Headquarters,
Johnstown Castle Estate,
County Wexford, Ireland

GREENHOUSE GAS EMISSIONS PERMIT

Permit Register Number: IE-GHG196-10523-2

Operator: KDCR (IRELAND) 2 LIMITED
Ballycoolin Business & Technology Park,
Blanchardstown,
Dublin 15
D15 YN9K

Installation Name: KDCR DUB2

Site Name: KDCR DUB2

Location: Unit B10 Ballycoolin Business &
Technology Park
Blanchardstown, Dublin 15
D15 YN9K
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-GHG196-10523.

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)**:**

Status Log

Current Permit

Permit number	Date application received	Date Permit issued	Comment
IE-GHG196-10523-2	31 May 2021	25 June 2021	1. Addition of two new emission sources (generators) S10 and S11 and their associated emission points EP10 and EP11. 2. Update of the Measurement Devices Table with the addition of two new level gauges associated with the new bulk storage tanks.

Previous Permits

Permit number	Change Type	Date application received	Date Permit issued	Comment
IE-GHG196-10523-1	GHG Permit Application	09 June 2020	31 July 2020	

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)	KDCR (IRELAND) 2 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:

KDCR (IRELAND) 2 LIMITED
Ballycoolin Business & Technology Park,
Blanchardstown,
Dublin 15
D15 YN9K

Company Registration Number: 463736

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):

KDCR DUB2 **Installation number:** 214063

located at

Unit B10 Ballycoolin Business & Technology Park
Blanchardstown, Dublin 15
D15 YN9K
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.: 214063

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

Directly Associated Activity Description
N/A

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

Table 2 Emission Sources and Capacities:

Emission Source Reference	Emission Source Description	Capacity	Capacity Units
S1	Emergency electricity generator	< 50	MW
S2	Emergency electricity generator	< 50	MW
S3	Emergency electricity generator	< 50	MW
S4	Emergency electricity generator	< 50	MW
S5	Emergency electricity generator	< 50	MW
S6	emergency electricity generator	< 50	MW
S7	Emergency electricity generator	< 50	MW

Emission Source Reference	Emission Source Description	Capacity	Capacity Units
S8	Emergency electricity generator	< 50	MW
S9	Emergency electricity generator	< 50	MW
S10	Emergency Generator engine	< 50	MW
S11	Emergency Generator engine	< 50	MW

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

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

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

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

Condition 2. Notification

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

2.1.1 the nature or functioning of the installation;

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

2.1.3 the fuels used at the installation;

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

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

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

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

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

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

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

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

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

Condition 3. Monitoring and Reporting

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

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

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

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

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

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

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

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

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

3.3 Temporary changes to the monitoring methodology:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3.9 Where the verification report states outstanding non conformities, misstatements or recommendations for improvements the Operator shall submit a report to the Agency for approval

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

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

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

3.12 The Operator shall retain all information as specified in the M&R Regulation for a period of at least 10 years after the submission of the relevant annual report.

3.13 A record of independent confirmation of capacities listed in this permit shall be available on-site for inspection by authorised persons of the Agency at all reasonable times.

3.14 The Operator shall keep records of all modifications of the monitoring plan. The records shall include the information specified in Article 16.3 of the M&R Regulation.

3.15 The Operator shall ensure that members of the public can view a copy of this permit and any reports submitted to the Agency in accordance with this permit at all reasonable times. This requirement shall be integrated with the requirements of any public information programme approved by the Agency in relation to any other permit or licence held by the Operator for the site.

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

Condition 4. Allowances

4.1 Surrender of Allowances

4.1.1 The Operator shall, by 30 April in each year, surrender to the Agency, or other appropriate body specified by the Agency, allowances equal to the annual reportable emissions in the preceding calendar year.

4.1.2 The number of allowances to be surrendered shall be the annual reportable emissions for the preceding calendar year plus such allowances as may be necessary to cover any earlier calendar year in respect of which allowances remain outstanding and due. This includes allowances to cover the amount of any annual reportable emissions in respect of which allowances were not surrendered in accordance with Condition 4.1.1 in the previous year, and the amount of any reportable emissions which were discovered during the previous year to have been unreported in reports submitted under Condition 3 in that or in earlier years.

4.1.3 In relation to activities or parts of activities which have ceased to take place and have been notified to the Agency in accordance with Condition 2.2 above, the Operator shall surrender to the Agency allowances equal to the annual reportable emissions from such activities in the preceding calendar year or part thereof, together with such allowances as

may be necessary to cover any earlier calendar year in respect of which allowances remain outstanding and due as described in Condition 4.1.2 above.

4.1.4 The Operator may, from 2008 onwards, subject to the provisions of the Regulations and the relevant National Allocation Plan for that compliance year, surrender emission reduction units (ERUs) and certified emission reduction units (CERs) in place of allowances.

4.2 The holding, transfer, surrender and cancellation of allowances shall be in accordance with the requirements of any Regulations adopted as provided for under Article 19.3 of Directive 2003/87/EC, any amendment or revision to the same and any guidance issued by the Agency or the National Administrator.

4.3 The Operator shall provide the National Administrator with all the necessary information for the opening of an Operator holding account for the installation described in Condition 1 of this permit within twenty working days of the issue of this permit, unless such an account is already open.

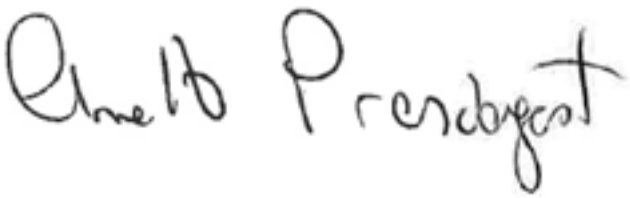
Reason: *To provide for the surrendering, holding, transfer and cancellation of allowances in respect of reported emissions.*

Condition 5. Penalties

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

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

Signed by the Authorised Person on this the 25 June 2021:



_____

Ms. Annette Prendergast
Inspector/ Authorised Person

Appendix 1 to Greenhouse Gas Emissions Permit Number IE-GHG196-10523

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	KDCR DUB2
Site name	KDCR DUB2
Address	Unit B10 Ballycoolin Business & Technology Park Blanchardstown, Dublin 15 D15 YN9K Ireland
Grid reference of site main entrance	E 309010 N 240730
Licence held pursuant to the Environmental Protection Agency Act 1992, as amended.	No
Has the regulated activity commenced at the Installation?	Yes
Date of Regulated Activity commencement	12 September 2017

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	KDCR (IRELAND) 2 LIMITED
Company Registration Number	463736

Operator Legal status

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

(c) Company / Corporate Body

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

Registered office address

Address Line 1	Ballycoolin Business & Technology Park,
Address Line 2	Blanchardstown,
City/Town	Dublin 15
County	N/A
Postcode	D15 YN9K

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

Address	Unit B10 Ballycoolin Business & Technology Park Blanchardstown Dublin 15 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.

KDCR DUB 2 is a data processing centre used by KDCR (IRELAND) 2 LIMITED for Information Technology and "Cloud Computing" services. The facility is used for data processing and network routing. The Annex 1 Activity on site is the combustion of fossil fuels in diesel engines. These engines are used to drive alternators (generators) which are designed for emergency or standby use in the event of a power failure from the electricity grid. KDCR DUB 2 is a data processing centre providing information service activities for the storage, management and dissemination of data. Most of the equipment used at KDCR DUB 2 is information technology equipment, together with the equipment required to deliver the ancillary services (such as power supply and air conditioning) that are required in order to facilitate the proper operation of the information technology equipment. The installation uses power from the Irish electricity grid, and the installation is equipped with emergency backup electricity generators for use in the event of a disruption to the supply of electricity from the Irish electricity grid.

The emergency backup generators are operated periodically throughout the year for testing and preventative maintenance purposes. The emergency backup generators burn sulphur-free diesel fuel, stored onsite in aboveground storage tanks, which generates carbon dioxide (CO2) emissions. Based on the foreseeable operation of the emergency backup generators, the site is considered a low emissions installation, and the CO2 emissions in any one year are predicted to be below 25,000 tonnes of CO2.The monitoring and reporting of CO2 emissions will be conducted in accordance with Article 47 of the Monitoring and Reporting Regulations for installations with low emissions. Annual emissions of carbon dioxide from the installation will be estimated based on the generators' annual fuel consumption. This will be measured through a combination of (i) a start of year and end of year stock take; together with (ii) the amount of diesel delivered (metered) by the vendor during the year. Both data sets will be used, together with vendor information on the composition of the fuel and the net calorific value and emission factors (as outlined in the current EPA guidance), to calculate an estimated figure for emissions of carbon dioxide by the generators. This method is appropriate for the installation as it qualifies under the "low emitter" threshold as installations which on average emit less than 25,000 tonnes CO2(e) per year. Our initial calculations indicate that this data centre as currently designed and operated will emit no more than 1000 tonnes CO2(e) per year.

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)	<50	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
DUB2 Site Map_w_New gensets.pdf	Plot plan showing location of proposed new fuel tanks and new gensets
RTI calculation of New KDCR Genset Engines _FM.xlsx	New genset Engine RTI calculation at second tab

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 $CO_{2(e)}$)	170
Justification for the use of a conservative estimate of CO_2 emissions.	We used the 2020 Verified Annual Emissions Report to estimate future GHG emissions. we have used CO2e from 9 gensets at 113 tCO2e and pro-rated this to 11 gensets + 20%.

Installation Category: A

6. Emissions Details

j. About your emissions

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

k. Emission Sources

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

Emission Source Reference	Emission Source Description
S1	Emergency electricity generator
S2	Emergency electricity generator
S3	Emergency electricity generator
S4	Emergency electricity generator
S5	Emergency electricity generator
S6	emergency electricity generator
S7	Emergency electricity generator
S8	Emergency electricity generator
S9	Emergency electricity generator
S10	Emergency Generator engine
S11	Emergency Generator engine

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

Emission Source Reference	Emission Source Description
S1	Emergency electricity generator
S2	Emergency electricity generator
S3	Emergency electricity generator
S4	Emergency electricity generator
S5	Emergency electricity generator
S6	emergency electricity generator
S7	Emergency electricity generator

Emission Source Reference	Emission Source Description
S8	Emergency electricity generator
S9	Emergency electricity generator
S10	Emergency Generator engine
S11	Emergency Generator engine

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
EP1	Generator exhaust
EP2	Generator exhaust
EP3	Generator exhaust
EP4	Generator exhaust
EP5	Generator exhaust
EP6	Generator exhaust
EP7	Generator exhaust
EP8	Generator exhaust
EP9	Generator exhaust
EP10	Engine Exhaust
EP11	Engine Exhaust

m. Source Streams (fuels and/or materials)

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

Source Stream Reference	Source Stream Type	Source Stream Description
F1(gas oil)	Combustion: Commercial standard fuels	Gas/Diesel Oil

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

Source streams (Fuel / Material)	Emission Source Refs.	Emission Point Refs.	Annex 1 Activity
F1(gas oil)	S1,S10,S11,S2,S3,S4,S5,S6, S7,S8,S9	EP1,EP10,EP11,EP2,EP3,EP 4,EP5,EP6,EP7,EP8,EP9	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)? Yes

If the installation is an installation with low emissions as defined above there are a number of special provisions which may be applied to provide a simplified monitoring plan. These provisions are set out in Article 47 of the MRR.

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 methodology applied to determine annual CO2 emissions at KDCR DUB 2 is as follows:

CALCULATION FOR ANNUAL CO2 EMISSIONS

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

Fuel Consumed

GAS OIL CONSUMPTION will be based on delivery invoices and difference in stock levels at the start and end of each year. Oil is delivered by road tankers which are loaded through fiscal meters. The delivery dockets and invoices are based on the fiscal meters. The fiscal meters are calibrated and certified annually and are subject to National Metrology Regulations. Deliveries are determined from the delivery dockets (litres) and converted to m3 and then to tonnes using a factor of 0.86 (this factor is updated regularly). Delivery dockets are cross-checked with the invoices. The delivery of gas oil/diesel is subject to on-site supervision and includes a level check of the fuel tank before and after loading to ensure that tank level changes correspond to the metered quantity as displayed on the fuel delivery truck meter. A record of each delivery as well as the oil tank levels is recorded by the Datacentre Manager. A standard manual check sheet is completed and stored for each delivery.

STOCK AT START AND END OF YEAR: The Datacentre Manager shall arrange for the level of the oil tanks to be checked both at the beginning of the year and at year end. This is a manual reading taken by engineering facilities staff which shall be recorded as the initial or opening gas oil stock and the closing readings. The Tank Level Gauges have a measured accuracy of these meters is less than +/- 1 %. The stock level showing on the Operations Report at the time of the stock survey will also be recorded. If any difference is observed its cause will be ascertained. The stock level showing on the Operations Report will be corrected by this difference from the manually recorded oil levels. The stock difference between start and end of the year will be determined using the results of these engineering facilities staff witnessed meter readings. Therefore there shall be manually recorded levels and instrument recorded levels which will meet the overall Tier 1 uncertainty.

Calculation Factors

Tier 2(a) is applied for both NCV (TJ/ktonne) and Emission Factor (tCO2/TJ) and these gas oil factors are taken from the latest National Inventory data as submitted to the UNFCCC. The factors are available on the EPA website each year. An oxidation factor of unity is used.

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(gas oil)	S1,S2,S3,S4,S5,S6,S7,S8,S9,S10,S11	MD5	Purchase and invoice records based on gas oil deliveries	variable	Litres	7.5	Third party delivery truck meter
F1(gas oil)	S1,S2,S3	MD1	Level gauge	0-32900	litres	1	gas oil tank plant area
F1(gas oil)	S4,S5,S6	MD2	Level gauge	0-32900	litres	1	Gas Oil tank Plant area
F1(gas oil)	S7,S8,S9	MD4	Level gauge	0-32400	litres	1	Gas oil tank plant area
F1(gas oil)	S10	MD3	Level gauge	0-32400	Litres	1	Gas oil tank plant area
F1(gas oil)	S11	MD6	Level gauge	0-32400	litres	1	Gas oil tank plant area

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(gas oil)	MD5	Batch	Trade partner	Yes	Yes	Yes
F1(gas oil)	MD1	Continual	Operator	N/A	N/A	N/A
F1(gas oil)	MD2	Continual	Operator	N/A	N/A	N/A

Source Stream Refs.	Measurement Device Ref.	Determination Method	Instrument Under Control Of	Conditions Of Article 29(1) Satisfied	Invoices Used To Determine Amount Of Fuel Or Material	Trade Partner And Operator Independent
F1(gas oil)	MD4	Continual	Operator	N/A	N/A	N/A
F1(gas oil)	MD3	Batch	Trade partner	Yes	Yes	Yes
F1(gas oil)	MD6	Batch	Operator	N/A	N/A	N/A

t. Applied Tiers

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

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

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

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

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

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

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

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

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

Source Stream Refs.	**Emission Source Refs.**	**Measurement Device Refs.**	**Overall Metering Uncertainty (less than +/- %)**	**Applied Monitoring Approach**	**Activity Data Tier Applied**	**Net Calorific Value Tier Applied**	**Emission Factor Tier Applied**	**Carbon Content Tier Applied**	**Oxidation Factor Tier Applied**	**Conversion Factor Tier Applied**	**Biomass Fraction Tier Applied**	**Estimated Emissions $tCO_{2(e)}$**	**% of Total Estimated Emissions**	**Source Category**	**Highest Tiers Applied**	**Justification for not applying the highest tiers**	**Improvement Plan Reference (where applicable)**
F1(gas oil)	S1,S2,S3,S4,S5,S6,S7,S8,S9,S10,S11	MD1, MD2, MD3, MD4, MD5, MD6	<7.5%	Standard	1	2a	2a	N/A	1	N/A	N/A	175	100	Major	Yes	n/a	n/a

Total Estimated Emissions for Calculation (tonnes $CO_{2(e)}$) 175

u. 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(gas oil)	S1,S2,S3,S4,S5,S6,S7,S8,S9,S10,S11	1	2a	2a	N/A	1	N/A	N/A

v. 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

w. 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)
F1(gas oil)	S1,S2,S3,S4,S5,S6,S7,S8,S9,S10,S11	NCV	National GHG Inventory	n/a
F1(gas oil)	S1,S2,S3,S4,S5,S6,S7,S8,S9,S10,S11	EF	National GHG Inventory	n/a
F1(gas oil)	S1,S2,S3,S4,S5,S6,S7,S8,S9,S10,S11	OxF	MRR	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? No

11. Management

x. 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
Country Manager	Ensures that Keppel KDCR DUB 2 is compliant with all applicable regulatory requirements and other Environmental standards to which Keppel conforms. The Country Manager role includes management of identification of source data, validation of this data, making the necessary calculations of emissions, forwarding the required information to the Climate Change Unit of the EPA and having the data independently verified by an ISO 14065 accredited Verification Body.
Data Centre Manager	The Datacentre Manager ensures the site is compliant with all applicable regulatory requirements and other Environmental standards to which Keppel DUB2 conforms. The Datacentre Manager role includes identification of source data, validation of this data, making the necessary calculations of emissions, forwarding the required information to the Climate Change Unit of the EPA and having the data independently verified annually; Recording of GHG data such as fuel delivery activities and fuel oil consumption data is managed and controlled by the Datacentre Manager.

Attachment	Description
DUB2 Org Chart 2020.pdf	KDCR DUB2 Organisation Chart

y. 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	Assignment of GHG roles and responsibilities
Reference for procedure	DUB2-GHG-SOP-001
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Responsibilities for GHG Management are assigned by the Country Manager who is responsible for guiding and directing the staff on implementation of GHG activities on site with the Datacentre Manager acting as a second in command. The Datacentre Manager ensures the site is compliant with all applicable regulatory requirements and other Environmental standards to which Keppel DUB2 conforms. The Datacentre Manager role includes identification of source data, validation of this data, making the necessary calculations of emissions, forwarding the required information to the Climate Change Unit of the EPA and having the data independently verified annually. The site works involving recording of GHG data such as fuel delivery activities and fuel oil consumption data is managed and controlled by the Datacentre Manager. The Datacentre Manager reports to the Country Manager in a line function. Competence is managed by virtue of the education, training and experience of this management team. A training programme on the EU ETS is planned for Q2 of 2020. All employees participate in annual performance appraisals which include a discussion of the key performance indicators - this includes environmental compliance.
Post or department responsible for the procedure and for any data generated	Data Centre Manager
Location where records are kept	Manual records are maintained onsite under the supervision of the Datacentre Manager. Electronic data is stored on Keppel DUB2 SharePoint cloud storage.
Name of IT system used	Microsoft SharePoint
List of EN or other standards applied	Good practice guidance from the industry shall be followed.

z. 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	Quality assurance of the GHG Monitoring Plan.
Reference for procedure	DUB2-GHG-SOP-002
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The procedure ensures a regular evaluation of the monitoring plan's appropriateness is undertaken, covering in particular any potential measures for the improvement of the monitoring methodology. This includes; 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. There shall be specific duties and work plans which specify: -That the plan is conformant with the MRR, -regular inspection of fuel quality and instrument calibrations -process and justification for determining and monitoring organizational boundaries methods to identify and monitor GHG programme requirements by regular consultation of the MRR and updates thereto, -methods of identifying measurement technologies and data sources, -selection and application of the processes and tools used for collecting, processing and reporting GHG information, -methods for assessing the effect of changes to other related systems, - procedures for authorizing, approving and documenting changes to information systems, - the information technology systems used for dataflow activities are tested and controlled, including access control

	- back up, recovery and security, -annual assessment of potential measures for improvement of the monitoring methodology at the site.
Post or department responsible for the procedure and for any data generated	Datacentre Manager
Location where records are kept	Onsite in Operations office and on Keppel DUB2 SharePoint
Name of IT system used	Microsoft SharePoint
List of EN or other standards applied	N/A

aa. Data Flow Activities

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

Title of procedure	Data management for the GHG Information Management System at Keppel Data Centres
Reference for procedure	DUB2-GHG-SOP-003
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	This procedure shall specify: 1 - identification of the primary data sources. 2 - each step in the data flow from primary data to annual emissions 3 - the relevant processing steps related to each specific data flow activity including the formulas and data used to determine the emissions 4 - relevant electronic data processing and storage systems used as well as the interaction between such IT systems and other inputs including manual input 5 - it shall specify how outputs of data flow activities are recorded and logged
Post or department responsible for the procedure and for any data generated	Data Centre Manager
Location where records are kept	Keppel Operations office and on Keppel DUB2 SharePoint
Name of IT system used	Microsoft SharePoint
List of EN or other standards applied	N/A
List of primary data sources	1 - Data generated by the gas oil/diesel fuel supplier metered delivery tankers. 2 - Data from the onsite fuel oil tank level indicators.

	3 - Data from the on-board engine / generator set shall be recorded to indicate fuel use, run hours, electrical output. 4 - Emission and oxidation factors as issued and updated by the Irish EPA.
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	For annual reporting purposes, Diesel / Gas oil consumption is calculated by reference to deliveries (invoices) and stock difference (the activity data). CO2 emissions are based on the product of the Activity Data *NCV*EF*OF. Data for NCV and EF are taken from the latest National tables submitted to the UNFCCC. The calculation methodology applied to determine annual CO2 emissions at KDCR DUB 2 is as follows: CALCULATION FOR ANNUAL CO2 EMISSIONS CO2 emissions (tonnes) = Fuel consumed (tonnes) x Emission factor x NCV x Oxidation factor Fuel Consumed GAS OIL CONSUMPTION will be based on delivery invoices and difference in stock levels at the start and end of each year. Oil is delivered by road tankers which are loaded through fiscal meters. The delivery dockets and invoices are based on the fiscal meters. The fiscal meters are calibrated and certified annually and are subject to National Metrology Regulations. Deliveries are determined from the delivery dockets (litres) and converted to m3 and then to tonnes using a factor of 0.86 (this factor is updated regularly). Delivery dockets are cross-checked with the invoices. The delivery of gas oil/diesel is subject to on-site supervision and includes a level check of the fuel tank before and after loading to ensure that tank level changes correspond to the metered quantity as displayed on the fuel delivery truck meter. A record of each delivery as well as the oil tank levels is recorded by the Datacentre Manager. A standard manual check sheet is completed and stored for each delivery. STOCK AT START AND END OF YEAR: The Datacentre Manager shall arrange for the level of the oil tanks to be checked both at the beginning of the year and at year end. This is a manual reading taken by engineering staff which shall be recorded as the initial or opening gas oil stock and the closing readings. The Tank Level Gauges have a measured accuracy of these meters is less than +/- 1 %. The stock level showing on the Operations Report at the time of the stock survey will also be recorded. If any difference is observed its cause will be ascertained. The stock level showing on the Operations Report will be corrected by this difference from the manually recorded oil

levels. The stock difference between start and end of the year will be determined using the results of these engineering staff witnessed meter readings. Therefore there shall be manually recorded levels and instrument recorded levels which will meet the overall Tier 1 uncertainty.

Calculation Factors

Tier 2(a) is applied for both NCV (TJ/ktonne) and Emission Factor (tCO2/TJ) and these gas oil factors are taken from the latest National Inventory data as submitted to the UNFCCC. The factors are available on the EPA website each year. An oxidation factor of unity is used.

Monitoring data is collated with the facility's existing inventorisation process for budgetary control and fuel purchases. This consists of producing monthly reports, which feed into quarterly reports where appropriate and also into annual reports. The delivery of gas oil/diesel is subject to on-site supervision and includes a level check of the fuel tank before and after loading to ensure that tank level changes correspond to the metered quantity as displayed on the fuel delivery truck meter. A record of each delivery as well as the oil tank levels is recorded by the Datacentre Manager and these data are recorded in the site GHG IMS. A standard manual check sheet is completed and stored for each delivery in order to comply with existing legislation under the ADR regulations as transposed into national regulations. On each occasion that an engine is run on test - the tank fuel level prior to and following each such run shall be recorded manually and on the site GHG IMS. The run hour meter on the engine shall also be recorded at each run to allow for cross-checking of engine fuel use with tank level changes. Based on the fuel consumption for each run and the level drop in the fuel tank a reconcilation shall be carried out to ensure that instrument accuracy is maintained and any anomalies are immediately detected and corrected.

Submit relevant documents to record data flow activities

Attachment	**Description**

Attachment	Description
Keppel DUB2 Site Fueling Generator Operation Final 09.03.2020.docx	KDCR DUB2 GHG SOP

bb. 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	Risk Management for GHG quantification at Keppel Data Centres
Reference for procedure	DUB2-GHG-SOP-010
Diagram reference	N/N
Brief description of procedure. The description should cover the essential parameters and operations performed	The initial risk assessment studied the inherent risk, based on the complexity of the technology. However as these generator sets are common practice and well understood the Inherent Risk is classified as low. The Control Risk (the risk that Keppel DUB2 will not detect a material error or misstatement concerning GHG emissions) is regarded as low as the engine management systems are fully automated and are regularly maintained in accordance with the manufacturer's recommendations. However as a cross check on the engine management system Keppel DUB2 will use a triangulation technique to compare fuel level changes against engine management system reported use.
Post or department responsible for the procedure and for any data generated	Country Manager
Location where records are kept	On site in the ETS File and on Keppel SharePoint
Name of IT system used	SharePoint
List of EN or other standards applied	ISO 14064 Part 1:2018 will be followed (Note this is not a accreditation standard buy a method showing good practice in GHG management)

cc. 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	Calibration of Fuel tank level Recorder
Reference for procedure	DUB2-GHG SOP 011
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The fuel tank level indicators shall be calibrated and maintained strictly in accordance with the manufacturers recommendations. All calibration work shall be carried out by trained and qualified technicians as part of Keppel's Quality Control procedures. The Calibration records shall

	be examined by the the Critical Facilities as a Quality Assurance measure.
Post or department responsible for the procedure and for any data generated	Datacentre Manager
Location where records are kept	On site in the ETS File and on Keppel SharePoint
Name of IT system used	SharePoint
List of EN or other standards applied	Industry guidance notes

dd. 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	Data management for the GHG IMS at Keppel DUB2
Reference for procedure	DUB2-GHG-SOP-012
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	This SOP specifies how information technology used for data flow and monitoring is a) tested and under management control b) access to the Keppel IT Domain is controlled through individual logins with unique passwords c) The individual log-in control provides complete information security d) all data is backed up to the Microsoft SharePoint Cloud Service
Post or department responsible for the procedure and for any data generated	Datacentre Manager
Location where records are kept	On site in the ETS File and on Keppel SharePoint
Name of IT system used	Keppel SharePoint
List of EN or other standards applied	N/A

ee. Review and Validation of Data

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

Title of procedure	Internal Audit of GHG data and information
Reference for procedure	DUB2-GHG-SOP-013
Diagram reference	N/A

Brief description of procedure. The description should cover the essential parameters and operations performed	Keppel DUB2 shall internally review, at least annually, the data and data system and this review includes the following aspects: a) regularly review all GHG data and records b) methods to identify errors in the data if discovered c) methods checking data for completeness, d) methods of identifying measurement differences between current and previous years e) includes a cross-check between fuel delivery invoices and actual consumption, rates of combustion, units and oil stock levels f) the criteria for rejecting anomalous data.
Post or department responsible for the procedure and for any data generated	Country Manager
Location where records are kept	On site with the ETS Filing system
Name of IT system used	Keppel SharePoint
List of EN or other standards applied	ISO 14064 Part 3:2019

ff. 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	Corrective Actions Procedure
Reference for procedure	DUB2-GHG-SOP 014
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	In the event of non-conformance, the installation shall investigate the non-conformance to: i. determine what caused the non-conformance. ii. determine what correction is required for the nonconformance. iii. ensure if preventative measures implemented are effective. iv. ensure procedures affected by the corrective actions

	taken are revised accordingly.
	This procedure defines the person(s) responsible for, and the authority they have, for investigating, correcting, mitigating, and preventing non-conformances. This procedure ensures that any corrective, mitigating, or preventative actions are appropriate to the nature and scale of the associated environmental impact or potential for environmental impact of that non-conformance. The installation shall document and maintain a record of non-conformances.
Post or department responsible for the procedure and for any data generated	Country Manager
Location where records are kept	On site with the ETS Filing system
Name of IT system used	Keppel SharePoint
List of EN or other standards applied	N/A

gg. 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	Control of outsourced GHG related activities
Reference for procedure	DUB2-GHG-SOP-015
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	This procedure defines how the installation's management controls any outsourced activities. The prime control mechanism is through a commercial contract which defines precise controls which the contractor shall have to comply with. Each outsourced activity will have a mission specific set of criteria with which the contractor shall comply with. Calibration records are obtained for the gas oil delivery trucks and reviewed upon receipt. For GHG Verification the installation shall appoint only those Verification bodies which are ISO 14065 accredited and accredited in accordance with AVR Regulation and are on the Accreditation Body list of approved verifiers.
Post or department responsible for the procedure and for any data generated	Datacentre Manager
Location where records are kept	On site with the ETS Filing system
Name of IT system used	Keppel SharePoint
List of EN or other standards applied	ISO 14064 - Part 3 and ISO 14065

hh. Record Keeping and Documentation

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

Title of procedure	Document Control Procedure for GHG Information
Reference for procedure	DUB2-GHG-SOP-016
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Each Keppel installation shall establish and maintain procedures for document retention and record keeping. We shall retain and maintain documentation supporting the design, development and maintenance of the GHG inventory to enable verification. The documentation, whether in paper, electronic or other format, shall be handled in accordance with the organization's GHG information management procedures for document retention and record keeping. All data and information stipulated in Annex IX of the MRR of relevance to the installation in accordance with the requirements of Article 66 of the Regulation is maintained on site for ten years. Controlled documents include:1- The monitoring plan approved by the EPA;2 - Documents justifying the selection of the monitoring methodology and the documents justifying temporal or non-temporal changes of monitoring methodologies and tiers approved by the EPA; 3 - All relevant updates of monitoring plans notified to the competent authority in accordance with Article 15 of the MRR, and any correspondence from the EPA;4 - All written procedures referred to in this monitoring plan, including the procedures for data flow activities and the procedures for control activities;5 - A list of all versions used of the monitoring plan and all related procedures. 6 - Documentation showing the organisation's allocation of responsibilities in connection to the monitoring and reporting of GHG; 7 - The risk assessment performed by the organisation; 8 - The improvement reports in accordance with Article 69 of MRR - where relevant to a "low emissions" site; 9 - The verified annual emission report issued by the organisation and a copy of the annual independent verification report/statement;
Post or department responsible for the procedure and for any data generated	Country Manager

Location where records are kept	On site with the ETS Filing system
Name of IT system used	N/A
List of EN or other standards applied	N/A

ii. Risk Assessment

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

Attachment	Description
N/A	N/A

jj. Environmental Management System

Does your organisation have a documented Environmental Management System?	No

12. Changes in Operation

kk. 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	Site Operational changes which affect GHG performance
Reference for procedure	DUB2-GHG-SOP-100
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Should any increase or decrease in thermal input to combustion installations be planned or anticipated at the installation a prior notification shall be submitted to the EPA. This procedure shall be invoked at the planning stage of any such increase or decrease. In order to ensure this the site development and planning guidelines shall include a provision to refer to this SOP 100.
Post or department responsible for the procedure and for any data generated	Country Manager
Location where records are kept	On site in the general management procedures and at corporate head office.
Name of IT system used	SharePoint

13. Abbreviations

II. Abbreviations Acronyms or definitions

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

Abbreviation	**Definition**
GHG	Greenhouse Gas
ETS	Emission Trading Scheme
EPA	Environmental Protection Agency
ISO	International Standards Organisation
EP	Emission Point
S	Source

14. Additional Information

Any other information:

Attachment	**Description**
DUB2 Generators MWth Input.pdf	RTI of all generators from Vendor for S1 through S9.

Attachment	Description
Keppel Gauge Calibration Certificate 20.02.2020.pdf	Level gauge calibration certificate
KDCR DUB2 Generator Details 08.06.2020.pdf	List of gensets with engine types
KDCR DUB2 Org Chart 2020.pdf	KDCR DUB 2 Org Chart
S7-S9 gen specification.pdf	S7-S9 generator specification
Generator spec sheets for S1-S6.pdf	Generator technical specification sheets for S1-S6
Generator Bulk tank data sheet.pdf	New 2021 Genset data sheet from Vendor

15. Confidentiality

mm. 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: true

The table below identifies which (if any) sections of the form the operator considers should be treated as commercially confidential and explains why disclosure of this information would cause an adverse effect to commercial interests.

Section	Justification
Emissions Details	The RTI of the generator engines is commercially sensitive as publication shall provide detail to other Data Centre operators regarding our site capacity. We have entered the actual RTIs on the application and ask if the published GHG permit might use a figure, of say, <10

Section	Justification
	MW for example.
Installation Activities	RTI of the generator engines is commercially sensitive as publication shall provide detail to other Data Centre operators regarding our site capacity. We have entered the actual RTIs on the application and ask if the published GHG permit might use a figure, of say, <10 MW for example.

END of Appendix I.