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Technical Report: Acoustics

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Report No – 14947C-R1 TR
Client – Balfours
Site - Shawbury 004 (Alternative Site) Comparison

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2. Scope

- 2.1.1. This report details the observations with respect to noise impact, noise sources, acoustics, building envelope sound insulation and mitigation.
- 2.1.2. The report assumes standard practice prevails in selection of treatments and applies a risk based assessment on the mitigation options.

3. Introduction

3.1. Introduction

3.1.1. The client requires a technical assessment and comparison of their existing application site with an alternative site denoted as SHAW004. See below:

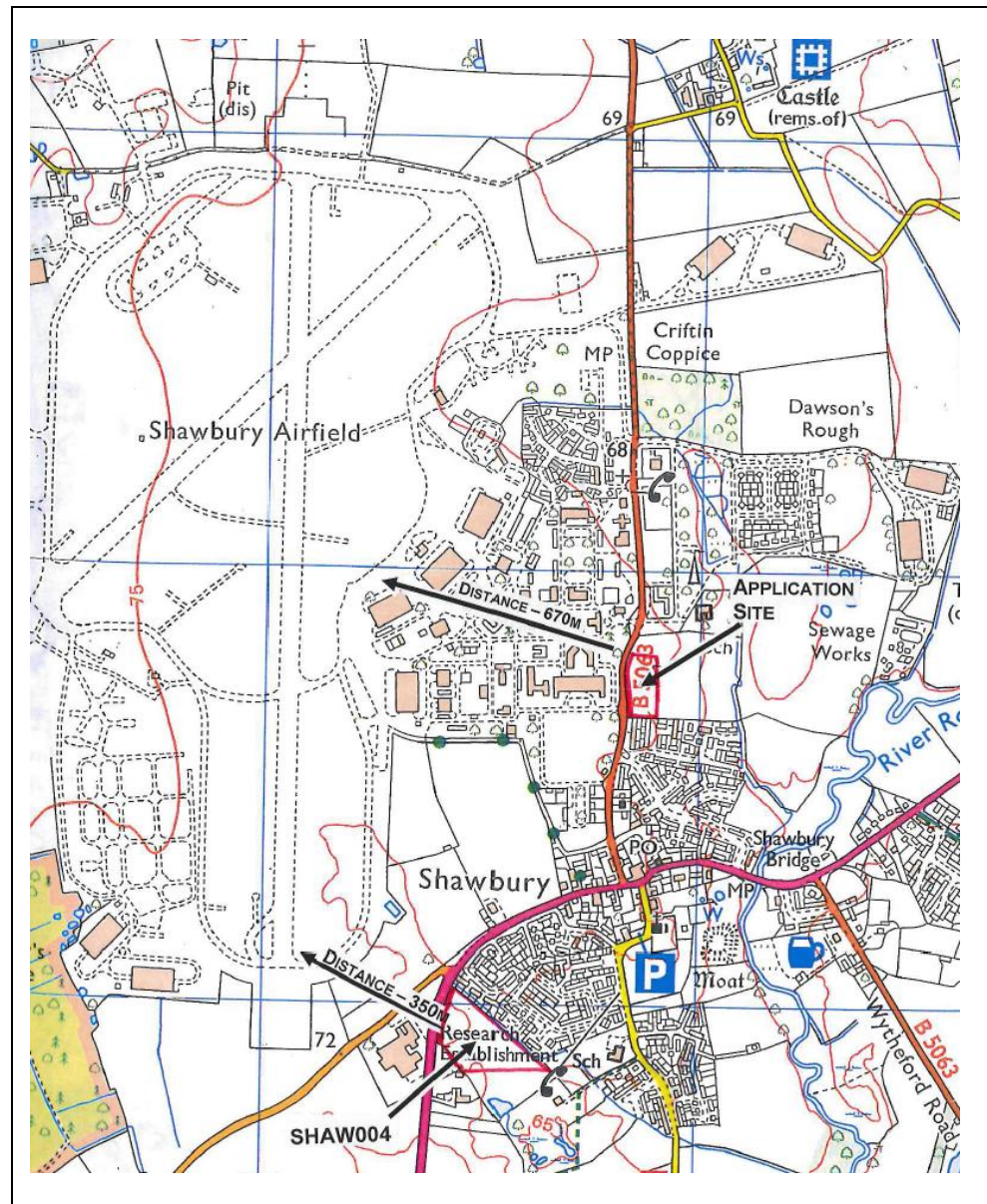


Figure 1: Site Location Plan Application Site and SHAW004 Alternative.

3.2. Noise Sources

3.2.1. The noise sources are as follows:

- Environmental sources – Anonymous noise from transportation sources e.g. surrounding roads
- Specific noise from RAF Shawbury: Overhead flight noise

3.2.2. Day and night time measurements have been made on both sites. The noise monitoring positions for the application site are No 1 & 2 and for the alternative site SHAW004 are 3 & 4. These are detailed below:

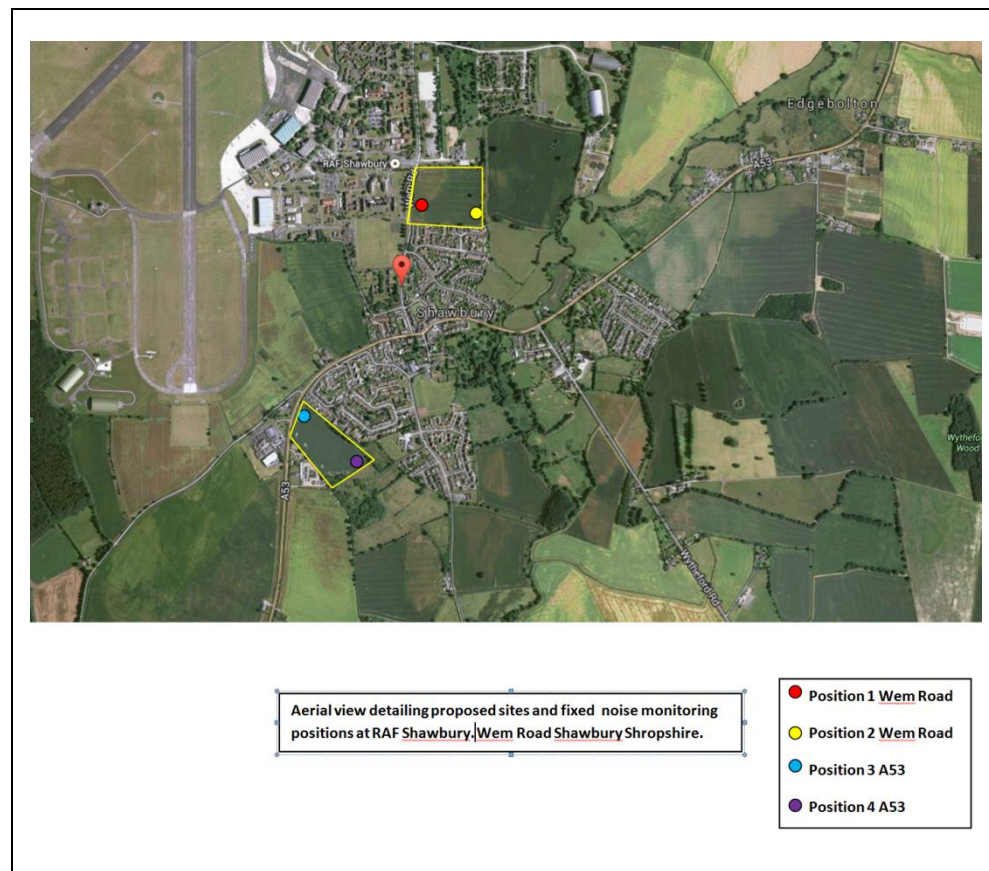


Figure 2: Noise Monitoring Positions

3.3. Noise Results

3.3.1. Simultaneous noise monitoring took place between 16th – 23rd February on the Application site and the alternative site (SHAW004).

3.3.2. The noise results are as follows:

3.3.3. Application Site: Position 1 & 2: Alternative Site **SHAW004** Position 3 & 4.

3.3.4. The day time levels are detailed as a 16 hour average, the night time as an 8 hour average and an L_{Amax} level.

| Result ID | Measurement | Quantity | Inclusive Hours | SPL (dB) |
|-----------|-------------|-----------------------|-----------------|----------|
| 1 | Pos 1 | L _{Aeq,16hr} | 0700-2300 | 62.7 |
| 2 | Pos 1 | L _{Aeq,8hr} | 2300-0700 | 51.5 |
| 3 | Pos 1 | L _{Amax,T} | 2300-0700 | 79.2 |
| 4 | Pos 2 | L _{Aeq,16hr} | 0700-2300 | 60.5 |
| 5 | Pos 2 | L _{Aeq,8hr} | 2300-0700 | 45.5 |
| 6 | Pos 2 | L _{Amax,T} | 2300-0700 | 74.4 |
| 7 | Pos 3 | L _{Aeq,16hr} | 0700-2300 | 60.3 |
| 8 | Pos 3 | L _{Aeq,8hr} | 2300-0700 | 47.1 |
| 9 | Pos 3 | L _{Amax,T} | 2300-0700 | 75.4 |
| 10 | Pos 4 | L _{Aeq,16hr} | 0700-2300 | 65.3 |
| 11 | Pos 4 | L _{Aeq,8hr} | 2300-0700 | 59.1 |
| 12 | Pos 4 | L _{Amax,T} | 2300-0700 | 84.6 |

Table 1: Noise Monitoring Position 1 & 2 - Application Site

3.3.5. It is noted that position 1 & 3 represent the proposed facade locations closest to the adjacent roads and are nearest facades to RAF Shawbury on each site. Positions 2 & 4 are the back of site locations i.e. furthest away from the nearest roads and RAF Shawbury. Each pair of positions is compared below.

3.4. Comparison of results

3.4.1. The noise measurement data can be compared based on the road frontage positions and the back of site positions. The difference is detailed in the table below:

| Pos 1-3 (dB) | Pos 2-4 (dB) |
|-----------------|-----------------|
| 2.4 | -4.8 |
| 4.4 | -13.6 |
| 3.8 | -10.2 |

3.4.2. In this case the road frontage property on the Application site have higher sound pressure levels between 2 – 4dB(A) L_{Aeq,T} day and night time respectively and 4dB higher L_{Amax} higher due to road noise than those on the Alternative Site SHAW004:

3.4.3. The site sound pressure levels on the Alternative site are between 5 – 13dB(A) L_{Aeq,T} day and night time and 10dB higher L_{Amax} higher at the rear of site (away from roads) than the Application site.

4. Conclusions

- 4.1.1. Simultaneous noise monitoring took place between 16th – 23rd February on the Application site and the alternative site (SHAW004).
- 4.1.2. The data indicated that road noise is dominant on the road frontages to both the application and alternative (SHAW004) sites and this dictates the glazing at these locations.
- 4.1.3. The rear of the Application site is relatively quiet due to the distance from the road and only a modest glazing specification is required.
- 4.1.4. By contrast the rear of SHAW004 (the alternative site) is adversely affected by aircraft noise (helicopter and fixed wing) as it is close to the access gate flight path for the runways at RAF Shawbury and subsequently is overflowed regularly during the normal operation of the RAF base. In addition the measured LAeq,T between 0700-2300 (Daytime), indicates the likelihood of further increased noise levels in garden and amenity areas outside of the WHO guidelines of 55dB LAeq,T.

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