

Project

56 High Street, Bognor Regis

Prepared for

Reynolds Limited

By

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Summary

SRL Technical Services Limited has been commissioned by Reynolds Limited to do a noise survey at 56 High Street in Bognor Regis. A pre-application has been submitted to convert the first-floor space and additional two floors to include nine flats. The ground floor space will remain as a commercial space.

As part of the renewable energy strategy a heat recovery unit is proposed on the roof.

Without any noise-related planning condition, I have based my assessment on the guidance in BS4142:2014. I have also made the following assumptions:

- Plant will operate at any time.
- Plant will be located in the middle of the roof.
- Nearest noise sensitive receptor is the proposed flat on the third floor.

To minimise the noise impact, the total plant noise should not exceed a sound pressure level of 62 dB(A) when measured at 1 metre from the plant or enclosure.

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For and on behalf of

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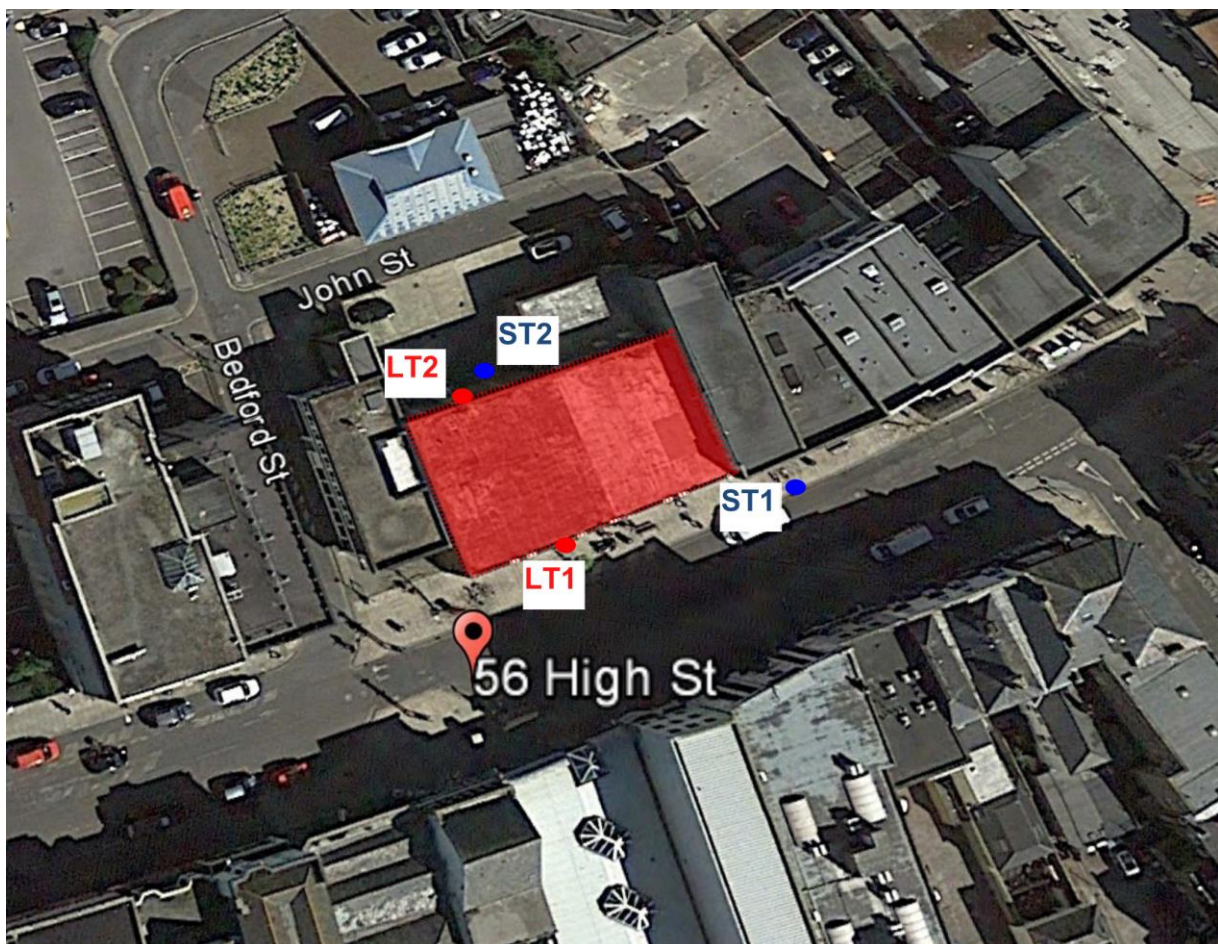
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1.0 Introduction

Reynolds Limited are proposing to develop the existing building at 56 High Street in Bognor Regis. The proposal will include changing the use of the first-floor space to include three flats and adding six additional flats over two floors.

The noise at the front of the site is dominated by road traffic from the High Street and the back of the site is generally quiet. We measured noise at the front and back of the site at first floor locations marked as LT1 and LT2, leaving automatic noise logging equipment for 5 days. We also did attended short term measurements, at 1.5m above ground level, marked as ST1 and ST2 in figure 1.

Figure 1: Site location and noise measurement positions



As part of the renewable energy strategy a heat recovery unit is proposed on the roof.

2.0 Criteria

BS 4142: 2014 'Methods for rating and assessing industrial and commercial sound' provides a method to assess whether “sound of an industrial and/or commercial nature” is likely to have an adverse impact at Noise Sensitive Receptors.

BS 4142's assessment methodology considers how loud the noise is and its character (e.g. whether it contains hisses, bangs or clicks). The assessment is then based on how loud (and how annoying) the source noise is compared with the existing background noise at the receptor.

The following corrections (which can be considered as penalties) can potentially be applied for the acoustic character:

Tonality – a correction of up to +6 dB can be applied depending on how tonal the specific noise is:

- 2 dB for a tone which is just perceptible at the receptor
- 4 dB for a tone which is clearly perceptible at the receptor, and
- 6 dB for a tone which is highly perceptible at the receptor

Impulsivity – a correction of up to +9 dB can be applied if the noise is impulsive:

- 3 dB for impulsivity which is just perceptible at the receptor
- 6 dB for impulsivity which is clearly perceptible at the receptor, and
- 9 dB for impulsivity which is highly perceptible at the receptor

If the source is both tonal and impulsive it is usual to only apply the correction for the characteristic which is most dominant.

Other sound characteristics – where the noise source is not tonal or impulsive but has another characteristic that is readily distinguishable against the residual acoustic environment, a correction of up to 3 dB can be applied.

Intermittency – when the noise source has identifiable on/off conditions (e.g. an item of plant which switches on and off), and these on/off conditions are readily distinguishable against the residual acoustic environment, a correction of up to 3 dB can be applied.

Once the rating level is determined by applying these corrections to the specific level, and then compared with the measured background level. The difference between the rating level and the typical background level can then be interpreted using the following guidance from BS4142:2014, depending on the context:

- If the Rating Level is 10 dB or more above the background Level, this indicates a significant adverse impact.
- A difference of around +5 dB is likely to be an indication of 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.

3.0 Noise Climate

We recorded noise levels at LT1 and LT2 (shown in figure 1) over five days including a weekend period. Details are in Appendix A.

Measurements LT1 and LT2 were done at the façade of the building on first floor level. Noise levels recorded at 15 minute intervals are shown in Appendix B. Daytime noise levels during the weekday were affected by noise from construction work in the commercial unit on the ground floor. Noise at other times was dominated by road traffic from the High Street.

Based on the recorded data I judge that 35 dB L_{A90} is suitable to use as the typical background noise level experienced at the back of the site which is represented by data recorded at LT2. Note that I haven't used the very quietest background noise level as this would create an unnecessarily onerous plant noise limit.

4.0 Noise Assessment

I have used the typical night-time background noise measured at LT2 to set the plant noise limit. This is because I assume that there is likely to be a bedroom at the back of the building, which has lower background noise levels. As described in section 3, the typical background noise level during the night time period measured at position LT2 is 35 dB L_{A90} .

I have applied a +6dB penalty for the potential acoustic characteristics of the plant because this is largest correction that is likely to be applied in practice. I have assumed that the plant will be located in the middle of the roof which is approximately 8m from the edge of the building.

Using the data obtained from the survey and assumptions made in this assessment, the total plant noise should not exceed a sound pressure level of 62 dB(A) when measured 1m from the plant or enclosure. An enclosure would be one method of achieving the noise limit, if the plant itself is too noisy.

It is also essential that the rooftop plant is resiliently mounted to reduce the effects of structure borne noise which might otherwise be heard in the rooms below. We can help you with a suitable specification for this if you need us to.

I recommend that you send me details of the proposed plant so I can check whether it meets this requirement before you finalise the selection.

Appendix A

Survey Details

A1. Location of Survey

56 High Street, Bognor Regis

A2. Date & Time of Survey

25 and 30 May 2017

A3. Personnel Present During Survey

Jody Tan SRL Technical Services Ltd

Charl Vester SRL Technical Services

A4. Weather Conditions during Survey

Clear and calm.

A5. Instrumentation

Brüel & Kjær

Type 2250 Sound Level Meter (SRL 2250A, SRL No: 750) (serial no. 2548190)

Type 4231 Calibrator (SRL No:753) (serial No:2545771)

Type 2250 Sound Level Meter (SRL 2250 Purple, SRL No: 519) (serial no. 2559287)

Type 4231 Calibrator (SRL No:520) (serial No:2564290)

Norsonic - Noise Logger (HL1, Green)

Description	Location	SRL No.	Serial	Make	Model
Sound Level Meter	Holbrook	777	1404560	Norsonic	Nor 140
Calibrator (94.0dB)	Holbrook	187	1169468	Brüel & Kjær	Type 4230
Pre-amp	Holbrook	-	13927	Norsonic	Type 1209
Microphone	Holbrook	-	157421	Norsonic	Type 1225
De-humidifier	Holbrook	-	255	Norsonic	Type 1284

Norsonic - Noise Logger (HL4, Brown)

Description	Location	SRL No.	Serial	Make	Model
Sound Level Meter	Holbrook	799	1404737	Norsonic	Nor 140
Calibrator (93.8dB)	Holbrook	184	1739193	Brüel & Kjær	Type 4230
Pre-amp	Holbrook	-	13927	Norsonic	Type 1209
Microphone	Holbrook	-	128683	Norsonic	Type 1225

A6. Calibration Procedure

Bruel & Kjaer - Type 2250

Before and after the survey the measurement, apparatus was check calibrated to an accuracy of ± 0.3 dB using the type 4231 Sound Level Calibrator. The Calibrators produce a sound pressure level of 94.0 dB re 2×10^{-5} Pa at a frequency of 1 kHz.

Norsonic - Type 140

Before and after the survey the measurement, apparatus 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/ 94.0 dB re 2×10^{-5} Pa at a frequency of 1 kHz.

A7. Survey Procedure

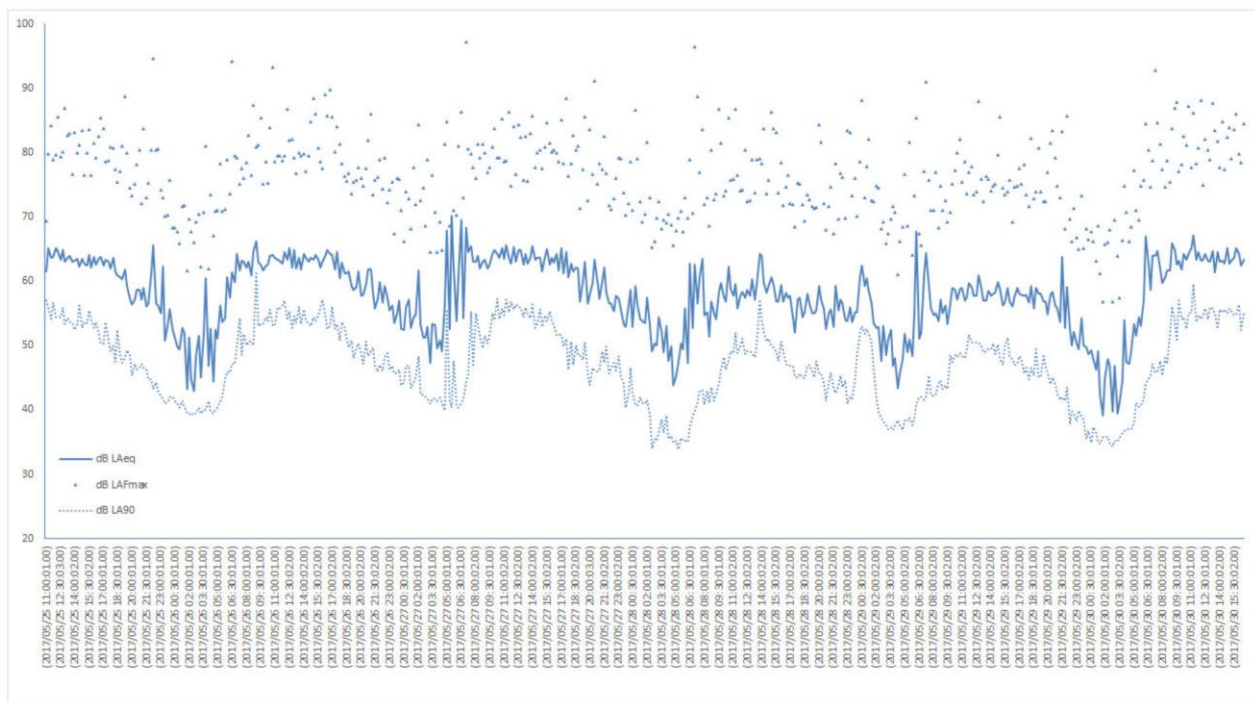
Ambient noise levels were measured at various positions around the site as shown on Figure 1. The measurements are tabulated in Appendix B, and explanations of the parameters used are listed in Appendix C.

Appendix B

B1. Logger (LT1): Summary of Unattended Noise Measurements: Facing High Street

Date	Day / Night	Time	L _{Aeq}	L _{A90}
25/05/2017 to 30/05/2017	Daytime	07:00 - 23:00	62	54
	Night-time	23:00 - 07:00	57	42

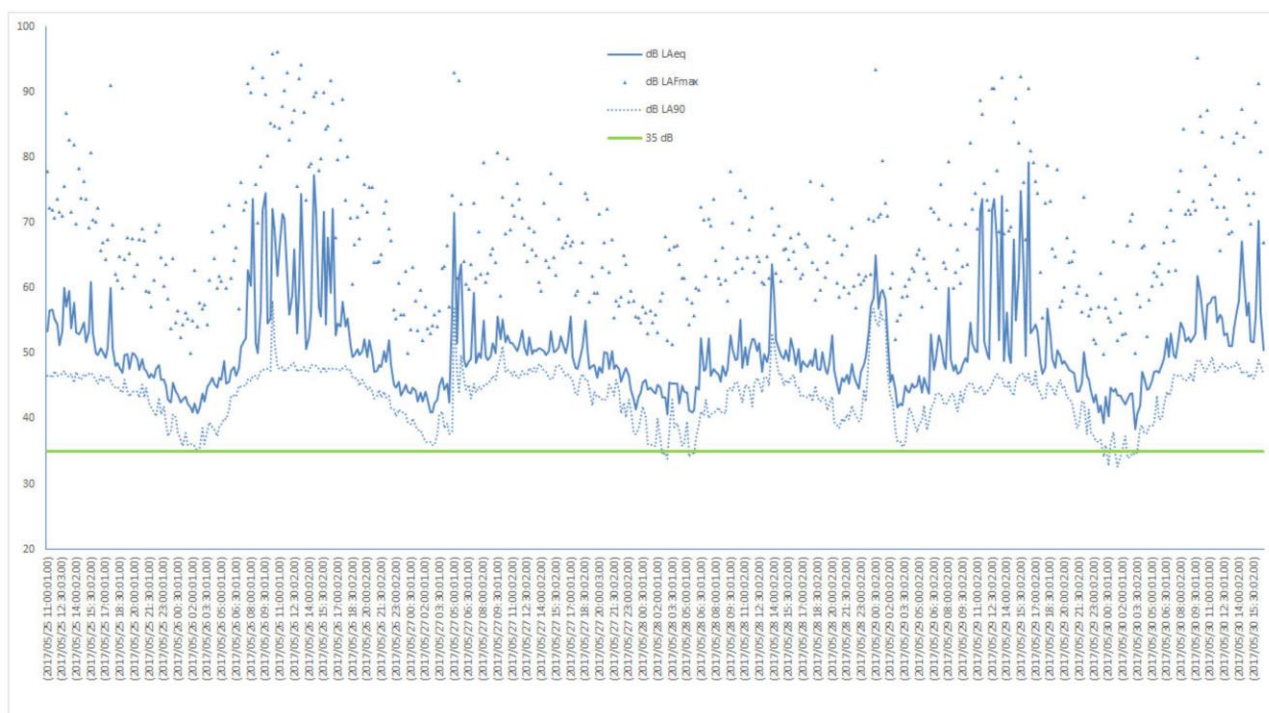
B2. Noise Levels recorded at LT1



B3. Logger (LT2): Summary of Unattended Noise Measurements: Back of site

Date	Day / Night	Time	L _{Aeq}	L _{A90}
25/05/2017 to 30/05/2017	Daytime	07:00 - 23:00	64	47
	Night-time	23:00 - 07:00	53	38

B4. Noise Levels recorded at LT2 (daytime noise on weekday affected by construction noise)



Green line at 35 dB(A), judged to be the typical background noise level.

Full logger data is available on request.

B5. Attended Noise Measurements - dB(A)

Position	Date	Time	Duration (mins)	L _{Aeq}	L _{A90}
1	30/05/2017	14:46	10	63	53
	30/05/2017	15:26	10	63	53
	30/05/2017	16:28	10	64	54
	25/05/2017	23:17	5	46	34
	25/05/2017	06:12	5	46	42
2	30/05/2017	14:33	10	56	45
	30/05/2017	15:13	10	53	45
	30/05/2017	16:15	10	56	47
	25/05/2017	23:36	5	43	36
	25/05/2017	06:04	5	53	39

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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SRL offers services in:

Acoustics
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Laboratory and Site Testing

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