



ENVIRONMENTAL NOISE REPORT

**To Support the Development of
Proposed 2 No 4 Bedroom Semi-detached Houses following the
Demolition of Outhouses at the Radcliffe Arms, 31 Walsworth
Road, Hitchin SG4 9ST**

Report for Charles Wells Ltd

Report Date: June 2018

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NOISE REPORT/June 2018

CHARLES WELLS LTD

**PROPOSED DEVELOPMENT OF 4 BEDROOM SEMI-DETACHED HOUSES
ADJACENT TO THE RADCLIFFE ARMS, WALSWORTH ROAD, HITCHIN**

1.0 INTRODUCTION

- 1.1 Instruction: To provide acoustic consultancy services including noise monitoring, advise and evaluation with reference to supporting a planning application for the development of 2 No 4 Bedroom semi-detached houses.
- 1.2 Client: Charles Wells Ltd.
- 1.3 Site Location: Proposed 2 No 4 Bedroom Semi-detached Houses following the Demolition of Outhouses at the Radcliffe Arms, 31 Walsworth Road, Hitchin SG4 9ST
- 1.4 Env Survey Date: 23 May 2018 through 24 May 2018 – environmental background noise monitoring.
- 1.5 Weather Conds.: Cloudy, no rain, dry and warm.
- 1.6 Report Date: 04 June 2018
- 1.7 Consultant: R B Parker MIOA, MCIEH.
- 1.8 Equipment Used: CEL 6333 C1 Type 1 Noise Analyser
CEL 284/1 Type 1 Calibrator
(Current Calibration Status: March 2017)

2.0 PURPOSE OF THIS REPORT

- 2.1 The purpose of this report is to provide acoustic information to support discharge of a planning condition relating to environmental noise. In addition information has been provided to support the requirements of Condition 7 of Approval 17/01756/1 and guidance in BS8233:2014 to ensure sound insulation to protect against environmental noise levels and to ensure it meets satisfactory internal noise standards.

3.0 DESCRIPTION OF THE SITE/LOCATION

- 3.1 The Existing Site and Location.
- 3.2 The proposed site forms part of the Radcliffe Arms land. The land proposed for the use for the development is currently fenced off from the main car park serving the Radcliffe Arms and has disused out buildings situated on this land. The area is predominantly residential close to the SE side of Hitchin centre. Walsworth Road and Veralum Road are fairly busy routes.



- 3.3 The Radcliffe Arms itself is located on the NE corner of the junction of Walsworth Road and Veralum Road. The proposed development site is situated to the north of the Radcliffe Arms building and has frontage on to Veralum Road. The proposed properties will be orientated west/east and have frontage on to Veralum Road
- 3.4 Proposals for the Development
- 3.5 The proposal is to erect 2 No semi-detached residential 4 bedroom houses on land part of the Radcliffe Arms
- 3.6 Proposed Site Layout



4.0 ENVIRONMENTAL NOISE EVALUATION

4.1 Evaluation of Environmental Noise Impact

- 4.2 Insofar as external noise impact is concerned levels should be in line with the requirements of BS8233:2014. Internal levels have been set out in Condition 7 of the planning approval. This is to protect the residential comfort. This building will be subjected to noise primarily from road traffic using Veralum Road and Walsworthy Road. Noise from the Radcliffe Arms car park usage will also be considered.

4.3 Design Considerations



- 4.4 Initial observations at the site indicate the following environmental factors likely to impact on the development design:
- Façade make up – external façade acoustic performance.
 - Glazing specification – control of noise from road traffic using the nearby highways
- 4.5 Monitoring Methodology
- 4.6 Environmental measurements were made in accordance with BS7445:2003 Parts 1-3. In all cases the microphone should be positioned 1.2 metres above ground level mid point of the site southern boundary.
- 4.7 Measurements made are assessed and rated under procedures in British Standard 4142:2014 – Method for rating industrial and commercial sound. This standard is extensively used to assess the impact of noise from commercial/industrial activity upon residential properties.
- 4.8 Measurement periods of 15 minutes are used during the survey as these periods are considered an adequate range of measurement periods. Calibration of instrumentation must be carried out at the beginning and end of each monitoring period, in accordance with good practice
- 4.9 The noise level descriptors to be used for the survey:
- L_{AeqT} dB Time weighted equivalent continuous A-weighted sound pressure level in decibels. This index is used to describe events over the period of the event.
 - L_{A90T} dBA-weighted sound pressure level exceeded for 90% of the measurement period. This index is used to measure background noise level.
 - L_{Amax} dBA-weighted maximum sound pressure level measured at 125msecs. This is used to describe short period noise events.
 - L_{Amin} dBA-weighted minimum sound pressure level measured at 125msecs. This is used to describe short period noise events.
- 4.10 Summary Range -23 May 2018 to 24 May 2018 – Existing Environmental Background Noise Monitoring – Full Results are in Appendix 1

Monitoring Position	Period	L_{Aeq} (5mins)	L_{A90dB}	L_{Amax}	L_{Amin}	L_{A10dB}
In Rear Garden Area of the Radcliffe Arms						
23 to 24 May 2018	0700-1900	54-66	46-50	67-82	43-46	57-69
	1900-2300	48-67	41-46	65-98	38-43	51-70
	2300-0700	41-58	33-50	60-78	29-45	44-61

- 4.11 The above measurements show background noise levels on the site at present. Noise is mainly attributed to road traffic using Walsworth Road and Veralum Road.

5.0 ASSESSMENT CONSIDERATIONS



- 5.1 National Planning Policy Framework (replaces Planning Policy Guidance No 24).
- 5.2 The PPG24 was used in relation to planning approvals of any development. Under the new policy ie NCCP planning law requires that applications for planning permission must be determined in accordance with the development plan, unless material considerations indicate otherwise.
- 5.3 The National Planning Policy Framework must be taken into account in the preparation of local and neighbourhood plans, and is a material consideration in planning decisions. Planning policies and decisions must reflect and where appropriate promote relevant EU obligations and statutory requirements.
- 5.4 The guidance in BS 8233:2014 in relation to acceptable noise levels within buildings has been considered also and does not raise any issues in relation to the development. As part of the planning permissions process site boundary noise conditions are often set by local authorities. The method of calculating the effect of these conditions is as in BS 4142:2014.
- 5.5 BS8233:2014
- 5.6. This British Standard sets out guidance on the internal comfort levels that should be aimed for within a dwelling space. Noise from unpredictable sources such as road traffic noise, outside the control of the company, are more likely to cause sleep disturbance problems in this area.
- 5.7 Planning Condition 7
- 5.8 North Hertfordshire District Council imposed the following condition to the planning approval as follows:
Prior to the commencement of the development the developer shall carry out a noise assessment in accordance with relevant guidance and standards and a scheme for sound insulation and noise control measures shall be submitted for the Council's written approval. The approved scheme shall be implemented in accordance with the approved details in order to achieve the following internal noise targets:
Bedrooms (2300 hours to 0700 hours) 30 dB L_{Aeq} (8 hour) and 45 dB L_{Amax} (F)
Living Rooms (0700 hours to 2300 hours) 35 dB L_{Aeq} (16 hour)
Dining Room/Area (0700 hours to 2300 hours) 40 dB L_{Aeq} (16 hour)
Once implemented, the scheme of measures shall be maintained in accordance with the approved details.



6.0 NOISE ASSESSMENT

6.1 BS8233:2014

- 6.2. This British Standard sets out guidance on the internal comfort levels that should be aimed for within a dwelling space. Noise from unpredictable sources such as road traffic noise, outside the control of the company, are more likely to cause sleep disturbance problems in this area.
- 6.3. This British Standard sets out guidance on the internal comfort levels that should be aimed for within a dwelling space. Noise from unpredictable sources such as road traffic noise, outside the control of the company, are more likely to cause sleep disturbance problems in this area.
- 6.4 In BS8233:2014 the criteria which needs to be considered is that noise levels within the dwellings. The British Standard providing guidance for the control of noise in and around both new and refurbished buildings applying for change of use, has been updated. Changes in noise standards could impact on planning decisions. The new document provides recommended guideline values for internal noise levels within dwellings which are similar in scope to guideline values contained within the World Health Organisation Guidelines for Community Noise, 1999 (WHO).
- 6.5 Unlike the previous version, BS 8233:2014 doesn't provide recommendations in relation to maximum noise levels in residential bedrooms at night from individual noise events such as vehicle pass-bys or aircraft movements. Instead, it advises that:
“regular individual noise events...can cause sleep disturbance. A guideline value may be set in terms of SEL (Sound Exposure Level) or $L_{Amax,F}$ depending on the character and number of events per night. Sporadic noise events could require separate values”.
- 6.6 The new guidance does, however, provide limited guidance for indoor noise levels from external noise events for bedrooms, with a recommended indoor noise range of 45 – 55 dB L_{Amax} . The Standard also adopts guideline external noise values provided in WHO for external amenity areas such as gardens and patios. The Standard states that it is “desirable” that the external noise does not exceed 50 dB $L_{Aeq,T}$ with an upper guideline value of 55 dB $L_{Aeq,T}$ whilst recognising that development in higher noise areas such as urban areas or those close to the transport network may require a compromise between elevated noise levels and other factors that determine if development in such areas is warranted.
- 6.7 In this case the noise calculated levels within the bedrooms and living areas of the houses falls within the requirements of the above standard.



6.8 Planning Condition 7

- 6.9 The planning condition 7 has imposed more stringent standards than the BS8233:2014. These are:
Bedrooms (2300 hours to 0700 hours) 30 dB L_{Aeq} (8 hour) and 45 dB L_{Amax} (F)
Living Rooms (0700 hours to 2300 hours) 35 dB L_{Aeq} (16 hour)
Dining Room/Area (0700 hours to 2300 hours) 40 dB L_{Aeq} (16 hour)
- 6.10 Calculations based on the recommended acoustic specification in this report, in conjunction with noise reduction data from manufacturers of installed materials ie windows and doors and existing background noise data are set out below to demonstrate compliance with Condition 7.

Assessment Criteria	Levels
Bedrooms (2300 hours to 0700 hours)	
1 L_{Aeq} dB Requirement	30dB
L_{Aeq} incident on façade (L_{Aeq} dB (8hr) + Façade Correction)	51dB
Fixed glazing sound reduction	-43dB
Resultant	8dB
Complied	
2 L_{Amax} dB Requirement	45dB
L_{Amax} incident on façade (L_{Amax} dB (F) + Façade Correction)	75dB
Fixed glazing sound reduction	-43dB
Resultant	32dB
Complied	
Living Rooms (0700 hours to 2300 hours)	
3 L_{Aeq} dB Requirement	35dB
L_{Aeq} incident on façade (L_{Aeq} dB (16hr) + Façade Correction)	60dB
Fixed glazing sound reduction	-43dB
Resultant	17dB
Complied	
Dining Room/Area (0700 hours to 2300 hours)	
4 L_{Aeq} dB Requirement	40dB
L_{Aeq} incident on façade (L_{Aeq} dB (16hr) + Façade Correction)	60dB
Fixed glazing sound reduction	-43dB
Resultant	17dB
Complied	

6.11 Impact of Noise from the Use of the Ratcliffe Arms Car Park

- 6.12 This has been considered as a possible impact. However, taking into account the fact that the gable elevation of the proposed development faces the car park area and the impact of existing road traffic using Veralum Road and Walsworth Road there is unlikely to be a contribution above these noise emissions. That is to say general movement on the car park is unlikely to impact on the development over and above existing background noise.



7.0 CONCLUSIONS

- 7.1 This environmental report sets out noise assessments for the development and to provide guidance on suitable construction to achieve the Council's requirements. It is concluded that provided this guidance, in conjunction with the acoustic Recommendations below should ensure the house development meets any environmental noise requirement set out by the Local Council and in particular the requirements in Condition 7 of Approval 17/01756/1.

8.0 RECOMMENDATIONS

8.1 Minimum Sound Reduction – External Façade

- 8.2 It is understood that the building construction is traditional cavity brick/blockwork construction. This construction is suitable for this location and should provide the following sound reduction.

Measured Levels	Octave Band Centre Frequency ref 2 x 10 ⁻⁵ Pascalls					
	125Hz	250Hz	500Hz	1KHz	2KHz	4KHz
Facade	41	48	58	66	72	70

- 8.3 The only other area which needs to be provided with additional acoustic support are the room located rooms. In this case all elevations should be lined out full height with 2 layers of 15 mm Soundbloc at staggered joints.

8.4 External Glazing of the Building.

- 8.5 It is understood that in order to provide a good standard of sound and thermal comfort triple glazed fixed windows are to be installed to all facades. The Velfac 200 Energy or equivalent has been selected as suitable. The specification is understood to be 8.8 mm-12 mm-4 mm-15 mm-8.8 mm giving an Rw or 43-4Ctr (manufacturers noise data). Line all window reveals with 1 layer of 154 mm Soundbloc in conjunction with any cavity closers.

8.6 Room Ventilation

- 8.7 Under the Building Regulations 2010 adequate room ventilation should be provided. It is understood that a passive ventilation system is being installed which negates the need for trickle ventilation in the windows themselves.

8.8 Environmental Noise During the Construction Phase

- 8.9 Noise from construction operations can be controlled by local authorities under the Control of Pollution Act 1990. Reference to BS5228 can offer guidance on construction noise limitations and methods of control should it be found to be necessary during the contract period. This site is relatively close to existing housing there should be attention to environmental noise issues. The provisions of the Health and Safety at Work etc Act 1974 and the Control of Noise at Work Regulations 2005 may apply. Suitably qualified parties should advise on these



matters.

APPENDIX 1 – MONITORING RESULTS – 23 to 24 May 2018

	L _{Aeq} (dB)	L _{A90} (dB)	L _{Amax} (dB)	L _{Amin} (dB)	L _{A10} (dB)
11:22:47	54.7	47.0	82.4	43.6	56.5
	52.1	46.0	78.9	43.6	54.0
	52.8	46.5	74.4	42.5	55.5
	52.2	47.5	76.7	42.3	54.5
12:22:47	54.3	48.0	80.1	43.3	56.5
	52.0	46.5	72.6	42.9	54.5
	52.3	47.0	73.9	42.7	55.0
	53.8	48.0	79.4	43.7	55.5
13:22:47	54.1	46.5	77.2	43.3	57.0
	53.6	47.0	74.0	43.5	57.0
	55.9	48.5	71.5	45.4	59.5
	53.2	47.5	78.9	44.5	55.5
14:22:47	55.0	48.5	80.0	44.8	58.0
	55.3	48.5	79.4	45.0	57.5
	52.8	48.0	78.1	43.5	55.0
	52.4	48.0	74.5	45.0	55.0
15:22:47	53.0	48.5	74.7	45.4	55.0
	53.1	48.0	73.7	42.1	55.5
	55.4	49.0	84.1	46.1	56.0
	52.8	47.0	70.4	43.8	56.0
16:22:47	54.3	48.0	77.2	44.6	57.0
	54.1	48.5	75.4	43.2	57.0
	54.8	48.5	74.1	43.8	57.0
	55.2	49.5	80.2	45.3	57.0
17:22:47	54.9	49.0	76.7	45.1	57.5
	55.0	49.5	67.6	47.0	58.5
	55.8	48.0	79.2	44.5	58.0
	56.2	49.0	74.1	46.1	59.0
18:22:47	57.5	49.5	72.9	46.6	61.0
	55.3	48.5	70.6	44.9	58.5
	54.4	48.0	65.1	44.4	58.0
	57.2	49.0	80.0	44.8	60.0
19:22:47	58.5	47.0	86.1	42.8	58.5
	55.8	46.5	78.8	43.7	59.5
	53.9	46.0	70.8	42.8	57.5
	54.8	45.5	69.8	42.1	58.5
20:22:47	54.5	46.0	65.9	43.4	58.5
	54.0	45.5	73.5	41.8	57.5
	53.1	45.5	73.2	42.2	57.0
	51.8	44.5	78.1	42.4	55.5
21:22:47	53.6	45.5	66.5	41.7	58.0
	54.6	43.5	76.7	40.4	58.0
	51.5	42.0	75.6	38.8	56.0
	51.1	42.5	69.1	39.5	55.5
22:22:47	49.8	42.0	70.2	39.7	54.0



	67.6	42.5	98.4	40.7	56.0
	48.9	41.0	66.8	38.4	52.5



APPENDIX 1 – MONITORING RESULTS – 23 to 24 May 2018

	L _{Aeq} (dB)	L _{A90} (dB)	L _{Amax} (dB)	L _{Amin} (dB)	L _{A10} (dB)
	48.0	39.0	68.5	35.7	51.0
23:22:47	45.6	36.5	63.2	33.1	47.0
	45.2	37.0	62.0	35.0	46.0
	45.6	36.5	61.3	33.9	47.5
	43.6	36.0	62.8	33.2	44.5
00:22:47	41.3	33.5	59.9	31.3	42.0
	39.8	34.5	59.3	32.1	42.0
	42.9	34.0	63.8	31.6	43.0
	43.1	33.0	63.7	29.6	43.0
01:22:47	46.8	33.5	67.1	31.7	48.5
	41.8	32.5	61.8	29.1	41.5
	39.9	31.5	59.3	29.5	39.5
	42.1	33.0	60.2	30.4	43.0
02:22:47	42.8	35.5	60.0	32.7	45.0
	43.5	34.0	68.0	31.1	45.0
	43.3	33.0	65.0	29.9	45.0
	43.9	35.5	59.6	31.6	47.0
03:22:47	46.3	36.0	71.0	32.5	45.0
	47.9	32.5	62.8	30.0	52.5
	51.0	40.5	70.0	33.4	56.0
	54.2	37.5	66.3	34.0	59.0
04:22:47	53.9	39.0	68.2	34.2	59.0
	53.3	38.5	71.9	34.5	58.0
	51.0	36.0	65.5	32.9	55.5
	48.5	37.0	68.0	34.7	50.5
05:22:47	46.9	39.0	62.3	35.4	49.0
	50.7	38.5	71.6	35.2	54.5
	50.2	39.5	65.7	36.0	54.0
	53.0	42.5	78.5	37.5	55.0
06:22:47	55.9	46.0	74.6	42.2	59.0
	58.0	46.0	76.7	41.9	62.0
	56.3	46.5	68.9	42.0	60.5
	58.0	50.0	75.6	45.1	61.5
07:22:47	59.2	50.5	72.4	43.6	62.5
	61.2	50.5	88.8	46.4	62.0
	58.5	50.5	77.0	44.8	61.0
	58.0	50.5	77.2	44.1	61.0
08:22:47	55.3	50.0	78.9	46.1	58.5
	67.4	50.0	95.1	45.8	60.5
	56.6	49.5	73.7	43.8	59.5
	61.8	50.0	91.6	44.8	60.5
09:22:47	56.7	49.0	77.9	44.4	59.0
	66.5	56.5	96.3	54.0	67.5
	65.9	58.5	80.3	55.6	68.0
	67.5	65.5	80.4	55.8	69.5
10:22:47	63.3	47.5	79.3	43.9	68.0
	48.0	39.0	68.5	35.7	51.0



APPENDIX 1 – MONITORING RESULTS – 23 to 24 May 2018

	L _{Aeq} (dB)	L _{A90} (dB)	L _{Amax} (dB)	L _{Amin} (dB)	L _{A10} (dB)
	59.0	48.5	79.7	43.9	59.0
	69.3	49.5	80.7	43.3	73.0
	57.5	48.0	73.8	43.0	61.0
11:22:47	57.7	49.5	73.8	45.1	61.0
	57.6	48.0	75.6	44.9	60.5
11:52:47	56.1	47.5	74.8	44.4	59.5



APPENDIX 2 - GLOSSARY OF ACOUSTIC TERMS

1. **A-weighted decibels - dB(A)** - Approximately equivalent to the human ear frequency response. A simulated measure of the loudness level of the noise as heard by the listener. Specific corrections are made to simulate this response.
2. **Ambient noise** - Totally encompassing sound in a given situation at a given time.
3. **Attenuation** - the amount by which a noise is reduced.
4. **Corrected Noise Level or Rating level $L_{A_{rT}}$** - the specific noise level plus any adjustment for the character of the noise.
5. **Decibels** - a unit of sound level using a logarithmic scale. It is the ratio of the measured sound pressure and the reference level ie $10 \log_{10}(P^2_1/P^2_{ref})$ where 1 = rms pressure and $ref = 2 \times 10^{-5} \text{ N/m}^2$.
6. **Frequency in Hertz** - sound is propagated in wave form. Sound frequency is expressed in cycles per second or Hertz. Most noises comprise many frequencies. One Hertz equals one cycle per second.
7. **L_{AeqT} - Equivalent Continuous A-weighted sound pressure level** - the value of the A-weighted sound pressure level in decibels of the continuous steady sound that within a specified time interval has the same mean square sound pressure as a sound that varies with time.
8. **L_{A90T} - Background Noise Level (BNL)** - the A-weighted level of the residual noise in decibels exceeded for 90% of a given time interval. The level of noise underlying all fluctuating noise s reaching a given location. This tends to be dominated by the more distant, non-local sources and events.
9. **$L_{A10(1hour)}$ dBA - Road Traffic Noise** - the value of $L_{A10(1hour)}$ dBA is the noise exceeded for 10% of a period of one hour.
10. **Noise** - A complex sound often defined as unwanted sound.
11. **Precision Grade Instrumentation** - There are 2 basic grades of instrumentation guaranteeing different grades of accuracy of which precision grade instrumentation is the most accurate.
12. **Sound Pressure Level** - the sound pressure level in decibels is given by:
 $20 \log_{10} (P_1/P_2)$.