

Hampshire Water Transfer and Water Recycling Project

Environmental Statement – Appendix 15.4 Acoustic terminology and baseline

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The Southern Water logo consists of three stylized, wavy blue lines of varying lengths, positioned to the right of the word 'Water'.

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1 Introduction

1.1 Aim of report

- 1.1.1 This acoustic terminology and baseline conditions report has been prepared to present the terminology (contained in a glossary) and the measured baseline conditions at identified noise and vibration sensitive receptors (NVSRs) for the Hampshire Water Transfer and Water Recycling Project (hereafter referred to as the 'Proposed Development').
- 1.1.2 The document additionally details the baseline sound survey undertaken to characterise the existing soundscape within the Proposed Development study area.
- 1.1.3 This report is a technical appendix of the Environmental Statement (ES) Chapter 15 Noise and vibration, Volume I (Document reference 6.1, DCO Volume 6). It is supported by ES Figure 15.1 Noise and vibration direct effects study areas, sensitive receptors and monitoring locations, Volume III (Document reference 6.3, DCO Volume 6).

2 Baseline

- 2.1.1 The baseline sound survey comprises measurements at locations representative of identified NVSRs within the Proposed Development study area. Measurements were conducted in accordance with current best practice guidance as specified in British Standard (BS) 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound [1] and BS 7445-2:1991 Description and measurement of environmental noise [2].
- 2.1.2 The baseline sound data will be used within the construction and operational phase assessments reported the ES Chapter 15 Noise and vibration, Volume 1 (Document reference 6.1, DCO Volume 6). The survey was undertaken between 22 March 2024 and 14 October 2024.
- 2.1.3 Survey methodology and locations were agreed with Fareham Borough Council (FBC), Eastleigh Borough Council (EBC), Havant Borough Council (HBC), Portsmouth City Council (PCC) and Winchester City Council (WCC).
- 2.1.4 The identified NVSRs in the noise and vibration assessment have been separated by principal component of the Proposed Development. These are shown as follows:
1. Table 2-1 outlines identified NVSRs in the proximity of the Water Recycling Plant (WRP) site.
 2. Table 2-2 outlines identified NVSRs in proximity of the Pipelines between the WRP site and Bedhampton Springs.
 3. Table 2-3 outlines identified NVSRs associated with the Pipeline between the WRP site and Otterbourne Water Supply Works (WSW) (Sections D to M only).
- 2.1.5 Some NVSRs are included in the impact assessments for multiple principal components but for brevity, they are only included in the table for the first principal component where they have been identified. Addresses are not provided for residential dwellings to provide confidentiality.
- 2.1.6 The sensitivity of receptors to health and quality of life-related effects has been classified in accordance with the Guidelines for Environmental Noise Impact Assessment.

Table 2-1 Identified noise and vibration sensitive receptors at the Water Recycling Plant site

NVSR	Classification	Sensitivity	X	Y
R1	Residential	High	470263	106058
R2 - Broadmarsh Business and Innovation Centre	Business park	Medium	470387	105760
FR1 - Land south of Lower Road	Residential	High	469858	105951
R165 - Broadmarsh Coastal Park	Open space and recreation	Medium	470258	105576

Table 2-2 Identified noise and vibration sensitive receptors in proximity to the Pipelines between the Water Recycling Plant site and Bedhampton Springs

NVSR	Classification	Sensitivity	X	Y
R3	Residential	High	470286	106298
R4	Residential	High	470478	106375
R5	Residential	High	470892	107006
R6	Residential	High	470877	106904
R7	Residential	High	470894	107149
R8	Residential	High	470755	107190
R9	Residential	High	470643	107138
R10	Residential	High	470647	106962
R11 - Old Mill house	Hotel	High	470322	106087
R73 - Allotments at James Road	Open space and recreation	Medium	470921	106806
R74 - Allotments adjacent to Bidbury Infant School	Open space and recreation	Medium	470722	106800
R75 - Bidbury Infant and Junior School	Schools and education	High	470630	106807
R76 - St Thomas More's Roman Catholic Primary School	Schools and education	High	470656	107056
R77 - Playing fields adjacent to St Thomas More's RC School	Open space and recreation	Medium	470668	107009
R78 - Havant Rugby Club and adjacent playing fields [Hooks Lane Recreation Ground]	Open space and recreation	Medium	470775	107021
R80	Residential	High	470491	107020
R81	Residential	High	471062	106998
R160 - Church of St Thomas	Religious buildings and grounds	High	470263	106416
R163 - Bedhampton Community Centre	Community centres	High	470635	106547
R194	Residential	High	470266	106459
R215 - Bedhampton Methodist Church	Religious buildings and grounds	High	470318	106948
R221 - Bedhampton Mariners Cricket Club and adjacent playing fields [Bidbury Mead Recreation Ground]	Open space and recreation	Medium	470405	106532

Table 2-3 Identified noise and vibration sensitive receptors associated with the Pipeline between the Water Recycling Plant site and Otterbourne Water Supply Works

NVSR	Classification	Sensitivity	X	Y
FR2 - Welborne	Residential	High	458195	108953
R12 - Brooklands Farmhouse	Residential	High	454271	116680
R16	Residential	High	468278	106213
R17	Residential	High	467875	106249
R18	Residential	High	468120	106017
R19	Residential	High	466663	106682
R20	Residential	High	466614	106478
R21	Residential	High	466387	106349
R22	Residential	High	466127	106464
R23	Residential	High	464687	107137
R24	Residential	High	464058	106942
R25	Residential	High	446055	122771
R26	Residential	High	463700	107602
R28	Residential	High	462033	107835
R29	Residential	High	461916	108007
R30	Residential	High	460693	108091
R31	Residential	High	460311	108253
R32	Residential	High	460273	107483
R33	Residential	High	458959	108498
R34	Residential	High	458682	108015

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NVSR	Classification	Sensitivity	X	Y
R35 - Albany Business Centre	Business park	Medium	457863	109081
R36 - Albany Farm Care Home	Healthcare facilities	High	457888	109012
R37	Residential	High	457773	108904
R38	Residential	High	457881	109304
R39	Residential	High	457505	110721
R40	Residential	High	457889	110609
R41	Residential	High	456901	110734
R42	Residential	High	457169	111013
R43	Residential	High	457352	110917
R44	Residential	High	457555	110567
R46	Residential	High	456892	111029
R47	Residential	High	456203	110909
R48	Residential	High	456959	110848
R49	Residential	High	456294	111695
R50 - Kids Love Nature Kindergarten at Wickham	Schools and education	High	456550	111633
R51	Residential	High	456497	111576
R52 - Little Park Mansions	Residential	High	456366	111900
R53	Residential	High	456522	112005
R54	Residential	High	456791	112041
R55	Residential	High	456841	112174
R56	Residential	High	456947	112240
R57	Residential	High	456968	111993

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NVSR	Classification	Sensitivity	X	Y
R58	Residential	High	456846	111880
R59	Residential	High	457089	112325
R60	Residential	High	457325	112349
R61	Residential	High	457281	112020
R62	Residential	High	457067	112074
R63	Residential	High	457174	112604
R64	Residential	High	456195	111785
R65	Residential	High	457098	112698
R66	Residential	High	456947	113653
R67 - New Place Hotel	Hotel	High	456674	113553
R68	Residential	High	456873	113633
R69	Residential	High	456879	113695
R70	Residential	High	456845	113729
R71 - Christ Church	Religious buildings and grounds	High	466842	106556
R72 - The George Inn	Restaurant	Medium	466720	106438
R82 - Church of St Nicholas	Religious buildings and grounds	Medium	460317	108252
R83	Residential	High	458094	110455
R84	Residential	High	458093	110082
R85 - Site of Wickham Festival	Open space and recreation	Medium	457101	112383
R86	Residential	High	456966	113806
R87	Residential	High	452049	119203
R88	Residential	High	452321	119180

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NVSR	Classification	Sensitivity	X	Y
R89	Residential	High	456298	113907
R90	Residential	High	456485	114018
R91 - The Forge	Restaurant	Medium	456381	114119
R92	Residential	High	456330	114018
R93	Residential	High	456737	113721
R94	Residential	High	456671	113722
R95	Residential	High	456167	114362
R96	Residential	High	455894	114568
R97	Residential	High	455641	114926
R98	Residential	High	454030	115674
R99	Residential	High	453855	115529
R100	Residential	High	454104	115788
R101	Residential	High	454197	115842
R102	Residential	High	453791	116588
R103	Residential	High	454239	116718
R104	Residential	High	453073	117826
R105	Residential	High	453244	117880
R106	Residential	High	453020	117689
R107	Residential	High	452891	117689
R108	Residential	High	455016	115125
R109	Residential	High	452783	117774
R110	Residential	High	453065	117619

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NVSR	Classification	Sensitivity	X	Y
R111	Residential	High	453440	117982
R112	Residential	High	452782	118149
R113 - Winters Hill Hall	Events venue	High	452776	118407
R114	Residential	High	452832	118434
R115	Residential	High	452475	118567
R116	Residential	High	452511	118307
R117	Residential	High	452435	118368
R118	Residential	High	451850	119939
R119	Residential	High	451856	119822
R120	Residential	High	451903	119897
R121	Residential	High	451342	119707
R122	Residential	High	451307	119869
R123	Residential	High	451725	119436
R124 - Wickham allotments	Open space and recreation	Medium	456544	111460
R125	Residential	High	451590	120210
R126	Residential	High	451556	119391
R127	Residential	High	448853	120817
R128	Residential	High	448861	120473
R129	Residential	High	448886	120339
R130	Residential	High	448856	120394
R131	Residential	High	448809	120398
R132	Residential	High	449070	120270

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NVSR	Classification	Sensitivity	X	Y
R133	Residential	High	448934	120148
R134	Residential	High	449022	120093
R135	Residential	High	448735	120209
R136	Residential	High	448721	120980
R137	Residential	High	448399	121060
R138 - Oakwood Lodge Farm Cottages	Hotel	High	448380	121144
R139	Residential	High	447426	121432
R140	Residential	High	447131	121385
R141	Residential	High	447076	121403
R142	Residential	High	446863	121546
R143 - The Brambridge Arms	Restaurant	Medium	447264	121731
R144	Residential	High	447272	121645
R145	Residential	High	446982	121667
R146	Residential	High	447187	121275
R147	Residential	High	446962	121403
R148	Residential	High	447455	121516
R149 - Otterbourne Manor	Residential	High	446401	122390
R150	Residential	High	445934	121818
R151	Residential	High	446338	123213
R152	Residential	High	446301	123175
R153 - Oakwood Park Recreational Ground, Oakwood Park Play Area and Colden Common Football Club	Open space and recreation	Medium	446506	123379

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NVSR	Classification	Sensitivity	X	Y
R154	Residential	High	446270	123264
R155	Residential	High	446911	121818
R156	Residential	High	446392	123355
R161 - WMD Studios	Recording studio	Very high	462062	107833
R162 - Wickham Park Golf Club	Open space and recreation	Medium	456508	110944
R164 - Fort Purbrook Activity Centre	Community centres	High	467841	106354
R166 - The Churchillian Pub	Restaurant	Medium	466082	106483
R167	Residential	High	457620	111004
R168	Residential	High	466462	106254
R169	Residential	High	456249	111774
R170	Residential	High	452282	119079
R171	Residential	High	452227	119035
R172	Residential	High	456628	111707
R173	Residential	High	447480	121416
R174	Residential	High	447344	121136
R175	Residential	High	447735	121530
R177	Residential	High	466096	106209
R178	Residential	High	456200	113635
R179	Residential	High	456382	113643
R180	Residential	High	456781	113640
R181	Residential	High	456842	113550
R182	Residential	High	457045	113711

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NVSR	Classification	Sensitivity	X	Y
R184	Residential	High	454351	116193
R185	Residential	High	453819	115231
R186	Residential	High	456179	113532
R187	Residential	High	457023	113324
R188	Residential	High	456701	113416
R189	Residential	High	457116	113962
R190	Residential	High	457702	110249
R191	Residential	High	450391	120174
R192	Residential	High	450258	120081
R193	Residential	High	455593	114777
R195	Residential	High	456940	113249
R196	Residential	High	457055	112648
R197	Residential	High	446355	122473
R198	Residential	High	456673	111490
R199	Residential	High	456440	111532
R212	Residential	High	457698	110085
R213	Residential	High	465909	107375
R214	Residential	High	466293	106958
R231 - Waterworks Field (including MUGA and play area)	Open space and recreation	Medium	467801	105974
R232 - Portsmouth Golf Course	Open space and recreation	Medium	467986	106762
R238 - The Stables Fitness Studio	Gym	Medium	463030	107561

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NVSR	Classification	Sensitivity	X	Y
R240 - Fareham Barbell Club	Gym	Medium	463056	107621
R246 - Play park at Wickham Community Centre	Open space and recreation	Medium	457274	111840
R247 - Wickham Community Centre	Open space and recreation	Medium	457275	111899
R249 - Wickham Church Of England Primary School	Schools and education	High	457198	111813
R250 - Upper Church Road playground and cricket pitch	Open space and recreation	Medium	456394	113420
R253 - Meon Valley Golf Course	Open space and recreation	Medium	455860	114332
R254 - The Black Dog	Restaurant	Medium	456195	114447
R255 - Allotments, football pitch and cricket club off Albany Road	Open space and recreation	Medium	454030	117763
R256 - Play space at Torbay Farm	Open space and recreation	Medium	453776	117761
R257 - A E Roberts, Woodlea Nurseries	Shop	Medium	453743	117815
R258 - The Alma Inn	Hotel	High	452254	119533
R259 - Upham Village Hall	Community centres	High	452214	119560
R263 - Bow Lake Equestrian	Open space and recreation	Medium	449321	120734
R264 - Fisher's Pond	Restaurant	Medium	448846	121027
R265 - Bright Horizons Fair Oak Day Nurseries and Preschool	Schools and education	High	449084	120019
R267 - The Old Forge	Hotel	High	446154	123284
R268 - Brambridge Park Garden Centre	Shop	Medium	446714	122025
R269 - Cemetery at Old St Matthew's Church [Ruins]	Religious buildings and grounds	Medium	446532	122668
R270	Residential	High	464716	107052

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NVSR	Classification	Sensitivity	X	Y
R271	Residential	High	457811	109628
R272	Residential	High	456875	113676
R273	Residential caravan	High	456304	111685
R274	Residential	High	452016	119331
R275 - Park place centre	Community centres	High	456540	111576
R276 - Wickham Surgery	Healthcare facility	High	457217	112025
R277	Residential	High	451990	119520

3 Survey procedures

3.1 Monitoring locations

- 3.1.1 Aerial imagery was used to determine NVSR locations within the airborne noise study area, defined in section 15.5 of ES Chapter 15 Noise and vibration, Volume I (Document reference 6.1, DCO Volume 6).
- 3.1.2 Monitoring locations were chosen to represent individual or groups of NVSRs and agreed with FBC, EBC, HBC, PCC and WCC are as shown in Table 3-1.
- 3.1.3 Monitoring locations are illustrated in ES Figure 15.1 Noise and vibration direct effects study areas, sensitive receptors and monitoring locations, Volume III (Document reference 6.3, DCO Volume 6).

Table 3-1 Identified noise and vibration sensitive receptors

Monitoring location Identifier	Co-ordinates		Representative receptors
	X	Y	
Locations at the Water Recycling Plant site			
*ME5-1	470265	106083	R1, R2 - Broadmarsh Business and Innovation Centre, FR1 - Land south of Lower Road, R11 - Old Mill house
MN2	470268	105504	Centre of R165 Broadmarsh Coastal Park
Monitoring locations associated with the Pipelines between the Water Recycling Plant and Bedhampton Springs			
ME4-1	470482	106518	R160 - Church of St Thomas, R163 - Bedhampton Community Centre, R194, R221 - Bedhampton Mariners Cricket Club and adjacent playing fields
ME3-1	470874	106962	R5, R75 - Bidbury Infant and Junior School, R76 - St Thomas More's Roman Catholic Primary School, R77 - Playing fields adjacent to St Thomas More's RC School, R73 - Allotments at James Road, R74 - Allotments adjacent to Bidbury Infant School, R6, R7, R8, R9, R10, R78 - Havant Rugby Club and adjacent playing fields [Hooks Lane Recreation Ground]
Monitoring locations associated with the Pipeline between the Water Recycling Plant site and Otterbourne Water Supply Works (Sections D to M only)			
ME6-1	468102	106466	R164 - Fort Purbrook Activity Centre, R16, R17
*ME10-1	466645	106533	R71 - Christ Church, R20

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Monitoring location Identifier	Co-ordinates		Representative receptors
	X	Y	
ME13-3	466311	106922	R214
ME15-1	464044	106951	R24
ME16-1	462008	107867	R161 - WMD Studios, R28, R29
ME17-1	460680	108099	R82 - Church of St Nicholas, R30, R31
ME18-1	459000	108253	R33, R34
*ME19-1	457828	109080	R35 - Albany Business Centre, R36 - Albany Farm Care Home, R37
MN1	456966	111131	R46
MW21	456767	112181	R54, R55, R58
MW17-1	456322	112921	R91 - The Forge, R89, R92
MW19-3	456799	113593	R68, R69, R70, R180, R181, R272
MW14	454247	115919	R98, R99, R100, R101, R184, R185
MW13	454307	117385	R256 - Play space at Torbay Farm, R255 - Allotments, football pitch and cricket club off Albany Road, R257 - A E Roberts, Woodlea Nurseries
MW11	452813	117737	R104, R105, R109, R111
MW10	452704	117949	R106 R107 R110
MW9-1	451880	119861	R118, R119, R120
MW8	450479	120326	R191
MW23	448866	120442	R128 R129 R130 R131
MW6-1	448398	121193	R138 - Oakwood Lodge Farm Cottages, R137
MW5	447542	121694	R143 - The Brambridge Arms, R144
MW1-4	445750	121661	R150
MW4-1	447219	121895	R142, R145
MW1	446315	123206	R153 - Oakwood Park Recreational Ground, Oakwood Park Play Area and Colden Common Football Club, R151, R152, R154, R156
MW15	455197	114988	R108
*MW22	456187	111633	R49, R64, R169, R273

* Indicates measurement locations representative of Noise Sensitive Receptors (NSR) in proximity of Above Ground Plant (i.e. operational noise)

- 3.1.4 The noise measurements were conducted with Sound Level Meters (SLMs) at a height of more than 1.5m above-ground level and 3.5m away from any reflecting surface other than the ground, i.e. in free-field conditions. Most SLMs were mounted on lamppost, telegraph and other utility poles, with the remainder mounted on tripods at a height of 1.5m.
- 3.1.5 For all measurement locations during the noise survey SLMs were set to record the following parameters in 15-minute intervals:
1. L_{Aeq} – the equivalent continuous sound pressure level over the measurement period. This parameter was standardised as pertinent for land use within BS 7445
 2. L_{Amax} – the maximum sound pressure level occurring within the defined measurement period
 3. L_{A90} – the sound pressure level exceeded for 90% of the measurement period and is indicative of the background noise level
 4. L_{A10} - the sound pressure level exceeded for 10% of the measurement period. The L_{A10} index is used as an appropriate descriptor of traffic noise.
- 3.1.6 Surveys were conducted when weather conditions were appropriate for noise measurements, i.e. no rainfall and wind speeds below 5 metres per second (m/s).
- 3.1.7 24-hour noise surveys were undertaken during periods of settled weather where an absence of rainfall and light winds were certain from the Met Office forecast.
- 3.1.8 The same weather condition were targeted for the 4-day surveys. A portable battery-powered meteorological station with logging was installed to verify that weather conditions were appropriate.

4 Results

4.1 Summary of data

4.1.1 The following subsections provide summaries of the data obtained at each survey location. Recorded parameters are presented in Table 4-1. Time periods are as per BS5228-1:2009+A1:2014, where daytime is 07:00-19:00, evening is 1900-2300 and night-time is 2300-0700.

Table 4-1 Baseline Noise Summary - All Measurement Locations

Location ID	Measurement Start Date (dd/mm/yyyy)/Time (hh:mm)	Measurement End (dd/mm/yyyy)/Time (hh:mm)	Time period	$L_{Aeq,15min}$ (dB)	$L_{Amax,15min}$ (dB)	$L_{A10,15min}$ (dB)	$L_{A90,15min}$ (dB)
ME5-1*	03/10/2024 15:45	14/10/2024 12:00	Day	63	98	63	60
			Evening	60	82	61	57
			Night	55	80	56	49
MN2	11/07/2024 14:03	11/07/2024 16:03	Day	51	68	52	49
			Evening	-	-	-	-
			Night	-	-	-	-
ME4-1	27/06/2024 16:35	28/06/2024 15:50	Day	56	86	57	52
			Evening	54	82	50	45
			Night	51	84	51	45
ME3-1	02/07/2024 11:45	03/07/2024 13:30	Day	51	85	51	44
			Evening	52	77	51	41
			Night	42	72	41	35
ME6-1			Day	71	100	76	48

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Location ID	Measurement Start Date (dd/mm/yyyy)/Time (hh:mm)	Measurement End (dd/mm/yyyy)/Time (hh:mm)	Time period	$L_{Aeq,15min}$ (dB)	$L_{Amax,15min}$ (dB)	$L_{A10,15min}$ (dB)	$L_{A90,15min}$ (dB)
	22/07/2024 13:30	23/07/2024 14:30	Evening	70	102	71	41
			Night	62	95	51	33
ME10-1	28/06/2024 16:00	01/07/2024 16:00	Day	55	93	51	42
			Evening	59	102	51	43
			Night	49	92	45	36
ME13-3	11/07/2024 10:30	12/07/2024 10:30	Day	51	86	68	51
			Evening	44	91	44	37
			Night	36	75	43	36
ME15-1*	02/10/2024 13:30	03/10/2024 15:00	Day	60	86	64	49
			Evening	57	84	60	42
			Night	53	82	49	38
ME16-1	15/07/2024 13:30	16/07/2024 13:00	Day	53	87	49	41
			Evening	48	79	45	38
			Night	46	85	40	34
ME17-1	15/07/2024 12:00	16/07/2024 13:15	Day	53	91	49	42
			Evening	44	77	44	38
			Night	45	76	42	36
ME18-1	16/07/2024 15:30	17/07/2024 16:45	Day	50	85	49	45
			Evening	48	72	49	46
			Night	42	70	43	37

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Location ID	Measurement Start Date (dd/mm/yy)/Time (hh:mm)	Measurement End (dd/mm/yy)/Time (hh:mm)	Time period	$L_{Aeq,15min}$ (dB)	$L_{Amax,15min}$ (dB)	$L_{A10,15min}$ (dB)	$L_{A90,15min}$ (dB)
ME19-1	27/06/2024 14:45	01/07/2024 15:15	Day	75	109	79	64
			Evening	73	112	76	58
			Night	67	104	65	37
MN1	16/07/2024 17:30	16/07/2024 18:30	Day	50	79	50	43
			Evening	44	83	42	35
			Night	38	71	35	28
MW21	15/07/2024 14:00	16/07/2024 14:45	Day	64	85	65	54
			Evening	59	80	58	46
			Night	54	77	50	39
MW17-1	22/07/2024 12:00	23/07/2024 13:30	Day	74	101	78	60
			Evening	71	92	74	45
			Night	66	91	57	32
MW19-3	22/07/2024 12:30	23/07/2024 13:45	Day	65	94	70	45
			Evening	61	88	60	36
			Night	56	88	44	31
MW14	22/07/2024 12:00	23/07/2024 12:30	Day	74	97	79	52
			Evening	70	95	73	40
			Night	65	90	49	35
MW13	15/07/2024 13:45	16/07/2024 14:00	Day	50	90	47	38
			Evening	44	67	41	33

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Location ID	Measurement Start Date (dd/mm/yyyy)/Time (hh:mm)	Measurement End (dd/mm/yyyy)/Time (hh:mm)	Time period	$L_{Aeq,15min}$ (dB)	$L_{Amax,15min}$ (dB)	$L_{A10,15min}$ (dB)	$L_{A90,15min}$ (dB)
			Night	36	69	34	27
MW11	22/07/2024 11:30	23/07/2024 12:30	Day	59	88	62	48
			Evening	53	76	54	39
			Night	48	80	43	31
MW10	18/07/2024 13:15	19/07/2024 13:15	Day	61	90	60	38
			Evening	57	84	49	34
			Night	49	82	35	27
MW9-1	18/07/2024 13:00	19/07/2024 15:30	Day	75	109	79	53
			Evening	71	99	75	43
			Night	67	95	54	30
MW8	15/07/2024 12:49	16/07/2024 13:34	Day	52	92	48	41
			Evening	47	81	43	36
			Night	41	75	37	30
MW23	22/07/2024 12:00	23/07/2024 13:30	Day	53	77	56	45
			Evening	52	82	52	37
			Night	45	68	41	30
MW6-1	26/06/2024 13:45	27/06/2024 12:45	Day	47	83	46	38
			Evening	42	74	42	36
			Night	42	78	41	33
MW5			Day	68	96	63	46

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Location ID	Measurement Start Date (dd/mm/yyy)/Time (hh:mm)	Measurement End (dd/mm/yyy)/Time (hh:mm)	Time period	$L_{Aeq,15min}$ (dB)	$L_{Amax,15min}$ (dB)	$L_{A10,15min}$ (dB)	$L_{A90,15min}$ (dB)
	26/06/2024 10:45	27/06/2024 13:00	Evening	56	77	59	39
			Night	52	91	46	37
MW1-4	25/06/2024 12:45	26/06/2024 12:30	Day	59	97	61	37
			Evening	55	83	53	40
			Night	48	79	43	37
MW4-1	18/07/2024 12:00	19/07/2024 16:00	Day	67	97	70	54
			Evening	64	94	65	45
			Night	58	90	51	37
MW1	25/06/2024 12:05	26/06/2024 11:20	Day	56	100	47	37
			Evening	49	95	46	39
			Night	44	66	44	39
MW15	02/10/2024 15:15	03/10/2024 13:45	Day	45	80	47	39
			Evening	40	68	43	33
			Night	38	60	38	30
MW22	03/10/2024 14:30	14/10/2024 13:00	Day	51	84	52	43
			Evening	47	79	49	39
			Night	45	80	41	31

* Indicates measurement locations representative of NSR in proximity of Above Ground Plant (AGP) (i.e. operational noise)

4.2 Above Ground Plant measurement location data summary

- 4.2.1 The results of the unattended baseline noise survey are summarised in this section for the BS4142 daytime (07:00 to 23:00) and night-time (23:00 to 07:00) reference periods.
- 4.2.2 All samples influenced by non-compliant weather conditions (and therefore unsuitable for noise monitoring due to noise interference) have been removed from the data presented in this section.
- 4.2.3 For each measurement location, statistical analysis of the baseline background sound level ($L_{A90,15min}$) was undertaken to determine an appropriate representative level for use in the Operational Phase BS4142 assessment. Histograms were produced based on the 15-minute interval periods and are provided in Annex A.

Measurement location ME5-1 data summary

- 4.2.4 Table 4-2 summarises the BS4142 weather compliant unattended baseline survey sound data (15-minute interval) measured at location ME5-1.

Table 4-2 Baseline noise summary – measurement location ME5-1

Period	Measurement Start and End Date	$L_{Aeq,15min}$ (dB)	Average $L_{A10,15min}$ (dB)	Average $L_{A90,15min}$ (dB)	$L_{AFmax,15min}$ (dB)	
					Max	Min
Daytime	03/10/24 to 14/10/24	62	62	59	98	57
Night time		55	56	49	80	53

- 4.2.5 Statistical analysis of the background sound levels ($L_{A90,15mins}$) measured during the unattended (BS4142 compliant data only) baseline survey at location ME5-1 are detailed in Table 4-3.

Table 4-3 Baseline L_{A90} noise data analysis – ME5-1

Period	Number of BS4142 compliant 15-minute samples collected	$L_{A90,15min}$ analytics (dB)			
		Mode	Average	Median	Standard deviation
Daytime	666	61	59.0	59.5	2.9
Night time	318	46	49.3	48.2	4.5

Measurement location ME10-1 data summary

4.2.1 Table 4-4 summarises the BS4142 weather compliant unattended baseline survey sound data (15-minute interval) measured at location ME10-1.

Table 4-4 Baseline noise summary – measurement location ME10-1

Period	Measurement Start and End Date	$L_{Aeq,15min}$ (dB)	Average $L_{A10,15min}$ (dB)	Average $L_{A90,15min}$ (dB)	$L_{AFmax,15min}$ (dB)	
					Max	Min
Daytime	28/06/24 to 01/07/24	57	51	42	102	53
Night time		49	45	36	92	42

4.2.2 Statistical analysis of the background sound levels ($L_{A90,15mins}$) measured during the unattended (BS4142 compliant data only) baseline survey at location ME10-1 are detailed in Table 4-5.

Table 4-5 Baseline L_{A90} noise data analysis – ME10-1

Period	Number of BS4142 compliant 15-minute samples collected	$L_{A90,15mins}$ analytics (dB)			
		Mode	Average	Median	Standard deviation
Daytime	193	41	42.4	41.9	3.9
Night time	92	30	35.9	35.6	6.8

Measurement location ME19-1 data summary

4.2.3 Table 4-6 summarises the BS4142 weather compliant unattended baseline survey sound data (15-minute interval) measured at location ME19-1.

Table 4-6 Baseline noise summary – measurement location ME19-1

Period	Measurement Start and End Date	$L_{Aeq,15mins}$ (dB)	Average $L_{A10,15min}$ (dB)	Average $L_{A90,15min}$ (dB)	$L_{AFmax,15min}$ (dB)	
					Max	Min
Daytime	27/06/24 to 01/07/24	74	77	61	112	83
Night time		67	65	37	104	77

4.2.4 Statistical analysis of the background sound levels ($L_{A90,15mins}$) measured during the unattended (BS4142 compliant data only) baseline survey at location ME19-1 are detailed in Table 4-7.

Table 4-7 Baseline L_{A90} noise data analysis – ME19-1

Period	Number of BS4142 compliant 15-minute samples collected	$L_{A90,15min}$ analytics (dB)			
		Mode	Average	Median	Standard deviation
Daytime	258	64	60.7	62.8	5.6
Night time	124	39	36.8	37	10.4

Measurement location MW22 data summary

4.2.5 Table 4-8 summarises the BS4142 weather compliant unattended baseline survey sound data (15-minute interval) measured at location MW22.

Table 4-8 Baseline Noise Summary – Measurement Location MW22

Period	Measurement Start and End Date	$L_{Aeq,15min}$ (dB)	Average $L_{A10,15min}$ (dB)	Average $L_{A90,15min}$ (dB)	$L_{AFmax,15min}$ (dB)	
					Max	Min
Daytime	03/10/24 to 14/10/24	50	51	41	84	49
Night time		45	41	31	80	34

4.2.6 Statistical analysis of the background sound levels ($L_{A90,15mins}$) measured during the unattended (BS4142 compliant data only) baseline survey at location MW22 are detailed in Table 4-9.

Table 4-9 Baseline L_{A90} noise data analysis – MW22

Period	Number of BS4142 compliant 15-minute samples collected	$L_{A90,15min}$ analytics (dB)			
		Mode	Average	Median	Standard deviation
Daytime	671	48	45	45	4.5
Night time	318	39	35	34	6.8

4.3 BS4142 Background sound levels ($L_{A90,15mins}$) summary

4.3.1 Statistical analysis of the baseline background sound level (L_{A90}) was undertaken following guidance detailed in BS4142. This process enables the assessor to determine an appropriate representative background sound level for use in the Operational Phase assessment.

- 4.3.2 Histograms were produced based on the 15-minute interval periods and are provided in Annex A.
- 4.3.3 Representative background sound levels for use in the assessment of operational noise impacts are displayed in Table 4-10.

Table 4-10 Representative BS4142 $L_{A90,15min}$ sound levels

NSR ID	Representative $L_{A90,15mins}$ (dB)		Justification
	Daytime	Night time	
ME5-1	57	45	<p>Daytime – 25th percentile is 57dB L_{A90}, this is the lowest value in the cluster of frequently measured values (57 to 61dB L_{A90}) and therefore represents a likely worst case.</p> <p>Night-time – strong modal value towards the lower end of the data range, however this value is above the 25th percentile, selected a lower value representative of the 20th percentile to ensure a likely worst case.</p>
ME10-1	39	29	<p>Daytime – strong modal value towards the lower end of the data range; however, this value is above the 25th percentile, selected a lower value representative of the 20th percentile to ensure a likely worst case.</p> <p>Night-time – strong modal value towards the lower end of the data range, however this value is above the 25th percentile, selected a lower value representative of the 20th percentile to ensure a likely worst case.</p>
ME19-1	47	27	<p>Daytime – large spread of data and measurement location was closer to a roundabout (where traffic would be expected to cluster, raising the $L_{A90,15min}$) than the receptor. Hence, selected a value representative of periods when traffic flows were very low.</p> <p>Night-time – lowest level which was measured a similar number of times to the modal value.</p>
MW22	41	28	<p>Daytime – 25th percentile is 42dB L_{A90}, selected a lower value representative of the 20th percentile to ensure a likely worst case.</p> <p>Night-time – Large spread of data, value based on professional judgement of an observed peak at the lower end of the values which could be considered representative.</p>

5 Correction of measured levels

- 5.1.1 In general, for any survey of ambient noise levels ($L_{Aeq,T}$) intended to be representative of a specific receptor, it will be necessary to make small corrections to the measured levels to account for the measurement location not being precisely coincident with the receptor. In general, even where the measurement and receptor positions are precisely coincident, effects such as façade reflections may also need to be corrected for.
- 5.1.2 For the survey locations reported here, corrections are in general required for differential values of:
1. Distance from a nearby road of the receptor/survey location.
 2. Angle of view of road.
 3. Barrier screening between such a road and the receptor/survey location.
- 5.1.3 None of the measurement locations were subject to façade reflections, and the tabulated results in Table 5-1 are all free-field.
- 5.1.4 Where corrections are made to L_{Aeq} to account for the receptor being at a greater distance from the road than the survey locations, the resultant calculated L_{Aeq} is constrained to be no less than $L_{A90} + 5$, as this would be indicative of an over-correction, perhaps due to the presence of additional noise sources.
- 5.1.5 Time periods are as per BS5228-1:2009+A1:2014, where daytime is 0700-1900, evening is 1900-2300 and night-time is 2300-0700. These corrected results replace the measured survey results in the assessments using these time periods.

Table 5-1 Baseline noise summary – correction of levels (BS5228 assessment periods)

Location ID	Distance correction from road			Additional screening at receptor	Angle of view correction			Time period per BS5228	$L_{Aeq,T}$ (dB)		Comment
	Measured at (m)	Receptor at (m)	Correction (dB)		Correction (dB)	Measured (°)	Receptor (°)		Correction (dB)	Measured	
ME5-1	n/a	n/a	0	0	N/A	N/A	0	Day	63	63	No corrections; survey in receptor garden.
								Evening	60	60	
								Night	55	55	
MN2	n/a	n/a	0	0	N/A	N/A	0	Day	51	51	No corrections; survey at receptor location.
								Evening	-	-	
								Night	-	-	
ME4-1	570	580	0	0	N/A	N/A	0	Day	56	56	Difference between measured day L_{Aeq} and L_{A90} already less than 5.
								Evening	54	54	
								Night	51	51	
ME3-1	n/a	n/a	0	0	N/A	N/A	0	Day	51	51	No corrections; Measurement location representative of receptors.
								Evening	52	52	
								Night	42	42	
ME6-1	7	66	-10	0	N/A	N/A	0	Day	71	61	Complex situation; measurement not on same road as receptor, but same road assumed dominant. Distance corrections made as comparative L_{Aeq} and L_{A10} levels indicate road noise dominant. Limited to $L_{A90}+5$.
								Evening	70	60	
								Night	62	52	

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Location ID	Distance correction from road			Additional screening at receptor	Angle of view correction			Time period per BS5228	$L_{Aeq,T}$ (dB)		Comment
	Measured at (m)	Receptor at (m)	Correction (dB)		Correction (dB)	Measured (°)	Receptor (°)		Correction (dB)	Measured	
ME10-1	133	140	0	-10	90	15	8	Day	55	53	Measurement position has a clear line of sight to A3, receptor is screened by bund but has a wider angle of view.
								Evening	59	57	
								Night	49	47	
ME13-3	n/a	n/a	0	0	N/A	N/A	0	Day	51	51	No Corrections; survey in receptor garden.
								Evening	44	44	
								Night	36	36	
ME15-1	16	26	-2	0	90	180	-3	Day	60	55	Corrected for distance and angle of view.
								Evening	57	52	
								Night	53	48	
ME16-1	n/a	n/a	0	0	N/A	N/A	0	Day	53	53	No corrections; Measurement location representative of receptors.
								Evening	48	48	
								Night	46	46	
ME17-1	n/a	n/a	0	0	N/A	N/A	0	Day	53	53	No corrections; Measurement location representative of receptors.
								Evening	44	44	
								Night	45	45	
ME18-1	n/a	n/a	0	0	N/A	N/A	0	Day	50	50	No corrections; Measurement location representative of receptors.
								Evening	48	48	

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Location ID	Distance correction from road			Additional screening at receptor	Angle of view correction			Time period per BS5228	L _{Aeq,T} (dB)		Comment
	Measured at (m)	Receptor at (m)	Correction (dB)		Correction (dB)	Measured (°)	Receptor (°)		Correction (dB)	Measured	
								Night	42	42	
ME19-1	5	35	-8	0	N/A	N/A	0	Day	75	69	Distance corrected, limited to L _{A90} +5.
								Evening	73	65	
								Night	67	59	
MN1	290	385	-1	0	N/A	N/A	0	Day	50	49	Distance corrected, limited to L _{A90} +5.
								Evening	44	43	
								Night	38	37	
MW21	50	90	-3	0	N/A	N/A	0	Day	64	61	Distance corrected, limited to L _{A90} +5.
								Evening	59	56	
								Night	54	51	
MW17-1	8	22.5	-4	0	N/A	N/A	0	Day	74	70	Distance corrected, limited to L _{A90} +5.
								Evening	71	67	
								Night	66	62	
MW19-3	8	100	-11	0	N/A	N/A	0	Day	65	54	Distance corrected, limited to L _{A90} +5.
								Evening	61	50	
								Night	56	45	
MW14	6	25	-6	0	N/A	N/A	0	Day	74	68	Distance corrected, limited to L _{A90} +5.

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Location ID	Distance correction from road			Additional screening at receptor	Angle of view correction			Time period per BS5228	$L_{Aeq,T}$ (dB)		Comment
	Measured at (m)	Receptor at (m)	Correction (dB)		Correction (dB)	Measured (°)	Receptor (°)		Correction (dB)	Measured	
								Evening	70	64	
								Night	65	59	
MW13	n/a	n/a	0	0	N/A	N/A	0	Day	50	50	No corrections; Measurement location representative of receptors.
								Evening	44	44	
								Night	36	36	
MW11	4	20	-7	0	N/A	N/A	0	Day	59	53	Complex situation; measurement not on same road as receptor, but same road assumed dominant. Distance corrections made as comparative L_{Aeq} and L_{A10} levels indicate road noise dominant. Limited to $L_{A90}+5$.
								Evening	53	46	
								Night	48	41	
MW10	2	345	-22	-10	N/A	N/A	0	Day	61	43	Complex situation with multiple sources affecting receptor, requiring large correction, likely to be inaccurate. Limited to $L_{A90}+5$.
								Evening	57	39	
								Night	49	32	
MW9-1	8	23	-5	0	N/A	N/A	0	Day	75	70	Distance corrected, limited to $L_{A90}+5$.
								Evening	71	66	
								Night	67	62	
MW8	n/a	n/a	0	0	N/A	N/A	0	Day	52	52	No corrections; Measurement location representative of receptors.
								Evening	47	47	

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Location ID	Distance correction from road			Additional screening at receptor	Angle of view correction			Time period per BS5228	$L_{Aeq,T}$ (dB)		Comment
	Measured at (m)	Receptor at (m)	Correction (dB)		Correction (dB)	Measured (°)	Receptor (°)		Correction (dB)	Measured	
								Night	41	41	
MW23	5	10	-3	-5	N/A	N/A	0	Day	53	50	Distance corrected, limited to $L_{A90}+5$.
								Evening	52	44	
								Night	45	37	
MW6-1	410	544	-1	0	N/A	N/A	0	Day	47	46	Distance corrected, limited to $L_{A90}+5$.
								Evening	42	41	
								Night	42	41	
MW5	2350	2300	0	0	N/A	N/A	0	Day	68	68	Distance corrected, limited to $L_{A90}+5$.
								Evening	56	56	
								Night	52	52	
MW1-4	600	800	-1	0	N/A	N/A	0	Day	59	58	Distance corrected, limited to $L_{A90}+5$.
								Evening	55	54	
								Night	48	47	
MW4-1	5.3	29.5	-7	-10	N/A	N/A	0	Day	67	59	Measurement has clear line of sight to road, receptor is screened. The measurement position is at a major 4-way junction, not all traffic will pass the receptor. Limited to $L_{A90}+5$.
								Evening	64	50	
								Night	58	42	
MW1	624	638	0	0	N/A	N/A	0	Day	56	56	Distance corrected, limited to $L_{A90}+5$.

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Location ID	Distance correction from road			Additional screening at receptor	Angle of view correction			Time period per BS5228	$L_{Aeq,T}$ (dB)		Comment
	Measured at (m)	Receptor at (m)	Correction (dB)		Correction (dB)	Measured (°)	Receptor (°)		Correction (dB)	Measured	
								Evening	49	49	
								Night	44	44	
MW15	n/a	n/a	0	0	N/A	N/A	0	Day	45	45	No corrections; Measurement location representative of receptors.
								Evening	40	40	
								Night	38	38	
MW22	60	20	5	-15	90	180	-3	Day	51	48	AOV of measurement location is 90 degrees. Additionally, receptor faces away from road so 15dB barrier effect. Receptor closer to the road than the measurement. Limited to $L_{A90}+5$.
								Evening	47	44	
								Night	45	36	

6 Strategic noise mapping noise levels in lieu of survey data

- 6.1.1 Where no noise data exists from the noise survey campaign, for example where receptor locations have been introduced to the assessment following the completion of the survey period, strategic noise mapping has been used to derive representative L_{Aeq} .
- 6.1.2 Strategic noise mapping is discussed in Table 15-1 of ES Chapter 15 Noise and vibration, Volume I (Document reference 6.1, DCO Volume 6). It provides L_{Aeq} levels for daytime, evening and night-time close to significant road and rail sources across England, based on calculated noise emissions from those sources.
- 6.1.3 To derive the ambient noise levels tabulated here, separate levels for road and rail noise have been extracted and logarithmically summed.
- 6.1.4 Free-field receptor noise levels derived in this manner are presented in Table 6-1. Where levels fall below the threshold of the dataset, n/a is shown.

Table 6-1 Receptor baseline noise levels from strategic noise mapping

NVSR	L _{Aeq,T} (dB)		
	Night (7:00pm to 7:00am)	Evening (7:00pm to 11:00pm)	Day (7:00am to 7:00pm)
FR1 - Land south of Lower Road	53	59	61
FR2 – Welborne	N/a	44	46
R1	51	58	60
R2 - Broadmarsh Business and Innovation Centre	50	57	59
R3	51	57	59
R4	59	64	65
R5	36	48	53
R6	N/a	47	52
R7	N/a	51	56
R8	N/a	43	46
R9	N/a	49	53
R10	N/a	43	47
R11 - Old Mill house	50	56	57
R12 - Brooklands Farmhouse	N/a	N/a	N/a
R16	37	46	49
R17	37	51	55
R18	N/a	N/a	44
R19	N/a	N/a	N/a
R20	N/a	48	53
R21	N/a	N/a	N/a
R22	35	54	59
R23	N/a	N/a	N/a
R24	N/a	57	60
R25	43	50	53
R26	N/a	66	69
R28	N/a	50	55
R29	N/a	N/a	44
R30	N/a	56	61
R31	N/a	41	46
R32	N/a	47	52
R33	36	43	45

NVSR	L _{Aeq,T} (dB)		
	Night (7:00pm to 7:00am)	Evening (7:00pm to 11:00pm)	Day (7:00am to 7:00pm)
R34	38	45	47
R35 - Albany Business Centre	N/a	60	63
R36	N/a	60	63
R37	35	52	55
R38	N/a	52	56
R39	N/a	57	60
R40	N/a	46	49
R41	N/a	N/a	45
R42	N/a	44	49
R43	N/a	45	48
R44	N/a	59	62
R46	N/a	N/a	N/a
R47	N/a	N/a	N/a
R48	N/a	N/a	44
R49	N/a	N/a	43
R50 - Kids Love Nature Kindergarten at Wickham	N/a	N/a	N/a
R51	N/a	N/a	N/a
R52 - Little Park Mansions	N/a	N/a	42
R53	40	47	51
R54	53	56	58
R55	48	51	54
R56	N/a	N/a	40
R57	35	N/a	42
R58	45	48	51
R59	N/a	48	53
R60	N/a	56	61
R61	N/a	42	47
R62	N/a	N/a	42
R63	N/a	49	53
R64	N/a	48	53
R65	N/a	43	47
R66	N/a	N/a	N/a

NVSR	L _{Aeq,T} (dB)		
	Night (7:00pm to 7:00am)	Evening (7:00pm to 11:00pm)	Day (7:00am to 7:00pm)
R67 - New Place Hotel	N/a	44	49
R68	N/a	N/a	N/a
R69	N/a	52	57
R70	N/a	48	53
R71 - Christ Church	54	59	62
R72 - The George Inn	61	66	70
R73 - Allotments at James Road	42	49	50
R74 - Allotments adjacent to Bidbury Infant School	37	47	51
R75 - Bidbury Infant and Junior School	N/a	N/a	42
R76 - St Thomas More's Roman Catholic Primary School	N/a	42	44
R77 - Playing fields adjacent to St Thomas Mores RC School	36	43	46
R78 - Havant Rugby Club and adjacent playing fields [Hooks Lane Recreation Ground]	36	44	46
R80	N/a	45	50
R81	N/a	47	52
R82 - Church of St Nicholas	N/a	42	47
R83	N/a	45	49
R84	N/a	44	47
R85 - Site of Wickham Festival	N/a	49	54
R86	N/a	48	52
R87	N/a	50	57
R88	N/a	52	57
R89	N/a	56	60
R90	N/a	45	50
R91 - The Forge	N/a	58	63
R92	N/a	53	58
R93	N/a	41	45
R94	N/a	N/a	41
R95	N/a	N/a	42
R96	N/a	49	55
R97	N/a	N/a	44

NVSR	L _{Aeq,T} (dB)		
	Night (7:00pm to 7:00am)	Evening (7:00pm to 11:00pm)	Day (7:00am to 7:00pm)
R98	N/a	46	50
R99	N/a	55	59
R100	N/a	62	67
R101	N/a	52	56
R102	N/a	N/a	N/a
R103	N/a	N/a	N/a
R104	N/a	52	57
R105	N/a	48	53
R106	N/a	41	46
R107	N/a	44	49
R108	N/a	40	46
R109	N/a	56	61
R110	N/a	N/a	N/a
R111	N/a	47	52
R112	N/a	N/a	N/a
R113 - Winters Hill Hall	N/a	N/a	N/a
R114	N/a	N/a	N/a
R115	N/a	46	52
R116	N/a	46	52
R117	N/a	53	58
R118	N/a	52	57
R119	N/a	53	58
R120	N/a	50	55
R121	N/a	N/a	43
R122	N/a	N/a	N/a
R123	N/a	50	54
R124 - Wickham allotments	N/a	N/a	N/a
R125	N/a	50	55
R126	N/a	48	52
R127	N/a	55	59
R128	N/a	61	65
R129	N/a	65	69

Hampshire Water Transfer and Water Recycling Project
Environmental Statement – Appendix 15.4 Acoustic terminology and baseline

NVSR	L _{Aeq,T} (dB)		
	Night (7:00pm to 7:00am)	Evening (7:00pm to 11:00pm)	Day (7:00am to 7:00pm)
R130	N/a	56	60
R131	N/a	44	47
R132	N/a	42	45
R133	N/a	53	57
R134	N/a	57	62
R135	N/a	N/a	40
R136	N/a	43	47
R137	N/a	N/a	N/a
R138 - Oakwood Lodge Farm Cottages	N/a	N/a	N/a
R139	N/a	50	55
R140	37	42	45
R141	N/a	N/a	41
R142	40	60	64
R143 - The Brambridge Arms	36	49	53
R144	38	46	47
R145	40	55	59
R146	36	41	45
R147	37	49	53
R148	36	45	48
R149 - Otterbourne Manor	44	49	50
R150	42	47	48
R151	41	46	47
R152	42	48	50
R153 - Oakwood Park Recreational Ground, Oakwood Park Play Area and Colden Common Football Club	44	50	51
R154	40	51	55
R155	40	47	48
R156	40	48	51
R160 - Church of St Thomas	45	52	55
R161 - WMD Studios	N/a	N/a	45
R162 - Wickham Park Golf Club	N/a	N/a	N/a
R163 - Bedhampton Community Centre	47	54	56

NVSR	L _{Aeq,T} (dB)		
	Night (7:00pm to 7:00am)	Evening (7:00pm to 11:00pm)	Day (7:00am to 7:00pm)
R164 - Fort Purbrook Activity Centre	36	51	55
R165 - Broadmarsh Coastal Park	46	55	59
R166 - The Churchillian Pub	N/a	50	55
R167	38	54	59
R168	62	66	69
R169	N/a	45	50
R170	N/a	51	56
R171	N/a	50	56
R172	36	N/a	41
R173	N/a	48	53
R174	N/a	43	48
R175	N/a	53	58
R177	43	46	49
R178	N/a	53	58
R179	N/a	51	56
R180	N/a	47	52
R181	N/a	N/a	41
R182	N/a	N/a	N/a
R184	N/a	46	50
R185	N/a	41	45
R186	N/a	42	47
R187	N/a	N/a	N/a
R188	N/a	49	54
R189	N/a	N/a	41
R190	N/a	62	65
R191	N/a	N/a	N/a
R192	N/a	N/a	N/a
R193	N/a	47	53
R194	45	52	54
R195	N/a	N/a	N/a
R196	N/a	48	53
R197	42	48	48

NVSR	L _{Aeq,T} (dB)		
	Night (7:00pm to 7:00am)	Evening (7:00pm to 11:00pm)	Day (7:00am to 7:00pm)
R198	N/a	N/a	N/a
R199	N/a	N/a	N/a
R212	N/a	63	66
R213	N/a	42	48
R214	N/a	N/a	N/a
R215 - Bedhampton Methodist Church	36	55	59
R221 - Bedhampton Mariners Cricket Club and adjacent playing fields [Bidbury Mead Recreation Ground]	43	50	52
R231 - Waterworks Field (including MUGA and play area)	37	44	47
R232 - Portsmouth Golf Course	N/a	N/a	N/a
R238 - The Stables Fitness Studio	N/a	N/a	N/a
R240 - Fareham Barbell Club	N/a	N/a	42
R246 - Play park at Wickham Community Centre	N/a	N/a	43
R247 - Wickham Community Centre	N/a	41	46
R249 - Wickham Church Of England Primary School	N/a	N/a	40
R250 - Upper Church Road playground and cricket pitch	N/a	44	49
R253 - Meon Valley Golf Course	N/a	N/a	N/a
R254 - The Black Dog	N/a	49	53
R255 - Allotments, football pitch and cricket club off Albany Road	N/a	N/a	N/a
R256 - Play space at Torbay Farm	N/a	N/a	N/a
R257 - A E Roberts, Woodlea Nurseries	N/a	N/a	N/a
R258 - The Alma Inn	N/a	55	60
R259 - Upham Village Hall	N/a	58	63
R263 - Bow Lake Equestrian	N/a	N/a	43
R264 - Fisher's Pond	N/a	54	58
R265 - Bright Horizons Fair Oak Day Nurseries and Preschool	N/a	46	50
R267 - The Old Forge	43	52	56
R268 - Brambridge Park Garden Centre	44	50	51
R269 - Cemetery at Old St Matthew's Church [Ruins]	48	53	55
R270	N/a	47	53

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NVSR	L _{Aeq,T} (dB)		
	Night (7:00pm to 7:00am)	Evening (7:00pm to 11:00pm)	Day (7:00am to 7:00pm)
R271	N/a	56	59
R272	N/a	50	55
R273	N/a	N/a	41
R274	N/a	44	48
R275 - Park place centre	N/a	N/a	N/a
R276 - Wickham Surgery	N/a	N/a	40

Glossary

Common acoustic terms

Defined Term	Description
<p>A-weighting L_A or L_{pA}, L_{WA},</p> <p>similar – C-weighting L_C or L_{pC}, L_{WC}</p>	<p>Is an electronic filter which is equal to the frequency sensitivity of the human ear. Human hearing sensitivity is at a maximum at around 2 kHz and steadily decreases above and below. Below 20 Hz and above about 20 kHz humans can't hear at all.</p> <p>Within its operating limits a precision measurement microphone measures all frequencies the same so the output it produces does not reflect what humans would hear. When considering impacts on humans, it is therefore often necessary to apply an A-weighting to the measured sound frequency spectrum. When A-weighted, the Sound Pressure Level L_p becomes L_{pA} (or L_A) and the Sound Power Level L_W becomes L_{WA}.</p> <p>The response of the human ear varies depending on how loud the sound is. A-weighting matches the response of a sound level meter to human hearing at low levels (~ 40-90 dB). For higher levels there are other weightings, the most common of which is the C-weighting.</p>
Decibels (dB)	<p>A logarithmic ratio of two values of a variable. The decibel is not a true measurement unit nor is it exclusive to noise assessments. Decibels are used because they can represent very wide ranges of ratios (from trillionths and billionths to billions and trillions) with a small range of decibel values. Decibels can be used to represent measured values by using a known reference value in the ratio. When using decibels to measure something it is therefore important to specify what variable is being measured and what reference level has been used. This is done by adding a reference value statement in the form dB re x units, where the units indicate the variable being measured and x is the reference value.</p> <p>Decibels are used in noise assessments because the human ear responds to sound pressure in a logarithmic way and the quantities measured in acoustics vary over wide ranges.</p> <p>As the decibel is used in acoustics to represent a range of sound level parameters, there is a standardised notation system. This takes the form of an italic capital letter 'L' (referring to 'level') and subscript characters which give specific details of what is being represented.</p> <p>Because decibels are logarithmic, they must be added, subtracted, multiplied, divided and averaged using different techniques from normal, linear, quantities.</p>
Directivity	The amount by which a source radiates more sound in one direction than another.
Free-Field	Free-field measurements contain only direct sound propagation, with no sound reaching the ear (or microphone) from reflections.
Index	A value based on the mathematical processing of raw data.
Indicator	<p>A value used to indicate the likelihood of a particular response of effect.</p> <p>e.g. $L_{10,18hr}$ is an index based on statistical processing of sound pressure data that is used as an indicator for road traffic noise response.</p>
Level	Values measured in decibels.

Defined Term	Description
Near and far-fields	<p>These are the regions of the radiation field of a sound source. In the near field, the sound pressure and acoustic particle velocity are not in phase and there is no simple relationship between sound pressure level and distance from the source. The near field is limited to a distance from the source of around a wavelength of sound or three times the largest dimension of the sound source (whichever is the larger).</p> <p>The far field is the region of the sound field in which sound pressure level decreases predictably with distance. For a point source, the sound pressure level decreases by 6 dB for each doubling of distance. It extends from the near field to infinity.</p>
Noise	No strict definition and is often used interchangeably with sound. However, it is usually taken to mean unwanted sound.
Sound	The physical phenomenon of the transmission of energy through gaseous, liquid or solid media via rapid periodic fluctuations in pressure.
Sound Pressure Level L_p obsolete – SPL	<p>The basic measure of how much sound there is at a given location. It is a measure of the size of the pressure fluctuations in the air that we perceive as sound.</p> <p>Sound Pressure Level is expressed in decibels with a reference level of 20×10^{-6} Pa (L_p in dB re 20 μPa).</p>
Sound Power Level L_w obsolete – SWL	<p>The total amount of sound produced by a source. It cannot be measured directly but can be calculated from Sound Pressure Level measurements in known conditions. It can be used to predict the Sound Pressure Level at any point.</p> <p>Sound Power Level is expressed in decibels with a reference level of 1×10^{-12} W (L_w in dB re 1 pW).</p>

Common noise level parameters

Defined Term	Description
L_p L_{pA} (or L_A) L_{AF} , L_{AS}	<p>The instantaneous sound pressure level (L_p).</p> <p>The A-weighted instantaneous sound pressure level (L_{pA} or L_A).</p> <p>This is the root mean square size of the pressure fluctuations in the air. This level can fluctuate wildly even for seemingly steady sounds. To make sound level meters easier to read the values on the display are smoothed or damped out. This is effectively done by taking a rolling average of the previous 0.125 seconds (s) (FAST time constant) or the previous 1s (SLOW time constant).</p> <p>The letters F or S are added to the subscripts in the notation to indicate when the FAST or SLOW time constant has been used. These are often omitted but it is good practice to include them.</p>
L_{max} L_{Amax} L_{AFmax} L_{min} , L_{Fmin}	<p>The maximum instantaneous sound pressure level (L_{max}),</p> <p>The A-weighted maximum instantaneous sound pressure level (L_{Amax}).</p> <p>The A-weighted maximum instantaneous sound pressure level with a FAST time constant (L_{AFmax}).</p> <p>This is the highest instantaneous sound pressure level reached during a measurement period.</p> <p>The opposite of the L_{max} is the minimum instantaneous sound pressure level or L_{min} etc.</p>

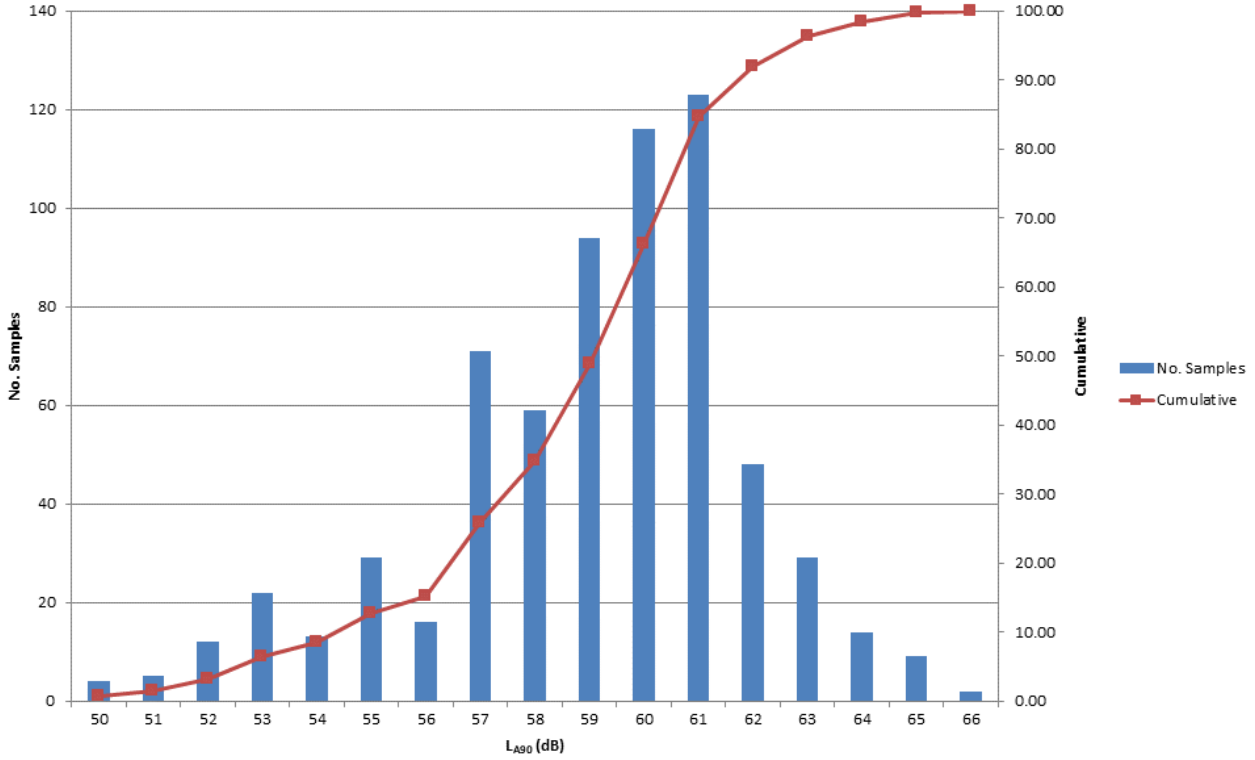
Defined Term	Description
	<p>It is good practice to include the letter which identifies the time constant used as this can make a significant difference to the value.</p>
<p>$L_{N,T}$ $L_{AN,T}$ $L_{AFN,T}$ $N =$ %age value, 0-100 $T =$ measurement time e.g. L_{A90}, L_{A10}, $L_{AF90, 5 \text{ min}}$</p>	<p>The percentage exceedance sound pressure level ($L_{N,T}$), The A-weighted percentage exceedance sound pressure level ($L_{AN,T}$), the A-weighted percentage exceedance sound pressure level with a FAST time constant ($L_{AFN,T}$). This is the sound pressure level exceeded for N% of the time T. e.g. If an A-weighted level of x dB is exceeded for a total of six minutes within one hour, the level will have been above x dB for 10% of the measurement period. This is written as $L_{A10,1hr} = x \text{ dB}$. L_{A0} (the level exceeded for 0 % of the time) is equivalent to the L_{Amax} and L_{A100} (the level exceeded for 100 % of the time) is equivalent to the L_{Amin}. It is good practice to include the letter which identifies the time constant used as this can make a significant difference to the value.</p>
<p>$L_{eq,T}$ $L_{Aeq,T}$ $T =$ measurement time e.g. $L_{Aeq,5min}$</p>	<p>The equivalent continuous sound pressure level over period T ($L_{eq,T}$). The A-weighted equivalent continuous sound pressure level over period T ($L_{Aeq,T}$). This is effectively the average sound pressure level over a given period. As the decibel is a logarithmic quantity the L_{eq} is not a simple arithmetic mean value. The L_{eq} is calculated from the raw sound pressure data. It is not appropriate to include a reference to the FAST and SLOW time constants in the notation.</p>

References

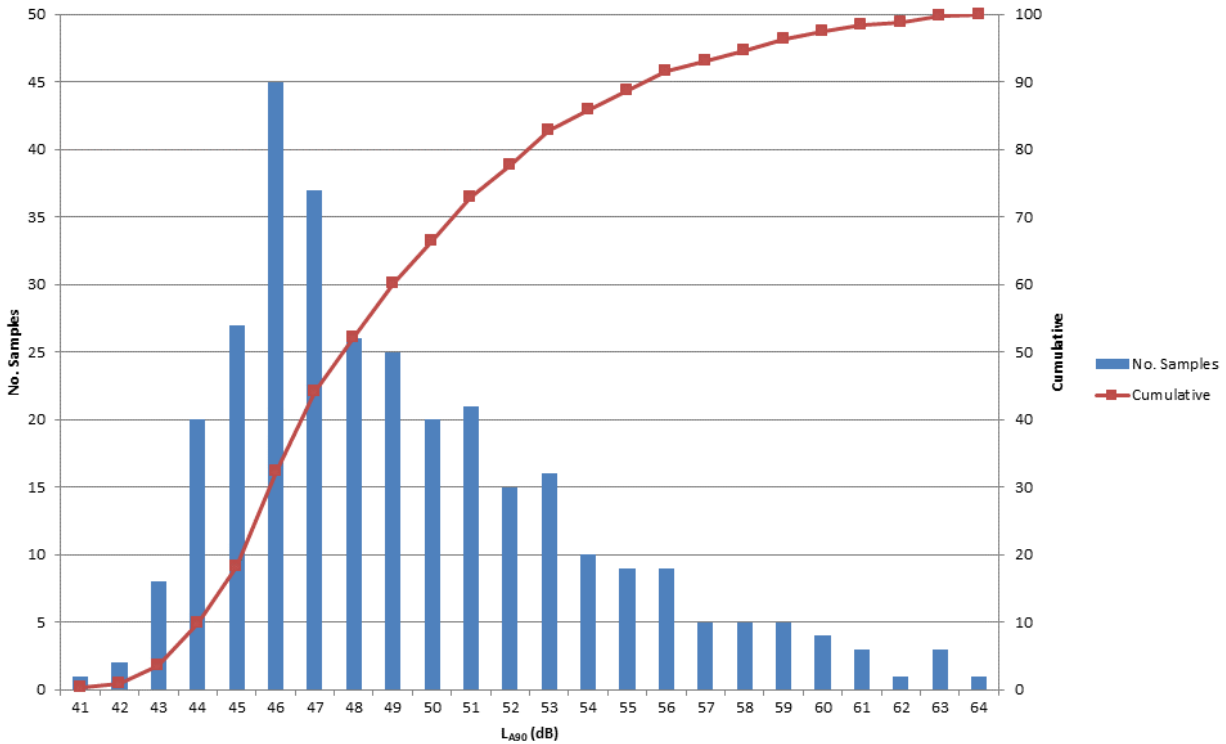
- [1] British Standards Institution, *British Standard 4142:2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound*, London: BSI, 2019.
- [2] British Standards Institution, *British Standard 7445-2:1991 Description and measurement of environmental noise – Part 2: Guide to the acquisition of data pertinent to land use*, London: BSI, 1991.

Annex A Background Sound Level Histograms

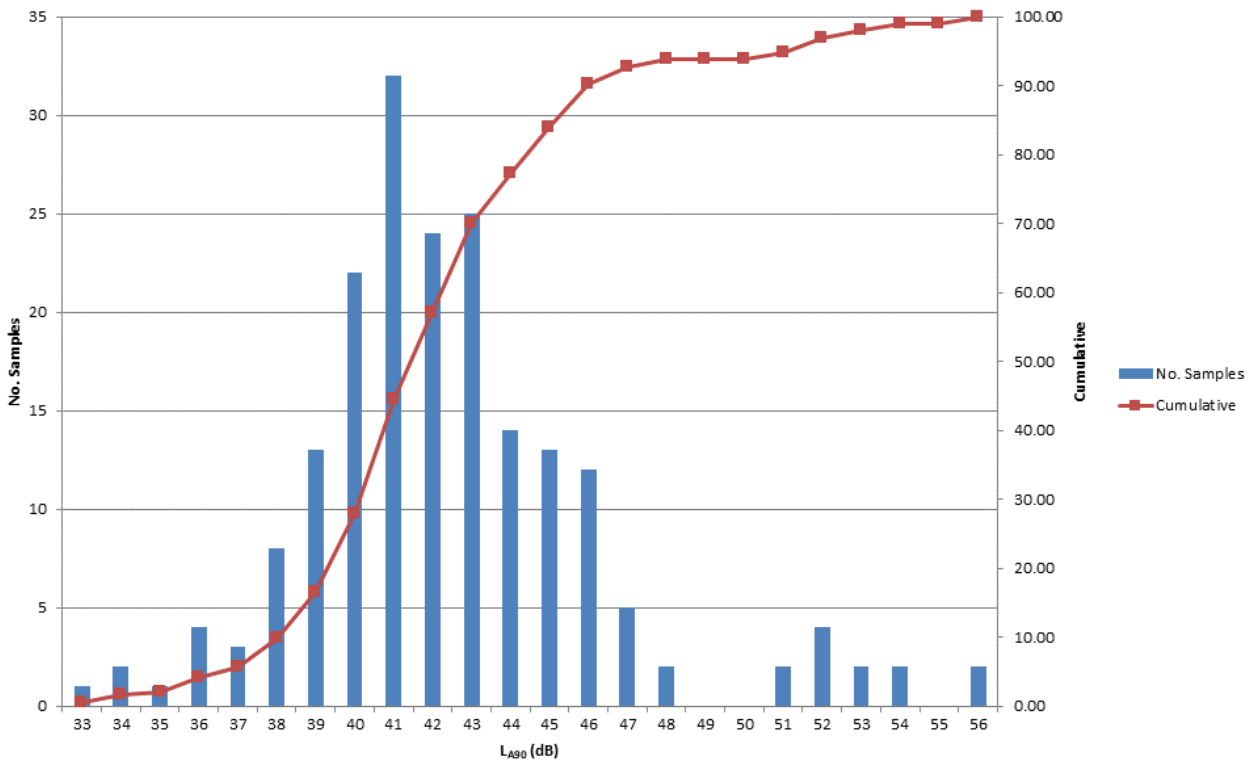
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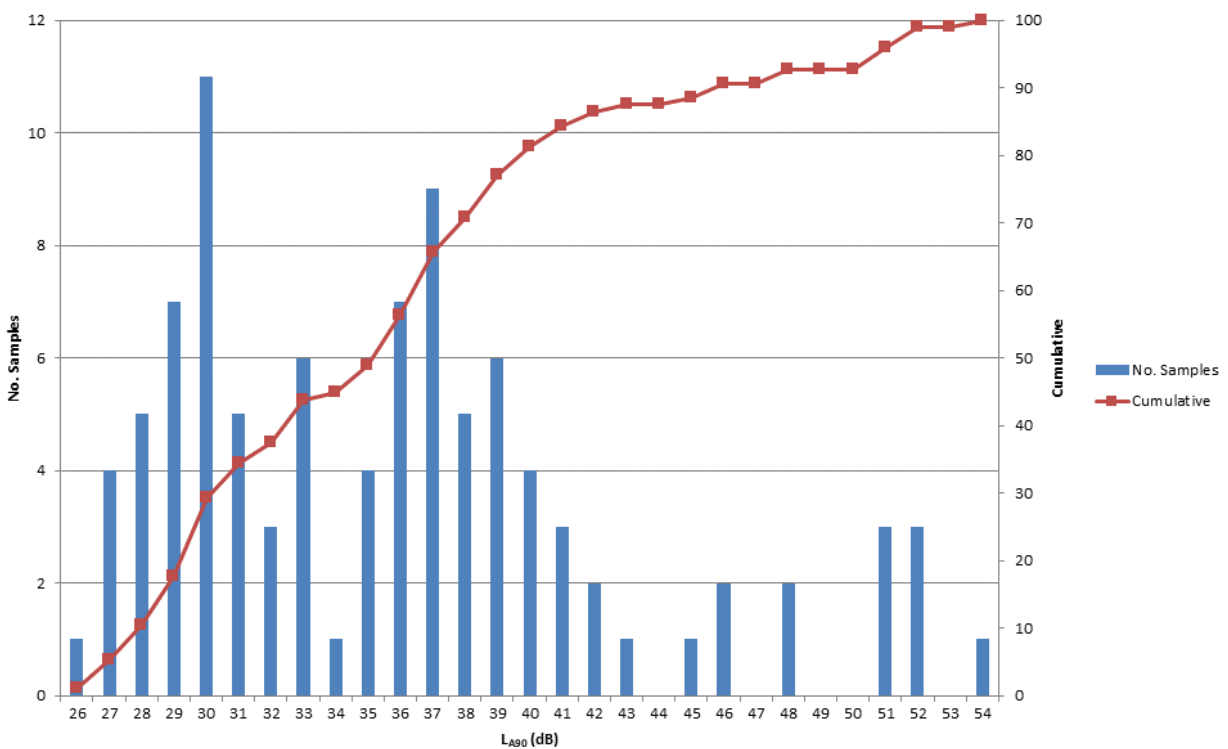
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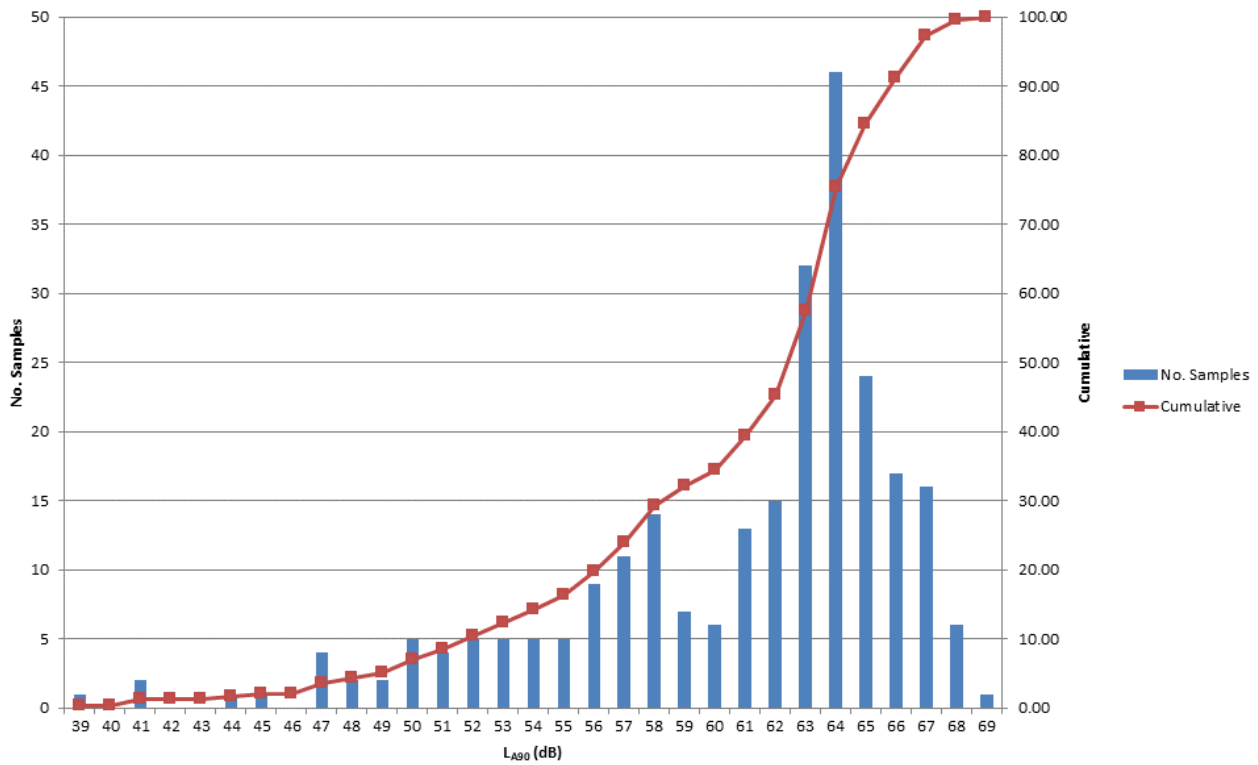
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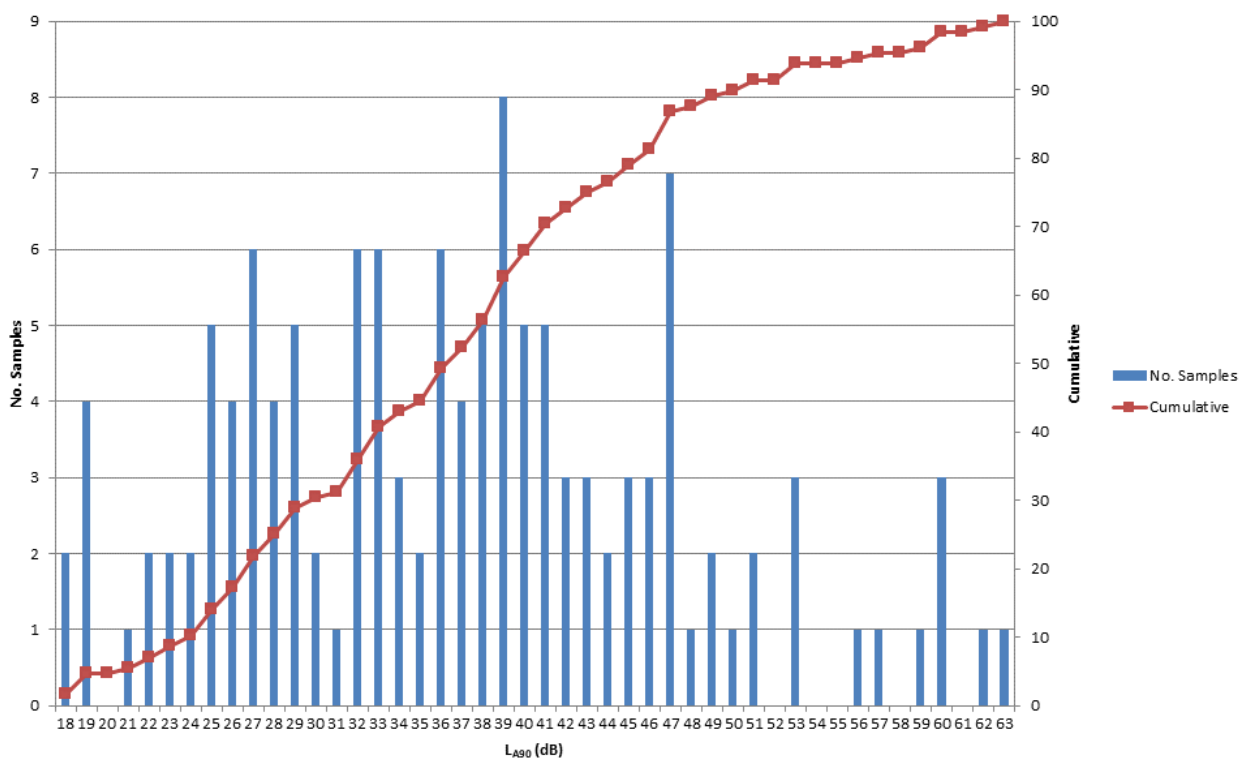
ME10 Night-time Background Sound Levels



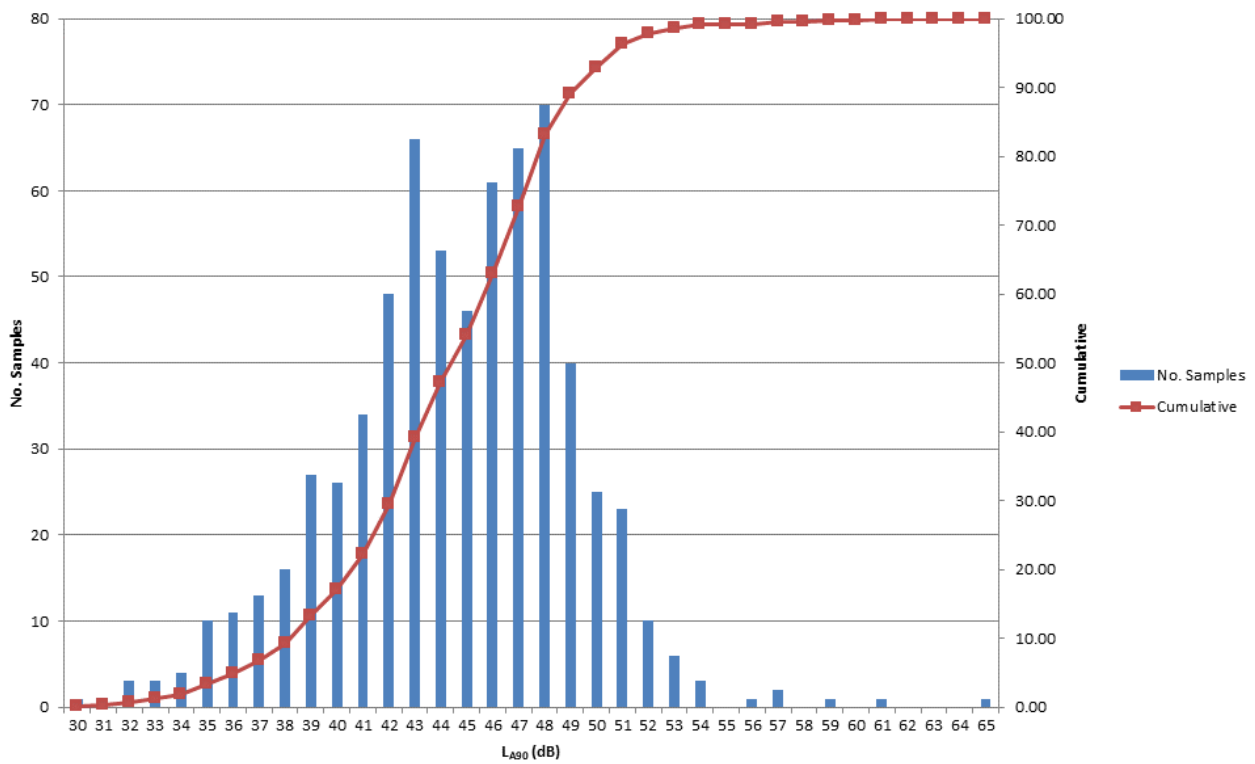
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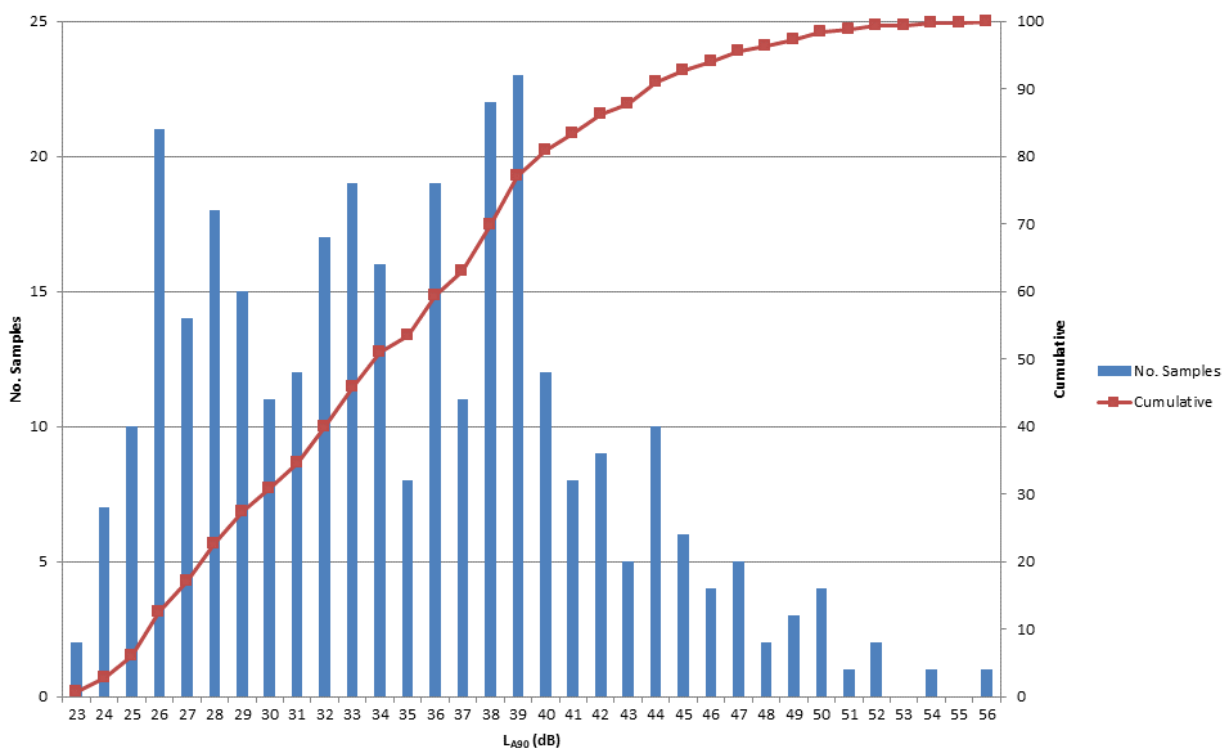
ME19 Night-time Background Sound Levels



MW22 Daytime Background Sound Levels



MW22 Night-time Background Sound Levels





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The Southern Water logo graphic consists of three white, stylized wavy lines that resemble water waves, positioned to the right of the word "Water".