



Headquarters,
Johnstown Castle Estate,
County Wexford, Ireland

GREENHOUSE GAS EMISSIONS PERMIT

Permit Register Number:	IE-GHG007-10339-3
Operator:	Edenderry Power Limited Main Street Newbridge Kildare
Installation Name:	Edenderry Power Plant
Site Name:	Edenderry Power Plant
Location:	Ballykilleen Edenderry Offaly 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-GHG007-10339.

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

Email: help.ets@epa.ie

By Post: Climate Change Unit, Environmental Protection Agency
P.O. Box 3000, Johnstown Castle Estate,
Co. Wexford

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
P0482-04

Status Log

Current Permit

Permit number	Date application received	Date Permit issued	Comment
IE-GHG007-10339-3	21 November 2016	06 February 2017	Additional beltweigher MD11 included for the source streams biomass and peat and relevant sections of the monitoring plan and procedures updated. Additional laboratory added for fuel analysis.

Previous Permits

Permit number	Change Type	Date application received	Date Permit issued	Comment
IE-GHG007-10339-1	GHG Permit Application	25 March 2013	08 May 2013	
IE-GHG007-10339-2	GHG Variation	11 February 2014	20 November 2014	<p>Addition of two emission sources S3 Diesel Firepump and S4 Workshop Gases.</p> <p>Update of procedure descriptions and references to sampling and analysis methods.</p> <p>Inclusion of additional information on determination of oxidation factor for Peat and the calculation of emissions from the use of Limestone.</p>

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)	Edenderry Power Limited
“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:

Edenderry Power Limited
Main Street
Newbridge
Kildare

Company Registration Number: 278071

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)

at the following installation(s):

Edenderry Power Plant **Installation number:** 6

located at

Ballykilleen
Edenderry
Offaly
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.: 6

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	299.3	MW
S2	Emergency Generator	1.8	MW
S3	Diesel Fire Pump	0.32	MW
S4	Workshop Gases	0.01	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 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 06 February 2017:

PRESENT when the seal of the Agency was affixed hereto:

Ms. Annette Prendergast
Inspector/ Authorised Person

Appendix 1 to Greenhouse Gas Emissions Permit Number IE-GHG007-10339

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	Edenderry Power Plant
Site name	Edenderry Power Plant
Address	Ballykilleen Edenderry Offaly Ireland

Grid reference of site main entrance	E 260913 N 226958
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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
P0482-04	Edenderry Power Limited	EPA

Has the regulated activity commenced at the Installation? Yes

Date of Regulated Activity commencement	01 January 2005
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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	Edenderry Power Limited
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Company Registration Number	278071
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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	Richard
Surname	Neale
Position	Environmental Health and Safety Manager

Registered office address

Address Line 1	Main Street
Address Line 2	N/A
City/Town	Newbridge
County	Kildare
Postcode	N/A

Principal office address

Is the principal office address different to the registered office address? Yes

Address Line 1	Ballykilleen
Address Line 2	N/A
City/Town	Edenderry
County	Offaly
Postcode	N/A
Company registration number	278071

Holding company

Does the company belong to a holding company? Yes

Holding company name	Bord na Mona Plc
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Holding company address

Address Line 1	Main Street
Address Line 2	N/A
City/Town	Newbridge
County	Kildare
Postcode	N/A
Company registration number	297717

Is the holding company principal address different to the holding company address? 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 end of a reporting period allowances can be balanced against reported emissions. | Yes |

4. Service Contact

e. Service Contact

Name	Mr Richard Neale
Address / Email Address	Edenderry Power Plant Ballykilleen Edenderry Offaly

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.

The installation is a 128 MW (Gross output) Milled Peat & Biomass co-fired power plant with a thermal rated input of 299 MWth. The combustion technology installed at the plant is a bubbling fluidised bed (BFB) boiler. Ultimate plant dispatch is determined by the Transmission System Operator, but in general plant availability runs at about 85-87%, and plant load on average is about 85%. Current typical CO₂ production per MWhr of ~0.98t, annual emission of CO₂ have historically been in the range 800- 850kt per annum, however with increasing levels of biomass this tonnage is reducing.

The primary fuel used on site is a mix of milled peat and biomass with up to 1,000,000 wet tonnes of fuel consumed per annum. As part of an environmental improvement programme, increasing quantities of wood and other biomass are used to maintain a cofuelling target of 38%. Small quantities of gas oil are also used at start-up, with propane being used to light the start up burners. There are approximately 6-8 start-ups annually. A small quantity of gas oil may also be used to run the emergency diesel generator and standby fire pump on site. This gas oil is fed directly from the primary stock held in the oil tank storage area. A very small amount of Acetylene is used for welding. Process emissions of CO₂ also arise from the use of dry powdered limestone in the boiler, which is used to abate SO_x emissions.

In total, the combustion of milled peat is responsible for more than 99% of total CO₂ emissions on the site, with combined emissions from the use of gas oil and limestone representing less than 1% of total emissions.

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)	301.43	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
GHG007 Site Map 2016.pdf	Site Map

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)}) 680652

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	Emergency Generator
S3	Diesel Fire Pump
S4	Workshop Gases

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

Emission Source Reference	Emission Source Description
S2	Emergency Generator
S3	Diesel Fire Pump
S4	Workshop Gases

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
A1-1	Main Boiler Stack
A2-1	Emergency Generator Stack
A3.1	Diesel Fire Pump Exhaust
A4.1	Workshop Ventilation

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-Peat	Combustion: Solid fuels	Peat
F2-Bio	Combustion: Solid fuels	Biomass
F3-MFO	Combustion: Other gaseous & liquid fuels	Medium Fuel Oil
F4-GasOil	Combustion: Commercial standard fuels	Gas/Diesel Oil
F5-Pro	Combustion: Commercial standard fuels	Propane
M1-CaCO ₃	Combustion: Scrubbing (carbonate)	Limestone
F6-Acetylene	Combustion: Other gaseous & liquid fuels	Acetylene Gas

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-Peat	S1	A1-1	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-Bio	S1	A1-1	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-MFO	S1	A1-1	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-GasOil	S1,S2,S3	A1-1,A2-1,A3.1	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-Pro	S1	A1-1	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-CaCO ₃	S1	A1-1	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)
F6-Acetylene	S4	A4.1	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 primary fuel is a Peat Biomass. Small quantities of Gas Oil are used for start up activities only. Some additional process emissions arise from the use of Calcium Carbonate as a SO_x scrubbing agent.

Due to the variation in calorific value and non-homogenous nature of milled peat, calculation of CO₂ emissions from peat is approached by determining the Carbon Content of supplied peat fuel and calculating an Emissions Factor. Sampling and analysis is conducted on the basis of a Fuel Supply Agreement, which is currently used for the payment calculations for the fuel. The Total Peat Biomass Fuel purchases are metered using a weigh belt (MD2-EBA50CW001), located on the rising belt from the supplier screen house to the intermediate fuel storage shed (capacity ~7,000 t). The Biomass intake is measured on the road weighbridge MD1-BNM1CW001 and new belt weigher MD11-EBA22CW001, thereby through calculation providing a peat and biomass tonnage.

Each month is divided into four periods for the purpose of determining net calorific value and carbon content of the delivered fuel.

Peat Consumed (Activity) = Opening Stock + Delivered Fuel Tonnes (MD2-EBA50CW001) – Delivered Biomass - Closing Stock

Biomass Consumed (Activity) = Delivered Biomass (MD1-BNM1CW001)+(MD11-EBA22CW001) – No opening or closing stock

Laboratory analysis of the fuel consumed for each period is applied to the activity data to produce the calculated NCV and calculated emission factors. NCV is calculated using an industry standard formula based on IS EN 14918:2009 Appendix E3.1. The Oxidation Factor is determined from a period (weekly) analysis of boiler ash proportioned between peat and biomass based on the input fuel ash content, this is based on an industry standard formula.

Ancillary fuels (Gas Oil Propane and workshop Acetelene) are de minimis and are calculated on an invoiced delivery and end of year stock level basis and Default or the National Country specific values are applied in the final calculation to provide the necessary CO₂ and NCV values. Emission Factor for the limestone use is based on MRR Annex VI Section 2. Activity data is calculated from stock and deliveries. The limestone used is a mix of CaCO₃ and MgCO₃, the supplier provides a certificate of analysis indicating the percentage of each element. The product, although dry, has some residual moisture that is also specified and is used in the calculation. The relevant factors from MRR Annex VI Section 2 Table 2 are taken for these two constituents – 0.440 and 0.522 and the percentages applied to provide an average emission factor. The following calculation is used;

Weighted Factor = (((solids content)*percentage CaCO₃)*0.44)+(((solids content)*percentage MgCO₃)*0.522). The Limestone activity data is then multiplied by this calculated factor to give total CO₂ emitted”

For Peat and other fuels (except Biomass) - Total Emissions = Activity Data*NCV*Emission Factor*Oxidation Factor. For Limestone - Total Emissions = Activity Data*Emission Factor.

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-Peat	S1	MD2-EBA50CW001	Belt weigher	0-1200	tonnes	0.25	EBA50 Conveyor - Main Delivery Belt
F1-Peat	S1	MD3-EBA55CL003	Ultrasonic Level Gauge	0 - 13	m	21.2	Intermediate Peat Storage Shed
F1-Peat,F2-Bio	S1	MD1-BNM1CW001	Weighbridge	0 - 50	Tonnes	0.5	Road Delivery Weighbridge Entry
F3-MFO	S1	MD5-EGB10CL001	Level gauge	0 - 4	metres	1.1	Oil Storage Area
F4-GasOil	S1,S2,S3	MD6-EGB20CL001	Level gauge	0 - 5	metres	0.6	Fuel Bund Area
M1-CaCO3	S1	MD4-HFA40CW001	Weighscale	0 - 150	Tonnes	5.00	Limestone Silo
F5-Pro	S1	Stock Count	Visual Count of Bottles in Stock	N/A	Kg	N/A	Boiler Propane Cage
F4-GasOil	S1	MD7-EGD50CF001	Rotary meter	0 - 250	Litres/minute	5.0	Oil Storage Bund
F3-MFO	S1	MD8-SUT001	Supplier Rotary Meter (National Metrology)	0 - 2500	Liters/minute	0.10	Supplier Depot
F4-GasOil	S1,S2,S3	MD9-SUT002	Supplier Rotary Meter (National Metrology)	0 - 2500	Liters/minute	0.10	Supplier Depot
M1-CaCO3	S1	MD10- EXTLIME001	Weighbridge	0-60	Tonnes	0.5	External Supplier Weighbridge - National metrology

Source Stream Refs.	Emission Source Refs.	Measurement Device Ref.	Type of Measurement Device	Measurement Range	Metering Range Units	Specified Uncertainty (+/- %)	Location
							controlled
F6-Acetylene	S4	Stock Check	Visual Check and Purchase Records	N/A	Kg	N/A	Workshop Gas Cage
F1-Peat,F2-Bio	S1	MD11-EBA22CW001	Belt weigher	0-150	Tonnes	0.25	Biomass System

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
F1-Peat	MD2-EBA50CW001	Batch	Operator	N/A	N/A	N/A
F1-Peat	MD3-EBA55CL003	Batch	Operator	N/A	N/A	N/A
F1-Peat,F2-Bio	MD1-BNM1CW001	Batch	Trade partner	Yes	Yes	Yes
F3-MFO	MD5-EGB10CL001	Batch	Operator	N/A	N/A	N/A
F4-GasOil	MD6-EGB20CL001	Batch	Operator	N/A	N/A	N/A
M1-CaCO3	MD4-HFA40CW001	Batch	Operator	N/A	N/A	N/A
F5-Pro	Stock Count	Batch	Operator	N/A	N/A	N/A
F4-GasOil	MD7-EGD50CF001	Batch	Operator	N/A	N/A	N/A
F3-MFO	MD8-SUT001	Batch	Trade partner	Yes	Yes	Yes
F4-GasOil	MD9-SUT002	Batch	Trade partner	Yes	Yes	Yes
M1-CaCO3	MD10- EXTLIME001	Batch	Trade partner	Yes	Yes	Yes
F6-Acetylene	Stock Check	Batch	Operator	N/A	N/A	N/A
F1-Peat,F2-Bio	MD11-EBA22CW001	Batch	Operator	N/A	N/A	N/A

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-Peat	S1	MD2-EBA50 CW001, MD3-EBA55 CL003, MD1-BNM1 CW001, MD11-EBA22 CW001	<1.5%	Standard	4	3	3	N/A	3	N/A	N/A	760600	99.84	Major	Yes	n/a	n/a
F2-Bio	S1	MD11-EBA22 CW001, MD1-BNM1 CW001	<1.5%	Standard	4	3	1	N/A	3	N/A	N/A	0	0	De-minimis	Yes	n/a	n/a
F3-MFO	S1	MD5-EGB10 CL001, MD8-SUT001	N/A	Standard	No tier	2a	2a	N/A	1	N/A	N/A	215.08	0.03	De-minimis	N/A	n/a	n/a
F4-	S1	MD6-	N/A	Standard	No tier	2a	2a	N/A	1	N/A	N/A	200	0.03	De-	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)
GasOil		EGB20 CL001, MD7-EGD50 CF001, MD9-SUT002		rd										minimise			
M1-CaCO ₃	S1	MD10-EXTLIME001, MD4-HFA40 CW001	<7.5%	Standard	1	N/A	1	N/A	N/A	1	N/A	810.75	0.11	De-minimise	N/A	n/a	n/a
F5-Pro	S1	Stock Count	N/A	Standard	No tier	2a	2a	N/A	1	N/A	N/A	0.12	0	De-minimise	N/A	n/a	n/a
F4-GasOil	S2,S3	MD6-EGB20 CL001, MD9-SUT002	N/A	Standard	No tier	2a	2a	N/A	1	N/A	N/A	8.2	0	De-minimise	N/A	n/a	n/a
F6-Acetyl	S4	Stock Check	N/A	Standard	No tier	1	1	N/A	1	N/A	N/A	0.12	0	De-minimise	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)
ene														s			

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

761834.27

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
Weighbridge Certificate.pdf	Road Weighbridge Certification to Class III
Thermo Ramsey Weighbridge Specification.pdf	Weighbridge Manufacturers Uncertainty (MD2 EBA05CW001)
IE GHG007-03 Uncertainty Assessment Calculations 2016.doc	Uncertainty Assessment Calculations 2016
Biomass Thermo Ramsey Specification.pdf	New Biomass Weighbridge Specification
CAL CERT - 18Nov15 BW006.pdf	New Biomass Weighbridge Manufacturers calibration

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-Peat	S1	4	3	3	N/A	3	N/A	N/A
F2-Bio	S1	4	3	1	N/A	3	N/A	N/A
F3-MFO	S1	No tier	2a	2a	N/A	1	N/A	N/A
F4-GasOil	S1	No tier	2a	2a	N/A	1	N/A	N/A
M1-CaCO3	S1	1	N/A	1	N/A	N/A	1	N/A
F5-Pro	S1	No tier	2a	2a	N/A	1	N/A	N/A
F4-GasOil	S2,S3	No tier	2a	2a	N/A	1	N/A	N/A
F6-Acetylene	S4	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)
F3-MFO,F4-GasOil,F5-Pro	S1,S2,S3	NCV	Ireland's National Greenhouse Gas Inventory	n/a
M1-CaCO ₃	S1	EF	MRR Annex VI Section 2	0.440 for CaCO ₃ and 0.522 for MgCO ₃ fraction
F3-MFO,F4-GasOil,F5-Pro	S1,S2,S3	EF	Ireland's National Greenhouse Gas Inventory	n/a
M1-CaCO ₃	S1	Conversion Factor	MRR Annex II Section 4.2	1
F3-MFO,F4-GasOil,F5-Pro	S1,S2,S3	OxF	MRR Annex II Section 2.3	1
F2-Bio	S1	OxF	MRR Article 37	1
F2-Bio	S1	EF	MRR Subsection 5 Article 38 Section 2	0
F6-Acetylene	S4	NCV	EPA Guidance Document - Published Averaged Supplier Data - MRR Article 31.1(d)	48
F6-Acetylene	S4	EF	EPA Guidance Document - Stoichiometric Ratio MRR Article 31.1(d)	70.4
F6-Acetylene	S4	OxF	MRR Annex II Section 2.3	1

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-Peat	S1	NCV	ISO 589:2008, ISO 1171:2010, EN 14918:2009 - NCV calculated from analysis based on EN 14918:2009 - Appendix E 3.1	7 to 8 Day Period (4 Periods per Month)	Edenderry Power Operations Limited & Knight Energy Services Limited, Environmental Scientifics Group Limited	Yes	n/a
F1-Peat	S1	EF	I.S. CEN/TS 15104:2011, I.S. CEN/TS 15407:2011	7 to 8 Day Period (4 Periods per Month)	Knight Energy Services Limited, Environmental Scientifics Group Limited	Yes	n/a
F2-Bio	S1	NCV	I.S. EN 14918:2009 - NCV calculated from analysis based on EN 14918:2009 - Appendix E 3.1	7 to 8 day Period (4 per Month)	Edenderry Power Operations Limited & Knight Energy Services Limited, Environmental Scientifics Group Limited	Yes	n/a
F1-Peat	S1	OxF	ISO 1171:2010 - Solid mineral fuels - Determination of ash and BS EN 15407:2011 -	7 to 8 Day Period (Weekly) 4 per Month	Edenderry Power Operations Limited & Knight Energy Services Limited, Environmental	Yes	n/a

Source Stream Refs.	Emission Source Refs.	Parameter	Method of Analysis	Frequency	Laboratory Name	Laboratory ISO17025 Accredited	Evidence Reference
			Carbon Content		Scientifics Group Limited		
F1-Peat	S1	EF	I.S. CEN/TS 15104:2005, I.S. CEN/TS 15407:2006	7 to 8 Day Period (4 per Month)	Edenderry Power Operations Limited, Environmental Scientifics Group Limited	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	Fuel Laboratory Quality Manual
Reference for procedure	EDE B1 12073
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	To outline and document the compliance of the Fuel laboratory at EPL to International standard ISO/IEC 17025:2005 to analyze fuel for % Moisture content, % Ash content, Gross Calorific Value (dry basis), % Carbon & % Sulphur (dry basis) and Bulk Density also to maintain and calibrate laboratory equipment used, for the purpose of calculating CO2 emissions.
Post or department responsible for the procedure and for any data generated	Laboratory Quality Manager
Location where records are kept	Site Laboratory
Name of IT system used	Ms Word & MS Excel
List of EN or other standards applied	ISO 1171:2010 - Solid mineral fuels - Determination of ash. ISO 589:2008 - Determination of Total Moisture. BS 1016 Section 104.1 – Analysis and testing of coal and coke. I.S. EN 14775:2009 – Solid Biofuels – method for the determination of Ash content I.S EN 14774-1:2009 – Solid Biofuels – Method for determination of moisture content – Oven dry method Part 1 :Total Moisture – reference method. I.S EN 14774-3:2009 – Solid Biofuels – Method for determination of moisture content – Oven dry method Part 3: Moisture in general analysis sample I.S.CEN/TS 14780:2005 – Solid Biofuels – Method for Sample Preparation I.S. EN 14918:2009 – Solid Biofuels – Method for the Determination of Calorific Value I.S. CEN/TS 15104:2005 – Solid Biofuels – Determination of Total Content of Carbon, Hydrogen and Nitrogen Instrumental Methods. I.S.CEN/TS 15289:2006 – Solid Biofuels – Determination of Total Content of Sulphur and Chlorine

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
Fuel Sampling Arrangements for GHG.doc	Fuel sampling Updated 2016

Title of procedure	Fuel Sampling Arrangements for Green House Gas Reporting
Reference for procedure	EDE B1 21037
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	This overarching procedure outlines how and where samples are taken and includes references to additional procedures providing detailed information on methods for the preparation of samples, relevant responsibilities, locations, frequencies quantities and methodologies for the storage and transport of the samples. The procedure has been developed to ensure that samples are representative of the delivered fuel and free from any bias.
Post or department responsible for the procedure and for any data generated	The procedure provides for a review of the plan at intervals to ensure the plan remains relevant. EHS Manager
Location where records are kept	EHS Manager Office
Name of IT system used	MS Word
List of EN or other standards applied	ISO 9001, ISO 14001 & ISO 17025 CEN/TS 14778-1:2005 (Biofuels - Sampling Part 1)

aa. Sampling Plan Appropriateness

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

Title of procedure	Monitoring and Reporting of Greenhouse Gas Emissions
Reference for procedure	EDE B1 21028 - Development and Maintenance of Monitoring Plans
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The procedure provides for a review process to look at the sampling process, this review occurs at least annually or following any major process change and takes into account any issues arising from Audits or Verification, the procedure also takes into account the Risk Review and where possible provides for changes or improvements.
Post or department responsible for the procedure and for any data generated	EHS Manager
Location where records are kept	EHS Manager Office

Name of IT system used	Windows Network and Microsoft Office
List of EN or other standards applied	The Sampling Plan is based on CEN/TS 14778-1:2005 (Biofuels - Sampling Part 1) and is the agreed Contractual Sampling Plan. The Sampling Plan includes sample reduction and compositing in accordance with CEN/TS 14780 (Solid Biofuels - Method for Sample Preparation) and also exceeds the minimum requirements as indicated in Annex VII of the MRR for peat. The planned sampling rate results in >30 samples per day, these samples when analysed result in daily average moisture values. In addition, composite weekly samples are analysed in duplicate resulting in >85 samples per annum for GCV, Carbon and other related values. This is ~ double the stated minimum requirement in the MRR.

Are stock estimates carried out as part of the emission calculations?	Yes
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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	Monitoring and Reporting of Greenhouse Gas Emissions
Reference for procedure	EDE B1 21028 - Stocktake Procedure
Diagram reference	N/A
Brief description of procedure.	This section of the Procedure is used to document how stocks are estimated at the beginning/end of a reporting period and how end of year stocks are verified by an external auditor.
Post or department responsible for the procedure and for any data generated	EHS Manager
Location where records are kept	EHS Manager Office and Network Locations
Name of IT system used	MS Excel and MS Word
List of EN or other standards applied	ISO 9001, ISO 14001

cc. Tracking Instruments

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

Title of procedure	Monitoring and Reporting of Greenhouse Gas Emissions
Reference for procedure	EDE B1 21028 - Equipment Identification
Diagram reference	N/A
Brief description of procedure.	Procedure outlines the use of the Powermaint maintenance management package used for all site instruments, indicates how all plant items are tagged using a standardised KKS system. Specific equipment related to the monitoring and reporting of emissions are listed in the current Monitoring

and Reporting Plan

Post or department responsible for the procedure and for any data generated	EHS Manager
Location where records are kept	EHS Manager Office and Powermaint Database
Name of IT system used	Powermaint (Maintenance Management System) & MS Word
List of EN or other standards applied	ISO 9001, ISO 14001

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
EHS Manager	Coordination of site activities for the monitoring and reporting of Green House Gas. Ensures procedures, plans and operations are reviewed in line with Monitoring and Reporting Regulations and the Permit.
Automation Engineer	Maintenance and calibration of on site measurement equipment
Laboratory Quality Manager	Coordinates the on site laboratory activities so as to ensure accurate reporting of results associated with GHG reporting
Production Controller	Data Collection and Supervision of Fuel sampling
Finance and Administration Manager	Administration of Carbon Trading and Registry Activity. Quality System Management Representative overseeing Auditing, Corrective Action and other relevant support management procedures

Attachment	Description
Company Organisation Chart.ppt	Company Organisational Chart

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	Monitoring and Reporting of Greenhouse Gas Emissions
Reference for procedure	EDE B1 21028 - Responsibilities and Training
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The procedure outlines the management of responsibilities and the identification of competencies. Formal job descriptions are documented and based on these descriptions and training needs are identified and addressed. The procedures ensure that the training and development of all employees is carried out in line with the business objectives and that the relevant competencies and performance is achieved and maintained so as to achieve the company's business goals.
Post or department responsible for the procedure and for any data generated	EHS Manager
Location where records are kept	Administration Office - Employee Training Records
Name of IT system used	MS Word
List of EN or other standards applied	ISO 9001, ISO 14001

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	Monitoring and Reporting of Greenhouse Gas Emissions
Reference for procedure	EDE B1 21028 Sections - Audit and Management Review
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 the accurate and complete monitoring & reporting of greenhouse gas emissions from the site. The procedure outlines how all potential emissions sources are checked and source streams identified so as to ensure completeness of the emission reporting. The procedure also documents how changes in the installation will be reviewed and included in the monitoring plan. The procedure also describes how compliance with the uncertainty thresholds for activity data and other parameters assessed and and potential measures

	for improvement is applied. The procedure indicates how the agreed Monitoring & Reporting plans submitted to the Competent Authority are reviewed how any potential improvements are identified and implemented. This relevant document will be updated as required based on annual verification by the Competent Authority.
Post or department responsible for the procedure and for any data generated	EHS Manager
Location where records are kept	EHS Manager Office
Name of IT system used	MS Word
List of EN or other standards applied	ISO 9001, ISO 14001

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	Monitoring and Reporting of Greenhouse Gas Emissions
Reference for procedure	EDE B1 21028 - Data Flow Activities
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The procedure documents the approach for data flow activities for the monitoring and reporting of greenhouse gas emissions. The procedure outlines how the annual emission report is generated from data flow information. It ensures that the report does not contain miss-statements or errors and is in conformance with the monitoring plan. It includes the identification of any associated measurement, the frequency of the data collection, control measures, spreadsheets used along with any additional data used for calculation. The document ensures that written procedures have as a minimum the items of information listed on Article 12.
Post or department responsible for the procedure and for any data generated	EHS Manager
Location where records are kept	EHS Manager Office
Name of IT system used	MS Word
List of EN or other standards applied	ISO 9001, ISO 14001
List of primary data sources	Weighbridge Data, Weighbelt Data, Laboratory Moisture, GCV, Ash, Carbon, Unburnt Carbon, Fuel Stock Levels, Supporting Fuels Tank levels, Limestone Stocks, MRR 601/2012, National Inventory Values
Description of the relevant processing steps for each specific data flow activity.	Peat and Biomass fuel is delivered via train or by road transport, in either case the fuel is weighed and a representative sample taken from each load. Samples are uniquely identified and are passed to the site laboratory for analysis.
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	Daily delivery data for Peat and Biomass is received from the supplier weighbridge electronically; the data file

activities are recorded

includes a list of individual deliveries, fuel types, tonnages and sample IDs.

The total daily tonnages of each fuel type are determined as outlined in the Sampling Procedure. The accumulated Weekly Period Fuel totals are entered into the CO2 Emissions Spreadsheet. This piece of software calculates all the required factors for green house gas reporting.

Samples of fuel as described in the Sampling Procedure are analysed for each daily or period as appropriate. The resultant laboratory values for Moisture, Ash, GCV and Carbon are manually inputted from Laboratory Reports. A Net Calorific Value is calculated based on an approved formula.

De-minimis Fuels and materials are calculated from production data on a monthly basis as a QC measure – However the final emission figures are calculated on an annual delivery and stock check basis. Default NCV and emission values are used.

For Peat fuel CO2 quantities are accumulated monthly - the oxidation factor from the four weekly samples is calculated based on ash carbon analysis and used to generate a weighted average monthly oxidation factor applied to determine monthly CO2 emissions. The carbon associated with the peat fuel is based on a ratio of peat fuel to biomass. The annual total emissions for the primary fuel are the accumulation of the 12 Monthly values.

Several Flow diagrams included as an attachment (Data Flow Diagrams) illustrate the main flows of information and the sample handling and analysis.

Submit relevant documents to record data flow activities

Attachment	Description
Data Flow Activitiy Diagrams 2016.doc	Data Flow Diagrams updated for 2016

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	Monitoring and Reporting of Greenhouse Gas Emissions
Reference for procedure	EDE B1 21028 - Assessment and Control of Monitoring and Reporting Risks
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	This section of the procedure documents how inherent risks and control risks are assessed in accordance with the MRR. The procedure indicates how the company assesses the risks associated with this data flow. The document also indicates how appropriate control activities are developed and set up to mitigating any identified monitoring risks and re-assess the risk level. The control measures are documented and also integrated into the data flow diagram.
Post or department responsible for the procedure and for any data generated	EHS Manager
Location where records are kept	EHS Manager Office
Name of IT system used	MS Word
List of EN or other standards applied	ISO 9001, ISO 14001

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	Monitoring and Reporting of Greenhouse Gas Emissions
Reference for procedure	EDE B1 21028 - Quality Assurance of Measuring Equipment
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The procedure provides detail on how the company manages quality assurance of measuring equipment in accordance with requirements of the MRR. The procedure describes how the MMS - Powermaint is used to record and schedule calibrations and checks. The procedure also indicates what action is taken in the event of any non-conformance. Calibrations are traceable back to a recognised calibration standard or other equivalent value.
Post or department responsible for the procedure and for any data generated	Automation Engineer
Location where records are kept	Automation Office
Name of IT system used	MS Word - Beamix Calibration Software - Powermaint MMS
List of EN or other standards applied	ISO 9001, ISO 14001

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	Monitoring and Reporting of Greenhouse Gas Emissions
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Reference for procedure	EDE B1 21028 - Control of Related IT Systems
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The procedure describes the Management of the IT Network, and other IT Systems. Specifically addressing security, controlled access, backup and anti-virus controls. The procedure also describes the means of updating software, patching and other activities related to ensuring the reliability of the facilities on site. Specifically relevant to GHG Reporting, the procedure specifies that access to the GHG related documents and included calculations are controlled by password security. Calculation sheets used in reporting are validated against manual calculation. Nightly backups are maintained to ensure security of the data.
Post or department responsible for the procedure and for any data generated	EHS Manager
Location where records are kept	Automation Workshop
Name of IT system used	Microsoft Windows Server systems and associated backup software.
List of EN or other standards applied	ISO 9001, ISO 14001

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	Monitoring and Reporting of Greenhouse Gas Emissions
Reference for procedure	EDE B1 21028 - Review and Validation of Data
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The procedure describes how all the relevant monitoring activities are audited as part of accreditation to the ISO 9001 and ISO 14001 documented systems on site. The internal audit schedule includes specifically all aspects of GHG Monitoring and includes formal QC cross checks and comparisons to validate the data provided. This includes historical comparisons, validation against other information sources (Fuel Supplier) and ratio based validation against net plant output. The procedure references the quality system Internal Audit Procedure.
Post or department responsible for the procedure and for any data generated	EHS Manager
Location where records are kept	EHS Manager Office
Name of IT system used	MS Excel
List of EN or other standards applied	ISO 9001 and ISO 14001

ll. 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	Monitoring and Reporting of Greenhouse Gas Emissions
Reference for procedure	EDE B1 21028 - Corrective Action
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	This subsection of the procedure describes the methodology used to ensure that all reporting and measurement non conformances, including errors associated with the verification of green house gas activities, are recorded, the root cause investigated and responsibilities assigned to allow timely action to be taken to correct the issues concerned. The main input to the corrective action system is from internal audit, EPA audits and Annual Verification of the activities. At least two internal audits on monitoring and reporting is carried out annually in addition to two verification visits by an external competent verification body. The procedure outlines the appropriate actions in the event of errors in the data flow activities or control activities. Corrective actions are implemented where necessary to correct any issues.
Post or department responsible for the procedure and for any data generated	The procedure references the generic quality system site procedure Corrective and Preventative Action EHS Manager
Location where records are kept	EHS Manager Office
Name of IT system used	MS Word & MS Excel
List of EN or other standards applied	ISO 9001, ISO 14001

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	Monitoring and Reporting of Greenhouse Gas Emissions
Reference for procedure	EDE B1 21028 - Control of Outsourced Activities and Services
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The procedure documents how EPL ensures that all outsourced measuring equipment is calibrated, adjusted and checked at regular intervals to traceable to international measurement standards where available. To ensure, so far as is reasonably practicable that measurements or other reporting related services by contractors have defined quality or accuracy requirements and that the work product is checked against these standards so as to ensure the integrity of the final report. The procedure also indicates how any outsourced services must also be risk assessed in the same manner as in house monitoring and is subject to the same level of control.
Post or department responsible for the procedure and for any data generated	EHS Manager

Location where records are kept	EHS Manager Office
Name of IT system used	Powermaint - MS Word
List of EN or other standards applied	ISO 9001, ISO 14001

nn. Record Keeping and Documentation

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

Title of procedure	Monitoring and Reporting of Greenhouse Gas Emissions
Reference for procedure	EDE B1 21028 Document and Data Control
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The procedure identifies the process of document control, specifically in relation to the data and information in the MRR and for GHG Reporting. Includes details on storage, availability and retrieval. Documents how the company ensures that that data and records generated by the various processes and system are controlled, secured and accessed as required.
Post or department responsible for the procedure and for any data generated	EHS Manager
Location where records are kept	EHS Manager Office
Name of IT system used	Microsoft Windows Server environment and MS Office
List of EN or other standards applied	ISO 9001, ISO 14001

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
GHG Risk 2016.xls	GHG Risk Document Updated 2016

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	Not Applicable
Reference for procedure	Not Applicable
Diagram reference	Not Applicable
Brief description of procedure. The description should cover the essential parameters and operations performed	Not Applicable
Post or department responsible for the procedure and for any data generated	Not Applicable
Location where records are kept	Not Applicable
Name of IT system used	Not Applicable

13. Abbreviations

rr. Abbreviations Acronyms or definitions

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

Abbreviation	Definition
EPL	Edenderry Power Limited

Abbreviation	Definition
MFO	Medium Fuel Oil
MMS	Maintenance Management System - Powermaint Software - Basic Database to record, monitor and schedule maintenance and calibration activity
KKS	Kraftwerk-Kennzeichen-System - a standardised identification and naming system for equipment and process items typically used within power plants

14. Additional Information

Any other information:

Attachment	Description
Monitoring and Reporting of Greenhouse Gas Emissions.docx	GHG Monitoring procedure updated for 2016 and new system
ESG Accreditation - 1015Testing Multiple.pdf	ESG Accreditation detail - Additional 17025 Laboratory Option Added
Additional Explanatory Notes EPL 2016.doc	Notes to aid review
WEighbridge Cal cert 2016.pdf	Weighbridge calibration 2016
0001Testing Multiple.pdf	ESGL current accreditation cert 0001

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.