

Appendix 11C

Baseline Sound Level Monitoring

[THIS PAGE INTENTIONALLY LEFT BLANK]

## APPENDIX 11C: BASELINE SOUND LEVEL MONITORING

### Instrumentation

The table below identifies the instrumentation used to conduct the measurements.

**Table 1: Sound measurement equipment details per location.**

Equipment Type by Location	GPS Coordinates	Equipment Type by Location
Sound level meter for M1	S/N 97568	53.3249483,-7.2433253
Sound level meter for M2	S/N 98491	53.3287816,-7.2520075
Sound level meter for M3	S/N 98491	53.3340252,-7.2466146
Sound level meter for M4	S/N 97571	53.3429941,-7.2469539
Sound level meter for M5	S/N 97571	53.3824483,-7.2345442
Sound level meter for M6	S/N 98410	53.3872659,-7.2408631
Sound level meter for M7	S/N 98491	53.4044058,-7.2801307
Sound level meter for M8	S/N 97571	53.3922107, -7.2536459

Calibrators used were:

- SVAN SV33 Calibrator S/N 48871; and
- SVAN SV33B Calibrator S/N 100013.

All the above equipment has in-date factory calibration certificates. The sound level meters (SLMs) were field calibrated before conducting measurements and calibration was checked at the end of the measurements, where the maximum deviation in the calibrated signals was 0.5dB. All SLMs have been calibrated at an accredited laboratory within the previous two years.

All monitoring locations were approx. 1.5m above ground level and free-field i.e. at least 3.5m away from any reflecting surface except the ground.

### Weather conditions

The meteorological conditions throughout the monitoring period were suitable for sound measurements.

Best efforts were made to ensure the setup and monitoring periods were completed at each location during periods of dry weather, for some periods this wasn't achievable. The below climate profile is taken from closest available Met Eireann data source (Gurteen) to Derrygreenagh Co. Offaly.

Throughout the month of April, daytime temperatures generally reached highs of c.9°C and at night the average minimum temperature drops down to around 3°C..The daily relative humidity for March was in the range of 81%. The monthly amount of precipitation has been recorded at 54.8mm.

Throughout the month of May daytime temperatures generally reached highs of c.12.5°C and at night the average minimum temperature drops down to around 4°C.The daily relative humidity for May was in the range of 80%. The monthly amount of precipitation has been recorded at 42.9mm.

## Baseline Sound Levels

The tables below identify baseline sound levels for daily day, evening, and night periods, for difference receptors.

**Table 2: Baseline sound levels for Receptor M1.**

Period	Start Time & Date	End Time & Date	LA <sub>eq</sub>	LAF <sub>max</sub>	L <sub>A90</sub> (Mode)	L <sub>A90</sub> (Mean)
Day	21/04/2023 07:00	21/04/2023 18:45	60	95	43	43
Day	22/04/2023 07:00	22/04/2023 18:45	58	90	39	41
Day	23/04/2023 07:00	23/04/2023 18:45	58	88	39	38
Day	24/04/2023 07:00	24/04/2023 18:45	58	97	39	39
Day	25/04/2023 07:00	25/04/2023 18:45	60	99	36	37
Evening	20/04/2023 19:00	20/04/2023 22:45	50	76	41	41
Evening	21/04/2023 19:00	21/04/2023 22:45	62	97	42	35
Evening	22/04/2023 19:00	22/04/2023 22:45	58	95	40	38
Evening	23/04/2023 19:00	23/04/2023 22:45	52	86	22	31
Evening	24/04/2023 19:00	24/04/2023 22:45	49	79	39	32
Evening	25/04/2023 19:00	25/04/2023 22:45	50	82	37	32
Night	20/04/2023 23:00	21/04/2023 06:45	58	91	27	30
Night	21/04/2023 23:00	22/04/2023 06:45	56	89	23	26
Night	22/04/2023 23:00	23/04/2023 06:45	56	89	22	29
Night	23/04/2023 23:00	24/04/2023 06:45	55	89	20	25
Night	24/04/2023 23:00	25/04/2023 06:45	58	99	21	26
Night	25/04/2023 23:00	26/04/2023 06:45	56	95	20	25

**Table 3: Baseline sound levels for Receptor M2.**

Period	Start Time & Date	End Time & Date	LA <sub>eq</sub>	LAF <sub>max</sub>	L <sub>A90</sub> (Mode)	L <sub>A90</sub> (Mean)
Day	27/04/2023 07:05	27/04/2023 18:50	58	85	42	43
Day	28/04/2023 07:05	28/04/2023 18:50	57	85	43	43
Day	29/04/2023 07:05	29/04/2023 18:50	56	89	43	42
Day	30/04/2023 07:05	30/04/2023 18:50	56	90	44	44
Day	01/05/2023 07:05	01/05/2023 18:50	57	100	42	43
Day	02/05/2023 07:05	02/05/2023 18:50	56	93	42	42
Day	03/05/2023 07:05	03/05/2023 18:50	58	89	43	43
Evening	26/04/2023 19:05	26/04/2023 22:50	55	82	22	34
Evening	27/04/2023 19:05	27/04/2023 22:50	54	85	42	33
Evening	28/04/2023 19:05	28/04/2023 22:50	58	88	45	37
Evening	29/04/2023 19:05	29/04/2023 22:50	61	102	45	37
Evening	30/04/2023 19:05	30/04/2023 22:50	61	103	44	37
Evening	01/05/2023 19:05	01/05/2023 22:50	59	98	45	38
Evening	02/05/2023 19:05	02/05/2023 22:50	54	88	41	34

Evening	03/05/2023 19:05	03/05/2023 22:50	65	104	43	37
Night	26/04/2023 23:05	27/04/2023 06:50	56	89	19	25
Night	27/04/2023 23:05	28/04/2023 06:50	57	89	17	25
Night	28/04/2023 23:05	29/04/2023 06:50	57	87	18	24
Night	29/04/2023 23:05	30/04/2023 06:50	58	93	19	30
Night	30/04/2023 23:05	01/05/2023 06:50	58	101	23	28
Night	01/05/2023 23:05	02/05/2023 06:50	58	96	23	26
Night	02/05/2023 23:05	03/05/2023 06:50	58	90	19	27
Night	03/05/2023 23:05	04/05/2023 06:50	57	89	25	31

**Table 4: Baseline sound levels for Receptor M3.**

Period	Start Time & Date	End Time & Date	LA <sub>eq</sub>	LAF <sub>max</sub>	L <sub>A90</sub> (Mode)	L <sub>A90</sub> (Mean)
Day	21/04/2023 06:59	21/04/2023 18:44	54	87	47	43
Day	22/04/2023 06:59	22/04/2023 18:44	47	75	35	38
Day	23/04/2023 06:59	23/04/2023 18:44	48	74	32	34
Day	24/04/2023 06:59	24/04/2023 18:44	49	79	37	38
Day	25/04/2023 06:59	25/04/2023 18:44	48	80	37	34
Evening	20/04/2023 18:59	20/04/2023 22:44	46	75	39	34
Evening	21/04/2023 18:59	21/04/2023 22:44	48	77	38	34
Evening	22/04/2023 18:59	22/04/2023 22:44	47	73	37	40
Evening	23/04/2023 18:59	23/04/2023 22:44	49	74	35	29
Evening	24/04/2023 18:59	24/04/2023 22:44	50	79	36	31
Evening	25/04/2023 18:59	25/04/2023 22:44	49	75	37	30
Night	20/04/2023 22:59	21/04/2023 06:44	45	73	33	30
Night	21/04/2023 22:59	22/04/2023 06:44	45	70	21	25
Night	22/04/2023 22:59	23/04/2023 06:44	47	83	25	28
Night	23/04/2023 22:59	24/04/2023 06:44	47	84	19	24
Night	24/04/2023 22:59	25/04/2023 06:44	53	93	20	23
Night	25/04/2023 22:59	26/04/2023 06:44	50	83	18	23

**Table 5: Baseline sound levels for Receptor M4 (NVM10).**

Period	Start Time & Date	End Time & Date	LA <sub>eq</sub>	LAF <sub>max</sub>	L <sub>A90</sub> (Mode)	L <sub>A90</sub> (Mean)
Day	27/04/2023 07:08	27/04/2023 18:53	48	81	38	38
Day	28/04/2023 07:08	28/04/2023 18:53	57	102	39	39
Day	29/04/2023 07:08	29/04/2023 18:53	46	79	37	37
Day	30/04/2023 07:08	30/04/2023 18:53	49	94	36	37
Day	01/05/2023 07:08	01/05/2023 18:53	46	77	35	36
Day	02/05/2023 07:08	02/05/2023 18:53	44	76	36	36
Day	03/05/2023 07:08	03/05/2023 18:53	46	73	39	39

Evening	26/04/2023 19:08	26/04/2023 22:53	45	72	39	31
Evening	27/04/2023 19:08	27/04/2023 22:53	45	76	39	31
Evening	28/04/2023 19:08	28/04/2023 22:53	64	101	38	32
Evening	29/04/2023 19:08	29/04/2023 22:53	46	86	37	34
Evening	30/04/2023 19:08	30/04/2023 22:53	45	80	39	32
Evening	01/05/2023 19:08	01/05/2023 22:53	43	71	34	29
Evening	02/05/2023 19:08	02/05/2023 22:53	44	71	38	31
Evening	03/05/2023 19:08	03/05/2023 22:53	43	64	35	32
Night	26/04/2023 23:08	27/04/2023 06:53	41	63	17	23
Night	27/04/2023 23:08	28/04/2023 06:53	51	99	16	22
Night	28/04/2023 23:08	29/04/2023 06:53	44	70	17	23
Night	29/04/2023 23:08	30/04/2023 06:53	42	73	18	25
Night	30/04/2023 23:08	01/05/2023 06:53	43	76	23	26
Night	01/05/2023 23:08	02/05/2023 06:53	42	67	17	22
Night	02/05/2023 23:08	03/05/2023 06:53	44	74	17	24
Night	03/05/2023 23:08	04/05/2023 06:53	44	78	22	26

**Table 6: Baseline sound levels for Receptor M5 (NVM7).**

Period	Start Time & Date	End Time & Date	LA <sub>eq</sub>	LAF <sub>max</sub>	LA <sub>90</sub> (Mode)	LA <sub>90</sub> (Mean)
Day	05/05/2023 07:12	05/05/2023 18:57	51	84	42	43
Day	06/05/2023 07:12	06/05/2023 18:57	56	88	42	41
Day	07/05/2023 07:12	07/05/2023 18:57	54	85	42	42
Day	08/05/2023 07:12	08/05/2023 18:57	54	82	44	45
Day	09/05/2023 07:12	09/05/2023 18:57	54	83	45	44
Day	10/05/2023 07:12	10/05/2023 18:57	54	80	48	47
Evening	04/05/2023 19:12	04/05/2023 22:57	57	86	38	38
Evening	05/05/2023 19:12	05/05/2023 22:57	52	89	42	34
Evening	06/05/2023 19:12	06/05/2023 22:57	49	86	39	36
Evening	07/05/2023 19:12	07/05/2023 22:57	51	77	42	43
Evening	08/05/2023 19:12	08/05/2023 22:57	51	90	41	36
Evening	09/05/2023 19:12	09/05/2023 22:57	50	77	40	37
Evening	10/05/2023 19:12	10/05/2023 22:57	49	86	42	38
Night	04/05/2023 23:12	05/05/2023 06:57	41	80	32	29
Night	05/05/2023 23:12	06/05/2023 06:57	52	79	23	29
Night	06/05/2023 23:12	07/05/2023 06:57	52	78	20	30
Night	07/05/2023 23:12	08/05/2023 06:57	52	90	32	37
Night	08/05/2023 23:12	09/05/2023 06:57	52	82	24	31
Night	09/05/2023 23:12	10/05/2023 06:57	51	76	29	34
Night	10/05/2023 23:12	11/05/2023 06:57	51	73	28	33

**Table 7: Baseline sound levels for Receptor M6 (NVM8).**

Period	Start Time & Date	End Time & Date	LA <sub>eq</sub>	LAF <sub>max</sub>	LA <sub>90</sub> (Mode)	LA <sub>90</sub> (Mean)
Day	21/04/2023 07:00	21/04/2023 18:45	50	82	42	40
Day	22/04/2023 07:00	22/04/2023 18:45	48	78	39	37
Day	23/04/2023 07:00	23/04/2023 18:45	44	70	35	35
Day	24/04/2023 07:00	24/04/2023 18:45	46	73	35	37
Day	25/04/2023 07:00	25/04/2023 18:45	47	77	34	36
Evening	20/04/2023 19:00	20/04/2023 22:45	52	72	35	35
Evening	21/04/2023 19:00	21/04/2023 22:45	46	65	38	33
Evening	22/04/2023 19:00	22/04/2023 22:45	48	80	38	36
Evening	23/04/2023 19:00	23/04/2023 22:45	45	72	37	34
Evening	24/04/2023 19:00	24/04/2023 22:45	42	77	32	28
Evening	25/04/2023 19:00	25/04/2023 22:45	48	73	37	31
Night	20/04/2023 23:00	21/04/2023 06:45	44	73	24	28
Night	21/04/2023 23:00	22/04/2023 06:45	47	80	22	26
Night	22/04/2023 23:00	23/04/2023 06:45	44	78	17	24
Night	23/04/2023 23:00	24/04/2023 06:45	46	78	21	27
Night	24/04/2023 23:00	25/04/2023 06:45	48	77	19	25
Night	25/04/2023 23:00	26/04/2023 06:45	48	79	18	23

**Table 8: Baseline sound levels for Receptor M7 (NVM9).**

Period	Start Time & Date	End Time & Date	LA <sub>eq</sub>	LAF <sub>max</sub>	LA <sub>90</sub> (Mode)	LA <sub>90</sub> (Mean)
Day	06/05/2023 07:13	06/05/2023 18:58	53	92	44	45
Day	07/05/2023 07:13	07/05/2023 18:58	54.4	89	49.0	47.4
Day	08/05/2023 07:13	08/05/2023 18:58	59	81	54	55
Day	09/05/2023 07:13	09/05/2023 18:58	59	87	56	54
Day	10/05/2023 07:13	10/05/2023 18:58	62	87	58	58
Evening	05/05/2023 19:13	05/05/2023 22:58	64	91	51	51
Evening	06/05/2023 19:13	06/05/2023 22:58	54	71	49	49
Evening	07/05/2023 19:13	07/05/2023 22:58	54	78	50	49
Evening	08/05/2023 19:13	08/05/2023 22:58	56	78	54	51
Evening	09/05/2023 19:13	09/05/2023 22:58	57	83	55	51
Evening	10/05/2023 19:13	10/05/2023 22:58	58	80	55	52
Night	05/05/2023 23:13	06/05/2023 06:58	47	75	41	38
Night	06/05/2023 23:13	07/05/2023 06:58	51	84	44	41
Night	07/05/2023 23:13	08/05/2023 06:58	52	78	36	43
Night	08/05/2023 23:13	09/05/2023 06:58	53	76	41	42
Night	09/05/2023 23:13	10/05/2023 06:58	54	74	50	45
Night	10/05/2023 23:13	11/05/2023 06:58	54	74	38	42

**Table 9: Baseline sound levels for Receptor M8 (NVM11).**

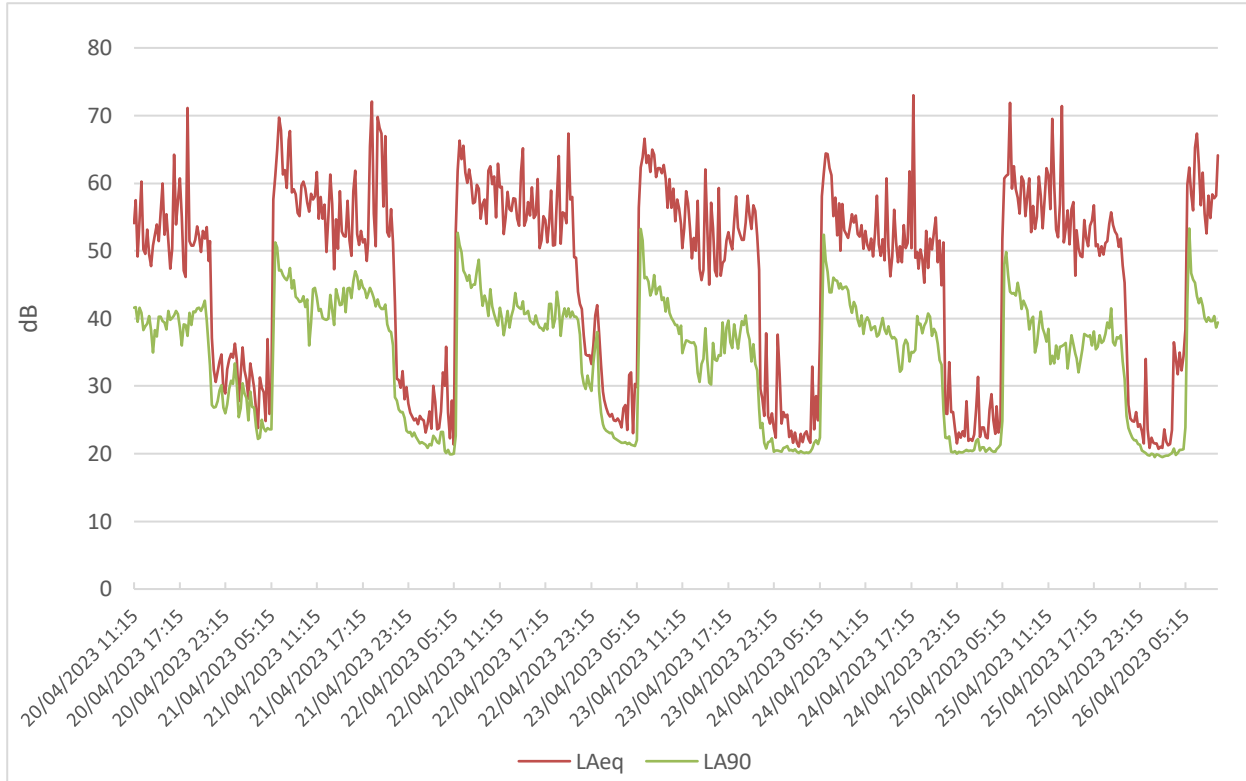
Period	Start Time & Date	End Time & Date	LA <sub>eq</sub>	LAF <sub>max</sub>	LA <sub>90</sub> (Mode)	LA <sub>90</sub> (Mean)
Day	21/04/2023 07:00	21/04/2023 18:45	51	82	41	42
Day	22/04/2023 07:00	22/04/2023 18:45	45	77	35	35
Day	23/04/2023 07:00	23/04/2023 18:45	49	89	36	36
Day	24/04/2023 07:00	24/04/2023 18:45	51	95	46	43
Day	25/04/2023 07:00	25/04/2023 18:45	46	86	38	38
Evening	20/04/2023 19:00	20/04/2023 22:45	48	67	34	34
Evening	21/04/2023 19:00	21/04/2023 22:45	45	75	39	35
Evening	22/04/2023 19:00	22/04/2023 22:45	44	69	29	31
Evening	23/04/2023 19:00	23/04/2023 22:45	45	71	38	38
Evening	24/04/2023 19:00	24/04/2023 22:45	45	71	32	30
Evening	25/04/2023 19:00	25/04/2023 22:45	45	69	34	30
Night	20/04/2023 23:00	21/04/2023 06:45	43	67	30	32
Night	21/04/2023 23:00	22/04/2023 06:45	40	60	27	29
Night	22/04/2023 23:00	23/04/2023 06:45	42	79	19	23
Night	23/04/2023 23:00	24/04/2023 06:45	42	81	32	34
Night	24/04/2023 23:00	25/04/2023 06:45	41	69	34	30
Night	25/04/2023 23:00	26/04/2023 06:45	41	69	33	33



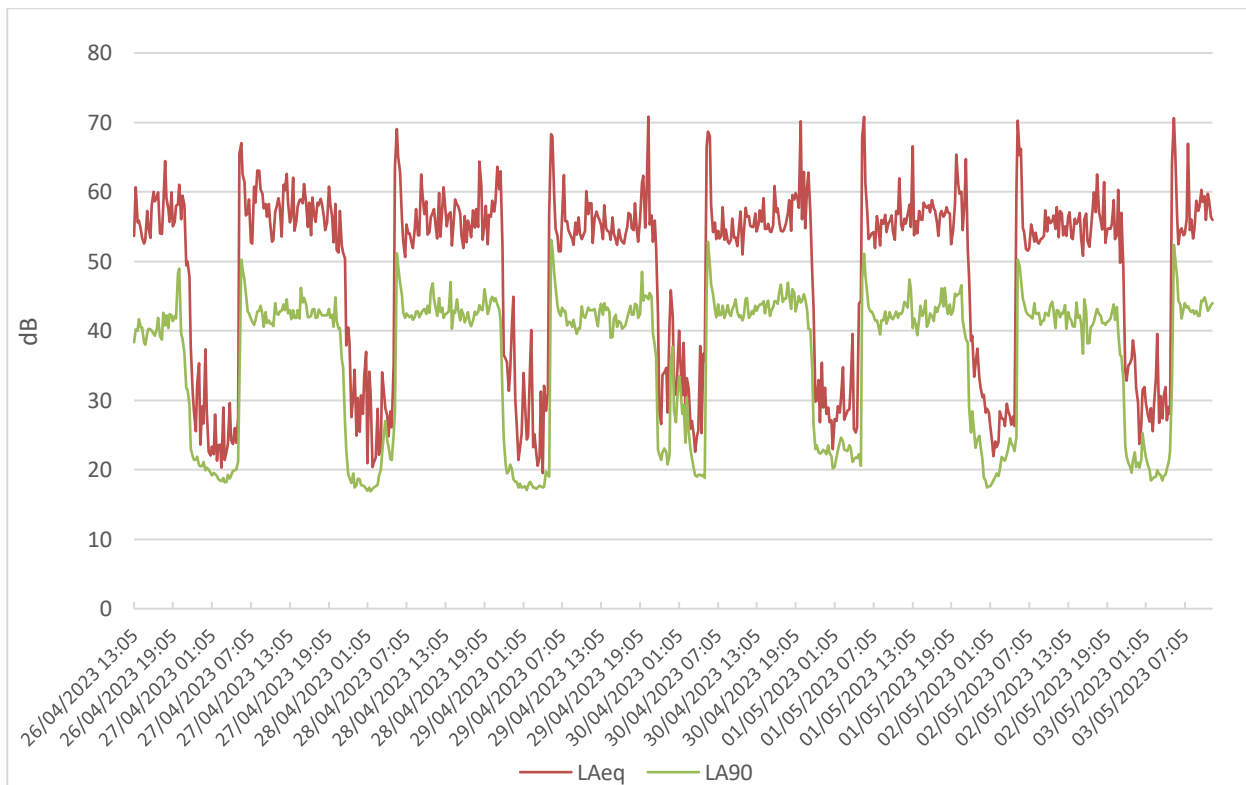
### Sound Level Time Histories

The figures below illustrate sound level time histories for different monitoring locations.

**Figure 1: Sound level time histories for Monitoring Location 1 (NVM1).**



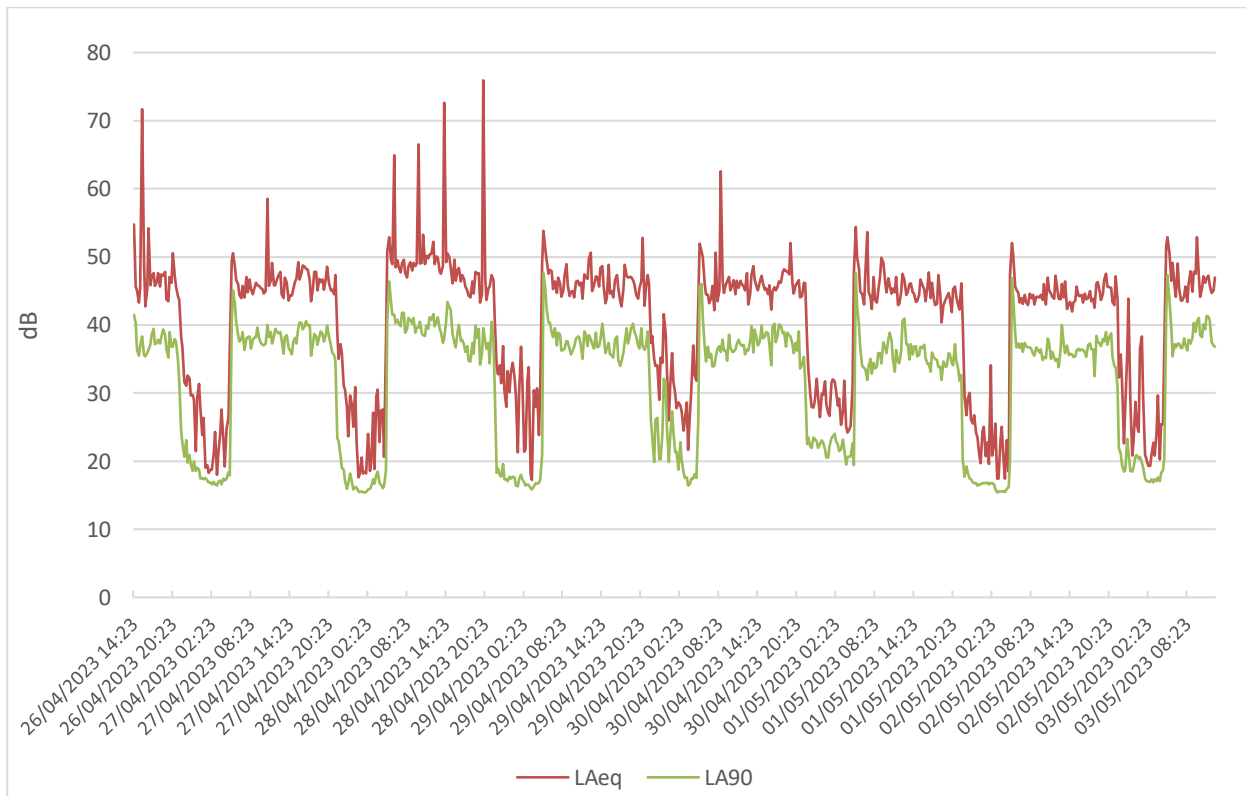
**Figure 2: Sound level time histories for Monitoring Location 2 (NVM2).**



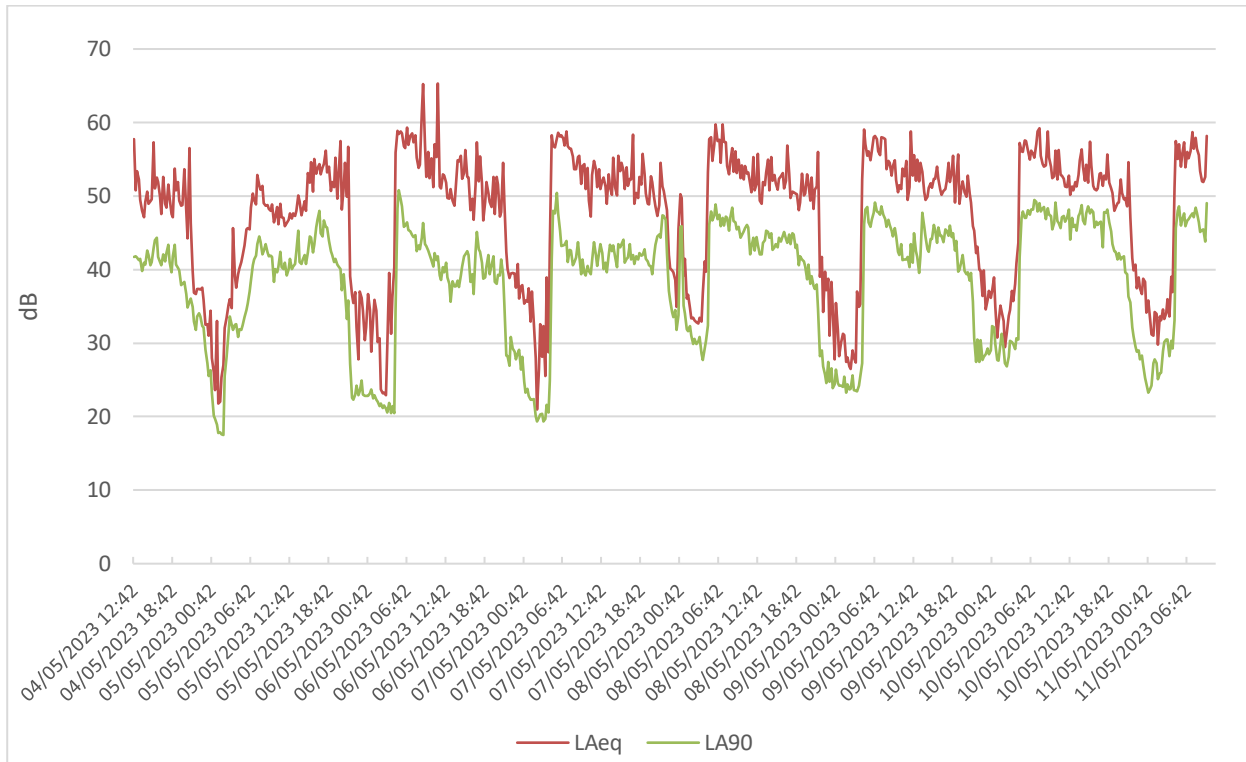
**Figure 3: Sound level time histories for Monitoring Location 3 (NVM3).**



**Figure 4: Sound level time histories for Monitoring Location 4 (NVM10).**



**Figure 5: Sound level time histories for Monitoring Location 5 (NVM7).**



**Figure 6: Sound level time histories for Monitoring Location 6 (NVM8).**

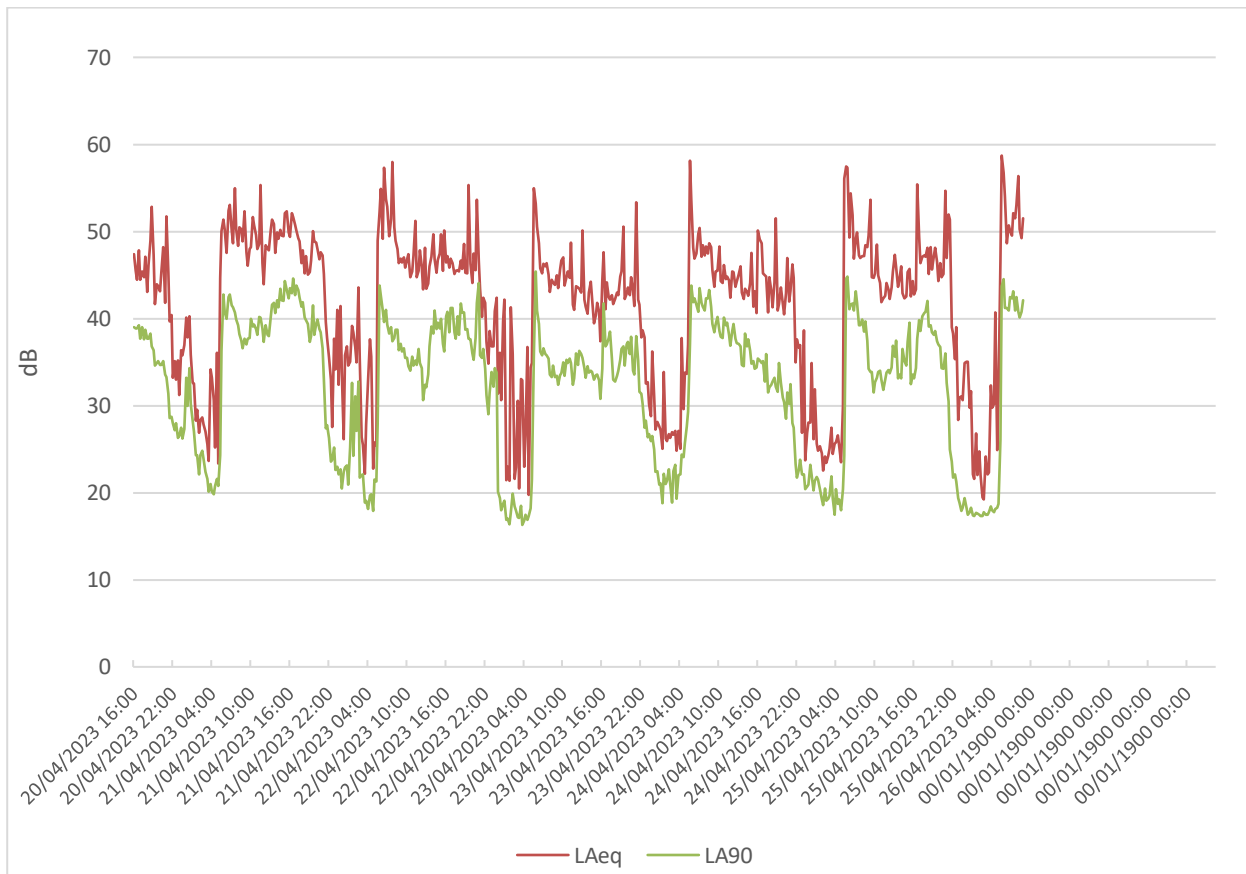


Figure 7: Sound level time histories for Monitoring Location 7 (NVM9).

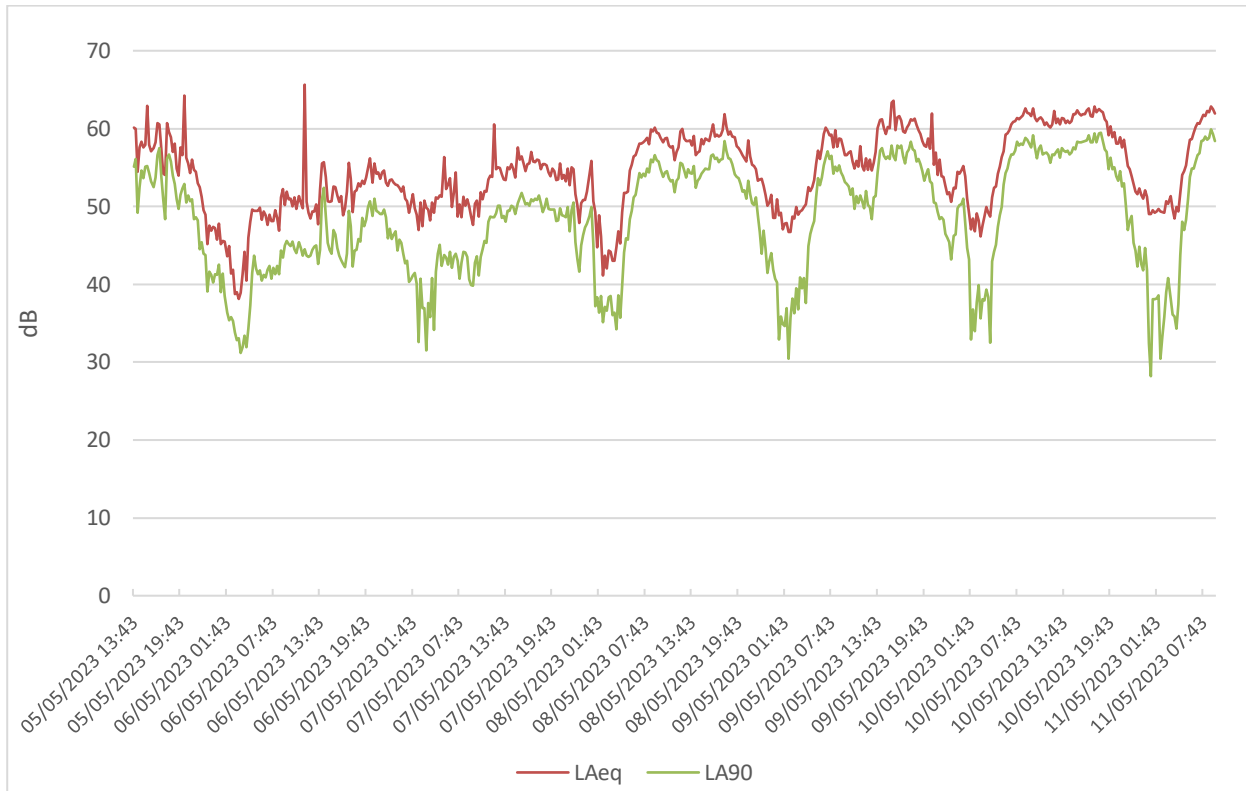


Figure 8: Sound level time histories for Monitoring Location 8 (NVM11).

