Chartered Building Consultancy

Acoustic South East

Assessment of Auditorium Sound Breakout

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Date: 19/07/2024
Project: J3719
Issue 1

Site: **Performing Arts Centre, Durrington High School**
Client: **Durrington High School**

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CQMS Safety Scheme
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Issue 1	19/07/2024	Original Issue

1 Introduction and Executive Summary

Acoustic South East have been appointed to undertake an assessment of the noise breakout from the new Durrington Performing Arts Centre in order to provide evidence for the discharge of condition 10 of planning consent AWDM/1475/21.

An assessment was carried out on 28th June 2024 to survey the LAeq,5min SPL at the boundary with the nearest noise sensitive receptor (NSR).

The assessment shows that at even the loudest plausible internal SPL operated by the school's auditorium staff from the PA system, the sound was subjectively inaudible at the boundary.

An objective assessment shows also that the LAeq,5min SPL did not change with or without the PA system operating at its loudest level (dictated by the staff for the venue).

The assessment will also show that there is no tonality present from the PA system, when measured at the boundary with the nearest NSR.

The planning condition requiring the SPL from the PA system to be no higher than Leq,5min 45dBA at the boundary is actually moot, as even without the PA system operating, it is Leq,5min = 48dBA and as detailed above, with the PA system operating, this SPL did not change.

The data in this report confirms full compliance with the requirements of Planning Condition 10 set out by the Local Authority and therefore it is considered that this can now be discharged.

2 Context, Noise Criteria & Noise Assessment Methodology

2.1 Context

The Performing Arts Centre at Durrington High School is now complete as an auditorium for use by the school for both assembly and performance purposes.

From discussion with the staff who run the space, performances are not typically loud and certainly not “rock band” type.

To the north of the new auditorium is the school’s multi-use outdoor sports pitch used for sports and PE lessons. To the south and west are other existing elements of the school to which this proposed new performing arts centre adjoins.

To the East, is a small area of school staff car parking and beyond that the nearest Noise Sensitive Receptors (NSR) (houses 251 – 267 Ringmer Road, Durrington).

The figure below shows the NSRs to the right of the proposed site.

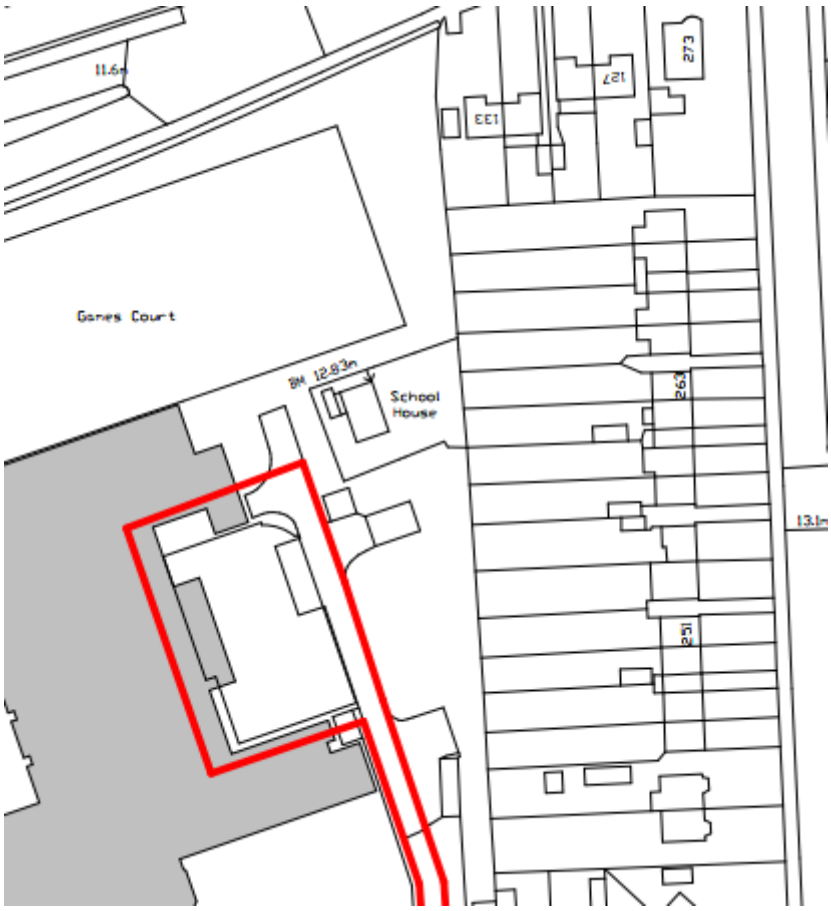

Figure 1: Location Plan showing proposed site and nearest NSRs to the East

The Local Authority require assessment to show that this new auditorium will not provide any increase to the existing ambient sound level for the area and their criteria is below.

2.2 Local Authority Requirement

Planning Condition 10 states the following:

> *Any sound amplifying equipment for music or speech used in the Performing Arts building hereby permitted shall be controlled in volume and bass tone so as not to clearly impact above the existing background noise level at the curtilage of the nearest residential premises. The noise level from the new Performing Arts building shall not exceed 45dB LAeq5mins at the boundary of the site (the 'boundary noise level'). There shall not be any tonal noise associated with the development. Within one month of implementation of the development, a test shall be carried out and the result submitted to the Local Planning Authority to demonstrate compliance with the boundary noise level. Should this test show that the boundary noise level has not been complied with and notwithstanding the development hereby approved, a further scheme of attenuation works capable of achieving the boundary level shall be submitted to and agreed by the Local Planning Authority and completed within 3 months of the installation and thereafter retained.*
>
> ***Reason:** In the interests of amenity and to ensure the use of the site does not have a harmful environmental effect and in accordance with saved policy RES7 of the Worthing Local Plan*

2.3 Methodology

The following methodology will be carried out:

- Two consultants will attend site, one to remain within the auditorium and one to be stationed at the boundary with the nearest NSR.
- The auditorium staff will operate the sound system running program material at a “typical level”, whilst the two consultants measure the A-Weighted Leq,5min sound pressure level internally and at the site boundary.
- The system will then be increased to the SPL that the staff dictate to be the loudest they will run the system and the consultants will repeat the measurements as previously.
- The “outside” consultant will then also measure the existing A-Weighted Leq,5min at the boundary without the sound system running.
- Intentional and Subjective listening will also occur at the boundary to consider if any sound is “audible”.
- Data will be compared and conclusions drawn.

3 Sound Survey Baseline Information

Sound Level Meters were placed within the venue and at the boundary with the nearest NSR in order to measure in line with the requirements of the Local Authority.

3.1 Noise Survey Details

Survey(s) carried out by	Simon Barrett BSc(Hons) MSc MIOA Josh Robinson
Equipment Used	Norsonic Nor118 – Class 1 Sound Level Meter x2
Equipment Used	Norsonic Calibrator Type 1251
Location	Tripod Mounted at 2.1m high (external) / Tripod at 1.8m high (internal)
Grid Co-Ordinates	External Sound Level Meter: 50°49'41" N 0°24'21" W
Date of Survey	28th June 2024

Table 1. Survey Equipment

The sound level meter was calibrated before and after commencing the noise measurements (@114dB with no drift). All measurements were taken with the time base set to 5-minute periods. See the figure below for the survey location.



Figure 2: External Sound Survey Location

3.2 Survey Results

The measurements carried out for the survey are shown in the table below:

Condition	Location	
	Inside Venue LAeq,5min (dB)	External by Boundary LAeq,5min (dB)
PA System – Typical Setting	63.9	48
PA System – Loudest Setting	77.1	47.4
Existing Ambient (Residual)	-	48.7

Table 2: LAeq,5min Measurement Data

As can be seen in the table above, when the sound system was running at the loudest setting, it can be seen that the A-Weighted Leq,5min was actually quieter than the LAeq of the quieter setting and when the system was not running at all.

For the avoidance of doubt, the existing ambient (residual) sound pressure level was that measured with the PA system switched off.

This survey result clearly shows that the ambient noise level is unaffected by the PA system within the new Performing Arts Centre.

Reviewing the frequency profile of the three measurements in table 2, above, it can be seen that there is no tonal element to the ambient noise level readings. It is also clear that in many 1/3rd octave bands the SPL is higher than when the PA system is not operating. This is further evidence to show that the existing ambient noise levels are unaffected by the PA system operation within the new performing arts centre.

The 1/3rd octave band frequency data can be seen in the figure below:

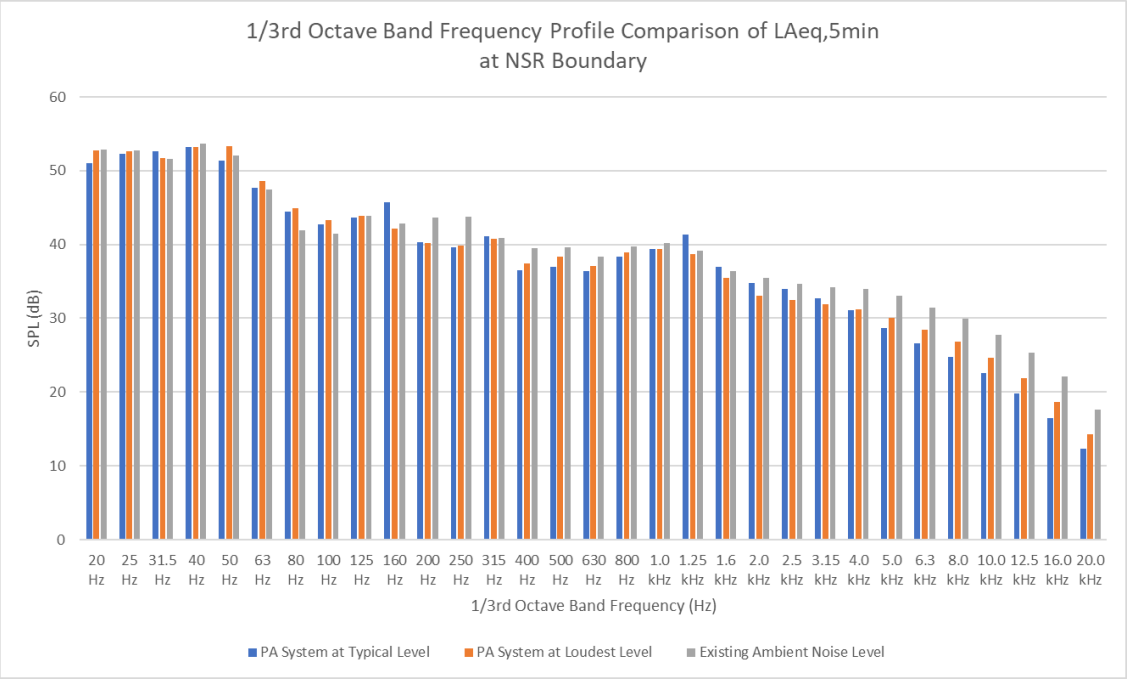

Figure 3: 1/3rd Octave Band Frequency Profiles of the LAeq,5min data

4 Discussion and Conclusion

A noise survey and assessment has been carried out of the 5-minute A-Weighted Leq sound pressure level both inside the new Durrington High School performing arts centre and at the boundary with the nearest NSR.

The Leq sound pressure levels have been compared against each other and it is clear that there is zero change to the SPL at the boundary – indeed the existing ambient sound level was higher than when the PA system was running at its loudest setting.

Comparison of the 1/3rd octave band frequency profiles have also been carried out and the graph in figure 3 shows how there is no tonality present.

The data in this report confirms full compliance with the requirements of Planning Condition 10 set out by the Local Authority and therefore it is considered that this can now be discharged.