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NOISE IMPACT ASSESSMENT REPORT– FACADE NOISE ASSESSMENT

LAND WEST OF ALLINGTON BUSINESS CENTRE, EASTLEIGH SO50 7DE

FOR

MR S LOVERIDGE



ISSUE STATUS: FINAL
DATE OF ISSUE: 13/11/2023
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1. EXECUTIVE SUMMARY

The Client is seeking planning approval for the construction of 5 No. mobile homes for residential use (C3 Usage) at Land West of Allington Business Centre, Eastleigh SO50 7DE. See Figure 3.1.

Sound Licensing were instructed to undertake a noise assessment at the site to determine the internal and external ambient noise levels that would be representative of the proposed residential premises and to assess compliance with Local Authority planning policy and BS8233:2014/WHO internal and external noise guidelines.

A noise survey and assessment has been undertaken for the proposed residential premises. Existing external noise levels at the site have been measured and compared to the relevant criteria. The results of the noise survey are considered reasonable given the location of the measurement positions and the existing noise sources in the local vicinity.

The assessment has indicated that internal noise levels within the proposed units will comply with the BS8233:2014/WHO internal and external noise guidelines and Local Authority planning policy through the use of appropriately specified glazing, ventilation systems and proposed boundary fencing.

2. INTRODUCTION

The Client proposes to construct 5 No. mobile homes for residential use (C3 Usage) at Land West of Allington Business Centre, Eastleigh SO50 7DE. The existing ambient noise climate could have the potential to affect the proposed noise sensitive property.

The purposes of this report are:

- To determine and assess prevailing ambient and maximum noise levels affecting the development due to nearby noise sources (e.g. road traffic, commercial premises operations, aircraft etc);
- Based on the above, to present the internal and external noise levels to be achieved at the residential development in accordance with the BS 8233:2014/WHO standards, and
- To demonstrate that internal/external noise levels comply with the Local Authority planning policy

3. SITE DESCRIPTION

The client is seeking planning approval for the construction of 5 No. mobile homes for residential use (C3 Usage) at Land West of Allington Business Centre, Eastleigh SO50 7DE (hereafter referred to as 'the site'). The proposed site is located near an overground rail line and approximately 1.5 miles from Southampton airport. There are also several commercial businesses located close to the site.

Figure 3.1 shows the site and its surroundings with the site highlighted approximately in red.

Figure 3.1 Site Location and Surrounding Land Use



Source: Google Maps

4. ENVIRONMENTAL NOISE SURVEY METHODOLOGY

An unmanned environmental noise survey was undertaken at a single measurement location at ground-floor level. The survey was undertaken between 12:45 hours on 31st October and 12:30 hours on 7th November 2023. A survey at this time represents typical week, day, evening and night at the site.

Ambient, background and maximum noise levels (L_{Aeq} , L_{A90} and L_{Amax} respectively) were measured throughout the noise survey in continuous 15-minute periods. The approximate measurement position is indicated in orange on Figure 4.1 below.

Figure 4.1 Site Plan Showing Approximate Location of Measurement Positions



Source: Google Maps

The sound level meter microphone was positioned on a tripod at the site at a height of 2.5m, above any reflective façades. This position is considered to be in free field therefore no façade correction will be applied. The monitoring position is considered representative of noise levels experienced at the proposed property. The monitoring position was chosen for equipment security reasons also.

The equipment used for the noise survey is summarised in Table 4.1.

Table 4.1 **Description of Equipment used for Noise Survey**

Equipment	Description	Quantity	Serial Number
Larson Davis Sound Expert LxT1	Type 1 automated logging sound level meter	1	0004702
Larson Davis 377B02	½" microphone	1	319670
Larson Davis	Pre-amplifier	1	069941
Larson Davis CAL200	Class 1 Calibrator	1	12245

The noise survey and measurements were conducted in accordance with BS 7445-1:2003 '*Description and measurement of environmental noise. Guide to quantities and procedures*'.

Weather conditions throughout the entire noise survey period were noted to be cold (approximately 4 - 12° Celsius), 70-100% cloud cover approximately and a light wind (<5m/s). There was some light precipitation throughout the monitoring period. These weather conditions were checked against and confirmed by the use of the Met Office mobile application available on smart phone technology. These conditions were maintained throughout the majority of the survey period and are considered reasonable for undertaking environmental noise measurements.

The noise monitoring equipment was field-calibrated before and after the noise survey period. No significant drift was recorded (± 0.3 dB). Equipment calibration certificates can be provided upon request.

5. NOISE SURVEY RESULTS AND OBSERVATIONS

5.1 Results

The time-based ambient and maximum sound pressure levels at the measurement position during the survey are provided in Table 5.1. A full listing of the noise monitoring data recorded during the measurement survey is provided in Appendix C.

Table 5.1 External Noise Monitoring Results Summary

Period	Measured External Sound Pressure Level, dB
31/10/2023 & 07/11/2023 Daytime (07:00 - 23:00)	65dB $L_{Aeq(16Hr)}$
31/10/2023 – 01/11/2023 Night-time (23:00 - 07:00)	78dB $L_{A_{fmax}}^*$
31/10/2023 – 01/11/2023 Night-time (23:00 - 07:00)	58dB $L_{Aeq(8Hr)}$
01/11/2023 Daytime (07:00 - 23:00)	65dB $L_{Aeq(16Hr)}$
01/11/2023 – 02/11/2023 Night-time (23:00 - 07:00)	72dB $L_{A_{fmax}}^*$
01/11/2023 – 02/11/2023 Night-time (23:00 - 07:00)	61dB $L_{Aeq(8Hr)}$
02/11/2023 Daytime (07:00 - 23:00)	65dB $L_{Aeq(16Hr)}$
02/11/2023 – 03/11/2023 Night-time (23:00 - 07:00)	67dB $L_{A_{fmax}}^*$
02/11/2023 – 03/11/2023 Night-time (23:00 - 07:00)	52dB $L_{Aeq(8Hr)}$
03/11/2023 Daytime (07:00 - 23:00)	62dB $L_{Aeq(16Hr)}$
03/11/2023 – 04/11/2023 Night-time (23:00 - 07:00)	54dB $L_{A_{fmax}}^*$
03/11/2023 – 04/11/2023 Night-time (23:00 - 07:00)	52dB $L_{Aeq(8Hr)}$

*-3dB Façade Correction

**15th highest $L_{A_{fmax}}$ sound pressure level

Period	Measured External Sound Pressure Level, dB
04/11/2023 Daytime (07:00 - 23:00)	62dB $L_{Aeq(16Hr)}$
04/11/2023 – 05/11/2023 Night-time (23:00 - 07:00)	69dB $L_{A_{fmax}}^*$
04/11/2023 – 05/11/2023 Night-time (23:00 - 07:00)	52dB $L_{Aeq(8Hr)}$
05/11/2023 Daytime (07:00 - 23:00)	72dB $L_{Aeq(16Hr)}^{**}$
05/11/2023 – 06/11/2023 Night-time (23:00 - 07:00)	58dB $L_{A_{fmax}}^*$
05/11/2023 – 06/11/2023 Night-time (23:00 - 07:00)	45dB $L_{Aeq(8Hr)}$
06/11/2023 Daytime (07:00 - 23:00)	65dB $L_{Aeq(16Hr)}$
06/11/2023 – 07/11/2023 Night-time (23:00 - 07:00)	58dB $L_{A_{fmax}}^*$
06/11/2023 – 07/11/2023 Night-time (23:00 - 07:00)	52dB $L_{Aeq(8Hr)}$

*15th highest $L_{A_{fmax}}$ sound pressure level

**Anomalous result due to nearby construction work between 10:00 and 17:00 hours.

BS 8233:2014 does not provide specific guidance on night time $L_{A_{fmax}}$ criteria therefore this assessment is based on World Health Organisation (WHO) guidance that states for suitable sleeping conditions 45dB $L_{A_{fmax}}$ should not be exceeded by more than 10-15 times a night within a bedroom. As such, the $L_{A_{fmax}}$ noise levels presented above are the 15th highest measured between 23:00 and 07:00 hours.

5.2 Observations

During the unmanned noise survey, noise sources could not be identified. However, at the beginning and end of the survey background noise was dominated by noise from commercial activities, aircraft and rail noise. These noise sources are considered normal to the site location. It is considered that the measured noise levels are reasonable given the location of the measurement positions.

5.3 Aircraft Movements - Southampton Airport

Due to the proposed site's location approximately 1.5 miles from the Southampton Airport runway, monitoring was completed over a 7-day period to ensure a full assessment of the aircraft noise was completed.

The data in Table 5.3 below presents a comprehensive overview of the arrivals and departures at Southampton Airport during the monitoring period.

Table 5.3 Southampton Airport Arrivals and Departures

Date	Arrival	Departure	Total	Take Off/Landing Direction	
				North	South
31/10/2023	26	22	48	27	21
01/11/2023	23	21	44	31	13
02/11/2023	10	10	20	20	0
03/11/2023	31	29	60	35	25
04/11/2023	20	17	37	19	18
05/11/2023	28	26	54	32	22
06/11/2023	30	27	57	34	23
07/11/2023	29	25	54	31	23

It was noted that all aircraft movements associated with Southampton Airport were during the day (07:00-23:00) and there were no flights during any night-time period.

The flight paths associated with arrivals and departures to/from Southampton Airport can be found in Appendix D.

5.4 Rail Movements – Eastleigh to Hedge End

The overground rail line between Eastleigh and Hedge End passes directly south of the site. Only passenger trains were noted to use the rail line*. A summary of the train movements between Eastleigh and Hedge End during the monitoring period are shown in Table 5.4 below.

Date	First Train Time	Final Train Time	Total Number of Trains
31/10/2023	05:35	23:40	38
01/11/2023	05:35	23:40	38
02/11/2023	05:35	23:40	38
03/11/2023	05:35	23:40	38
04/11/2023	05:30	00:35	38
05/11/2023	07:57	00:35	35
06/11/2023	05:35	23:40	38
07/11/2023	05:35	23:40	38

*www.rail-record.co.uk

One train travelling each direction passes the site each hour except during the period of 07:00 to 09:00 hours on weekdays (Monday to Friday) where there are two trains passing in each direction. A full summary of the rail movements can be found in Appendix D.

5.5 Nearby Commercial Activities

The site is located west of the Allington Business Centre where several commercial businesses are located within 30m to 130m from the proposed development. The businesses and their opening hours are presented below.

Hallett Motors (MOT Centre) – 08:00 - 17:00 hours, Monday to Saturday, close Sunday.

PRMoody Vehicle Repair (Vehicle Repair Shop) – 09:00 – 18:00 hours, Monday to Friday, closed Saturday and Sunday.

JBruno Construction and Restoration (Construction Company) – 09:00 – 17:00 hours, Monday to Friday, closed Saturday and Sunday.

Get Smart Valeting (Car Valeting Service) – 09:00 – 21:00 hours, Monday to Friday and 09:00 – 17:00 hours, Saturday and Sunday

Auto Perfection (Car Body Shop) – 09:00 – 19:00 hours, Monday to Saturday, closed Sunday.

It was also noted that there were storage units and waste collection vehicles parked in an enclosed area close to the site. However, at the time of writing this report, the associated business and opening hours are unknown.

5.6 On-Site Noise

Additional noise from the site was observed with people and animals present during the monitoring period which may have caused an increase in the measured levels. As it is not possible to determine to what extent this may have affected the measured levels, no correction has been applied.

5.7 Review of Results and Surrounding Noise Sources

After reviewing the noise monitoring data and the surrounding noise sources, it is evident that the consistent noise sources from the commercial uses have the greatest impact on the ambient noise levels at the site. This is demonstrated by the increase in ambient levels between 08:00 and 18:00 hours during which period commercial works and vehicle movements are considered to be the dominant noise source.

At the time of the site visits, noise produced by the rail and aircraft movements were audible above the commercial works, however, due to the intermittent nature of these sources, they have less of an impact, as shown by noise levels after 18:00 hours, on the ambient noise over a 16-hour daytime period than the commercial activities.

As there are no commercial activities or aircraft movements and only minimal rail movements between 23:00 hours and 00:35 hours, it can be assumed that the recorded night-time noise levels are from the on-site activities.

6. GUIDANCE & LOCAL AUTHORITY REQUIREMENTS

6.1 NATIONAL PLANNING POLICY

NOISE POLICY STATEMENT FOR ENGLAND (NPSE)

The Noise Policy Statement for England (NPSE) was published on 15th March 2010. It sets out the long-term vision for government noise policy. The Noise Policy aims, as presented in this document, are: *“Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:*

- *Avoid significant adverse impacts on health and quality of life;*
- *mitigate and minimise adverse impacts on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life.’*

It highlights the underlying principles on noise management already found in existing legislation and guidance. The NPSE should apply to all forms of noise including environmental noise.

The NPSE makes reference to the concepts of NOEL (No Observed Effect Level) and LOAEL (Lowest Observed Adverse Effect Level) as used in toxicology but applied to noise impacts. It also introduces the concept of SOAEL (Significant Observed Adverse Effect Level) which is described as 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 effects. The second aim seeks to provide guidance on potential noise impacts that falls between the LOAEL and the SOAEL, in which case:

“...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.”

Importantly, the NPSE goes on to state that:

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

NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

A revised National Planning Policy Framework (NPPF2) was published in September 2023. The revised edition contains no new directions with respect to noise, and all previous references remain. The references quoted below relate to the new September 2023 edition.

Paragraph 180 states that “planning policies and decisions should aim to:

- *Mitigate and reduce to a minimum potential adverse impact resulting from noise from new development and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
- *identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.’*

Paragraph 47 of the NPPF states that “*planning law requires that applications for planning permission must be determined in accordance with the development plan unless material considerations indicate otherwise.*”

The NPPF document does not refer to any other documents or British Standards regarding noise other than the NPSE.

PLANNING PRACTICE GUIDANCE (PPG)

In July 2019, the Department for Communities and Local Government (DCLG) launched a national planning practice guidance (PPG). The guidance advises that when plan-making and decision-taking, the Local Planning Authority should consider the acoustic environment in relation to:

- Whether or not a significant adverse effect is occurring or likely to occur;
- Whether or not an adverse effect is occurring or likely to occur; and
- Whether or not a good standard of amenity can be achieved.

The section on noise includes a table that summarises ‘the noise exposure hierarchy, based on the likely average response’ which offers ‘examples of outcomes’ relevant to the NOEL, LOAEL and SOAEL effect levels described in the NPSE (see above). These outcomes are in descriptive form and the guidance offers no numerical definition of the NOEL, LOAEL and SOAEL, or any further detailed advice regarding methodologies for their determination.

6.2 Local Authority Requirements

Local Authorities usually stipulate internal noise criteria for residential uses based on British Standard 8233:2014 'Guidance on Sound Insulation and noise reduction for buildings'. BS 8233:2014 provides references and guideline values for desirable indoor ambient noise levels for dwellings as shown in Table 6.2 below.

Table 6.2 BS 8233:2014 Desirable Internal Ambient Noise Levels for Dwellings

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq,16hour}$	—
Dining	Dining room/area	40 dB $L_{Aeq,16hour}$	—
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

The table is noted to apply to external noise as it affects the internal acoustic environment from sources without a specific character. The above internal ambient noise levels are considered appropriate within this assessment. The BS 8233:2014 standards are considered to be consistent with the principle aims of the Environmental Health Departments planning policies and the National Planning Policy Framework.

The above internal ambient noise levels are considered appropriate for this assessment.

External Amenity Areas

BS 8233:2014 states that '*for traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed an upper guideline value of 55dB L_{Aeq}* '. The BS 8233:2014 standards are considered to be consistent with the principle aims of the National Planning Policy Framework.

The above external ambient noise levels are considered appropriate for this assessment.

7. FAÇADE SOUND INSULATION

With appropriate sound insulation measures and building construction as exemplified within this report, the site is more than capable of achieving the recommended internal noise levels inside the residential premises. This section of the report provides recommendations of the building fabric required to achieve the desired internal noise levels. All major building elements should be tested in accordance with BS EN ISO 140-3:1995.

Sound reduction performance calculations have been undertaken to specify the minimum performance required from glazed elements as outlined in Table 7.1. The specification has been adopted to achieve the night time level (23:00 – 07:00 hours) for bedrooms, 30dB $L_{Aeq,8hr}$, and the day time level (07:00 – 23:00) for living rooms and bedrooms, 35dB $L_{Aeq,16hr}$. L_{Amax} values of the night time period have been also applied to the calculated sound reduction index of the glazed elements to confirm the limit of 45 L_{Afm} is achieved for single events during the night.

Suggested glazing units other than those provided below may also be suitable. The analysis is provided to demonstrate that a design solution is feasible at the site for the purposes of meeting the requirements of the Local Authority.

Table 7.0 Façade Elevations Required Sound Insulation Performance

Period	Measured Ambient Noise Level, dB	Internal Noise Level Requirement, dB	Minimum Sound Reduction Performance Requirement, dB Rw
Daytime (07:00 - 23:00)	65dB $L_{Aeq(16Hr)}$	35 $L_{Aeq(16Hr)}$	30dB
Night-time (23:00 - 07:00)	78dB L_{Afm} *	45 L_{Afm}	33dB
Night-time (23:00 - 07:00)	61dB $L_{Aeq(8Hr)}$	30 $L_{Aeq(8Hr)}$	31dB

7.1 Non-glazed elements

At the time of writing this report the construction specifications for the residential units had not been finalised.

It is therefore recommended that all external walls and roofs have a minimum SRI of 40dB $D_{nT,w}$ to ensure internal noise levels meet the requirements of BS 8233:2014.

7.2 Glazed Elements

A minimum of 33dB R_w noise reduction is required for all glazed elements in habitable rooms of the proposed development. The performance is specified for the whole window unit, including the frame and other design features such as the inclusion of trickle vents. Glazing performance calculations have been based on achieving the measured ambient (L_{Aeq}) noise levels and for maximum (L_{Amax}) night-time noise levels as given in the noise criteria.

Example glazing specifications which can attain the minimum sound insulation requirements are:

- Pilkington Double Glazed Units – 8/(6-16)/4 – 33dB R_w

7.3 Ventilation

Further to any new glazing requirements, if required internal noise levels should be considered in the context of room ventilation requirements. At the time of writing, full details regarding any ventilation strategy are not available. Notwithstanding this, the Building Regulations' Approved Document F (2010) presents whole dwelling ventilation rates. In this context ventilation can be provided by passive wall or window ventilators. The Building Research Establishment (BRE) has published an Information Paper on the acoustic performance of such passive ventilation systems. 'IP4/99: Ventilators: Ventilation and Acoustic Effectiveness' (October 1999) details a study into the sound reduction performance of fourteen different window mounted trickle ventilators and seven different through-wall passive ventilators. The measured sound reduction performance, after taking into account flanking sound paths (i.e. sound paths that do not travel directly through the vent) and the effective area of the ventilator, ranged up to 46dB $D_{ne,w}$. Attenuation performance for ventilation openings is specified in terms of $D_{ne,w}$. Passive vents to provide ventilation are therefore available that meet or exceed the sound reduction required by the glazing elements and can be constructed into the proposal accordingly.

8. EXTERNAL AMENITY AREAS

With appropriate mitigation measures and building construction as exemplified within this report, the site is more than capable of achieving the recommended external noise levels in the proposed external amenity spaces. This section of the report provides calculations to determine the minimum insertion loss requirements.

Sound reduction performance calculations have been undertaken to specify the minimum insertion loss required from any mitigation measures at the rear of the site as outlined in Table 8.0. As this is considered to be a busy mixed use area, the mitigation measures have been recommended to achieve the upper guideline external level of 55dB $L_{Aeq,T}$ in accordance with BS8233:2014. The measured daytime levels have been used for calculation purposes as this is the period in which the external amenity spaces will be used.

Table 8.0 External Amenity Space Required Insertion Loss

Period	Measured Ambient Noise Level, dB	External Noise Level Requirement, dB	Minimum Insertion Loss Requirement, dB
Daytime (07:00 - 23:00)	65dB $L_{Aeq(16Hr)}$	55 $L_{Aeq,T}$	10dB

8.1 Building/Barrier Screening

It is proposed to install close boarded fencing at a height of 2m along the boundary of the site. As it is considered that the dominant daytime noise sources in the surrounding area are from the nearby commercial activities, the proposed fencing will obscure any line of sight between the residential development and the commercial units. As there will be no direct line of sight, the barrier loss will provide a minimum of 10dB attenuation which will meet the required noise levels for external amenity spaces within BS8233:2014.

9. CONCLUSION

Sound Licensing has undertaken noise monitoring at the proposed development site at Land West of Allington Business Centre, Eastleigh SO50 7DE. The resultant noise levels have been used to specify glazing requirements & minimum construction SRIs to ensure that suitable noise levels are achieved within the proposed residential premises in line with Local Authority planning policy & BS 8233:2014/WHO noise guidelines.

A minimum of 33dB R_w noise reduction is required for all glazed elements in habitable rooms of the proposed development.

Example glazing specifications which can attain the minimum sound insulation requirements are:

- Pilkington Double Glazed Units – 8/(6-16)/4 – 33dB R_w

At the time of writing this report the construction specifications for the residential units had not been finalised. It is therefore recommended that all external walls and roofs have a minimum SRI of 40dB $D_{nT,w}$ to ensure internal noise levels meet the requirements of BS 8233:2014.

With appropriate sound insulation measures installed, the habitable rooms in the proposed development are more than capable of achieving the internal noise level criteria specified in BS8233:2014 and WHO noise guidelines and is considered to comply with the Local Authority planning policy.

It is proposed to install close boarded wooden fencing around the boundary of the site. The fencing will be constructed of a solid material with no gaps in it, to a height of 2m, obscuring any line of site from the dominant daytime commercial noise sources.

With the proposed mitigation measures installed, the external amenity areas should achieve the external noise level criteria specified in BS8233:2014 and is considered to comply with the Local Authority planning policy.

APPENDIX A – ACOUSTIC TERMINOLOGY

Parameter	Description
Acoustic environment	Sound from all sound sources as modified by the environment
Ambient sound	Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far.
Ambient sound level, $L_a = L_{Aeq,T}$	Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T
Background sound level, LA_{90}, T	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels
Decibel (dB)	A logarithmic scale representing the sound pressure or power level relative to the threshold of hearing (20×10^{-6} Pascals).
Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$	Value of the A-weighted sound pressure level in decibels of continuous steady sound that, within a specified time interval, $T = t_2 - t_1$, has the same mean-squared sound pressure as a sound that varies with time
Facade level	Sound pressure level 1 m in front of the facade NOTE Facade level measurements of L_pA are typically 1 dB to 2 dB higher than corresponding free-field measurements because of the reflection from the facade.
Free-field level	Sound pressure level away from reflecting surfaces NOTE Measurements made 1.2 m to 1.5 m above the ground and at least 3.5 m away from other reflecting surfaces are usually regarded as free-field.
L_{Amax}	Maximum noise level (dB)
Measurement time interval, T_m	Total time over which measurements are taken
Noise criteria	Numerical indices used to define design goals in a given space.
Noise rating (NR)	Graphical method for rating a noise by comparing the noise spectrum with a family of noise rating curves.
Reference time interval, T_r	Specified interval over which the specific sound level is determined
Weighted sound reduction index (R_w)	Single-number quantity which characterizes the airborne sound insulating properties of a material or building element over a range of frequencies. NOTE The weighted sound reduction index is used to characterize the insulation of a material or product that has been measured in a laboratory

References:

- British Standard 8233:2014 'Guidance on Sound Insulation and noise reduction for buildings'
- World Health Organisation 2009 'WHO Guidelines for Community Noise'
- National Planning Policy Framework 2023 – Controller of HM Stationery Office
- Noise Planning Statement for England 2010 - Controller of HM Stationery
- Planning Practice Guidance 2019 – Controller of HM Stationery

APPENDIX B - Proposed Plans

Proposed Site Plan

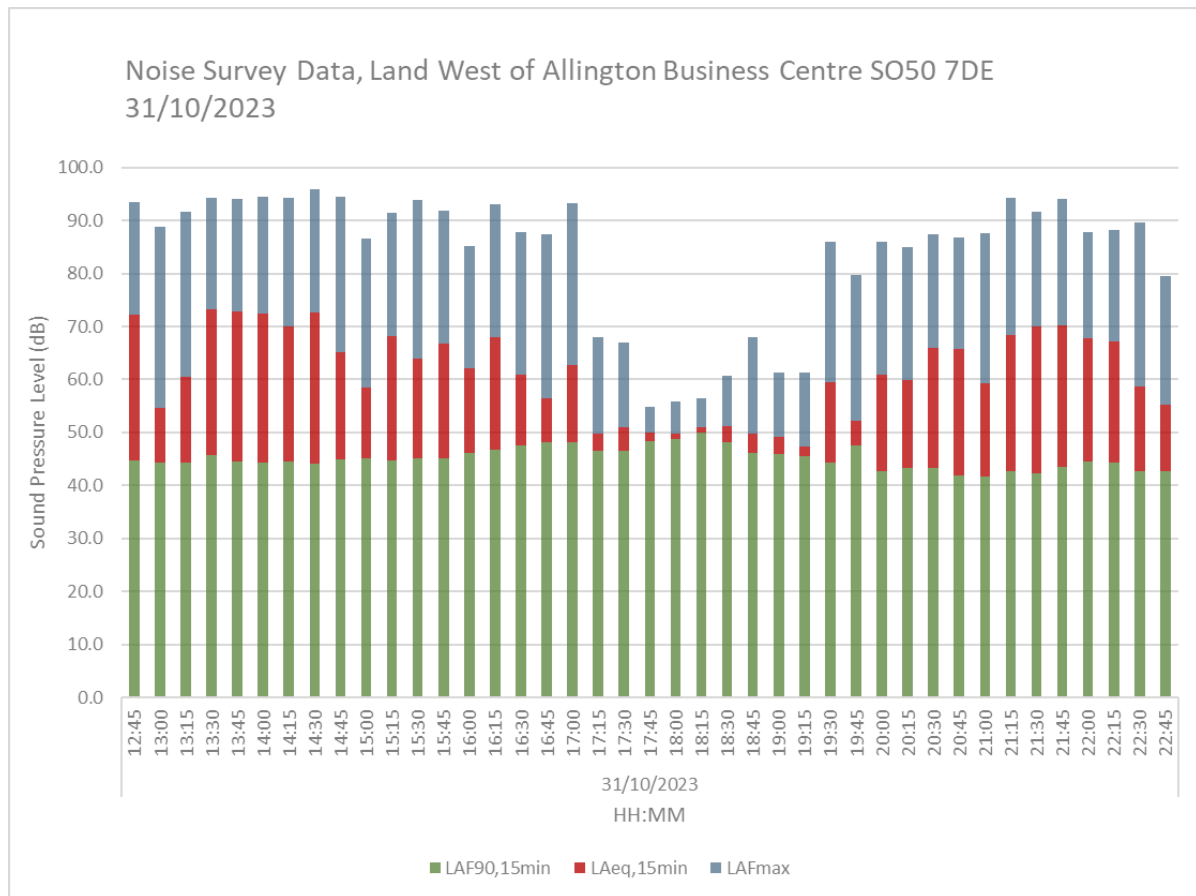


Pilkington 8/(6-16)/4 Data Sheet – Example Glazing Specification

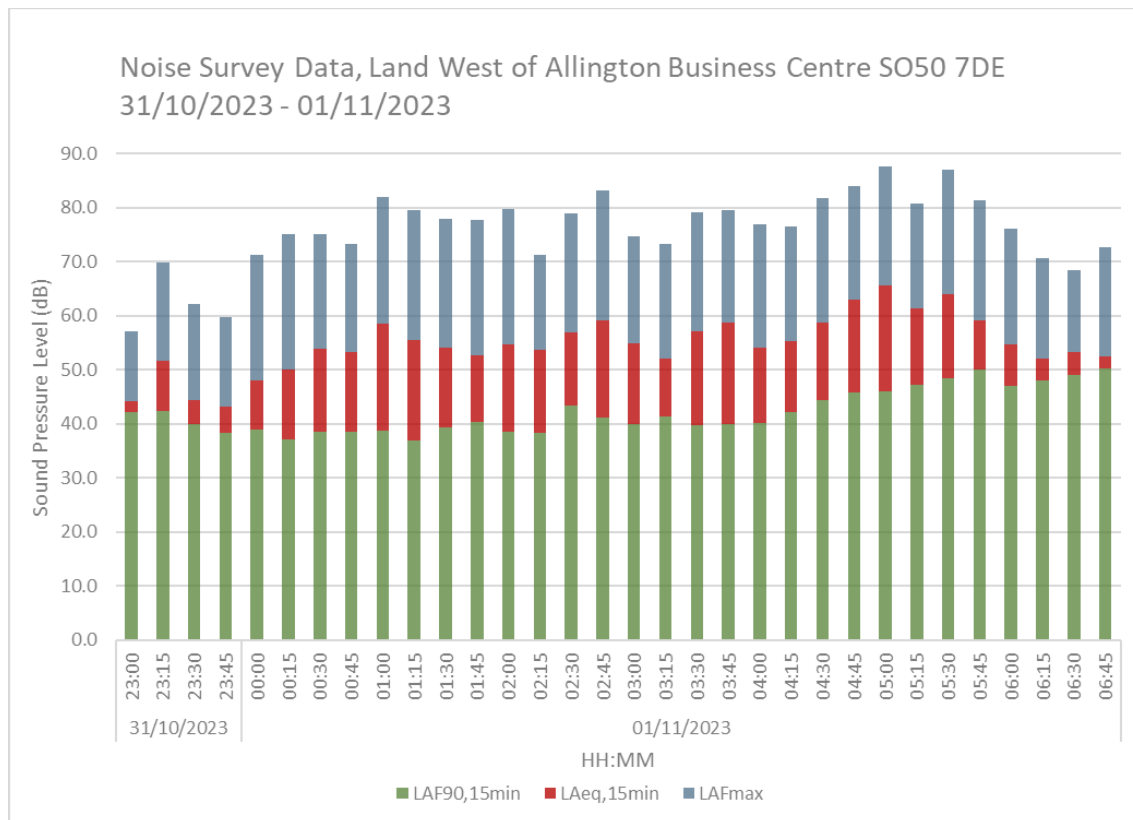
Sound insulation data for standard products

Glass	Sound reduction index (dB)									
	Octaveband Centre Frequency (Hz)						R _w (C; C _{tr})	R _w	R _w +C	R _w +C _{tr}
	125	250	500	1000	2000	4000				
Single glazing										
4 mm Float Glass	17	20	26	32	33	26	29 (-2; -3)	29	27	26
6 mm Float Glass	18	23	30	35	27	32	31 (-2; -3)	31	29	28
8 mm Float Glass	20	24	29	34	29	37	32 (-2; -3)	32	30	29
10 mm Float Glass	23	26	32	31	32	39	33 (-2; -3)	33	31	30
12 mm Float Glass	27	29	31	32	38	47	34 (0; -2)	34	34	32
6 mm Laminated Glass	20	23	29	34	32	38	32 (-1; -3)	32	31	29
8 mm Laminated Glass	20	25	32	35	34	42	33 (-1; -3)	33	32	30
10 mm Laminated Glass	24	26	33	33	35	44	34 (-1; -3)	34	33	31
12 mm Laminated Glass	24	27	33	32	37	46	35 (-1; -3)	35	34	32
16 mm Laminated Glass	26	31	30	35	43	51	36 (-1; -3)	36	35	33
Insulating glass units										
4 mm / (6 - 16 mm) / 4 mm	21	17	25	35	37	31	29 (-1; -4)	29	28	25
6 mm / (6 - 16 mm) / 4 mm	21	20	26	38	37	39	32 (-2; -4)	32	30	28
6 mm / (6 - 16 mm) / 6 mm	20	18	28	38	34	38	31 (-1; -4)	31	30	27
8 mm / (6 - 16 mm) / 4 mm	22	21	28	38	40	47	33 (-1; -4)	33	32	29
8 mm / (6 - 16 mm) / 6 mm	20	21	33	40	36	48	35 (-2; -6)	35	33	29
10 mm / (6 - 16 mm) / 4 mm	24	21	32	37	42	43	35 (-2; -5)	35	33	30
10 mm / (6 - 16 mm) / 6 mm	24	24	32	37	37	44	35 (-1; -3)	35	34	32
6 mm / (6 - 16 mm) / 6 mm Laminated	20	19	30	39	37	46	33 (-2; -5)	33	31	38
6 mm / (6 - 16 mm) / 10 mm Laminated	24	25	33	39	40	49	37 (-1; -5)	37	36	32

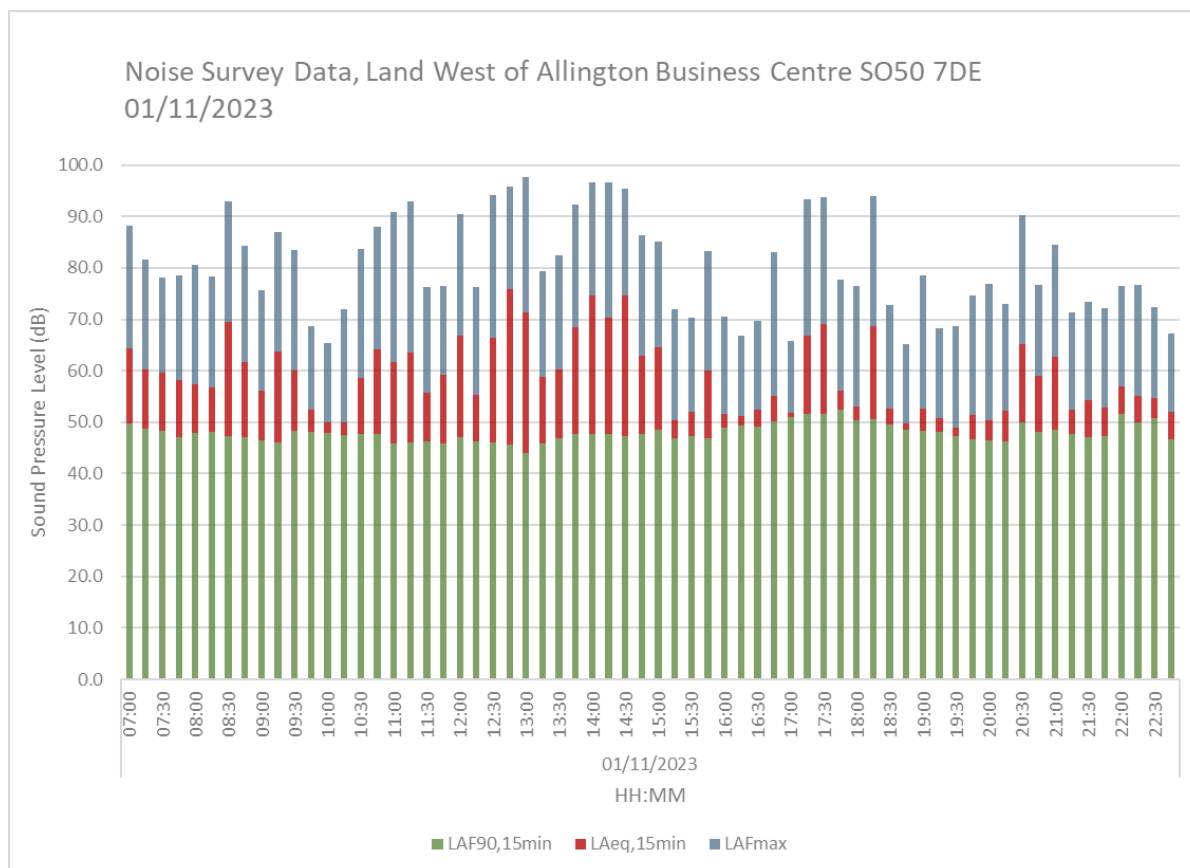
The above are generally accepted values for generic products taken from EN 12758. They are conservative values that can be used in the absence of measured data.
 Data for laminated glass is based on pvb interlayers (excluding acoustic pvb interlayers). Glass thickness for laminated glass excludes interlayer thickness.
 Data can be adopted for air or argon gas-filled cavities

APPENDIX C – Noise Monitoring Data

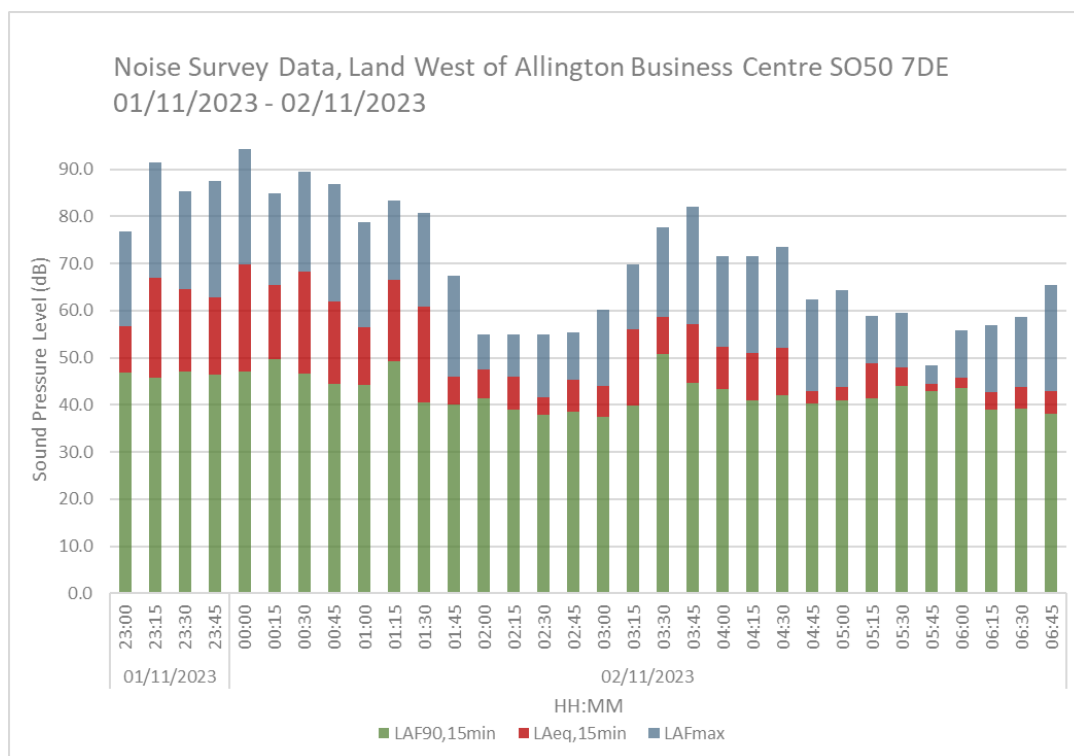
Date	Time	L _{Aeq,15min}	L _{AFmax}	L _{AF90,15min}	L _{Aeq,16hour}	Date	Time	L _{Aeq,15min}	L _{AFmax}	L _{AF90,15min}	L _{Aeq,16hour}
31/10/2023	12:45	72.1	93.4	44.7	65.0	31/10/2023	18:00	49.8	55.9	48.7	65.0
	13:00	54.7	88.8	44.3			18:15	50.9	56.4	50.0	
	13:15	60.5	91.7	44.3			18:30	51.2	60.7	48.1	
	13:30	73.3	94.2	45.7			18:45	49.8	67.9	46.2	
	13:45	72.8	94.0	44.5			19:00	49.2	61.3	45.9	
	14:00	72.5	94.4	44.3			19:15	47.4	61.4	45.6	
	14:15	70.0	94.2	44.5			19:30	59.6	85.9	44.4	
	14:30	72.7	95.9	44.1			19:45	52.2	79.8	47.6	
	14:45	65.2	94.4	45.0			20:00	60.8	85.9	42.7	
	15:00	58.4	86.5	45.2			20:15	59.9	84.9	43.4	
	15:15	68.2	91.5	44.7			20:30	66.0	87.3	43.3	
	15:30	63.9	93.9	45.1			20:45	65.8	86.7	41.9	
	15:45	66.8	91.8	45.2			21:00	59.2	87.5	41.7	
	16:00	62.1	85.1	46.2			21:15	68.5	94.3	42.7	
	16:15	67.9	93.0	46.7			21:30	70.0	91.7	42.4	
	16:30	60.8	87.8	47.6			21:45	70.1	94.1	43.6	
	16:45	56.5	87.3	48.1			22:00	67.7	87.8	44.5	
	17:00	62.8	93.3	48.2			22:15	67.1	88.3	44.4	
	17:15	49.8	68.0	46.5			22:30	58.6	89.5	42.8	
	17:30	51.1	67.1	46.5			22:45	55.3	79.4	42.7	
	17:45	50.0	54.9	48.4							



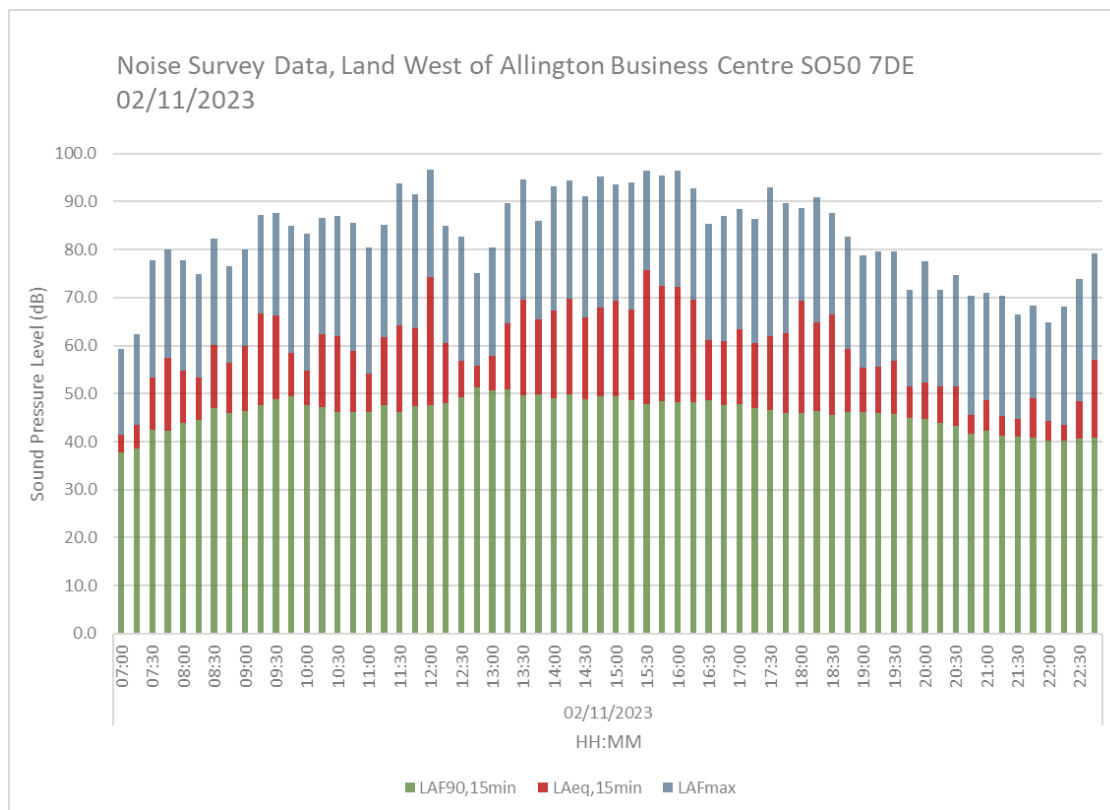
Date	Time	L _{Aeq,15min}	L _{AFmax}	L _{AF90,15min}	L _{Aeq,8hour}
31/10/2023	23:00	44.3	57.1	42.1	57.6
	23:15	51.6	69.8	42.4	
	23:30	44.3	62.2	39.9	
	23:45	43.2	59.7	38.3	
01/11/2023	00:00	48.1	71.3	39.0	
	00:15	50.0	75.1	37.2	
	00:30	53.9	75.1	38.6	
	00:45	53.3	73.3	38.6	
	01:00	58.5	82.0	38.8	
	01:15	55.6	79.6	36.9	
	01:30	54.0	77.9	39.3	
	01:45	52.6	77.8	40.4	
	02:00	54.8	79.7	38.5	
	02:15	53.8	71.2	38.3	
	02:30	57.0	78.9	43.4	
	02:45	59.1	83.2	41.2	
	03:00	54.8	74.7	40.0	
	03:15	52.2	73.3	41.3	
	03:30	57.1	79.2	39.7	
	03:45	58.9	79.6	39.9	
	04:00	54.2	77.0	40.2	
	04:15	55.4	76.6	42.2	
	04:30	58.7	81.8	44.5	
	04:45	63.1	84.1	45.9	
	05:00	65.6	87.6	46.0	
	05:15	61.3	80.7	47.2	
	05:30	64.0	87.0	48.4	
	05:45	59.1	81.4	50.0	
	06:00	54.8	76.2	47.0	
	06:15	52.2	70.7	48.0	
	06:30	53.3	68.5	49.1	
	06:45	52.6	72.7	50.2	



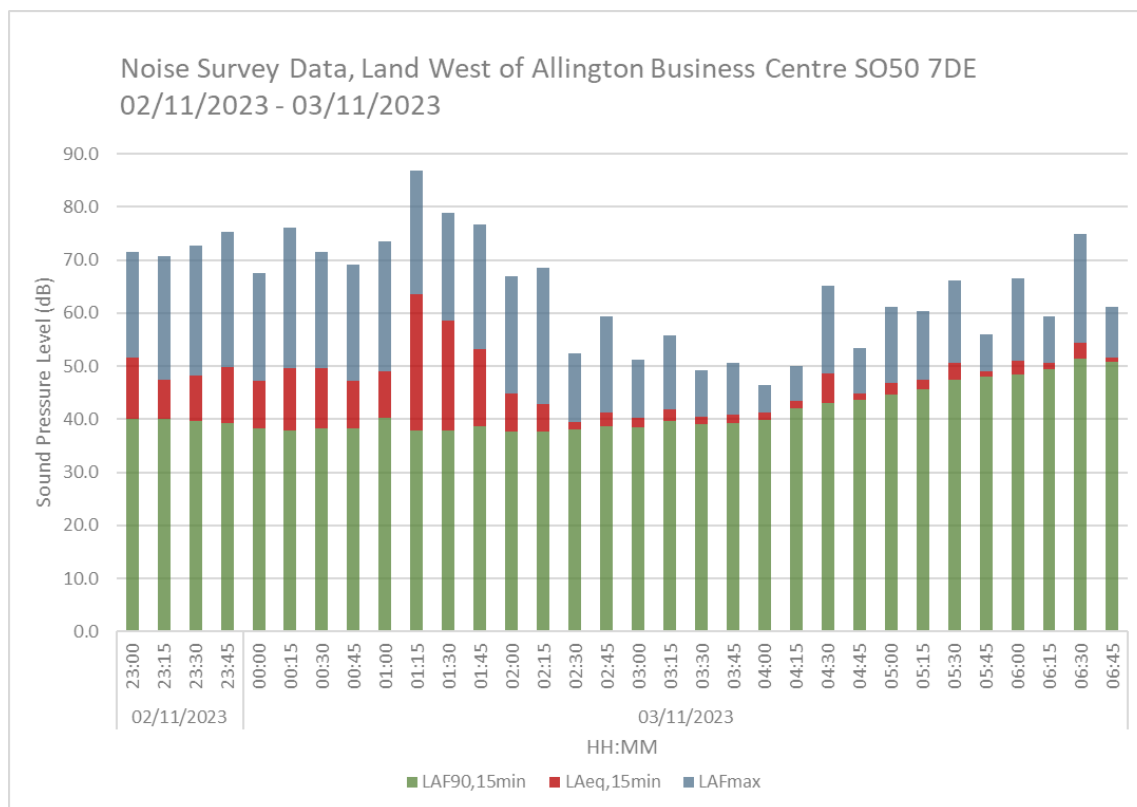
Date	Time	L _{Aeq,15min}	L _{AFmax}	L _{AF90,15min}	L _{Aeq,16hour}	Date	Time	L _{Aeq,15min}	L _{AFmax}	L _{AF90,15min}	L _{Aeq,16hour}
01/11/2023	07:00	64.4	88.1	49.8	65.1	01/11/2023	15:00	64.5	85.0	48.6	65.1
	07:15	60.3	81.6	48.7			15:15	50.4	72.0	46.8	
	07:30	59.6	78.1	48.3			15:30	52.0	70.4	47.3	
	07:45	58.2	78.6	47.1			15:45	60.0	83.3	46.9	
	08:00	57.5	80.5	48.0			16:00	51.6	70.4	48.9	
	08:15	56.8	78.4	48.2			16:15	51.2	66.7	49.3	
	08:30	69.5	92.9	47.3			16:30	52.3	69.6	49.1	
	08:45	61.6	84.2	47.0			16:45	55.0	83.1	50.2	
	09:00	56.0	75.6	46.5			17:00	51.9	65.8	51.0	
	09:15	63.7	86.9	46.0			17:15	66.8	93.4	51.6	
	09:30	59.9	83.4	48.3			17:30	69.0	93.7	51.7	
	09:45	52.4	68.7	48.1			17:45	56.2	77.7	52.5	
	10:00	50.0	65.5	48.0			18:00	53.0	76.5	50.4	
	10:15	49.9	72.0	47.5			18:15	68.7	93.9	50.5	
	10:30	58.6	83.7	47.8			18:30	52.7	72.7	49.6	
	10:45	64.0	88.1	47.6			18:45	49.9	65.1	48.5	
	11:00	61.7	90.9	45.9			19:00	52.5	78.6	48.4	
	11:15	63.5	92.9	46.0			19:15	50.8	68.2	48.1	
	11:30	55.6	76.2	46.2			19:30	49.0	68.7	47.3	
	11:45	59.2	76.5	45.8			19:45	51.4	74.7	46.7	
	12:00	66.8	90.4	47.0			20:00	50.4	76.9	46.4	
	12:15	55.2	76.2	46.3			20:15	52.2	73.0	46.2	
	12:30	66.3	94.1	46.0			20:30	65.2	90.3	49.9	
	12:45	75.8	95.8	45.7			20:45	59.1	76.7	48.1	
01/11/2023	13:00	71.3	97.8	44.1	65.1		21:00	62.8	84.6	48.5	65.1
	13:15	58.8	79.3	45.9			21:15	52.4	71.3	47.8	
	13:30	60.2	82.4	46.8			21:30	54.2	73.4	47.1	
	13:45	68.4	92.3	47.6			21:45	52.9	72.2	47.2	
	14:00	74.7	96.7	47.7			22:00	56.9	76.6	51.6	
	14:15	70.4	96.7	47.8			22:15	55.1	76.8	49.9	
	14:30	74.7	95.5	47.2			22:30	54.6	72.4	50.7	
	14:45	62.8	86.4	47.8			22:45	52.1	67.2	46.7	



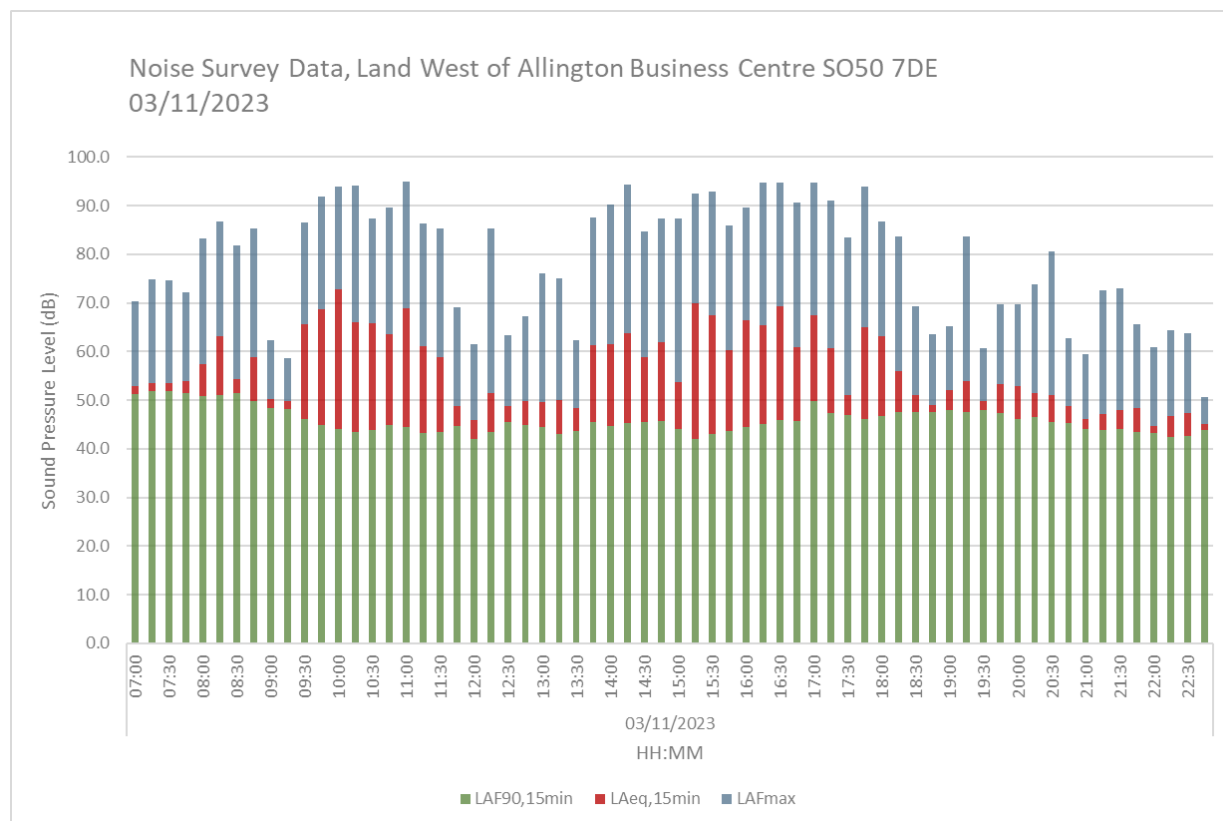
Date	Time	L _{Aeq,15min}	L _{AFmax}	L _{AF90,15min}	L _{Aeq,8hour}
01/11/2023	23:00	56.7	76.7	46.9	61.0
	23:15	67.0	91.4	45.7	
	23:30	64.5	85.4	47.0	
	23:45	62.8	87.6	46.5	
02/11/2023	00:00	69.7	94.3	47.1	
	00:15	65.4	85.0	49.6	
	00:30	68.2	89.6	46.7	
	00:45	61.9	86.9	44.4	
	01:00	56.4	78.8	44.3	
	01:15	66.4	83.4	49.2	
	01:30	60.8	80.8	40.6	
	01:45	46.1	67.5	40.0	
	02:00	47.5	55.0	41.5	
	02:15	46.0	54.9	39.0	
	02:30	41.5	54.9	37.8	
	02:45	45.2	55.4	38.6	
	03:00	44.0	60.3	37.5	
	03:15	56.1	69.8	39.8	
	03:30	58.7	77.8	50.7	
	03:45	57.2	82.1	44.7	
	04:00	52.4	71.6	43.3	
	04:15	51.0	71.5	41.0	
	04:30	52.2	73.6	42.1	
	04:45	43.0	62.3	40.4	
	05:00	43.8	64.4	41.0	
	05:15	48.8	58.8	41.3	
	05:30	48.0	59.6	44.0	
	05:45	44.4	48.3	42.9	
	06:00	45.8	55.8	43.6	
	06:15	42.7	56.9	39.0	
	06:30	43.8	58.7	39.3	
	06:45	43.0	65.5	38.2	



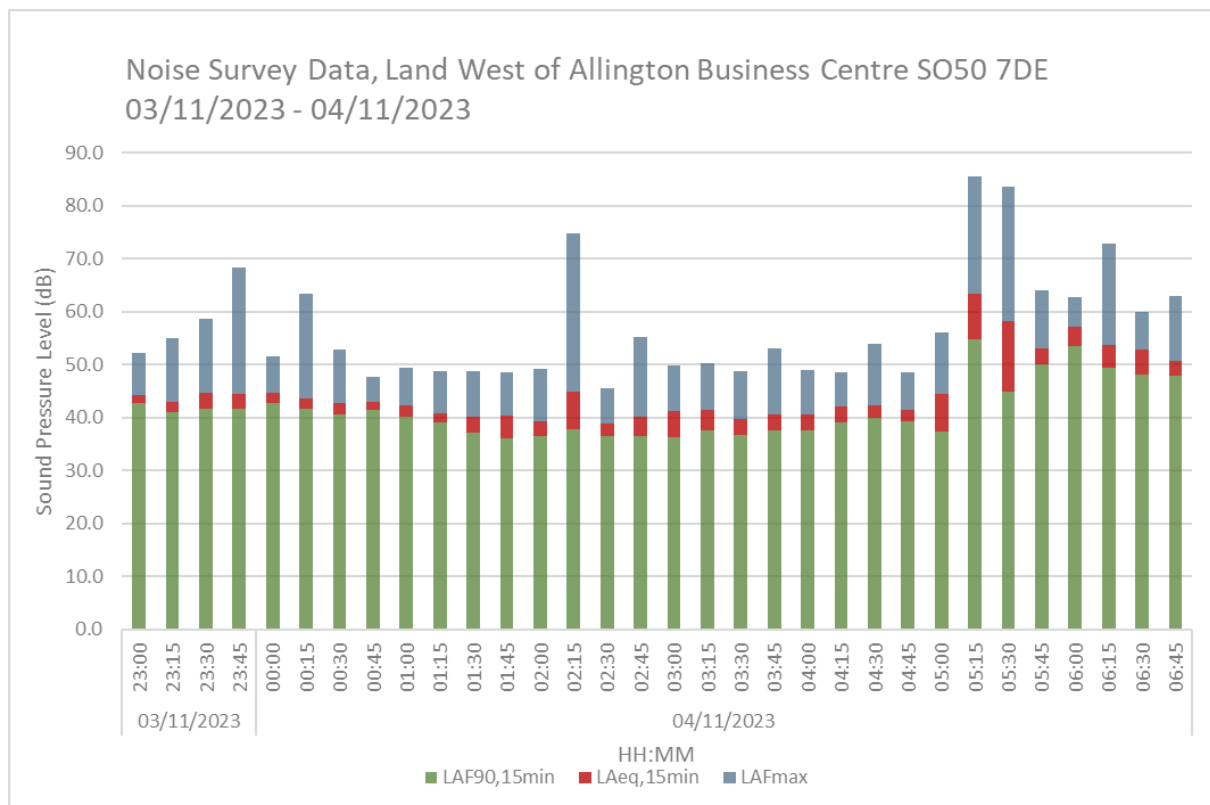
Date	Time	L _{Aeq,15min}	L _{AFmax}	L _{AF90,15min}	L _{Aeq,16hour}	Date	Time	L _{Aeq,15min}	L _{AFmax}	L _{AF90,15min}	L _{Aeq,16hour}
02/11/2023	07:00	41.5	59.2	37.8	65.3	02/11/2023	15:00	69.3	93.6	49.5	65.3
	07:15	43.6	62.3	38.5			15:15	67.6	94.1	48.7	
	07:30	53.4	77.7	42.4			15:30	75.6	96.3	47.8	
	07:45	57.4	80.0	42.2			15:45	72.4	95.4	48.5	
	08:00	54.7	77.8	43.8			16:00	72.1	96.5	48.2	
	08:15	53.2	74.8	44.6			16:15	69.6	92.7	48.2	
	08:30	60.1	82.3	46.9			16:30	61.2	85.3	48.6	
	08:45	56.3	76.5	45.9			16:45	61.0	87.0	47.6	
	09:00	59.9	79.9	46.3			17:00	63.4	88.3	47.7	
	09:15	66.7	87.2	47.6			17:15	60.5	86.3	46.9	
	09:30	66.2	87.6	48.9			17:30	62.0	92.9	46.6	
	09:45	58.5	85.0	49.5			17:45	62.6	89.7	45.9	
	10:00	54.7	83.3	47.6			18:00	69.4	88.6	46.0	
	10:15	62.3	86.5	47.2			18:15	64.9	90.9	46.3	
	10:30	61.9	87.1	46.1			18:30	66.4	87.5	45.6	
	10:45	59.0	85.5	46.1			18:45	59.3	82.7	46.1	
	11:00	54.2	80.4	46.2			19:00	55.4	78.9	46.2	
	11:15	61.8	85.1	47.5			19:15	55.6	79.6	45.9	
	11:30	64.1	93.7	46.1			19:30	56.8	79.5	45.7	
	11:45	63.7	91.5	47.3			19:45	51.4	71.6	44.9	
	12:00	74.3	96.6	47.5			20:00	52.3	77.5	44.7	
	12:15	60.5	85.0	48.0			20:15	51.5	71.5	43.9	
	12:30	56.8	82.8	49.3			20:30	51.5	74.8	43.3	
	12:45	55.8	75.0	51.2			20:45	45.6	70.3	41.7	
	13:00	57.8	80.4	50.6			21:00	48.7	70.9	42.3	
	13:15	64.6	89.7	50.9			21:15	45.4	70.3	41.2	
	13:30	69.5	94.6	49.7			21:30	44.7	66.4	41.1	
	13:45	65.5	86.1	49.9			21:45	49.1	68.2	40.8	
	14:00	67.3	93.0	49.1			22:00	44.3	64.9	40.1	
	14:15	69.7	94.4	49.9			22:15	43.5	68.1	40.2	
	14:30	65.9	91.0	48.8			22:30	48.4	73.8	40.7	
	14:45	67.8	95.3	49.4			22:45	57.0	79.1	40.8	



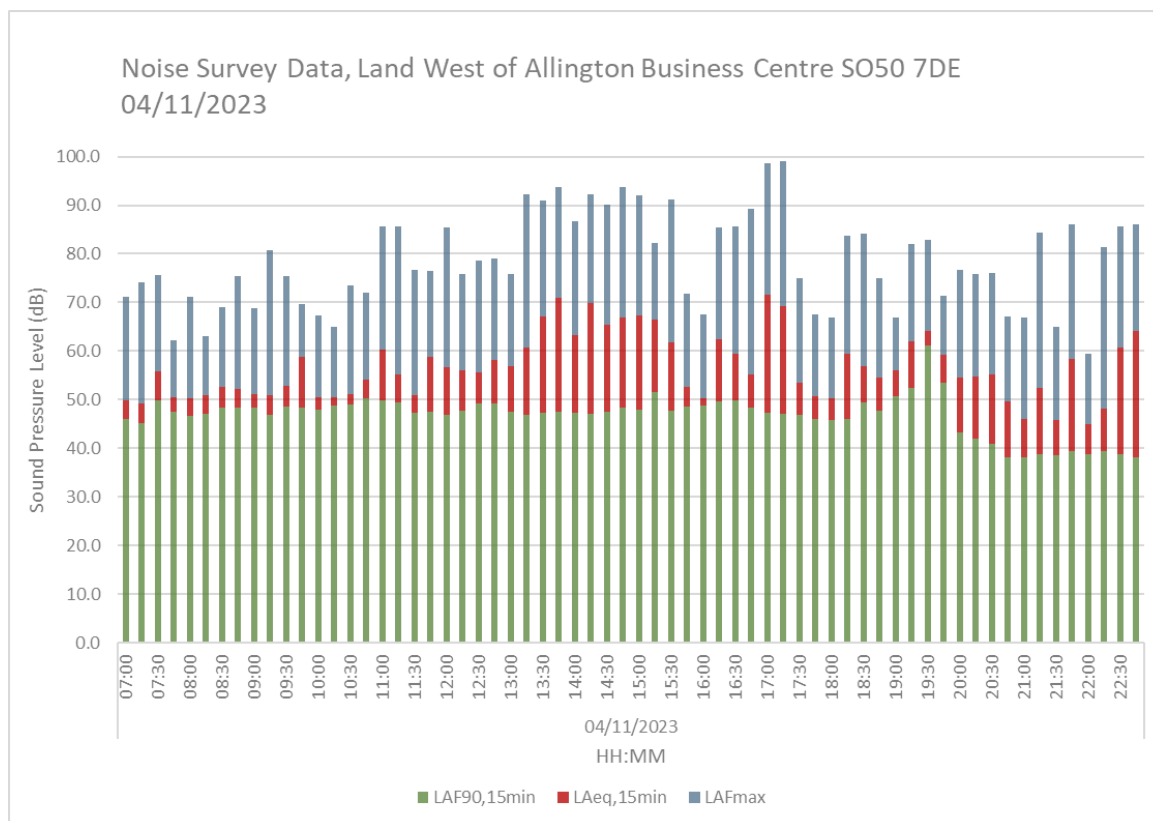
Date	Time	L _{Aeq,15min}	L _{AFmax}	L _{AF90,15min}	L _{Aeq,Shour}
02/11/2023	23:00	51.7	71.6	40.1	52.1
	23:15	47.4	70.7	40.0	
	23:30	48.2	72.8	39.6	
	23:45	49.8	75.3	39.2	
	00:00	47.2	67.6	38.2	
03/11/2023	00:15	49.6	76.2	37.9	
	00:30	49.7	71.6	38.3	
	00:45	47.2	69.2	38.2	
	01:00	49.0	73.6	40.2	
	01:15	63.7	86.9	37.8	
	01:30	58.6	79.0	37.9	
	01:45	53.3	76.6	38.7	
	02:00	44.9	66.9	37.7	
	02:15	42.8	68.5	37.7	
	02:30	39.5	52.4	38.0	
	02:45	41.3	59.3	38.7	
	03:00	40.3	51.2	38.5	
	03:15	41.8	55.8	39.7	
	03:30	40.5	49.3	39.1	
	03:45	40.9	50.6	39.2	
	04:00	41.3	46.4	39.9	
	04:15	43.5	49.9	42.1	
	04:30	48.6	65.1	43.1	
	04:45	44.8	53.5	43.6	
	05:00	46.9	61.1	44.6	
	05:15	47.4	60.5	45.7	
	05:30	50.6	66.1	47.5	
	05:45	49.0	56.0	48.0	
	06:00	51.1	66.5	48.4	
	06:15	50.7	59.3	49.5	
	06:30	54.5	74.9	51.4	
	06:45	51.6	61.2	50.9	



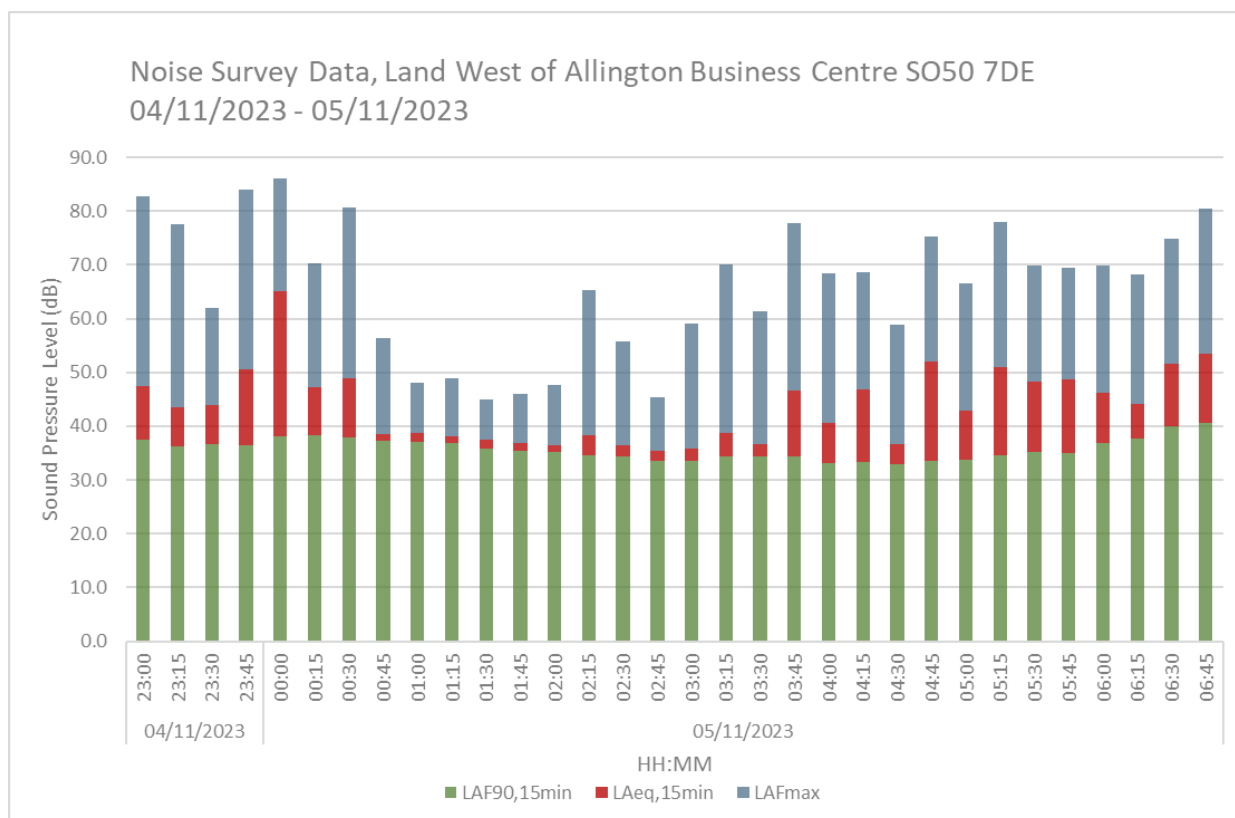
Date	Time	L _{Aeq,15min}	L _{AFmax}	L _{AF90,15min}	L _{Aeq,16hour}	Date	Time	L _{Aeq,15min}	L _{AFmax}	L _{AF90,15min}	L _{Aeq,16hour}
03/11/2023	07:00	53.0	70.3	51.2	62.4	03/11/2023	15:00	53.6	87.4	44.1	62.4
	07:15	53.5	74.8	51.8			15:15	69.9	92.5	42.0	
	07:30	53.5	74.7	51.8			15:30	67.4	92.8	43.0	
	07:45	54.0	72.1	51.5			15:45	60.3	86.0	43.7	
	08:00	57.4	83.2	50.9			16:00	66.4	89.6	44.5	
	08:15	63.1	86.7	51.0			16:15	65.4	94.7	45.1	
	08:30	54.2	81.8	51.4			16:30	69.3	94.7	46.0	
	08:45	58.8	85.3	49.8			16:45	60.8	90.7	45.6	
	09:00	50.2	62.2	48.3			17:00	67.5	94.6	49.9	
	09:15	49.7	58.7	48.1			17:15	60.8	91.1	47.4	
	09:30	65.7	86.5	46.1			17:30	51.1	83.4	46.9	
	09:45	68.8	91.8	44.8			17:45	65.0	94.0	46.1	
	10:00	72.8	94.0	44.0			18:00	63.2	86.8	46.7	
	10:15	66.1	94.1	43.5			18:15	55.9	83.6	47.5	
	10:30	65.8	87.3	43.9			18:30	51.0	69.4	47.5	
	10:45	63.5	89.7	44.8			18:45	49.1	63.5	47.5	
	11:00	68.9	94.9	44.4			19:00	52.0	65.1	47.9	
	11:15	61.2	86.3	43.2			19:15	53.9	83.7	47.6	
	11:30	58.7	85.3	43.4			19:30	49.9	60.7	47.9	
	11:45	48.9	69.0	44.7			19:45	53.3	69.7	47.3	
	12:00	45.9	61.5	42.1			20:00	52.8	69.7	46.1	
	12:15	51.4	85.4	43.5			20:15	51.3	73.8	46.6	
	12:30	48.7	63.4	45.4			20:30	51.0	80.6	45.5	
	12:45	49.7	67.3	44.9			20:45	48.8	62.8	45.2	
	13:00	49.7	76.0	44.4			21:00	46.0	59.4	44.0	
	13:15	50.1	75.1	43.0			21:15	47.0	72.7	43.9	
	13:30	48.4	62.3	43.6			21:30	47.9	72.9	44.1	
	13:45	61.3	87.5	45.5			21:45	48.5	65.6	43.5	
	14:00	61.5	90.2	44.7			22:00	44.7	60.8	43.3	
	14:15	63.8	94.3	45.2			22:15	46.8	64.3	42.5	
	14:30	58.9	84.6	45.5			22:30	47.3	63.7	42.7	
	14:45	62.0	87.3	45.6			22:45	45.0	50.6	43.9	



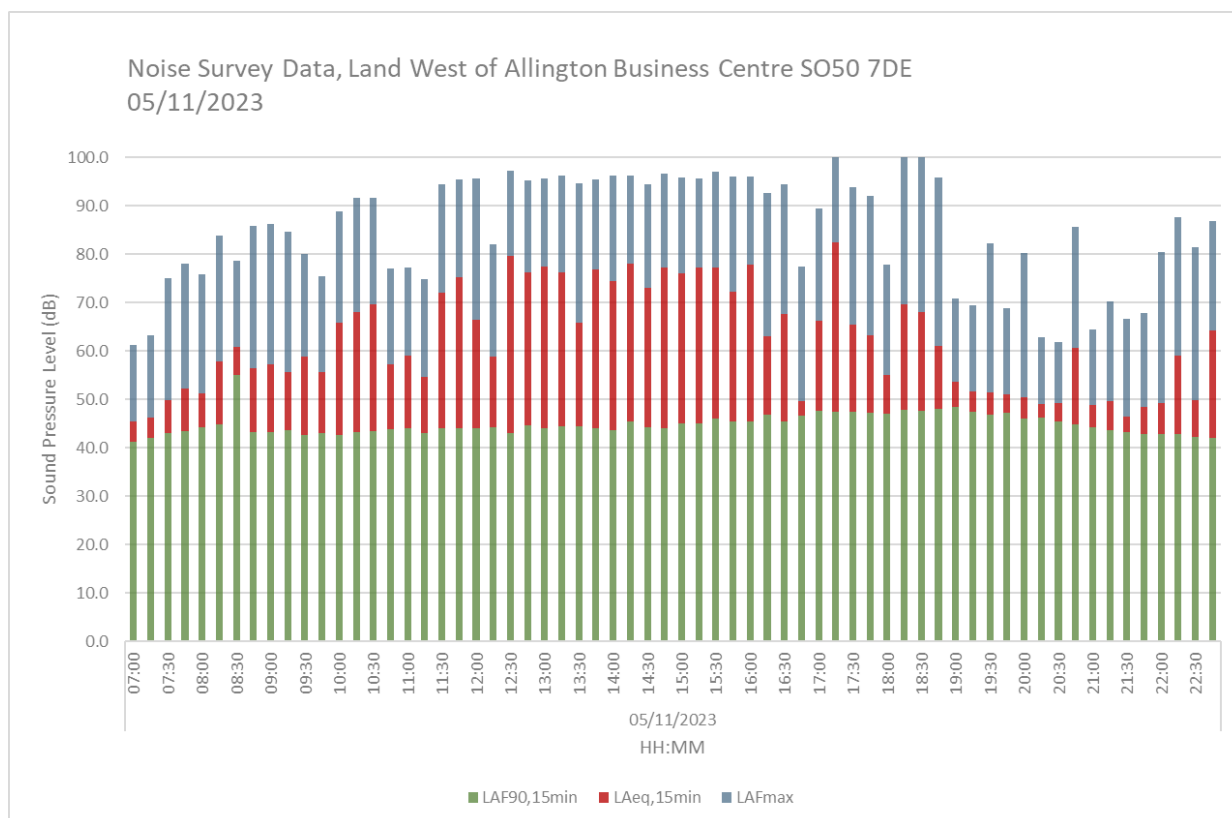
Date	Time	L _{Aeq,15min}	L _{AFmax}	L _{AF90,15min}	L _{Aeq,8hour}
03/11/2023	23:00	44.2	52.2	42.7	51.6
	23:15	43.1	55.0	41.1	
	23:30	44.6	58.6	41.6	
	23:45	44.5	68.3	41.7	
04/11/2023	00:00	44.7	51.5	42.8	
	00:15	43.5	63.4	41.7	
	00:30	42.8	52.8	40.7	
	00:45	42.9	47.7	41.4	
	01:00	42.4	49.4	40.2	
	01:15	40.7	48.7	39.0	
	01:30	40.3	48.8	37.1	
	01:45	40.3	48.5	36.1	
	02:00	39.3	49.2	36.6	
	02:15	44.9	74.7	37.7	
	02:30	38.9	45.6	36.6	
	02:45	40.1	55.3	36.6	
	03:00	41.2	49.9	36.4	
	03:15	41.4	50.3	37.6	
	03:30	39.7	48.8	36.7	
	03:45	40.6	53.1	37.6	
	04:00	40.7	48.9	37.5	
	04:15	42.0	48.6	39.1	
	04:30	42.4	54.0	40.0	
	04:45	41.4	48.5	39.2	
	05:00	44.5	56.2	37.4	
	05:15	63.5	85.5	54.8	
	05:30	58.3	83.5	44.8	
	05:45	53.2	64.0	50.0	
	06:00	57.1	62.8	53.4	
	06:15	53.7	72.8	49.4	
	06:30	52.8	60.1	48.2	
	06:45	50.6	63.0	47.9	



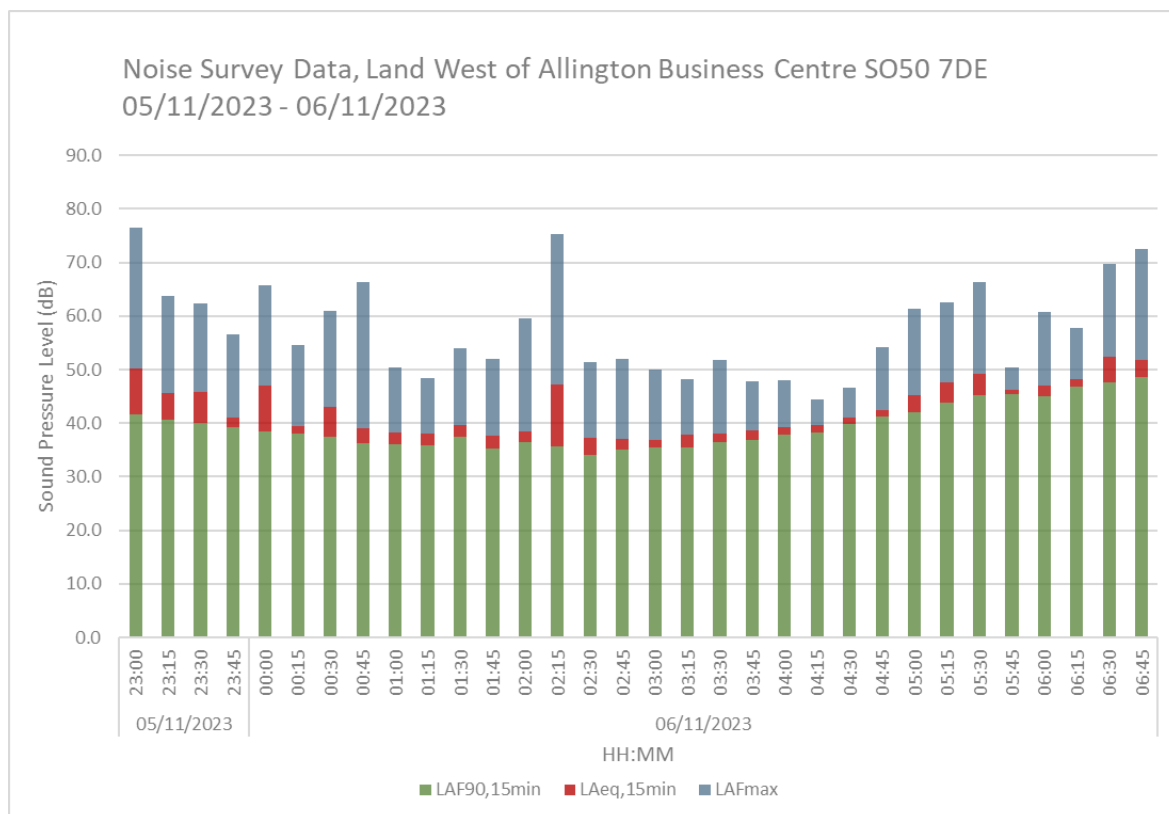
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04/11/2023	07:00	49.9	71.1	46.0	61.8	04/11/2023	15:00	67.4	92.0	48.0	61.8
	07:15	49.3	74.1	45.1			15:15	66.4	82.3	51.5	
	07:30	55.8	75.7	49.8			15:30	61.9	91.2	47.8	
	07:45	50.4	62.1	47.5			15:45	52.6	71.9	48.6	
	08:00	50.3	71.1	46.7			16:00	50.3	67.5	48.8	
	08:15	51.0	63.1	47.0			16:15	62.4	85.3	49.6	
	08:30	52.5	69.0	48.3			16:30	59.4	85.7	49.8	
	08:45	52.3	75.4	48.3			16:45	55.2	89.2	48.4	
	09:00	51.2	68.9	48.3			17:00	71.6	98.7	47.4	
	09:15	50.9	80.7	46.9			17:15	69.2	99.1	47.1	
	09:30	52.9	75.4	48.6			17:30	53.4	74.9	46.9	
	09:45	58.7	69.8	48.4			17:45	50.7	67.6	46.0	
	10:00	50.6	67.4	48.0			18:00	50.3	66.9	45.8	
	10:15	50.5	65.0	48.7			18:15	59.5	83.7	46.0	
	10:30	51.1	73.4	49.1			18:30	56.9	84.1	49.4	
	10:45	54.1	72.0	50.3			18:45	54.6	75.0	47.8	
	11:00	60.4	85.6	49.9			19:00	56.1	66.8	50.8	
	11:15	55.2	85.6	49.5			19:15	62.0	82.0	52.4	
	11:30	51.0	76.8	47.3			19:30	64.2	82.8	61.2	
	11:45	58.8	76.5	47.5			19:45	59.2	71.4	53.4	
	12:00	56.7	85.4	46.9			20:00	54.6	76.7	43.2	
	12:15	56.1	75.9	47.7			20:15	54.8	75.8	41.9	
	12:30	55.5	78.7	49.3			20:30	55.2	76.1	40.9	
	12:45	58.2	79.0	49.2			20:45	49.6	67.1	38.1	
	13:00	56.8	75.9	47.6			21:00	46.1	66.8	38.2	
	13:15	60.7	92.2	46.8			21:15	52.4	84.4	38.8	
	13:30	67.0	91.0	47.4			21:30	45.7	64.9	38.6	
	13:45	71.0	93.6	47.6			21:45	58.5	86.1	39.4	
	14:00	63.2	86.7	47.3			22:00	45.0	59.5	38.8	
	14:15	69.9	92.3	47.2			22:15	48.2	81.3	39.5	
	14:30	65.3	90.0	47.5			22:30	60.7	85.7	38.9	
	14:45	67.0	93.7	48.3			22:45	64.2	86.0	38.1	



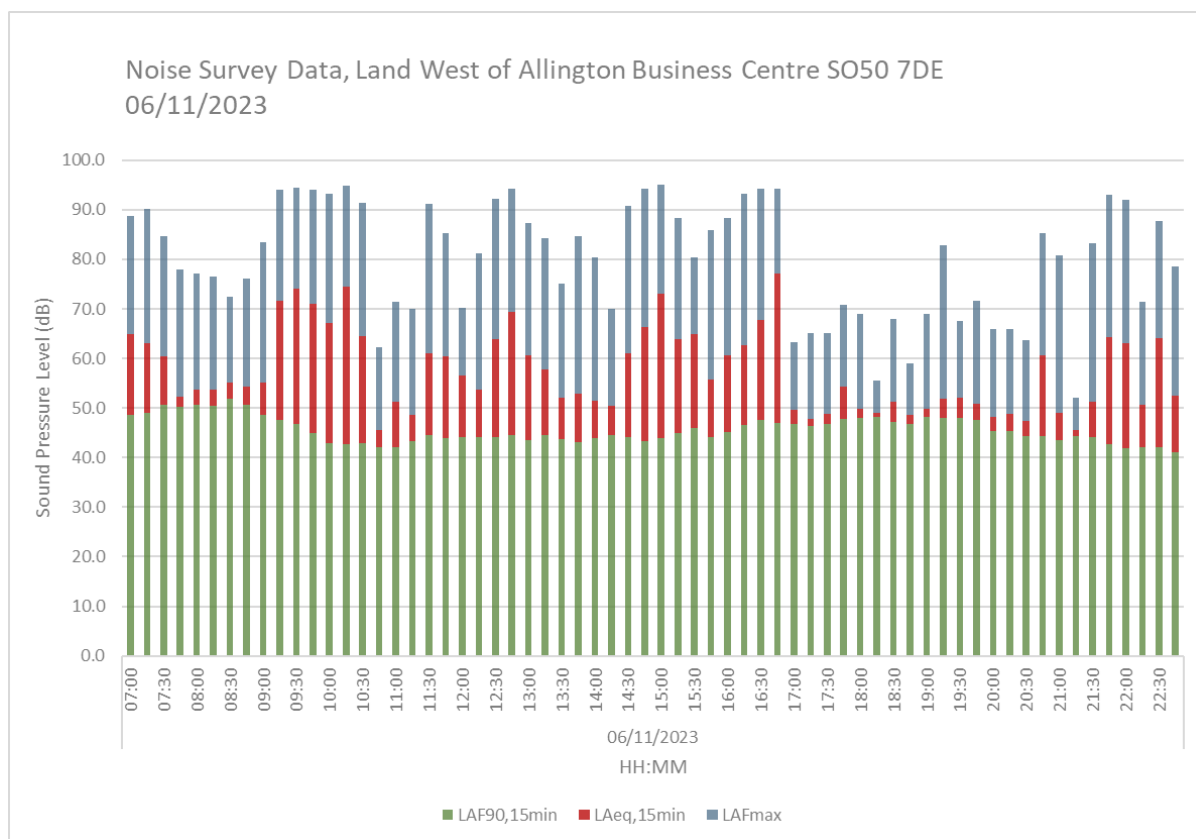
Date	Time	L _{Aeq,15min}	L _{AFmax}	L _{AF90,15min}	L _{Aeq,8hour}
04/11/2023	23:00	47.4	82.7	37.4	51.6
	23:15	43.4	77.6	36.2	
	23:30	43.9	62.1	36.7	
	23:45	50.6	83.9	36.5	
05/11/2023	00:00	65.0	86.0	38.1	
	00:15	47.3	70.2	38.3	
	00:30	48.9	80.6	38.0	
	00:45	38.6	56.4	37.2	
	01:00	38.7	48.1	37.1	
	01:15	38.0	48.9	36.8	
	01:30	37.4	45.1	35.9	
	01:45	36.9	46.0	35.5	
	02:00	36.6	47.8	35.2	
	02:15	38.4	65.3	34.6	
	02:30	36.5	55.9	34.4	
	02:45	35.4	45.3	33.6	
	03:00	35.9	59.1	33.5	
	03:15	38.7	70.1	34.4	
	03:30	36.6	61.4	34.4	
	03:45	46.7	77.7	34.3	
	04:00	40.7	68.5	33.2	
	04:15	46.9	68.7	33.4	
	04:30	36.6	58.9	32.9	
	04:45	52.0	75.4	33.6	
	05:00	42.9	66.5	33.7	
	05:15	50.9	78.0	34.5	
	05:30	48.2	69.8	35.3	
	05:45	48.6	69.4	35.1	
	06:00	46.3	69.9	36.8	
	06:15	44.2	68.3	37.7	
	06:30	51.7	74.8	39.9	
	06:45	53.4	80.4	40.7	



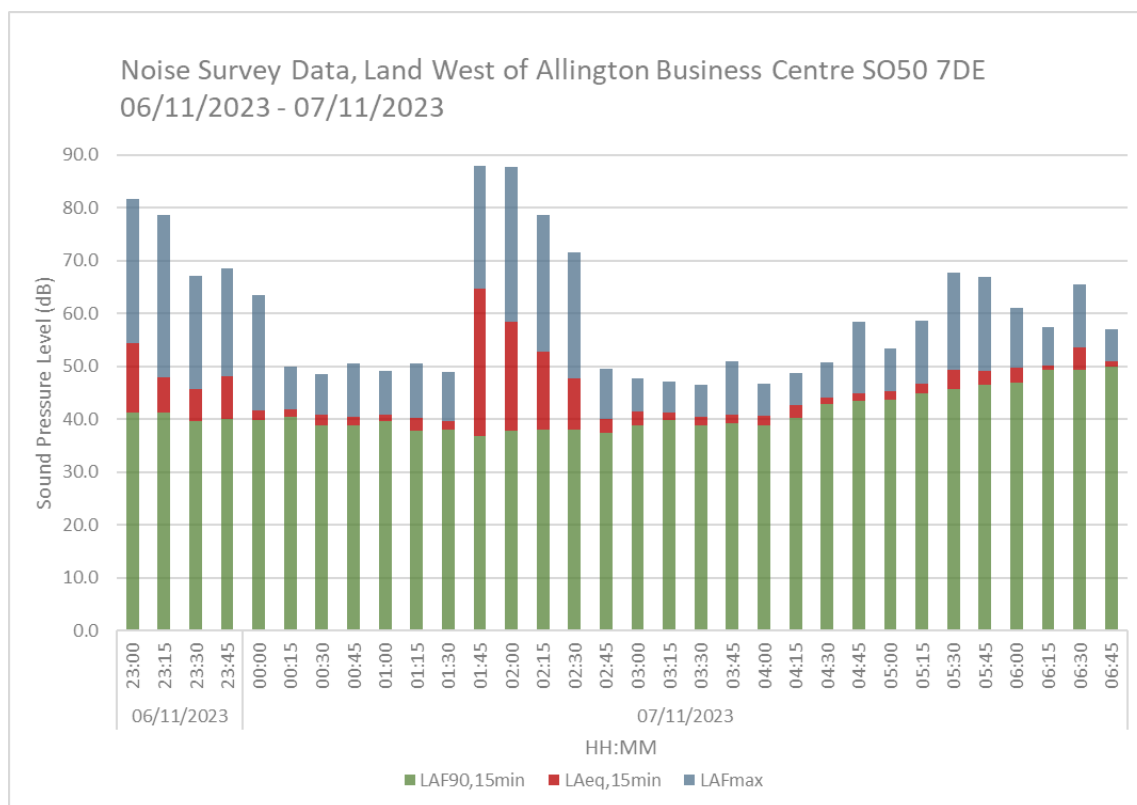
Date	Time	L _{Aeq,15min}	L _{AFmax}	L _{AF90,15min}	L _{Aeq,16hour}	Date	Time	L _{Aeq,15min}	L _{AFmax}	L _{AF90,15min}	L _{Aeq,16hour}
05/11/2023	07:00	45.4	61.2	41.3	71.8	05/11/2023	15:00	76.0	95.8	45.0	71.8
	07:15	46.2	63.2	42.0			15:15	77.2	95.7	45.0	
	07:30	49.8	75.1	43.0			15:30	77.2	97.0	46.1	
	07:45	52.2	78.1	43.5			15:45	72.2	95.9	45.4	
	08:00	51.2	75.8	44.2			16:00	77.8	96.0	45.5	
	08:15	57.8	83.8	44.9			16:15	63.0	92.7	46.8	
	08:30	60.9	78.7	55.1			16:30	67.6	94.5	45.4	
	08:45	56.5	85.7	43.3			16:45	49.6	77.4	46.7	
	09:00	57.3	86.2	43.2			17:00	66.3	89.4	47.6	
	09:15	55.6	84.6	43.7			17:15	82.5	104.3	47.5	
	09:30	58.8	80.1	42.7			17:30	65.5	93.7	47.5	
	09:45	55.7	75.5	43.0			17:45	63.3	92.0	47.2	
	10:00	65.8	88.7	42.6			18:00	55.0	77.8	47.1	
	10:15	68.0	91.7	43.3			18:15	69.7	101.6	47.8	
	10:30	69.7	91.6	43.4			18:30	68.0	101.9	47.6	
	10:45	57.3	77.0	43.8			18:45	61.0	95.9	48.1	
	11:00	59.1	77.3	44.1			19:00	53.6	70.9	48.4	
	11:15	54.6	74.8	43.1			19:15	51.7	69.4	47.5	
	11:30	72.1	94.5	44.1			19:30	51.5	82.2	46.8	
	11:45	75.2	95.4	44.1			19:45	51.1	68.9	47.2	
	12:00	66.4	95.7	44.0			20:00	50.5	80.3	46.1	
	12:15	58.9	82.0	44.2			20:15	49.1	62.8	46.2	
	12:30	79.7	97.2	43.0			20:30	49.2	61.9	45.4	
	12:45	76.3	95.1	44.7			20:45	60.7	85.6	44.9	
	13:00	77.5	95.7	44.1			21:00	48.9	64.5	44.2	
	13:15	76.3	96.2	44.5			21:15	49.7	70.2	43.7	
	13:30	65.9	94.7	44.5			21:30	46.4	66.6	43.3	
	13:45	76.7	95.4	44.1			21:45	48.4	67.9	42.8	
	14:00	74.5	96.3	43.6			22:00	49.3	80.4	42.8	
	14:15	78.0	96.1	45.5			22:15	59.1	87.6	42.8	
	14:30	73.0	94.5	44.2			22:30	49.8	81.4	42.2	
	14:45	77.2	96.6	44.0			22:45	64.2	86.9	42.1	



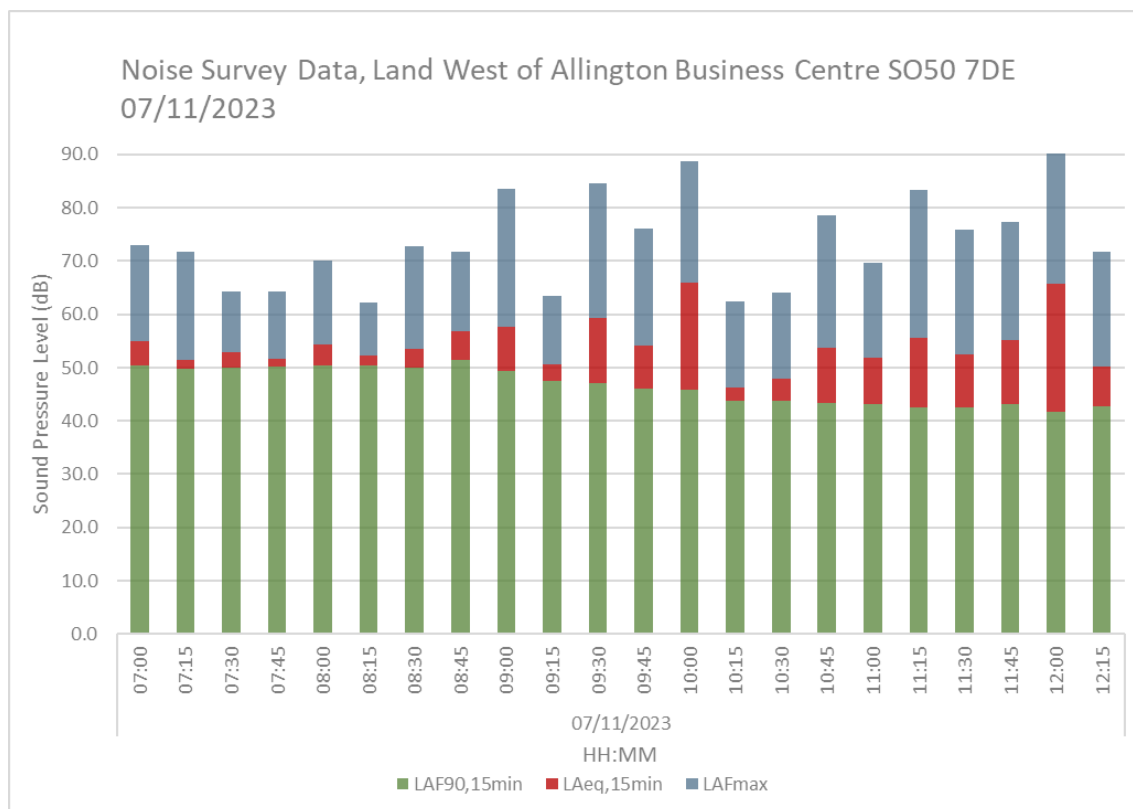
Date	Time	L _{Aeq,15min}	L _{AFmax}	L _{AF90,15min}	L _{Aeq,8hour}
05/11/2023	23:00	50.2	76.5	41.7	45.4
	23:15	45.6	63.8	40.6	
	23:30	45.9	62.3	40.1	
	23:45	41.0	56.6	39.3	
06/11/2023	00:00	47.1	65.8	38.5	
	00:15	39.4	54.5	38.1	
	00:30	43.0	60.9	37.5	
	00:45	39.0	66.4	36.3	
	01:00	38.3	50.5	36.1	
	01:15	38.1	48.4	35.9	
	01:30	39.6	54.0	37.4	
	01:45	37.7	52.1	35.2	
	02:00	38.4	59.6	36.5	
	02:15	47.2	75.4	35.7	
	02:30	37.3	51.5	34.1	
	02:45	37.1	51.9	35.0	
	03:00	37.0	50.1	35.4	
	03:15	37.8	48.3	35.4	
	03:30	38.2	51.8	36.5	
	03:45	38.7	47.7	36.8	
	04:00	39.2	48.1	37.8	
	04:15	39.7	44.5	38.2	
	04:30	41.1	46.6	39.9	
	04:45	42.4	54.3	41.3	
	05:00	45.3	61.4	42.0	
	05:15	47.5	62.6	43.9	
	05:30	49.1	66.4	45.2	
	05:45	46.2	50.4	45.4	
	06:00	47.0	60.7	45.1	
	06:15	48.3	57.8	46.9	
	06:30	52.3	69.7	47.6	
	06:45	51.9	72.6	48.6	



Date	Time	L _{Aeq,15min}	L _{AFmax}	L _{AF90,15min}	L _{Aeq,16hour}	Date	Time	L _{Aeq,15min}	L _{AFmax}	L _{AF90,15min}	L _{Aeq,16hour}
06/11/2023	07:00	64.9	88.7	48.7	65.3	06/11/2023	15:00	73.0	94.9	43.9	65.3
	07:15	63.0	90.2	49.1			15:15	63.9	88.4	44.9	
	07:30	60.4	84.6	50.6			15:30	64.8	80.3	46.0	
	07:45	52.4	77.9	50.3			15:45	55.8	85.9	44.2	
	08:00	53.8	77.1	50.7			16:00	60.5	88.3	45.2	
	08:15	53.7	76.4	50.4			16:15	62.7	93.3	46.5	
	08:30	55.1	72.4	51.9			16:30	67.7	94.3	47.5	
	08:45	54.4	76.2	50.6			16:45	77.1	94.3	47.0	
	09:00	55.0	83.5	48.6			17:00	49.6	63.3	46.7	
	09:15	71.6	94.0	47.5			17:15	47.9	65.0	46.4	
	09:30	74.1	94.4	46.8			17:30	48.9	65.1	46.7	
	09:45	71.1	94.1	45.0			17:45	54.3	70.7	47.7	
	10:00	67.1	93.2	42.9			18:00	49.8	69.0	47.9	
	10:15	74.4	94.8	42.8			18:15	49.0	55.5	48.1	
	10:30	64.6	91.4	42.9			18:30	51.3	68.0	47.1	
	10:45	45.5	62.2	42.1			18:45	48.6	59.0	46.7	
	11:00	51.3	71.3	42.0			19:00	49.9	69.0	48.2	
	11:15	48.7	70.1	43.3			19:15	51.8	82.8	47.9	
	11:30	61.1	91.1	44.5			19:30	52.0	67.5	48.0	
	11:45	60.4	85.3	43.9			19:45	50.9	71.6	47.6	
	12:00	56.6	70.3	44.1			20:00	48.2	65.8	45.3	
	12:15	53.7	81.3	44.2			20:15	48.9	65.9	45.3	
	12:30	64.0	92.2	44.2			20:30	47.4	63.6	44.4	
	12:45	69.4	94.3	44.5			20:45	60.7	85.2	44.4	
	13:00	60.6	87.3	43.6			21:00	49.0	80.9	43.5	
	13:15	57.7	84.2	44.5			21:15	45.6	52.0	44.3	
	13:30	52.1	75.0	43.8			21:30	51.2	83.2	44.2	
	13:45	52.9	84.7	43.1			21:45	64.2	93.0	42.7	
	14:00	51.4	80.3	43.9			22:00	63.1	92.0	41.9	
	14:15	50.4	70.1	44.6			22:15	50.7	71.4	42.1	
	14:30	61.1	90.8	44.2			22:30	64.1	87.7	42.1	
	14:45	66.3	94.3	43.4			22:45	52.5	78.5	41.0	



Date	Time	L _{Aeq,15min}	L _{AFmax}	L _{AF90,15min}	L _{Aeq,8hour}
06/11/2023	23:00	54.3	81.6	41.3	52.2
	23:15	47.9	78.5	41.2	
	23:30	45.7	67.2	39.6	
	23:45	48.1	68.4	40.0	
07/11/2023	00:00	41.6	63.4	39.8	
	00:15	41.8	49.9	40.4	
	00:30	40.8	48.6	38.8	
	00:45	40.5	50.6	38.9	
	01:00	40.9	49.1	39.6	
	01:15	40.2	50.5	37.7	
	01:30	39.7	48.9	37.9	
	01:45	64.6	87.9	36.8	
	02:00	58.4	87.7	37.7	
	02:15	52.7	78.7	38.0	
	02:30	47.6	71.6	37.9	
	02:45	40.0	49.5	37.3	
	03:00	41.4	47.8	38.9	
	03:15	41.3	47.1	39.8	
	03:30	40.5	46.4	38.8	
	03:45	40.9	50.9	39.3	
	04:00	40.6	46.8	38.9	
	04:15	42.6	48.8	40.3	
	04:30	44.0	50.6	42.8	
	04:45	44.8	58.3	43.5	
	05:00	45.3	53.3	43.7	
	05:15	46.7	58.7	44.9	
	05:30	49.3	67.7	45.7	
	05:45	49.1	66.9	46.5	
	06:00	49.7	60.9	46.9	
	06:15	50.1	57.4	49.3	
	06:30	53.5	65.4	49.4	
	06:45	50.9	57.0	50.0	

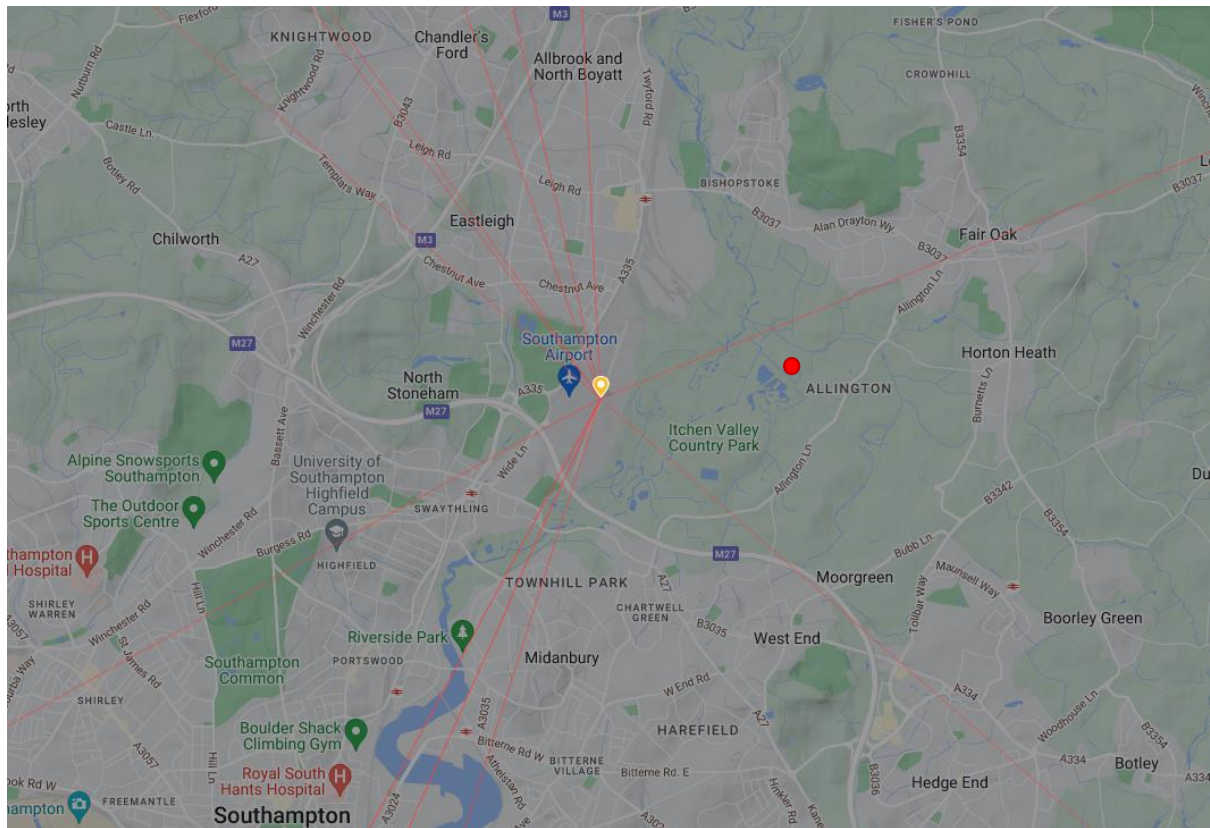


Date	Time	L _{Aeq,15min}	L _{AFmax}	L _{AF90,15min}	L _{Aeq,16hour}
07/11/2023	07:00	54.9	72.9	50.5	65.0
	07:15	51.5	71.7	49.8	
	07:30	52.9	64.2	49.9	
	07:45	51.6	64.3	50.2	
	08:00	54.3	70.0	50.5	
	08:15	52.2	62.3	50.5	
	08:30	53.5	72.9	49.9	
	08:45	56.9	71.7	51.5	
	09:00	57.6	83.6	49.4	
	09:15	50.6	63.5	47.6	
	09:30	59.4	84.6	47.0	
	09:45	54.2	76.1	46.0	
	10:00	65.9	88.7	45.8	
	10:15	46.3	62.4	43.7	
	10:30	47.9	64.0	43.8	
	10:45	53.7	78.6	43.3	
	11:00	51.8	69.6	43.1	
	11:15	55.5	83.4	42.6	
	11:30	52.5	75.9	42.6	
	11:45	55.2	77.3	43.1	
	12:00	65.7	92.7	41.7	
	12:15	50.1	71.8	42.8	

Appendix D – Vehicle Movements

Southampton Airport Flight Paths

The red lines originating from the central yellow symbol, which denotes the precise position of the airport's runway, displays the close proximity of one of the flight paths above the site. The flight paths with the site highlighted approximately in **red**.



Train Movements – Eastleigh to Hedge End

Date	Time	Type	Daily Number
Tues 31/10	05:35	Passenger	38
	06:06	Passenger	
	06:32	Passenger	
	07:05	Passenger	
	07:07	Passenger	
	07:32	Passenger	
	07:34	Passenger	
	08:04	Passenger	
	08:34	Passenger	
	08:37	Passenger	
	09:36	Passenger	
	09:39	Passenger	
	10:36	Passenger	
	10:39	Passenger	
	11:36	Passenger	
	11:39	Passenger	
	12:37	Passenger	
	12:40	Passenger	
	13:36	Passenger	
	13:40	Passenger	
	14:36	Passenger	
	14:39	Passenger	
	15:36	Passenger	
	15:39	Passenger	
	16:36	Passenger	
	16:39	Passenger	
	17:00	Passenger	
	17:36	Passenger	
	17:39	Passenger	
	18:39	Passenger	
	19:39	Passenger	
	20:39	Passenger	
	20:40	Passenger	
	21:39	Passenger	
	22:29	Passenger	
	22:34	Passenger	
	22:40	Passenger	
	23:40	Passenger	

Date	Time	Type	Daily Number
Wed 01/11	05:35	Passenger	38
	06:06	Passenger	
	06:32	Passenger	
	07:05	Passenger	
	07:07	Passenger	
	07:32	Passenger	
	07:34	Passenger	
	08:04	Passenger	
	08:34	Passenger	
	08:37	Passenger	
	09:36	Passenger	
	09:39	Passenger	
	10:36	Passenger	
	10:39	Passenger	
	11:36	Passenger	
	11:39	Passenger	
	12:37	Passenger	
	12:40	Passenger	
	13:36	Passenger	
	13:40	Passenger	
	14:36	Passenger	
	14:39	Passenger	
	15:36	Passenger	
	15:39	Passenger	
	16:36	Passenger	
	16:39	Passenger	
	17:00	Passenger	
	17:36	Passenger	
	17:39	Passenger	
	18:39	Passenger	
	19:39	Passenger	
	20:39	Passenger	
	20:40	Passenger	
	21:39	Passenger	
	22:29	Passenger	
	22:34	Passenger	
	22:40	Passenger	
	23:40	Passenger	

Date		Type	Daily Number
Thurs 02/11	05:35	Passenger	38
	06:06	Passenger	
	06:32	Passenger	
	07:05	Passenger	
	07:07	Passenger	
	07:32	Passenger	
	07:34	Passenger	
	08:04	Passenger	
	08:34	Passenger	
	08:37	Passenger	
	09:36	Passenger	
	09:39	Passenger	
	10:36	Passenger	
	10:39	Passenger	
	11:36	Passenger	
	11:39	Passenger	
	12:37	Passenger	
	12:40	Passenger	
	13:36	Passenger	
	13:40	Passenger	
	14:36	Passenger	
	14:39	Passenger	
	15:36	Passenger	
	15:39	Passenger	
	16:36	Passenger	
	16:39	Passenger	
	17:00	Passenger	
	17:36	Passenger	
	17:39	Passenger	
	18:39	Passenger	
	19:39	Passenger	
	20:39	Passenger	
	20:40	Passenger	
	21:39	Passenger	
	22:29	Passenger	
	22:34	Passenger	
	22:40	Passenger	
	23:40	Passenger	

Date		Type	Daily Number
Fri 03/11	05:35	Passenger	38
	06:06	Passenger	
	06:32	Passenger	
	07:05	Passenger	
	07:07	Passenger	
	07:32	Passenger	
	07:34	Passenger	
	08:04	Passenger	
	08:34	Passenger	
	08:37	Passenger	
	09:36	Passenger	
	09:39	Passenger	
	10:36	Passenger	
	10:39	Passenger	
	11:36	Passenger	
	11:39	Passenger	
	12:37	Passenger	
	12:40	Passenger	
	13:36	Passenger	
	13:40	Passenger	
	14:36	Passenger	
	14:39	Passenger	
	15:36	Passenger	
	15:39	Passenger	
	16:36	Passenger	
	16:39	Passenger	
	17:00	Passenger	
	17:36	Passenger	
	17:39	Passenger	
	18:39	Passenger	
	19:39	Passenger	
	20:39	Passenger	
	20:40	Passenger	
	21:39	Passenger	
	22:29	Passenger	
	22:34	Passenger	
	22:40	Passenger	
	23:40	Passenger	

Date	Time	Type	Daily Number
Sat 04/11	05:30	Passenger	38
	06:33	Passenger	
	06:36	Passenger	
	07:35	Passenger	
	07:39	Passenger	
	08:36	Passenger	
	08:39	Passenger	
	09:36	Passenger	
	09:39	Passenger	
	10:36	Passenger	
	10:39	Passenger	
	11:36	Passenger	
	11:39	Passenger	
	12:37	Passenger	
	12:39	Passenger	
	13:36	Passenger	
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	18:36	Passenger	
	18:39	Passenger	
	19:36	Passenger	
	19:39	Passenger	
	20:36	Passenger	
	20:39	Passenger	
	21:36	Passenger	
	21:39	Passenger	
	22:34	Passenger	
	22:36	Passenger	
	22:39	Passenger	
	00:04	Passenger	
	00:35	Passenger	

Date	Time	Type	Daily Number
Sun 05/11	07:57	Passenger	35
	08:29	Passenger	
	08:57	Passenger	
	09:31	Passenger	
	09:57	Passenger	
	10:31	Passenger	
	10:57	Passenger	
	11:31	Passenger	
	11:57	Passenger	
	12:31	Passenger	
	12:57	Passenger	
	13:31	Passenger	
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	18:57	Passenger	
	19:31	Passenger	
	19:57	Passenger	
	20:31	Passenger	
	20:57	Passenger	
	21:31	Passenger	
	21:49	Passenger	
	21:58	Passenger	
	22:31	Passenger	
	22:58	Passenger	
	23:31	Passenger	
	23:57	Passenger	
	00:35	Passenger	

Date	Time	Type	Daily Number
Mon 06/11	05:35	Passenger	38
	06:06	Passenger	
	06:32	Passenger	
	07:05	Passenger	
	07:07	Passenger	
	07:32	Passenger	
	07:34	Passenger	
	08:04	Passenger	
	08:34	Passenger	
	08:37	Passenger	
	09:36	Passenger	
	09:39	Passenger	
	10:36	Passenger	
	10:39	Passenger	
	11:36	Passenger	
	11:39	Passenger	
	12:37	Passenger	
	12:40	Passenger	
	13:36	Passenger	
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	14:36	Passenger	
	14:39	Passenger	
	15:36	Passenger	
	15:39	Passenger	
	16:36	Passenger	
	16:39	Passenger	
	17:00	Passenger	
	17:36	Passenger	
	17:39	Passenger	
	18:39	Passenger	
	19:39	Passenger	
	20:39	Passenger	
	20:40	Passenger	
	21:39	Passenger	
	22:29	Passenger	
	22:34	Passenger	
	22:40	Passenger	
	23:40	Passenger	

Date	Time	Type	Daily Number
Tues 07/11	05:35	Passenger	38
	06:06	Passenger	
	06:32	Passenger	
	07:05	Passenger	
	07:07	Passenger	
	07:32	Passenger	
	07:34	Passenger	
	08:04	Passenger	
	08:34	Passenger	
	08:37	Passenger	
	09:36	Passenger	
	09:39	Passenger	
	10:36	Passenger	
	10:39	Passenger	
	11:36	Passenger	
	11:39	Passenger	
	12:37	Passenger	
	12:40	Passenger	
	13:36	Passenger	
	13:40	Passenger	
	14:36	Passenger	
	14:39	Passenger	
	15:36	Passenger	
	15:39	Passenger	
	16:36	Passenger	
	16:39	Passenger	
	17:00	Passenger	
	17:36	Passenger	
	17:39	Passenger	
	18:39	Passenger	
	19:39	Passenger	
	20:39	Passenger	
	20:40	Passenger	
	21:39	Passenger	
	22:29	Passenger	
	22:34	Passenger	
	22:40	Passenger	
	23:40	Passenger	