

Environment Agency permitting decisions

Bespoke permit

We have decided to grant the permit for Carlton Park Data Centre 1 & 2 operated by Santander UK Plc.

The permit number is EPR/QP3533ED.

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
- Annex 2 the consultation and web publicising responses

Key issues of the decision

The Installation

The installation is subject to the Environmental Permitting Regulations (EPR) as it carries out an activity listed in Part 1 of Schedule 1 to the EPR:

- Section 1.1 A(1) (a): Burning any fuel in an appliance with a rated thermal input of 50 megawatts or more.

And includes the following Directly Associated Activity (DAA):

- Diesel bulk storage tanks, accompanying pipe work and fill points.

The permit authorises the operation of standby diesel generators serving two data centres, in the event of failure in the electrical grid supply. Data Centre 1 and Date Centre 2 are served by two separate feed supplies from the National Grid. The permit does not allow the export of electricity to the National Grid.

The installation is located at Carlton Business Park, Narborough, Leicestershire. The site is centred approximately on National Grid reference 453711,298245. Carlton Park is predominantly an office location, however, there is a leisure facility and nursery close to the site.

The nearest residential properties are located approximately 60 metres west of Data Centre 2 and 250 metres west of Data Centre 1. The principal habitats are Enderby Warren Quarry and Narborough Bog which are designated as Sites of Special Scientific Interest (SSSI) and located 1.7 kilometres (km) and 1.1 km from the installation, respectively. A number of Local Wildlife Sites (LWS) have also been identified, with the closest being Ashlands Crack Willow, located 985 metres from the site.

The generators will be configured in two groups of six standby generators, making a total of 12 generators at each data centre and 24 generators across both data centres. Each generator has a full power thermal input of 4.49 megawatts. The thermal capacity of the site is as follows:

- 53.88 MWth (at Day 1); and
- 107.76 MWth (at Day 2)

Diesel fuel will be stored in four bulk fuel tanks, which are housed within subterranean bunkers. There will be two bunkers on each site, each containing two bulk fuel tanks. Each tank will have a capacity of 67,500 litres. The bulk tanks will be fitted with an overfill alarm float and overfill prevention valve. They will also be double skinned, as will the interconnecting pipe work.

There will be no process effluent discharge from the installation. Uncontaminated water from roof and hard standing run off will drain via a below ground surface water drainage system to attenuation tanks with the

objective of recycling any uncontaminated water where possible. Any excess that can't be reutilised within the installation will be discharged to foul sewer.

A separate recessed area will be provided for the fuel oil delivery area, for each data centre. Any surface water from these areas will discharge through a retention interceptor to foul sewer.

Site Setting, Layout and History

The proposed installation lies on the north east outskirts of Narborough. The installation will be located at Carlton Park Business Park which is a Primary Employment Area and the development itself will be on a former Greenfield site. The installation will occupy approximately 2.5 acres and Data Centre 1 and Data Centre 2 are located 190 metres apart. To the north of Data Centre 1 and east of Data Centre 2 are office buildings, to the east of Data Centre 1 is David Lloyd leisure facility, to the west of Data Centre 2 there are residential properties and in between both data centres is Busy Bees Nursery.

The underlying geology of the site is Triassic Mudstones. The bedrock is classified as secondary B aquifer which is of lower permeability.

There is no known history of pollution at the site as this area was previously a mixture of semi improved grassland, scattered trees and scrub.

The Operator has submitted a Site Condition Report (SCR) which included the baseline conditions. We have reviewed the SCR and consider that it adequately describes the condition of the soil and groundwater prior to commencement of operations.

The installation will operate an Environment Management System in line with the requirements of ISO 14001.

We are satisfied that appropriate management systems and management structures will be in place for this installation.

Site Security

Having considered the information submitted in the application, we are satisfied that appropriate infrastructure and procedures will be in place to ensure that the site remains secure.

Operating Techniques

We have specified that the Operator must operate the installation in accordance with the following documents contained in the application:

Description	Parts Included	Justification
The application	Parts B2 and B3 and the supplementary	Each of the indicated sections contains

	information supplied with these parts.	information regarding the manner in which the installation is operated.
Response to Schedule 5 Notice, dated 01/09/2015	Clarification on worst case operational event (event 3) of the facility.	To ensure the standby generators are operated in line with the scenarios assessed in our determination.
Response to Schedule 5 Notice, dated 21/09/2015	Confirmation and further detail of the emission concentrations used in the air quality modelling.	To ensure the air quality modelling and our assessment is based on correct emission concentrations.
Additional information received	Email received on 06/10/2015 confirming event 2, routine maintenance, scenario.	To ensure the standby generators are operated in line with the scenarios assessed in our determination.
Additional information received	Clarification of the standby diesel generator emission data and engine data sheets.	To ensure our assessment is based on correct emission concentrations.
Additional information received	Confirmation of the NO _x emission concentration from the manufacturers.	
Response to Schedule 5 Notice, dated 22/01/2016	Revised proposal for improved standby diesel generator specifications for the additional 12 standby generators to be installed and options for abatement for the installed 12 standby generators.	To ensure the most efficient standby generators are used for the additional 12 to be installed.

The details set out in the sections above, describe the techniques that will be used for the operation of the installation and have been assessed by the Environment Agency as Best Available Techniques (BAT); they form part of the permit through permit condition 2.3.1 and Table S1.2 in the permit schedules.

Use of Diesel Generators

Santander compared seven options for the technology to supply an independent emergency electricity supply to Carlton Park Data Centre 1 and Data Centre 2 as detailed below:

- Option 1 – Diesel engine generators run on fuel oil
- Option 2 – LPG spark ignition generators
- Option 3 – Piped natural gas spark ignition generators

- Option 4 – Piped natural gas turbine generators
- Option 5 – Hydrogen fuel cell generators
- Option 6 – Gas turbines and fast start aero engine based gas turbines

The BAT assessment highlighted that option 2, LPG spark ignition generators, would not be suitable as they are not as reliable as diesel generators in providing frequency stability and therefore will require additional equipment to correct for this.

Option 3, piped natural gas spark ignition generators, was ruled out as the reliance on gas network rather than onsite fuel creates a single point of failure that is unlikely to meet the resilience requirements of the installation. Onsite storage of natural gas would require excessive storage space. Option 4, piped natural gas turbines, was also ruled out on this basis and slow cold start capability.

Option 5, hydrogen fuel cell generators, were considered in the BAT options assessment. However they were ruled out due to being new technology without proven installations in back up generation capacity. Furthermore, they are considered unsuitable for providing back up power due to their high operating temperatures and consequential start up time and hydrogen gas can be difficult to store for long periods of time.

Option 6, gas turbines, are not proven reliable for high integrity data centres. The synchronising process is not as efficient as diesel based systems due to poor turn down of gas turbines, significant risks with storing gas and increased risk from failure of a single unit. Therefore, they are unlikely to be resilient enough for the installation requirements. Fast start aero engines were also considered but, similarly to the gas turbines, synchronising multiple units is difficult and unreliable. Large single units are unsuitable due to poor turn down. Therefore, they do not provide the required flexibility and have a high risk of failure. The gas turbines and fast start aero engines would require battery uninterruptible power supply (UPS) to cover the longer (40 second) start up period, in order to achieve the same resilience as diesel generators.

Fast start is a fundamental requirement of the technology as it is essential to resume, almost instantaneously, a supply of electricity in the event of loss of power to the site. Diesel generators are the preferred option for the supply of backup power for data centres and are a proven technology for providing reliable resilience of functionality which can be started from cold very quickly. Santander consider that option 1, diesel engine generators run on fuel oil, is the best technology and should be used to provide the emergency power supply to Carlton Park Data Centre 1 and 2.

Emissions to Air

The Operator has assessed emissions using a number of operating scenarios. These are described in the application as events 1, 2 and 3.

The main pollutants of concern resulting from operation of the standby generators are: oxides of nitrogen (NO_x), oxides of sulphur (SO_x) and particulates (PM₁₀).

The Operator has assessed emissions from the generators and conducted air dispersion modelling to determine whether impact from these pollutants can be screened out as having no likely significant effect.

However, where an emission cannot be screened out as insignificant, it does not mean it will necessarily be significant. For pollutants that do not screen out as insignificant, we determine whether exceedances of the relevant environmental quality standard (EQS) is likely. This is done through detailed audit and review of the Operator's air dispersion modelling taking background concentrations and modelling uncertainties into account. Where an exceedance of an EQS is identified, we may require the Operator to go beyond what would normally be considered BAT or refuse the application.

The Operator's assessment of the impact of air quality is set out in section 8.2 of the application and the amended modelling saved on EDRM, reference 'Application new bespoke: Modelling files – amended modelling' dated 14/07/2015. The assessment comprises:

- dispersion modelling of emissions to air from the operation of the generators; and
- a study of the impact of emissions on nearby sensitive habitat and conservation sites.

The Operator's modelling predictions has considered three operating scenarios described as event 1, 2 and 3 in the application. The air quality assessment considered emissions of nitrogen dioxide (NO₂), particulate matter (PM₁₀) and sulphur dioxide (SO₂) from 24 diesel generators under the following events:

- Event 1 (standby generator tests) – each month each group of standby generators are powered up and run to approximately 50% full load for two hours whilst connected to a mobile load bank.
- Event 2 (non routine operation standby duty) – annually a full In Service Test (IST/Black Building Test) is undertaken where all generator sets are started, synchronised and take the building load. This will normally take place over a one hour period.
- Event 3 (grid outage) – at the present time the standby generators are used for standby power only. Standby duty will only occur in the event of a loss of grid power to the building. An assumed grid outage of up to five days loss at a maximum frequency of once per five years as a worst case scenario.

Further to assessment it should be noted that for all the scenarios described above, it is not possible for all generators to operate at the same time. This is to ensure that there is a margin of safety should there be a failure in the backup system. As such modelling predictions significantly over estimate emissions from the generators.

Emissions of Oxides of Nitrogen (NO_x)

Additional information, on the generator emission concentrations, was received as a result of a request for further information (Application Bespoke Schedule 5 Response – confirmation of NO_x emission concentration, dated 13/01/2016). This highlighted higher pollutant concentrations than those used in the original air dispersion modelling. However, after assessment of the results, we are satisfied that the revised emission concentrations for sulphur dioxide (SO₂) and particulate matter (PM₁₀) would not lead to exceedances of the relevant environmental quality standard (EQS) and the original conclusions can be used.

The NO_x emission concentrations required more detailed assessment and therefore we carried out modelling sensitivity using the revised concentration. For the purpose of event 3, we re-evaluated the statistical likelihood of operating their emergency scenario for one 24 hour period every five years, which the Operator confirmed would be a more realistic scenario. The conclusions of this are:

- it is unlikely that there would be any exceedances of the long term annual EQS of 40 ug/m³ at any of the receptors under all events; and
- it is unlikely that under event 2 that there will be exceedances of the short term EQS of 200 ug/m³;
- it is likely under events 1 and 3 there could be an exceedance of the short term EQS of 200 ug/m³.

Currently on site only half of the generators have been installed across both data centres, six diesel generators in Data Centre 1 and six in Data Centre 2. The Operator has confirmed that the second 12 generators will have lower emissions of NO_x (less than 2000 mg/m³ compared to the existing generators which have a 4000 mg/m³ design). Therefore, we have included a pre operational condition (PO1) requiring the Operator to submit a report containing a comprehensive review of the best available generator options, prior to installing the outstanding 12 back up diesel generators. An improvement condition, IC2, has also been included requesting the Operator to carry out a detailed assessment of the emissions to air from the existing 12 standby generators using the emission concentrations provided by the manufacturers.

Emissions of Sulphur Dioxide and Particulate Matter

Events 1 & 2

The air quality assessment has modelled the impacts of events 1 and 2 combined by calculating the total number of hours per year that each generator would operate, and modelling the operation as an equivalent number of hours. Following this principle the modelled scenario comprises 12 generators running at full power for one hour once a week for 12 months (624 hours). This is a reasonable approach for calculating the impact of annual average pollutant concentrations.

The process contribution (PC) for Events 1 and 2 are summarised in the tables below. The figures shown indicate the maximum off site ground level impacts and those at the most significantly impacted human receptor location, Busy Bees Nursery 1st floor.

Table 1- Events 1 and 2 predicted short term impacts

Pollutant	EQS/EAL µg/m ³	2 x background concentration µg/m ³ [1]	PC µg/m ³ [2]	PC as % of EQS/EAL	PEC µg/m ³ (PC + 2 x background)	PEC as % of EQS/EAL [3]
SO ₂ (15 min)	266	8.26	9.75	3.67	18.01	6.77
SO ₂ (1 hr)	350	8.26	0.23	0.07	8.49	2.43
SO ₂ (24 hr)	125	8.26	0.49	0.39	8.75	7
PM ₁₀ (24 hr)	50	32.56	0.001	0.002	32.56	65.12

Note [1] The concentration is taken as twice the long term background level for Short Term Environmental Quality Standard (EQS) / Environmental Assessment Level (EAL) standards referenced to an hourly averaging value.

Note [2] Representative of worst case impact at Busy Bees Nursery 1st floor.

Note [3] Where the PC is demonstrated to be less than 10% of the short term EQS/EAL, a level below which we consider to indicate insignificant impact, further consideration of the PEC is not required.

Table 2 – Events 1 and 2 predicted long term impacts

Pollutant	EQS/EAL µg/m ³	Background concentration µg/m ³	PC µg/m ³ [1]	PC as % of EQS/EAL	PEC µg/m ³	PEC as % of EQS/EAL [2] [3]
SO ₂	-	-	-	-	-	-
PM ₁₀	40	16.28	0.009	0.02	16.29	40.72

Note [1] Representative of worst case impact at Busy Bees Nursery 1st floor.

Note [2] Where the PC is demonstrated to be less than 1% of the long term EAL, a level below which we consider to indicate insignificant impact, further consideration of the PEC is not required.

Note [3] Where the PEC is demonstrated to be greater than 70% of the long term EAL, a level below which we consider to indicate as not being a significant impact, more detailed assessment is required.

Screening out emissions which are insignificant

In accordance with Environment Agency guidance H1 Annex F, the following emissions are considered insignificant as the short term impact is < 10% of the relevant short term EQS's/EAL's and < 1% of the long term EQS/EAL.

These are:

- SO₂ short term (15 min, 1hr and 24 hr);
- PM₁₀ short term; and
- PM₁₀ long term.

Conclusion

All emissions (SO₂ and PM₁₀), for Event 1 and 2, screen out as being considered insignificant and no further assessment is required.

Event 3

The original modelling of impact for Event 3, submitted with the application, assumed 12 generators being run at full power for all meteorological hours of a year. The consultant then completed statistical analysis on their modelling results to show the likelihood of exceedances based on five consecutive days of the generators being operational.

The process contribution (PC) for Events 3 is summarised in the tables below. The figures shown indicate the maximum off site ground level impacts and those at the most significantly impacted human receptor location, Busy Bees Nursery 1st floor.

Table 3- Events 3 predicted short term impacts

Pollutant	EQS/EAL µg/m ³	2 x background concentration µg/m ³ [1]	PC µg/m ³ [2]	PC as % of EQS/EAL	PEC µg/m ³ (PC + 2 x background)	PEC as % of EQS/EAL [3]
SO ₂ (15 min)	266	8.26	20.91	7.86	29.17	10.97
SO ₂ (1 hr)	350	8.26	15.01	4.29	23.27	6.65
SO ₂ (24 hr)	125	8.26	9.35	7.48	17.61	14.09

Note [1] The concentration is taken as twice the long term background level for Short Term Environmental Quality Standard (EQS) / Environmental Assessment Level (EAL) standards referenced to an hourly averaging value.

Note [2] Representative of worst case impact at Busy Bees Nursery 1st floor.

Note [3] Where the PC is demonstrated to be less than 10% of the short term EQS/EAL, a level below which we consider to indicate insignificant impact, further consideration of the PEC is not required.

Screening out emissions which are insignificant

Emissions of SO₂ can be screened out as insignificant as the short term impact is < 10% of the relevant short term EQS. No further assessment is required.

Conclusion

All SO₂ emission, for Event 3, screen out as being considered insignificant and no further assessment is required.

Emission Limits and Monitoring Requirements

The generators are only planned to operate for two hours per month with an annual one hour black building test as part of the maintenance regime to ensure integrity of plant operation. Based on this mode of operation, we have not set any emission limits or monitoring requirements for these generators. Furthermore, Article 30 para 8(a) of the IED states that, the Emission Limit Values (ELV's) in Annex V do not apply to diesel generators.

As there are no limits or monitoring requirements, condition 2.3.3 '*The activities shall not operate for more than 500 hours in emergency use.*' has been included to restrict the hours of operation. The Operator will be required to record operating hours for each generator and the number of runs for each of the generators. Furthermore, the Operator will also ensure that standby generators are well maintained in line with the operating techniques submitted in their application, in order to minimise the likelihood of impact from air pollutants.

Ecological Impacts

There are two Sites of Special Scientific Interest (SSSIs) and 19 local wildlife sites (LWSs) located within two kilometres of the installation.

An ecological assessment detailing the LWSs and SSSIs was submitted as part of the duly making request.

Events 1 and 2

For events 1 and 2, the modelling considers the long term impacts of NO_x and SO₂ and the daily impacts from NO_x compared to critical levels (CLe) and critical loads (CLo) at sensitive ecological receptors. The results indicate that exceedance of either CLes, nutrient nitrogen CLo or acid deposition CLo will not be likely.

Check modelling carried out by our Air Quality Modelling Assessment Unit (AQMAU) supported the Operator's conclusions that for events 1 and 2, the impacts at ecological receptors are not likely to be significant compared to the NO_x and SO₂ CLes, nutrient nitrogen and acid deposition CLo.

Event 3

Under event 3, using annual met data, the modelling predicts exceedances of the 24 hour NO_x CLe at the two SSSIs and most of the LWSs. The applicant has analysed the probability of plant operating and predict no more than a 0.3% probability that the short term NO_x CLe will be exceeded. However, this probability assessment does not take into account the statistical likelihood of operational hours coinciding with predicted exceedance days. As such this approach is conservative.

We agree that under Event 3 it is unlikely there will be an exceedance of the 24 hour NO_x CLe at all SSSIs and most LWSs. The applicant predicts a 0.3% chance of this occurring. However, AQMAU checks show that this prediction is highly conservative and is likely to be substantially lower than this. Furthermore, event 3 was modelled on the scenario of five days once every five years, rather than the revised 24 hours once every five years. Therefore, these results are much more conservative than the more realistic event 3 scenario.

Emissions to Sewer

The only emissions to sewer from the proposed facility comprises of domestic foul water from toilets, sinks, showers, condensate discharge from the mechanical plant and uncontaminated surface water that has not been utilised in the process.

Data Centre 1 will be connected into the existing drainage system via new manholes. Data Centre 2 will connect to the head of the existing foul water system to the north east of Busy Bees nursery. The discharges from the installation connects to the existing Carlton Park foul discharge network and connects into the public foul sewer in King Edward Avenue to the south of the installation.

Emissions to Water

There will be no emissions to surface water from the proposed installation.

Emissions to Land

There will be no emissions to land from the proposed installation.

Fugitive Emissions

All raw materials are stored in secure containers within bunded areas. Bulk diesel storage tanks and associated pipework are double skinned and within subterranean enclosures. Each bulk storage tank is fitted with an overfill alarm float switch.

Based on the information in the application we are satisfied that appropriate measures will be in place to prevent and/or minimise fugitive emissions.

Odour and Waste

The type of activity that will be carried out at the proposed facility is unlikely to give rise to odour issues.

A waste management plan will be developed for the proposed site and reviewed every four years. There will be no waste accepted at the site. Waste will not be generated during normal operations. Waste oil would normally only occur during a spillage, contamination or degradation of the oil stocks. Small

quantities of waste items may be generated during routine maintenance activities. The site management system will include procedures for the collection and disposal or recovery of any waste oils and any other wastes that are generated.

Based upon the information in the application, we are satisfied that the appropriate measures will be in place to prevent or where that is not practicable to minimise pollution from odour and waste.

Noise and Vibration

The application contained a noise impact assessment, undertaken by Sandy Brown Associates, which identified sensitive receptors, potential sources of noise from the installation and their noise attenuation measures. Measurements were taken from various locations around the site to establish existing noise levels. The measured background noise levels were used to derive 'noise limits' for normal and emergency operations. For noise assessments, for permit applications, BS4142 should be used rather than 'noise limits'. BS4142 assesses the impact of industrial and commercial sound on residential receptors by subtracting the measured background from the rating level. BS4142 states: "A difference of +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context." and "A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context."

The lowest measured background noise levels recorded during the assessment are 44 dBA in the daytime and 34 dBA in the night-time. The assessment predicts a noise level of 47 dBA at the most sensitive residential receptor. This is based on measured levels from existing operational generators and corrected to assume all proposed units in the nearest data centre (Data Centre 2) will be operating at full load.

Making no rating corrections this would result in a difference of +3 dB and +13 dB over the lowest measured background for daytime and night-time respectively. This indicates no adverse impact during the daytime and significant adverse impact during the night time. However, the context of the operations needs to be taken into account. The generators are only likely to be operational infrequently, less than 4% of the year for maintenance and national grid failure of both Data Centres simultaneously. Maintenance is scheduled to be 1 hour for each unit per year and is likely to be during daytime hours. Grid failure is most likely due to overload during peak periods, which is normally daytime hours, or due to extreme weather conditions which are rare, difficult to predict and will change the soundscape significantly. Therefore, although the assessment indicates the potential for significant adverse noise impact at the most sensitive receptor during the night time, the probability of this occurring is likely to be very small.

The generators will be housed within the main Data Centre buildings which will provide acoustic attenuation and screening. Furthermore, the exhaust

system will include a suitable high performance reactive absorptive silencer. The noise of the exhaust will be limited to 60 dBA at 1 metre.

The noise impact assessment concluded that there will be no adverse effect providing that the diesel generators met the following specifications: 71 dB at Data Centre 2 and 63 dB at Data Centre 1. The anticipated noise levels were achieved at Data Centre 1 but not at Data Centre 2. Therefore, an improvement condition, IC1, has been included. This requests that a report is submitted outlining proposals for the further attenuation and/or management of noise for Data Centre 2 and shall include a timescale, to be agreed with the Environment Agency, for the implementation of the proposed measures. The IC has to be completed within 6 months of permit issue.

Further Information Received

Not duly made – request for further information (RFI) one

EDRM reference: Application bespoke Not duly made letter (19/01/2015) -

RFI, dated 19/01/2015, to provide an additional application fee of £15,450, as a result of amendments to the following parts of OPRA:

- Scheduled activities – Revise the OPRA assessment to regard the installation as comprising of two scheduled activities, S1.1 Part A(1)(a)(i), as each Data Centre operates independently in its own right and is above the 50 MWth threshold.
- Location attribute – Amendments to include SSSI's, presence of aquifers and air quality management zone.

EDRM reference: Application Bespoke NDM Email for Additional Fee (28/05/2015) -

Email, dated 26/05/2015, stating that the additional application fee is still required.

EDRM reference: Application Bespoke Fee Confirmation (22/07/2015) -

Additional application fee received on 29/06/2015.

Not duly made – RFI two

EDRM reference: Application Bespoke – Not Duly Made Letter 2 (04/02/2015) -

RFI, dated 04/02/2015, to provide the following information:

- Re-submit statistical interpretation of modelled output, based on a more realistic emissions scenario for Event 3, to determine likelihood of exceedance.
- Provide an assessment for Local Wildlife Sites (LWS) located within two kilometres of the installation.

- Assessment of the 24 hour critical level for NOx at ecological receptors.
- Provide expected actual oxygen and moisture levels.
- Remove any buildings within the modelling that are beyond the USEPA Good Engineering Practice guidelines. For receptor locations that are within this distance, comment on expected modelling uncertainties associate with predictions at that location.

EDRM references: Application new bespoke: Response to EA comments on modelling report (14/07/2015) and Application new bespoke: Modelling files – amended modelling (14/07/2015) -

Response to RFI request, including updated modelling and associated modelling files, received on 14/07/2015.

Schedule 5 one

EDRM reference: Application Bespoke – Schedule 5 Notice (01/09/2015) -

Schedule 5 Notice, dated 01/09/2015, requesting clarification on worst case operational event (Event 3) of the facility.

EDRM reference: Application – Bespoke – Schedule 5 Response (09/09/2015) -

Response received on 09/09/2015 – Confirming that 24 hours once every five years would be a more realistic operational scenario for Event 3. Applicant also clarified that the Data Centres are fed from two 33kV supplies and are therefore very unlikely to suffer a complete loss of grid supplies at all.

EDRM reference: Application Bespoke Schedule 5 Response. email (21/09/2015) -

In the Schedule 5 two response the applicant expressed that the Data Centres are in fact fed by two 132kV supplies.

Schedule 5 two

EDRM reference: Application Bespoke – Schedule 5 Notice 2 (21/09/2015) -

Schedule 5 Notice, dated 21/09/2015, requesting confirmation and further detail of the emission concentrations used in the air quality modelling.

EDRM references: Application Bespoke Schedule 5 Response. email (21/09/2015), Application Bespoke Schedule 5 response – air quality data email 25/06/2015 (21/09/2015), Application Bespoke Schedule 5 Response document (21/09/2015) -

Response received on 21/09/2015, provided the following:

- The emission concentrations (mg/m³) for oxides of nitrogen (NO_x), sulphur dioxide (SO₂), particulates (PM₁₀) and carbon monoxide (CO) used in the modelling.
- Confirmation that the maximum concentrations were used.
- Input parameters for the modelling.
- Manufacturers data sheets.
- Further information on the national grid supplies to the Data Centres.

Additional Information Received

EDRM reference: Application bespoke: RFI response – Event 2 confirmation (15/10/2015) –

RFI email, dated 06/10/2015, requesting confirmation of the operating scenario for Event 2.

Response received on 06/10/2015, confirmed that Event 2 would involve all 24 generators starting and running for less than an hour. In reality likely to only be one Data Centre (12 generators) at a time.

Additional Information Received

EDRM reference: Application - Bespoke: RFI Response (19/10/2015), Application - Bespoke: Kawasaki_GPS_Catalog_JAN_2010 (19/10/2015), Application – Bespoke: 5.1 BAT Options Appraisal_CP v2 (19/10/2015) -

Consideration of why fast start aero engines were not suitable technology for the Data Centres.

Additional Information Received

EDRM reference: Application Bespoke Additional Information Received – engine emission data confirmation (16/11/2015), Application Bespoke Additional Information Received – engine emission data confirmation Santander_Fox_Emissions_data_v2a (revised with G13 data) (18/11/2015), Application Bespoke Additional Information Received – engine emission data confirmation QSK60-G13 engine performance data (18/11/2015), Application Bespoke Additional Information Received – engine emission data confirmation Fox engine specs (18/11/2015) –

Clarification of the generator emission data from the manufacturers.

Additional Information Received

EDRM reference: Application Bespoke Schedule 5 Response – confirmation of NO_x emission concentration (13/01/2016) –

Confirmation that the NO_x emission concentration is 3,572 mg/m³.

Schedule 5 three

EDRM reference: Application bespoke Schedule 5 Notice (22/01/2016) -

Schedule 5 Notice, dated 22/01/2016, requesting a revised proposal for improved generator specification for the additional 12 standby generators yet to be installed and investigate options for mitigation/abatement for the existing 12 standby generators.

EDRM reference: Application Bespoke Schedule 5 Response 3 – proposal for the additional 12 engines (23/02/2016)

Response received on the 23/02/2016 provided the following:

- Propose that the specification for the 12 generators for the additional DRUP units are revised to the latest available low NOx standards and industry best practice at point of installation.
- Mitigation/abatement options and justifications on why fitting retrospectively is not suitable. Proposed that running history is recorded and reviewed annually to establish whether the use of selective catalytic convertors could be appropriate.

Annex 1: decision checklist

This document should be read in conjunction with the Duly Making checklist, 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 Regulatory Guidance Note (RGN) 6 High Profile Sites, our Public Participation Statement and our Working Together Agreements.	✓
Responses to consultation and web publicising	The web publicising and consultation responses (Annex 2) were taken into account in the decision. The decision was taken in accordance with our guidance.	✓
Operator		
Control of the facility	We are satisfied that the applicant (now the operator) is the person who will have control over the operation of the facility after the grant of the permit. The decision was taken in accordance with EPR RGN 1 Understanding the meaning of operator.	✓
European Directives		
Applicable directives	All applicable European directives have been considered in the determination of the application. The proposed installation is subject to the Industrial Emissions Directive (IED).	✓
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.	✓
Site condition report	The operator has provided a description of the condition of the site.	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	<p>We consider this description is satisfactory. The decision was taken in accordance with our guidance on site condition reports and baseline reporting under IED–guidance and templates (H5).</p>	
Biodiversity, Heritage, Landscape and Nature Conservation	<p>The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat .</p> <p>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 site.</p> <p>An Appendix 4 was completed and saved to ERDM, for audit only, on 23/09/2015.</p> <p>We have not formally consulted on the application. The decision was taken in accordance with our guidance.</p>	✓
Environmental Risk Assessment and operating techniques		
Environmental risk	<p>We have reviewed the operator's assessment of the environmental risk from the facility.</p> <p>The operator's risk assessment is satisfactory.</p> <p>The assessment shows that, applying the conservative criteria in our guidance on Environmental Risk Assessment, all emissions may be categorised as environmentally insignificant.</p>	✓
Operating techniques	<p>We have reviewed the techniques used by the operator and compared these with the relevant guidance notes.</p> <p>The facility will be subject to IED Chapter II plant and have consideration for combustion sector guidance.</p> <p>It must be noted that although the aggregated total thermal input for the facility is 107.76 MW, this was done for the purposes of determining the activity type when applying for a permit. The proposed facility does not have a common windshield and each standby generator emits</p>	✓

Aspect considered	Justification / Detail	Criteria met Yes
	<p>from its own individual stack and is therefore not subject to Chapter III of the IED.</p> <p>Assessment of operation at the proposed installation has also taken into account the requirements set out in Combustion Activities (EPR 1.01).</p> <p>The proposed techniques/emission levels for priorities for control are in line with the benchmark levels contained in the TGN and we consider them to represent appropriate techniques for the facility. The permit conditions ensure compliance with relevant BREFs and BAT Conclusions, and ELVs deliver compliance with BAT-AELs.</p>	
The permit conditions		
Raw materials	<p>We have specified limits and controls on the use of raw materials and fuels.</p> <p>The use of low sulphur diesel oil less than 0.1% w/w sulphur content.</p>	✓
Pre-operational conditions	<p>Based on the information in the application, we consider that we need to impose a pre-operational condition (PO1).</p> <p><i>'Prior to the commencement of installing the outstanding 12 standby generators the Operator shall undertake a comprehensive review of the best available options; this shall include but not be limited to;</i></p> <ul style="list-style-type: none"> • <i>oxides of nitrogen emission concentrations; and</i> • <i>evidence that the considered options will achieve an oxides of nitrogen emission concentration of below 2000mg/m³; and</i> • <i>a modelling assessment to predict the impact of the additional 12 engines on air quality in comparison to the relevant environmental assessment levels.</i> <p><i>A written report summarising the options shall be submitted to the Environment Agency and include timescales for the implementation of the preferred option. The report shall be submitted in writing for approval by</i></p>	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	<i>the Environment Agency.'</i>	
Improvement conditions	<p>Based on the information in the application, we consider that we need to impose improvement conditions (IC).</p> <p>We have imposed IC1 to ensure that appropriate measures are in place to ensure noise pollution is minimised.</p> <p>IC1 requires the Operator to submit a report including proposals for the further attenuation and/or management of noise for Data Centre 2.</p> <p>We have imposed IC2 to establish the impact of the installed 12 standby generators.</p> <p>IC2 requires the Operator to carry out a detailed assessment of the emissions to air from the existing 12 standby generators using the emission concentrations provided by the manufacturer.</p>	✓
Incorporating the application	<p>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.</p> <p>These descriptions are specified in the Operating Techniques table in the permit.</p>	✓
Emission limits	<p>We have decided that emission limits not need to be set.</p> <p>However, condition 2.3.3 '<i>The activities shall not operate for more than 500 hours in emergency use.</i>' has been included to restrict the hours of operation.</p>	✓
Monitoring	We have decided that monitoring will not be carried out for operation of the generators.	✓
Reporting	<p>We have specified reporting in the permit.</p> <p>The Operator will be required to report on the gas oil usage and the number of operating hours for each of the generator groups. The reporting frequency is based on</p>	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	the low frequency of use and the low number of operating hours per annum.	
Considerations of foul sewer	<p>We agree with the operators justification for not connecting to foul sewer.</p> <p>There will be no process effluent from operation of the installation. Foul is of a domestic nature as a result of the welfare facilities at the data centres.</p>	✓
Operator Competence		
Environment management system	There is no known reason to consider that the operator will not have the management systems to enable it to comply with the permit conditions. The decision was taken in accordance with RGN 5 on Operator Competence.	✓

Annex 2: Consultation and web publicising responses

Summary of responses to consultation and web publication and the way in which we have taken these into account in the determination process.

Response received from Public Health England
Public Health England on 30 th July 2015
Brief summary of issues raised
PHE have no significant concerns regarding the risk to the health of the local population from the installation.
Summary of actions taken or show how this has been covered
None required.

The following organisations were consulted, however no responses were received:

- Environmental Health – Blaby Council
- Food Standards Agency
- Health and Safety Executive
- Director of Public Health

This proposal was also publicised on the Environment Agency's website between 24/07/2015 to 21/08/2015, but no representations were received during this period.