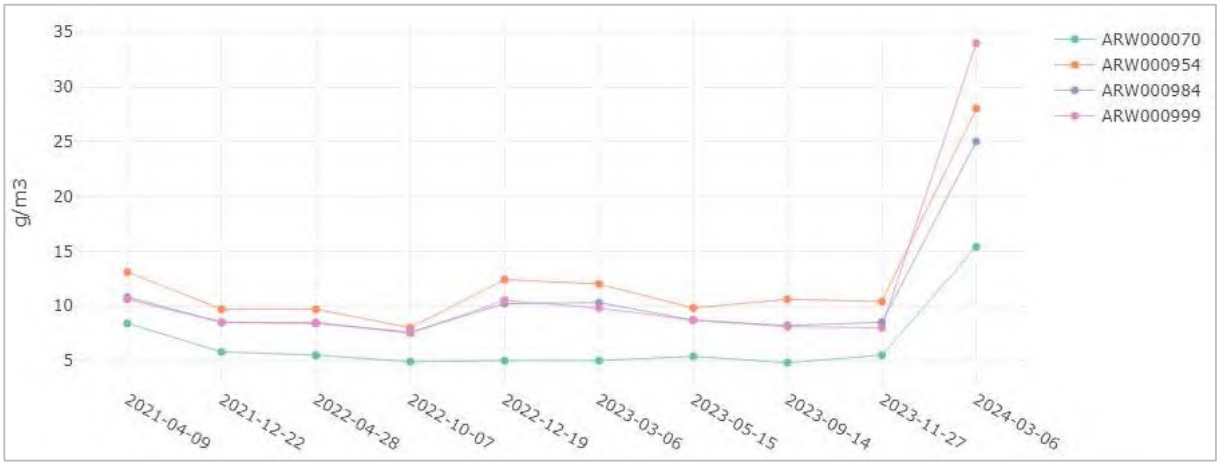

Figure 5 Potassium trend from April 2021 to March 2024.

Potassium levels also remained at a low level throughout the surface water monitoring, with the exception of higher levels recorded at all sites in March 2024. As noted in previous reports, control site ARW000954 shows higher levels of potassium than downstream sites. It may be influenced by irrigation water.

Figure 6 Nitrate nitrogen trend from April 2021 to March 2024.

Nitrate nitrogen has remained below 3g/m^3 throughout the surface water sampling, dropping to below 2g/m^3 over the 2023/24 monitoring year. When comparing the median lines for each site, the results indicate an increase in nitrate nitrogen over the irrigation area.

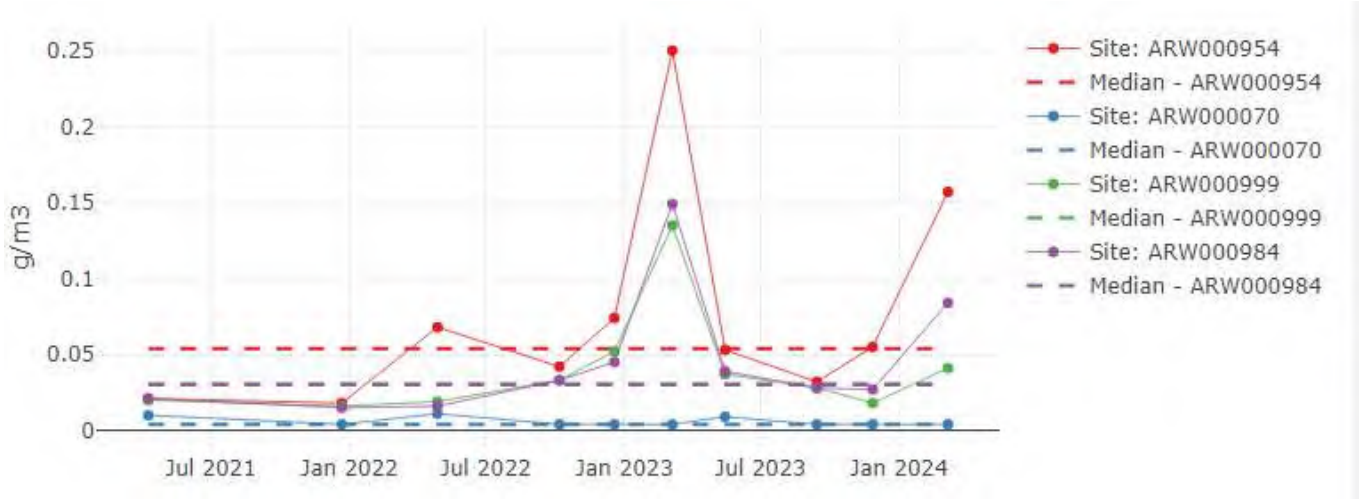

Figure 7 Dissolved reactive phosphorus (DRP) trend from April 2021 to March 2024.

The results do not show a clear trend in the DRP data. However, it is notable that the highest recorded DRP levels for all sites occur in the months following the summer dry period, when river levels are expected to be lower. The median values for ARW000984 and ARW000999 are the identical, indicating little change between the middle of the irrigation area and the final discharge to the ocean. However both these sites have higher DRP levels than the upstream site ARW00070.

2.3 Provision of consent holder data

Consent required information was provided to the Council by means of an annual report (Appendix III). This was produced by the Company's third party consultant agKnowledge[2].

[2] Report of 2023/24 effluent irrigation management plan for Stanley Bros Trust. agKnowledge

2.3.1 Pig inventory 2023/24

Special condition 1 of consent 10671-1.1 states the effluent discharged shall be from a piggery of no more than 5,381, 50kg pig equivalents (standard pig units or SPU). Table 3 indicates that the Company were well below the consented allowance, with 5,033SPU equivalents. The total number of pigs in 2023/24 has increased from that of 2022/23 by 23,413kg and 468SPU equivalents.

Table 3 Stanley Bros piggery inventory 2023/24

Type of pigs	No. of pigs	Average weight (kg)	Total weight (kg)	50 kg equivalent pigs (SPU)
Sows	343	165	56595	1,132
Boars	8	150	1,200	24
Gilt Sows	107	140	14,980	300
Grower	1,410	75	105,750	2,115
Weaner	944	42	39,648	793
Nursery	1,455	23	33,465	669
Total	**4,267**		**251,638**	**5,033**

2.3.2 Record keeping

The consent holder is required to keep accurate records of effluent application to land, including as a minimum:

a. Volume of effluent applied;
b. Rate and time of application;
c. Area (ha) that the effluent was applied to
d. Method of irrigation; and
e. Type of crop that is grown on that land.

2.3.2.1 Rate, time and volume of effluent application

Table 4 below provides the rate and time of the applications to land in the 2023/24 monitoring period.

Table 4 Irrigations per month and effluent volumes applied 2023/24

Month	Irrigation per month (days)	Effluent volumes applied (mm)
July 2023	0	0
August	6	28
September	11	70
October	18	48
November	9	35
December	11	62
January 2024	19	16
February	17	39
March	30	82
April	10	52
May	7	26
June	3	14

2.3.2.2 Area (ha) that effluent is applied and locations of irrigation

The farm is now divided into three blocks, these total 105.1ha. The annual effluent volumes applied to these blocks is provided in the following Table 5.

Special condition 9 of consent 10671-1.1 states: The consent holder shall ensure that the effluent is discharged to at least 100ha of land that is not grazed and that is planted in crops that are removed from the property i.e. a 'cut and carry' operation. It may also be applied and additional areas that are grazed. Discharge was only to 81.3ha of land, but this has not affected the nitrogen and potassium loading rates.

Table 5 Block areas and annual effluent volumes applied

Block	Effective area (ha)	Effluent volume applied (mm)
Cut & carry	44.1	256
Sand dunes (grazing only)	23.8	164
Maize/annual grass	37.2	52
Total	105.1	-

Special condition 7 of consent 10671-1.1 states: No effluent shall be applied to land less than: 25m from the water's edge in any watercourse, 50m from any bore, well or spring actively used for water supply purposes; or 150m from any dwelling house unless the written approval of the occupier has been obtained to allow discharge at a closer distance.

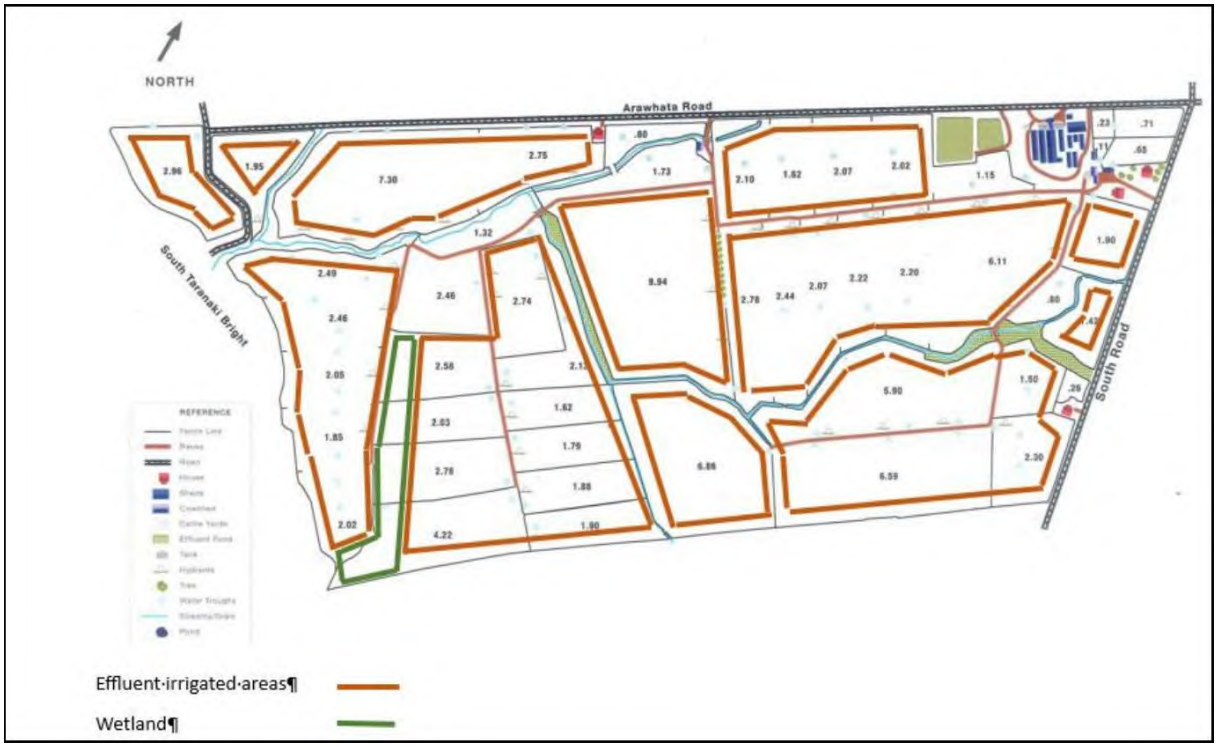

Figure 8 Farm map showing withholding areas from streams and property boundaries

2.3.2.3 Method of irrigation

The effluent from the piggery is pumped to storage ponds prior to land application. The Company communicated that two different delivery systems were used during the 2023/24 monitoring year:

1. Dribble bar – main method of effluent application, depths applied (~3mm)

2. 'Weta' travelling rain gun – used to apply effluent to the Sand Dune block at 8-10mm depths during 7 months of the year.

2.3.2.4 Type of crops grown

Two crops were grown under the cut and carry system in 2023/24. Maize Silage paddocks (37.2ha) which were cultivated in October and harvested in March, yielding around 20.8 tonnes dry matter (DM/ha).

An annual Ryegrass was planted as a crop cover over the cooler and wetter months. This is harvested in late September/early October, yielding 4.5 tonnes DM/ha.

Over the rest of the farm excluding the Sand Dune Block, the pasture was harvested to produce 910 bales as hay and 902 bales as haylage.

Table 6 Dry matter yields of cut and carry operations 2023-2024. Sourced agKnowledge report 2023/24

Harvested feed	Feed amount	Average DM yield	DM removed (tonnes)
Maize silage	37.2ha	20.8 tonnes/ha	774
Grass silage	23.6ha	4.5 tonnes/ha	106
Hay (15's)	910 bales	300 kg/bale	273
Haylage (15's)	902 bales	300 kg/bale	271

2.3.3 Total nitrogen and potassium in the effluent

Effluent sample results collected by the consent holder and the Council have been combined in the agKnowledge effluent management report 2023/24 to determine mean nitrogen and potassium concentrations, as shown in Table 7.

Table 7 Mean nutrient composition of piggery effluent (n=14) plus 95% confidence interval

Nutrients in piggery effluent	Mean (g/m^3)	95% CI (g/m^3)
Nitrogen	844	160
Phosphorus	163	62
Potassium	3360	64
Calcium	130	454
Magnesium	83	24
Sodium	88	24

2.3.4 Nutrient management

Consent 10671-1.1, special conditions 10 and 11 require the following:

3. The Total Nitrogen applied to any hectare of land shall not exceed:
   a. 400kg in any 12-month period for 'cut and carry areas'; or
   b. 200kg in any 12-month period for any other land (including grazed pasture).
4. The total Potassium applied to any hectare of land shall not exceed:
   a. 300kg in any 12-month period for 'cut and carry areas'; or
   b. 100g in any 12-month period for any other land (including grazed pasture).

2.3.4.1 Nitrogen loading

Estimated nitrogen loading across all areas is provided in Table 8. All cut and carry areas were estimated to be well below consent loading limit for nitrogen. For the non-cut and carry areas the N loading was also estimated to be below the consent limit, with an estimated loading of 138.4kg N/ha.

Table 8 Estimated nitrogen (N) loading by irrigation block 2023/24

Block	Effective area (ha)	m^3 of effluent	Loading of N kg/ha
Cut and carry	44.1	11,289.6	216.1
Sand dunes	23.8	3,903.2	138.4
Maize	37.2	1,934.4	43.9
Total	105.1	17,127.2	-
Underlined blocks indicate cut and carry areas. Please note 2.74ha of the sand dunes is actioned under cut and carry.			

2.3.4.2 Potassium loading

Estimated potassium loading has been calculated and provided in the following Table 9. The results demonstrated that the Company were compliant with the potassium loading limits across all irrigation blocks for cut and carry and other land.

Table 9 Estimated potassium (K) loading by irrigation block 2023/24

Block	Effective area (ha)	m^3 of effluent	Loading of potassium kg/ha
Cut and carry	44.1	11,289.6	88.02
Sand dunes	23.8	3,903.2	55.1
Maize	37.2	1,934.4	17.47
Total	105.1	17,127.2	-
Underlined blocks indicate cut and carry areas. Please note 2.74 ha of the sand dunes is actioned under cut and carry.			

2.3.5 Nitrogen and potassium for the cut and carry operation

The Company provided the Council with analysis of composite feed samples[3] of each crop, so that the nutrient uptake and removal off-farm could be calculated.

Table 10 Nitrogen and potassium concentrations and total N and K removed in the cut and carry system

Harvested Feed	N (% in DM)	K (% in DM)	N uptake (kg)	K uptake (kg)
Maize silage	1.15	1.15	8,901	8,901
Grass silage	1.70	2.80	1,805	2,974
Hay (15's)	1.60	1.60	4,368	4,368
Haylage (15's)	1.80	2.50	4,878	6,775
Total			19,952	23,018

In total the Company removed 19,952kg nitrogen (N) and 23,018kg potassium (K) from cut and carry areas this monitoring period.

[3] Report of 2023/24 effluent irrigation management plan for Stanley Bros Trust. agKnowledge

2.4 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).

Table 11 below sets out details of any incidents recorded, additional investigations, or interventions required by the Council in relation to the Company activities during the 2023/24 period. This table presents details of all events that required further investigation or intervention regardless of whether these were found to be compliant or not.

Table 11 Incidents, investigations, and interventions summary table

Date	Details	Compliant (Y/N)	Enforcement Action Taken?	Outcome
	During the 2023/24 monitoring period it was found the Company had not installed groundwater monitoring bores as per special condition 14 of consent 10671-1.1	N	Y	A new abatement notices was issued in the 2023/24 monitoring period, requiring the Company to install the bores by 1 May 2024. These bored have been installed and abatement notice has been removed.

3. Discussion

3.1 Discussion of site performance

The Company was required to provide the Council with an Effluent Irrigation Management Plan (EIMP), as well as the concentrations of nitrogen and potassium within the irrigation effluent. The Company commissioned agKnowledge to undertake the works and their assistance has been retained throughout the monitoring period.

The plan fulfilled the consent requirements by providing information on the following:

- Management of the cut and carry operation;
- Evapotranspiration and available water holding capacity of the soil over the irrigated area. Soil moisture content is gathered using the soil sensor probes.
- How irrigation will be scheduled to maximise the benefits of the evapotranspiration and minimise subsurface drainage
- How effluent is to be applied as uniformly as practicable over the irrigated area, and the uniformity of application demonstrated;
- The designated application area and buffer zones for streams and the property boundary.
- The determination of the total nitrogen and potassium in the effluent.

From an administrative performance perspective, performance has been good during the period under review.

Consent 10671-1.1 condition 14 requiring the installation of a minimum of three piezometers by 31 January 2020 has been non-compliant in previous years and an updated abatement notice was issued during the monitoring year. The Company was given a new deadline to install the piezometers by May 2024. Installation took place in June 2024 and the abatement was lifted. The delay was due to the availability of the contractor to drill the bores, and due to the weather not allowing work to commence.

The newly installed piezometers will be used to monitor and ensure that there is minimal leaching of nutrients to groundwater, to satisfy condition 2 of consent 1067-1.1. The first 2 years of monitoring will be used to establish a baseline of the groundwater quality below the piggery. Thereafter, monitoring will occur at low and high groundwater levels, looking for elevations in the nutrient content of the groundwater.

Over the years, the Company has invested heavily in new technologies. This has allowed greater control in irrigation management, more transparency in effluent application and improved productivity for cut and carry operations on site.

3.2 Environmental effects of exercise of consents

During the 2023/24 monitoring period inspections, surface water monitoring, and effluent monitoring all demonstrate that the company is compliant with the conditions of their resource consent. This a continued improvement from previous monitoring periods, in which several abatement and infringement notices were issued for poor environmental performance.

Liaison with Company and review of records indicated more N and K was removed than discharged to land. This is calculated through composite maize and grass silage feed samples analysed by Hill Laboratories for N and K. This is compared to piggery effluent applied to maize and grass silage areas per hectare at an application depth of 21.5mm.

Riparian planting and fencing has been completed across the site. It is understood from discussions that the Company is undertaking maintenance only (replacing perished plants) at the present time.

The three Arawhata Stream monitoring surveys recorded elevated levels in nitrate and nitrite-nitrogen, electrical conductivity, chloride, DRP, potassium, pH and free ammonia down the length of the property. Analysis of the difference between the results at the control sites ARW000954 and ARW000070 has resulted in ARW000954's validity as a control to be disregarded. The site is surrounded by irrigation fields and should not have been set up as a control site during the initial design of this monitoring programme.

In comparison to the National Policy Statement for Freshwater Management 2020 (NPS-FW), DRP results in particular are highly elevated in each site other than ARW00070. It is acknowledged that the NPS-FM guideline values are based on monthly sampling over a minimum of 5 years. The Regional Freshwater Plan for Taranaki states that after reasonable mixing, the contaminant shall not cause the concentration of DRP to exceed 0.03g/m^3. The median value for DRP is lowest at ARW00070 at <0.004 g/m^3. The highest median was at ARW000954 at 0.054g/m^3. The middle (ARW000984) and downstream (ARW000999) sites both have a median value of 0.031g/m^3. This indicates there may be base levels of DRP entering the site from upstream of the property on the eastern tributary side, or the elevated levels are due to irrigation water runoff around ARW000954. It is difficult to determine conclusively without a suitable upstream control site and further sampling. Given DRP results are only just meeting guidelines levels within the lower irrigation areas, it is necessary to look into further ways of removing phosphorus from the irrigation water. Elevated levels of DRP can increase periphyton growth and affect the abundance of macroinvertebrate and fish communities sensitive to low oxygen levels.

It is important to highlight that for all sites, apart from control site ARW000070, there is seasonal variation. Peaks are evident in the summer dry period due to low rainfall causing higher concentrations of nutrients present within the water.

As a result of these findings and the ongoing monitoring trends, it is suggested that stream monitoring may be reviewed within the 2024/25 monitoring period.

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 12-14.

Table 12 Summary of performance for consent 5251-2.2

Purpose: ***To discharge emissions into the air from pig farming operation and associated practices including effluent treatment and other waste management activities***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Maximum allowable number of pig equivalents	Liaison with Company and review of Company records indicated that the piggery is carrying less than consented (5,381SPU equivalents) Actual 4,565PU equivalents	Yes
2. Adoption of best practical option to avoid or minimise adverse effects	Liaison with Company and inspections	Yes
3. Consultation and approval prior to alterations to plant and process	Liaison with Company	N/A
4. Minimisation of impact and emissions through use of equipment and suitable methods	Monitoring Inspections	Yes
5. Operation of piggery in accordance with original application	Monitoring inspections	Yes

Purpose: *To discharge emissions into the air from pig farming operation and associated practices including effluent treatment and other waste management activities*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
6. Objectionable odour at site boundary not permitted	Monitoring inspections	Yes
7. Optional review provision	Consent expires June 2030- next review June 2027	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 13 Summary of performance for consent 10671-1.1

Purpose: *To discharge piggery effluent onto land by spray irrigation*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Effluent discharge no more than allowable number of pig equivalents	Liaison with Company and review of Company records indicated that the piggery is carry less than consented (5,381 SPU equivalents) Actual 4,565 SPU equivalents	Yes
2. Minimisation of nutrient leaching to groundwater	Liaison with Company and review of records	Yes
3. No overflow of effluent from disposal system	Liaison with Company and inspection	Yes
4. Sufficient storage available in effluent storage ponds	Liaison with Company and Inspection	Yes
5. No effluent surface ponding exceeding 30 minutes	Monitoring Inspection	Yes
6. Sodium adsorption ratio of wastewater shall not exceed 15	Sampling and review of chemical parameters	Yes
7. Effluent applied in consented areas and away from dwellings/rivers	Monitoring Inspection	Yes
8. No spray drift beyond property boundary	Monitoring Inspection	Yes
9. The consent holder shall ensure that the effluent is discharged to at least 100ha of land that is not grazed and that is planted in crops that are removed from the property	Liaison with Company and Inspection. Discharged to only 81.3ha of cut and carry land	Yes
10. Total nitrogen applied on land will not exceed 400kg in 12 month cut and carry areas, or 200kg in 12 month pasture areas	Liaison with Company and review of records with estimate of loading from duplicate sample from effluent pond.	Yes
11. Total potassium applied on land will not exceed 300kg in 12 month cut and carry areas, or 100kg in 12 month pasture areas	Liaison with Company and review of records with estimate of loading from duplicate sample of effluent pond	Yes
12. Accurate records of applied effluent volume, rate, area, method, and type of crop grown	Liaison with Company	Yes

Purpose: *To discharge piggery effluent onto land by spray irrigation*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
13. Consent exercised in accordance with Effluent Irrigation Management Plan	Liaison with Company and Inspection. More detail is required in the current EIMP.	Yes
14. Installation of three piezometers by 31 January 2020 for groundwater quality monitoring	Liaison with Company and Inspection	Yes
Overall assessment of consent compliance and environmental performance in respect of this consent		**Good**
Overall assessment of administrative performance in respect of this consent		**Good**

N/A = not applicable

Table 14 Evaluation of environmental performance over time

Year	Consent numbers	High	Good	Improvement req	Poor
2019/20	5251, 10671	1	-	1	-
2020/21	5251, 10671	-	-	2	-
2021/22	5251, 10671	1	-	1	-
2022/23	5251, 10671	1	-	1	-
2023/24	5251, 10671	1	1	-	-

During the year, the Company demonstrated a high level of environmental and administrative performance for consent 5251-2.2. A good level of environmental performance was given to consent 10671-1.1 as a further non-compliance due to condition 14 was recorded. The Company also demonstrated a good level for administrative performance. Appendix II defines categories used to evaluate environmental and administrative performance.

3.4 Recommendations from the 2022/23 Annual Report

In the 2022/23 Annual Report, it was recommended:

1. THAT in the first instance, monitoring of consented activities at the Company site will remain unchanged from that undertaken in the 2022/23 monitoring period. Four rounds of surface water monitoring will be completed, along with three inspections and four effluent monitoring surveys.
2. THAT the Company shall submit for a variation of consent 10671-1.1 to reduce the number of pigs allowed by the consent, to what is currently held on site. In doing so the Company will also submit, with supporting rationale, for a reduction in the cut and carry irrigation area requirement.
3. THAT the Council shall give notice to review the conditions of consent 10671-1.1 in June 2024 in relation to the above recommendation, if the Company does not submit a variation of consent.
4. THAT control site ARW000954 is moved further upstream to determine if irrigation is having an effect at this site. Total potassium levels at this site are consistently the highest in the catchment. Moving this monitoring site upstream to the neighbouring farm may indicate if irrigation is having an effect on potassium levels at this location.
5. THAT should there be issues with environmental or administrative performance in 2023/24, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

Recommendation 1 was undertaken, however, not all surface water monitoring surveys were completed.

Recommendation 2 was not submitted to Council.

Recommendation 3 was not adopted by Council.

Recommendation 4 was unable to be implemented due to a lack of accessibility to a suitable alternative site.

Recommendation 5 was not required by Council.

3.5 Alterations to monitoring programmes for 2024/25

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.

Planned changes for 2024/25 monitoring programme include groundwater water quality monitoring.

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 2024/25.

4. Recommendations

1. THAT in the first instance, monitoring of consented activities at the company in the 2024/25 year be reviewed from that undertaken in 2023/24. Four instances of groundwater sampling will be completed, along with three inspections and four effluent monitoring surveys. Surface water monitoring needs to be reviewed.
2. THAT should there be issues with environmental or administrative performance in 2024/25, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.
3. THAT the company needs to provide improved information in relation to evapotranspiration and available water holding capacity of the soil over the irrigated area, based on soil tests.

Glossary of common terms and abbreviations

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

Al*	Aluminium.
As*	Arsenic.
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 µS/cm.
Cu*	Copper.
Cumec	A volumetric measure of flow- 1 cubic metre per second ($1m^3s^{-1}$).
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.
$g/m^2/day$	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.
MPN	Most Probable Number. A method used to estimate the concentration of viable microorganisms in a sample.
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.
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).
Pb*	Lead.
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.
PM_{10}, $PM_{2.5}$, $PM_{1.0}$	Relatively fine airborne particles (less than 10 or 2.5 or 1.0 micrometre diameter, respectively).
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.
SQMCI	Semi quantitative macroinvertebrate community index.
Temp	Temperature, measured in °C (degrees Celsius).
Turb	Turbidity, expressed in NTU or FNU.
Zn*	Zinc.

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

For further information on analytical methods, contact a manager within the Environment Quality Department.

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Appendix I

Resource consents held by Stanley Bros Trust Piggery

(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:	Stanley Bros Trust (Trustees: Ronald Thomas Stanley & Noel Henry Stanley) 4789A South Road RD 31 Opunake 4681
Decision Date (Change):	6 August 2019
Commencement Date (Change):	6 August 2019 (Granted Date: 12 September 2012)

Conditions of Consent

Consent Granted:	To discharge emissions into the air from a pig farming operation and associated practices including effluent treatment and other waste management activities
Expiry Date:	1 June 2030
Review Date(s):	June 2024
Site Location:	24 Arawhata Road, Opunake
Grid Reference (NZTM)	1670475E-5637131N

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

General condition

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

Special conditions

1. The maximum number of pigs on the property, at any one time, shall not exceed 5,000 pigs (or 5,381, 50 kg pig equivalents).

2. 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 into the air from the site.

3. Prior to undertaking any alterations to the pig farming and effluent disposal processes, operations, equipment or layout, as specified in the original application and any subsequent application to change the conditions of this consent, 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 air 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 consent holder shall, at all times, operate the piggery and associated activities in accordance with the information provided in support of the original application and any subsequent application to change the conditions to this consent, except as otherwise required or directed by the conditions set out in this resource consent.

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

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 2018 and/or June 2024 for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 6 August 2019

For and on behalf of
Taranaki Regional Council

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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:	Stanley Bros Trust (Trustees: Ronald Thomas Stanley & Noel Henry Stanley) 4789A South Road RD 31 Opunake 4681
Decision Date	6 August 2019
Commencement Date	6 August 2019

Conditions of Consent

Consent Granted:	To discharge piggery effluent onto land by spray irrigation
Expiry Date:	1 June 2030
Review Date(s):	June 2021, June 2024, June 2027
Site Location:	24 Arawhata Road, Opunake
Grid Reference (NZTM)	1670475E-5637131N
Catchment:	Arawhata

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 effluent discharged shall be from a piggery of no more than 5,381, 50 kg pig equivalents.

2. Notwithstanding the conditions of this consent, it shall be exercised in a manner that minimises the leaching of nutrients to groundwater.

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

4. 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 storage ponds for any reasonably likely inflow, so that there is no unauthorised discharge to land or water.

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

6. The sodium adsorption ratio of the wastewater shall not exceed 15.

7. No effluent shall be applied to land less than:

    a. 25 metres from the water's edge in any watercourse
    b. 50 metres from any bore, well or spring actively used for water supply purposes; or
    c. 150 metres from any dwelling house unless the written approval of the occupier has been obtained to allow discharge at a closer distance.

8. There shall be no spray drift, as a result of the irrigation of treated wastewater, at or beyond the property boundary.

9. The consent holder shall ensure that the effluent is discharged to at least 100 hectares of land that is not grazed and that is planted in crops that are removed from the property i.e. a 'cut and carry' operation. It may also be applied and additional areas that are grazed.

10. The Total Nitrogen applied to any hectare of land shall not exceed:

    (a) 400 kilograms in any 12-month period for 'cut and carry areas'; or
    (b) 200 kilograms in any 12-month period for any other land (including grazed pasture).

11. The total Potassium applied to any hectare of land shall not exceed:

    (a) 300 kilograms in any 12-month period for 'cut and carry areas'; or
    (b) 100 kilograms in any 12-month period for any other land (including grazed pasture).

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

    a. volume of effluent applied;
    b. rate and time of application;
    c. area (ha) that the effluent was applied to;
    d. method of irrigation; and
    e. type of crop that is grown on that land.

    This information shall be provided to the Taranaki Regional Council annually during the month of July and at other times when requested.

13. From 1 November 2019, 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 effluent irrigation is managed to minimise nutrient leaching to groundwater. The EIMP shall include as a minimum, details of:

    (a) management of the cut and carry operation
    (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 effluent is to be applied as uniformly as practicable over the irrigated area, and the uniformity of application demonstrated;
    (e) the designated application areas and buffer zones for streams and the property boundary; and
    (f) the determination of total Nitrogen and Potassium in effluent.

14. Before 31 January 2020 the consent holder shall after consultation with the Chief Executive, Taranaki Regional Council, install a minimum of three piezometers. The piezometers 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 piezometers shall be installed in accordance with NZS 4411:2001 and all associated costs shall be met by the consent holder.

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 2021 and at 3-yearly intervals thereafter, for the purpose 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
    (b) addressing any significant increases in the concentration of nutrients in the groundwater.

Signed at Stratford on 6 August 2019

For and on behalf of
Taranaki Regional Council

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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.