Environmental Risk Assessment

Colt Hayes L4 Data Centre

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1.0 INTRODUCTION

This Environmental Risk Assessment (ERA) has been prepared by HDR on behalf of Colt data centre Services UK Limited (Colt) (the Operator) to support the application for a new bespoke Environmental Permit.

The operator is involved to apply to the Environment Agency (EA) for an Environmental Permit because the total thermal capacity of the site's combustion plant exceeds the 50MW threshold stipulated in the regulations[1].

This ERA relates to the proposed operation of the combustion plant and the directly associated activities (DAA) at the following location:

Colt Hayes
Beaconsfield Road
Brook Industrial Estate
Hayes, London
UB4 0SL (TQ 11533 80192)

This ERA has been produced in accordance with Environment Agency (EA) guidance[2] – "Risk assessments for your environmental permit".

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
- Site condition report / Site Baseline assessment
- Flood risk assessment

The requirement to complete a Climate Change Risk Assessment (CCRA) as part of the application for a new bespoke Installation EP was withdrawn in August 2023. As is now required, this will be integrated into the site's management system and included in the non-technical summary (NTS).

Colt currently holds an environmental permit for its site in Welwyn Garden City (ref: KP3139DW) and is in the process of obtaining a second permit for the Colt site in Park Royal, north west London (ref: DP3107LF). Colt is fully committed to operating in accordance with the relevant permit conditions and demonstrating best practice within the data centre sector.

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] The Environmental Permitting (England and Wales) Regulations 2016
[2] https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit
[3] https://www.gov.uk/guidance/adapting-to-climate-change-risk-assessment-for-your-environmental-permit

2.0 METHODOLOGY

2.1 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.

2.2 Risk scoring

This ERA has been completed using the scoring matrix shown in Table 2.1 – 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 2.1 – 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

3.0 SITE CONTEXT

This section contains a high-level summary. Please refer to the Non-technical Summary (NTS) document submitted with the application for a permit for further details.

3.1 Site location

The Colt L4 Hayes site (the site) is located off Beaconsfield Road, Hayes, UB4 OSL in west London in the London Borough of Hillingdon. It is situated in the Brook Industrial Estate and has previously included the Tudor Works buildings, Veetec Motor Group and Optimum Data Centres (Trinity plot). The Tudor Works buildings and data centre were demolished in 2021/2022.

The site sits as part of Springfield Road Industrial Area, a wider commercial area bound to the north by Uxbridge Road, the west by Springfield Road, to the east by the Yeading Brook, and to the south by Beaconsfield Road. The area comprises of a mix of commercial operations, with several retail developments and a hotel located predominantly in the northern part closer to Uxbridge Road, and industrial, storage, and manufacturing operations across much of the central and southern areas.

The closest residential receptors are located approximately 180m to the east, on Cherry Avenue, and 180m to the north-east, on Bankside. There are new residential dwellings planned for development on land approximately 200m to the south-east.

3.2 Site activities

The Colt Hayes installation, once operational, will be a data centre that utilises Emergency Standby Generators (ESGs) to provide emergency power in the event of grid failure.

As outlined in Figure 1 and Figure 2 below, the data centre campus will see the construction of two data hall buildings, with associated, office spaces, ESGs, fuel systems and electrical infrastructure. The installation boundary encompasses the listed activities only.

As per Table 3.1, the current plans are for the installation of x44 ESGs over two buildings across several phases.

The generator models Colt has selected are as follows with further details:

- 17no. 2.4MWe Rolls Royce MTU DS3100 (6.4MWth each).
- 27no. 2.6MWe Rolls Royce MTU DS3600 (6.4MWth each).
- Total: 44no ESGs, 282MWth

At present, the generators for Building 2 are still to be confirmed. It is likely that the design will be similar to Building 1, with 2.4MWe generators on the intermediate floors and 2.6MWe on the roof. The number will depend on final IT capacity of Building 2. To be conservative, the application assumes all the Building 2 generators will be 2.6MWe.

All the ESGs due to be commissioned are over 1MWth and are therefore classed as new ‘Medium Combustion Plant’ (MCP). These ESGs are ‘limited hour MCPs’, as they are purely standby plant that will operate less than 500 hours per year and there is no capacity agreement in place. More details can be found in the Thermal Schedule and Non-technical Summary submitted with the application.

The ESGs are likely to operate on Hydrogenated Vegetable Oil (HVO) or diesel and are to be fitted with Selective Catalytic Reduction (SCR) to reduce NOx emissions to 250mg/Nm^3 (at 5% O_2). The SCR systems use Urea as a raw material to operate.

The permanent fuel store will be constructed as either part of Phase 1 or Phase 2 works. If the permanent store is delayed until Phase 2, a temporary fuel storage arrangement will be implemented. This will be located within the footprint of Building 2. Once the permanent

fuel storage building has been constructed, these temporary tanks will be removed and Building 2 constructed.

For further details please refer to the Best Available techniques assessment, Drainage Strategy and Non-technical Summary (NTS) that accompany this Environmental Permit application.

The Directly Associated Activities (DAA) include the 160kW life safety generator, fuel storage tanks, Urea storage tanks, associated pipework, and the drainage network. The life safety generator for Building 1 has not been fitted with SCR, as it is below 1MWth. Building 2 is expected to house a life safety generator of a similar size.

Table 3.1 Summary of MCP details

Location	MCP type	Rating (MWe)	No. of ESGs	Thermal capacity (MWth)	Install date
Building 1	New	2.4MW	17	109.19	Q3 2025 – Q4 2028 (planned)
	New	2.6MW	5	32.16	Q3 2025 – Q4 2028 (planned)
Building 2	New	2.6MW	22	141.52	Q3 2028 – Q1 2030 (planned). This is TBC, as noted above
		Total	**44**	**282.87**	

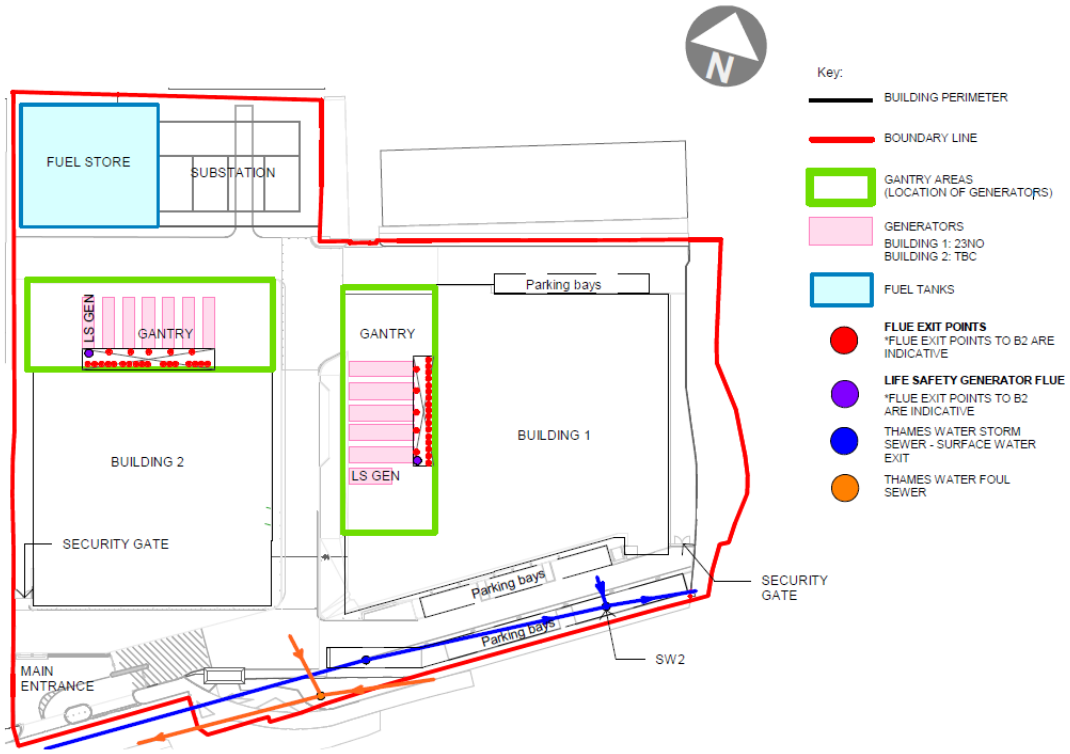

Figure 1 - Site plan with permit boundary and emissions points

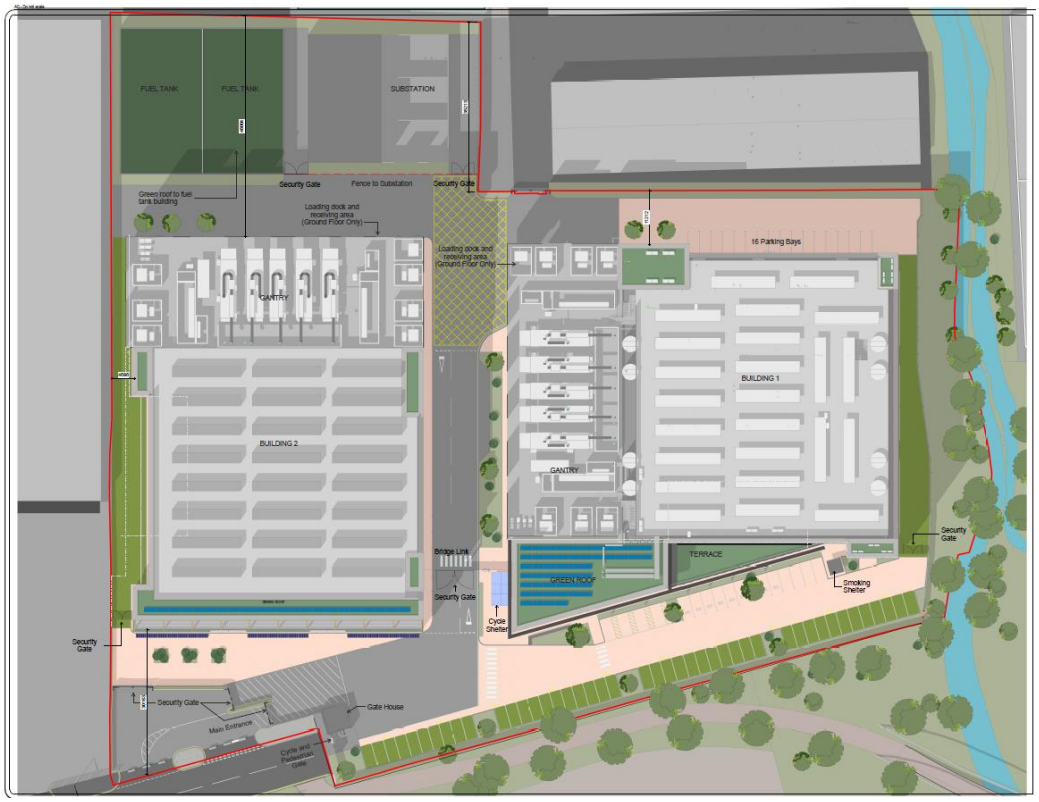

Figure 2 - Buildings 1 & 2 Site Plan Drawing

3.3 Site history

The site comprised agricultural fields prior to 1945. By 1961, the east of the site had been comprised of office blocks, laboratories, and a car park. Two 'works' buildings had been constructed in the west of the site, which expanded to the north in the 1970s. The buildings in the east were labelled as research depot on the 1973 map and two tanks were shown on the 1988 map. The research depot extended offsite to the north and northwest. The east of the site underwent several phases of demolition and construction over subsequent decades.

Since c.2000, the site was comprised of three parcels of land, occupied by the Trinity London data centre in the east, and Tudor Works and Veetec Motor Group in the west. The data centre has been vacant for approximately 10 years and was previously occupied by Deutsche Bank. Approval for demolition of the existing data centre and Tudor Works buildings was granted in October 2021 and this work is ongoing.

For further details on site history, please see the Site Condition Report which was submitted as part of this application.

3.4 Site sensitivity

The site is in the administrative boundaries of London Borough of Hillingdon (LBH) Council. See Figure 3 for an overview of the site and surrounding area.

The north of the site is bound by Brook Industrial Estate and a larger single-let distribution warehouse. Uses further north are also commercial and industrial in nature, until retail uses on the southern side of Uxbridge Road. Immediately south of the site, on the southern side of Beaconsfield Road, is Hayes and Yeading Football Club. Further west of the Football Club is the Guru Nanak Sikh Academy and associated playing fields. A portion of the playing fields benefits from planning permission for the erection of an associated primary school.

The eastern part of the site was occupied by a data centre. As noted above, the data centre was demolished in 2021/2022. The eastern boundary of the site is formed by Yeading Brook (with vegetation on both sides of its bank) which is a narrow watercourse that runs north-south through the wider Springfield Road site. Further commercial premises are located immediately to the east of Yeading Brook, beyond which is the Great Union Canal. On the eastern side of the Grand Union Canal is housing, the Blair Peach Primary School, and public allotments.

To the west of the demolished data centre (and forming the central element of the site) was the Tudor Works, a terrace of 16 industrial units with two storey office extensions on both the northern and southern ends. The Tudor Works building was demolished in 2021/2022. To the west of the demolished Tudor Works (and forming the very western part of the site) is the Veetec Motor Group facility, which comprises a three-story office building at the front of the site.

The closest residential receptors are located approximately 180m to the east, on Cherry Avenue, and 180m to the north-east, on Bankside. There are new residential dwellings planned for development on land approximately 200m to the south-east.

The site is within an area of adopted green belt. There are no Sites of Special Scientific Interest (SSSI), Ramsar Sites, Special Areas of Conservation (SAC), Special Protection Areas (SPA), National Nature Reserves (NNR), Local Nature Reserved (LNR), Marine Nature Reserves (MNR), Areas of Outstanding Natural Beauty (AONB), ancient woodland or world heritage sites within 1km of the site.

The closest ecological sites lie approximately 2km of the site. These sites are Crane Corridor, Lady Margaret Road, Cranleigh Park Rough, and Havelock Cemetery and are Local Wildlife Sites (LWS). The site is also surrounded by a few “Sites of Importance for Nature Conservation” (SINCs), as seen in Table 3.3 Ecological ReceptorsTable 3.3.

Richmond Park, a Special Area of Conservation (cSAC or SAC) and Ramsar is located approximately 10km from the site. South-west London Waterbodies comprise of a number of reservoirs and former gravel pits. The closest designated area in proximity to the site is Syon Park, approximately 7,000m from the site.

The installation is located within Hillingdon Air Quality Management Area (AQMA) for NO_2 and close to an air quality focus area (AQFA). As a planning condition, LBH has required that abatement be implemented on the generators to achieve a NOx emissions rate of 250mg/Nm^3 (at 5% O_2). In response to this planning requirement, the operator has made significant investment in NOx abatement technology in the form of Selective Catalytic Reduction (SCR).

For further details on site history, including the points outlined below, please see the Site Condition Report which was submitted as part of this application.

- Geology
- Hydrogeology
- Hydrology
- Ecology & heritage

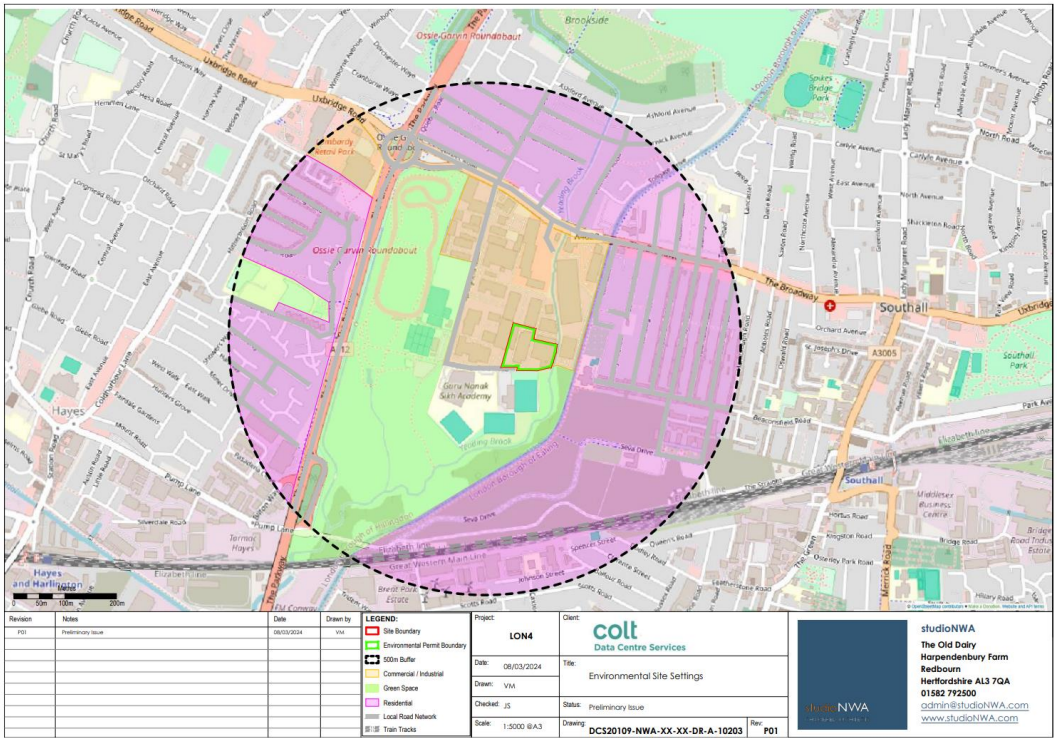

Figure 3 - Site-setting plan

3.5 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 3.2 Human Receptors

Location / description	Distance (km)	X grid ref	Y grid ref
Blair Peach Primary School	1.5	511690.66	180105.36
Residential Dwelling, Cherry Avenue	1.5	511770.59	180176.81
Residential Dwelling, Bankside	1.5	511778.66	180439.45
Residential Dwelling, Cherry Avenue	1.5	511814.81	180268.67
Residential Dwelling, Ranleigh Road	1.5	511893.06	180306.09
Residential Dwelling, Beaconsfield Road	1.5	511857.34	180054.33
Allotments	1.5	511711.06	180246.12
Residential Dwelling, Beresford Road	1.5	511779.09	180331.19
Guru Nanak School 1	1.5	511372.53	180105.36
Guru Nanak School 2	1.5	511307.91	180110.45
Guru Nanak School 3	1.5	511275.38	179940.47
Goals, Football Club	1.5	511168.12	180251.8
Hayes and Yeading Football Club	1.5	511496.72	180090.05
Residential Use under construction (PP/2015/4682)	1.5, 15, 28.5	511683.5	180037.69
Residential Use under construction (PP/2015/4682)	1.5, 15, 28.5	511668.59	179959.78
Minet Country Park Play Area	1.5	511090.75	180141.97
Residential Dwelling, Abbotswood Way	1.5	510878.44	180639.22
Residential Dwelling, Uxbridge Road	1.5	511528.31	180727.42
Residential Dwelling, Beresford Road	1.5	511892.81	180510.36
Wellings House Apartments	1.5, 15, 30	510775.53	180255.25

Table 3.3 Ecological Receptors

Site Name	Distance from Site (km)	X grid ref	Y grid ref
Richmond Park SAC	9.6	518850	174044
Ruislip Woods SSSI	8.6	509538	188558
Yeading Meadows LNR	2.0	510387	181946
Minet Country Park SINC	0.5	511105	179753
Yeading Brooks SINC	0.1	511596	180092
Willowtree Park SINC	1.2	512218	181127
St Mary's Wood End SINC	1.9	509768	181078
Havelock Cemetery SINC	1.3	512549	179345
Hortus Cemetery SINC	1.5	512832	179549
Avenue Road Hedge SINC	1.4	512826	180037
Southall Railsides SINC	1.5	512967	179964
Crane Corridor SINC	1.8	510421	178819
London Canals SINC	0.2	511719	180310

4.0 RISKS IDENTIFIED

Using the guidance and approach outlined in 2.0, the following have identified as having the potential to cause harm to the environment and/or human receptors:

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

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 ENVIRONMENTAL 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}, and $PM_{2.5}$, and Benzene (C_6H_6).	Employees, residents, and adjacent premises immediately surrounding the installation.	Airborne	An Air Quality Impact Assessment & Dispersion Model has been completed and submitted in support of this permit application ("Air Quality Assessment"). This assessment evaluates the impacts on local air quality of the data centre's emergency standby generator (ESG) emissions during two operating scenarios. • Scenario 1 is Routine 'Testing and Maintenance' of the ESGs, • Scenario 2 is a 72-hour 'Grid Failure'/ power outage emergency. The modelling assessment concluded that long term impacts from the operation of the proposed SBGs were predicted to be insignificant for both scenarios at all relevant modelled receptor locations when assessed against all relevant long-term UK Air Quality Standards. Short term impacts were also found to be insignificant for scenario 1, which assesses 'business as usual' maintenance and testing operations. An exceedance of the 24-hour NOX critical level for ecological impacts was considered possible if prolonged 72-hour grid failure events occurred consistently for several years, at the nearby Yeading Brook and London Canals local wildlife sites. All generators have been fitted with Selective Catalytic Reduction (SCR) to reduce NOx to 250mg/Nm^3 (at 5% O_2). The flues / stacks for all generators terminate vertically at approx. 38.6m. The data centre is located within an Air Quality Management Area where the Local Planning Authority has a particular concern with air quality. The emissions will be significantly lower than a normal operating permit for data centres with standby generators due to the requirements of the local planning authority. Prolonged 72-hour grid failure events are considered to be extremely rare events and therefore do not reflect the likely impacts from the installation. To address and mitigate the risks associated with a prolonged grid failure, an Air Quality Management Plan will be implemented. The ESGs are designed to provide power in the event of grid failure, and during operation are a point source of emissions to air. Information	Low – maintenance and testing Very low – grid failure	Emissions to air can have an adverse impact to human health and ecological receptors in surrounding areas.	Low – maintenance and testing Low – grid failure

Hazard	Receptors	Pathway	Controls / Mitigation / Risk management	Probability of exposure	Consequence of exposure	Overall risk
			available from National Grid4 shows that the overall reliability of the network is assessed at 99.999966% in 2021 and has similar levels of reliability for 2020 and 2019. This equates to an average down time over the entire network of 17.67 seconds per year (average for national grid). As such, Scenario 2 is an extremely rare/unlikely event. Operation of the ESGs is therefore likely to be limited to testing and maintenance. Where possible and practicable, testing is to avoid peak NOX periods such as during rush hour and outside of school times to mitigate impacts to nearby schools. The operator will also seek to minimise the frequency of generator runs as far as practicable and to stagger tests so multiple engines are not operating simultaneously. Each engine shall be provided with a dedicated attenuated exhaust gas flue system and each flue will exit into a common outlet air plenum that will rise and terminate above roof level. Dispersion of pollutants has been considered when designing the flues for the generators. As a result, all flues are unimpeded by flaps/cowls and have been orientated vertically, terminating at 1m above the height of the building. An Air Quality Management Plan (AQMP) will be submitted 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 events and associated generator operation. The AQMP is based on air dispersion model findings and seeks to determine likely air quality 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. For further information, please refer to the Air Quality Assessment submitted as part of this application.			

[4] National Grid annual report 2021 public report reviewed by OFGEM

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 etc.	Groundwater, surface water, sewer system, soils.	Land/ water	The predominant risk is deemed to be during refuelling activities which, as discussed, are rare events, given the standby nature of the generators. The site has automatic fuel transfer, and the Facility Operations Centre shall be provided with a manual override fuel transfer panel (MOP). Fuel delivery to the day tanks shall be via a resilient distribution, minimising accidents. Tanks are provided with secondary containment in the form of an integral bund to 110% of the capacity of primary tank. Tanks are also fitted with leak detection and are situated either internally or externally over good quality hardstanding. Tanks contain a minimum of x4 level sensors to indicate fuel levels and the manual override fuel transfer panel will be connected so the control system cannot overfill a localised delivery day tank. The surface water drainage system is connected to an interceptor prior to discharging to the local network. All fuel pipework shall be pipe-in-pipe, with vacuum leak detection and remote monitoring. Tank levels are linked to the site's fuel management system for remote monitoring. Drip trays shall be pitched towards appropriately located drain points to facilitate draining with point leak detection and shall be galvanised/painted for corrosion resistance. A standard operating procedure (SOP) is to be implemented to facilitate refuelling activities. This SOP is intended to help reduce the risk of spillage during refuelling. These are supplemented by additional supplier procedures for fuel deliveries. In addition to this, additional controls are to be developed to help reduce the risk of an incident including an SOP for spill response and spill kits. A periodic preventative maintenance (PPM) regime is to be implemented once operational that will include periodic visual checks for leaks/spills and checks for suitably stocked spill kits, and that these are located within close proximity of fuel storage tanks and fill points. Spill kits with drain covers will be located in the vicinity of the fill points to reduce the risk of spilt fuel entering the drainage network during refuelling or in an emergency.	Very low – bulk tanks Low – refuelling	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.	Very low – bulk tanks Medium – refuelling

Hazard	Receptors	Pathway	Controls / Mitigation / Risk management	Probability of exposure	Consequence of exposure	Overall risk
			PPM regime to include visual checks for leaks / spills. Hazardous waste to be disposed of by licenced carrier with duty of care information retained as evidence. Fuelling points will be equipped with source capture and separation to contain potential fuel spills. Drip trays are present inside the cabinets to capture minor spillages during refuelling. These cabinets will be locked when not in use. In an emergency, the Dump tank can be used to hold the contents of the day tanks. For more information, please refer to the Best Available Technique (BAT) document, included as part of this application.			
Flooding of drainage network and generators.	Groundwater, surface water, sewer system	Floodwater, surface waters, drainage system etc	The site is located within a Flood Zone 2 which is defined as an area with medium risk of flooding (between 1 in 100 and 1 in 1,000 annual probability, or 1% to 0.1%). There are no records of historic flooding having impacted the site. The generators and day tanks are located internal to their respective buildings which will provide some defence during flooding. The ground floor of the fuel storage building is raised to allow for a cavity housing electrical cables and fuel distribution lines such that internal ground floor levels may be at a reduced flood risk. The surface water drainage system follows performance requirements that ensure all surfaces are suitably graded, so surface water is conveyed to the drainage system and the drainage systems will adequately convey flows and meet self-cleansing velocities. Routine maintenance of the onsite drainage system should allow surface water drains to remain unobstructed. Emergency procedures (amongst others) are to be put in place and would be enacted in the event of flooding. For more information, please refer to the Best Available Technique (BAT) document and Drainage Strategy, included as part of this application.	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	The site will be fitted with fire detection systems that shall charge the dry pipe via single-interlocked pre-action valves. The site will have an automatic water sprinkler fire suppression system installed. Day tanks shall be completed with motorised fuel dump valves, positioned at low level. Dump valves actuators shall be interfaced with fire alarm system via the fuel management system. A motorised fuel day tank shall dump its fuel in the event of a confirmed fire within the generator enclosure, or malfunction of the motorised fuel make-up valve. The fuel dump lines discharge via gravity to a 3,000-litre capacity above-ground receiving tank located in the loading bay, with a single submersible pump and level controls. The dumped fuel receiving tank/pump shall transfer fuel back to the bulk fuel tanks under the control of the fuel management system. In the unlikely event of a fire, there is potential for fire water from either site suppression systems or emergency services to enter the environment and cause harm. Emergency preparedness and response plans are to be produced once the site is operational to mitigate this risk. The contractor shall develop a fire alarm cause and effect in line with building fire strategy and shall be suitable with respect to maximising uptime of the crucial systems in a safe manner. The fire safety statement, completed by Fire Safety Consultants at Salus, confirms that provisions are made to incorporate fire safety arrangements into the scheme.	Very low	Fire damage to generators could impact resiliency for operations. Fire would also cause emissions to air, having an adverse impact to local environment and receptors. Firewater could infiltrate local water courses, adversely impacting the local environment.	Very low
Vandalism	Land / Surface Water / Ground Water / Air	Drainage systems, air, surface	The site will have thorough security provisions that ensures access to critical areas is restricted without permission. The site will be operated and managed with 24-7 security staff, CCTV, and an alarm system in place. The security office will have operation to switch on all external luminaries on intruder detection by an operation switch.	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 and urea	Employees & residents	Airborne	The fuel storage tanks are to be sealed and located within a fuel store building in the northeast corner of the site. The site's urea tanks are to The permanent fuel store will be constructed as either part of Phase 1 or Phase 2 works. If the permanent store is delayed until Phase 2, a temporary fuel storage arrangement will be implemented. This will be located within the footprint of Building 2. Once the permanent fuel storage building has been constructed, these temporary tanks will be removed and Building 2 constructed. be sealed located on top of the buildings. These tanks will be sufficiently sealed with low consumption meaning fuel deliveries are rare events. Emissions are not expected to be significant, and an odour Management Plan is not required. The complaints procedure will be followed in the event the site receives an odour complaint relating to the permitted activities.	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, residents, and adjacent premises / pedestrians / road users immediately surrounding the installation.	Air	A noise impact assessment in accordance with BS4142:2014+A1:2019 has been completed and submitted as part of the permit application. The assessment concluded that "when considered in context, the risk of an adverse noise impact during the daytime period is low" and the Local Planning Authorities preferred noise criteria adopted for the assessment of a rating level of no more than 5 dB above background sound level was met. Please refer to this assessment for further details. The expected operation of the EGS's is limited to testing and maintenance only. The risk of any unplanned operation of the EGS's in the event of power loss is low. Each containerised generator set will include noise control treatments for the air inlet, air discharge and engine exhaust. The internal noise levels shall meet the guidance noise levels provided in CIBSE Guide A. The in-duct noise levels shall not exceed 85 dB L_{wA}. The internal noise levels for the data halls will have an upper limit reverberant level of 80 dB $L_{Aeq,T}$. The complaints procedure should be followed in the event the site receives a noise complaint relating to the generators.	Low – maintenance and testing Very low – grid failure	Complaints from local residences. Potential harm to human health due to elevated noise levels.	Low – maintenance and testing low – grid failure
Noise from site traffic e.g., fuel deliveries	Employees, residents, and adjacent premises / pedestrians / road users immediately surrounding the installation.	Air	The data centre is located within the Brook Industrial Estate. A residential area is situated to the east approximately 150m away and to the south is a mixed-use residential development. The generators are emergency standby plant operated infrequently as discussed above. As such fuel consumption is low, meaning fuel deliveries are infrequent. The data centre may have no deliveries in a year therefore noise from associated traffic is not expected to be significant.	Low	Complaints from local receptors. Potential harm to human health due to elevated noise levels.	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.	Fuel consumption is low in this installation due to the plant being used for emergency back-up power generation only. As such, fuel deliveries are, on average, less than once per year. When required, refuelling is conducted by trained fuel tanker drivers, and supervised by a trained member of the site engineering team. A standard operating procedure (SOP) is to be implemented to facilitate refuelling activities. This SOP is intended to help reduce the risk of spillage during refuelling. These are supplemented by additional supplier procedures for fuel deliveries. In addition to this, additional controls are to be developed to help reduce the risk of an incident including an SOP for spill response and spill kits. A periodic preventative maintenance (PPM) regime is to be implemented once operational that will include periodic visual checks for leaks/spills and checks for suitably stocked spill kits, and that these are located within close proximity of fuel storage tanks and fill points. Spill kits with drain covers will be located in the vicinity of the fill points to reduce the risk of spilt fuel entering the drainage network during refuelling or in an emergency. Fuel sampling points will be provided at each day tank, each bulk tank, and the fuel polishing unit. Fuelling points will be equipped with source capture and separation to contain potential fuel spills. Each day tank is to have a 15-litre fuel spill kit provided, with one kit to be installed on each level of the gantry. The fuel delivery system will incorporate motorised valves to facilitate transfer of fuel from one bulk tank to another bulk tank, and fuel polishing through a fuel polishing unit. One cabinet-mounted 50-litre fuel spill kit with drain covers shall be provided, along with one set of spare pads/socks. Day tanks shall be completed with motorised fuel dump valves, positioned at low level. An overflow connection from the day tank shall by-pass the motorised dump valve to prevent spillage should the make-up valve malfunction resulting in an overflow event.	Very low – bulk tanks Low – refuelling	Pollution and / or harm to environmental and / or human health Leaks of fuel or other substances associated with permitted installation into the surrounding environment can cause adverse impacts to the ground water as well as adjacent water ways.	Very low – bulk tanks low – refuelling --- Medium – refuelling

Hazard	Receptors	Pathway	Controls / Mitigation / Risk management	Probability of exposure	Consequence of exposure	Overall risk
			Tanks are to be bunded to and fitted with leak detection and a minimum of 4 level sensors to indicate fuel levels and prevent overfilling. Dedicated drainage interceptors to be installed acting as a tertiary containment to prevent spill fuel entering surface waters. Interceptor discharges into sewer. Fuel delivery, Emergency preparedness and spill response procedures are to be implemented once site operational. Suppliers will be expected to adhere to procedures. Deliveries will be carried out by competent individual(s) and supervised by site staff. Surrounding area covered in good quality hardstanding. Further commentary on the drainage plan is available in the 'Accidents – Flooding' section and in the Drainage Strategy, included as part of this application. Further information on spill mitigation is available in the Best Available Technique (BAT) assessment, included as part of this application.			
VOCs / fumes from storage / delivery of fuel	Industrial, commercial, and residential receptors	Air	Fuel tanks are containerised in skinned sealed tanks, fitted with leak detection alarms in place and monitored from a remote management system, which will minimise the likelihood of release to the environment. Fuel points will be equipped with source capture and separation to contain potential spills. Refuelling activities are carried out by approved suppliers with trained competent individuals. Deliveries are rare and best practices are to be adhered to in order to limit durations which fumes could escape into the environment. The site will be operated with 24-7 security ensuring all critical areas are restricted and includes 24-7 security staff, CCTV, and an alarm system. This reduces the risk of accidental impact, theft, vandalism.	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	Industrial, commercial, and residential receptors	Visual	Smoke may be visible during the first 10-15s of generator operation. After this time visible plumes are not anticipated due to high due to exhaust temperatures (approx. 450°C). In the unlikely event that visible emissions after are still present, these are to be investigated as part of ESG maintenance. 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. The installation of SCR, the site's PPM regime and regular fuel polishing is intended to remove impurities, and to help ensure the engine burns as cleanly as practicable to reduce visible emissions. The complaints procedure should be followed in the event the site receives complaints relating to the visible emissions from the generators.	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'). As such, annual operation and fuel consumption is likely to be limited to testing and maintenance for approx. 1 hours / generator / month. 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	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. Once the site is operational, procedures for licenced and responsible collection of any waste oils and other hazardous wastes are due to be implemented, with Duty of Care evidence retained upon uplift. Contractors are responsible for waste disposal that arises during maintenance activities.	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.