

# Lakeland Dairies Co-Operative Society



*Lakeland Dairies Killeshandra Dairy Site*

*Annual Environmental Report 2009*

*License No: P0800-01*

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## 1 Introduction

### 1.1 Company Details

<b>Licensee</b>	<b>Lakeland Dairies Co-Operative Society</b>
<b>Location of Installation</b>	<b>Lakeland Dairies Killeshandra Dairy Site</b>
<b>Address</b>	<b>Killeshandra</b>
<b>County / City</b>	<b>Co. Cavan</b>
<b>Business</b>	<b>7.2.1 The treatment and processing of milk, the quantity of milk received being greater than 200 tonnes per day (average value on a yearly basis).</b>
<b>No of Employees</b>	<b>120</b>
<b>Site Contact</b>	<b>Rory Farrell</b>
<b>Position</b>	<b>Environmental Manager</b>
<b>Telephone</b>	<b>+ 00 353 49 4364200</b>
<b>Fax</b>	<b>+ 00 353 49 4364201</b>
<b>Email</b>	<b><a href="mailto:rory.farrell@lakeland.ie">rory.farrell@lakeland.ie</a></b>
<b>IPPC Registration Number</b>	<b>P0800-01</b>

## **1.2 Site Background and Description**

Lakeland Dairies, Ireland's second largest dairy processing co-operative, operates within a fifteen county catchment area in the northern half of Ireland.

The Food Ingredients Division extracts constituents of freshly assembled milk to offer a comprehensive portfolio of highly functional food ingredients including milk powders, proteins and liquid dairy fats. The Food Ingredients Division manufactures on sites at Killeshandra, Co. Cavan, Bailieborough, Co. Cavan and Lough Egish, Co. Monaghan.

The Foodservice Division manufactures predominantly UHT (Ultra High Temperature) Products. This involves heating the milk/cream to high temperatures and packing them in sterile conditions into sterile packs. UHT products are generally sold in minipots, 1litre cartons and 200ml cartons. The Foodservice Division also manufactures frozen ice-cream, which involves taking cream / skim base and adding various ingredients/colours and flavours filling into blocks and tubs and freezing. The Foodservice Division also manufactures butter portions, which involves buying in bulk butter and repacking it into foil wrapped portions. The main foodservice markets are Ireland, UK, Europe, Russia and the Middle East. The Foodservice Division manufactures at Killeshandra and at Newtownards in Northern Ireland.

The Killeshandra Site then involves the manufacture of products from both the Food Ingredients (Casein and Whey Processing) and Food Service (UHT, Ice-cream and Mini-butter) Divisions.

There has been dairy production on the Killeshandra Site since 1896.

For many years manufacturing on the site would have involved predominantly butter production. UHT production was introduced to the Site in the 1960s while Casein and Whey Processing was introduced to the Site in the early 1980s. More recent additions to production on the site are Frozen Ice-cream manufacture and Whey Protein Concentrate manufacture for example.

Production activities are 24 hours a day, 7 days a week during peak production. There are 140 employees operating on site during peak production.

Lakeland Dairies Killeshandra occupies an approximately 5-hectare site, located in the town of Killeshandra, Co. Cavan. The Site is split into two sections, an independent Processing Facility and Wastewater Treatment Plant. This Treatment Plant is located at the Convent Farm Killeshandra.

The Production Facility is bounded to the north by Church St., Killeshandra, to the east by commercial property, to the south by a housing development and agricultural land and to the west by agricultural land. The Wastewater Treatment Plant is located at the centre of the 'Convent Farm' at Cornaclea, Killeshandra and discharges effluent to the River Cullies.

Lakeland Dairies were granted an IPPC licence under the EPA Acts, 1992 – 2007, for the Treatment and Processing of Milk, the quantity of milk received being greater than 200 tonnes per day (average value based on a yearly basis). The licence was issued to Lakeland Dairies in March 2008. This is the second Annual Environmental Report commissioned under the terms of this licence.

### 1.3 Environmental Policy

Lakeland Dairies Killeshandra is a multi-purpose dairy processing site that is committed to the production of high quality dairy products. The production units currently on the Killeshandra site are the UHT Plant, the Casein Plant, Whey Processing, a Frozen Ice-cream Plant, Butteroil and a Mini-Butter Plant.

**Environmental Management:**

Lakeland Dairies will commit the resources necessary to establish, implement and maintain an Environmental Management System.

**Environmental Protection:**

It is the aim of Lakeland Dairies to comply with applicable legal requirements and other requirements to which the company subscribes which relate to our environmental aspects. Through the use of integrated environmental procedures and planning, Lakeland Dairies will minimise any significant adverse environmental impacts of their activities, products and services and of new developments.

**Pollution Prevention:**

Lakeland Dairies is committed to prevention of pollution.

**Environmental Risks:**

Lakeland Dairies will take appropriate precautions to minimise significant environmental risks by utilising safe technologies and operating procedures including emergency response plans.

**Emissions to Land, Air and Water:**

Lakeland Dairies will minimise our emissions to land, air and water.

**Use of Energy:**

As a large consumer, Lakeland Dairies will Endeavour to optimise energy efficiency and conservation in all operations.

**Waste Disposal:**

Lakeland Dairies will Endeavour to minimise the production of all wastes, dispose of such wastes in a safe and responsible manner and increase the amount of waste recycled to the maximum possible.

**Continual Improvement:**

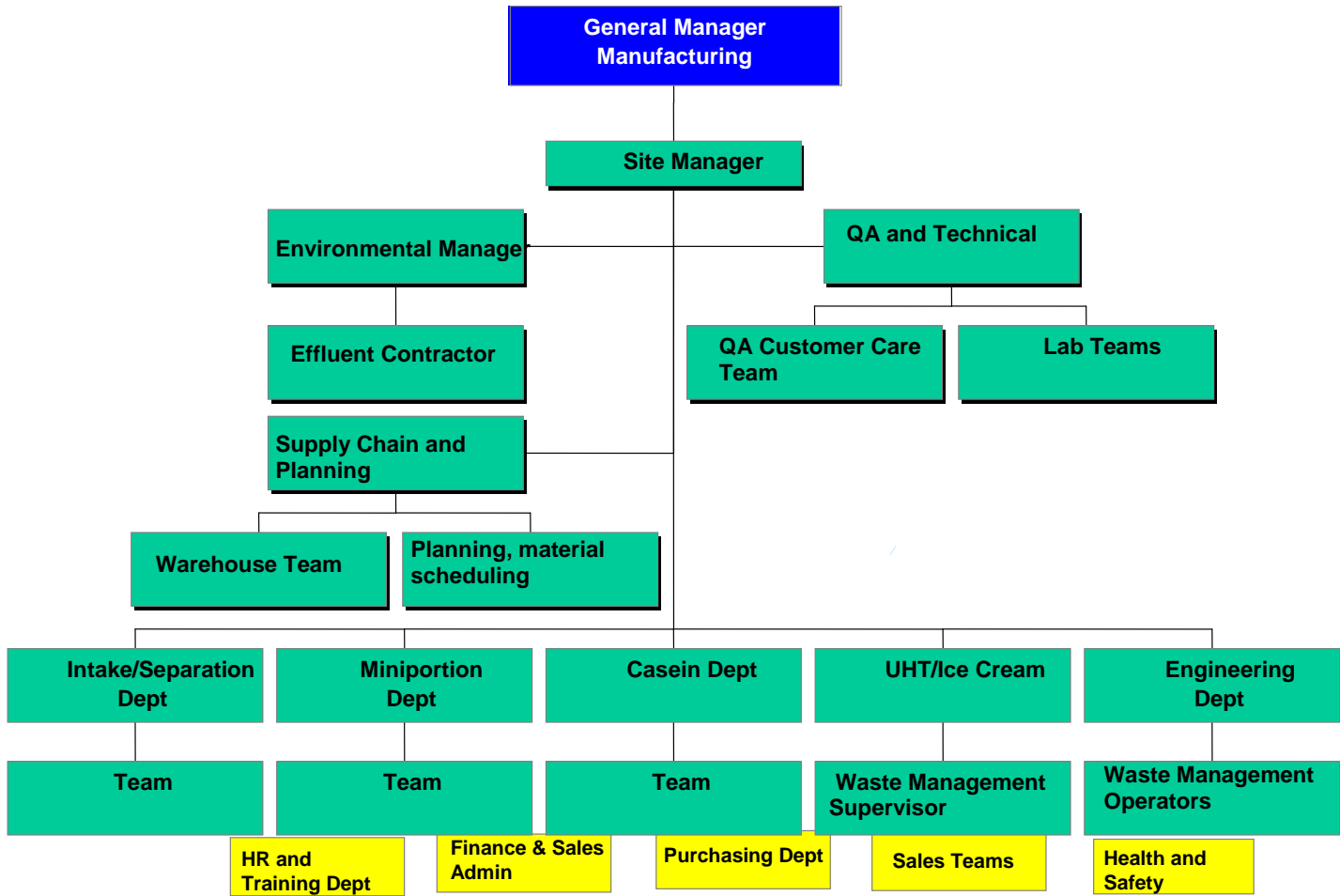
Lakeland Dairies is committed to the policy of continual improvement through the development of environmental performance evaluation procedures and associated indicators.

**Awareness and Training:**

We will actively encourage environmental awareness among our employees through appropriate communication and training programmes.

Lakeland Dairies will approach environmental issues in an open manner and maintain close links with all relevant bodies.

1.4 Organisational Chart for Lakeland Dairies including Environmental Management



## 2.0 Summary Information

### 2.1 Self Monitoring Data

Lakeland Dairies are licensed for emissions to surface water, atmosphere and landspreading sludge. There is one emission point from the Wastewater Treatment Plant at SW4, discharging treated effluent to the River Cullies. Emissions to atmosphere are in the form of both process and combustion emissions. There are three surface water discharges that transport water from site to Town Lough. All of these emission points have been monitored and analysed in accordance with requirements of Schedule B. Air emissions, water and wastewater analysis was carried out by independent laboratories in 2009. In September 2009, Lakeland Dairies began to carry out wastewater analysis at its own on-site laboratory. Lakeland Dairies are required under Condition 8.11 to submit a Nutrient Management Plan for agreement with the Agency on an annual basis. Lakeland Dairies had submitted and obtained agreement from the EPA to store and landspread sludge in accordance with the Nitrates Directive for 2009.

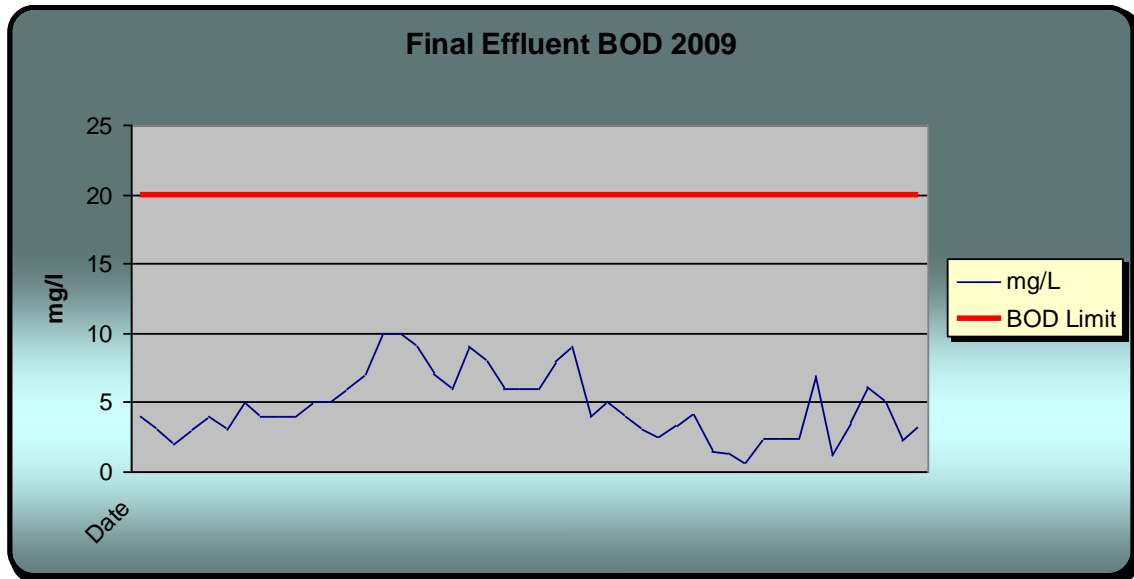
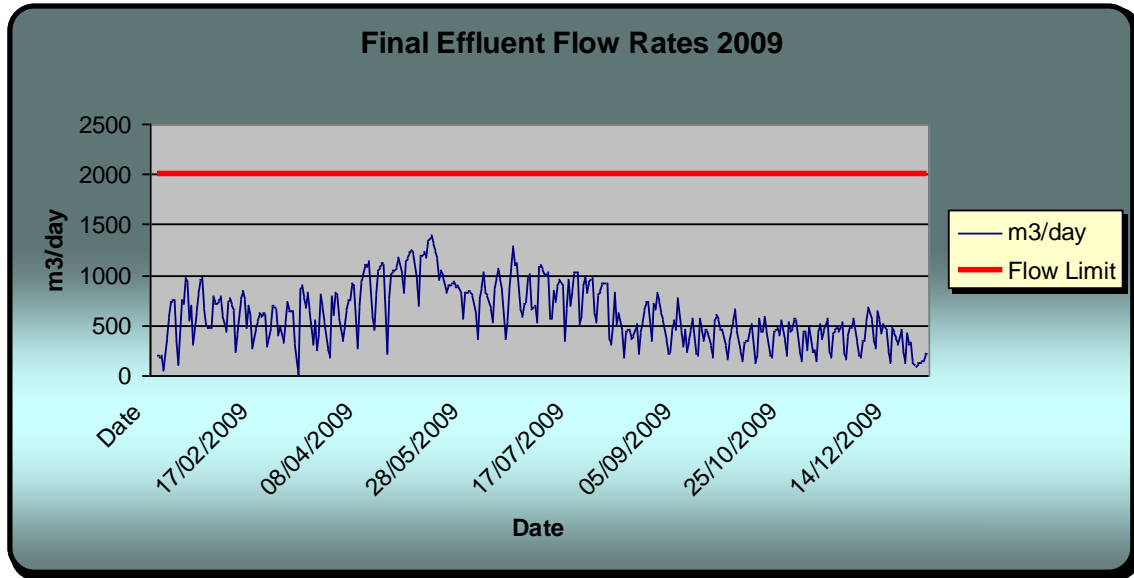
### 2.2 Final Effluent Emissions Summary

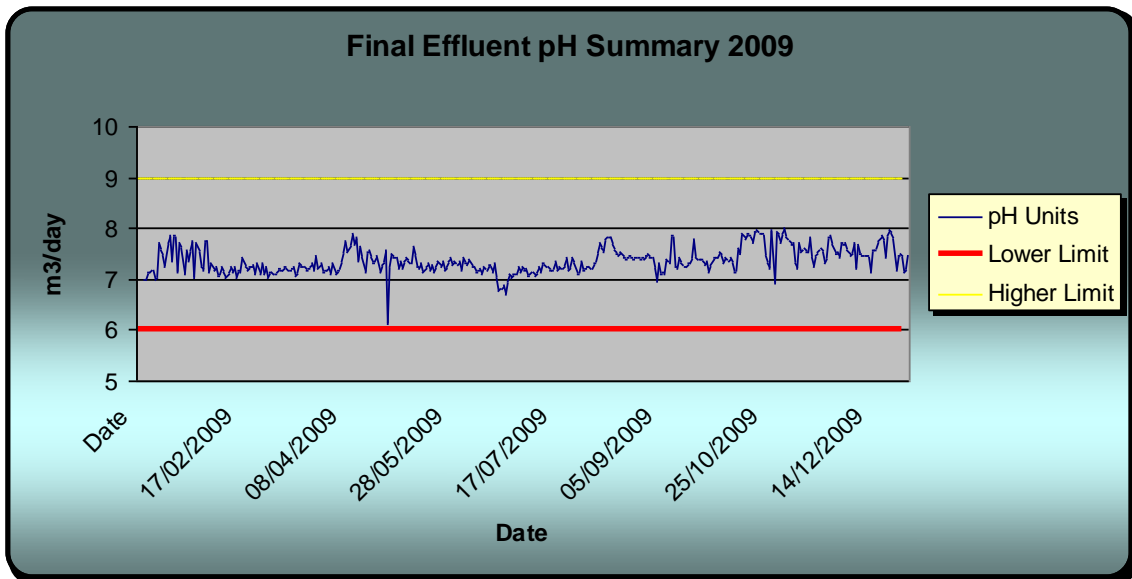
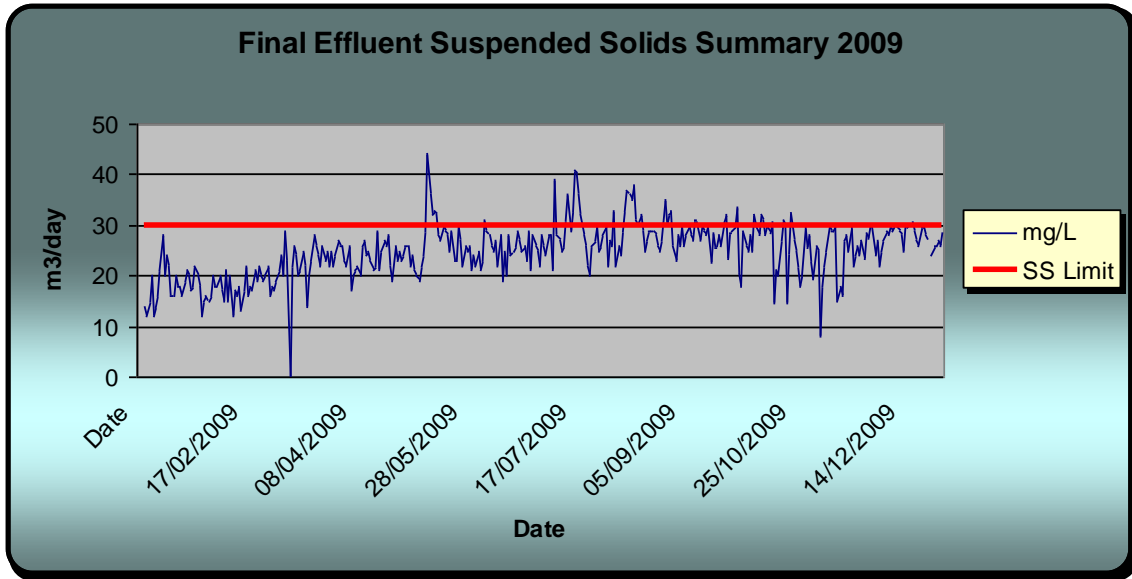
**Table 1: Summary Data for Final Effluent Emissions (SW4) 2009**

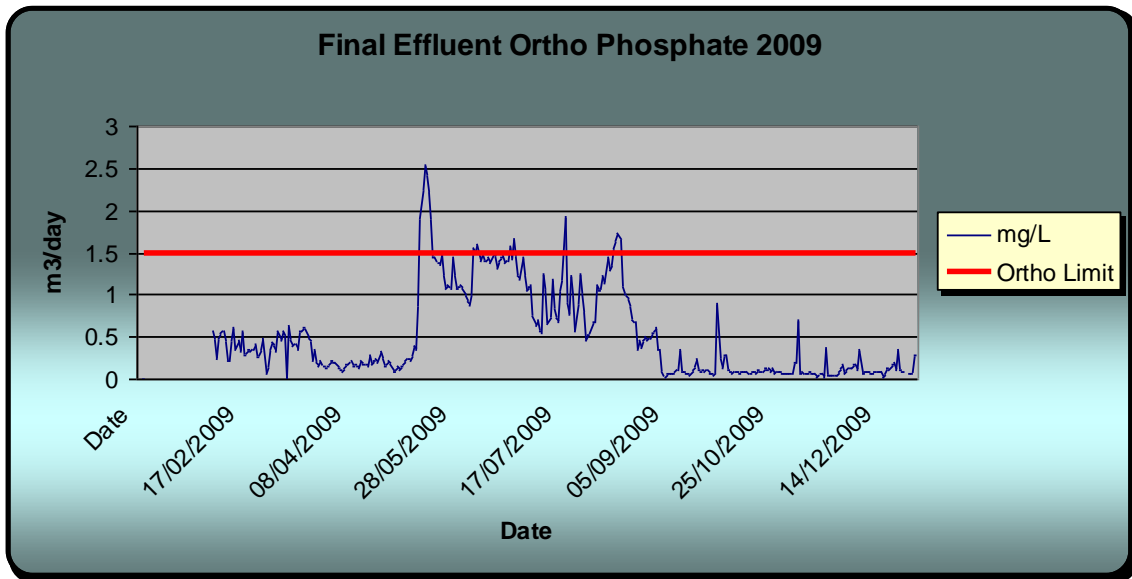
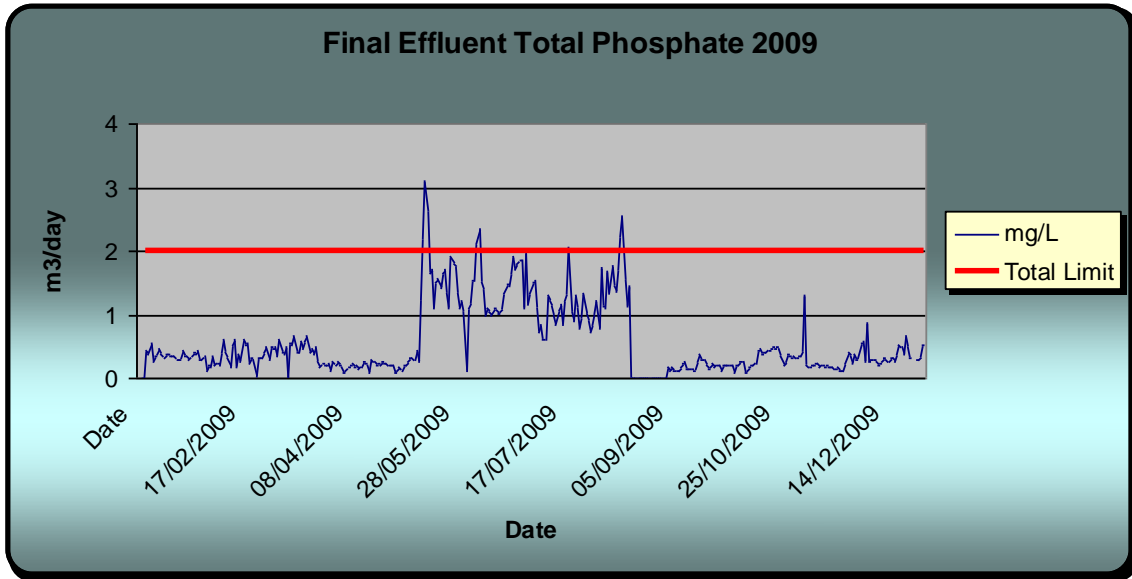
Parameter	Mass Emissions (kg)	Mass Emissions (kg)	License Limits Mass Emissions
	2008	2009	(kg)
BOD	1,439	1,057	14,600
Suspended Solids	5,881	5,539	21,900
Total Phosphate (as P)	199	134	1,460
Ortho-Phosphate (as P)	230	115	1,095
Ammonia (as N)	358	70	3,650
Total Oxidised Nitrogen	599	85	10,950

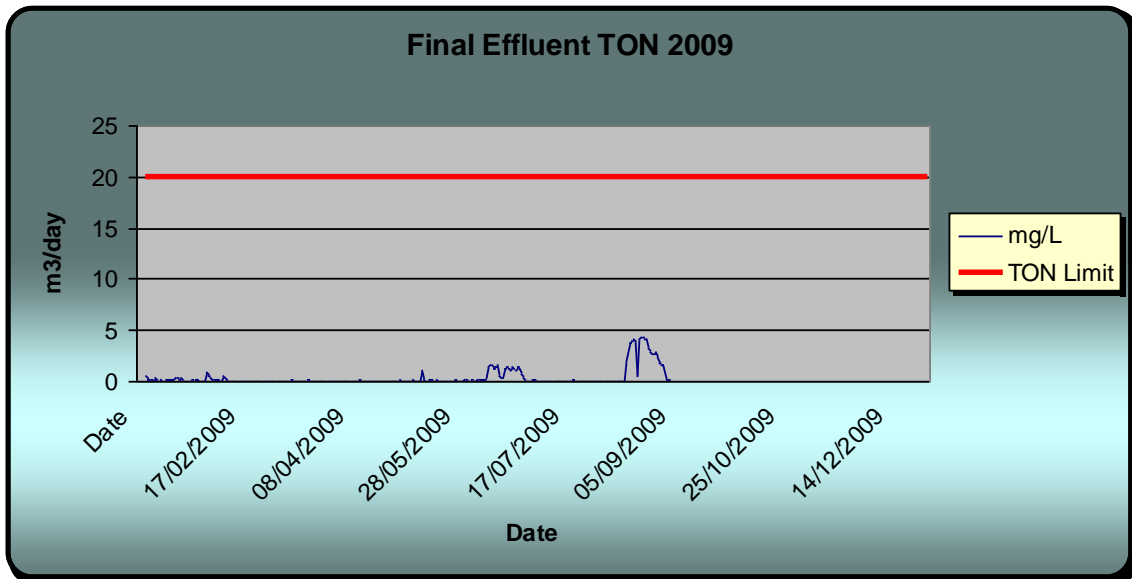
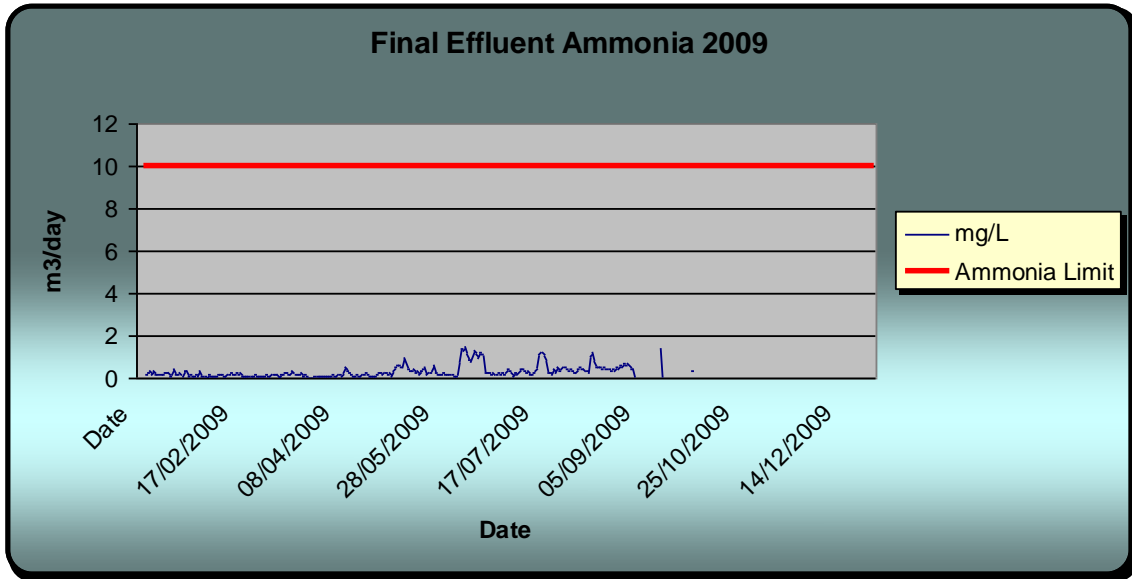
Final effluent from the wastewater treatment plant is discharged to the Cullies River at IPPC reference location SW4.

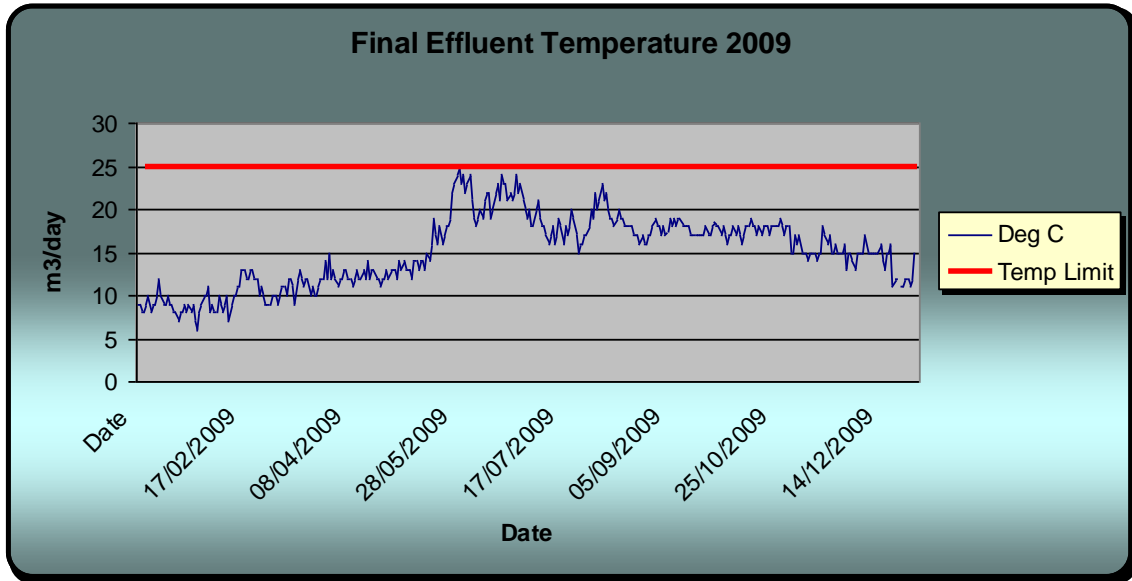
Picture 1: Graphical Display of Wastewater Results for 2009











**Table 2: Summary of Non-Compliances 2009**

Date	Non- Compliance	Cause	Corrective Action
11 – 14 <sup>th</sup> May 2009	Exceedance on Discharge Licence Limit for Suspended Solids, Ortho and Total Phosphate.	WWTP was heavily loaded. Also there was an issue with the bulk Aluminium Sulphate Tank which prevented dosing adequate volumes of Alum to the Treatment Plant. IBC's of Alum were used but were not very effective.	Bulk Alum storage tank repaired and commissioned.  Internal meetings held with Casein and Whey Plant managers to investigate high loading to effluent WWTP.
07 <sup>th</sup> June 2009	Exceedance on Suspended Solid concentration limits	Plant not operating efficiently due to heavier than normal loading on the WWTP.	Addressed loading issues with Production Plant Managers
16 <sup>th</sup> and 18 <sup>th</sup> June 2009	Exceedance on Suspended Solid concentration, Ortho and Total P.	Plant not operating efficiently due to heavier than normal loading on WWTP.	Addressed loading issues with Production Plant Managers

11 – 12 <sup>th</sup> August 2009	Exceedance on Suspended Solids, ortho and total phosphate concentration.	Plant not operating efficiently due to heavier than normal loading on the WWTP.	Addressed loading issues with Production Plant Managers
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### 2.3 Surface Water Emissions Summary

Lakeland Dairies have three surface water systems that transport water from site to Town Lough. These surface waters were monitored in accordance with Schedule C.2.3 of the licence in 2009. There are no license limits applied to parameters tested in these surface waters.

Lakeland Dairies have installed continuous temperature and conductivity meters alongside the flow meters to monitor and manage surface waters in line with licence requirements. Trigger and action levels for conductivity and temperature were set on all surface waters in 2009.

### 2.4 Emissions to Atmosphere

**Table 3: Summary of Process Emissions to Atmosphere (A2-1) Casein Dryer 1**

This Dryer was not operational in 2009.

**Table 4: Summary of Process Emissions to Atmosphere (A2-2) Casein Dryer 2**

Parameter	Units	September 2008	July 8th 2009	July 21 <sup>st</sup> 2009	Limits mg/Nm <sup>3</sup>
<b>Particulates</b>	mg/Nm <sup>3</sup>	1	0	0	<b>10</b>
<b>PM<sub>10</sub></b>	mg/Nm <sup>3</sup>	<1	0	0	-
<b>PM<sub>2.5</sub></b>	mg/Nm <sup>3</sup>	<1	0	0	-
<b>Flow Rate</b>	Nm <sup>3</sup> /Hr	10,801	11,606	11,305	<b>12,000</b>

**Table 5: Summary of Process Emissions to Atmosphere (A2-3) Casein Dryer 3**

Parameter	Units	September 2008	July 8th 2009	July 21st 2009	Limits mg/Nm <sup>3</sup>
<b>Particulates</b>	mg/Nm <sup>3</sup>	-	0	0	<b>10</b>
<b>PM<sub>10</sub></b>	mg/Nm <sup>3</sup>	-	0	0	-
<b>PM<sub>2.5</sub></b>	mg/Nm <sup>3</sup>	-	0	0	-
<b>Flow Rate</b>	Nm <sup>3</sup> /Hr	-	17,457	18,403	<b>25,000</b>

The Casein Dryers were operational from April 9th until August 4<sup>th</sup>, a period of four months approximately. The smallest Casein Dryer (Dryer 1) was not operational at all in 2009.

**Table 6: Summary of Combustion Emissions to Atmosphere**

Parameter	Units	Emission Point A1-1	Limits
<b>Oxides of Sulphur</b>	mg/Nm <sup>3</sup> @ 3% O <sub>2</sub>	646	<b>1,700</b>
<b>Nitrogen Oxides</b>	mg/Nm <sup>3</sup> @ 3% O <sub>2</sub>	330	<b>1,000</b>

## 2.5 Waste Management

Waste Management and associated contractors are summarised in the PRTR for 2009. This report is attached to this Annual Environmental Report and has been electronically uploaded to the EPA website.

**Table 7: Summary of Waste Contractors on Site**

Waste Code	Material	Hazardous	Contractor	Permit / License No	Waste Collection Permit	Waste Volume
13-02-06	Waste Oil	Yes	ENVA	W0184-01	WCD-MH-2001/107D	5000 litres
20-01-21	Light Fittings	Yes	Irish Lamp Recycling	02-2000B Kildare Co. Co.	WCP/MH/2001/101D	500kgs
20-01-35	Light Fittings	Yes	Irish Lamp Recycling	02-2000B Kildare Co. Co.	WCP/MH/2001/101D	500 kgs
15-01-01	Recyclable Cardboard (includes Tetrapak)	No	CWD	W0207-01	WCP/MH2001/37E	48840 kgs
15-01-02	Recyclable Plastic	No	CWD	W0207-01	WCP/MH2001/37E	7006 kgs
15-01-01	Recyclable Cardboard	No	Irish Packaging Recycling (TA Panda Waste)	WPR021/2	WCP/MH2001/01D	37,194 kgs
15-01-02	Recyclable Plastic	No	Irish Packaging Recycling (TA Panda Waste)	WPR021/2	WCP/MH2001/01D	8,402 kgs
15-01-01	Recyclable Cardboard	No	Guy Recycling	MEX 03/25	WCP/MH/408/2007	13,000 kgs
15-01-02	Recyclable Plastic	No	Guy Recycling	MEX 03/25	WCP/MH/408/2007	1280 kgs
15-01-01	Recyclable Cardboard	No	Wilton Waste	06/30 Cavan Co. Council	WCP/MH/08/0057-01	33,160 kgs
15-01-02	Recyclable Plastic	No	Wilton Waste	06/30 Cavan Co. Council	WCP/MH/08/0057-01	3700 kgs
15-01-02	Recyclable Plastic	No	O'Leary International	Dimne-Cet - Italy	WCP/MH/2006/090B	155,000 kgs

15-01-02	Recyclable Plastic	No	Surefreight	PJ Strutt - UK	WCP/MH/2003/56C	73,820 kgs
15-01-02	Recyclable Plastic	No	Quinn Packaging	Returns	Returns	1400 kgs
02-01-10	Metal	No	Felix Gormley	07/15 Cavan Co. Co.	WCP/MH/2001/76D	12,720 kgs
02-01-99	Landfill Waste	No	CWD	W0207-01	WCP/MH2001/37D	0 kgs – approx 15 tonnes in storage in the compactor.

### 3 Agency Monitoring and Enforcement

#### 3.1 EPA Inspections 2009

Lakeland Dairies obtained an IPPC licence in March 2008. The EPA visited the site twice in 2009. The agency also sent a letter to Lakeland Dairies in February outlining reports that were due to be submitted to the EPA.

A site visit took place on the 31<sup>st</sup> March 2009. There was one non-compliance determined by the site inspector which is summarised in the table below.

A full site audit took place in July 2009, in which 2 auditors assessed the environmental management system, licence compliance and site operational performance. There were four non-compliances determined on the day.

Date	Non- Compliance	Cause	Corrective Action
16-02-09	Environmental Management Plan was not sent to the EPA.	The report had been complete and was on the public file.	This was sent to the Agency on 24 <sup>th</sup> February
	Fire Water Risk Assessment had not been sent in to the EPA.	The report had been complete and was on the public file.	This was sent to the Agency on 24 <sup>th</sup> February
	Suitable location for river flow monitoring had not been agreed with the EPA	This condition had been under review and it was considered appropriate to have an Agency Inspector on site to agree the location.	A proposal was sent to the Agency and agreement obtained.
	Warning and action levels had not been proposed for process water drainage lines	Baseline data was being collected which would allow the site to make an accurate assessment on what levels to propose.	Baseline data was gathered and assessed and action/ warning levels of 22 and 25 Degrees C were set respectively.

	Program of Works required to comply with noise emission limits.	A Noise Survey of the site did not highlight any significant issues with day or night-time levels.	There was no corrective action required.
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Date	Non- Compliance	Cause	Corrective Action
	Residuals Management Plan had not been submitted.	The Plan had been compiled and held on public file.	This plan was submitted to the Agency.
31-03-09	Non-Process Water	No warning or action levels set for temperature and conductivity.	The Agency had been on site between the above letter of non-compliance and its response sent in. The warning and action levels had been sent in for agreement.
16-07-09	High liquid level alarm on Fat Tank	Due to the nature of the material stored in this tank it is considered necessary to have a high level alarm.	An alarm was fitted to this tank as requested by the Agency.
	Environmental Monitoring	Quarterly ortho-phosphate not sampled on the river,  Temperature not recorded on SW4,  Bi-annual monitoring on air emissions not carried out.	Ortho P schedule set out for the year,  Final effluent temperature probe was commissioned.  Emissions tests are scheduled in for when all stacks are in operation and were carried out twice in 2009.

	Bund Integrity Testing	All bunds had not been tested by the audit date,  Some bunds have insufficient capacity	All bunds on site were integrity tested,  Volumes of material stored in tanks were reduced to meet compliance requirements of the license.
	ELRA incomplete	The ELRA was not available for inspection of the date of audit.	An ELRA was completed and submitted to the Agency.
13-05-09	Effluent Quality	Ortho-Phosphate was determined to be above the license limits on day of sampling.	Losses to the plant were minimised while aluminum sulphate dosing was increased to reduce phosphorus levels in the final effluent.

The EPA visited the site unannounced twice during the year to collect samples of water from the wastewater treatment plant. Table 8 summarises analytical data obtained from the EPA in 2009.

Samples were lifted on 13<sup>th</sup> May at a time when there were issues at the wastewater treatment plant. These issues were investigated and resolved. Correspondence to this effect was sent to the Agency during the year.

**Table 8: Summary of EPA Analysis**

Parameter	Units	Final Effluent		
		SW4 13 <sup>th</sup> May	SW4 16 <sup>th</sup> Sept	License Limits
pH	Units	7.7	7.3	6 – 9
BOD	mg/L	7.2	<4	20
COD	mg/L	85	112	-
Suspended Solids	mg/L	Nm	9	30
Total Organic Nitrogen	mg/L as N	<0.08	<0.08	20
Ammonia	mg/L as N	0.09	0.37	10
Ortho-Phosphate	mg/L as P	5.33	0.07	1.5

### 3.2 Environmental Incidents and Complaints

Lakeland Dairies are required as part of IPPC licence Condition 11 to inform the Agency immediately of any incidents, accidental release, spillage, malfunction or breakdown of equipment, complaint, etc.

There was one category 3 incident at the site in 2009. A control panel went on fire in the wastewater treatment plant pump house. Damage was caused to the electrics of the waste-water pumps, therefore wastewater had to be tankered from the Balance Tank to the WWTP for a period of about 10 hours. There was no effect on the environment caused as result of the incident.

There were no major incidents with regard to malfunctions of major equipment, or emergency situations with an impact on the local environmental in 2009.

- There were no environmental incidents or emissions to air exceeding limits outlined in Schedule B1 of the licence;
- Lakeland Dairies were on occasion determined to exceed concentration emission limit values on final effluent discharged to the River Cullies. This is a non-compliance with Schedule B2 of the license. Effluent did not on any occasion exceed its mass emissions limit.
- A noise survey carried out determined all monitoring points within the limits required for day and night time noise levels. There were two complaints made from the local community against Lakeland Dairies in 2009 in relation to noise. The issues were resolved to the satisfaction of the complainant and the Agency.

- Cavan County Council alerted Lakeland Dairies they had noticed white material in the influent to the town treatment plant. An investigation was carried out to the satisfaction of the Council.

**Table 9: Summary of Complaints Received**

<b>Date</b>	<b>Complaint</b>	<b>Cause</b>	<b>Corrective Action</b>
26 <sup>th</sup> February 2009	Noise Complaint	Excessive noise at a neighbouring dwelling as a result of relocating compressors.	Noise insulation was installed in the building and air vented through roof as opposed to side wall. A noise survey carried out afterwards determined the site to be in compliance with license conditions.  This was assessed by the EPA and an independent consultancy.
02 <sup>nd</sup> July 2009	Noise Complaint	Possible source was an agitator on a UHT silo. A bearing was gone which needed to be replaced.	The Agitator was fixed and noise readings at the dwelling of interest were measured at 35 dB(A).
08 <sup>th</sup> July 2009	Milky substance in Town WWTP	Cause undetermined. It was traced back to a specific area; however there was no evidence of a leak found.	This was communicated to all associated plant operatives. The town council agreed to ring back immediately if any further incident occurred.

#### 4.0 Management of the Activity

##### 4.1 Targets and Objectives for 2010

Targets and objectives for 2010 were set at the Annual Environmental Management Meeting.

The following are the objectives and targets for 2010:

**Table 10: Objectives and Targets 2010:**

	<b>Objective &amp; Target</b>	<b>Project</b>	<b>Responsibility</b>
<b>1.0</b>	Resource Management	The Chemtrack Project is to be completed and rolled out to the rest of the site.	Derek O'Connor
<b>2.0</b>	Energy Management	An RO Plant for Boiler Feed Water is to be installed. This will have the impact of reducing boiler blow downs and reducing energy consumption on site.	Erik Schutten
<b>3.0</b>	Energy Management	Alternative energies – To investigate the use of LPG and biomass as a fuel source in the boilers. This would reduce carbon output significantly and also reduce the risk of any issues associated with the use of Heavy Fuel Oil on site.	Derek O'Connor / Erik Schutten
<b>4.0</b>	Energy Management	To use the refrigeration plant for ice-cream to supply all chilled water requirements for UHT Block in the non-casein season so that the main refrigeration plant does not have to be run.	Erik Schutten

5.0	Water / Wastewater Management	To install new flow meters and samplers on all surface water and process water lines on site and to install a new software system to process this information.	Rory Farrell
6.0	Water / Wastewater Management	A shut-off valve system on the storm water lines to be installed.	Rory Farrell
7.0	Wastewater Treatment / Energy Management	A full Water Audit is to be carried out on the site and water reduction on site per unit processed to be reduced by 10%.	Erik Schutten / Rory Farrell.
8.0	Waste Management	Waste to be sent to landfill in 2010 to be less than 10 tonnes.	Tom Brady.
9.0	Emergency Preparedness	Detailed Training to be carried out with Maintenance Staff in the area of Emergency Preparedness / Response	Rory Farrell / Paucic Gilheaney

## 4.2 Targets and Objectives for 2009

The following table outlines targets and objectives set out in the Environmental Management System for 2009:

**Table 11: Objectives and Targets 2009**

	<b>Objective &amp; Target</b>	<b>Project</b>	<b>Respon- sibility</b>	<b>Status</b>
<b>1.0</b>	Energy Management	To use an RO Plant to treat boiler feed water with the objective of decreasing HFO usage by 5% per hour on full load.	Anthony Jordan	Not completed – Prices were received and exercises were done on payback – applied for capital for 2010 – will be carried out with Board approval.
<b>2.0</b>	Energy Management	To present energy usage on site in a much clearer more presentable way	Derek O'Connor.	Complete – Qlikview software is now used to present energy usage on the site. Very successful and presented at site meeting.
<b>3.0</b>	Energy Management	To reduce energy usage in the freezer in Ice-cream by using an automatic palletiser.	Paul Brady	This has been completed and is working very well. Has been running for four months and 45k of labour and energy has been saved in four months. The energy saving results from the fact that the freezer door is not continuously opened and so there is not the same energy requirement to maintain temperature in the freezer.
<b>4.0</b>	Energy Management	To develop software control for the refrigeration compressors to ensure that	Anthony Jordan	Complete – software control is now in place to ensure that screw compressors do not stay

		the screw compressors do not stay on part load.		on part load.
5.0	Water Management	To reduce the volume of 'clean water' from the UHT Plant going to the Wastewater Treatment Plant.	Tom Brady	No reliability on figures – new flow meter to be installed.
6.0	Water Management	Reduce Boiler Blow-down volume by 10% and recover condensate on-site.	Anthony Jordan / Derek O'Connor.	There is a cost reduction project in place at the moment which is ongoing and the condensate part has not been done yet.
7.0	Wastewater Treatment / Energy Management	To control the aerators in the Wastewater Treatment Plant by using Dissolved Oxygen Meters in the Aeration Basin	Rory Farrell	Agitators are now being controlled by turning on and off as required due to incoming loads. It has been determined that the aerators are not suitable mechanically for the installation of variable speed drives.
8.0	Waste Management	Volume of waste to landfill to be less than 10 tonnes for 2009	Tom Brady	This has been successfully completed, less than 10 tonnes of material was sent to landfill in 2009.
9.0	Raw Materials	To complete the installation of the Chemtrack system on the site to monitor chemical usage and other production KPIs throughout the site.	Anthony Jordan.	Ongoing – Chemtrack has been installed for casein and will be rolled out for the rest of the site during 2010.

10.0	IPPC License	To ensure that conductivity monitoring system for surface water systems on site is fully operational	Rory Farrell	This has been completed and there are conductivity meters on all surface water lines on the site.
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### 4.3 Five Year Targets and Objectives

#### **Environmental Management Plan 2008-2012:**

An Environmental Management Plan is outlined below to cover the five year period following the grant of the IPPC License to the Lakeland Dairies site at Killeshandra.

The following processes are to be addressed in the five-year plan:

- Milk Intake
- Separation
- UHT Production
- Ice-cream Production
- Casein Manufacture
- Whey Processing
- Mini-Butter Manufacture
- Site Services
- Wastewater Treatment

The following areas are to be addressed in the five year plan for each of the processes above:

#### **Energy and Resource Efficiency**

##### Responsibility:

Energy - Derek O'Connor – Site Manager

Resource – Rory Farrell – Environmental Manager

##### Specific Requirements:

Energy Audit for all processes. Assess viability of implementing Energy Management System on site. Achieve year on year reduction in energy usage on site relative to production output. Look at renewable energy options on site.

Resource usage to be assessed and closely monitored – e.g. water usage, chemical usage. Annual reductions in resource usage relative to production output to be achieved.

### **Use of Cleaner Technology**

Responsibility:

Erik Schutten – Engineering Manager

Specific Requirements:

Assessment of the use of cleaner technology options in all of the processes outlined above, e.g. improvements to wastewater treatment processes on site, improvements to water treatment on site, use of cleaner fuels.

### **Cleaner Production**

Responsibility:

Erik Schutten – Engineering Manager

Specific Requirements:

Assessment of the use of cleaner production options in all of the processes outlined above.

e.g. improved efficiency in CIP on site, reduction in chemical usage, reduced emissions to atmosphere.

### **Waste Prevention / Reduction / Minimisation**

Responsibility:

Tom Brady – Production Supervisor

Specific Requirements:

Continuation of programme of waste prevention / reduction / minimization on site – leading to year on year reductions in the volume of waste going to landfill.

Following this general five year plan, a more specific set of objectives and targets are outlined annually. These specific targets are set at the Annual Environmental Management Review Meeting. This meeting is held on site at the beginning of every year.

The annual objectives are reviewed during the year. This is carried out using the Objectives Reports that form part of the Environmental Management System on site.

#### 4.4 Energy and Water Consumption

Lakeland Dairies used Heavy Fuel Oil as the main combustion fuel in 2009. Liquid Petroleum Gas is consumed for a Gas Dryer in the Casein Plant and heating systems in offices and the canteen. Water is sourced from two groundwater wells on site, which undergoes physical and chemical treatment prior to use at the installation. All electricity used on site is obtained from the national grid. Table 9 summarises volumes and quantities of raw materials used on site during the reporting period.

**Table 12: Resource Consumption Summary**

Parameter	Units	Quantity 2008	Per m <sup>3</sup> Milk Intake 2008	Quantity 2009	Per m <sup>3</sup> Milk Intake 2009
Water	Cubic Metres	370,110	3.4	284,386	3.3
Electricity	Megawatt/ Hrs	16,665	0.15	13,757	0.2
HFO	Cubic Metres	1,871	0.017	1,789	0.021
LPG	Cubic Metres	258	0.0024	176	0.002

The milk throughput in 2009 was 85,000,000 litres approximately. This was down significantly from the 2008 figure of 113,249.

This has made it very challenging to achieve to reduced water, HFO and LPG usage relative to milk throughput.

## 5.0 License Specific Reports

### 5.1 Noise Survey

A noise survey was carried out in 2009 in accordance with requirements outlined in Condition 4.5 of the licence. The following table summarises results outlined in the report from a survey carried out in December 2009:

**Table 13: Daytime Noise Survey Results**

Point	Limit	Result	Comments
NSL1	55	45	The main source of noise at this point was traffic movements on the R199. There was also some noise from employees passing the monitoring point, i.e. talking and walking close by. Some low level noise was coming from Lakeland but this was deemed to be insignificant.
NSL2	55	52	The main source of noise at this point was from a resident of the estate that the monitoring point is located in. The resident was using a high pressure water sprayer to clean the footpaths approx 10-15 metres from the point. No noise was audible from Lakeland at this point.
NSL3	55	34	Very faint operational noise audible from the WWTP at this point and occasional traffic movements on the R201. A vehicle also passed by close to the monitoring point halfway through the survey.

**Table 14: Night Time Noise Survey Results**

Point	Limit	Result	Comments
NSL1	45	41	The main source of noise at this point was from heavy traffic on the R199. No noise was audible from Lakeland at this point.
NSL2	45	44	The main source of noise here was attributed to a humming noise coming from the Lakeland dairies mill and not from the dairy site. The boilers were the only source of noise faintly audible from the creamery. Dogs barking intermittently and distant traffic were also audible at this point. The L90 is a more representative figure to use here as there was too much interference during this survey.
NSL3	45	31	There was no audible noise from Lakeland Dairies at this private dwelling. The main source of noise was from two cars that entered the site at high speed, both cars had modified exhausts.

## 5.2 Ambient Monitoring Survey

Groundwater monitoring was carried out on a groundwater well located on site in 2009 in accordance with Schedule C.6.1. The following table summarises results obtained:

**Table 15: Groundwater Well Results**

Parameter	Units	GW1
pH	pH Units	6.55
Conductivity	us/cm	1951
Nitrate	mg/L as N	1.13
Nitrite	mg/L as N	<0.5
Chloride	mg/L	30.95
Sulphate	mg/L	56
Ammonia	mg/L as N	<0.01
Iron	ug/L	110
Manganese	ug/L	29
Calcium	mg/L	-
Magnesium	mg/L	-
Sodium	mg/L	7.87
Potassium	mg/L	-
Aluminum	mg/L	118

The River Cullies was surveyed on August 15<sup>th</sup> 2009 for Biological Quality Q Rating. This is in accordance with the terms of the license which dictates that the survey is to be carried out in the period June to September.

A rating of Q3 was determined both upstream and downstream of the discharge point.

Ortho Phosphorous concentrations were determined upstream and downstream of SW4. Lakeland Dairies agreed monitoring locations with the EPA prior to testing.

Concentrations of 0.03 were determined in the river upstream and downstream of the discharge point.

The Nutrient Management Plan had been completed in 2007. Soils were tested in June 2007 and are not due for retest until June 2010. This plan has been updated for 2010 and will be agreed with the Agency prior to sludge being applied.

### **5.3 Tank, Pipeline Testing and Inspection Report**

Lakeland Dairies commissioned independent contractors to survey the drains on site. Several drain surveys were carried out on site during the year and remediation was carried out as necessary.

All bunds on site were surveyed in 2009 and a report was submitted to the Agency.

## 5.4 Sludge Register Details

A hard copy register is maintained on site which manages and details destinations of consignments of sludge from the treatment plant to land or storage. The register is complete with names, dates, persons responsible, nutrient content and final destination.

2009 was a quiet year for production on the Lakeland Dairies site and because of low sludge volumes and the growing of maize at the Lakeland Dairies farm, it was possible to recycle all of the sludge produced at the Wastewater Treatment Plant onto the farm, according to the requirements of the Nutrient Management Plan.

The following table summarises consignments to each plot and totals the amount sent to each field during 2009.

**Table 16: Summary of Sludge Register 2009**

Field No	Field Map Identity	NMP 2009 Sludge Capacity	Cubic Metres of Sludge Spread on Fields												Total	
			J	F	M	A	M	J	J	A	S	O	N	D		
Field A	18	22						28								28
Field B	19	24							8							8
Field C	20	59					40	12								62
Field D	17	58						40								40
Field E	15 & 16	118						28								28
Field F	14 & 28	471				470										470
Field G	12	158				155										155
Field H	13	145				145										145
Field I	11 & 25 & 27	52								40						40
Field J	1 & 25	30														0
Field K	26	41														0
Field L	21	32								16						16
Field M	2 & 22	68							20	36	8					64
Field No	23 & 3	31														0
Field O	4	124										40				0
Field P	6 & 7	83				36			48							84
Field Q	5 & 24	137														0
Field R	10	62						24			16					40
Field S	29	58														0
Field T	8	48														0
Field U	9 & 30	197				92	56		20							136
<b>Total Spread in 2009</b>															<b>1,388</b>	

## 5.5 Energy Efficiency Audit Report Summary

An energy audit was carried out on site in 2008 by independent consultants in association with Sustainable Energy Ireland, with an aim of managing current energy use and significantly reducing energy requirements over the next five years. There have been some recommendations made in the report which have been initiated on site and have proved successful. The assessment included an intrusive investigation into energy consumption, key performance indicators, areas for improvement and recommendations.

**Table 17: Summary of Energy Audit**

<b>Item 1.</b>	Reduce the Steam pressure from the main header to the Mill from 10 bar to 4 bar.
<b>Status.</b>	Complete. Reduction valve put on the header.
<b>Item 2.</b>	Reduce the pressure of the stand-by boiler.
<b>Status.</b>	Complete. Boiler now turned down to 8 bar from 10 bar.
<b>Item 3.</b>	Reduce the compressed air pressure where possible.
<b>Status.</b>	System now been drawn up. Flow meters ordered and casein one to be installed immediately. Casein meter installed. It is not possible to drop pressure further or there will be production issues.
<b>Item 4.</b>	Extend the times between the start ups on the compressors for the ice-cream plant.
<b>Status.</b>	Complete.
<b>Item 5</b>	Connect soft water pump to separation that it will go off when not separating.
<b>Status.</b>	Not started.
<b>Item 6</b>	Investigate using the heat in the flue in casein to pre-heat the incoming air.
<b>Status.</b>	Not started.
<b>Item 7</b>	Investigate the use of energy efficient lighting through out the site.
<b>Status.</b>	This item has been largely completed.
<b>Item 8</b>	Use membranes to clean up our well water.
<b>Status.</b>	Quotes are in place - will be put for capital after summer.
<b>Item 8</b>	Investigate using cooling water to replace some of the chilled water in our cream cooling.
<b>Status.</b>	Not started.
<b>Item 9</b>	Investigating the use of an RO plant on the permeate to then feed to the boiler feed tank.
<b>Status.</b>	GE Betz working on it at present.
<b>Item 10</b>	Remove the batch system C10 heating/cooling method.
<b>Status.</b>	Not complete
<b>Item 11</b>	Recover the secondary water stream from the Infusion vapour condenser as boiler source.

- Status.** Not complete
- Item 12** Optimise Infusion and Tubular CIP temperatures & times & rinse volumes.  
**Status.** This project has been started.
- Item 13** Re-engineer the Tubular UHT Homo seal water condenser as per Infusion style.  
**Status.** Not complete
- Item 14** Change the Tubular UHT to sterilise and circulate water at low flowrate as per infusion.  
**Status.** Not complete
- Item 15** Solve the problem of the Aseptic Tank barrier temperatures being too high and preheating not clearing air (reduce pre-heat time)  
**Status.** This project has been started
- Item 16** Modify the software to shut down the Aseptic Tank barriers when not in use.  
**Status.** This project has started
- Item 17** Measure and monitor the key three regeneration efficiencies in the UHT  
**Status.** Not complete
- Item 18** CIP Centre A could be changed to "heat on demand" rather than "always hot"  
**Status.** Not Complete
- Item 19** Change the CIP centre chemical switching to volumetric counting.  
**Status.** Not complete
- Item 20** Fix the detergent foaming problem because aerated detergent equals inefficient CIP  
**Status.** Not complete
- Item 21** Commission the Hot Water Booster heater & drop the temperature set point of the External Silo.  
**Status.** Not complete
- Item 22** Insulation - External Circuits/CIP Circuits/Secondary Hot Water circuits (Check the Economics)  
**Status.** Not complete

## 5.6 Efficiency of Raw Materials and Reduction of Waste Generated

There have been targets set over previous years to reduce waste volumes produced on site. There have been large improvements made on waste management structures and training over the past five years. This has resulted in a streamlined process, with emphasis on efficient use of raw materials and waste reduction. In 2009, waste for landfill was further reduced on site to less than 10 tonnes per year, with almost 100% of all packaging waste being recycled from site. Lakeland Dairies were named Repak's Best Member of the Year for 2007 / 2008 for their re-use and recycling practices at the Killeshandra Site and recycling levels have improved since.

Continuous work is carried out to reduce milk losses to the waste water treatment plant. This is achieved through COD monitoring of all waste streams going to the wastewater treatment plant. As detailed in the site objectives a Chemtrack system is being investigated to manage closely chemical usage on site.

#### **5.7 Proposals and Progress Made to Minimise Water Demand and Trade Effluent Produced**

Water meters have been placed on the groundwater well storage tanks on site. This now gives an accurate measurement of the volumes of water consumed on site on a daily basis. Water usage is also reviewed by the site energy management team at the monthly energy meetings.

It is proposed to carry out an audit of water usage on site in 2010 as part of the environmental targets and objectives. This will allow for a better understanding of water consumption on site and also water wastage.

#### **5.8 Review of Residuals Management Plan**

A residuals management plan was commissioned in 2008 and completed by independent consultants. This plan was been submitted to the Agency in 2009 and is the current plan. This plan will be reviewed on an annual basis going forward as part of the AER.

#### **5.9 Statement of Measures to Prevent Environmental Damage and Remedial Actions**

There are numerous procedures developed on site for the prevention of environmental damage. These are reviewed annually and all employees are made aware of any changes.

There are continuous analysers on line to monitor and assess surface water emissions at SW4. 24 hour composite samples are collected and analysed from cooling water and final effluent. Conductivity and temperature probes have been installed on cooling and condensate lines. High level alarms have been installed on all tanks that have potential to pollute the environment. This monitoring equipment is included on the calibration schedule as part of the environmental management system.

In relation to emissions to atmosphere, bag filters are present on all three casein dryer stacks to minimise emissions.

Hazardous chemicals are stored in bunded areas. These are emptied as per bund inspection procedures held on site. There are spill kits located throughout the site, which employees have been trained in their use and management.

The majority of production areas on site have been strategically located within the catchment area of the wastewater treatment plant. This drainage network is inspected regularly.

Sludge is lime-stabilised and stored on site on a suitably engineered storage area. This sludge is spread on land in accordance with a nutrient management plan agreed with the Agency on an annual basis. This plan meets all requirements of the Nitrates Directive (SI 378 of 2006).

Hazardous waste was collected and stored in appropriate collection vessels within bunding structures. This waste is collected and transported by permitted haulers, controlled by C1 forms. The waste is delivered to a waste management facility and treated / disposed of under licence by the Agency.

Monthly planned inspections are carried out throughout the site. Observations and recommendations are made where appropriate and implemented by approval of site management.

The waste water treatment plant at the site is PLC controlled and an alarm system is in place to inform plant operators if there has been a malfunction at the Plant. A new control system was commissioned at the pumping station which will further enhance the smooth operation of the treatment plant in 2009.

#### **5.10 Environmental Liabilities Risk Assessment**

An ELRA was complete by independent consultants in 2009 and submitted to the Agency. A copy of the report is held on public file at Lakeland Dairies for review.