Notice of variation with introductory note

Environmental Permitting (England & Wales) Regulations 2010

Centrica Brigg Limited

Glanford Brigg Generating Station
Scawby Brook
Brigg
North Lincolnshire
DN20 9LT

Variation application number

EPR/ZP3133LM/V006

Permit number

EPR/ ZP3133LM

Glanford Brigg Generating Station
Permit number EPR/ZP3133LM

Introductory note

This introductory note does not form a part of the notice

The following notice gives notice of the variation of an environmental permit.

This normal variation application is for Glanford Brigg Generating Station to continue operating gas turbines in open cycle mode via three new by-pass stacks and one modified existing by-pass stack under Section 1.1 Part A1 (a) of Schedule 1 of the Regulations.

This change is the result of a previous trial operating in Open Cycle mode, using one by-pass stack at a height of 20m, as part of a phased programme of work at the station. All by-pass stacks will operate at a revised height from that of the trial stack, of 30m.

Generally most open cycle runs will be short as the Operator is currently contracted to operate as a STOR (Short Term Operating Reserve) facility, supplying power to the National Grid.

Operating the facility in open cycle mode will reduce a number of constraints at the facility allowing for quicker start up times and reducing unnecessary consumption of raw materials and energy use. Effluent discharges and maintenance requirements will also be reduced. This will enable the facility to respond more effectively when there is a need for emergency electrical generation. Generally most open cycle runs will be of short duration.

Because of the change to using by-pass stacks for Open Cycle operation, it will not be necessary to use the heat recovery steam generation (HRSG) boilers. As a result they will be isolated from the exhaust gas stream. This change will also affect some parts of the water cooling system. Some items of cooling plant will also be isolated whilst the facility operates in Open Cycle mode.

There will be no change to emission limits from those set out in the previous variation EPR/ZP3133LM/V004 when operating in normal mode (CCGT) and therefore no likely significant change in impact from this variation.

This variation also incorporates the changes required by the Industrial Emissions Directive. This includes the amendment of the wording of several permit conditions. This also includes the addition of a condition (3.1.3) relating to a requirement for routine monitoring, and an associated reporting condition.

The schedules specify the changes made to the original permit.

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 ZP3133LM (EPR/ZP3133LM/A001)	Received 20/03/2006	
Application ZP3133LM (EPR/ZP3133LM/A001)	Received 20/03/2006	
Additional information received	12/07/2007	
Permit Determined (EPR/ZP3133LM)	10/08/2007	
First Variation ZP3538XH (EPR/ZP3133LM/V002)	Determined 01/08/2008	Minor variation
Second Variation (EPR/ZP3133LM/V003) (WP3239KN)	Determined 15/06/09	Minor variation
Variation Application (EPR/ZP3133LM/V004) (MP3337FY)	Duly made 02/12/11	Normal variation for open cycle operation and by-pass stack
Schedule 5 notice response	04/07/2012	
Additional information	16/10/2012	Response to draft variation notice
Additional information	02/11/2012	Information regarding emergency use
	02/12/2012	Response to draft variation notice
Variation issued	18/12/2012	
Variation determined EPR/ZP3133LM/V005 (MP3833ZW)	11/03/2013	Environment Agency Initiated Variation, to incorporate Eel Regulations improvement condition.
Variation Application (EPR/ZP3133LM/V006)	Duly made 21/01/14	Normal variation to include four fixed by-pass stacks for open cycle operation. This incorporates three new by-pass stacks and an extension to the existing by-pass stack.
Additional information	22/04/14	Clarification on sections of plant that will be isolated whilst operating in Open Cycle
Schedule 5 notice response	06/05/14	Additional details of assessment at habitats sites that include nutrient nitrogen, acid deposition and emission concentrations that were not covered in the submitted application
Variation determined EPR/ZP3133LM/V006 (Billing Ref: AP3133ED)	23/05/14	Varied permit issued to Centrica Brigg Limited

End of introductory note

Notice of variation

Environmental Permitting (England and Wales) Regulations 2010

The Environment Agency in exercise of its powers under regulation 20 of the Environmental Permitting (England and Wales) Regulations 2010 varies

Permit number
EPR/ZP3133LM

issued to:
Centrica Brigg Limited ("the Operator")

Whose registered office is

Millstream
Maidenhead Road
Windsor
Berkshire
SL4 5GD

Company registration number **02352390**

To operate a regulated facility at

Glanford Brigg Generating Station
Scawby Brook
Brigg
North Lincolnshire
DN20 9LT

To the extent set out in the schedules.

The notice shall take effect from 23/05/2014

Name	Date
Thomas Ruffell	**23/05/2014**

Authorised on behalf of the Environment Agency

Schedule 1 – conditions to be deleted

None

Schedule 2 – conditions to be amended

The following conditions are amended as a result of the application made by the Operator and the requirements of the Industrial Emissions Directive

4.3.1 (a) In the event 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) in the event 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) 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, 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.

Table S1.1 is amended to include operation in open cycle mode. The amended table is as follows:

Table S1.1 activities		
Activity listed in Schedule 1 of the PPC 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	Production of electricity from four gas turbines in combined cycle. (Each with a 70m stack). Production of electricity from four gas turbines in open cycle mode exhausting via four 30m by-pass stacks.	The Operation of a gas fired power station with fuel switching capability (including gas turbines, heat recovery steam generators, electrical generators, oil lubrication systems, water abstraction, air compressors, and high voltage switchgear.) From receipt, handling and on-site storage of raw materials to despatch of products and waste. Open cycle operation using natural gas only.
Directly Associated Activity		
Directly associated activity	Gas oil and biofuel storage	From receipt of raw materials to dispatch for use.
Directly associated activity	Water treatment	From receipt of raw materials to dispatch of treated effluent, process cooling waters and dirty water system to final discharge via bulking reservoir to the New River Ancholme.
Directly associated activity	Surface water drainage	Handling and storage of site drainage via the site surface water system to the bulking reservoir until final discharge to the New River Ancholme.
Directly associated activity	Miscellaneous utility systems (including diesel starters, fire pumps, lubricating and control systems).	From receipt of raw materials to dispatch for use.
Directly associated activity	Auxiliary Boiler with thermal input of approximately 3.4MW	The operation of a gas or gas oil fired boiler. Used primarily for providing de-aerated water for the heat recovery boilers. The boiler is also used for gland sealing and at main start up periods, from receipt of raw materials to handling and dispatch of product for use.
Directly associated activity	Gas Heaters	The operation of gas heating plant from receipt of raw materials to handling and dispatch of product for use.

Table S1.2 is amended to include operating techniques associated with this variation. The amended table is as follows:

Table S1.2 Operating techniques

Description	Parts	Date Received
Application	The response to section 2.1and 2.2 in the Application.	20/03/06
Receipt of additional information to the application	Responses to section 2 of application detailing Sump/Bund Inspections, Thermal Input of the Gas Heaters, Cooling Water Pipe-work Flows Underground, Annual Total of Raw Materials Used, Gas Oil Burnt on Site, List of all Vents to Air and Thermal Input of the Auxiliary Boiler.	12/07/07
Variation application EPR/ZP3133LM/V004	• Response to question 3 of application form C3; • Overview of application document section 4	02/12/11
Response to schedule 5 notice for Variation application EPR/ZP3133LM/V004	Paragraph 2 of response to question 5	04/07/12
Variation application EPR/ZP3133LM/V006	Response to questions in application form C2 and C3 and details of plant operation in Doc.Ref.1	27/08/13
Additional information	Email response for clarification on sections of plant that will be isolated whilst operating in Open Cycle	22/04/14

Table S4.1(a) is amended by the addition of emission points A1a, A2a and A3a.

Table S4.1(a) Point source emissions to air from Gas Turbines

Emission point ref. & location [Note 1 & 2]	Parameter	Source	Limit (including unit) [a]	Reference period	Monitoring frequency	Monitoring standard or method
A1- A4 [A1 – SE 9903 0600, A2 – SE 9906 0600, A3 – SE 9916 0602, A4 – SE 9918 0602]	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	Gas turbines fired on natural gas	125 mg/m^3	Daily mean of validated hourly averages	Continuous	BS EN 14181
		Gas turbines fired on gas oil or biofuel	165 mg/m^3	Daily mean of validated hourly averages	Continuous	BS EN 14181
	Carbon Monoxide	Gas turbines fired on natural gas, gas oil or biofuel	No limit set	-	-	-
	Sulphur Dioxide	Gas turbines fired on natural gas, gas oil or biofuel	No limit set	-	-	-
	Particulate matter	Gas turbines fired on natural gas, gas oil or biofuel				

	Unburned fuel gas (as CH_4) [Note 3]	Gas turbines	No limit set	-	-	-
A1a By-pass stack [SE 9903 0599	No parameters set	Gas turbine GT1A fired on natural gas during open cycle operation	No limits set	-	-	-
A2a By-pass stack [SE 9966 0599]		Gas turbine GT1B fired on natural gas during open cycle operation		-	-	-
A3a By-pass stack [SE 9915 0601]		Gas turbine GT2B fired on natural gas during open cycle operation		-	-	-
A4a By-pass stack [SE 9918 0601]		Gas turbine GT2A fired on natural gas during open cycle operation		-	-	-

[a]-these limits do not apply during start up or shut down.

Table S5.3 is amended to include the reporting of periods of open cycle operation via the by-pass stacks. The amended table is as follows:

Table S5.3 Performance parameters

Parameter	Frequency of assessment	Units
Water usage	Annually	M^3
Gas usage	Annually	MJ related to Net CV
Gas oil usage	Annually	MJ related to Net CV
Biofuel usage	Annually	MJ related to Net CV
Gas usage per MWhr generation	Annually	M^3/MWhr
Gas oil running time	Annually	Hours
Biofuel running time	Annually	Hours
Total annual emissions of Nitrogen Dioxide	Annually	tonnes/MWHrs
Total annual emissions of Sulphur Dioxide	Annually	tonnes/MWHrs
Total annual emissions dust (as total suspended particles)	Annually	tonnes/MWHrs
Electricity (incoming)	Annually	MWhrs
Open cycle operating hours for emission points A1a, A2a, A3a, A4a	Every Quarter	Total hours, total number of runs, duration of

	longest run and number of runs >2 hrs duration.

Table S5.4 is amended to include the reporting form for open cycle operation. The amended table is as follows:

Table S5.4 Reporting forms

Media/ parameter	Reporting format	Starting Point	Agency recipient	Date of form
Air	Form Air – 2 continuous monitoring or other form as agreed in writing by the Agency	01/10/07	SI	01/09/07
Air	Form Air – 3 continuous measurement systems invalidation log or other form as agreed in writing by the Agency	01/10/07	SI	01/09/07
Air	Form Air – 4 discontinuous monitoring (for annual mass release) or other form as agreed in writing by the Agency	01/10/07	SI & Central office	01/09/07
Air	Form Air - 7 Energy Usage summary or other form as agreed in writing by the Agency	01/10/07	SI & Central office	01/09/07
Air	Form Air - 8 PPC discontinuous monitoring or other form as agreed in writing by the Agency (Auxiliary boiler)	01/10/07	SI	01/09/07
Water	Form water 1 or other form as agreed in writing by the Agency	01/10/07	SI	01/09/07
Air	Form Air - 9 Open Cycle or other form as agreed in writing by the Agency	01/01/14	SI	01/01/14
Water usage	Form water usage1 or other form as agreed in writing by the Agency	01/10/07	SI	01/09/07
Energy usage	Form energy 1 or other form as agreed in writing by the Agency	01/10/07	SI	01/09/07
Other performance indicators	Form performance 1 or other form as agreed in writing by the Agency	01/10/07	SI	01/09/07

Schedule 3 – conditions to be added

The following condition is added as a result of the application made by the Operator and the requirements of the Industrial Emissions Directive

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.

The following term has been added to Schedule 6 - Interpretation:

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

Schedule 4 – amended plan

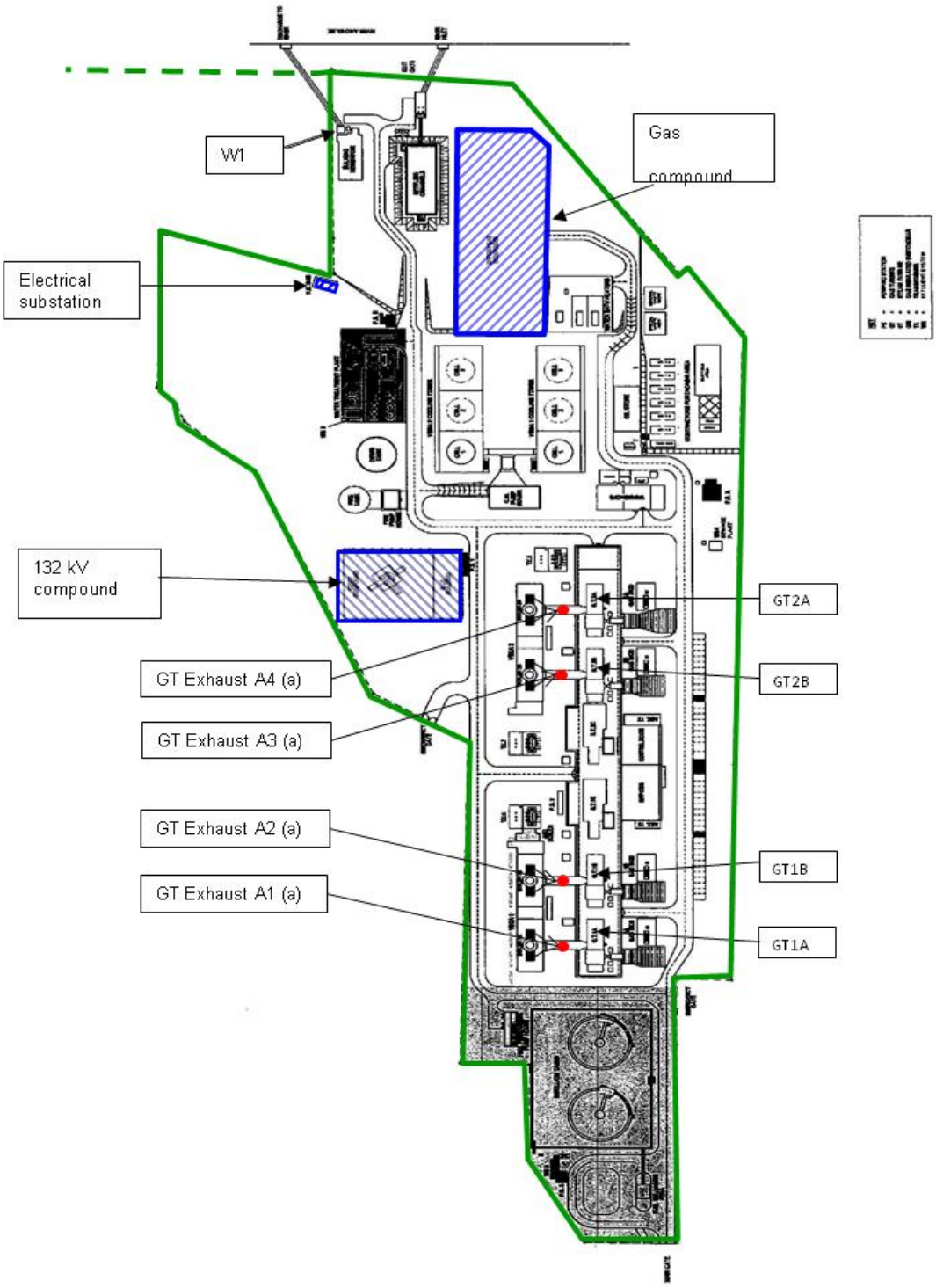

Fig 2

Installation Boundary

Gas compound, 132kV compound and electrical substation excluded from Installation Boundary

By-pass stacks

Environment Agency permitting decisions

Variation

We have decided to issue variation for Glanford Brigg Generating Station operated by Centrica Brigg Limited

The variation number is EPR/ZP3133LM/V006

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

Purpose of this document

This decision document:

- explains how the application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account
- justifies the specific conditions in the permit other than those in our generic permit template.

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Structure of this document

- Key issues
- Annex 1 the decision checklist

Key issues of the decision

Industrial Emissions Directive (IED)

The Environmental Permitting (England and Wales) (Amendment) Regulations 2013 were made on the 20 February 2013 and came into force on 27 February 2013. These Regulations transpose the requirements of the Industrial Emissions Directive (IED).

This permit implements the requirements of the EU Directive on Industrial Emissions.

Introduction

This normal variation for Glanford Brigg Generating Station, submitted by Centrica Brigg Limited, is to allow them to continue to operate all four gas turbines in open cycle mode via three new by-pass stacks and one modified existing by-pass stack. There are no changes to the operating techniques at the facility. The operating techniques currently in use will therefore be maintained along with existing management procedures.

Operating gas turbines in open cycle is not considered best available technique (BAT) due to reduced energy efficiency and the potential increase of pollutants to air, when compared to operating gas turbines in combined cycle mode. However, operating in open cycle enables a quick start up time of 20 minutes in order to provide energy to the National Grid. This variation will enable the Operator to maintain electrical generation for emergency use. It does not set BAT for open cycle operation.

This change is the result of a previous trial using one by-pass stack, at a height of 20m and the existing 70m stacks, as part of a phased programme of work at the station to provide emergency generation. All by-pass stacks will be fixed structures with a revised height from that of the trial stack of 30m. Generally most open cycle runs will be short as the Operator is currently contracted to operate as a STOR (Short Term Operating Reserve) facility, generating emergency power within specific periods, to support the energy requirements of the National Grid.

Operating the facility in this mode will reduce a number of constraints at the facility allowing for faster start up times as well as unnecessary consumption of raw materials, reduced energy use and effluent discharges.

There will also be a reduction in maintenance requirements. Because of the change to using by-pass stacks for Open Cycle (OC) operation, it will not be necessary to use heat recovery steam generation (HRSG) plant. As a result the HRSG plant will be isolated from the exhaust gas stream. This change will also affect parts of the water cooling system. Some items of cooling plant will be isolated whilst the facility operates in OC mode.

The Operator has stated that they intend to maintain capability to operate in Combined Cycle (CC) mode. Therefore, the HRSG, HRSG stacks and associated cooling plant will be retained. The Operator recognises that there may be some deterioration to these sections of plant whilst in OC mode. Therefore, a review of the plant will be undertaken to determine those parts of the HRSG and cooling system affected. A planned programme of work will then be undertaken to repair or replace affected items of plant to enable a return to operation in CC mode.

During open cycle operation the facility will only burn natural gas and the main pollutant of concern from the plant will be NO_2. This is in line with the previous variation V004 where the Operator has assessed impact from NO_2 whilst operating the plant in unabated open cycle mode. The Operator is restricted to a period of unabated operation in open cycle for 500 hours in any

one year. The assessment has modelled the impact of emissions conservatively for 4,380 hours in one year (at 12 hours per day) for this variation. This approach has been taken on the basis that the full operational potential of the installation is for 12 hours per day; 6 hours in the morning and early evening to meet peak demand loads during the day. The Operator also provided information on the their previous full year of operational data for 2012. During that period the average length of runs were circa 1 hour, with a total of 105 hours for the year.

The Short Term Operating Reserve (STOR) contract requires the power station to generate power within specific windows to support the energy requirement of the National Grid. The Operator notes that these typically occur six days per week for two periods per day of up to approximately 5-6 hours. Generally Open Cycle runs would typically be two hours or less. Where runs exceed two hours a condition in the existing permit requires the Operator to report runs where:

a) 10% of open cycle operations in a quarter exceed 2 hours in length; or

b) Any open cycle operation exceeds 4 hours in length;

the Operator shall notify the Environment Agency in writing, as soon as possible, specifying the time, date and duration of the run(s), and the reasons and purpose for which the run(s) was (were) required.

Based on the typical operating mode described above we consider that modelling at 12 hours per day is a reasonable approach.

As outlined in a previous variation, operating gas turbines in open cycle mode is part of improving the resilience of the electrical supply industry and therefore contributes to the emergency preparedness of the country. Under the provisions set out in Annex V of the Industrial Emissions Directive, gas turbines for emergency use that operate for less than 500 hours are not covered by the emission limit values set out in that part of the directive. In these cases, the Operator of such plants shall record operating hours.

There are no emission limits or monitoring requirements in the permit whilst operating in open cycle. The Operator has specific conditions in the existing permit relating to the length of runs and reporting requirements when operating in OC mode. This variation does not change these conditions. There will be no change to emission limits from those set out in the previous (V004) variation.

The Operator originally applied for a minor technical variation based on the grounds that they had already assessed operating in open cycle mode and that emissions are not significantly different from their existing permit. However, their previous assessment only considered exhaust gases emitting through three existing stacks and one by-pass. Exhaust combustion gases will now be emitted via three new by-pass stacks at a lower height and different location to the existing stacks as well as the trial by-pass stack at a revised height.

We determined that this application should, as a minimum, be a normal variation. This decision was based upon the fact that emission release parameters had changed e.g. location and height, exit velocity, exit temperature and release rate that could potentially alter dispersion characteristics. The Operator reviewed their application and agreed that this was a normal variation. They also considered whether the variation should be substantial and concluded that the changes would not meet the requirements set out in RGN No. 8 for a substantial variation. We also reviewed their assessment and agreed with this conclusion.

Emissions to Air.

Assessment of impact from operating in OC mode using the by-pass stacks at the installation only considers emissions of NO_2 to air. This is consistent with the approach carried out previously in variation V004 of this permit.

It is not necessary to consider emissions from other sources at the installation because the change to using by-pass stacks will result in a reduction in raw material use, energy use and effluent discharges. Emissions from other sources at the installation have already been considered in previous permit variations.

Human Assessment

The Operator carried out air dispersion modelling using AERMOD to assess the impacts of the proposed change in operation on ground level concentration from NO_2 emissions.

The modelling is a worse case scenario based on all four gas turbines operating without the de-NO_x steam system and exhausting through the 30m by-pass stacks. The results are shown in tables 1 and 2 below.

Table 1 . Maximum predicted Process Contribution (PC) of NO_2

Reference period	EQS	PC (µg/m^3)	PC as % of EQS	Background (µg/m^3)	PEC (µg/m^3)	PEC as % of EQS
Annual mean	40	10	25	13	40	57

Table 1 above indicates that the annual Process Contribution (PC) is greater than 1% of the (long term) relevant air quality standard and the Predicted Environmental Concentration (PEC) is less than 70%. Where the PEC is less that 70% of the relevant air quality standard we can conclude that there is no likely significant effect.

The applicant has modelled impact unabated as a worst case. The installation is limited to 500hours operation per year, where as the model assumes operation over 12 hours each day throughout the year, a total of 4380 hours.

This is a conservative approach because of the limited number of hours the plant will be allowed to operate in by-pass open cycle (OC) mode. If the facility were to extend beyond 500 hours then the existing emission limits set

out in permit for operating in combined cycle (CC) mode would come into force and NOx abatement would need to be employed. However, this is unlikely because it is not technically possible within the operating requirements of the contract with the National Grid to operate beyond this limit. Therefore long term impact is considered as insignificant when operating in OC mode.

Table 2 . Maximum predicted Process Contribution (PC) of NO_2

Reference period	EQS	PC ($\mu g/m^3$)	PC as % of EQS	Background ($\mu g/m^3$)	PEC ($\mu g/m^3$)	PEC as % of EQS
99.8^{th} percentile (1 hour average)	200	166	83	26	192	96

Potential impact from the facility will be dominated by short term emissions whilst operating in by-pass mode. Table 2 above indicates that the hourly PC is greater than 10% of the (short term) relevant air quality standard. The PEC is greater than 70% and therefore not insignificant. As stated above, the emissions are a worst case assessment and indicate the highest concentration predicted. The maximum predicted short term PC, detailed in the table above, will occur approximately 60m north east of the installation boundary on the western side of the New River Ancholme, away from the nearest sensitive receptor located further east on the eastern side of the River Ancholme. The Operator has assessed the short term emissions at the nearest human receptors and concluded that the relevant environmental standard is unlikely to be exceeded.

We have reviewed the Operator's modelling and carried out sensitivity checks from unabated operation of the facility. While we do not agree with some of the absolute numeric values submitted in the air modelling assessment, they do not materially impact on our conclusions. We agree with the Operators' conclusions that the long term and short term PC are not likely to be insignificant; but taking the background concentration into account the PECs of NO_2 are likely to be below the respective EQS.

Based on our checks we are satisfied that the impact on short term air quality does not require the further reduction of the aggregated period of operation below 500 hours per year. The long term impact from operating in the open cycle mode for this limited period will be insignificant.

Based on the proposed OC operation of the facility and the modelling submitted by the Operator, emissions from the bypass stacks are not likely to result in an exceedance of the relevant air quality standard.

Ecological Sites

There are no Special Areas of Conservation (SAC), Special Protection Areas (SPA) or Ramsar sites within 10km of this installation.

Castlethorpe Tufas is the only Site of Special Scientific Interest (SSSI) within the relevant distance criterion of 2km. This site is designated for a geological

feature and there is no mechanism for NO_x emissions to impact this site. Therefore no further assessment of this site is necessary.

There are 6 Local Wildlife Sites (LWS) within 2km of the installation. These are:

- Traffords Covert;
- Scawby Park;
- Farnway & Thirty Foot Drains;
- Newstead Drain;
- Candley Beck, Westrun;
- Silversides Settling Ponds.

The closest sites are Silversides Settling Ponds approximately 250m and Newstead Drain approximately 890m from the facility. The impacts at these sites are shown in the tables below. None of the other non-statutory sites listed above is greater than 6.5% of the long term or 29% of the short term critical level.

Table 3

LWS	**Substance and reference period**	**Critical level (µg/m^3)**	**PC (µg/m^3)**	**PC as % of EQS**
Silversides Settling Ponds	NO_2 annual	30	2.48	8.28
Newstead Drain	NO_2 annual	30	2.34	7.8

Table 3a

LWS	**Substance and reference period**	**Critical level (µg/m^3)**	**PC (µg/m^3)**	**PC as % of EQS**
Silversides Settling Ponds	NO_2 daily mean	75	102.4	135
Newstead Drain	NO_2 daily mean	75	46.1	61.4

The Operator has predicted that the PC at Silversides Settling Ponds would exceed the short term critical level. The modelled prediction is based on continuous operation for 12 hour periods. This is a worst case scenario that does not reflect the lower risk from operations at the installation which would normally involve running periods of less than two hours duration twice a day.

Furthermore, our sensitivity analysis tested the sensitivity of model outputs. We carried out check modelling based on the emission rate and efflux parameters provided in the Operator's report. While we do not agree with the

absolute numeric values, we agree with the applicant's conclusions with respect to the impacts at ecological receptors.

As the normal operating periods at the installation will be significantly less than the modelled hours, we consider that the daily mean critical level is unlikely to be exceeded at the non-statutory sites.

Table 4

LWS	Substance and reference period	PC	PC as % of
Silversides Settling Ponds	N deposition	0.25 kgN/ha/yr	1.3
	Acid deposition	0.85 keqN/ha/yr	2.0
Newstead Drain	N deposition	0.24 kgN/ha/yr	1.2
	Acid deposition	0.85 keqN/ha/yr	2.0

Deposition results are low at all the sites. No sites were greater than 2% of the relevant critical load and therefore unlikely to affect the LWS.

Based on the scenario that the plant is operational during the 500 meteorological hours which contribute to the highest PC at each habitat site, our check modelling indicates that there is a low risk that the PC to Nutrient Nitrogen or Acid Deposition will not be insignificant.

We agree with the applicant's conclusions with respect to the impacts at ecological receptors. Our check modelling shows that there is a low risk of the impacts from annual mean and 24 hour NO_2 exceeding the screening criteria of 100% at non-statutory sites within 2km of the applicants site.

Noise

There is the potential for an increase in noise from the by-pass stacks due to a higher exit velocity. During the by-pass stack trial the Operator fitted a silencer to the shorter 20m stack to mitigate potential noise problems. This has proved successful and during the trial period no noise complaints were received. The Operator will therefore use silencers on all the by-pass stacks. The Operator has stated in their application that noise monitoring will also be carried out in accordance with the requirements set out in BS4142:1997, which will confirm the effectiveness of the silencers.

We are satisfied that appropriate measures have been taken to minimise the potential for noise at the facility.

Emission Monitoring

There are no changes to the existing permit regarding monitoring and emission limits, and therefore no predicted material impact from this variation. As stated in the introduction above, under Annex V of the IED, gas fired plant that operate less than 500 hours per year for emergency use are not covered by emission limits. The Operator will not be required to monitor emissions from the by-pass stacks but they have to record the operating hours. This requirement is covered by condition 2.3.5 of the existing permit.

There will be no change to emission limits from those set out in the previous variation.

The emission points for the gas turbines and their related mode of operation are detailed in table 5 below.

Table 5

Gas turbine	Emission point in Combined Cycle (Main Stack)	Emission point in Open Cycle (By-pass Stack)
GT 1a	A1	A1(a)
GT 1b	A2	A2(a)
GT 2b	A3	A3(a)
GT 2a	A4	A4(a)

There are no other changes to the existing facility.

Annex 1: decision checklist

This document should be read in conjunction with the, the application and supporting information and permit/notice.

Aspect considered	Justification / Detail	Criteria met
		Yes
Consultation		
Scope of consultation	The consultation requirements were identified and implemented. The decision was taken in accordance with RGN 6 High Profile Sites, our Public Participation Statement and our Working Together Agreements.	✓
European Directives		
Applicable directives	All applicable European directives have been considered in the determination of the application. The following of are particular note: IPPC and the IED. This variation incorporates the changes required by the Industrial Emissions Directive. It includes amendment to the wording of several permit conditions. It also includes	✓

Aspect considered	Justification / Detail	Criteria met Yes
	the addition of a condition relating to a requirement for routine monitoring, and an associated reporting condition	
The site		
Extent of the site of the facility	The Operator has provided a plan which we consider is satisfactory, showing the extent of the site of the facility. A plan is included in the permit and the Operator is required to carry on the permitted activities within the site boundary.	✓
Biodiversity, Heritage, Landscape and Nature Conservation	The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat . A full assessment of the application and its potential to affect the sites has been carried out as part of the permitting process. We consider that the application will not affect the features of the sites. See key issues section for further details.	✓
Environmental Risk Assessment and operating techniques		
Environmental risk	We have reviewed the Operator's assessment of the environmental risk from the facility. The Operator's risk assessment is satisfactory.	✓
Operating techniques	We have reviewed the techniques used by the Operator and compared these with the relevant guidance notes. See key issues section for details.	✓
The permit conditions		
Noise alternative conditions	We consider that the activities carried out at the site have the potential to cause noise and/or vibration that might cause pollution outside the site and consider it appropriate to impose specific measures. See key issues section	✓
Incorporating	We have specified that the applicant must operate the	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
the application	permit in accordance with descriptions in the application, including all additional information received as part of the determination process. These descriptions are specified in the Operating Techniques table in the permit.	
Reporting	We have specified reporting in the permit. We have set reporting on the by-pass stacks for the hours of open cycle operation.	✓

Notice of variation with introductory note

Environmental Permitting (England & Wales) Regulations 2010

Centrica Brigg Limited

Glanford Brigg Generating Station
Scawby Brook
Brigg
North Lincolnshire
DN20 9LT

Variation application number

EPR/ZP3133LM/V005

Permit number

EPR/ZP3133LM

Glanford Brigg Generating Station
Permit number EPR/ZP3133LM

Introductory note

This introductory note does not form a part of the notice

The following notice gives notice of the variation of an environmental permit.

This is an Environment Agency initiated variation to add an improvement condition to ensure that the regulated facility will comply with the Eels (England and Wales) Regulations 2009 (SI 2009/3344) and the Environment Agency's ''Safe Passage of Eel'' Regulatory Position Statement version 1 dated July 2012.

The schedules specify the changes made to the original permit.

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 ZP3133LM (EPR/ZP3133LM/A001)	Received 20/03/2006	
Additional information received	12/07/2007	
Permit Determined (EPR/ZP3133LM)	10/08/2007	
First Variation ZP3538XH (EPR/ZP3133LM/V002)	Determined 01/08/2008	Minor Variation
Second Variation (EPR/ZP3133LM/V003)	Determined 15/06/2009	Minor Valuation
Variation Application (EPR/ZP3133LM/V004)	Duly made 02/12/2011	Normal variation for open cycle operation and by-pass stack
Schedule 5 Notice response	04/07/2012	
Additional information	16/10/2012	Response to draft variation notice
Additional information	02/11/2012	Information regarding emergency use
Additional information	02/12/2012	Response to draft variation notice
Variation issued	18/12/2012	
Variation determined EPR/ZP3133LM/V005	11/03/2013	Environment Agency Initiated Variation, to incorporate Eel Regulations improvement condition.

End of introductory note

Notice of variation

Environmental Permitting (England and Wales) Regulations 2010

The Environment Agency in exercise of its powers under regulation 20 of the Environmental Permitting (England and Wales) Regulations 2010 varies

Permit number
EPR/ZP3133LM

issued to:
Centriga Brigg Limited ("the operator")

whose registered office is

Centrica Brigg Limited
Millstream
Maidenhead Road
Windsor
Berkshire
SL4 5GD

company registration number **2352390**

to operate a regulated facility at

Glanford Brigg Power Station
Scawby Brook
Brigg
North Lincolnshire
DN20 9LT

to the extent set out in the schedules.

The notice shall take effect from 11/03/2013

Name	Date
A.J. Nixon	**11/03/2013**

Authorised on behalf of the Environment Agency

Schedule 1 – conditions to be deleted

None

Schedule 2 – conditions to be amended

None

Schedule 3 – conditions to be added

The following condition is added following an Environment Agency initiated variation

Improvement condition IC7 is added to Table S1.3

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
IC7	The Operator shall undertake a review of the existing screening measures at the intakes and outfalls which provide and discharge water to and from the Installation. The review shall be undertaken with reference to the Eels (England and Wales) Regulations 2009 (SI 2009/3344) and the Environment Agency ''Safe Passage of Eel'' Regulatory Position Statement version 1 dated July 2012. The Operator shall submit details of the arrangement suitable to meet the requirements for the safe passage of eels [of the Eels (England and Wales) Regulations 2009 (SI 2009/3344)] by either:- • Providing a written proposal for the installation of an eel screen. • Providing a written proposal to the modification of existing screening arrangements. • Providing a written response with an explanation and description of how the existing screening arrangements can be regarded to meet the requirements for the safe passage of eels [of SI 2009/3344] either without change or with mitigation measures. • Providing a written response setting out a case for an exemption In all cases, the proposal shall be submitted in writing for the approval of the Environment Agency. Where appropriate, each proposal shall contain an assessment of alternative options considered including impacts on other fish species and an explanation of why the proposed option has been chosen. Where installation of eel screen; modification of existing arrangements; or mitigation measures are proposed, the submission shall contain relevant timescales for installation in accordance with the Safe Passage of Eel Regulatory Position Statement version 1 dated July 2012. The proposals shall be implemented in accordance with the Environment Agency's written approval.	30 September 2013

Environment Agency permitting decisions

Bespoke Variation

We have decided to issue variation for Glanford Brigg Generating Station operated by Centrica Brigg Limited

The variation number is EPR/ZP3133LM/V004

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

Purpose of this document

This decision document:

- explains how the application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account
- justifies the specific conditions in the permit other than those in our generic permit template.

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Structure of this document

- Key issues
- Annex 1 the decision checklist

Key issues of the decision

Details of variation

The Application is for the power station to operate gas turbines in open cycle mode to enable fast start up so that they can supply emergency power to the grid Plant modifications are required to reduce start-up times, reduce maintenance and aid the National Grid in emergencies.

Most runs are short and therefore running in combined cycle is not a viable option because the start up times are too long. The current practice is to exhaust via the Heat Recovery Steam Generator (HRSG) for which cooling is required. The Applicant wants to install by-pass stacks to allow quicker start-up.

This variation is for one trail by-pass stack. They plan to operate four gas turbines (GTs) in open cycle (OC), three will exhaust via the existing stacks and one via new by-pass stack. The de-NOx system will not be available on the by-pass stack. The trial will be used to assess the effectiveness of the by-pass, including investigating NOx abatement measures. If the trial is successful Centrica will apply for a variation to install four permanent by-pass stacks.

Introduction

The purpose of operating in open cycle mode is to prevent instability on the electricity grid by rapidly providing additional short term supply to meet peak demand or where there is a shortfall of available supply from other sources.

Operating gas turbines is not BAT in open cycle mode due to being less energy efficient than closed cycle operation under normal conditions <30% compared with >50%. However open cycle plants can be started up very quickly <15mins, compared with closed cycle plants which take longer, typically 1 to 2 hours to become fully operational and so have a potential role to play in addressing the specific needs of the STOR market.

1) Total number of operating hours allowed per year

Operation under open cycle conditions would be unabated. The LCPD and IED also allows up to 500 hours of unabated operation under emergency conditions in a calendar year for a common stack. The operation of gas turbines in open cycle mode is part of improving the resilience of the electrical supply industry and so contributes to the emergency preparedness of the country.

Therefore operation of gas turbines in unabated open cycle mode cannot exceed 500 hours in any calendar year. We have reviewed the effect on short term air quality from unabated operation to determine whether the maximum period of operation should be further restricted.

We are satisfied that the impact on short term air quality does not require the further reduction of the aggregated period of operation below 500 hours per year. The long term impact from operating for this short period will be insignificant.

Permit condition 2.3.5 restricts annual operation to 500 hours emergency use for a given common stack.

2) Number of operating hours allowed uninterrupted

Because the operation of gas turbines in open cycle mode is less efficient under normal periods of operation, it is necessary to limit the permitted period of uninterrupted operation allowed. The plant will only be permitted to operate

in open cycle mode when it is required to operate to provide electricity to the grid under the balancing arrangements.

It is considered that the period of operation should not normally exceed 2 hours, however it is recognised given the uncertainties of balancing supply and demand on the grid some flexibility around this figure will be needed. We have therefore set two reporting requirements (permit condition 2.3.4) to gather information on open cycle operation:

- Any circumstances of greater than 4 hours; and
- if 10% of the periods of operation in any quarter exceed 2 hours.

The permit condition will require them to notify us of the operation and to give reasons for exceeding the times.

Our view that a time of 2 hours and 4 hours should be the transition point is based on the following factors:

- the energy efficiency of closed cycle operation is far higher than that for open cycle operation which is not considered BAT. Open cycle plants can be brought on line in around 15 minutes, whereas closed cycle plants can take between 1 to 2 hours, nearer 1hr for modern CCGT plants.
- During the start up phase for closed cycle plant, the energy efficiency of open cycle operation compares reasonably favourably with closed cycle operation.

IC5 requires the Operator to submit an update on the BAT assessments with regards to energy efficiency and emissions to air. Information from permit condition 2.3.4 and IC5 will enable us to establish BAT for open cycle operation for emergency use.

3) Air quality

3.1 Human receptors

The Applicant carried out air dispersion modelling using AERMOD to predict the impact from NO_2 emissions.

The modelling was based on 3 gas turbines operating with the de-NOx system, exhausting through the existing 70m stacks with NO_2 at 125mg/m^3 and 1 gas turbine with no de-NOx exhausting through a 20m by-pass stack with NO_2 at 285mg/m^3. The results are shown in table 3.1 below.

Table 3.1.- Impacts at receptors

Reference period	**Receptor**	**EQS**	**PC (µg/m^3)**	**PC as % of EQS**	**Background (µg/m^3)**	**PEC (µg/m^3)**	**PEC as % of EQS**
Annual average	Residential 1	40	0.1	0.3	11.6	11.7	29.3
	Residential 2		0.6	1.5		12.2	30.5

	Farm		1.3	3.2		12.9	32.2
99.8th percentile 1 hour average	Residential 1	200	25.4	12.7	23.2	48.6	24.3
	Residential 2		32.1	16.1		55.3	27.7
	Farm		43.7	21.9		66.9	33.4

The highest short term impact at a receptor is 43.7 µg/m^3. The modelling is a worse case because it assumes that the by-pass stack will not have any NOx abatement, whereas in practice steam from one of the HRSGs is being used.

During start-up de-NOx steam would be unavailable for a short period (up to 1 hour). Even is all turbines emitted at the unabated level of 285mg/m^3 , there is still significant headroom for the PC not to approach the EQS.

3.2 Ecological Sites

There are no Special Areas of Conservation, Special Protection Areas or Ramsar sites within 10km of this installation.

There is one Site of Special Scientific Interest within 2km: Castlethorpe Tufas. It is designated for a geological feature and is therefore not considered further.

There are 6 Local Wildlife Sites (LWS) within 2km of the installation. These are:

- Traffords Covert;
- Scawby Park;
- Farnway & Thirty Foot Drains;
- Newstead Drain;
- Candley Beck, Westrun;
- Silversides Settling Ponds.

The closest sites are Silversides Settling Ponds (~250m) and Newstead Drain (890m). The impacts at these sites are shown in the table below.

Table 3.2.1

LWS	**Substance and reference period**	**Critical level (µg/m^3)**	**PC (µg/m^3)**	**PC as % of EQS**
Silversides Settling Ponds	NOx annual	30	0.6	2
Newstead Drain	NOx annual	30	<0.6	<2

The 24 hr mean for NOx will not be exceeded.

Table 3.2.2

LWS	Substance and reference period	PC
Silversides Settling Ponds	N deposition	0.17 kgN/ha/yr
	Acid deposition	0.01 keq/ha/yr
Newstead Drain	N deposition	<0.17 kgN/ha/yr
	Acid deposition	0.01 keq/ha/yr

Deposition results are very low and unlikely to affect the LWS.

4) Noise

There is the potential for increased noise from the by-pass stack due to a higher exit velocity. A silencer will be fitted to the by-pass stack to mitigate this. Noise monitoring and assessment will be carried out, which will confirm the effectiveness of the silencer.

We are satisfied that measures have been taken to minimise noise.

5) Monitoring and emission limits

The discontinuous nature of operation will make it impractical to arrange annual surveillance tests to meet BS EN 14181 requirements.

The applicant had proposed to carry out monitoring during open cycle to gather information. Due to the infrequent and short nature of open cycle runs, monitoring is not likely to give meaningful results (especially after start-up times have been discounted). In addition the environmental impact of the long and short term emissions is not significant. We have not set monitoring or limits in table S4.1 so the requirements of BS EN 14181 will also not apply. However through IC6, we have required the applicant to report on the feasibility of monitoring and submit results of any monitoring that has been carried out.

6) Emission points

The emission points will be as shown below.

Gas turbine	Emission point in CC mode	Emission point in OC
GT 1a	A1	A1
GT 1b	A2	A2

GT 2a	A3	A3
GT 2b	A4	A4(a)

1. **Annex 1: decision checklist**

This document should be read in conjunction with the, the application and supporting information and permit/ notice.

Aspect considered	Justification / Detail	Criteria met Yes
Consultation		
Scope of consultation	The consultation requirements were identified and implemented. The decision was taken in accordance with RGN 6 High Profile Sites, our Public Participation Statement and our Working Together Agreements. The application was made available to view on our and the local authority public registers, no further consultation was required for this normal variation.	✓
European Directives		
Applicable directives	All applicable European directives have been considered in the determination of the application. The following of are particular note: IPPC, LCPD	✓
The site		
Biodiversity, Heritage, Landscape and Nature Conservation	The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat . A full assessment of the application and its potential to affect the sites has been carried out as part of the permitting process. We consider that the application will not affect the features of the sites. See key issues section for further details.	✓
Environmental Risk Assessment and operating techniques		
Environmental risk	We have reviewed the operator's assessment of the environmental risk from the facility. The operator's risk assessment is satisfactory. See key issues section for further details.	✓
Operating	We have reviewed the techniques used by the operator	✓

Aspect considered	Justification / Detail	Criteria met Yes
techniques	and compared these with the relevant guidance notes. See key issues section for details.	
The permit conditions		
Noise alternative conditions	We consider that the activities carried out at the site have the potential to cause noise and/or vibration that might cause pollution outside the site and consider it appropriate to impose specific measures. See key issues section	✓
Improvement conditions	Based on the information on the application, we consider that we need to impose improvement conditions. IC 5 and 6 have been set, see key issues section for details.	✓
Incorporating the application	We have specified that the applicant must operate the permit in accordance with descriptions in the application, including all additional information received as part of the determination process. These descriptions are specified in the Operating Techniques table in the permit.	✓
Monitoring	We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified. See key issues section	✓
Reporting	We have specified reporting in the permit. We have set reporting on the monitoring from the by-pass stack as well as reporting on the hours of open cycle operation.	✓

Notice of variation with introductory note

Environmental Permitting (England & Wales) Regulations 2010

Centrica Brigg Limited

Glanford Brigg Generating Station
Scawby Brook
Brigg
North Lincolnshire
DN20 9LT

Variation application number

EPR/ZP3133LM/V004

Permit number

EPR/ZP3133LM

Glanford Brigg Generating Station

Permit number EPR/ZP3133LM

Introductory note

This introductory note does not form a part of the notice

The following notice gives notice of the variation of an environmental permit.

The Application is for the power station to operate gas turbines in open cycle mode to enable fast start up so that they can supply emergency power to the National Grid. Plant modifications are required to reduce start-up times, reduce maintenance and aid the National Grid in emergencies.

Most open cycle runs are short and therefore running in combined cycle is not a viable option because the start up times are too long. The current practice is to exhaust the combustion gases via the Heat Recovery Steam Generator (HRSG), but cooling is required. The Applicant wants to install by-pass stacks to allow quicker start-up.

This variation is for one trail by-pass stack. The Operator plans to operate four gas turbines (GTs) in open cycle (OC), three will exhaust via the existing stacks and one via the new by-pass stack. If the trial is successful Centrica may apply for a variation to install four permanent by-pass stacks.

The schedules specify the changes made to the original permit.

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 ZP3133LM (EPR/ZP3133LM/A001)	Received 20/03/2006	
Additional information received	12/07/2007	
Permit Determined (EPR/ZP3133LM)	10/08/2007	
First Variation ZP3538XH (EPR/ZP3133LM/V002)	Determined 01/08/2008	Minor variation
Second Variation (EPR/ZP3133LM/V003)	Determined 15/06/09	Minor variation
Variation Application (EPR/ZP3133LM/V004)	Duly made 02/12/11	Normal variation for open cycle operation and by-pass stack
Schedule 5 notice response	04/07/2012	
Additional information	16/10/2012	Response to draft variation notice
Additional information	02/11/2012	Information regarding emergency use
Additional information	02/12/2012	Response to draft variation notice
Variation issued	18/12/2012	

End of introductory note

Notice of variation

Environmental Permitting (England and Wales) Regulations 2010

The Environment Agency in exercise of its powers under regulation 20 of the Environmental Permitting (England and Wales) Regulations 2010 varies

Permit number
EPR/ZP3133LM

issued to:
Centrica Brigg Limited ("the operator")

whose registered office is

Centrica Brigg Limited
Millstream
Maidenhead Road
Windsor
Berkshire
SL4 5GD
company registration number **2352390**

to operate a regulated facility at

Glanford Brigg Power Station
Scawby Brook
Brigg
North Lincolnshire
DN20 9LT

to the extent set out in the schedules.

The notice shall take effect from 18/12/2012

Name	Date
Kelly Bailey	**18/12/2012**

Authorised on behalf of the Environment Agency

Schedule 1 – conditions to be deleted

None

Schedule 2 – conditions to be amended

The following conditions are amended as a result of the application made by the operator:

1. Table S1.1 is amended to include operation in open cycle mode. The amended table is as follows:

Table S1.1 activities		
Activity listed in Schedule 1 of the PPC 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	Production of electricity from four gas turbines in combined cycle. (Each with a 70m stack). Production of electricity from four gas turbines in open cycle. Three gas turbines using main 70m stacks and 1 gas turbine using a 20m high by-pass stack.	The Operation of a gas fired power station with fuel switching capability (including gas turbines, heat recovery steam generators, electrical generators, oil lubrication systems, water abstraction, air compressors, and high voltage switchgear.) From receipt, handling and on-site storage of raw materials to despatch of products and waste. Open cycle operation using natural gas only.
Directly Associated Activity		
Directly associated activity	Gas oil and biofuel storage	From receipt of raw materials to dispatch for use.
Directly associated activity	Water treatment	From receipt of raw materials to dispatch of treated effluent, process cooling waters and dirty water system to final discharge via bulking reservoir to the New River Ancholme.
Directly associated activity	Surface water drainage	Handling and storage of site drainage via the site surface water system to the bulking reservoir until final discharge to the New River Ancholme .
Directly associated activity	Miscellaneous utility systems (including diesel starters, fire pumps, lubricating and control systems).	From receipt of raw materials to dispatch for use.

Directly associated activity	Auxiliary Boiler with thermal input of approximately 3.4MW	The operation of a gas or gas oil fired boiler. Used primarily for providing de-aerated water for the heat recovery boilers. The boiler is also used for gland sealing and at main start up periods, from receipt of raw materials to handling and dispatch of product for use.
Directly associated activity	Gas Heaters	The operation of gas heating plant from receipt of raw materials to handling and dispatch of product for use.

2. Table S1.2 is amended to include operating techniques associated with this variation. The amended table is as follows:

Table S1.2 Operating techniques

Description	Parts	Date Received
Application	The response to section 2.1and 2.2 in the Application.	20/03/06
Receipt of additional information to the application	Responses to section 2 of application detailing Sump/Bund Inspections, Thermal Input of the Gas Heaters, Cooling Water Pipe-work Flows Underground, Annual Total of Raw Materials Used, Gas Oil Burnt on Site, List of all Vents to Air and Thermal Input of the Auxiliary Boiler.	12/07/07
Variation application EPR/ZP3133LM/V004	• Response to question 3 of application form C3; • Overview of application document section 4	02/12/11
Response to schedule 5 notice for Variation application EPR/ZP3133LM/V004	Paragraph 2 of response to question 5	04/07/12

3. Table S1.3 is amended to remove completed improvement conditions and to add new conditions. The amended table is as follows:

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
IC 5	It is not considered to be BAT to operate a CCGT in OCGT mode other than exceptional circumstances The operator should provide a justification of the circumstances under which it may be BAT to operate a CCGT in open cycle mode in the balancing market or other operating regimes. Parameters to consider should include: ▪ Emissions to air and impact on human health ▪ Energy efficiency The Environment Agency will use this information along with information from other industry and National Grid to determine generic BAT conditions for the open cycle operation of CCGTs in competition with closed cycle plants. The operator should have regard to the requirements of the balancing market (eg. start up time requirements) and define a maximum run time beyond which the service should be provided by high efficiency plant.	01/05/2013

IC6	The Operator shall submit a report on the feasibility of carrying out emissions monitoring during open cycle operation. The report shall include results from any monitoring that has been carried out during open cycle operation and how the results would relate to possible emission limit values.	01/05/2013

4. The schedule 4 introductory note is amended to include definition of open cycle start-up.

Schedule 4 – Emissions and monitoring

Note

For the purposes of this Schedule, the following interpretations shall apply:

- For the continuous measurement systems fitted to the LCP release points A1, A2, A3 and A4 defined in Table S4.1, the validated hourly 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 of a single measured result shall be taken to be 20%.

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.

Combined cycle Start-up: the period required to establish production of de-NOx steam in relation to the previous operational period of the gas turbines.

Start Type	**Previous Non-Operational Period**	**Time to comply with limits specified in Table S4.1(a)**
Cold Start	>48 hours	Within 6 hours
Warm Start	10 – 48 hours	Within 4 hours
Hot Start	<10 hours	Within 3 hours

Open Cycle start-up

The period required to establish stable operation of the gas turbines is 20 minutes

5. Table S4.1(a) is amended by the addition of the following row to include emission point A4a.

Table S4.1(a) Point source emissions to air from Gas Turbines						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A4a [SE 99182 06013]	No parameters set	Gas turbine GT2b via by-pass stack, during open cycle operation	No limits set	-	-	-

6. Table S5.3 is amended to include the reporting of periods of open cycle operation. The amended table is as follows:

Table S5.3 Performance parameters		
Parameter	Frequency of assessment	Units
Water usage	Annually	M^3
Gas usage	Annually	MJ related to Net CV
Gas oil usage	Annually	MJ related to Net CV
Biofuel usage	Annually	MJ related to Net CV
Gas usage per MWhr generation	Annually	M^3/MWhr
Gas oil running time	Annually	Hours
Biofuel running time	Annually	Hours
Total annual emissions of Nitrogen Dioxide	Annually	tonnes/MWHrs
Total annual emissions of Sulphur Dioxide	Annually	tonnes/MWHrs
Total annual emissions dust (as total suspended particles)	Annually	tonnes/MWHrs
Electricity (incoming)	Annually	MWhrs
Open cycle operating hours for emission points A1, A2, A3, A4, A4(a)	Every Quarter	Total hours, total number of runs, duration of longest run and number of runs >2 hrs duration.

Schedule 3 – conditions to be added

The following conditions are added:

2.3.4 Where:

a) 10% of open cycle operations in a quarter exceed 2 hours in length; or

b) Any open cycle operation exceeds 4 hours in length;

the Operator shall notify the Environment Agency in writing, as soon as possible, specifying the time, date and duration of the run(s), and the reasons and purpose for which the run(s) was (were) required

2.3.5 In any calendar year open cycle operation shall not exceed 500 hours emergency use for a given common stack.

2.3.6 During a period of open cycle operation, the emission limit values and monitoring in schedule 4, table S4.1(a) shall not apply for a given turbine.

The following definition is added to schedule 6

"open cycle operation" means operation where the steam turbine is not being used to generate electricity or the steam turbine is being by-passed, from when start-up is completed until shut down is commenced.

"start-up" for open cycle operation, this means the period to achieve stable operation which is twenty minutes.

Environment Agency permitting decisions

Bespoke Variation

We have decided to issue variation for Glanford Brigg Generating Station operated by Centrica Brigg Limited

The variation number is EPR/ZP3133LM/V004

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

Purpose of this document

This decision document:

- explains how the application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account
- justifies the specific conditions in the permit other than those in our generic permit template.

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Structure of this document

- Key issues
- Annex 1 the decision checklist

Key issues of the decision

Details of variation

The Application is for the power station to operate gas turbines in open cycle mode to enable fast start up so that they can supply emergency power to the grid Plant modifications are required to reduce start-up times, reduce maintenance and aid the National Grid in emergencies.

Most runs are short and therefore running in combined cycle is not a viable option because the start up times are too long. The current practice is to exhaust via the Heat Recovery Steam Generator (HRSG) for which cooling is required. The Applicant wants to install by-pass stacks to allow quicker start-up.

This variation is for one trail by-pass stack. They plan to operate four gas turbines (GTs) in open cycle (OC), three will exhaust via the existing stacks and one via new by-pass stack. The de-NOx system will not be available on the by-pass stack. The trial will be used to assess the effectiveness of the by-pass, including investigating NOx abatement measures. If the trial is successful Centrica will apply for a variation to install four permanent by-pass stacks.

Introduction

The purpose of operating in open cycle mode is to prevent instability on the electricity grid by rapidly providing additional short term supply to meet peak demand or where there is a shortfall of available supply from other sources.

Operating gas turbines is not BAT in open cycle mode due to being less energy efficient than closed cycle operation under normal conditions <30% compared with >50%. However open cycle plants can be started up very quickly <15mins, compared with closed cycle plants which take longer, typically 1 to 2 hours to become fully operational and so have a potential role to play in addressing the specific needs of the STOR market.

1) Total number of operating hours allowed per year

Operation under open cycle conditions would be unabated. The LCPD and IED also allows up to 500 hours of unabated operation under emergency conditions in a calendar year for a common stack. The operation of gas turbines in open cycle mode is part of improving the resilience of the electrical supply industry and so contributes to the emergency preparedness of the country.

Therefore operation of gas turbines in unabated open cycle mode cannot exceed 500 hours in any calendar year. We have reviewed the effect on short term air quality from unabated operation to determine whether the maximum period of operation should be further restricted.

We are satisfied that the impact on short term air quality does not require the further reduction of the aggregated period of operation below 500 hours per year. The long term impact from operating for this short period will be insignificant.

Permit condition 2.3.5 restricts annual operation to 500 hours emergency use for a given common stack.

2) Number of operating hours allowed uninterrupted

Because the operation of gas turbines in open cycle mode is less efficient under normal periods of operation, it is necessary to limit the permitted period of uninterrupted operation allowed. The plant will only be permitted to operate

in open cycle mode when it is required to operate to provide electricity to the grid under the balancing arrangements.

It is considered that the period of operation should not normally exceed 2 hours, however it is recognised given the uncertainties of balancing supply and demand on the grid some flexibility around this figure will be needed. We have therefore set two reporting requirements (permit condition 2.3.4) to gather information on open cycle operation:

- Any circumstances of greater than 4 hours; and
- if 10% of the periods of operation in any quarter exceed 2 hours.

The permit condition will require them to notify us of the operation and to give reasons for exceeding the times.

Our view that a time of 2 hours and 4 hours should be the transition point is based on the following factors:

- the energy efficiency of closed cycle operation is far higher than that for open cycle operation which is not considered BAT. Open cycle plants can be brought on line in around 15 minutes, whereas closed cycle plants can take between 1 to 2 hours, nearer 1hr for modern CCGT plants.
- During the start up phase for closed cycle plant, the energy efficiency of open cycle operation compares reasonably favourably with closed cycle operation.

IC5 requires the Operator to submit an update on the BAT assessments with regards to energy efficiency and emissions to air. Information from permit condition 2.3.4 and IC5 will enable us to establish BAT for open cycle operation for emergency use.

3) Air quality

3.1 Human receptors

The Applicant carried out air dispersion modelling using AERMOD to predict the impact from NO_2 emissions.

The modelling was based on 3 gas turbines operating with the de-NOx system, exhausting through the existing 70m stacks with NO_2 at 125mg/m^3 and 1 gas turbine with no de-NOx exhausting through a 20m by-pass stack with NO_2 at 285mg/m^3. The results are shown in table 3.1 below.

Table 3.1.- Impacts at receptors

Reference period	**Receptor**	**EQS**	**PC (µg/m^3)**	**PC as % of EQS**	**Background (µg/m^3)**	**PEC (µg/m^3)**	**PEC as % of EQS**
Annual average	Residential 1	40	0.1	0.3	11.6	11.7	29.3
	Residential 2		0.6	1.5		12.2	30.5

	Farm		1.3	3.2		12.9	32.2
99.8th percentile 1 hour average	Residential 1	200	25.4	12.7	23.2	48.6	24.3
	Residential 2		32.1	16.1		55.3	27.7
	Farm		43.7	21.9		66.9	33.4

The highest short term impact at a receptor is 43.7 µg/m^3. The modelling is a worse case because it assumes that the by-pass stack will not have any NOx abatement, whereas in practice steam from one of the HRSGs is being used.

During start-up de-NOx steam would be unavailable for a short period (up to 1 hour). Even is all turbines emitted at the unabated level of 285mg/m^3 , there is still significant headroom for the PC not to approach the EQS.

3.2 Ecological Sites

There are no Special Areas of Conservation, Special Protection Areas or Ramsar sites within 10km of this installation.

There is one Site of Special Scientific Interest within 2km: Castlethorpe Tufas. It is designated for a geological feature and is therefore not considered further.

There are 6 Local Wildlife Sites (LWS) within 2km of the installation. These are:

- Traffords Covert;
- Scawby Park;
- Farnway & Thirty Foot Drains;
- Newstead Drain;
- Candley Beck, Westrun;
- Silversides Settling Ponds.

The closest sites are Silversides Settling Ponds (~250m) and Newstead Drain (890m). The impacts at these sites are shown in the table below.

Table 3.2.1

LWS	**Substance and reference period**	**Critical level (µg/m^3)**	**PC (µg/m^3)**	**PC as % of EQS**
Silversides Settling Ponds	NOx annual	30	0.6	2
Newstead Drain	NOx annual	30	<0.6	<2

The 24 hr mean for NOx will not be exceeded.

Table 3.2.2

LWS	Substance and reference period	PC
Silversides Settling Ponds	N deposition	0.17 kgN/ha/yr
	Acid deposition	0.01 keq/ha/yr
Newstead Drain	N deposition	<0.17 kgN/ha/yr
	Acid deposition	0.01 keq/ha/yr

Deposition results are very low and unlikely to affect the LWS.

4) Noise

There is the potential for increased noise from the by-pass stack due to a higher exit velocity. A silencer will be fitted to the by-pass stack to mitigate this. Noise monitoring and assessment will be carried out, which will confirm the effectiveness of the silencer.

We are satisfied that measures have been taken to minimise noise.

5) Monitoring and emission limits

The discontinuous nature of operation will make it impractical to arrange annual surveillance tests to meet BS EN 14181 requirements.

The applicant had proposed to carry out monitoring during open cycle to gather information. Due to the infrequent and short nature of open cycle runs, monitoring is not likely to give meaningful results (especially after start-up times have been discounted). In addition the environmental impact of the long and short term emissions is not significant. We have not set monitoring or limits in table S4.1 so the requirements of BS EN 14181 will also not apply. However through IC6, we have required the applicant to report on the feasibility of monitoring and submit results of any monitoring that has been carried out.

6) Emission points

The emission points will be as shown below.

Gas turbine	Emission point in CC mode	Emission point in OC
GT 1a	A1	A1
GT 1b	A2	A2

GT 2a	A3	A3
GT 2b	A4	A4(a)

1. **Annex 1: decision checklist**

This document should be read in conjunction with the, the application and supporting information and permit/ notice.

Aspect considered	Justification / Detail	Criteria met Yes
Consultation		
Scope of consultation	The consultation requirements were identified and implemented. The decision was taken in accordance with RGN 6 High Profile Sites, our Public Participation Statement and our Working Together Agreements. The application was made available to view on our and the local authority public registers, no further consultation was required for this normal variation.	✓
European Directives		
Applicable directives	All applicable European directives have been considered in the determination of the application. The following of are particular note: IPPC, LCPD	✓
The site		
Biodiversity, Heritage, Landscape and Nature Conservation	The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat . A full assessment of the application and its potential to affect the sites has been carried out as part of the permitting process. We consider that the application will not affect the features of the sites. See key issues section for further details.	✓
Environmental Risk Assessment and operating techniques		
Environmental risk	We have reviewed the operator's assessment of the environmental risk from the facility. The operator's risk assessment is satisfactory. See key issues section for further details.	✓
Operating	We have reviewed the techniques used by the operator	✓

Aspect considered	Justification / Detail	Criteria met Yes
techniques	and compared these with the relevant guidance notes. See key issues section for details.	
The permit conditions		
Noise alternative conditions	We consider that the activities carried out at the site have the potential to cause noise and/or vibration that might cause pollution outside the site and consider it appropriate to impose specific measures. See key issues section	✓
Improvement conditions	Based on the information on the application, we consider that we need to impose improvement conditions. IC 5 and 6 have been set, see key issues section for details.	✓
Incorporating the application	We have specified that the applicant must operate the permit in accordance with descriptions in the application, including all additional information received as part of the determination process. These descriptions are specified in the Operating Techniques table in the permit.	✓
Monitoring	We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified. See key issues section	✓
Reporting	We have specified reporting in the permit. We have set reporting on the monitoring from the by-pass stack as well as reporting on the hours of open cycle operation.	✓

Variation notice with introductory note

Environmental Permitting (England & Wales) Regulations 2007

Glanford Brigg Generating Station

Centrica Brigg Ltd
Scawby Brook
Brigg
North Lincolnshire
DN20 9LT

Variation notice number

EA/EPR/ZP3133LM/V003

Permit number

ZP3133LM

Glanford Brigg Generating Station
Permit Number ZP3133LM

Introductory note

This introductory note does not form a part of the permit

The following notice, which is issued pursuant to regulation 20 and Part 1 of Schedule 5 of the Environmental Permitting (England and Wales) Regulations S.I.2007 No. 3538 (the Regulations), gives notice of the variation of an environmental permit to operate a regulated facility.

A non-technical description of the installation is given in the Application, but the main features of the installation are as follows.

Located on the south-western outskirts of Brigg at Scawby Brook in North Lincolnshire with a national grid reference SE 499850 40610. The installation covers an area of approximately seven hectares and is relatively flat. Land surrounding the site is predominantly farmland. To the south are fields and a local railway track. The New River Ancholme is immediately to the east of the site and beyond this farmland. To the north-east is Island Carr Farm and directly beyond this is mill View Caravan site. To the north of the site are settling ponds, beyond this are some residential properties, a sports ground and leisure centre. To the west of the site is the main site access road which passes through open farmland where it meets Scawby Road.

The installation was commissioned in 1993 to supply electricity to the National grid. The main operational processes at the installation consist of two combined Cycle Gas Turbine (CCGT) modules. Each module is comprised of two gas turbines (each turbine driving an electrical generator), two heat recovery boilers and one steam turbine. The applicant is carrying out activities to Schedule 1 of the PPC Regulations covered by the description in Section 1.1 A(1)(a) - “Burning any fuel in an appliance with a rated thermal input of 50 megawatts or more”.

The turbines burn natural gas with gas oil as a back up fuel. The operator also has the capability to burn biofuel and will use this fuel as a stand-by alternative. Gas is delivered to the site directly from a National Grid compound located within the site boundary. The gas compound is operated and controlled solely by National Grid and the compound does not form part of the installation boundary. Gas oil and biofuel are delivered to the site in road tankers.

The station employs steam injection to suppress emissions of Oxides of Nitrogen (NOx) during combustion. Each gas turbine exhausts through a heat recovery boiler with the combined steam output passing to a condensing steam turbine. All electrical capacity is exported to the National Grid less a parasitic station load. Total output from the gas turbines and steam turbine is approximately 240 MW. The power station generally operates on a two shift basis and is demand led.

An auxiliary boiler of approximately 3.4 MW thermal input provides de-aerated water for the heat recovery boilers and boiler drum pacification for whole plant shut down. The boiler also provides gland steam during start up. The fuel for boiler operation is either gas or gas oil. Along with gas turbines the Operator will also have the capability to burn biofuel in the auxiliary boiler as a standby fuel.

The majority of water used at the site is for process cooling and is abstracted from the New River Ancholme. Process cooling water is provided by two banks of forced draught cooling towers. The water is circulated through condensers and then the cooling towers before being collected in a below ground channel/sump. Silt is then removed from the channels and discharged off site by licensed contractors under duty of care.

A water treatment plant treats incoming water after filtration, from the New River Ancholme with town mains water backup prior to distribution to an on-site demineralised water storage facility. Waste water is discharged off site via a bulking reservoir.

The main environmental issues at the site are emissions to air from combustion activities and the discharge of process cooling waters and surface water to the New River Ancholme.

The primary emission to air from this type of installation is NOx. The daily averages for NOx emissions are within benchmark sector limits for the type of abatement technology employed. Pollution potential via emissions to water is minimised by careful raw materials selection criteria.

The installation has the potential to generate noise. However, noise levels are within guidelines and there is no history of public complaint.

There is little waste produced due to the type of installation. The quantity of waste does not generally exceed 400 tonnes per annum resulting from a variety of activities including maintenance programmes, cleaning operations and water treatment.

There are no European sites within 15km of the installation. There is a SSSI within 2km of the site, Castlethorpe Tufas, which has been screened with emissions having no significant impact.

The installation is a low tier COMAH site due to the quantity of gas oil stored on site.

The Operator operates an environmental management system with accreditation to ISO14001.

Schedule 1 of this notice lists any deleted conditions, Schedule 2 lists any amended conditions and Schedule 3 lists any conditions that have been added.

Status Log of the permit		
Detail	Date	Response Date
Application ZP3133LM	Received 20/03/2006	
Additional information received	12/07/2007	
Permit Determined	10/08/2007	
Permit BK5053IW	Determined 20/07/2001	
First Variation ZP3538XH (minor)	Determined 01/08/2008	
Second Variation EA/EPR/ZP3133LM/V003 (minor)	Determined 15/06/09	

End of Introductory Note

Notice of variation

Environmental Permitting
(England and Wales) Regulations 2007

Permit number
ZP3133LM

The Environment Agency in exercise of its powers under Regulation 20 of the Environmental Permitting (England and Wales) Regulations 2007 (SI 2000 No 3538) varies the permit as set out below.

Centric Brigg Ltd ("the operator"),

whose registered office is

Millstream
Maidenhead
Windsor
Berkshire
SL4 5GD

company registration number **2352390**

to operate an installation at

Glanford Brigg Power Station
Scawby Brook
Brigg
North Lincolnshire
DN20 9LT

and that permit is varied to the extent set out in Schedules 1 to 3 of this notice.

The notice shall take effect from 15 June 2009

Name	Date
K E MORGAN	

Authorised on behalf of the Agency

Schedule 1 – conditions to be deleted

1. None

Schedule 2 – conditions to be amended

2. The following conditions are amended as follows

Table S1.1 shall be amended as follows:

Table S1.1 activities		
Activity listed in Schedule 1 of the PPC 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	Production of electricity from four gas turbines. (Each with a 70m stack).	The Operation of a gas fired power station with fuel switching capability (including gas turbines, heat recovery steam generators, electrical generators, oil lubrication systems, water abstraction, air compressors, and high voltage switchgear.) From receipt, handling and on-site storage of raw materials to despatch of products and waste.
Directly Associated Activity		
Directly associated activity	Gas oil and biofuel storage	From receipt of raw materials to dispatch for use.
Directly associated activity	Water treatment	From receipt of raw materials to dispatch of treated effluent, process cooling waters and dirty water system to final discharge via bulking reservoir to the New River Ancholme.
Directly associated activity	Surface water drainage	Handling and storage of site drainage via the site surface water system to the bulking reservoir until final discharge to the New River Ancholme .
Directly associated activity	Miscellaneous utility systems (including diesel starters, fire pumps, lubricating and control systems).	From receipt of raw materials to dispatch for use.
Directly associated activity	Auxiliary Boiler with thermal input of approximately 3.4MW	The operation of a gas or gas oil fired boiler. Used primarily for providing de-aerated water for the heat recovery boilers. The boiler is also used for gland sealing and at main start up periods, from receipt of raw materials to handling and dispatch of product for use.
Directly associated activity	Gas Heaters	The operation of gas heating plant from receipt of raw materials to handling and dispatch of product for use.

Schedule 3 – conditions to be added

3. None

Variation Notice with introductory note

Pollution Prevention and Control (England & Wales) Regulations 2000

Glanford Brigg Generating Station

Centrica Brigg Ltd
Scawby Brook
Brigg
North Lincolnshire
DN20 9LT

Variation Notice Number
ZP3538XH

Permit number

ZP3133LM

Glanford Brigg Generating Station

Permit Number ZP3133LM/ZP3538XH

Introductory note

This introductory note does not form a part of the permit

The following notice is issued under regulation 17 of The Pollution Prevention and Control (England and Wales) Regulations 2000 (S.I.2000 No. 1973 (as amended) (the Regulations) to vary the conditions of a permit issued under the Regulations to operate an installation. The notice comprises schedule 1 containing conditions to be deleted, schedule 2 conditions to be amended and schedule 3 conditions to be added.

This minor variation is to define start-up and shutdown.

Status Log

Detail	Date	Comment
Application ZP3133LM	Received 20/03/2006	
Additional information received	12/07/2007	
Permit Determined	10/08/2007	
Permit BK5053IW	Determined 20/07/2001	
First Variation ZP3538XH (minor)	Determined 01/08/2008	

A non-technical description of the installation is given in the Application, but the main features of the installation are as follows.

Located on the south-western outskirts of Brigg at Scawby Brook in North Lincolnshire with a national grid reference SE 499850 40610. The installation covers an area of approximately seven hectares and is relatively flat. Land surrounding the site is predominantly farmland. To the south are fields and a local railway track. The New River Ancholme is immediately to the east of the site and beyond this farmland. To the north-east is Island Carr Farm and directly beyond this is mill View Caravan site. To the north of the site are settling ponds, beyond this are some residential properties, a sports ground and leisure centre. To the west of the site is the main site access road which passes through open farmland where it meets Scawby Road.

The installation was commissioned in 1993 to supply electricity to the National grid. The main operational processes at the installation consist of two combined Cycle Gas Turbine (CCGT) modules. Each module is comprised of two gas turbines (each turbine driving an electrical generator), two heat recovery boilers and one steam turbine. The applicant is carrying out activities to Schedule 1 of the PPC Regulations covered by the description in Section 1.1 A(1)(a) - “Burning any fuel in an appliance with a rated thermal input of 50 megawatts or more”.

The turbines burn natural gas with gas oil as a back up fuel. The operator also has the capability to burn biofuel and will use this fuel as a stand-by alternative. Gas is delivered to the site directly from a National Grid compound located within the site boundary. The gas compound is operated and controlled solely by National Grid and the compound does not form part of the installation boundary. Gas oil and biofuel are delivered to the site in road tankers.

The station employs steam injection to suppress emissions of Oxides of Nitrogen (NOx) during combustion. Each gas turbine exhausts through a heat recovery boiler with the combined steam output passing to a condensing steam turbine. All electrical capacity is exported to the National Grid less a parasitic station load. Total output from the gas turbines and steam turbine is approximately 240 MW. The power station generally operates on a two shift basis and is demand led.

An auxiliary boiler of approximately 3.4 MW thermal input provides de-aerated water for the heat recovery boilers and boiler drum pacification for whole plant shut down. The boiler also provides gland steam during start up. The only fuel for boiler operations is gas oil. Along with gas turbines the Operator will also have the capability to burn biofuel in the auxiliary boiler as a standby fuel.

The majority of water used at the site is for process cooling and is abstracted from the New River Ancholme. Process cooling water is provided by two banks of forced draught cooling towers. The water is circulated through condensers and then the cooling towers before being collected in a below ground channel/sump. Silt is then removed from the channels and discharged off site by licensed contractors under duty of care.

A water treatment plant treats incoming water after filtration, from the New River Ancholme with town mains water backup prior to distribution to an on-site demineralised water storage facility. Waste water is discharged off site via a bulking reservoir.

The main environmental issues at the site are emissions to air from combustion activities and the discharge of process cooling waters and surface water to the New River Ancholme.

The primary emission to air from this type of installation is NOx. The daily averages for NOx emissions are within benchmark sector limits for the type of abatement technology employed. Pollution potential via emissions to water is minimised by careful raw materials selection criteria.

The installation has the potential to generate noise. However, noise levels are within guidelines and there is no history of public complaint.

There is little waste produced due to the type of installation. The quantity of waste does not generally exceed 400 tonnes per annum resulting from a variety of activities including maintenance programmes, cleaning operations and water treatment.

There are no European sites within 15km of the installation. There is a SSSI within 2km of the site, Castlethorpe Tufas, which has been screened with emissions having no significant impact.

The installation is a low tier COMAH site due to the quantity of gas oil stored on site.

The Operator operates an environmental management system with accreditation to ISO14001.

End of Introductory Note.

Variation Notice

Permit number
ZP3133LM
Variation number
ZP3538XH

The Environment Agency (the Agency) in exercise of its powers under Regulation 17 of the Pollution Prevention and Control (England and Wales) Regulations 2000 (SI 2000 No 1973) hereby varies the permit held by you
Centric Brigg Ltd ("the operator"),

whose registered office is

Millstream
Maidenhead
Windsor
Berkshire
SL4 5GD

company registration number **2352390**

to operate an installation at

Glanford Brigg Power Station
Scawby Brook
Brigg
North Lincolnshire
DN20 9LT

to the extent set out in schedules 1 to 3 of this variation notice .

The notice shall take effect from 01/08/2008.

Signed	Date

ROGER ASHFORD – (ACTING) NORTHERN AREA MANAGER

Authorised to sign on behalf of the Agency

SCHEDULE 1 – CONDITIONS TO BE DELETED

1. All conditions and schedules are deleted

SCHEDULE 2 – CONDITIONS TO BE AMENDED

2. None

SCHEDULE 3 – CONDITIONS TO BE ADDED

3. The following conditions are added to the permit

   Conditions 1, 2, 3, 4 and Schedules 1, 2, 3, 4, 5, 6, 7 inclusive.

Conditions

1 Management

1.1 General management

1.1.1 The activities shall be managed and operated:

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

(b) by sufficient persons who are competent in respect of the responsibilities to be undertaken by them in connection with the operation of the activities.

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 Accidents that may cause pollution

1.2.1 The operator shall:

(a) maintain and implement an accident management plan;

(b) review and record at least every 4 years or as soon as practicable after an accident, (whichever is the earlier) whether changes to the plan should be made;

(c) make any appropriate changes to the plan identified by a review.

1.3 Energy efficiency

1.3.1 The operator shall:

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

(b) review and record at least every 4 years whether there are suitable opportunities to improve the energy efficiency of the activities; and

(c) take any further appropriate measures by a review.

1.4 Efficient use of raw materials

1.4.1 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 4 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 appropriate further measures identified by a review.

1.5 Avoidance, recovery and disposal of wastes produced by the activities

1.5.1. The operator shall:

(a) take appropriate measures to ensure that waste produced by the activities is avoided or reduced, or where waste is produced it is recovered wherever practicable or otherwise disposed of in a manner which minimises its impact on the environment;

(b) review and record at least every 4 years whether changes to those measures should be made; and

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

1.6 Site security

1.6.1. Site security measures shall prevent unauthorised access to the site, as far as practicable.

2. Operations

2.1 Permitted activities

2.1.1 The operator is 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 2 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 Agency.

2.3.2 Subject to condition 2.3.3 no raw materials or fuels listed in schedule 3 table S3.1 shall be used unless they comply with the specifications set out in that table.

2.3.3 Standby fuel gas oil and biofuel may be used but for no more than 1080 hours per year.

2.4 Off-site conditions

There are no off-site conditions under this section.

2.5 Improvement programme

2.5.1 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 Agency.

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

2.6 Pre-operational conditions

There are no pre-operational conditions in this permit.

2.7 Closure and decommissioning

2.7.1 The operator shall maintain and operate the activities so as to prevent or where that is not practicable, to minimise, any pollution risk on closure and decommissioning.

2.7.2 The operator shall maintain a site closure plan which demonstrates how the activities can be decommissioned to avoid any pollution risk and return the site to a satisfactory state.

2.7.3 The operator shall carry out and record a review of the site closure plan at least every 4 years.

2.7.4 The site closure plan (or relevant part thereof) shall be implemented on final cessation or decommissioning of the activities or part thereof.

2.8 Site protection and monitoring programme

2.8.1 The operator shall, within 2 months of the issue of this permit, submit a site protection and monitoring programme.

2.8.2 The operator shall implement and maintain the site protection and monitoring programme and shall carry out and record a review of it at least every 4 years.

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 4 tables S4.1, S4.2 and S4.3.

3.1.2 The limits given in schedule 4 shall not be exceeded.

3.2 Transfers off-site

3.2.1 Records of all the wastes sent off site from the activities, for either disposal or recovery, shall be maintained.

3.3 Fugitive emissions of substances

3.3.1 Fugitive emissions of substances (excluding odour, noise and vibration) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, have been taken to prevent or where that is not practicable, to minimise, those emissions.

3.3.2 All liquids, 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.

3.4 Odour

3.4.1 Emissions from the activities shall be free from odour at levels likely to cause annoyance outside the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures, to prevent or where that is not practicable to minimise the odour.

3.5 Noise and vibration

3.5.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause annoyance outside the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures, to prevent or where that is not practicable to minimise the noise and vibration.

3.6 Monitoring

3.6.1 The operator shall, unless otherwise agreed in writing by the Agency, undertake the monitoring specified in the following tables in schedule 4 to this permit:

(a) point source emissions specified in tables S4.1, S4.2 and S4.3;

3.6.2 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.

3.6.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme in condition 3.6.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate) unless otherwise agreed in writing by the Agency.

3.6.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 4 tables S4.1, S4.2 and S4.3 unless otherwise specified in that schedule.

3.6.5 Within 6 months of the issue of this permit (unless otherwise agreed in writing by the Agency) the site reference data identified in the site protection and monitoring programme shall be collected and submitted to the Agency.

3.7 Monitoring for the purposes of the Large Combustion Plant Directive

3.7.1 All LCP monitoring required by this permit shall be carried out in accordance with the provisions of Annex VIII of the Large Combustion Plant Directive.

3.7.2 If the monitoring results for more than 10 days a year are invalidated within the meaning set out in Schedule 4, the Operator shall:

(a) within 28 days of becoming aware of this fact, review the causes of the invalidations and submit to the 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 measures.

3.7.3 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.

3.7.4 Unless otherwise agreed in writing by the Agency in accordance with condition 3.7.5 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.

3.7.5 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 Agency.

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

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 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) the site protection and monitoring programme.

4.1.2 Any records required to be made by this permit shall be supplied to the Agency within 14 days where the records have been requested in writing by the Agency.

4.1.3 All records required to be held by this permit shall be held on the installation and shall be available for inspection by the Agency at any reasonable time.

4.2 Reporting

4.2.1 A report or reports on the performance of the activities over the previous year shall be submitted to the Agency by 31 January (or other date agreed in writing by the 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 this permit against the relevant assumptions, parameters and results in the assessment of the impact of the emissions submitted with the application;

(b) where the operator's management system encompasses annual improvement targets, a summary report of the previous year's progress against such targets;

(c) the annual production /treatment data set out in schedule 5 table S5.2;

(d) the performance parameters set out in schedule 5 table S5.3 using the forms specified in table S5.4 of that schedule; and

(e) details of any contamination or decontamination of the site which has occurred.

4.2.2 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the 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 5 table S5.1;

(b) for the reporting periods specified in schedule 5 table S5.1 and using the forms specified in schedule 5 table S5.4 ; and

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

4.2.3 The operator shall, unless notice under this condition has been served within the preceding 4 years, submit to the Agency, within 6 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.

4.2.4 All reports and notifications required by the permit shall be sent to the Agency using the contact details supplied in writing by the Agency

4.2.5 The results of reviews and any changes made to the site protection and monitoring programme shall be reported to the Agency, within 28 days of the review or change

4.3 Notifications

4.3.1 The Agency shall be notified without delay following the detection of:

(a) any malfunction, breakdown or failure of equipment or techniques, accident, or fugitive emission which has caused, is causing or may cause significant pollution;

(b) the breach of a limit specified in the permit;

(c) any significant adverse environmental effects.

4.3.2 Any information provided under condition 4.3.1 shall be confirmed by sending the information listed in schedule 6 to this permit within the time period specified in that schedule.

4.3.3 Prior written notification shall be given to the Agency of the following events and in the specified timescales:

(a) as soon as practicable prior to the permanent cessation of any of the activities;

(b) cessation of operation of part or all of the activities for a period likely to exceed 1 year; and

(c) resumption of the operation of part or all of the activities after a cessation notified under (b) above.

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

4.3.5 Where the 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 Agency when the relevant monitoring is to take place. The operator shall provide this information to the Agency at least 14 days before the date the monitoring is to be undertaken.

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

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

(b) any change to particulars of the operator's ultimate holding company (including details of an ultimate holding company where an operator has become a subsidiary); and

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

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Notification of Closure of Large Combustion Plant.

4.3.7 From 1 January 2008 the operator shall inform the 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 7 shall have the meaning given in that schedule.

Schedule 1 - Operations

Table S1.1 activities		
Activity listed in Schedule 1 of the PPC 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	Production of electricity from four gas turbines. (Each with a 70m stack).	The Operation of a gas fired power station with fuel switching capability (including gas turbines, heat recovery steam generators, electrical generators, oil lubrication systems, water abstraction, air compressors, and high voltage switchgear.) From receipt, handling and on-site storage of raw materials to despatch of products and waste.
Directly Associated Activity		
Directly associated activity	Gas oil and biofuel storage	From receipt of raw materials to dispatch for use.
Directly associated activity	Water treatment	From receipt of raw materials to dispatch of treated effluent, process cooling waters and dirty water system to final discharge via bulking reservoir to the New River Ancholme.
Directly associated activity	Surface water drainage	Handling and storage of site drainage via the site surface water system to the bulking reservoir until final discharge to the New River Ancholme .
Directly associated activity	Miscellaneous utility systems (including diesel starters, fire pumps, lubricating and control systems).	From receipt of raw materials to dispatch for use.
Directly associated activity	Auxiliary Boiler with thermal input of approximately 3.4MW	The operation of a gas oil fired boiler. Used primarily for providing de-aerated water for the heat recovery boilers. The boiler is also used for gland sealing and at main start up periods, from receipt of raw materials to handling and dispatch of product for use.
Directly associated activity	Gas Heaters	The operation of gas heating plant from receipt of raw materials to handling and dispatch of product for use.

Table S1.2 Operating techniques		
Description	Parts	Date Received
Application	The response to section 2.1and 2.2 in the Application.	20/03/06
Receipt of additional information to the application	Responses to section 2 of application detailing Sump/Bund Inspections, Thermal Input of the Gas Heaters, Cooling Water Pipe-work Flows Underground, Annual Total of Raw Materials Used, Gas Oil Burnt on Site, List of all Vents to Air and Thermal Input of the Auxiliary Boiler.	12/07/07

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC 1	The Operator shall confirm completion of the Reverse Osmosis (RO) installation. If the installation is not completed at permit issue the Operator shall submit in writing a date for completion of all work. On completion of all work the Operator shall inform Agency.	One month from permit issue.
IC 2	A written procedure shall be submitted to the agency 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 3.6.3. The notification requirements of condition 2.5.2 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 the Agency	Completed
IC 3	A written plan shall be submitted to the Agency for approval detailing the results of an assessment of the the primary, secondary and tertiary containment arrangements against the requirements of section 2.2.9 of the Technical Guidance Note V2.03 IPPC Sector Guidance Note for Combustion Activities" 27/7/05. A written report summarising the findings, together with a timetable for any improvements identified will be submitted to the Environment Agency. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the report. The plan shall be implemented by the operator from the date of approval by the Agency.	31/12/08
IC 4	The Operator shall undertake a review of the Best Available Techniques listed within the Combustion Sector Technical Guidance Note (TGN) IPPC S1.01 Section 2 for Oxides of Nitrogen which will enable them to achieve the Emission Limit Values given within the TGN for the release to air from gas turbines No. 1A & 1B and No. 2A & 2B (emission points A1 – A4) burning natural gas, gas oil and biofuel. The review shall include, but not be limited to, all of the relevant techniques listed within the TGN, the reduction in the level of pollutants (for each option) and the costs of achieving the reduction (for each option). The report shall include a timetable to implement any proposed changes as appropriate. The Operator shall implement the proposals as agreed in writing with the Environment Agency.	31/07/09

Schedule 2 - Site plan

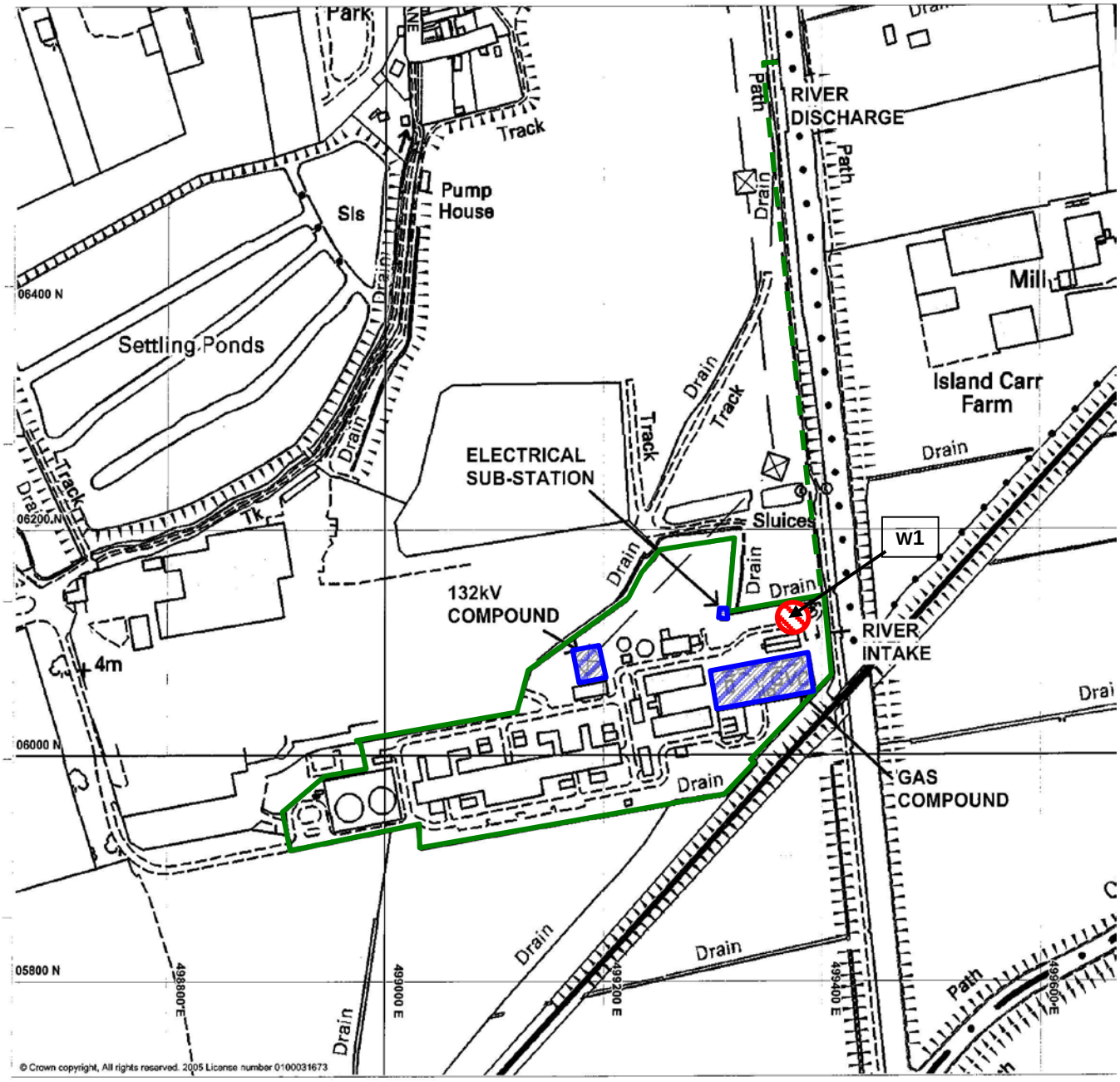

Fig 1

"Reproduced from the Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office ©Crown Copyright 2000. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings."

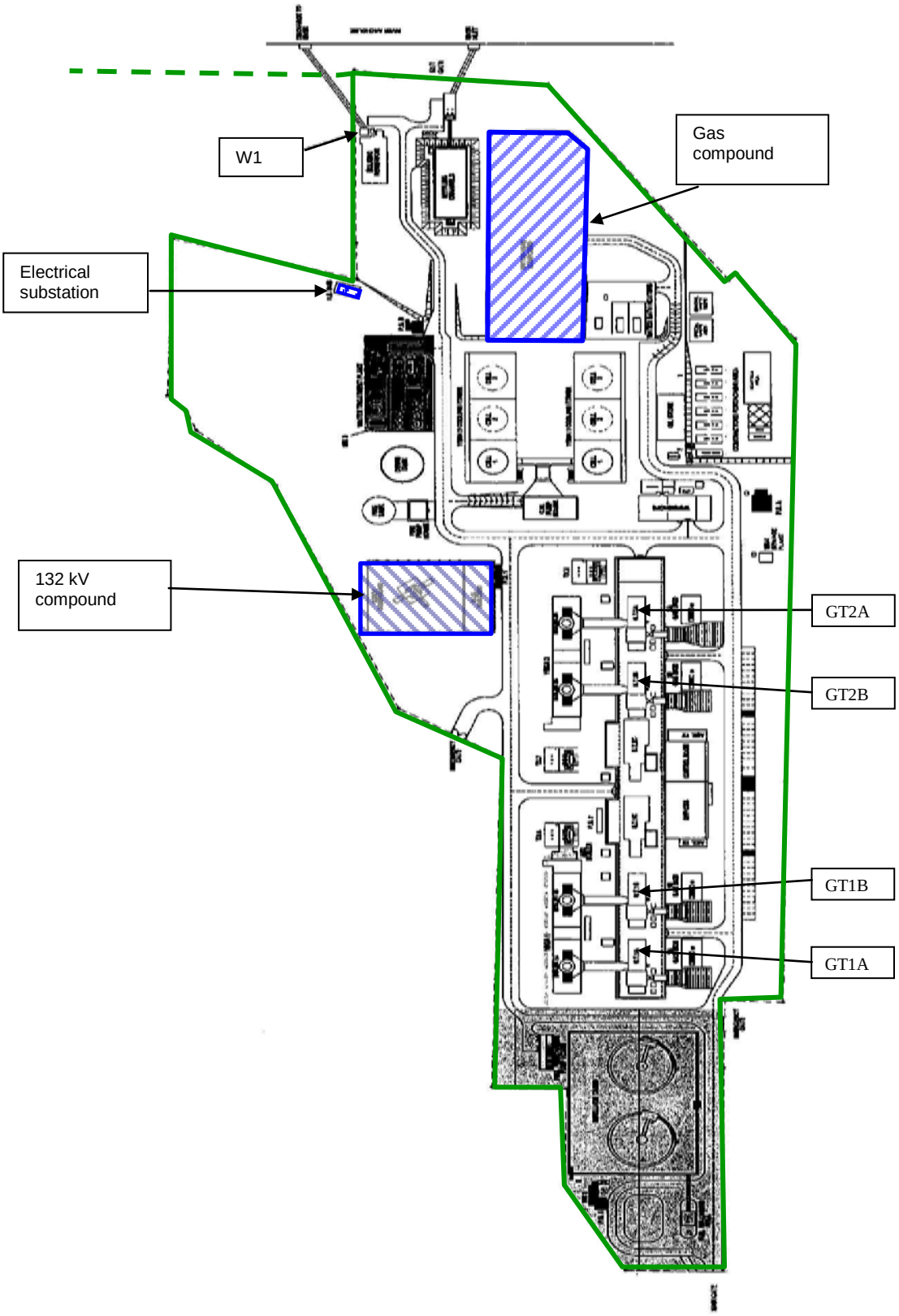

Fig 2

Installation Boundary

Gas compound, 132kV compound and electrical substation excluded from Installation Boundary

Schedule 3 - Waste types, raw materials and fuels

Table S3.1 Raw materials and fuels	
Raw materials and fuel description	Specification
Gas oil until 31/12/2007	Less than 0.2% w/w sulphur content
Gas oil from 01/01/2008	Less than 0.1% w/w sulphur content
Biofuel	Less than 0.1% w/w sulphur content
Water treatment plant chemicals:	Discharges of mercury and cadmium, as a result of the impurities of raw materials used in the water treatment plant, shall be controlled by ensuring that impurity levels are the minimum available in the commercial product.

Schedule 4 – Emissions and monitoring

Note

For the purposes of this Schedule, the following interpretations shall apply:

- For the continuous measurement systems fitted to the LCP release points defined in Table S4.1 the validated hourly 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 of a single measured result shall be taken to be 20%.

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.

Start-up: the period required to establish production of de-nox steam in relation to the previous operational period of the gas turbines.

Start Type	**Previous Non-Operational Period**	**Time to comply with limits specified in Table S4.1(a)**
Cold Start	>48 hours	Within 6 hours
Warm Start	10 – 48 hours	Within 4 hours
Hot Start	<10 hours	Within 3 hours

Table S4.1(a) Point source emissions to air from Gas Turbines						
Emission point ref. & location [Note 1 & 2]	Parameter	Source	Limit (including unit) [a]	Reference period	Monitoring frequency	Monitoring standard or method
A1- A4 [A1 – SE 9903 0600, A2 – SE 9906 0600, A3 – SE 9916 0602, A4 – SE 9918 0602]	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	Gas turbines fired on natural gas	125 mg/m^3	Daily mean of validated hourly averages	Continuous	BS EN 14181
		Gas turbines fired on gas oil or biofuel	165 mg/m^3	Daily mean of validated hourly averages	Continuous	BS EN 14181
	Carbon Monoxide	Gas turbines fired on natural gas, gas oil or biofuel	No limit set	-	-	-
	Sulphur Dioxide	Gas turbines fired on natural gas, gas oil or biofuel	No limit set	-	-	-
	Particulate matter	Gas turbines fired on natural gas, gas oil or biofuel				
	Unburned fuel gas (as CH_4) [Note 3]	Gas turbines	No limit set	-	-	-

[a]-these limits do not apply during start up or shut down.

Table S4.1(b) Point source emissions to air from existing or new boiler plant						
Emission point ref. & location	Parameter	Source	Limit (including unit) [a]	Reference period	Monitoring frequency	Monitoring standard or method
A5 [SE 9907 0602]	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	Boiler Plant fired on gas oil or biofuel	250 mg/m^3	Validated hourly average	Annual spot sample	ISO 10849: 1996

[a]-these limits do not apply during start up or shut down.

Table S4.1(c) Other point source emissions to air						
Emission point ref. & location [Note 4]	Parameter	Source	Limit (including unit) [a]	Reference period	Monitoring frequency	Monitoring standard or method
A6	-	Water Bath Heater 1 vent stack	-	-	-	-
A7	-	Water Bath Heater 2 vent stack	-	-	-	-
A8-A11	-	Diesel Starter Exhausts (turbine hall)	-	-	-	-
A12 [SE 9931 0603]	-	Gas Vent for Station	-	-	-	-
A13-A14	-	Storage of gas oil (oil tank)	-	-	-	-
A15-A19	-	Chemical Tank Vents	-	-	-	-
A20	-	Degasser Vent	-	-	-	-
A21,		Chemical Tank Vents				
A22	-	Diesel Pump Fire Exhaust	-	-	-	-
A23-A28		Chemical Tank Vents				
A29	-	Welding Bay Vent	-	-	-	-
A30-A31	-	Oil Mist Eliminator Vents	-	-	-	-

Notes 1 to 4 apply unless otherwise agreed in writing by Agency

Note 1: The concentration limit for oxides of nitrogen shall not apply

- during re-commissioning after maintenance overhauls
- when establishing steam production following restart operations
- for the first ten minutes after fuel change over.

Note 2: In the event of a failure of the de-NO_x steam injection system:

- The first four hours, the hourly average concentration shall not exceed three times the limit shown
- After twelve hours the affected gas turbine(s) shall be taken out of service until repairs can be effected

Note 3: The venting of unburned fuel shall be minimised.

Note 4. No permanent means of access required for sampling/monitoring except A13 and A14

Table S4.2 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
W1 on site plan (fig 1) in schedule 2 emission to New River Ancholme [SE 9934 0661]	Total daily volume	Bulking reservoir discharge including: cooling water purge, boiler blow down, neutralised effluent from water treatment pant, treated sewage effluent. Surface water run-off from: - National Grid Gas compound, Fuel unloading area, Fuel oil storage compound, Fuel forwarding pump-house, Southern side of the site, Turbine Hall, GIS building and Fire pump-house drainage. Oil interceptor from car park	6,800 m^3	24 hour period beginning 00.01	Continuous	Permanent sampling access not required
	Maximum flow		460 m^3/hr	Average over 24 hour period beginning 00.01		
	Total oxidant (as chlorine)		0.2 mg/l			SCA blue book 51 ISBN 0117516260
	Temperature		25 ^{0}C		Daily	BS EN 13500
	pH		6 - 9	Hourly average	Continuous	BS6068-2.50
	Oil or grease		No visible emission	24-hour flow proportional sample	Fortnightly	Permanent sampling access not required

Table S4.3 Point source emissions to sewer, effluent treatment plant or other transfers off-site– emission limits and monitoring requirements						
Emission point ref. & location	Parameter	Source	Limit (incl. Unit)	Reference period	Monitoring frequency	Monitoring standard or method
-	-	-	-	-	-	-

Schedule 5 - Reporting

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

Table S5.1 Reporting of monitoring data

Parameter (Parameters as required by condition 3.6.1)	Emission or monitoring point/reference	Reporting period	Period begins
Oxides of nitrogen- continuous.	A1, A2, A3, A4	Every 3 months	01/10/07
Oxides of nitrogen - discontinuous	A5	Every 12 months	01/10/07
Oxides of nitrogen - annual mass release	A1, A2, A3, A4	Every 12 months	01/10/07
Sulphur dioxide - annual mass release	A1, A2, A3, A4	Every 12 months	01/10/07
Particulate matter - annual mass release	A1, A2, A3, A4	Every 12 months	01/10/07
Water emissions	W1	Every 12 months	01/10/07

Table S5.2: Annual production/treatment

Parameter	Units
Power generated	GWHrs

Table S5.3 Performance parameters

Parameter	Frequency of assessment	Units
Water usage	Annually	M^3
Gas usage	Annually	MJ related to Net CV
Gas oil usage	Annually	MJ related to Net CV
Biofuel usage	Annually	MJ related to Net CV
Gas usage per MWhr generation	Annually	M^3/MWhr
Gas oil running time	Annually	Hours
Biofuel running time	Annually	Hours
Total annual emissions of Nitrogen Dioxide	Annually	tonnes/MWHrs
Total annual emissions of Sulphur Dioxide	Annually	tonnes/MWHrs
Total annual emissions dust (as total suspended particles)	Annually	tonnes/MWHrs
Electricity (incoming)	Annually	MWhrs

Table S5.4 Reporting forms				
Media/ parameter	Reporting format	Starting Point	Agency recipient	Date of form
Air	Form Air – 2 continuous monitoring or other form as agreed in writing by the Agency	01/10/07	SI	01/09/07
Air	Form Air – 3 continuous measurement systems invalidation log or other form as agreed in writing by the Agency	01/10/07	SI	01/09/07
Air	Form Air – 4 discontinuous monitoring (for annual mass release) or other form as agreed in writing by the Agency	01/10/07	SI & Central office	01/09/07
Air	Form Air - 7 Energy Usage summary or other form as agreed in writing by the Agency	01/10/07	SI & Central office	01/09/07
Air	Form Air - 8 PPC discontinuous monitoring or other form as agreed in writing by the Agency (Auxiliary boiler)	01/10/07	SI	01/09/07
Water	Form water 1 or other form as agreed in writing by the Agency	01/10/07	SI	01/09/07
Water usage	Form water usage1 or other form as agreed in writing by the Agency	01/10/07	SI	01/09/07
Energy usage	Form energy 1 or other form as agreed in writing by the Agency	01/10/07	SI	01/09/07
Other performance indicators	Form performance 1 or other form as agreed in writing by the Agency	01/10/07	SI	01/09/07

Schedule 6 - 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 PPC Regulations.

Part A

Permit Number	**ZP3133LM**
Name of operator	**Centrica Brigg Limited**
Location of Installation	**Glanford Brigg Generation Station**
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or fugitive emission 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	
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 installation in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of Glanford Brigg Generation Station

Schedule 7 - Interpretation

''a*ccident*'' means an accident that may result in pollution.

''a*nnually*'' means once every year.

"a*pplication*" 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 4 to the PPC Regulations.

"authorised officer" means any person authorised by the 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.

"b*ackground concentration*" means such concentration of that substance as is present in:

- for emissions to surface water, the surface water quality up-gradient of the site; or
- for emissions to sewer, the surface water quality up-gradient of the sewage treatment works discharge.

"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.

"emissions to land", includes emissions to groundwater.

"fugitive emission" means an emission to air, water or land from the activities which is not controlled by an emission limit.

"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.

"*land protection guidance*", means Agency guidance "H7 - Guidance on the protection of land under the PPC Regime: application site report and site protection monitoring programme".

"*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 gross calorific value.

"Large Combustion Plant Directive" means Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants.

"MCERTS" means the Environment Agency's Monitoring Certification Scheme.

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

"ncv" means net calorific value.

"notify without delay" / "notified without delay" means that a telephone call can be used, whereas all other reports and notifications must be supplied in writing, either electronically or on paper.

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

"PPC Regulations" means the Pollution, Prevention and Control (England and Wales) Regulations SI 2000 No.1973 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

"*quarter*" means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

"SI" means site inspector

"*site protection and monitoring programme*" means a document which meets the requirements for site protection and monitoring programmes described in the Land Protection Guidance.

"Shut-down" means a period of 1 hour following the steam injection system tripping out during shutdown operations.

"year" means calendar year ending 31 December.

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

(a) 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.

(b) in relation to gas turbines or compression ignition engines; an oxygen content of 15%, dry, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, for liquid and gaseous fuels.

END OF PERMIT

Permit with introductory note

Pollution Prevention and Control (England & Wales) Regulations 2000

Glanford Brigg Generating Station

Centrica Brigg Limited
Scawby Brook
Brigg
North Lincolnshire.
DN20 9LT

Permit number

ZP3133LM

Glanford Brigg Generating Station
Permit Number ZP3133LM

Introductory note

This introductory note does not form a part of the permit

The main features of the installation are as follows.

Located on the south-western outskirts of Brigg at Scawby Brook in North Lincolnshire with a national grid reference SE 499850 40610. The installation covers an area of approximately seven hectares and is relatively flat. Land surrounding the site is predominantly farmland. To the south are fields and a local railway track. The New River Anchlome is immediately to the east of the site and beyond this farmland. To the north-east is Island Carr Farm and directly beyond this is mill View Caravan site. To the north of the site are settling ponds, beyond this are some residential properties, a sports ground and leisure centre. To the west of the site is the main site access road which passes through open farmland where it meets Scawby Road.

The installation was commissioned in 1993 to supply electricity to the National grid. The main operational processes at the installation consist of two combined Cycle Gas Turbine (CCGT) modules. Each module is comprised of two gas turbines (each turbine driving an electrical generator), two heat recovery boilers and one steam turbine. The applicant is carrying out activities to Schedule 1 of the PPC Regulations covered by the description in Section 1.1 A(1)(a) - “Burning any fuel in an appliance with a rated thermal input of 50 megawatts or more”.

The turbines burn natural gas with gas oil as a back up fuel. The operator also has the capability to burn biofuel and will use this fuel as a stand-by alternative. Gas is delivered to the site directly from a National Grid compound located within the site boundary. The gas compound is operated and controlled solely by National Grid and the compound does not form part of the installation boundary. Gas oil and biofuel are delivered to the site in road tankers.

The station employs steam injection to suppress emissions of Oxides of Nitrogen (NOx) during combustion. Each gas turbine exhausts through a heat recovery boiler with the combined steam output passing to a condensing steam turbine. All electrical capacity is exported to the National Grid less a parasitic station load. Total output from the gas turbines and steam turbine is approximately 240 MW. The power station generally operates on a two shift basis and is demand led.

An auxiliary boiler of approximately 3.4 MW thermal input provides de-aerated water for the heat recovery boilers and boiler drum pacification for whole plant shut down. The boiler also provides gland steam during start up. The only fuel for boiler operations is gas oil. Along with gas turbines the Operator will also have the capability to burn biofuel in the auxiliary boiler as a standby fuel.

The majority of water used at the site is for process cooling and is abstracted from the New River Ancholme. Process cooling water is provided by two banks of forced draught cooling towers. The water is circulated through condensers and then the cooling towers before being collected in a below ground channel/sump. Silt is then removed from the channels and discharged off site by licensed contractors under duty of care.

A water treatment plant treats incoming water after filtration, from the New River Ancholme with town mains water backup prior to distribution to an on-site demineralised water storage facility. Waste water is discharged off site via a bulking reservoir.

The main environmental issues at the site are emissions to air from combustion activities and the discharge of process cooling waters and surface water to the New River Ancholme.

The primary emission to air from this type of installation is NOx. The daily averages for NOx emissions are within benchmark sector limits for the type of abatement technology employed. Pollution potential via emissions to water is minimised by careful raw materials selection criteria.

The installation has the potential to generate noise. However, noise levels are within guidelines and there is no history of public complaint.

There is little waste produced due to the type of installation. The quantity of waste does not generally exceed 400 tonnes per annum resulting from a variety of activities including maintenance programmes, cleaning operations and water treatment.

There are no European sites within 15km of the installation. There is a SSSI within 2km of the site, Castlethorpe Tufas, which has been screened with emissions having no significant impact.

The installation is a low tier COMAH site due to the quantity of gas oil stored on site.

The Operator operates an environmental management system with accreditation to ISO14001.

Status Log of the permit		
Detail	**Date**	**Response Date**
Application ZP3133LM	20/03/06	
Additional Information Received		12/07/07
Permit determined	10/08/07	

Other PPC permits relating to this installation		
Operator	**Permit Number**	**Date of Issue**
-	-	-

Superseded or Partially Superseded Licences/Authorisations/Consents relating to this installation			
Holder	**Reference Number**	**Date of Issue**	**Fully or Partially Superseded**
Centrica Energy Limited	AA6904	30/09/91	Fully superseded

Other existing Licences/Authorisations/Registrations relating to this site		
Holder	**Reference Number**	**Date of issue**
Centrica Energy Limited	GB-EA-ETCO2-0158	02/03/04
Centrica Energy Limited	4/29/03/*S/0084	05/07/05

End of Introductory Note

Permit

Permit number
ZP3133LM

The Environment Agency (the Agency) in exercise of its powers under Regulation 10 of the Pollution Prevention and Control (England and Wales) Regulations 2000 (SI 2000 No 1973) hereby authorises

Centrica Brigg Limited ("the operator"),

whose registered office is

Millstream
Maidenhead
Windsor
Berkshire
SL4 5GD

company registration number 2352390

to operate *an installation* at
Glanford Brigg Generating Station
Scawby Brook
Brigg
North Lincolnshire
DN20 9LT

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

Signed	Date
	10 August 2007

Mr. Phil Reynolds, Regulatory Team Leader (PIR Permitting), Strategic Permitting Group - Nottingham

Authorised to sign on behalf of the Agency

Conditions

1 Management

1.1 General management

1.1.1 The activities shall be managed and operated:

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

(b) by sufficient persons who are competent in respect of the responsibilities to be undertaken by them in connection with the operation of the activities.

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 Accidents that may cause pollution

1.2.1 The operator shall:

(a) maintain and implement an accident management plan;

(b) review and record at least every 4 years or as soon as practicable after an accident, (whichever is the earlier) whether changes to the plan should be made;

(c) make any appropriate changes to the plan identified by a review.

1.3 Energy efficiency

1.3.1 The operator shall:

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

(b) review and record at least every 4 years whether there are suitable opportunities to improve the energy efficiency of the activities; and

(c) take any further appropriate measures by a review.

1.4 Efficient use of raw materials

1.4.1 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 4 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 appropriate further measures identified by a review.

1.5 Avoidance, recovery and disposal of wastes produced by the activities

1.5.1. The operator shall:

(a) take appropriate measures to ensure that waste produced by the activities is avoided or reduced, or where waste is produced it is recovered wherever practicable or otherwise disposed of in a manner which minimises its impact on the environment;

(b) review and record at least every 4 years whether changes to those measures should be made; and

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

1.6 Site security

1.6.1. Site security measures shall prevent unauthorised access to the site, as far as practicable.

2. Operations

2.1 Permitted activities

2.1.1 The operator is 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 2 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 Agency.

2.3.2 Subject to condition 2.3.3 no raw materials or fuels listed in schedule 3 table S3.1 shall be used unless they comply with the specifications set out in that table.

2.3.3 Standby fuel gas oil and biofuel may be used but for no more than 1080 hours per year.

2.4 Off-site conditions

There are no off-site conditions under this section.

2.5 Improvement programme

2.5.1 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 Agency.

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

2.6 Pre-operational conditions

There are no pre-operational conditions in this permit.

2.7 Closure and decommissioning

2.7.1 The operator shall maintain and operate the activities so as to prevent or where that is not practicable, to minimise, any pollution risk on closure and decommissioning.

2.7.2 The operator shall maintain a site closure plan which demonstrates how the activities can be decommissioned to avoid any pollution risk and return the site to a satisfactory state.

2.7.3 The operator shall carry out and record a review of the site closure plan at least every 4 years.

2.7.4 The site closure plan (or relevant part thereof) shall be implemented on final cessation or decommissioning of the activities or part thereof.

2.8 Site protection and monitoring programme

2.8.1 The operator shall, within 2 months of the issue of this permit, submit a site protection and monitoring programme.

2.8.2 The operator shall implement and maintain the site protection and monitoring programme and shall carry out and record a review of it at least every 4 years.

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 4 tables S4.1, S4.2 and S4.3.

3.1.2 The limits given in schedule 4 shall not be exceeded.

3.2 Transfers off-site

3.2.1 Records of all the wastes sent off site from the activities, for either disposal or recovery, shall be maintained.

3.3 Fugitive emissions of substances

3.3.1 Fugitive emissions of substances (excluding odour, noise and vibration) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, have been taken to prevent or where that is not practicable, to minimise, those emissions.

3.3.2 All liquids, 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.

3.4 Odour

3.4.1 Emissions from the activities shall be free from odour at levels likely to cause annoyance outside the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures, to prevent or where that is not practicable to minimise the odour.

3.5 Noise and vibration

3.5.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause annoyance outside the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures, to prevent or where that is not practicable to minimise the noise and vibration.

3.6 Monitoring

3.6.1 The operator shall, unless otherwise agreed in writing by the Agency, undertake the monitoring specified in the following tables in schedule 4 to this permit:

(a) point source emissions specified in tables S4.1, S4.2 and S4.3;

3.6.2 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.

3.6.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme in condition 3.6.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate) unless otherwise agreed in writing by the Agency.

3.6.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 4 tables S4.1, S4.2 and S4.3 unless otherwise specified in that schedule.

3.6.5 Within 6 months of the issue of this permit (unless otherwise agreed in writing by the Agency) the site reference data identified in the site protection and monitoring programme shall be collected and submitted to the Agency.

3.7 Monitoring for the purposes of the Large Combustion Plant Directive

3.7.1 All LCP monitoring required by this permit shall be carried out in accordance with the provisions of Annex VIII of the Large Combustion Plant Directive.

3.7.2 If the monitoring results for more than 10 days a year are invalidated within the meaning set out in Schedule 4, the Operator shall:

(a) within 28 days of becoming aware of this fact, review the causes of the invalidations and submit to the 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 measures.

3.7.3 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.

3.7.4 Unless otherwise agreed in writing by the Agency in accordance with condition 3.7.5 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.

3.7.5 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 Agency.

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

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 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) the site protection and monitoring programme.

4.1.2 Any records required to be made by this permit shall be supplied to the Agency within 14 days where the records have been requested in writing by the Agency.

4.1.3 All records required to be held by this permit shall be held on the installation and shall be available for inspection by the Agency at any reasonable time.

4.2 Reporting

4.2.1 A report or reports on the performance of the activities over the previous year shall be submitted to the Agency by 31 January (or other date agreed in writing by the 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 this permit against the relevant assumptions, parameters and results in the assessment of the impact of the emissions submitted with the application;

(b) where the operator's management system encompasses annual improvement targets, a summary report of the previous year's progress against such targets;

(c) the annual production /treatment data set out in schedule 5 table S5.2;

(d) the performance parameters set out in schedule 5 table S5.3 using the forms specified in table S5.4 of that schedule; and

(e) details of any contamination or decontamination of the site which has occurred.

4.2.2 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the 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 5 table S5.1;

(b) for the reporting periods specified in schedule 5 table S5.1 and using the forms specified in schedule 5 table S5.4 ; and

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

4.2.3 The operator shall, unless notice under this condition has been served within the preceding 4 years, submit to the Agency, within 6 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.

4.2.4 All reports and notifications required by the permit shall be sent to the Agency using the contact details supplied in writing by the Agency

4.2.5 The results of reviews and any changes made to the site protection and monitoring programme shall be reported to the Agency, within 28 days of the review or change

4.3 Notifications

4.3.1 The Agency shall be notified without delay following the detection of:

(a) any malfunction, breakdown or failure of equipment or techniques, accident, or fugitive emission which has caused, is causing or may cause significant pollution;

(b) the breach of a limit specified in the permit;

(c) any significant adverse environmental effects.

4.3.2 Any information provided under condition 4.3.1 shall be confirmed by sending the information listed in schedule 6 to this permit within the time period specified in that schedule.

4.3.3 Prior written notification shall be given to the Agency of the following events and in the specified timescales:

(a) as soon as practicable prior to the permanent cessation of any of the activities;

(b) cessation of operation of part or all of the activities for a period likely to exceed 1 year; and

(c) resumption of the operation of part or all of the activities after a cessation notified under (b) above.

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

4.3.5 Where the 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 Agency when the relevant monitoring is to take place. The operator shall provide this information to the Agency at least 14 days before the date the monitoring is to be undertaken.

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

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

(b) any change to particulars of the operator's ultimate holding company (including details of an ultimate holding company where an operator has become a subsidiary); and

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

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Notification of Closure of Large Combustion Plant.

4.3.7 From 1 January 2008 the operator shall inform the 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 7 shall have the meaning given in that schedule.

Schedule 1 - Operations

Table S1.1 activities		
Activity listed in Schedule 1 of the PPC 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	Production of electricity from four gas turbines. (Each with a 70m stack).	The Operation of a gas fired power station with fuel switching capability (including gas turbines, heat recovery steam generators, electrical generators, oil lubrication systems, water abstraction, air compressors, and high voltage switchgear.) From receipt, handling and on-site storage of raw materials to despatch of products and waste.
Directly Associated Activity		
Directly associated activity	Gas oil and biofuel storage	From receipt of raw materials to dispatch for use.
Directly associated activity	Water treatment	From receipt of raw materials to dispatch of treated effluent, process cooling waters and dirty water system to final discharge via bulking reservoir to the New River Ancholme.
Directly associated activity	Surface water drainage	Handling and storage of site drainage via the site surface water system to the bulking reservoir until final discharge to the New River Ancholme .
Directly associated activity	Miscellaneous utility systems (including diesel starters, fire pumps, lubricating and control systems).	From receipt of raw materials to dispatch for use.
Directly associated activity	Auxiliary Boiler with thermal input of approximately 3.4MW	The operation of a gas oil fired boiler. Used primarily for providing de-aerated water for the heat recovery boilers. The boiler is also used for gland sealing and at main start up periods, from receipt of raw materials to handling and dispatch of product for use.
Directly associated activity	Gas Heaters	The operation of gas heating plant from receipt of raw materials to handling and dispatch of product for use.

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application	The response to section 2.1and 2.2 in the Application.	20/03/06
Receipt of additional information to the application	Responses to section 2 of application detailing Sump/Bund Inspections, Thermal Input of the Gas Heaters, Cooling Water Pipe-work Flows Underground, Annual Total of Raw Materials Used, Gas Oil Burnt on Site, List of all Vents to Air and Thermal Input of the Auxiliary Boiler.	12/07/07

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC 1	The Operator shall confirm completion of the Reverse Osmosis (RO) installation. If the installation is not completed at permit issue the Operator shall submit in writing a date for completion of all work. On completion of all work the Operator shall inform Agency.	One month from permit issue.
IC 2	A written procedure shall be submitted to the agency 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 3.6.3. The notification requirements of condition 2.5.2 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 the Agency	30/06/08
IC 3	A written plan shall be submitted to the Agency for approval detailing the results of an assessment of the the primary, secondary and tertiary containment arrangements against the requirements of section 2.2.9 of the Technical Guidance Note V2.03 IPPC Sector Guidance Note for Combustion Activities" 27/7/05. A written report summarising the findings, together with a timetable for any improvements identified will be submitted to the Environment Agency. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the report. The plan shall be implemented by the operator from the date of approval by the Agency.	31/12/08
IC 4	The Operator shall undertake a review of the Best Available Techniques listed within the Combustion Sector Technical Guidance Note (TGN) IPPC S1.01 Section 2 for Oxides of Nitrogen which will enable them to achieve the Emission Limit Values given within the TGN for the release to air from gas turbines No. 1A & 1B and No. 2A & 2B (emission points A1 – A4) burning natural gas, gas oil and biofuel. The review shall include, but not be limited to, all of the relevant techniques listed within the TGN, the reduction in the level of pollutants (for each option) and the costs of achieving the reduction (for each option). The report shall include a timetable to implement any proposed changes as appropriate. The Operator shall implement the proposals as agreed in writing with the Environment Agency.	31/07/09

Schedule 2 - Site plan

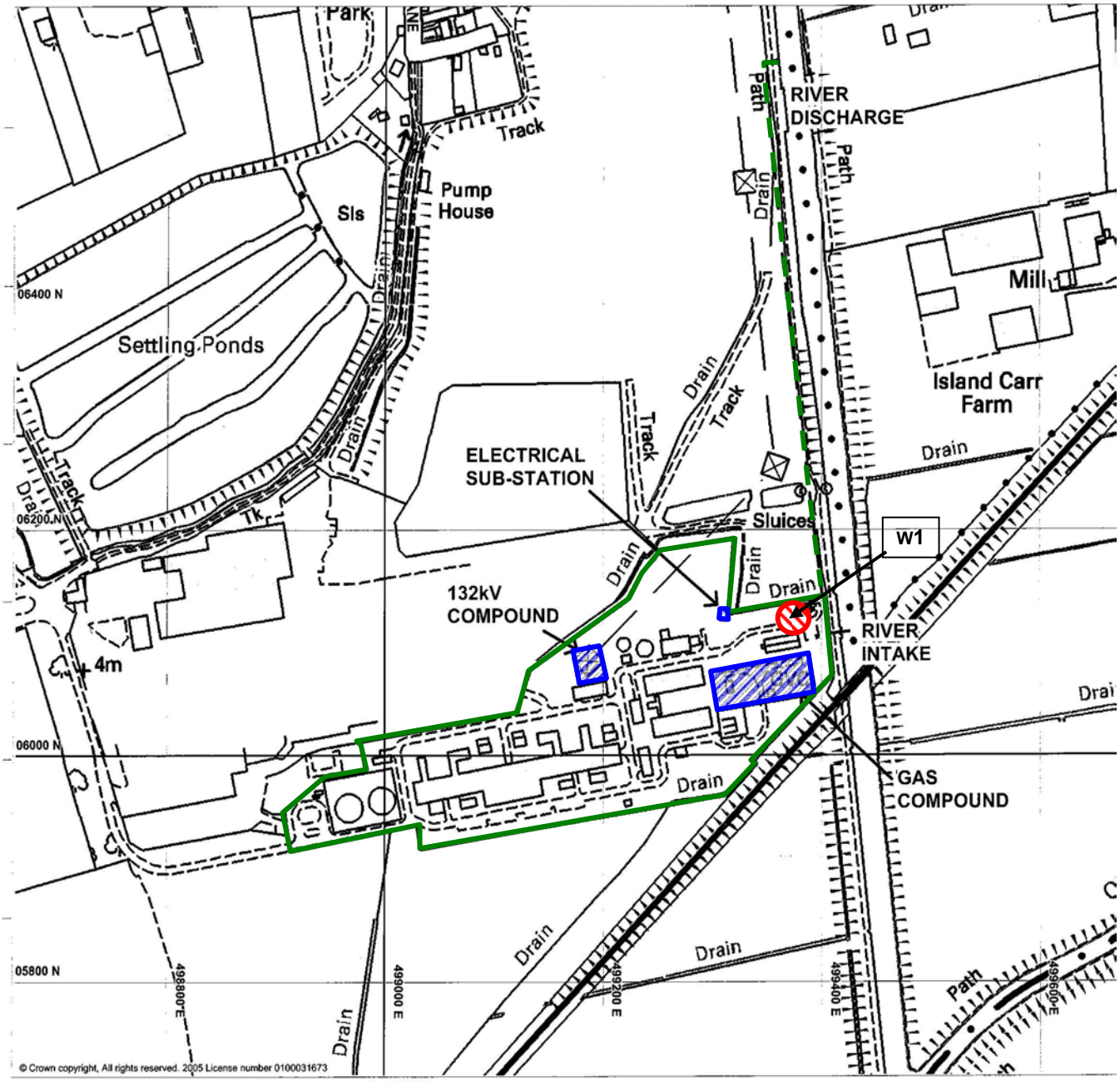

Fig 1

"Reproduced from the Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office ©Crown Copyright 2000. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings."

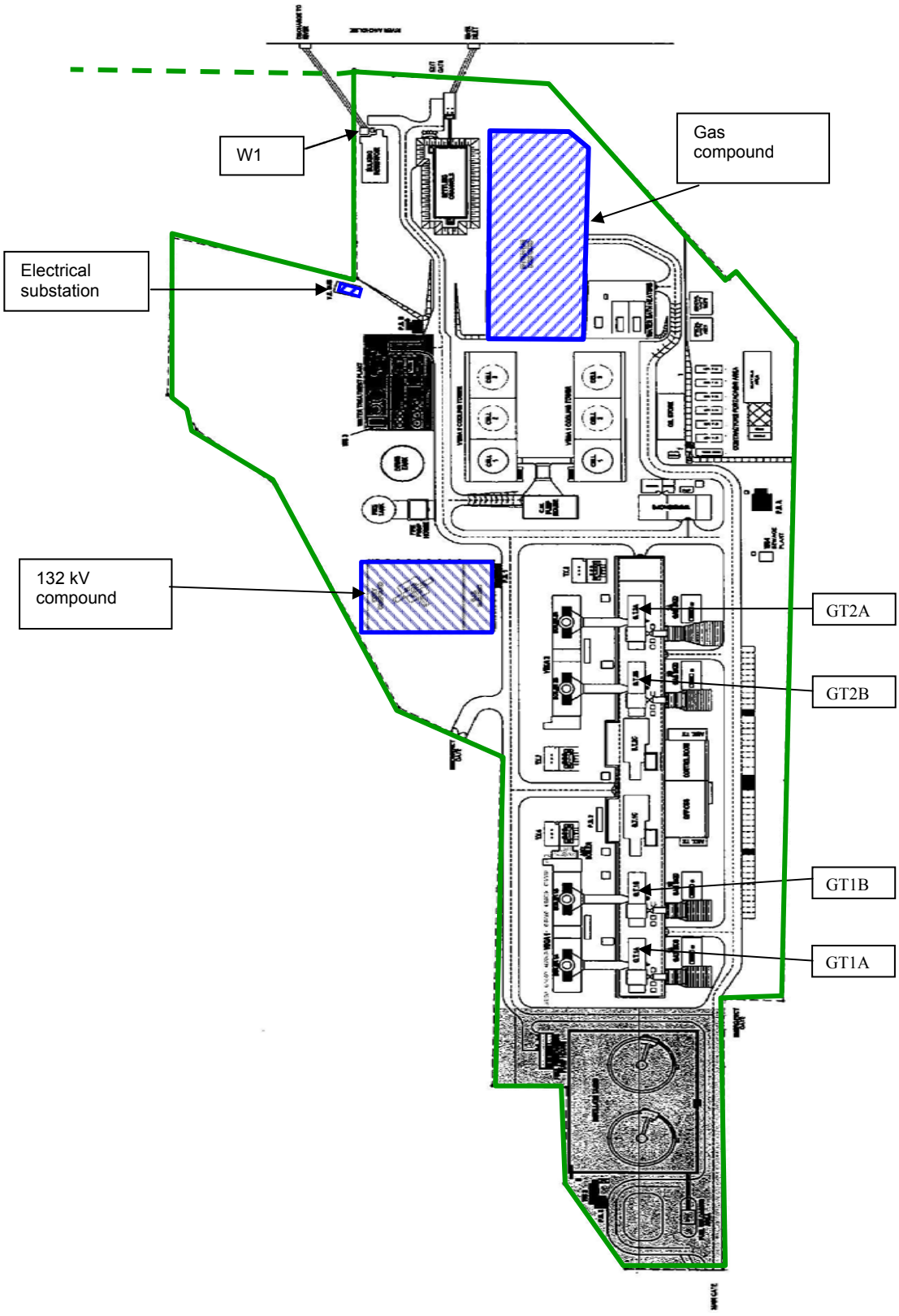

Fig 2

Installation Boundary

Gas compound, 132kV compound and electrical substation excluded from Installation Boundary

Schedule 3 - Waste types, raw materials and fuels

Table S3.1 Raw materials and fuels	
Raw materials and fuel description	**Specification**
Gas oil until 31/12/2007	Less than 0.2% w/w sulphur content
Gas oil from 01/01/2008	Less than 0.1% w/w sulphur content
Biofuel	Less than 0.1% w/w sulphur content
Water treatment plant chemicals:	Discharges of mercury and cadmium, as a result of the impurities of raw materials used in the water treatment plant, shall be controlled by ensuring that impurity levels are the minimum available in the commercial product.

Schedule 4 – Emissions and monitoring

Note

For the purposes of this Schedule, the following interpretations shall apply:

- For the continuous measurement systems fitted to the LCP release points defined in Table S4.1 the validated hourly 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 of a single measured result shall be taken to be 20%.

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.

Table S4.1(a) Point source emissions to air from Gas Turbines						
Emission point ref. & location [Note 1 & 2]	**Parameter**	**Source**	**Limit (including unit) [a]**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A1- A4 [A1 – SE 9903 0600, A2 – SE 9906 0600, A3 – SE 9916 0602, A4 – SE 9918 0602]	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	Gas turbines fired on natural gas	125 mg/m^3	Daily mean of validated hourly averages	Continuous	BS EN 14181
		Gas turbines fired on gas oil or biofuel	165 mg/m^3	Daily mean of validated hourly averages	Continuous	BS EN 14181
	Carbon Monoxide	Gas turbines fired on natural gas, gas oil or biofuel	No limit set	-	-	-
	Sulphur Dioxide	Gas turbines fired on natural gas, gas oil or biofuel	No limit set	-	-	-
	Particulate matter	Gas turbines fired on natural gas, gas oil or biofuel				
	Unburned fuel gas (as CH_4) [Note 3]	Gas turbines	No limit set	-	-	-

[a]-these limits do not apply during start up or shut down.

Table S4.1(b) Point source emissions to air from existing or new boiler plant						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit) [a]**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A5 [SE 9907 0602]	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	Boiler Plant fired on gas oil or biofuel	250 mg/m^3	Validated hourly average	Annual spot sample	ISO 10849: 1996

[a]-these limits do not apply during start up or shut down.

Table S4.1(c) Other point source emissions to air						
Emission point ref. & location [Note 4]	**Parameter**	**Source**	**Limit (including unit)** [a]	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A6	-	Water Bath Heater 1 vent stack	-	-	-	-
A7	-	Water Bath Heater 2 vent stack	-	-	-	-
A8-A11	-	Diesel Starter Exhausts (turbine hall)	-	-	-	-
A12 [SE 9931 0603]	-	Gas Vent for Station	-	-	-	-
A13-A14	-	Storage of gas oil (oil tank)	-	-	-	-
A15-A19	-	Chemical Tank Vents	-	-	-	-
A20	-	Degasser Vent	-	-	-	-
A21,		Chemical Tank Vents				
A22	-	Diesel Pump Fire Exhaust	-	-	-	-
A23-A28		Chemical Tank Vents				
A29	-	Welding Bay Vent	-	-	-	-
A30-A31	-	Oil Mist Eliminator Vents	-	-	-	-

Notes 1 to 4 apply unless otherwise agreed in writing by Agency

Note 1: The concentration limit for oxides of nitrogen shall not apply
- during re-commissioning after maintenance overhauls
- when establishing steam production following restart operations
- for the first ten minutes after fuel change over.

Note 2: In the event of a failure of the de-NO_x steam injection system:
- The first four hours, the hourly average concentration shall not exceed three times the limit shown
- After twelve hours the affected gas turbine(s) shall be taken out of service until repairs can be effected

Note 3: The venting of unburned fuel shall be minimised.

Note 4. No permanent means of access required for sampling/monitoring except A13 and A14

Table S4.2 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
W1 on site plan (fig 1) in schedule 2 emission to New River Ancholme [SE 9934 0661]	Total daily volume	Bulking reservoir discharge including: cooling water purge, boiler blow down, neutralised effluent from water treatment pant, treated sewage effluent. Surface water run-off from: - National Grid Gas compound, Fuel unloading area, Fuel oil storage compound, Fuel forwarding pump-house, Southern side of the site, Turbine Hall, GIS building and Fire pump-house drainage. Oil interceptor from car park	6,800 m^3	24 hour period beginning 00.01	Continuous	Permanent sampling access not required
	Maximum flow		460 m^3/hr	Average over 24 hour period beginning 00.01		
	Total oxidant (as chlorine)		0.2 mg/l			SCA blue book 51 ISBN 0117516260
	Temperature		25 ^0C		Daily	BS EN 13500
	pH		6 - 9	Hourly average	Continuous	BS6068-2.50
	Oil or grease		No visible emission	24-hour flow proportional sample	Fortnightly	Permanent sampling access not required

Table S4.3 Point source emissions to sewer, effluent treatment plant or other transfers off-site– emission limits and monitoring requirements

Emission point ref. & location	Parameter	Source	Limit (incl. Unit)	Reference period	Monitoring frequency	Monitoring standard or method
-	-	-	-	-	-	-

Schedule 5 - Reporting

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

Table S5.1 Reporting of monitoring data

Parameter (Parameters as required by condition 3.6.1)	Emission or monitoring point/reference	Reporting period	Period begins
Oxides of nitrogen- continuous.	A1, A2, A3, A4	Every 3 months	01/10/07
Oxides of nitrogen - discontinuous	A5	Every 12 months	01/10/07
Oxides of nitrogen - annual mass release	A1, A2, A3, A4	Every 12 months	01/10/07
Sulphur dioxide - annual mass release	A1, A2, A3, A4	Every 12 months	01/10/07
Particulate matter - annual mass release	A1, A2, A3, A4	Every 12 months	01/10/07
Water emissions	W1	Every 12 months	01/10/07

Table S5.2: Annual production/treatment

Parameter	Units
Power generated	GWHrs

Table S5.3 Performance parameters

Parameter	Frequency of assessment	Units
Water usage	Annually	M^3
Gas usage	Annually	MJ related to Net CV
Gas oil usage	Annually	MJ related to Net CV
Biofuel usage	Annually	MJ related to Net CV
Gas usage per MWhr generation	Annually	M^3/MWhr
Gas oil running time	Annually	Hours
Biofuel running time	Annually	Hours
Total annual emissions of Nitrogen Dioxide	Annually	tonnes/MWHrs
Total annual emissions of Sulphur Dioxide	Annually	tonnes/MWHrs
Total annual emissions dust (as total suspended particles)	Annually	tonnes/MWHrs
Electricity (incoming)	Annually	MWhrs

Table S5.4 Reporting forms				
Media/ parameter	**Reporting format**	**Starting Point**	**Agency recipient**	**Date of form**
Air	Form Air – 2 continuous monitoring or other form as agreed in writing by the Agency	01/10/07	SI	01/09/07
Air	Form Air – 3 continuous measurement systems invalidation log or other form as agreed in writing by the Agency	01/10/07	SI	01/09/07
Air	Form Air – 4 discontinuous monitoring (for annual mass release) or other form as agreed in writing by the Agency	01/10/07	SI & Central office	01/09/07
Air	Form Air - 7 Energy Usage summary or other form as agreed in writing by the Agency	01/10/07	SI & Central office	01/09/07
Air	Form Air - 8 PPC discontinuous monitoring or other form as agreed in writing by the Agency (Auxiliary boiler)	01/10/07	SI	01/09/07
Water	Form water 1 or other form as agreed in writing by the Agency	01/10/07	SI	01/09/07
Water usage	Form water usage1 or other form as agreed in writing by the Agency	01/10/07	SI	01/09/07
Energy usage	Form energy 1 or other form as agreed in writing by the Agency	01/10/07	SI	01/09/07
Other performance indicators	Form performance 1 or other form as agreed in writing by the Agency	01/10/07	SI	01/09/07

Schedule 6 - 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 PPC Regulations.

Part A

Permit Number	**ZP3133LM**
Name of operator	**Centrica Brigg Limited**
Location of Installation	**Glanford Brigg Generation Station**
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or fugitive emission 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	
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 installation in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of Glanford Brigg Generation Station

Schedule 7 - Interpretation

"a*ccident*" means an accident that may result in pollution.

"a*nnually*" means once every year.

"a*pplication*" 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 4 to the PPC Regulations.

"authorised officer" means any person authorised by the 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.

"b*ackground concentration*" means such concentration of that substance as is present in:

- for emissions to surface water, the surface water quality up-gradient of the site; or
- for emissions to sewer, the surface water quality up-gradient of the sewage treatment works discharge.

"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.

"emissions to land", includes emissions to groundwater.

"fugitive emission" means an emission to air, water or land from the activities which is not controlled by an emission limit.

"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.

"*land protection guidance*", means Agency guidance "H7 - Guidance on the protection of land under the PPC Regime: application site report and site protection monitoring programme".

"*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 gross calorific value.

"Large Combustion Plant Directive" means Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants.

"MCERTS" means the Environment Agency's Monitoring Certification Scheme.

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

"ncv" means net calorific value.

"notify without delay" / "notified without delay" means that a telephone call can be used, whereas all other reports and notifications must be supplied in writing, either electronically or on paper.

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

"PPC Regulations" means the Pollution, Prevention and Control (England and Wales) Regulations SI 2000 No.1973 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

"*quarter*" means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

"SI" means site inspector

"*site protection and monitoring programme*" means a document which meets the requirements for site protection and monitoring programmes described in the Land Protection Guidance.

"year" means calendar year ending 31 December.

Unless otherwise stated any references in this permit to reference conditions means:

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. concentrations of substances in emissions into air means:

(a) 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.

(b) in relation to gas turbines or compression ignition engines; an oxygen content of 15%, dry, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, for liquid and gaseous fuels.

END OF PERMIT