

Project

Alder Park
Noise Impact Assessment

Prepared for

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By

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Version History

| Version | Date | Comments |
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| P1 | 19/11/2020 | - |
| P2 | 24/11/2020 | Updated site layout |
| P3 | 30/06/2021 | Update assessment with the latest layout. Update project title |

Summary

SRL Technical Services Limited has been commissioned by Stanley Bragg Architects Ltd to assess the acoustic impact a proposed office / light industrial development will have on the nearest noise sensitive receptors. My assessment considers:

- Noise from the car park of the development
- Noise from fixed mechanical services
- Noise breaking out of the building of the development

My assessment showed that noise from the development is expected to be below the typical background noise levels at the site and therefore expected to have a low impact on local noise sensitive receptors.

I have proposed cumulative plant noise limits to be met at the nearest noise sensitive receptors as below

- Daytime (07.00hrs to 23.00hrs): **35 dB L_{Aeq}**
- Night time (23.00hrs to 07.00hrs): **30 dB L_{Aeq}**

In my opinion noise from the site is not a cause for concern provided that my recommended plant noise limits are adhered to.

Tom Rusby

For and on behalf of

SRL Technical Services Limited



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1.0 Introduction

Planning permission has been granted for two new offices on land adjacent to Harwich Road in Little Bentley (appeal ref: APP/P1560/W/19/3226387). The client has had pre-application discussions with Tendring Council planning officers regarding changes to the scheme, including the addition of four additional buildings resulting in a site with approximately 3500 m² of floor area over six buildings, with 116 parking spaces. No building is more than two storeys tall.

The land on Harwich Road is surrounded by empty parcels of land, the closest noise sensitive receptor is the residential property at Clip Hedge Farm to the north of the site. The A120 runs approximately 170 m to the north of the site. The noise environment is dominated by traffic on these two roads.

The approximate boundary of the site in relation to the two main roads and the nearest noise sensitive receptor is shown in Figure 1.1. The site layout is shown in Figures 1.2 and 1.3.

Figure 1.1 - Approximate site boundary



Figure 1.2 - Site layout



Figure 1.3 - Site layout (aerial)



2.0 Criteria

2.1 BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'

BS 4142 "Methods for rating and assessing industrial and commercial sound" describes methods for rating and assessing noise from new industrial and commercial noise sources against the existing noise climate.

BS 4142 defines the noise source assessed as the 'specific' noise. This would be any new external plant items serving the development. When comparing the specific noise against existing background levels, BS4142 highlights that certain acoustic features (tonality, impulsivity, intermittency etc.) can increase any significance of impact and penalties should be applied to the specific noise level, in accordance with the guidance in BS4142, to provide the Rating Level of the noise source.

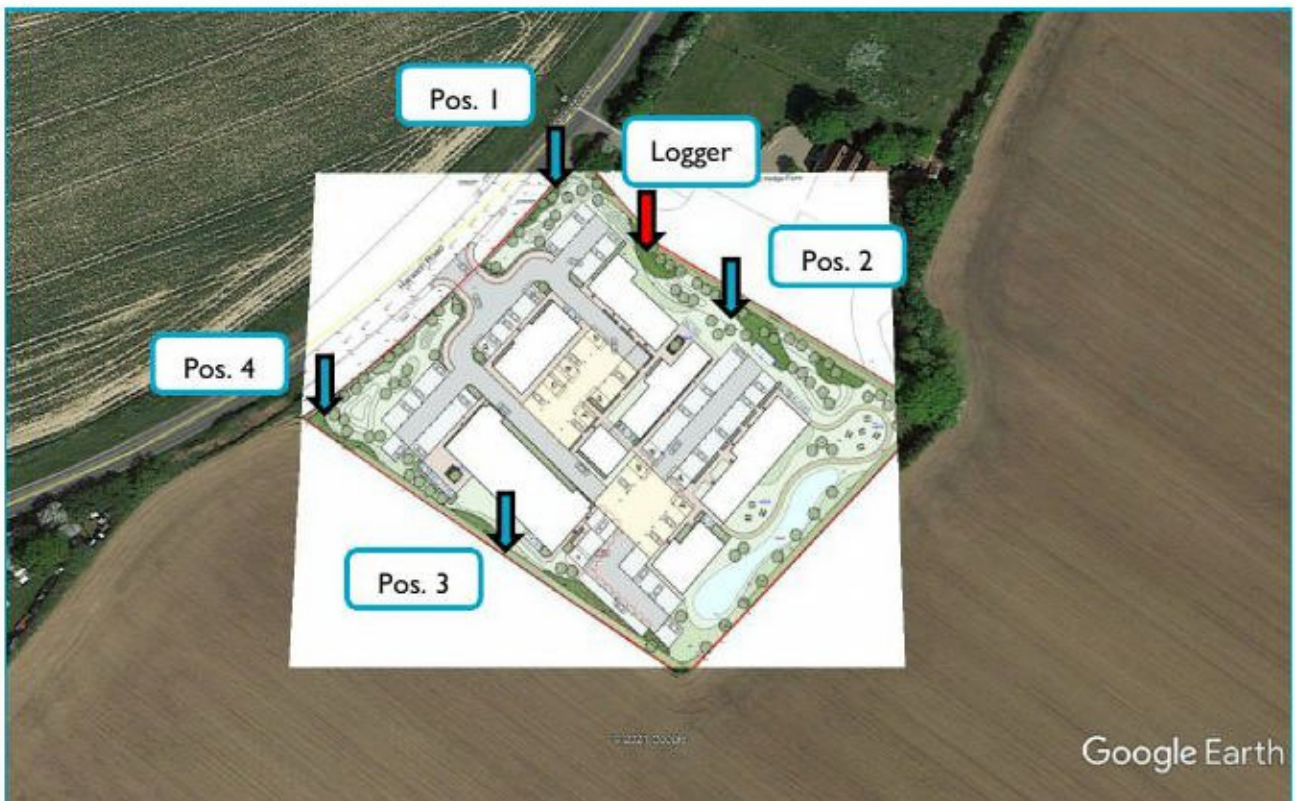
Comparison of the Rating Level to background noise level indicates the significance of the new noise source at the receptor under assessment. If the Rating Level is higher than the background noise level, then there may be an impact:

- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

3.0 Noise Survey

SRL measured noise levels around the site on the 4th November 2020 (just before the second Covid-19 lockdown) to determine the existing environmental noise levels around the site. Figure 3.1 shows the measurement locations in relation to the proposed development. All measurements were taken approximately 1.5m from ground level and in free-field conditions.

Figure 3.1 - Noise measurement locations



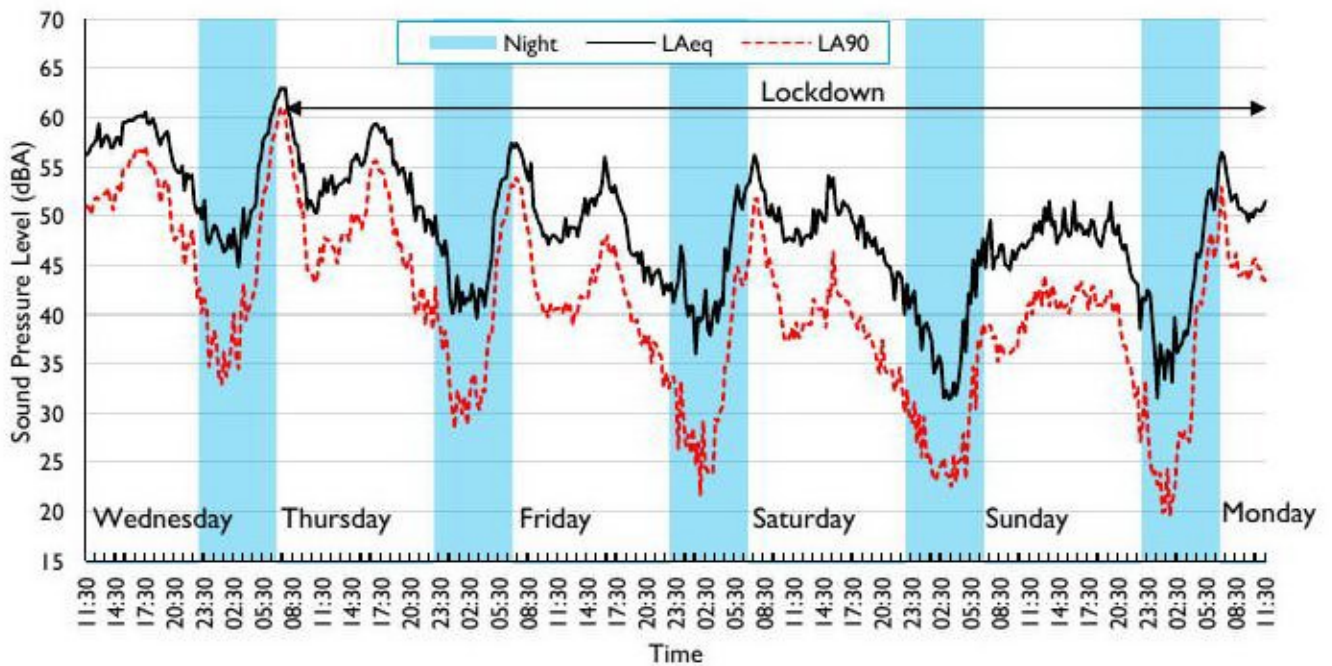
Positions 1 to 4 were attended measurements between 11:00 and 14:00. The position marked 'logger' was an unattended noise monitor that recorded noise levels at the site between the 4th to 9th November to capture the evening and weekend noise levels.

Noise levels at the site were dominated by constant traffic flow on Harwich Road, and noise from the A120 was clearly audible in the background during lulls of traffic. Table 3.1 shows the typical noise levels at each position, Figure 3.2 shows the logger data between the 4th to 9th November.

Table 3.1 - Typical attended noise levels (daytime)

| Position | L _{Aeq} | L _{A90} |
|----------|------------------|------------------|
| 1 | 65 | 51-52 |
| 2 | 55-57 | 50-52 |
| 3 | 51-55 | 47-51 |
| 4 | 63-64 | 49-53 |

Figure 3.2 - Noise logger data Wednesday 4th to Monday 9th November



4.0 Assessment

4.1 Noise from traffic

The proposed site consists of six buildings as shown in Figure 4.1. The site is designed in such a way that the majority of noise generated by the internal access roads and car parking will be shielded by the buildings.

Figure 4.1 - Proposed site layout



I understand that the buildings will be in use between 07:00 and 18:00 Monday to Friday, 09:00 to 16:00 on Saturdays, and closed Sundays and Bank Holidays.

I have calculated noise from a worst-case scenario of 116 cars entering the site (representing 100% of the car park) within a half hour duration. My calculations show that noise levels at the boundary of the nearest noise sensitive receptor as a result of cars arriving/departing at the site to be approximately **37 dBA $L_{Aeq,30min}$** . To put this into context, the lowest daytime background noise levels outside of rush hour were measured at around 11:30 on a Saturday during lockdown, at **47 dBA L_{Aeq}** and **37 dB L_{A90}** . It's therefore reasonable to assume that noise from the car park is expected to be largely inaudible at the nearest noise sensitive receptor.

4.2 Noise from fixed plant

As specific plant details are unknown at this stage, I have proposed noise limits for any fixed plant and equipment associated with the proposed development in accordance with BS 4142:2014+A1:2019. I propose that the rating level is equivalent to the existing typical background L_{A90} background noise level measured at the nearest noise sensitive receptors, in this case the residential dwelling to the north of the site.

As noted above, the rating level is the actual noise level of the plant plus any character "corrections" in accordance with BS 4142. Certain acoustic characteristics (such as tones, bangs, hisses, etc) carry "penalties" which are added to the noise level to determine the rating level. At least some of these penalties are likely to apply to most types of plant noise.

The typical background noise levels measured at locations representative of the nearest noise sensitive property are:

- Daytime (07.00hrs to 23.00hrs): 40 dB L_{A90}
- Night time (23.00hrs to 07.00hrs): 33 dB L_{A90} *

**These noise levels were recorded before the second Covid-19 lockdown. Noise levels less than these were recorded after the 5th of November, however as these were recorded after lockdown, these are non-typical.*

To comply with our proposed plant noise criterion, the rating level of plant must not exceed 40 dB $L_{A,r,Tr}$ during the daytime and 30 dB $L_{A,r,Tr}$ during the night-time.

For the purpose of noise control design for building services and taking account of the expected characteristics of the noise from plant, the cumulative noise limits at the nearest noise sensitive receptor for building services plant associated with the proposed development are:

- Daytime (07.00hrs to 23.00hrs): **35 dB L_{Aeq}**
- Night time (23.00hrs to 07.00hrs): **30 dB L_{Aeq} ****

***Whilst the background is very low, there is no benefit to controlling plant to less than 30 dBA during the night as at this level it is expended to be inaudible inside a bedroom ventilated by open windows.*

These are the total levels of plant noise with all plant running and they incorporate a 5 dB rating penalty in accordance with BS 4142 (2 dB for a tone where it is just perceptible at the noise receptor and 3 dB for intermittency).

The building services engineer and the hardware suppliers can use these limits for their designs. Please note that the characteristics of the plant noise will need to be assessed when specific details of the plant are known, and therefore the noise limits given may change.

4.3 Noise break out

I have assessed the noise break out from Block B (indicated by the blue rectangle in Figure 4.2) to outdoor amenity space of the nearest noise sensitive receptor. I have assumed a worst-case internal reverberant level of 80 dB L_{Aeq} . This internal noise level is typical of a busy chain restaurant. I consider this noise level above what you would expect in a Class E building. My assessment also assumes the buildings will be naturally ventilated using open windows.

I have calculated that with internal noise levels of 80 dBA, the resulting noise level at the property boundary of the nearest noise sensitive receptor will be **30 dBA**. This is 10 dBA lower than the typical daytime L_{A90} background noise level. Therefore, noise breaking out of the buildings is expected to be largely inaudible at the nearest noise sensitive receptor.

Figure 4.2 - Proximity of the nearest building to the noise sensitive receptor



Appendix A - Survey Details

A1. Location of Survey

Harwich Road CO6 8SZ

A2. Date & Time of Survey

Attended 4th November 2020 11:20 to 14:00

Unattended 4th November 2020 11:15 to 9th November 11:30

A3. Personnel Present During Survey

Tom Rusby (SRL Technical Services Ltd)

A4. Weather Conditions during Survey

10°C, clear calm and dry with no cloud cover

A5. Instrumentation

| Description | Location | SRL No. | Make | Type | S/N |
|-------------------------------------|----------|---------|--------------|--------|---------|
| Sound Level Analyzer (HT2, Blue) | Holbrook | 850 | Brüel & Kjær | 2250 | 3007898 |
| Preamplifier | Holbrook | 852 | Brüel & Kjær | ZC0032 | 19790 |
| Microphone | Holbrook | 951 | Brüel & Kjær | 4189 | 3130789 |
| Calibrator | Holbrook | 692 | Brüel & Kjær | 4231 | 2438805 |

| Description | Location | SRL No. | Make | Type | S/N |
|---------------------------------|----------|---------|---------------|-----------|---------|
| Sound Level Meter (HL2, Purple) | Holbrook | 779 | Norsonic | Nor 140 | 1404737 |
| Calibrator | Holbrook | 169 | Brüel & Kjaer | Type 4230 | 1541905 |
| Pre-amp | Holbrook | 779 | Norsonic | Type 1209 | 13919 |
| Microphone | Holbrook | 779 | Norsonic | Type 1225 | 128712 |
| De-humidifier | Holbrook | 779 | Norsonic | Type 1284 | 330 |

A6. Calibration Procedure

Before and after the survey the measurement apparatus HT2 was check calibrated to an accuracy of ± 0.3 dB using the type 4231 Sound Level Calibrator. The Calibrator produces a sound pressure level of 93.8 dB re 2×10^{-5} Pa at a frequency of 1 kHz.

Before and after the survey the measurement apparatus HL2 was check calibrated to an accuracy of ± 0.3 dB using the type 4230 Sound Level Calibrator. The Calibrator produces a sound pressure level of 93.8 dB re 2×10^{-5} Pa at a frequency of 1 kHz.

Appendix B - Measured Ambient Noise Levels

| Position | Time | L _{Aeq} | L _{A90} |
|----------|-------|------------------|------------------|
| 1 | 11:26 | 65 | 51 |
| | 12:17 | 65 | 51 |
| | 13:09 | 65 | 52 |
| 2 | 11:37 | 55 | 50 |
| | 12:28 | 56 | 51 |
| | 13:21 | 56 | 52 |
| 3 | 11:51 | 51 | 47 |
| | 12:42 | 53 | 49 |
| | 13:32 | 55 | 51 |
| 4 | 12:05 | 63 | 49 |
| | 12:56 | 64 | 52 |
| | 13:47 | 64 | 53 |

Appendix C - Noise Measurement Parameter Definitions

- L_{A90} - The "A" weighted sound pressure level that is exceeded for 90% of the measurement period. It is commonly used as the "Background Noise Level".
- L_{Aeq} - The "A" weighted equivalent continuous sound pressure level. A representation of a continuous sound level containing the same amount of sound energy as the measured varying noise, over the measurement period. It can be considered as the "average" noise level.

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