Air Quality Assessment Addendum for Ecological Impacts

October 2023

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KLON06 Data Centre, Galvin Road, Slough

October 2023

HDR Consulting Ltd

240 Blackfriars Road
London
SE1 8NW

Document Control:

Project No.	Project
11749B	KLON06 Data Centre

Project No.	Revision	Written By:	Checked by:	Authorised by:	Date of issue
11749B	V0	R. Boakes	P. Beckett	P. Beckett	31/10/2023

Phlorum Limited

Southern Office: Unit 12, Hunns Mere Way, Woodingdean, Brighton, East Sussex, BN2 6AH

T: 01273 307 167 E: info@phlorum.com W: www.phlorum.com

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Executive Summary

Phlorum Limited has been commissioned by HDR to produce an air quality assessment addendum ("Addendum") on behalf of KAO Data ("the operator") to support the Environmental Permit application (ref: EPR/JP3647JU/A001) to operate the KLON06 Data Centre located in Slough Trading Estate, Galvin Road, SL1 4AN.

Phlorum Limited previously (February 2023) provided a full assessment (Ref: 11749A (AQ Permit) v2) of the air quality impacts associated with the development's standby generator (SBG) emissions during testing, maintenance and unplanned emergency use. This assessment concluded that the proposed development is not anticipated to have an overall significant effect on local air quality, on the basis that a prolonged 72-hour grid failure event would be extremely unlikely to occur. However, in case of any such occurrences, it was also concluded that that an Air Quality Management Plan should be implemented.

At the request of the Environment Agency (EA), this Addendum presents the results of further air quality assessment, evaluating the likely significant effects of the proposed development's generator operations on the ecological environment. Specifically, this Addendum addresses potential impacts associated with annual mean increases in NO_X and NH_3 concentrations, 24-hour maximum NO_X concentrations, nitrogen deposition and acid deposition at nearby ecological sites.

Impacts from normal and unplanned operation of the proposed SBGs are predicted to be insignificant at all relevant modelled ecological receptor locations, when assessed against all relevant critical levels and critical loads.

As such, and acknowledging the conservative methodology applied to the assessment, the proposed development's impacts are not anticipated to have an overall significant effect on local air quality at the assessed ecological sites.

1. Introduction

1.1 Phlorum Limited has been commissioned by HDR to produce an air quality assessment addendum ("Addendum") on behalf of KAO Data ("the operator") to support the Environmental Permit application to operate the KLON06 Data Centre located in Slough Trading Estate, Galvin Road, SL1 4AN ("the site"). The National Grid Reference for the centre of the site is 496105, 180555.

1.2 In February 2023, Phlorum Limited produced a full air quality assessment (Ref: 11749A (AQ Permit) v2) to assess impacts associated with the testing, maintenance and unplanned emergency operation of this data centre's SBGs. The assessment concluded that the proposed development is not anticipated to have an overall significant effect on local air quality during routine testing and maintenance. A prolonged 72-hour grid failure could lead to exceedances of the short-term UK Air Quality Objective for NO_2 at some locations, but such prolonged events are extremely rare and unlikely. An Air Quality Management Plan was recommended in the unlikely event of prolonged grid failures.

1.3 Following a review of the February 2023 air quality assessment ("the AQA"), the Environment Agency ("EA") requested that additional assessment work be undertaken to establish the following:

- The impact of ammonia (NH_3) emissions on nearby ecological sites from the SCR-fitted generators, commonly referred to as '*ammonia slip*'; and
- The impact of acid deposition from nitrogen-based pollutants emitted by the SBGs on nearby ecological sites.

1.4 The EA also requested that all potential ecological impacts be assessed for Local Wildlife Sites ("LWS") in close proximity to the site, namely the Jubilee River and Dorney Wetlands LWS and the Railway Triangle LWS.

1.5 This air quality assessment evaluates the air quality impacts of the SBG emissions during routine testing and maintenance, as well as a theoretical 72-hour emergency power outage scenario.

1.6 This Addendum should be read in conjunction with the AQA, which describes the assessment processes in full detail. This Addendum supersedes the results of the ecological assessment work presented within the AQA.

2. Assessment Methodology

Guidance

2.1 For the assessment of emissions from the SBGs, Defra's guidance on assessing air emissions for environmental permitting[1] and the Environment Agency's guidance on assessing impacts on limited hour operations[2] has been followed. The EA's guidance on specified generators[3] and their Data Centre FAQ headline approach guidance[4] to aide permit applications for data centres has also been reviewed.

Assessment Criteria

2.2 There are two categories of pollutants that are typically the subject of assessments for ecological designated sites. These are pollutants that have an effect on vegetation/habitats in (1) a gaseous form, assessed against critical levels, and (2) those which have an impact through deposition, assessed against critical loads.

Critical Levels

2.3 Critical levels represent the maximum concentrations of pollutants in air for the protection of vegetation. These have been adopted by, amongst others, the European Union and the United Nations Economic Commission for Europe (UNECE) and are used as regulatory standards. These critical levels are summarised in Table 2.1.

1 Defra (2016) Air emissions risk assessment for your environmental permit. Available at: https://www.gov.uk/guidance/air-emissions-riskassessment-for-your-environmental-permit
2 Air Quality Modelling & Assessment Unit (AQMAU). (2016). Diesel generator short term NO_2 impact assessment.
3 Environment Agency (2019) Specified generators: dispersion modelling assessment
4 Environment Agency (2018) Data Centre FAQ Headline Approach

Table 2.1: Critical Levels

Pollutant	Averaging Period Critical Level	Averaging Period Critical Level
Oxides of nitrogen (NO_X)	24 Hour maximum mean	75/ 200 $\mu g.m^{-3}$*
	Annual	30 $\mu g.m^{-3}$
Ammonia (NH_3)	Annual	1 $\mu g.m^{-3}$ (for lichens and bryophytes)
	Annual	3 $\mu g.m^{-3}$

*The critical level is generally considered to be 75$\mu g.m^{-3}$; but this only applies where there are high concentrations of SO_2 and ozone, which is not generally the current situation in the UK, especially not in inland urban regions such as Slough.

Critical Loads

2.4 Critical loads represent estimates of exposure to one or more pollutants below which significant effects are not known to occur, according to present knowledge. Whilst critical levels relate to the concentration of pollutants in air, critical loads relate to a quantity of a pollutant being deposited onto a habitat/ ecosystem.

2.5 The Air Pollution Information System (APIS)[5] provides critical loads for nitrogen deposition (leading to eutrophication) and acid deposition (leading to acidification). Critical loads for nitrogen deposition are in units of kilogrammes of nitrogen per hectare per year (kg N/ha/year) and vary with habitat sensitivity. Critical loads for acid deposition are in kilogrammes of acid equivalent per hectare per year (keq H^+/ha/year). Site specific critical loads are discussed below.

Ecological Sites

2.6 Environment Agency guidance sets out that the assessment must consider all Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites within 10km of an application site, and all Sites of Special Scientific Interest (SSSI) and local nature sites within 2km. The list of ecological sites considered in this assessment, their critical loads, and critical levels are included in Table 2.2, below.

5 Air Pollution Information System. (2021). Available at www.apis.ac.uk

Table 2.2: Modelled Ecological Sites

Site Name	Distance to Site (km)	X	Y	Critical Loads		Critical Levels		
				Nitrogen Deposition (Kg/Ha/Yr)	Max N Acid Deposition (Keq/Ha/Yr)	Annual Mean NO_X (µg/m^3)	Max. 24-Hr NOx (µg/m^3)	Annual Mean NH_3 (µg/m^3)
Burnham Beeches SAC	3.8	495262	184358	10	2.06	30	200	1
Windsor Forest SAC	5.3	495557	175319	10	1.04	30	200	1
South London Waterbodies SPA	6.8	500262	175319	10	1.72	30	200	1
Haymill Valley LNR	2.0	494252	181477	10	1.00	30	200	1
Railway Triangle LWS	1.3	497325	180152	10	1.00	30	200	1
Jubilee River LWS	2.0	494790	179119	10	1.00	30	200	1

2.7 The critical levels and critical loads used for this assessment, as displayed in Table 2.2, have been selected for conservatism. The critical levels are as stringent as they can be, accounting for uncertainties relating to the habitat profiles of the locally designated ecological sites (e.g. whether they contain lichens/ bryophytes). The same approach has been applied for nitrogen deposition critical loads.

2.8 For acid deposition, values were selected based on which identified habitat within each ecological site was considered to be most vulnerable to acid deposition. The Local Nature Reserve (LNR) and Local Wildlife Sites (LWSs) would likely have a considerably higher critical load for acid deposition; a value of 1 Keq.ha^{-1}.yr^{-1} has been selected for conservatism.

Model Input Data

Meteorological Data and Surface Characteristics

2.9 Dispersion modelling was undertaken using ADMS-6 (version: 6.0.0.1, released March 2023), which is produced by Cambridge Environmental Research Consultants (CERC). The handling of meteorological data, surface characteristics, buildings and terrain remain unchanged from the AQA.

Emission Parameters

2.10 The assessment has been carried out assuming that the fuel type for all generators would be <u>diesel</u>.

2.11 The emission parameters of the SDGs (e.g. volumetric flow rate, exhaust temperature) were derived from the manufacturers' datasheets. The datasheets are included with the February 2023 AQA.

2.12 The seven new Kohler generators are to be fitted with Selective Catalytic Reduction (SCR) technology to reduce NO_X emissions concentrations to 507 $mg.m^{-3}$ (5% O_2). As the SCR system is only effective after temperatures reach 250°C, there is a period after start-up when emissions from the generators would be unabated. It is understood that this period should last no longer than 15 minutes. For conservative purposes, all generators are assumed to run for 15 minutes unabated, regardless of the loads the SDGs are run at.

<u>Ammonia Slip</u>

2.13 As was stated within the AQA, ammonia slip is anticipated to be minimal. Exact concentrations are difficult to predict, so highly conservative assumptions have been made:

- NH_3 emission concentrations have been obtained from the upper limit given within the 2017 BAT Conclusions for Large Combustion Plant[6], which is 15 mg $NH_3.Nm^{-3}$ (STP, dry, 15% O_2); and
- Actual conditions were not provided by the Kohler generator manufacturers, so no gas volume correction could be applied for moisture or oxygen. For conservatism, no correction was applied for temperature either; as gases would be released from the engine at temperatures well above STP (see Table 2.4, below), the actual concentration would be well below 15 mg $NH_3.Nm^{-3}$ (Charles' Law states that the volume of an ideal gas would increase with temperature while the mass of the emission within that increasing volume would remain the same, so the molecules of gas would be diluted, reducing its concentration per m^3).
- Ammonia Slip can occur as soon as urea dosing commences. It is expected that dosing would not commence during the first 15 minutes (generator warm-up time). However, in this case, it was assumed that ammonia slip would occur as soon as the SBGs operate.

2.14 A summary of the emission parameters is included in Table 2.4 below. The X,Y coordinates for each stack are provided in the AQA.

Table 2.4: Model Inputs for Generators

Parameter	Unit	MTU generator at 100% load	MTU generator at 50% load	Kohler generator at 100% load
Power	kW	2590	1295	3280
Stack(s) height	m	15	15	7 – 15

6 EA (2019). UK Interpretation Guidance and Permitting Advice on the Best Available Techniques (BAT) Conclusions for: LARGE COMBUSTION PLANTS (LCPs).

Parameter	Unit	MTU generator at 100% load	MTU generator at 50% load	Kohler generator at 100% load
Stack(s) diameter	m	0.5	0.5	0.5
Exhaust gas temperature	°C	503.6	438.5	455
Exhaust Gas Velocity	m/s	44.6*	22.3**	57.8
NO_X emission rate (unabated)	g/s	8.094	3.086	8.109
NO_X emission rate (concentration post SCR not to exceed 507 $mg.Nm^{-3}$ (5% O_2))	g/s	N/A	N/A	1.375
NH_3 emission rate	g/s	N/A	N/A	0.171

* 100% load gas velocity provided separately by the manufacturers.

** The 50% load exhaust gas velocity was not provided by the manufacturers. Using professional judgement, it has been assumed that that the velocity decreases linearly with engine load; it is probable that the velocity would be higher than 22.3 m/s, so this is considered a suitably conservative approach in the absence of detailed information.

Modelled Scenarios

2.15 The scenarios modelled in this assessment are identical to those modelled within the AQA.

Model Outputs

Modelling of Long Term and Short Term Emissions

2.16 With regard to short-term impacts, consideration has been given to the limited hours of operation through the use of hypergeometric distribution statistics. The short-term impacts are applicable to the 24-hour critical level for NO_X, specifically, where the critical level concentration is not to be exceeded in any day of the year.

2.17 As such, the hypergeometric distribution has been used to ascertain the likelihood of 1 or more days of exceedance in a calendar year coinciding with the actual number of days when the generators are operating. For the purposes of this assessment, a probability threshold of 2% (due to Monte Carlo simulations, this equates to a 5% probability) has been considered as an indicator of 'unlikely exceedance', when generators could run over consecutive days. The percentiles used are as follows: 97.81% for Testing and Maintenance; and 99.46% for the Grid Failure scenario.

2.18 To calculate the long-term process contribution, the modelled output, which is based on the model running for every hour in the year, was scaled down to account for the actual number of SBGs operating at one time and the hours of operation in the commissioning year.

Deposition Velocities

2.19 Deposition velocities were obtained from AQTAG06[7] and velocities for forested areas were assumed for all ecological sites, for conservative purposes. The velocities used are provided below:

- NO_X = 0.003 $m.s^{-1}$
- SO_2 = 0.024 $m.s^{-1}$
- NH_3 = 0.030 $m.s^{-1}$

2.20 Nitrogen and acid deposition fluxes were also obtained from the AQTAG06[7] document.

Significance of Impacts

2.21 The significance of impacts from the proposed energy centre is determined in terms of criteria set out in Defra's 'Air emissions risk assessment for your environmental permit'[1]. The significance of impacts is considered both in terms of the:

- **Process Contribution (PC):** the impact of direct, additional emissions associated with the new processes only, and
- **Predicted Environmental Concentration (PEC):** the impact associated with combined PC and existing background pollutant concentrations.

2.22 The determination of significance is the same within this Addendum as was used within the AQA.

Model Uncertainty

2.23 There are a number of inherent uncertainties associated with the modelling process, including:

- Model uncertainty – due to model formulations;
- Data uncertainty – due to inaccuracies in input data, including emissions estimates, background estimates and meteorology; and uncertainty.

2.24 The choices of the practitioner throughout the air quality assessment process are also essential to the management of uncertainty, including the decision to bias the predicted impact towards a worst-case estimate or a central estimate. This assessment has used inputs tending towards 'worst-case', where appropriate, to provide a conservative and robust approach.

2.25 Table 2.4 below summarises the approach to minimising the uncertainty in the conclusions drawn.

7 Habitats Directive (2014). AQTAG06 Technical Guidance on Detailed Modelling Approach for an Appropriate Assessment for Emissions to Air.

Table 2.4: Summary of Conservative Methods used in Assessment

Source of uncertainty	Approach	Comments
Meteorological data	The model has been run with 5 years of meteorological data to account for potential differences in meteorology from year to year. The maximum concentration from 5 years' worth of data, at each receptor or gird point was used in the analysis, increasing the probability that worst-case meteorological conditions are identified. The maximum concentration from 5 years' worth of data, at each receptor or gird point was used in analysis.	This is the recommended approach for Environmental Permitting.
Length of possible grid failure	An Emergency Grid Failure scenario has been modelled in which the failure lasts a full 72-hour period.	Noting the reliability of the grid (99.999967% availability), grid failures are highly unlikely. As such, it is reasonable to consider a 72-hour outage to be a highly conservative modelling assumption.
'Ammonia Slip' Emission Assumptions	Due to uncertainties surrounding the NH_3 emission concentrations, assumptions as listed in paragraph 2.13 have been applied.	This is a worst-case approach, especially considering that none of the generators are categorised as 'large combustion plant'.

3. Assessment of Impacts

3.1 The proposed development's predicted impact on air quality at ecological sites during routine testing and maintenance of the generators, as well as during prolonged 72-hour emergency operation, is presented below.

Annual Mean Air Quality Impacts

3.2 Tables 3.1 and 3.2, below, show the modelled impacts on annual mean NO_x and NH_3 concentrations, respectively.

Table 3.1: Annual mean NO_x impacts from routine testing and a prolonged grid failure.

Modelled Receptor	Annual Mean NO_X ($\mu g.m^{-3}$)				Potentially Significant
	NO_X	%CL	PEC	%CL	
Testing and Maintenance					
Burnham Beeches SAC	0.005	0.02%	N/A	N/A	No
Windsor Forest SAC	0.004	0.01%	N/A	N/A	No
South West London Waterbodies SPA	0.003	0.01%	N/A	N/A	No
Haymill Valley LNR	0.006	0.02%	N/A	N/A	No
Railway Triangle LWS	0.033	0.11%	N/A	N/A	No
Jubilee River LWS	0.019	0.06%	N/A	N/A	No
Grid Failure					
Burnham Beeches SAC	0.012	0.04%	N/A	N/A	No
Windsor Forest SAC	0.009	0.03%	N/A	N/A	No
South West London Waterbodies SPA	0.008	0.03%	N/A	N/A	No
Haymill Valley LNR	0.016	0.05%	N/A	N/A	No
Railway Triangle LWS	0.086	0.29%	N/A	N/A	No
Jubilee River LWS	0.048	0.16%	N/A	N/A	No

Note: Any discrepancies are due to rounding.

3.3 As shown in Table 3.1, the largest annual mean NO_X concentration increase from process contributions was 0.086 $\mu g.m^{-3}$ (grid failure scenario), which is just 0.29% of the 30 $\mu g.m^{-3}$ critical level.

3.4 As all increases (process contributions) are less than 1% of the critical level at internationally designated sites, and less than 100% of the critical level at locally designated sites, the EA's screening criteria[3] have not been exceeded and all impacts in relation to annual mean NO_X can be considered insignificant.

Table 3.2: Annual mean NH_3 impacts from routine testing and a prolonged grid failure.

Modelled Receptor	Annual Mean NH_3 ($\mu g.m^{-3}$)				Potentially Significant
	NO_X	%CL	PEC	%CL	
Testing and Maintenance					
Burnham Beeches SAC	0.0001	0.01%	N/A	N/A	No
Windsor Forest SAC	0.0001	0.01%	N/A	N/A	No
South West London Waterbodies SPA	0.0001	0.01%	N/A	N/A	No
Haymill Valley LNR	0.0001	0.01%	N/A	N/A	No
Railway Triangle LWS	0.0006	0.06%	N/A	N/A	No
Jubilee River LWS	0.0004	0.04%	N/A	N/A	No
Grid Failure					
Burnham Beeches SAC	0.0003	0.03%	N/A	N/A	No
Windsor Forest SAC	0.0003	0.03%	N/A	N/A	No
South West London Waterbodies SPA	0.0002	0.02%	N/A	N/A	No
Haymill Valley LNR	0.0005	0.05%	N/A	N/A	No
Railway Triangle LWS	0.0025	0.25%	N/A	N/A	No
Jubilee River LWS	0.0014	0.14%	N/A	N/A	No

Note: Any discrepancies are due to rounding.

3.5 As shown in Table 3.2, the largest annual mean NH_3 concentration increase from process contributions was 0.0025 $\mu g.m^{-3}$ (grid failure scenario), which is just 0.25% of the 1 $\mu g.m^{-3}$ critical level (assuming the habitat includes lichens/ bryophytes).

3.6 As all increases (process contributions) are less than 1% of the critical level at internationally designated sites, and less than 100% of the critical level at locally designated sites, the EA's screening criteria[3] have not been exceeded and all impacts in relation to annual mean NH_3 can be considered insignificant.

Short-Term Air Quality Impacts

3.7 Short-term impacts for NO_X are provided in Table 3.3, below, assessed against the maximum daily critical level of 200 $\mu g.m^{-3}$.

Table 3.3: 24-hour maximum NO_x impacts from routine testing and a prolonged grid failure.

Modelled Receptor	Maximum 24-Hour NO_X ($\mu g.m^{-3}$)		Potentially Significant
	NO_X	%CL	
Testing and Maintenance			
Burnham Beeches SAC	12.7	6.3%	No
Windsor Forest SAC	11.4	5.7%	No
South West London Waterbodies SPA	9.0	4.5%	No
Haymill Valley LNR	21.8	10.9%	No

Modelled Receptor	Maximum 24-Hour NO_X (µg.m^{-3})		Potentially Significant
	NO_X	%CL	
Railway Triangle LWS	59.8	29.9%	No
Jubilee River LWS	52.3	26.1%	No
Grid Failure			
Burnham Beeches SAC	10.6	5.3%	No
Windsor Forest SAC	11.9	6.0%	No
South West London Waterbodies SPA	8.1	4.1%	No
Haymill Valley LNR	22.6	11.3%	No
Railway Triangle LWS	57.9	29.0%	No
Jubilee River LWS	38.0	19.0%	No

Note: Any discrepancies are due to rounding.

3.8 As shown in Table 3.3, maximum 24-hour NO_x concentrations are modelled to be below the critical level at each ecological site, even when using the more stringent assessment criteria. The maximum predicted daily concentration increase from process contributions is 57.9 µg.m^{-3} (grid failure scenario), which is 29% of the 200 µg.m^{-3} critical level.

3.9 As all increases are less than 10% of the critical level at internationally designated sites, and less than 100% of the critical level at locally designated sites, the EA's screening criteria[3] have not been exceeded and all impacts in relation to daily maximum NO_x can be considered insignificant.

Deposition

3.10 Tables 3.4 and 3.5, below, show modelled impacts on nitrogen and acid deposition, respectively. Nitrogen deposition and acid deposition considers the cumulative contributions of NO_X and NH_3.

Table 3.4: Nitrogen deposition impacts from routine testing and a prolonged grid failure.

Modelled Receptor	Nitrogen deposition (Kg N/ha/yr)				Potentially Significant
	N Deposition PC	%CL	N Deposition PEC	%CL	
Testing and Maintenance					
Burnham Beeches SAC	0.002	0.02%	N/A	N/A	No
Windsor Forest SAC	0.002	0.02%	N/A	N/A	No
South West London Waterbodies SPA	0.001	0.01%	N/A	N/A	No
Haymill Valley LNR	0.003	0.03%	N/A	N/A	No
Railway Triangle LWS	0.015	0.15%	N/A	N/A	No
Jubilee River LWS	0.008	0.08%	N/A	N/A	No
Grid Failure					
Burnham Beeches SAC	0.006	0.06%	N/A	N/A	No
Windsor Forest SAC	0.005	0.05%	N/A	N/A	No

Modelled Receptor	Nitrogen deposition (Kg N/ha/yr)				Potentially Significant
	N Deposition PC	%CL	N Deposition PEC	%CL	
South West London Waterbodies SPA	0.004	0.04%	N/A	N/A	No
Haymill Valley LNR	0.008	0.08%	N/A	N/A	No
Railway Triangle LWS	0.045	0.45%	N/A	N/A	No
Jubilee River LWS	0.025	0.25%	N/A	N/A	No

Note: Any discrepancies are due to rounding.

3.11 As shown in Table 3.4, the largest nitrogen deposition increase from process contributions was 0.045 kg $N.Ha^{-1}.Yr^{-1}$ (grid failure scenario), which is just 0.45% of the 10 kg $N.Ha^{-1}.Yr^{-1}$ critical load.

3.12 As all increases are less than 1% of the critical load at internationally designated sites, and less than 100% of the critical load at locally designated sites, the EA's screening criteria[3] have not been exceeded and all impacts in relation to nitrogen deposition can be considered insignificant.

Table 3.5: Acid deposition impacts from routine testing and a prolonged grid failure.

Modelled Receptor	Nitrogen deposition (Keq H^+/ha/yr)				Potentially Significant
	Acid Deposition PC	%CL	Acid Deposition PEC	%CL	
Testing and Maintenance					
Burnham Beeches SAC	0.0001	0.01%	N/A	N/A	No
Windsor Forest SAC	0.0001	0.01%	N/A	N/A	No
South West London Waterbodies SPA	0.0001	0.01%	N/A	N/A	No
Haymill Valley LNR	0.0002	0.02%	N/A	N/A	No
Railway Triangle LWS	0.0010	0.10%	N/A	N/A	No
Jubilee River LWS	0.0006	0.06%	N/A	N/A	No
Grid Failure					
Burnham Beeches SAC	0.0004	0.03%	N/A	N/A	No
Windsor Forest SAC	0.0004	0.03%	N/A	N/A	No
South West London Waterbodies SPA	0.0003	0.02%	N/A	N/A	No
Haymill Valley LNR	0.0006	0.06%	N/A	N/A	No
Railway Triangle LWS	0.0032	0.32%	N/A	N/A	No
Jubilee River LWS	0.0018	0.18%	N/A	N/A	No

Note: Any discrepancies are due to rounding.

3.13 As shown in Table 3.5, the largest acid deposition increase from process contributions was 0.0032 Keq $H^+.Ha^{-1}.Yr^{-1}$ (grid failure scenario), which is just 0.32% of the conservatively assumed 1 Keq $H^+.Ha^{-1}.Yr^{-1}$ critical load for that habitat.

3.14 As all increases are less than 1% of the critical load at internationally designated sites, and less than 100% of the critical load at locally designated sites, the EA's screening criteria[3] have not been exceeded and all impacts in relation to acid deposition can be considered insignificant.

4. Conclusions

4.1 Phlorum Limited has been commissioned by HDR to produce an air quality assessment addendum to support the permit application for the KLON06 data centre.

4.2 A dispersion modelling assessment of the SBGs was undertaken at the request of the Environment Agency, to assess air quality impacts on nearby ecological sites. Concentrations of NO_x and NH_3 were predicted at selected ecological receptors using a detailed dispersion model and compared with the relevant long and short-term critical levels. Nitrogen and acid deposition were also predicted and compared against relevant critical loads.

4.3 The results in Section 3 of this report show that the relevant screening criteria are not exceeded at any modelled receptor location for any critical level or critical load of any pollutant. This is despite several highly conservative assumptions and conditions being applied to the modelling methodology, as set out in Table 2.4. As such, significant impacts on ecological sites as a result of the SBGs operating under normal testing and maintenance, or an unplanned emergency grid failure, are not anticipated.

phlorum

Phlorum Limited

Head Office & Registered Office:
Unit 12
Hunns Mere Way
Woodingdean
Brighton
East Sussex
BN2 6AH
T: 01273 307 167

Northern Office:
Ground Floor
Adamson House
Towers Business Park
Wilmslow Road
Didsbury
Manchester
M20 2YY
T: 0161 955 4250

Western Office:
One Caspian Point
Pierhead Street
Cardiff Bay
Cardiff
CF10 4DQ
T: 029 2092 0820

info@phlorum.com
www.phlorum.com