

# Environmental Noise Impact Report

22nd December 2023

Site Adjacent to Yew Tree Cottage  
School Lane  
Takeley  
Bishop's Stortford,  
Essex CM22 6PJ

## **SITE DESCRIPTION AND OBSERVATIONS**

Proposed dwelling is adjacent Yew Tree Cottage, School Lane, Takeley, Bishop's Stortford, Essex CM22 6PJ, a grade two listed building. It will be hereafter referred to as the site.

The proposal is to subdivide the site and construct one detached one and a half storey dwelling. The site is located within a rural area and is predominantly surrounded by agricultural land. To the west of the site lies Molehill Green a village of varied residential properties.

At 900m to the south-west of the site is Stansted Airport.

Located to the south, approximately 2km away is the A120. The M11 is located westward at approximately 4km distance.

The site lies outside the 51dB LAeq,T daytime contour for Stansted Airport, but within the 45-48 dB LAeq,T night-time noise contour, as defined by the Civil Aviation Authority: Stansted Noise Exposure Contours (see map on next page).

The noise contour seen in the Noise Contour and Aircraft Noise plan shows that the development site can be found between the 54dB contour and the 57dB contour.

The glazing specified is designed to reduce the internal noise levels regarding BS8233:2014, based on a 71.5dB LAFmax, therefore the levels shown on the noise contour should not be of concern to the proposed dwelling.

The WAV spectrum data indicate that low frequencies from the aircraft noise are prominent in the local environment. The nature of this noise requires that a robust glazing specification is utilised. The use of double or triple glazed windows will provide the necessary level of sound insulation to all rooms. The use of trickle vents is precluded as a requirement of the Conservation Officer, so this potential weakness in the sound insulation of the windows will not be a factor.

The recommended internal noise levels described in BS8233:2014 can be achieved in all habitable areas, therefore discharging the Local Authority conditions for bedrooms and living rooms. In the daytime the amenity spaces will experience noise levels above those described in WHO guidelines.

Subjective assessment of background and ambient noise sources indicate that aircraft and road noise is not significant. The dominant noise source emanates from aircraft and road traffic on the A120/M11 but was not intrusive or disturbing. There were no abnormal noise sources identified. The noise sources noticed are considered normal to the site location e.g. cars passing along School Lane, where the nature of the narrow single track road enforces a low speed regime on the vehicles. Road noise from the occasional passing vehicle was more prominent than the aircraft noise, or the road traffic noise from the A120/M11.

## **NOISE EMISSION GUIDANCE AND CRITERIA**

The proposed site lies within the jurisdiction of Uttlesford District Council. An acoustic report is required to support planning consent by condition 8 of the planning permission UTT/23/1215/FUL.

National Planning Policy Framework (2021)

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.

The Government's environmental, economic and social planning policies for England are set out in NPPF (2021). The Noise Policy Statement for England 2010 applies to '*all forms of noise, including environmental noise and neighbourhood noise*'.

Paragraph 185 of the NPPF (2021) considers the effect of noise:

*“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”.*

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.

BS8233: 2014 stipulates internal noise criteria for new build residential uses and is widely used by Local Planning Authorities. For different rooms the desirable ambient noise levels are:-

<b>Activity</b>	<b>Location</b>	<b>07:00 to 23:00</b>	<b>23:00 to 07:00</b>
Resting	Living Room	35dB $L_{Aeq}$ , 16hour	-----
Dining	Dining Room/Area	40dB $L_{Aeq}$ , 16hour	-----
Sleeping (daytime resting)	Bedroom	35dB $L_{Aeq}$ , 16hour	30dB $L_{Aeq}$ , 8hour

The table is noted to apply to external noise as it affects internal ambient noise levels and are therefore considered appropriate within this assessment.

For traditional external areas that are used for amenity space, e.g. patios and gardens, the desire is that the external noise level does not exceed the upper guideline value of 35dB  $L_{Aeq}$ , which would be acceptable in noisier places. It is recognised that these guideline values are not achievable in city or urban centres and adjacent to transport networks. A compromise in these areas may be acceptable in developments to make efficient use of land, but efforts should be made to achieve the lowest practicable levels in external amenity spaces. A prohibition should not be enforced, so as to ensure that development needs can be met.

Noise levels in the area adjacent to the site have been recorded as:-

55dB $L_{Aeq}$ . to 56dB $L_{Aeq}$ .	Day time	07:00 to 23:00
51dB $L_{Aeq}$ . to 51dB $L_{Aeq}$ .	Night time	23:00 to 07:00
71dB $L_{Amax,F,NNE}$ . to 68dB $L_{Amax,F,NNE}$	Night time	23:00 to 07:00

The World Health Organisation 'Guideline for Community Noise (2009)' and 'Environmental Noise Guidelines for the European Region (2018)' can be used in the absence of guidance in BS 8233: 2014, together with ProPG: 2017 guidance.

For suitable sleeping conditions, 45dB  $L_{Amax,F}$  should not be exceeded by more than 10 to 15 times at night within a bedroom. The 71dB  $L_{Amax,F,NNE}$  noise levels shown in the table above should not, for robustness, not exceed (NNE) 10<sup>th</sup> and 11<sup>th</sup> highest measured between 23:00 and 07:00 hours. The  $L_{Amax,F,NNE}$  noise level then needs to be reduced to 45dB internally to comply with the internal night time noise level.

## SUITABILITY OF BUILDING FACADES

The sound reduction performance of glazed and non glazed elements have to achieve the night time level for bedrooms between the hours of 23:00 to 07:00. The level required is 30dB  $L_{Aeq, 8hour}$ . For day time, for living rooms between the hours of 07:00 to 23:00, the required level is 35dB  $L_{Aeq, 16hour}$ . For the night time period, the spectrum the  $L_{Amax,F,NNE}$  should be applied to confirm that the limit of 45 $L_{Amax,F}$  is not exceeded regularly for single events during the night time period.

### Non Glazed Elements

**External Walls** – The elements of the building that are not to be glazed will consist of an external wall constructed of a blockwork and blockwork cavity wall with a rendered finish above a brickwork and blockwork cavity plinth wall. The external wall will be plastered internally with 12.5mm gypsum plasterboard on plaster dabs. The anticipated sound reduction of this construction is:-

Non glazed element (blockwork cavity wall).

Octave band centre frequency SRI, dB

125Hz	250Hz	500Hz	1kHz	2kHz	4kHz
39	41	43	48	50	55

The assumption from experience with external walls, constructed in accordance with the Building Regulations, is that this element will provide significant attenuation, and will achieve the desired noise reduction.

**Roofs** – A lesser SRI is expected from roofs, but roofs still have a function to reduce external noise entering the building. Typically a roof constructed of slate on felt with 100mm of glass or mineral wool, with a plasterboard ceiling should see an SRI of 43dB  $R_w$  (approximately).

Non glazed element (roof).

Octave band centre frequency SRI, dB

125Hz	250Hz	500Hz	1kHz	2kHz	4kHz
27	37	43	48	52	52

**Windows** – Based on commonly obtained noise data from monitoring, together with facade materials, room volumes and sizes, the noise reduction performance of the glazed elements on the ground floor is an SRI of 37dB  $R_w$ . An SRI of 46dB  $R_w$  is required for all glazed elements at first floor level. Sound reduction performance for whole window units (glazing, frame and other features (such as trickle vents), and as performance data for solely the glass element would not be sufficient to demonstrate compliance with the required performance. Window performance calculations have to be based on as measured  $L_{Aeq}$  and  $L_{Amax,NNE}$  noise levels, as recommended in BS 8233: 2014. As the dwelling is assumed to be fully carpeted, curtained and furnished (in the bedrooms and living spaces), the reference reverberation time of 0.5 seconds is used.

The dwelling is to have double or triple glazed windows to comply with the Building Regulations (Part L). This type of window will provide approximately 31dB  $R_w$  sound insulation. This window specification will ensure that both sound reduction and thermal insulation requirements are achieved.

The glazing details to achieve the desired sound reduction are listed here:-

Ground Floor Facades	37dB	<i>R<sub>w</sub></i> 37dB double glazing system (6mm glass; 16mm air gap; 6mm glass).
First Floor Facades	46dB	<i>R<sub>w</sub></i> 46dB triple glazing system (10mm glass; 14mm air gap; 4mm mid glass; 8mm glass).

## **CONCLUSION**

The proposal is for a new residential dwelling on land adjacent to Yew Tree Cottage, School Lane, Takeley, Bishop's Stortford, Essex CM22 6PJ.

A minimum of 38dB *R<sub>w</sub>* noise reduction is required for all glazed elements to be installed into the proposed dwelling. In the absence of trickle vents, through the wall passive vents are available that meet or exceed the sound reduction required by the glazed elements, and can be constructed into the proposal accordingly.

With appropriate sound insulation glazing measures and building construction as shown in this report the criteria of BS 8233: 2014 can comfortably be achieved in this residential dwelling.

## **References**

BS 7445-1:2003 Description and measurement of environmental noise – Part 1: Guide to quantities and procedures.

BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings.

National Planning Policy Framework (NPPF).

World Health Organisation Guidelines for Community Noise.

Noise Contours for Stansted Airport 2017.

## **Drawing References**

C488/BR/01 - PROPOSED PLANS AND ELEVATIONS

C488/BR/02 - PROPOSED SECTIONS

C488/BR/05 - PROPOSED SITE PLAN

C488/BR/07 - PROPOSED WINDOW AND DOOR DETAILS

C488/LO/01 - LOCATION PLAN