RYEDALE TESTING

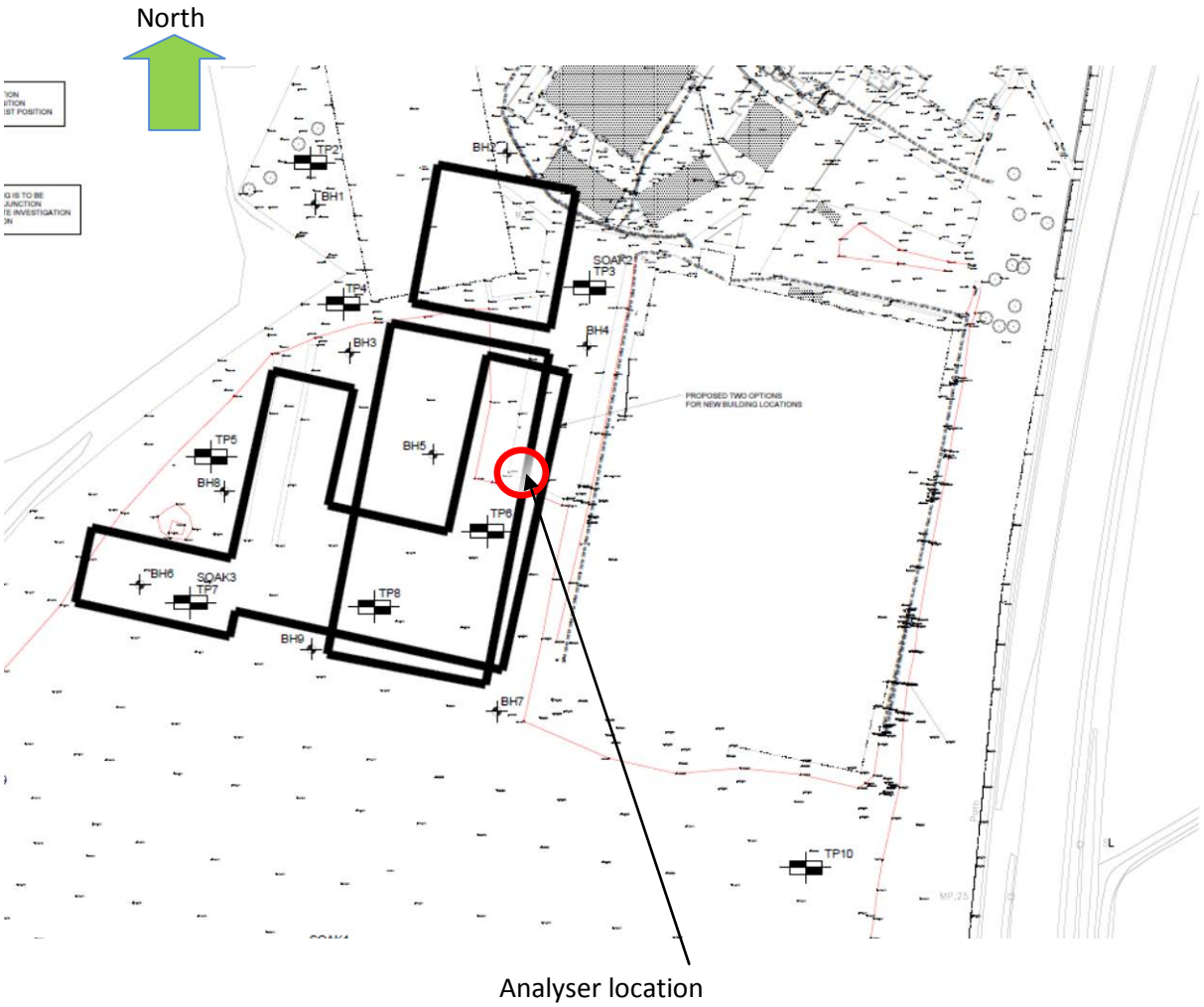
Noise Assessment

Glossopdale School, Hadfield Site, Glossop

Report No. 1499

Carried out by Nick Greenhalgh Dip Arch. RIBA TechIOA Acoustic Technician

Tests carried out on 27th. May 2015



Tel: 01653 693957
info@ryedale-att.co.uk
www.ryedale-att.co.uk

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1 INTRODUCTION

1.1 RT were instructed to carry out a noise assessment to inform the design and development of new school buildings on the site.

1.2 The report will describe existing background noise levels present on the site, existing ambient noise levels and sources in the area and identify noise sensitive receptors in the area sufficient that the project designers can allow for any required mitigation measures in their proposals to ensure compliance with 'Building Bulletin 93' and Building Regulations 'Part E'.

Where appropriate, the following documents will be utilised:-

- ISO 1996-2:2007
- BS 7445-1:2003
- BS 4142:2014
- BS 8233:2014
- Calculation of Railway Noise (CRN 1995)
- Calculation of aircraft noise (ANCON noise model)

2.0 NOISE SURVEY

2.1 Attended surveys were executed to determine the existing ambient sound environment on site, any specific sounds likely to adversely affect the proposed site usage and background sound levels . The measurement location chosen is indicated on the attached site plan. The analyser was located on grass at the corner of a tarmac sports area at a point roughly equivalent to the position of proposed buildings.

2.2 The main sound sources having a potential adverse effect on the development are neither industrial nor commercial in nature but are generated by external school activities in the all-weather areas adjacent to the proposed sites.

2.3 Other sound sources identified during the survey period were intermittent rail noise from the adjacent Hadfield-Glossop railway line, aircraft on approach to Manchester Airport, garden maintenance at adjoining property (Oakford Court)and traffic noise from Newshaw Lane.

2.4 Aircraft sounds were noticeable but not greatly intrusive. When approaching Manchester airport planes are at approx. 2500 feet and speed 190 kph. When leaving Manchester airport, planes are at approx. 6000 feet and speed 240 kph (data from flightradar24.com)

2.5 The highest sound level recorded (78.2dB) was caused by football being kicked against the wire netting of the all-weather pitch.

2.6 The equipment utilised was a Brüel & Kjær 2250 Class 1 Sound Level meter mounted on a tripod approximately 1.8m above ground level and at least 3.0m away from any reflective surfaces. The meter was fitted with a dedicated windshield. The meter was calibrated before and after tests and values noted. The next calibration date for the meter is 01/06/2017.
The meter serial number is 2645027

2.7 The initial reference level of the calibrator was 51.98 mV/Pa (09:30hrs).
The final reference level of the calibrator was 52.03mV/Pa (11:58hrs)

2.9 Date and time of measurements.
27th. May 2015 commencing approximately 09:30hrs and ending approximately 12:00hrs

2.10 Noise measurements were taken as broadband "A" weighted indices and 1/3rd octave bands ranging from 16Hz to 16kHz

2.11 Noise measurements are included in Appendix 1 (Noise Survey Data). Measurements were taken over approximately 1 hour periods with 1 minute logging periods.

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Table 1 Noise level summary

Ref:	Times	L_{Aeq}	L_{AFmax} *	L_{A10}	$L_{AF\ 90}$	*Note*
002	09:42-09:52hrs	47.5dB	63.9dB	49.7dB	43.7dB	(1)
003	09:53 - 10:53hrs	50.9dB	78.2dB	52.2dB	44.8dB	(2)
004	10:54 - 11:54hrs	76.5dB	76.5dB	52.8dB	44.4dB	(3)

* Analysis intervals of 1 second

Notes:-

1. Shortened timescale, main sounds from school activity.

2. Typical sounds include:
   Football training on all-weather area.
   Train (without hooter) 52dB @09:55hours
   Train (with hooter) 70.3dB@ 10:00 hours
   Aircraft 65.0dB @10:03 hours
   Aircraft 55.0dB @10:43 hours
   Loudest event – children shouting 78.2dB @ 10:46 hours

3. Typical sounds include: Football training on all-weather area until 11:17 hours
   Highest noise level (children screaming) 76.5dB @11:10 hours
   Grass cutting machinery/leaf blower 62dB @11:28 hours
   Train (with hooter) 70.3dB@ 11:30 hours
   Aircraft 66.0dB @11:33 hours
   The quietest period was approximately 11:48- 11:50 hours when L_{Aeq} levels were less than 45dB

   These figures may be identified within the tables and graphs in the Appendix.

   Trains passing the site are travelling between Hadfield and Glossop/ Dinting. As Hadfield is a terminus, the same train passes the site twice within a period of approximately 5-10 minutes, with a hooter when travelling away from Hadfield. Because of the nature of the line (single track) it is unlikely that rail traffic will increase substantially.

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3.0 NOISE ASSESSMENT

3.1 BB93 (December 2014) will be used to inform the design of the new school buildings, together with The Building Regulations and any specialist design advice required to suit discrete spaces within the school.
This assessment may be used to inform the decision making on any likely application for development on this site.

3.2 Daytime levels have been assessed as 50 dB $L_{Aeq\ (1\ hour)}$

3.3 Night-time levels have not been measured here as these would not be relevant for the proposed use

3.4 BB93 refers to upper limits for indoor ambient noise levels, which vary between 30 – 50 $L_{Aeq\ (30\ min)}$ depending upon the room classifications. It is outside the remit of this report to suggest the location of activity spaces within the new school but it would be advisable to keep noise sensitive spaces away from the all-weather activity area.

Table 2 Examples of upper levels for indoor ambient noise levels for schools (BB93-2014)

Type of room	Upper limit for indoor ambient noise level $L_{Aeq\ (30\ mins)}$ dB
Open plan teaching area	35
Primary music room	35
Performance/recital room	30
Lecture room	35
SEN calming room	35
Science laboratory	40

4.0 NOISE MITIGATION

4.1 If the design criteria of 35 dB L_{Aeq} for rooms adjoining the all-weather are adopted then using openable windows for rapid ventilation (approx. 15dB sound reduction) will mean the sound reduction of the building envelope would not be compromised and recommended internal noise levels would not be exceeded. (This does not take into account any mechanical ventilation system).

4.2 Because of the measured external sound levels, it may not be necessary to incorporate special noise mitigation measures.

4.4 This report will not make any recommendations for the construction of the proposed buildings but it is likely that:-

4.5 Traditional masonry construction with brick/cavity/block internal plaster finish will provide sufficient attenuation against rail, aircraft and external school activities.

4.6 Windows with double glazing comprising, typically:-

- 6mm toughened glass
- 12mm cavity

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- 6.5mm laminated glass

Will provide suitable sufficient attenuation against rail, aircraft and external school activities.

4.7 These recommendations are for acoustic measures only. Other aspects that will be considered under Building Regulations or other statutory documents are outside the scope of this document.

5.0 SUMMARY & CONCLUSION

5.1 A noise impact assessment has been conducted at land forming the site of proposed new school buildings at Glossopdale School, Hadfield Site.

5.2 Measurements have been conducted to establish the main sound sources that could adversely affect the proposed development.

5.3 The main contributing sound sources have been found to be external school activities on the all-weather activity area and to a lesser extent, sounds from the nearby railway line and aircraft flight paths to Manchester Airport.

6.0 Noise Indices

$L_{Aeq,T}$: the equivalent continuous sound level -the sound level of a notionally steady sound having the same energy as a fluctuating sound over a specified measurement period (T).

L_{Amax}: the highest A weighted noise level recorded during a noise event. The time weighting used (F or S) should be stated.

$L_{A10,T}$: the A weighted level of noise exceeded for 10% of the specified measurement period (T). It gives an indication of the upper limit of fluctuating noise such as that from road traffic

$L_{A90,T}$: the A weighted noise level exceeded for 90% of the specified measurement period (T). In BS 4142: 1990 it is used to define background noise level.

SEL- The SEL is a single event level. Also called sound exposure level . (LAE)

Noise measurements are normally taken with an A-weighting (denoted by sub-script 'A') to approximate to the frequency response of the human ear.

This report has been compiled, checked and issued by Nick Greenhalgh, on behalf of Ryedale Testing.

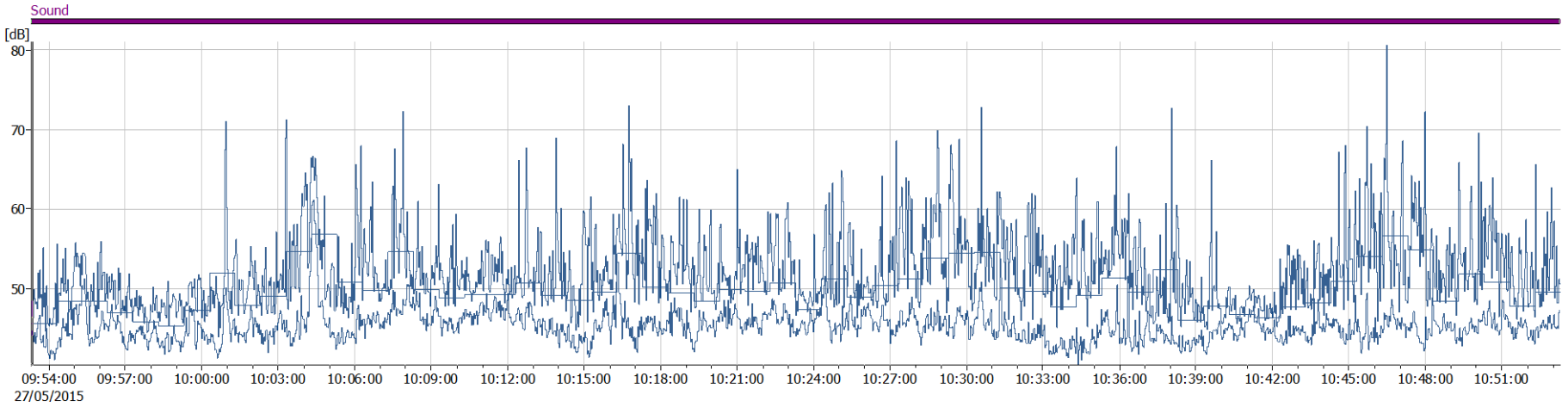
Signed N.W. Greenhalgh ..... Nick Greenhalgh Dip Arch RIBA Tech IOA

APPENDIX 1
Noise Survey data

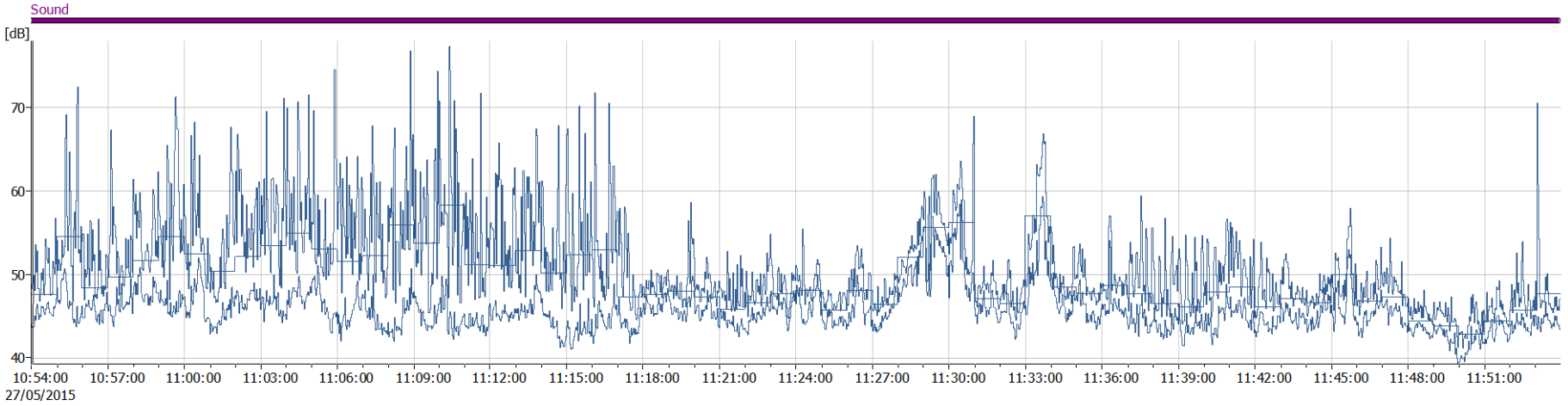
003 Start	Logged Stop	LAFmax	LAeq		004 Start	Logged Stop	LAFmax	LAeq
09:53	09:54	53.23	45.59		10:53	10:54	55.61	47.6
09:54	09:55	55.37	48.42		10:54	10:55	70.93	54.56
09:55	09:56	54.7	48.36		10:55	10:56	56.69	48.39
09:56	09:57	51.87	46.9		10:56	10:57	65.57	49.71
09:57	09:58	50.09	45.78		10:57	10:58	60.84	51.66
09:58	09:59	50.52	45.32		10:58	10:59	71.02	54.56
09:59	10:00	51.48	47.28		10:59	11:00	67.05	52.47
10:00	10:01	70.27	51.99		11:00	11:01	66.7	50.38
10:01	10:02	54.52	47.88		11:01	11:02	65.75	52.14
10:02	10:03	67.37	49.01		11:02	11:03	69.38	53.44
10:03	10:04	70.86	54.66		11:03	11:04	70.23	54.97
10:04	10:05	65.99	56.79		11:04	11:05	72.09	53.03
10:05	10:06	67.53	50.79		11:05	11:06	62.38	51.6
10:06	10:07	61.61	49.79		11:06	11:07	66.56	52.27
10:07	10:08	71.82	54.6		11:07	11:08	75.98	55.91
10:08	10:09	60.94	49.89		11:08	11:09	73.24	53.78
10:09	10:10	61.44	48.87		11:09	11:10	**76.47**	58.32
10:10	10:11	56.07	49.19		11:10	11:11	70.2	51.22
10:11	10:12	55.75	49.22		11:11	11:12	64.78	51.05
10:12	10:13	66.54	50.68		11:12	11:13	65.19	52.87
10:13	10:14	67.14	49.13		11:13	11:14	66.45	50.23
10:14	10:15	60.21	48.49		11:14	11:15	69.26	52.33
10:15	10:16	57.82	49.5		11:15	11:16	69.65	52.95
10:16	10:17	71.76	54.42		11:16	11:17	57.42	47.35
10:17	10:18	61.82	50.13		11:17	11:18	50.37	47.6
10:18	10:19	60.33	49.47		11:18	11:19	57.72	48.05
10:19	10:20	59.17	48.42		11:19	11:20	51.5	47.36
10:20	10:21	63.76	49.82		11:20	11:21	51.62	45.86
10:21	10:22	58.06	49.64		11:21	11:22	52.42	46.63
10:22	10:23	59.15	50.71		11:22	11:23	54.85	47.68
10:23	10:24	55.32	47.41		11:23	11:24	55.68	48.1
10:24	10:25	62.82	51.21		11:24	11:25	47.88	45.72
10:25	10:26	56.96	48.9		11:25	11:26	53.04	48.12
10:26	10:27	66.36	50.4		11:26	11:27	49.9	46.38
10:27	10:28	63.56	51.23		11:27	11:28	57.95	52.11
10:28	10:29	69.36	53.83		11:28	11:29	62.02	55.68
10:29	10:30	67.42	54.45		11:29	11:30	67.1	56.29
10:30	10:31	72.02	54.57		11:30	11:31	53	47.15
10:31	10:32	60.77	50.09		11:31	11:32	51.58	46.49
10:32	10:33	61.38	49.6		11:32	11:33	66.22	57.06
10:33	10:34	60.75	47.66		11:33	11:34	55.66	48.54
10:34	10:35	62.62	49.17		11:34	11:35	53.26	47.7
10:35	10:36	66.68	51.33		11:35	11:36	56.85	48.75
10:36	10:37	61.55	49.55		11:36	11:37	58.73	47.7
10:37	10:38	72.03	52.37		11:37	11:38	54.62	46.55
10:38	10:39	56.62	45.96		11:38	11:39	54.8	46.17
10:39	10:40	65.11	47.79		11:39	11:40	56.26	47.87
10:40	10:41	50.05	46.72		11:40	11:41	55.27	48.5
10:41	10:42	52.58	46.3		11:41	11:42	52.41	46.08
10:42	10:43	54.58	47.7		11:42	11:43	52.55	47.11
10:43	10:44	55.94	48.24		11:43	11:44	49.56	46.6
10:44	10:45	66.3	50.89		11:44	11:45	57.28	49.95
10:45	10:46	69.52	54.01		11:45	11:46	53.48	46.81
10:46	10:47	**78.23**	56.63		11:46	11:47	53.98	47.31
10:47	10:48	71.36	54.87		11:47	11:48	47.47	44.45
10:48	10:49	57.45	48.44		11:48	11:49	47.04	43.87
10:49	10:50	67.6	51.8		11:49	11:50	47.32	42.84
10:50	10:51	63.03	50.77		11:50	11:51	48.37	44.48
10:51	10:52	57.71	47.75		11:51	11:52	53.12	45.73
10:52	10:53	64.71	49.54		11:52	11:53	68.49	47.72
		Average	**50.00**				**Average**	**49.56**

APPENDIX 2 (Logged data - LAeq)

150527 003



150527 004



APPENDIX 3 (Logged data - LAFmax)