

TECHNICAL NOTE – ROOF TERRACE NOISE ASSESSMENT

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Company:	Pembrook Design	Date:	08 July 2019
Pages:	4	Our Ref:	297098-03(00)

1. Introduction

RSK Environment has been commissioned by Pembrook Design to provide acoustic consultancy advice with regards to the proposed development at 1-2 Market Place, Reading.

As part of the works, an environmental noise survey has been carried out to determine the existing noise environment in the vicinity of the development.

Following the receipt of the planning decision notice discussed herein, an assessment of noise from the roof terrace area has been carried out by RSK.

This technical note provides a summary of the local authority requirements, relating to the planning conditions, the assessment method and results of the assessment.

2. Local Authority requirements

A number of planning conditions relating to the development have been provided within the planning decision notice document reference 180863, dated 17 April 2019.

Planning Condition 14 relates to noise from the external roof terrace area, and reads as follows:

“14. Prior to first occupation of the roof top terrace area hereby permitted, as shown on drawing no. 3172.14 rev D – Proposed Third Floor received by the Local Planning Authority on 25th May 2018, an acoustic assessment of the noise from the outdoor terrace should have been submitted to and approved by the Council. This assessment should demonstrate that the noise from use of the outdoor area shall not exceed 3 dBA greater than the existing ambient noise (LAeq) at the nearest sensitive receptor. The outdoor terrace shall thereafter only be constructed and operated in accordance with the assessment and shall not be occupied until the acoustic screening has been installed as shown on drawing no.s 3172.125 rev A – Proposed Elevations, 3172.120 rev A – Proposed Sections AA, BB & CC and 3172.14 rev D – Proposed Third Floor received by the Local Planning Authority on 25th May 2018. The acoustic screen shall be permanently retained in situ thereafter.

Reason: In the interest of the noise and disturbance impact on the amenities of surrounding occupiers in accordance with Policies DM4 and CS34.”

3. Environmental noise survey

An environmental noise survey was carried out by RSK between 21-26 February 2018, as detailed in RSK report 297098-01(00)_1-2 Market Place Reading_Noise Assessment.

The report provides a summary of the noise measurements at each location, including ambient noise levels inferred at each nearby noise sensitive receptor.

The nearest exposed receptor is referenced as Receptor R3 within our initial report, the planning-approved Jackson's Corner development, which directly overlooks the terrace area.

The commercial daytime (07:00 – 19:00) and evening (19:00 – 23:00) period ambient noise levels measured at this location were $L_{Aeq,12hr}$ 58 and $L_{Aeq,4hr}$ 55 dB respectively when corrected to a façade noise level as would be expected at the facades of the Jackson's Corner development.

4. Project criteria

Based on the local authority planning requirements and the measured ambient noise levels during the noise survey, the project criteria proposed for the development are presented in Table 1.

Table 1 Roof terrace noise limits

Receptor	Limit for noise from roof terrace, $L_{Aeq,T}$ (dB)	
	Commercial daytime (07:00 – 19:00)	Evening (19:00 – 23:00)
R3 – Jackson's Corner	61	58

The commercial daytime and evening periods have been assessed separately to reflect the likely operation hours of the roof terrace, with the evening period a worst-case scenario.

5. Assessment method

The assessment to date has been based on the same information as detailed in Section 4 of the original noise assessment report 297098-01(00), with the following updated drawings included within this assessment:

- 3172.14 RevD - Proposed Third Floor

In order to assess noise from the terrace area, a 3D computer model has been created using CadnaA acoustic modelling software.

The computer modelling algorithms follow the procedures set out in ISO 9613-2:1996 *Acoustics -- Attenuation of sound during propagation outdoors -- Part 2: General method of calculation*.

The applicable area of external terrace to be occupied by patrons, as per the drawing information received, has been modelled as an area source at 1.5 m above the finished floor level of the roof terrace.

The screening provided by the perimeter pergola has been modelled within the software, including the absorption characteristics of the acoustic treatment applied to the inner facing sides of the screens. This has been detailed within the initial noise assessment report for reference.

A typical conservative estimate of the acoustic absorption provided by such fencing is included within Table 2 as included within the model. Other building objects within the model are assumed to be acoustically reflective as a worst-case scenario.

Table 2 Acoustic timber screen absorption coefficients

Element	Absorption coefficient @ octave-band centre-frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
Acoustic timber screen	0.15	0.30	0.50	0.70	0.70	0.70	0.70	0.70

The source noise levels for the model are presented in Table 3, and are in agreement with the benchmarking noise measurements carried out previously at existing City Pubs venues.

Table 3 Model source levels

	Source sound power level per unit area (dB/m ²) @ octave-band centre-frequency (Hz)								
	63	125	250	500	1000	2000	4000	8000	dBA
Source noise levels	60	64	64	77	74	72	65	55	79

Noise levels have been calculated at the overlooking windows and balconies of noise-sensitive spaces within the Jackson's Corner development, based on the planning submission drawings for the scheme, with each apartment and room type considered.

Noise levels are predicted at 1 m from the façade and are therefore considered façade measurements. As such, results are comparable to the criterion provided within Section 4 which are also presented as façade levels.

6. Results

The results of the roof terrace noise assessment are presented in Table 4.

Table 4 Predicted roof terrace noise levels at receptors

Location	Predicted noise level at receptor location from roof terrace only, L_{Aeq} (dB).	58 dB $L_{Aeq,T}$ Criterion achieved?
JC L4 Flat 30 BR	48	✓
JC L4 Flat 32 BR	50	✓
JC L4 Flat 32 LR	52	✓
JC L5 Flat 33 BR	55	✓
JC L5 Flat 34 BR	51	✓
JC L6 Flat 33 LR	56	✓
JC L6 Flat 34 BR	53	✓

An extracted section in Figure 1 from the planning-approved documents for the Jackson's Corner development shows the location of the overlooking apartments relative to the roof terrace height, highlighted.

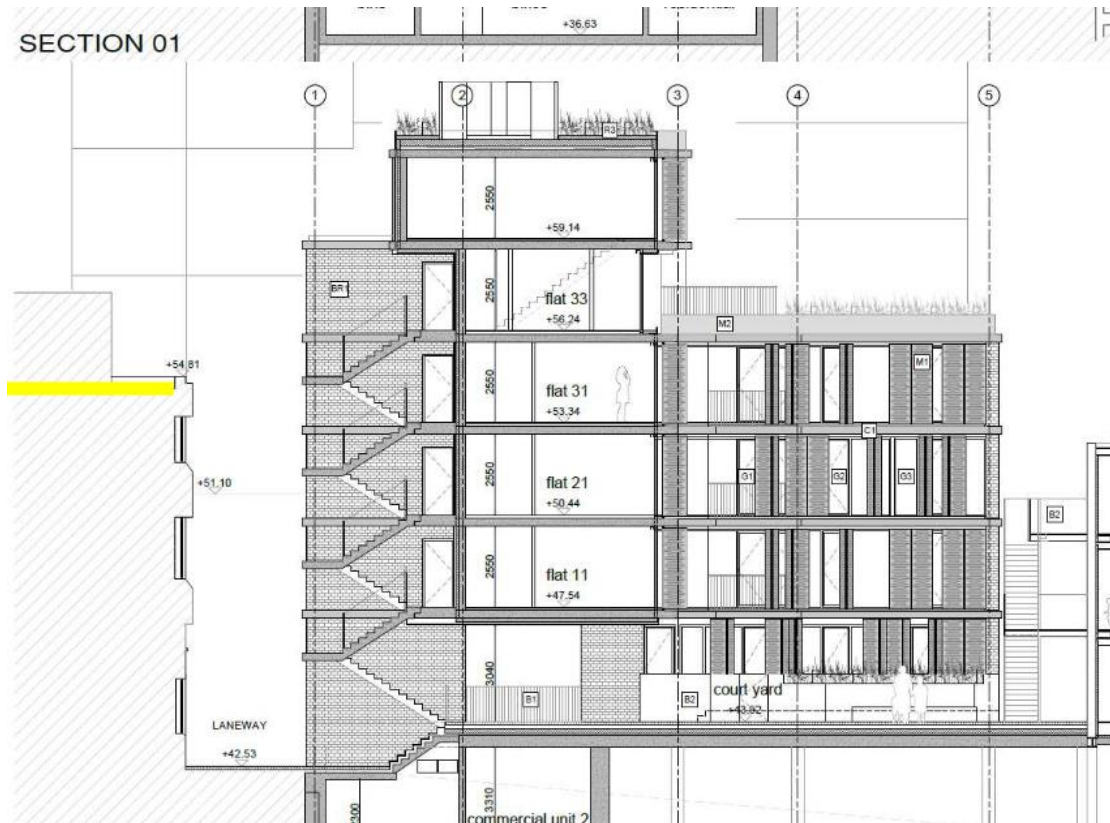


Figure 1 Roof terrace relative to neighbouring Jackson's Corner development

7. Conclusions

All of the predicted noise levels as presented in Table 4 meet the project criterion, with a margin of at least 2 dB at all receptor locations.

As such, this assessment is considered suitable to discharge Planning Condition 14 associated with the development.