



Headquarters,
Johnstown Castle Estate,
County Wexford, Ireland

GREENHOUSE GAS EMISSIONS PERMIT

Permit Register Number:	IE-GHG068-10379-3
Operator:	Electricity Supply Board 27 Lower Fitzwilliam Street Dublin 2
Installation Name:	ESB Lough Ree Power
Site Name:	ESB Lough Ree Power
Location:	ESB Lough Ree Power Lanesboro Longford Ireland

Introductory Note

This introductory note does not form a part of the Greenhouse Gas Emissions Permit.

This Greenhouse Gas Emissions Permit authorises the holder to undertake named activities resulting in emissions of Carbon Dioxide from the listed emission sources. It also contains requirements that must be met in respect of such emissions, including monitoring and reporting requirements. This Greenhouse Gas Emissions Permit places an obligation on the Operator to surrender allowances to the Agency equal to the annual reportable emissions of carbon dioxide equivalent from the installation in each calendar year, no later than four months after the end of each such year.

Contact with Agency:

If you contact the Agency about this Greenhouse Gas Emissions Permit please quote the following reference: Greenhouse Gas Emissions Permit N^o IE-GHG068-10379.

All correspondence in relation to this permit should be addressed to:

Email: help.ets@epa.ie

By Post: Climate Change Unit, Environmental Protection Agency
Regional Inspectorate, McCumiskey House,
Richview, Clonskeagh Road, Dublin 14

Updating of the permit:

This Greenhouse Gas Emissions Permit may be updated by the Agency, subject to compliance with Condition 2. The current Greenhouse Gas Emissions Permit will normally be available on the Agency's website at www.epa.ie and [ETSWAP](#).

Surrender of the permit:

Before this Greenhouse Gas Emissions Permit can be wholly or partially surrendered, a written application must be made to the on-line ETS portal, and written permission received from, the Agency through [ETSWAP](#).

Transfer of the permit or part of the permit:

Before this Greenhouse Gas Emissions Permit can be wholly or partially transferred to another Operator a joint written application to transfer this Greenhouse Gas Emissions Permit must be made (by both the existing and proposed Operators) to, and written permission received from, the Agency through the on-line ETS portal [ETSWAP](#).

Licence held pursuant to the Environmental Protection Agency Act 1992, as amended. (as of the date of this permit):

IPC/IE Licence Register Number
P610-02

Status Log

Current Permit

Permit number	Date application received	Date Permit issued	Comment
IE-GHG068-10379-3	08 October 2014	13 November 2014	Update to the default tier table and inclusion of acetylene.

Previous Permits

Permit number	Change Type	Date application received	Date Permit issued	Comment
IE-GHG068-10379-1	GHG Permit Application	28 February 2013	22 March 2013	
IE-GHG068-10379-2	GHG Variation	03 December 2013	23 April 2014	1. Correction of omission of source stream (Acetylene - workshop and mobile plant) and related emission source (S5) and emission point (PS-A5). 2. Corrections and rationalisation of procedures following operator review.

End of Introductory Note

Glossary of Terms

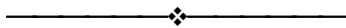
For the purposes of this permit the terms listed in the left hand column shall have the meaning given in the right hand column below:

The Agency	Environmental Protection Agency.
Agreement	Agreement in writing.
Allowance	Permission to emit to the atmosphere one tonne of carbon dioxide equivalent during a specified period issued for the purposes of Directive 2003/87/EC by the Agency or by a designated national competent authority of a Member State of the European Union.
Annual Reportable Emissions	Reportable Emissions of carbon dioxide made in any calendar year commencing from 1 January 2005 or the year of commencement of the activity, whichever is the later.
A & V Regulation	Commission Regulation (EU) No 600/2012 of 21 June 2012 on the verification of greenhouse gas emission reports and tonne-kilometre reports and the accreditation of verifiers pursuant to Directive 2003/87/EC of the European Parliament and of the Council and any amendments or revisions thereto.
Category A Installation	As defined in Article 19.2 (a) of the M&R Regulation.
Category B Installation	As defined in Article 19.2 (b) of the M&R Regulation.
Category C Installation	As defined in Article 19.2 (c) of the M&R Regulation.
The Directive	Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.
Emissions	The release of greenhouse gases into the atmosphere from sources in an installation.
EPA	Environmental Protection Agency.
Fall-Back Methodology	As defined in Article 22 of the M&R Regulation.
GHG	Greenhouse gas.
GHG Permit	Greenhouse gas emissions permit.
Greenhouse Gas	Any of the gases in Schedule 2 of the Regulations.
IPC/IE	Integrated Pollution Control/Industrial Emissions.
Installation	Any stationary technical unit where one or more activities listed in Schedule 1 to the Regulations are carried out. Also any other directly associated activities which have a technical connection with the activities carried out on that site and which could have an effect on emissions and pollution. References to an installation include references to part of an installation.

Installation with low emissions	As defined in Article 47 of the M&R Regulation.
Major Source Streams	As defined in Article 19.3 (c) of the M&R Regulation.
M&R Regulation	Commission Regulation (EU) No 601/2012 of 21 June 2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council and any amendments or revisions thereto.
Mis-statement	An omission, misrepresentation or error in the Operators reported data, not considering the uncertainty permissible pursuant to Article 12(1)(a) of Regulation (EU) no 601/2012.
N/A	Not applicable.
Monitoring Plan	The Plan submitted and approved in accordance with Condition 3.1 of this permit and attached at Appendix 1.
Non-conformity	Any act or omission by the Operator, either intentional or unintentional, that is contrary to the greenhouse gas emissions permit and the requirements of the Monitoring Plan.
The National Administrator	The person so designated in accordance with the requirements of any Regulations adopted as provided for under Article 19.3 of Directive 2003/87/EC.
The Operator (for the purposes of this permit)	Electricity Supply Board
“operator”	Any person who operates or controls an installation or to whom decisive economic power over the functioning of the installation has been delegated.
Person	Any natural or legal person.
Reportable emissions	The total releases to the atmosphere of carbon dioxide (expressed in tonnes of carbon dioxide equivalent) from the emission sources specified in Table 2 and arising from the Schedule 1 activities which are specified in Table 1.
The Regulations	European Communities (Greenhouse Gas Emissions Trading) Regulations 2012 (S.I. No 490 of 2012) and any amendments or revisions thereto.
The Verifier	A legal person or another legal entity carrying out verification activities pursuant to Regulation (EU) No 600/2012 and accredited by a national accreditation body pursuant to Regulation (EC) No 765/2008 and Regulation (EU) No 600/2012 or a natural person otherwise authorised, without prejudice to Article 5(2) of Regulation (EC) No 765/2008, at the time a verification report is issued.
The Registry	The Registry as provided for under Article 19 of Directive 2003/87/EC.

Schedule 1

Schedule 1 to the Regulations.



Reasons for the Decision

The Agency is satisfied, on the basis of the information available, that subject to compliance with the conditions of this permit, the Operator is capable of monitoring and reporting emissions in accordance with the requirements of the Regulations.

Activities Permitted

Pursuant to the Regulations the Agency issues this Greenhouse Gas Emissions Permit, subject to any subsequent revisions, corrections or modifications it deems appropriate, to:

The Operator:

Electricity Supply Board
27 Lower Fitzwilliam Street
Dublin 2

Company Registration Number: NA ESB Act 1927

to carry out the following

Categories of activity:

Annex 1 Activity

Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)
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at the following installation(s):

ESB Lough Ree Power **Installation number:** 52

located at

ESB Lough Ree Power
Lanesboro
Longford
Ireland

subject to the five conditions contained herein, with the reasons therefor and associated tables attached thereto.

Conditions

Condition 1. The Permitted Installation

- 1.1 This permit is being granted in substitution for the previous GHG permit granted to the Operator as listed in the Status Log of this GHG permit.
- 1.2 The Operator is authorised to undertake the activities and/or the directly associated activities specified in Table 1 below resulting in the emission of carbon dioxide:

Table 1 - Activities which are listed in Schedule 1 of the Regulations and other directly associated activities carried out on the site:

Installation No.: 52

Activity Description
Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)

Directly Associated Activity Description
N/A

- 1.3 Carbon dioxide from Schedule 1 activities shall be emitted to atmosphere only from the emission sources as listed in Table 2 below:

Table 2 Emission Sources and Capacities:

Emission Source Reference	Emission Source Description	Capacity	Capacity Units
S1	Main Boiler	247	MW
S2	Auxiliary Boiler	10	MW
S3	Emergency Diesel Generator	0.71	MW
S4	Emergency Diesel Fire Pump	0.4	MW
S5	Mobile Welding Plant	0	MW

- 1.4 The activity shall be controlled, operated and maintained so that emissions of carbon dioxide shall take place only as set out in this GHG Emissions Permit. The permit does not control emissions of gases other than carbon dioxide. All agreed plans, programmes and methodologies required to be carried out under the terms of this permit, become part of this permit.
- 1.5 This GHG Permit is for the purposes of GHG emissions permitting under the European Communities (Greenhouse Gas Emissions Trading) Regulations 2012 and any amendments to the same only and nothing in this permit shall be construed as negating the Operator's statutory obligations or

requirements under any other enactments or regulations unless specifically amended by the Regulations.

- 1.6 Any reference in this permit to 'installation' shall mean the installation as described in the Greenhouse Gas Emissions Permit application and any amendments approved by the Agency.

Reason: To describe the installation and clarify the scope of this permit.

Condition 2. Notification

- 2.1 No alteration to, or reconstruction in respect of, the activity or any part thereof which would, or is likely to, result in a change in:
- 2.1.1 the nature or functioning of the installation;
 - 2.1.2 the capacity of the installation as detailed in this permit;
 - 2.1.3 the fuels used at the installation;
 - 2.1.4 the range of activities to be carried out at the installation
- that may require updating of the GHG permit shall be carried out or commenced without prior notice to and without the prior written agreement of the Agency.
- 2.2 The Operator shall notify the Agency in writing of the cessation of all or part of any activity listed in Table 1 of this permit no later than one month from the date of cessation or by 31 December of the year of cessation, whichever is sooner.
- 2.3 The Operator shall apply for an update of this GHG Permit where there is a change to the Operator name and/or registered address of the Operator, within seven days of the change.
- 2.4 For installations or parts of installations which have not come into operation when the application for this permit was made the Operator shall notify the Agency of the date of commencement of the activity within seven days of commencement.
- 2.5 The Operator shall notify the Agency in writing within three days of becoming aware of any factors which may prevent compliance with the conditions of this permit.
- 2.6 The Operator shall submit to the Agency by 21 January of each year a declaration of operability. The declaration submitted shall be in the format required by the Agency.
- 2.7 All notifications required under Condition 2 above shall be made to the address given in the Explanatory Note included with this permit.

Reason: To provide for the notification of updated information on the activity.

Condition 3. Monitoring and Reporting

- 3.1 The Operator shall monitor and record greenhouse gas emissions on site in accordance with the M&R Regulation and the approved Monitoring Plan attached at Appendix 1 to this GHG permit and in compliance with any other guidance approved by the Agency for the purposes of implementing the Directive and/or the Regulations.
- 3.2 The Operator shall modify the monitoring plan in any of the following situations:
- 3.2.1 new emissions occur due to new activities carried out or due to the use of new fuels or materials not yet contained in the monitoring plan;

- 3.2.2 the change of availability of data, due to the use of new measurement instrument types, sampling methods or analysis methods, or for other reasons, leads to higher accuracy in the determination of emissions;
- 3.2.3 data resulting from the previously applied monitoring methodology has been found incorrect;
- 3.2.4 changing the monitoring plan improves the accuracy of the reported data, unless this is technically not feasible or incurs unreasonable costs;
- 3.2.5 the monitoring plan is not in conformity with the requirements of the M&R Regulation and the Agency requests a change;
- 3.2.6 it is necessary to respond to the suggestions for improvement of the monitoring plan contained in the verification report.

The Operator shall notify any proposals for modification of the monitoring plan to the Agency without undue delay. Any significant modifications of the monitoring plan, as defined in Article 15 of the M&R Regulation, shall be subject to approval by the Agency. Where approved these changes shall be implemented within a timeframe agreed by the Agency.

3.3 Temporary changes to the monitoring methodology:

- 3.3.1 Where it is for technical reasons temporarily not feasible to apply the tier in the monitoring plan for the activity data or each calculation factor of a fuel or material stream as approved by the Agency, the Operator shall apply the highest achievable tier until the conditions for application of the tier approved in the monitoring plan have been restored. The Operator shall take all necessary measures to allow the prompt restoration of the tier in the approved monitoring plan. The Operator shall notify the temporary change to the monitoring methodology without undue delay to the Agency specifying:
 - (i) The reasons for the deviation from the tier;
 - (ii) in detail, the interim monitoring methodology applied by the Operator to determine the emissions until the conditions for the application of the tier in the monitoring plan have been restored;
 - (iii) the measures the Operator is taking to restore the conditions for the application of the tier in the approved monitoring plan;
 - (iv) the anticipated point in time when application of the approved tier will be resumed.
- 3.3.2 A record of all non-compliances with the approved monitoring plan shall be maintained on-site and shall be available on-site for inspection by authorised persons of the Agency and/or by the Verifier at all reasonable times.

3.4 The Operator shall appoint a Verifier to ensure that, before their submission, the reports required by Condition 3.5 below are verified in accordance with the criteria set out in Schedule 5 of the Regulations, the A&V Regulation and any more detailed requirements of the Agency.

3.5 The written report of the verified annual reportable emissions and the verification report in respect of each calendar year shall be submitted to the Agency by the Operator no later than 31 March of the following year. The reports shall be in the format required by the Agency and meet the criteria set out in the M&R and A&V Regulations.

3.6 The Operator shall enter the verified annual reportable emissions figure for the preceding year into the Registry no later than 31 March of the following year. This figure shall be electronically approved by the Verifier in the registry no later than 31 March of each year.

- 3.7 Where an Operator is applying the Fall-Back methodology, the Operator shall assess and quantify each year the uncertainties of all parameters used for the determination of the annual emissions in accordance with the ISO Guide to the Expression of Uncertainty in Measurement or another equivalent internationally accepted standard and include the verified results in the written report of the verified annual reportable emissions to be submitted to the Agency by 31 March each year.
- 3.8 An Operator shall submit to the Agency for approval a report containing the information detailed in (i) or (ii) below, where appropriate, by the following deadlines:
- (a) for a category A installation, by 30 June every four years;
 - (b) for a category B installation, by 30 June every two years;
 - (c) for a category C installation, by 30 June every year.
- (i) Where the Operator does not apply at least the tiers required pursuant to the first subparagraph of Article 26(1) and to Article 41(1) of the M&R Regulation, the Operator shall provide a justification as to why it is technically not feasible or would incur unreasonable costs to apply the required tiers. Where evidence is found that measures needed for reaching those tiers have become technically feasible and do not incur unreasonable costs, the Operator shall notify the Agency of appropriate modifications to the monitoring plan and submit proposals for implementing appropriate measures and its timing.
- (ii) Where the Operator applies a fall-back monitoring methodology, the Operator shall provide a justification as to why it is technically not feasible or would incur unreasonable costs to apply at least tier 1 for one or more major or minor source streams. Where evidence is found that measures needed for reaching at least tier 1 for those source streams have become technically feasible and do not incur unreasonable costs, the Operator shall notify the Agency of appropriate modifications to the monitoring plan, submit proposals and a timeframe for implementing appropriate measures.
- 3.9 Where the verification report states outstanding non conformities, misstatements or recommendations for improvements the Operator shall submit a report to the Agency for approval by 30 June of the year in which the verification report is issued. This requirement does not apply to the Operator of an installation with low emissions where the verification report contains recommendations for improvements only. The report shall describe how and when the Operator has rectified or plans to rectify the non-conformities identified and to implement recommended improvements. Where recommended improvements would not lead to an improvement of the monitoring methodology this must be justified by the Operator. Where the recommended improvements would incur unreasonable costs the Operator shall provide evidence of the unreasonable nature of the costs. The Operator shall implement the improvements specified by the Agency in response to the report submitted in accordance with this Condition in accordance with a timeframe set by the Agency.
- 3.10 The Operator shall make available to the Verifier and to the Agency any information and data relating to emissions of carbon dioxide which are required in order to verify the reports referred to in Condition 3.5 above or as required by the Agency to facilitate it in establishing benchmarks and/or best practice guidance.
- 3.11 Provision shall also be made for the transfer of environmental information, in relation to this permit, to the Agency's computer system, as may be requested by the Agency.
- 3.12 The Operator shall retain all information as specified in the M&R Regulation for a period of at least 10 years after the submission of the relevant annual report.
- 3.13 A record of independent confirmation of capacities listed in this permit or agreed with the Agency in writing as minor emissions shall be available on-site for inspection by authorised persons of the Agency at all reasonable times.

- 3.14 The Operator shall keep records of all modifications of the monitoring plan. The records shall include the information specified in Article 16.3 of the M&R Regulation.
- 3.15 The Operator shall ensure that members of the public can view a copy of this permit and any reports submitted to the Agency in accordance with this permit at all reasonable times. This requirement shall be integrated with the requirements of any public information programme approved by the Agency in relation to any other permit or licence held by the Operator for the site.

Reason: *To provide for monitoring and reporting in accordance with the Regulations.*

Condition 4. Allowances

4.1 Surrender of Allowances

- 4.1.1 The Operator shall, by 30 April in each year, surrender to the Agency, or other appropriate body specified by the Agency, allowances equal to the annual reportable emissions in the preceding calendar year.
- 4.1.2 The number of allowances to be surrendered shall be the annual reportable emissions for the preceding calendar year plus such allowances as may be necessary to cover any earlier calendar year in respect of which allowances remain outstanding and due. This includes allowances to cover the amount of any annual reportable emissions in respect of which allowances were not surrendered in accordance with Condition 4.1.1 in the previous year, and the amount of any reportable emissions which were discovered during the previous year to have been unreported in reports submitted under Condition 3 in that or in earlier years.
- 4.1.3 In relation to activities or parts of activities which have ceased to take place and have been notified to the Agency in accordance with Condition 2.2 above, the Operator shall surrender to the Agency allowances equal to the annual reportable emissions from such activities in the preceding calendar year or part thereof, together with such allowances as may be necessary to cover any earlier calendar year in respect of which allowances remain outstanding and due as described in Condition 4.1.2 above.
- 4.1.4 The Operator may, from 2008 onwards, subject to the provisions of the Regulations and the relevant National Allocation Plan for that compliance year, surrender emission reduction units (ERUs) and certified emission reduction units (CERs) in place of allowances.

- 4.2 The holding, transfer, surrender and cancellation of allowances shall be in accordance with the requirements of any Regulations adopted as provided for under Article 19.3 of Directive 2003/87/EC, any amendment or revision to the same and any guidance issued by the Agency or the National Administrator.
- 4.3 The Operator shall provide the National Administrator with all the necessary information for the opening of an Operator holding account for the installation described in Condition 1 of this permit within twenty working days of the issue of this permit, unless such an account is already open.

Reason: *To provide for the surrendering, holding, transfer and cancellation of allowances in respect of reported emissions.*

Condition 5. Penalties

- 5.1 Any Operator who fails to comply with Condition 4.1 above shall be subject to the provisions of the Regulations, including, but not limited to the payment of penalties.

Reason: To provide for the payment of excess emissions penalties as required under the Regulations.

Sealed by the seal of the Agency on this the 13 November 2014:

PRESENT when the seal of the Agency was affixed hereto:

Mr. Marc Kierans
Inspector/ Authorised Person

Appendix 1 to Greenhouse Gas Emissions Permit Number IE-GHG068-10379

Monitoring Plan

1. Guidelines & Conditions

1. Directive 2003/87/EC as amended by Directive 2009/29/EC (hereinafter "the (revised) EU ETS Directive") requires operators of installations which are included in the European Greenhouse Gas Emission Trading Scheme (the EU ETS) to hold a valid GHG emission permit issued by the relevant Competent Authority and to monitor and report their emissions and have the reports verified by an independent and accredited verifier.

The Directive can be downloaded from:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2003L0087:20090625:EN:PDF>

2. The Monitoring and Reporting Regulation (Commission Regulation (EU) No 601/2012) (hereinafter the "MRR") defines further requirements for monitoring and reporting.

The MRR can be downloaded from:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:181:0030:0104:EN:PDF>

Article 12 of the MRR sets out specific requirements for the content and submission of the monitoring plan and its updates. Article 12 outlines the importance of the Monitoring plan as follows:

The monitoring plan shall consist of a detailed complete and transparent documentation of the monitoring methodology of a specific installation [or aircraft operator] and shall contain at least the elements laid down in Annex I.

Furthermore Article 74(1) states:

Member States may require the operator and aircraft operator to use electronic templates or specific file formats for submission of monitoring plans and changes to the monitoring plan as well as for submission of annual emissions reports tonne-kilometre data reports verification reports and improvement reports. Those templates or file format specifications established by the Member States shall at least contain the information contained in electronic templates or file format specifications published by the Commission

3. All Commission guidance documents on the Monitoring and Reporting Regulation will be published at the link below as they become available:

http://ec.europa.eu/clima/policies/ets/monitoring/index_en.htm

(a) Information sources:

EU Websites:

EU-Legislation: <http://eur-lex.europa.eu/en/index.htm>

EU ETS general: http://ec.europa.eu/clima/policies/ets/index_en.htm

Monitoring and Reporting in the EU ETS: http://ec.europa.eu/clima/policies/ets/monitoring/index_en.htm

Environmental Protection Agency Website:

<http://www.epa.ie>

Environmental Protection Agency Contact:

GHGpermit@epa.ie

2. Application Details

The Installation Name, Site Name and the address of the site of the installation are detailed below. The Site Name and address can be updated from the Organisation Details Page on the ETSWAP website. The Installation Name can only be updated by your Competent Authority.

Installation name	ESB Lough Ree Power
Site name	ESB Lough Ree Power
Address	ESB Lough Ree Power Lanesboro Longford Ireland

Grid reference of site main entrance	201100E 269400N
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Licence held pursuant to the Environmental Protection Agency Act 1992, as amended.	Yes
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IPC/IE Licence Register Number	Licence holder	Competent body
P610-02	Electricity Supply Board	Environmental Protection Agency

Has the regulated activity commenced at the Installation? Yes

Date of Regulated Activity commencement	15 May 2004
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This information is only required to identify the first relevant reporting year of an installation. If the installation was in operation from the beginning of 2008 and held a Greenhouse Gas Emissions Permit from this point, 1 January 2008 will be used where the actual date of commencement is not readily known.

3. About the Operator

The information about the "Operator" is listed below. The "Operator" is defined as the person who it is proposed will have control over the relevant Regulated Activities in the installation in respect of which this application is being made.

(b) Operator Details

The name of the operator and where applicable the company registration number are detailed below. These details can only be updated by the Environmental Protection Agency.

Operator name	Electricity Supply Board
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Company Registration Number	NA ESB Act 1927
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Operator Legal status

The legal status of the operator is:	Company / Corporate Body
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(c) Company / Corporate Body

Is the trading / business name different to the operator name? No

Details of the individual authorised to submit this application on behalf of the company / corporate body.

Title	Mr
Forename	Duncan
Surname	Clarke
Position	Environmental & Sustainability Manager

Registered office address

Address Line 1	27 Lower Fitzwilliam Street
Address Line 2	N/A
City/Town	Dublin 2
County	N/A
Postcode	N/A

Principal office address

Is the principal office address different to the registered office address? No

Holding company

Does the company belong to a holding company? No

(d) Operator Authority

Does the operator named above have the authority and ability to:

- | | |
|---|-----|
| a. manage site operations through having day-to-day control of plant operation including the manner and rate of operation | Yes |
| b. ensure that permit conditions are effectively complied with | Yes |
| c. control monitor and report specified emissions | Yes |
| d. be responsible for trading in Allowances so that at the | Yes |

end of a reporting period allowances can be balanced against reported emissions.

4. Service Contact

e. Service Contact

Name	Fiona Spellissy
Address / Email Address	ESB Lough Ree Power Lanesboro Longford Ireland

5. Installation Activities

f. Installation Description

Below is a description of the installation and its activities, a brief outline description of the site and the installation and the location of the installation on the site. The description also includes a non-technical summary of the activities carried out at the installation briefly describing each activity performed and the technical units used within each activity.

Lough Ree Power is a 100MWe peat fired circulating fluidised bed power plant located at Lanesboro Co. Longford and operated by ESB. The main technologies used are a circulating fluidised boiler, which uses peat as a main fuel to raise steam to drive a reheat steam turbine to produce electricity at thermal efficiencies of over 37% in net terms. The plant will also use a combination of limestone in the fluidised bed and lime in a back end absorber to capture sulphur which is inherent in the peat fuel, and hence to reduce sulphur oxide emissions.

The main raw materials which will lead to emissions of carbon dioxide are peat fuel, which is the main fuel, and light fuel oil which is used for start up of the boiler, combustion support with high moisture peat and in an auxiliary boiler which provides start up steam and in an emergency generator which is used to back up essential supplies in the event of disconnection from external power supplies.

The sources of emissions of Carbon Dioxide from the facility are:

- Combustion of Peat in CFB Boiler.
- Combustion of Light Fuel Oil in CFB Boiler.
- Combustion of Light Fuel Oil in Auxiliary Boiler.
- Combustion of Light Fuel Oil in Emergency Generator.

- Conversion of Limestone to Lime in CFB Boiler.
- Acetylene (workshop and mobile plant).

Peat Fuel will be measured at the delivery point to the Intermediate Store on site and hence usage can be determined. The Moisture Content and Ash content will be determined by sampling and hence the input of dry matter can be calculated. The carbon content of the dry matter will be measured by periodic testing. In this way the carbon input to the process can be accurately established.

The light fuel oil usage will also be measured and hence the Carbon from this source will also be known.

Biomass is also used and is considered a carbon neutral fuel and the resultant tonnages emitted equate to zero CO₂ tonnages.

g. Annex 1 Activities

The table below lists the technical details for each Annex 1 activity carried out at the installation.

Note that 'capacity' in this context means:

- Rated thermal input (for combustion installations) which is defined as the rate at which fuel can be burned at the maximum continuous rating of the installation multiplied by the calorific value of the fuel and expressed as megawatts thermal.
- Production capacity for those specified Annex I activities for which production capacity determines ETS eligibility.

Annex 1 Activity	Total Capacity	Capacity units	Specified Emissions
Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)	258.1	MW	Carbon Dioxide

h. Site Diagram

The table below lists attachments (if available) that provide a simple diagram showing emissions sources source streams sampling points and metering/measurement equipment.

Attachment	Description
LRP Fig 1.pdf	Site Layout & Boundary
LRP Fig 2.pdf	GHG Emission Points
LRP Fig 3.pdf	Milled Peat Handling Flow
LRP Fig 4.pdf	Gas Oil Flow diagram

i. Estimated Annual Emissions

Detail of the estimated annual emission of CO₂ equivalent. This information enables categorisation of the installation in accordance with Article 19 of the MRR and is based on the average verified annual emissions of the previous trading period data OR if this data is not available or is inappropriate a conservative estimate of annual average emissions including transferred CO₂ excluding CO₂ from biomass.

Estimated Annual Emissions (tonnes CO_{2(e)}) 805000

Installation Category: C

6. Emissions Details**j. About your emissions**

Annex I of the Monitoring and Reporting Regulations (MRR) requires that monitoring plans include a description of "the installation" and activities to be carried out and monitored including a list of emission sources and source streams. The information provided in this template relates to the Annex I activity(ies) comprised in the installation in question and should relate to a single installation. It includes any activities carried out by the operator and does not include related activities carried out by other operators.

k. Emission Sources

The table below lists all the emission sources at the installation, which may include directly associated activities/excluded activities.

Emission Source Reference	Emission Source Description
S1	Main Boiler
S2	Auxiliary Boiler
S3	Emergency Diesel Generator
S4	Emergency Diesel Fire Pump
S5	Mobile Welding Plant

The table below lists the emission sources which are linked to the Regulated Activities at the installation.

Emission Source Reference	Emission Source Description
S1	Main Boiler
S2	Auxiliary Boiler
S3	Emergency Diesel Generator

Emission Source Reference	Emission Source Description
S4	Emergency Diesel Fire Pump
S5	Mobile Welding Plant

I. Emission Points

The table below lists all the emission points at the installation, which may include directly associated activities/excluded activities.

Emission Point Reference	Emission Point Description
PS-A1	Main Boiler Stack
PS-A2	Auxiliary Boiler Stack
PS-A3	Emergency Diesel Generator Exhaust
PS-A4	Emergency Fire Pump Exhaust
PS-A5	Mobile Welding Plant - Acetylene

m. Source Streams (fuels and/or materials)

The table below lists the source streams which are used in Schedule 1 Activities at the installation.

Source Stream Reference	Source Stream Type	Source Stream Description
F1	Combustion: Solid fuels	Peat
F2-1	Combustion: Commercial standard fuels	Gas/Diesel Oil
F2-2	Combustion: Commercial standard fuels	Gas/Diesel Oil
F3	Combustion: Commercial standard fuels	Propane
F4	Combustion: Solid fuels	Wood/Wood Waste
M1	Lime / dolomite / magnesite: Carbonates (Method A)	Limestone
F5	Combustion: Other gaseous & liquid fuels	Acetylene

n. Emissions Summary

The table below provides a summary of the emission source and source stream details in the installation.

Source streams (Fuel / Material)	Emission Source Refs.	Emission Point Refs.	Annex 1 Activity
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Source streams (Fuel / Material)	Emission Source Refs.	Emission Point Refs.	Annex 1 Activity
F1	S1	PS-A1	Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)
F2-1	S1,S2	PS-A1,PS-A2	Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)
F2-2	S3,S4	PS-A3,PS-A4	Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)
F3	S1	PS-A1	Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)
F4	S1	PS-A1	Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)
M1	S1	PS-A1	Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)
F5	S5	PS-A5	Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)

o. Excluded Activities

Certain activities that result in greenhouse gas emissions may be excluded under the EU ETS Directive for example truly mobile sources such as vehicle emissions.

Do you have any excluded activities which need to be identified in your monitoring plan? No

7. Low Emissions Eligibility**p. Low Emissions Eligibility**

The operator may submit a simplified monitoring plan for an installation where no nitrous oxide activities are carried out and it can be demonstrated that:

(a) the average verified annual emissions of the installation during the previous trading period was less than 25 000 tonnes CO_{2(e)} per year or;

(b) where this data is not available or inappropriate a conservative estimate shows that emissions for the next 5 years will be less than 25 000 tonnes CO_{2(e)} per year.

Note: the above data shall include transferred CO₂ but exclude CO₂ stemming from biomass.

Does the installation satisfy the criteria for installations with low emissions (as defined by Article 47 of the MRR)? No

8. Monitoring Approaches**q. Monitoring Approaches**

Emissions may be determined using either a calculation based methodology ("calculation") or measurement based methodology ("measurement") except where the use of a specific methodology is mandatory according to the provisions of the MRR. [MRR Article 21].

Note: the operator may subject to competent authority approval combine measurement and calculation for different sources. The operator is required to ensure and demonstrate that neither gaps nor double counting of reportable emissions occurs.

Please specify whether or not you propose to apply the following monitoring approaches. Select all monitoring approaches that are applicable to you. The consecutive sections will become mandatory based on the selected approaches.

Calculation	Yes
Measurement	No
Fall-back approach	No
Monitoring of N ₂ O	No
Monitoring of PFC	No

Monitoring of transferred / inherent CO₂

No

9. Calculation

r. Approach Description

The calculation approach including formulae used to determine annual CO₂ emissions:

The CO₂ emissions for Peat Consumption F1 is calculated on a delivery basis as the product of Activity*NCV*EF*Oxidation Factor. The Activity data is measured by deliveries (Belt weigh to Intermediate Store) and stock difference between start and year end. Stock levels at year end are obtained from a computerised system known as DCS. Peat is sampled automatically every 470 tonnes.

There is a sampling plan in the M&R Protocol covering how samples re made up for - carbon, NCV and moisture analyses.

Carbon content, NCV and Moisture analysis will be carried out by an independent ISO17025 accredited laboratory. Carbon in ash will be determined in an ISO17025 Lab for the calculation of the oxidation factor. Reportable CO₂ emissions are calculated on a monthly basis.

Gas oil consumption (F2.1) is calculated on deliveries (invoices) and the volume is converted to tonnes using a factor of 0.8657kg/l. An independent surveyor conducts dips at start/year end. Stock difference between start and year end is accounted for. Emissions from this source are calculated on an annual basis. CO₂ emissions are calculated - Activity*EF*NCV*OxF. An OxF of 1 is used.

Gas oil consumption (F2.2) is based on delivery invoices and based on fire pump capacities.

Propane F3 consumption is based on deliveries, the approach taken is de-minimis as emission from this source are minimal. Emissions are calculated on an annual basis. The NCV and EF factors used will be taken from those stipulated in the document "Country Specific NCV and CO₂ emission factors" from the EPA website for the year being reported on, for use in the AIER.

Limestone consumption is based on deliveries (invoices). The calculation methodology is de-minimis. CO₂ emission will be based on delivered tonnes, multiplied by a factor of 0.44 (purity factor if dry CaCo₃).

Solid Biomass will be delivered by truck and the quantity will be measured using a weighbridge. Representative samples will be made up into a composite sample which will be analysed in an ISO17025 laboratory for Moisture, ash and NCV. The Biomass will be calculated on a monthly basis where applicable.

Acetylene consumption will be based on invoices only, as emissions are de minimis. Emission factors will be based on the default figures on EPA website.

s. Measurement Devices

Below is a description of the specification and location of the measurement systems used for each source stream where emissions are determined by calculation

Also a description of all measurement devices including sub-meters and meters used to deduct non-Annex I activities to be used for each source and source stream.

Source Stream Refs.	Emission Source Refs.	Measurement Device Ref.	Type of Measurement Device	Measurement Range	Metering Range Units	Specified Uncertainty (+/- %)	Location
F1	S1	MD1	Belt weigher	0-50,000	kgs	0.5	BNM Site (Belt to IPS)
F2-1	S1,S2	MD3	Tank dip	0-200	cubic metres	0.02	ESB Oil Tank
F1	S1	MD2	Ultrasonic meter	At standard peat conditions 5600	tonnes	0.25	Intermediate Peat Storage
F3	S1	MD6	Supplier Invoices	Unknown	kgs	N/A	Supplier Depot
F2-2	S3,S4	MD5	Supplier Invoices	n/a	litres	N/A	Supplier
F2-1	S1,S2	MD4	Fiscal Meter	Unknown	litre	0.03	Supplier's Depot
F1,F4	S1	MD7	Weighbridge	0-50,000	kgs	0.5	BNM
F1,F4	S1	MD8	Rotary Meter (Bottom Ash)	Unknown	tonnes	N/A	Ash Silo
F1,F4	S1	MD9	Rotary Meter (Fly Ash)	Unknown	tonnes	N/A	Ash Silo
M1	S1	MD10	Supplier Invoices	De-minimis	tonnes	N/A	Supplier Depot
F5	S5	MD11	Supplier invoices	Unknown	kgs	N/A	Supplier Depot

Source Stream Refs.	Measurement Device Ref.	Determination Method	Instrument Under Control Of	Conditions Of Article 29(1) Satisfied	Invoices Used To Determine Amount Of Fuel Or Material	Trade Partner And Operator Independent
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Source Stream Refs.	Measurement Device Ref.	Determination Method	Instrument Control Of	Under	Conditions Of Article 29(1) Satisfied	Invoices Used To Determine Amount Of Fuel Or Material	Trade Partner And Operator Independent
F1	MD1	Batch	Trade partner		Yes	Yes	Yes
F2-1	MD3	Batch	Operator		N/A	N/A	N/A
F1	MD2	Batch	Operator		N/A	N/A	N/A
F3	MD6	Batch	Trade partner		Yes	Yes	Yes
F2-2	MD5	Batch	Trade partner		Yes	Yes	Yes
F2-1	MD4	Batch	Trade partner		Yes	Yes	Yes
F1,F4	MD7	Batch	Trade partner		Yes	Yes	Yes
F1,F4	MD8	Batch	Trade partner		Yes	N/A	Yes
F1,F4	MD9	Batch	Trade partner		Yes	N/A	Yes
M1	MD10	Batch	Trade partner		Yes	Yes	Yes
F5	MD11	Batch	Trade partner		Yes	Yes	Yes

t. Applied Tiers

The table below identifies the tiers applied against the relevant input data for each source stream and confirms whether a standard (MRR Article 24) or mass balance (MRR Article 25) approach is applied.

(i) The highest tiers as defined in Annex II of the MRR should be used by Category B and C installations to determine the activity data and each calculation factor (except the oxidation factor and conversion factor) for each major source stream. Category A installations should apply as a minimum the tiers listed in Annex V.

(ii) Operators may apply a tier one level lower than those referred to in sub paragraph (i) above for Category C installations and up to two levels lower for Category A and B installations with a minimum of tier 1 if the operator can demonstrate to the satisfaction of the competent authority that this is not technically feasible or would lead to unreasonable cost to apply the higher tier. The justification for not applying the higher tier should be recorded when completing the tier table.

(iii) The competent authority may allow an operator to apply even lower tiers than those referred to in the sub paragraph (ii) with a minimum of tier 1 for a transition period of up to three years if the operator can demonstrate to the satisfaction of the competent authority that this is not technically feasible or would lead to unreasonable cost to apply the higher tier and provides an improvement plan detailing how and by when at least the tier referred to in sub paragraph (ii) will be achieved. The improvement plan should be referenced in subsequent table and provided to the competent authority at the time of submission of this plan.

(iv) For minor source streams operators shall apply the highest tier which is technically feasible and will not lead to unreasonable costs with a minimum of tier 1 for activity data and each calculation factor. For de-minimis source streams operators may use conservative estimations rather than tiers unless a defined tier can be achieved without additional effort (MRR Article 26(2)).

(v) Installations with low emissions as identified in section 6(d) may apply as a minimum tier 1 for determining activity data and calculation factors for all source streams unless higher accuracy is achievable without additional effort.

* Note 1: For commercial standard fuels the minimum tiers listed in Annex V of the MRR may be applied for all activities in all installations.

* Note 2: If you are intending to apply a fall-back approach please complete the table below and select "n/a" for the tiers to be applied for each source stream where a fall-back approach is used. Section 10 "Fall-back" must also be completed for these source streams.

* Note 3: For biomass or mixed fuels the emission factor is the preliminary emission factor as defined in Definition 35 Article 3 of the MRR.

Source Stream Refs.	Emission Source Refs.	Measurement Device Refs.	Overall Metering Uncertainty (less than +/- %)	Applied Monitoring Approach	Activity Data Tier Applied	Net Calorific Value Tier Applied	Emission Factor Tier Applied	Carbon Content Tier Applied	Oxidation Factor Tier Applied	Conversion Factor Tier Applied	Biomass Fraction Tier Applied	Estimated Emissions tCO _{2(e)}	% of Total Estimated Emissions	Source Category	Highest Tiers Applied	Justification for not applying the highest tiers	Improvement Plan Reference (where applicable)
F1	S1	MD1, MD2, MD7	<1.5%	Standard	4	3	3	N/A	3	N/A	N/A	802729	99.82	Major	Yes	n/a	n/a
F2-1	S1,S2	MD3, MD4	<1.5%	Standard	4	2a	2a	N/A	1	N/A	N/A	1000	0.12	Minor	N/A	n/a	n/a
F3	S1	MD6	N/A	Standard	No tier	2a	2a	N/A	1	N/A	N/A	0	0	De-minimis	N/A	n/a	n/a
F2-2	S3,S4	MD5	N/A	Standard	No tier	2a	2a	N/A	1	N/A	N/A	4	0	De-minimis	N/A	n/a	n/a

Source Stream Refs.	Emission Source Refs.	Measurement Device Refs.	Overall Metering Uncertainty (less than +/- %)	Applied Monitoring Approach	Activity Data Tier Applied	Net Calorific Value Tier Applied	Emission Factor Tier Applied	Carbon Content Tier Applied	Oxidation Factor Tier Applied	Conversion Factor Tier Applied	Biomass Fraction Tier Applied	Estimated Emissions tCO _{2(e)}	% of Total Estimated Emissions	Source Category	Highest Tiers Applied	Justification for not applying the highest tiers	Improvement Plan Reference (where applicable)
F4	S1	MD7	<1.5%	Standard	No tier	3	N/A	N/A	3	N/A	N/A	0	0	De-minimis	N/A	n/a	n/a
M1	S1	MD10	N/A	Standard	1	N/A	1	N/A	N/A	N/A	N/A	420	0.05	De-minimis	N/A	n/a	n/a
F5	S5	MD11	N/A	Standard	No tier	1	1	N/A	1	N/A	N/A	0	0	De-minimis	N/A	n/a	n/a

Total Estimated Emissions for Calculation (tonnes CO_{2(e)})

804153

u. Uncertainty Calculations

The table below lists evidence attached to the application that demonstrates compliance with the applied tiers in accordance with Article 12 of the MRR.

Attachment	Description
Gas Oil Calibration cert 1 2012.pdf	Gas OIL F2-1 Calibration certificates
beltweigher cert dec 2011.pdf	Beltweigher Certificate of Compliance Dec 2011
Beltweigher Cross check 2011.xls	Beltweigher Cross Check 2011
Cert of Calibration Weighbridge 2011.pdf	Certificate of Calibration Weighbridge 2011
Gas Oil Calibration Certs 2 2012.pdf	Gas Oil Calibration Certs 2 2012.
Dip Tape Certificates.pdf	Gas Oil Tank Dip Tape Cert 2012
Fuel Delivery Flow chart.pdf	Uncertainty Flow chart
LRP Ultrasonic meter Certs.pdf	LRP Ultrasonic meter Certs
LRP Uncertainty Oct 2012.pdf	Uncertainty 2012
LRP Overall Uncertainty 2012.pdf	Overall uncertainty 2012
AHK Accreditation Certificate.pdf	AHK Accreditation Certificate
ukas Schedule of Accreditation AHK 2012.pdf	ukas Schedule of Accreditation AHK
BNM INAB Cert + scope of Accreditation 2011.pdf	BNM INAB Cert + scope of Accreditation

v. Applied tiers

Applied tiers for each source stream

Source Stream Ref.	Emission Source Refs.	Activity Data Tier Applied	Net Calorific Value Tier Applied	Emission Factor Tier Applied	Carbon Content Tier Applied	Oxidation Factor Tier Applied	Conversion Factor Tier Applied	Biomass Fraction Tier Applied
F1	S1	4	3	3	N/A	3	N/A	N/A
F2-1	S1,S2	4	2a	2a	N/A	1	N/A	N/A
F3	S1	No tier	2a	2a	N/A	1	N/A	N/A
F2-2	S3,S4	No tier	2a	2a	N/A	1	N/A	N/A
F4	S1	No tier	3	N/A	N/A	3	N/A	N/A
M1	S1	1	N/A	1	N/A	N/A	N/A	N/A
F5	S5	No tier	1	1	N/A	1	N/A	N/A

w. Justification for Applied tiers

Justifications for the applied tiers for each major source stream where highest tiers are not currently achieved.

Source Stream Ref.	Emission Source Refs.	Justification for the applied tier	Improvement Plan Reference (where applicable)
N/A	N/A	N/A	N/A

10. Calculation Factors

x. Default Values

The table below lists, for each parameter, where default values are to be used for calculation factors.

Source Stream Refs.	Emission Source Refs.	Parameter	Reference Source	Default Value applied (where appropriate)
F2-1	S1,S2,S3,S4	NCV	Ireland's National Greenhouse Gas Inventory	N/A
F2-1	S1,S2,S3,S4	EF	Ireland's National Greenhouse Gas Inventory	N/A
F2-1	S1,S2	OxF	MRR Annex II Section 2.3	1
F2-2	S3,S4	OxF	MRR Annex II Section 2.3	1
F3	S1	OxF	MRR Annex II Section 2.3	1
F5	S5	OxF	MRR Annex II Section 2.3	1
F3	S1	NCV	Ireland's National Greenhouse Gas Inventory	N/A
F3	S1	EF	Ireland's National Greenhouse Gas Inventory	N/A
M1	S1	EF	MRR Annex VI Table 2.(CaCO ₃ = 0.440tCO ₂ /tonne and MgCO ₃ =0.522tCO ₂ /tonne	n/a
F5	S5	NCV	Default figures on EPA website.	n/a
F5	S5	EF	Default figures on EPA website.	n/a

Sampling and Analysis

Do you undertake sampling and analysis of any of the ☐ Yes

parameters used in the calculation of your CO₂ emissions?

y. Analysis

The table below lists, for each source stream, where calculation factors are to be determined by analysis.

Source Stream Refs.	Emission Source Refs.	Parameter	Method of Analysis	Frequency	Laboratory Name	Laboratory ISO17025 Accredited	Evidence Reference
F1	S1	NCV	Documented In house method conforming to BS EN 14918:2009, ISO 1928	Weekly	Knight Energy Services Ltd	Yes	n/a
F1	S1	EF	Documented in-house method conforming to BSEN 15104:2011, BS EN 15407:2011(Determination of Carbon content)	Weekly	Knight Energy Services Ltd	Yes	n/a
F1	S1	Moisture	Documented in house method conforming to ISO 589-2008	Every 470 tonnes	Anua	Yes	n/a
F1,F4	S1	OxF	Documented In house method based on ISO1711:2010, BS EN 14775:2009(determination of ash)	Weekly	Knight Energy Services Ltd	Yes	n/a

Source Stream Refs.	Emission Source Refs.	Parameter	Method of Analysis	Frequency	Laboratory Name	Laboratory ISO17025 Accredited	Evidence Reference
F4	S1	NCV	Documented in house method conforming to ISO14918:2009	Monthly	Knight Energy Services Ltd	Yes	n/a
F1,F4	S1	OxF	Documented In house method conforming to BS en 15104:2011(determination of carbon in ash)	Monthly	Knight Energy Service Ltd	Yes	n/a

Detail about the written procedures for the above analysis.

Where a number of procedures are used details of an overarching procedure which covers the quality assurance of analyses methods and links together individual analytical methods is listed.

Title of procedure	Procedure for sampling and analyses for fuels for GHG Permit
Reference for procedure	EMS 9.1.09
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The purpose of this procedure is to ensure that peat consumed on site is sampled and analysed for carbon content to allow calculation of CO ₂ emissions. This procedure also outlines the sampling and analysis method used to determine CO ₂ emissions from biomass using NCV. The parameters to be measured for peat are: Carbon, Carbon-in-Ash (if required), Ash and Calorific Value. Information that is gathered in relation to peat and biomass sampling and analysis will be used for verification, auditing and calculation of CO ₂ (GHG) Emissions in the AEM Report.
Post or department responsible for the procedure and for any data generated	Chemical & Environmental Manager
Location where records are kept	Chemical & Environmental Managers office or Sharepoint
Name of IT system used	Microsoft Sharepoint
List of EN or other standards applied	N/A

z. Sampling Plan

Details about the procedure covering the sampling plan for the analysis table above.

The procedure below covers the elements of a sampling plan as required by Article 33 of the MRR. Where a number of procedures are used, details of an overarching procedure which covers the sampling methods and links together individual sampling methods are listed.

Attachment	Description
EMS 9.1-09 Procedure for Sampling and Analysis of Fuels.pdf	EMS 9.1-09 Procedure for Sampling and Analysis of Fuels

Title of procedure	Procedure for sampling and analyses for fuels for GHG Permit
Reference for procedure	EMS 9.1.09
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The purpose of this procedure is to ensure that the Peat and Biomass consumed on site are sampled appropriately to the standards specified. Peat samples are taken automatically every 470 tonnes, this is known as primary sample. Then the 6 sequential primaries is the equivalent of 1 secondary or known as a day sample and then 7 consecutive secondary samples known as a week sample forms a period sample.

Post or department responsible for the procedure and for any data generated	It is on the period sample that we measure in duplicate the Carbon content, NCV and Carbon in ash. There are roughly 4/5 period samples a month depending on deliveries. The Biomass samples are taken by hand at three points during the unloading process, a representative sample is then taken every third truck and compiled into a composite sample for a month. These samples are then sent off for independent analysis for NCV, Moisture and Ash. Chemical & Environmental Manager
Location where records are kept	Chemical & Environmental Manager's office or Sharepoint
Name of IT system used	Microsoft Sharepoint
List of EN or other standards applied	N/A

aa. Sampling Plan Appropriateness

The procedure to be used to revise the appropriateness of the sampling plan.

Title of procedure	Procedure for sampling and analyses for fuels for GHG Permit
Reference for procedure	EMS 9.1.09
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Sampling plan appropriateness is detailed in the procedure for sampling and analysis of fuels-peat and Biomass. A review of all sampling and analysis methods is conducted on an annual basis. This is completed by members of the Environmental & Sustainability team from head office where they conduct both in interim and final review of all analysis, documentation and a validation of the GHG figures for the reporting year. A review of the sampling methods, frequency and analysis is also completed by an independent verifier in his pre audit inspection and final audit inspection on an annual basis. Any new requirements are identified in both head office interim reports and the verifier inspection reports and required to be actioned upon within a specified stated time frame.
Post or department responsible for the procedure and for any data generated	Chemical & Environmental Manager
Location where records are kept	Chemical & Environmental Manager's Office or Sharepoint
Name of IT system used	Microsoft Sharepoint
List of EN or other standards applied	N/A
Are stock estimates carried out as part of the emission calculations?	Yes

bb. Year-end reconciliations

The procedure to be used to estimate stocks at the beginning/end of a reporting period where applicable. This should include any source streams monitored using batch metering e.g. where invoices are used.

Title of procedure	Procedure for describing the protocol used in the determination of Co2 emissions
Reference for procedure	EMS 11.2.10
Diagram reference	N/A
Brief description of procedure.	This procedure details the stock takes on Peat and Gas oil. Gas oil Tank dips occur at the start/end of the year by an independant surveyor. In addition a member of Operations staff records the level of the tank at the start of the year. Any consumption between the start of the year and the time of the tank dip is then accounted for in the calculation. Integrator readings from the belt weigher afor Peat are taken at the start/end of year year by Operations staff and send to the Chemical & Environmental Manager. In addition to this stock profile in the IPS is recorede at the end/start of the year by Operations. A screenshot is taken and this is reviewed by the verifier as of the documentation review at the final verification.
Post or department responsible for the procedure and for any data generated	Chemical & Environmental Manager
Location where records are kept	Chemical & Environmental Manager office or sharepoint
Name of IT system used	Microsoft Sharepoint
List of EN or other standards applied	N/A

cc. Tracking Instruments

The procedure used to keep track of instruments installed in the installation used for determining activity data.

Title of procedure	Procedure for the Calibration and Verification of Peat Weighers for CO2 emissions
Reference for procedure	EMS 11.2.07
Diagram reference	N/A
Brief description of procedure.	The purpose of this procedure is to ensure that calibration and certification of weighing equipment used in the calculation of CO2 emissions from peat. This procedure applies to the belt-weigher and weighbridge and tippler supplying peat into the intermediate Peat Storage Shed.
Post or department responsible for the procedure and for any data generated	Chemical & Environmental Manager
Location where records are kept	Chemical & Environmental Manager's office or Sharepoint
Name of IT system used	Microsoft Sharepoint
List of EN or other standards applied	N/A

11. Management

dd. Monitoring and Reporting Responsibilities

Responsibilities for monitoring and reporting emissions from the installation are listed below:

Relevant job titles/posts and provide a succinct summary of their role relevant to monitoring and reporting are listed below.

Job Title / Post	Responsibilities
Environmental & Chemical Manager	Ensure GHG compliance, Responsible for the submission of AEM Report and M&R plan and associated protocols for the reporting year
Chemical & Environmental Team Leader	Fuel Management, Analysis
Commerical & Financial Team Leader	Invoices, Fuel, Management
Station Manager	Sign off on independant verification and Compliance
Enviromental & Sustainability (Head Office)	Internal checks

Attachment	Description
Organisational Structure LRP.doc	ESB LRP Organisational Structure
EMS 11.2-10 Procedure Protocol used in the Determination of CO2 Emissions LRP 12.pdf	Ver 12.0

ee. Assignment of Responsibilities

Details of the procedure used for managing the assignment of responsibilities for monitoring and reporting within the installation and for managing the competencies of responsible personnel in accordance with Article 58(3)(c) of the MRR:

This procedure identifies how the monitoring and reporting responsibilities for the roles identified above are assigned and how training and reviews are undertaken.

Title of procedure	The procedure for describing the protocol used in the determination of CO2 emissions
Reference for procedure	EMS 11.2.10
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Procedure regarding the determination of CO2 emissions in LRP. It specifies Roles & Responsibilities, details of plant, calculation methodology for all fuel and materials used in LRP, sampling plans, emission factors, oxidation factors. Records and documentation, Corrections and Corrective actions, Risk Register.
	Section 3.0 outlines the roles & responsibilities within the station and external to the station and the training mechanisms employed in the station. A data flow diagram states the roles and responsibilities regarding activity data, see the data activity flow diagram and protocol attached below.
Post or department responsible for the procedure and for any data generated	Chemical & Environmental Manager
Location where records are kept	Chemical & Environmental Manager office or Sharepoint
Name of IT system used	Microsoft Sharepoint
List of EN or other standards applied	N/A

ff. Monitoring Plan Appropriateness

Details of the procedure used for regular evaluation of the monitoring plan's appropriateness covering in particular any potential measures for the improvement of the monitoring methodology:

Title of procedure	The procedure for describing the protocol used in the determination of CO2 emissions
Reference for procedure	EMS 11.2.10
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The purpose of this procedure is to show how CO2 emissions are determined and described in a single protocol. Section 4.3 reviews the calculation methodology and Section 7.0 reviews the appropriateness of the M&R

Post or department responsible for the procedure and for any data generated	through a system of internal and external reviews. Chemical & Environmental Manager
Location where records are kept	Chemical & Environmental Manager office or Sharepoint
Name of IT system used	Microsoft Sharepoint
List of EN or other standards applied	N/A

gg. Data Flow Activities

Details of the procedures used to manage data flow activities in accordance with Article 57 of the MRR:

Title of procedure	The procedure for describing the protocol used in the determination of CO ₂ emissions
Reference for procedure	EMS 11.2.10
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The purpose of this procedure is to show how CO ₂ emissions are determined and described in a single protocol. Section 4.0, 4.2 and 4.3 and Appendices 2, 3 and 4 demonstrate the flow activity data in the station for peat, gas oil, propane, Biomass. Appendix 3 also depicts the documentation supporting ash management.
Post or department responsible for the procedure and for any data generated	Chemical & Environmental Manager
Location where records are kept	Chemical & Environmental Manager office or Sharepoint
Name of IT system used	Microsoft Sharepoint
List of EN or other standards applied	N/A
List of primary data sources	EPA Table of Country specific NCV and Emission Factors
	Directive 2003/97/EC
	EU Commission Regulation 601/2012
	EU Guidance documents.
Description of the relevant processing steps for each specific data flow activity.	The CO ₂ emissions for Peat Consumption F1 is calculated on a delivery basis as the product of Activity*NCV*EF*Oxidation Factor.
Identify each step in the data flow and include the formulas and data used to determine emissions from the primary data. Include details of any relevant electronic data processing and storage systems and other inputs (including manual inputs) and confirm how outputs of data flow activities are recorded	The Activity data is measured by deliveries (Belt weighs to Intermediate Store) and stock difference between start and year end. Stock levels at year end are obtained from a computerised system known as DCS.
	Peat is sampled automatically every 470 tonnes. There is a sampling plan in the M&R Protocol covering how samples re made up for - carbon, NCV and moisture analysis. Carbon content, NCV and Moisture analysis will be carried out by an independent ISO17025 accredited laboratory.
	Carbon in ash will be determined in an ISO17025 Lab for

the calculation of the oxidation factor. Reportable CO₂ emissions are calculated on a monthly basis on an excel spreadsheet and cross audited against invoices, analysis and year end dips etc. All records are held on hard copy and soft copy (SharePoint).

Gas oil consumption (F2-01) is calculated on deliveries(invoices) and the volume is converted to tonnes using a factor of 0.8657kg/l. An independent surveyor conducts dips at start/year end. Stock difference between start and year end is accounted for. Emissions from this source are calculated on an annual basis via an excel spreadsheet and are cross checked against invoices, tank dips. All records are held on hard copy and soft copy (SharePoint).

CO₂ emissions are calculated -Activity*EF*NCV*OF. An OF of 1 is used. Gas oil consumption (F2-02) is based on delivery invoices and based on fire pump capacities. This is also recorded on an excel spreadsheet and invoices are cross checked against data in the spreadsheet. Propane F3 consumption is based on deliveries, the approach taken is de-minimis as emission from this source are minimal. Emissions are calculated on an annual basis on a spreadsheet and cross checked against invoices. The NCV and EF factors used will be taken from those stipulated in the document "Country Specific NCV and CO₂ emission factors" from the EPA website for the year being reported on, for use in the AIER.

Limestone consumption is based on deliveries (invoices). The calculation methodology is de minimis. CO₂ emission will be based on a delivered tonnes, multiplied by a factor of 0.44 (purity factor if dry CaCO₃). Solid biomass will be delivered by truck and the quantity measured using a weighbridge. Representative samples will be taken to make up a composite sample for each type of biomass fuel. These samples will be analysed in an independent laboratory for Moisture, ash and NCV. These are cross checked against an excel spreadsheet.

Acetylene consumption will be based on invoices only, as emissions are de minimis. Emission factors will be based on the default figures on EPA website.

The Chemical/Environmental Mgr fills in the spreadsheet, this is then audited twice a year by members of the Environmental & Sustainability team in Head office and the spreadsheet is also audited twice by an independent verifier during the reporting year verification. All records are held on hard copy and soft copy (SharePoint).

Submit relevant documents to record data flow activities

Attachment	Description
Flow Diagram of LRP Fuel Activity.doc	Flow Diagram of LRP Fuel Activity

hh. Assessing and Controlling Risks

Details of the procedures used to assess inherent risks and control risks in accordance with Article 58 of the MRR:

Title of procedure	The procedure for describing the protocol used in the determination of CO2 emissions
Reference for procedure	EMS 11.2.10
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Procedure regarding the determination of CO2 emissions in LRP from Peat, Gas Oil, Propane and Biomass. Section 9.0 details the risk, Appendix 1 incorporate the stations risk register. It outlines the risks and controls associated with the GHG process individuals responsible, mitigating procedures and outcomes. It is reviewed on an annual basis and amended accordingly by the Chemical & Environmental Manager.
Post or department responsible for the procedure and for any data generated	Chemical & Environmental Manager
Location where records are kept	Chemical & Environmental Manager office or Sharepoint
Name of IT system used	Microsoft Sharepoint
List of EN or other standards applied	N/A

ii. Quality Assurance of Metering / Measuring Equipment

Details of the procedures used to ensure quality assurance of measuring equipment in accordance with Article 58 and 59 of the MRR.

Title of procedure	The procedure for describing the protocol used in the determination of CO2 emissions
Reference for procedure	EMS 11.2.10
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Procedure regarding the determination of CO2 emissions in LRP. Section 6.0 of the protocol details any issues in relation to Quality Assurance. Section 6.1 specifically details issues that are specific to metering devices and metering device calibrations.

Post or department responsible for the procedure and for any data generated	Chemical & Environmental Manager
Location where records are kept	Chemical & Environmental Manager office or Sharepoint
Name of IT system used	Microsoft Sharepoint
List of EN or other standards applied	N/A

jj. Quality Assurance of Information Technology used for Data Flow Activities

Details of the procedures used to ensure quality assurance of information technology used for data flow activities in accordance with Article 58 and 60 of the MRR:

Title of procedure	The procedure for describing the protocol used in the determination of CO2 emissions
Reference for procedure	EMS 11.2.10
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Procedure regarding the determination of CO2 emissions in LRP. Section 6.3 of the protocol deals with security issues, user rights and access to documentation available on-line and Section 5.0 outlines the specific modes of record keeping such as spreadsheets, records etc.
Post or department responsible for the procedure and for any data generated	Chemical & Environmental Manager
Location where records are kept	Chemical & Environmental Manager office or Sharepoint
Name of IT system used	Microsoft Sharepoint
List of EN or other standards applied	N/A

kk. Review and Validation of Data

Details of the procedures used to ensure regular internal reviews and validation of data in accordance with Articles 58 and 62 of the MRR.

Title of procedure	The procedure for describing the protocol used in the determination of CO2 emissions
Reference for procedure	EMS 11.2.10
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Procedure regarding the determination of CO2 emissions in LRP. It specifies Roles & Responsibilities. Records and documentation, Corrections and Corrective actions, Risk Register. Section 7.0 of the protocol details how reviews are conducted within the station. Section 7.1 details Internal mechanism to review and validate data. Section 7.2 details the review mechanism employed by external independent bodies i.e. the verifier.
Post or department responsible for the procedure and for any data generated	Chemical & Environmental Manager
Location where records are kept	Chemical & Environmental Manager office or Sharepoint
Name of IT system used	Microsoft Sharepoint

List of EN or other standards applied	N/A
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II. Corrections and Corrective Actions

Details of the procedures used to handle corrections and corrective actions in accordance with Articles 58 and 63 of the MRR:

Title of procedure	The procedure for describing the protocol used in the determination of CO2 emissions
Reference for procedure	EMS 11.2.10
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Procedure regarding the determination of CO2 emissions in LRP. It specifies Roles & Responsibilities. Records and documentation, Corrections and Corrective actions, Risk Register. Section 5.0 of the procedure details the corrective actions and close mechanisms from the internal and external system and the reports generated from these processes which are for the purpose of the validation of GHG documentation.
Post or department responsible for the procedure and for any data generated	Chemical & Environmental Manager
Location where records are kept	Chemical & Environmental Manager office or Sharepoint
Name of IT system used	Microsoft Sharepoint
List of EN or other standards applied	N/A

mm. Control of Outsourced Activities

Details of the procedures used to control outsourced processes in accordance with Articles 59 and 64 of the MRR.

Title of procedure	The procedure for describing the protocol used in the determination of CO2 emissions
Reference for procedure	EMS 11.2.10
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Procedure regarding the determination of CO2 emissions in LRP. It specifies Roles & Responsibilities. Records and documentation, Corrections and Corrective actions, Risk Register. Section 8.0 of the protocol details the issues with fuel, fuel sampling and with the fuel analysis.
Post or department responsible for the procedure and for any data generated	Chemical & Environmental Manager
Location where records are kept	Chemical & Environmental Manager office or Sharepoint
Name of IT system used	Microsoft Sharepoint
List of EN or other standards applied	N/A

nn. Record Keeping and Documentation

Details of the procedures used to manage record keeping and documentation:

Title of procedure	The procedure for describing the protocol used in the determination of CO2 emissions
Reference for procedure	EMS 11.2.10
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Procedure regarding the determination of CO2 emissions in LRP. Section 5.0 of the protocol details the issues regarding documentation.
Post or department responsible for the procedure and for any data generated	Chemical & Environmental Manager
Location where records are kept	Chemical & Environmental Manager office or Sharepoint
Name of IT system used	Microsoft Sharepoint
List of EN or other standards applied	N/A

oo. Risk Assessment

The results of a risk assessment that demonstrates that the control activities and procedures are commensurate with the risks identified:

Attachment	Description
LRP.WOP Risk Register.doc	LRP Risk Register

pp. Environmental Management System

Does your organisation have a documented Environmental Management System? Yes

Is the Environmental Management System certified by an accredited organisation? Yes

The standard to which the Environmental Management System is certified: ISO 14001

12. Changes in Operation

qq. Changes in Operation

Article 24(1) of Commission Decision 2011/278/EC requires that Member States must ensure that all relevant information about any planned or effective changes to the capacity activity level and operation of an installation is submitted by the operator to the competent authority by 31 December each year. Article 12(3) of the MRR further provides that Member States may require information to be included in the monitoring plan of an installation for the purposes of meeting these requirements.

Details of the procedure used to ensure regular reviews are carried out to identify any planned or effective changes to the capacity activity level and operation of the installation that have an impact on the installation's allocation:

The procedure specified below cover the following:

- planning and carrying out regular checks to determine whether any planned or effective changes to the capacity activity level and operation of an installation are relevant under Commission Decision 2011/278/EC; and
- Procedures to ensure such information is submitted to the competent authority by 31 December of each year.

Title of procedure	N/A
Reference for procedure	N/A
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	N/A
Post or department responsible for the procedure and for any data generated	N/A
Location where records are kept	N/A
Name of IT system used	N/A

13. Abbreviations**rr. Abbreviations Acronyms or definitions**

Abbreviations acronyms or definitions that have been used in this monitoring plan:

Abbreviation	Definition
EF	Emission Factor
OF	Oxidation Factor
NCV	Net Calorific Value
CFB	Circulating Fluidised Bed

Abbreviation	Definition
IPS	Intermediate Peat Storage

14. Additional Information

Any other information:

Attachment	Description
EPA LRP GHG revision of MR Dec 2013 (2).pdf	Outline of changes to GHG Permit.

15. Confidentiality

ss. Confidentiality Statement

It is the Environmental Protection Agency's policy to make information received by it in the course of its work open to inspection by any person on request. This is in accordance with the provisions of the European Communities (Access to Information on the Environment) Regulations 2007 to 2011.

In the event that you considered that some of the information being submitted of a confidential nature, then the nature of this information and the reasons why it should be considered confidential, with reference to the European Communities (Access to Information on the Environment) Regulations 2007 to 2011 and any amendments must be explicitly requested using the facility below. The Board of the Environmental Protection Agency will consider the requests and if the information can be deemed as confidential and necessary.

Notwithstanding any request for confidentiality, the Environmental Protection Agency explicitly reserves the right to release data to the Commission, including emissions and allocations to the public, on the basis that the data will be used for the purposes foreseen in Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

Please tick this box if you consider that any part of your form should be treated as commercially confidential/sensitive: ☐ false

END of Appendix I.