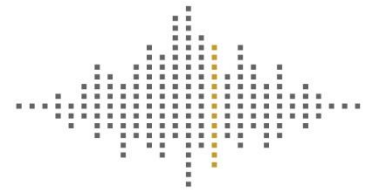


SHARPS REDMORE

ACOUSTIC CONSULTANTS ▪ Established 1990



Report 1

BURMAR-SHR-V2-XX-RP-Y-0002

BREEAM Pol 05 Criteria

Bury Market & Flexi Hall

Prepared by

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Project No 2120732

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Revision Register

Revision	Date	Author	Description of changes
R1	31.01.21	AJN	First issue
R1B	04.02.22	AJN	BIM codes included

This report has been prepared with all reasonable skill, care and diligence commensurate with an acoustic consultancy practice under the terms and brief agreed with our client at that time. Sharps Redmore provides no duty or responsibility whatsoever to any third party who relies upon its content, recommendations or conclusions.

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1.0 Executive Summary

- 1.1 This report presents proposed noise criteria for external building services plant to achieve the standards described by BREEAM Pol 05 for the Bury Market and Flexi Hall development.
- 1.2 One credit is available for achieving the standards required by BREEAM which specifies that fixed plant must not exceed 5 dB below the measured background sound level at the nearest noise-sensitive receptors.
- 1.3 Acoustic surveys were carried out by Sharps Redmore between the 13th and 18th January 2022 to determine the background sound level at the nearest noise-sensitive locations.
- 1.4 A summary of the survey results and the proposed criteria are presented in Table 1.1 below.

Table 1.1 Proposed Pol 05 Criteria

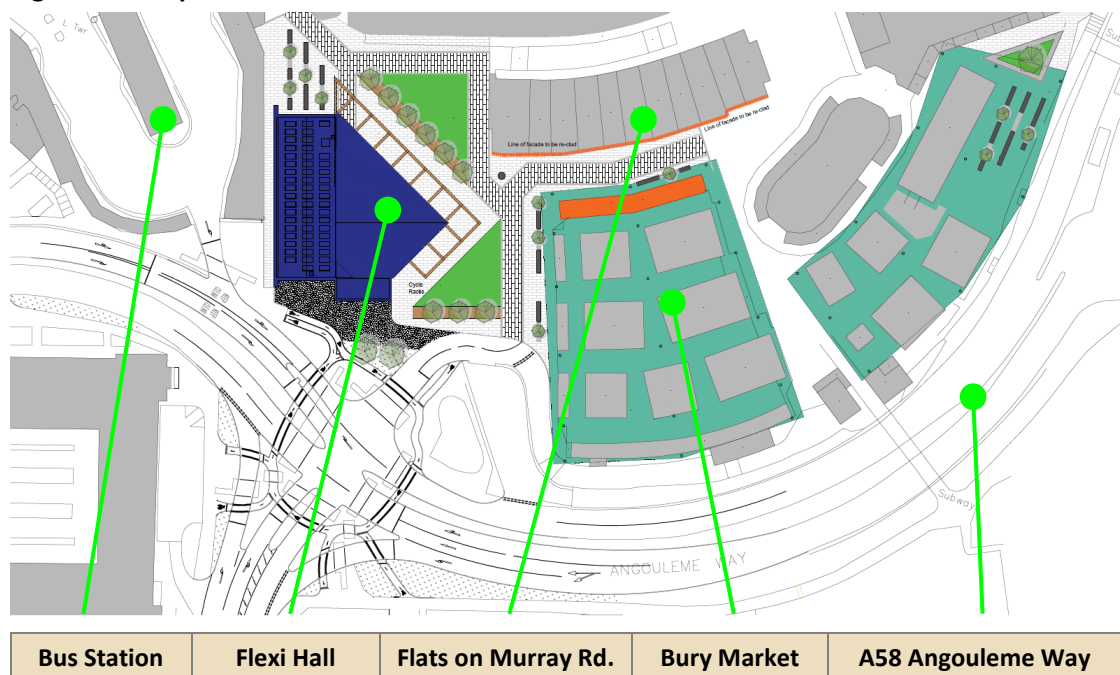
Noise-sensitive receptor	Period	Measured background sound level, L_{A90} (dB)	Pol 05 plant noise criteria, $L_{Ar,Tr}$ (dB)
Dwellings above shops on Murray Road	Day (0700 – 1900)	53	48
	Evening (1900 – 2300)	48	43
	Night (2300 – 0700)	38	33

- 1.5 The project is at an early stage of development and as such plant details are currently unknown. A full assessment of proposed plant will be undertaken in due course.
- 1.6 BREEAM require that acoustic assessments are carried out by a suitably qualified acoustician, or 'SQA'. This report has been prepared by Andrew Newell who has nine years' experience as an acoustic consultant, holds a Post-Graduate Diploma in Acoustics and Noise Control and is a corporate member of the Institute of Acoustics (MIOA). The author therefore meets BREEAM prerequisites for an SQA. Further details can be provided if required.

2.0 Introduction

- 2.1 Sharps Redmore (SR) has been appointed to provide acoustic advice regarding the Bury Market and Flexi Hall development with a view to achieving sustainability credits in accordance with the British Research Establishment Environmental Assessment Method (BREEAM) 2018.
- 2.2 A single credit is being targeted for meeting the standards specified by Pol 05 *Reduction of noise pollution*.
- 2.3 The development comprises the redevelopment of Bury Market, involving demolition of some existing buildings and roof canopies, and the construction of a new flexible hall space. The Flexi Hall building will also include offices, meetings rooms and hospitality facilities.
- 2.4 The site is situated in the centre of the market town of Bury amongst the existing market north of the A58 *Angouleme Way*. The Bus Station is located directly to the west of the proposed site. Existing buildings, including the Market Office will be demolished to make way for the Flexi Hall building. The land use is mixed predominantly with retail /commercial, leisure and some residential.
- 2.5 The closest residential noise-sensitive premises are flats situated above shops on Murray Road, with the closest flat within around 20 metres of the Flexi Hall building.

Figure 2.1 Proposed site and noise-sensitive residences



3.0 Acoustic Standards and Guidance

BREEAM Pol 05 *Reduction of noise pollution*

3.1 The aim of Pol 05 is to reduce the likelihood of noise from fixed installations at the new development affecting nearby noise-sensitive buildings. Typical noise-sensitive receptors include:

- Residential areas
- Hospitals, health centres, care homes, doctor's surgeries etc.
- Schools, colleges and other teaching establishments
- Libraries
- Places of worship
- Wildlife areas, historic landscapes, parks and gardens
- Located in an Area of Outstanding Natural Beauty, or near a Site of Special Scientific Interest
- Any other development that could be considered noise-sensitive

3.2 One credit is available where:

1 There are no noise-sensitive areas within the building or within 800m radius of the assessed site.

OR

2 Where there are noise-sensitive areas within the assessed building or noise-sensitive areas within 800m radius of the assessed site, a noise impact assessment compliant with BS 4142:2014¹ is commissioned. Noise levels must be determined for:

2.a Existing background noise levels:

2.a.i At the nearest or most exposed noise-sensitive development to the proposed assessed site

2.a.ii Including existing plant on a building, where the assessed development is an extension to the building

2.b Noise rating level from the assessed building.

3 The noise impact assessment must be carried out by a suitably qualified acoustic consultant.

4 The noise level from the assessed building, as measured in the locality of the nearest or most exposed noise-sensitive development, must be at least 5 dB lower than the background noise throughout the day and night.

5 If the noise sources from the assessed building are greater than the levels described in criterion 4, measures have been installed to attenuate the noise at its source to a level where it will comply with the criterion.

3.3 Compliance can typically be demonstrated through the use of acousticians' calculations as measurement is not possible at the design stage.

¹ BS EN ISO 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*

Suitably Qualified Acoustician (SQA)

- 3.4 BREEAM states that a Suitably Qualified Acoustician is:

An individual who holds a recognised acoustic qualification and membership of an appropriate professional body. The primary professional body for acousticians in the UK is the Institute of Acoustics.

- 3.5 Andrew Newell (the author of this report) holds a BSc (Hons) in Music Technology and Audio Systems and the Institute of Acoustics Diploma in Acoustics and Noise Control awarded in 2012. He is a full corporate Member of the Institute of Acoustics (MIOA) with nine years' experience as an acoustic consultant, with previous experience delivering acoustic advice for a number of BREEAM projects.

BS 4142:2014 Methods for rating and assessing industrial and commercial sound

- 3.6 BS 4142:2014 describes the usual method for rating and assessing sound of industrial and/or commercial nature according, in summary, to the following process:

1. Determine the background sound level, in terms of L_{A90} , at the receptor locations of interest.
2. Determine the specific sound level of the source being assessed, in terms of $L_{Aeq,T}$. The reference period T is typically 1 hour during the daytime period or 15 minutes during the night-time.
3. Apply an acoustic feature correction if the source sound has tonal, impulsive, intermittent, or other characteristic which attracts attention to determine the rating level.
4. Compare the rating level with the background noise level; the greater the difference between the two, the higher the likelihood of complaints of the noise.
5. A difference (rating level minus the background sound level) of around +10 dB is likely to be an indication of significant adverse impact depending on context; a difference of +5 dB is likely to be an indication of adverse impact, depending on context. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending upon context.

- 3.7 The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound exceeds the background sound level and the context in which it is placed. There are several contextual considerations when assessing the impact of sound including the following:

- The absolute level of sound;
- The character and level of the specific sound compared to the existing noise climate;
- The sensitivity of the receptors;
- The time and duration that the specific sound occurs;
- The conclusions of assessments undertaken using alternative assessment methods, for example WHO guideline noise values or change in noise level;

- The ability to mitigate the specific sound through various methods, for example by screening, the selection of quiet plant equipment, the use of attenuators, through the imposition of noise management plans and good practice, façade design and layout/orientation;
- The form and scale and scale of a development. For example, does the proposed development involve a new industrial/commercial premises or is the proposal the installation of new plant or an extension to an existing premises?

3.8 It is therefore entirely possible that whilst the numerical outcome of a BS 4142 assessment is indicative of adverse or even significant adverse impact, when the proposal is considered in context the significance of the impact is reduced to an acceptable level.

4.0 Acoustic Survey

- 4.1 Sharps Redmore carried out an environmental survey to determine the current acoustic climate at the site and at nearby noise-sensitive locations. The results of the survey will be used to identify appropriate criteria for the BREEAM Pol 05 assessment.
- 4.2 The survey was undertaken between the 13th and 18th January 2022 such that sufficient data was obtained to represent the daytime and night-time periods, weekdays and weekends, and days which were or were not market days.
- 4.3 A single sound level meter was left unattended to record measurements over the six-day survey period.
- 4.4 Sound level meters are laboratory calibrated to national standards, and field-calibrated before and after the survey. No significant calibration drift was observed. Equipment details are shown in Table 4.1 below; calibration certificates are available on request.

Table 4.1 Measurement equipment

Equipment	Description	Serial Number
Norsonic 118	Class 1 sound level meter	31657
Norsonic 1225	Microphone	285495
Norsonic 1206	Preamplifier	30946
Norsonic 1251	Calibrator	31229

- 4.5 The measurement location was chosen to be representative of the closest-noise sensitive flats on Murray Road, whilst being sufficiently safe and secure to leave monitoring equipment unattended. The meter was positioned on the roof of the Market Office building equivalent to first-floor level at the flats. The measurement position is shown in Figure 4.1 and Figure 4.2.

Figure 4.1 Unattended survey position

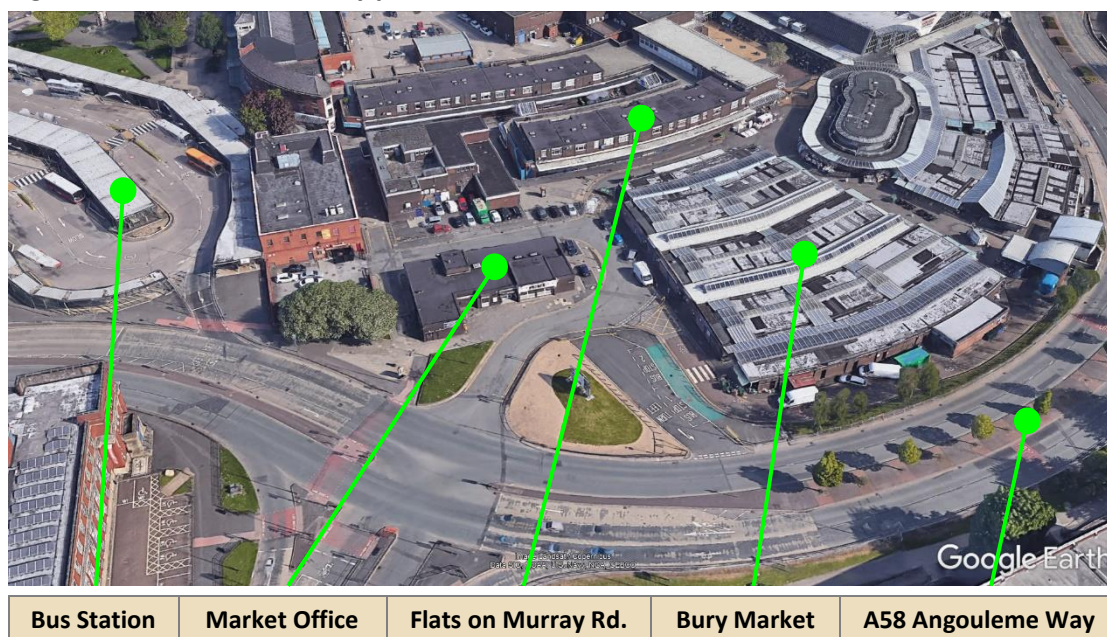
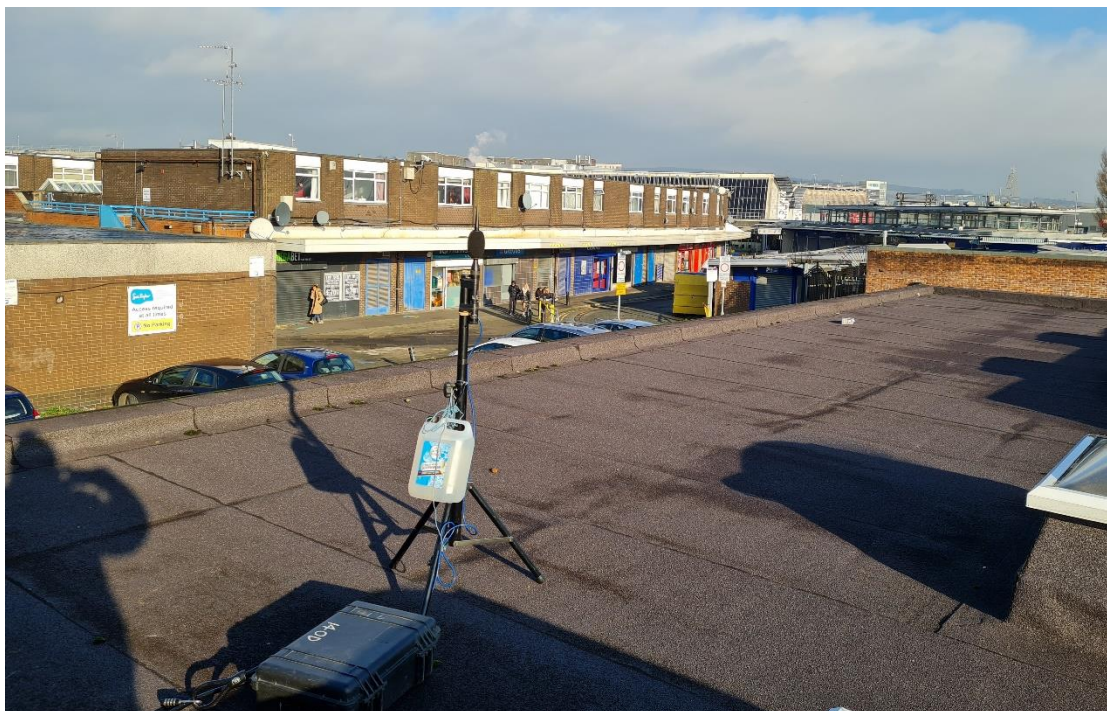


Figure 4.2 Meter location



- 4.6 Multiple parameters were recorded in 5-minute measurement periods, including the following:
- equivalent sound pressure level ($L_{eq,T}$)
 - maximum sound pressure level (L_{Fmax})
 - background sound pressure level ($L_{90,T}$)
 - the tenth percentile sound pressure level ($L_{10,T}$)
- 4.7 Measurements are recorded in one-third-octave frequency bands, which are adjusted in each frequency band by an 'A' weighting, before summing logarithmically to obtain a single-figure A-weighted value, denoted by the 'A' subscript. The A-weighting represents a normal human's response to sound pressure levels.
- The A-weighted equivalent sound pressure level ($L_{Aeq,T}$) represents an 'average' continuous sound level over a given period T .
 - The A-weighted maximum sound pressure level (L_{AFmax}) is the highest sound pressure level measured with a 'fast' time constant, which is a rise and fall time of 125 milliseconds.
 - The background sound level ($L_{A90,T}$) is the level which is exceeded by 90% of measurements over a given period. As the name suggests this represents a background level of sound without the influence of significant transient sound events.
 - The A-weighted tenth percentile sound pressure level ($L_{A10,T}$) is commonly used to represent traffic noise.
- 4.8 The weather conditions during the survey have been sourced from www.wunderground.com for the weather station IBURY44 located at 53.566° N, 2.293° W. The data is presented on the survey history charts in Appendix A.

- 4.9 In summary, temperatures ranged between -2°C and 8°C during the daytime and between -2°C and 6°C during the night-time. Wind speeds were low and not considered to have significantly affected measurements. There was a very small amount of precipitation during the survey, and roads may have been damp during some periods, though this is in keeping with typical meteorological conditions at the site.
- 4.10 The dominant noise sources at the site was road traffic noise, predominantly from the A58 Angouleme Way, and from the market access roads close by. There were many pedestrians walking through the market which contributed noise from footfall and from talking/shouting.
- 4.11 When in attendance for collection of the monitoring equipment, it was noted that there was some construction noise from the south side of the A58, comprising some continuous low-frequency engine hum and the percussive sound of impact wrenches.
- 4.12 A period of comparatively higher sound levels is notable during the night-time on Saturday 15th January, which could be due to the night-time economy and preparation for market day. Overall there was no significant difference in sound levels during the day between market and non-market days.
- 4.13 The results of the survey are presented in the time history charts in Appendix A; detailed measured data are available on request.

5.0 Criteria

- 5.1 The noise level from the proposed site/building, as measured in the locality of the nearest or most exposed noise-sensitive development, must be at least 5 dB lower than the background noise throughout the day and night.
- 5.2 Analysis of the survey data indicates that the background sound level noticeably reduces during the evening period when compared to the daytime period. As such criteria are provided for the day, evening and night-time periods.
- 5.3 This approach avoids onerous criteria during the daytime and the potential for high plant levels during the evening.
- 5.4 Based on the results of the environmental acoustic survey, and in accordance with the requirements of BREEAM Pol 05 and the guidance of BS 4142:2014 the following criteria are proposed for fixed plant installations at the development:

Table 5.1 Proposed Pol 05 criteria

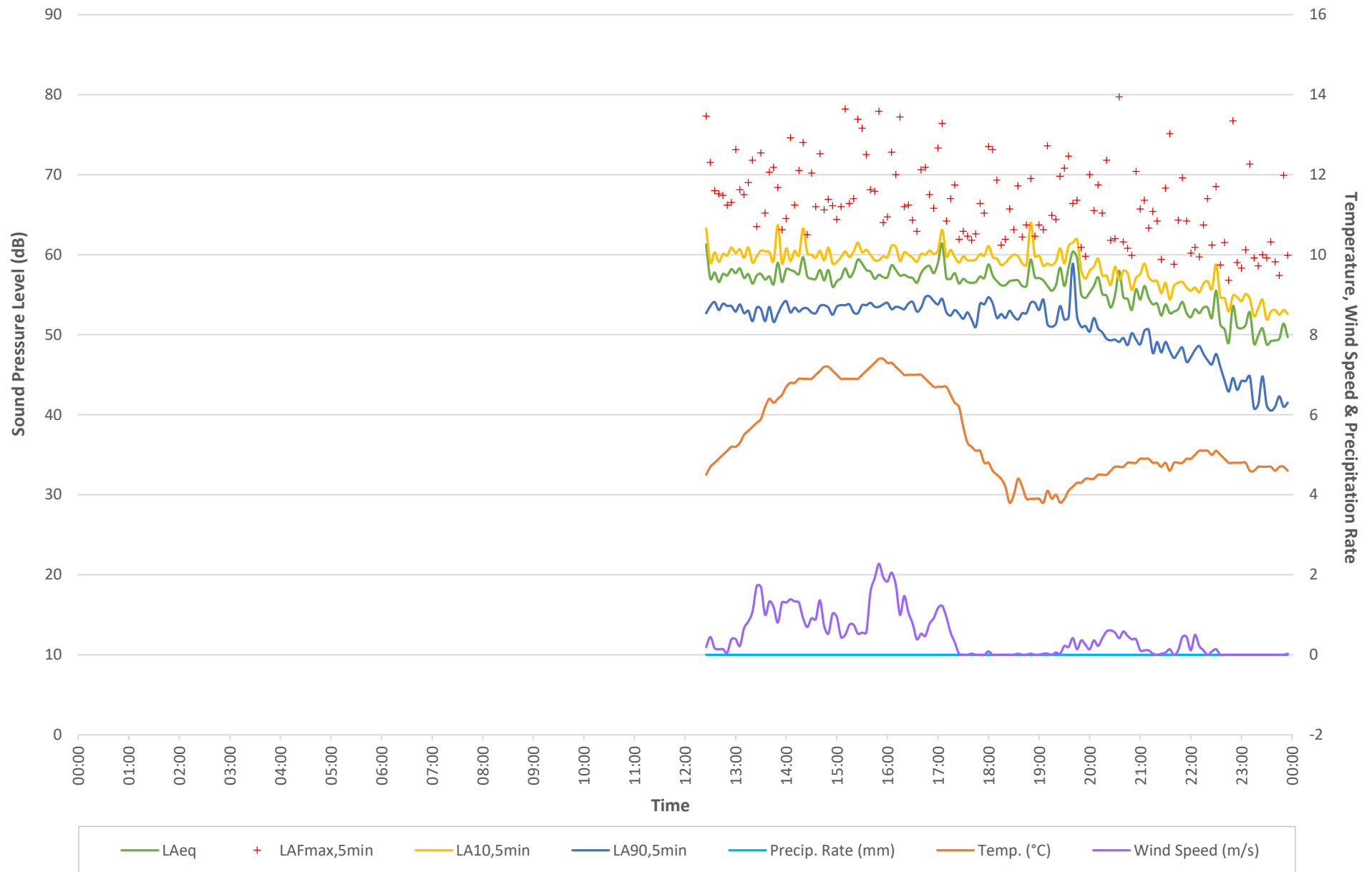
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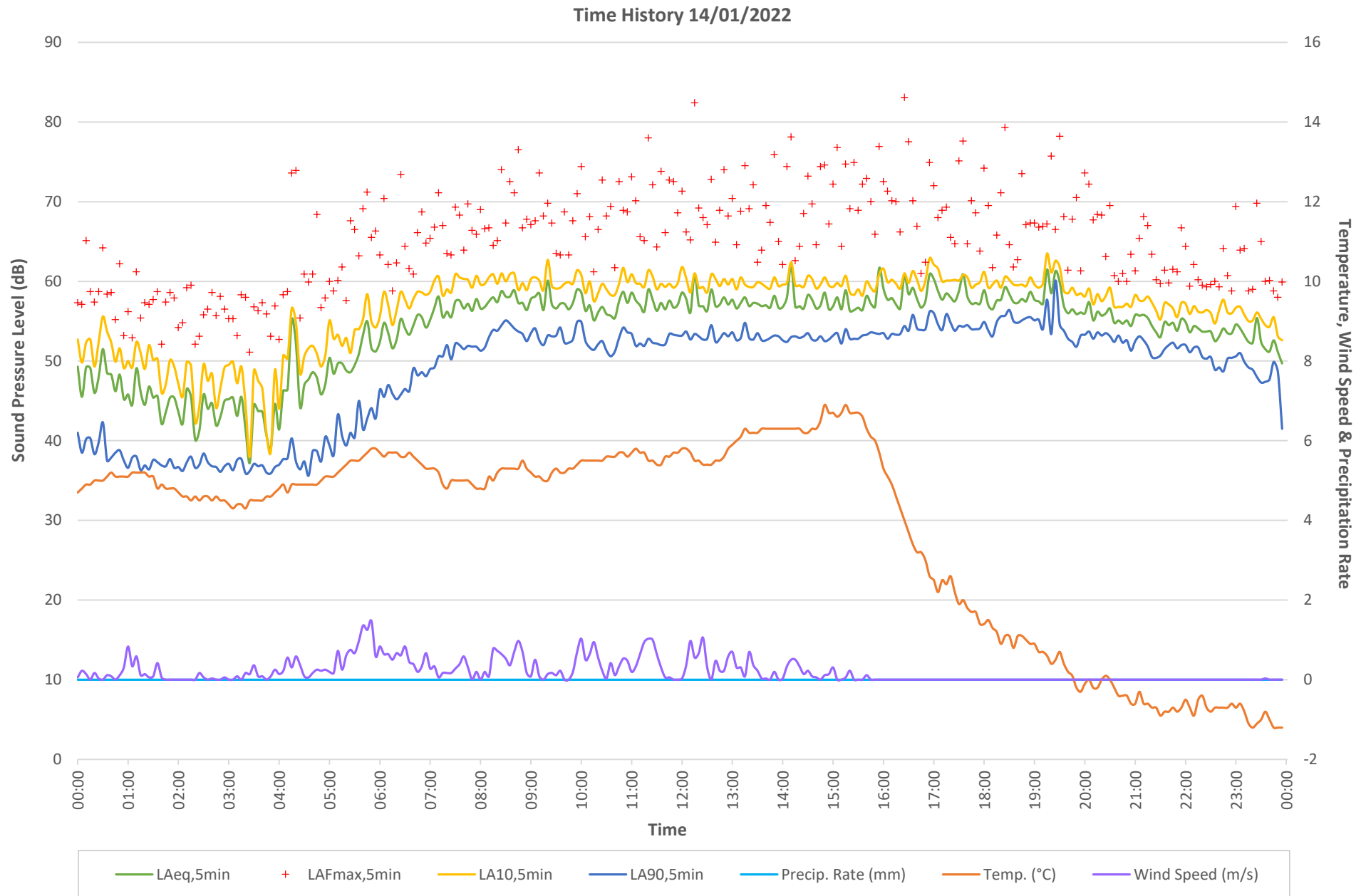
- 5.5 The criteria above are given in terms of the background sound level L_{A90} and plant noise rating level $L_{Ar,Tr}$ as defined in BS 4142:2014 and measured at the nearest noise-sensitive receptor, and include adjustments for any distinguishable characteristic features of the sound source. The values given are free-field.

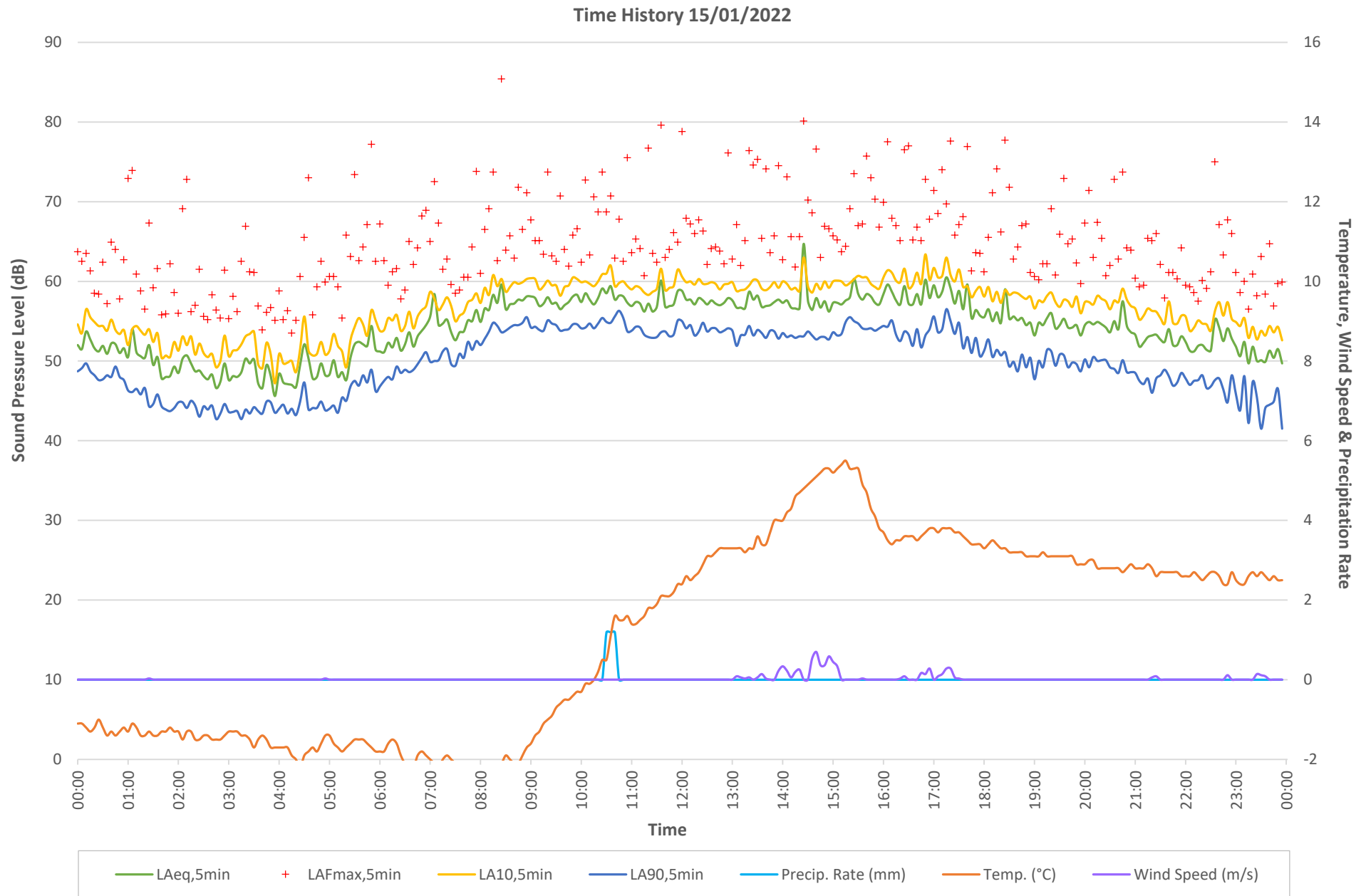
APPENDIX A

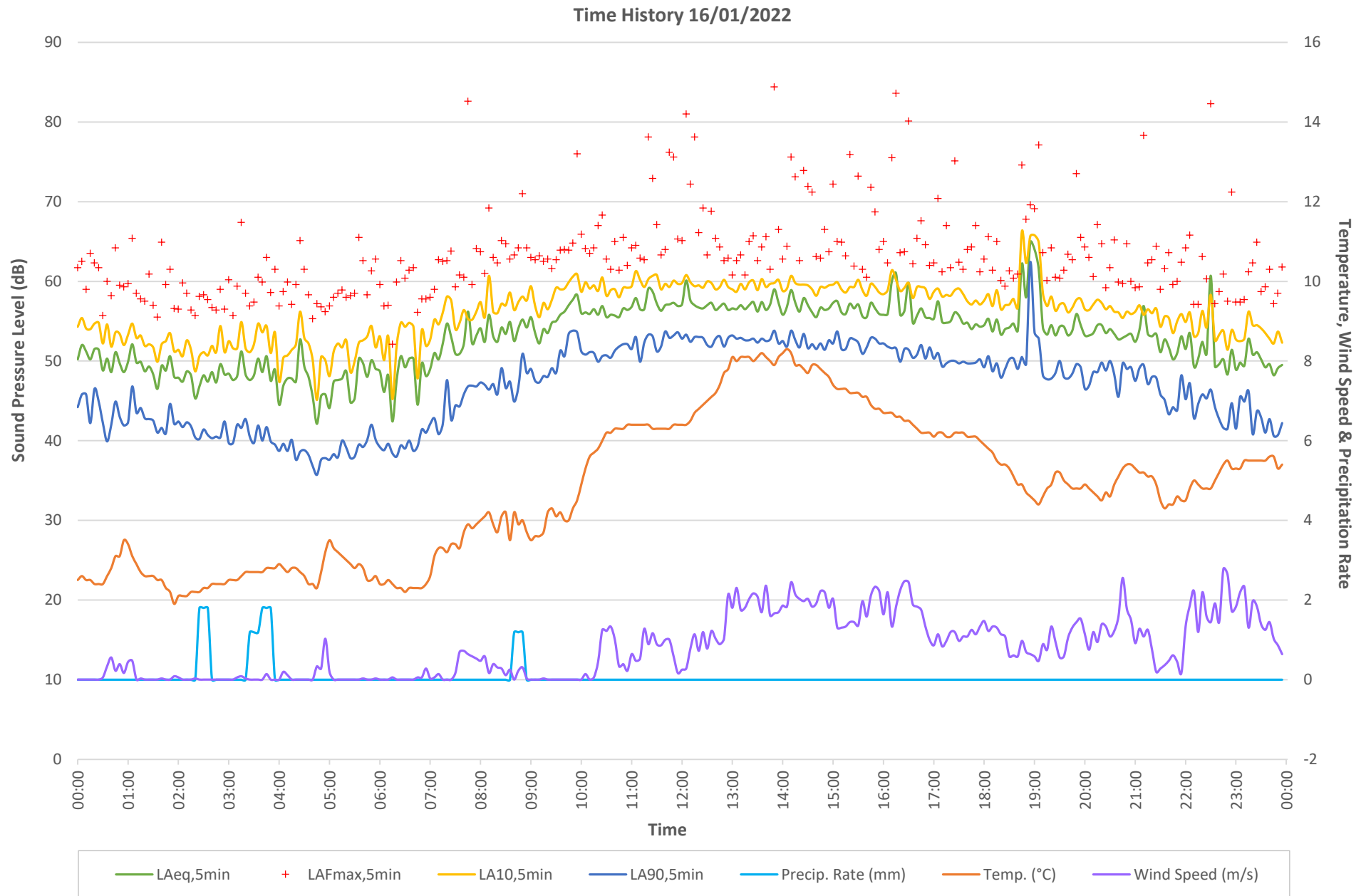
Survey Time History Charts

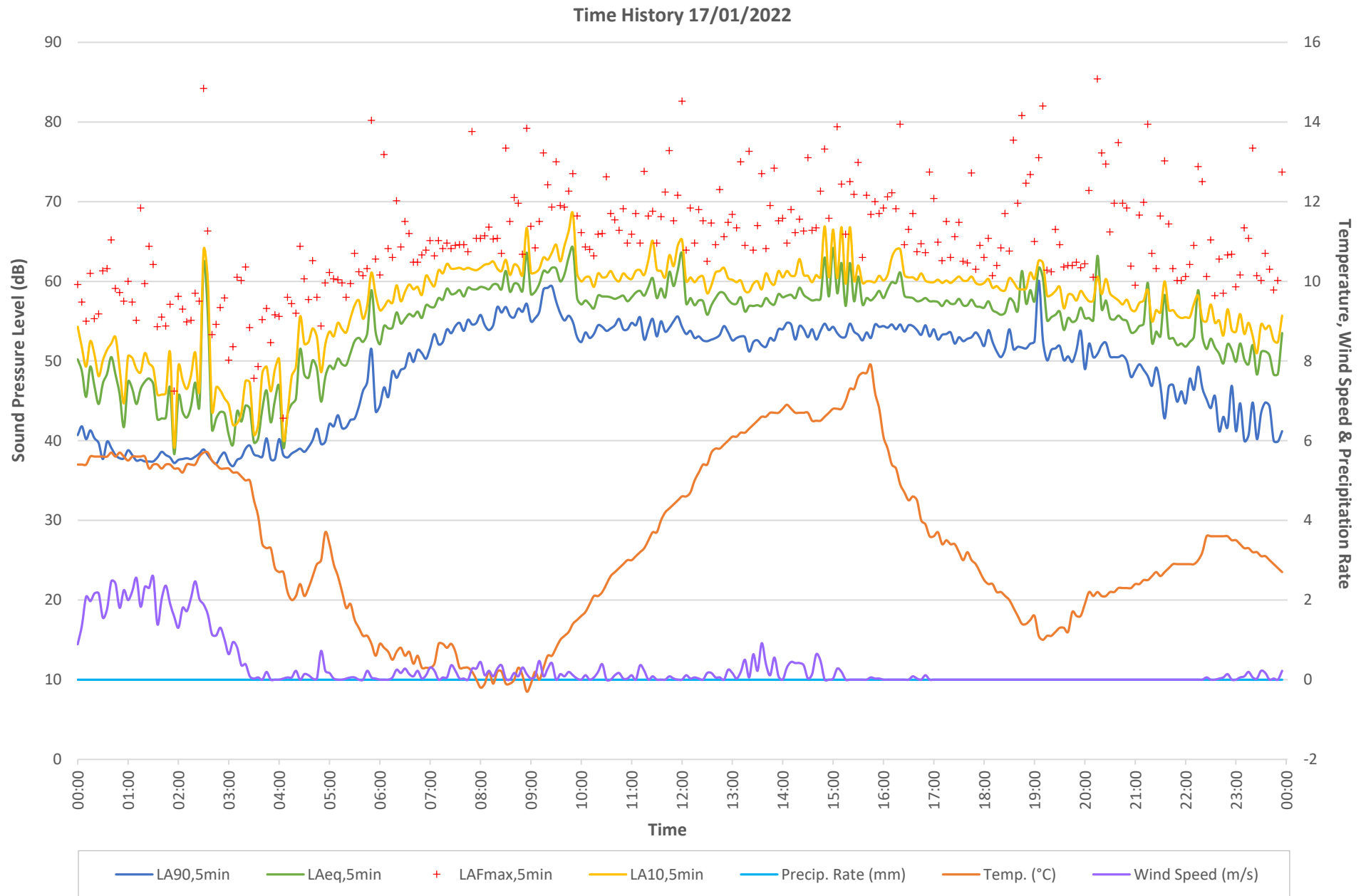
Time History 13/01/2022











Time History 18/01/2022

