

Moorgate Rd N, Liverpool L33 7RX

784-B075616

Noise Impact Assessment

Lysander Associates Ltd

January 2026



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Appendix A – Acoustic Terminology

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Acronyms/Abbreviations

Acronyms/Abbreviations	Definition
CADNA	Computer Aided Noise Abatement
DMRB	Design Manual for Roads and Bridges
HGV	Heavy Goods Vehicle
PPG	Planning Practice Guidance
UDP	Unitary Development Plan
UKAS	United Kingdom Accreditation Service

Executive Summary

A noise assessment has been undertaken in support of a full application for site alterations to include new external plant equipment and associated compounds and elevation alterations to include new louvres, on the site at Moorgate Road North, Liverpool L33 7RX.

A baseline monitoring survey was undertaken at one location between Thursday 27th November 2025 to Wednesday 3rd November 2025 to establish the existing background noise levels (L_{A90}) and ambient noise levels ($L_{Aeq,T}$) at the surrounding existing sensitive receptors during the daytime and night-time periods.

CADNA noise modelling software has been used to model predicted noise emissions from the plant using the ISO 9613-2 noise propagation methodology at the closest sensitive receptors.

The results of the BS4142 predict that noise rating levels from the operation of the proposed external plant will be below the existing background noise levels at all receptor locations during the daytime and night-time periods. As such, operational noise will result in a No Observed Adverse Effect Level (NOAEL), and therefore the development will have a negligible impact in relation to noise in accordance with PPG: Noise.

1.0 Introduction

1.1 Purpose of this Report

This report presents the findings of a noise assessment to support a full application for site alterations to include new external plant equipment and associated compounds and elevation alterations to include new louvres at Moorgate Road North, Liverpool L33 7RX. A description of the existing noise environment in and around the site is provided. Noise surveys have been undertaken and the results used to verify predictions of the short-term and long-term effects of noise.

A list of acoustic terminology used in this report is provided in Appendix A.

1.2 Legislative Context

This report is intended to provide information relevant to the local planning authority and their consultees in support of a planning application for the above proposed development. Policy guidance with respect to noise is found in the National Planning Policy Framework (NPPF), published in December 2024. With regard to noise and planning, the NPPF contains the following statement at Paragraph 198:

“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 the 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 [...]

“200. Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or ‘agent of change’) should be required to provide suitable mitigation before the development has been completed.

“201. The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.”

Planning Practice Guidance (PPG): Noise provides further guidance with regard to the assessment of noise within the context of Planning Policy. The overall aim of this guidance, tying in with the principles of the NPPF and the Explanatory Note of the Noise Policy Statement for England (NPSE), is to **“identify whether the overall effect of noise exposure is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.”**

A summary of the effects of noise exposure associated with both noise generating developments and noise sensitive developments is presented within the PPG and repeated below in Table 1.1.

Table 1.1: PPG Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing Effect Level	Action
No Observed Effect Level			
Not present	No Effect	No Observed Effect	No Specific Measures Required
No Observed Adverse Effect Level (NOAEL)			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No Specific Measures Required
Lowest Observed Adverse Effect Level (LOAEL)			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

The NPPF, NPSE and PPG do not, however, present absolute noise level criteria which define SOAEL, LOAEL and NOEL which is applicable to all sources of noise in all situations. Therefore, within the context of the Proposed Development, national planning policy and appropriate guidance documents including 'BS 4142:2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound' (2014) have been used. Section 2.0 presents the noise level criteria used as a basis of this assessment.

The PPG also states that neither the NPSE nor the NPPF (which reflects the Noise Policy Statement) expects noise to be considered in isolation, separately from the economic, social and other environmental dimensions of the proposed development.

Furthermore, the PPG: Noise identifies at Paragraph: 011 Reference ID: 30-011-20190722 the requirement for developments proposals to incorporate measures to mitigating the impact of noise on residential developments. In particular:

“Noise impacts may be partially offset if residents have access to one or more of:

- a relatively quiet facade (containing windows to habitable rooms) as part of their dwelling;*
- a relatively quiet external amenity space for their sole use, (e.g. a garden or balcony). Although the existence of a garden or balcony is generally desirable, the intended benefits will be reduced if this area is exposed to noise levels that result in significant adverse effects;*
- a relatively quiet, protected, nearby external amenity space for sole use by a limited group of residents as part of the amenity of their dwellings; and/or*
- a relatively quiet, protected, external publicly accessible amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within a 5-minute walking distance).*

1.3 Local & Regional Policy Context

The Knowsley Council's (KC) Local Plan Core Strategy (adopted 2016) contains local plan policies; it sets out how and where new development and regeneration should take place and will therefore promote, guide and manage the future development of the borough.

Following a review of the KC Local Plan Core Strategy, the following policy concerning noise was identified:

Policy CS2: Development Principles

“1) New development in Knowsley and the preparation of subsequent stages of the Local Plan will be expected to support the following development principles:

...Principle 4: Recognise environmental limits, protect and enhance environmental assets, enhance local character and promote quality of place by:

...j) Minimising negative impact upon flood risk, air quality, water quality, land quality, soil quality, and noise or vibration levels and ensuring any negative impacts are appropriately mitigated. Development that will have an unacceptable impact upon any of the above will only be permitted where the benefits of the proposal clearly outweigh the harm...”

1.4 Acoustic Consultants' Qualifications and Professional Memberships

The lead project Acoustic Consultant is Kishan Vegamwala. The report has been checked by Joe Archer and verified by Dawit Abraham. Relevant qualifications, membership and experience are summarised in Table 1.2 below.

Table 1.2: Acoustic Consultants' Qualifications & Experience

Name	Education	Experience in Undertaking Noise Assessments (Start date of working in noise & acoustics)	Attained Associate Membership of the Institute of Acoustics (date)	Attained Membership of the Institute of Acoustics (date)
Kishan Vegamwala	A Levels 2022	Sep 2022	-	-
Joe Archer	BSc (Hons) 2015 PgDip 2022	Jun 2016	Apr 2018	-
Dawit Abraham	BSc 2008 MSc 2010	Oct 2010	Jan 2011	Jan 2015

2.0 Assessment Criteria

In order to enable the assessment of the proposed development in terms of LOAEL and SOAEL, Table 2.1 presents equivalent noise levels and associated actions with the target noise level criteria identified. The noise level criteria detailed below have been derived from standards and design guidance:

BS4142:2014 'Method for rating industrial and commercial sound'

A full bibliography of documents referenced within this report is provided within Appendix B.

Table 2.1: Noise Level Criteria and Actions

Noise Sources	Noise Level Criteria	Justification for Effect Level- Action Required
No Observed Adverse Effect Level (NOAEL)		
Fixed plant and equipment located externally or internally with louvered ventilation grilles	Difference between Rating Level ($L_{Ar,T}$) dB and existing background level $L_{A90,T}$ dB is less than or equal to 0dB	Justification for Effect Level: Below low impact threshold in BS4142:2014 Action Required: None
Lowest Observed Adverse Effect Level (LOAEL)		
Fixed plant and equipment located externally or internally with louvered ventilation grilles	Difference between Rating Level ($L_{Ar,T}$) dB and existing background sound level $L_{A90,T}$ dB is between 1-4dB.	Justification for Effect Level: Lower rating levels relative to measured background indicate it is less likely for adverse impacts to occur (depending on context). Action Required: Reduce to a minimum the exceedance over 0dB above background threshold through good acoustic design where practicable, or demonstrate contextual reasoning as to why adverse effects are not predicted
Significant Observed Adverse Effect Level (SOAEL)		
Fixed plant and equipment located externally or internally with louvered ventilation grilles	Difference between Rating Level ($L_{Ar,T}$) dB and existing background sound level $L_{A90,T}$ dB is between 5-9dB.	Justification for Effect Level: Within adverse impact threshold in BS4142:2014. Action Required Additional mitigation required to achieve effect of LOAEL or less.
Unacceptable Observed Adverse Effect Level (UOAEL)		
Fixed plant and equipment located externally or internally with louvered ventilation grilles	Difference between Rating Level ($L_{Ar,T}$) dB and existing background sound level $L_{A90,T}$ dB is equal to or greater than 10dB	Justification for Effect Level: Within significant adverse impact threshold in BS4142:2014 Action Required: Additional mitigation required to achieve effect of LOAEL or less.

3.0 Assessment Methodology

3.1 Noise Modelling Methodology

Three-dimensional noise modelling has been undertaken based on the monitoring data to predict noise levels at a number of locations both horizontally and vertically. CADNA noise modelling software has been used. This model is based on ISO 9613-2 noise propagation methodology and allows for detailed prediction of noise levels to be undertaken for large numbers of receptor points and different noise emission scenarios both horizontally and vertically. The modelling software calculates noise levels based on the emission parameters and spatial settings that are entered. Input data and model settings as given in Table 3.1 below have been used.

Table 3.1: Modelling Parameters Sources and Input Data

Parameter	Source	Details
Horizontal distances – around site	Ordnance Survey	Ordnance Survey
Ground levels – around site	DEFRA	LIDAR 1m DTM
Building heights – around site	Tetra Tech Observations	4.0m height for one-storey properties 8.0 m height for two storey properties 3.0m per additional storey
Receptor positions*	Tetra Tech	1.5 m for ground floor properties 4.0m height for first-floor properties
Modelling Parameters	Tetra Tech	- Ground Absorption: 0.5 - Order of Reflections: 3 - Noise Contour Plot Grid - Receiver Spacing: 10.0
Proposed Plans	Ashton Smith	Drawing Title: Proposed Site Plan Drawing No: 25108 - ASA - 00 - EX.SI - D - A - 0003 _ (S3 - P05)
*All receptors modelled 0.05m from building façade unless otherwise stated.		

It is acknowledged that a number of the values of parameters chosen will affect the overall noise levels presented in this report. However, it should be noted that the values used, as identified above, are worst-case.

3.2 Model Input Data

Information regarding noise emissions from proposed plant has been determined using manufacturer data.

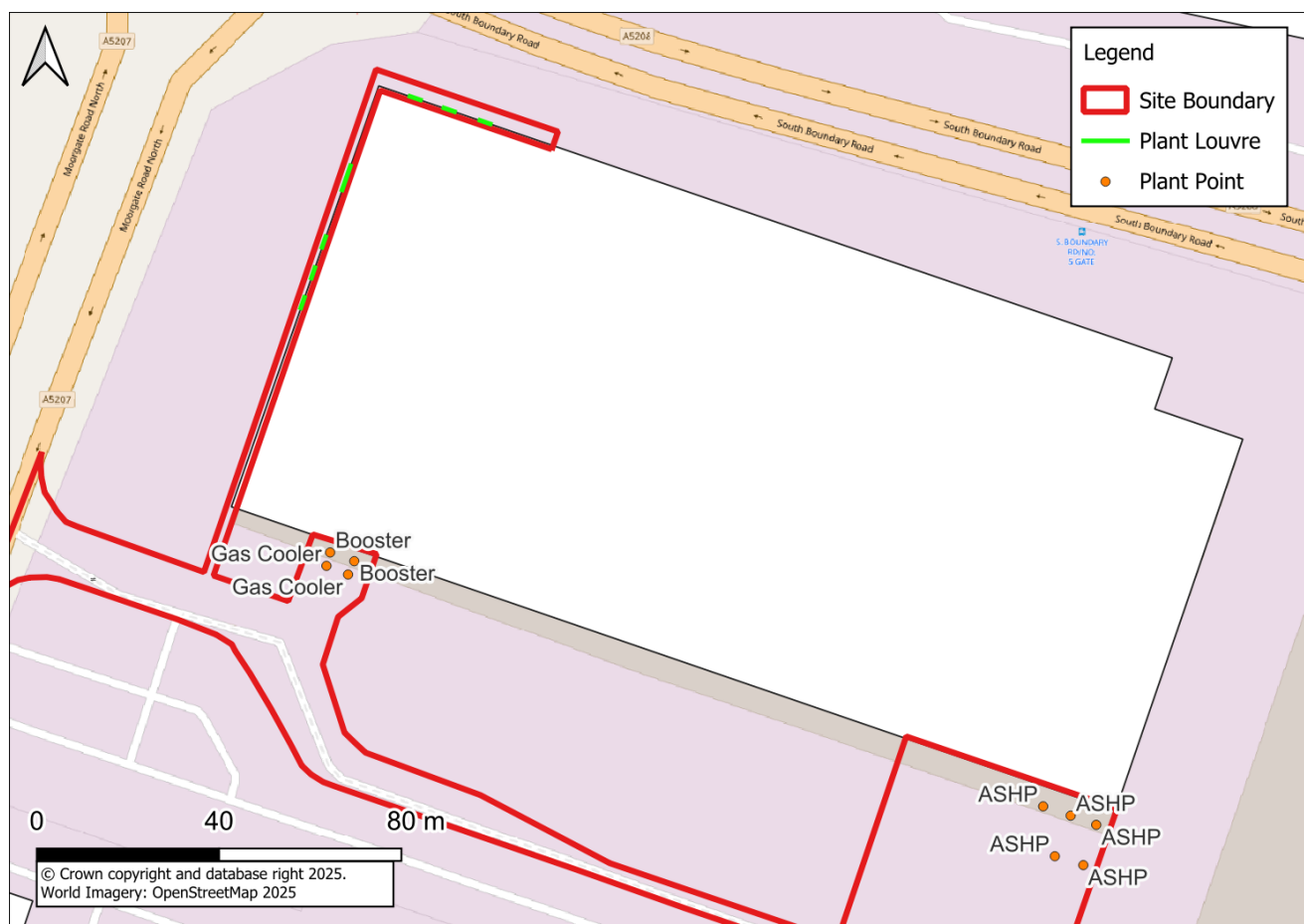
Data contained within Table 3.2 and Table 3.3 below presents noise information. Locations of the plant assessed are presented in Figure 3.1.

Table 3.2: Summary of Noise Input Data (Sound Pressure Levels)

Noise Source	Type	Octave Band Sound Pressure Level (dB(A))								Sound Pressure Level (dB(A))	Distance (m)	Source
		63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz			
Gas Cooler	Point Source	44	58	67	69	68	67	61	53	42	10	Manufacturer Data
Booster	Point Source	47	61	70	72	71	70	64	56	45	10	Manufacturer Data

Table 3.3: Summary of Noise Input Data (Sound Power Levels)

Noise Source	Type	Octave Band Sound Power Level (L _w (A))								Sound Power Level (L _w (A))	Source
		63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz		
Air Handling Unit (Outlet) Louvre	Vertical Area Source	86.0	102.0	91.0	91.0	88.0	85.0	81.0	78.0	93.8	Manufacturer Data
Air Handling Unit (Inlet) Louvre	Vertical Area Source	67.0	90.0	73.0	63.0	57.0	44.0	29.0	23.0	74.6	Manufacturer Data
Air Source Heat Pump	Point Source	87.7	95.3	93.4	93.2	90.5	93.3	82.1	77.6	97.5	Manufacturer Data

Figure 3.1: Plant Locations

3.3 Sensitive Receptors

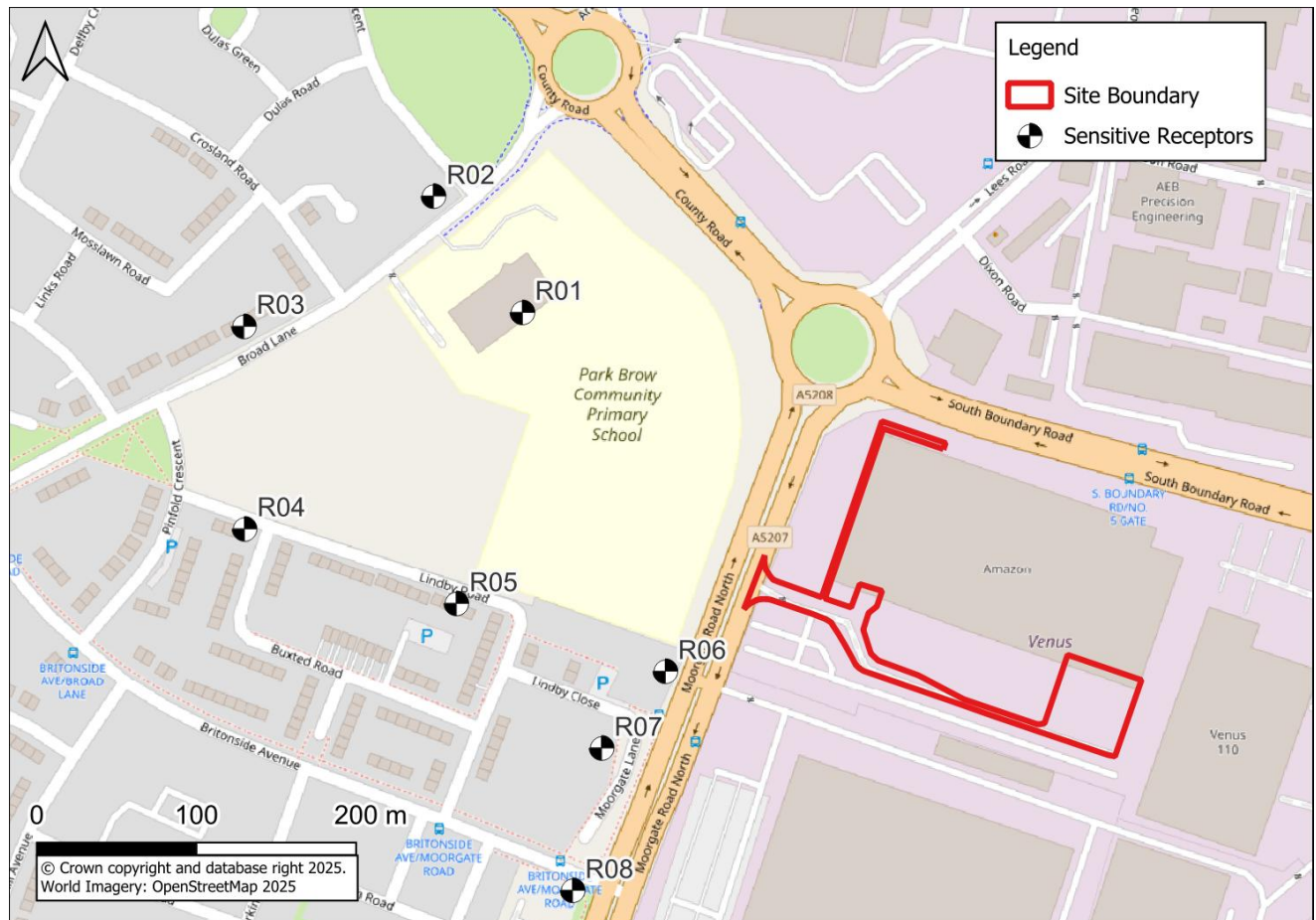
3.3.1 Existing Sensitive Receptor Locations

Table 3.4 summarises receptor locations that have been selected to represent worst-case sensitive receptors with respect to direct noise from the site. Façades of the nearest noise sensitive properties to the development site have been represented. The locations of the receptors are presented within Figure 3.2.

Table 3.4: Existing Sensitive Receptor Locations

Ref.	Description	Type of Use	Height (m) Daytime / Night-time
R01	Park Brow Community Primary School	Educational	1.5/4.0
R02	60 Delfby Crescent	Residential	1.5/4.0
R03	165 Broad Lane	Residential	1.5/4.0
R04	43 Buxted Road	Residential	1.5/4.0
R05	31 Lindby Road	Residential	1.5/4.0

R06	19 Moorgate Road North	Residential	1.5/4.0
R07	9 Moorgate Lane	Residential	1.5/4.0
R08	Britonside Avenue	Residential	1.5/4.0

Figure 3.2: Existing Sensitive Receptor Locations

4.0 Noise Survey

4.1 Noise Survey Details

Equipment used during the survey:

Rion NL-52	Environmental Noise Analyser	s/n 264488
Rion NC-75	Sound Calibrator	s/n 34145522

The measurement equipment was checked against the appropriate calibrator at the beginning and end of the measurements, in accordance with recommended practice. The accuracy of the calibrators can be traced to National Physical Laboratory Standards, calibration certificates for which are available on request.

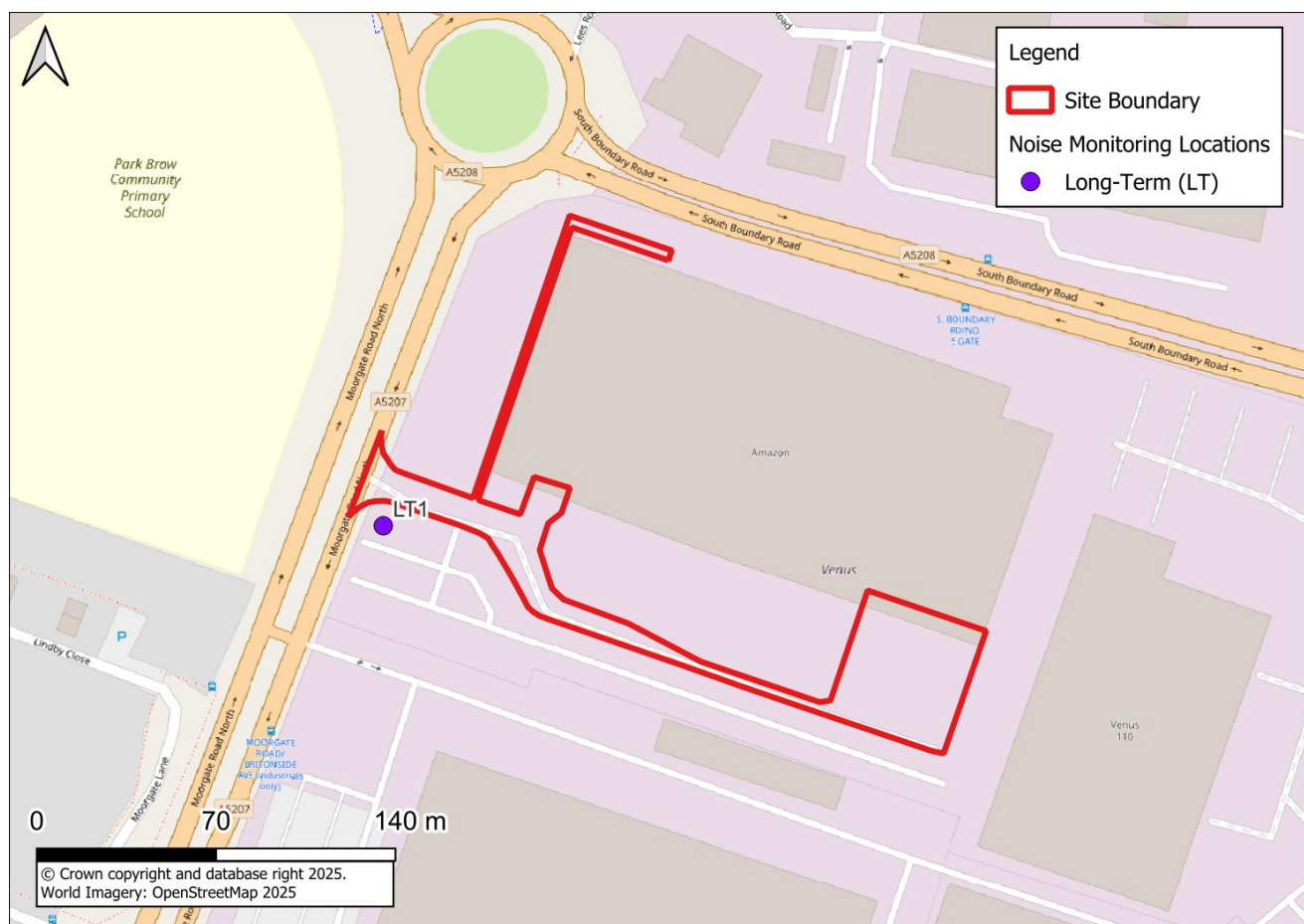
A baseline monitoring survey was undertaken at one location (as specified in Table 4.1 and shown in Figure 4.1 below) from Thursday 27th November 2025 to Wednesday 3rd November 2025. One unattended Long term (LT) location was measured over a 146-hour period. The raw data collected from the long-term monitoring is available upon request.

Measurements were taken in general accordance with BS 7445-1:2003 The Description and Measurement of Environmental Noise: Guide to quantities and procedures. Weather conditions during the survey period were observed as being dry. Anemometer readings confirmed that wind speeds were less than 5 ms⁻¹ at all times during the survey, with a predominant southern wind direction during the survey.

Table 4.1 Noise Monitoring Locations

Ref	Description
LT1	On the grass ahead of the carpark in the west corner of the site boundary.

4.1: Noise Monitoring Locations



The dominant noise sources found in the area include road traffic noise from Moorgate Road North and industry noise from the existing site operations.

Ambient and background noise levels are usually described using the L_{Aeq} index (a form of energy average) and the L_{A90} index (i.e. the level exceeded for 90% of the measurement period) respectively. Road traffic noise is generally described using the L_{A10} index (i.e. the level exceeded for 10% of the measurement period). For the long-term (LT) locations, the presented $L_{Aeq,T}$ and $L_{A10,T}$ are average noise levels whilst the L_{A90} is the modal noise level of each 5-minute measurement over the stated survey period.

Table 4.2: Meteorological Conditions During the Survey

Survey Location	Date & Time	Temperature (°C)	Wind Speed (m/s)	Wind Direction	Cloud Cover (Oktas)	Dominant Noise Source
LT1	27/11/25 11:36	11	2-3	S	2	Road traffic noise from Moorgate Road North. Industry noise from existing carpark.

The results of the statistical measurements and frequency measurements conducted during the survey are summarised in the following table. All values are sound pressure levels in dB (re: 2×10^{-5} Pa).

4.2 Noise Survey Results

Table 4.3: Results of Baseline Noise Monitoring Survey (Average Levels)

Period	Duration (T)	Monitoring Date and Times	Location	L _{Aeq,T} (dB)	L _{Amax,T} (dB)	L _{Amin,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)
Weekday Daytime 07:00 - 23:00	66 hours	27/11/2025 11:36 – 03/12/2025 13:06	LT1	68.9	98.6	44.9	72.6	60
Weekday Night-time 23:00 – 07:00	32 hours	27/11/2025 23:06 – 03/12/2025 06:56		63.4	90.1	42.7	63.3	46
Weekend Daytime 07:00 - 23:00	32 hours	29/11/2025 07:01 – 30/11/2025 23:01		66.9	98.6	45.5	70.4	56
Weekend Night-time 23:00 – 07:00	16 hours	29/11/2025 23:06 – 01/12/2025		63.1	88.4	43.1	63.5	49

All values are sound pressure levels in dB re: 2×10^{-5} Pa

4.3 Representative Background Noise Levels

Using the data collected during the baseline survey, representative background noise levels have been derived for all receptor locations presented in Figure 3.2. Table 4.4 presents the representative background noise levels considered appropriate for the existing sensitive

receptors within the area (the lower of the respective daytime and evening measurements have been used to represent daytime noise levels, where appropriate).

Table 4.4: Representative Background Noise Levels (All Receptors)

Receptors	Monitoring Location	Time Period	Representative Background Noise Level ($L_{A90,T}$ dB)*
All Receptors	LT1	Daytime (07:00 – 23:00)	56
		Night-time (23:00 – 07:00)	46

The representative noise levels presented in Table 4.4 have been used to inform the assessment presented in Section 5.0.

5.0 Assessment of Effects

5.1 Operational Phase

5.1.1 Building Services Plant Noise Assessment

The results of the plant noise assessment are presented within Table 5.1, and the night-time noise contours are presented within Figure 5.1.

Table 5.1: BS4142 Assessment

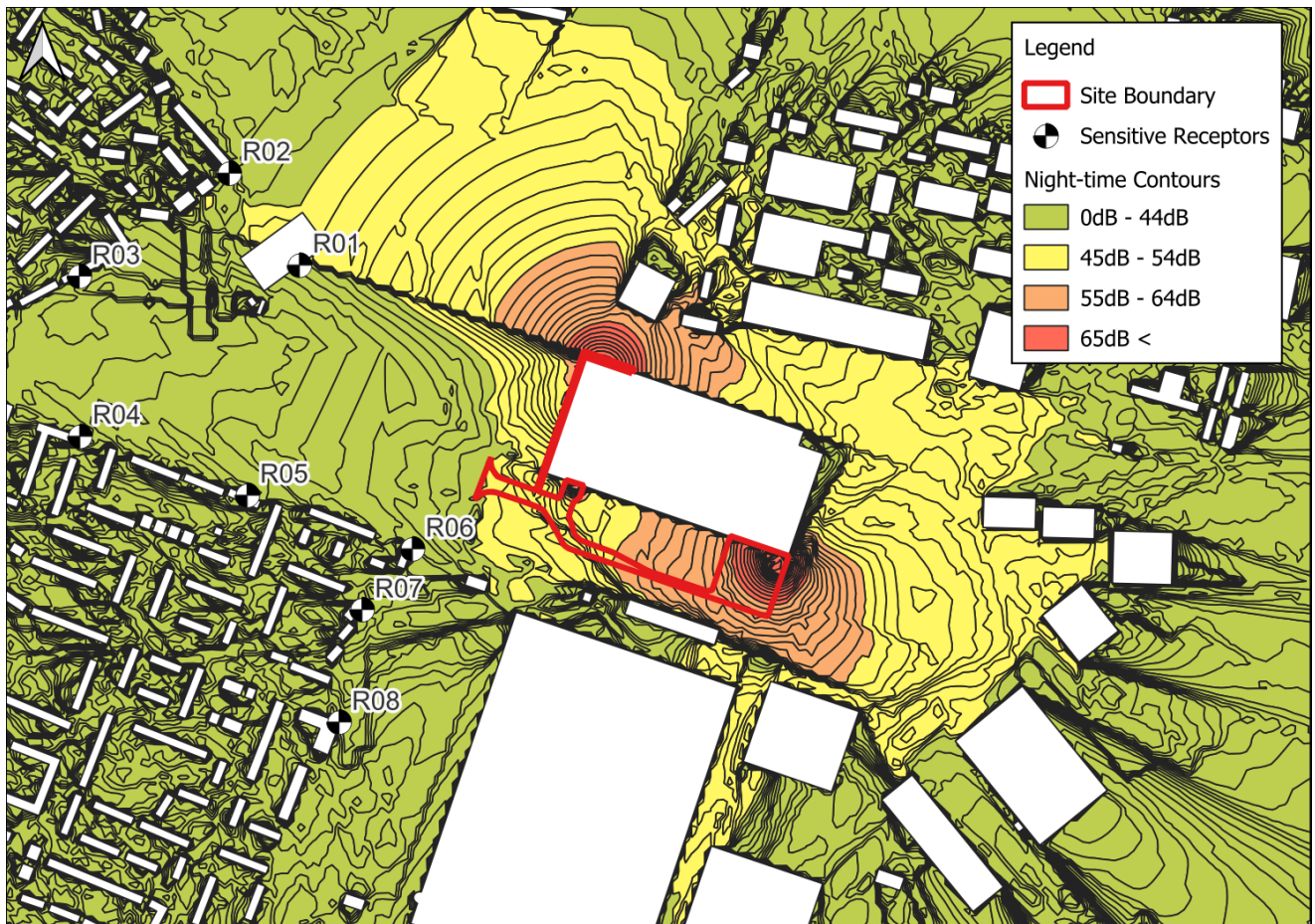
Location	Existing Measured Background L _{A90}		Noise rating level from plant		BS 4142 Score	
	Daytime	Night-time	Daytime	Night-time	Daytime	Night-time
R01	56	46	42	42	-14	-4
R02	56	46	37	37	-19	-9
R03	56	46	32	32	-24	-14
R04	56	46	35	35	-21	-11
R05	56	46	39	39	-17	-7
R06	56	46	44	44	-12	-2
R07	56	46	41	41	-15	-5
R08	56	46	35	35	-22	-12

All values are sound pressure levels in dBA re: 2×10^{-5} Pa.

All calculations used to derive the above table (including averaging of background noise levels and predicted source noise levels) have been undertaken to 1 decimal place to avoid perpetuation of rounding errors. However, in accordance with BS4142 para 8.6 the levels are expressed as integers (with 0.5 dB being rounded up). This may mean that the arithmetic in the above table may appear to be up to 1 dB incorrect due to this rounding.

As demonstrated within Table 5.1, the results of the assessment indicate that the BS4142 Noise Rating Levels at sensitive façades of the existing noise sensitive properties are at least 2dB below existing background noise levels during the night-time period. As such, this falls within the No Observed Adverse Effect Level (NOAEL).

Figure 5.1: Noise Contour Plot Night-time (LAeq,15min)



6.0 Conclusion

A noise assessment has been undertaken in support of a full application for site alterations to include new external plant equipment and associated compounds and elevation alterations to include new louvres, on the site at Moorgate Road North, Liverpool L33 7RX.

The results of the BS4142 predict that noise levels will be below the existing background noise levels at all receptor locations during the daytime and night-time. As such it is considered that no further mitigation is required.

The NPPF provides test points against which the proposed development has been assessed. Considering these points, the following conclusions can be drawn:

NPPF paragraphs 198 and 201

Based upon the assessments presented, it is considered that the development does not adversely affect or put sensitive receptors at risk from noise pollution, and no significant adverse effects are predicted to occur.

NPPF paragraph 200

Considering the existing use of the site and wider development site, it is not considered that any existing businesses wanting to develop would be restricted by the proposals.

Planning Practice Guidance: Noise

It has been predicted that on-site operational noise effects associated with the Development will be below the No Observed Adverse Effect Level (NOAEL), and therefore the development will have a negligible impact in relation to noise.

Appendices

Appendix A – Acoustic Terminology

Acoustic Terminology

- dB** Sound levels from any source can be measured in frequency bands in order to provide detailed information about the spectral content of the noise, i.e. whether it is high-pitched, low-pitched, or with no distinct tonal character. These measurements are usually undertaken in octave or third octave frequency bands. If these values are summed logarithmically, a single dB figure is obtained. This is usually not very helpful as it simply describes the total amount of acoustic energy measured and does not take any account of the ear's ability to hear certain frequencies more readily than others.
- dB(A)** Instead, the dBA figure is used, as this is found to relate better to the loudness of the sound heard. The dBA figure is obtained by subtracting an appropriate correction, which represents the variation in the ear's ability to hear different frequencies, from the individual octave or third octave band values, before summing them logarithmically. As a result the single dBA value provides a good representation of how loud a sound is.
- L_{Aeq}** Since almost all sounds vary or fluctuate with time it is helpful, instead of having an instantaneous value to describe the noise event, to have an average of the total acoustic energy experienced over its duration. The L_{Aeq, 07:00 – 23:00} for example, describes the equivalent continuous noise level over the 16-hour period between 7 am and 11 pm. During this time period the L_{pA} at any particular time is likely to have been either greater or lower than the L_{Aeq, 07:00 – 23:00}.
- L_{Amin}** The L_{Amin} is the quietest instantaneous noise level. This is usually the quietest 125 milliseconds measured during any given period of time.
- L_{Amax}** The L_{Amax} is the loudest instantaneous noise level. This is usually the loudest 125 milliseconds measured during any given period of time.
- L_n** Another method of describing, with a single value, a noise level which varies over a given time period is, instead of considering the average amount of acoustic energy, to consider the length of time for which a particular noise level is exceeded. If a level of x dBA is exceeded for say, 6 minutes within one hour, then that level can be described as being exceeded for 10% of the total measurement period. This is denoted as the L_{A10, 1 hr} = x dB.
- The L_{A10} index is often used in the description of road traffic noise, whilst the L_{A90}, the noise level exceeded for 90% of the measurement period, is the usual descriptor for underlying background noise. L_{A1} and L_{Amax} are common descriptors of construction noise.
- R_w** The *weighted sound reduction index* determined using the above *measurement* procedure, but weighted in accordance with the procedures set down in BS EN ISO 717-1. Partitioning and building board manufacturers commonly use this index to describe the inherent sound insulation performance of their products.

Appendix B – References

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