Headquarters,
Johnstown Castle Estate,
County Wexford, Ireland

GREENHOUSE GAS EMISSIONS PERMIT

Permit Register Number: IE-GHG038-10361-3

Operator: Limerick Alumina Refining Limited
Aughinish Island
Askeaton
Limerick

Installation Name: Aughinish Alumina

Site Name: Aughinish Alumina

Location: Aughinish Island
Askeaton
County Limerick
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 Nº IE-GHG038-10361.

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
P0035-06

Status Log

Current Permit

Permit number	Date application received	Date Permit issued	Comment
IE-GHG038-10361-3	04 September 2017	12 January 2018	Removal of the emission source and emission point EV-75. The category of the source stream HFO updated from Major to De-minimis.

Previous Permits

Permit number	Change Type	Date application received	Date Permit issued	Comment
IE-GHG038-10361-1	GHG Permit Application	11 April 2013	23 April 2013	
IE-GHG038-10361-2	GHG Variation	06 June 2013	11 April 2014	Addition of two new Natural Gas Boilers A4-A and A4-B. Inclusion of the source stream Acetylene.

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)	Limerick Alumina Refining 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:

Limerick Alumina Refining Limited
Aughinish Island
Askeaton
Limerick

Company Registration Number: 231248

to carry out the following

Categories of activity:

Annex 1 Activity
Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)

at the following installation(s):

Aughinish Alumina **Installation number:** 31

located at

Aughinish Island
Askeaton
County Limerick
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.: 31

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

Directly Associated Activity Description
N/A

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

Table 2 Emission Sources and Capacities:

Emission Source Reference	Emission Source Description	Capacity	Capacity Units
A1-A	HFO Foster Wheeler Boiler Area 14	158.6	MW
A1-B	HFO Foster Wheeler Boiler Area 14	159.8	MW
A1-C	HFO Foster Wheeler Boiler Area 14	159.8	MW
A3-A	Natural Gas CHP Area 15	252.35	MW
A3-B	Natural Gas CHP Area 15	252.35	MW
PB-73-1	Diesel/Gas Oil Package Boiler Area 73	1.9	MW
PB-73-2	Diesel/Gas Oil Package Boiler Area 73	1.9	MW

Emission Source Reference	Emission Source Description	Capacity	Capacity Units
PB-76	Diesel/Gas Oil Package Boiler Area 76	0.97	MW
PB-79	Diesel/Gas Oil Package Boiler Area 79	0.97	MW
PB-14	Diesel/Gas Oil Package Boiler Area 14	0.7	MW
GN-15	Diesel/Gas Oil Backup generator CHP Area 15	2.7	MW
A2-1	Alumina Calciner Area 10	74.6	MW
A2-2	Alumina Calciner Area 10	74.6	MW
A2-3	Alumina Calciner Area 10	74.6	MW
PB-SC	Diesel/Gas Oil Package Boiler Sports Centre	0.25	MW
GN-79	Diesel/Gas Oil Backup generator Medical Centre Area 79	0.17	MW
EV-73	Laboratory Propane Use	0.5	MW
PB-15A	CHP Natural Gas Heater	0.5	MW
PB-15B	CHP Natural Gas Heater	0.5	MW
PB-15C	CHP Natural Gas Heater	0.5	MW
PB-15D	CHP Natural Gas Heater	0.5	MW
FW-14	Diesel/Gas Oil Fire Water Pump Area 14	0.06	MW

Emission Source Reference	Emission Source Description	Capacity	Capacity Units
BGE PB-15-1	BGE Gas Heater 1	0.28	MW
BGE PB-15-2	BGE Gas Heater 2	0.28	MW
BGE PB-15-3	BGE Gas Heater 3	0.28	MW
BGE PB-15-4	BGE Gas Heater 4	0.28	MW
BGE PB-15-5	BGE Gas Heater 5	0.28	MW
A4-A	Foster Wheeler Natural Gas boiler (model AG-5325) Area 14	102.76	MW
A4-B	Foster Wheeler Natural Gas boiler (model AG-5325) Area 14	102.76	MW
ACT-001	Mobile welding equipment	0.1	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 12 January 2018:

PRESENT when the seal of the Agency was affixed hereto:

_____

Ms. Annette Prendergast
Inspector/ Authorised Person

Appendix 1 to Greenhouse Gas Emissions Permit Number IE-GHG038-10361

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	Aughinish Alumina
Site name	Aughinish Alumina
Address	Aughinish Island Askeaton County Limerick Ireland
Grid reference of site main entrance	128220E, 151676N
Licence held pursuant to the Environmental Protection Agency Act 1992, as amended.	Yes

IPC/IE Licence Register Number	Licence holder	Competent body
P0035-06	Aughinish Alumina Limited	Environmental Protection Agency

Has the regulated activity commenced at the Installation?	Yes
Date of Regulated Activity commencement	01 January 2008

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	Limerick Alumina Refining Limited
Company Registration Number	231248

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?	Yes
Trading / business name	Limerick Alumina Refining Limited

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

Title	[redacted]
Forename	
Surname	
Position	Environment Co-ordinator

Registered office address

Address Line 1	Aughinish Island
Address Line 2	N/A
City/Town	Askeaton
County	Limerick
Postcode	N/A

Principal office address

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

Holding company

Does the company belong to a holding company?	No

(d) Operator Authority

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

a.	manage site operations through having day-to-day control of plant operation including the manner and rate of operation	Yes
b.	ensure that permit conditions are effectively complied with	Yes
c.	control monitor and report specified emissions	Yes

d. be responsible for trading in Allowances so that at the end of a reporting period allowances can be balanced against reported emissions.	Yes

4. Service Contact

e. Service Contact

Name	[redacted]
Address / Email Address	Senior Environmental Engineer Aughinish Alumina Ltd. Askeaton County Limerick Limerick Ireland

5. Installation Activities

f. Installation Description

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

Limerick Alumina Refining Ltd. (operating as Aughinish Alumina Ltd.) is located on Aughinish Island, Askeaton, Co. Limerick and extracts alumina from bauxite ore. The plant was commissioned in 1983. The plant extracts alumina from bauxite using the Bayer Process, a chemical method that has been developed and refined over the past century and is used by over 40 alumina extraction plants worldwide. Approximately 70% of the bauxite processed by Aughinish Alumina comes for Guinea in West Africa with the remainder coming from Brazil. The finished product, alumina, is exported for further processing through smelting to aluminium metal.

The energy requirement for plant operations is supplied by a 160MW natural gas Combined Heat & Power plant which commenced operation in 2006 and two natural gas boilers which were installed in 2014. The installation's calciners which operate primarily on natural gas are used to calcine aluminium hydrate into alumina. Three heavy fuel oil boilers are only used as back-up to the CHP and gas boilers.

g. Annex 1 Activities

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

Note that 'capacity' in this context means:

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

Annex 1 Activity	**Total Capacity**	**Capacity units**	**Specified Emissions**
Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)	1425.84	MW	Carbon Dioxide

h. Site Diagram

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

Attachment	**Description**
GHG permit fuel locations and emission points 10-07-17.pdf	GHG Permit Location Drawing

i. Estimated Annual Emissions

Detail of the estimated annual emission of CO_2 equivalent. This information enables categorisation of the installation in accordance with Article 19 of the MRR and is based on the average verified annual emissions of the previous trading period data OR if this data is not available or is inappropriate a conservative estimate of annual average emissions including transferred CO_2 excluding CO_2 from biomass.

Estimated Annual Emissions (tonnes $CO_{2(e)}$)	1450000
Justification for the use of a conservative estimate of CO_2 emissions.	Estimate is based on previous verified annual emissions from last trading period plus estimated emissions from the calciners which were excluded from the Phase 2 ETS

Installation Category: C

6. Emissions Details

j. About your emissions

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

k. Emission Sources

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

Emission Source Reference	Emission Source Description
A1-A	HFO Foster Wheeler Boiler Area 14
A1-B	HFO Foster Wheeler Boiler Area 14
A1-C	HFO Foster Wheeler Boiler Area 14
A3-A	Natural Gas CHP Area 15
A3-B	Natural Gas CHP Area 15
PB-73-1	Diesel/Gas Oil Package Boiler Area 73
PB-73-2	Diesel/Gas Oil Package Boiler Area 73
PB-76	Diesel/Gas Oil Package Boiler Area 76
PB-79	Diesel/Gas Oil Package Boiler Area 79
PB-14	Diesel/Gas Oil Package Boiler Area 14
GN-15	Diesel/Gas Oil Backup generator CHP Area 15
A2-1	Alumina Calciner Area 10
A2-2	Alumina Calciner Area 10
A2-3	Alumina Calciner Area 10
PB-SC	Diesel/Gas Oil Package Boiler Sports Centre
GN-79	Diesel/Gas Oil Backup generator Medical Centre Area 79
EV-73	Laboratory Propane Use
PB-15A	CHP Natural Gas Heater
PB-15B	CHP Natural Gas Heater
PB-15C	CHP Natural Gas Heater
PB-15D	CHP Natural Gas Heater
FW-14	Diesel/Gas Oil Fire Water Pump Area 14
BGE PB-15-1	BGE Gas Heater 1
BGE PB-15-2	BGE Gas Heater 2
BGE PB-15-3	BGE Gas Heater 3
BGE PB-15-4	BGE Gas Heater 4
BGE PB-15-5	BGE Gas Heater 5
A4-A	Foster Wheeler Natural Gas boiler (model AG-5325) Area

Emission Source Reference	Emission Source Description
	14
A4-B	Foster Wheeler Natural Gas boiler (model AG-5325) Area 14
ACT-001	Mobile welding equipment

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

Emission Source Reference	Emission Source Description
A1-A	HFO Foster Wheeler Boiler Area 14
A1-B	HFO Foster Wheeler Boiler Area 14
A1-C	HFO Foster Wheeler Boiler Area 14
A3-A	Natural Gas CHP Area 15
A3-B	Natural Gas CHP Area 15
PB-73-1	Diesel/Gas Oil Package Boiler Area 73
PB-73-2	Diesel/Gas Oil Package Boiler Area 73
PB-76	Diesel/Gas Oil Package Boiler Area 76
PB-79	Diesel/Gas Oil Package Boiler Area 79
PB-14	Diesel/Gas Oil Package Boiler Area 14
GN-15	Diesel/Gas Oil Backup generator CHP Area 15
A2-1	Alumina Calciner Area 10
A2-2	Alumina Calciner Area 10
A2-3	Alumina Calciner Area 10
PB-SC	Diesel/Gas Oil Package Boiler Sports Centre
GN-79	Diesel/Gas Oil Backup generator Medical Centre Area 79
EV-73	Laboratory Propane Use
PB-15A	CHP Natural Gas Heater
PB-15B	CHP Natural Gas Heater
PB-15C	CHP Natural Gas Heater
PB-15D	CHP Natural Gas Heater
FW-14	Diesel/Gas Oil Fire Water Pump Area 14
BGE PB-15-1	BGE Gas Heater 1
BGE PB-15-2	BGE Gas Heater 2
BGE PB-15-3	BGE Gas Heater 3
BGE PB-15-4	BGE Gas Heater 4
BGE PB-15-5	BGE Gas Heater 5
A4-A	Foster Wheeler Natural Gas boiler (model AG-5325) Area 14

Emission Source Reference	Emission Source Description
A4-B	Foster Wheeler Natural Gas boiler (model AG-5325) Area 14
ACT-001	Mobile welding equipment

I. Emission Points

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

Emission Point Reference	Emission Point Description
A1-A	Boiler House Stack Area 14
A1-B	Boiler House Stack Area 14
A1-C	Boiler House Stack Area 14
A3-A	CHP HRSG Stack Area 15
A3-B	CHP HRSG Stack Area 15
PB-73-1	Package Boiler Stack Area 73
PB-73-2	Package Boiler Stack Area 73
PB-76	Package Boiler Area 76
PB-79	Package Boiler Area 79
PB-14	Package Boiler Area 14
GN-15	Backup generator CHP Area 15
A2-1	Calciner Stack Area 10
A2-2	Calciner Stack Area 10
A2-3	Calciner Stack Area 10
PB-SC	Package Boiler Sports Centre
GN-79	Backup generator Medical Centre Area 79
EV-73	Laboratory Extraction Vent
PB-15A	CHP Gas Heater Vent
PB-15B	CHP Gas Heater Vent
PB-15C	CHP Gas Heater Vent
PB-15D	CHP Gas Heater Vent
FW-14	Fire Water Pump Area 14 Vent
BGE PB-15-1	BGE Gas Heater 1
BGE PB-15-2	BGE Gas Heater 2
BGE PB-15-3	BGE Gas Heater 3
BGE PB-15-4	BGE Gas Heater 4
BGE PB-15-5	BGE Gas Heater 5

Emission Point Reference	Emission Point Description
A4-A	Foster Wheeler Natural Gas boiler Area 14
A4-B	Foster Wheeler Natural Gas boiler Area 14
ACT-001	Mobile Welding Equipment

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 (HFO)	Combustion: Other gaseous & liquid fuels	Fuel Oil
F2 (NG)	Combustion: Other gaseous & liquid fuels	Natural Gas
F3 (GO)	Combustion: Commercial standard fuels	Gas/Diesel Oil
F4 (LPG)	Combustion: Other gaseous & liquid fuels	Liquefied Petroleum Gases
F5 (Acetylene)	Combustion: Other gaseous & liquid fuels	Acetylene

n. Emissions Summary

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

Source streams (Fuel / Material)	Emission Source Refs.	Emission Point Refs.	Annex 1 Activity
F1 (HFO)	A1-A,A1-B,A1-C,A2-1,A2-2,A2-3	A1-A,A1-B,A1-C,A2-1,A2-2,A2-3	Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)
F2 (NG)	A2-1,A2-2,A2-3,A3-A,A3-B,A4-A,A4-B,BGE PB-15-1,BGE PB-15-2,BGE PB-15-3,BGE PB-15-4,BGE PB-15-5,PB-15A,PB-15B,PB-15C,PB-15D	A2-1,A2-2,A2-3,A3-A,A3-B,A4-A,A4-B,BGE PB-15-1,BGE PB-15-2,BGE PB-15-3,BGE PB-15-4,BGE PB-15-5,PB-15A,PB-15B,PB-15C,PB-15D	Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)
F3 (GO)	A2-1,A2-2,A2-3,A3-A,A3-B,FW-14,GN-15,GN-79,PB-14,PB-73-1,PB-73-2,PB-	A2-1,A2-2,A2-3,A3-A,A3-B,FW-14,GN-15,GN-79,PB-14,PB-73-1,PB-73-2,PB-	Combustion of fuels in installations with a total rated thermal input

Source streams (Fuel / Material)	Emission Source Refs.	Emission Point Refs.	Annex 1 Activity
	76,PB-79,PB-SC	76,PB-79,PB-SC	exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)
F4 (LPG)	A1-A,A1-B,A1-C,A2-1,A2-2,A2-3,EV-73	A1-A,A1-B,A1-C,A2-1,A2-2,A2-3,EV-73	Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)
F5 (Acetylene)	ACT-001	ACT-001	Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)

o. Excluded Activities

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

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

7. Low Emissions Eligibility

p. Low Emissions Eligibility

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

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

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

Note: the above data shall include transferred CO_2 but exclude CO_2 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_2O	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 CO_2 emissions:

The calculation approach used is done in the following way:

1. Heavy Fuel Oil, LPG & Diesel/Gas Oil;

Fuel consumption is calculated using a mass balance approach based on the quantity of fuel purchased and the difference in the quantity held in stock over a period of time using the following formula: Fuel C = Fuel P + (Fuel S - Fuel E) where:

Fuel C: Fuel combusted during the reporting period in the Boilers

Fuel P: Fuel purchased during the reporting period

Fuel S: Fuel stock at the beginning of the reporting period

Fuel E: Fuel stock at the end of the reporting period

Calculation of CO2 emissions shall be based on the following formula: CO2 emissions = activity data * emission factor * oxidation factor. For HFO the activity data and national emission factors (NCV and EF) will be used to calculate the total

quantity. For LPG and Diesel/Gas oil, default national values are used for NCV and EF. Tonnes of fuel consumed per annum is determined and multiplied by NCV and EF and Oxidation factor to determine annual CO2 emissions.

2. Natural Gas: The quantity of Natural Gas (NG) delivered to the site will be measured via fiscal continuous flow meters. The net calorific value (NCV), Emission Factor and carbon dioxide (CO2) emitted will be calculated by Aughinish Alumina from the monthly component data supplied by GNI who will provide gas chromatograph analysis.

The calculation of the relevant tonnage of CO2 shall be carried out by the formula: Tonnes CO2 = Volume of NG * Weighted NCV* Emission factor* oxidation factor

3. Acetylene: The quantities of acetylene consumed will be determined from vendor invoices/bills. Supplier density information will be used to convert volume to mass. CO2 emissions are calculated as follows: Acetylene consumption (kt) x NCV TJ/kt x Emission Factor t CO2/TJ x oxidation factor

s. Measurement Devices

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

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

Source Stream Refs.	Emission Source Refs.	Measurement Device Ref.	Type of Measurement Device	Measurement Range	Metering Range Units	Specified Uncertainty (+/- %)	Location
F1 (HFO)	A1-A,A1-B,A1-C,A2-1,A2-2,A2-3	HFO Delivery tanker meter	Rotary meter	0-25,000	Litres	2	HFO Delivery Tanker
F2 (NG)	A3-A,A3-B,A2-1,A2-2,A2-3,PB-15A,PB-15B,PB-15C,PB-15D,BGE PB-15-1,BGE PB-15-2,BGE PB-15-3,BGE PB-15-4,BGE PB-15-5,A4-A,A4-B	Gas Networks Ireland Ultrasonic Flow Meter	Ultrasonic meter	0 -100	Bar	1.5	Gas Networks Ireland AGI
F3 (GO)	A3-A,A3-B,PB-73-1,PB-73-2,PB-76,PB-79,PB-14,GN-15,A2-1,A2-2,A2-3,PB-SC,GN-79,FW-14	Diesel/Gas Oil Delivery Tanker Meter	Rotary meter	0-25,000	Litres	2	Diesel Delivery Tanker
F4 (LPG)	A1-A,A1-B,A1-C,A2-1,A2-2,A2-3,EV-73	LPG Delivery Tanker Flow meters	Rotary meter	0-100% of tank volume	Litres	2	LPG Delivery Tanker
F5 (Acetylene)	ACT-001	Invoices	NA	NA	NA	N/A	NA

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

Source Stream Refs.	Measurement Device Ref.	Determination Method	Instrument Under Control Of	Conditions Of Article 29(1) Satisfied	Invoices Used To Determine Amount Of Fuel Or Material	Trade Partner And Operator Independent
F1 (HFO)	HFO Delivery tanker meter	Batch	Trade partner	Yes	Yes	Yes
F2 (NG)	Gas Networks Ireland Ultrasonic Flow Meter	Continual	Trade partner	Yes	Yes	Yes
F3 (GO)	Diesel/Gas Oil Delivery Tanker Meter	Batch	Trade partner	Yes	Yes	Yes
F4 (LPG)	LPG Delivery Tanker Flow meters	Batch	Trade partner	Yes	Yes	Yes
F5 (Acetylene)	Invoices	Batch	Trade partner	Yes	Yes	Yes

t. Applied Tiers

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

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

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

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

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

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

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

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

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

Source Stream Refs.	**Emission Source Refs.**	**Measurement Device Refs.**	**Overall Metering Uncertainty (less than +/- %)**	**Applied Monitoring Approach**	**Activity Data Tier Applied**	**Net Calorific Value Tier Applied**	**Emission Factor Tier Applied**	**Carbon Content Tier Applied**	**Oxidation Factor Tier Applied**	**Conversion Factor Tier Applied**	**Biomass Fraction Tier Applied**	**Estimated Emissions $tCO_{2(e)}$**	**% of Total Estimated Emissions**	**Source Category**	**Highest Tiers Applied**	**Justification for not applying the highest tiers**	**Improvement Plan Reference (where applicable)**
F1 (HFO)	A1-A,A1-B,A1-C,A2-1,A2-2,A2-3	HFO Delivery tanker meter	<7.5%	Standard	1	2a	2a	N/A	1	N/A	N/A	2845	0.2	De-minimis	No	Accounts for approximately 0.2% of total emissions	n/a
F2 (NG)	A3-A,A3-B,A2-1,A2-2,A2-3,PB-15A,PB-	Gas Networks Ireland Ultrasonic Flow Meter	<1.5%	Standard	4	3	3	N/A	1	N/A	N/A	14182 53	99.73	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)
	15B,PB-15C,PB-15D,BGE PB-15-1,BGE PB-15-2,BGE PB-15-3,BGE PB-15-4,BGE PB-15-5,A4-A,A4-B																
F3 (GO)	A3-A,A3-B,PB-73-1,PB-73-2,PB-76,PB-79,PB-14,GN-	Diesel/ Gas Oil Delivery Tanker Meter	<7.5%	Standard	1	2a	2a	N/A	1	N/A	N/A	996	0.07	De-minimis	No	Accounts for approximately 0.1% of CO2 emissions	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)**
	15,A2-1,A2-2,A2-3,PB-SC,GN-79,FW-14																
F4 (LPG)	A1-A,A1-B,A1-C,A2-1,A2-2,A2-3,EV-73	LPG Delivery Tanker Flow meters	<7.5%	Standard	1	2a	2a	N/A	1	N/A	N/A	1.4	0	De-minimis	No	Accounts for 0.0001 % of CO2 emissions	n/a
F5 (Acetylene)	ACT-001	Invoices	N/A	Standard	No tier	1	1	N/A	1	N/A	N/A	1	0	De-minimis	N/A	n/a	n/a

Total Estimated Emissions for Calculation (tonnes $CO_{2(e)}$) 1422096.4

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**
SSL tank dipping tapes specification.pdf	SSL/Richter Tank Dipping Tapes Specifications
Tank dipping review paper.pdf	Reference paper "The Art of Tank Dipping"
Calculation of metering uncertainty July 2017 (Final).xls	Calaculation of Metering Uncertainty
Aughinish St.1 09-07-16.pdf	Aughinish Stream 1 2017
Aughinish St 2 09-07-16.pdf	Aughinish Stream 2 2016
200047 Aughinish Metering Summary 2016.pdf	GNI Aughinish AGI Metering Summary 2016

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 (HFO)	A1-A,A1-B,A1-C,A2-1,A2-2,A2-3	1	2a	2a	N/A	1	N/A	N/A
F2 (NG)	A3-A,A3-B,A2-1,A2-2,A2-3,PB-15A,PB-15B,PB-15C,PB-15D,BGE PB-15-1,BGE PB-15-2,BGE PB-15-3,BGE PB-15-4,BGE PB-15-5,A4-A,A4-B	4	3	3	N/A	1	N/A	N/A
F3 (GO)	A3-A,A3-B,PB-73-1,PB-73-2,PB-76,PB-79,PB-14,GN-15,A2-1,A2-2,A2-3,PB-SC,GN-79,FW-14	1	2a	2a	N/A	1	N/A	N/A
F4 (LPG)	A1-A,A1-B,A1-C,A2-1,A2-2,A2-3,EV-73	1	2a	2a	N/A	1	N/A	N/A
F5 (Acetylene)	ACT-001	No tier	1	1	N/A	1	N/A	N/A

w. Justification for Applied tiers

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

Source Stream Ref.	**Emission Source Refs.**	**Justification for the applied tier**	**Improvement Plan Reference (where applicable)**
F1 (HFO)	A1-A,A1-B,A1-C,A2-1,A2-2,A2-3	Accounts for approximately 0.2% of total emissions	n/a
F3 (GO)	A3-A,A3-B,PB-73-1,PB-73-2,PB-76,PB-79,PB-14,GN-15,A2-1,A2-2,A2-3,PB-SC,GN-79,FW-14	Accounts for approximately 0.1% of CO2 emissions	n/a
F4 (LPG)	A1-A,A1-B,A1-C,A2-1,A2-2,A2-3,EV-73	Accounts for 0.0001% of CO2 emissions	n/a

10. Calculation Factors

x. Default Values

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

Source Stream Refs.	Emission Source Refs.	Parameter	Reference Source	Default Value applied (where appropriate)
F3 (GO)	A2-1,A2-2,A2-3,A3-A,A3-B,FW-14,GN-15,GN-79,PB-14,PB-73-1,PB-73-2,PB-76,PB-79,PB-SC	EF	EPA Guidance: Country Specific NCV & CO2 Emission Factors for use in the AIER	n/a
F3 (GO)	A2-1,A2-2,A2-3,A3-A,A3-B,FW-14,GN-15,GN-79,PB-14,PB-73-1,PB-73-2,PB-76,PB-79,PB-SC	NCV	EPA Guidance: Country Specific NCV & CO2 Emission Factors for use in the AIER	n/a
F4 (LPG)	A1-A,A1-B,A1-C,A2-1,A2-2,A2-3,EV-73	EF	EPA Guidance: Country Specific NCV & CO2 Emission Factors for use in the AIER	n/a
F4 (LPG)	A1-A,A1-B,A1-C,A2-1,A2-2,A2-3,EV-73	NCV	EPA Guidance: Country Specific NCV & CO2 Emission Factors for use in the AIER	n/a
F5 (Acetylene)	ACT-001	NCV, EF	EPA Guidance: Ireland Specific NCV & CO2 Emission Factors for use in the AIER	N/A
F1 (HFO)	A1-A,A1-B,A1-C,A2-1,A2-2,A2-3	EF, NCV	EPA Guidance: Country Specific NCV & CO2 Emission Factors for use in the AIER	N/A

Sampling and Analysis

Do you undertake sampling and analysis of any of the parameters used in the calculation of your CO_2 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
F2	A2-1,A2-2,A2-3,A3-A,A3-B,A4-A,A4-B,BGE PB-15-1,BGE PB-15-2,BGE PB-15-3,BGE PB-15-4,BGE PB-15-5,PB-15A,PB-15B,PB-15C,PB-15D	Natural Gas Composition	Gas Chromatograph	Continuous	BGE Gas Chromatograph Danalyzer C6+	No	Analysis of natural gas is done in accordance with ISO 10723 (Natural gas - Performance evaluation of on-line analytical systems). Calculation of calorific values, density and Wobbe index for the natural gas is done in accordance with ISO 6976 (Natural gas - Calculation of calorific value, density and Wobbe index from composition). Determination of composition with defined uncertainty is done in accordance with ISO/IEC 98-3 (Uncertainty of measurement -

Source Stream Refs.	Emission Source Refs.	Parameter	Method of Analysis	Frequency	Laboratory Name	Laboratory ISO17025 Accredited	Evidence Reference
							Part 3: Guide to the expression of uncertainty in measurement). Danalyzer C6+ Chromatograph is calibrated by EffecTech calibration laboratories (UKAS accredited calibration laboratory no 0590).

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	BGE Gas Chromatograph Procedure
Reference for procedure	As above
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Natural gas is determined by a continuous gas chromatograph procedure which is calibrated in accordance with ISO17025 and operated in accordance with GNI procedures. Chromatograph is calibrated annually by EffecTech (an ISO accredited laboratory) in accordance wih ISO17023. A copy of the current calibration record is attached along with a copy of the UKAS ISO17025 accreditation for EffecTech. In addition the operator of the gas chromatograph (GNI) is accredited to ISO 9001 and a copy of their accreditation is attached.
Post or department responsible for the procedure and for any data generated	Copies of all records are retained by the Environmental Department of Aughinish Alumina.
Location where records are kept	Environmental Deaprtment Records
Name of IT system used	N/A
List of EN or other standards applied	ISO 10723 (Natural gas - Performance evaluation of on-line analytical systems). ISO 6976 (Natural gas - Calculation of calorific value, density and Wobbe index from composition). ISO/IEC 98-3 (Uncertainty of measurement - Part 3: Guide to the expression of uncertainty in measurement)

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**
EffecTech UKAS 17025 (0590).pdf	Effectech ISO17025
List of IP Test Methods and Corresponding BS, EN, ISO and ASTM methods.pdf	List of IP Test Methods and Corresponding BS, EN, ISO and ASTM methods
Signed Natural gas sampling plan.pdf	Natural Gas Sampling Plan
17_0052_02 Calibration Report Aughinish AGI 2017 (UK32T1298).pdf	2017 NG calibration report
ISO 9001 CERT.PDF	Current certificate

Title of procedure	(1) Natural gas sampling plan
Reference for procedure	Natural gas sampling plan
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	(1) Procedure documents how the sampling and analysis of natural gas is carried out at the GNI AGI at Aughinish Alumina
Post or department responsible for the procedure and for any data generated	(1) GNI are responsible for the sampling of the natural gas.
Location where records are kept	(1) Records are submitted by BGN to Aughinish alumina in the form of monthly invoices and gas reports.
Name of IT system used	N/A
List of EN or other standards applied	N/A

aa. Sampling Plan Appropriateness

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

Title of procedure	Monitoring & Reporting of Carbon Dioxide
Reference for procedure	SWM 7518
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Section 6.3 of Standard Work Method 7518 describes the procedure to revise the appropriateness of the sampling plan if required.
Post or department responsible for the procedure and for any data generated	Environmental Department
Location where records are kept	Environmental Department records
Name of IT system used	N/A
List of EN or other standards applied	N/A

Are stock estimates carried out as part of the emission calculations?	Yes

bb. Year-end reconciliations

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

Title of procedure	Dipping of Heavy Fuel Oil & Diesel Tanks
Reference for procedure	Operator Task Procedure OP/L4004/003
Diagram reference	N/A
Brief description of procedure.	Relevant heavy fuel oil and diesel storage tanks are dipped on the 31st of December in order to establish tank contents. The bulk HFO storage tank is dipped by a surveyor from Shannon Surveyors Ltd. All tank dips on the 31st of December are witnessed by an independent auditor from KPMG who provides written confirmation of the levels recorded.
Post or department responsible for the procedure and for any data generated	Environmental Department

Location where records are kept	Environmental Department records
Name of IT system used	N/A
List of EN or other standards applied	N/A

cc. Tracking Instruments

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

Title of procedure	N/A
Reference for procedure	N/A
Diagram reference	N/A
Brief description of procedure.	N/A
Post or department responsible for the procedure and for any data generated	N/A
Location where records are kept	N/A
Name of IT system used	N/A
List of EN or other standards applied	N/A

11. Management

dd. Monitoring and Reporting Responsibilities

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

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

Job Title / Post	**Responsibilities**
Environmental Engineer	Calculate GHG emissions as per Monitoring Plan. Liaise with GHG verifier and report all emissions to the EPA as part of the EU Emissions Trading Scheme.
Purchasing/Accounts Department	Ensure that all gas oil, LPG deliveries and acetylene deliveries are invoiced and recorded.
Gas Networks Ireland	Responsible for calibration and maintenance of natural gas instrumentation.

Attachment	**Description**
N/A	N/A

ee. Assignment of Responsibilities

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

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

Title of procedure	Monitoring and Reporting of Carbon Dioxide
Reference for procedure	SWM 7518
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Detailed procedure outlining how the reporting of carbon dioxide emissions from the Aughinish Alumina site is carried in accordance with EU ETS. Heavy Fuel Oil - Quantity of fuel purchased: Responsible - Materials Supply Department; Data to be confirmed by Environmental Engineer. Natural Gas - Volume of gas and composition. Responsible for recording data; Gas Networks Ireland. Data to be confirmed by Environmental Engineer. Gas oil & Propane & Acetylene - Quantity of fuel purchased: Responsible; Materials Supply Department. Data to be confirmed by Environmental Engineer. All personnel have received adequate training for their role and this training is recorded on the Training system.
Post or department responsible for the procedure and for any data generated	Environmental Department
Location where records are kept	Environmental Department Records
Name of IT system used	N/A
List of EN or other standards applied	N/A

ff. Monitoring Plan Appropriateness

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

Title of procedure	Monitoring and Reporting of Carbon Dioxide
Reference for procedure	SWM 7518
Diagram reference	N/A
Brief description of procedure. The description should	The appropriateness of the monitoring plan, as submitted,

cover the essential parameters and operations performed	will be reviewed on an annual basis and prior to any changes in emission sources, source streams, metering and fuel analysis as appropriate. As per the requirements of Article 69.1 of the Commission Regulation (EU) No 601/2012, a report on any improvements to the Monitoring Plan will be submitted to the EPA by the 30th of June every year. Section 6.4 of SWM 7518.
Post or department responsible for the procedure and for any data generated	Environmental Department
Location where records are kept	Environmental Department Records
Name of IT system used	N/A
List of EN or other standards applied	N/A

gg. Data Flow Activities

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

Title of procedure	Monitoring and Reporting of Carbon Dioxide
Reference for procedure	SWM 7518
Diagram reference	Section 7 of SWM 7518 shows Data Flow diagram
Brief description of procedure. The description should cover the essential parameters and operations performed	HFO inventory is established from deliveries and end of year stock levels. Natural Gas delivered to the site is determined from the GNI Fiscal flow meters. Gas composition is from analysis by the GNI Chromatograph. Gas oil and LPG deliveries are determined from road tank delivery dockets. Acetylene quantity determined from invoices.
Post or department responsible for the procedure and for any data generated	Environmental Department
Location where records are kept	Environmental Department Records
Name of IT system used	N/A
List of EN or other standards applied	N/A
List of primary data sources	GNI records for natural gas volume and composition. HFO delivery dockets. Gasoil and LPG delivery dockets. Acetylene invoices.
Description of the relevant processing steps for each specific data flow activity. 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	HFO: Fuel consumption is calculated using a mass balance approach based on the quantity of fuel purchased and the difference in the quantity held in stock over a period of time. Calculation of CO2 emissions shall be based on the following formula: CO2 emissions = activity data(Fuel consumed*NCV) * emission factor * oxidation factor. Activity data is expressed as the net energy content of the fuel consumed (TJ) during the reported period. NCV,

emission factor and oxidation factor will be taken from the EPA guidance "Country Specific Net Calorific Values and CO2 Emission Factors for use in AIER". Emission factors are based on EPA national values and expressed as tCO2/TJ (combustion emissions).

Natural Gas: The quantity of Natural Gas delivered to the site will be measured via fiscal continuous flow meters. The net calorific value (NCV) and carbon dioxide (CO2) emitted will be calculated by Rusal Aughinish from the monthly component data supplied by GNI who will perform continuous gas chromatograph analysis. The NCV shall be calculated using the method detailed in the standard method ISO 6976. The calculation of the relevant tonnage of CO2 shall be carried out by the formula: Tonnes CO2 = Volume of NG * Weighted NCV* Emission factor.

Gas oil and LPG: Emissions will be calculated by the formula CO2 emissions = activity data(fuel consumed*NCV) * weighted emission factor * oxidation factor

Fuel consumed will be determined from delivery dockets and end of year stock levels. NCV, emission factor and oxidation factor will be taken from the EPA guidance "Country Specific Net Calorific Values and CO2 Emission Factors for use in AIER".

Acetylene: The quantities of acetylene consumed will be determined from vendor invoices/bills. Supplier density information will be used to convert volume to mass. CO2 emissions are calculated as follows: Acetylene consumption (kt) x NCV TJ/kt x Emission Factor t CO2/TJ x oxidation factor.

Submit relevant documents to record data flow activities

Attachment	**Description**
7518 Monitoring and Reporting of Carbon Dioxide revised 08-01-18.docx	7518 Monitoring and Reporting of Carbon Dioxide

hh. Assessing and Controlling Risks

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

Title of procedure	Monitoring and Reporting of Carbon Dioxide
Reference for procedure	SWM 7518
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The excel spreadsheets and other documents used for the calculation of CO2 emissions will, prior to annual emissions report submission, be reviewed by a member of the environmental department to establish, document, implement and maintain an effective control system to ensure that the annual emissions report, resulting from the data flow activities does not contain misstatements and is in conformance with the approved monitoring plan and the monitoring and reporting regulation (Commission Regulation 601/2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council). All data relating to greenhouse gas permit, annual emissions report and associated information is subject to audit under ISO 14001, ISO 9001 and financial control systems.
Post or department responsible for the procedure and for any data generated	Environmental Department
Location where records are kept	Environmental Department Records
Name of IT system used	N/A
List of EN or other standards applied	N/A

ii. Quality Assurance of Metering / Measuring Equipment

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

Title of procedure	Monitoring and Reporting of Carbon Dioxide
Reference for procedure	SWM 7518
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	All metering equipment is calibrated in accordance with the manufacturer recommendations. The natural gas chromatograph located in the GNI AGI is calibrated annually by a laboratory accredited to ISO17025. The natural gas fiscal flow meters are calibrated by GNI

	annually. Copies of the calibration records are given to Aughinish Alumina and reviewed by the Environmental Engineer. If any of the equipment is found not to comply with the required performance, GNI are required to take the necessary corrective actions. Any non-compliance with required performance of metering equipment will be notified to the EPA by Aughinish Alumina.
Post or department responsible for the procedure and for any data generated	Environmental Department
Location where records are kept	Environmental Department Records
Name of IT system used	N/A
List of EN or other standards applied	N/A

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

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

Title of procedure	Application and File Server Backups
Reference for procedure	SWM 7019,7018,7022,7040
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	All critical IT systems at Aughinish Alumina are backed up daily, weekly, monthly and annually to ensure that no data is lost. This includes all data required for the ETS. The SWM (Standard Work Methods) detailed above detail how IT systems are tested, how access is controlled and data security ensured and how lost/corrupted data can be recovered and thereby comply with Articles 58 and 60 of the MRR.
Post or department responsible for the procedure and for any data generated	IT/IS
Location where records are kept	IT Records Area 76
Name of IT system used	N/A
List of EN or other standards applied	N/A

kk. Review and Validation of Data

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

Title of procedure	Monitoring and Reporting of Carbon Dioxide
Reference for procedure	SWM 7518
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The data generated in relation to ETS is thoroughly reviewed as part of the annual GHG verification audit. There are several internal checks carried out to validate the

	data: Natural gas volume from the GNI Fiscal flow meters is compared with volume of gas invoiced for transportation charges (therms converted to m3). All instrumentation required for the measurement of fuel flow etc. is calibrated, adjusted and checked at regular intervals including prior to use, and checked against measurement standards traceable to international measurement standards where available. Records of the results of calibration and authentication shall be retained for the period of 10 years.
Post or department responsible for the procedure and for any data generated	Environmental Department
Location where records are kept	Environmental Department records
Name of IT system used	N/A
List of EN or other standards applied	N/A

II. Corrections and Corrective Actions

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

Title of procedure	Monitoring and Reporting of Carbon Dioxide
Reference for procedure	SWM 7518
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	If, for technical reasons (e.g. a breakdown or malfunction of key instrumentation), it is not feasible to apply the tier for the activity data or fuel as specified in the approved Monitoring Plan (MP), Rusal Aughinish shall apply the highest achievable tier until the conditions for application of the tier approved in the MP have been restored. All necessary measures to allow the prompt restoration of the tier in the monitoring plan shall be taken. Rusal Aughinish shall notify the temporary change to the monitoring methodology without undue delay to the EPA, specifying: The reasons for the deviation from the tier; Details of the interim monitoring methodology that Rusal Aughinish will use to determine the emissions until the conditions for the application of the tier in the MP have been restored; The measures to be undertaken to restore the conditions for the application of the tier in the MP as approved by the

	EPA; The anticipated point in time when application of the tier as approved by the EPA will be resumed. Rusal Aughinish will maintain a record of all non-compliances in relation to the agreed monitoring plan and this record shall be available on-site for inspection by the Agency and/or by the GHG Verifier at all reasonable times. In addition where any part of the data flow activities is found not to function effectively, or to function outside set boundaries appropriate corrections will be made and any rejected data corrected. The cause of the error or malfunction will be determined and appropriate corrective and preventative actions implemented.
Post or department responsible for the procedure and for any data generated	Environmental Department
Location where records are kept	Environmental Department Records
Name of IT system used	N/A
List of EN or other standards applied	N/A

mm. Control of Outsourced Activities

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

Title of procedure	Monitoring and Reporting of Carbon Dioxide
Reference for procedure	SWM 7518
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Procedure specifies that dipping of tanks is witnessed and reported by an independent observer.
Post or department responsible for the procedure and for any data generated	Environmental Department
Location where records are kept	Environmental Department Records
Name of IT system used	N/A
List of EN or other standards applied	N/A

nn. Record Keeping and Documentation

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

Title of procedure	List of Records and Retention Times for Environment
Reference for procedure	QES 09A 7E
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	As part of the ISO14001 Environmental Management System at Aughinish Alumina, key records are identified

	and retain for a specific period. All ETS documentation (paper and/or electronic) is retained for 10 years. The Environmental Department are responsible for ensuring all paper records are stored in the designated ETS area. All electronic records are automatically backed up and retained as part of the IT system (see section on "Quality Assurance of Information Technology used for Data Flow Activities" above)
Post or department responsible for the procedure and for any data generated	Environmental Department
Location where records are kept	Environmental archieve and IT storage.
Name of IT system used	N/A
List of EN or other standards applied	N/A

oo. Risk Assessment

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

Attachment	Description
GHG Control system risk assessment 10-01-17.xlsx	GHG Control System 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

12. Changes in Operation

qq. Changes in Operation

Article 24(1) of Commission Decision 2011/278/EC requires that Member States must ensure that all relevant information about any planned or effective changes to the capacity activity level and operation of an

installation is submitted by the operator to the competent authority by 31 December each year. Article 12(3) of the MRR further provides that Member States may require information to be included in the monitoring plan of an installation for the purposes of meeting these requirements.

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

The procedure specified below cover the following:

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

Title of procedure	Monitoring and Reporting of Carbon Dioxide
Reference for procedure	SWM 7518
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	SWM 7518 has been updated to ensure that the EPA will be informed in a timely manner of any planned or effective changes to capacity which may impact on Aughinish Alumina's allocation.
Post or department responsible for the procedure and for any data generated	Environmental Department
Location where records are kept	Environmental Department Records
Name of IT system used	N/A

13. Abbreviations

rr. Abbreviations Acronyms or definitions

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

Abbreviation	**Definition**
GHG	Greenhouse Gas
SWM	Standard Work Method
HFO	Heavy Fuel Oil
GNI	Gas Networks Ireland
IP	Institute of Petroleum
ASTM	American Society for Testing and Materials

Abbreviation	Definition
AGI	Above Ground Installation
ETS	Emission Trading Scheme

14. Additional Information

Any other information:

Attachment	Description
GHG038boilerstart.docx	Proposed boiler start date
FWES Expected Performance Summary.pdf	Boiler capacity
2880-9000-003-C.PDF	Boiler Capacity
2880-9000-004-C.PDF	boiler capacity details

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.