

# ENVIRONMENTAL NOISE ASSESSMENT

## BONNINGTONS YARD, STATION ROAD, TAKELEY, ESSEX, CM22 6SQ

**Project Reference:**

ENV306-TAKE-002 – Bonningtons, Takeley

**Site Address:**

Bonningtons Yard  
Station Road  
Takeley  
Essex  
CM22 6SQ

**Version Number:**

Version 1.0

**Report Date:**

23<sup>rd</sup> January 2024

**Customer:**

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## PROFESSIONAL CREDENTIALS

Stansted Environmental Services Limited (SES) is a standalone company within the Weston Group. SES provides a range of Health, Safety and Environmental Consultancy Services, specifically for the construction industry, working with developers, architects, planners and designers.

The consultants at Stansted Environmental Services specialise specifically in:-

Site Investigation and Contaminated Land  
Acoustics and Noise Control  
Construction Safety  
Energy and Sustainability

Silvio Petrasso is the Managing Director for Stansted Environmental Services Limited and has experience in dealing with acoustic assessments at Senior Management and Director Level, overseeing a number of large projects, to ensure that the end product is suitable for its intended use.

Silvio is a Chartered Health and Safety Practitioner with the Institute of Occupational Safety and Health (IOSH), a Corporate Member of the Institute of Acoustics (IOA), an Associate Member of the Chartered Institute of Environmental Health (CIEH) as well as an Incorporated Member of the Association for Project Safety (APS).

Hugo is an Assistant Geo-Environmental Consultant and has been working for Stansted Environmental Services Ltd for over 2 years. For the past 2 years, Hugo has been working with the environmental team at SES, assisting senior acoustic consultants with acoustic assessments including field work, data analysis and final report preparation.

Hugo holds a BA(Hons) (Second Class, Upper Division) degree in Geography from Canterbury Christ Church University, the IOA Diploma in Acoustics and Noise Control from London South Bank University, the Certificate of Competence in Environmental Noise Measurement and is a Technician Member of the IOA.

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## 1. Introduction

Stansted Environmental Services (SES) Ltd has been commissioned by Lioncrest Building Services Ltd to prepare an Environmental Noise Assessment for the proposed residential development consisting of 7 no. new-build dwellings at Bonningtons Yard, Station Road, Takeley, Essex, CM22 6SQ.

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, railway, commercial premises operations, aircraft etc.),
- Based on the above, to present the internal noise levels to be achieved within the residential premises,
- To identify and recommend appropriate sound insulation requirements for the purposes of mitigating noise caused by prevailing noise sources such that internal noise levels are achieved and,
- To address Uttlesford District Council's comments relating to Condition 9 of Planning Permission **UTT/23/2617/FUL**.

The noise assessment has been undertaken in accordance with the most up-to-date planning guidance – in particular:

- The National Planning Policy Framework (NPPF),
- The WHO Guidelines for Community Noise and
- BS8233:2014 Guidance on sound insulation and noise reduction for buildings
- ProPG: Planning and Noise – Professional Practice Guidance on Planning & Noise – New Residential Development, May 2017
- Aviation Policy Framework

This report provides details of the noise survey, including measurement results, and provides recommendations.

## 2. Site Description

An aerial view of the site in its current use is shown in **Figure 1**.



**Figure 1: Aerial view of the site – Bonningtons Yard, Station Road, Takeley, Essex, CM22 6SQ**

Bonningtons Yard, Station Road, Takeley, Essex, CM22 6SQ (hereafter referred to as ‘the site’) will consist of 7 no. residential dwellings with associated external amenity space within the **red** line boundary shown in **Figure 1**.

During the site visit on Friday 5<sup>th</sup> January 2024, the site was occupied by way of an existing farm storage building. The site was secured by fencing at all boundaries.

With regards to the surrounding local environment, the following was noted:

- The South and West of the site was immediately bordered by agricultural land.
- To the North, the site was immediately bordered by treeline with a footpath known as Fitch Way present at approximately 10m from the Northern site boundary. Beyond Fitch Way lie existing residential dwellings with the B1256 Dunmow Road at approximately 200m to the North of the site.
- To the East, the site was immediately bordered by existing residential and commercial premises known as ‘Bonnington Farm Guest House’. Beyond, lies the B183 Station Road and Takeley Football Club at approximately 60m and 80m to the East of the site, respectively.



Further afield, the following was noted:

- The A120 lies at approximately 1.0km (0.6mi) to the North of the site.
- The runway belonging to London Stansted Airport lies at approximately 2.9km (1.8mi) to the North-West of the site.
- The M11 lies at approximately 4.7km (2.9mi) to the West of the site.

During the site visit on Friday 5<sup>th</sup> January 2024, it was noted that the dominant sources of noise impacting upon the site was road traffic noise emanating from the B183 Station Road to the East of the site and aircraft noise associated with London Stansted Airport.

It was also noted that the dominant source of aircraft noise associated with London Stansted Airport, that was audible at the site, was noise emanating from aircraft passings during departures and arrivals. In addition, it was noted that jet engine 'spool-up' noise from aircraft at London Stansted Airport was also audible.

With regards to aircraft passings, it was noted that aircraft passed the site to the West and North-West at a distance of approximately 3.0km – 3.5km from the site. Aircraft movements were noted to occur frequently, at a maximum frequency of 1 passing every 2 minutes.

Background noise sources affecting the site was noted to be road traffic noise emanating from the B1256 Dunmow Road to the North and the A120 beyond.

Furthermore, it was noted that no noise emanated from 'Bonnington Farm Guest House' and Takeley Football Club to the East of the site.

Potential noise emanating from Takeley Football Club that may impact upon the noise environment at the site, is likely to be masked by road traffic noise from the B183 Station Road. As a result, the potential noise impact from Takeley Football Club was noted to be low.

No other sources of environmental noise were noted to impact upon the site.

### 3. Standard Guidance

The noise assessment has been undertaken in accordance with the most up-to-date planning guidance – in particular:

- The National Planning Policy Framework (NPPF),
- Noise Policy Statement for England (NSPE)
- BS8233:2014 Guidance on sound insulation and noise reduction for buildings
- The WHO Guidelines for Community Noise and
- ProPG: Planning and Noise – Professional Practice Guidance on Planning & Noise – New Residential Development, May 2017

#### 3.1 The National Planning Policy Framework (NPPF), 2021

The National Planning Policy Framework was published in March 2012 and has had a number of revisions since, with the latest revision being September 2023. In respect of noise, the document states, in section 15, paragraph 174 that:

*“Planning policies and decisions should contribute to and enhance the natural and local environment by... preventing new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of ... noise pollution”.*

It goes on to advise in section 15, paragraph 185 that:

“Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- a) Mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life<sup>65</sup>;*
- 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; and*
- c) Limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.*

Paragraph 187 states “Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or ‘agent of change’) should be required to provide suitable mitigation before the development has been completed.

The NPPF revokes Planning Policy Guidance 24 (PPG 24) which was previously used to assess noise impacts of planning applications. PPG 24:

- Outlined the considerations to be taken into account in determining planning applications both for noise-sensitive developments and for those activities that will generate noise
- Introduced the concept of “Noise Exposure Categories” for residential development, encouraged their use and recommended appropriate levels for exposure to different sources of noise and
- Advised on the use of planning conditions to minimise the impact of noise

The NPPF indicates that the Noise Policy Statement for England (NPSE) should be used to define “significant adverse impacts”. A summary of the NPSE is provided below, and it is understood that the UK government is currently undertaking research to quantify the significant observed adverse effect levels for noise.

### 3.2 Noise Policy Statement for England (NPSE)

The NPSE was published in March 2010. The document seeks to clarify the underlying principles and aims in existing policy documents, legislation and guidance that relate to noise. It also sets out, in paragraph 1.6, the long term vision of Government noise policy:

*“Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development”.*

The NPSE clarifies that noise should not be considered in isolation of the wider benefits of a scheme or development, and that the intention is to minimise noise and noise effects as far as is reasonably practicable having regard to the underlying principles of sustainable development.

The explanatory note of NPSE defines the terms used in the NPPF:

*“There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation.*

*They are:*

*NOEL – No Observed Effect Level: This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.*

*LOAEL – Lowest Observed Adverse Effect Level: This is the level above which adverse effects on health and quality of life can be detected.*

*Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.*

*SOAEL – Significant Observed Adverse Effect Level: This is the level above which significant adverse effects on health and quality of life occur.”*

The NPSE does not provide a numerical value for the SOAEL, stating at paragraph 2.22:

*“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.”

The NPPF does not quote figures for action, however BS8233:2014 is the most appropriate guidance document in relation to identifying target noise level criteria. Achieving the LOAEL requires “all reasonable steps” to be taken in terms of mitigation.

### 3.3 Possible Options for the identification of SOAEL and LOAEL in support of the NPSE

In the absence of any specific guidance in the NPSE relating the absolute levels of noise from different sources to the various defined effect levels, DEFRA commissioned AECOM to carry out research to identify the potential threshold levels for LOAEL and SOAEL to assist implementation of the NPSE. The resultant document ‘Possible Options for the identification of SOAEL and LOAEL in support of the NPSE’ aims to contribute to the further understanding of what may constitute a significant adverse impact of noise on health and quality of life.

Guidance has been determined for different noise sources, receptors and at different periods of the day and night. The noise sources analysed include transportation (air, road and rail), neighbour, entertainment and industrial noise. The effects considered were: annoyance; stress; sleep; cardiovascular disease; cognitive mental health; quality of life and wellbeing; impacts on performance; and cognitive mental health.

The approach adopted for deriving possible LOAEL and SOAEL values for transportation noise sources is based on exposure – response relationships which are discussed in the report as having sufficient evidence to provide identifiable link between the level of noise and a given effect. The report caveats that these relationships refer to community responses over the long term and might not be relevant for assessing either noise impacts on individuals or the short term responses where there is an abrupt change in noise exposure.

A summary of the recommendations of the report are contained within Table 1.1 of the report, of which the sections relevant to this assessment are reproduced in **Table 1**.

**Table 1: Summary outcomes of AECOM report**

Source/Effect	Annoyance/Stress, dB $L_{Aeq,16hr}$		Sleep disturbance, dB $L_{night}$		Cardiovascular disease, dB $L_{Aeq,16hr}$	
	LOAEL	SOAEL	LOAEL	SOAEL	LOAEL	SOAEL
Road	53-59 (56)	64-68(66)	43-52(46)	51-64(56)	58	67
Air	50-54 (52)	58-62(60)	40-49(41)	47-60(53)	NA	NA

Note: numbers shown in parentheses indicate mid points of the range, ‘NA’ indicates that no evidence is available for this effect.

### 3.4 British Standard BS8233:2014: Sound Insulation and Noise Reduction for Buildings – Code of Practice

The scope of this Standard is to provide recommendations for the control of noise in and around buildings. It suggests appropriate criteria and limits for different situations, which are primarily intended to guide the design of new or refurbished buildings undergoing a change of use, rather than to assess the effect of changes in the external noise climate.

The Standard suggests suitable internal noise levels within different types of buildings, including dwellings, and these are repeated in **Table 2**.

**Table 2: Recommended internal noise levels  $L_{Aeq,T}$  dB**

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35dB $L_{Aeq,16-hour}$	---
Dining	Dining room area	40dB $L_{Aeq,16-hour}$	---
Sleeping	Bedroom	35dB $L_{Aeq,16-hour}$	30dB $L_{Aeq,8-hour}$

These internal levels are based on annual average data and do not have to be achieved in all circumstances. It is normal to exclude occasional events, such as fireworks night or New Year's Eve.

The standard states that where development is considered necessary or desirable, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.

For external amenity areas, such as gardens and patios, the standard states:

*'it is desirable that the external noise level does not exceed 50 dB  $L_{Aeq,T}$  with an upper guideline value of 55 dB  $L_{Aeq,T}$  which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.'*

Regarding individual noise events (for example, scheduled aircraft or passing trains) the standard highlights the likelihood of sleep disturbance. A guideline value may be set in terms of a SEL (Single Event Level) or  $L_{Amax,f}$ , depending on the character and number of events per night. Sporadic noise events could require separate values.

It is proposed a target value of 45dB  $L_{Amax}$  should not be regularly exceeded in bedroom spaces during night periods.

### 3.5 World Health Organisation (WHO)1999; Guidelines for Community Noise

WHO 2009: *Guidelines for Community Noise* has established guideline values for community noise in specific environments, which are summarised below:

- Outdoor Living Area – Serious Annoyance 55 dB(A), 16 hours between 07:00 and 23:00
- Outdoor Living Area – Moderate Annoyance 50 dB(A), 16 hours between 07:00 and 23:00
- Indoor Speech Intelligibility – Moderate Annoyance 35 dB(A), 16 hours between 07:00 and 23:00

- Inside bedrooms night time sleep disturbance 30dB(A), 8 hours between 23:00 and 07:00
- Outside bedrooms, window open (outdoor values), sleep disturbance 45dB(A)

The WHO has issued a further document. “Night Noise Guidelines for Europe (2009)” and the following table details the effects of different levels of night noise on health.

**Table 3: WHO Exposure –Effects Relationship**

Average night noise levels over a year $L_{night,outside}$	Health Effects Observed in the Population
<b>Up to 30dB</b>	Although individual sensitivities exist, circumstances may differ, it appears that up to this level no substantial biological effects are observed. $L_{night,outside}$ of 30dB is equivalent to the no observed effect level (NOEL) for night noise.
<b>30 to 40dB</b>	A number of effects on sleep are observed from this range: body movements, awakening, self-reported sleep disturbances, arousals. The intensity of the effect depends on the nature of the source and the number of events. Vulnerable groups (for example, children, the chronically ill and the elderly) are more susceptible. However, even in the worst cases the effects seem modest. $L_{night,outside}$ of 40dB is equivalent to the lowest observed adverse effect level (LOAEL) for night noise.
<b>40 to 55dB</b>	Adverse health effects are observed among the exposed population. Many people have to adapt to their lives to cope with noise at night. Vulnerable groups are more severely affected.
<b>Above 55dB</b>	The situation is considered increasingly dangerous for public health. Adverse health effects occur frequently, a sizeable proportion of the population is highly annoyed and sleep-disturbed. There is evidence that the risk of cardiovascular disease increases.

Based on the exposure-effects relationship summarised in **Table 3**, the night noise guideline values are recommended for the protection of public health from night noise as follows:

- Night Noise guideline –  $L_{night,outside} = 40dB$
- Interim Target –  $L_{night,outside} = 55dB$

For the primary prevention of health effects related to night noise, the WHO (2009) recommends people should not be exposed to night time noise levels greater than 40dB of  $L_{night,outside}$  during the part of the night when most people are in bed. The LOAEL of night noise, 40dB  $L_{night,outside}$ , should be considered a health based limit value to protect the public.

### 3.6 ProPG: Planning and Noise – Professional Practice Guidance on Planning & Noise – New Residential Development, May 2017

Ever since PPG 24 Planning and Noise was repealed in 2012 with the introduction of the National Planning Policy Framework (NPPF), there has been no objective policy guidance

provided by the English government on noise aspects of new residential planning applications.

Noise is still clearly a material issue to be considered in planning, as highlighted by the requirements of paragraph 170 of the NPPF. However, no objective policy guidance on assessing potential noise impact at residential developments is provided in the NPPF or subsequent policy documents.

Guidance on acceptable noise levels within residential properties is provided within British Standard 8233:2014 as previously noted.

The ProPG has been produced to provide practitioners with guidance on a recommended approach to the management of noise within the planning system in England. The IOA, the Chartered Institute of Environmental Health and the Association of Noise Consultants worked together to produce the guidance which encourages better acoustic design for new residential development and aims to protect people from the harmful effects of noise.

The guidance emphasises the importance of *good acoustic design* in the planning process and describes what this may mean.

- *Good acoustic design* describes the process of considering the environmental noise impacts on the proposed residential development from the early stages in a project.
- Site layout, building massing, orientation and internal layouts can all be important to demonstrating good acoustic design.
- Noise needs to be considered in the context of the internal environmental quality (IEQ), to avoid trade-offs with other aspects of the internal environment such as day-lighting, sunlight, ventilation and thermal comfort.

### 3.7 Aviation Policy Framework

The Aviation Policy Framework (APF) sets out the Government's high-level strategy and overall objectives for aviation and the policies to achieve those objectives. The policies of the APF are of relevance to this given the adjacency of the proposed development to Stansted Airport.

The APF recognises that noise is the primary concern of local communities near airports and aims to strike a fair balance between the negative impacts of noise on health and quality of life and the positive economic impacts of flights. In this context, it sets the Governments' overall policy on aviation noise as follows:

"...to limit and, where possible, reduce the number of people in the UK significantly affected by aircraft noise".

Much of the noise policy contained in the APF concerns noise from aircraft arriving and departing an airport including helicopter noise, and the levels at which noise insulation measures and compensation should be considered. In this regard the APF reference the policy threshold marking the 'approximate onset of significant community annoyance' at a daytime noise level of 57dB  $L_{Aeq,16hr}$  and an upper threshold level of 63dB  $L_{Aeq,16hr}$  at which airport operators would be expected to offer financial support towards acoustic insulation to both residential properties and community buildings, including schools.

### 3.8 Stansted Airport Noise Contours

Noise exposure contours have been produced by the Civil Aviation Authority for Stansted Airport in 2022. These are reproduced in **Appendix 6**.

Although the site lies at 2.9km from the runway belonging to London Standard Airport, the site is located perpendicular to the direction of the runway, therefore the site is less impacted by aircraft noise than other sites that may be located parallel to the runway and at a similar distance.

The site lies outside of the lowest daytime noise contour (51dB  $L_{Aeq,16-hour}$ ), as shown in **Appendix 6**.

Furthermore, the site lies outside of the lowest night-time noise contour (45dB  $L_{Aeq,8-hour}$ ), as shown in **Appendix 6**.

### 3.9 Local Planning Authority Requirements: Uttlesford District Council – Condition 9 of Planning Permission UTT/23/2617/FUL

In addition to the standard guidance stated above, the assessment shall address Uttlesford District Council's comments relating to condition 9 of Planning Permission **UTT/23/2617/FUL** for the site.

Condition 9 of Planning Permission **UTT/23/2617/FUL** reads as follows;

*“No development shall commence on site until a detailed scheme, informed by an assessment of the current noise environment, for protecting the dwellings from the external noise environment of the area has been submitted to and approved, in writing, by the Local Planning Authority. The scheme itself shall be designed, specified and constructed so that the sound insulation performance of the structure and the layout of the dwellings are such that the indoor ambient noise levels do not exceed the values detailed in Table 4 of BS 8233:2014 and the and that the individual noise events do not exceed 45 dB  $L_{A,max,F}$  more than 10 times a night. Where opening windows will lead to an internal noise level increase of 5 dBA or greater above BS 8233:2014 recommended internal levels, the scheme shall include provision of alternative mechanical ventilation with minimum performance equivalent to a mechanical heat recovery (MVHR) system with cool air bypass as an alternative means of cooling and ventilation. Noise from the system should not result in BS8233 internal levels being exceeded.*

*Thereafter, the development shall not be carried out other than in accordance with the approved scheme which shall be completed before any part of the accommodation hereby approved is occupied, unless the Local Planning Authority otherwise agrees in writing.*

**REASON:** *These details are required due to insufficient information being contained within this submission and in order to safeguard the amenity of occupants.”*



## 4. Environmental Noise Survey Methodology

An unattended noise survey was undertaken at the site. The Unattended Noise Measurement Position (UNMP) was located on the South-Eastern site boundary and measurements were recorded between 16:00 on Friday 5<sup>th</sup> January 2024 and 08:30 on Wednesday 10<sup>th</sup> January 2024.

At the UNMP, a class 1 sound level meter was fixed to the top of the existing fence line at approximately 2.2m above ground level and positioned in free-field conditions.

Monitoring was conducted over 6 calendar days to determine the prevailing ambient and maximum noise levels affecting the proposed development.

The UNMP is indicatively highlighted in **orange** in **Figure 2** overleaf. This monitoring location was chosen to be reasonably representative of noise levels at the site and was located at the site boundary identified as being the worst affected in terms of overall noise levels impacting upon the site. This particularly concerned road traffic noise emanating from the B183 Station Road (approximately 60m East of the site), which was noted to be most audible at the South-East of the site.

Furthermore, the UNMP at the South-Eastern site boundary provided a clear line of sight to the B183 Station Road, which enabled a 'worst-case' scenario of overall noise levels impacting upon the site. It should also be noted that the UNMP was located in close proximity to the site entrance

During the site setup of the noise monitoring equipment at the UNMP, it was noted that occasional vehicular noise occurred along the site access road and at the entrances to the site and Bonnington Farm Guest House. As a result of the UNMP being positioned in close proximity to the site entrance, a number of elevated maximum noise level events occurred during the monitoring period at the UNMP in excess of 80dB  $L_{Amax, f}$ , as can be seen in **Figures 19 to 24** in **Appendix 7**. However, the majority of these elevated noise events occurred during daytime hours between 07:00 – 23:00.

The unattended noise survey represents typical day, evening and night-time periods at the site. Ambient, background and maximum sound pressure levels ( $L_{Aeq}$ ,  $L_{A90}$  and  $L_{Amax, f}$  respectively) were measured throughout the noise survey in continuously recorded 1-minute periods.

For robustness of assessment, additional attended measurements were undertaken at the Attended Noise Measurement Position (ANMP) between 14:32 and 15:31 on Friday 5<sup>th</sup> January 2024, as shown in **blue** in **Figure 2**.

Attended measurements were undertaken to confirm the typical daytime ambient noise levels within the proposed external amenity spaces to the rear of the development site.

As can be seen in **Figure 3**, the site plan shows the layout of the proposed residential dwellings and associated external amenity space. The ANMP was positioned approximately within the proposed external amenity space belonging to Plot 1b of the development.

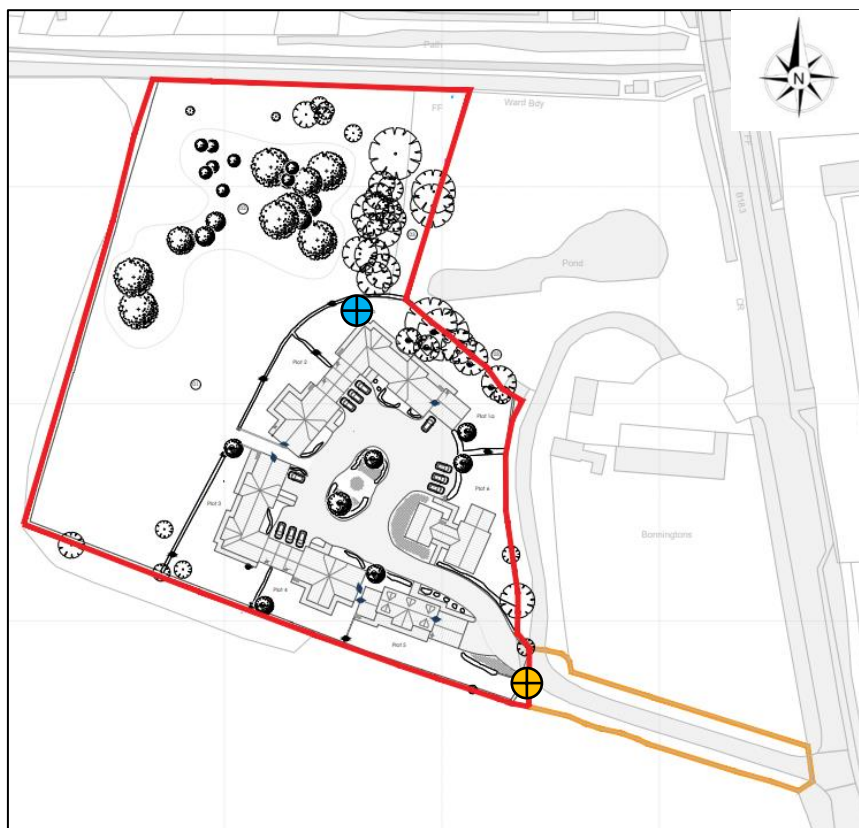
The ANMP is indicatively highlighted in **blue** in **Figure 3** and for reference, the UNMP is also highlighted in **orange** in **Figure 3**.

The ANMP was positioned on a tripod approximately 1.5m above ground level, in free-field conditions and on soft ground. The ANMP was chosen to be reasonably representative of the 'worst-case' scenario of overall noise levels at the rear of the site.

At the ANMP, it was confirmed that aircraft noise associated with London Stansted Airport was the dominant source of noise impacting upon the rear of the site. Road traffic noise from the B183 Station Road was audible at the ANMP.



**Figure 2: Aerial site plan showing approximate locations of the measurement positions**



**Figure 3: Proposed site plan showing approximate locations of the measurement positions**

All equipment was installed and collected by Hugo Evans, Assistant Geoenvironmental Consultant for SES.

**Figure 4** and **Figure 5** below show the setup of the noise monitoring equipment at the UNMP.



**Figure 4: Unattended Measurement Setup at the UNMP**



**Figure 5: Unattended Measurement Setup at the UNMP**

**Figure 6** and **Figure 7** below show the setup of the noise monitoring equipment at the ANMP.



**Figure 6: Attended Measurement Setup at the ANMP**



**Figure 7: Attended Measurement Setup at the ANMP**

With respect to unattended noise measurements undertaken at the UNMP and attended noise measurements undertaken at the ANMP, the sound level meter had been calibrated within 2 years, as shown in **Table 4** below.

**Table 4: Sound Level Meter Equipment**

Model	Serial Number	Date of Calibration	Calibration Expiry	Measurement Position used at
<b>Sonitus Systems EM2030</b>	00724	07/02/2023	06/02/2025	UNMP
<b>NTi Audio XL2</b>	A2A-17871-E0	20/09/2023	19/09/2025	ANMP

**Table 5** below provides details of the calibration equipment which was used to calibrate both sound level meters prior to undertaking unattended and attended noise measurements. The sound level meters were calibrated to 94.0dB (1000Hz).

No significant drift was recorded on the sound level meters after measurements were undertaken.

The noise monitoring equipment was calibrated before unattended and attended measurements were undertaken. No significant drift was recorded. Equipment calibration certificates can be provided upon request.

**Table 5: Calibration Equipment**

Model	Type	Serial Number	Date of Calibration	Calibration Expiry
<b>RION NC-74</b>	Acoustic Calibrator	410208	26/04/2023	25/04/2024

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 unattended noise survey period were noted to be between approximately -1 to +7° Celsius, partly cloudy to overcast skies (40-90% cloud cover approximately) with a maximum wind speed up to 7.6m/s and a typical range of 3.1m/s to 4.0m/s. Suitable weather conditions prevailed throughout the unattended noise survey. As a result, all recorded data was included in the assessment.

Weather conditions throughout the attended noise survey period were noted to be approximately +6° Celsius, cloudy skies (99% cloud cover approximately) with a typical average windspeed of 5.0m/s from the North-West. Suitable, dry weather conditions prevailed throughout the attended noise survey. As a result, all recorded data was included in the assessment.

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.

## 5. Measurement Results

The results of the unattended noise measurements undertaken at the UNMP are summarised in **Table 6** and **Table 7** below.

Graphs showing the measured noise levels at the UNMP are provided in **Appendix 7**.

For the purposes of clarity, the summarised ambient noise levels ( $L_{Aeq}$ ) are logarithmically averaged values. Regarding maximum noise levels ( $L_{Amax, i}$ ), these are presented as the 95<sup>th</sup> percentile to ensure robustness of the assessment.

Furthermore, a standard day period is defined as 16-hour (7am-11pm) and night being 8-hour (11pm-7am) which is defined in British Standard guidance.

Daytime and night-time ambient noise levels measured at the UNMP are presented in **Table 6** and the maximum noise levels measured at the UNMP are presented in **Table 7**.

**Table 6: Ambient Sound Pressure Levels Measured at the UNMP**

Date	Daytime (07:00 – 23:00)	Night-time (23:00 – 07:00)
	$L_{Aeq, 16h}$ (dB)	$L_{Aeq, 8h}$ (dB)
Friday 5 <sup>th</sup> January 2024	53*	51
Saturday 6 <sup>th</sup> January 2024	53	50
Sunday 7 <sup>th</sup> January 2024	52	49
Monday 8 <sup>th</sup> January 2024	57	50
Tuesday 9 <sup>th</sup> January 2024	53	52
Wednesday 10 <sup>th</sup> January 2024	56*	N/A
<b>Overall</b>	<b>54</b>	<b>50</b>

\* Measurement disregarded as not made over full period due to monitoring start and end time

**Table 7: Maximum Sound Pressure Levels Measured at the UNMP**

Date	Night-time (23:00 – 07:00)
	$L_{Amax, f, 8h}$ (dB)
Friday 5 <sup>th</sup> January 2024	72
Saturday 6 <sup>th</sup> January 2024	70
Sunday 7 <sup>th</sup> January 2024	68
Monday 8 <sup>th</sup> January 2024	72
Tuesday 9 <sup>th</sup> January 2024	72
<b>Overall</b>	<b>72</b>

The results of the attended measurements undertaken at the ANMP on Friday 5<sup>th</sup> January 2024 are provided in **Table 8** overleaf.

A graph showing the measured noise levels at the ANMP is provided in **Appendix 7**.

**Table 8: Sound Pressure Levels Measured at the ANMP on the 5<sup>th</sup> January 2024**

Start Time	Sound Pressure level (dB)		Notable Noise Events
	$L_{Aeq, 1min}$ (dB)	$L_{Amax, f, 1min}$ (dB)	
14:32	54	62	1x aircraft noise event
14:33	54	61	1x aircraft noise event
14:34	52	56	1x aircraft noise event
14:35	52	55	-
14:36	52	54	Nearby house or car alarm audible (<30 seconds)
14:37	52	55	-
14:38	53	58	1x aircraft noise event
14:39	55	63	1x aircraft noise event
14:40	53	59	-
14:41	52	54	-
14:42	56	63	1x aircraft noise event
14:43	54	61	-
14:44	53	55	-
14:45	52	56	1x aircraft noise event
14:46	54	60	1x aircraft noise event
14:47	54	61	-
14:48	54	61	1x aircraft noise event
14:49	53	56	-
14:50	52	55	-
14:51	52	55	1x aircraft noise event
14:52	54	60	1x aircraft noise event
14:53	55	65	-
14:54	53	56	1x aircraft noise event
14:55	53	56	-
14:56	52	56	1x aircraft noise event
14:57	55	63	1x aircraft noise event
14:58	51	53	-
14:59	52	54	1x aircraft noise event
15:00	55	61	-
15:01	53	56	1x aircraft noise event
15:02	55	65	-
15:03	52	54	-
15:04	52	54	1x aircraft noise event
15:05	52	59	-



15:06	52	54	-
15:07	52	55	1x aircraft noise event
15:08	51	55	-
15:09	52	56	-
15:10	52	54	-
15:11	57	67	1x helicopter passing overhead (<30 seconds)
15:12	59	69	-
15:13	53	55	-
15:14	53	57	-
15:15	54	62	1x aircraft noise event
15:16	52	56	-
15:17	53	55	1x aircraft noise event
15:18	52	55	-
15:19	52	57	1x aircraft noise event
15:20	51	55	1x aircraft noise event
15:21	53	59	-
15:22	54	57	1x aircraft noise event
15:23	54	60	-
15:24	53	57	-
15:25	54	63	1x aircraft noise event
15:26	54	63	-
15:27	54	62	1x aircraft noise event
15:28	55	63	-
15:29	55	63	-
15:30	54	60	1x aircraft noise event
15:31	54	61	1x aircraft noise event
			Frequent aircraft noise associated with London Stansted Airport (aircraft passings and jet engine 'spool-up' noise)
			Frequent road traffic noise from the B183 Station Road
			Background road traffic noise from the A120 and the B1256 Dunmow Road
<b>Overall</b>	<b>54</b>	<b>65</b>	No noise was audible from 'Bonnington Farm Guest House'

As shown in **Table 8** above, the results of the attended noise monitoring show that the daytime ambient noise level at the ANMP is consistent with the daytime ambient noise level measured at the UNMP.

## 6. Design Criteria

### Site Suitability for Residential Development

This section describes an assessment of façade sound insulation to control noise ingress. The required façade specification largely depends on the external noise levels and the internal noise criteria.

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.

### Local Authority requirements

The site lies within the jurisdiction of Uttlesford District Council. The Local Authority refers to the standards set out for internal noise level in BS8233:2014, as outlined in **Section 3.4**.

Across the site, the façade performance requirements of the proposed residential dwellings are driven by the night-time maximum noise levels, notably the night-time maximum noise levels emanating from aircraft noise associated with London Stansted Airport.

**Table 9** below shows the façade elevations required sound insulation performance for the proposed residential dwellings.

**Table 9: Façade Elevations Required Sound Insulation Performance**

Period	Measured External Noise Level, dB	Internal Noise Level Requirement, dB	Minimum Sound Reduction Performance Requirement, dB SRI
Daytime (07:00 - 23:00)	54dB $L_{Aeq, 16h}$	35dB $L_{Aeq, 16h}$	19
Night-time (23:00 - 07:00)	50dB $L_{Aeq, 8h}$	30dB $L_{Aeq, 8h}$	20
Night-time (23:00 - 07:00)	72dB $L_{Amax, f, 8h}$ (95 <sup>th</sup> percentile)	45dB $L_{Amax, f, 8h}$	27

### Non-glazed elements

According to the client, the proposed residential development will be of timber frame construction. In addition, it has been proposed that the timber frame roof construction will be fully insulated, which will provide added sound insulation. The construction is anticipated to provide a minimum sound reduction performance of 43dB; the same performance would also be required for the roof construction to provide suitable sound insulation. The non-glazed elements spectral data is presented in **Table 10**, overleaf.

The non-glazed elements spectral data for the proposed construction is presented below in **Table 10**.

**Table 10: Non-glazed elements assumed sound reduction performance**

Element	Octave band centre frequency SRI, dB					
	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz
Non-glazed element SRI	16	35	44	46	52	53

### Guidance on glazing and ventilation strategy

The recommended glazing configuration and ventilation strategy is highlighted below in **Table 11**.

**Table 11: Example glazing configurations and ventilation strategies for overall facade sound insulation**

Overall facade sound insulation, $R'_w+C_{tr}$ (dB)	Example glazing configuration	Ventilation strategy
≤10	6 mm glass/16 mm cavity/6 mm glass	Open windows
10-15	6 mm glass/16 mm cavity/6 mm glass	Limited open area opening windows
15-27	6 mm glass/16 mm cavity/6 mm glass	Acoustically attenuated passive ventilation (eg, trickle vents)
28-29	6.8 mm acoustic laminate/16 mm cavity /6 mm glass	Acoustically attenuated passive ventilation (eg, trickle vents)
30-32	8.8 mm acoustic laminate /16 mm cavity/6 mm glass	Acoustically attenuated passive ventilation (eg, trickle vents)

It is recommended that glazing with a reduction value of 30dB  $R'_w+C_{tr}$  is required for all habitable rooms at the premises. 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 ambient ( $L_{Aeq}$ ) daytime and night-time noise levels and for maximum ( $L_{Amax}$ ) night-time noise levels as given in BS8233:2014.

The attenuation of sound provided by an open window is typically in the region of 10dB to 15dB, depending on the open area.

As a result of the existing external ambient and maximum noise levels at the site, the opening of windows for ventilation is not suitable as internal noise levels will exceed the desired levels as stated in BS8233:2014. As such trickle vents with a reduction value of  $D_{n,e,w}+C_{tr}$  32dB in the open position should be provided in the frames of the proposed windows allowing adequate air changes into the habitable rooms without the need for opening windows for ventilation.

## External Amenity Spaces

Although the site lies outside of the lowest daytime noise 51dB  $L_{Aeq,16hr}$  contour, which are provided in the noise exposure report from the Civil Aviation Authority (CAA), the results of the noise monitoring show that the external daytime ambient noise level at the site is 54dB  $L_{Aeq,16hr}$ . As such, the survey results suggest that the external sound levels are unlikely to exceed the 55dB  $L_{Aeq,16hr}$  upper guideline target level given in BS8233:2014.

It should be noted that the external daytime ambient noise levels at the site are dominated by both road traffic noise from the B183 Station Road and aircraft noise associated with London Stansted Airport.

It should also be noted that there is no suitable mitigation available to significantly reduce external sound levels at the site as one of the dominant noise sources is airborne and cannot be screened.

However, BS8233:2014 does state 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  $L_{Aeq}$ , which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances.

In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited'.

## 7. Conclusions

Stansted Environmental Services (SES) Ltd has been commissioned by Lioncrest Building Services Ltd to prepare an Environmental Noise Assessment for the proposed residential development consisting of 7 no. new-build dwellings at Bonningtons Yard, Station Road, Takeley, Essex, CM22 6SQ.

An environmental noise survey has been carried out by Stansted Environmental Services (SES) to establish the existing noise levels at the proposed development site.

To provide suitable conditions for the proposed residential development, minimise noise related impacts and to meet the requirements of BS8233:2014, the following recommendations will need to be included in the design of the proposed buildings;

- It is recommended that a reduction value of  $30\text{dB } R'_w+C_{tr}$  is required for all glazed elements in habitable rooms at the premises. Example specifications with minimum sound reduction index figures are provided for the new glazing proposals. The performance is specified for the whole window unit, including the frame and other design features such as the inclusion of trickle vents.
- It is recommended that trickle vents with a reduction value of  $D_{,n,e,w}+C_{tr}$  32dB in the open position should be provided in the frames of the proposed windows allowing adequate air changes into the habitable rooms without the need for opening windows for ventilation.

With the implementation of the controls stated above, the required internal noise levels can be achieved as referred to in BS8233:2014.

With respect to external spaces at the proposed development site, the external ambient noise level upper guideline of  $55\text{dB } L_{Aeq16hr}$ , as mentioned in BS8233:2014, is likely to be met.

BS8233:2014 also recognises that recommended external noise levels are not achievable in all circumstances (including near strategic transport infrastructure) and that a compromise between elevated external noise levels and other factors, such as making an efficient use of land resources to ensure development needs are met, can be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited.

The findings of this report should provide satisfactory evidence for the Local Planning Authority to be in a position to recommend discharge of Planning Condition 9 of Planning Permission UTT/23/2617/FUL, relating to environmental noise.

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## 8. Appendices

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## Appendix 1 – Glossary of Acoustics Terminology

### Noise

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20Hz to 20,000Hz and over the audible range of 0dB (the threshold of perception) to 140dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude, but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features, such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source.

The most widely used weighting mechanism that best corresponds to the response of the human ear is the “A”-Weighting Scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or  $L_{Aeq}$ ,  $L_{A90}$  etc, according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a channel guide a 10dB(A) increase can be taken to represent a doubling of loudness, whilst an increase of 3dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions.

An indication of the range of sound levels commonly found in the environment is given in the table.

### Typical Sound Levels found in the Environment

Sound Level	Location
0dB(A)	Threshold Hearing
20-30dB(A)	Quiet Bedroom at night
30-40dB(A)	Living Room during the day
40-50dB(A)	Typical Office
50-60dB(A)	Inside a Car
60-70dB(A)	Typical High Street
70-90dB(A)	Inside a Factory
90-100dB(A)	Burglar Alarm at 1m away
100-110dB(A)	Jet Aircraft on Takeoff
140dB(A)	Threshold of Pain

## Terminology

dB(Decibel)	The scale on which sound pressure level is expressed. It is defined as 20 x the logarithm of the ratio between the ratio route mean square pressure of the sound field and a reference pressure ( $2 \times 10^{-5} \text{Pa}$ )
dB(A)	A-Weighted Decibel. This is measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. A-Weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
$L_{Aeq,T}$	$L_{Aeq}$ is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.
$L_{Amax}$	$L_{Amax}$ is the maximum A-weighted sound pressure level recorded over the period stated. $L_{Amax}$ is sometimes used in assessing environmental noise where occasional loud noises occur which may have little effect on the overall $L_{eq}$ noise level but will still effect the noise environment. Unless described otherwise, it is measured using the fast sound level meter response.
$L_{Cpeak}$	The absolute highest sound pressure of the noise signal of either the positive or negative part of the sound with a 'C' weighting. 'C' weighting is the frequency response often used to measure very high noise levels.
$L_{10}$ and $L_{90}$	If a non-steady noise is to be described it is necessary to know both its level and degree of fluctuation. The $L_n$ indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence $L_{10}$ is the level exceeded for 10% of the time and as such can be regarded as the average maximum level. Similar $L_{90}$ is the average minimum level and is often used to describe the background noise. It is common practice to use the $L_{10}$ index to describe traffic noise.
Free Field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally as measured outside and away from buildings.
Fast	A time weighting used in the route mean square section of a sound level meter with a 125milisecond time constraint.
Slow	A time weighting used in the route mean square section of a sound level meter with a 1000milisecond time constant.
$R_w$	A single-number quantity which characterises the airborne sound insulation of a material or building element over a range of frequencies.
$C_{tr}$	A-weighted urban traffic noise spectrum.

## **Appendix 2 – Limitations to this Report**

### **Notes on limitations**

This report has been prepared for the titled project or named part therefore and should not be used in whole or part and relied upon for any other project without the written authorisation of Stansted Environmental Services Ltd. Stansted Environmental Services Ltd, accept no responsibility or liability for the consequences of this document if it is used for a purpose other than that for which it was commissioned. Persons wishing to use or rely upon this report for other purposes must seek written authority to do so from the owner of this report and oblige all Stansted Environmental Services Ltd, and agree to indemnify Stansted Environment Services Ltd for any and all loss or damage resulting there from. Stansted Environment Services Ltd accepts no responsibility or liability for this document to any other party other than the person by whom it was commissioned.


The findings and opinions are relevant to the dates of the site works and should not be relied upon to represent conditions at substantially later dates. Opinions included therein are based on information gathered during the study and from our experience. If additional information becomes available which may affect our comments, conclusions or recommendations, Stansted Environment Services Ltd, reserve the right to review the information, reassess any new potential concerns and modify our opinions accordingly.

## Appendix 3 – Proposed Site Plan



**Figure 8: Proposed site plan – Bonningtons Yard, Station Road, Takeley, Essex, CM22 6SQ**

**Appendix 4 – Planning Permission (including details of Condition 9) for the proposed development (Ref.: UTT/23/2617/FUL) 15.12.2023**

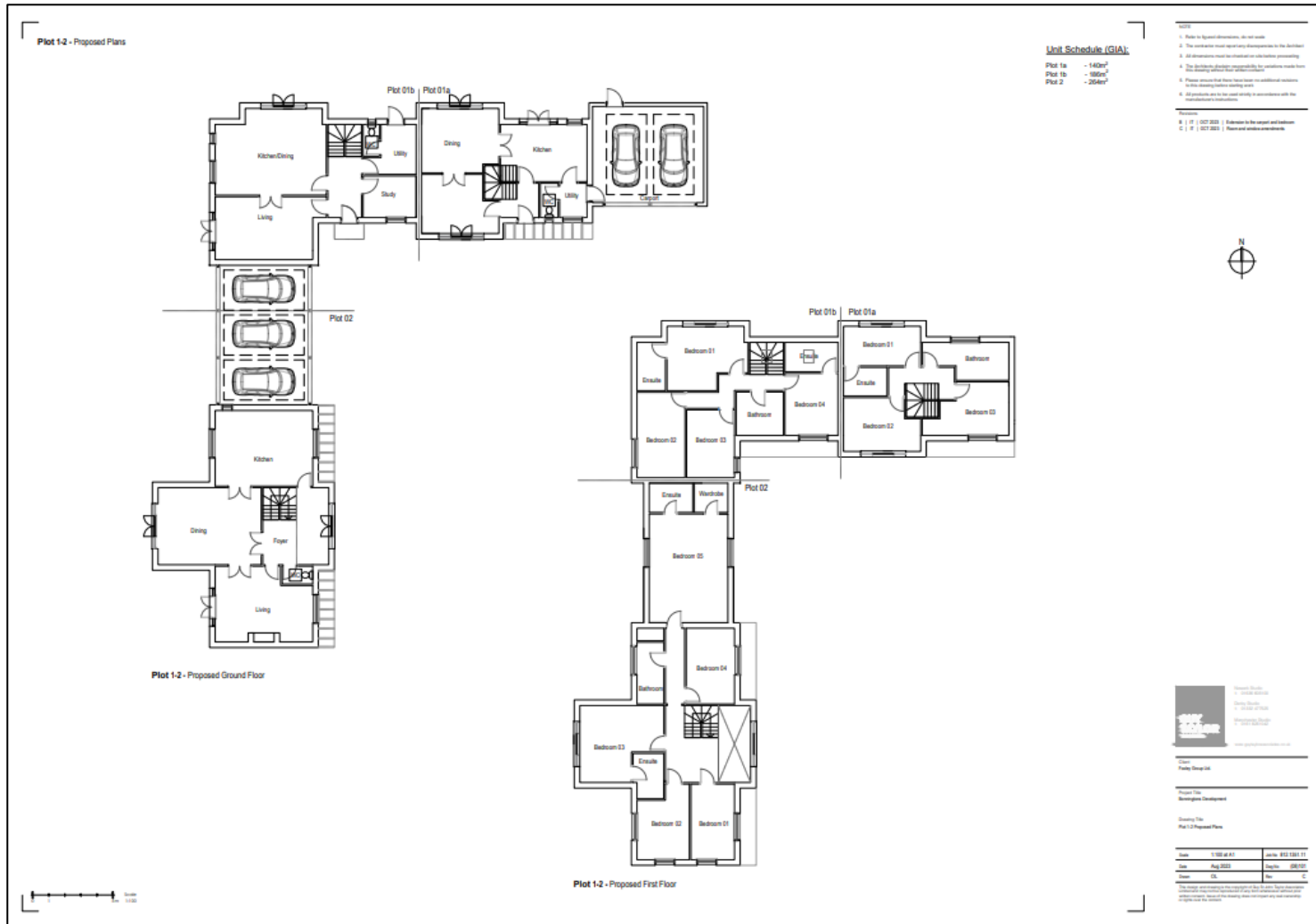
 <p>UTTLESFORD DISTRICT COUNCIL <i>It's Our Community</i></p>	<p><b>UTTLESFORD DISTRICT COUNCIL</b></p> <p>Council Offices, London Road, Saffron Walden, Essex CB11 4ER Telephone (01799) 510510, Fax (01799) 510550 Textphone Users 18001 Email <a href="mailto:uconnect@uttlesford.gov.uk">uconnect@uttlesford.gov.uk</a> Website <a href="http://www.uttlesford.gov.uk">www.uttlesford.gov.uk</a></p>	
<p>Ms Natalie Taylor Foxley Group Barn 3 Warren Park Green Tye Herts SG10 6FF</p>	<p>Dated: 15 December 2023</p>	
<p><b>TOWN AND COUNTRY PLANNING ACT 1990 (AS AMENDED) TOWN AND COUNTRY PLANNING (DEVELOPMENT MANAGEMENT PROCEDURE) (ENGLAND) ORDER 2015</b></p>		
<p><b>Application Number: UTT/23/2617/FUL</b></p>		
<p><b>Applicant: Foxley Commercial Property Ltd</b></p>		
<p>Uttlesford District Council <b>Grants Permission</b> for:</p>		
<p><b>Demolition of existing buildings and erection of 7 no. dwellings and associated work at Bonningtons Yard Station Road Takeley Essex CM22 6SQ</b></p>		
<p><b>The approved plans/documents are listed below:</b></p>		
Plan Reference/Version	Plan Type/Notes	Received
(08)001	Location Plan	16/10/2023
(08)101 C	Floor Plan (proposed)	16/10/2023
(08)102 D	Elevations (proposed)	16/10/2023
(08)105	Combined	16/10/2023
(08)107 A	Block Plan	16/10/2023
(08)108 C	Block Plan	16/10/2023
(08)109	Elevations (proposed)	16/10/2023
(08)110	Elevations (proposed)	16/10/2023
(03)106 A	Combined	16/10/2023

**Figure 9: Planning Permission with conditions (Ref.: UTT/23/2617/FUL) dated 15.12.2023 (page 1 of 11)**

9	<p>No development shall commence on site until a detailed scheme, informed by an assessment of the current noise environment, for protecting the dwellings from the external noise environment of the area has been submitted to and approved, in writing, by the Local Planning Authority.</p> <p>The scheme itself shall be designed, specified and constructed so that the sound insulation performance of the structure and the layout of the dwellings are such that the indoor ambient noise levels do not exceed the values detailed in Table 4 of BS 8233:2014 and the and that the individual noise events do not exceed 45 dB LA,max,F more than 10 times a night.</p> <p>Where opening windows will lead to an internal noise level increase of 5 dBA or greater above BS 8233:2014 recommended internal levels, the scheme shall include provision of alternative mechanical ventilation with minimum performance equivalent to a mechanical heat recovery (MVHR) system with cool air bypass as an alternative means of cooling and ventilation. Noise from the system should not result in BS8233 internal levels being exceeded.</p> <p>Thereafter, the development shall not be carried out other than in accordance with the approved scheme which shall be completed before any part of the accommodation hereby approved is occupied, unless the Local Planning Authority otherwise agrees in writing.</p> <p>REASON: These details are required due to insufficient information being contained within this submission and in order to safeguard the amenity of occupants in accordance with Policies GEN4 and ENV10 of the Uttlesford Local Plan (adopted 2005).</p>
10	<p>No development shall take place, including any works of demolition, until a Construction Method Statement has been submitted to, and approved in writing by the local planning authority. The statement shall specify the provisions to be made for the control of noise and dust emanating from the site and shall be consistent with the best practicable means as set out in the Uttlesford Code of Development Practice.</p> <p>The approved Statement shall be adhered to throughout the construction period.</p> <p>REASON: In the interests of the amenity of surrounding locality residential/business premises in accordance with Policies GEN1, GEN2, and GEN4 of the Uttlesford Local Plan (adopted 2005).</p>
11	<p>No development or preliminary groundworks of any kind shall take place until a programme of archaeological evaluation has been secured in accordance with a written scheme of investigation which has been submitted by the applicant and approved in writing by the local planning authority.</p> <p>REASON: The Historic Environment Record shows that the proposed development lies within an area of known sensitive archaeological deposits, in accordance with the provisions of Policy ENV4 of the adopted Uttlesford Local Plan 2005</p>
12	<p>No development or preliminary groundworks of any kind shall take place until the completion of the programme of archaeological evaluation identified in the WSI defined in Condition 11 and confirmed by the Local Authority archaeological advisors.</p>

**Figure 10: Planning Permission with conditions (Ref.: UTT/23/2617/FUL) dated 15.12.2023 (page 4 of 11)**

## Appendix 5 – Plans and Elevations drawings

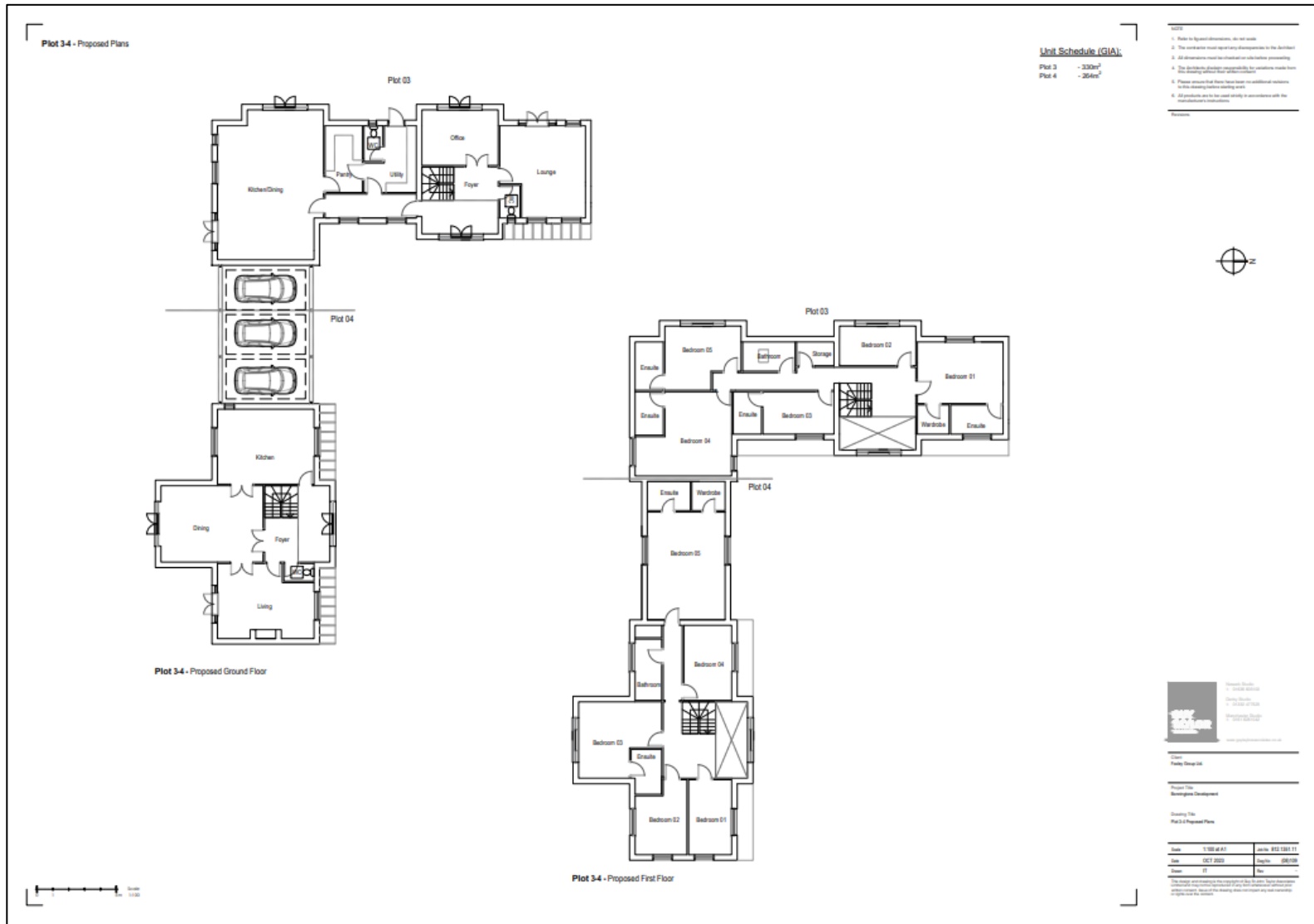


**Figure 11: Proposed Plans – Plots 1a, 1b and 2 – Bonningtons Yard, Takeley**



**Figure 12: Proposed Elevations – Plots 1a, 1b and 2 – Bonningtons Yard, Takeley**

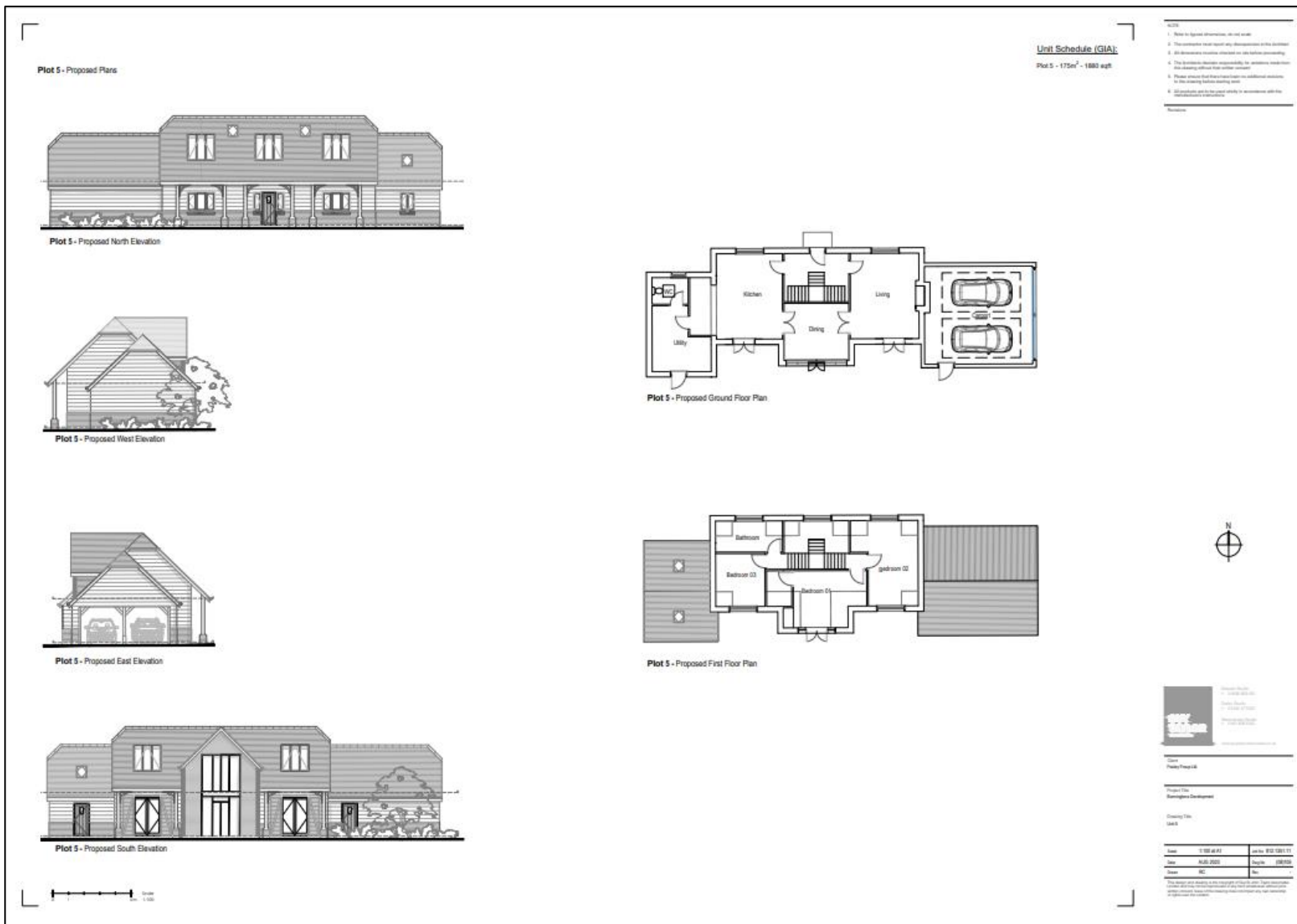




**Figure 13: Proposed Plans – Plots 3 and 4 – Bonningtons Yard, Takeley**



**Figure 14: Proposed Elevation – Plots 3 and 4 – Bonningtons Yard, Takeley**

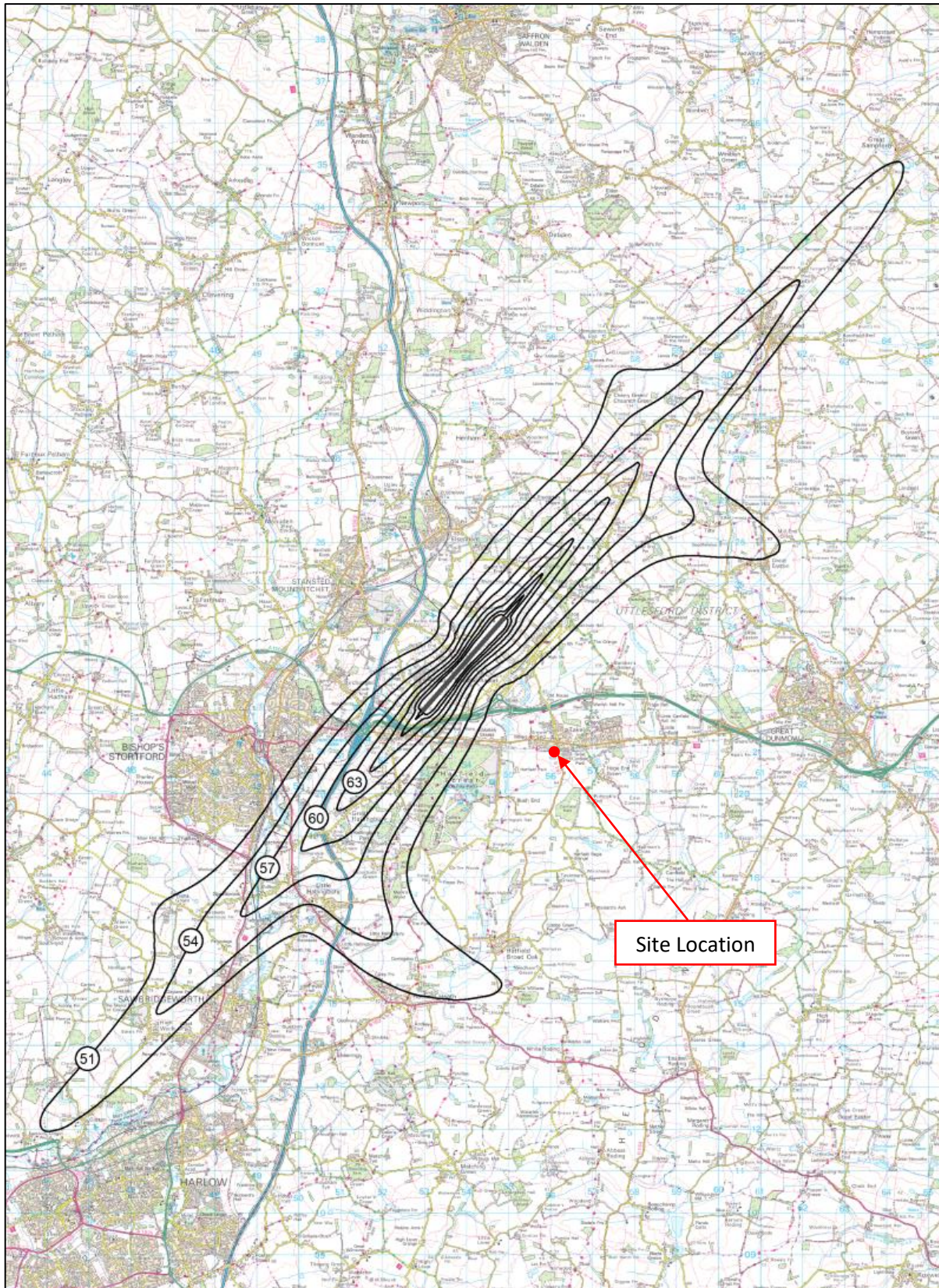


**Figure 15: Proposed Plans and Elevations – Plot 5 – Bonningtons Yard, Takeley**

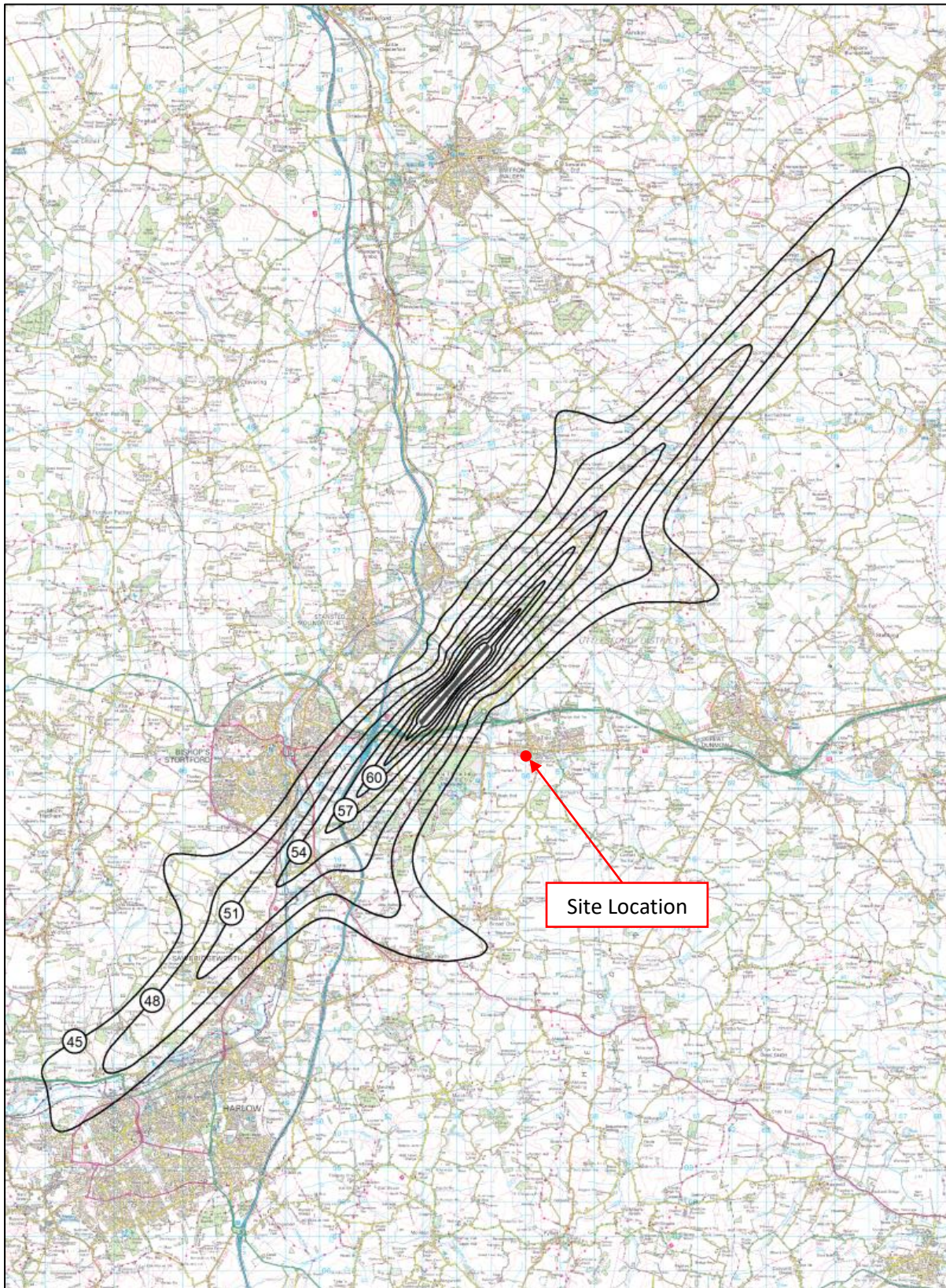


**Figure 16: Proposed Plans and Elevations – Plot 6 – Bonningtons Yard, Takeley**

## Appendix 6 – Stansted Airport Noise Contours

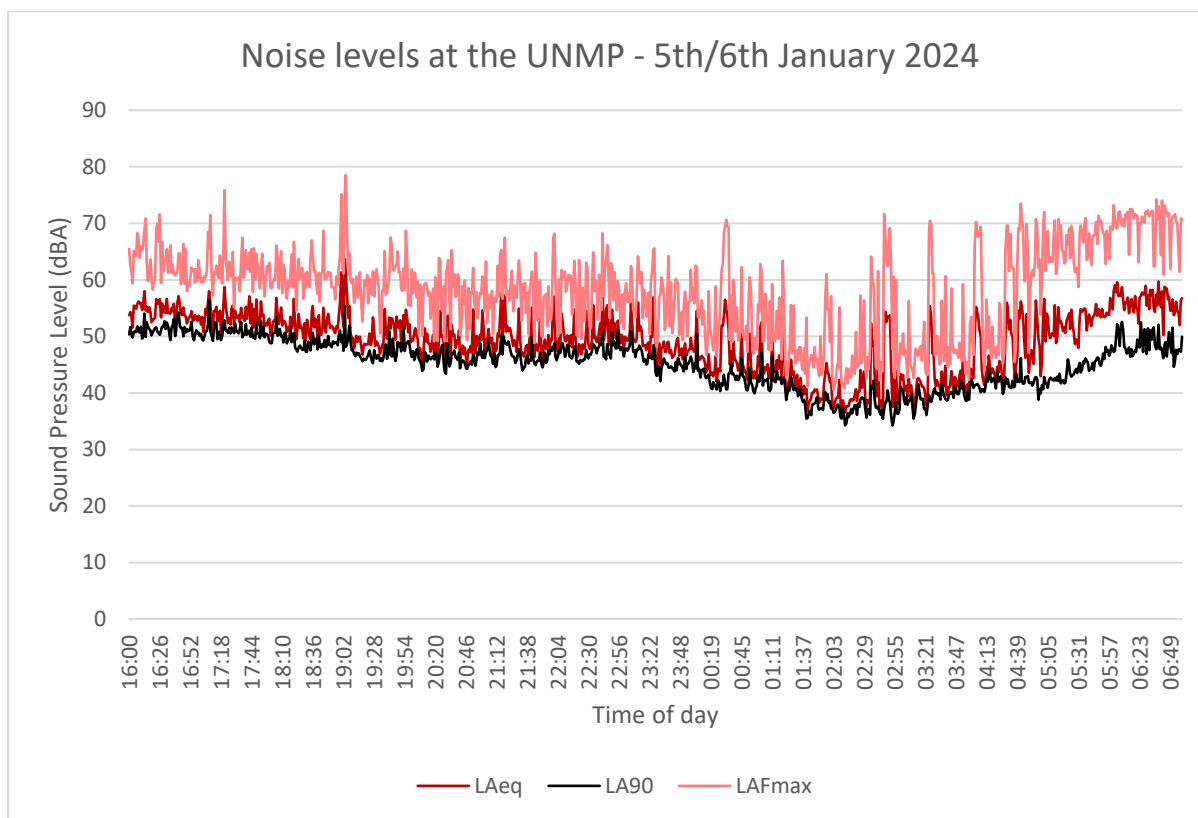


**Figure 17: Stansted 2022 summer day actual modal split (58% SW / 42% NE)  $L_{Aeq,16h}$  contours**

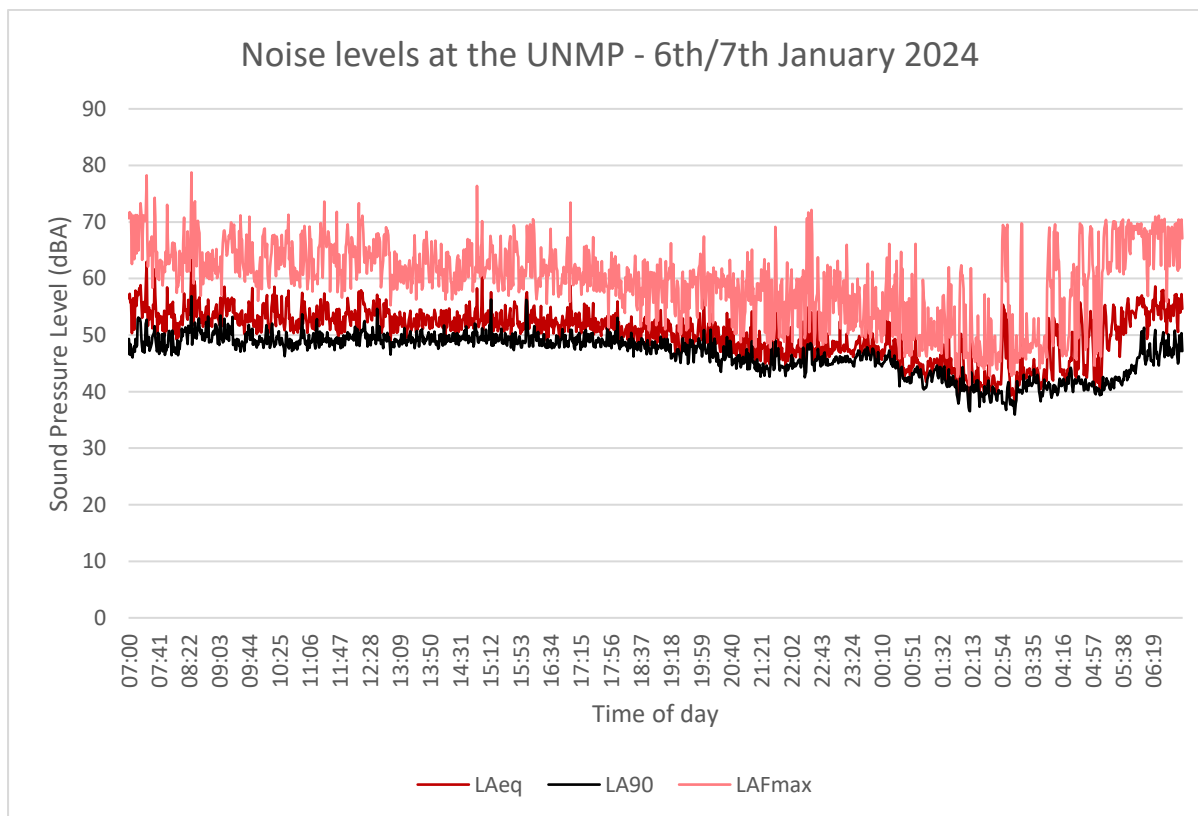


**Figure 18: Stansted 2022 summer night actual modal split (59% SW / 41% NE)  $L_{Aeq,8h}$  contours**

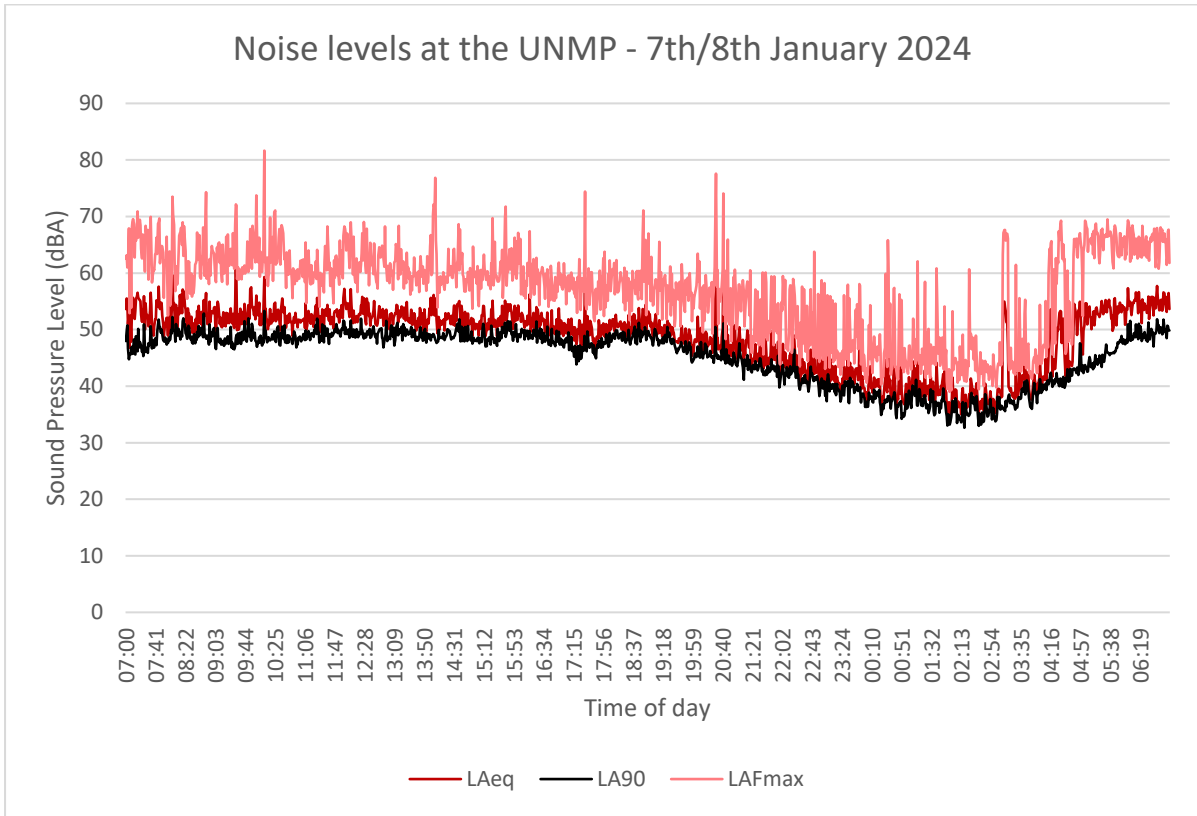
## Appendix 7 – Noise Monitoring Data



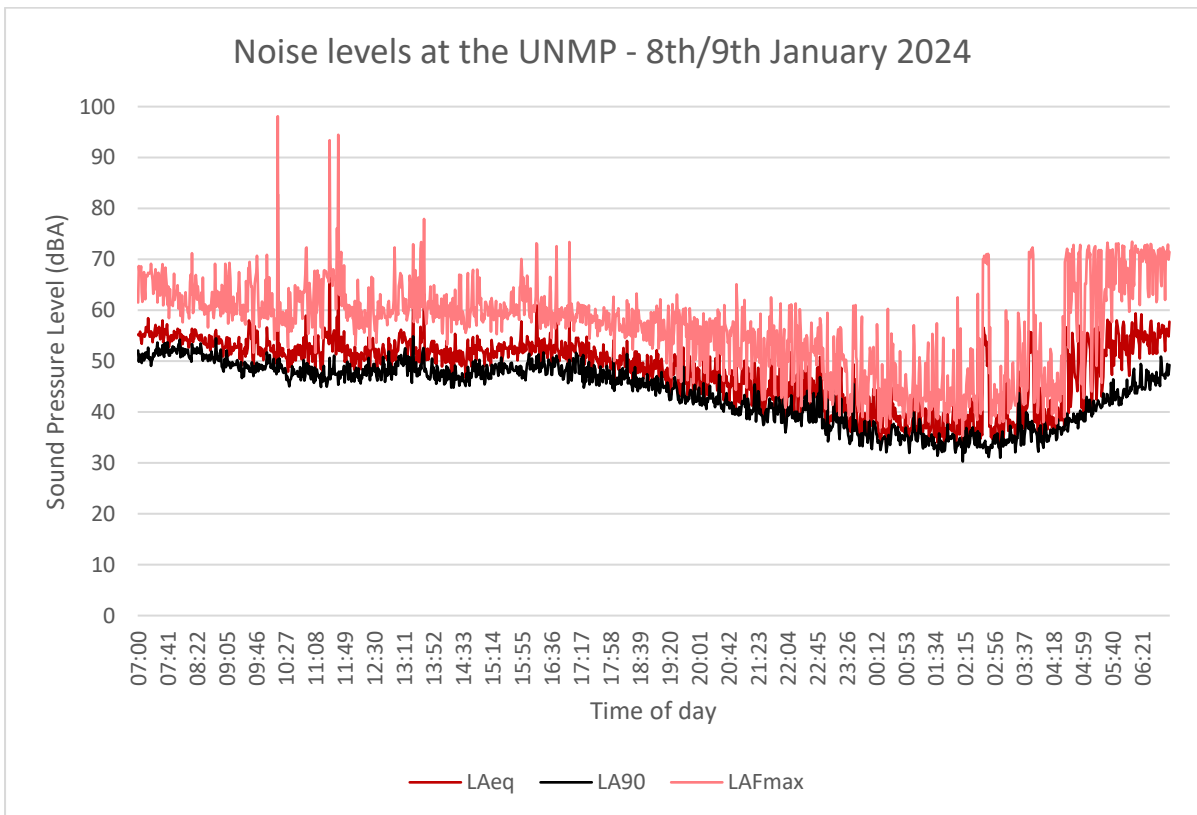
**Figure 19: Graphical representation of the noise levels at the UNMP on the 5<sup>th</sup>/6<sup>th</sup> January 2024**



**Figure 20: Graphical representation of the noise levels at the UNMP on the 6<sup>th</sup>/7<sup>th</sup> January 2024**

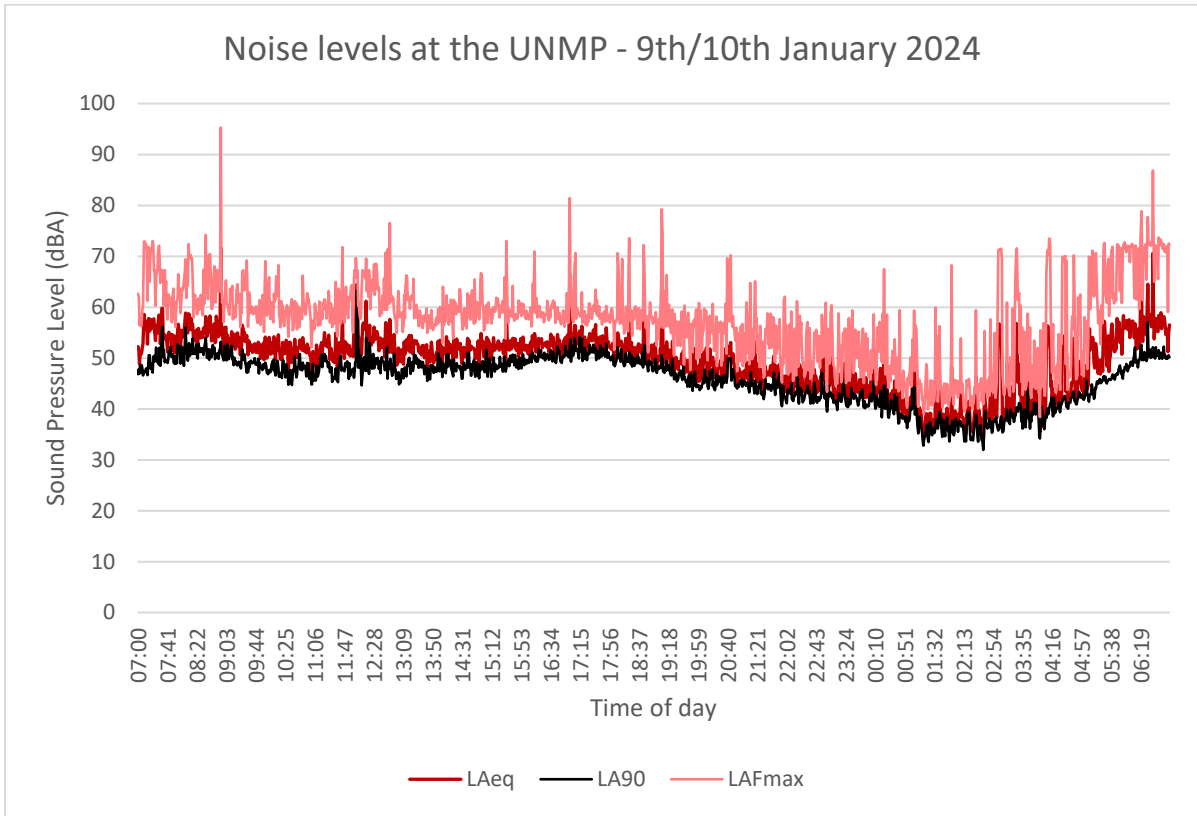


**Figure 21: Graphical representation of the noise levels at the UNMP on the 7<sup>th</sup>/8<sup>th</sup> January 2024**

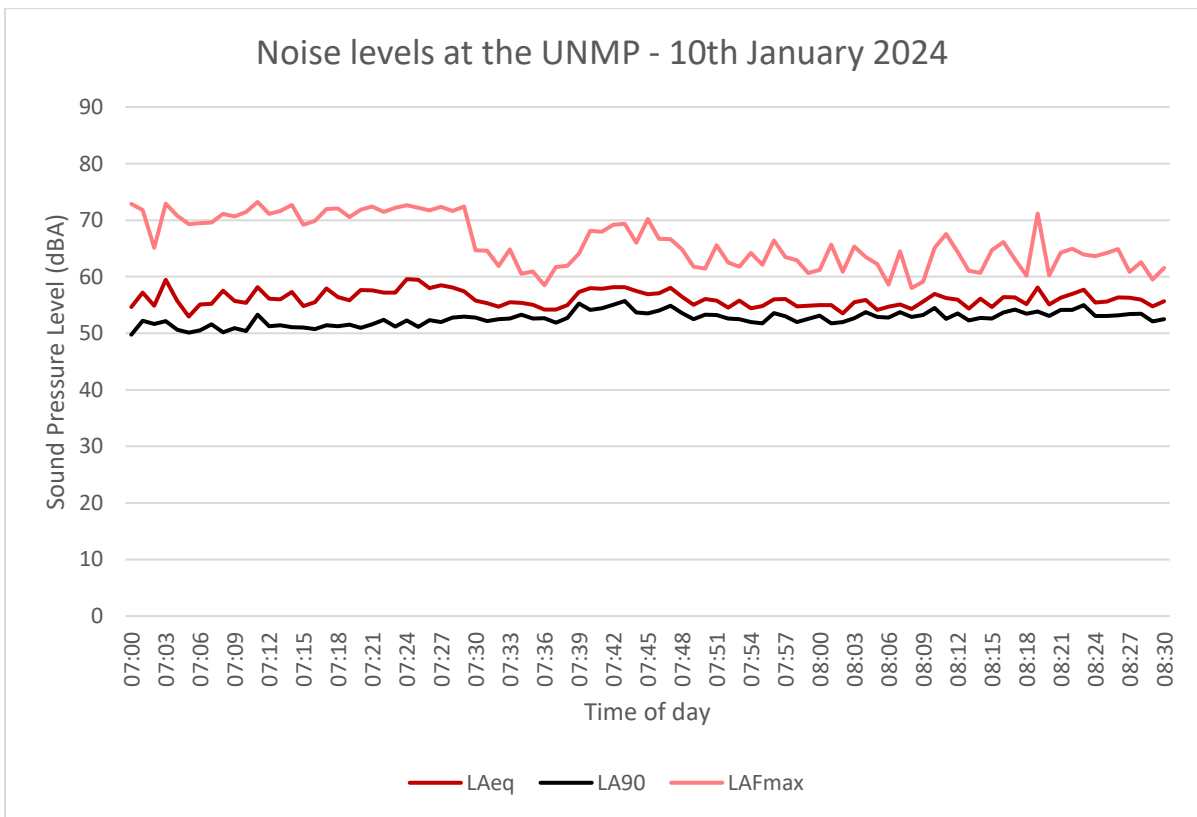


**Figure 22: Graphical representation of the noise levels at the UNMP on the 8<sup>th</sup>/9<sup>th</sup> January 2024**

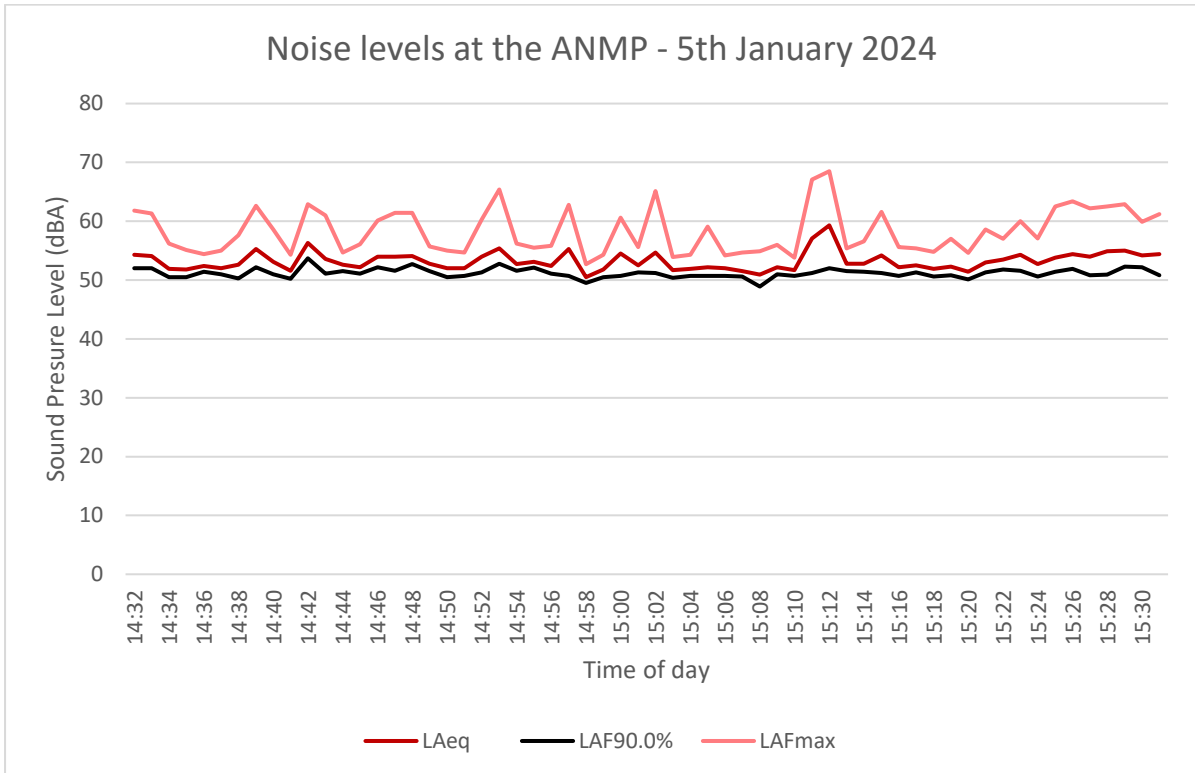




**Figure 23: Graphical representation of the noise levels at the UNMP on the 9<sup>th</sup>/10<sup>th</sup> January 2024**



**Figure 24: Graphical representation of the noise levels at the UNMP on the 10<sup>th</sup> January 2024**



**Figure 25: Graphical representation of the noise levels at the ANMP on the 5<sup>th</sup> January 2024**