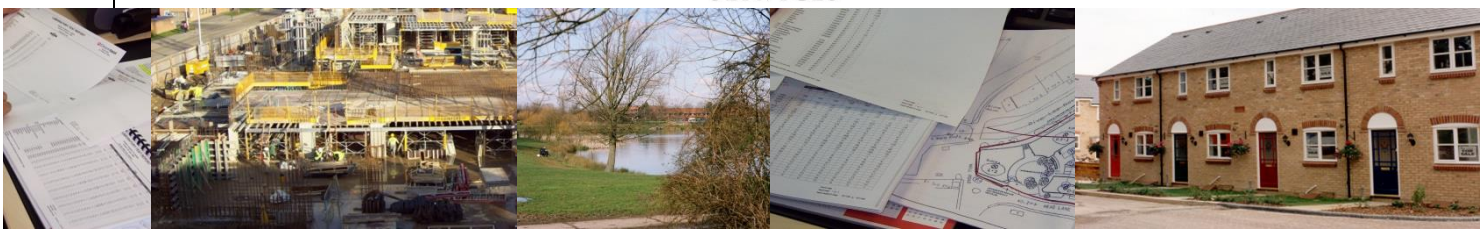

BS8233 ENVIRONMENTAL NOISE ASSESSMENT
JACKS LANE, TAKELEY, ESSEX

Project Reference:
ENV01-TAKE-068b Jacks Lane

Site Address:
Jacks Lane
Takeley
Essex
CM22 6NT

Version Number:
Version 1.3

Report Date:
22nd April 2024

Customer:
Weston Homes Plc
The Stansted Centre
Parsonage Road
Takeley
Essex
CM22 6PU

Prepared By:
Stansted Environmental Services Ltd
The Stansted Centre
Parsonage Road
Takeley
Essex
CM22 6PU

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Prepared by:

Hugo Evans BA (Hons), AMIOA
Assistant Geo-Environmental Consultant

Hugo has over 2 years' experience in Environmental Noise and holds the Institute of Acoustics (IOA) Diploma in Acoustics and Noise Control from London South Bank University. Hugo also holds the Certificate of Competence in Environmental Noise Measurement and is an Associate Member of the Institute of Acoustics (IOA).

Reviewed and Approved By:

Silvio Petrasso BSc (Hons), CMIOSH, MIOA, IMAPS, ACIEH
Managing Director of Stansted Environmental Services Ltd

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).

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Contents

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 3 years. For approximately 3 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 an Associate Member of the IOA.

1. Introduction

Stansted Environmental Services (SES) Ltd has been commissioned by Weston Homes Plc to prepare a BS8233 Environmental Noise Assessment for the proposed development at Jacks Lane, Takeley, CM22 6NT.

The purposes of this report are:

- To determine and assess the current, prevailing ambient and maximum noise levels affecting the development due to nearby noise sources (e.g. road traffic, commercial premises operations, aircraft etc.),

- Based on the above, to present the internal noise levels to be achieved within the residential premises in accordance with the relevant planning conditions and,

- To address Condition 13 relating to acoustic mitigation of Planning Permission Ref.: S62/A/2023/0027 by demonstrating that the internal noise levels, with the installation of the proposed acoustic mitigation measures as detailed in the provided Weston Homes Plc construction drawings, will comply with the internal noise levels requirements contained in BS8233:2014.

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 an assessment of the proposed acoustic mitigation measures against the internal noise level requirements contained in BS8233:2014.

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 – Jacks Lane, Takeley, CM22 6NT

Jacks Lane, Takeley (hereafter referred to as 'the site') will consist of 40 dwellings, including open space, landscaping, and associated infrastructure within the **red** line boundary shown in **Figure 1** above. The site is surrounded by existing residential premises on Jacks Lane and Smiths Green as well as private farmland to the North.

The dominant noise sources impacting upon the site were noted to be aircraft noise associated with London Stansted Airport and road traffic noise emanating from the A120 to the North of the site.

Occasional road traffic noise emanating from Smiths Green was 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)

The National Planning Policy Framework was published in March 2012 and has had a number of revisions since, with the latest revision being December 2023. In respect of noise, the document states, in section 15, paragraph 180 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 191 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[69];*

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 193 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 $L_{Aeq,16\text{-hour}}$	---
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} 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
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 the 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 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 3**.

The lowest daytime contour shown in **Figure 10** is 51dB $L_{Aeq,16\ hr.}$ This is below the threshold for SOAEL shown in **Table 1** and below the APF 'approximate onset of community annoyance'. The proposed developed site is considerably further away from the airport than this contour line. Therefore, it is likely that daytime noise levels are well below the APF onset values and threshold for SOAEL.

Similarly, the lowest night-time contour shown in **Figure 11** is 45dB L_{night}. This is below the threshold for SOAEL shown in **Table 1.** The proposed development site is considerably further away from the airport than this contour line. Therefore, it is likely that night-time noise levels are well below the threshold for SOAEL.

The level of aircraft noise across the site, which is perpendicular to the runway, is much lower than adjacent areas of land at similar distance that falls within the directions of the runway and therefore is under the flight-path. This is to be expected for all airports. As a worst-case, aircraft noise has been considered to be above the threshold of LOAEL, but below the level of SOAEL.

3.9 Local Planning Authority Requirements: Uttlesford District Council – Condition 13 of Planning Permission Ref.: S62A/2023/0027

In addition to the standard guidance stated above, the assessment shall address Condition 13 of Planning Permission Ref.: S62A/2023/0027 for the site.

Condition 13 of Planning Permission Ref.: S62A/2023/0027 reads as follows;

> *"No development shall commence until a scheme for protecting the dwellings from external noise has been submitted to and approved, in writing by the local planning authority. The scheme shall be designed, specified and constructed so that the*

sound insulation performance of the structure and layout of the dwellings are such that the indoor ambient noise levels do not exceed the values detailed in Table 4 of BS8233:2014 – Guidance on Sound Insulation and Noise Reduction for Buildings and that the individual noise events do not exceed 45dB LA,max,F more than 10 times a night. Where opening of windows will lead to an internal noise level increase of 5dBA or greater above BS8233:2014 recommended internal levels, the scheme shall include the provision of alternative mechanical ventilation with a 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 BS8233:2014 internal noise levels being exceeded. Development shall be carried out in accordance with the approved scheme and completed before any dwelling that the approved scheme relates to is occupied.

REASON: To ensure future occupiers enjoy a good acoustic environment, in accordance with Policy ENV10 of the Uttlesford Local Plan (2205) which requires appropriate noise mitigation and sound proofing to noise sensitive development. The application site is located in the vicinity of Stansted Airport and the A120 considered to be dominant noise sources that will impact on future occupiers of the development. The Noise Assessment submitted with the application contains measurements taken between 6th and 10th April 2021 when, as part of the Government's response to the Covid 19 Pandemic, there was a ban on non-essential travel, and other shops and businesses were closed. It is considered that the noise levels recorded during this period would not represent what would be normally experienced at the site. A Noise Assessment is required to assess the current noise environment and ensure that a suitable noise mitigation scheme is incorporated into the design and construction of the new dwellings."

As mentioned in Condition 13 above, a previous environmental noise assessment was undertaken at the site during April 2021, however Uttlesford District Council noted that the noise level measurements undertaken during this period would likely not represent the 'normal' noise levels experienced at the site due to Covid restrictions on non essential travel.

As such, a new environmental noise survey has been undertaken in April 2024 to confirm the noise levels at the site.

3. Environmental Noise Survey Methodology

An unattended environmental noise survey was undertaken at the site. The Unattended Noise Measurement Position (UNMP) was located on the North-Western boundary of the site. Noise levels were recorded between 16:56 on Thursday 11th April and 08:50 on Monday 15th April 2024. Monitoring was conducted over 5 calendar days to determine prevailing ambient and maximum noise levels affecting the development site.

At the UNMP, a class 1 sound level meter was fixed to a tripod at approximately 1.5m above ground level and positioned in free-field conditions. The UNMP is indicatively highlighted in **orange** in **Figure 2** below. This measurement location was chosen to be reasonably representative of noise levels at the site and outside the nearest noise-sensitive premises.

The 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.

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

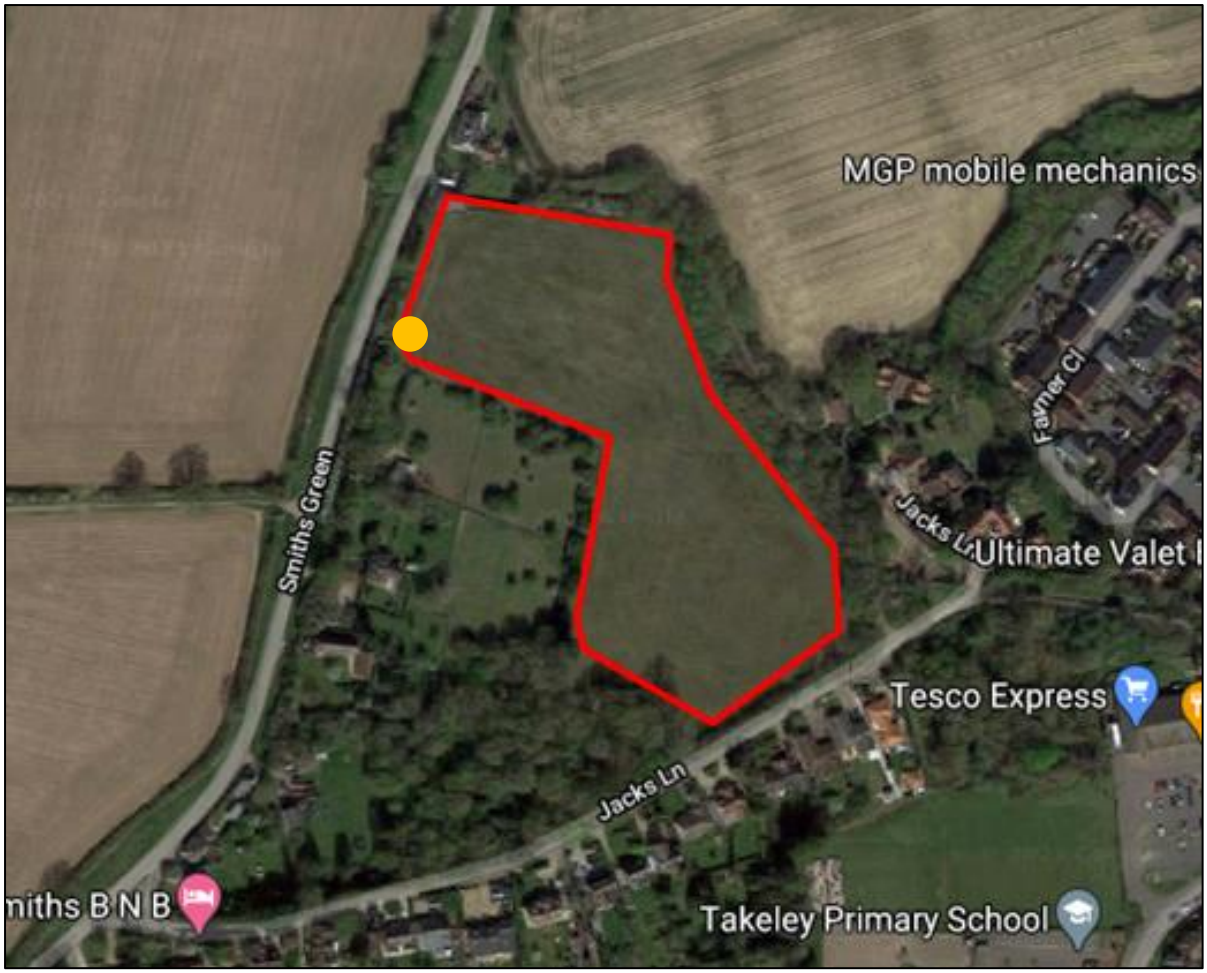

Figure 2: Site map (courtesy of Google Maps) with approximate measurement position

Figure 3 and **Figure 4** below show the setup of the noise monitoring equipment at the UNMP.

Figure 3: Unattended Measurement Setup at the UNMP

Figure 4: Unattended Measurement Setup at the UNMP

With respect to unattended noise measurements undertaken at the UNMP, 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
NTi Audio XL2	A2A-17871-E0	20/09/2023	20/09/2025	UNMP

Table 5 below provides details of the calibration equipment which was used to calibrate the sound level meter prior to undertaking noise measurements. The sound level meter was 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 5: Calibration Equipment

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

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 +7 to +21° Celsius, clear to cloudy skies (20-90% cloud cover approximately) with a maximum wind speed up to 7.6m/s and a typical range of 4.0m/s to 4.9m/s.

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.

4. Measurement Results

April 2024

The results of the unattended noise measurements undertaken during April 2024 are summarised in the following tables.

Graphs showing the results of the unattended measurements undertaken during April 2024 are provided in **Appendix 10**.

Daytime and night-time ambient noise levels measured during April 2024 are presented in **Table 6** below.

Table 6: Ambient noise levels measured during the unattended survey – April 2024

Date	Daytime (07:00 – 23:00) $L_{Aeq,16h}$ (dB)	Night (23:00 – 07:00) $L_{Aeq,8h}$ (dB)
Thursday 11th April 2024	47.7*	43.8
Friday 12th April 2024	51.8	45.0
Saturday 13th April 2024	51.3	46.8
Sunday 14th April 2024	50.8	45.2
Overall	51.3	45.2

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

Maximum noise levels measured during April 2024 are presented in **Table 7** below.

Table 7: Maximum noise levels measured during the unattended survey – April 2024

Date	Night (23:00 – 07:00) $L_{Afmax,8h}$ (dB)
Thursday 11th April 2024	49.7
Friday 12th April 2024	51.4
Saturday 13th April 2024	54.2
Sunday 14th April 2024	51.2
Overall	51.6

April 2021

The results of the unattended noise measurements undertaken during April 2021 are summarised in the following tables.

Daytime and night-time ambient noise levels measured during April 2021 are presented in **Table 8** below.

Table 8: Ambient noise levels measured during the unattended survey – April 2021

Date	Daytime (07:00 – 23:00) $L_{Aeq,16h}$ (dB)	Night (23:00 – 07:00) $L_{Aeq,8h}$ (dB)
Tuesday 6th April 2021	53.7*	45.5
Wednesday 7th April 2021	54.3	47.5
Thursday 8th April 2021	52.3	46.0
Friday 9th April 2021	54.3	48.1
Saturday 10th April 2021	51.9	-
Overall	53.3	46.8

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

Maximum noise levels measured during April 2021 are presented in **Table 9** below.

Table 9: Maximum noise levels measured during the unattended survey – April 2021

Date	Night (23:00 – 07:00) $L_{Afmax,8h}$ (dB)
Tuesday 6th April 2021	52.3
Wednesday 7th April 2021	49.0
Thursday 8th April 2021	47.5
Friday 9th April 2021	51.4
Saturday 10th April 2021	-
Overall	50.1

Shown overleaf in **Table 10** is a comparison of the noise level results recorded during the unattended survey's during April 2021 and April 2024.

Table 10: Comparison of noise level results – April 2021 and April 2024

Survey Period	Daytime (07:00 – 23:00) $L_{Aeq,16h}$ (dB)	Night (23:00 – 07:00) $L_{Aeq,8h}$ (dB)	Night (23:00 – 07:00) $L_{Afmax,8h}$ (dB)
April 2021	53.3	46.8	50.1
April 2024	51.3	45.2	51.6
Difference, dB(A)	(-) 2.0	(-) 1.6	(+) 1.5

As can be seen in **Table 10** above, the ambient daytime and ambient night-time noise levels measured at the site during April 2024 are below the levels measured during April 2021.

Regarding maximum noise levels, the maximum night-time noise levels measured at the site during April 2024 are marginally greater (+1.5dB) than the levels measured during April 2021. However, it should be noted that a 1dB difference is generally considered negligible in acoustic terms, as this difference is undetectable to normal human hearing.

The results of the noise levels measured at the site during April 2024 confirm that the noise levels measured at the site during April 2021 are representative of the normal noise levels experienced at the site.

5. Design Criteria

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 exampled 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 the Local Authority, 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**.

At this site, the facade performance requirements are driven by the daytime ambient noise levels and the night-time ambient noise levels.

It should be noted that the minimum sound reduction performance requirements as shown in **Table 11** below are based on the noise levels measured during the unattended survey undertaken in April 2024.

Table 11: 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)	51.3dB $L_{Aeq,16hour}$	35 $L_{Aeq,16hour}$	16
Night-time (23:00 - 07:00)	45.2dB $L_{Aeq,8hour}$	30 $L_{Aeq,8hour}$	15
Night-time (23:00 - 07:00)	51.6dB L_{AFmax}	45 L_{Afmax}	7

Non-glazed elements

The proposed residential development will be of masonry construction. The construction is anticipated to provide a sound reduction performance of 61dB; the same performance would also be required for the roof construction to provide suitable sound insulation. The non-glazed elements spectral data is presented below in **Table 12**.

Table 12: Non-glazed elements assumed sound reduction performance

Element	Octave band centre frequency SRI, dB					
	125Hz	**250Hz**	**500Hz**	**1kHz**	**2kHz**	**4kHz**
Non-glazed element SRI	49	54	54	62	72	82

Guidance on glazing, and ventilation strategy

The recommended glazing configuration and ventilation strategy is highlighted below in **Table 13**.

Table 13: 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)

It is recommended that a noise reduction performance of 25dB R_w+C_{tr} is required for all glazed elements in 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 measured ambient (L_{Aeq}) 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 10 to 15dB, depending on the open area. As such, where the required façade sound insulation performance is less than R_w+C_{tr} 10dB, it is likely that opening windows can be used for ventilation while achieving the necessary internal noise levels.

External Amenity Spaces

It is noted that the external ambient noise levels at the site in the residential gardens generally comply with the WHO's 'Guideline for Community Noise' (2009) guideline values for external amenity space (55dB $L_{Aeq16hour}$) due to the development being outside of Stansted Airport's flight path highlighted in the noise exposure report from the Civil Aviation Authority (CAA).

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'.

6. Noise Mitigation Scheme

Weston Homes Plc have provided drawings of the external wall and roof constructions which include acoustic mitigation measures necessary to protect the future occupants of the dwellings from external noise, to achieve the internal noise level requirements contained in BS8233:2014.

Non-Glazed Elements – External Walls

Weston Homes Plc have provided SES with the following external wall construction drawings for the site, as detailed below:

- WH202/22/75.300
- WH202/22/75.301
- WH202/22/75.320
- WH202/22/75.321
- WH202/22/75.326

The above drawings are provided in **Appendix 5**.

Using Insul 9.0 sound insulation prediction software, the sound insulation performance of the of the external walls at the site have been modelled.

With regards to external wall drawings 'WH202/22/75.300', 'WH202/22/75.301' and 'WH202/22/75.320', the standard construction is to be the following:

- 102mm brickwork outer-leaf
- 150mm cavity fully filled with 'Knauf' Dritherm 32 insulation
- 100mm Hanson 'Fenlite' blockwork inner-leaf
- 12.5mm Gyproc wallboard

Shown in **Figure 5** overleaf is the modelled external wall construction relating to drawings 'WH202/22/75.300', 'WH202/22/75.301' and 'WH202/22/75.320'.

It should be noted that Insul 9.0 does not include 'Knauf' Dritherm 32 mineral wool insulation. As a result, Rockwool mineral wool has been applied to the model as an alternative insulation material, which will provide a similar sound insulation performance.

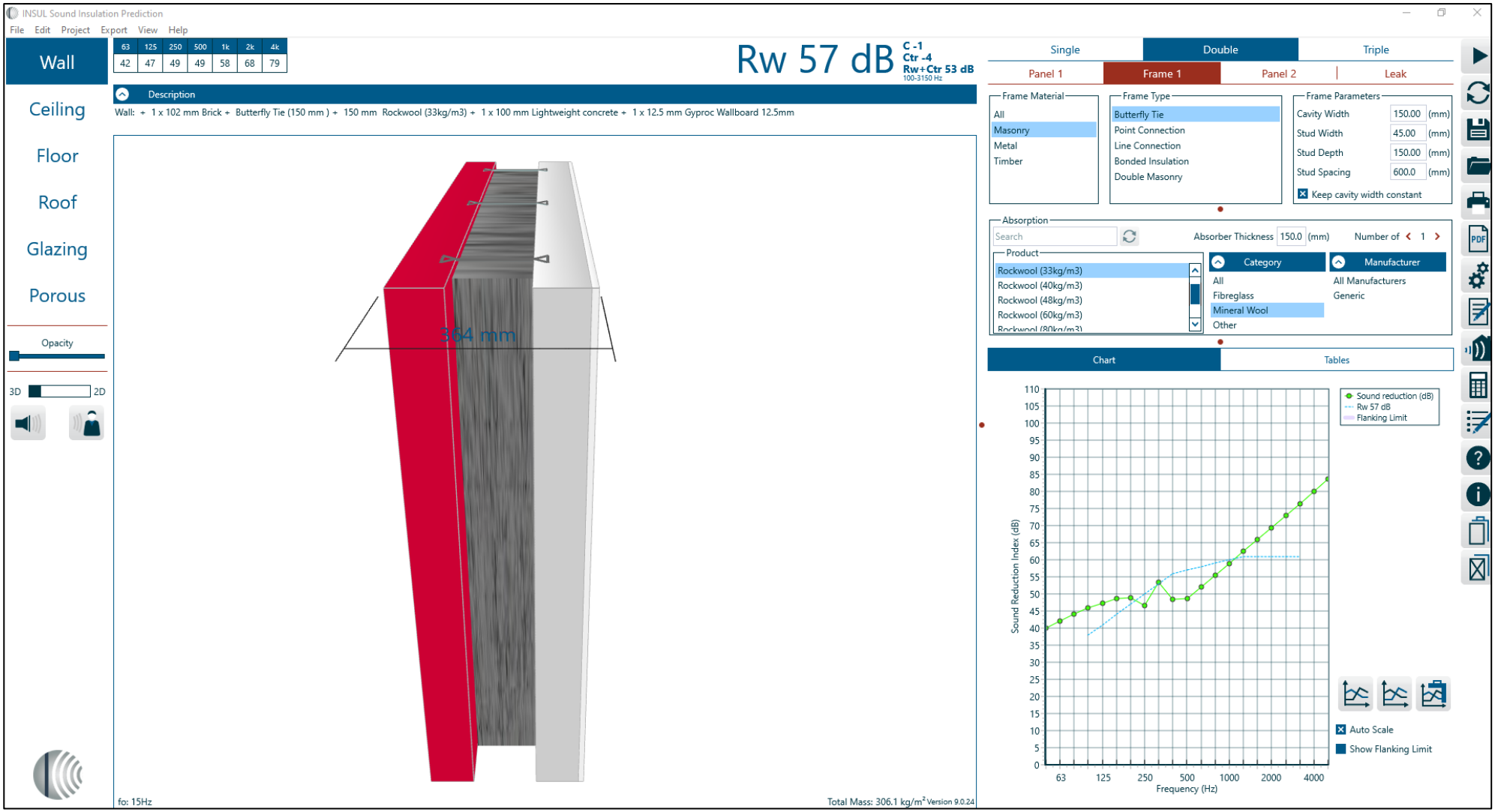

Figure 5: Insul Modelled External Wall Construction – 'WH202/22/75.300', 'WH202/22/75.301' and 'WH202/22/75.320' – Jacks Lane

As can be seen in **Figure 5** above, the external wall construction relating to drawings 'WH202/22/75.300', 'WH202/22/75.301' and 'WH202/22/75.320' for the site provides a sound reduction performance of 57dB R_w.

With regards to the external wall drawing 'WH202/22/75.321', the standard construction is to be the following:

- 20mm render
- 100mm Hanson 'Fenlite' blockwork outer-leaf
- 150mm cavity fully filled with 'Knauf' Dritherm 32 insulation
- 100mm Hanson 'Fenlite' blockwork inner-leaf

Shown in **Figure 6** overleaf is the modelled external wall construction relating to drawing 'WH202/22/75.321'.

It should be noted that Insul 9.0 does not include 'Knauf' Dritherm 32 mineral wool insulation. As a result, Rockwool mineral wool has been applied to the model as an alternative insulation material, which will provide a similar sound insulation performance.

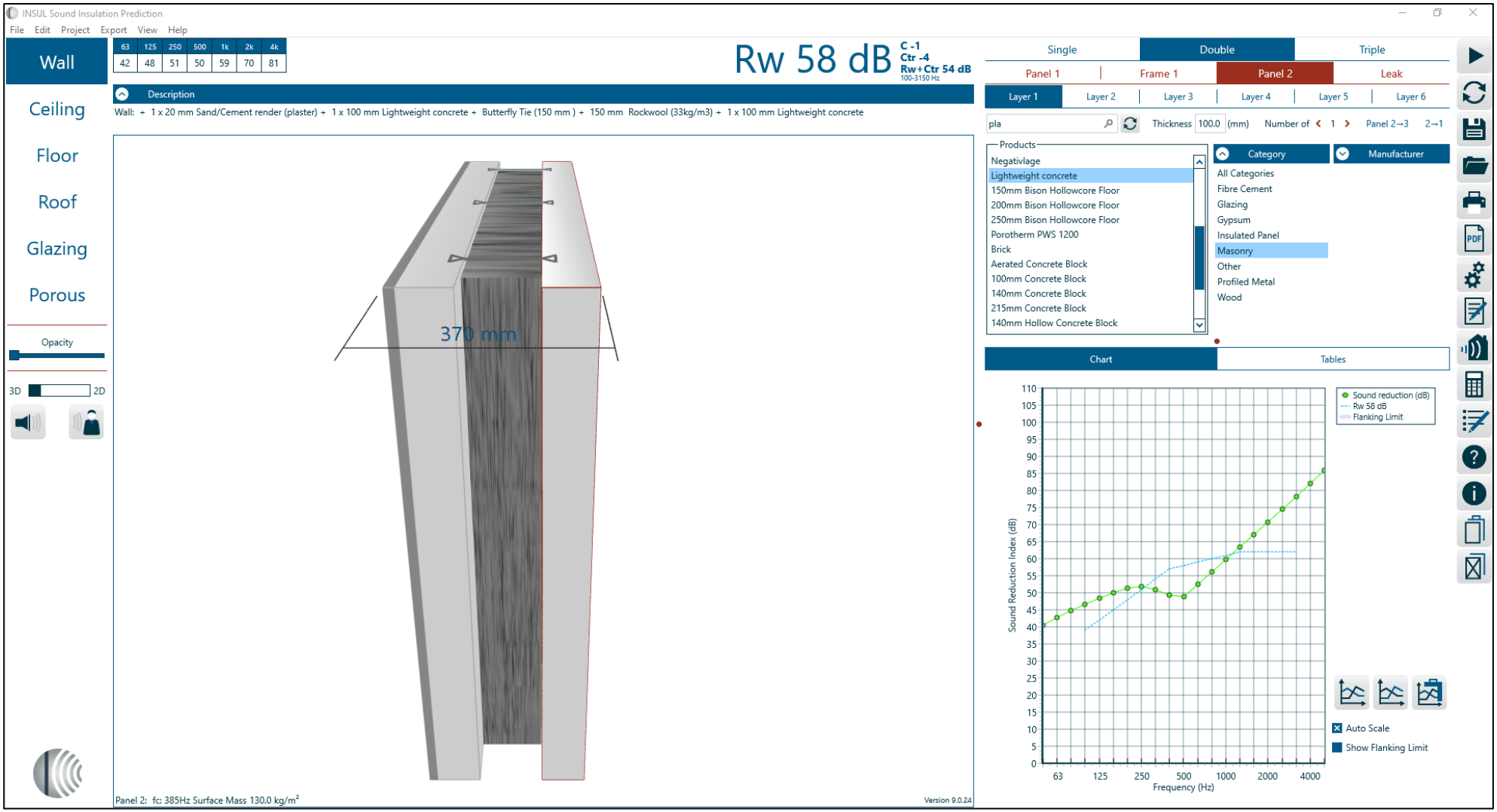

Figure 6: Insul Modelled External Wall Construction – 'WH202/22/75.321' – Jacks Lane

As can be seen in **Figure 6** above, the external wall construction relating to drawing 'WH202/22/75.321' for the site provides a sound reduction performance of 58dB R_w.

With regards to the external wall drawing 'WH202/22/75.326', the standard construction is to be the following:

- 100mm Hanson 'Fenlite' blockwork outer-leaf
- 150mm cavity fully filled with 'Knauf' Dritherm 32 insulation
- 100mm Hanson 'Fenlite' blockwork inner-leaf
- 12.5mm Gyproc wallboard

Shown in **Figure 7** overleaf is the modelled external wall construction relating to drawing 'WH202/22/75.326'.

It should be noted that Insul 9.0 does not include 'Knauf' Dritherm 32 mineral wool insulation. As a result, Rockwool mineral wool has been applied to the model as an alternative insulation material, which will provide a similar sound insulation performance.

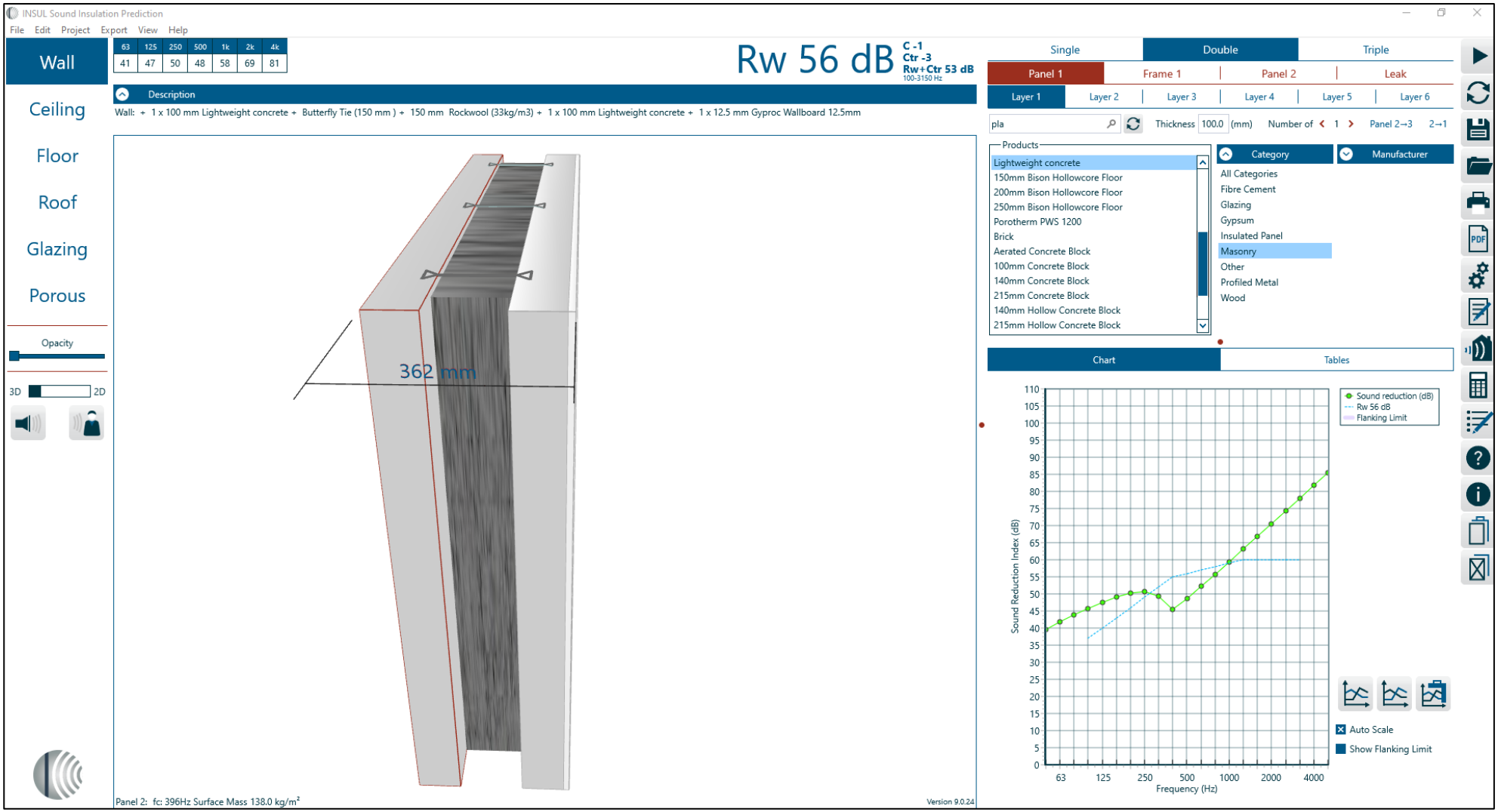

Figure 7: Insul Modelled External Wall Construction – 'WH202/22/75.326' – Jacks Lane

As can be seen in **Figure 7** above, the external wall construction relating to drawing 'WH202/22/75.326' for the site provides a sound reduction performance of 56dB R_w.

The external wall specifications have been modelled using Insul 9.0 sound insulation prediction software and as such, the proposed external wall constructions appear to satisfactorily meet the minimum performance requirement.

Non-Glazed Elements – Roof

Weston Homes Plc have provided SES with the following roof construction drawings for the site, as detailed below:

- WH202/22/75.401
- WH202/22/75.414
- WH202/22/75.417

The above drawings are provided in **Appendix 6**.

Using Insul 9.0 sound insulation prediction software, the sound insulation performance of the of the roof constructions at the site have been modelled.

With regards to the roof construction drawings as noted above, the standard construction is to be the following:

- Pitched (35º) timber frame roof structure
- Roof tiles
- 15mm Gyproc wallboard internal lining
- 200mm stud depth
- 400mm thick 'Knauf' earthwool loft roll
- 15mm Gyproc Fireline board

Shown in **Figure 8** overleaf is the modelled roof construction relating to drawings 'WH202/22/75.401', 'WH202/22/75.414' and 'WH202/22/75.417'.

It should be noted that the modelled roof construction does not include 400mm thick 'Knauf' earthwool loft roll. As such, the addition of this material into the roof structure will provide additional sound insulation against external noise.

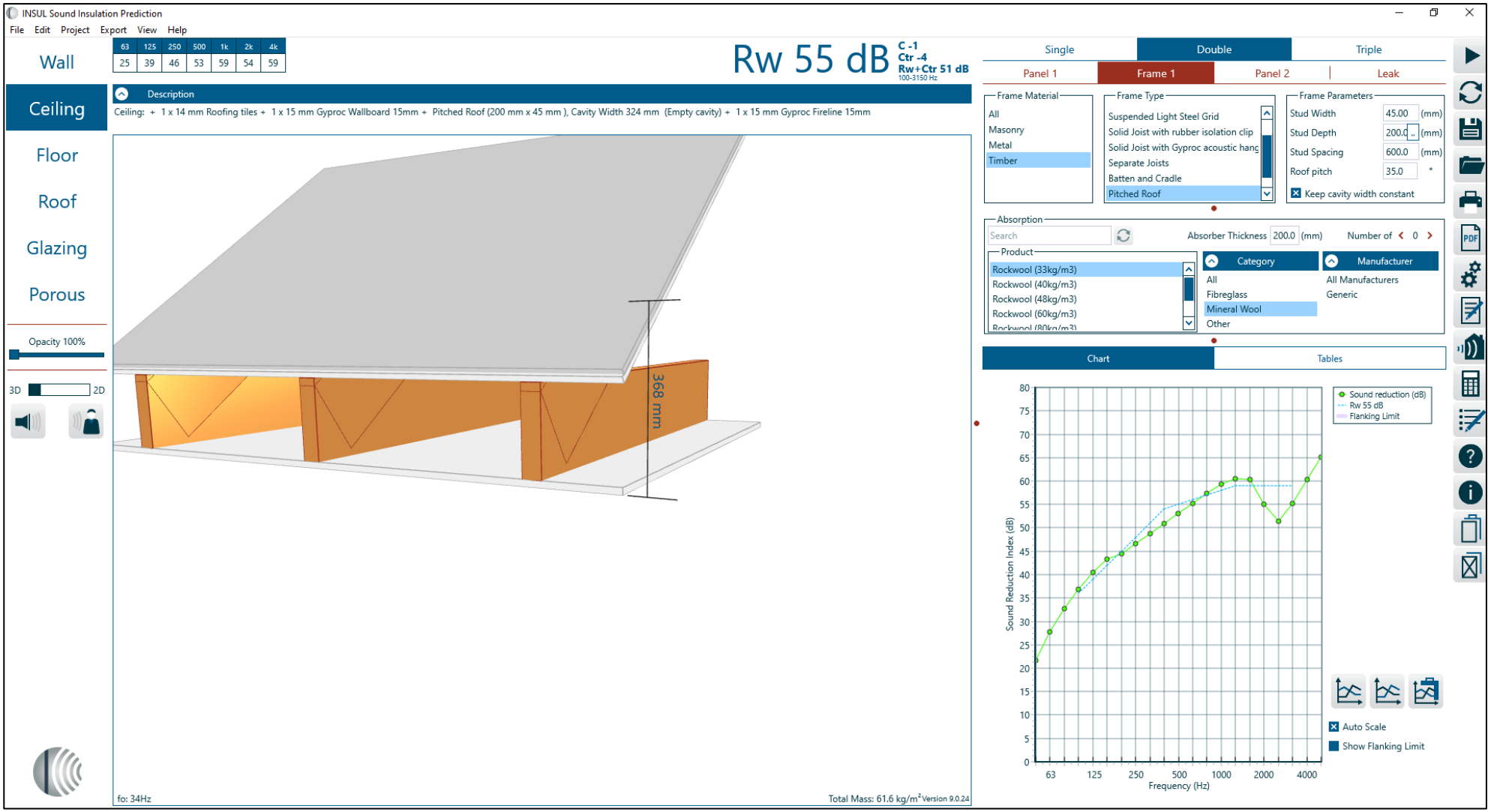

Figure 8: Insul Modelled Roof Construction – 'WH202/22/75.401', 'WH202/22/75.414' and 'WH202/22/75.417' – Jacks Lane

As can be seen in **Figure 8** above, the roof construction relating to drawings 'WH202/22/75.401', 'WH202/22/75.414' and 'WH202/22/75.417' for the site provide a sound reduction performance of 55dB R_w.

The roof specifications have been modelled using Insul 9.0 sound insulation prediction software and as such, the proposed roof constructions appear to satisfactorily meet the minimum performance requirement.

Glazed Elements

Weston Homes Plc have provided SES with the following window schedule drawings for the site, as detailed below:

- WH202/22/80.01
- WH202/22/80.02

The above drawings are provided in **Appendix 7**.

Within the above-mentioned window schedule drawings, it is noted that the glazing is specified as 24mm double glazed units, with air gap.

Reference has also been made to the Weston Homes Construction Specification document 'Construction Specification 1.0(H)' which states the following with respect to glazing (pages 24 & 25);

"1.14.6 GLAZING
Glazing units to windows generally to be 28mm thick unit size with air gap and Low E (hard coat) internal leaf. Where obscured glass is called for, outer leaf to be 4mm Cotswold pattern float.

All glass to conform with BS 6262, toughened glass to be in accordance with B 6206, 1981.

Where Part K of the Building Regulations requires safe breakage of glass, toughened Low E inner leaf is to be provided in the following locations:

All areas of glazing within 800mm of finished floor level, 1500mm in doors and adjacent sidelights for 300mm width from doors, to be Class C laminated glass satisfying requirements of BS 6206: 1981. Any areas of glazing exceeding 900mm in width should be Class B laminated glass. The glazing should be clearly marked as described in Section 6 of BS 6206, and visible after installation.

Glazing in windows up to 800mm above floor level, should be fitted and so constructed to resist horizontal imposed loads as specified in Table 4, A(i) of BS 6399:Part1:1996.

Provide safety glass in bathrooms where bath is below a window.

Glazed units in framing member tests must have all edges supported.

Glass must have an adequate resistance to thermal stress generated by orientation, shading, solar control and construction.

The psychometric conditions under which condensation must not form on the building interior surfaces of framing members or any part of infill panels/facings are: external: Summer: 29°C dB, 20°C wb Winter: -4°C dB, 100% saturation.

Required acoustic reduction value to windows to achieve 32dB Rw+Ctr reduction."

As such, the proposed glazed elements specification appears to satisfactorily meet the minimum performance requirement, to achieve the internal noise levels contained in BS8233:2014.

Ventilation

Weston Homes Plc have provided SES with the model of proposed trickle vents to be installed in the heads of the windows.

Details of the proposed trickle vents are provided on page 41 of the 'Construction Specification 1.0(H)', which confirms that the trickle vents to be installed are Glazpart 'Link' trickle vents (2,500mm^2 EA). An extract of the Construction Specification has been provided in **Appendix 8**.

A copy of page 5 of the BRE Testing Report of the Glazpart 'Link' vents is provided in **Appendix 9**, which provides details of the sound reduction performance of the trickle vents.

The Glazpart 'Link' (2,500mm^2 EA) trickle vents provide a minimum sound reduction performance of $D_{,n,e,w}+C_{tr}$ 35dB in the open position and as such, the proposed trickle vents appear to satisfactorily meet the minimum performance requirement, to achieve the internal noise levels contained in BS8233:2014 and negating the need to open windows for ventilation.

7. Conclusions

Stansted Environmental Services (SES) Ltd has been commissioned by Weston Homes Plc to prepare a BS8233 Environmental Noise Assessment for the proposed development at Jacks Lane, Takeley, CM22 6NT.

An environmental noise survey has been carried out by Stansted Environmental Services (SES) Ltd during April 2024, to establish the existing noise levels at the site, following Uttlesford District Council's comments contained in Condition 13 of Planning Permission Ref.: S62/A/2023/0027.

The comments refer to the noise survey undertaken in April 2021. It was considered by Uttlesford District Council that the results of that survey were not representative of the normal noise levels experienced at the site, due to the ban on non-essential travel as part of the Government's response to the Covid-19 pandemic.

The results of the noise survey undertaken in April 2024 correlate with the results of the April 2021 noise survey.

To provide suitable conditions for the proposed residential development and minimise noise related impacts, it is necessary to achieve suitable internal ambient noise levels to meet BS8233:2014 recommendations.

A minimum of 25dB R_w+C_{tr} noise reduction 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.

Weston Homes has specified windows with a sound reduction performance of 32dB R_w+C_{tr}, therefore demonstrating that the internal noise levels requirements contained in BS8233:2014, will be met.

In addition, the trickle vents to be installed in the proposed dwellings provide a minimum sound reduction performance of $D_{,n,e,w}$+C_{tr} 35dB in the open position and as such, the trickle vents appear to satisfactorily meet the minimum performance requirement, to achieve the internal noise levels contained in BS8233:2014.

Furthermore, the results of the sound insulation prediction modelling of the proposed external wall and roof constructions demonstrate that the design of the dwellings will provide sufficient acoustic mitigation against external noise, to achieve the internal noise level requirements contained in BS8233:2014.

The findings of this report should provide satisfactory evidence for the Local Planning Authority to be in a position to recommend discharge of Condition 13 of Planning Permission S62/A/2023/0027.

7. 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) in 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 ($2x10^{-5}$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 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 – Stansted Airport noise contours

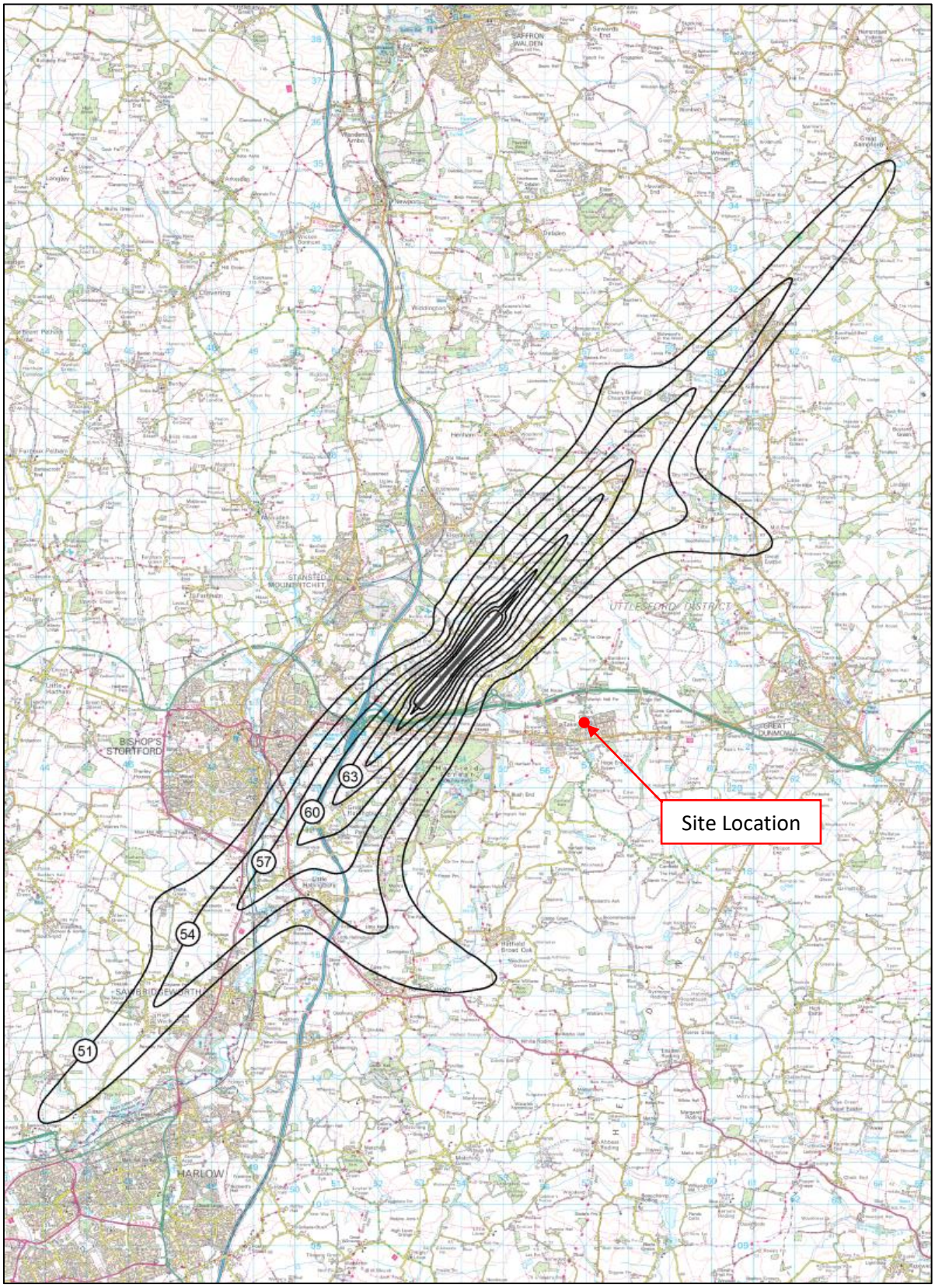

Figure 10: Stansted 2022 summer day actual modal split (58% SW / 42% NE) $L_{Aeq,16h}$ contours

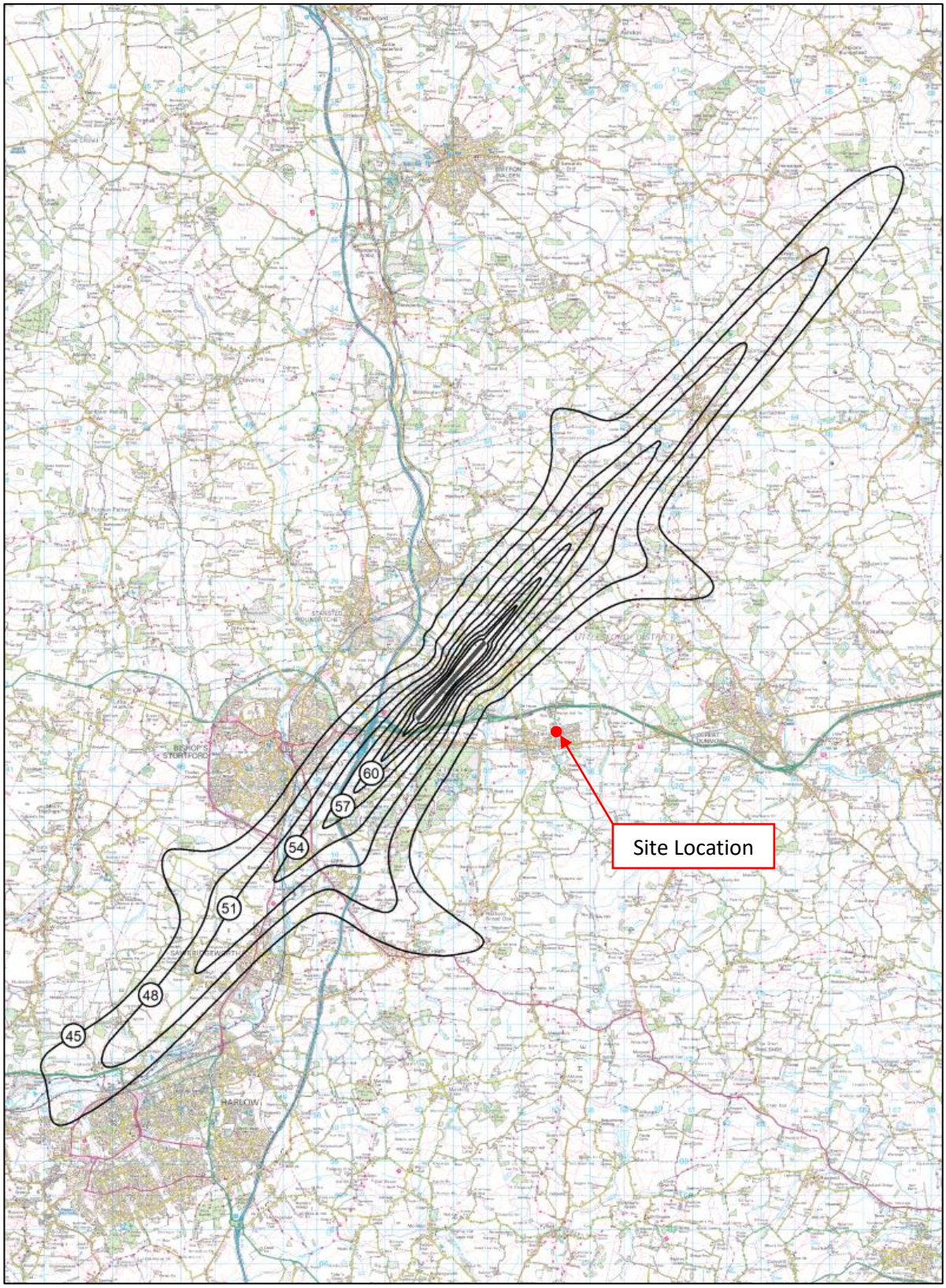

Figure 11: Stansted 2022 summer night actual modal split (59% SW / 41% NE) $L_{Aeq,8h}$ contours

Appendix 4 – Proposed Site Plan

Figure 12: Proposed Site Plan – Jacks Lane

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Appendix 5 – External Wall Construction Drawings

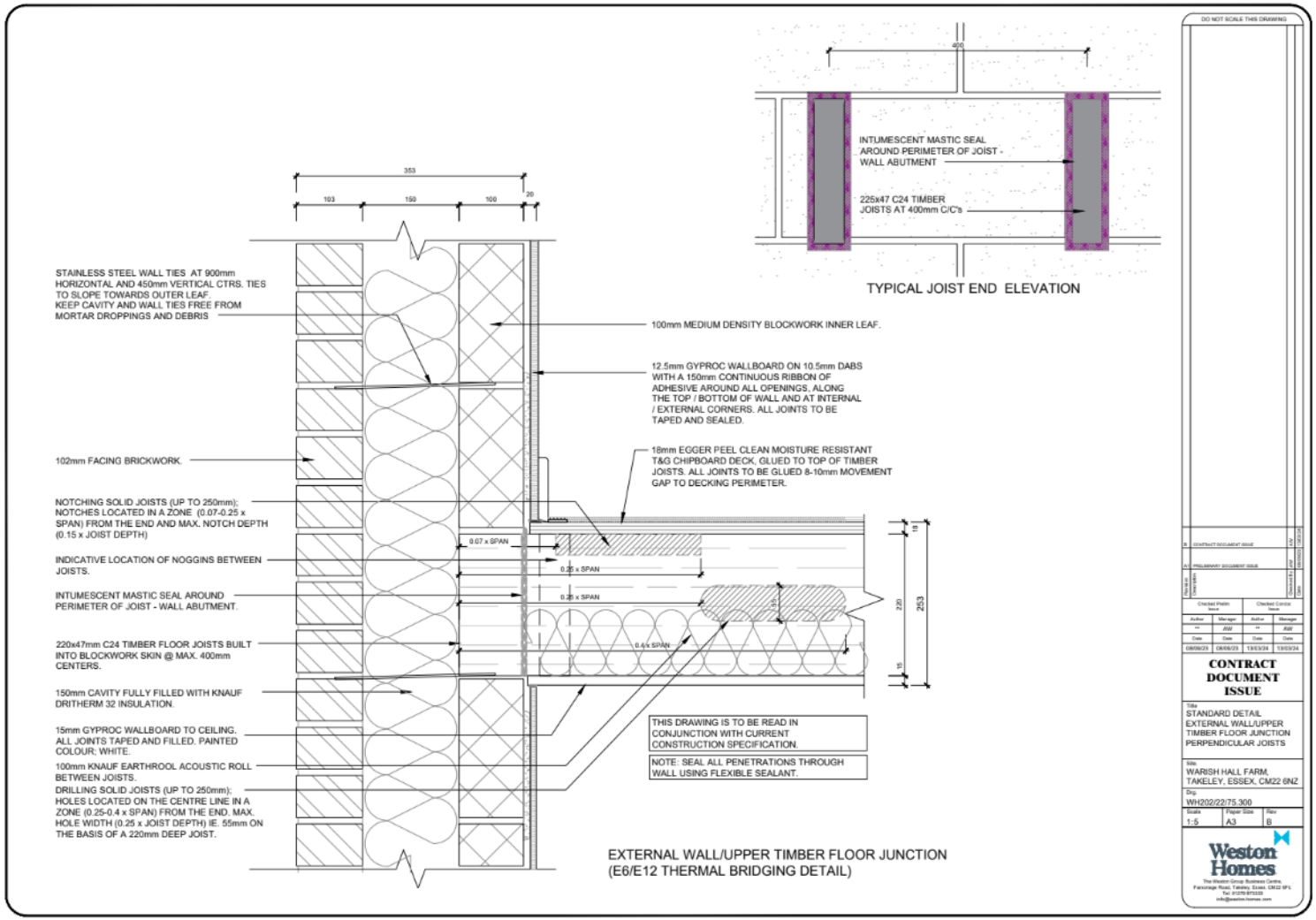

Figure 13: External Wall Construction Drawing WH202/22/75.300 – Jacks Lane

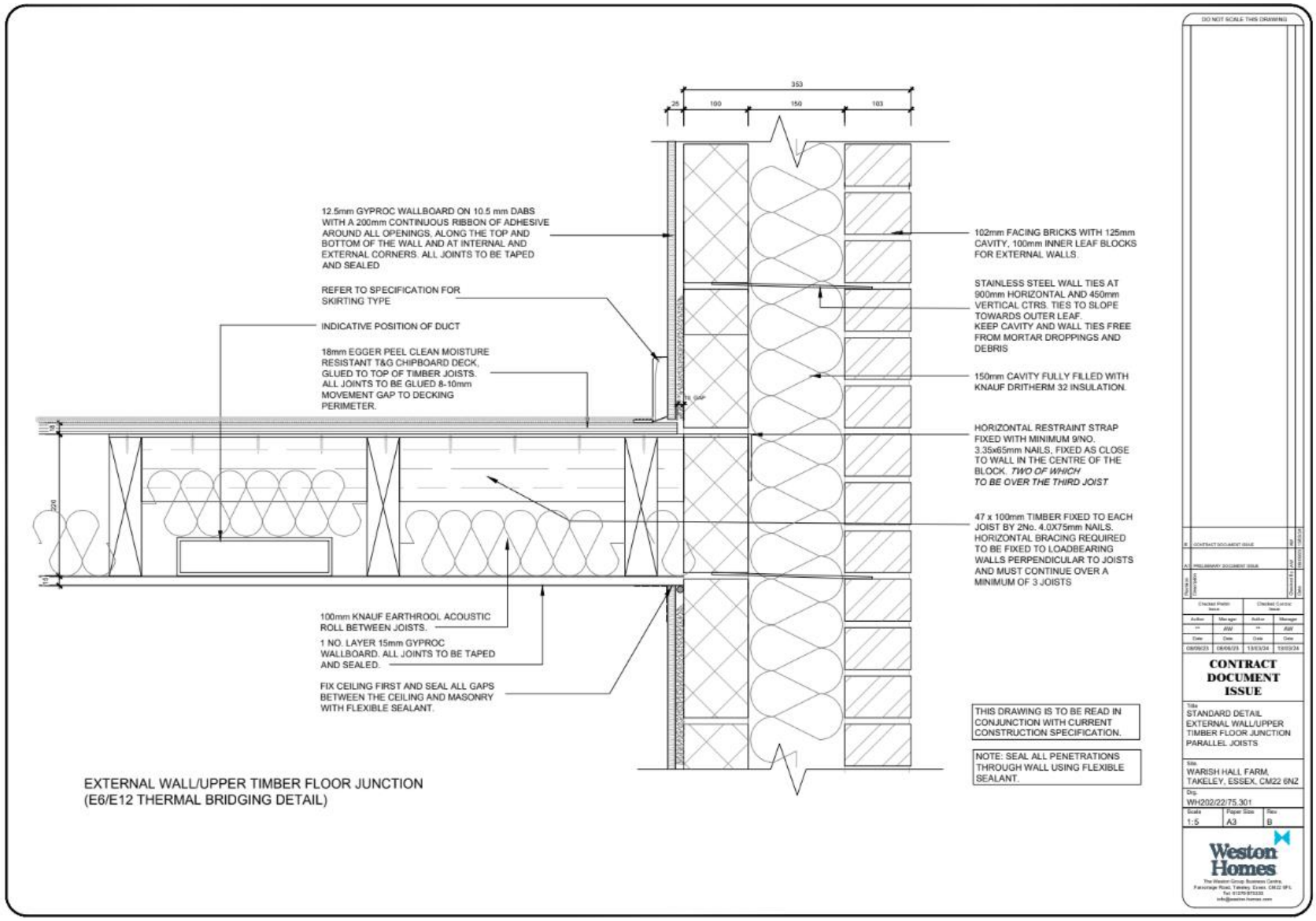

Figure 14: External Wall Construction Drawing WH202/22/75.301 – Jacks Lane

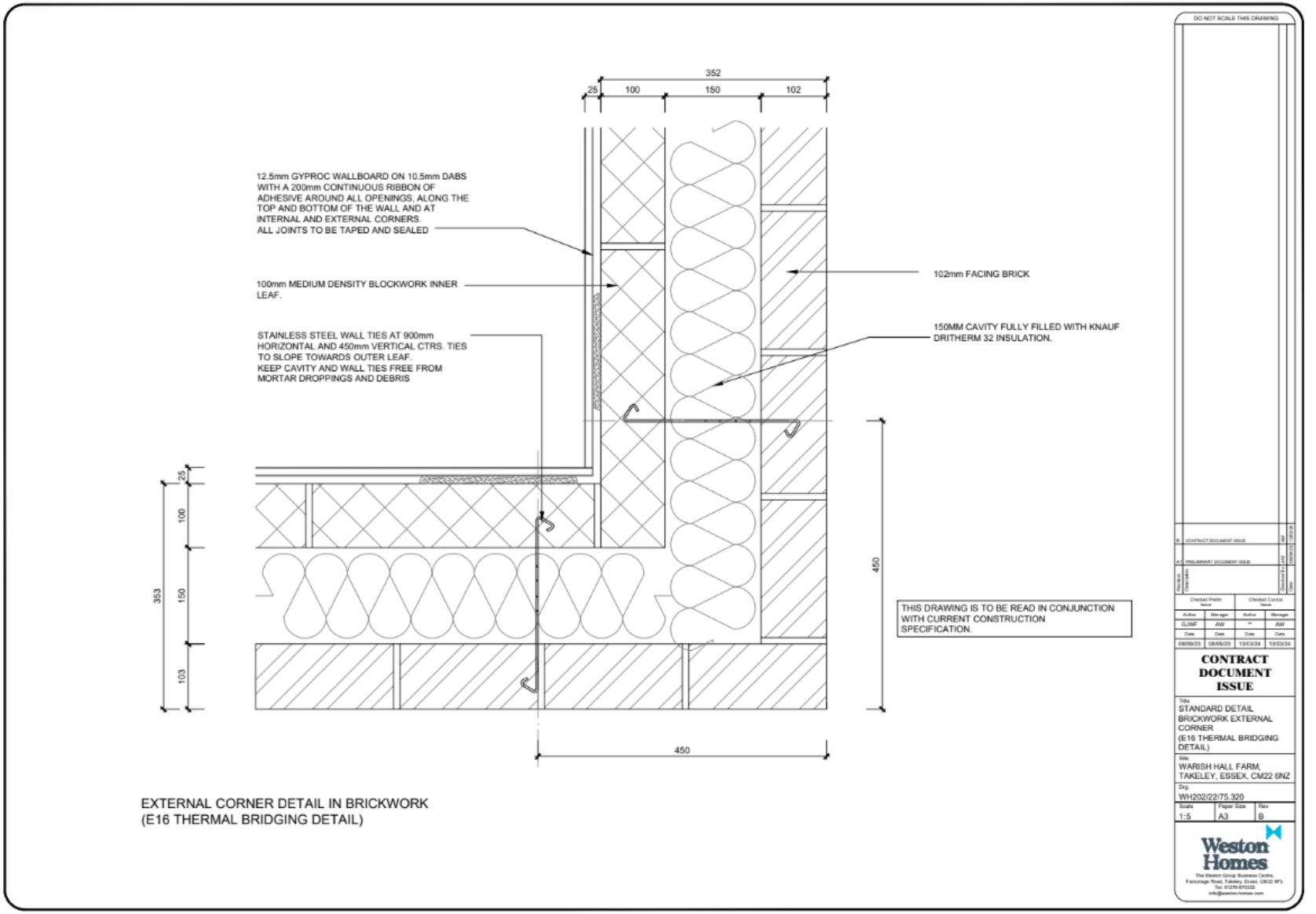

Figure 15: External Wall Construction Drawing WH202/22/75.320 – Jacks Lane

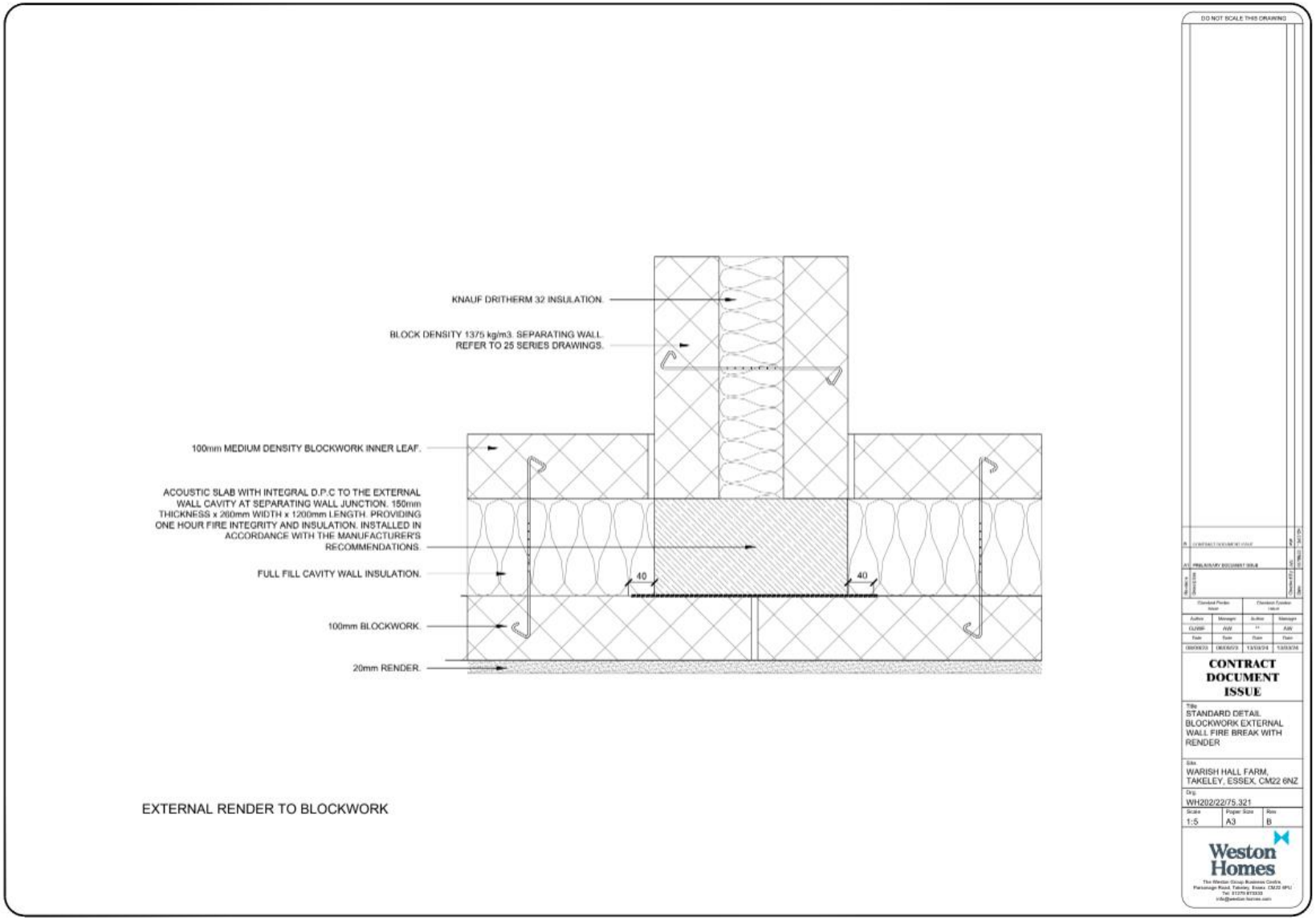

Figure 16: External Wall Construction Drawing WH202/22/75.321 – Jacks Lane

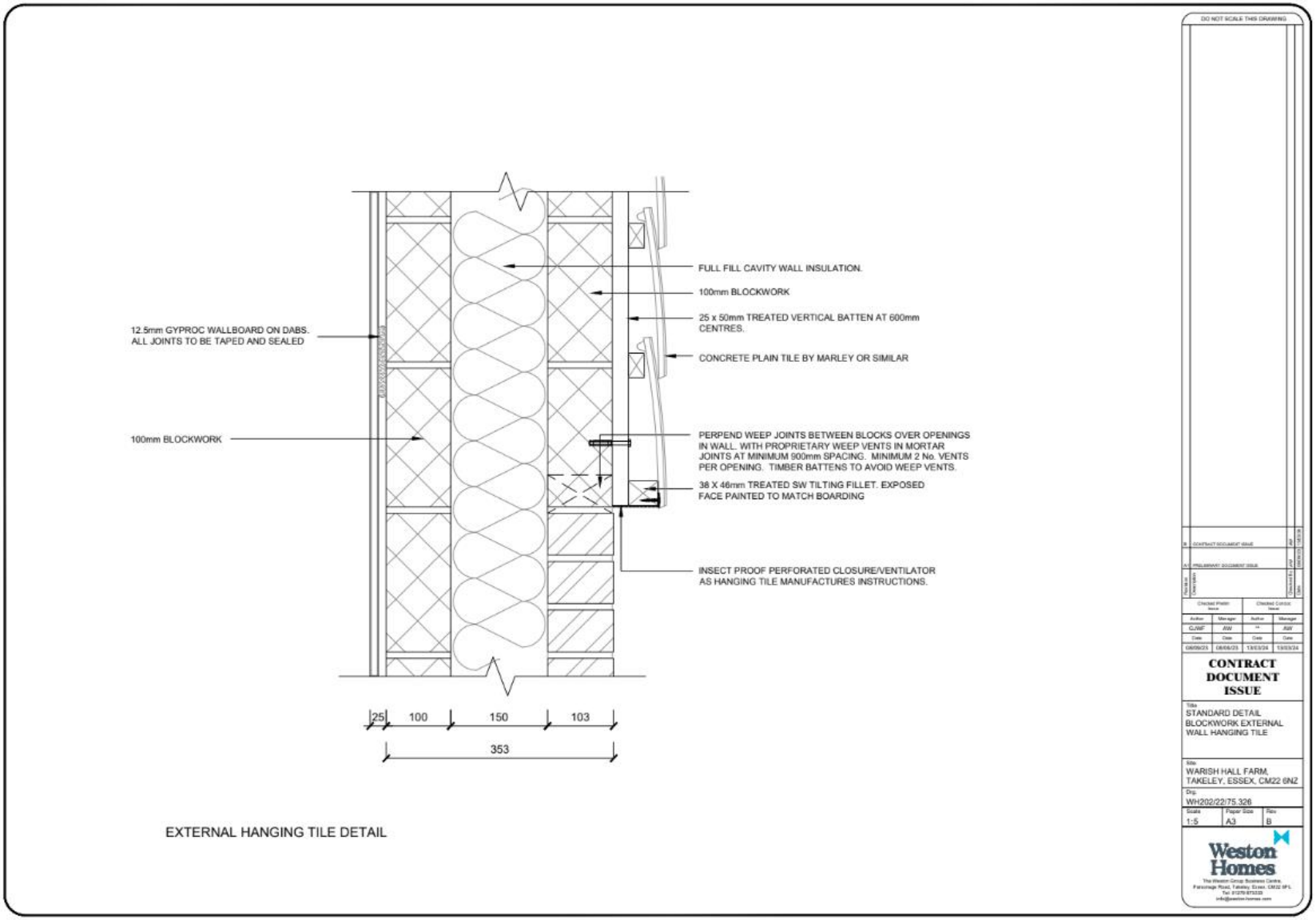

Figure 17: External Wall Construction Drawing WH202/22/75.326 – Jacks Lane

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Appendix 6 – Roof Construction Drawings

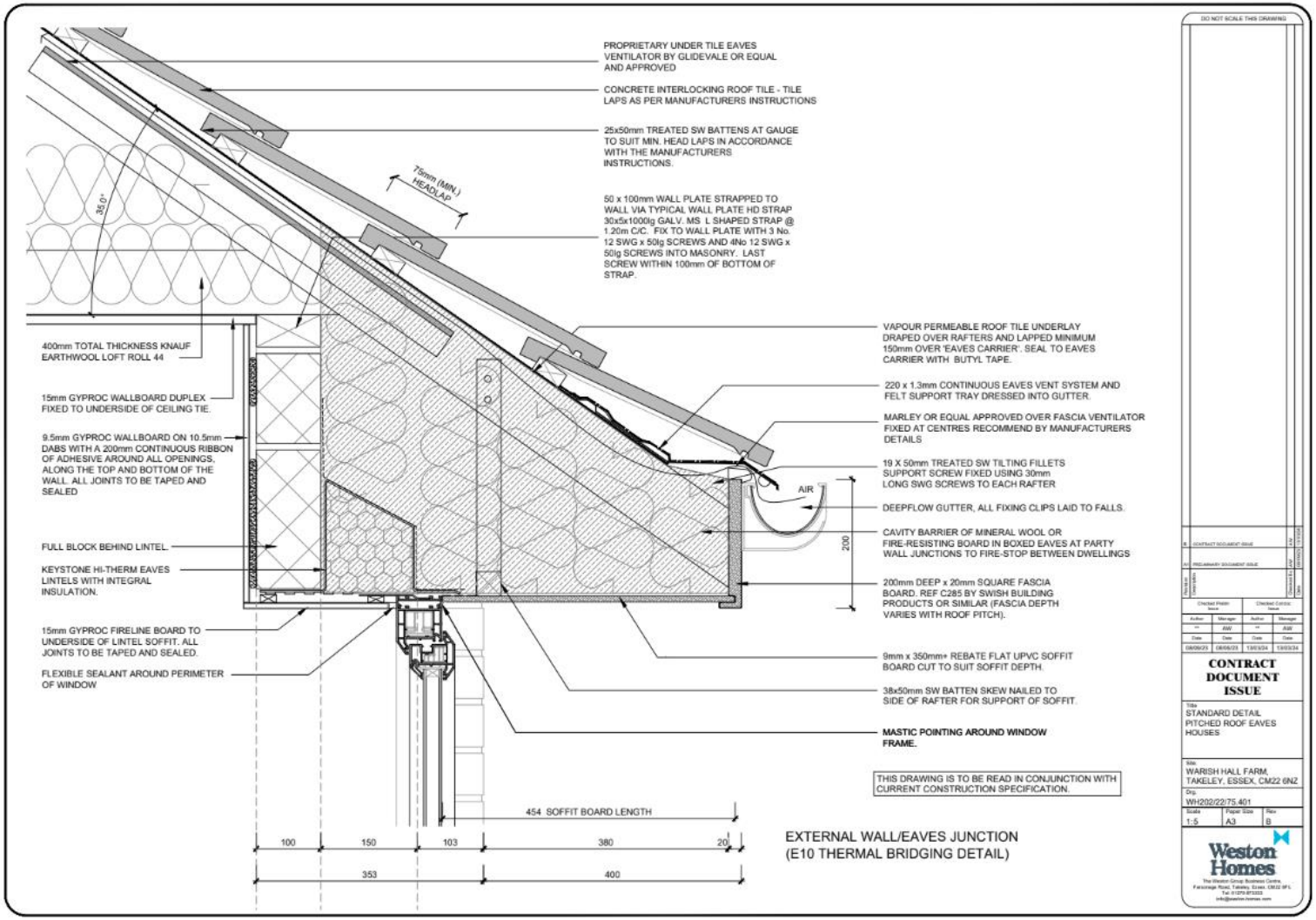

Figure 18: Roof Construction Drawing WH202/22/75.401 – Jacks Lane

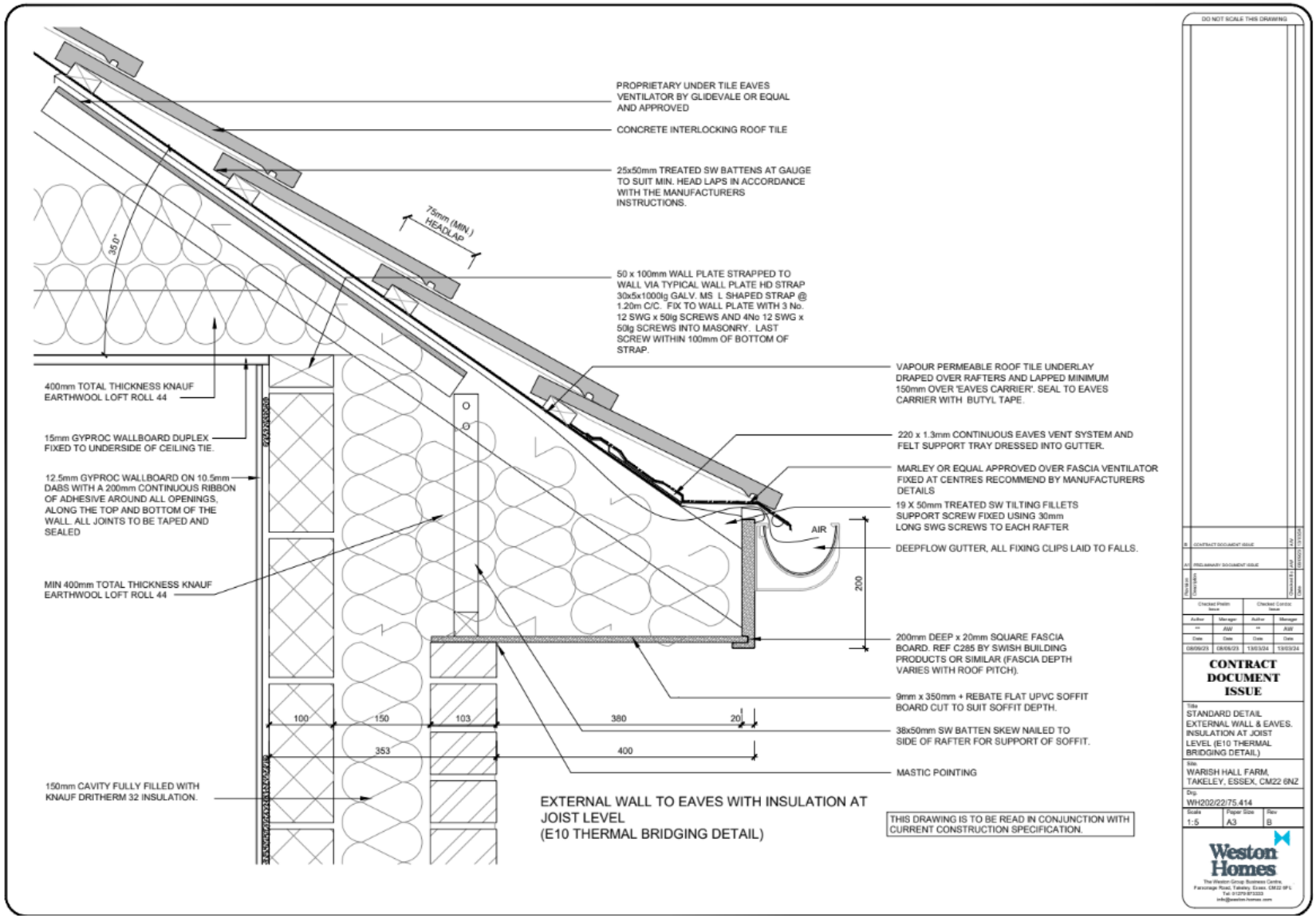

Figure 19: Roof Construction Drawing WH202/22/75.414 – Jacks Lane

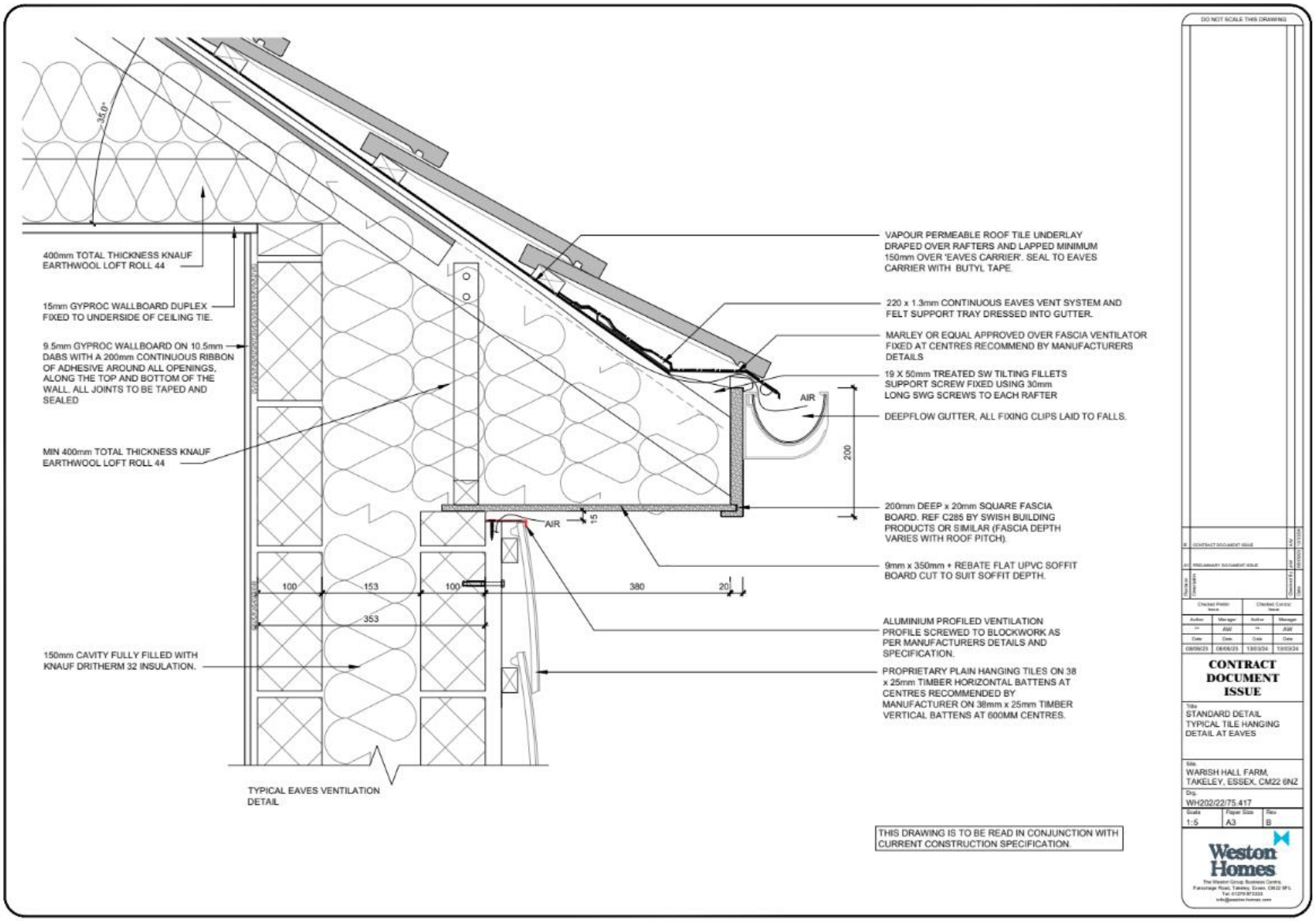

Figure 20: Roof Construction Drawing WH202/22/75.417 – Jacks Lane

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Appendix 7 – Glazing Drawings

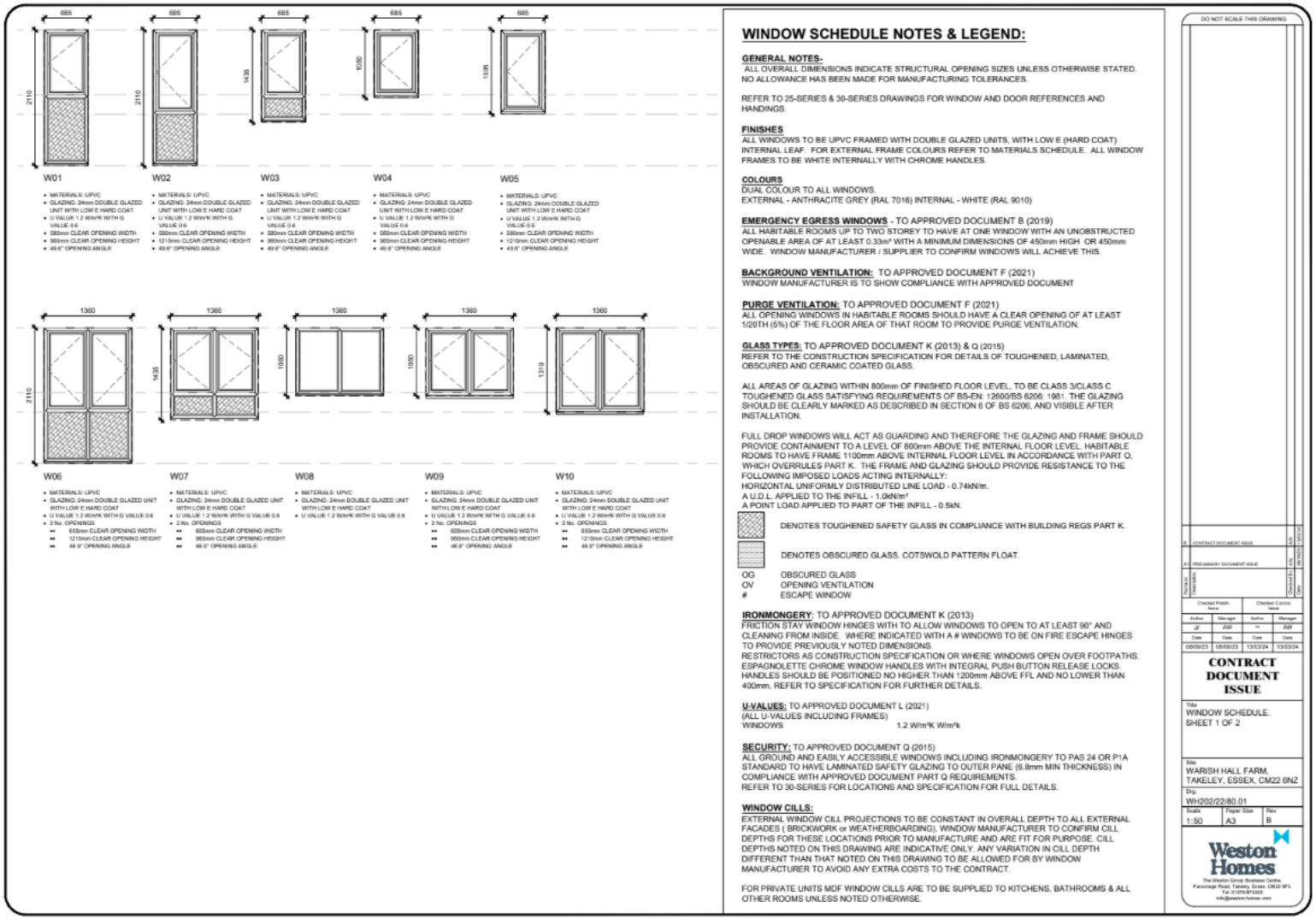

Figure 21: Glazing Drawing WH202/22/80.01 – Jacks Lane

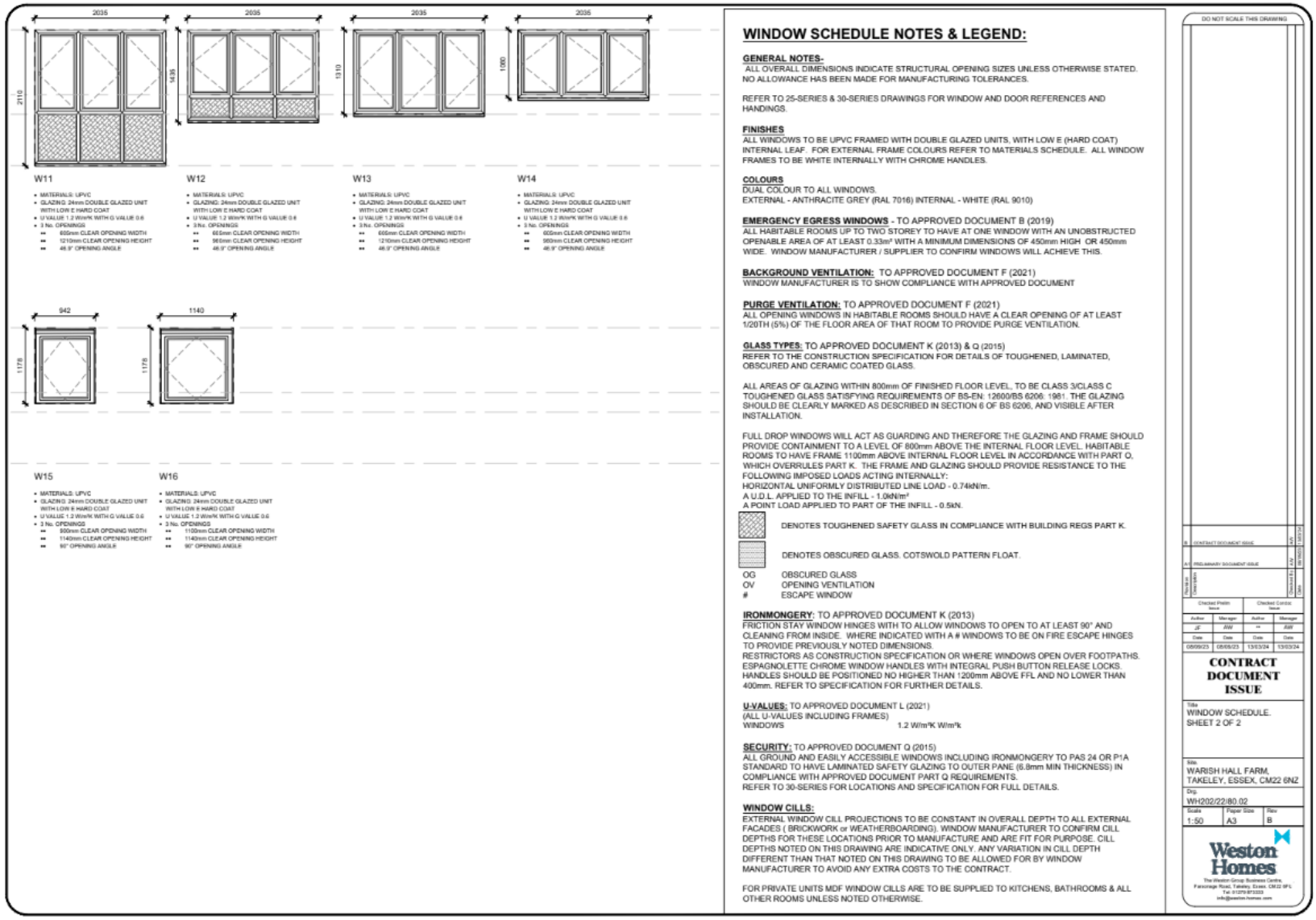

Figure 22: Glazing Drawing WH202/22/80.02 – Jacks Lane

Appendix 8 – Weston Homes Plc Construction Specification 1.0(H) – WH202; Warish Hall Farm, Takeley – REV B, 29/02/2024 – Page 41 (Trickle Ventilators)

Trickle Background Ventilators

Ventilation units to be Glazpart "Link" trickle vents providing 2,700mm² EA or similar approved and to be fitted in the heads of windows by window manufacturer. Trickle vent to provide reduction as per glazing in the open position.

1.20.2 WALLS (EXTERNAL TERMINATION)

Vent Axia Low Resistance High flow air brick (449224 depending on colour) connecting to 204 x 60mm Vent Axia insulated or Thermapipe ducts running within ceiling batten zone. All ductwork to be within the warm side of envelope. Air Brick colour to match brickwork
All supply ductwork shall be insulated to prevent heat loss and surface condensation. This shall be achieved by using suitable pre-insulated ductwork, or a proprietary insulation system with a thermal resistance equivalent to a minimum of 25mm of insulating material with a thermal conductivity of 0.04W/m.k as per NHBC's document 2016 section 8.3

Refer to **30.00** for locations.

Continuous mechanical extract ventilation is to be supplied via Vent Axia 475142 NBR dMEV, stand alone, ceiling or wall mounted decentralised mechanical extract unit. To kitchens, bathrooms, ensuites, utilities and WCs. DMEV unit shall provide fully adjustable, continuous trickle and boost speeds activated via the light switch.

For premium (4&5 Bed) units, where recessed kitchen extract is located, 220 x 90 insulated ductwork required to vent to external envelope.

1.21 ELECTRICAL INSTALLATION

1.21.1 GENERAL

All electrical work to be carried out by a competent person registered with a Part P self-certification scheme. A self-certification certificate shall be supplied by that person to the occupier and a copy issued to the local authority.

Electrical installation to comply with IEE Regulations and all relevant Codes of Practice. All roof space cables to be run within void or otherwise uprated to prevent overheating.

The consumer unit should comply with BS 5486 Part 13 and circuits clearly identified with way labels/icons. Consumer unit to be located so the switches are at a height of between 1350-1450mm above FFL and be lockable. **Where consumer units are installed onto stud partition walls a 1mm thick steel plate is to be positioned directly behind the meter board in front of plasterboard. The steel sheet is to be earthed.**

Light switches to BS 3676 and socket outlets to BS 1363.

Figure 23: Model of Trickle Vents to be installed in dwellings – Jacks Lane

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Appendix 9 – Sound Insulation Test Results of Proposed Trickle Vents; Glazpart 'Link' 2500EA – BRE Test Report P123184-1001 – Issue 5, 31/03/2023

2.6 Construction details, test numbers and sound insulation test results

The construction details and single number quantities for the sound insulation tests are shown below in **Table 3**.

Test element	Test number	Construction details	$D_{n,e,w}(C;C_{tr})$ (dB)
Filler wall	L122-012	2x 15 mm Knauf Soundshield Plus on both sides of 70 mm Knauf 'C' stud at 300 mm centres with 50 mm Acoustic Roll between studs, taped and jointed. Wall reduced to accommodate ventilator aperture (by use of auxiliary transition panels*)	59 (-1;-5)
Block 1	L322-014	204 mm x 10 mm - 2500EA - open	35 (-1; 1)
	L322-015	204 mm x 10 mm - 2500EA - closed	40 (0;0)
Block 2	L322-016	204 mm x 13 mm - 2500EA - open	34 (-1; 1)
	L322-017	204 mm x 13 mm – 2500EA - closed	46 (-1;-1)
Block 3	L322-020	2x 204 mm x 10 mm – 5000EA - open	32 (-1; 1)
	L322-021	2x 204 mm x 10 mm – 5000EA – closed	37 (0; 0)
Block 4	L322-018	2x 204 mm x 13 mm - 5000EA - open	31 (-1; 1)
	L322-019	2x 204 mm x 13 mm – 5000EA - closed	42 (0; 0)
Block 5	L322-022	2 x 167 mm x 13 mm – 4000EA - open	32 (-1; 1)
	L322-023	2 x 167 mm x 13 mm – 4000EA - closed	41 (0; 0)
Block 6	L322-024	132 mm x 19 mm – 2000EA - open	33 (0; 1)
	L322-025	132 mm x 19 mm – 2000EA - closed	48 (-1; -2)

Table 3 Construction details

**As described in BS EN ISO 10140-1:2021 (page 16)*

Figure 24: Sound Insulation Test Results of Proposed Trickle Vents; Glazpart 'Link' 2500EA

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Appendix 10 – Noise Monitoring Data; April 2024

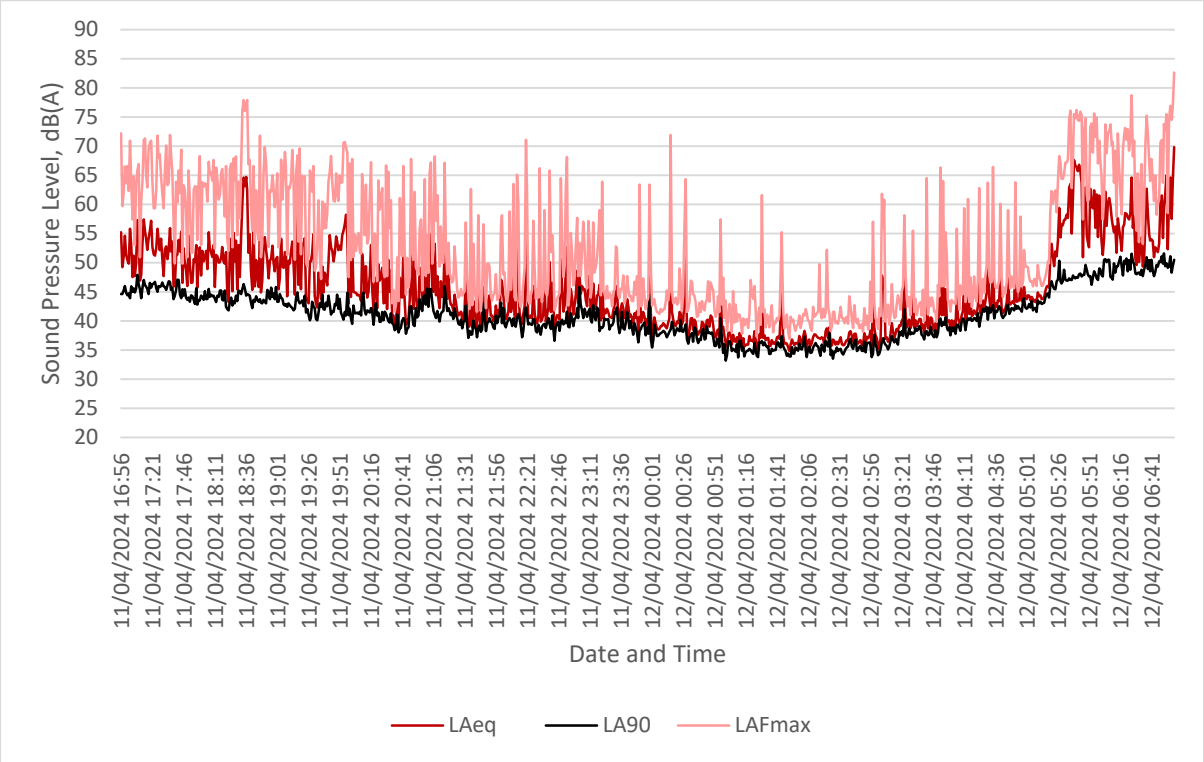

Figure 25: Graphical representation of the noise levels at the UNMP on the 11th/12th April 2024

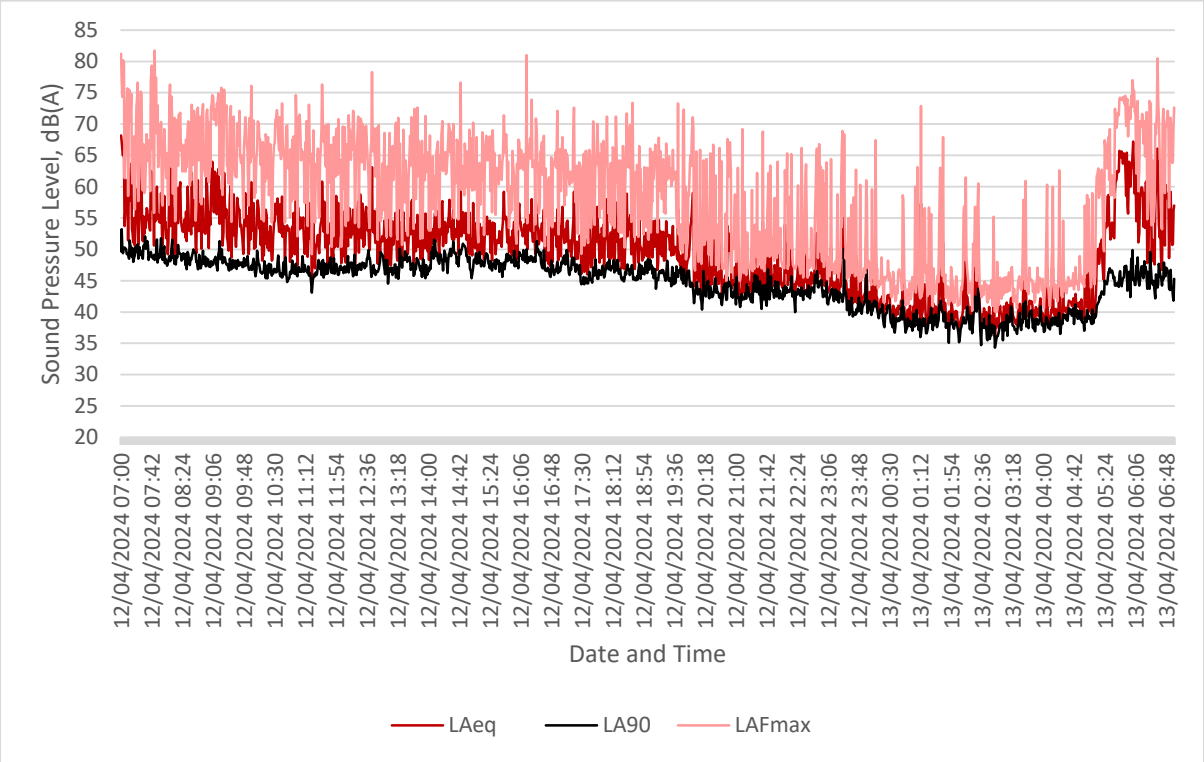

Figure 26: Graphical representation of the noise levels at the UNMP on the 12th/13th April 2024

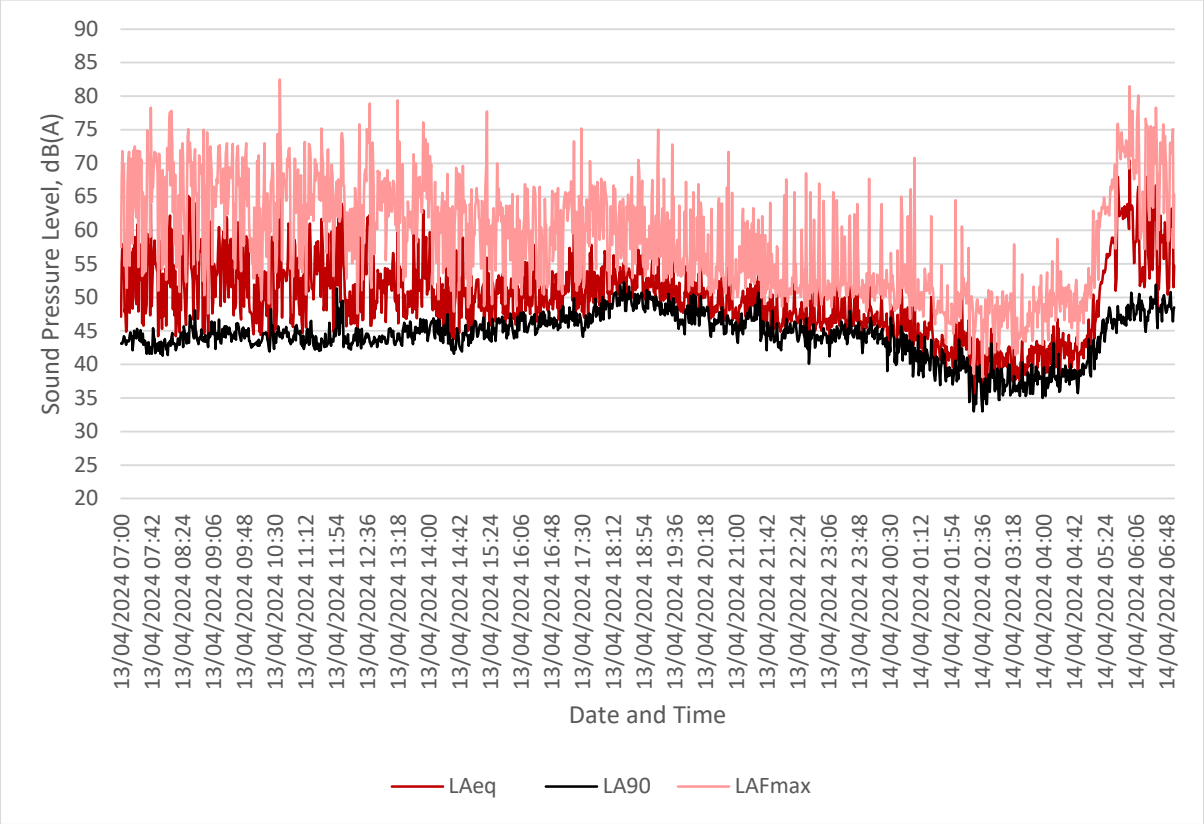

Figure 27: Graphical representation of the noise levels at the UNMP on the 13th/14th April 2024

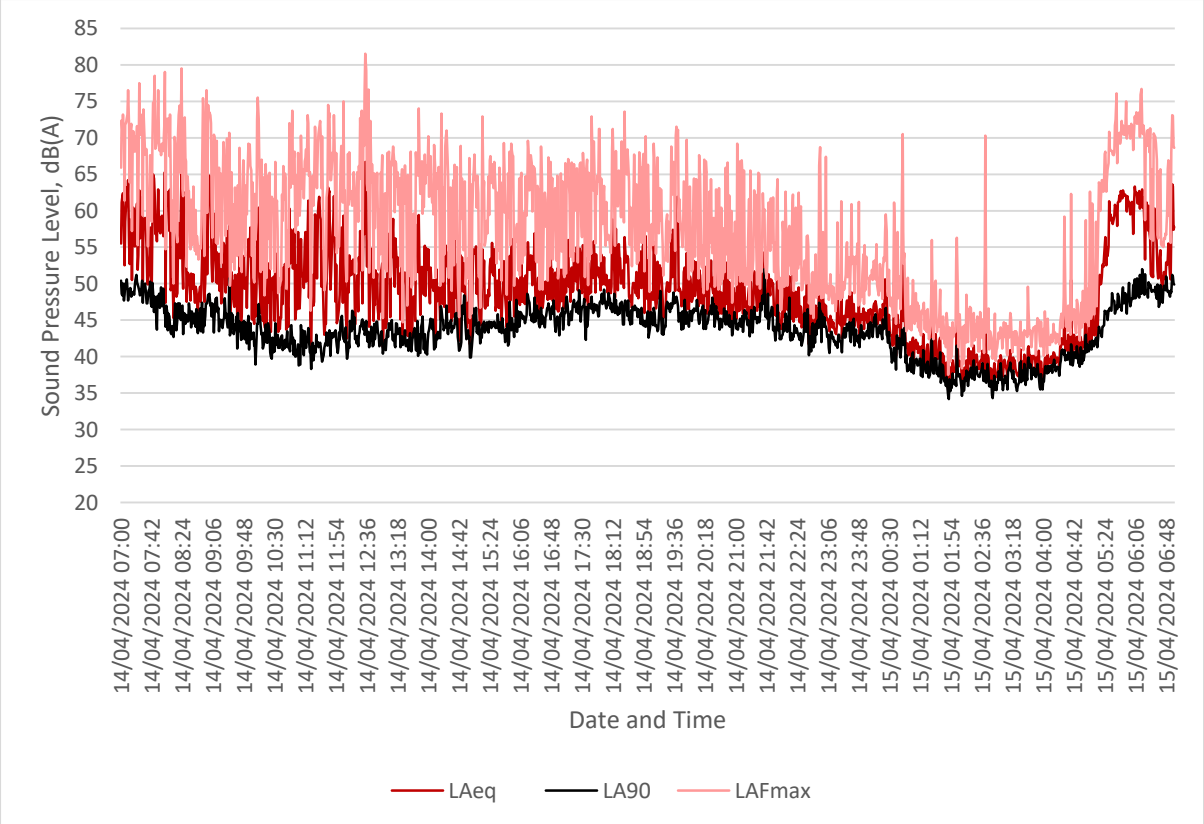

Figure 28: Graphical representation of the noise levels at the UNMP on the 14th/15th April 2024