21 Thomas Street, Huddersfield

Noise Impact Assessment Report

11233.1

3rd April 2024

Revision A

21 Thomas Street, Huddersfield

Noise Impact Assessment Report

11233.1

Revision	Description	Issued by	Date
A	First issue	NC	3rd April 2024

This report has been prepared for the sole benefit, use and information of the client for the purposes set out in the report or instructions commissioning it. The liability of Apex Acoustics Limited in respect of the information contained in the report will not extend to any third party. All concepts, data and proposals are copyright © 2024. Issued in commercial confidence.

Prepared for

Torsion Projects

1280 Century Way, Thorpe Park, Leeds, LS15 8ZB

Prepared by

Kaelyn Tan MSc MIOA

Checked by

Tom Lucas MSc MIOA

Apex Acoustics Limited Reg. in England no. 05656507
Design Works, William Street, Gateshead, NE10 0JP

T 0191 620 0750
E info@apexacoustics.co.uk
W www.apexacoustics.co.uk

1 Contents

1 Contents 2
2 Summary 3
3 Introduction 3
4 Planning Conditions 4
5 External Ambient Noise Levels 4
6 Internal Ambient Noise Levels 5
7 External building services noise limits 7

2 Summary

2.1 This report provides the acoustic strategy for the project and highlights the mandatory requirements for both Planning and Building Regulation compliance.

2.2 The planning condition is included, comments provided on how this should be complied with and the information requirements to discharge the condition.

3 Introduction

3.1 A new care home has been proposed at 21 Thomas Street, Lindley, Huddersfield.

3.2 The ground floor levels will include spaces such a kitchen, reception / lobby, activity lounge and dining.

3.3 The new building location is shown on the site plan in Figure 1.

Figure 1: Proposed site with the new building location

4 Planning Conditions

4.1 **Planning Condition 13**

4.2 *Prior to the commencement of food cooking within the development, details of a kitchen extract system shall be submitted to and approved in writing by the Local Planning Authority. The details shall provide the following information:*

- *A risk assessment for odour which considers amount and type of food that would be cooked together with the proposed dispersion of odours and proximity of receptors likely to be affected by any cooking odours;*
- *Based on the risk assessment, details of the proposed methods of odour control and dispersion of any extracted odours. The effective stack height (discharge height plus plume rise) must be high enough to ensure that adequate dilution takes place before the plume interacts with the nearest sensitive receptor;*
- *Details showing the proposed location of all the major components of the extract system;*
- *The noise mitigation measures that would be incorporated in the extract system and details of the likely resulting noise levels that would be caused by operation of the extract system, in particular how loud it would be at nearby noise sensitive locations; and*
- *A schedule of the proposed ongoing maintenance that would be carried out to ensure that the extract system continues to effectively control odours and not cause excessive noise.*

Before food cooking commences the approved extract system shall be installed and thereafter retained and maintained in accordance with the approved details.

4.3 **Planning Condition 13 comments**

4.4 This condition requires noise mitigation measures for the kitchen extract system and details of the likely resulting noise levels at the nearby noise sensitive locations.

4.5 This is covered in Section 7 of this report.

5 External Ambient Noise Levels

5.1 Measurements of the existing noise environment have been undertaken by Apex between 14th and 18th March 2024 at P1. Short-term measurements have also been undertaken at P2.

5.2 The measurement positions are shown in Figure 2.

Figure 2: Measurement positions

5.3 The microphone at P1 was located at 3.5 m above ground level, away from other reflecting surfaces, such that the measurements are considered to be free-field. The microphone at P2 was located at 1.5 m above ground level and away from other reflecting surfaces, such that the measurements are considered to be free-field.

5.4 The equipment used is listed in Table 1.

Equipment	Model	Serial no.
Sound Level Meter	NTi XL2	A2A-11084-E0
Calibrator	Larson Davis CAL 200	10665
Sound Level Meter	NTi XL2	A2A-20287-E0
Calibrator	Larson Davis CAL 200	19379

Table 1: Equipment used

5.5 All sound level meters and calibrators used meet the technical specifications of BS 7445 and have current calibration certificates traceable to national standards. The equipment was field-calibrated before and after the measurement with no significant drift in sensitivity noted.

5.6 The most significant noise source affecting the proposed development was road traffic on the surrounding road networks.

5.7 The measured daytime and night-time noise levels are shown in Table 2.

Position	Daytime dB	Night-time dB	Night-time L_{AFmax} dB[1]
1	57 – 63 $L_{Aeq,16hr}$	45 – 53 $L_{Aeq,8hr}$	65 – 73
2	53 – 56 $L_{Aeq,1hr}$	-	-

[1]Value not exceeded more than 10 times a night, based on noise data logged at 2 minute intervals

Table 2: Measured free-field noise levels

5.8 The background sound level, $L_{A90,\ 15min}$, is calculated from the $L_{Aeq\ 15min}$.

5.9 Statistical analysis is undertaken of the results of all the $L_{A90,15min}$ data, following the guidance of BS 4142:2014, to determine a background sound level considered to be representative of the assessment period.

5.10 Based on the statistical analysis results, the background sound levels considered representative of the daytime and night time assessment periods are shown in Table 3.

Position	Assessment period	L_{A90} (dB)
1	Daytime (07:00 – 23:00 hrs)	42
	Night time (23:00 – 07:00 hrs)	37

Table 3: Background sound levels representative of the assessment period

6 Internal Ambient Noise Levels

6.1 Noise Ingress

6.2 The planning permission does not contain any conditions with regards to internal ambient noise levels within the proposed building or ingress of external noise. Advice regarding building envelope sound insulation is therefore provided based on best practice guidance.

6.3 Standards for desirable internal ambient noise levels are defined in BS 8233:2014 and are shown in Table 4.

Activity	Location	Guideline level, $L_{Aeq,\ T}$ / dB	
		07:00 to 23:00	23:00 to 07:00
Resting	Living rooms	35	-
Dining	Dining room/area	40	-
Sleeping (daytime resting)	Bedroom	35	30

Table 4: Guideline indoor ambient noise levels defined in BS 8233

6.4 Note 4 of the BS 8233:2014 Table states:

"Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$, depending on the character and number of events per night. Sporadic noise events could require separate values."

6.5 WHO Guidelines

6.6 Section 3.4 of the World Health Organisation (WHO) Guidelines for Community Noise states:

"For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB L_{Amax} more than 10 – 15 times per night."

6.7 Façade performance requirements

6.8 Calculations have been undertaken following the method for façade sound insulation in accordance with BS 8233 and the principles of BS EN 12354-3.

6.9 The proposed development will be required to meet Part F of the Building Regulations with regard to the whole dwelling ventilation condition, as described in Approved Document F (AD-F).

6.10 Considering a 15 dB level difference for a partially open window, the indoor noise targets can be achieved when windows are open to the rooms facing the west. Therefore there are no acoustic restrictions for the AD-F ventilation strategy to these plots.

6.11 For the bedrooms facing the roads, standard thermal double glazing with suitably rated trickle ventilators would provide sufficient acoustic performance on the facades.

6.12 The acoustic performance requirements for glazing and trickle ventilators to bedrooms are summarised in Table 5 and Table 6 respectively. A mark-up showing the sound insulation treatments required for each façade on a typical floor plan is shown in Figure 3. It is considered that the same specification could be adopted for the garden lounge and quiet lounge.

6.13 The acoustic performance requirement for the glazing could be achieved with any standard thermal double glazing units. Various trickle ventilator products are available from suppliers such as Titon and Greenwood which would satisfy the acoustic performance requirement. The acoustic performance requirement for the trickle ventilator is based on one vent per room.

Façade	Acoustic Performance Requirements
	$R_w + C_{tr}$
Not marked	Open windows feasible, no acoustic requirements
Red	25 dB

Table 5: Glazing acoustic requirements (bedrooms, garden lounge & quiet lounge)

Façade	Acoustic Performance Requirements
	$D_{n,e,w} + C_{tr}$
Not marked	Open windows feasible, no acoustic requirements
Red	31 dB

Table 6: Trickle ventilator acoustic requirements (bedrooms, garden lounge & quiet lounge)

Figure 3: Typical façade performance requirements

6.14 **Overheating**

6.15 Part O of the Building Regulations, as described in Approved Document O (AD-O), relates to the overheating of new dwellings and when undertaking an assessment of the overheating risks the likelihood that open windows can be used for controlling thermal comfort must be considered.

6.16 According to AD-O:

6.17 *"In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am).*

Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.

a. 40dB LAeq,T, averaged over 8 hours (between 11pm and 7am).

b. 55dB LAFmax, more than 10 times a night (between 11pm and 7am)."

6.18 For this development, based on the survey data, the L_{AFmax} level not exceeded more than 10 times a night incident on the most exposed bedrooms is 68 dB, meaning a reduction of 13 dB is required to meet the internal noise level of 55 dB L_{AFmax} from AD-O.

6.19 This precludes use of the AD-O simplified method and, therefore, dynamic thermal modelling will be required. With a typical ceiling height of 2.4 m, the maximum equivalent area of the window openings would need to be limited to 2 % of the floor area within bedrooms during the night time period (11pm to 7am) in order to satisfy the AD-O internal noise limits.

6.20 It should be emphasised that the above is not intended to constitute a ventilation strategy design, which is the responsibility of others.

7 External building services noise limits

7.1 It is understood that there will be kitchen ventilation plant and air source heat pump (ASHP) units proposed at the kitchen and external compound area at ground floor level as shown in Figure 4.

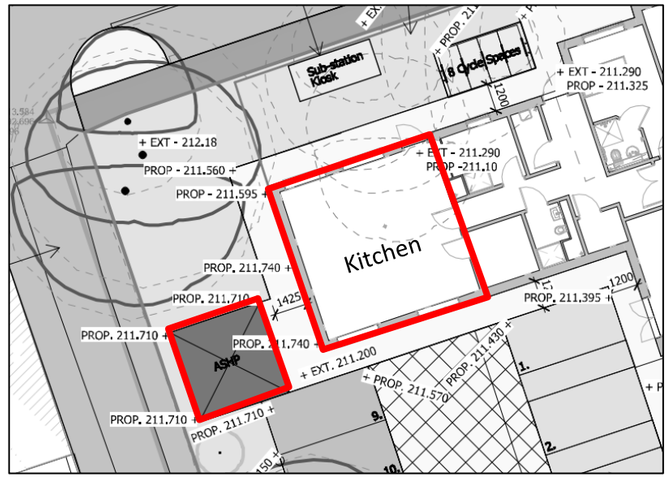

Figure 4: Location of the kitchen and ASHP at ground floor level

7.2 It is understood that the planning condition only applies to the kitchen extract system. However, it would be prudent to consider the cumulative noise level from all plant.

7.3 For this development the receptors are the new building itself, which will have habitable rooms facing the new plant, as well as existing residential properties on Thomas Street.

7.4 BS 4142:2014 indicates that, depending on context, where the rating level of the new plant does not exceed the background sound level, this would typically indicate a low impact. Therefore, at this stage, plant noise rating level limits of equal to the background sound level are proposed, as detailed in Table 7.

Time period	Lowest background level L_{A90} / dB	Noise rating level at receptors $L_{Ar,Tr}$ dB
Daytime 07:00 to 19:00	42	42
Night-time 23:00 to 07:00	37	37

Table 7: Plant noise rating levels at nearest receptors