

ENVIRONMENTAL NOISE ASSESSMENT KINGSCOTE PLACE, EAST GRINSTEAD

Project Reference:

ENV416-EAST-001 Kingscote Place, East Grinstead

Site Address:

Imberhorne Farm
Imberhorne Lane
East Grinstead
West Sussex
RH19 1TX

Version Number:

Version 1.1

Report Date:

26th August 2026

Customer:

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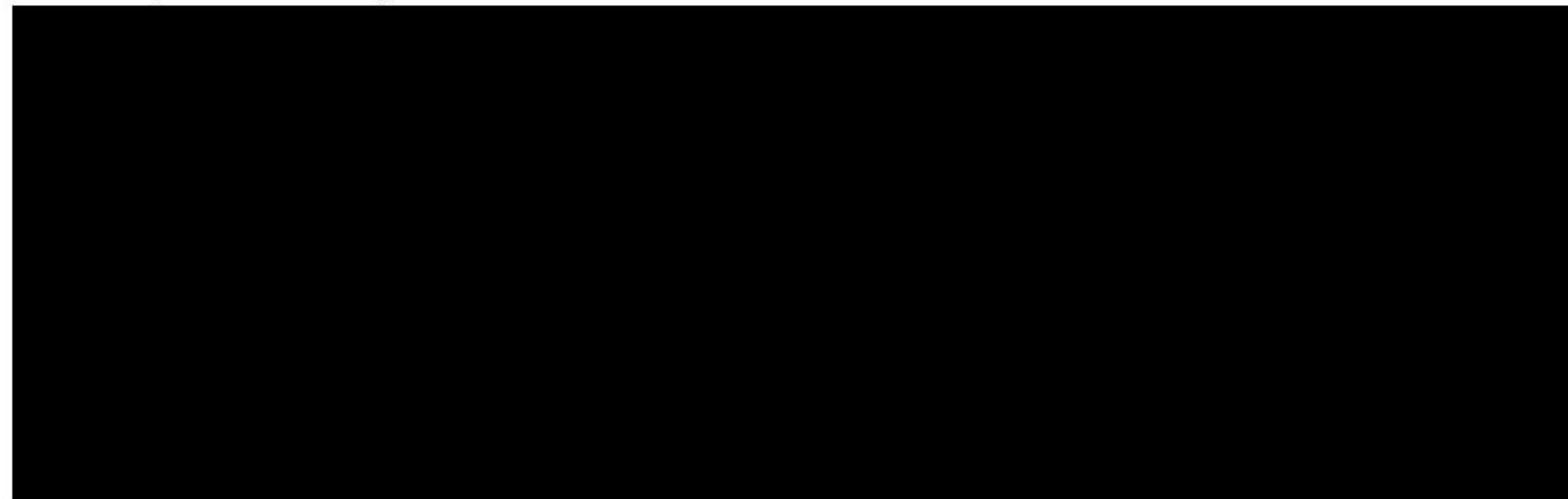
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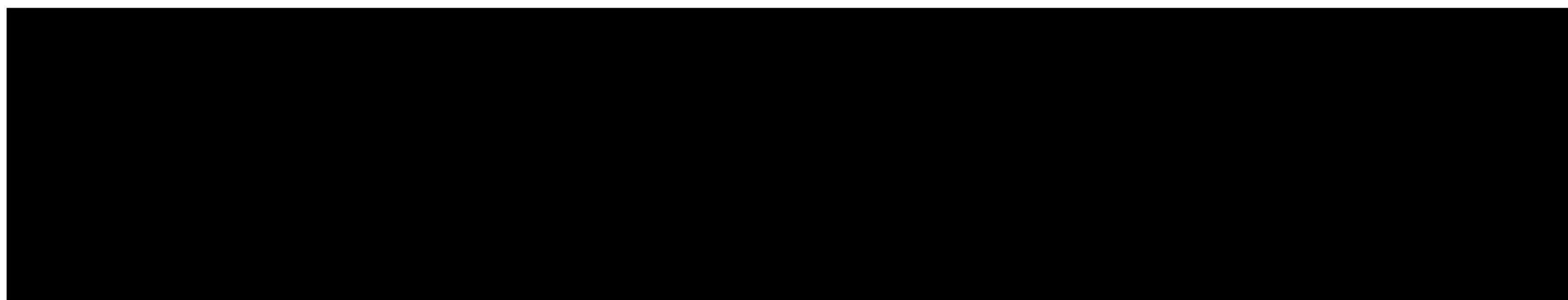
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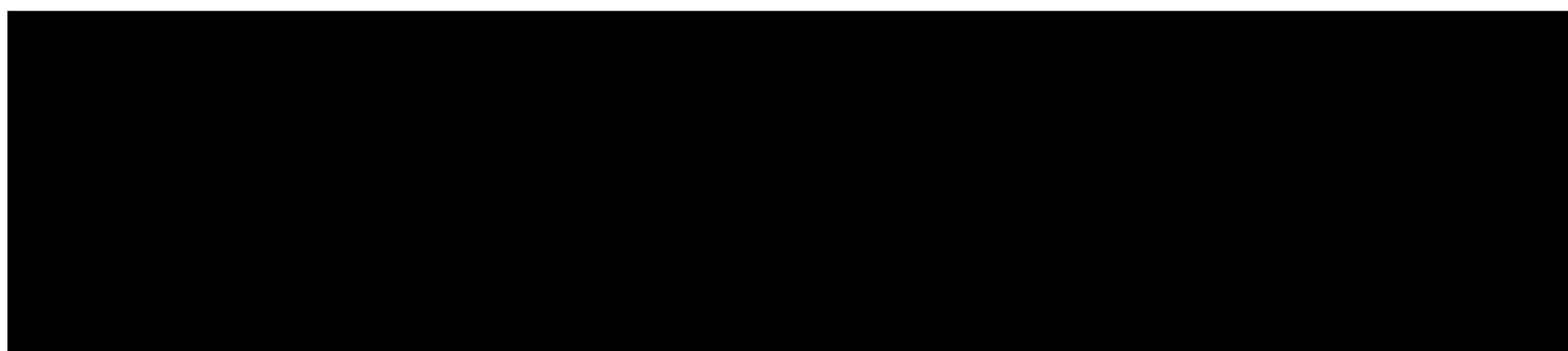
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PROFESSIONAL CREDENTIALS

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).

Tom is the Head of Technical and has been working for Stansted Environmental Services Ltd for over 10 years and has experience in sound insulation testing and airtightness testing. Tom currently manages the technical team at SES, which consists of environmental technicians who undertake sound insulation testing and air tightness testing as well as consultants who undertake acoustic assessments.

Tom holds the IOA Diploma in Acoustics and Noise Control, the Certificate of Competence in Building Acoustics Measurement and is a Technician Member of the Institute of Acoustics (IOA). Tom is also an ATTMA registered level 2 air tightness tester and a domestic energy assessor.

Hugo is an Environmental Consultant and has been working for Stansted Environmental Services Ltd for over 5 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.

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1. Introduction

Stansted Environmental Services (SES) Ltd has been commissioned by Rangeford East Grinstead Limited to prepare an Environmental Noise Assessment to assist with the reserved matters planning application for the proposed development of an integrated retirement community scheme consisting of 134 residential units (comprising 118 apartments and 16 bungalows) at the site known as Kingscote Place located at Imberhorne Farm, Imberhorne Lane, East Grinstead, West Sussex, RH19 1TX.

The purpose of this report is:

- To determine and assess the prevailing external 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 and the external noise levels to be achieved within amenity spaces and,
- To identify and recommend appropriate mitigation measures for the purposes of mitigating noise caused by prevailing noise sources such that target internal and external noise levels are achieved

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,
- 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 and,
- Acoustics, Ventilation and Overheating: Residential Design Guide (AVO), January 2020

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

2. Site Description

An aerial view of the site, outlined in **red**, is provided in **Figure 1** below.



Figure 1: Aerial view of the site

Figure 1 above shows the site in its current form.

The site layout plan is provided in **Figure 2** overleaf.



Figure 2: Site layout plan

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It should be noted that **Figure 2** above shows the proposed, site layout, which includes proposed highway alterations including the formation of a new roundabout on Imberhorne Lane.

Kingscote Place, Imberhorne Farm, Imberhorne Lane, East Grinstead, West Sussex, RH19 1TX (hereafter referred to as 'the site') is proposed to consist of 134 residential units (comprising 118 apartments and 16 bungalows) as an integrated retirement community scheme.

The site is located on the Western edge of East Grinstead and is bordered by Imberhorne Lane to the East with existing residential dwellings beyond.

To the South, the site is bordered by a bridleway known as Worth Way with open green space beyond.

To the West, the site is bordered by the existing buildings of Imberhorne Farm with agricultural land beyond to the West.

To the North, the site is bordered by a bridleway with public woodland and existing residential dwellings beyond.

Further afield, London Gatwick airport lies at approximately 10km (6.2miles) to the North-West of the site.

During the site visits undertaken on Friday 1st and Wednesday 6th May 2026, it was noted that the principal source of noise impacting upon the site was road traffic passing along Imberhorne Lane to the East of the site. Road traffic primarily impacted upon the Eastern elevation of the site.

Frequent, aircraft passings were also noted to occur, typically passing every 3-4 minutes. During the site visits, aircraft were noted to pass the site following their departure from London Gatwick Airport, travelling in either a West to East direction (passing the North of the site) or in a West to South direction (passing the West of the site).

Figure 12 in Appendix 4 shows the London Gatwick Airport aircraft routes which pass to the North and West of the site, namely route 5 and route 2, respectively.

At the East of the site, aircraft passings were often masked by road traffic noise emanating from Imberhorne Lane, however at the West of the site, aircraft passings were more noticeable.

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 (NPSE),
- BS8233:2014 Guidance on sound insulation and noise reduction for buildings,
- The WHO Guidelines for Community Noise,
- ProPG: Planning and Noise – Professional Practice Guidance on Planning & Noise – New Residential Development, May 2017 and,
- Acoustics, Ventilation and Overheating: Residential Design Guide (2020)

3.1 The National Planning Policy Framework (NPPF)

The National Planning Policy Framework was first published in March 2012 and has had a number of revisions since. The latest version of the NPPF was adopted in August 2026.

The 2026 NPPF overhaul restructures national noise policy into standardised, decision-making policies, placing greater responsibility on developers to address noise upfront.

Noise criteria are outlined with Policy P3 (Living Conditions and Pollution).

In relation to noise, policy P3 states:

- P3(2)(a) - that development proposals should *“Provide healthy living conditions for occupiers and users in terms of... avoiding exposure to levels of... noise... which could have an unacceptable adverse effect on health and the quality of life. Where necessary suitable mitigation measures should be incorporated to secure acceptable living conditions”*
- P3(2)(b) – that development proposals should *“not give rise to, or contribute to... unacceptable levels of noise... on or beyond the site. Adverse impacts of this nature should be avoided where possible, or else mitigated to an acceptable degree. Where possible, opportunities should be taken to reduce (noise) pollution affecting the wider area”*
- P3(2)(d) – the development proposals should *“Mitigate and reduce to a minimum potential adverse impacts resulting from noise, not result in levels of noise exposure which would have a significant observed adverse effect, and maintain the character of tranquil areas (those areas that have remained relatively undisturbed by noise from human sources and are prized for their recreational and amenity value for this reason”*

Policy P4 (Impact of development on existing activities) of the NPPF 2026 incorporates the agent of change principle, explicitly reinforcing this principle since previous versions of the NPPF.

Policy P4(1) states that *“Existing businesses, community facilities, public services and defence and security activities should not have unreasonable restrictions placed on their current or permitted operation as a result of development being approved after they were established”*.

Policy P4(2)(a) goes on to state that where the operation of an existing activity could have a significant adverse effect on a proposed new development in its vicinity, development

proposals should *“Identify the nature of the potential impacts, informed where necessary by early discussions between the applicant (i.e. the ‘agent of change’) and those existing uses which could be affected by the proposal to inform the scope for mitigation”*.

Policy P4(2)(b) states that where the operation of an existing activity could have a significant adverse effect on a proposed new development in its vicinity, development proposals should *“Be able to demonstrate that suitable mitigation can be provided before first occupation of the development, if it is to be acceptable. Planning conditions or obligations should be used to secure agreed mitigation measures”*.

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** overleaf.

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 $L_{Aeq,16\text{-hour}}$	---
Dining	Dining room area	40dB $L_{Aeq,16\text{-hour}}$	---
Sleeping	Bedroom	35dB $L_{Aeq,16\text{-hour}}$	30dB $L_{Aeq,8\text{-hour}}$

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 $L_{Amax,f}$ should not be regularly exceeded in bedroom spaces during night-time periods.

3.5 World Health Organisation (WHO) 2018; Environmental Noise Guidelines for the European Region

WHO 2018: *Environmental Noise Guidelines for the European Region* has established recommended guideline values for specific outdoor noise sources, which are summarised below in Table 3.

Table 3: WHO 2018 – Noise Exposure Limits

Noise Source	Average exposure limit (L_{den})	Night-time exposure limit (L_{night})	Strength of recommendation
Road traffic	<53dB L_{den}	<45dB L_{night}	Strong
Railway	<54dB L_{den}	<44dB L_{night}	Strong
Aircraft	<45dB L_{den}	<40dB L_{night}	Strong
Wind turbines	<45dB L_{den}	No specific recommendation	Conditional
Leisure activities	<70dB $L_{Aeq,24hr}$ (yearly average)	Follow existing legal limits	Conditional

The indoor noise exposure guideline values are summarised below:

- Indoor Speech Intelligibility – Moderate Annoyance 35 dB(A) $L_{Aeq, 16 \text{ hours}}$ between 07:00 and 23:00
- Inside bedrooms night-time sleep disturbance 30dB(A) $L_{Aeq, 8 \text{ hours}}$ between 23:00 and 07:00
- Inside bedrooms, window open, sleep disturbance 45dB(A) $L_{Amax, f}$

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 4: WHO Exposure –Effects Relationship

Average night noise levels over a year $L_{night,outside}$	Health Effects Observed in the Population
Up to 30dB	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.
30 to 40dB	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.
40 to 55dB	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.
Above 55dB	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 4**, the night noise guideline values are recommended for the protection of public health from night noise as follows:

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

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 187 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.

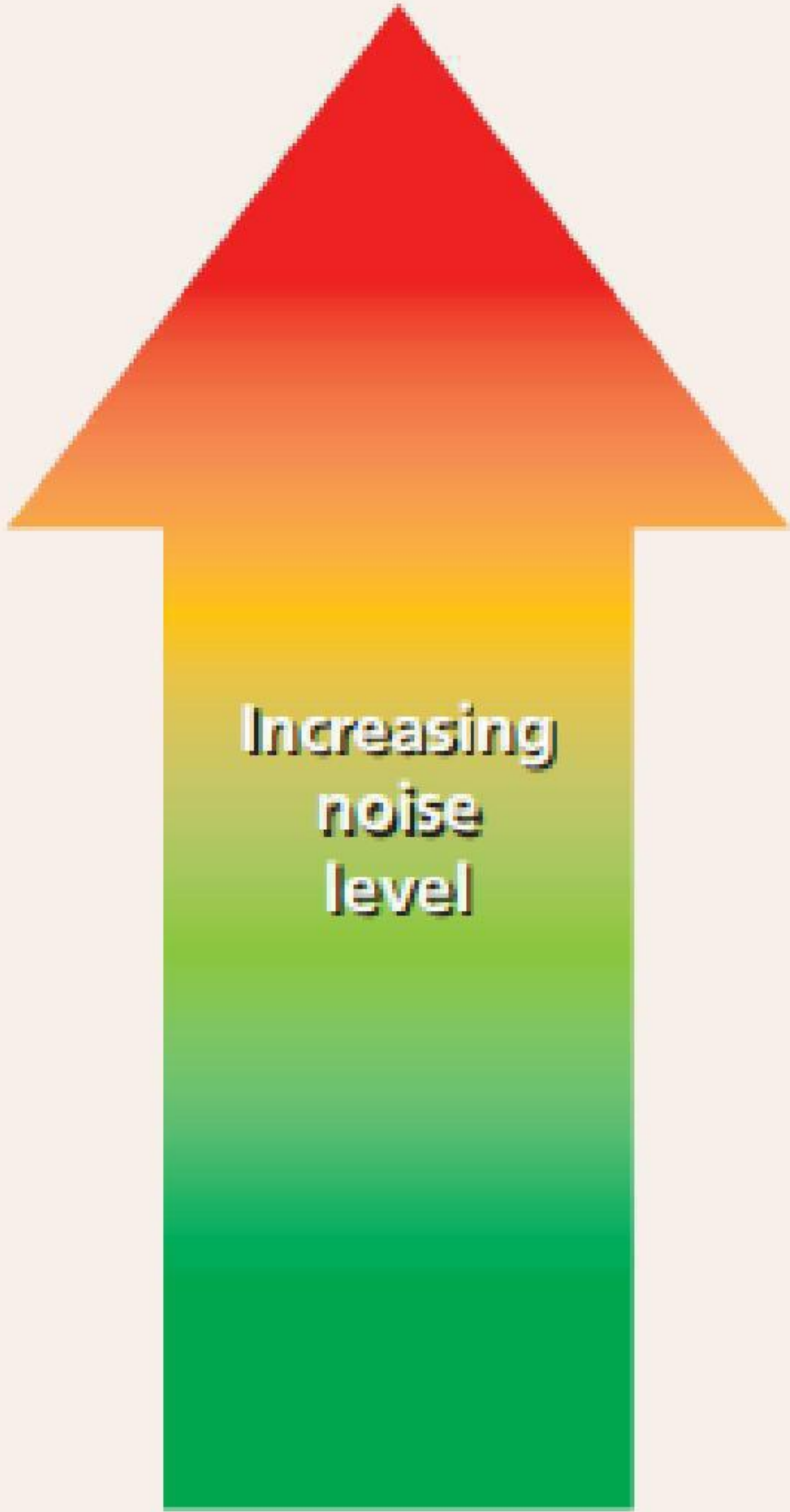
3.7 Acoustics, Ventilation and Overheating: Residential Design Guide, January 2020

The Acoustics, Ventilation and Overheating (AVO) Guide provides guidance for the planning, development design and commissioning of new dwellings. Within it is an approach to acoustic assessments for new residential developments, taking into account the relationship of acoustics, ventilation and overheating. The AVO guide is designed to demonstrate good acoustic design, as described in the ProPG: Planning & Noise guidance, when considering internal noise level guidelines.

The AVO Guide seeks to:

- Encourage an assessment of noise that recognizes the interdependence between the acoustics, ventilation, and overheating designs;
- Provide a means of assessment to satisfy the need to consider acoustics, ventilation and overheating at the planning stage;
- Assist in educating clients, environmental health/planning officers and other stakeholders of the interdependence of design for acoustics, ventilation, and overheating.

Table 6: Guidance for Level 2 assessment of noise from transport noise sources relating to overheating condition (Source: AVO Residential Design Guide, v1.1, January 2020)

Internal ambient noise level [Note 2]			Examples of Outcomes [Note 5]	
$L_{Aeq,T}$ [Note 3] during 07:00 – 23:00 [Note 6]	$L_{Aeq,8h}$ during 23:00 – 07:00	Individual noise events during 23:00 – 07:00 [Note 4]		
> 50 dB	> 42 dB	Normally exceeds 65 dB $L_{AF,max}$	Noise causes a material change in behaviour e.g. having to keep windows closed most of the time	Avoiding certain activities during periods of intrusion. Having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.
			Increasing likelihood of impact on reliable speech communication during the day or sleep disturbance at night	At higher noise levels, more significant behavioural change is expected and may only be considered suitable if occurring for limited periods. As noise levels increase, small behaviour changes are expected e.g. turning up the volume on the television; speaking a little more loudly; having to close windows for certain activities, for example ones which require a high level of concentration. Potential for some reported sleep disturbance. Affects the acoustic environment inside the dwelling such that there is a perceived change in quality of life. At lower noise levels, limited behavioural change is expected unless conditions are prevalent for most of the time. [Note 8]
≤ 35 dB	≤ 30 dB	Do not normally exceed $L_{AF,max}$ 45 dB more than 10 times a night	Noise can be heard, but does not cause any change in behaviour	Noise can be heard, but does not cause any change in behaviour, attitude, or other physiological response [Note 9]. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.

Regarding maximum internal noise levels, the guide states the following:

“For simplicity, it is considered that the external design case maximum level determined for the overheating condition should not result in the $L_{Amax,r}$ within bedrooms exceeding a value of 65dB.”

Additionally, the guide further states:

“Overheating design case L_{AFmax} levels up to but not normally exceeding 65dB may be acceptable for limited periods”

For passive ventilation via an open window, an approximate level difference (external free field to internal reverberant level) of -13dB is quoted. For clarity, this would be when a window is open sufficiently to provide a ventilation free-area equivalent to 2% of the floor area.

This guidance further states the following commentary:

“Crucially, how long will people tolerate higher noise levels in order to stay cool? One suggestion is to consider the overall average day (16h) and night (8h) time average. There is some logic to this as we know that we can tolerate high noise levels for a short duration and high levels for a little longer....”

Within Appendix B of the AVO guide, the following graphs are provided to be considered in the assessment of the likelihood of adverse impact from transport noise for daytime and night-time periods. The figures overleaf outline the threshold of adverse effect on occupants within dwellings based on the internal ambient noise levels and the frequency of their occurrence.

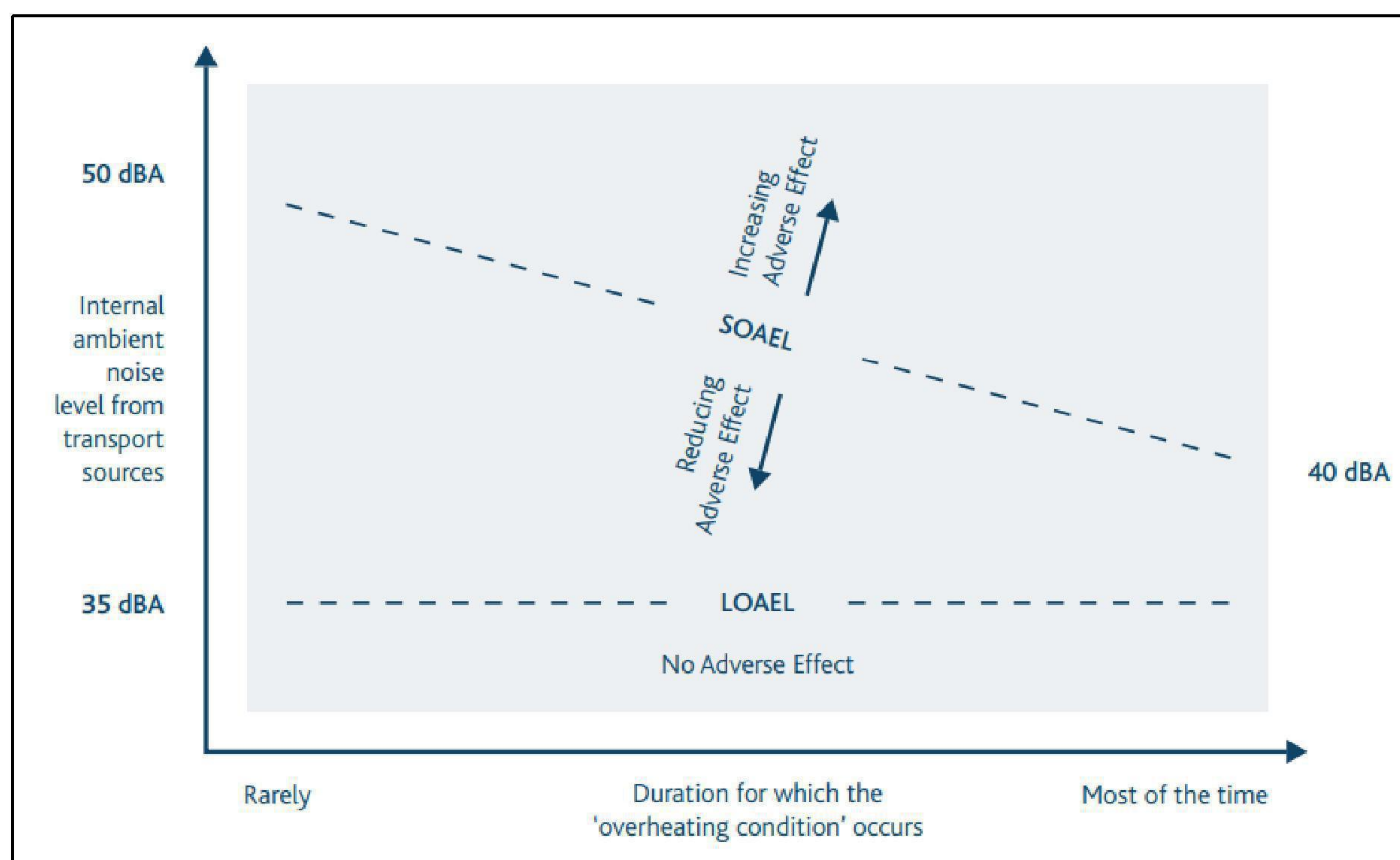


Figure 3: Figure B-2 'AVO Diagram' indicating noise levels associated with adverse effects during the daytime (Source: AVO Residential Design Guide, v1.1, January 2020)

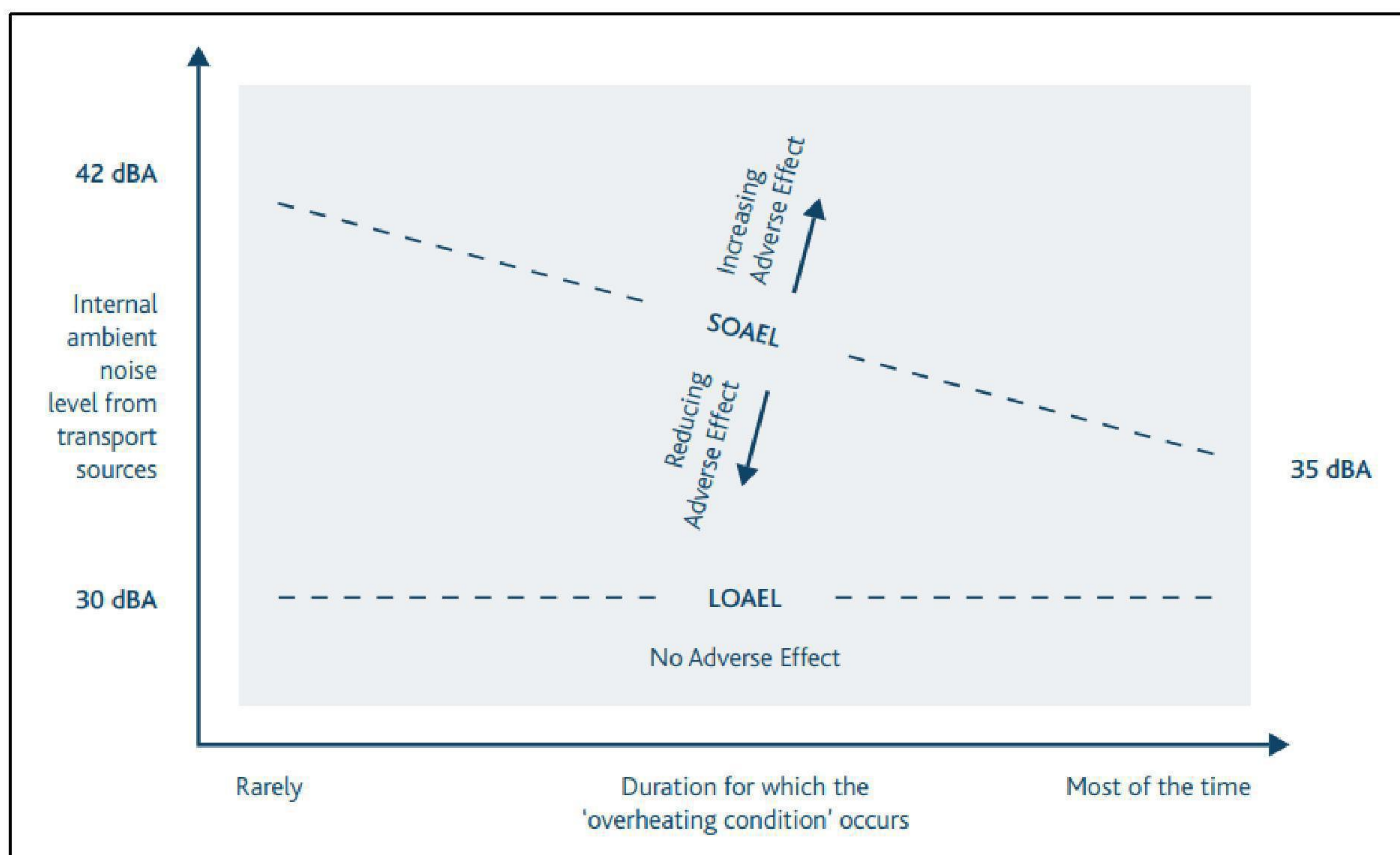


Figure 4: Figure B-3 ‘AVO Diagram’ indicating noise levels associated with adverse effects during the night-time (Source: AVO Residential Design Guide, v1.1, January 2020)

3.8 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 proximity of the proposed development to Gatwick Airport aircraft flight paths.

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.

3.9 London Gatwick Airport Noise Contours

Noise exposure contours have been produced by the Civil Aviation Authority for London Gatwick Airport within the ERCD Report 2502 titled ‘*Noise Exposure Contours for Gatwick Airport 2024*’, dated May 2025. These are reproduced in **Appendix 4**.

The ERCD 2502 report provides daytime $L_{Aeq, 16hr}$ and night-time $L_{Aeq, 8hr}$ noise contour maps as well as supplementary N65 16-hour and N60 8-hour noise contour maps. N65 and N60 contours indicate the number of aircraft noise events exceeding a maximum sound level (L_{Amax}) of 65dB and 60dB, respectively, at a given location.

In terms of the 16-hour daytime ambient and 8-hour night-time ambient L_{Aeq} contours, the site lies outside of the lowest daytime 51dB $L_{Aeq, 16hr}$ and lowest night-time 45dB $L_{Aeq, 8hr}$ contour lines, as shown in **Appendix 4**.

With regards to maximum noise levels, the site lies close to the daytime N65 noise contour, however, the site lies at a significant distance away from the night-time N60 noise contour. As such, it is expected that there will not be any significant night-time maximum noise event disturbances associated with aircraft passings, at the proposed development site.

3.10 Mid Sussex District Plan 2014 – 2031 Policy DP29

The primary aim of Policy DP29 titled ‘Noise, Air and Light Pollution’ of the Mid Sussex District Plan 2014 – 2031 is to safeguard human health, local living conditions, and protected habitats from the adverse impacts of environmental pollution.

In relation to noise, Policy DP29 states that protected habitats must be protected from unacceptable levels of noise pollution by permitting development where:

- It is and,
- If it is likely to generate significant levels of noise it incorporates appropriate noise attenuation measures.

Furthermore, Policy DP26 requires that noise sensitive development such as residential will not be permitted in close proximity to existing or proposed development generating high levels of noise unless adequate sound insulation measures, as supported by a noise assessment are incorporated within the development.

Under appropriate circumstances, development applicants are required to provide:

- An assessment of the impact of noise generated by a proposed development; or
- An assessment of the effect of noise by an existing noise source upon a proposed development

4. Environmental Noise Survey Methodology

A long-term unattended noise survey and a short-term attended noise survey was undertaken at the site during May 2026.

Unattended Noise Measurement Position (UNMP)

An unattended noise survey was undertaken at the Unattended Noise Measurement Position (UNMP) which was located at the East of the site, overlooking Imberhorne Lane. Noise levels were captured between 14:53 on Friday 1st May and 10:35 on Wednesday 6th May 2026.

Monitoring was conducted over 6 calendar days to determine the external ambient and maximum noise levels at the worst-affected boundary of the site.

At the UNMP, a Class 1 sound level meter was fixed to the top of the existing heras fencing which was noted to secure the site, with the microphone positioned at approximately 2.2m above ground level.

The UNMP is indicatively highlighted in **orange** in **Figures 5 and 6** overleaf.

The unattended noise survey represents the typical day, evening and night-time periods at worst-affected boundary of 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 continuous recorded 1-minute periods.

Attended Noise Survey (ANMP)

A short-term attended noise survey was undertaken at the Attended Noise Measurement Position (ANMP) which was located at the West of the site. Noise levels were captured between 13:57 and 14:27 on Friday 1st May 2026.

The purpose of the noise monitoring at the ANMP was to determine the typical daytime noise levels at the West of the site, away from Imberhorne Lane and to consider the potential noise impact of aircraft passings upon the site.

At the ANMP, a Class 1 sound level meter was fixed a tripod with the microphone positioned at approximately 1.6m above ground level.

The ANMP is indicatively highlighted in **blue** in **Figures 5 and 6** overleaf.

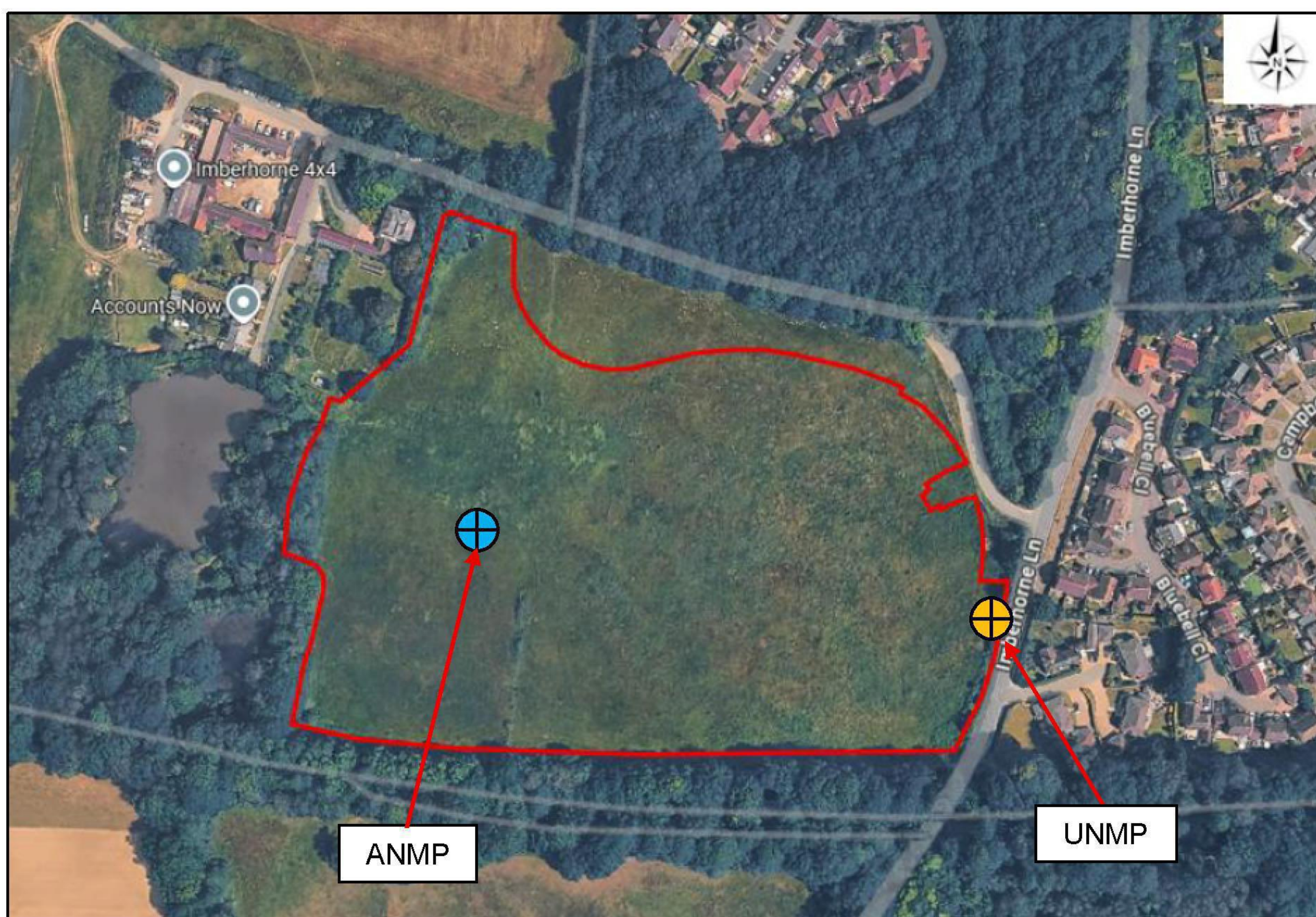


Figure 5: Aerial view of the site showing the approximate locations of the noise monitoring positions

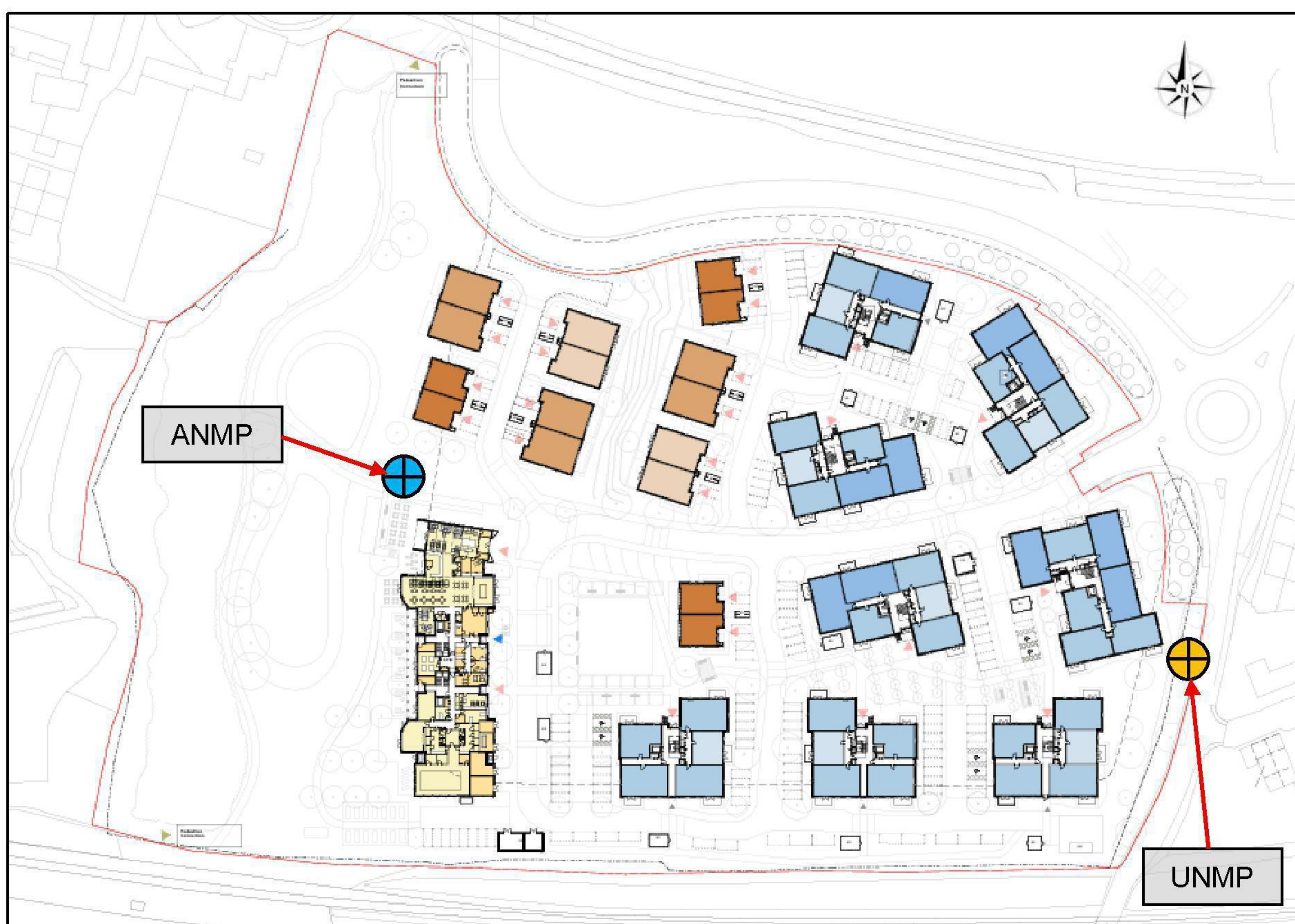


Figure 6: Site layout plan showing the approximate locations of the noise monitoring positions

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

The figures on the following pages show the setup of the noise monitoring equipment at the noise monitoring positions.

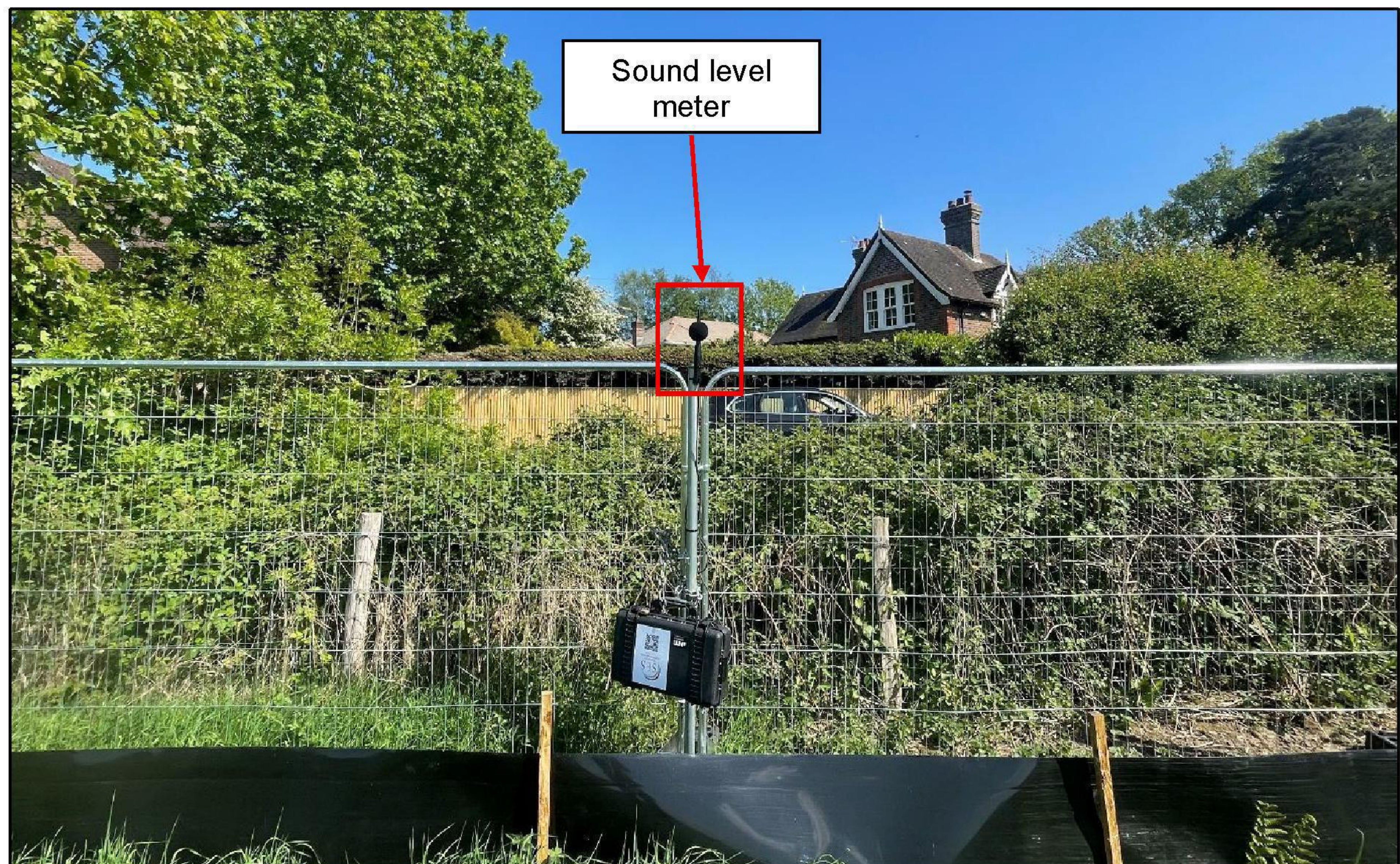


Figure 7: Unattended Measurement Setup at the UNMP (East facing)

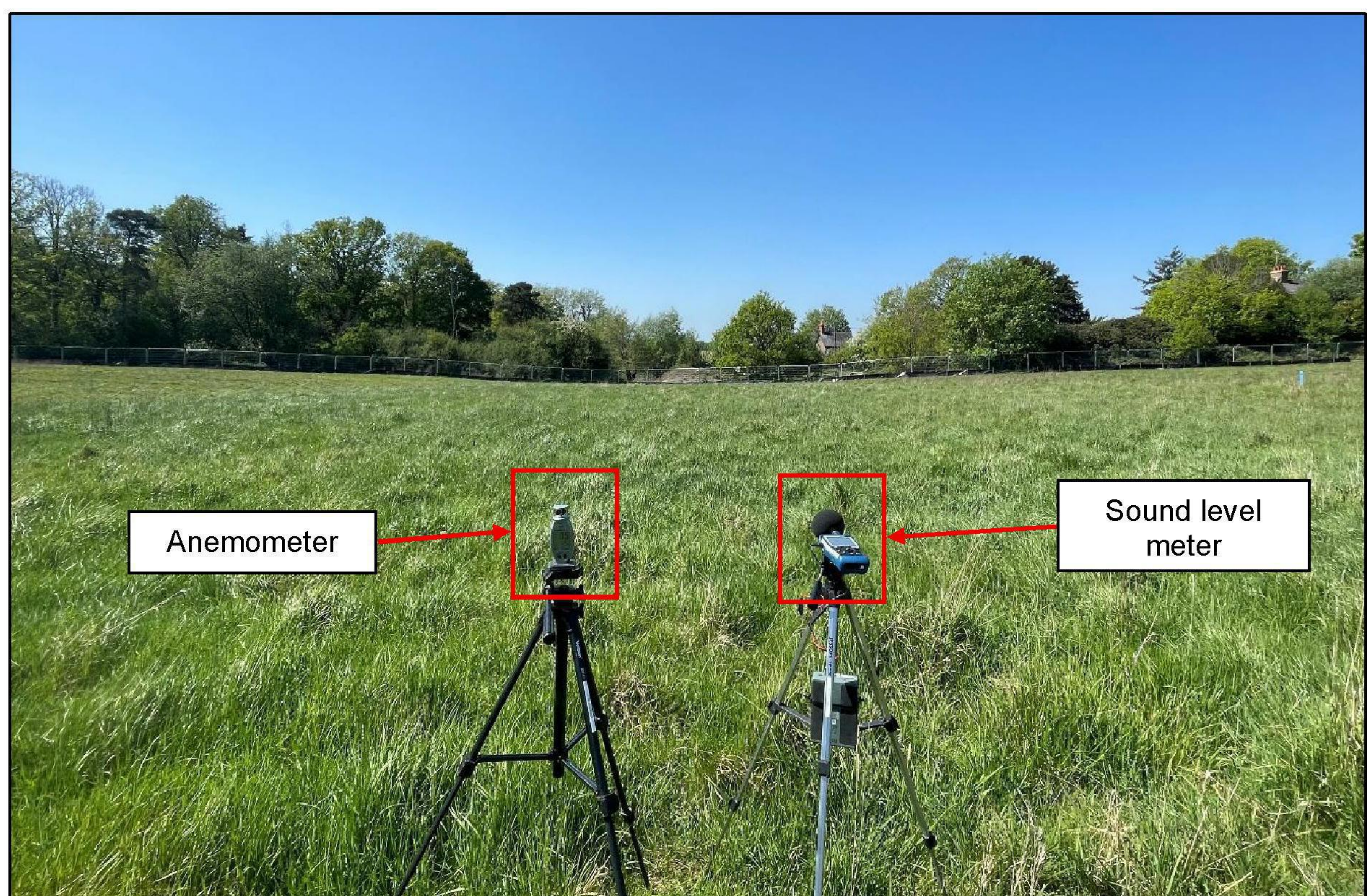


Figure 8: Attended Measurement Setup at the ANMP (West facing)

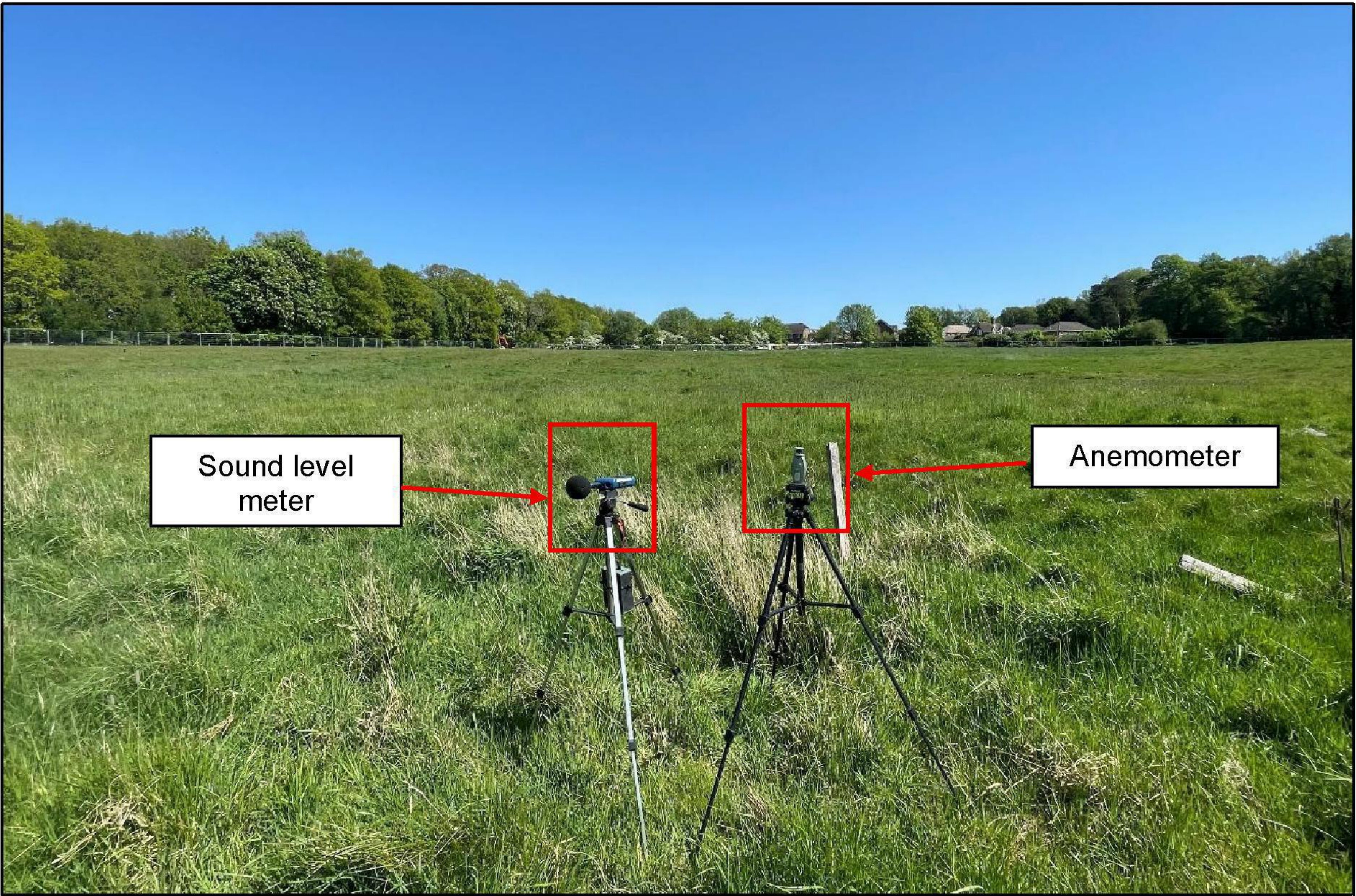


Figure 9: Attended Measurement Setup at the ANMP (East facing)

Table 7 below shows the grid co-ordinates of the noise monitoring positions.

Table 7: Grid coordinates

Position	Easting	Northing
UNMP	537651	138245
ANMP	537455	138291

With respect to all noise measurements undertaken at the site, the sound level meters had been calibrated within 2 years, as shown in Table 8 below.

Table 8: Sound Level Meter Equipment

Model	Serial Number	Date of Calibration	Calibration Expiry	Measurement position used at
NTi Audio XL2	A2A-17871-E0	24/09/2025	24/09/2027	UNMP ANMP

Table 9 overleaf provides details of the calibration equipment which was used to calibrate the sound level meter prior to undertaking noise measurements.

The sound level meters were calibrated to 94.0dB (1000Hz).

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

Equipment calibration certificates can be provided upon request.

Table 9: Calibration Equipment

Model	Type	Serial Number	Date of Calibration	Calibration Expiry
RION NC-74	Acoustic calibrator	410208	29/04/2026	29/04/2027

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

Weather conditions throughout the unattended noise survey period between the 1st and 6th May 2026 were noted to be between approximately +8 to +25° Celsius, overcast to sunny skies with a typical wind speed range of 2.7m/s to 4.5m/s.

Suitable weather conditions prevailed throughout the unattended noise survey period.

These weather conditions were checked against the publicly available weather information available at <https://www.timeanddate.com/>.

Weather conditions throughout the attended noise survey period at the ANMP were noted to be approximately +20° Celsius, mostly clear skies (15% cloud cover approximately) with 52% humidity.

These weather conditions were checked against and confirmed by the use of the 'Windy' mobile application available on smart phone technology.

Screenshots of the 'Windy' mobile application showing the weather conditions during the attended measurements are provided in **Appendix 6**.

An average windspeed of 1.8m/s from the South prevailed, which was measured in-situ using a Kaindl Windtronic 2 anemometer. The averaged windspeed measurement was recorded over a 30-minute period between 13:56 and 14:26 on 01/05/2026.

5. Measurement Results

The results of the unattended noise measurements are summarised in **Tables 10** and **11**.

Graphs showing the results of the unattended noise measurements 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 ($L_{Amax, f}$), these are presented as the 90th 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.

UNMP

Table 10: Ambient Sound Pressure Levels Measured at the UNMP

Date	Daytime (07:00 – 23:00) $L_{Aeq, 16hr}$ (dB)	Night-time (23:00 – 07:00) $L_{Aeq, 8hr}$ (dB)
Friday 1 st May 2026	59.8*	49.9
Saturday 2 nd May 2026	60.3	59.3
Sunday 3 rd May 2026	59.7	51.7
Monday 4 th May 2026	60.5	52.3
Tuesday 5 th May 2026	61.6	52.4
Wednesday 6 th May 2026	62.7*	No data recorded
Overall (mean average)	61 (60.5 to 1 decimal place)	53 (53.1 to 1 decimal place)

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

Table 11: Maximum Sound Pressure Levels Measured at the UNMP

Date	Night-time (23:00 – 07:00) $L_{Amax, f, 8hr}$ (dB)
Friday 1 st May 2026	71.1
Saturday 2 nd May 2026	67.4
Sunday 3 rd May 2026	68.9
Monday 4 th May 2026	71.9
Tuesday 5 th May 2026	72.7
Overall (mean average)	70 (70.4 to 1 decimal place)

Table 12 overleaf shows the results of the attended noise measurements captured at the ANMP.

Table 12: Summary Sound Pressure Levels Measured at the ANMP on 01/05/2026

Start Time	End Time	$L_{Aeq,1min}$ (dB)	$L_{Amax, f,1min}$ (dB)	$L_{A90,1min}$ (dB)	Noise events
13:57	13:58	41.9	50.2	38.9	Distant aircraft passing to the North
13:58	13:59	42.3	46.5	39.7	None
13:59	14:00	41.4	51.1	38.3	None
14:00	14:01	43.5	57.6	38.4	Distant aircraft passing to the North
14:01	14:02	41.6	55.6	36.7	None
14:02	14:03	41.8	51.1	39.1	None
14:03	14:04	41.5	53.1	38.6	None
14:04	14:05	57.6	68.4	41.0	Aircraft passing overhead to the West of the site
14:05	14:06	51.2	65.4	39.0	None
14:06	14:07	51.2	62.8	38.5	Aircraft passing overhead to the West of the site
14:07	14:08	50.3	62.3	40.2	None
14:08	14:09	43.7	54.8	40.5	Distant aircraft passing to the North
14:09	14:10	59.6	70.5	42.8	Aircraft passing overhead to the West of the site
14:10	14:11	39.7	47.1	36.2	None
14:11	14:12	41.7	51.8	38.1	Distant aircraft passing to the North
14:12	14:13	40.0	46.3	36.4	None
14:13	14:14	42.9	47.5	40.2	None
14:14	14:15	63.1	72.7	47.0	Aircraft passing overhead to the West of the site
14:15	14:16	46.6	61.9	41.3	Distant aircraft passing to the North
14:16	14:17	40.9	46.7	39.1	None
14:17	14:18	57.6	69.4	37.2	Aircraft passing overhead to the West of the site
14:18	14:19	51.1	65.7	38.5	None
14:19	14:20	42.4	51.3	38.6	None
14:20	14:21	49.1	61.3	41.6	Loud motorbike along Imberhorne Lane
14:21	14:22	42.2	51.8	40.3	Distant aircraft passing to the North
14:22	14:23	41.5	55.8	38.6	None
14:23	14:24	40.4	52.3	38.4	None
14:24	14:25	59.0	70.9	43.3	Aircraft passing overhead to the West of the site
14:25	14:26	44.0	55.3	41.3	None
14:26	14:27	44.3	60.1	41.3	None
Overall		53	70	40	Aircraft passings and distant road traffic noise from Imberhorne Lane

6. Assessment and Discussion

Site Suitability for Residential Development

This section describes an assessment of facade 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 Mid Sussex District Council. Policy DP29 requires that permitted developments are designed, located and controlled to minimise the impact of noise on health and quality of life, neighbouring properties and the surrounding area. The Local Authority refers to the standards set out for internal noise level in BS8233:2014, as outlined in **Section 3.4**.

The environmental noise climate at the site is driven by road traffic noise emanating from Imberhorne Lane, which primarily effects the East of the site, and aircraft noise.

Table 13 below shows the minimum required sound insulation performance for façade elevations for the proposed dwellings at the site.

Table 13: Minimum required sound insulation performance for façade elevations

Period	Measured External Noise Level, dB (UNMP)	Internal Noise Level Requirement, dB	Minimum Sound Reduction Performance Requirement, dB SRI
Daytime (07:00 - 23:00)	61dB $L_{Aeq,16hr}$	35dB $L_{Aeq,16hr}$	26
Night-time (23:00 - 07:00)	53dB $L_{Aeq,8hr}$	30dB $L_{Aeq,8hr}$	23
Night-time (23:00 - 07:00)	70dB $L_{Amax, f,8hr}$ (90 th percentile)	45dB $L_{Amax, f,8hr}$	25

Table 13 above shows that the minimum required sound insulation performance for façade elevations is 26dB.

Non-glazed elements

According to the client, the proposed construction of the buildings will be a masonry (brick and block) construction. A typical masonry external wall construction consisting of 102.5mm brickwork with 100mm blockwork to the inner-leaf, separated by a cavity is anticipated to provide a sound reduction performance of 53dB R'_w+C_{tr} , excluding any insulation which may be installed within the cavities, which only improve the overall sound insulation performance of the external wall.

The client has confirmed that in some instances, the buildings at the site will include tile hanging or weatherboarding to the outer-leaf.

SES have used Insul 9.0 sound insulation prediction modelling software to determine the anticipated sound insulation performance provided by a traditional masonry construction external wall, excluding any potential insulation that may be installed within the cavity.

The modelled external wall construction is provided in **Appendix 5**.

As can be seen in **Appendix 5**, the external wall construction is anticipated to provide a sound reduction performance of approximately 53dB R'_w+C_{tr} .

The non-glazed elements spectral data for external walls is presented below in **Table 14**.

Table 14: Non-glazed elements anticipated sound reduction performance – External Walls

Element	Octave band centre frequency SRI, dB					
	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz
Non-glazed element SRI	47	47	49	59	69	79

As can be seen from the sound insulation figures provided in **Table 14**, a masonry construction will provide sufficient sound insulation against the external noise environment.

Guidance on glazing and ventilation strategy

The recommended glazing configuration and ventilation strategy for the dwellings at the site is highlighted in **orange** in **Table 15** below.

Table 15: 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 minimum reduction value of 29dB 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 ($L_{Amax, f}$) night-time noise levels as given in BS8233:2014.

It is recommended that trickle vents with a minimum 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.

In addition to the required reduction value of the trickle vents as stated above, it is recommended that a maximum number of 3 trickle vents is provided in each room to ensure that the internal noise levels do not exceed the desired levels as stated in BS8233:2014.

Due to the limited information available at the time of writing this report, break-in calculations have not been undertaken to validate the sound insulation performance of the scheme of mitigation, with respect to internal noise levels.

Thermal Comfort / Overheating

Based on the AVO Residential Design Guide (2020) guidance for a Level 1 risk assessment (as provided in **Table 5** of this report), the measured 16hr daytime ambient noise level (61dB $L_{Aeq, 16h}$) and 8hr night-time ambient noise level (53dB $L_{Aeq, 8h}$) at the proposed development site demonstrate that the site is at a 'medium' risk of impact from noise from transport noise sources, of which the site is subjected to.

As a result, there is likely to be an adverse impact upon the internal living environment with respect to noise, if open windows were used as the primary means of mitigating overheating.

As such, windows must be closed during daytime and night-time periods, so as to achieve the internal noise level requirements, as stated in BS8233:2014.

Table 16 below shows the external free-field sound pressure levels measured at the UNMP.

Table 16: External free-field sound pressure levels at the UNMP

Period	External Sound pressure level, dB(A)
Day (L_{Aeq})	61
Night (L_{Aeq})	53
Night (L_{Amax})	70

Based on the 13dB outside-to-inside noise level difference, the following internal noise levels can be achieved with a partially open window in an overheating scenario within the bedrooms, as shown in **Table 17** overleaf.

Table 17: Indicative internal noise levels within the proposed bedrooms with windows partially open in an overheating scenario

Period	Internal Sound pressure level, dB(A)
Day (L_{Aeq})	48
Night (L_{Aeq})	40
Night (L_{Amax})	57

With respect to overheating, the AVO guide states in section 3.9:

“...it is considered reasonable to allow higher levels of internal ambient noise from transport sources when higher rates of ventilation are required in relation to the overheating condition.”

In addition, the AVO guide states in section B.49:

“For simplicity, it is considered that the external design case maximum level determined for the overheating condition should not result in the L_{Amax} within bedrooms exceeding a value of 65dB.”

The proposed residential dwellings within the development could be equipped with acoustically attenuated mechanical ventilation systems which would deliver continuous background ventilation in accordance with Approved Document F. This would ensure that good internal air quality is maintained under normal conditions without the need to open windows.

However, during the warmest times of the year, typically in summer, internal temperatures can rise to levels that risk occupant discomfort or health impacts. In line with the Acoustics, Ventilation and Overheating (AVO) guidance and CIBSE TM59 (“Design Methodology for the Assessment of Overheating Risk in Homes”), purge ventilation through window opening may be required to reduce the risk of overheating.

It is acknowledged that during such periods, the use of openable windows may result in internal noise levels exceeding the guideline of 40 dB $L_{Aeq,16hr}$ recommended in BS 8233:2014 and the ProPG: Planning & Noise guidance. In the case of this development, internal noise levels within bedrooms during window opening for purge ventilation may reach up to 48dB $L_{Aeq,16hr}$. However, these higher levels are expected for only during short durations on the warmest days of the year, when mitigation of overheating is critical to safeguard occupant health and wellbeing.

This approach is consistent with the principles of Approved Document O, specifically sections 3.2 to 3.4, which acknowledge that in mitigating overheating, it may not be possible to meet the internal noise criteria at all times. Paragraph 3.4 explicitly states that exceedances of noise guidelines may be acceptable where necessary to reduce overheating risk. Furthermore, considering that Document O allows up to 40 dB $L_{Aeq,8hr}$ in bedrooms at night, internal daytime levels of up to 48dB $L_{Aeq,16hr}$, limited to warmer days and for short periods can be considered tolerable in the context of safeguarding thermal comfort and health.

Professional guidance also recognises that full compliance with internal noise targets with open windows is not always achievable in locations subject to elevated external noise levels,

such as developments near airports or busy transport routes. In such cases, a balanced approach is supported acknowledging that the health impacts of overheating may outweigh the acoustic impact of temporary noise level exceedances.

The provision of acoustically attenuated trickle vents and the potential installation of acoustically attenuated mechanical ventilation systems across all residential units ensures that window opening is not required for general background ventilation. Instead, window use is restricted to purge ventilation during occasional overheating events. In these circumstances, the health and comfort benefits of reducing overheating clearly outweigh the short-term acoustic impacts.

As such, based on the calculated internal noise levels within bedrooms with windows partially open, as shown in **Table 17** on the previous page, it appears that purge ventilation can be used to mitigate overheating for short periods, when it is critical to reduce the risk of overheating. Purge ventilation is designed for short, targeted intervals (typically 10 – 20 minutes) to rapidly remove excess heat from within dwellings and is not designed for continuous operation as it creates a trade-off with noise pollution.

External Amenity Spaces

The results of the noise monitoring undertaken at the UNMP shows that the external daytime ambient noise level at the worst-affected, Eastern boundary of the site is 61dB L_{Aeq} , which exceeds with the upper guideline level of 55dB $L_{Aeq,16hr}$ as stated within BS8233:2014.

As can be seen in the site layout plan in **Figure 2** in section 2, the proposed development includes highway alterations along the Eastern and Northern boundaries of the site. The proposed highway alterations include the formation of a new roundabout on Imberhorne Lane and the creation of a new access road along the Northern elevation of the site, which is understood to serve future developments to the North-West of the site, which are noted to form part of a wider masterplan development.

As a result of the proposed indicative highway alterations, during the future occupation of the site, the development will be partly encompassed by the road network along both its Northern and Eastern boundaries. As such, during the future occupation of the site, road traffic noise is anticipated to impact upon a greater proportion of the site, than was the case at the time of undertaking the noise survey in May 2026.

With regards to amenity spaces which may be located along the Northern and Eastern boundaries of the site, it is recommended that these amenity spaces are protected by 2.0m tall solid close-boarded timber fencing along their boundaries, so as to comply with the upper guideline level of 55dB $L_{Aeq,16hr}$ for amenity spaces, as stated within BS8233:2014. Furthermore, the buildings can be positioned in such a way to shield amenity spaces against road traffic noise.

The site layout plan and landscape general arrangement (GA) plan are shown in **Figures 10** and **11** overleaf, respectively. **Figures 10** and **11** show the extent of the recommended 2.0m tall solid close-boarded timber fencing, which is highlighted in **red**.



Figure 10: Site layout plan showing the location of the recommended fencing



Figure 11: GA plan showing the location of the recommended fencing

With regards to the remaining amenity spaces at the site, the results of the noise levels captured at the ANMP show that the external amenity noise levels comply with the upper guideline level of 55dB $L_{Aeq,16hr}$ for amenity spaces, as stated within BS8233:2014.

BS8233:2014 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} , 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 Rangeford East Grinstead Limited to prepare an Environmental Noise Assessment to assist with the reserved matters planning application for the proposed development of an integrated retirement community scheme consisting of 134 residential units (comprising 118 apartments and 16 bungalows) at the site known as Kingscote Place located at Imberhorne Farm, Imberhorne Lane, East Grinstead, West Sussex, RH19 1TX.

SES has undertaken an environmental noise assessment to establish the existing noise levels at the proposed development site.

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

- It is recommended that a minimum reduction value of $29\text{dB } R'_w + C_{tr}$ is required for all glazed elements in habitable rooms for the dwellings across the development site. 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 minimum reduction value of $D_{n,e,w} + C_{tr}$ 32dB in the open position should be provided in the frames of the proposed windows of the dwellings across the development site, allowing adequate air changes into the habitable rooms without the need for opening windows for ventilation.
- It is recommended that a maximum number of 3 trickle vents is provided in each room to ensure that the internal noise levels do not exceed the desired levels as stated in BS8233:2014.

With the implementation of the controls relating to glazing and ventilation, the sound insulation of the external building envelope should be suitable to control external noise ingress, so as to achieve the internal noise levels, as referred to in BS8233:2014.

With reference to the AVO Residential Design Guide (2020), it has been demonstrated that windows serving habitable rooms must be closed during daytime and night-time periods, so as to achieve the internal noise level requirements, as stated in BS8233:2014.

While internal noise levels may temporarily rise up to 48dB $L_{Aeq,16hr}$ within bedrooms when windows are opened for a short period of time for purge ventilation purposes only, during the hottest periods of the year (as shown in **Table 17**), this is considered acceptable in the context of mitigating overheating.

The design provides compliant background ventilation through the provision of acoustically attenuated trickle vents and the potential installation of acoustically attenuated mechanical ventilation systems, with window opening used only under exceptional thermal conditions.

This approach represents a pragmatic and policy-compliant balance between acoustic and thermal comfort, in accordance with BS 8233:2014, ProPG, and Approved Document O.

It is recommended that a 2.0m tall solid close-boarded timber fence is installed along the Northern and Eastern boundaries of the development, as shown in **red** in **Figures 10** and **11**, so as to reduce the noise levels within the worst-affected amenity spaces at the site and

comply with the upper guideline level of 55dB $L_{Aeq,16hr}$ for amenity spaces, as stated within BS8233:2014.

Furthermore, the buildings can be positioned in such a way to shield amenity spaces against road traffic noise.

With regards to the remaining amenity spaces at the site, it has been demonstrated that the external amenity noise levels comply with the upper guideline level of 55dB $L_{Aeq,16hr}$, as stated within BS8233:2014, prior to any amenity boundary treatments.

The findings of this report should provide satisfactory information to assist the developer with the design of the development for the purposes of protecting the future occupiers from the impacts of 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 root 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 affect 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. Similarly, 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 root mean square section of a sound level meter with a 125millisecond time constant.
Slow	A time weighting used in the root mean square section of a sound level meter with a 1000millisecond 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 thereof 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 oblique 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.

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Appendix 3 – Plans



Figure 12: Site layout plan

Appendix 4 – CAA Noise Exposure Contours for Gatwick Airport 2024 (ERCD Report 2502, dated May 2025)

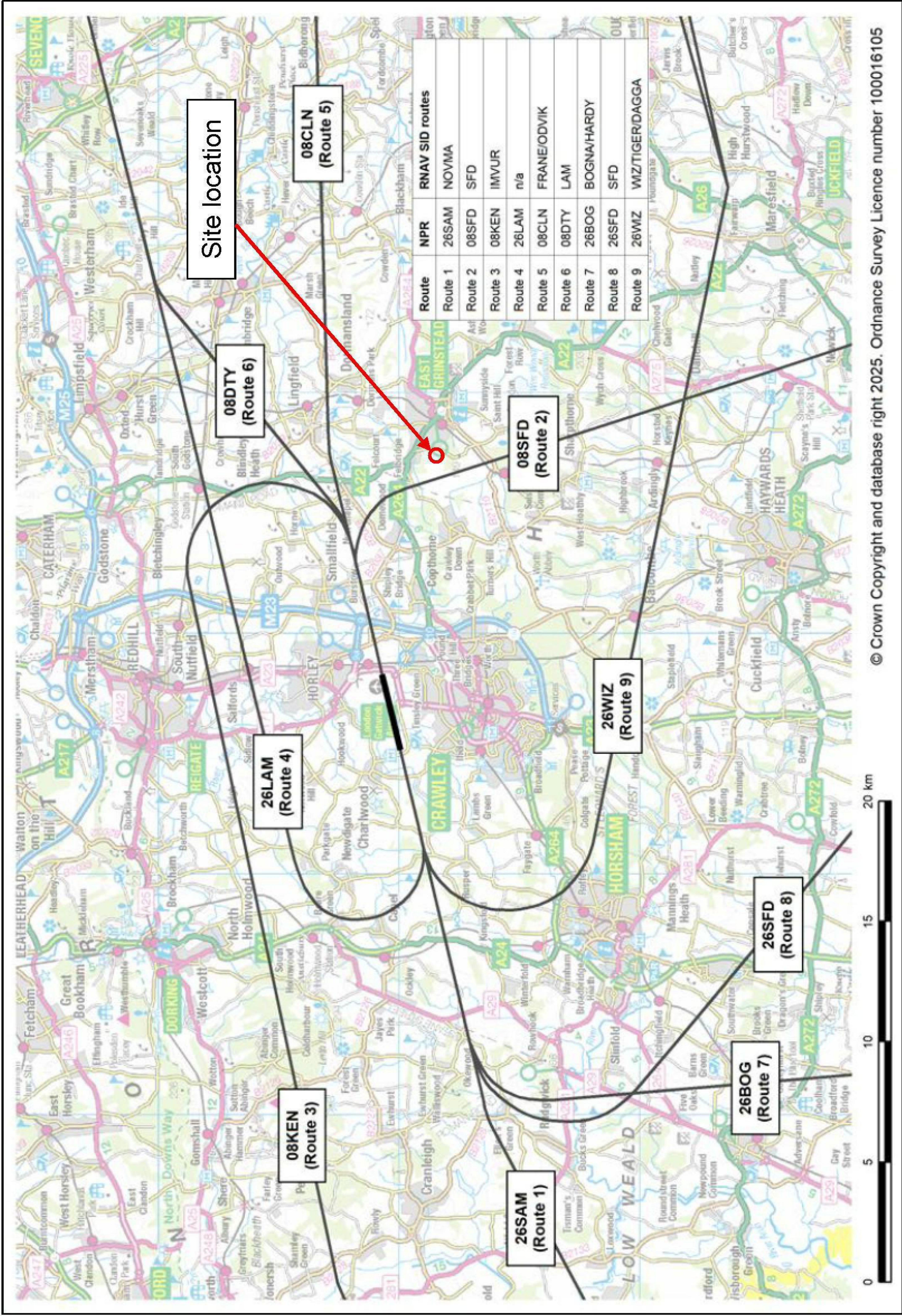
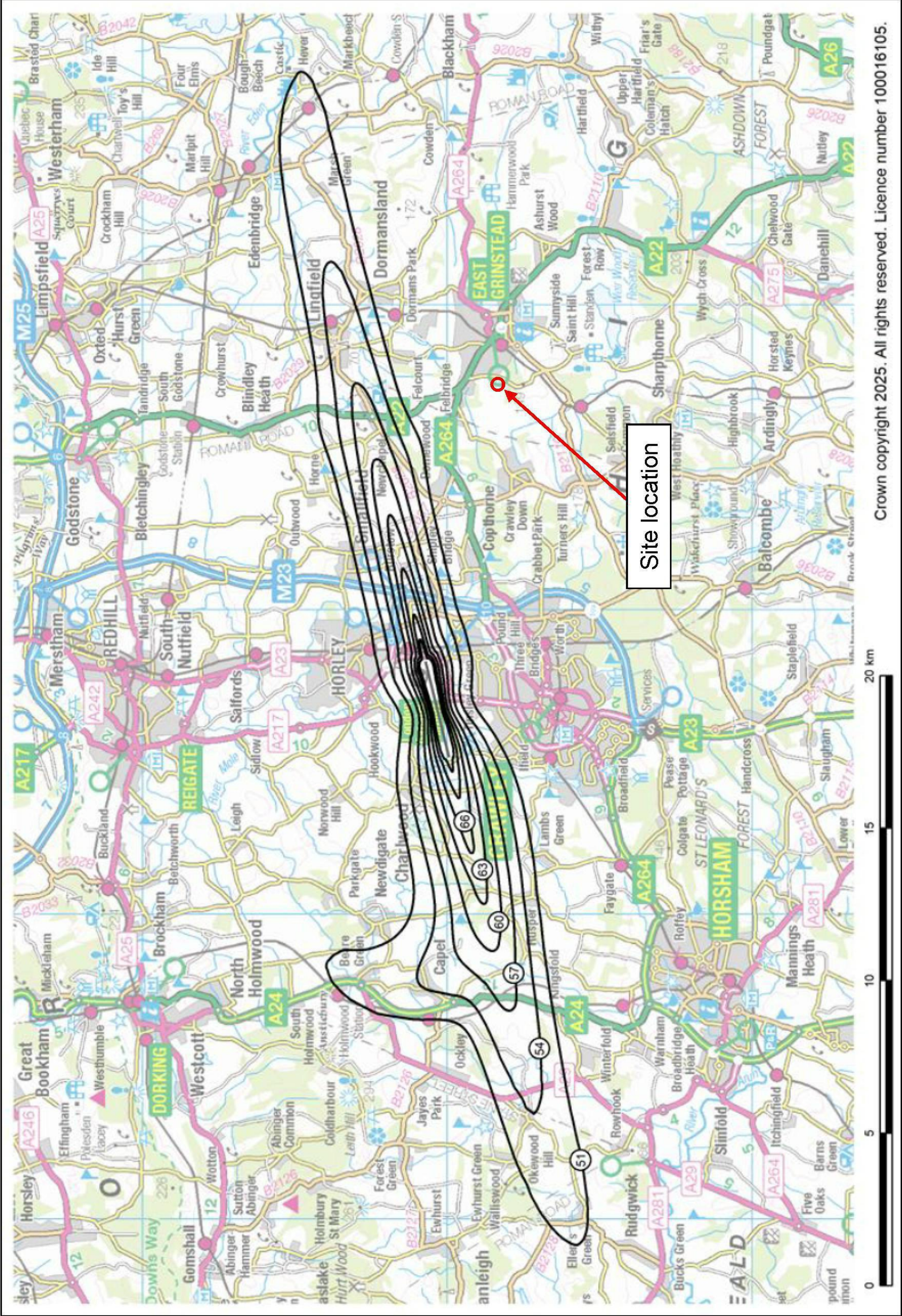


Figure 14: Gatwick airport flight path routes (Figure B3 of ERCD Report 2502)



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Figure 15: Gatwick 2024 summer day actual modal split (78% W / 22% E) L_{Aeq} 16h contours

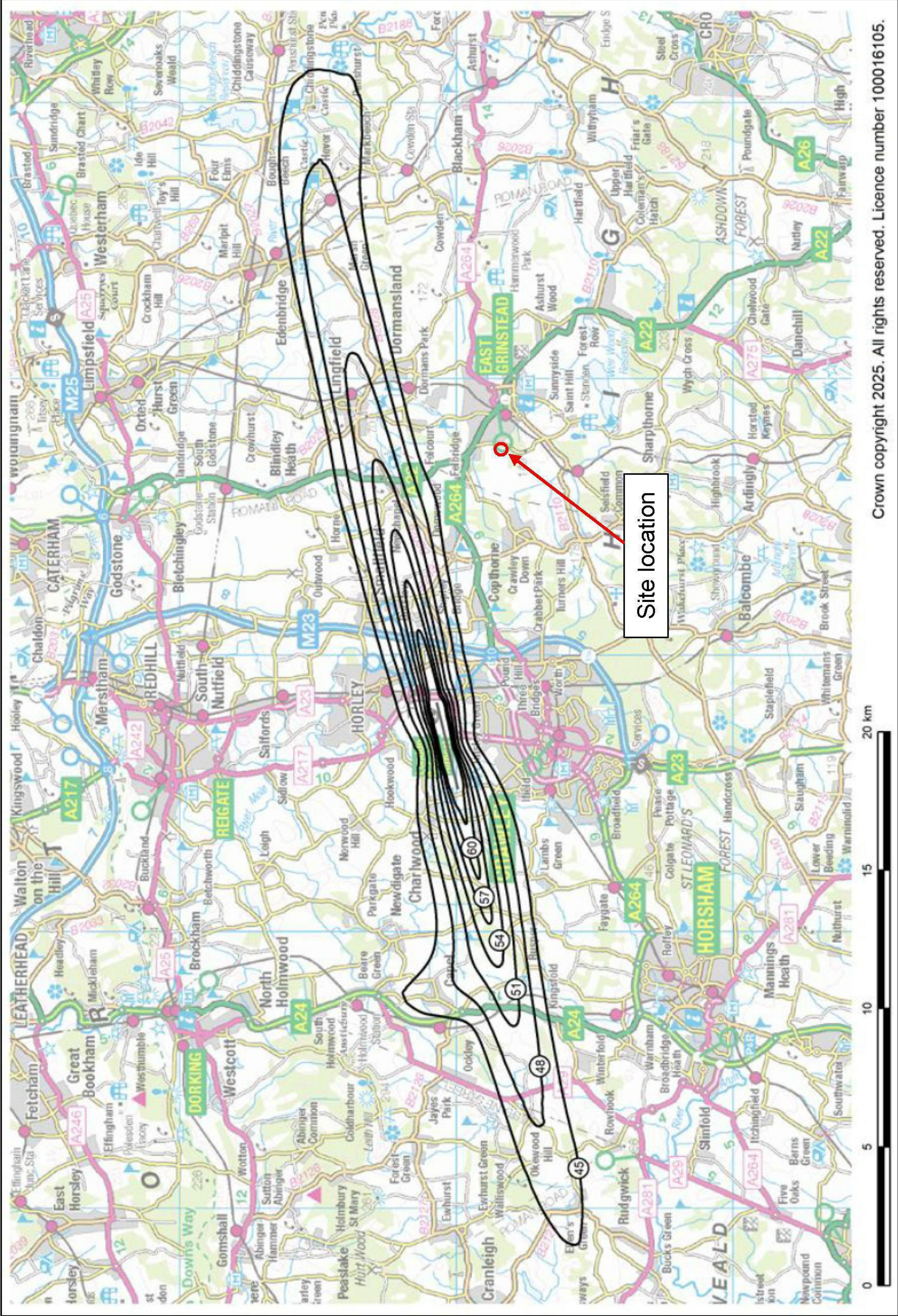
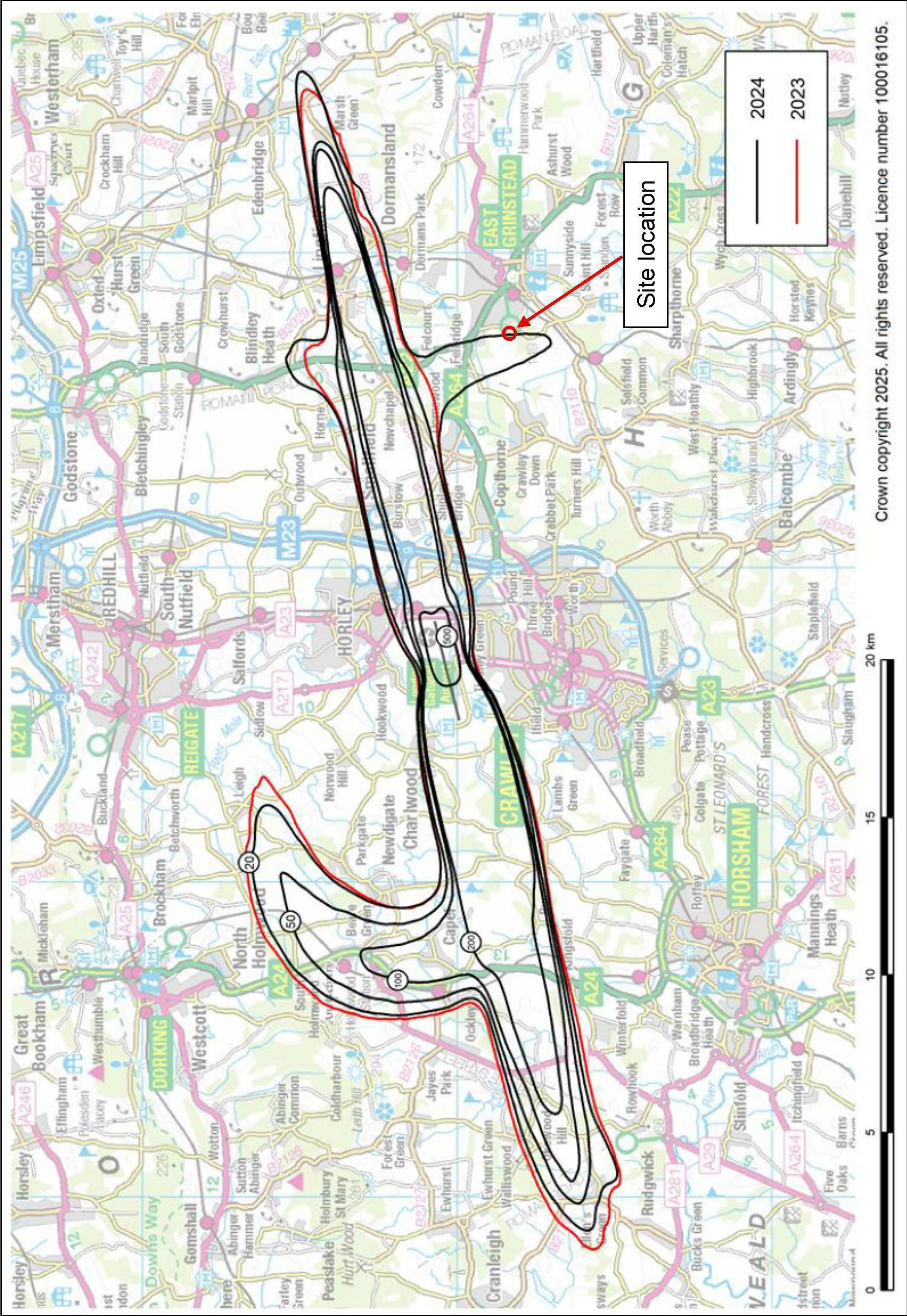


Figure 16: Gatwick 2024 summer night actual modal split (78% W / 22% E) $L_{Aeq\ 8h}$ contours



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Figure 17: Gatwick 2024 summer day actual modal split (78% W / 22% E) N65 contours

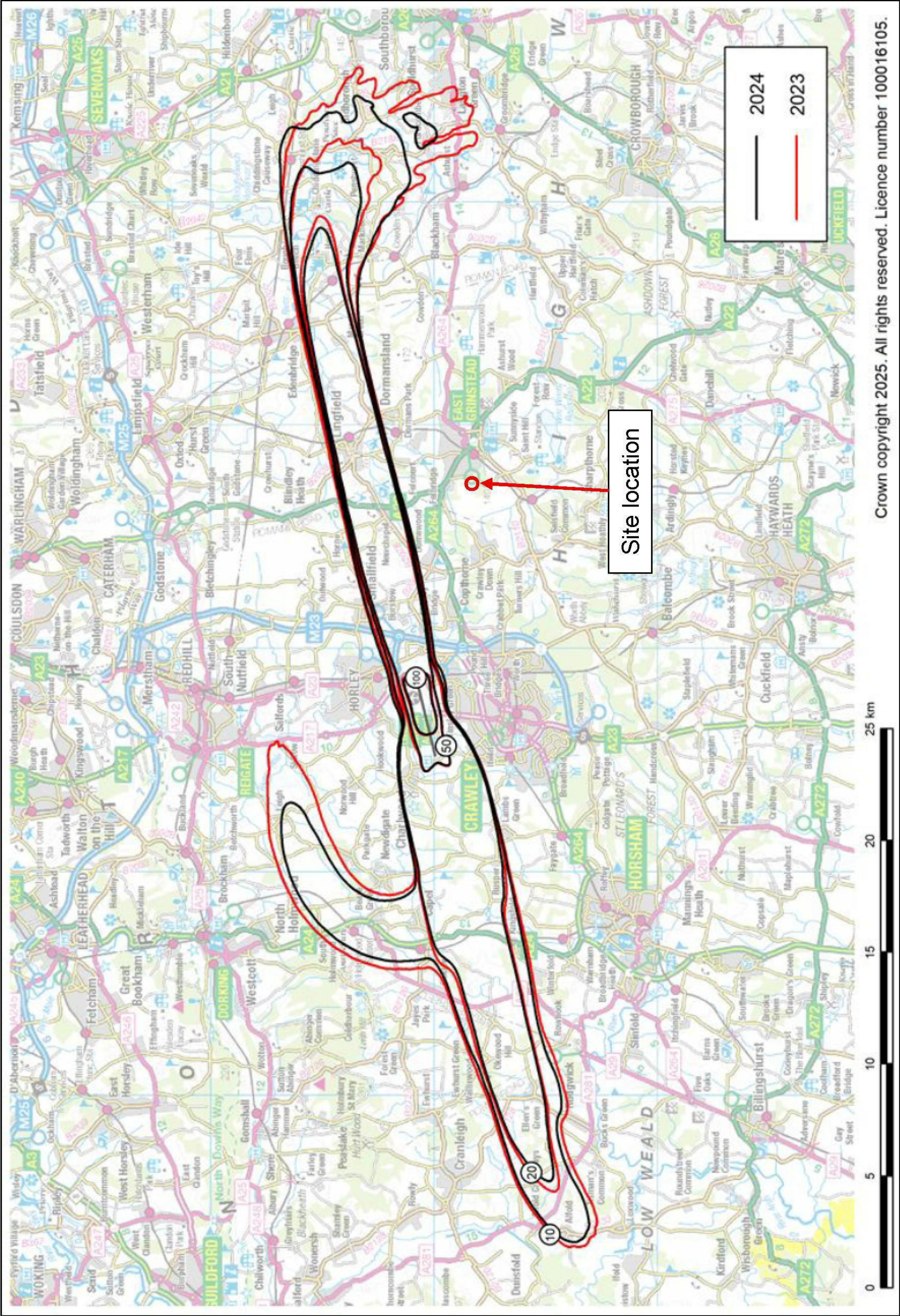
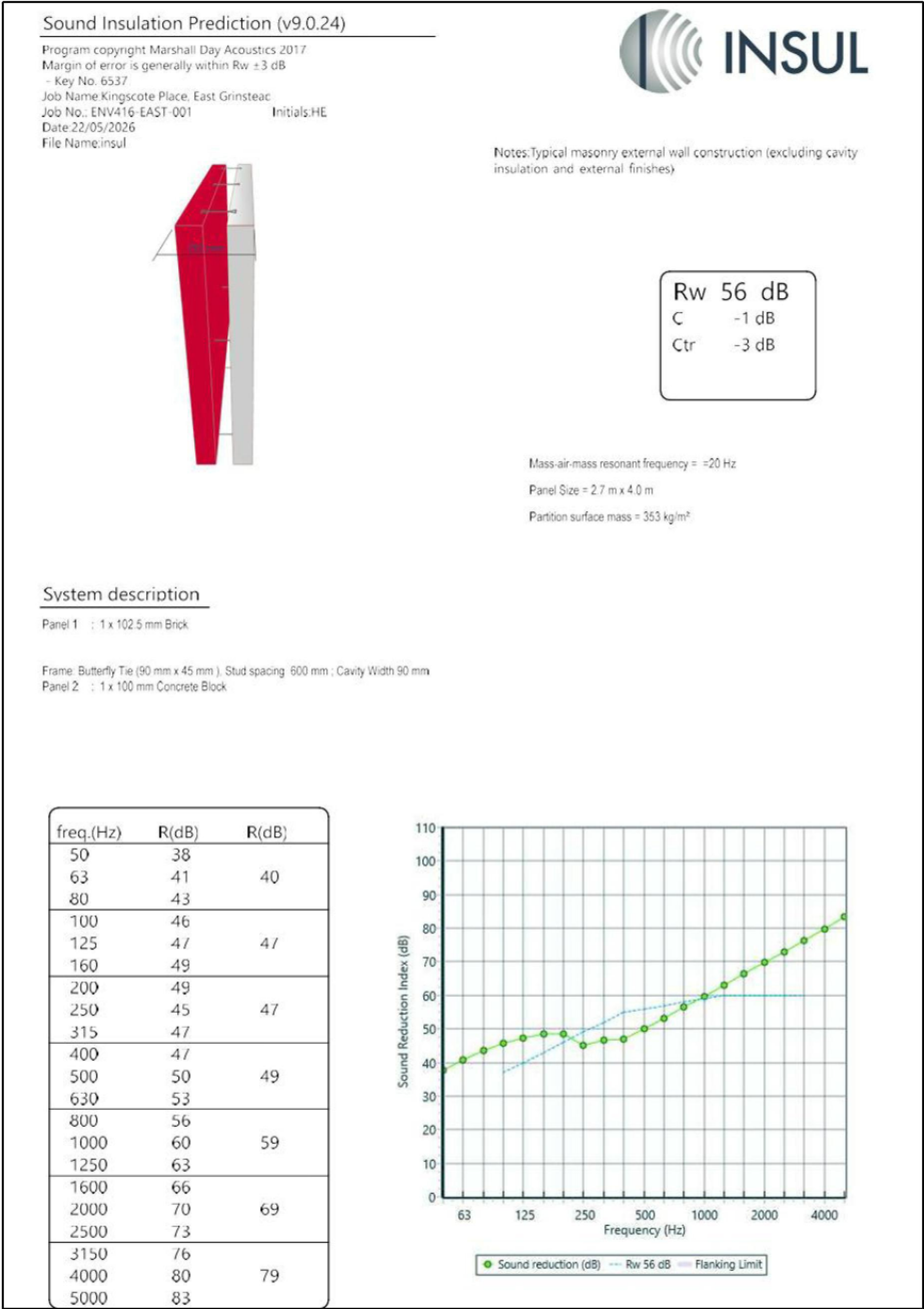


Figure 18: Gatwick 2024 summer night actual modal split (78% W / 22% E) N60 contours

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Appendix 5 – Insul model (external wall)



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Appendix 6 – Weather conditions on 01.05.2026

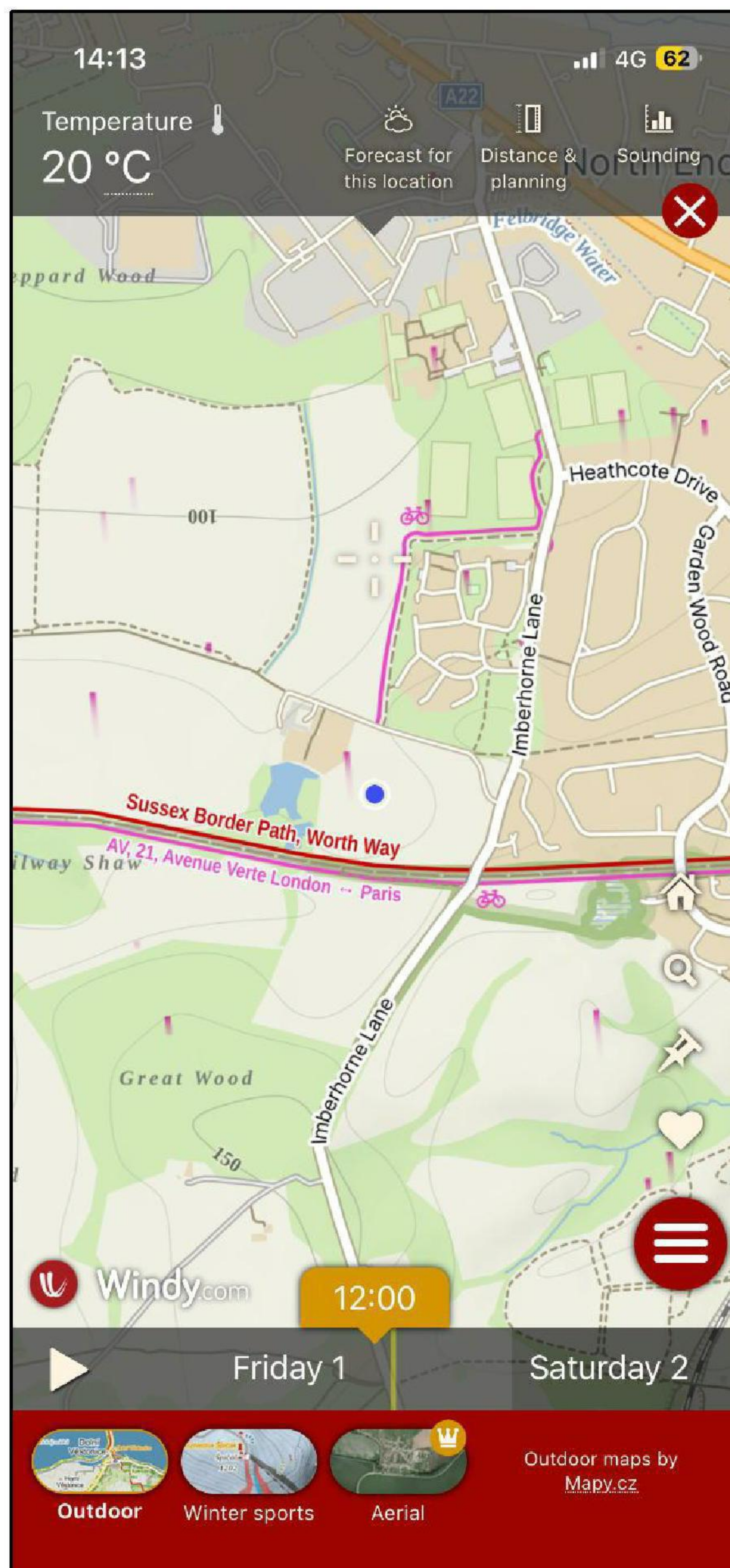


Figure 20: Temperature 01.05.2026

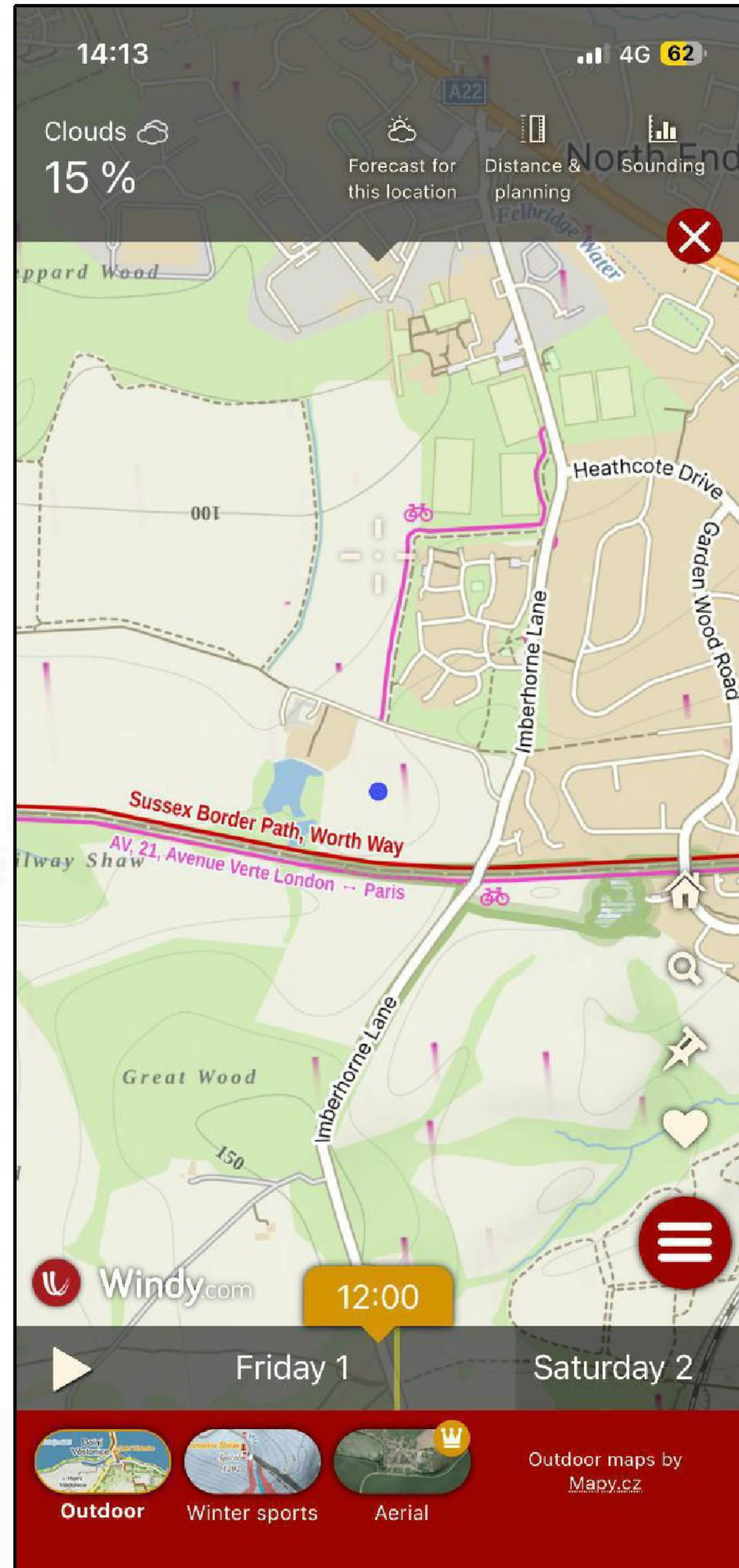


Figure 21: Cloud cover 01.05.2026

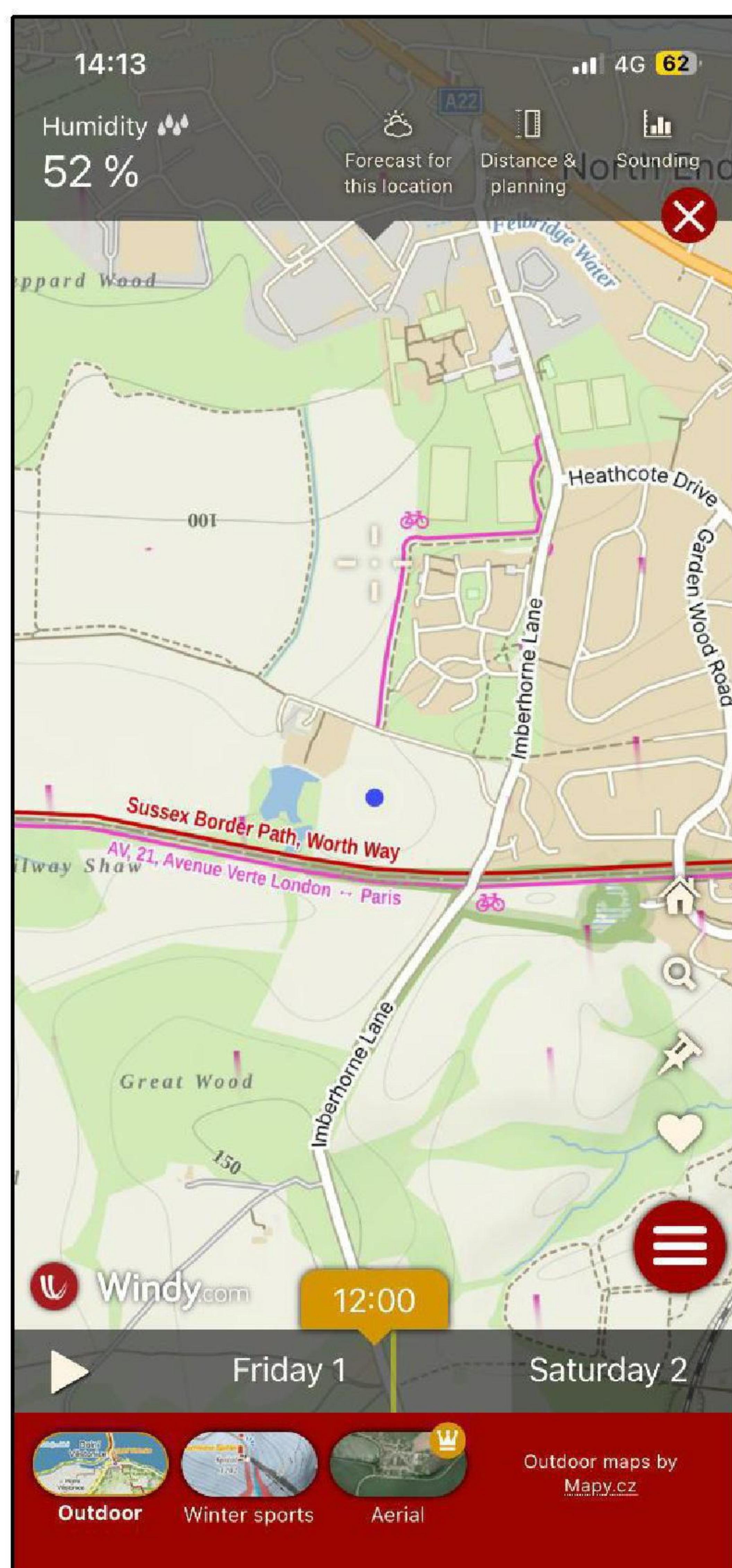


Figure 22: Humidity 01.05.2026

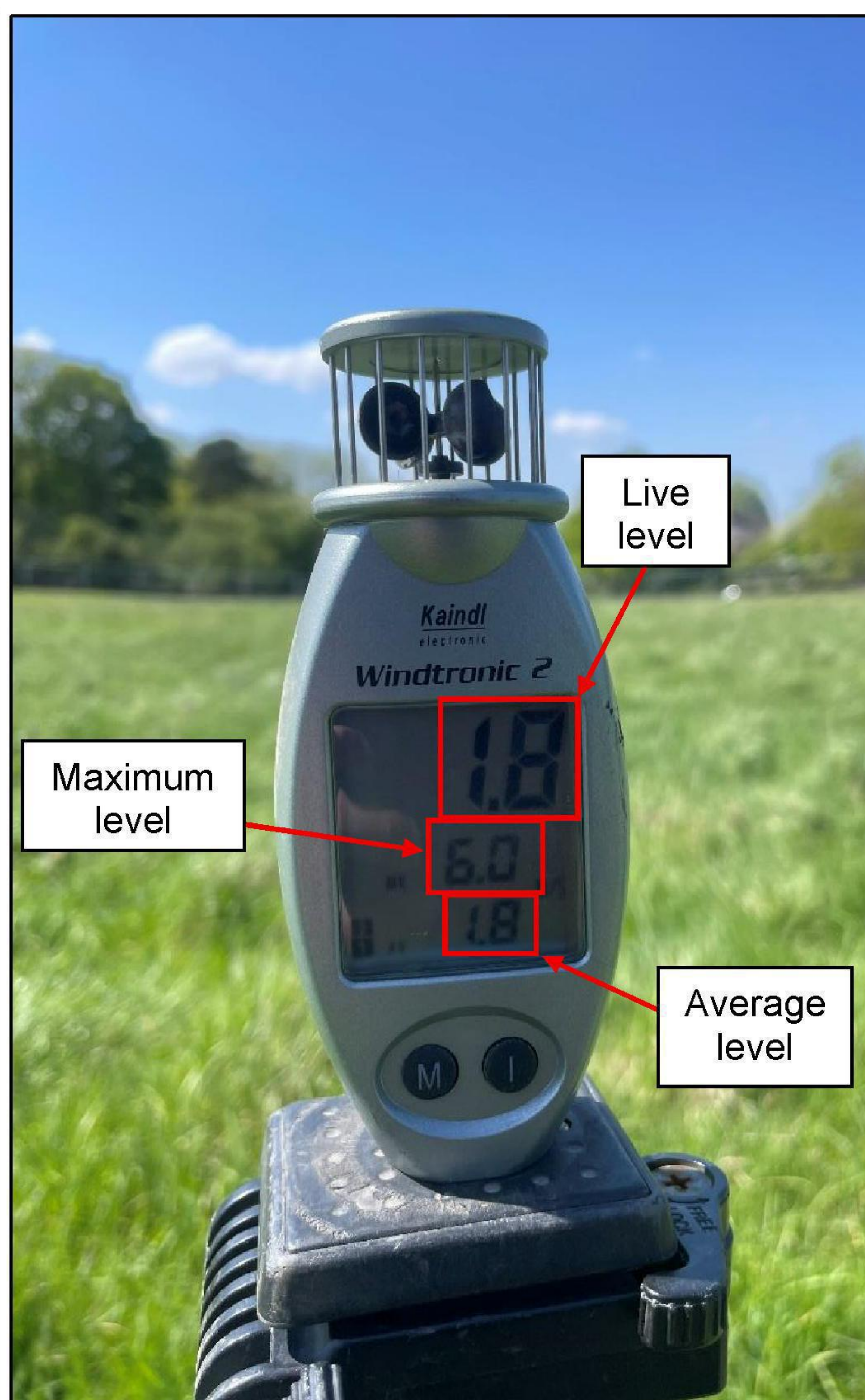


Figure 23: Wind data – values recorded between 13:56 and 14:26 on 01.05.2026

Appendix 7 – Noise monitoring graphs

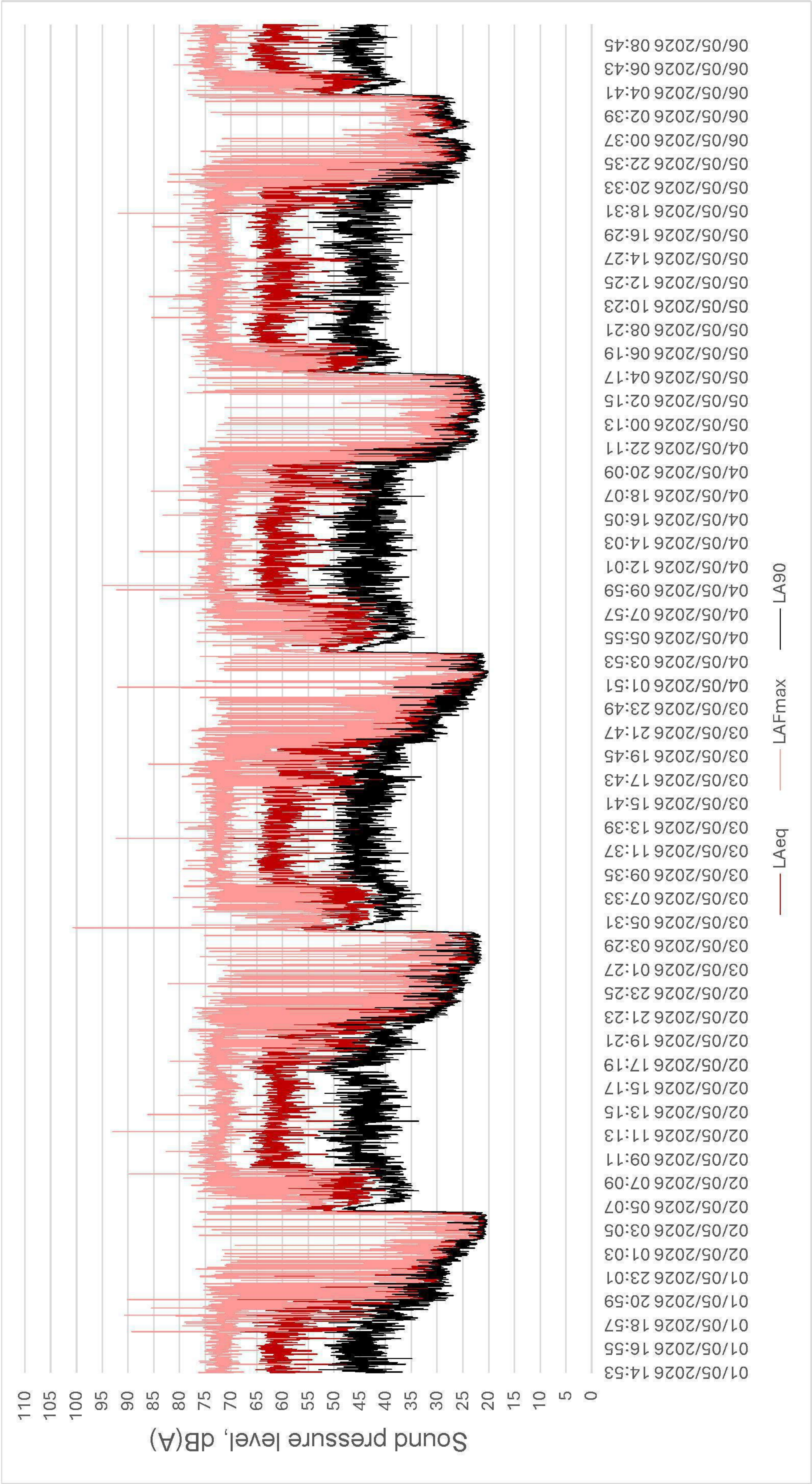


Figure 24: Graphical representation of noise levels recorded at the UNMP

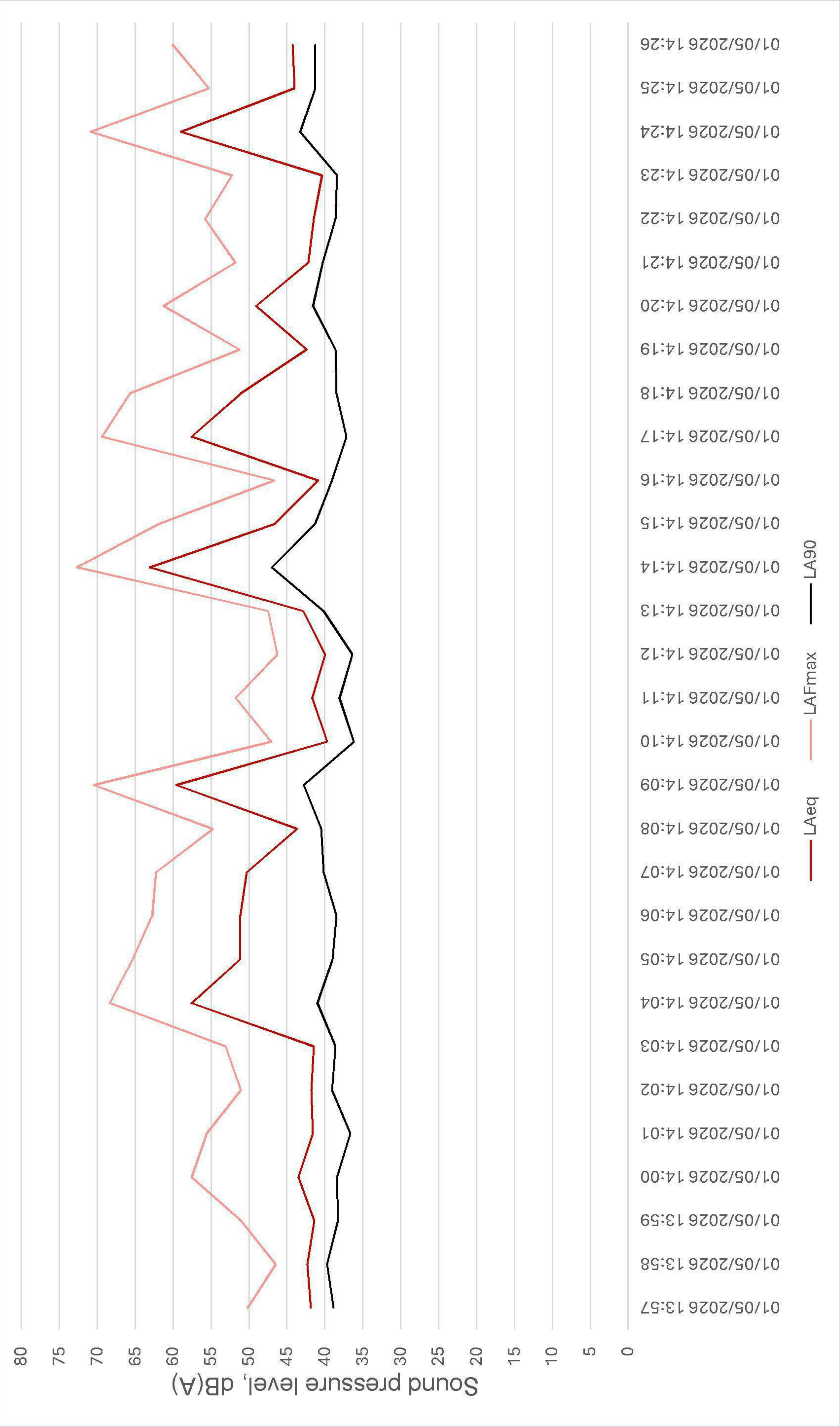


Figure 25: Graphical representation of noise levels recorded at the ANMP