Permitting Decisions- Bespoke Permit

We have decided to grant the permit for Linmere Island Data Centre operated by Amazon Data Services UK Limited.

The permit number is EPR/AP3427SQ

The permit was granted on 29/01/2026

The application is for

The application is for the operation of standby electricity generating combustion plant at a data centre site. The site is in a rural location; the area is an industrial estate predominantly made up of hardstanding and numerous buildings of varying style and height. The site's national grid reference number is TL 03503 25622.

The combustion plant comprises:

40 gas oil/ HVO fired CAT 3516E Main generators each with a thermal input of 8 MWth and 2 gas oil/ HVO fired CAT C32 house generators each with a thermal input of 2.1 MWth all operating as standby backup generators.

The combined net rated thermal input of all diesel/ HVO backup generators on site is 324.6 MWth (40 x 8 MWth standby generators and 2x 2.1 MWth house generators).

Operation of the data centre combustion plant will be regulated as a Section 1.1 Part A (1) (a) (i) activity under the Environmental Permitting (England and Wales) Regulations (EPR) 2016 for the burning of any fuel in an appliance with a rated thermal input of 50 or more megawatts (MW).

The generators will supply emergency power to the data centre in the event of National Grid failure. In non-emergency scenarios, they will be operated only for testing and maintenance purposes to an agreed schedule. They will not provide any electricity themselves to the National Grid and all electricity generated will be used within the data centre.

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 provides a record of the decision-making process. It:

- summarises the decision making process in the decision considerations section to show how the main relevant factors have been taken into account
- highlights key issues in the determination
- shows how we have considered the consultation responses

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

Read the permitting decisions in conjunction with the environmental permit.

Key issues of the decision

Best Available Techniques (BAT) Assessment – Emergency Power Provision on Site

Technology & Fuel

The operator carried out a BAT assessment of the viable technologies and fuel capable of providing emergency power at the data centre.

As outlined in the Environment Agency's 'Data Centre FAQ' document, we accept that gas oil or equivalent fuel generators are presently a commonly used technology for standby generators. Currently gas oil or equivalent fuel 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.

We have specified the fuel to be burned in the engines to consist of gas oil or equivalent substitute to be agreed in writing with the Environment Agency with a sulphur content of 0.001% w/w. We are in the process of developing our position on the use of gas oil substitute fuels such as hydrotreated vegetable oil (HVO), therefore we have required that if any of these fuels are proposed, written agreement is sought by the operator from the Environment Agency's regulatory officer. The operator confirmed that it is anticipated that the units will be run using Gas oil/HVO. We agreed the use of HVO on 01/12/2025.

Managing Emissions

Point Source Emissions to Air

Emissions to air from the Installation will principally comprise combustion gases arising from the operation of the generation plant under emergency, testing and maintenance scenarios.

The primary pollutants of concern to air quality from the combustion processes at the Installation are nitrogen dioxide (NO_2), oxides of nitrogen (NO_x)**,** carbon monoxide (CO), particulates (PM_{10} and $PM_{2.5}$)**,** and sulphur dioxide (SO_2).

The operator has taken measures to minimise emissions from the gas oil or equivalent fuel generators under emergency, testing and maintenance scenarios.

Both the Data Centre FAQ Headline Approach v21 and Emergency backup diesel engines on installations: best available techniques (BAT) - GOV.UK (www.gov.uk) specifies the BAT emissions specification for new gas oil-fired reciprocating engines as emissions optimised to 2g-TA Luft or US EPA Tier 2 or

an equivalent. These are the international standards that we have concluded that we will use to infer what BAT is for sites.

The operator has confirmed that the 42 generators to be used at the data centres are emissions optimised to meet the US EPA Tier 2 standard.

We do not consider SO_2 emissions to be a risk from the operation of the Installation as we have included a condition in the permit restricting the fuel to ultra-low sulphur gas oil, resulting in negligible emissions of sulphur. HVO has the same sulphur content restrictions set in the permit as gas oil.

Aqueous Releases from Site

The Installation has separate foul and surface water drainage systems.

The foul water from WW1 and WW2 enters the wider data centre foul water system before discharging to the Anglian Water foul sewer (subject to agreement).

Surface water from SW1 flows to Ouzel Brook after treatment through the attenuation pond and oil separator.

Point Source Emissions to Foul Sewer

The foul water discharges from the permitted Installation will occur at two emission points, WW1 and WW2, as shown on the Installation Boundary and Emission Points Drawing. These discharges comprise surface water from generator refuelling laybys, which will pass through an oil interceptor before entering the foul drainage system.
The connection to the Anglian Water foul sewer network is subject to agreement, for which an application has been submitted.

Point Source Emissions to Surface Water Sewer

The operator has confirmed that there will be no contaminated emissions to the public surface water sewer system associated with the regulated activity undertaken at the Installation.

Uncontaminated surface water runoff from the Installation and the wider data centre site will flow to the attenuation pond (southwest corner), which has an impermeable liner and a Penstock valve for emergency isolation. Before discharge via SW1, water passes through the interceptor downstream of the flow control device, ensuring oil separation before entering an open water course (Ouzel Brook).
Fuel spill kits will be present at the time of refuelling. All spillages will be logged, investigated and corrective action will be taken.

Interceptors

One oil interceptor is located downstream of the attenuation pond's flow control device. It has an oil compartment capacity of 225 L and is fitted with an alarm that activates when the compartment reaches capacity.

In total, the site has three interceptors:
• Two interceptors (10,000 L each) serving the refuelling laybys within the foul drainage network.
• One interceptor located before the surface water discharge point (SW1), downstream of the attenuation pond's flow control device.

Procedures will be included in the EMS which will require the regular inspection of the oil interceptors. Prior to any refuelling event, the oil interceptors will be checked and emptied and any oil removed offsite for treatment/disposal at an appropriate waste management facility.

All three interceptors are fitted with alarms which will notify staff via the Installation's control system if the presence of fuel is detected at a certain level prior to reaching capacity. Following the identification of oil, the Spill Response Plan will be followed. This will ultimately result in oil being pumped from the oil interceptor and be removed from site by a licenced contractor.

Firewater

In the event that a fire does breakout at the Installation, it has been designed so that any firewater that has been generated will be contained in the Installation boundary. The drainage systems include measures to contain all firewater within the system so that it can be subject to controlled removal offsite and thus prevent the escape of firewater to the environment.

The firewater would be managed within the surface water drainage system (with the exception of any firewater generated within the refuelling laybys).

The capacity of surface water drainage system (including the attenuation pond) has been designed for a 1 in 100 year storm event. This capacity has been incorporated into the design to ensure firewater is contained within the surface water drainage system (primarily within the attenuation pond) and prevent overtopping resulting in accidental release to ground.

Following emptying and removal of firewater from the attenuation pond offsite, as a precautionary measure surface water in the pond would be tested to check for

any residual firewater contamination. Remediation of the attenuation pond may also be undertaken if deemed necessary. This could include the removal and replacement of surface topsoil materials in the pond which would then be taken offsite for treatment/disposal at an appropriate waste facility.

Firewater generated within refuelling laybys will drain to the foul drainage system and be captured in the 10,000 L interceptors. Each interceptor is fitted with an outfall valve that can be closed under the Emergency Response Plan to prevent discharge. If capacity is exceeded, firewater will back up into the layby and, if necessary, enter the surface water system for containment in the attenuation pond.

In the event of a fire, the valve located at the surface water drainage discharge point will be manually closed. The Installation's Emergency Response Plan requires the closing of this valve in the event of a fire. This will prevent surface water from escaping the boundary of the Installation via surface water drainage discharge point (SW1).

Air Quality

In line with the Environment Agency's guidance (Air emissions risk assessment for your environmental permit - GOV.UK (www.gov.uk)) and the relevant parts of the guidance applicable to the assessment of air dispersion modelling of emissions from generators (Specified generators: dispersion modelling assessment - GOV.UK (www.gov.uk)) the operator submitted detailed air dispersion modelling and impact assessment to assess the predicted impacts on human receptors and ecological sites.

The methodology for risk assessment of point source emissions to air, and the associated definitions, are set out in our guidance Air emissions risk assessment for your environmental permit - GOV.UK (www.gov.uk).

Operator's Assessment of Potential Impact on Air Quality

The operator submitted an Air Emissions Risk Assessment prepared by Ove Arup & Partners (the consultant), which considered the potential impacts of the principal pollutants of concern with respect to emissions to air from low sulphur gas oil/ HVO generators. The consultant has assessed the potential long-term and short-term impacts of nitrogen oxides (NOX), particulate matter (PM), and sulphur dioxide (SO2) at sensitive human and ecological receptors within the defined screening distances.

Human Receptors

The consultant has modelled predictions at 18 discrete receptor locations to represent human exposure.

Ecological Receptors

Using the Environment Agency guidance distance criteria, the consultant identified two SSSIs (Sundon Chalk Quarry and Fancott Woods and Meadows), and six local wildlife sites (LWS) within 2 km. No European sites are present within 10 km of the facility.

The six LWS are:

River Flit- LWS

Chalton scrub and grassland -LWS

Fancott Woods and Meadows -LWS

Sundon Wood - LWS

River Lea/ Riverside Walk - LWS

Croda Colloids - LWS

Testing

The consultant modelled three testing scenarios and one emergency scenario. The modelled scenarios are:

- Scenario 1: each generator is tested individually for half an hour fortnightly (13 hours total per generator per year). Generators will be tested at 25% load, but they are modelled operating at 100% load.

- Scenario 2: each generator is tested individually for up to four hours, twice per year at 100% load (eight hours total per generator per year).

- Scenario 3: each generator is tested for up to 10 hours individually over the course of the year at 100% load (10 hours total per generator per year).

- Scenario 4: all generators run together for 72 hours at 100% load to represent a power utility outage.

The consultant predicts insignificant process contributions (PCs) during testing for annual nitrogen dioxide (NO2) and 1-hour nitrogen monoxide (NO) at human

health receptors. 99.79th percentile 1-hour NO2 PCs are predicted to be 'not insignificant' but predicted environmental concentrations (PECs) are not predicted to exceed the environmental standards (ES).

Emergency scenario

Their results indicate the following:

- 1-hour 99.79th percentile NO2 PCs are predicted to exceed the ES. The consultant's statistical analysis predicts that exceedances of the ES are unlikely to occur at all receptors, apart from at receptor HR17. They predict exceedances at HR17 are still unlikely to occur, because a 72-hour emergency outage is highly unlikely.

- The consultant's 100th percentile 1-hour, 10-minute and 30-minute NO2 PCs are predicted to exceed the Acute Exposure Guideline Levels (AEGL-1) values at one receptor, HR17. Again, the low likelihood of a 72-hour emergency outage means that the consultant predicts that the chance of an exceedance is unlikely.

- The consultant's annual NO2 and 1-hour NO PCs are 'not insignificant', but PECs are not expected to exceed the ES.

Consultant's Conclusion:

Impact on Human Receptors

The consultant reports PCs and PECs from the facility at human health receptors in Appendix C of the AQA. Summaries of the results are provided in tables 13–18 of the AQA, while NO PCs and annual PCs for the emergency scenario are presented in the technical note (tables 2–8). The results indicate:

- Long-term ES: No exceedances for any modelled scenario.
- Short-term ES: No exceedances for any modelled scenario.
  Apart from at receptor HR17 of which the predicted exceedances are still unlikely to occur, because a 72-hour emergency outage is highly unlikely due to grid reliability.
- AEGL: No exceedances for any modelled scenario apart from the 72-hour emergency scenario at one receptor (HR17).
- Cumulative impacts are also considered unlikely, given the negligible process contributions relative to background and standards, so operation of the neighbouring data centre facility is not expected to give rise to cumulative air quality impacts.

Impact on Ecological Receptors

The consultant selected critical levels and critical loads using data from the Air Pollution Information System (APIS) website. The consultant stated that, according to APIS, the Sundon Chalk Quarry SSSI does not have assigned critical loads. The consultant has applied the critical loads for 'calcareous grassland' and 'broadleaved, mixed and yew woodland' as proxy values for the SSSI and assessed their PCs against these in the AQA (tables 33, 34, 43, 44, 53 and 54).

The consultant did not assess acid or nitrogen deposition at any of the LWS included in the assessment. Our checks indicate that acid and nitrogen deposition PCs are likely to be insignificant at all six LWS. The consultant has applied the higher daily mean NOX critical level of 200 µg/m3 at all ecological sites. Our checks confirm that the higher critical level can be applied in this instance.

The consultant reports PCs and PECs for ecological receptors ER1–ER5 in Appendix C of the AQA, and results for ER6–ER12 in the technical note (tables 10, 11 and 14–23). The consultant's results indicate the following:

- During testing, the annual NOX, acid deposition and nitrogen deposition PCs are predicted to be insignificant at all receptors. Daily NOX PCs are predicted to be insignificant at all receptors apart from at the Sundon Chalk Quarry SSSI, where the PECs are predicted to be below the lower critical level of 75 µg/m3.

- For the 72-hour emergency scenario, the consultant's annual NOX PCs are 'not insignificant', but the PECs are not predicted to exceed the critical level. The consultant's daily mean NOX PCs exceed the ES at all modelled ecological receptors. The consultant claims that the chances of an exceedance are unlikely, because of the reliability of the electrical distribution network and the inbuilt design resilience. We agree exceedances are unlikely, because the emergency scenario is based on a national emergency event.

- The consultant did not assess nitrogen or acid deposition for the emergency scenario. We have assessed these in our audit which is discussed below.

Environment Agency review of operator assessment of potential impact on air quality

We carried out modelling checks and sensitivity analysis using ADMS version 6.0.2.0 based on the consultant's modelling files. The sensitivity analysis considered in this audit included:

- Our own meteorological data observed at London Luton Airport meteorological station.
- Using a lower short-term NOX to NO2 conversion ratio.
- Consideration of acid and nitrogen deposition for the emergency scenario.

Human Health Assessment

For the testing and emergency scenarios, all PECs are predicted to be within the relevant long-term and short-term ES at all human health receptors.

Routine testing and emergency operations are unlikely to make a significant contribution to or cause an exceedance of an environmental standard at human health receptors.

Habitats Assessment

For the emergency scenario, we cannot rule out exceedances of the daily NOx critical level of 200 µg/m³ at ecological receptors. However, as the 72-hour emergency scenario represents a national 'black start' power outage event, the likelihood of exceedances occurring is expected to be low.

No other exceedances of critical levels or loads are predicted at any ecological receptor for either testing or emergency scenarios.

Critical loads are not available on APIS for Sundon Chalk Quarry SSSI. The designated features at this SSSI are known to be sensitive to acid and nitrogen, and APIS recommends obtaining site-specific advice. As proxy values, applied a nitrogen deposition critical load of 10 kgN/ha/yr and the acid deposition critical load for 'calcareous grassland,' which is the likely habitat present. For added conservatism, our audit assessed against a lower nitrogen deposition critical load of 5 kgN/ha/yr. Predicted contributions (PCs) for testing and emergency scenarios are insignificant compared to these indicative critical loads.

The facility emits NOx and SO_2, which can contribute to acidification, nutrient enrichment, and toxic contamination, potentially altering ecological composition.

We carried out an audit on the operator's assessment of the impact of NOx, SO_2, acid deposition, and nutrient nitrogen deposition on Sundon Chalk Quarry SSSI and Fancott Woods and Meadows SSSI. We concluded that for all scenarios, impacts are predicted to be insignificant or highly unlikely and are therefore not expected to damage the features of these SSSIs in any of the scenarios.

Emergency exceedances, while possible, are extremely rare events due to system reliability.

Protection Against Power Outage and Minimisation of Generator Operation

The largest risk of gaseous emissions from the site occurring which could impact human health or ecological receptors would be if the gas oil or equivalent fuel generators had to operate for any significant period of time following a National Grid failure.

To address this scenario and minimise emissions, the operator:

Uses power distribution system, on-site, starting from the High Voltage 9HV (132kV) UKPN connection at Sundon substation down to the Operators 132/20kV Transformer, it is designed to be safe reliable, robust and efficiency and have a high in-built redundancy.

Building A and Building B are both equipped with a Catcher system which is an electrical infrastructure element that provides redundant power to the critical loads. This system is shared across all electrical lineups.

Each Building will be equipped with two catcher distinct systems consisting of a Catcher Unit Substation Switchboard (MEDS-1.1C and MEDS-2.1C) with a dedicated utility supply and an emergency generator for the provision of power. The Catcher installation distributes the "reserve" power from the catcher MEDS to downstream equipment connected throughout the data centre building, when needed.

In each critical electrical lineup, the Utility Switchboard is supplied from a third "catcher" source in addition to the utility and generator sources. This allows critical loads to be automatically transferred to the catcher system in case of failure on the normal power supply or equipment. The catcher system helps reduce generator runtime by providing an alternative backup power source to the critical loads. Instead of relying solely on the generators for backup power during a utility failure, the catcher system can take over and supply power to the critical loads. This allows the generators to remain in standby mode, reducing their runtime.

In case of loss of mains supply, a certain amount of load is transferred to one of the catchers and the other catcher can be utilised to provide a fully available second source for all the unaffected lineups and the critical load. Catcher loading will be monitored and actively balanced through the use of a Dynamic Load Balancing (DLB MK2) control system.

Operational hours

In order to minimise generator operation, we set operational hour limits for data centres at 500 hours as they are permitted for emergency use only. The limit on

the emergency use of 500 hours is for the Installation as a whole i.e. as soon as one generator starts operating the hours count towards the 500 hours.

The operational hours on the site will be monitored and reported as follows:

- Emergency operation limited to 500 hours for the Installation via permit condition 2.3.3.
- Maintenance and testing regime limited to <50 hours per stack, linked to operating techniques table S1.2.

Containment and Prevention of Pollution to Ground, Surface water and Groundwater

Fuel Storage, Distribution and Containment

The operator has demonstrated that there are robust systems in place for the containment of fuel. There is an internal gauge in the tank cabinet. It sits on top of the tank within the cabinet, so is protected from the external environment, reducing the risk of any damage occurring. The sight gauge has no valve as it sits above the fuel. The fuel storage and management system for the Installation comprises belly tanks, bulk storage tanks, delivery infrastructure, spill control measures, and compliance features. All taps and valves will be locked shut when not in use.

Fuel Storage – Belly Tanks

Each generator is equipped with an integrally bunded belly tank with a capacity of 16,000 litres and bunding to 110% capacity. Tanks are fitted with multiple alarms (low, low-low, high, high-high, and leak detection) to detect pressure loss, significant leakage, and abnormal fluid levels during filling and operation.

All alarms are connected to the Electrical Power Monitoring System (EPMS) for remote monitoring. Daily visual checks are conducted to identify minor leaks not detected by alarms.

Each generator includes a fuel polishing unit to maintain fuel integrity by continuous circulation and filtration. These units also have leak detection linked to EPMS.

Belly tanks are welded internally and externally and manufactured to the Water Environment Standard for Oil Storage. Tanks are permanently plumbed into the bulk fuel storage system, reducing the risk of spills by not having temporary pipeline connections.

Fuel Storage – Bulk Fuel Storage System

There are two 40,000-litre top-up tanks serving the data centre halls. Fuel tankers deliver fuel to these tanks, which then distribute fuel to individual belly tanks.

A separate fuel storage tank (capacity 349 litres) serves the substation generator.

The operator confirms that all tanks comply with the Control of Pollution (Oil Storage) (England) Regulations 2001 (SI 2001/2954).

Fuel Delivery – Unloading Area

Fuel is delivered to site via fuel tankers. Tanker unloading will take place in dedicated refuelling laybys, with one layby serving each data centre hall for the emergency generators. Upon arrival, the tanker will be directed to the layby and connected to the top-up tank fill point. Each top-up tank, located adjacent to its layby, has a 40,000 litters (L) capacity and is integrally bunded to 110% of the primary tank volume. Tanks will be constructed to BS 799 Pt 5 Type J standards from 3 mm thick steel (S275JR BS EN 10025:2004) and comply with oil storage regulations.

During refuelling, only one tanker compartment (10,000 L) will be unloaded at a time. For the substation generator, refuelling occurs through an external fill cabinet mounted on the substation wall. Protective measures include impermeable surfacing, kerbing on three sides, and sloped surfaces directing runoff to a foul linear drain at the low point. Each drain connects to an oil interceptor with a 10,000 L capacity, sufficient to contain the contents of one tanker compartment. Additional safeguards include drip trays beneath connections and temporary spillage barriers deployed around the tanker during refuelling in line with the Spill Response Plan to contain any accidental spills.

Fuel from the top-up tanks will be distributed via double-skinned pipelines with leak detection to belly tanks beneath each generator. Underground sections are limited to connections between the top-up tanks and generator yards; all other pipelines are aboveground and permanently fixed. The fuel system will be inspected under the Planned Preventative Maintenance (PPM) programme.

The permanent tanker connection point, located within a refuelling cabinet on the outside of the top-up tank, will include a dust cap, isolation valve, and non-return valve to prevent contamination, enable safe disconnection, and avoid backflow. A drip tray beneath the connection point will capture any spillage during connection and disconnection, and its condition will be checked before refuelling.

Overfill prevention measures include alarms, shut-off valves, and probes detecting fuel levels and bund leaks. Audible alarms will alert personnel at the fill point when preset levels are reached, and an overfill prevention valve provides a

failsafe. These components will be regularly maintained under the Environmental Management System (EMS).

Fuel deliveries will be conducted by trained tanker drivers and supervised by qualified site engineering personnel, following the Standard Operating Procedure (SOP) for Fuel Delivery Refill of Receiver and Belly Tanks. The SOP, incorporated into the EMS, covers pre-work checks, delivery procedures, system verification, emergency scenarios, and inspection of spill containment measures such as drip trays. The Operator has also prepared a Spill Response Plan detailing notification, containment, cleanup, disposal, drainage checks, and post-response review. Spill kits designed for diesel will be deployed to prevent hazardous liquids entering drainage systems, and procedures will be updated following any spill to minimise recurrence.

Containment Protection - Pipework

The pipework on site will have protection measures in place to prevent loss of containment. Diesel will be pumped from the central top-up tanks to the belly tanks located beneath the generators. Underground fuel pipes will be double-skinned and fitted with leak detection, and their length will be minimised wherever possible. Above-ground pipes will be single-skinned and positioned close to building perimeters. All pipework will be regularly maintained and visually inspected prior to, during, and after refuelling operations.

Generators, fuel storage areas, and above-ground pipelines will be located on or over hardstanding drip trays to provide secondary containment. The underground fuel distribution system has been designed and installed in accordance with best practice and relevant standards. Warning tape has been installed above the pipework in compliance with National Joint Utilities Group (NJUG) standards, and pipes are laid in suitable backfill material. Additional vibration protection measures are not required due to the low frequency of heavy vehicle movements on site.

Underground pipelines will consist of double-skinned stainless-steel pipes (BRUGG flexwell or equivalent) with integrated leak detection. Non-corrosive plastic (PLX/PE) double-walled pipes with vacuum leak detection, certified to EN 14125, will also be used. Leak detection will be linked to the main monitoring system, and daily visual inspections will be carried out on above-ground pipework. No mechanical joints will be present in the underground system, reducing potential leak points.

Single-skinned pipelines will only be used between belly tanks and generators, contained within generator enclosures. These seamless carbon steel pipes will only hold fuel during generator operation, which is limited to approximately 50 hours per year for testing or emergencies. During operation, generators will be

monitored, and the enclosure will provide secondary containment in case of leaks. If fuel is detected within an enclosure, the Spill Response Plan will be implemented.

All other fuel pipelines will be double skinned with vacuum leak detection and alarm systems to provide immediate notification of leaks.

Raw Material Storage, and Distribution

The raw materials to be used at the site are: Gas oil and HVO: each generator will require (when providing 'standby' power):

- Main generators CAT 3516E (8 MWth): up to 757.1 L per hour (at 100% load)
- House generators CAT C32 (2.1 MWth): up to 249 L per hour (at 100% load)

Lubricating oil and anti-freeze: to be used in the engines and other mechanical equipment. Occasional top up or replacement will be required during scheduled or forced maintenance periods only.

The lubricating oil and anti-freeze for the generators will be stored within the engines and manually topped up during servicing by an appointed service contractor.

Transformer oil: Occasional top up or replacement will be required. No lubricating oil/anti-freeze or transformer oil will be stored on site by the operator; all oils will be brought to site and topped up/replaced during planned or forced maintenance periods only.

The BAT objective with regard to raw materials is achieved by the appropriate design, operation and maintenance of the generators to ensure the lowest possible consumption rate of fuel; by the selection of least hazardous materials; and by the provision of appropriate storage methods.

The generator engines are designed for the combustion of gas oil, this being the fuel recommended/specified by the engine manufacturers. The gas oil will have a low sulphur content. Gas oil has been selected due to the ability to store sufficient volumes on site to ensure security of supply.

Inspection and Maintenance

A formal Planned Preventative Maintenance (PPM) regime will be implemented, including a six-monthly inspection and maintenance programme undertaken by a contractor. This will involve:

- Bringing interceptors to ground level and removing contaminated water.

- Inspecting interceptor tanks, pipework/fittings, valves, and fuel fill points.
- Identifying and documenting any degradation (rust, wear, cracks, leaks).
- Determining corrective actions and recording all repairs or replacements.

The PPM regime will include testing and maintenance of overfill prevention devices as part of the six-monthly inspection programme described below.

Overfill Prevention

Daily checks for signs of leakage will be carried out. During filling operations:

- Audible alarm activates at 85% tank capacity.
- Second alarm at 90% closes the motorised fill valve.
- Mechanical overfill prevention valve at 95% shuts off the fill line automatically.
- Daily visual inspections of above-ground pipework; underground system includes integrated leak detection linked to the main monitoring system.

Pumps

Measures to secure pumps against theft are based on the site security provisions outlined in Document 302321-ARP-XX-XX-RP-Z-1005 Environmental Risk Assessment, Table 3-7 (submitted on 20/12/2024):

- 3m high perimeter fence and monitored security-controlled gates.
- Access restricted to a secure entrance requiring reporting to Site reception.
- Emergency-only secondary access on the western side of the site.
- CCTV equipment and thermal cameras mounted on poles for intruder detection.

Screw Fittings/ Fixed Couplings

The operator confirms signs of degradation, including corrosion and debris, will be checked during each filling operation and incorporated into the PPM. Licensed third-party fuel suppliers will perform these inspections.

Noise

Noise is not a significant aspect of data centre permitting (it is only the standby generators and associated gas oil or equivalent fuel supply systems that are permitted, not the operation of the data centre itself). The site will only run the

generators regularly as part of the testing regimes described earlier, occurring during daytime hours. Overnight operation of the generators will only occur in an emergency situation. As this is a new Installation it is not possible to consider the likelihood of overnight operation by examining the frequency of historical outages, but the potential for prolonged power outages in the area is considered to be low.

However, the operator has carried out a Noise Impact Assessment for the operation of the generators at the data centre.

Operator's assessment of potential noise impact:

The operator submitted a Noise Impact Assessment prepared by Colliers Properties LLC to evaluate potential noise impacts from generator operations on nearby sensitive receptors. The assessment adopted a conservative approach by assuming all mechanical plant operates at 100% duty, even though actual operation is expected to average around 80% and full capacity would only occur rarely and for short durations.

Key findings include:

- Under normal operating conditions and during generator testing, predicted noise levels are not expected to cause disturbance at the nearest residential areas or within nearby commercial spaces.
- In a full emergency scenario (e.g., total power outage), predicted noise levels at two southern residential locations could increase slightly compared to typical conditions. However, this exceedance is considered minimal (around 3 dB, generally regarded as barely perceptible) and would occur only during rare, short-term events.
- The assessment incorporates significant mitigation measures to minimize noise impacts, particularly for residences closest to the site.
- The design has been optimised to balance noise control with site constraints, and the overall approach is considered proportionate to the low likelihood and short duration of high-duty operation.

Overall, the assessment concludes that noise from the proposed data centre is unlikely to result in significant adverse effects on nearby sensitive receptors, given the conservative assumptions, rarity of emergency scenarios, and mitigation measures in place.

Environment Agency review of operator's assessment of potential noise impacts

We have carried out our own audit by means of detailed check modelling and sensitivity analysis on the Noise Impact Assessment (NIA) presented by the consultant.

Assessment of normal operations (testing) has been undertaken; emergency operations have not been assessed as this is considered outside of normal operating procedures.

- We assessed the operation of the closest generators to residential receptors operating simultaneously over an hour-long period. This has been undertaken as a worst-case scenario as length of testing has not been stated within the submitted NIA.
- Operation of 2 generators simultaneously has been considered as the consultant has provided a proposed testing regime.
- We tested sensitivity to the current standard ISO 9613:2024, the consultant has used the now superseded ISO 9613:1994.

Based on our conservative approach, a low impact (+3dB above background) is predicted at NSRs at the proposed residential development adjacent to the proposed permitted site. If testing of generators does not occur concurrently at both buildings the impact is likely to be lower than what we have predicted.

We are satisfied that the risk of noise impact from normal operations is low and the predicted increase at the nearest sensitive receptors is considered minor.

Permit Conditions

The Permit condition 2.3.3 limits emergency operation to 500 hours/ annum.

Table S1.2 incorporates the maintenance and testing regime, which is less than 50 hours/ generator.

Emission limit values (ELVs) to air are not applicable to MCPs operating less than 500 hours per year.

Emergency operation includes those unplanned hours required to come off grid to make emergency repair of electrical infrastructure associated but occurring only within the data centre itself. The Environment Agency expects planned testing and generator operations to be organised to minimise occasions and durations (subject to client requirements).

Each individual standby generator that is a new Medium Combustion Plant (MCP) is required to have stack monitoring for carbon monoxide (CO) and NOx, refer to monitoring section below.

Table S1.1 of the permit prevents any electricity produced at the Installation from being exported to the National Grid.

Table S1.2 incorporates operational and management procedures reflecting the outcomes of the air quality modelling by minimising the duration of testing, the duration and frequency of whole site tests and planning off-grid maintenance days and most importantly times/ days to avoid adding to any high ambient pollutant background levels.

The permit application has assessed and provided evidence of the reliability of the local electricity grid distribution allowing us to judge that the realistic likelihood of the plant needing to operate for prolonged periods in an emergency mode is very low.

Tables S4.2 and S4.3 require annual reporting of standby engine maintenance run and any electrical outages (planned or grid failures regardless of duration) require both immediate notification to the Environment Agency and annual reporting.

Table S2.1 restricts the fuel to ultra-low sulphur gas oil or equivalent substitute as agreed in writing with the Environment Agency.

Decision considerations

Confidential information

A claim for commercial or industrial confidentiality has not been made.

The decision was taken in accordance with our guidance on confidentiality.

Identifying confidential information

We have not identified information provided as part of the application that we consider to be confidential.

The decision was taken in accordance with our guidance on confidentiality.

Consultation

The consultation requirements were identified in accordance with the Environmental Permitting (England and Wales) Regulations (2016) and our public participation statement.

The application was publicised on the GOV.UK website.

We consulted the following organisations:

- Local Authority - Environmental Protection Department (Air Quality Specialist)
- Health and Safety Executive
- Director of Public Health & UK Health Security Agency (UKHSA) (formerly Public Health England (PHE)

The comments and our responses are summarised in the consultation responses section.

Operator

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 our guidance on legal operator for environmental permits.

The regulated facility

We considered the extent and nature of the facility at the site in accordance with RGN2 'Understanding the meaning of regulated facility', Appendix 2 of RGN2 'Defining the scope of the installation', Appendix 1 of RGN 2 'Interpretation of Schedule 1'.

The extent of the facility is defined in the site plan and in the permit. The activities are defined in table S1.1 of the permit.

See key issues for more discussion on the nature of the site

The site

The operator has provided a plan which we consider to be satisfactory.

These show the extent of the site of the facility including the discharge points.

The plan is included in the permit.

Site condition report

The operator has provided a description of the condition of the site, which we consider is satisfactory. The decision was taken in accordance with our guidance on site condition reports and baseline reporting under the Industrial Emissions Directive.

Nature conservation, landscape, heritage and protected species and habitat designations

We have checked the location of the application to assess if it is within the screening distances we consider relevant for impacts on nature conservation, landscape, heritage and protected species and habitat designations. The application is within our screening distances for these designations.

We have assessed the application and its potential to affect sites of nature conservation, landscape, heritage and protected species and habitat designations identified in the nature conservation screening report as part of the permitting process.

We consider that the application will not affect any site of nature conservation, landscape and heritage, and/or protected species or habitats identified.

We have not consulted Natural England.

The decision was taken in accordance with our guidance.

Environmental risk

We have reviewed the operator's assessment of the environmental risk from the facility.

The operator’s risk assessment is satisfactory.

General operating techniques

We have reviewed the techniques used by the operator and compared these with the relevant guidance notes and we consider them to represent appropriate techniques for the facility.

The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.

Operating techniques for emissions that screen out as insignificant

Emissions of pollutants nitrogen dioxide (NO_2), oxides of nitrogen (NO_x), carbon monoxide (CO), particulates (PM_{10} and $PM_{2.5}$), and sulphur dioxide (SO_2) have been screened out as insignificant, and so we agree that the applicant’s proposed techniques are Best Available Techniques (BAT) for the installation.

National Air Pollution Control Programme

We have considered the National Air Pollution Control Programme as required by the National Emissions Ceilings Regulations 2018. By setting emission limit values in line with technical guidance we are minimising emissions to air. This will aid the delivery of national air quality targets. We do not consider that we need to include any additional conditions in this permit.

Raw materials

We have specified limits and controls on the use of raw materials and fuels.

Pre-operational conditions

Based on the information in the application, we consider that we need to include pre-operational conditions. The following pre-operational conditions have been included in the permit:

1 - Commissioning
At least one month before operation the operator shall submit a commissioning plan to the Environment Agency for approval. The plan shall provide timescales for the commissioning of the gas oil generators and shall demonstrate that the commissioning of the gas oil generators is covered within the site's permitted regular testing regime, thereby minimising durations and impacts.

We have included this pre-operational condition as the risk assessment submitted with the application does not cover the commissioning phase

Improvement programme

Based on the information on the application, we consider that we need to include an improvement programme.

We consider that IC2 and IC3 are appropriate because the potential level of exceedance in a prolonged emergency scenario is very high at one receptor (with predicted environmental concentration at HR17 almost 5 times higher and a 100th percentile 1-hour, 10-minute and 30-minute NO2 PCs predicted to exceed the Acute Exposure Guideline Levels (AEGL-1) values at this receptor). However, we agree that the likelihood of the emergency scenario occurring is very unlikely (<5% probability for an operating window of 55 hours for receptor HR17) based on electrical grid reliability for the area and inbuilt design resilience. Therefore, these two improvement conditions are to be actioned only on the request of the Environment Agency if we deem it necessary.

The following improvement conditions (ICs) have been included in the permit:

IC1 - Air Quality Management Plan (AQMP)
We have specified that the operator shall have a written action Air Quality Management Plan (AQMP) to manage the risks for prolonged emergency running of the plant and limit the duration of an outage event to less than 50 hours, as far as possible. This needs to be proportionate to the level of risk at the receptors. The operator is expected to work with the Local Authority to develop this plan to ensure local factors are fully considered.

IC2 - Short-term nitrogen oxides and dust concentrations - monitoring plan
We have set improvement condition 2 (IC2) requiring the operator to detail proposals and subsequently undertake a monitoring programme to verify the predicted short-term nitrogen oxides (NOx) and dust concentrations at the boundary of the site or off-site locations of sensitive receptors as appropriate.

IC3 - Short-term nitrogen oxides and dust concentrations - monitoring report
Improvement condition 3 (IC3) requires the operator to submit a report detailing the results and conclusions of the emissions monitoring undertaken as part of IC2. This will contribute to the validation of conclusions reached in the air quality assessment and inform the air quality management plan. IC3 also requires the operator to review the options for reducing the predicted emission impacts. The reduction measures are expected to achieve a reduction of impacts during both the maintenance/testing and emergency operations. In setting IC2 and IC3 we have considered the level of the NOx peaks predicted by the Applicant's modelling.

IC4 - Monitoring plan - flue gas monitoring requirements
The operator shall submit a monitoring plan for assessment and written approval by the Environment Agency detailing their proposal for the implementation of the flue gas monitoring requirements specified in table S3.1, in line with web guide 'Monitoring stack emissions: low risk MCPs and specified generators' Published 04 June 2024 (formerly known as TGN M5).

We have included this improvement condition to ensure that they comply with the monitoring requirements of the permit.

Emission Limits

We have decided that emission limits are not required in the permit.

As the plant is limited to less than 500 hours of emergency operation by permit condition 2.3.3 and less than 50 hours for maintenance and testing in permit table S1.2, air emission limits are not applicable.

Monitoring

We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified. In particular:

We have specified monitoring of emissions of carbon monoxide from emission points A1 to A42, with a minimum frequency of once every 1,500 hours of operation or every five years (whichever comes first). This monitoring has been included in the permit in order to comply with the requirements of Medium Combustion Plant Directive (MCPD), which specifies the minimum requirements for monitoring of carbon monoxide emissions, regardless of the reduced operating hours of the plant.

We have also specified monitoring of emissions of nitrogen oxides (NOx) from emission points A1 to A42, with the same frequency specified for the monitoring of carbon monoxide emissions. In setting out this requirement, we have applied our regulatory discretion, as we consider that this limited monitoring, to happen in concurrence with the carbon monoxide monitoring, is proportionate to the risk associated with the emissions of NOx from the installation.

Taking into account the limited hours of operation of the engines operating at the installation, and the fact that we are not setting emission limits for NOx and carbon monoxide, we consider this monitoring can be carried out in line with web guide ‘Monitoring stack emissions: low risk MCPs and specified generators’ Published 04 June 2024 (formerly known as TGN M5).

We have set an improvement condition (IC4) requesting the operator to submit a monitoring plan for approval by the Environment Agency detailing the operator’s proposal for the implementation of the flue gas monitoring requirements specified in the permit.

We have set a requirement for the first monitoring to happen within 4 months of the issue date of the permit or the date when each new MCP is first put into operation, whichever is later (permit condition 3.5.2) unless otherwise agreed under Improvement Condition 4.

Reporting

We have specified reporting in the permit to ensure the site is operated to the standards specified in the Operating Techniques including the reporting of emissions to air.

We have specified reporting to ensure the operator notifies us of any operation of the stand-by generators in emergency mode in response to national grid power outage.

Management System

We are not aware of any reason to consider that the operator will not have the management system to enable it to comply with the permit conditions.

The decision was taken in accordance with the guidance on operator competence and how to develop a management system for environmental permits.

Previous performance

We have assessed operator competence. There is no known reason to consider the applicant will not comply with the permit conditions.

We have checked our systems to ensure that all relevant convictions have been declared.

No relevant convictions were found. The operator satisfies the criteria in our guidance on operator competence.

Financial competence

There is no known reason to consider that the operator will not be financially able to comply with the permit conditions.

Growth duty

We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 110 of that Act in deciding whether to grant this permit.

Paragraph 1.3 of the guidance says:

“The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation.”

We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections.

We consider the requirements and standards we have set in this permit are reasonable and necessary to avoid a risk of an unacceptable level of pollution. This also promotes growth amongst legitimate operators because the standards applied to the operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.

Consultation Responses

The following summarises the responses to consultation with other organisations, our notice on GOV.UK for the public, and the way in which we have considered these in the determination process.

Responses from organisations listed in the consultation section:

Response received from: UK HSA. - UKHSA has no significant concerns regarding the risk to the health of the local population from the installation.

No Responses were received from the Local Authority - Environmental Protection Department (Air Quality Specialist) or Health and Safety Executive

Representations from community and other organisations

Response received from Chalton Parish Council

Brief summary of issues raised:

1. Unsuitability of the Site Location

The site is too close to sensitive areas. The area is transitioning into a mixed-use residential and community zone, making an industrial-scale diesel generator facility inappropriate.

2. Emergency Generators – Air Quality and Emissions

The operator to provide site-specific air quality modelling that fully accounts for local meteorological conditions, the proximity and elevation of nearby residential buildings, the type and quality of fuel used, and the actual test frequency proposed. Generic modelling assumptions may understate real-world exposure risks in this specific context.

3. Cumulative and Ongoing Air Quality Deterioration

The local area is already experiencing worsening air quality due to the scale of new developments and road traffic. Adding 42 diesel generators would accelerate deterioration.

4. Public Health, Planning, and Community Engagement

Concerned that Chalton Parish Council was not consulted, despite being the closest local authority to the development. This omission denied the residents a fair opportunity to engage with the process.

Summary of actions taken:

With regard to concerns about unsuitability of the site location, the decision for suitability of a site location falls within the purview of the planning authority. Location is only a relevant consideration for Environmental Permitting in assessing potential to have an adverse environmental impact on communities or sensitive environmental receptors. The environmental impact has been assessed as part of this determination process.

With regard to concerns about the operator's Air Quality and Emissions, the operator confirmed the generators are emissions-optimised to US EPA Tier 2 standard which is considered best available techniques for standby generators for data centres. The air quality assessment for this site has primarily used UK Environmental Standards to evaluate pollutant concentrations and potential health impacts. These standards form the basis for assessing long-term and short-term exposure risks at human receptors. In addition to these benchmarks, Acute Exposure Guideline Levels (AEGLs) have been included as an extra layer of scrutiny due to the nature of operations at data centres, where short-term, high-intensity emissions may occur during emergency generator use. AEGLs provide a measure of very short-term acute exposure and are particularly relevant for identifying potential risks from pollutants such as NO_2 during rare but intense operational scenarios. AEGLs are recognised by both the Environment Agency and UKHSA as part of multi-agency public health protection during air quality incidents. Although they originate from the US EPA, they are accepted

indicators of concentrations that may require public health action, especially where UK equivalents are unavailable.

• As described in more detail in the Air Quality Section above, we audited the operator's air quality assessment, including undertaking detailed check modelling and completing sensitivity analysis. We audited the inputs including receptor locations and are satisfied. We agree that the consultant has assessed the human receptors likely to have worst-case exposure.

We audited an Air Quality Assessment (AQA)1 prepared by Ove Arup & Partners Limited (the consultant), commissioned by Amazon Data Services UK Limited (the operator). The consultant submitted the AQA in support of their permit application to operate a set of 42 back-up diesel generators at Linmere Island Data Centre, Sundon Road (the site). The consultant has assessed potential impacts at human and ecological receptors for nitrogen oxides (NOX), nitrogen dioxide (NO2), nitrogen monoxide (NO), and particulate matter (PM10 and PM2.5), under three testing scenario and one emergency scenario of this report). As the SBGs utilise low sulphur diesel, SO2 emissions have been screened out. No assessment of short term (ST) PM10 has been completed as "operational periods would not contribution to more than 35 individual 24-hour periods". We have determined that the risk of exceedance of the SO2 and PM10 Environmental Standards (ES) is de minimis, therefore, have only considered emissions of NOX in our audit.

- For all testing and emergency scenarios, we predict no exceedances of long-term or short-term UK Environmental Standards for routine testing. Under the emergency scenario, short-term NO_2 and AEGL-1 exceedances may occur at one receptor (HR17), but the likelihood is very low due to the rarity of prolonged outages.

We note the consultant states "Grid outages are highly rare events occurring less than 1 in 10 years and historically last less than 2 hours". We consider that exceedances are unlikely to occur as a result of emergency operations provided the grid reliability is high.

With regards to concern on air quality deterioration, the applicant's modelling assessment included consideration of existing pollution levels. We checked the levels used in the modelling were appropriate as part of our audit. We are satisfied that there will not be a significant adverse impact on air quality. In addition to this, we have specified that the Operator shall have a written Air Quality Management Plan (AQMP) to manage the risks for prolonged emergency running of the plant and limit the duration of an outage event to less than 50 hours, as far as possible. This needs to be proportionate to the level of risk at the receptors. The Operator is expected to work with the Local Authority to develop this plan to ensure local factors are fully considered.

Regarding concerns for lack of wide consultation, we are satisfied that we took appropriate steps to inform people about the Application and how they could comment on it.

In addition to the above, we do not routinely consult directly with Parish Councils as they are not a statutory consultee for environmental permit applications.

Where an application is considered to be for a site of high public interest we may do wider direct consultation with interested parties in addition to our statutory consultees, which can include the Parish Council. For all other sites we place a notification on our website (gov.uk) with links to our consultation portal where the application can be viewed.

Although we don’t consider that an extension to the consultation period is required, we will consider any responses that are received whilst we are determining the application.