



West Offaly Power Generating Station

IPPC Licence Reg. No. P0611-01

Annual Environmental Report

For the period of 1st Jan 2009 to 31st Dec 2009

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1. Introduction

1.1 IPPC Licence Number

IPPCL P0611-01

1.2 Name and Location

Electricity Supply Board
West Offaly Power
Shannonbridge Co Offaly.

1.3 Description of Activities

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

West Offaly Power is one of two new peat stations and construction commenced in the Summer of 2002 with a commercial operation date (COD) of 27-1-2005. West Offaly Power station has one unit, consisting of a boiler, turbine and auxiliary plant, with an electricity generating capacity of 150MWe. The boiler operates on peat with gas oil used for start up. It is scheduled to burn approximately 1,245,000 tonnes of peat each year.

Note: This report covers Environmental activities for the period of January 2009 to December 2009. The station is still operating under the construction warranty period.

The contractor – Foster Wheeler and ESB concluded an agreement in December 2008 to implement in 2011 a permanent solution to the long standing corrosion problems

Total Running Hrs 2009

Run Hours for 2009 was a total of 7249 hrs, which is comparable to 2008 run hours as seen below in the Table. The reduced running requirement was due to the flood conditions experienced in Qtr 4 of 2009 where quantities of peat were restricted and therefore the output of the station was reduced for November and December ..

Table of Total Running Hrs from 2005- 2009

Year	Total Run hrs for Station
2009	7249
2008	7335
2007	5326
2006	4607
2005	6631

1.4 West Offaly Power Environmental Policy and Key Objectives.

West Offaly Power Generating Station is part of ESB Power Generation Business Unit. It exports approximately 137 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 West Offaly Power does not have a significant impact on the environment.

It is the policy at West Offaly 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 P0611-01.
- 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.

WOP 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 :

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.

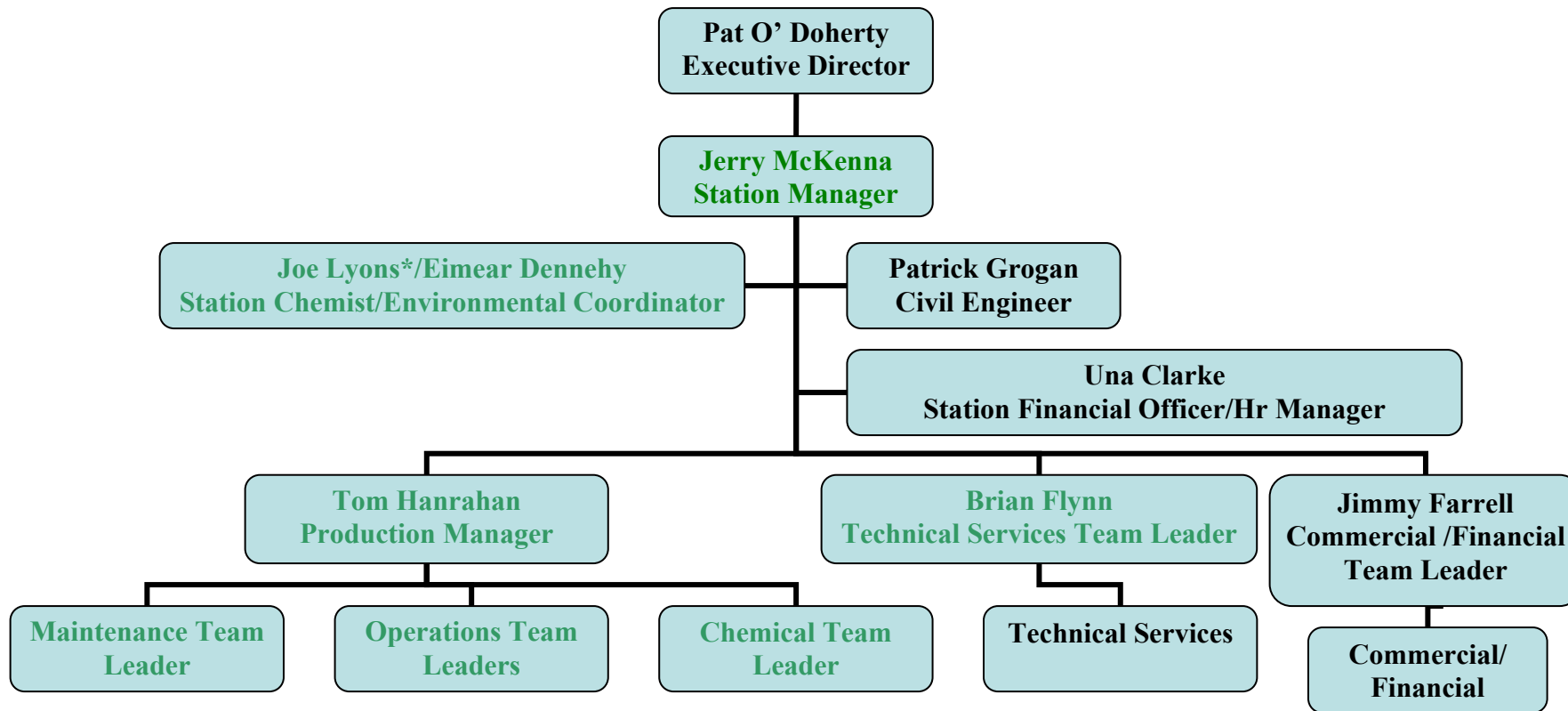


Figure Figure 1.1 Organisation Chart

2. Summary Information : Jan – Dec 2009

2.1 Emissions to Water

ESB West Offaly Power has 3 licensed emission points discharging to the River Shannon.

The following 2 have a common emission point

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

The following 2 also have a common emission point

- PS-SW3 Treated Sewage Effluent
- PS-SW7 Surface Water Drainage (2)

Finally, the following 3 have a common emission point

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

However, each of the above discharges has individual sampling points

Monitoring of these emission points is carried out in accordance with Schedule 2(iii) of West Offaly Power IPPC license P0611-01. 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 Mass Emission Annually kg	Results for 2009 Annually mg/l	Results for 2008 Annually Mg/l
Temperature	Not specified	95% of discharges < 8 °C and 100% < 10 °C	95% of discharges < 8 °C and 100% < 10 °C
Chlorine	0.1mg/l	Cl not being used	Cl not being used
Thermal Load	186 MWth (max)	Full Compliance	Full Compliance
Volume m3	219,000,000	152,159,623	153,964,800

Ref Point : PS-SW3 – Sewage Treatment Effluent

2009	Licensed Mass Emission kg	Mean Conc 2009 mg/l
Temp C	25	14.5
BOD mg/l	20	1.3
SS mg/l	30	14
pH	6-9	6-9

Ref Point: PS-SW4 Boiler Blowdown prior to dilution with surface water

Parameter	Licensed Mass Emissions Annually kg	Mass Emissions 2009 annually	Mass Emissions 2008 annually
Flow	Not given	10-17t/hr	10 -17 t/hr
Orthophospate (PO4)	2	Not being used	Not being used
Ammonia (kg)	25.5	1.0	1.0
Volume (m3)	43,800	390	390
Hydrazine	0.37	Not being used	Not being used

Ref Point : PS-SW5 Neutralised Water Treatment Effluent (prior to dilution with surface water)

Parameter	Licensed Mass Emissions (kg) annually	Mean Conc 2009 (mg/l)	Mass Emissions (kg) 2009 annually	Mass Emissions (kg) 2008 annually
pH	6 – 8.5		7.2-7.7	6 – 8.5
Total Dissolved Solids	3,285,000	5860	138,823	110,362
Mineral Oil	Not given	0.01	0.2369	0.24
SS	3,285	15	355	263
Ammonia (as N)	21.9	0.89	21.0	14.6
Volume (m3)	109,500	1974	23,690	24,500

Ref Point : PS-SW6 Surface Water (1)

Parameter	Licensed Emissions Average Concentration (mg/l)	Mean Conc 2009 (mg/l)	Mean Conc 2008 (mg/l)
pH	6 – 8.5	8.1	pH = 7.6 – 8.4
Conductivity	Not given	590	
Total Dissolved Solids	Not given	343	624
Mineral Oil (µg/l)	Not given	<10	< 10
SS	Not given	17.3	< 10
Ammonia (as N)	Not given	0.7	< 0.2
BOD	Not given	12.1	< 3
Oil, fats & greases	Not given	<1	< 1
Total Nitrogen	Not given	6	

Ref Point : PS-SW7 Surface Water (2)

Parameter	Licensed Emissions Average Concentration (mg/l)	Average Conc 2009 (mg/l)	Average Conc(mg/l) 2008
pH	6 – 8.5	8.1	pH = 7.5 - 8
Conductivity Us/cm	Us/cm	827	
Total Dissolved Solids	Not given	342	325
Mineral Oil (µg/l)	Not given	<10	< 10
SS	Not given	6	< 10
Ammonia (as N)	Not given	0.3	< 0.2
BOD	Not given	1.3	< 3
Oil, fats & greases	Not given	4	< 1
Total N	Not given	3	

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.

2.3 Toxicity PS-SW5 Neutralised Water Treatment Plant Results

Parameter	Test Species	Limits	2009 Results
Toxicity	Daphnia Magna	10 TU	1.5 TU
	Vibrio Fischeri	10 TU	<2.2 TU

2.4 Groundwater Monitoring Results

2.4.1 Annual Groundwater Monitoring

- Station: PS-GW1 & PS-GW2
- Ash Disposal Facility (ADF): ADF-GW3, ADF-GW4, ADF-GW5, ADF-GW6

2009						
Parameter	PS-GW1	PS-GW2	ADF-GW3	ADF-GW4	ADF-GW5	ADF-GW6
Al (µg/l)	<2	14	<2	4	<2	<2
As (µg/l)	4	6	4	4	4	2
Mo (µg/l)	<1	<1	<1	1	2	<1
Fe (µg/l)	47	99	249	200	116	80
Cd (µg/l)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Se (µg/l)	15	17	12	10	7	6
Cu (µg/l)	3	3	3	4	4	2
Ni (µg/l)	14	2	1	1	9	1
Zn (µg/l)	16	15	15	46	38	6
Chloride mg/l	29	96	15	23	14	12
Hydrocarbons (µg/l)	<10	<10	<10	<10	<10	<10
Ammonia (N) mg/l	<0.2	8.7	0.9	2.5	5.3	3.9
Conductivity	804	1271	330	600	652	661
pH	7.6	7.6	7.5	7.4	7.6	7.4
2008						
Parameter	PS-GW2	ADF-GW3	ADF-GW4	ADF-GW5	ADF-GW6	
Al (µg/l)	167	141	213	266	178	
As (µg/l)	2	2	1	2	1	
Mo (µg/l)	13	<1	<1	3	<1	
Fe (µg/l)	315	137	184	134	37	
Cd (µg/l)	<0.4	<0.4	<0.4	<0.4	<0.4	
Se (µg/l)	4	2	<1	2	4	
Cu (µg/l)	2	<1	<1	<1	2	
Ni (µg/l)	49	<1	5	<1	<1	
Zn (µg/l)	31	4	4	9	11	
Chloride mg/l	130	22	21	14	32	
Hydrocarbons µg/l	<10	<10	<10	<10	<10	
Ammonia (N) mg/l	3.3	0.6	3.1	3.1	3.3	

2.4.2 Quarterly Groundwater Monitoring

	PS –GW1			PS-GW 2		
200 9	NH4 mg/l N	TPH ug/l	Cl mg/l	NH4 mg/l N	TPH ug/l	Cl mg/l
Qtr 1	<0.2	<10	29	8.7	<10	96
Qtr 2	0.2	<10	36	8.3	<10	88
Qtr 3	<0.2	<10	15	11	<10	111
Qtr 4	<0.2	<10	19	7.6	<10	79

	ADF- GW3			ADF-GW4		
2009	NH4 mg/l N	TPH ug/l	Cl mg/l	NH4 mg/l N	TPH ug/l	Cl mg/l
Qtr 1	0.9	<10	15	2.5	<10	23
Qtr 2	1.1	<10	16	2.6	<10	19
Qtr 3	<0.2	<10	14.5	2.5	<10	19
Qtr 4	NS*	NS	NS	NS	NS	NS

	ADF –GW5			ADF-GW 6		
2009	NH4 mg/l N	TPH ug/l	Cl mg/l	NH4 mg/l N	TPH ug/l	Cl mg/l
Qtr 1	5.3	<10	14	3.9	<10	12
Qtr 2	2.7	<10	12	3.2	<10	13
Qtr 3	2.1	<10	12	2.4	<10	13
Qtr 4	NS	NS	NS	NS	NS	NS

*:NS= No sample. As stated in Quarter 4 reports, no samples from the ADF could be taken due to flooding and hazardous conditions.

2.5 Metals in Peat Ash, based on Quarterly Results

2009	Peat Ash mg/kg			
Parameter	Q1	Q2	Q3	Q4
pH	11.9	11.6	10.7	12.6
Al	8234	8980	9250	8280
As	32	18	27	43
Fe	11730	13400	25200	24600
Cd	<0.5	0.4	0.6	0.6
Ca	62760	98800	120000	128000
Cu	12	9	21	16
Ni	12	21	26	33
Zn	48	40	52	69
Se	<0.5	6	8	5
Mo	3	2	4	5

2.6 Emissions to Water Non-Compliance Summary:

Date	Source	NC	Cause	Corrective Action
2009			Full compliance	

2.7 Emissions to Atmosphere

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

Table 2.7.1: summary of the mass emissions at these points. Report Period: 1/1/2009 to 31/12/2009.

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	779	44	43.7	1,055,151
PS-A2	0.2*	0.4*	-	-

Note: It was agreed with the Agency that due to the very intermittent operation of the auxiliary boiler it is not good environmental practice to operate the boiler for a number of days in order that a test be carried out. These values are calculated based on hours run and 0.1% sulphur in gas oil

- Total Run hours for WOP in 2009 was 7249hrs.

Table 2.7.2: Emissions to Atmosphere Non-compliance Summary

Year	Date	Non-compliance	Cause	Corrective Action
2009	Dec 09	CEMS Malfunction	No corrected Nox, So2 or particulate measurement on CEMS pc due to the discovery of a faulty O2 reading and solenoid valve	Repairs made, replaced zeroing valve. Ordered new valve for spares.

2.8 Waste Management Report West Offaly Power

Summary of Waste Information for 2009	
Item	Tonnes
Total quantity of waste produced in 2009	42,887.58
total quantity of waste disposed of on-site	41,570
total quantity of waste disposed of off-site	42.29
total quantity of waste recovered on-site	1239
total quantity of waste recovered off-site	36.29
Quantity of non-hazardous waste produced in 2009	42,879.76
quantity of non-hazardous waste disposed of on-site	41,570
quantity of non-hazardous waste disposed of off-site	42.27
quantity of non-hazardous waste recovered on-site	1239
quantity of non-hazardous waste recovered off-site	28.49
Quantity of hazardous waste produced in 2009	7.82
quantity of hazardous waste disposed of on-site	0
quantity of hazardous waste disposed of off-site	0
quantity of hazardous waste recovered on-site	0
quantity of hazardous waste recovered off-site	7.82

Information on each waste stream for 2009

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	2192.00	Disposal	Bord na Mona IPPCL No 502	Blackwater, Co Offaly	Bord na Mona IPPCL No 502
17 05 04	No	Stones/Sand	1239.00	Reuse	Bord na Mona IPPCL No 502	Blackwater, Co Offaly	Bord na Mona IPPCL No 502
10 01 01	No	Bottom Ash	4447.00	Disposal	Bord na Mona IPPCL No 502	Blackwater, Co Offaly	Bord na Mona IPPCL No 502
10 01 03	No	Fly Ash	34931.00	Disposal	Bord na Mona IPPCL No 502	Blackwater, Co Offaly	Bord na Mona IPPCL No 502
13 08 02*	Yes	Oil- Liquid	2.82	Recovery	ENVA Portlaoise WCP -DC-08-116-01	Portlaoise	Enva Waste Licence 184-1
15 02 02*	Yes	Oil - Solid	0.49	Recycled	ENVA Portlaoise WCP -DC-08-116-01	Germany	Lindenschmidt, Germany E97095037
15 02 02*	Yes	Oil Filters	0.26	Recovery	ENVA Portlaoise WCP -DC-08-116-16	Belgium	RD Recycling Belguim 5172
15 01 10*	Yes	Oil Drums	0.02	Recovery	ENVA ,WO184-1	Portlaoise	Enva Waste Licence 184-1
15 01 10*	Yes	Ammonia Drums	0.13	Recovery	ENVA ,WO184-1	Shannon	Enva Waste Licence 184-1
15 01 01	No	Waste Paper	0.67	Recycled	AES 053(2)/OY/351/06	Tullamore	Enva Waste Licence 184-1
15 01 01	No	Cardboard	0.15	Recycled	AES 053(2)/OY/351/06	Tullamore	Enva Waste Licence 184-1
20 03 01/ 15 01 06	No	Mixed Dry Recyclables	2.18	Recycled	AES, WCP-0Y-08--601-01/ 053(2)/OY/351/06	Tullamore	Failand Paper Services, Bri UK

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
17 04 05	No	Scrap Metal	20.34	Recycled	Munster Metal Limerick 002/OY/02	Limerick	Munster Metal WPLK 01C
20 03 01	No	General Waste (food waste, canteen waste)	42.27	Disposal	ENVA Portlaoise 033/OY/18/02	Tullamore	Enva Waste Licence 184-1
15 01 03	No	Timber	4.82	Recovery	AES 053(2)/OY/351/06	Tullamore Co Offaly	AES Waste Licence 104-01 Conroy Recycling
20 01 21*	Yes	Lighting	4.00	Recycled	Irish lamp Recycling 035(2)/OY/400/06	Athy, Co Kildare	Irish Lamp Recycling WP 200002B
16 06 05	Yes	Batteries	0.08	Recovery	ENVA Portlaoise WCP -DC-08-116-01	Germany	Accurec, Mulheim, Germany 52.03.06.06 Accu 9/99
16 02 14	No	Electronic &Electrical Waste	0.33	Recycled	AES, WCP-0Y-08-601-01	Tullamore Co Offaly	KMK Recycling WO113-03
16 05 04*	Yes	Aerosol containers	0.02	Disposal	ENVA Portlaoise WCP -DC-08-116-16	Germany	SBH,Krautheim, Germany HRB590 346

2.9 Energy and Water Consumption

Energy Consumption

Year	Peat (tonnes)	Gas Oil (tonnes)	House Load MWhrs
2009	1,256,824	1182	
2008	1,235,992	748	117,979

Energy Generated MWhrs

Year	MW hrs Generated	MWhrs Exported
2009	1,001,689	892,343
2008	1,069,941	951,962

Total run hours for 2009 was 7249 hours.

Water Consumption m³

Year	Domestic Water Usage	Other	Plant Operation	Total
2009	1,300	0*	**100,800	102,100
2008	2,100	0*	**107,250	109,350

Note:

*this is water used mainly in the DeSox plant for SO₂ removal and the DeSOx was not in operation in 2009

** this is water used solely for make-up to the steam/water cycle

2.10 Environmental Incidents and Complaints

2.10.1 Complaints Summary

Year	Date	Complaint	Corrective Action
2009	April	Dust found on machinery at engineering works	Sample was sent for analysis, results found show sample contained mainly sand and could not be traced back to WOP
	August	Dust reported on cars	Bag house, had the bags replaced during a scheduled outage.. Dust limit had increased to about 13mg/Nm ³ in July but were still within the ELV. Wind direction was found to be directly over St Kierans park.
	August	Dust	Faulty instrument pressure reading on ash hopper allowed fans to run when they should not. The fans were immediately stopped upon notification by complainant. The instrument failure has been noted and placed on Maximo job card for future references, equipment was repaired and fault has not re-occurred.
	October	Noise	High pitched noise was found coming from the station. An investigation ensued and found that the bag cleaning vessel caused the noise air operating. The vessel was immediately stopped and bolts on cowl of the cleaning vessel was tightened up and bearing oiled.

2.10.2 Incidents Summary

No incidents in 2009

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 Management Program (Objectives and Targets) 2009

In Table 3.1 is a summary of the progress on the 8 objectives in the EMP for 2009. Two of these objectives will be rolled over to 2010 Targets and Objectives.

3.2 Environmental Management Program (Objectives and Targets) 2010

In Table 3.2 is a summary of the progress on 8 objectives in the EMP for 2010.

Table 3.1 West Offaly Summary Programme 2009

Objective Number	Objective Summary	Management Group Responsible	Status
2009/01	<p>Install a Sensor beam in DeSOx to monitor expansion joints for rupture</p> <ul style="list-style-type: none"> To eliminate ash spillage due to expansion joint rupture 	Production Manager	Complete
2009/02	<p>Install photo cells in the lighting in: stairways, fuel day bin area and blending bunker</p> <ul style="list-style-type: none"> To reduce energy consumption in these areas 	Production Manager	Item Removed- on the grounds of safety implications
2008/03	<p>Investigate the possibility of switching off of the house transformers</p> <ul style="list-style-type: none"> This will minimise electricity consumption and conserve energy. 	Production Manager	Completed
2009/04	<p>Stakeholder Management</p> <ul style="list-style-type: none"> Keep stakeholders such as local neighbourhood, Offaly Co Co and Shannon Regional Fisheries Board aware of environmental progress in the station by being proactive i.e sponsorship of local events, village improvements etc 	Station Manager/ Environmental Coordinator	Completed
2009/05	<p>Promote Sustainability awareness by (i) week dedicated to sustainability and (ii) on-going interaction with staff and colleagues in other stations to identify further improvement</p> <ul style="list-style-type: none"> To reduce energy consumption 	Sustainability Coordinator	Completed
2009/06	<p>Investigate utilising heated water at the CW outfall and Settlement pond to provide heat to the station</p> <ul style="list-style-type: none"> Energy saving 	Production Manager/ Sustainability Coordinator	Awaiting Investigation in Moneypoint on the feasibility of this project
2009/07	<p>Install hardtop contractor lay-down area This will improve tidiness and drainage control and overall environmental management of contractors</p>	Services Team Leader	Completed
2009/08	<p>Investigate harnessing the flow energy at the CW outfall using a marine turbine and supply the station with an alternative energy source that is environmentally friendly</p> <ul style="list-style-type: none"> To conserve energy 	Production Manager/ Sustainability Coordinator	Awaiting Investigation in Moneypoint on the feasibility of this project

3.2 West Offaly Summary Environmental Management Programme 2010

Objective Number	Objective Summary	Management Group Responsible	Target Milestone Completion Date
2010/01	<p>Investigate utilising heated water at the CW outfall and Settlement pond to provide heat to the station</p> <ul style="list-style-type: none"> • Energy saving 	Production Manager/ Sustainability Coordinator/ Moneypoint Environmental Co-ordinator	April 2010
2010/02	<p>Investigate harnessing the flow energy at the CW outfall using a marine turbine and supply the station with an alternative energy source that is environmentally friendly</p> <ul style="list-style-type: none"> • To conserve energy 	Production Manager/ Sustainability Coordinator/ Moneypoint Environmental Co-ordinator	April 2010
2010/03	<p>Promote Sustainability awareness (I) week dedicated to sustainability (ii) Give presentation to tours on sustainability (iii)Ongoing interaction with staff in relation to identifying areas for further improvement</p>	Production Manager/ Sustainability Coordinator	(i)March2010 (ii)March, April, July 2010 (iii) Dec2010
2010/04	Install timer on Kitchen hot water boiler	Sustainability Co-ordinator / maintenance team leader	June 2010
2010/05	<p>Investigate installing energy monitoring Equipment</p> <ul style="list-style-type: none"> • Stores • Workshop 	Sustainability Co-ordinator / maintenance team leader	June2010
2010/06	<p>Investigate the use of occupancy detectors in</p> <ul style="list-style-type: none"> • Toilets • Canteen • Automation Room(1&2) 	Sustainability Co-ordinator / maintenance team leader	June 2010
2010/07	<p>Review the Lifetime of Halides V Fluorescent Review the lighting in the turbine hall- Use of timers within the station and outside the station</p>	Sustainability Co-ordinator / maintenance team leader	Oct 2010
2010/08	<p>Investigate with Johnson control the optimisation of the air conditioning system</p> <ul style="list-style-type: none"> • Use of VSD 	Sustainability Co-ordinator / maintenance team leader	Oct 2010
2010/09	<p>Investigate feasibility of fitting VSDs to the major drives to reduce house load consumption during low load running.</p> <ul style="list-style-type: none"> • 	Production Manager/ESBI	Dec 2010
2010/10	Conduct a survey on settlement pond to ensure adequate station drainage during times of flooding	Environmental Co-ordinator/ Civil Engineer	June 2010

3.3 E-PRTR 2009

ESB West Offaly Power expected to carry out a study on heavy metals in air emissions in 2009 to coincide with similar work in other ESB power plant, however this has been postponed in other plants to 2010

3.3.1 Methodology for determination of mass emissions

The methodology for the determination of mass emissions for inclusion in the PER 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:

CO₂ emitted = Fuel consumed (in tonnes) x Fuel Carbon (C content as %/100) x Conversion Factor (3.667) x Oxidation Factor (as measured)

In WOP 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 and Carbon in Ash 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 product of ash quantity and fraction of carbon-in-ash.

Exclusion of other Substances.

Please see 2008 AER for explanation on the exclusion of, Heavy Metals, Ammonia, Hydrazine and Ortho-phosphate .:

3.3.2 West Offaly Power PER Report for 2009

Facility Identification			
Name	ESB West Offaly Power		
IPC Register Number	P0611-01		
Reporting Period	1 st January - 31 st December 2009		
National Grid Reference	E 197300 N 224800		
Employee No.	41		
Pollutant Summary			
Pollutant Name	Output to Air (tonnes)		
	PS-A1	PS-A2	Total
Sulphur Dioxide (SO ₂)	44	0.4	44.04
Nitrogen Oxides (as NO ₂)	779	0.2	779.02
Carbon Dioxide	1,055,151	-	1,055,151
Particulates	43.7	-	43.7

IPPCL P0611-01 states the following under condition 5: Emission to Air.

5.7 The licensee shall report the total annual emissions of SO₂, NO_x, and dust (as total suspended particulates) annually as part of the AER. When continuous monitoring is used, the licensee shall separately calculate for each substance the mass emitted each day, on the basis of volumetric flow rates of waste gases.

The basis of the calculation of the pollutants in the Table is that the ultimate analysis data for the fuel was used to calculate dry flue gas volumes generated under standard conditions of 6% O₂ dry and hence multiplied out to estimate this for the annual tonnage (including the contribution of gas oil to the total flue gas volume). The concentrations recorded on a 24 hour average by the CEMS was then used to determine the amount emitted annually

NCVs of fuels used in 2009

Year	Peat NCV mJ/kg	Gas Oil NCV mJ/kg
2009	7.051	43.1
2008	7.56	43.1

4 Licence Specific Reports

4.1 Noise Monitoring Reports

The contract between Foster Wheeler and ESB for the construction of West Offaly Power station specified that Condition 8.1, 8.2 and 8.3 of IPPCL P0611-01 must be complied with and the contractor Foster Wheeler had difficulty meeting the limits. Extra noise reduction panels have been installed on a number of occasions with a 1-3dBA reduction each time. Further noise reduction measures were installed in Feb-March '06. Noise measurement by an independent consultant showed that the limit was exceeded at one location and the source of the noise was found to be an air extractor fan in the fuel screening building. A further noise survey was carried out in December '07 and it was found that the plant is exceeding the 45dB(a) limit by 1dB at the boundary. A report was submitted to the EPA and the Agency replied that it would consider a Technical Amendment to the IPPCL, to change from boundary measurement to nearest noise sensitive location (NSL), following the submission of further information. This submission was made in on the 5th August '08 and the technical amendment was granted on the 3rd October '08. Locations of the Noise sensitive locations (three) have been agreed with the inspector and from 2010 all surveys will use these stated NSL in noise assessment.

4.2 Underground Tanks and Pipelines

CCTV inspection surveys were conducted in 2008. Copies of the survey are held within the station for viewing at any time by the Agency.

4.3 Report on List 1 and List 11 Substance Reduction

(i) List I and List II Substance Reductions

At the time of IPPCL application it was anticipated that Hydrazine (35%) would be used in the chemical treatment of the feedwater/steam cycle. This is the only List 1 and List 2 substance to be considered. During commissioning of the plant it was decided, for environmental reasons, to try and eliminate the use of hydrazine and this has been successful.

(ii) Trisodium Phosphate

At the time of IPPCL application it was anticipated that Trisodium phosphate would be used in the chemical treatment of the feedwater/steam cycle. During commissioning of the plant it was decided, for environmental reasons, to try and eliminate the use of hydrazine and this has been successful.

(iii) Chlorine

At the time of IPPCL application it was anticipated that Chlorine would be used in the treatment of the cooling water to eliminate slime build up in the tubes of the steam condenser. For environmental reasons it was decided to try a rubber ball cleaning system. To date it has not been necessary to use chlorine because of the effectiveness of the alternative. If this continues to be effective then chlorine will not be used. The EPA will be informed in advance of the use of chlorine

4.4 Energy Efficiency Audit Report Summary

General

The generating plant at West Offaly Power (WOP) station consists of one circulating fluidised bed boiler (CFB) and a Fuji steam turbine with a capacity of 150Megawatts. .

West Offaly Power is one of the most modern and efficient generating stations of its kind in the world with a conversion efficiency of the order of 37%. The CFB is the most up to date technology available. It operates almost exclusively on peat with gas oil used only in start-up.

All possible operations are computerised and automated. Sophisticated monitoring systems provide immediate warning of any deviation from normal standards.

The following are the configuration and operating particulars to year end 2009. The overall efficiency for 2009 was 37%.

Date C.O.D	Design Conditions		M.C.R	MW Hrs Gen
	Press. MPa	Temp. Deg. C	MW	2009
28-1-'05	165	560	150	1,001,689

Design Parameters

The plant is required to meet design operating conditions and efficiency and this determined by an 'Acceptance Test' prior to takeover of the plant by ESB. The 'Acceptance Test' was successfully carried out in Nov-Dec 2004 and the plant was accepted by ESB on commercial operation date (COD) of the 28-1-'05. All operating parameters of the plant are recorded on a computer system called the DCS. All operating parameters are analysed by a computer system known as the Operating Information System (OIS). These monitoring systems provide immediate warning of any deviation from normal standards.

Plant Corrosion

The contractor Foster Wheeler and ESB reached agreement in December 2008 on the implementation of corrective measures to eliminate the corrosion problems that have limited the output from the plant since commissioning in Jan 2005. Program planning has commenced by both parties and the corrective action will be implemented in the Summer of 2011 from 30th of April till the 16th of September.

Review of Efficiency Monitoring Practice in the Station

Unit efficiency is reported weekly by Operations staff to the Production Manager who reviews the information on an ongoing basis.

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

The Production Manager in turn reports efficiency performance to the Station Manager on a weekly basis, but daily information is also provided.

Future Plans

Environmental

During design all environmental considerations were taken into account and during construction all necessary equipment was installed. Periodically minor improvements have been instituted and this will continue to be the case with station staff continually assessing procedures/plant for improvement. Each year a list of environmental objectives are drawn up for continual environmental improvement and these are monitored by station management for implementation

A number of environmental sustainability projects are planned for 2009, these are incorporated into the stations Targets & Objectives for 2009 & 2010.

4.5 Review of Environmental Liabilities Insurance Cover / Environmental Risk Assessment Report

Report submitted on 12/6/2006.

4.6 Groundwater Monitoring

Submitted in the quarterly reports to the EPA

4.7 Bund Testing

Report submitted in 2008

4.8 Annual Landfill Status Report

Landfill Name	Ash Disposal Facility (ADF)
Licence Number	P0611-01
Landfill Location	Blackwater, Co Offaly
Owner	ESB
Operator	Bord na Mona

	Active Areas						
Cell in Operation	1 st cell Full in Dec 07 and 2 nd cell in operation.						
Area occupied by waste	15,600 m ²						
Volume and composition of waste deposited in 2009	<table> <tr> <td>Pulverised Fuel Ash</td> <td>34931 tonnes</td> </tr> <tr> <td>Furnace Bottom Ash</td> <td>4447</td> </tr> <tr> <td>Total</td> <td>39,378</td> </tr> </table>	Pulverised Fuel Ash	34931 tonnes	Furnace Bottom Ash	4447	Total	39,378
Pulverised Fuel Ash	34931 tonnes						
Furnace Bottom Ash	4447						
Total	39,378						
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 to date	161,881 tonnes						
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	2009 Rainfall 1,185.2 mm						
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	1 st cell full – 2 nd cell in operation due to be capped in 2010. 10 cells remaining						
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	1 st cell was capped in the Summer of 2008 - following discussion with the EPA. 2 nd cell due to be capped end of 2010/ start of 2011.						

4.9 Auxiliary Boilers

The auxiliary boiler is only in operation intermittently for short periods when plant is off load

Date	Hours in Operation
2009	208
2008	153

4.10 Total Annual Emissions of SO₂, NO_x, CO₂ and Particulates.

Method of calculations is described in section 3.3

SO ₂	44 tonnes
NO ₂	779 tonnes
CO ₂	1,055,151 tonnes
Particulates	43.7 tonnes

4.11 Fuel Use and Energy Input Summary

Fuel Use

Peat (tonnes)	Gas Oil (tonnes)	Year
1256,824	1180	2009
1,235,992	748	2008

Run hours on Peat and Gas oil.

Peat	Gas Oil	Year
7249	0	2009
7335	0	2008

Note: Gas oil used only for start-up.

Energy Input MWHrs Generated

Peat	Gas oil	Total	Year
1,001,688	0	1,001,688	2009
1,069,941	0	1,069,941	2008

Energy Produced MWHrs Exported

Generated	Exported	House Load	Year
1,001,688	893,144	108,544	2009
1,069,941	951,962	117,979	2008

Appendix 1

AER Electronic Report

Appendix 2

Map of Sampling Locations