

DH Lepper Trust Piggery  
Monitoring Programme  
Annual Report  
2008-2009

Technical Report 2009–34

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## Executive summary

The DH Lepper Trust owns and operates a piggery located on Mountain and Manutahi Roads, and a farm dairy located on Manutahi Road, in the Waiongana catchment. The Company holds resource consents for the discharge of treated piggery and dairy effluent to water, and for the discharge of emissions into the air. This report for the period July 2008-June 2009 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 three resource consents, which include a total of 24 special conditions setting out the requirements that the Company must satisfy.

The Council's monitoring programme included eight inspections and several information visits to the piggery during the construction phase of the covered anaerobic pond.

Because the existing treatment ponds are located in close proximity to south eastern residential properties, odour issues have become a concern within some quarters of the Lepperton community. Residential encroachment and reverse sensitivity issues in the rural countryside are also a major concern for the pork industry.

The consent holder, in consultation with NIWA scientists and the New Zealand Pork Industry Board has constructed a covered anaerobic pond [digester] as part of the piggery wastewater treatment system to help minimise ongoing odour issues and also capture and utilise extracted biogas for energy requirements within the piggery. It is also expected that the final treated wastewater that discharges into the Waiongana Stream during high river flow conditions will be of a higher quality due to the additional treatment provided via the covered anaerobic pond.

The agricultural air discharge consent was renewed in November 2008.

Monitoring indicated an excellent level of environmental performance and generally good consent compliance.

During the monitoring programme, the consent holder has ensured that consented receiving water dilution ratios were maintained throughout limited discharge periods.

The consent holder has supplied the Council with accurate effluent discharge records, including notification of discharges to water and land.

The Consent holder has applied considerable effort and technology to minimising odour, reducing methane emissions, developing renewable energy resources and potentially producing a higher quality treated effluent wastewater discharge.

This report includes recommendations for the monitoring programme for the 2009-2010 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 2008-June 2009 by the Taranaki Regional Council on the monitoring programme associated with resource consents held by DH Lepper Trust. The DH Lepper Trust operates a piggery situated on Mountain Road (SH3a). The waste water treatment ponds system consists of two oxidation treatment ponds situated on Manutahi Road in the Waiongana catchment and a new covered anaerobic pond adjacent to the piggery.

This report covers the results and findings of the monitoring programme implemented by the Council in respect of the consents held by the DH Lepper Trust that relate to a discharge of water within the Waiongana catchment, and the air discharge permit held by DH Lepper Trust to cover emissions to air 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 the consent holder's use of both water and air.

### **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 the DH Lepper Trust in the Waiongana catchment, the nature of the monitoring programme in place for the period under review, and a description of the activities and operations conducted by the Company.

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. (Note, there was no physiochemical water samples taken during the monitoring period due to the time the piggery effluent took to fill the new anaerobic pond, combined with the limited opportunity to sample when discharging did occur).

Section 4 presents recommendations to be implemented in the 2009-2010 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 (e.g., 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, including 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, to move closer to achieving sustainable development of the region's resources.

### 1.1.4 Evaluation of environmental performance

Besides discussing the various details of the performance and extent of compliance by the DH Lepper Trust in the Waiongana catchment 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 trivial (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 year were negligible or minor at most, items of concern were resolved positively, co-operatively, and quickly, the Council did not record any verified unauthorised incidents involving significant environmental impacts and was not obliged to issue any abatement notices, 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.

- **improvement desirable** indicates that the Council may have been obliged to record a verified unauthorised incident involving significant environmental impacts against the company, and/or abatement notices may have been issued; there were adverse 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.
- **poor** performance is used when there were grounds for prosecution or infringement notice.

## 1.2 Process description

The piggery operates as a breeding and fattening unit, holding approximately 400 adult pigs and 3000 growers. The Council has calculated the total pig equivalents for the piggery equals 3420 units based on 50 kg pig equivalents.

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

A feed mill located on-site mixes the majority of the piggery's food requirements, with brought in grains and feed supplements. Local waste food supplies including frozen poultry mortality from local chicken farms are ground-up, cooked and sterilised to produce a protein meal for the stock.

Stock holding pens are washed down on a daily basis and the waste is conveyed through pipes to a central collection tank. From this point, all the waste material is channelled through a rotating screen machine which provides a primary treatment by separating out the solid component of the effluent. Solid waste is stored in three large bins prior to being mixed 50:50 with sawdust. This mixture is then transferred to a large shed where it is aerated and cooked until well composted. The final product is bagged and sold commercially as a soil conditioner. The screening of waste material reduces solids, biochemical oxygen demand [BOD] and some nutrients contained in the liquid effluent. Liquid effluent passes through a sand trap before being piped to the oxidation ponds system.

Until recently, all liquid effluent from the piggery was pumped via a pipeline directly to the off-site oxidation ponds located on the banks of the Waiongana River near Lepperton for further treatment. The original oxidation pond system was established in 1981 and consists of two ponds, an anaerobic and an aerobic pond. The design of the ponds was based upon Ministry for Agriculture and Forestry specifications as they existed at the time of construction.

The new covered anaerobic pond has been constructed close to the piggery itself. Liquid effluent from the piggery discharges to the anaerobic pond for primary treatment prior to discharging to the off-site oxidation ponds. Biogas which is produced from the anaerobic digestion process is stored beneath the plastic cover on the anaerobic pond and will be utilised for on site power generation, returning electricity back to the National Power Grid during peak load periods.

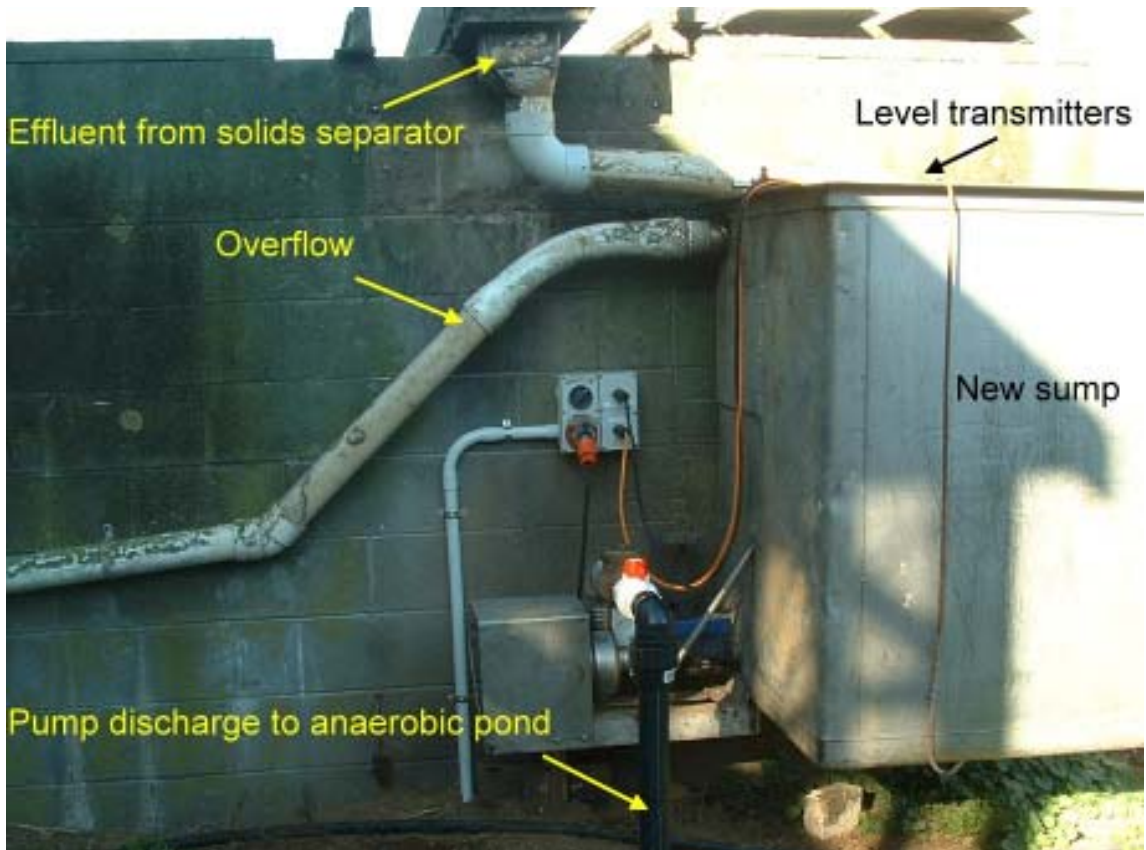
The DH Lepper Trust also farms 500 dairy cows on the property. Effluent from the applicant's dairy shed undergoes a primary anaerobic treatment in a settling pond referred to as 'the dairy pond'. The dairy effluent then flows into the effluent pipeline from the piggery and is transported to the existing oxidation ponds near Lepperton for secondary treatment.

Bacteria present in the two off-site oxidation ponds break-down the contents of the effluent further. Periodically during high river flows, the applicant discharges treated water from the final aerobic pond into the neighbouring Waiongana Stream in compliance with the conditions of consent 0715.

Occasional de-sludging and effluent removal is required as part of the maintenance of the pond system. The material removed from this process is spread onto the applicant's surrounding farmland as a fertiliser. An annual practice has developed whereby effluent from the original anaerobic pond is applied to land in late autumn under suitable weather conditions and neighbours are notified of this event in advance. The activity is carried out in order to meet the conditions of Rule 40 of the Regional Air Quality Plan [RAQP].



**Photo 1** Solids separation and collection system



**Photo 2** New sump and pump



**Photo 3** Covered anaerobic pond – flexible drainage pipes holds the covered in situ and protects the cover from severe wind

## **1.3 Resource consents**

### **1.3.1 Water 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.

DH Lepper Trust holds consent **0715-3** to discharge treated piggery and farm dairy effluent from a treatment ponds system into the Waiongana Stream during fresh (high flow) conditions. This renewed consent was issued by the Taranaki Regional Council on 19 December 2002 as a resource consent under Section 87(e) of the Resource Management Act. It is due to expire on 1 December 2013.

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.

Eleven special conditions are included in Resource Consent **0715-3**:

Special Condition 1 relates to the operation of the piggery and associated activities and discharges.

Special Condition 2 defines the point of discharge.

Special Condition 3 requires the maintenance of a minimum dilution rate at all times in the receiving water.

Special Condition 4 defines a minimum flow in the Waiongana Stream at which the discharge may occur.

Special Conditions 5 and 6 define the mixing zone and prohibit a number of effects.

Special Condition 7 requires the consent holder to operate and maintain the treatment and discharge system to ensure compliance.

Special Condition 8 requires the consent holder to monitor and maintain records of the discharge.

Special Conditions 9 and 10 require effluent from the aerobic pond to be discharged onto and into land via irrigation at least once annually during the summer/autumn period and notification to be provided prior to any irrigation.

Special Condition 11 provides for review of the consent

The permit is attached to this report in Appendix I.

### **1.3.2 Water abstraction permit**

Section 14 of the RMA stipulates that no person may take, use, dam or divert any water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or it falls within some particular categories set out in Section 14.

DH Lepper Trust holds consent **0188-3** to cover the take of water from an unnamed tributary of the Waiongana Stream for piggery operation purposes.

This permit was re-issued by the Council on 09 January 2002 under Section 87(d) of the RMA. It is due to expire on 1 June 2020.

Three special conditions are attached to this consent.

Special condition 1 requires consent holder to adopt best practicable option to prevent or minimise effects.

Special condition 2 states the abstraction should not exceed 50% of the natural stream flow.

Special condition 3 is a review provision.

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.

DH Lepper Trust holds air discharge permit **5206-2** to discharge emissions into the air from a pig farming operation and associated practices, including solids composting, effluent treatment and other waste management activities. This permit was issued by the Taranaki Regional Council on 13 November 2008 as a resource consent under Section 87(e) of the Resource Management Act.

Ten special conditions are attached to the consent.

Special Condition 1 requires the number of pigs [equivalent = 50kg per pig] on the property at any one time shall not exceed 3500 pig equivalents.

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 requires the new anaerobic pond to be covered and biogas utilised as an energy source.

Special Condition 4 requires consultation should any alterations occur to the pig farming and effluent disposal processes, operations, equipment or layout which might change the nature or quantity of contaminants emitted from the site.

Special Condition 5 requires the consent holder to minimise the emissions and impacts of air contaminants discharged into air from the site.

Special Condition 6 restricts odours at or beyond the boundary of the site.

Special Condition 7 allows intermittent offensive and objectionable odour, beyond the property boundary for a limited period while anaerobic to aerobic pond conditions settle.

Special Condition 8 outlines odour emission reporting which may be deemed offensive or objectionable.

Special Condition 9 requires an Odour Management Plan outlining how odorous emissions beyond the boundary are minimised.

Special Condition 10 provides for review of any or all of the conditions of the consent.

The permit is attached to this report in Appendix I.

## **1.4 Monitoring programme**

### **1.4.1 Introduction**

Section 35 of the Resource Management Act sets out an obligation for 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.

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 the DH Lepper Trust 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 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**

The DH Lepper Trust site was visited twelve times during the monitoring period. The main points of interest was the development of the new covered anaerobic pond, solids separator and composting system and treatment ponds system with associated actual and potential emission sources and characteristics.

### **1.4.4 Physicochemical sampling**

The Taranaki Regional Council had not sampled any of the discharges from the treatment ponds system and the water quality upstream of the discharge point and downstream of the designated mixing zone.

Discharge and receiving water samples were unable to be collected throughout the monitoring period as the new anaerobic pond took several months to fill which resulted in no discharge during this period.

The monitoring programme allows for the effluent discharge and receiving water to be sampled on three occasions. When discharging to the Waiongana Stream the consent holder advises the Council staff, who undertake sampling if required.

## **2. Results**

### **2.1 Water**

#### **2.1.1 Wastewater dilution establishment**

To determine flow rates in the Waiongana Stream, a rating curve of flow against water depth is maintained by the 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 hundred and fifty parts of receiving water flow).

The wastewater discharge flow from the aerobic pond was established at 15 litres per second by calculating the conductivity ratios of the receiving water. To ensure that the dilution ratio is being met during a moderate fresh, the effluent discharge flow can be controlled by reducing the flow via a control valve.

A staff gauge was installed on the old Manutahi Road bridge which provided the consent holder with the stream level (or height), and a rating chart produced by the Council showed water flow rates at any given stream depth. The old bridge has since been demolished and there has been no requirement by the Council or the consent holder to replace the staff gauge.

The consent holder has access to the Taranaki Regional Council web site ([www.trc.govt.nz](http://www.trc.govt.nz)) which provides current river flow and water levels for the Waiongana Stream recorded at SH3a at the time of discharging. Information via the web site has proven to be successful in allowing the consent holder to monitor and discharge during optimum river flow conditions.

The river level and flow data are automatically forwarded to the Council computer database. The data is analysed every two hours and a graph is provided within ten minutes of downloading. The staff gauge provides the consent holder with accurate 'real time' river conditions.

#### **2.1.2 Inspections**

##### **1 September 2008**

The first inspection for the monitoring period was carried out around the piggery operation and effluent treatment ponds system. The solids separator was in use with effluent being pumped into the new anaerobic pond. No water quality or treated effluent samples were collected on this occasion as the new pond was still filling.

An odour survey was conducted around the western side of the Lepperton Township, namely Sisson Terrace, Smith Street and opposite Burkhart's engineering workshop. No offensive odours were recorded from the odour survey and it was noted that the wind direction at the time of inspection was from the north easterly quarter.

##### **31 October 2008**

This inspection of the piggery and waste effluent treatment system found all facilities to be operating satisfactory except for the new anaerobic pond which had developed a serious leak. Effluent was draining from the lower, south eastern corner of the pond wall, which had lowered the pond level by at least one meter in

depth. A temporary drain was constructed to channel all the leaking effluent contents back to the main collection sump. The consent holder was investigating ways to make repairs to the pond wall, including emptying the pond contents and rebuilding the pond wall.

Normal piggery odours were observed at various sites around the piggery, including the lower pond area. Both pond levels were low and no treated discharge had occurred into the Waiongana Stream for a considerable period.

#### **21 November 2008**

This inspection was to follow-up with any progress made to the leaking anaerobic pond. Effluent was still leaking from the pond wall and wastes were still being directed back to the main collection sump. The pond level had risen slightly indicating that the leak may have started to seal itself. All piggery wastes are now being directed back to the original pond system. On 8 December 2008 the consent holder had informed the Council that the pond level had risen approximately 600mm and was being monitoring regularly. Soil experts from Massey University and NIWA were to advise on how to carry out repairs.

#### **12 January 2009**

The new anaerobic pond had developed another leak, discharging effluent from the pond wall. All wastes were contained and the piggery effluent was being directed back to the original pond treatment system via the collection sump. The lower pond treatment system was also inspected and was found to be operating satisfactory. There were no noticeable odours emanating from around the ponds and no treated effluent discharge had recently occurred. The first pond was full and discharging into the aerobic pond. The first pond contents were pink in colour indicating anaerobic conditions existed. It was anticipated that the anaerobic pond would revert to aerobic conditions once the new upstream anaerobic pond was covered and connected into the treatment system. It was also envisaged that the microbial conversion process (anaerobic to aerobic conditions) may take several months and there may initially be odour issues while this process takes place.

#### **10 February 2009**

This inspection was carried out in relation to an odour complaint received by the Council. An odour survey was carried out at the Lepperton Township. 'Noticeable', but 'not offensive' odour was noted at the intersection of Sisson and Smith Streets. An inspection of the ponds system found that the ponds were full and working. The first pond had a noticeable red/pink colour and showing aggressive anaerobic activity which was probably the cause of an odour complaint. The second pond was also full, waiting to discharge during the next high flow stream conditions. The new anaerobic pond at the piggery was still leaking and the consent holder had constructed an extra drain along the eastern end of the pond mainly as a contingency to prevent spillage if further leaks developed.

On 6 March 2009 a follow-up inspection was carried out around the new pond to check on the recent progress made. The pond bund repair had successfully been carried by excavating and replacing compacted clay along a fissure which had been the cause of the leak. It was planned to repair the other leak once it was known the first leak repair was successful.

It was also noted that minimal odour was emanating from around the pond and piggery.

**16 April 2009**

This inspection was mainly to look at the new anaerobic pond after the consent holder had informed the Council that the leaks had now been successfully repaired. This extensive repair work required excavating below the fissure line and repacking clay to seal off any seepage that was flowing from the fissure. Piggery effluent was now flowing into the anaerobic pond and the pond level was holding its working level and was discharging to the lower ponds treatment system. Contractors were ready to level off the top of the bund wall and dig a trench around the pond perimeter in preparation for laying the pond cover. Normal piggery odours were emanating from around the piggery collection area and exposed sumps. The lower ponds were now full and waiting for an opportunity to discharge treated effluent to the river during the next.

**12 & 18 June 2009**

A compliance monitoring inspection was carried around the piggery wastewater collection facilities, solids separator and effluent wastewater treatment system. A polyethylene cover was successfully placed over the anaerobic pond and biogas was being produced and vented to atmosphere. The piggery manager demonstrated the workings of the covered anaerobic pond and discussed future possibilities on the best way to utilize the stored energy for the piggery operation. The temporary flare system was manually ignited, demonstrating the clear burning of methane gas.

The waste collection sumps and drains were found to be clean. Normal piggery odour was noticed around the buildings and no odour was apparent downwind of the covered pond as per design. The final ponds were also inspected. It appeared there was no visual change to the microbial conditions on the first anaerobic pond as this process could take some time. Both two ponds were showing normal levels and no discharge into the Waiongana Stream was found to be occurring. Only slight to minimal odour was noticed at the northern end of the anaerobic pond.

An odour survey was also conducted opposite the Waiongana Stream Bridge towards Sission Terrace and Smith Street. Moderate to strong (cattle effluent) odour were noticed opposite Burkhart's engineering workshop and this was attributed to contractors cleaning out the dairy farm oxidation pond and spray irrigating to pasture on the Lepper property. The weather conditions at the time of inspection were overcast and cool with a light southerly wind blowing.

No discharge or receiving water quality samples had been collected due to the new anaerobic pond taking several weeks to fill.

The piggery in general was found to be clean and tidy.



**Photo 4** New anaerobic pond

### 2.1.3 Analytical results of wastewater and receiving water physicochemical monitoring

During the monitoring period, eight inspections of the piggery site were conducted by Taranaki Regional Council staff. No samples were collected on any of these occasions for physico-chemical analysis in the Taranaki Regional Council IANZ-registered laboratory, due to the absence of any discharge.

A new sampling site PGP005001 has been established to assess reductions in waste loadings and nutrient values from the new covered anaerobic pond effluent discharge.

Sampling sites are located as listed in Table 1 and illustrated in Figure 1.

**Table 1** Location of sampling sites

Site	Site code	GPS reference	Location
Waiongana Stream	WGA000361	N1704445 E5676110	100 m u/s of discharge
Piggery final treated effluent	PGP002002	N1704469 E5676207	In aerobic pond adjacent to outlet
Piggery wastewater effluent	PGP005001	N1704076 E5674877	Covered anaerobic pond discharge @ piggery
Waiongana Stream	WGA000363	N1704466 E5676273	50 m d/s of discharge



**Figure 1** Aerial location map of sampling sites in the Waiongana Stream

**Table 2** Results from DH Lepper Trust piggery and Waiongana Stream, sampled on 12 October 2007 (Note: no recent sampling data available)

Site location		WGA000361 Waiongana Stream upstream	WGA000363 Waiongana Stream downstream	PGP002002 Piggery final effluent
<b>Parameter</b>	<b>Unit</b>			
Temperature	°C	12.1	12.1	15.1
Conductivity @ 20°C	mS/m	9.1	9.3	362
Chloride	g/m <sup>3</sup>	11.1	11.1	246
pH		7.4	7.4	-
Total carbonaceous BOD5	g/m <sup>3</sup>	-	-	160
Filtered carbonaceous BOD5	g/m <sup>3</sup>	1	1.1	-
Ammoniacal nitrogen	g/m <sup>3</sup> N	0.358	0.37	-
Unionised ammonia	g/m <sup>3</sup> NH <sub>3</sub>	0.00238	0.00246	-
Dissolved reactive phosphorus	g/m <sup>3</sup> P	0.033	0.056	-
Turbidity	NTU	11.2	12.2	290
Suspended solids	g/m <sup>3</sup>	12	11	420

The above results are included from the previous monitoring period 2007-2008.

**Table 3** Nil results for the covered anaerobic pond discharge

Site location		PGP005001 Covered Anaerobic Pond Discharge
<b>Parameter</b>	<b>Unit</b>	-
Temperature	°C	-
Conductivity @ 20°C	mS/m	-
pH	pH	-
Total carbonaceous BOD5	g/m <sup>3</sup>	-
Suspended solids	g/m <sup>3</sup>	-
Nitrogen TN-1	g/m <sup>3</sup> N	-
Phosphorus TP-1	g/m <sup>3</sup> P	-
Potassium K-4	g/m <sup>3</sup> K	-

No wastewater samples were collected from the anaerobic pond discharge for the 2008-2009 monitoring period because the pond took several weeks to fill and the pond cover was placed towards the end of the monitoring period. PGP005001 is a newly established monitoring site therefore monitoring for the 2009-2010 period will include analyzing for nutrients ie nitrogen, phosphorus & potassium (NPK) for the feasibility of spray irrigating effluent to land. Because the majority of the waste treatment occurs in the covered anaerobic pond, regular bi-monthly monitoring will be necessary to assess reductions in waste loadings.

**Photo 5** New sampling site PGP005001 Anaerobic pond discharge

### 2.1.4 Treated piggery/dairy wastewater

Prior to the 2008-2009 monitoring period, the treatment ponds system was sampled for various reasons. These results are summarised in Table 3. The sampling point was within the final (aerobic) pond, adjacent to the outlet.

**Table 3** Summary of treated wastewater analysis results from the DH Lepper Trust piggery/dairy for the period 1991 to June 2008

Parameter	Unit	Number of samples	Range	Median
Conductivity @ 20°C	mS/m	14	222 - 415	288
pH		4	8.1 - 8.3	8.1
Total carbonaceous BOD <sub>5</sub>	g/m <sup>3</sup>	17	110 - 1100	180
Filtered carbonaceous BOD <sub>5</sub>	g/m <sup>3</sup>	7	3.4 - 46	24
Ammoniacal nitrogen	g/m <sup>3</sup> N	9	189 - 336	257
Turbidity (cyberscan)	NTU	12	110 - 450	220
Suspended solids	g/m <sup>3</sup>	15	230 - 840	440

These results illustrate the variability in effluent quality measured from this dairy/piggery treatment system over the period prior to the establishment of the current tailored consent monitoring programme. Some of this variability relates to stormwater infiltration through the system and may have coincided with changes in the configuration preceding storage provided by the treatment system over the sixteen-year period surveyed.

### 2.1.5 Treated effluent discharge records

Records of treated wastewater discharges to the Waiongana Stream supplied by the consent holder, as required by Special Condition 8 of consent **0715-3**, are provided in Table 4.

**Table 4** Discharge records of piggery treated wastes to the Waiongana Stream

Discharge period	Duration (hrs)	Stream flow above 5m <sup>3</sup> /sec while discharging
05 Oct 08, 1100 hrs to 06 Oct 08, 0800 hrs	21	Yes
07 Oct 08, 0900 hrs to 08 Oct 08, 1000hrs	25	Yes
03 Jan 09, 1145 hrs to 03 Jan 09, 0830 hrs	9.25	Yes
12 Feb 09, 1600 hrs to 13 Feb 0700 hrs	15	Yes
20 Feb 09, 1000 hrs to 21 Feb 09, 1400 hrs	28	Yes
26 Jun 09, 1100 hrs to 26 Jun 09, 1700 hrs	6	Yes

These records indicate that, on all occasions, the treated effluent discharge into the Waiongana Stream was well managed and that good wastewater dilution ratios have been maintained and were compliant with Special Condition 4 of consent **0715-3**. The old Waiongana River Bridge was recently removed and subsequently the staff gauge for measuring river flows was displaced. Estimates of flow for the

staff gauge were superseded by the consent holder having access to the Taranaki Regional Council web site ([www.trc.govt.nz](http://www.trc.govt.nz)) which provided current river flow and water levels for the Waiongana Stream recorded at SH3a at the time of discharging.

The Waiongana Stream hydrology displays a natural rapid rise and fall (typical of Taranaki ring plain streams) which allows for a limited window of opportunity when treated wastewater can be discharged above the minimum consent limit.

For the 2008-2009 period a total of 104.25 discharge hours were recorded compared to 267.5 hours recorded for the 2007-2008 period.

## **2.2 Air**

### **2.2.1 Inspections**

Air quality is checked during compliance monitoring inspections, or if odour complaints are received. There was only one odour complaint concerning piggery emissions from the ponds system, and routine follow-up inspections found no objectionable odour offsite.

## **2.3 Register of incidents**

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 register ('unauthorised incident register') includes events where the company concerned has itself notified the Council. The register contains details of any investigation and corrective action taken.

Incidents may be alleged to be associated with a particular site. If there is 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 2008-2009 year, there was one incident recorded by the Council that were associated with the DH Lepper Trust piggery.

### **2.3.1 Incidents**

An odour complaint was received on 9 January 2009 and a Council Investigating Officer carried out an ambient air odour survey at the Lepperton Township and adjacent to the complainant's property.

The new anaerobic pond clay wall had developed a major leaks and the pond level required lowering urgently to enable repairs to be carried out. Effluent was temporarily directed back to the existing ponds system which shocked the pond treatment system causing temporary odour emissions.

The consent holder had at all times kept the Council fully informed about the situation which was regularly monitored.

### **2.3.2 Liaison with consent holder**

During the 2008-2009 monitoring period, the Taranaki Regional Council liaised with the consent holder regarding several operational issues, additional to those required in the monitoring programme and in particular the development of the new covered anaerobic pond.

#### **21 August 2008**

In regard to renewal of the air discharge application the consent holder held a consultation meeting at the Lepperton Bowling Club with property owners in the vicinity of the existing oxidation ponds and the piggery near Lepperton and piggery. Property owners and residents at the following locations were invited to attend the meeting; Lower Manutahi Road, Sissions Terrace, Cross Street, Burkharts Engineering Workshop, Tegal Foods including the property owners who adjoin the piggery land boundary on Mountain Road (including those on the opposite side of the road). Council staff also attended the meeting.

At the meeting the consent holder gave a presentation to approximately ten local residents about the piggery, the development of the new anaerobic pond and the resource consent application 4714. Following the presentation, attendees were invited to ask questions of the applicant regarding the application for a resource consent for air discharges relating to the piggery and associated treatment ponds.

#### **20 March 2009**

Council staff along with other local and central government personal, MAF, NIWA, PowerCo, piggery producers, biogas consultants and suppliers attended a NZPork Biogas information seminar held at Palmerston North. It was demonstrated that biogas systems have the potential to deliver on mitigating methane emissions from effluent storage and wastewater treatment systems, and to deliver on generating renewable energy for farm and rural communities.

The consent holder gave a talk on his experiences in setting up a covered anaerobic pond for on farm biogas production.

#### **30 June 2009.**

Taranaki Regional Councillors visited the consent holder's property to inspect the facilities and discuss issues relating to the new covered anaerobic pond. The cover had recently been installed over the anaerobic pond and was producing biogas which was being vented in the interim. The consent holder and visitors discussed the feasibility of farm biogas systems using pig manure as a feed stock

### 3. Discussion

#### 3.1 Discussion of plant performance

Lepperton, like many small rural towns in New Zealand is going through a period of change. Land that was used for dairy farming is now being subdivided into smaller lots and, with the inevitable increase in population, attitudes change, forcing existing farmers such as pig and poultry growers to adapt to new regulatory conditions. (Reverse sensitivity).

The Lepper family has been running a successful pig farming business for over forty years and has seen many changes through that period.

Today, Lepper's piggery operates as a breeding and fattening unit, holding up to 400 adult pigs and 3000 growers at any one time.

Until recently, piggery and dairy wastewater was treated in a two pond treatment system consisting of an anaerobic and aerobic pond with the treated wastewater being discharged periodically into the Waiongana River by submerged outlet during high flow conditions.

The two pond effluent treatment system worked reasonably effectively in the breakdown of organic contents by removing BOD, but not in removing odour under certain weather conditions. Prior to the 2008 – 2009 monitoring period an increasing number of odour complaints were received from neighboring residents and consequently investigated by the Taranaki Regional Council.

With a pending air consent renewal, the consent holder had to look at innovative ways of reducing odour, and at the same time, investigated the feasibility of biogas production for electrical energy generation.

In consultation with NIWA scientists and the New Zealand Pork Industry Board, the consent holder constructed a covered anaerobic pond as part of the piggery wastewater treatment system and is investigating several options on the best way to utilize extracted methane gas for the piggery operation.

Raw biogas contains 50-70% methane gas and 30-50% carbon dioxide with a trace of impurities as sulphide gases, similar to fossil natural gas. Although the raw gas can be used in boilers, space heating, cooking stoves, and stationary combustion engines that drive pumps, blowers, or electricity generators, removal of sulphides is advisable to prevent equipment corrosion.

Biogas can be collected simply by using cost-effective surface covers. These covers are secured around the pond perimeter by burying in a trench. Biogas produced at the surface of the pond is extracted from under the cover through perforated pvc piping placed around the pond perimeter. Typically the biogas is drawn off the pond by a slight vacuum using a small exhaust fan.

Key features of covered anaerobic ponds:

- low cost, advanced design
- simple operation and maintenance

- elimination of odours, flies and insects from the pond
- prevent rainwater intrusion and enables collection for beneficial use
- enhanced treatment performance and biogas production
- economically recover biogas energy
- reuse treated effluent for washdown
- storage for deferred irrigation
- reduced odour from effluent irrigation (by as much as 70%)
- reduced GHG emissions and potential for carbon credits.
- increased microbial activity in the anaerobic pond, producing a cleaner wastewater discharge.

Whether covering an existing pond or developing from scratch, anaerobic ponds are an extremely cost effective way of utilizing anaerobic digestion technology. Eminently they are more suitable for larger piggeries, dairy farms, meatworks and other agricultural processing plants needing to optimize anaerobic treatment and capture renewable energy while reducing GHG emissions.

The design proposal for the Lepperton piggery is for gas emissions to be extracted from the covered anaerobic pond and utilized for power generation that can be used in the piggery's operation, or alternately generated electricity may be supplied to the national electricity grid during peak load periods.

In effect, the new pond will replace the function of the existing anaerobic pond near Lepperton in terms of treating liquid effluent. Once the piggery effluent has undergone primary treatment in the covered anaerobic pond, it will then be piped to the existing oxidation ponds.

It is anticipated that the existing anaerobic pond will revert to aerobic conditions producing minimal emissions of odorous hydrogen sulphide, which is the contaminant mainly responsible for odour complaints. Consideration of pond depth to optimize aerobic conditions may also be required in the future. This may be achieved by simply lowering the pond level or possibly filling to achieve the required depth.

### **3.2 Environmental effects of the exercise of water and land discharge consent**

Receiving water physicochemical monitoring indicated the discharge of treated piggery/dairy effluent to the Waiongana Stream generally occurred under high stream flows, and had minimal impacts on the stream and complied with the minimum dilution standard. (Table 4)

Discharge of treated effluent to land from the first pond reduced the frequency of discharge of effluent to water, and was likely to have improved effluent quality (through the reduction of wastes loadings on the system). Discharge to land also improves soil structure and fertility.

### **3.3 Environmental effects of exercise of air discharge permit**

Only one complaint concerning piggery odour emissions from the pond system was received by the Council during the 2008-2009 monitoring period. This complaint

was subsequently investigated by the Council and also the Piggery Manager. The new anaerobic pond had developed a major leak and the pond contents were urgently pumped back to the existing pond system to lower the level of the new pond. The raw effluent from the new pond discharged into the lower treatment system had caused a shock dose effect which in turn attributed to this odour complaint.

For this complaint the strength of odours recorded was as perceived as 'light' by the Investigating Officer at or beyond the boundary of the piggery site.

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 0-5 scale (ambient)

0. *Not detectable – no odour*
1. *Very light – odour detected but may not be recognisable*
2. *Light – odour recognisable (i.e., discernible)*
3. *Moderate – odour very distinct and clearly distinguishable.*
4. *Strong – odour causes a person to try to avoid it*
5. *Very strong – odour overpowering and intolerable*

Duration:

- The length 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).

Odours emanating from the aerobic pond are generally acceptable, but odours from the anaerobic pond, as to be expected, are usually stronger and it's these odours which give rise to complaints from neighbours. Ponds treating pig effluent can produce up to 5,000 ppm hydrogen sulphide, and this potent-smelling gas is one of the main causes of many odour complaints. Weather conditions, especially wind direction (Figure 2), have been the main trigger for residents to register an odour complaint with the Council. In all previous odour cases investigated, the wind has been from a northerly quarter.

Although one complaint had been received by the Council during the 2008-2009 monitoring period, previous complainants are all local residents living within close

proximity (200 metres), directly south-west of the ponds system. The locations from where the complaints have been received, and the Council subsequently investigated, are generally from Sisson Terrace, Smith Street and an industrial area on the eastern side of Manutahi Road Bridge.

It is anticipated that the new covered anaerobic pond will greatly improve the effluent quality discharging to the existing pond system and consequently minimize down stream odour effects. It is possible that some odour emissions from the lower anaerobic pond may continue for a period of time while reverting to aerobic conditions. It is these odours that produce emissions of odorous hydrogen sulphide, which is the contaminant mainly responsible for odour complaints.

For the majority of the monitoring period the consent holder has maintained and operated the ponds system effectively, demonstrating good odour control.

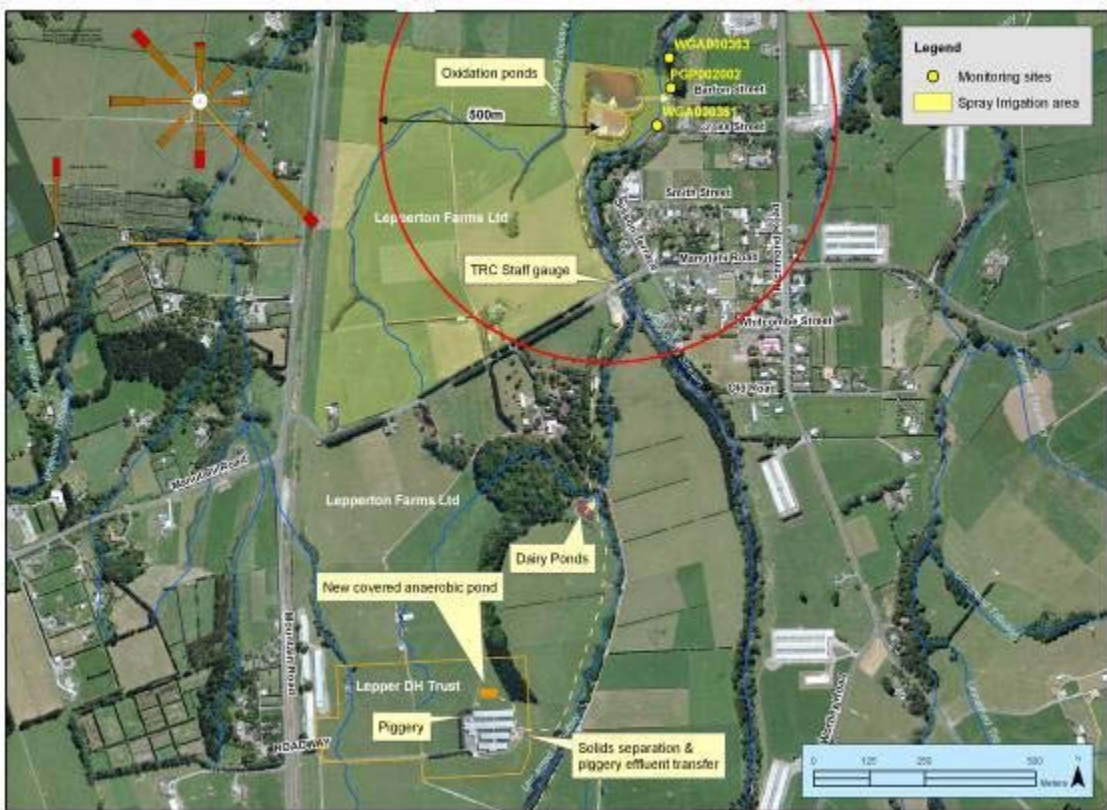


Figure 2 Aerial map showing wind direction in relation to ponds and township

### 3.4 Evaluation of performance

A tabular summary of DH Lepper Trust's compliance record for the year under review is provided in Tables 5, 6 & 7.

**Table 5** Summary of performance for Consent 0715-3 To discharge piggery and farm dairy effluent from an oxidation pond treatment system

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	Yes
2. Location and position of the discharge point	Monitoring inspections	Yes
3. Minimum dilution rate in receiving waters	Consent holders discharge records and monitoring	n/a
4. Discharge only when the river conditions allow	Consent holders discharge records and monitoring	n/a
5. Maximum concentrations in receiving water after mixing	Sampling	n/a
6. Maximum concentrations in receiving water after mixing	Monitoring inspections of receiving waters	Yes
7. Operation and maintenance of treatment and discharge system	Monitoring inspections	Yes
8. Records of discharge	Records Received	Yes
9. Effluent from aerobic pond discharged to land	Consent holder to notify Council	Yes
10. Notification of discharging to land	Consent holder to notify Council	Yes
11. Optional review provision	Consent up for review during 2008	N/A

N/A = not applicable

**Table 6** Summary of performance for Consent 5206-1 to discharge emissions into the air from a pig farming operation and associated practices including solids composting, effluent treatment and other waste management activities

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adoption of action to minimise adverse environmental effects	Monitoring inspections	Yes
2. Consultation and approval prior to alterations to plant or process	Monitoring inspections	Yes
3. Minimisation of impact and emissions through use of equipment and suitable methods	Monitoring inspections	Yes
4. Operation in accordance with application	Monitoring inspections	Yes
5. Objectionable odour at site boundary not permitted (excluding ponds)	Monitoring inspections	Yes
6. Objectionable dust levels at site boundary not permitted	Monitoring inspections	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
7. Significant adverse ecological effect on ecosystems	Monitoring inspections	Yes
8. Maintenance and landscaping plan	Monitoring inspections	N/A
9. Maintain and operate the effluent ponds system and associated activities	Monitoring inspections	Yes
10. Advise neighbours prior to irrigating effluent to land	Consent holder to inform neighbours and Council prior to irrigating to land	Yes
11. Particular regard to wind direction to minimise effects upon neighbours when discharging effluent	Monitoring inspections	Yes
12. Review of consent conditions	Consent expired 1 June 2008 – application received to renew	N/A

N/A = not applicable

**Table 7** Summary of performance for Consent 0188-3 to take water from an unnamed tributary of the Waiongana Stream for piggery purposes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Minimise environmental effects	Monitoring inspections	Yes
2. Water abstraction not to exceed 50% of the stream flow	Monitoring inspections	Yes
3. Review of consent conditions	Optional permit review – June 2008	N/A

N/A = not applicable

DH Lepper Trust has subsequently demonstrated an overall excellent level of environmental performance and compliance with resource consents.

### 3.5 Recommendations from the 2007-2008 Annual Report

In the 2007-2008 Annual Report, it was recommended:

1. That monitoring of air emissions and discharges to natural water from the DH Lepper Trust Piggery and farm dairy in the 2008-2009 year, continues at the same level as in the 2007-2008 period.

The monitoring programme was undertaken as scheduled.

### 3.6 Alterations to monitoring programme for 2009-2010

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 emitting to the atmosphere/discharging to the environment, with the Taranaki Region.

In the case of DH Lepper Trust piggery/dairy monitoring programme, it is recommended that there be no alteration to the programme for the 2009–2010 period. A recommendation to this effect is attached to this report.

### **3.7 Exercise of optional review of consent**

Resource consents **0715-3** (wastewater discharge) and **0188-3** (water take) both provided for an optional review of consent in June 2008.

Condition 11 on consent **0715-3** allows the Council to review the consent, to ensure that conditions are adequate to deal with any significant adverse effects on the environment in relation to dilution rate, maximum discharge rate, and concentrations of constituents of both the discharge and receiving water. Similarly, condition 3 on consent **0188-3** allows the Council to review the consent to deal with effects on the environment which either were not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

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 was considered that there are no grounds that require a review to be pursued in respect of either consent.

The air discharge Consent **5206-1** expired on 1 June 2008 and an application for renewal has been received by Council.

## 4. Recommendations

1. THAT monitoring of air emissions and discharges to natural water from the DH Lepper Trust piggery and dairy farm in the 2009-2010 year continue at the same level as in the 2008-2009 period.
2. THAT the consent holder continues to advise the Council of all treated effluent wastewater discharges to the Waiongana Stream and onto land.
3. THAT the consent holder monitors and maintains discharge records and forwards these records to the Council as required.
4. THAT the consent holder monitors and maintains anaerobic biogas abstraction rates (flaring or energy usage) and supplies details to Council as required.
5. THAT the consent holder operates and maintains pond levels with a minimum of 300mm freeboard.
6. THAT the provisions in the monitoring programme to sample the discharge and receiving waters on three separate occasions remain unchanged and to include sampling of the new anaerobic pond discharge.
7. THAT the Consent holder be required to provide to Council an odour management plan for the avoidance of any offensive or objectionable odour from the effluent ponds on neighbouring properties.

## Glossary of common terms and abbreviations

The following abbreviations and terms are used within this report:

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
BODC	carbonaceous biochemical oxygen demand. A measure of the presence of degradable organic matter, excluding the biological conversion of ammonia to nitrate
bund	a wall around a tank to contain its contents in the case of a leak
CAP	covered anaerobic pond
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
DO	dissolved oxygen
DRP	dissolved reactive phosphorus
FIDOL	factors (frequency, intensity, duration, offensiveness and location) and scales to rate odour observations
fresh	elevated flow in a stream, such as after heavy rainfall
g/m <sup>3</sup>	grammes per cubic metre, and equivalent to milligrammes per litre (mg/L). In water, this is also equivalent to parts per million (ppm), but the same does not apply to gaseous mixtures
GHG	green house gas emissions
l/s	litres per second
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 <sub>4</sub>	ammoniacal nitrogen, normally expressed in terms of the mass of nitrogen (N)
NH <sub>3</sub>	unionised ammonia nitrogen, normally expressed in terms of the mass of nitrogen (N)
NO <sub>3</sub>	nitrate, normally expressed in terms of the mass of nitrogen (N)
NTU	Nephelometric Turbidity Unit, a measure of the turbidity of water
pH	a numerical system for measuring acidity in solutions, with 7 as neutral. Numbers lower than 7 are increasingly acidic and higher than 7 are increasingly alkaline. The scale is logarithmic i.e. a change of 1

	represents a ten-fold change in strength. For example, a pH of 4 is ten times more acidic than a pH of 5.
physicochemical	measurement of both physical properties(e.g. temperature, clarity, density) and chemical determinants ( e.g. metals and nutrients) to characterise the state of an environment
resource consent	refer Section 87 of the RMA. Resource consents include land use consents (refer Sections 9 and 13 of the RMA), coastal permits (Sections 12, 14 and 15), water permits (Section 14) and discharge permits (Section 15)
RMA	Resource Management Act 1991 and subsequent amendments
SS	suspended solids,
Temp	temperature, measured in °C
Turb	turbidity, expressed in NTU
UIR	Unauthorised Incident Register entry- an event recorded by the Council on the basis that it had potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan

\*an abbreviation for a metal or other analyte may be followed by the letter '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

## **Bibliography and references**

- Taranaki Regional Council 1990 Review of monitoring and inspectoral procedures for dairy shed oxidation pond waste treatment systems. Taranaki Regional Council Technical report 90-42
- Taranaki Regional Council 2004 DH Lepper Trust Piggery Monitoring Programme Annual Report 2003-2004 Technical Report 2004-79
- Taranaki Regional Council 2005 DH Lepper Trust Piggery Monitoring Programme Annual Report 2004-2005 Technical Report 2005-24
- Taranaki Regional Council 2006 DH Lepper Trust Piggery Monitoring Programme Annual Report 2005-2006 Technical Report 2006-61
- Taranaki Regional Council 2007 DH Lepper Trust Piggery Monitoring Programme Annual Report 2006-2007 Technical Report 2007-50
- Taranaki Regional Council 2008 DH Lepper Trust Piggery Monitoring Programme Annual Report 2007-2008 Technical Report 2008-16
- Ministry for the Environment  
Good Practice Guide for Assessing & Managing Odour in New Zealand – June 2003
- New Zealand Pork Industry Board – Pork Industry guide to Managing Environmental Effects EnvioPork - 2005



## **Appendix I**

### **Resource consents held by DH Lepper Trust Piggery**





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

PRIVATE BAG 713  
47 CLOTON ROAD  
STRATFORD  
NEW ZEALAND  
PHONE 0-6-765 7127  
FAX 0-6-765 5097

Name of  
Consent Holder:           Lepper D H Trust  
                                      S Lepper  
                                      326 Wortley Road  
                                      R D 9  
                                      INGLEWOOD

Consent Granted           9 January 2002  
Date:

**Conditions of Consent**

Consent Granted:        To take up to 75 cubic metres/day [0.9 litres/second] of  
                                  water from an unnamed tributary of the Waiongana Stream  
                                  for piggery operation purposes at or about GR: Q19:145-  
                                  366

Expiry Date:             1 June 2020

Review Date(s):         June 2008, June 2014

Site Location:           Manutahi Road, RD 3, New Plymouth

Legal Description:       Pt Sec 185 & 186 Huirangi Dist Blk VII Paritutu SD

Catchment:               Waiongana

## Consent 0188-3

### General conditions

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

### Special conditions

1. At all times the consent holder shall adopt the best practicable option to prevent or minimise any actual or likely adverse effect on the environment associated with the abstraction of water from the unnamed tributary in the Waiongana Stream catchment, including, but not limited to, the efficient and conservative use of water.
2. That abstraction shall not exceed 50% of the natural stream flow at any time.
3. The Taranaki Regional Council may review, according to section 128 of the Resource Management Act 1991, any or all of the conditions of this consent by giving notice of review during June 2008 and/or June 2014, for the purpose of ensuring that the conditions are adequate to deal with any significant adverse effects on the environment arising from the exercise of this consent, which either were not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 9 January 2002

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  
PHONE 06-765 7127  
FAX 06-765 5097

Please quote our file number  
on all correspondence

Name of  
Consent Holder: DH Lepper Trust  
SM Lepper  
326 Wortley Road  
R D 9  
INGLEWOOD

Consent Granted  
Date: 18 December 2002

**Conditions of Consent**

Consent Granted: To discharge treated piggery and farm dairy effluent from  
an oxidation pond treatment system into the Waiongana  
Stream during fresh [high flow] conditions

Expiry Date: 1 December 2013

Review Date(s): June 2004, June 2008

Site Location: Manutahi Road, Lepperton

Legal Description: Pt Lot 2 DP 2634 Sec 185 Huirangi Dist Blk VII Paritutu SD

Catchment: Waiongana

Treatment/Discharge System[s]:	two oxidation ponds	length	width	depth	[metres]
	anaerobic pond	100	50	4	
	aerobic pond	130	80	1.2	

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

**Special conditions**

- 1. The consent holder shall, at all times, operate the piggery and associated activities and discharges in accordance with the information provided in support of application 1649, including the management and contingency plans, except as otherwise required or directed by the conditions set out in this resource consent.
- 2. The discharge point into the Waiongana Stream shall be located at 2614557E-6237954N. The point of discharge shall be beneath the surface of the receiving water.
- 3. 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
- 4. Discharge from the ponds to the Waiongana Stream shall occur only when the flow in the Waiongana Stream measured at the Taranaki Regional Council SH3A monitoring site is greater than 5 cumecs (5 cubic metres per second).
- 5. 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 Waiongana Stream to exceed the following concentrations:

<b>Constituent</b>	<b>Concentration</b>
Unionised ammonia	0.025 gm <sup>-3</sup>
Filtered carbonaceous BOD <sub>5</sub>	2.0 gm <sup>-3</sup>

- 6. After allowing for reasonable mixing, within a mixing zone extending 50 metres downstream of the discharge point, the discharge shall not give rise to any of the following effects in the receiving waters of the Waiongana Stream:
  - a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
  - b) any conspicuous change in the colour or visual clarity;
  - c) any emission of objectionable odour;
  - d) the rendering of fresh water unsuitable for consumption by farm animals;
  - e) any significant adverse effects on aquatic life, habitats or ecology.
- 7. The consent holder shall operate and maintain the treatment and discharge system to ensure that the conditions of this consent are met.

Consent 0715-3

8. The consent holder shall monitor and maintain records of the discharge including date, rate, and volume discharged to the Waiongana Stream; and date, volume and area of land discharge occurs to onto and into land; and shall make these records available to the Chief Executive, Taranaki Regional Council, upon request.
9. Effluent from the aerobic pond shall be discharged onto and into land via irrigation at least once annually during the summer/autumn period, to minimise the adverse effects on water quality in the Waiongana Stream, to the satisfaction of the Chief Executive, Taranaki Regional Council.
10. The Chief Executive, Taranaki Regional Council shall be advised in writing at least 24 hours prior to any irrigation onto and into land from the aerobic pond.
11. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2004 and/or June 2008, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time, including but not limited to:
  - a) dilution rate
  - b) maximum discharge rate
  - c) concentrations of constituents of the discharge
  - d) concentrations of constituents of the receiving water.

Signed at Stratford on 18 December 2002

For and on behalf of  
Taranaki Regional Council

  
\_\_\_\_\_  
Director-Resource Management





CHIEF EXECUTIVE  
PRIVATE BAG 713  
47 CLOTEN ROAD  
STRATFORD  
NEW ZEALAND  
PHONE: 06-765 7727  
FAX: 06-765 5097  
[www.trc.govt.nz](http://www.trc.govt.nz)

Please quote our file number  
on all correspondence

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

Name of  
Consent Holder: DH Lepper Trust  
[Trustees: Steven Maxwell Lepper & Paul Robert Franklin]  
326 Wortley Road  
R D 9  
INGLEWOOD

Consent Granted  
Date: 13 November 2008

**Conditions of Consent**

Consent Granted: To discharge emissions into the air from a pig farming  
operation and associated practices including solids  
composting, effluent treatment and other waste  
management activities at or about (NZTM)  
1704054E-5674882N [Piggery] and  
1704345E-5676156N [Ponds]

Expiry Date: 1 June 2026

Review Date(s): June 2009, June 2011, June 2013, June 2016, June 2020

Site Location: Mountain Road, Lepperton

Legal Description: Lot 3 DP 21006 [Piggery] &  
Pt Lot 1491, Pt Lot 2 DP 2634 [Ponds]

*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**

1. The number of pigs [equivalent 50 kg per pig] on the property at any one time shall not exceed 3500 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. Before 30 September 2009, the development of the covered anaerobic pond shall be completed. From that date gases emanating from the covered anaerobic pond shall be captured and appropriately utilised as an energy source.
4. 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.
5. The consent holder shall minimise the emissions and impacts of contaminants discharged into air from the site by:
  - a) the selection of the most appropriate process equipment;
  - b) process control equipment and emission control equipment;
  - c) the methods of control;
  - d) 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.
6. Subject to condition 7, the discharges authorised by this consent shall not give rise to an odour at or beyond the property boundary that is offensive or objectionable.

7. To allow for the conversion of the existing anaerobic pond to an aerobic state, discharges from this pond may give rise to intermittent offensive and objectionable odour beyond the property boundary until 30 September 2009.
8. For the purposes of condition 6 and 7, an odour shall be deemed to be offensive or objectionable if:
  - a) it is held to be so in the opinion of an enforcement officer of the Taranaki Regional Council, having regard to the duration, frequency, intensity and nature of the odour; and/or
  - b) an officer of the Taranaki Regional Council observes that an odour is noticeable, and either it lasts longer than three (3) hours continuously, or it occurs frequently during a single period of more than six (6) hours; and/or
  - c) no less than three individuals from at least two different properties, each declare in writing that an objectionable or offensive odour was detected beyond the boundary of the site, provided the Council is satisfied that the declarations are not vexatious and that the objectionable or offensive odour was emitted from the site at the frequency and duration specified in (b). Each declaration shall be signed and dated and include:
    - the individuals' names and addresses;
    - the date and time the objectionable or offensive odour was detected;
    - details of the duration, frequency, intensity and nature of the odour that cause it to be considered offensive or objectionable;
    - the location of the individual when it was detected; and
    - the prevailing weather conditions during the event.
9. The consent holder shall provide an Odour Management Plan that details to the satisfaction of the Chief Executive of Taranaki Regional Council how odorous emissions beyond the property boundary will be minimised by 30 September 2009. The plan shall include:
  - i) Define the environmental effect/s being managed by the plan and the objective sought in relation to this effect;
  - ii) Identify key personnel responsible to managing the effect;
  - iii) Describe the activities on the site and describe the main potential sources of odour emissions;
  - iv) Identify and describe methods of mitigation and operating procedures including the dewatering of the anaerobic pond or during control contingency discharge events;
  - v) Monitoring methods including record keeping of maintenance and control parameters, any odour complaints received and weather conditions present at time of complaints.

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

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10. 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 2009 and/or June 2011 and/or June 2013 and/or June 2016 and/or June 2020, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 13 November 2008

For and on behalf of  
Taranaki Regional Council



Director-Resource Management

## **Appendix II**

### **Flow Rating for the Waiongana Stream (at Manutahi Road)**



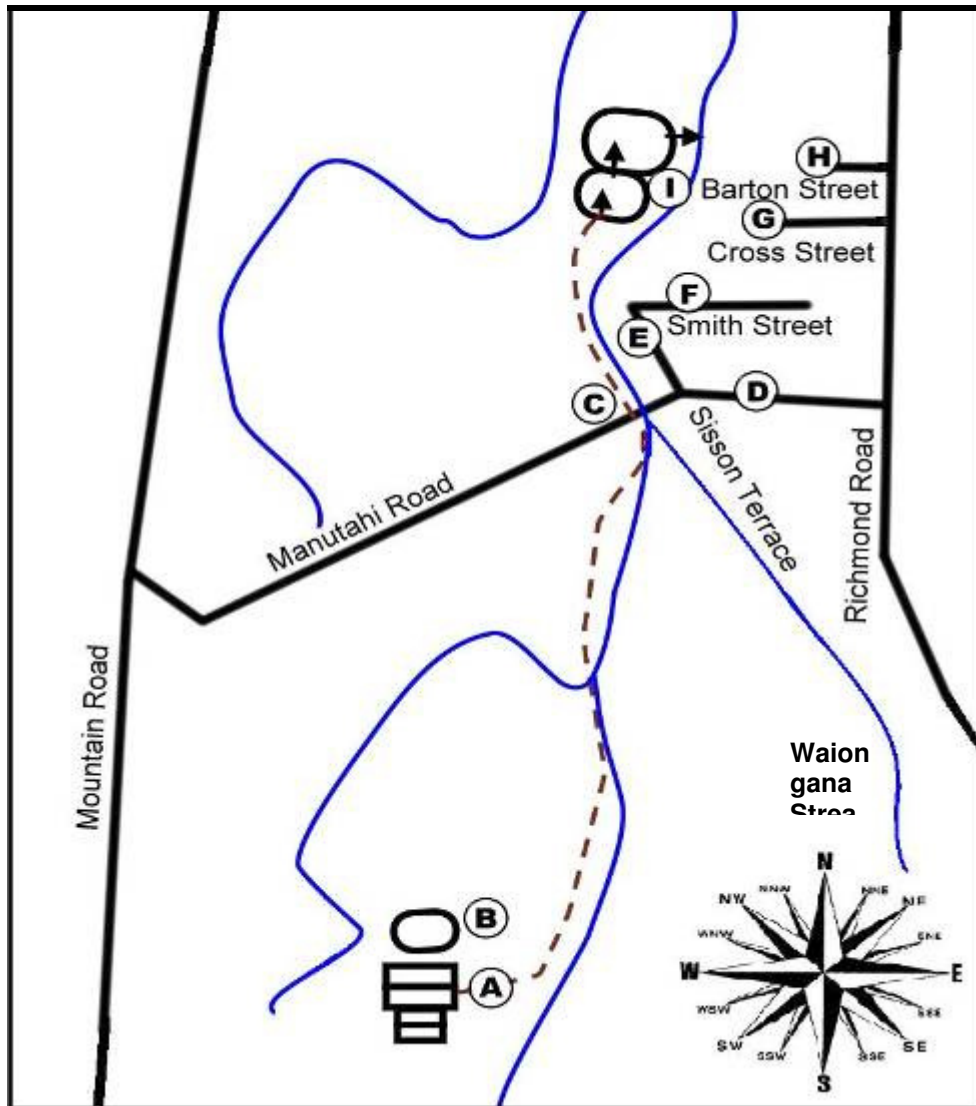
# Odour Survey - DH Lepper Trust Piggery

Date:

Time:

Job No: 3401 565

Sampled By:



## Strength of Odour - Assessed subjectively (scale 0-5)

0 = Not detectable – No odour

1 = Very light – odour detected but may not be recognisable

2 = Light – Odour recognisable (i.e., discernible)

3 = Moderate – Odour very distinct and clearly distinguishable

4 = Strong – Odour causes person to try to avoid it

5 = Very Strong – Odour overpowering and intolerable

	Odour survey sites	Time	Wind direction	Odour
A	Piggery operation			
B	Covered anaerobic pond			
C	Manutahi Road bridge			
D	Manutahi Road			
E	Sisson Terrace			
F	Smith Street			
G	Cross Street			
H	Barton Street			
I	Aerobic ponds			

