Connah's Quay Low Carbon Power

Environmental Statement Volume IV
Appendix 9-B: Baseline Sound Level Survey

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1. Baseline Sound Level Survey Details

1.1 Introduction

1.1.1 Surveys have been undertaken to determine baseline sound levels at residential and ecological receptors between 11th April 2024 and 8th May 2024. There are nine long term unattended locations representative of residential and education receptors, four long term unattended locations representative of ecological receptors and three short term attended locations representative of residential receptors.

1.1.2 For each measurement location the details of the location, equipment used and observations of the sound climate are summarised along with a picture of the measurement location and the full results in graphical form for the long term locations and tables for the short term locations.

1.1.3 The baseline sound monitoring locations are the same as set out in Chapter 7 of the Scoping Report (**Appendix 1-A: Scoping Report** (**EN010166/APP/6.4**) apart from:

- ST3 – a short-term measurement in place of LT7, on the basis that a secure place to leave the sound monitoring equipment could not be found;
- LT2 – a long-term measurement placed in the garden area of receptor R21 instead of R22, due to access availability; and
- Ecology 1 to 4 – replacing LT10 to provide additional baseline data for ecological assessment.

1.1.4 Weather stations were set up to monitor meteorological conditions during the measurements. Measurement periods during which the weather was not suitable for environmental sound measurements (i.e. when wind speeds >5 m/s and during precipitation or wet conditions) have been removed during analysis of the measured data based on the guidance in BS 7445 (Ref 1). The long term weather data are provided graphically on Plates 31-33. Weather conditions during the short term attended measurements were all within suitable limits for environmental sound measurements.

1.2 Unattended Monitoring Location (Ecology 1)

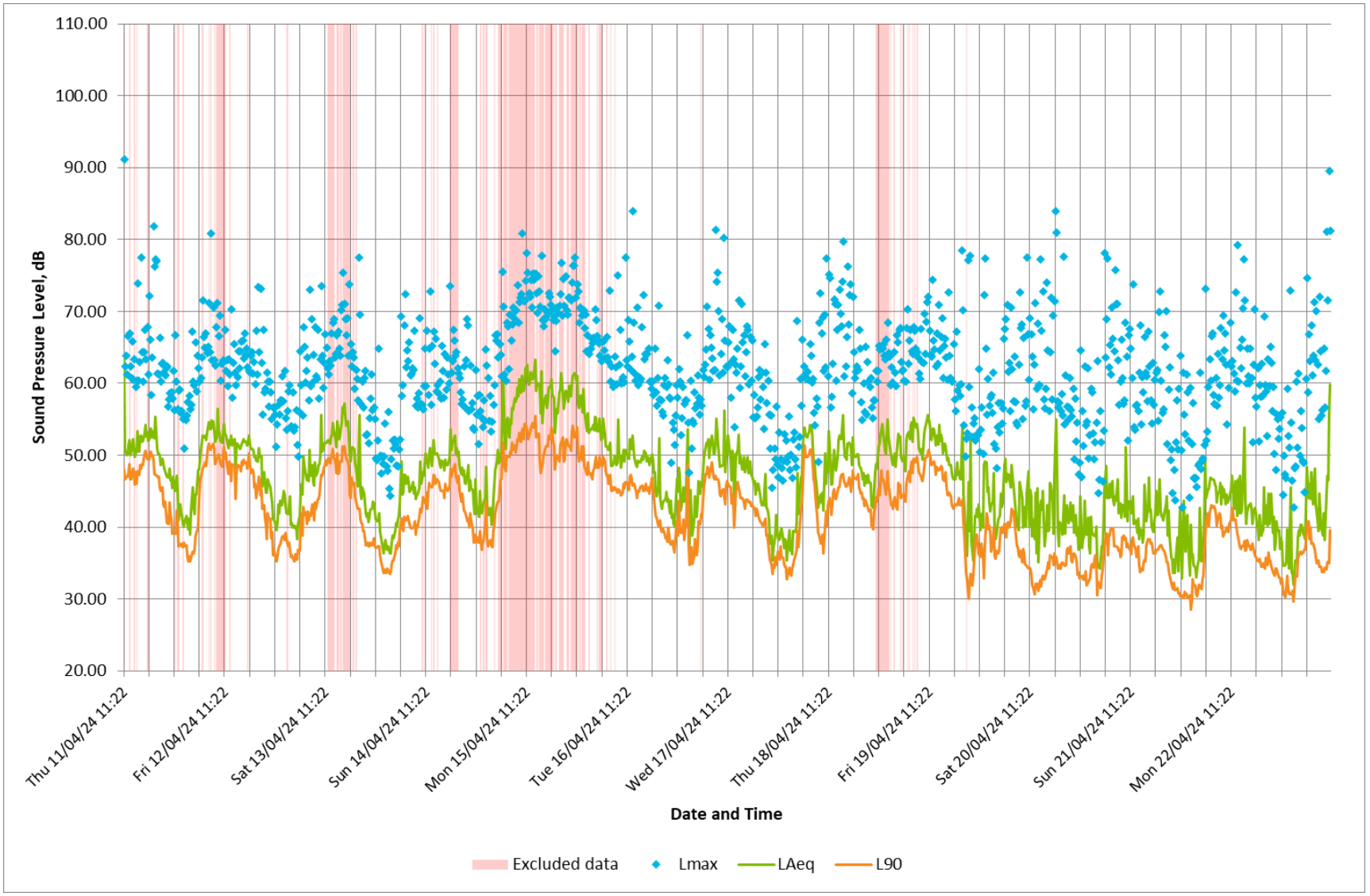
1.2.1 **Table 1** provides information on the survey location and conditions recorded on site and **Plate 1** shows the monitoring location. The full results are shown in the graph in **Plate 2**.

Table 1: Ecology 1 Survey Location Details

Location Ecology 1	Description
	Day and night unattended monitoring
Location description, what 3 words location and OS grid reference (Easting/Northing)	Adjacent to the River Dee and Connah's Quay Power Station ///Craftsman.Liquids.Camper NZ 327112 371731
Monitoring date and time	11/04/2024 11:22 to 23/04/2024 10:58
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5 m
Sound Level Meter and Serial No.	Rion NL-52 s/n1021278
Field Calibration and Serial No.	Norsonics 1251 s/n 27485. Start calibration 114.2 dB, end calibration 114.1 dB
Weather station used	Vaisala S/N: 3A1C1A2B1B1A weather station positioned at Ecology 2
Daytime description of the sound climate	Road traffic, birds, wind, trainline, Connah's Quay Power Station (just audible)

Plate 1: Location Ecology 1

Plate 2: Sound Monitoring Results Ecology 1



1.3 Unattended Monitoring Location (Ecology 2)

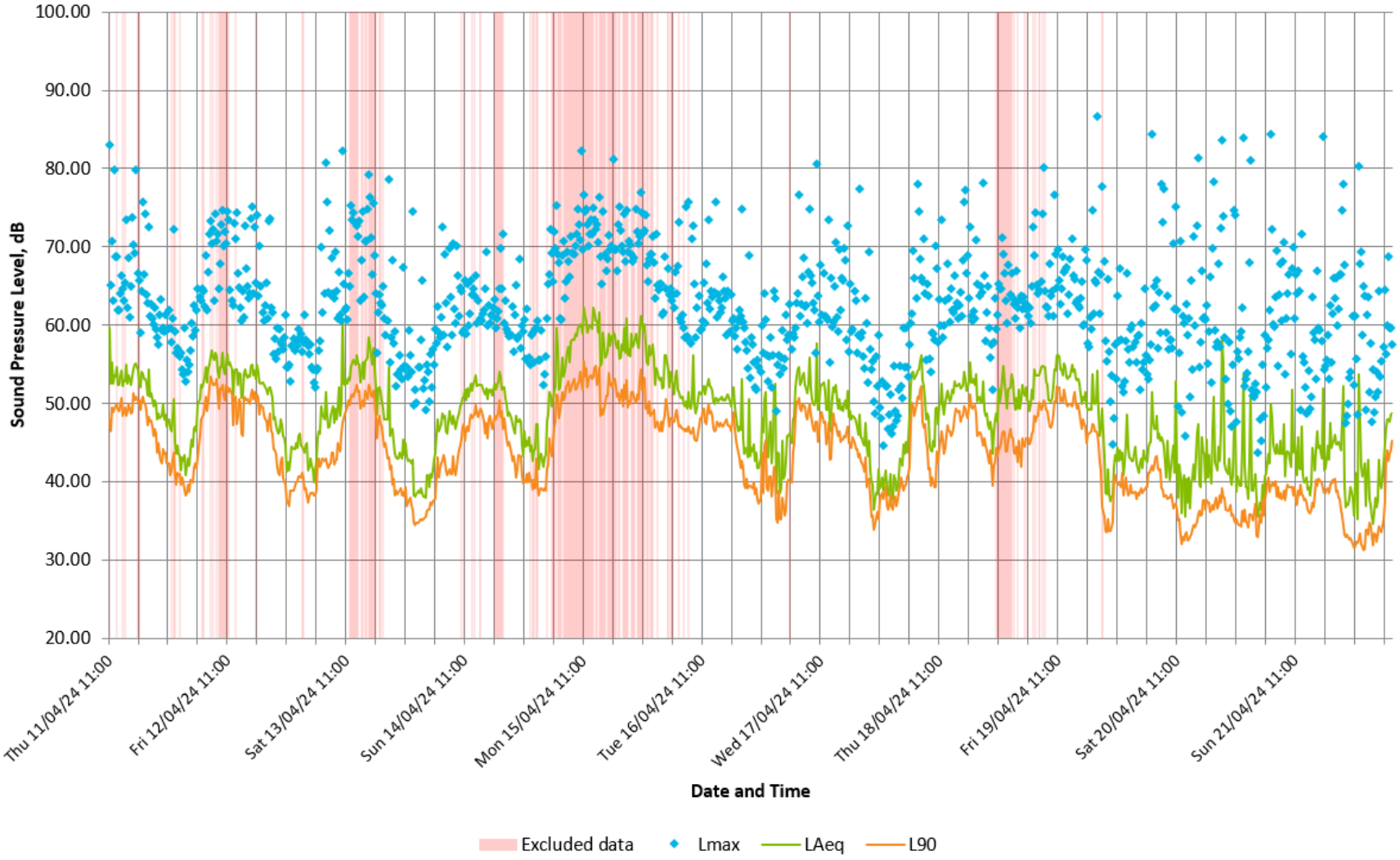
1.3.1 **Table 2** provides information on the survey location and conditions recorded on site and **Plate 3** shows the monitoring location. The full results are shown in the graph in **Plate 4**.

Table 2: Ecology 2 Survey Location Details

Location Ecology 2	Description
	Day and night unattended monitoring
Location description, what 3 words location and OS grid reference (Easting/Northing)	Adjacent to the River Dee and Connah's Quay Power Station ///Couch.Increases.Dared NZ 327395 371568
Monitoring date and time	11/04/2024 11:00 to 22/04/2024 06:31
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5 m
Sound Level Meter and Serial No.	Rion NL-52 s/n 654034
Field Calibrator and Serial No.	Norsonics 1251 s/n 27485. Start calibration 113.9 dB, end calibration 113.8 dB
Weather station used	Vaisala S/N: 3A1C1A2B1B1A Weather station positioned at Ecology 2
Daytime description of the sound climate	Road traffic, Connah's Quay Power Station (cooling towers), birds, wind

Plate 3: Location Ecology 2

Plate 4: Sound Monitoring Results Ecology 2



1.4 Unattended Monitoring Location (Ecology 3)

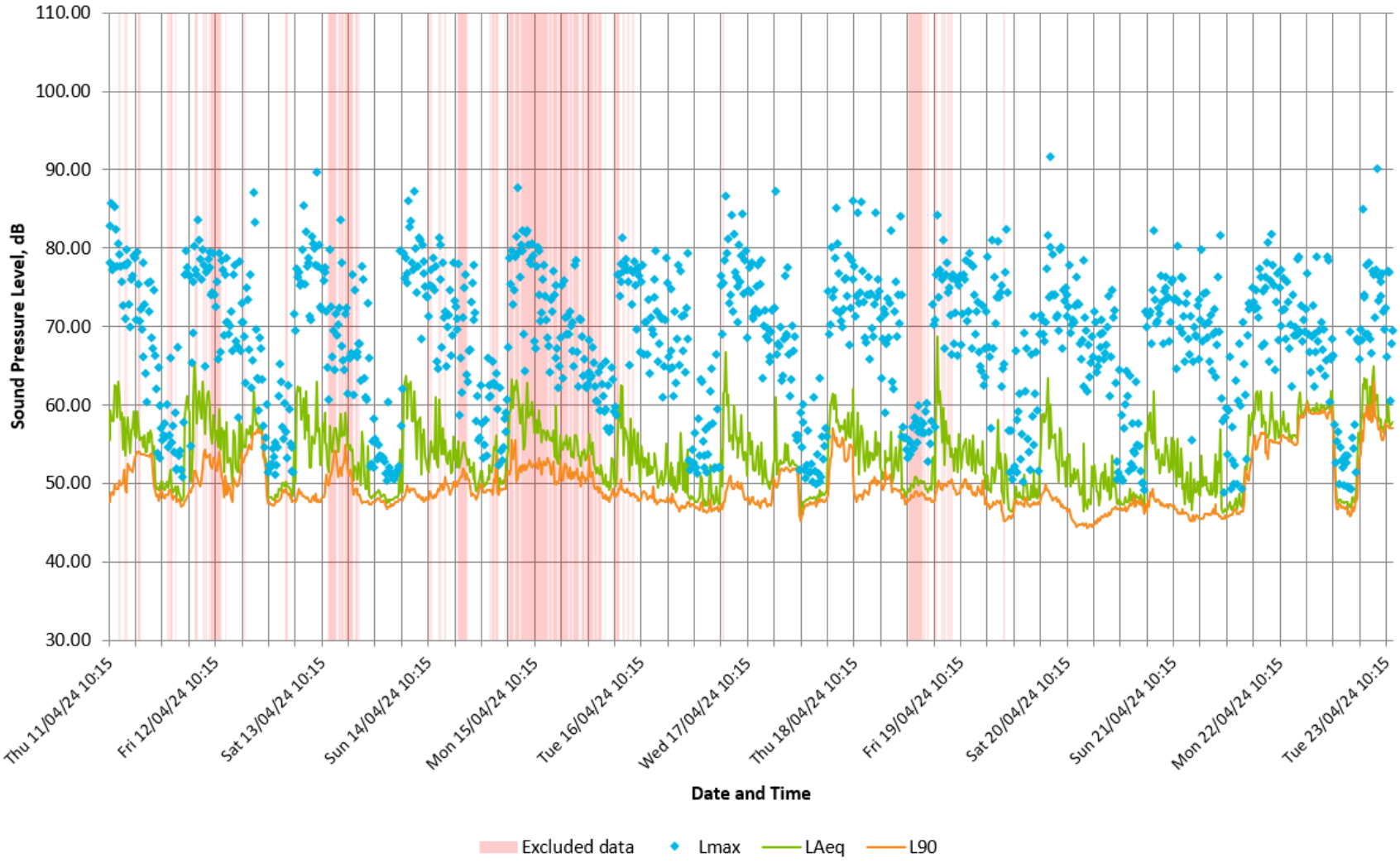
1.4.1 **Table 3** provides information on the survey location and conditions recorded on site and **Plate 5** shows the monitoring location. The full results are shown in the graph in **Plate 6**.

Table 3: Ecology 3 Survey Location Details

Location Ecology 3	Description
	Day and night unattended monitoring
Location description, what 3 words location and OS grid reference (Easting/Northing)	Adjacent to the River Dee and Connah's Quay Power Station ///Puppy.Torn.Height NZ 327711 371329
Monitoring date and time	11/04/2024 10:15 to 23/04/2024 11:30
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5 m
Sound Level Meter and Serial No.	Rion NL-52 s/n 1021280
Field Calibrator and Serial No.	Norsonics 1251 s/n 27485. Start calibration 114.0 dB, end calibration 113.9 dB
Weather station used	Vaisala S/N: 3A1C1A2B1B1A Weather station positioned at Ecology 2
Daytime description of the sound climate	Power Station (cooling towers), birds, other site activity, light aircraft

Plate 5: Location Ecology 3

Plate 6: Sound Monitoring Results Ecology 3



1.5 Unattended Monitoring Location (Ecology 4)

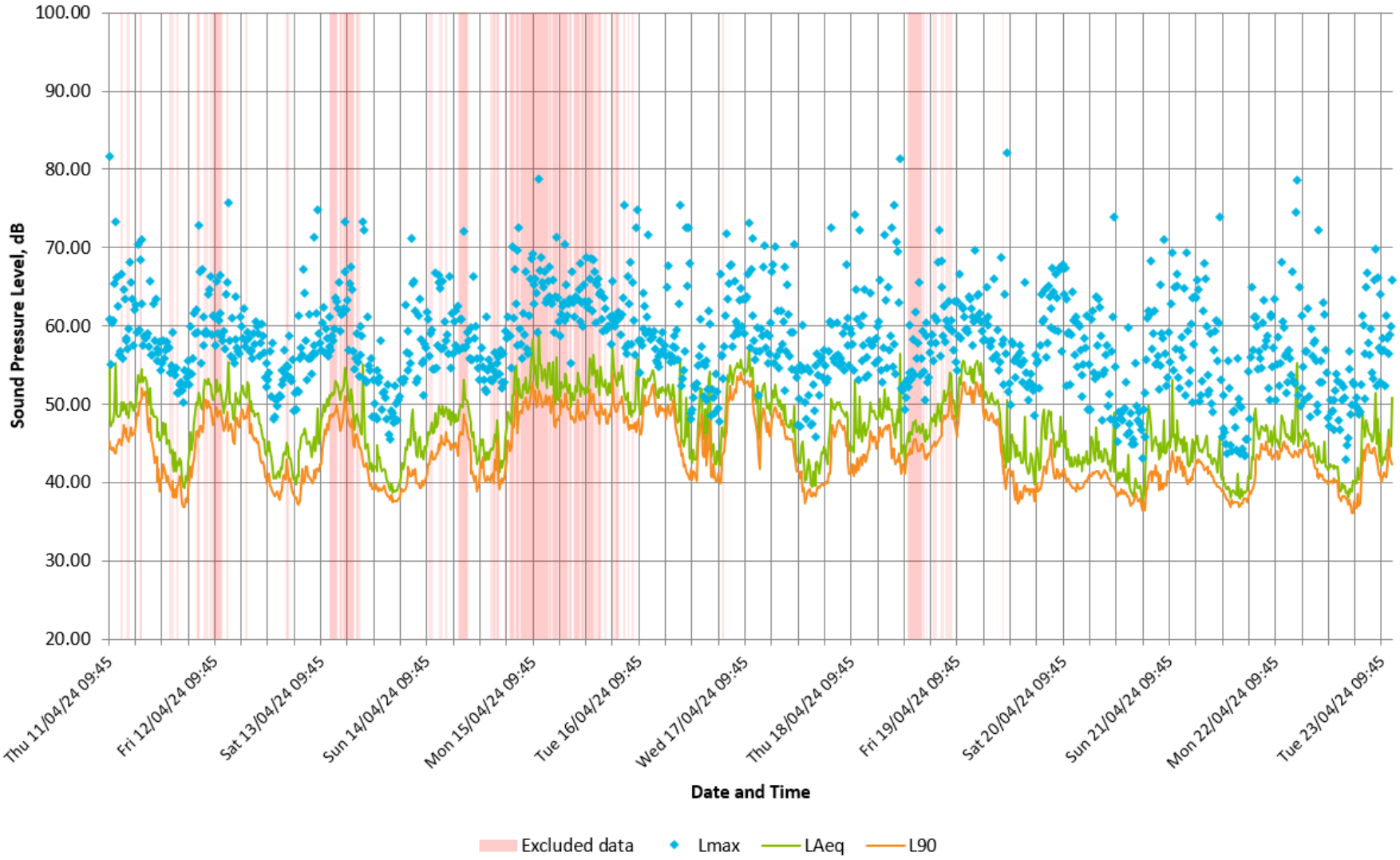
1.5.1 **Table 4** provides information on the survey location and conditions recorded on site and **Plate 7** shows the monitoring location. The full results are shown in the graph in **Plate 8**.

Table 4: Ecology 4 Survey Location Details

Location Ecology 4	Description
	Day and night unattended monitoring
Location description, what 3 words location and OS grid reference (Easting/Northing)	Adjacent to the River Dee and Connah's Quay Power Station ///Straddled.Overtones.Outnumber NZ 328153 371140
Monitoring date and time	11/04/2024 09:45 to 23/04/2024 12:00
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5 m
Sound Level Meter and Serial No.	Rion NL-52 s/n 710387
Field Calibrator and Serial No.	Norsonics 1251 s/n 27485. Start calibration 113.8 dB, end calibration 113.8 dB
Weather station used	Vaisala S/N: 3A1C1A2B1B1A Weather station positioned at Ecology 2
Daytime description of the sound climate	Road traffic (A548), Power Station, light aircraft, birds, sub-station, wind

Plate 7: Location Ecology 4

Plate 8: Sound Monitoring Results Ecology 4



1.6 Unattended Monitoring Location (LT1)

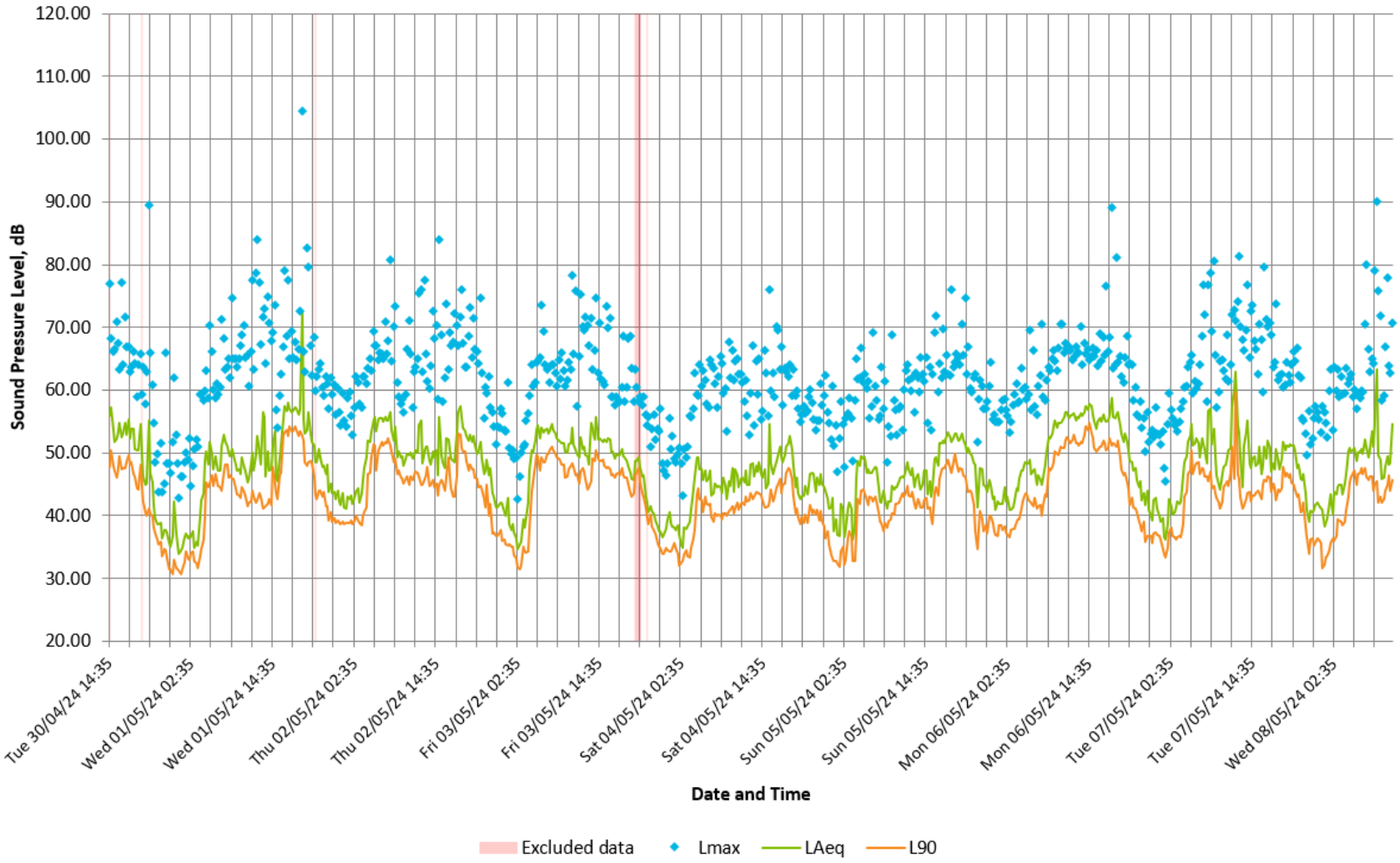
1.6.1 **Table 5** provides information on the survey location and conditions recorded on site and **Plate 9** shows the monitoring location. The full results are shown in the graph in **Plate 10**.

Table 5: LT1 Survey Location Details

Location LT1	Description
	Day and night unattended monitoring
Location description, what 3 words location and OS grid reference (Easting/Northing)	Adjacent to the edge of Coleg Cambria campus ///Plotter.Prepared.Safe NZ 327918 370517
Monitoring date and time	30/04/2024 14:35 to 08/05/2024 11:06
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5 m
Sound Level Meter and Serial No.	Rion NL-52 s/n 386762
Field Calibrator and Serial No.	Norsonics 1251 s/n 27485. Start calibration 114.0 dB, end calibration 113.8 dB
Weather station used	Vaisala S/N: 3A1C1A2B1B1A Positioned at LT1
Daytime description of the sound climate	Road traffic (local and A458), wind, minor construction, car park, sheep
Nighttime description of the sound climate	Distant road traffic noise (A458), barely audible cooling tower noise from Connah's Quay Power station

Plate 9: Location LT1

Plate 10: Sound Monitoring Results LT1



1.7 Unattended Monitoring Location (LT2)

1.7.1 **Table 6** provides information on the survey location and conditions recorded on site and **Plate 11** shows the monitoring location. The full results are shown in the graph in **Plate 12**.

Table 6: LT2 Survey Location Details

Location LT2	Description
	Day and night unattended monitoring
Location description, what 3 words location and OS grid reference (Easting/Northing)	Local residents garden along Kelsterton Road near R21 ///Cages.Paramedic.Estate NZ 327190 371289
Monitoring date and time	23/04/2024 16:00 to 30/04/2024 11:15
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5 m
Sound Level Meter and Serial No.	Rion NL-52 s/n 1021280
Field Calibrator and Serial No.	Norsonics 1251 s/n 27485. Start calibration 114.0 dB, end calibration 113.8 dB
Weather station used	Vaisala S/N: 3A1C1A2B1B1A Weather station positioned at LT2
Daytime description of the sound climate	Road traffic (Chester Road), birds, Power Station (barely audible), wind (several trees in garden)
Nighttime description of the sound climate	Road traffic (Chester Road), Essity Paper Mill and Connah's Quay Power Station cooling towers

Plate 11: Location LT2

Plate 12: Sound Monitoring Results LT2

1.8 Unattended Monitoring Location (LT3)

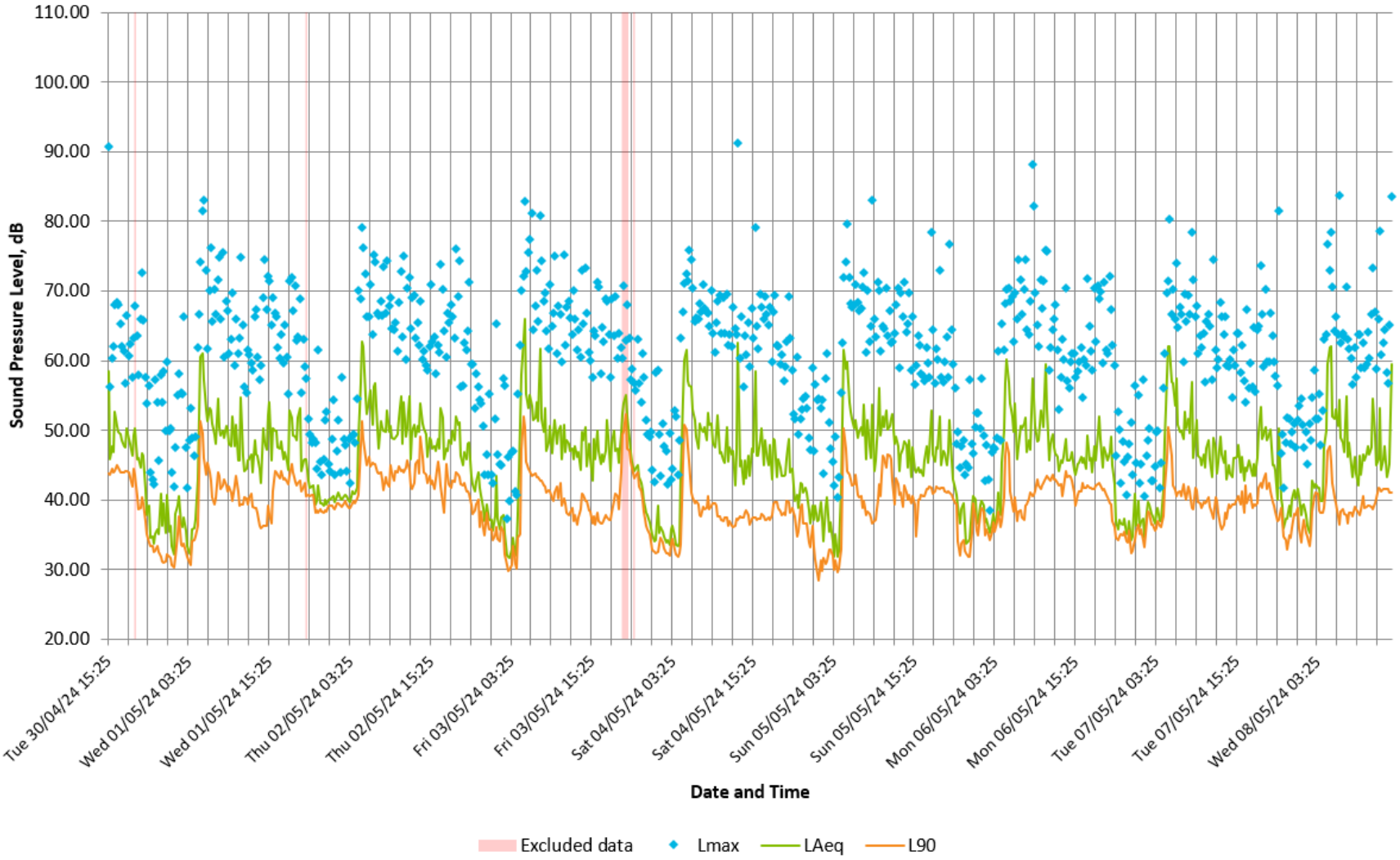
1.8.1 **Table 7** provides information on the survey location and conditions recorded on site and **Plate 13** shows the monitoring location. The full results are shown in the graph in **Plate 14**.

Table 7: LT3 Survey Location Details

Location LT3	Description
	Day and night unattended monitoring
Location description, what 3 words location and OS grid reference (Easting/Northing)	Next to the reservoir near Paper Mill Lane at the rear of the residences ///Remake.Splinters.Roaring NZ 326354 370897
Monitoring date and time	30/04/2024 15:25 to 08/05/2024 14:30
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5 m
Sound Level Meter and Serial No.	Rion NL-52 s/n 710387
Field Calibrator and Serial No.	Norsonics 1251 s/n 27485. Start calibration 114.0 dB, end calibration 114.0 dB
Weather station used	Vaisala S/N: 3A1C1A2B1B1A Positioned at LT1
Daytime description of the sound climate	Birds, wind through trees, plane overhead, distant road traffic
Nighttime description of the sound climate	Road traffic (Chester Road, A458), Essity Paper Mill

Plate 13: Location LT3

Plate 14: Sound Monitoring Results LT3



1.9 Unattended Monitoring Location (LT4)

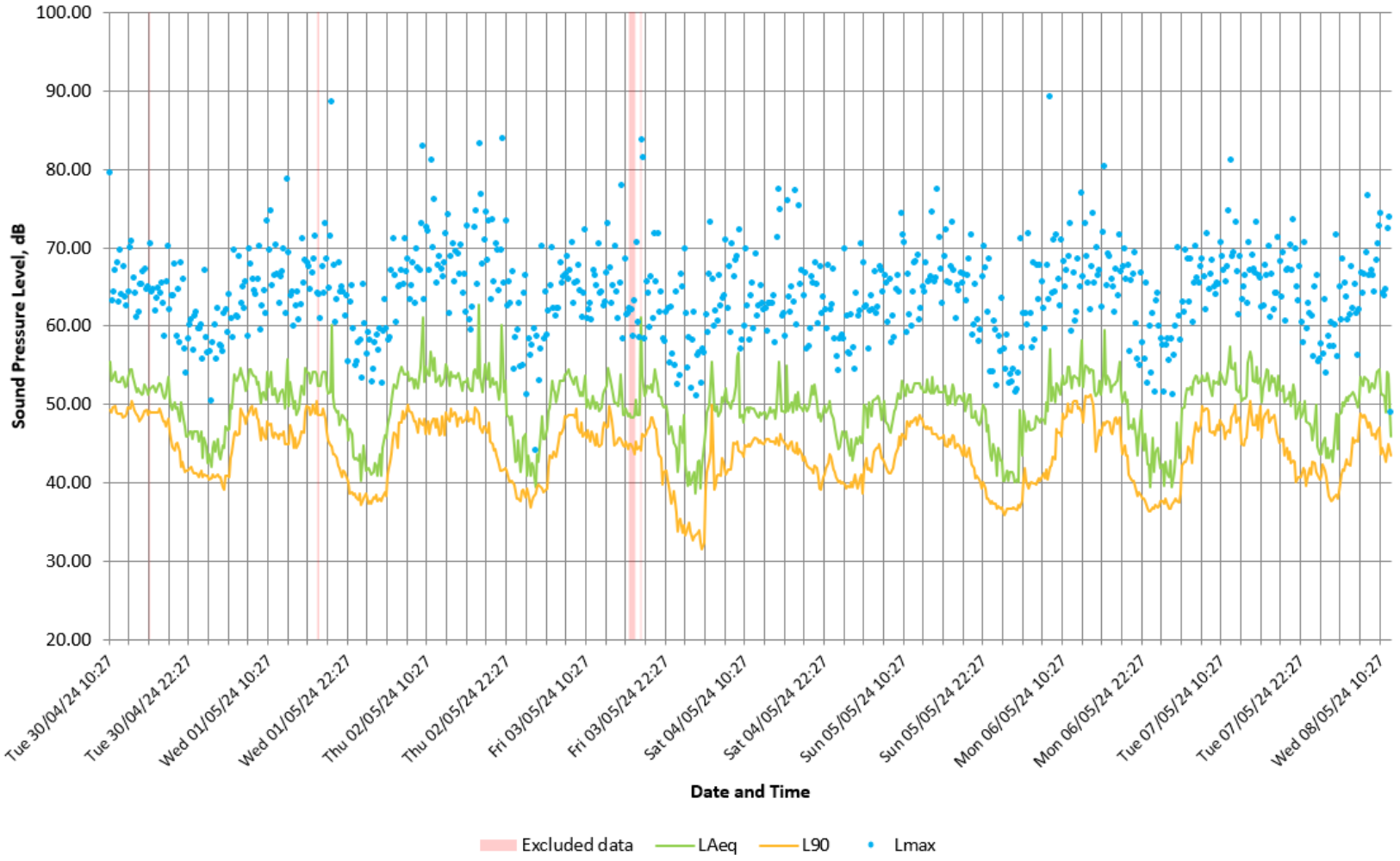
1.9.1 **Table 8** provides information on the survey location and conditions recorded on site and **Plate 15** shows the monitoring location. The full results are shown in the graph in **Plate 16.**

Table 8: LT4 Survey Location Details

Location LT4	Description
	Day and night unattended monitoring
Location description, what 3 words location and OS grid reference (Easting/Northing)	In the field along Leadbrook Drive by R6 ///Innovate.Originals.Router NZ 325976 371725
Monitoring date and time	30/04/2024 19:50 to 08/06/2024 11:56
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5 m
Sound Level Meter and Serial No.	Rion NL-52 s/n 1021279
Field Calibrator and Serial No.	Norsonics 1251 s/n 27485. Start calibration 114.0 dB, end calibration 114.0 dB
Weather station used	Vaisala S/N: 3A1C1A2B1B1A Positioned at LT1
Daytime description of the sound climate	Road traffic, dogs and birds, paper mill (just audible), members of the public walking past
Nighttime description of the sound climate	Essity Paper Mill dominant

Plate 15: Location LT4

Plate 16: Sound Monitoring Results LT4



1.10 Unattended Monitoring Location (LT5)

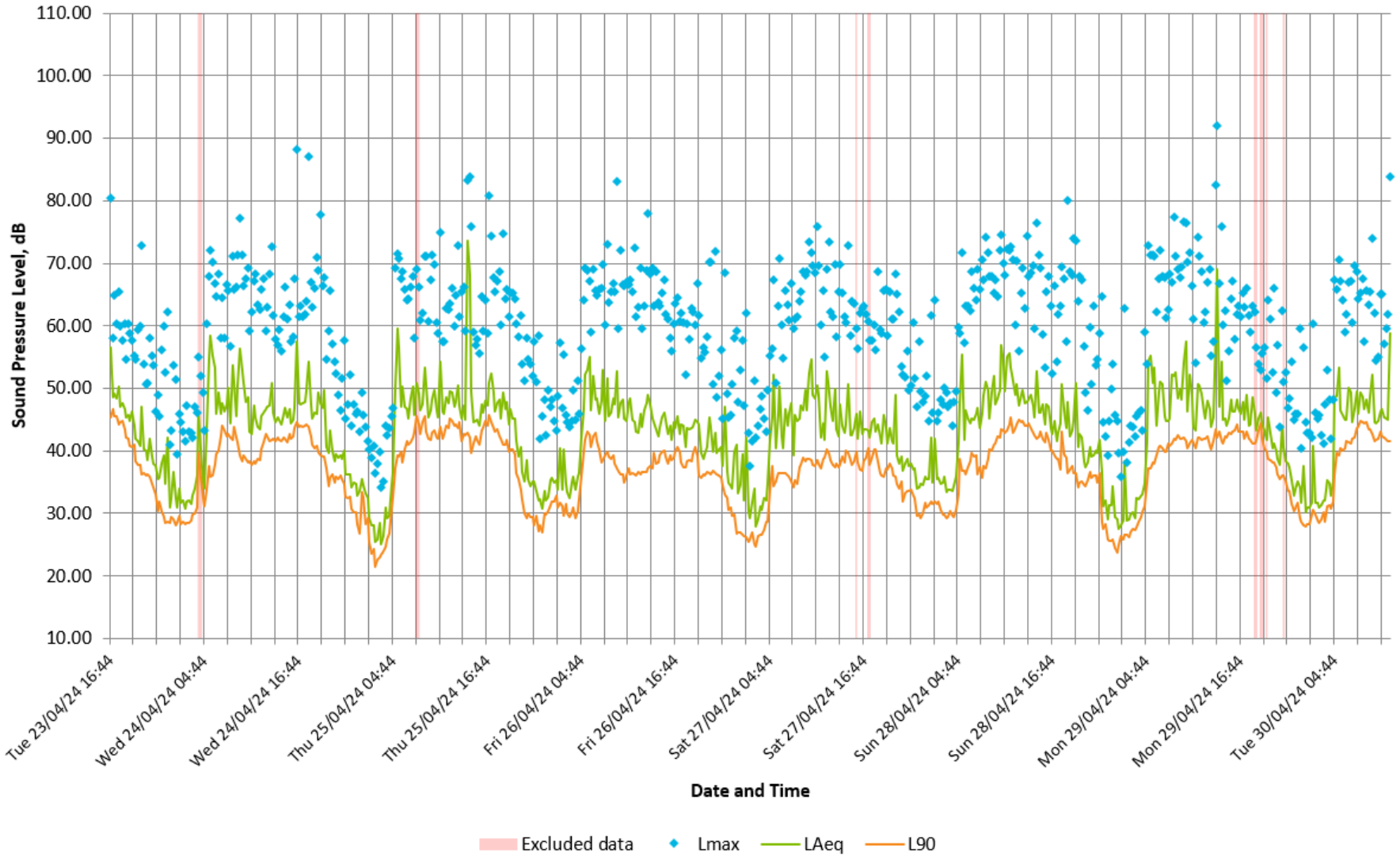
1.10.1 **Table 9** provides information on the survey location and conditions recorded on site and **Plate 17** shows the monitoring location. The full results are shown in the graph in **Plate 18**.

Table 9: LT5 Survey Location Details

Location LT5	Description
	Day and night unattended monitoring
Location description, what 3 words location and OS grid reference (Easting/Northing)	In residents garden at 109 York Road ///Inspector.Held.Valued NZ 328377 370258
Monitoring date and time	23/04/2024 16:45 to 30/04/2024 11:47
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5 m
Sound Level Meter and Serial No.	Rion NL-52 s/n 654034
Field Calibrator and Serial No.	Norsonics 1251 s/n 27485. Start calibration 114.0 dB, end calibration 113.8 dB
Weather station used	Vaisala S/N: 3A1C1A2B1B1A Weather station positioned at LT2
Daytime description of the sound climate	Local road traffic, birds, children, wind, wind chime
Nighttime description of the sound climate	Distant road traffic noise (A458) dominant, barely audible cooling tower noise from Connah's Quay Power station

Plate 17: Location LT5

Plate 18: Sound Monitoring Results LT5



1.11 Unattended Monitoring Location (LT6)

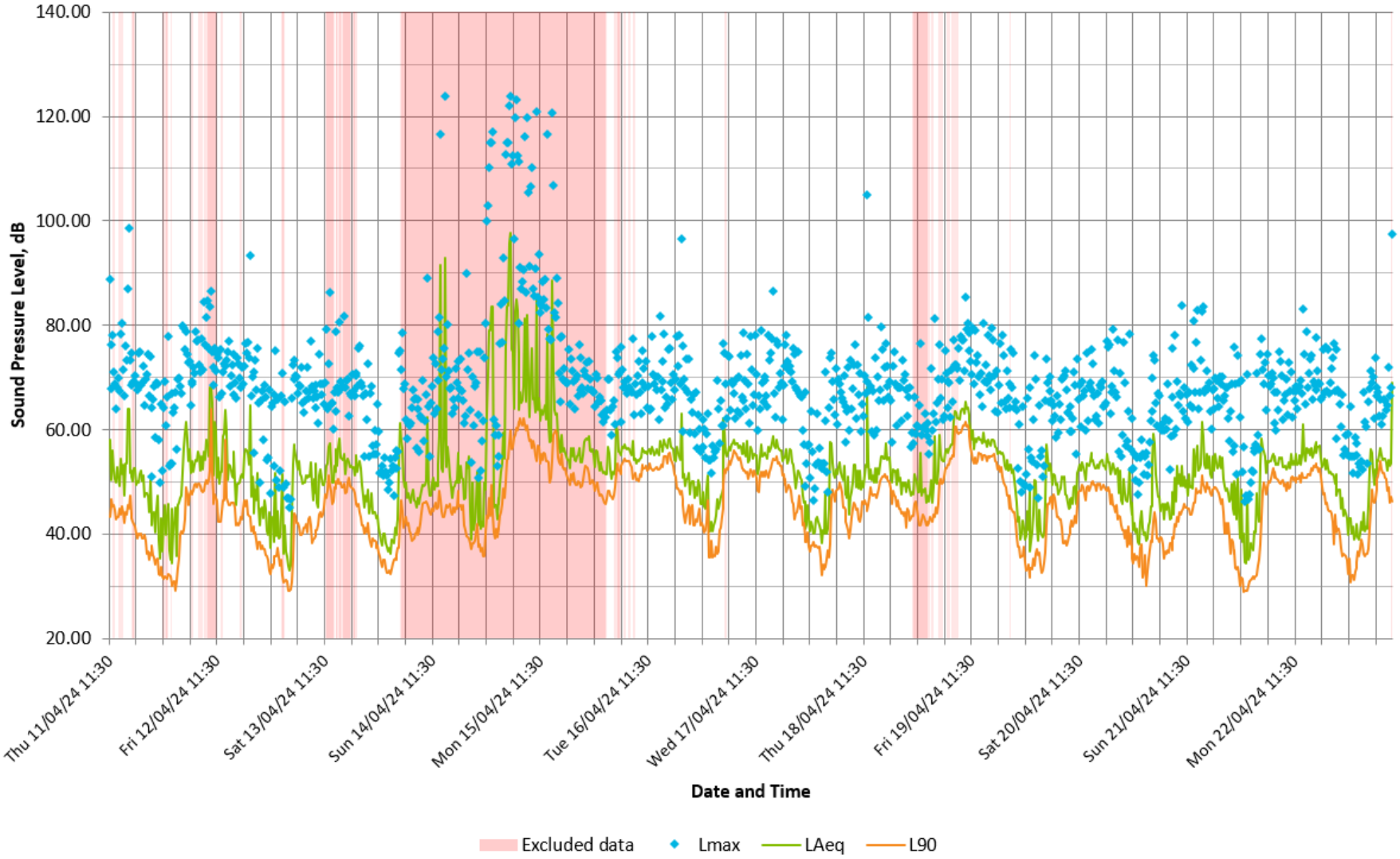
1.11.1 **Table 10** provides information on the survey location and conditions recorded on site and **Plate 19** shows the monitoring location. The full results are shown in the graph in **Plate 20**.

Table 10: LT6 Survey Location Details

Location LT6	Description
	Day and night unattended monitoring
Location description, what 3 words location and OS grid reference (Easting/Northing)	Opposite side of railway tracks to Dee View Road ///Wasps.Rise.Amuse NZ 328912 370190
Monitoring date and time	11/04/2024 12:30 to 23/04/2024 16:05
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5 m
Sound Level Meter and Serial No.	Rion NL-52 s/n 386762
Field Calibrator and Serial No.	Norsonics 1251 s/n 27485. Start calibration 114.0 dB, end calibration 113.8 dB
Weather station used	Vaisala S/N: 3A1C1A2B1B1A Weather station positioned at Ecology 2
Daytime description of the sound climate	Road traffic (A548), birds, trainline
Nighttime description of the sound climate	Road traffic (A548) dominant, Connah's Quay Power Station (barely audible)

Plate 19: Location LT6

Plate 20: Sound Monitoring Results LT6



1.12 Unattended Monitoring Location (LT8)

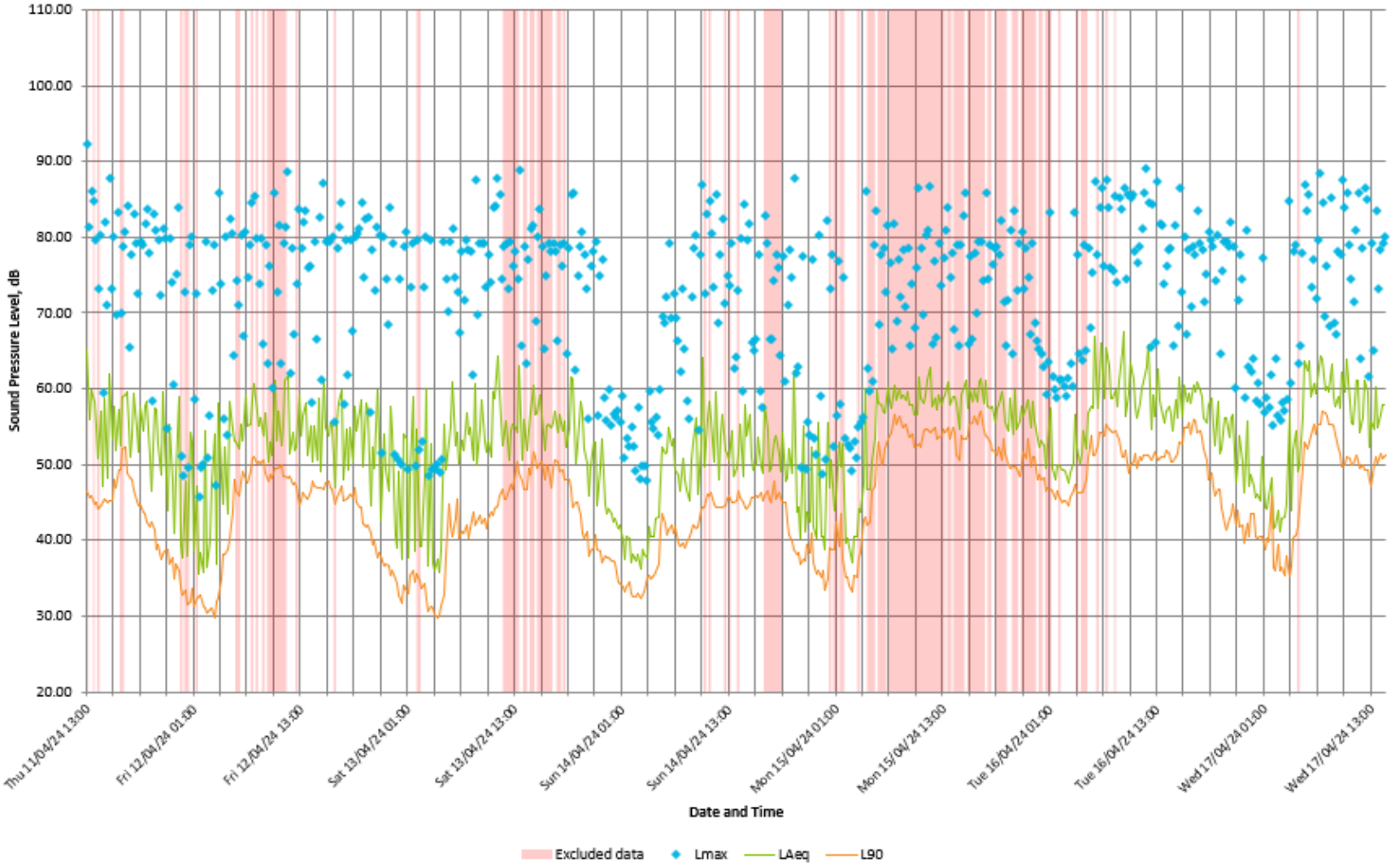
1.12.1 **Table 11** provides information on the survey location and conditions recorded on site and **Plate 21** shows the monitoring location. The full results are shown in the graph in **Plate 22**.

Table 11: LT8 Survey Location Details

Location LT8	Description
	Day and night unattended monitoring
Location description, what 3 words location and OS grid reference (Easting/Northing)	South of the National Grid Electricity Transmission 400 kV substation adjacent to the trainline at the opposite side of the tracks to R30 and R31 ///Homeward.Grasp.Claim NZ 328384 370519
Monitoring date and time	11/04/2024 13:00 to 17/04/2024 14:30
Monitoring height above ground	1.5m
Distance to nearest building façade	Greater than 3.5m
Sound Level Meter and Serial No.	Rion NL-52 s/n 1143567
Field Calibrator and Serial No.	Norsonics 1251 s/n 27485. Start calibration 113.9 dB, end calibration 113.8 dB
Weather station used	Vaisala S/N: 3A1C1A2B1B1A Weather station positioned at Ecology 2
Daytime description of the sound climate	Road traffic (A548, Chester Road), trainline, wind, vegetation clearance works, birds
Nighttime description of the sound climate	Road traffic (A548, Chester Road), Connah's Quay Power Station

Plate 21: Location LT8

Plate 22: Sound Monitoring Results LT8



1.13 Unattended Monitoring Location (LT9)

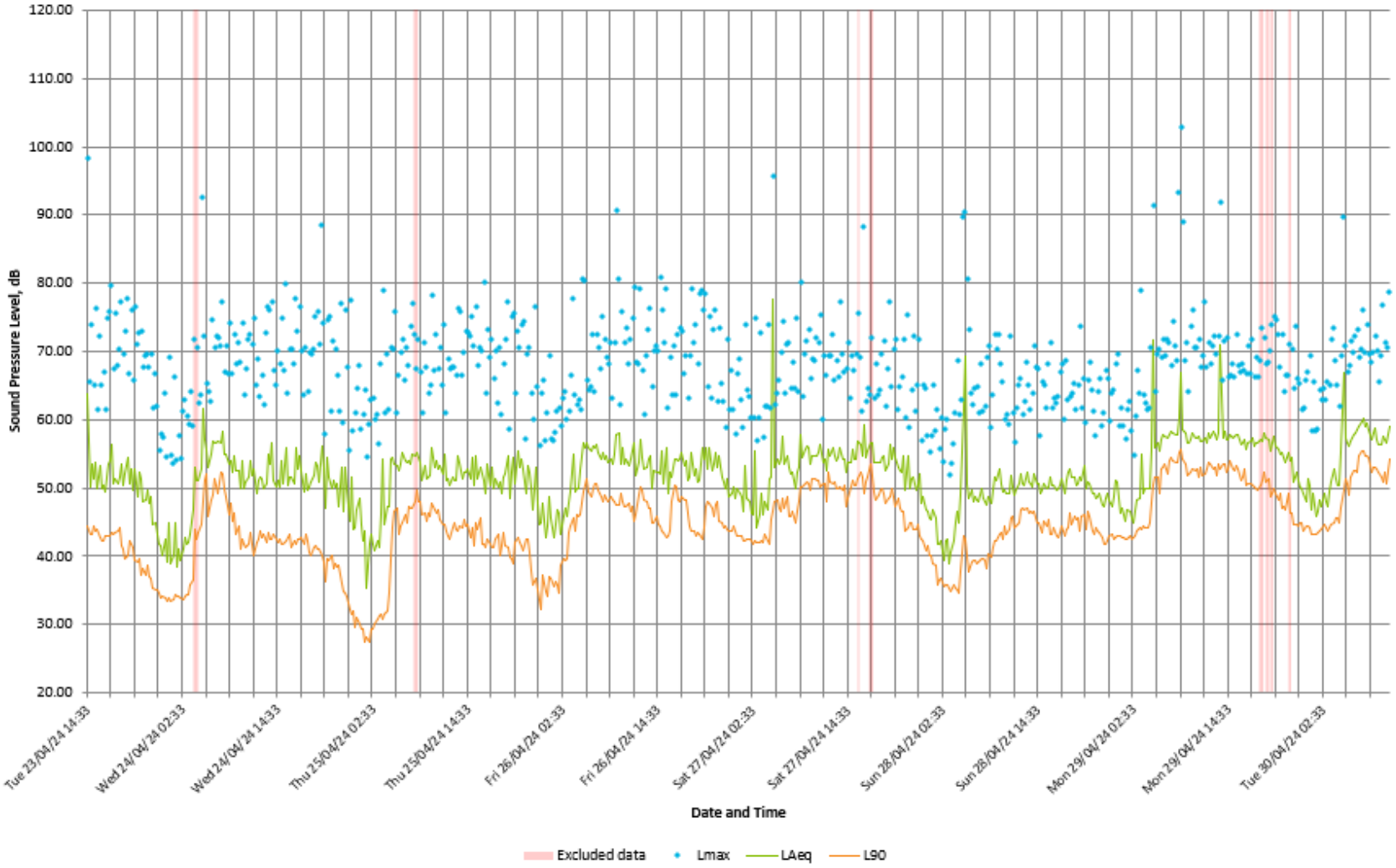
1.13.1 **Table 12** provides information on the survey location and conditions recorded on site and **Plate 23** shows the monitoring location. The full results are shown in the graph in **Plate 24.**

Table 12: LT9 Survey Location Details

Location LT9	Description
	Day and night unattended monitoring
Location description, what 3 words location and OS grid reference (Easting/Northing)	Alongside the A548, opposite Leadbrook Drive ///Chase.Laugh.Grunt NZ 326019 371832
Monitoring date and time	23/04/2024 14:33 to 30/04/2024 10:48
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5 m
Sound Level Meter and Serial No.	Rion NL-52 s/n 386762
Field Calibrator and Serial No.	Norsonics 1251 s/n 27485. Start calibration 114.1 dB, end calibration 114.0 dB
Weather station used	Vaisala S/N: 3A1C1A2B1B1A Weather station positioned at LT2
Daytime description of the sound climate	Road traffic (Chester Roads) dominant, railway line, birds, sheep
Nighttime description of the sound climate	Essity Paper Mill dominant

Plate 23: Location LT9

Plate 24: Sound Monitoring Results LT9



1.14 Unattended Monitoring Location (LT11)

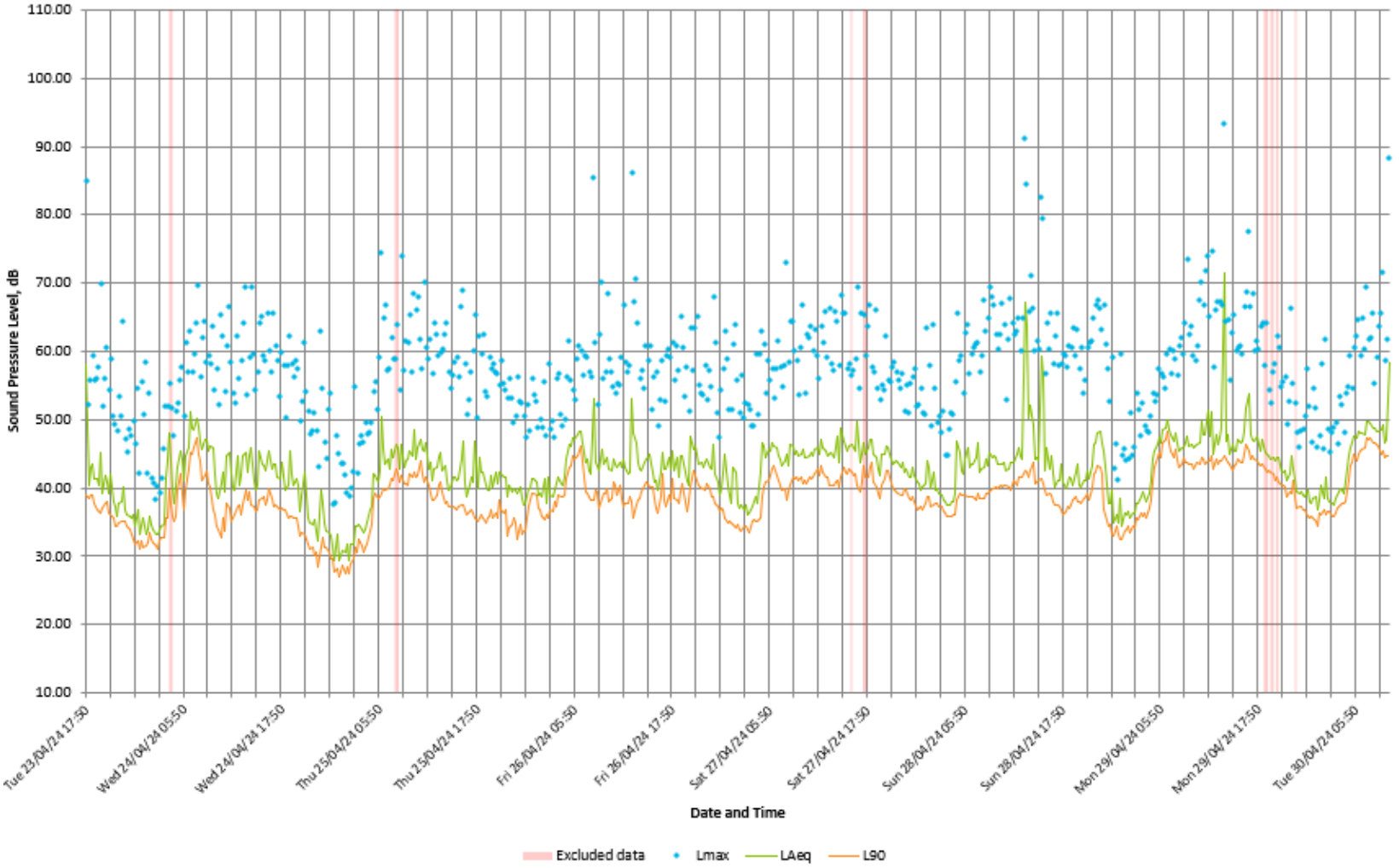
1.14.1 **Table 13** provides information on the survey location and conditions recorded on site and **Plate 25** shows the monitoring location. The full results are shown in the graph in **Plate 26.**

Table 13: LT11 Survey Location Details

Location LT11	Description
	Day and night unattended monitoring
Location description, what 3 words location and OS grid reference (Easting/Northing)	Adjacent to Leadbrook Drive and R4 ///Alleyway.Meant.Grew NZ 326006 371152
Monitoring date and time	23/04/2024 17:50 to 30/04/2024 10:04
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5 m
Sound Level Meter and Serial No.	Rion NL-52 s/n 1021279
Field Calibrator and Serial No.	Norsonics 1251 s/n 27485. Start calibration 113.9 dB, end calibration 114.0 dB
Weather station used	Vaisala S/N: 3A1C1A2B1B1A Weather station positioned at LT2
Daytime description of the sound climate	Road traffic dominant, birds, sheep
Nighttime description of the sound climate	Essity Paper Mill dominant, wind, nearby power lines

Plate 25: Location LT11

Plate 26: Sound Monitoring Results LT11



1.15 Attended Monitoring Location (ST1)

1.15.1 **Table 14** provides information on the survey location and conditions recorded on site and **Plate 27** shows the monitoring location. The full results are shown in **Table 15.**

Table 14: ST1 Survey Location Details

Location ST1	Description
	Day attended monitoring
Location description, what 3 words location and OS grid reference (Easting/Northing)	On the Llwyn Onn road that leads to R1 ///Confident.Clips.Consented NZ 325022 370924
Monitoring date and time	24/04/2024 10:45 to 24/04/2024 11:45
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5 m
Sound Level Meter and Serial No.	Rion NL-52 s/n 710387
Field Calibrator and Serial No.	Norsonics 1251 s/n 27485 Start calibration 114.1 dB, end calibration 114.1 dB
Weather station used	Handheld measurement and site observations
Description of the sound climate	Farm animals (sheep and horses), birds, wind blowing through trees, distant road noise, faint industrial noise from either the paper mill or the power station

Plate 27: Location ST1

Table 15: Sound Monitoring Results ST1

Date and time	Sound Level dB		
	$L_{Aeq(15min)}$	L_{Amax}	$L_{A90,(15min)}$
24/04/24 10:45	42	61	33
24/04/24 11:00	36	56	33
24/04/24 11:15	48	73	34
24/04/24 11:30	46	72	35

1.16 Attended Monitoring Location (ST2)

1.16.1 **Table 16** provides information on the survey location and conditions recorded on site and **Plate 28** shows the monitoring location. The full results are shown in **Table 17**.

Table 16: ST2 Survey Location Details

Location ST2	Description
	Day attended monitoring
Location description, what 3 words location and OS grid reference (Easting/Northing)	North of Ewe Two ///Sand.Orchestra.Nips NZ 325623 371128
Monitoring date and time	11/04/2024 15:17 to 11/04/2024 16:17
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5 m
Sound Level Meter and Serial No.	Rion NL-52 s/n 1021279
Field Calibrator and Serial No.	Norsonics 1251 s/n 27485 Start calibration 114.0 dB, end calibration 113.9 dB
Weather station used	Handheld measurement and site observations
Description of the sound climate	Road traffic, birds

Plate 28: Location ST2

Table 17: Sound Monitoring Results ST2

Date and time	Sound Level dB		
	$L_{Aeq, (15min)}$	L_{Amax}	$L_{A90, (15min)}$
11/04/24 15:17	45	57	43
11/04/24 15:32	45	54	42
11/04/24 15:47	42	55	40
11/04/24 16:02	44	57	41

1.17 Attended Monitoring Location ST3 Daytime

1.17.1 **Table 18** provides information on the survey location and conditions recorded on site and **Plate 29** shows the monitoring location. The full results are shown in **Table 19**.

Table 18: ST3 Daytime Survey Location Details

Location ST3 Daytime	Description
	Day attended monitoring
Location description, what 3 words location and OS grid reference (Easting/Northing)	Golftyn Lane ///Vies.Milder.Blasted NZ 328193 370006
Monitoring date and time	24/04/2024 12:00 to 24/04/2024 13:00
Monitoring height above ground	1.5m
Distance to nearest building façade	Greater than 3.5m
Sound Level Meter and Serial No.	Rion NL-52 s/n 710387
Field Calibrator and Serial No.	Norsonics 1251 s/n 27485, Start calibration 114.0 dB, end calibration 114.1 dB
Weather station used	Handheld measurement and site observations
Description of the sound climate	Passing traffic, birds, distant shouts of people playing sports

Plate 29: Location ST3 Daytime

Table 19: Sound Monitoring Results ST3 Daytime

Date and time	Sound Level dB		
	$L_{Aeq, (15min)}$	L_{Amax}	$L_{A90, (15min)}$
24/04/24 12:00	61	73	47
24/04/24 12:15	60	71	49
24/04/24 12:30	62	86	49
24/04/24 12:45	61	83	47

1.18 Attended Monitoring Location ST3 Night-time

1.18.1 **Table 20** provides information on the survey location and conditions recorded on site and **Plate 30** shows the monitoring location. The full results are shown in **Table 21**.

Table 20: ST3 Night-time Survey Location Details

Location ST3 Night-time	Description
	Night unattended monitoring
Location description, what 3 words location and OS grid reference (Easting/Northing)	Publically accessible grassed area at beginning of Golftyn Lane ///Vies.Milder.Blasted NZ 328193 370006
Monitoring date and time	23/04/2024 23:43 to 24/04/2024 00:28
Monitoring height above ground	1.5m
Distance to nearest building façade	Greater than 3.5m
Sound Level Meter and Serial No.	Rion NL-52 s/n 710387
Field Calibrator and Serial No.	Norsonics 1251 s/n 27485 Start calibration 114.1 dB, end calibration 114.1dB
Weather station used	Handheld measurement and site observations
Description of the sound climate	Plant noise from school

Plate 30: Location ST3 Night-time

Table 21: Sound Monitoring Results ST3 Night-time

Date and time	Sound Level dB		
	$L_{Aeq, (15min)}$	L_{Amax}	$L_{A90, (15min)}$
23/04/24 23:43	47	66	30
23/04/24 23:58	51	75	30
24/04/24 00:13	45	66	30
24/04/24 00:28	36	50	30

1.19 Weather Data

Plate 31: Wind speed data over the measurement period

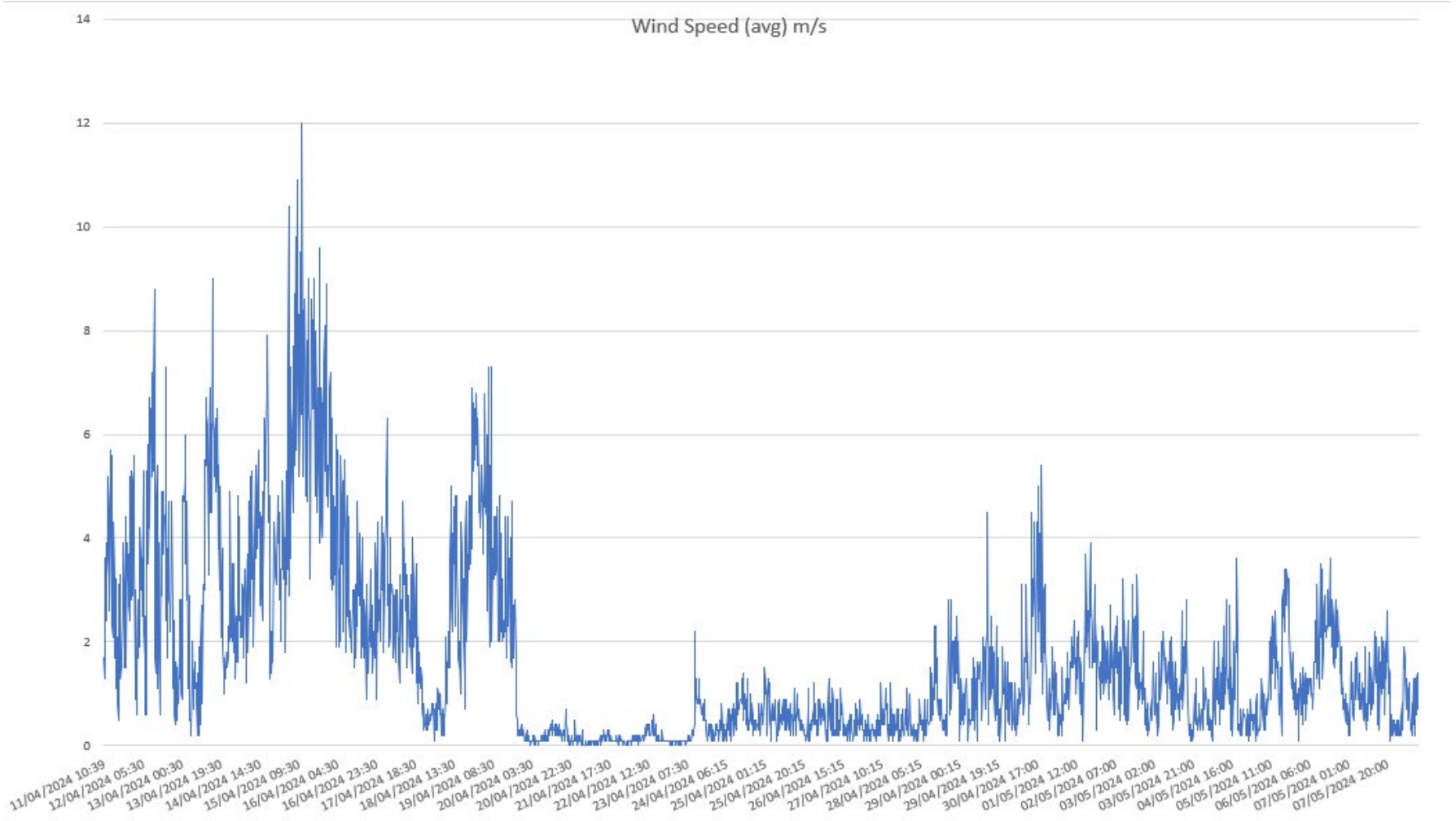


Plate 32: Wind direction data over the measurement period

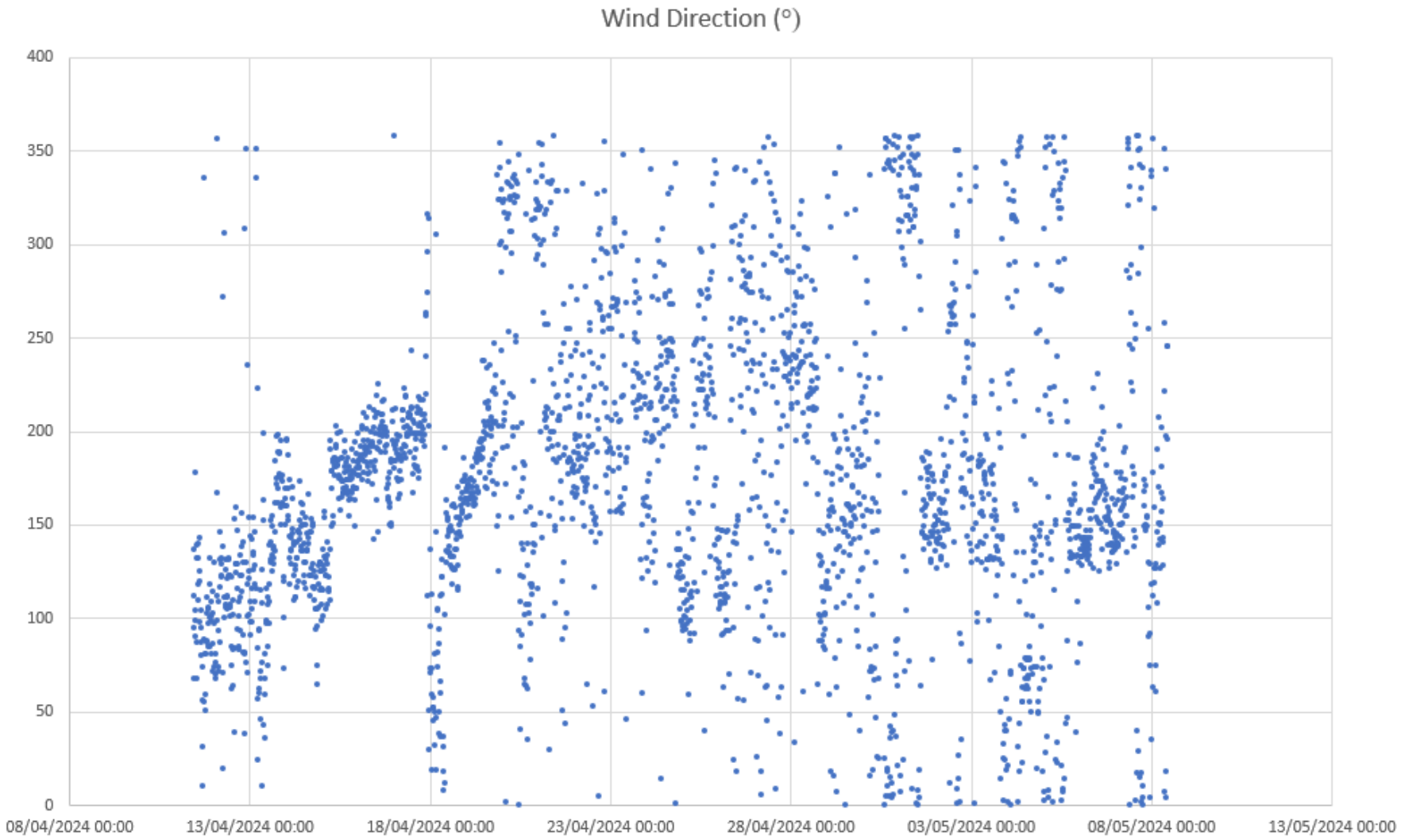
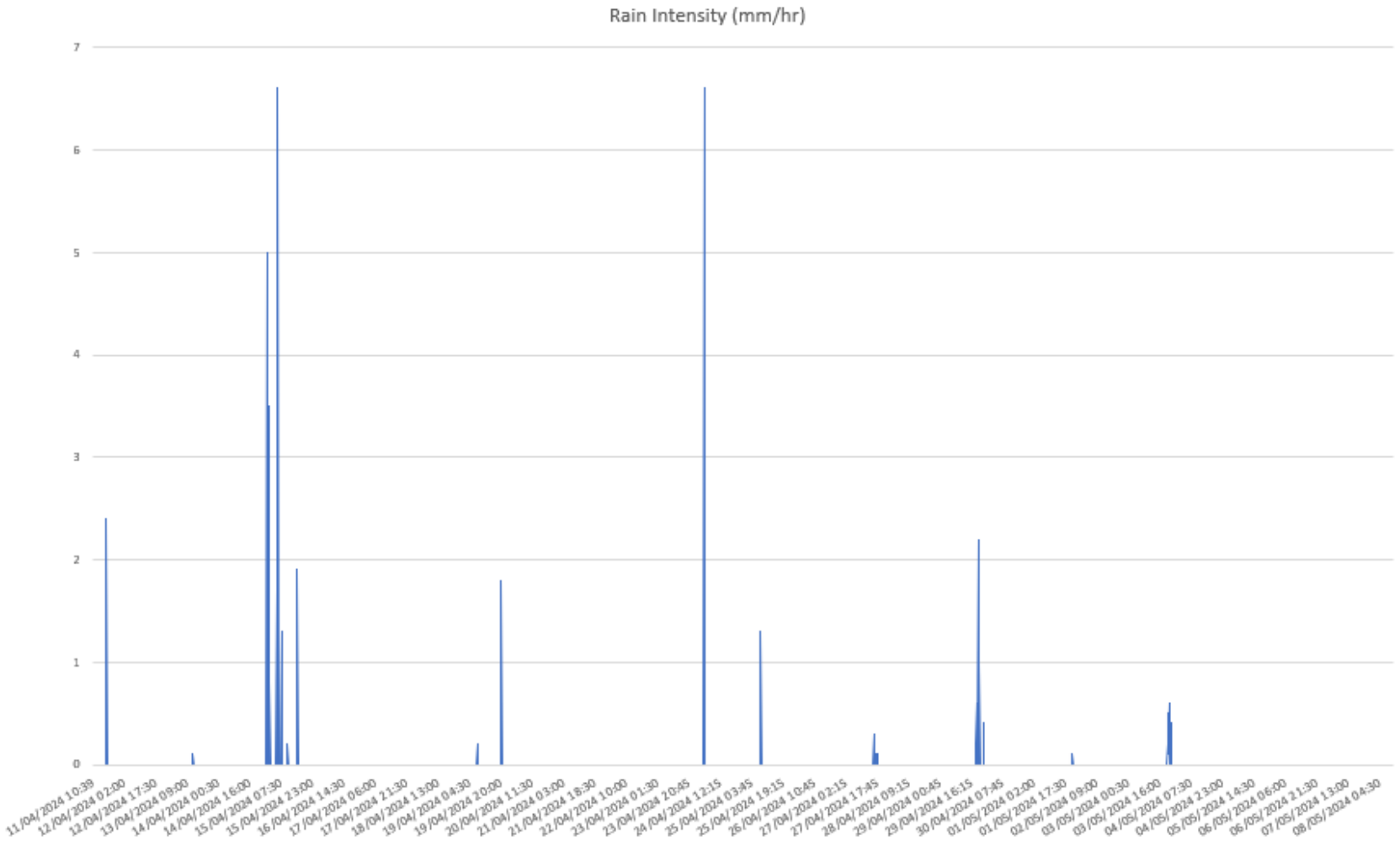


Plate 33: Rain data over the measurement period



1.20 Calibration Certificates

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 11 May 2023 **Certificate Number: UCRT23/1638**

Calibrated at & Certificate issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

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Approved Signatory

K. Mistry

Customer	AECOM 12 Regan Way Chetwynd Business Park Chilwell Notts NG9 6RZ
Order No.	1590922
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Identification	*Manufacturer*	*Instrument*	*Type*	*Serial No. / Version*
	Rion	Sound Level Meter	NL-52	01021278
	Rion	Firmware		2.0
	Rion	Pre Amplifier	NH-25	21320
	Rion	Microphone	UC-59	07287
	Rion	Calibrator	NC-74	34536109
		Calibrator adaptor type if applicable		NC-74-002

Performance Class 1
Test Procedure TP 2.SLM 61672-3 TPS-49
Procedures from IEC 61672-3:2006 were used to perform the periodic tests.
Type Approved to IEC 61672-1:2002 YES Approval Number 21.21 / 13.02
If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2003
Date Received 10 May 2023 ANV Job No. UKAS23/05328
Date Calibrated 11 May 2023

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2:2003, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2002.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	20 May 2021	UCRT21/1653	0653

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0653

Certificate Number UCRT23/1638

Page 2 of 2 Pages

Sound Level Meter Instruction manual and data used to adjust the sound levels indicated.

SLM instruction manual title	Sound Level Meter	NL-42 / NL-52	
SLM instruction manual ref / issue		11-03	
SLM instruction manual source		Manufacturer	
Internet download date if applicable		N/A	
Case corrections available		Yes	
Uncertainties of case corrections		Yes	
Source of case data		Manufacturer	
Wind screen corrections available		Yes	
Uncertainties of wind screen corrections		Yes	
Source of wind screen data		Manufacturer	
Mic pressure to free field corrections		Yes	
Uncertainties of Mic to F.F. corrections		Yes	
Source of Mic to F.F. corrections		Manufacturer	
Total expanded uncertainties within the requirements of IEC 61672-1:2002		Yes	
Specified or equivalent Calibrator		Specified	
Customer or Lab Calibrator		Lab Calibrator	
Calibrator adaptor type if applicable		NC-74-002	
Calibrator cal. date		25 April 2023	
Calibrator cert. number		UCRT23/1549	
Calibrator cal cert issued by		0653	
Calibrator SPL @ STP	94.00	dB	Calibration reference sound pressure level
Calibrator frequency	1001.99	Hz	Calibration check frequency
Reference level range	25 - 130	dB	

Accessories used or corrected for during calibration - Extension Cable & Wind Shield WS-15
Note - if a pre-amp extension cable is listed then it was used between the SLM and the pre-amp.

Environmental conditions during tests	Start	End	
Temperature	22.49	22.60	± 0.30 °C
Humidity	51.6	51.0	± 3.00 %RH
Ambient Pressure	100.53	100.53	± 0.03 kPa

Response to associated Calibrator at the environmental conditions above.

Initial indicated level	94.3	dB	Adjusted indicated level	94.0	dB
The uncertainty of the associated calibrator supplied with the sound level meter ±				0.10	dB

Self Generated Noise This test is currently not performed by this Lab.

Microphone installed (if requested by customer) = Less Than	N/A	dB	A Weighting
Uncertainty of the microphone installed self generated noise ±	N/A	dB	

Microphone replaced with electrical input device - UR = Under Range indicated

Weighting	A			C			Z		
	14.6	dB	UR	22.9	dB	UR	27.9	dB	UR
Uncertainty of the electrical self generated noise ±							0.12	dB	

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor *k*=2, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

For the test of the frequency weightings as per paragraph 12. of IEC 61672-3:2006 the actual microphone free field response was used.

The acoustical frequency tests of a frequency weighting as per paragraph 11 of IEC 61672-3:2006 were carried out using an electrostatic actuator.

..... END .....

Calibrated by: K. Zablocki R 1

Additional Comments The results on this certificate only relate to the items calibrated as identified above.
None

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 11 January 2023 **Certificate Number: UCRT23/1045**

Calibrated at & Certificate issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Page 1 of 2 Pages

Approved Signatory

K. Mistry

Customer	AECOM Limited 12 Regan Way Chetwynd Business Park Chilwell Nottingham NG9 6RZ
Order No.	1558716
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Identification

Manufacturer	*Instrument*	*Type*	*Serial No. / Version*
Rion	Sound Level Meter	NL-52	01021279
Rion	Firmware		2.0
Rion	Pre Amplifier	NH-25	21321
Rion	Microphone	UC-59	04334
Rion	Calibrator	NC-74	34536109
	Calibrator adaptor type if applicable		NC-74-002

Performance Class 1
Test Procedure TP 2.SLM 61672-3 TPS-49
Procedures from IEC 61672-3:2006 were used to perform the periodic tests.
Type Approved to IEC 61672-1:2002 YES Approval Number 21.21 / 13.02
If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2003
Date Received 09 January 2023 ANV Job No. UKAS23/01014
Date Calibrated 11 January 2023

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2:2003, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2002.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	22 December 2020	UCRT20/2265	0653

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0653

Certificate Number UCRT23/1045

Page 2 of 2 Pages

Sound Level Meter Instruction manual and data used to adjust the sound levels indicated.

SLM instruction manual title	Sound Level Meter	NL-42 / NL-52	
SLM instruction manual ref / issue		11-03	
SLM instruction manual source		Manufacturer	
Internet download date if applicable		N/A	
Case corrections available		Yes	
Uncertainties of case corrections		Yes	
Source of case data		Manufacturer	
Wind screen corrections available		Yes	
Uncertainties of wind screen corrections		Yes	
Source of wind screen data		Manufacturer	
Mic pressure to free field corrections		Yes	
Uncertainties of Mic to F.F. corrections		Yes	
Source of Mic to F.F. corrections		Manufacturer	
Total expanded uncertainties within the requirements of IEC 61672-1:2002		Yes	
Specified or equivalent Calibrator		Specified	
Customer or Lab Calibrator		Lab Calibrator	
Calibrator adaptor type if applicable		NC-74-002	
Calibrator cal. date		14 December 2022	
Calibrator cert. number		UCRT22/2464	
Calibrator cal cert issued by		0653	
Calibrator SPL @ STP	94.01	dB	Calibration reference sound pressure level
Calibrator frequency	1001.91	Hz	Calibration check frequency
Reference level range	25 - 130	dB	

Accessories used or corrected for during calibration - Wind Shield WS-10
Note - if a pre-amp extension cable is listed then it was used between the SLM and the pre-amp.

Environmental conditions during tests	Start	End		
Temperature	23.14	22.78	± 0.30	°C
Humidity	45.7	48.3	± 3.00	%RH
Ambient Pressure	99.75	99.66	± 0.03	kPa

Response to associated Calibrator at the environmental conditions above.

Initial indicated level	94.0	dB	Adjusted indicated level	94.0	dB
The uncertainty of the associated calibrator supplied with the sound level meter ±				0.10	dB

Self Generated Noise This test is currently not performed by this Lab.

Microphone installed (if requested by customer) = Less Than	N/A	dB	A Weighting
Uncertainty of the microphone installed self generated noise ±	N/A	dB	

Microphone replaced with electrical input device - UR = Under Range indicated

Weighting	A			C			Z		
	11.5	dB	UR	16.4	dB	UR	21.9	dB	UR
Uncertainty of the electrical self generated noise ±							0.12	dB	

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

For the test of the frequency weightings as per paragraph 12. of IEC 61672-3:2006 the actual microphone free field response was used.

The acoustical frequency tests of a frequency weighting as per paragraph 11 of IEC 61672-3:2006 were carried out using an electrostatic actuator.

END

Calibrated by: PB R 1

Additional Comments The results on this certificate only relate to the items calibrated as identified above.
None

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 28 March 2023 **Certificate Number: UCRT23/1429**

Page 1 of 2 Pages

Approved Signatory

K. Mistry

Calibrated at & Certificate issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Customer
AECOM Ltd
12 Regan Way
Chetwynd Business Park
Chilwell
Nottingham
NG9 6RZ

Order No. 1582430
Description Sound Level Meter / Pre-amp / Microphone / Associated Calibrator
Identification

Manufacturer	*Instrument*	*Type*	*Serial No. / Version*
Rion	Sound Level Meter	NL-52	01021280
Rion	Firmware		2.0
Rion	Pre Amplifier	NH-25	21322
Rion	Microphone	UC-59	10850
Rion	Calibrator	NC-74	34425538
	Calibrator adaptor type if applicable		NC-74-002

Performance Class 1
Test Procedure TP 2.SLM 61672-3 TPS-49
Procedures from IEC 61672-3:2006 were used to perform the periodic tests.
Type Approved to IEC 61672-1:2002 YES Approval Number 21.21 / 13.02
If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2003
Date Received 27 March 2023 ANV Job No. UKAS23/03227
Date Calibrated 28 March 2023

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2:2003, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2002.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	13 April 2021	UCRT21/1486	0653

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0653

Certificate Number UCRT23/1429

Sound Level Meter Instruction manual and data used to adjust the sound levels indicated.

SLM instruction manual title	Sound Level Meter	NL-42 / NL-52	
SLM instruction manual ref / issue		11-03	
SLM instruction manual source		Manufacturer	
Internet download date if applicable		N/A	
Case corrections available		Yes	
Uncertainties of case corrections		Yes	
Source of case data		Manufacturer	
Wind screen corrections available		Yes	
Uncertainties of wind screen corrections		Yes	
Source of wind screen data		Manufacturer	
Mic pressure to free field corrections		Yes	
Uncertainties of Mic to F.F. corrections		Yes	
Source of Mic to F.F. corrections		Manufacturer	
Total expanded uncertainties within the requirements of IEC 61672-1:2002		Yes	
Specified or equivalent Calibrator		Specified	
Customer or Lab Calibrator		Customers Calibrator	
Calibrator adaptor type if applicable		NC-74-002	
Calibrator cal. date		28 March 2023	
Calibrator cert. number		UCRT23/1423	
Calibrator cal cert issued by		0653	
Calibrator SPL @ STP	93.98	dB	Calibration reference sound pressure level
Calibrator frequency	1001.96	Hz	Calibration check frequency
Reference level range	25 - 130	dB	

Accessories used or corrected for during calibration - Extension Cable & Wind Shield WS-15
Note - if a pre-amp extension cable is listed then it was used between the SLM and the pre-amp.

Environmental conditions during tests	Start	End	
Temperature	23.54	22.88	± 0.30 °C
Humidity	44.0	44.7	± 3.00 %RH
Ambient Pressure	100.76	100.76	± 0.03 kPa

Response to associated Calibrator at the environmental conditions above.

Initial indicated level	94.0	dB	Adjusted indicated level	94.0	dB
The uncertainty of the associated calibrator supplied with the sound level meter ±				0.10	dB

Self Generated Noise This test is currently not performed by this Lab.

Microphone installed (if requested by customer) = Less Than	N/A	dB	A Weighting	
Uncertainty of the microphone installed self generated noise ±	N/A	dB		

Microphone replaced with electrical input device - UR = Under Range indicated

Weighting	A			C			Z		
	12.4	dB	UR	17.2	dB	UR	23.5	dB	UR
Uncertainty of the electrical self generated noise ±				0.12	dB				

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor *k*=2, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

For the test of the frequency weightings as per paragraph 12. of IEC 61672-3:2006 the actual microphone free field response was used.

The acoustical frequency tests of a frequency weighting as per paragraph 11 of IEC 61672-3:2006 were carried out using an electrostatic actuator.

END

Calibrated by: B. Bogdan R 2

Additional Comments The results on this certificate only relate to the items calibrated as identified above.
None

CERTIFICATE OF CALIBRATION

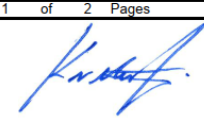
0653

Date of Issue: 11 November 2022 **Certificate Number: UCRT22/2357**

Calibrated at & Certificate issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Page 1 of 2 Pages

Approved Signatory



K. Mistry

Customer
AECOM
12 Regan Way
Chetwynd Business Park
Chilwell
Nottingham
NG9 6RZ

Order No. 1552324
Description Sound Level Meter / Pre-amp / Microphone / Associated Calibrator
Identification

Manufacturer	*Instrument*	*Type*	*Serial No. / Version*
Rion	Sound Level Meter	NL-52	00654034
Rion	Firmware		2.0
Rion	Pre Amplifier	NH-25	54079
Rion	Microphone	UC-59	08289
Rion	Calibrator	NC-74	34536109
	Calibrator adaptor type if applicable		NC-74-002

Performance Class 1
Test Procedure TP 10. SLM 61672-3:2013
Procedures from IEC 61672-3:2013 were used to perform the periodic tests.
Type Approved to IEC 61672-1:2013 Yes
If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013
Date Received 10 November 2022 ANV Job No. UKAS22/11700
Date Calibrated 11 November 2022

The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	10 November 2020	UCRT20/2080	0653

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0653

Certificate Number UCRT22/2357

Sound Level Meter Instruction manual and data used to adjust the sound levels indicated.

SLM instruction manual title	NL-52/NL-42 Description for IEC 61672-1			
SLM instruction manual ref / issue	No. 56034 21-03	Source	Rion	
Date provided or internet download date	19 March 2021			

	Case Corrections	Wind Shield Corrections	Mic Pressure to Free Field Corrections
Uncertainties provided	Yes	Yes	Yes

Total expanded uncertainties within the requirements of IEC 61672-1:2013 YES

Specified or equivalent Calibrator	Specified		
Customer or Lab Calibrator	Lab Calibrator		
Calibrator adaptor type if applicable	NC-74-002		
Calibrator cal. date	09 November 2022		
Calibrator cert. number	UCRT22/2334		
Calibrator cal cert issued by Lab	0653		
Calibrator SPL @ STP	94.02	dB	Calibration reference sound pressure level
Calibrator frequency	1001.92	Hz	Calibration check frequency
Reference level range	Single	dB	

Accessories used or corrected for during calibration - Extension Cable & Wind Shield WS-15
Note - The Extension Cable was used between the SLM and the pre-amp for this calibration.

Environmental conditions during tests	Start	End	
Temperature	23.67	23.38	± 0.30 °C
Humidity	59.3	59.2	± 3.00 %RH
Ambient Pressure	101.43	101.43	± 0.03 kPa

Indication at the Calibration Check Frequency

Initial indicated level	94.2	dB	Adjusted indicated level	94.0 dB
Uncertainty of calibrator used for Indication at the Calibration Check Frequency ±				0.10 dB

Self Generated Noise

Microphone installed -	Less Than	18.4	dB	A Weighting					
Microphone replaced with electrical input device -				UR = Under Range indicated					

Weighting	A			C			Z		
	12.6	dB	UR	16.7	dB	UR	23.0	dB	UR

Self Generated Noise reported for information only and not used to assess conformance to a requirement

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Additional Comments The results on this certificate only relate to the items calibrated as identified above.

None

END

Calibrated by: B. Bogdan R 2

ANV MEASUREMENT SYSTEMS

CERTIFICATE OF CALIBRATION

ilac-MRA UKAS CALIBRATION 0653

Date of Issue: 11 November 2022 **Certificate Number: UCRT22/2352**

Calibrated at & Certificate issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Page 1 of 2 Pages

Approved Signatory

K. Mistry

Customer	AECOM 12 Regan Way Chetwynd Business Park Chilwell Nottingham NG9 6RZ
Order No.	1552324
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Identification

Manufacturer	*Instrument*	*Type*	*Serial No. / Version*
Rion	Sound Level Meter	NL-52	01143567
Rion	Firmware		2.0
Rion	Pre Amplifier	NH-25	43584
Rion	Microphone	UC-59	16874
Rion	Calibrator	NC-74	34536109
	Calibrator adaptor type if applicable		NC-74-002

Performance Class 1

Test Procedure TP 2.SLM 61672-3 TPS-49

Procedures from IEC 61672-3:2006 were used to perform the periodic tests.

Type Approved to IEC 61672-1:2002 YES Approval Number 21.21 / 13.02

If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2003

Date Received 10 November 2022 ANV Job No. UKAS22/11700

Date Calibrated 11 November 2022

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2:2003, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2002.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	19 November 2021	UCRT21/2424	0653

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0653

Certificate Number UCRT22/2352

Sound Level Meter Instruction manual and data used to adjust the sound levels indicated.

SLM instruction manual title	Sound Level Meter	NL-42 / NL-52	
SLM instruction manual ref / issue		11-03	
SLM instruction manual source		Manufacturer	
Internet download date if applicable		N/A	
Case corrections available		Yes	
Uncertainties of case corrections		Yes	
Source of case data		Manufacturer	
Wind screen corrections available		Yes	
Uncertainties of wind screen corrections		Yes	
Source of wind screen data		Manufacturer	
Mic pressure to free field corrections		Yes	
Uncertainties of Mic to F.F. corrections		Yes	
Source of Mic to F.F. corrections		Manufacturer	
Total expanded uncertainties within the requirements of IEC 61672-1:2002		Yes	
Specified or equivalent Calibrator		Specified	
Customer or Lab Calibrator		Lab Calibrator	
Calibrator adaptor type if applicable		NC-74-002	
Calibrator cal. date		09 November 2022	
Calibrator cert. number		UCRT22/2334	
Calibrator cal cert issued by		0653	
Calibrator SPL @ STP	94.02	dB	Calibration reference sound pressure level
Calibrator frequency	1001.92	Hz	Calibration check frequency
Reference level range	25 - 130	dB	

Accessories used or corrected for during calibration - Extension Cable & Wind Shield WS-15
Note - if a pre-amp extension cable is listed then it was used between the SLM and the pre-amp.

Environmental conditions during tests	Start	End	
Temperature	23.42	23.48	± 0.30 °C
Humidity	49.7	52.7	± 3.00 %RH
Ambient Pressure	101.40	101.43	± 0.03 kPa

Response to associated Calibrator at the environmental conditions above.

Initial indicated level	94.0	dB	Adjusted indicated level	94.0	dB
The uncertainty of the associated calibrator supplied with the sound level meter ±				0.10	dB

Self Generated Noise This test is currently not performed by this Lab.

Microphone installed (if requested by customer) = Less Than	N/A	dB A Weighting
Uncertainty of the microphone installed self generated noise ±	N/A	dB

Microphone replaced with electrical input device - UR = Under Range indicated

Weighting	A			C			Z		
	13.2	dB	UR	16.9	dB	UR	22.5	dB	UR
Uncertainty of the electrical self generated noise ±							0.12	dB	

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

For the test of the frequency weightings as per paragraph 12. of IEC 61672-3:2006 the actual microphone free field response was used.

The acoustical frequency tests of a frequency weighting as per paragraph 11 of IEC 61672-3:2006 were carried out using an electrostatic actuator.

END

Calibrated by: B. Bogdan R 2

Additional Comments The results on this certificate only relate to the items calibrated as identified above.
None

ANV MEASUREMENT SYSTEMS

CERTIFICATE OF CALIBRATION

ilac-MRA UKAS CALIBRATION 0653

Date of Issue: 12 August 2022 **Certificate Number: UCRT22/2001**

Page 1 of 2 Pages

Calibrated at & Certificate issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
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E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Approved Signatory
K. Mistry

Customer
AECOM
12 Regan Way
Chetwynd Business Park
Nottingham
NG9 6RZ

Order No. 1535420
Description Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Identification	*Manufacturer*	*Instrument*	*Type*	*Serial No. / Version*
	Rion	Sound Level Meter	NL-52	00386762
	Rion	Firmware		2.0
	Rion	Pre Amplifier	NH-25	76912
	Rion	Microphone	UC-59	12802
	Brüel & Kjær	Calibrator	4231	2217877
		Calibrator adaptor type if applicable		UC 0210

Performance Class 1
Test Procedure TP 10. SLM 61672-3:2013
Procedures from IEC 61672-3:2013 were used to perform the periodic tests.
Type Approved to IEC 61672-1:2013 Yes
If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013
Date Received 11 August 2022 ANV Job No. UKAS22/08525
Date Calibrated 12 August 2022

The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	14 July 2020	UCRT20/1623	0653

CERTIFICATE OF CALIBRATION

Certificate Number UCRT22/2001

UKAS Accredited Calibration Laboratory No. 0653

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Sound Level Meter Instruction manual and data used to adjust the sound levels indicated.

SLM instruction manual title	NL-52/NL-42 Description for IEC 61672-1		
SLM instruction manual ref / issue	No. 56034 21-03	Source	Rion
Date provided or internet download date	19 March 2021		

	Case Corrections	Wind Shield Corrections	Mic Pressure to Free Field Corrections
Uncertainties provided	Yes	Yes	Yes

Total expanded uncertainties within the requirements of IEC 61672-1:2013 YES

Specified or equivalent Calibrator	Equivalent		
Customer or Lab Calibrator	Customers Calibrator		
Calibrator adaptor type if applicable	UC 0210		
Calibrator cal. date	11 August 2022		
Calibrator cert. number	UCRT22/1994		
Calibrator cal cert issued by Lab	0653		
Calibrator SPL @ STP	93.98	dB	Calibration reference sound pressure level
Calibrator frequency	999.97	Hz	Calibration check frequency
Reference level range	Single	dB	

Accessories used or corrected for during calibration - Extension Cable & Wind Shield WS-15
Note - The Extension Cable was used between the SLM and the pre-amp for this calibration.

Environmental conditions during tests	Start	End	
Temperature	22.56	23.73	± 0.30 °C
Humidity	48.8	46.5	± 3.00 %RH
Ambient Pressure	100.97	100.92	± 0.03 kPa

Indication at the Calibration Check Frequency

Initial indicated level	94.0 dB	Adjusted indicated level	94.0 dB
Uncertainty of calibrator used for Indication at the Calibration Check Frequency ±			0.10 dB

Self Generated Noise
Microphone installed - Less Than 18.4 dB A Weighting
Microphone replaced with electrical input device - UR = Under Range indicated

Weighting	A			C			Z		
	12.7	dB	UR	16.5	dB	UR	22.3	dB	UR

Self Generated Noise reported for information only and not used to assess conformance to a requirement

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Additional Comments The results on this certificate only relate to the items calibrated as identified above.

None

END

Calibrated by: PB/BB R 1

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 22 December 2023 **Certificate Number: UCRT23/2618**

Calibrated at & Certificate issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

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Approved Signatory

K. Mistry

Customer
AECOM Limited
100 Embankment
Level 4
Manchester
M3 7FB

Order No. 1627338
Description Sound Level Meter / Pre-amp / Microphone / Associated Calibrator
Identification

Manufacturer	*Instrument*	*Type*	*Serial No. / Version*
Rion	Sound Level Meter	NL-52	00710387
Rion	Firmware		2.1
Rion	Pre Amplifier	NH-25	10930
Rion	Microphone	UC-59	19663
Rion	Calibrator	NC-75	34334830
	Calibrator adaptor type if applicable		NC-75-022

Performance Class 1
Test Procedure TP 10. SLM 61672-3:2013
Procedures from IEC 61672-3:2013 were used to perform the periodic tests.
Type Approved to IEC 61672-1:2013 Yes
If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013
Date Received 19 December 2023 ANV Job No. UKAS23/12859
Date Calibrated 22 December 2023

The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	Initial Calibration		

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0653

Certificate Number UCRT23/2618

Sound Level Meter Instruction manual and data used to adjust the sound levels indicated.

SLM instruction manual title	NL-52/NL-42 Description for IEC 61672-1			
SLM instruction manual ref / issue	No. 56034 21-03	Source	Rion	
Date provided or internet download date	19 March 2021			
	Case Corrections	Wind Shield Corrections	Mic Pressure to Free Field Corrections	
Uncertainties provided	Yes	Yes	Yes	
Total expanded uncertainties within the requirements of IEC 61672-1:2013	YES			
Specified or equivalent Calibrator	Specified			
Customer or Lab Calibrator	Lab Calibrator			
Calibrator adaptor type if applicable	NC-75-022			
Calibrator cal. date	18 December 2023			
Calibrator cert. number	UCRT23/2596			
Calibrator cal cert issued by Lab	0653			
Calibrator SPL @ STP	94.01	dB	Calibration reference sound pressure level	
Calibrator frequency	1000.00	Hz	Calibration check frequency	
Reference level range	Single	dB		
Accessories used or corrected for during calibration -	None			

Environmental conditions during tests	Start	End		
Temperature	23.08	23.03	± 0.30	°C
Humidity	44.3	44.3	± 3.00	%RH
Ambient Pressure	100.13	100.13	± 0.03	kPa

Indication at the Calibration Check Frequency				
Initial indicated level	94.1	dB	Adjusted indicated level	94.0 dB
Uncertainty of calibrator used for Indication at the Calibration Check Frequency ±				0.10 dB

Self Generated Noise
Microphone installed - Less Than 18.4 dB A Weighting
Microphone replaced with electrical input device - UR = Under Range indicated

Weighting	A			C			Z		
	12.3	dB	UR	17.1	dB	UR	24.2	dB	UR

Self Generated Noise reported for information only and not used to assess conformance to a requirement

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor *k* =2, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Additional Comments The results on this certificate only relate to the items calibrated as identified above.

None

END

Calibrated by: B. Bogdan R 2

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 14 December 2023

Certificate Number: UCRT23/2576

Calibrated at & Certificate issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

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Approved Signatory

K. Mistry

CUSTOMER AECOM
1 New York Street
Manchester
M1 4HD

ORDER No 1626571 Job No UKAS23/12840

DATE OF RECEIPT 13 December 2023

PROCEDURE Procedure TP 1 Calibration of Sound Calibrators

IDENTIFICATION Sound Calibrator Norsonic type 1251 serial number 27485 with one-inch housing and adapter type 1443 for half-inch microphone

CALIBRATED ON 14 December 2023

PREVIOUS CALIBRATION Calibrated on 19 January 2022, Certificate No. UCRT22/1084 issued by this laboratory.

CERTIFICATE OF CALIBRATION

UKAS ACCREDITED CALIBRATION LABORATORY No 0653

Certificate No UCRT23/2576

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MEASUREMENTS

The sound pressure level generated by the Sound Calibrator in its half-inch configuration was measured using a B&K type 4134 microphone with the protective grid in position. The microphone sensitivity was traceable to National Standards.

RESULTS

The mean level of the calibrator output was

114.10 ± 0.10 dB rel 20 µPa

The fundamental frequency of the sound output was 999.28 ± 0.12 Hz,
and its total distortion was (0.11 ± 0.02) %.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor *k*=2, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

During the measurements the laboratory environmental conditions were:

Temperature: 22 to 24 ºC
Atmospheric pressure: 100.9 to 101.0 kPa
Relative humidity: 38 to 51 %

The tests carried out were based on Annex B of BS EN 60942:2003, but with five determinations of sound pressure level, and limited to the above level(s) & freq(s). This is a subset of the tests specified in Annex B of BS EN 60942:1998. The mean level, frequency and total distortion of the sound output as measured meet the Class 1 requirements of BS EN 60942:1998 for the environmental conditions under which the tests were performed. This does not imply that the sound calibrator meets this standard under any other conditions. However it has successfully undergone pattern evaluation to the earlier Standard IEC 942:1988

The results on this certificate only relate to the items calibrated as identified above.

Calibrator adjusted No END R 1

References

Ref 1. British Standard 7445-1:2003: Description and measurement of environmental noise – Guide to quantities and procedures and 7445-2:1991: Description and measurement of environmental noise – Guide to the acquisition of data pertinent to land use.