



Lough Ree Power Generating Station

IPPC Licence Reg. No. P0610-01

Annual Environmental Report

For the period of 1st Jan 2011 to 31st Dec 2011

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1. Introduction

1.1 IPPC Licence Number

IPPCL P0610-01

1.2 Name and Location

Electricity Supply Board
Lough Ree Power Generating Station
Lanesborough
Co Longford.

1.3 Description of Activities

The production of energy in a combustion plant, rated thermal input of which is greater than 50 MW.

Lough Ree Power is one of two new peat stations and construction commenced in the summer of 2002 with a commercial operation date (COD) of 9-12-2004. Lough Ree Power station has one unit, consisting of a boiler, turbine and auxiliary plant, with an electricity generating capacity of 100MWe. The boiler operates on peat with gas oil used for start up. It is scheduled to burn approximately 835,000 energy tonnes of peat each year.

Note: This report covers Environmental activities for the period of January 2011 to December 2011. The station is still operating under the construction warranty period.

Total Running Hrs 2011

Run Hours for 2011 was a total of 8,178hrs.

Table of Total Running Hrs from 2005- 2011

Year	Total Run hrs for Station
2011	8178
2010	5231
2009	8222
2008	7780
2007	4997
2006	7307
2005	7343

1.4 Lough Ree Power Environmental Policy and Key Objectives.

Lough Ree Power Generating Station is part of ESB Power Generation Business Unit. It exports approximately 90 Megawatts of electricity produced from steam generation plant burning peat and uses gas oil for start up. The station is located on the east bank of the River Shannon in an area of significant environmental importance. Environmental monitoring demonstrates that the operation of Lough Ree Power does not have a significant impact on the environment.

It is the policy at Lough Ree Power Generating Station to operate our facilities in a safe, efficient and environmentally responsible manner. In doing so we will:

- Define clear accountabilities and responsibilities for the management and operation of all environmental protection systems.
- Actively promote environmental awareness among all staff through communication and training programs.
- Integrate environmental concerns into all decision making and planning at the earliest stage.
- Ensure and demonstrate compliance with applicable permits, licences and relevant legal requirements, in particular Integrated Pollution Prevention and Control Licence No P0610-01.
- Ensure all significant risks are identified, evaluated and reduced to a minimum and the necessary plans and programmes are in place to minimise or eliminate potential impacts including those arising from emergency incidents.
- Put in place systems to reduce waste production and to monitor and ensure the safe disposal of all residual wastes.
- Have regard for the concerns of neighbours and other stakeholders.
- Recognise the need for special sensitivity in all operations arising from the station's location adjacent to the River Shannon, in an area of significant tourist and amenity value.
- Encourage good environmental practices from suppliers of goods and services.
- Achieve and maintain ISO 14001:2004 certification.
- Review our environmental policy and practices on an ongoing basis, to take cognisance of changes in technology and regulations.
- Minimise the consumption of energy, water and other process raw materials.
- Acknowledge the impact of peat extraction and to influence our fuel supplier towards optimum environmental management of that resource.
- Audit and review the environmental performance of the station at regular intervals and adjust our policy, procedures, objectives and practices in the light of findings and experience.

LRP will set and update appropriate targets on a regular basis in order to deliver the above objectives and ensure continuous improvement in environmental performance.

Originally Issued : Date: 27-5-'05

Revised: Date: 28-8-'08

Signed:

Station Manager

1.5 Environmental Management Structure and Responsibility

Environmental Management is fully integrated into all aspects of management on site. The management structure is shown in Figure 1.1. Those marked in green have a significant environmental role within the station. The Station Chemist is the Environmental Co-ordinator and is responsible for the co-ordination and management of all environmental activity at the station. The Environmental Co-ordinator works with the management team and environmental management group (EMG) to ensure that

- the station complies with or improves on the requirements of any environmental provisions specified under its IPPC licence, other licences, planning permission and environmental legislation.
- the station's EMS is operated and maintained to the required standard.
- by way of audit and management review, the EMS is effective, is adaptive to changing circumstances and is delivering continuous improvement.

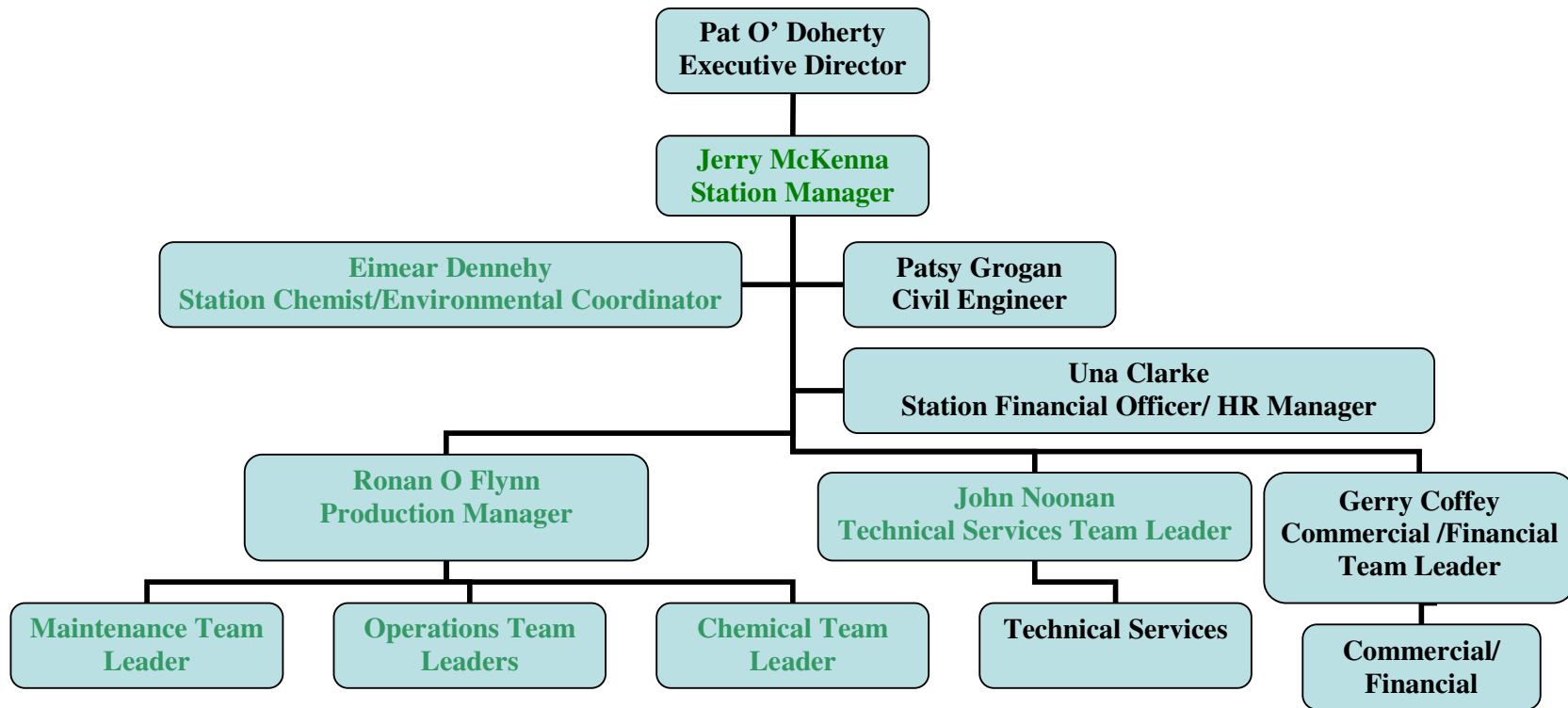


Figure 1.1 Organisation Chart

2. Summary Information: Jan – Dec 2011

2.1 Emissions to Water

ESB Lough Ree Power has 3 licensed emission points discharging to the River Shannon.

The following 2 discharges have individual emission points

- PS-SW1 Condenser Cooling Water
- PS-SW2 Screen Wash Water

The following 4 discharges have only one emission point

- PS-SW3 Boiler Blow-down
- PS-SW4 Water Treatment Effluent
- PS-SW5 Surface Water Drainage (1)
- PS-SW6 Surface Water Drainage (2)

Each of the above discharges has individual sampling points

Monitoring of these emission points is carried out in accordance with Schedule 2(iii) of Lough Ree Power IPPC license P0610-01. A summary of the monitoring results for mass emissions to water at each of the above emission points is presented in the tables below.

Ref Point: PS-SW1 & PS-SW2 – Condenser Cooling Water & Screen Wash Water

Parameter	Licensed Conditions annually	Results for 2011 annually	Results for 2010 annually	Results for 2009 annually
Temperature	Not specified	95% of discharges < 8 °C and 100% < 10 ° C	95% of discharges < 8 °C and 100% < 10 ° C	95% of discharges < 8 °C and 100% < 10 ° C
Chlorine	0.1mg/l	CI not being used	CI not being used	CI not being used
Thermal Load	135 MWth (max)	Full Compliance	Full Compliance	Full Compliance
Volume m3	140,160,000	130,848,000	83,696,000	131,552,000

Note: PS-SW2 contributes an insignificant amount to the total since it is only washwater from the bandscreen.

The difference in volume from 2010 and 2011 was due to a station outage in 2010 for five months.

Ref Point: PS-SW3 (Boiler Blowdown prior to dilution with surface water)

Parameter	Licensed Mass Emissions (kg) annually	Mass Emissions 2011 annually	Mass Emissions 2010 annually	Mass Emissions 2009 annually
Flow	Not given	10 -17 t/hr	10 -17 t/hr	10 -17 t/hr
Orthophosphate (PO4)	54.75	Not being used	Not being used	Not being used
Ammonia (kg)	7.3	0.8	0.8	0.8
Volume (m3)	3,650	390	390	390
Hydrazine	0.37	Not being used	Not being used	Not being used

Comment:

The Boiler blowdown emission point is an infrequently used emission point. The use of the emission point is specific to the boiler drum. Blowing down the drum occurs generally due to non-compliance with chemical parameters for steam set conditions and high drum levels. The fore mentioned situations usually only occur during the start up of the boiler. As the station is a base load station, these are limited to occurrences for overhauls which are limited to possibly twice a year. Station trips have limited effect due to steam conditions already being in compliance with chemical parameters before the unit is tripped.

Ref Point : PS-SW4 – Neutralised Water Treatment Effluent (prior to dilution with surface water)

Parameter	Licensed Emissions Mass Emissions (kg) annually	Mass Emissions (kg) 2011 annually	Average Concentration (mg/l) 2011
pH (6 - 9)	6-9	6-9	6-9
Total Dissolved Solids	2,190,000	46,941	3,921.88
Mineral Oil	547.50	0.1562	12.8ug/l
SS	5,475	499	41.75
Ammonia (as N)	164	6.19	0.5176
BOD	2,736	18.67	1.56
COD	Not given	285	23.83
Total Phosphorus(as P)	Not given	1.5	131.95ug/l
Total Nitrogen(Kjeldahl)	Not given	205.62	17.18

PS-SW 4 discharged a total volume of 11,969m3 on 2011- see quarterly reports. The mass emission calculations are based on this volume discharged. This emission point does not discharge daily- previous estimations were based on the hourly volumetric flow rate and annual operational hours. This year specific discharge volumes were used for the calculation.

Ref Point : PS-SW5 Surface Water (1)

Parameter	Licensed Emissions Average Concentration (mg/l)	Average Concentration (mg/l) 2011	Average Concentration (mg/l) 2010	Average Concentration (mg/l) 2009
pH	6 - 9	7	6-9	6-9
Total Dissolved Solids	Not given	359	377	377
Mineral Oil (µg/l)	Not given	10	27.3	27.3
SS	Not given	13	25	25
Ammonia (as N)	Not given	0.6	0.26	0.26
BOD	Not given	2.04	2.08	2.08
Oil, fats & greases	Not given	1	1	1
Total Nitrogen(Kjeldahl)	Not given	2.7	2.3	2.3

Ref Point : PS-SW6 Surface Water (2)

Parameter	Licensed Emissions Average Concentration (mg/l)	Average Concentration (mg/l) 2011	Average Concentration (mg/l) 2010	Average Concentration (mg/l) 2009
pH (6 - 9)		7.13	6-9	6-9
Total Dissolved Solids	Not given	189	419	285
Mineral Oil (µg/l)	Not given	10	10	10
SS	Not given	9	3.6	6
Ammonia (as N)	Not given	0.225	0.325	0.28
BOD	Not given	1.6	1.05	1.5
Oil, fats & greases	Not given	1	1	1
Total Nitrogen(Kjeldahl)	Not given	1.25	2.16	2.35

2.2 Outfall Drain from Holding Lagoon at Ash Disposal Facility:

ADF-SW1:

There is no leachate from the ADF being sent to the leachate lagoon. All leachate is recycled onto the ADF to condition the ash and to minimise dust emission. This was confirmed by the Agency during site visits and site audit.

2.3 Annual Toxicity PS-SW4 Results:

Toxicity testing was requested in 2009 and the results are available on file.

2.4 Groundwater Monitoring Results

Station: PS-GW1 & PS-GW2

Annual Monitoring Requirements

2011	GW1	GW2
Hydrocarbons mg/l	<46*	49.7
Ammonia (N) mg/l	0.2	0.2
2010	GW1	GW2
Hydrocarbons mg/l	<46*	141
Ammonia (N) mg/l	0.2	0.2

*46ug/l is the LOD for DRO/EPH

Ash Disposal Facility (ADF): ADF-GW3, ADF-GW4, ADF-GW5, ADF-GW6

Annual Monitoring Requirements

2011	ADF-GW3	ADF-GW4	ADF-GW5	ADF-GW6
Al	2.9	2.9	2.9	2.9
As	0.656	2	0.83	0.748
Fe	1	0.019	0.0315	0.195
Cd	0.1	0.1	0.1	0.1
Cu	0.86	1.4	0.85	1.03
Ni	1.83	1.93	2.01	5.21
Zn	0.39	9.68	2.17	43.6
Mo	0.67	0.518	1.09	1.09
Se	0.39	0.767	0.39	0.489
2010	ADF-GW3	ADF-GW4	ADF-GW5	ADF-GW6
Al (µg/l)	4.84	2.9	<2.9	15.6
As (µg/l)	1.27	16.9	5.47	6.18
Fe (µg/l)	0.524	2.1	0.442	1.38
Cd (µg/l)	<0.1	<0.1	<0.1	<0.1
Ca (µg/l)	88	143	124	27.5
Cu (µg/l)	<0.85	<0.85	<0.85	<0.85
Ni (µg/l)	1.54	2.24	2.43	7.6
Zn (µg/l)	3.48	8.68	6.05	101

ADF GW3- GW6 Quarterly Monitoring

	ADF-GW3	ADF-GW4	ADF-GW5	ADF-GW6
Qtr 1 2011				
Hydrocarbons mg/l	1	1	1	1
Chloride mg/l	7.9	12.9	17.4	28.6
Ammonia (N) mg/l	0.557	5.2	0.314	2.39
Qtr 2 2011				
Hydrocarbons mg/l	1	1	1	1
Chloride mg/l	12.2	16.5	19.8	25.7
Ammonia (N) mg/l	3.18	8.7	2.72	2.54
Qtr 3 2011				
Hydrocarbons mg/l	1	1	1	1
Chloride mg/l	11.7	10.5	21.7	19.8
Ammonia (N) mg/l	2.42	9.83	2.96	2.24
Qtr 4 2011				
Hydrocarbons mg/l	1	1	1	1
Chloride mg/l	11.8	16.6	19.9	21.2
Ammonia (N) mg/l	5.09	10.7	2.35	0.3

ADF GW3- GW6 Monthly Monitoring:

2011	ADF-GW3	ADF-GW4	ADF-GW5	ADF-GW6	2011	ADF-GW3	ADF-GW4	ADF-GW5	ADF-GW6
pH					Conductivity Us/cm				
January	7.04	6.78	7.39	7.26	January	480	840	663	845
February	6.9	7.1	7.26	7.04	February	412	770	699	800
March	7.29	7.03	7.35	7.22	March	491	821	649	832
April	8.8	7.05	7.1	7.1	April	609	788	682	755
May	5.6	6.89	6.6	6.82	May	566	791	636	485
June	6.3	7.44	7.25	7.65	June	525	815	695	625
July	7.4	7.6	7.6	7.8	July	520	785	590	675
August	7.6	7.3	7.25	7.5	August	535	722	570	585
September	6.83	6.8	6.9	6.5	September	663	839	647	763
October	7.79	7.8	7.7	7.3	October	625	685	695	575
November	7.3	7.1	7.4	7.33	November	595	620	570	785
December	7.2	6.6	6.9	7	December	674	852	676	559

2.5 Metals in: Peat Ash, Fly & Bottom Ash, based on Quarterly Results

2011	Fly Ash mg/kg				Bottom Ash mg/kg			
Parameter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
pH	11.3	12.5	11.7	12.6	12.1	12.1	11.9	10.6
Al	15100	12900	19300	13800	8200	9650	9140	10200
As	28.9	39.8	27	42.5	25.1	32.8	25	27
Fe	32400	49100	59100	40800	11400	15800	16300	15300
Cd	0.8	2.39	2.08	1.77	0.02	0.06	0.249	0.267
Ca	82400	152000	142000	123000	64200	95800	64600	51800
Cu	18.9	27	33.4	22.8	12.9	9.45	8.38	12.6
Ni	32.5	36.9	59.5	31.3	13.1	13.8	15.1	15.9
Zn	62.2	89.2	96.9	113	51	75.5	64.7	89

2010	Peat Ash mg/kg				Fly & Bottom Ash mg/kg			
Parameter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
pH	n/a	12.07	12.8	12.72	n/a	12.8	12.07	12.72
Al	9558	9950	9770	12200	9729	8560	9010	12200
As	13	22	20.8	25.7	14	33	24.4	25.7
Fe	11990	10600	11500	19200	13210	50200	11200	19200
Cd	<0.5	0.3	0.174	0.483	<0.5	1.16	0.0241	0.483
Ca	58510	103000	18800	76200	62720	89400	352000	76200
Cu	14	20.3	19.8	14.2	17	30.8	19.9	14.2
Ni	11	12.2	12.9	15.2	13	30.7	13.8	15.2
Zn	64	60.3	58.8	95.1	74	61.4	67.2	95.1

n/a= Sample not available –unfortunately this test was omitted from the testing regime and we do not have a result for it

2.6 Emissions to Water Non-Compliance Summary

Date	Source	NC	Cause	Corrective Action
July 2011	PS-SW4	NC	Emission Limit exceedance of PS-SW4 Sample Suspended solid of 356mg/l V ELV 50mg/l	Tubing on Composite sampler replaced and sample retaken. Sample showed Suspended solids within emission limit

2.7 Emissions to Atmosphere

There are two IPPC licensed air emissions points at ESB Lough Ree Power: PS-A1, Boiler Stack and PS- A2: Auxiliary Boiler.

Table 2.7.1: summary of the mass emissions at these points.
Report Period: 1/1/2011 to 31/12/2011

Table 2.7.1: Summary of Emissions to Atmosphere

Emission Point	NOx (tonnes)	SOx (tonnes)	Particulates (tonnes)	CO2 Emitted tonnes Calculated From fuel use
PS-A1	412.6	354.2	19.1	805,410

PS-A2 the auxiliary Boiler ran only for a total of 29hrs for 2011 and therefore its emissions were de minimus to report in this document. Further information is available at the station upon request.

Table 2.7.2: Emissions to Atmosphere Non-compliance Summary

Year	Date	Non-compliance	Cause	Corrective Action
2011	15/04/2011	CEMS malfunction- Dust probe- missing values from daily reports	Electronic Fault	Spare probe from WOP inserted, dust probe sent for Repair
2011	18/05/2011	CEMS software crash- missing values from daily reports	Software crash	new software had been uploaded onto system
2011	24/06/2011	Incorrect values being displayed	The software upgrade has altered the calculation showing elevated readings	Older version of software with correct calc uploaded
2011	09/12/2011	Exceedance of the SOX limit	Turbine trip and fuel feeder problems	Resolved plant issues- No corrective actions required

2.8 Waste Management Report Lough Ree Power

Information on each waste stream for Non Hazardous Waste 2011

European Waste Catalogue Code	Hazardous (Yes/No)	Description* (Sample of wastes types listed below - use/delete as applicable & add required waste streams)	Quantity (tonnes)	Disposal / Reuse / Recycling	Carrier / Transporter	Ultimate Disposal / Recovery	
					Name & Permit Details	Location	Name & Permit Details
10 01 99	No	Fuel Debris	1,478	D1	Bord na Mona IPPCL No 504	Mountdillon Co Longford	Bord na Mona IPPCL No 504
20 03 01	No	General Waste (non-hazardous)	18.025	D5	AES Tullamore 053(2)OY/351/06	Kildare	Drehid WMF ,W201-1
10 01 01	No	Bottom Ash	6,868	D1	Bord na Mona IPPCL No 504	Mountdillon Co Longford	Bord na Mona IPPCL No 504
10 01 03	No	Fly Ash	43,237	D1	Bord na Mona IPPCL No 504	Mountdillon Co Longford	Bord na Mona IPPCL No 504
12 01 99	No	Scrap Metal	3.520	R4	Munster Metal Limerick WCP LK 08 589-01	Limerick	Munster Metal WPLK 01C
16 06 05	No	Batteries (Mixed)	0.08	R4	ENVA, Port Laois WO 184-1 WCP- DC-08-1116-16	Offaly	KMK Metals, Tullamore, Offaly WO113-02
20 01 40*	No	Plastic Tank	0.8	R5	ENVA Port Laois WO 184-	Louth	Leinster Environmentals WP2008/06
17 05 04	No	Stones/Sand	1,496	R5	Bord na Mona IPPCL No 504	Mountdillon Co Longford	Bord na Mona IPPCL No 504
15 01 03	No	Timber	3.3	R5	AES Tullamore WCP-OY-08-601-01	Dublin	Thornton's Recycling, PDM 297/2007
15 01 06	No	Mixed Dry Recyclables	1.261	R5	AES Tullamore 053(2)OY/351/06	Kildare	Failand Paper Service(Bristol UK)
16 02 14	No	WEEE waste	0.166	R13	AES, Naas, Ireland	Offaly	WEEE Recycle, Tullamore, Offaly RC-002937
16 02 16	No	WEEE waste	0.02	R13	AES, Naas, Ireland	Offaly	WEEE Recycle, Tullamore, OffalyRC-002937

Information on each waste stream for Hazardous Waste 2011

European Waste Catalogue Code	Hazardous (Yes/No)	Description* (Sample of wastes types listed below - use/delete as applicable & add required waste streams)	Quantity (tonnes)	Disposal / Reuse / Recycling	Carrier / Transporter	Ultimate Disposal / Recovery	
					Name & Permit Details	Location	Name & Permit Details
15 02 02*	Yes	Solid Oily Waste	1.015	R1	ENVA Port Laois WO 184-1 WCP-DC-08-1116-01/04	Germany	Lindenschmidt ,E97095037
13 02 08*	Yes	Waste Oil	3.8	R9	ENVA Port Laois WO 184-1	Ireland	Enva, W184-1
13 05 07*	Yes	Liquid	9.12	R1	ENVA Port Laois WO 184-1	Ireland	Enva, W184-1
13 07 01	Yes	Waste- Diesel	1.5	R9	ENVA Port Laois WO 184-1	Ireland	Enva, W184-1
08 01 11*	Yes	Paint Tins	0.055	R3	ENVA Port Laois WO 184-1	Germany	Nehlsen, D33300040
18 01 03*	Yes	Clinical Waste	0.04	D15	Initial Medical services, Carlow W054-2	Ireland	ECO Safe Systems, Kylemore Rd, Dublin 10
20 01 21*	Yes	Mercury Thermometers	0.004	R4	ENVA Port Laois WO 184-1	Ireland	ENVA , 041-01
20 01 21*	Yes	Fluorescent Tubes	0.205	R4	ENVA Port Laois WO 184-1 WCP-DC-08-1116-01/04	Ireland	Irish Lamps Recycling, Athy, Co. Kildare WCP-KE-08-0348-01

Total Hazardous Waste: 19.611 tonnes

Total Non Hazardous Waste: 53,106 tonnes

2.9 Energy and Water Consumption

2.9.1 Energy Consumption

Year	Peat (tonnes)	Gas Oil (tonnes)	House Load MWhrs
2011	878,759	324.5	75,635
2010	560,240	480	48,800
2009	959,288	197	79,900
2008	870,788	205	75,382

2.9.2 Energy Generated MWhrs

Year	MW hrs Generated	MWhrs Exported
2011	761,056	685779
2010	484,490	434,265
2009	765,844	711,648
2008	760,611	685,229

Year	Exported	MW hrs Generated	House Load	House Load %
2011	685779	761,056	75,635	9.9
2010	434,265	484,490	48,800	10.01
2009	711,648	765,844	79,900	10.4
2008	685,229	760,611	75,382	9.9

2.9.3 Run hours on Peat and Gas Oil

Run Hours on Peat	Run Hours on Gas Oil	Year
8,178	0	2011
5,231	0	2010
8,222	1	2009
5,304	0	2008

Note: Gas oil used only for start-up.

2.9.4 Auxiliary Boilers Run Hrs

Date	Hours in Operation
2011	29
2010	60
2009	1
2008	3

2.9.5 Water Consumption m³

Year	Domestic Water Usage	Plant Operation**	Total
2011	9,062	60,945	70,007
2010	6,371	60,093	66,464
2009	2,800	87,000	90,000
2008	2,650	82,500	85,350

Note:

** this is water used solely for make-up to the steam/water cycle and is taken from wells.

2.10 Environmental Incidents and Complaints

2.10.1 Complaints Summary

There was 0 complaints in 2011.

2.10.2 Incidents Summary

All incidents have been reported previously in air and water non-compliance emissions sections .

2.10.3 Queries

There was 0 queries in 2011.

3.0 Management of the Activity

The EMP is reviewed quarterly by the station's management team and status of objectives is discussed and noted.

3.1 Environmental Objectives and Targets 2011

There were 7 objectives included in the EMP for 2011 and Table 3.1 has a summary of progress in completing these objectives. Six were completed and one has been pushed over to 2012 for completion.

3.2 Environmental Objectives and Targets 2012

Table 3.2 is list of 5 objectives in the EMP for 2012.

3.1 Environmental Objectives and Targets 2011

Objective Ref. No.	Objective	Person Responsible	Estimated Date for Completion	Status
2011/01	Reduce Water consumption by 5%	Maintenance TL and Sustainability Champion	Dec 2011	Completed
2011/02	Reduce Energy Consumption by 5%	Maintenance TL and Sustainability Champion Production Mgr	Dec 2011 Monthly	Ongoing-
2011/03	Sustainability <ul style="list-style-type: none"> • Identify corporate policies regarding sustainability and procurement • Review Financial legalisation • Develop strategy in relation to tender documentation • Discuss with key stakeholders in procurement and sustainability • Determine whether the practice is suitable to roll out in both stations • Training 	Sustainability Champion, procurement	Dec 2011	Withdrawn- policy already developed by corporate
2011/04	Reduce Waste <ul style="list-style-type: none"> • Reduce waste by 5% • Maintain a Recycling Rate of 55% 	Chemical & Environmental Manager Enva(waste contractor)	Dec 2011	Completed
2011/05	Sustainability <ul style="list-style-type: none"> • Awareness • Monthly presentations to staff on sustainability issues and consumption levels • Sustainability week- participate • Workshop review- of pervious years data – to see if items are outstanding • Review other stations sustainability projects. 	Sustainability Champion	Dec 2011	Completed
2010/01	Install Photosensors		March 2011	Completed
2010/04	Install Occupancy detectors		March 2011	Completed

3.2 Environmental Objectives and Targets 2012

Objective Ref. No.	Objective	Person Responsible	Estimated Date for Completion
2012/01	5% Reduction in Water consumption <ul style="list-style-type: none"> • Install data logger on county council meter • Establish whether meter can be installed on BNM section • Establish total consumption rate • 250m3 Target for month for all site consumption • 	Sustainability Champion, Chemical & Environmental Teamleader	Dec 2012
2012/02	Increase recycling rates (as collected) to 45% <ul style="list-style-type: none"> • Conduct Waste Audit • Implement recommendations of audit • Review and report figure on monthly basis to mgt • Review and report figures at staff briefing 	Sustainability Champion	Dec 2012
2012/03	Air monitoring <ul style="list-style-type: none"> • Produce EMS procedures • Review alarm and maintenance systems 	Chemical & Environmental Manager	Dec 2012
2012/04	Performance & Reliability <ul style="list-style-type: none"> • Conduct as assessment on the system 	Thermal performance Manager	Dec 2012
2012/05	Energy Monitoring <ul style="list-style-type: none"> • Avg monthly House load is 10-11% • Efficiency Target is 35-37% • Develop Energy Monitoring page for all large users of plant on process book • Develop energy meter system in conjunction with WOP. 	Sustainability Champion	Dec 2012

3.3 E-PRTR 2011

3.3.1 Methodology for determination of mass emissions

The methodology for the determination of mass emissions for inclusion in the PRTR is as follows.

The flue gas volume generated is not measured directly in the station CEMS equipment. It is, however, possible to calculate flue gas volumes under standard conditions (as is required to express measured emission concentrations) to a high degree of accuracy based on knowledge of fuel composition, calorific value and activity.

NO_x

The NO_x has an ELV of 200 mg/Nm³. It is proposed that the NO_x emitted be calculated on the basis of the fuel quantity consumed, its consequent flue gas volume (under standard conditions) and the average NO_x concentration measured over the reporting period.

SO₂

Similarly, the SO₂ is limited to an ELV of 200 mg/Nm³ and is measured by an extractive system in the CEMS system. It is proposed that the SO₂ emitted be calculated on the basis of the fuel quantity consumed, its consequent flue gas volume (under standard conditions) and the average SO₂ concentration measured over the reporting period.

Particulate

The dust has an ELV of 30 mg/Nm³ and is measured by the CEMS. It is proposed that the dust emitted be calculated on the basis of the fuel quantity consumed, its consequent flue gas volume (under standard conditions) and the average dust concentration measured over the reporting period.

CO₂

The calculation of CO₂ emissions is as agreed for verification of compliance with the Emissions Trading Directive:

$$CO_2 \text{ emitted} = \text{Fuel consumed (in tonnes)} \times \text{Fuel Carbon (C content as \% / 100)} \times \text{Conversion Factor (3.667)} \times \text{Oxidation Factor (as measured)}$$

In LRP the fuel is subject to a complex sampling regime to define its characteristics. 36 Primary samples are taken each day. These are combined and reduced to a daily sample that is analysed for moisture content. A week's set of daily samples is used to generate a period sample and that is used to calculate C and H₂ compositions. Analysis of C content is done by an independent laboratory to EN ISO 17025.

Fuel consumption is measured by independently calibrated belt-weighers. A calibrated weighbridge is used to measure deliveries of peat by road.

The oxidation factor is calculated from the produce of ash quantity and fraction of carbon-in-ash.

3.3.2 Lough Ree Power PER Report for 2011

Pollutant Name	PS-A1 (tonnes)
Sulphur Dioxide (SO ₂)	354.2
Nitrogen Oxides (as NO ₂)	412.6
Carbon Dioxide	805,410
Particulates	19.1
Methane	0
CO	58.2
N ₂ O	49.5
NH ₃	10.7
NM VOC	2.7
Benzene	0.17
PAHS	0.0006

PS-A2 is the emission point for the stations Auxiliary Boiler .It ran for a total of 29hrs in 2011, further information on this emission point is available on request at the station.

NCVs of fuels used in 2011

Year	Peat NCV mJ/kg	Gas Oil NCV mJ/kg
2011	7.88	43.31
2010	7.797	43.31
2009	7.427	43.31
2008	7.727	43.31

4 Licence Specific Reports

4.1. Bund Testing

In accordance with Condition 9.4.2 of the IPPCL, bunds were tested for integrity and water tightness .

Bund / tank description	Type of Bund	Comments
Sulphuric Acid	Chemical	Pass 23/07/2010
Sodium hydroxide (Caustic)	Chemical	Pass 23/07/2010
Sodium Hypochlorite	Chemical	Not in service
Gas Oil Bund	Diesel	Pass 23/07/2010
Ammonia Tank	Chemical	Pass 22/07/2010
L1 BBT 10	Unit Transformer	Pass 09/12/2011 (retest)
L1 BAT 10	Main Transformer	Pass 22/07/2010
L1 BFT 10	6.6 Distribution	Pass 09/12/2011 (retest)
L1 BFT 20	6.6 kv to 380v	Pass 22/07/2010
L1 BFT 30	6.6 kv to 380v	Pass 22/07/2010
L1 BFT 40	6.6 kv to 380v	Pass 09/12/2011 (retest)
L1 BCT 10	10 kv to 6.6 kv	Not completed -scheduled for repair and retest 29/06/2012 Work Order 110432
BNM Diesel bund	Diesel	Pass 19/10/09

4.2 Underground Tanks and Pipelines

The survey was started in Dec 2011 and completed in January 2012. The report is available on site for inspection.

4.3 Report on List 1 and List II Substance Reduction

(i) List I and List II Substance Reductions

Hydrazine is not used at the station..

(ii) Trisodium Phosphate

Trisodium Phosphate is not used at the station.

(iii) Chlorine

Chlorine is not used at the station.

4.4 Energy Efficiency Audit Report Summary

Review of Efficiency Monitoring Practice in the Station

Unit efficiency and house load is reported weekly by Operations staff to the Production Manager who reviews the information on a monthly basis and reports to the management team in the station. Targets have been set for both parameters which are then reported to Senior Management in Generation operations in ESBEI.

Appropriate remedial action, where necessary, is decided upon and progressed through the maintenance/operations work planning system, known as 'Maximo'.

Running Regime

It was ESB's intention that the station will run on Base Load for most of its operating life. However due to the downturn in the economy and reduced demand along with increased volume of supply in both thermal and wind generation, the running regime of the plant rests with the Commission for Electricity Regulation (CER) and as a result in 2011 the station loading was modified to reduced load at night time and weekends. As the plant is not as efficient at part load, Thermal Efficiency will inevitably be impacted. The station will review maintenance and operations practice to minimise any environmental impacts.

Conclusion

It is concluded that the station is focussing on key efficiency improvements and will make significant progress in future years. The improvement areas may have significant capital expenditure.

An energy efficiency audit was completed at the end of 2009 as part of the ongoing sustainability initiatives in ESB. A copy is available in the station, a number of objectives from the report have been incorporated into the EMP for 2011 and 2012.

4.5 Review of Environmental Liabilities Insurance Cover / Environmental Risk Assessment Report/Oil Spill Response

The insurance liabilities cover was submitted for the year 2011/2012 to the Agency on the 18th of April 2011 .

There have been no changes made to the stations ELRA.

Only minor changes have been made to the stations oil spill response plan , reflecting our system on training and planned exercises.

4.6 Annual Landfill Status Report

Landfill Name	Ash Disposal Facility (ADF)
Licence Number	P0610-01
Landfill Location	Derraghan, Lanesboro, Co Longford
Owner	ESB
Operator	Bord na Mona

	Active Areas
Cell in Operation	Cell 4
Area occupied by waste	10,500 m ²
Volume and composition of waste deposited in 2010	Pulverised Fuel Ash 43,237 tonnes Furnace Bottom Ash 6,868 " " Total 50,105 " "
Methods of Depositing	Delivered by wagon train. Fill and Compact
Time and duration of depositing	One wagon train of 12 wagons daily 8AM to 5PM 6 days a week
Total Accumulated quantities of waste deposited	250,895 tonnes (FA)
Stability Checks Undertaken	None required
Results of Monitoring Programme:	
a) Surface Water Monitoring	Refer to Section 2.2
b) Groundwater Monitoring	Refer to section 2.4
c) Leachate Monitoring	Refer to Section 2.2
d) Waste Stability ,levels, Void Monitoring	None
e) Meteorological Monitoring	2011 Rainfall 944 mm approx- taken from Mullingar weather station on www.met.ie
f) Dust Monitoring	None – ash conditioned with water prior to leaving the power station
Summary of Monitoring Non Compliance & Corrective Actions	None
Revisions to Landfill Operational Plan	None
Summary of any developmental / remedial works carried out in the preceding year	None since construction. Operational Plan, CQA Report and Leachate Lagoon Report submitted to the EPA in 2004.
Calculated Remaining Capacity	Cells 4- 12
Calculated final capacity of site	550,000 tonnes (estimated)
Year in which final capacity of site is expected to be reached	2019
Progress on restoration of completed cells	Cell 1-3 closed and capped. Cell 4 now commissioned and in operation and Cell 5 and 6 under construction.

4.7 Annual Noise Survey

A survey was submitted in December 2011.

Appendix 1 Sampling Locations

