10 Noise and Vibration

10.1 Introduction

10.1.1 This chapter of the Environmental Statement (ES) has been prepared by AECOM and presents the findings of an assessment of the likely significant effects on noise and vibration as a result of the Proposed Development.

10.1.2 This chapter identifies and proposes measures to address the potential impacts and likely significant effects on human receptors, with regards to noise and vibration, during the construction and operational phases of the Proposed Development.

10.1.3 This chapter is supported by the following technical appendices:

- Appendix 10.1: Baseline Noise Monitoring.
- Appendix 10.2: Noise Modelling.

10.1.4 This chapter is supported by the following figures:

- Figure 10.1: Study Area, Noise Monitoring Locations and Sensitive Receptors.
- Figure 10.2: Normal Operations Noise Contours.
- Figure 10.3: Emergency Generator Noise Contours.
- Figure 10.4: Mitigated Normal Operations Noise Contours.
- Figure 10.5: Mitigated Emergency Generator Noise Contours.

Planning Policy and Guidance

National Planning Policy

10.1.5 National policy documents relevant to the assessment of noise and vibration are set out below:

- National Planning Policy Framework (NPPF), with particular reference to Policies P1 and P3 of Chapter 17, which require planning policies and decisions to consider wider opportunities to reduce noise pollution and contribute to environmental objectives, whilst avoiding significant adverse effects from noise, minimising and mitigating adverse noise impacts wherever possible, and protecting tranquil areas valued for their recreational and amenity benefits.
- Noise Policy Statement for England (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.

Regional Planning Policy

10.1.6 Regional policy documents relevant to the assessment of noise and vibration are set out below:

- The London Plan – Spatial Development Strategy for Greater London - Policy D14: Noise, requires development proposals to reduce, manage and mitigate noise to improve health and quality of life. The policy seeks to avoid significant adverse noise effects, protect existing noise-sensitive receptors, and incorporate good acoustic design and appropriate mitigation into new development proposals.

Local Planning Policy

10.1.7 Local policy documents relevant to the assessment of noise and vibration are set out below:

- The Hillingdon Local Plan 2012, Policy EM8 states that: “The Council will seek to ensure that noise sensitive development and noise generating development are only permitted if noise impacts can be adequately controlled and mitigated.”
- Supplementary Planning Document (SPD) Noise Generating and Noise Sensitive Development was produced by the London Borough of Richmond Upon Thames in conjunction with the London Borough of Hillingdon (LBH). It provides an interpretation of guidance in BS 4142 and how it should be applied in LBH.

Guidance

10.1.8 Guidance and best practice documents relevant to the assessment of noise and vibration are set out below:

- Planning Practice Guidance: Noise provides guidelines that are designed to assist with the implementation of the noise requirements set out in the NPPF and provides guideline descriptions to assist in identifying when adverse and significant adverse effects occur.
- BS: 7445 ‘Description and Measurement of Environmental Noise. Part 1 – Guide to Quantities and Procedures’ specifies methods for the description, measurement and assessment of environmental noise, providing a framework for the accurate determination of sound levels in outdoor environments.
- BS 4142:2014+A1:2019 provides a method for assessing the likely impact of industrial and commercial sound on people living in an area by comparing the rating level of the specific sound source with the existing background sound level.
- BS 5228-1 provides guidance on the prediction, measurement and control of noise arising from construction and open sites, enabling the assessment and management of potential noise impacts on surrounding receptors during construction activities.
- BS 5228-2 provides guidance on the assessment, prediction, measurement and control of vibration arising from construction and open site activities, helping to evaluate and mitigate potential impacts on nearby occupants, structures and sensitive equipment.
- Association of Noise Consultants Construction Noise Guide (ANC Guide) provides practical guidance on the assessment and management of construction noise, including recommended methodologies for undertaking noise impact assessments and determining significance in accordance with UK planning and environmental legislation.

- Institute of Environmental Management and Assessment Guidelines for Environmental Noise Impact Assessment (IEMA Guidelines) provide a framework for identifying, predicting and evaluating the significance of environmental noise effects within Environmental Impact Assessments and other planning-related assessments.

10.2 Assessment methodology

10.2.1 This section presents the methodology used to assess the potential effects on noise and vibration during the construction and operational phases of the Proposed Development.

10.2.2 The assessment has been carried out following the below methodology:

- Establishment of the baseline conditions, including identification and assessment of the receiving environment and receptor sensitivity;
- Identification of environmental design and mitigation measures that form part of the construction methodology;
- Identification of the potential impacts, and assessment of the magnitude of potential effects, and their significance;
- Consideration of additional mitigation measures and enhancement measures; and
- Assessment of residual effects.

Defining Study Area

10.2.3 The study area has been defined to include construction and operational noise and vibration features likely to be at risk from possible direct and indirect impacts that might arise from the Proposed Development.

10.2.4 For construction phase noise effects, the area for which impacts are expected is considered to be 300 m from the Proposed Development site, based on guidance from BS 5228-1, which states construction noise predictions are generally reliable up to 300 m. Although BS 5228-2 does not contain any guidance on suitable construction vibration buffers, an industry standard approach is to apply a buffer of 100 m to encompass vibration sensitive receptors. As such, a 100 m Study Area has been adopted for construction phase vibration.

10.2.5 For operational phase noise effects, the Study Area has been defined based on the likely extent of noise impact. Operational noise effects from the Proposed Development will be calculated up to a distance of 1 km, which is the distance beyond which the uncertainty of the noise prediction methodology in ISO 9613-2 is not provided.

Baseline study

Sensitive Receptors

10.2.6 Potential sensitive receptors (i.e. buildings whose occupants may be disturbed by adverse noise and vibration levels, and structures that are sensitive to vibration) have been identified and taken into consideration when assessing the effects associated with noise and vibration levels from the construction, operation and decommissioning phases of the Proposed Development.

10.2.7 The type of noise-sensitive receptors that may experience significant effects due to the construction, operation, and decommissioning of the Proposed Development are identified in Table 10.1 as either residential or non-residential receptors.

10.2.8 The approach to the assessment of non-residential receptors differs from that adopted for residential receptors. Government policy for noise in the NPSE is based on relationships between noise and health/quality of life, and noise insulation of a typical dwelling and these are not considered applicable to non-residential receptors.

10.2.9 Non-sensitive locations include those where no human or other noise-sensitive activity takes place, or where such activity would not be affected by noise from the Proposed Development, such as barns, outbuildings, or industrial facilities.

Table 10.1 Receptor Types

Receptor Group	Receptors in Group
Residential	Individual dwellings.
Non-residential	Non-residential community facilities such as schools, hospitals, places of worship and noise sensitive commercial properties.

10.2.10 The effects of noise and vibration generated during the construction and operational phases of the Proposed Development are considered at nearby sensitive receptors. When considering groups of properties as a single receptor, noise and vibration is assessed at the nearest receptor to the Proposed Development (i.e. the receptor that will experience the highest levels of noise and vibration). Although noise and vibration may be perceivable at other receptors in each identified receptor group, effects will not be significant if they are suitably controlled at the identified receptors.

10.2.11 Noise sensitive receptors have been identified through a desktop study of aerial imagery and mapping and are presented in Figure 10.1 and summarised in Table 10.2. The receptors are the closest to the Proposed Development within the Study Area. This approach allows a proportionate assessment given that, if noise is controlled at the identified receptors, then it will subsequently be controlled at all other receptors within the Study Area.

Table 10.2 Sensitive Receptors

Receptor ID	Receptor Name	Receptor Type	Representative Monitoring Location
R01	Odd-numbered properties from 241 to 265 Sipson Road, and properties 23, 24, 25, 27, 28, 29, 35, 37, 38, 43, 45, 51 and 53 Russell Gardens.	Residential	LT1
R02	Holiday Inn London - Heathrow M4.	Hotel	LT2
R03	Property numbers 1 to 10 Vineries Close, property 335 Sipson Road and property numbers 1 to 12 Church Court.	Residential	LT3
R04	Lady Nafisa Secondary School for Girls.	Educational	LT3
R05	Sipson Christian Fellowship.	Place of Worship	LT2

Baseline Noise Monitoring

10.2.12 Baseline noise monitoring was carried out between Friday 31st January and Thursday 6th February 2025 at discrete locations within the Proposed Development boundary to establish the existing baseline noise environment.

10.2.13 The monitoring procedures followed guidance from BS 7445-1 and BS 4142. All noise measurements included ambient noise level ($L_{Aeq,T}$) and background noise level ($L_{A90,T}$) sound level indicators. The baseline monitoring methodology and results are presented in full within Appendix 10.1: Baseline Noise Monitoring of this ES.

10.2.14 Noise monitoring locations are shown in Figure 10.1 and summarised in Table 10.3. Based on their surroundings and relative distance to existing dominant sound sources, the monitoring locations have been allocated as representative of the local noise environment at each of the various sensitive receptors.

Table 10.3 Summary of site-specific surveys

Title	Extent of survey	Overview of survey	Survey provider	Year	Reference to further information
LT1	The western Site boundary, representative of properties located on Russell Gardens and Sipson Road.	Longterm unattended noise monitoring undertaken.	AECOM	2025	Appendix 10.1
LT2	The northern Site boundary, representative of the Holiday Inn, IHG Hotel and other ancillary buildings.	Longterm unattended noise monitoring undertaken.	AECOM	2025	Appendix 10.1
LT3	The southern Site boundary, representative of Vineries Close, Sipson Christian Fellowship and Lady Nafisa Secondary School.	Longterm unattended noise monitoring undertaken.	AECOM	2025	Appendix 10.1

Predicting effects

Methodology for Identifying a Likely Significant Effect

10.2.15 The assessment presented in this ES chapter follows the principles of the NPSE, which differ from the standard EIA methodology described in Chapter 5: EIA Approach.

10.2.16 The NPSE sets definitions for ‘significant adverse effects’ and ‘adverse effects’ using the concepts:

- Lowest Observed Adverse Effect Level (LOAEL) – the level above which, as an average response, adverse effects on health and quality of life can be detected; and
- Significant Observed Adverse Effect Level (SOAEL) – the average response level above which, as an average response, significant adverse effects on health and quality of life occur.

10.2.17 The NPSE states 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".*

10.2.18 Noise levels exceeding the SOAEL should be avoided as far as reasonably practicable. For noise levels exceeding the LOAEL, the NPSE states that:

> *"It requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development … This does not mean that such adverse effects cannot occur".*

10.2.19 All noise effects are local, only affecting nearby sensitive receptors, and are direct in nature; however, defining a likely effect and whether it is significant or not depends on the nature of a noise source. Likely effects have been defined based on guidance set out in the NPSE and PPGN.

10.2.20 A new source of noise is assessed by the absolute noise level it generates at sensitive receptors. Where an exceedance of the defined SOAEL for each noise source occurs, it is an indication of a likely significant effect. However, for the assessment of construction traffic noise where an existing noise source (road traffic noise) is changed, the assessment of the effect level due to the change in noise refers to guidance within the IEMA Guidelines and consideration of the absolute noise level based on guidance set out in the NPSE and PPGN.

10.2.21 Government policy for noise is based on community exposure and response relationships between noise and health/quality of life, and the noise insulation of a typical dwelling. Consequently, an assessment based on LOAELs and SOAELs cannot be applied to non-residential sensitive receptors. As such, the approach to the assessment of non-residential receptors differs from that adopted for residential receptors. Non-residential receptors are assessed on a case-by-case basis by considering the applicable design criteria for good internal noise levels.

10.2.22 The LOAEL and SOAEL levels used for this assessment are set out in the following sections.

Methodology for Determining Construction Phase Effects

Construction Phase Noise at Residential Receptors

10.2.23 Specific details of the construction works associated with the Proposed Development will be available once the detailed design has been completed and the detailed construction methodology is available. Therefore, at this stage representative construction activities and 'worst-case' assumptions, including the likely type and number of construction plant, have been assumed based on the information provided in previous noise assessments undertaken relating to the Proposed Development.

10.2.24 British Standard BS 5228-1 provides practical information on noise reduction measures during construction works and promotes a Best Practicable Means ('BPM') approach to control noise. The calculation method provided in BS 5228-1 is based on the number and type of equipment operating, their associated Sound Power Level (Lw), and the distance between the equipment being used and the sensitive receptors. Details on the methodology for calculating construction noise are presented in Appendix 10.2: Noise Modelling.

10.2.25 The construction phase noise criteria have been based on guidance from the Association of Noise Consultants Construction Noise Guide (ANC Guide). The ANC Guide was issued in 2021

and, although primarily aimed at providing a consistent approach to Section 61 applications, it also represents the most modern interpretation of example assessment methods in Annex E of BS 5221-1 and the latest industry standard.

10.2.26 The LOAEL and SOAEL levels for construction phase noise are defined, as per the ANC Guide in Table 10.4. If the measured ambient sound level at a receptor is greater than the LOAEL, the LOAEL is adjusted to that level.

Table 10.4 Construction Phase Noise Assessment Criteria

Time Period	Threshold Value, $L_{Aeq,T}$ dB	
	LOAEL	SOAEL
Day (07:00–19:00) Saturday (07:00–13:00)	65	75
Evening (19.00–23.00) Weekends (13.00–23.00 Saturdays and 07.00–23.00 Sundays)	55	65
Night (23.00–07.00)	45	55
Note: The values apply to a location one metre from a residential building façade containing a window, ignoring the effect of the acoustic reflection from that façade. As per standard practice where ambient noise levels exceed the relevant LOAEL value defined in this table, the LOAEL is set at the ambient sound level and the SOAEL is set 5 dB higher.		

Construction Phase Noise at Non-Residential Receptors

10.2.27 The following non-residential receptors within the Study Area have been considered in accordance with BS 8233 and BB93:

- R02 (Holiday Inn London – Heathrow M4);
- R04 (Lady Nafisa Secondary School for Girls); and
- R05 (Sipson Christian Fellowship).

10.2.28 The internal design criteria appropriate to each receptor (based on the building type) has been applied and the external noise level thresholds have been calculated based on typical façade attenuation. These thresholds represent the maximum external noise levels that would be expected to exceed the internal design criteria for the receptor.

10.2.29 The derived external noise level thresholds for non-residential receptors are presented in Table 10.5. Whilst the LOAEL and SOAEL are not applicable to non-residential receptors, they have been defined relative to the external noise threshold range to allow a consistent approach to the assessment.

Table 10.5 Internal Noise Criteria and External Thresholds for Non-residential Receptors

Receptor	Relevant BS 8233 or BB93 Category	Design Range, $L_{Aeq,T}$ dB	Typical Façade Attenuation, dB	Derived External Noise Threshold Range, $L_{Aeq,T}$ dB
R02	Indoor ambient noise level ranges for hotel bedrooms (daytime, 07:00 – 23:00) (BS 8233)	30-40	30	60-70

Receptor	Relevant BS 8233 or BB93 Category	Design Range, $L_{Aeq,T}$ dB	Typical Façade Attenuation, dB	Derived External Noise Threshold Range, $L_{Aeq,T}$ dB
	Indoor ambient noise level ranges for hotel bedrooms (night-time, 23:00 – 07:00) (BS 8233)	25- 35	30	55-65
R04	Secondary school: classroom, general teaching area, seminar room, tutorial room, language laboratory (BB93)	30-35	30	60-65
R05	Place of Worship (BS 8233)	30-35	30	60-65

Construction Phase Vibration

10.2.30 The level of construction vibration at the assessed receptors has been estimated using the method in Table E.1 of BS 5228-2, which is based on the distance to receptor and a scaling factor. Details on the methodology for calculating construction vibration are presented in Appendix 10.2: Noise Modelling.

10.2.31 BS 5228-2 provides guidance on the perception of vibration within occupied buildings, offering a simple approach to assessing both annoyance and the potential for cosmetic damage arising from construction phase vibration. Table B.1 of Annex B in BS 5228-2 sets out indicative Peak Particle Velocity (PPV) levels and their potential impact on people.

10.2.32 For construction phase vibration, the LOAEL and SOAEL are provided in Table 10.6.

Table 10.6 Construction Phase Vibration Assessment Criteria

Effect Level	PPV Vibration Level, mm/s	BS 5228-2 Description of Impacts
LOAEL	0.3	Vibration might be just perceptible in residential environments.
SOAEL	1.0	It is likely that vibration of this level in residential environments will cause complaint, but it can be tolerated if prior warning and explanation has been given to residents.

Construction Phase Traffic Noise

10.2.33 Baseline traffic noise levels at assessed receptors have been calculated using the methodology set out in CRTN, based on existing traffic flows along the construction route for the proposed construction year. The predicted change in traffic noise during the construction phase has been calculated from the percentage increase in overall traffic and Heavy Goods Vehicle (HGV) movements associated with construction activities.

10.2.34 The temporary changes in road traffic noise levels along the local road network due to construction phase traffic are assessed based on guidance from the IEMA (now ISEP) Guidelines. Assessment criteria are presented in Table 10.7.

10.2.35 Negligible and Minor effects are identified as Not Significant whereas Moderate and Major effects are identified as Significant. If no sensitive receptors are identified along a road link, a Negligible effect is identified.

Table 10.7 Construction Phase Traffic Noise Assessment Criteria

Effect Level	Magnitude Criteria
Negligible	≥ 0 dB and < 1 dB
Minor	≥ 1 dB and < 3 dB
Moderate	≥ 3 dB and < 5 dB
Major	≥ 5 dB

Methodology for Determining Operational Phase Effects

Operational Phase Noise

10.2.36 The main sources of operational phase noise that are considered in the assessment of fixed plant noise for data centres are:

- Chillers;
- Emergency generators; and
- Transformer substations.

10.2.37 Noise predictions of the operational Proposed Development have been undertaken using CadnaA® (v2026), which implements the calculation procedures of ISO 9613-2:2024 to predict the propagation of noise away from the Proposed Development in all directions and to quantify the resultant noise levels at the identified receptors. Details on the methodology for predicting operational noise are presented in presented in Appendix 10.2: Noise Modelling.

10.2.38 The impact of the proposed operational plant has been assessed following guidance from BS 4142. When defining values for LOAEL and SOAEL, reference is made to Table 2 of the SPD, which is summarised in Table 10.8. Criteria are based on the outcome of a BS 4142 assessment, which compares the predicted rating noise level ($L_{Ar,Tr}$) against the measured background sound level ($L_{A90,T}$).

Table 10.8 SPD BS 4142 Interpretation

Noise Impact from Relevant Proposed Industrial or Commercial Premises or Plant	Development Outcome
Rating Level ($L_{Ar,Tr}$) is at least 5 dB(A) below the Background Level L_{A90}	Normally acceptable
Rating level ($L_{Ar,Tr}$) is no more than 5 dB(A) above the Background Level L_{A90}	Acceptable only if there are overriding economic or social reasons for development to proceed
Rating level ($L_{Ar,Tr}$) is more than 5 dB(A) above the Background Level L_{A90}	Normally unacceptable

10.2.39 Criteria in Table 10.8 are applicable to normal operations, which are permanent and continuous use of chillers. As such, the LOAEL is set at a $L_{Ar,Tr}$ rating noise level of 5 dB below the $L_{A90,T}$ background sound level and the SOAEL is set at a $L_{Ar,Tr}$ rating noise level of 5 dB above the $L_{A90,T}$ background sound level.

10.2.40 The other significant source of noise would be from generators, which are required in the event of a power cut and would be tested intermittently. Given generator use would be temporary and only occur in the case of a power cut or for testing, assessment criteria can be relaxed. As such, in conjunction with BS 4142, the LOAEL is set at a $L_{Ar,Tr}$ rating noise level of 5 dB above the

$L_{A90,T}$ background sound level and the SOAEL is set at a $L_{Ar,Tr}$ rating noise level of 10 dB above the $L_{A90,T}$ background sound level.

Operational Phase Traffic Noise

10.2.41 The addition of operational phase traffic onto the existing road network can have an impact on sensitive receptors located along the existing roads used by these vehicles. The change in road traffic noise levels has been calculated using the standard methodology outlined in the CRTN. The predictions are based on baseline and 'with development' operational phase traffic data. Permanent changes in road traffic noise as a result of the Proposed Development will be assessed with reference to criteria presented in Table 10.7.

Consultation

10.2.42 Consultation relating to this chapter has been undertaken through the scoping process. The Scoping Opinion (12th October 2026) contained comments relating to noise and vibration as reproduced in Table 10.9 along with how they have been addresses within this chapter.

Table 10.9 Scoping Opinion and Responses

Comment	Response
Paragraph 15.2.3 in the EIA Scoping Report states that the key receptors sensitive to changes in noise and vibration levels that could potentially be affected by the proposed development are existing residential properties. However, Paragraph 13.3.1 also references the adjacent hotel and school as sensitive receptors. The ES chapter should assess effects on all of these local sensitive receptors.	Sensitive receptors are identified in Table 10.2 and includes the adjacent hotel and educational receptors. Likely significant effects have been assessed at all of these receptors.
The receptor sensitivity, impact magnitude and effect significance criteria have not been provided. The criteria used in the ES chapter should be transparent and repeatable.	The assessment methodology is set out in section 10.2 and follows the framework defined in the Noise Policy Statement for England. This applies LOAEL and SOAEL descriptors to residential properties. Non-residential properties are considered on a case-by-case basis by defining significance thresholds that depend on their use. As such, following the NPSE approach does not require receptor sensitivity or impact magnitude criteria to be defined.
The technical methodology information is light in detail, for example in regard to construction vibration. The technical methodology should be set out in detail in the ES chapter in due course. The assessment should consider all relevant aspects of the proposed development that could create noise, including testing and potential use of backup generators, and the cooling infrastructure.	The assessment methodology is set out in detail in section 10.2 and includes consideration of noise during normal operations (cooling infrastructure) and noise from testing and the potential use of backup generators.

Assumptions and Limitations

Baseline Assumptions and Limitations

10.2.43 Any measurement of existing ambient or background sound levels will be subject to a degree of uncertainty. Environmental sound levels vary between days, weeks, and throughout the year due to variations in source levels and conditions, meteorological effects on sound propagation and other factors. Hence, any measurement survey can only provide a sample of the ambient levels. Every effort has been made such that measurements were undertaken in such a way as to provide a representative sample of conditions, such as avoiding periods of adverse weather conditions, and school holiday periods (which are often considered to result in atypical sound levels). However, a small degree of uncertainty will always remain in the values taken from such a measurement survey.

10.2.44 As unattended monitoring requires secure locations, the monitoring locations are not exactly at the receptor locations that they represent. As such, attended monitoring was undertaken to test whether sound measurements were suitably representative. The suitability of unattended sound measurement data as representative of nearby sensitive receptors is discussed in Appendix 10.1: Baseline Noise Monitoring.

Noise Model Assumptions

10.2.45 A series of assumptions were made for the generation of the construction and operational noise models as follows:

- Digital noise modelling of the operational Proposed Development has been based on the maximum worst-case parameters set out in the drawings, plans, and construction and operation details as set out in Chapter 3: The Proposed Development;
- Ground absorption: 1.0 for soft ground (vegetated) and 0.0 for hard ground (including water). Car parks as part of the proposed development have been modelled as 0.2.
- Air temperature was set at 10 degrees Celsius and humidity 80%, which are typical annual average weather conditions in London based on historical weather data.
- Three orders of reflection were modelled.
- Land topography has been incorporated into the noise modelling.

Construction Noise Assumptions and Limitations

10.2.46 The assessment of construction noise has considered construction activities that have the potential to result in significant effects on identified receptors, based on information presented in Chapter 3: The Proposed Development and professional judgement. These assessments are based on a reasonable representative worst-case scenario. Construction noise predictions have been undertaken using the computer modelling software SoundPLAN 9.1, based on an example schedule of plant items that are typically used in such developments for the purposes of carrying out a quantitative assessment at this stage. Construction plant is summarised in Appendix 10.2: Noise Modelling.

10.2.47 Construction noise predictions in CadnaA® have been undertaken using BS 5228-1 methodologies. Construction sound sources are taken to be representative of the plant and/or activities that will be used during the construction process of the Proposed Development. Noise predictions were carried out to represent a conservative scenario where construction plant is active nearest to the identified receptors and does not take into account quieter periods when limited activities take place or at further distances. Consequently, noise predictions may

overestimate construction noise levels and are therefore considered to be a reasonable likely worst-case.

Operational Assumptions and Limitations

10.2.48 Full details on the data centre modelling methodology covering assumptions and limitations are presented in Appendix 10.2: Noise Modelling.

10.3 Baseline conditions

Current Baseline

10.3.1 In order to assess the potential effects of the Proposed Development, it is necessary to determine the sensitive receptors that currently exist in the surrounding area to the Site and baseline noise conditions at those receptors. These are known as the 'baseline conditions' and have been considered in the context of this assessment.

10.3.2 Baseline sound conditions at the Site are dominated by road traffic noise from the M4 to the east and the north of the Site. Heathrow Airport is also located approximately 1 km to the south of the Site; however, as aircraft activity occurs in an east-west direction out of the airport, they do not have a significant influence on baseline noise levels at the Site. As there have been no material changes in M4 traffic flows since the February 2025 survey was undertaken, the results are considered to be suitably representative of the current baseline sound environment.

10.3.3 A summary of baseline noise monitoring results is presented below in Table 10.10. Full details of baseline monitoring are provided in Appendix 10.1: Baseline Noise Monitoring.

Table 10.10 Baseline Noise Monitoring Results Summary

Monitoring Location	Daytime (07:00-23:00)		Night-time (07:00-23:00)	
	$L_{Aeq,16h}$ dB	$L_{A90,1h}$ dB	$L_{Aeq,8h}$ dB	$L_{A90,1h}$ dB
LT1	59	55	58	52
LT2	59	56	57	53
LT3	59	55	58	53

Future Baseline

10.3.4 In the absence of the Proposed Development, the baseline noise environment is expected to remain broadly similar to existing conditions. While natural traffic growth may lead to a gradual increase in noise levels over time, any increase is unlikely to be material, as a traffic increase of approximately 25% would be required to result in a 1 dB increase in noise level, assuming traffic composition remains unchanged. As such, the February 2025 measured baseline sound levels provide a conservative representation of future conditions, as lower baseline levels result in more onerous noise assessment criteria.

10.3.5 The construction phase and operational phase traffic noise assessments accounts for future traffic growth. However, the operational phase noise assessment assumes measured baseline conditions are representative (i.e. no higher) than future baseline conditions, which represents a worst-case assessment scenario.

10.4 Inherent design mitigation

10.4.1 Mitigation measures for the construction activities are in the Outline Construction Environmental Management Plan (CEMP). Mitigation measures covered in the CEMP represent the adoption of Best Practicable Means (BPM), as defined in Section 72 of the CoPA. Examples of BPM from BS 5228 will be implemented during construction works are presented below, no other mitigation measures other than those proposed to be covered in the CEMP are required for construction activities:

- Noisy plant or equipment will be situated as far as possible from noise sensitive buildings;
- A piling technique should be adopted that is least likely to cause adverse vibration impacts (e.g. auger piling);
- Barriers (e.g. site huts, acoustic sheds or partitions) will be used to reduce noise reaching noise sensitive buildings;
- Vehicles and mechanical plant used for the purpose of the works shall be fitted with effective exhaust silencers, maintained in good and efficient working order and operated in such a manner as to minimise noise emissions. The contractor shall ensure that all plant complies with the relevant statutory requirements;
- Machines in intermittent use should be shut down or throttled down to a minimum when not in use;
- Compressors should be fitted with properly lined and sealed acoustic covers which should be kept closed whenever in use. Pneumatic percussive tools should be fitted with mufflers or silencers of the type recommended by the manufacturers;
- Equipment which breaks concrete, brickwork or masonry by bending or bursting or “nibbling” shall be used in preference to percussive tools. Avoid the use of impact tools where the site is close to occupied premises;
- Rotary drills and bursters activated by hydraulic, chemical or electrical power shall be used for excavating hard or extrusive material;
- Equipment powered by mains electricity shall be used in preference to equipment powered by internal combustion engine or locally generated electricity;
- Neither any part of the works nor any maintenance of plant shall be carried out in such a manner as to cause unnecessary noise except in the case of an emergency when the work is absolutely necessary for the saving of life or property or the safety of the works;
- Plant shall be maintained in good working order so that extraneous noise from mechanical vibration, creaking and squeaking is kept to a minimum; and
- Noise emitting machinery which is required to run continuously shall be housed in a suitable acoustically lined enclosure.

Operational Noise

10.4.2 The Parameter Plans have informed the assessment of likely significant effects. Although the outline planning application does not commit to any specific building massing or noise mitigation, there will be an element of screening inherent in the final design. This would include screening of chiller noise, which may be applied through measures such as a barrier around

the edge of the gantry or local screening through cold aisle containment. For the purposes of assessing the Parameter Plans, screening has been assumed around the edge of the gantry.

10.4.3 Should the development come forward in a different form, the relevant assessment assumptions and parameters would be reviewed to confirm the validity of the conclusions presented in this chapter. A detailed plant noise assessment would be undertaken at the reserved matters stage to demonstrate compliance with the relevant noise criteria required by LBH policy, with any necessary mitigation incorporated into the final design.

10.5 Potential effects prior to additional mitigation

Construction Phase

Construction Phase Noise

10.5.1 Noise predictions have been undertaken for representative construction activities that will be undertaken during core daytime working hours. It is likely that construction activities will be carried out in phases, however confirmation on phasing is not finalised at this time. Noise predictions been undertaken by breaking down construction activities into three distinct work activities that are representative of worst-case periods of noise as follows:

- Enabling works.
- Substructure (including piling) construction.
- Building construction.

10.5.2 The results of construction noise predictions are summarised in Table 10.11.

Table 10.11 Construction Noise Predictions

Assessment Location	LOAEL/ SOAEL	Construction Noise Prediction $L_{Aeq,T}$ dB		
		Enabling Works	Substructure	Building
R01	65/ 75	72	67	64
R02	60/ 70	64	61	57
R03	65/ 75	68	65	62
R04	60/ 65	69	66	63
R05	60/ 65	66	64	61

10.5.3 Construction noise predictions are predicted to exceed the SOAEL at R04 and R05, which is **significant**. As exceedances of the SOAEL should be avoided, additional mitigation is required.

10.5.4 At all other receptors, construction noise levels are predicted to be either between the LOAEL and SOAEL, or below the LOAEL, and are **not significant**. As exceedances of the LOAEL are likely to occur throughout the construction programme, all reasonable steps will be taken to mitigate and minimise the effects through adoption of BPM, as defined in Section 72 of the Control of Pollution Act 1974.

10.5.5 Noise effects during the construction phase are a direct effect as a result of the Proposed Development. As construction noise is dynamic and transient, significant noise effects would occur at specific periods of the construction programme when high intensity works are taking place in close proximity to a sensitive receptor, which could occur for a period of up to two years

at an individual receptor. As such, the duration of works affecting an individual receptor is likely to last for a short-term duration.

Construction Phase Vibration

10.5.6 Piling is likely to generate the highest level of vibration at sensitive receptors. The distance from sensitive receptors to the nearest building block in the Parameter Plans are presented in Table 10.12 along with the potential vibration effect based on sample data in Appendix 10.2: Noise Modelling.

Table 10.12 Construction Vibration Predictions

Assessment Location	Approximate Distance from Building Footprint to Closest Receptor	Calculated PPV	Effect Level
R01	40 m	0.3 mm/s	Equal to LOAEL
R02	75 m	0.2 mm/s	Below LOAEL
R03	60 m	0.3 mm/s	Equal to LOAEL
R04	50 m	0.3 mm/s	Equal to LOAEL
R05	90 m	0.2 mm/s	Below LOAEL

10.5.7 Calculations of construction vibration indicate that the LOAEL is not exceeded. As such, construction vibration effects are **not significant**.

Construction Phase Traffic Noise

10.5.8 The Site will be accessed by construction traffic via the southbound A408 from the M4 Motorway. As such, construction traffic would only impact receptors to the north of the Site entrance. As there are no residential receptors along this route, construction traffic noise effects are defined as Negligible and **not significant**.

Operational Phase

Operational Phase Noise – Normal Operations

10.5.9 With reference to measured baseline sound levels in Table 10.10 and the method for defining assessment criteria set out above, the LOAEL and SOAEL at sensitive receptors for normal operations are defined in Table 10.13 for daytime and night-time.

Table 10.13 Normal Operations Noise Assessment Criteria

Location	Period	Normal Operations Effect Level $L_{Ar,Tr}$ dB	
		LOAEL	SOAEL
LT1	Daytime (07:00 – 23:00)	50	60
	Night-time (23:00 – 07:00)	47	57
LT2	Daytime (07:00 – 23:00)	51	61
	Night-time (23:00 – 07:00)	48	58
LT3	Daytime (07:00 – 23:00)	50	60
	Night-time (23:00 – 07:00)	48	58

10.5.10 As R04 and R05 are educational and place of worship receptors, they are not occupied at night. As such, the assessment of operational noise only accounts for effects during the daytime period at these receptors.

10.5.11 The predicted $L_{Ar,Tr}$ rating noise levels due to normal operations at the worst-affected receptor within each receptor group are presented in Table 10.14 for daytime noise and Table 10.15 for night-time noise. The rating noise levels include a +3 dB correction to account for data centre noise being distinctive against the residual acoustic environment. Rating noise level predictions have been compared against the thresholds defined in Table 10.13.

Table 10.14 Normal Operations Predicted Daytime Sound Levels at Sensitive Receptors

Assessment Location	LOAEL/ SOAEL $L_{Ar,Tr}$ dB	Predicted Rating Level, dB $L_{Ar,Tr}$	Effect Level
R01	50/ 60	62	Above SOAEL
R02	60/ 70	63	Above LOAEL
R03	50/ 60	64	Above SOAEL
R04	60/ 65	62	Above LOAEL
R05	60/ 65	63	Above LOAEL

Table 10.15 Normal Operations Predicted Night-time Sound Levels at Sensitive Receptors

Assessment Location	LOAEL/ SOAEL $L_{Ar,Tr}$ dB	Predicted Rating Level, dB $L_{Ar,Tr}$	Effect Level
R01	47/ 57	62	Above SOAEL
R02	55/ 65	63	Above LOAEL
R03	48/ 58	64	Above SOAEL

10.5.12 At non-residential receptors R02, R04 and R05, noise levels above the LOAEL are identified. This is equivalent to an adverse effect, which is not significant.

10.5.13 Noise from normal operations is predicted to be above the SOAEL defined for residential properties in receptor group R01 and R03. This is equivalent to a **significant** effect on health and quality of life.

10.5.14 As exceedances of the SOAEL should be avoided, additional mitigation measures are required to reduce chiller noise during normal operations.

Operational Phase Noise – Generator Testing/ Emergency Operations

10.5.15 Emergency generators are required so power is maintained at the Proposed Development in the event of a power cut. Routine testing and maintenance will be undertaken periodically throughout the year to ensure the generators remain in working condition. It is currently anticipated that the testing and maintenance regime will include:

- 15 minute off-load tests at 0% load, once per month for 11 months per year, with one generator running at any one time
- One 120-minute full-load test at 100% load, once per year, with one generator running at any one time

- One 2-hour emergency test at 100% load, with all generators operating in unison

10.5.16 Emergency operation is expected to be infrequent but may involve multiple generators operating simultaneously during a single extended grid outage event. The duration of an emergency event cannot be foreseen.

10.5.17 For the purposes of assessing emergency generator noise, it is assumed that all generators are operating simultaneously at 100% load as a worst-case.

10.5.18 With reference to measured baseline sound levels in Table 10.10, the LOAEL and SOAEL at sensitive receptors for emergency operations are defined in Table 10.16 for daytime and night-time periods.

Table 10.16 Generator Testing/ Emergency Operations Noise Assessment Criteria

Location	Period	Testing/Emergency Operations Effect Level $L_{Ar,Tr}$ dB	
		LOAEL	SOAEL
LT1	Daytime (07:00 – 23:00)	60	65
	Night-time (23:00 – 07:00)	57	62
LT2	Daytime (07:00 – 23:00)	61	66
	Night-time (23:00 – 07:00)	58	63
LT3	Daytime (07:00 – 23:00)	60	65
	Night-time (23:00 – 07:00)	58	63

10.5.19 The predicted $L_{Ar,Tr}$ rating noise levels (including a 3 dB correction) due to emergency operations at the worst-affected receptor within each receptor group are presented in Table 10.17 for daytime noise and Table 10.18 for night-time noise. Rating noise level predictions have been compared against the thresholds defined in Table 10.16.

Table 10.17 Generator Testing/ Emergency Operations Predicted Daytime Levels

Assessment Location	LOAEL/ SOAEL $L_{Ar,Tr}$ dB	Predicted Rating Level, dB $L_{Ar,Tr}$	Effect Level
R1	60/ 65	83	Above SOAEL
R2	60/ 70	83	Above SOAEL
R3	60/ 65	80	Above SOAEL
R4	60/ 65	78	Above SOAEL
R5	60/ 65	79	Above SOAEL

Table 10.18 Emergency Operations Predicted Night-time Levels

Assessment Location	LOAEL/ SOAEL $L_{Ar,Tr}$ dB	Predicted Rating Level, dB $L_{Ar,Tr}$	Effect Level
R1	57/ 62	83	Above SOAEL
R2	55/ 65	83	Above SOAEL
R3	58/ 63	80	Above SOAEL

10.5.20 Noise from normal operations is predicted to be above the SOAEL at all receptors. This is equivalent to a **significant** effect on health and quality of life.

10.5.21 As exceedances of the SOAEL should be avoided, additional mitigation measures are required to reduce generator noise during generator testing/ emergency operations.

Operational Phase Traffic Noise

10.5.22 Baseline traffic on Sipson Road consists of 454 vehicle movements of which 109 vehicle movements relate to the existing site. Vehicle trips associated with the Proposed Development amount to 354 movements. As such, baseline traffic of 454 vehicle movements on Sipson Road will increase to 699 vehicle movements.

10.5.23 Assuming that the composition of traffic remains approximately consistent for the baseline and Proposed Development traffic flows, the increase in vehicle movements would result in an increase in traffic noise of 1.9 dB. This is equivalent to Minor effect and **not significant**.

10.6 Additional Mitigation

Construction Phase

10.6.1 Additional mitigation is required to avoid significant effects at R04 and R05 due to construction noise. Screening in the form of solid fencing or acoustic matting on heras fencing should be applied at the Site boundary adjacent to R04 and R05. BS 5228-1 states to:

"…assume an approximate attenuation of 5 dB when the top of the plant is just visible to the receiver over the noise barrier, and of 10 dB when the noise screen completely hides the sources from the receiver.

10.6.2 Assuming a barrier provides partial screening of 5 dB, construction noise levels would be reduced to below the SOAEL and **not significant**.

10.6.3 The effect of noise and vibration on nearby sensitive receptors can be minimised through a good communication strategy. Prior to works being undertaken, liaison will be undertaken with occupiers of sensitive receptors that may be adversely affected by construction noise and vibration. Providing information of construction works and notice of when high noise and/or vibration generating activities are taking place can reduce adverse effects. All communications will contain contact details to direct any questions or complaints to.

10.6.4 Detailed communications will be undertaken with R04 and R05 to determine periods when noisy construction activities disturbing to church or teaching activities. High noise generating activities should be avoided during these periods to minimise any potential disturbance.

Operational Phase

10.6.5 Additional mitigation is required to avoid significant effects due to normal operations and generator testing/ emergency operations.

Normal Operations Mitigation

10.6.6 In order to reduce chiller noise, attenuators have been considered as a means to reduce noise emissions. An example of attenuation performance for an attenuator that could be applied was referenced from Soler and Palau manufacturer's data, as presented in Table 10.19. This data has been applied in noise predictions

Table 10.19 Chiller Attenuator Performance

Attenuator	Airflow Velocity (mm/s)	Attenuation (dB) per Frequency (Hz)						
		125	250	500	1000	2000	4000	8000
SIL-CZO-1000	10	8	14	20	24	21	14	10

10.6.7 The predicted $L_{Ar,Tr}$ rating noise levels due to normal operations at the worst-affected receptor within each receptor group are presented in Table 10.14 for daytime noise and Table 10.15 for night-time noise. The rating noise levels include a +3 dB correction to account for data centre noise being distinctive against the residual acoustic environment. Rating noise level predictions have been compared against the thresholds defined in Table 10.13.

Table 10.20 Normal Operations Predicted Daytime Levels – Mitigated

Assessment Location	LOAEL/ SOAEL	Predicted Rating Level, dB $L_{Ar,Tr}$	Effect Level
R1	50/ 60	47	Equal to LOAEL
R2	51/ 61	51	Equal to LOAEL
R3	50/ 60	41	Below LOAEL
R4	50/ 60	42	Below LOAEL
R5	50/ 60	43	Below LOAEL

Table 10.21 Normal Operations Predicted Night-time Levels – Mitigated

Assessment Location	LOAEL/ SOAEL	Predicted Rating Level, dB $L_{Ar,Tr}$	Effect Level
R1	47/ 57	47	Equal to LOAEL
R2	55/ 65	51	Below LOAEL
R3	48/ 58	41	Below LOAEL

10.6.8 With mitigation in place, noise from normal operations at all receptors does not exceed the LOAEL and is **not significant**.

Generator Testing/ Emergency Operations Mitigation

10.6.9 Generator noise is emitted from both the generator and the generator exhaust. As the exhausts are above data centre roof level, nearby receptors are only partially screened from exhaust noise. As such, mitigation has first been tested by applying exhaust silencers.

10.6.10 Generator exhausts will be fitted with silencers to reduce noise emissions. Hospital grade silencers can typically reduce exhaust noise by 25 to 35 dB and are typically used at data centres. Example attenuation data for a silencer that would reduce generator exhaust noise by 30 dB are presented in Table 10.22.

Table 10.22 Generator Exhaust Silencer Performance

Attenuation (dB) per Frequency (Hz)						
125	**250**	**500**	**1000**	**2000**	**4000**	**8000**
17	23	28	31	30	27	33

10.6.11 The predicted $L_{Ar,Tr}$ rating noise levels (including a 3 dB correction) at the worst-affected receptor within each receptor group due to emergency operations after the implementation of generator exhaust mitigation are presented in Table 10.23 for daytime noise and Table 10.24 for night-time noise. Rating noise level predictions have been compared against the thresholds defined in Table 10.16.

Table 10.23 Generator Testing/ Emergency Operations Predicted Daytime Levels

Assessment Location	LOAEL/ SOAEL $L_{Ar,Tr}$ dB	Predicted Rating Level, dB $L_{Ar,Tr}$	Effect Level
R1	60/ 65	71	Above SOAEL
R2	60/ 70	78	Above SOAEL
R3	60/ 65	67	Above SOAEL
R4	60/ 65	66	Above SOAEL
R5	60/ 65	67	Above SOAEL

Table 10.24 Emergency Operations Predicted Night-time Levels

Assessment Location	LOAEL/ SOAEL $L_{Ar,Tr}$ dB	Predicted Rating Level, dB $L_{Ar,Tr}$	Effect Level
R1	57/ 62	69	Above SOAEL
R2	55/ 65	78	Above SOAEL
R3	58/ 63	67	Above SOAEL

10.6.12 As exceedances of the defined SOAEL are still predicted, further mitigation is required. As the generator exhausts are mitigated, the most prominent noise source is now from the generators. Generators noise can be mitigated through the use of enclosures. Example attenuation data for an enclosure that would reduce generator noise by 29 dB are presented in Table 10.25.

Table 10.25 Generator Enclosure Performance

Attenuation (dB) per Frequency (Hz)						
125	**250**	**500**	**1000**	**2000**	**4000**	**8000**
16	22	26	29	32	35	35

10.6.13 The predicted rating noise levels (including a 3 dB correction) at the worst-affected receptor within each receptor group due to emergency operations after the implementation of generator mitigation are presented in Table 10.26 for daytime noise and Table 10.27 for night-time noise. Rating noise level predictions have been compared against the thresholds defined in Table 10.16.

Table 10.26 Generator Testing/ Emergency Operations Predicted Daytime Levels

Assessment Location	LOAEL/ SOAEL $L_{Ar,Tr}$ dB	Predicted Rating Level, dB $L_{Ar,Tr}$	Effect Level
R1	60/ 65	48	Below LOAEL
R2	60/ 70	56	Below LOAEL
R3	60/ 65	45	Below LOAEL
R4	60/ 65	46	Below LOAEL
R5	60/ 65	48	Below LOAEL

Table 10.27 Emergency Operations Predicted Night-time Levels

Assessment Location	LOAEL/ SOAEL $L_{Ar,Tr}$ dB	Predicted Rating Level, dB $L_{Ar,Tr}$	Effect Level
R1	57/ 62	48	Below LOAEL
R2	55/ 65	56	Above LOAEL
R3	58/ 63	45	Below LOAEL

10.6.14 With generator enclosures in place, predicted noise levels at all receptors are below the LOAEL with the exception of R2 at night, which is marginally above the LOAEL but comfortably within the design range for hotels. As such, residual noise effects due to generator testing/ emergency operations are **not significant**.

10.7 Residual effects

10.7.1 Table 10.30 provides a summary of residual effects of noise and vibration on sensitive receptors following the implementation of additional mitigation during the construction and operational phases of the Proposed Development.

Construction Phase

10.7.2 The assessment of temporary construction phase activities accounts for potential direct effects due to construction noise and vibration emissions, and indirect effects due to construction phase traffic noise. No significant residual effects are identified as a result of construction noise or vibration, or construction traffic noise.

Operational Phase

10.7.3 The operational phase accounts for permanent, direct noise effects as a result of the data centre and associated infrastructure, as well as indirect effects due to operational phase traffic noise.

10.7.4 After implementation of additional mitigation, no residual significant effects are identified as a result of operational data centre noise. No significant effects are identified as a result of operational phase traffic.

10.8 Implications of Climate Change

10.8.1 The impact of climate change may may affect noise conditions at sensitive receptors due to:

- Windows being open more often due to an increase in high temperatures.
- Increases in temperature and humidity of the air reducing the atmospheric attenuation of noise.

10.8.2 The noise assessment criteria are based on external noise levels and, in line with PPGN, assumes that windows are open and closing windows is a form of mitigation against noise. Consequently, although windows may be open more frequently in future as a result of climate change, there is no impact on residual noise effects identified.

10.8.3 Increased temperatures tend to result in increased atmospheric attenuation whereas increased humidity results in reduced attenuation. Over distances of a few hundred metres, which covers the noise study area, atmospheric effects on noise can be ignored. Consequently, increases in temperature and humidity is unlikely to have a material effect on noise sources during the construction phase and operational phase.

10.9 Cumulative effects

10.9.1 The nearest cumulative development is approximately 750m southeast of the Site boundary. As such, there are no cumulative developments within the Study Area and no significant cumulative effects are expected.

10.10 Summary

Construction Phase

10.10.1 No significant residual effects are identified due to noise and vibration emissions from construction activities or construction traffic noise.

Operational Phase

10.10.2 No significant residual effects are identified due to noise emissions from operational data centre or operational traffic noise.

10.11 References

- Ministry of Housing, Communities & Local Government (2026) National Planning Policy Framework.
- Department for Environment Food and Rural Affairs (2010); Noise Policy Statement for England.
- Greater London Authority. (2021). The London Plan: The Spatial Development Strategy for Greater London.
- London Borough of Hillingdon (2012) Hillingdon Local Plan: Part 1 – Strategic Policies. Uxbridge: London Borough of Hillingdon.
- London Borough of Hillingdon (2018) Development Control for Noise Generating and Noise Sensitive Development: Supplementary Planning Document (SPD). Uxbridge: London Borough of Hillingdon.
- Ministry of Housing, Communities & Local Government (2019); Planning Practice Guidance - Noise.
- British Standards Institute (2009 with 2014 amendments); BS 5228-1:2009+A1:2014 – Code of practice for noise and vibration control on construction and open sites Part 1: Noise, BSi, London.
- British Standards Institute (2009 with 2014 amendments); BS 5228-1:2009+A1:2014 – Code of practice for noise and vibration control on construction and open sites Part 2: Vibration, BSi, London.
- British Standards Institute (2003); BS 7445 – Description and environment of environmental noise – Part 1: Guide to quantities and procedures, BSi, London.
- British Standards Institute (2014 with 2019 amendments); BS 4142 – Methods for rating and assessing industrial and commercial sound, BSi, London.
- Institute of Environmental Management and Assessment (2014); Guidelines for Environmental Noise Impact Assessment.
- ANC Acoustics & Noise Consultants Construction Noise (2021); A good practice guide to the preparation, submission and management of Section 61 consents.
- International Standards Organization (Part 1: 1993, Part 2: 2024); ISO 9613 – Acoustics – Attenuation of sound during propagation outdoors, ISO.

10.12 Assessor information

Table 10.28 Assessor Information

Chapter	Responsibility	Name	Qualifications	Assessor information
Noise and Vibration	AECOM	Eddie Robinson	BSc, Dip. IOA	Edward has 20 years' experience working as a noise and vibration consultant and is a Member of the Institute of Acoustics. Edward is a specialist in undertaking environmental noise impact assessments and has a track record of delivering high quality reports including high-profile Environmental Impact Assessments covering operational noise and construction noise associated with new developments.

Table 10.29 Summary of effects

Receptor	Receptor type	Description of potential impact	Proposed mitigation	Residual effect	Significant / not significant
Construction Phase					
R01, R03	Residential	Noise emissions from construction activities. Above LOAEL and below SOAEL.	None	Above LOAEL and below SOAEL	Not significant
R02	Non-residential	Noise emissions from construction activities. Above LOAEL and below SOAEL.	None	Above LOAEL and below SOAEL	Not significant
R04, R05	Non-residential	Noise emissions from construction activities. Above LOAEL.	Acoustic barriers Communication strategy	Above LOAEL and below SOAEL	Not significant
R01, R03	Residential	Vibration emissions from construction activities. Equal to LOAEL	None	Equal to LOAEL	Not significant
R04	Non-residential	Vibration emissions from construction activities. Equal to LOAEL	None	Equal to LOAEL	Not significant
R02, R05	Non-residential	Vibration emissions from construction activities. Below LOAEL	None	Below LOAEL	Not significant
All receptors	Residential, Non-residential	Noise from construction traffic movements. Negligible.	None	Negligible	Not significant
Operation Phase					
R1	Residential	Noise from chillers during normal operations. Above SOAEL	Attenuators to be fitted onto chiller fans	Equal to LOAEL	Not significant
R2	Non-residential	Noise from chillers during normal operations. Above SOAEL		Equal to LOAEL	Not significant
R3	Residential	Noise from chillers during normal operations. Above SOAEL		Below LOAEL	Not significant
R4, R5	Non-residential	Noise from chillers during normal operations. Above SOAEL		Below LOAEL	Not significant

Receptor	Receptor type	Description of potential impact	Proposed mitigation	Residual effect	Significant / not significant
R1, R3	Residential	Noise from chillers and generators during generator testing/ emergency operations. Above SOAEL.	Silencers on generator exhausts and generator enclosures	Below LOAEL	Not significant
R2	Non-residential	Noise from chillers and generators during generator testing/ emergency operations. Above SOAEL.		Above LOAEL and below SOAEL	Not significant
R4, R5	Non-residential	Noise from chillers and generators during generator testing/ emergency operations. Above SOAEL.		Below LOAEL	Not significant
All receptors	Residential, Non-residential	Noise from traffic associated with the Proposed Development. Minor Adverse	None	Minor Adverse	Not significant

10.13 Mitigation commitments Summary

Table 10.30 Summary for Securing Mitigation

Identified receptor	Type and purpose of mitigation measure (prevent, reduce, offset, enhance)	Means by which mitigation may be secured (e.g. planning condition / legal agreement)	Delivered by	Auditable by
Construction Phase				
All receptors	Application of best practicable means committed to in the CEMP	Planning condition	contractor	contractor
R04, R05	Acoustic screening at site boundary adjacent to R04 and R05 to reduce noise. To be included in the CEMP	Planning condition	contractor	contractor
Operation Phase				
All receptors	Mitigation to achieve noise levels that do not exceed the defined LOAEL during normal operations through the use of mitigation such as screening, attenuators, silencers and enclosures	Planning condition	applicant	applicant
All receptors	Mitigation to achieve noise levels that do not exceed the defined SOAEL during emergency operations through the use of mitigation such as screening, attenuators, silencers and enclosures	Planning condition	applicant	applicant