

Viking CCS Pipeline

**Environmental  
Statement Volume IV –  
Appendix 13-1: Noise  
Baseline Data**

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# 1 Baseline Noise Monitoring

## 1.1 Introduction

- 1.1.1 This appendix of the Viking CCS Pipeline Environment Statement (ES) presents the methodology and results of the baseline noise monitoring carried out to inform the construction, operation, and ecological acoustic assessments.
- 1.1.2 Noise monitoring locations were determined based on the development site location with respect to nearby noise-sensitive human and ecological receptors. A number of other factors were also taken into consideration when identifying these locations, including:
- The safety of the operators;
  - Security of monitoring equipment; and
  - Site accessibility.

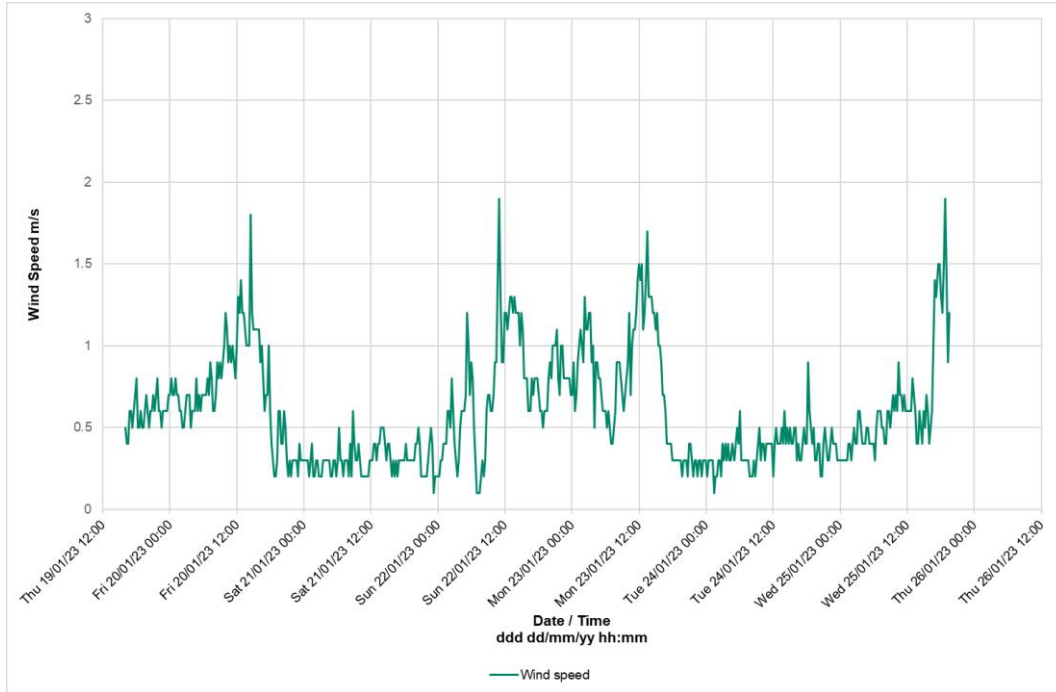
## 1.2 Noise Monitoring Methodology

- 1.2.1 Baseline noise monitoring was carried out to establish the existing noise climate at sensitive receptors within the study area. Additionally, noise monitoring provided data at ecological receptors to support a Habitats Regulations Assessment presented in *ES Volume II Chapter 6: Ecology and Biodiversity (Application Document 6.2.6)*.
- 1.2.2 Noise monitoring procedures followed guidance from British Standard (BS) 7445-1:2003 Description and measurement of environmental noise - Part 1: Guide to quantities and procedures and BS 4142:2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound. Acoustic field calibrators were applied to each instrument at the start and end of each measurement to check the calibration levels.
- 1.2.3 Unattended noise monitoring concerning human receptors affected by the construction and operation of the Proposed Development was carried out between 19 January and 26 January 2023 at five locations for a minimum period of five days (including a weekend).
- 1.2.4 Attended noise monitoring concerning human receptors affected by the construction of the Proposed Development were carried out between the 20 January and the 3 February 2023 at eleven locations for a period of one hour during the typical construction hours (08:00 – 17:00).
- 1.2.5 Attended noise monitoring concerning ecological receptors was carried out between 9 August 2023 and 10 August 2023 at twenty locations for a period of one hour during typical construction hours (08:00 – 17:00).

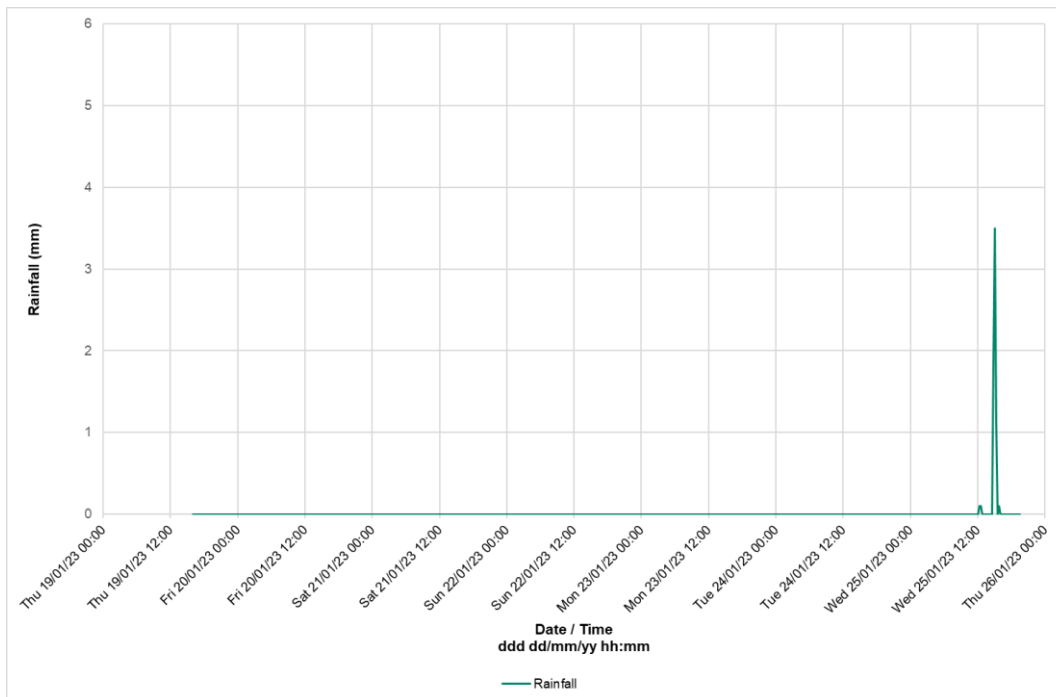
## 1.3 Meteorological Conditions

- 1.3.1 A weather station was set up to measure wind speed and rainfall during periods of unattended noise monitoring. There was one period of adverse weather conditions (i.e. heavy rain and/or wind speeds in excess of 5 m/s) during the unattended monitoring period for 45 minutes at 14:45 on the 25 January 2023, this has been excluded from the analysis of the noise results.
- 1.3.2 It is noted that monitoring at NM7 and NM17 was undertaken outside of this period. Daily weather checks were made online during the measurement and no periods of data have been excluded due to unsuitable weather conditions.

- 1.3.3 During all attended measurements, an anemometer was used to log the wind speed and no measurements were conducted during heavy rainfall or when roads were damp post rainfall.
- 1.3.4 A time history of meteorological conditions including windspeed and rainfall is presented in **Figure 1** and **Figure 2** below.



**Figure 1: Windspeed Time History 19/01/23 – 26/01/23**



**Figure 2: Rainfall Time History 19/01/23 – 26/01/23**

## 1.4 Survey Results

### Unattended Noise Monitoring Results

#### NM2 – Immingham Facility, South

1.4.1 **Table 1** presents the noise monitoring results at NM2 between the 19 January and 26 January 2023. The dominant noise source was from road traffic along Church Lane approximately 5m to the south, other noise sources included pedestrian chatter and dogs barking.

**Table 1: NM2 – Noise Monitoring Results**

Date	Daytime			Evening		Night-time		
	L <sub>Aeq,10h</sub> dB	L <sub>A10,18h</sub> dB	L <sub>A90,10h</sub> dB	L <sub>Aeq,4h</sub> dB	L <sub>A90,4hr</sub> dB	L <sub>Aeq,8h</sub> dB	L <sub>AFmax</sub> dB	L <sub>A90.4h</sub> dB
19/01/2023	62	63	47	55	47	52	78	47
20/01/2023	62	64	48	57	46	50	79	41
21/01/2023	61	62	44	58	41	49	80	37
22/01/2023	60	61	46	55	40	51	81	38
23/01/2023	61	63	46	57	42	52	83	42
24/01/2023	61	64	50	56	47	53	79	46
25/01/2023	65	66	51	57	47	54	80	47
26/01/2023	61	64	50	-	-	-	-	-
Summary	62	63	48	56	44	52	80	43

#### NM5 – Washingdales Lane Block Valve Station

1.4.2 **Table 2** presents the noise monitoring results at NM5 between the 19 January and 24 January 2023. The dominant noise source was from traffic on the A46 approximately 120m to the northwest, other noise sources included road traffic along the A18 approximately 800m to the east, and birdsong.

**Table 2: NM5 – Noise Monitoring Results**

Date	Daytime			Evening		Night-time		
	L <sub>Aeq,10h</sub> dB	L <sub>A10,18h</sub> dB	L <sub>A90,10h</sub> dB	L <sub>Aeq,4h</sub> dB	L <sub>A90,4hr</sub> dB	L <sub>Aeq,8h</sub> dB	L <sub>AFmax</sub> dB	L <sub>A90.4h</sub> dB
19/01/2023	57	58	48	52	39	51	80	37
20/01/2023	59	61	52	55	43	49	76	27
21/01/2023	57	58	46	51	34	45	80	23
22/01/2023	54	55	42	47	33	44	81	34
23/01/2023	54	55	45	49	38	47	79	36
24/01/2023	56	58	49	-	-	-	-	-
Summary	56	58	47	51	37	47	79	31

#### NM7 – Thoroughfare Block Valve Site

1.4.3 **Table 3** presents the noise monitoring results at NM7 between the 26 January and 3 February 2023. The dominant noise source was from traffic on surrounding A-roads including Main Road to the north at a distance of approximately 500m and the A18 to the southwest at a distance of approximately 1000m, other noise sources included distant noise from construction, and cars and pedestrians moving near the monitor.

**Table 3: NM7 – Noise Monitoring Results**

Date	Daytime			Evening		Night-time		
	L <sub>Aeq,10h</sub> dB	L <sub>A10,18h</sub> dB	L <sub>A90,10h</sub> dB	L <sub>Aeq,4h</sub> dB	L <sub>A90,4h</sub> dB	L <sub>Aeq,8h</sub> dB	L <sub>AFmax</sub> dB	L <sub>A90.4h</sub> dB
26/01/2023	62	58	42	56	34	49	89	26
27/01/2023	62	58	41	56	30	50	88	26
28/01/2023	61	56	40	56	33	47	84	34
29/01/2023	60	56	45	55	44	52	85	43
30/01/2023	61	58	45	55	35	53	83	43
31/01/2023	63	62	50	57	38	55	86	45
01/02/2023	63	62	50	57	42	52	89	41
02/02/2023	62	59	46	58	40	52	82	41
03/02/2023	61	59	47	-	-	-	-	-
Summary	62	59	45	56	37	51	86	37

**NM11 – Louth Road Block Valve Station**

1.4.4 **Table 4** presents the noise monitoring results at NM11 between the 19 January and 26 January 2023. The dominant noise source was from traffic on Louth Road approximately 120m southeast of the monitoring location. Other noise sources included birdsong.

**Table 4: NM11 – Noise Monitoring Results**

Date	Daytime			Evening		Night-time		
	L <sub>Aeq,10h</sub> dB	L <sub>A10,18h</sub> dB	L <sub>A90,10h</sub> dB	L <sub>Aeq,4h</sub> dB	L <sub>A90,4h</sub> dB	L <sub>Aeq,8h</sub> dB	L <sub>AFmax</sub> dB	L <sub>A90.4h</sub> dB
19/01/2023	59	52	36	50	34	48	83	33
20/01/2023	60	55	36	52	24	49	83	19
21/01/2023	58	53	35	51	25	47	83	20
22/01/2023	58	52	35	50	26	50	92	25
23/01/2023	61	58	40	51	27	48	84	24
24/01/2023	60	58	39	54	26	46	82	24
25/01/2023	60	55	38	54	27	47	82	27
26/01/2023	60	56	36	-	-	-	-	-
Summary	59	55	37	52	27	48	84	24

**NM15 – Theddlethorpe Facility**

1.4.5 **Table 5** presents the noise monitoring results at NM15 between the 19 January and 26 January 2023. The dominant noise source was from traffic on the A1031 approximately 900m to the west of the monitoring location. Other noise sources included birdsong and pedestrians walking their dogs.

**Table 5: NM15 – Noise Monitoring Results**

Date	Daytime			Evening		Night-time		
	L <sub>Aeq,10h</sub> dB	L <sub>A10,18h</sub> dB	L <sub>A90,10h</sub> dB	L <sub>Aeq,4h</sub> dB	L <sub>A90,4h</sub> dB	L <sub>Aeq,8h</sub> dB	L <sub>AFmax</sub> dB	L <sub>A90,4h</sub> dB
19/01/2023	47	49	39	42	34	41	75	38
20/01/2023	48	49	42	42	38	44	59	39
21/01/2023	47	49	39	40	32	38	67	33
22/01/2023	48	50	40	39	31	39	78	30
23/01/2023	47	50	40	41	33	38	61	29
24/01/2023	49	50	41	41	30	37	59	27
25/01/2023	50	50	42	43	36	41	69	39
26/01/2023	49	51	44	-	-	-	-	-
<b>Summary</b>	<b>48</b>	<b>50</b>	<b>41</b>	<b>41</b>	<b>33</b>	<b>40</b>	<b>67</b>	<b>33</b>

**NM17 – Immingham Facility, East**

1.4.6 **Table 6** presents the noise monitoring results at NM17 between the 26 January and 2 February 2023. The dominant noise source was noise from plant at Immingham approximately 250m southwest of the monitoring location. Other noise sources included traffic on Rosper Road and birdsong.

**Table 6: NM17 – Noise Monitoring Results**

Date	Daytime			Evening		Night-time		
	L <sub>Aeq,10h</sub> dB	L <sub>A10,18h</sub> dB	L <sub>A90,10h</sub> dB	L <sub>Aeq,4h</sub> dB	L <sub>A90,4h</sub> dB	L <sub>Aeq,8h</sub> dB	L <sub>AFmax</sub> dB	L <sub>A90,4h</sub> dB
26/01/2023	56	54	50	54	50	51	84	46
27/01/2023	55	52	47	53	49	53	85	50
28/01/2023	51	51	48	53	49	52	84	49
29/01/2023	54	54	51	52	50	55	85	52
30/01/2023	57	57	53	55	52	53	81	51
31/01/2023	58	59	53	55	52	56	82	53
01/02/2023	58	59	53	54	52	54	84	52
02/02/2023	56	57	53	-	-	-	-	-
<b>Summary</b>	<b>56</b>	<b>55</b>	<b>51</b>	<b>54</b>	<b>50</b>	<b>53</b>	<b>83</b>	<b>50</b>

**Unattended Noise Monitoring Time History Results**

1.4.7 **Figure 3** to **Figure 8** overleaf presents the noise monitoring time history for all unattended noise monitoring locations. Each graph displays the 15-minute L<sub>Aeq</sub>, L<sub>Amax</sub>, L<sub>A10</sub>, and L<sub>A90</sub> values.



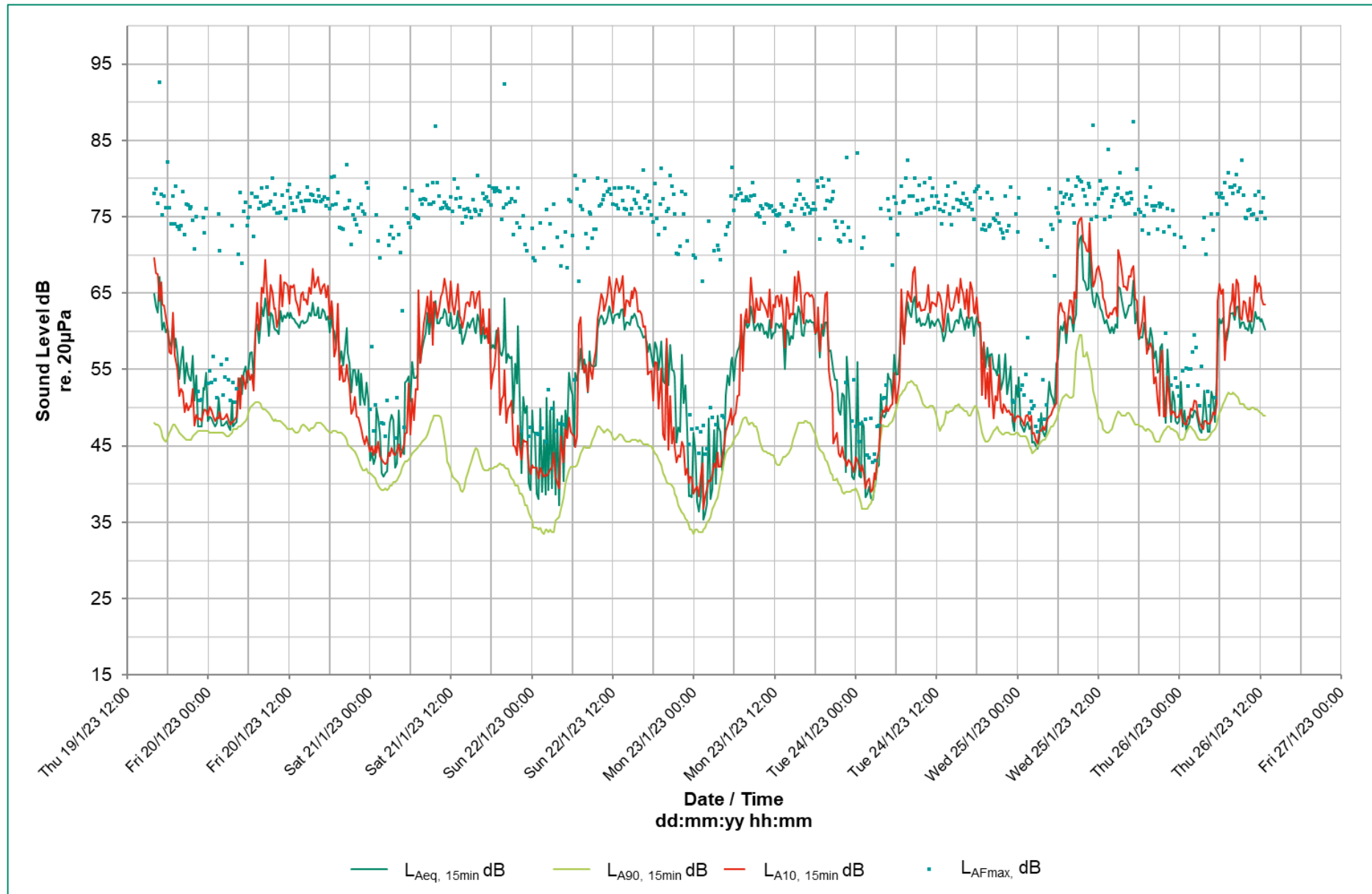


Figure 3: NM2 Unattended Noise Monitoring Time History

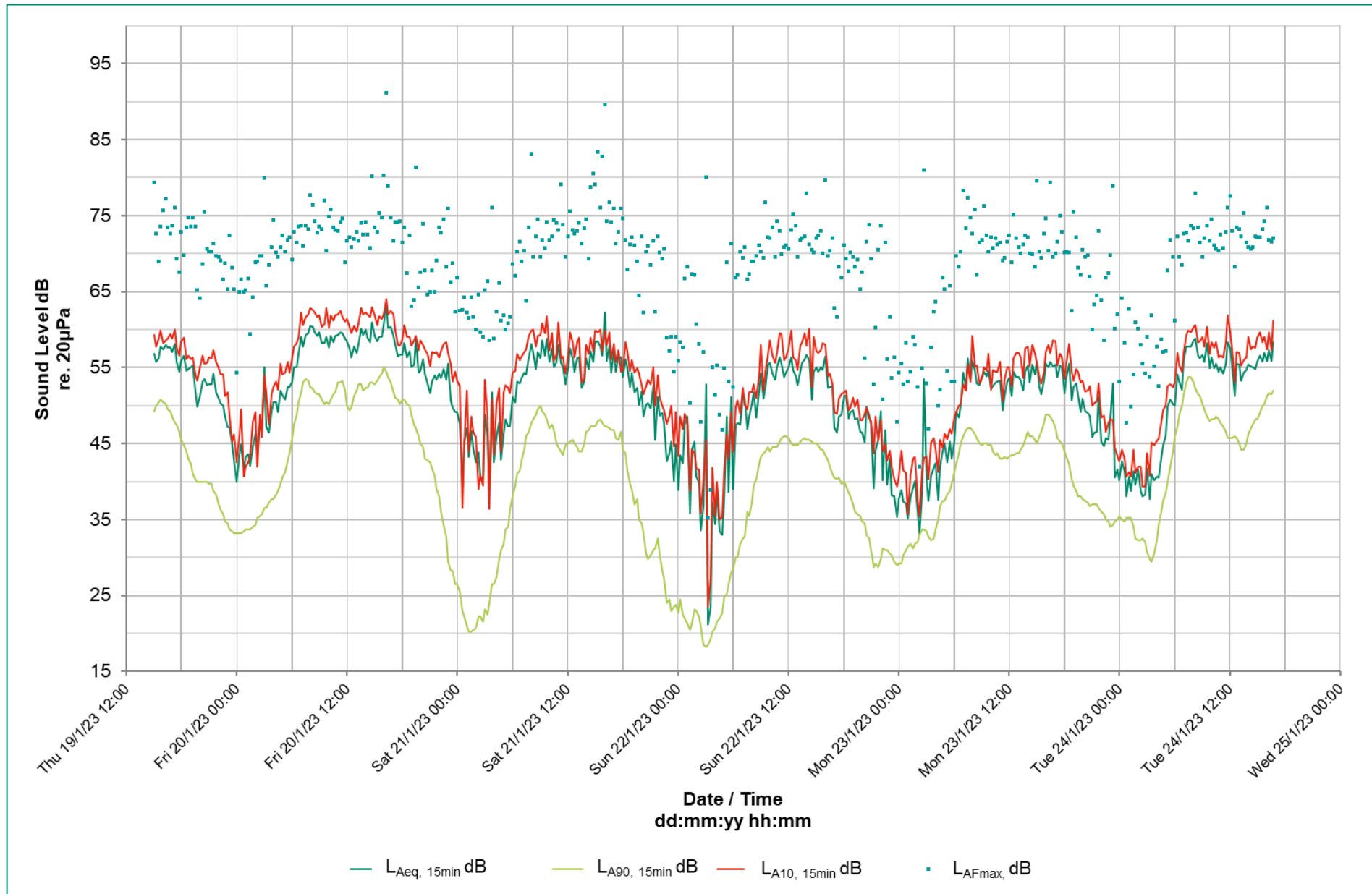


Figure 4: NM5 Unattended Noise Monitoring Time History

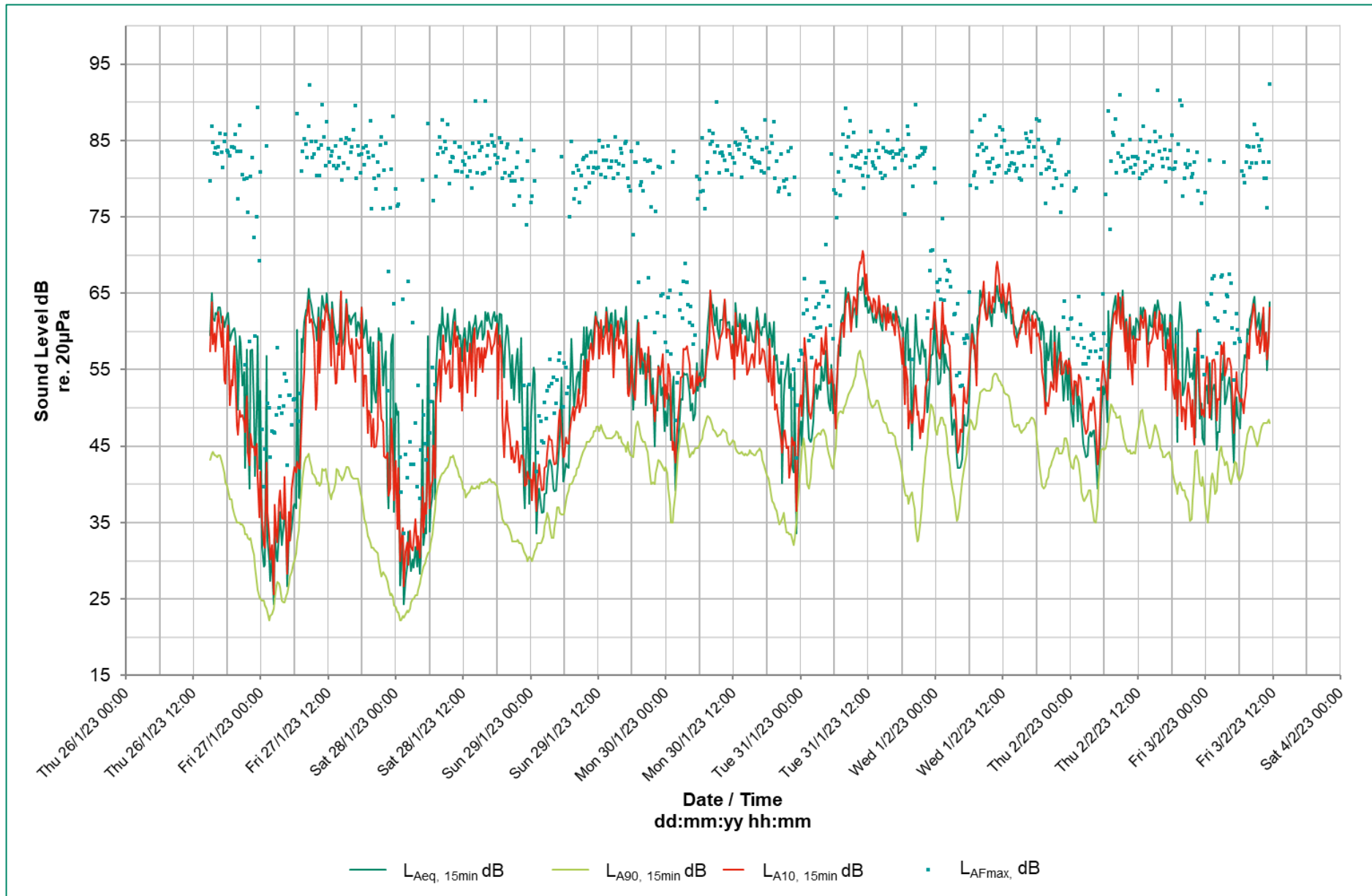


Figure 5: NM7 Unattended Noise Monitoring Time History

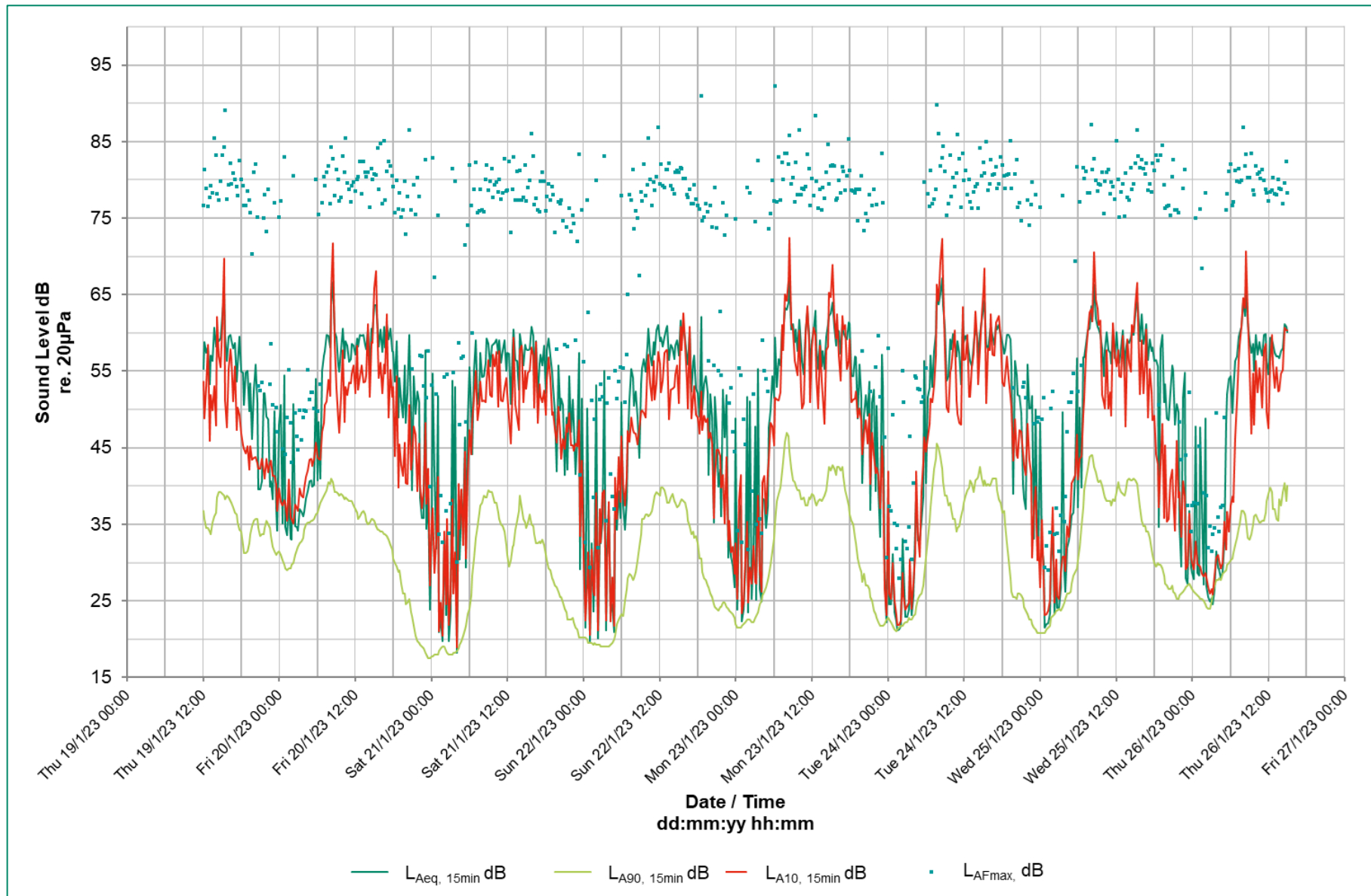


Figure 6: NM11 Unattended Noise Monitoring Time History



Figure 7: NM15 Unattended Noise Monitoring Time History

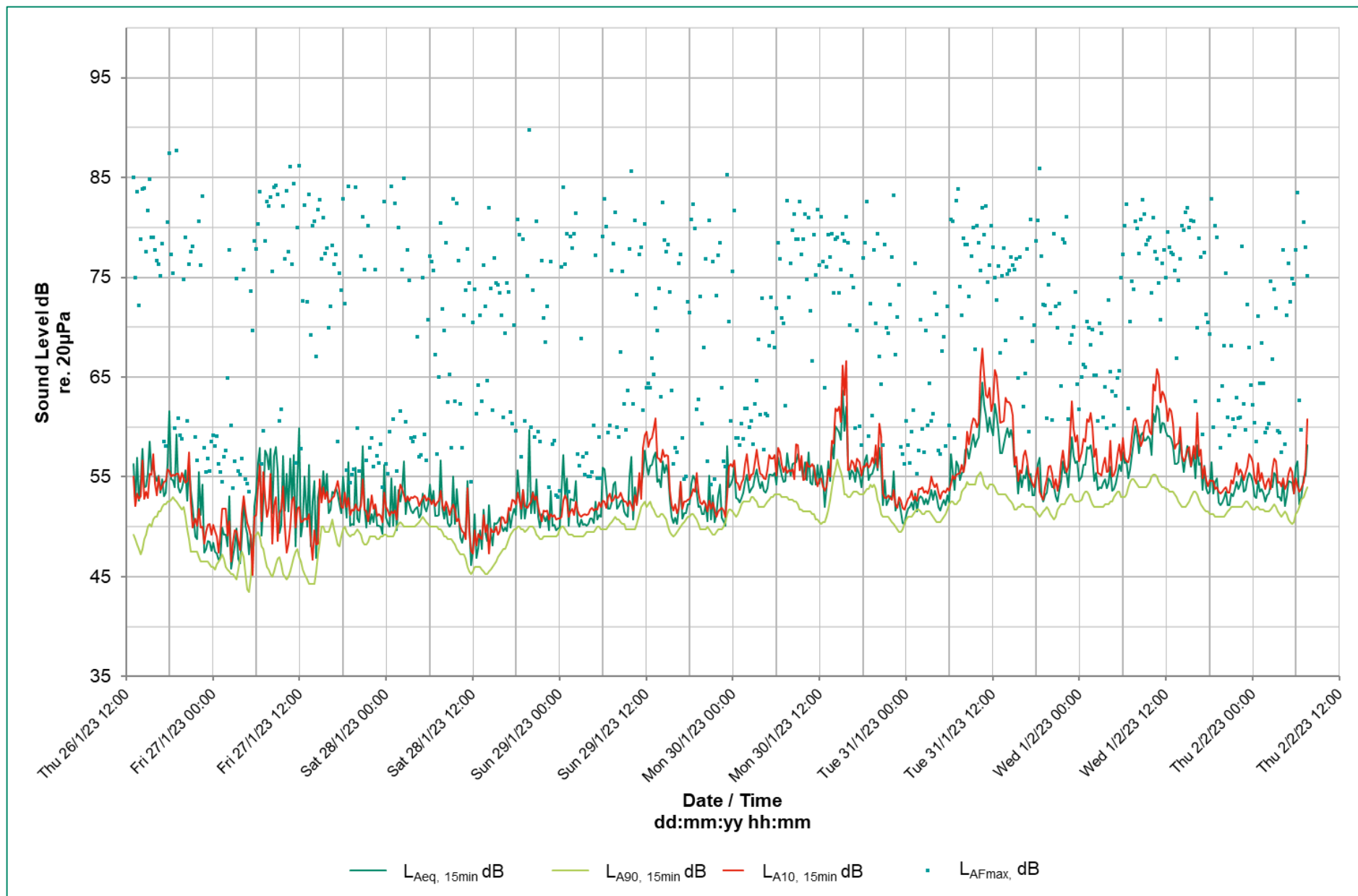


Figure 8: NM17 Unattended Noise Monitoring Time History

## Attended Noise Monitoring Results (Human Receptors)

1.4.8 **Table 7** shows the attended noise monitoring results for monitoring locations related to human receptors. It shows the date and time period that the monitoring took place, and what the dominant noise source was observed to be during the measurement.

**Table 7: Attended Noise Monitoring Results Summary**

Monitor Location	Date	Time Period	L <sub>Aeq,1h</sub> dB	L <sub>A10,1h</sub> dB	L <sub>A90,1h</sub> dB	L <sub>AFmax, 1h</sub> dB	Dominant noise source during measurement
NM1	20/01/2023	13:00 - 14:00	61	65	54	71	Road traffic
NM3	20/01/2023	14:30 - 15:30	71	75	54	85	Road traffic
NM4	23/01/2023	11:00 - 12:00	56	61	40	71	Road traffic
NM6	23/01/2023	12:45 - 13:45	69	73	46	85	Road traffic
NM8	23/01/2023	15:30 - 16:30	69	69	46	96	Road traffic
NM9	24/01/2023	15:30 - 16:30	61	59	51	85	Road traffic
NM10	24/01/2023	14:00 - 15:00	44	41	34	67	Road traffic
NM12	24/01/2023	11:45 - 12:45	55	54	37	87	Road traffic
NM13	03/02/2023	14:00 - 15:00	48	47	35	75	Road traffic
NM14	24/01/2023	09:30 - 10:30	63	61	36	85	Road Traffic
NM16	23/01/2023	14:15 - 15:15	59	62	48	80	Road Traffic

## Additional Baseline Analysis

- 1.4.9 During further analysis of the noise data as part of the construction noise assessment, irregularities were found when analysing the attended baseline noise data in further detail.
- 1.4.10 Attended noise monitoring positions at NM6, NM8, NM9, NM10, NM12, and NM14 were found to have unusually high ambient noise levels considering they were in rural areas. Upon further investigation it was found that during the measurement period there were periods of gunfire consequently increasing the ambient noise level for the respective measurement period. As gunfire is considered an atypical event, periods of gunfire have been identified and excluded from the measurements in this report.
- 1.4.11 **Table 8** presents the ambient level with gunfire included, the ambient level with it excluded, and the total amount of time excluded from the measurement due to gunfire.

**Table 8: Attended Noise Monitoring that Required Additional Analysis**

Monitor Location	Ambient Noise with Gunfire L <sub>Aeq,1hr</sub> dB	Ambient Noise with Gunfire Excluded L <sub>Aeq,1hr</sub> dB	Time excluded from measurement (mm:ss)
NM6	69	55	18:08
NM8	69	56	10:24
NM9	61	55	02:23
NM10	44	40	00:52
NM12	55	50	00:32
NM14	63	51	06:32

### Attended Noise Monitoring Results (Ecology Receptors)

1.4.12 **Table 9** shows the attended noise monitoring results for monitoring locations related to ecological receptors. It shows the date and time period that the monitoring took place, and what the dominant noise source was observed to be during the measurement.

**Table 9: Attended Ecology Noise Monitoring Results Summary**

Monitor Location	Date	Time Period	L <sub>Aeq,1h</sub> dB	L <sub>A10,1h</sub> dB	L <sub>A90,1hr</sub> dB	L <sub>AFmax, 1hr</sub> dB	Dominant noise source
ENM1	09/08/2023	08:10 - 09:10	56	53	50	81	Plant noise
ENM2	09/08/2023	10:02 - 11:03	48	50	46	58	Trees in the wind
ENM3	09/08/2023	11:27 - 12:27	52	48	44	86	Plant noise
ENM4	09/08/2023	13:04 - 14:04	49	53	40	63	Distant plant noise
ENM5	09/08/2023	14:27 - 15:27	44	45	39	74	Light road traffic
ENM6	09/08/2023	15:45 - 16:45	61	56	40	36	Light road traffic
ENM7	10/08/2023	08:23 - 09:23	60	42	37	96	Distant road traffic
ENM8	10/08/2023	10:09 - 11:09	47	40	33	80	Birdsong
ENM9	10/08/2023	11:39 - 12:39	59	46	32	92	Birdsong
ENM10	10/08/2023	13:00 - 14:00	67	45	37	103	Birdsong / agricultural plant
ENM11	10/08/2023	14:34 - 15:43	46	48	36	70	Trees in the wind
ENM12	10/08/2023	14:45 - 15:45	43	45	37	57	Insects chirping
ENM13	10/08/2023	13:21 - 14:21	38	40	34	53	Insects chirping
ENM14	10/08/2023	11:56 - 12:56	42	47	35	47	Insects chirping
ENM15	10/08/2023	09:15 - 11:15	44	48	27	59	Insects chirping
ENM16	09/08/2023	15:24 - 16:24	39	42	33	53	Distant agricultural
ENM17	09/08/2023	13:36 - 14:36	42	44	38	54	Birdsong
ENM18	09/08/2023	11:32 - 13:32	41	41	35	65	Distant road traffic
ENM19	09/08/2023	09:48 - 10:48	54	50	38	80	Distant road traffic
ENM20	09/08/2023	08:18 - 09:18	43	45	41	61	Coastal waves



