



Lancashire Farm, Littleborough

Noise Impact Assessment

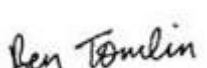
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REVISION HISTORY

Revision	Date	Revision Details	Author	Checked
R01	24/11/2025	Original Issue	 Susan Witterick BSc MIOA	 Ben Tomlin BSc MIOA

1 INTRODUCTION

- 1.1 dBx Acoustics Ltd has been appointed by Define Architects to provide a noise impact assessment for the proposed extension of refrigerated storage at Lancashire Dairies, Littleborough OL15 8BZ.
- 1.2 Planning permission for the development is sought from Rochdale Borough Council.
- 1.3 Accordingly, this report details an environmental noise survey undertaken at the site, and an assessment of the noise impact of the proposals.
- 1.4 A glossary of acoustic terminology has been supplied in Appendix A to assist the reader.

2 STANDARDS AND GUIDANCE

Local Authority

- 2.1 The Local Authority is Rochdale Borough Council.
- 2.2 No specific requirements for the noise impact assessment have been stipulated. This assessment is therefore undertaken with reference to BS4142:2014+A1:2019 as detailed below.

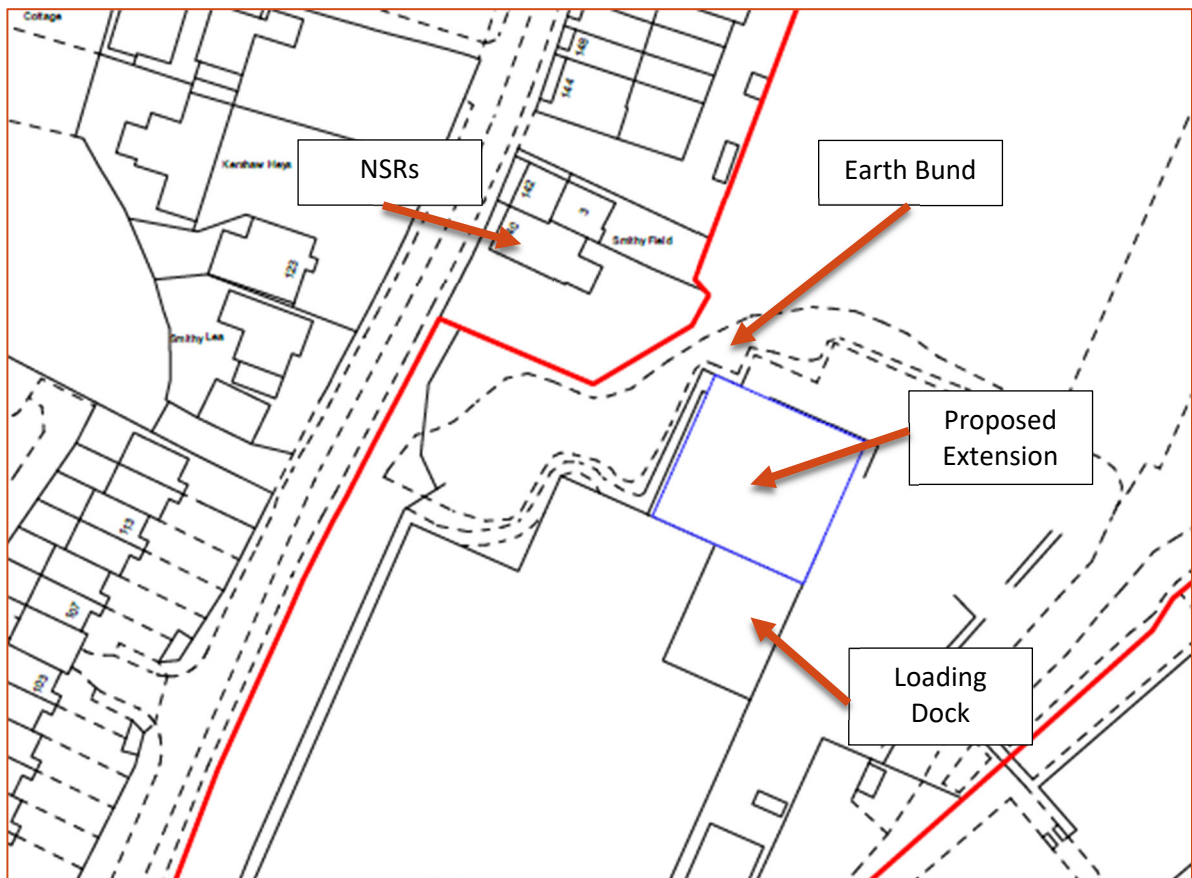
BS 4142:2014 + A1:2019 'Methods for Rating and Assessing Industrial and Commercial Sound'

- 2.3 BS 4142:2014 + A1:2019 sets out a procedure for assessing noise impact whereby a Noise Rating Level is determined and compared with the existing local Background Sound Level.
- 2.4 The Rating Level ($dB_{L_{Ar,Tr}}$) is evaluated from the Specific Noise Level by including cumulative corrections to account for factors such as distinguishable tone, impulsivity, intermittency or other readily distinguishable sound characteristics.
- 2.5 The assessment of the impact depends upon the margin by which the Rating Level of the specific sound source exceeds the Background Sound Level. An initial estimate of the impact of the specific sound is made by subtracting the Background Sound Level from the Rating Level, while considering the following points:
 - a) Typically, the greater this difference, the greater the magnitude of the impact.
 - b) A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.
 - c) A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.
 - d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source 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 on the context.

3 SITE CONDITIONS AND PROPOSED DEVELOPMENT

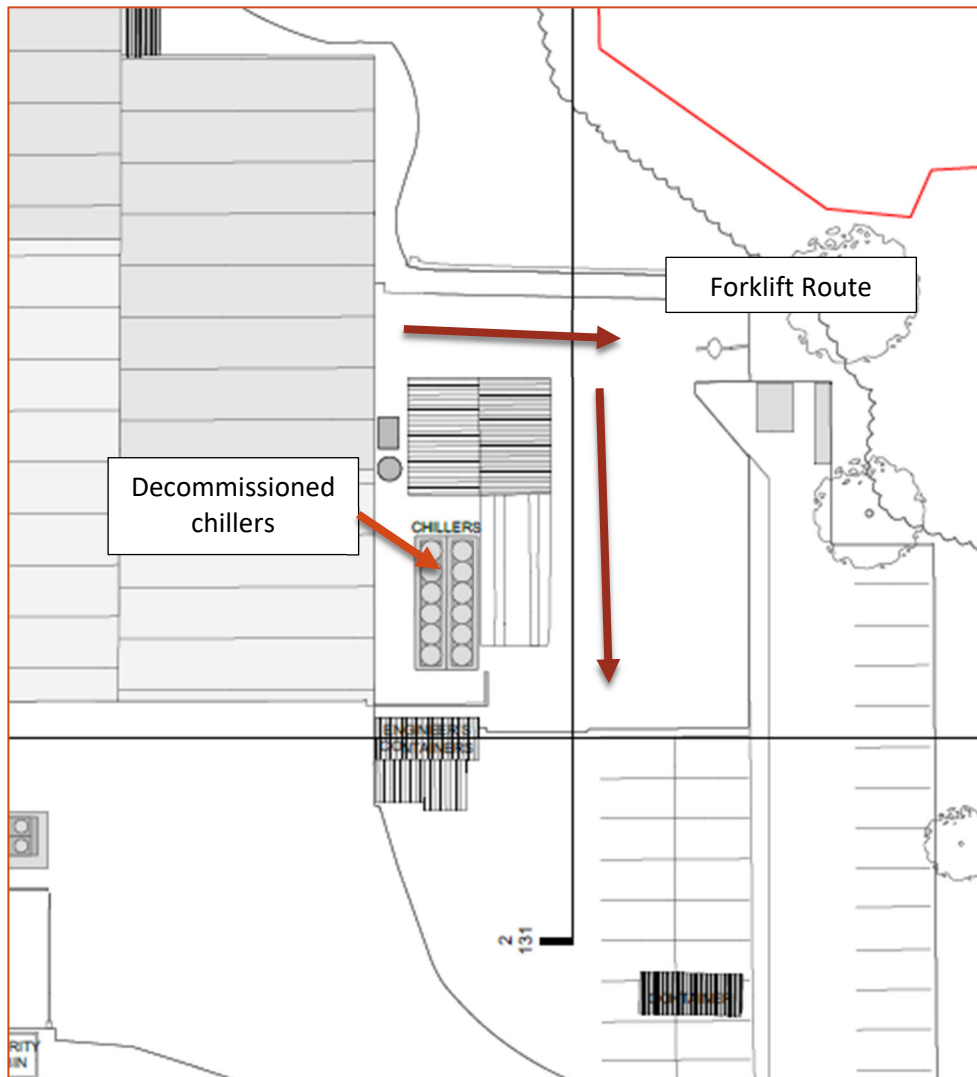
- 3.1 It is proposed to construct a small extension to the north of the existing Lancashire Farms facility off Whitelees Road, Littleborough.
- 3.2 Figure 1, below, indicates the location of the proposed extension, and the nearest noise sensitive receptors (NSRs) at 140-142 Whitelees Road.
- 3.3 There are existing earth bunds constructed to provide acoustic screening from this area to the NSRs, also indicated in Figure 1.
- 3.4 The NSRs are approximately 20m from the proposed extension at the nearest point.

Figure 1: Site Location



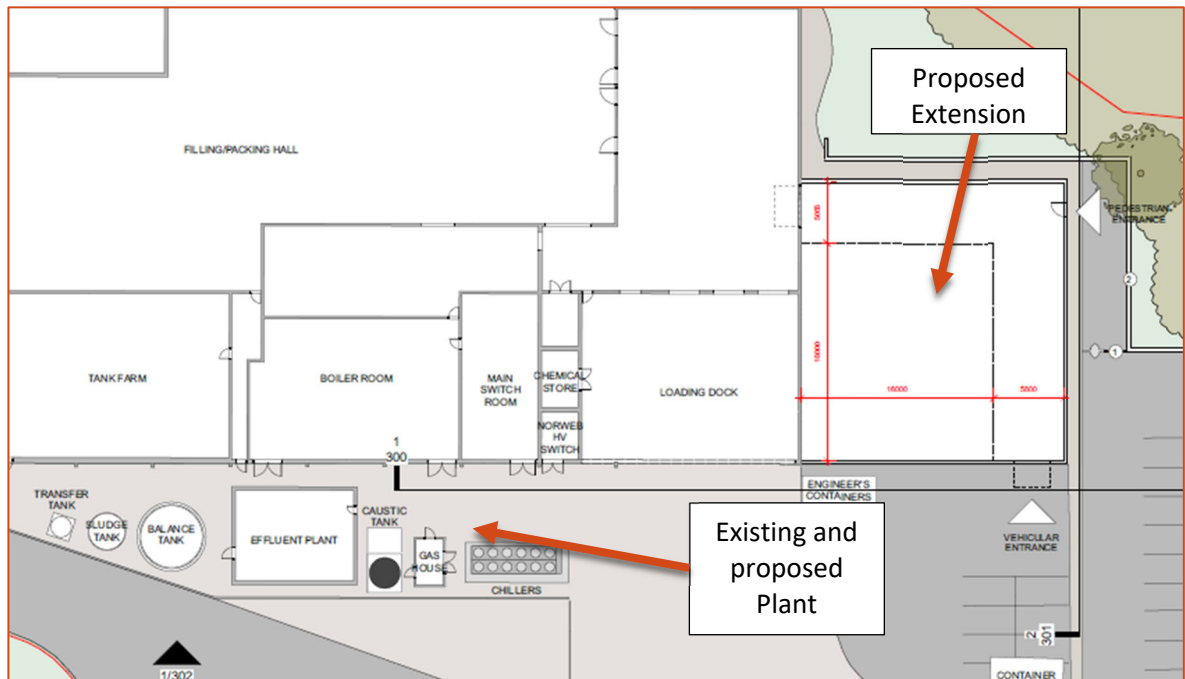
- 3.5 The area proposed for the extension was previously occupied by external chiller plant, which has been decommissioned in anticipation of the proposed development, and were not operational at the time of the noise survey.
- 3.6 There is an existing forklift truck route as indicated in Figure 2, below, which will be fully enclosed within the proposed extension. Again, no activity occurred in this area during the noise survey.

Figure 2: Existing Forklift Truck Route



- 3.7 The proposed extension will be used for refrigerated storage, and it is anticipated that new external condensing units will be installed adjacent to existing units as indicated in Figure 3, below.

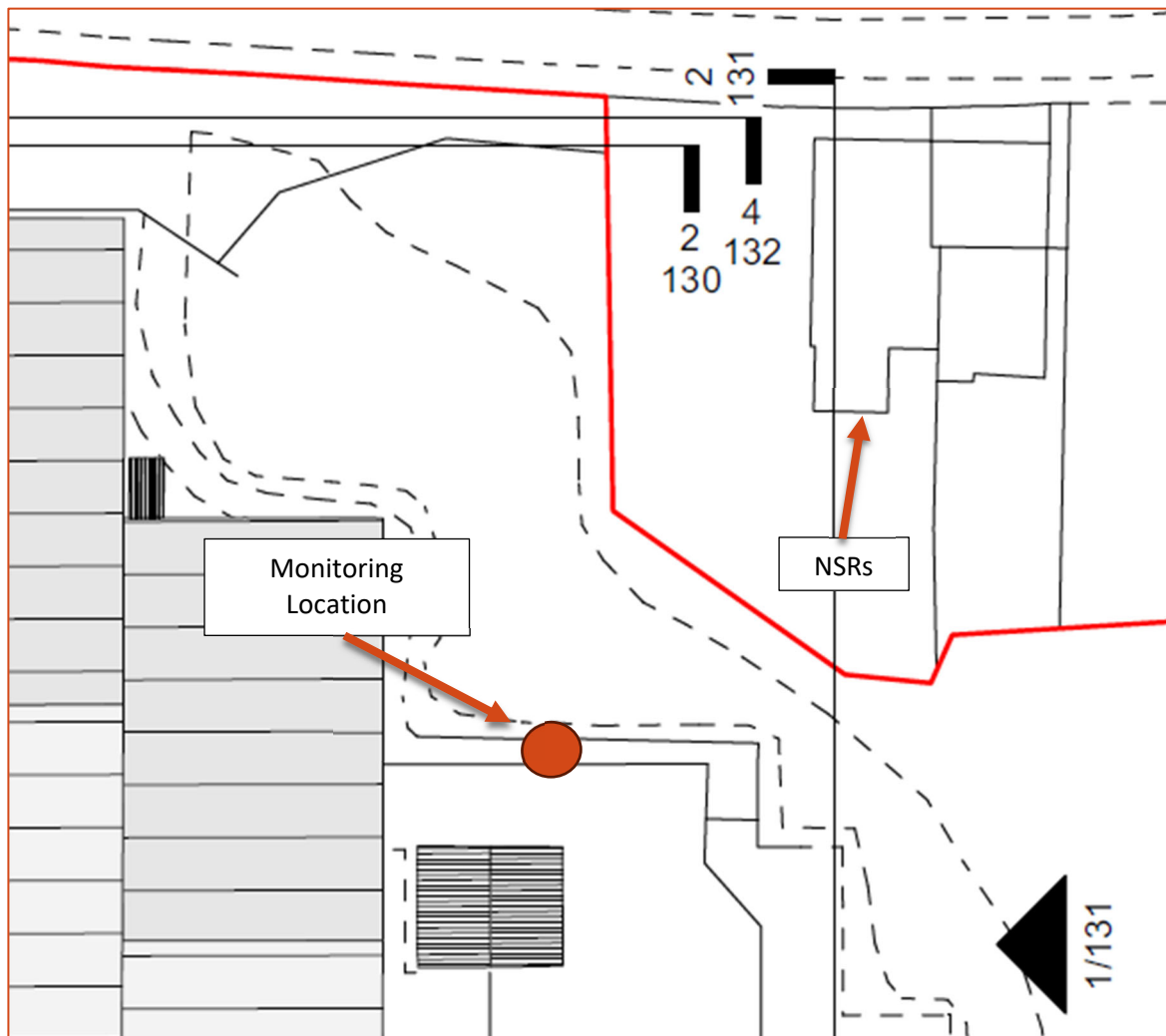
Figure 3: Approximate Location of New External Condensing Units



4 ENVIRONMENTAL NOISE SURVEY

- 4.1 An environmental noise survey was undertaken between 11:30h on Thursday 20th November and 10:00h on Friday 21st November 2025.
- 4.2 Measurements were made at the site boundary as indicated on Figure 4, below. There was no working in this area during the noise survey and as such the ambient and background noise levels are considered representative of those at the noise sensitive receptors.

Figure 4: Noise Monitoring Location



- 4.3 Measurements were made continuously at this location in 15-minute periods.
- 4.4 All measurements were undertaken in accordance with BS 7445-1:2003 '*Description and Measurement of Environmental Noise*', with microphones located approximately 1.5m above the local ground level, and at least 3.5 metres away from other reflective surfaces, and therefore represent free field conditions.

- 4.5 The equipment used during the environmental noise survey is shown in Table 1, below.

Table 1: Equipment Used in Environmental Noise Survey

Equipment	Manufacturer & Part No.	Serial Number
Meter	CR:171B	G300741
Pre-Amp	MV:200F	9082F
Microphone	MK:224	211753D
Calibrator	CR:515	87160

- 4.6 The sound level meter was calibrated before and after measurements, with no significant drift recorded. An accredited laboratory calibrated the equipment not more than two years prior to the measurements being made, with the exception of the calibrator, which had been calibrated not more than one year prior to the survey.
- 4.7 The temperature during the noise survey varied between -3°C and 3°C. There was no precipitation. Wind speeds during the survey averaged 2m/s.

5 MEASURED NOISE DATA

5.1 Table 2, below, summarises the day- and night-time ambient and background noise levels measured at the continuous monitoring location.

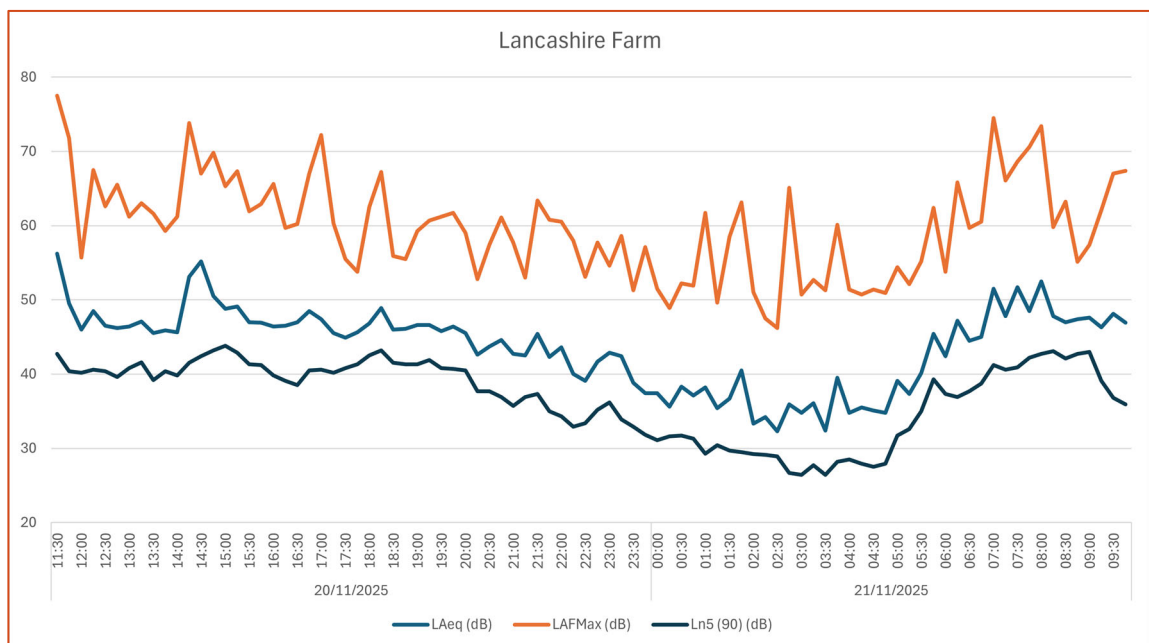
Table 2: Measured Noise Data

Date	Period	Ambient Noise Level, dBL _{Aeq,T}	Background Noise Level, dBL _{A90,T}
Thursday 20 th November	Daytime 11:30h-23:00h	48	41
	Night Time 23:00h-07:00h	40	32
Friday 21 st November	Daytime 07:00h-10:00h	49	43
Thursday / Friday	All daytime measurements	48	41

5.2 The background noise levels presented are the modal value of the 15-minute dBL_{A90} values measured during each period, while a logarithmic average has been used to establish the corresponding ambient noise (dBL_{Aeq,T}) value.

5.3 Figure 5, below, presents the data in graphical format.

Figure 5: Noise Survey Data



- 5.4 As noted above, the proposed extension area is not currently in use, and the existing chillers have been decommissioned. There was no noise from plant or activity at Lancashire Farm at the noise monitoring location during the survey period.
- 5.5 On this basis, the measured noise data can be assumed to be lower than that occurring during normal operation at the site and represents a worst case for assessment.

6 NOISE IMPACT ASSESSMENT

Noise Emissions

- 6.1 Based on measurements made within similar refrigerated storage and distribution facilities by dBx Acoustics Ltd, a typical indoor ambient noise level of $70\text{dBL}_{\text{Aeq,T}}$ within the extension has been assumed in this assessment.
- 6.2 The proposed façade and roof construction comprises insulated standing seam cladding to match the existing building.
- 6.3 As a worst-case for assessment, data for Kingspan AWP60 with no inner lining, achieving an airborne sound insulation performance of 25dBR_w , has been used in this assessment.
- 6.4 On this basis, and allowing for a 5dB reduction due to partial screening provided by the earth bund, the resultant specific noise level arising at the NSR is $26\text{dBL}_{\text{Aeq,T}}$.
- 6.5 A BS4142 assessment is presented as Table 3, below.

Table 3: BS4142 Assessment

Item	Calculation	Relevant Clause	Comments
Measured background sound level - daytime	$41\text{dBL}_{\text{A90, 1hr}}$	8.2	The typical background sound level measured during the daytime period.
Measured background sound level – night-time	$32\text{dBL}_{\text{A90, 15min}}$	8.2	The typical background sound level measured during the night-time period.
Specific sound level	$26\text{dBL}_{\text{Aeq,T}}$	7.3.6	A prediction made using the methodology outlined above, includes all sources, screening and distance corrections.
Assessment made during the daytime and night-time periods, so reference period is 1 hour and 15 minutes respectively		7.2	-
Acoustic feature correction	0dB	9.2	No acoustically distinct characteristics
Rating Level	$26\text{dBL}_{\text{Ar,Tr}}$	9.2	The predicted Rating Level during the daytime and night-time period.
Excess of Rating Level over background sound level - daytime	-15dB	11	-
Excess of Rating Level over background sound level -night-time	-6dB	11	-
Assessment indicates low likelihood of adverse impact		11	Predicted Rating Level does not exceed the measured background level. This is an indication of the development having a low impact.
Uncertainty of the assessment	Minor	10	The predicted Rating Level is based on established prediction methodologies. The background sound level at the NSR has been established by the noise survey.

- 6.6 The predicted resultant noise level at the NSRs does not exceed the background noise level which is an indication of a low likelihood of adverse impact.
- 6.7 This should be considered in the context of the proposed development which includes;
- NSRs previously subject to noise from chiller plant and activity within this area.
 - Forklift truck movements will occur within the building, which were previously external along the site boundary.
 - The measured background noise level used for assessment does not include noise from usual plant and activity in this area, which had been decommissioned at the time of the survey.

Noise Emissions from New External Plant

- 6.8 It is anticipated that new external condensing units will be required. These will be located to the southeast of the building, in an area already containing similar units.
- 6.9 This location will be fully acoustically screened from the NSRs by the existing building and proposed extension.
- 6.10 The plant has not been selected at the time of writing.
- 6.11 Given the context of the site as described above, it is proposed that when assessed at 1m from the residential façade, noise emissions from the new plant should not exceed a BS4142 rating level equal to the existing night-time background sound level, i.e. $32\text{dBL}_{\text{A},\text{Tr}}$ to avoid adverse impact.
- 6.12 Indicative calculations show that on this basis, the new plant should have a sound power of no greater than 85dBL_{WA} . This is not an onerous specification, and can be reviewed when the equipment specification and location are confirmed.

7 CONCLUSION

- 7.1 dBx Acoustics Ltd has been appointed by Define Architects to provide a noise impact assessment for the proposed extension of refrigerated storage at Lancashire Dairies, Littleborough OL15 8BZ.
- 7.2 This report presents the results of a day- and night- time noise survey at a location representative of the nearest noise sensitive receptors (NSRs) at 140-142 Whitelees Road.
- 7.3 It is noted that the existing operations and external plant in the proposed development area have been decommissioned, and as such the noise survey likely indicates lower background noise levels than the receptors would typically be exposed to.
- 7.4 Based on the anticipated activity within the proposed extension and using typical noise data and a façade construction achieving a nominal 25dBR_w sound insulation performance, calculations demonstrate that the noise level arising at the NSRs will be below the background noise level during the day and night time period, indicating no adverse impact.
- 7.5 Based on the measured background sound levels, noise emission limits for new external plant are proposed such that no adverse noise impact will occur. Indicative calculations are provided to guide the selection of the proposed plant.
- 7.6 On this basis, noise should not be a limiting factor in determining this planning application.

APPENDIX A – GLOSSARY OF ACOUSTIC TERMINOLOGY

Decibel, dB	A unit of level derived from the logarithm of the ratio between the value of a quantity and a reference value. For sound pressure level (L_p) the reference quantity is 2×10^{-5} N/m ² . The sound pressure level existing when microphone measured pressure is 2×10^{-5} N/m ² is 0 dB, the threshold of hearing.
L	Instantaneous value of Sound Pressure Level (L_p) or Sound Power Level (L_w).
Frequency	Number of cycles per second, measured in hertz (Hz), related to sound pitch.
A-weighting	Arithmetic corrections applied to values of L_p according to frequency. When logarithmically summed for all frequencies, the resulting single "A weighted value" becomes comparable with other such values from which a comparative loudness judgement can be made, then, without knowledge of frequency content of the source.
$L_{eq,T}$	Equivalent continuous level of sound pressure which, if it actually existed for the integration time period T of the measurement, would possess the same energy as the constantly varying values of L_p actually measured.
$L_{Aeq,T}$	Equivalent continuous level of A weighted sound pressure which, if it actually existed for the integration time period, T, of the measurement would possess the same energy as the constantly varying values of L_p actually measured.
$L_{n,T}$	L_p which was exceeded for n% of time, T.
$L_{An,T}$	Level in dBA which was exceeded for n% of time, T.
L_{Fmax}	The instantaneous maximum sound pressure level which occurred during the measurement. F indicates that the fast time-weighting is used.
L_{AFmax}	The instantaneous maximum A weighted sound pressure level which occurred during the measurement. F indicates that the fast time-weighting is used.
$L_{Ar,Tr}$	The rating level: the equivalent continuous A-weighted sound pressure level of the noise, plus any adjustment for the characteristic features of the noise.
Reverberation Time, T	The time that would be required for the sound pressure level to decrease by 60 dB after the sound source has stopped. The descriptor T, often includes other nomenclature to describe the type of reverberation time measurement or if the reverberation time is an average taken for specific frequencies. For example, a T_{mf} is the mid-frequency reverberation time.
Absorption Coefficient, α	The fraction of reverberant sound energy absorbed by a material. It is expressed as a value between 1.0 which equates to perfect absorption and 0 which equates to zero absorption.
Acoustic Class, A - E	Classification of sound absorbers into Sound Absorption Classes A-E, according to BS EN ISO 11654, including frequencies 200-5000 Hz
NRC	A single-number rating system used to compare the sound-absorbing characteristics of building materials. A measurement of the acoustical absorption performance of a material, calculated by averaging its Sound Absorption Coefficients at 250, 500, 1000 and 2000 Hz
STI	Speech Transmission Index , Metric ranging between 0 and 1 representing the transmission quality of speech with respect to intelligibility by a speech transmission channel
R	Sound Reduction Index , the laboratory measured sound insulation properties of a material or building element in octave or third octave bands.
R_w	Weighted Sound Reduction Index , a single number which represents the sound reduction of a material. It is derived by plotting the sound reduction index against a set of reference curves. The curves are shifted until a best-fit is established and the curve which best fits the sound reduction spectrum is used to represent the single figure value.
D_w	Weighted Level Difference , the weighted level difference between a pair of rooms, stated as a single figure.

D_{nT}	Standardised Level Difference, a frequency-dependent measurement of airborne sound insulation, calculated using the following formula: $D_{nT} = L_1 - L_2 + 10\log(T/T_0)$ dB Where: L_1 is the energy-averaged sound pressure level due to the pink noise source measured in the source room using a sweep technique. L_2 is the energy-averaged sound pressure level measured in the receiving room using a sweep technique. T is the mean receiving room reverberation time (derived from T_{30} measured in seconds). T_0 is the reference reverberation time (= 0.5s for dwellings).
$D_{nT,w}$	Weighted Standardised Level Difference, a single-figure value of airborne sound insulation performance, derived according to procedures in BS EN ISO 717-1, based on the D_{nT} values at different frequencies (100-3150 Hz third octave bands).
$D_{nF,w}$	Weighted, Normalised Flanking Level Difference, the normalised, weighted difference in sound level between a pair of rooms via a flanking element, such as mullion or ceiling detail. The level difference in octave bands is first normalized to a reference amount of absorption and then plotted against a set of reference curves to establish a single figure value.
D_{ne}	Normalised Element Level Difference. The normalised difference in sound level between a pair of rooms via a small element such as a trickle ventilator. The level difference in octave bands is normalized to a reference amount of absorption.
$D_{n,e,w}$	Weighted, Normalised Element Level Difference. The normalised, weighted difference in sound level between a pair of rooms via a small element such as a trickle ventilator, stated as a single figure. The level difference in octave bands is normalized to a reference amount of absorption and then plotted against a set of reference curves to establish a single figure value.
C_{tr}	Spectrum Adaptation Term, a correction term applied to the sound insulation single-number values (R_w, D_w, and $D_{nT,w}$) in accordance with BS EN ISO 717-1. Applying the C_{tr} penalises a construction's performance if its low frequency performance is poor in relation its performance at higher frequencies.
Impact Sound	The noise generated by an impact on a structure. This is normally used to describe the noise created by people walking or moving furniture on a floor structure.
L_{nT}	Standardised Impact Sound Pressure Level, a frequency dependent measurement of impact sound insulation, calculated using the following formula: $L_{nT} = L_1 + 10\log(T/T_0)$ dB Where: L_1 is the mean sound pressure level due to the tapping machine measured in the receiving room using a sweep technique. T is the mean receiving room reverberation time (derived from T_{30} measured in seconds). T_0 is the reference reverberation time (0.5s for dwellings)
$L'_{nT,w}$	Weighted Standardised Impact Sound Pressure Level, a single-figure value (@ 500 Hz) of impact sound insulation, performance, derived according to BS EN ISO 717-2, based on the L_{nT} values at different frequencies (100Hz- 3150 Hz third octave bands).
Insertion Loss, IL	The reduction of noise level due to the presence of a noise control device such as an attenuator, excluding any regeneration noise created by its presence.
NR	The Noise Rating level. This is a single figure value derived by plotting a noise spectrum against a set of curves. The curve under which the spectrum fits is the resulting NR level.

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