
TECHNICAL MEMO

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SUBJECT: RINGMER PRIMARY SCHOOL, RINGMER, INTERNAL AND EXTERNAL NOISE LEVELS

1 INTRODUCTION

At the development of Ringmer Primary School, teaching rooms in the new extension are to be naturally ventilated via open windows. The new extension will provide five classrooms, a nursery play room, an early years courtyard and various other ancillary areas.

The acoustic requirements for internal noise levels in naturally ventilated spaces are given in BB93 and BB101. BB93 specifies an internal ambient noise limit in teaching rooms from non-school related activity of 35 dB $L_{Aeq,30min}$

BB101 has introduced a relaxation to the noise levels given in BB93 on the basis of the difficulties in finding sites quiet enough for natural ventilation. Specifically the internal limits in BB93 apply with underlying background ventilation provided (3 litres/second/person); higher ventilation and a higher noise level 5 dB above the BB93 value applies at a ventilation rate of 8 l/s/p for natural ventilation only.

Therefore, for classrooms here the limits are:

- Background Ventilation (3 l/s/person) L_{Aeq} 35 dB;
- Higher Ventilation (8 l/s/person) L_{Aeq} 40 dB

This technical memo presents our assessment of internal noise levels with respect to the BB93 and BB101 internal limits based on the results of external noise measurement survey and the provision of ventilation via open windows.

2 EXTERNAL AND INTERNAL NOISE LEVELS

External noise measurements were obtained during a site survey conducted on 24th September 2014 at Ringmer Primary School.

2.1 External noise survey procedure

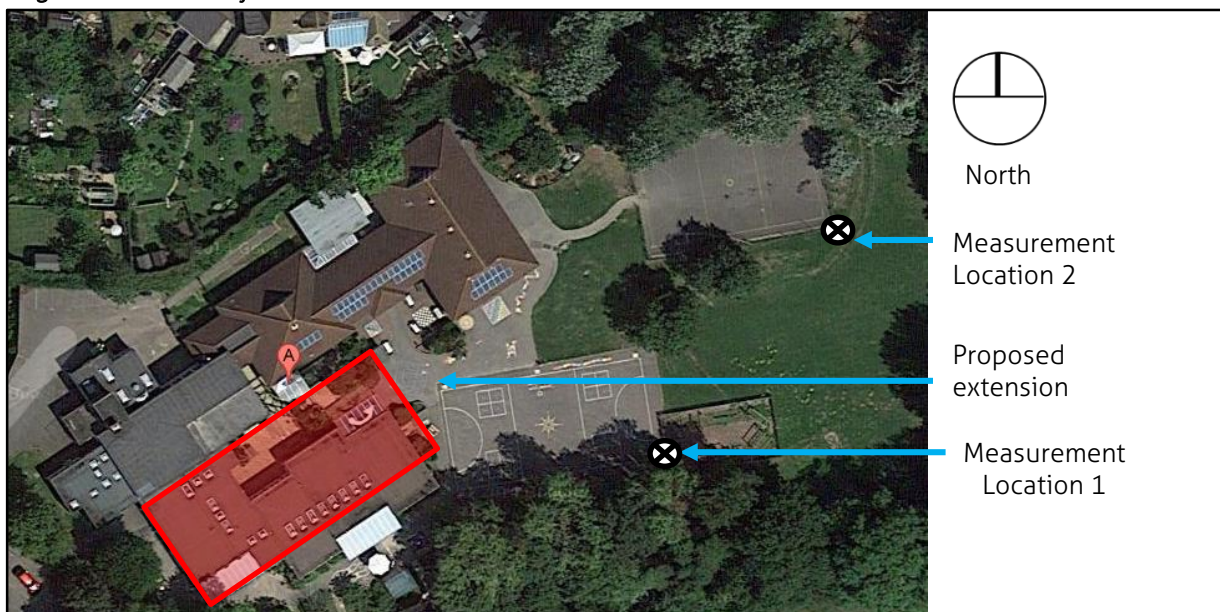
The survey was conducted using a Rion NL-52 sound level meter. The meter was calibrated before and after the measurements using a Rion NC-74 calibrator with no significant drift observed.

Short term noise measurements of 15 minutes duration were made between 17:30 and 18:00 hrs on 24th September 2014 at locations shown in Figure 2.1 below.

Weather conditions during the survey were dry with negligible winds.

The survey was conducted during term-time but there were no after-school activities on the day of monitoring and therefore no school activities interfered with the noise measurements.

Figure 2.1: Noise Survey Measurement Locations





2.2 Survey Observations

The area surrounding the school is predominantly residential to the west and north with rural land to the east and south. Ambient noise levels were considered to be very low, governed by distant traffic on the surrounding roads and light wind rustling in the trees.

2.3 External Measurement Survey Results

The results of the survey are summarised in Table 2.1 below.

Table 2.1 Attended External Noise Measurements

Location	Start time Hrs	Duration mins	dB $L_{Aeq,T}$	dB L_{A90}
1	17:30	15	43	40
2	17:45	15	42	39
Average			43	40

The results and observations of the noise survey indicate.

- The main source of external noise was observed to be local traffic on Harrison Lane to the west and distant traffic on the B2192 to the north.
- The average ambient $L_{Aeq,T}$ noise level measured was 43 dB, which has been used in our assessment.

2.4 Internal Noise Levels

Internal noise levels have been calculated with the use of openable windows for ventilation.

Typically an open window has been found to provide around 13 dB(A) sound insulation for a measured external 'free-field' noise level, which implies that with the representative measured external noise level of 43 dB $L_{Aeq,15min}$ the internal levels would be approximately 30 dB L_{Aeq} .

This level is below the BB93 limit for background ventilation of L_{Aeq} 35 dB and significantly below the level for higher ventilation of L_{Aeq} 40 dB for classrooms under the BB101 allowances. Therefore the use of openable windows to provide both background and rapid ventilation throughout the extension should enable compliance with the BB93 internal ambient noise level requirements.

2.5 External School Noise

In relation to noise from playgrounds and outdoor areas BB93 makes the following statements:

Section 1.1.1 (mandatory) states: "The indoor ambient noise level [limit] excludes noise contributions from: teaching activities within the school premises, including noise from staff, students and equipment within the building or in the playground....."

Section 2.8 (non-mandatory) states: "The effect of playground noise on children inside parts of the school near the playground should also be considered as part of the design."

For compliance with BB93 and hence the Building Regulations Part E there is no need to consider the noise of other activity from the school. Therefore it is not addressed further.



2.6 Plant Noise Emissions

It is understood that a new extract fan is to be installed as part of the extension to serve the refurbished kitchen. At this stage of the development exact details of the plant are not available.

Noise emission limits for external plant are not prescribed by BB93, Lewes District Council does not have any specific policies regarding plant noise emission limits. In these instances it is typical to ensure noise emissions from external plant are controlled to 5 dB below the prevailing background noise level at the nearest noise sensitive properties.

The plant will operate during the daytime period only. The results of our noise survey showed that the lowest prevailing background level was 39 dB $L_{AF90,15min}$, so the noise level outside the nearest noise sensitive premises should not exceed 34 dB.

3 SUMMARY

Based on the results of the attended noise survey carried out at the school and resultant predicted internal noise levels the assessment has found that internal ambient noise levels with natural ventilation provided via openable windows should comply with the requirements of BB93 for both the standard and higher ventilation rates.

Noise emission limits have also been suggested for controlling noise from mechanical plant serving the proposed extension to the nearby sensitive properties.