Headquarters,
Johnstown Castle Estate,
County Wexford, Ireland

GREENHOUSE GAS EMISSIONS PERMIT

Permit Register Number: IE-GHG170-10431-4

Operator: Google Ireland Limited
Gordon House
Barrow Street
Dublin 4
D04E5W5

Installation Name: Google Ireland Data Center

Site Name: Google Ireland Data Center

Location: Grange Castle Business Park South
Baldonnell Road
Dublin 22
D22 X602
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-GHG170-10431.

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-GHG170-10431-4	22 February 2019	03 July 2019	Addition of 8 new emission sources and associated emission points; update of Installation name and address.

Previous Permits

Permit number	Change Type	Date application received	Date Permit issued	Comment
IE-GHG170-10431-1	GHG Permit Application	21 March 2013	13 May 2013	
IE-GHG170-10431-2	GHG Variation	18 July 2014	26 September 2014	Inclusion of the Installation number in the GHG permit. Update of the measurement devices table, the approach description and data flow procedure summary in relation to the methodology for monitoring emissions from combustion of gas oil.
IE-GHG170-10431-3	GHG Variation	07 May 2015	09 September 2015	The addition of 10 new emission sources (S9-S18) at the new datacentre building and update of relevant tables .

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)	Google Ireland Limited
"operator"	Any person who operates or controls an installation or to whom decisive economic power over the functioning of the installation has been delegated.
Person	Any natural or legal person.
Reportable emissions	The total releases to the atmosphere of carbon dioxide (expressed in tonnes of carbon dioxide equivalent) from the emission sources specified in Table 2 and arising from the Schedule 1 activities which are specified in Table 1.
The Regulations	European Communities (Greenhouse Gas Emissions Trading) Regulations 2012 (S.I. No 490 of 2012) and any amendments or revisions thereto.
The Verifier	A legal person or another legal entity carrying out verification activities pursuant to Regulation (EU) No 600/2012 and accredited by a national accreditation body pursuant to Regulation (EC) No 765/2008 and Regulation (EU) No 600/2012 or a natural person otherwise authorised, without prejudice to Article 5(2) of Regulation (EC) No 765/2008, at the time a verification report is issued.
The Registry	The Registry as provided for under Article 19 of Directive 2003/87/EC.

Schedule 1	Schedule 1 to the Regulations.

Reasons for the Decision

The Agency is satisfied, on the basis of the information available, that subject to compliance with the conditions of this permit, the Operator is capable of monitoring and reporting emissions in accordance with the requirements of the Regulations.

Activities Permitted

Pursuant to the Regulations the Agency issues this Greenhouse Gas Emissions Permit, subject to any subsequent revisions, corrections or modifications it deems appropriate, to:

The Operator:

Google Ireland Limited
Gordon House
Barrow Street
Dublin 4
D04E5W5

Company Registration Number: 368047

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):

Google Ireland Data Center **Installation number:** 205782

located at

Grange Castle Business Park South
Baldonnell Road
Dublin 22
D22 X602
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.: 205782

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 back-up generator	<200	MW
S2	Emergency back-up generator	<200	MW
S3	Emergency back-up generator	<200	MW
S4	Emergency back-up generator	<200	MW
S5	Emergency back-up generator	<200	MW
S6	Emergency back-up generator	<200	MW
S7	Emergency back-up generator	<200	MW

Emission Source Reference	Emission Source Description	Capacity	Capacity Units
S8	Fire pump engine	<200	MW
S9	Emergency back-up generator	<200	MW
S10	Emergency back-up generator	<200	MW
S11	Emergency back-up generator	<200	MW
S12	Emergency back-up generator	<200	MW
S13	Emergency back-up generator	<200	MW
S14	Emergency back-up generator	<200	MW
S15	Emergency back-up generator	<200	MW
S16	Emergency back-up generator	<200	MW
S17	Emergency back-up generator	<200	MW
S18	Fire pump engine	<200	MW
S19	Emergency back-up generator	<200	MW
S20	Emergency back-up generator	<200	MW
S21	Emergency back-up generator	<200	MW
S22	Emergency back-up generator	<200	MW

Emission Source Reference	Emission Source Description	Capacity	Capacity Units
S23	Emergency back-up generator	<200	MW
S24	Emergency back-up generator	<200	MW
S25	Emergency back-up generator	<200	MW
S26	Emergency back-up generator	<200	MW

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

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

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

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

Condition 2. Notification

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

2.1.1 the nature or functioning of the installation;

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

2.1.3 the fuels used at the installation;

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

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

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

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

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

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

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

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

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

Condition 3. Monitoring and Reporting

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

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

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

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

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

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

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

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

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

3.3 Temporary changes to the monitoring methodology:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Condition 4. Allowances

4.1 Surrender of Allowances

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

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

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

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

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

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

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

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

Condition 5. Penalties

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

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

Sealed by the seal of the Agency on this the 03 July 2019:

PRESENT when the seal of the Agency was affixed hereto:

_____

Dr Suzanne Monaghan
Inspector/ Authorised Person

Appendix 1 to Greenhouse Gas Emissions Permit Number IE-GHG170-10431

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	Google Ireland Data Center
Site name	Google Ireland Data Center
Address	Grange Castle Business Park South Baldonnell Road Dublin 22 D22 X602 Ireland
Grid reference of site main entrance	East: 303402 North: 230546
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	01 January 2012

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	Google Ireland Limited
Company Registration Number	368047

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	Gordon House
Address Line 2	Barrow Street
City/Town	Dublin 4
County	N/A
Postcode	D04E5W5

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	Grange Castle Business Park South Baldonnell Road Dublin 22 D22 X602 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.

The installation and its activities including the technology used: Google's Ireland Data Center located at Grange Castle Business Park South, Baldonnell Road, Dublin 22 is a light industrial unit providing information service activities for the storage, management and dissemination of data. The installation utilises electricity connection from the mains supply. For business continuity purposes diesel backup generators have been installed at the site to provide emergency backup to the electricity supply. Google's Ireland Data Center installation has a greenhouse gas (GHG) permit as the total rated thermal input of these diesel backup generators exceeds 20 MWth. Other than for exceptional circumstances (i.e. when the electricity supply is disrupted), running of these backup generators occurs during well planned events for testing and preventative maintenance purposes during the year. Small fire pump engines are used as part of the fire response measures at the site. Based on the foreseeable operation of the backup generators, the installation is considered a low emissions installation, with CO2 emissions in any one year predicted to be way below 25,000 tonnes of CO2.

The raw materials and auxiliary materials, the use of which is likely to lead to emissions of carbon dioxide: CO2 emissions are generated at the installation from the combustion of sulphur free diesel. Diesel is held on-site in individual generator belly tanks for generator emission sources S1 to S7, small dedicated tanks for S8 and S18 (firewater pumps) and dedicated storage tanks for the remaining generator emission sources S9 to S17 and S19 to S26. There are two designated diesel unloading areas designated for the unloading of diesel from a road tanker. Full secondary containment is provided for all storage tanks and aboveground transfer pipelines.

The sources of emissions of carbon dioxide from the installation: The source of emissions of CO2 from the installation is from the operation of the diesel back-up generators. These are only operated in the event of a failure of the main electricity supply to the site for business continuity purposes or for testing and maintenance. Small fire pump engines are used as part of the fire response measures at the site.

The measures planned to monitor and report emissions: For monitoring and reporting of CO2 emissions, Google propose to follow the measures outlined in Article 47 of the European Regulation No 601/2012 for installations with low emissions.

g. Annex 1 Activities

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

Note that 'capacity' in this context means:

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

Annex 1 Activity	Total Capacity	Capacity units	Specified Emissions
Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)	<200	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
Figure1_Main Building Location Plan Rev1.pdf	Main building locations plan
Emission Points .pdf	Update of site map with the additional 8 emission points

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 $CO_{2(e)}$)	250
Justification for the use of a conservative estimate of CO_2 emissions.	Previous verified annual emissions are from 2017 as the data for 2018 is still pending to be submitted. In 2017 our verified emissions were 31.2 tonnes of CO2. As in the last year, we had foreseen issues that required more use of the generators than intended, we are providing an estimation here that should be the maximum CO2 emissions to be reached as in normal circumstances our emissions should be way lower than that.

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 back-up generator
S2	Emergency back-up generator
S3	Emergency back-up generator
S4	Emergency back-up generator
S5	Emergency back-up generator
S6	Emergency back-up generator
S7	Emergency back-up generator
S8	Fire pump engine
S9	Emergency back-up generator
S10	Emergency back-up generator
S11	Emergency back-up generator
S12	Emergency back-up generator
S13	Emergency back-up generator
S14	Emergency back-up generator
S15	Emergency back-up generator
S16	Emergency back-up generator
S17	Emergency back-up generator
S18	Fire pump engine
S19	Emergency back-up generator
S20	Emergency back-up generator
S21	Emergency back-up generator
S22	Emergency back-up generator

Emission Source Reference	**Emission Source Description**
S23	Emergency back-up generator
S24	Emergency back-up generator
S25	Emergency back-up generator
S26	Emergency back-up generator

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 back-up generator
S2	Emergency back-up generator
S3	Emergency back-up generator
S4	Emergency back-up generator
S5	Emergency back-up generator
S6	Emergency back-up generator
S7	Emergency back-up generator
S8	Fire pump engine
S9	Emergency back-up generator
S10	Emergency back-up generator
S11	Emergency back-up generator
S12	Emergency back-up generator
S13	Emergency back-up generator
S14	Emergency back-up generator
S15	Emergency back-up generator
S16	Emergency back-up generator
S17	Emergency back-up generator
S18	Fire pump engine
S19	Emergency back-up generator
S20	Emergency back-up generator
S21	Emergency back-up generator
S22	Emergency back-up generator
S23	Emergency back-up generator
S24	Emergency back-up generator
S25	Emergency back-up generator
S26	Emergency back-up generator

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	Stack 1 (Emergency back-up generator)
EP2	Stack 2 (Emergency back-up generator)
EP3	Stack 3 (Emergency back-up generator)
EP4	Stack 4 (Emergency back-up generator)
EP5	Stack 5 (Emergency back-up generator)
EP7	Stack 7 (Emergency back-up generator)
EP8	Stack 8 (Fire pump engine)
EP6	Stack 6 (Emergency back-up generator)
EP9	Stack 9 (Emergency back-up generator)
EP10	Stack 10 (Emergency back-up generator)
EP11	Stack 11 (Emergency back-up generator)
EP12	Stack 12 (Emergency back-up generator)
EP13	Stack 13 (Emergency back-up generator)
EP14	Stack 14 (Emergency back-up generator)
EP15	Stack 15 (Emergency back-up generator)
EP16	Stack 16 (Emergency back-up generator)
EP17	Stack 17 (Emergency back-up generator)
EP18	Stack 18 (fire pump engine)
EP19	Stack 19 (Emergency back-up generator)
EP20	Stack 20 (Emergency back-up generator)
EP21	Stack 21 (Emergency back-up generator)
EP22	Stack 22 (Emergency back-up generator)
EP23	Stack 23 (Emergency back-up generator)
EP24	Stack 24 (Emergency back-up generator)
EP25	Stack 25 (Emergency back-up generator)
EP26	Stack 26 (Emergency back-up generator)

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 Stream 1)	Combustion: Commercial standard	Gas/Diesel Oil

Source Stream Reference	Source Stream Type	Source Stream Description
	fuels	
F2 (Gas Oil Stream 2)	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
F1 (Gas Oil stream 1)	S1,S2,S3,S4,S5,S6,S7,S9,S10,S11,S12,S13,S14,S15,S16,S17,S19,S20,S21,S22,S23,S24,S25,S26	EP1,EP2,EP3,EP4,EP5,EP7,EP6,EP9,EP10,EP11,EP12,EP13,EP14,EP15,EP16,EP17,EP19,EP20,EP21,EP22,EP23,EP24,EP25,EP26	Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)
F2 (Gas Oil Stream 2)	S8,S18	EP8,EP18	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:

A flow chart of the primary methods of fuel usage monitoring is maintained on site. For the source stream F1 (gas oil stream 1) used in S1 to S7, S9 to S17 and S19 to S26, the activity data is calculated using the fuel figure consumed based on recorded data (e.g. PCC) or where this primary data is unavailable, consumption of gas oil stream 1 is determined using stock changes (and purchase records where relevant in the particular monitoring period). Stock levels are measured using ultrasonic level meters (S1-S7) or pressure transmitter level meters (S9-S17 and S19-S26). The uncertainty of the monitoring methodology for activity data for source stream F1 must meet the required Tier 1 (overall uncertainty of 7.5%).

For source stream F2 (gas oil stream 2) used in S8 and S18, the activity data is calculated using the fuel usage figure based on recorded data (e.g. purchase records) and no tier estimation of stock changes. Run time records for the combustion sources is also used as a cross check.

The fuel usage is then multiplied by the net calorific value (based on the country specific factor for the respective fuel). The calculated activity data is summed up and the CO2 emissions from combustion installations shall be calculated by multiplying the energy content of each fuel by an emission factor and an oxidation factor.

For each fuel the following calculation shall be carried out for each activity: CO2 emissions = activity data * emission factor * oxidation factor. The emission factor used is based on the country specific factor for the respective fuel.Oxidation factor applied is 1, in accordance with Annex II section 2.3 of Commission regulation (EU) No 601/2012.

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 Stream 1)	S1,S2,S3,S4,S5,S6,S7	MD 1	Power Command Controller (PCC)	variable	litres	5	Generator compound
F1 (Gas Oil Stream 1)	S1,S2,S3,S4,S5,S6,S7	MD 2	Ultrasonic level meter	variable	litres	7.5	generator compound
F1 (Gas Oil stream 1)	S1,S2,S3,S4,S5,S6,S7,S9,S10,S11,S12,S13,S14,S15,S16,S17,S19,S20,S21,S22,S23,S24,S25,S26	MD3	purchase records	variable	litres	0.5	Generator compound and fuel storage tank area
F2 (Gas Oil Stream 2)	S8,S18	MD4	purchase records	variable	litres	0.5	fire pump houses 1 and 2
F1 (Gas Oil stream 1)	S9,S10,S11,S12,S13,S14,S15,S16,S17,S19,S20,S21,S22,S23,S24,S25,S26	MD5	Power Command Controller (PCC)	variable	liters	5	generator room
F1 (Gas Oil Stream 1)	S9,S10,S11,S12,S13,S14,S15,S16,S17,S19,S20,S21,S22,S23,S24,S25,S26	MD6	pressure transmitter level meter	variable	liters	5	fuel storage tank 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 Stream 1)	MD 1	Continual	Operator	N/A	N/A	N/A
F1 (Gas Oil Stream 1)	MD 2	Continual	Operator	N/A	N/A	N/A
F1 (Gas Oil stream 1)	MD3	Batch	Trade partner	Yes	Yes	Yes
F2 (Gas Oil Stream 2)	MD4	Batch	Trade partner	Yes	Yes	Yes
F1 (Gas Oil stream 1)	MD5	Continual	Operator	N/A	N/A	N/A
F1 (Gas Oil Stream 1)	MD6	Continual	Operator	N/A	N/A	N/A

t. Applied Tiers

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

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

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

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

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

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

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

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

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

Source Stream Refs.	**Emission Source Refs.**	**Measurement Device Refs.**	**Overall Metering Uncertainty (less than +/- %)**	**Applied Monitoring Approach**	**Activity Data Tier Applied**	**Net Calorific Value Tier Applied**	**Emission Factor Tier Applied**	**Carbon Content Tier Applied**	**Oxidation Factor Tier Applied**	**Conversion Factor Tier Applied**	**Biomass Fraction Tier Applied**	**Estimated Emissions $tCO_{2(e)}$**	**% of Total Estimated Emissions**	**Source Category**	**Highest Tiers Applied**	**Justification for not applying the highest tiers**	**Improvement Plan Reference (where applicable)**
F1 (Gas Oil stream 1)	S1,S2,S3,S4,S5,S6,S7,S9,S10,S11,S12,S13,S14,S15,S16,S17,S19,S20,S21,S22,S23,S24,S25,S26	MD 1,MD 2,MD3, MD5, MD6	<7.5%	Standard	1	2a	2a	N/A	1	N/A	N/A	99.4	99.34	De-minimis	N/A	n/a	n/a
F2 (Gas Oil Stream 2)	S8,S18	MD4	N/A	Standard	No tier	2a	2a	N/A	1	N/A	N/A	0.66	0.66	De-minimis	N/A	n/a	n/a

Total Estimated Emissions for Calculation (tonnes $CO_{2(e)}$)	100.06

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 stream 1)	S1,S2,S3,S4,S5,S6,S7,S9,S10,S11,S12,S13,S14,S15,S16,S17,S19,S20,S21,S22,S23,S24,S25,S26	1	2a	2a	N/A	1	N/A	N/A
F2 (Gas Oil Stream 2)	S8,S18	No tier	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 stream 1),F2 (Gas Oil Stream 2)	S1,S2,S3,S4,S5,S6,S7,S8,S9,S10,S11,S12,S13,S14,S15,S16,S17,S18,S19,S20,S21,S22,S23,S24,S25,S26	NCV	Ireland's National greenhouse Gas Inventory	n/a
F2 (Gas Oil Stream 2)	S1,S2,S3,S4,S5,S6,S7,S8,S9,S10,S11,S12,S13,S14,S15,S16,S17,S18,S19,S20,S21,S22,S23,S24,S25,S26	Emission Factor	Ireland's National Greenhouse Gas Inventory	n/a
F1 (Gas Oil stream 1),F2 (Gas Oil Stream 2)	S1,S2,S3,S4,S5,S6,S7,S8,S9,S10,S11,S12,S13,S14,S15,S16,S17,S18,S19,S20,S21,S22,S23,S24,S25,S26	OxF	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	1

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**
Facility Manager	Manage site operations through having day-to-day control of plant operation including the manner and rate of operation. Control and monitor specified fuel usage by each generator.
Environmental & Safety Specialist	Ensures that permit conditions are effectively complied with. Report specified emissions to the EPA. Coordinate accredited Verifier audits
Generators SME	Control and monitor specified fuel usage by each generator. The Generators SME reports this data to the Facility Manager.
EU Regional EHS Manager	Ensures that the EHS Specialist on site has the necessary means including budget to perform their duties. They also perform quality data checks

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

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	Site specific Emission Trading Scheme compliance
Reference for procedure	Chapter: Roles and Responsibilities
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The purpose of this procedure is to establish the general overview about how to handle locally the Emission Trading Scheme and GHG permit for Google Ireland Data Center. There is a dedicated chapter in this procedure to establish the roles and responsibilities and to manage the competencies of responsible personnel. The procedure also identifies how training and reviews are undertaken.
Post or department responsible for the procedure and for any data generated	Data Center Environmental Health and Safety
Location where records are kept	Internal webpage system
Name of IT system used	N/A
List of EN or other standards applied	N/A

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	Site specific Emission Trading Scheme Compliance
Reference for procedure	Chapter: Monitoring and measurement
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	This procedure establishes minimum standards for meeting the requirements of the GHG permit for Google Ireland Data Center, including but not limited to internal reviews and data validation. The procedure covers the following: 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	Data Center Environmental Health and Safety
Location where records are kept	Internal webpage system
Name of IT system used	N/A
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	Site specific Emission Trading Scheme Compliance
Reference for procedure	Chapter: Data Flow Activities
Diagram reference	Document Creation and Control
Brief description of procedure. The description should cover the essential parameters and operations performed	This procedure establishes the management of the data flow activities and links the other documentation available as the Site specific Fuel Monitoring & Measurement Work Instructions as well as the Activities flowcharts.
Post or department responsible for the procedure and for any data generated	Datacentre Environmental Health and Safety
Location where records are kept	Internal webpage system
Name of IT system used	N/A
List of EN or other standards applied	N/A
List of primary data sources	A flow chart of the primary methods of fuel usage monitoring is maintained on site. The primary data sources used to calculate the CO2 emissions from site, comprise: For the source stream F1 (gas oil stream 1) used in S1 to S7, S9 to S17 and S19 to S26, the activity data is calculated using the fuel figure consumed based on recorded data (e.g. PCC) or where this primary data is unavailable, consumption of gas oil stream 1 should be measured using stock changes (and purchase records where relevant in the particular monitoring period). Stock levels are measured using ultrasonic level meters (S1-S7) or pressure transmitter level meters (S9-S26). The uncertainty of the monitoring methodology for activity data must meet the required Tier 1 (overall uncertainty of 7.5%). For source stream F2 (gas oil stream 2) used in S8 and S18, the activity data is calculated using the fuel usage figure based on recorded data (e.g. purchase records) and no tier estimation of stock changes. Run time records for the combustion sources is also used as a cross check. Net Calorific Value are based on country specific factors for the respective fuel. Emission Factor: Emissions factors are based on country specific factors for the respective fuel. Oxidation Factor: Oxidation factors are based on the COMMISSION REGULATION (EU) No 601/2012.

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	The following provides a description of site measures to comply with Article 57 of COMMISSION REGULATION (EU) No 601/2012: (a) The following data flow activities will form part of the Google's Datacentre Environmental Health & Safety Management System (EHSMS). Where it is deemed necessary, Google will revise EHSMS procedures where needed to meet ETS requirements. The Datacentre Environmental Health and Safety team will be responsible for the procedure and any data generated and this will be maintained on the internal webpage system. (b) identification of the primary data sources: The primary data sources used to calculate the CO2 emissions from site, comprise: A flow chart of the primary methods of fuel usage monitoring is maintained on site. For the source stream F1 (gas oil stream 1) used in S1 to S7, S9 to S17 and S19 to S26, the activity data is calculated using the fuel figure consumed based on recorded data (e.g. PCC) or where this primary data is unavailable, consumption of gas oil stream 1 should be measured using stock changes (and purchase records where relevant in the particular monitoring period). Stock levels are measured using ultrasonic level meters (S1-S7) or pressure transmitter level meters (S9-S26). The uncertainty of the monitoring methodology for activity data must meet the required Tier 1 (overall uncertainty of 7.5%). For source stream F2 (gas oil stream 2) used in S8 and S18, the activity data is calculated using the fuel usage figure based on recorded data (e.g. purchase records) and no tier estimation of stock changes. Run time records for the combustion sources is also used as a cross check. Net Calorific Value are based on country specific factors for the respective fuel. Emission Factor: Emissions factors are based on country specific factors for the respective fuel. Oxidation Factor: Oxidation factors are based on the COMMISSION REGULATION (EU) No 601/2012. (c) Each step in the data flow from primary data to annual emissions which shall reflect the sequence and interaction between the data flow activities: Step 1 (i): Obtain fuel usage figures for each of the generators based on recordings in accordance with the flow chart of the primary methods of fuel usage monitoring. Step 1(ii): Obtain estimates of the stock changes in fuel pump engine diesel tank. Step 2 (i): Obtain country specific emission factor and net

calorific value for the respective fuel covering the year emissions occurred.

Step 2(ii): Take the oxidation factor to be 1, in accordance with Annex II section 2.3 of COMMISSION REGULATION (EU) No 601/2012. .

Step 3: Using the equation in (d) below calculate the CO2 emissions during the year and record on computer spreadsheet for verification.

Step 4: Include verified CO2 emission figure in the Annual Installation Environmental report (AIER) for submission to the EPA.

(d) the relevant processing steps related to each specific data flow activity including the formulas and data used to determine the emissions : CO2 emissions from combustion installations shall be calculated by multiplying the energy content of each fuel used by an emission factor and an oxidation factor. For each fuel the following calculation shall be carried out for each activity - CO2 emissions = Activity data * Emission factor * Oxidation factor.

(e) relevant electronic data processing and storage systems used as well as the interaction between such systems and other inputs including manual input: Fuel levels are monitored in each generator diesel tank by a separate monitoring device for emission sources S1 to S7 and for S9-17 and S19-S26. For reporting purposes fuel usage and run-times are recorded electronically.

(f) the way outputs of data flow activities are recorded: A computer spreadsheet showing the fuel usage and generator runtime is recorded each month. These figures are tracked monthly and kept on record for verification.

Submit relevant documents to record data flow activities

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

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	Site specific Emission Trading Scheme Compliance
Reference for procedure	Chapter: Assessing and controlling risks
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	This procedure establishes minimum standards for meeting the requirements of Google Ireland Data Center GHG permit including management and control of the risks. This includes but not limited, Risk Assessments, review and validation of data and internal procedures to mitigate risks identified to establish an effective control system.
Post or department responsible for the procedure and for any data generated	Datacentre Environmental Health and Safety
Location where records are kept	Internal webpage system
Name of IT system used	N/A
List of EN or other standards applied	N/A

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	Site specific Emission Trading Scheme Compliance
Reference for procedure	Chapter: Quality assurance of measurement equipment
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	This procedure establishes requirements for assure the quality of the measurement equipment. This procedure also includes requirements regarding EHS equipment calibration . The process control data will be periodically cross checked using invoices after a fuel fill, runtimes and manual tank dips. The level gauges on the diesel tanks were calibrated at commissioning stage prior to operation and thereafter calibrated and checked at periodic intervals. Periodic cross checks of the data such as run hours, energy generation, deliveries and comparison between Building Management System showing tank levels and the readings at the physical gauges at the tanks will be carried out to confirm the accuracy of the fuel tank level gauges. If a potential issue with accuracy is identified through these cross checks, then calibration via a suitably qualified person (likely an external contractor) would be undertaken. There is a Preventative Maintenance System in place to track measurement equipment (sensors) and gas oil purchases and usage.
Post or department responsible for the procedure and for any data generated	Datacentre Environmental Health and Safety
Location where records are kept	Internal webpage system
Name of IT system used	N/A
List of EN or other standards applied	N/A

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	Site specific Emission Trading Scheme Compliance
Reference for procedure	Chapter: Quality assurance of the information technology system
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	This procedure establishes minimum standards for ensuring quality of the information technology system used for data flow activities, including process control technology. It outlines how often the IT systems are backed up and identifies how the system is controlled in relation to security, recovery and limited access control to designated personnel.
Post or department responsible for the procedure and for any data generated	Datacentre Environmental Health and Safety
Location where records are kept	Internal webpage system
Name of IT system used	N/A
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	Site specific Emission Trading Scheme Compliance
Reference for procedure	Chapter: GHG permit
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	This procedure establishes all the necessary reviews and validation of data and how this is managed in Google Ireland Data Center. The review and validation process includes a 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	Datacentre Environmental Health and Safety
Location where records are kept	Internal webpage system
Name of IT system used	N/A
List of EN or other standards applied	N/A

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	Site specific Emission Trading Scheme Compliance
Reference for procedure	Chapter: Corrective and preventive actions
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	This procedure establishes and defines the process by which Google Ireland Data Center receives, resolves, and tracks issues identified with the ETS and related GHG permit. In accordance with condition 2.5 of the GHG Permit the EPA shall be notified in writing within three (3) days of becoming aware of any factors which may prevent compliance with the conditions of this permit, such as any capacity expansion or change to the approved monitoring plan. In accordance with Condition 3.3 of the GHG permit, where it is, for technical reasons only, 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 highest achievable tier shall be applied until the conditions for application of the tier approved in the monitoring plan have been restored. All necessary measures shall be taken by Google Ireland Data Center to allow the prompt restoration of the tier in the approved monitoring plan. Google shall notify the temporary change to the monitoring methodology without undue delay to the Agency specifying: (i) The reasons for the deviation from the approved tier; (ii) a detailed description of the interim monitoring methodology applied by Google - in order to determine the emissions until the normal or approved conditions for the application of the tier in the monitoring plan have been restored; (iii) the measures Google 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. A record of all non-compliances with the approved monitoring plan shall be maintained on-site and shall be available for inspection by authorised persons of the Agency and/or by the Verifier at all reasonable times.
Post or department responsible for the procedure and for any data generated	Datacentre Environmental Health and Safety
Location where records are kept	Internal webpage system
Name of IT system used	N/A
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	Site specific Emission Trading Scheme Compliance
Reference for procedure	Chapter: Control of outsourced activities
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	This procedure establishes minimum standards for managing compliance with laws and regulations regarding Contractor environmental, health, and safety (EHS) affairs at Google Datacenters. Where it is deemed necessary, Google will revise EHSMS procedures where needed to meet ETS requirements including control of outsourcing activities.Gas oil/Diesel delivery data is obtained from the fuel vendor via invoices. Fuel volumes are based on tanker flow meters which are subject to national metrological control and calibration records are obtained for the gas oil delivery trucks and retained on site.
Post or department responsible for the procedure and for any data generated	Datacentre Environmental Health and Safety
Location where records are kept	Internal webpage system
Name of IT system used	N/A
List of EN or other standards applied	N/A

hh. Record Keeping and Documentation

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

Title of procedure	Site specific Emission Trading Scheme Compliance
Reference for procedure	Chapter: Record keeping and Documentation
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The purpose of this procedure is to set out the minimum requirements for the management of EHS records and documentation at Google Ireland Data Center including a description of the documents that need to be retained, by whom and for how long in accordance with Article 66 and Annex IX of the MRR.
Post or department responsible for the procedure and for any data generated	Datacentre Environmental Health and Safety
Location where records are kept	Internal webpage 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?	Yes
Is the Environmental Management System certified by an accredited organisation?	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	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	Does not apply to on-site electricity generation.
Post or department responsible for the procedure and for any data generated	n/a

Location where records are kept	n/a
Name of IT system used	n/a

13. Abbreviations

II. Abbreviations Acronyms or definitions

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

Abbreviation	Definition
N/A	N/A

14. Additional Information

Any other information:

Attachment	Description
Thermal Letter.pdf	CONFIDENTIAL Statement of the thermal input of each generator from the manufacturer associated with building 1
Google Ireland Limited - ETS letter 27Feb13 (1).pdf	Letter detailing Google Ireland Limited's request for confidentiality covering certain information submitted as part of this application
Letter-ThermalInput_Ireland_C3500D5e.pdf	CONFIDENTIAL Statement of the thermal input of each generator from the manufacturer associated with building 2
Google ETS data flow diagram rev 1 April 2015.pdf	ETS capture of on-site fuel usage
EPA Pre-Application Assessment Response_signed.pdf	CONFIDENTIAL Letter covering pre-application assessment for the application of IED to site
Thermal input Letter new generators 02_2019.pdf	CONFIDENTIAL Statement of the thermal input of each generator from the manufacturer associated with building 2 extension

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
Total capacity detailed in the Annex 1 Activities table of the installation activities section and individual capacities of the generators in the Total Emissions Sources Table and the Regulated Sources Table.	Refer to attachment Google Ireland Limited - ETS letter 27 February 2013. In summary, the information regarding the total capacity is a “trade secret” because: (a) it’s secret in the sense that it is not generally known or easily accessible: (b) it has commercial value.
Additional Information	Thermal letter, EPA Pre-Application Assessment Response_signed, -ThermalInput_Ireland_C3500D5e and Thermal input Letter new generators 02_2019.pdf Refer to attachment Google Ireland Limited - ETS letter 27 February 2013. The information regarding the capacity of the generators is a “trade secret” because: (a) it’s secret in the sense that it is not generally known

Section	Justification
	or easily accessible: (b) it has commercial value.

END of Appendix I.