Headquarters,
Johnstown Castle Estate,
County Wexford, Ireland

GREENHOUSE GAS EMISSIONS PERMIT

Permit Register Number: IE-GHG066-10378-4

Operator: SSE Generation Ireland Limited
Red Oak South
South County Business Park
Leopardstown
Dublin 18

Installation Name: Great Island Generating Station

Site Name: Great Island Generating Station

Location: Campile
New Ross
Wexford
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-GHG066-10378.

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
P0606-03

Status Log

Current Permit

Permit number	Date application received	Date Permit issued	Comment
IE-GHG066-10378-4	12 December 2016	18 July 2018	Inclusion of SSE Regulated Metering Station Turbine Flow meters and Gas Chromatograph as alternative monitoring methodology for future data gaps.

Previous Permits

Permit number	Change Type	Date application received	Date Permit issued	Comment
IE-GHG066-10378-1	GHG Permit Application	24 May 2013	14 June 2013	
IE-GHG066-10378-2	GHG Variation	14 October 2013	19 May 2014	Inclusion of the following emission sources associated with the new CCGT plant: CCGT S1, CCGT S2A, CCGT S2B, CCGT S3, CCGT S4, CCGT S5, CCGT S6 and S7. Inclusion of the source streams, CCGT F1, CCGT F2, CCGT F3 and F4.
IE-GHG066-10378-3	GHG Variation	08 October 2015	15 January 2016	Emission sources HFO S1-HFO S6 removed. Source streams HFO F1-HFO F3 and F4 removed. Relevant sections of the Permit and Monitoring Plan updated to remove all reference to the HFO plant which has ceased operation.

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)	SSE Generation 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 transfers this Greenhouse Gas Emissions Permit, subject to any subsequent revisions, corrections or modifications it deems appropriate, to:

The Operator:

SSE Generation Ireland Limited
Red Oak South
South County Business Park
Leopardstown
Dublin 18

Company Registration Number: 459400

from

The Former Operator:

XJWB Limited
85 Merrion Square

Dublin 2

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):

Great Island Generating Station **Installation number:** 51

located at

Campile
New Ross
Wexford
Ireland

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

In accordance with Joint Declaration made to the Agency on 17 February 2009, *SSE Generation Ireland Limited* is deemed to have assumed and accepted all liabilities, requirements and obligations provided for in or arising under the permit, regardless of how and in respect of what period, including the period 2005-2007, prior to the transfer of the permit, that may arise.

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.: 51

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
CCGT S1	Gas Turbine	795.51	MW
CCGT S2A	Auxiliary Boiler (ST Gland Sealing)	15.21	MW
CCGT S2B	Auxillary Boiler (ST Gland Sealing)	15.21	MW
CCGT S3	Gas Heater	1.8	MW
CCGT S4	Gas Heater	1.8	MW
CCGT S5	Emergency Diesel Generator	1.42	MW
CCGT S6	Emergency Diesel Fire Pump	0.41	MW

Emission Source Reference	Emission Source Description	Capacity	Capacity Units
S7	Workshop Gases	0	MW

1.4 The activity shall be controlled, operated and maintained so that emissions of carbon dioxide shall take place only as set out in this GHG Emissions Permit. The permit does not control emissions of gases other than carbon dioxide. All agreed plans, programmes and methodologies required to be carried out under the terms of this permit, become part of this permit.

1.5 This GHG Permit is for the purposes of GHG emissions permitting under the European Communities (Greenhouse Gas Emissions Trading) Regulations 2012 and any amendments to the same only and nothing in this permit shall be construed as negating the Operator's statutory obligations or requirements under any other enactments or regulations unless specifically amended by the Regulations.

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

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

Condition 2. Notification

2.1 No alteration to, or reconstruction in respect of, the activity or any part thereof which would, or is likely to, result in a change in:

2.1.1 the nature or functioning of the installation;

2.1.2 the capacity of the installation as detailed in this permit;

2.1.3 the fuels used at the installation;

2.1.4 the range of activities to be carried out at the installation

that may require updating of the GHG permit shall be carried out or commenced without prior notice to and without the prior written agreement of the Agency.

2.2 The Operator shall notify the Agency in writing of the cessation of all or part of any activity listed in Table 1 of this permit no later than one month from the date of cessation or by 31 December of the year of cessation, whichever is sooner.

2.3 The Operator shall apply for an update of this GHG Permit where there is a change to the Operator name and/or registered address of the Operator, within seven days of the change.

2.4 For installations or parts of installations which have not come into operation when the application for this permit was made the Operator shall notify the Agency of the date of commencement of the activity within seven days of commencement.

2.5 The Operator shall notify the Agency in writing within three days of becoming aware of any factors which may prevent compliance with the conditions of this permit.

2.6 The Operator shall submit to the Agency by 21 January of each year a declaration of operability. The declaration submitted shall be in the format required by the Agency.

2.7 All notifications required under Condition 2 above shall be made to the address given in the Explanatory Note included with this permit.

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

Condition 3. Monitoring and Reporting

3.1 The Operator shall monitor and record greenhouse gas emissions on site in accordance with the M&R Regulation and the approved Monitoring Plan attached at Appendix 1 to this GHG permit and in compliance with any other guidance approved by the Agency for the purposes of implementing the Directive and/or the Regulations.

3.2 The Operator shall modify the monitoring plan in any of the following situations:

3.2.1 new emissions occur due to new activities carried out or due to the use of new fuels or materials not yet contained in the monitoring plan;

3.2.2 the change of availability of data, due to the use of new measurement instrument types, sampling methods or analysis methods, or for other reasons, leads to higher accuracy in the determination of emissions;

3.2.3 data resulting from the previously applied monitoring methodology has been found incorrect;

3.2.4 changing the monitoring plan improves the accuracy of the reported data, unless this is technically not feasible or incurs unreasonable costs;

3.2.5 the monitoring plan is not in conformity with the requirements of the M&R Regulation and the Agency requests a change;

3.2.6 it is necessary to respond to the suggestions for improvement of the monitoring plan contained in the verification report.

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

3.3 Temporary changes to the monitoring methodology:

3.3.1 Where it is for technical reasons temporarily not feasible to apply the tier in the monitoring plan for the activity data or each calculation factor of a fuel or material stream as approved by the Agency, the Operator shall apply the highest achievable tier until the conditions for application of the tier approved in the monitoring plan have been restored. The Operator shall take all necessary measures to allow the prompt restoration of the tier in the approved monitoring plan. The Operator shall notify the temporary change to the monitoring methodology without undue delay to the Agency specifying:

(i) The reasons for the deviation from the tier;

(ii) in detail, the interim monitoring methodology applied by the Operator to determine the emissions until the conditions for the application of the tier in the monitoring plan have been restored;

(iii) the measures the Operator is taking to restore the conditions for the application of the tier in the approved monitoring plan;

(iv) the anticipated point in time when application of the approved tier will be resumed.

3.3.2 A record of all non-compliances with the approved monitoring plan shall be maintained on-site and shall be available on-site for inspection by authorised persons of the Agency and/or by the Verifier at all reasonable times.

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

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

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

3.7 Where an Operator is applying the Fall-Back methodology, the Operator shall assess and quantify each year the uncertainties of all parameters used for the determination of the annual emissions in accordance with the ISO Guide to the Expression of Uncertainty in Measurement or another equivalent internationally accepted standard and include the verified results in the written report of the verified annual reportable emissions to be submitted to the Agency by 31 March each year.

3.8 An Operator shall submit to the Agency for approval a report containing the information detailed in (i) or (ii) below, where appropriate, by the following deadlines:

(a) for a category A installation, by 30 June every four years;

(b) for a category B installation, by 30 June every two years;

(c) for a category C installation, by 30 June every year.

(i) Where the Operator does not apply at least the tiers required pursuant to the first subparagraph of Article 26(1) and to Article 41(1) of the M&R Regulation, the Operator shall provide a justification as to why it is technically not feasible or would incur unreasonable costs to apply the required tiers. Where evidence is found that measures needed for reaching those tiers have become technically feasible and do not incur unreasonable costs, the Operator shall notify the Agency of appropriate modifications to the monitoring plan and submit proposals for implementing appropriate measures and its timing.

(ii) Where the Operator applies a fall-back monitoring methodology, the Operator shall provide a justification as to why it is technically not feasible or would incur unreasonable costs to apply at least tier 1 for one or more major or minor source streams. Where evidence is found that measures needed for reaching at least tier 1 for those source streams have become technically feasible and do not incur unreasonable costs, the Operator shall notify the Agency of appropriate modifications to the monitoring plan, submit proposals and a timeframe for implementing appropriate measures.

3.9 Where the verification report states outstanding non conformities, misstatements or recommendations for improvements the Operator shall submit a report to the Agency for approval by 30 June of the year in which the verification report is issued. This requirement does not apply to the Operator of an installation with low emissions where the verification report contains recommendations for improvements only. The report shall describe how and when the Operator has rectified or plans to rectify the non-conformities identified and to implement recommended improvements. Where recommended improvements would not lead to an improvement of the monitoring methodology this must be justified by the Operator. Where the recommended improvements would incur unreasonable costs the Operator shall provide evidence of the unreasonable nature of the costs. The Operator shall implement the improvements specified by the Agency in response to the report submitted in accordance with this Condition in accordance with a timeframe set by the Agency.

3.10 The Operator shall make available to the Verifier and to the Agency any information and data relating to emissions of carbon dioxide which are required in order to verify the reports referred to in Condition 3.5 above or as required by the Agency to facilitate it in establishing benchmarks and/or best practice guidance.

3.11 Provision shall also be made for the transfer of environmental information, in relation to this permit, to the Agency's computer system, as may be requested by the Agency.

3.12 The Operator shall retain all information as specified in the M&R Regulation for a period of at least 10 years after the submission of the relevant annual report. This shall include all annual emissions reports submitted by the Former Operator(s) in respect of the installation.

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.

3.16 Any discrepancies with regard to reports submitted by the Former Operator(s) in respect of this installation become the liability of the Operator.

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, including any liabilities arising from the period before the permit was transferred. 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 18 July 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-GHG066-10378

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	Great Island Generating Station
Site name	Great Island Generating Station
Address	Campile New Ross Wexford Ireland
Grid reference of site main entrance	E268907, N114574
Licence held pursuant to the Environmental Protection Agency Act 1992, as amended.	Yes

IPC/IE Licence Register Number	Licence holder	Competent body
P0606-03	SSE Generation Ireland	EPA

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	SSE Generation Ireland Limited
Company Registration Number	459400

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	SSE Generation Ireland Ltd.

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

Title	[redacted]
Forename	
Surname	
Position	Environmental Co-Ordinator

Registered office address

Address Line 1	Red Oak South
Address Line 2	South County Business Park
City/Town	Leopardstown
County	N/A
Postcode	Dublin 18

Principal office address

Is the principal office address different to the registered office address?	Yes
Address Line 1	Great Island Generation Station
Address Line 2	Campile
City/Town	New Ross
County	Wexford
Postcode	Y34 KC62
Company registration number	459400

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	Campile New Ross Wexford 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.

A Combined Cycle Gas Turbine (CCGT) is in operation at the Great Island Site. The Combined Cycle Gas Turbine (CCGT) began commercial operation on the 10th April 2015. The CCGT operates with a total electricity generating capacity of 469 Megawatt of electricity (MWe) and is comprised of a Gas Turbine, associated Waste Heat Recovery Boiler and Steam Turbine. The main gas turbine is a single shaft type connected to hydrogen-cooled generators. Fuel is burnt in the combustion chambers and the resulting hot gases, at pressure, drive the turbine. The gas turbine exhausts through a waste heat recovery boiler. The steam generated in the boilers is combined and passes to a condensing steam turbine. The exhaust steam is condensed, the condensate being returned as feedwater for the waste heat recovery boilers. The gas turbine normally is fired on natural gas but can operate on distillate fuel oil as a standby fuel in times of gas interruption. Releases to air occur via 65m stack for the gas turbine. A smaller 20m chimney serves the auxiliary boiler.The auxiliary boiler provides heat during start up of the CCGT plant. Frequency of use will be limited to start up events and will last for a limited duration of approximately one day. The auxiliary boiler stack will be separate from the main CCGT stack. The auxiliary boiler will use the same fuels as the CCGT but its emissions will be equal to

approximately 0.5% of those of the CCGT. The auxiliary boiler and main CCGT plant will not run simultaneously. The old HFO plant ceased production on the commercial start of the CCGT.

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)	831.36	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
CCGT_Fuel_Flow_Drawing.pdf	Fuel Flow and Monitoring

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 $CO_{2(e)}$) 980640

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
CCGT S1	Gas Turbine
CCGT S2A	Auxiliary Boiler (ST Gland Sealing)
CCGT S2B	Auxillary Boiler (ST Gland Sealing)
CCGT S3	Gas Heater
CCGT S4	Gas Heater
CCGT S5	Emergency Diesel Generator
CCGT S6	Emergency Diesel Fire Pump
S7	Workshop Gases

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

Emission Source Reference	Emission Source Description
CCGT S1	Gas Turbine
CCGT S2A	Auxiliary Boiler (ST Gland Sealing)
CCGT S2B	Auxillary Boiler (ST Gland Sealing)
CCGT S3	Gas Heater
CCGT S4	Gas Heater
CCGT S5	Emergency Diesel Generator
CCGT S6	Emergency Diesel Fire Pump
S7	Workshop Gases

l. 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
CCGT EP1	Gas Turbine Stack
CCGT EP2	Auxillary Boiler Stack
CCGT EP3	Gas Heater Stack
CCGT EP4	Gas Heater Stack
CCGT EP5	Diesel Generator Exhaust Stack
CCGT EP6	Emergency Diesel Pump Exhaust Stack
EP7	Workshop

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
CCGT F1 (Natural Gas)	Combustion: Other gaseous & liquid fuels	Natural Gas
CCGT F2 (GO)	Combustion: Commercial standard fuels	Gas/Diesel Oil
CCGT F3 (Propane)	Combustion: Commercial standard fuels	Propane

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
CCGT F1 (Natural Gas)	CCGT S1,CCGT S2A,CCGT S2B,CCGT S3,CCGT S4	CCGT EP1,CCGT EP2,CCGT EP3,CCGT EP4	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)
CCGT F2 (GO)	CCGT S1,CCGT S2A,CCGT S2B,CCGT S5,CCGT S6	CCGT EP1,CCGT EP2,CCGT EP5,CCGT EP6	Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the

Source streams (Fuel / Material)	Emission Source Refs.	Emission Point Refs.	Annex 1 Activity
			incineration of hazardous or municipal waste)
CCGT F3 (Propane)	S7	EP7	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:

CCGT Station

Great Island CCGT comprises a 831.36 MW (Total Thermal Input of CCGT plus ancilliaries; aux boilers, gas preheaters, diesel generator and fire pump) Combined Cycle Power Block which includes a Gas Turbine, Steam Turbine, Heat Recovery Boiler and Exhaust Stack. The System normally operates on natural gas with gas oil as a back up in the event of an interruption to gas supply.

Reportable emissions are derived as follows -:

High pressure natural gas is supplied to the site by Gas Networks Ireland (GNI) and is measured by Ultrasonic flow meter (S1,F1). Gas oil is stored on site in bulk storage tanks and when required it is pumped to the GT`s and measured via positive displacement flowmeters (S1,F2). The auxiliary boiler is used for supplying the glands when starting up the steam turbine and is normally fired on natural gas (S2A/S2B, F1) but does have a back up Gas oil capability (S2A/S2B,F2).Emergency diesel generators (EDG S5, F2) and an Emergency Diesel Fire Pump (EDP S6, F2) operate on Gas Oil. Both Sources have their own fuel tanks. Delivery dockets shall be retained for each. Generator and Pump run hours shall also be recorded for monitoring fuel consumption as a cross check.

Reportable emissions are calculated from the quantities of fuel consumed on a monthly basis. Activity data is derived from the fuel souce metering points. For the main gas fuel supply (F1) the metering point is GNI AGI, Primary meter, which give pressure and temperature compensated flow data.The composition of gaseous fuel is obtained from a Gas Chromatograph which is used to derive monthly Net Calorific Values (TJ/m3). At the end of each month GNI supplies a data file setting out for each day and hour of the month the gas flow hourly integrator readings corrected to 288.15 K and 101.325 kPa, and hourly averages of gross calorific value, specific gravity, and individual gas fractions in the gas mixture (namely CO2, Nitrogen, and the paraffin gases from methane through to hexane).

From this data the total nett energy supplied TJ [= Fuel Flow Nm3 * Average Net Calorific Value TJ/Nm3] and the emission factors tCO2/TJ are calculated for the month. In calculating the Emission Factor for the conversion of tonnes of Carbon into CO2 a conversion factor of 3.664 tonnes CO2/tonne Carbon is used. CO2 tonnes = fuel flow [Nm3] * Net Calorific Value [TJ/Nm3] * Emission Factor [tCO2/TJ] * Oxidation Factor

The NCV of the gas will be calculated from the gas analysis to the following standard ISO6976.

The CCGT is supplied with gas oil (as a secondary fuel) from an Oil Tank .Gasoil Consumption is calculated by reference to deliveries (invoices) and stock difference. CO2 emissions are based on the product of the Activity*NCV*EF*OF. Data for NCV and EF are taken from the latest National tables Country Specific Values. The calculation is done on an annual basis. The oxidation factor is 1.0. Density values of the gasoil will be confirmed by sampling during fuel deliveries when large volumes of greater than 500 tonnes are expected. Fuel density will be confirmed during fuel storage quality checks on annual basis.

CO2 tonnes = Fuel Flow [t] * Net Calorific Value [TJ/t] * Emission Factor [tCO2/TJ * Oxidation Factor

Oxidation Factor is 1.0 for both fuels.

Propane consumption is calculated by reference to deliveries (invoices) only. CO2 emissions are based on the Activity*NCV*EF*OF. As consumption is very low a deminis approach has been adopted. Data for NCV and EF are taken from the latest National tables submitted to the UNFCCC. The calculation is conducted on an annual basis. Oxidation factor is taken as 1.0.

The calculation methods are described within Data Flow Activities, and the station's GHG Complaince Procedure.

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
CCGT F1 (Natural Gas)	CCGT S1,CCGT S2A,CCGT S2B,CCGT S3,CCGT S4	CCGT MD1	Ultrasonic meter	80-3990 m3 at standard temperature and pressure	m3	0.5	GNI AGI
CCGT F2 (GO)	CCGT S1,CCGT S2A,CCGT S2B	CCGT MD3	Fiscal Meter	0-36000 litres	Litres	0.04	Suppliers depot
CCGT F2 (GO)	CCGT S1,CCGT S2A,CCGT S2B	CCGT MD4	Tank dip	Height of tank	Metres	1.12	Indepedantly stock dipped
CCGT F2 (GO)	CCGT S5,CCGT S6	CCGT MD5	Delivery Dockets	N/A	Litres	N/A	N/A
CCGT F3 (Propane)	S7	CCGT MD6	Delivery Dockets	NA	Litres	N/A	Purchasing
CCGT F1 (Natural Gas)	CCGT S1,CCGT S2A,CCGT S2B,CCGT S3,CCGT S4	CCGT MD2	Ultrasonic meter	80-3990m3 at standard temperature and pressure	m3	0.5	GNI AGI
CCGT F1 (Natural Gas)	CCGT S1,CCGT S2A,CCGT S2B,CCGT S3,CCGT S4	CCGT MD7	Ultrasonic meter	50-2500 m3 at standard temperature and pressure	m3	0.5	SSE RMS
CCGT F1 (Natural Gas)	CCGT S1,CCGT S2A,CCGT S2B,CCGT S3,CCGT S4	CCGT MD8	Ultrasonic meter	50-2500 m3 at standard temperature and pressure	m3	0.5	SSE RMS

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
CCGT F1 (Natural Gas)	CCGT MD1	Continual	Trade partner	Yes	Yes	Yes
CCGT F2 (GO)	CCGT MD3	Batch	Trade partner	Yes	Yes	Yes
CCGT F2 (GO)	CCGT MD4	Batch	Operator	Yes	No	Yes
CCGT F2 (GO)	CCGT MD5	Batch	Trade partner	Yes	Yes	Yes
CCGT F3 (Propane)	CCGT MD6	Batch	Trade partner	Yes	Yes	Yes
CCGT F1 (Natural Gas)	CCGT MD2	Continual	Trade partner	Yes	Yes	Yes
CCGT F1 (Natural Gas)	CCGT MD7	Continual	Operator	Yes	Yes	Yes
CCGT F1 (Natural Gas)	CCGT MD8	Continual	Operator	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)**
CCGT F1 (Natural Gas)	CCGT S1,CCGT S2A,CCGT S2B,CCGT S3,CCGT S4	CCGT MD1,CCGT MD2,CCGT MD7,CCGT MD8	<1.5%	Standard	4	3	3	N/A	1	N/A	N/A	980640	99.53	Major	Yes	n/a	n/a
CCGT F2 (GO)	CCGT S1,CCGT	CCGT MD3,CCGT	<1.5%	Standard	4	2a	2a	N/A	1	N/A	N/A	4579.5	0.46	De-minimis	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)**
	S2A,CCGT S2B	MD4															
CCGT F2 (GO)	CCGT S5,CCGT S6	CCGT MD5	N/A	Standard	No tier	2a	2a	N/A	1	N/A	N/A	12.9	0	De-minimis	Yes	n/a	n/a
CCGT F3 (Propane)	S7	CCGT MD6	N/A	Standard	No tier	2a	2a	N/A	1	N/A	N/A	0	0	De-minimis	Yes	n/a	n/a

Total Estimated Emissions for Calculation (tonnes $CO_{2(e)}$) 985232.4

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**
Justification_of_Instrument_uncertainty_assertions_CCGT_GI.pdf	Independant Justification of Material Uncertanity
Material_uncertainty_for_major_fuel_source_stream_rev2.docx	Material Uncertainity Calculations
Material_uncertainty_for_major_fuel_source_stream_rev3.docx	Uncertainty calculations Rev 3

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
CCGT F1 (Natural Gas)	CCGT S1,CCGT S2A,CCGT S2B,CCGT S3,CCGT S4	4	3	3	N/A	1	N/A	N/A
CCGT F2 (GO)	CCGT S1,CCGT S2A,CCGT S2B	4	2a	2a	N/A	1	N/A	N/A
CCGT F2 (GO)	CCGT S5,CCGT S6	No tier	2a	2a	N/A	1	N/A	N/A
CCGT F3 (Propane)	S7	No tier	2a	2a	N/A	1	N/A	N/A

w. Justification for Applied tiers

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

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

10. Calculation Factors

x. Default Values

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

Source Stream Refs.	Emission Source Refs.	Parameter	Reference Source	Default Value applied (where appropriate)
CCGT F2 (GO),CCGT F3 (Propane)	CCGT S1,CCGT S2A,CCGT S2B,CCGT S5,CCGT S6,S7	NCV,EF	Data to be taken from the latest national inventory as submitted to the UNFCCC	n/a
CCGT F1 (Natural Gas),CCGT F2 (GO),CCGT F3 (Propane)	CCGT S1,CCGT S2A,CCGT S2B,CCGT S3,CCGT S4,CCGT S5,CCGT S6,S7	OxF	MRR Annex2, section2.3	1

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
CCGT F1 (Natural Gas)	CCGT S1,CCGT S2A,CCGT S2B,CCGT S3,CCGT S4	NCV	EN ISO 6976:2005.(Calculation of NCV, density, wobbe index from	Continuous	Effectech	Yes	N/A

Source Stream Refs.	Emission Source Refs.	Parameter	Method of Analysis	Frequency	Laboratory Name	Laboratory ISO17025 Accredited	Evidence Reference
			composition)				
CCGT F1 (Natural Gas)	CCGT S1,CCGT S2A,CCGT S2B,CCGT S3,CCGT S4	EF	EN ISO6974	Continuous	Effectech	Yes	N/A
CCGT F1 (Natural Gas)	CCGT S1,CCGT S2A,CCGT S2B,CCGT S3,CCGT S4	Natural Gas performance for Analytical Systems	EN ISO 10723:2012	Annual	Effectech	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	Compliance with the Requirements of the EU Emissions Trading Scheme
Reference for procedure	WI-GTIS-SHE-001-007
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The purpose of these procedures is to ensure that Natural Gas consumed on site is sampled & analysed for NCV and carbon content to allow calculation of CO2 emissions to the standard specified in the M&R Regulation. Information that is gathered in relation to fuel sampling and analysis will be used for verification, auditing and calculation of CO2 (GHG) emissions. For NG, NCV, Relative density, Wobbe-index are calculated from composition in accordance with EN ISO 6976:2005. Annual performance assessment is conducted for the on-line gas chromatograph in accordance with EN ISO 10723:2012.
Post or department responsible for the procedure and for any data generated	Environmental Coordinator
Location where records are kept	Great Island Environmental Office
Name of IT system used	Shared Electronic Drive
List of EN or other standards applied	For Natural Gas:EN ISO 6976:2005, EN ISO 6974, EN ISO 10723:2012, EN 12261 for Turbine meters, EN 12480 for Rotary displacement meters, EN 1359 for Diaphragm meters, BS 7965:2000 for Ultrasonic meters, EN ISO 9001 BGE, ISO 5168 – Measurement of fluid flow – Evaluation of uncertainties. EN ISO 10715 Natural gas sampling guidelines.

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**
Cert_of_Reg_-_IS_EN_ISO_9001_2008_-_GWR_-_to_19Nov2014[1].pdf	Bord Gais 9001 Quality Certification
11680-IUT-6205-2013-02-27[1] Ultrasonic Meter.pdf	Calibration Certifcate for U. Meter
11679-IUT-6204-2013-02-27[1] Ultrasonic Meter.pdf	Calibration certificate for U. Meter
0590Calibration Multiple.pdf	50590 Effctech UKAS Calibration Certificate
17_0050_02 Calibration Report Great Island CCGT AGI 2017 (61300862).pdf	BGN GC Calibration Report 2017

Attachment	**Description**
17_0050_02 Certificate of Calibration Great Island CCGT AGI 2017 (61300862).pdf	BGN GC Calibration Certifcate 2017
17_0047_01 Calibration Report Great Island CCGT AGI 2017 (T142986166).pdf	SSE RMS calibration report 2017
17_0047_01 Certificate of Calibration Great Island CCGT AGI 2017 (T142986166).pdf	SSE RMS calibration certificate 2017
WI-GTIS-SHE-001-007 Compliance with requirements of EU Emissions Trading Scheme.doc	Station Control Procedure for GHG emissions recording
Great_Island_CCGT_Sampling_Plan.docx	FG & GO GHG Sampling Requirements

Title of procedure	Compliance with the Requirements of the EU Emissions Trading Scheme
Reference for procedure	WI-GTIS-SHE-001-007
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The purpose of these procedures is to ensure that Natural Gas consumed on site is sampled & analysed for carbon content to allow calculation of CO2 emissions to the standard specified in the M&R Regulation. Information that is gathered in relation to fuel sampling and analysis will be used for verification, auditing and calculation of CO2 (GHG) emissions. Annual performance assessment is conducted for the on-line gas chromatograph in accordance with EN ISO 10723:2012. First Performance checks were carried out in 2014 prior to First Fire.
Post or department responsible for the procedure and for any data generated	Environmental Coordinator
Location where records are kept	Great Island Environmental Office
Name of IT system used	Shared Electronic Drive
List of EN or other standards applied	BS 7965:2000 for Ultrasonic meters, EN ISO 9001 BGE, ISO 5168 – Measurement of fluid flow – Evaluation of uncertainties. EN ISO 10715 Natural gas sampling guidelines

aa. Sampling Plan Appropriateness

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

Title of procedure	Compliance with the Requirements of the EU Emissions Trading Scheme
Reference for procedure	N/A
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The purpose of these procedures is to ensure that Natural Gas consumed on site is sampled & analysed for carbon content to allow calculation of CO2 emissions to the standard specified in the M&R Regulation. Information that is gathered in relation to fuel sampling and analysis will be used for verification, auditing and calculation of CO2 (GHG) emissions. In relation to the sampling plan appropriateness-

	should any change occur to the above sampling and analysis plan the plan will be revised and the EPA informed and their approval sought.
Post or department responsible for the procedure and for any data generated	Environmental Coordinator
Location where records are kept	Great Island Environmental Office
Name of IT system used	Shared Electronic Drive
List of EN or other standards applied	ISO14001

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	Compliance with the Requirements of the EU Emissions Trading Scheme
Reference for procedure	WI-GTIS-SHE-001-007
Diagram reference	N/A
Brief description of procedure.	Difference in Stock at Start and End of Year • The annual stock survey will be carried out as near to the end of the year as possible. • The stock survey will be carried out by an Independent Surveyor. • The consumption from the stock check to the year-end will be based on MWhrs generated from year end to time of check.
Post or department responsible for the procedure and for any data generated	Environmental Coordinator
Location where records are kept	Shared Electronic Drive
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	N/A

any data generated	
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 Coordinator	Calculation, reviewing, checking, reviewing and submission
Environment/Chemcial Officer	Accepting, checking and recording fuel deliveries
Process Support Manager	Overall management of GHG activities and allocation of GHG responsibilities

Attachment	**Description**
Great Island Staffing Structure April 2018.pdf	Responsibilities Orgnogram

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	Compliance with requirements of the EU Emissions Trading Scheme
Reference for procedure	WI-GTIS-SHE-001-007
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The procedure describes the processes used to calculate CO2 emissions for installations as required by the MRR. It covers 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. It identifies how the monitoring and reporting esponsibilities for the roles identified above are assigned and how training and reviews are undertaken.
Post or department responsible for the procedure and for any data generated	Environmental Coordinator
Location where records are kept	Great Island Environmental Office
Name of IT system used	Shared Drive
List of EN or other standards applied	ISO 14001

ff. Monitoring Plan Appropriateness

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

Title of procedure	Compliance with requirements of the EU Emissions Trading Scheme
Reference for procedure	WI-GTIS-SHE-001-007
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The Monitoring Plan Appropriateness procedure is contained within the WI-GTIS-SHE-001-007 procedure. It covers the following evaluations which are carried out on a regular basis: Checking the list of emissions sources and source streams, ensuring completeness of the emissions and source streams and that all relevant changes in the nature and functioning of the installation will be included in the

	monitoring plan; Assessing compliance with the uncertainty thresholds for activity data and other parameters (where applicable) for the applied tiers for each source stream and emission source; and Assessment of potential measures for improvement of the monitoring methodology applied.
Post or department responsible for the procedure and for any data generated	Environmental Coordinator
Location where records are kept	Great Island Generating Station & Company Share Drive
Name of IT system used	N/A
List of EN or other standards applied	ISO 14001

gg. Data Flow Activities

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

Title of procedure	Compliance with requirements of the EU Emissions Trading Scheme
Reference for procedure	WI-GTIS-SHE-001-007
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The management of data flow activities procedure is contained within WI-GTIS-SHE-001-007 Compliance with the requirements of the EU Emissions Trading Scheme. It covers the following:Identification of the primary data sources; A description of each step in the data flow from primary data to annual emissions which reflects the sequence and interaction between the data flow activities; A description of the relevant processing steps related to each specific data flow activity including formulas and data used to determine emissions; Details of electronic data processing and storage systems used and interaction between such systems and other inputs including manual input; A description of how outputs of data flow activity are recorded. It covers the following:Identification of the primary data sources; A description of each step in the data flow from primary data to annual emissions which reflects the sequence and interaction between the data flow activities; A description of the relevant processing steps related to each specific data flow activity including formulas and data used to determine emissions; Details of electronic data processing and storage systems used and interaction between such systems and other inputs including manual input; A description of how outputs of data flow activity are recorded.
Post or department responsible for the procedure and for any data generated	Environmental Coordinator
Location where records are kept	Great Island Environmental Office

Name of IT system used	Shared Drive
List of EN or other standards applied	ISO 14001
List of primary data sources	GNI Chromatograph reports Stock dips Delivery Invoices National Inventory Data
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	CALCULATION METHODOLOGY CO2 emissions (NG) = Activity Data x Emissions factor x NCV x Oxidation Factor. Emissions factor will be calculated from the Carbon content of the NG multiplied by 3.664 (for conversion to CO2) and divided by the NCV. CO2 emissions (GO) = Activity Data x Emissions factor x NCV x Oxidation Factor. The fuels consumed in the CCGT will be Natural Gas, Gas Oil, very small quantities propane. NATURAL GAS CONSUMPTION Natural Gas consumption will be based on the data issued to the station by GNI. This data comprises gas consumption and composition on an hourly basis over the full reporting year. The consumption will be in thousands of cubic metres (KCM) at standard conditions (15oC and 101,325 Pa). For reporting purposes the consumption will be in KCM @ OoC and 101,325Pa. The consumption as received monthly from GNI is compared against GNI invoices. At least one calibration of the metering system is carried out annually, the metering system is made up of a flow element i.e. the ultrasonic flow meter, and associated secondary instrumentation - flow corrector, pressure and temperature instruments. Calibration gas bottles as provided by GNI in the AGI shall be changed out prior to expiration of the calibration gas. A Job card shall be created which will ensure that Great Island checks to ensure GNI changes the calibration gas as appropriate to ensure GHG permit compliant. SSE's RMS (Regulated Metering Station) contains a Turbine flow meter and a Gas Chromatograph for recording activity data. The GNI meters will be used for the purposes of recording and reporting activity data under Art. 28 and Art. 29 . SSE monitoring equipment will be used to cross verify the operation of GNI monitoring equipment. At least one calibration of the metering system is carried out annually.

These flow meters are continually monitored against GNI fiscal metering.

In the unlikely event both GNI and SSE have simultaneous failure the following shall be applied;

For periods up to 24 Hours:

Take the previous and next operational day's data and the equivalent load period to sum the electrical generation sent out (MW's) and gas volumes. Using the Station electrical generation sent out during the data gap determine the gas volume from previous and next operational day's data and a conservative estimate will be obtained by adding twice the Standard Deviation of the hour data to determine the gas volume used during the period of lost data.

For periods longer than 24 Hours:

In the first instance, approval from the EPA must be sought to use the GNI Chromatograph, located in Balyconra. At least one calibration of the metering system is carried out annually.

For both the CCGT and AGI Calibration Cylinders shall be changed out prior to expiration of the calibration gas. A Job Card shall be created via Maximo which will ensure that Great Island checks to ensure GNI changes the calibration gas as appropriate to ensure GHG permit compliant.

GAS OIL CONSUMPTION

Consumption will be based on delivery invoices and difference in stock levels at the start and end of each year. The stock difference between start and end of the year will be determined using the results of independently witnessed dips. Data for NCV and EF are taken from the latest National Inventory data. An oxidation factor of 1.0 is applied.

CO2 emissions (tonnes) = Fuel consumed (tonnes) x Emission factor x NCV x Oxidation factor

Gas Oil consumption data and emission factors are entered into "CO2 Emissions Monitor Spreadsheet" for calculation of CO2 emissions.

CALCULATION SPREADSHEETS

CO2 emission calculation spreadsheets will be updated on monthly basis. information from this sheet will be used in

	the station monthly reporting.These spreadsheets will also be checked each month by the Environmental Coordinator & also reviewed by internal auditors on a regular basis. Further cross-checks are carried out by the Verifier. All systems in SSE are backed up regularly in case of computers failure. Access to the data will be controlled, with access only to those directly involved in the process. PROPANE CO2 is calculated using deminis approach. EMERGENCY DIESEL GENERATORS: Calculated on a deminis approach.

Submit relevant documents to record data flow activities

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

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	Compliance with requirements of the EU Emissions Trading Scheme
Reference for procedure	WI-GTIS-SHE-001-007
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The procedure for assessing and controlling risks is contained within the WI-GTIS-SHE-001-007 procedure. It covers the following: A risk assessment is carried out for the whole data flow from obtaining primary data to the final annual emissions report following the guidance given in chapter 4 of the MRR Guidance Document on Data Flow Activities and Control System. For each data handling or processing step an assessment of what can go wrong is undertaken. The probability of this occurring is then assessed. The impact is determined (how big would the error be in terms of emissions). The risk (low medium,high) resulting from probability and impact is then determined. An appropriate control activity is then determined (how can the risk be mitigated). A final overall risk remaining after implementation of control activities is then determined.
Post or department responsible for the procedure and for any data generated	Environmental Coordinator
Location where records are kept	Great Island Environmeantal Office
Name of IT system used	Electronic Shared Dirve

List of EN or other standards applied	ISO 14001

ii. Quality Assurance of Metering / Measuring Equipment

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

Title of procedure	Compliance with requirements of the EU Emissions Trading Scheme
Reference for procedure	WI-GTIS-SHE-001-007
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The procedure describes the processes used to calculate CO2 emissions for installations as required by the MRR to the EU Emissions Trading Scheme. It covers these specific areas; including the calibration and checking of the Gas Chromatograph, Ultrasonic Meters, Turbine Meters, Fuel tank level indicators strictly in accordance with the manufacturers recommendations, all fuel tank dips are carried out by an outside independent contractor (SGS Ireland) Limited. The fuel delivery road tankers are subject to legally enforceable national metrology regulations. All calibration work shall be carried out by trained and qualified technicians. The Calibration records shall be examined by the Maintenance Engineer as a Quality Assurance measure.
Post or department responsible for the procedure and for any data generated	Environmental Coordinator
Location where records are kept	Great Island Generating Station & Company Share Drive
Name of IT system used	N/A
List of EN or other standards applied	ISO 14001

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

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

Title of procedure	Compliance with requirements of the EU Emissions Trading Scheme
Reference for procedure	WI-GTIS-SHE-001-007
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The procedure for quality assurance of information cover the essential parameters and operations performed technology (IT) is contained within the WI-GTIS-SHE-001-007 procedure. It describes processes implemented to ensure that the IT system is designed, documented, tested, implemented and controlled and maintained in a way to process reliable, accurate and timely data. The procedure

	also covers access control, back-up, recovery and security.
Post or department responsible for the procedure and for any data generated	Environmental Coordinator
Location where records are kept	Great Island Environmental Office
Name of IT system used	Shared Electronic Drive
List of EN or other standards applied	ISO 14001

kk. Review and Validation of Data

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

Title of procedure	Compliance with requirements of the EU Emissions Trading Scheme
Reference for procedure	WI-GTIS-SHE-001-007
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The procedure for review and validation of data is contained within the WI-GTIS-SHE-001-007 procedure. It identifies that the review and validation process includesa check on whether data is complete, comparisons with data over previous years, comparison of fuel consumption reported with purchase records and criteria for rejecting data.
Post or department responsible for the procedure and for any data generated	Environmental Coordinator
Location where records are kept	Great Island Environmental office
Name of IT system used	Shared Electronic Drive
List of EN or other standards applied	ISO 14001

ll. Corrections and Corrective Actions

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

Title of procedure	Compliance with requirements of the EU Emissions Trading Scheme
Reference for procedure	WI-GTIS-SHE-001-007
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The procedure for corrections and corrective actions is contained within the WI-GTIS-SHE-001-007 procedure. It outlines what appropriate actions are undertaken if data flow activities and control activities are found not to function effectively. It details how the validity of the outputs are assessed, it describes the process of determining the cause of errors and implementing appropriate corrective and preventative actions.
Post or department responsible for the procedure and for	Environmental Coordinator

any data generated	
Location where records are kept	Great Island Environmental Office
Name of IT system used	Shared Electronic Drive
List of EN or other standards applied	ISO 14001

mm. Control of Outsourced Activities

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

Title of procedure	Compliance with requirements of the EU Emissions Trading Scheme
Reference for procedure	WI-GTIS-SHE-001-007
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The procedure for the control of outsourced activities is contained within the WI-GTIS-SHE-001-007 procedure. It details how data flow activities and control activities of outsourced processes are checked and what checks are undertaken on the quality of the resulting data. Out sourced processes include fuel metering and annual independent survey of opening and closing stocks. It describes how it is ensured that the third party equipment used for tank dips and third party fuel metering equipment is calibrated and checked at regular intervals and how any non-compliance with the required performance is dealt with.
Post or department responsible for the procedure and for any data generated	Environmental Coordinator
Location where records are kept	Great Island Environmental Office
Name of IT system used	Shared Electronic Drive
List of EN or other standards applied	ISO 14001

nn. Record Keeping and Documentation

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

Title of procedure	Compliance with requirements of the EU Emissions Trading Scheme
Reference for procedure	WI-GTIS-SHE-001-007
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The procedure used to manage record keeping andcover the essential parameters and operations performed documentation is contained within the WI-GTIS-SHE-001-007 procedure. It details the process of document retention, specifically in relation to the data and

	information stipulated in Annex IX of the MRR and to how the data is stored such that information is made readily available upon request of the competent authority or verifier and the data is stored for ten years.
Post or department responsible for the procedure and for any data generated	Environmental Coordinator
Location where records are kept	Great Island Environmental Office
Name of IT system used	Shared Electronic Drive
List of EN or other standards applied	ISO 14001

oo. Risk Assessment

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

Attachment	Description
Great Island Power Station GHG Risk Assessment 2018.docx	Great Island Power Station GHG 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.

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

13. Abbreviations

rr. Abbreviations Acronyms or definitions

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

Abbreviation	**Definition**
GHG	Green House Gases
ST	Steam
CCGT	Combined Cycle Gas Turbine
BGN	Bord Gais Networks
AGI	Above Ground Installation
RMS	Regulated Metering Station
GNI	Gas Networks Ireland

14. Additional Information

Any other information:

Attachment	Description
Appendix 6.1 - Turbine Heat Balances.pdf	Independant Thermal Capacity Report App1
Appendix 6.2 - Aux boiler calculations.pdf	Independant Thermal Capacity Report App 2
Appendix 6.2 - Aux boiler datasheets.pdf	Independant Thermal Capacity Report App2
Appendix 6.2 - Aux boiler nameplates.pdf	Independant Thermal Capacity Report App2
Appendix 6.3 - RMS Boiler Datasheets.pdf	Independant Thermal Capacity Report App3
Appendix 6.3 - RMS Boiler Nameplate.pdf	Independant Thermal Capacity Report App3
Appendix 6.4 - EDG Datasheets.pdf	Independant Thermal Capacity Report App4
Appendix 6.4 - EDG Nameplates.pdf	Independant Thermal Capacity Report App4
Appendix 6.5 - Fire Pump nameplate.pdf	Independant Thermal Capacity Report App5
Thermal_input_capacities.pdf	Calculations Thermal Input
GI_CO2_Data_Calculation_Sheet_(Draft).xls	CCGT Data Collection Sheets Draft (EXAMPLE)
Appendix_6.5_-_Fire_Pump_datasheet.pdf	Thermal Capacity Report _ App 6.5 Data Sheet
Great_Island_Air_Emissions_Source_Study rev. 1.pdf	Revised Thermal Input Capacity Report
GRI_EPA Site Audit_Letter of Response_May 2014 (2).doc	Permit updates following site visit of 09 May 2014.

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.