ERAS ECO Ltd.

Annual Environmental Report 2009

ERAS ECO Limited

Foxhole, Youghal, Co. Cork
County Cork

Waste Licence Number:
W0211-01

Document Lead Sheet:

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Author(s)

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1 Introduction

ERAS ECO Ltd. is a Sludge Drying and Waste Recovery/ Transfer facility located in, Foxhole, Youghal, Co. Cork. ERAS ECO Ltd. operates in accordance with the company's waste licence (Waste Licence number W0211-01). ERAS ECO Ltd. has prepared this Annual Environmental Report in accordance with the terms W0211-01, in particular Condition 11.9. This Annual Environmental Report covers the twelve month period from January 2009 to December 2009.

During 2009 ERAS ECO Ltd. changed ownership. The company (ERAS ECO Ltd.) is now solely owned by Ormonde Organics Holdings Limited, Killowen, Portlaw, Co. Waterford. The change of ownership was documented to the agency during 2009. In this AER the company is referred to as ERAS ECO Ltd.

A Certification of Incorporation for ERAS ECO Ltd is provided in Appendix A of this report.

2 Company Description

2.1 Company Description and Site Activities

ERAS ECO Ltd is an innovative waste management company specialised in treatment of WWTP sludge's and recovery of Biomass. The company, which is now solely owned by Ormonde Organics was set up to compensate for the lack of facilities in Ireland capable of operating under the guidelines of recently published environmental legislation.

Ormonde Organics is a leading sludge management company with headquarters located at Killowen, Portlaw, Co. Waterford, Ireland. Ormonde Organics consists of specialist services in sludge management, sludge dewatering, composting and land restoration, industrial site services, specialist services, brown field excavation and remediation.

ERAS ECO Ltd consists of a Sludge Drying and Waste Recovery/Transfer Facility. The location of the Facility is on a 3.5 acre brown field site, close to the Youghal Landfill and Civic Amenity Centre (Waste Licence Reg. No. W0068-02). A maximum 70,000 tonnes per annum (tpa) of commercial and industrial non-hazardous waste will be managed in the Waste Recovery/Transfer Facility. The Sludge Drying Facility will treat a maximum 30,000 tpa of non-hazardous treated sewage sludge and industrial sludge from municipal or industrial waste water treatment plants. In addition ERAS ECO LTd is also licensed to accept 10,000 tpa of landfill leachate.

The Sludge Drying Facility treats sludge from industrial, pharmaceutical and municipal sources. Sludge accepted on-site will have a minimum dry solids content of 10%. Effluent from the sludge drying plant is treated in the on-site waste water treatment plant (WWTP) prior to discharge to the Sanitary Authority sewer. The licensee may accept leachate from the nearby Youghal Landfill to be treated in the on-site WWTP, subject to agreement in advance by the Agency and the Sanitary Authority.

The Waste Recovery/Transfer facility was used for the recovery and transfer of solid, non-hazardous commercial and industrial waste. Such waste consisted of cardboard, paper, plastic, metals, wood, glass, electrical and electronic equipment and wood. Operations included waste inspection, segregation, recovery, storage and transfer into vehicles for removal off-site. Other activities that were carried out include baling, compacting and shredding. With the exception of the shredding, these other activities are not actively being carried out.

The licence and the Environmental Management System in place sets out in detail the conditions under which ERAS ECO Ltd. operates and manage the facility.

2.2 Environmental Policy (ERAS ECO Ltd.)

Figure 1 - ERAS ECO Ltd - Environmental Policy

ERAS ECO Ltd	Environmental Policy		Document Number; Eras-DS-003
			Page 1 of 1
Created by; J. Dee	Approved by; P. Wilson	Date; 19/02/2010	Revision 00

Eras Eco Ltd. operates a non hazardous waste transfer station for waste sludge, C&I waste and storage. The group recognises it's environmental and occupational health & safety responsibilities to its staff, shareholders, customers and the general public and is committed to the continual improvement of the operating environment of its facility.

To this end it shall maintain a documented Environmental Management System which is implemented in line with ISO 14001:2004 and complies with all regulatory and legislative requirements pertinent to its industry, local operating environment and customer requirements.

The organisation's objectives include the following:

- Communicating it's policies both internally and externally
- Ensuring that all employees are aware of their obligations
- Commitment to continual improvement in environmental, quality, occupational health & safety and performance.
- Using the input of staff, customers, shareholders, government, local authorities, interested third parties and the general public
- Awareness and training on quality, occupational health & safety and environmental issues
- Creating a better environment for all, through promotion of reducing, recycling and reuse of waste, the optimum usage of resources and the elimination of polluting releases to the environment
- Compliance with all pertinent applicable regulations and legislation
- Prevention of pollution
- Provision of a competitive, cost effective and on time service

The above policy is supported by the management of the organisation who shall commit the necessary resources in ensuring that the objectives and targets can be achieved. This policy shall be made available to the public.

Facility Manager

Date: 19/2/10

Environmental Management Rep.

Date: 19/2/10

2.3 Company Management and Organisational Chart

ERAS ECO Ltd. contributes to the local economy with the direct/indirect employment and to a wider scale through promotion of reducing, recycling and reuse of waste and the optimum usage of resources.

At present 7 full time persons and 2 part time persons are directly employed at ERAS ECO Ltd. Other staffs connected with the running of the company are located in the parent company's offices in Portlaw, Co. Waterford. In addition ERAS ECO Ltd relies upon external contractors and suppliers for carrying out various activities on an ongoing basis onsite.

Under the present shift pattern, the Facility Manager is responsible for day-to-day operations including the acceptance of waste and running of the sludge drying facility. A Site Foreman maintains plant and equipment and is aided by selected experienced maintenance contractors. The EHSQ Manager ensures environmental, health & safety compliance. The sludge drying plant is manned by a suitably experienced operative; in the current shift arrangement the night shift operator maintains sole control over the plant at night. Operator assistance is provided by communication links with the Facility Manager, Site Foreman, EHSQ, other designated contractors and monitoring centre.

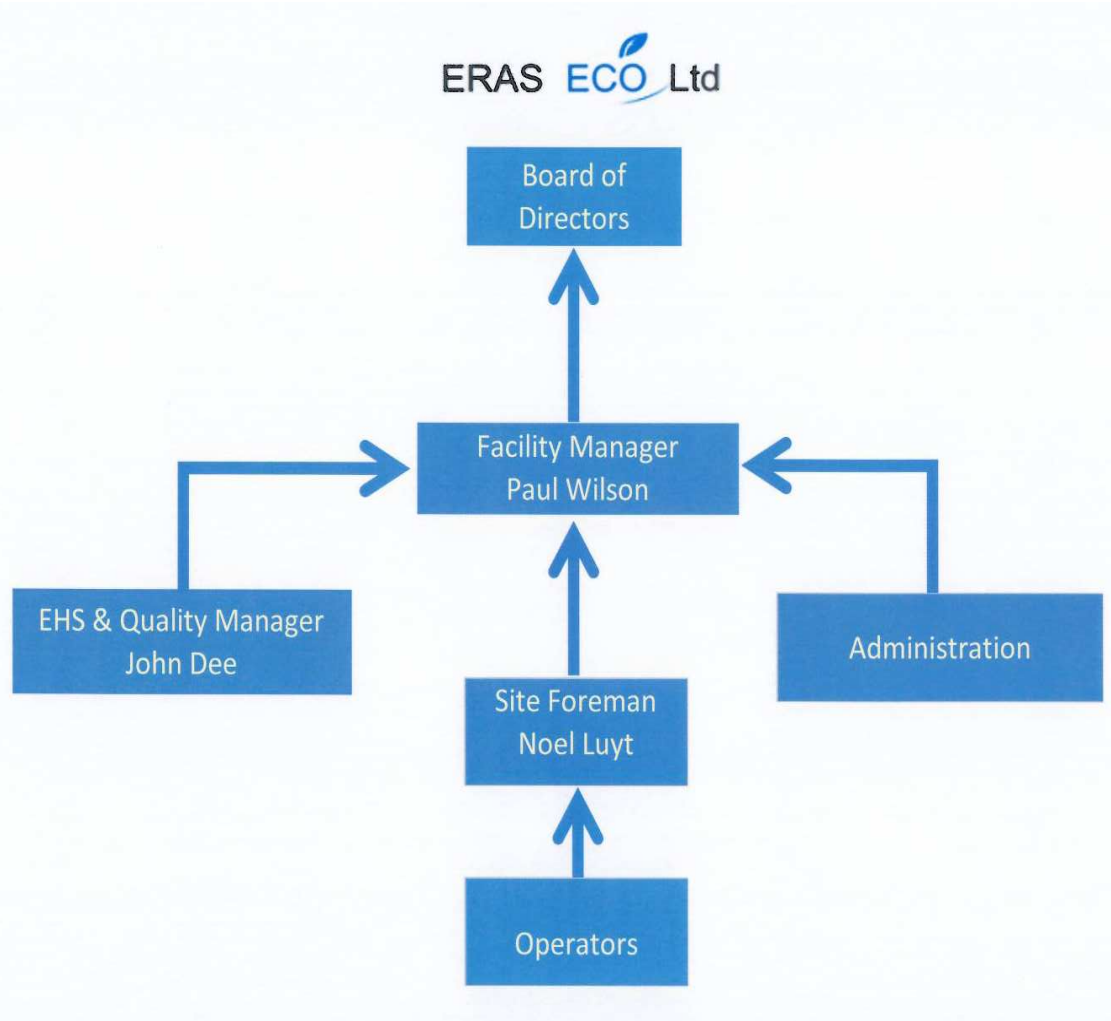
As part of the company's environmental policy, management is committed to continual improvement in environmental, quality, occupational health & safety and performance.

Management will ensure that necessary resources are available to comply with all objectives stated in our environmental policy.

See below (

Figure 2) an up-to-date organisational flow diagram of ERAS ECO Ltd.:

Figure 2 - ERAS ECO Ltd Organisational Chart



3 Summary Information

In accordance with Schedule E of ERAS ECO Ltd. waste license (W0211-01) the following summary information is provided:

- Waste management
- Emissions to sewer
- Stormwater Emissions
- Emissions to air
- Noise monitoring
- Groundwater monitoring

3.1 Waste Management

As per condition 11.10 of Waste License W0211-01, a full record of all incoming /outgoing waste is kept and updated on a monthly basis.

The main on site waste activities are summarized as follows:

- Non hazardous industrial or municipal WWTP Sludge are inspected, accepted (or rejected if non-compliance with waste acceptance criteria), dried and exported as a fuel.
- Non-hazardous grade wood/ woodchip is accepted, stored and used onsite as a fuel for the onsite boiler, improving our self-sufficiency capability. Some wood is delivered in a non-chipped form and this is shredded onsite when the quantities are sufficient.
- The facility is also licensed to accept Non hazardous waste from Commercial and Industrial sources. Since 2008 – 2009 the acceptance of these waste streams has been curtailed.
- Waste storage

All incoming/ outgoing waste is recorded by means of an integrated weighbridge and software system.

ERAS ECO Ltd. operates with stringent waste acceptance criteria and in-house standard operational procedures for waste acceptance.

3.1.1 Incoming wastes

The total amount of sludge accepted during 2007, 2008 and 2009 is provided in Table 3-1 below.

Table 3-1 Total sludge accepted in ERAS ECO Ltd. during 2008 and 2009

EWC	Description	Total Weight (Tonnes) 2007 Note 1	Total Weight (Tonnes) 2008 Note 2	Total Weight (Tonnes) 2009 Note 3
07 05 12	Sludge	1,910.84	4505	5620.51
19 08 05	Municipal Sludge	-	-	370.24

Note 1 Total weight figure for 2007 includes both sludge waste accepted during sludge drying facility commissioning period (March 2007 to May 2007 inclusive) and sludge accepted during operational phase (June 2007 to December 2007 inclusive).
Note 2 The total weight figure for 2008 includes sludge waste accepted from January 2008 to December 2008.
Note 3 The total weight figure for 2009 includes sludge waste accepted from January 2009 to December 2009.

The total commercial and industrial (C&I) waste accepted during 2007, 2008 and 2009 is outlined in Table 3-2.

Table 3-2 Total C&I (Dry Recyclables) accepted in ERAS ECO Ltd. during 2007, 2008 and 2009.

EWC	Description	Total Weight note1 (Tonnes) 2007	Total Weight note2 (Tonnes) 2008	Total Weight note3 (Tonnes) 2009
15 01 01	Cardboard or paper packaging	40.708	200.04	18.33
15 01 02	Plastic Packaging	12.541	111.16	3.48
15 01 03	Timber packaging	5.268	300.42	129.79
15 01 04	Metal packaging	0.000	1.00	0.02
15 01 06	Mixed packaging	12.90	798.52	0
19 12 12	Mixed Waste from waste management	0.000	6.28	0
20 01 01	Paper (separately collected)	0.442	0.81	0

Note 1: Waste accepted relates to commissioning period as Waste Recovery/ Transfer Facility entered into commercial operation in Quarter 1 2008

Note 2: Waste accepted relates to wastes accepted from January 2008 to December 2008.

Note 3: Waste accepted relates to wastes accepted from January 2009 to December 2009.

A copy of the Waste Survey submitted to the EPA is enclosed in Appendix B EPA Waste Survey 2009

A copy of the PRTR Returns for 2009 are enclosed in Appendix C EPA PRTR Returns 2009

3.1.2 Outgoing Waste

Table 3-3 Provides a summary of all Outgoing wastes during 2009

EWC [1]	Description	Weight (kg)	Via (Haulier)	Waste Licence/ Collection Permit/ Waste Permit	Final Outlet	Waste Licence/ Waste Permit	Recovery [2]/ Disposal [3]
10 01 01	Ash boiler	71,106 kgs	O'Brien Skip Hire Ballyrussel, Midleton, Co Cork	CK WMC 104/02	Youghal Landfill Foxhole Youghal County Cork	EPA waste Licence W0068-02	D1
15 01 01	Paper & cardboard packaging	359,900 kgs	Mr. Binman, Ballylynch, Carrick On Suir, Co. Tipperary	Mr. Binman CK WMC 45/01	Mr. Binman, Ballylynch, Carrick On Suir, Co. Tipperary	WP 035- 02 IRE/ W0061-02	R3
15 01 02	Plastics	23,680 kgs	Mr. Binman, Ballylynch, Carrick On Suir, Co. Tipperary	Mr. Binman CK WMC 45/01	Mr. Binman, Ballylynch, Carrick On Suir, Co. Tipperary	WP 035- 02 IRE/ W0061-02	R3
15 01 04	Metal packaging (cans)	780 kgs	Cork Metal Company Ltd, Dublin Hill, Cork	CK WMC 26/01	Cork Metal Company Ltd, Dublin Hill Cork	CK (S) 204/05 CK (S) 279/06	R4
15 01 06	Mixed Packaging	73, 760 kgs	Mr. Binman, Ballylynch, Carrick On Suir, Co. Tipperary	Mr. Binman CK WMC 45/01	Mr. Binman, Ballylynch, Carrick On Suir, Co. Tipperary	WP 035- 02 IRE/ W0061-02	R3
19 08 12	Dried Sludge	591, 640 kgs	Yawl Haulage Foxhole, Youghal, Co Cork	W 0050-02 CK WMC 07/01	Remondis, Luenen, Germany	21/Fo/Tho -G 61/93	R1
		501, 260 kgs	Yawl Haulage Foxhole, Youghal, Co Cork	CK WMC 495/07	Lagan Cement Limited, Killaskillen, Kinnegan, County Meath	IPPC Licence Reference: P0487-05	
20 01 01	Paper	5,260 kgs	Mr. Binman, Ballylynch, Carrick On Suir, Co. Tipperary	Mr. Binman CK WMC 45/01	Mr. Binman, Ballylynch, Carrick On Suir, Co. Tipperary	WP 035- 02 IRE/ W0061-02	R3

19 09 04	WWTP Bed Media	10,180 kgs	Ormonde Organics	WCP-OY-08-0595-01	Waddock Composting, Carlow WP 01 02 & WP11 04	WP 01 02 & WP11 04	R3
19 08 99	Biofilter Media	9,660 kgs	AQS, Thurles, Co. Tipperary	CK WMC 129/02	Miltown Composting	WP 019 - 02	R3
20 03 01	Landfill waste	20,600 kgs	O'Brien Skip Hire Ballyrussel, Midleton, Co Cork	CK WMC 104/02	Youghal Landfill, Foxhole, Youghal County Cork	W0068-02	D1

Note 1: European Waste Catalogue Code (asterisk denotes hazardous waste)
Note2: R1 Use as a fuel to generate energy; R3 Recycling/ Reclamation of organic substances which are not used as solvents (including Composting); R4 recycling/reclamation of metal and metals compounds; R5 recycling/reclamation of other inorganic materials.
Note 3: D1 deposit into landfill,
Note4 Plastic includes: Baled Hard Plastic, PET Bottles, Plastic Clear, Plastic Coloured, Plastic Film Clear, Plastic Film Coloured, Light Plastic mixed, PP Big Bags.

1.1.1 Waste Monitoring 2009

As per schedule C.4 Waste Monitoring, a Boiler Ash sample and a dried sludge sample were sent for analysis during 2009. A boiler ash sample was collected on the 2nd of November 2009 from an outgoing load and sent to ELS Environmental Laboratory for metals analysis. A dried sludge sample was collected on 19th November 2009 from an outgoing load and sent to ELS Environmental Laboratory for metals, nitrogen and phosphorous analysis.

Table **Error! No text of specified style in document.**-1 below summarises the annual waste monitoring carried out, as per Schedule C.4 of the Waste License W0211-01.

Certificates of Results are provided in **Error! Reference source not found.**.

Table Error! No text of specified style in document.**-1 Annual Waste Monitoring 2009**

Document No.	EWC Code	Description	Outgoing Date	Sampling Date	Laboratory	Analysis
Dried Sludge 01 09/ 14691-2	10 01 01	Ash	02/11/08	02/11/08	ELS Environmental Laboratory	Metals
Boiler Ash 01 09/ 14691-1	19 08 12	Dried Sludge	19/11/08	19/11/08	ELS Environmental Laboratory	Metals, P, N

3.2 Emissions to Sanitary Sewer (Emission point Reference SE1)

This section provides information relating to annual emissions to sewer (**Ref: emission point SE1**). Effluent from the sludge drying plant and Waste /Transfer Facility is treated in the on-site waste water treatment plant (WWTP) designed and installed by EPS Pumping and Treatment Systems Ltd. prior to discharge to the Sanitary Authority sewer (Youghal Town Council).

Washwater from the wheelwash is also treated in the on-site waste water treatment plant. The Sanitary effluent from the administration building is treated in a Puraflo peat filter sewage treatment system, which was installed by Bord Na Mona in 2007, prior to discharge to the Sanitary Authority Sewer.

The main source of the trade effluent originates from the sludge drying process, as the condensate water from the process is discharged and treated in the WWTP.

Table 3-5 below outlines the monitoring requirements for emission point SE1 as stipulation by Schedule C3.1

Table 3-5 Monitoring Frequency and Analysis methodology SE1

Monitoring Frequency	Parameter	Analysis Method	Emission Limit Value Note 1
Continuous	Flow	On-line flow meter with recorded	Maximum in any one day: 170 m^3/day Max rate per hour 7m^3/hour
Weekly	Temperature	Temperature probe (on-line continuous daily readings available)	25^{0}C (max)
	pH	pH electrode/meter (on-line continuous daily readings available)	6.0-8.5 (ph units)
	COD	Standard Method	125 mg/l
	Suspended Solids	Gravimetric	35 mg/l
Monthly	BOD	Standard Method	20 mg/l
Quarterly	Total Nitrogen (as N)	Standard Method	10 mg/l
	Sulphate	Standard Method	100mg/l
	VOC	Standard Method	50ug/l
	Semi VOC	Standard Method	50ug/l
	Faecal Coliforms	Standard Method	<250FC/100mls
Biannually	Total Phosphorus (p)	Standard Method	1.0
	Cyanide	Standard Method	0.01mg/l
	Mercury	Standard Method	
Annually	Lead	Atomic Absorption/ ICP	5ug/l
	Zinc		100 ug/l
	Copper		30ug/l
	Cadmium (total)		5 ug/l
	Arsenic (total)		20 ug/l
	Chromium		15ug/l
	Nickel		25ug/l

Note 1 Source B.4 Emission to Sewer Waste Licence NO: W0211-01

3.2.1 Flow

Volume flow is monitored hourly using an online probe. Graphs showing the monthly hourly and daily flow are provided in Appendix E Emissions to Sewer- SE1 Report 2009 (See section Appendix 1 of this report). No daily flow during 2009 exceeded the 170 m^3 /day emission limit value. The average total daily flow for each month during 2009 is provided in

Table 3-6.

Flow readings at SE1 are taken hourly by operators onsite, please see the below table for average daily flow readings each month in 2009.

Table 3-6 Average Total Daily Flow per month during 2009.

Month	Total Average Flow (m^3/day)	Emission Limit Value (m^3/day)
January	21.71	170
February	24.80	170
March	24.56	170
April	17.72	170
May	20.99	170
June	18.76	170
July	77.99	170
August	50.92	170
September	56.79	170
October	24.57	170
November	32.00	170
December	6.93	170

At present, there is one sludge dryer in operation (15,000 tonnes sludge capacity). The Flow limits in The Waste License W0211-01 are based on two sludge dryers (30,000 tonnes sludge capacity).

3.2.2 *Weekly Monitoring*

COD, pH and Suspended Solids are monitored on a weekly basis by an external laboratory, Alcontrol, Laboratories BHP and Environmental Laboratory Services.

Error! Reference source not found. summarises the results of weekly monitoring during 2009. In Appendix E, copies of the Certificates of Analysis are included within its Appendix B.

Any result highlighted in red exceeded the emission limit value. Temperature is monitored continuously using an online probe. The temperature from the online probe for the date the weekly sample was collection is reported.

Table 3-7- SE1 Weekly Results

		COD *Note 1		pH *Note 1			Temperature		TSS *Note 1	
Week 2009	Date1	ELV	Result	ELV (Low & High		Result	ELV	Result	ELV	Result
Wk1	07/01/2009	125	339	6	8.5	5.44	25	2.5	35	55
Wk2	15/01/2009	125	103	6	8.5	7.52	25	6.4	35	18
Wk3	25/01/2009	125	235	6	8.5	6.99	25	4.8	35	57
Wk4	28/01/2009	125	120	6	8.5	7.63	25	7.3	35	38
Wk5	04/02/2009	125	191	6	8.5	8.62	25	7.6	35	76
Wk6	11/02/2009	125	233	6	8.5	6.95	25	5.5	35	28
Wk7*Note 2	16/02/2009	125	64*Note 2	6	8.5	7.55*Note 2	25	7.9*Note 2	35	11*Note 2
Wk8	24/02/2009	125	100	6	8.5	8.06	25	10.7	35	10
Wk9	04/03/2009	125	76	6	8.5	7.77	25	4.3	35	12
Wk10	09/03/2009	125	93	6	8.5	5.81	25	7.2	35	29
Wk11	18/03/2009	125	123	6	8.5	6.85	25	9.8	35	20.7
Wk12	27/03/2009	125	270	6	8.5	6.75	25	10.6	35	50
Wk13	01/04/2009	125	48	6	8.5	7.2	25	11.2	35	12.5
Wk14	09/04/2009	125	155	6	8.5	8.05	25	10.2	35	16.8
Wk15	15/04/2009	125	90	6	8.5	7.81	25	12.8	35	26
Wk16	22/04/2009	125	230	6	8.5	7.03	25	12.4	35	20.8
Wk17	29/04/2009	125	140	6	8.5	7.29	25	12.7	35	33
Wk18	08/05/2009	125	163	6	8.5	7.95	25	11.7	35	10.4
Wk19	14/05/2009	125	129	6	8.5	7.62	25	12.5	35	18.4
Wk20	20/05/2009	125	155	6	8.5	7.54	25	14.5	35	7.2
Wk21	28/05/2009	125	230	6	8.5	7.53	25	16.1	35	6.8
Wk22	03/06/2009	125	312	6	8.5	7.65	25	20	35	5.2
Wk23	10/06/2009	125	260	6	8.5	7.82	25	15.4	35	10.8
Wk24	18/06/2009	125	380	6	8.5	7.11	25	17.4	35	18.8
Wk25	25/06/2009	125	260	6	8.5	7.71	25	19.3	35	7.6
Wk26	02/07/2009	125	170	6	8.5	7.73	25	20.4	35	5.5
Wk27	09/07/2009	125	190	6	8.5	7.34	25	11.4	35	8
Wk28	16/07/2009	125	230	6	8.5	7.39	25	19.4	35	15.7
Wk29	23/07/2009	125	200	6	8.5	7.6	25	18.3	35	65.5

		COD *Note 1		pH *Note 1			Temperature		TSS *Note 1	
Week 2009	Date1	ELV	Result	ELV (Low & High		Result	ELV	Result	ELV	Result
Wk30	30/07/2009	125	320	6	8.5	7.31	25	17.2	35	24
Wk31	06/08/2009	125	87	6	8.5	6.78	25	17.5	35	45
Wk32	14/08/2009	125	260	6	8.5	7.28	25	19.1	35	29
Wk33	21/08/2009	125	240	6	8.5	7.66	25	20.2	35	24
Wk34	28/08/2009	125	270	6	8.5	7.84	25	16.1	35	6.4
Wk35	03/09/2009	125	400	6	8.5	7.57	25	14.4	35	12
Wk36	10/09/2009	125	380	6	8.5	7.2	25	14.5	35	4.8
Wk37	17/09/2009	125	250	6	8.5	7.01	25	15.2	35	1
Wk38	23/09/2009	125	290	6	8.5	7.51	25	15.8	35	21.6
Wk39	01/10/2009	125	305	6	8.5	6.98	25	15.8	35	30.8
Wk40	08/10/2009	125	330	6	8.5	7.24	25	12.8	35	24.8
Wk41	16/10/2009	125	26	6	8.5	8.44	25	15.4	35	5.5
Wk42	22/10/2009	125	5	6	8.5	7.29	25	14.9	35	2
Wk43	29/10/2009	125	204	6	8.5	6.95	25	15.2	35	10
Wk44	05/11/2009	125	53	6	8.5	7.35	25	10.4	35	10.4
Wk45	12/11/2009	125	470	6	8.5	7.17	25	8.2	35	9
Wk46	20/11/2009	125	400	6	8.5	6.73	25	12.8	35	18.4
Wk47	27/11/2009	125	650	6	8.5	7.06	25	8.9	35	59
Wk48	04/12/2009	125	510	6	8.5	7.48	25	10.8	35	12
Wk49	11/12/2009	125	120	6	8.5	7.03	25	8.74	35	1
Wk50	15/12/2009	125	450	6	8.5	7.21	25	9.8	35	22
Wk51	23/12/2009	125	104	6	8.5	6.67	25	2.7	35	12
Wk52	04/01/2010	125	28	6	8.5	5.7	25	1.2	35	40.8

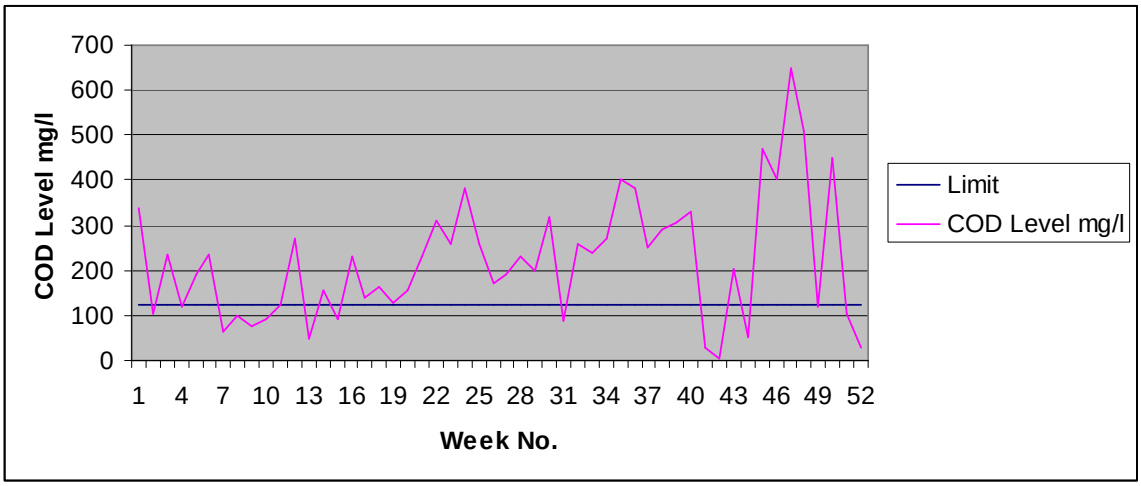
Note 1 Any result highlighted in red exceeds the emission limit value.
Note 2 An EPA split sample was taken at this date

3.2.3 *Chemical Oxygen Demand*

In 2009, COD continued to fall in line with the decreases that were initiated in the final quarter of 2008. Despite the reduction in overall terms, compliance with the ELV's is still proving difficult. In the last quarter of 2009, there were some spikes in the COD level, due in part to ongoing trials. Improvements within the onsite WWTP are an ongoing objective within ERAS ECO in order to meet emission limits values, hence these trials will continue until continuous compliance can be achieved.

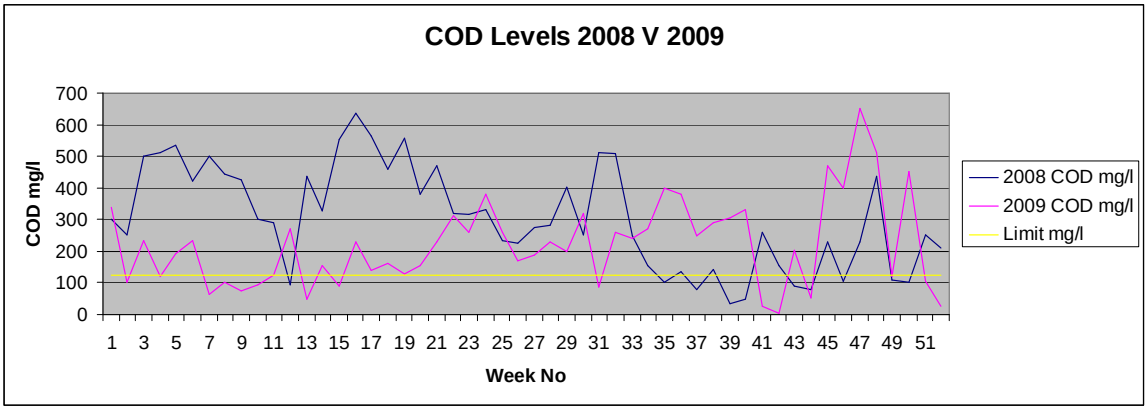
A summary of improvement works carried out to date are provided in Section 4 of Appendix E.

Figure 3 - 2009 COD Level (mg/l) per Week



The average COD value in 2009 has fallen considerably from the previous year (i.e. In 2008 the average COD was 304.3 mg/l and in 2009 the average was 220.0 mg/l). This reduction is displayed in Figure 3 & Figure 4.

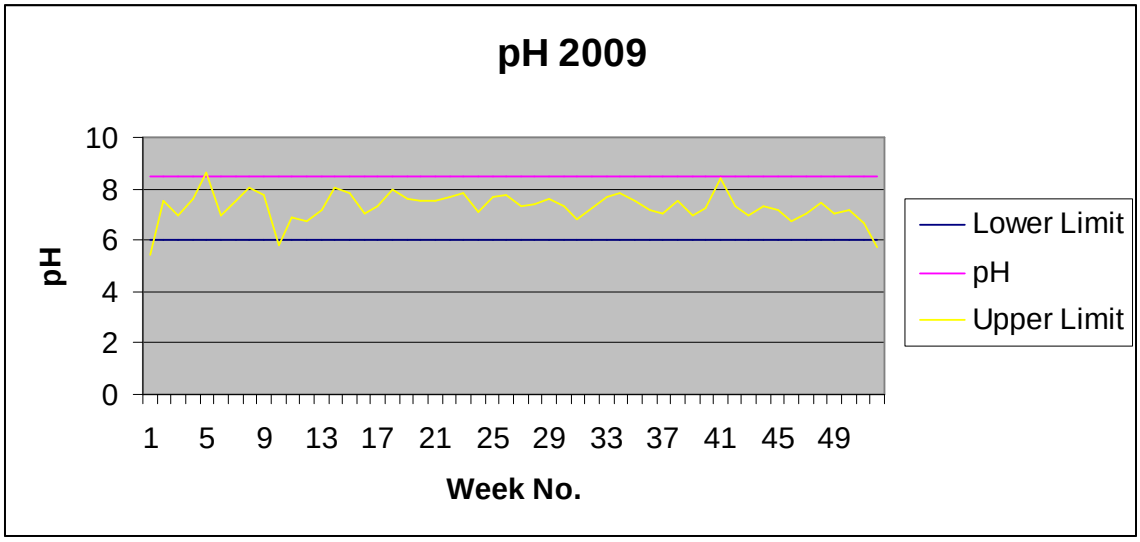
Figure 4 - 2008 V 2009 Weekly COD Level (mg/l)



3.2.4 pH

Three pH exceedances were observed in the weekly 24h composite samples during 2009 (Week 1, Week 5 & Week 52). This trend is displayed in Figure 5 below. The average pH reading from the 2009 composites was 7.30.

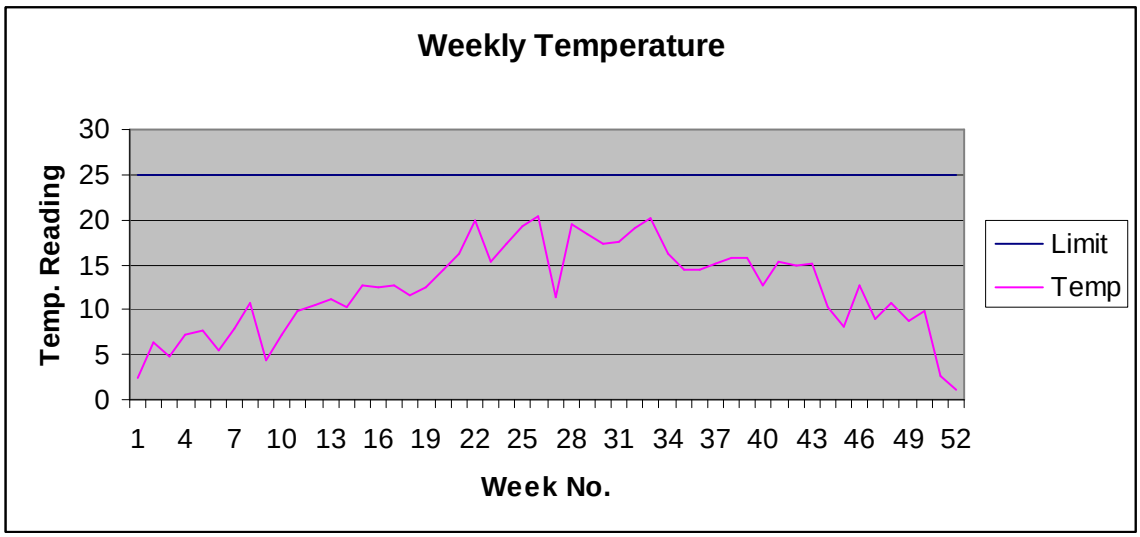
Figure 5 - 2009 pH levels per Week



3.2.5 Temperature

Temperature was found in compliance (see Figure 6) at all times with the waste license emission limit values during 2009.

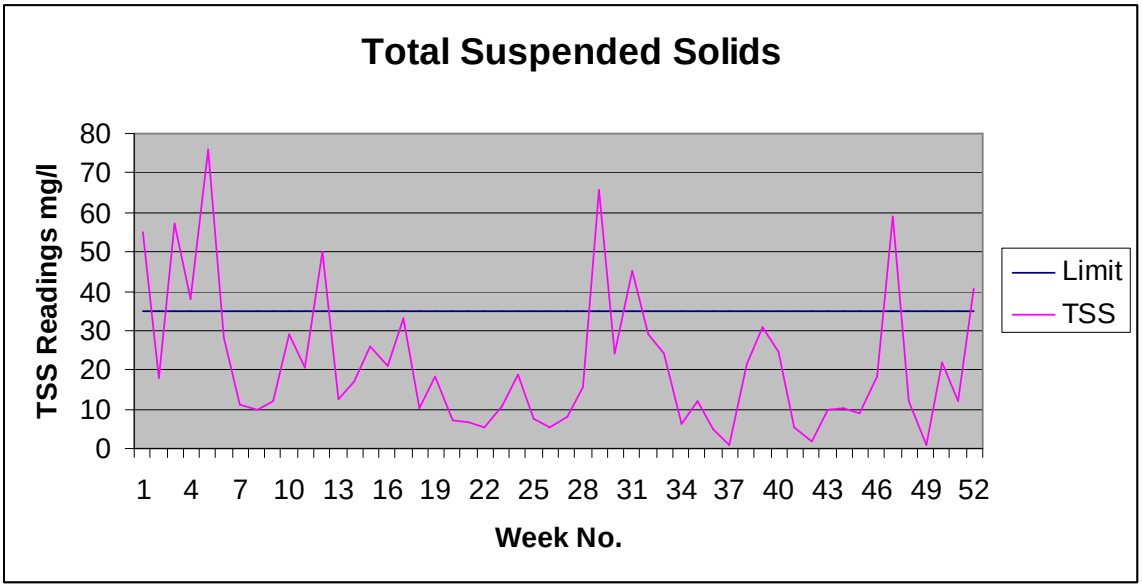
Figure 6 SE1-Temperature 2009



3.2.6 *Suspended Solids*

Suspended Solids is monitored on weekly basis. Nine suspended solids exceedances were observed during 2009: *Week* 1 55mg/l; *Week 3* 57 mg/l; *Week 4* 38 mg/l; Week *5* 76 mg/l; Week *12* 50 mg/l; Week *29* 65.5 mg/l; Week *31* 45 mg/l; *Week 47* 59 mg/l; Week *52* 40.8 mg/l. While exceedances have occurred, these are very often attributable to our incessant efforts to reduce Chemical Oxygen Demand (COD). See Figure 7 below.

Figure 7 - 2009 TSS Emissions per Week



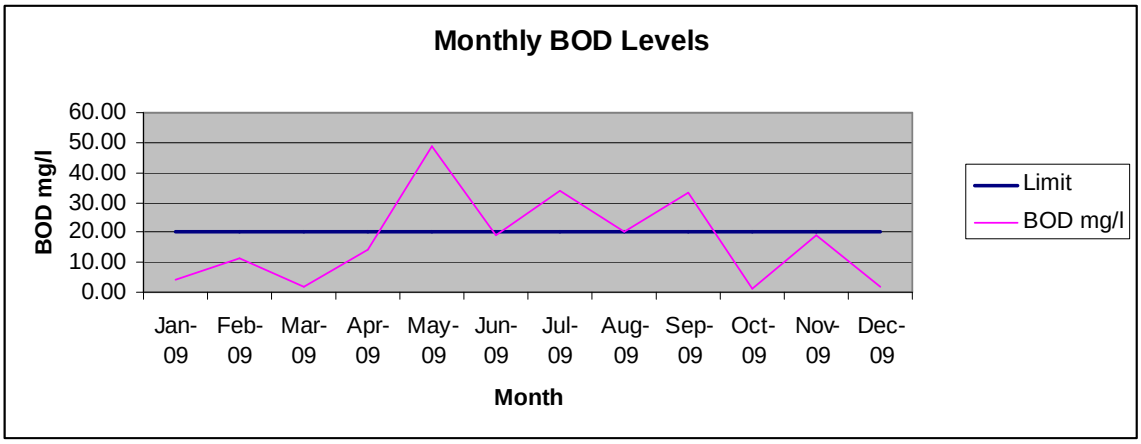
3.2.7 *Biological Oxygen Demand*

Biological Oxygen Demand (BOD) is monitored on a monthly basis in accordance with the requirements of the licence. Table 3-8 below summarises all results for BOD during 2009. Certificates of Analysis are provided in Appendix E of this report.

Table 3-8 - Monthly Monitoring Results 2009 – Biological Oxygen Demand

	BOD mg/l	
Month	***Emission Limit Value***	***Result***
Jan-09	20	4
Feb-09	20	11
Mar-09	20	2
Apr-09	20	14
May-09	20	**49**
Jun-09	20	19
Jul-09	20	**34**
Aug-09	20	20
Sep-09	20	**33**
Oct-09	20	1
Nov-09	20	19
Dec-09	20	2

Figure 8 - 2009 Monthly BOD levels



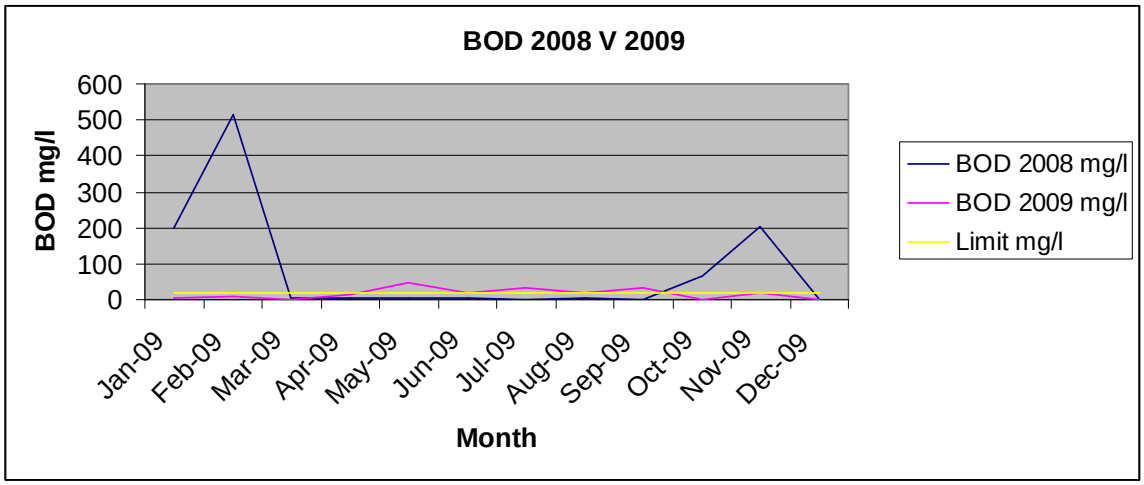
Three BOD exceedances (outlined in bold text above) were observed during 2009, these are:

- May = 49 mg/l
- July = 34 mg/l
- September = 33 mg/l

These exceedances have been studied and addressed by modifications to the plant and its flow. As part of ongoing improvements at ERAS ECO Ltd it is now apparent that the high level BOD experienced in 2008 (>100 mg/l) has now been successfully addressed. As the carbon filters act as a significant BOD remover, it was therefore necessary to ensure that the quality of the backwash water that scrubs these beds is of sufficient purity. ERAS ECO Ltd has addressed this situation by

increasing its particulate removal by the addition of proprietary flocculants. The success of this programme has been reflected in the fall in BOD (i.e. In 2008 the average BOD was 83.5 mg/l and in 2009 the average was 17.33 mg/l) and hence the improved compliance.

Figure 9 - 2008 V 2009 Monthly BOD Levels



3.2.8 *Quarterly Monitoring (Q1, Q2, Q3 and Q4):*

Table 3-9 outlines monitoring results for parameters monitored on a quarterly basis. Certificates of Analysis are provided in Appendix E.

Quarterly monitoring was carried out on following dates:

- Q1: 17/02/2009; 09/03/2009 & 27/03/2009
- EPA Spilt: 17/02/2009
- Q2: 08/05/2009
- Q4: 30/07/2009
- Q4: 23/09/2009

Table 3-9 - 2009 Quarterly Monitoring Results

Year/Quarter	Date	Parameter	Units	Emission Limit	Result
2009/Q1	27/03/2009	Total Nitrogen	mg/l	10	4.2
	09/03/2009	Sulphate	mg/l	100	**353**
	17/02/2009	VOC	ug/l	50	**~ 60**
	09/03/2009	Semi VOC	ug/l	50	<1
	27/03/2009	Faecal Coliforms	FC/100mls	<250	0
Year/Quarter	**Date**	**Parameter**	**Units**	**Emission Limit**	**Result**
EPA Split Sample	17/02/2009	Total Nitrogen	mg/l	10	9.0
	17/02/2009	Sulphate	mg/l	100	64.6
	17/02/2009	VOC	ug/l	50	**223**
	17/02/2009	Semi VOC	ug/l	50	-
	17/02/2009	Faecal Coliforms	FC/100mls	<250	<1
Year/Quarter	**Date**	**Parameter**	**Units**	**Emission Limit**	**Result**
2009/Q2	08/05/2009	Total Nitrogen	mg/l	10	6.2
	08/05/2009	Sulphate	mg/l	100	21.7
	08/05/2009	VOC	ug/l	50	<10
	08/05/2009	Semi VOC	ug/l	50	<10
	08/05/2009	Faecal Coliforms	FC/100mls	<250	0
Year/Quarter	**Date**	**Parameter**	**Units**	**Emission Limit**	**Result**
2009/Q3	30/07/2009	Total Nitrogen	mg/l	10	4.60
	30/07/2009	Sulphate	mg/l	100	31.2
	30/07/2009	VOC	ug/l	50	<10
	30/07/2009	Semi VOC	ug/l	50	<10
	30/07/2009	Faecal Coliforms	FC/100mls	<250	0
Year/Quarter	**Date**	**Parameter**	**Units**	**Emission Limit**	**Result**
2009/Q4	23/09/2009	Total Nitrogen	mg/l	10	1
	23/09/2009	Sulphate	mg/l	100	14.4
	23/09/2009	VOC	ug/l	50	<10
	23/09/2009	Semi VOC	ug/l	50	<10
	23/09/2009	Faecal Coliforms	FC/100mls	<250	0

ND: Not detected

- Total Nitrogen: All results were compliant with the Emission Limit Value of 10mg/l.

- Sulphate levels were above the license limit values during Quarter 1 2009. Ongoing investigations have established that these exceedances are to some extent related to intrinsic sulphate levels caused by the use of chemicals, such as Aluminium Sulphate and Sulphuric Acid for inline pH adjustment. As can be seen from subsequent quarterly analysis, this is no longer the case and Sulphate is now compliant.
- The EPA Split sample had unusually high VOC's. The VOC's have since reduced as evident by Q2 – Q4 analysis.
- All Semi VOC results were within the license emission limit values.
- Faecal Coliforms results were within the emission limit values during 2009.

3.2.9 *Ammonia Testing during 2009*

Ammonia levels are measured both internally and externally, and the combined efforts by both ERAS ECO Ltd and consultants are helping to control emissions to sewer. However, experimentation and trials there has created its own problems. In particular ERAS ECO Ltd relentless pursuit of COD compliance has caused knock-on spikes in the levels of other parameters, namely Ammonia, pH, Sulphates & Total Suspended Solids. Current daily onsite ammonia levels are within compliance limits.

The ammonia limit value of 0.5mg/l was exceeded once in 2009, this was an EPA Split Sample taken on the 17/02/2009. A copy of this report is included in Appendix E.

Table 3-10 - Ammonia Testing during 2009

Date	Result mg/l	Limit value mg/l	Reference
17/02/2009	**7.11**	0.5	EPA: 290337/1

3.2.10 *Biannual Monitoring (B1 and B2):*

Biannual monitoring was carried out in May and December 2009. Parameters analysed include Total Phosphate, Cyanide and Mercury. Biannual analysis (i.e. both B1 and B2) were in general compliant and less than Emission Limit Values as specified in Schedule B4 of W0211-01. However there is one exceedance to the Biannual 2, this is highlighted in red. Table 3-11 below summarises biannual monitoring results. Certificates of Analysis are provided in Appendix E of this report.

Table 3-11- Biannual Monitoring Results 2009

Parameter	Units	Limits	Sample ID	
			Sample B1: Composite 0921C	Sample B2: Composite 0951A
Total Phosphate	mg/l	1	0.03	0.2
Cyanide	mg/l	0.01	<0.001	0.033
Mercury	ug/l	Not Specified	<0.2	0.3

3.2.11 *Annual Monitoring*

Annual monitoring of the Heavy Metals is required for the compliance of the waste licence. All parameters were found to be compliant with the emission limit values for a sample collected on the 16 February 2009.

Table 3-12 - Annual Monitoring Results 2009

Year	Date	Parameter	Units	Emission Limit	Result
2009	16/02/2009	Pb	ug/l	5	<1
		Zn	ug/l	100	<1
		Cu	ug/l	30	<1
		Cd	ug/l	5	<0.4
		As	ug/l	20	<1
		Cr	ug/l	15	<1
		Ni	ug/l	25	<1

Certificates of analysis are provided in Appendix E.

3.2.12 *Toxicity Testing*

A sample of effluent was taken for toxicological analysis on the 18th December 2008. Analysis was carried out by Shannon Aquatic Toxicity Services. A summary of results are provided in Table 3-13. A full copy of the report is provided in Appendix F.

Table 3-13 Summary of Toxicity report

Test Parameter	Toxic units
48 hLC 50 to Tisbe Battagliai (Marine Copepod)	<3.1
72 h IC50 to Skeletonema costatum (Marine Algae)	<3.01
5 min EC50 to Vibrio Fischeri (Marine Bacterium)	<2.2
15 min EC50 to Vibrio Fischeri (Marine Bacterium)	<.2.2

This reported indicates that the sample of effluent tested is not toxic for the range of species monitored.

In accordance with 6.16.2, on the 02/09/2009 ERAS ECO Ltd submitted communication to the Agency regarding the future program for toxicity testing. ERAS ECO Ltd is awaiting Agency confirmation regarding the necessary monitoring frequency and species for any future toxicity analysis.

3.2.13 Mass Emissions

Flows (See Table 3-6. Average Total Daily Flow 2009) and results were averaged to provide information on annual emission figures for the licensed parameters. Table 3-14 below summarises the mass emissions to the sewer 2009.

Table 3-14 SE 1 Mass Emissions 2009

Parameter	ELV Emission Limit Value	2008	2009
COD	7756.25	3590.11	2532.571
BOD	1241.00	700.51	235.968
TSS	2171.75	193.49	260.025
Total Nitrogen	620.50	353.81	48.920
Sulphate	6205.00	9443.35	1237.106
VOC	3.10	0.07	0.115
Semi VOC	3.10	0.21	0.115
Total Phosphate	NA	0.21	2.647
Cyanide	0.62	0.19	5.986
Mercury	NA	0.00	2.878
Pb	0.31	0.03	0.012
Zn	6.21	0.47	0.046
Cu	1.86	0.30	0.012
Cd	0.31	0.01	0.012
As	1.24	0.02	0.012
Cr	0.93	0.10	0.012
Ni	1.55	0.05	0.012
Faecal Coliforms	250.00	<1	<1

Note1: Calculations based on total days January 2009 -December 2009 (365 days) and maximum discharge limit: 170m^3/day (Schedule B.4 of Waste License W0211-01)
Note2: Results based on average flow
Note 3: Calculations based on 260 drying days

As can be seen from the above table, COD and TSS solids are not in excess of the mass emissions limits. This is due to the discharge being considerably less than the license flow limit. In 2009, one parameter was in excess of the mass emission limits, this is highlighted in red.

As reported to the Agency (in standardised facsimile) a number of exceedances were recorded in the effluent during 2009. These exceedances have been categorised as incidents and a summary table is provided in Table 3-28. Also the laboratory certificates are included in the appendices of the Appendix E.

As part of onsite continual improvement and corrective action procedures, ERAS ECO Ltd. installed additional plant in latter stages of 2008; the benefits of this were revealed in the improved compliance 2009.

All improvement works carried out in the WWTP in different stages during 2008 by EPS and Celtic Water are outlined below, these included:

- Installation of an aeration system in the balance tank (130 m^3).

- Installation of a Granular Activated Carbon (GAC) filter unit by EPS on the basis on the findings of pilot scale condensate tests by Celtic Water.
- Larger dosing pumps for sodium hydroxide were installed to enable pH correction to an upper level of 11.6 pH units to facilitate improved aeration. Subsequent dosing with greater amounts of sulphuric acid reducing inline pH to an optimum level of 7-8.8 pH units to optimise a absorption in the activated carbon unit
- A high molecular weight flocculant was added to the plant to facilitate improved suspended solids removal, and aid COD reduction via downstream filtration.
- Installation of new inline mixers to aid contact between effluent and floculant/ co-agulant.
- Installation of a mixing tank inline together an increase of sodium hypochlorite dosing rate

In the past year, ERAS ECO Ltd. has experienced a reduction in the overall/ total Mass Emissions. The above measures have positively improved the final effluent discharge at SE1. ERAS ECO Ltd. are committed to continual improvement works to ensure demonstration of compliance with emission limits.

To build upon ongoing improvements over the last year and a half, ERAS ECO Ltd. has outlined further projects/works that will aid the company meet its discharge emission limits. To this end a programme for continual improvement is included in the site's Environmental Objectives and Targets indicating targets, timelines and works the company is committed to achieving.

While exceedances to the ERAS ECO Ltd's SE1 emission limit values are occurring, these exceedances are not significantly impacting upon the water quality. This can be verified by a water quality survey which was conducted to investigate the effects of the discharging effluent on the environment. It was concluded from the study that **the impact of the effluent discharge on the immediate or surrounding environment is negligible**. The water quality study report is enclosed in Appendix G**.**

As part of our commitment to resolve the issue of SE1 exceedances, in 2009 ERAS ECO Ltd met with various stakeholders (EPA, Sanitary Authority & other divisions of the Cork County Council). These meetings were arranged to outline the present difficulties and suggest a suitable approach going forward. It was agreed at these meetings that further investigation into the exact nature of these exceedances was needed, and most likely a review of the discharge limits. ERAS ECO Ltd. will report the findings of these investigations to the necessary departments.

3.3 Emissions to the Air

ERAS ECO Ltd. operates two licensed emission points to the atmosphere namely:

- A1-Boiler
- A2-Biofilter

3.3.1 Emission Point Reference No.: A1 Boiler

The sludge drying process (non-contact drying process) utilises 12 bar steam generated by the onsite biomass boiler. The start-up procedure for the boiler uses light fuel oil which raises the furnace temperature to approximately 400ºC. Upon reaching this temperature the system is manually switched to woodchip. This results in the furnace reaching temperatures above 600 ºC. The flue gas generated is treated through a cyclone and a bag filter, prior to emission at reference point A1 (boiler stack).

As per Schedule C.1.2 Monitoring of Emissions to Air, quarterly monitoring was carried out during 2009 and results are summarised in Table 3-15. Any results highlighted in bold exceeded emission limit value. Monitoring of Emissions to Air Reports (Emission Point A1-Boiler) is provided in Appendix H.

Table 3-15 Air Results 2009: Emission Point A1 Boiler

			Monitoring period	Q1 2009	Q2 2009	Q3 2009	Q4 2009
Parameter	License Emission Limit	UNITS	Date of monitoring	26/03/2009	26/06/2009	28/09/2009	12/11/2009
NOx	250	mg/Nm^3		95.1	203	155	90.8
CO	150	mg/Nm^3		<0.67	2.8	4.5	7.9
Particulates	20	mg/Nm^3		0.282	<0.6	0.9	1.1
SOx	--	mg/Nm^3		0.53	2.2	3.6	2.4
Airflow	11,600	Nm^3/hr		4248	3322	2794	3199

Note 1: Normalised to 273K, 101.3 kPa and 11% O_2 reference.
Note 2: in 2009, there was no exceedance to Schedule B1, thus suggesting that the levels are under control.

Table 3-16 below summarises the annual mass emissions (Emission Point ref. A1-Boiler) to the air 2009. These figures are based on average values (Q1-Q4) of the parameters monitored and the actual number of sludge drying days in 2009 (260 days).

Table 3-16 Mass Emissions to the Air (A1-Boiler) 2008 & 2009.

Parameter	Units	License Emission Limit Mass emissions[1,2]	Mass Emissions 2007[1,2]	Mass Emissions 2008[1,3]	Mass Emissions 2009[1,4]
NOx	Kg/year	14,894.40	1,499.19	7,501	9842.41
CO	Kg/year	8,936.64	106.81	697.27	287.18
Particulates	Kg/year	1,191.55	64.32	84.13	55.06
SOx	Kg/year	Not Specified	415.04	185.65	157.98

Note 1: Normalised to 273K, 101.3 kPa and 11% O_2 reference.
Note 2: ELV - Calculations based on boiler running 24 hours per day 365 days per annum emission limits and airflow emission limit (as per schedule B.1 of Waste license W0211-01)
Note 2: 2007 - Calculations based on boiler running 24 hours per day 214 days per annum - January- December 2007
Note 3: 2008 - Calculations based on drying hours January- December 2008 (3973 drying hours)
Note 4: 2009 - Calculations based on boiler running 24 hours per day 260 days per annum - January- December 2009

Note 5: Calculations based on average of Quarterly results

3.3.2 Emission Point Reference No.: A2 Biofilter

As per condition 6.8.3 of Waste License W0211-01, the sludge storage bin (Ref: HST2) is vented to the onsite biofilter for odour abatement.

As per condition 6.8.4 and 6.8.5 of Waste License W0211-01, gaseous emissions from the condensate (cooling) tower and from the WWTP are treated in the onsite biofilter.

The odour abatement system (A2-Biofilter) was installed and commissioned in May 2008 by Bord na Mona.

Controls are also carried out regularly by ERAS ECO Ltd. personnel. Monthly biofilter pH water return results summarised in **Error! Reference source not found.**.

Table 3-17 – Biofilter Sump 1 pH & TVC (2009)

Sump 1				
Biofilter- A2 water sumps	**Total Viable Count 22^{O}C**	**Total Viable Count 37^{O}C**	**pH result**	**Monthly**
			7.81	Jan-09
			8.09	Feb-09
			8.14	Mar-09
			8.22	Apr-09
A2 M5 2009	663	83	8.38	May-09
A2 M6 2009	340	67	8.26	Jun-09
A2 M7 2009	40000	12400	7.76	Jul-09
A2 M8 2009	2080	10575	7.44	Aug-09
A2 M9 2009	26000	19000	7.72	Sep-09
A2 M10 2009	27400	76	7.54	Oct-09
A2 M11 2009	2200	2500	9.05	Nov-09
A2 M12 2009	6000	800	7.52	Dec-09

Table 3-18 - Biofilter Sump 2 pH & TVC (2009)

Sump 2				
Biofilter- A2 water sumps	**Total Viable Count 22^{O}C**	**Total Viable Count 37^{O}C**	**pH result**	**monthly**
			7.46	Jan-09
			7.35	Feb-09
			7.15	Mar-09
			7.21	Apr-09
A2 M5 2009	1016	73	7.32	May-09
A2 M6 2009	480	7	7.79	Jun-09
A2 M7 2009	18000	7900	7.21	Jul-09
A2 M8 2009	2210	5000	7.44	Aug-09
A2 M9 2009	33000	25000	7.6	Sep-09
A2 M10 2009	9000	85	7.48	Oct-09
A2 M11 2009	7200	495	8.94	Nov-09
A2 M12 2009	2200	700	7.32	Dec-09

The above tables are the results of Biofilter sump water testing conducted by an external laboratory. The pH values are critical to the Biofilter's performance and hence the abatement of odours. As a general rule, the target pH range is 7 – 8. A trend that has come to light is that the pH is generally greater in sump 1; this can be observed in the Figure 10 below.

Figure 10 - Biofilter pH Comparison - Sump 1 V Sump 2

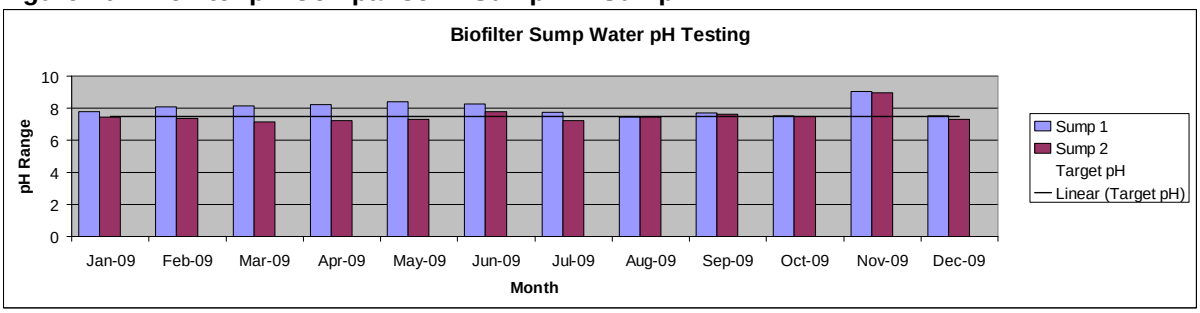


Figure 11 - Biofilter Sump 1 TVC Levels (2009)

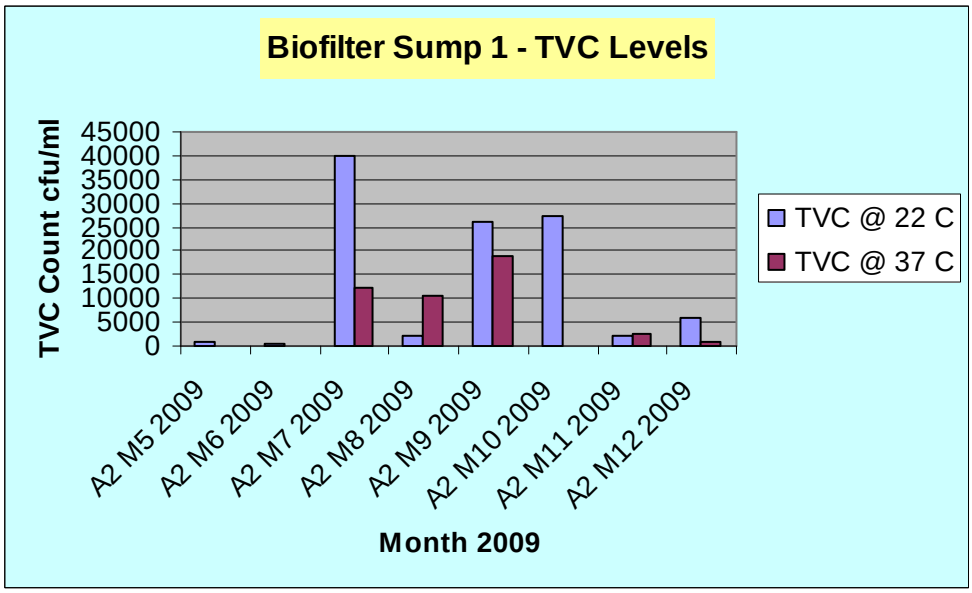
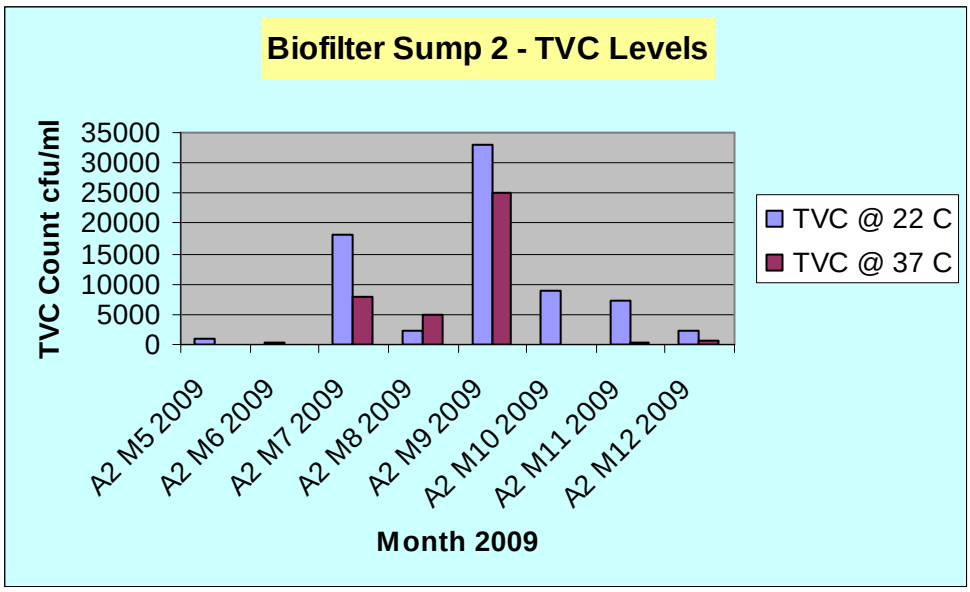


Figure 12 - Biofilter Sump 2 TVC Levels (2009)



As part of odour management strategy developed in 2009, ERAS ECO Ltd is now taking samples of the Biofilter sump water once monthly; these samples are sent to an external laboratory for Total Viable Count (TVC) testing. The purpose of this test is to gauge an understanding of the bacteria levels in each of the sump and consequently realising when it is time to replenish the sumps with new bacteria/innoculum. This testing was recommended by the Biofilter manufacturer and has been communicated to the Agency. In reality this testing does not appear to provide any meaningful data, the TVC levels are fluctuating enormously and this instability cannot be linked to innoculum boosts.

As per Schedule C.1.2 Monitoring of Emissions to Air, Biannual and weekly monitoring was carried out during 2009. Biannual biofilter stack monitoring was carried out twice during 2009. A summary of the biannual and weekly monitoring are provided in Table 3-19 and Table 3-20 respectively. A copy of the biannual reports is provided in Appendix I of this report.

Table 3-19 Biannual Emissions to the Air Results 2009. Emission Point Ref. A2

Parameter	Units	Emission Limit	Result B1 26/06/2009	Result B2 12/11/2009
Airflow	Nm^3/hr	No Limit Specified	1193	1289
Ammonia	mg/Nm^3		<0.19	<0.19
Organics (VOC)	mg/Nm^3		<0.18	<0.18
Hydrogen Sulphide	mg/Nm^3		<0.18	<0.18
Amines	mg/Nm^3		<0.18	<0.18
Mercaptans	mg/Nm^3		<0.04	<0.04

Table 3-20 Weekly Emissions to the Air Results 2009. Emission Point Ref. A2

Date	Parameter	Units	Result	Emission limit	Airflow (m^3/h)
05/01/2009	Mercaptons	Ppm	<0.5	NA	1195
15/01/2009	Mercaptons	Ppm	<0.5	NA	1017
24/01/2009	Mercaptons	Ppm	<0.5	NA	1025
28/01/2009	Mercaptons	Ppm	<0.5	NA	1107
05/02/2009	Mercaptons	Ppm	<0.5	NA	1017
13/02/2009	Mercaptons	Ppm	<0.5	NA	1224
18/02/2009	Mercaptons	Ppm	<0.5	NA	1205
27/02/2009	Mercaptons	Ppm	<0.5	NA	1125
06/03/2009	Mercaptons	Ppm	<0.5	NA	1150
13/03/2009	Mercaptons	Ppm	<0.5	NA	1051
19/03/2009	Mercaptons	Ppm	<0.5	NA	1164
27/03/2009	Mercaptons	Ppm	<0.5	NA	1210
02/04/2009	Mercaptons	Ppm	<0.5	NA	1198
10/04/2009	Mercaptons	Ppm	<0.5	NA	1190
17/04/2009	Mercaptons	Ppm	<0.5	NA	1175
24/04/2009	Mercaptons	Ppm	<0.5	NA	1153
30/04/2009	Mercaptons	Ppm	<0.5	NA	248
08/05/2009	Mercaptons	Ppm	<0.5	NA	1173
15/05/2009	Mercaptons	Ppm	<0.5	NA	1040
22/05/2009	Mercaptons	Ppm	<0.5	NA	1040
29/05/2009	Mercaptons	Ppm	<0.5	NA	926.92
03/06/2009	Mercaptons	Ppm	<0.5	NA	1627
05/06/2009	Mercaptons	Ppm	<0.5	NA	1390
08/06/2009	Mercaptons	Ppm	<0.5	NA	1311.26
19/06/2009	Mercaptons	Ppm	<0.5	NA	926
22/06/2009	Mercaptons	Ppm	<0.5	NA	949.53
26/06/2009	Mercaptons	Ppm	<0.5	NA	1096.49
01/07/2009	Mercaptons	Ppm	<0.5	NA	1176
03/07/2009	Mercaptons	Ppm	<0.5	NA	1028
06/07/2009	Mercaptons	Ppm	<0.5	NA	1073.88
14/07/2009	Mercaptons	Ppm	<0.5	NA	1198
17/07/2009	Mercaptons	Ppm	<0.5	NA	1051
22/07/2009	Mercaptons	Ppm	<3.0	NA	1175.6
24/07/2009	Mercaptons	Ppm	<0.5	NA	1119.1
29/07/2009	Mercaptons	Ppm	<0.5	NA	1153
31/07/2009	Mercaptons	Ppm	<0.5	NA	1170
05/08/2009	Mercaptons	Ppm	<1.0	NA	1435.6
07/08/2009	Mercaptons	Ppm	<1.0	NA	1401.7
11/08/2009	Mercaptons	Ppm	<0.5	NA	1367.8
13/08/2009	Mercaptons	Ppm	<1.0	NA	1209
18/08/2009	Mercaptons	Ppm	<0.5	NA	1254.7
20/08/2009	Mercaptons	Ppm	<0.5	NA	1164.3
24/08/2009	Mercaptons	Ppm	<0.5	NA	1039.9
27/08/2009	Mercaptons	Ppm	<1.0	NA	1051.3
02/09/2009	Mercaptons	Ppm	<1.0	NA	1062
05/09/2009	Mercaptons	Ppm	<0.5	NA	926.92
08/09/2009	Mercaptons	Ppm	<0.5	NA	1006
10/09/2009	Mercaptons	Ppm	<2.0	NA	1627
14/09/2009	Mercaptons	Ppm	<0.5	NA	1175.6
16/09/2009	Mercaptons	Ppm	<0.5	NA	1220.8
23/09/2009	Mercaptons	Ppm	<0.5	NA	1232.1

28/09/2009	Mercaptons	Ppm	<0.5	NA	802
01/10/2009	Mercaptons	Ppm	<0.5	NA	1379
07/10/2009	Mercaptons	Ppm	<0.5	NA	757.36
09/10/2009	Mercaptons	Ppm	<0.5	NA	802.6
14/10/2009	Mercaptons	Ppm	<0.5	NA	655.6
19/10/2009	Mercaptons	Ppm	<0.5	NA	1039.9
20/10/2009	Mercaptons	Ppm	<1.0	NA	1288
21/10/2009	Mercaptons	Ppm	<1.0	NA	1718
28/10/2009	Mercaptons	Ppm	<0.5	NA	1492
30/10/2009	Mercaptons	Ppm	<0.5	NA	1458.2
04/11/2009	Mercaptons	Ppm	<0.5	NA	1345
06/11/2009	Mercaptons	Ppm	<3.0	NA	1446
11/11/2009	Mercaptons	Ppm	<0.5	NA	1379
13/11/2009	Mercaptons	Ppm	<0.5	NA	1210
18/11/2009	Mercaptons	Ppm	<0.5	NA	1458.2
20/11/2009	Mercaptons	Ppm	<0.5	NA	1480.8
25/11/2009	Mercaptons	Ppm	<2.0	NA	1480
27/11/2009	Mercaptons	Ppm	<0.5	NA	1537
08/12/2009	Mercaptons	Ppm	<0.5	NA	1006
11/12/2009	Mercaptons	Ppm	<0.5	NA	1051.3
14/12/2009	Mercaptons	Ppm	<0.5	NA	1040
16/12/2009	Mercaptons	Ppm	<0.5	NA	1006
21/12/2009	Mercaptons	Ppm	<1.0	NA	1006
23/12/2009	Mercaptons	Ppm	<0.5	NA	1209.5

In accordance with C1.1.Bord Na Mona personnel have also carried out periodic maintenance visits during 2009 to set up airflows and check the Biofilter performance and media. A brief summary of the results is included in Table 3-21 below, while a full copy of this health check report is provided in Appendix J of this report.

Table 3-21 Inlet and Outlet Concentrations at A2 Biofilter

	INLET	OUTLET	% REMOVAL
Hydrogen Sulphide	0.25ppm	0.00	>99%
Ammonia	200ppm	ND	>99%
Mercaptans	2ppm	ND	>99%

*** ND = None Detected**

As can be seen from the results, in Table 3-21, the unit is currently removing >99% of Ammonia Mercaptans and Hydrogen Sulphide from the inlet air. While these efficiencies are high, on the date of this visit the pressure differential readings indicated that the media (Monashells) had reached their end of life. On the advice of Bord Na Mona, ERAS ECO Ltd then replaced 16 m^3 of this filter media on the 05/05/2009. In addition, ERAS ECO Ltd established an extended Biofilter monitoring programme to ensure that such an event be avoided in the future.

Table 3-22 below summarises the annual mass emissions (Emission Point ref. A2- Biofilter) to the air during 2009. These figures are based on the values obtained in the biannual monitoring, the average values of the weekly parameters monitored and the average of flows recorded during 2009. The Biofilter calculations are based on total of number drying days from Jan 2009 to December 2009 (i.e. 260 drying days).

Table 3-22 Mass Emissions to the Air Results 2009. Emission Ref. Point A2

Parameter	Units	Mass Emissions 2009[1,2]
Ammonia	Kg/year	1.42
Organics (VOC)	Kg/year	1.34
Hydrogen Sulphide	Kg/year	1.34
Amines	Kg/year	1.34
Mercaptans	Kg/year	0.30

Note 1: Based on average airflow recorded during 2009 (1,197 Nm3/h) and 260 Drying Days
Note 2: Calculations based on: H2S molecular weight (34.082 g/mol) / 1ppm NH3= 19.03 mg NH3/m^3 / 1ppm methylmercaptan = 48.11 mg methylmercaptan/ m^3

3.4 Stormwater Emissions SW1

ERAS ECO Ltd. stormwater is discharged into the Blackwater estuary via a non-return valve. Two silt / oil interceptors (Class 1 and designed in accordance I.S. EN 858) together with a pH controlled storm water tank are installed on site before the final storm/surface water outlet pipe to retain any potential spillages that could occur onsite.

As per Schedule C.2.2 Monitoring of Stormwater Emissions, quarterly monitoring and daily visual inspections were carried out during 2009.

A summary of all daily 2009 storm/surface water visual inspections are enclosed in Appendix K.

Quarterly Storm/ surface water monitoring in Emission Point Ref SW1 was carried out twice during 2009. A copy of the surface water monitoring report is provided in Appendix L.

All Conductivity, pH, Temperature and Total Suspended Solids results (Q3 and Q4 surface/ storm water monitoring, Emission point Reference SW1) are outlined in the Table 3-23 below:

Table 3-23 Quarterly Stormwater Results 2009- Emission Reference Point SW1

Parameters	Units	SW1 Q1 (30/03/2009)	SW1 Q2 (07/05/2009)	SW1 Q3 (23/07/2009)	SW1 Q4 (20/08/2009)	W211-01 License Limits
Sample ID	-	SW1-Q1-2009	SW1-Q2-2009	SW1-Q3-2009	SW1-Q4-2009	N/A
Lab. Report No	-	ELS: 13255	ELS: 13629	BHP: 87841.2	ELS: 15980	N/A
Temperature	^{o}C					-
pH	pH units	7.65	7.5	7.72	8.1	-
Conductivity	uS/cm	300	397	1034	2139	-
Total Suspended Solids	mg/l	1	<1	10	<5	-
Visual Inspection	-	Clear	Clear	Clear	Clear	-

All parameters analysed during the first, second, third & fourth quarterly monitoring are well within acceptable levels for storm/surface water.

No storm water was sent off-site for treatment during 2009. No contamination was found in outlet surface/ stormwater discharge during 2009 (Emission Point Reference SW1).

3.5 Noise Emissions

As per condition 4.5 of Waste License W0211-01, "Noise from the facility shall not give rise to sound pressure levels (Leq,T) measured at the boundary of the facility or at the noise sensitive locations which exceed the limit values".

As per Schedule B.5 of Waste License W0211-01, Noise Daytime limit values $L_{eq\ (30\ min)}$ are 55 dB(A) and Noise Night-time limit values are 45dB(A)

As per Schedule B.5 of Waste License W0211-01, "No clearly audible tonal component or impulsive component in the noise emission from the activity at any noise sensitive location"

As per condition 6.19 and Schedule C.5 of Waste License W0211-01, daytime annual environmental noise monitoring was carried out on 12/11/2009. As there is no requirement for night-time monitoring, no noise monitoring took place at night. The complete noise monitoring report is enclosed in Appendix M.

A summary of the 2009 annual noise report is included below.

3.5.1 Summary of Noise Measurement Comments:

Observation: ''Monitoring on the 12th November was carried out on ideal conditions with no rain and low winds. Noise characteristics of the area are influenced by local traffic and noise from light industry.''

NM1: ''Noise measurements at this location were recorded at the northern corner of the site. Noise from the Biofilter and the landfill flare contributed to the ambient noise levels. The average noise level was recorded at 52.2 dB(A).''

NM2: ''Noise measurements at N2 were recorded at the south-eastern corner of the site. Local industrial noise influenced the average levels, while the contribution from the facility was not significant. The average noise level was recorded at 49.8 dB(A).''

NM3: ''The daytime noise measurements at N3 recorded an average noise level of 53.3dB(A), influenced mainly by passing traffic, with the background level at 48.8dB(A). There was minimal contribution from the facility while industrial noise from buildings to the north also contributed to the ambient levels.''

NSR1: ''Average noise levels were influenced by intermittent traffic volumes passing close to the monitoring location close to the dwelling. There was no contribution from the operation of the Eras Eco facility. The average noise level was recorded at 59.8 dB(A).''

3.5.2 Conclusions of Noise Report:

''It is considered that the noise emanating from the facility is not a source of nuisance at local sensitive dwelling NSR1 and local traffic is the main noise source in the region. This is supported by the low L90 levels recorded. Noise levels on-site are within the EPA licence limit of 55dB (A).''

Table 3-24 below outlines noise emissions results during the ERAS ECO Ltd. annual noise survey 2009.

Table 3-24 Annual Noise Monitoring Results 2009

Monitoring Points	Units	L_{Aeq} Result	L_{90} Result	L_{10} Result
NM01	dB(A)	52.2	44.9	53.9
NM02	dB(A)	49.8	48.3	52.2
NM03	dB(A)	53.3	48.8	55.9
NSL1	dB(A)	59.8	49.4	61.2

(Daytime Leq (30min) Emission Limit Value: 55 dB(A); Night-time Leq (30min) Emission Limit Value: 45 dB(A))

As stated in 2009 Annual noise survey in ERAS ECO Ltd. report (Appendix M): “noise emanating from the facility is not a source of nuisance.”

3.6 Groundwater Monitoring

In accordance with condition 6.18.2 of Waste License W0211-01, an independent investigation into the potential for soil and groundwater contamination at ERAS ECO Ltd. site was carried out in 2008. This report was submitted as part of the Annual Environmental Report for 2007.

As per condition 3.23 of Waste License W0211-01, three groundwater monitoring points were installed in 2007. Minerex installed and monitored the boreholes on 19/02/07, 08/03/07, 14/03/07 and 15/03/07.

The locations for the groundwater monitoring points are specified in schedule C.6 Ambient Monitoring (Groundwater monitoring) in the waste licence as follows:

- MW1 at E209704, N079731 (along the south-eastern boundary of site).
- MW2 at E209589, N079778 (along the western boundary of site).
- MW3 at E209641, N79805 (in the area which housed the diesel storage unit).

In accordance with condition 6.18.1 and Schedule C.6 Groundwater Monitoring, Groundwater monitoring was carried out biannually during 2009. Groundwater monitoring reports are enclosed in Appendix N.

Table 3-25 below outlines groundwater monitoring results obtained during the site investigation and biannual groundwater monitoring 2009.

Table 3-25 Groundwater Monitoring Results

Parameter	Units	Results MW1BI (10/06/2009)	Results MW2 B1 (10/06/2009)	Results MW3 B1 (10/06/2009)	Results MW1 B2 (15/12/2009)	Results MW2 B2 (15/12/2009)	Results MW3 B2 (15/12/2009)
Diesel Range Organics	µg/l	<10	<10	<10	303	<10	<10
Petrol Range Organics	µg/l	<5	<5	<5	59	<5	<5
Organohalogens	µg/l	<10	<10	<10	<10	10	<10
Cd	µg/l	<1	<1	<1	18	60	1
Co	µg/l	<1	<1	<1	<1	10	<1
Iron	mg/l	0.808	0.544	0.808	0.51	0.24	0.88
Mn	mg/l	0.041	0.282	0.119	0.112	0.109	0.098
Arsenic	µg/l	<1	<1	<1	4	5	<1
Chloride	mg/l	164.8	39.2	39.1	84.2	47.8	47.7
Nitrate (as NO_3)	mg/l	15.2	10	2.2	17.6	11.4	25.4
Conductivity (at 25℃)	µS/cm	665	396	925	962	532	676
pH	pH units	6.96	7.68	6.62	6.80	7.41	7.18
Ammonia (as N)	mg/l	0.09	0.01	<0.01	0.09	4.25	0.01
COD	mg/l	<1	<1	18	2200	1100	<1

The results of levelling and of recording water levels at the monitoring points suggested that groundwater flow is towards the south-eastern corner of the site under low tide conditions. However the direction of flow may change under high tide conditions.

The results of sampling show there to be levels of iron and manganese, characteristic of groundwater in impure limestone bedrock. This analysis shows there to be no recorded hydrocarbon contamination present in the groundwater.

The results not only vary between boreholes, but there is also a stark contrast between results in each monitoring round at the same borehole.

3.7 Ambient Air Monitoring

3.7.1 Dust Deposition

In accordance with Schedule C.6 of Waste License W0211-01, ERAS ECO Ltd. carried out dust deposition monitoring during 2009. Dust Deposition monitoring was carried out three times during 2009. Dust Deposition Monitoring Reports are enclosed in Appendix O.

As per condition 4.6 of the Waste License, dust and particulate matter from the activity shall not give rise to deposition levels which exceed the limit value. Table 3-26 below outlines dust deposition monitoring carried out during 2009.

Table 3-26 Dust Deposition Results 2009. Jan 2009- December 2009

Date	Location	Dust Deposition[1] mg/m2/day	ELV[1,2] mg/m2/day	Visual Comments
1st Dust Deposition Monitoring 27/04/2009 – 27/05/2009	D1	132.8	350	In Compliance. Close to landfill entrance.
	D2	98.3	350	In Compliance. South West corner of the site. Next to a marshland and approx 300m from landfill site.
	D3	345	350	In Compliance. Next to adjacent Rd and NCT Centre trucks and passing cars at N corner. Construction in the Millenium Park across the stream
2nd Dust Deposition Monitoring 27th May-02nd July 2009	D1	246.8	350	In Compliance. N perimeter corner next to landfill entrance.
	D2	316.7	350	In Compliance. SE Corner
	D3	308.9	350	In Compliance. SW corner next to the foxhole rd and NCT Centre, trucks and cars to landfill passing at higher speed than in N corner.
3rd Dust Deposition Monitoring 17ndSept-23ndOct 2009	D1	98.5	350	In Compliance. N perimeter corner next to landfill entrance, and ongoing works at onsite WWTP.
	D2	124.5	350	In Compliance. SE Corner
	D3	263.7	350	In Compliance. SW corner next to the foxhole rd and NCT Centre, trucks and cars to landfill passing at higher speed than in N corner. Ongoing works in adjacent road.

Note1: 30 day composite sample (Bergerhoff Gauges)
Note 2: As per schedule B.2 of Waste License W0211-01, Dust Deposition Emission Limit Values: 350 mg/m2/day.

Dust deposition results during 2009 were found IN COMPLIANCE with the Waste license W211-01 (Schedule B.2 Dust Deposition Limits)

3.7.2 Odour monitoring

In accordance with condition 6.8.3 of Waste License W0211-01, the sludge storage bin (Ref: HST2) is vented to the onsite biofilter for odour abatement.

In accordance with 6.8.4 and 6.8.5 of Waste License W0211-01, gaseous emissions from the condensate (cooling) tower and from the WWTP are treated in the onsite biofilter.

The odour abatement system (A2-Biofilter) was installed and commissioned in May 2008 by Bord na Mona. Refer to previous section 3.2.10 of the AER 2007 document for biofilter summary of emissions to the air.

Sludge arriving onsite is stored in enclosed storage bins (HST1 and HST2) inside the sludge drying building. Doors are kept closed in the sludge reception area except when sludge deliveries arrive onsite.

All waste is stored within the buildings. The plant presently accepts sludge between 7am and 6pm; doors are only opened for deliveries and immediately closed after tipping. Sludge is dried 24 hours per day Monday to Friday, also depending on levels of sludge in stock, sludge may also be dried on weekends. All doors remain closed throughout the night. There is no acceptance of sludge on Sundays.

In accordance with schedule C.6 Ambient Air Monitoring, ERAS ECO Ltd. personnel carry out daily sniff test in the site boundaries and site entrance.

In communication with the Agency, ERAS ECO LTD were requested to revise the procedure for odour monitoring to allow scope for increased description of odours. The daily sniff checks checksheets have revised to include adequate space for additional comments/notes.

3.8 Nuisance Monitoring

In accordance with condition 6.11 Nuisance Monitoring of Waste License W0211-01, vermin controls were put in place and the site is subject to regular inspection by an external contractor.

ERAS ECO Ltd has contracted a pest control company to carryout routine inspection of vermin at points located throughout the facility. In addition, should this same contractor detect any activity, they will also conduct follow-up visits, as necessary. There is no indication of significant Pest/vermin activity onsite. An example report is included in Appendix T.

In accordance with condition 6.11, the site is inspected daily for litter and odour in accordance with in-house standard and operational procedures and site operators are trained in corrective actions in the event of litter and control odour measures. Please refer to previous section **3.7.2** for **odour monitoring**.

3.9 Trade effluent / Contaminated Stormwater

There was no trade effluent sent off site for treatment during 2009.

There was no recorded contamination in the stormwater outlet during 2009 and therefore no requirement for off-site treatment.

3.10 Resources Consumption

In accordance with Schedule E of Waste License W0211-01, ERAS ECO Ltd. must submit a summary of the resources consumed during 2009 in the Annual Environmental Report.

The following resources are used on site:

- Water consumption
- Light fuel oil
- Diesel
- Electricity
- Wood chip

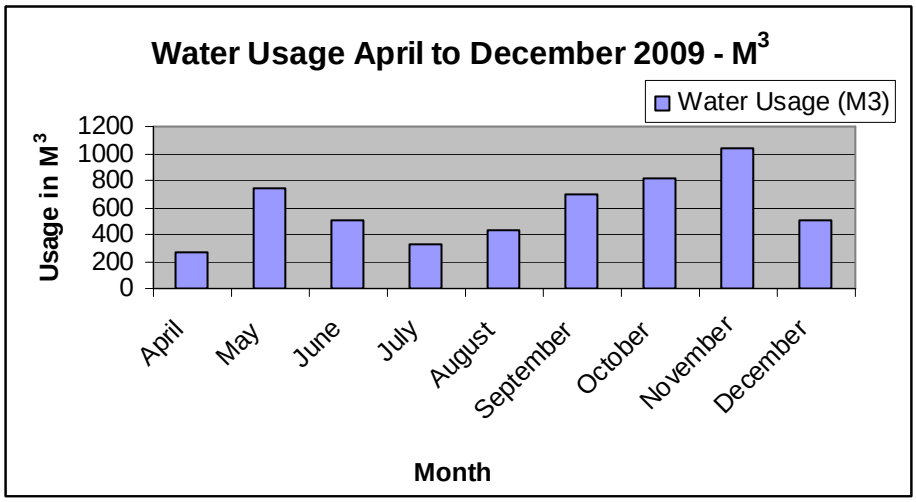
3.10.1 Water Consumption

The operation of facility utilises water in two main areas which are outlined below:

- Process Water (Sludge Dryer Plant Boiler, Cooling Screw for dry product, wheel wash and admin building sanitary water/potable water).
- Fire Water (Fire fighting equipment for entire site).

The approximate 2009 municipal water consumption in ERAS ECO Ltd. was 10,279 m^3 .This is a dramatic reduction on the previous year's usage of 17,759 $m^{3.}$ Since the end of March 2009, ERAS ECO Ltd have been recording water consumption. These readings are taken from onsite Youghal Town Council water meter located outside the entrance gates to the facility. Figure 13 below demonstrates the fluctuating consumption of water onsite.

Figure 13 - Water Consumption April to December (2009)



3.10.2 Electricity Consumption

Electricity is supplied to ERAS ECO Ltd. by Electricity Supply Board (ESB).

The total electricity consumed since the sludge drying plant entered into commercial operation (January 2007 to December 2009) was 2,285,241 **kWh.**

Table 3-27 and

Figure 14 below outlines the electricity consumption by ERAS ECO Ltd. during the period January 2009 to December 2009. An electrical consumption comparison is provided in a Figure 15.

Table 3-27 Total Electricity consumed in ERAS ECO Ltd. during 2009.

Total kWh Units 2009		
Month	**2008**	**2009**
January	81091	94,244
February	99590	67,614
March	89048	45,663
April	96797	46,310
May	101698	47,141
June	96825	47,188
July	91513	48,122
August	81434	45,312
September	73965	39,899
October	97793	31,412
November	97744	46,738
December	76368	40,040
Total kWh units (Jan Dec)	1,085,874	601,692

Figure 14 Total Electricity consumed in ERAS ECO Ltd. during 2009

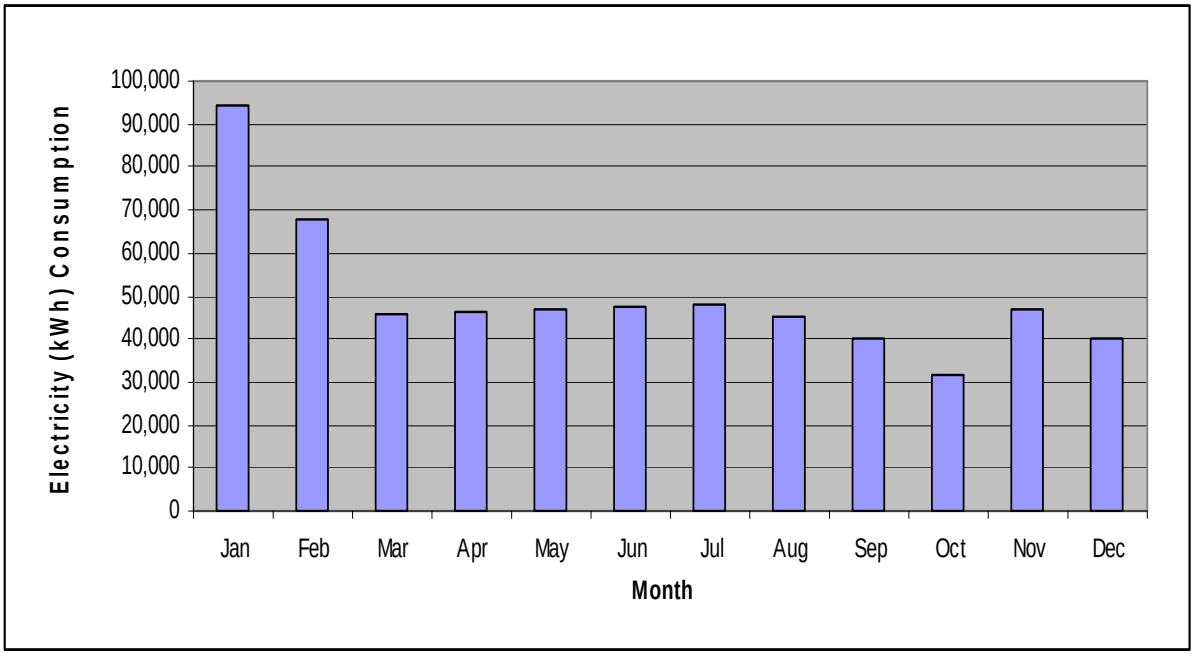
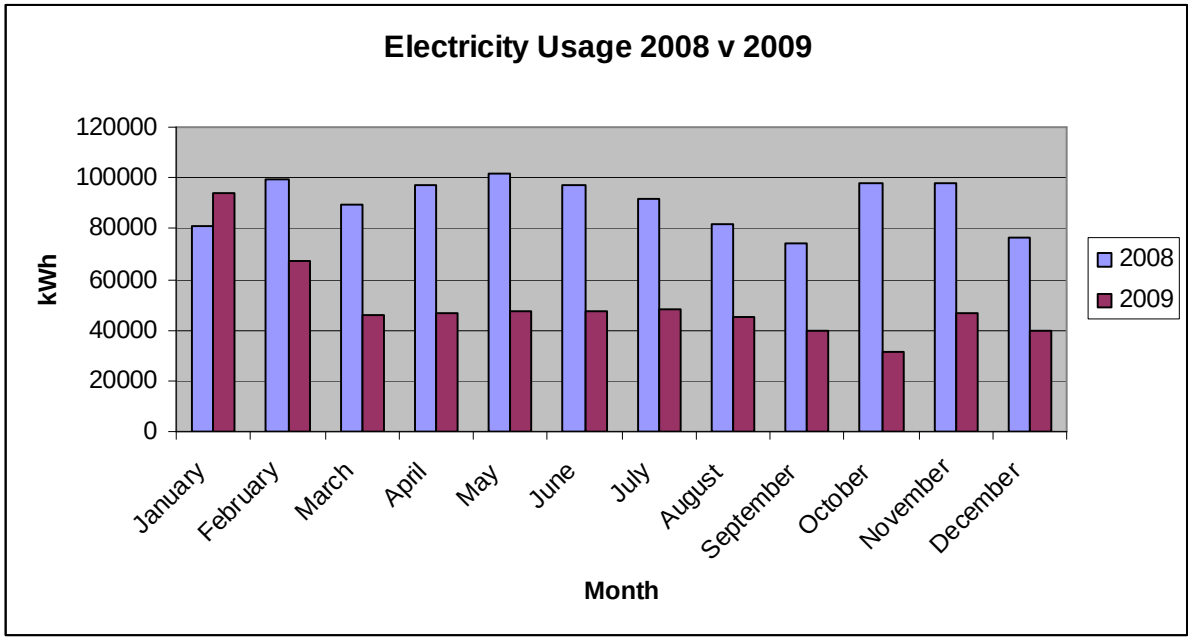


Figure 15 - Electricity Consumption - 2008 V 2009



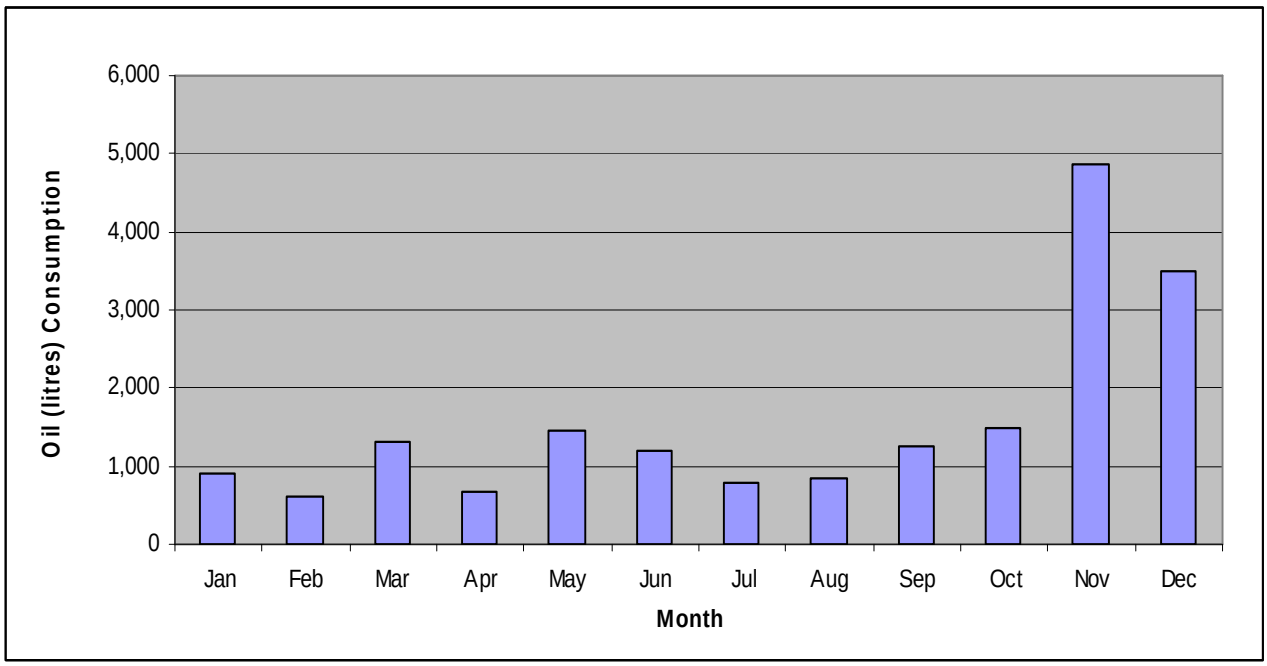
3.10.3 Light Fuel Oil Consumption

Light Fuel Oil is mainly consumed for the boiler start-up procedure to raise the furnace temperature to approximately 400ºC. Light Fuel Oil is also consumed for the onsite teleporter and forklift.

The approximate total 2009 light fuel oil consumption in ERAS ECO Ltd. was 18, 882 and this represents **13,537 Litres**.

Figure 16 below outlines the total light fuel oil consumed per month by ERAS ECO Ltd during 2009.

Figure 16 Light Fuel Oil Consumption during 2009



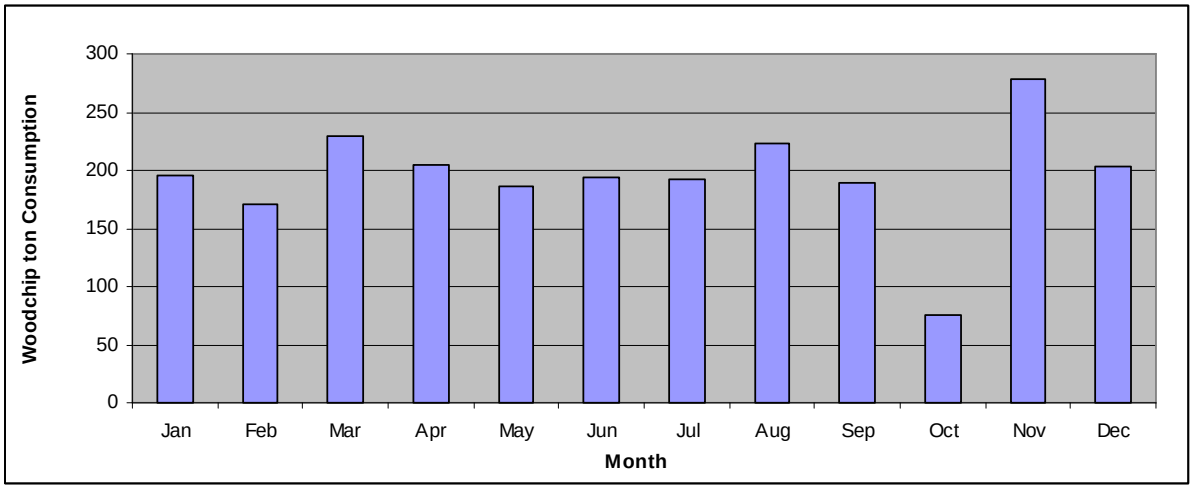
3.10.4 Woodchip consumption

The sludge drying process (non-contact drying process) utilises 12 bar steam generated by the onsite biomass boiler. This biomass system utilises woodchip as fuel.

Virgin and recycled woodchip are both used as a fuel in the onsite boiler.

Figure 17 below outlines the trend of woodchip usage during 2009. The total amount of woodchip used during 2009 was 1,868.9 tonnes.

Figure 17 Woodchip consumption during 2009



3.11 Environmental Incidents

Fourteen environmental incidents were recorded during 2009. In each case corrective actions were taken and reports relayed to the EPA. Table 3-28 below summarises the environmental incidents recorded in ERAS ECO Ltd. during 2009. This table also outlines the corrective actions taken to prevent and correct the incident.

In each case the incidents were closed out as soon as practicable.

Table 3-28 Summary of 2009 Environmental Incidents recorded.

Date/Week	Reference no.	Nature of Incident	Cause	Environmental impact	Corrective Action
Week 1 - 4 2009	WK 1 – 4 2009	SE 1 – ELV Exceedance's	Ongoing COD problem	Negligible	Meet with EPA
Week 5- 6 2009	WK 5-6 2009	SE 1 – ELV Exceedance's	Ongoing COD problem	Negligible	Meet with EPA
Week 11 2009	WK 11 2009	SE 1 – ELV Exceedance's	Ongoing COD problem	Negligible	Meet with EPA
Week 16 2009	WK 16 2009	SE 1 – ELV Exceedance's	Ongoing COD problem	Negligible	Meet with EPA
Week 17 2009	WK 17 2009	SE 1 – ELV Exceedance's	Ongoing COD problem	Negligible	Meet with EPA
Week 18-19 2009	WK 18-19 2009	SE 1 – ELV Exceedance's	Ongoing COD problem	Negligible	Meet with CCC
Week 20-23 2009	WK 20-23 2009	SE 1 – ELV Exceedance's	Ongoing COD problem	Negligible	Meet with CCC
Week 24-27 2009	WK 24-27 2009	SE 1 – ELV Exceedance's	Ongoing COD problem	Negligible	Meet with CCC
Week 28-31 2009	WK 28-31 2009	SE 1 – ELV Exceedance's	Ongoing COD problem	Negligible	Meet with CCC
Week 32-35 2009	WK 32-35 2009	SE 1 – ELV Exceedance's	Ongoing COD problem	Negligible	Meet with CCC
Week 36-39 2009	WK 36-39 2009	SE 1 – ELV Exceedance's	Ongoing COD problem	Negligible	Further Info for CCC
Week 40-48 2009	WK 40-48 2009	SE 1 – ELV Exceedance's	Ongoing COD problem	Negligible	Tests & Trials by WWTP Consultant
Week 50-52 2009	WK 50-52- 2009	SE 1 – ELV Exceedance's	Ongoing COD problem	Negligible	Tests & Trials by WWTP Consultant
Biannual 2 2009	Biannual 2 2009	SE 1 – ELV Exceedance's	WWTP Cyanide Exceedance	Negligible	Tests & Trials by WWTP Consultant

3.12 Environmental Complaints

Fifteen environmental Complaints were recorded during 2009. However it should be noted that on the dates of these complaints, odours were detected from neighbouring facilities and therefore these complaints are not directly attributable to ERAS ECO Ltd. These complaints are listed in Table 3-29 below.

Table 3-29 below summarises all complaints recorded during 2009 and investigations and corrective actions, where applicable, carried out for all complaints recorded.

Table 3-29 Environmental Complaints during 2009

Date	Reference no.	Name of Complainant	Nature of Complaint	Corrective Action	Closed out
04/02/2009	W0211-01/cm09noc.doc	Sally O' Reilly	Odour	Odour Checks	06/02/2009
23/04/2009 12:43	W0211-01/cc12noc.doc	Billy Elliss	Odour	1. Biofilter Healthcheck 2. Biofilter Media Replacement	23/04/2009
23/04/2009 14:43	W0211-01/cc12noc.doc	Billy Elliss	Odour		23/04/2009
28/04/2009	W0211-01/cc12noc.doc	Billy Elliss	Odour		28/04/2009
30/04/2009	W0211-01/cc12noc.doc	Billy Elliss	Odour		30/04/2009
02/05/2009	W0211-01/cc12noc.doc	Cllr. Michael Beecher	Odour		02/05/2009
25/05/2009	W0211-01/cc12noc.doc	Billy Elliss	Odour	Odour & Biofilter Checks	25/05/2009
29/05/2009	W0211-01/cc12noc.doc	Billy Elliss	Odour	Odour & Biofilter Checks	29/05/2009
07/06/2009	W0211-01/cc13noc.doc	Margaret Bernard	Odour	Odour & Biofilter Checks	23/06/2009
14/07/2009	W0211-01/cc14pc.doc	Billy Elliss	Odour	Odour & Biofilter Checks	28/07/2009
02/09/2009	W0211-01/cc15SMcD.doc	Billy Elliss	Odour	Odour & Biofilter Checks	02/09/2009
10/09/2009	W0211-01/cc16SMcD.doc	Billy Elliss	Odour	Condensate Trap on Biofilter Condensate Trap on Biofilter	29/09/2009
09/09/2009	W0211-01/cc17SMcD.doc	John Elliss	Odour		26/09/2009
10/09/2009	W0211-01/cc18SMcD.doc	Brian Welsh	Odour		28/09/2009
10/09/2009	W0211-01/cc19SMcD.doc	Ann Cooney	Odour		29/09/2009

3.13 Summary of Non - Compliances - 2009

Table 3-30 below summarises non-compliances recorded during 2009:

Table 3-30 Non-Compliance Summary 2009

Non-compliance	Report No	Description	Corrective Action
Condition 5.1 of Waste License W0211-01	EPA: W0211-01/NC05CN	Emissions (SE1)	Consult with sanitary authority and consultants
Condition 11.2 of Waste License W0211-01	EPA: W0211-01/NC05CN	Reporting of Results by Fax	Standardised fax of exceedances reported to the Agency
Condition 5.2 of Waste License W0211-01	EPA: W0211-01/NC06CN	Emissions (odour)	Activities carried out in a manner that do not result in odours
Condition 5.2 of Waste License W0211-01	EPA: W0211-01/NC07CN	Emissions (odour)	Activities carried out in a manner that do not result in odours

With respect to each of these non-compliances ERAS ECO Ltd. put in place corrective actions to address the same.

A programme for continual improvement is included in site's Environmental Objectives and Targets (see section **Error! Reference source not found.** of the Annual Environmental report) indicating timelines and plan of action the company is committed to ensure that emissions to sewer are in compliance and to prevent any odour nuisance.

4 Waste License Specific Reports

As per schedule E of Waste License W0211-01, the following reports must also be submitted in the Annual Environmental Report:

- Tank and pipeline testing report.
- Closure, restoration management plan.
- Environmental Liabilities Risk Assessment.
- Energy efficiency audit report summary.
- Development / Infrastructural work summary

4.1 Tank and Pipeline Testing & Inspection Report

In accordance with condition 6.14 of Waste License W0211-01, "all tanks and pipelines shall be maintained impervious to materials carried by stored therein. The integrity and water tightness of all underground pipes, tanks, bunding structures or containers and their resistance to penetration by water or other materials carried or stored therein shall be tested and demonstrated by the license prior to use. This testing shall be carried out by the license at least once every three years thereafter and reported to the Agency on each occasion. A written record of all integrity tests and any maintenance or remedial works arising from them shall be maintained by the license"

All underground pipework was completed and tested in accordance to the relevant standards during 2006 and 2007. A pipeline testing report is submitted in Appendix P Pipeline & Bund Testing Report.

A bund integrity assessment report was carried out on February 2007. All bunds and sumps have been designed and tested in accordance with the requirements of BS8007 – Standard Code Practice for the Design Liquid Retaining Concrete Structures and in accordance with Chapter 6 of Environmental Protection Agency IPPC Guidance Notes, June 2004. The bund integrity assessment report and certificates of all onsite bunds are enclosed in Appendix P**.**

Table 4-1 List of bunds on site

Name	Description	Bund Test	Due for Bund test
The Diesel Fuel Oil Tank Bund – purchased unit	The Fuel Oil Bund is an above ground structure. The unit is a Kingspan Ecosafe ES2600 Double skinned tank measuring 2585mm x 1570mm x 1465mm high. The maximum capacity of the vessel is 2600lts. The vessel is designed and constructed in accordance with OFS T-100 (OFCERT No. 0641099913).	A bund certificate was issued by the manufacturer and is attached to the Appendix P Report. Manufactured 22/09/06	22/09/2009
The Main Chemical Store Area – purchased units	Main Chemical Store is an enclosed covered 4 IBC Bunded Chemical Store –purchased from Chemstore (Model 4IBC-P)	Tested 27/02/07	27/02/2010
Spill Tray s	ST100-307	Tested 02/03/07	03/03/2010
	IBC-22B	Tested 15/02/07	15/02/2010
	IBC-22B	Tested 15/02/07	15/02/2010
Sludge reception bin		01/03/2008	01/02/2010

The testing of all bunds is scheduled for the first quarter of 2010.

4.2 Closure, Restoration & Aftercare Management Plan

In accordance with Condition 10.2, "the license shall prepare, to the satisfaction of the agency, a fully detailed and costed plan for the decommissioning or closure of the site or part thereof. This plan shall be submitted to the Agency for agreement in advance of the commencement of the licensed activities"

A Closure, Restoration and Aftercare Management Plan, which was carried out in January 2008

10.2.2 The plan shall be reviewed annually and proposed amendments thereto notified to the Agency for agreement as part of the AER. No amendments may be implemented without the agreement of the Agency.

The closure bond was agreed and submitted to the Agency in 2009. This Closure, Restoration and Aftercare Management Plan has been reviewed by Management and no modifications are deemed necessary for 2010. This plan is located in Appendix Q of this report.

4.3 Environmental Liabilities Risk Assessment

In accordance with condition 12.3.2 of Waste license W0211-01, "the license shall arrange for the completion, by an independent and appropriately qualified consultant, of a comprehensive and fully costed Environmental Liabilities Risk Assessment (ELRA) which addresses the liabilities from past and present activities. The assessment shall include those liabilities and cost identified in Condition 10 for the execution of RMP/CRAMP".

The site Environmental Risk Liability Assessment, which was carried out in 2007, is enclosed in Appendix R.

A detailed Environmental Liabilities Risk Assessment was conducted for ERAS ECO Ltd., which is a Risk Category 3 facility (based on the EPA guidance on Liability Risk Assessment, Residuals Management Plans and Financial Provision). The ELRA considers the risk of unplanned events occurring during the operation of the facility that could result in unplanned events occurring during the operation of a facility that could result in unknown liabilities materialising.

The ELRA covers environmental risks leading to a potential or anticipated liability. Environmental Risks will be deemed to cover all risks to surface water, groundwater, atmosphere, land and human health.

> ''12.3.2 The licensee shall arrange for the completion, by an independent and appropriately qualified consultant, of a comprehensive and fully costed Environmental Liabilities Risk Assessment (ELRA), which addresses the liabilities from past and present activities. The assessment shall include those liabilities and costs identified in Condition 10 for execution of the RMP/CRAMP. A report on this assessment shall be submitted to the Agency for agreement in advance of the commencement of the licensed activities. The ELRA shall be reviewed as necessary to reflect any significant change on site, and in any case every three years following initial agreement: review results are to be notified as part of the AER. ''

Environmental Liabilities Risk Assessment was agreed and submitted to the Agency in 2008. The financial bond is in place. The contents of the Assessment have been reviewed by Management and no modifications are deemed necessary for 2010. This plan is located in Appendix R of this report.

Date of ELRA Review: 2010 review required if no significant change

4.4 Statement of measures taken

In accordance with condition section 12.3.1 an annual statement relating to the measures taken or adopted on site to prevent potential environmental nuisance/damage is also enclosed in Appendix R **together with a proof of financial provision to cover any liabilities identified in condition 12.3.2 of the license. The company's annual statement of measures re-affirms its financial commitment for the implementation of such measures or remedial actions.**

4.5 Energy Efficiency Audit Report

As per condition 7.1 of Waste License W0211-01, "the license shall carry out an audit of the energy efficiency of the site within a year of the commencement of the licensed activities. The audit shall be carried out in accordance with the guidance published by the Agency: "Guidance Note on Energy Efficiency Auditing". The energy efficiency audit shall be repeated at intervals as required by the Agency".

The site Energy Efficiency Audit was carried out during 2008 and an energy efficiency audit report summary was submitted to the EPA. In 2009, ERAS ECO Ltd subscribed to the Sustainable Energy Ireland (SEI) mentoring and advice service. As part of this service, the Energy Consultants (RPS) completed an Energy Audit; this is enclosed in Appendix S.

4.5.1 Findings of Energy Audit

''ERAS ECO Ltd's commitment to sustainable and green initiatives is evidenced by its installation of a 4MW steam-generating biomass boiler. However, alternative options are available which may make further financial as well as sustainable business sense. A front end study is recommended:

Explore the potential benefits in using the dried waste sludge as a fuel source for the existing boiler. The energy content of this end product is sufficiently high as to justify examining mixing this fuel with the woodchips and feeding this to the boiler's burner assembly. Such a project would significantly reduce operating costs onsite (e.g. fuel costs, disposal costs for end product).''

4.5.2 Conclusion of Report *(provided in Appendix S)*

'' Energy efficiency and 'green' initiatives are taken very seriously by management at ERAS ECO Ltd. As can be seen from the EPI charts, efficiency levels onsite have improved dramatically in recent months.

''ERAS ECO Ltd should review this report and in particular the opportunities for energy savings.''

4.6 Development / Infrastructural Works summary 2009

The following works outlined below exclude any development and/or infrastructural works carried out in 2009 relating to construction works for the site i.e. prior to commercial operation for Sludge Dryer Building and C&I Building.

The Waste Water treatment plant had a number of alterations and/or additions in its infrastructure in order to improve/streamline the treatment process. These alterations/additions are outlined in Section 4 of Emissions to the Sewer 2009 Report contained in Appendix E**.**

There were no other development works related to ERAS ECO Ltd. activities on site for the calendar year 2009.

4.7 EPA Audits 2009

The EPA carried out one audit during 2009 (i.e. 10/09/2009). Also it contracted routine odour inspections; a summary of these inspections was forwarded in an audit report.

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Table 4-2 EPA Inspection/ Audit summary

Date	Observation(s)	Non Compliance(s)	Details	Corrective action required	Corrective action implemented
23/04/2009 – 12/05/2009		Condition 5.2	Downwind Odour	Ensure operations are carried out in a manner that air emissions or odours do nor result in impairment	Biofilter Media Replaced Odour Management Plan
10/09/2009	*'Change of Ownership of the Facilty'*. This had already been notified to the Agency in communications dated 19/09/2009. No name change occurred and the company still operates under ERAS ECO Ltd.	Condition 5.2	Odour from Facility	Gaseous emissions from wet sludge bin to be sent to the air abatement system	There is active air abstraction of head gases from the Sludge Mixing bin. The Reception bins are only used to receive sludge, the sludge is then transferred to the mixing bin. The frequency and range of parameters monitored at the Biofilter has been extended. The facility conducts daily sniff checks around the perimeter. The WWTP tanks are enclosed and active abstraction occurs where possible.
				Covering of sludge reception bins and venting of head gases to the Biofilter	
				Covering of WWTP and active abstraction of air to the Biofilter	
				Identification and reduction of fugitive emissions	
				Test programmes for WWTP, Sludge Drier & Biofilter	

5 MANAGEMENT OF THE FACILITY

5.1 Environmental Management Programme (Environmental Objectives and Targets)

In accordance with condition 2.2.2.3 of W0211-01, ERAS ECO Ltd. have established, implemented and maintained an Environmental Management System during 2009. This EMP was submitted to the Agency prior to ERAS ECO Ltd. entering into commercial operation The EMS was implemented in line with ISO 14001:2004 and complies with all regulatory and legislative requirements pertinent to industry, local operating environment and customer requirements.

The Environmental Management System is reviewed annually together with the company's Environmental Objectives and Targets. In section 5.2 a progress report details the significant achievements and developments attained at ERAS ECO Ltd. during 2009. These objectives and targets form part of a longer term Environmental Management Programme. When setting targets for 2010, consideration was taken of both the Environmental Management Programme and developments to date. Thus the 2010 targets will help build upon developments/improvements in 2009 and also realise longer term goals. The achievement of the environmental targets will be evaluated during 2010.

The Board of Management, Facility Manager, Supervisor, EHSQ Manager and the operational staff are responsible for achieving these objectives and targets within a set time frame.

The environmental objectives and targets which are established at relevant functions and levels within the company are consistent with the company's environmental policy and all legislative requirements that the facility must be in compliance with. Objectives and targets must also be consistent with BATNEEC (Best Available Technology Not Entailing Excessive Cost) and the financial, operational and business requirements of the organisation.

ERAS ECO Ltd. will invest funds for both internal and external works to be carried out as appropriate, as may be defined as part of the objectives and target programme and any follow-up actions required.

For each objective the following information is detailed in the schedule for the Environmental Objectives and Targets:

- Objectives.
- Target.
- Plan of Action / Methodology.
- Timeframe for implementation (Targets timeframes are arranged according to the Quarter in which they are scheduled to be completed).
- Responsibility.

A schedule for the Environmental objectives and targets is included below:

- **Objective 1** - Compliance with Schedule B4. Emission to Sewer of Waste License W0211-01
- **Objective 2 -** Nuisance Prevention (Ambient Monitoring)
- **Objective 3 -** Energy efficiency
- **Objective 4** - Prevention of noise nuisance
- **Objective 5** - Waste recycling efficiency
- **Objective 6** - Administration Waste Management
- **Objective 7 -** Environmental Health & Safety Awareness

5.2 Progress on 2009 Objectives and Targets

Objectives 2009

OBJECTIVE 1

Reference: SE1

Title: Compliance with Schedule B4. Emission to Sewer of Waste License W0211-01

Objectives: To ensure that emission to the sewers are in compliance with the Emission Limit Values of the waste license W211-01

Targets:

- To continuously monitor the proposed improvements to ensure that discharge limits are within the permitted Emission Limit Values.
- Evaluate & Monitor the impact of dosing on discharge levels e.g. levels of sulphate resulting from use of aluminium sulphate co-agulant.
- Optimise the WWTP's performance.

Plan of Action/ Methodology Vs Timescale:

Plan of Action (methodology)	Timescale (2009)	2009 Progress/ Status in 2010
Increase frequency and range of in-house sampling e.g. suspended solids (TSS/ TN) analysis so as to reduce number of license non-compliances	January to December 2009	Research has been conducted on these tests (Capabilities, Costs, Requirements, etc.). SOP's have been documented, but not tested or approved.
Document procedures for testing of TSS and train staff accordingly. Also detail actions to be taken to control levels in excess of ELV's.	April to December 2009	SOP's have been documented, but not tested or approved. Ongoing in 2010.
Scheduled cleaning of Wash-water Sump.	January to December 2009	The Washwater sump has been cleaned and will continue to be cleaned as required.
Explore and trial alternatives to Aluminum Sulphate.	April to December 2009	Poly Aluminum Chloride and High molecular weight flocculants have been trialed. Trials have not demonstrated noticeable improvements.
Use of proprietary flocculant in Washwater line to improve particulate/water separation, and prolong filter lifetime.	January to December 2009	A new flocculant has been trialed with varying levels of effectiveness. Flocculant in stock.
Update WWTP SOP's on, in particular the Backwashing procedure.	April to June 2009	SOP's have been updated, but need revising as per 2010 Objectives.

Responsibility:

- Resources: Board of Management & Facility Manager
- Trials & Analysis: Consultants/ Facility Manager/ Supervisor/ EHSQ Manager
- SOP: Facility Manager/ Supervisor/ EHSQ Manager / All Staff

OBJECTIVE 2

Reference: Ambient Emissions

Title: Nuisance Prevention.

Objectives: To ensure that air/ odour emissions do not produce any significant environmental impact/nuisance

Targets:

- To keep regular inspections and controls for nuisance
- To maintain and check the odour abatement system regularly to ensure its correct performance

Plan of Action/ Methodology Vs Timescale:

Plan of Action (methodology)	Timescale (2009)	2009 Progress/ Status in 2010
Reduce number of Complaints (i.e. <7)- and categorize by type (Noise, Odour, Traffic, Visual, etc.)	January to December 2009	Categorised – Complete Reduced – Ongoing 2010
Complete Smoke Test in the Sludge Drying Building	January to April 2009	Complete
Train/Re-train staff on Environmental Checks (Sniff Test)	January to December 2009	Complete – Ongoing in 2010
Trial mobile odour control units	January to April 2009	Complete

Responsibility:

- Reduce Complaints: Facility Manager, EHSQ Manager, Supervisor & all staff
- Categorise Complaints: EHSQ Manager
- Smoke Test: Facility Manager/ External Contractor
- Train/ Retrain staff on Environmental Checks: Facility Manager/EHSQ Manger
- Trial mobile odour control unit: Facility Manager/ EHSQ Manager/ Odour Control Company

OBJECTIVE 3

Reference: To minimise the use of resources on site.

Title: Energy Efficiency

Objectives: Energy, water and raw materials use are a significant cost factor in addition to having a potential adverse environmental impact. Consequently ERAS ECO Ltd. propose to minimise the use of resources on site as far as is practicably possible.

Targets:

- Increase energy efficiency awareness among all staff
- To revisit the energy audit and implement finding(s)
- Establish/ Increase us of performance indications
- Minimise where possible consumption of energy resources

Plan of Action/ Methodology Vs Timescale:

Plan of Action (methodology)	Timescale (2009)	2009 Progress/ Status in 2010
Consult with Energy Experts: Energy consultants/ SEI, etc.	January 2009 – July 2009	Complete
Meter the building to determine electricity usage by area	January to June 2009	Complete
Implement Recommendations of Energy Audit	January to December 2009	Completed in part
Conduct energy efficiency projects (Woodchip to Sludge Ratio)	January to December 2009	Complete
Draw on external experience e.g Sustainable Energy placement programme	January to May 2009	Complete
Record Water Usage Weekly	January to April 2009	
Document Procedure and Datasheets for Water Monitoring	January to December 2009	Complete
Establish Key Performance Indicator's: Such as: o Performance against targets in AER o Non Compliances o Kilowatt per kg or tonne of Dry Sludge o Woodchip kg per kg of Dry Sludge o M^3 of Water per kg of dry sludge o Diesel per kg of dry sludge	January to December 2009	Completed in part

Responsibility:

- To provide sufficient resources to minimise resources consumption: Board Management
- Energy audit: Facility Manager/ EHSQ Manger / external consultancy.
- Establish KPI's: Facility Manager/ EHSQ Manager

OBJECTIVE 4

Reference: N1, N2, N3 (boundary points)/ NSR-1 (Nearest Noise Sensitive Location)

Title: Prevention of Noise Nuisance.

Objectives: To ensure that noise emissions are in compliance with the waste license noise emission limits.

Targets:

- To ensure that existing and new equipment do not produce noise nuisance.
- To ensure that ERAS ECO Ltd. noise emissions are in compliance with Schedule B.5- Noise Emissions of Waste License W0211-01.

Daytime dB(A) L_{Aeq}(30 minutes)	Night-time dB(A) L_{Aeq}(30 minutes)
55 Note 1	45 Note 1

Note 1: There shall be no clearly audible tonal component or impulsive component in the noise emission from the activity at any noise sensitive location.

Plan of Action / Methodology Vs Timescale:

Plan of Action (methodology)	Timescale (2009)	2009 Progress/ Status in 2010
Complete Noise survey as per Condition C.5	January 2009 – December 2009	Complete
Conduct occupational noise survey to determine the personal exposure for operators	January 2009 – December 2009	Not Required
Monitor Complaints – Group Complaints by issue (Noise, Odour, Traffic, Visual, etc.)	January to December 2009	Complete

Location	As per *Figure F.2: Noise Monitoring Locations* (submitted in Application Form, received 1/10/2004)
N1, N2 & N3	Three boundary points
NSR-1	Nearest noise sensitive location – dwelling house

Parameter	Monitoring Frequency	Analysis Method/Technique
$L(A)_{EQ}$ [30 minutes]	Annual	Standard Note 1
$L(A)_{10}$ [30 minutes]	Annual	Standard Note 1
$L(A)_{90}$ [30 minutes]	Annual	Standard Note 1
Frequency Analysis(1/3 Octave band analysis)	Annual	Standard Note 1

Note 1: "International Standards Organisation. ISO 1996. Acoustics - description and Measurement of Environmental noise. Parts 1, 2 and 3."

Responsibility:

- Resources for Monitoring: Board of Management/Facility Manager
- Monitoring: EHSQ Manger / Independent external contractor
- Complaints: Facility Manager/ EHSQ Manager/ Administration

OBJECTIVE 5

Reference: Waste & Recycling

Title: Waste recycling efficiency.

Objectives: Monitoring of waste accepted, processed or rejected

Targets:

- To monitor efficiency of waste segregation and increase landfill diversion

Plan of Action / Methodology V's Timescale:

Plan of Action (methodology)	Timescale (2009)	2009 Progress/ Status in 2010
Revise/ Retrain staff on load acceptance and rejection procedures	January 2009 – December 2009	Complete. Needs to be reviewed in 2010
Quantity & Increase Landfill Diversion Rates (kg's landfill per kg of dry sludge)	January 2009 – December 2009	Ongoing 2010
Quantify Waste Generated by Type & potential for recycling: a. Boiler Ash b. Metals	April to December 2009	Complete – Metals No longer accepted
Explore potential of more localised outlet options for the following: a. Dried Sludge b. Spent Carbon c. Boiler Ash	January 2009 – Continuous	Complete. Further review Ongoing
Management Review of C&I Operations	January to December 2009	New Review with change of ownership and staffing

Responsibility:

- Re-train staff on Waste Acceptance Procedures: Facility Manager/ EHSQ Manager/ All Staff
- Review C&I Operations: Board of Management/ Facility Manager
- Explore alternative outlet options: Facility Manager/ EHSQ Manager

OBJECTIVE 6

Reference: Administration waste.

Title: Administration Waste Management

Objectives: To improve waste segregation and consequently reducing waste to landfill

Targets:

- To manage properly all waste generated in the administration building.
- To segregate and recycle all administration recyclable waste in the onsite Waste Recovery transfer Facility.

Plan of Action/ Methodology V's Timescale:

Plan of Action (methodology)	Timescale (2009)	2009 Progress/ Status in 2010
Review of current waste generation	April to June 2009	Complete
Select and trial a suitable alternative, such as setting-up a 3 Bin System or suitable alternative source segregation i.e. General Waste, Mix Dry Recyclables & Brown Waste	June to December 2009	Deferred with change of ownership and staffing
Provide additional resources and training required for source segregation	April to December 2009	
Review effectiveness of trials and report to Facility Manager	August to December 2009	

Responsibility:

- Waste Generation: EHSQ Manager
- Trial Suitable System: Facility Manager/ EHSQ Manager/ All Staff
- Provision of additional resources: Facility Manager
- Effectiveness of system: Facility Manager

OBJECTIVE 7

Reference: Environmental Health & Safety.

Title: Environmental Health & Safety Awareness.

Objective: To increase the awareness of all on-site personnel of the provisions and requirements of Health and Safety in the work place.

Targets:

- To continually improve Environmental, Health & Safety and Waste License awareness issues among staff
- To review, and improve the signage/labeling onsite
- To continually improve the working environment for persons onsite

Plan of Action/ Methodology V's Timescale:

Plan of Action (methodology)	Timescale (2009)	2009 Progress/ Status in 2010
Review Training Matrix for additional training needs/requirements	April to June 2009	Complete
Implement Environmental & Waste License Awareness Training	April to December 2009	Ongoing 2010
Increase Labelling: o Tanks, drums, vessels. o Chemstore o H&S	April to September 2009	Ongoing 2010
Plan Monthly Safety meetings of Site Safety Management Team.	January to September	Ongoing with new staff
Train/Retrain all staff in Manual Handling so as to complete company training matrix plan.	April to December 2009	Ongoing with new staff
Implement Lock Out & Tag Out Procedures.	April to June 2009	Complete
Maintain/improve on current onsite accident rate.	April to December 2009	Ongoing 2010
Revise Safety Statement and Communicate changes to all staff	September to December 2009	Completed with revise shift pattern

Responsibility:

- To provide sufficient resources for training: Board Management and Facility Manager
- To ensure a safe place to work: Board Management; Facility Manager; All Staff
- New Labeling: EHSQ Manager/ supervisor/ Administration
- Health and Safety Statement: EHSQ Manager and or Safety Consultant; Safety Rep; All Staff

OBJECTIVE 8

Reference: Environmental Management System

Title: Environmental Health & System Update

Objective: To ensure all documents are accurate, available to all, relevant, understood and in use. .

Targets:

- To continually improve Environmental Management System
- Ensure all documents are accurate and correctly named
- Ensure documentation is easy to locate and understandable for visitors

Plan of Action/ Methodology V's Timescale:

Plan of Action (methodology)	Timescale (2009)	2009 Progress/ Status in 2010
Ensure all SOP's, datasheets and folders are up to date, and amend where appropriate.	April to December 2009	Ongoing 2010
Ensure all documentation uses the name ERAS ECO Ltd.	June to December 2009	Ongoing 2010
Complete Chart/Flowchart/ Table/etc outlining the location of documents	June to December 2009	Temporally Deferred
Update Health, Safety & Environmental Emergency Response procedure, and ensure all relevant persons are familiar with procedure and the necessary training is completed.	April to September 2009	Ongoing 2010

Responsibility:

- To provide sufficient resources for training: Board Management and Facility Manager
- Review and Amend SOP's: Facility Manager; EHSQ Manager; All Staff
- Flow Diagram for Document Location; EHSQ Manager
- Revise ERP: EHSQ Manager; All Staff
- Document approval: Facility Manager

5.3 Objectives 2010

5.3.1 OBJECTIVE 1: Emission to Sewer

Reference: SE1

Title: Compliance with Schedule B4. Emission to Sewer of Waste License W0211-01

Objectives: To ensure that emission to the sewers are in compliance with the Emission Limit Values of the waste license W211-01

Targets:

- To continuously monitor emissions to sewer
- Reduce emissions and where possible increase compliance
- Propose modifications & optimise the WWTP's performance
- Increase speed of emissions reporting

Plan of Action/ Methodology Vs Timescale:

Compliance with Schedule B4. Emission to Sewer of Waste License W0211-01		
No.	**Plan of Action (methodology)**	**Timescale**
1	Reduce the lag time between monitoring and reporting of results to the Agency and Sanitary Authority	Q1 – Q2 2010
2	Continue to conduct trials on WWTP and Liaise with external WWTP Consultant(s)	Q1 – Q2 2010
3	Trial WWTP technologies as per recommendations by external consultant	Q3 – Q4 2010
4	Liaise with the Agency and Sanitary Authority on recommendations from consultant	Q3 –Q4 2010
5	Increase the range of parameters and quantity of analysis conducted internally. This will assist WWTP operators with understanding of the WWTP and allow swift responses to fluctuating loads. Also it will ensure faster reporting of exceedances to the Agency & Sanitary Authority	Q4 2010
6	If necessary, seek an increase from the Sanitary Authority on the Ammonia/ COD emission limit values	Quarter 4 2010
7	Conduct Integrity Test on Bunds	Quarter 2 2010
8	Conduct Integrity Test on Pipelines	Quarter 4 2010
9	Calibrate flowmeters, probes & other instrumentation	Ongoing 2010
10	Replace media beds of filter tanks (where required)	Ongoing 2010
11	Complete a report on the requirements for extending the internal laboratory analysis and sampling onsite	Q1 – Q4 2010
12	Install new plant where agreeable/necessary	Ongoing 2010 – 2011

Responsibility:

- Resources to complete above: Board of Management & Facility Manager
- Report Results: Laboratory/ EHSQ Manager /Facility Manager
- Resolve Exceedances: External Consultant/ Facility Manager
- Report to Agency: External Consultant/ Facility Manager/ EHSQ Manager
- Increase Analysis: Facility Manager/ EHSQ Manager
- Development and Training of New SOP's: Facility Manager/ EHSQ Manager/ Laboratory
- Bunds/ Pipelines: Contractor /Facility Manager/ EHSQ Manager
- Calibrate Instrumentation: Contractor/ Facility Manager/ EHSQ Manager

5.3.2 OBJECTIVE 2: Ambient Emissions

Reference: Ambient Emissions

Title: Nuisance Prevention.

Objectives: To ensure that air/ odour emissions do not produce any significant environmental impact/nuisance

Targets:

- To ensure regular inspections and monitoring are sufficient to control nuisance(s)
- To maintain and check the odour abatement system regularly to ensure its correct performance
- Understand and where possible reduce potential of onsite odours

Plan of Action/ Methodology Vs Timescale:

Ambient Emissions		
No.	**Plan of Action (methodology)**	**Timescale**
1	Reduce no. of Complaints	Q1 – Q4 2010
2	Improve Biofilter Performance – increase the range and frequency of Biofilter monitoring, and hence reduce the risk of odours	Q1 – Q4 2010
3	Increase the frequency of Innoculum top-ups to the Biofilter sump water	Q1 – Q4 2010
4	Install weather station, therefore aiding the review and identification of odours	Q4 2010
5	Install odour suppressing/misting system	Q2 – Q3 2010
6	Compile a spreadsheet of customer sludge analysis, identifying what parameter(s) are likely to be given-off from each sludge. This will allow operators to gauge the likely load at the abatement system.	Q2 – Q3 2010

Responsibility:

- Resources to complete above: Board of Management & Facility Manager
- Reduce Complaints: Facility Manager/EHSQ Manager/ Supervisor & All staff
- Install Weather Station: Contractor/ Facility Manager
- Innoculum Top-Up: Bord Na Mona/ EHSQ Manager
- Odour Misting System: Facility Manager/ Electrical Contractor/ Fragrance Supplier
- Spreadsheet of customer profiles: Student/ EHSQ Manger/All Staff

5.3.3 OBJECTIVE 3: Use of Resources

Reference: To minimise the use of resources on site.

Title: Energy Efficiency

Objectives: Energy (woodchip, oil, electricity), water and raw materials use are a significant cost factor in addition to having a potential adverse environmental impact. Consequently ERAS ECO Ltd. proposes to minimise the use of resources on site as far as is practicably possible.

Targets:

- Increase efficiency & minimise the use of resources
- Minimise emissions and footprint of activities onsite
- Conduct a detailed energy audit (including energy map) and implement finding(s)
- Increase energy efficiency awareness among all staff
- Establish/ Increase us of performance indications

Plan of Action/ Methodology Vs Timescale:

Minimise the Use of Resources		
No.	**Plan of Action (methodology)**	**Timescale**
1	Reduce oil consumption by 10% per kg of Sludge Dried	Q1 – Q4 2010
2	Reduce water consumption by 10% per kg of Sludge Dried	Q1 – Q4 2010
3	Improve the efficiency of chemical dosing in the WWTP and consequently reduce the dosing by 5% per M^3 of flow through the plant	Q1 – Q4 2010
4	Contrast the Carbon Footprint of exporting the Dried Biomass Sludge to the existing recovery facility and using the dried sludge directly as a fuel the onsite Biomass Boiler	Q1 – Q2 2010
5	Examine the potential energy savings by utilising the dried sludge produced onsite in the Biomass Boiler	Q1 – Q2 2010
6	Conduct an Energy audit identifying the major electricity consumers per each segregated area of the facility	Q1 – Q2 2010
7	Investigate the possibility of harvesting rainwater onsite e.g. estimated rainfall, ease of capture and reuse, costs, savings, etc.	Q1 – Q4 2010
8	Identify a energy and cost saving opportunity list – as part of the energy audit	Q1 – Q2 2010
9	Install sensors on lights, therefore reducing electricity consumption	Q3 – Q4 2010
10	Provide energy training on the above targets and results to all ERAS ECO Staff	Q1 – Q2 2010
11	Maximise steam use (Examine valves for steam/heat losses and repair or replace as necessary). This measure is expected to reduce woodchip consumption by 10% per kg of sludge dried	Q1 - Q4 2010

Responsibility:

- Resources to complete above: Board of Management & Facility Manager
- Oil, Water & Chemical Consumption: Facility Manager/ All Staff
- Carbon Footprint: Student/ EHSQ Manager/ Facility Manager
- Energy Savings Dried Sludge: Student/ EHSQ Manager/ Facility Manager
- Energy Audit & Opportunities: Student/ EHSQ Manager/ Facility Manager
- Rainwater Harvesting: Student/ EHSQ Manager/ Facility Manager
- Lighting: Student/ Contractor/ Facility Manager/ All Staff
- Energy Training: Student/ EHSQ Manager/ Facility Manager/ All Staff

5.3.4 *OBJECTIVE 4: Prevention of Noise*

Reference: N1, N2, N3 (boundary points)/ NSR-1 (Nearest Noise Sensitive Location)

Title: Prevention of Noise Nuisance.

Objectives: To ensure that noise emissions are in compliance with the waste license noise emission limits.

Targets:

- To ensure that existing and new equipment do not produce noise nuisance.
- To ensure that ERAS ECO Ltd. noise emissions are in compliance with Schedule B.5- Noise Emissions of Waste License W0211-01.

Daytime dB(A) L_{Aeq}(30 minutes)	Night-time dB(A) L_{Aeq}(30 minutes)
55 Note 1	45 Note 1

Note 1: There shall be no clearly audible tonal component or impulsive component in the noise emission from the activity at any noise sensitive location.

Plan of Action / Methodology Vs Timescale:

Prevention of Noise		
	WWTP Plan of Action (methodology)	**Timescale**
1	Minimise truck running times in open yard, where delays are expected direct loads to be tipped within the material recovery building	Ongoing 2010
2	Complete noise survey as per Condition C5 of W0211-01	Ongoing 2010
3	Continue to ensure plant is well maintained	Ongoing 2010

Responsibility:

- Resources to complete above: Board of Management & Facility Manager
- Monitoring: EHSQ Manger / Independent external contractor
- Maintenance: Contractor/ Facility Manager/ All Staff

5.3.5 *OBJECTIVE 5: Waste Recycling Efficiency*

Reference: Waste & Recycling

Title: Waste recycling efficiency.

Objectives: Increase waste and awareness levels with respect to acceptable materials, segregation procedure. Identify and reduce carbon footprint of operations.

Targets:

- To increase throughput, viability and sustainability of operations.

Plan of Action / Methodology V's Timescale:

Waste Recycling Efficiency		
	WWTP Plan of Action (methodology)	**Timescale**
1	Increase the hourly sludge throughput through the drier. Communicate the plant performance to all staff (e.g. graph)	Q1 – Q4 2010
2	Extend the scope of the Sludge Drying SCADA system to include other area(s) of the plant e.g. the Boiler	Q2 – Q3 2010
3	Management to explore options for increasing the waste intake and viability of the facility	Q1 – Q4 2010
4	Remove any superfluous plant and equipment from the material recovery facility	Q1 – Q2 2010
5	Explore local sustainable options for the Biomass produced onsite i.e. Dried Sludge e.g. onsite in the Biomass boiler.	Q1 – Q4 2010
6	Submit sample(s) of the onsite Biomass (i.e. Dried sludge) for testing, to demonstrate the absence of any Active Pharmaceutical Ingredients (API's), and hence its suitability as a Boiler Fuel.	Q1 – Q2 2010
7	Revise/Retrain staff on load acceptance and rejection procedures for sludges, wood waste and any other permitted waste materials	Q2 – Q3 2010
8	Review/Update customer profiling data	Q2 – Q3 2010
9	Ensure the metals content of the Boiler Ash is reduced in 2010. To this end, only use/purchase woodchip were it has undergone screening for metals e.g. magnet	Q1 – Q4 2010
10	Document and train relevant staff on the procedure for segregating, removing and subsequent disposal of non suitable materials within loads of wood waste	Q2 – Q4 2010
11	Increase load weight of outgoing dried sludge trucks/ Reduce transport emissions (e.g. modify ducting and access to filling hatches)	Q1 – Q2 2010

Responsibility:

- Resources to complete above: Board of Management & Facility Manager
- SCADA: Contractor/ Facility Manager/ Supervisor/ Operators
- Review of Operations: Board of Management & Facility Manager
- Remove Waste Sorting Plant: Contractor/ Board of Management & Facility Manager
- Review Biomass Options: Agency/ Board of Management/ Facility Manager
- Test Biomass: Laboratory/ EHSQ Manager/ Facility Manager
- Procedures: Facility Manager/ Supervisor/ EHSQ Manager/ All Staff
- Customer Profiling: Contracts Manager/ Facility Manager
- Boiler Ash Metals: Suppliers/ Facility Manager/ EHSQ Manager
- Segregation Training: Facility Manager/ Supervisor/ EHSQ Manager/ All Staff

5.3.6 *OBJECTIVE 6: Administration Waste*

Reference: Administration waste.

Title: Administration Waste Management

Objectives: To improve waste segregation and consequently reducing waste to landfill

Targets:

- To manage properly all waste generated in the administration building
- To reduce material consumption and increase source segregate of waste

Plan of Action/ Methodology V's Timescale

Administration Waste		
	WWTP Plan of Action (methodology)	**Timescale**
1	Provide suitable recycling in addition to the existing waste bins	Q1 2010
2	Provide training for all staff on segregation of waste	Q2 – Q3 2010
3	Arrange for a licensed waste contractor to provide and maintain a separate recyclables and general waste collection service	Q1 – Q4 2010
4	Source a licensed outlet and dispose of used laboratory vials	Ongoing 2010
5	Reduce administration consumption of paper and printer inkjets/cartridges by 10%	Q1 – Q4 2010

Responsibility:

- Resources to complete above: Board of Management & Facility Manager
- Arrange Bins & Collection: Facility Manager/ Waste Contractor/ All Staff
- Waste Segregation: Cleaners/ All Staff
- Reduce Administration & stationary consumption: All Staff

5.3.7 *OBJECTIVE 7: EHS Awareness*

Reference: Environmental Health & Safety.

Title: Environmental Health & Safety Awareness.

Objective: To increase the awareness of all on-site personnel of the provisions and requirements of Health and Safety in the work place.

Targets:

- To continually improve Environmental, Health & Safety and Waste License awareness issues among staff
- To review, and improve the signage/labeling onsite
- To continually improve the working environment for persons onsite

Plan of Action/ Methodology V's Timescale:

Environmental, Health & Safety Awareness		
	WWTP Plan of Action (methodology)	**Timescale**
1	Install steps at weighbridge to aid drivers access and egress from their vehicles	Q1 2010
2	Calibrate the portable Confined Space entry gas analyser	Q1 – Q2 2010
3	Elect a new Safety Representative	Q1 – Q4 2010
4	Document a formal SOP for vendor control i.e. identifying and approving Contractors/Vendors	Q2 – Q3 2010
5	Review Training matrix & update training where needed (e.g. Chemical Spill, Confined Space, Fire Extinguisher, Forklift, Manual Handling, Telescopic Handler, Waste License, etc.)	Q2 – Q4 2010
6	Chart Biofilter & WWTP performance and make these available to all staff	Q2 – Q4 2010
7	Review and revise lockout & tagout procedures	Q2 – Q4 2010
8	Ensure all storage areas including bins, bunds, bunkers, FIBC, IBC, skips, and other containers are labeled correctly	Q2 – Q3 2010
9	Review the procedure for carrying out colorimetric tests on A2 Biofilter and in particular specify any P.P.E. for carrying out these tests	Q1 – Q4 2010
10	Review signage onsite, in particular its conformity with the Safety Health and Welfare at Work (General Application) Regulations 2007 (Chapter 1 of Part 7: Safety Signs at Places of Work)	2010 - 2011

Responsibility:

- Resources to complete above: Board of Management & Facility Manager
- Calibrate Analyzer: Contractor/ EHSQ Manager/ Facility Manager
- Safety Representative: Facility Manager/ EHSQ Manager/ All Staff
- Remove Waste Sorting Plant: Contractor/ Board of Management & Facility Manager
- Training: Review: Trainer(s)/ Facility Manager Supervisor/ EHSQ Manager/ All Staff
- Chart Biofilter: EHSQ Manager/ All Staff
- Labeling: Facility Manager/ Supervisor/All Staff
- Review Biofilter SOP: EHSQ Manager
- Review Signage: Facility Manager Supervisor/ EHSQ Manager/ All Staff

5.3.8 OBJECTIVE 8: Environmental Management System

Reference: Environmental Management System

Title: Environmental Health & System Update

Objective: To ensure ERAS ECO Ltd operates to the highest level of performance

Targets:

- Review Environmental Management System
- Achieve standard accreditation

Plan of Action/ Methodology V's Timescale:

Environmental Management System		
No.	**Plan of Action (methodology)**	**Timescale**
1	Review, revise and develop the management systems in line with formal standards e.g. ISO 9000; ISO 14000 & OHSAS 18000	Q1- Q4 2010
2	Achieve ISO 9001 & ISO 14001 Certification	Q1 – Q2 2010
3	Achieve OHSAS 18001 Certification	Q2 – Q4 2010

Responsibility:

- Resources to complete above: Board of Management & Facility Manager
- Review and Amend SOP's: Facility Manager/ Supervisor/ EHSQ Manager/ All Staff
- Document approval: Facility Manager
- Standards Certification: External Consultant & Certification Body

5.2 Resources Consumption and 2010 Planned Efficiency Improvements

5.2.1 Municipal Water /Trade Effluent

ERAS ECO Ltd. consumed approximately 9,956 m^3 of municipal water for the calendar year 2009 based on Youghal town council water meter. The water volume reduction works undertaken have been an immense success, reducing approximately 7,803 m^3 in one calendar year (2008 V 2009).

This is the second full year that the facility has been operating; in 2007 the facility was being constructed and commissioned and operations were only initiated during the second half of the year. The consumption of water is related to the onsite operations, in particular sludge drying.

The operation of facility utilizes water in three main areas these are outlined below:

a) Process Water (Sludge Dryer Plant Boiler, Cooling water for dry product, wheel wash and admin building sanitary water/potable water)
b) Biofilter (Sump flushing)
c) Fire Water (Fire fighting equipment for entire site)

In accordance with our waste licence W0211-01 the volume of trade effluent will not exceed our maximum limit of 7m^3 per hour or 170m^3 within a 24 hour period.

The main raw materials utilized on site by ERAS ECO Ltd. are detailed below:

5.2.2 Boiler Woodchip Fuel

The total consumption of virgin and recycling woodchip for the calendar year 2009 was **2,111.72 tonnes** and this is an increase of **1,037.48 tonnes** from 2008. This woodchip is imported from a number of outlets and is used for generating the 12 bar steam required for the sludge drying process.

It is difficult to ascertain efficiencies for woodchip due to the intermittent start-up/shut-down of plant.

Furthermore, it should be noted that limitations in respect of sludge supply, necessitated frequent boiler shut down (e.g. weekends). This reduces the woodchip requirement, as the boiler is not operating 24 hours a day/365 days per year.

5.2.3 Light Fuel Oil

The total consumption of light fuel oil for the calendar year 2008 is approximately 18,882 litres. The light fuel oil is used for the start up procedure for Boiler to raise the temperature of furnace to 400 degrees Celsius and for the continual operation of the on-site vehicles.

It is difficult to ascertain efficiencies for light fuel oil due to the intermittent start-up/shut-down of plant and due to commissioning operations in 2008. If and when possible, it is planned to have the boiler running continually at low temperature (depending on the boiler pressure) during shutdown periods to reduce the significant consumption of light diesel oil in boiler re-start mode.

5.2.4 Reduction in Waste Generated

The waste volumes generated at the facility are low and this is due to a number of factors, including:

- Lower than expected intake levels. The facility is licensed to accept a total of 110,000 tpa and in reality the tonnage is <10,000 tpa.
- The Waste Transfer Facility ceased accepting dry mixed recyclables in 2009.

Management are investigating potential other uses of this waste transfer building, however at the moment it used to store wood (in both the shredded and non shredded form) and also some overflow sludge. These will be stored in designated and labelled areas.

All recyclable waste generated in the administration building is sent to dedicated skips located in the yard areas of the facility. As detailed in Objective 6 of the 2010 EMP, ERAS ECO Ltd will arrange and maintain separate bins/skips for boiler ash, dry mixed recycling and general waste. These bins/skips will be serviced periodically by licensed contractors.

5.4 Facility Operational Procedures

As per Objective 8 in the 2010 EMP, ERAS ECO Ltd has initiated the process of formal management system accreditation. By the end of 2010, it is hoped ERAS ECO Ltd will have successfully attained ISO 9001, ISO 14001 and OHSAS 18001.

Whilst ERAS ECO Ltd had an extensive series of onsite operational procedures developed prior to the change of ownership in 2009, all procedures and documentation are being reviewed in line with the direction of the new parent company i.e. Ormonde Organics. Ormonde Organics will assist and direct ERAS ECO Ltd in the creation of procedures that are in concordance with the above formal management standards. As per this review of documentation of procedures, ERAS ECO Ltd will produce a summary of all approved Standard Operational Procedures and this shall be made available to stakeholders (e.g. staff, customers, Agency, etc.) on request.

5.5 Specified Engineering Works 2010

- Safely remove plant from C&I building
- Install atomiser in sludge drying building
- Install Weather Station

6 E-PRTR / AER SUMMARY TABLE

In accordance with the requirements of the S.I. No. 123 of 2008, European Communities (European Pollutant Release and Transfer Register) Regulations 2008, ERAS ECO Ltd. submits Appendix C, that is the information in relation to releases of pollutants and off-site transfers of pollutants and waste occurred during 2008. This information was also submitted to the EPA via electronic format.

APPENDIXES

Appendix A Certification of Incorporation
Appendix B EPA Waste Survey 2009
Appendix C EPA PRTR Returns 2009
Appendix D Waste Monitoring Results 2009 - Sludge and Ash
Appendix E Emissions to Sewer- SE1 Report 2009
Appendix F Emissions to Sewer- Toxicity Results 2008
Appendix G Emissions to Sewer- Aquafact Report 2009
Appendix H A1 Boiler Monitoring Reports Q1-Q4
Appendix I A2 Biofilter Monitoring Reports B1 & B2 2009
Appendix J A2 Biofilter Health Check Report Bord Na Mona
Appendix K Surface Water SW1 Daily Inspections
Appendix L Surface Water SW1 Monitoring Reports 2009
Appendix M Noise Monitoring Report 2009
Appendix N Groundwater Monitoring Results 2009
Appendix O Dust Monitoring Results 2009
Appendix P Pipeline & Bund Testing Reports
Appendix Q Closure Restoration and Aftercare Management Plan v2.00
Appendix R ELRA v2.00
Appendix S Energy Audit
Appendix T Pest/Vermin Control