

DH Lepper Trust Piggery
Monitoring Programme
Annual Report
2005-2006

Technical Report 2006–61

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Executive summary

The DH Lepper Trust 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 piggery and dairy effluent to water, and for the discharge of emissions into the air. This report for the period July 2005-June 2006 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 a total of three resource consents, which include a total of 26 conditions setting out the requirements that the Company must satisfy.

The Council's monitoring programme included three inspections, comprising two wastewater and receiving water surveys for physicochemical analyses, one inspection of the system during low flow conditions, one inspection of the system when wastewater from the treatment ponds was being spray irrigated to land and one inspection in relation to the annual dairy round.

Monitoring indicated a good level of environmental performance and generally good consent compliance. Impacts on the water quality of the Waiongana Stream were relatively minor and in compliance with consent conditions. Discharge records received from the consent holder indicated one breach of conditions in the early part of the monitoring period and one other breach caused by a faulty discharge valve. In general for the majority of the monitoring programme, the consent holder has ensured that consented receiving water dilution ratios were maintained throughout discharge periods.

The consent holder has supplied the Council with accurate effluent discharge records, including notification of most discharges.

There was one unsubstantiated odour complaint concerning piggery emissions from the ponds system, one breach of consent relating to a routine pond discharge and another consent discharge breach caused by a mechanical failure when river flow conditions were too low for discharge to natural water.

During the year, the consent holder demonstrated a good level of environmental performance and good compliance with the resource consents.

This report includes recommendations for an unaltered monitoring programme for the 2006-2007 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 2005-June 2006 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), and the waste water treatment ponds are situated on Manutahi Road in the Waiongana catchment.

This report covers the results and findings of the monitoring programme implemented by the Council in respect of the consents held by DH Lepper 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 holders use of both water and air and is the second combined annual report by the Taranaki Regional Council for the DH Lepper Trust piggery and dairy farm.

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 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 DH Lepper Trust.

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 2005-2006 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, 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

All raw wastewater is collected in one large holding tank from which it is pumped through a rotating screen machine (Photo 1) which provides primary treatment by separating the solid component of the effluent. The solid component is stored in



Photo 1 Solids separation and collection system.

three large bins prior to being mixed 50:50 with sawdust. It is then transferred to a large shed where it is aerated until well composted. The end product is then bagged and sold as a soil conditioner. The separator reduces solids, biochemical oxygen demand (BOD₅) and some nutrients contained in the liquid wastes which are then directed to the treatment ponds system (Photo 2).

This system is a two pond treatment system located some 1500 metres away adjacent to Manutahi Road. The two ponds are very well sized and have been designed to operate as an anaerobic pond followed by a facultative pond. The pond system also receives wastewater from a 500 cow dairy farm.

Treated effluent is discharged from the ponds system to the Waiongana Stream when



Photo 2 Raw effluent wastewater collection and pumping system

flows permit (consent requirement of a minimum flow of 5m³/sec in the stream). The discharge occurs through a diffuser anchored to the bed of the stream, and as this lies beneath the stream under fresh flow conditions, all sampling of the treated wastewater is from within the final (aerobic) pond, adjacent to the outlet. The treatment pond system is cleaned out annually by contractors and irrigated to the consent holder's surrounding dairy pasture. The ponds are stirred and pumped for 1 to 2 days, which allows for some solids to be removed and for a reduction in volume. Due to the size of the treatment ponds they are not completely emptied as to do so would be impractical and would take a significant period of time.

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 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 (see Appendix I).

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

Eleven special conditions are included in Resource Consent 0715:

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

DH Lepper Trust also holds a consent (0188) to take water from an unnamed tributary of the Waiongana Stream for piggery operation purposes, which has an expiry date of 1 June 2020.

Three special conditions provide for prevention of adverse effects, limit of abstraction and provision for consent review.

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 to discharge emissions into the air from a pig farming activity and associated practices, including solids composting, effluent treatment and other waste management activities. This permit was issued by the Taranaki Regional Council on 4 February 1998 as a resource consent under Section 87(e) of the Resource Management Act. It is due to expire on 1 June 2008.

Twelve special conditions are attached to the consent.

Special Condition 1 requires the consent holder to adopt the best practicable option to prevent or minimise any actual or likely adverse effect on the environment.

Special Condition 2 requires consultation should any alterations occur to the pig farming and effluent disposal processes, operations, equipment or layout which might significantly change the nature or quantity of contaminants emitted from the site.

Special Condition 3 requires the consent holder to minimise the emissions and impacts of air contaminants discharged from the site.

Special condition 4 requires the consent holder to operate the piggery and associated activities in accordance with information provided.

Special Condition 5 restricts odours at or beyond the boundary of the site.

Special Condition 6 limits the discharges of suspended or deposited dust at or beyond the boundary of the site.

Special Condition 7 prohibits any significant adverse ecological effect.

Special Condition 8 requires the consent holder to submit an effluent ponds maintenance and landscaping plan.

Special Condition 9 requires the consent holder to maintain and operate the effluent ponds system and associated activities in compliance with the plan required by Special Condition 8.

Special Condition 10 requires the consent holder to advise neighbours of any scheduled land application of effluent or sludge onto a property.

Special Condition 11 requires the consent holder to minimise effects upon neighbours and the land uses of neighbouring properties.

Special Condition 12 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 three times during the monitoring period. The main points of interest were the collection area, the separator and composting system and treatment ponds system with associated actual and potential emission sources and characteristics, including potential odour.

As far as was practicable, inspections in relation to air emissions were integrated with inspections undertaken for other purposes eg, effluent discharges. The air monitoring programme had been costed on the basis of an integrated approach to resource monitoring.

1.4.4 Physicochemical sampling

The Taranaki Regional Council undertook sampling of the discharges from the treatment ponds system and the stream water quality upstream of the discharge point and downstream of the designated mixing zone.

The effluent discharge was sampled on two occasions, and the sample analysed for carbonaceous biochemical oxygen demand (CBOD₅), chloride, conductivity, suspended solids and turbidity.

The Waiongana Stream was sampled on two occasions, upstream and downstream of the discharge, and analysed for filtered carbonaceous biochemical oxygen demand (FCBOD₅), chloride, conductivity, dissolved reactive phosphorus, unionised ammonia, ammoniacal nitrogen, pH, suspended solids, turbidity and temperature.

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

2. Results

2.1 Water

2.1.1 Wastewater dilution establishment

To determine flow rates in the Waiongana Stream a rating curve 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 staff gauge installed at the Manutahi Road Bridge provides the consent holder with the stream level (or height) and a rating chart produced by the Council showing water flow rates at any given stream rate. This rating was updated during the 2005-2006 period from the hydrological gauging programme.

The Taranaki Regional Council web site (www.trc.govt.nz) provides current river flow and water levels for the Waiongana Stream recorded at SH3a. The river level and flow data are automatically forwarded to the Councils computer database. The data are analysed every two hours and a graph is provided within ten minutes of downloading. Because of the time lag between the pond discharge point and downstream flow at Waiongana SH3a, the staff gauge provides the consent holder with accurate 'real time' river conditions.

2.1.2 Inspections and analytical results of wastewater and receiving water physiochemical monitoring

During the monitoring period three inspections of the piggery site were conducted by the Taranaki Regional Council staff. Samples were collected on two of these occasions for physicochemical analysis in the Taranaki Regional Council IANZ-registered laboratory using standard methods. Sites sampled were located as listed in Table 1 and illustrated in Figure 1.



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

Table 1 Location of sampling sites

Site	Site code	Map reference	Location
Waiongana Stream	WGA000361	Q19: 145-379	100 m u/s of discharge
Piggery effluent	PGP002002	Q19: 146-380	In aerobic pond adjacent to outlet
Waiongana Stream	WGA000363	Q19: 146-380	50 m d/s of discharge

Comments in relation to these inspections and the results of the sampling programme are provided as follows:

Inspection of 9 December 2005

No discharge was occurring from the piggery treatment ponds during this inspection as the Waiongana Stream was in a low river flow condition (less than 3m³ per second). It appeared that solids had overflowed into the second pond from the anaerobic pond and that the pipe between ponds may have been blocked. The dairy farm treatment pond was found to have a very high pond level which was near to overflow.

Inspection of 9 February 2006

This inspection of the piggery operation and effluent waste treatment system was carried out during fine weather conditions following an initial complaint of black smoke emanating from off site. On inspection it was found that the valve on the discharge pipe line appeared to be in the closed position (Photo 3) but on further investigation it was found that the valve was leaking, resulting in pond effluent discharging into the Waiongana Stream when river flow conditions were below the allowable 5 cumecs (staff gauge = 0.31metres). As a result of this discharge samples



were taken from the treated effluent discharge and receiving waters. An explanation of why this discharge had occurred was requested by the Council. The consent holder informed the Council that repairs to a faulty discharge valve had subsequently been made. The piggery solids separator and waste collection system were well managed and the two offal pits were found to be secure. Results of the sampling are presented in Table 2.

Photo 3 The treated effluent discharge valve at entry to stream outfall

Table 2 Results from DH Lepper Trust piggery and Waiongana Stream, sampled on 9 February 2006

Site location		WGA000361 Waiongana Stream upstream	WGA000363 Waiongana Stream downstream	PGP002002 Piggery final effluent
Parameter	Unit			
Time	NZST	1210	1315	1220
Temperature	°C	18.0	18.0	20.5
Conductivity @ 20°C	mS/m	11.6	12.7	266
Chloride	g/m ³	13.8	14.4	286
pH		8.0	8.0	-
Total carbonaceous BOD5	g/m ³	2.6	4.5	110
Filtered carbonaceous BOD5	g/m ³	1.3	1.5	-
Ammoniacal nitrogen	g/m ³ N	0.48	0.782	189
Unionised ammonia	g/m ³ NH ₃	0.002	0.031	-
Dissolved reactive phosphorus	g/m ³ P	0.054	0.246	-
Turbidity	NTU	9.7	10	320
Suspended solids	g/m ³	15	16	680
Appearance		clear (SG = 0.31m)	Some discolouration	Redish coloured (algal bloom)

Under low river flow conditions (1.4 cumecs) these results indicated that the wastewater dilution was probably in excess of 250:1 but only as a result of the piggery final effluent (discharging through the partially closed valve) at a rate of about 5 l/sec. Minimal impacts were measured in the Waiongana Stream below the mixing zone because of the low rate of discharge at the time. The discharge was in breach of Special Condition 4 of consent 0715 where the receiving flow is required to be greater than 5 cumecs.

Inspection of 18 April 2006

Notification was received from the consent holder that a discharge of treated wastes from the pond system into the Waiongana Stream had commenced. This inspection of the piggery and ponds was carried out during fine, but overcast weather conditions. Samples from the treated effluent discharge and receiving water were taken on this occasion as per the compliance monitoring programme. The inspection



found that the piggery effluent wastes were well managed and the ponds system was working well. Although the river was running high (SG=0.58 metres) and turbid at the time of discharging, there was a distinct noticeable pink discolouration (Photo 4) fifty metres downstream at the end of the mixing zone. Results of the sampling are presented in Table 3.

Photo 4 Pink discolouration from the treated wastes discharge

Table 3 Results from DH Lepper Trust piggery and Waiongana Stream, sampled on 18 April 2006

Site location		WGA000361 Waiongana Stream upstream	PGP002002 Piggery final effluent	WGA000363 Waiongana Stream downstream
Parameter	Unit			
Time	NZST	1110	1120	1115
Temperature	°C	15.0	19.6	-
Conductivity @ 20°C	mS/m	8.2	300	01.6
Chloride	g/m ³	11.8	283	13.1
pH		7.6	-	7.6
Total carbonaceous BOD ₅	g/m ³	-	280	-
Filtered carbonaceous BOD ₅	g/m ³	1.4	-	1.4
Ammoniacal nitrogen	g/m ³ N	0.059	223	1.47
Unionised ammonia	g/m ³ NH ₃	<0.001	-	<0.001
Dissolved reactive phosphorus	g/m ³ P	0.045	-	0.310
Turbidity	NTU	36	400	33
Suspended solids	g/m ³	49	840	53
Appearance		High & turbid (SG = 0.58m)	Pink colour, noticeable discharge plume	High & turbid slight pink discoloration

Under relatively high river flow conditions (5.7 cumecs) these results indicated wastewater dilution was probably in excess of 450:1. Minimal impacts were measured in the Waiongana Stream below the mixing zone and the discharge was in compliance with all relevant Special Conditions of consent 0715. Elevated nutrients, turbidity and suspended solids were typical of flood conditions in the Waiongana Stream. The wastewater TCBOD₅ result was comparable to previous year's results and the suspended solids concentration was slightly elevated.

2.1.3 Treated piggery/dairy wastewater

Prior to the 2005-2006 monitoring period the treatment ponds system had been sampled for various reasons. These results are summarised in Table 4 and relate to sampling from within the final (aerobic) pond adjacent to the outlet.

Table 4 Summary of treated wastewater analyses results from the DH Lepper Trust piggery/dairy for the period 1991 to May 2005

Parameter	Unit	Number of samples	Range	Median
Conductivity @ 20°C	mS/m	10	222-415	279
pH		4	8.1-8.3	8.1
Total carbonaceous BOD ₅	g/m ³	8	120-1100	170
Filtered carbonaceous BOD ₅	g/m ³	5	7.2-46	24
Ammoniacal nitrogen	g/m ³ N	7	200-336	264
Turbidity	NTU	8	110-240	190
Suspended solids	g/m ³	11	230-800	410

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 fourteen-year period surveyed.

The current treatment system's effluent was monitored on two occasions during the 2005-2006 period (see Section 2.1.2) and these results are summarised in Table 5 for comparative purposes.

Table 5 Summary of treated wastewater analyses results from the DH Lepper Trust piggery/dairy for the period July 2005 to June 2006

Parameter	Unit	Number of samples	Range	Median
Conductivity @ 20°C	mS/m	2	266 - 300	283
Total carbonaceous BOD ₅	g/m ³	2	110 - 280	195
Turbidity	NTU	2	320 - 400	350
Suspended solids	g/m ³	2	680 - 840	760

2.1.4 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 are provided in Table 6.

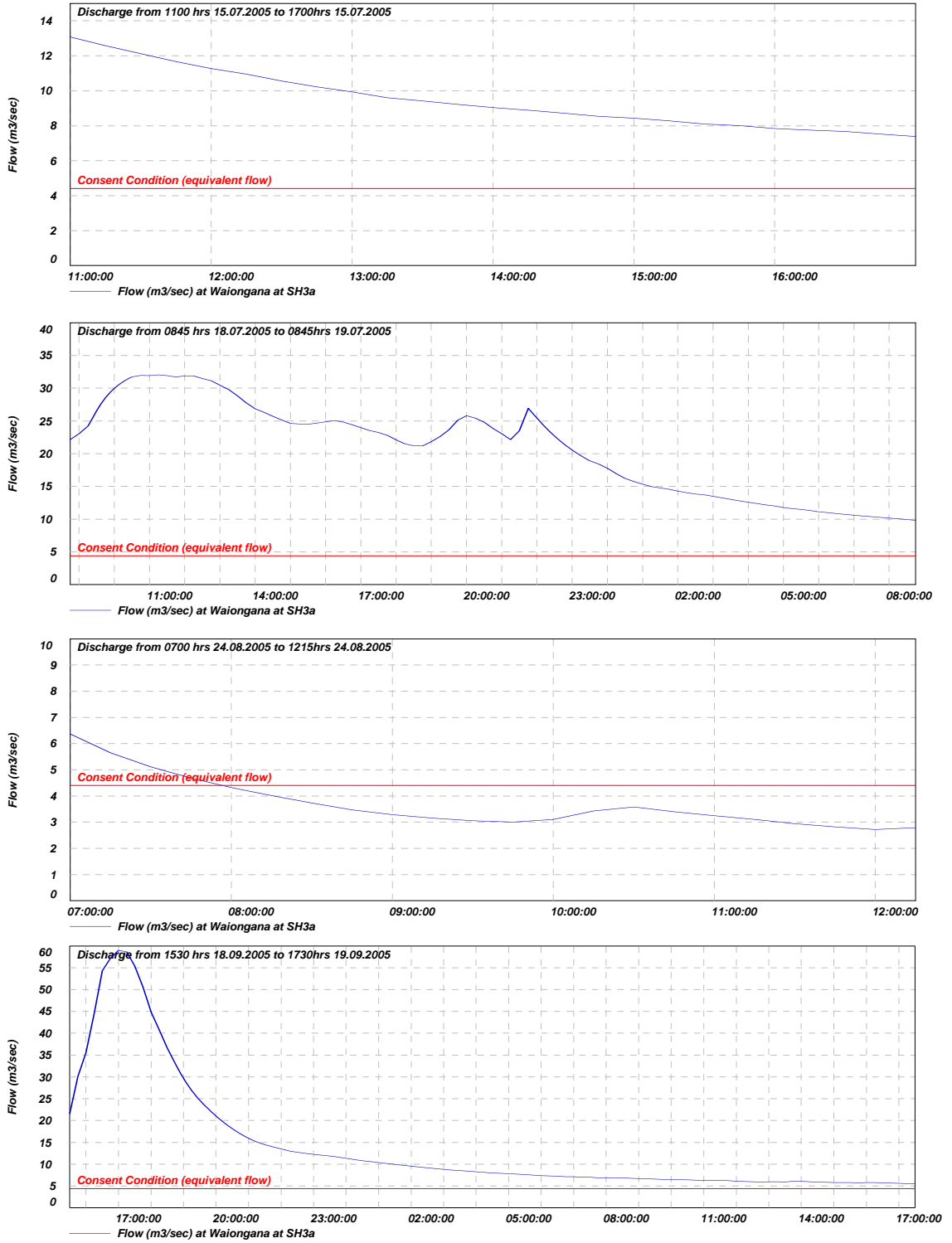
Table 6 Discharge records of piggery treated wastes to the Waiongana Stream

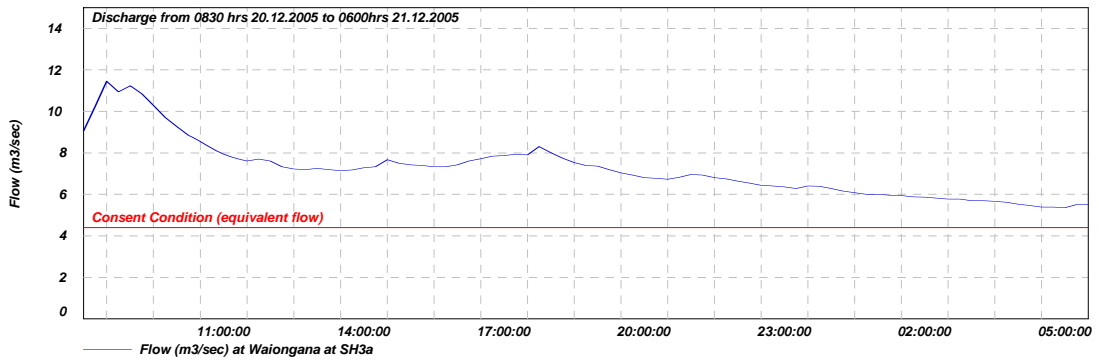
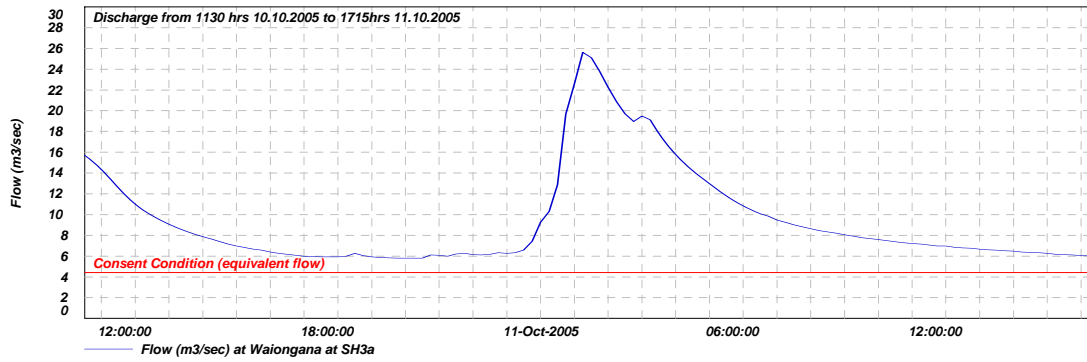
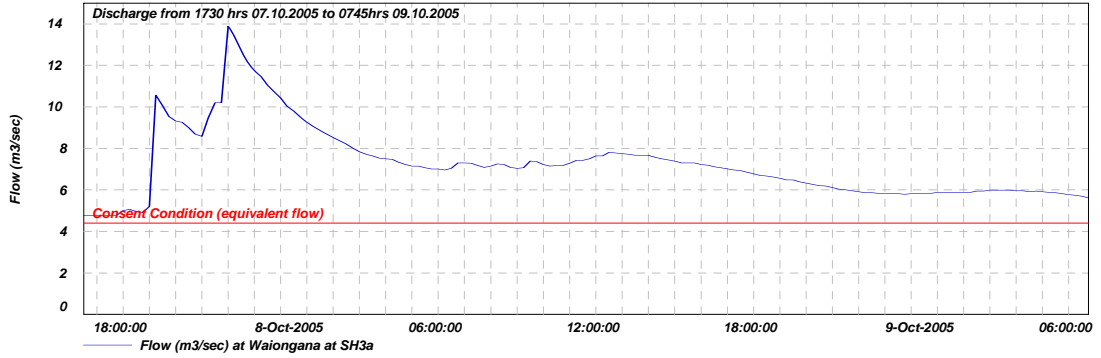
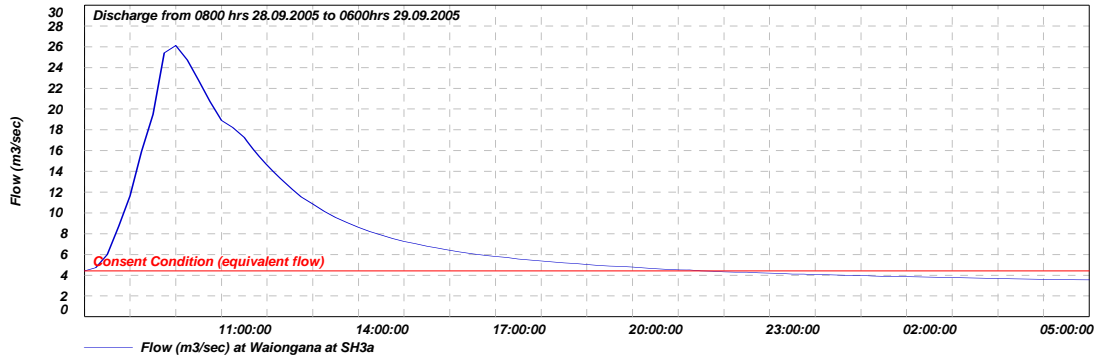
Discharge period	Duration (hrs)	TRC notified	Stream flow during period (m ³ /sec)
15 July 05, 1100 hrs to 15 July 05 1700 hrs	6	√	13-8
18 July 05, 0845 hrs to ?	?		22-10
24 Aug 05, 0700 hrs to 24 Aug 05 1215 hrs	5		6-3
18 Sept 05, 1530 hrs to 19 Sept 05 1730 hrs	26		21-5
28 Sept 05, 0800 hrs to 29 Sept 05 0600 hrs	22	√	5-4.5
07 Oct 05, 1730 hrs to 09 Oct 05 0745 hrs	36		5-6
10 Oct 05, 1130 hrs to 11 Oct 05 1715 hrs	30	√	16-7
20 Dec 05, 0830 hrs to 21 Dec 05 0600 hrs	22		9-6
03 April 06, 1230 hrs to 04 April 06 1700 hrs	28	√	Spray irrigation (contractor)
18 April 06, 0700 hrs to 18 April 06 1800 hrs	11	√	15-5
25 April 06, 1000 hrs to 26 April 06 0700 hrs	21		10-5
27 May 06, 0815 hrs to 29 May 06 0730 hrs	23		26-7
12 June 06, 1015 hrs to 13 June 06 0830 hrs	22	√	40-5

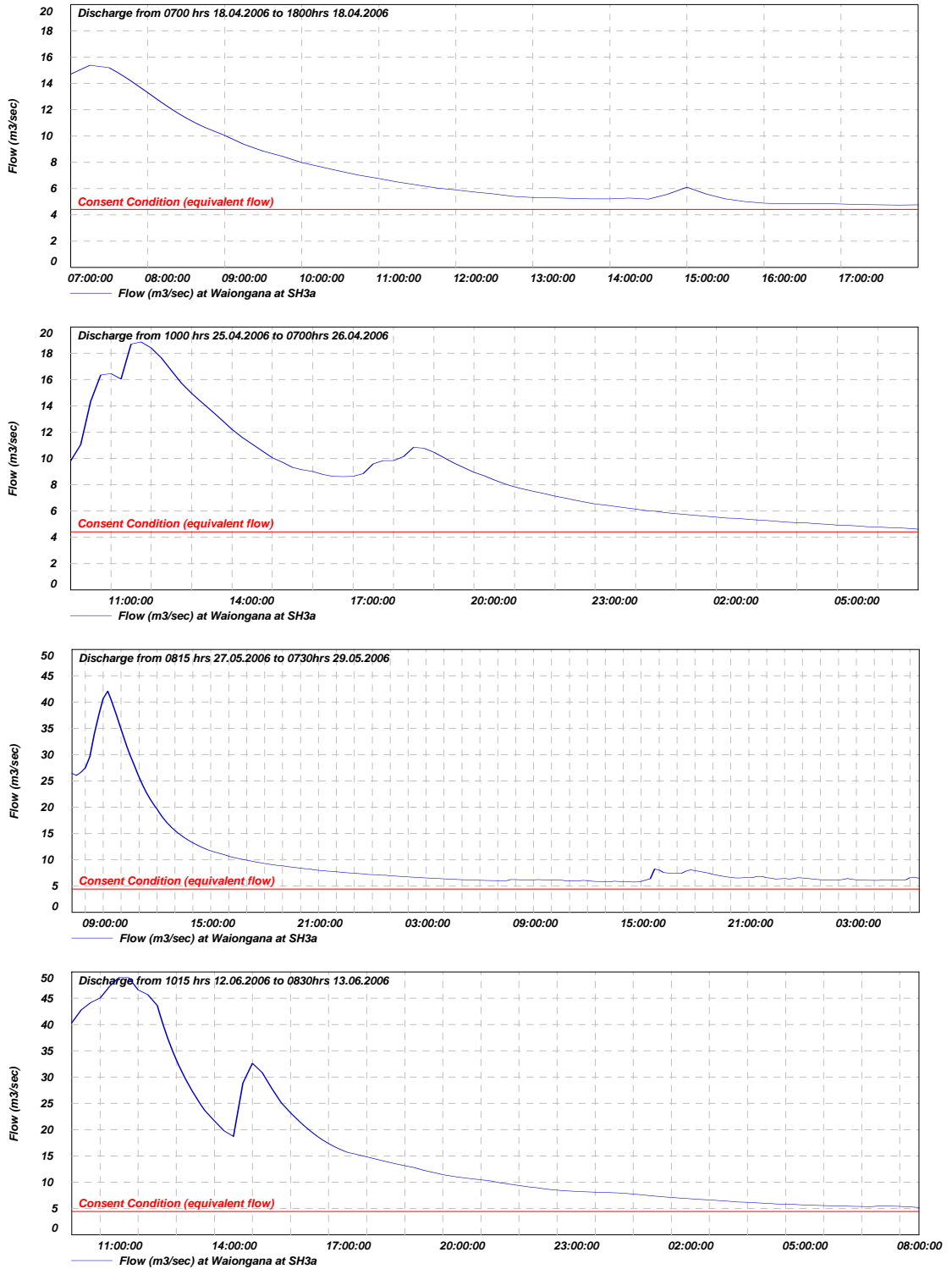
These records indicate that on most occasions the treated effluent discharge into the Waiongana Stream was compliant with Special Condition 4 of consent 0715. The records received from the consent holder for 24 August 2005 indicate that the discharge into the Waiongana Stream occurred when the stream flow was well below the required 5 cubic metres per second for the majority of the discharge. TRC was notified of discharges on six out of thirteen occasions. On 03 April 2006 the consent holder informed TRC that spray irrigation to land had commenced. The following graphs (Figure 2) illustrate the piggery discharges in relation to the Waiongana

Stream flow conditions at the time of discharge. The 5 m³/sec minimum river flow consent condition is highlighted in red and the blue line represents the river flow (m³/sec) at the time of discharge.

Figure 2 Graphs displaying discharge records received from the consent holder







The above graphs (Figure 2) demonstrate that good wastewater dilution ratios have been maintained on most occasions. The Waiongana Stream hydrology displays a natural rapid rise and fall (typical of Taranaki mountain ring plain streams) which allows for a limited window of opportunity when treated wastewater can be discharged above the consent limit.

The treated wastewater discharged early on the 24 August 2005 (Figure 2 graph 3) shows a rapid receding stream flow condition and was below the consent requirement within an hour after discharging commenced, continuing for a further period of up to four hours.

2.2 Air

2.2.1 Inspections

Air quality is checked during compliance monitoring inspections or if odour complaints are received. There was one unsubstantiated odour complaint concerning piggery emissions from the ponds system and routine inspections found no objectionable odour off site.

2.3 Register of incidents

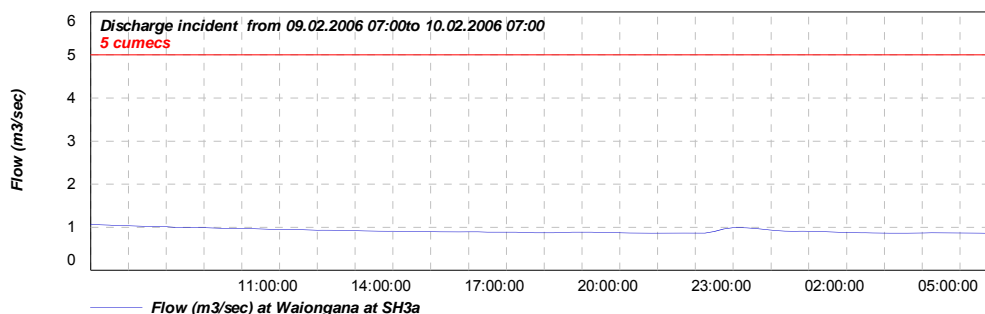
The Taranaki Regional Council operates and maintains a register of all complaints or reported and discovered excursions from acceptable limits and practices, including non-compliance with consents, which may damage the environment. The register ('unauthorised incident register') includes events where 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 2005-2006 year, there were two incidents recorded by the Council that were associated with the DH Lepper Trust piggery.

On 9 February 2006 the inspection of the system found that the valve on the discharge pipe was not entirely closed resulting in a discharge to the Waiongana Stream when the stream flow conditions were below 5 cumecs (Figure 3). Samples of the piggery discharge and the receiving waters were taken on this occasion.

Figure 3 Graph displaying the Waiongana Stream at low river flow conditions.



On 12 June 2006 a complaint was received by Council regarding odours off site. An inspection was performed in response to this complaint but no odour was detected 'off site' on this occasion.

3. Discussion

3.1 Discussion of plant performance

The DH Lepper Trust's piggery/dairy performance generally has been good. The implementation of a tailored consent monitoring programme has shown the consent holder to have met consent conditions including receiving water conditions (for unionised ammonia and FCBOD₅, dilution), compliance with receiving water dilution ratios for the majority of discharge periods, monitoring of the system, maintenance of records and discharge to land requirements. The consent holder has also advised Council on some occasions of the exercise of the consent to discharge to the Waiongana Stream, thereby assisting with components of the monitoring programme.

The site has been well maintained and the use of the piggery wastes separator system assists with lowering wastes loadings to the anaerobic-aerobic treatment ponds system. It also utilises valuable nutrients and organic material as a soil conditioner.

Annual disposal of treated wastewater to land was also performed during the monitoring period in compliance with Special Condition 9 of consent 0715.

On one occasion the discharge of pond effluent into the Waiongana Stream when stream flow conditions did not allow was in contravention of the Resource Consent special conditions 4. (*'Discharge from the ponds to the Waiongana Stream shall occur only when the flow in the Waiongana Stream measured by the Taranaki Regional Council SH3a monitoring site is greater than 5 cumecs'*). On this occasion the unauthorised discharge was caused by the final pond effluent valve being partially open discharging into the Waiongana Stream. This discharge valve requires adequate protection by way of a fence to prevent cattle from inadvertently knocking the valve open. For greater protection the ball valve should be replaced with a screw type valve which will allow for a positive isolation. Although samples results showed that there were no significant adverse effects as a result of the low discharge rate, the Council regards any non compliance as serious.

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

Receiving water physicochemical monitoring indicated that the discharge of treated piggery/dairy effluent to the Waiongana Stream, which generally only occurred under high stream flows, had very minimal impacts on the stream and complied with the minimum dilution standard. All parameters measured complied with appropriate consent conditions.

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

Operation of the DH Lepper Trust piggery has resulted in no recording of objectionable odours off site. The piggery was a very tidy, clean and well managed operation which helped in minimising odour.

One unsubstantiated complaint concerning piggery odour emissions from the pond system was received by the Council during the 2005-2006 period. Because of the treatment ponds close proximity to the eastern neighbouring houses, odour issues remain a concern. Residential encroachment into the rural countryside is also a major concern for the pork industry. For the majority of the monitoring period the consent holder has maintained and operated the ponds system effectively demonstrating good odour control.

3.4 Evaluation of performance

A tabular summary of the Company's compliance record for the year under review is provided in Table 7.

Table 7 Summary of performance for Consent 0715-3 To discharge piggery and farm dairy effluent from an oxidation pond treatment system into the Waiongana Stream during fresh (high flow) conditions

Condition requirement	Means of monitoring during period under review	Compliance achieved?
Limits of discharge rates and volumes	Inspections of data and discharge point inspections	Yes
Concentration limits upon potential contaminants in discharge	Chemical sampling	Yes
Location of discharge point	Inspections of treatment system and discharge point	Yes
Consultation over significant proposed changes	Liaison during visits. No significant changes undertaken during year	Yes
Monitor and maintain discharge records	Consent holder to notify TRC when discharging and record all discharges. Not all discharges were recorded.	No
To discharge only when the monitoring site is greater than 5 cumecs	Consent holder to ensure staff gauge water level reading is within given parameters when starting and finishing discharge.	No
Effluent from aerobic pond discharged to land	Consent holder notify TRC when irrigating to land	Yes
Option for review of wastewater plan	No review sought by either Council or Company	N/A
Designated staff member	Officer introduced to Council	Yes
Donation to Taranaki Tree Trust	Confirmation with Council finance dept that donation received	N/A
Optional review provision re nutrient loadings	Not exercised- current system addresses nutrients in discharge satisfactorily	N/A
Optional review provision re environmental effects	Not scheduled for consideration during year under review. Next consideration June 2005.	N/A

N/A = not applicable

During the beginning of the monitoring period, DH Lepper Trust breached special condition 4 of consent 0715-3 which allows a discharge from the treatment ponds to the Waiongana Stream, only when the Waiongana Stream is greater than 5 cumecs (5 cubic meters per second). This consent condition was breached on two separate occasions on calculating discharge records received by the consent holder. After

consultation with the consent holder, discussing river flows and discharge conditions, DH Lepper Trust has subsequently demonstrated an overall good level of environmental performance and compliance with the resource consents.

Special condition 8 requests that the consent holder shall monitor and maintain records of discharge, including date, rate and volumes discharged to the Waiongana stream including wastewater volumes discharged onto land.

3.5 Recommendations from the 2004-2005 Annual Report

In the 2004-2005 Annual Report, it was recommended:

That monitoring of air emissions and discharges to natural water from the DH Lepper Trust Piggery and farm dairy in the 2004-2005 year, continues at the same level as in the 2005-2005 period.

The monitoring programme was undertaken as scheduled.

3.6 Alterations to monitoring programmes for 2006-2007

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 the case of DH Lepper Trust piggery/dairy monitoring programme, it is recommended that there be no alteration to the programme for the 2006-2007 period. A recommendation to this effect is attached to this report.

3.7 Exercise of optional review of consent

There are no consents relating to D H Lepper Trust that provide for optional review in June 2007.

4. Recommendations

1. THAT monitoring of air emissions and discharges to natural water from the DH Lepper Trust piggery and dairy farm in the 2006-2007 year continues at the same level as in the 2005-2006 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 to forward these records to the Council at six month intervals.
4. That the consent holder operates and maintains pond levels with a minimum 300mm of freeboard.
5. That the provision in the monitoring programme to sample the discharge and receiving waters on three separate occasions remain unchanged.
6. That the consent holder be advised to provide protection for the final aerobic pond discharge valve (into the Waiongana Stream) by means of a barrier fence, and to replace this valve if necessary with a suitable screw type valve ensuring positive isolation when closed.

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

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

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

fresh elevated flow in a stream, such as after heavy rainfall

g/m³ 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

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.

NH₄ ammoniacal nitrogen, normally expressed in terms of the mass of nitrogen (N)

NH₃ unionised ammonia nitrogen, normally expressed in terms of the mass of nitrogen (N)

NO₃ 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

Appendix I

Resource consents held by DH Lepper Trust Piggery

Appendix II

Flow Rating for the Waiongana Stream (at Manutahi Road)

Waiongana Stream at Manutahi Road Bridge Height vs Flow Values

Prepared for DH Lepper Trust

(updated March 2006)

A staff gauge has been installed on the Waiongana Stream at Manutahi Road Bridge for monitoring of the stream level (or height).

The table shows stream levels at this bridge and the corresponding flow for each level.

River Level	Flow (m ³ /sec)
0.20	0.572
0.21	0.604
0.22	0.640
0.23	0.683
0.24	0.733
0.25	0.790
0.26	0.857
0.27	0.932
0.28	1.020
0.29	1.110
0.30	1.220
0.31	1.340
0.32	1.470
0.33	1.620
0.34	1.770
0.35	1.940
0.36	2.109
0.37	2.292
0.38	2.486
0.39	2.691
0.40	2.906
0.41	3.133
0.42	3.372
0.43	3.622
0.44	3.885
0.45	4.160
0.46	4.448
0.47	4.749
0.48	5.063
0.49	5.391
0.50	5.733
0.51	6.089
0.52	6.460
0.53	6.846
0.54	7.247
0.55	7.663
0.56	8.096
0.57	8.544
0.58	9.008
0.59	9.490
0.60	9.988



