Thorney Lane Data Centre Emergency Back-Up Generation Facility

Environmental Permit Application EPR/SP3224LP
Noise Impact Assessment

Amazon Data Services UK Limited

Project Reference: EPR/SP3224LP/A001
Project number: 60753942
SP3224LP-APP-NIA

February 2026

Delivering a better world

Prepared for:

Amazon Data Services UK Limited

Prepared by:

AECOM Limited
Sunley House
4 Bedford Park
Croydon CRO 2AP
United Kingdom

T: +44 (0)20 8639 3500
aecom.com

Table of Contents

1. Report Context 2
1.1 Introduction 2
1.2 Proposed Installation 2
2. Risk Assessment 0
2.1 Planning Policy and Standards 0
2.1.1 National Planning Policy 0
2.1.1.1 National Planning Policy Framework (2024) 0
2.1.1.2 Noise Policy Statement for England (2010) 0
2.1.2 Relevant Standards 1
2.1.2.1 Environment Agency Data Centre FAQ Headline Approach 1
2.1.2.2 Environment Agency Guidance: Noise and Vibration Management: Environmental Permits 1
2.1.2.3 Environment Agency Guidance: Noise impact assessments involving calculations or modelling 2
2.1.2.4 BS 4142:2014+A1:2019 2
2.1.2.5 British Standard 7445-1:2013 3
2.2 Assessment Methodology 3
2.2.1 Grid Reliability 3
2.2.2 Operational Assessment 4
2.3 Embedded Noise Mitigation Measures 6
2.3.1 Extant Permission 8
2.4 Baseline Conditions 8
2.4.1 Monitoring Methodology 8
2.4.2 Monitoring Results 9
2.4.2.1 Unattended Monitoring Results 9
2.4.2.2 Attended Monitoring Results 9
2.4.3 Noise Sensitive Receptors 10
2.4.4 Noise Limits 11
2.5 Noise Assessment 11
2.5.1 Operational Noise Assessment 11
3. Conclusion 14
Appendix A Acoustic Glossary 15
Appendix B Figures 16
Appendix C Baseline Sound Monitoring 19
C.1 Monitoring Equipment 19
C.2 Monitoring Location LT1 19
C.3 Monitoring Location LT2 20
C.4 Monitoring Location ST1 20
C.5 Monitoring Location ST2 21
C.6 Sound Monitoring Data 23
C.7 Sound Monitoring Time Histories 25

Figures

Figure 1 Site Masterplan 0
Figure 2 Site Boundary, Sound Monitoring Locations and Nearest Noise Sensitive Receptors 10

Figure 3 Roof Plant Layout 12
Figure 4 Generator Testing and Maintenance Noise Contour Map 17
Figure 5 Emergency Operation Noise Contour Map 18
Figure 6 LT1 Monitoring Location 19
Figure 7 LT2 Monitoring Location 20
Figure 8 ST1 Monitoring Location 21
Figure 9 ST2 Monitoring Location 22
Figure 10 Sound Monitoring Time History - LT1 25
Figure 11 Sound Monitoring Time History – LT2 26

Tables

Table 1 Sound Power Levels of Plant 5
Table 2 Sound Power Levels of Generators 5
Table 3 Louvre Attenuator Insertion Loss Data 7
Table 4 Exhaust Fan Attenuator Insertion Loss Data 7
Table 5 Description of Sound Monitoring Locations 8
Table 6 Typical Background Sound Levels – LT1 9
Table 7 Typical Background Sound Levels – LT2 9
Table 8 Typical Background Sound Levels – ST1 9
Table 9 Typical Background Sound Levels – ST2 9
Table 10 Sensitive Receptor Locations and Description 10
Table 11 Operational Noise Limits 11
Table 12 Summary of Predicted Noise Levels Generator Testing and Maintenance 12
Table 13 Summary of Predicted Noise Levels Emergency Operation 13
Table 14 Sound Monitoring Equipment 19
Table 15 Sound Monitoring Results – LT1 23
Table 16 Sound Monitoring Results – LT2 23
Table 17 Sound Monitoring Results – ST1 24
Table 18 Sound Monitoring Results – ST2 24

1. Report Context

1.1 Introduction

AECOM Limited ('AECOM') has been commissioned by Amazon Data Services UK Ltd ('the operator) to prepare an application for an environmental permit under the Environmental Permitting (England and Wales) Regulations 2016 (as amended) ('the EPR Regulations') for the proposed data centre emergency back-up facility at Thorney Lane Business Park, Thorney Lane North, Iver in Buckinghamshire. The environmental permit will be for the operation of the emergency backup generators and associated fuel storage and handling ('the Proposed Installation').

This document is the Noise Impact Assessment (NIA) which has been prepared to identify any potential significant environmental risks associated with the Proposed Installation activities and demonstrate that associated impacts including the application of appropriate mitigation and management, will be acceptable.

1.2 Proposed Installation

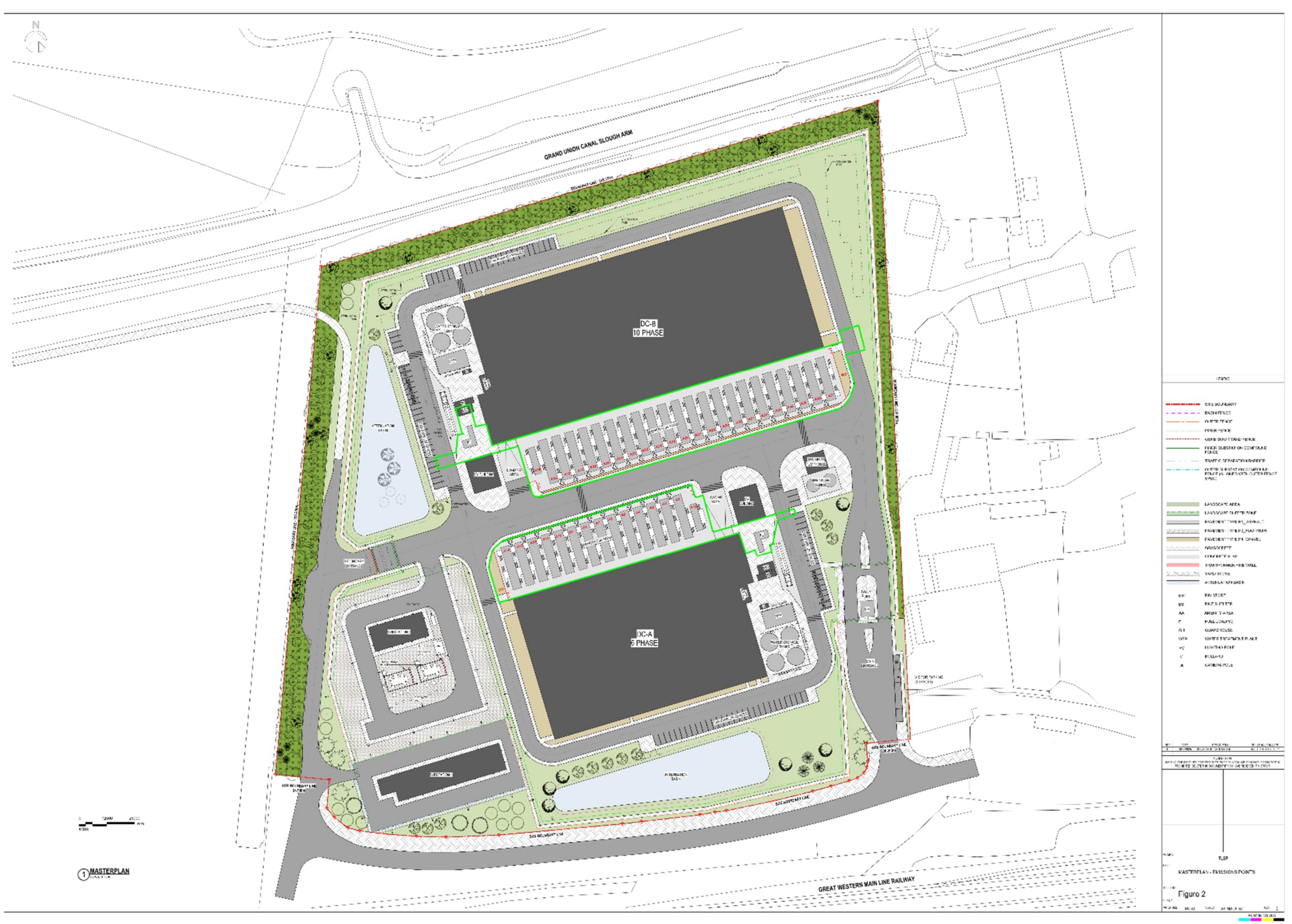
The Environmental Permit application will be made for the combustion activities (including fuel storage and handling) associated with emergency backup generators only and not the wider data centre operations. The installation boundary for the Environmental Permit will include the areas covered by these activities only.

The wider data centre development consists of the construction of commercial buildings to comprise the data centres, ancillary offices, associated plant, equipment and emergency backup generators and associated fuel storage, landscaping, sustainable drainage systems and parking. The main data centre buildings are called DC-A and DC-B.

A bank of emergency generators will be provided to support the data centre operation in the event of a power outage. Each individual generator will be classed as medium combustion plant (MCP) with an aggregated thermal input for the site which will exceed 50 MWth.

The installation will include 36 containerised generators to provide backup power supply for the main data centre buildings, a smaller 'house' generator for each building to cover non critical operations in an emergency such as offices, the proposed generator fuel storage and handling areas, and associated emission points only. A site masterplan with permit boundary (in green) is presented in Figure 1.

Figure 1 Site Masterplan



2. Risk Assessment

2.1 Planning Policy and Standards

2.1.1 National Planning Policy

2.1.1.1 National Planning Policy Framework (2024)

The revised National Planning Policy Framework[1] (NPPF) was published in December 2024 and sets out the Government's planning policies for England and how these are expected to be applied. This NPPF supersedes the previous NPPF published in March 2012, revised in July 2018, updated in February 2019 and revised in July 2021 and December 2023.

The revised NPPF maintains the presumption in favour of sustainable development, which should be delivered in accordance with three main objective areas: economic, social and environmental (Paragraph 8). The revised NPPF aims to enable local people and their local authorities to produce their own distinctive local and neighbourhood plans, which should be interpreted and applied in order to meet the needs and priorities of their communities.

Section 15 of the NPPF is concerned with conserving and enhancing the natural environment, including the matters that should be considered for planning decisions in relation to ground conditions and pollution.

Policies and objectives which are of particular relevance to noise and vibration include:

Paragraph 187: "Planning policies and decisions should contribute to and enhance the natural and local environment by: e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans."

Paragraph 198: "Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should: a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development - and avoid noise giving rise to significant adverse impacts on health and quality of life; b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason."

With regards to 'adverse effects' and 'significant adverse effects', the NPPF refers to the Noise Policy Statement for England (NPSE).

2.1.1.2 Noise Policy Statement for England (2010)

The Noise Policy Statement for England[2] (NPSE) seeks to clarify the underlying principles and aims in existing policy documents, legislation and guidance that relate to noise. The statement applies to all forms of noise, including environmental noise, neighbour noise, and neighbourhood noise.

---

[1] *National Planning Policy Framework, Department for Communities and Local Government, 2012 (updated 2024)*

[2] *Noise Policy Statement for England, Department for Environment, Food and Rural Affairs, 2010*

The NPSE sets out the long-term vision of the government's noise policy, which is to *"promote good health and a good quality of life through the effective management of noise within the context of policy on sustainable development".*

This long-term vision is supported by three aims:

> *"Avoid significant adverse impacts on health and quality of life;*
>
> *Mitigate and minimise adverse impacts on health and quality of life; and*
>
> *Where possible, contribute to the improvements of health and quality of life."*

The 'Explanatory Note' within the NPSE provides further guidance on defining 'significant adverse effects' and 'adverse effects' using the following concepts:

- No Observed Effect Level (NOEL) - the level below which no effect can be detected. Below this level no detectable effect on health and quality of life due to noise can be established;
- Lowest Observable Adverse Effect Level (LOAEL) - the level above which adverse effects on health and quality of life can be detected; and
- Significant Observed Adverse Effect Level (SOAEL) - the level above which significant adverse effects on health and quality of life occur.

With reference to the SOAEL, the NPSE states:

> *"It is recognised that it is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."*

For situations where noise levels are between the LOAEL and SOAEL, all reasonable steps should be taken to mitigate and minimise the adverse effects. However, this does not mean that such adverse effects cannot occur.

2.1.2 Relevant Standards

2.1.2.1 Environment Agency Data Centre FAQ Headline Approach

The Environment Agency's Data Centre FAQ Headline Approach[3] document states that no special treatment is required for data centre noise, compared to any other sources that are the subject of a permit application:

> *"1.12.5 Noise*
>
> *Generally same rules acceptable for planning though clearly noise control is a BAT issue within the permit application. See https://www.gov.uk/government/publications/environmental-permitting-h3-part-2-noise-assessment-and-control"*

2.1.2.2 Environment Agency Guidance: Noise and Vibration Management: Environmental Permits

The Environment Agency's environmental permitting guidance is published online in a publication entitled Noise and Vibration Management: Environmental Permits (2021)[4], updated in 2022, and supersedes the previous H3 guidance.

[3] Data Centre FAQ Headline Approach, Environment Agency, 2019
[4] Noise and Vibration Management: Environmental Permits, Environment Agency, 2021 (updated in 2022)

The document references the impact assessment method described in BS 4142. The document also outlines the operator's responsibilities to use 'best available techniques' (BAT) to prevent or minimise noise pollution.

2.1.2.3 Environment Agency Guidance: Noise impact assessments involving calculations or modelling

The Environment Agency's noise impact assessment involving calculations or modelling guidance was published online in 2018[5], updated in 2022, and outlines the information submission requirements for noise calculation or modelling.

2.1.2.4 BS 4142:2014+A1:2019

BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'[6] (BS 4142) can be used for assessing the effect of sound of an industrial nature (such as from pumps, generators, and electrical equipment) on residential dwellings. The method compares the difference between 'rating level' of the industrial sound, with the 'background sound level' at the receptor position, in decibels (dB). The standard uses the following definitions to describe various aspects of the soundscape of the scenario being assessed:

- Background sound level, $L_{AF90,T}$ dB – defined in the Standard as the 'A-weighted sound pressure level that is exceeded by the residual sound for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels'.
- Specific sound level, $L_s = L_{Aeq,Tr}$ dB – the 'sound source at the assessment location over a given reference time internal, Tr,'.
- Rating level, $L_{Ar,Tr}$ dB – the 'specific sound level plus any adjustment made for the characteristic features of the sound'.
- Ambient sound level, $L_{Aeq,T}$ dB – defined in the standard as 'the totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far when present. The ambient sound comprises the residual sound and the specific sound.'
- Residual sound level, $L_r = L_{Aeq,T}$ dB – the 'Ambient Sound remaining at the assessment location when the Specific Sound source is suppressed to such a degree that it does not contribute to the Ambient Sound'.

When assessing a sound source, it is important to consider the context of the site and the nature of the existing sound sources in the area. However, it is also necessary to consider the risks of new sources causing the ambient sound levels in the area to 'creep' up.

In order to obtain a rating level, BS 4142 allows for corrections to be applied based upon the presence or expected presence of the following:

- Tonality (for example, hum, whine, or screeching sounds): up to +6 dB penalty;
- Impulsivity (for example, clicks, bangs, or crashes): up to +9 dB penalty (this can be summed with tonality penalty); and
- Other sound characteristics (neither tonal nor impulsive but still distinctive): +3 dB penalty.
- Intermittency: +3 dB

Once any adjustments have been made, the background sound level and the rating level are compared. The standard states that:

a. *"Typically, the greater the difference, the greater the magnitude of impact.*

[5] Noise impact assessments involving calculations or modelling, Environment Agency, 2018 (updated in 2022)

[6] *BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound', British Standards Institution, 2019*

b. *A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending upon the context.*

c. *A difference of around +5 dB is likely to be an indication of an adverse impact, depending upon the context.*

The lower the rating level is to the measured background sound level, the less likely it is that the specific sound will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending upon the context."

2.1.2.5 British Standard 7445-1:2013

BS 7445 'Description and Measurement of Environmental Noise. Part 1 – Guide to Quantities and Procedures'[7] defines the parameters, procedures and instrumentation requirements for noise measurement and analysis.

2.2 Assessment Methodology

2.2.1 Grid Reliability

By way of context, a data centre is filled with various servers and associated IT equipment. This equipment requires a stable and constant supply of electricity to operate. Data Centres require a high level of uninterruptible power provision, and being supplied by the national grid brings a risk of a mains failure events (black out) or fluctuations outside of acceptable limits (brown outs). Downtime, i.e., power failures or voltage drops, even momentarily, may mean loss of service to customers, e.g., banks. This could have significant negative implications to site services, both in terms of direct financial costs and indirectly through reputational damage.

In the event of a loss of mains power supply, i.e. temporary grid blackout, the diesel-powered emergency (back-up) generators will be utilised to maintain power supply. These generators are designed to automatically activate and provide power to the plant pending restoration of mains power. In addition to applying acoustic measures to the emergency generators, every effort will be made to ensure that the emergency generators would not be required in practice, as described below.

Power for the data centre will be supplied from/by the National Grid by a dual circuit supply The dual redundant circuit provides security of supply in the event of a fault or loss of supply from one source; the other circuit is capable of supplying full load to the site. This will minimise the need for the generators to be operated.

In addition, National Grid operates its transmission system in accordance with the Security and Quality of Supply Standard which is a requirement of its Transmission Licence. In accordance with this standard, a level of redundancy is also built into the transmission system.

The overall reliability of supply for the National Grid Electricity Transmission (NGET) System is reported each year in the annual National Electricity Transmission System Performance Report[8]. The performance for England and Wales for the five years from 2021 shows the grid reliability ranged between 99.999966 – 99.999998%. The number of annual grid events in England and Wales ranged between 355 – 517 events with the majority of grid events having no impact on electricity users with up to 11 events in a single year (<2.7%) resulting in loss of supplies to customers. The longest outage totalled 762 minutes in 2022 – 2023 year.

[7] *BS 7445-1:2003 'Description and environment of environmental noise – Part 1', British Standards Institution, 2013*

[8] https://www.neso.energy/industry-information/industry-data-and-reports/system-performance-reports

2.2.2 Operational Assessment

The noise impact of the Proposed Installation during generator testing and maintenance as well as grid power failure has been assessed using the methodology described in Environment Agency Guidance and BS 4142 (as set out in 2.1.2.4).

Predicted rating levels have been compared against the measured background sound levels set out in Table 11 at each receptor to assess impacts based on BS 4142 guidance.

In determining the rating levels (as per guidance from BS 4142 Section 9.2, 'Subjective Method'), no BS 4142 correction has been applied. This is because noise from the facility during generator testing and maintenance as well as emergency operation is likely to be broadband in nature and not impulsive or readily distinctive at the nearest noise-sensitive receptors.

The two following scenarios have been assessed for noise impacts:

- Generator Testing and Maintenance; and
- Emergency Operation.

SoundPLAN® acoustic modelling software (version 9.1) implementing the calculation procedures of ISO 9613[9] has been employed to predict the propagation of sound from the Proposed Installation in all directions and to quantify resultant sound levels at the identified noise-sensitive receptor locations.

The following assumptions and parameters were used to prepare the noise model:

- All emergency generators comprising the Proposed Installation have been assumed to be continuous throughout the day and night to represent a worst-case;
- Generator testing and maintenance has been confirmed to solely take place during the daytime, so a night-time assessment has not been undertaken;
- The ground absorption has been set to 1 (i.e. assumed soft ground conditions), except where identifiable ground features are present where acoustically hard ground (such as water and industrial estates) is set to 0;
- Topography obtained from DEFRA LIDAR[10] data has been used;
- Building footprints in the surrounding area have been sourced from Ordnance Survey Open Map data[11];
- Heights of residential buildings have been standardised from OS building height data and checked against aerial photography for assessed receptors;
- Receiver points have been modelled as 1.5 m above local ground level; and
- The maximum order of reflections was 3.

All plant and operational assumptions, presented in Table 1 and Table 2 have been derived from a review by AECOM of vendor specification data sheets.

---

[9] ISO 9613, Acoustics – Attenuation of Sound During Propagation Outdoors. Part 1: Calculation of the absorption of sound by the atmosphere (1993) and Part 2: General Method of Calculation (2024).

[10]National LIDAR Programme © Environment Agency copyright and/or database right 2022. All rights reserved

[11] Ordnance Survey Open Data Publication © Ordnance Survey copyright. Contains Ordnance Survey data © Crown copyright and database right 2025

Table 1 Sound Power Levels of Plant

Plant Name	Number of Plant DC-A	Number of Plant DC-B	Unweighted dB at Octave Band Centre Frequency (Hz)								
			63	125	250	500	1000	2000	4000	8000	dB(A)
Fresh Air Intake Louvre non-Gen side	6	10	83.1	81.6	83.3	74.5	76.0	76.4	67.4	53.5	81.8
Fresh Air Intake Louvre Gen side	6	10	80.6	77.9	81.6	72.8	74.2	73.3	63.8	41.7	79.5
Exhaust Fan (Single and 2-storey)	76	124	102.1	105.6	104.0	101.2	97.5	92.0	86.3	80.2	84.3
VRF Condensers	4	4	81.5	71.5	74.0	72.0	67.0	62.5	56.5	53.0	73.0
Split Unit condensers	11	12	37.2	43.5	49.1	53.5	56.9	60.9	61.9	62.0	67.3
Toilet Exhaust Fan	1	1	63.0	68.0	69.0	73.0	70.0	69.0	62.0	54.0	75.3
Admin AHU (Air Inlet)	1	1	58.0	68.0	51.0	52.0	47.0	45.0	44.0	41.0	55.8
Admin AHU (Air Exhaust)	1	1	73.0	81.0	76.0	84.0	85.0	81.0	80.0	71.0	88.7
Admin AHU (Breakout)	1	1	65.0	70.0	66.0	67.0	64.0	67.0	54.0	31.0	54.6
CRAC Condensers	56	96	-	93.8	83.3	73.6	70.5	66.6	59.4	54.4	80.7
80MVA Transformers	2*		-	70.4	81.3	77.5	74.0	61.1	52.5	53.7	55.8

**2 in total for the Proposed Installation*

Table 2 Sound Power Levels of Generators

Plant Name	Number of Plant DC-A	Number of Plant DC-B	Unweighted dB at Octave Band Centre Frequency (Hz)								
			63	125	250	500	1000	2000	4000	8000	dB(A)
LHS			95.0	100.9	86.6	87.3	84.2	83.6	78.1	84.0	91.7
RHS			95.0	100.9	86.6	87.3	84.2	83.6	78.1	84.0	91.7
Front			102.7	100.9	93.4	88.0	86.3	86.2	80.4	77.7	93.2
Rear (Intake)	15	23	106.7	106.6	82.2	68.0	63.9	62.9	61.8	73.3	91.1
Roof (solid)			101.6	105.9	94.9	89.2	86.8	85.6	80.7	84.0	94.9
(Roof Discharge)			114.1	116.9	94.0	69.5	68.0	68.1	72.8	98.1	102.6
Exhaust Outlet			115.2	114.0	99.6	94.2	89.7	88.2	84.1	80.2	100.7

2.3 Embedded Noise Mitigation Measures

Embedded noise mitigation measures have been built into the data centre design in the form of attenuators for the louvres and exhaust fans. Insertion loss data has been obtained from manufacturer specification sheets with the following attenuators considered:

- Q-nis LDM Acoustic Module 4500x2200x2700 mm attenuators for all Gen side louvres on both data centre buildings;
- Q-nis LDM Acoustic Module 4500x2800x1600 mm attenuators for all Non-Gen side louvres on both data centre buildings;
- Danaan Air DH Extract Unit 1200 mm with fan flow grids for all exhaust fans on both data centre buildings.

The insertion loss of each louvre attenuator is presented below in Table 3 and the exhaust fan attenuator in Table 4.

Table 3 Louvre Attenuator Insertion Loss Data

Attenuator	Insertion Loss dB at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
Q-nis LDM Acoustic Module 4500mmx2200mmx2700mm	13	24	44	50	50	50	50	50
Q-nis LDM Acoustic Module 4500mmx2800mmx1600mm	9	17	29	44	50	50	46	33

Table 4 Exhaust Fan Attenuator Insertion Loss Data

Attenuator	Insertion Loss dB at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
Danaan Air DH Extract Unit 1200 mm with fan flow grids	8	13	22	36	45	45	36	24

2.3.1 Extant Permission

The Site has planning consent for a data centre (planning permission: PL/22/1775/FA) which was granted in May 2024 (referred to as the 'Extant Permission').

The Extant Permission contains two conditions relating to noise (condition 12 and condition 48) which states the requirement for a noise report, including operational noise assessment in accordance with BS 4142 and the approved noise impact assessment, to be submitted to the Local Planning Authority prior to the installation of any building plant. It is understood that the original planning application included a BS 4142 noise assessment. The purpose of the planning conditions is for this to be updated to reflect final operational plant specifications to confirm the original conclusions based on indicative plant remain valid.

The operator is seeking changes to the extant permission to reflect detailed design of the Proposed Installation. A full planning application for these changes has been submitted to the LPA and is pending determination. This application includes an operational noise assessment in accordance with BS 4142 prepared by AECOM and is based on the noise modelling and assessment undertaken in this NIA for the EPR application.

2.4 Baseline Conditions

2.4.1 Monitoring Methodology

The monitoring procedures followed guidance from BS 7445-1. All instrumentation was field calibrated at the start and end of each measurement. No significant drift (± 0.1dB) in calibration was noted.

Unattended monitoring equipment was set up at two locations (LT1 and LT2) from the 21st of May to the 3rd of June 2025. Each unattended sound level meter was housed in a weatherproof box with batteries to power the instrument for the full measurement duration. Appropriate outdoor all-weather equipment was used on all microphones.

Unattended monitoring was supplemented with attended monitoring at two locations to provide baseline sound data at nearest noise sensitive receptors. The measurements recorded sound level data during the daytime on the 21st of May and 3rd of June 2025, and during the night-time on the 23rd of May 2025. All meteorological conditions during the monitoring period were measured throughout the sound monitoring period using a weather station which was installed along Market Lane to the south of the Great Western Main Line.

Sound monitoring locations are described in Table 5.

Table 5 Description of Sound Monitoring Locations

Monitoring Location	Measurement Duration	Description	GPS Coordinates
LT1	13-day	The Sound Level Meter was installed along the Market Lane, to the south of the Great Western Main Line and south-west of the Proposed Installation site	51°30'25.4"N 0°31'45.1"W
LT2	14-day	The Sound Level Meter was installed at the rear garden of the residence at the end of Bathurst Walk in Richings Park, south of the Great Western Main Line and the Proposed Installation site.	51°30'27.7"N 0°30'50.5"W
ST1	15-min	The attended sound measurements were undertaken along the Grand Union Canal Slough Arm to the north-east from the Grand Union Place mobile home park and to the north-west of the Proposed Installation site.	51°30'37.4"N 0°31'24.1"W

Monitoring Location	Measurement Duration	Description	GPS Coordinates
ST2	15-min	The attended sound measurements were undertaken at the land to the north along Mansion Lane, and north-west from the Proposed Installation site.	51°30'45.1"N 0°31'34.9"W

All unattended meters were set to measure L_{Aeq}, L_{A10}, L_{A90}, and L_{AFmax} sound level indicators over 15-minute continuous periods. The calibrator and sound level meters used for the sound monitoring are listed in C.1. The sound level meters were issued with a valid laboratory calibration certificate within the last two years, and the calibrator within the last year, in line with BS 7445-1.

2.4.2 Monitoring Results

Details regarding the sound monitoring survey are presented in Appendix C along with photos of the monitoring set-ups, a daily breakdown of measured levels and time histories.

2.4.2.1 Unattended Monitoring Results

Table 6 and Table 7 show a summary of the unattended sound level monitoring results.

Table 6 Typical Background Sound Levels – LT1

Measurement Location	Ambient Sound Level, $L_{Aeq,T}$ dB	Typical Background Sound Level, $L_{A90,T}$ dB
Daytime	64	42
Night-time	58	38

Table 7 Typical Background Sound Levels – LT2

Measurement Location	Ambient Sound Level, $L_{Aeq,T}$ dB	Typical Background Sound Level, $L_{A90,T}$ dB
Daytime	56	42
Night-time	55	40

2.4.2.2 Attended Monitoring Results

Table 8 and Table 9 show a summary of attended sound level monitoring results.

Table 8 Typical Background Sound Levels – ST1

Measurement Location	Ambient Sound Level, $L_{Aeq,T}$ dB	Typical Background Sound Level, $L_{A90,T}$ dB
Daytime	50	44
Night-time	49	44

Table 9 Typical Background Sound Levels – ST2

Measurement Location	Ambient Sound Level, $L_{Aeq,T}$ dB	Typical Background Sound Level, $L_{A90,T}$ dB
Daytime	66	46
Night-time	54	41

2.4.3 Noise Sensitive Receptors

The Proposed Installation is located within the wider Thorney Lane Data Centre site which is located on a vacant part of the Thorney Business Park and adjacent open fields. The site is bordered by the following features which have been identified within the assessment, distances stated are between noise-sensitive receptors and the Proposed Installation boundary (shown in Green in Figure 1, Figure 4 and Figure 5):

- Residential properties along Market Lane approximately 775 m to the south-west;
- Residential properties along Bathurst Walk approximately 280 m to the south-east;
- The Mansion Lane caravan/halting site approximately 345 m to the west; and
- Residential properties further along Mansion Lane approximately 540 m to the north-west.

A site location plan showing the planning application boundary for the data centre development illustrating the locations of nearby noise-sensitive receptors is presented in Figure 2 with the receptors also described in Table 10.

Figure 2 Site Boundary, Sound Monitoring Locations and Nearest Noise Sensitive Receptors

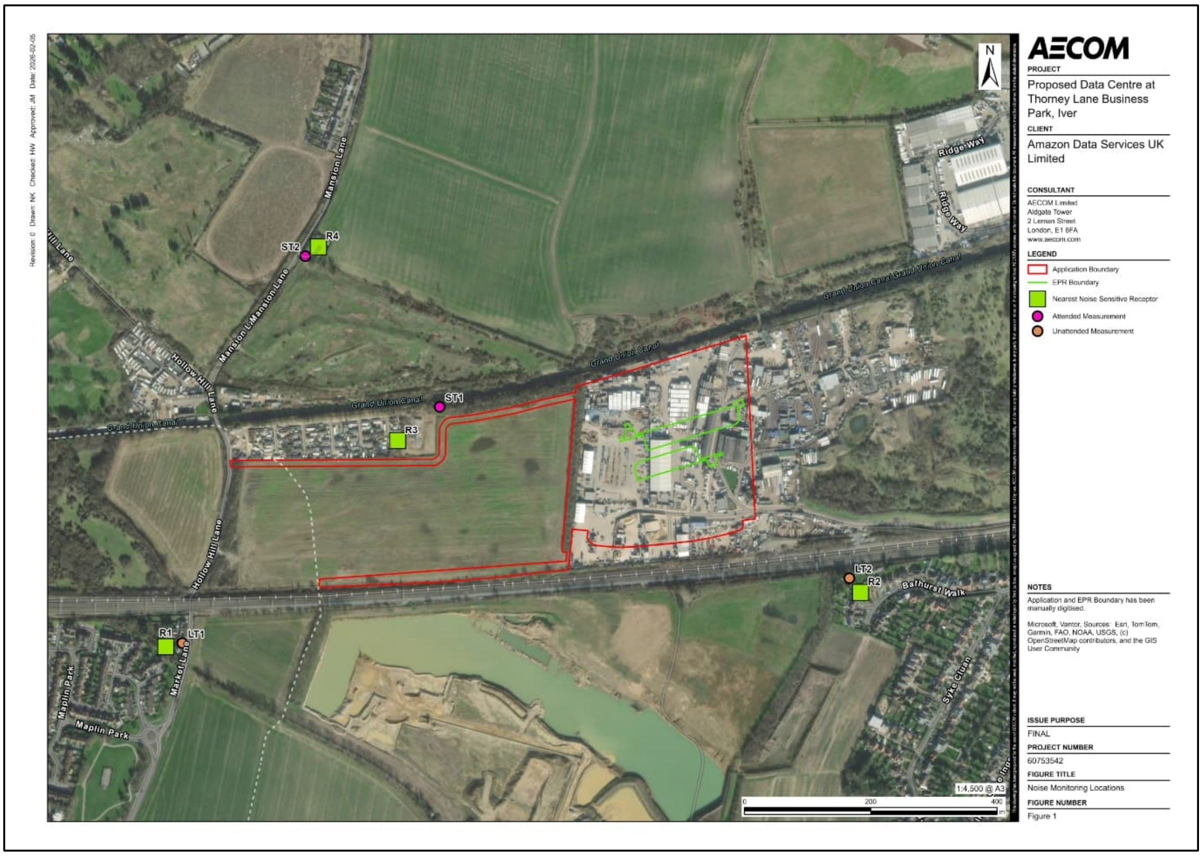


Table 10 Sensitive Receptor Locations and Description

Receptor ID	Description	Receptor type	Representative Monitoring Location
R1	Market Lane	Residential	LT1
R2	Bathurst Walk	Residential	LT2
R3	Mansion Lane caravan/halting site	Residential	ST1
R4	Mansion Lane	Residential	ST2

2.4.4 Noise Limits

Following the methodology of BS 4142 measured background sound levels ($L_{A90,T}$) are proposed to be used as the operational noise limits for the nearest identified noise-sensitive receptors. These are presented below in Table 11.

Table 11 Operational Noise Limits

Receptor ID	Representative Monitoring Location	Daytime Noise Limits $L_{A90,16hr}$ dB	Night-time Noise Limits $L_{A90,8hr}$ dB
R1	LT1	41*	37*
R2	LT2	42	40
R3	ST1	44	44
R4	ST2	46	41

*It should be noted that, at monitoring location LT1, the sound level meter was installed approximately 0.2 m away from a building façade. Therefore, in line with the methodology of BS 4142, a 1 dB correction has been applied to the measured levels which is reflected in the noise limits applied to receptor R1.

2.5 Noise Assessment

2.5.1 Operational Noise Assessment

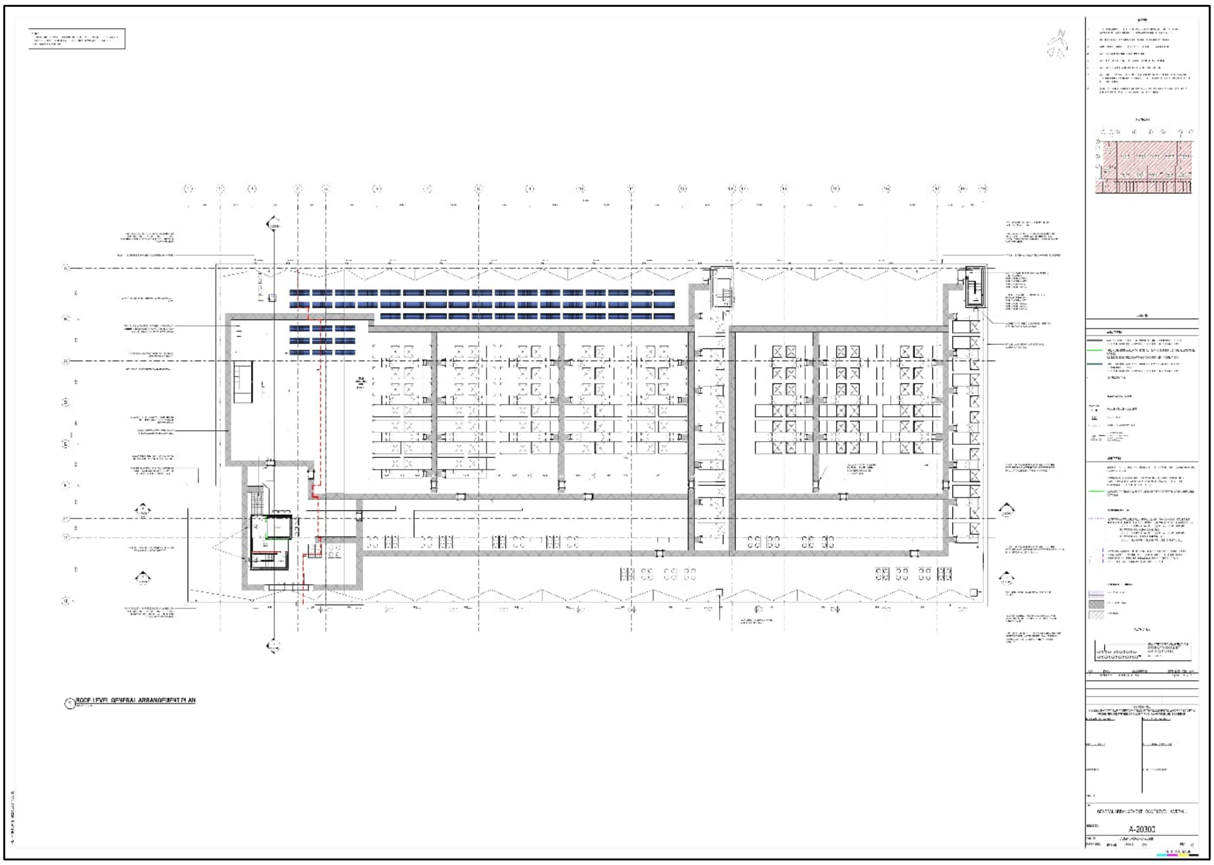
Noise modelling implementing the calculation procedures of ISO 9613 has been employed to predict the propagation of sound from the Proposed Installation in all directions and to quantify resultant sound levels at the identified noise-sensitive receptor locations for generator testing and maintenance as well as emergency operational scenario during a grid power failure.

Operational plant presented in Table 1 and Table 2 have been considered, with building geometry and plant locations obtained from the masterplan (shown in Figure 1) and roof plant layout (shown in Figure 3).

During generator testing and maintenance, which is restricted to the daytime only (07:00 – 23:00), each generator will be individually tested over the course of a day with all plant in Table 1 operating as part of normal operational noise. For the noise modelling, to assess a worst-case scenario, one generator from DC-B has been selected and modelled to be running continuously throughout the daytime period. This generator has been chosen because it either receives minimal screening from the data centre buildings or maintains a clear line of sight to each noise sensitive receptor. Consequently, it contributes the highest sound levels at all receptors — both where a direct line of sight exists and where limited building screening reduces attenuation.

For the emergency operational scenario during a grid power failure, all plant presented in Table 1 and Table 2 have been considered and assumed to be in continuous operation throughout the daytime and night-time (23:00-07:00).

Figure 3 Roof Plant Layout



The assessment considers that embedded noise mitigation measures, in the form of attenuators on louvres and exhaust fans, are in place, as described in Section 2.3 above.

Table 12 presents predicted noise levels during generator testing and maintenance whilst

Table 13 summarises noise levels during emergency operation. Noise contour maps for both assessed scenarios are presented in Appendix B

Table 12 Summary of Predicted Noise Levels Generator Testing and Maintenance

Modelling Scenario	Noise Sensitive Receptors	Predicted Noise Levels Day L_{Aeq} dB	Noise Limits Day L_{A90} dB	Difference between predicted noise levels and noise limits
		Daytime	Daytime	Daytime
Generator Testing and Maintenance	R1	34	41	-7
	R2	42	42	0
	R3	39	44	-5
	R4	35	46	-11

Table 13 Summary of Predicted Noise Levels Emergency Operation

Modelling Scenario	Noise Sensitive Receptors	Predicted Noise Levels Day/night L_{Aeq} dB		Noise Limits Day/night L_{A90} dB		Difference between predicted noise levels and noise limits	
		Daytime	Night-time	Daytime	Night-time	Daytime	Night-time
Emergency operation	R1	47	47	41	37	+6	+10
	R2	52	52	42	40	+10	+12
	R3	53	53	44	44	+9	+9
	R4	47	47	46	41	+1	+6

During the generator testing and maintenance scenario, predicted noise levels at all receptors are compatible with the noise limits at daytime. A negligible, not significant impact is predicted at all receptors.

During emergency operation, at receptor R1 and R3, predicted noise levels are between 5 and 10 dB over their respective noise limits for both the day and night. An adverse, not significant impact is expected at both receptors. At receptor R2, daytime predicted noise level is 10 dB above the noise limit which is an adverse not significant impact. Night-time predicted noise level at R2 is 12 dB over the noise limit leading to a classification of significant adverse impact. During the day at receptor R4, predicted noise levels are 1 dB over the daytime noise limit, which is a minor, not significant impact. During the night, predicted nose levels are 6 dB over the night-time noise limit, which is an adverse, not significant impact.

The emergency generators are for the provision of power and data suite cooling, to allow the Proposed Installation to continue operating and prevent the loss of any data in the event of mains power failure or an emergency cooling event. As discussed in 2.2.1, while a major power outage is considered an exceptional event, substantial consideration has been given to the design of the Proposed Installation to minimise the likelihood of such occurrences. Additionally, the BS 4142 standard is typically used to assess regular noise from industrial and commercial plant. It does not generally account for the infrequency of events like these and the associated noise impacts.

Although a significant adverse impact is predicted at R2 during the night based on the BS 4142 methodology, due to the unlikelihood and infrequency of the emergency occurring, as well as the limited duration of the event, it is considered acceptable.

3. Conclusion

A baseline sound survey was carried out in May to June 2025 to determine the existing sound environment. Detailed noise modelling has been undertaken to assess generator testing and maintenance as well as emergency operation of the Proposed Installation. Embedded mitigation measures have been implemented in the form of louvre attenuators and exhaust fan attenuators, which have been applied to all louvres and exhaust fans of both buildings.

The results conclude, that based on the data centre design and its embedded noise mitigation measures, during generator testing and maintenance, at all receptors, noise levels are predicted to not exceed their respective daytime and night-time noise limits assessed in accordance with BS 4142. The operational noise impact during generator testing and maintenance is assessed as not significant.

During emergency operation, at receptor R1, R3 and R4, an adverse, not significant impact is expected. At receptor R2, during the night-time, a significant adverse impact is predicted.

The emergency generators are for the provision of power and data suite cooling, to allow the Proposed Installation to continue operating and prevent the loss of any data in the event of mains power failure or an emergency cooling event. As discussed in 2.2.1, while a major power outage is considered an exceptional event, substantial consideration has been given to the design of the Proposed Installation to minimise the likelihood of such occurrences. Additionally, the BS 4142 standard is typically used to assess regular noise from industrial and commercial plant. It does not generally account for the infrequency of events like these and the associated noise impacts.

Although a significant adverse impact is predicted at R2 based on the BS 4142 methodology, due to the unlikelihood and infrequency of the emergency occurring, as well as the limited duration of the event, it is considered acceptable.

Appendix A Acoustic Glossary

Term	Definition
Noise	Unexpected or unwanted sound.
Decibel (dB)	The range of audible sound pressures is approximately 2 x 10-5 Pa to 200 Pa. Using decibel notation presents this range in a more manageable form, 0dB to 140dB. Mathematically Sound Pressure level = 20 log {p(t)/p0} Where P0 = 2 x 10-5 Pa.
A" Weighting (dB(A))	The human ear does not respond uniformly to different frequencies. "A" weighting is commonly used to simulate the frequency response of the ear. It is used in the assessment of risk of damage of hearing due to noise.
Frequency (Hz)	The number of cycles per second, for sound this is subjectively perceived as pitch.
Frequency Spectrum	Analysis of the relative contributions of different frequencies that make up a noise.
Ambient Sound	Totally encompassing sound in a given situation at a given time usually composed of sound from many sources near and far (The ambient sound comprises the residual sound and the specific sound when present).
Ambient Sound Level La = $L_{Aeq,T}$	Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T.
Background Sound Level $L_{A90,T}$	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels.
Equivalent Continuous A-weighted Sound Pressure Level $L_{Aeq,T}$	Value of the A-weighted sound pressure level in decibels of continuous steady sound that, within a specified time interval, T = t2 – t1, has the same mean-squared sound pressure as a sound that varies with time, and is given by the following equation: $L_{Aeq,T} = 10lg_{10}\left\{\left(\frac{1}{T}\right)\int_{t1}^{t2}\left[p_A\frac{(t)^2}{{p_0}^2}\right]dt\right\}$ Where p0 is the reference sound pressure (20μPA); and PA(t) is the instantaneous A-weighted sound pressure level at time t
Measurement Time Interval Tm	Total time over which measurements are taken (This may consist of the sum of a number of non-contiguous, short-term measurement time intervals)
Rating level $L_{Ar,Tr}$	Specific sound level plus any adjustment for the characteristic features of the sound
Reference Time Interval, Tr	Specified interval over which the specific sound level is determined (This is 1 h during the day from 07:00 h to 23:00 h and a shorter period of 15 min at night from 23:00 h to 07:00 h)
Residual Sound	Ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound
Residual sound level Lr = $L_{Aeq,T}$	Equivalent continuous A-weighted sound pressure level of the residual sound in a given situation at the assessment location over a given time interval, T.
Specific sound level Ls = $L_{Aeq,Tr}$	Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given time interval, T.
Specific Sound Source	Sound source being assessed
L_{Amax}	The maximum RMS A-weighted sound pressure level occurring within a specified time period. Fast time weighting indicates sound pressure level measurements undertaken using a 125-millisecond moving average time weighting period

Appendix B Figures

Figure 4 Generator Testing and Maintenance Noise Contour Map

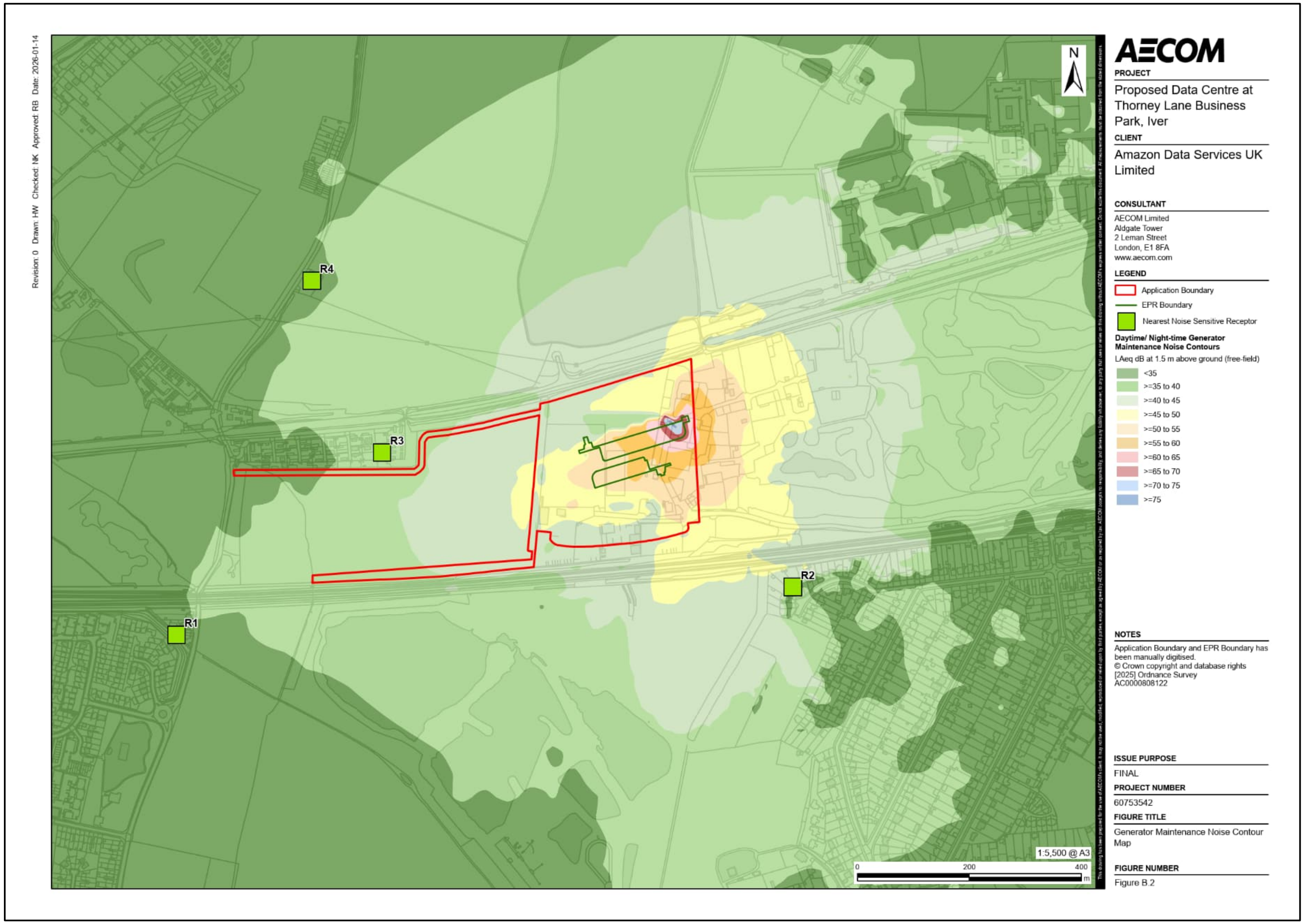
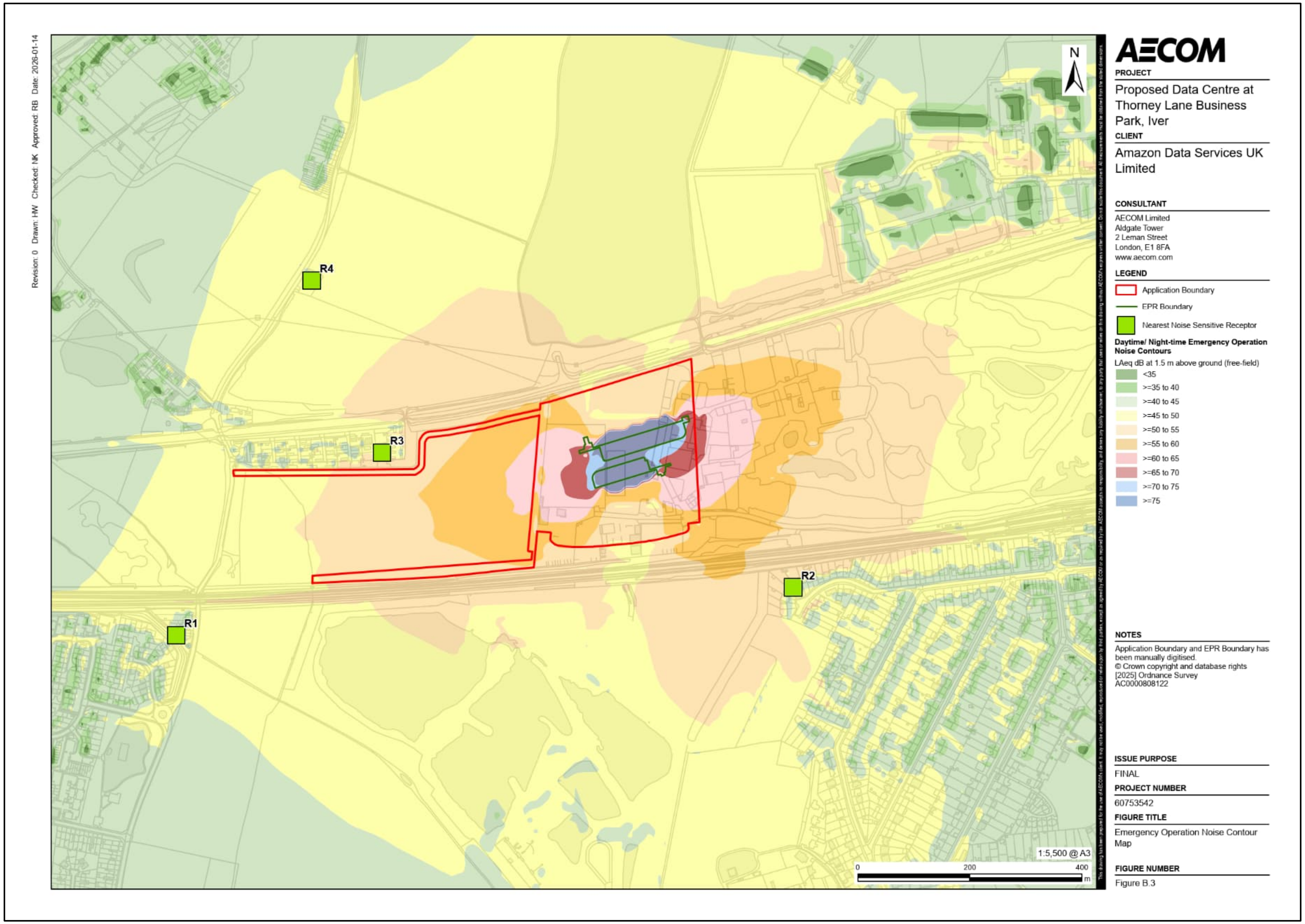


Figure 5 Emergency Operation Noise Contour Map



Appendix C Baseline Sound Monitoring

C.1 Monitoring Equipment

Details of the monitoring equipment are given in Table 14 . Sound level meters with Class 1 specifications were used as set out in BS EN 61672-1:2013 'Electroacoustics. Sound level meters. Specifications', with sound level meters calibrated every two years by a UKAS Accredited Calibration Laboratory to BS EN 61672-3:2013 'Electroacoustics. Sound level meters. Periodic tests'. UKAS calibration certificates are available on request.

Table 14 Sound Monitoring Equipment

Equipment	Monitoring Location	Model	Serial Number	Laboratory Calibration Date
Type 1 Sound Level Meter	LT1	Rion NL-52	809413	22/10/2024
Type 1 Sound Level Meter	LT2	Rion NL-52	743082	17/01/2025
Type 1 Sound Level Meter	ST1 and ST2	Rion NL-52	420764	11/02/2025
Acoustic Calibrator	All	Rion NC-74	50541127	17/01/2025

C.2 Monitoring Location LT1

Unattended Sound measurements were recorded at LT1 in the front of a house adjacent to Market Lane between 21st of May and 2nd of June 2025.The sound level meter was housed in a weatherproof case which was secured to a pipe. The microphone was mounted approximately 1.2 m above ground level and approximately 5 m from the edge Market Lane and 0.2 m away from the nearest façade. A picture of the sound monitoring set-up at LT1 is provided in Figure 6

Figure 6 LT1 Monitoring Location

During the installation and collection of the sound monitoring equipment, the sound environment at this location was characterised by (from the most dominant sound source to the least dominant sound source):

- Road traffic noise from the Market Lane; and
- Rail traffic noise from the Great Western railway line.

C.3 Monitoring Location LT2

Unattended sound measurements were recorded at LT2 on a residential courtyard at the end of Bathurst Walk between 21st of May and the 3rd of June 2025. The sound level meter was housed in a weatherproof case which was secured to a tree in the courtyard. The microphone was mounted approximately 1.2 m above ground level and approximately 32 m from the railway line and 10 m from the nearest residential façade. A picture of the sound monitoring set-up at LT2 is provided in Figure 7.

Figure 7 LT2 Monitoring Location

During the installation and collection of the sound monitoring equipment, the sound environment at this location was characterised by (from the most dominant sound source to the least dominant sound source):

- Distant road traffic noise (from Thorney Lane North and M25 motorway);
- Rail traffic noise from the Great Western railway line; and
- Natural ambient sounds, including birdsong.

C.4 Monitoring Location ST1

Attended daytime sound measurements were recorded at ST1 along the Grand Union Canal Slough Arm on the 21st of May 2025 and on the 3rd of June 2025. Attended night-time sound measurements were undertaken on the 23rd of May 2025. The meter was mounted on a tripod 1.5 m above ground level and approximately 48 m to the east from the Grand Union Place mobile home park. A picture of the sound monitoring set-up at ST1 is provided in Figure 8.

Figure 8 ST1 Monitoring Location

During the measurement, the sound environment at this location was noted down and characterised by (from the most dominant sound source to the least dominant sound source):

- Wind induced foliage movement;
- Intermittent aircraft noise; and
- Natural ambient sounds, including Birdsong.

C.5 Monitoring Location ST2

Attended daytime sound measurements were recorded at ST2 on the driveway entrance of a residential property, adjacent to Mansion Lane on the 21st of May 2025 and on the 3rd of June. The night-time sound measurements were undertaken at ST2 on the 23rd of May. The meter was mounted on a tripod 1.5 m above ground level and approximately 3 m from the edge of Mansion Lane. A picture of the sound monitoring set-up at ST2 is provided in Figure 9.

Figure 9 ST2 Monitoring Location

During the measurement, the sound environment at this location was noted down and characterised by (from the most dominant sound source to the least dominant sound source):

- Nearby road traffic noise from Mansion Lane; and
- Natural ambient sounds, including birdsong.

C.6 Sound Monitoring Data

Table 15 Sound Monitoring Results – LT1

Date	Daytime (07:00 - 23:00)			Night-time (23:00 - 07:00)		
	$L_{Aeq,16h}$ dB	$L_{A90,1h}$ dB	L_{AFmax} dB	$L_{Aeq,8h}$ dB	$L_{A90,15min}$ dB	L_{AFmax} dB
Wed 21/05/2025	65	43	83	60	43	82
Thu 22/05/2025	65	43	85	60	48	83
Fri 23/05/2025	65	44	90	58	37	81
Sat 24/05/2025	65	44	85	56	39	81
Sun 25/05/2025	65	42	89	57	35	81
Mon 26/05/2025*	64	44	87	59	41	81
Tue 27/05/2025*	66	48	87	60	37	83
Wed 28/05/2025*	65	42	87	60	37	82
Thu 29/05/2025*	65	45	87	59	35	81
Fri 30/05/2025*	65	42	89	57	32	82
Sat 31/05/2025	64	42	86	57	33	84
Sun 01/06/2025	63	40	86	59	31	83
Mon 02/06/2025	65	41	84	-	-	-
Summary**	64	42	90	58	38	84

**The dates coincide with a bank and school holiday. As such, the measurement data for these days have been excluded from the summary results, as they are not considered representative of typical conditions.*

***For the summary values, $L_{Aeq,\ T}$ and $L_{A90,\ T}$ represent average values over the measurement period and $L_{AFmax,\ T}$ reflects the highest level over the measurement period*

Table 16 Sound Monitoring Results – LT2

Date	Daytime (07:00 - 23:00)			Night-time (23:00 - 07:00)		
	$L_{Aeq,16h}$ dB	$L_{A90,1h}$ dB	L_{AFmax} dB	$L_{Aeq,8h}$ dB	$L_{A90,15min}$ dB	L_{AFmax} dB
Wed 21/05/2025	54	43	75	55	42	73
Thu 22/05/2025	54	42	77	54	45	72
Fri 23/05/2025	54	41	79	54	40	72
Sat 24/05/2025	57	43	84	51	39	74
Sun 25/05/2025	54	44	85	53	39	75
Mon 26/05/2025*	58	44	86	54	42	73
Tue 27/05/2025*	54	46	84	56	40	74
Wed 28/05/2025*	54	42	82	60	39	85
Thu 29/05/2025*	57	44	83	58	37	81
Fri 30/05/2025*	59	40	87	54	36	72
Sat 31/05/2025	57	39	81	57	37	79
Sun 01/06/2025	62	41	84	57	37	79
Mon 02/06/2025	57	41	84	57	42	81
Tue 02/06/2025	60	47	84	-	-	-

Date	Daytime (07:00 - 23:00)			Night-time (23:00 - 07:00)		
	$L_{Aeq,16h}$ dB	$L_{A90,1h}$ dB	L_{AFmax} dB	$L_{Aeq,8h}$ dB	$L_{A90,15min}$ dB	L_{AFmax} dB
Summary**	56	42	85	55	40	81

**The dates coincide with a bank and school holiday. As such, the measurement data for these days have been excluded from the summary, as they are not considered representative of typical conditions.*

***For the summary values, $L_{Aeq,\,T}$ and $L_{A90,\,T}$ represent average values over the measurement period and $L_{AFmax,\,T}$ reflects the highest level over the measurement period.*

Table 17 Sound Monitoring Results – ST1

Time Period	Date and Time	Duration	$L_{Aeq,T}$ dB	$L_{A90,T}$ dB	$L_{Amax,T}$ dB
Day	21/05/2025 16:46-17:01	15 min	48	44	69
	03/06/2025 11:48-12:03	15 min	49	44	60
	03/06/2025 13:21-13:37	15 min	54	45	68
	Summary*		50	44	69
Night	23/05/2025 02:30-02:45	15 min	49	44	70
	Summary*		49	44	70

**For the summary values, $L_{Aeq,\,T}$ and $L_{A90,\,T}$ represent average values over the measurement period and $L_{AFmax,\,T}$ reflects the highest level over the measurement period.*

Table 18 Sound Monitoring Results – ST2

Time Period	Date and Time	Duration	$L_{Aeq,T}$ dB	$L_{A90,T}$ dB	$L_{Amax,T}$ dB
Day	21/05/2025 15:01-15:16	15 min	64	43	83
	03/06/2025 12:36-12:51	15 min	68	46	86
	03/06/2025 14:32-14:47	15 min	65	47	79
	Summary*		66	46	86
Night	23/05/2025 03:13-03:28	15 min	54	41	84
	23/05/2025 03:28-03:43	15 min	55	41	79
	Summary*		54	41	84

**For the summary values, $L_{Aeq,\,T}$ and $L_{A90,\,T}$ represent average values over the measurement period and $L_{AFmax,\,T}$ reflects the highest level over the measurement period.*

C.7 Sound Monitoring Time Histories

Figure 10 Sound Monitoring Time History - LT1

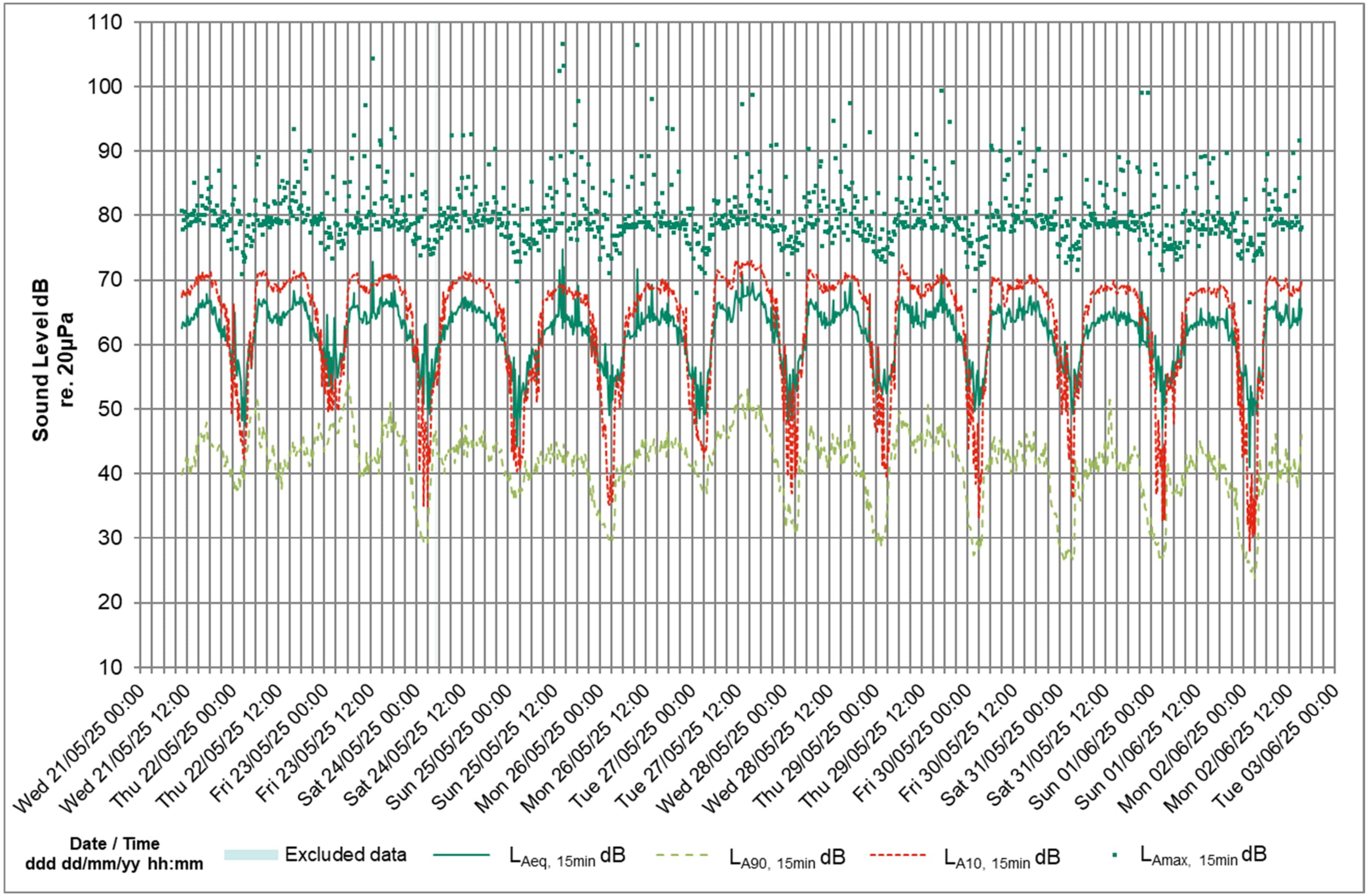
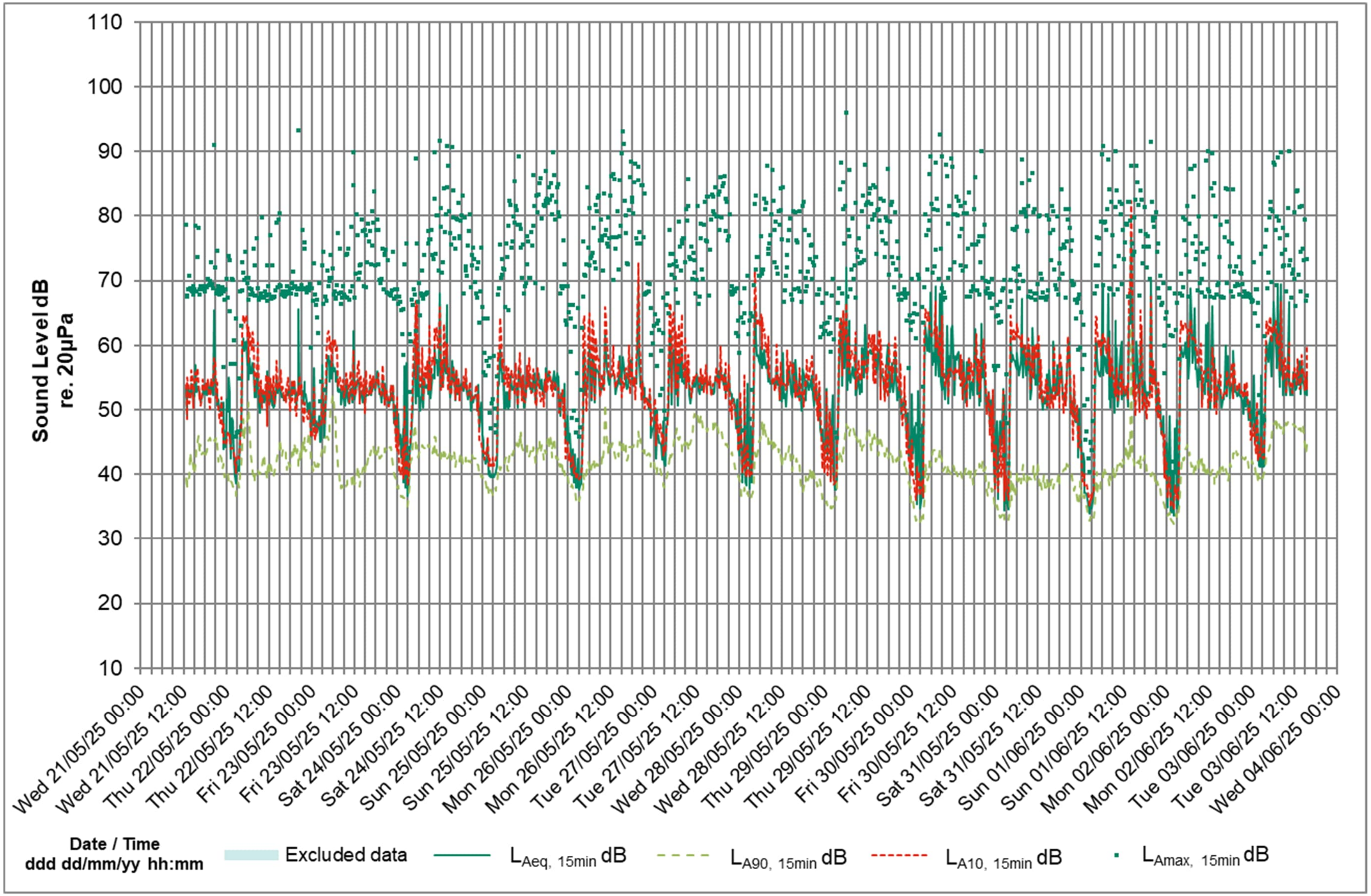


Figure 11 Sound Monitoring Time History – LT2



aecom.com