

CPI Coxon Building Expansion
BREEAM 2018 Pol 05 assessment

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Revision A



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2 Summary

- 2.1 This report presents the results of the noise survey and sets plant noise limits for the proposed CPI Coxon Building Expansion.
- 2.2 Measurements of the existing noise environment were made over a 92-hour period.
- 2.3 Background sound levels have been determined for daytime and night-time BS 4142 assessment periods based on statistical analysis.
- 2.4 At this stage in the development, mechanical plant specifications are unavailable, plant noise limits for the cumulative impact of all proposed plant at the development are proposed to reduce the risk of an adverse impact.
- 2.5 It is proposed that the cumulative impact from all the fixed plant should not exceed 5 dB below the background sound levels at the development when rated according to BS 4142.
- 2.6 Should fixed mechanical plant run continuously throughout a 24-hour day, the suggested upper limits during the night-time assessment should be used as the design limit.

3 Introduction

- 3.1 A development consisting of the expansion of the CPI Coxon Building has been proposed at CPI, Sedgefield.
- 3.2 The site location is shown in Figure 1 and Figure 2.
- 3.3 Apex Acoustics has been commissioned to undertake a noise survey and determine suitable noise limits for fixed mechanical plant associated with the development to achieve the BREEAM 2018 Pol 05 credit.
- 3.4 The scope of our instructions includes:

Measurement of the existing noise environment at a location representative of the nearest noise sensitive receptors;

Determine background sound levels based on measurement data; and

Determine upper noise limits for fixed mechanical plant following the guidance of BS 4142, Reference 1 and the BREEAM 2018 Pol 05 design criteria.

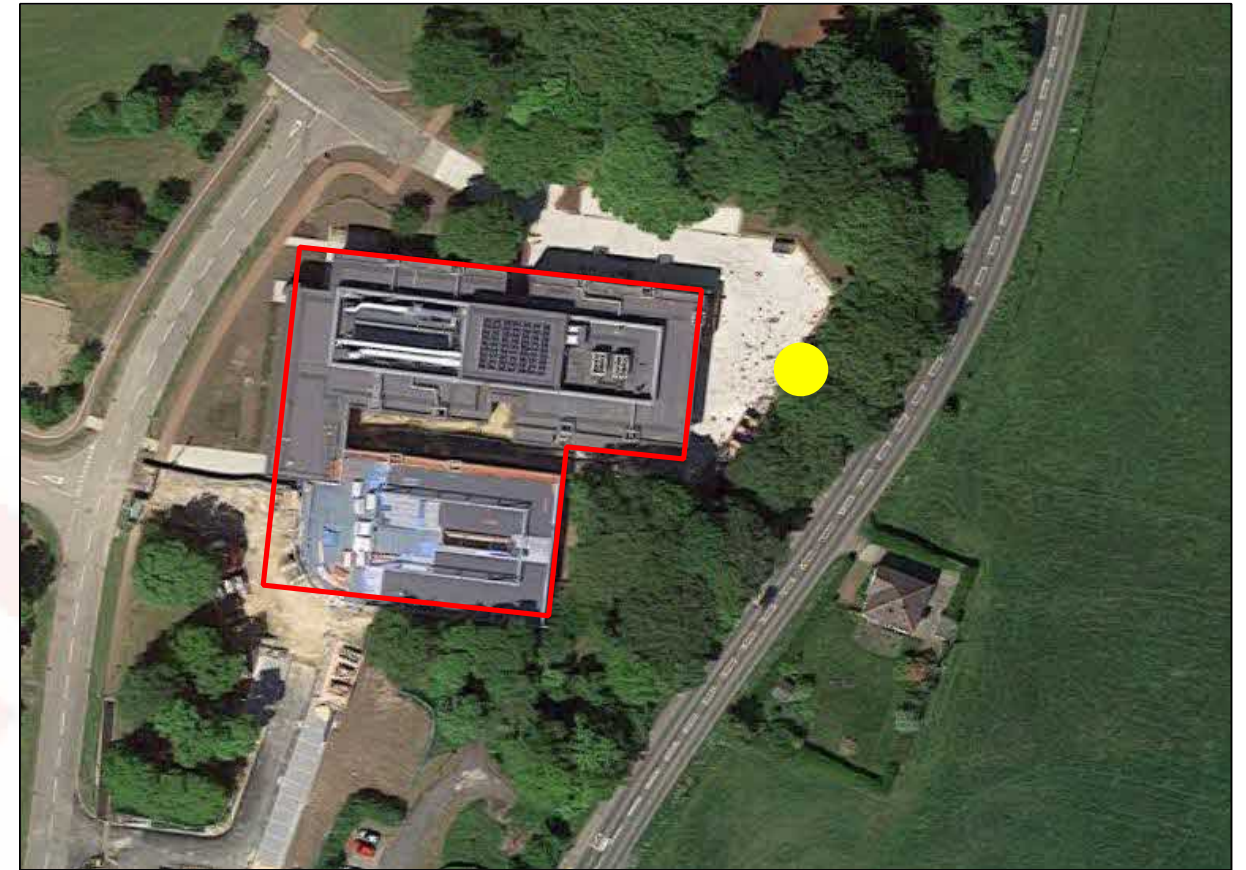


Figure 1: CPI Coxon site outlined in red and measurement position indicated by yellow marker

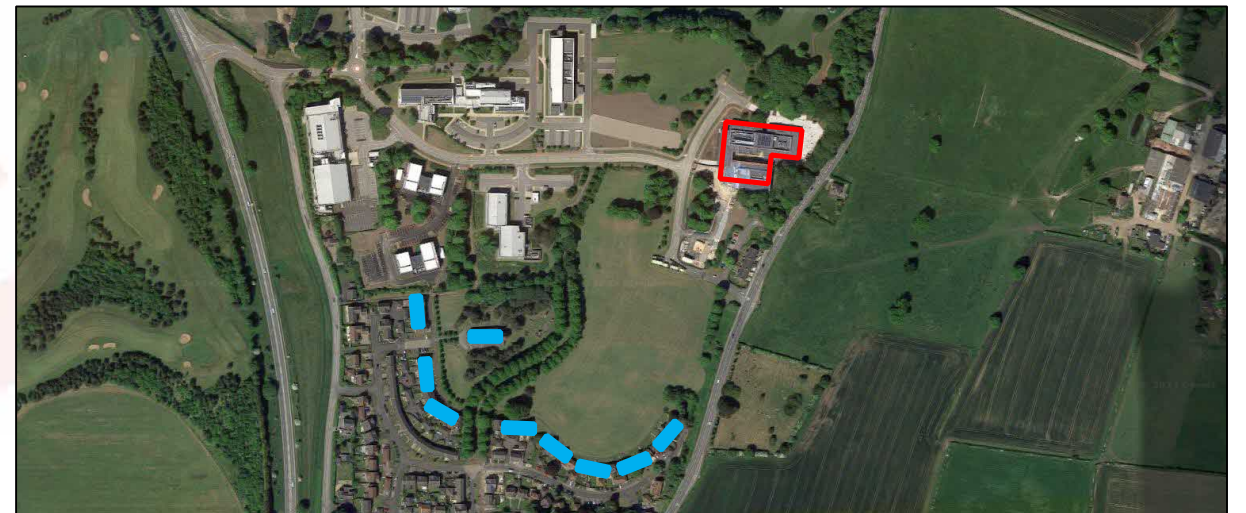


Figure 2: CPI Coxon site in red and identified NSRs in blue

4 BREEAM 2018 Pol 05 criteria

- 4.1 BREEAM credit Pol 05 Reduction of noise pollution is targeted for the development.
- 4.2 The Pol 05 section of BREEAM 2018 indicates a set of five assessment criteria, as outlined in Table 1. Where criterion 1 is not achieved, all of the criteria between 2 and 5 must be achieved to be awarded the credit.

Assessment criterion	Requirement
1	Where there are, or will be, no noise-sensitive areas or buildings within 800 m radius of the assessed site then the credit can be awarded by default.
2	Where there are noise-sensitive areas within the assessed building or noise-sensitive areas within 800 m radius of the assessed site, a noise impact assessment complaint with BS 4142:2014 is commissioned. Noise levels must be measured or determined for: <ul style="list-style-type: none"> a. Existing background noise levels: <ul style="list-style-type: none"> a.i. at the nearest or most exposed noise-sensitive development to the proposed assessed site a.ii. including existing plant on a building, where the assessed development is an extension to the building b. Noise rating level from the assessed building.
3	The assessment must be carried out by a suitably qualified acoustic consultant with a recognised acoustic qualification and membership of an appropriate professional body. The credit identifies the Institute of Acoustics as the primary professional body for acoustics in the UK.
4	The noise level from the proposed site/building, as measured in the locality of the nearest or most exposed noise-sensitive development, must be at least 5 dB lower than the background noise throughout the day and night.
5	Where the requirements of criterion 4 are not met, to award the credit it must be shown that measures have been installed to attenuate the noise at its source to a level where it will comply with criterion 4.

Table 1: BREEAM 2018 Pol 05 criteria

5 Professional qualifications and competence

- 5.1 All Apex Acoustics consultants work under the close supervision of a Member of the Institute of Acoustics (MIOA) who holds recognised qualifications in acoustics.
- 5.2 The reviewer of this report fulfils BREEAM criteria for a suitably qualified acoustic consultant. This can be verified by searching the Institute of Acoustics list of Members, available at: www.ioa.org.uk/membership-check.

6 Existing acoustic environment

- 6.1 The existing acoustic environment was measured over a 92-hour period from 15:00 hours on the 9th March 2023.
- 6.2 The measurement positions are shown in Figure 1.
- 6.3 The microphone was located 2.5 metres above ground level and away from other reflecting surfaces such that the measurements are considered free-field.
- 6.4 Data was recorded in single-octave band frequencies at one-second intervals throughout the 92-hour measurement period.
- 6.5 The most significant noise source was road traffic noise.
- 6.6 The equipment used is listed in Table 2.

Equipment	Model	Serial no.
Sound Level Meter	NTi XL2	A2A-14205-E0
Calibrator	Larson Davis CAL 200	15308

Table 2: Equipment used

- 6.7 Both meter and calibrator have current calibration certificates traceable to national standards. The sound level meter has been calibrated within the last two years and calibrator has been calibrated within the last year in accordance with the guidance of BS 4142; calibration certificates are available on request.
- 6.8 The equipment was field-calibrated before and after the measurements with no significant drift in sensitivity noted.

6.9 Background noise levels

- 6.10 The background sound level, $L_{A90, T}$ is calculated from the L_r , $L_{Aeq, T}$.
- 6.11 Statistical analysis is undertaken of the results of all the $L_{A90, T}$ data following the guidance of BS 4142, to determine a background sound level considered to be representative of the assessment period.
- 6.12 Based on the statistical analysis results, the background sound level considered representative of the daytime and night time assessment periods are shown in Table 3.

Position	Assessment period	L_{A90} (dB)
Position 1	Daytime (07:00 – 23:00 hrs)	52
	Night time (23:00 – 07:00 hrs)	49

Table 3: Background sound levels representative of the assessment periods

7 Proposed plant noise rating level limits

- 7.1 The background noise levels at the nearest noise sensitive receptors have been determined.
- 7.2 It is proposed that the noise rating levels from plant associated with the CPI Coxon Building Expansion do not exceed 5 dB below the measured background noise levels in order to eligible to be awarded the credit.
- 7.3 Therefore, the rating level should not exceed 47 dB during the daytime and 44 dB during the night-time.

Assessment period	Plant noise limits
Daytime (07:00 – 23:00 hours)	47
Night-time (23:00 – 07:00 hours)	44

Table 4: Proposed plant limits

8 Conclusion

- 8.1 This report presents the results of the noise survey and sets limits for plant associated with the CPI Coxon Building Expansion.
- 8.2 At this stage in the development, mechanical plant specifications are unavailable; plant noise limits for the cumulative impact of all proposed plant at the development are proposed to reduce the risk of an adverse impact.
- 8.3 Limits are set based on the BREEAM 2018 Pol 05 criteria and the development should be eligible for the credit upon achieving the proposed limits.

9 References

- 1 BS 4142: 2014, Method for rating and assessing industrial and commercial sound.

Appendix A Residual and background sound levels

A.1 Residual sound level time history, $L_{Aeq,5-min}$

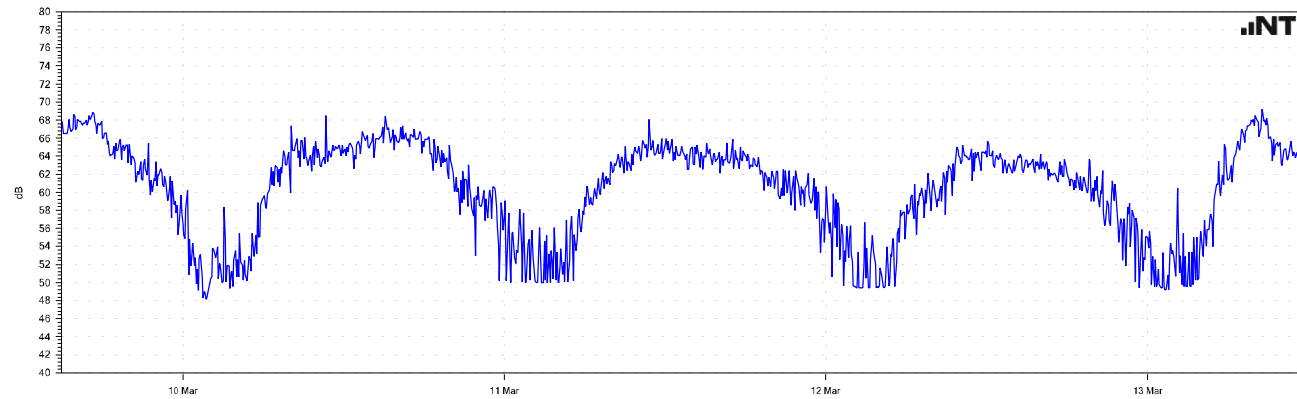


Figure 3: Residual sound level time history, $L_{Aeq, 5-min}$ (dB) shown as blue

A.2 Analysis to determine the typical background sound level representative of the daytime and night-time period is undertaken following the guidance of BS 4142, with results shown in Figure 4 and Figure 5 respectively.

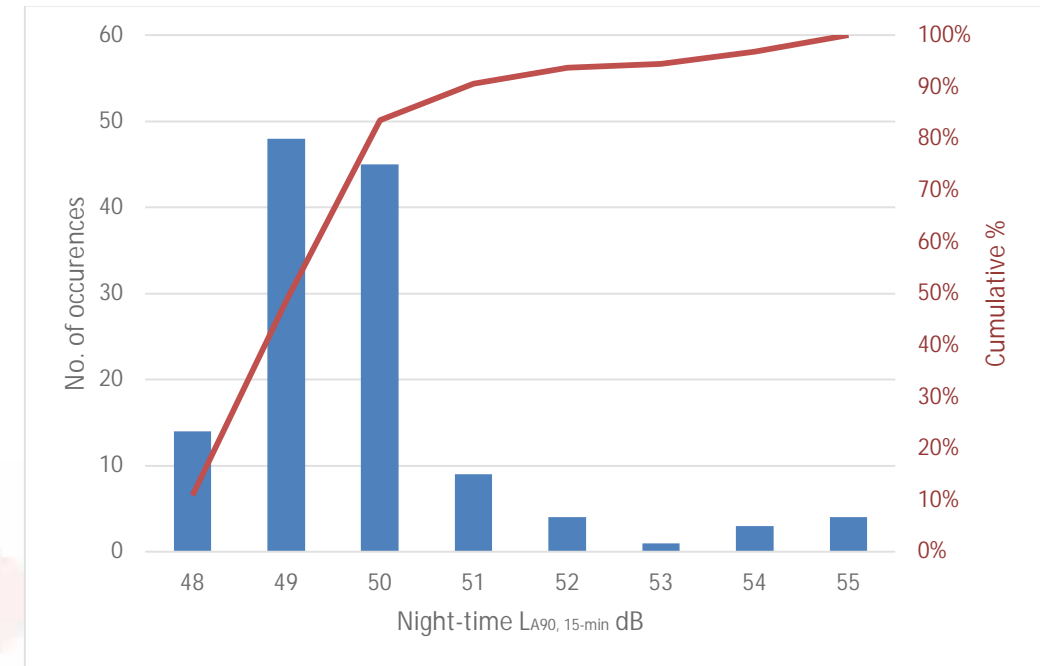


Figure 5: Analysis of night-time background levels, $L_{A90, 15-min}$

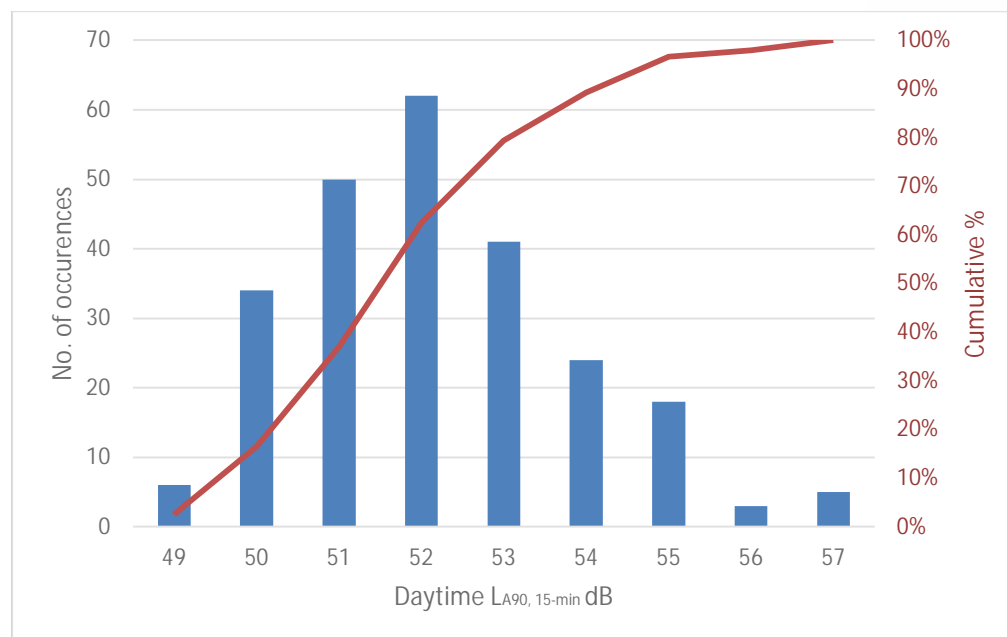


Figure 4: Analysis of daytime background levels, $L_{A90, 15-min}$