

APPENDIX 8/1 – GLOSSARY OF TERMINOLOGY

In order to assist the understanding of acoustic terminology and the relative change in noise, the following background information is provided.

The human ear can detect a very wide range of pressure fluctuations, which are perceived as sound. In order to express these fluctuations in a manageable way, a logarithmic scale called the decibel, or dB scale, is used. The decibel scale typically ranges from 0dB (the threshold of hearing) to over 120dB. An indication of the range of sound levels commonly found in the environment is given in the following table.

**Table A8/1-1
Noise Levels Commonly Found In the Environment**

Sound Level	Location
0dB(A)	Threshold of hearing
20 to 30dB(A)	Quiet bedroom at night
30 to 40dB(A)	Living room during the day
40 to 50dB(A)	Typical office
50 to 60dB(A)	Inside a car
60 to 70dB(A)	Typical high street
70 to 90dB(A)	Inside factory
100 to 110dB(A)	Burglar alarm at one metre away
110 to 130dB(A)	Jet aircraft on take off
140dB(A)	Threshold of Pain

Acoustic Terminology

dB (decibel) The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2×10^{-5} Pa).

dB(A) A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.

L_{Aeq} L_{Aeq} is defined as the notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.

L₁₀ & L₉₀ If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L₁₀ is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L₉₀ is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L₁₀ index to describe traffic noise.

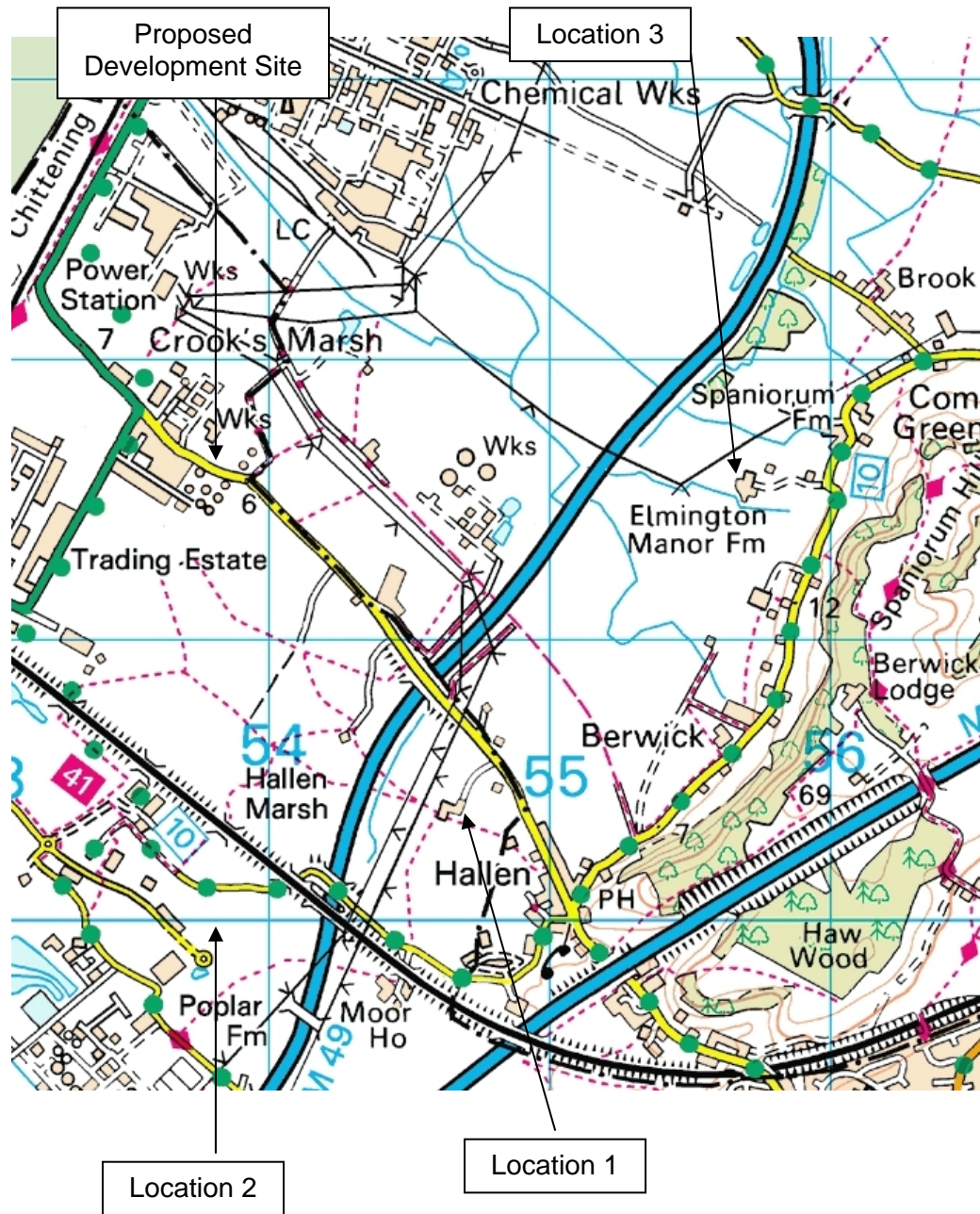
L_{Amax} L_{Amax} is the maximum A-weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.

APPENDIX 8/2 – NOISE MONITORING EQUIPMENT

TableA8/2-1
Criteria for Normal Operations, free-field, dB

Location	Description	Serial No.
All Locations	Norsonic Nor-140 Type 1 sound level meter	1403009
	Norsonic Type 1225 microphone	12449
	Norsonic Type 1209 preamplifier	91777
	Norsonic Type 1251 acoustic calibrator	31872

APPENDIX 8/3 – NOISE MONITORING LOCATIONS



APPENDIX 8/4 – FULL SURVEY RESULTS

Table A8/4-1
Measured Noise Levels at Location 1 – Fencott, free-field, dB

Date	Time	L _{Aeq,T}	L _{A90}	L _{A10}	L _{Amax}
22.03.2009	03:15	45.1	37.4	48.5	58.6
	03:20	44.7	39.2	47.4	52.6
	03:25	52.8	35.6	47.5	76.5
	03:30	55.5	36.5	50.1	79.0
	03:35	42.7	38.2	45.4	51.7
	03:40	44.0	37.8	47.1	53.3
	03:45	42.7	35.5	46.0	53.6
	03:50	46.8	36.9	50.7	56.6
	03:55	42.4	36.5	45.7	53.8
22.03.2009	10:44	63.2	47.3	62.1	85.8
	11:50	65.2	50.9	66.2	88.9
	14:43	64.1	51.3	64.1	86.6
	15:48	64.6	54.1	66.7	82.6
23.03.2009	02:34	56.8	42.7	49.2	79.9
	02:39	63.0	43.3	52.9	87.3
	02:44	47.8	43.9	50.1	60.5
	02:49	62.0	42.7	50.8	89.0
	02:54	49.3	44.4	52.4	60.4
	02:59	57.5	42.6	50.2	82.3
	03:04	61.9	42.6	52.3	88.5
	03:09	59.0	44.7	52.4	84.6
24.03.2009	03:14	57.9	44.1	53.2	83.0
	10:10	67.1	52.8	69.2	89.5
	11:21	65.9	51.2	67.5	83.8
	12:39	67.2	51.9	70.3	84.9
	14:31	68.4	53.9	70.9	91.2

Table A8/4-2
Measured Noise Levels at Location 2 – Shadow Patch, free-field, dB

Date	Time	L _{Aeq,T}	L _{A90}	L _{A10}	L _{Amax}
22.03.2009	02:19	42.0	37.2	39.1	59.1
	02:24	49.7	41.0	45.3	65.9
	02:29	49.7	43.5	48.0	61.8
	02:34	41.7	39.3	42.9	59.6
	02:39	42.2	37.1	41.3	53.7
	02:44	46.5	37.7	40.7	47.5
	02:49	46.6	39.8	43.9	59.5
	02:54	43.7	38.9	42.7	56.7
	02:59	41.7	36.8	39.5	52.8
22.03.2009	10:23	48.9	44.8	49.5	68.8
	11:29	48.3	44.9	49.2	64.3
	14:23	55.3	51.7	57.6	66.3
	15:28	54.0	51.3	56.0	70.0
23.03.2009	01:39	48.3	43.5	51.2	70.2
	01:44	48.4	45.1	50.5	59.0
	01:49	46.2	43.6	48.0	55.3
	01:54	53.2	45.8	56.5	64.1
	01:59	52.2	43.6	56.1	67.1
	02:04	50.3	43.8	53.7	64.1
	02:09	51.5	44.0	55.2	63.1
	02:14	51.3	45.6	54.8	62.4
	02:19	47.9	43.6	49.8	60.1
24.03.2009	09:49	49.8	46.1	50.6	65.6
	11:01	54.1	45.4	50.8	70.4
	12:03	49.9	45.1	49.8	66.5
	14:10	56.3	52.5	59.1	70.1

Table A8/4-3
Measured Noise Levels at Location 3 – Elmington Manor Farm, free-field, dB

Date	Time	L _{Aeq,T}	L _{A90}	L _{A10}	L _{Amax}
22.03.2009	11:07	54.1	46.4	56.3	70.9
	14:00	47.9	44.3	50.0	62.2
	15:06	48.6	45.3	50.6	65.9
	16:08	54.1	50.8	54.5	75.5
24.03.2009	10:39	52.8	48.0	54.4	73.2
	11:41	50.1	45.3	52.0	64.2
	13:00	52.4	44.3	52.2	70.6
	14:52	54.4	48.4	57.3	72.3

Night-time noise levels measured at Location 2 have been used for this Location as access could not be gained to Elmington Manor Farm during the night-time.

APPENDIX 8/5 – LIST OF PLANT

Table A8/5-1
Construction Plant Employed

Phase	Plant	No. of Plant	Plant L _{WA} dB	Estimated On-Time %	Equivalent Continuous L _{WA} dB
Site Preparation	Tracked Excavator	2	108	50	108
	Dozer	2	109	50	109
	Lorry	2	104	10	97
	Scraper/Grader	1	104	50	101
	Articulated Dump Truck	2	110	50	110
	Road Roller	2	108	50	108
	Asphalt Spreader	1	110	50	107
Piling	Piling Equipment	2	115	50	115
Foundation	Tracked Excavator	2	108	50	108
	Concrete Pump	2	107	50	107
	Articulated Dump Truck	2	108	50	108
Building	Mobile Crane	2	110	50	110
	Concrete Truck	4	108	50	111
	Concrete Pump	2	107	50	107
	Hand Tools	2	111	10	104
	Compressor	1	100	100	100
	Articulated Dump Truck	1	108	50	105
	Scaffolding (Striking)	1	92	10	92

**Table A8/5-2
EfW Plant Details**

Area	Plant	No. of Plant	Plant L_{WA} dB	Estimated On-Time %	Equivalent Continuous L_{WA} dB
Tipping/Bunker Hall	HGV unloading	n/a	88	50	85
	Shredder	1	93	25	87
	Crane	1	78	100	78
	Hopper Loading	1	88	20	81
	MRF	1	115	80	112
Bottom Ash Hall	HGV	n/a	93	100	93
	Unloading	n/a	100	100	100
	Conveyor	6	85	100	93
Boiler Hall	Ash Transport	4	78	100	84
	Combustion Fan	2	93	100	96
	Rappers	12	95	10	96
	De-aerator	1	88	100	88
	Air Cooling System	1	100	100	100
	Conveyor Drive Units	16	93	100	105
	Conveyors	16	78	100	90
Flue Gas Hall	ID Fans	2	100	100	103
	Residue & Ash Conveyors	12	78	100	89
Turbine Hall	Turbine	1	108	100	108
	Gearbox	1	108	100	108
	Generator	1	108	100	108
	Feed water Pumps	2	98	100	101
	Condensate Pumps	1	93	100	93
	Vacuum Ejectors	1	103	100	103
	Air Cooled Condensers	4	92	100	98
Cooling	Fans	6	92	80	97

APPENDIX 8/6 – LIMITATIONS TO THIS REPORT

This entails a physical investigation of the site with a sufficient number of sample measurements to provide quantitative information concerning the type and degree of noise and vibration affecting the site. The objectives of the investigation have been limited to establishing sources of noise and vibration material to carrying out an appropriate assessment.

The number and duration of noise and vibration measurements have been chosen to give reasonably representative information on the environment within the agreed time, and the locations of measurements have been restricted to the areas unoccupied by building(s) that are easily accessible without undue risk to our staff.

As with any sampling, the number of sampling points and the methods of sampling and testing cannot preclude the existence of “hotspots” where noise or vibration levels may be significantly higher than those actually measured due to previously unknown or unrecognised noise or vibration emitters. Furthermore, noise or vibration sources may be intermittent or fluctuate in intensity and consequently may not be present or may not be present in full intensity for some or all of the survey duration.