



Environmental Risk Assessment - DP3107LF

Colt Powergate Data Centre

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1.0 INTRODUCTION

This Environmental Risk Assessment (ERA) has been prepared by HDR on behalf of the operator *Colt Data Centre Services UK Limited* in support of the application for a new bespoke Environmental Permit (ref DP3107LF).

This ERA relates to the proposed operation of the combustion plant exceeding 50MWth and the associated fuel storage facilities at the *Colt - Powergate* Data Centre located at Unit 9-13, Volt Avenue, Powergate Business Park, North Acton, NW10 6PN (Grid reference TQ 20965 82874).

This ERA has been produced in accordance with Environment Agency (EA) guidance – “Risk assessments for your environmental permit”¹.

Please refer to the following reports for detailed risk assessments that have been submitted as part of the application for a permit:

- Air Quality assessment
- Noise assessment
- Climate change risk assessment
- Site condition report / Site Baseline assessment

1.1 Purpose of this document

This ERA aims to identify potentially significant environmental risks associated with the installation’s activities, the applicable source pathway receptors, and the control measures in place to help mitigate the identified risks.

¹ <https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit>

2.0 BACKGROUND

We have presented a high-level summary below. Please refer to the Non-technical Summary (NTS) document submitted with the application for a permit for further details.

2.1 Site Summary

The Colt Powergate installation (see Figure 2.1 below) has been operating as a data centre since 2001. As with other data centres the site utilises Emergency Standby Generators (ESGs) to provide emergency power in the event of grid electrical failure. Recent expansion works will see additional ESGs installed and commissioned which will result in the total thermal capacity exceeding 50MWth for the first time in the sites history.

The ESGs are “excluded MCPs” as they are purely standby plant and there is no capacity agreement in place. All of the ESGs due to be commissioned are over 1MWth and are therefore classed as ‘Medium Combustion Plant’ (MCP). Details of the existing and new MCPs are in the table below with more details found in the Non-technical Summary submitted with the application.

Table 2.1 Summary of MCP details

MCP type	No. of ESGs	Thermal capacity	Install date
Existing	7	~30MWth	Pre 2010
New	6	~32MWth	2023
Total after expansion	13*	~62MWth	

In addition to the above, there are currently 2no. temporary generators to support the IDC4 & NODE data halls during the expansion works. These temporary generators will be removed once the new IDC5-7 generators have been commissioned and therefore have not been included in the application for a permit.

The location of the generators, fuel tanks, emissions points (flues / stacks) and surface water connections are shown in Figure 2.1 below. The installation boundary encompasses the listed activities only.

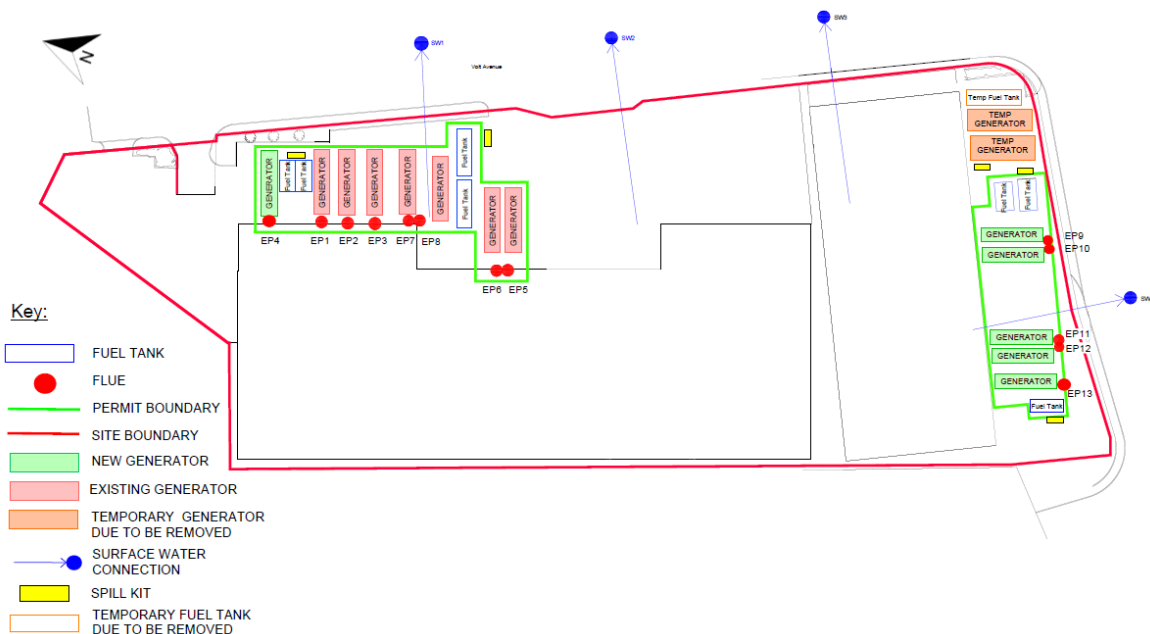


Figure 2.1 : Site boundary and emissions points

2.2 Site sensitivity

The installation is located within Powergate Business Park which is an industrial estate in North Acton (See Figure 2.2 and Figure 2.3 below). As such the immediate surrounding area is predominately industrial and commercial. There is a train line to the East of the site and the Grand Union Canal runs from North to East with the A40 to the South. There are residences to the West (approx. 350 m), North (approx. 500m), Northeast (approx. 500m) and Southeast (approx. 600m).

The London Borough of Ealing has designated the area an Air Quality Management Area (AQMA) for exceeding the annual mean NO₂ objective and the 24-hour mean PM₁₀ objective. There are no Local Nature Reserves within 1 km of the Site and no Sites of Special Scientific Interest within 2km of the Site.



Figure 2.2 : Site context

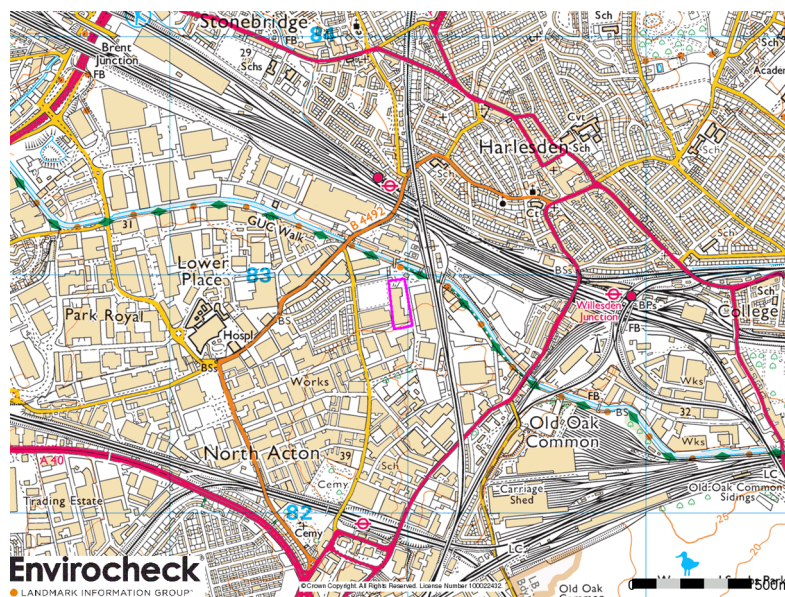


Figure 2.3 : Site context

2.3 Sensitive receptors

Sensitive receptors are either human/ecological receptors that could potentially be affected by the permitted activities. The sensitive receptors identified as part of this ERA are presented in the tables below.

Table 2.2 Human Receptors

Location / description	X grid ref	Y grid ref
Unit 6 - 8 Powergate Business Park	520905.2	182758.7
Unit 6 - 8 Powergate Business Park	520926.4	182705.2
Unit 3 - 5 Powergate Business Park	521012.1	182757.5
Unit 3 - 5 Powergate Business Park	520960.6	182738.6
Unit 2 Powergate Business Park	521045.9	182756.1
Unit 1 Kingham Industrial Estate	520928.4	182792.3
Unit 1 -5 Royal London Industrial Estate	520882.0	183045.1
Unit 1 Powergate Business Park	521050.8	182718.0
60 North Acton Road	520770.6	182871.8
40 North Acton Road	520764.4	182947.2
110 North Acton Road	520784.7	182727.8
85 Harley Road	521303.8	183193.3
15 Stephenson Street	521500.1	182730.3
Bashley Road Caravan Site	521143.6	182683.3

Table 2.3 Ecological Receptors

Site Name	Distance from Site (m)	Designation	X grid ref	Y grid ref
Wormwood Scrubs	1,208	LNR/SINC	521543	181807
Wormwood Scrubs	1,343	LNR/SINC	521996	182003
Grand Union Canal	219	SINC	520929	182879
Grand Union Canal	180	SINC	520923	182937
Grand Union Canal	1,437	SINC	520919	182985
River Brent west of Stonebridge	1,978	SINC	521181	182929
Abbey Road Mound and Bestway Park	1,446	SINC	520936	183047
St. Raphael's Open Space	1,802	SINC	519571	183197
The Canal Feeder	828	SINC	519089	183481
Shakespeare Road Open Space	1,026	SINC	519717	183591
The Old Orchard SINC	1,461	SINC	519916	184331
Brentfield Open Space	1,466	SINC	520604	183613
Brentfield Park	1,481	SINC	520586	183821
Gibbons Recreation Ground	1,803	SINC	520637	184293
St Mary's Church Willesden	1,900	SINC	520830	184329
Roundwood Park and Willesden Cemeteries	1,596	SINC	520824	184344
Roundwood Park	1,445	SINC	521052	184671
St Mary's Cemetery	1,435	SINC	521345	184733
Kensal Green Cemetery	1747	SINC	521799	184234
North Acton Cemetery	706	SINC	522393	182687

3.0 METHODOLOGY

3.1 Approach

This ERA has been prepared in accordance with EA guidance. This guidance recommends that the following steps are undertaken in preparing a risk assessment:

1. Identify and consider risks for your site, and the sources of the risks.
2. Identify the receptors (people, animals, property and anything else that could be affected by the hazard) at risk from your site.
3. Identify the possible pathways from the sources of the risks to the receptors.
4. Assess risks relevant to your specific activity and check they are acceptable and can be screened out.
5. State what you will do to control risks if they are too high.
6. Submit your risk assessment as part of your permit application.

3.2 Risk scoring

This ERA has been completed using the scoring matrix shown in Table 3.1 – Risk Matrix with definitions for each score as follows:

Probability of exposure:

- High – exposure highly likely to occur
- Medium – considered to be likely
- Low – considered to be unlikely
- Very Low – considered to be highly unlikely / very rare event / mitigation in place

Consequence:

- High – potential for significant impact requiring mitigation / remediation
- Medium – potential for moderate impact which may require mitigation / remediation
- Low – negligible impact that may require mitigated
- Very Low – no significant / perceivable impact to receptor

Table 3.1 – Risk Matrix

	Probability of exposure / Likelihood			
Consequence	High	Medium	Low	Very Low
High	High	High	Medium	Low
Medium	High	Medium	Medium	Low
Low	Medium	Medium	Low	Very low
Very low	Low	Low	Very low	Very low

4.0 RISKS IDENTIFIED

Using the guidance and approach outlined above, the following have been deemed to be identified as potential environmental risks which have the potential to cause harm as a result of operating the installation / accidents.

- Controlled releases to air
- Accidents
- Odour
- Noise and Vibration
- Fugitive Emissions (from uncontrolled sources)
- Visible emissions
- Global warming potential
- Waste
- Water discharges

Section 5.0 presents the risk assessment for each of the above including identification of the potential hazard, receptors, pathway, risk management practices, probability of exposure, consequence of exposure and overall risk.

5.0 RISK ASSESSMENT

5.1 Controlled releases to air

Hazard	Receptors	Pathway	Controls / Mitigation / Risk management	Probability of exposure	Consequence of exposure	Overall risk
Point source emissions to air- NO _x , CO, SO ₂ , PM ₁₀ emissions from generator stacks	Employees, local residents, and adjacent premises / pedestrians / road users immediately surrounding the installation.	Airborne	<p>An Air Quality Impact Assessment & Dispersion Model has been completed and submitted in support of this permit application ("Air Quality Assessment v2). This report concluded that the "the proposed development's impacts were not anticipated to have an overall significant effect on local air quality."</p> <p>The ESGs are designed to provide power in the event of grid failure, are a point source of emissions to air during operation. Within the last 8 years, the Data Centre has experienced only a few minor failures (less than 0.1s) per year. As such a grid outage is considered to be a highly rare event. Operation is therefore likely to be limited to testing and maintenance for approx. 13 hours / generator / year.</p> <p>Flues for the existing x7 no. generators terminate vertically, unimpeded by cowls/caps, at approx. 10.5m. The flues for the x6 no new IDC5-7 generators are also vertical and unimpeded by cowls/caps with a height of 13.63m.</p> <p>Where possible the operator will seek to minimise the frequency of generator runs. Testing occurs on Saturdays to avoid coinciding with rush hour NO₂ peaks and when human occupation in the immediate vicinity is reduced. Testing is staggered with generators tested individually rather than simultaneously, reducing emission peaks. In the event a complaint is raised against the operation of the generators, the complaints procedure should be followed.</p> <p>A draft Air Quality Management Plan (AQMP) has been submitted with the application and will be finalised once the expansion works are complete and the Data Centre is fully operational. The aim of the AQMP is to seek to reduce AQ impacts during prolonged grid failure and associated generator operation. The AQMP is based on air dispersion model findings and seeks to determine likely AQ impacts through observations of current weather conditions, time of day, cumulative impacts, and anticipated outage durations. Actions include limiting the operation of the generators as far as possible and notifying sensitive receptors / the EA in the event of a prolonged grid outage.</p>	<p>Low – maintenance and testing</p> <p>Very low – grid failure</p>	<p>Emissions to air can have an adverse impact to human health and ecological receptors in surrounding areas.</p>	<p>Low – maintenance and testing</p> <p>Low – grid failure</p>

5.2 Accidents

Hazard	Receptors	Pathway	Controls / Mitigation / Risk management	Probability of exposure	Consequence of exposure	Overall risk
Accidents relating to fuel storage e.g. Spills, overfilling during refuelling / disposal / transfers, failure in secondary containment, pipe ruptures, valve failure, user error, collision.	Groundwater, surface water, sewer system, soils.	Land/ water	<p>Generators and associated fuel tanks are located external to the main data centre buildings. Tanks and pipework are bunded to 110% and fitted with leak detection and high-level alarms to prevent overfilling. These systems feedback to the BMS which is monitored 24/7.</p> <p>Refuelling activities are rare events given the standby nature of the generators (0-3 deliveries per year).</p> <p>Spill kits (including drain covers) are located beside the generator enclosures, fuel tanks and fill points. Drip trays are present to capture small spillages from fill points and associated pipework.</p> <p>Fuel delivery, emergency preparedness and spill response procedures are in place. Fuel suppliers are to adhere to applicable procedures when attending site. Deliveries are to be carried out by competent individual(s) and supervised by site staff.</p> <p>The site's PPM regime includes visual checks for leaks / spills. Hazardous waste is disposed of by a licenced carrier with duty of care information retained as evidence following uplift.</p>	<p>Very low – bulk tanks</p> <p>Low – refuelling</p>	Leaks of fuel or other substances associated with Data Centres operations into the surrounding environment can cause adverse impacts to the ground water course as well as adjacent water courses.	<p>Very low – bulk tanks</p> <p>Medium – refuelling</p>
Flooding of drainage network and generators.	Groundwater, surface water, sewer system	Floodwater, surface waters, drainage system etc	<p>The site is located within a Flood Zone 1 which is defined as an area with a low risk of flooding (less than 1 in 1000 annual probability of flooding from surface water). There is no potential for groundwater flooding.</p> <p>Routine maintenance of the onsite drainage system should allow surface water drains to remain unobstructed. CBRE are currently responsibly for maintenance of the drainage network for the entire industrial estate.</p> <p>The generators are located within raised containers which will provide some level of protection from limited surface water flooding.</p> <p>Emergency procedures (amongst others) are in place and would be enacted in the event of flooding.</p>	Very low	Flooding / water damage to the generators could impact resiliency for operations.	Very low

Hazard	Receptors	Pathway	Controls / Mitigation / Risk management	Probability of exposure	Consequence of exposure	Overall risk
Fire	Emissions to Air / Water	Air & Water	<p>All 13 no. generator enclosures should be fitted with fire detection systems that utilise automatic shut off valves that will close in the event of a fire shutting off the fuel supply to the generator(s).</p> <p>The fire suppression systems rely on mains water to extinguish fires. In the unlikely event of a fire, there is potential for fire water from either site suppression systems / emergency services to enter the environment and cause harm. Emergency preparedness and response plans are in place to help mitigate this risk.</p>	Very low	<p>Fire damage to generators could impact resiliency for operations.</p> <p>Fire would also cause emissions to air, having an adverse impact to local environment and receptors.</p> <p>Firewater could infiltrate local water courses, adversely impacting the local environment.</p>	Very low
Vandalism	Land / Surface Water / Ground Water / Air	Drainage systems, air, surface	The site is manned 365 days a year with monitoring by security staff from a security office using an extensive CCTV system. Entry and exit to the site will be tightly controlled via a security gate and turnstiles. The ~2.5m palisade security fence should act as an impenetrable perimeter to prevent unauthorised access to the Data Centre.	Very low	Damage arising from vandalism to the generators / storage tanks could impact emergency back-up potential and/or lead to fugitive emissions	Very low

5.3

Odour

Hazard	Receptors	Pathway	Controls / Mitigation / Risk management	Probability of exposure	Consequence of exposure	Overall risk
Odour from storage and combustion of fuel	Employees & local residents	Airborne	<p>Fuel is stored externally in integrally bunded tanks across the site. Emissions are not expected to be significant, and an odour Management Plan is not expected to be required.</p> <p>The complaints procedure should be followed in the event the site receives an odour complaint relating to the permitted activities.</p>	Very low	Nuisance to on site staff and local human receptors. Could lead to complaints.	Very low

5.4 Noise and Vibration

Hazard	Receptors	Pathway	Controls / Mitigation / Risk management	Probability of exposure	Consequence of exposure	Overall risk
Noise and Vibration from start-up and operation of generators	Employees, local residents, and adjacent premises / pedestrians / road users immediately surrounding the installation.	Air	<p>A noise impact assessment has been completed and submitted as part of the permit application ('Noise Impact Assessment v1'). This report concluded that the "noise levels are predicted to achieve the noise limits at the nearest noise sensitive properties." Please refer to this report for further details.</p> <p>Significant noise breakout is not expected as the generators operate infrequently as they are emergency standby plant designed to provide power in the event of grid failure. This is a highly rare event given grid reliability. As such, annual operation is likely to be limited to testing and maintenance for approx. 13 hours / generator.</p> <p>Generators are to be maintained in accordance with manufacturer guidelines as part of a planned preventative maintenance (PPM) regime.</p> <p>The complaints procedure should be followed in the event the site receives a noise complaint relating to the generators.</p>	<p>Low – maintenance and testing</p> <p>Very low – grid failure</p>	<p>Complaints from local residences.</p> <p>Potential harm to human health due to elevated noise levels.</p>	<p>Low – maintenance and testing</p> <p>low – grid failure</p>
Noise from site traffic e.g. fuel deliveries	Employees, local residents, and adjacent premises / pedestrians / road users immediately surrounding the installation.	Air	<p>The Data Centre is located within an industrial estate with no residences in the immediate vicinity.</p> <p>The generators are emergency standby plant operated infrequently as discussed above. As such fuel consumption is low meaning fuel deliveries are infrequent. In reality the Data Centre may have no deliveries in a year therefore noise from associated traffic is not expected to be significant.</p>	Low	<p>Complaints from local receptors.</p> <p>Potential harm to human health due to elevated noise levels.</p>	Very low

5.5 Fugitive Emissions (from uncontrolled sources)

Hazard	Receptors	Pathway	Controls / Mitigation / Risk management	Probability of exposure	Consequence of exposure	Overall risk
Fuel spills during refuelling / leaks / accidents e.g. damaged tanks / pipework.	Groundwater, surface water, sewer system, soils.	Surface run off / surface waters via drainage or vertical leaching.	<p>Generators and associated fuel tanks are located externally across the site. Tanks are bunded and leak detection is fitted along the fuel network with high-level alarms operational to prevent overfilling. These systems feedback to the BMS which is monitored 24/7.</p> <p>Refuelling activities are rare events given the standby nature of the generators (0-3 deliveries per year).</p>	<p>Very low – bulk tanks</p> <p>Low – refuelling</p>	Leaks of fuel or other substances associated with permitted installation into the surrounding environment can	<p>Very low – bulk tanks</p> <p>low – refuelling</p>

Hazard	Receptors	Pathway	Controls / Mitigation / Risk management	Probability of exposure	Consequence of exposure	Overall risk
			<p>Spill kits (including drain covers) are located beside the generator enclosures, fuel tanks and fill points. Drip trays are present to capture small spillages from fill points and associated pipework.</p> <p>Fuel delivery, emergency preparedness and spill response procedures are in place. Fuel suppliers are to adhere to applicable procedures when attending site. Deliveries are to be carried out by competent individual(s) and supervised by site staff.</p> <p>The site's PPM regime includes visual checks for leaks / spills. Hazardous waste is disposed of by a licenced carrier with duty of care information retained as evidence following uplift.</p>		cause adverse impacts to the ground water as well as adjacent water ways.	
VOCs / fumes from storage / delivery of fuel	Employees & local residents,	Air	<p>Fuel tanks are integrally bunded meaning the release of fuel to the environment is considered to be very unlikely.</p> <p>Refuelling activities are carried out by trained competent individuals, following Colt's refuelling procedures.</p>	Very low	Emissions to air have an adverse impact to human health and ecological receptors in surrounding areas.	Very low

5.6 Visible emissions

Hazard	Receptors	Pathway	Controls / Mitigation / Risk management	Probability of exposure	Consequence of exposure	Overall risk
Visible Emissions from generator stacks	Local residents	Visual	<p>Smoke may be visible during the first 10-15s of generator operation. After this time visible plumes are not anticipated due to high exhaust temperatures (approx. 450°C). In the unlikely event that visible emissions after still present, these are to be investigated as part of generator maintenance.</p> <p>Plumes may not be visible due to line of sight, weather conditions, and the timing of generator operation (testing out with working hours on Saturdays). They may also be infrequent therefore are not considered to be likely / significant.</p> <p>The complaints procedure should be followed in the event the site receives complaints relating to the visible emissions from the generators.</p>	Low	Potential visual impacts, particularly during generator start ups.	Very low

5.7 Global warming potential

Hazard	Receptors	Pathway	Controls / Mitigation / Risk management	Probability of exposure	Consequence of exposure	Overall risk
Global Warming Potential from combustion of fuel by generators	Global population	Airborne	The generators are emergency standby plant designed to provide power in the event of grid failure. This is a highly rare event given grid reliability (See 'BAT Assessment v1'). As such, annual operation and fuel consumption is likely to be limited to testing and maintenance for approx. 13 hours / generator / year. This level of operation is not considered to provide a significant global warming impact.	Very low	Contribute to climate change, due to increase in greenhouse gases present in the atmosphere.	Very low

5.8 Waste

Hazard	Receptors	Pathway	Controls / Mitigation / Risk management	Probability of exposure	Consequence of exposure	Overall risk
Waste associated with generators e.g. waste fuels, oil sorbents and rags, lubricants & hydraulic fuels, solid wastes (air filters, packaging and spare parts) and end of life plant.	Ground, soil, ground water, surface water, sewer system.	Land/ water	<p>Small quantities of wastes may be generated from routine generator maintenance activities or in the event of a spillage/leakage. This is likely to be low given the standby nature of the generators and procedures in place to reduce the risk of spills and leaks spillage/leaks.</p> <p>Procedures for licenced and responsible collection of waste oils and other hazardous wastes are in place , with Duty of Care evidence retained upon uplift.</p> <p>Appropriate storage of waste arising from the permitted activities is utilised which helps prevent fugitive emissions to land/water.</p>	Very low	Potential to contaminate water/ land.	Very low

6.0 CONCLUSION

This ERA has identified and assessed the potential risks and hazards associated with the operation of the facility and from accidents.

Various measures have been taken to help reduce to mitigate against these as far as reasonably practicable and to a level considered to be acceptable for a Data Centre of this size, nature and location.