



REPORT

FAÇADE NOISE EXPOSURE ASSESSMENT TO SUPPORT DISCHARGE OF PLANNING REFERENCE
UTT/22/3512/FUL, CONDITION 5

SITE ADDRESS

DUCK END FARM, GREEN ROAD, LINDSELL, DUNMOW, ESSEX CM6 3QH



REFERENCE

HA/AF270/V1

HEALTHY ABODE ACOUSTICS
BUILDING ACOUSTICIANS & ENVIRONMENTAL NOISE CONSULTANTS

Our Ref HA/AF270/V1
Site Address Duck End Farm, Green Road, Lindsell, Dunmow, Essex CM6 3QH
For Mr Martin Menhinick
Client Address Duck End Farm, Green Road, Lindsell, Dunmow, Essex CM6 3QH
Date of Report 25 May 2023
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This report has been prepared by Healthy Abode Limited t/a HA Acoustics with all reasonable expertise, care and diligence. The survey and report has been undertaken in accordance with accepted acoustic consultancy principles, it takes account of the services and terms and conditions agreed verbally and in writing between HA Acoustics and our client. Any information provided by third parties and referenced is considered to have undergone suitably thorough third-party checks to ensure accuracy. We can accept no liability for errors with a third-party data. This report is confidential to our client and therefore HA Acoustics accepts no responsibility whatsoever to third parties unless formally agreed in writing by HA Acoustics. Any such party relies upon the report at their own risk.

EXECUTIVE SUMMARY

- Mr Martin Menhinick instructed Healthy Abode Ltd t/a as HA Acoustics to undertake a noise façade assessment for proposed residential premises to be located at Duck End Farm, Green Road, Lindsell, Dunmow, Essex CM6 3QH. The report to be supplied as part of an application to discharge condition 5 of Uttlesford Council Planning consent, Ref UTT/22/3512/FUL.
- HA Acoustics has undertaken an environmental noise survey and assessment at the site in line with the guidance contained in British Standard (BS) 8233:2014. The environmental noise survey has been undertaken in order to determine prevailing ambient, background and maximum noise levels that are representative of the residential premises.
- A baseline environmental noise survey and assessment has been undertaken in line with the guidance contained in British Standard (BS) 8233:2014, measurements being taken over continuous 5-minute periods.
- An unattended survey was conducted between Wednesday 3rd May 2023 and Saturday 6th May 2023 at two fixed secure monitoring positions deemed representative for the permitted new-build.
- The results of the noise survey are considered reasonable given the location of the measurement position and the existing noise sources in the local vicinity. The representative time-averaged ambient and night-time maximum noise levels have been calculated at:
 - Position 1: 47dB L_{Aeq} daytime, 41dB L_{Aeq} night time, and 57dB $L_{Amax,F,NNE}$
 - Position 2: 41dB L_{Aeq} daytime, 40dB L_{Aeq} night time, and 57dB $L_{Amax,F,NNE}$
- The assessment has indicated that internal noise levels within the proposed development are predicted to meet the guideline noise criteria contained in BS 8233:2014 provided the identified appropriate minimum specified glazing, ventilation and façade materials are installed to a good manner of workmanship.
- At the time of composing the report, the exact specifications of the construction/build of the proposal have not been finalised. Recommendations provided in respect to sound insulation of the building have been proposed based on achieving the desired internal noise levels in BS 8233:2014.

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APPENDICES**Appendix A** – Site Plan (SP1-SP3)**Appendix B** – Time Histories (TH1-TH2)**Appendix C** – Façade Exposure Window Calculations (C1-C3)**Appendix D** – Stansted Noise Exposure Contours (D1-D2)

1. INTRODUCTION

1.1. Uttlesford District Council awarded consent (Ref. UTT/22/3512/FUL) for the removal of an agricultural barn and in its place the introduction of a new residential premises at Duck End Farm, Green Road, Lindsell, Dunmow, Essex CM6 3QH. As part of the consent, a discharge condition pertaining to noise has been set, as the existing ambient noise climate could have the potential to affect the premises.

1.2. The purposes of this report are:

1.2.1. To determine and assess prevailing ambient, background and maximum noise levels affecting the proposal due to nearby noise sources (e.g. air and road traffic);

1.2.2. To present desired internal noise levels to be achieved within the residential premises in accordance with BS 8233:2014, and

1.2.3. To detail appropriate sound insulation requirements for the purposes of mitigating noise caused by prevailing and potential noise sources such that internal noise levels are achieved.

2. SITE DESCRIPTION AND OBSERVATIONS

2.1. Duck End Farm, Green Road, Lindsell, Dunmow, Essex CM6 3QH is hereafter referred to as 'the site'.

The site comprises a privately owned agricultural sheet metal (tin) clad barn, principally used for farming equipment and machinery storage; and due to be demolished as part of the scheme. The neighbouring agricultural land, farmhouse, converted-to-residential barn, agricultural barns and adjacent Kennels and Cattery business are owned by the same family. The proposal is to build one new residential detached dwelling with cart lodge landscaping in place of the existing barn. The intention is for it to be occupied by the clients' daughter. The client resides in the adjacent farmhouse; and the clients' other daughter, in the adjacent barn-to-residential conversion. Once new build is constructed, the three residential units will surround a central open-farmyard space.

2.2. The client advised that in addition to farm operations, for 20 years they have run the kennels and cattery business. Upon retirement, the client's intention is to cease trading of the kennels and cattery. Therefore, a scenario where that business is operated by another party unrelated to the new dwelling occupants; or conversely a scenario where the new dwelling is sold to a party unrelated to the farm/kennels and cattery operators, is not likely; and therefore nor are complaints. However, for robustness, the acoustic assessment determines the local noise climate inclusive of times when both farm and kennels/cattery activities are in operation, in order to establish the local noise climate.

2.3. See Appendix A for the site plan.

2.4. The site is located within a rural area, in the near locality; the farm is predominantly surrounded by other agricultural land. To the west is the B184, to the north Bardfield Road, and to the east, the B1057. There are residential premises to the south along the access road.

2.5. Approximately 9000 metres to the south-west is Stansted Airport, the site falls outside the Stansted Noise Contours for Day and Night, see Appendix D for site location in relation to airport flight paths.

2.6. The noise survey was unmanned; therefore, a subjective assessment of background and ambient noise sources could not be undertaken for the whole monitoring duration. However, an extended period of time was spent during installation and collection of the monitoring equipment, the dominant noise source emanated from animals kept in the kennels and cattery, and environmental noise such as

birdsong and occasional passing vehicles. These noise sources are considered normal to the site location. No significant abnormal noise sources were identifiable.

2.7. A visit to the nearby kennels and cattery, found a well organised, professionally run site. The client showed the acoustician the set-up, this comprised internal kennels houses within a converted barn and set behind the barn, extra outdoor runs installed to enable good separation between dogs and thus limit barking. These can be seen in the aerial imagery in Appendix A.

2.8. The client advised that centre staff practice noise management controls, so as to minimise barking/whining. Animal drop off and collection wherever possible is arranged within strict, specified times, typically 10:00 hrs to 12:00 hours and 16:00 and 18:00 hours.

3. NOISE EMISSION GUIDANCE AND CRITERIA

3.1. Local Authority

3.2. The proposed site lies within the jurisdiction of the Local Authority, Uttlesford Borough Council.

3.3. Uttlesford Borough Council granted planning consent for the demolition of the sheet metal (tin) clad barn and erection of a single dwelling Ref. UTT/22/3512/FUL), as part of the consent, a condition pertaining to noise requires an application for discharge.

3.4. The acoustic survey and report has been commissioned to support the application for discharge of the planning condition, as stipulated below:

“Condition 5:

No development shall commence until a scheme of noise mitigation has been submitted and approved in writing by the local planning authority. Details shall be included in the scheme of the design, layout and acoustic noise insulation performance specification of the external building envelope, having regard to the building fabric, glazing and ventilation.

The survey of the noise environment should be carried out during a period of not less than 72hrs of representative conditions and good weather, not influenced by rain or wind. The assessment should be based on the guidance within BS 8233: 2014 Guidance on sound insulation and noise reduction for buildings.

The assessment must demonstrate that the following noise levels can be achieved:

30dB LAeq 8hr within bedrooms

35dB LAeq 16hr within living rooms

50dB LAeq 16hr in outdoor living areas

The scheme as approved shall be fully implemented prior to occupation of the residential unit and shall be retained thereafter and not altered without prior approval.

REASON: To prevent unacceptable noise disturbance, in accordance with Policy ENV10 of the Uttlesford Local Plan (adopted 2005).

3.5. National Planning Policy Framework (2021)

3.6. In March 2012, the National Planning Policy Framework (NPPF) came into force and was revised in 2019 and 2021. This document replaces a great many planning guidance documents, which previously informed the planning system in England.

3.7. The NPPF (2021) sets out the Government’s economic, environmental and social planning policies for England and these policies articulate the Government’s vision of sustainable development.

3.8. The Noise Policy Statement for England (NPSE) published 2010 applies to *‘all forms of noise, including environmental noise, neighbour noise and neighbourhood noise’*.

3.9. Paragraph 185 of the NPPF (2021) considers noise, stating:

“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;*
- 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.”*

3.10. National Planning Policy is guided by the NPPF. With regard to noise, the terms ‘significant adverse impact’ and ‘other adverse impacts’ are defined in the explanatory notes of the ‘Noise Policy Statement for England’ (NPSE). These state that 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, and
- LOAEL – Lowest Observed Adverse Effect Level. This is the level above which adverse effects on health and quality of life can be detected.

3.11. Extending these concepts for the purpose of this NPSE leads to the concept of SOAEL - significant observed adverse effect level. This is the level above which significant adverse effects on health and quality of life occur’. However, no specific noise limits for LOAEL and SOAEL have been defined. Therefore, guidance from other acoustic standards must be employed to determine suitable levels within the overall principal of the National Planning Policy Framework; such as BS 8233:2014.

3.12. **BS8233:2014**

3.13. Local Authorities usually stipulate internal noise criteria for new build residential uses based on British Standard 8233:2014 ‘Guidance on Sound Insulation and Noise Reduction for Buildings’.

3.14. BS 8233:2014 provides references and guideline values for desirable indoor ambient noise levels for dwellings as shown in Table 3.1 below.

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

Table 3.1 BS 8233:2014 Desirable Internal Ambient Noise Levels for Dwellings

3.15. The table is noted to apply to external noise as it affects the internal acoustic environment from sources without a specific character. The above internal ambient noise levels are therefore considered appropriate within this assessment.

3.16. BS 8233:2014 states that ‘for traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed an upper guideline value of 55dB L_{Aeq} , 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’.

4. ENVIRONMENTAL NOISE SURVEY METHODOLOGY

- 4.1. An unmanned environmental noise survey was undertaken at two secure single measurement locations (see appendix A). The surveys were undertaken between 15:30 hours on Wednesday 3rd May and 12:00 on Saturday the 6th May 2023; this comprises a minimum 72-hours. The period thereafter comprising of inclement weather and a need for site operations to clear the tin clad barn that is being demolished.
- 4.2. Ambient, background and maximum sound pressure level measurements (L_{Aeq} , L_{A90} and $L_{Amax,F}$ respectively) were measured throughout the noise survey with continuous recorded 5 minute periods. The measurement position is indicated in orange in Appendix A.
- 4.3. The sound level meter's (SLM) were mounted approximately 1.5 metres above ground level and positioned 3.5 metre from reflective surfaces (walls/fences) to the front and rear boundary of the proposed development. The positions are considered to be in 'free-field' conditions. The positions were chosen to gain representative noise levels from any noise sources as well as for monitoring equipment security reasons.
- 4.4. The equipment used for the noise survey is summarised in Table 3.1.

Equipment	Description	Quantity	Serial Number
Svantek 977	Class 1 automated logging sound level meter	1	69297
ACO Pacific 7052E	Class 1 ½" microphone- [HA's Black]	1	69364
Svantek 977	Class 1 automated logging sound level meter	1	46457
ACO Pacific 7052E	Class 1 ½" microphone – [HA's Titanium]	1	64237
Larson Davis CAL200	Class 1 Calibrator	1	20159

Table 3.1 Description of Equipment used for Noise Survey

- 4.5. The noise survey and measurements were conducted, in accordance with BS7445-1:2003 '*Description and measurement of environmental noise. Guide to quantities and procedures*'. Measurements were made generally in accordance with ISO 1996-2:2017 '*Acoustics – Description, measurement and assessment of environmental noise – Part 2: Determination of environmental noise levels*'.
- 4.6. The noise monitoring equipment used was calibrated before and after the noise survey period. No significant drift was recorded. Equipment calibration certificates can be provided upon request.

4.7. Weather Conditions

4.8. Weather conditions were noted to be:

4.8.1.during installation - warm (approx. 16° Celsius), dry, with clear to cloudy skies (25% cloud cover) and a light wind (<5m/s).

4.8.2.during collection - warm (approx. 20° Celsius), dry, with clear to cloudy skies (50 cloud cover) and a light wind (<5m/s).

4.8.3.throughout the entire noise survey period - predominantly warm (approx. 8-20° Celsius), dry, with clear to cloudy skies (50-75% cloud cover) and a light wind (<5m/s) until intermittent, heavy showers which started from 10am on Friday 5th May. Weather conditions improved between 8pm on the 5th May and 04:30am on the Saturday 6th May, but became too intermittent to provide suitable conditions for environmental noise surveys beyond this 12:00hrs.

4.9. These weather conditions were checked against and confirmed by the use of the Met Office. These conditions were generally maintained throughout the whole survey period and are considered reasonable for undertaking environmental noise measurements.

5. NOISE SURVEY RESULTS

5.1. The average-ambient and maximum noise levels at the measurement position during the survey have been based on an analysis of the monitoring data and are summarised in Table 5.1. A time history of the noise monitoring data is provided in Appendix B.

Monitoring Position	Period	Measured External Sound Pressure Level, dB
Position 1 (South Façade)	Daytime (07:00 - 23:00)	47 $L_{Aeq,T}$
	Night-time (23:00 - 07:00)	41 $L_{Aeq,T}$
	Night-time (23:00 - 07:00)	*57 $L_{Amax,F,NNE}$
Position 2 (West site boundary)	Daytime (07:00 - 23:00)	41 $L_{Aeq,T}$
	Night-time (23:00 - 07:00)	40 $L_{Aeq,T}$
	Night-time (23:00 - 07:00)	* 57 $L_{Amax,F,NNE}$

*10th highest measured noise level

Table 5.1 Noise Survey Results

5.2. BS 8233:2014 does not provide specific guidance on night time $L_{Amax,F}$ criteria therefore maximum levels are based on World Health Organisation (WHO) 'Guideline for Community Noise' (2009) and WHO 'Environmental Noise Guidelines for the European Region' (2018) guidance and ProPG: 2017 guidance.

5.3. It is stated that for suitable sleeping conditions, 45dB $L_{Amax,F}$ should not be exceeded by more than 10-15 times a night within a bedroom. For robustness, the $L_{Amax,F,NNE}$ noise levels presented above is the not normally exceeded (NNE) 10th highest measured between 23:00 and 07:00 hours. This $L_{Amax,F,NNE}$ noise level then needs to be reduced to 45dB internally to comply with the night time internal noise level.

6. BUILDING FACADES SUITABILITY

6.1. Sound reduction performance calculations have been undertaken to determine the internal noise levels and performance of the glazed and non-glazed elements as outlined in section 7. The specification has been adopted to achieve the night-time level (23:00 – 07:00 hours) for bedrooms, 30dB $L_{Aeq, 8hour}$ and for the daytime (07:00 – 23:00) for living rooms, 35dB $L_{Aeq, 16hour}$. The spectrum of the $L_{Amax, NNE}$ during the night-time period have also been applied to the calculations to confirm the limit of 45 $L_{Amax, F}$, is not regularly exceeded for single events during the night.

6.2. Suggested window units and building element specifications other than those provided may be suitable but should be reviewed before purchase or installation. The analysis is provided to demonstrate that a design solution is feasible at the site for the purposes of meeting the requirements of the Local Authority.

6.3. Non-Glazed Elements

6.4. It is understood that the non-glazed elements of the building will be constructed from brick and block work and internally drylined. This construction would be anticipated to provide a sound reduction performance of at least the figures shown in Table 6.1 when tested in accordance with BS EN ISO, 140-3:1995.

Element	Octave band centre frequency SRI, dB					
	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz
Non-glazed element brick/block cavity wall SRI	41	43	48	50	55	55

Table 6.1 Non-glazed elements assumed sound reduction performance

6.5. The below example of construction provides guidance to a typical wall build which should attenuate external noise such that the internal noise levels are achieved.

- BS 8233 Table E.1A (50-54dB R_w sound insulation) (d) details construction of “Brick laid frogs up, wall nominal 200 mm thickness, weight (including plaster) not less than 380 kg/m². Plaster or dry-lined finish both sides. Brickwork joints well filled”.

6.6. Given the typical extensive build and construction of external walls in accordance with the Building Regulations it is predicted that this element would provide significant attenuation to achieve the internal noise levels.

6.7. Roofs

6.8. Roofs generally have a lower SRI than masonry façade walls but they are required to reduce noise from external sources. Typical construction and sound insulation values of roofs can be gained from BS 8233:2014, for example a traditional pitched roof with tiles on felt with 100mm mineral wool on plasterboard ceiling has an SRI of approximately 43dB R_w .

6.9. Given the typical extensive build and construction of roofs it is predicted that these elements would provide sufficient attenuation to achieve the internal noise levels.

6.10. Window Elements

6.11. Calculations (Appendix C) show that based on the noise monitoring data obtained, façade materials, room sizes and volumes, a minimum of 31dB R_w noise reduction is required for all glazed elements to be installed.

6.11.1. The performance is specified for the whole window unit, including the frame and other design features such as the inclusion of trickle vents. Sole glass performance data would not demonstrate compliance with this specification. Window performance calculations have been based on the measured L_{Aeq} and $L_{Amax,NNE}$ noise levels as recommended by BS 8233: 2014.

6.12. The reference reverberation time of 0.5 second is utilised, as stated in BS8233: 2014 and assumes that the dwelling shall have carpeted, fully furnished, occupied bedroom(s) and living spaces.

6.13. Typical thermal double-glazing required by the Building Regulations provide approximately 31dB R_w sound insulation therefore this window specification should ensure that the thermal requirements and internal noise levels are achieved.

6.14. The glazing window requirements are listed below in table 6.2. These specifications and their acoustic data on octave band frequencies are provided in Appendix C.

	Required Overall Sound Reduction Performance, R_w	Glazing and Ventilation Type – Indicative Only
All Façades*	31 dB	R _w 31 dB Double Glazing System (4mm Glass – 12mm air gap – 4mm Secondary Glass)
		Standard Trickle Ventilator (32 D _{n,e,w})

*based on approximate room sizes

Table 6.2 Required window specifications.

6.15. Ventilation

6.16. In addition to the glazing requirements, internal noise levels should be considered in the context of room ventilation requirements. At the time of writing, full details regarding a ventilation strategy are not available. Table 7.2 above details a suitable standard trickle ventilator, which provides a sound insulation performance of 32dB D_{n,e,w}, which would work in combination with the specified window spectral.

6.17. Detailed Design Stage Notes:

6.18. The analysis is provided to demonstrate that a design solution is feasible at the site for the purposes of meeting the requirements of the Local Authority local policy and British Standard internal design criteria and therefore to produce a noise impact assessment to be supplied in support of discharging Condition 5.

6.19. Following planning consent, then it is usual that the architect will produce full building regulation drawings. At which time, structural chartered engineers, thermal engineers, M+E and acoustic engineers will be engaged to input on the detailed design. As part of this detailed design stage, it is strongly recommended that further acoustic analysis of the individual specified components and if necessary further recommendations, specifications be undertaken.

6.20. Acoustic calculations to determine the glazing and ventilation strategy should also be re-run should the room sizes and percentage of glazing differ from that assumed above.

7. EXTERNAL AMENITY SUITABILITY

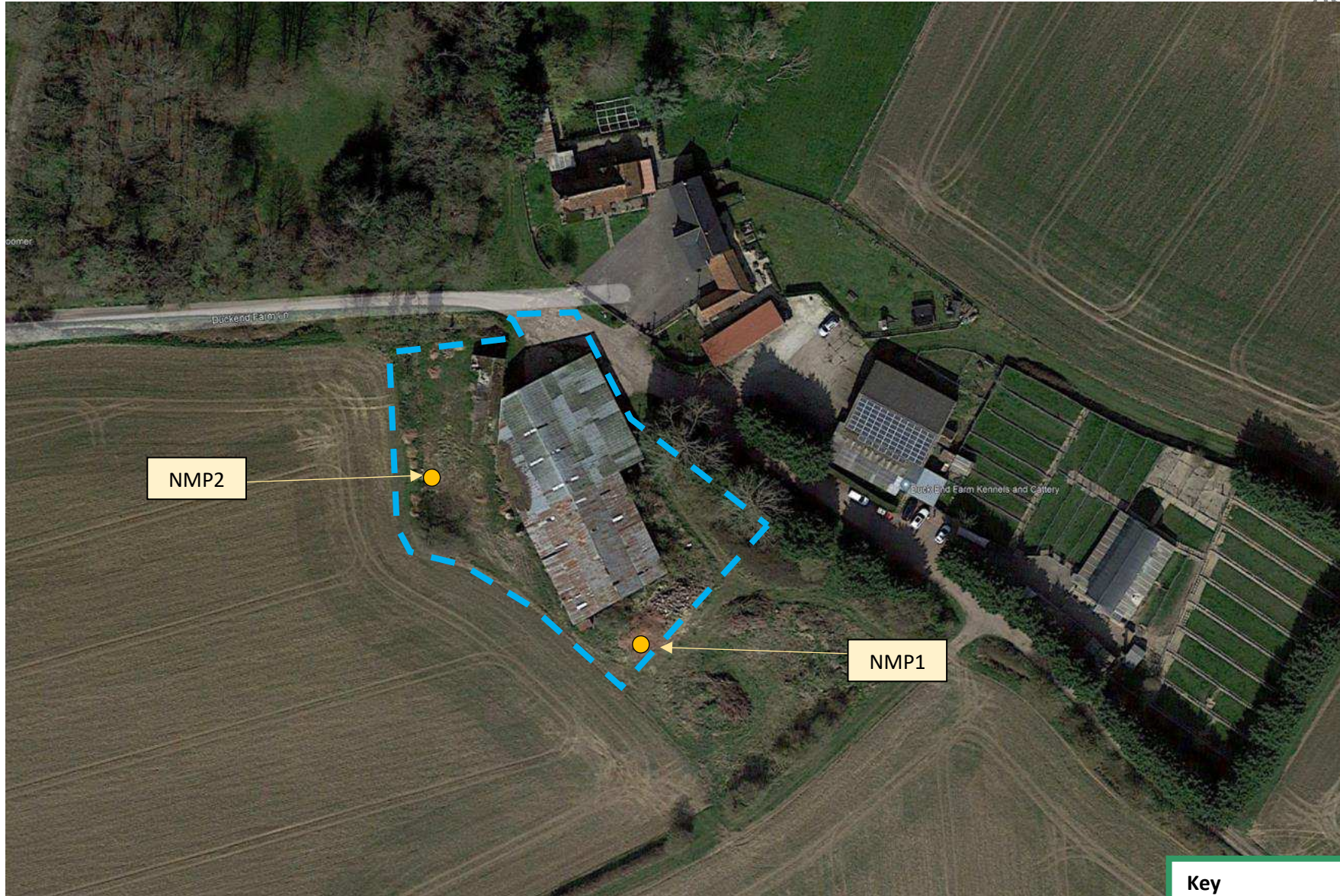
7.1. BS 8233:2014 states that *'for traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50dB $L_{Aeq,T}$ with an upper guideline value of 55dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances...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'*.

7.2. The 16-hr (07:00 – 23:00) daytime external amenity at NMP1 was measured at 47 $L_{Aeq,T}$ and at NMP2 at 41dB. The measured levels are in accordance with the local authority desirable criteria for external amenity.

7.3. Noise monitoring data confirms that the external amenity areas achieve BS8233:2014 and WHO (1999) guidance levels, therefore no mitigation levels are required. The recently released ProPG Planning and Noise Guidance, published 2017, states that: *"If external amenity spaces are an intrinsic part of the overall design, the acoustic environment of those spaces should be considered so that they can be enjoyed as intended"*. Should a further reduction be desired, then a basic standard fence will achieve a sound reduction of around 5dB(A), a good standard fence design will achieve around 10dB(A) noise reduction.

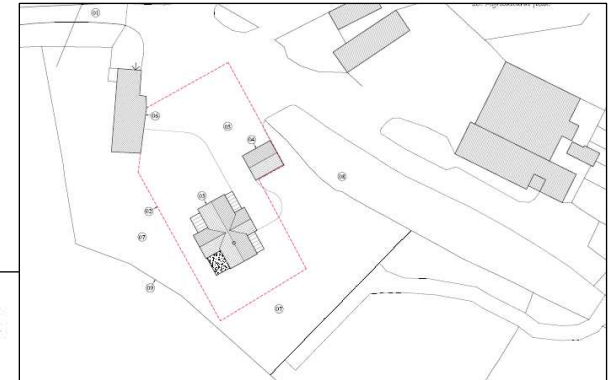
8. CONCLUSION

- 8.1. A new residential development is proposed at Duck End Farm, Green Road, Lindsell, Dunmow, Essex CM6 3QH.
- 8.2. A noise survey and assessment has been undertaken for the proposed development. An extended period of monitoring has been undertaken, so as to capture a variety of noise sources inclusive of farming operations, kennels and cattery business and commercial aircraft. The Stansted Airport day and night noise contours have been reviewed, and it has been established that the development site lies outside of the contours of concern for aircraft flightpath emissions.
- 8.3. Existing noise levels at the site have been measured and compared to relevant standards and guidance.
- 8.4. A minimum of 31dB R_w noise reduction is required for all glazed elements to be installed into the proposed building. Window calculations have been carried out and the requirements identified. Passive vents to provide ventilation are available that meet or exceed the sound reduction required by the window elements and can be constructed into the proposal accordingly.
- 8.5. With appropriate sound insulation window measures and building construction as exemplified within this report the proposed residential premises is more than capable of achieving the guideline internal noise criteria contained in BS 8233:2014.



Key

- Noise Monitoring Position ●
- Site Boundary [---]



Proposed Ground Floor Plan - 1:100



Proposed First Floor Plan - 1:100

Schedule of Finishes

- walls - To be surfaced in a mixture of horizontal and vertical pre-finished weatherboarding over brickwork plinth.
- clivity - To be purpose made aluminium with pre-coloured finish.
- roof - Main roof slopes to be surfaced in slates, shallow roofs surfaced in zinc. Flat roof to be dressed in zinc or single ply roof membrane.

Andrew Stevenson Associates
 ARCHITECTURAL & BUILDING SURVEYING SERVICES

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CLIENT
 MR & MRS MENHINICK
 PROJECT TITLE
 PROPOSED NEW DWELLING @ DUCK END FARM,
 DUCK END LANE, LINDSELL, DUNMOW, CM63QH

DRAWING TITLE
 PROPOSED FLOOR PLANS
 PROJECT No
 5757
 SCALE
 1:100 @ A3
 DRAWING
 D4
 DATE
 DEC '22
 REVISION
 DRAWN
 KW





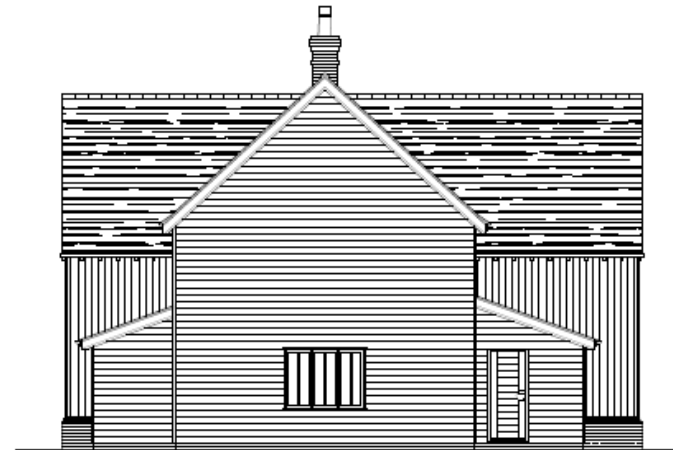
Proposed Front Elevation - 1:100



Proposed Side Elevation - 1:100

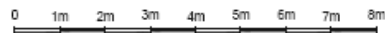


Proposed Rear Elevation - 1:100



Proposed Side Elevation - 1:100

Scale @ 1:100



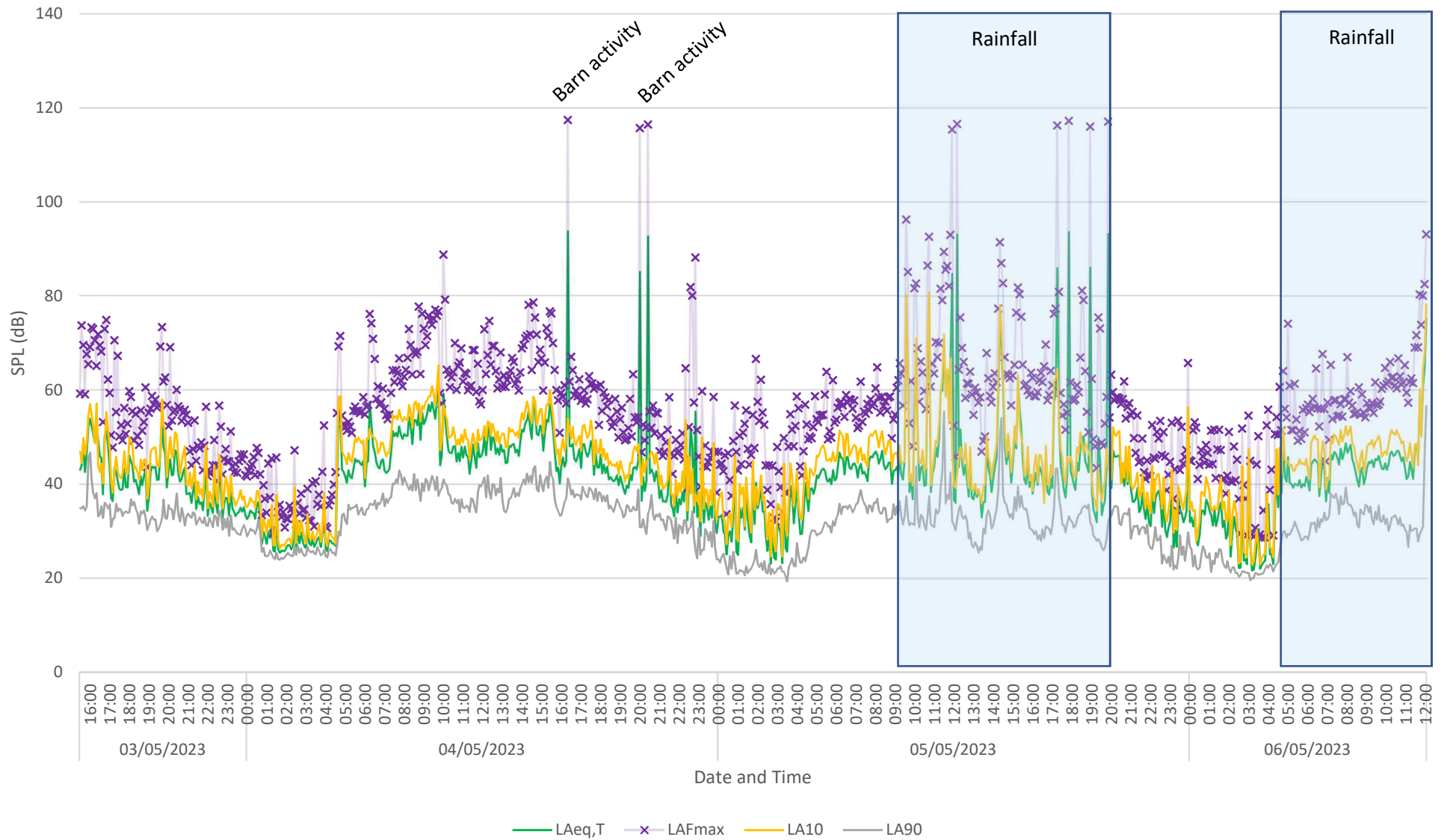
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ARCHITECTURAL & BUILDING SURVEYING SERVICES

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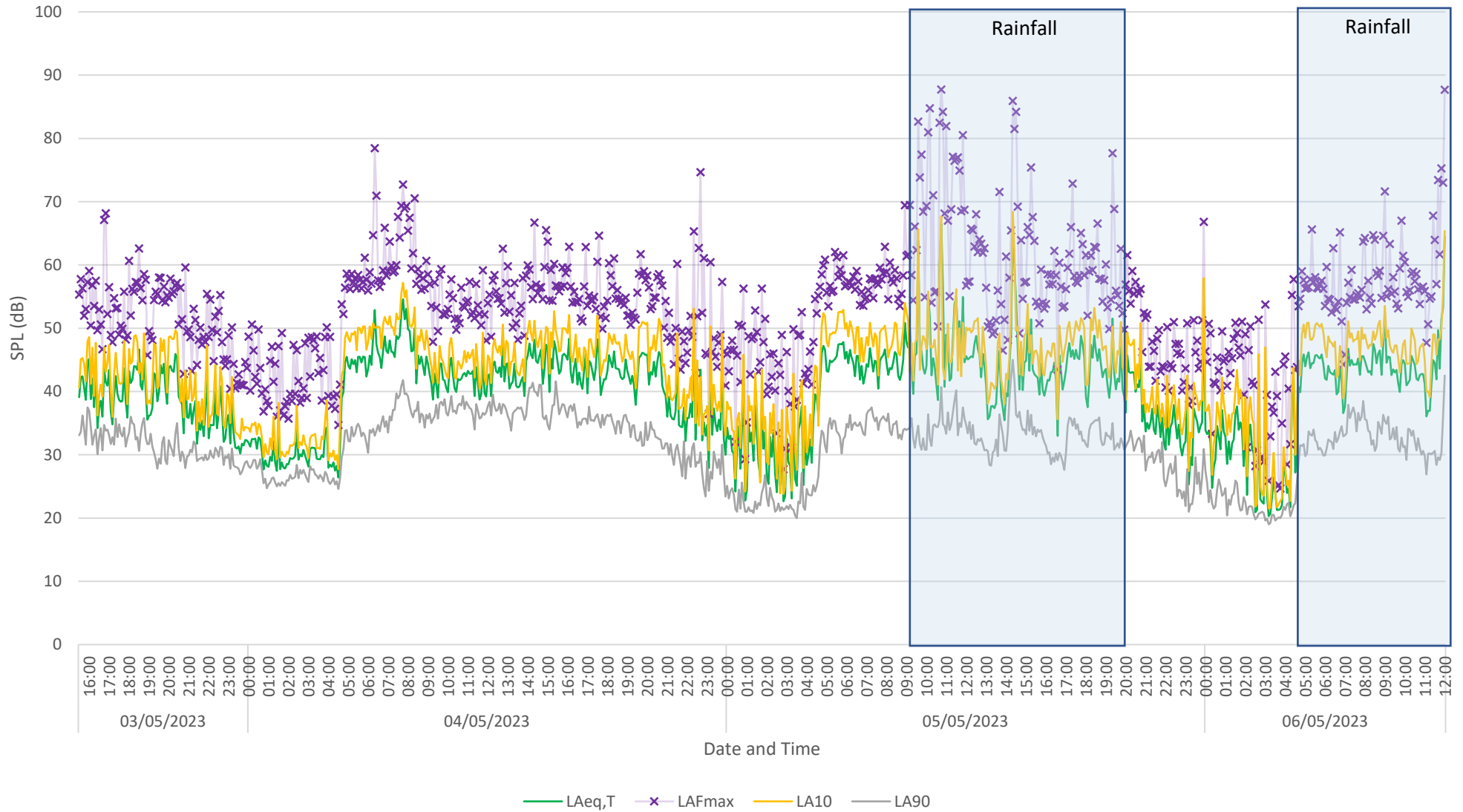
CLIENT
MR & MRS MENHINICK
PROJECT TITLE
PROPOSED NEW DWELLING @ DUCK END FARM,
DUCK END LANE, LINDSELL, DUNMOW, CM63QH

DRAWING TITLE		
PROPOSED ELEVATIONS		
PROJECT No	DRAWING	REVISION
5757	05	
SCALE	DATE	DRAWN
1:100 @ A3	DEC '22	KW

Duck End Farm: 3rd - 6th May 2023



Duck End Farm: 3rd - 5th May 2023



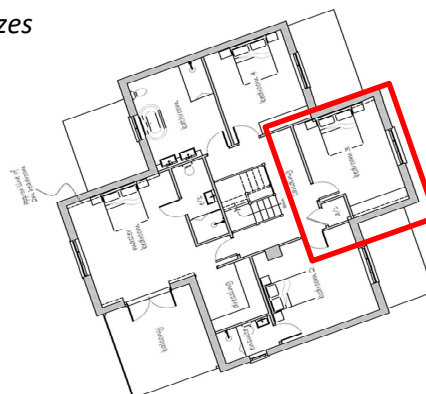
Duck End Farm Bedroom 3

BS EN 12354-3 Calculation to determine glazing specification

**Based on approximate measured room sizes*

Habitable room data variables

Type of habitable room	Bedroom
Volume	36 cubic metres
Total area - external façade(22 square metres
Total area - window(s)	2 square metres
L(k)	3
Lmax (K)	3
Trickle Ventilator(s)	5
Solid Façade (exc. windows)	20 square metres
Reverberation Time	0.5 seconds



External noise level

	1:1 Octave Bands Centre Frequency (Hz)							dB(A)
	63	125	250	500	1000	2000	4000	
Logged Log average daytime Leq	64	51	47	45	40	40	28	47
Logged Log average night-time Leq	46	38	28	32	27	39	26	41
Logged Lmax for duration of survey	55	57	63	57	47	30	21	57

Sound reduction of building fabric

	1:1 Octave Band Centre Frequency (Hz)							Rw / Dn,e,W
	63	125	250	500	1000	2000	4000	
31 Rw - 4/12/4mm double glazing	22	24	20	25	34	37	35	31
**Standard Masonry from Template R	39	41	43	48	50	55	55	
32 Dn,e,w - Titon Hit & Miss HM5050 - Standard trickle	29	31	31	31	37	28	31	32

	1:1 Octave Band Centre Frequency (Hz)						
	63	125	250	500	1000	2000	4000
Reduction from façade	-24.4	-26.4	-23.7	-27.5	-34.6	-28.0	-30.7
Addition for Ctr	5.0	5.0	5.0	5.0	5.0	5.0	5.0

Resultant internal noise level

	1:1 Octave Band Centre Frequency (Hz)							dB(A)
	63	125	250	500	1000	2000	4000	
Daytime internal Leq	45	30	28	23	10	17	3	25
Night-time internal Leq	27	16	9	10	-2	16	0	18
Night-time internal Lmax	30	31	39	29	12	2	-10	32

Based on BS8233:2014 - Design Criterion: LAeq 30
Based on BS8233: 1999 Lmax levels LAmax 45

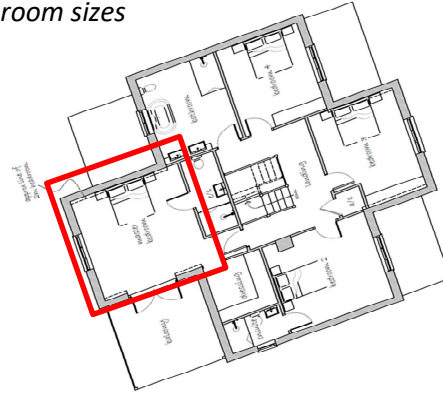
Duck End Farm Master Bedroom

BS EN 12354-3 Calculation to determine glazing specification

**Based on approximate measured room sizes*

Habitable room data variables

Type of habitable room	Bedroom
Volume	48 cubic metres
Total area - external façade(26 square metres
Total area - window(s)	4 square metres
L(k)	6
Lmax (K)	6
Trickle Ventilator(s)	5
Solid Façade (exc. windows)	22 square metres
Reverberation Time	0.5 seconds



External noise level

	1:1 Octave Bands Centre Frequency (Hz)							dB(A)
	63	125	250	500	1000	2000	4000	
Logged Log average daytime Leq	64	51	47	45	40	40	28	47
Logged Log average night-time Leq	46	38	28	32	27	39	26	41
Logged Lmax for duration of survey	55	57	63	57	47	30	21	57

Sound reduction of building fabric

	1:1 Octave Band Centre Frequency (Hz)							Rw / Dn,e,W
	63	125	250	500	1000	2000	4000	
31 Rw - 4/12/4mm double glazing	22	24	20	25	34	37	35	31
**Standard Masonry from Template R	39	41	43	48	50	55	55	
32 Dn,e,w - Titon Hit & Miss HM5050 - Standard trickle	29	31	31	31	37	28	31	32

	1:1 Octave Band Centre Frequency (Hz)						
	63	125	250	500	1000	2000	4000
Reduction from façade	-20.6	-22.6	-19.3	-23.7	-31.4	-26.1	-28.4
Addition for Ctr	5.0	5.0	5.0	5.0	5.0	5.0	5.0

Resultant internal noise level

	1:1 Octave Band Centre Frequency (Hz)							dB(A)
	63	125	250	500	1000	2000	4000	
Daytime internal Leq	48	33	32	27	13	19	5	29
Night-time internal Leq	30	20	14	14	1	18	3	20
Night-time internal Lmax	34	35	43	33	15	4	-8	36

Based on BS8233:2014 - Design Criterion: LAeq 30
 Based on BS8233: 1999 Lmax levels LAmax 45

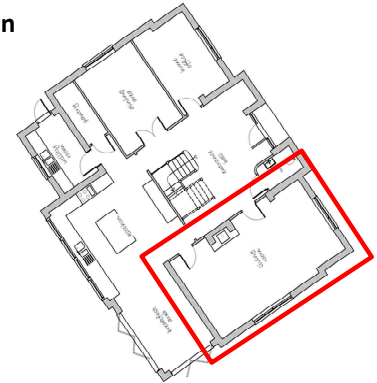
Duck End Farm Living Room

BS EN 12354-3 Calculation to determine glazing specification

**Based on approximate measured room sizes*

Habitable room data variables

Type of habitable room	Living Room
Volume	76 cubic metres
Total area - external façade(s)	29 square metres
Total area - window(s)	4.5 square metres
L(k)	6
Lmax (K)	6
Trickle Ventilator(s)	10
Solid Façade (exc. windows)	24.5 square metres
Reverberation Time	0.5 seconds



External noise level

	1:1 Octave Bands Centre Frequency (Hz)							
	63	125	250	500	1000	2000	4000	dB(A)
Logged Log average daytime Leq	64	51	47	45	40	40	28	47
Logged Log average night-time Leq	46	38	28	32	27	39	26	41
Logged Lmax for duration of survey	55	57	63	57	47	30	21	57

Sound reduction of building fabric

	1:1 Octave Band Centre Frequency (Hz)							Rw /
	63	125	250	500	1000	2000	4000	Dn,e,W
31 Rw - 4/12/4mm double glazing	22	24	20	25	34	37	35	31
Standard Masonry from Template Report	39	41	43	48	50	55	55	
32 Dn,e,w - Titon Hit & Miss HM5050 - Standard trickle	29	31	31	31	37	28	31	32

	1:1 Octave Band Centre Frequency (Hz)						
	63	125	250	500	1000	2000	4000
Reduction from façade	-21.5	-23.5	-20.5	-24.5	-31.8	-25.2	-27.9
Addition for Ctr	5.0	5.0	5.0	5.0	5.0	5.0	5.0

Resultant internal noise level

	1:1 Octave Band Centre Frequency (Hz)							
	63	125	250	500	1000	2000	4000	dB(A)
Daytime internal Leq	47	32	31	26	13	20	5	28
Night-time internal Leq	29	19	12	13	1	19	3	21
Night-time internal Lmax	33	34	42	32	15	5	-7	35

Based on BS8233:2014 - Design Criterion:

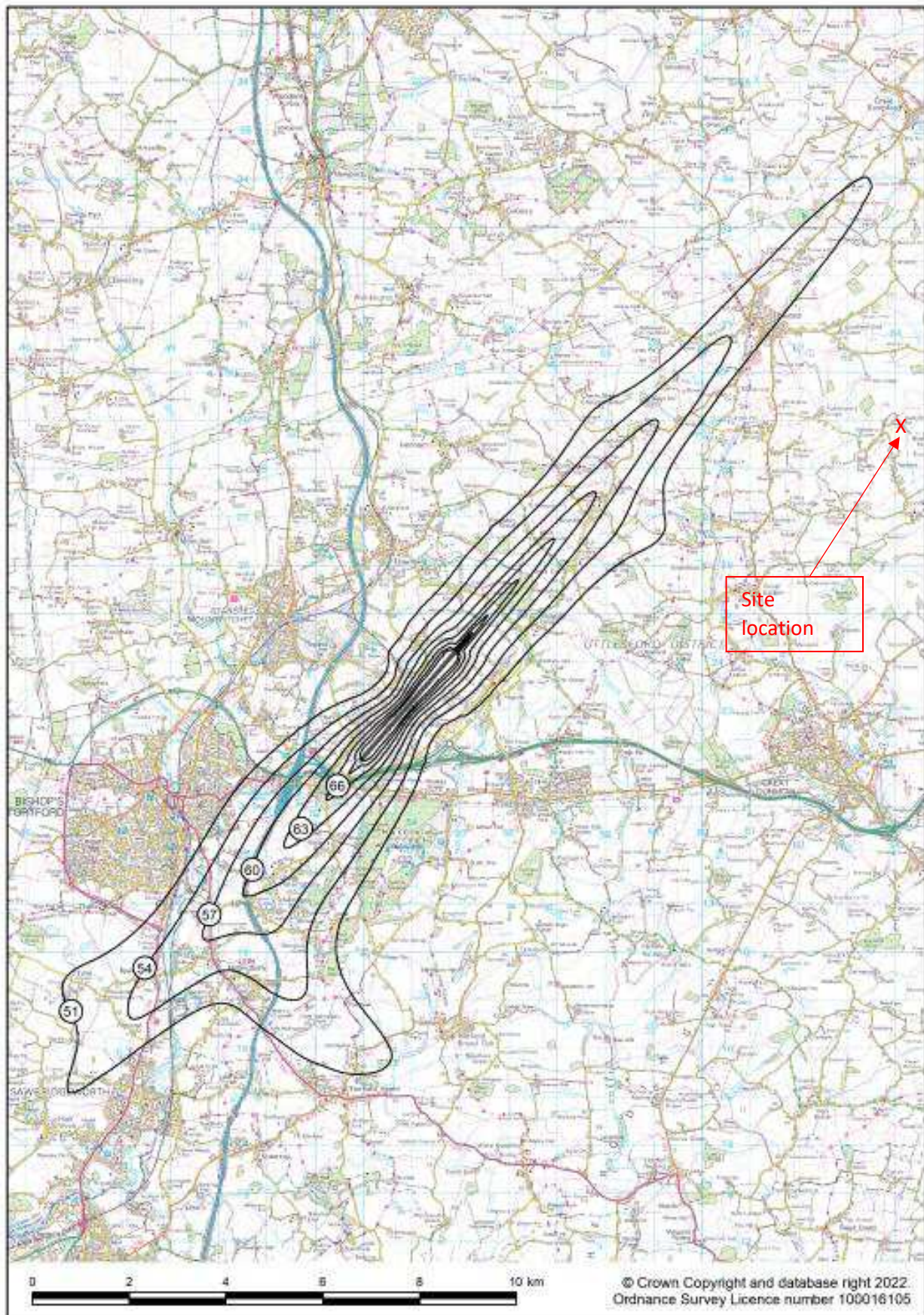
L_{Aeq} Daytime

35

Appendix D – Stansted Noise Exposure Contours

Daytime

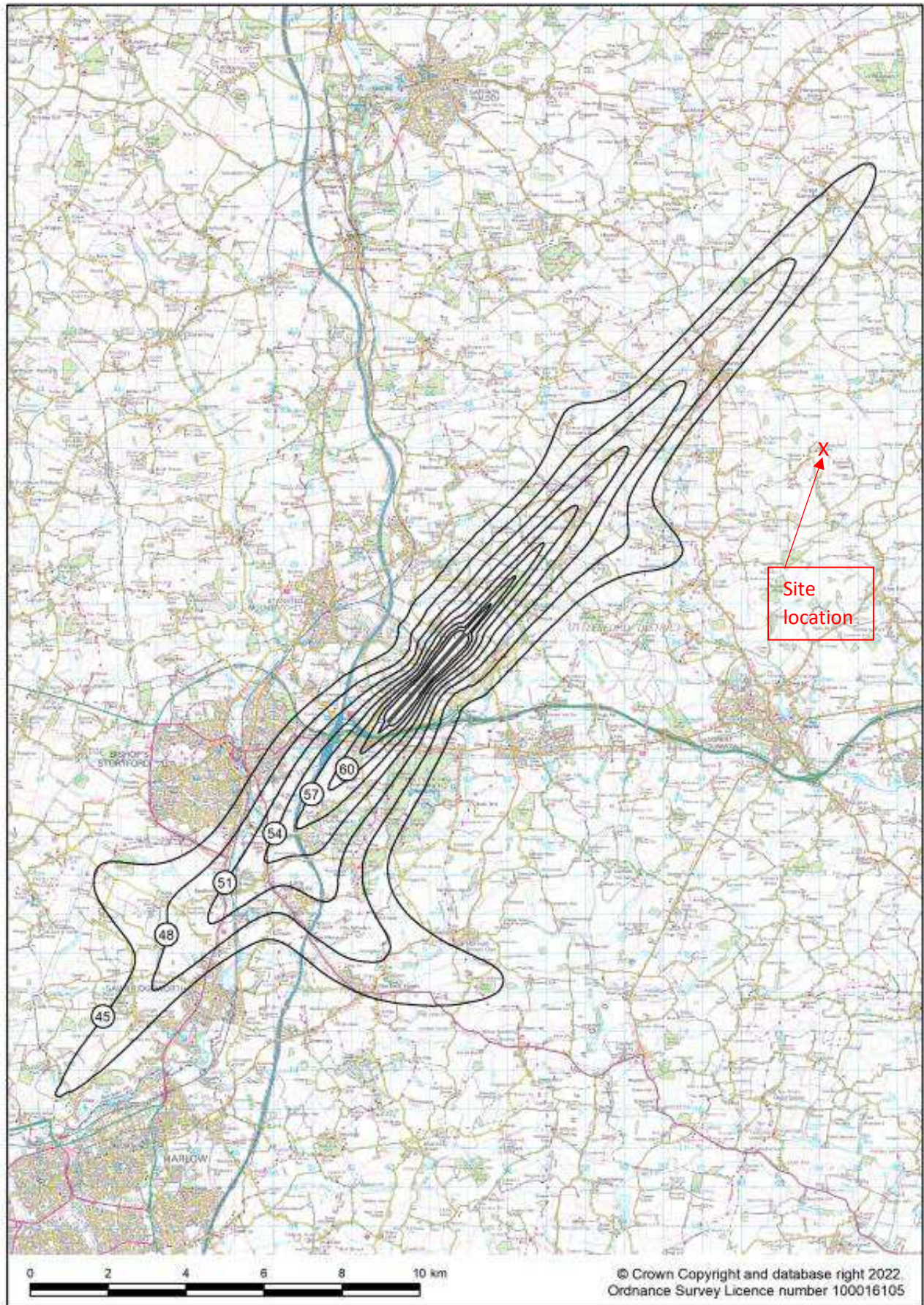
Figure B14 Stansted 2021 summer day standard modal split (72% SW / 28% NE) $L_{Aeq,16h}$ contours



Appendix D – Stansted Noise Exposure Contours

Night time

Figure B15 Stansted 2021 summer night standard modal split (70% SW / 30% NE) $L_{Aeq,8h}$ contours





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