# Notice of variation and consolidation with introductory note

## The Environmental Permitting (England & Wales) Regulations 2016

Drax Generation Enterprise Limited

Damhead Creek Power Station
Kingsnorth
Hoo St Werburgh
Rochester
Kent
ME3 9TX

### Variation application number

EPR/DP3933DN/V004

### Permit number

EPR/DP3933DN

# Damhead Creek Power Station
# Permit number EPR/DP3933DN

## Introductory note

### This introductory note does not form a part of the notice.

Under the Environmental Permitting (England & Wales) Regulations 2016 (schedule 5, part 1, paragraph 19) a variation may comprise a consolidated permit reflecting the variations and a notice specifying the variations included in that consolidated permit.

Schedule 2 of the notice comprises a consolidated permit which reflects the variations being made. All the conditions of the permit have been varied and are subject to the right of appeal.

Article 21(3) of the Industrial Emissions Directive (IED) requires the Environment Agency to review conditions in permits that it has issued and to ensure that the permit delivers compliance with relevant standards, within four years of the publication of updated decisions on Best Available Techniques (BAT) Conclusions. We have reviewed the permit for this installation against the revised BAT Conclusions for the large combustion plant sector published on 17th August 2017. Only activities covered by this BAT Reference Document have been reviewed and assessed.

This variation makes the below changes following the review under Article 21(3) of the IED and the consolidation of the Environmental Permitting Regulations that came into force on the 4 January 2017:

- Revised emission limits and monitoring requirements for emissions to air applicable from 17 August 2021 in table S3.1a;
- Inclusion of process monitoring for energy efficiency in table S3.3; and
- Inclusion of an improvement condition (IC14) to ensure that the Dry Low NOx (DLN) effective parameters are confirmed for plant which is not yet operational (LCP467, LCP468 and LCP469).

Permit condition 2.3.7 has been included in the permit with corresponding improvement condition IC15 requiring the operator to submit a report in relation to potential black start operation of the plant.

Improvement conditions 11, 12 and 13 (IC11, IC12 and IC13) relating to DHC2 are outstanding and have been retained in the permit. All other improvement conditions, which were previously marked as complete, have been removed from the permit.

Table S1.5 has been updated to reflect the amended criteria for minimum start-up (MSUL) and shut-down (MSDL).

We have also removed the requirement to monitor for mercury and cadmium from Table S3.2.

The rest of the installation is unchanged and continues to be operated as follows:

This permit covers the listed activity under EPR Section 1.1 Part A1(a) ‘Burning of fuel in an appliance with a rated thermal input of 50 megawatts or more’. The Power Station has been developed in two phases, Damhead Creek 1 (DHC1) and Damhead Creek 2 (DHC2), both are covered by this permit. DHC2 has not yet been constructed.

The power station is located on the Isle of Grain to the east of Chatham and Rochester and to the north of the former Kingsnorth Power Station. The water body of Damhead Creek is located approximately 600m south east of the installation. The land surrounding the power station has varied uses. To the west and north-west is a mixed industrial area comprising activities including fuel oil distribution, packaging manufacturers and waste disposal activities. To the south of the installation, the former Kingsnorth Power Station site occupies a substantial area beyond which is the River Medway.

The installation is located on a chalk aquifer overlain by alluvial deposits. It is not within a Groundwater Protection Zone.

There are 13 groundwater abstractions and 8 surface water abstractions within 2 km of the site which are primarily used for spray irrigation and industrial purposes. There are 6 Natura 2000 sites within a 10 km radius of the site.

The site operates an Environmental Management System which is certified to ISO 14001.

*Damhead Creek 1 (DHC1)*

The station is a combined cycle gas turbine power plant of 805 MWe, comprising two gas combustion turbine sets, each with an electrical capacity of 270 MWe. Each gas turbine (GT) has a dedicated Heat Recovery Steam Generator (HRSG) which produces steam from the exhaust gases from the GTs. This provides steam for one 265 MWe condensing steam turbine (ST) generator. Exhaust gases are discharged via two stacks of 75m in height. All the electricity generated is exported to the National Grid except for a small amount used on site.

There are two main point source emissions to air (A1 and A2) associated to the Gas Turbines. The principal pollutants emitted are oxides of nitrogen ($NO_X$), which results mainly from the reaction of oxygen and nitrogen from the atmosphere during the combustion process, and carbon monoxide (CO). Emissions $NO_X$ are minimised by the use of dry low-$NO_X$ burners. Emissions are continually monitored from points A1 and A2 for oxides of nitrogen and carbon monoxide.

An auxiliary start up boiler of approximately 12MWth input is used during start up and shut down to heat incoming gas and seal the steam turbine glands. The boiler is fuelled by natural gas only and has a steam generating capacity of 11.3 tonnes/hour. It discharges via its own stack at emission point A8.

A water treatment plant is fed with water from a 200m deep borehole and returned water from the HRSG. This incorporates a water softener system and reverse osmosis plant to produce demineralised water for the HRSG. Process water can be 100% sustained from the borehole and water recovery plant under normal operation. The original water treatment plant runs periodically for preservation, and can also be operated to provide a higher sustained throughput which is required when returning the station from outage or where make up rates are higher than normal.

The air cooled condensers use twin speed fans to force air over tube banks to condense steam rejected from the steam turbine for return to the feed-water system. Visible plumes from this cooling method are of no significance.

Effluent from the treatment process is discharged into waste conditioning basins where pH is adjusted through circulation prior to discharge to the storm water basin. Together with treated sewage effluent, collected rainwater and oil separator discharge, this then discharges via W1. W1 discharges to Damhead Creek at NGR TQ 581410 172750. Emissions are continuously monitored for flow, temperature and pH and other parameters on a monthly basis. There are no emissions to sewer.

*Damhead Creek 2 (DHC2)*

The station consists of three CCGTs with a thermal input of 1,093 MWth each. The plant will combust natural gas only and there will be no standby fuel. Each CCGT comprises a gas turbine, heat recovery steam generator (HRSG) and steam turbine in a single shaft configuration. The gas turbine drives an electrical generator to generate electricity. The hot exhaust gases exiting the gas turbine are passed to the HRSG which rotates the steam turbine connected to another electrical generator to generate additional electricity. Spent steam is condensed (via air cooled condensers) and the resultant condensate returned to the HRSG for reuse. The exhaust gases leave the HRSG via a dedicated 75 metre stack for each CCGT.

A 23.1 MWth gas fired auxiliary boiler provides steam to enable the start up of the steam turbines and has its own dedicated 45 metre stack. In addition, there is a 2.8 MWth emergency diesel generator which enables safe shut down of the plant and a 0.8 MWth diesel firefighting pump onsite.

Natural gas is supplied by the National Transmission System (NTS) via the existing gas pipeline connecting DHC1 to the NTS. Electricity is exported via a new underground cable to the existing Kingsnorth substation to the south of DHC2.

Process effluent consists of boiler blowdown, water treatment plant effluent and surface water runoff. All process effluents will drain to a water conditioning basin prior to discharge to Damhead Creek. Discharge from DHC2 will be via a new discharge point, W2, which is located adjacent to W1. The maximum discharge from DHC2 will be 90 cubic metres per hour.

The cooling system consists of air cooled condensers in a closed looped system. As DHC2 does not have a cooling tower there will be no visible plume.

The plant has an overall efficiency of over 60% and will be operated in different modes including:

- base load – operating at full capacity;
- two shift mode – operation during the day with overnight shut down.

The status log of a permit sets out the permitting history, including any changes to the permit reference number.

| **Status log of the permit** | | |
|---|---|---|
| **Description** | **Date** | **Comments** |
| Application received EPR/VP3133LP/A001 | Duly made 31/03/2006 | |
| Submission of site plan for permit | 31/01/2007 | |
| Submission of additional air dispersion modelling results (final version C) | 05/02/2007 | |
| Submission of revised EP OPRA spreadsheet | 05/02/2007 | |
| Submission of revised H1 assessment and clarification of emissions to water data | 05/02/2007 | |
| Submission of EMAS certificate of registration and results of sampling undertaken 5/2/07 for emissions to water | 16/02/2007 | |
| Permit determined EPR/VP3133LP | 28/03/2007 | |
| Variation application determined EPR/VP3133LP/V002 | 11/03/2013 | Environment Agency initiated variation to incorporate Eel Regulations improvement condition. |
| Transfer application EPR/NP3634WE/T001 | Duly made 06/11/2014 | Full transfer of permit EPR/VP3133LP from ScottishPower Damhead Creek Operations Ltd to ScottishPower (DCL) Ltd. |
| Transfer application determined EPR/NP3634WE | 27/11/2014 | Full transfer of permit complete. |

| Status log of the permit | | |
|---|---|---|
| **Description** | **Date** | **Comments** |
| Regulation 60 Notice sent to the Operator | 09/12/2014 | Issue of a Notice under Regulation 60(1) of the EPR. Environment Agency Initiated review and variation to vary the permit under IED to implement the special provisions for LCP under Chapter III, introducing new Emission Limit Values (ELVs) applicable to LCP, referred to in Article 30(2) and set out in Annex V. The permit is also updated to modern conditions. |
| Regulation 60 Notice response | 30/03/2015 | Response received from the Operator. |
| Additional information received | 15/06/2015 | Response to request for further information (RFI) dated 29/05/2015. |
| Variation determined<br>EPR/NP3634WE/V002<br>(Billing ref: NP3234AT) | 22/12/2015 | Varied and consolidated permit issued in modern condition format.<br>Variation effective from 01/01/2016. |
| Transfer application<br>EPR/DP3933DN/T001 (full transfer of permit EPR/NP3634WE) | Duly made 31/03/2016 | Application to transfer the permit in full to Drax Generation Enterprise Limited. |
| Transfer determined EPR/DP3933DN | 17/05/2016 | Full transfer of permit complete. |
| Variation application<br>EPR/DP3933DN/V002 | Duly made 09/11/2016 | Application to vary the permit to add a 1,800 megawatt electrical (MWe) combined cycle gas turbine (CCGT) power plant and increase the W1 discharge volume and add a new emission point W2. |
| Additional information received | 17/11/2016 | Site location plan, installation boundary plan, proposed layout plan, raw material plan, process flow diagram, emissions plan and drainage plan. |
| Response to schedule 5 notice received | 30/11/2016 | Baseline noise assessment from DHC2 S36 2009 application. |
| Additional information received | 20/06/2017 | Revised installation boundary plan with emission points |
| Variation determined EPR/DP3933DN/V002<br>(Billing ref: UP3934DT) | 30/06/2017 | Varied permit issued. |
| Regulation 61 Notice sent to the Operator | 01/05/2018 | Issue of a Notice under Regulation 61(1) of the EPR. Environment Agency initiated review and variation to vary the permit under IED to implement Chapter II following the publication of the revised Best Available Techniques (BAT) Reference Document for large combustion plant. |
| Regulation 61 Notice response. | 06/11/2018 | Response received from the Operator for Damhead Creek 1. |
| Regulation 61 Notice response. | 14/05/2019 | Response received from the Operator for Damhead Creek 2. |
| Regulation 61 Notice sent to the Operator | 05/07/2019 | Issue of a Notice under Regulation 61(1) of the EPR. |

| Status log of the permit | | |
|---|---|---|
| **Description** | **Date** | **Comments** |
| Regulation 61 Notice response. | 01/08/2019 | Response received from the Operator relating to Table 24 under BAT Conclusion 44. |
| Notified of change of company name and registered office address<br>Variation EPR/DP3933DN/V003 | 12/08/2019 | Name and registered office address changed to Drax Generation Enterprise Limited, 13 Queen's Road, Aberdeen, Scotland, AB15 4YL. |
| Variation issued EPR/DP3933DN/V003 | 11/09/2019 | Varied permit issued to Drax Generation Enterprise Limited. |
| Additional information<br>EPR/DP3933DN/V004 | 25/11/2019 | Email confirming new MSUL/MSDL and DLN-E thresholds |
| Variation determined<br>EPR/DP3933DN/V004<br>(Billing ref: CP3931QJ) | 11/02/2020 | Varied and consolidated permit issued to Drax Generation Enterprise Limited.<br>Effective from 11/02/2020 |

End of introductory note

# The Environmental Permitting (England and Wales) Regulations 2016

The Environment Agency in exercise of its powers under regulation 20 of the Environmental Permitting (England and Wales) Regulations 2016 varies

## Permit number

**EPR/DP3933DN**

## Issued to

**Drax Generation Enterprise Limited** ("the operator")

whose registered office is

**13 Queen's Road**
**Aberdeen**
**Scotland**
**AB15 4YL**

company registration number SC189124

to operate a regulated facility at

**Damhead Creek Power Station**
**Kingsnorth**
**Hoo St Werburgh**
**Rochester**
**Kent**
**ME3 9TX**

to the extent set out in the schedules.

The notice shall take effect from 11/02/2020

| Name | Date |
|---|---|
| **Sifelani F Mpofu** | **11/02/2020** |

Authorised on behalf of the Environment Agency

## Schedule 1

All conditions have been varied by the consolidated permit as a result of an Environment Agency initiated variation.

## Schedule 2 – consolidated permit

Consolidated permit issued as a separate document.

# Permit

## The Environmental Permitting (England and Wales) Regulations 2016

### Permit number

**EPR/DP3933DN**

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/DP3933DN/V004 authorising,

**Drax Generation Enterprise Limited** ("the operator"),

whose registered office is

**13 Queen's Road**
**Aberdeen**
**Scotland**
**AB15 4YL**

company registration number SC189124

to operate a regulated facility at

**Damhead Creek Power Station**
**Kingsnorth**
**Hoo St Werburgh**
**Rochester**
**Kent**
**ME3 9TX**

to the extent authorised by and subject to the conditions of this permit.

| Name | Date |
|---|---|
| **Sifelani F Mpofu** | **11/02/2020** |

Authorised on behalf of the Environment Agency

# Conditions

## 1 Management

### 1.1 General management

1.1.1 The operator shall manage and operate the activities:

(a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and

(b) using sufficient competent persons and resources.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

### 1.2 Energy efficiency

1.2.1 The operator shall:

(a) take appropriate measures to ensure that energy is used efficiently in the activities;

(b) take appropriate measures to ensure the efficiency of energy generation at the permitted installation is maximised;

(c) review and record at least every four years whether there are suitable opportunities to improve the energy efficiency of the activities; and

(d) take any further appropriate measures identified by a review.

1.2.2 The operator shall review the viability of Combined Heat and Power (CHP) implementation at least every 4 years, or in response to any of the following factors, whichever comes sooner:

(a) new plans for significant developments within 15 km of the installation;

(b) changes to the Local Plan;

(c) changes to the DECC UK CHP Development Map or similar; and

(d) new financial or fiscal incentives for CHP.

The results shall be reported to the Agency within 2 months of each review, including where there has been no change to the original assessment in respect of the above factors.

### 1.3 Efficient use of raw materials

1.3.1 The operator shall:

(a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;

(b) maintain records of raw materials and water used in the activities;

(c) review and record at least every four years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and

(d) take any further appropriate measures identified by a review.

## 1.4 Avoidance, recovery and disposal of wastes produced by the activities

1.4.1 The operator shall take appropriate measures to ensure that:

(a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities;

(b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and

(c) where disposal is necessary, this is undertaken in a manner which minimises its impact on the environment.

1.4.2 The operator shall review and record at least every four years whether changes to those measures should be made and take any further appropriate measures identified by a review.

# 2 Operations

## 2.1 Permitted activities

2.1.1 The operator is only authorised to carry out the activities specified in schedule 1 table S1.1 (the "activities").

## 2.2 The site

2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on the site plan at schedule 7 to this permit.

## 2.3 Operating techniques

2.3.1 The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by the Environment Agency.

2.3.2 For the following activities referenced in schedule 1, table S1.1:LCP81, LCP82, LCP467, LCP468 and LCP469. The activities shall be operated in accordance with the "Electricity Supply Industry IED Compliance Protocol for Utility Boilers and Gas Turbines" dated December 2015 or any later version unless otherwise agreed in writing by the Environment Agency.

2.3.3 If notified by the Environment Agency that the activities are giving rise to pollution, the operator shall submit to the Environment Agency for approval within the period specified, a revision of any plan or other documentation ("plan") specified in schedule 1, table S1.2 or otherwise required under this permit which identifies and minimises the risks of pollution relevant to that plan , and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by the Environment Agency.

2.3.4 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.

2.3.5 For the following activities referenced in schedule 1, table S1.1: LCP81, LCP82, LCP467, LCP468 and LCP469. The end of the start up period and the start of the shutdown period shall conform to the specifications set out in Schedule 1, tables S1.2 and S1.5.

2.3.6 For the following activities referenced in schedule 1, table S1.1: LCP81, LCP82, LCP467, LCP468 and LCP469. The effective Dry Low NOx threshold shall conform to the specifications set out in Schedule 1, tables S1.2 and S1.6.

2.3.7 The emission limit values from emission point(s) A1, A2, A9, A10 and A11 listed in table(s) S3.1 and S3.1a of Schedule 3 following the issue of a Black Start Instruction by the National Grid shall be disregarded for the purposes of compliance whilst that instruction remains effective and in accordance with the report submitted in response to improvement condition IC15.

2.3.8 The operator shall ensure that where waste produced by the activities is sent to a relevant waste operation, that operation is provided with the following information, prior to the receipt of the waste:

(a) the nature of the process producing the waste;

(b) the composition of the waste;

(c) the handling requirements of the waste;

(d) the hazardous property associated with the waste, if applicable; and

(e) the waste code of the waste.

2.3.9 The operator shall ensure that where waste produced by the activities is sent to a landfill site, it meets the waste acceptance criteria for that landfill.

## 2.4 Improvement programme

2.4.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Environment Agency.

2.4.2 Except in the case of an improvement which consists only of a submission to the Environment Agency, the operator shall notify the Environment Agency within 14 days of completion of each improvement.

## 2.5 Pre-operational conditions

2.5.1 The activities shall not be brought into operation until the measures specified in schedule 1 table S1.4 have been completed.

# 3 Emissions and monitoring

## 3.1 Emissions to water, air or land

3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1, S3.1a and S3.2.

3.1.2 The limits given in schedule 3 shall not be exceeded.

3.1.3 Periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless such monitoring is based on a systematic appraisal of the risk of contamination.

## 3.2 Emissions of substances not controlled by emission limits

3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.

3.2.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution, submit to the Environment Agency for approval within the period specified, an emissions management plan which identifies and minimises the risks of pollution from emissions of substances not controlled by emission limits;

(b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.2.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

## 3.3 Odour

3.3.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour.

3.3.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to odour, submit to the Environment Agency for approval within the period specified, an odour management plan which identifies and minimises the risks of pollution from odour;

(b) implement the approved odour management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

## 3.4 Noise and vibration

3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.

3.4.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency for approval within the period specified, a noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration;

(b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

## 3.5 Monitoring

3.5.1 The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring specified in the following tables in schedule 3 to this permit:

(a) point source emissions specified in tables S3.1, S3.1a and S3.2; and

(b) process monitoring specified in table S3.3.

3.5.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continuous), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.

3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate), where available, unless otherwise agreed in writing by the Environment Agency.

3.5.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1, S3.1a and S3.2 unless otherwise agreed in writing by the Environment Agency.

## 3.6 Monitoring for Large Combustion Plant

3.6.1 All monitoring required by this permit shall be carried out in accordance with the provisions of Annex V of the Industrial Emissions Directive and the Large Combustion Plant Best Available Techniques Conclusions.

3.6.2 If the monitoring results for more than 10 days a year are invalidated within the meaning set out in condition 3.6.7, the operator shall:

(a) within 28 days of becoming aware of this fact, review the causes of the invalidations and submit to the Environment Agency for approval, proposals for measures to improve the reliability of the continuous measurement systems, including a timetable for the implementation of those measures; and

(b) implement the approved proposals.

3.6.3 Continuous measurement systems on emission points from the LCP shall be subject to quality control by means of parallel measurements with reference methods at least once every calendar year.

3.6.4 Unless otherwise agreed in writing by the Environment Agency in accordance with condition 3.6.5 below, the operator shall carry out the methods, including the reference measurement methods, to use and calibrate continuous measurement systems in accordance with the appropriate CEN standards.

3.6.5 If CEN standards are not available, ISO standards, national or international standards which will ensure the provision of data of an equivalent scientific quality shall be used, as agreed in writing with the Environment Agency.

3.6.6 Where required by a condition of this permit to check the measurement equipment, the operator shall submit a report to the Environment Agency in writing, within 28 days of the completion of the check.

3.6.7 Where Continuous Emission Monitors are installed to comply with the monitoring requirements in schedule 3, table(s) S3.1 and S3.1a; the Continuous Emission Monitors shall be used such that:

(a) for the continuous measurement systems fitted to the LCP release points defined in table(s) S3.1 and S3.1a the validated hourly, monthly, yearly and daily averages shall be determined from the measured valid hourly average values after having subtracted the value of the 95% confidence interval;

(b) the 95% confidence interval for nitrogen oxides and sulphur dioxide of a single measured result shall be taken to be 20%;

(c) the 95% confidence interval for dust releases of a single measured result shall be taken to be 30%;

(d) the 95% confidence interval for carbon monoxide releases of a single measured result shall be taken to be 10%;

(e) an invalid hourly average means an hourly average period invalidated due to malfunction of, or maintenance work being carried out on, the continuous measurement system. However, to allow some discretion for zero and span gas checking, or cleaning (by flushing), an hourly average period will count as valid as long as data has been accumulated for at least two thirds of the period. Such discretionary periods are not to exceed more than 5 in any one 24-hour period unless agreed in writing. Where plant may be operating for less than the 24-hour period, such discretionary periods are not to exceed more than one quarter of the overall valid hourly average periods unless agreed in writing; and

(f) any day, in which more than three hourly average values are invalid shall be invalidated.

# 4 Information

## 4.1 Records

4.1.1 All records required to be made by this permit shall:

(a) be legible;

(b) be made as soon as reasonably practicable;

(c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and

(d) be retained, unless otherwise agreed in writing by the Environment Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:

(i) off-site environmental effects; and

(ii) matters which affect the condition of the land and groundwater.

4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by the Environment Agency.

## 4.2 Reporting

4.2.1 The operator shall send all reports and notifications required by the permit to the Environment Agency using the contact details supplied in writing by the Environment Agency.

4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to the Environment Agency by 31 January (or other date agreed in writing by the Environment Agency) each year. The report(s) shall include as a minimum:

(a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;

(b) the resource efficiency metrics set out in schedule 4 table S4.2;

(c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule.

4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Environment Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:

(a) in respect of the parameters and emission points specified in schedule 4 table S4.1;

(b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4; and

(c) giving the information from such results and assessments as may be required by the forms specified in those tables.

4.2.4 The operator shall, unless notice under this condition has been served within the preceding four years, submit to the Environment Agency, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.

## 4.3 Notifications

4.3.1 In the event:

(a) that the operation of the activities gives rise to an incident or accident which significantly affects or may significantly affect the environment, the operator must immediately—

(i) inform the Environment Agency,

(ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and

(iii) take the measures necessary to prevent further possible incidents or accidents;

(b) of a breach of any permit condition the operator must immediately—

(i) inform the Environment Agency, and

(ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;

(c) of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the operator must immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored.

4.3.2 Any information provided under condition 4.3.1 (a)(i), 4.3.1 (b)(i) where the information relates to the breach of a condition specified in the permit, shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.

4.3.3 Where the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Environment Agency at least 14 days before the date the monitoring is to be undertaken.

4.3.4 The Environment Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:

Where the operator is a registered company:

(a) any change in the operator's trading name, registered name or registered office address; and

(b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

Where the operator is a corporate body other than a registered company:

(c) any change in the operator's name or address; and

(d) any steps taken with a view to the dissolution of the operator.

In any other case:

(e) the death of any of the named operators (where the operator consists of more than one named individual);

(f) any change in the operator's name(s) or address(es); and

(g) any steps taken with a view to the operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case of them being in a partnership, dissolving the partnership.

4.3.5 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:

(a) the Environment Agency shall be notified at least 14 days before making the change; and

(b) the notification shall contain a description of the proposed change in operation.

4.3.6 The Environment Agency shall be given at least 14 days notice before implementation of any part of the site closure plan.

4.3.7 The operator shall inform the Environment Agency in writing of the closure of any LCP within 28 days of the date of closure.

## 4.4 Interpretation

4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.

4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made “immediately”, in which case it may be provided by telephone.

# Schedule 1 – Operations

| Table S1.1 activities | | |
|---|---|---|
| **Activity listed in Schedule 1 of the EP Regulations** | **Description of specified activity** | **Limits of specified activity** |
| Section 1.1 A(1) (a): Burning any fuel in an appliance with a rated thermal input of 50 megawatts or more. | **Damhead Creek 1**<br>LCP81 and LCP82: operation of a power plant made up of two combined cycle gas turbines (CCGT) each with a net rated thermal input of 711 MWth burning natural gas to produce electricity. | From receipt of natural gas to discharge of exhaust gases and the generation of electricity for export. |
| | Operation of an auxiliary boiler with a net rated thermal input of 12 MWth fired on natural gas. | From receipt of natural gas to discharge of exhaust gases and the generation of steam. Used during start up to heat gas and seal steam turbine glands. |
| | Operation of an emergency diesel generator with a net rated thermal input of 1.2 MWth. | From receipt, storage and handling diesel to discharge of exhaust gases. Used for emergency purposes when network is down and tested monthly. |
| | **Damhead Creek 2** | |
| | LCP467, LCP468 and LCP469: operation of a power plant made up of three combined cycle gas turbines (CCGT) each with a net rated thermal input of 1,093 MWth burning natural gas to produce electricity | From receipt of natural gas to discharge of exhaust gases and the generation of electricity for export. |
| | Operation of an auxiliary boiler with a net rated thermal input of 23.1 MWth fired on natural gas. | From receipt of natural gas to discharge of exhaust gases and the generation of steam. Used during start up to heat gas and seal steam turbine glands |
| | Operation of an emergency diesel generator with a net rated thermal input of 2.8 MWth. | From receipt, storage and handling diesel to discharge of exhaust gases. Used for emergency purposes when network is down and tested monthly. |
| | Operation of two 0.8 MWth back up diesel fired fire water pumps. | From receipt, storage and handling of diesel to discharge of exhaust gases. |

| Table S1.1 activities | | |
|---|---|---|
| **Activity listed in Schedule 1 of the EP Regulations** | **Description of specified activity** | **Limits of specified activity** |
| **Directly Associated Activity** | | |
| Directly associated activity | Operation of four steam turbines | Input of steam from the heat recovery steam generators associated with the CCGTs into steam turbines for the generation of electricity for export to the National Grid. |
| Directly associated activity | Two air cooled condenser systems (ACC) | Rejection of waste steam to ACC and return of condensate to feedwater system. |
| Directly associated activity | Raw water storage tanks | From receipt of towns water to use for domestic supply, for cooling, in the water treatment plant and for fire mains. |
| Directly associated activity | Water treatment - treatment of water by reverse osmosis and ion exchange | From receipt of raw materials to despatch for use in HRSG, cooling systems and domestic heating system. Transfer of effluent to neutralisation tank for pH adjustment. |
| Directly associated activity | Plant drainage system and effluent neutralisation and storage. Sumps and drains in process areas and site surface water drainage. Storm water storage basin and pumping system and pipeline to discharge point for Damhead Creek 1 and Damhead Creek 2. | From transfer of wastewater effluent streams (neutralisation tank effluent, treated sewage effluent, rainwater and surface water via interceptors and oily separator effluent) to storm water basin prior to discharge to Damhead Creek 1, emission point W1 and Damhead Creek 2, emission point W2. |
| Directly associated activity | Fuel oil storage for use in emergency generators. | From receipt of raw materials to dispatch for use. |
| Directly associated activity | Gas feeder pipeline including slam shut valve. | From receipt of raw materials to dispatch for use. |
| Directly associated activity | Waste handling and storage. | From waste generation, storage and monitoring to waste dispatch. |

| Table S1.2 Operating techniques | | |
|---|---|---|
| **Description** | **Parts** | **Date Received** |
| Application received EPR/VP3133LP/A001 | The response to questions B2.1 and B2.2 provided in Section 2 of the application. | 31/03/2006 |
| Response to regulation 60(1) Notice – request for information dated 9/12/2014 | Compliance route) and operating techniques identified in response to questions 2 (ELV compliance route) and 6 (MSUL/MSDL definitions). | 30/03/2015 |
| Receipt of additional information to the regulation 60(1) Notice. requested by letter dated 29/05/2015 | Operating techniques identified in response to questions 2 (thermal input), 3 (MSUL/MSDL definitions). | 15/06/2015 |

| Table S1.2 Operating techniques | | |
|---|---|---|
| **Description** | **Parts** | **Date Received** |
| Variation application EPR/DP3933DN/V002 | The responses to Parts C2 and C3 and the supplementary information supplied with these parts. | 9/11/2016 |
| Additional information received variation EPR/DP3933DN/V002 | Site location plan, installation boundary plan, proposed layout plan, raw material plan, process flow diagram, emissions plan and drainage plan. | 17/11/2016 |
| Schedule 5 notice response variation EPR/DP3933DN/V002 | Baseline noise assessment from DHC2 S36 2009 application. | 30/11/2016 |
| Response to regulation 61(1) Notice – request for information dated 01/05/18<br>EPR/DP3933DN/V003 | Damhead Creek 1: Compliance and operating techniques identified in response to the BAT Conclusions for large combustion plant published on 17th August 2017. | 06/11/2018 |
| Response to regulation 61(1) Notice – request for information dated 01/05/18<br>EPR/DP3933DN/V003 | Damhead Creek 2: Compliance and operating techniques identified in response to the BAT Conclusions for large combustion plant published on 17th August 2017. | 14/05/2019 |
| Additional information in response to regulation 61(1) Notice<br>EPR/DP3933DN/V003 | Compliance and operating techniques identified in response to Table 24 under BAT Conclusion 44. | 01/08/2019 |

| Table S1.3 Improvement programme requirements | | |
|---|---|---|
| **Reference** | **Requirement** | **Date** |
| Improvement conditions 1 – 10 have been removed from the permit through variation EPR/DP3933DN/V004 as they are complete | | |
| IC11 | The Operator shall submit a report in writing to the Environment Agency for acceptance. The report shall define and provide a written justification of the “minimum start up load” and “minimum shut-down load”, for each unit within the LCP, at Damhead Creek 2 Power Station, as required by the Implementing Decision 2012/249/EU in terms of:<br>i. The output load (i.e. electricity, heat or power generated) (MW); and<br>ii. This output load as a percentage of the rated thermal output of the combustion plant (%).<br>And / Or<br>At least three criteria (operational parameters and / or discrete processes as detailed in the Annex) or equivalent operational parameters that suit the technical characteristics of the plant, which can be met at the end of start up or start of shut down as detailed in Article (9) 2012/249/EU. | Within 12 months of the date on which fuel is first burnt |

| Table S1.3 Improvement programme requirements | | |
|---|---|---|
| **Reference** | **Requirement** | **Date** |
| IC12 | The Operator shall provide a report in writing to the Environment Agency for acceptance which provides the net rated thermal input for LCP467, LCP468 and LCP469.<br><br>Evidence to support this figure, in order of preference, shall be in the form of:-<br><br>a) Performance test results* during contractual guarantee testing or at commissioning (quoting the specified standards or test codes);<br>b) Manufacturer's contractual guarantee value;<br>c) Published reference data, e.g. Gas Turbine World Performance Specifications (published annually);<br>d) Design data, e.g. nameplate rating of a boiler or design documentation for a burner system;<br>e) Operational efficiency data as verified and used for heat accountancy purposes;<br>f) Data provided as part of Due Diligence during acquisition.<br><br>* Performance test results shall be used if these are available. | Within 12 months of the date on which fuel is first burnt |
| IC13 | The Operator shall submit a report to the Environment Agency on the commissioning of Damhead Creek 2 Power Station. The report shall include:<br><br>• A summary of how the environmental performance of the plant as installed against the design parameters set out in variation Application EPR/DP3933DN/V002;<br>• A review of how the design of the plant meets the BAT Conclusions as specified in the Regulation 61 response dated 14/05/2019; and<br>• A review of the performance of the facility against the conditions of this permit and details of procedures developed during commissioning for achieving and demonstrating compliance with permit conditions.<br><br>The report shall be submitted to the Environment Agency in writing for approval. | Within 4 months of the completion of commissioning |
| IC14 | The Operator shall submit a report in writing to the Environment Agency for approval. The report shall define an output load or operational parameters for LCP467, LCP468 and LCP469 and provide a written justification for when the dry low $NO_x$ operation is effective. The report shall also include the $NO_x$ profile through effective dry low $NO_x$ to 70% and then to full load. | Within 4 months of the completion of commissioning |

| Table S1.3 Improvement programme requirements | | |
|---|---|---|
| **Reference** | **Requirement** | **Date** |
| IC15 | A written report shall be submitted to the Environment Agency for approval. The report shall contain an impact assessment demonstrating that there is no significant environmental risk associated with black start operations and propose a methodology for minimisation of environmental impact during such a period of operation and for reporting instances of black start operation.<br><br>The plant can be operated as set out in condition 2.3.7 of the permit once the report has been approved by the Environment Agency. The methodology for operation and reporting set out in the report shall be implemented by the Operator from the date of approval by the Environment Agency. | 12 months from variation issue (EPR/DP3933DN/V004) |

| Table S1.4 Pre-operational measures | |
|---|---|
| **Reference** | **Pre-operational measures** |
| PO1 | Prior to the commencement of commissioning of Damhead Creek 2 Power Station, the Operator shall provide a written commissioning plan, including timelines for completion, for approval by the Environment Agency. The commissioning plan shall include the expected emissions to the environment during the different stages of commissioning, the expected durations of commissioning activities and the actions to be taken to protect the environment and report to the Environment Agency in the event that actual emissions exceed expected emissions. Commissioning shall be carried out in accordance with the commissioning plan as approved. |
| PO2 | Prior to the commencement of commissioning of Damhead Creek 2 Power Station, the Operator shall prepare and submit a comprehensive noise assessment report undertaken by an experienced and suitably qualified person in accordance with the procedures given in BS4142:2014 (Methods for rating and assessing industrial and commercial sound). The assessment shall include the assessment of the predicted impact of noise emissions upon surrounding sensitive receptors arising from the operation of the powerstation against the relevant benchmarks for assessment set out in BS4142:2014.<br><br>If the report does not demonstrate that there will be no adverse effect, the noise management and mitigation proposals must be amended accordingly and the noise assessment updated to reflect the changes. |

| Table S1.5 Start-up and Shut-down thresholds | | |
|---|---|---|
| **Emission Point and Unit Reference** | **"Minimum Start-Up Load"**<br>**Load in MWe and as percent of rated power output (%)** | **"Minimum Shut-Down Load"**<br>**Load in MWe and as percent of rated power output (%)** |
| A1: LCP 81 | 200 MWe; 50% - "part module" operation – single GT and ST | 185 MWe; 46% - "part module" operation – single GT and ST |
| A2: LCP 82 | 200 MWe; 50% - "part module" operation – single GT and ST | 185 MWe; 46% - "part module" operation – single GT and ST |
| A1: LCP 81 + A2: LCP 82 | 430 MWe; 53.4% - "full module" operation – two GTs and ST | 380 MWe; 47.2% - "full module" operation – two GTs and ST |

| Table S1.5 Start-up and Shut-down thresholds | | |
|---|---|---|
| **Emission Point and Unit Reference** | **"Minimum Start-Up Load"**<br>**Load in MWe and as percent of rated power output (%)** | **"Minimum Shut-Down Load"**<br>**Load in MWe and as percent of rated power output (%)** |
| Emission points A9, A10 and A11 from LCP467, LCP468 and LCP469 | To be agreed in writing by the Environment Agency, following the outcome of improvement condition IC11. | To be agreed in writing by the Environment Agency, following the outcome of improvement condition IC11. |

| Table S1.6 Dry Low NOx effective definition | |
|---|---|
| **Emission Point and Unit Reference** | **Dry Low NOx effective definition**<br>**Load in MW and as percent of rated power output (%)** |
| A1: LCP 81 | 200 MWe; 50% - "part module" operation – single GT and ST |
| A2: LCP 82 | 200 MWe; 50% - "part module" operation – single GT and ST |
| A1: LCP 81 + A2: LCP 82 | 430 MWe; 53.4% - "full module" operation – two GTs and ST |
| Emission points A9, A10 and A11 from LCP467, LCP468 and LCP469 | To be agreed in writing by the Environment Agency, following the outcome of improvement condition IC14. |

# Schedule 2 – Raw materials and fuels

| Table S2.1 Raw materials and fuels | |
|---|---|
| **Raw materials and fuel description** | **Specification** |
| Natural gas | -- |

# Schedule 3 – Emissions and monitoring

| **Table S3.1 Point source emissions to air - emission limits and monitoring requirements shall apply until 16 August 2021** | | | | | | |
|---|---|---|---|---|---|---|
| **Emission point ref. & location** | **Source** | **Parameter** | **Limit (including unit)** | **Reference period** | **Monitoring frequency** | **Monitoring standard or method** |
| A1 and A2<br>[Points A1 and A2 on plan in Schedule 7] | LCP81 and LCP82<br>Gas turbine fired on natural gas | Oxides of nitrogen<br>(NO and $NO_2$ expressed as $NO_2$) | 50 $mg/m^3$<br>70% to base load Note 1 | Monthly mean of validated hourly averages | Continuous | BS EN 14181 |
| | | | 55 $mg/m^3$<br>70% to base load Note 1 | Daily mean of validated hourly averages | | |
| | | | 55 $mg/m^3$<br>MSUL/MSDL to base load Note 2 | | | |
| | | | 90 $mg/m^3$<br>70% to base load Note 1 | 95% of validated hourly averages within a calendar year | | |
| | | Carbon monoxide | 80 $mg/m^3$<br>70% to base load Note 1 | Monthly mean of validated hourly averages | Continuous | BS EN 14181 |
| | | | 80 $mg/m^3$<br>70% to base load Note 1 | Daily mean of validated hourly averages | | |
| | | | 80 $mg/m^3$<br>MSUL/MSDL to base load Note 2 | | | |
| | | | 120 $mg/m^3$<br>70% to base load Note 1 | 95% of validated hourly averages within a calendar year | | |
| | | Sulphur dioxide | No limit set | --- | At least every 6 months | Concentration by calculation, as agreed in writing with the Environment Agency |

| Table S3.1 Point source emissions to air - emission limits and monitoring requirements shall apply until 16 August 2021 | | | | | | |
|---|---|---|---|---|---|---|
| **Emission point ref. & location** | **Source** | **Parameter** | **Limit (including unit)** | **Reference period** | **Monitoring frequency** | **Monitoring standard or method** |
| | | Oxygen | --- | --- | Continuous as appropriate to reference | BS EN 14181 |
| | | Water vapour | - | - | Continuous as appropriate to reference | BS EN 14181 |
| | | Stack gas temperature | - | - | Continuous as appropriate to reference | Traceable to national standards |
| | | Stack gas pressure | - | - | Continuous as appropriate to reference | Traceable to national standards |
| | | As required by the Method Implementation Document for BS EN 15259 | - | - | Pre-operation and when there is a significant operational change | BS EN 15259 |
| A4 [Point A4 on plan in Schedule 7] | 1.2 MWth emergency diesel generator | - | No limit set | - | - | - |
| A8 [Point A8 on plan in Schedule 7] | 12 MWth auxiliary boiler fired on natural gas | Oxides of nitrogen (NO and $NO_2$ expressed as $NO_2$) | No limit set | - | - | - |
| | | Carbon monoxide | No limit set | - | - | - |
| A9, A10 and A11 [Points A9, A10 and A11 on plan in Schedule 7] | LCP467, LCP468 and LCP469 Gas turbines fired on natural gas | Oxides of nitrogen (NO and $NO_2$ expressed as $NO_2$) | 50 mg/$m^3$ 70% to base load Note 1 | Monthly mean of validated hourly averages | Continuous | BS EN 14181 |
| | | | 55 mg/$m^3$ 70% to base load Note 1<br><br>55 mg/$m^3$ MSUL/MSDL to base load Note 2 | Daily mean of validated hourly averages | | |

| Table S3.1 Point source emissions to air - emission limits and monitoring requirements shall apply until 16 August 2021 | | | | | | |
|---|---|---|---|---|---|---|
| **Emission point ref. & location** | **Source** | **Parameter** | **Limit (including unit)** | **Reference period** | **Monitoring frequency** | **Monitoring standard or method** |
| | | | 100 mg/m$^3$<br>70% to base load Note 1 | 95% of validated hourly averages within a calendar year | | |
| | | Carbon monoxide | 100 mg/m$^3$<br>70% to base load Note 1 | Monthly mean of validated hourly averages | Continuous | BS EN 14181 |
| | | | 110 mg/m$^3$<br>70% to base load Note 1<br><br>110 mg/m$^3$<br>MSUL/MSDL to base load Note 2 | Daily mean of validated hourly averages | | |
| | | | 200 mg/m$^3$<br>70% to base load Note 1 | 95% of validated hourly averages within a calendar year | | |
| | | Sulphur dioxide | No limit set | - | At least every 6 months | Concentration by calculation, as agreed in writing with the Environment Agency |
| A9, A10 and A11 [Points A9, A10 and A11 on plan in Schedule 7] | LCP467, LCP468 and LCP469<br>Gas turbines fired on natural gas | Oxygen | - | - | Continuous as appropriate to reference | BS EN 14181 |
| | | Water vapour | - | - | Continuous as appropriate to reference | BS EN 14181 |
| | | Stack gas temperature | - | - | Continuous as appropriate to reference | Traceable to national standards |
| | | Stack gas pressure | - | - | Continuous as appropriate to reference | Traceable to national standards |

| Table S3.1 Point source emissions to air - emission limits and monitoring requirements shall apply until 16 August 2021 | | | | | | |
|---|---|---|---|---|---|---|
| **Emission point ref. & location** | **Source** | **Parameter** | **Limit (including unit)** | **Reference period** | **Monitoring frequency** | **Monitoring standard or method** |
| | | As required by the Method Implementation Document for BS EN 15259 | - | - | Pre-operation and when there is a significant operational change | BS EN 15259 |
| A12<br>[Point A12 on plan in Schedule 7] | 2.8 MWth emergency diesel generator | - | No limit set | - | - | - |
| A13<br>[Point A13 on plan in Schedule 7] | 0.8 MWth fire water pump fired on diesel | - | No limit set | - | - | - |
| A14<br>[Point A14 on plan in Schedule 7] | 23.1 MWth auxiliary boiler fired on natural gas | Oxides of nitrogen<br>(NO and $NO_2$ expressed as $NO_2$) | No limit set | - | - | - |
| | | Carbon monoxide | No limit set | - | - | - |
| Vents for lubricating oil systems | Gas and steam turbines | VOCs | No limit set | - | - | - |
| Steam and pressure release valves | Process areas on site | - | No limit set | - | - | - |
| Vents for natural gas venting | Gas distribution pipelines on site | - | No limit set | - | - | - |

Note 1: This ELV applies when the load is > 70% throughout the reference period.

Note 2: This ELV applies when the load varies between MSUL/MSDL and base load during the daily reference period. MSUL and MSDL are defined in Table S1.5 of this permit

| Table S3.1a Point source emissions to air - emission limits and monitoring requirements shall apply from 17 August 2021 | | | | | | |
|---|---|---|---|---|---|---|
| **Emission point ref. & location** | **Source** | **Parameter** | **Limit (including unit)-these limits do not apply during start up or shut down.** | **Reference period** | **Monitoring frequency** | **Monitoring standard or method** |
| A1 and A2<br>[Points A1 and A2 on plan in Schedule 7] | LCP81 and LCP82<br>Gas turbine fired on natural gas | Oxides of nitrogen<br>(NO and $NO_2$ expressed as $NO_2$) | 40 $mg/m^3$<br>When DLN is effective Note 1 | Yearly average | Continuous | BS EN 14181 |
| | | | 50 $mg/m^3$<br>When DLN is effective Note 1 | Monthly mean of validated hourly averages | | |
| | | | 50 $mg/m^3$<br>When DLN is effective Note 1 | Daily mean of validated hourly averages | | |
| | | | 50 $mg/m^3$<br>MSUL/MSDL to base load Note 2 | | | |
| | | | 90 $mg/m^3$<br>When DLN is effective Note 1 | 95% of validated hourly averages within a calendar year | | |
| | | Carbon monoxide | 30 $mg/m^3$<br>When DLN is effective Note 1 | Yearly average | Continuous | BS EN 14181 |
| | | | 80 $mg/m^3$<br>When DLN is effective Note 1 | Monthly mean of validated hourly averages | | |
| | | | 80 $mg/m^3$<br>When DLN is effective Note 1 | Daily mean of validated hourly averages | | |
| | | | 80 $mg/m^3$<br>MSUL/MSDL to base load Note 2 | | | |

| Table S3.1a Point source emissions to air - emission limits and monitoring requirements shall apply from 17 August 2021 | | | | | | |
|---|---|---|---|---|---|---|
| **Emission point ref. & location** | **Source** | **Parameter** | **Limit (including unit)-these limits do not apply during start up or shut down.** | **Reference period** | **Monitoring frequency** | **Monitoring standard or method** |
| | | | 120 mg/m$^3$<br>When DLN is effective Note 1 | 95% of validated hourly averages within a calendar year | | |
| | | Sulphur dioxide | No limit set | - | At least every 6 months | Concentration by calculation, as agreed in writing with the Environment Agency |
| | | Flow | - | - | Continuous<br>As appropriate to reference | EN ISO 16911 and M2 |
| | | Oxygen | - | - | Continuous as appropriate to reference | BS EN 14181 |
| | | Water vapour | - | - | Continuous as appropriate to reference | BS EN 14181 |
| | | Stack gas temperature | - | - | Continuous as appropriate to reference | Traceable to national standards |
| | | Stack gas pressure | - | - | Continuous as appropriate to reference | Traceable to national standards |
| | | As required by the Method Implementation Document for BS EN 15259 | - | - | Pre-operation and when there is a significant operational change | BS EN 15259 |
| A4<br>[Point A4 on plan in Schedule 7] | 1.2 MWth emergency diesel generator | - | No limit set | - | - | - |
| A8<br>[Point A8 on plan in Schedule 7] | 12 MWth auxiliary boiler fired on natural gas | Oxides of nitrogen<br>(NO and $NO_2$ expressed as $NO_2$) | No limit set | - | - | - |
| | | Carbon monoxide | No limit set | - | - | - |

| Table S3.1a Point source emissions to air - emission limits and monitoring requirements shall apply from 17 August 2021 | | | | | | |
|---|---|---|---|---|---|---|
| **Emission point ref. & location** | **Source** | **Parameter** | **Limit (including unit)-these limits do not apply during start up or shut down.** | **Reference period** | **Monitoring frequency** | **Monitoring standard or method** |
| A9, A10 and A11 [Points A9, A10 and A11 on plan in Schedule 7] | LCP467, LCP468 and LCP469 Gas turbines fired on natural gas | Oxides of nitrogen (NO and $NO^2$ expressed as $NO^2$) | 40 $mg/m^3$ When DLN is effective Note1 | Yearly average | Continuous | BS EN 14181 |
| | | | 50 $mg/m^3$ When DLN is effective Note 1 | Monthly mean of validated hourly averages | | |
| | | | 50 $mg/m^3$ When DLN is effective Note 1 | Daily mean of validated hourly averages | | |
| | | | 50 $mg/m^3$ MSUL/MSDL to base load Note 2 | | | |
| | | | 100 $mg/m^3$ When DLN is effective Note 1 | 95% of validated hourly averages within a calendar year | | |
| | | Carbon monoxide | 30 $mg/m^3$ When DLN is effective Note 1 | Yearly average | Continuous | BS EN 14181 |
| | | | 100 $mg/m^3$ When DLN is effective Note 1 | Monthly mean of validated hourly averages | | |
| | | | 110 $mg/m^3$ When DLN is effective Note 1 | Daily mean of validated hourly averages | | |
| | | | 110 $mg/m^3$ MSUL/MSDL to base load Note 2 | | | |

| Table S3.1a Point source emissions to air - emission limits and monitoring requirements shall apply from 17 August 2021 | | | | | | |
|---|---|---|---|---|---|---|
| **Emission point ref. & location** | **Source** | **Parameter** | **Limit (including unit)-these limits do not apply during start up or shut down.** | **Reference period** | **Monitoring frequency** | **Monitoring standard or method** |
| | | | 200 mg/m$^3$<br>When DLN is effective Note 1 | 95% of validated hourly averages within a calendar year | | |
| | | Sulphur dioxide | No limit set | - | At least every 6 months | Concentration by calculation, as agreed in writing with the Environment Agency |
| | | Flow | - | - | Continuous<br>As appropriate to reference | EN ISO 16911 and M2 |
| | | Oxygen | - | - | Continuous as appropriate to reference | BS EN 14181 |
| | | Water vapour | - | - | Continuous as appropriate to reference | BS EN 14181 |
| | | Stack gas temperature | - | - | Continuous as appropriate to reference | Traceable to national standards |
| | | Stack gas pressure | - | - | Continuous as appropriate to reference | Traceable to national standards |
| | | As required by the Method Implementation Document for BS EN 15259 | - | - | Pre-operation and when there is a significant operational change | BS EN 15259 |
| A12<br>[Point A12 on plan in Schedule 7] | 2.8 MWth emergency diesel generator | - | No limit set | - | - | - |
| A13<br>[Point A13 on plan in Schedule 7] | 0.8 MWth fire water pump fired on diesel | - | No limit set | - | - | - |

| Table S3.1a Point source emissions to air - emission limits and monitoring requirements shall apply from 17 August 2021 | | | | | | |
|---|---|---|---|---|---|---|
| **Emission point ref. & location** | **Source** | **Parameter** | **Limit (including unit)-these limits do not apply during start up or shut down.** | **Reference period** | **Monitoring frequency** | **Monitoring standard or method** |
| A14<br>[Point A14 on plan in Schedule 7] | 23.1 MWth auxiliary boiler fired on natural gas | Oxides of nitrogen<br>(NO and $NO_2$ expressed as $NO_2$) | No limit set | - | - | - |
| | | Carbon monoxide | No limit set | - | - | - |
| Vents for lubricating oil systems | Gas and steam turbines | VOCs | No limit set | - | - | - |
| Steam and pressure release valves | Process areas on site | - | No limit set | - | - | - |
| Vents for natural gas venting | Gas distribution pipelines on site | - | No limit set | - | - | - |
| Note 1: This ELV applies when DLN is effective as defined in Table S1.6.<br>Note 2: This ELV applied when the load varies between MSUL/MSDL and base load during the daily reference period. MSUL and MSDL are defined in Table S1.5. | | | | | | |

| Table S3.2 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements | | | | | | |
|---|---|---|---|---|---|---|
| **Emission point ref. & location** | **Source** | **Parameter** | **Limit (incl. unit)** | **Reference period** | **Monitoring frequency** | **Monitoring standard or method** |
| W1 emission to Damhead Creek<br>[Point W1 on plan in Schedule 7] | Storm water basin 1 [1] | Flow | 60 $m^3$ per hour | Instantaneous | Continuous | MCERTS accredited |
| | | Temperature | 30°C | Instantaneous | Continuous | MCERTS accredited |
| | | pH range | 6-9 | Instantaneous | Continuous | BS6068-2.50 |
| | | Total suspended solids | 60 mg/l | Flow weighted monthly average | Monthly | BS EN 872 |
| | | BOD | 40 mg/l | Flow weighted monthly average | Monthly | ISO 5815 |

| Table S3.2 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements | | | | | | |
|---|---|---|---|---|---|---|
| **Emission point ref. & location** | **Source** | **Parameter** | **Limit (incl. unit)** | **Reference period** | **Monitoring frequency** | **Monitoring standard or method** |
| | | Total ammonia | 8 mg/l | Flow weighted monthly average | Monthly | BS 6068 2.11 |
| | | Oil or grease | No visible traces [2] | Instantaneous | Daily | Visual check |
| W2 emission to Damhead Creek<br>[Point W2 on plan in Schedule 7] | Storm water basin 2 [1] | Flow | 90 $m^3$ per hour | Instantaneous | Continuous | MCERTS accredited |
| | | Temperature | 30°C | Instantaneous | Continuous | MCERTS accredited |
| | | pH range | 6-9 | Instantaneous | Continuous | BS6068-2.50 |
| | | Total suspended solids | 60 mg/l | Flow weighted monthly average | Monthly | BS EN 872 |
| | | BOD | 40 mg/l | Flow weighted monthly average | Monthly | ISO 5815 |
| | | Total ammonia | 8 mg/l | Flow weighted monthly average | Monthly | BS 6068 2.11 |
| | | Oil or grease | No visible traces [2] | Instantaneous | Daily | Visual check |

Note 1: Storm water basin comprises the following effluent streams:

- plant processing areas having passed through wastewater conditioning basin;
- treated sewage effluent;
- collected rain water; and
- site drainage having passed through an oil separator

Note 2: No visible oil or grease on the surface of the storm water basin at point of discharge. Physical visual checks required once per day.

| Table S3.3 Process monitoring requirements | | | | |
|---|---|---|---|---|
| **Emission point reference or source or description of point of measurement** | **Parameter** | **Monitoring frequency** | **Monitoring standard or method** | **Other specifications** |
| LCP81 and LCP82 | Net electrical efficiency | After each modification which that could significantly affect these parameters | EN Standards or equivalent | - |
| LCP467, LCP468 and LCP469 | Net electrical efficiency | Once within 4 months after commissioning and then after each modification that could significantly affect these parameters | EN Standards or equivalent | -- |

# Schedule 4 – Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

| **Table S4.1 Reporting of monitoring data** | | | |
|---|---|---|---|
| **Parameter** | **Emission or monitoring point/reference** | **Reporting period** | **Period begins** |
| Oxides of nitrogen | A1, A2, A9, A10, A11 | Every 3 months | 1 January, 1 April, 1 July, 1 October |
| | | Every year | 1 January |
| Carbon monoxide | A1, A2, A9, A10, A11 | Every 3 months | 1 January, 1 April, 1 July, 1 October |
| | | Every year | 1 January |
| Sulphur dioxide | A1, A2, A9, A10, A11 | Every 6 months | 1 January, 1 July |
| Emissions to water<br>Parameters as required by condition 3.5.1 | W1, W2 | Every 3 months | 1 January, 1 April, 1 July, 1 October |

| **Table S4.2 Resource Efficiency Metrics** | |
|---|---|
| **Parameter** | **Units** |
| Electricity Exported | GWhr |
| Heat Exported | GWhr |
| Mechanical Power Provided | GWhr |
| Fossil Fuel Energy Consumption | GWhr |
| Non-Fossil Fuel Energy Consumption | GWhr |
| Annual Operating Hours | hr |
| Water Abstracted from Fresh Water Source | $m^3$ |
| Water Abstracted from Borehole Source | $m^3$ |
| Water Abstracted from Estuarine Water Source | $m^3$ |
| Water Abstracted from Sea Water Source | $m^3$ |
| Water Abstracted from Mains Water Source | $m^3$ |
| Gross Total Water Used | $m^3$ |
| Net Water Used | $m^3$ |
| Hazardous Waste Transferred for Disposal at another installation | t |
| Hazardous Waste Transferred for Recovery at another installation | t |
| Non-Hazardous Waste Transferred for Disposal at another installation | t |
| Non-Hazardous Waste Transferred for Recovery at another installation | t |
| Waste recovered to Quality Protocol Specification and transferred off-site | t |
| Waste transferred directly off-site for use under an exemption / position statement | t |

| Table S4.3 Large Combustion Plant Performance parameters for reporting to DEFRA | | |
|---|---|---|
| **Parameter** | **Frequency of assessment** | **Units** |
| Thermal Input Capacity for each LCP | Annually | MW |
| Annual Fuel Usage for each LCP | Annually | TJ |
| Total Emissions to Air of NOx for each LCP | Annually | t |
| Total Emissions to Air of SO2 for each LCP | Annually | t |
| Total Emissions to Air of Dust for each LCP | Annually | t |
| Operating Hours for each LCP | Annually | hr |

| Table S4.4 Reporting forms | | |
|---|---|---|
| **Media/ parameter** | **Reporting format** | **Agency recipient** |
| Air & Energy | Form IED AR1 – $SO_2$, $NO_x$ and dust mass emission and energy.<br>Form as agreed in writing by the Environment Agency. | National and Area Office |
| LCP | Form IED HR1 – operating hours.<br>Form as agreed in writing by the Environment Agency. | National and Area Office |
| Air | Form IED CON 2 – continuous monitoring.<br>Form as agreed in writing by the Environment Agency | Area Office |
| CEMs | Form IED CEM – invalidation Log.<br>Form as agreed in writing by the Environment Agency. | Area Office |
| Resource Efficiency | Form REM1 – resource efficiency annual report<br>Form as agreed in writing by the Environment Agency. | National and Area Office |
| Water | Form water 1 or other form as agreed in writing by the Environment Agency | Area Office |

# Schedule 5 – Notification

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the EP Regulations.

## Part A

| | |
|---|---|
| Permit Number | |
| Name of operator | |
| Location of Facility | |
| Time and date of the detection | |

| **(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution** | |
|---|---|
| **To be notified within 24 hours of detection** | |
| Date and time of the event | |
| Reference or description of the location of the event | |
| Description of where any release into the environment took place | |
| Substances(s) potentially released | |
| Best estimate of the quantity or rate of release of substances | |
| Measures taken, or intended to be taken, to stop any emission | |
| Description of the failure or accident. | |

| **(b) Notification requirements for the breach of a limit** | |
|---|---|
| **To be notified within 24 hours of detection unless otherwise specified below** | |
| Emission point reference/ source | |
| Parameter(s) | |
| Limit | |
| Measured value and uncertainty | |
| Date and time of monitoring | |

| **(b) Notification requirements for the breach of a limit** | |
|---|---|
| **To be notified within 24 hours of detection unless otherwise specified below** | |
| Measures taken, or intended to be taken, to stop the emission | |
| Time periods for notification following detection of a breach of a limit | |
| Parameter | Notification period |
| | |
| | |
| | |

| **(c) Notification requirements for the detection of any significant adverse environmental effect** | |
|---|---|
| **To be notified within 24 hours of detection** | |
| Description of where the effect on the environment was detected | |
| Substances(s) detected | |
| Concentrations of substances detected | |
| Date of monitoring/sampling | |

# Part B – to be submitted as soon as practicable

| | |
|---|---|
| Any more accurate information on the matters for notification under Part A. | |
| Measures taken, or intended to be taken, to prevent a recurrence of the incident | |
| Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission | |
| The dates of any unauthorised emissions from the facility in the preceding 24 months. | |

| | |
|---|---|
| **Name*** | |
| **Post** | |
| **Signature** | |
| **Date** | |

* authorised to sign on behalf of the operator

# Schedule 6 – Interpretation

“accident” means an accident that may result in pollution.

“Air Quality Risk Assessment” has the meaning given in Annex D of IED Compliance Protocol for Utility Boilers and Gas Turbines.

“application” means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under Schedule 5 to the EP Regulations.

“authorised officer” means any person authorised by the Environment Agency under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in section 108(4) of that Act.

“base load” means: (i) as a mode of operation, operating for >4000hrs pa; and (ii) as a load, the maximum load under ISO conditions that can be sustained continuously, i.e. maximum continuous rating.

“Black Start” means the procedure to recover from a total or partial shutdown of the UK Transmission System which has caused an extensive loss of supplies. This entails isolated power stations being started individually and gradually being reconnected to other power stations and substations in order to form an interconnected system again.

“calendar monthly mean” means the value across a calendar month of all validated hourly means.

“CEN” means Commité Européen de Normalisation.

“Combustion Technical Guidance Note” means IPPC Sector Guidance Note Combustion Activities, version 2.03 dated 27th July 2005 published by Environment Agency.

“commissioning” means testing of the installation that involves any operation of a Large Combustion Plant referenced in schedule 1, table S1.1 or as agreed with the Environment Agency.

“daily average” means the average over a period of 24 hours of validated hourly averages obtained by continuous measurements.

“DLN” means dry, low $NO_x$ burners.

“emissions of substances not controlled by emission limits” means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission or background concentration limit.

“emissions to land” includes emissions to groundwater.

“Energy efficiency” means the annual net plant energy efficiency, the value for which is calculated from the operational data collected over the year.

“EP Regulations” means The Environmental Permitting (England and Wales) Regulations SI 2016 No.1154 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

“groundwater” means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

“Industrial Emissions Directive” means DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions.

“large combustion plant” or “LCP” is a combustion plant or group of combustion plants discharging waste gases through a common windshield or stack, where the total thermal input is 50 MW or more, based on net calorific value. The calculation of thermal input, excludes individual combustion plants with a rated thermal input below 15MW.

“malfunction” has the meaning given in the ESI IED Compliance Protocol for Utility Boilers and Gas Turbines.

“MCERTS” means the Environment Agency’s Monitoring Certification Scheme.

“MCR” means maximum continuous rating.

“MSDL” means minimum shut-down load as defined in Implementing Decision 2012/249/EU.

“MSUL” means minimum start-up load as defined in Implementing Decision 2012/249/EU.

“Natural gas” means naturally occurring methane with no more than 20% by volume of inert or other constituents.

“ncv” means net calorific value.

“Net electrical efficiency” means the ratio between the net electrical output (electricity produced minus the imported energy) and the fuel/feedstock energy input (as the fuel/feedstock lower heating value) at the combustion unit boundary over a given period of time.

“operational hours” are whole hours commencing from the first unit ending start up and ending when the last unit commences shut down.

“quarter” means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

“SI” means site inspector.

“Standby fuel” means alternative liquid fuels that are used in emergency situations when the gas fuel which is normally used, is not available.

Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

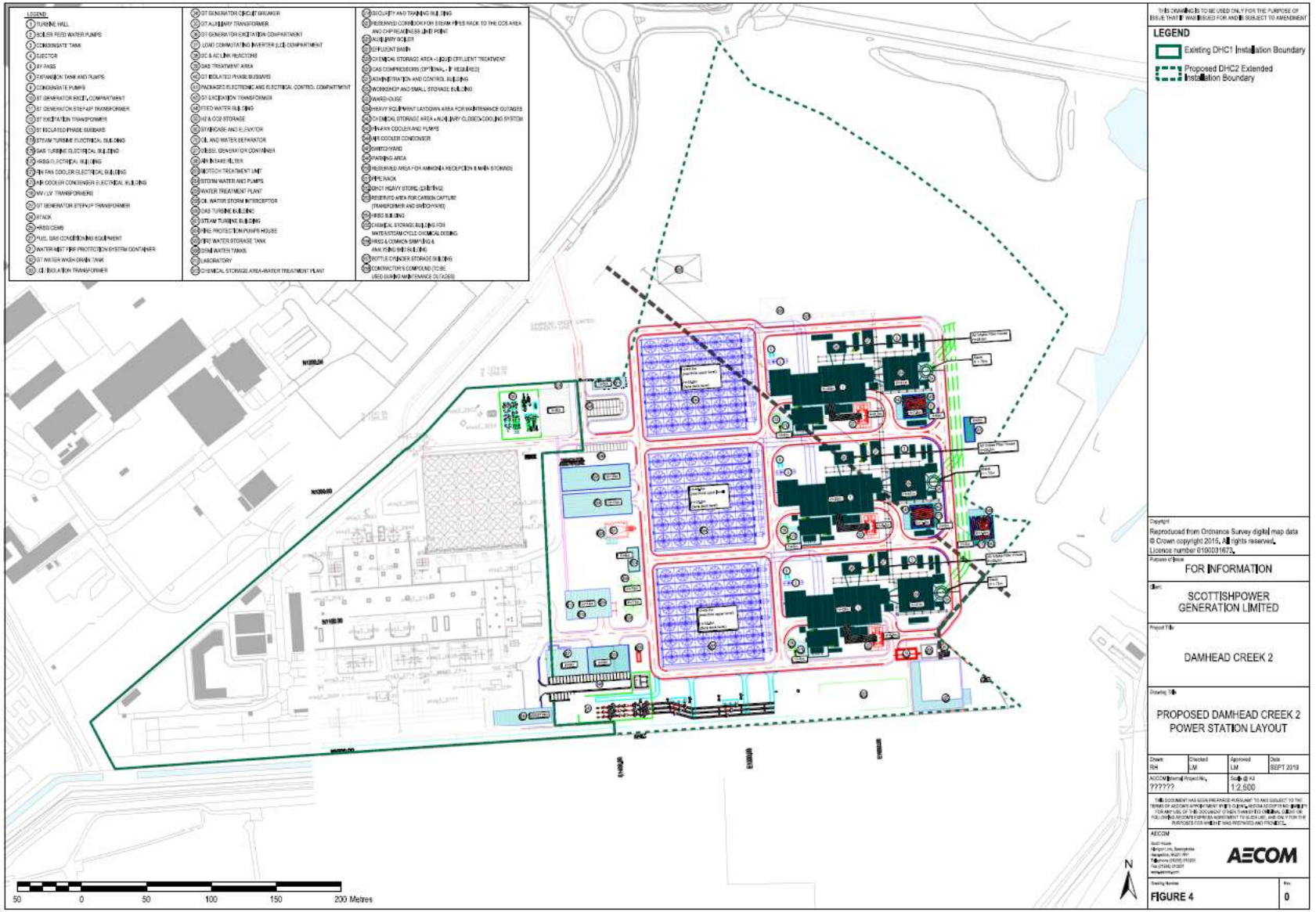
Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

- in relation to emissions from combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels, 6% dry for solid fuels; and/or
- in relation to emissions from gas turbine or compression ignition engine combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3kPa and with an oxygen content of 15% dry for liquid and gaseous fuels; and/or
- in relation to emissions from combustion processes comprising a gas turbine with a waste heat boiler, the concentration in dry air at a temperature of 273K, at a pressure of 101.3kPa and with an oxygen content of 15% dry, unless the waste heat boiler is operating alone, in which case, with an oxygen content of 3% dry for liquid and gaseous fuels; and/or
- in relation to emissions from non-combustion sources, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, with no correction for water vapour content.

“year” means calendar year ending 31 December.

“yearly average” means the average over a period of one year of validated hourly averages obtained by continuous measurements.

# Schedule 7 – Site plan

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