North Wall Generating Station

Annual Environmental Report

For the period of 1st January to 31st December 2012

North Wall Environmental Policy

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1 Introduction

1.1 IPPC Licence Number

P0579-03 (This AER is based on P0579-02 as the revised licence was issued late October 2012)

1.2 Name and Location

Electricity Supply Board
North Wall Generating Station
Alexandra Road
Dublin 1

1.3 Description of Activities

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

North Wall generating station has one generating unit, an open cycle Gas Turbine CT5, with a total electricity generating capacity of 109 MW_e. The CC4 combined cycle[1] unit, which had previously been in operation on the site suffered a compressor failure on 5th August 2010, a decision not to invest in the unit was made in January 2011, effectively closing the combined cycle unit. CT5 is a simple or open cycle combustion turbine, used for peak system demands or unusual non-availability of other plants.

CT5 is normally fired on Natural Gas supplied from the national gas network. Distillate Oil is used as a Secondary fuel.

1.4 Environmental Policy

See overleaf.

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. The Environmental Co-ordinator is responsible for the co-ordination of all environmental activity at the station. The Environmental Co-ordinator, works with the management team to ensure that:

- The station complies with or betters 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 review cycle, the EMS is effective, is adaptive to changing circumstances and is delivering continuous improvement.

[1] CC4 combined cycle unit comprised one Gas Turbine, CT4 and three steam turbines, G1, G2 and G3.

North Wall Environmental Policy

North Wall Generating Station operates a single Open Cycle Gas Turbine plant and is part of ESB Generation Operations. The nominal output is 109MW from an open cycle gas turbine plant which burns natural gas with distillate oil as back up. The station is situated on Alexandra Basin on the North Wall of the River Liffey. This is an environmentally important area with Sandymount Strand/Tolka Estuary a Special Protected Area for Birds and North Dublin Bay a designated Natural Heritage Area, nearby.

Our Commitment

We at North Wall power station commit ourselves to meeting customer demand for electricity in a safe, efficient and environmentally responsible manner, while recognising the technical and financial constraints within which we must operate. We strive for continual improvement in our environmental performance and prevention of pollution through the operation of the station's environmental management system. Environmental risks are minimised by the use of appropriate technologies and working procedures. Emergency procedures are in place to deal with major hazards. We are committed to maintaining our ISO 14001 accreditation and to operating within the terms of our Greenhouse Gas Permit and Integrated Pollution Prevention and Control Licence.

We carry out our activities in conformance with the policy principles outlined below:

Responsibilities and Accountabilities
Regard the achievement of the station's annual environmental targets and objectives as a line management responsibility requiring personal involvement and commitment from all management and staff.

Compliance Issues
Ensure compliance with all relevant legal requirements and conformance with all relevant in-house standards and procedures relating to environmental protection with proper monitoring, reporting and control systems in place.

Use of Natural Resources
Use environmental resources, including air, land and water in a sustainable manner and make every effort to conserve finite natural resources by efficient use and careful planning.

Energy Conservation
Minimise energy use by maintaining efficiency both in terms of our generation activity and our own usage, through a programme of assessment and review.

Waste Materials
Reduce waste generation as far as possible and ensure proper management of waste storage and disposal to minimise its impact on the environment. Evaluate opportunities to recycle and reuse waste material.

Environmental Awareness
Actively promote environmental awareness among staff through communication and training programmes and consider the impacts on and concerns of the local community as part of this training.

Suppliers of goods and on Site Services
Ensure that appropriate suppliers of goods and on site services assess the environmental impacts in their dealings with North Wall. We will also encourage responsible environmental management and insist that they conform to all relevant environmental legislation. For suppliers of on site services we will advise them of our site specific environmental policy and relevant environmental documentation.

Auditing and Reporting
Conduct regular internal and external audits to assess the level of performance and compliance with the environmental requirements of the company and regulatory bodies. Report as appropriate, to staff, regulatory bodies and other interested parties.

Review
Carry out regular reviews of environmental policies and practices in the light of experience and make improvements where appropriate. Ensure high levels of awareness of any changing legislation or applicable technologies.

Sustainability
Embracing ESB's Sustainability Charter and promoting Sustainability in the workplace and at home.

Signed:

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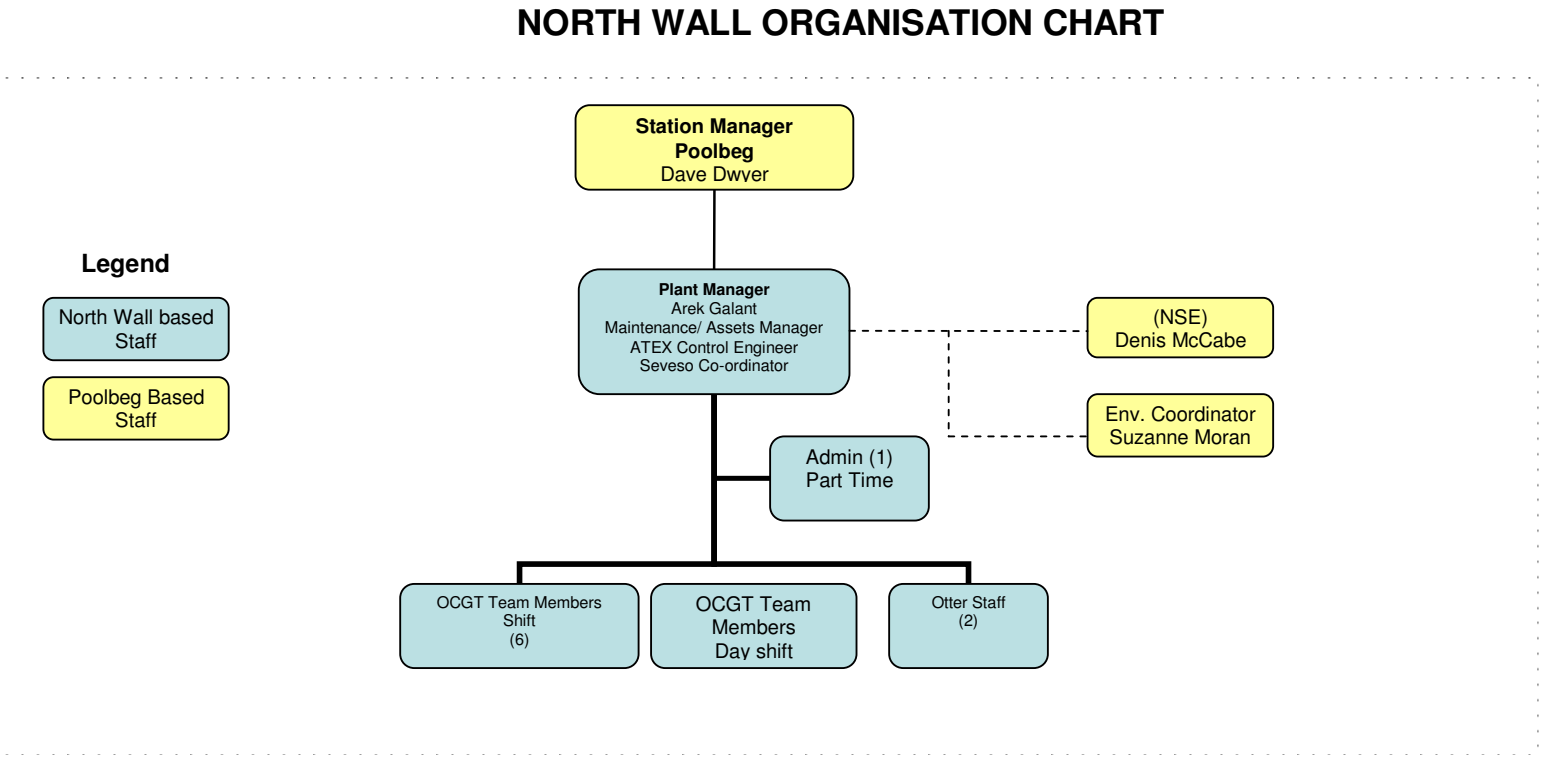
Arkadiusz Galant, Plant Manager, March 2013

This Policy has Corporate Body endorsement

Figure 1.1 Company Organisation Chart for Environmental Management



Shared group staff (Financial Asset Manager, HR Business Partner and Civil Engineer) are not shown on the above chart.

2 Summary Information

2.1 Emission to Water

As CC4 has not operated since August 2010 there are no longer process Emission to Water and therefore monitoring has ceased at the following Emission points. This has been reflected in the revised licence P0579 – 03.

SW1 - Condenser Cooling Water
SW2 – Water Treatment Neutralisation Tank

2.2 Emissions to Sewer

Following the closure of CC4 and reduced number of staff on site, the laboratory is no longer in use and all environmental samples requiring analysis are sent for external analysis to laboratories accredited to 17025.

Note: there are only three quarterly sample results below which reflect the lab closure and as per the revised licence, monitoring at S1 will no longer occur.

In accordance with IPPC Licence No. P0579-02, Emissions to Sewer were monitored in accordance with Schedule 3 (i) having regard to Licence Conditions 3 and 7. There is one licensed emission points S1, Laboratory Drains. The monitoring parameters for emissions to sewer were:

- Temperature
- pH
- Chemical Oxygen Demand
- Biochemical Oxygen Demand
- Suspended Solids
- Total Phosphorus (as P)
- Detergents (as MBAS)
- Oils, Fats and Greases
- Sulphates

A grab sample was taken quarterly and analysed for the above parameters, the results for the quarters in the reporting period are tabulated below.

Table 2.1: S1 (Laboratory Drains) Monitoring Results

Parameter	Unit	ELV	Quarter 1	Quarter 2	Quarter 3
Temperature °C	^{o} C	42 ^{0} C	10.9	17.8	18.9
pH		6-10	8.0	7.8	7.7
Chemical Oxygen Demand	mg/l	2,000	< 7	< 7	9.6
Biochemical Oxygen Demand	mg/l	1,000	1.6	2.1	0.3
Suspended Solids	mg/l	1,000	< 1	< 1	< 1
Phosphorus (As PO_4)	mg/l	50	n/d	n/d	n/d
Detergents (As MBAS)	mg/l	100	0.07	0.06	< 0.05
Oils, Fats & Greases	mg/l	100	< 1	< 1	< 1
Sulphates (SO_4)	mg/l	400	21	17	18

Table 2.2: Summary Table of Emissions to Sewer

Parameter	Units	Mass Emissions					
		2008	2009	2010	2011	2012	ELV
Volume	m^3	40*	40*	40*	1*	1*	1460
Temperature	^{o}C	11	14.55	17.7	15.6	15.9	42
pH		7.8	7.3	7.7	8.1	7.8	6-10
BOD	kg	0.19	0.196	0.01	0.001	0.001	1095
COD	kg	1.06	0.352	0.28	0.004	0.003	2190
Suspended Solids	kg	0.00	0.00	0.04	0.00	n/d	876
Total Phosphorus (As P)	kg	0.04	0.028	0.01	0.0001	n/d	73
Sulphates (As SO_4)	kg	0.07	0.028	0.97	0.019	0.019	584
Oils, Fats & Greases	kg	n/d	n/d	0.04	n/d	n/d	146
Detergents (as MBAS)	kg	n/d	0.0044	0.0024	0.03	< 0.001	146

*Estimate – Volume of Emissions to Sewer has greatly reduced for 2011 as a result of CC4 closure. 2012 based on 3 quarterly results due to lab closure.

Figure 2.1 Summary of Mass Emissions to Sewer

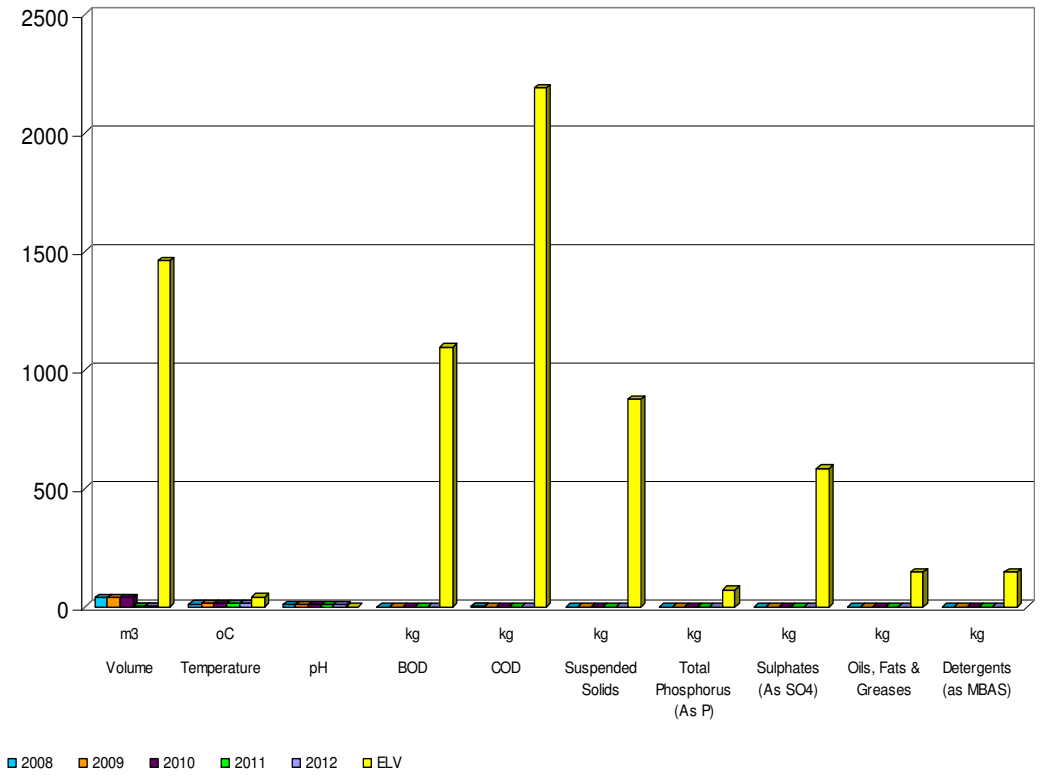


Table 2.3 Emissions to Sewer Non-compliance Summary

Date	Non-compliance	Cause	Corrective Action
	None		

2.3 Emissions to Atmosphere

Following the closure of CT4 there are no further Emissions from Emission Point A1-1 this is reflected in the revised licence.

Emission Point A1-2 (Combustion Turbine CT5)

This unit does not have CEMs as historically the running load factor was very low due to the unit only running at peak times or as required. Two sets of quarterly testing were carried out in 2012 and the reports are included in Appendix I and II.

Table 2.4: Summary Table of Emissions to Atmosphere - A1- 2 (CT5)

Parameter	Mass Emissions 2008	Mass Emissions 2009	Mass Emissions 2010	Mass Emissions 2011	Mass Emissions 2012	Licensed Mass Emissions
Nitrogen Oxides Kgs (as NO_2)	35,175	9,909	108,141	207,054[2]	74,239	4,112,294

The corollary of table 2.4 above is that CT5, emissions point A1-2 saw an increase in running during the last 5 months of 2010 and throughout 2011 following the closure of CT4 which has resulted in an increase in NOx emissions as seen in the above table. In 2012 CT5 running hours were significantly reduced since 2011.

Table 2.5: Emissions to Atmosphere Non-compliance Summary

Date	Non-compliance	Cause	Corrective Action
	None		

[2] Error in calculation of NOx in 2011 – corrected figure in Table 2.4.

2.4 Surface Water Discharge Monitoring

Surface water discharges are monitored in accordance with Schedule 5(i) of the IPPC Licence. There are three Surface Water Discharge Monitoring points SW3, SW4, SW5.

A visual inspection is carried out weekly at the surface water discharge points. The surface of chamber one in the interceptors is skimmed and checked for oil. Quarterly monitoring includes for pH, temperature, BOD, suspended solids, ammonia, phosphate, mineral oil and oils, fats and greases.

Quarterly monitoring results for SW3 and SW4 are presented in the tables below.

SW5 is a sump at the boiler blowdown tank, the boiler is no longer operational and the sump was emptied by our waste contractor in August 2011, as a result no further samples are obtainable from this monitoring point from Q3 2011. This emission point has been removed in the revised licence.

Table 2.6: Surface Water Monitoring Results for Emission Point SW3 (Interceptor located close to canteen)

Parameter	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4
pH		7.4	7.3	7.1	7.4
Temperature	°C	9.0	18.0	17.6	7.5
BOD	mg/l	3.9	0.1	3.7	3.3
Suspended Solids	mg/l	2.0	2.4	3.0	n/d
Ammonia	mg/l	0.02	n/d	2.7	1.14
Phosphate	mg/l	n/d	0.1	0.0	0.2
Mineral Oil	mg/l	0.78	< 0.01	0.08	0.2
Oils, Fats and Greases	mg/l	1.1	< 1	1.6	< 1

Table 2.7 Surface Water Monitoring Results Emission Point SW4 (Interceptor at Fuel Pump House)

Parameter	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4
pH		7.6	7.6	7.5	7.3
Temperature	°C	8.6	18.1	17.0	9.5
BOD	mg/l	5.8	1.4	2.3	4.0
Suspended Solids	mg/l	3.4	2.0	1.8	n/a
Ammonia	mg/l	0.1	0.22	0.82	1.01
Phosphate	mg/l	0.1	n/d	0.1	< 0.2
Mineral Oil	mg/l	< 0.01	< 0.01	< 0.01	0.12
Oils, Fats and Greases	mg/l	< 1	< 1	< 1	< 1

n/d: non detect
n/a: not applicable – not requried under revised licence P0579-03

2.5 Fuel Use and Energy Input Summary

2.5.1 Fuel Use

Table 2.8 Run hours on Natural Gas and Distillate Oil

Unit	Run Hours on Natural Gas				
	2008	**2009**	**2010**	**2011**	**2012**
CT4	2,279	2,291	1,795	-	-
CT5	174	21	2,575	2673	1505
Unit	**Run Hours on Gas Oil**				
	2008	**2009**	**2010**	**2011**	**2012**
CT4	37	2	1	-	-
CT5	22	14	75	1*	4*

*Testing purposes only

Figure 2.2 Run hours on Natural Gas

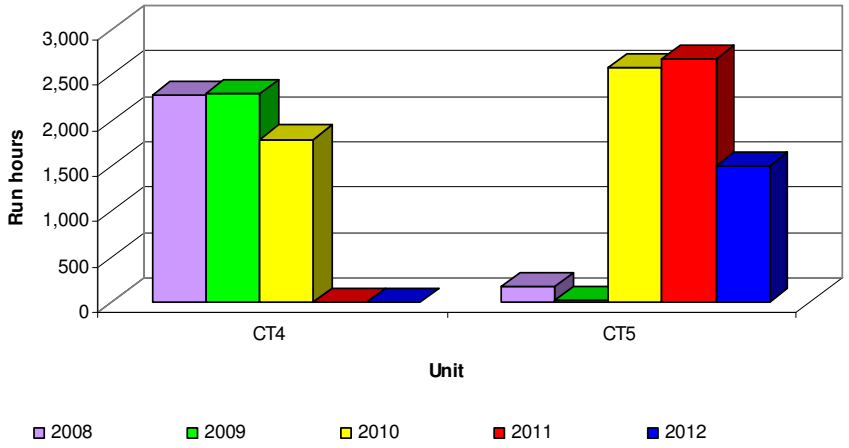
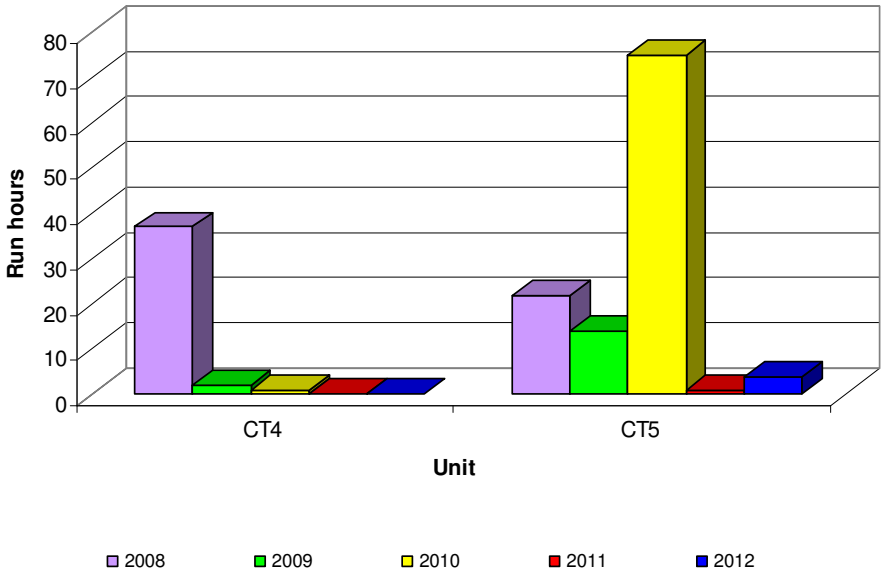


Figure 2.3 Run hours on Gas Oil

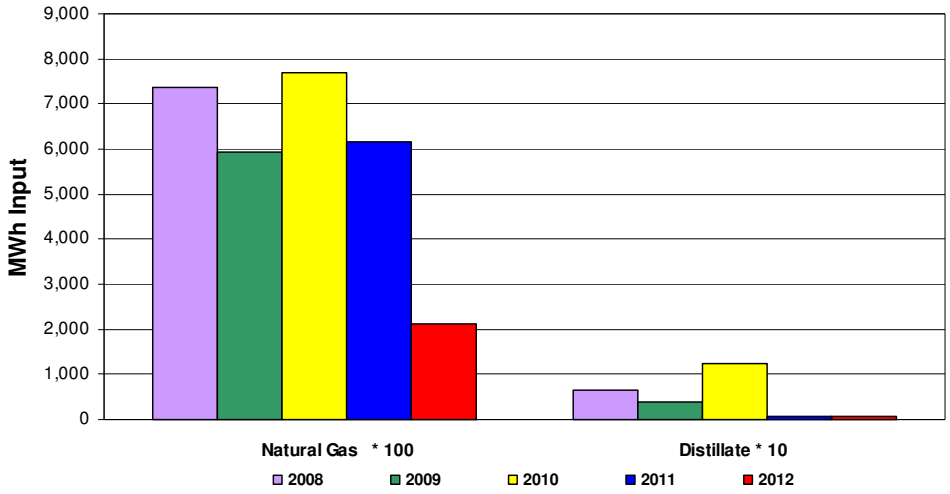


2.5.2 Energy Input

Table 2.9 Energy Consumption

Fuel input (MWh)	2008	2009	2010	2011	2012
Natural Gas	735,359	592,038	770,240	616,280	211,228
Distillate Oil	6,633	4,028	12,548	536	664

Figure 2.4 Energy Consumption



Decrease in energy consumption in 2012 is due to reduced running hours.

2.6 Water Consumption

Water consumption increased in 2012 this was due to a water leak on site that was repaired in June 2012.

Table 2.10 Water Consumption

Water Consumption m^3	2008	2009	2010	2011	2012
	36,993	19,427	12,749	6,131	7,199*

2.7 Environmental Incidents and Complaints

2.7.1 Reportable Incidents

There was one incident reported to the Agency in 2012

Table 2.11 Incidents

Date	Incident Description	Action Taken	Authorities Contacted
22/05/2012	Transformer Oil Leak During a routine bund inspection, oil was discovered in the bund of Transformer T 42 (This is a redundant transformer onsite) .	Following discovery of the transformer oil leak, ESBs waste contractor was called to site immediately to remove the oil and oil contaminated stones from the bund. The bund and transformer were power washed following removal of oil and stones to ensure no oily rain water residues can occur in the bund. Other redundant non strategic transformers onsite were also drained following this leak.	EPA contacted 22/05/2012

2.7.2 Complaints

There were no complaints during 2012

3 Management of the Activity

3.1 Schedule of Objectives and Targets 2013 (5 Year)

Ref	Objective	Target 2013 - 2018
1	Ensure 100% compliance with IPPCL	• **2013- 2018:** Implement and maintain the conditions of IPPCL through our EMS, monitoring, reporting and achieving targets set out in our EMP. • **2013:** Carry out emissions monitoring on CT5. (This may prove difficult due to the amount of running which may take place in 2013) • **2013**: Consider licence implications if NORA lease oil farm. • **2013:** Revised RMP and ELRA to be carried out. • **2013/2014** Class 1 interceptors to be installed on site.
2	Identify and implement opportunities for improvements in energy usage	• **2013:** Continue to track in house energy use via the DCS system. • **2013:** Ensure lighting, heating and water use are minimised on site. • **2013:** Compressor washes to be carried out every six months. • **2013- 2018:** An energy audit will be repeated at intervals as required by the Agency.
3	Reduce the potential for discharge to surface and ground water.	• **2013:** Groundwater monitoring and investigations to be carried out as agreed with the Agency. • **2013:** Groundwater Remedial Options to be progressed as agreed with the Agency. • **2013:** Review underground tank and pipeline integrity reporting requirements.
4	To identify improvements in waste management through ongoing assessment of waste streams and initiatives within the station to improve staff awareness.	• **2013 - 2018** Monitor and set targets for waste recycling on site. • **2013:** Recycling target 30% as collected. (This includes for General waste, recyclables, timber, glass and WEEE)
5	Water Usage Reduction	• **2013- 2018:** Minimise water use on site. • **2013:** Target: 5% Reduction in 2012 use. • **2013:** Monitor monthly and carry out repairs as required.
6	Training	• **2013:** Carry out as per EMP and training plan.

3.2 Environmental Management Program Report 2012

Ref	Objective	Target	Reason	Project Summary	Resp.	Status	Date Due
1.1	To ensure 100% compliance with IPPCL.	Implement required monitoring/recording.	To ensure compliance with licence by implementing required measurement and reporting of emissions.	Quarterly monitoring of CT5 should continue if possible and in particular if the unit is operated continuously for any significant period in a quarter.	T & E	Testing carried out in July and December. Reports included in AER Appendix.	Q 4
1.2				Request annual noise monitoring at North Walls NSLs to be discontinued under licence Condition 12.5 due to difficulty in obtaining results which reflect actual background noise emitted from station.	SM	Submission to discontinue NSL monitoring accepted by EPA.	Q 2
1.3				Complete Residual Management Plan J:\Integrated Pollution Control Licence\RMP\North Wall RMP 2012.xls	AS/SM	Resins removed from WTP for disposal, lab chemicals reused/disposed and lube oils removed from steam units and CT4.	Q 4
1.4				New RMP and ELRA to be completed for site.	SM	This work requires to be tendered in 2013 due to the costs of carrying out reports.	Q 4
1.5				Consider implications if NORA lease tank farm – will need to remove from licence boundary and carry out site investigation prior to handing over.	RS/SM	Carry forward to 2013, NORA discussions ongoing in relation to leasing the oil farm.	Q 4

Ref	Objective	Target	Reason	Project Summary	Resp.	Status	Date Due
2.1	Identify areas for improvement in Energy Efficiency	Energy usage improvements	To optimise Energy usage and reduce CO2 emissions.	Continue to monitor energy usage via the DCS and identify if any improvements can be made. DCS System in place to monitor energy usage in admin/control room/workshops. https://portal.dcsenergysavings.com	JN/SM	Monitored monthly and reported in monthly report.	Q 4
2.2				Efficiency Test to be carried out on CT5 following hot gas path inspection. Emissions testing to be carried out during this testing.	T & E	To be carried out after CT5 outage. Outage finished 5th July. Complete.	Q 2
2.3				Carry out compressor washes every six months.	SMs	Wash carried out before overhaul. In CMMS for scheduling every six months.	Q 4
2.4				Raise awareness re switching off lights and review lighting use on site. Investigate use of PIRs in basement.		Not carried out due to changes in structure on site and reducing staff numbers.	Q 4
3.1	Reduce the potential for discharge to surface and ground water	Biannual borehole monitoring.	To monitor ground water contamination on site.	Carry out recommendations as per URS report. 1. Two rounds of borehole monitoring report to be carried out to further assess contaminant trends on site. 2. Site practices and activities at MW1, MW3 and MW6 to be reviewed to identify any potential sources of contamination.	SM	Groundwater Investigations ongoing as per EPA communications. Remedial Options Assessment draft report and results from testing and additional boreholes installation in Q4 2012 completed and to be submitted to the Agency.	Q 4
3.2		Ensure no contamination in surface water discharges	Surface Water Monitoring	Eliminate the source of oil at SW3 Canteen Interceptor.	AS/SM	Source identified and isolated.	Q 1

Ref	Objective	Target	Reason	Project Summary	Resp.	Status	Date Due
4.1	Identify improvements in waste management.	To improve current waste practices by ensuring all recyclable materials are segregated and recycled.	To improve waste management on site by encouraging good waste management by all staff and contractors.	Waste Recycling target – 30% This target includes for general waste, recyclables, timber, glass and WEEE. Review and track monthly.	GSS	41% non hazardous waste recycled including metal waste. Waste quantities significantly reduced due to reduced number of staff on site. (2011 - 27% waste recycled)	Ongoing
5.1	Reduction in water usage	To reduce the amount of water used on site.	To optimise water usage in the station	Target: 5% reduction in 2011 use (6,131 m3) Tracked monthly at EMG meetings www.meter.ie used for tracking use. 2012 usage: 7199 m3	AS/SM	Target not achieved due to leaks which were repaired in June 2012. Leak detection survey carried out by external contractor and a number of leaks were pinpointed and repaired.	
6.1	Training	Carry out Environmental Training	To ensure that all staff are aware of our IPPCL and Environmental aspects associated with their work on site.	Environmental Awareness Training	SM	Awaiting new station structure embedded before carrying out training. Carried over to 2013.	Q 4
6.2				Emergency Preparedness - Weekend training now taking place.	SMs	Due to site personnel changes, format of emergency training to be restructured.	Ongoing
6.3				Emergency Exercise with external agencies	AS	Transformer fire desktop scenario completed with operations staff.	Q 4
6.4				Following new station structure consider all the Environmental training needs.	SM	Env Liaison person now appointed.	Q 4
6.5				Contractor Management	SM	Very limited no. of contractors now in use on site. Consider if required in 2013.	Q 4

3.3 Environmental Management Program 2013 Proposal

Ref	Objective	Target	Reason	Project Summary	Resp.	Status	Date Due
1.1	To ensure 100% compliance with IPPCL.	Implement required monitoring/recording.	To ensure compliance with licence by implementing required measurement and reporting of emissions.	Biannual monitoring of CT5 to take place. (This may prove difficult due to the amount of running which may take place in 2013)	T&E/SB		Q 4
1.2				Noise - Consider any items in relation to noise reduction on site if required. (Infrequent plant running so noise is not an issue)	SM	Noise currently not an issue on site.	Q 4
1.3				Complete items as per Residual Management Plan. J:\Integrated Pollution Control Licence\RMP\North Wall RMP 2012.xls	PM SM		Q 4
1.4				New RMP and ELRA to be completed for site.	SM		Q 2
1.5				Study for replacement Interceptors to be carried out. (Interceptor replacement will require tendering) Drainage survey should also be completed as part of this work.	PM/SM/ Civil Engineer		Q 4
1.6				Consider implications if NORA lease tank farm – will need to remove from licence boundary and carry out site investigation prior to handing over.	PM SM	.	Q 4

Ref	Objective	Target	Reason	Project Summary	Resp.	Status	Date Due
2.1	Identify areas for improvement in Energy Efficiency	Energy usage improvements	To optimise Energy usage and reduce CO2 emissions.	Continue to monitor energy usage via the DCS and identify if any improvements can be made. DCS System in place to monitor energy usage in admin/control room/workshops https://portal.dcsenergysavings.com	SM	Monitored monthly and reported in monthly report.	Ongoing
2.2				Carry out compressor washes every six months.	PM	In CMMS for scheduling	Q 4
2.3				Ensure resource use such as lighting, heating and water are at a minimum for the numbers on site.	PM	.	Q 3
3.1	Reduce the potential for discharge to surface and ground water	Biannual borehole monitoring.	To monitor ground water contamination on site.	Remedial options appraisal to be submitted and agreed with Agency. Continue with biannual monitoring and other monitoring and investigations as requested by EPA.	SM		Q 4
3.2		Ensure no contamination in surface water discharges	Bund Testing	Test bunds as per test schedule. (Portable bunds all due for testing in October 2013) Repairs to be carried out to lining of oil farm bund as per civil engineers recommendations. Integrity of diesel line and underground tanks to be reviewed.(FSD and compressor wash tanks)	PM SM PG		Q 2 Q 2 Q 4
4.1	Identify improvements in waste management.	To improve current waste practices by ensuring all recyclable materials are segregated and recycled.	To improve waste management on site by encouraging good waste management by all staff and contractors.	Waste Recycling target – 30 % This target includes for general waste, recyclables, timber, glass and WEEE. Track recycling rate in monthly report.	NW team members SM		Ongoing

Ref	Objective	Target	Reason	Project Summary	Resp.	Status	Date Due
5.1	Reduction in water usage	To reduce the amount of water used on site.	To optimise water usage in the station	7199 m3 usage for 2012. Corporate Sustainability target is 5% reduction on 2012 usage – this should be achieved following the investigations/repairs completed in 2012. Consider if there is scope for further reductions. Track usage in monthly Environmental report. Data available on www.meter.ie	PM SM		Ongoing
6.1	Training	Carry out Environmental Training	To ensure that all staff are aware of our IPPCL and Environmental aspects associated with their work on site.	Environmental Awareness training and waste management.	SM		Q 2
6.2				Emergency Evacuation and procedures.	PM		Q 3

4 Licence Specific Reports

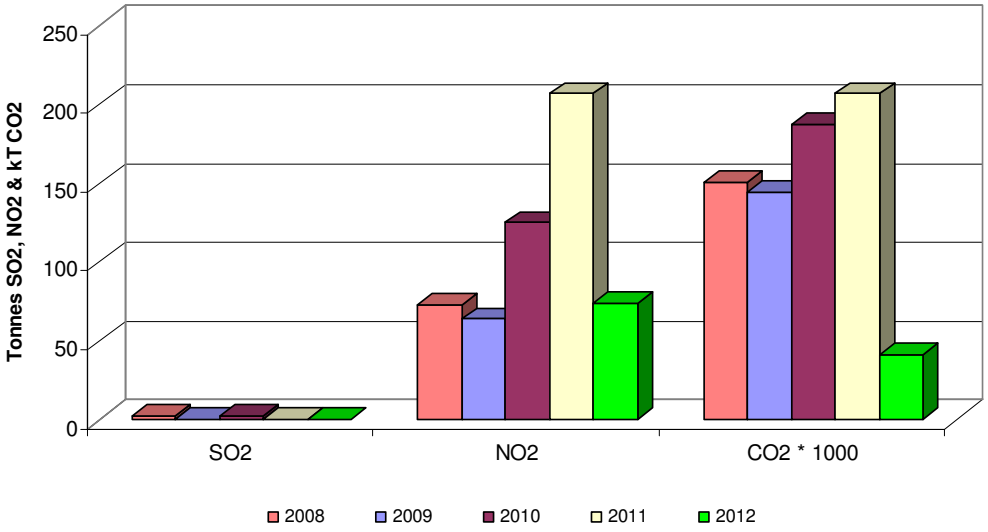
4.1 Total Annual Emissions of SO_2, NO_x and CO_2

Sulphur Dioxide is calculated from fuel use. CO_2 was calculated from fuel use and analysis as per ETS procedures. Nitrogen Oxides are calculated from the amount of MWh generated and a factor relating to the run load of the unit and test data for emission point A1-2.

Table 4.1 Annual Emissions of SO_2, NO_x and CO_2,

Parameter	2008 (Tonnes)	2009 (Tonnes)	2010 (Tonnes)	2011 (Tonnes)	2012 (Tonnes)
SO_2	2.9	0.66	2.2	0.1	0.1
NO_2	73	64	125	207	74
CO_2	150,686	144,318	187,650	127,184	41,371

Figure 4.1 Annual Emissions of SO_2, NO_x and CO_2



Reduction in 2012 emissions due to only CT5 reduced running.

4.2 Borehole Monitoring Results

Groundwater investigation work has been ongoing during 2012, groundwater reports will be sent under separate cover.

4.3 List I and List II Substances

As CC4 is no longer in operation ammonia and hydrazine use has been discontinued on site as this was used for boiler water conditioning. The water treatment plant is also no longer in operation.

4.4 Noise Monitoring

Noise monitoring at NSLs is no longer required due to the difficulties in obtaining credible readings from the station due to North Walls location. This has been agreed with the Agency during 2012.

4.5 Bund Retention Test Report

Bund location	Result (Pass/Fail)	Date of Inspection	Next Inspection Due
House Transformer HoT 11 (10kV-380kV) BUND	Pass	12/07/2011	11/07/2014
House Transformer HoT 12 (10kV-380kV) BUND	Pass	18/07/2011	17/07/2014
House Transformer HoT 13 (10kV-380kV) BUND	Pass	18/07/2011	17/07/2014
Main Transformer T41 BUND	Pass	Oil drained from transformer, transformer redundant.	
Main Transformer T42 BUND	Pass	Oil drained from transformer, transformer redundant.	
Main Transformer T43 BUND	Pass	Oil drained from transformer, transformer redundant.	
Unit Transformer UT4 BUND	Pass	25/07/2011	24/07/2014
Unit Transformer UT5 - BUND	Pass	05/01/2011	04/01/2014
House Transformer HoT4 - BUND	Pass	27/07/2011	26/07/2014
House Transformer HoT5 - BUND	Pass	10/08/2011	09/08/2014
Pump House Transformer PHT12 - BUND	Pass	Oil drained from transformer, transformer redundant.	
Pump House Transformer PHT13 - BUND	Pass	Oil drained from transformer, transformer redundant.	
House Transformer (Spare) (10kV-380kV) BUND	Pass	16/08/2011	15/08/2014
ST41 Transformer - BUND	Pass	08/08/2011	07/08/2014
ST42 Transformer - BUND	Pass	08/08/2011	07/08/2014
T2004/5 Transformer - BUND	Pass	25/07/2011	24/07/2014
ST 11 Transformer (38kV-3.3kV) - BUND	Pass	27/07/2011	26/07/2014
Neutralisation Sump – BUND	Pass	Sump emptied cleaned and decommissioned	
Hydrazine Storage Tank - BUND	Pass	Hydrazine tank emptied cleaned and decommissioned	
Waste Oil Storage - BUND	Pass	14/01/2011	13/01/2014
Diesel Tank Farm Inspection	Pass	21/11/2012	20/11/2014
220 kV Cable Oil Tank - BUND	Pass	26/10/2011	25/10/2014

All chemstores/portable/mobile bunds on site have also all been tested and passed retention tests.

4.6 Residual Management Plan Progress Report

Introduction

The CC4 combined cycle unit, which had previously been in operation on the site in North Wall suffered a compressor failure on 5th August 2010, a decision not to invest in the unit was made in January 2011, effectively closing the combined cycle unit.

CT5 is still operational on site, it is a simple or open cycle combustion turbine, used for peak system demands or unusual non-availability of other plants.

CT5 is normally fired on Natural Gas supplied from the national gas network. Distillate Oil is used as a Secondary fuel.

A revised DMP and ELRA will be submitted to the Agency in 2013 to take into account CC4 closure.

Following further decommissioning or demolition on site a further RMP report and full Environmental summary report would be issued to the EPA.

The following details what has been completed to date as part of the Residual Management Plan due to CC4 closure.

Chemicals and Oil Removal

1. Water Treatment Plant

As the water treatment plant is no longer required bulk chemicals and resins were removed and disposed appropriately.

Bulk Chemicals

All bulk chemical and tank pipelines have been emptied, cleaned and decommissioned.

- Sulphuric acid bulk and dilute tanks and pipelines
- Caustic soda (sodium hydroxide) bulk and dilute tanks and pipelines
- Hydrazine bulk tank and dilute tanks and pipelines.
- Ammonia dilution tank and pipelines. Concentrated ammonia carboys were disposed.

Resins

All ion exchange resins from the water treatment plant were removed.

2. Lab Chemicals

All lab chemicals have been disposed or sent to ESB locations for reuse. Environmental analysis is now being sent externally to laboratories accredited to ISO17025.

3. Tank and Sump Cleaning

The following tanks were cleaned and effluents removed for disposal.

- Neutralisation Sump
- Blowdown Tanks

4. Lube Oil

Lube oil has been removed from CT4, the steam turbine units and the boiler feed pump. 17 tonnes of lube oil was removed from boiler feed pumps, turbines etc

A quantity of lube oil in stock was transferred to ESB Poolbeg or other ESB locations.

Other lube oils no longer required were disposed.

5. Transformer Oil

5 transformers have been drained of oil - T41, T42, T43, PHT 12 and PHT 13. Some of this oil was reused by ESB Networks and the remainder disposed.

6. Gases

Any gas bottles surplus to requirements for CT5 were returned to the supplier.

Waste Disposal

All waste referred to above was disposed appropriately by approved waste contractors and details of waste disposed is included in the following table.

Various oils and small chemical agents would have been disposed in the last two years as part of the RMP and are included in waste details that are submitted in the PRTR. The following table refers to the major hazardous items disposed.

Residual Management Plan Hazardous Waste Details

European Waste Catalogue Code	Description of Waste	Hazardous (Yes/No)	Quantity (t/year)	Disposal/ Recovery Code	Location of Disposal/ Recovery	Name of Waste Disposal Recovery Contractor	Waste Permit Details and Issuing authority.
06 02 03*	Ammonia and ammonia washings	Yes	0.82	R1-	Germany	Enva Environmental (Shannon)	EPA Waste Licence No. WO41-1
16 05 08*	Hydrazine and hydrazine washings.	Yes	3.66	R1	Germany	Enva Environmental (Shannon)	EPA Waste Licence No. WO41-1
06 02 04*	Sodium Hydroxide	Yes	106.62	D9	Ireland	Enva Environmental (Shannon)	EPA Waste Licence No. WO41-1
06 01 01*	Sulphuric Acid	Yes	12.81	R6	Belgium	Enva Environmental (Shannon)	EPA Waste Licence No. WO41-1
16 10 02	Blowdown sump cleaning (water with traces of ammonia)	No	3.58	R9	Ireland	Enva Environmental (Portlaoise)	EPA Waste Licence No. WO184-1
16 05 06*	Lab Chemicals	Yes	0.08	R1	Germany	Enva Environmental (Shannon)	EPA Waste Licence No. WO41-1
19 09 05	Resins	No	21.26	R5	Ireland	Enva Environmental (Portlaoise)	EPA Waste Licence No. WO184-1
13 02 05*	Lube Oil	Yes	16.74	R9	Ireland	Rilta Environmental	EPA Waste Licence No. WO192-03
13 03 07*	Transformer Oil	Yes	64.24	R9	Ireland	Enva Environmental	EPA Waste Licence No. WO184-1

4.7 Annual statement of measures in relation to the prevention of Environmental damage.

In the event of major Environmental accidents/incidents on site ESB have an indemnity policy which will cover such events.

A Residual Management Plan (RMP) and Environmental Liability Risk Assessment (ELRA) were prepared for the site and submitted to the EPA previously. These both require updating following the closure of North Wall CC4. As per the revised licence for North Wall a DMP and ELRA will be prepared in 2013 and submitted to the Agency for agreement.

Financial provisions which include for Environmental remediation are in place in the event of closure of North Wall station. These will be included in the ELRA to be submitted.

APPENDIX I

PRTR

Environmental Protection Agency

Guidance to completing the PRTR workbook

AER Returns Workbook

Version 1.1.15

REFERENCE YEAR	2012

1. FACILITY IDENTIFICATION

Parent Company Name	Electricity Supply Board
Facility Name	Electricity Supply Board
PRTR Identification Number	P0579
Licence Number	P0579-03

Waste or IPPC Classes of Activity

No.	class_name
2.1	The operation of combustion installations with a rated thermal input equal to or greater than 50MW

Address 1	North Wall Generating Station
Address 2	Alexandra Road
Address 3	Dublin 1
Address 4	
	Dublin
Country	Ireland
Coordinates of Location	-6.21025 53.3495
River Basin District	IEEA
NACE Code	3511
Main Economic Activity	Production of electricity
AER Returns Contact Name	Suzanne Moran
AER Returns Contact Email Address	Suzanne.moran@esb.ie
AER Returns Contact Position	Environmental Coordinator
AER Returns Contact Telephone Number	016189677
AER Returns Contact Mobile Phone Number	0879692713
AER Returns Contact Fax Number	016388181
Production Volume	35725.0
Production Volume Units	MWhrs
Number of Installations	1
Number of Operating Hours in Year	8760
Number of Employees	8
User Feedback/Comments	
Web Address	www.esb.ie

2. PRTR CLASS ACTIVITIES

Activity Number	Activity Name
1(c)	Thermal power stations and other combustion installations

3. SOLVENTS REGULATIONS (S.I. No. 543 of 2002)

Is it applicable?	No
Have you been granted an exemption ?	No
If applicable which activity class applies (as per Schedule 2 of the regulations) ?	
Is the reduction scheme compliance route being used ?	

4. WASTE IMPORTED/ACCEPTED ONTO SITE

Guidance on waste imported/accepted onto site

Do you import/accept waste onto your site for on-site treatment (either recovery or disposal activities) ?	No

This question is only applicable if you are an IPPC or Quarry site

4.1 RELEASES TO AIR Link to previous years emissions data

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO AIR						Please enter all quantities in this section in KGs			
POLLUTANT		METHOD				QUANTITY			
			Method Used		A1-2				
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
08	Nitrogen oxides (NOx/NO2)	C	OTH	As per ESB calculations.	74239.0	74239.0	0.0	0.0
05	Nitrous oxide (N2O)	C	OTH	As per VGB expert group and ESB calculations	709.33	709.33	0.0	0.0
62	Benzene	C	OTH	As per VGB expert group and ESB calculations	3.59	3.59	0.0	0.0
01	Methane (CH4)	C	OTH	As per VGB expert group and ESB calculations	2831.78	2831.78	0.0	0.0
02	Carbon monoxide (CO)	C	OTH	As per VGB expert group and ESB calculations	34496.13	34496.13	0.0	0.0
07	Non-methane volatile organic compounds (NMVOC)	C	OTH	As per VGB expert group and ESB calculations	356.74	356.74	0.0	0.0
21	Mercury and compounds (as Hg)	C	OTH	As per VGB expert group and ESB calculations	0.04	0.04	0.0	0.0
03	Carbon dioxide (CO2)	C	ETS	As per monitoring and reporting protocol.	41371000.0	41371000.0	0.0	0.0
72	**Polycyclic aromatic hydrocarbons (PAHs)**	C	OTH	As per VGB expert group and ESB calculations	0.0006	0.0006	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			QUANTITY			
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION C : REMAINING POLLUTANT EMISSIONS (As required in your Licence)

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			QUANTITY			
			Method Used					
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

Additional Data Requested from Landfill operators

For the purposes of the National Inventory on Greenhouse Gases, landfill operators are requested to provide summary data on landfill gas (Methane) flared or utilised on their facilities to accompany the figures for total methane generated. Operators should only report their Net methane (CH4) emission to the environment under T(total) KG/yr for Section A: Sector specific PRTR pollutants above. Please complete the table below:

Landfill: Electricity Supply Board

Please enter summary data on the quantities of methane flared and / or utilised	T (Total) kg/Year	M/C/E	Method Used: Method Code	Method Used: Designation or Description	Facility Total Capacity m3 per hour	
Total estimated methane generation (as per site model)	0.0				N/A	
Methane flared	0.0				0.0	(Total Flaring Capacity)
Methane utilised in engine/s	0.0				0.0	(Total Utilising Capacity)
Net methane emission (as reported in Section A above)	0.0				N/A	

4.2 RELEASES TO WATERS Link to previous years emissions data | PRTR# : P0579 | Facility Name : Electricity Supply Board | Filename : P0579_2012(1).xls | Return Year : 2012 | 28/03/2013 16:02

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

Data on ambient monitoring of storm/surface water or groundwater, conducted as part of your licence requirements, should NOT be submitted under AER / PRTR Reporting as this only concerns Releases from your facility

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT					QUANTITY			
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT					QUANTITY			
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION C : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT					QUANTITY			
			Method Used					
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
				Note:Since closure of CC4 unit in North Wall in 2010 there is no further process emissions to water.	0.0	0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

4.3 RELEASES TO WASTEWATER OR SEWER

Link to previous years emissions data

SECTION A : PRTR POLLUTANTS

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			QUANTITY			
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			QUANTITY			
			Method Used		S1			
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
303	**BOD**	M	OTH	ESB North Wall Procedure NW-EMS11.1-11	0.001	0.001	0.0	0.0
306	COD	M	OTH	External Lab - ISO 6060-1989	0.003	0.003	0.0	0.0
240	Suspended Solids	M	OTH	ESB North Wall Procedure NW-EMS11.1-18	0.0	0.0	0.0	0.0
387	Ortho-phosphate (as P)	M	OTH	ESB North Wall Procedure NW-EMS11.1-07	0.0	0.0	0.0	0.0
343	Sulphate	M	OTH	ESB North Wall Procedure NW-EMS11.1-08	0.019	0.019	0.0	0.0
314	Fats, Oils and Greases	M	OTH	External Lab - Determination of Total Petroleum Hydrocarbons (TPH) in Waters By Infra-Red Spectroscopy	0.0	0.0	0.0	0.0
308	Detergents (as MBAS)	M	OTH	External Lab -Standard Methods for the Examination of Water and Wastewater. 20th Edition. 1998	0.0	0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

4.4 RELEASES TO LAND Link to previous years emissions data | PRTR# : P0579 | Facility Name : Electricity Supply Board | Filename : P0579_2012(1).xls | Return Year : 2012 | 28/03/2013 16:03

SECTION A : PRTR POLLUTANTS

RELEASES TO LAND					Please enter all quantities in this section in KGs		
POLLUTANT		METHOD			QUANTITY		
			Method Used				
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year
					0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

RELEASES TO LAND					Please enter all quantities in this section in KGs		
POLLUTANT		METHOD			QUANTITY		
			Method Used				
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year
					0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

5. ONSITE TREATMENT & OFFSITE TRANSFERS OF WASTE | PRTR# : P0579 | Facility Name : Electricity Supply Board | Filename : P0579_2012(1).xls | Return Year : 2012 | 28/03/2013 15:59

Please enter all quantities on this sheet in Tonnes 0

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the Country	13 05 07	Yes	45.98	oily water from oil/water separators	R9	M	Weighed	Offsite in Ireland	Enva Environmental ,W0184-01,Clonminam Ind. Estate,Portlaoise,Co. Laois,,,Ireland	Clonminam Ind. Estate,Portlaoise,Co. Laois,,,Ireland	Enva Environmental ,W0184-01,Clonminam Ind. Estate,Portlaoise,Co. Laois,,,Ireland	Clonminam Ind. Estate,Portlaoise,Co. Laois,,,Ireland
Within the Country	15 01 06	No	0.48	mixed packaging	R3	M	Weighed	Offsite in Ireland	Midland Waste Disposal,W0131-02	Proudstown,Navan,Co. Meath,,,Ireland		
To Other Countries	15 02 02	Yes	0.91	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	R1	M	Weighed	Abroad	Enva Environmental ,W0184-01	Clonminam Ind. Estate,Portlaoise,Co. Laois,,,Ireland	Lindenschmidt KG ,04 714 98089,Lindenschmidt KG ,Umweitservice Krombacher Strasse 42-46,57223 Kreuztal,,,Germany	Lindenschmidt KG ,Umweitservice Krombacher Strasse 42-46,57223 Kreuztal,,,Germany
Within the Country	17 04 05	No	2.74	iron and steel	R4	M	Weighed	Offsite in Ireland	Hegarty Metal ,WP05-04	Ballysimon Road,Limerick,,,,Ireland		
Within the Country	20 01 08	No	0.24	biodegradable kitchen and canteen waste	R3	M	Weighed	Offsite in Ireland	Midland Waste Disposal,W0131-02	Proudstown,Navan,Co. Meath,,,Ireland		
Within the Country	20 03 01	No	5.88	mixed municipal waste	D1	M	Weighed	Offsite in Ireland	Midland Waste Disposal,W0131-02	Proudstown,Navan,Co. Meath,,,Ireland		
Within the Country	13 02 05	Yes	16.74	mineral-based non-chlorinated engine, gear and lubricating oils	R9	M	Weighed	Offsite in Ireland	Rilta Environmental,W0192-03	Block 402 Grants Drive,Greenogue Business Park,Rathcoole,Co. Dublin,Ireland	Rilta Environmental,W0192-03,Block 402 Grants Drive,Greenogue Business Park,Rathcoole,Co. Dublin,Ireland	Block 402 Grants Drive,Greenogue Business Park,Rathcoole,Co. Dublin,Ireland
Within the Country	13 03 07	Yes	64.24	mineral-based non-chlorinated insulating and heat transmission oils	R9	M	Weighed	Offsite in Ireland	Enva Environmental ,W0184-01	Clonminam Ind. Estate,Portlaoise,Co. Laois,,,Ireland	Enva Environmental ,W0184-01,Clonminam Ind. Estate,Portlaoise,Co. Laois,,,Ireland	Clonminam Ind. Estate,Portlaoise,Co. Laois,,,Ireland
Within the Country	13 08 02	Yes	2.66	other emulsions	R9	M	Weighed	Offsite in Ireland	Enva Environmental ,W0184-01	Clonminam Ind. Estate,Portlaoise,Co. Laois,,,Ireland	Enva Environmental ,W0184-01,Clonminam Ind. Estate,Portlaoise,Co. Laois,,,Ireland	Clonminam Ind. Estate,Portlaoise,Co. Laois,,,Ireland
To Other Countries	16 05 06	Yes	0.078	laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals	R1	M	Weighed	Abroad	Enva Shannon,W041-01	Smithstown Ind. Estate,Shannon,,.Co. Clare,Ireland	Lindenschmidt KG ,04 714 98089,Lindenschmidt KG ,Umweitservice Krombacher Strasse 42-46,57223 Kreuztal,,,Germany	Lindenschmidt KG ,Umweitservice Krombacher Strasse 42-46,57223 Kreuztal,,,Germany
Within the Country	17 05 03	Yes	10.7	soil and stones containing dangerous substances	R5	M	Weighed	Offsite in Ireland	Enva Environmental ,W0184-01 Clonminam Ind. Estate Portlaoise Co. Laois . Ireland	Clonminam Ind. Estate,Portlaoise,Co. Laois,,,Ireland	Enva Environmental ,W0184-01,Clonminam Ind. Estate,Portlaoise,Co. Laois,,,Ireland	Clonminam Ind. Estate,Portlaoise,Co. Laois,,,Ireland
Within the Country	19 09 05	No	21.36	saturated or spent ion exchange resins	R5	M	Weighed	Offsite in Ireland	Enva Environmental ,W0184-01	Clonminam Ind. Estate,Portlaoise,Co. Laois,,,Ireland		

* Select a row by double-clicking the Description of Waste then click the delete button

Link to previous years waste data
Link to previous years waste summary data & percentage change

APPENDIX II

CEMs Reports

ESB THERMAL PERFORMANCE

TEST REPORT

North Wall CT5 Emissions Check 2012

Environmental Protection Agency Licence	IPPC no. P0579-02
Operator	ESB North Wall Power Station
Installation	North Wall Combustion Turbine (CT5)
Licensed Emissions Point	A1-2 (CT exhaust stack)
Reference	2012-North Wall-Emissions Check-08
Work Done	Emissions Check
CEMS Analysers	N/A
Client	ESB Energy International North Wall Generating Station Alexandra Road Dublin 1 County Dublin
Monitoring Organisation	ESB Thermal Performance 27 Lower Fitzwilliam Street Dublin 2
Monitoring Personnel	John Gilmartin
Test Dates	12th July, 2012
Report Date	24th August, 2012
Report Approved By	Arkadiusz Galant Thermal Performance Engineer
Signature	

CONTENTS

Section 1 Executive Summary

Executive Summary – EN 14181 Compliance Report	
Process Operator: ESB Energy International	**EPA Permit Number:** IPPC no. P0579-02
Address: North Wall Generating Station Alexandra Road Dublin 1, County Dublin	**Contact**: Suzanne Moran **Email:** Suzanne.Moran@esb.ie
Tests carried out: Quarterly Emissions Check	**Date of Tests:** 12th July, 2012

CEMS Details	
CEM System N/A	**Certification** N/A
Manufacturer / Supplier N/A	
Address N/A	

Testing Organisation Details	
Testing Organisation ESB Thermal Performance Services	
Address 27 Lower Fitzwilliam Street Dublin 2	**Contact**: Arkadiusz Galant **Telephone**: + 353 1 7021156 **Email:** Arkadiusz.Galant@esb.ie

Report Details		
Report reference:	**Date: 24tth** August, 2012	
Did the tests results comply with the requirements:		Yes
Are there any outstanding corrective actions:		No
Date QAL2 calibration function applied to the CEMS:		N/A
Report submitted by	**Name** **Organisation**	

Section 2 Information about the Regulated Requirements and Provisions for Monitoring

Overview

ESB Thermal Performance carried out a series of emissions measurements at the North Wall CT5 Power Plant on 12th July 2012. This was to fulfil the requirement of an emissions check of the CT5 Unit using a standard reference method (SRM). The NO_x SRM measurements were found to be less than the ELV for minimum load test and base load tests at all times during the July's testing campaign.

An Emissions Check was carried out on the North Wall CT5 Unit. This was the first Emissions Check on this unit completed in 2012 followed by Emissions Check completed in December 2011.

Emission Limit Values

Emissions to atmosphere are regulated under the installation IPPC no. P0579-02 Details are as follows:

Emissions Measurement Point: A1-2

Substances to be monitored: NO_x (NO and NO_2), O_2

The table below presents Emissions Limit Values (in mg/Nm^3) at reference conditions, dry, 15% O_2.

Table 1: CT5 Emissions Limit Values

	Natural Gas	Distillate
NO_x (as NO_2 equivalent)	275	400

Section 3 Information about Monitoring Performed

Monitoring Objectives

Aim of the Monitoring Campaign

The aim of the campaign is to carry out an Emissions Check of the CT5 at North Wall Power Station.

Substances to be monitored

The components to be measured during the tests are oxides of nitrogen (NO_x) and oxygen (O_2).

The licence sets out emission limit values (ELVs) for NO_x, which is defined for the purpose of reporting as the sum of nitrogen II oxide (NO) and nitrogen dioxide (NO_2) concentrations, expressed as an equivalent concentration of NO_2 at a defined reference condition.

The SRM measures NO_x and O_2 at atmospheric conditions, O_2 must be measured for the purpose of correction of measured NO_x to reference condition, and comparison with the specific ELV.

Details of SRM equipment

ESB Thermal Performance Services used a Horiba PG250. This measures NO or NO_x concentration by chemiluminescent technique, CO by NDIR technique and O_2 by zirconia cell technique.

The Horiba PG250 is certified under MCERTS for the measurement of components including NO, SO_2 and O_2, with product certificate number 050056/00 (2005).

The output of the Horiba was logged using a PC running proprietary data acquisition software.

The table below presents the range of reportable species and detail of a SRM used during testing.

Table 2: SRM Analyser details

Species	Instrument	Range	Units
NO/NO_2	Horiba PG 250 Chemiluminescent analyser	0-500	ppm dry
O_2	Horiba PG 250 Galvanic cell	0-25	% v/v dry

Monitoring results

Emission point

Emission Point Reference Number A1-2 (Exhaust from CT5 gas turbine)

SRM:

The measurement location is at a sampling plane in the horizontal exhaust ducting of CT5. This is the nominated official test point for the exhaust from CT5.

Substances to be monitored

SRM:

During the test, NO_x and O_2 concentrations were measured using the SRM.

Deviations

Due to dispatch (number of run hours and unit starts) of the North Wall CT5 OCGT plant and time available for testing, this emissions check was the first emission check in 2012 after the emission check completion in December 2011.

Section 4 Test Results

Test Results

This section presents the emissions test data.

Emissions measurements with a SRM

The table below presents test schedule for the SRM measurements which were taken during the emissions tests.

Table 3: CT5 Test Schedule

Date:	***Start:***	***Stop:***	***Activity:***	***Power Output***
				MW
12/07/2012	11:00	11:30	Minimum load test 1	*21.40*
12/07/2012	11:30	12:00	Minimum load test 2	21.21
12/07/2012	12:00	12:30	Minimum load test 3	21.61
12/07/2012	13:30	14:00	Base load test 2	*102.23*
12/07/2012	14:00	14:30	Base load test 3	102.56
12/07/2012	14:30	15:00	Base load test 4	102.73

The table below presents the SRM measurements which were taken during the minimum load tests. All parameters are presented as dry. The NOx measurements are given in mg/Nm3 at standard reference conditions at 15% O2 and in ppm at standard reference conditions at actual O2.

Table 4: CT5 Minimum Load Test

Minimum Load Test									
Test No	*Date/Time*			*Power*	*CO*	*CO2*	*NOx*	*O2*	*NOx*
	Date	*Start*	*Stop*	*MW*	*ppm*	*vol%*	*ppm*	*vol%*	*mg/Nm3*
Test 1	12/07/2012	11:00	*11:30*	*21.40*	19.80	4.19	24.42	18.14	104.84
Test 2	12/07/2012	11:30	12:00	21.21	*20.17*	*4.18*	*24.28*	*18.14*	*104.44*
Test 3	12/07/2012	12:00	12:30	21.61	19.68	4.22	24.60	18.12	104.89

The table below presents the SRM measurements which were taken during the base load tests. All parameters are presented as dry. The NOx measurements are given in mg/Nm3 at standard reference conditions at 15% O2 and in ppm at standard reference conditions at actual O2.

Table 5: CT5 Base Load Test

Base Load Test									
Test No	*Date/Time*			*Power*	*CO*	*CO2*	*NOx*	*O2*	*NOx*
	Date	*Start*	*Stop*	*MW*	*ppm*	*vol%*	*ppm*	*vol%*	*mg/Nm3*
Test 4	12/07/2012	13:30	*14:00*	*102.23*	4.89	7.98	113.63	15.31	245.44
Test 5	12/07/2012	14:00	14:30	102.56	*4.92*	*7.91*	*113.60*	*15.30*	*245.32*
Test 6	12/07/2012	14:30	15:00	102.73	5.83	8.01	114.75	15.30	247.64

The table below presents the summary of results to fulfil unit requirements according to IPPC Licence in respect of NOx emissions limit.

Table 5: Summary of Results

Test	**Result**
Measured Values at minimum load within the ELV Limits	Passed
Measured Values at base load within the ELV Limits	Passed

ESB THERMAL PERFORMANCE

TEST REPORT

North Wall CT5 Emissions Check 2012

Environmental Protection Agency Licence	IPPC no. P0579-02
Operator	ESB North Wall Power Station
Installation	North Wall Combustion Turbine (CT5)
Licensed Emissions Point	A1-2 (CT exhaust stack)
Reference	2012-North Wall-Emissions Check-12
Work Done	Emissions Check
CEMS Analysers	N/A
Client	ESB Energy International North Wall Generating Station Alexandra Road Dublin 1 County Dublin
Monitoring Organisation	ESB Thermal Performance 27 Lower Fitzwilliam Street Dublin 2
Monitoring Personnel	John Gilmartin
Test Dates	27th December, 2012
Report Date	17th January, 2013
Report Approved By	Arkadiusz Galant Thermal Performance Engineer
Signature	

CONTENTS:

Section 1 Executive Summary

Executive Summary – EN 14181 Compliance Report	
Process Operator: ESB Energy International	**EPA Permit Number:** IPPC no. P0579-02
Address: North Wall Generating Station Alexandra Road Dublin 1, County Dublin	**Contact**: Suzanne Moran **Email:** Suzanne.Moran@esb.ie
Tests carried out: Emissions Check	**Date of Tests:** 27th December, 2012

CEMS Details	
CEM System N/A	**Certification** N/A
Manufacturer / Supplier N/A	
Address N/A	

Testing Organisation Details	
Testing Organisation ESB Thermal Performance Services	
Address 27 Lower Fitzwilliam Street Dublin 2	**Contact**: Arkadiusz Galant **Telephone**: + 353 1 7021156 **Email:** Arkadiusz.Galant@esb.ie

Report Details		
Report reference:	**Date:** 17tth January, 2013	
Did the tests results comply with the requirements:		Yes
Are there any outstanding corrective actions:		No
Date QAL2 calibration function applied to the CEMS:		N/A
Report submitted by	**Name** **Organisation**	

Section 2 Information about the Regulated Requirements and Provisions for Monitoring

Overview

ESB Thermal Performance carried out a series of emissions measurements at the North Wall CT5 Power Plant on 27th December 2012. This was to fulfil the requirement of an emissions check of the CT5 Unit using a standard reference method (SRM). The NO_x SRM measurements were found to be less than the ELV at all times during the December's testing campaign.

An Emissions Check was carried out on the North Wall CT5 Unit. This was the second Emissions Check on this unit completed in 2012 followed by Emissions Check completed in July 2012.

Emission Limit Values

Emissions to atmosphere are regulated under the installation IPPC no. P0579-02 Details are as follows:

Emissions Measurement Point: A1-2

Substances to be monitored: NO_x (NO and NO_2), O_2

The table below presents Emissions Limit Values (in mg/Nm^3) at reference conditions, dry, 15% O_2.

Table 1: CT5 Emissions Limit Values

	Natural Gas	Distillate
NO_x (as NO_2 equivalent)	275	400

Section 3 Information about Monitoring Performed

Monitoring Objectives

Aim of the Monitoring Campaign

The aim of the campaign is to carry out an Emissions Check of the CT5 at North Wall Power Station.

Substances to be monitored

The components to be measured during the tests are oxides of nitrogen (NO_x) and oxygen (O_2).

The licence sets out emission limit values (ELVs) for NO_x, which is defined for the purpose of reporting as the sum of nitrogen II oxide (NO) and nitrogen dioxide (NO_2) concentrations, expressed as an equivalent concentration of NO_2 at a defined reference condition.

The SRM measures NO_x and O_2 at atmospheric conditions, O_2 must be measured for the purpose of correction of measured NO_x to reference condition, and comparison with the specific ELV.

Details of SRM equipment

ESB Thermal Performance Services used a Horiba PG250. This measures NO or NO_x concentration by chemiluminescent technique, CO by NDIR technique and O_2 by zirconia cell technique.

The Horiba PG250 is certified under MCERTS for the measurement of components including NO, SO_2 and O_2, with product certificate number 050056/00 (2005).

The output of the Horiba was logged using a PC running proprietary data acquisition software.

The table below presents the range of reportable species and detail of a SRM used during testing.

Table 2: SRM Analyser details

Species	Instrument	Range	Units
NO/NO_2	Horiba PG 250 Chemiluminescent analyser	0-500	ppm dry
O_2	Horiba PG 250 Galvanic cell	0-25	% v/v dry

Monitoring results

Emission point

Emission Point Reference Number A1-2 (Exhaust from CT5 gas turbine)

SRM:

The measurement location is at a sampling plane in the horizontal exhaust ducting of CT5. This is the nominated official test point for the exhaust from CT5.

Substances to be monitored

SRM:

During the test, NO_x and O_2 concentrations were measured using the SRM.

Deviations

None

Section 4 Test Results

Test Results

This section presents the emissions test data.

Emissions measurements with a SRM

The table below presents test schedule for the SRM measurements which were taken during the emissions tests.

Table 3: CT5 Test Schedule

Date:	*Start:*	*Stop:*	*Activity:*	*Power Output:*
				MW
27/12/2012	15:45	16:39	Minimum Load Test	19.6

The table below presents the SRM measurements which were taken during the minimum load tests. All parameters are presented as dry. The NOx measurements are given in mg/Nm3 at standard reference conditions at 15% O2 and in ppm at standard reference conditions at actual O2.

Table 4: CT5 Minimum Load Test

Minimum Load Test					
Test No	CO	NOx	O2	NOx	Load
	ppm	ppm	vol%	mg/Nm3	MW
Test 1	20.61	21.03	18.56	106.08	19.56

The table below presents the summary of results to fulfil unit requirements according to IPPC Licence in respect of NOx emissions limit.

Table 5: Summary of Results

Test	**Result**
Measured Values at minimum load within the ELV Limits	Passed