



Headquarters,
Johnstown Castle Estate,
County Wexford, Ireland

GREENHOUSE GAS EMISSIONS PERMIT

Permit Register Number:	IE-GHG062-10376-5
Operator:	Breedon Cement Ireland Limited Killaskillen Kinnegad Westmeath
Installation Name:	Breedon Cement Ireland Limited
Site Name:	Breedon Cement Ireland Limited
Location:	Lansdown Killaskillen Kinnegad Meath N91 D510 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-GHG062-10376.

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
P0487-07

Status Log

Current Permit

Permit number	Date application received	Date Permit issued	Comment
IE-GHG062-10376-5	22 September 2017	24 July 2019	<p>1. Change of Operator name, installation name and site name to "Breedon Cement Ireland Limited".</p> <p>2. Update of thermal input capacity details of individual emission sources (4 combustion units and 3 generators) included in site heating systems and stationary engines and update of site map.</p> <p>3. Description change of a source stream material from CKD (Cement Kiln Dust) to FDPC (Flue Dust Portland Cement). Monitoring Plan updated to include FDPC uncertainty and application of Tier 2 emission factor.</p> <p>4. Update of the Analysis Table with regard to current ISO 17025 accredited laboratories.</p> <p>5. Update of Measurement Devices Table, Applied Tiers Table and Uncertainty Assessment.</p> <p>6. Monitoring and Reporting Responsibilities updated in in Management Section.</p>

Previous Permits

Permit number	Change Type	Date application received	Date Permit issued	Comment
IE-GHG062-10376-1	GHG Permit Application	30 January 2014	30 January 2014	
IE-GHG062-10376-2	GHG Variation	26 June 2014	14 July 2014	Inclusion of minor emission sources previously omitted (combustion) and new solid bio-fuel.
IE-GHG062-10376-3	GHG Variation	29 September 2014	28 November 2014	Uncertainty analysis attachments were updated to remove commercially sensitive information. No material change to the AEM Plan.
IE-GHG062-10376-4	GHG Variation	06 March 2015	03 November 2015	<ol style="list-style-type: none"> 1. Inclusion of Directly Associated Activity (DAA) and sub meter (MD7) - Mobile gas oil plant (S5). 2. Changes to tiers for minor source streams and emission sources. 3. Update of Operator from Lagan Cement Limited to Lagan Cement.

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)	Breedon Cement Ireland 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:

Breedon Cement Ireland Limited
Killaskillen
Kinnegad
Westmeath

Company Registration Number: 237663

to carry out the following

Categories of activity:

Annex 1 Activity

Production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day
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at the following installation(s):

Breedon Cement Ireland Limited **Installation number: 48**

located at

Lansdown
Killaskillen
Kinnegad
Meath
N91 D510
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.: 48

Activity Description
Production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day
Directly Associated Activity Description
(S5) Mobile Equipment Various

- 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	Cement Clinker Kiln	1962	tonnes/day
S4	Acetylene Equipment	0	MW
S2.1	Admin central heating burner	0.12	MW
S2.2	Control Room central heating burner	0.21	MW
S2.3	Facilities central heating	0.24	MW
S2.4	Workshop central heating	0.06	MW
S3.1	CCR Emergency Generator	1.12	MW

Emission Source Reference	Emission Source Description	Capacity	Capacity Units
S3.2	Welder generator	0.02	MW
S3.3	Kiln Back up generator	0.13	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.
- 2.8 The Operator shall submit to the Agency by 31 December of each year all relevant information about any planned or effective changes to the capacity, activity level and operation of an installation. The information submitted shall be in the format required by the Agency.

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 24 July 2019:

PRESENT when the seal of the Agency was affixed hereto:

Dr Suzanne Monaghan
Inspector/ Authorised Person

Appendix 1 to Greenhouse Gas Emissions Permit Number IE-GHG062-10376

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 Breedon Cement Ireland Limited

Site name Breedon Cement Ireland Limited

Address Lansdown
Killaskillen
Kinnegad
Meath
N91 D510
Ireland

Grid reference of site main entrance E 256994, N 242738

Licence held pursuant to the Environmental Protection Agency Act 1992, as amended. Yes

IPC/IE Licence Register Number	Licence holder	Competent body
P0487-07	Breedon Cement Ireland Limited	Environmental Protection Agency

Has the regulated activity commenced at the Installation? Yes

Date of Regulated Activity commencement 01 September 2002

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 Breedon Cement Ireland Limited

Company Registration Number 237663

Operator Legal status

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

(c) Company / Corporate Body

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

Registered office address

Address Line 1	Killaskillen
Address Line 2	N/A
City/Town	Kinnegad
County	Westmeath
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? Yes

Holding company name Breedon Cement Limited

Holding company address

Address Line 1	Pinnacle House
Address Line 2	Breedon Quarry, Breedon On The Hill,
City/Town	Derby, England
County	N/A
Postcode	DE73 8AP
Company registration number	UK 8284549

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

Address	Lansdown Killaskillen Kinnegad Meath N91 D510 Ireland
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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.

Breedon Cement Ireland Limited operates a cement works and associated limestone and shale quarries at Killaskillen, Kinnegad, County Meath. The shale and limestone quarries supply raw materials for the cement manufacturing process.

The plant is located on a 200-hectare site and lies approximately 2.5 km south west of Kinnegad and approximately 1.2 km north of Ballinabrackey in County Meath. The cement works is located on the western side of the site towards the southern boundary, the limestone quarry lies south east of the works area and the shale quarry is located in the north west part of the site. A site map is provided as a part of this application.

The main raw materials used are those of limestone and shale. Cement is produced in a specially designed furnace, or kiln with a daily capacity of 1,962 t of clinker, at very high temperatures with the required mix of raw materials. These materials need to be finely ground and mixed in precise proportions to form a raw meal of required chemistry. The raw

meal is heated in the kiln process to form what is known as clinker. The clinker is ground to produce the cement powder. Gypsum is also added at the final grinding stage to control the setting time of the cement.

The company's overall sustainability/environmental strategy is to reduce the intensity of its net carbon output. This strategy takes the form of utilising alternative fuels to reduce the quantity of fossil fuels combusted at the plant. The current fuel usage consists of coal, diesel oil, Meat & Bonemeal(MBM), Solid Recovered Fuels (SRF), Low Carbon Fuels (LCF), Liquid Recovered Fuels (LRF), Tyre Derived Fuel (TDF) and BioFuel (BioF). The carbon produced from site heating systems, stationary engines and acetylene usage are also included. Diesel oil taken from the main kiln diesel tanks for varied mobile plant usage has been classed as an 'excluded activity'.

In addition there are a number of minor combustion sources that are required to support the cement production process which consume gas oil and acetylene.

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
Production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day	1962	tonnes/day	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
Site Map 2018.pdf	Site Map 2018

Emission Source Reference	Emission Source Description
S1	Cement Clinker Kiln
S4	Acetylene Equipment
S2.1	Admin central heating burner
S2.2	Control Room central heating burner
S2.3	Facilities central heating
S2.4	Workshop central heating
S3.1	CCR Emergency Generator
S3.2	Welder generator
S3.3	Kiln Back up generator

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
EP1	Stack 1 (Cement Clinker Kiln)
EP2	Stack 2 (Coal Mill Stack)
EP5	Site Acetylene Usage
EP6	Mobile Equipment Various
EP3.1	Admin central heating exhaust
EP3.2	Control Room central heating exhaust
EP3.3	Facilities central heating exhaust
EP3.4	Workshop central heating exhaust
EP4.1	CCR Emergency Generator exhaust
EP4.2	Welder generator exhaust
EP4.3	Kiln generator exhaust

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 (coal)	Combustion: Solid fuels	Coal
F2 (gas oil stream 1)	Combustion: Commercial standard fuels	Gas/Diesel Oil
F3 (MBM)	Combustion: Solid fuels	Meat & Bone Meal

Source Stream Reference	Source Stream Type	Source Stream Description
F4 (SRF)	Combustion: Solid fuels	Solid Recovered Fuel
F5 (LCF)	Combustion: Solid fuels	Low Carbon Fuel
M1 (Clinker)	Cement clinker: Clinker output (Method B)	Clinker
M2 (FDPC)	Cement clinker: CKD	FDPC (Flue Dust Portland Cement)
M3 (Raw Meal)	Cement clinker: Non-carbonate carbon	Raw Meal
F6 (LRF)	Combustion: Other gaseous & liquid fuels	Liquid Recovered Fuel
F7 (TDF)	Combustion: Solid fuels	Tyre Derived Fuel
F8 (gas oil stream 2)	Combustion: Commercial standard fuels	Gas/Diesel Oil
F10 (Acet)	Combustion: Other gaseous & liquid fuels	Acetylene
F11 (BioFuel)	Combustion: Solid fuels	BioFuel

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
F1 (coal)	S1	EP1,EP2	Production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day
F2 (gas oil stream 1)	S1	EP1,EP2	Production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day
F3 (MBM)	S1	EP1,EP2	Production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day

Source streams (Fuel / Material)	Emission Source Refs.	Emission Point Refs.	Annex 1 Activity
F4 (SRF)	S1	EP1,EP2	Production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day
F5 (LCF)	S1	EP1,EP2	Production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day
M1 (Clinker)	S1	EP1	Production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day
M2 (FDPC)	S1	EP1	Production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day
M3 (Raw Meal)	S1	EP1	Production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day
F6 (LRF)	S1	EP1,EP2	Production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day
F7 (TDF)	S1	EP1,EP2	Production of cement clinker in rotary kilns with a production capacity

Source streams (Fuel / Material)	Emission Source Refs.	Emission Point Refs.	Annex 1 Activity
			exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day
F8 (gas oil stream 2)	S2.1,S2.2,S2.3,S2.4,S3.1,S3.2,S3.3	EP3.1,EP3.2,EP3.3,EP3.4,EP4.1,EP4.2,EP4.3	Production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day
F10 (Acet)	S4	EP5	Production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day
F11 (BioFuel)	S1	EP1,EP2	Production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day

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? Yes

Detail of these activities:

Source Stream Refs	Emission Source Ref	Emission Point Ref
F2 (gas oil stream 1)	S5 (Mobile Equipment Various)	EP6

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 CO ₂	No

9. Calculation

r. Approach Description

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

Reportable emissions are determined by the total CO₂ produced through kiln fuel combustion and from CO₂ produced via the process emissions:

CO₂ (Total) = CO₂ ((Combustion Emissions) ((Fuel Emissions associated with the kiln) + (Fuel emissions associated with minor peripheral emission sources))) + CO₂ (Process Emissions)

Combustion Emissions:

The CO₂ from the fuel emissions is produced specifically from the Coal, Gas Oil, Solid Recovered Fuel (SRF), Low Carbon Fuel (LCF) (non-hazardous pre-mixed solid waste), Liquid Recovered Fuel (LRF), Tyre Derived Fuel (TDF) and (solid) BioFuel (sludges from biological treatment of industrial waste water) combusted in the kiln. Meat & Bone Meal (MBM) also used as a fuel in the kiln is a biomass fuel and as per Article 38 of 601/2012 the emission factor of biomass shall be zero. Gas oil (Stream 2) is also used in some of the small heating units and generators at the installation and acetylene is used for welding.

CO₂ (Combustion Emissions) = CO₂ (Coal) + CO₂ (Gas oil streams 1 and 2) + CO₂ (SRF) + CO₂ (LCF) + CO₂ (LRF) + CO₂ (TDF) + CO₂(Acetylene).

CO₂ (Coal): The CO₂ emissions for coal are calculated from the batches of coal delivered (measured over a calibrated weighbridge) and from stock levels recorded at the beginning and end of the reporting year as per Article 27(2). The total carbon and NCV is determined by an accredited laboratory (ISO 17025) for each batch delivered. Once calculated the tonnes of CO₂ for each batch are summed for the reporting period. The tonnes of CO₂ are calculated from the product of the Emission Factor, Net Calorific Value and Activity data as per formula according to Article 24(1).

CO₂ (Gas Oil Stream 1): The CO₂ tonnage for gas oil stream 1 is determined from metered deliveries to the main gas oil tanks (from the calibrated third-party delivery truck meters) and from independent stock level surveys conducted at the beginning and end of the reporting period as per Article 27(2). The gas oil utilised for on-site mobile equipment is physically extracted from the gas oil tanks that supply the kiln and therefore this quantity is deducted to attain the net kiln usage. The gas oil quantity utilised for the mobile equipment is extracted via a calibrated pump and is classified as an 'excluded activity'. Tier 4 is applied for Activity Data for gas oil stream 1. The density of the gas oil is as per supplier's specification sheet and Tier 2 country specific factors for NCV and Emission Factor are applied for this commercial standard fuel.

CO₂ (Gas Oil Stream 2): The quantity of gas oil extracted as part of the 'excluded activity' contains the gas oil used for on-site stationary engines including gas oil used in the kiln diesel oil back-up drive, which is itself a back-up for the electric motor for the kiln drive system; a backup diesel generator for the control room and a welder/generator for site welding jobs. The quantity of gas oil used for the stationary engines is an estimated figure based on experience of operation of the units. In addition, gas oil used in the on-site heating systems is determined based on quantity of gas oil delivered to the heating system storage tanks during a calendar year. The assumption is made that all diesel/gas oil delivered to these units is used. As Gas Oil stream 2 which is combusted in the stationary engines and heating units at the site is a de minimis source stream, a No Tier approach for Activity Data is applied. The density of the gas oil is as per supplier's specification sheet and Tier 2 country specific factors for NCV and Emission Factor are applied.

CO₂ (SRF): The CO₂ emissions for SRF (Solid Recovered Fuel) are determined for the total quantity of material used in the reporting period. This is the total quantity delivered (verified by a calibrated weighbridge) less stock at the end of the reporting period as per Article 27(2). Representative samples of SRF are independently tested by an accredited external laboratory (ISO 17025) to determine the Emission Factor (Non-Biomass & Biomass t CO₂/T SRF), NCV and Biomass Fraction. From this, the tonnes of CO₂ are calculated as per formula according to Article 24(1).

CO₂ (LCF): The CO₂ emissions for LCF (Low Carbon Fuel) are determined for the total quantity of material used in the reporting period. This is the total quantity delivered (verified by a calibrated weighbridge) less stock at the end of the reporting period as per Article 27 (2). Representative samples of LCF are independently tested by an accredited external laboratory (ISO 17025) to determine the Emission Factor (Non-biomass & Biomass t CO₂/ T LCF), NCV and Biomass Fraction. From this, the tonnes of CO₂ are calculated as per formula according to Article 24(1).

CO₂ (LRF): The CO₂ emissions for LRF (Liquid Recovered Fuel) are determined for the total quantity of material used in the reporting period. This is the total quantity delivered (verified by a calibrated weighbridge) less stock at the end of the reporting period as per Article 27 (2). Representative samples of LRF are independently tested by an accredited

external laboratory (ISO 17025) to determine the Emission Factor and Net Calorific Value. From this, the tonnes of CO₂ are calculated as per formula according to Article 24(1).

CO₂ (TDF): The CO₂ emissions for TDF (Tyre Derived Fuel) are determined for the total quantity of material used in the reporting period. This is the total quantity delivered (verified by a calibrated weighbridge) less stock at the end of the reporting period as per Article 27 (2). As CO₂ emissions for tyre derived fuel (TDF) are classed as de-minimis, Tier 1 emission factor listed in Annex VI of the MRR is applied, net calorific value is based on values from past analyses (where the Operator can demonstrate to the satisfaction of the competent authority that these values are representative for future batches of the same material) as per article 31(1)(e) and the biomass fraction is based on a no tier estimation method.

CO₂ (Meat & Bonemeal): The total quantity of MBM utilised, is the total quantity delivered (verified by a calibrated weighbridge) less stock at the end of the reporting period as per Article 27 (2). Meat & Bone Meal is a pure biomass fuel and therefore has an emission factor of zero and does not contribute to CO₂ emissions as per Article 38 of 601/201. The NCV, Carbon Content and Ash Content is tested annually in an ISO 17025 accredited laboratory.

CO₂ (Biofuel): The total quantity of solid BioFuel utilised, is the total quantity delivered (verified by a calibrated weighbridge) less stock at the end of the reporting period as per Article 27 (2). This BioFuel (EWC 19 08 12 - biomass sludge derived from industrial waste water processes) is considered to be a de minimis source stream. Representative samples of BioFuel are independently tested by an accredited external laboratory (ISO 17025) to determine the Emission Factor, Net Calorific Value and Biomass fraction. From this, the tonnes of CO₂ are calculated as per formula according to Article 24(1).

CO₂ (Acetylene): The CO₂ emissions from acetylene usage are determined from the number of acetylene bottles utilised on-site throughout the calendar year. The quantity of CO₂ emitted due to combustion of acetylene is calculated using the Tier 1 net calorific value and CO₂ emissions factor listed on the EPA website.

Process Emissions:

Overall process emissions are produced from the combination of the following:

Clinker Process Emissions (corrected for Non carbonate CaO due to Biomass (MBM, SRF, LCF, TDF)) + Emissions from Non-carbonate carbon in raw meal + Emissions related to Flue Dust Portland Cement (FDPC).
CO₂ (Clinker Process Emissions): The CO₂ emissions arising from the production of clinker are determined for the total quantity of clinker produced (Calculation, Method B). The quantity of clinker produced (Activity Data) in tonnes is derived from cement sales (calibrated weighbridge records) and initial/final cement stocks for the reporting period. Adjustments for any imported clinker (calibrated weighbridge records) together with clinker stock adjustments are then applied. Tier 3 Emission Factor using Method B is applied by determination of the amount of relevant metal oxides (CaO and MgO) in the clinker, using analysis from an ISO 17025 accredited laboratory in accordance with Articles 32 to 35 of the Monitoring and Reporting Regulations and applying the stoichiometric ratios referred to Annex VI Section 2 Table 3 to convert the composition data into emission factors i.e. $(0.785 * \text{CaO} + 1.092 * \text{MgO}) / \text{Clinker Activity Data} = \text{Clinker EF}$.

Tier 2 Conversion Factor is applied. This takes account of the CaO present from the relevant fuels containing biomass. This is achieved using external analysis (% Ash content and % CaO content) of the relevant fuels in accredited laboratories. The conversion factor is determined as follows $(\text{CaO tonnes minus non-carbonate CaO due to biomass}) / \text{CaO tonnes}$. The CaO arising due to biomass is determined as follows: Non-Carbonate CaO due to MBM ash: The non-carbonate CaO due to MBM ash is determined by analysis of CaO and ash content. Non-Carbonated CaO due to biomass fraction of SRF: The non-carbonated CaO contributed by the carbon neutral portion of the SRF material is calculated using the biomass fraction determination and analysis of CaO and ash content. Non-Carbonated CaO due to LCF ash: The non-carbonated CaO contributed by the carbon neutral portion of the solid LCF material (when relevant) is calculated. This is achieved using external analysis (biomass fraction, % Ash content and % CaO content) to determine the total CaO contributed. Non-Carbonated CaO due to TDF ash: The non-carbonate CaO due to TDF ash is determined (when relevant) using external analysis (biomass fraction, % Ash content and % CaO content) to determine the total CaO contributed.

The total tonnes of CO₂ are determined by the product of the Clinker Activity data * Clinker EF * Conversion Factor = Clinker CO₂ Process Emissions.

CO₂ (Non-Carbonate Carbon in raw meal): Non-carbonated carbon (NCC) in raw meal is classed as a de-minimis source stream. A no tier estimation is applied for Activity Data whereby the quantity of kiln input material is back-calculated by multiplying the clinker produced by a factor obtained from analysis. Tier 2 emission factor is applied such that the content of non-carbonate carbon in the raw meal sample is determined on an annual basis in an accredited laboratory and the CO₂ emissions are determined based on the application of the 3.664 t CO₂/tC factor.

CO₂ (Flue Dust Portland Cement): The activity data) for Flue Dust Portland Cement (FDPC) is determined by both weighbridge and a belt weigher. Tier 2 emission factor is applied based on the formula in Annex IV Section 9.C of the Monitoring and Reporting Regulations. The installation specific emission factor for Clinker (tCO₂/tClinker) and the degree of calcination of the FDPC is determined from analysis in accredited laboratories. Flue Dust Portland Cement is classed as a minor emission source category.

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 (coal),F11 (BioFuel),F3 (MBM),F4 (SRF),F5 (LCF),F6 (LRF),F7 (TDF),M1 (Clinker),M2 (FDPC),M3 (Raw Meal)	S1	MD1 (in) and MD1 (Out)	Weighbridges	400 - 50,000	kg	0.12	Plant Entrance
F1 (coal)	S1	MD2	Stock take by external surveyors	N/A	tonnes	0.56	Coal Storage Shed
F2 (gas oil stream 1)	S1	MD3	Flow Meter	0-2,200	LPM	0.2	Main Gas Oil Depot
F2 (gas oil stream 1)	S1	MD4	Flow meter	0-350	LPM	1	Supplier gas oil/diesel delivery truck meters
F2 (gas oil stream 1)	S1	MD6	Stock take by external surveyors.	0-55000	litres	6.78	Main Gas Oil Storage Tanks
F3 (MBM)	S1	MD8	Stock take	N/A	tonnes	N/A	Adjacent to rotary kiln
F4 (SRF)	S1	MD9	Stock take by external surveyors	N/A	tonnes	0.56	SRF Bay
F5 (LCF)	S1	MD10	Stock take by external surveyors	N/A	tonnes	0.56	LCF Bay

Source Stream Refs.	Emission Source Refs.	Measurement Device Ref.	Type of Measurement Device	Measurement Range	Metering Range Units	Specified Uncertainty (+/- %)	Location
M1 (Clinker),M3 (Raw Meal)	S1	MD11	Stock take by external surveyors.	N/A	tonnes	0.56	Clinker storage shed
M1 (Clinker),M3 (Raw Meal)	S1	MD12	Silo pilot	N/A	m3	7.8	Cement silos
M1 (Clinker),M3 (Raw Meal)	S1	MD13	Silo pilot	N/A	m3	0.4	Clinker Silo
M1 (Clinker),M3 (Raw Meal)	S1	MD14	Belt weigher	0 - 100	TPH	1.2	Cement Mill Building (Limestone)
M1 (Clinker),M3 (Raw Meal)	S1	MD15	Belt weigher	0 - 100	TPH	1.2	Cement Mill Building (Gypsum)
M1 (Clinker),M2 (FDPC)	S1	MD16	Belt weigher	0 - 100	TPH	0.8	Cement Mill Building (FDPC)
F6 (LRF)	S1	MD17	Silo pilot	N/A	m3	N/A	LRF Storage Tank
F7 (TDF)	S1	MD18	stock take by external surveyor	N/A	tonnes	0.56	TDF storage bay
M1 (Clinker),M3 (Raw Meal)	S1	MD19	Belt weigher	0-100	TPH	1.2	Cement Mill Building (Clinker)
F8 (gas oil stream 2)	S2.1,S2.2,S2.3,S2.4, S3.1,S3.2,S3.3	MD20	Estimation (based on run times and delivery dockets)	N/A	litres	N/A	Site Wide Heating Systems and Stationary Engines
F10 (Acet)	S4	MD22	Estimation (based on number of bottles)	N/A	kg	N/A	Site Wide Acetylene Usage
F11 (BioFuel)	S1	MD23	Stock take	N/A	tonnes	N/A	Adjacent to rotary kiln

Source Stream Refs.	Emission Source Refs.	Measurement Device Ref.	Type of Measurement Device	Measurement Range	Metering Range Units	Specified Uncertainty (+/- %)	Location
F2 (gas oil stream 1)	S1	MD7	Pump meter (for measurement of subtracted gas oil used in S5 (mobile sources))	0-90	LPM	1	Adjacent to main gas oil storage tanks
M1 (Clinker),M3 (Raw Meal)	S1	MD24	Belt weigher	0-100	TPH	0.8	Cement Mill Building (Off spec clinker)

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 (coal),F11 (BioFuel),F3 (MBM),F4 (SRF),F5 (LCF),F6 (LRF),F7 (TDF),M1 (Clinker),M2 (FDPC),M3 (Raw Meal)	MD1 (in) and MD1 (Out)	Batch	Operator		N/A	N/A	N/A
F1 (coal)	MD2	Batch	Trade partner		Yes	No	Yes
F2 (gas oil stream 1)	MD3	Batch	Trade partner		Yes	Yes	Yes
F2 (gas oil stream 1)	MD4	Batch	Trade partner		Yes	Yes	Yes
F2 (gas oil stream 1)	MD6	Batch	Trade partner		Yes	No	Yes
F3 (MBM)	MD8	Batch	Operator		N/A	N/A	N/A
F4 (SRF)	MD9	Batch	Trade partner		Yes	No	Yes
F5 (LCF)	MD10	Batch	Trade partner		Yes	No	Yes
M1 (Clinker),M3 (Raw Meal)	MD11	Batch	Trade partner		Yes	No	Yes
M1 (Clinker),M3 (Raw Meal)	MD12	Continual	Operator		N/A	N/A	N/A

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
M1 (Clinker),M3 (Raw Meal)	MD13	Continual	Operator	N/A	N/A	N/A
M1 (Clinker),M3 (Raw Meal)	MD14	Continual	Operator	N/A	N/A	N/A
M1 (Clinker),M3 (Raw Meal)	MD15	Continual	Operator	N/A	N/A	N/A
M1 (Clinker),M2 (FDPC)	MD16	Continual	Operator	N/A	N/A	N/A
F6 (LRF)	MD17	Batch	Operator	N/A	N/A	N/A
F7 (TDF)	MD18	Batch	Operator	N/A	N/A	N/A
M1 (Clinker),M3 (Raw Meal)	MD19	Continual	Operator	N/A	N/A	N/A
F8 (gas oil stream 2)	MD20	Batch	Operator	N/A	N/A	N/A
F10 (Acet)	MD22	Batch	Operator	N/A	N/A	N/A
F11 (BioFuel)	MD23	Batch	Operator	N/A	N/A	N/A
F2 (gas oil stream 1)	MD7	Batch	Operator	N/A	N/A	N/A
M1 (Clinker),M3 (Raw Meal)	MD24	Continual	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 (coal)	S1	MD1 (in) and MD1 (Out), MD2	<1.5%	Standard	4	3	3	N/A	1	N/A	N/A	67853	15.95	Major	Yes	n/a	n/a
F2 (gas)	S1	MD3,	<1.5%	Standard	4	2a	2a	N/A	1	N/A	N/A	1552	0.36	De-	Yes	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)
oil stream 1)		MD4, MD6, MD7		rd										minimise			
F3 (MBM)	S1	MD1 (in) and MD1 (Out), MD8	<1.5%	Standard	4	3	3	N/A	1	N/A	N/A	0	0	De-minimise	N/A	n/a	n/a
F4 (SRF)	S1	MD1 (in) and MD1 (Out), MD9	<1.5%	Standard	4	3	3	N/A	1	N/A	2	45342	10.66	Major	Yes	n/a	n/a
F5 (LCF)	S1	MD1 (in) and MD1 (Out), MD10	<1.5%	Standard	4	3	3	N/A	1	N/A	2	391	0.09	Minor	Yes	n/a	n/a
M1 (Clinker)	S1	MD1 (in) and MD1	<2.5%	Standard	2	N/A	3	N/A	N/A	2	N/A	287556	67.59	Major	Yes	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)
		(Out), MD11, MD12, MD13, MD14, MD15, MD16, MD19															
M2 (FDPC)	S1	MD1 (in) and MD1 (Out), MD16	<1.5%	Standard	2	N/A	2	N/A	N/A	N/A	N/A	9505	2.23	Minor	Yes	n/a	n/a
M3 (Raw Meal)	S1	MD1 (in) and MD1 (Out), MD11, MD12, MD13, MD14, MD15, MD16, MD19	N/A	Standard	No tier	N/A	2	N/A	N/A	1	N/A	4207	0.99	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)
F6 (LRF)	S1	MD1 (in) and MD1 (Out), MD17	<1.5%	Standard	4	3	3	N/A	1	N/A	N/A	8858	2.08	Minor	Yes	n/a	n/a
F7 (TDF)	S1	MD1 (in) and MD1 (Out), MD19	<1.5%	Standard	4	1	1	N/A	1	N/A	1	0	0	De-minimis	N/A	n/a	n/a
F8 (gas oil stream 2)	S2.1,S2.2,S2.3,S2.4,S3.1,S3.2,S3.3	MD20	N/A	Standard	No tier	2a	2a	N/A	1	N/A	N/A	169.217	0.04	De-minimis	N/A	n/a	n/a
F10 (Acet)	S4	MD22	N/A	Standard	No tier	1	1	N/A	1	N/A	N/A	0.99	0	De-minimis	N/A	n/a	n/a
F11 (BioFuel)	S1	MD23	<7.5%	Standard	1	3	3	N/A	1	N/A	2	0	0	De-minimis	N/A	n/a	n/a

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

425434.207

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
Uncertainty_Analysis Rev 4.pdf	Uncertainty Analysis

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 (coal)	S1	4	3	3	N/A	1	N/A	N/A
F2 (gas oil stream 1)	S1	4	2a	2a	N/A	1	N/A	N/A
F3 (MBM)	S1	4	3	3	N/A	1	N/A	N/A
F4 (SRF)	S1	4	3	3	N/A	1	N/A	2
F5 (LCF)	S1	4	3	3	N/A	1	N/A	2
M1 (Clinker)	S1	2	N/A	3	N/A	N/A	2	N/A
M2 (FDPC)	S1	2	N/A	2	N/A	N/A	N/A	N/A
M3 (Raw Meal)	S1	No tier	N/A	2	N/A	N/A	1	N/A
F6 (LRF)	S1	4	3	3	N/A	1	N/A	N/A
F7 (TDF)	S1	4	1	1	N/A	1	N/A	1
F8 (gas oil stream 2)	S2.1,S2.2,S2.3,S2.4,S3.1,S3.2,S3.3	No tier	2a	2a	N/A	1	N/A	N/A
F10 (Acet)	S4	No tier	1	1	N/A	1	N/A	N/A
F11 (BioFuel)	S1	1	3	3	N/A	1	N/A	2

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 (gas oil stream 1),F8 (gas oil stream 2)	S1,S2.1,S2.2,S2.3,S2.4,S3.1,S3.2,S3.3	NCV and Emission Factor	Ireland's National Greenhouse Gas Inventory	n/a
F1 (coal),F10 (Acet),F11 (BioFuel),F2 (gas oil stream 1),F3 (MBM),F4 (SRF),F5 (LCF),F6 (LRF),F7 (TDF),F8 (gas oil stream 2)	S1,S2.1,S2.2,S2.3,S2.4,S3.1,S3.2,S3.3,S4	OxF	MRR Annex II	1
F10 (Acet)	S4	NCV and Emission Factor	EPA Website	n/a

Sampling and Analysis

Do you undertake sampling and analysis of any of the parameters used in the calculation of your CO₂ emissions? Yes

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 (coal)	S1	NCV	Documented in-house method based on ISO	Every 20,000 tonnes and at least 6 times a year	SOCOTEC UK Limited	Yes	n/a

Source Stream Refs.	Emission Source Refs.	Parameter	Method of Analysis	Frequency	Laboratory Name	Laboratory ISO17025 Accredited	Evidence Reference
			1928:2009				
F1 (coal)	S1	Emission Factor (Carbon Content)	Documented In-House method by Instrumental Analysis based on ISO 29541	Every 20,000 tonnes and at least six times per year	SOCOTEC UK Limited	Yes	n/a
F3 (MBM)	S1	NCV	Documentated In-House Method based on BS EN ISO 18125: 2017	Annual	SOCOTEC UK Limited	Yes	n/a
F3 (MBM)	S1	Carbon Content	BS EN ISO 16948: 2015	Annual	SOCOTEC UK Limited	Yes	n/a
F3 (MBM)	S1	Ash Content	BS EN ISO 18122: 2015	Annual	SOCOTEC UK Limited	Yes	n/a
F4 (SRF)	S1	NCV	In house method based on EN 15400:2011	Every 5,000 tonnes and at least four times a year	Knight Energy Services Ltd / Wessling GmbH/SOCOTEC UK limited	Yes	n/a
F4 (SRF)	S1	Emission Factor (Carbon Content)	In-House method based on EN 15407:2011	Every 5,000 tonnes and at least four times a year	Knight Energy Services Ltd/ Wessling GmbH/SOCOTEC UK Limited	Yes	n/a
F4 (SRF)	S1	Ash Content	EN 15403:2011; DIN EN 15403	Every 5,000 tonnes and at least four times a year	Knight Energy Services Ltd/ Wessling GmbH/SOCOTEC UK Limited	Yes	n/a

Source Stream Refs.	Emission Source Refs.	Parameter	Method of Analysis	Frequency	Laboratory Name	Laboratory ISO17025 Accredited	Evidence Reference
F4 (SRF)	S1	Biomass Fraction	In-House Methods conforming to EN 15440	Every 5,000 tonnes and at least four times a year	Knight Energy Services Ltd/ Wessling GmbH/SOCOTEC UK Limited	Yes	n/a
F5 (LCF)	S1	NCV	In-House Method based on BS EN 15400:2011	Every 5,000 tonnes and at least 4 times per year	Knight Energy Services Ltd/SOCOTEC UK Limited	Yes	n/a
F5 (LCF)	S1	Emission Factor (Carbon Content)	In-House method based on EN 15407:2011	Every 5,000 tonnes and at least four times a year	Knight Energy Services Ltd/SOCOTEC UK Limited	Yes	n/a
F5 (LCF)	S1	Ash Content	BS EN 15403: 2011	Every 5,000 tonnes and at least four times a year.	Knight Energy Services Ltd/SOCOTEC UK Limited	Yes	n/a
F5 (LCF)	S1	Biomass Fraction	In House Method conforming to EN 15440:2011	Every 5,000 tonnes and at least four times a year	Knight Energy Services Ltd/SOCTEC UK Limited	Yes	n/a
F6 (LRF)	S1	NCV	DIN 51900-1	Every 10,000 tonnes and at least 4 times a year	Wessling GmbH	Yes	n/a
F6 (LRF)	S1	Carbon Content	DIN 51732	Every 10,000 tonnes and at least 4 times a year	Wessling GmbH	Yes	n/a
M1 (Clinker)	S1	CaO & MgO	X-Ray Fluorescence Analysis	Monthly	AMG Analytical	Yes	n/a

Source Stream Refs.	Emission Source Refs.	Parameter	Method of Analysis	Frequency	Laboratory Name	Laboratory ISO17025 Accredited	Evidence Reference
M3 (Raw Meal)	S1	Total Organic Carbon	DIN EN 13639	Annual	FIZ GmbH	Yes	n/a
M3 (Raw Meal)	S1	Loss on Ignition	DIN EN 196-2 Laboratory calculated based on CO ₂ ,H ₂ O	Annual	FIZ GmbH	Yes	n/a
F11 (BioFuel)	S1	NCV	Documented in house method based on BS EN ISO 18125:2017	Every 5,000 tonnes and at least four times a year	SOCOTEC UK Limited	Yes	n/a
F11 (BioFuel)	S1	Emission Factor (Carbon content)	Documented In-House Method based on BS EN ISO 16948: 2015	Every 5,000 tonnes and at least 4 times a year	SOCOTEC UK Limited	Yes	n/a
F11 (BioFuel)	S1	Ash Content	Documented in-house method based on BS EN ISO 18122:2015	Every 5,000 tonnes and at least four times a year	SOCOTEC UK Limited	Yes	n/a
M2 (FDPC)	S1	Degree of Calcination	DIN EN 196-2 Calculation based on LOI of FDPC and raw meal	Quarterly	FIZ GmbH	Yes	n/a
F3 (MBM)	S1	Elemental Oxides (Clinker conversion factor)	Documented in-house method using XRF	Quarterly	SOCOTEC UK Limited	Yes	n/a
F11 (BioFuel)	S1	Biomass Fraction	Documented In-House Method based on EN 15440:2011	Every 5,000 tonnes and at least four times per year	SOCOTEC UK Limited	Yes	n/a

Source Stream Refs.	Emission Source Refs.	Parameter	Method of Analysis	Frequency	Laboratory Name	Laboratory ISO17025 Accredited	Evidence Reference
F4 (SRF)	S1	Elemental Oxides (Clinker Conversion factor)	Method based on DIN EN ISO 11885 or method using XRF	Every 5,000 tonnes and at least four times a year	Wessling GmbH; Knight Energy Services Limited; SOCOTEC UK Limited	Yes	n/a
F5 (LCF)	S1	Elemental Oxides (Clinker Conversion Factor)	Method based on XRF	Every 5,000 tonnes and at least 4 times per year	SOCOTEC UK 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 and Material Analytical Approaches for GHG Source Streams
Reference for procedure	GHG M012
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	<p>The scope of this procedure is to outline the analytical approaches used for the various fuel and material source streams. An overview of the analytical approaches is as follows:</p> <p>NCV & Carbon Content for coal using ISO 1928:2009 and Instrumental analysis based on ISO 29541 respectively.</p> <p>NCV, Carbon Content and Ash Content analysis for MBM and BioFuel is carried out using EN 18125; EN 16948 and EN 18122 respectively and elemental analysis using XRF.</p> <p>NCV, EF, Biomass fraction and ash content for SRF and LCF using EN 15400:2011; EN 15407; EN 15403 and EN 15440 respectively. Elemental analysis using either XRF for both SRF and LCF or EN ISO 11885 for SRF.</p> <p>NCV and Carbon Content for waste solvents (LRF) using DIN 51900-1 and DIN 51732 respectively.</p> <p>CaO and MgO for clinker using x-ray fluorescence.</p> <p>LOI and TOC for raw meal using laboratory calculation and EN 13639 respectively. Degree of calcination for FDPC using LOI method based on EN 196-2.</p>
Post or department responsible for the procedure and for any data generated	Environmental Department
Location where records are kept	Kinnegad site and cloud based storage (Dublin)
Name of IT system used	Sharepoint and Window file server
List of EN or other standards applied	As described in procedure.

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
GHG S01 Sampling Plan Overview.pdf	Sampling Plan

Title of procedure	Sampling Plan Overview For Fuels and Materials
Reference for procedure	GHG S01
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	<p>The scope of the sampling plan procedure is to give an overview of the fuel and material sampling plans in place with respect to the greenhouse gas emissions. The procedure details the following:</p> <ol style="list-style-type: none"> 1. Responsibilities of maintaining, updating and implementation of the sampling procedures. 2. The fuel and material types sampled. 3. A sampling plan graphic overview indicating how the sampling plan sits in the overall compliance of greenhouse gas monitoring. 4. Content of each individual sampling plan (ie general information details; responsibilities; sampling objectives; specifications of source streams; sampling methodology; packaging & transport; laboratory details). 5. Frequency and reference of the sampling plans.

Post or department responsible for the procedure and for any data generated	Quality Department
Location where records are kept	Kinnegad site and cloud based storage (Dublin)
Name of IT system used	Sharepoint and Window file server
List of EN or other standards applied	Listed in sampling plan.

aa. Sampling Plan Appropriateness

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

Title of procedure	Sampling Plan Appropriateness
Reference for procedure	GHG S02
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	This procedure is used to ensure that all individual sampling plans (as per procedure GHG S01) are appropriately reviewed, updated and maintained. The review will ensure any changes in procedure, fuel or materials, technical amendments or additional procedures are updated in a timely fashion.

Post or department responsible for the procedure and for any data generated	Quality Department
Location where records are kept	Kinnegad site and cloud based storage (Dublin)
Name of IT system used	Sharepoint and Window file server.
List of EN or other standards applied	Listed in sampling plan.

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	Fuel & Material Stock Reconciliation
Reference for procedure	GHG S03
Diagram reference	N/A
Brief description of procedure.	On an annual basis, (end of year) an independent survey is undertaken on all stock piles associated with GHG activity data. The survey includes (but not exclusive to) clinker, coal, diesel oil, SRF, LCF, tyres and cement bag stocks. A report is issued by the surveyor and includes a site location or each stock pile, volume figure and uncertainty/percentage error figure. The year end figures are used to determine the quantity of fuel/material used.

Post or department responsible for the procedure and for	Environmental Department
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any data generated	
Location where records are kept	Kinnegad site and cloud based storage (Dublin)
Name of IT system used	Sharepoint and Window file server.
List of EN or other standards applied	ISO14001: 2015

cc. Tracking Instruments

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

Title of procedure	Weighing and Metering System Overview
Reference for procedure	GHG S04
Diagram reference	N/A
Brief description of procedure.	The procedure involves the utilisation of a weighing and metering instrument 'master spreadsheet' for tracking instruments used for determining GHG activity data.

The following information is kept for each tracking instrument:

- Type of meter,
- identification no.
- location
- range and units
- calibration details
- maintenance details
- confirmation of meter installation and operating on appropriate environment.

Post or department responsible for the procedure and for any data generated	Environmental Department
Location where records are kept	Kinnegad site and cloud based storage (Dublin)
Name of IT system used	Sharepoint and Window file server.
List of EN or other standards applied	ISO14001:2015

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
Technical Manager	Monitoring & reporting of CO2 Emissions
Environmental Group Manager	Monitoring & Reporting of CO2 Emissions
Electrical Manager	Maintenance & Calibration of on-site meters and responsibility for extrapolation of fuel usage reports.
Financial Manager	Upkeep of invoiced records of sales and goods received.
Process Manager	Upkeep of clinker production, cement sales and all fuel stock reports.

Attachment	Description
Organisational Chart.doc	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.

<p>Title of procedure</p> <p>Reference for procedure</p> <p>Diagram reference</p> <p>Brief description of procedure. The description should cover the essential parameters and operations performed</p>	<p>Responsibilities & Competence</p> <p>GHG 01/W:/ISO14001/Greenhouse Gas/Procedures</p> <p>N/A</p> <p>The scope of this procedure is to correctly assign responsibility for the monitoring and reporting of greenhouse gas to suitably qualified personnel in accordance with Article 58(3)(c) of the MRR. This procedure identifies the personnel responsible for the quality assurance and effective control of greenhouse gas monitoring. The training and review systems are also identified.</p> <p>The breakdown of the duties is as follows:</p> <p>Technical Manager: Overall responsibility for GHG issues.</p> <p>Environmental Manager: Monitoring and reporting of CO2 emissions.</p> <p>Electrical Manager: Maintenance and calibration of relevant on-site instruments. Responsibility for extrapolation of diesel fuel usage reports.</p> <p>Financial Manager: Upkeep of invoiced records of sales and goods received.</p> <p>Process Manager: Management of material and fuel stock reports.</p>
<p>Post or department responsible for the procedure and for any data generated</p> <p>Location where records are kept</p>	<p>Environmental Department</p> <p>Kinnegad site and cloud based storage (Dublin)</p>

Name of IT system used	Sharepoint and Window file server.
List of EN or other standards applied	ISO14001:2015

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 & Reporting Plan Review
Reference for procedure	GHG 02/W:/ISO14001/Greenhouse Gas/Procedures
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	<p>The scope of this procedure is to ensure that the monitoring plan is appropriate to the current practices on site and any changes in operation or improvement are reflected in the plan. The monitoring and reporting regime includes the following:</p> <p>Updating the monitoring plan for process changes when applicable.</p> <p>Conducting internal review audits.</p> <p>Updating the GHG permit with external audit findings.</p> <p>Review of uncertainty thresholds.</p> <p>Ensuring there is an effective risk assessment for the control of data.</p>

Post or department responsible for the procedure and for any data generated	Environmental Department
Location where records are kept	Kinnegad site and cloud based storage (Dublin)
Name of IT system used	Sharepoint and Window file server.
List of EN or other standards applied	ISO14001:2015

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	Sequence & Interaction of Data Flow Activities
Reference for procedure	GHG 03/W:/ISO14001/Greenhouse Gas/Procedures

Diagram reference N/A

Brief description of procedure. The description should cover the essential parameters and operations performed

The scope of this procedure is to accurately detail the sequence and interaction of data flow activities for the monitoring and reporting of greenhouse gas emissions in accordance with Article 57 of the MRR.

This process involves the following steps:

1. Identification of individual data streams - (primary data source).
2. Collation of the activity data.
3. Annual carbon emissions calculations - detailed description of the calculation process.

Post or department responsible for the procedure and for any data generated Environmental Department

Location where records are kept Kinnegad site and cloud based storage (Dublin)

Name of IT system used Sharepoint and Window file server.

List of EN or other standards applied ISO14001:2015

List of primary data sources See Attachment

Description of the relevant processing steps for each specific data flow activity. See Attachment.

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

Submit relevant documents to record data flow activities

Attachment	Description
Data Flow Activity Document.pdf	Data Flow Activity Document

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:

<p>Title of procedure</p> <p>Reference for procedure</p> <p>Diagram reference</p> <p>Brief description of procedure. The description should cover the essential parameters and operations performed</p>	<p>Assessing and Controlling Risks</p> <p>GHG 04/ISO14001/Greenhouse Gas/Procedures</p> <p>N/A</p> <p>The scope of this procedure is to identify and implement mechanisms to assess any inherent risks associated with the monitoring and reporting of greenhouse gases and to implement adequate controls in accordance with Article 58 of the MRR.</p> <p>The following activities have been implemented to control and mitigate any activities associated with the quality of greenhouse gas data:</p> <ol style="list-style-type: none"> 1. Quality Assurance of the measuring equipment 2. Quality assurance of the information technology system 3. Internal Reviews 4. Validation of Data 5. Corrections and Corrective Actions 6. Control of outsourced processes 7. Keeping records and documentation.
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<p>Post or department responsible for the procedure and for any data generated</p> <p>Location where records are kept</p> <p>Name of IT system used</p> <p>List of EN or other standards applied</p>	<p>Environmental Department</p> <p>Kinnegad site and cloud based storage (Dublin)</p> <p>Sharepoint and Window file server.</p> <p>ISO14001:2015</p>
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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.

<p>Title of procedure</p> <p>Reference for procedure</p> <p>Diagram reference</p>	<p>Maintenance and Calibration of Measuring Equipment</p> <p>GHG 05/W:/ISO14001/Greenhouse Gas/Procedures</p> <p>N/A</p>
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<p>Brief description of procedure. The description should cover the essential parameters and operations performed</p>	<p>The scope of this procedure is to detail the calibration practices utilised to maintain the measurement equipment and to detail how a non-compliance is managed in accordance with Article 58 and 59 of the MRR.</p> <p>The main focus of the procedure is to detail corrective actions pertaining to the validity of the data from incorrect input or calculation formulae and also taking into account the validity of data from inaccurate weighing or control systems.</p> <p>The procedure details the responsibility for initiating corrective actions and how non-conformities and root cause analysis are undertaken to prevent repeat occurrences.</p>
<p>Post or department responsible for the procedure and for any data generated</p> <p>Location where records are kept</p> <p>Name of IT system used</p> <p>List of EN or other standards applied</p>	<p>Environmental Department</p> <p>Kinnegad site and cloud based storage (Dublin). Sharepoint and Window file server.</p> <p>ISO14001:2015</p>

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:

<p>Title of procedure</p> <p>Reference for procedure</p> <p>Diagram reference</p> <p>Brief description of procedure. The description should cover the essential parameters and operations performed</p>	<p>Quality Control of IT System</p> <p>GHG 06/W:/ISO14001/Greenhouse Gas/Procedures.</p> <p>N/A</p> <p>The scope of this procedure is to detail the methods of protecting digital information and assuring quality of information stored within the Breedon Cement computer system.</p> <p>The procedure details the general access security procedures used and security in relation to VPN's.</p> <p>The back up information is strictly monitored and controlled by Breedon IT staff.</p> <p>Disaster recovery is backed up using phd virtual software. This procedure details where the back-ups are kept, the levels at which restoration can be made and time taken to restore servers so as to ensure quality assurance of information technology used for data flow activities in</p>
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accordance with Article 58 and 60 of the MRR.

Post or department responsible for the procedure and for any data generated	Environmental Department
Location where records are kept	Kinnegad site and cloud based storage (Dublin)
Name of IT system used	Sharepoint and Window file server.
List of EN or other standards applied	ISO14001:2015

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	Internal Audit of Reported Data
Reference for procedure	GHG 07/W:/ISO14001/Greenhouse Gas/Procedures
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The scope of this procedure is to identify the mechanisms put in place to ensure regular internal reviews and validation of data in accordance with Article 58 and 62 of the MRR.
	The procedure describes the internal reviews undertaken and the control system 'risk assessment' in place.
	Internal reviews encompass greenhouse gas procedures and calibration certificates and maintenance checks. The control system covers the areas of manual data entry, calculation errors, transposition errors and non conformities.

Post or department responsible for the procedure and for any data generated	Environmental Department
Location where records are kept	Kinnegad site and cloud based storage (Dublin)
Name of IT system used	Sharepoint and Window file server
List of EN or other standards applied	ISO14001:2015

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:

<p>Title of procedure</p> <p>Reference for procedure</p> <p>Diagram reference</p> <p>Brief description of procedure. The description should cover the essential parameters and operations performed</p>	<p>Corrections and Corrective Actions</p> <p>GHG 08/ISO14001/Greenhouse Gas/Procedures.</p> <p>N/A</p> <p>The scope of this procedure is to identify mechanisms of how to handle corrections and corrective actions detected in the GHG data flow and control activities.</p> <p>The procedure details the steps taken following the identification of incorrect inputs or incorrect calculation formulae. Also dealt with is the corrective actions taken as a result of inaccurate weighing or control systems and the 'root cause analysis' procedure applied.</p>
<p>Post or department responsible for the procedure and for any data generated</p> <p>Location where records are kept</p> <p>Name of IT system used</p> <p>List of EN or other standards applied</p>	<p>Environmental Department</p> <p>Kinnegad site and cloud based storage (Dublin). Sharepoint and Window file server.</p> <p>ISO14001:2015</p>

mm. Control of Outsourced Activities

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

<p>Title of procedure</p> <p>Reference for procedure</p> <p>Diagram reference</p> <p>Brief description of procedure. The description should cover the essential parameters and operations performed</p>	<p>Control of Outsourced Activities</p> <p>GHG 09/ISO14001/Greenhouse Gas/Procedures</p> <p>N/A</p> <p>The scope of this procedure is to identify mechanisms to control activities of outsourced processes in accordance with Article 59 and 64 of the MRR.</p> <p>Outlined are the steps taken to ensure that the correct calibrations and certificates of conformity are in place to ensure continued accuracy and compliance.</p> <p>Outsourced activities include the following areas:</p> <ol style="list-style-type: none"> 1. Fuel/Product Analysis 2. Calibration of weighbridge platforms. 3. Calibration of internal fuel delivery system. 4. Fuel/Product Stock take.
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Post or department responsible for the procedure and for any data generated Environmental Department
 Location where records are kept Kinnegad site and cloud based storage (Dublin)
 Name of IT system used Sharepoint and Window File server.
 List of EN or other standards applied ISO14001:2015

nn. Record Keeping and Documentation

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

Title of procedure Record Keeping and Data Management
 Reference for procedure GHG 10/ISO14001/Greenhouse Gas/Procedures
 Diagram reference N/A
 Brief description of procedure. The description should cover the essential parameters and operations performed The scope of this procedure is to detail the practices that are utilised to manage all relevant GHG documentation and record keeping in accordance with Article 66 (1) of the MRR.

 The procedure details the type of information retained, the duration (10 years) it is retained for and storage location of the information.

Post or department responsible for the procedure and for any data generated Environmental Department
 Location where records are kept Kinnegad site and cloud based storage (Dublin).
 Name of IT system used Sharepoint and Window file server.
 List of EN or other standards applied ISO14001:2015

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
Risk Assessment.docx	Risk Assessment

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 14001:2015

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.

<p>Title of procedure</p> <p>Reference for procedure</p> <p>Diagram reference</p> <p>Brief description of procedure. The description should cover the essential parameters and operations performed</p>	<p>Documenting & Reporting Operational Changes</p> <p>GHG 11/ISO14001/Greenhouse Gas/Procedures</p> <p>N/A</p> <p>The scope of this procedure is to detail the system in place that is utilised to identify any planned or effective changes to the operation or capacity level and also to detail how the competent authority is notified.</p> <p>The system review incorporates the GHG Emissions Permit (MRR Plan), the internal carbon emissions spreadsheet, monitoring data and calibration schedules. An initial forecast of carbon emissions is undertaken at the end of the third quarter of each year. This forecast will predict end of year carbon tonnages and the requirement for notification to the relevant authority by 31 December. The</p>
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procedure also details the notification process and the associated time frames.

Post or department responsible for the procedure and for any data generated	Environmental Department
Location where records are kept	Kinnegad site and cloud based storage (Dublin).
Name of IT system used	Sharepoint and Window file server.

13. Abbreviations

rr. Abbreviations Acronyms or definitions

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

Abbreviation	Definition
MBM	Meat & Bone Meal
LRF	Liquid Recovered Fuel
LCF	Low Carbon Fuel
SRF	Solid Recovered Fuel
CKD	Cement Kiln Dust
NCC	Non Carbonated Carbon
EF	Emission Factor
NCV	Net Calorific Value
TDF	Tyre Derived Fuels (waste tyres)
MRR	Monitoring & Reporting Regulations
OxF	Oxidation Factor
BioF	BioFuel
FDPC	Flue Dust Portland Cement

14. Additional Information

Any other information:

Attachment	Description
Gas oil pump certificate.pdf	On Site Gas Oil Pump Certificate Sample
Instrument Tracking Master Spreadsheet.pdf	Instrument Tracking Template
Admin Riello 40 G10 Burner Pic 1.jpg	Admin Heating System 1
Admin Riello 40 G10 Burner Pic 2 ID Plate.jpg	Admin Heating System 2
CCR Riello 40 G20 Burner Pic 1.jpg	CCR Heating System 1
CCR Riello 40 G20 Burner Pic 2 ID Plate.jpg	CCR Heating System 2
Facilities Riello 40 G20S Pic 1.jpg	Facilities Heating System 1
Facilities Riello 40 G20S Pic 2 ID Plate.jpg	Facilities Heating System 2
Stores Riello G5 Pic 1.jpg	Stores Heating System 1
Stores Riello G5 Pic 2 ID Plate.jpg	Stores Heating System 2
RIELLO 40 G Technical Manual.pdf	Heating Systems (All) Technical Manual
Emergency CCR Gen Pic 1.jpg	Emergency CCR Generator 1
Emergency CCR Gen Pic 2 ID Plate.jpg	Emergency CCR Generator 2
Emergency CCR Gen Manual TAD740GE.pdf	Emergency CCR Generator Manual
Cal cert. 52673 Lagan Cement In Bridge EC Ver 110718.pdf	Weighbridge 'In' Cal Cert July 2018
Cal cert. 52674 Lagan Cement Out Bridge EC Ver 110718.pdf	Weighbridge 'Out' Cal Cert July 2018
Welder Gen Pic1.jpg	Welder Gen 1
Welder Gen Pic 2.jpg	Welder Gen 2
Welder Gen Manual.pdf	Welder Gen Manual
Kiln Back Up Drive 1.jpg	Kiln Back Up Drive 1
Kiln Back Up Drive 2.jpg	Kiln Back Up Drive 2
Summary List of Non-Permitted Combustion Plant.xls	Summary List of Non-Permitted Combustion Plant
Summary List of Stationary Engines.xls	Summary List of Stationary Engines
Stockpile Uncertainty Measurements Report 2017.pdf	Stockpile Uncertainty Measurement Data
ESSO Terminal Meter Uncertainty email.pdf	ESSO Terminal Meter Uncertainty email
Delivery Tanker Meter Uncertainty email.pdf	Delivery Tanker meter Uncertainty
Weigh feeder Uncertainty Internal.pdf	Weigh feeder uncertainty internal checks
Weigh Feeder Technical Manual.pdf	Weigh Feeder Technical Manual
Silo Pilot Clinker Technical Manual VEGA63.pdf	Silo Pilot Clinker Technical Manual
Clinker Silo Internal Uncertainty.pdf	Clinker Silo Pilot Uncertainty Verification
Silo Pilot Cement Technical Manual.pdf	Silo Pilot Cement Technical Manual
Cement Silo Internal Uncertainty.pdf	Cement Silo Internal Uncertainty Verification
Response to DIN 51732 use.docx	Laboratory response to use of DIN 51732 for LRF analysis

Attachment	Description
LRF SRF Accreditation Certificate.pdf	Wessling GmbH Accreditation Certificate
LRF SRF Schedule of Accreditation.pdf	LRF SRF Wessling GmbH Schedule of Accreditation
Company Printout for 237663.pdf	237663
1091 AMG Analytical Testing Single.pdf	AMG Analytical Detail of accreditation
1765 Knight Energy Services Limited Testing Multiple.pdf	Knight Energy Services Limited accreditation
17025_Bauwesen_FIZ_EN.pdf	FIZ GmbH (VDZ) Accreditation
Socotec ukas-0001.pdf	SOCOTEC UK Limited
Socotec 0001Testing Schedule Multiple.pdf	SOCOTEC UK limited Schedule of accreditation

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.