

NZ Pure Bred Genetics Ltd (Piggery)
Monitoring Programme
Annual Report
2012-2013
Technical Report 2013–04

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Executive summary

NZ Pure Bred Genetics Ltd (formerly Meadowvale Piggery) operates a piggery located on Mountain Road at Midhirst, in the Manganui catchment. This report for the period July 2012-June 2013 describes the monitoring programme implemented by the Taranaki Regional Council to assess the Company's environmental performance during the period under review, and the results and environmental effects of the Company's activities.

The Company holds two resource consents, which include a total of 22 conditions setting out the requirements that the Company must satisfy. The Company holds resource consent **0351** to allow the discharge of treated effluent to land and into Rumkeg Creek and consent **5249** to allow the discharge of emissions into the air from the piggery site.

The Council's monitoring programme for the year under review included five inspections and two wastewater and receiving water physicochemical sampling surveys.

Transfer of consents between the two parties became effective on 1 December 2012. NZ Pure Bred Genetics Ltd currently have the largest registered purebred herd in New Zealand with the NZ Pig Breeders Association of Berkshire, Duroc, Hampshire, Large White and Landrace breeds. Current stock numbers include 80 Sows and gilts, 50 weaners, 12 boars and up to 100 piglets and any one time.

During the year, the Company demonstrated a high level of environmental performance and compliance with the resource consents. The one odour complaint investigated by Council Investigating Officers was found to be unsubstantiated.

In the 2012-2013 year, 35% of consent holders in Taranaki monitored through tailored compliance monitoring programmes achieved a **high** level of environmental performance and compliance with their consents, while another 59% demonstrated a **good** level of environmental performance and compliance with their consents.

This report includes recommendations for the 2013-2014 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 the Annual Report for the period July 2012-June 2013 by the Taranaki Regional Council on the monitoring programme associated with resource consents held by NZ Pure Bred Genetics Ltd (formerly known as Meadowvale Stud Farm Ltd Piggery).

NZ Pure Bred Genetics Ltd business is now owned and operated by J & R Cooley who leases the piggery buildings from E & J O'Sullivan.

Prior to 1 December 2012 over a four month period Meadowvale piggery had significantly reduced stock numbers allowing NZ Pure Bred Genetics Ltd to become established. During this period no land or water discharges (from either party) took place.

Transfer of consents between the two parties became effective on 1 December 2012.

The Company operates a piggery situated on Mountain Road at Midhirst, in the Waitara catchment.

This report covers the results and findings of the monitoring programme implemented by the Council in respect of the consents held by NZ Pure Bred Genetics Ltd that relate to discharges to water, air and land from the site.

One of the intents of the Resource Management Act (1991) 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 Taranaki Regional Council generally implements integrated environmental monitoring programmes and reports the results of the programmes jointly. This report discusses the environmental effects of NZ Pure Bred Genetics Ltd use of water, land, and air, and is the tenth combined annual report by the Taranaki Regional Council for the site.

1.1.2 Structure of this report

Section 1 of this report is a background section. It sets out general information about compliance monitoring under the Resource Management Act and the Council's obligations and general approach to monitoring sites through annual programmes, the resource consents held by NZ Pure Bred Genetics Ltd in the Manganui catchment, (which flows on into the Waitara River) the nature of the monitoring programme in place for the period under review, and a description of the activities and operations conducted at the piggery site.

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

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

Section 4 presents recommendations to be implemented in the 2013-2014 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 Resource Management Act 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 a discharger, and may include cultural and socio-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 (eg, recreational, cultural, or aesthetic);
- (e) risks to the neighbourhood or environment.

In drafting and reviewing conditions on discharge permits, and in implementing monitoring programmes, the Taranaki Regional Council is recognising the comprehensive meaning of 'effects' inasmuch as is appropriate for each discharge source. Monitoring programmes are not only based on existing permit conditions, but also on the obligations of the Resource Management Act to assess the effects of the exercise of consents. In accordance with section 35 of the Resource Management Act 1991, the Council undertakes compliance monitoring for consents and rules in regional plans; and maintains an overview of performance of resource users against regional plans and consents. Compliance monitoring, (covering both activity and impact) monitoring, also enables the Council to continuously assess its own performance in resource management as well as that of resource users particularly consent holders. It further 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 NZ Pure bred Genetics Ltd during the period under review, this report also assigns an overall rating. The categories used by the Council, and their interpretation, are as follows:

- a **high** level of environmental performance and compliance indicates that essentially there were no adverse environmental effects to be concerned about, and no, or inconsequential (such as data supplied after a deadline) non-compliance with conditions.

- a **good** level of environmental performance and compliance indicates that adverse environmental effects of activities during the monitoring period were negligible or minor at most, or, 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, or, there were perhaps some items noted on inspection notices for attention but these items were not urgent nor critical, and follow-up inspections showed they have been dealt with, and inconsequential non compliances with conditions were resolved positively, co-operatively, and quickly.
- **improvement desirable** indicates that the Council may have been obliged to record a verified unauthorised incident involving measureable environmental impacts, or, there were measureable environmental effects arising from activities and intervention by Council staff was required, and there were matters that required urgent intervention, took some time to resolve, or remained unresolved at end of the period under review, and/or abatement notices may have been issued.
- **poor performance** indicates that the Council may have been obliged to record a verified unauthorised incident involving significant environmental impacts, or, there were adverse environmental effects arising from activities and there were grounds for prosecution or an infringement notice.

In the 2012-2013 year, 35% of consent holders in Taranaki monitored through tailored compliance monitoring programmes achieved a **high** level of environmental performance and compliance with their consents, while another 59% demonstrated a **good** level of environmental performance and compliance with their consents.

1.2 Process description

Piggery wastewater is collected from various collection sumps situated around the piggery and passes through a separator screen which provides primary treatment by separation of the solid component from the waste. The solid waste is composted, bagged and sold as a garden fertiliser. The separator reduces solids from the wastewater stream, which reduces the biochemical oxygen demand (BOD₅) and some nutrients contained in the liquid wastewater, which is directed to the treatment pond system.

The oxidation pond system consists of three ponds as shown in Figure 1. These ponds were designed to operate as an initial anaerobic pond, followed by two aerobic ponds. However, in practice the second pond operates as an anaerobic pond. Therefore there are two anaerobic ponds and one aerobic pond. These ponds are adequately sized for the treatment of the piggery wastes provided the system is regularly maintained.

From the treatment pond system, treated wastewater is discharged to the Rumkeg Creek or spray irrigated to the surrounding farmland, including a neighbouring property. Rumkeg Creek is a tributary of the Manganui River in the Waitara catchment and joins the Manganui River 750m downstream of the discharge.

Wastewater from the treatment system is only discharged to the Rumkeg Creek when river flow conditions provide for at least 250 times effluent dilution. When low receiving water flow conditions preclude this discharge, treated wastewater is spray irrigated onto nearby farmland. There is insufficient land available for this purpose on the consent holder's property; agreements have been reached with neighbouring property owners to spray irrigate wastewater to their land.

Wastewater is spray irrigated onto the surrounding farmland from the second anaerobic treatment pond. Previously untreated wastewater was pumped directly from out of the separator sump which had contributed to odour issues during certain wind conditions. Spray irrigating partially treated effluent has reduced the odour effects which are sometimes associated with spray drift.



Figure 1 Piggery and disposal system of the NZ Pure Bred Genetics Limited site

1 Initial anaerobic pond; 2 Anaerobic pond; 3 Final aerobic pond; 4 Staff gauge at Denbigh Rd Bridge; 5 Offal disposal; 6 & 7 Showing spray irrigated areas

1.3 Resource consents

1.3.1 Water and land discharge permit

Section 15(1)(a) of the Resource Management Act 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.

Sections 15(1)(b) and (d) of the Resource Management Act 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.

NZ Pure Bred Genetics Ltd holds water and land discharge permit **0351-3** to discharge treated piggery effluent from an oxidation pond treatment system into the Rumkeg Creek, a tributary of the Manganui River in the Waitara catchment (during high flow conditions) and to discharge treated piggery effluent into and onto land. This permit was issued by the Taranaki Regional Council on 5 September 2003 (change of conditions: 27 July 2009) as a resource consent under Section 87(e) of the Resource Management Act. It is due to expire on 1 June 2015.

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 (e.g. appearance, turbidity) while biological effects may be more subtle.

The discharge of piggery effluent to land greatly improves soil fertility. However piggery effluent also has the potential to contaminate groundwater and surface water if managed inappropriately.

The Council's policy is to promote spray irrigation to land in preference to discharging to water.

There are sixteen special conditions that are attached to this consent.

Discharge to water

Special condition 1 refers to the consent holder operating the piggery and associated activities and discharges in accordance to information provided as directed by conditions set out in the resource consent.

Special conditions 2, 3 and 4 relate to the operation of piggery and associated activities and discharges to water within consent conditions and defines the mixing zone and prohibited effects on the receiving waters.

Special condition 5 requires the consent holder to operate and maintain the treatment and discharge system to ensure compliance.

Special condition 6 requires the consent holder to maintain the minimum dilution rate at all times in the receiving water at point of discharge.

Special condition 7 requires the consent holder to monitor, maintain and supply records of the discharge.

Special condition 8 requires riparian fencing and planting to be completed.

Discharge to land

Special conditions 9 and 10 limit effluent application rates to land in terms of nutrient loadings over any 12 month period.

Special conditions 11, 12 and 13 relate to areas and locations of land discharge, prohibit discharges to surface water, and place restrictions on ponding.

Special condition 14 requires the consent holder to monitor and maintain records of the land discharge.

Special condition 15 requires that the discharge to land shall be maximised and used in preference to discharge to water.

Special condition 16 relates to review of consent conditions.

The permit is attached to this report in Appendix I.

1.3.2 Air discharge permit

Section 15(1)(a) of the Resource Management Act 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.

NZ Pure Bred Genetics Ltd holds air discharge permit **5249-2** to discharge emission into the air from a pig farming activity and associated activities, including solids composting, effluent treatment and irrigation and other waste management activities. This permit was issued by the Taranaki Regional Council on 27 July 2009 as a resource consent under Section 87(e) of the Resource Management Act. It is due to expire on 1 June 2027.

Piggery effluent has the potential to have significant odour especially when discharged to land. Six special conditions are attached to this consent.

Special condition 1 stipulates the number of pigs equivalents allowed on the property at any one time.

Special condition 2 requires the consent holder to adopt the best practicable option to prevent or minimise any actual or likely adverse effects.

Special condition 3 controls alterations which may significantly change the nature or quantity of contaminants from the site.

Special condition 4 requires the consent holder to minimise the emissions and impacts of air contaminants from the site.

Special condition 5 requires the consent holder limit odour at or beyond the boundary.

Special condition 6 allows for two additional reviews.

The permit is attached to this report in Appendix I.

1.3.3 Air discharge permit

Section 15(1)(c) of the Resource Management Act 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.

NZ Pure Bred Genetics Ltd holds air discharge permit **5249-2** to discharge emission into the air from a pig farming activity and associated activities, including solids composting, effluent treatment and irrigation and other waste management activities. This permit was issued by the Taranaki Regional Council on 27 July 2009 as a resource consent under Section 87(e) of the Resource Management Act. It is due to expire on 1 June 2027.

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Special condition 3 controls alterations which may significantly change the nature or quantity of contaminants from the site.

Special condition 4 requires the consent holder to minimise the emissions and impacts of air contaminants from the site.

Special condition 5 requires the consent holder limit odour at or beyond the boundary.

Special condition 6 allows for two additional reviews.

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1.4 Monitoring programme

1.4.1 Introduction

Section 35 of the Resource Management Act sets out obligation/s upon the Taranaki Regional Council to gather information, monitor, and conduct research on the exercise of resource consents, and the effects arising, within the Taranaki region and report upon these.

The Taranaki Regional 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 NZ Pure Bred Genetics Ltd consisted of four primary components.

1.4.2 Programme liaison and management

There is generally a significant investment of time and resources by the Taranaki Regional Council in ongoing liaison with resource consent holders over consent conditions and their interpretation and application, in discussion over monitoring requirements, preparation for any reviews, renewals, or new consents, advice on the Council's environmental management strategies and the content of regional plans, and consultation on associated matters.

1.4.3 Site inspections

NZ Pure Bred Genetics Ltd was visited five times during the monitoring period. With regard to consents for the 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. Air inspections focused on plant processes with associated actual and potential emission sources and characteristics, including potential odour, dust, noxious or offensive emissions.

1.4.4 Chemical sampling

The Taranaki Regional 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 Meadowvale Stud Farm discharge was sampled on two occasions, and the sample analysed for carbonaceous biochemical oxygen demand (CBOD₅), chloride, conductivity, suspended solids, and dissolved reactive phosphate (DRP), un-ionised ammonia, pH, turbidity and temperature.

Rumkeg Creek was sampled on the same two occasions, upstream and downstream of the treated discharge, and the samples analysed for filtered carbonaceous biochemical oxygen demand (FCBOD₅), chloride, conductivity, suspended solids, dissolved reactive phosphate (DRP), un-ionised ammonia, pH, turbidity and temperature.

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

1.4.5 Biomonitoring survey

No bio-monitoring survey for the piggery was undertaken in the 2012-2013 monitoring period, as none was scheduled within the baseline monitoring programme.

2. Results

2.1 Water

2.1.1 Inspections

14 August 2012

A slight NW breeze was blowing at the time of inspection. There were now only about 80 sows, weaners and a few finishers present at the piggery with numbers still being reduced. There was a slight odour around the solids separation area, but nothing around the ponds and main piggery area. Samples were taken at the discharge and upstream and downstream sites with the stream flow rate of 3.6 L/s on the staff gauge (discharge sample 2 litres over 10 seconds). The irrigator was not in use at the time of inspection. The numbers were going to be reduced even further with only sows and weaners on site.

8 November 2012

A slight SW breeze was blowing at the time of inspection. The pig numbers were well down and there was very little effluent being generated from the piggery. The oxidation ponds were relatively clear and were not discharging into the Rumkeg Creek. The effluent spray irrigator was operating, and keeping up with all the effluent produced from site. Only slightly noticeable odours were detected at various sites around the piggery. The irrigator had only recently been used with no ponding or odour issues generated from spray irrigating. Overall the piggery site and the wastewater treatment system were maintained to a satisfactory standard.

20 November 2012

Weather conditions at the time of inspection - fine and overcast with a light northerly breeze. An inspecting officer visited Meadowvale piggery prior to the transfer of consents. Stock numbers had been reduced (E O'Sullivan 5 sows, J Cooley 70 sows). Plans were in place to increase sow numbers up to 80 maximum. The wastewater discharge to the receiving waters was less frequent in preference to discharging effluent to land. J Cooley intended to use a honey wagon to spread partially treated effluent to land and only discharge to water when necessary. It was discussed that discharge consent **0351-3** expires June 2015 and that the Council is reviewing the RFWP. It is Councils policy to discourage discharge to water in preference to discharge effluent to land. It was noted that there had been only one unsubstantiated odour complaint (Meadowvale Piggery) during this monitoring period. It was recommended that the piggery have a general tidy up around drains and sumps, especially around the solids separator area. Noticeable odour was emanating from the covered offal hole. The ponds appeared to be operating to a satisfactory standard. Pond 1 had turned a green colour and was showing light microbial activity. Pond 2 was at a relatively high level and green brown in colour (pond 2 contents were being irrigated to land). The final pond was showing normal operating levels and green brown in colour.

The transfer of consents between the two parties became effective on 1 December 2012.

On 4 March 2013

A gusty south westerly breeze was blowing at the time of inspection. Slightly noticeable to normal piggery odours were detected at the downwind side of the

piggery. The second and third ponds were low (below discharge level) and the first pond was still discharging to the second pond. There was no evidence of any effluent wastes bypassing the solids separator and no odour was emanating from around the solids separator area. The system appeared to be working satisfactory. Overall the piggery was being well managed and stock units had not been significantly increased.

On 17 April 2013

The Council contacted the consent holder regarding the piggery operation. To date (since transfer of consents), no treated piggery effluent had been discharged into the Rumkeg Creek as pond levels were very low due to drought conditions. Discharge records received by Council showed that effluent had been spray irrigated to land throughout most of February, March and April. Effluent records also showed the volume of effluent that had been stored to bins. A general clean-up was carried out in front of the separator and improvements had been made around the piggery entrance. The consent holder was instructed to contact Council prior to discharging any treated effluent to the receiving water.

On 27 May 2013

The following was found to be occurring: a slight southerly breeze was blowing at the time of inspection. Very little to nil odours were detected around the piggery and downwind monitoring sites. This was probably due to the reduction of pig numbers (approximately 80 sows) and also a change of diet for the pigs with calcium being added and less blood products used. The solids separator bin was taking approximately 4 months to fill as the wash down of the piggery was done sparingly due to the lower stock numbers at the piggery. The oxidation ponds appeared to be well maintained. The discharges from both the first and second ponds looked to be relatively clear with slight turbidity. The final aerobic pond also looked to be in good condition. The effluent spray irrigator was used only when necessary as the pond levels were low. Overall the ponds and system appeared to be well managed.

On 20 June 2013

Piggery discharge and receiving water samples were collected after a recent heavy rainfall event throughout the upper Manganui catchment. The Rumkeg Creek staff gauge was reading 0.58m at the time of sampling, equating to a river flow of 5.028 m³/ sec. The piggery discharge flow rate was estimated at 8-10 litres per sec. The piggery manager had only discharged treated effluent wastewater to the Rumkeg Creek on two previous occasions. No concerning odour was found to be emanating from either outside the piggery boundary or at the downstream sampling site. The consent holder had discussed options with diverting rainwater and uncontaminated stormwater away from the oxidation pond system. A meeting was arranged with the consent holder to discuss any future plans for the piggery operation, prior to the Council writing up the 2012-2013 Annual Monitoring Programme Report.

2.1.2 Results of discharge monitoring

2.1.3.1 Receiving waters physicochemical monitoring

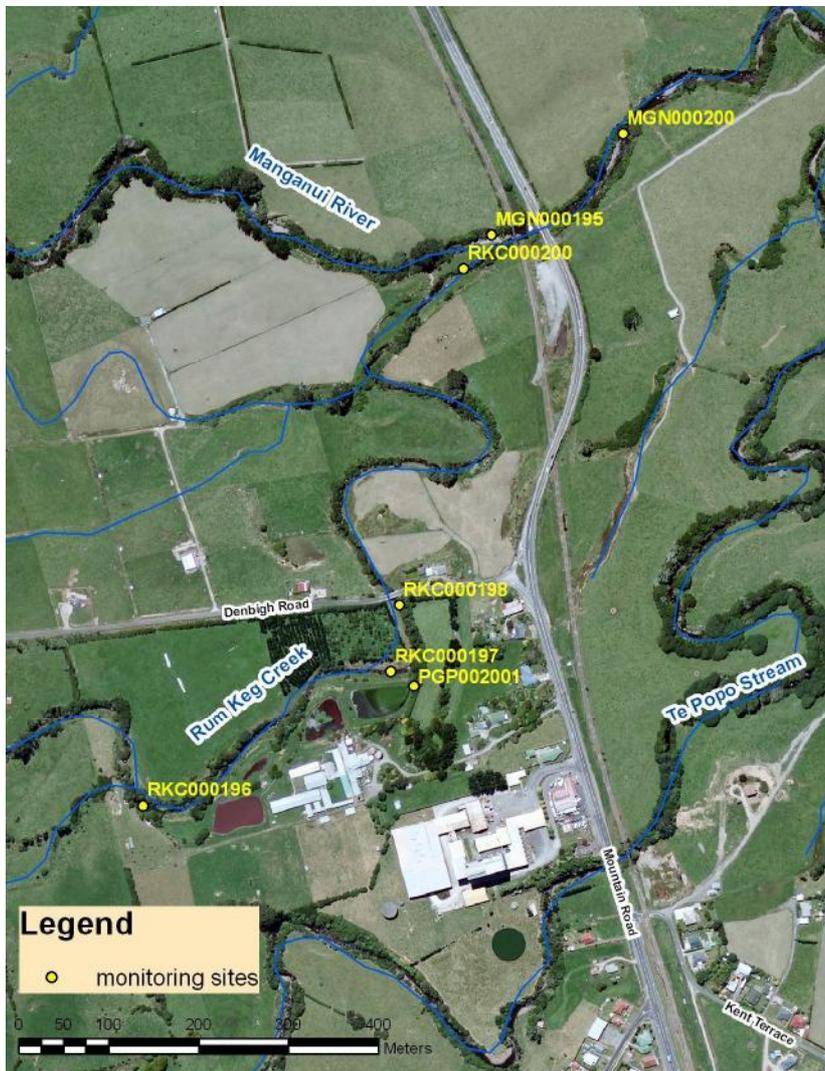


Figure 2 Aerial photograph of monitoring sites

Figure 2 shows the piggery site in relation to the receiving waters of Rumkeg Creek and Manganui River. Te Popo Stream also borders the piggery boundary on the southern side. Environmental monitoring sites are also illustrated in relation to the piggery operation.

Table 1 Location of sampling sites in Rumkeg Creek, a tributary of the Manganui River

Site	Site code	GPS reference	Location
Rumkeg Creek	RKC000197	E1708759 N5650789	20 metres upstream of piggery discharge
Piggery effluent	PGP002001	E1708785 N5650773	Discharge outlet from aerobic pond
Rumkeg Creek	RKC000198	E1708769 N5650864	Denbigh Road Bridge (75m d/s of discharge)

2.1.3.2 August 2012 survey

Results of the survey performed on 14 August 2012 are presented in Table 2. On this occasion the stream was on a fresh and the ponds' treated wastewater discharge was estimated at about 0.2 L/sec.

Table 2 Results from NZ Pure Bred Genetics Ltd and Rumkeg Creek sampled on 14 August 2012

Site location Site code		Rumkeg Creek u/s RKC000197	Piggery final effluent PGP002001	Rumkeg Creek d/s RKC000198
Parameter	Unit			
Time		0945	0940	1000
Temperature	°C	9.8	11.0	9.9
Conductivity @ 20°C	mS/m	8.7	158	8.8
Chloride	g/m ³	8.0	43.0	8.0
pH		7.5	7.9	7.5
Total carbonaceous BOD ₅	g/m ³	-	87	-
Filtered carbonaceous BOD ₅	g/m ³	<0.5	-	<0.5
Ammoniacal nitrogen	g/m ³ N	0.056	167	0.121
Unionised ammonia	g/m ³ NH ₃	0.0004	3.20	0.0009
Dissolved reactive phosphorus	g/m ³ P	0.010	35.7	0.027
Turbidity	NTU	3.0	94	2.9
Suspended solids	g/m ³	<2	210	<2
Appearance				

These results indicate that the treated wastewater discharge dilution ratio in the stream at the time of sampling was well above the minimum ratio of 1:250 as required by Special Condition 6 of the consent.

Compliance with Special Condition 2 was well achieved with downstream un-ionised ammonia (4% of limit) and filtered BOD₅ (no measurable increase) well within requisite standards. The turbidity (no measurable increase) was well within the limit imposed by Special Condition 3 of the consent, under stream fresh conditions at the time of the sampling survey.

Rumkeg Creek staff gauge reading was recorded 0.36m at the time of sampling equating to a river flow of 615 litres per second.

No consent holder's discharge records were received by Council for 14 August 2012 as required by Special Condition 7 of the consent. There was a misunderstanding between the previous consent holder, Council and the new operator as per discharge record keeping.

2.1.3.3 Survey June 2013 survey

Results of the survey performed on 19 June 2013 are presented in Table 3. On this occasion the stream was in a receding fresh. The ponds' treated discharge was estimated at about 8-10 L/sec.

Table 3 Results from NZ Pure Bred Genetics Ltd piggery and Rumkeg Creek, sampled on 19 June 2013

Site location Site code		Rumkeg Creek u/s RKC000197	Piggery final effluent PGP002001	Rumkeg Creek d/s RKC000198
Parameter	Unit			
Time		1405	1410	1420
Temperature	°C	11.7	11.3	11.7
Conductivity @ 20°C	mS/m	6.8	61.6	7.0
Chloride	g/m ³	8.1	24.2	8.2
pH		7.3	7.8	7.6
Filtered carbonaceous BOD ₅	g/m ³	1.0	-	0.6
Ammoniacal nitrogen	g/m ³ N	0.144	50.6	0.262
Unionised ammonia	g/m ³ NH ₃	0.0007	0.790	0.0027
Dissolved reactive phosphorus	g/m ³ P	0.033	15.2	0.075
Turbidity	NTU	5.4	54	4.9
Suspended solids	g/m ³	5	100	6
Appearance		Turbid brown	Light brown	Turbid brown

These results indicate that the treated effluent discharge dilution ratio in the stream at the time of sampling was well above the minimum ratio of 1:250 as required by special Condition 6 of the consent, and was having negligible effects.

Rumkeg Creek staff gauge was reading 0.58m at the time of sampling equating to a river flow of 5,028 litres per second.

Compliance with Special Condition 2 was achieved with downstream un-ionised ammonia and filtered BOD₅ (no measurable increase) well within requisite standards. Turbidity (no measurable increase) was well within the limit imposed by Special Condition 3 of the consent, under stream fresh conditions at the time of the sampling survey.

The consent holder's discharge records for 19 June 2013 at 0700 am (approximately 5.30 hours before sampling was completed) show that Rumkeg Creek level was 0.62 m equating to a river flow of 6,647 litres per second. The piggery discharge wastewater flow was volumetrically measured at 10 litres per second achieving a dilution ratio well in excess of 1:250 as required by special Condition 6 of the consent.

Table 4 Summary of treated wastewater analyses from the NZ Pure Bred Genetics Ltd for the period July 2012 to June 2013

Parameter	unit	14 August 2012	19 June 2013	Median
Conductivity @ 20°C	mS/m	158	62	110
Chloride	g/m ³	43.0	24.2	33.6
pH	pH	7.9	7.8	7.8
Total carbonaceous BOD ₅	g/m ³	87	67	77
Ammoniacal nitrogen	g/m ³ N	167	50.6	109
Dissolved reactive phosphorus	g/m ³ P	35.7	15.2	24.5
Turbidity	NTU	94	54	74
Suspended solids	g/m ³	210	100	155

Monitoring of wastewater on the two occasions during the 2012-2013 year indicated a well treated wastewater typical of past median wastewater quality in terms of BOD₅, suspended solids, and turbidity, with nutrient levels within range (Table 4).

2.1.3 Gauging water flow

To determine flow rates in the Rumkeg Creek a rating curve is maintained by Council. This enables the consent holder to assess treated wastewater discharge compliance with the minimum dilution ratio of 1:250 (one part effluent to two part hundred and fifty parts receiving water flow).

The staff gauge installed on the Denbigh Road Bridge provides the consent holder with the stream level (or height) and a rating chart produced by Council shows stream flow rates at any given time. It was not considered necessary to review the rating curve during the 2012-2013 year but it may be reviewed again in the 2013-2014 monitoring period if required.

2.1.4 Treated effluent discharge records

Discharge to water

Special condition 6 of consent 0351-3 requires a minimum dilution rate of 1 part effluent to 250 parts receiving water at the point of discharge and is to be maintained at all times during discharge events.

Special condition 7 of consent 0351-3 requires the consent holder shall monitor and maintain discharge records, including date, time, rate, staff gauge reading and duration of discharge. These records are to be supplied to the Council quarterly or as requested.

During the 2012-2013 monitoring period the Council received from Meadowvale Piggery/NZ Pure Bred Genetics Ltd records showing 5 only daily discharges to the Rumkeg Creek.

These records indicate that the consent holder maintained a minimum dilution rate of 1 part effluent to 250 parts receiving water at the point of discharge on all occasions. In comparison 51 daily discharges were recorded by Meadowvale piggery during the previous 2011-2012 monitoring period.

Discharge to land

Special condition 14 of Consent **0351-3** requires that the consent holder shall monitor and maintain records of discharge, including date, application area, rate and duration of discharge. These records are to be supplied to the Council quarterly or as requested.

Special condition 15 of consent **0351-3** requires the consent holder to maximise discharge to land in preference to discharge to water. This was achieved with records showing 32 days where effluent was spray irrigated to land.

During the 2012-2013 monitoring period, compliance monitoring inspections included a visual assessment over the land where spray irrigation had been carried out.

Wastewater was spray irrigated to the surrounding farmland on most days when not discharging treated wastes to the receiving water and only when favourable weather conditions allow. Wastewater is pumped via a single stationary effluent irrigation sprinkler for up to 4 hours at any particular time at a flow rate of 2 litres per second (28.8 m³ per 4 hour day). It takes approximately one month to complete a spray cycle to available pasture.

Effluent application rates to land are required to ensure that the effluent application rate does not exceed the recommended 200 kg nitrogen/ha/year.

The Council strongly encourages pork producers to use systems that discharge pig manure to land in preference to discharging to water. The nitrogen content of piggery manure is usually the major determinant of land area required.

2.1.5 Liaison with consent holder

During the 2012-2013 monitoring period, the Taranaki Regional Council liaised with the consent holder (J Cooley) regarding several operational issues, additional to those required in the monitoring programme. These included matters such as odour management, annual draft report, pond maintenance, piggery operations, discharge effluent record keeping and discharging piggery wastewater to land in preference to water as per the proposed RFWP.

2.2 Air

2.2.1 Inspections

Air inspections were carried out in conjunction with all the general compliance monitoring inspections at the Meadowvale Stud/ NZ Pure Bred Genetics Ltd Farm. Inspections found that general piggery odours were present during the site inspections for most of the time. No objectionable or offensive odours were recorded. No dust, smoke or other issues were noted during the inspections of the site.

2.2.2 Results of air monitoring

Special condition 5 of consent 5249-2 requires that discharges shall not give rise to an odour at or beyond the property boundary that is offensive or objectionable

Odours emitted from normal piggery operations are influenced mainly by weather conditions (i.e. wind direction), effluent treatment areas, solids storage & disposal, irrigating to land and general piggery hygiene operations.

The offensiveness of odour on any particular occasion is reliant on individual perception, Council methods of measurement, and management 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 areas of the piggery.

The routine compliance monitoring inspections found that normal piggery odour were emanating from around the piggery, solids separator, and oxidation treatment ponds system.

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 holder. During the year matters may arise which require additional activity by the Council eg provision of advice and information, or investigation of potential or actual causes of non-compliance or failure to maintain good practices. A pro-active approach that in the first instance avoids issues occurring is favoured.

The Taranaki Regional 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 Unauthorised Incident Register (UIR) 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 2012-2013 period, there was one recorded incident that was associated with Meadowvale Piggery Stud Farm. This incident was the result of an odour complaint received from a neighbouring property owner. The complaint was subsequently investigated by the Council and found to be unsubstantiated; however, the offensiveness of unpleasant odour is reliant on individual perception. There will always be varying degrees of odour strength associated with intensive pig, cattle or poultry farming which can not be entirely eliminated.

No odour complaints were received by Council regarding NZ Pure Bred Genetics Ltd piggery during the 2012-2013 period after transfer of consents.

The Council's policy is to investigate all complaints received within a 4 hour period.

All Council Inspecting Officers undergo an olfactory calibration which determines their odour perception.

Incident logged by Council

Incident 22839

On 27 July 2012 at 6:00 PM a complaint was received concerning a piggery odour at the corner of Denbigh and Mountain Roads, Midhurst. An odour survey was undertaken in the area. A slight breeze was blowing and no odour was found.

3. Discussion

3.1 Discussion of site performance

During the year NZ Pure Bred Genetics Ltd demonstrated that a high level of environmental performance and compliance issues relating to the consents was achieved.

NZ Pure Bred Genetics Ltd currently have the largest registered purebred herd in New Zealand with the NZ Pig Breeders Association of Berkshire, Duroc, Hampshire, Large White and Landrace breeds. Current stock numbers include 80 sows and gilts, 50 weaners, 12 boars and up to 100 piglets at any one time.

The herds had originally been established at a Foxton piggery six years ago and the pigs had been sold off. Only recently has NZ Pure Bred Genetics Ltd been able to re-establish its piggery in Taranaki by buying in pure bred stock from their original progeny throughout New Zealand piggeries.

There has been no significant change to the monitoring programme (which was originally designed for the Meadowvale Piggery) at this stage. The NZ Pure Bred Genetics Ltd piggery is operating on a smaller scale compared to Meadowvale piggery. At this stage four regularly spaced tri- bimonthly inspections of the piggery will continue including water quality sampling of the piggery wastewater discharge and receiving waters sampled twice yearly. Treated effluent has been spray irrigated to land in preference to discharging to water on most occasions. Biomonitoring, a component of the previous monitoring programme, will be put on hold until such time it may be deemed necessary to continue. This would be dependant on any future expansion of the piggery and the frequency of discharging treated wastewater to the receiving waters.

Improvements carried out at the piggery include redirecting the stormwater from around the piggery and away from the oxidation pond system. Metal has been laid around the solids separator and solids are no longer stored on site. Solids are now spread onto an adjacent neighbouring farm.

NZ Pure Bred Genetics were recently audited byASUREQuality. They successfully achieved accreditation with the 'Pig Care Animal Welfare Programme' complying with the Animal Welfare (Pigs) Code of Welfare 2011. The purpose of this code is to inform the owners of pigs and persons who are in charge of them about the minimum standards they must achieve in order to meet their obligations under the animal Welfare Act 1999. The achievement of high standards of animal welfare in any pig production system requires skill and good judgment. Unless the pigs are managed and handled well, their welfare cannot be adequately protected. This code also stresses the importance of good stockmanship, husbandry and management of pigs.

Although a high level of environmental performance and compliance was achieved, the piggery and ponds, are located in close proximity to residential properties, and people's perceptions and attitudes towards environmental issues over time have changed with the expectation that existing farmers such as pig and poultry growers

must adapt to new regulatory conditions. What was once regarded as acceptable now becomes debateable when referring to odour compliance.

Odour emissions from the aerobic pond are generally acceptable, but odours from the anaerobic pond, as to be expected, are usually stronger. The proliferation of anaerobic bacteria can lead to an increase in hydrogen sulphide (i.e. "rotten egg" gas) and increased pH (i.e. increased alkalinity). Oxidation ponds treating pig effluent can produce up to 5,000ppm hydrogen sulphide, and this potent-smelling gas is one of the main causes for odour complaints. Weather conditions, especially wind direction have been the main trigger for residents to register an odour complaint with the Council.

The dietary feed for the pigs is mainly made up from barley, ground meat & bone, milk powder, soya bean, calci lime and minerals & salts. The grower uses less meat meal and dried blood, which may otherwise contribute to odour issues.

3.2 Exercise of air consent

Operations at the piggery have resulted in some odour emanating off site from time to time. Odour has been the result of general operations and adverse weather conditions. As the piggery is located on a small site within a residential area in Midhurst there is no real buffer zone.

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

Frequency:

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

Intensity:

- Perceived strength or concentration of the odour.
- Does not relate to degree of pleasantness or unpleasantness.
- Assessed subjectively using 0-6 scale (ambient)

0. Not detectable – no odour
1. Very weak – odour detected but may not be recognisable
2. Weak – odour recognisable (i.e., discernible)
3. Distinct – odour very distinct and clearly distinguishable
4. Strong – odour causes a person to try to avoid it
5. Very strong – odour overpowering and intolerable
6. Extremely Strong – pungent, highly offensive, overpowering and intolerable

Duration:

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

Offensiveness:

- A rating of an odour's pleasantness or unpleasantness ("hedonic tone").

- This does not necessarily have the same meaning as offensiveness in the Act or consent conditions
- A subjective assessment which can vary between individuals, but which must also be based on a 'typical' response.

Location:

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

The RMA (1991) requires that there should be no offensive or objectionable odour beyond the boundary of the farm.

The pork industries guide to managing environmental effects, deals with management practices ensuring the effect of odour is taken into account when undertaking activities relating to farm operations.

One complaint concerning piggery odour emissions was received by the Council during the 2012-2013 monitoring period. This complaint was followed up by an inspecting Officer and no odour was found to be present at the complainant's address. Meadowvale Piggery Ltd was the consent holder at the time the complaint was received by Council.

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 5-6.

Table 5 Summary of performance for Consent **0351-3** discharge of treated piggery effluent to Rumkeg Creek and land

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Operation and discharge in accordance with application	Inspections of data and discharge point inspections	Yes
2. Maximum concentrations in receiving water after mixing	Physicochemical sampling	yes
3. Maximum increase in turbidity after mixing	Physicochemical sampling	Yes
4. Constituents not permitted in receiving water after mixing	Monitoring inspection of receiving waters	Yes
5. Operation and maintenance of treatment and discharge system	Monitoring inspection	Yes
6. Minimum dilution rate in receiving waters	Discharge records and monitoring	Yes
7. Records of discharge	Discharge records received by Council	Yes
8. Riparian fencing and planting	Monitoring inspections and liaison with the consent holder	N/A

Condition requirement	Means of monitoring during period under review	Compliance achieved?
9. Maximum total nitrogen application rate to land	Not yet accessed by Council	N/A
10. Maximum total potassium application rate to land	Not yet accessed by Council	N/A
11. Proximity of discharge to dwelling or water body	Monitoring inspections	Yes
12. Contamination of surface water not permitted from land irrigation	Monitoring inspections	Yes
13. Extended surface ponding not permitted	Monitoring inspections	Yes
14. Discharge to land	Liaison with consent holder	Yes
15. Maximum discharge to land over water	Records and monitoring inspections	Yes
16. Optional review provision	Reviewed July 2009. Consent expires June 2015	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High

N/A = not applicable

Table 6 Summary of performance for Consent **5249-2** discharge of emissions into the air and waste management activities

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Total number of pigs allowed	Liaison with the consent holder	Yes
2. Operation and air discharge in accordance with application	Monitoring inspections	Yes
3. Consultation and approval prior to alterations to plant or process	Liaison with consent holder	N/A
4. Minimise emissions and impacts of contaminants discharged to air	Monitoring inspections	Yes
5. Objectionable odour at or beyond the boundary	Monitoring inspection and incident investigations	Yes
6. Optional review provision	Next review June 2015	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High

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

3.4 Recommendations from the 2011-2012 Annual Report

In the 2011-2012 Annual Report, it was recommended:

1. THAT monitoring of air emissions from the Meadowvale Stud Farm piggery in the 2012-2013 year continue at the same level as in the 2011-2012 period and that the consent holder minimise the impact of discharges to air by adopting the appropriate odour management and odour control practices.
2. THAT monitoring of wastewater discharges from the Meadowvale Stud Farm piggery in the 2012-2013 year continues as in the 2011-2012 period with provision for an extra sampling run to be undertaken if the downstream receiving waters are showing signs of adverse environmental effects.
3. THAT the piggery inspections in the 2012-2013 period remain at four inspections as in the 2011-2012 period and these inspections to be carried out tri-monthly and if the consents are transferred to new operators the frequency of inspections may be increased in the interim.
4. THAT the consent holder continues to desludge the anaerobic ponds and final ponds as required thereby providing the necessary retention time in the system for adequate waste treatment.
5. THAT the consent holder be advised that maximisation of land discharge be complied with, and that close attention be given to maintenance of sufficient dilution of any discharge of treated wastes in the receiving waters to prevent the development of any 'undesirable biological growths' on the bed of Rumkeg Creek.
6. THAT the consent holder provides the Council with details of the location of areas to be irrigated with piggery wastes and provides records as required by special condition 14 of Consent 0351.
7. THAT the biomonitoring survey for the 2012-2013 period in the Rumkeg Creek continues.
8. THAT the total number of pigs (equivalent 50 kg per pig) on the property at any one time shall not exceed 2500 pig equivalents.
9. That the consent holder seeks professional advice on the mitigation of odour issues and that an Odour Assessment Report and Implementation Plan be submitted to Council during this monitoring year ending June 2013.

Transfer of consents between the two parties became effective on 1 December 2012.

Meadowvale Piggery achieved most of the recommendations for their part of the monitoring period.

Recommendation 1- Was achieved during the routine compliance monitoring inspections. One unsubstantiated odour complaint was received by Council.

Recommendation 2 - Monitoring wastewater and receiving water was carried out on two occasions and there was no requirement to undertake an additional sampling run.

Recommendation 3 - Five compliance monitoring inspections were carried out (including 2 visits to undertake monitoring of the wastewater and receiving water)..

Recommendation 4 - Desludging of the anaerobic or aerobic pond was not required.

Recommendation 5 & 6 - Were both partially achieved. Land discharge records were received by Council but did not include a record of areas of land which were spray irrigated.

Recommendation 7 - The Council recommended a biomonitoring survey of the receiving waters was not required as discharge occasions were minimal and stock numbers were significantly decreased.

Recommendation 8 - Achieved – stock numbers reduced between the transfers of consent holders.

Recommendation 9 – Not: implemented as Meadowvale Piggeries were scaling down their side of the piggery operation.

3.5 Alterations to monitoring programmes for 2013-2014

In designing and implementing the monitoring programmes for air/water discharges in the region, the Taranaki Regional Council has taken into account the extent of information made available by previous authorities, its relevance under the Resource Management Act, the obligations of the Act in terms of monitoring emissions/discharges and effects, and subsequently reporting to the regional community, 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 consideration of the NZ Pure Bred Genetics Ltd environmental performance in regard to treated wastewater discharge and its effects, it is proposed that for 2013-2014 that the Council continues at four monitoring inspections of the piggery per year.

It is also recommended that provision be made for physicochemical impact monitoring to continue twice per year, under normal stream flow and wastewater discharge conditions with an extra sampling run to be undertaken if the downstream receiving waters are showing signs of adverse effects, (i.e. presence of sewage fungus in Rumkeg Creek or high waste loadings from the treatment pond system).

It is also recommended that a biomonitoring survey of the Rumkeg Creek is discontinued for the 2013-2014 monitoring period but may again be reinstated depending on the future expansion of the piggery and also the frequency of wastewater discharges to the receiving water.

3.6 Exercise of optional review of consent

Resource consent 0351-3 (discharge to water and land) was last reviewed in July 2009 and does not provide for any further optional review of the consent. Consent 0351-3 expires in June 2015.

Resource consent 5249-2 - to discharge emissions into the air from a pig farming activity and associated activities, was last reviewed in July 2009 with the next review dates June 2015 & June 2021. Consent 5249-2 expires in June 2027.

4. Recommendations

1. THAT monitoring of air emissions from the NZ Pure Bred Genetics Ltd piggery in the 2013-2014 year continue at the same level as in the 2012-2013 period and that the consent holder minimises the impact of discharges to air by adopting the appropriate odour management and odour control practices.
2. THAT monitoring of wastewater discharges from the NZ Pure Bred Genetics Ltd piggery in the 2013-2014 year continues as in the 2012-2013 period with provision for an extra sampling run to be undertaken if the downstream receiving waters are showing signs of adverse environmental effects.
3. THAT the piggery inspections in the 2013-2014 period remain at four inspections as in the 2012-2013 period and these inspections to be carried out tri-monthly.
4. THAT the consent holder be advised that maximisation of land discharge should be complied with, and that close attention be given to maintenance of sufficient dilution of any discharge of treated wastes in the receiving waters to prevent the development of any 'undesirable biological growths' on the bed of Rumkeg Creek.
5. THAT the consent holder provides the Council with details of the location of areas to be irrigated with piggery wastes and provides records as required by special condition 14 of Consent **0351**.
6. THAT the biomonitoring survey for the 2013-2014 period in the Rumkeg Creek discontinues but with provision for biomonitoring to be undertaken if the downstream receiving waters are showing signs of adverse environmental effects.
7. THAT the total number of pigs (equivalent 50 kg per pig) on the property at any one time shall not exceed 2500 pig equivalents.

Glossary of common terms and abbreviations

The following abbreviations and terms are 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
Condy	conductivity, an indication of the level of dissolved salts in a sample, usually measured at 20°C and expressed in mS/m
Cu*	copper
Cumec	A volumetric measure of flow- 1 cubic metre per second (1 m ³ s ⁻¹)
DO	dissolved oxygen
DRP	dissolved reactive phosphorus
<i>E.coli</i>	<i>escherichia coli</i> , 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
fresh	elevated flow in a stream, such as after heavy rainfall
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
l/s	litres per second

MCI	macroinvertebrate community index; a numerical indication of the state of biological life in a stream that takes into account the sensitivity of the taxa present to organic pollution in stony habitats
mS/m	millisiemens per metre
mixing zone	the zone below a discharge point where the discharge is not fully mixed with the receiving environment. For a stream, conventionally taken as a length equivalent to 7 times the width of the stream at the discharge point
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	relatively fine airborne particles (less than 10 micrometre diameter)
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)
RFWP	Regional Fresh Water Plan
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
UI	Unauthorised Incident
UIR	Unauthorised 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
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 the Council's laboratory.

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- Taranaki Regional Council 2011: Meadowvale Stud Farm Piggery Monitoring Programme Annual Report 2011-2012. Technical Report 2012-09.

Appendix I

Resource consents held by Meadowvale Stud Farm 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: Meadowvale Stud Farm Limited
3084 Mountain Road
R D 24
STRATFORD 4394



Change To
Conditions Date: 27 July 2009 [Granted: 5 September 2003]

Conditions of Consent



Consent Granted: To discharge treated piggery effluent from an oxidation pond treatment system into Rum Keg Creek a tributary of the Manganui River in the Waitara catchment [during high flow conditions] at or about (NZTM) 1708745E-5650801N and to discharge treated piggery effluent onto and into land at or about (NZTM) 1708434E-5650801N

Expiry Date: 1 June 2015

Review Date(s): June 2010

Site Location: Mountain Road, Stratford

Legal Description: Lot 2 DP 405477, Lot 2 DP 20963 Pt Sec 125, Sec 22
Manganui Dist Blk XIII Huiroa SD

Catchment: Waitara

Tributary: Manganui
Rum Keg Creek

Consent 0351-3

General conditions

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



Special conditions

Condition 1 [changed]

1. The consent holder shall, at all times, operate the piggery and associated activities and discharges in accordance with the information provided in support of applications 1959 and 6284, except as otherwise required or directed by the conditions set out in this resource consent.

Discharge to Water - conditions 2 - 8 [unchanged]

2. After allowing for reasonable mixing within a mixing zone extending 50 metres downstream of the discharge point, the discharge shall not cause the receiving waters of the Rum Keg Creek to exceed the following concentrations:

Constituent	Concentration
Unionised ammonia	0.025 gm ³
Filtered carbonaceous BOD ₅	2.0 gm ³
3. After allowing for reasonable mixing within a mixing zone extending 50 metres downstream of the discharge point, the discharge shall not give rise to an increase in turbidity of more than 50% in the Rum Keg Creek.
4. That after allowing for reasonable mixing, within a mixing zone extending 50 metres below the discharge point, the discharge shall not give rise to any of the following constituents in the receiving water:
 - i) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended solids;
 - ii) any conspicuous change in colour or visual clarity;
 - iii) any emission of objectionable odour;
 - iv) the rendering of fresh water unsuitable for consumption by farm animals;
 - v) any significant adverse effects on aquatic life, habitats or ecology.

Consent 0351-3

5. The consent holder shall operate and maintain the treatment and discharge system to ensure that the conditions of this consent are met.
6. A minimum dilution rate of 1 part effluent to 250 parts receiving water shall be maintained at all times in the receiving water at the point of discharge during discharge events.
7. The consent holder shall monitor and maintain records of the discharge, including date, rate, and duration of discharge to the Rum Keg Creek, and the staff gauge reading at the site. These records shall be made available to the Taranaki Regional Council, quarterly [September 30, December 31, March 31, and June 30].
8. The 600 metres section of Rum Keg Creek on the property shall be riparian fenced and planted within 3 years, with at least one third of the planting and fencing to be undertaken each year.

Discharge to Land - conditions 9 - 10 [changed]

9. Over any 12 month period the amount of Total Nitrogen applied to land as a result of the discharge shall be no more than 200 kg per hectare of land used for effluent application over that period.
10. Over any 12 month period the amount of Potassium applied to land as a result of the discharge shall be no more than 100 kg per hectare of land used for effluent application over that period.

Conditions 11 - 15 [unchanged]

11. No contaminants shall be discharged within 150 metres of any dwelling, nor within 50 metres from any bore, well or spring used for water supply purposes, nor within 25 metres of any surface water body.
12. The discharge shall not result in any discharge of contaminants to surface water.
13. The discharge shall not result in any ponding on the surface which remains for more than 3 hours after the discharge has ceased.
14. The consent holder shall monitor and maintain records of the discharge, including date, application area, rate, and duration of discharge. These records shall be made available to the Taranaki Regional Council, quarterly [September 30, December 31, March 31, and June 30].
15. The discharge to land shall be maximised and be used in preference to discharge to water.

Review - condition 16 [unchanged]

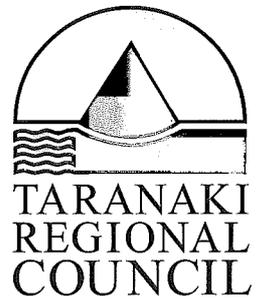
16. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2010, for the purpose 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 27 July 2009

For and on behalf of
Taranaki Regional Council



Director-Resource Management



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

CHIEF EXECUTIVE
PRIVATE BAG 713
47 CLOTEN ROAD
STRATFORD
NEW ZEALAND
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Please quote our file number
on all correspondence

Name of
Consent Holder: Meadowvale Stud Farm Limited
3084 Mountain Road
R D 24
STRATFORD 4394

Consent Granted
Date: 27 July 2009

Conditions of Consent

Consent Granted: To discharge emissions into the air from a pig farming activity and associated activities, including solids composting, effluent treatment and irrigation and other waste management activities at or about (NZTM) 1708696E-5650669N

Expiry Date: 1 June 2027

Review Date(s): June 2015, June 2021

Site Location: Mountain Road, Stratford

Legal Description: Lot 2 DP 405477, Lot 2 DP 20963 Pt Sec 125, Sec 22 Manganui Dist Blk XIII Huiroa SD

Consent 5249-2

General conditions

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

Special conditions

1. The number of pigs [equivalent 50 kg per pig] on the property at any one time shall not exceed 2500 pig equivalents.
2. Notwithstanding any other condition of this consent, the consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any actual or likely adverse effect on the environment associated with the discharge of contaminants from the site.
3. Prior to undertaking any alterations to the piggery unit's processes, operations, equipment or layout, which may significantly change the nature or quantity of contaminants emitted from the site, the consent holder shall consult with the Chief Executive, Taranaki Regional Council, and shall obtain any necessary approvals under the Resource Management Act 1991 and its amendments.
4. The consent holder shall minimise the emissions and impacts of contaminants discharged into air from the site by:
 - a) the selection of the most appropriate process equipment;
 - b) process control equipment and emission control equipment;
 - c) the methods of control;
 - d) the proper and effective operation, supervision, maintenance and control of all equipment and processes; and
 - e) the proper care of all pigs on the site.
5. The discharges authorised by this consent shall not give rise to an odour at or beyond the property boundary that is offensive or objectionable.

Consent 5249-2

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 2015 and/or June 2021, 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 27 July 2009

For and on behalf of
Taranaki Regional Council



Director-Resource Management

Appendix II

**Resource consents held by
NZ Pure Bred Genetics 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: NZ Pure Bred Pig Genetics Limited
131 York Road
R D 24
STRATFORD 4394

Decision Date (Change): 27 July 2009

Commencement Date (Change): 27 July 2009 (Granted: 5 September 2003)

Conditions of Consent

Consent Granted: To discharge treated piggery effluent from an oxidation pond treatment system into Rum Keg Creek a tributary of the Manganui River in the Waitara catchment (during high flow conditions) at or about (NZTM) 1708745E-5650801N and to discharge treated piggery effluent onto and into land at or about (NZTM) 1708434E-5650801N

Expiry Date: 1 June 2015

Review Date(s): June 2010

Site Location: Mountain Road, Stratford

Legal Description: Lot 2 DP 405477, Lot 2 DP 20963 Pt Sec 125, Sec 22 Manganui Dist Blk XIII Huiroa SD

Catchment: Waitara

Tributary: Manganui
Rum Keg Creek

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

General conditions

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

Special conditions

Condition 1 (changed)

1. The consent holder shall, at all times, operate the piggery and associated activities and discharges in accordance with the information provided in support of applications 1959 and 6284, except as otherwise required or directed by the conditions set out in this resource consent.

Discharge to Water - conditions 2 - 8 (unchanged)

2. After allowing for reasonable mixing within a mixing zone extending 50 metres downstream of the discharge point, the discharge shall not cause the receiving waters of the Rum Keg Creek to exceed the following concentrations:

Constituent	Concentration
Unionised ammonia	0.025 gm ³
Filtered carbonaceous BOD ₅	2.0 gm ³

3. After allowing for reasonable mixing within a mixing zone extending 50 metres downstream of the discharge point, the discharge shall not give rise to an increase in turbidity of more than 50% in the Rum Keg Creek.
4. That after allowing for reasonable mixing, within a mixing zone extending 50 metres below the discharge point, the discharge shall not give rise to any of the following constituents in the receiving water:
 - i) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended solids;
 - ii) any conspicuous change in colour or visual clarity;
 - iii) any emission of objectionable odour;
 - iv) the rendering of fresh water unsuitable for consumption by farm animals;
 - v) any significant adverse effects on aquatic life, habitats or ecology.

Consent 0351-3

5. The consent holder shall operate and maintain the treatment and discharge system to ensure that the conditions of this consent are met.
6. A minimum dilution rate of 1 part effluent to 250 parts receiving water shall be maintained at all times in the receiving water at the point of discharge during discharge events.
7. The consent holder shall monitor and maintain records of the discharge, including date, rate, and duration of discharge to the Rum Keg Creek, and the staff gauge reading at the site. These records shall be made available to the Taranaki Regional Council, quarterly (September 30, December 31, March 31, and June 30).
8. The 600 metres section of Rum Keg Creek on the property shall be riparian fenced and planted within 3 years, with at least one third of the planting and fencing to be undertaken each year.

Discharge to Land - conditions 9 - 10 (changed)

9. Over any 12 month period the amount of Total Nitrogen applied to land as a result of the discharge shall be no more than 200 kg per hectare of land used for effluent application over that period.
10. Over any 12 month period the amount of Potassium applied to land as a result of the discharge shall be no more than 100 kg per hectare of land used for effluent application over that period.

Conditions 11 - 15 (unchanged)

11. No contaminants shall be discharged within 150 metres of any dwelling, nor within 50 metres from any bore, well or spring used for water supply purposes, nor within 25 metres of any surface water body.
12. The discharge shall not result in any discharge of contaminants to surface water.
13. The discharge shall not result in any ponding on the surface which remains for more than 3 hours after the discharge has ceased.
14. The consent holder shall monitor and maintain records of the discharge, including date, application area, rate, and duration of discharge. These records shall be made available to the Taranaki Regional Council, quarterly (September 30, December 31, March 31, and June 30).
15. The discharge to land shall be maximised and be used in preference to discharge to water.

Review - condition 16 (unchanged)

16. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2010, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 1 December 2012

For and on behalf of
Taranaki Regional Council



Director-Resource Management

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

Name of
Consent Holder: NZ Pure Bred Pig Genetics Limited
131 York Road
R D 24
STRATFORD 4394

Decision Date: 27 July 2009

Commencement
Date: 27 July 2009

Conditions of Consent

Consent Granted: To discharge emissions into the air from a pig farming activity and associated activities, including solids composting, effluent treatment and irrigation and other waste management activities at or about (NZTM) 1708696E-5650669N

Expiry Date: 1 June 2027

Review Date(s): June 2015, June 2021

Site Location: 3084 Mountain Road, Midhirst, Stratford

Legal Description: Lot 2 DP 405477, Lot 2 DP 20963 Pt Sec 125, Sec 22
Manganui Dist Blk XIII Huiroa SD

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

General conditions

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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:
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 - 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.

Consent 5249-2

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 2015 and/or June 2021, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 1 December 2012

For and on behalf of
Taranaki Regional Council



Director-Resource Management

Appendix III

Flow rating for Rumkeg Creek

Rumkeg Creek above Confluence

River Height vs Flow Values

Prepared for NZ Pure Bred Genetics Ltd piggery

A staff gauge has been installed on the Rumkeg Creek Denbigh Road Bridge for monitoring of the river level (or height).

Table 1 shows river levels at this bridge and the corresponding flow for each level. All flows are expressed in litres per second.

River Level	Flow (litres/second)	River Level	Flow (litres/second)
0.1	20	0.5	2,726
0.11	24	0.51	2,959
0.12	29	0.52	3,205
0.13	34	0.53	3,465
0.14	39	0.54	3,739
0.15	46	0.55	4,036
0.16	54	0.56	4,350
0.17	62	0.57	4,681
0.18	72	0.58	5,028
0.19	82	0.59	5,393
0.2	95	0.6	5,789
0.21	110	0.61	6,207
0.22	126	0.62	6,647
0.23	144	0.63	7,109
0.24	164	0.64	7,592
0.25	189	0.65	8,098
0.26	216	0.66	8,625
0.27	246	0.67	9,174
0.28	279	0.68	9,744
0.29	315	0.69	10,337
0.3	359	0.7	10,991
0.31	406	0.71	11,674
0.32	459	0.72	12,386
0.33	516	0.73	13,127
0.34	577	0.74	13,897
0.35	648	0.75	14,695
0.36	725	0.76	15,523
0.37	808	0.77	16,380
0.38	897	0.78	17,266
0.39	993	0.79	18,181
0.4	1,100	0.8	19,180
0.41	1,217	0.81	20,219
0.42	1,341	0.82	21,296
0.43	1,474	0.83	22,413
0.44	1,615	0.84	23,568
0.45	1,772	0.85	24,763
0.46	1,939	0.86	25,996
0.47	2,118	0.87	27,269
0.48	2,307	0.88	28,581
0.49	2,507	0.89	29,932



At 0.40m (river level) the flow is 1100 L/sec

River Level	Flow (litres/second)
0.9	31,365
0.91	32,845
0.92	34,372
0.93	35,946
0.94	37,567
0.95	39,235
0.96	40,950
0.97	42,712
0.98	44,520
0.99	46,376
1	48,591

