



Oakridge
Environmental
Services
Limited

GLEBE FARM
Warehouse Noise Assessment
Reference: OES23-001AQUA/1

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Document Control Sheet

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Disclaimer

Recommendations in this report are for acoustics purposes only, and it is the responsibility of the Project Manager or Architect to ensure that all other requirements are met including (but not limited to) structure, fire and Building Controls.

1 INTRODUCTION

1.1 Background

We have been appointed by Aquatix-2U Ltd to undertake an operational noise assessment for the proposed extended operational hours of the online retail sale of pond and aquarium products at Glebe Farm.

The site was granted planning permission by Babergh District Council (DC/22/00227) on 14th March 2022 for two additional warehouses although the business has been operating for over a decade. The planning Consent placed a restriction on operating times as follows:

10. The warehouse and office shall not operate outside of the following hours:
Monday to Friday 08:30 - 17:00
Saturday 09:00 – 13:00
No works on Sundays or Public Holidays

1.2 Structure of this report

The structure of this report is as follows:

- Section 2 describes the noise criteria referred to in this report.
- Section 3 describes the site and its nearest noise sensitive receptor.
- Section 4 sets out our methodology and the results of our noise survey.
- Section 5 presents our operational noise assessment.
- An explanation of the technical terms used in this report is given in Appendix A;
- Details of the measurement equipment used, and calibration are set out in Appendix B.

1.3 Summary

- We have undertaken a noise survey of the existing ambient noise levels at the site.
- We have compared ambient noise levels when the site has been operational and compared them with ambient noise levels when the site is not. The comparison showed no significant difference differences between these levels and extraneous noise (in particular road traffic noise from both the A12 and London Road) is the dominant source of noise affecting both the site and the noise sensitive dwellings. Noise from the operation of the warehouse has little to no effect upon the soundscape.
- Therefore, increasing the operational hours to include Saturday afternoons and Sundays/Bank Holidays 09:00hrs to 17:00hrs would not have an adverse noise impact upon nearby residents We have produced an Environmental Noise Assessment, recommending suitable noise limits, times and estimated noise levels from site distribution activities.

2 NOISE CRITERIA

2.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) came into force in March 2012 and was revised in 2021. Paragraph 185 states:

“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 – 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.”*

The NPPF does not set out numerical criteria for noise affecting proposed development sites. For an explanation of significant adverse impacts on health and quality of life, the NPPF refers to the Noise Policy Statement for England (NPSE).

2.2 Noise Policy Statement for England

The Noise Policy Statement for England (NPSE) published in March 2010 sets out the Government’s policy on noise and introduced the concepts from toxicology currently being applied to noise impacts by the World Health Organisation. These are:

- NOEL – No Observed Effect Level: This is the level below which no effect can be detected.
- LOAEL – Lowest Observed Adverse Effect Level: This the level above which adverse effects on health and quality of life can be detected.
- SOAEL – Significant Observed Adverse Effect Level: This is the level above which significant adverse effects on health and quality of life occur.

The first aim of the NPSE is to avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.

The second aim of the NPSE is to mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development. This second aim refers to the situation where the impact lies somewhere between LOAEL and SOAEL. It requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life. This does not mean that such adverse effects cannot occur.

Section 2.22 of the NPSE states:

“It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant

adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.”

2.3 BS 8233:2014 Guidance on sound insulation and noise reduction for buildings

The guidelines recommend that daytime noise levels in external amenity areas should not exceed 50 dB $L_{Aeq,16hours}$.

3 SITE DESCRIPTION

3.1 Site description and nearest noise-sensitive premises

Glebe Farm is located on London Road, Copdock within a mix of industrial/commercial uses, agricultural land and dwellings. The nearest dwellings to the site are those on The Avenue approximately 100m to the North of the site and those on London Road opposite the entrance to the site at a distance of approximately 75m (London Road is a dual carriageway).

The nearest commercial use is the Best Western Hotel located 100m north-west, this hotel often hosts live and recorded music events. Copdock Mill is located at the start of London Road and operates as an agricultural and pet feed store with 7 days a week operating times and several storage/distribution further South of the site on London Road.

The A12 runs parallel to London Road 400m to the East and the A14/A12 Copdock interchange is 1.3km to the North-East. Thus, road traffic noise is the dominant noise source affecting both the site and surrounding dwellings.

Aquatix-2U is a family run business which specialises in supplying all forms of water based (pond & aquarium) products. The facility at the application site is solely storage and distribution with all sales being completed either on the internet or via telephone. The site does not offer any sales on site via a trade counter and nor does it allow collections of sold products. There are on average 10 deliveries a day, including 2/3 deliveries a day via larger 7-10 tonne vehicles and the remainder through smaller Sprinter vans. On average there is 1 large articulated HGV delivery per week and unloading takes place within the buildings to minimise movements within the site and noise emanating from loading/unloading activities.

During our noise survey we noted very little noise from the operation with the dominant source of noise being road traffic on both the A12 and London Road and bird noise such as crows and songbirds.

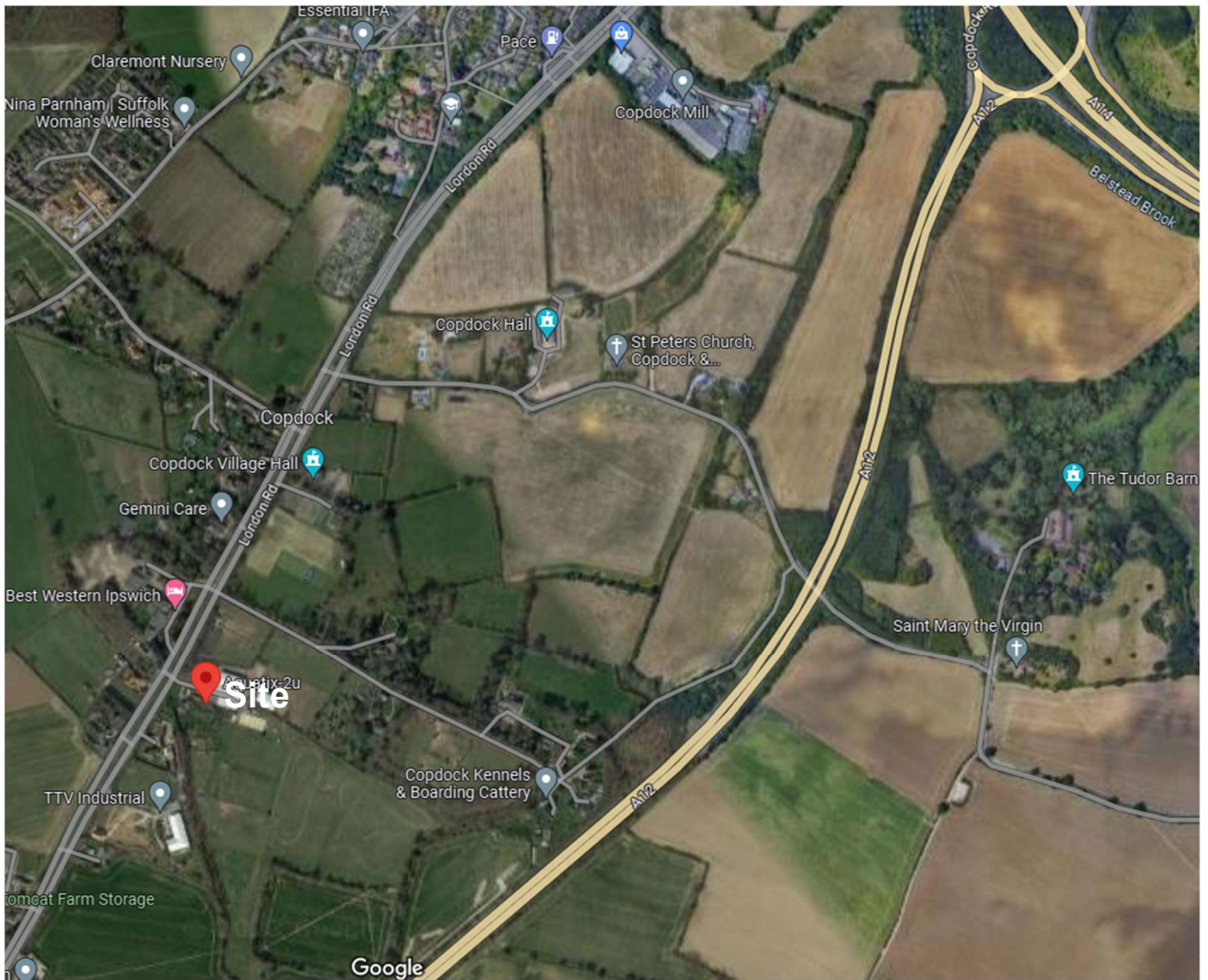


Figure 1- Site location © Google



Figure 2 - View from unattended measurement position towards front warehouses



Figure 3 - View from unattended measurement position towards rear warehouses



Figure 4 Warehouse interior

4 NOISE SURVEY

4.1 Methodology

We undertook a noise survey by installing an unattended sound level meter at the location shown in Figure 5. The microphone was mounted on a tripod at a height of 1.5m in a free-field position. The equipment was left in place from Friday 25th August 2023 13:00hrs to Tuesday 29th August 2023 12:30hrs. Several short 15-minute measurements were also taken on Friday 25th August 2023 and Monday 28th (BH Monday) with a separate meter at two further locations shown in Figure 5 to determine any level differences over the site.

Unfortunately, a server error whilst downloading the data from the unattended meter resulted in the loss of some data leaving only the unweighted (Z) levels for the assessment. Therefore, a second unattended survey was undertaken from Friday 8th September 2023 09:45hrs to Monday 11th September 2023 09:30hrs at the same measurement position. Weather conditions during both survey periods were compliant with BS 7445 "Description and measurement of environmental noise."

Details of the survey, personnel and equipment are listed in Appendix B of this report.

Noise levels in terms of $L_{eq,T}$ were compared against the days and times when the site was operating and when it was not.

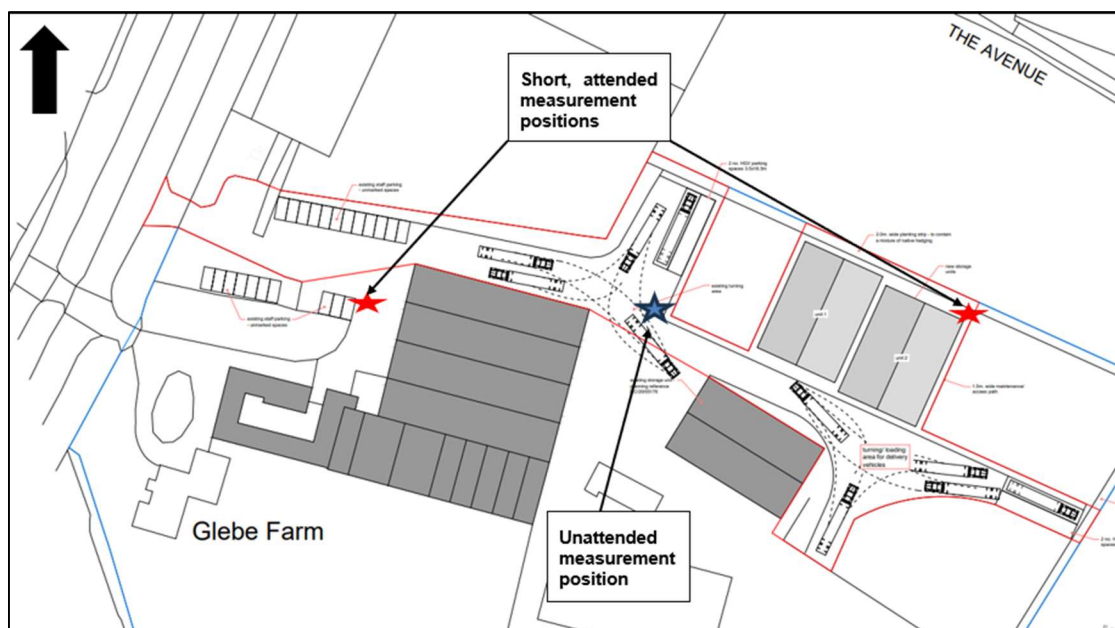


Figure 5 - Site layout and survey positions



Figure 6 - View of unattended measurement position towards rear warehouses



Figure 7 - View of short attended position towards front warehouses and office



Figure 8 View of short, attended position towards London Road



Figure 9 View of short, attended position towards The Avenue

4.2 Level difference between attended and unattended measurement positions

The main source of noise was road traffic on both London Road and the A12. Very little noise was noted from the site as the order picking is done by hand. Table 1 shows the level differences between the measured levels at the unattended position in the centre of the site and the levels at the front and rear. The difference in levels between the centre of the site and the front was between 0.4 and 3.6 dB and between the centre and the rear of the site between 9.5 and 7.2 dB $L_{Aeq,15\text{ minutes}}$. Bearing in mind that work was taking place within the front warehouses and no work in the rear warehouses, the small difference in levels between the front and centre compared to the larger difference between the rear and the centre indicates that road traffic on the A12 is the dominant noise source.

Measurement Position	Start date & time	$L_{Aeq, 15\text{ minutes}}$ (dB)	$L_{Zeq, 15\text{ minutes}}$ (dB)
Rear of site closest to The Avenue	25/08/2023 13:15	45.0	66.0
Unattended Position centre of site			66.4
Level Difference			+0.4
<hr/>			
Front of site facing warehouse and office	25/08/2023 13:45	52.9	78.9
Unattended Position centre of site			69.4
Level Difference			-9.5
<hr/>			
Front of site facing warehouse and office	28/08/2023 12:30	52.9	68.4
Unattended Position centre of site			64.8
Level Difference			-3.6
<hr/>			
Rear of site closest to The Avenue	28/08/2023 13:00	43.4	69.8
Unattended Position centre of site			62.6
Level Difference			-7.2

Table 1 -Level difference results

4.3 A weighted ambient noise levels

Figure 10 shows the level v time history of the measured levels from Friday 8th September 2023 09:45hrs to Monday 11th September 2023 09:30hrs. We have included the times from 06:00hrs to 21:00hrs as it is clear from the results that noise levels before 08:30 and after 17:00hrs when the site is closed are often equal to or more than the levels measured during operational hours.

The $L_{Aeq,15\text{ minutes}}$ from 10:15hrs to 13:30hrs on Sunday were significantly higher than the corresponding level on Saturday when the site was operating. Even those peaks that could be attributed to the operation such as vehicles on site are no higher than 56.8dB $L_{Aeq, 15\text{ minutes}}$ at 15:15hrs on Friday and this level was exceeded on Sunday at 06:30hrs by 1.9dB.

The $L_{Aeq,15\text{ hours}}$ for Friday and Saturday were 50.5 and 50.6 dB respectively and 48.3 dB for Sunday. This 2.3dB difference is indicative of the dominant noise sources being road traffic and bird noise with the operation having very little affect upon ambient noise levels.

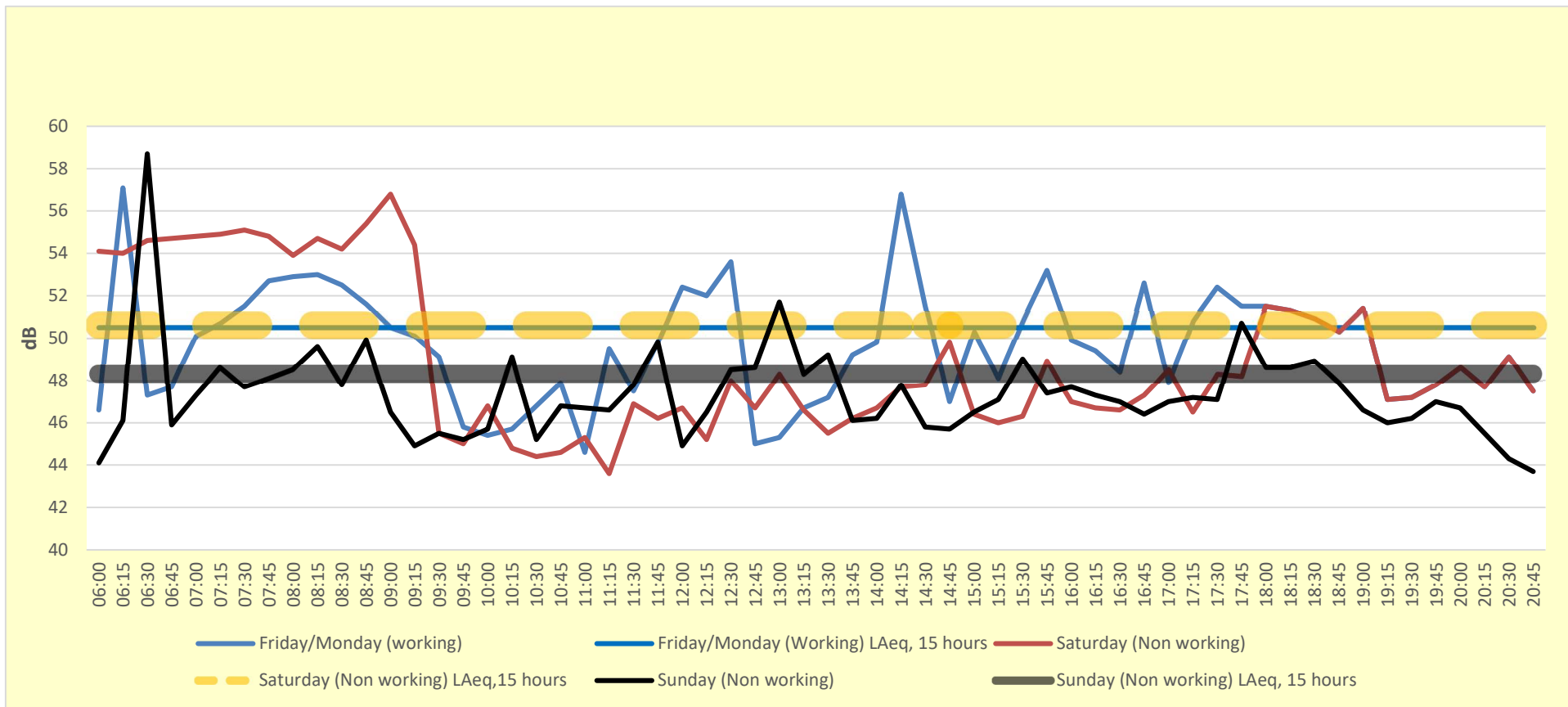


Figure 10 - Level v Time history 8th to 11th September 2023

4.4 Unweighted (z) ambient noise levels

Figure 11 shows the unweighted (z) level v time history of the measured levels from Friday 8th September 2023 09:45hrs to Monday 11th September 2023 09:30hrs. The $L_{Zeq,15 \text{ minutes}}$ from 08:30hrs to 09:45hrs on Friday/Monday (Friday and Monday were aggregated to form a complete day) were significantly higher than the corresponding levels on Saturday and Sunday this is most likely a delivery HGV although the highest A-weighted level for that period is 53.0 dB $L_{Aeq,15 \text{ minutes}}$. However, there is a significantly high periods on Saturday and Sunday around 15:00hrs which are not present when the site is operating.

The $L_{Aeq,15 \text{ hours}}$ for Friday/Monday and Saturday were 66.9 and 65.5 dB respectively and 64.3 dB for Sunday. This 1.6dB difference is indicative of the dominant noise being road traffic with the operation having very little affect upon ambient noise levels.

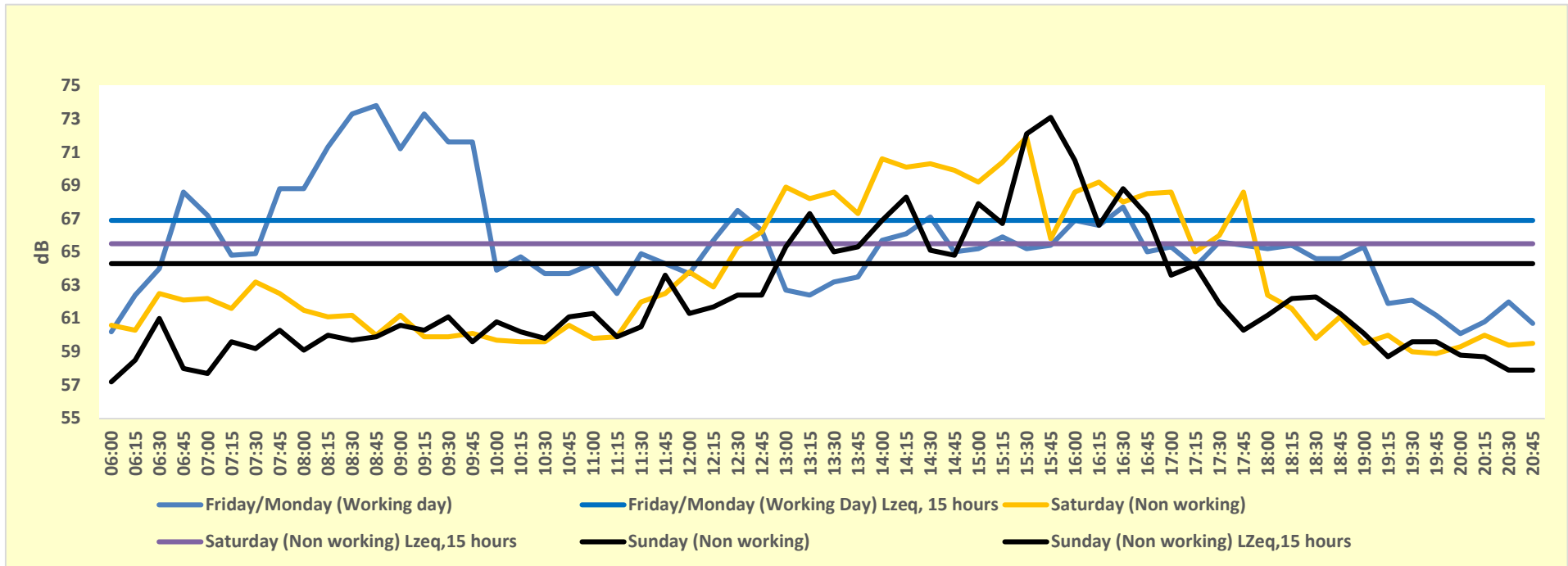


Figure 11- Level v Time history 8th to 11th September 2023

Figure 12 shows the unweighted (z) level v time history of the measured levels from Friday 25th August 2023 13:00hrs to Tuesday 29th August 2023 12:45hrs. The $L_{Zeq,15\text{ minutes}}$ graph follows a similar pattern apart from Sunday which shows a sharp rise in levels to a high of 80.6 dB $L_{Zeq,15\text{ minutes}}$ at 14:15 hours and then a steep decrease in levels. The client has informed us that the village hall 300m North of the site often has music events including bagpipe practice at varying times and days of the week.

The $L_{Aeq,15\text{ hours}}$ for Friday/Tuesday and Saturday were 69.1 and 69.0 dB respectively and 66.1 and 67.6 dB for Sunday and BH Monday respectively. The 3dB difference between the highest and lowest $L_{Zeq,15\text{ hours}}$ levels is indicative of the dominant noise being road traffic with the operation having very little affect upon ambient noise levels.

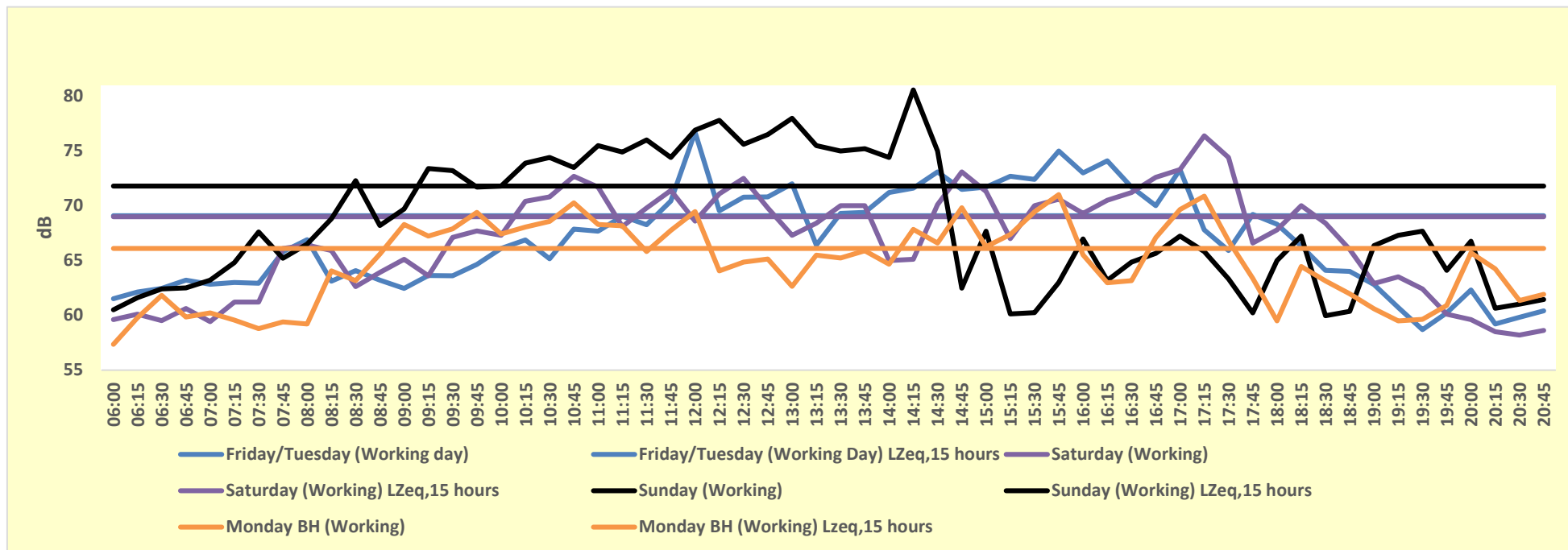


Figure 12- Level v Time history 25th to 29th August 2023

5 OPERATIONAL NOISE ASSESSMENT

5.1 Impact of working increased hours

The surveys show that the extraneous noise and in particular road traffic noise from both the A12 and London Road is the dominant source of noise affecting both the site and the noise sensitive dwellings. Noise from the operation of the warehouse has little to no effect upon the soundscape. Even those peaks that could be attributed to the operation, such as vehicles on site, are no higher than 56.8dB $L_{Aeq, 15 \text{ minutes}}$ and even without allowing for the shielding effect of the buildings the noise level from such an event at the nearest dwellings 75m away would be well below the 50dB $L_{Aeq, 16 \text{ hours}}$ recommended in BS8233:2014.

Therefore, increasing the operational hours to include Saturday afternoons and Sundays/Bank Holidays 09:00hrs to 17:00hrs would not have an adverse noise impact upon nearby residents.

APPENDIX A - TECHNICAL TERMS AND UNITS USED IN THIS REPORT

Decibel (dB) - This is the unit used to measure sound level. The range of human hearing from the quietest detectable sound to the threshold of pain is very large. If a normal linear scale of measurement were used, it would have to range from 20 μ Pa to 200,000,000 μ Pa. Using such large figures would be unmanageable and for this reason sound pressure levels are expressed on a logarithmic scale, which corresponds to the almost logarithmic response of the ear and which compresses the range to a manageable 0dB to 140dB.

Sound Pressure Level (Lp or SPL) - This is a function of the source and its surroundings and is a measure in decibels of the total instantaneous sound pressure at a point in space. The SPL can vary both in time and in frequency. Different measurement parameters are therefore required to describe the time variation and frequency content of a given sound. These are described below.

Frequency - This refers to the number of complete pressure fluctuations or cycles that occur in one second. Frequency is measured in Hertz (Hz). The rumble of thunder has a low frequency, while a whistle has a high frequency. The sensitivity of the ear varies over the frequency range and is most sensitive between 1KHz and 5KHz.

Octave and One-Third Octave Bands - The human ear is sensitive to sound over a frequency range of approximately 20 Hz to 20,000 Hz and is more sensitive to medium and high frequencies than to low frequencies. To define the frequency content of a sound, the spectrum is divided into frequency bands, the most common of which are octave bands. Each band is referred to by its centre frequency, and the centre frequency of each band is twice that of the band below it. Where it is necessary for a more detailed analysis octave bands may be divided into one-third octave bands.

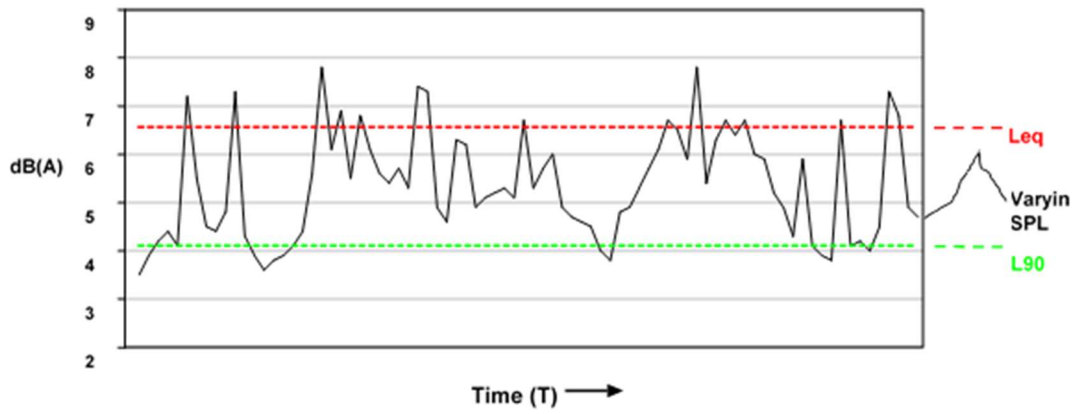
'A' Weighting - The sensitivity of the human ear varies with frequency, some frequencies sound louder than others. The 'A'-weighting curve represents the non-linear frequency response of the human ear and is incorporated in an electronic filter used in sound level meters. Measurements using an 'A'-weighting filter makes the meter more sensitive to the middle range of frequencies, which approximates to the response of the ear and the subjective loudness of the sound. Sound level measurements using 'A'-weighting will include the subscript A, e.g.dB(A).

Statistical Analysis - These figures are normally expressed as LN, where L is the sound pressure level in dB and N is the percentage of the measurement period. The LN figure represents the sound level that is exceeded for that percentage of the measurement period. L90 is commonly used to give an indication of the background level or the lowest level during the measurement period. L10 may be used to measure road traffic noise. See Figure A1.

L_{Amax} - The highest A weighted sound pressure level recorded during the measurement period. The time constant used (Fast or Slow) should be stated. See Figure A1.

L_{eq,T} - The equivalent continuous sound level is used to measure sound that varies with time. The L_{eq,T} is the notional equivalent steady sound level, which contains the same acoustic energy as the actual varying sound level over the period of measurement. Because the averaging process used is logarithmic, the L_{eq,T} level tends to be dominated by the higher sound levels measured. See Figure A1 overleaf.

Figure A1 - Time Varying Sound and Equivalent Continuous Sound Level (Leq,T)



APPENDIX B - MEASURING EQUIPMENT AND CALIBRATION

Job reference and title: Glebe Farm Warehouse Noise Assessment				
Measurement locations: As per Figure 5				
Measurement date(s): 25 th August 2023 to 29 th August 2023				
Measuring equipment used:				
Equipment description / serial number	Type number	Manufacturer	Date of calibration expiration	Calibration certificate number
Precision sound level meter serial no. 121068	SV971A	Svantek	04/08/2024	Factory
Microphone serial no. 83649	7152	ACO PACIFIC	04/08/2024	Factory
Microphone pre-amplifier serial no. 122179	SV18A	Svantek	04/08/2024	Factory
Microphone calibrator serial no 125775.	SV33B	Svantek	13/09/2024	Factory
Calibration level:	113.9dB @ 1 kHz			
Precision sound level meter serial no. 127614	SV971A	Svantek	04/05/2025	Factory
Microphone serial no. 85902	7152	ACO PACIFIC	04/05/2025	Factory
Microphone pre-amplifier serial no. 130496	SV18A	Svantek	04/05/2025	Factory
Microphone calibrator serial no 074050.	GA611	Castle	02/05/2025	Factory
Outdoor Microphone protection kit	MW402	Castle		
Calibration level:	94.0 dB @ 1kHz			
Person in charge of measurements:	Mick Cheong MSc MIOA			
Assisted by:	Chris Cornish MCIEH			

Job reference and title: Glebe Farm Warehouse Noise Assessment				
Measurement locations: As per Figure 5				
Measurement date(s): 8 th September 2023 to 11 th September 2023				
Measuring equipment used:				
Equipment description / serial number	Type number	Manufacturer	Date of calibration expiration	Calibration certificate number
Precision sound level meter serial no. G301585-K	CR171C	Cirrus	18/07/2024	Factory
Microphone calibrator serial no 125775.	CR154	Cirrus	18/07/2024	Factory
Calibration level:	93.7dB @ 1 kHz			
Person in charge of measurements: Chris Cornish MCIEH				