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**NOISE BREAK-IN SURVEYS
BLOCK J1, KENNET ISLAND
READING**

Technical Report: R5298-2 Rev 0

Date: 6th July 2017

For: Berkeley Homes (Western) Ltd
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24 Acoustics Document Control Sheet

Project Title: Noise Break-In Surveys, Block J1, Kennet Island, Reading

Report Ref: R5298-2 Rev 0

Date: 6th July 2017

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Document Status and Approval Schedule

Revision	Description	Prepared By	Approved By
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1.0 INTRODUCTION

- 1.1 24 Acoustics Ltd has been appointed by Berkeley Homes (Western) Ltd to provide acoustic consultancy services in relation to their development project Kennet Island in Reading.
- 1.2 This report presents the results of break-in noise tests undertaken in Block J1 in July 2017, as required under the conditions of the reserved matters planning consent for the site.
- 1.3 An explanation of acoustical terms used in this report is provided in Appendix A. All sound pressure levels in this report are given in dB re: 20 μ Pa.

2.0 SITE DESCRIPTION AND BACKGROUND

- 2.1 The Kennet Island Phase 3 development site is located on land to the north of the existing Kennet Island development in Reading. Block J1 is located on the western boundary of the site in close proximity to the A33. Figure 1 provides an overview of the Kennet Island Phase 3 area and shows the location of Block J1.
- 2.2 Outline planning consent for the Block J1 development was granted on 7th November 2012 (Ref: 12/00481/OUT) as part of the Phase 3 planning consent. Conditions 28 and 29 relate to internal noise levels within the residential properties. Condition 28 states:

No development shall take place on each block within Phases 3B and 3C until a detailed scheme has been submitted to ensure noise levels within residential properties will not exceed 30 dB LAeq, 16hr for living rooms during the day and 35 dB LAeq, 8hr and 45 dB LAm_{ax} for bedrooms at night; and that noise levels within the private garden area of the houses shall not exceed 50-55 dB LAeq, 16hr (in accordance with BS 8233:1999) within each block. These measures shall be implemented and a sample tested before any of the units within the respective phases (i.e. Phases 3B and 3C) are occupied. The acoustic fence shall thereafter be maintained in the position specified and at the height specified at all times unless agreed in writing by the LPA.

Reason: to protect the amenity of the proposed properties from surrounding noise sources.

- 2.3 Planning consent was granted (Ref: 06/01030/FUL) for a new speedway circuit, greyhound racing track, casino and bingo hall for Reading Speedway to be located to the west of the proposed development site (on the opposite side of the A33). Construction of the proposed speedway circuit was delayed and the original planning consent has since been extended (Ref: 10/01396/EXT). A condition attached to the original development required the new speedway stadium to be designed to ensure that noise arising from the speedway (and associated activities) does not cause unacceptable disturbance to the occupants of the nearest existing or proposed residential properties. Condition 14 of the planning consent (Reference 06/01030/FUL) relating to noise stipulates that:

'Prior to the commencement of stadium construction the developers shall submit a noise scheme to be approved by the Local Planning Authority. The scheme must include the design, specification and operation of the Stadium and the Public Address (PA) system (both internally and externally) such that its Noise Rating Level, measured or calculated at 1 m from the façade of the nearest noise sensitive premises, shall not exceed a value no more than 5 dB(A) above the existing LA90 (background noise level). The Noise Rating Level from the Stadium and existing background noise levels shall be determined as per the guidance provided in BS4142: 1997. Following approval of the noise scheme the Stadium or the PA system shall not be used (other than for testing and commissioning purposes) until the Local Planning Authority has approved the stadium design and PA system and its operational noise levels in writing.'

Reason: In order to safeguard the amenities of adjoining properties.

- 2.4 Condition 15 of the new speedway circuit and dog racing track requires all external stadium areas to not be used after 11pm. Noise from the new stadium should therefore not impact nearby sensitive properties during night-time hours.
- 2.5 The scope of this assessment therefore primarily considers the impact of noise from road traffic using the A33 and it is assumed that the mitigation of noise from the stadium, if it is developed, will be provided as part of the acoustic design of the stadium, in accordance with Condition 14 of the stadium's planning consent.

Summary

2.6 The impact of noise upon the site has been assessed using the following methodology:

- Condition 28 of planning consent requires noise levels to not exceed 30 dB $L_{Aeq, 16hr}$ for living rooms during the day and 30 dB $L_{Aeq, 8hr}$ and 45 dB L_{Amax} for bedrooms at night (for regular events);
- It is assumed noise from the proposed speedway stadium, if developed, will be controlled by the prescribed noise planning conditions associated within its planning consent which will apply to the new Kennet Island properties.

3.0 ENVIRONMENTAL NOISE SURVEYS

3.1 Noise surveys were undertaken between 30th June and 4th July 2017 to assess the impact of noise arising from road traffic from the A33. The survey locations are shown in Figure 1. Measurements were undertaken inside two rooms within Block J1 (facing the A33). In each room, the microphone was positioned at a height of approximately 1.2 m in the centre of the finished room. Background ventilators were open during the survey period. The measurements were undertaken in the following plots/ rooms:

- Flat 103, Bedroom 1;
- Flat 306, Living Room/Kitchen.

3.2 The surveys were undertaken in completed plots, however, some building works were still ongoing during the tests which will have interfered with the daytime survey results. Data associated with periods of construction have been excluded from analysis.

3.3 Noise measurements in Flat 306, Living Room/Kitchen were affected by low-level internal noise sources (understood to be the fridge-freezer which was switched on during the survey period). Daytime noise level results were not affected by these internal noise sources, however, night-time noise levels were partly influenced.

3.4 The surveys were undertaken using the following instrumentation:

2 x Rion precision Class 1 accuracy sound level meter	Type NL52;
Bruel and Kjaer calibrator	Type 4231.

- 3.5 The sound level meters were equipped with an environmental windshield and powered by external batteries. The calibration of the instrumentation was checked before and after the tests and no signal variation occurred. Calibration of 24 Acoustics' equipment is traceable to National Standards. The weather was mostly dry throughout the survey and the wind speed was less than 5 m/s. It is considered that the weather did not affect measurements obtained.
- 3.6 The noise monitors were configured to continuously measure and store overall A-weighted statistical parameters including L_{Aeq} , L_{Amax} and L_{A90} (all measured on fast response) in 5 minute intervals.

4.0 RESULTS AND ASSESSMENT

- 4.1 The results of the noise surveys are shown graphically in Appendix B. A summary of these results are shown below in Table 1.

Survey Location	Daytime Noise Level, dB (07:00- 23:00)	Night-time Noise Level, dB (23:00-07:00)	
	L_{Aeq} , 16 hour	L_{Aeq} , 8 hour	$L_{Amax,f}$
Flat 103, Bedroom 1	27	21	35
Flat 306, Living Room/Kitchen	33	31	39

Table 1: Kennet Island, Block J1 - Noise Survey Results

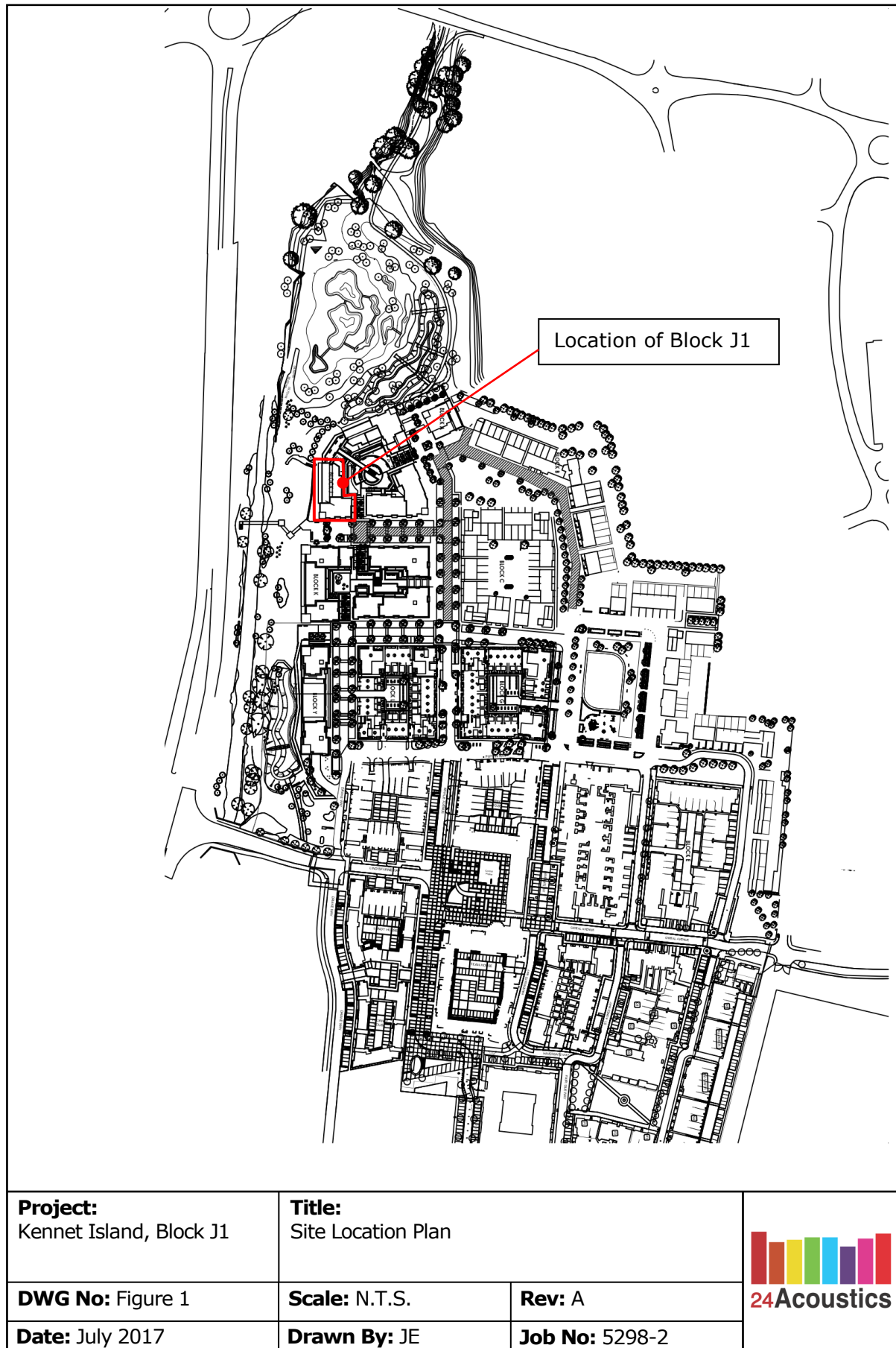
- 4.2 The test results indicate that the level of external noise break-in is within the limits set in Conditions 28 planning consent respectively at all times.

5.0 CONCLUSIONS

- 5.1 24 Acoustics Ltd has been appointed by St. James Developments to undertake break-in noise surveys within Block J1 at Kennet Island, Reading.
- 5.2 It has been established that the noise levels inside the flats will be within the requirements of Condition 28 of the reserved matters planning consent at all times.

REFERENCES

1. British Standards Institution. BS 7445: 'Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use' 1991.



APPENDIX A: ACOUSTIC TERMINOLOGY

Noise is defined as unwanted sound. The range of audible sound is from 0 to 140 dB. The frequency response of the ear is usually taken to be around 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dB(A) weighting. This is an internationally accepted standard for noise measurements.

For variable sources, such as traffic, a difference of 3 dBA is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dBA. The 'loudness' of a noise is a purely subjective parameter, but it is generally accepted that an increase / decrease of 10 dB(A) corresponds to a doubling / halving in perceived loudness.

External noise levels are rarely steady, but rise and fall according to activities within an area. In an attempt to produce a figure that relates this variable noise level to subjective response, a number of noise indices have been developed. These include:

i) The L_{Amax} noise level

This is the maximum noise level recorded over the measurement period.

ii) The L_{Aeq} noise level

This is "equivalent continuous A-weighted sound pressure level, in decibels" and is defined in British Standard BS 7445 as the "value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval, T, has the same mean square sound pressure as a sound under consideration whose level varies with time".

It is a unit commonly used to describe construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise.

iii) The L_{A10} noise level

This is the noise level that is exceeded for 10% of the measurement period and gives an indication of the noisier levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.

iv) The L_{A90} noise level

This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during the quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.

APPENDIX B: NOISE SURVEY RESULTS

Figure B1: Internal Ambient Noise Measurements, Flat 103 Bedroom 1
30th June to 4th July 2017

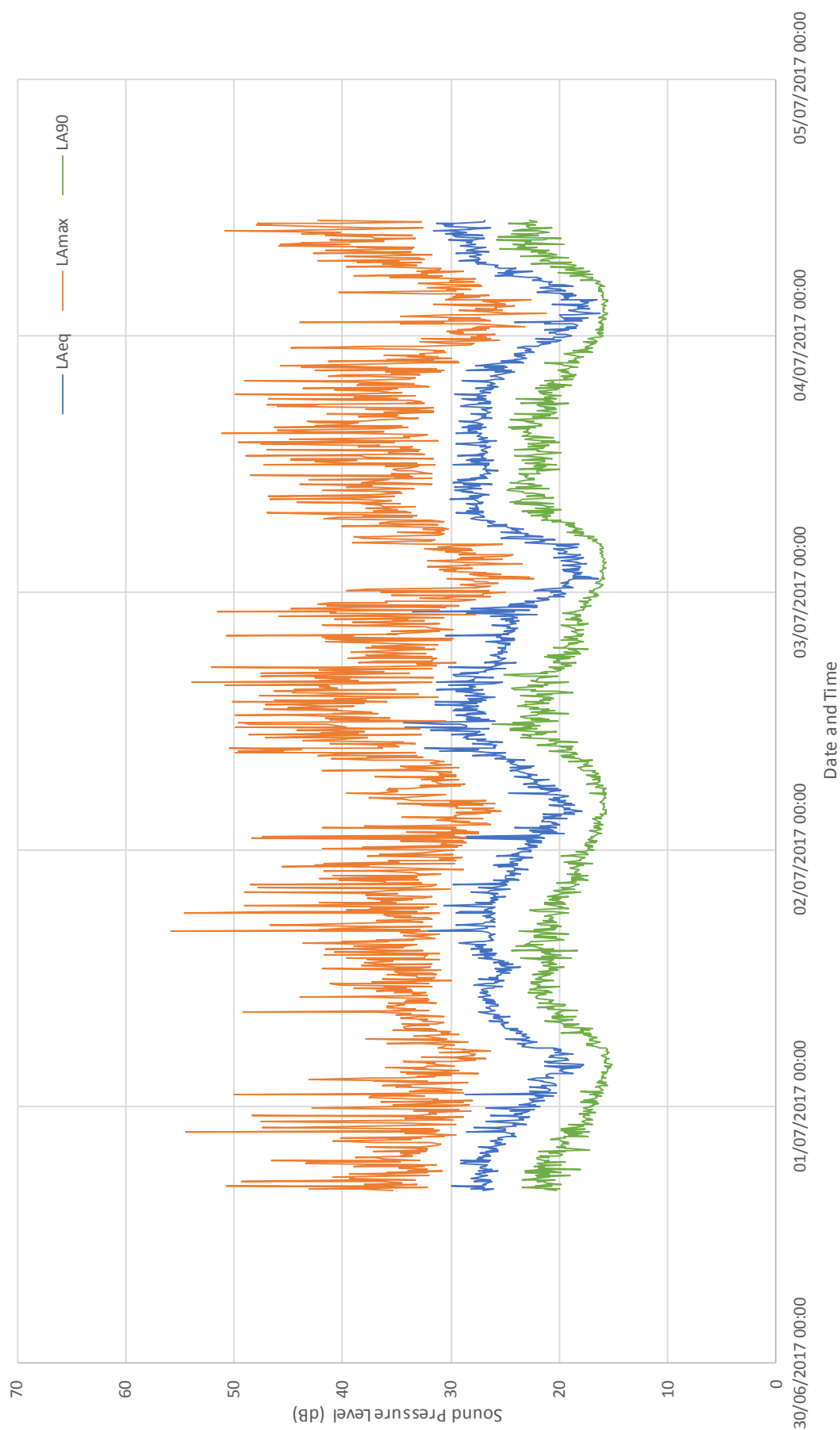


Figure B2: Internal Ambient Noise Measurements, Flat 306 Living Room
30th June to 4th July 2017

