APPENDIX D NOISE ASSESSMENT REPORT

Mahalo North Coal Seam Gas Project

Noise Impact Assessment



Project:	Mahalo North Coal Seam Gas Project
Location:	Comet, QLD
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EXECUTIVE SUMMARY

Comet Ridge Mahalo North Pty Ltd (Comet Ridge) is proposing to develop a greenfield Coal Seam Gas (CSG) project contained within ATP2048 (the project). The project area is situated in Central Queensland approximately 45 kilometres (km) north of Rolleston and lies within the Central Highlands Regional Council area. The project will require the development of the 34 CSG production wells and 34 lateral wells, water and gas gathering lines, a gas compression facility (GCF) and ancillary infrastructure. At this stage of the project the location of the export pipeline alignment is still under investigation. Therefore, the export pipeline is excluded from this assessment.

This noise assessment has been prepared to determine the noise impacts from construction, operations of the project to support the legislated environmental approvals assessment process for the project.

The results of the assessment show that the majority of the project construction works will be in compliance with the required noise limits without the requirement of any specialised noise mitigation treatments. The operational phases of the project will require various noise mitigation treatments to be applied in order to maintain compliance with site specific noise criteria (as defined in Section 4.4).

With the inclusion of the noise mitigation treatments, a suitably implemented noise management plan, and ongoing compliance testing, the project is expected to be able to fully comply with the noise limits obtained from process contained in the DES Guideline ESR/2016/1935, the objective of which is "to best achieve the object of the *Environmental Protection Act 1994*". As implementation of the DES Guideline ESR/2016/1935 achieves the objective of the *Environmental Protection Act*, it therefore also fulfils the objectives of the *Environmental Protection Regulation* and the *Environmental Protection (Noise) Policy 2019*.

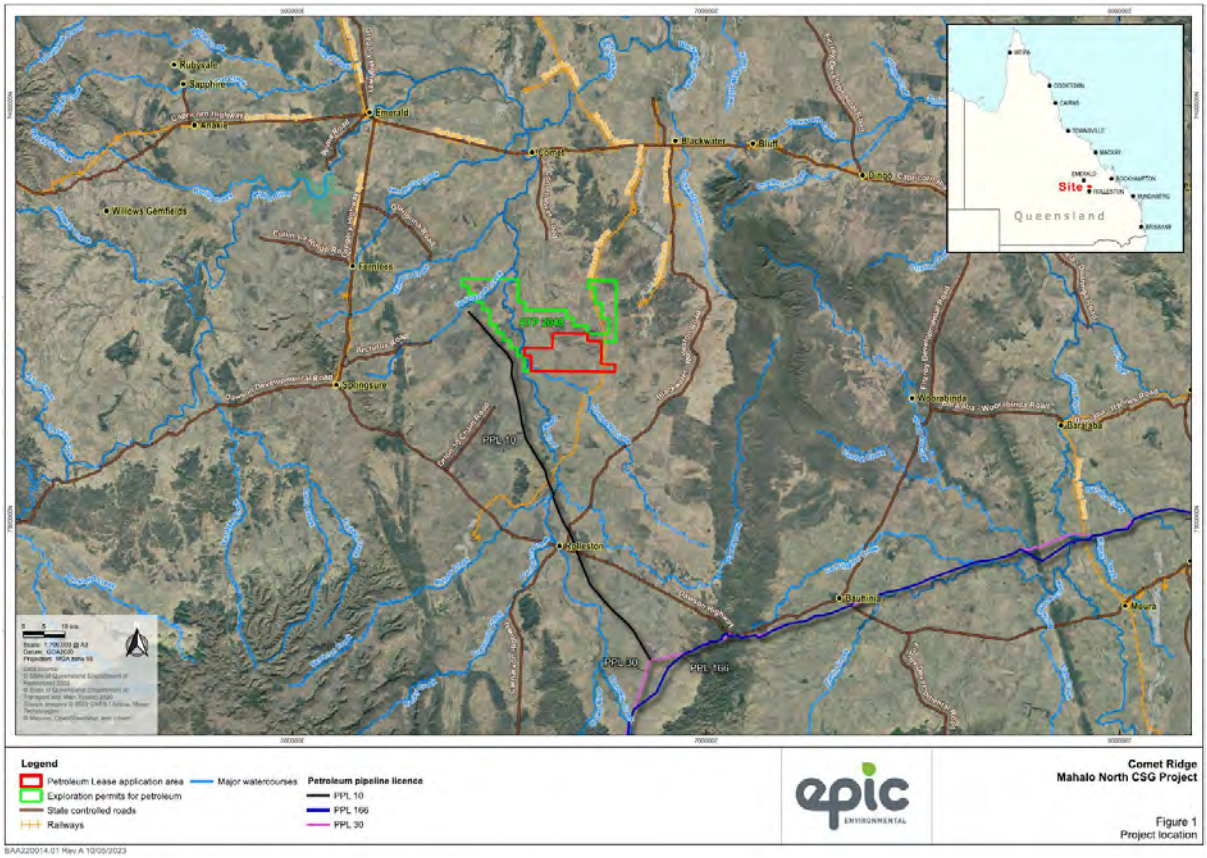
1 INTRODUCTION

1.1 PROJECT INTRODUCTION

The Mahalo North Coal Seam Gas project area (the project) is located approximately 45 kilometres (km) north of Rolleston and lies within the Central Highlands Regional Council area (Figure 1-1).

The area is bisected by the Blackwater-Rolleston Road and the Comet-Rolleston Road. Comet Ridge Mahalo North Pty Ltd (Comet Ridge) (the Proponent) is the holder of an authority to prospect (ATP) ATP2048, which is located in the Denison Trough within the Bowen Basin. There are no significant population centres within the project area. Rolleston is the nearest town to the South, with Comet to the North, and Springsure to the West.

Figure 1-1 Project location

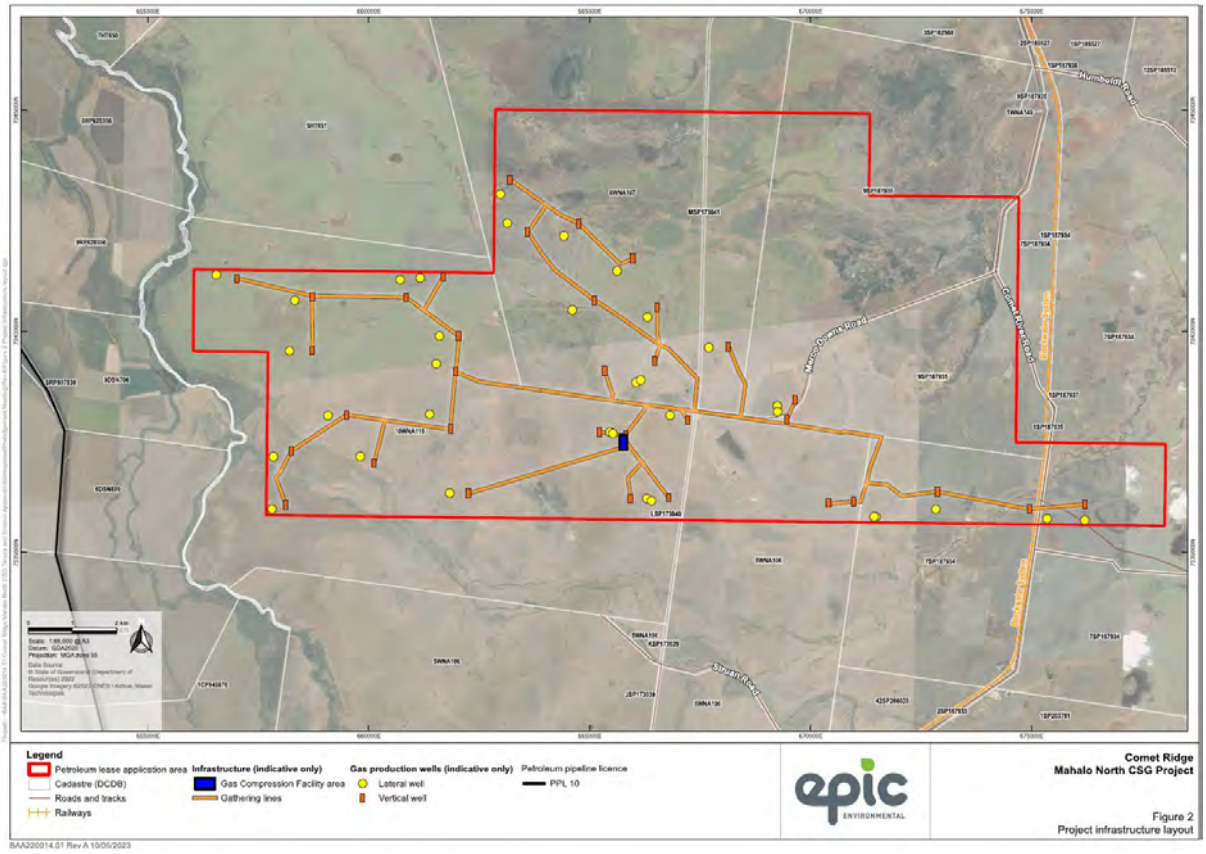


The project is situated within the Central Highlands Regional Council area. The project area falls within the Federal Electoral district of Flynn, and the Queensland Electoral district of Gregory.

The primary land use in the area is agriculture and grazing. There are existing resource operations located in the area, including Blackwater Coal Mine and the Rolleston Coal Mine.

Figure 1-2 shows the current project layout.

Figure 1-2 Project layout



1.2 PROJECT WORKS WITH POTENTIAL NOISE IMPACTS

The project includes the construction and operation of coal seam gas (CSG) collection network, de-watering and compression facility, and connection to export pipeline. It is important to note that export pipeline is excluded from this assessment.

Project works are proposed to include:

- Establishment of access tracks
- Establishment of workers accommodation area
- Establishment of gas compression facility (GCF) pad area
- Establishment of wells drilled with both vertical and directional drilling
- Operation of wells
- Operation of GCF
- Workover of wells throughout project life
- Progressive rehabilitation throughout project life

There is no blasting associated with the works.

2 CRITERIA

The noise criteria for both the construction and operational phase of the project are discussed and defined in this chapter.

2.1 LEGISLATIVE CONTEXT

2.1.1 Environmental Protection Act 1994

The *Environmental Protection Act 1994* (EP Act) is the principle environmental legislative instrument in Queensland. The EP Act provides the legislative framework for the assessment and management of environmental noise emissions in the State. It has the objective of regulating activities conducted in the State of Queensland and minimising environmental harm and nuisance from such activities. Section 319 states that "A person must not carry out any activity that causes, or is likely to cause, environmental harm unless the person takes all reasonable and practicable measures to prevent or minimise the harm." This is known as the General Environmental Duty. Compliance with subordinate legislation and guidelines is generally accepted as proof of compliance with this General Environmental Duty.

Chapter 5 provides information regarding Environmental Authorities (EA) and environmentally relevant activities (ERA). Under this act, a CSG project may require an Environmental Authority (EA) before commencing activities.

The EP Act does not directly provide any specific noise or vibration criteria other than for blasting. Noise criteria can be obtained from the *Environmental Protection Regulation 2019* (EP Regulation), and through appropriate departmental guidelines or the application of objectives contained within the *Environmental Protection (Noise) Policy 2019* (EPP Noise).

It is noted that the EP Act defines noise as including vibration of any frequency, whether emitted through air or another medium.

2.1.2 Environmental Protection Regulation 2019

The EP Regulation in Queensland, serves as a subordinate legislation under the EP Act. The EP Regulation provides specific details and guidelines to support the implementation of the overarching objectives of the EP Act.

The objective of the EP Regulation is to facilitate the effective management of potential environmental impacts associated with ERAs and other activities that have the potential to cause environmental harm. The EP Regulation outlines the requirements for obtaining environmental approvals, such as EAs, and provides specific rules and criteria for conducting these activities in a manner that minimises environmental harm.

The *Environmental Objectives and Performance Outcomes* outlined Division 1, Part 3 of the EP Regulation, states for operational assessment of noise, the environmental objective is:

> *The activity will be operated in a way that protects the environmental values of the acoustic environment.*

This includes performance outcomes of:

> *1 Sound from the activity is not audible at a sensitive receptor.*

2 The release of sound to the environment from the activity is managed so that adverse effects on environmental values, including health and wellbeing and sensitive ecosystems, are prevented or minimised.

2.1.3 Environmental Protection (Noise) Policy 2019

The purpose of the EPP Noise is to achieve the object of the EP Act in relation to the acoustic environment. The EPP Noise provides specific noise levels which, if complied with, would be considered achieving the objective of the EP Act, namely to not cause environmental nuisance or harm.

The EPP Noise identifies the environmental values to be enhanced or protected relating to the qualities of the acoustic environment that are conducive to:

- Protecting the health and biodiversity of ecosystems
- Human health and wellbeing, including an individuals' ability to have sleep, study or learn, and recreation activities (including relaxation and conversation)
- Protect the amenity of the community.

The policy defines noise sensitive receptors as the following:

- Dwelling
- Library and educational institute (including a school, college and university)
- Childcare or kindergarten
- School or playground
- Hospital, surgery or medical institution
- Commercial and retail activity
- Protected area, or an area identified under a conservation plan under *the Nature Conservation Act 1992* as a critical habitat or an area of major interest
- Marine park under the *Marine Parks Act 2004*
- Park or garden that is open to the public (whether or not on payment of an amount) for use other than for sport or organised entertainment.

The acoustic quality objective is the measurement of an acoustic descriptor at a sensitive receptor. Table 2-1 shows the acoustic quality objective for each type of sensitive receptor. Time periods are defined as follows:

- Daytime – 7 am to 6 pm
- Evening – 6 pm to 10 pm
- Night time – 10 pm to 7 am.

Table 2-1 Acoustic quality objectives from EPP Noise

Sensitive receptor type	Location	Time of day	Acoustic quality objectives (measured at the receptor) dB(A)		
			$L_{Aeq,adj,1hr}$	$L_{A10,adj,1hr}$	$L_{A01,adj,1hr}$
Dwelling	outdoors	Daytime and evening	50	55	65
Dwelling	indoors	Daytime and evening	35	40	45
		Night-time	30	35	40
Library and educational institution (including a school, college and university)	indoors	when open for business or when classes are being offered	35	—	—
Childcare centre or kindergarten	indoors	when open for business, other than when the children usually sleep	35	—	—
Childcare centre or kindergarten	indoors	when the children usually sleep	30	—	—
School or playground	outdoors	when the children usually play outside	55	—	—
Hospital, surgery or other medical institution	indoors	visiting hours	35	—	—
Hospital, surgery or other medical institution	indoors	anytime, other than visiting hours	30	—	—
Commercial and retail activity	indoors	when the activity is open for business	45	—	—
Protected area, or an area identified under a conservation plan under the Nature Conservation Act 1992 as a critical habitat or an area of major interest		anytime	The level of noise that preserves the amenity of the existing area or place		
Marine park under the Marine Parks Act 2004		anytime	The level of noise that preserves the amenity of the existing marine park		
Park or garden that is open to the public (whether or not on payment of an amount) for use other than for sport or organised entertainment		anytime	The level of noise that preserves the amenity of the existing park or garden		

The EPP Noise states in section 9.2.b that background creep in an area or place is prevented or minimised. This is addressed inherently in the following DES Guideline.

2.1.4 DES Guideline Prescribing noise conditions for petroleum activities

The Department of Environment and Science (DES) Guideline, *Prescribing noise conditions for petroleum activities ESR/2016/1935, Version 2.03, Last reviewed: 14 APR 2022* (DES 1935 Guideline), is a key reference document for this assessment. As stated by the DES 1935 Guideline: *"This guideline is intended to assist in the assessment of noise impacts and the development of noise conditions for petroleum activities within the general framework provided by the Environmental Protection Act 1994 (EP Act)."*

The purpose and scope of the DES 1935 Guideline is to:

1. *Assess impacts on environmental values from noise impacts as part of an application for an Environmental Authority for resource activities other than mining; and*
2. *Develop noise conditions, including measured noise limits, to best achieve the object of the Environmental Protection Act 1994 (EP Act).*

The DES 1935 Guideline provides indicative noise levels in the form of 'deemed background noise levels', which can be applied in the absence of noise monitoring in the project area. They are also used as the minimum background noise level for projects where the ambient noise levels are very quiet. The deemed background noise levels from DES 1935 Guideline are shown in Table 2-2.

Table 2-2 DES 1935 Guideline – Table 2 deemed background noise levels

Time Period	Deemed background noise level (dB(A))
7:00 am – 6:00 pm	35
6:00 pm – 10:00 pm	30
10:00 pm – 6:00 am	25
6:00 am – 7:00 am	30

The DES 1935 Guideline has provided some streamlined model conditions which can be applied in the absence of monitored background noise levels. Table 5 of the DES 1935 Guideline is reproduced in Table 2-3. Table 5 from the DES 1935 Guideline shows specific model criteria which are based on the deemed background noise levels. The DES 1935 Guideline allows for site specific background noise criteria to be used in the determination of noise criteria. (See "background noise levels" section of DES 1935 Guideline pp 8-9) It is noted that this project has undertaken noise monitoring, so the monitored noise levels take precedence over the deemed background noise levels. Where the monitored noise levels are greater than the deemed background noise levels, the criterion is based on the measured background noise levels, plus a correction as stated for each specific criterion in Table 2-3.

Table 2-3 Streamlined Model Conditions Noise Nuisance limits from DES 1935 Guideline

Time period	Metric	Short Term dB(A)	Medium Term dB(A)	Long Term dB(A)

7:00 am – 6:00 pm (Day)	$L_{Aeq, adj, 15 mins}$	45 (Bg +10)	43 (Bg + 8)	40 (Bg + 5)
6:00 pm – 10:00 pm (Evening)	$L_{Aeq, adj, 15 mins}$	40 (Bg +10)	38 (Bg +8)	35 (Bg +5)
10:00 pm – 6:00 am (Night)	$L_{Aeq, adj, 15 mins}$	28 (Bg +3)	28 (Bg +3)	28 (Bg +3)
All	Max $_{LpA, 15 min}$	55	55	55
6:00 am – 7:00 am (Morning)	$L_{Aeq, adj, 15 mins}$	40 (Bg +10)	38 (Bg +8)	35 (Bg +5)

The DES 1935 Guideline provides the following definitions for the short, medium and long term periods:

- *A short term noise event is a noise exposure, when perceived at a receptor premise, which persists for an aggregate period not greater than eight hours and does not re-occur for a period of at least seven days. Reoccurrence is deemed to apply where a noise of comparable level is observed at the same receptor location for a period of one hour or more, even if it originates from a different source or source location.*
- *A medium term noise event is a noise exposure, when perceived at a receptor premise, which persists for an aggregate period not greater than five days and does not re-occur for a period of at least four weeks. Reoccurrence is deemed to apply where a noise of comparable level is observed at the same receptor location for a period of one hour or more, even if it originates from a different source or source location.*
- *A long term noise event is a noise exposure, when perceived at a receptor premise, which persists for a period of greater than five days, even when there are respite periods when the noise is inaudible within those five days.*

The criteria levels (based on measured background levels discussed in section 4 of this report) set forth in Table 2-3 will be used in this assessment as the best practice noise limits to be applied to this project. The actual values are reviewed at the end of the background monitoring section (Section 4.4) and are based on the measured background noise levels, which were determined in accordance with the *"Noise Measurement Manual 3rd edition (2000)" and "AS1055.1 "Acoustics—Description and measurement of environmental noise."*

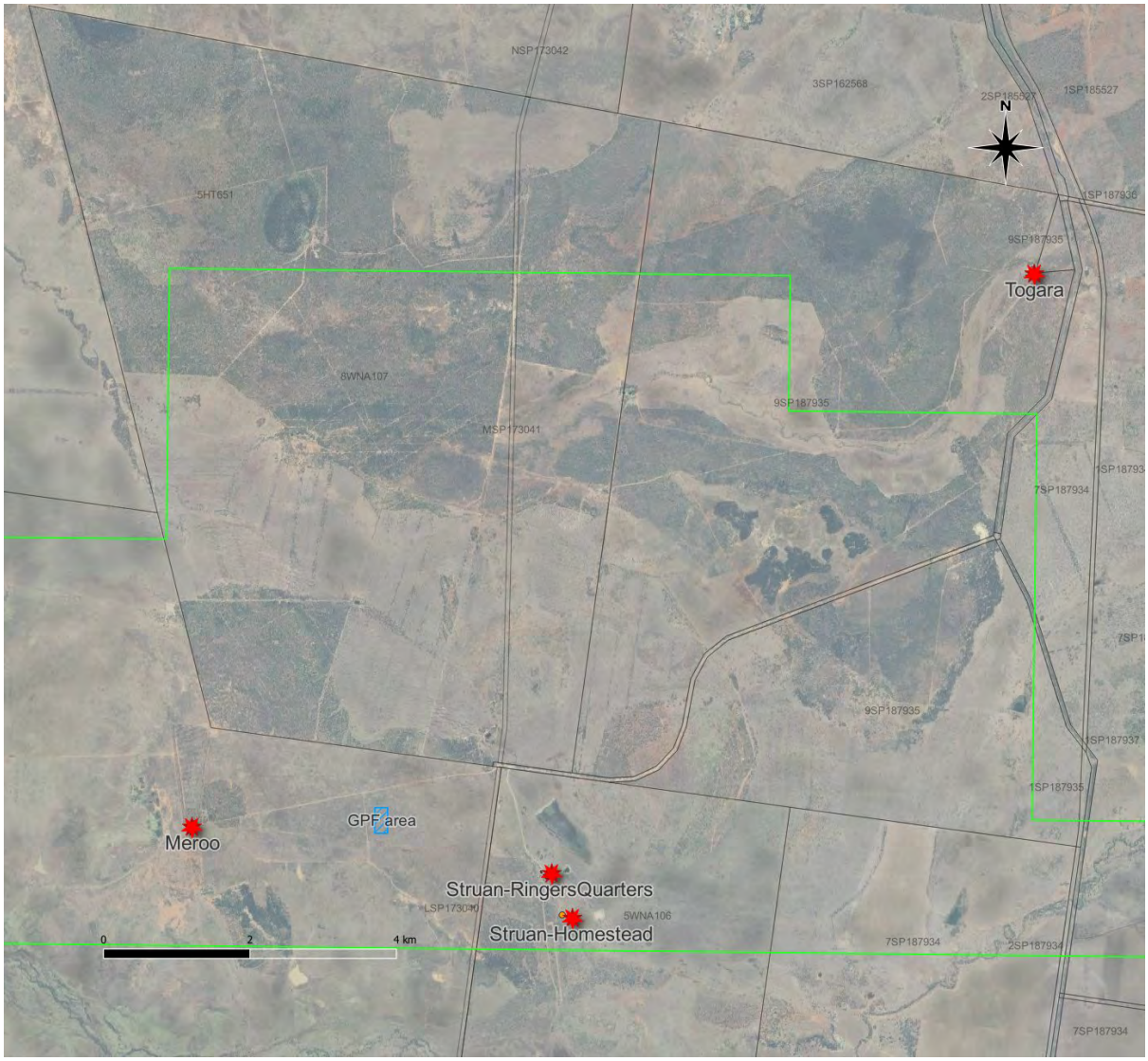
Application of, and compliance with, the DES 1935 Guideline noise limits will ensure compliance with the requirement of "*The release of sound to the environment from the activity is managed so that adverse effects on environmental values, including health and wellbeing and sensitive ecosystems, are prevented or minimised"* contained in the *Environmental Objectives and Performance Outcomes* stated in the EP Regulation.

3 SENSITIVE RECEPTORS

There are four noise sensitive receptor locations near the project. They are shown in Figure 3-1 and are denoted as:

- Meroo Downs
- Struan (homestead)
- Struan (ringers quarters)
- Togara

Figure 3-1 Sensitive receptor locations



There is one residential building at Meroo Downs, three residential buildings at Struan, and one residential building at Togara.

4 BACKGROUND NOISE MEASUREMENTS

Background noise measurements have been undertaken for this project. Measurements were undertaken using two NTI XL2 type 1 environmental sound level meters (SN: A2A-16668-E0 and A2A-09856-E0) and an MH218 Type 1 sound level meter (SN:28). Field calibration of the sound level meters was done using a Pulsar 105 Type 1 acoustic calibrator (SN: 72905). All equipment was under current calibration. Calibration certificates can be supplied on request. Measurements were taken in general accordance with the *"Noise Measurement Manual 3rd edition (2000)" and "AS1055.1 "Acoustics—Description and measurement of environmental noise."*

The purpose of these measurements was to establish parameters of the existing ambient noise environment in the project area. Each monitoring location is addressed in the following sections. Site specific information is addressed for each monitoring location, along with the overall noise levels. The complete logged results of the noise measurements are included in Appendix A.

The DES 1935 Guideline does allow for project noise criteria to be set on the basis of deemed background noise levels if noise monitoring has not been undertaken, or if the monitored noise levels are lower than the deemed background noise levels. The deemed background noise levels from DES 1935 Guideline are shown in Table 4-1.

As background noise measurements have been undertaken for this project, the measured background noise levels will be used for criteria determination except where the measured background noise levels are lower than the deemed background noise levels.

Table 4-1 DES 1935 Guideline - deemed background noise levels

Time Period	Deemed background noise level (dB(A))
7:00 am – 6:00 pm	35
6:00 pm – 10:00 pm	30
10:00 pm – 6:00 am	25
6:00 am – 7:00 am	30

The Rating Background Level (RBL) has been calculated for all locations. The determination of the RBL was conducted in accordance with Ecoaccess guideline "Planning for Noise Control" 2004 (0804).

Weather observations were also taken using a Davis Vantage Vue weather station. The weather station was located at Merro Downs. The weather observations are considered valid for all three monitoring locations, and were to exclude noise data during periods of adverse weather conditions as outlined in the Noise Measurement Manual.

4.1 MEROO DOWNS

Meroo Downs is located in the southern area of the project to the west of the proposed GCF and has a main homestead with a number of secondary structures such as sheds and covered areas.

Noise monitoring was conducted between the 30th January and 8th February 2023. Complete monitoring results for the entire monitoring period are shown in Appendix A. The monitoring location is a free field location, with no major reflecting surfaces (other than the ground) within 3.5m of the microphone location, on the north-eastern side of the dwelling within the local fenced area. Both noise and weather data were recorded at this location.

Image 4-1 Meroo Downs monitoring location



The summary results of the monitoring are presented in Table 4-2.

Table 4-2 Meroo Downs noise monitoring overall results

Time period	Average L_{A90}	Average L_{Aeq}	Average L_{A10}	Average L_{Amax}	RBL
7:00 am – 6:00 pm	36.5	44.6	47.2	62.5	35.2
6:00 pm – 10:00 pm	48.1	52.2	54.4	62.3	42.3
10:00 pm – 6:00 am	45.7	50.6	53.2	60.9	41.8
6:00 am – 7:00 am	40.9	49.3	52.0	68.8	41.2

4.2 STRUAN RINGERS QUARTERS

Struan Ringers Quarters is located in the southern area of the project to the east of the proposed GCF. It is part of a large area of buildings with three residential buildings.

Noise monitoring was conducted between the 30th January and 8th February 2023. Full monitoring results are shown in Appendix A. The monitoring location is a free field location, with no major reflecting surfaces (other than the ground) within 3.5m of the microphone location, north-western side of the quarters within the local fenced area.

Image 4-2 Struan Ringers Hut monitoring location



The summary results of the monitoring are presented in Table 4-3.

Table 4-3 Struan Ringers Quarters noise monitoring overall results

Time period	Average L_{A90}	Average L_{Aeq}	Average L_{A10}	Average L_{Amax}	RBL
7:00 am – 6:00 pm	33.5	41.0	42.4	60.7	30.8
6:00 pm – 10:00 pm	39.3	43.3	44.7	55.7	36.2
10:00 pm – 6:00 am	38.0	41.5	42.6	51.6	33.2
6:00 am – 7:00 am	32.5	43.9	43.1	67.0	32.4

4.3 STRUAN HOMESTEAD

Struan Homestead is located in the southern area of the project to the east of the proposed GCF. It is part of a large area of buildings with three residential buildings.

Noise monitoring was conducted between the 30th January and 8th February 2023. Full monitoring results are shown in Appendix A. The monitoring location is a free field location, with no major reflecting surfaces (other than the ground) within 3.5m of the microphone. It was located approximately 300 m to the north-west of the homestead itself.

Image 4-3 Struan Homestead monitoring location



The summary results of the monitoring are presented in Table 4-4.

Table 4-4 Struan Homestead noise monitoring overall results

Time period	Average L_{A90}	Average L_{Aeq}	Average L_{A10}	Average L_{Amax}	RBL
7:00 am – 6:00 pm	35.0	40.2	42.0	56.8	31.9
6:00 pm – 10:00 pm	47.1	51.1	52.9	59.4	41.3
10:00 pm – 6:00 am	44.6	48.4	50.1	57.4	34.9
6:00 am – 7:00 am	36.7	41.3	42.6	58.1	36.5

4.4 SITE SPECIFIC NOISE CRITERIA

Each of the monitoring locations is considered representative of the ambient noise conditions at the associated nearby noise sensitive receptors. Therefore, the noise levels at each of the monitoring location have been used to develop the specific criteria for each of the commensurate noise sensitive receptors.

The method contained in the DES 1935 Guideline was used to determine site specific criteria for each of the noise sensitive receptors. The RBL has been used as the background noise level as this is the more stringent approach.

The site-specific noise criteria for each monitoring site is shown in Tables 4-5 to 4-7.

Table 4-5 Meroo noise criteria

Project criteria	Metric	Short term	Medium Term	Long Term
7:00 am – 6:00 pm	$L_{Aeq\ adj\ 15min}$, dB(A)	45	43	40
6:00 pm – 10:00 pm	$L_{Aeq\ adj\ 15min}$, dB(A)	52	50	47
10:00 pm – 6:00 am	$L_{Aeq\ adj\ 15min}$, dB(A)	45	45	45
All	Max L_{pA}, dB(A)	55	55	55
6:00 am – 7:00 am	$L_{Aeq\ adj\ 15min}$, dB(A)	51	49	46

Table 4-6 Struan Ringers Quarters noise criteria

Project criteria	Metric	Short term	Medium Term	Long Term
7:00 am – 6:00 pm	$L_{Aeq\ adj\ 15min}$, dB(A)	45	43	40
6:00 pm – 10:00 pm	$L_{Aeq\ adj\ 15min}$, dB(A)	46	44	41
10:00 pm – 6:00 am	$L_{Aeq\ adj\ 15min}$, dB(A)	36	36	36
All	Max L_{pA}, dB(A)	55	55	55
6:00 am – 7:00 am	$L_{Aeq\ adj\ 15min}$, dB(A)	42	40	37

Table 4-7 Struan Homestead noise criteria

Project criteria	Metric	Short term	Medium Term	Long Term
7:00 am – 6:00 pm	$L_{Aeq\ adj\ 15min}$, dB(A)	45	43	40
6:00 pm – 10:00 pm	$L_{Aeq\ adj\ 15min}$, dB(A)	51	49	46
10:00 pm – 6:00 am	$L_{Aeq\ adj\ 15min}$, dB(A)	38	38	38
All	Max L_{pA}, dB(A)	55	55	55
6:00 am – 7:00 am	$L_{Aeq\ adj\ 15min}$, dB(A)	46	44	41

5 NOISE MODELLING

5.1 NOISE PREDICTION METHOD

SoundPLAN 8.2 noise prediction software was used to predict noise levels at the noise sensitive receptors surrounding the Project. The ISO 9613-2:1996 Acoustics – *Attenuation of sound during propagation outdoors – Part 2: General method of calculation* (ISO 9613-2:1996) noise prediction methodology was used in the SoundPLAN software to predict the noise propagation from the various construction activities. ISO 9613-2:1996 assumes downwind conditions from the noise source towards the sensitive receptor, predicted noise levels at the sensitive receptors are therefore conservative predictions. The method considers topographic shielding, ground absorption, atmospheric absorption and localised shielding from equipment or barriers. Noise barriers or other screening can therefore be included in the noise model to investigate the effects of installing temporary noise screening between receptors and noise emitting sources. For the construction assessment it has been assumed that all equipment and plant is operating at maximum effort.

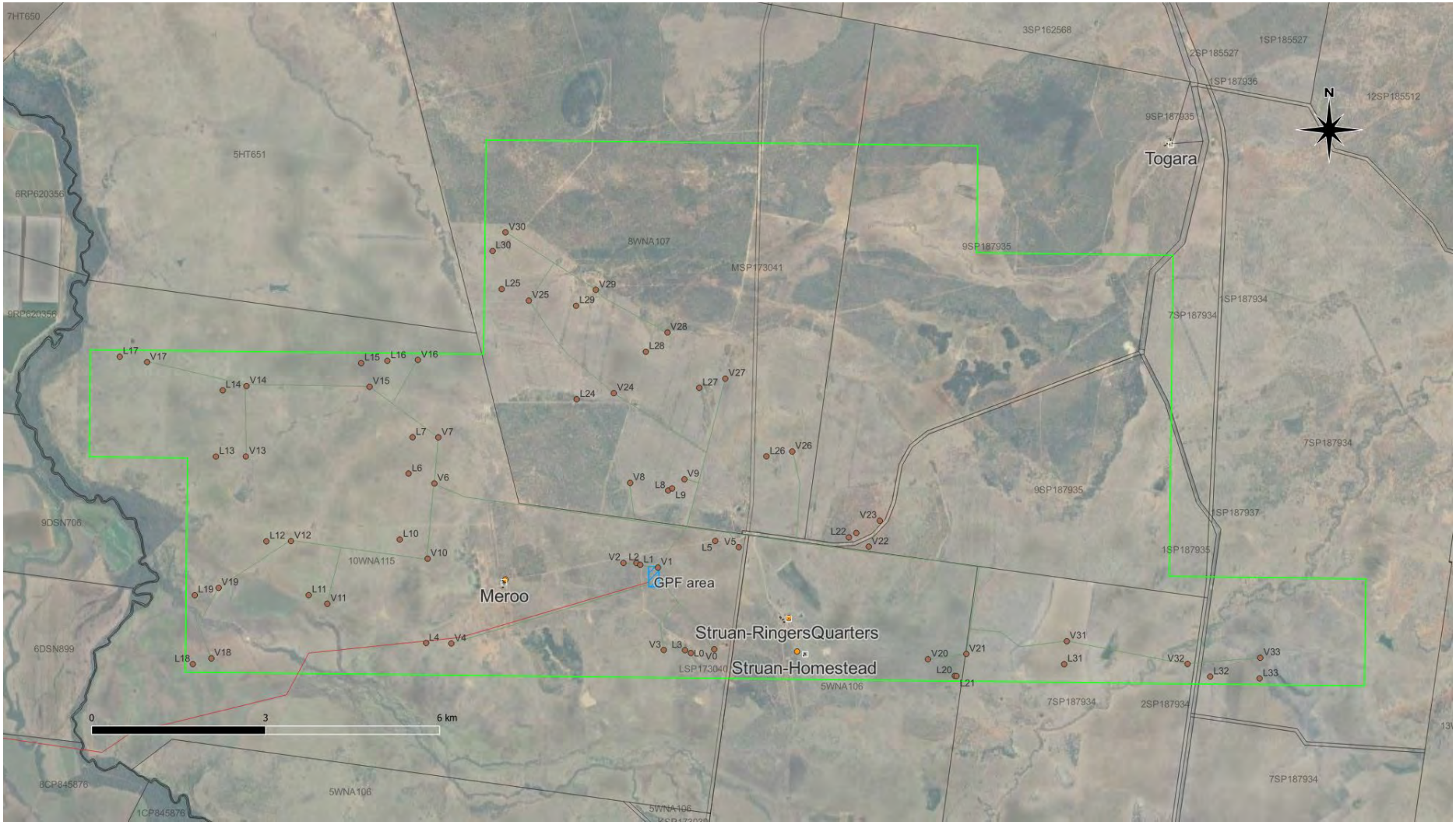
The noise model includes the information outlined in Table 5-1.

Table 5-1 Noise model information

Noise model elements	Noise model input, assumptions and source reference
Ground elevation geometry	Elevation and Depth – Foundation Spatial Data
Project area locations and general site arrangement	Provided by Epic Environmental (Ref: Figure 5-1)
Noise propagation methodology	ISO 9613-2:1996
Weather conditions	Calm
Ground absorption	Scrub and roads α=1
Receiver height	1.8 m above ground level
Noise source location	Provided by Epic Environmental (Ref: Figure 5-1)

Figure 5-1 shows the modelled locations of the GCF, along with the current well locations, and the noise sensitive receptors.

Figure 5-1 Site layout with well and receptor locations



5.2 MODELLED SCENARIOS

The following scenarios were modelled:

1. Establishment/clearing of access tracks, workers accommodation and GCF area;
2. Construction of workers accommodation and processing GCF area;
3. Construction/workover of well pads;
4. Operation of wells and GCF.

The fleet for each scenario is shown in Table 5-2.

Table 5-2 Modelled fleet and sound power data - unmitigated

Scenario	Fleet	Details	Quantity	Sound Power Level dB(A)
1 Site establishment/access tracks	Grader	CAT 12H	1	102
	Excavator	CAT 320	1	108
	Bobcat	CAT 216	1	107
	Gravel truck	Hino body truck	1	92
	Light vehicles	Hilux	3	90
	Truck floats	Prime mover and float	1	107
	Water truck	20kl	1	94
2 Construction accommodation and GCF	Grader	CAT 12H	1	102
	Excavator	CAT 320	1	108
	Bobcat	CAT 216	1	107
	Gravel truck	Hino body truck	1	92
	Light vehicles	Hilux	4	90
	Truck floats	Prime mover and float	6	107
	Water truck	20kl	1	94
3 Construction wells/workover	Drill Rig	Operational Load	1	112
	Mud pump	100% power for all	1	99
	SCUF tank	items	1	102
	Generator		1	85
	LED light tower		1	80
	Coil unit		1	96
4 Operation	Engine	L5794	2	102
	Engine Exhaust	L5794	2	125
	Engine Intake	L5794	2	102
	Recip Compressor	Ariel JCG6	2	125
	Metering Skid	Skid mounted	1	84
	Pumps	Electric	4	90
	Well Head Pack	All equipment at well	34	105

6 NOISE IMPACTS

This section sets for the predicted noise impacts for the various stages of the project, and the mitigation measures required to achieve compliance with the most stringent noise criterion.

6.1 ASSESSMENT CRITERION

For each receptor, the site-specific noise criteria contained in sections 4.1 to 4.4 will be applicable to noise impacts from the projects. However, to assess the compliance, it is not necessary to model and assess every metric in order to show whether the project is likely to be able to be constructed and operated within the noise limits. The most stringent criterion for each receptor is the long-term noise criterion. The assessment has assessed the noise impacts for each receptor against their most stringent criterion.

If the project is able to be managed such that the most stringent noise criterion is achieved, then all the other noise criteria will also be achieved.

The Togara receptor is the only receptor for which noise measurements were not undertaken. The lowest criterion based on the monitored noise levels from the other locations has been assumed for this receptor.

Licence conditions shall be based on the site-specific noise criteria for each site, but where the assessment shows compliance with this most stringent criterion, all other criteria are deemed to comply.

6.2 UN-MITIGATED RESULTS

For each of the sensitive receptors in the project area, the noise levels were calculated on each of their four main facades. The results in Table 6-1 present the un-mitigated noise levels for each scenario. Exceedances of the most stringent criteria are shown in red.

Table 6-1 Noise levels - unmitigated

Sensitive Receptor	Façade Direction	Most stringent criterion (dB(A))	1 Site establishment	2 Construction accommodation and GCF (dB(A))	3 Construction wells/workover (dB(A))	4 Operation (dB(A))
Meroo	N	40	10.2	22.0	31.3	**40.9**
Meroo	W	40	8.0	8.9	32.0	36.6
Meroo	E	40	10.9	22.1	24.6	40.0
Meroo	S	40	10.5	21.9	29.5	35.0
Struan Homestead	SW	38	16.0	20.7	29.4	**38.7**
Struan Homestead	NW	38	29.2	20.7	28.4	**39.6**
Struan Homestead	NE	38	25.7	5.5	25.6	35.4
Struan Homestead	S	38	17.1	10.7	25.3	34.0
Struan Ringers Quarters	NE	36	27.3	7.7	28.8	**36.2**
Struan Ringers Quarters	NW	36	20.4	22.9	29.7	**41.3**
Struan Ringers Quarters	SE	36	27.3	7.5	28.9	34.8

Sensitive Receptor	Façade Direction	Most stringent criterion (dB(A))	1 Site establishment	2 Construction accommodation and GCF (dB(A))	3 Construction wells/workover (dB(A))	4 Operation (dB(A))
Struan Ringers Quarters	SW	36	18.6	22.7	29.7	**40.7**
Togara Homestead	E	36	0.0	0.0	0.0	18.6
Togara Homestead	N	36	0.0	0.0	0.0	17.6
Togara Homestead	S	36	6.9	0.0	0.0	22.7
Togara Homestead	W	36	6.9	0.0	0.0	22.4

It is observed that all the construction scenarios are predicted to comply with the site-specific noise criteria (as listed in Section 4.4). However, the operational phase shows exceedances of 5dB(A).

6.3 MITIGATION MEASURES AND MITIGATED RESULTS

The following mitigation measures were applied to the operational noise model:

- Well head packs sound powers were set to 95dB(A);
- Exhaust noise levels from the compressor engines was set to 113.4dB(A) which represents the installation of a standard hospital grade muffler;
- Noise from the Ariel JCG6 compressors was set to 119dB(A) which represents the typical reduction from panel attention structures or enclosures.

The results of the noise modelling with the above mitigation in place area shown in Table 6-2.

Table 6-2 Operational noise levels - mitigated

Receptor	Façade Direction	Most stringent criterion (dB(A))	5 Operation – mitigated (dB(A))
Meroo	N	40	30.4
Meroo	W	40	22.0
Meroo	E	40	29.9
Meroo	S	40	20.0
Struan Homestead	SW	38	28.1
Struan Homestead	NW	38	28.5
Struan Homestead	NE	38	19.1
Struan Homestead	S	38	18.7
Struan Ringers Quarters	NE	36	20.7
Struan Ringers Quarters	NW	36	31.0
Struan Ringers Quarters	SE	36	18.8
Struan Ringers Quarters	SW	36	30.8
Togara Homestead	E	36	0.6
Togara Homestead	N	36	0
Togara Homestead	S	36	5.6
Togara Homestead	W	36	5.4

With the mitigation measures in place, the operations of the project are predicted to comply with the site specific noise criteria at all times of the day, evening and night.

While the noise mitigation has been applied to all the wells in the project area, it is not likely to be required at all wells, particularly those that are a significant distance from the receptors. During detailed design, modelling should be undertaken to show which wells require noise mitigation.

7 NOISE MANAGEMENT PLAN INFORMATION

In accordance with the DES 1935 Guideline, the following should be included in the noise management plan:

- A commitment by the Chief Executive Officer for the holder of the EA for this project, or their delegate, to ensure adequate allocation of staff and resources to the establishment and operation of the Noise Management Plan;
- Definition of roles, responsibilities and authorities within the staffing of the Noise Management Plan;
- Delivery of training to staff and contractors and maintenance of competencies;
- Risk/constraint analysis methods to be undertaken prior to any new operation (e.g. drill site) or installation of new equipment that has the potential to create noise nuisance;
- Procedures and methods to undertake assessments to determine compliance with best practice noise limits in the event of a valid complaint being received and when there are no alternative arrangements in place, taking into account any tonal or impulsive noise impacts;
- Procedures for handling noise complaints;
- Community liaison and consultation procedures including but not limited to consultation for when night time petroleum activities (i.e. between 10:00 pm and 6:00 am) are likely to exceed 36 dBA at Struan Ringers Quarters or 38 dBA at Struan Homestead;
- Procedures for managing records associated with all aspects of the Noise Management Plan including standardised forms for recording monitoring results and complaints;
- Details of petroleum activities and measured and/or predicted noise levels of noise sources associated with those activities;
- Reasonable and practicable control or abatement measures (including relocating the activity, altering the hours of operation, or having an alternate arrangement in place with any potentially affected person) that can be undertaken to ensure compliance with best practice noise limits;
- The level of noise at sensitive receptors that would be achieved from implementing reasonable and practicable control or abatement measures; and
- Mediation processes to be used in the event that noise complaints are not able to be resolved.

8 CONCLUSION

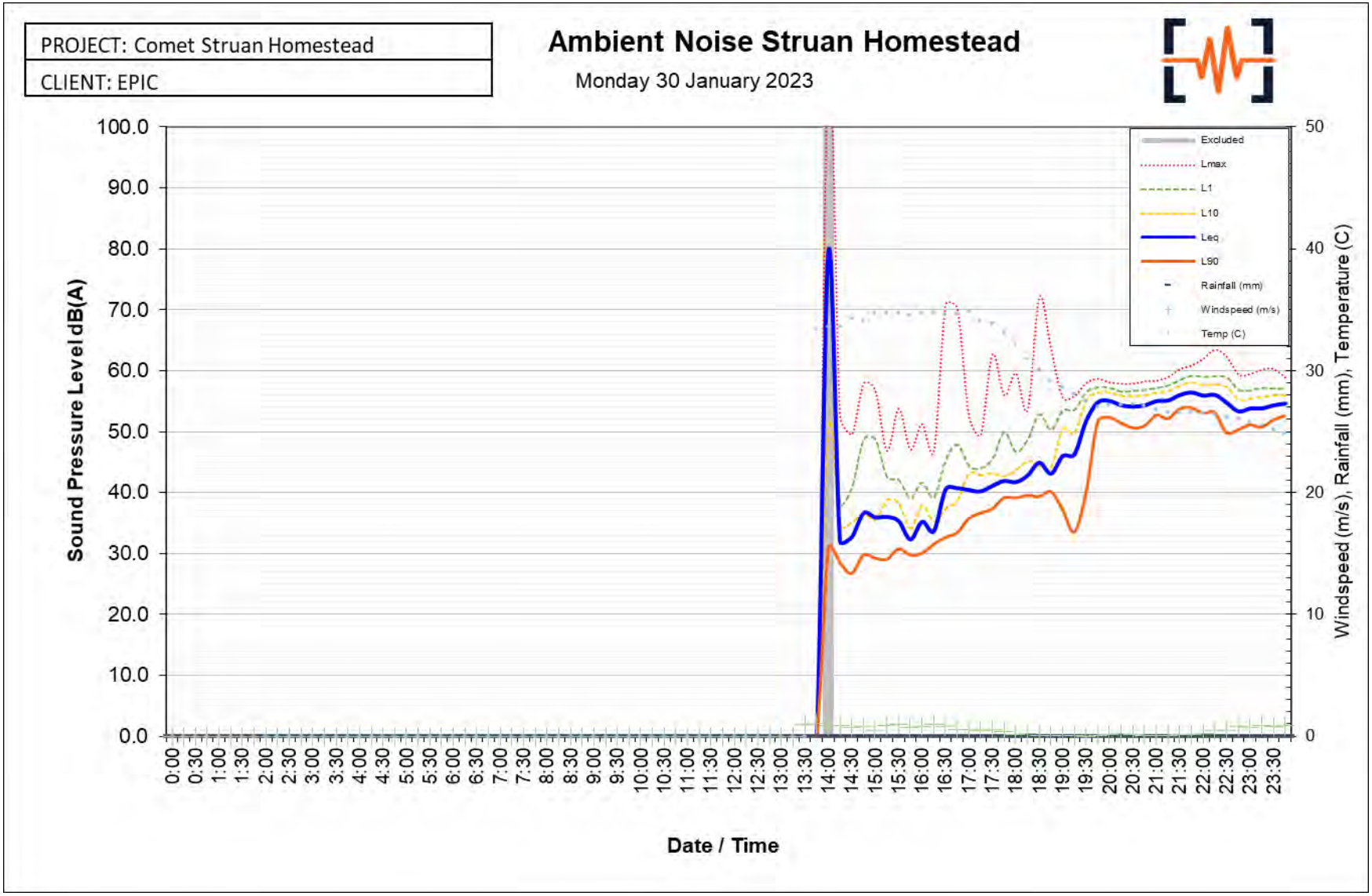
The project (ATP2048) is proposed by Comet Ridge. This project includes a gas field comprising CSG wells and GCF, in the area south of Comet and north of Rolleston in Queensland.

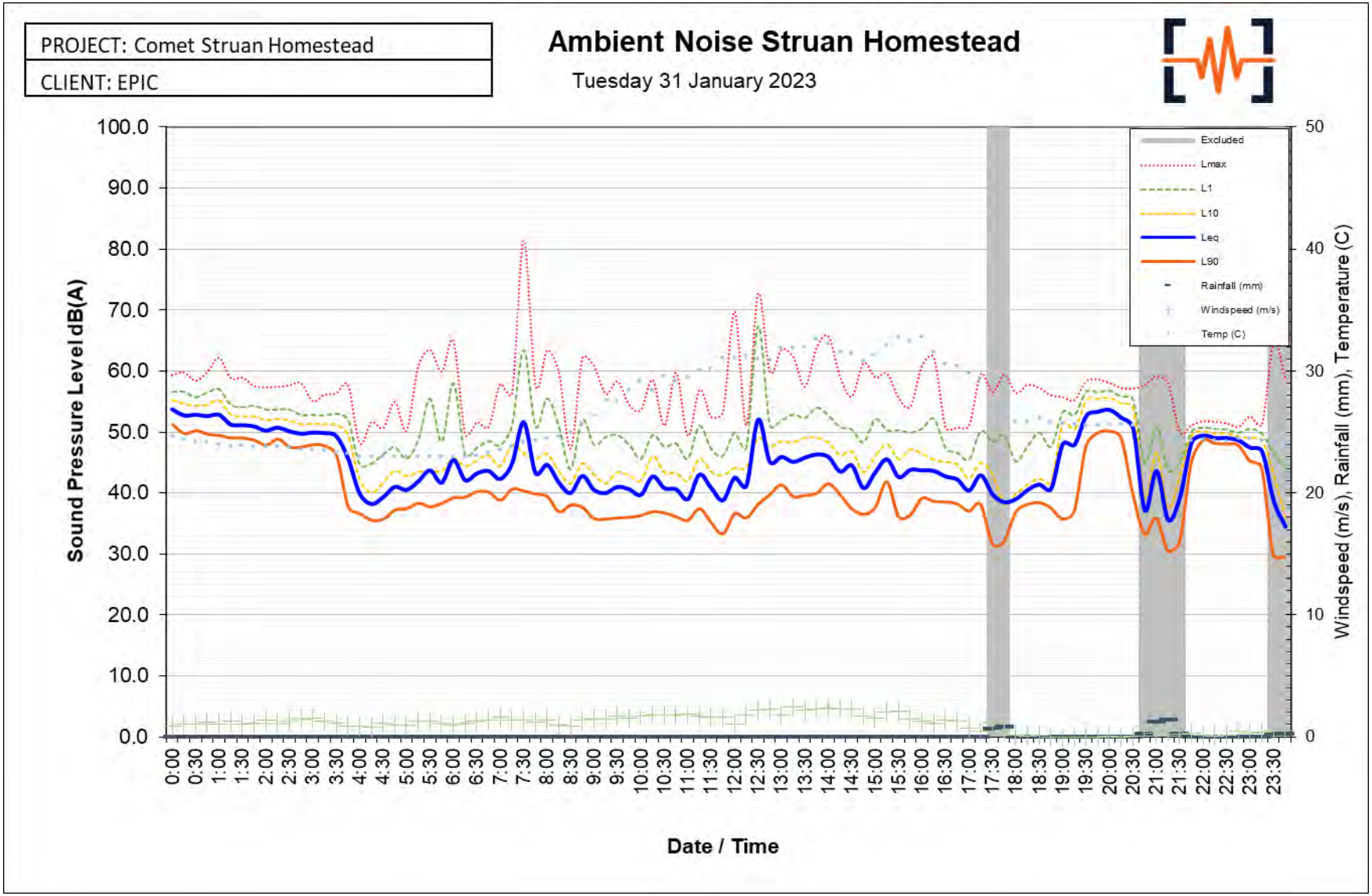
This noise assessment has been assessed to determine the noise impacts from construction, operation and ongoing maintenance of the project.

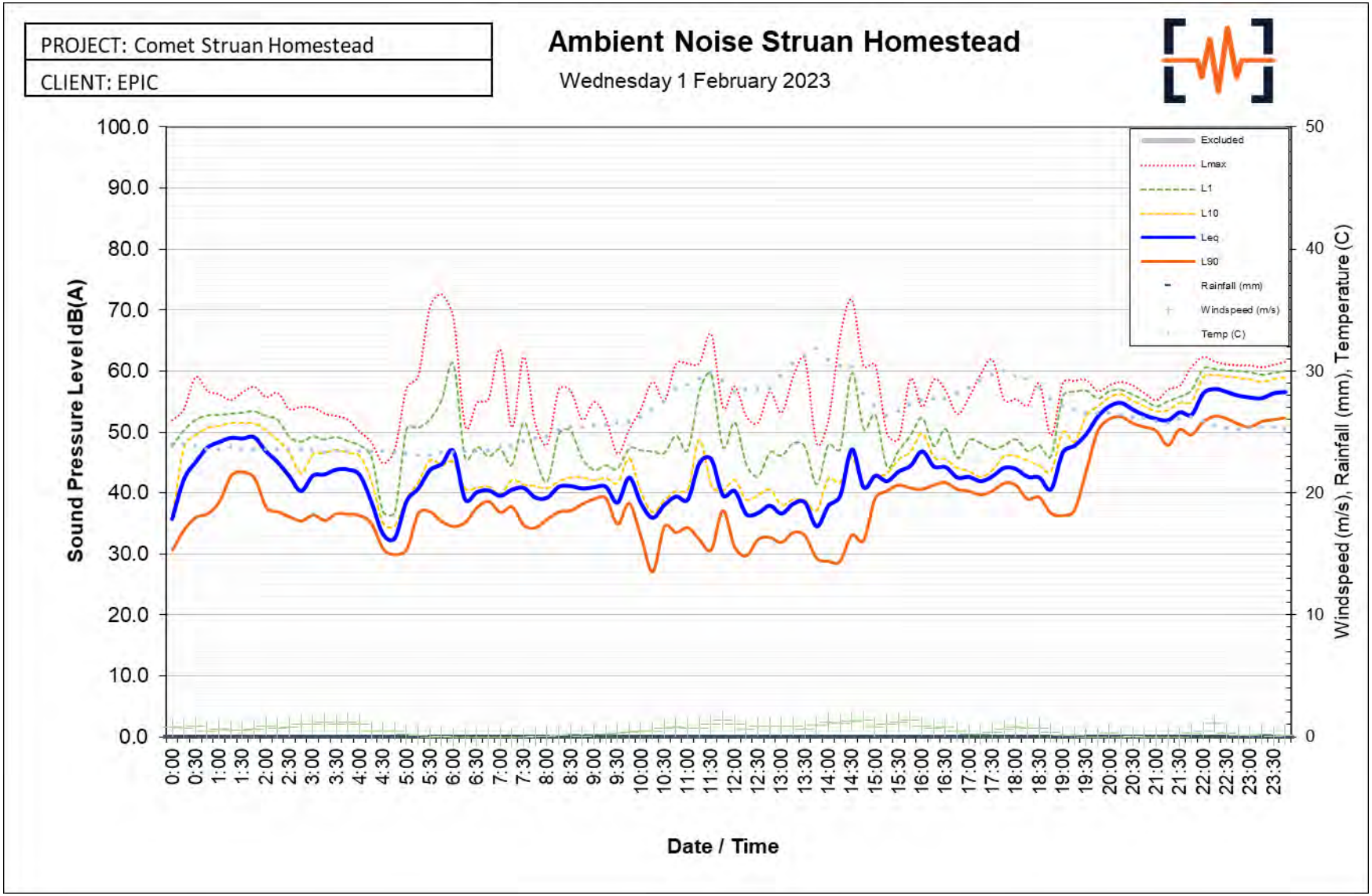
The results of the assessment are that the construction works will be in compliance with the required noise limits without the requirement of any specialised noise mitigation treatments. The operational phase of the project will require some standard noise mitigation treatments to be applied in order to maintain compliance with site specific noise criteria.

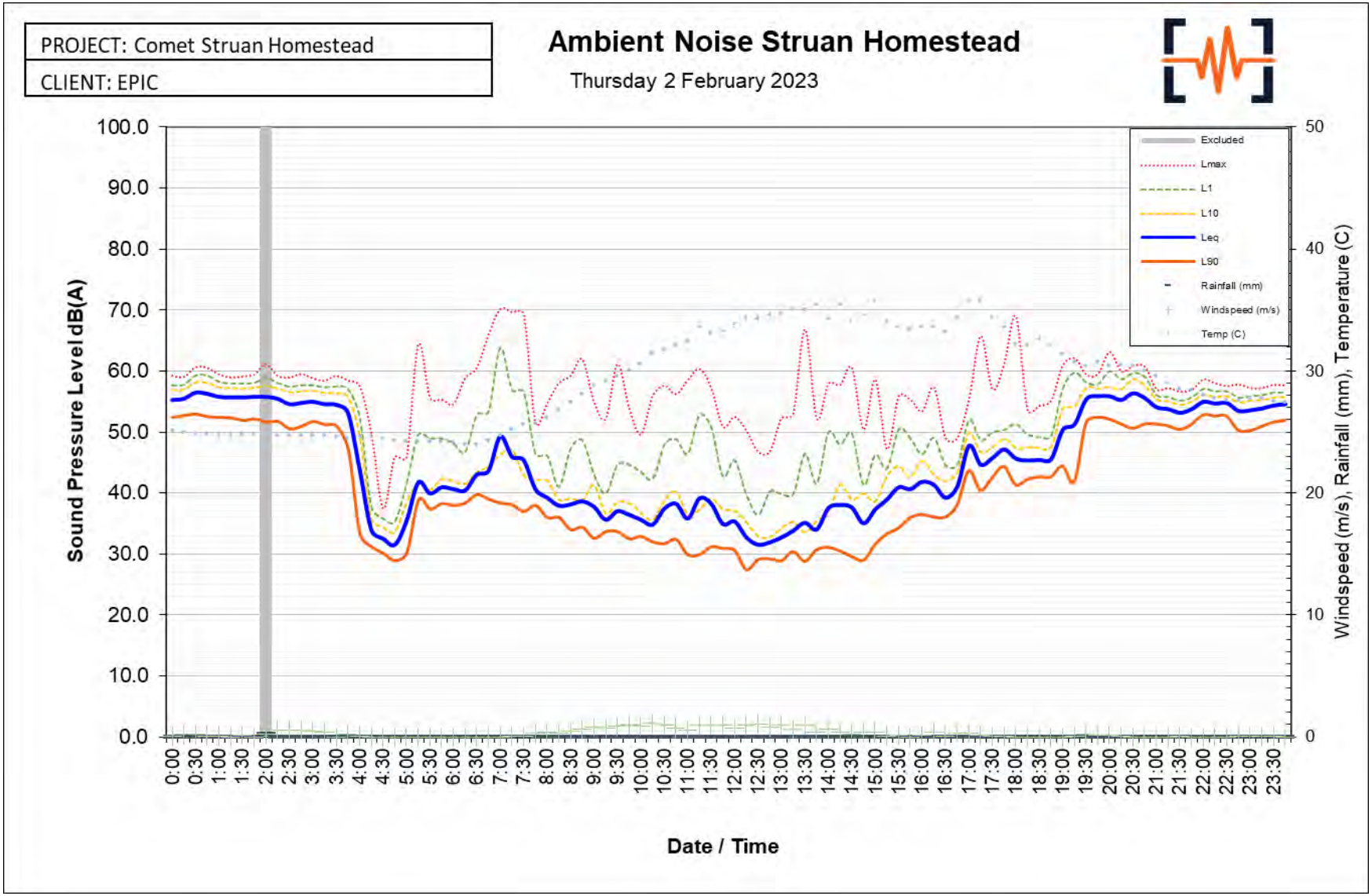
With a suitably implemented noise management plan and ongoing compliance testing the project is expected to be able to fully comply with the requirements of the DES 1935 Guideline, the noise components of the EP Regulation, and the noise components of the General Environmental Duty requirement of the EP Act. As implementation of the DES Guideline ESR/2016/1935 achieves the objective of the *Environmental Protection Act*, it therefore also fulfils the noise objectives of the *Environmental Protection Regulation* and the *Environmental Protection (Noise) Policy 2019*.

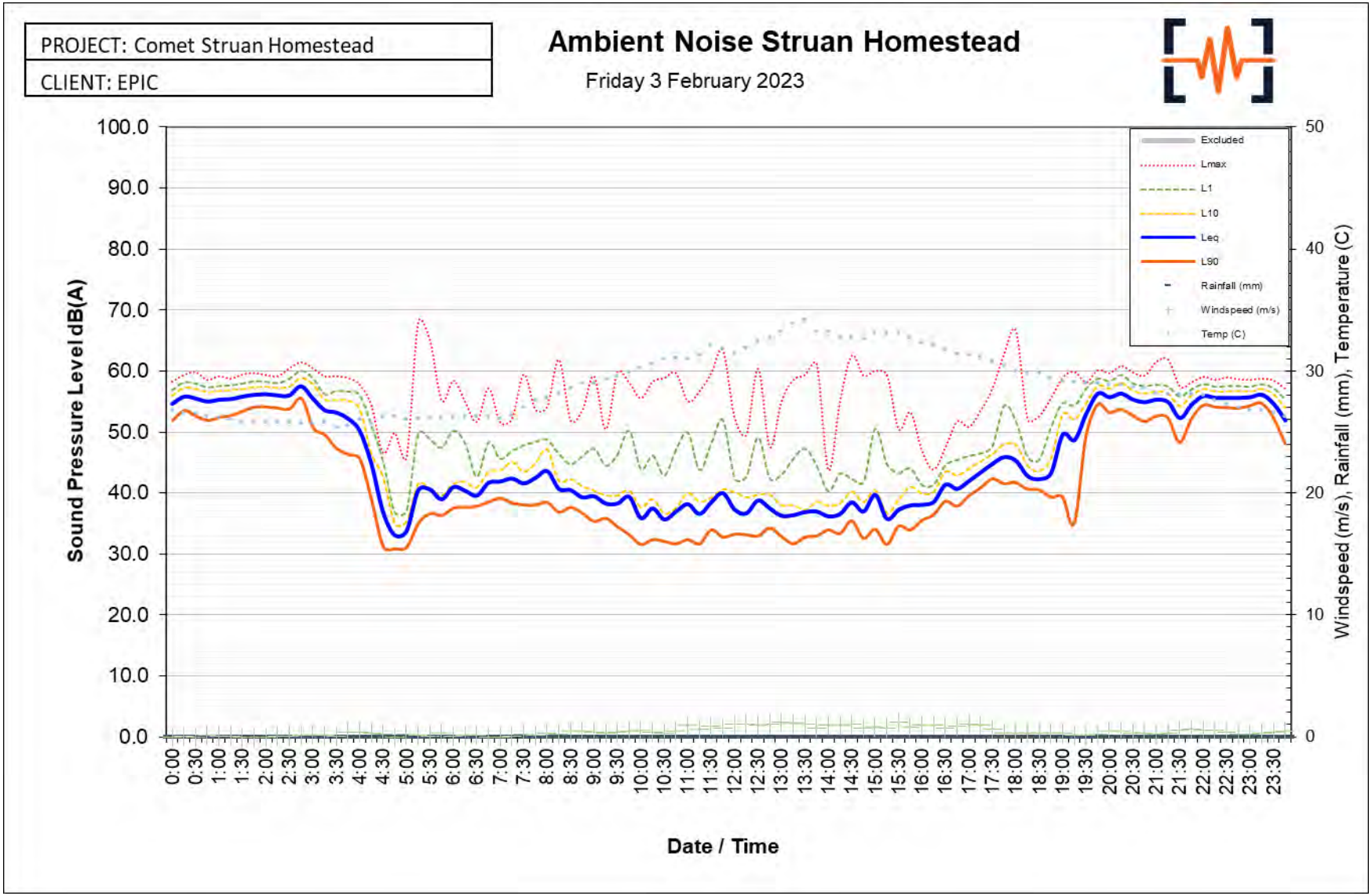
9 APPENDIX A – NOISE MONITORING CHARTS

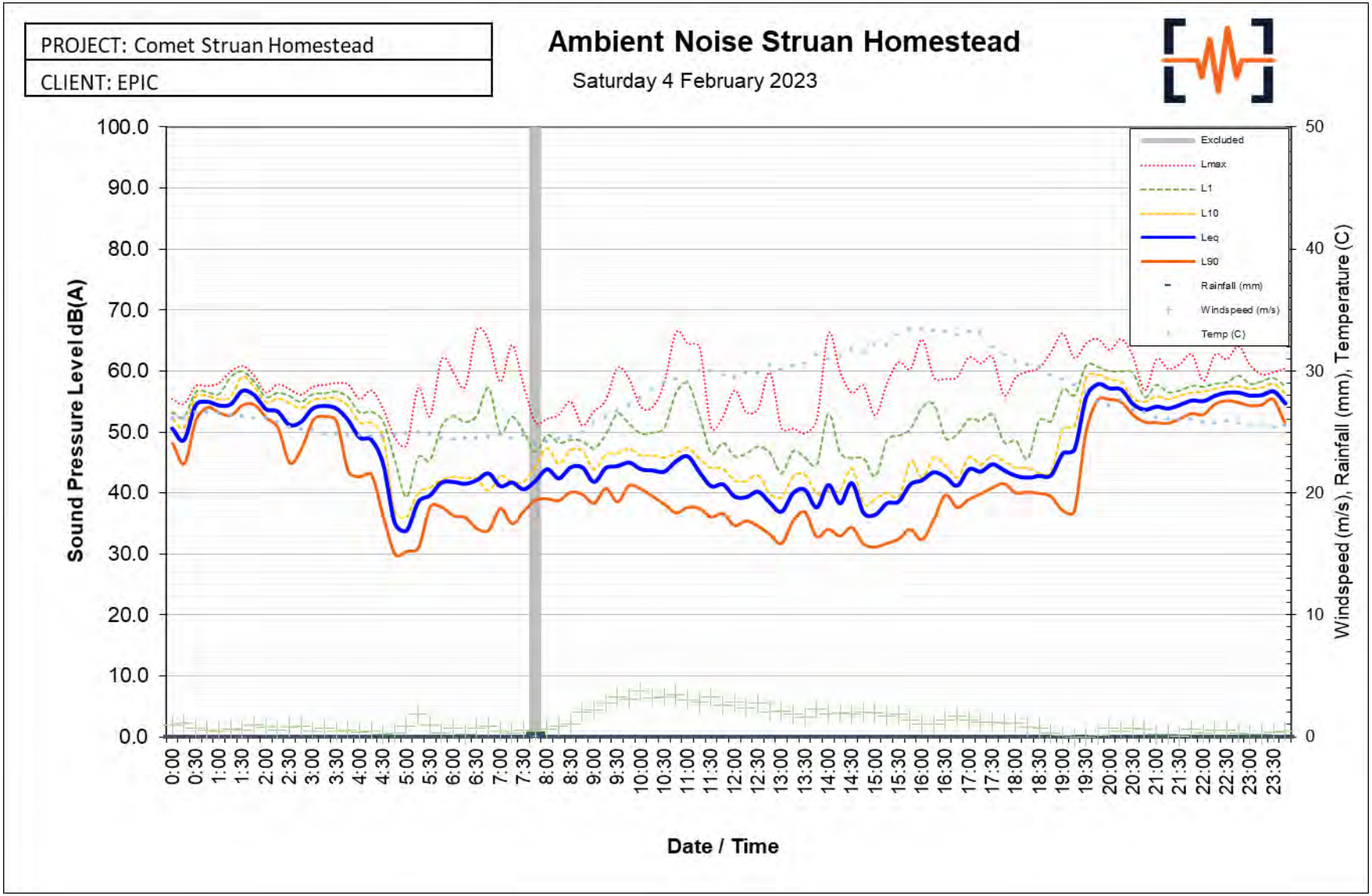

PROJECT: Comet Struan Homestead
CLIENT: EPIC
Ambient Noise Struan Homestead
Monday 30 January 2023
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time
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Rainfall (mm)
Windspeed (m/s)
Temp (C)

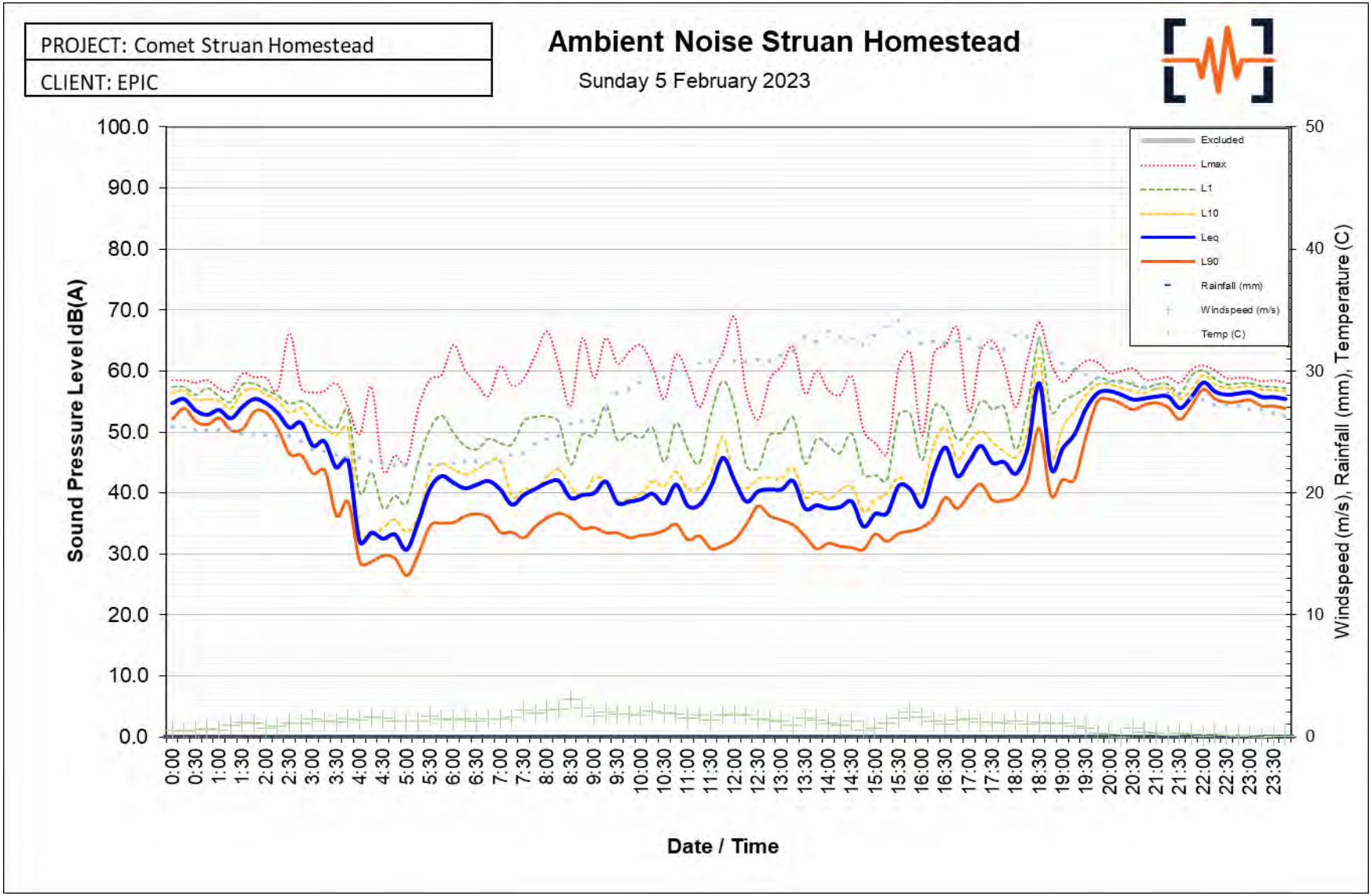

PROJECT: Comet Struan Homestead
CLIENT: EPIC
Ambient Noise Struan Homestead
Tuesday 31 January 2023
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time
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Rainfall (mm)
Windspeed (m/s)
Temp (C)

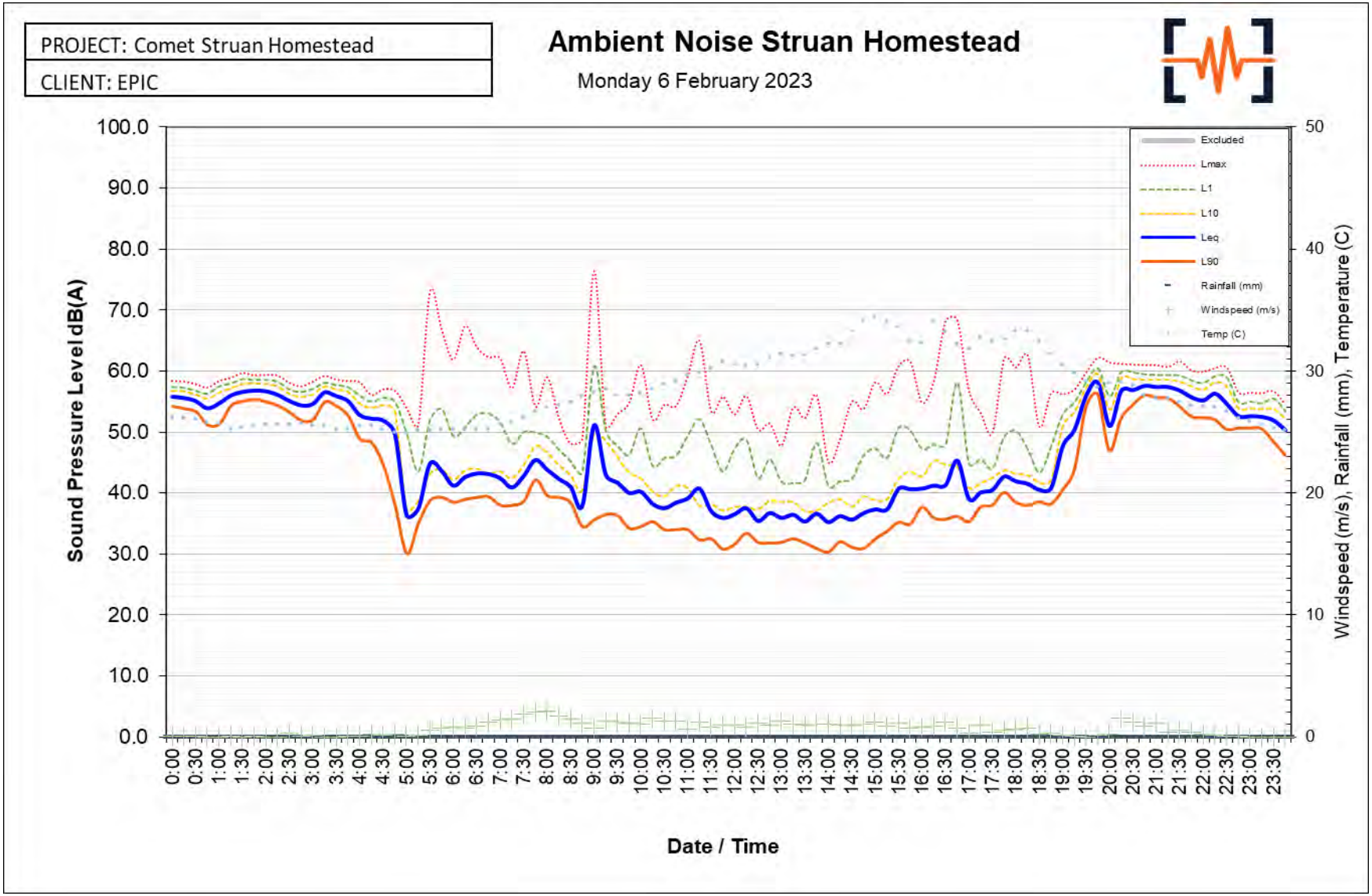

PROJECT: Comet Struan Homestead
CLIENT: EPIC
Ambient Noise Struan Homestead
Wednesday 1 February 2023
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Windspeed (m/s)
Temp (C)
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time

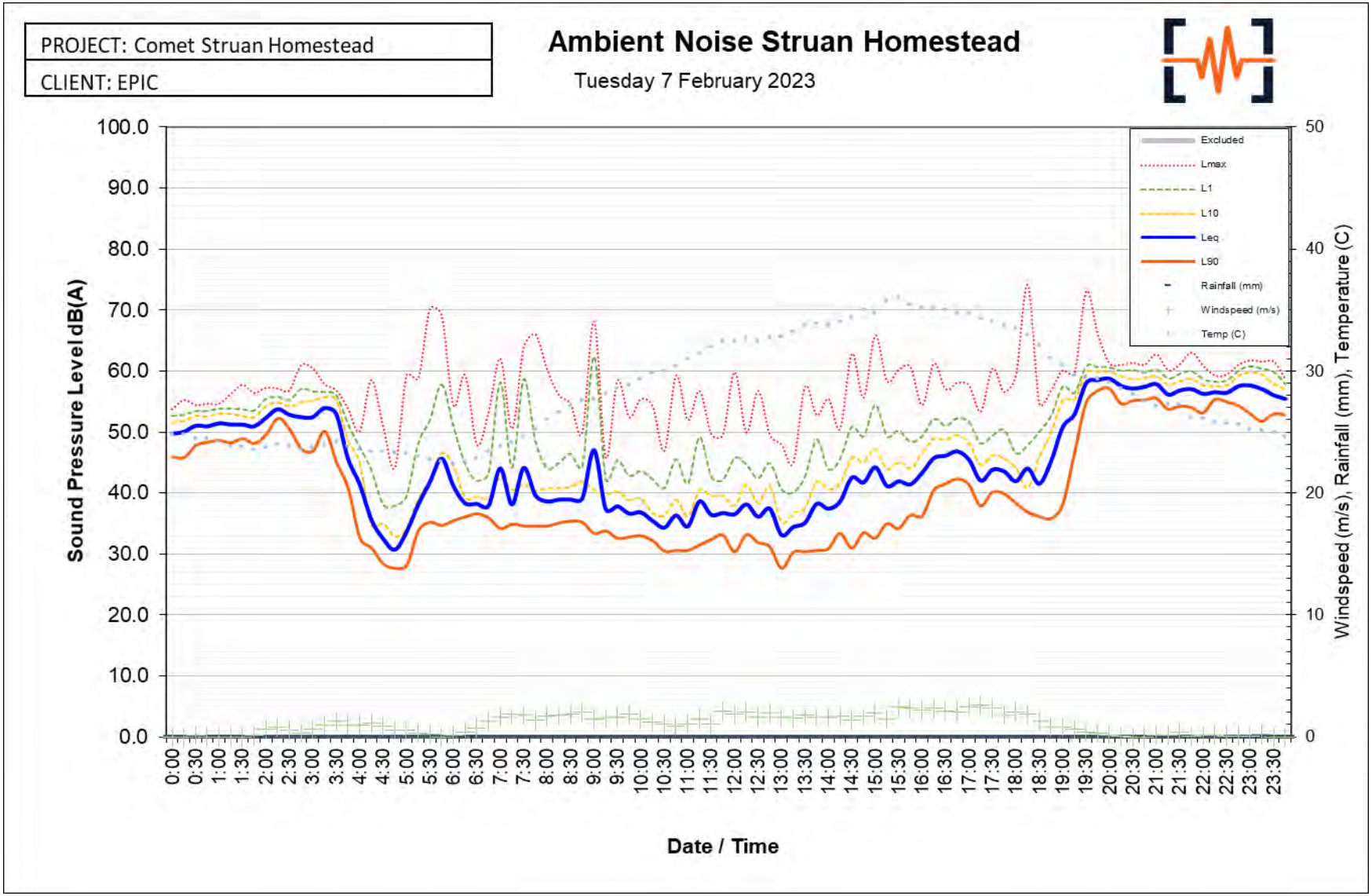

PROJECT: Comet Struan Homestead
CLIENT: EPIC
Ambient Noise Struan Homestead
Thursday 2 February 2023
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Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time
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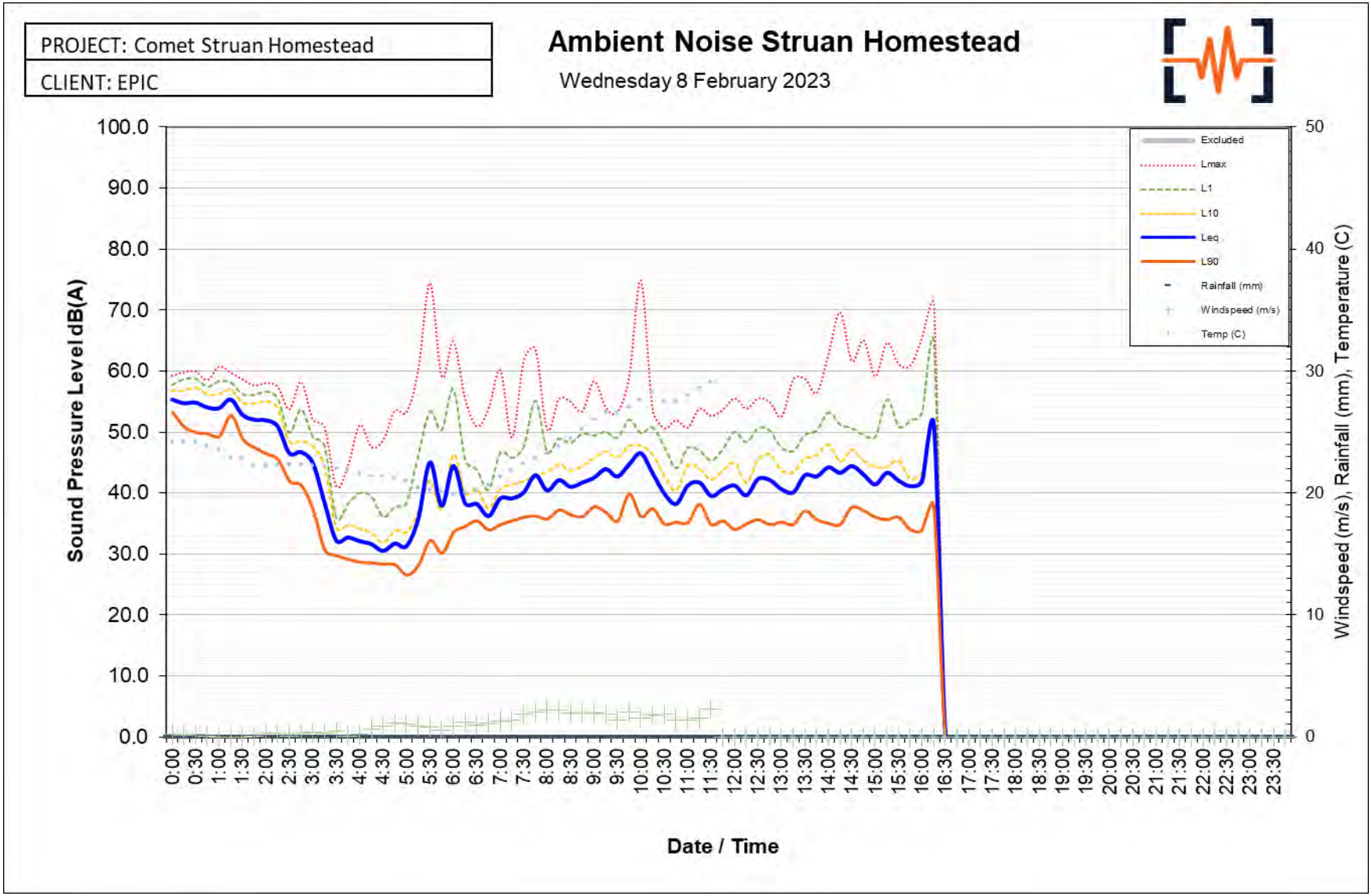

PROJECT: Comet Struan Homestead
CLIENT: EPIC
Ambient Noise Struan Homestead
Friday 3 February 2023
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time
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Rainfall (mm)
Windspeed (m/s)
Temp (C)
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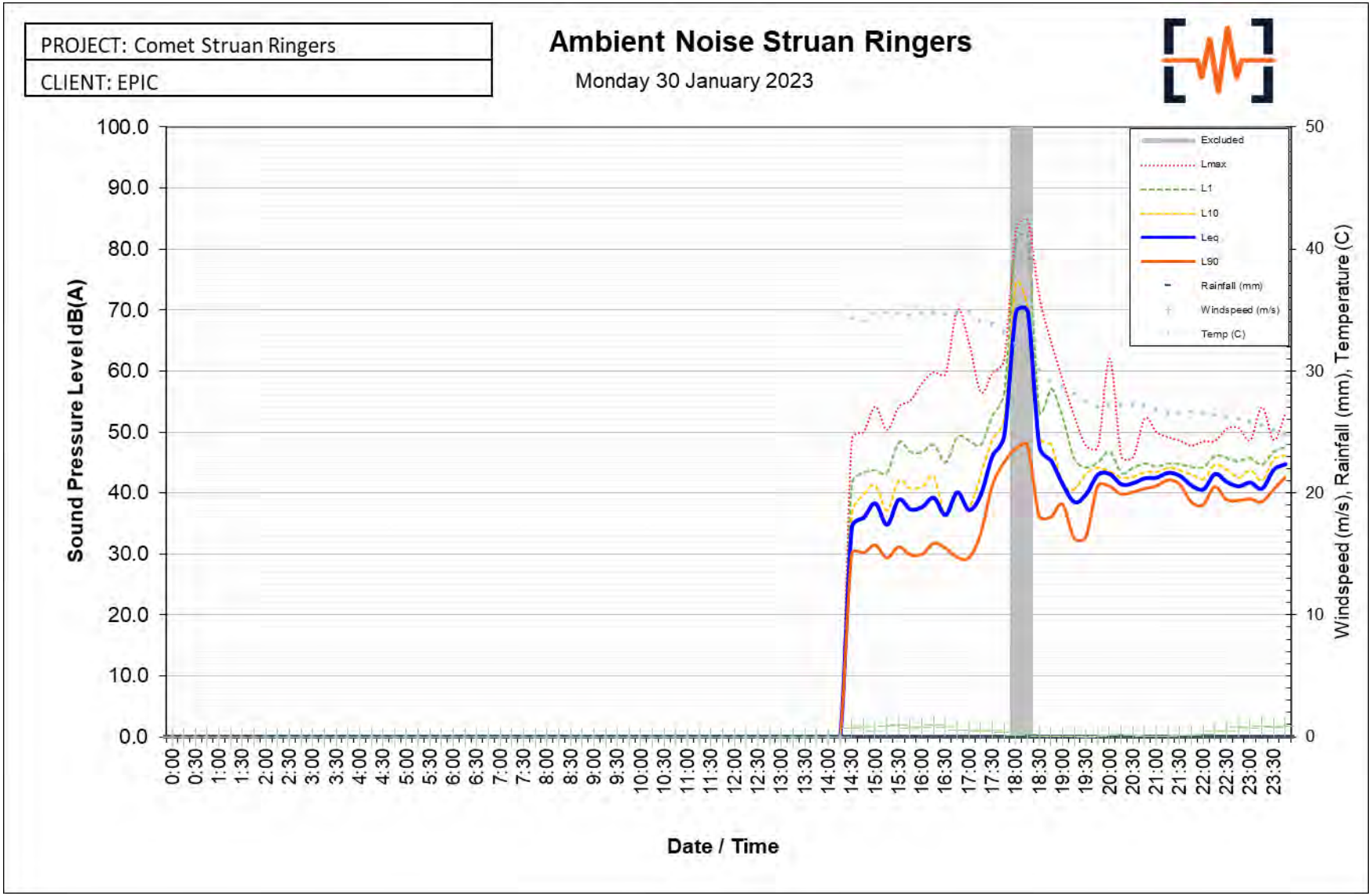

PROJECT: Comet Struan Homestead
CLIENT: EPIC
Ambient Noise Struan Homestead
Saturday 4 February 2023
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Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time
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Rainfall (mm)
Windspeed (m/s)
Temp (C)
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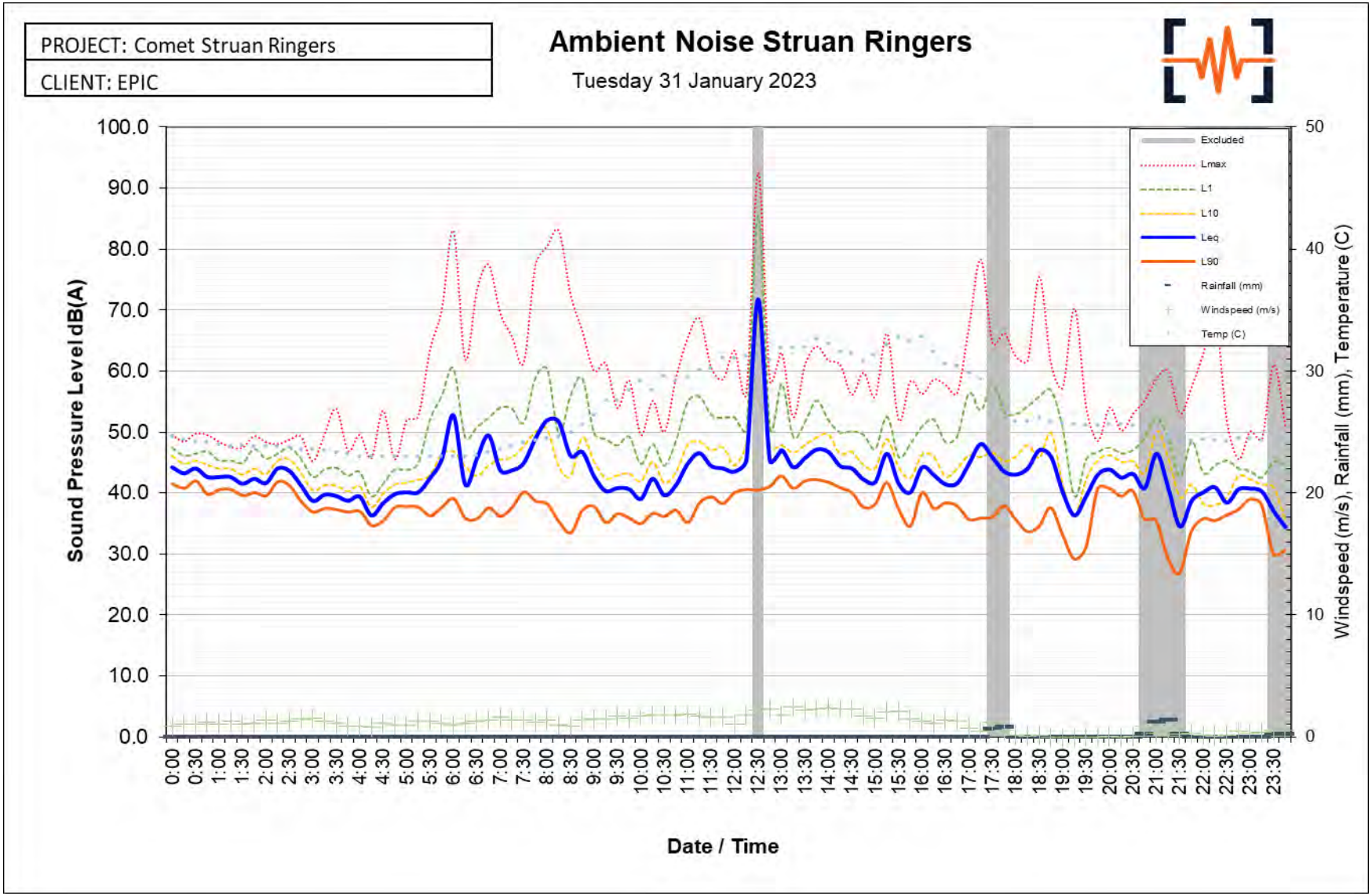

PROJECT: Comet Struan Homestead
CLIENT: EPIC
Ambient Noise Struan Homestead
Sunday 5 February 2023
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Rainfall (mm)
Windspeed (m/s)
Temp (C)
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time

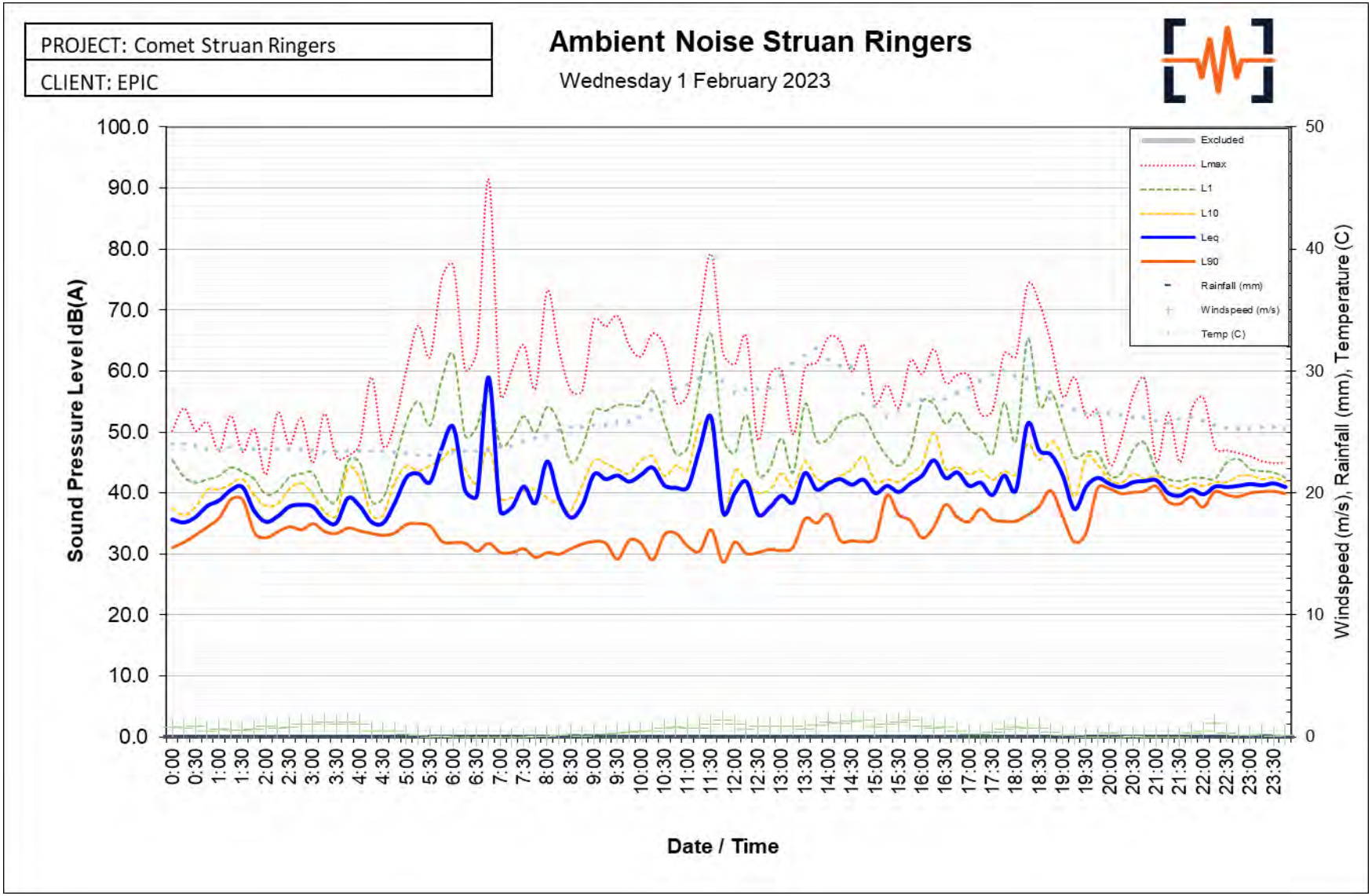

PROJECT: Comet Struan Homestead
CLIENT: EPIC
Ambient Noise Struan Homestead
Monday 6 February 2023
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time
Excluded
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Rainfall (mm)
Windspeed (m/s)
Temp (C)
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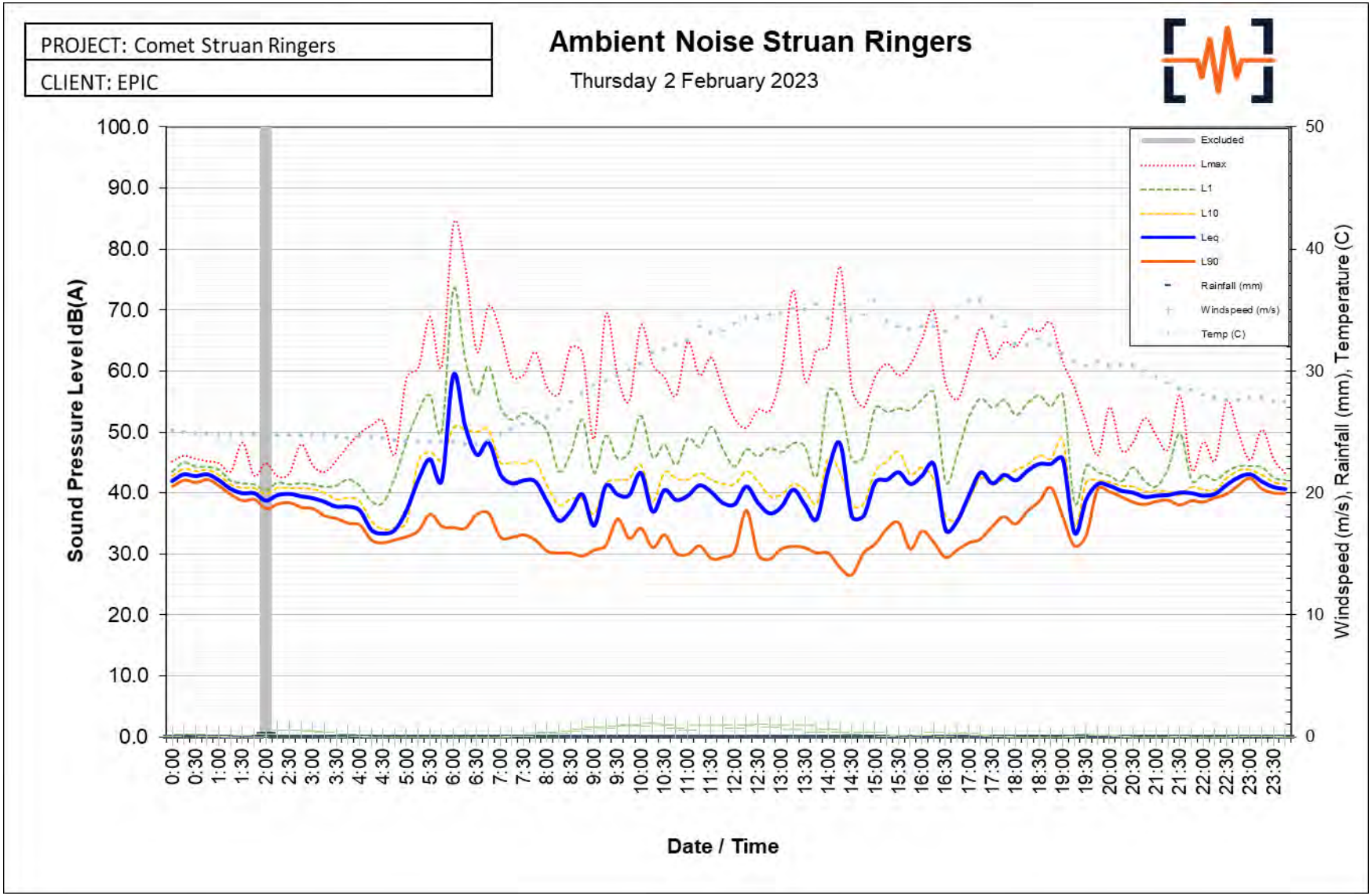

PROJECT: Comet Struan Homestead
CLIENT: EPIC
Ambient Noise Struan Homestead
Tuesday 7 February 2023
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time
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Rainfall (mm)
Windspeed (m/s)
Temp (C)

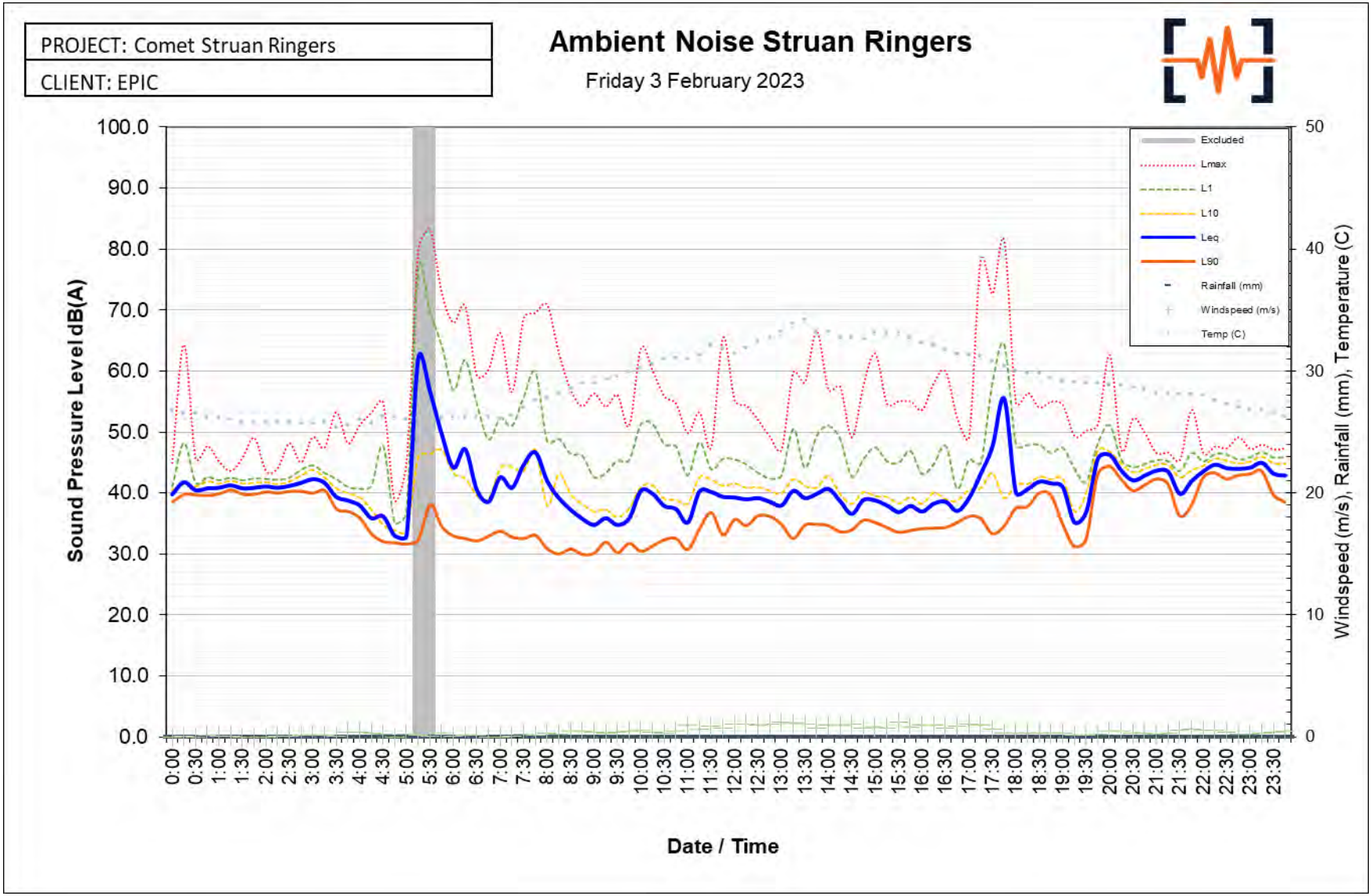

PROJECT: Comet Struan Homestead
CLIENT: EPIC
Ambient Noise Struan Homestead
Wednesday 8 February 2023
Excluded
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Windspeed (m/s)
Temp (C)
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time

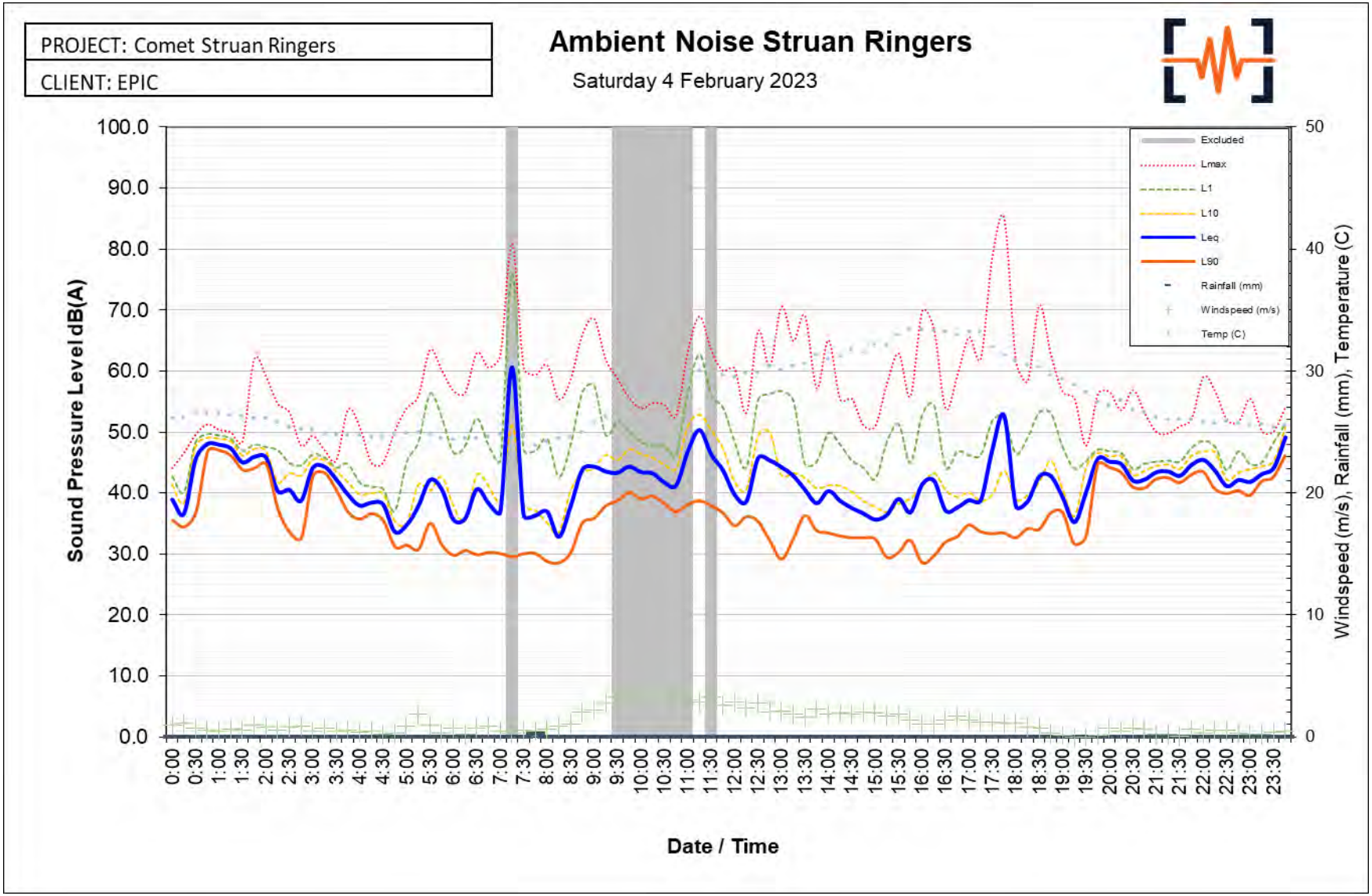

PROJECT: Comet Struan Ringers
CLIENT: EPIC
Ambient Noise Struan Ringers
Monday 30 January 2023
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time
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Rainfall (mm)
Windspeed (m/s)
Temp (C)

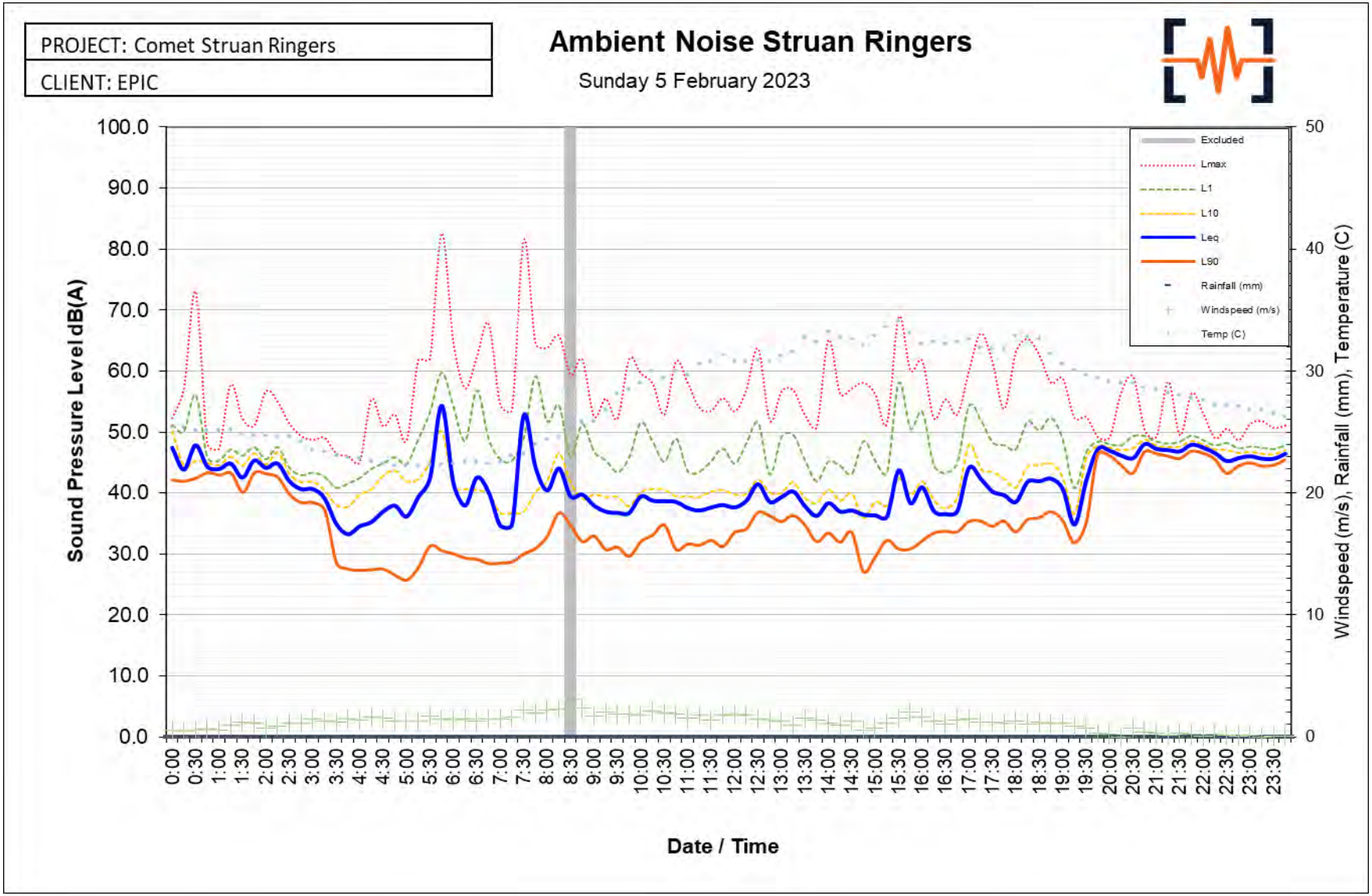

PROJECT: Comet Struan Ringers
CLIENT: EPIC
Ambient Noise Struan Ringers
Tuesday 31 January 2023
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time
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Rainfall (mm)
Windspeed (m/s)
Temp (C)

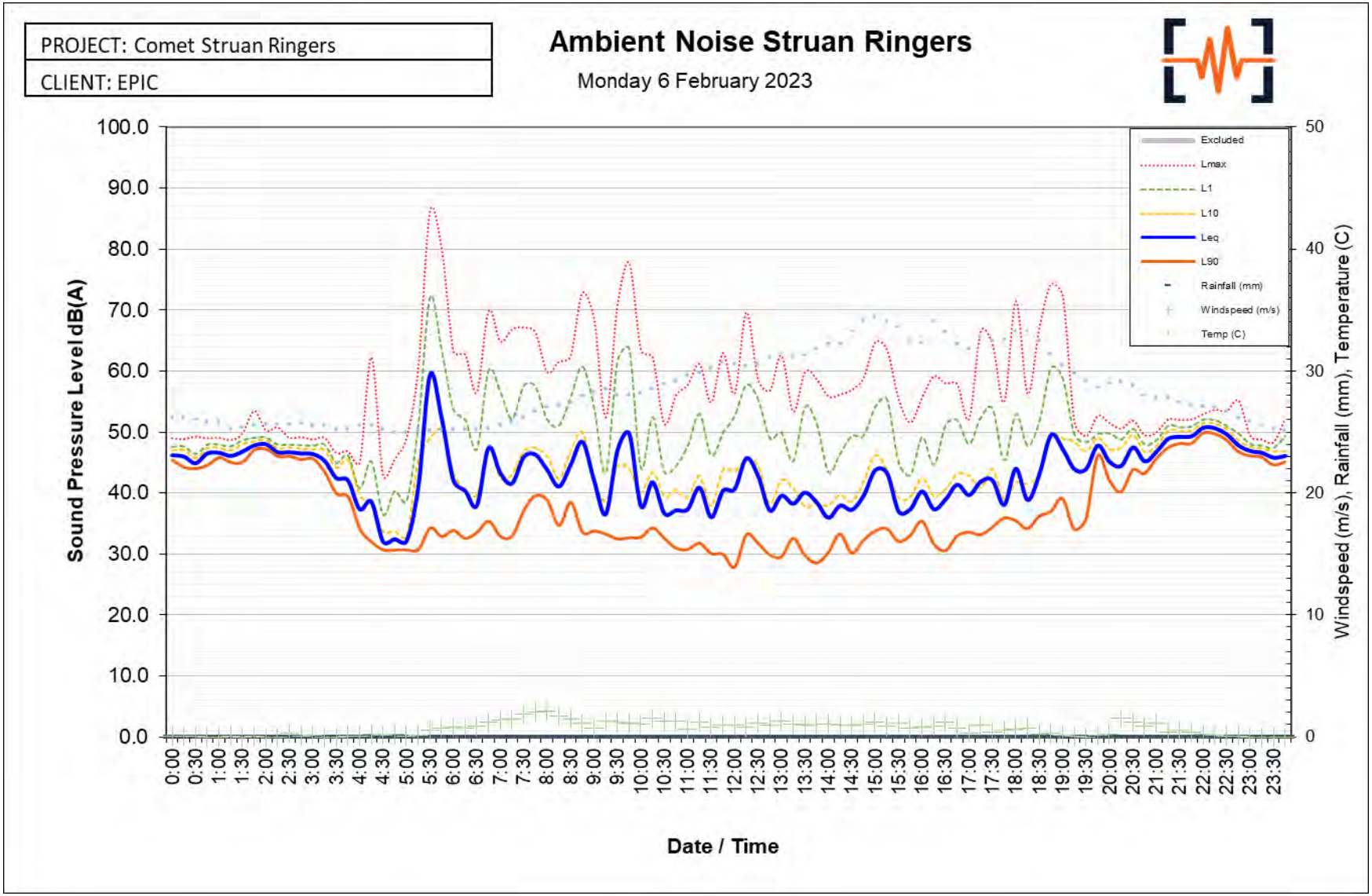

PROJECT: Comet Struan Ringers
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Ambient Noise Struan Ringers
Wednesday 1 February 2023
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Rainfall (mm)
Windspeed (m/s)
Temp (C)
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time

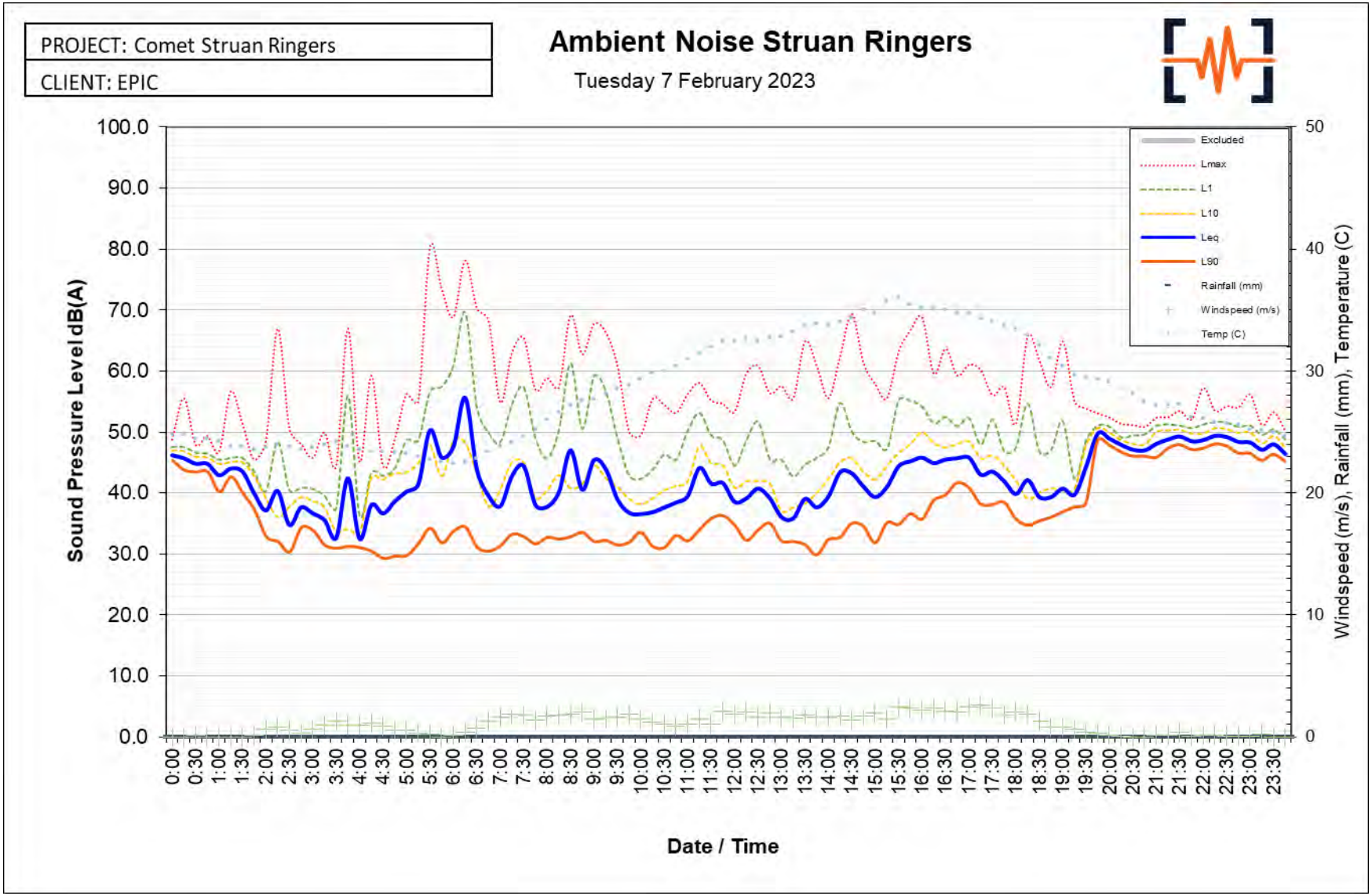

PROJECT: Comet Struan Ringers
CLIENT: EPIC
Ambient Noise Struan Ringers
Thursday 2 February 2023
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time
Excluded
Lmax
L1
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Rainfall (mm)
Windspeed (m/s)
Temp (C)
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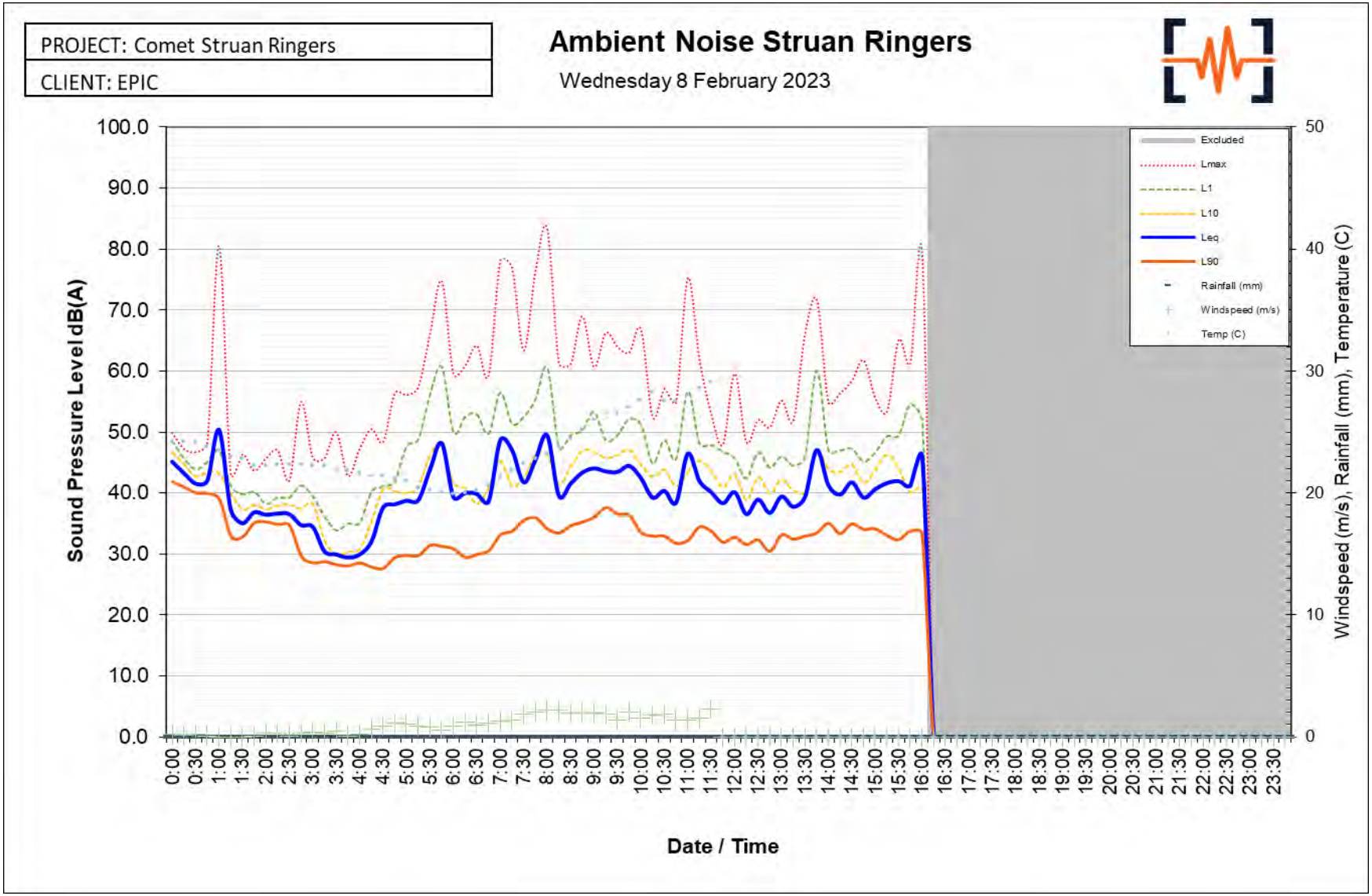

PROJECT: Comet Struan Ringers
CLIENT: EPIC
Ambient Noise Struan Ringers
Friday 3 February 2023
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time
Excluded
Lmax
L1
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Leq
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Rainfall (mm)
Windspeed (m/s)
Temp (C)
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90.0
80.0
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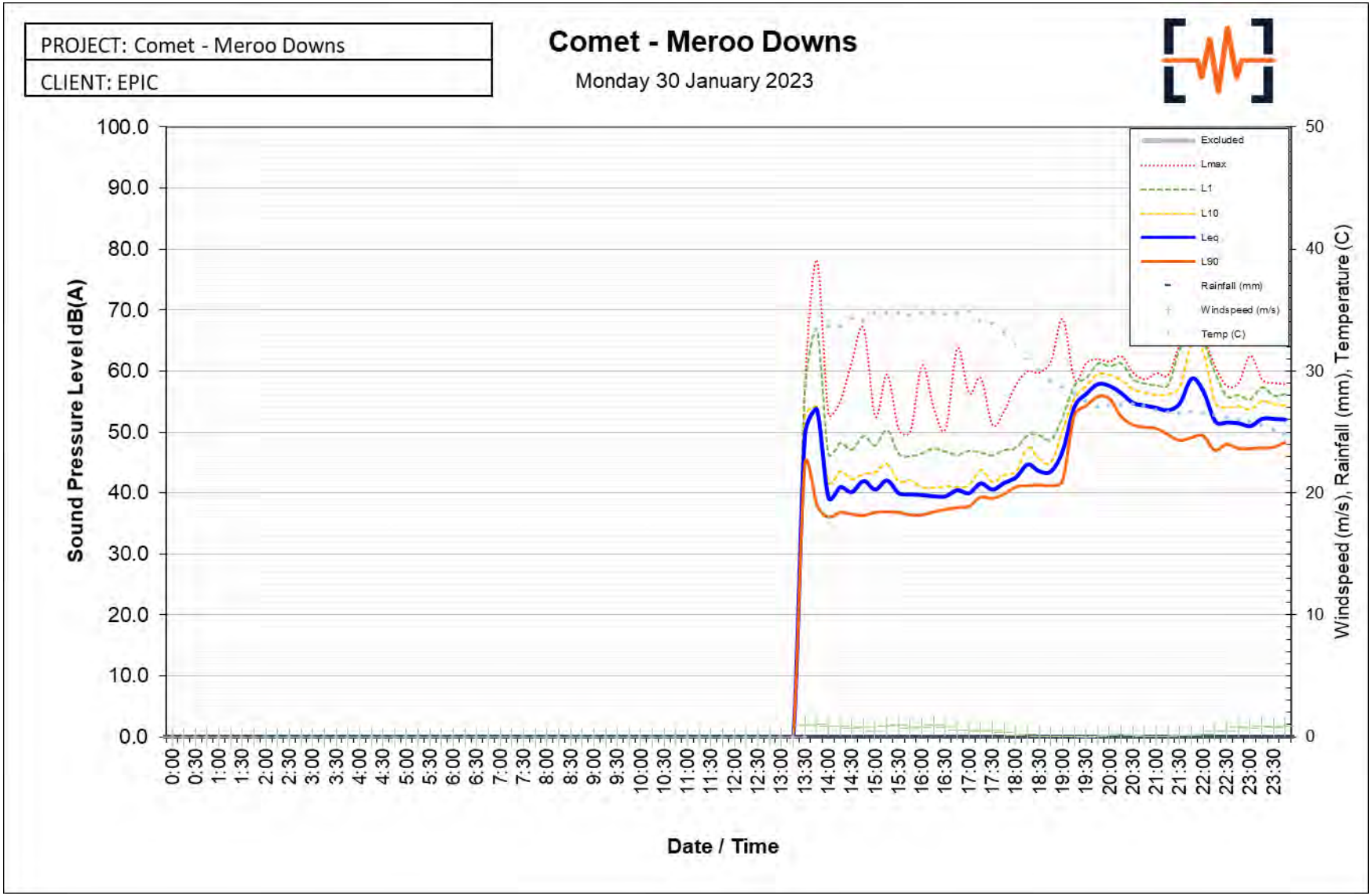

PROJECT: Comet Struan Ringers
CLIENT: EPIC
Ambient Noise Struan Ringers
Saturday 4 February 2023
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time
Excluded
Lmax
L1
L10
Leq
L90
Rainfall (mm)
Windspeed (m/s)
Temp (C)

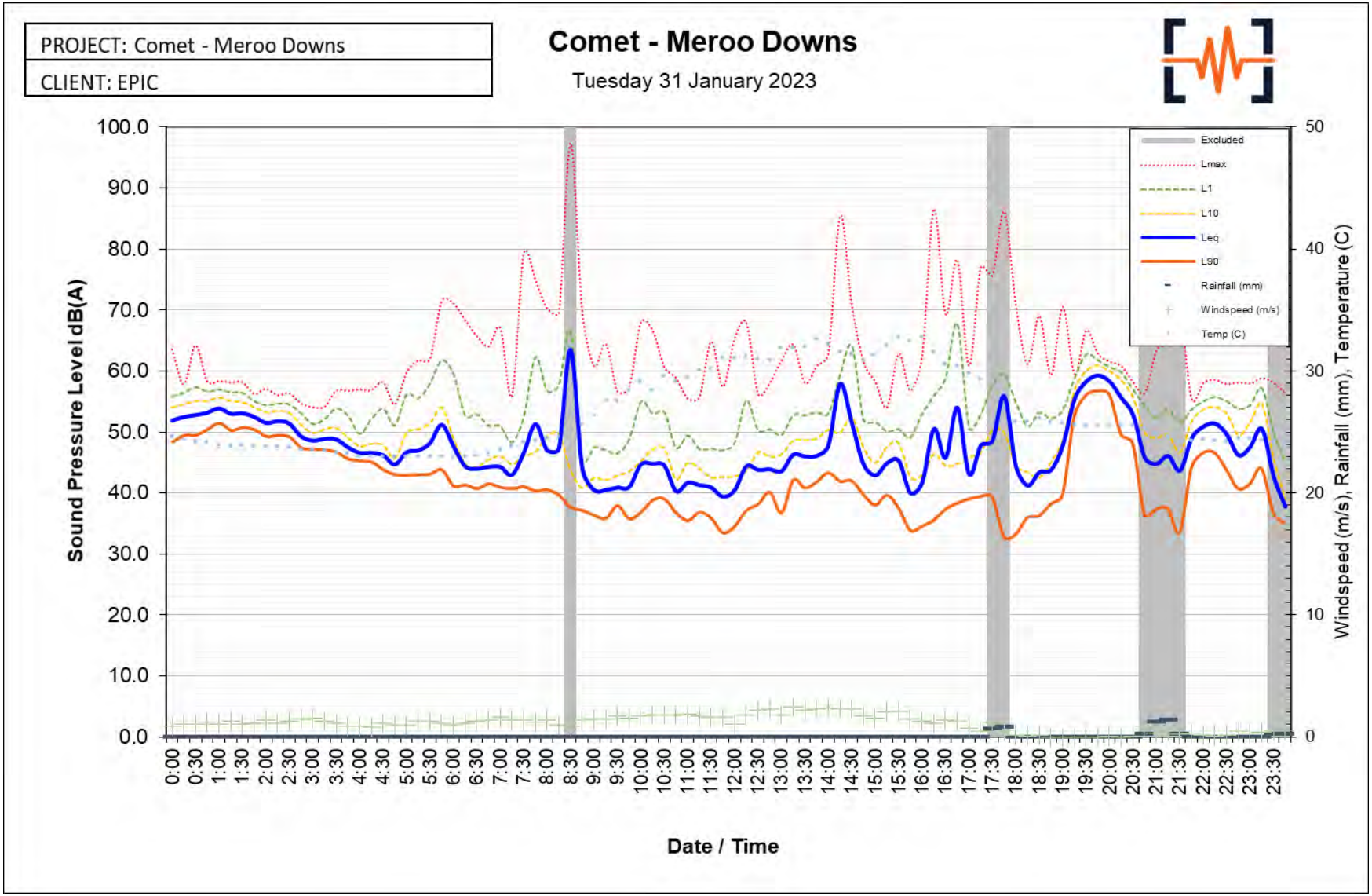

PROJECT: Comet Struan Ringers
CLIENT: EPIC
Ambient Noise Struan Ringers
Sunday 5 February 2023
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time
Excluded
Lmax
L1
L10
Leq
L90
Rainfall (mm)
Windspeed (m/s)
Temp (C)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
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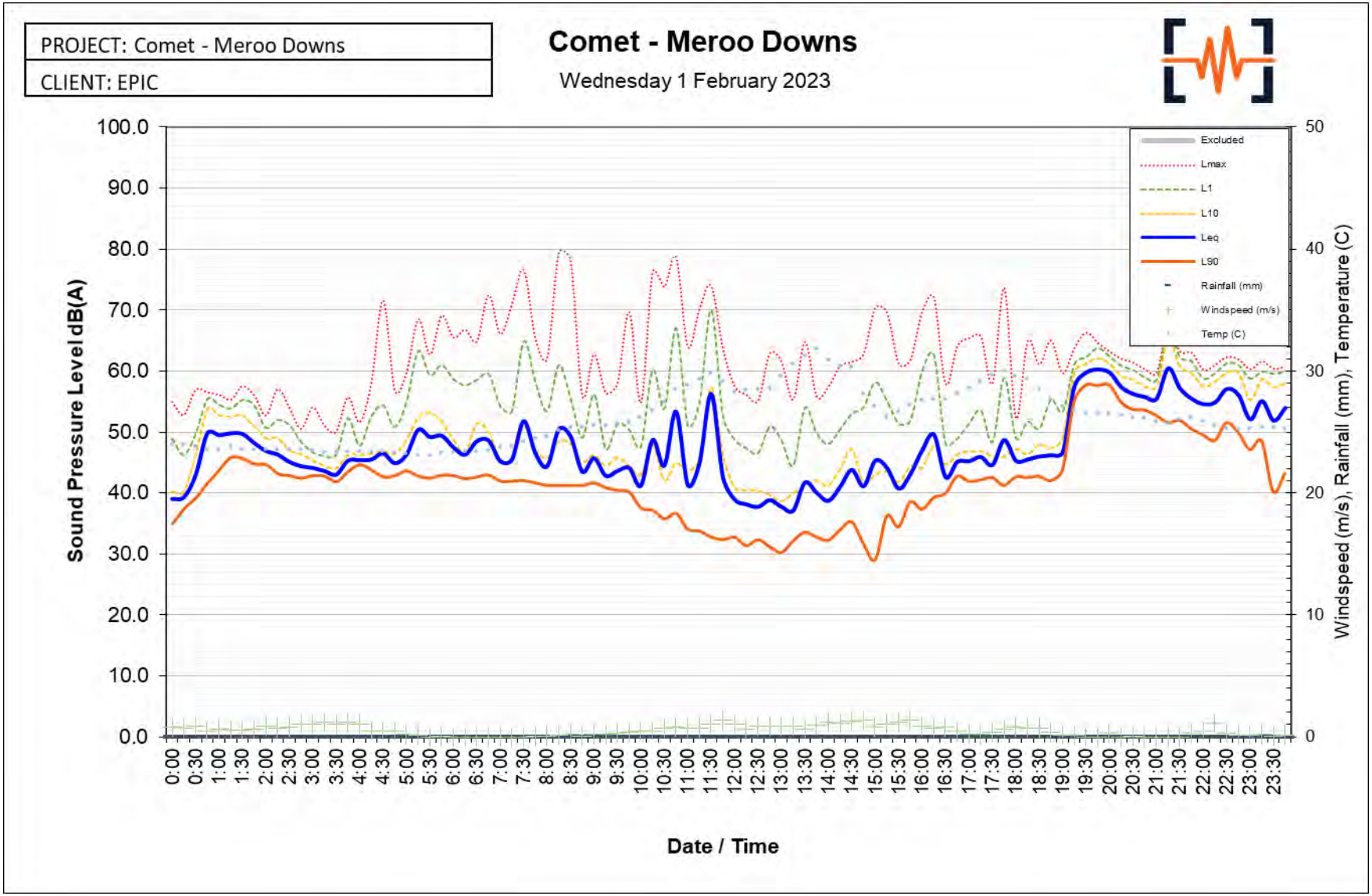

PROJECT: Comet Struan Ringers
CLIENT: EPIC
Ambient Noise Struan Ringers
Monday 6 February 2023
Excluded
Lmax
L1
L10
Leq
L90
Rainfall (mm)
Windspeed (m/s)
Temp (C)
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time

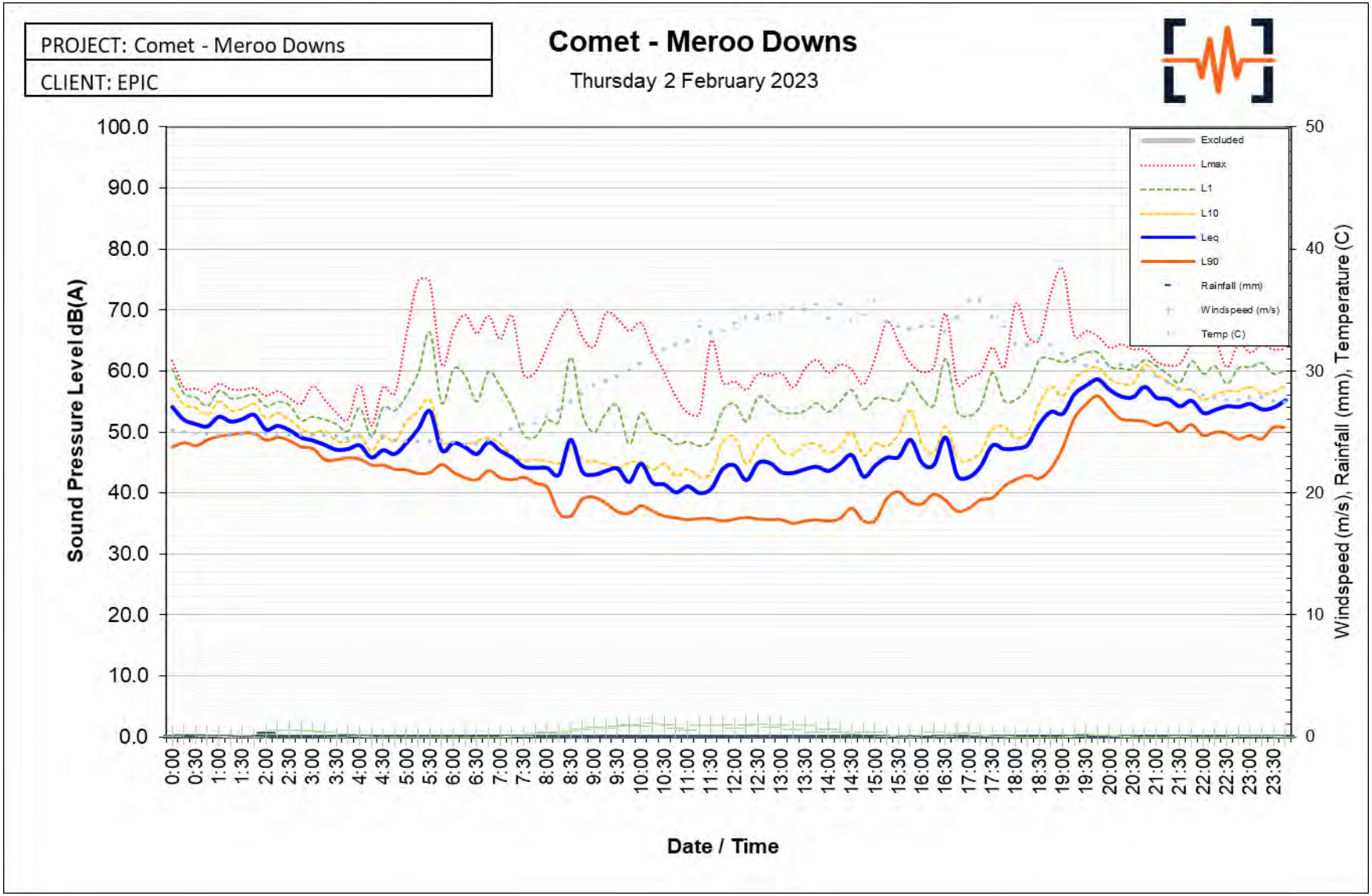

PROJECT: Comet Struan Ringers
CLIENT: EPIC
Ambient Noise Struan Ringers
Tuesday 7 February 2023
Excluded
Lmax
L1
L10
Leq
L90
Rainfall (mm)
Windspeed (m/s)
Temp (C)
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time

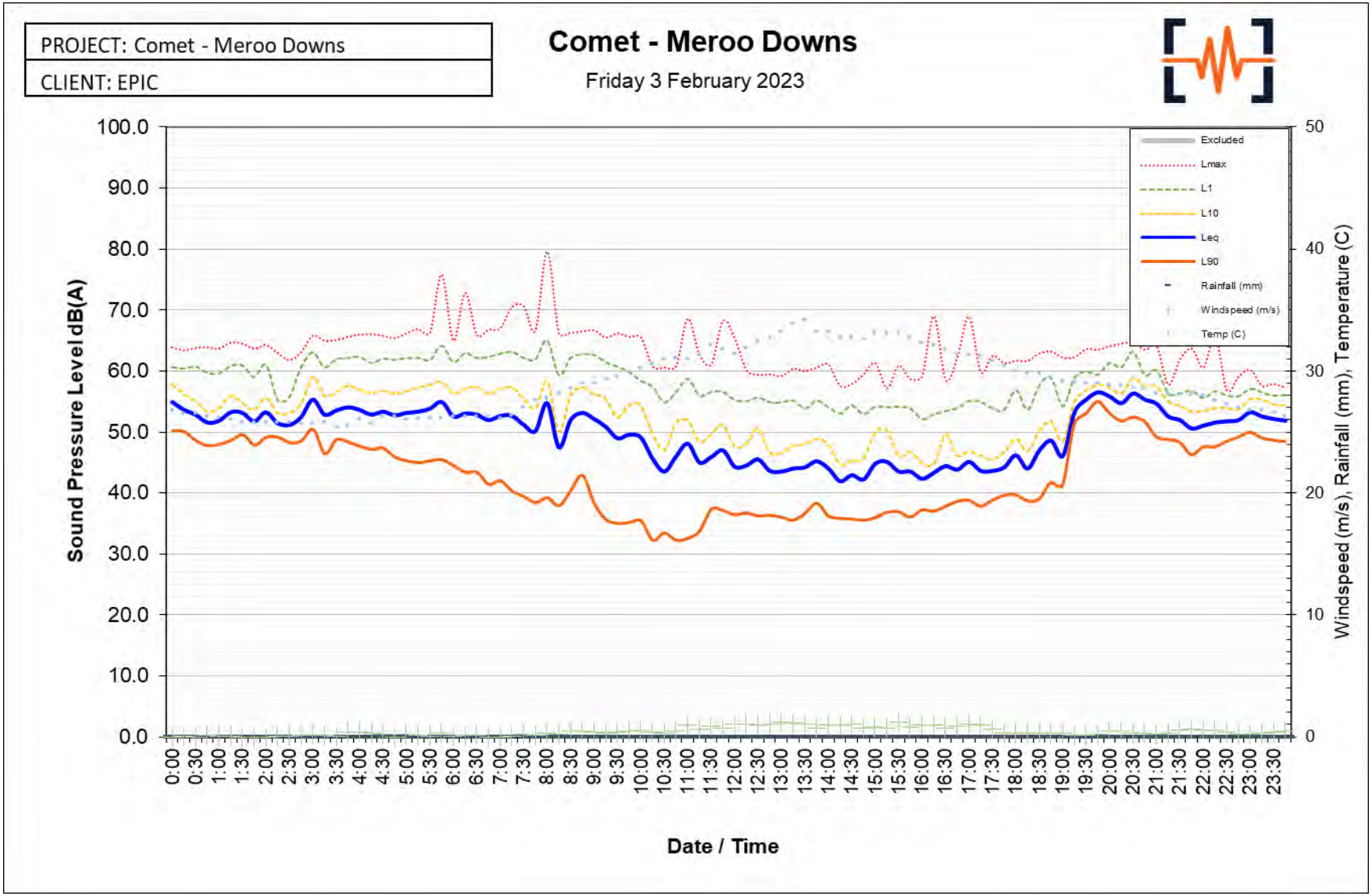

PROJECT: Comet Struan Ringers
CLIENT: EPIC
Ambient Noise Struan Ringers
Wednesday 8 February 2023
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time
Excluded
Lmax
L1
L10
Leq
L90
Rainfall (mm)
Windspeed (m/s)
Temp (C)

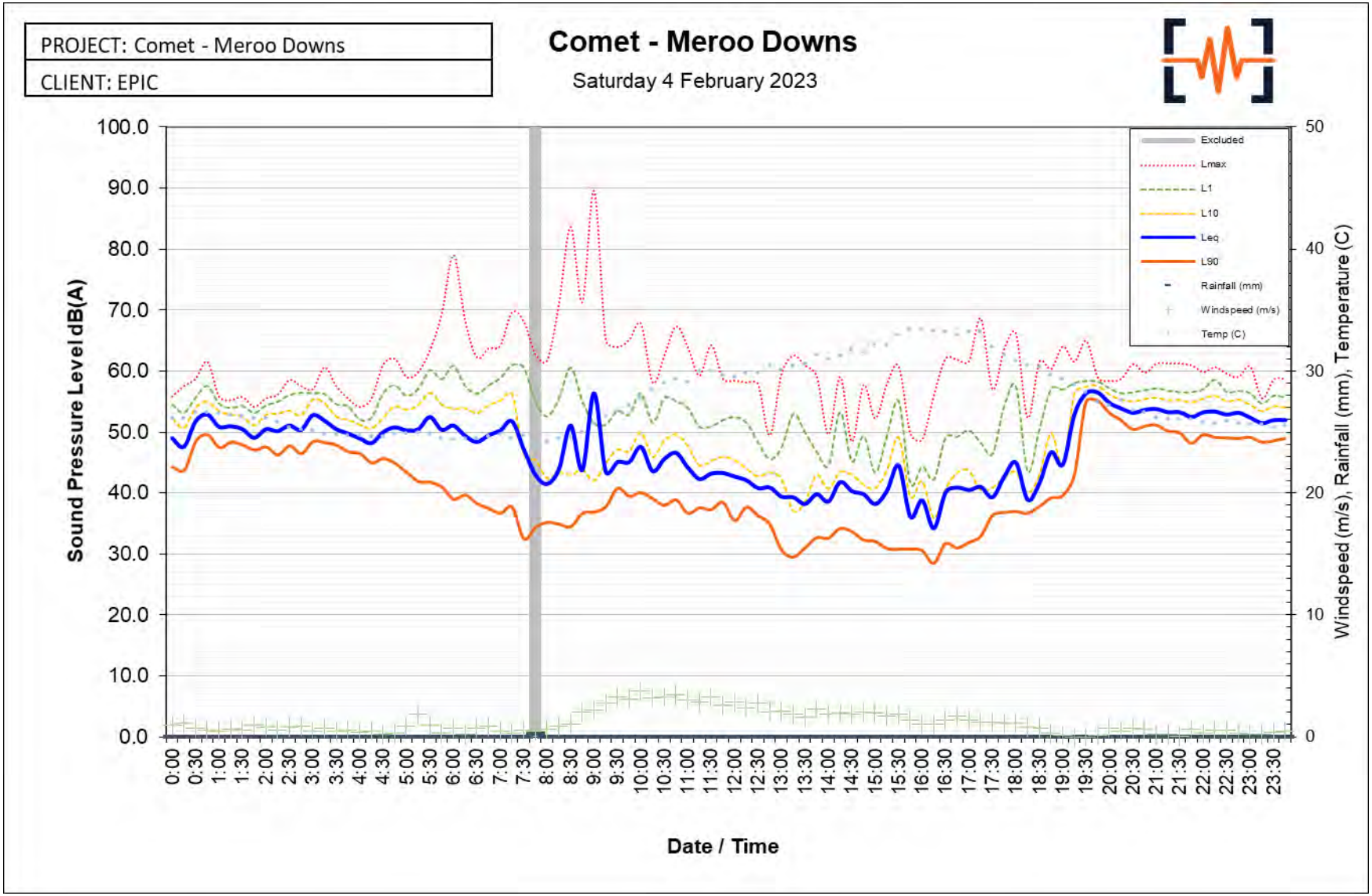

PROJECT: Comet - Meroo Downs
CLIENT: EPIC
Comet - Meroo Downs
Monday 30 January 2023
Excluded
Lmax
L1
L10
Leq
L90
Rainfall (mm)
Windspeed (m/s)
Temp (C)
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time

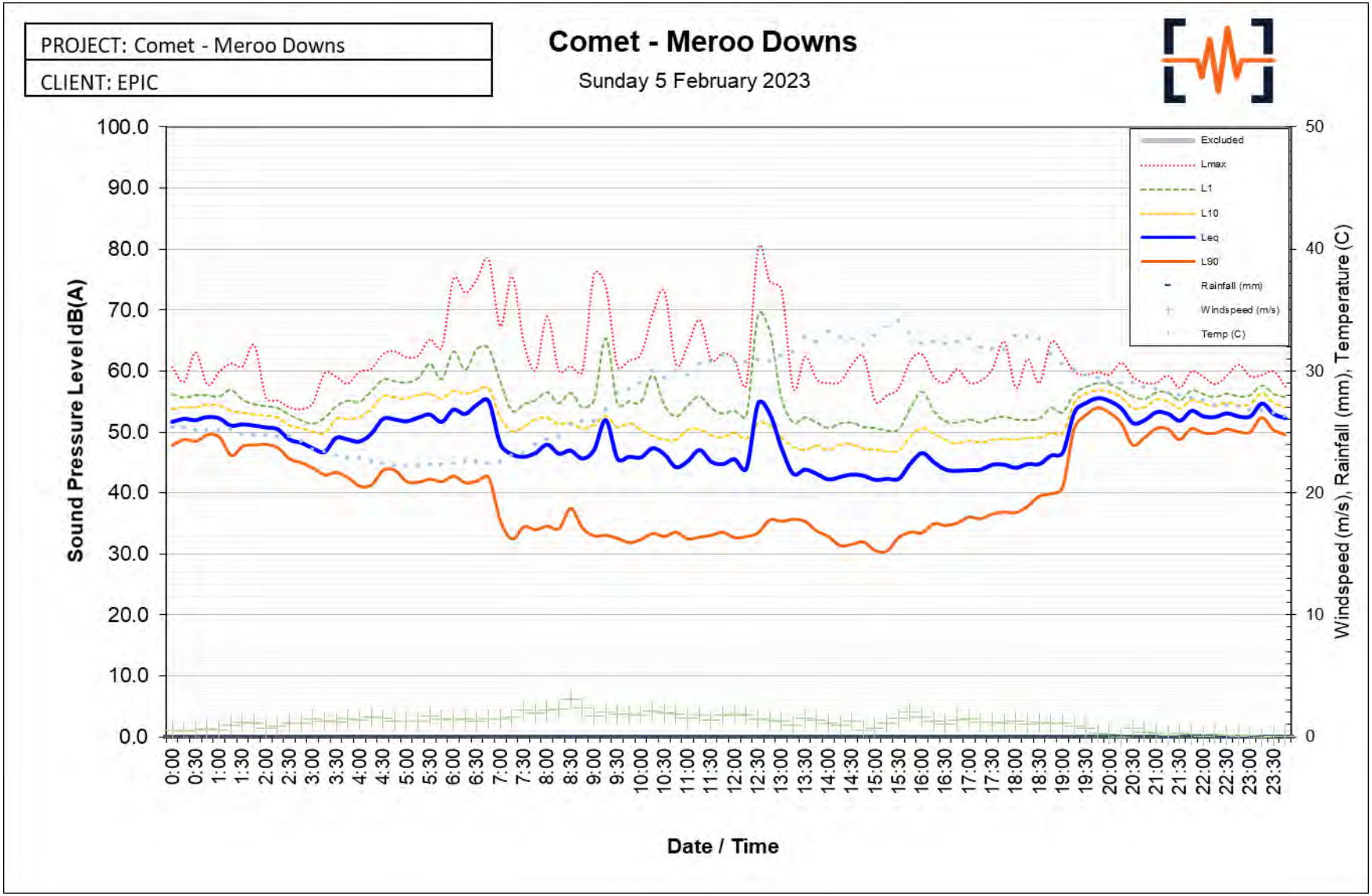

PROJECT: Comet - Meroo Downs
CLIENT: EPIC
Comet - Meroo Downs
Tuesday 31 January 2023
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time
Excluded
Lmax
L1
L10
Leq
L90
Rainfall (mm)
Windspeed (m/s)
Temp (C)
100.0
90.0
80.0
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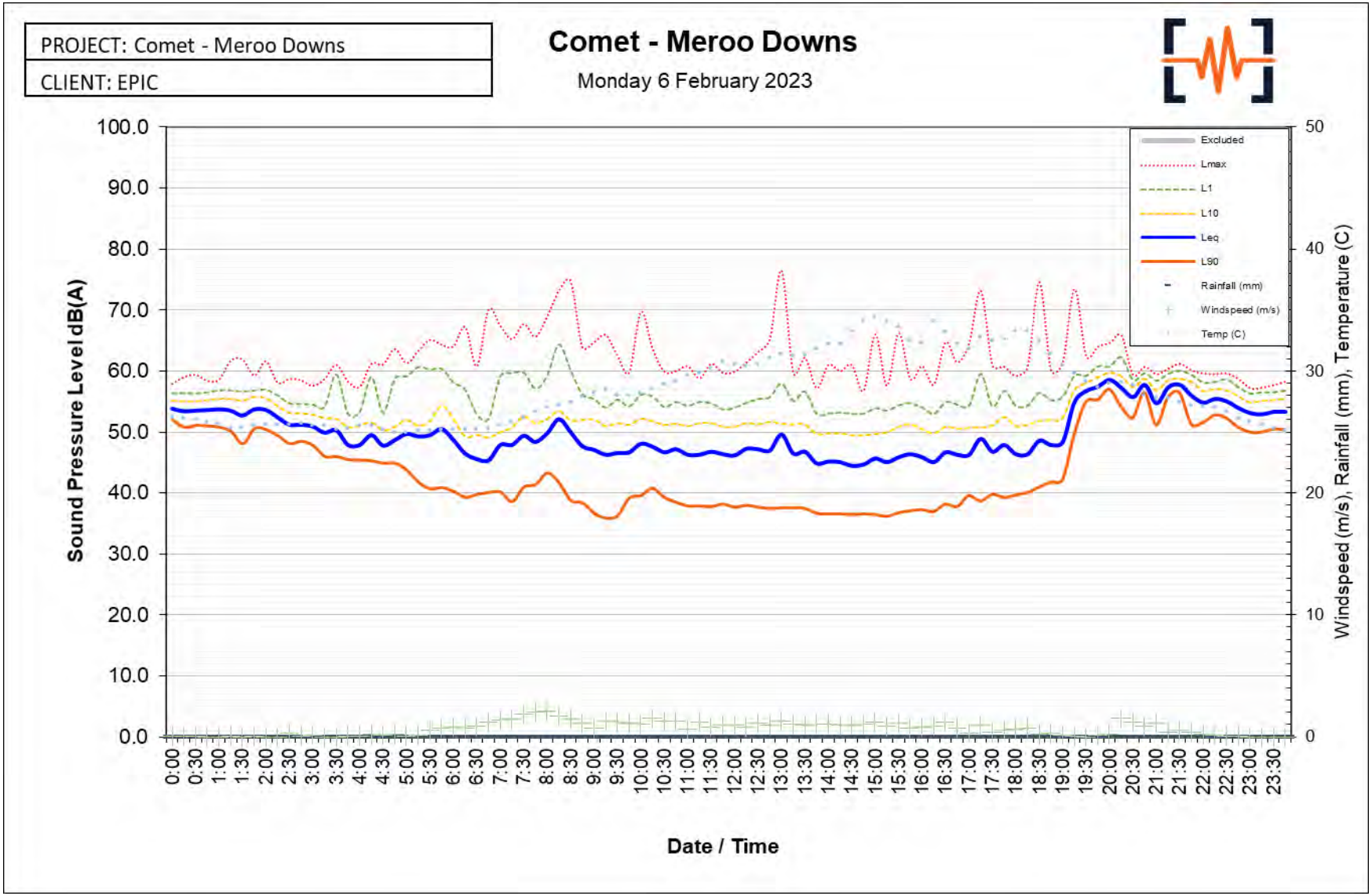

PROJECT: Comet - Meroo Downs
CLIENT: EPIC
Comet - Meroo Downs
Wednesday 1 February 2023
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time
Excluded
Lmax
L1
L10
Leq
L90
Rainfall (mm)
Windspeed (m/s)
Temp (C)
100.0
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80.0
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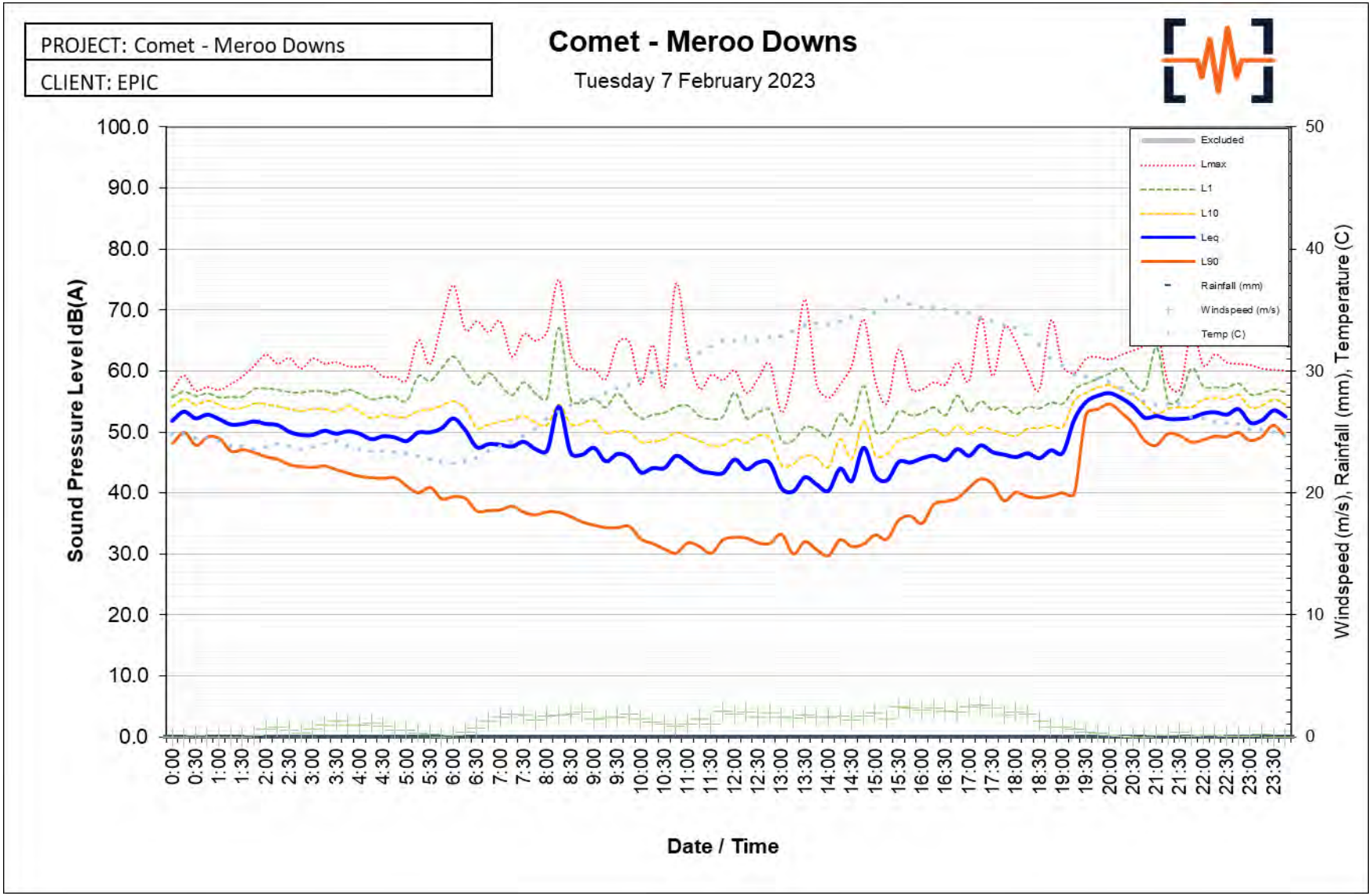

PROJECT: Comet - Meroo Downs
CLIENT: EPIC
Comet - Meroo Downs
Thursday 2 February 2023
Excluded
Lmax
L1
L10
Leq
L90
Rainfall (mm)
Windspeed (m/s)
Temp (C)
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time

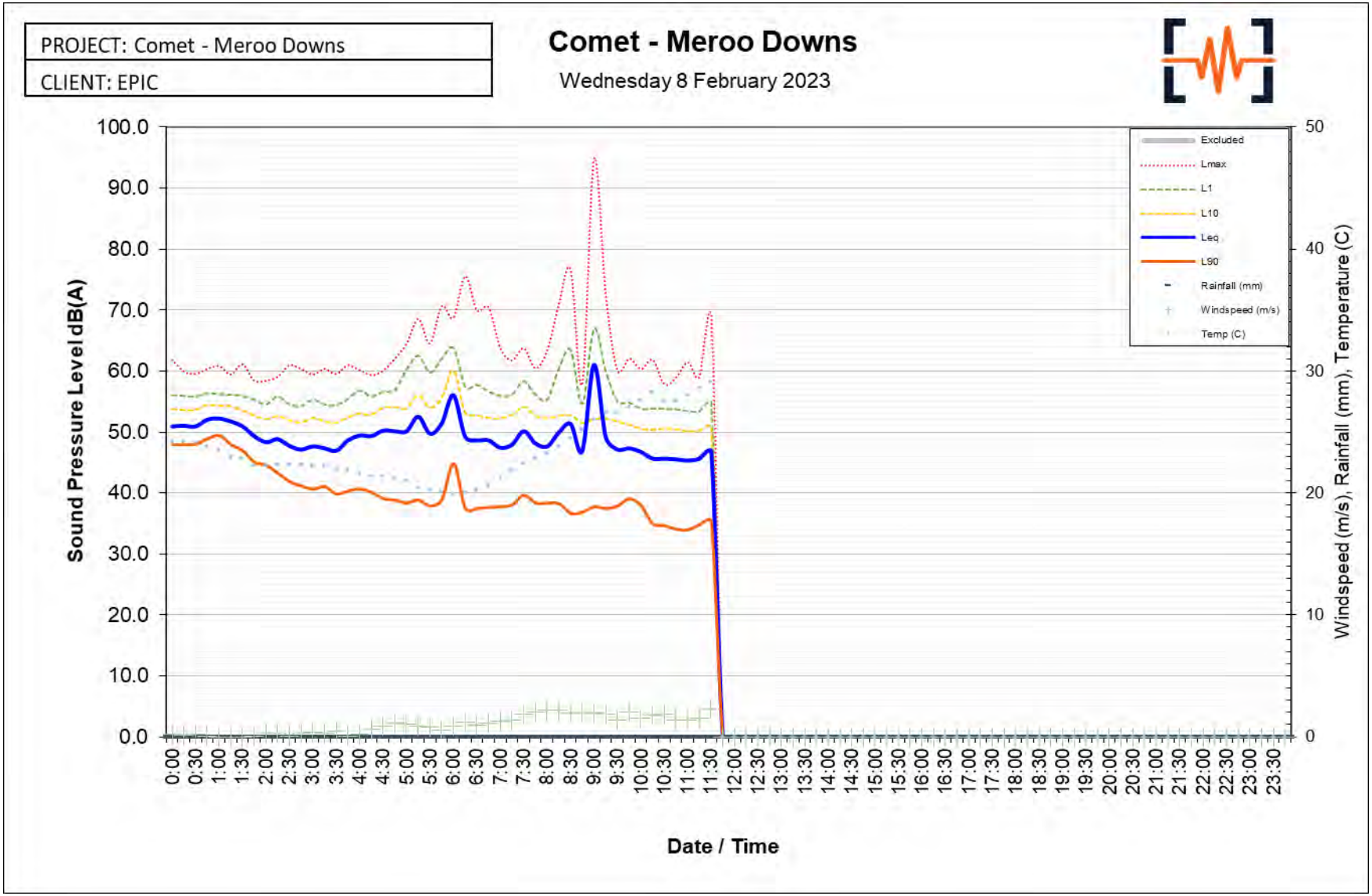

PROJECT: Comet - Meroo Downs
CLIENT: EPIC
Comet - Meroo Downs
Friday 3 February 2023
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time
Excluded
Lmax
L1
L10
Leq
L90
Rainfall (mm)
Windspeed (m/s)
Temp (C)
100.0
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PROJECT: Comet - Meroo Downs
CLIENT: EPIC
Comet - Meroo Downs
Saturday 4 February 2023
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time
Excluded
Lmax
L1
L10
Leq
L90
Rainfall (mm)
Windspeed (m/s)
Temp (C)
100.0
90.0
80.0
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PROJECT: Comet - Meroo Downs
CLIENT: EPIC
Comet - Meroo Downs
Sunday 5 February 2023
Excluded
Lmax
L1
L10
Leq
L90
Rainfall (mm)
Windspeed (m/s)
Temp (C)
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time


PROJECT: Comet - Meroo Downs
CLIENT: EPIC
Comet - Meroo Downs
Monday 6 February 2023
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time
Excluded
Lmax
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Leq
L90
Rainfall (mm)
Windspeed (m/s)
Temp (C)
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PROJECT: Comet - Meroo Downs
CLIENT: EPIC
Comet - Meroo Downs
Tuesday 7 February 2023
Excluded
Lmax
L1
L10
Leq
L90
Rainfall (mm)
Windspeed (m/s)
Temp (C)
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time


PROJECT: Comet - Meroo Downs
CLIENT: EPIC
Comet - Meroo Downs
Wednesday 8 February 2023
Excluded
Lmax
L1
L10
Leq
L90
Rainfall (mm)
Windspeed (m/s)
Temp (C)
Sound Pressure Level dB(A)
Windspeed (m/s), Rainfall (mm), Temperature (C)
Date / Time