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INDUSTRIAL EMISSIONS LICENCE P1187-01
NOISE SURVEY

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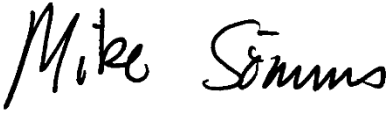
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1. INTRODUCTION

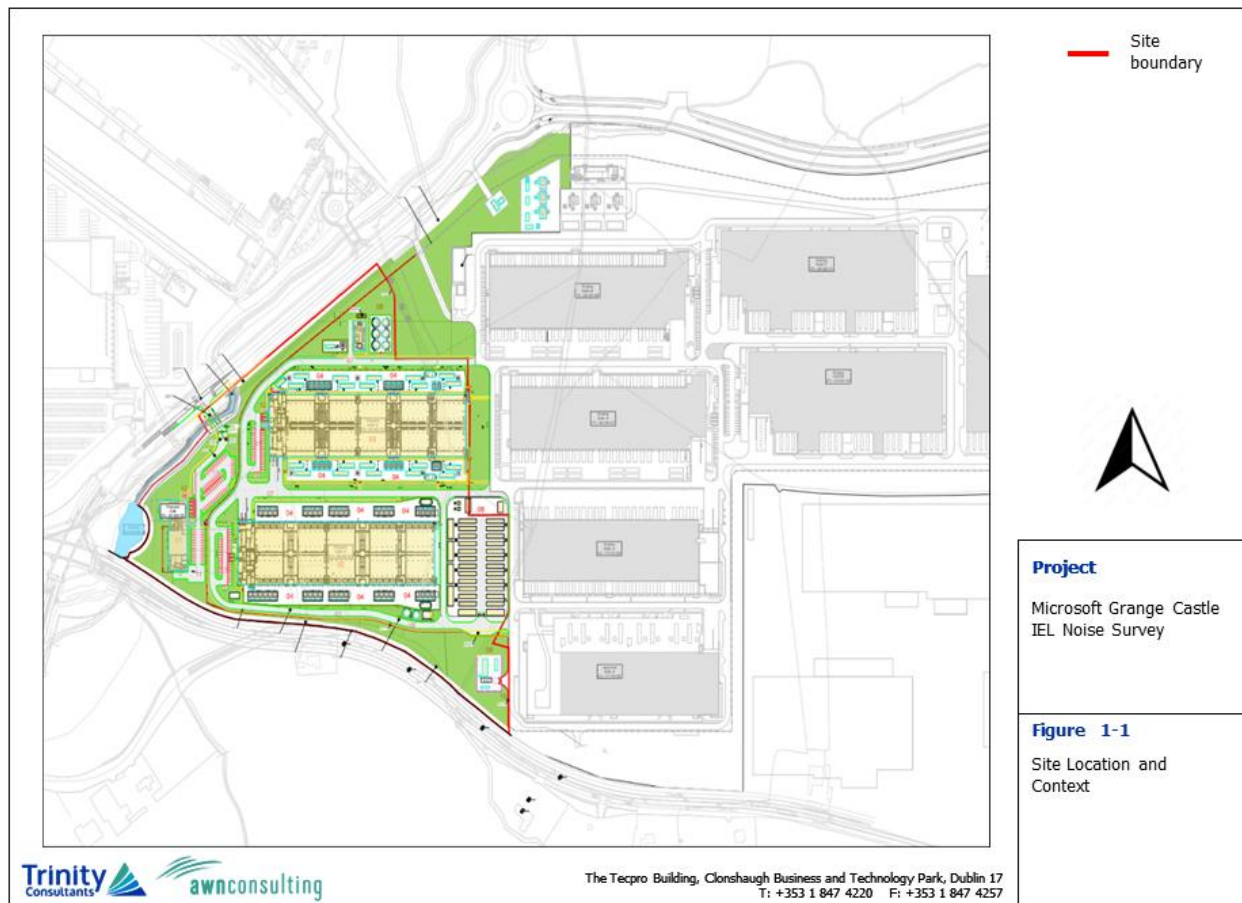
Microsoft Ireland Operations Limited operate a facility at Unit 74, Grange Castle Business Park that operates under an Industrial Emissions Licence (IEL) (Licence Register Number: P1187-01) as issued by the Environmental Protection Agency (EPA).

The facility operates 24 hours a day, 7 days a week in a predominantly commercial setting. The nearest noise sensitive locations comprise dwelling houses and commercial lots situated south and north of the business park. Figure 1-1 illustrates the site location and surrounding buildings and land uses.

As part of the facilities IEL, it is a requirement that environmental noise levels in the vicinity of the site are monitored on an annual basis. This report prepared by AWN Consulting presents the results of the 2026 annual noise survey. The survey was undertaken in accordance with the *Guidance Note for Noise: License Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)* 2016.

Please refer to the Glossary of Terms in Appendix A for a definition of the various acoustic terminology used in this report.

Figure 1-1: Site Location and Context.



1.1 Licence Limits

Condition 4, 6, Schedule B and Schedule C of the Licence sets out the following requirements in relation to noise emission limit values:

1.1.1 Condition 4:

4.5 Noise

Noise from the installation shall not give rise to sound pressure levels ($L_{eq,T}$) measured at any noise-sensitive locations (NSLs) that exceed the specified limit value(s).

1.1.2 Condition 6:

6.11 Noise

6.11.1 The licensee shall carry out a noise survey of the site operations annually. The survey programme shall be undertaken in accordance with the methodology specified in the 'Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)' as published by the Agency.

6.11.2 Noise Management Plan

6.11.2.1 The licensee shall prepare, maintain and implement, to the satisfaction of the Agency, Noise Management Plan.

6.11.2.2 The plan shall be submitted within two months of the date of grant of this licence.

6.11.2.3 The plan shall outline noise reduction and abatement measures.

6.11.2.4 The plan to reduce noise emissions should include the following mitigation measure(s): abatement and enclosure of operations, processes and equipment which might give rise to exceedances of noise limit values at the noise-sensitive locations.

6.11.2.5 The plan shall be prepared in accordance with the Agency's Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4).

6.11.2.6 The plan shall be implemented within six months of the date of grant of this licence.

6.11.2.7 The plan shall be reviewed annually.

1.1.3 Schedule B4

Schedule B4 pertains to noise and specifies the following limits:

B.4. Noise Emissions

Table 1-1: Noise Emission Limit Values for Day, Evening and Night-time Periods.

Daytime dB $L_{A,T}$ (30 minutes)	Evening time dB $L_{A,T}$ (30 minutes)	Night-time dB $L_{Aeq,T}$ (15 minutes) ^{Note 1}
55	50	45

Note 1: There shall be no clearly audible tonal or impulsive component in the noise emission from the site at any noise sensitive location

Daytime is defined in the licence document as 07:00 to 19:00 hrs, evening time 19:00 to 23:00 and night-time 23:00 to 07:00 hrs.

1.1.4 Schedule C4

Schedule C4 pertains to noise and specifies the following survey duration:

Table 1-2: Noise Monitoring Survey Duration.

Period	Measurement Survey Duration
Daytime	A minimum of 3 sampling periods at each noise monitoring location ^{Note 1}
Evening-time	A minimum of 1 sampling periods at each noise monitoring location
Night-time ^{Note 2}	A minimum of 2 sampling periods at each noise monitoring location

- a. Note 1: Sampling period is to be the time period T stated as per Schedule B.4 Noise Emissions, of this licence. This applies to day, evening and night time periods.
- b. Note 2: Night-time measurements should be made between 2300 hrs and 0400hrs, Sunday to Thursday, with 2300hrs being the preferred start time.

1.2 Determination of Specific Noise Level

A requirement of the EPA NG4 documents is that specific noise levels at noise sensitive locations be measured and/or estimated as part of the annual noise monitoring report. The following methodology has been adopted to complete this aspect of the assessment:

Table 1-3: Methodology for Determination of Site Specific Noise

Description of Site Noise		Noise Parameter that Best Represents Specific Noise from Site
Category	Subjective Impression	
A	Site noise dominant, no other significant noise sources noted.	$L_{Aeq,T}$
B	Intermittent noise from other sources (e.g. traffic, birds, wind), with underlying site noise audible.	$L_{A90,T}$ if frequent interfering noise and site noise is audible in lulls. or $L_{A50,T}$ if site noise is clearly audible (steady or variable), with occasional interference from other sources.
C	Plant barely audible (i.e. not immediately noticeable, unless actively listening)	$<L_{A90,T}$ (i.e. specific plant noise is up to 5dB lower than measured $L_{A90,T}$)
D	Plant not audible	Not Detected, ND $<<L_{A90,T}$ (more than 5dB lower than $L_{A90,T}$)

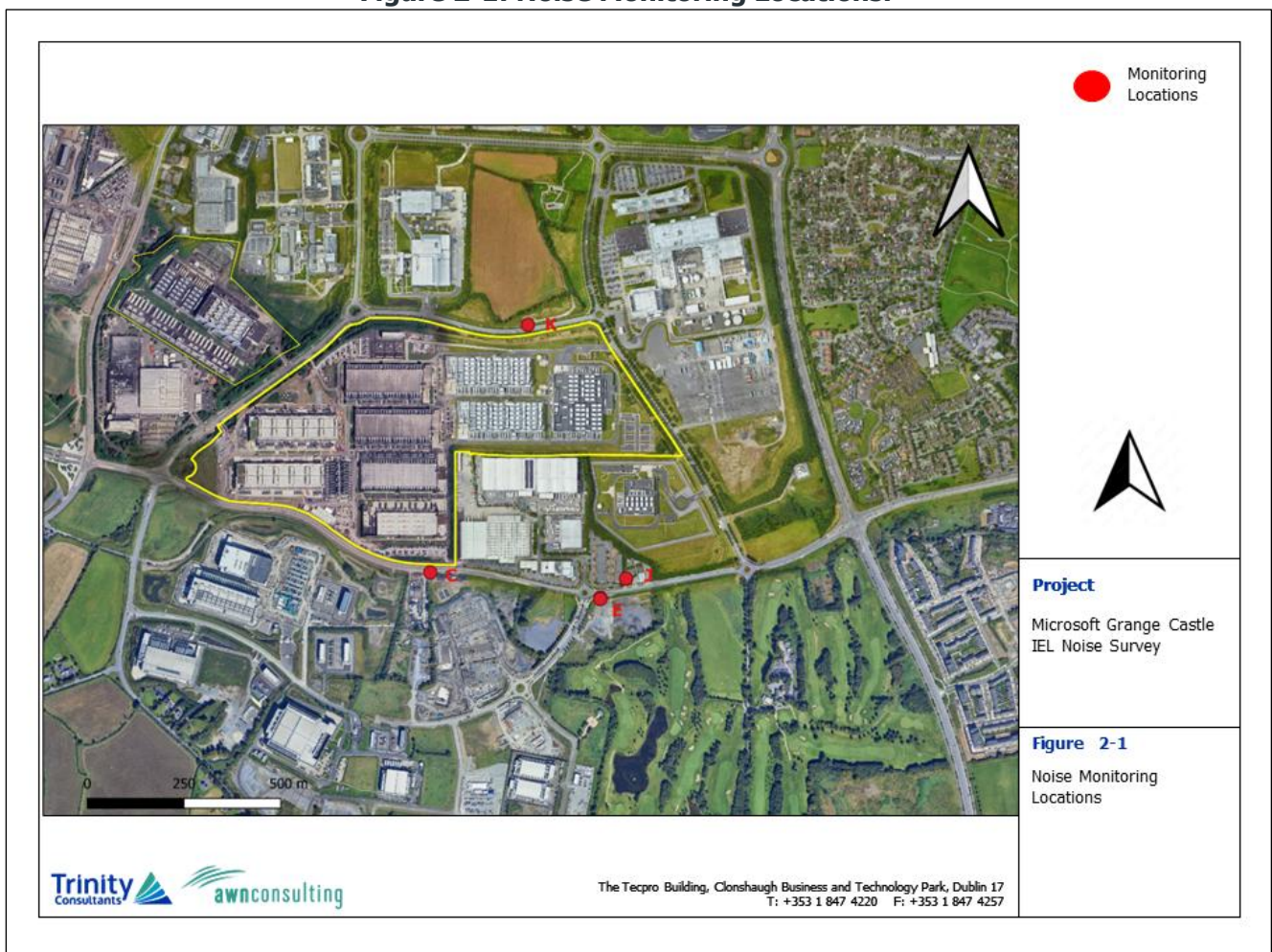
2. SURVEY DETAILS

An attended noise survey was conducted at noise monitoring locations specified in the licence. The survey was conducted in accordance with the *Guidance Note for Noise: License Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) 2016*. Survey details are set out below.

2.1 Measurement Locations

Noise measurements were conducted at four positions, shown in Figure 2-1, C, E, J and K. These locations are representative of the nearest noise sensitive locations as previously agreed by the EPA.

Figure 2-1: Noise Monitoring Locations.



The monitoring locations (C, E, J and K) are described below.

- ▶ **C:** Located beyond the southern site boundary, situated within a commercial property lot. This location has a direct line of sight to the campus.
- ▶ **E:** Located beyond the southern site boundary in the vicinity of the nearest residential property and has a direct line of sight to the campus.
- ▶ **J:** Located beyond the south eastern site boundary in the vicinity of the nearest residential property and has a direct line of sight to the campus.

- ▶ **K:** Located beyond the northern site boundary, situated within a commercial property field. This location has a direct line of sight to the campus.

2.2 Survey Periods

Measurements were conducted over the course of the following survey periods:

- ▶ Day: 15:31 hrs to 16:55 hrs on 23rd July 2026 and, 10:07 hrs to 17:25 hrs on 30th July 2026
- ▶ Evening: 19:38 hrs to 21:00 hrs on 23rd July 2026 and, 20:30 hrs to 22:06 hrs on 30th July 2026
- ▶ Night: 23:00 hrs on 30th July 2026 to 02:28 hrs 31st July 2026.

It is understood that the facility was operating under normal conditions during the period of the survey.

2.3 Weather Conditions

The weather during the daytime survey period was dry with temperatures of the order of 16 to 22 degrees Celsius, with wind speeds ranging from 1 to 2 m/s.

The weather during the evening survey period was dry with temperatures of the order of 15 to 18 degrees Celsius, with wind speeds ranging between 1 to 2 m/s.

The weather during night-time survey periods was dry with temperatures of the order of 12 to 14 degrees Celsius, with wind speeds ranging between 1 to 2 m/s.

2.4 Personnel and Instrumentation

Dylan Floyd (AWN) conducted the noise level measurements during all survey periods. The measurements were performed using the following equipment:

Table 2-1: Noise Monitoring Equipment Details.

Manufacturer	Equipment Model	Serial Number	Microphone	Calibration date
Rion	NL-53	630268	23630	14/10/2025

The microphone was protected using a Brüel and Kjaer windshield. Before and after the survey, the measurement apparatus was field calibrated using a Brüel and Kjaer type 4231 sound level calibrator, serial number 2394086.

2.5 Procedure

Measurements were conducted on a cyclical basis between the four monitoring locations. Sample periods were 30 minutes during the daytime and evening surveys, while sample periods were 15 minutes during night-time surveys, all in accordance with the licence conditions. The results were saved to the instrument memory for later analysis. Survey personnel noted all primary noise sources contributing to noise build-up.

3. SURVEY RESULTS

The survey results for each monitoring location are summarised in Table 3-1 below. Further discussion on the interpretation of the results has been provided in Section 5.0.

Table 3-1: Noise Survey Results.

Location	Period	Start Time	Measured Noise Levels (dB re. 2×10^{-5} Pa)				Comments	Parameter that Best Represents Specific Noise from Site (See Table 1-3) ¹
			L _{Aeq}	L _{AFmax}	L _{A10}	L _{A90}		
C	Day	11:17	72	88	76	52	The dominant noise source at this location was road traffic (R134) noise and distant road traffic noise during local R134 traffic noise lulls. Other noises audible included steady noise from industrial sites to the north and south of monitoring location that were barely audible. The Microsoft facility emitted steady noise that was barely audible.	L _{AF90}
		14:42	69	83	73	55		L _{AF90}
		16:55	62	84	73	58		L _{AF90}
	Evening	20:30	69	86	73	48	The dominant noise source at this location was road traffic (R134) noise and distant road traffic noise during local R134 traffic noise lulls. Other noises audible included steady noise from industrial sites to the north and south of monitoring location that were barely audible. The Microsoft facility emitted steady noise that was barely audible.	L _{AF90}
	Night	23:00	65	82	69	44	The dominant noise source at this location was road traffic (R134) noise and distant road traffic noise during local R134 traffic noise lulls. Other noises audible included steady noise from industrial sites to the north and south of monitoring location that were barely audible. The Microsoft facility emitted steady noise that was barely audible.	L _{AF90}
		00:31	61	82	61	42		L _{AF90}
E	Day	12:27	69	87	73	56	The dominant noise source at this location was road traffic (R134) noise and distant road traffic noise during local R134 traffic noise lulls. Other noises audible included steady noise from industrial sites to the south of monitoring location that was barely audible and distant construction noise. The Microsoft facility was not audible.	L _{AF90}
		15:15	67	86	71	55		L _{AF90}
		16:25	66	87	69	57		L _{AF90}

¹ Parameter deemed to be representative of the specific noise level arising from the site has been highlighted in bold

Location	Period	Start Time	Measured Noise Levels (dB re. 2x10 ⁻⁵ Pa)				Comments	Parameter that Best Represents Specific Noise from Site (See Table 1-3) ¹	
			L _{Aeq}	L _{AFmax}	L _{A10}	L _{A90}			
	Evening	19:38	67	82	72	50	The dominant noise source at this location was road traffic (R134) noise and distant road traffic noise during local R134 traffic noise lulls. Other noises audible included steady noise from industrial sites to the south of monitoring location that was barely audible. The Microsoft facility was not audible.	L _{AF90}	
	Night	23:18	63	82	66	48	The dominant noise source at this location was road traffic (R134) noise and distant road traffic noise during local R134 traffic noise lulls. Other noises audible included steady noise from industrial sites to the north and south of monitoring location that was barely audible. The Microsoft facility was barely audible.	L _{AF90}	
		00:48	62	84	63	46		L _{AF90}	
	J	Day	11:52	55	73	58	46	The dominant noise source at this location was road traffic (R134) noise and distant road traffic noise during local R134 traffic noise lulls. Other noises audible included steady noise from the nearby petrol garage and distant construction noise. The Microsoft facility was not audible.	L _{AF90}
14:13			55	71	58	47	L _{AF90}		
15:51			55	68	58	48	L _{AF90}		
Evening		20:10	50	68	55	42	The dominant noise source at this location was road traffic (R134) noise and distant road traffic noise during local R134 traffic noise lulls. Other noises audible included steady noise from the nearby petrol garage and leaves rustling in the foliage. The Microsoft facility was not audible.	L _{AF90}	
Night		23:35	49	66	52	39	The dominant noise source at this location was road traffic (R134) noise and distant road traffic noise during local R134 traffic noise lulls. Other noises audible included steady noise from the nearby petrol garage, leaves rustling in the foliage and barely audible hums from industrial facilities to the north and south. The Microsoft facility was barely audible.	L _{AF90}	
		01:05	49	70	52	38		L _{AF90}	
K		Day	10:42	61	82	60	44		L _{AF90}
			13:36	63	82	65	45		L _{AF90}

Location	Period	Start Time	Measured Noise Levels (dB re. 2x10 ⁻⁵ Pa)				Comments	Parameter that Best Represents Specific Noise from Site (See Table 1-3) ¹
			L _{Aeq}	L _{AFmax}	L _{A10}	L _{A90}		
		15:50	53	72	54	45	The dominant noise source at this location was distant road traffic noise and industrial noise to the west from the Pfizer industrial facility. Other noises audible included occasional grange castle business park road traffic and a barely audible steady noise from facilities to the south of the monitoring location. The Microsoft facility was barely audible.	L _{AF90}
	Evening	21:02	60	84	54	42	The dominant noise source at this location was noise from the Pfizer industrial facility to the west. Other noises audible included occasional grange castle business park road traffic, distant road traffic noise and a barely audible steady noise from facilities to the south of the monitoring location. The Microsoft facility was barely audible.	L _{AF90}
	Night	23:54	51	76	45	42	The dominant noise source at this location was noise from the Pfizer industrial facility to the west. Other noises audible included occasional grange castle business park road traffic, distant road traffic noise and a barely audible steady noise from facilities to the south of the monitoring location. The Microsoft facility was barely audible.	L _{AF90}
		01:25	44	71	48	41		L _{AF90}

4. TONAL ANALYSIS

The following guidance relating to the assessment and analysis of tonal noise associated with IEL Licenced sites is contained in the EPA document *Guidance Note For Noise: Licence Applications, Surveys and in Relation To Scheduled Activities* (NG4), 2016.

"A tonal noise source can normally be identified subjectively by a competent person familiar with noise impact assessments. However, prior to the application of a rating penalty the Agency would recommend that the simplified methodology for the objective identification of tones that is advocated in BS 4142: 2014: Annex C (normative): Objective method for assessing the audibility of tones in sound: One-third octave method. This methodology requires that for a prominent, discrete tone to be identified as present, the time-average sound pressure level in the one-third-octave band of interest should exceed the time-average sound pressure levels of both adjacent one-third-octave bands by some constant level difference.

The appropriate level differences vary with frequency. They should be greater than or equal to the following values in both adjacent one-third-octave bands:

- *15dB in low-frequency one-third-octave bands (25Hz to 125Hz);*
- *8dB in middle-frequency bands (160Hz to 400Hz), and;*
- *5dB in high-frequency bands (500Hz to 10,000Hz).*

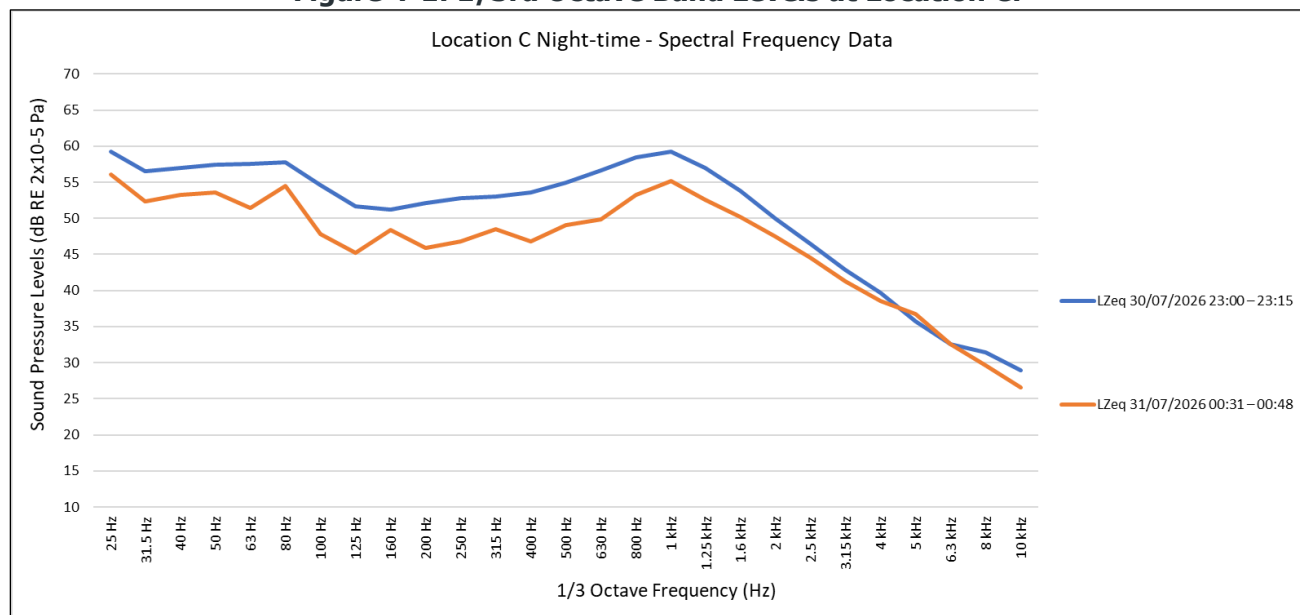
Care should be taken to ensure that any tones identified in the low frequency range of 25Hz to 125Hz are of a magnitude greater than the threshold of hearing at that frequency, see Appendix VI."

The methodology discussed above uses the 1/3rd octave band measurements to assess the presence of tones. Where peaks are identified in the spectrum the level difference between the peak and the adjacent 1/3rd octave bands is used to determine if there is an audible tone present. The 1/3rd octave band measurements during the night-time periods at each survey location will be discussed in turn in the following sections. Full details of the 1/3rd octave band measurements for all locations and periods are presented in Appendix B.

4.1 Location C: Tonal Assessment Results

Figure 4-1 below graphs the 1/3rd octave band measurements taken at location C during the night period. No potential tonal components were identified during the post survey analysis of the recorded spectral data.

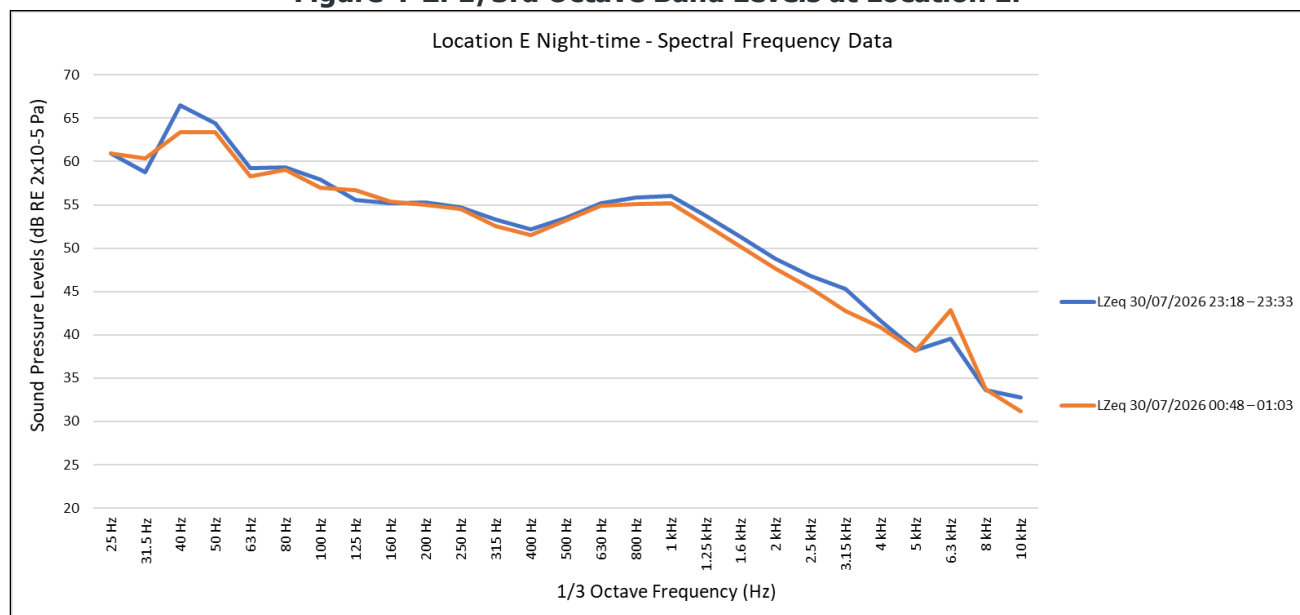
Figure 4-1: 1/3rd Octave Band Levels at Location C.



4.2 Location E: Tonal Assessment Results

Figure 4-2 below graphs the 1/3rd octave band measurements taken at Location E during the night period. No potential tonal components were identified during the post survey analysis of the recorded spectral data.

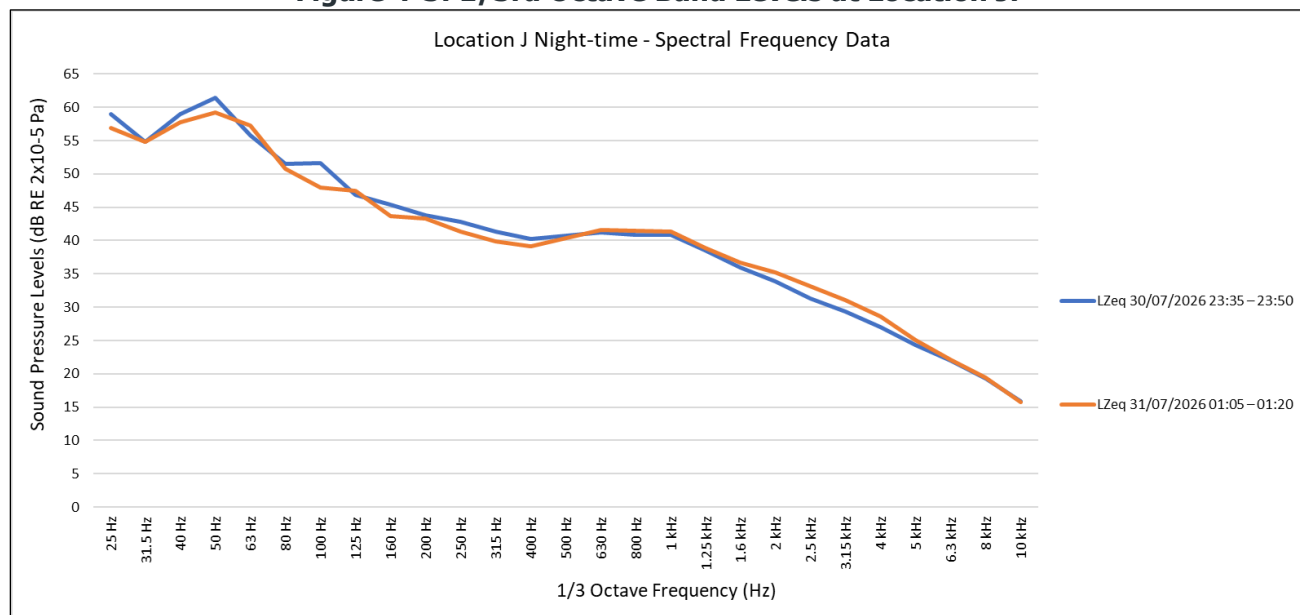
Figure 4-2: 1/3rd Octave Band Levels at Location E.



4.3 Location J: Tonal Assessment Results

Figure 4-3 below graphs the 1/3rd octave band measurements taken at location J during the night period. No potential tonal components were identified during the post survey analysis of the recorded spectral data.

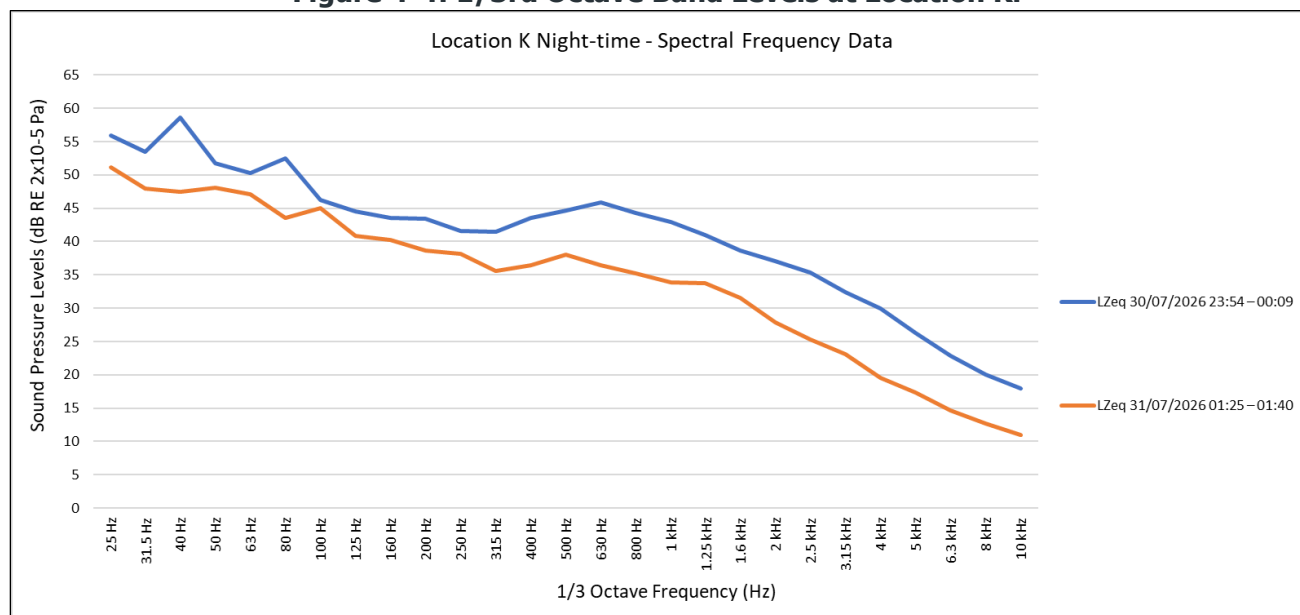
Figure 4-3: 1/3rd Octave Band Levels at Location J.



4.4 Location K: Tonal Assessment Results

Figure 4-4 below graphs the 1/3rd octave band measurements taken at location K during the night period. No potential tonal components were identified during the post survey analysis of the recorded spectral data.

Figure 4-4: 1/3rd Octave Band Levels at Location K.



5. DISCUSSION

The Licence assigns noise limits at the nearest noise sensitive locations of 55 dB $L_{Ar,30min}$ during the daytime period, 50 dB $L_{Ar,30min}$ during the evening time period and 45 dB $L_{Aeq,15min}$ during the night-time period respectively. Furthermore, the Licence stipulates that there shall be no audible tonal or impulsive character to noise emissions at any noise sensitive location.

Based on the observed acoustic environment and having regard to the methodology outlined in Section 1.2, the specific noise level at each noise sensitive location has been estimated and presented in Table 5-1. As all survey periods were classified as category C or category D, indicating that the facility noise was barely audible or inaudible, the estimated specific plant noise level, for category C monitoring locations were calculated by subtracting 5 dB from the measured $L_{AF90,T}$ level and the estimated specific plant noise level, for category D monitoring locations were calculated by subtracting 10 dB from the measured $L_{AF90,T}$ level in accordance with the methodology presented in Section 1.2.

Table 5-1: Estimation of Specific Noise Levels at Monitoring Locations.

Location	Period	Site Noise Category	Parameter that Represents Site Specific Noise	Estimated Specific Plant Noise, dB	Applicable Noise Limit, dB	Within ELV?
C	Day	C	L_{AF90}	47	55	Yes
		C	L_{AF90}	50		Yes
		C	L_{AF90}	53		Yes
	Evening	C	L_{AF90}	43	50	Yes
	Night	C	L_{AF90}	39	45	Yes
		C	L_{AF90}	37		Yes
E	Day	D	L_{AF90}	46	55	Yes
		D	L_{AF90}	45		Yes
		D	L_{AF90}	47		Yes
	Evening	D	L_{AF90}	40	50	Yes
	Night	C	L_{AF90}	43	45	Yes
		C	L_{AF90}	41		Yes
J	Day	D	L_{AF90}	36	55	Yes
		D	L_{AF90}	37		Yes
		D	L_{AF90}	38		Yes
	Evening	D	L_{AF90}	32	50	Yes
	Night	C	L_{AF90}	34	45	Yes
		C	L_{AF90}	33		Yes
K	Day	C	L_{AF90}	39	55	Yes
		C	L_{AF90}	40		Yes
		C	L_{AF90}	40		Yes
	Evening	C	L_{AF90}	37	50	Yes
	Night	C	L_{AF90}	37	45	Yes
		C	L_{AF90}	36		Yes

6. CONCLUSION

Attended noise monitoring has been carried out at the four noise monitoring points stipulated in the Licence. Noise levels were measured during daytime, evening time and night-time periods in accordance with the procedures outlined in the Agency's Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) 2016.

The results of the survey confirm that in all cases specific noise levels (i.e. noise attributable to activities within the IEL boundary) fall within the noise emission limit values specified in the licence. In addition, no audible tonal or impulsive noise was observed at any period.

APPENDIX A. GLOSSARY OF TERMS

ambient noise	The totally encompassing sound in a given situation at a given time, usually composed of sound from many sources, near and far.
background noise	The steady existing noise level present without contribution from any intermittent sources. The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90 per cent of a given time interval, T ($L_{A90,T}$).
dB	Decibel. The scale in which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the RMS pressure of the sound field and the reference pressure of 20 micro pascals (20 μ Pa).
ELV	Emission Limit Value, i.e. the limit applied in the EPA licence for the site.
free-field	These are conditions in which the radiation from sound sources is unaffected by the presence of any reflecting boundaries or the source itself. In practice, it is a field in which the effects of the boundaries are negligible over the frequency range of interest. In environmental noise, true free-field measurement conditions are seldom achieved and generally the microphone will be positioned at a height between 1.2 and 1.5 metres above ground level. To minimise the influence of reflections, measurements are generally made at least 3.5 metres from any reflecting surface other than the ground.
L_{Aeq}	This is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period (T). The closer the L_{Aeq} value is to either the L_{AF10} or L_{AF90} value indicates the relative impact of the intermittent sources and their contribution. The relative spread between the values determines the impact of intermittent sources, such as traffic, on the background.
L_{AFmax}	The maximum rms A-weighted sound pressure level occurring within a specified time period. Measured using the "Fast" time weighting.
L_{AFmin}	The minimum rms A-weighted sound pressure level occurring within a specified time period. This parameter was measured using the "Fast" time weighting.

L_{AF50}	Refers to those A-weighted noise levels in the top 50 percentile of the sampling interval; it is the level which is exceeded for 50% of the measurement period. It is used to determine the intermittent high noise level features of locally generated noise and usually gives an indicator of the level of road traffic. This parameter was measured using the "Fast" time weighting.
L_{AF90}	Refers to those A-weighted noise levels in the lower 90 percentile of the sampling interval; it is the level which is exceeded for 90% of the measurement period. It will therefore exclude the intermittent features of traffic and is used to describe a background level. This parameter was measured using the "Fast" time weighting.
1/3 octave	Frequency analysis of sound such that the frequency spectrum is subdivided into bands of one-third of an octave each.
A-weighting	The "A" suffix denotes the fact that the sound levels have been "A-weighted" in order to account for the non-linear nature of human hearing. All sound levels in this report are expressed in terms of decibels (dB) relative to 2×10^{-5} Pa.

APPENDIX B. ONE-THIRD OCTAVE BAND CENTRE FREQUENCY DATA

Table 6-1: One-Third Octave Band Centre Frequency Data.

Location	Period	Time	Measured Noise Level, (dB L _{eq} re. 2x10 ⁻⁵ Pa) at 1/3 rd Octave Frequency Band (Hz)																															
			12.5	16	20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	12.5k	16k
C	Day	11:17	68	67	66	66	70	68	68	65	65	62	59	58	61	63	62	59	62	63	65	65	63	60	56	53	50	46	43	40	36	34	29	24
		14:42	72	71	70	68	66	67	69	66	64	64	65	62	63	63	60	59	60	61	62	62	59	57	54	52	50	48	44	41	42	43	34	37
		16:55	68	68	66	66	65	66	68	65	63	63	61	61	61	62	59	58	59	60	63	64	61	57	55	52	49	47	44	42	38	36	40	30
	Evening	20:30	63	62	61	60	57	61	60	59	60	55	54	54	56	57	56	56	58	60	62	63	61	58	54	50	46	42	38	34	31	27	23	18
	Night	23:00	61	60	58	59	57	57	57	58	58	55	52	51	52	53	53	54	55	57	58	59	57	54	50	47	43	40	36	33	31	29	25	19
		00:31	59	57	56	56	52	53	54	51	55	48	45	48	46	47	49	47	49	50	53	55	53	50	48	45	41	39	37	33	30	27	22	17
E	Day	12:27	74	73	71	70	69	69	69	68	64	64	64	63	63	62	61	60	61	61	62	63	60	57	56	53	51	49	46	44	40	38	41	38
		15:15	73	71	69	67	66	67	67	65	64	64	62	60	60	60	58	56	57	58	60	61	58	55	53	50	48	46	43	40	37	35	37	29
		16:25	63	64	61	59	57	59	60	57	53	53	54	52	53	54	52	52	53	55	58	59	56	52	48	45	41	38	35	30	27	24	20	16
	Evening	19:38	66	64	63	63	62	65	65	64	60	59	58	57	58	58	56	55	57	58	61	62	59	56	52	49	46	42	39	36	33	30	28	23
	Night	23:18	64	63	63	61	59	67	64	59	59	58	56	55	55	55	53	52	54	55	56	56	54	51	49	47	45	42	38	40	34	33	27	24
		00:48	63	61	62	61	60	63	63	58	59	57	57	55	55	55	53	52	53	55	55	55	53	50	48	45	43	41	38	43	34	31	29	29
J	Day	11:52	59	61	63	64	60	61	61	59	55	54	51	50	50	48	47	46	46	47	47	47	45	43	41	39	37	34	30	28	24	20	16	17
		14:13	60	62	63	62	58	61	61	58	55	54	52	52	50	47	46	46	46	46	47	47	45	42	40	39	37	35	33	31	30	27	23	19
		15:51	54	58	62	63	59	60	60	59	57	57	53	53	49	47	46	44	45	47	48	49	46	43	41	38	36	33	31	26	22	18	16	15
	Evening	20:10	56	57	58	60	56	58	58	53	51	49	46	46	45	43	41	41	41	42	43	44	42	39	37	34	33	31	28	26	23	19	15	12
	Night	23:35	63	62	58	59	55	59	61	56	52	52	47	45	44	43	41	40	41	41	41	41	39	36	34	31	29	27	24	22	19	16	12	10
		01:05	57	63	59	57	55	58	59	57	51	48	48	44	43	41	40	39	40	42	42	41	39	37	35	33	31	29	25	22	19	16	12	10
K	Day	10:42	65	63	62	60	60	62	62	56	54	53	52	52	53	51	50	49	50	52	55	56	52	48	46	43	40	37	33	31	33	24	19	18
		13:36	68	66	64	63	61	61	63	59	56	55	53	53	54	53	51	52	53	55	57	57	53	49	46	44	41	38	34	31	28	25	21	17

Location	Period	Time	Measured Noise Level, (dB L _{eq} re. 2x10 ⁻⁵ Pa) at 1/3 rd Octave Frequency Band (Hz)																														
			12.5	16	20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	12.5k
		15:50	63	61	59	58	56	59	56	55	53	49	49	48	46	47	44	43	43	43	45	46	44	41	39	36	34	33	31	29	26	23	18
	Evening	21:02	61	60	59	59	55	60	62	59	52	53	52	50	51	49	49	49	51	53	54	54	51	47	44	42	38	35	31	27	24	21	17
Night	23:54	60	59	59	56	54	59	52	50	53	46	45	44	43	42	42	44	45	46	44	43	41	39	37	35	32	30	26	23	20	18	16	16
	01:25	54	53	54	51	48	48	48	47	44	45	41	40	39	38	36	37	38	36	35	34	34	32	28	25	23	20	17	15	13	11	10	10

APPENDIX C. CALIBRATION CERTIFICATES



CERTIFICATE OF CALIBRATION



0653

Date of Issue: 14 October 2025

Certificate Number: UCRT25/2465

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
AWN Consulting Limited
The Tecpro Building
17
Clonshaugh Business & Technology Park
Dublin
D17 XD90

Order No. 2541

Description Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Identification	Manufacturer	Instrument	Type	Serial No. / Version
	Rion	Sound Level Meter	NL-53	00630268
	Rion	Firmware		01.03
	Rion	Pre Amplifier	NH-25	33093
	Rion	Microphone	UC-59	23630
	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.

Pattern 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 09 October 2025

ANV Job No. UKAS25/10755

Date Calibrated 14 October 2025

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
	29 September 2023	UCRT23/2262	0653

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

CERTIFICATE OF CALIBRATION	Certificate Number UCRT25/2465
UKAS Accredited Calibration Laboratory No. 0653	Page 2 of 2 Pages

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

SLM instruction manual title	NL-53 NL-43 Instruction Manual Technical Guide		
SLM instruction manual ref / issue	66200 23-02		
Date provided or internet download date	11 May 2023	Source	Rion
	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	10 October 2025		
Calibrator cert. number	UCRT25/2449		
Calibrator cal cert issued by Lab	0653		
Calibrator SPL @ STP	94.02	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	23.70	23.90	± 0.30 °C
Humidity	48.7	55.5	± 3.00 %RH
Ambient Pressure	101.96	101.96	± 0.03 kPa

Indication at the Calibration Check Frequency	Calibration carried out using channel N/A		
Initial indicated level	94.4	dB	Adjusted indicated level
Uncertainty of calibrator used for Indication at the Calibration Check Frequency ±		94.0	dB
		0.10	dB
Self Generated Noise			
Microphone installed -	Less Than	17.5	dB A Weighting
Microphone replaced with electrical input device -		UR = Under Range indicated	
Weighting	A	C	Z
	12.2	dB UR	15.6 dB UR
			21.4 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 $k = 2$, which for a normal distribution corresponds to 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: K. Zablocki R 1



CERTIFICATE OF CALIBRATION



0653

Date of Issue: 25 June 2026

Certificate Number: UCRT26/3637

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 AWN Consulting Limited
 The Tecpro Building
 IDA Business and Technology Park
 Clonshaugh
 Dublin
 D17 XD90

Order No. 2628

Test Procedure Procedure TP 1 Calibration of Sound Calibrators

Description Acoustic Calibrator

Identification	Manufacturer	Instrument	Model	Serial No.
	Brüel & Kjær	Calibrator	4231	2394086

The calibrator has been tested as specified in Annex B of IEC 60942:2003. As public evidence was available from a testing organisation (PTB) responsible for approving the results of pattern evaluation tests, to demonstrate that the model of sound calibrator fully conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2003, the sound calibrator tested is considered to conform to all the class 1 requirements of IEC 60942:2003.

ANV Job No. UKAS26/06397

Date Received 17 June 2026

Date Calibrated 25 June 2026

Previous Certificate	Dated	25 June 2025
	Certificate No.	UCRT25/1927
	Laboratory	0653

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0653

Certificate Number

UCRT26/3637

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Measurements

The sound pressure level generated by the calibrator in its WS2 configuration was measured five times by the Insert Voltage Method using a microphone as detailed below. The mean of the results obtained is shown below. It is corrected to the standard atmospheric pressure of 101.3 kPa (1013 mBar) using original manufacturers information.

Test Microphone	Manufacturer	Type
	Brüel & Kjær	4134

Results

The level of the calibrator output under the conditions outlined above was

93.88 ± 0.10 dB rel 20 µPa

Functional Tests and Observations

The frequency of the sound produced was

999.97 ± 0.12 Hz

The total distortion was

0.47 ± 0.06 % Distortion

During the measurements environmental conditions were

Temperature	24	to	24 °C
Relative Humidity	36	to	42 %
Barometric Pressure	100.6	to	100.7 kPa

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

The uncertainties refer to the measured values only with no account being taken of the ability of the instrument to maintain its calibration.

A small correction factor may need to be applied to the sound pressure level quoted above if the device is used to calibrate a sound level meter which is fitted with a free-field response microphone. See manufacturers handbook for details.

Note:

END

Calibrator adjusted prior to calibration?	NO
Initial Level	N/A dB
Initial Frequency	N/A Hz

Additional Comments

None

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

Calibrated by: AC

R 1