RKM Farms Ltd (Piggery)
Monitoring Programme
Annual Report
2016-2017

Technical Report 2017-62

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Executive summary

RKM Farms Ltd (the Company) operates a piggery located on 599A South Road at Hawera in the Tangahoe catchment. The Piggery is a breeder grower and finishing operation with up to 5,000 pigs and piglets at any one time, employing between five and six full time staff.

This report for the period July 2016 to June 2017 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 13 conditions setting out the requirements that the Company must satisfy. Resource consent 5108-2 allows the discharge of treated effluent into the Tawhiti Stream, and consent 5266-2 relates to the discharge of emissions into the air at this site.

During the monitoring period the Company demonstrated an overall high level of environmental performance.

The Council's monitoring programme for the year under review included three inspections, two wastewater and receiving water samples collected for physicochemical analysis.

The monitoring showed that wastewater and receiving water samples were well within the consented limits and no odour incidents recording non-compliance in respect of this consent holder during the period under review.

During the year, the Company demonstrated a high level of environmental and administrative performance with the resource consents.

For reference, in the 2016-2017 year, consent holders were found to achieve a high level of environmental performance and compliance for 74% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 21% 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.

This report includes recommendations for the compliance monitoring programme for the 2017-2018 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 2016 to June 2017 by the Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents held by RKM Farms Ltd (the Company). The Company operates a piggery situated on 599A South Road at Hawera, in the Tangahoe catchment (Figure 1).

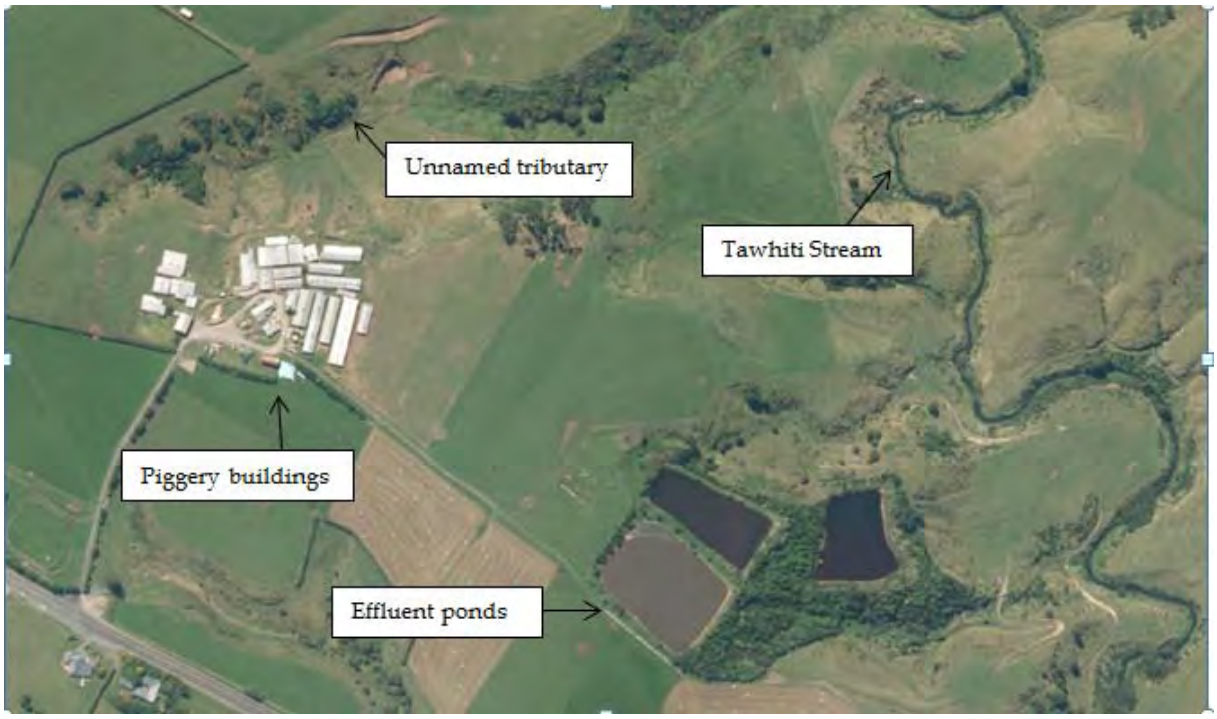

Figure 1 Location of RKM Farms Ltd piggery

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 the discharges of water within the Tangahoe catchment, and 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 seventh 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 Tangahoe 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 2017-2018 monitoring year.

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

1.1.3 The Resource Management Act 1991 and monitoring

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

a. the neighbourhood or the wider community around an activity, and may include cultural and social-economic effects;

b. physical effects on the locality, including landscape, amenity and visual effects;

c. ecosystems, including effects on plants, animals, or habitats, whether aquatic or terrestrial;

d. natural and physical resources having special significance (for example recreational, cultural, or aesthetic); and

e. risks to the neighbourhood or environment.

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

1.1.4 Evaluation of environmental and administrative performance

Besides discussing the various details of the performance and extent of compliance by the consent holder, this report also assigns a rating as to the Company's environmental and administrative performance during the period under review.

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 significant 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 in response to unauthorised incident reports, 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 in response to unauthorised incident reports. 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 in response to unauthorised incident reports. 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.

For reference, in the 2016-2017 year, consent holders were found to achieve a high level of environmental performance and compliance for 74% of the consents monitored through the Taranaki tailored monitoring

programmes, while for another 21% of the consents, a good level of environmental performance and compliance was achieved.

1.2 Process description

The piggery is a breeder, grower and finishing operation holding up to a maximum of 5,000 pigs and piglets (3,636 pig equivalents) onsite at any one time (Table 1). The discharge is made up of effluent and washwater from the piggery operation.

Table 1 Piggery inventory as at 30 June 2017

Type of pigs	No of pigs	Average weight kg	Total weight kg	50 kg Equivalent pigs
Breeding sows (older than 12 months)	245	162	39,690	794
Breeding sows (less than 12 months)	43	75	3,225	65
Boars	12	160	1,920	38
Weaners (less than 10 weeks)	650	18	11,700	234
Growers (10-17 weeks)	800	44	35,200	704
Growers (older than 17 weeks)	503	65	32,695	654
Total	**2,253**			**2,489**

Approximately 71 m^3 of wastewater is discharged on a daily basis. The wastewater from around the piggery is gravity fed to a series of sumps and is then mixed and pumped from the sumps to the oxidation pond treatment system.

The treatment system comprises of three ponds. The first pond, which is anaerobic in nature, is designed to capture the solid component of the discharge, and has an approximate holding capacity of 34,587 m^3. The second and third ponds are aerobic and have a total of 10,350 m^3 and 10,800 m^3 capacities respectively. The pond treatment system has a combined capacity of approximately 55,737 m^3.

The Discharge from the pond treatment system flows through a tertiary treatment system, comprised of a wetland which is approximately 1,600 m^3 in area. Raupo is planted within the wetlands to further treat the discharge.

From the wetland the treated discharge flows through an open drain and directly into the Tawhiti Stream.

The treatment system rarely discharges during the warmer months (January to March) because of evaporation within the two aerobic ponds.

In addition to discharging to the Tawhiti Stream, effluent including accumulated solids is pumped out of the anaerobic pond and onto land on an annual basis.

1.3 Resource consents

1.3.1 Water discharge permit

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.

The Company holds water permit **5108-2** to discharge treated piggery effluent from an aerobic and twin anaerobic pond treatment system, followed by a tertiary treatment (wetland) system, into the Tawhiti

Stream in the Tangahoe catchment. This permit was issued by the Council on 9 August 2010 under Section 87(d) of the RMA. It is due to expire on 1 June 2028.

The discharge of treated wastewater of this nature may affect the water quality of a stream, particularly if there is insufficient dilution. Some effects may be obvious (for example appearance, turbidity) while biological effects may be more subtle.

Five special conditions are attached to this consent.

Special Condition 1 requires the consent holder to submit a 'Site Layout Plan' which clearly shows the entire wastewater network system including the locations of ancillary equipment i.e. sump and pumps.

Special Condition 2 requires the consent holder to adopt the best practicable option to prevent or minimise any adverse environmental effects.

Special Condition 3 requires the number of pigs (equivalent to 50 kg per pig) on the property at any one time shall not exceed 3,636 pig equivalents.

Special Condition 4 defines the mixing zone and prohibits a number of effects.

Special Condition 5 allows for a review of the consent. The next review date is June 2022.

This summary of consent conditions may not reflect the full requirements of each condition. The consent conditions in full can be found attached to this report in Appendix I.

1.3.2 Air discharge permit

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.

The Company holds air discharge permit **5266-2** to discharge emissions into the air from a pig farming operation and associated activities, including effluent treatment and other waste activities. This permit was issued by the Council on 16 May 2017 under Section 87(e) of the RMA. It is due to expire on 1 June 2028. Six special conditions are attached to this consent.

Special Condition 1 refers to the number of pigs allowed on the property at any one time

Special Condition 2 requires the consent holder to adopt the best practicable option.

Special Condition 3 requires consultation should any alterations occur to any operations, equipment or layout.

Special Condition 4 and 5 requires the consent holder to minimise the emissions discharged into the air from the site and not to give rise to offensive or objectionable odour beyond the boundary.

Special Condition 6 allows for a review of the consent. The next review is set for June 2022.

This summary of consent conditions may not reflect the full requirements of each condition. The consent conditions in full can be found attached to this report in Appendix I.

1.3.3 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.

The Company engages an authorised contractor to undertake the spreading of effluent including solids from the anaerobic pond to land on an annual basis.

Agricultural contractor, Lloyd Gernhoefer, holds resource consent **5352-2** to irrigate effluent to land and thus is responsible for managing any potential effects on the environment from the activity.

The Permit is attached to this report in Appendix I.

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's 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;
- in 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 was visited three times during the monitoring period. With regard to consents for the abstraction of or discharge to water , the main points of interest were plant processes with potential or actual discharges to receiving watercourses, including contaminated stormwater and process wastewaters. The piggery was also visited on two 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 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.

As far as practical, inspections related to air emissions were integrated with inspections undertaken for other purposes for example inspection of the oxidation ponds. The air monitoring component focuses on processes with associated actual and potential emission sources and characteristics, including potential odour.

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 monitoring programme allows for the discharge and receiving water to be sampled on two occasions.

The treated effluent discharge was sampled on two occasions, and the sample analysed for biochemical oxygen demand (BOD), chloride, conductivity, dissolved reactive phosphate (DRP), unionised ammonia, pH, suspended solids and temperature.

The Tawhiti Stream and downstream of the discharge was sampled on two occasions, and the sample analysed for carbonaceous biochemical oxygen demand (CBOD), chloride, conductivity, dissolved reactive phosphate (DRP), unionised ammonia, pH, suspended solids and temperature.

2 Results

2.1 Water

2.1.1 Inspections

The piggery site was inspected on three separate occasions during the 2016-2017 monitoring period, these inspections were carried out on 26 August 2016, 5 December 2016 and 16 May 2017.

Water quality samples were collected on two occasions 16 January 2017 and 3 May 2017. No visual environmental impacts were observed downstream of the treated piggery discharge.

During the three inspections no objectionable or offensive odours were detected beyond the boundary. Only noticeable odours were detected emanating slightly downwind of the main pond and also around the offal pit.

The ponds looked to be working well with good microbial action in the anaerobic pond.

Overall the piggery looked to be maintained and well managed.

2.1.2 Results of discharge monitoring

Receiving waters physicochemical monitoring

The consent holders' farm boundary borders along the true right bank of Tawhiti Stream to where it meets the Tangahoe River, and along the river to South Road Bridge. Environmental monitoring sites are provided in relation to the piggery operation's discharge point (Table 2).

Table 2 Location of sampling sites in Tawhiti Stream including the piggery discharge

Site	Site code	GPS reference	location
Tawhiti Stream	TWH000495	E1715350 N5614243	20 metres upstream of piggery discharge
Piggery effluent	PGP003001	E1715305 N5614206	Discharge outlet from aerobic pond
Tawhiti Stream	TWH000496	E1715356 N5614111	30 metres downstream of piggery discharge

Samples were collected from the discharge point as well as upstream and downstream of the discharge on two occasions during the monitoring year under review.

Results of the survey performed on 16 January 2017 are presented in Table 3. On this occasion the stream was running at a moderate steady flow, relatively clear and uncoloured. The ponds' treated wastewater discharge was estimated at about 0.10 L/s and slightly turbid green with no piggery type odour being recognised in the sample. Samples were collected during fine weather conditions. The wastewater discharge from the wetland showed no downstream environmental impact on the Tawhiti Stream. The results below show the parameters tested were well within consented limits.

Table 3 Receiving water and discharge samples – 16 January 2017

Parameters	Units	PGP003001 Discharge	TWH000495 Upstream	TWH000496 Downstream
Time of sample collection	hrs	0935	0945	1000
Ammonical nitrogen	g/m^3	0.068	0.013	0.013
BOD	g/m^3	3.5	-	-

Parameters	Units	PGP003001 Discharge	TWH000495 Upstream	TWH000496 Downstream
BOD (filtered,carbonaecous)	g/m³	-	0.5	<0.5
Chloride		131	34.6	36.6
Conductivity	mS/m	80.1	26.6	26.8
DRP	g/m³	5.84	0.022	0.025
Suspended solids	g/m³	8	7	5
Temperature	°C	18.2	17.7	17.7
Turbidity	NTU	5.0	4.7	3.4
Un-ionised ammonia	g/m³	0.0034	0.0008	0.0008
pH		8.1	8.2	8.2

Special consent condition 4b specifies that after a mixing zone of 30 m downstream of the point where the discharge enters the Tawhiti Stream, the un-ionised ammonia level shall not exceed 0.025 g/m³. The above result showed no measureable change in the un-ionised ammonia level, (well within limit of the consented limit).

Special consent condition 4a specifies that after a mixing zone of 30 m downstream of the point where the discharge enters the Tawhiti Stream, filtered carbonaceous biochemical oxygen demand must not exceed 2.00 g/m³. The above results also show no measurable increase of BOD.

Although not a consent requirement the results indicate that good dilution in Tawhiti Stream has been maintained and typical of a very low summer discharge flow and moderate stream flow conditions.

Results of the survey performed on 3 May 2017 are presented in Table 4. The Tawhiti Stream was running at a moderately high swift flow, turbid green brown in colour. No visual environmental effects were observed in the Tawhiti Stream from the piggery discharge near the downstream monitoring site. The ponds' treated wastewater discharge was light green brown in colour and estimated at about 2.5 l/s.

These samples were collected during fine, dry weather conditions.

Table 4 Receiving water and discharge samples – 3 May 2017

Parameters	Units	PGP003001 Discharge	TWH000495 Upstream	TWH000496 Downstream
Time of sample collection	hrs	1005	1020	1035
Ammoniacal nitrogen	g/m³	4.44	0.069	0.069
BOD	g/m³	15	-	-
BOD (filtered, carbonaecous)	g/m³	-	0.5	<0.5
Chloride	g/m³	220	19.1	19.4
Conductivity	mS/m	115	26.4	26.6
DRP	g/m³	7.04	0.047	0.048
Suspended solids	g/m³	6	19	13
Temperature	°C	13.3	12.8	12.8
Turbidity	NTU	8.0	11	10

Parameters	Units	PGP003001 Discharge	TWH000495 Upstream	TWH000496 Downstream
Un-ionised ammonia	g/m^3	0.0501	0.0005	0.0005
pH		7.6	7.7	7.7

Special consent condition 4b specifies that after a mixing zone of 30 m downstream of the point where the discharge enters the Tawhiti Stream, the un-ionised ammonia level shall not exceed 0.025 g/m^3. The above result showed no measurable increase in un-ionised ammonia level.

Special consent condition 4a specifies that after a mixing zone of 30 m downstream of the point where the discharge enters the Tawhiti Stream, filtered carbonaceous biochemical oxygen demand must not exceed 2.00 g/m^3. The above results also show no measurable increase of BOD.

Although not a consent requirement the above results indicate that good dilution in Tawhiti Stream has been maintained.

Table 5 Summary of treated wastewater analyses from RKM Farms Ltd piggery for the period July 2016 to June 2017

Parameter	unit	16 Jan 2017	3 May 2017	Medium
Conductivity @ 20°C	mS/m	80.1	115	97.6
Chloride	g/m^3	131	220	176
pH	pH	8.1	7.6	7.8
Total carbonaceous BOD_5	g/m^3	3.5	15	9.2
Ammoniacal nitrogen	g/m^3N	0.068	4.44	2.254
Dissolved reactive phosphorus	g/m^3P	5.84	7.04	6.44
Suspended solids	g/m^3	8	6	7

Monitoring of wastewater on the two occasions during the 2016-2017 year indicated a well treated wastewater in terms of BOD, suspended solids and turbidity with nutrient levels within an acceptable range (Table 5).

2.2 Air

2.2.1 Inspections

As far as practicable, inspections relating to air emissions were integrated with inspection undertaken for other purposes.

2.2.2 Results of discharge monitoring

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

Odours emitted from normal piggery operations are generally influenced by weather conditions (i.e. wind direction), effluent treatment, pond management, irrigating sludge to land and general piggery hygiene practices.

The offensiveness of odour at any time is reliant on individual perception, Council methods of measurement, and practices of the pork producer. The Environmental Management System (EMS) deals with

piggery operational practices ensuring the effect of odour is taken into account when the pork producer is undertaking activities relating to different areas of the piggery.

All inspections that were carried out during the monitoring period found 'normal to slightly noticeable' piggery type odour emanating downwind of the piggery. In general wind conditions were from the south east to northwest quarter. No odour emissions were 'noted' beyond the perimeter of the boundary. However these odours were restricted to the property and not considered likely to impact neighbouring properties.

2.3 Investigations, interventions, and incidents

The monitoring programme for the year was based on what was considered to be an appropriate level of monitoring, review of data, and liaison with the consent holders. 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 courses of non-compliance or failure to maintain good practices. A pro-active approach that in the first instance avoids issues occurring is favoured.

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

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

In the 2016-2017 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

All compliance inspections that were carried out by Council officers found the piggery in general to be a well managed operation. All wastewater treatment facilities and disposal processes were adequately maintained.

Although no pig farming operation can operate without producing some odour emissions, steps are undertaken to prevent or minimise the effects of odour. No piggery odour complaints were received by the Council during the 2016-2017 monitoring period.

Wastewater (included solids) from the piggery operation is initially directed to the first anaerobic pond. This pond traps the solid component of the effluent, minimising the level of suspended solids discharging into the aerobic ponds. Desludging the anaerobic pond annually is recommended and an agricultural contractor (Lloyd Gernhoefer) usually performs this operation early May, spray irrigating piggery effluent to all the available flat pasture. Due to an unusually wet seasonal weather conditions this job was unable to be performed.

The consent holder had reduced their operation by reducing the total number of breeding sows. This had been brought about by the Animal Welfare Act changing the piggery regulations regarding sow pens. This meant that the older building were no longer compliant, resulting in less space to produce pigs.

Consent 5108-2 Special Condition 3 requires that the number of pigs (equivalent to 50 kg per pig) on the property at any one time shall not exceed 3,636 pig equivalents. Inventory figure supplied by the consent holder for the 2016-2017 show production at approximately 2,489 equivalents.

The air discharge consent expired 1 June 2016. A new consent was granted May 2017 with the next review June 2022. This consent expires June 2028.

3.2 Evaluation of performance

A tabular summary of the consent holder's compliance record for the year under review is set out in Tables 6 and 7

Table 6 Evaluation of performance for consent 5108-2

Purpose: *To discharge treated piggery effluent from an oxidation ponds system followed by tertiary treatment into water*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Provision of wastewater plan	Plan received by Council Nov 2010	Yes
2. Adoption of best practical option to avoid or minimise adverse effects	Liaison with Company and inspection	Yes
3. Maximum allowable number of pig equivalents	Liaison with Company	Yes
4. Specified limits in receiving water after mixing	Inspection and physicochemical sampling	Yes
5. Optional review provision	Consent expires June 2028 – next review June 2022	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

Table 7 Evaluation of performance for consent 5266-2

Purpose: *To discharge emissions to air from a 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	Yes
2. Adoption of best practical option	Liaison with Company and inspection	Yes
3. Consultation and approval prior to alterations to plant and process	Liaison with Company and inspection	N/A
4. Minimisation of impact and emissions through use of equipment and suitable methods	Monitoring inspections	Yes
5. Objectionable odour at site boundary not permitted	Monitoring inspections	Yes
6. Optional review provision	Consent expires June 2028 – next review June 2022	N/A

Purpose: *To discharge emissions to air from a 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?**
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

During the year, the Company demonstrated a high level of environmental and high level of administrative performance with the resource consents as defined in Section 1.1.4.

3.3 Recommendations from the 2015-2016 Annual Report

In the 2015-2016 Annual Report, it was recommended:

1. THAT monitoring of consented activities at the Company in the 2016-2017 year continues at the same level as in 2015-2016.
2. THAT the provisions in the monitoring programme to sample the discharge and receiving waters on two separate occasions remain unchanged.
3. THAT the consent holder continues to notify Council with information when solids are extracted from the main pond for disposal on an annual basis, including details of where the solids are spread over land.
4. THAT the piggery inspections for the 2016-2017 period remain at three inspections and these inspections to be carried out four-monthly.

Recommendations 1, 2 and 4 were implemented. Recommendation 3, disposal of piggery wastes spread over land was enable to be performed due to unusually wet seasonal weather conditions preventing the contractor and equipment performing this task. Compliance inspections were undertaken with two extra visits to the piggery when water quality samples were collected.

3.4 Alterations to monitoring programmes for 2017-2018

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account the extent of information made available by previous authorities, its relevance under the RMA, its obligations to monitor emissions/discharges and effects under the RMA, and report 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 emitting to the atmosphere/discharging to the environment.

In the case of the Company's monitoring programme it is recommended that there will be no significant alteration to the programme for the 2017-2018 period.

3.5 Exercise of optional review of consent

Resource consent 5108-2 provided for an optional review of the consent in June 2016. Condition 5 allows the Council to review the consent, if there are grounds to consider that existing conditions are not adequate to deal with adverse effects, or to specify further requirements of best practical option, or address any apparent deficiencies in the pond design.

Based on the results of monitoring in the year under review, and in previous years as set out in earlier annual compliance monitoring reports, it is considered that there were no grounds that require a review to be pursued or grounds to exercise the review option.

Resource Consent 5266-1 expired June 2016 with no further option for review. Consent 5266-2 commenced in May 2017 with the next consent review date June 2022.

4 Recommendations

1. THAT monitoring of consented activities at the Company's piggery in the 2017-2018 year continues at a similar level as in 2016-2017.
2. THAT the provisions in the monitoring programme to sample the discharge and receiving waters on two separate occasions remain unchanged.
3. THAT the consent holder continues to notify Council with information when solids are extracted from the main pond for disposal on a annual basis, including details of where the solids are spread over land.
4. THAT the inspections for the 2017-2018 period continue at three inspections and these inspections to be carried out on a four-monthly basis.

Glossary of common terms and abbreviations

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

Biomonitoring	Assessing the health of the environment using aquatic organisms.
BOD	Biochemical oxygen demand. A measure of the presence of degradable organic matter, taking into account the biological conversion of ammonia to nitrate.
BODF	Biochemical oxygen demand of a filtered sample.
Bund	A wall around a tank to contain its contents in the case of a leak.
CBOD	Carbonaceous biochemical oxygen demand. A measure of the presence of degradable organic matter, excluding the biological conversion of ammonia to nitrate.
cfu	Colony forming units. A measure of the concentration of bacteria usually expressed as per 100 millilitre sample.
COD	Chemical oxygen demand. A measure of the oxygen required to oxidise all matter in a sample by chemical reaction.
Conductivity	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 20°C and expressed in mS/m.
Cumec	A volumetric measure of flow- 1 cubic metre per second (1 m^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.
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.
Fresh	Elevated flow in a stream, such as after heavy rainfall.
$g/m^2/day$	grams per square metre per 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.
Incident register	The Incident register contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan.

Intervention	Action/s taken by Council to instruct or direct actions be taken to avoid or reduce the likelihood of an incident occurring.
Investigation	Action taken by Council to establish what were the circumstances/events surrounding an incident including any allegations of an incident.
l/s	Litres per second.
m^2	Square Metres.
mS/m	Millisiemens per metre.
Mixing zone	The zone below a discharge point where the discharge is not fully mixed with the receiving environment. For a stream, conventionally taken as a length equivalent to seven times the width of the stream at the discharge point.
NH_4	Ammonium, normally expressed in terms of the mass of nitrogen (N).
NH_3	Unionised ammonia, normally expressed in terms of the mass of nitrogen (N).
NO_3	Nitrate, normally expressed in terms of the mass of nitrogen (N).
NTU	Nephelometric Turbidity Unit, a measure of the turbidity of water.
O&G	Oil and grease, defined as anything that will dissolve into a particular organic solvent (e.g. hexane). May include both animal material (fats) and mineral matter (hydrocarbons).
pH	A numerical system for measuring acidity in solutions, with 7 as neutral. Numbers lower than 7 are increasingly acidic and higher than 7 are increasingly alkaline. The scale is logarithmic i.e. a change of 1 represents a ten-fold change in strength. For example, a pH of 4 is ten times more acidic than a pH of 5.
Physicochemical	Measurement of both physical properties (e.g. temperature, clarity, density) and chemical determinants (e.g. metals and nutrients) to characterise the state of an environment.
Resource consent	Refer Section 87 of the RMA. Resource consents include land use consents (refer Sections 9 and 13 of the RMA), coastal permits (Sections 12, 14 and 15), water permits (Section 14) and discharge permits (Section 15).
RMA	*Resource Management Act 1991* and including all subsequent amendments.
SS	Suspended solids.
Temp	Temperature, measured in °C (degrees Celsius).
Turb	Turbidity, expressed in NTU.

For further information on analytical methods, contact the Council's laboratory.

Bibliograhy and technical references

Taranaki Regional Council 2016: RKM Farms Ltd (Piggery) Monitoring Programme Annual Report 2015-2016. Technical Report 2016-94.

Taranaki Regional Council 2015: RKM Farms Ltd (Piggery) Monitoring Programme Annual Report 2014-2015. Technical Report 2015-20.

Taranaki Regional Council 2014: RKM Farms Ltd (Piggery) Monitoring Programme Annual Report 2013-2014. Technical Report 2014-19.

Taranaki Regional Council 2013: GD & J Harvie Piggery Monitoring Programme Annual Report 2012-2013. Technical Report 2013-02.

Taranaki Regional Council 2012: GD & J Harvie Piggery Monitoring Programme Annual Report 2011-2012. Technical Report 2012-25.

Taranaki Regional Council 2011: GD & J Harvie Piggery Monitoring Programme Annual Report 2010-2011. Technical Report 2011-05.

Appendix I

Resource consents held by RKM Farms Ltd piggery

Discharge Permit

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

Name of Consent Holder:	RKM Farms Limited 599B South Road R D 12 HAWERA 4672
Decision Date:	9 August 2010
Commencement Date:	9 August 2010

Conditions of Consent

Consent Granted:	To discharge treated piggery effluent from an anaerobic and twin aerobic pond treatment system, followed by a tertiary treatment system, into the Tawhiti Stream
Expiry Date:	1 June 2028
Review Date(s):	June 2012, June 2014, June 2016, June 2022
Site Location:	599A South Road, Hawera
Legal Description:	Pt Lot 3 DP 3116
Grid Reference (NZTM)	1715327E-5614198N
Catchment:	Tangahoe
Tributary:	Tawhiti

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

General condition

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

Special conditions

Information to be submitted

1. The consent holder shall prepare a Site Layout Plan [drawing] which clearly shows the entire wastewater network system including the location and extent of the following:

   - The drainage system [e.g. swales] within the piggery sheds which the wastewater generated drains to;
   - The collection areas [e.g. sumps] for the wastewater prior to it being pumped to the pond treatment system;
   - The pipe network between the collection areas and pond treatment system;
   - The pond treatment system including the location of the pipe network between the ponds; and
   - Any other details which would assist in showing how the wastewater is conveyed from the piggery sheds to the wastewater treatment system.

   The Plan shall be submitted to the Chief Executive, Taranaki Regional Council, within two months of the commencement date of this consent.

Wastewater discharge

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 adverse effects on the environment from the exercise of this consent.

3. The number of pigs [equivalent 50 kg per pig] on the property at any one time shall not exceed 3636 pig equivalents.

4. After a mixing zone of 30 metres downstream of the point where the discharge enters the Tawhiti Stream, the discharge shall not, either by itself or in combination with other discharges, give rise to any or all of the following adverse effects in the Tawhiti Stream:

   a) filtered carbonaceous biochemical oxygen demand must not exceed 2.00 gm^{-3};
   b) a level of unionised ammonia greater than 0.025 gm^{-3};
   c) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
   d) any conspicuous change in the colour or visual clarity;
   e) any emission of objectionable odour;
   f) the rendering of fresh water unsuitable for consumption by farm animals; and
   g) any significant adverse effects on aquatic life.

5. In accordance with section 128 and 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 in any of the following years: 2012, 2014, 2016, 2022; for any of the following purposes:

   a) Ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, and in particular to address any more than minor adverse effects relating to the discharge of wastewater; and/or

   b) To determine any measures that may be appropriate to comply with condition 2 of this consent, and which are necessary to address any adverse effects of the discharge of wastewater from the site; and/or

   c) To address any apparent deficiencies in the design of the pond treatment system.

Transferred at Stratford on 01 August 2013

For and on behalf of
Taranaki Regional Council

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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:	RKM Farms Limited 599B South Road RD 12 Hawera 4672
Decision Date:	16 May 2017
Commencement Date:	16 May 2017

Conditions of Consent

Consent Granted:	To discharge emissions into the air from a pig farming operation and associated practices including effluent treatment
Expiry Date:	1 June 2028
Review Date(s):	June 2022
Site Location:	599B South Road, Hawera
Grid Reference (NZTM)	1714646E-5614435N

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 number of pigs (equivalent 50 kg per pig) on the property at any one time shall not exceed 3636 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 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. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2022, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 16 May 2017

For and on behalf of
Taranaki Regional Council

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A D McLay
Director - Resource Management