Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

South Hook CHP Limited

South Hook CHP Plant
Dale Road
Herbrandston
Milford Haven
Pembrokeshire
SA73 3SU

Permit number

EPR/XP3936NS

South Hook CHP Plant
Permit number EPR/XP3936NS

Introductory note

This introductory note does not form a part of the permit

The main features of the permit are as follows.

South Hook Combined Heat and Power (CHP) Plant is located at Herbrandston in Pembrokeshire. The site covers an area approximately 10 hectares and is located at National Grid Reference SM 871 062. In close proximity to the CHP Plant is the Pembrokeshire Marine Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI).

South Hook CHP is a gas fired combined cycle gas turbine (CCGT) operated by South Hook CHP Limited. The CHP Plant is located alongside the South Hook Liquefied Natural Gas (LNG) Terminal operated by South Hook LNG Terminal Company Limited.

The CHP Plant comprises of:

- A single CCGT to generate electricity and heat of which;
    - Up to 300MWe of electricity will be generated from the gas turbine generator
    - Up to 200MWe of electricity will be generated from the steam turbine generator with steam supplied from the Heat Recovery Steam Generator which utilises the waste heat in the exhaust gases
- One single 75 metre stack
- A standby diesel generator
- A steam turbine generator condenser system

The steam turbine generator condenser system will use the heat from the steam turbine to supply South Hook LNG with heat to regasify the LNG instead of using the submerged combustion vaporisers.

The CHP Plant will use natural gas supplied from South Hook LNG or from the National Transmission System. The natural gas will be combusted in a dry low-Nitrogen Oxide gas turbine, will be operated in line with the Best Available Techniques for combustion and will conform to the requirements of the Industrial Emissions Directive 2010.

There will be emissions to air and water from the CHP Plant that are within acceptable levels and will require monitoring to ensure the Operator is complying with the conditions of this permit.

The CHP Plant has been designed to operate in an integrated mode, where it supplied heat to South Hook LNG, as well as independently when there is no requirement for heat at South Hook LNG. When operating in an integrated mode South Hook LNG will have the ability to operate with a net thermal efficiency of up to 88% and at circa 56% in independent mode.

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

Status log of the permit		
Description	**Date**	**Comments**
Application EPR/XP3936NS/A001	Duly made 12/11/13	Application for a new gas fired power station
Additional information received	12/03/14	Response to Schedule 5 Notice dated 21st February 2014
Permit determined	DD/MM/YY	

Other Part A installation permits relating to this installation		
Operator	**Permit number**	**Date of issue**
South Hook LNG Terminal Company Ltd.	EPR/XP3538LD	01/09/06

End of introductory note

Permit

The Environmental Permitting (England and Wales) Regulations 2010

Permit number
EPR/XP3936NS

The Natural Resources Body for Wales ("Natural Resources Wales") authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2010

South Hook CHP Limited ("the operator"),

whose registered office is

Mermaid Business Centre
Puddle Dock
Blackfriars
London
EC4V 3DB

company registration number **8109296**

to operate an installation at

South Hook CHP Plant
Dale Road
Herbrandston
Milford Haven
Pembrokeshire
SA73 3SU

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

Name	Date

Authorised on behalf of Natural Resources Wales

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.

1.3 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; and

(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 Natural Resources Wales.

2.3.2 For the following activity referenced in schedule 1, table S1.1 (A1), and without prejudice to condition 2.3.1, the activities shall be operated in accordance with the “Electricity Supply Industry IED Compliance Protocol for Utility Boilers and Gas Turbines Rev. 1” dated February 2015, or any later version unless otherwise agreed in writing by Natural Resources Wales.

2.3.3 If notified by Natural Resources Wales that the activities are giving rise to pollution, the operator shall submit to Natural Resources Wales 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 Natural Resources Wales.

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 activity referenced in schedule 1, table S1.1 (A1) the end of the start up period and the start of the shutdown period shall conform to the specifications set out in Schedule 1, Table S1.2 and S1.5.

2.3.6 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.

2.3.7 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 Natural Resources Wales.

2.4.2 Except in the case of an improvement which consists only of a submission to Natural Resources Wales, the operator shall notify Natural Resources Wales 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 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 Natural Resources Wales that the activities are giving rise to pollution, submit to Natural Resources Wales 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 Natural Resources Wales.

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 Natural Resources Wales, 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 Natural Resources Wales that the activities are giving rise to pollution outside the site due to odour, submit to Natural Resources Wales 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 Natural Resources Wales.

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 Natural Resources Wales, 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 Natural Resources Wales that the activities are giving rise to pollution outside the site due to noise and vibration, submit to Natural Resources Wales 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 Natural Resources Wales.

3.5 Monitoring

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

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

(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 continual), 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 Natural Resources Wales.

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 and S3.2 unless otherwise agreed in writing by Natural Resources Wales.

3.6 Monitoring for the purposes of the Industrial Emissions Directive Chapter III

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.

3.6.2 If the monitoring results for more than 10 days a year are invalidated within the meaning set out in schedule 3, the operator shall:

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

(a) 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 Natural Resources Wales 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 Natural Resources Wales.

3.6.6 Where required by a condition of this permit to check the measurement equipment, the operator shall submit a report to Natural Resources Wales 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 S3.1, the Continuous Emission Monitors shall be used such that;

- For the continuous measurement systems fitted to the LCP release points defined in Table S4.1 the validated hourly, monthly and daily averages shall be determined from the measured valid hourly average values after having subtracted the value of the 95% confidence interval.
- The 95% confidence interval for nitrogen oxides and sulphur dioxide of a single measured result shall be taken to be 20%.
- The 95% confidence interval for dust releases of a single measured result shall be taken to be 30%.
- The 95% confidence interval for carbon monoxide releases of a single measured result shall be taken to be 10%.
- 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 (40 minutes). 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.

- 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 Natural Resources Wales, 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 Natural Resources Wales.

4.2 Reporting

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

4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to Natural Resources Wales by 31 January (or other date agreed in writing by Natural Resources Wales) 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; and

(b) the annual production / treatment data sent out in schedule 4 table S4.2; and

(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 Natural Resources Wales, 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 Natural Resources Wales, 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 Natural Resources Wales,

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

4.3.4 Natural Resources Wales 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:

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

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

In any other case:

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

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

(c) 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) Natural Resources Wales 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 Natural Resources Wales 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 Natural Resources Wales 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 reference	**Activity listed in Schedule 1 of the EP Regulations**	**Description of specified activity**	**Limits of specified activity**
A1	Section 1.1 A(1) (a) : Burning any fuel in an appliance with a rated thermal input of 50 megawatts or more.	Combined heat and power production of steam and electricity or Combined Cycle electricity generation. Electricity is generated using a single generator driven by both a gas and steam turbine. Hot gases from the gas turbine pass into the heat recovery steam generator from which high pressure steam is extracted and passed into the steam turbine to generate electricity. Heat from the condenser system will be used to vaporise LNG when in CHP mode.	From receipt of natural gas from to the discharge of combustion gases from the associated stack. Includes the associated fin fan cooling system, 75 metre stack and associated devices and systems for controlling combustion conditions and emissions. Includes the operation of the demineralised water plant, condensate polishing plants and those required for conditioning of the water/steam cycle systems and hot water and return lines between the SCVs and the CHP. The collection and treatment of wastewater and surface water.
Directly Associated Activity			
Directly associated activity		Circa 600kWe standby emergency diesel generator	Includes diesel storage area.
Directly associated activity		Raw material storage area	From receipt of raw materials to dispatch for use.
Directly associated activity		Surface water drainage	Handling and storage of site drainage until discharge to the site surface water system.
Directly associated activity		Waste water treatment plant	From receipt of waste water to dispatch to LNG wastewater discharge line.

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application	The response to Part B3 Section 3a of the application form – Technical Standards Chapter 2: Management of Activities Chapter 3: Operations Chapter 4: Emissions and monitoring Chapter 6: BAT Assessment	12/11/13
Schedule 5 Notice Request dated 21/03/14	Responses to the following questions: 1 to 4 with regard to operating scenarios 5 and 6 with regard to operating scenarios 11 to 20 with regard to noise impact and control	12/03/14
Response to pre operational condition 2 and 4	The determination of both the proposed (PO2) and confirmed (PO4) MSDL / MSDC thresholds and part load ELVs.	On submission of responses

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IP1	The Operator shall: (a) Submit to Natural Resources Wales at the Reporting Address for approval written proposals for carrying out a noise survey to assess the impact of the Installation when fully operational. The proposals shall include the comparison of measured data against the information supplied Schedule 5 response dated 21st February 2014. This will involve establishing whether any of the noise emissions have a tonal quality (both during daytime and night time operation) likely to give rise to nuisance or complaint. The proposals shall also contain details of the methods to be used for the assessment of tonal noise at sensitive receptors and proposed a timeframe within which the survey will be undertaken; (b) Carry out the noise survey in accordance with Natural Resources Wales's written approval; (c) Submit a written report of the findings of the noise survey to Natural Resources Wales at the Reporting Address for approval; and (d) Submit to Natural Resources Wales at the Reporting Address for approval a written report which assesses whether any minor improvements and modifications are required. Where such improvements or modifications are required, the Operator shall provide a timescales for their implementation, and, if required, an associated cost benefit analysis. (e) Undertake a review of the actual noise emissions from the first year of operation at the installation and their impact with those predicted in the revised noise assessment.	Within 6 months of commissioning In accordance with NRWs approval Two month after completion of (b) 2 months after completion of (c) 12 months from first day of Operation.
IP2	The Operator shall submit a written report to Natural Resources Wales on the implementation of its Environmental Management System and the progress made in the accreditation of the system by an external body or if appropriate submit a schedule by which the EMS will be subject to accreditation.	12 months from first day of commercial Operation.

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IP3	The Operator shall submit to Natural Resources Wales at the Reporting Address a written report on the completion of the commissioning plan detailed in pre operational condition 2. It shall report in accordance with the approved commissioning plan and shall detail: – The environmental performance of the Installation as installed against the design parameters set out in the Application; – The performance of the turbines under various operating loads and start-up (both hot and cold) and shut-downs; – Confirmation of the thresholds for Minimum Start-Up Load (MSUL)/Minimum Shut-Down Load (MSDL), and, if required operational parameters; – Confirmation of the proposed daily mean ELVs for Nitrogen Dioxide and Carbon Monoxide between MSUL/MSDL and 70% load; – Confirmation of the proposed daily and monthly ELVs for Nitrogen Dioxide for 70% load to 100% load; – Confirmation of the proposed hourly, daily and monthly ELVs for Carbon Monoxide for 70% load to 100% load; – A comparison of the efficiency and performance of the unit; – A review of the performance of the Installation against the conditions of this Permit; – The procedures developed during commissioning for achieving and demonstrating compliance with permit conditions; – The results of the commissioning phase noise survey in line with the approved proposals; and – The results of calibration and verification testing that the performance of Continuous Emission Monitors for parameters as specified in Table S3.1 complies with the requirements of BS EN 14181, specifically the requirements of QAL1, QAL2 and QAL3 The Report shall also detail any minor improvements and modifications identified as part of the commissioning and a timetable for their implementation. Any changes approved in writing by Natural Resources Wales shall be implemented in accordance with that approval.	2 months from the completion of the comminssioing plan

Table S1.4 Pre-operational measures	
Reference	**Pre-operational measures**
PO1	The Operator shall confirm with Natural Resources Wales that the design of the installation has not changed from that submitted as part of the noise assessment submitted received on 21st February 2014. If the design has changed the Operator shall revise the Noise Assessment submitted in response to the Schedule 5 response dated 21st February 2014, and re-submit the assessment to Natural Resources Wales. The revised assessment shall include the design details for the room dimensions, what the walls and roofs will be made out of and what the sound power levels and quantity of machinery will be in each room. If the site boundary changes during the detailed final design of the installation the Operator shall submit revised drawings to Natural Resources Wales for written approval.

Table S1.4 Pre-operational measures	
Reference	**Pre-operational measures**
PO2	The Operator shall provide a written commissioning plan, including timelines for completion, for approval by Natural Resources Wales. 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 Natural Resources Wales in the event that actual emissions exceed expected emissions. The commissioning plan shall include but not be restricted to: • A noise impact assessment as regards the test running of equipment during the commissioning phase where there is considered to be a necessity to run individual items for short periods without full noise control mitigation measures in place. The assessment shall evaluate the appropriateness of applying temporary attenuators to any venting activities undertaken as part of the purging of pipework and equipment befo • re normal duty operation. The assessment shall also detail how commissioning activities will be scheduled such that the potential impact on sensitive receptors is minimised. • Operator shall carry out appropriate tests and measurements to demonstrate that each building has been designed and constructed to achieve the sound reduction indices modelled as part of the Schedule 5 response dated 21st February 2014, and that the sound power levels and internal reverberant sound pressure levels are also in line with those set out in Application. A report on the testing and measurements shall be submitted to Natural Resources Wales. • Proposals to undertake a noise survey to assess the impact of the Installation during commissioning and the comparison of measured data against the information supplied in the Schedule 5 response dated 21st February 2014. The proposals shall also detail the methods to be used to assess tonal noise at sensitive receptors. • Determination of the daily average ELVs for NOx and CO from MSDL to MCR, as required by the Implementing Decision 2012/249/EU in terms of: i. The output load (i.e., electricity, heat or power generated) (MW); and ii. This output load as a percentage of the rated thermal output of the combustion plant (%). And / Or i. Three criteria (operational parameters or discrete processes) which can be met at the end of start-up or start of shut-down as detailed in Article (9) 2012/249/EU. • With reference to SU/SD and emissions data, determine the ELVs SU and SD to MCR load and the method by which they were derived. • The Operator shall propose daily and monthly averages ELVs for Nitrogen Oxides as NO_2. Commissioning shall be carried out in accordance with the commissioning plan as approved in writing by Natural Resources Wales.

Table S1.4 Pre-operational measures	
Reference	**Pre-operational measures**
PO3	The Operator shall submit, for approval by NRW, an overview of the Environment Management System (EMS) to be incorporated and make available, on request from NRW, for inspection all documents and procedures which form part of the EMS. The EMS will encompass an Accident Management Plan in line with the final design of the plant. The EMS shall be developed in line with the requirements set out in Section 1 of How to comply with your environmental permit (Version 6 June 2013). The documents and procedures set out in the EMS shall form the written management system referenced in condition 1.1.1 (a) of the permit.
PO4	A written procedure shall be submitted to Natural Resources Wales detailing the measures to be used so that monitoring equipment, personnel and organisations employed for the emissions monitoring programme shall have either MCERTS certification or accreditation in accordance with condition 3.5.3. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the procedure. The procedure shall be implemented by the operator from the date of approval in writing by Natural Resources Wales

Table S1.5 Start-Up and Shut-Down thresholds [1]		
Emission Point and Unit Reference	"Minimum start up load"	"Minimum shut-down load"
	Load in MW and as percent of rated power output (%) and/or discrete processes)	Load in MW and as percent of rated power output (%) and/or discrete processes
A1		

[1] To be confirmed on completion of PO4

Schedule 2 - Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	**Specification**
Diesel fuel oil	Less than 0.1% w/w sulphur content

Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air – emission limits and monitoring requirements

Emission point ref. & location	Parameter	Source	Limit (including unit)-these limits do not apply during start up or shut down.	Reference period	Monitoring frequency	Monitoring standard or method
A1 on site plan in Schedule 7	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	Gas turbine fired on natural gas	50 mg/m^3 70% to MCR[1]	Validated hourly average	Continuous	BS EN 14181
			ELV to be agreed on completion of PO4 70% to MCR[1] ELV to be agreed on completion of PO4 for MSUL/MSDL to MCR[2]	Daily mean of validated hourly averages		
			ELV to be agreed on completion of PO4 70% to MCR[1]	Monthly mean of validated hourly averages		
	Carbon Monoxide		ELV to be agreed on completion of PO4[1] 70% to MCR[1]	Validated hourly averages		
			100 mg/m^3 70% to MCR[1] ELV to be agreed on completion of PO4 for MSUL/MSDL to MCR[2]	Daily mean of validated hourly averages		
			ELV to be agreed on completion of PO4 70% to MCR[1]	Monthly mean of validated hourly averages		
	Oxygen		-	-	Continuous as appropriate to reference	Traceable to national standards
	Water vapour		-	-		
	Stack gas temperature		-	-		
	Stack gas pressure		-	-		
	Flue gas homogeneity test		-	-	Pre-operation and when there is a significant operational change	BS EN 15259

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 MCR 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*	Parameter	Source	Limit (incl. unit)	Reference period	Monitoring frequency	Monitoring standard or method
W3 on site plan in schedule 7 emission to Milford Haven Waterway via LNG discharge pipe	Flow	Effluent Treatment Plant	500 m^3 per day	24 hour period beginning 00.01	Continuous	Flow meter
			25 m^3 per hour	Maximum		
	pH		6-9	Instantaneous	Continuous	BS ISO 10523
	Nitrates as N		10 mg/l	Daily	Monthly	BS EN ISO 13395:1996
			5 kg N/day annual mean	Annual average		
	Oil and Grease		No visible	Spot	Daily	Visual check
	Biological Oxygen Demand (BOD)		-	Spot	Monthly	BS EN 1899-1
	Ammonia		800 µg/l	Annual average	Monthly	BS6068-2.11
	Zinc		1000 µg/l			BS EN ISO 11885
	Lead		80 µg/l			
	Copper		80 µg/l			
	Nickel		200 µg/l			
	Mercury and its compounds, expressed as mercury (Total Hg)		5 µg/l			BS EN 13500
	Cadmium and its compounds, expressed as cadmium (Total Cd)		10 µg/l			BS 6068-2.89
	Total suspended solids		30 mg/ml	For 95% of all measured values of periodic samples taken over one month	Weekly	BS EN 872

Table S3.2 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements						
Emission point ref. & location*	**Parameter**	**Source**	**Limit (incl. unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
W4 on site plan in schedule 7 discharge to Milford Haven Waterway via LNG discharge pipe	Flow	Surface water	-	24 hour period beginning 00.01	Continuous	Flow meter
	pH		6-9	Spot	Daily	BS ISO 10523
	Turbidity		-	Spot	Daily	BS EN ISO 7027
	Oil and grease		None visible	Spot	Daily	Visual check
	TOC		-	Spot	Daily	BS EN 1484
	List 2 metals (copper, zinc and iron only)		-	Spot	Monthly	APHA 3120B
W5 on site plan in schedule 7 emission to LNG terminal	Flow	Circulating Water System discharged to LNG	-	-	-	-

*Discharge points W1 and W2 are associated with the permit EPR/XP3538LD issued to South Hook LNG Terminal Company Ltd.

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**
Operating hours – CHP only	Hours	Continuous	-	-
Operating hours – electricity generation only	Hours	Continuous	-	-

Schedule 4 - Reporting

Table S4.1 Reporting of monitoring data

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Oxides of nitrogen Parameters as required by condition 3.5.1	A1	Every 3 months	1 January, 1 April, 1 July, 1 October
Carbon Monoxide Parameters as required by condition 3.5.1	A1	Every 3 months	1 January, 1 April, 1 July, 1 October
Emissions to water Parameters as required by condition 3.5.1	W3, W4, W5	Every 6 months	1 January, 1 July

Table S4.2 Annual production/treatment

Parameter	Units
Power generated	GWHrs
Heat Exported to LNG	GWHrs

Table S4.3 Performance parameters

Parameter	Frequency of assessment	Units
Rated thermal input capacity for each LCP	-	MWth (net)
Annual fuel usage for each LCP	Annually	TJ
Total emissions to air of NOx for each LCP	Annually	t
Total effluent discharge	Annually	m^3

Table S4.4 Reporting forms

Media / parameter	Reporting format	Starting Point	NRW recipient	Date of form
Air	Form ESI/03B monthly mean, maximum daily mean and annual percentile concentrations or other form as agreed in writing by Natural Resources Wales	Date site becomes operational	Local office or other reporting mechanism as informed by NRW	DD/MM/YY
Air	Form Air – 3 continuous measurement systems invalidation log or other form as agreed in writing by Natural Resources Wales	Date site becomes operational		DD/MM/YY

Table S4.4 Reporting forms				
Media / parameter	**Reporting format**	**Starting Point**	**NRW recipient**	**Date of form**
Air	Form AAE1 or ESI02 and ESI04 - Energy Usage summary and LCP Emissions to Air other form as agreed in writing by Natural Resources Wales	Date site becomes operational		DD/MM/YY
Water	Form water 1 or other form as agreed in writing by Natural Resources Wales	Date site becomes operational		DD/MM/YY
Water usage	Form water usage 1 or other form as agreed in writing by Natural Resources Wales	Date site becomes operational		DD/MM/YY
Other performance indicators	Form performance 1 or other form as agreed in writing by Natural Resources Wales	Date site becomes operational		DD/MM/YY

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 activity that gives rise to an incident or accident which significantly affects or may significantly affect the environment	
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 permit condition	
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	
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) In the event 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:	
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.

"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 Natural Resources Wales 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.

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

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

"CEN" means Comité Européen de Normalisation

"DLN" means dry, low NOx burners.

"emissions to land" includes emissions to groundwater.

"EP Regulations" means The Environmental Permitting (England and Wales) Regulations SI 2010 No.675 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

"ELV" means Emission Limit Value.

"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.

"ISO" means International Organisation for Standardisation.

"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 MWth or more, based on net calorific value

"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.

"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

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

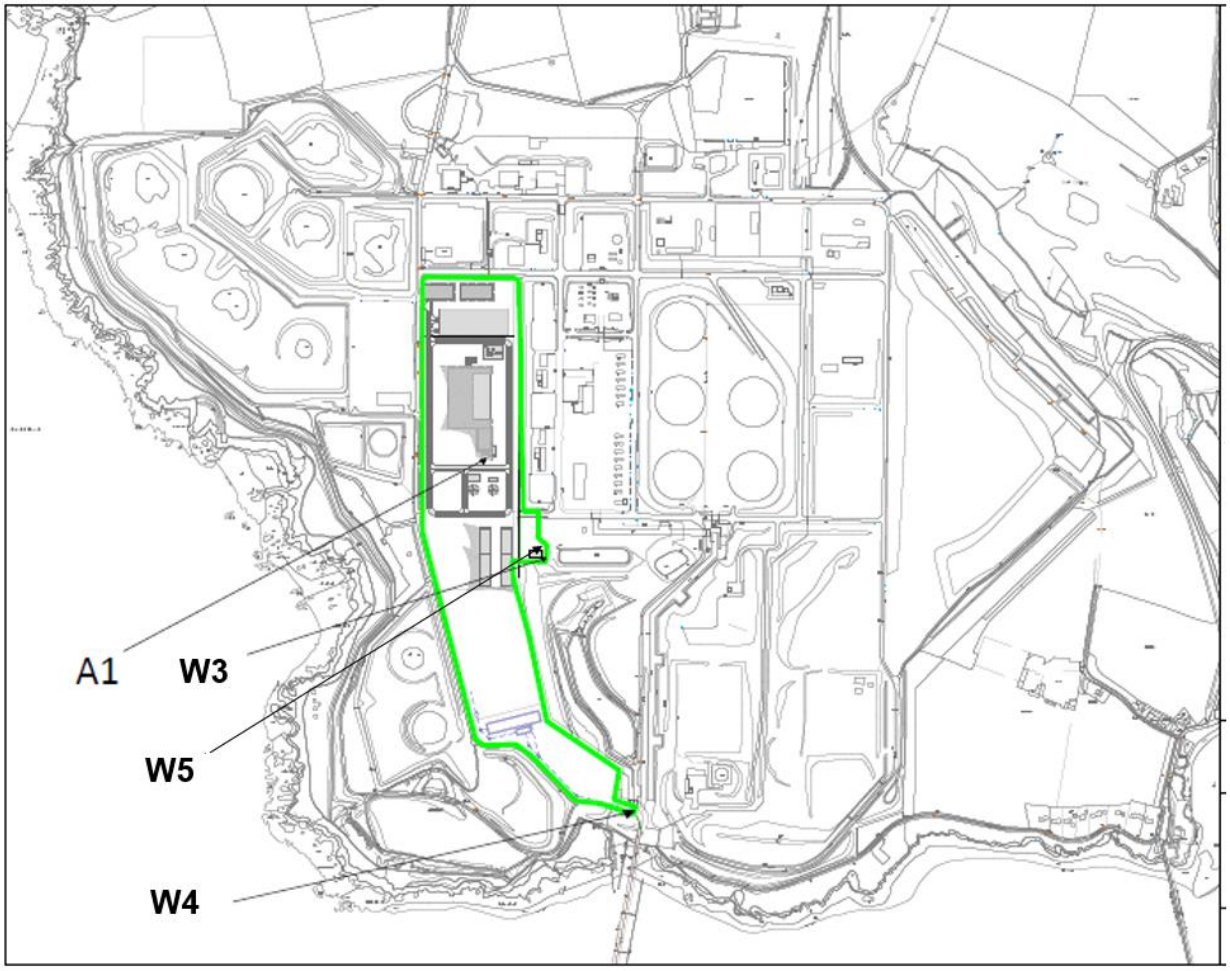
- in relation to emissions from gas turbine combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3kPa and with an oxygen content of 15% dry for liquid and gaseous fuels; and/or
- in relation to emissions from non-combustion sources, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, with no correction for water vapour content.

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.

"Waste Framework Directive" or *"WFD"* means Waste Framework Directive 2008/98/EC of the European Parliament and of the Council on waste

"year" means calendar year ending 31 December.

Schedule 7 - Site plan



END OF PERMIT