

## Construction Noise and Vibration Monthly Report – July 2024

London Borough of Camden

|  |           |
|--|-----------|
| <b>Non-Technical Summary</b>                       | <b>1</b>  |
| <b>Abbreviations and Descriptions</b>              | <b>3</b>  |
| <b>1 Introduction</b>                              | <b>4</b>  |
| 1.2 Measurement Locations                          | 7         |
| <b>2 Summary of Results</b>                        | <b>10</b> |
| 2.1 Summary of Measured Noise and Vibration Levels | 10        |
| 2.2 Exceedances of the SOAEL                       | 16        |
| 2.3 Exceedances of Trigger Level                   | 20        |
| 2.4 Complaints                                     | 21        |
| <b>Appendix A Site Locations</b>                   | <b>23</b> |
| <b>Appendix B Monitoring Locations</b>             | <b>28</b> |
| <b>Appendix C Data</b>                             | <b>34</b> |

### List of tables

|   |    |
|---|----|
| Table 1: Table of Abbreviations   | 3  |
| Table 2: Monitoring Locations   | 8  |
| Table 3: Summary of Measured dB $L_{Aeq}$ Data over the Monitoring Period | 11 |
| Table 4: Summary of Measured PPV Data over the Monitoring Period          | 16 |
| Table 5: Summary of Exceedances of SOAEL                                  | 17 |
| Table 6: Summary of Total Exceedances of SOAEL                            | 20 |
| Table 7: Summary of Exceedances of Trigger Levels                         | 21 |
| Table 8: Summary of Complaints  | 21 |

# Non-Technical Summary

This Noise and Vibration Monitoring Report fulfils HS2 Limited's commitment detailed in the Environmental Minimum Requirements (EMRs), Annex 1, Code of Construction Practice, to present the results of noise and vibration monitoring carried out within the London Borough of Camden during the month of July 2024.

Within this period monitoring was undertaken at the following worksites:

- Noise monitoring was undertaken in the vicinity of The Adelaide Road Ventilation Shaft (ref.: ARVS) where site shutdown was underway.
- Noise monitoring was undertaken in the vicinity of the Vehicle Holding Area worksite (ref.: VHA), where deliveries, site maintenance, surveys and haul road and drainage maintenance were underway.
- Noise monitoring was undertaken in the vicinity of the Mornington Street Bridge worksite (ref.: MSB), where no works were undertaken.
- Noise monitoring was undertaken in the vicinity of the Park Village East worksite (ref.: PVE), where deliveries, site maintenance, surveys, haul road and drainage maintenance, excavation works, steel fixing, formwork installation and concrete pouring were underway.
- Noise monitoring was undertaken in the vicinity of Euston Scissor Box worksite (ref.: ESB) where deliveries, site maintenance, surveys, haul road and drainage maintenance, installation and extraction of piles, excavation works, pile capping, scaffold installation, building of reinforcement cages, steel fixing and concrete pumping and pouring were underway.
- Noise monitoring was undertaken in the vicinity of Euston Throat Retained Cut worksite (ref.: ETRC) where deliveries, site maintenance, surveys, haul road and drainage maintenance, steel fixing, concrete pouring, abnormal load traffic, utility duct installation and backfilling were underway.
- Noise monitoring was undertaken in the vicinity of Granby Terrace Bridge worksite (ref.: GTB) where deliveries, site maintenance, surveys, haul road and drainage maintenance, bridge structure formwork, concrete pouring, bridge deck surfacing and utility works were underway.
- Noise and vibration monitoring were undertaken in the vicinity of the Hampstead Road Bridge worksite (ref.: HRB) where deliveries, site, haul road and drainage maintenance, surveys and hoarding maintenance were underway.

- Noise and vibration monitoring were undertaken in the vicinity of the Euston Cavern worksite (ref.: ECAV) where deliveries, site maintenance, surveys, haul road and drainage maintenance, access point construction, wall breakdown and concrete reinforcement works were underway.
- Noise monitoring was undertaken in the vicinity of On-Network worksites (ref.: B, C, D, E, F, G and H), where work activities included:
  - Ballast installation and compaction, waterproofing, kerb installation, tarmac installation, scaffold inspections, handrail installation, ground formation, trough route install including lighting bases, temporary works removal, scaffold striking, drainage installation. (Worksite E).
  - No HS2 works were undertaken at worksites B, C, D, F, G and H .
- Noise monitoring was undertaken in the vicinity of the Former National Temperance Hospital - North worksite (ref.: NTH-N) where no works were undertaken.
- Noise monitoring was undertaken in the vicinity of the Former National Temperance Hospital - Euston North worksite (ref.: NTH-EN) where worksite demobilisation was underway.
- Noise monitoring was undertaken in the vicinity of Maria Fidelis worksite (ref.: MF) where roof plant installation, internal fitout and snagging works were underway.
- Noise monitoring was undertaken in the vicinity of the Euston Towers Demolition worksite (ref.: ETD), where no works were undertaken.
- Noise monitoring was undertaken in the vicinity of the Traction Substation worksite (ref.: TSS) where blockwork installation, stair handrail and ramp installation and fitout works were underway.
- Noise monitoring was undertaken in the vicinity of the Interim Taxi Rank worksite (ref.: ITR) where barrier installation, cycle racks and canopy removal, pedestrian ramp installation and railing were underway.

The HS2 threshold levels for significant noise impacts, which are defined in Information Paper E23 (<https://www.gov.uk/government/publications/hs2-information-papers-environment>) were exceeded five (5) times during the reporting period.

There was one (1) exceedance of trigger levels as defined in section 61 consents during the reporting period. Further details can be found in Table 7 of this report.

Four (4) complaints were received during the monitoring period.

# Abbreviations and Descriptions

The abbreviations, descriptions and project terminology used within this report can be found in Table 1.

Table 1: Table of Abbreviations

| Acronym/Term   | Definition   |
|--|--|
| $L_{Aeq,T}$  | See equivalent continuous sound pressure level   |
| Ambient sound  | A description of the all-encompassing sound at a given location and time which will include sound from many sources near and far. Ambient sound can be quantified in terms of the equivalent continuous sound pressure level, $L_{pAeq,T}$   |
| Decibel(s), or dB  | Between the quietest audible sound and the loudest tolerable sound there is a million to one ratio in sound pressure (measured in Pascal (Pa)). Because of this wide range, a level scale called the decibel (dB) scale, based on a logarithmic ratio, is used in sound measurement. Audibility of sound covers a range of approximately 0-140dB.  |
| Decibel(s) A-weighted, or dB(A)                            | The human ear system does not respond uniformly to sound across the detectable frequency range and consequently instrumentation used to measure sound is weighted to represent the performance of the ear. This is known as the 'A weighting' and is written as 'dB(A)'.   |
| Equivalent continuous sound pressure level, or $L_{Aeq,T}$ | An index used internationally for the assessment of environmental sound impacts. It is defined as the notional unchanging level that would, over a given period of time (T), deliver the same sound energy as the actual time-varying sound over the same period. Hence fluctuating sound levels can be described in terms of an equivalent single figure value, typically expressed as a decibel level.   |
| Exclusion of data  | Measurement of noise levels can be affected by weather conditions such as prolonged periods of rain, winds speeds higher than 5m/s and snow/ice ground cover. Noise levels measured during these periods are considered not representative of normal noise conditions at the site and, for the purposes of this report, are excluded from the assessment of exceedances and calculation of typical noise levels and are also greyed out in charts. Identifiable incongruous noise and vibration events not attributable to HS2 construction noise are also excluded. |
| Façade   | A facade noise level is the noise level 1m in front of a large reflecting surface. The effect of reflection, is to produce a slightly higher (typically +3 dB) sound level than it would be if the reflecting surface was not there.   |
| Free-field   | A free-field noise level is the noise level measured at a location where no reflective surfaces, other than the ground, lies within 3.5 metres of the microphone position.   |
| LOAEL  | Lowest Observed Adverse Effect Level - the level above which adverse effects on health and quality of life can be detected.  |
| Peak particle velocity, or PPV                             | Instantaneous maximum velocity reached by a vibrating element as it oscillates about its rest position. The PPV is a simple indicator of perceptibility and risk of damage to structures due to vibration. It is usually measured in mm/s.   |
| SOAEL  | Significant Observed Adverse Effect Level - the level above which significant adverse effects on health and quality of life occur.   |
| Sound pressure level                                       | The parameter by which sound levels are measured in air. It is measured in decibels. The threshold of hearing has been set at 0dB, while the threshold of pain is approximately 120dB. Normal speech is approximately 60dB at a distance of 1 metre and a change of 3dB in a time varying sound signal is commonly regarded as being just detectable. A change of 10dB is subjectively twice, or half, as loud.  |
| Vibration dose value, or VDV                               | An index used to evaluate human exposure to vibration in buildings. While the PPV provides information regarding the magnitude of single vibration events, the VDV provides a measure of the total vibration experienced over a specified period of time (typically 16h daytime and 8h night-time). It takes into account the magnitude, the number and the duration of vibration events and can be used to quantify exposure to continuous, impulsive, occasional and intermittent vibration. The vibration dose value is measured in $m/s^{1.75}$ .                |

# 1 Introduction

1.1.1 HS2 is required to undertake noise (and vibration) monitoring as necessary to comply with the requirements of the High Speed Rail (London-West Midlands) Environmental Minimum Requirements, including specifically Annex 1: Code of Construction Practice, in addition to any monitoring requirements arising from conditions imposed through consents under Section 61 of the Control of Pollution Act, 1974 or through Undertakings & Assurances given to third parties. Such monitoring may be undertaken for the following purposes:

- monitoring the impact of construction works;
- to investigate complaints, incidents and exceedance of trigger levels; or
- monitoring the effectiveness of noise and vibration control measures.

Monitoring data and interpretive reports are to be provided to each relevant local authority on a monthly basis and shall include a summary of the construction activities occurring, the data recorded over the monitoring period, any complaints received, any periods in exceedance of agreed trigger levels, the results of any investigations and any actions taken or mitigation measures implemented. This report provides noise data, and interpretation thereof, for monitoring carried out by HS2 within the London Borough of Camden (LBC) for the period 1<sup>st</sup> to 31<sup>st</sup> July 2024.

1.1.2 Active construction sites in the local authority area where monitoring was undertaken during this period include:

- The Adelaide Road ventilation shaft ref.: ARVS, (see plan 2 in Appendix A), where work activities included:
  - Site shutdown including routine inspections.
- Vehicle Holding Area worksite ref.: VHA (see plan 1 in Appendix A), where work activities included:
  - Deliveries.
  - Site maintenance.
  - Surveys.
  - Haul road and drainage maintenance.
- Mornington Street Bridge worksite ref.: MSB (see plan 2 in Appendix A), where no works were undertaken.
- Park Village East worksite ref.: PVE (see plan 2 in Appendix A), where work activities included:
  - Deliveries.

- Site maintenance.
- Surveys.
- Haul road and drainage maintenance.
- Excavation works.
- Steel fixing.
- Formwork installation.
- Concrete pouring.
- Euston Scissor Box worksite ref.: ESB (see plan 2 in Appendix A), where work activities included:
  - Deliveries.
  - Site maintenance.
  - Surveys.
  - Haul road and drainage maintenance.
  - Installation and extraction of sheet piles.
  - Excavation works.
  - Pile capping.
  - Scaffold installation.
  - Building of reinforcement cages and steel fixing.
  - Concrete pumping and pouring.
- Euston Throat Retained Cut worksite ref.: ETRC (see plan 2 in Appendix A), where work activities included:
  - Deliveries.
  - Site maintenance.
  - Surveys.
  - Haul road and drainage maintenance.
  - Steel fixing.
  - Concrete pouring.
  - Abnormal load traffic.
  - Utility duct installation.
  - Backfilling.

- Granby Terrace Bridge worksite ref.: GTB (see plan 2 in Appendix A), where work activities included:
  - Deliveries.
  - Site maintenance.
  - Surveys.
  - Haul road and drainage maintenance.
  - Bridge structure formwork.
  - Concrete pouring.
  - Bridge deck surfacing.
  - Utility works.
- Hampstead Road Bridge worksite ref.: HRB (see plan 3 in Appendix A), where work activities included:
  - Deliveries.
  - Site maintenance.
  - Surveys.
  - Haul road and drainage maintenance.
  - Hoarding maintenance.
- Euston Cavern worksite ref.: ECAV (see plan 3 in Appendix A), where work activities included:
  - Deliveries.
  - Site maintenance.
  - Surveys.
  - Haul road and drainage maintenance.
  - Access point construction.
  - Wall breakdown.
  - Concrete reinforcement works.
- On-Network worksites ref.: B, C, D, E, F, G and H (see plan 3 in Appendix A), where work activities included:
  - Ballast installation and compaction, waterproofing, kerb installation, tarmac installation, scaffold inspections, handrail installation, ground formation, trough route install including lighting bases, temporary works removal, scaffold striking, drainage installation. (Worksite E).
  - No HS2 works were undertaken at worksites B, C, D, F, G and H.



- Former National Temperance Hospital – North worksite ref.: NTH-N (see plan 4 in Appendix A), where no works were undertaken.
- Former National Temperance Hospital – Euston North worksite ref.: NTH-EN (see plan 4 in Appendix A), where work activities included:
  - Worksite demobilisation.
- Maria Fidelis worksite ref.: MF (see plan 4 in Appendix A), where work activities included:
  - Roof plant installation.
  - Internal fitout and snagging works including window, mechanical and electrical installation.
- Euston Towers Demolition worksite ref.: ETD (see plan 4 in Appendix A), where no works were undertaken.
- Traction Substation worksite ref.: TSS (see plan 4 in Appendix A), where work activities included:
  - Blockwork installation.
  - Stair, handrail and ramp installation.
  - Fitout works including drilling.
- Interim Taxi Rank worksite ref.: ITR (see plan 4 in Appendix A), where work activities included:
  - Barrier installation.
  - Cycle racks and canopy removal.
  - Pedestrian ramp installation.
  - Railing

1.1.3 The applicable standards, guidance, and monitoring methodology are outlined in the construction noise and vibration monitoring methodology report which can be found at the following location <https://www.gov.uk/government/collections/monitoring-the-environmental-effects-of-hs2>. Noise and vibration monitoring reports for previous months can also be found at this location.

## 1.2 Measurement Locations

1.2.1 Thirty-three (33) noise and nine (9) vibration monitoring installations were active across eighteen worksites in July in the LBC area. Table 2 summarises the position of noise and vibration monitoring installations within the LBC area in July 2024.

- 1.2.2 The noise monitor at measurement location V059, worksite ARVS, was removed on the 28<sup>th</sup> of July as works have ceased temporarily.
- 1.2.3 The noise monitor at measurement location ARBW-V1, worksite ARVS, was removed on the 28<sup>th</sup> of July as works have ceased temporarily.
- 1.2.4 Maps showing the position of noise and vibration monitoring installations are presented in Appendix B.

Table 2: Monitoring Locations

| Worksite Reference | Measurement Reference | Address  |
|--------------------|-----------------------|--|
| ARVS               | N051a                 | Outside 70 Adelaide Road   |
|                    | N052                  | Adelaide Road-Beaumont Walk  |
| B                  | JC                    | Juniper Crescent   |
| MSB & ECAV, PVE, C | N024                  | Lamppost outside Park Village Studios, Park Village East   |
|                    | N047                  | Lamppost #3 on corner of Park Village East and Mornington Street Bridge  |
|                    | PVS-N001              | Park Village Studios   |
|                    | PVS-V1                | Park Village Studios   |
|                    | N022                  | Lamppost #34 on Mornington Terrace, between Mornington Street Bridge and Edinboro Castle pub                   |
|                    | N046                  | Lamppost on Mornington Terrace, between Mornington Street Bridge and Delancey Street, near Edinboro Castle pub |
| ESB & GTB, PVE, E  | N001                  | Park Village East Lamppost #1 Outside Cubitt Court   |
|                    | N002                  | Park Village East Lamppost #2 Outside Richmond House   |
| ESB & GTB, PVE, D  | N003                  | Park Village East Lamppost #15 Outside Silsoe House  |
|                    | SH-V1                 | Basement of Silsoe House   |
|                    | N004                  | Mornington Terrace Lamppost #7 Junction of Mornington Terrace, Mornington Place & Clarkson Row                 |
| ESB & GTB, PVE, E  | N005                  | Euston Approaches – Xavier House site office external staircase  |
|                    | CR                    | Lamppost #2 on Clarkson Row  |
| ETRC & HRB, F      | N023                  | Lamppost #21 on Hampstead Road - opposite Xavier House site office   |
| ETRC & HRB         | N020                  | Lamppost on corner of Mackworth Street and Harrington Street   |
|                    | N021                  | Lamppost on Stanhope Street, west of Stephenson House site office  |
|                    | N044                  | Euston Approaches site hoarding – between Stephenson House site office and Langdale, Regent's Park Estate      |
|                    | N045                  | Euston Approaches site hoarding – east of Coniston, Regent's Park Estate                                       |
|                    | V039                  | Euston Approaches site – east of Coniston, Regent's Park Estate  |

| Worksite Reference | Measurement Reference | Address  |
|--------------------|-----------------------|--|
|                    | V043                  | Euston Approaches site – Cartmel House, Regents Park Estate                    |
| HRB & ETRC, NTH-N  | N019                  | Euston Approaches site hoarding – north facing façade of Cartmel House         |
|                    | N026a                 | Euston Approaches site hoarding – east facing façade of Cartmel House          |
| ETD, TSS           | N006                  | Royal College of General Practitioners roof level                              |
| TSS                | N008                  | Stephenson’s Way lamppost (external to RCGP)                                   |
|                    | N010                  | Wesley Hotel   |
|                    | N011                  | Euston Street, lamppost #4 (external to 82 Euston Street)                      |
|                    | V002                  | Royal College of General Practitioners basement boiler room by Stephenson Way  |
|                    | V037                  | Magic Circle, basement   |
|                    | V038                  | Wesley Hotel, basement lightwell, Euston Street                                |
| ETD, ITR           | N007                  | Royal College of General Practitioners, Melton Street                          |
|                    | V003                  | Royal College of General Practitioners basement vaults under Melton St         |
| VHA                | N025                  | Lamppost #3 on Prince Albert Road opposite the Vehicle Holding Area (VHA) site |
| NTH-EN, TSS        | N012                  | Drummond Street, lamppost #14 (opposite to 92-94 Drummond Street)              |
| NTH-EN, MF         | N014                  | Starcross Street lamppost (external to Exmouth Arms)                           |
|                    | N016                  | Margaret Centre roof   |
|                    | V021                  | 42-44 Cobourg Street   |
| NTH-EN             | N017                  | Hampstead Road, lamppost #48   |
| ETRC & HRB, NTH-N  | N018                  | Outside replacement housing, Hampstead Road                                    |

## 2 Summary of Results

### 2.1 Summary of Measured Noise and Vibration Levels

2.1.1 Table 3 presents a summary of the measured noise levels at each monitoring location over the reporting period. The  $L_{Aeq,T}$  is presented for each of the relevant time periods averaged over the calendar month, along with the highest single period  $L_{Aeq,T}$  that was found to occur within the month.

Table 3: Summary of Measured dB L<sub>Aeq</sub> Data over the Monitoring Period

| Worksite Reference | Measurement Reference | Site Address  | Free-Field or Façade Measurement | Weekday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> ) |                |                |                |                | Saturday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> ) |                |                |                |                | Sunday / Public Holiday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> ) |                |
|--------------------|-----------------------|---|----------------------------------|--|----------------|----------------|----------------|----------------|---|----------------|----------------|----------------|----------------|--|----------------|
|                    |                       |   |                                  | 0700 - 0800  | 0800 - 1800    | 1800 - 1900    | 1900 - 2200    | 2200 - 0700    | 0700 - 0800   | 0800 - 1300    | 1300 - 1400    | 1400 - 2200    | 2200 - 0700    | 0700 - 2200  | 2200 - 0700    |
| ARVS               | N051                  | Outside 70 Adelaide Road  | Free-field                       | 67.5<br>(73.1)   | 68.1<br>(70.0) | 67.2<br>(69.7) | 67.0<br>(70.2) | 65.2<br>(69.9) | 63.5<br>(63.5)  | 68.2<br>(69.9) | 66.1<br>(66.2) | 68.5<br>(75.0) | 65.4<br>(67.6) | 66.7<br>(71.5)   | 64.8<br>(69.8) |
|                    | N051a                 | Outside 70 Adelaide Road  | Free-field                       | 66.6<br>(71.1)   | 67.0<br>(69.9) | 65.9<br>(68.2) | 65.8<br>(72.5) | 64.2<br>(70.7) | 62.9<br>(63.2)  | 65.9<br>(67.8) | 65.9<br>(67.2) | 67.3<br>(74.1) | 64.6<br>(68.7) | 65.1<br>(69.1)   | 65.1<br>(70.0) |
|                    | N052                  | Adelaide Road-Beaumont Walk   | Free-field                       | 67.0<br>(69.5)   | 67.6<br>(69.6) | 66.6<br>(68.5) | 66.4<br>(73.7) | 65.1<br>(69.7) | 63.7<br>(64.7)  | 66.9<br>(69.2) | 66.0<br>(66.5) | 67.6<br>(73.3) | 65.8<br>(70.0) | 65.6<br>(69.2)   | 64.8<br>(70.4) |
| B                  | JC                    | Juniper Crescent  | Free-field                       | 56.7<br>(59.1)   | 58.4<br>(59.8) | 58.4<br>(60.9) | 58.5<br>(61.5) | 54.9<br>(59.4) | 56.9<br>(57.3)  | 57.8<br>(57.9) | 58.9<br>(59.8) | 57.6<br>(59.4) | 51.6<br>(55.8) | 56.1<br>(59.7)   | 54.1<br>(57.3) |
| MSB & ECAV, PVE, C | N024                  | Lamppost outside Park Village Studios, Park Village East                | Free-field                       | 57.7<br>(61.4)   | 59.8<br>(61.7) | 58.7<br>(65.1) | 57.4<br>(63.0) | 53.7<br>(65.8) | 56.4<br>(59.4)  | 56.5<br>(57.7) | 58.7<br>(61.4) | 58.0<br>(60.9) | 54.3<br>(59.6) | 56.7<br>(67.8)   | 52.5<br>(56.9) |
|                    | N047                  | Lamppost #3 on corner of Park Village East and Mornington Street Bridge | Free-field                       | 57.1<br>(60.1)   | 59.9<br>(66.9) | 59.2<br>(62.8) | 58.1<br>(62.2) | 53.6<br>(76.6) | 54.1<br>(54.5)  | 59.1<br>(64.9) | 58.8<br>(60.2) | 58.0<br>(60.0) | 52.8<br>(59.3) | 56.9<br>(61.6)   | 52.3<br>(61.5) |
|                    | PVS-N001              | Park Village Studios  | Façade                           | 63.2<br>(64.3)   | 66.7<br>(71.3) | 64.8<br>(66.4) | 63.9<br>(66.2) | 57.9<br>(66.2) | 62.6<br>(63.8)  | 63.9<br>(64.1) | 62.6<br>(63.5) | 62.8<br>(64.7) | 53.3<br>(61.2) | 61.9<br>(64.6)   | 56.3<br>(62.8) |

| Worksite Reference | Measurement Reference | Site Address   | Free-Field or Façade Measurement | Weekday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> ) |                |                |                |                | Saturday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> ) |                |                |                |                | Sunday / Public Holiday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> ) |                |
|--------------------|-----------------------|--|----------------------------------|--|----------------|----------------|----------------|----------------|---|----------------|----------------|----------------|----------------|--|----------------|
|                    |                       |  |                                  | 0700 - 0800  | 0800 - 1800    | 1800 - 1900    | 1900 - 2200    | 2200 - 0700    | 0700 - 0800   | 0800 - 1300    | 1300 - 1400    | 1400 - 2200    | 2200 - 0700    | 0700 - 2200  | 2200 - 0700    |
|                    | N022                  | Lamppost #34 on Mornington Terrace   | Free-field                       | 57.9<br>(60.4)   | 59.8<br>(63.0) | 58.7<br>(64.2) | 57.7<br>(68.7) | 53.2<br>(68.0) | 56.3<br>(57.6)  | 57.3<br>(58.0) | 56.8<br>(57.1) | 57.5<br>(59.7) | 51.4<br>(59.0) | 56.2<br>(58.5)   | 52.2<br>(58.1) |
|                    | N046                  | Lamppost on Mornington Terrace, between Mornington Street Bridge and Delancey Street | Free-field                       | 61.5<br>(63.3)   | 62.5<br>(65.7) | 61.8<br>(65.1) | 61.4<br>(72.7) | 56.7<br>(66.4) | 60.3<br>(61.2)  | 61.0<br>(61.2) | 60.6<br>(61.1) | 61.4<br>(63.9) | 55.9<br>(64.5) | 59.8<br>(63.1)   | 56.4<br>(61.6) |
| ESB & GTB, PVE, E  | N001                  | Park Village East Lamppost #1  | Free-field                       | 56.2<br>(58.1)   | 60.6<br>(63.2) | 59.3<br>(68.5) | 57.7<br>(62.4) | 53.0<br>(66.6) | 53.5<br>(53.7)  | 59.9<br>(65.9) | 58.3<br>(58.9) | 58.4<br>(62.1) | 52.7<br>(58.2) | 56.5<br>(60.0)   | 51.3<br>(57.1) |
|                    | N002                  | Park Village East Lamppost #2  | Free-field                       | 56.4<br>(58.9)   | 60.4<br>(62.6) | 58.6<br>(59.4) | 58.1<br>(67.2) | 52.8<br>(57.6) | 53.4<br>(53.8)  | 56.1<br>(57.1) | 58.2<br>(58.8) | 58.2<br>(63.9) | 53.4<br>(58.6) | 56.4<br>(59.2)   | 52.3<br>(57.7) |
| ESB & GTB, PVE, D  | N003                  | Park Village East Lamppost #15 Outside Silsoe House                                  | Façade                           | 56.7<br>(58.8)   | 60.6<br>(65.4) | 59.3<br>(62.3) | 58.2<br>(61.2) | 53.6<br>(67.5) | 53.7<br>(54.2)  | 56.2<br>(57.0) | 58.8<br>(59.7) | 58.4<br>(60.3) | 53.5<br>(59.8) | 56.9<br>(60.8)   | 52.5<br>(59.7) |
|                    | N004                  | Mornington Terrace Lamppost #7   | Free-field                       | 62.6<br>(64.5)   | 64.7<br>(65.6) | 63.4<br>(64.4) | 63.4<br>(67.3) | 59.6<br>(69.4) | 61.7<br>(62.8)  | 62.8<br>(63.4) | 61.7<br>(62.7) | 64.4<br>(71.3) | 60.6<br>(69.4) | 63.7<br>(68.8)   | 62.1<br>(67.9) |
| ESB & GTB, PVE, E  | N005                  | Euston Approaches – Xavier House site office external staircase                      | Free-field                       | 63.5<br>(66.9)   | 64.6<br>(65.8) | 64.6<br>(67.0) | 63.8<br>(66.9) | 59.4<br>(67.1) | 61.7<br>(62.4)  | 63.3<br>(63.3) | 62.5<br>(63.9) | 63.0<br>(66.3) | 58.4<br>(62.4) | 62.6<br>(67.7)   | 58.5<br>(63.9) |

| Worksite Reference | Measurement Reference | Site Address   | Free-Field or Façade Measurement | Weekday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> ) |                |                |                |                | Saturday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> ) |                |                |                |                | Sunday / Public Holiday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> ) |                |
|--------------------|-----------------------|--|----------------------------------|--|----------------|----------------|----------------|----------------|---|----------------|----------------|----------------|----------------|--|----------------|
|                    |                       |  |                                  | 0700 - 0800  | 0800 - 1800    | 1800 - 1900    | 1900 - 2200    | 2200 - 0700    | 0700 - 0800   | 0800 - 1300    | 1300 - 1400    | 1400 - 2200    | 2200 - 0700    | 0700 - 2200  | 2200 - 0700    |
|                    | CR                    | Lamppost #2 on Clarkson  | Free-field                       | 64.3<br>(69.9)   | 70.1<br>(74.6) | 68.6<br>(73.0) | 67.6<br>(71.5) | 61.8<br>(70.5) | 66.0<br>(66.7)  | 67.2<br>(67.6) | 67.2<br>(67.6) | 67.7<br>(73.2) | 60.0<br>(65.4) | 66.5<br>(72.6)   | 62.1<br>(69.1) |
| ETRC & HRB, F      | N023                  | Lamppost #21 on Hampstead Road   | Free-field                       | 67.3<br>(69.3)   | 67.0<br>(68.9) | 66.0<br>(67.3) | 66.3<br>(71.6) | 64.8<br>(70.7) | 65.2<br>(66.5)  | 67.5<br>(69.0) | 65.2<br>(65.6) | 66.5<br>(67.9) | 65.2<br>(68.1) | 65.9<br>(70.9)   | 64.4<br>(68.2) |
| ETRC & HRB         | N020                  | Lamppost on corner of Mackworth Street and Harrington Street             | Free-field                       | 51.1<br>(54.4)   | 56.6<br>(60.6) | 52.3<br>(59.4) | 50.7<br>(53.6) | 48.3<br>(57.9) | 49.4<br>(51.4)  | 49.5<br>(49.8) | 52.2<br>(54.3) | 51.5<br>(54.7) | 48.0<br>(56.9) | 50.5<br>(54.5)   | 48.1<br>(57.0) |
|                    | N021                  | Lamppost on Stanhope Street, west of Stephenson House site office        | Free-field                       | 55.0<br>(57.3)   | 59.4<br>(64.1) | 59.5<br>(62.6) | 57.2<br>(62.6) | 51.8<br>(66.1) | 52.0<br>(52.4)  | 56.2<br>(57.6) | 58.2<br>(59.3) | 58.6<br>(63.9) | 52.0<br>(60.6) | 56.1<br>(60.9)   | 50.6<br>(56.3) |
|                    | N044                  | Regents Park Estate west, near Langdale                                  | Free-field                       | 54.7<br>(57.1)   | 57.6<br>(60.4) | 53.8<br>(58.2) | 53.1<br>(56.4) | 49.8<br>(55.0) | 52.3<br>(54.4)  | 54.1<br>(54.9) | 53.8<br>(55.0) | 53.3<br>(60.9) | 48.4<br>(52.4) | 52.1<br>(55.6)   | 48.7<br>(53.7) |
|                    | N045                  | Euston Approaches site hoarding – east of Coniston, Regent’s Park Estate | Free-field                       | 53.7<br>(56.1)   | 68.7<br>(75.0) | 53.0<br>(57.6) | 53.5<br>(57.9) | 50.8<br>(56.5) | 52.0<br>(52.8)  | 54.0<br>(55.7) | 51.8<br>(54.2) | 53.5<br>(61.9) | 50.6<br>(53.5) | 52.4<br>(56.0)   | 50.4<br>(55.2) |
| ETRC & HRB, NTH-N  | N019                  | Euston Approaches site hoarding – north facing façade of Cartmel House   | Façade                           | 54.8<br>(57.2)   | 66.3<br>(72.5) | 54.2<br>(57.6) | 55.1<br>(60.8) | 52.7<br>(58.4) | 52.6<br>(54.0)  | 55.4<br>(59.0) | 52.8<br>(53.9) | 55.5<br>(66.0) | 52.2<br>(55.0) | 53.6<br>(57.5)   | 52.3<br>(57.2) |

OFFICIAL

| Worksite Reference | Measurement Reference | Site Address  | Free-Field or Façade Measurement | Weekday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> ) |                |                |                |                | Saturday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> ) |                |                |                |                | Sunday / Public Holiday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> ) |                |
|--------------------|-----------------------|---|----------------------------------|--|----------------|----------------|----------------|----------------|---|----------------|----------------|----------------|----------------|--|----------------|
|                    |                       |   |                                  | 0700 - 0800  | 0800 - 1800    | 1800 - 1900    | 1900 - 2200    | 2200 - 0700    | 0700 - 0800   | 0800 - 1300    | 1300 - 1400    | 1400 - 2200    | 2200 - 0700    | 0700 - 2200  | 2200 - 0700    |
|                    | N026a                 | Euston Approaches site hoarding – east facing façade of Cartmel House | Façade                           | 58.2<br>(60.2)   | 67.6<br>(80.4) | 58.0<br>(61.1) | 58.6<br>(64.4) | 56.8<br>(62.4) | 56.4<br>(57.2)  | 58.4<br>(60.2) | 56.3<br>(57.0) | 59.2<br>(69.5) | 56.5<br>(59.8) | 57.4<br>(62.5)   | 56.1<br>(61.3) |
| ETD, TSS           | N006                  | Royal College of General Practitioners roof level                     | Free-field                       | 52.4<br>(54.0)   | 61.7<br>(70.2) | 54.1<br>(60.9) | 53.1<br>(63.3) | 49.2<br>(53.5) | 51.9<br>(52.4)  | 62.5<br>(64.6) | 58.2<br>(67.8) | 54.0<br>(67.2) | 48.5<br>(50.9) | 51.8<br>(57.9)   | 48.8<br>(51.8) |
| TSS                | N008                  | Stephenson's Way lamppost (external to RCGP)                          | Façade                           | 62.5<br>(69.9)   | 64.3<br>(68.5) | 56.0<br>(61.5) | 56.5<br>(66.0) | 55.8<br>(65.1) | 55.1<br>(55.4)  | 60.5<br>(61.7) | 57.9<br>(62.2) | 55.7<br>(62.2) | 53.3<br>(54.3) | 54.9<br>(58.1)   | 55.0<br>(61.5) |
|                    | N010                  | Wesley Hotel  | Façade                           | 72.6<br>(73.1)   | 73.1<br>(75.5) | 67.5<br>(72.9) | 68.3<br>(74.6) | 61.8<br>(73.1) | 72.6<br>(72.9)  | 73.6<br>(74.7) | 71.7<br>(72.8) | 59.7<br>(73.7) | 60.5<br>(69.7) | 68.8<br>(72.9)   | 63.4<br>(72.9) |
|                    | N011                  | Outside 82 Euston Street  | Free-field                       | 54.8<br>(61.3)   | 59.8<br>(65.1) | 53.9<br>(60.3) | 53.4<br>(60.0) | 51.5<br>(65.5) | 53.8<br>(59.7)  | 58.5<br>(63.2) | 60.8<br>(67.6) | 54.0<br>(63.1) | 47.9<br>(51.8) | 55.7<br>(63.7)   | 53.0<br>(63.4) |
| ETD, ITR           | N007                  | Royal College of General Practitioners, Melton Street                 | Free-field                       | 63.4<br>(65.5)   | 65.3<br>(67.8) | 62.7<br>(67.3) | 63.9<br>(75.1) | 61.9<br>(71.2) | 61.4<br>(61.7)  | 63.5<br>(65.2) | 62.3<br>(64.5) | 62.1<br>(66.8) | 61.2<br>(68.1) | 61.9<br>(65.7)   | 61.1<br>(69.2) |
| VHA                | N025                  | Lamppost #3 on Prince Albert Road                                     | Free-field                       | 66.8<br>(70.7)   | 66.7<br>(69.8) | 64.6<br>(67.2) | 65.1<br>(71.0) | 63.2<br>(73.0) | 63.0<br>(63.6)  | 64.0<br>(65.9) | 64.4<br>(64.7) | 65.1<br>(69.2) | 63.9<br>(67.8) | 64.0<br>(71.4)   | 62.3<br>(68.3) |

OFFICIAL



| Worksite Reference | Measurement Reference | Site Address   | Free-Field or Façade Measurement | Weekday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> ) |                |                |                |                | Saturday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> ) |                |                |                |                | Sunday / Public Holiday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> ) |                |
|--------------------|-----------------------|--|----------------------------------|--|----------------|----------------|----------------|----------------|---|----------------|----------------|----------------|----------------|--|----------------|
|                    |                       |  |                                  | 0700 - 0800  | 0800 - 1800    | 1800 - 1900    | 1900 - 2200    | 2200 - 0700    | 0700 - 0800   | 0800 - 1300    | 1300 - 1400    | 1400 - 2200    | 2200 - 0700    | 0700 - 2200  | 2200 - 0700    |
| NTH-EN, TSS        | N012                  | Opposite 92-94 Drummond Street                       | Free-field                       | 55.1<br>(67.3)   | 58.9<br>(62.2) | 56.6<br>(61.5) | 55.4<br>(59.3) | 50.5<br>(58.2) | 53.2<br>(55.8)  | 56.1<br>(58.6) | 57.4<br>(62.6) | 56.3<br>(62.9) | 49.9<br>(55.5) | 55.1<br>(62.8)   | 50.0<br>(60.7) |
| NTH-EN, MF         | N014                  | Starcross Street lamppost (external to Exmouth Arms) | Free-field                       | 50.7<br>(59.4)   | 54.6<br>(57.9) | 59.3<br>(67.8) | 59.1<br>(70.8) | 49.5<br>(65.1) | 49.4<br>(51.2)  | 49.7<br>(51.2) | 50.2<br>(52.1) | 50.7<br>(54.2) | 47.9<br>(56.9) | 52.9<br>(70.3)   | 47.6<br>(64.3) |
|                    | N016                  | Margaret Centre roof                                 | Free-field                       | 52.4<br>(53.9)   | 57.0<br>(63.9) | 51.9<br>(60.1) | 52.3<br>(57.6) | 50.0<br>(55.6) | 51.5<br>(52.0)  | 53.8<br>(54.3) | 51.3<br>(52.8) | 52.1<br>(58.1) | 49.1<br>(54.5) | 51.0<br>(57.1)   | 49.2<br>(53.6) |
| NTH-EN             | N017                  | Hampstead Road, lamppost #48                         | Free-field                       | 68.5<br>(73.1)   | 68.8<br>(71.5) | 68.2<br>(76.3) | 69.3<br>(75.1) | 67.7<br>(75.8) | 65.5<br>(65.9)  | 70.3<br>(72.0) | 66.5<br>(68.4) | 68.9<br>(75.8) | 67.5<br>(75.0) | 67.6<br>(78.4)   | 65.2<br>(71.0) |
| ETRC & HRB, NTH-N  | N018                  | Outside replacement housing, Hampstead Road          | Free-field                       | 66.8<br>(68.7)   | 68.2<br>(70.2) | 67.5<br>(71.8) | 67.7<br>(74.1) | 65.5<br>(73.4) | 65.0<br>(65.9)  | 67.8<br>(69.3) | 66.3<br>(66.6) | 68.0<br>(74.9) | 65.9<br>(71.2) | 66.7<br>(73.9)   | 65.2<br>(73.8) |

2.1.2 Table 4 presents a summary of the measured vibration levels at each monitoring location over the reporting period. The highest PPV measured during the monitoring along any axis is presented in the table.

Table 4: Summary of Measured PPV Data over the Monitoring Period

| Worksite Reference | Measurement Reference | Monitor Address   | Highest PPV measured in any axis, mm/s |
|--------------------|-----------------------|---|--|
| MSB & ECAV, PVE, C | PVS-V1                | Park Village Studios  | 1.27 (Y-axis)                          |
| ESB & GTB, PVE, D  | SH-V1                 | Basement of Silsoe House  | 2.81 (Y-axis)                          |
| ETRC & HRB         | V039                  | Euston Approaches site – east of Coniston, Regent’s Park Estate | 10.90 (Y-axis)*                        |
|                    | V043                  | Euston Approaches site – Cartmel House, Regents Park Estate     | 0.30 (Z-axis)                          |
| ETD, ITR           | V003                  | RCGP basement vaults, 305 Euston Road                           | 1.03 (Y-axis)                          |
| TSS                | V002                  | RCGP basement boiler room, 305 Euston Road                      | 1.24 (Y-axis)                          |
|                    | V037                  | Magic Circle, basement  | 1.38 (Z-axis)                          |
|                    | V038                  | Wesley Hotel, basement lightwell, Euston Street                 | 0.85 (Z-axis)                          |
| NTH-EN, MF         | V021                  | 42-44 Cobourg Street (floor)                                    | 0.82 (Z-axis)                          |

\*High levels of vibration are due to works in close proximity to the monitor. The receptor is located further from the works and therefore vibration levels will be lower at the receptor.

2.1.3 Appendix C presents graphs of the noise and vibration monitoring data over the month for each of the measurement locations. Noise data presented consists of the hourly  $L_{Aeq}$  values and, where relevant, the  $L_{Aeq,T}$  values (where the time period T has been taken to be the averaging period as specified in Table 1 of HS2 Information Paper E23). Vibration data presented consist of hourly PPV values. The full data set for the monitoring equipment can be found at the following location:

<https://data.gov.uk/dataset/24542ae7-dd44-444f-b259-871c4cc43b5e/environmental-monitoring-data>.

## 2.2 Exceedances of the SOAEL

2.2.1 The significant observed adverse effect level (SOAEL) is defined in the ‘Planning Practice Guidance – Noise’ as the level above which "noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area."

2.2.2 HS2 Phase One Information Paper E23: Control of Construction Noise and Vibration sets out the SOAELs for construction noise.

2.2.3 Where reported construction noise levels exceed the SOAEL at nearby receptors, relevant periods will be identified. Summary statistics to evaluate ongoing qualification for noise insulation and temporary rehousing are also presented where relevant.

2.2.4 Table 5 presents a summary of recorded exceedances of the SOAEL at each measurement location over the reporting period, including the number of exceedances during each time period.

Table 5: Summary of Exceedances of SOAEL

| Worksite Reference | Measurement Reference | Site Address  | Day (Weekday, Saturday, Sunday, Night) | Time period | Number of exceedances of SOAEL |
|--------------------|-----------------------|---|--|-------------|--------------------------------|
| ARVS               | N051                  | Outside 70 Adelaide Road  | All days                               | All periods | No exceedance                  |
|                    | N051a                 | Outside 70 Adelaide Road  | All days                               | All periods | No exceedance                  |
|                    | N052                  | Adelaide Road, Beaumont Walk  | All days                               | All periods | No exceedance                  |
| B                  | JC                    | Juniper Crescent  | All days                               | All periods | No exceedance                  |
| MSB & ECAV, PVE, C | N024                  | Lamppost outside Park Village Studios, Park Village East                | All days                               | All periods | No exceedance                  |
|                    | N047                  | Lamppost #3 on corner of Park Village East and Mornington Street Bridge | All days                               | All periods | No exceedance                  |
|                    | PVS-N001              | Park Village Studios  | All days                               | All periods | No exceedance                  |
|                    | N022                  | Lamppost #34 on Mornington Terrace                                      | All days                               | All periods | No exceedance                  |
|                    | N046                  | Lamppost on Mornington Terrace, between Mornington Street Bridge        | All days                               | All periods | No exceedance*                 |

| Worksite Reference | Measurement Reference | Site Address   | Day (Weekday, Saturday, Sunday, Night) | Time period | Number of exceedances of SOAEL |
|--------------------|-----------------------|--|--|-------------|--------------------------------|
|                    |                       | and Delancey Street  |  |             |                                |
| ESB & GTB, PVE, E  | N001                  | Park Village East Lamppost #1  | All days                               | All periods | No exceedance                  |
|                    | N002                  | Park Village East Lamppost #2  | All days                               | All periods | No exceedance                  |
| ESB & GTB, PVE, D  | N003                  | Park Village East Lamppost #15 Outside Silsoe House                      | All days                               | All periods | No exceedance                  |
|                    | N004                  | Mornington Terrace Lamppost #7   | All days                               | All periods | No exceedance                  |
| ESB & GTB, E, PVE  | N005                  | Euston Approaches – Xavier House site office external staircase          | All days                               | All periods | No exceedance                  |
|                    | CR                    | Lamppost #2 on Clarkson Row  | Weekday                                | 0800-1800   | 1                              |
| ETRC & GTB, F      | N023                  | Lamppost #21 on Hampstead Road   | All days                               | All periods | No exceedance                  |
| ETRC & HRB         | N020                  | Lamppost on corner of Mackworth Street and Harrington Street             | All days                               | All periods | No exceedance                  |
|                    | N021                  | Stanhope Street, lamppost #2   | All days                               | All periods | No exceedance                  |
|                    | N044                  | Regents Park Estate west, near Langdale                                  | All days                               | All periods | No exceedance*                 |
|                    | N045                  | Euston Approaches site hoarding – east of Coniston, Regent's Park Estate | All days                               | All periods | No exceedance                  |

| Worksite Reference | Measurement Reference | Site Address   | Day (Weekday, Saturday, Sunday, Night) | Time period | Number of exceedances of SOAEL |
|--------------------|-----------------------|--|--|-------------|--------------------------------|
| HRB & ETRC, NTH-N  | N019                  | Euston Approaches site hoarding – north facing façade of Cartmel House | All days                               | All periods | No exceedance                  |
|                    | N026a                 | Euston Approaches site hoarding – east facing façade of Cartmel House  | Weekday                                | 0800-1800   | 4                              |
| ETD, TSS           | N006                  | RCGP Roof level  | All days                               | All periods | Not applicable*                |
| TSS                | N008                  | Stephenson's Way lamppost (external to RCGP)                           | All days                               | All periods | Not applicable*                |
|                    | N010                  | Wesley Hotel   | All days                               | All periods | Not applicable*                |
|                    | N011                  | Outside 82 Euston Street   | All days                               | All periods | No exceedance                  |
| ETD, ITR           | N007                  | RCGP, Melton Street  | All days                               | All periods | No exceedance                  |
| VHA                | N025                  | Lamppost #3 on Prince Albert Road                                      | All days                               | All periods | No exceedance                  |
| NTH-EN, TSS        | N012                  | Opposite 92-94 Drummond Street   | All days                               | All periods | No exceedance                  |
| NTH-EN, MF         | N014                  | Starcross Street lamppost (external to Exmouth Arms)                   | All days                               | All periods | No exceedance                  |
|                    | N016                  | Margarete Centre roof  | All days                               | All periods | No exceedance                  |
| NTH-EN             | N017                  | Hampstead Road, lamppost #48   | All days                               | All periods | No exceedance                  |
| ETRC & HRB, NTH-N  | N018                  | Outside replacement housing, Hampstead Road                            | All days                               | All periods | No exceedance                  |

\* The defined SOAEL criteria are not applicable to non-residential properties.

2.2.5 Exceedances of the SOAEL were recorded at two (2) noise monitors. The SOAEL exceedances were recorded during weekday daytime periods.

2.2.6 For the purpose of assessing eligibility for noise insulation or temporary rehousing, multiple exceedances of the SOAEL in a 24-hour period would be counted as a single exceedance during that day. Over the reporting period, the overall number of SOAEL exceedances at each measurement location is shown in Table 6 and may be lower than the total sum of individual exceedances reported in Table 5 for each location.

Table 6: Summary of Total Exceedances of SOAEL

| Worksite Reference | Measurement Reference | Monitor Address   | Total of SOAEL exceedances in the month |
|--------------------|-----------------------|---|---|
| ESB & GTB, E, PVE  | CR                    | Lamppost #2 on Clarkson Row   | 1                                       |
| HRB & ETRC, NTH-N  | N026a                 | Euston Approaches site hoarding - east facing façade of Cartmel House | 4                                       |

2.2.7 Five (5) 24-hour periods that experienced an exceedance of the SOAEL were recorded due to HS2 construction works during July 2024.

## 2.3 Exceedances of Trigger Level

2.3.1 Table 7 provides a summary of exceedances of the S61 trigger noise levels determined to be due to HS2 related construction noise measured during the reporting period, along with the findings of any investigation.

Table 7: Summary of Exceedances of Trigger Levels

| Complaint Reference Number (if applicable) | Worksite Reference | Date and Time Period                      | Identified Source      | Results of Investigation (including noise monitoring results)  | Actions Taken  |
|--|--------------------|---|------------------------|--|--|
| -  | E                  | Wednesday 31/07/2024 - during core hours. | Tarmac delivery lorry. | Tarmac delivery lorry was located adjacent to the noise monitor resulting in level of 74.6dB LAeq,10h. | No actions taken, no other delivery methods that would keep the material at temperature were identified. Tarmac works were completed and works at worksite are now paused until September. |

## 2.4 Complaints

2.4.1 Table 8 provides a summary of complaint information related to noise and vibration received during the reporting period, along with the findings of any investigation.

Table 8: Summary of Complaints

| Complaint Reference Number | Worksite Reference | Description of Complaint  | Results of Investigation                               | Actions Taken  |
|----------------------------|--------------------|---|--|--|
| HS2-24-111627-E-C          | ARVS               | Complaint due to noisy workers at night.  | No HS2 works were taking place during the time stated. | Information was provided to the resident outlining the results of investigation. |
| HS2-24-45573-C             | TSS                | Complaint due to noisy workers talking and forcefully shutting vehicle doors during the night-time. | No HS2 works were taking place during the time stated. | Information was provided to the resident outlining the results of investigation. |

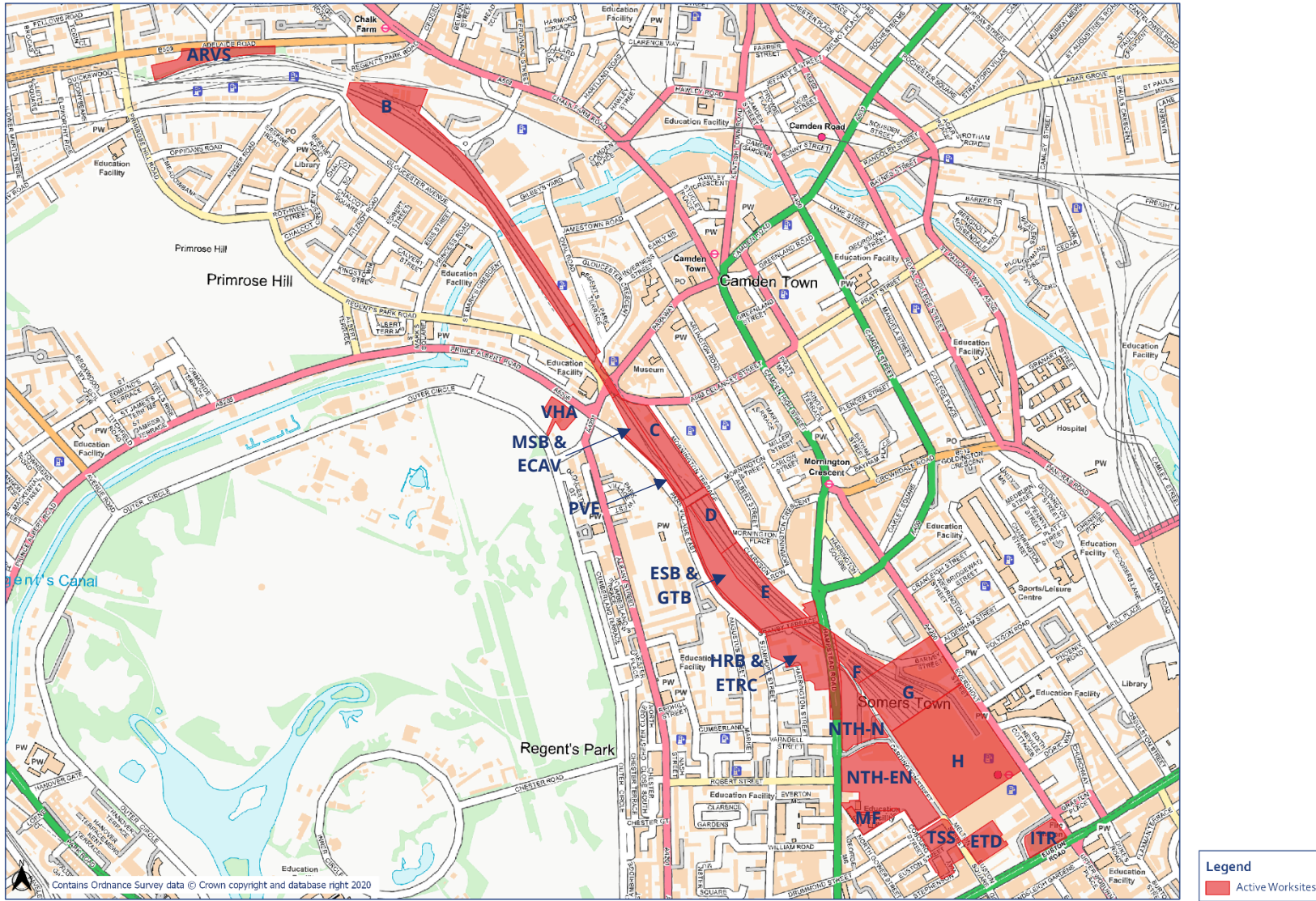
| Complaint Reference Number | Worksite Reference | Description of Complaint                               | Results of Investigation                               | Actions Taken   |
|----------------------------|--------------------|--|--|---|
| HS2-24-111959-E-C          | NTH-EN             | Complaint due to machinery noise coming from the site. | The noise due to machinery safety warning.             | The matter discussed with the site team, the alarm is a safety requirement to ensure the safety of workers operating next to live machinery. The team will limit the use of the machine to ensure disturbances is kept to a minimum. Information was provided to the resident outlining the results of investigation. |
| HS2-24-112261-E-C          | ESB & GTB, PVE, D  | Complaint due to machinery noise coming from the site. | No HS2 works were taking place during the time stated. | Information was provided to the resident outlining the results of investigation.  |



# Appendix A Site Locations

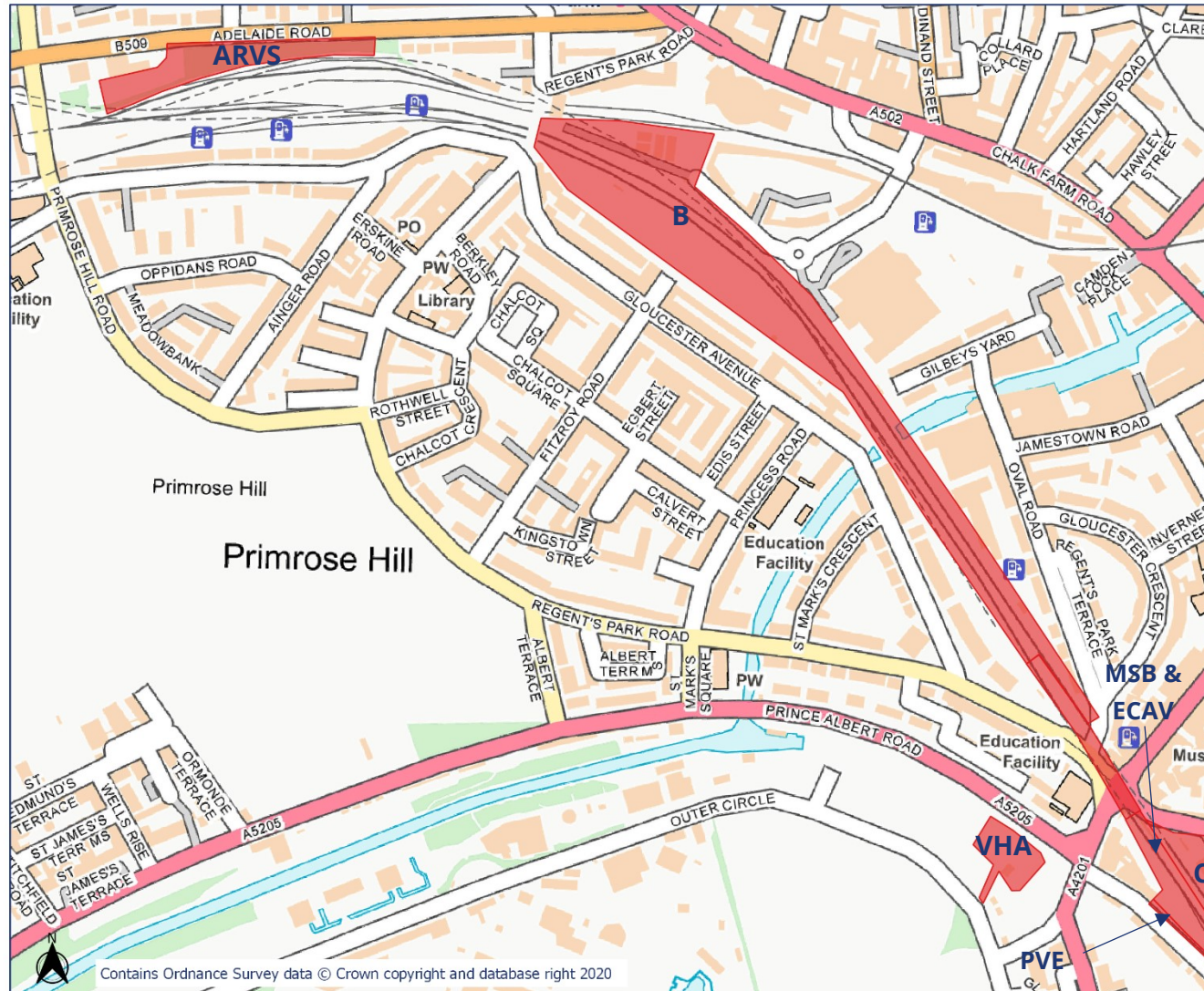
# HS2

## Worksite Identification Plan - Overview



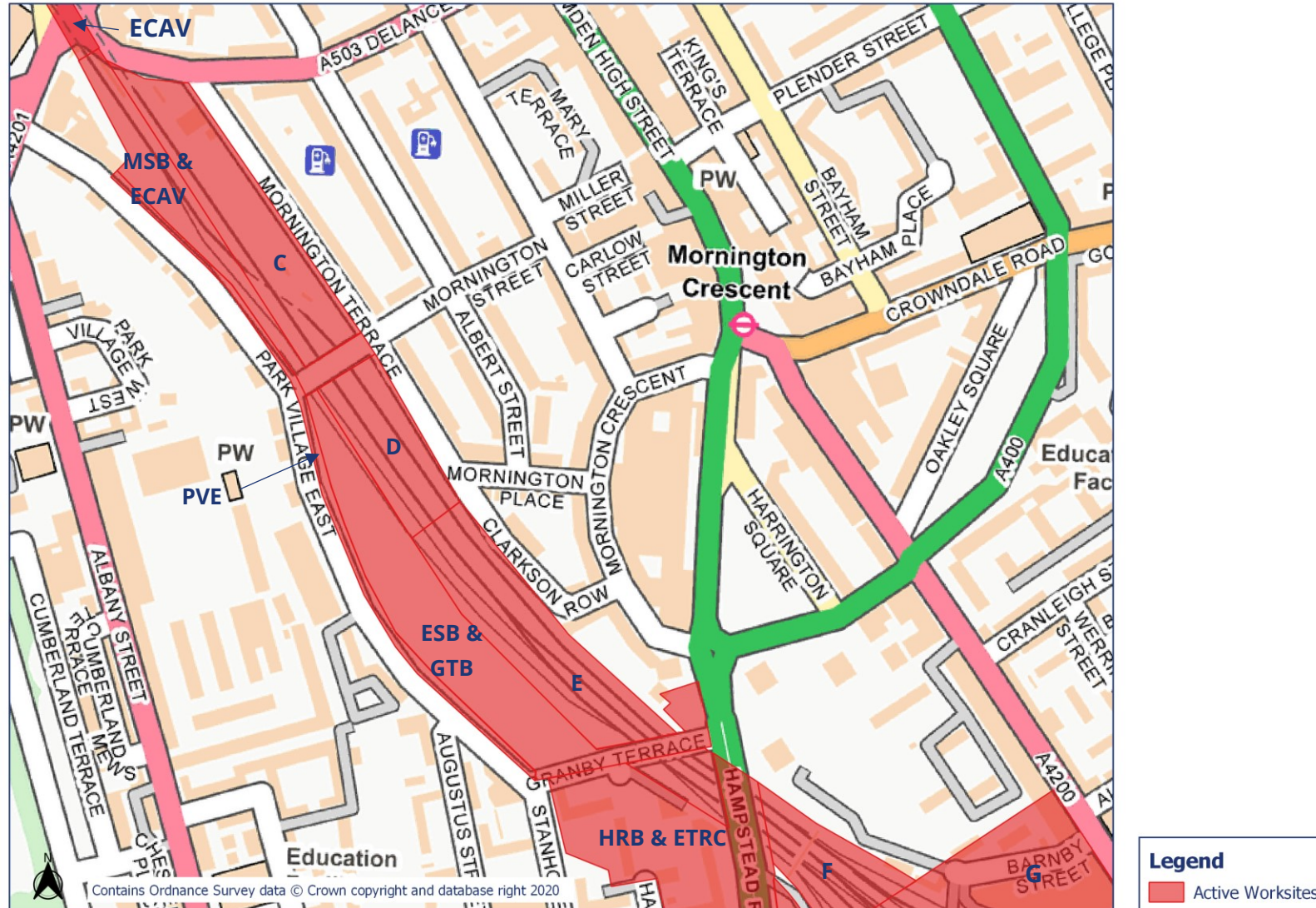
# HS2

## Worksite Identification Plan - 1



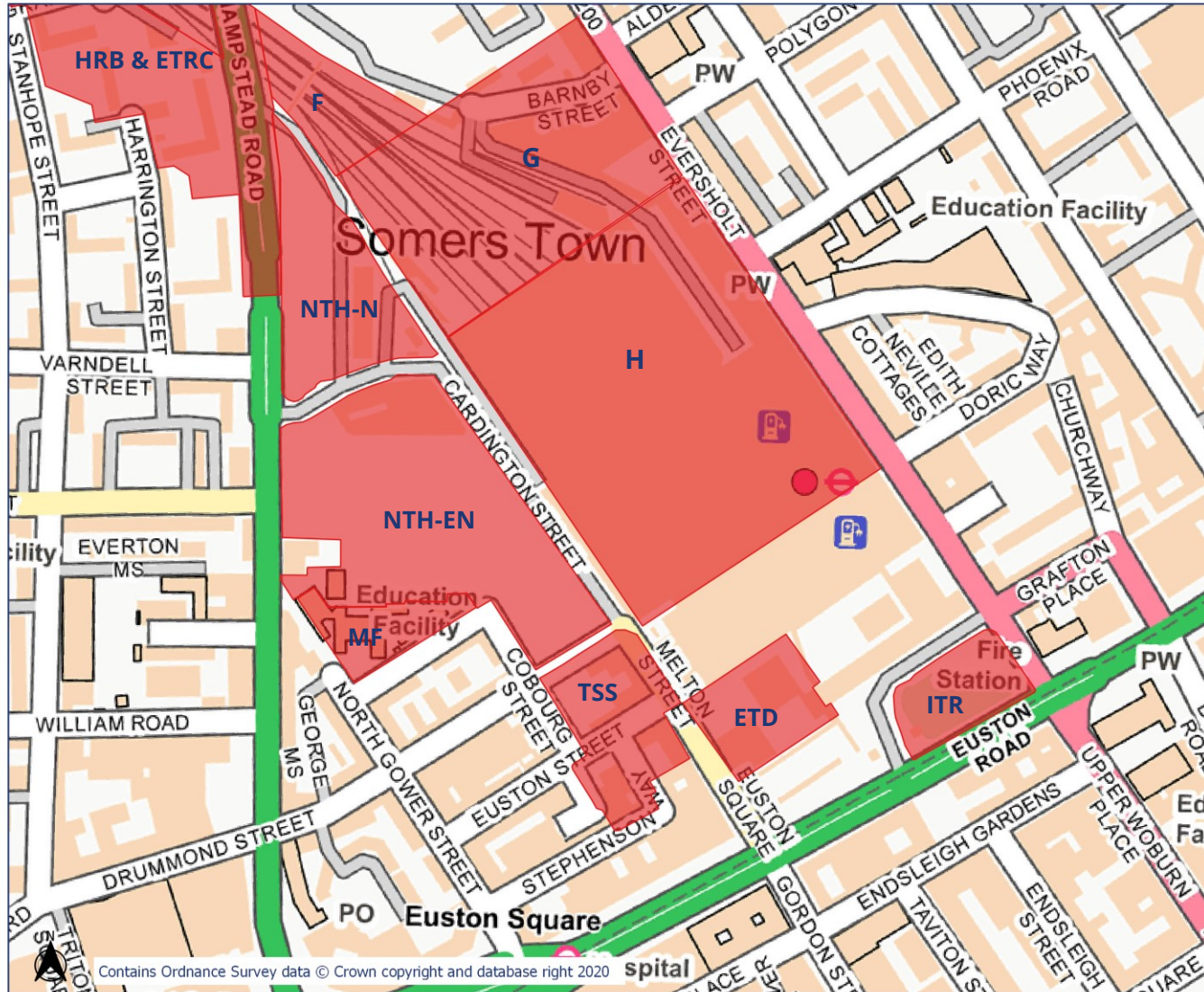
# HS2

## Worksite Identification Plan - 2



# HS2

## Worksite Identification Plan - 3



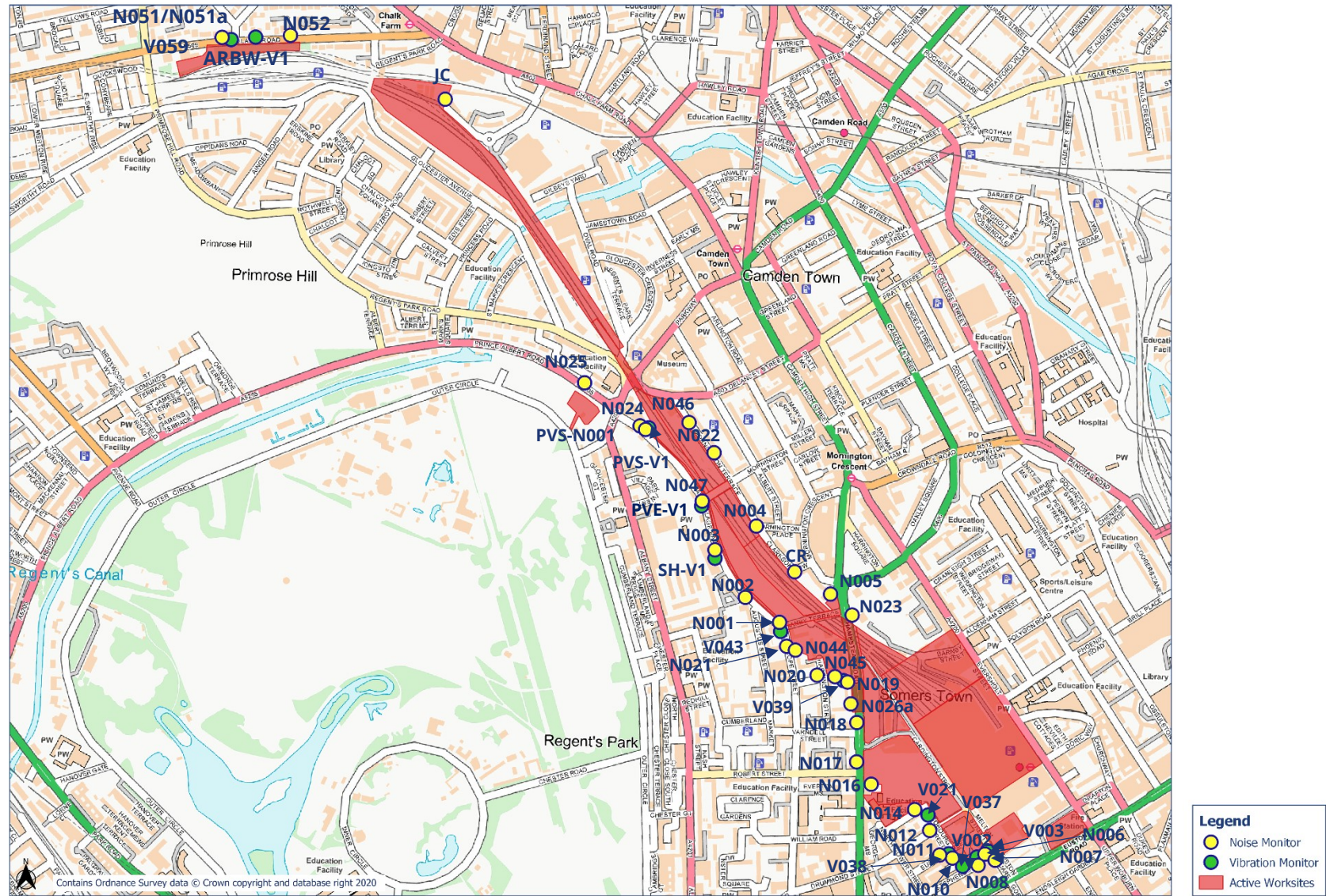
**Legend**

- Active Worksites

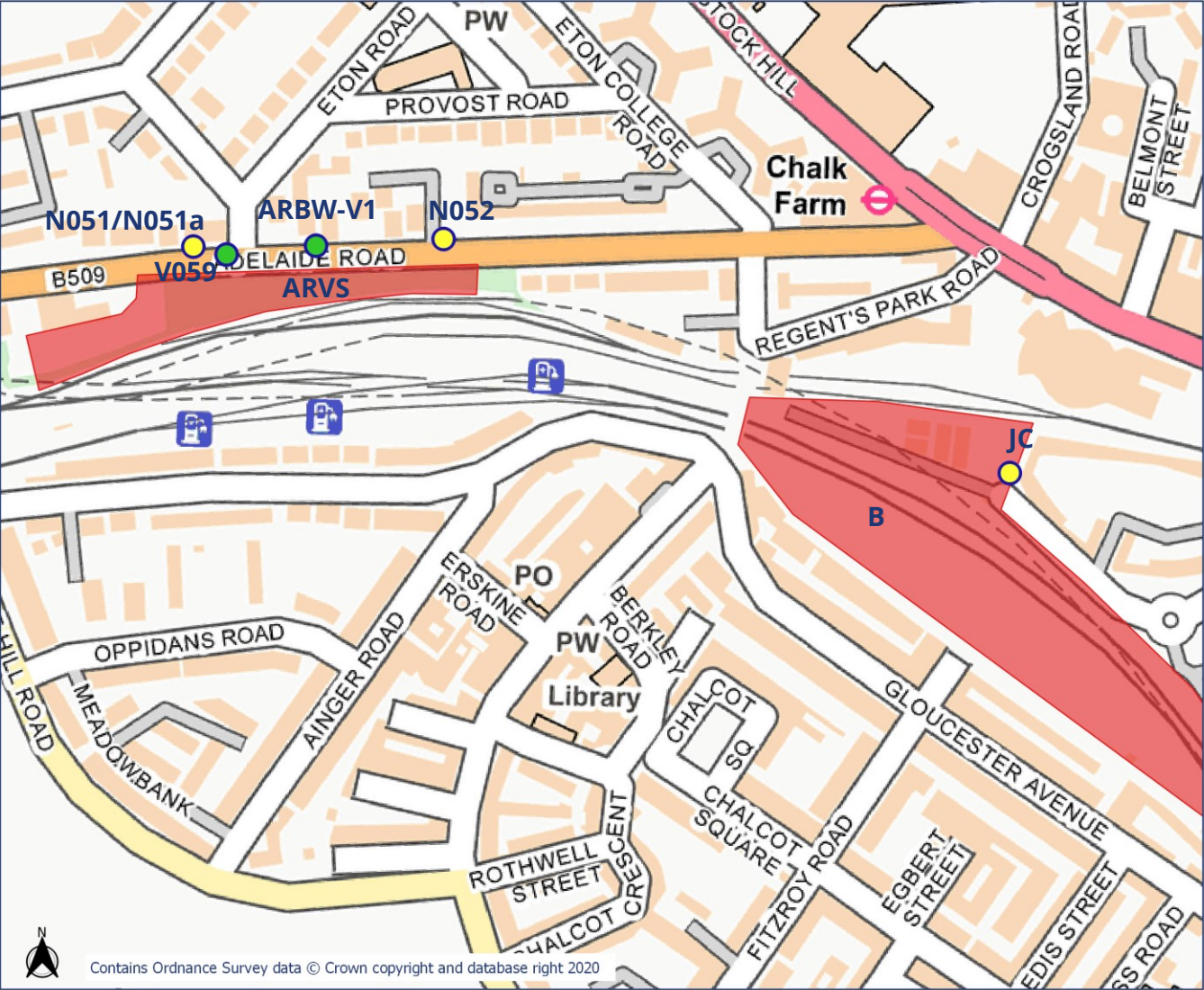
# Appendix B Monitoring Locations

# HS2

## Noise and Vibration Monitoring Plan - Overview



# HS2 Noise and Vibration Monitoring Plan - 1



**Legend**

- Noise Monitor
- Vibration Monitor
- Active Worksites

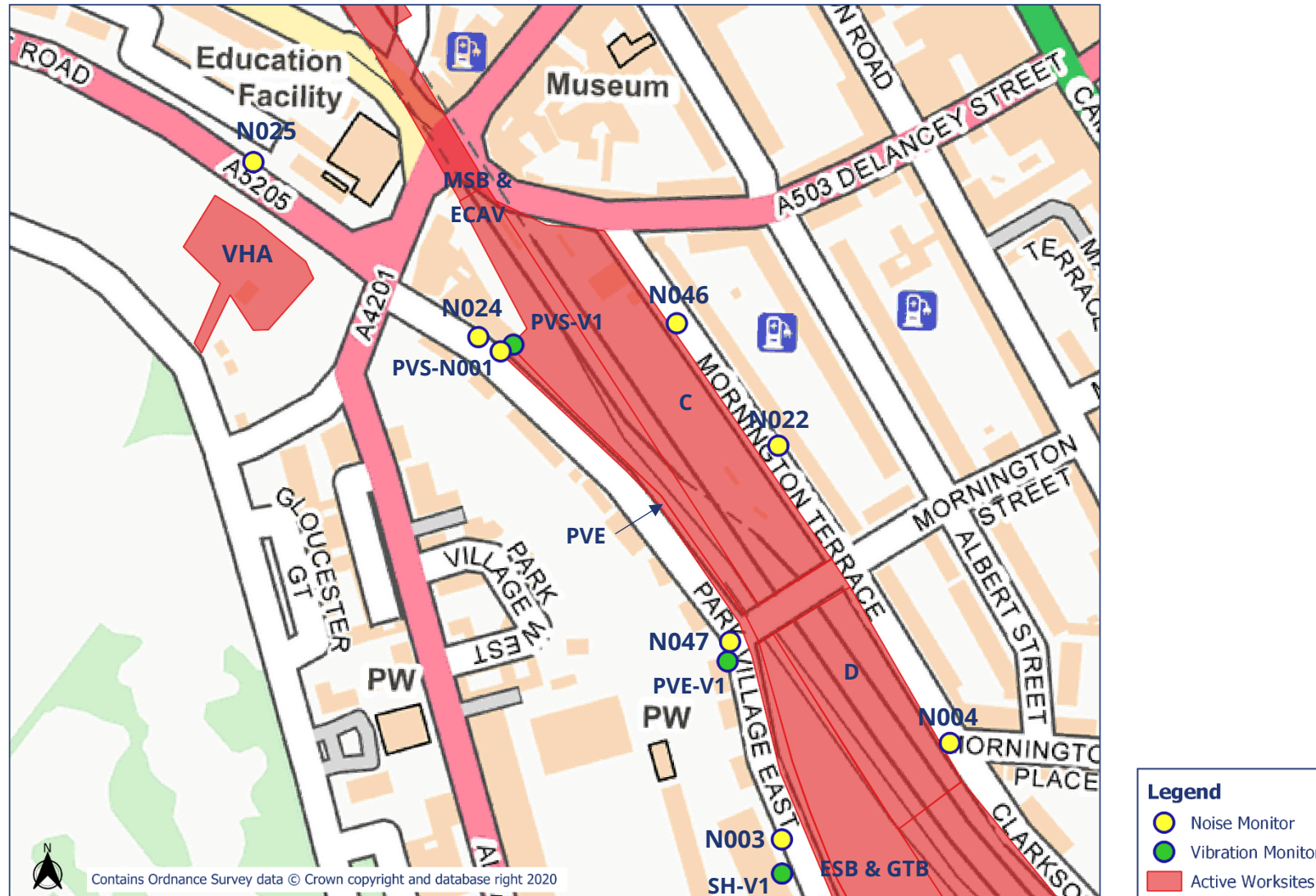


Contains Ordnance Survey data © Crown copyright and database right 2020



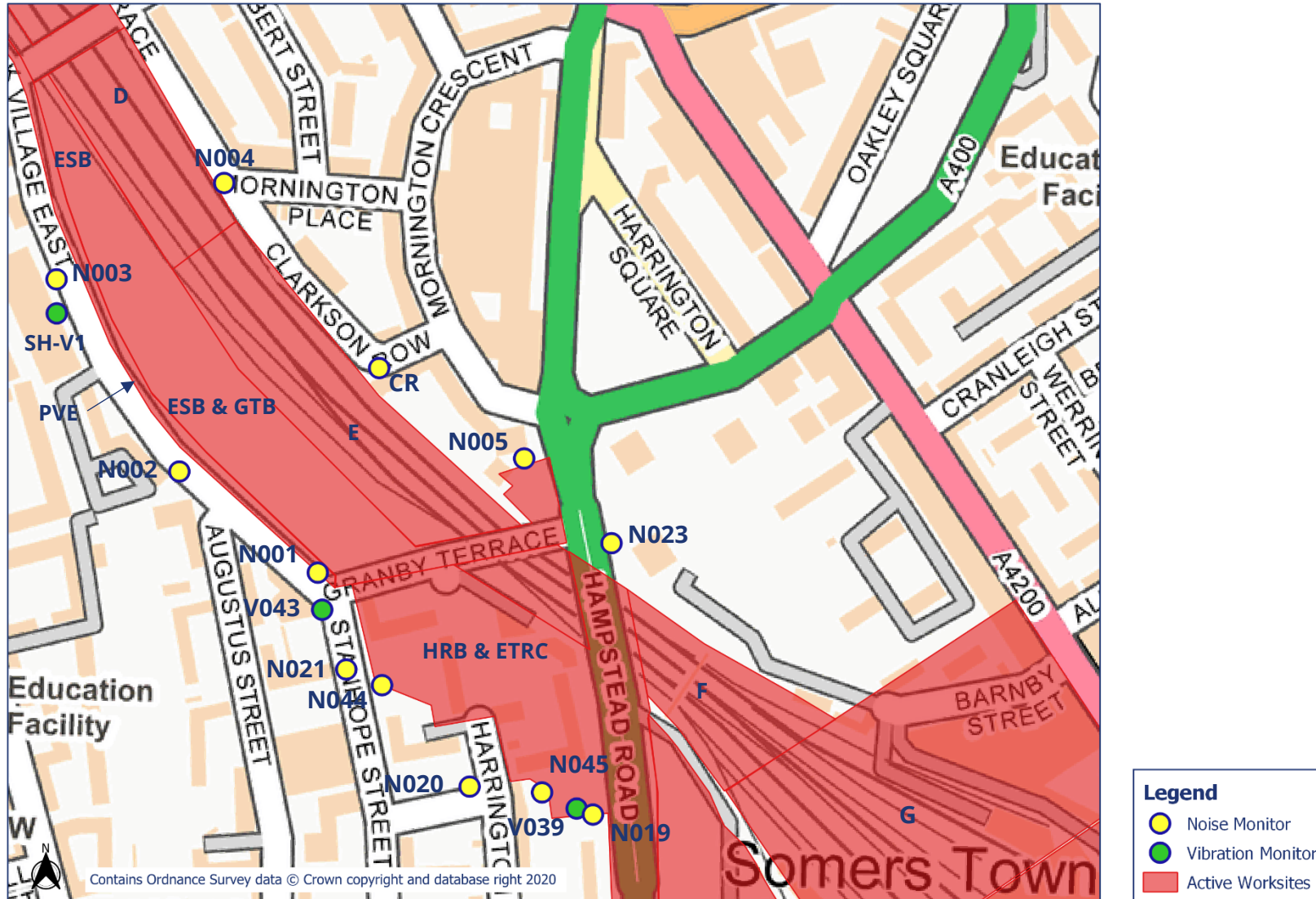
# HS2

## Noise and Vibration Monitoring Plan - 2



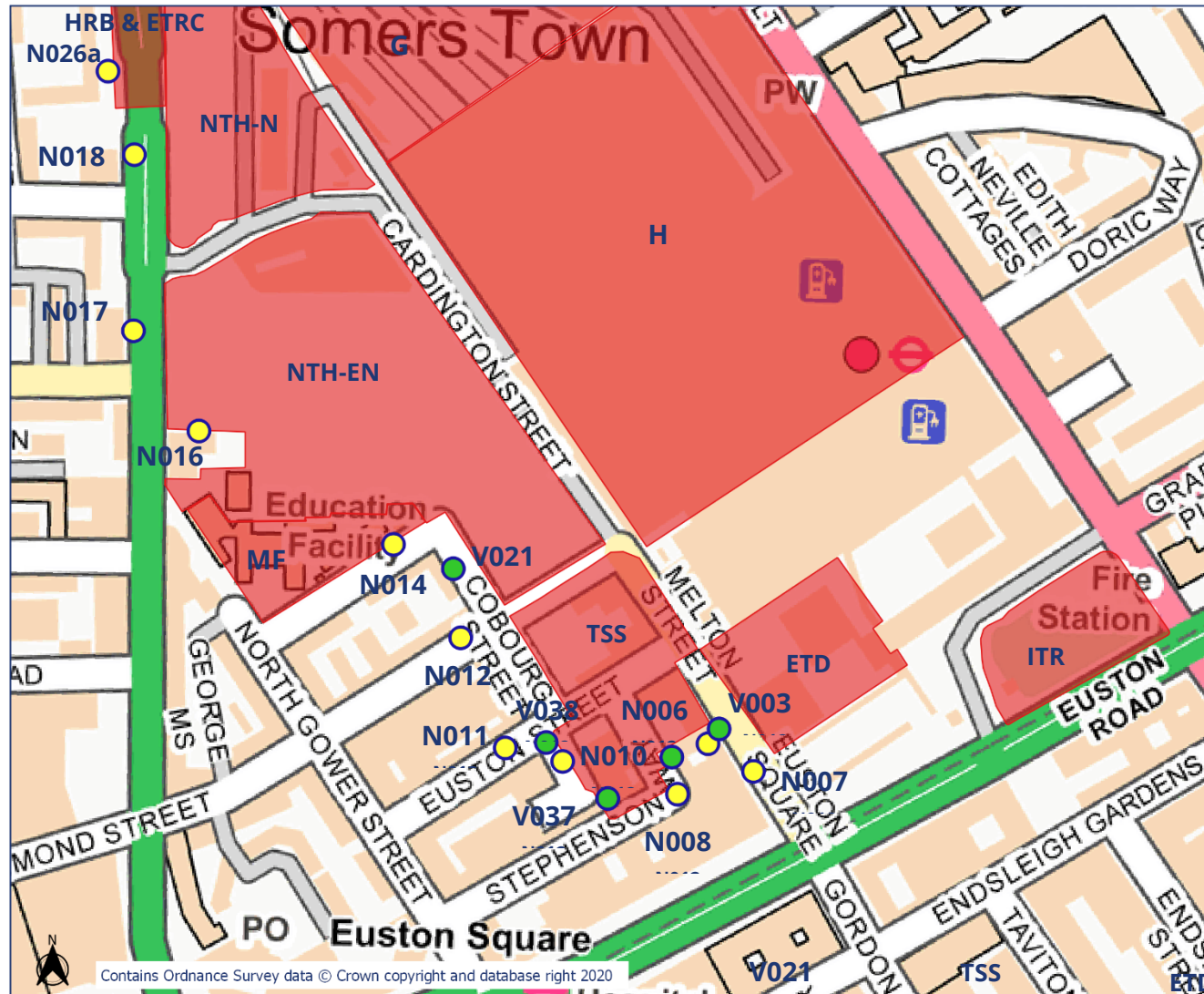
# HS2

## Noise and Vibration Monitoring Plan - 3



# HS2

## Noise and Vibration Monitoring Plan - 4



**Legend**

- Noise Monitor
- Vibration Monitor
- Active Worksites

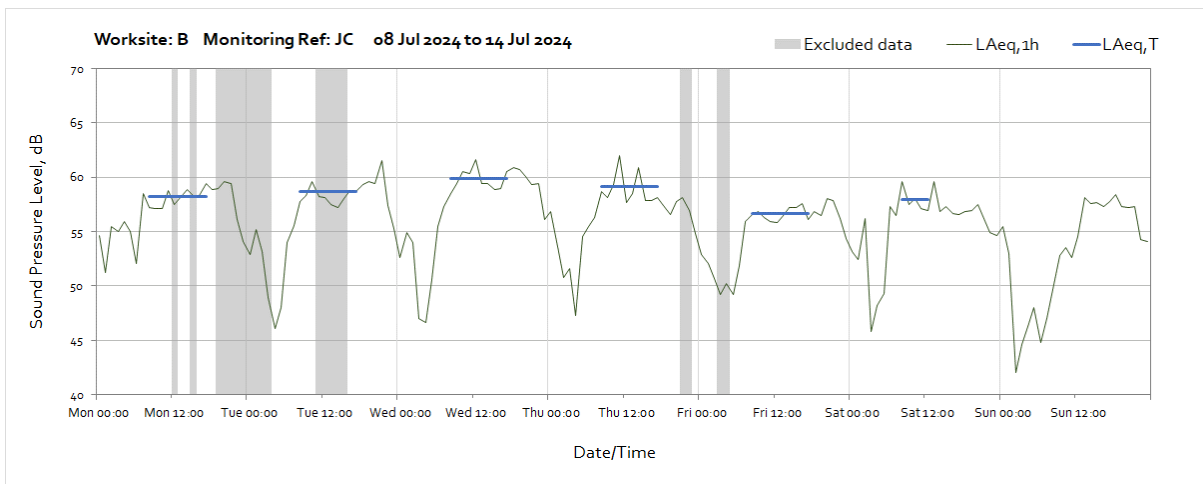
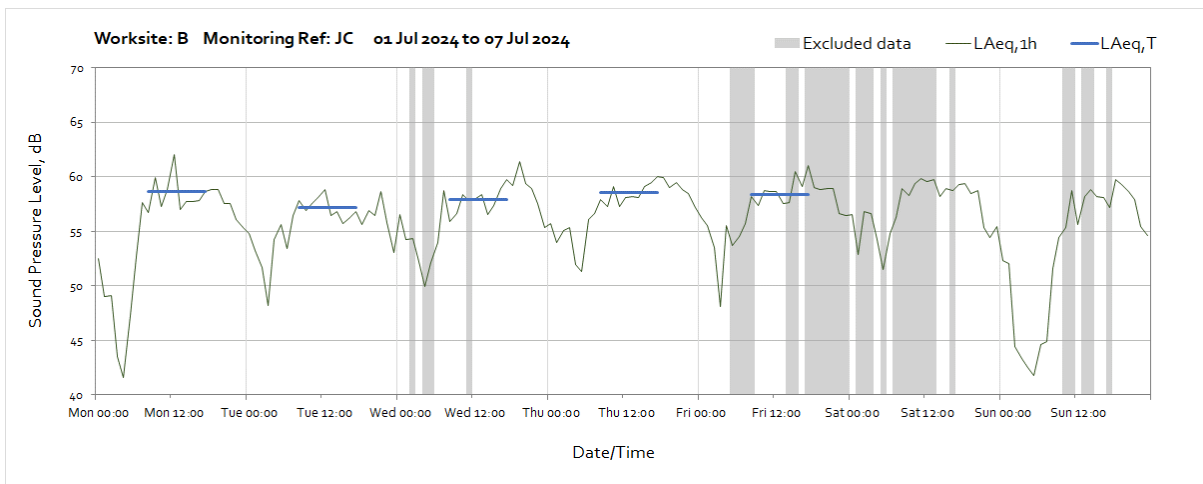
Contains Ordnance Survey data © Crown copyright and database right 2020

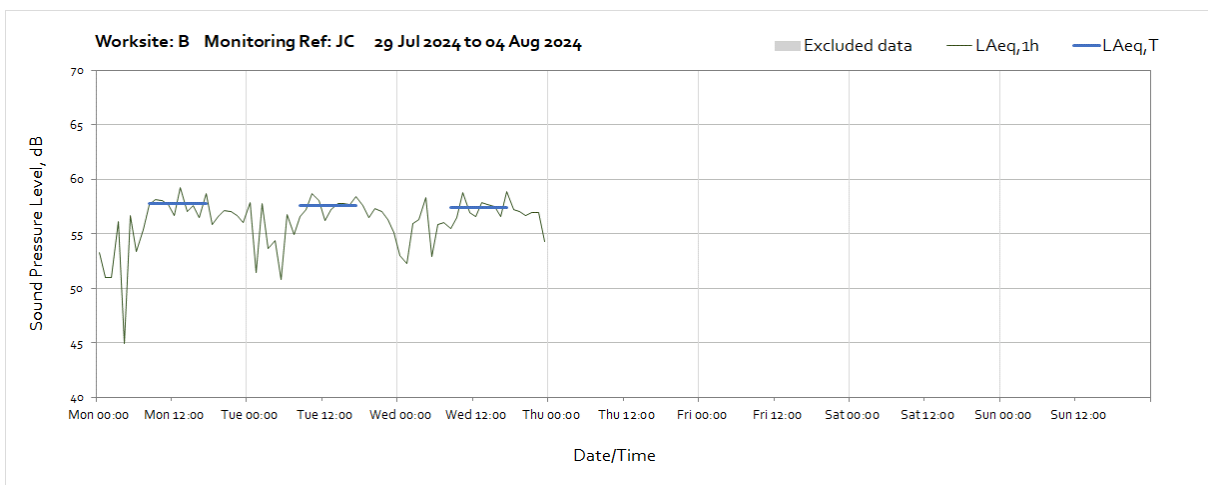
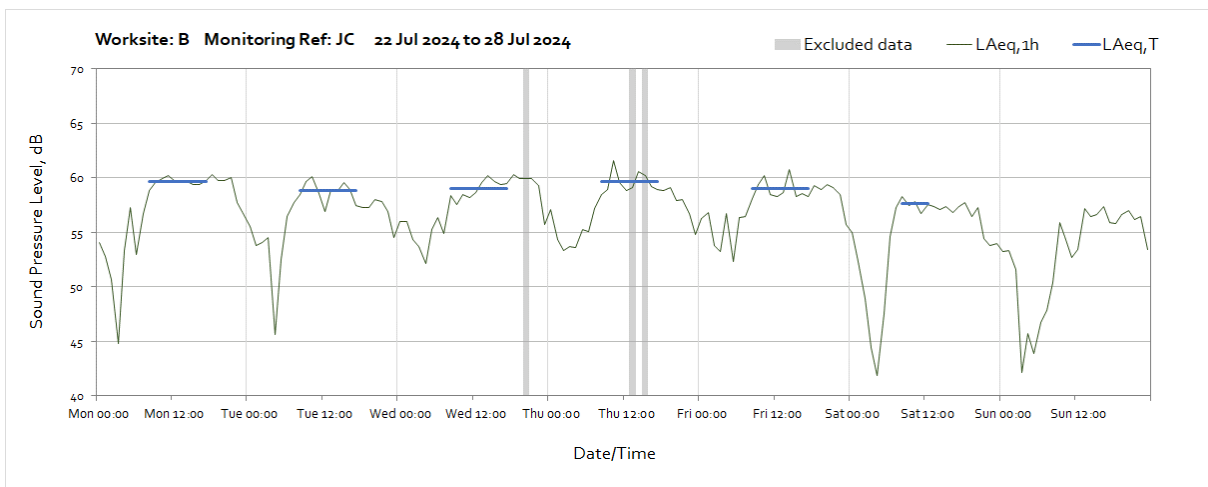
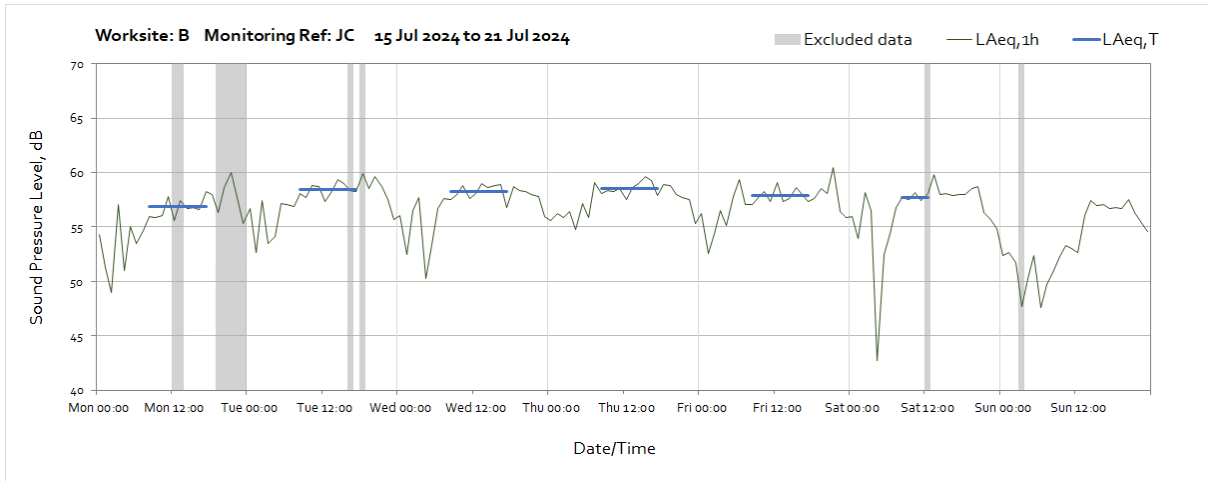
# Appendix C Data

## Noise

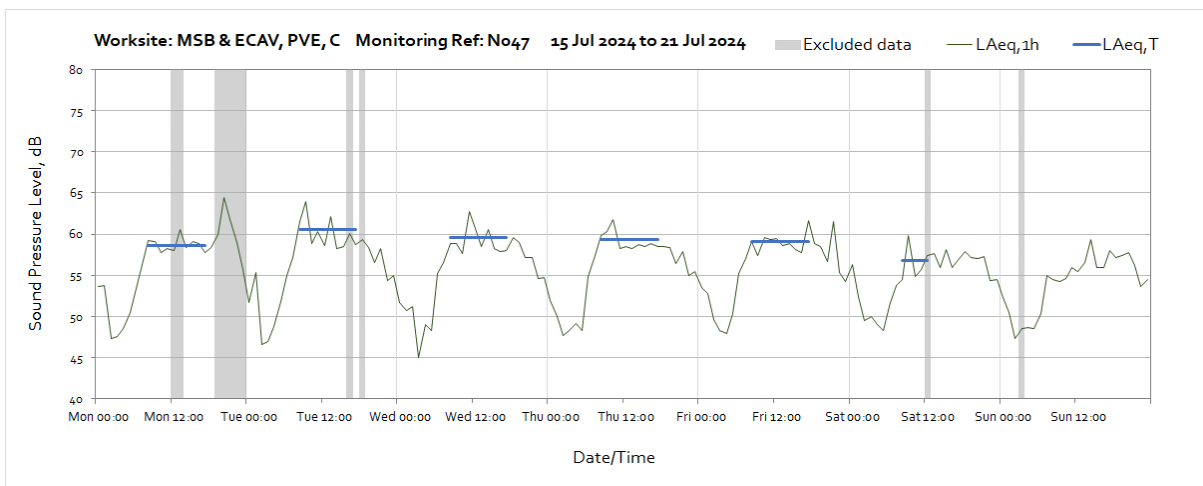
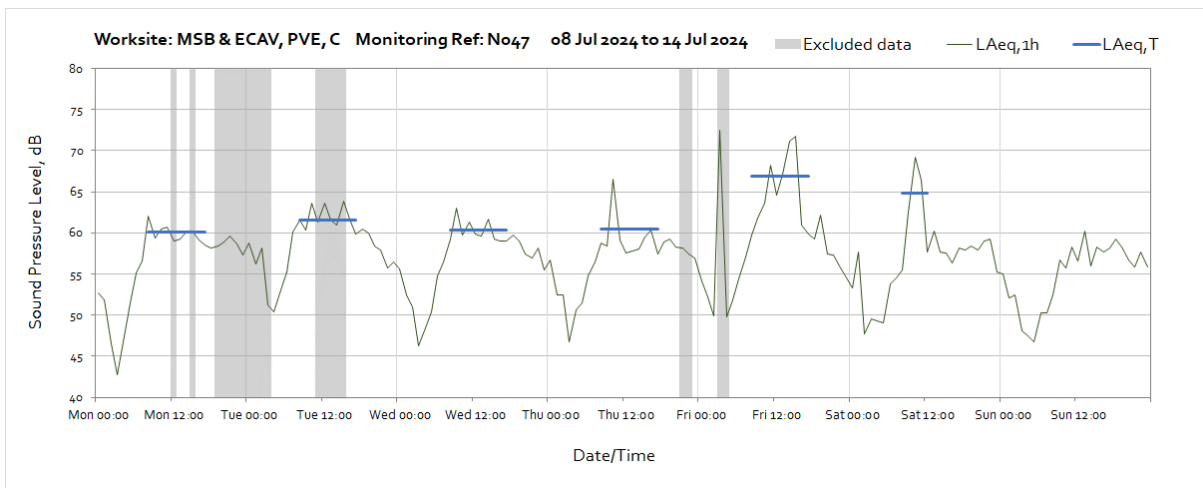
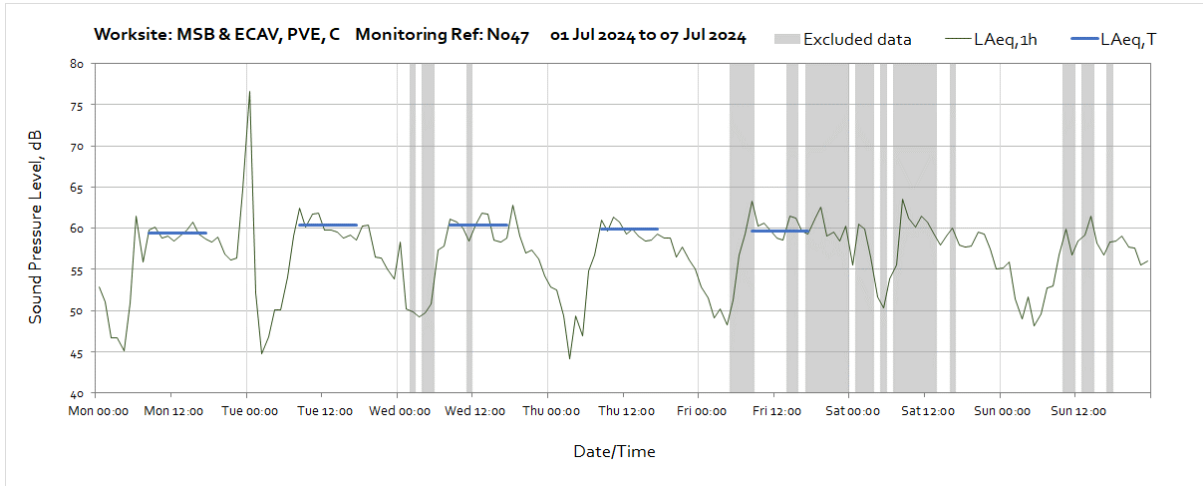
The following graphs show the hourly measured ambient noise level  $L_{Aeq,1h}$  and, where relevant, the averaged noise level  $L_{Aeq,T}$  values, where the time period T is as specified in Table 1 of HS2 Information Paper E23. Periods where noise levels are adversely affected by weather or only measured for part of the period, which are not representative of HS2 construction works, have been greyed out and excluded from the calculation of the  $L_{Aeq,T}$  values in in Table 3 of the main report.

### Worksite: B - Monitoring Ref: JC

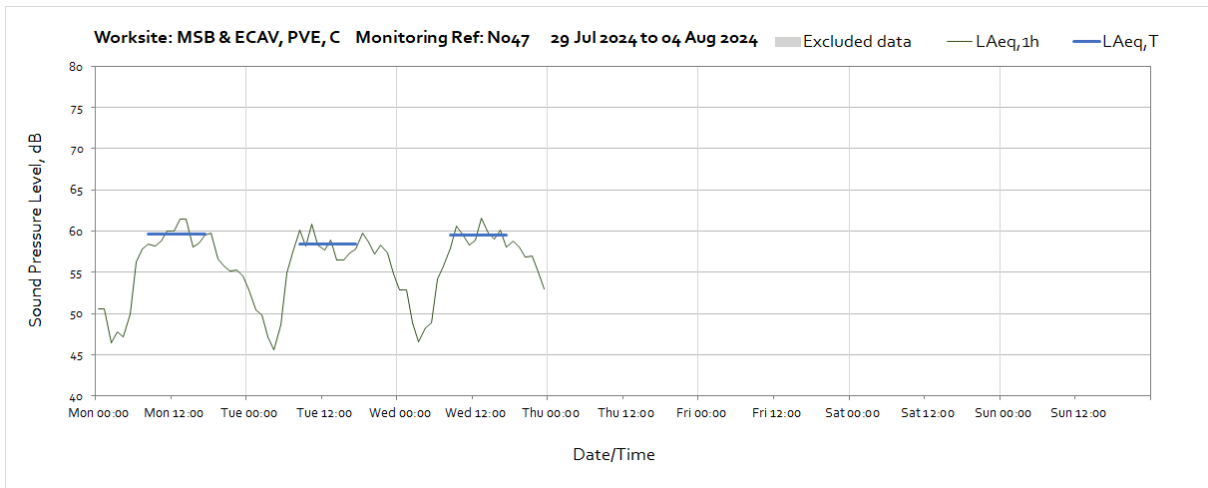
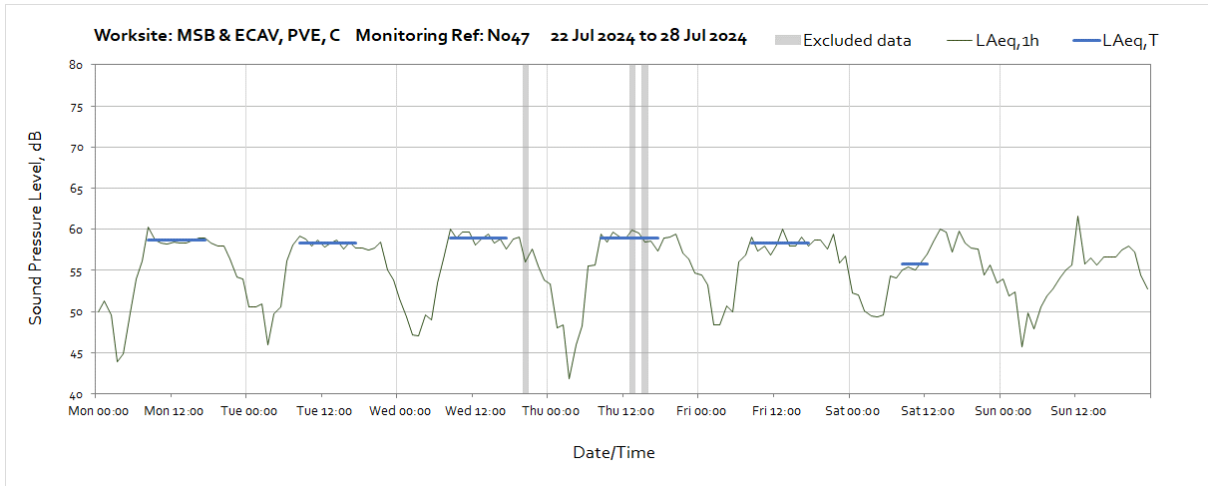




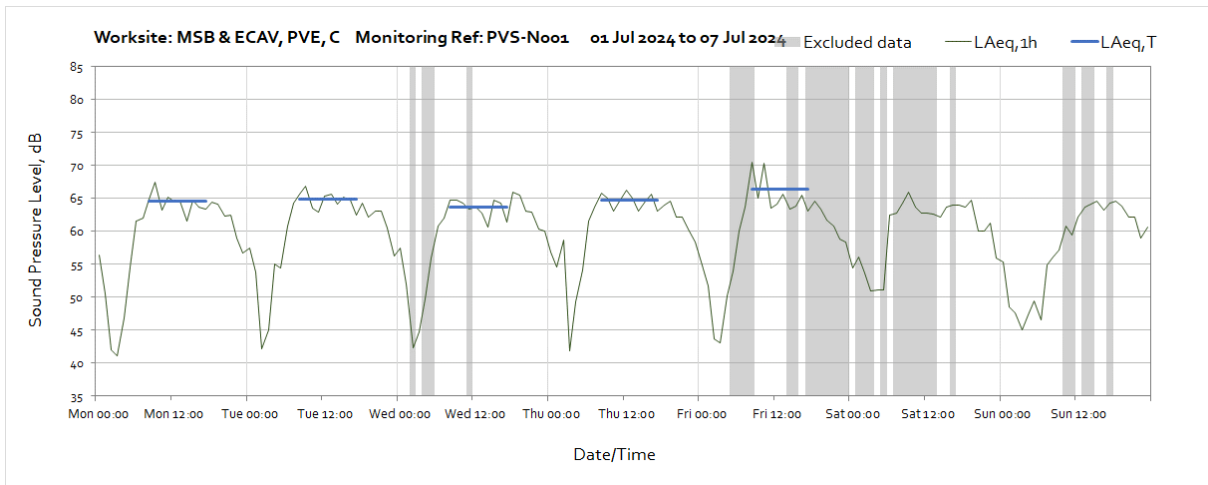
## Worksite: MSB & ECAV, PVE, C - Monitoring Ref: N047

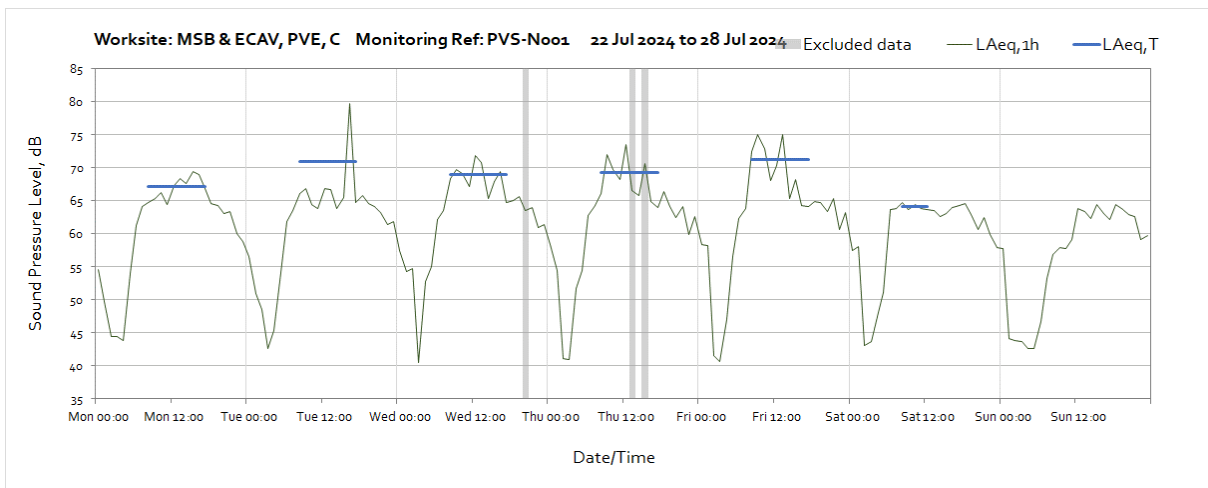
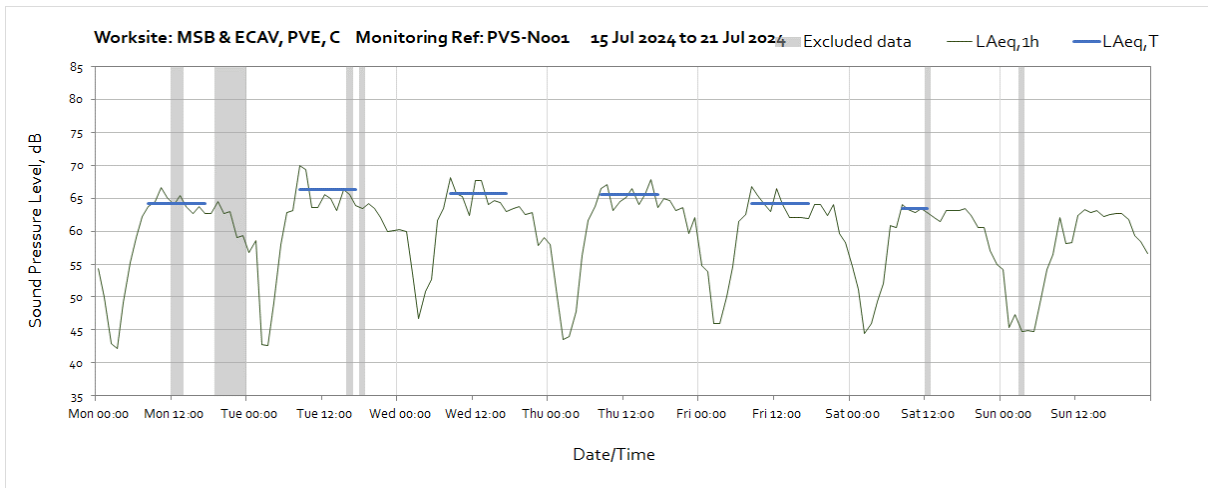
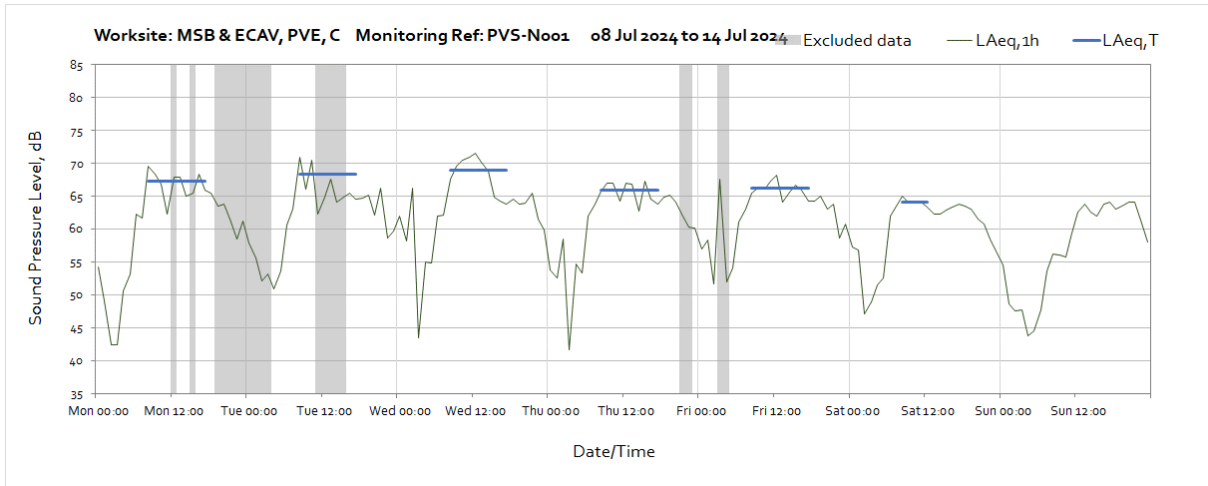


OFFICIAL

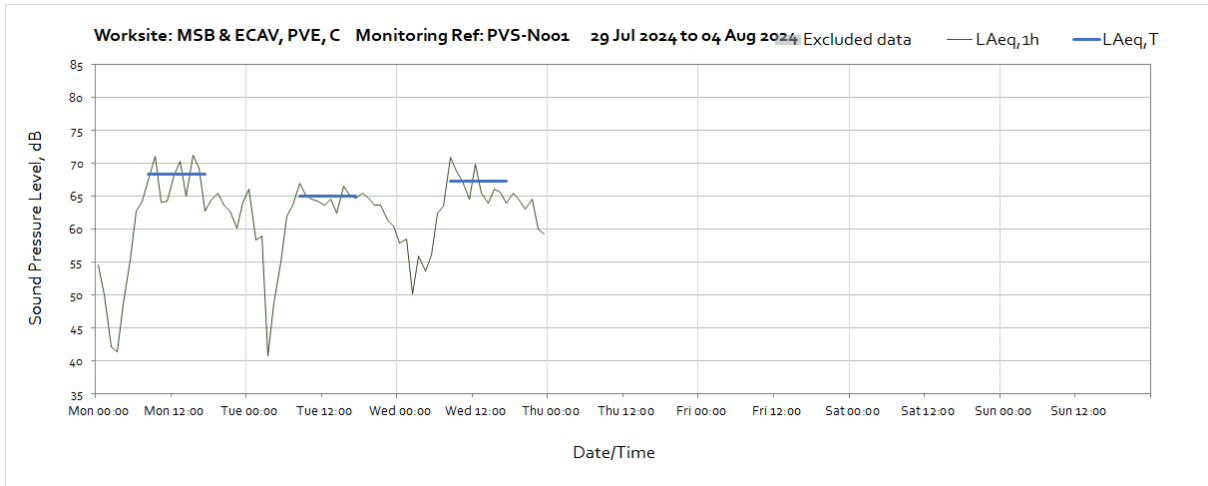


**Worksite: MSB & ECAV, PVE, C – Monitoring Ref: PVS-N001**

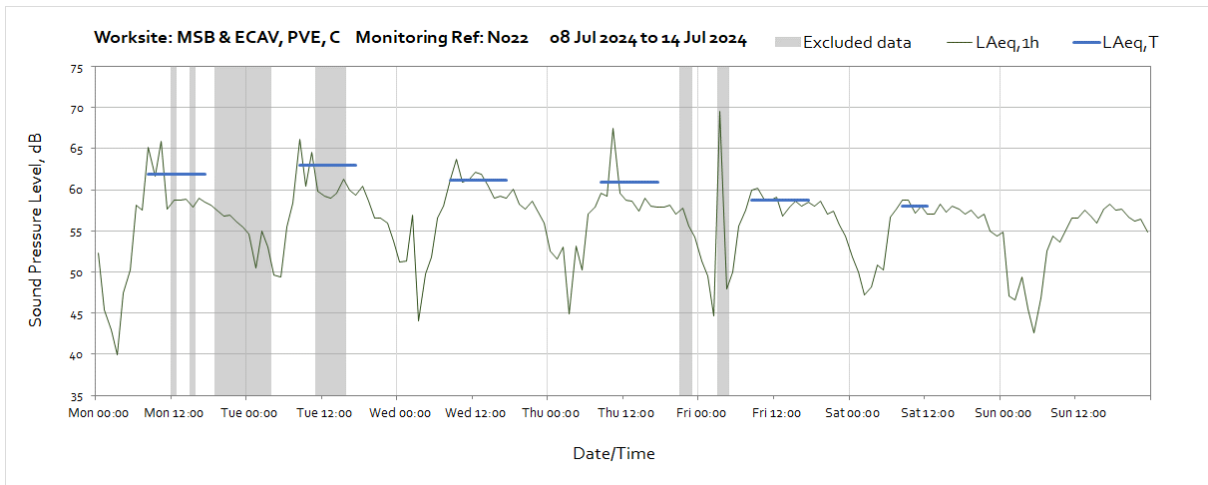
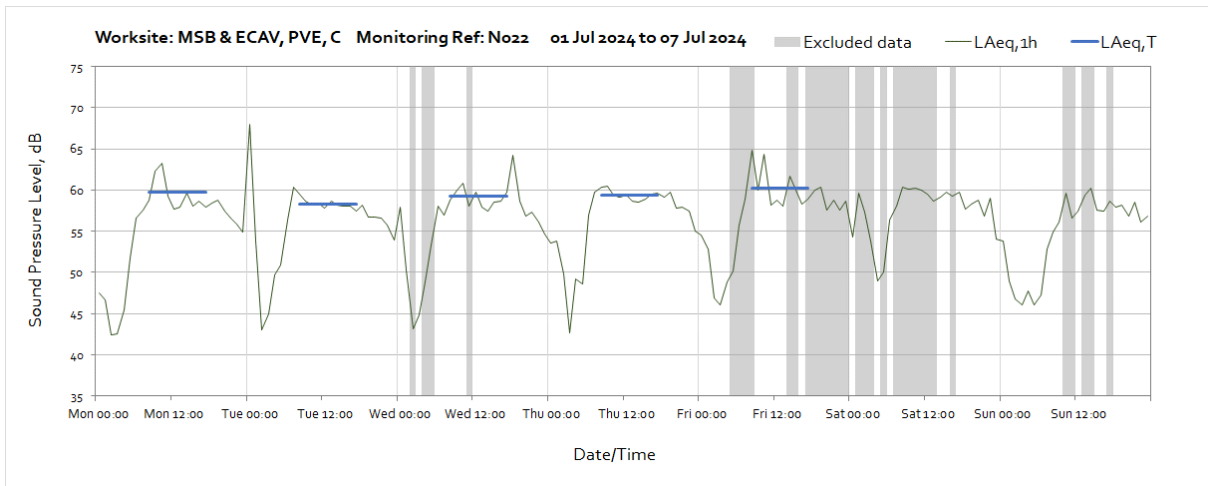


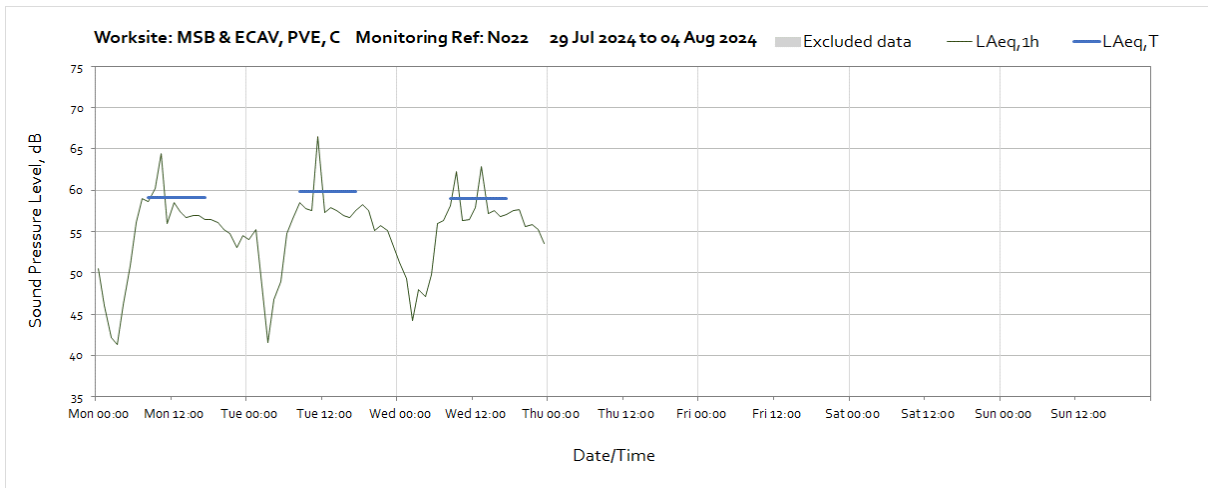
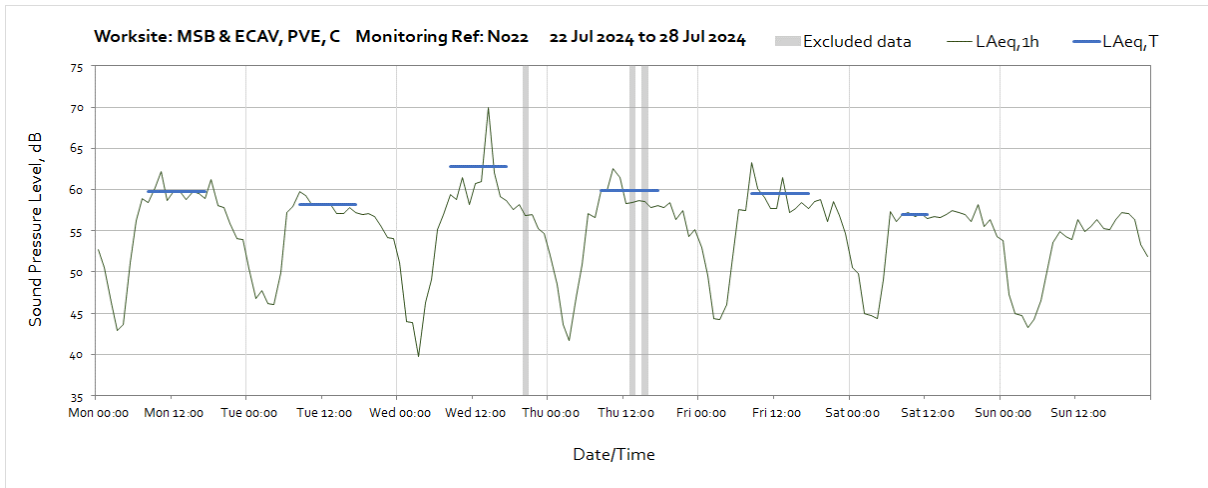
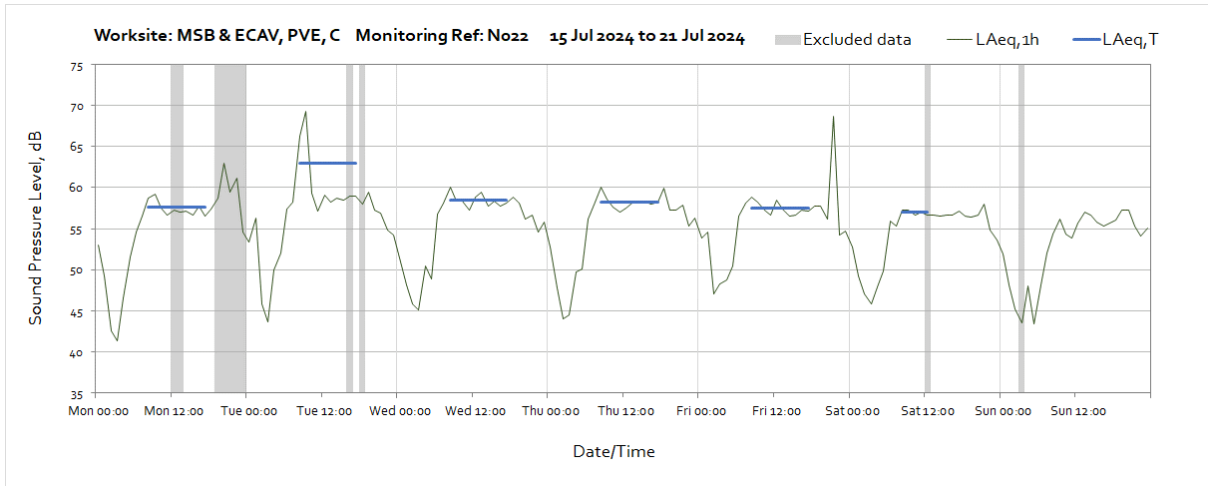




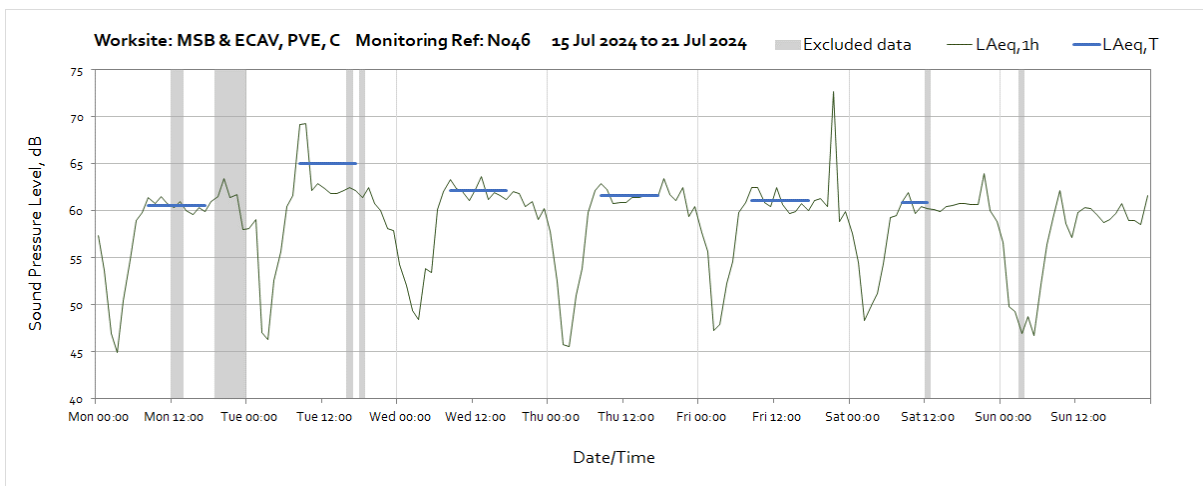
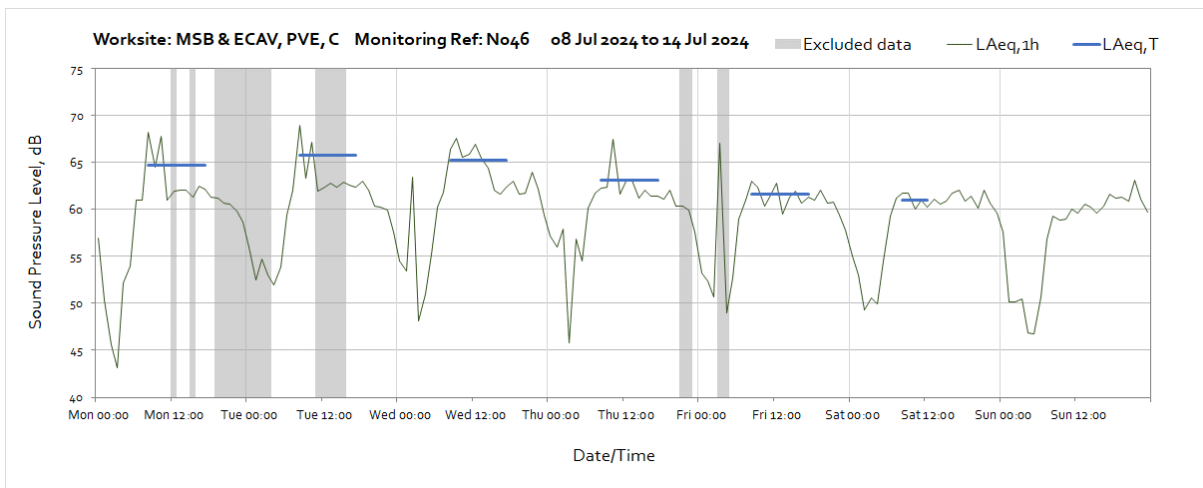
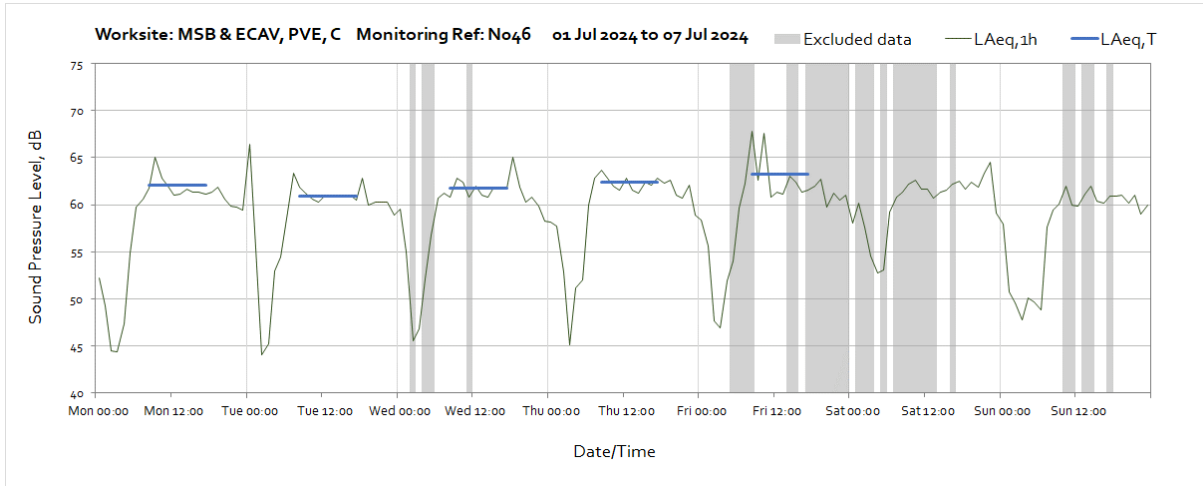


**Worksite: MSB & ECAV, PVE, C - Monitoring Ref: N022**

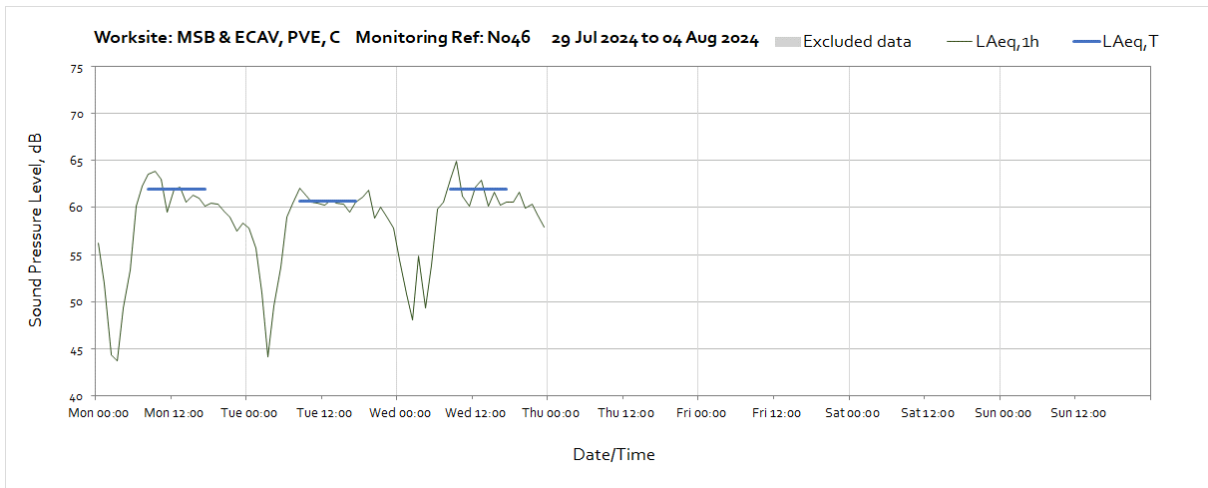
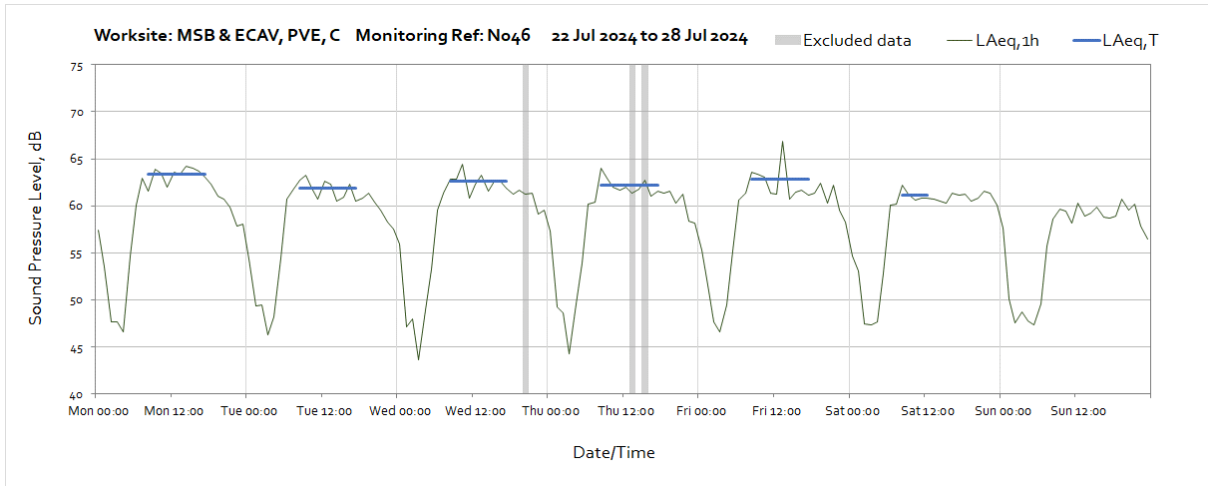




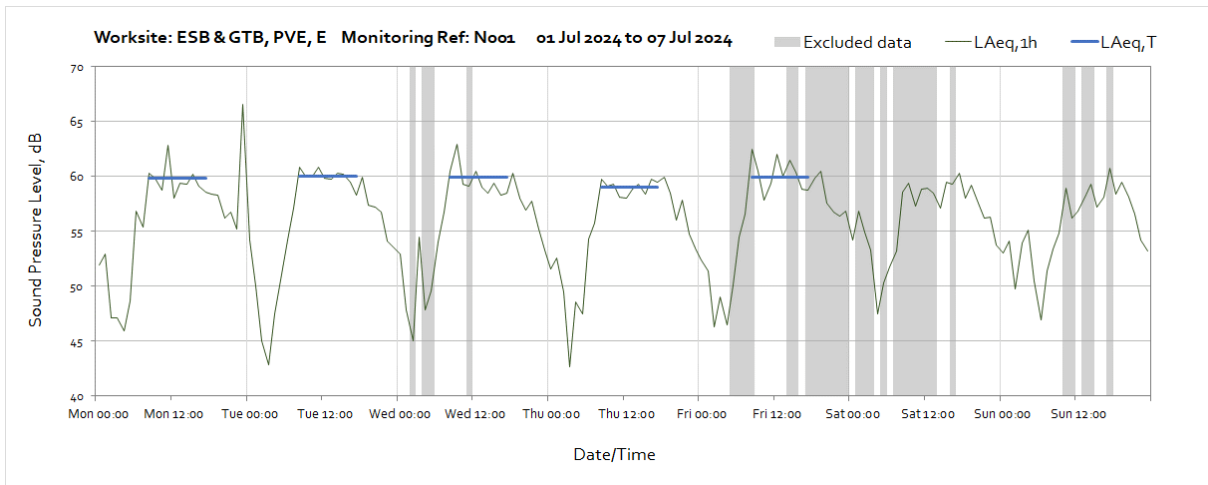
## Worksite: MSB & ECAV, PVE, C - Monitoring Ref: N046

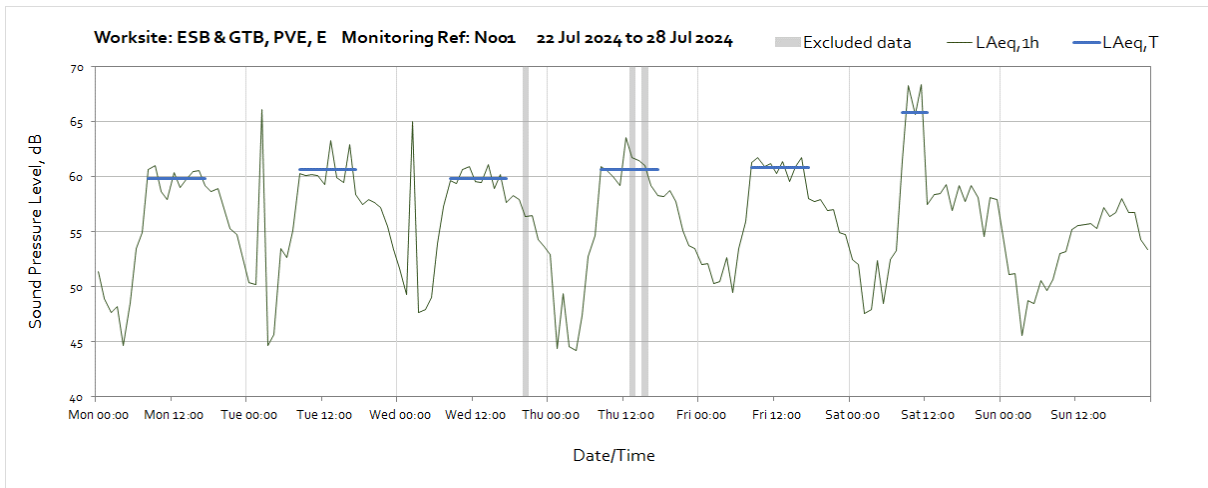
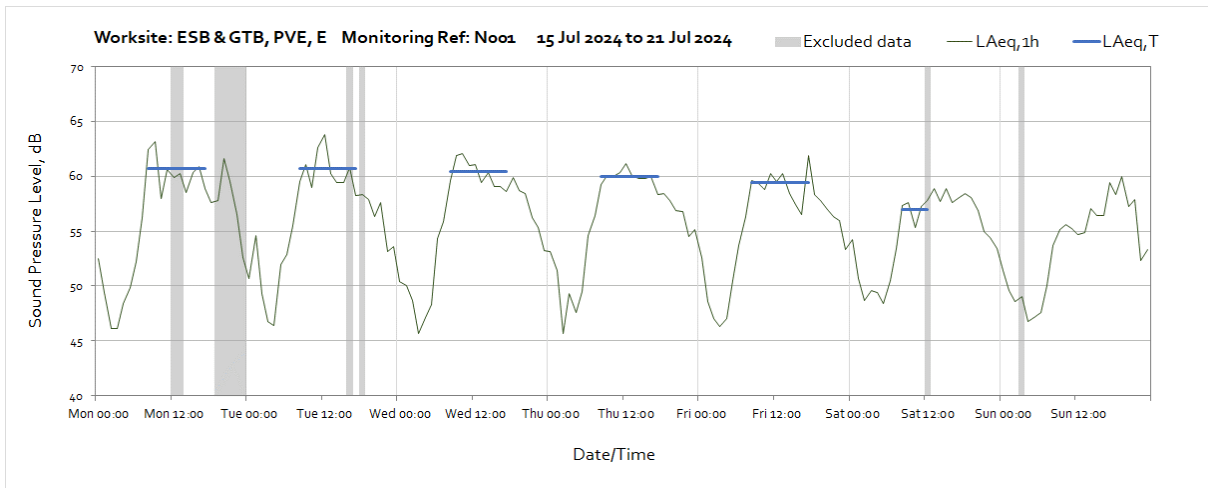
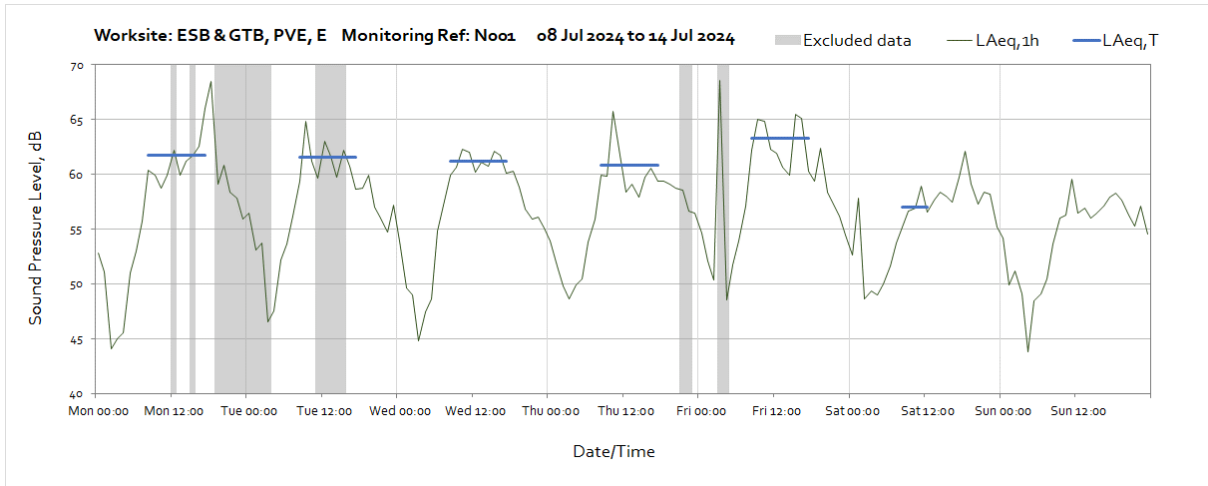


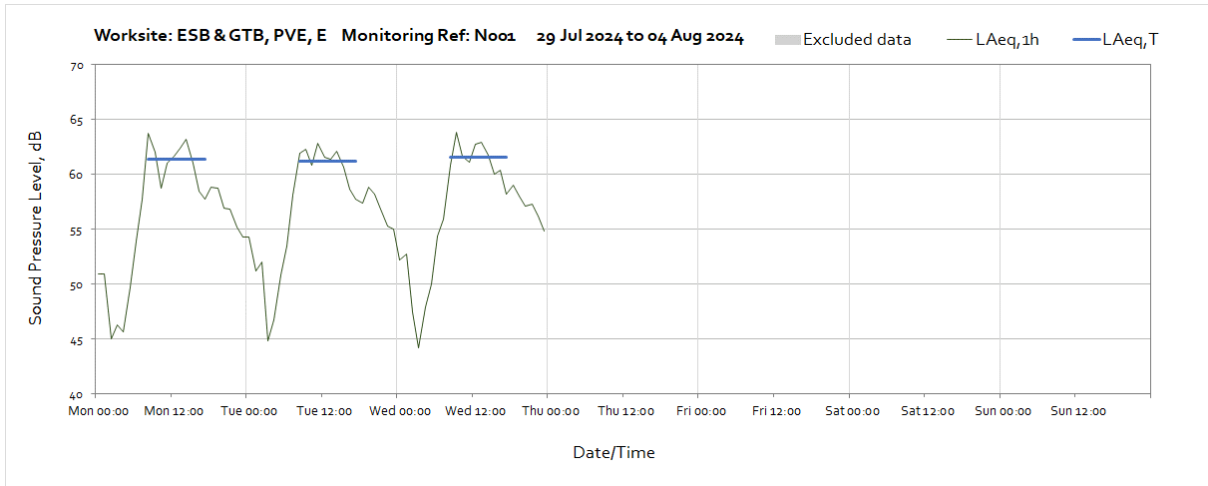
OFFICIAL



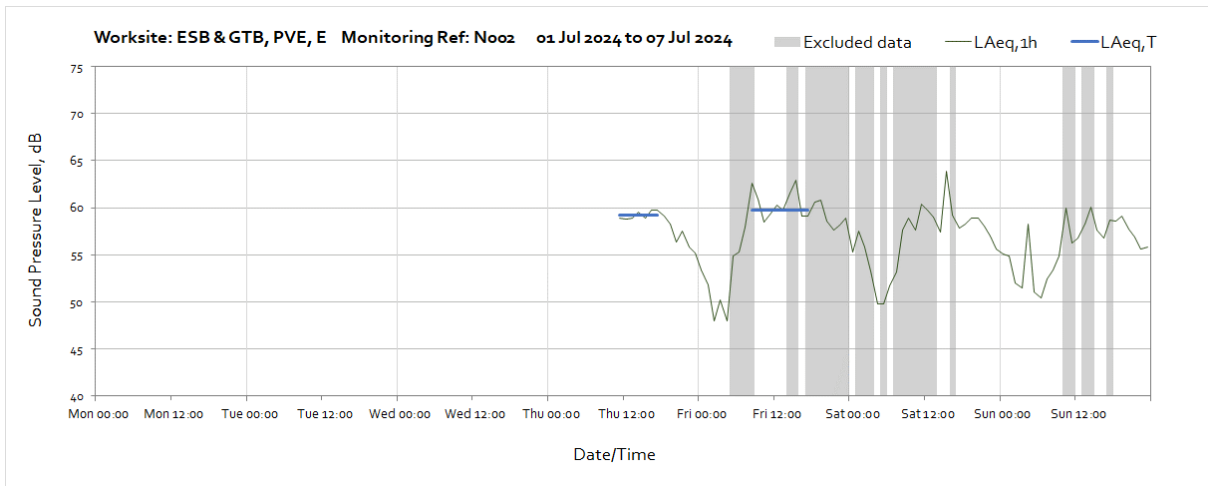
**Worksite: ESB & GTB, PVE, E – Monitoring Ref: N001**



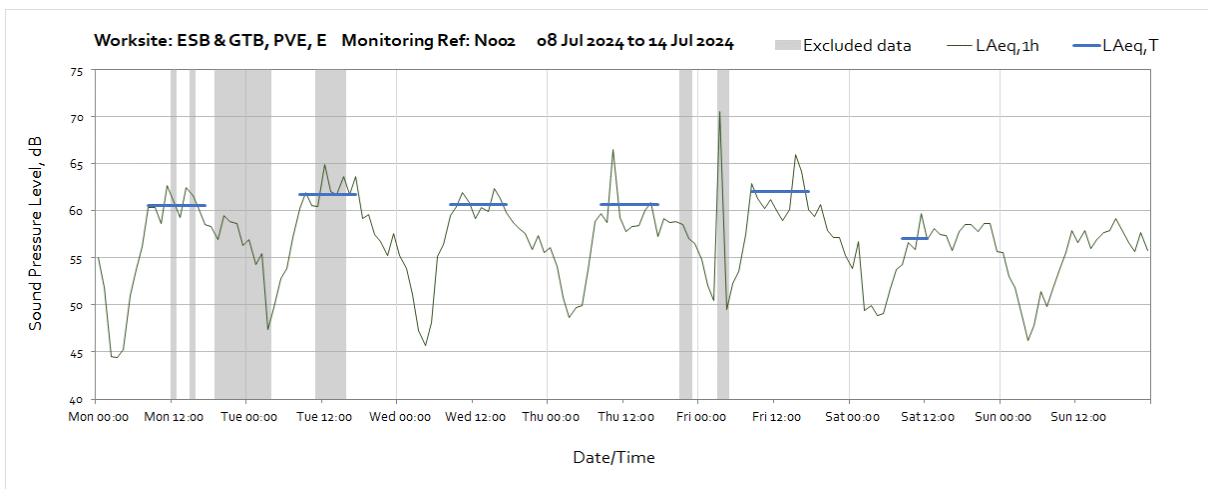


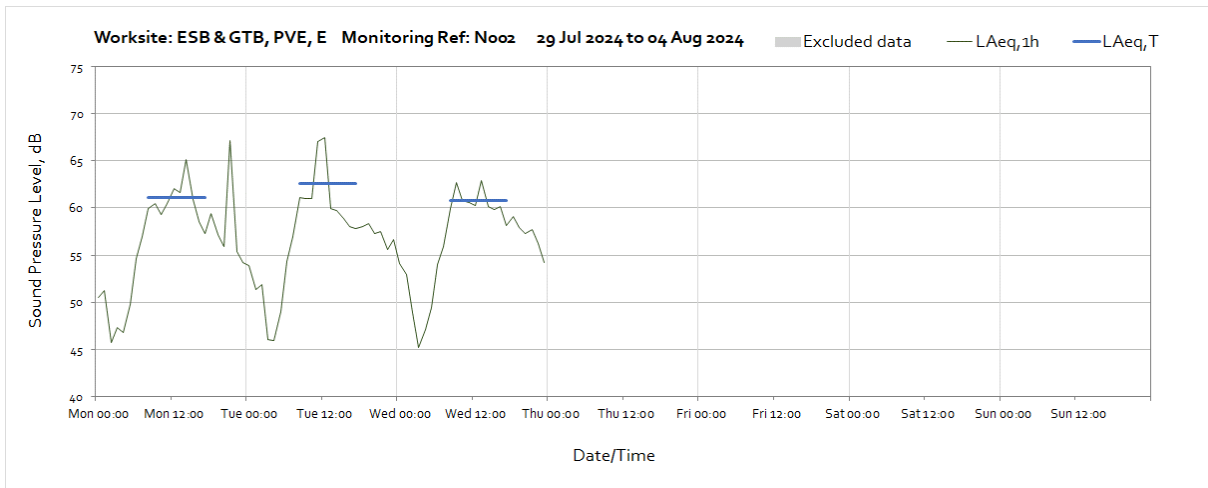
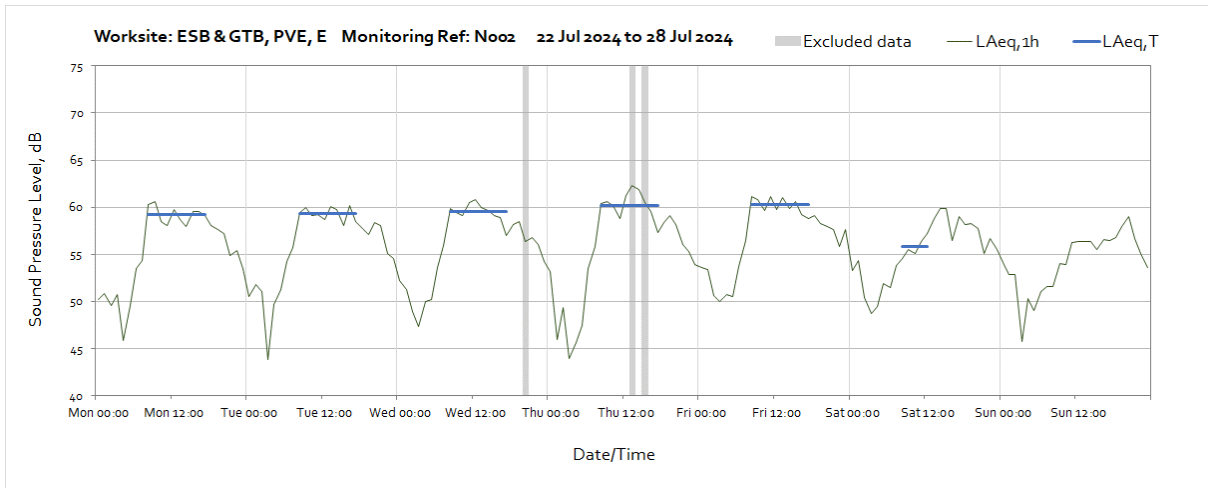
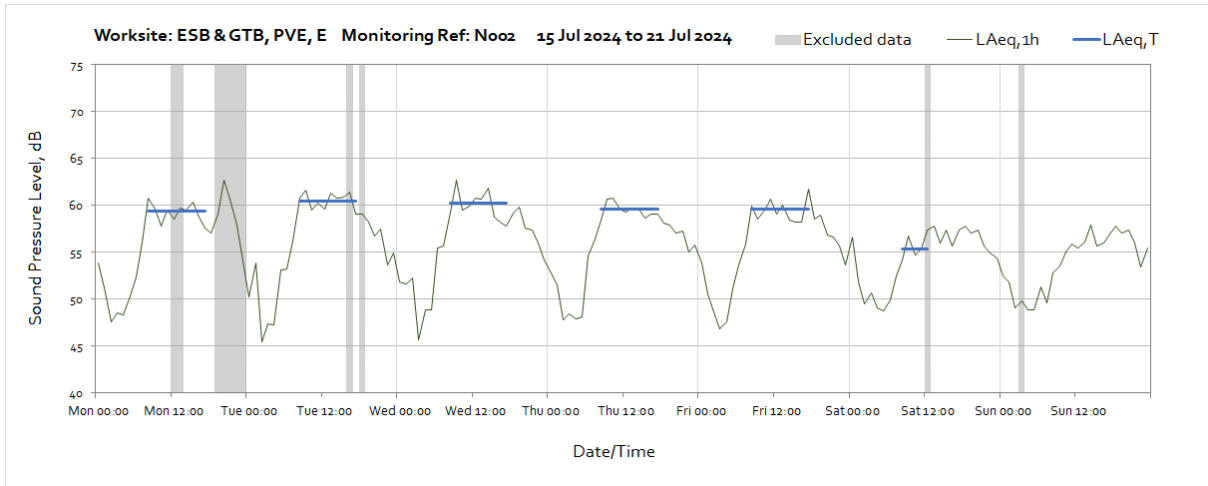


**Worksite: ESB & GTB, PVE, E - Monitoring Ref: N002**

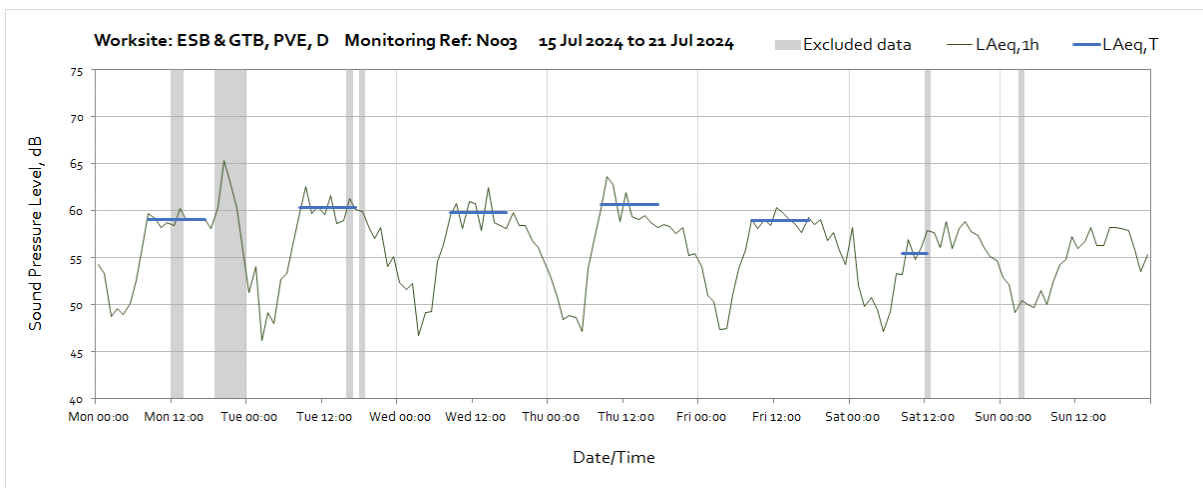
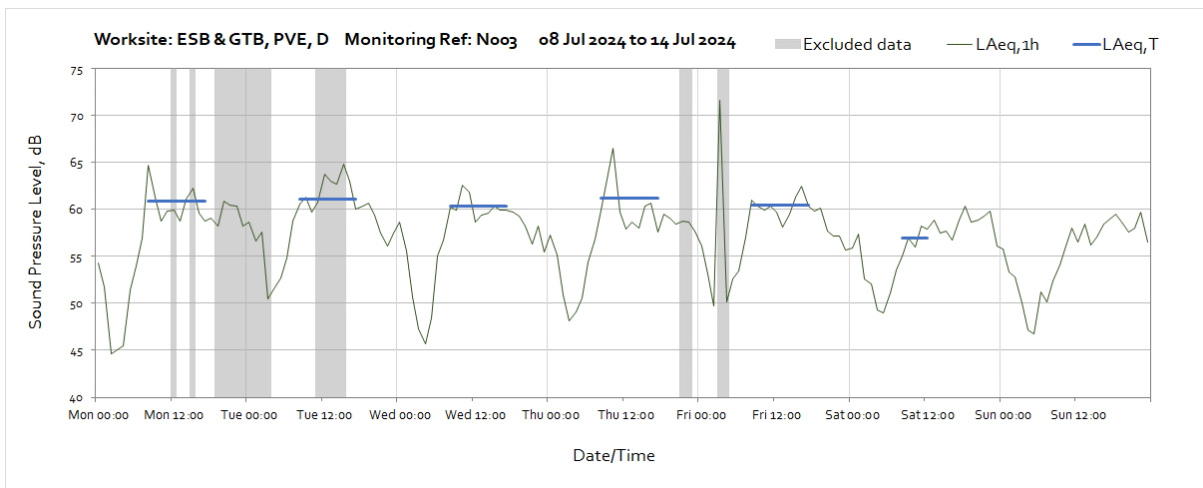
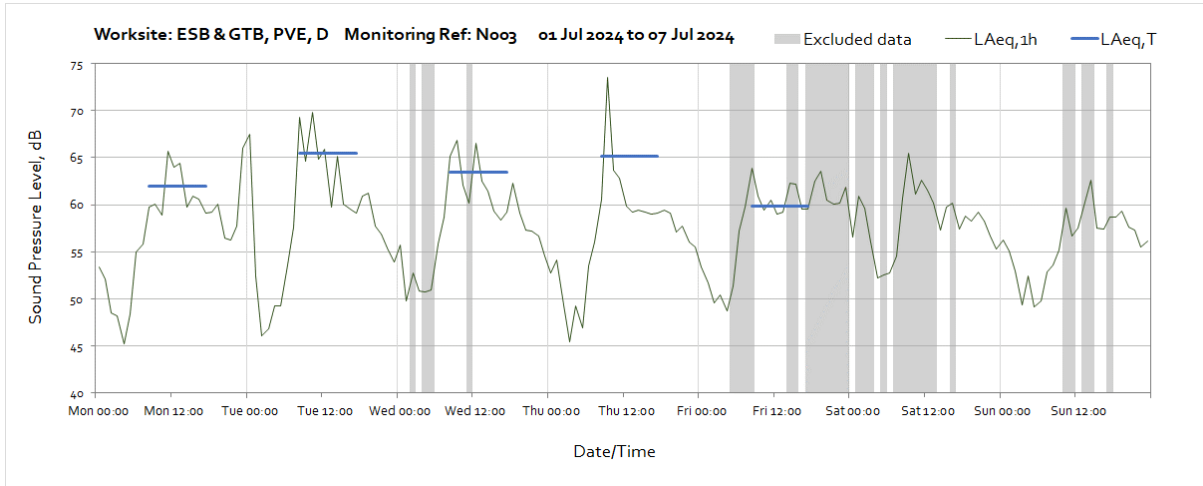


Note: Missing data between the start of the month and 10:00 on Thursday 04<sup>th</sup> July was due to a fault at the monitoring station.



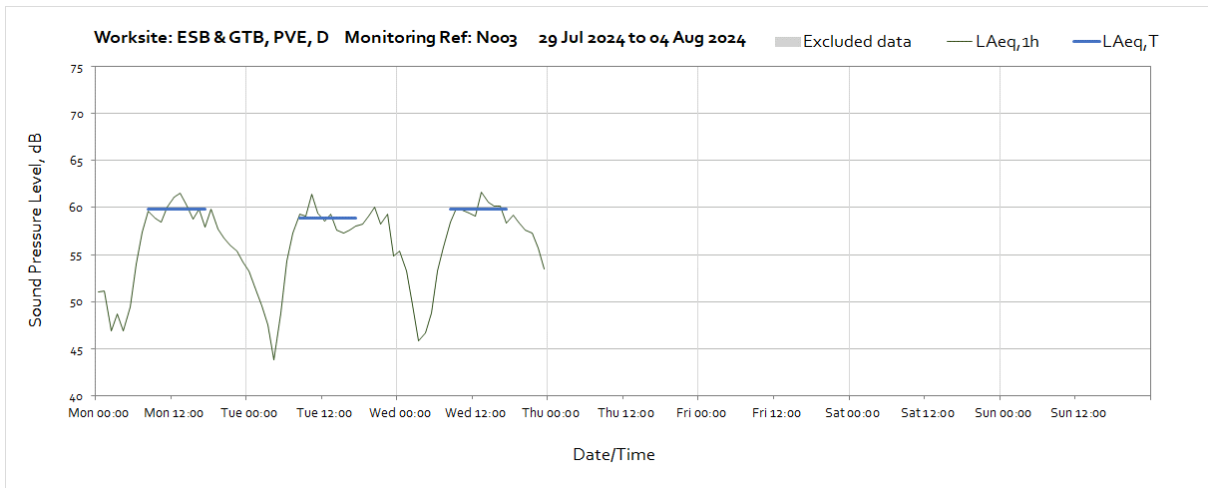
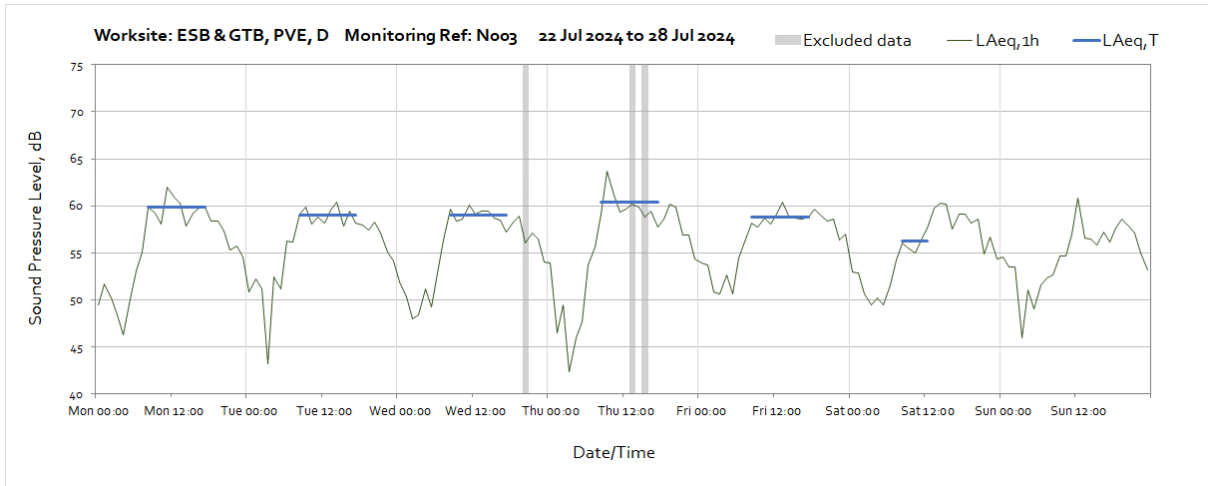


### Worksite: ESB & GTB, PVE, D – Monitoring Ref: N003

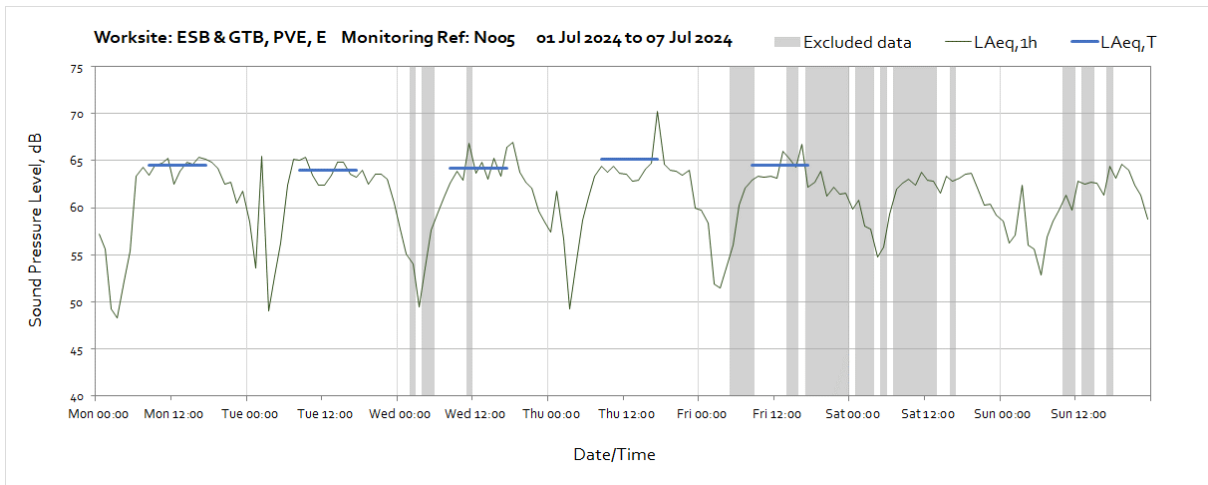


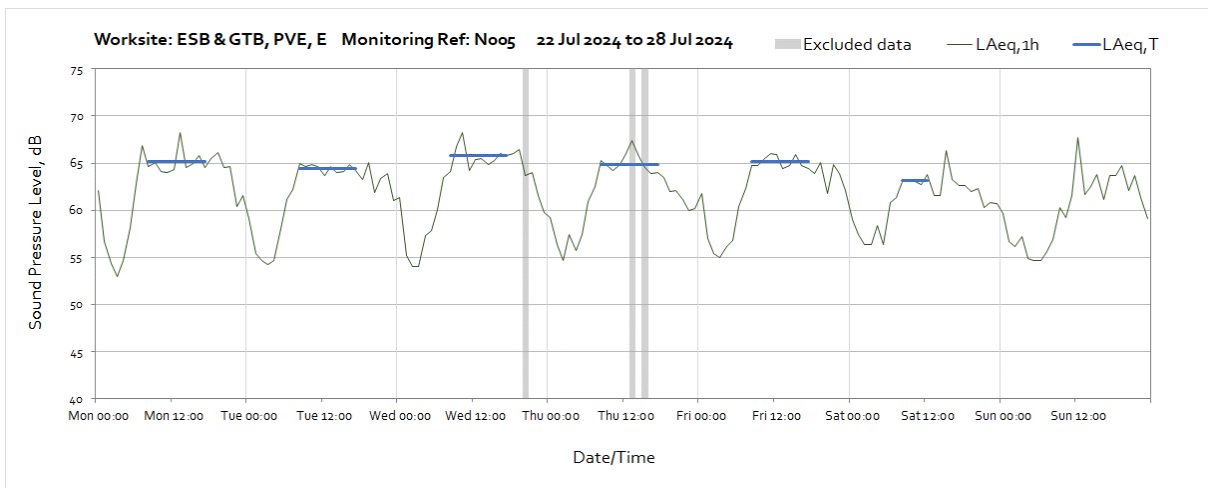
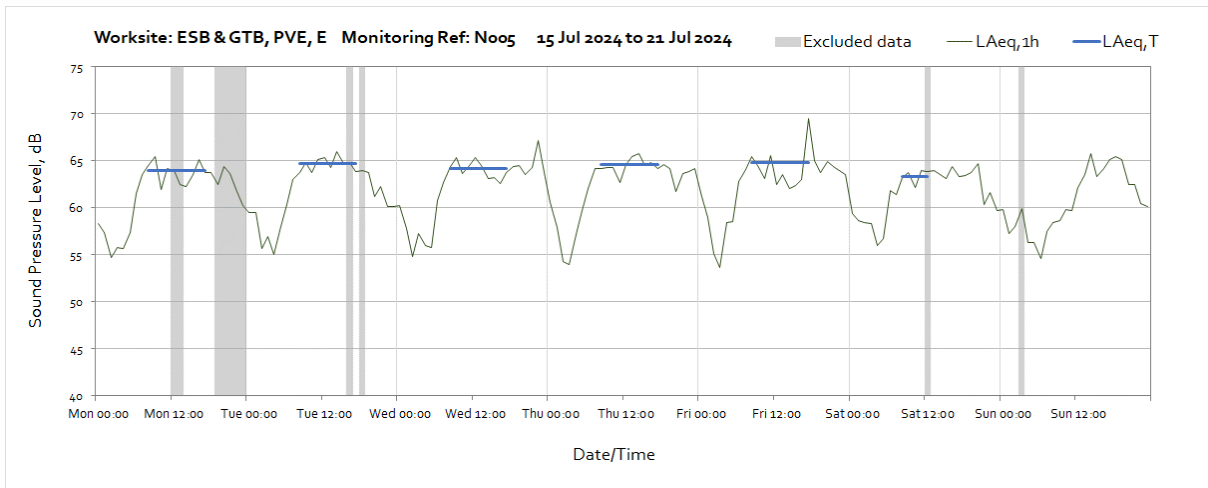
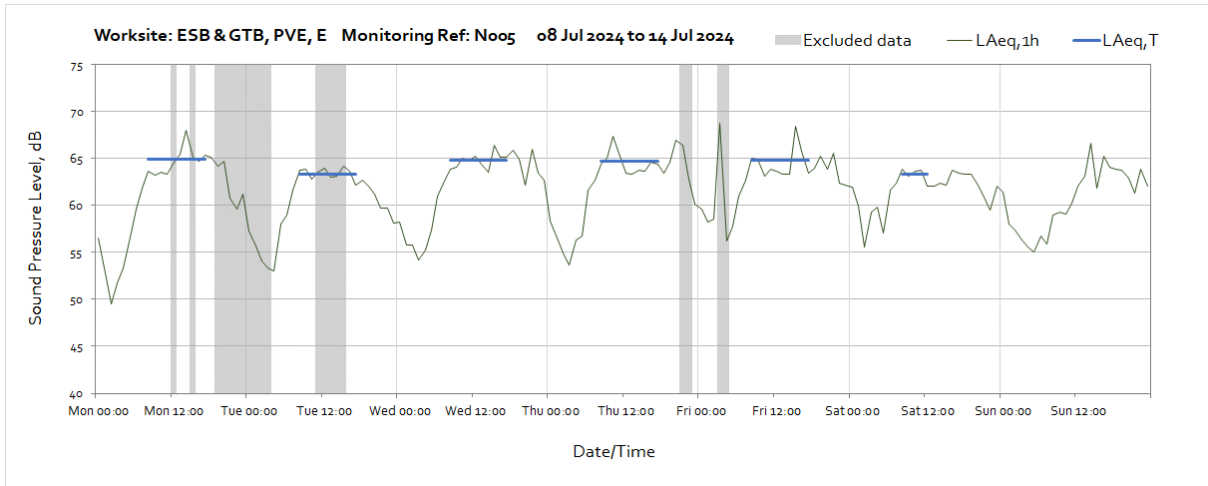
OFFICIAL

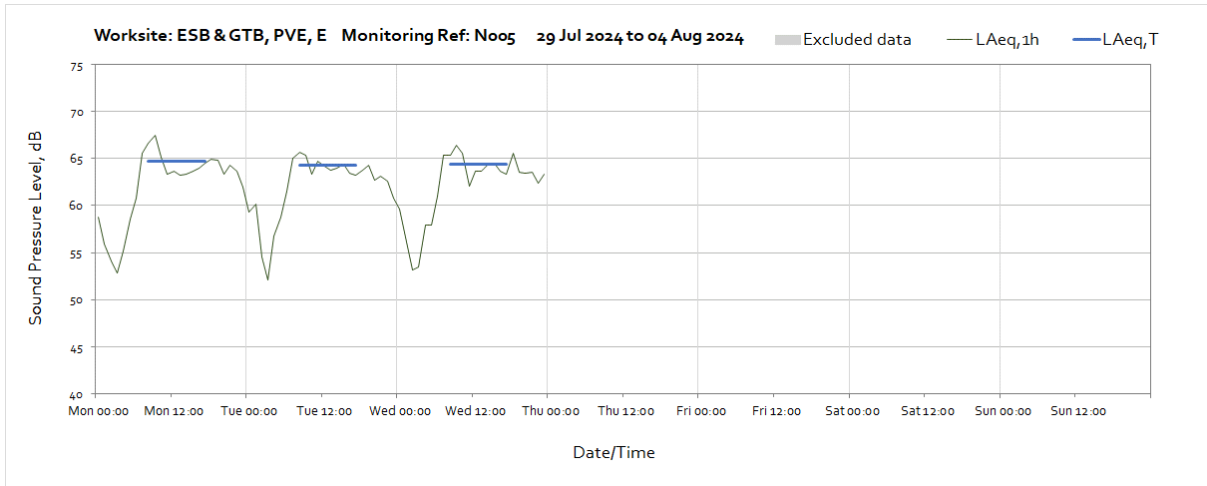




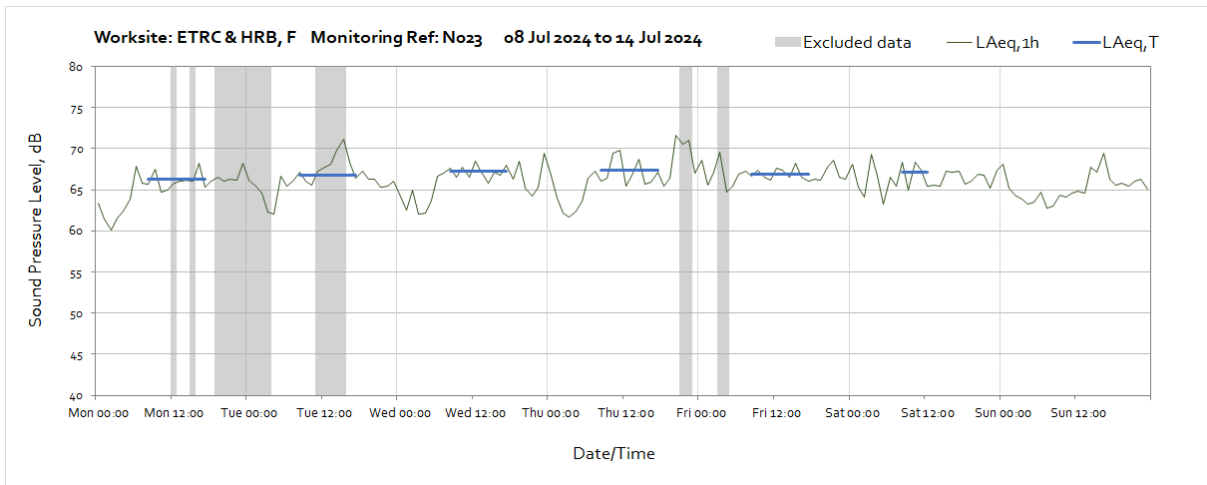
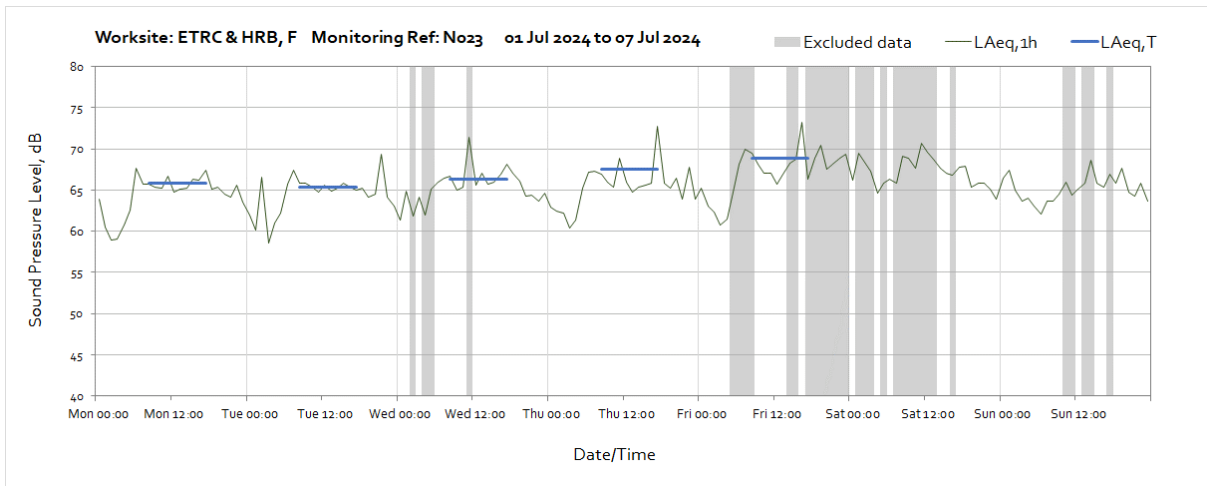
**Worksite: ESB & GTB, PVE, E – Monitoring Ref: N005**

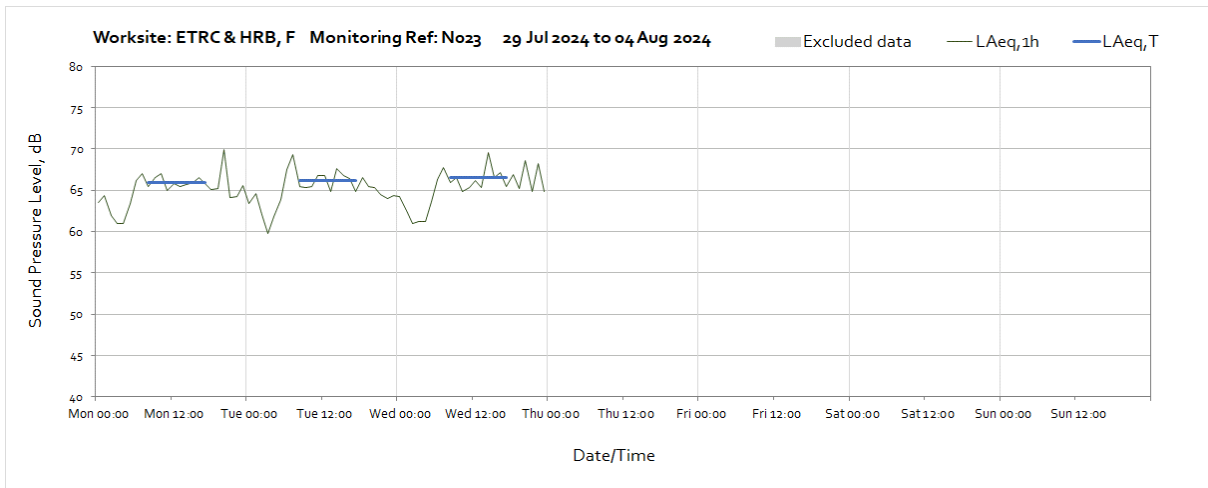
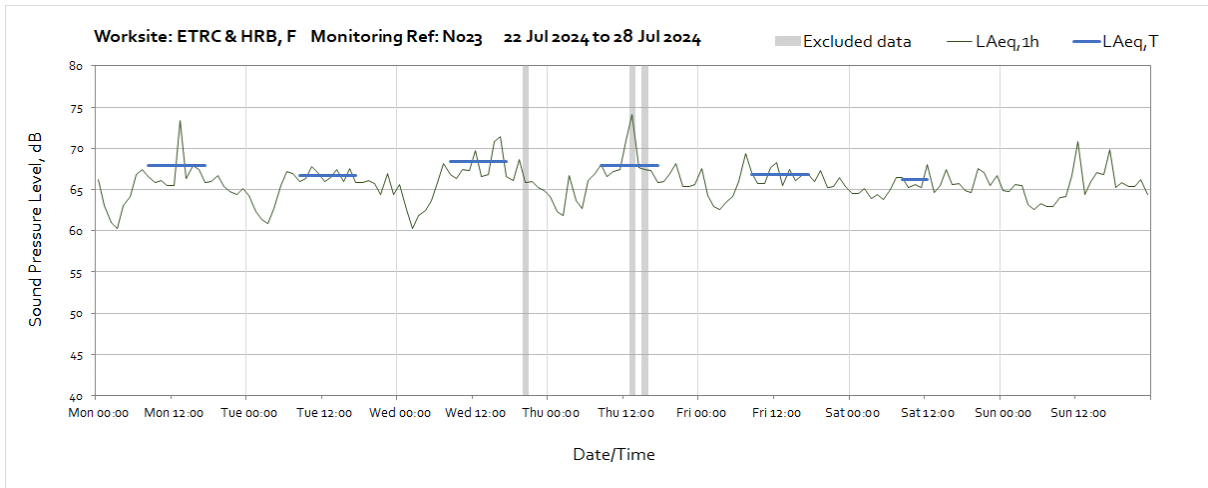
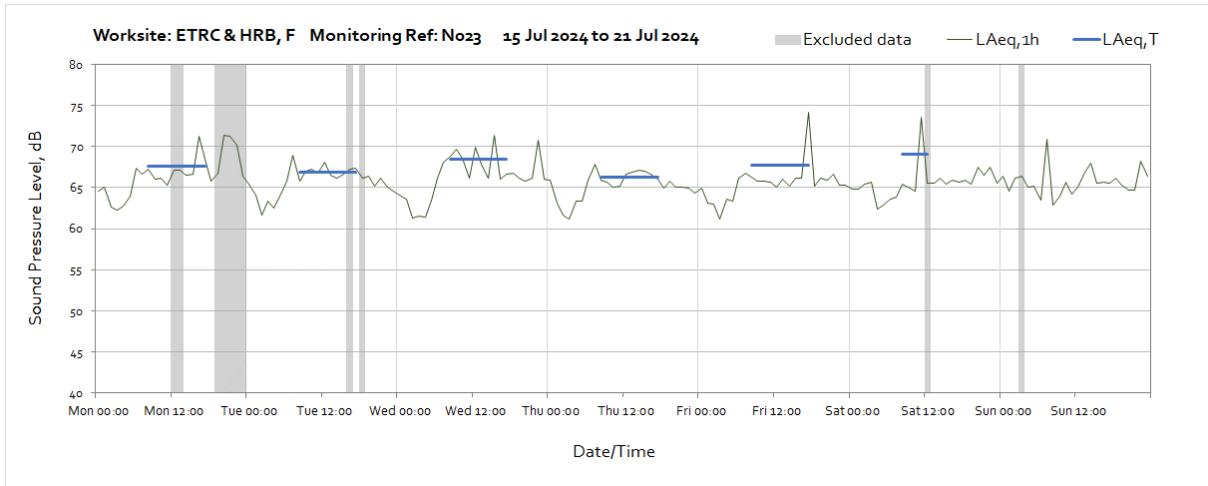




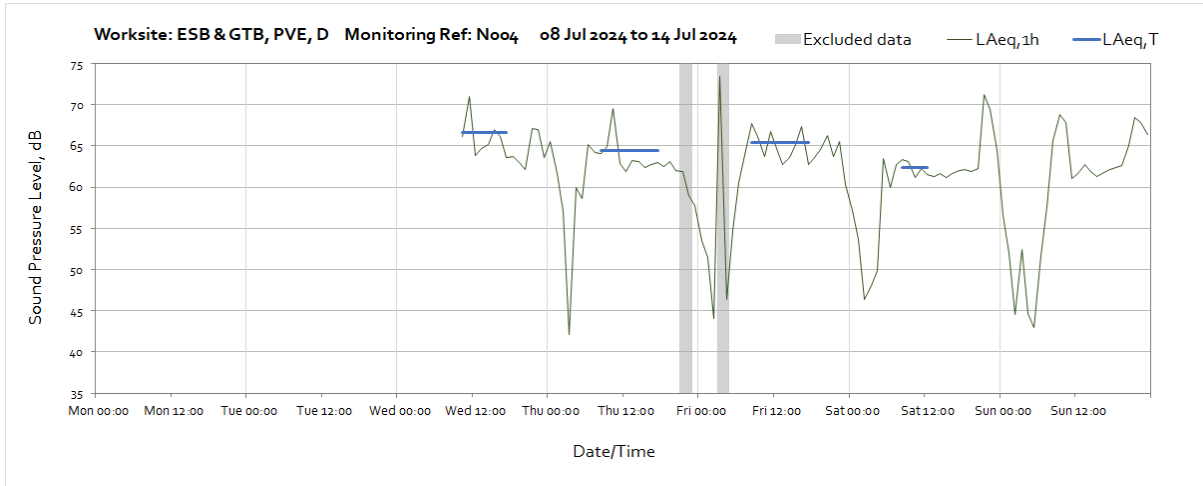


**Worksite: ETRC & HRB, F - Monitoring Ref: N023**

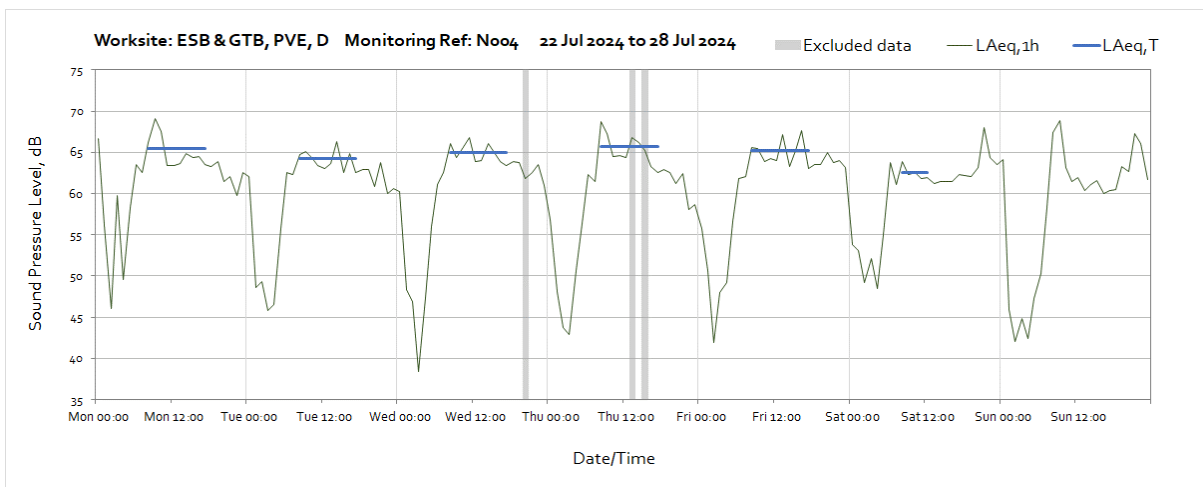
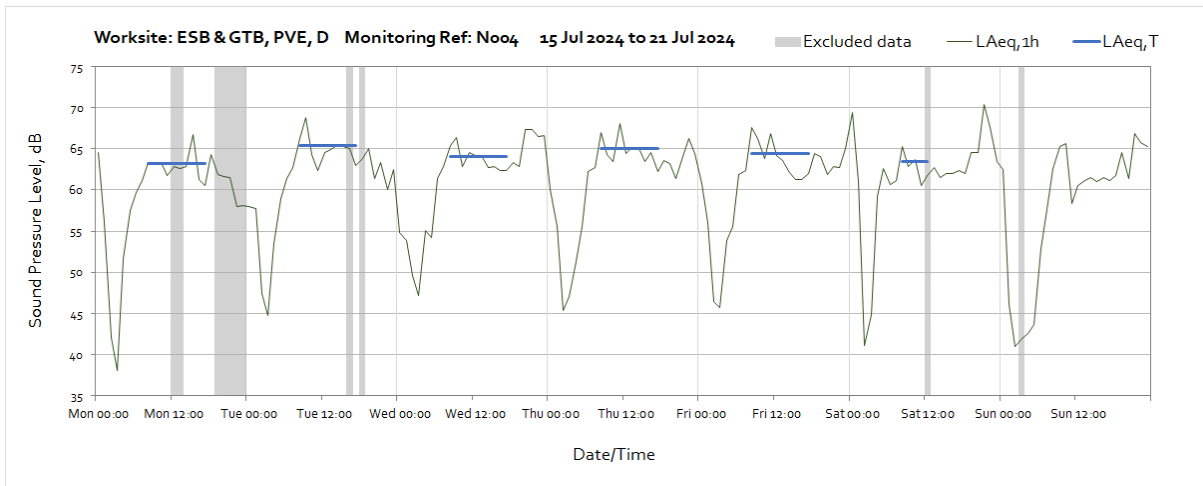


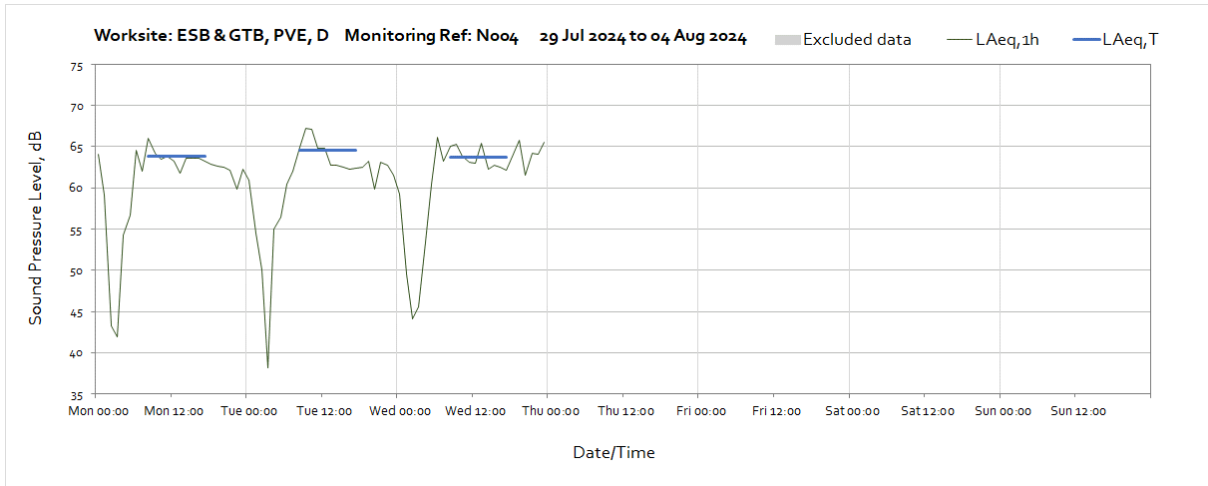


## Worksite: ESB & GTB, PVE, D – Monitoring Ref: N004

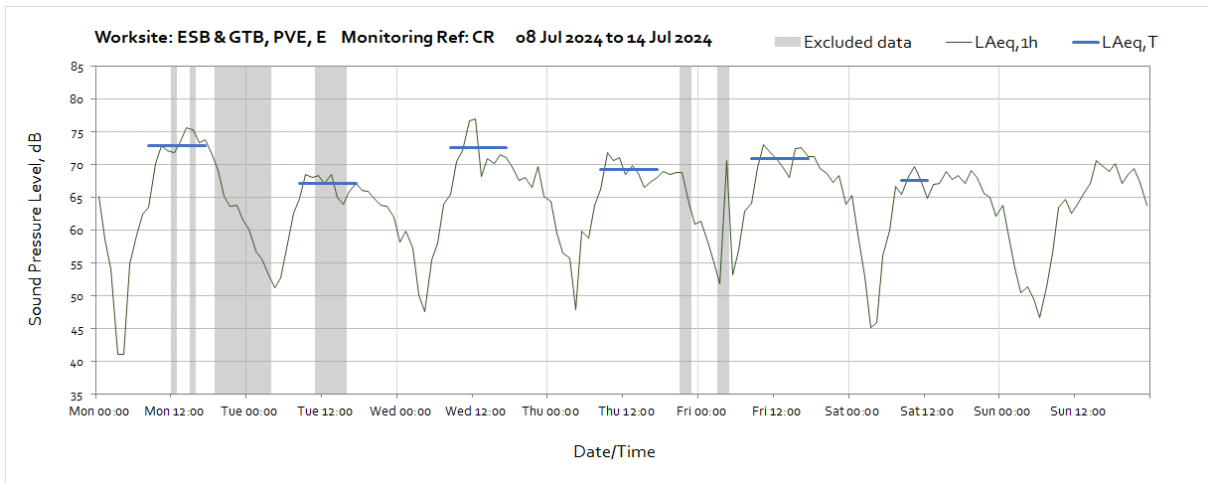
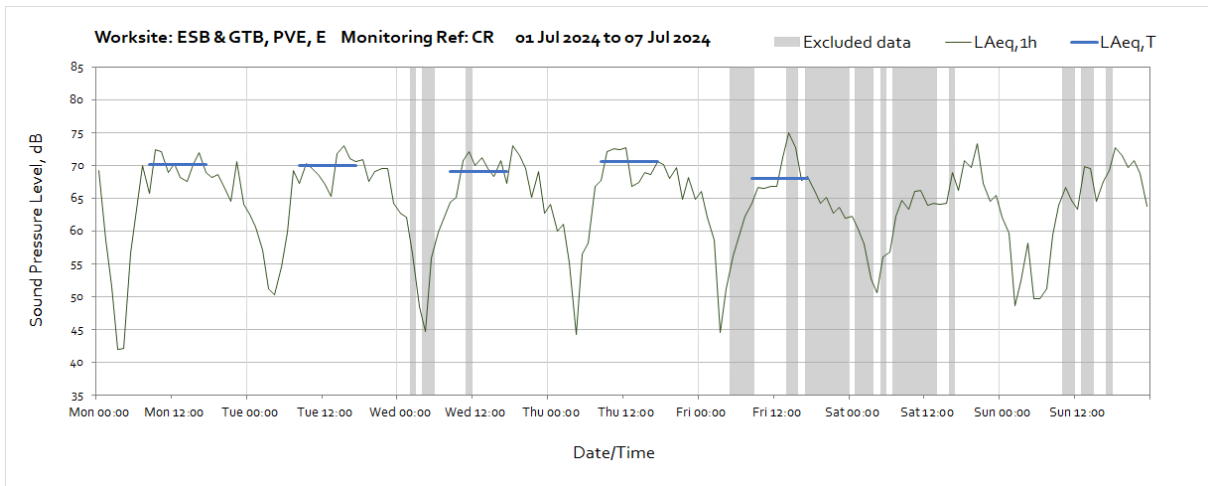


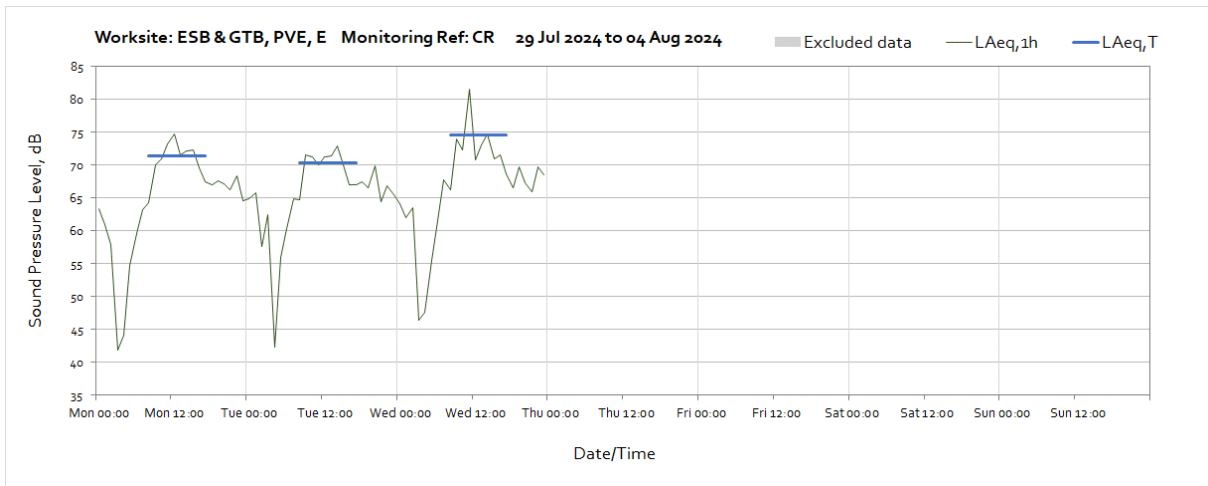
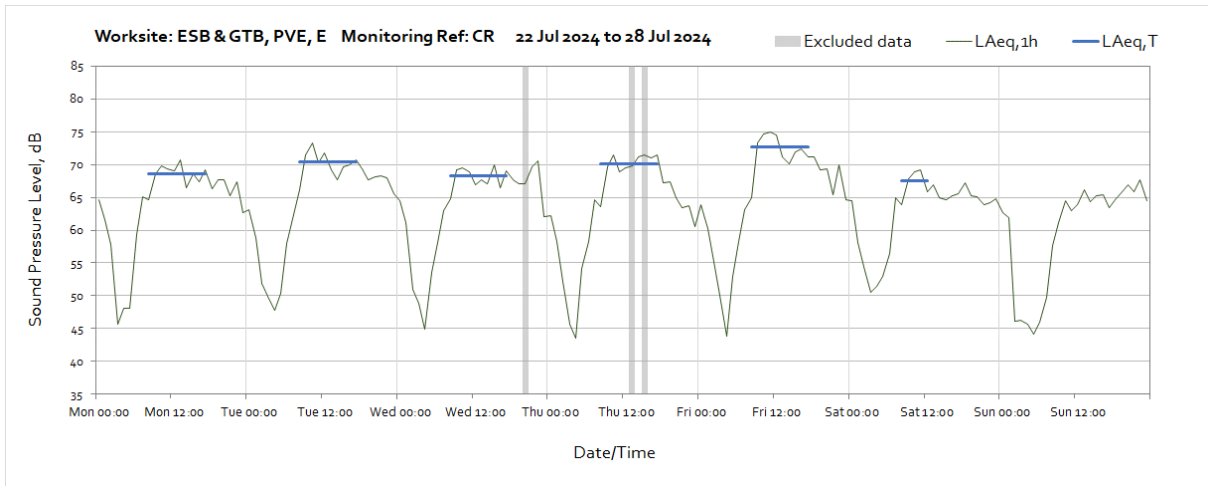
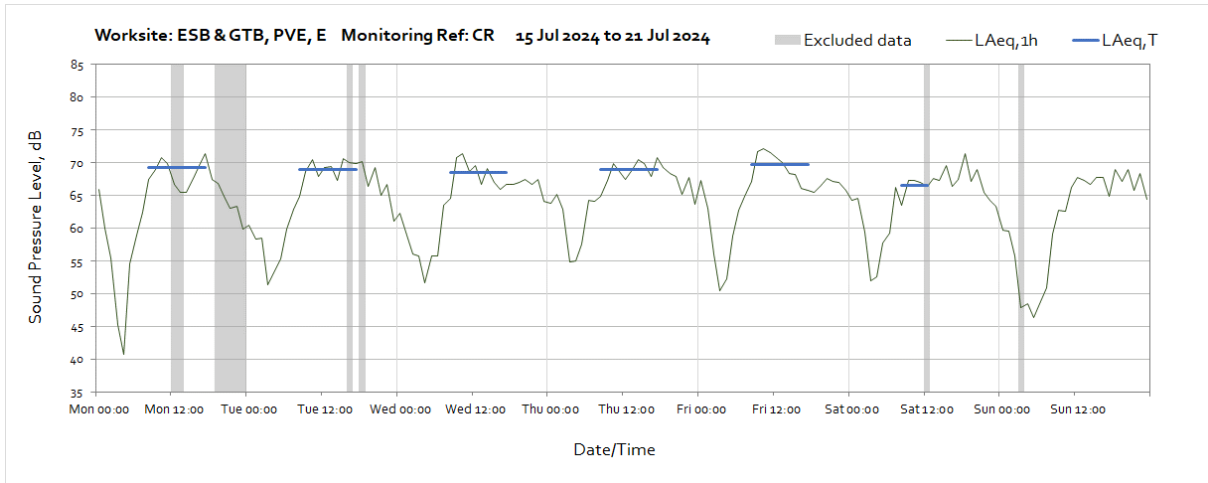
Note: Missing data between the start of the month and 09:00 on Wednesday 10<sup>th</sup> July was due to loss of power at the monitoring station.



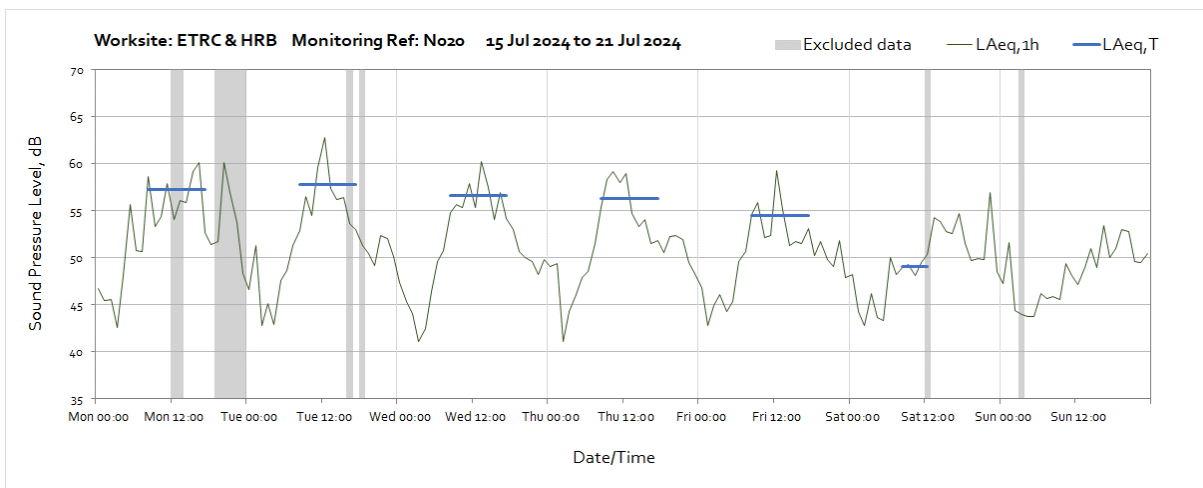
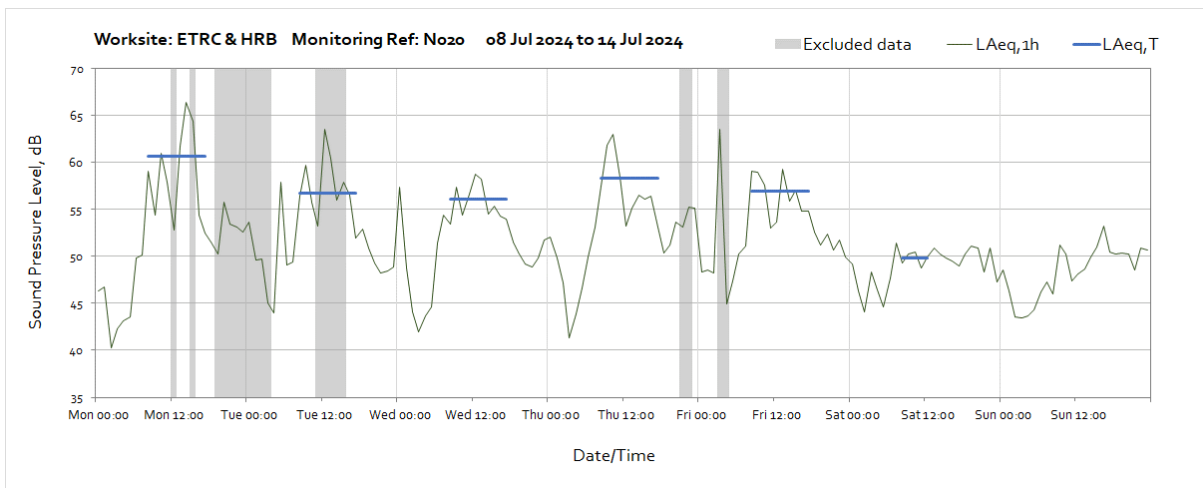
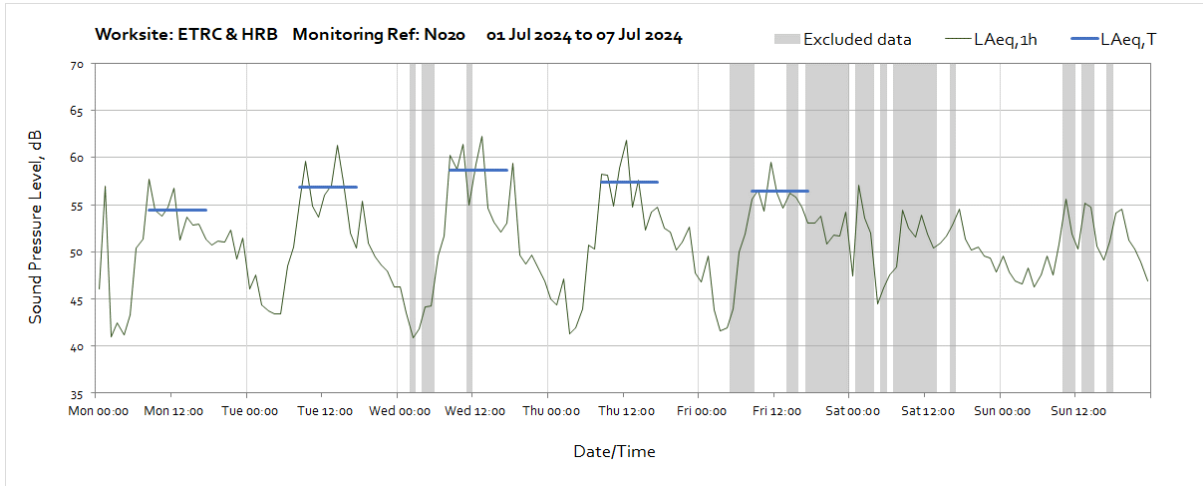


**Worksite: ESB & GTB, PVE, E – Monitoring Ref: CR**



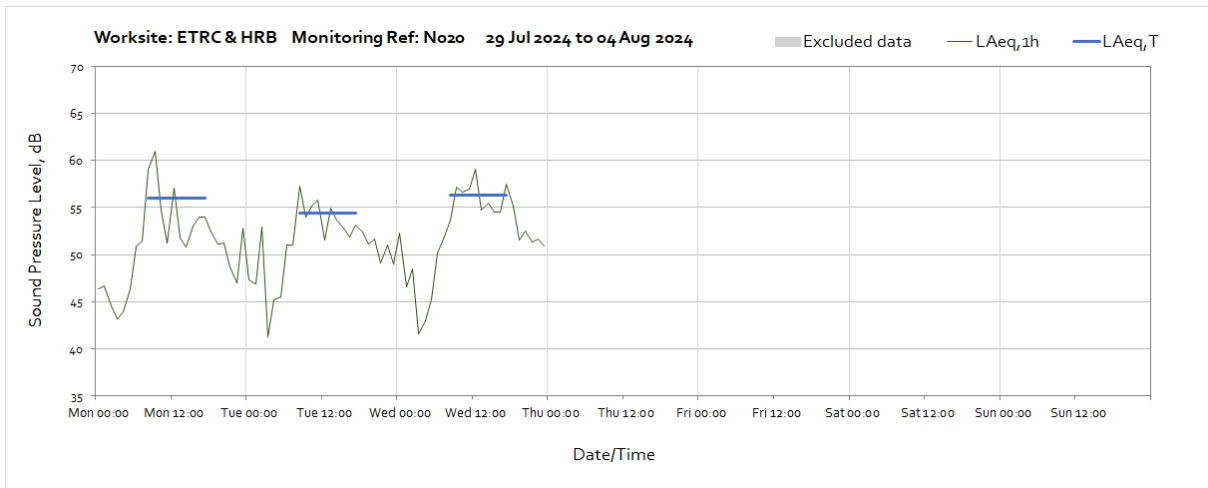
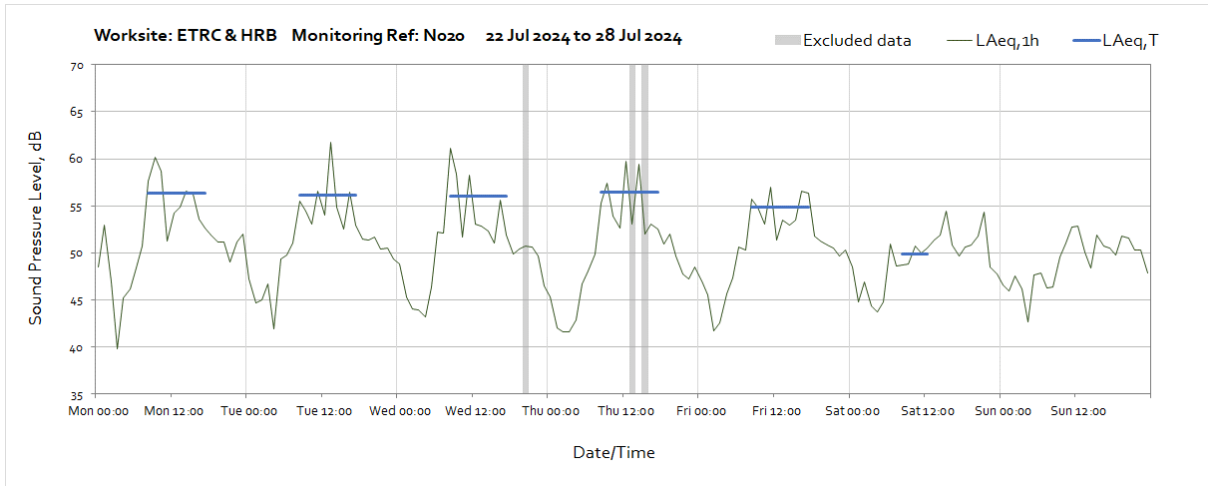


## Worksite: ETRC & HRB – Monitoring Ref: N020

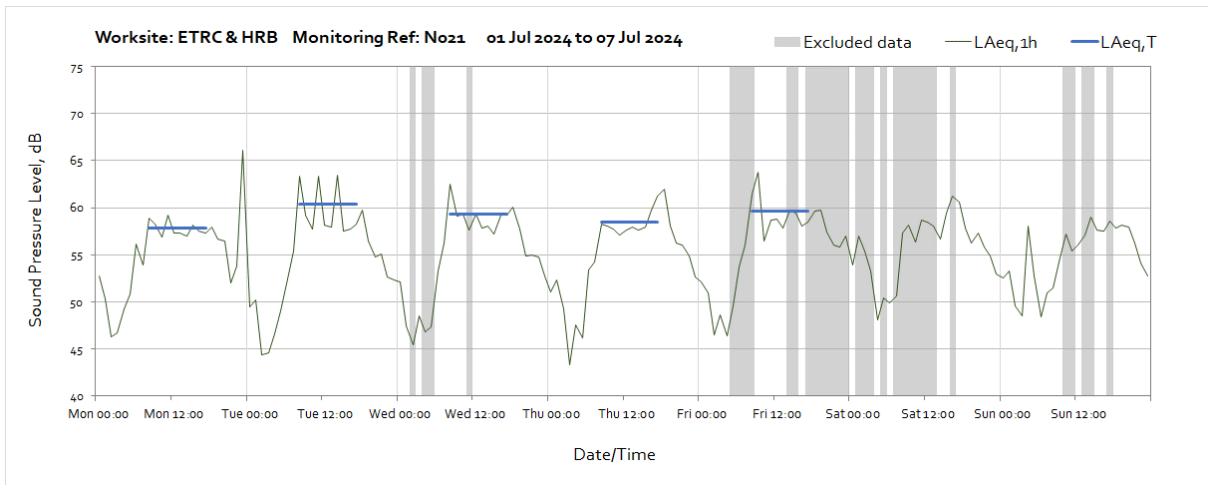


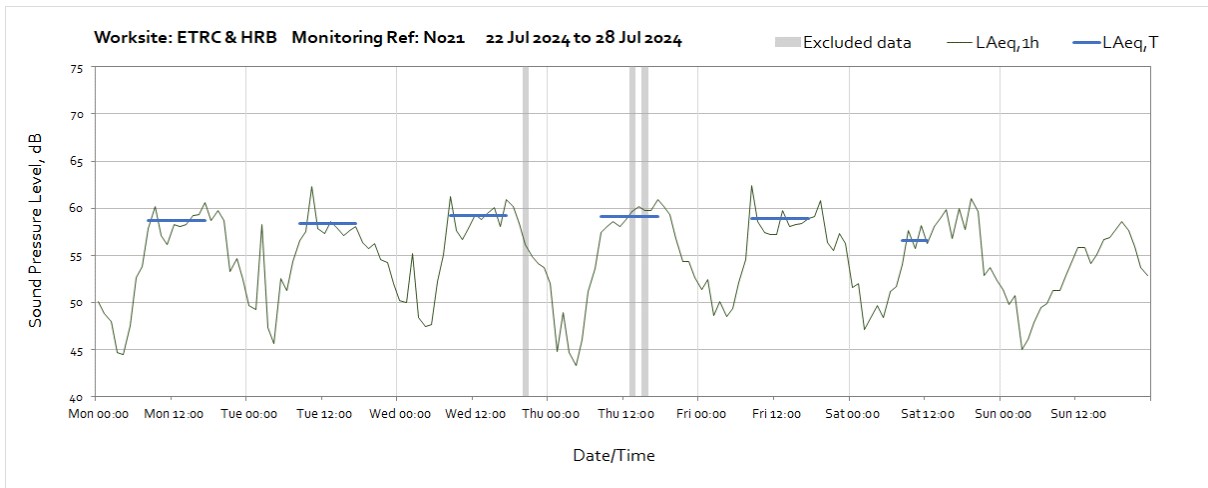
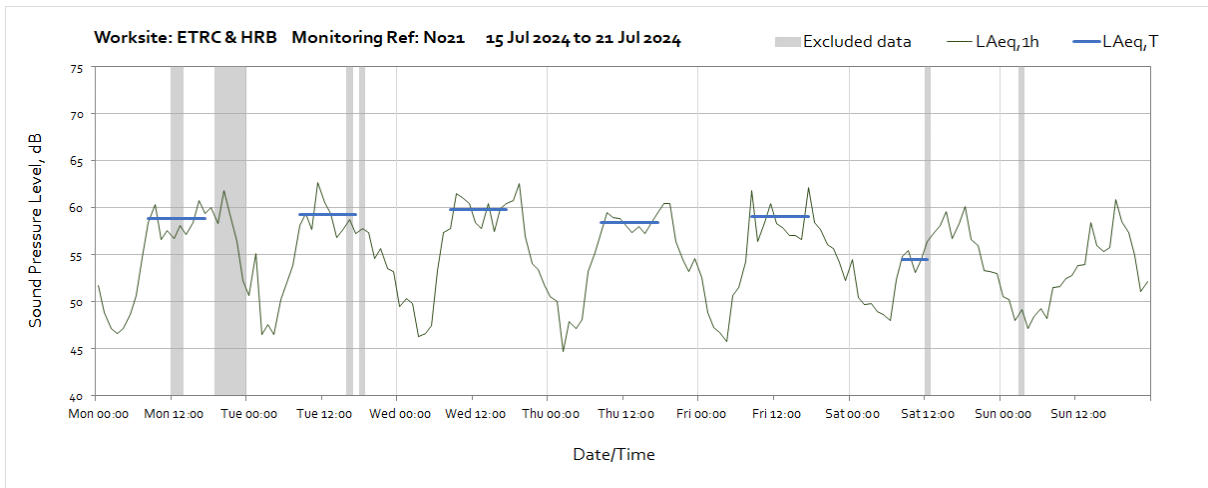
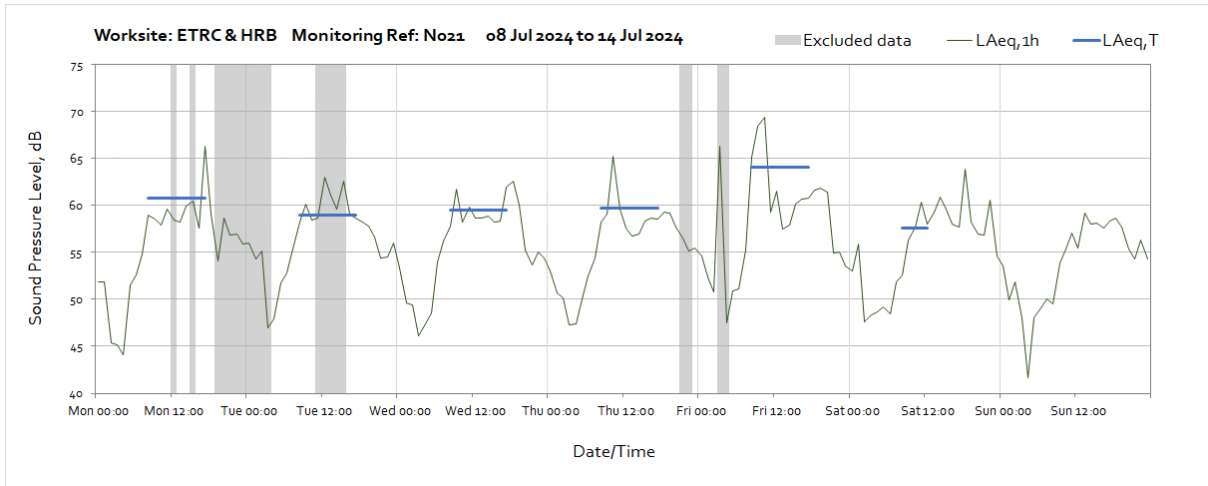
OFFICIAL

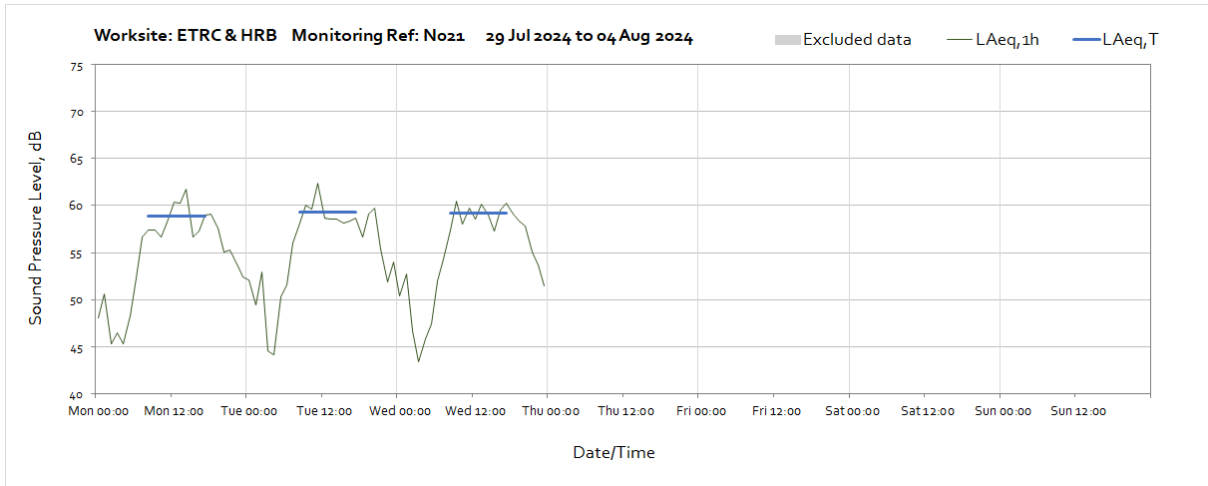




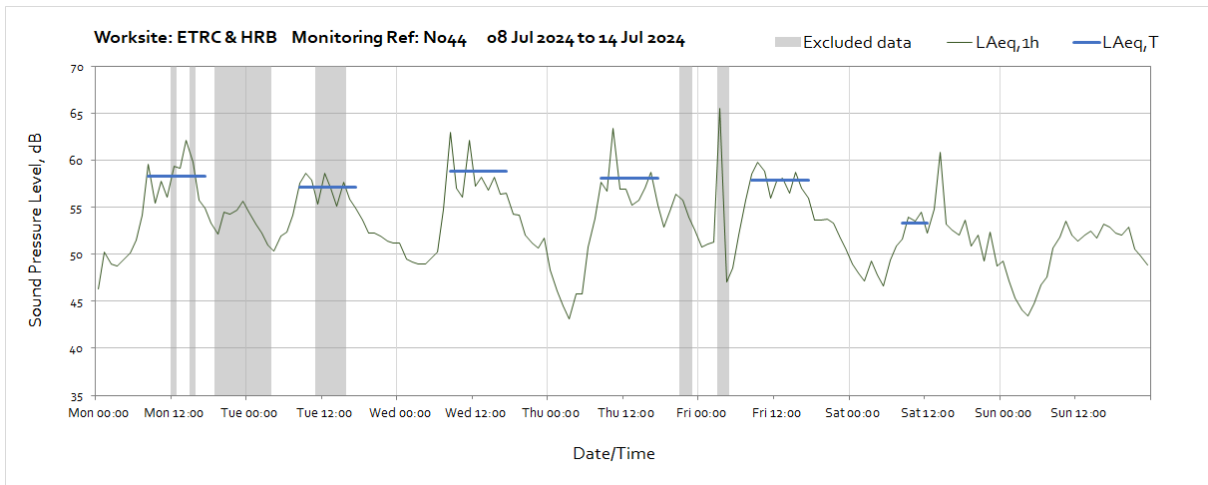
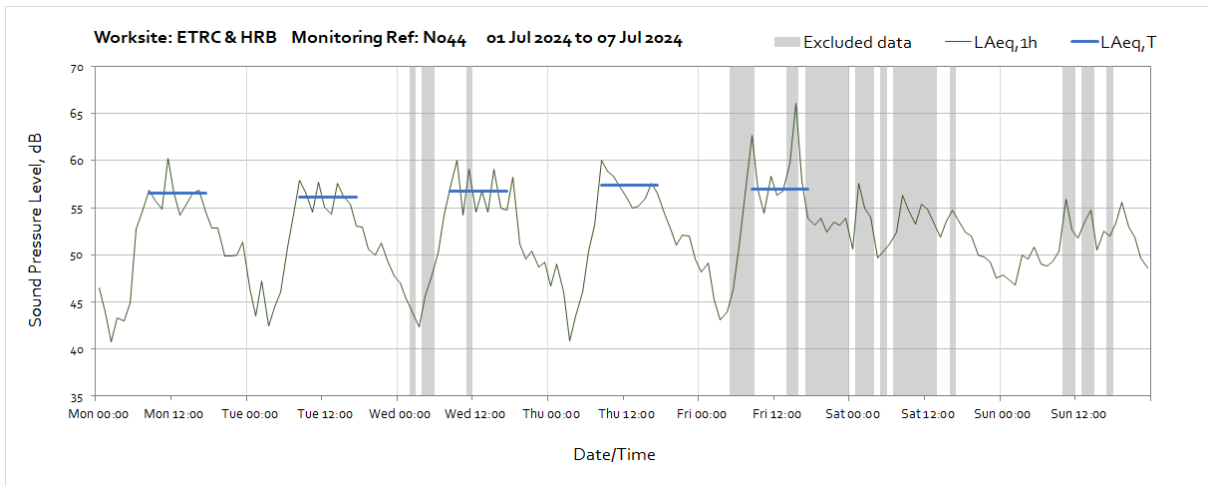
**Worksite: ETRC & HRB - Monitoring Ref: N021**

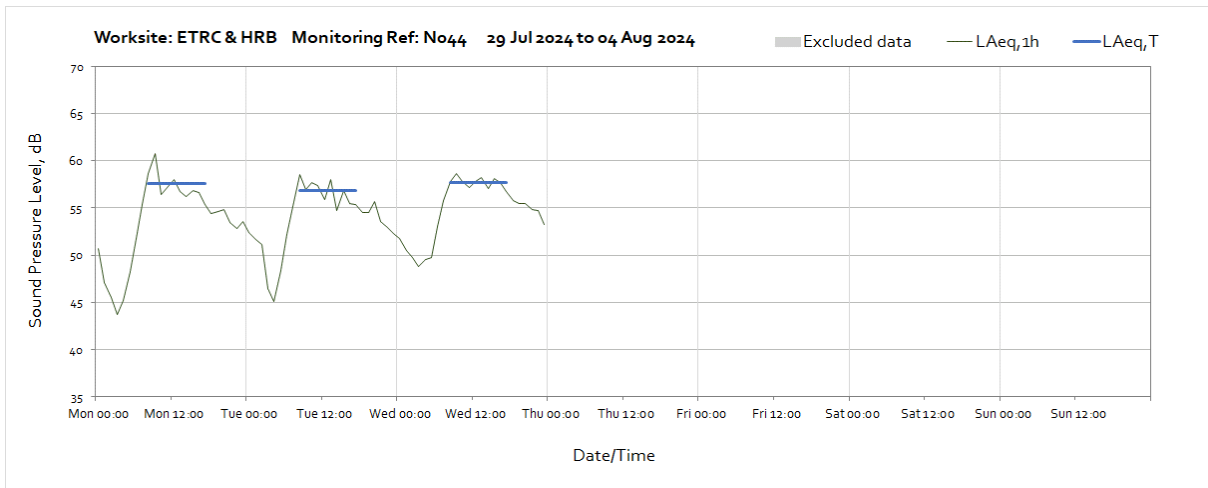
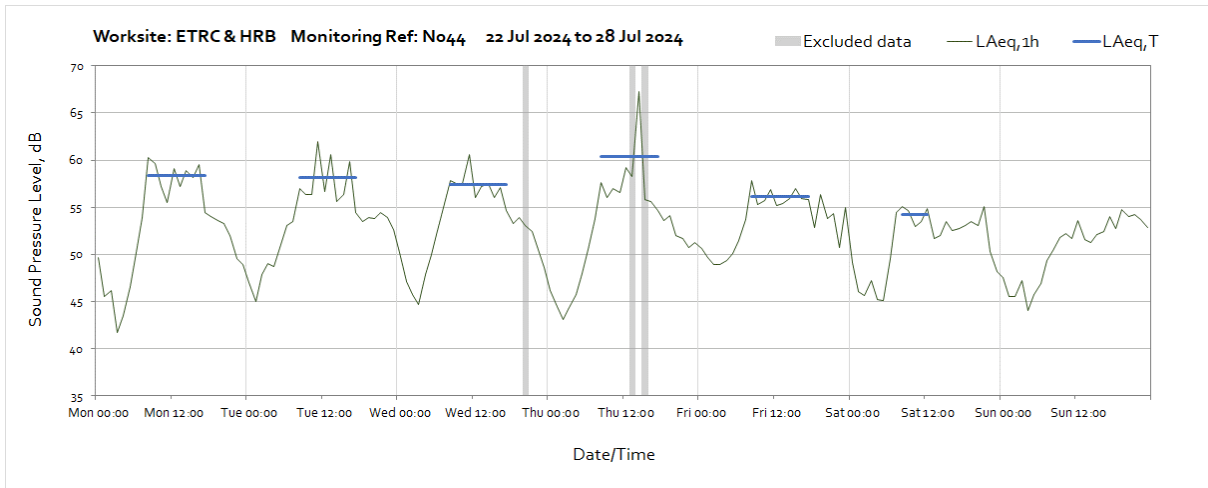
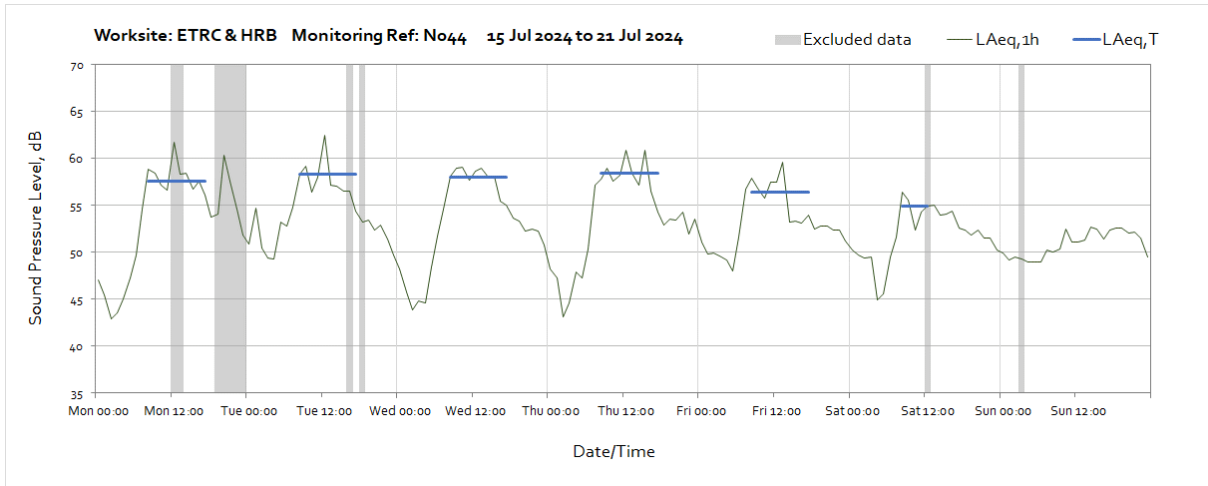




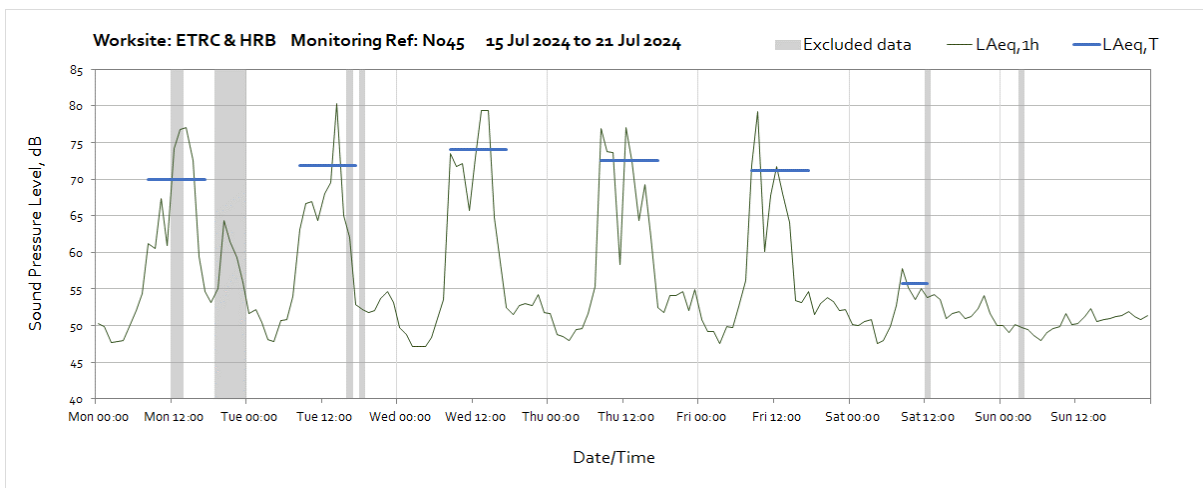
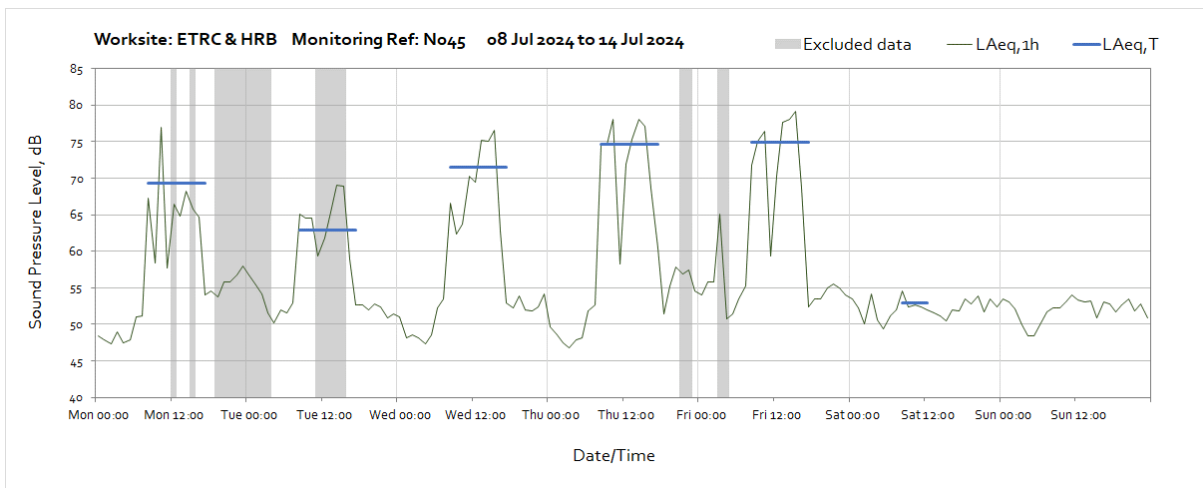
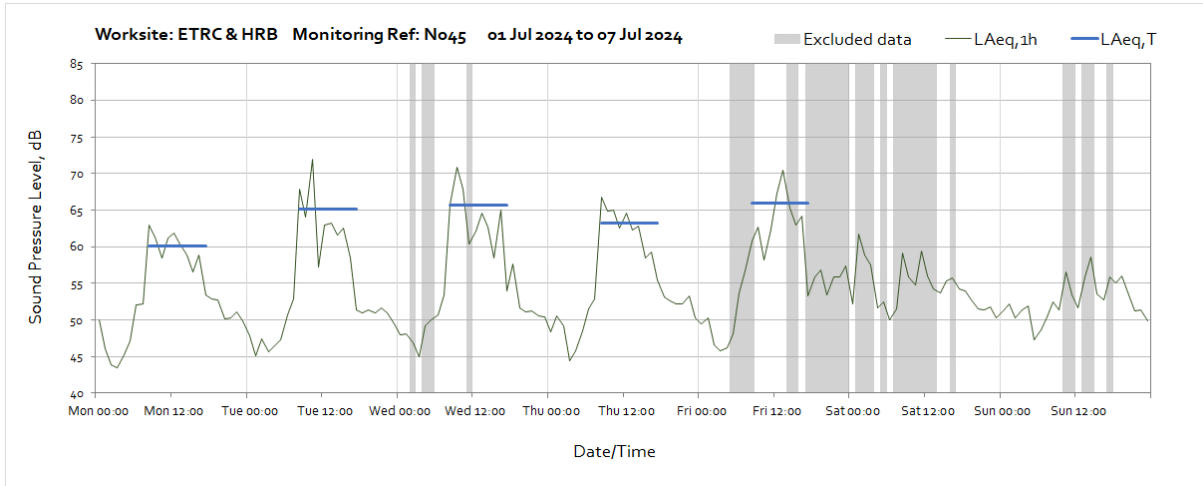


**Worksite: ETRC & HRB – Monitoring Ref: N044**

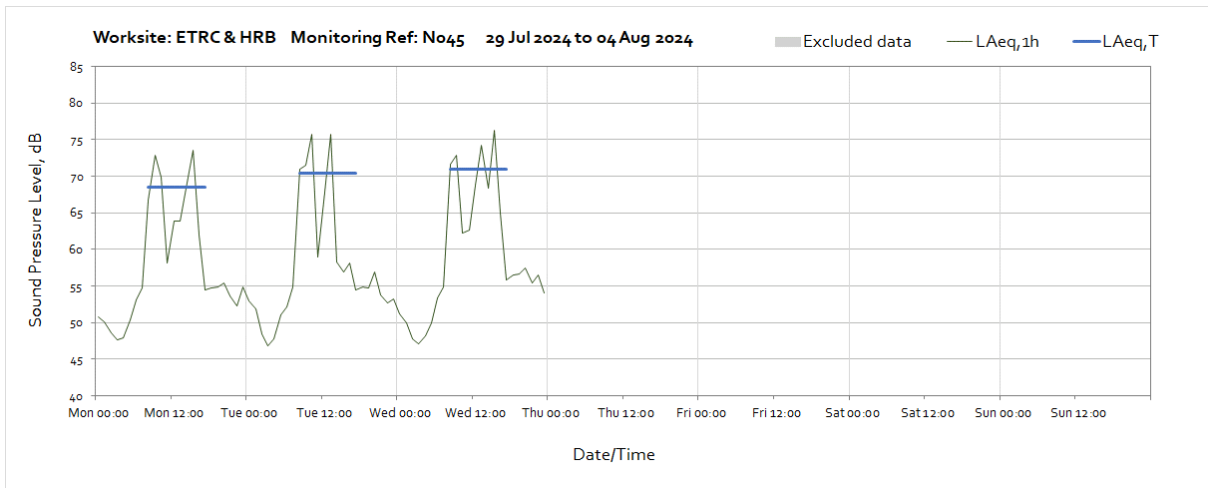
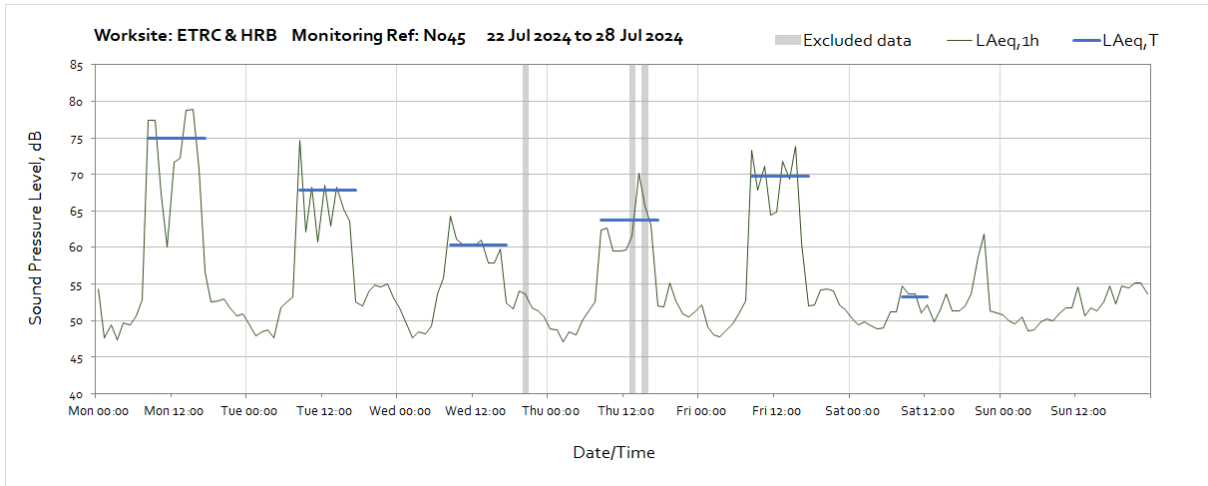




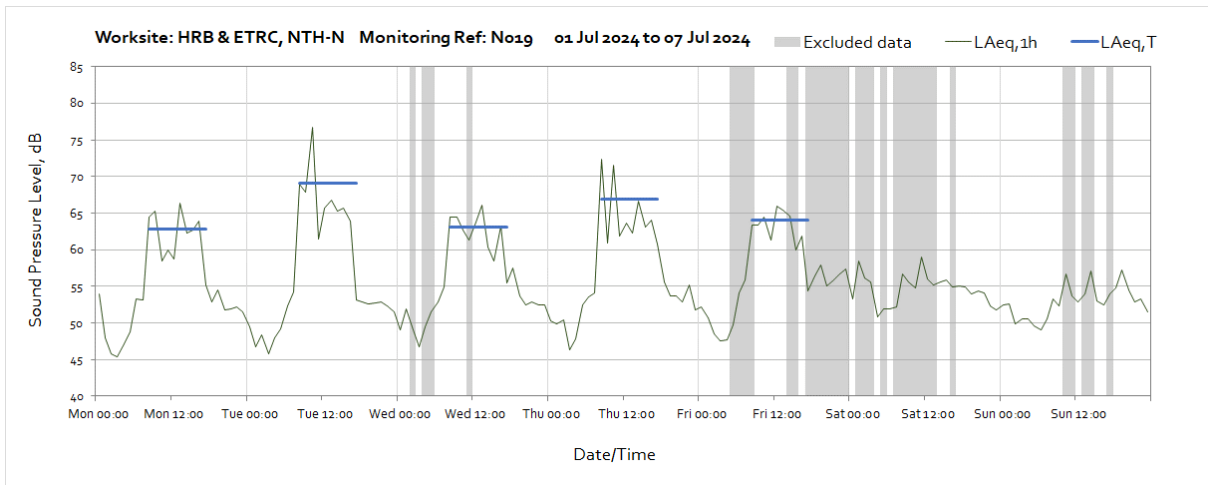
## Worksite: ETRC & HRB – Monitoring Ref: N045

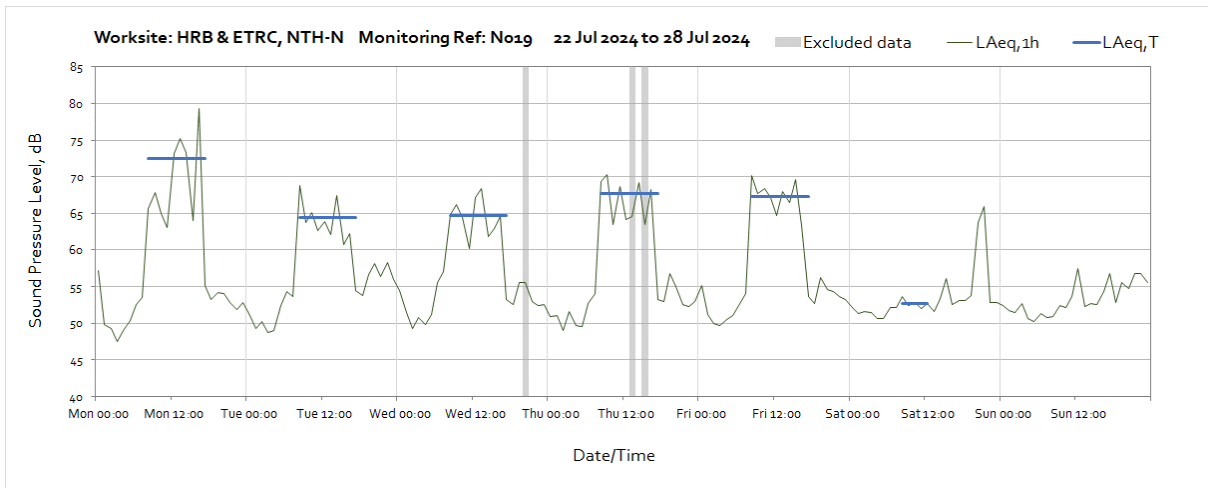
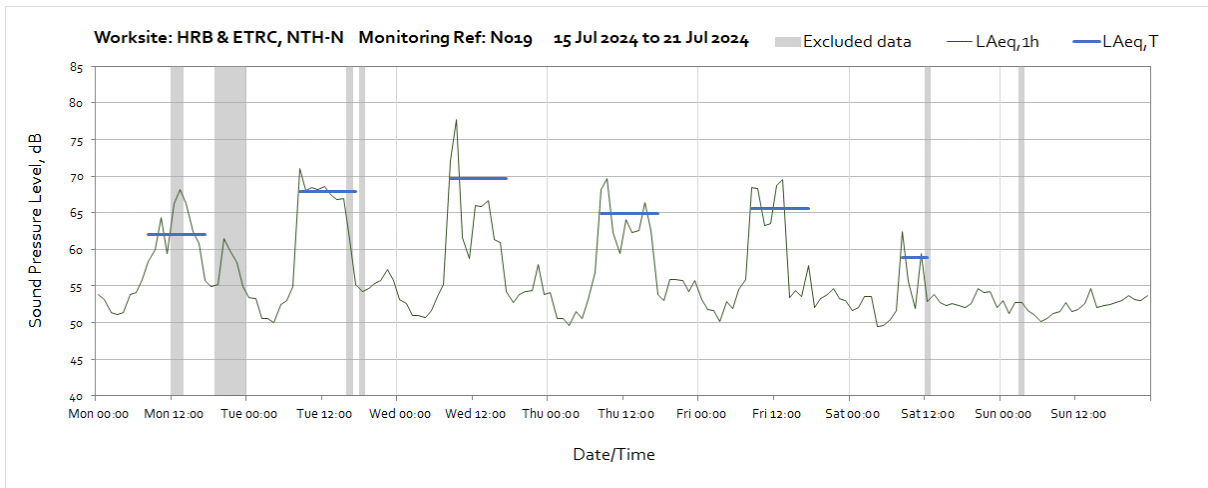
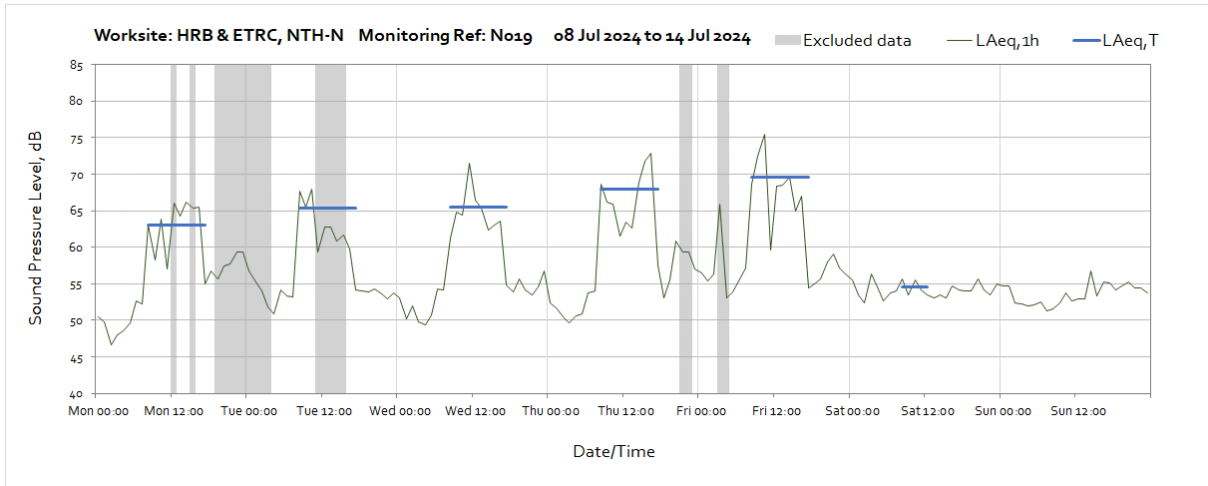


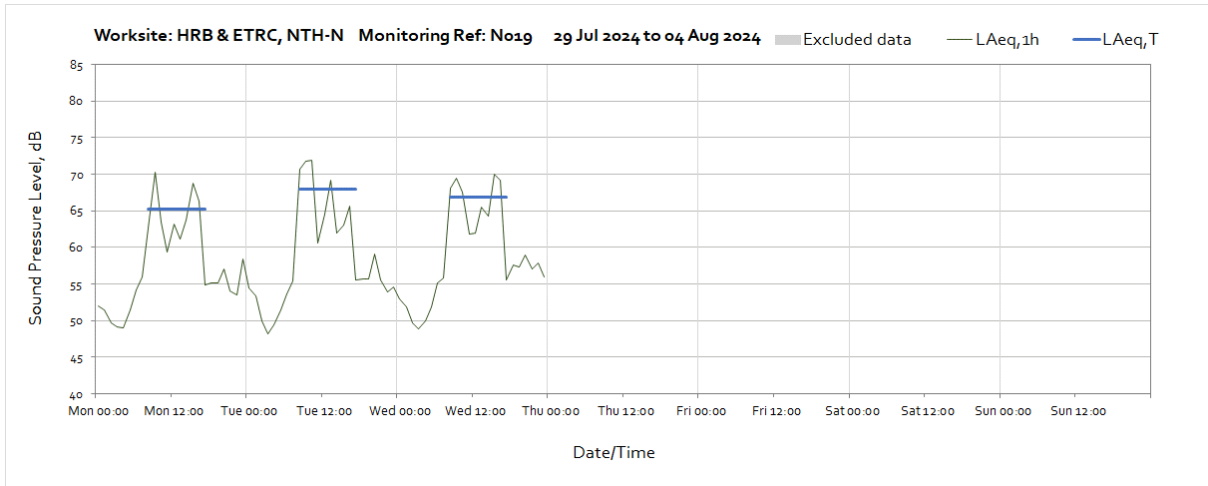
OFFICIAL



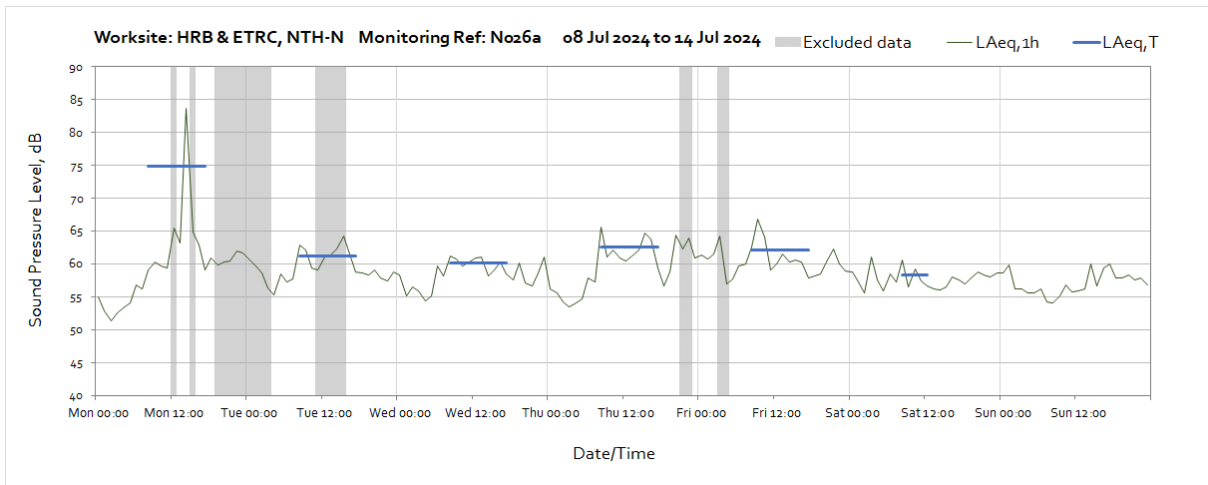
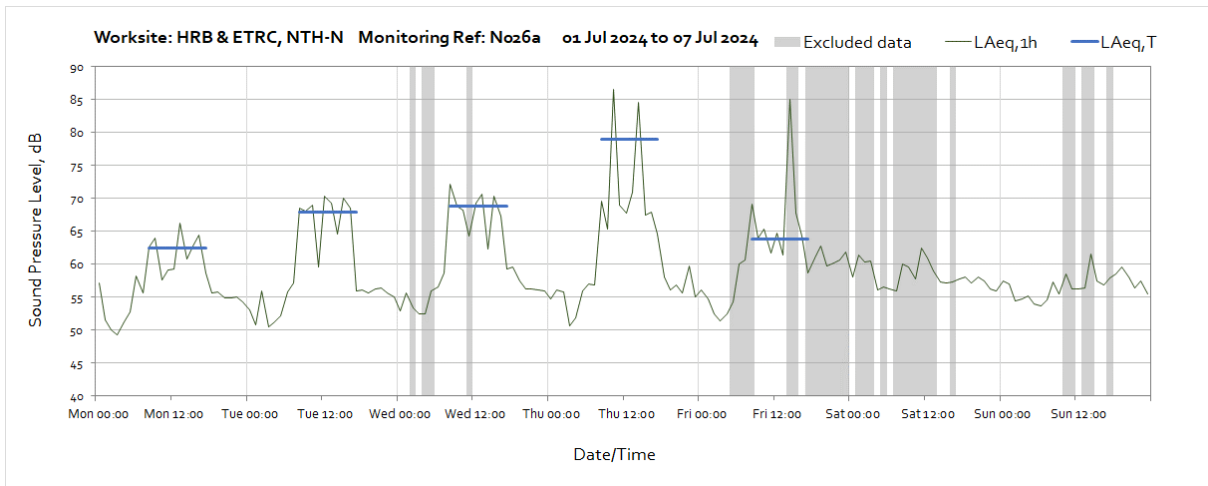
**Worksite: HRB & ETRC, NTH-N - Monitoring Ref: N019**



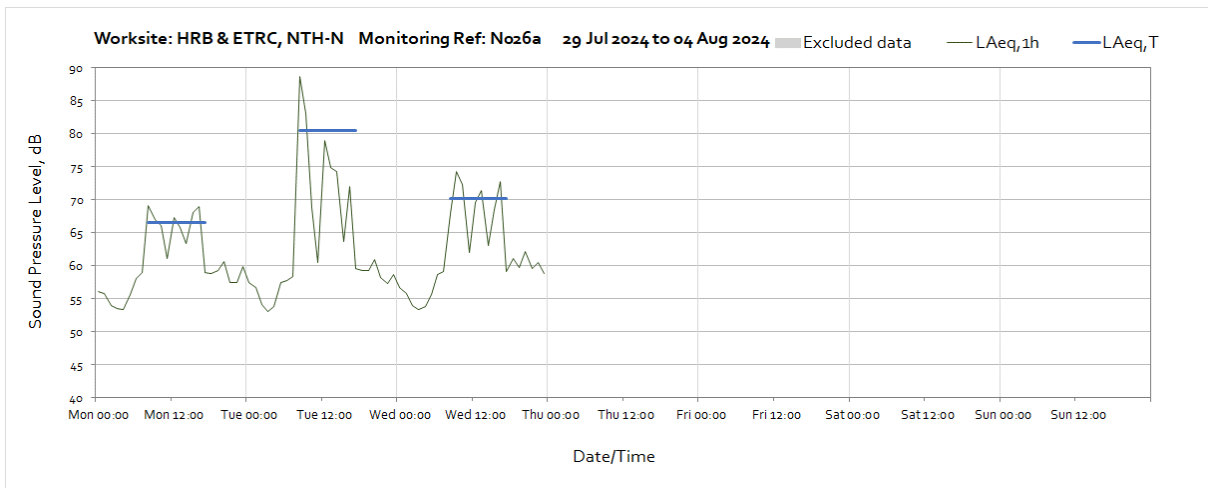
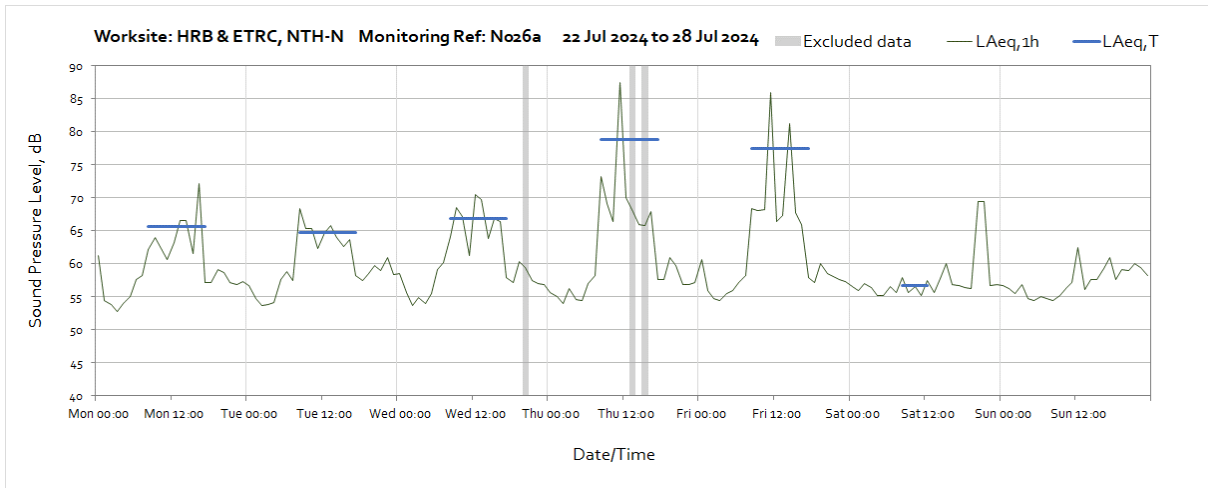
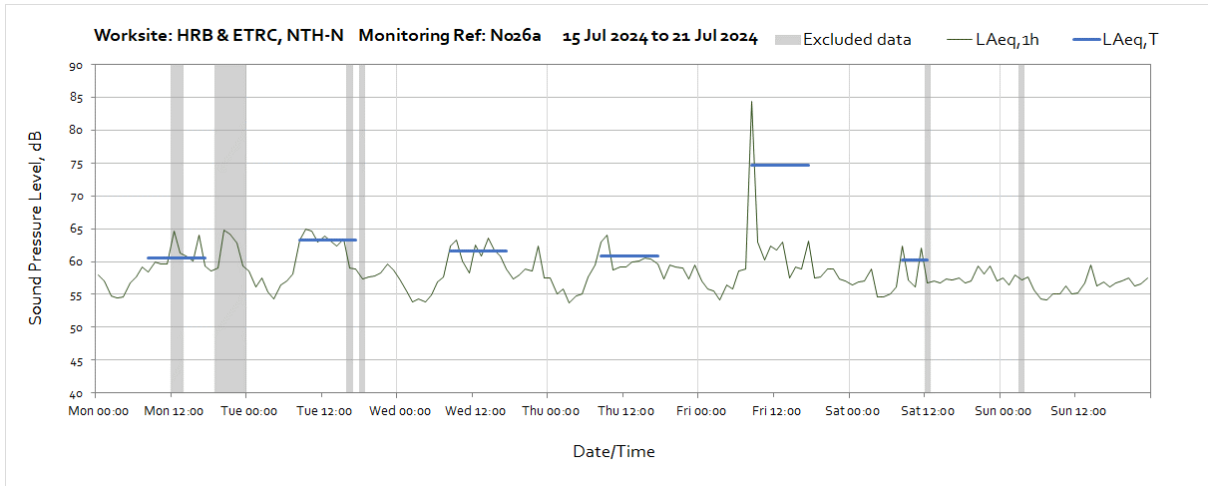




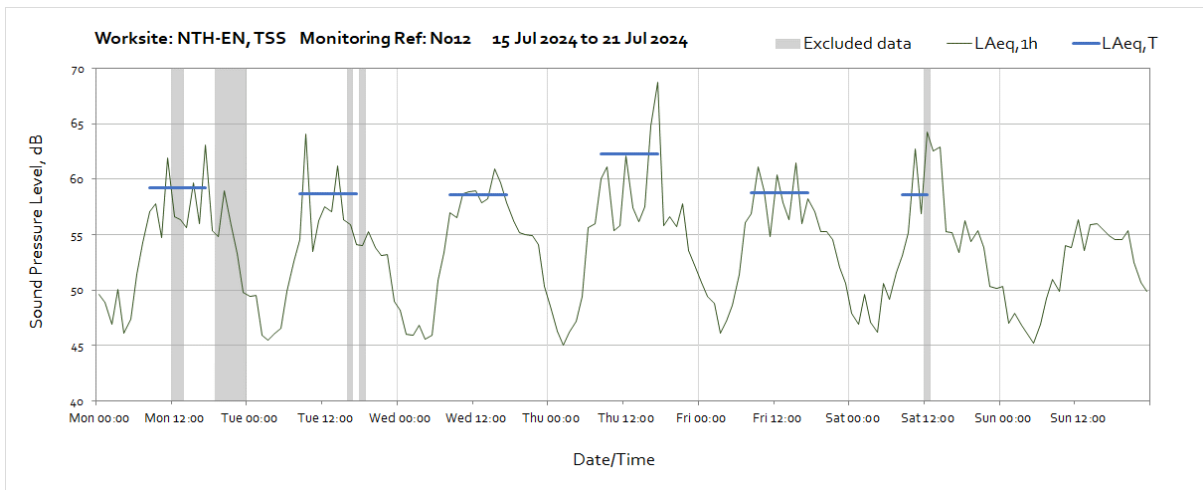
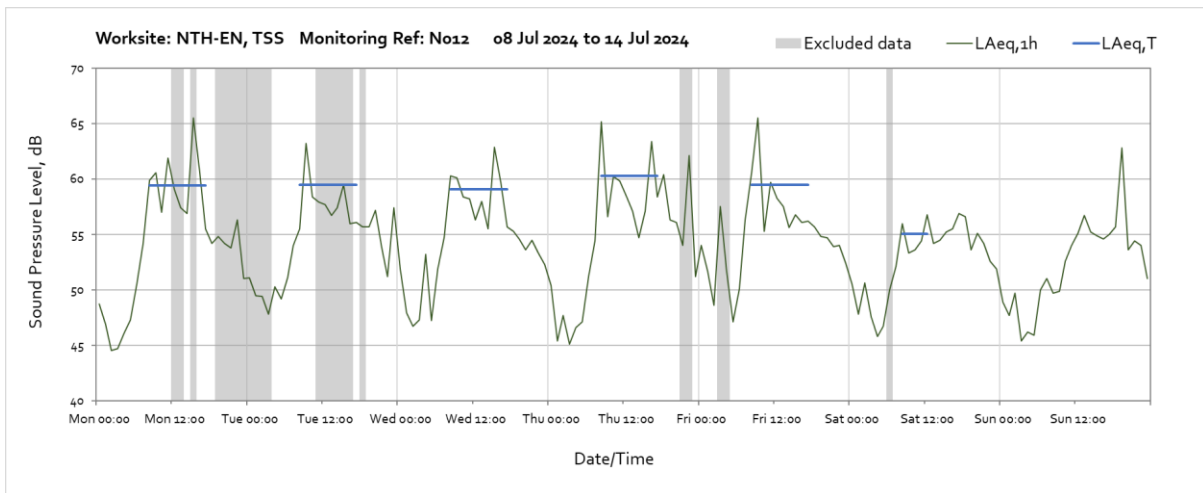
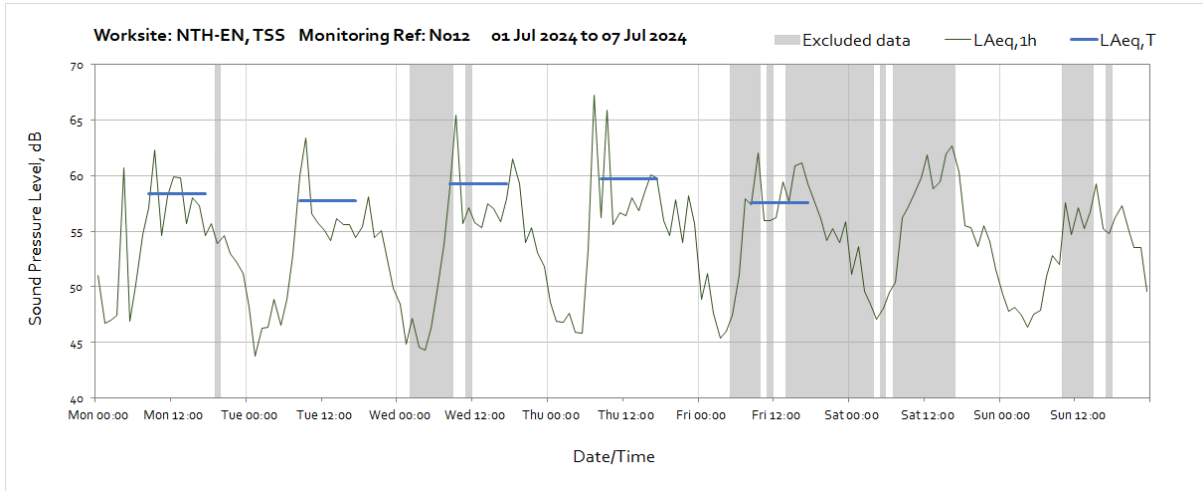
**Worksite: HRB & ETRC, NTH-N – Monitoring Ref: N026a**



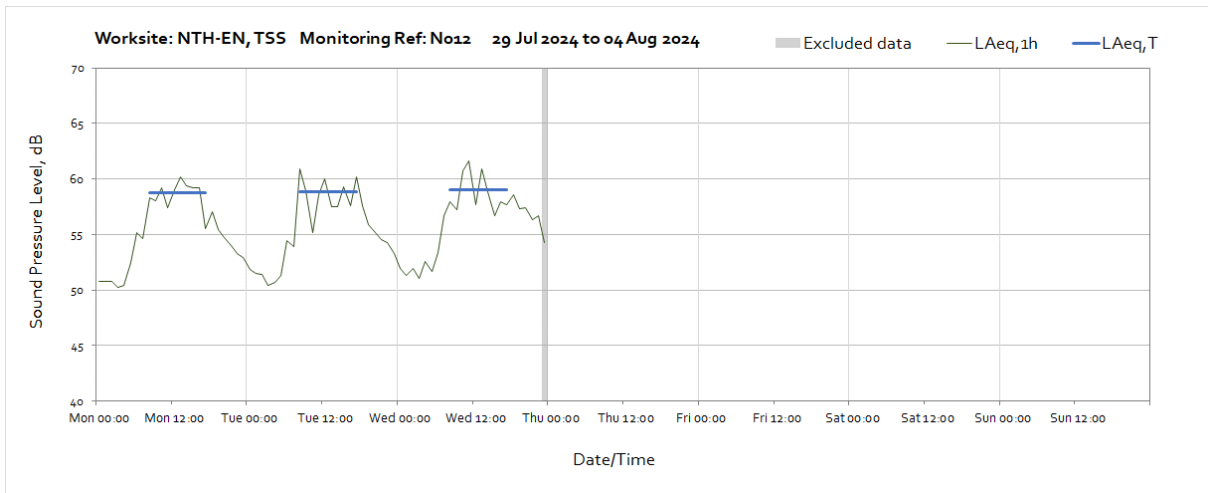
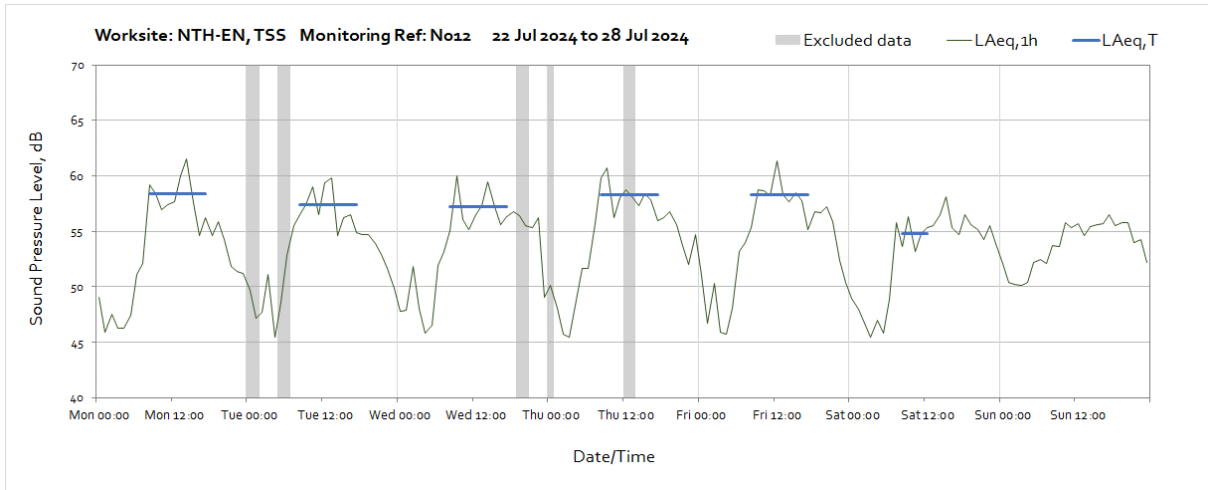




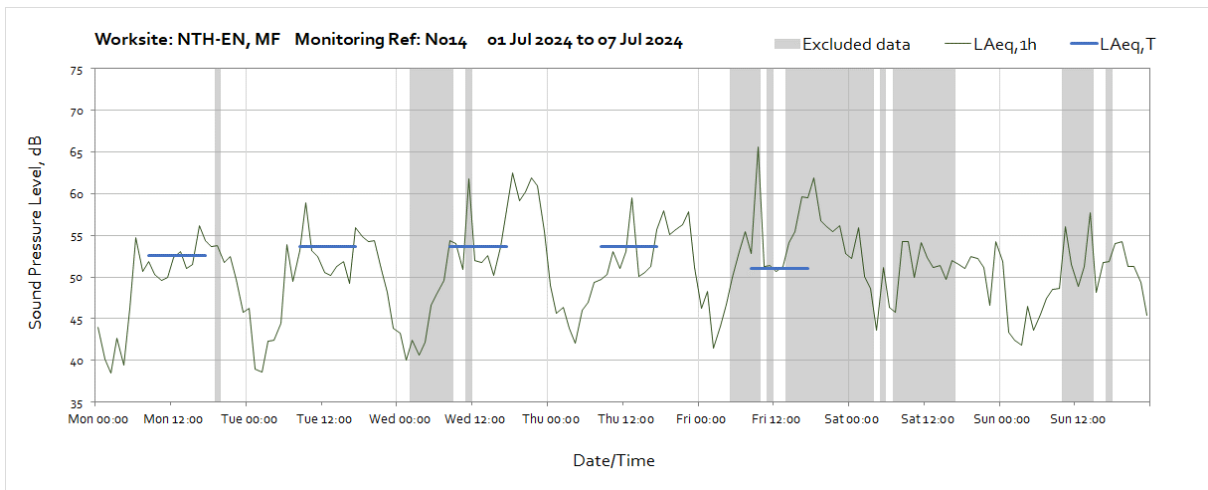
## Worksite: NTH-EN, TSS – Monitoring Ref: N012

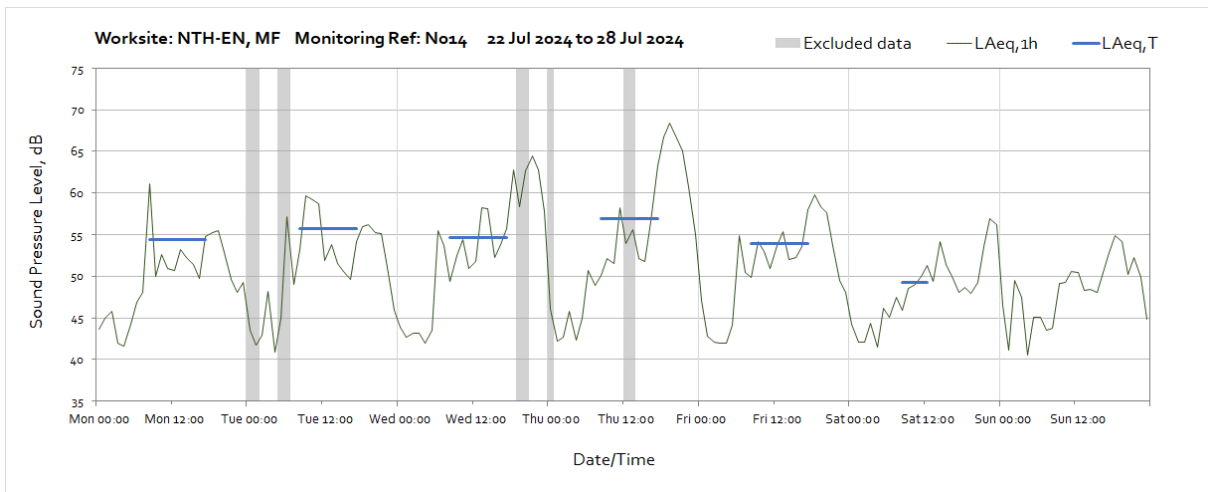
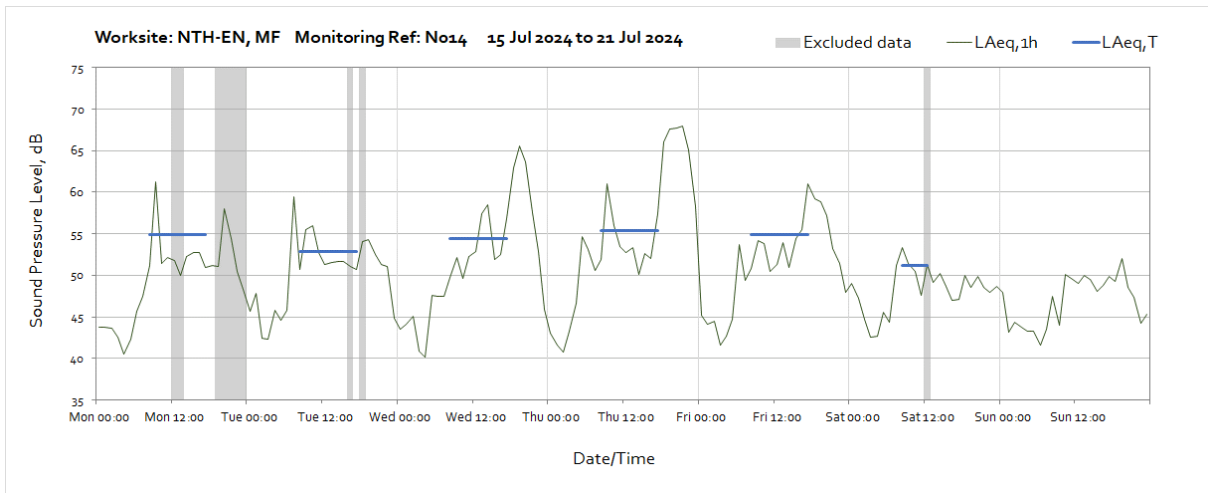
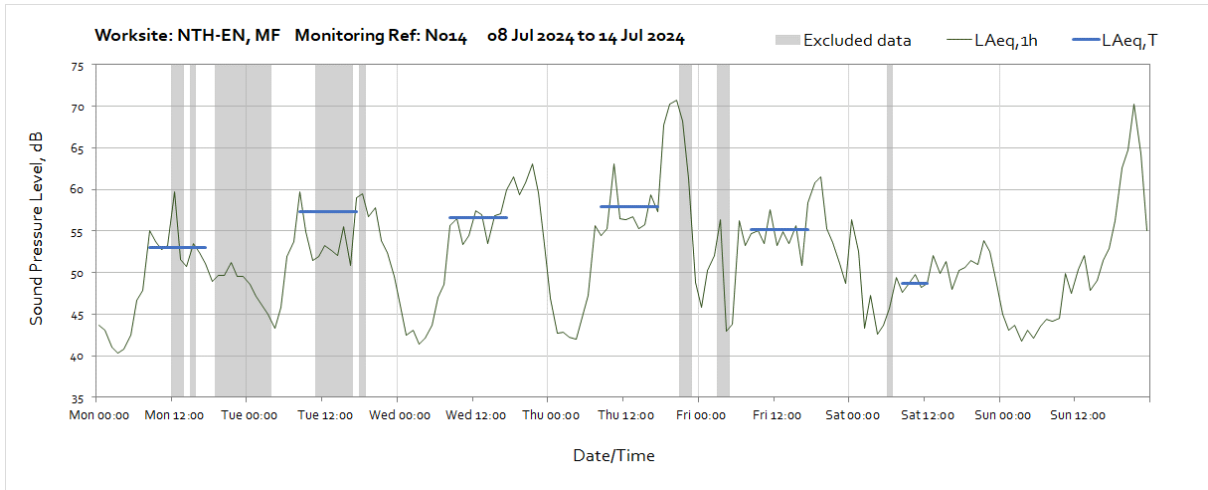


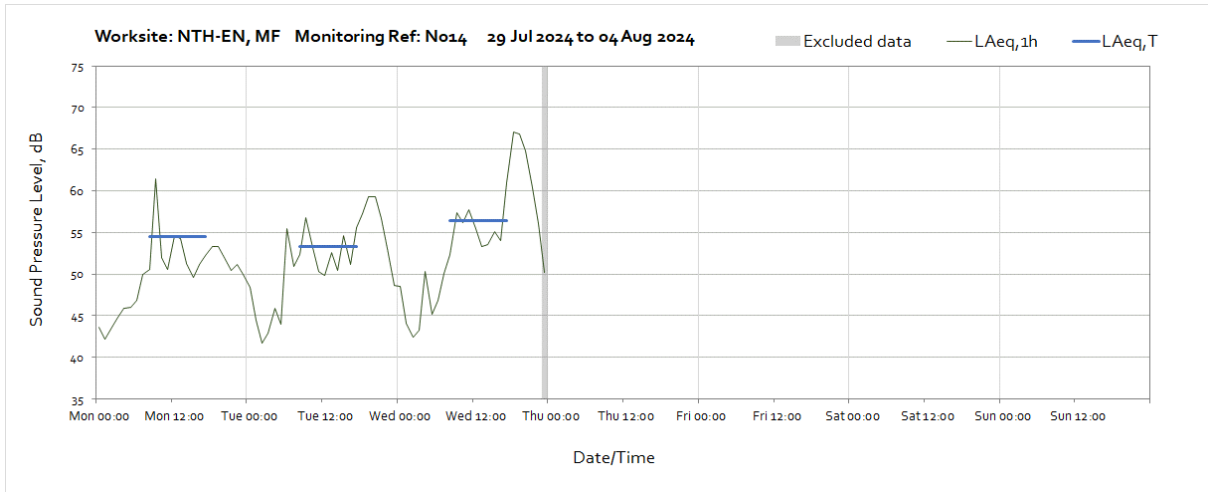
OFFICIAL



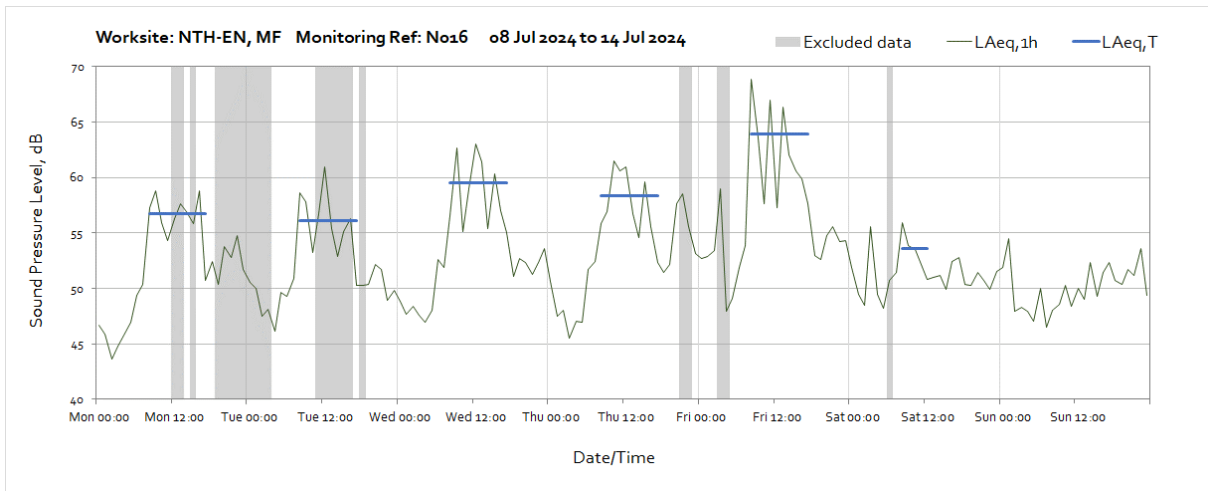
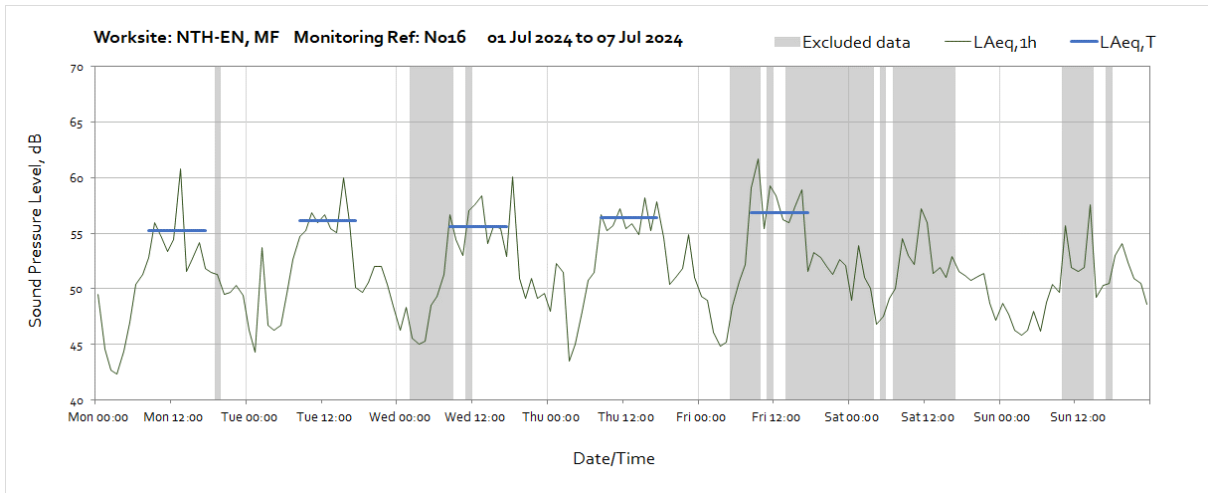
**Worksite: NTH-EN, MF - Monitoring Ref: N014**

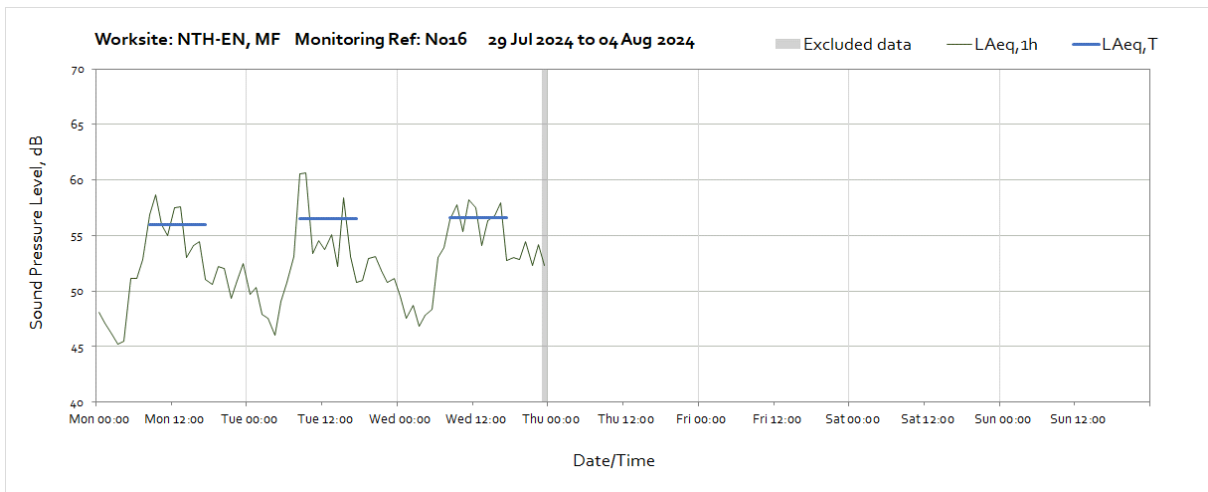
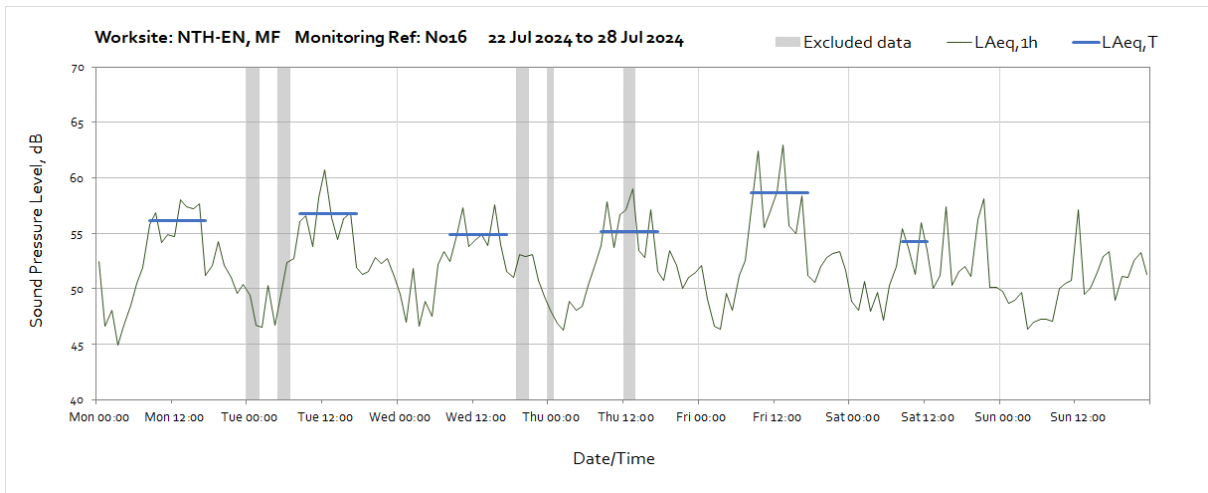
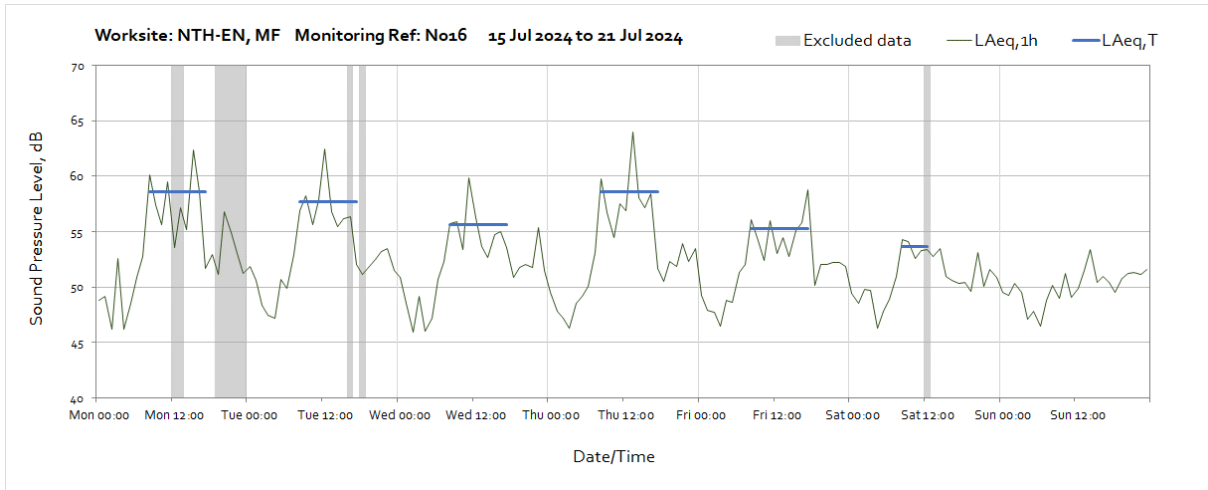




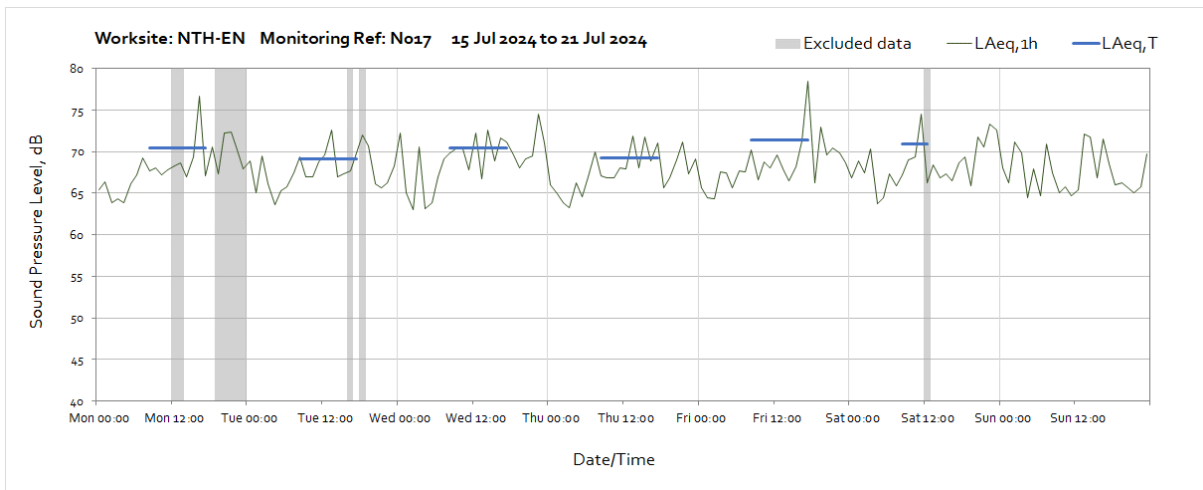
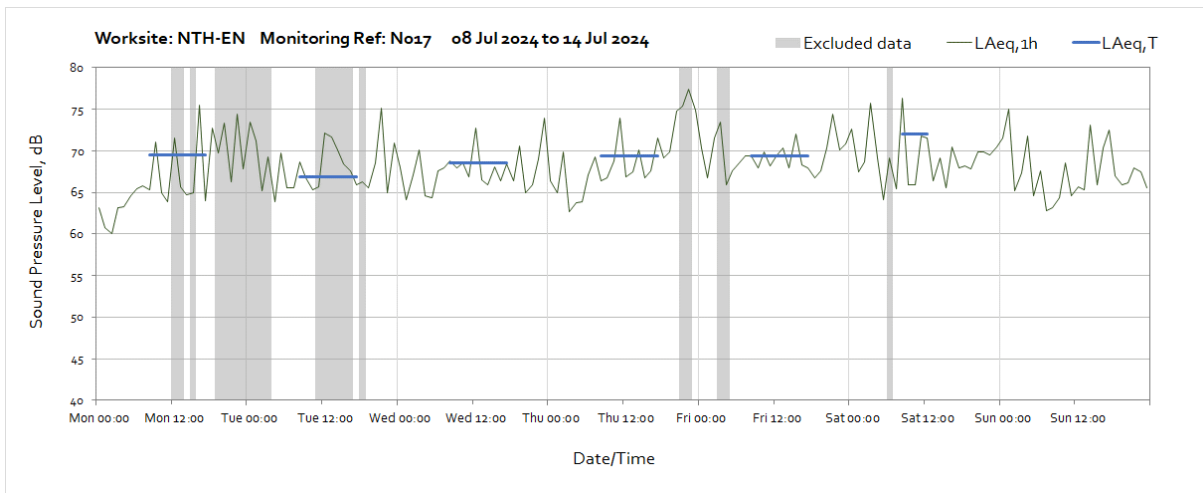
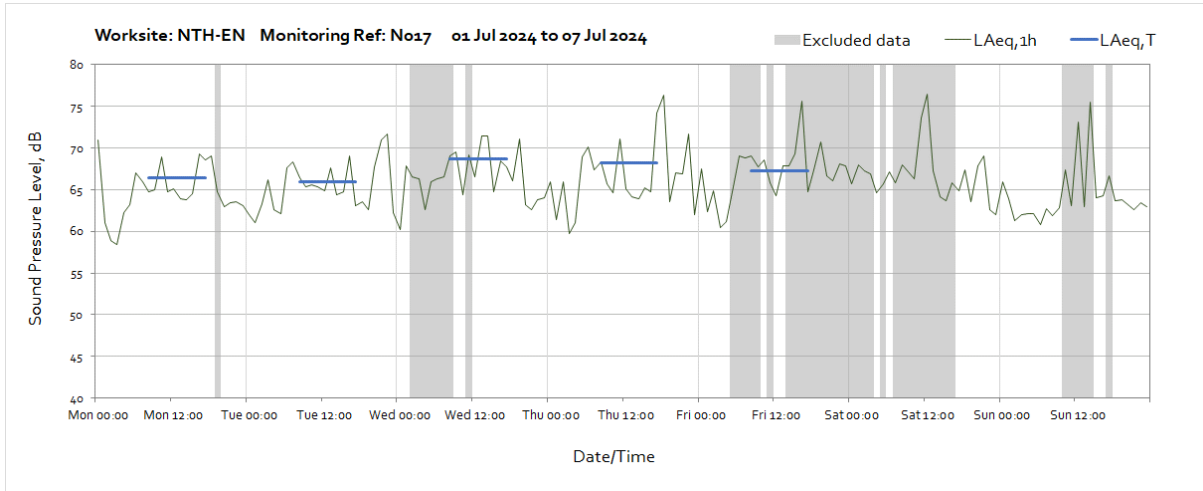


**Worksite: NTH-EN, MF – Monitoring Ref: N016**

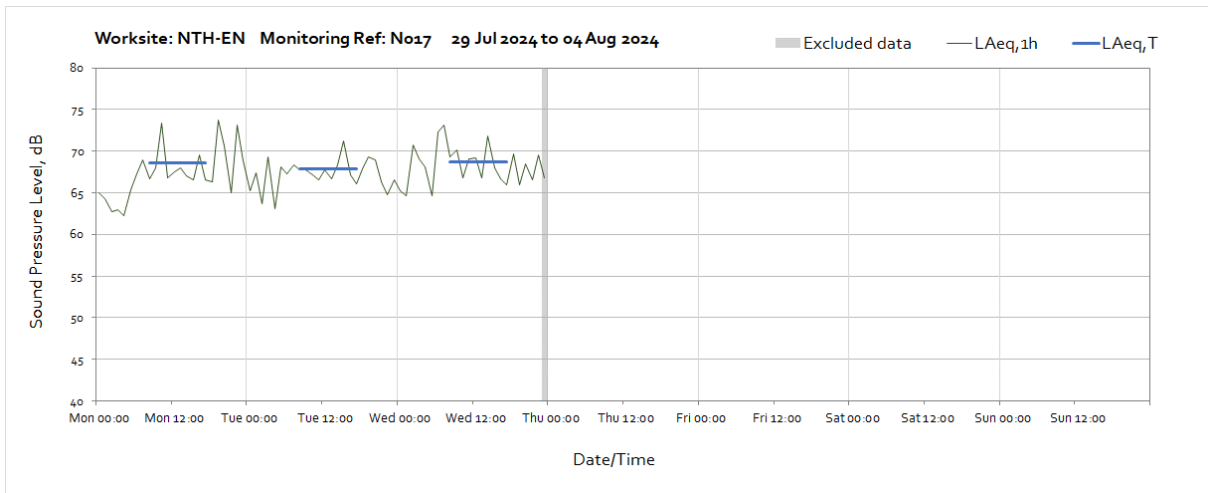
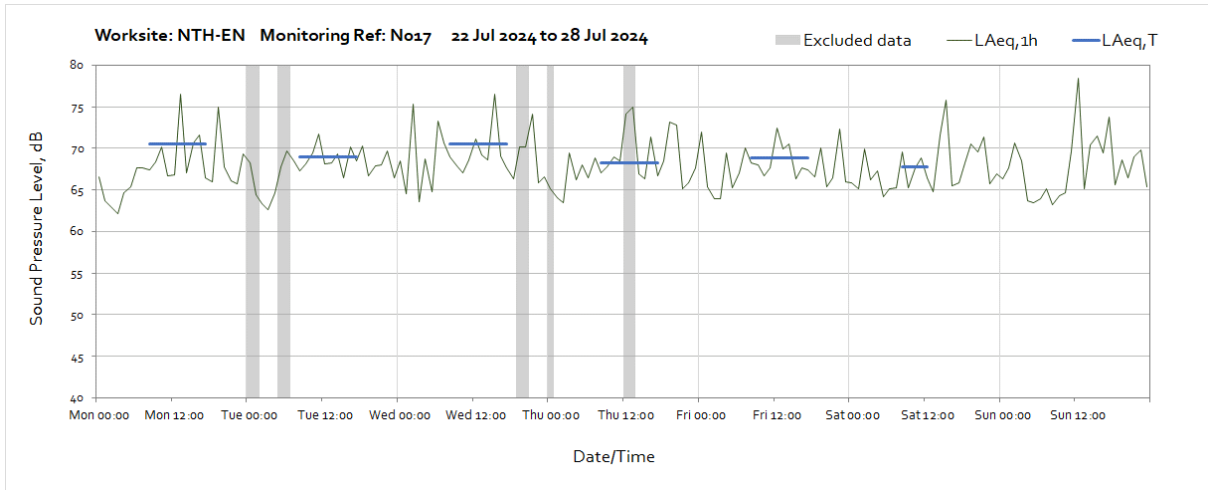




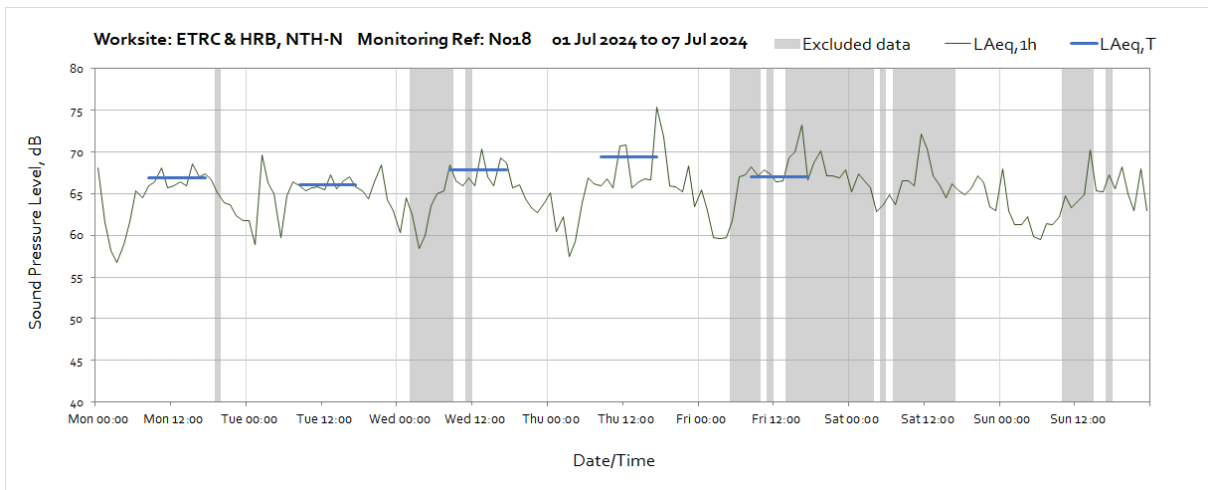
## Worksite: NTH-EN - Monitoring Ref: N017



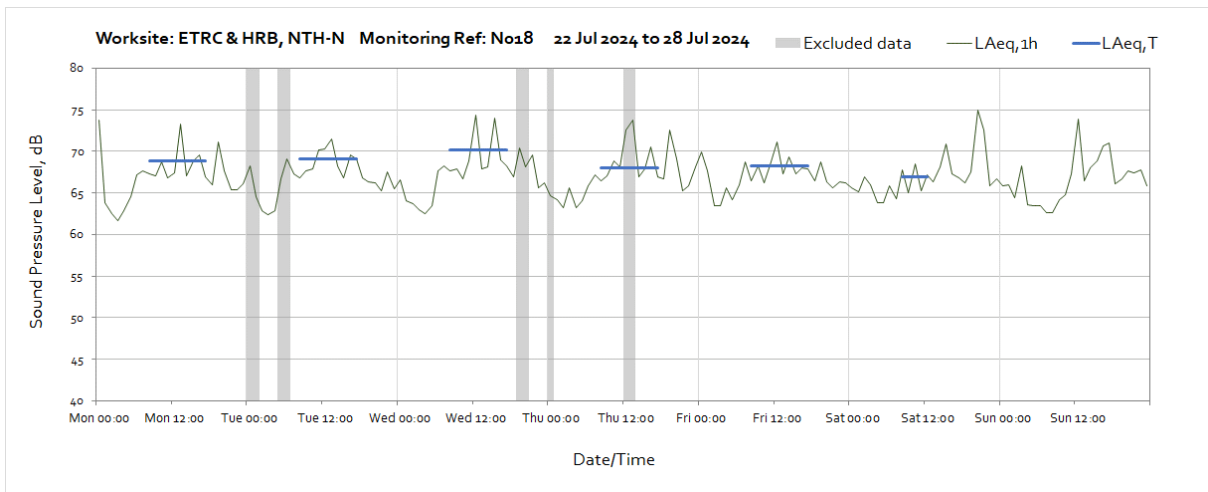
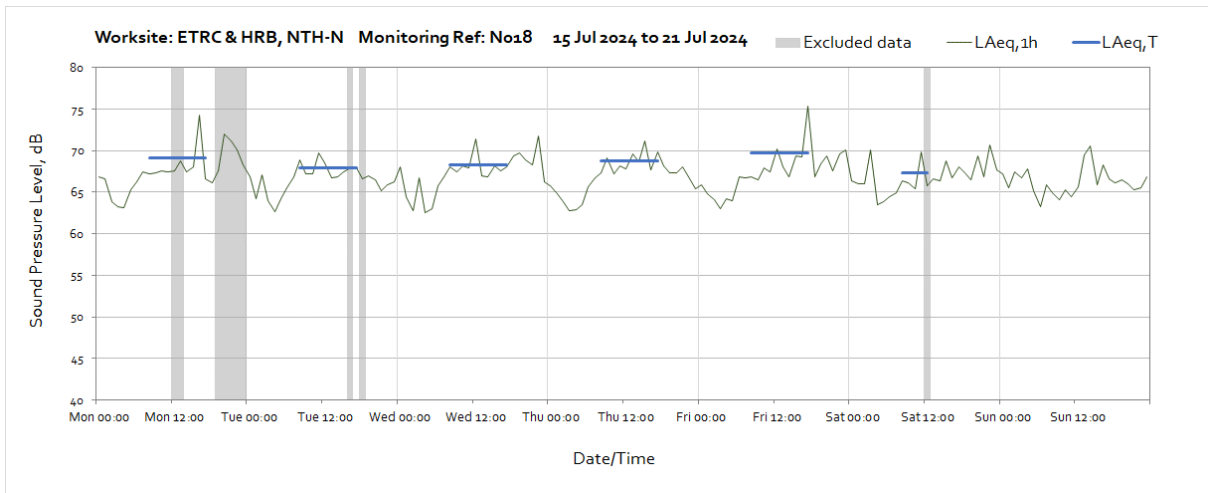
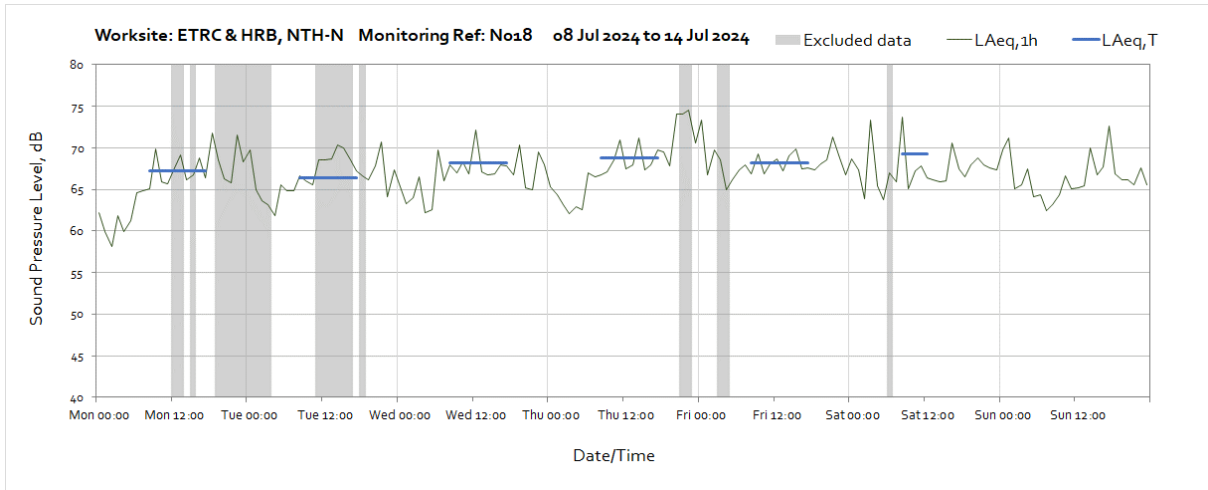
OFFICIAL

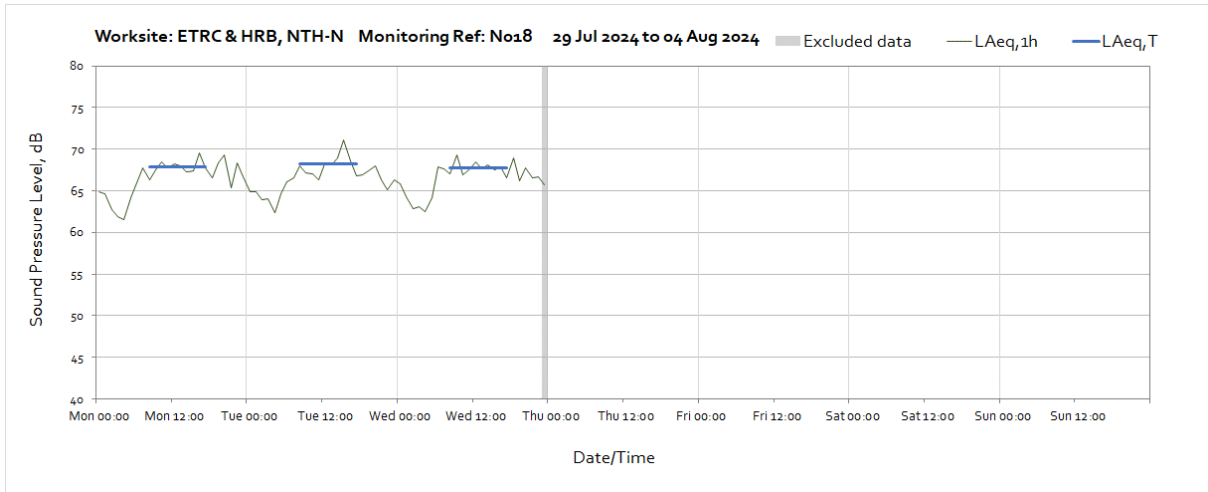


**Worksite: ETRC & HRB, NTH-N - Monitoring Ref: N018**

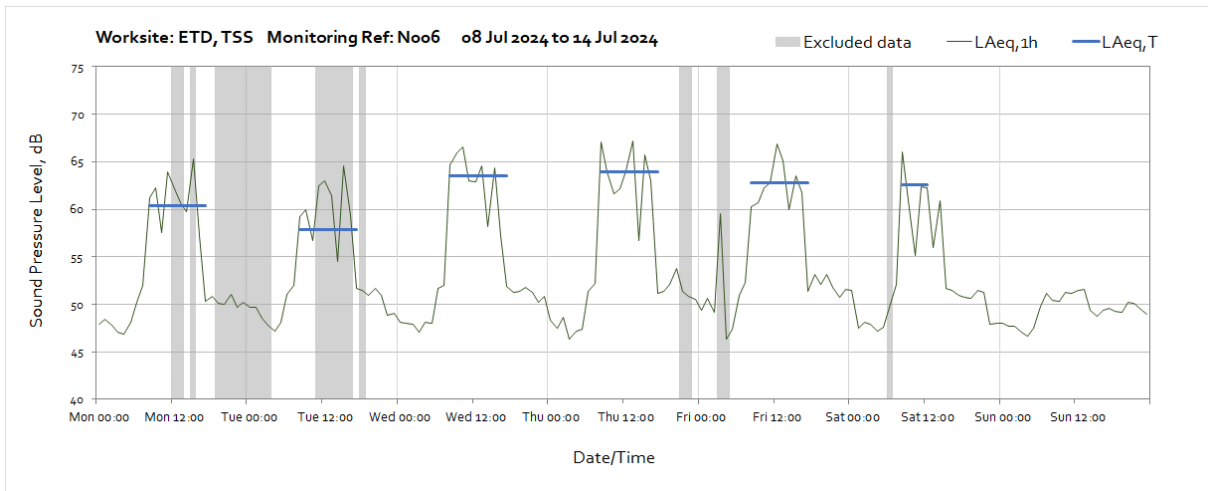
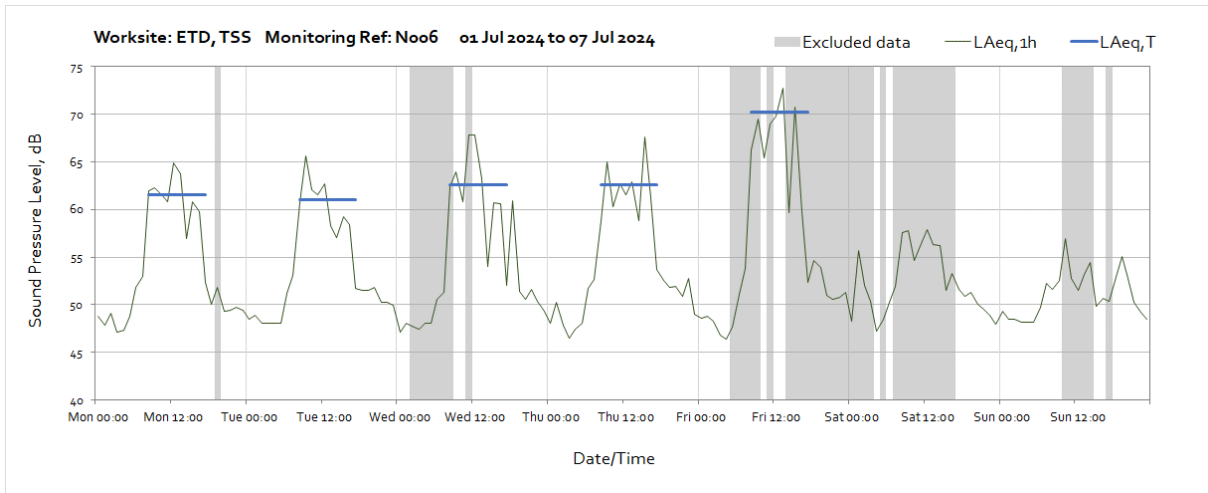


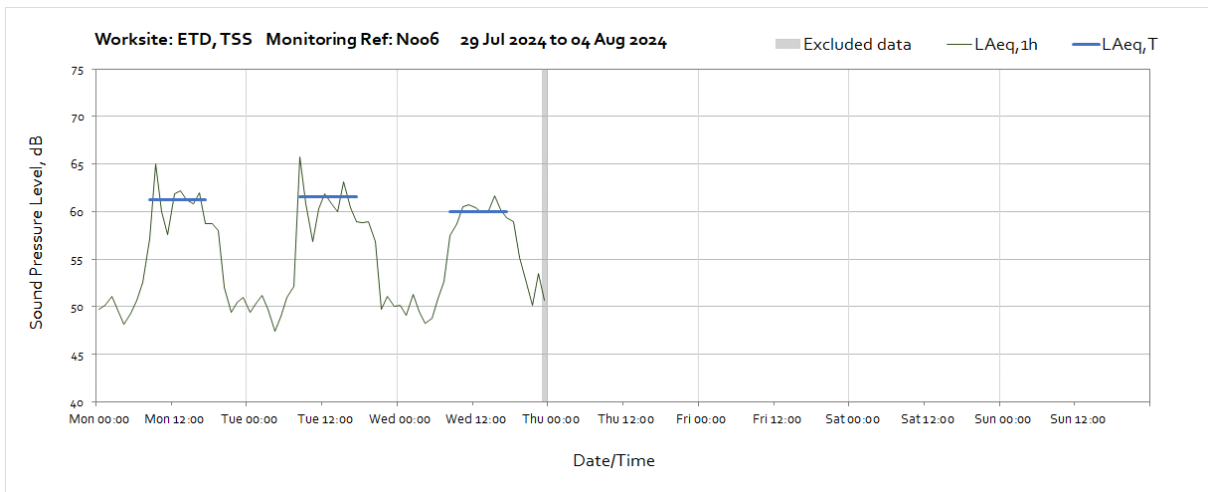
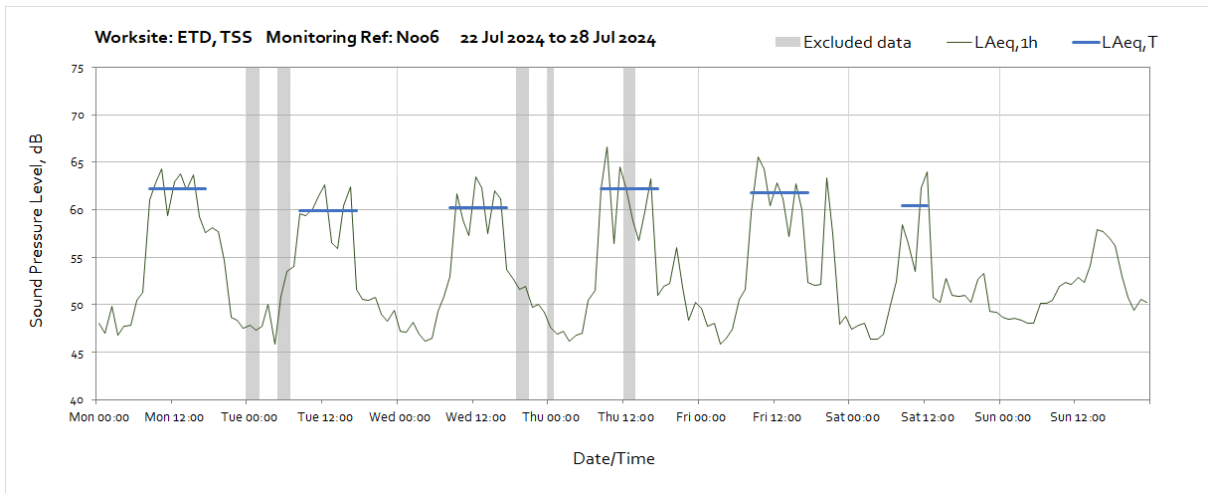
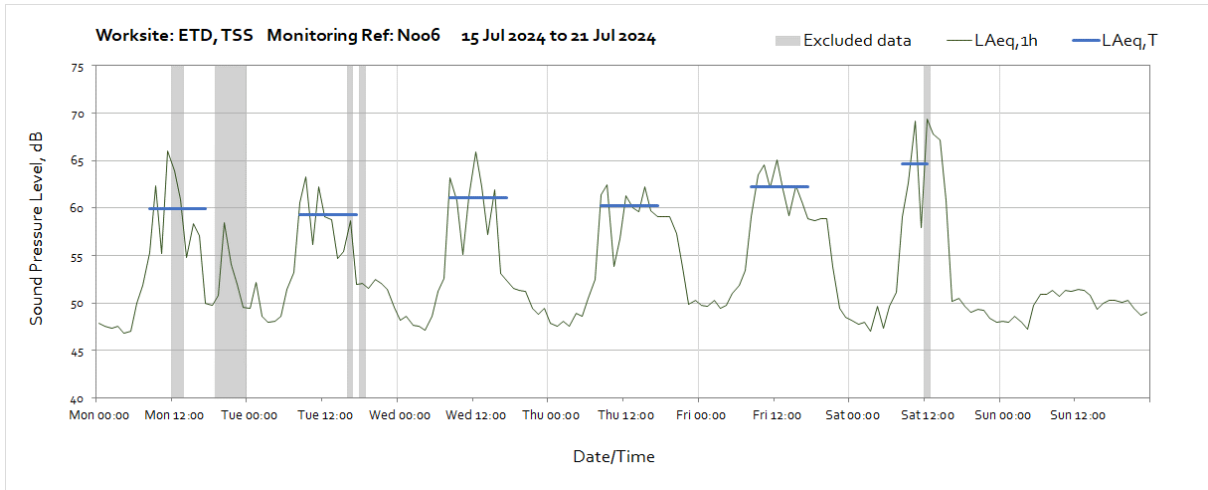




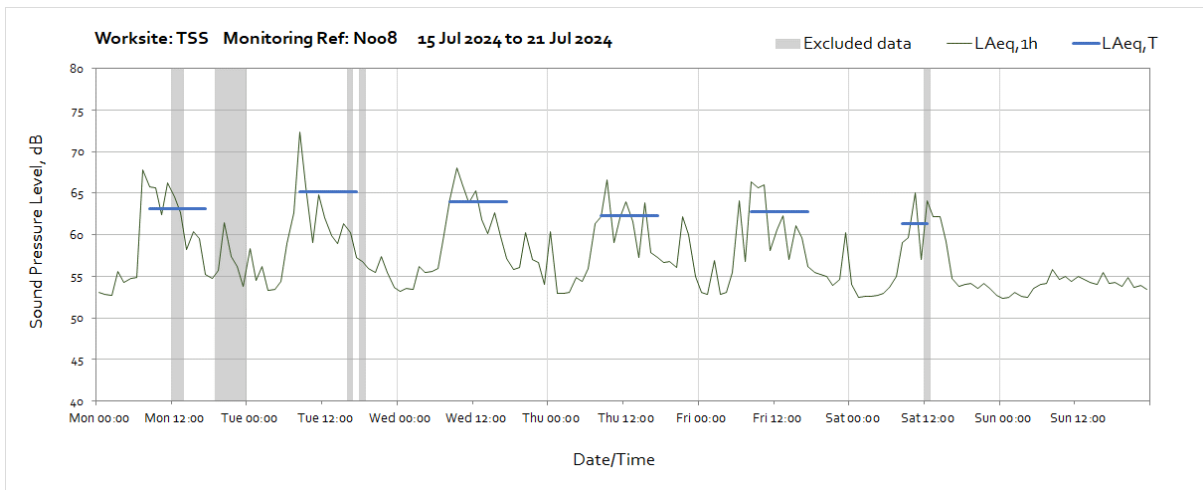
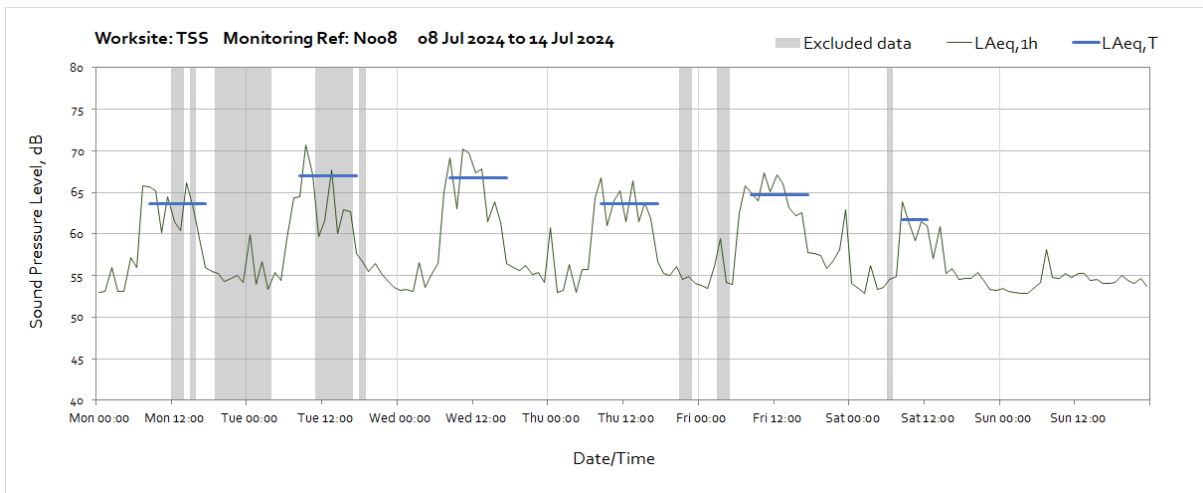
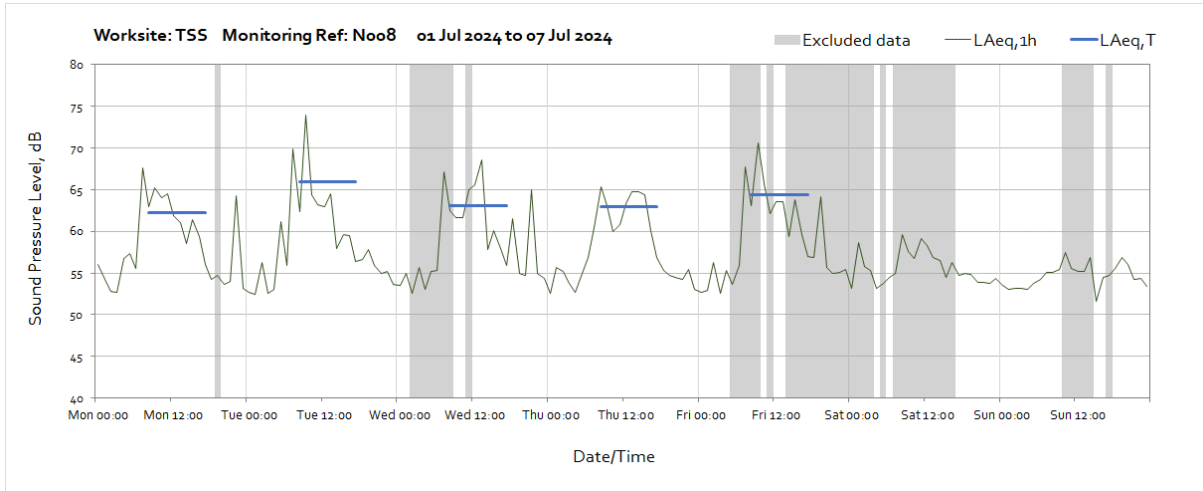


**Worksite: ETD, TSS – Monitoring Ref: N006**

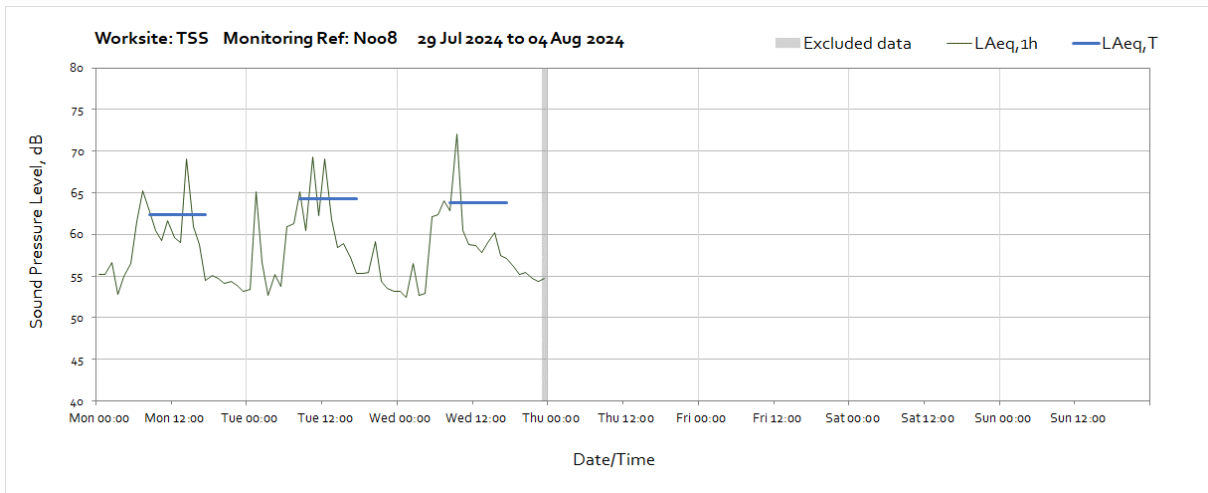
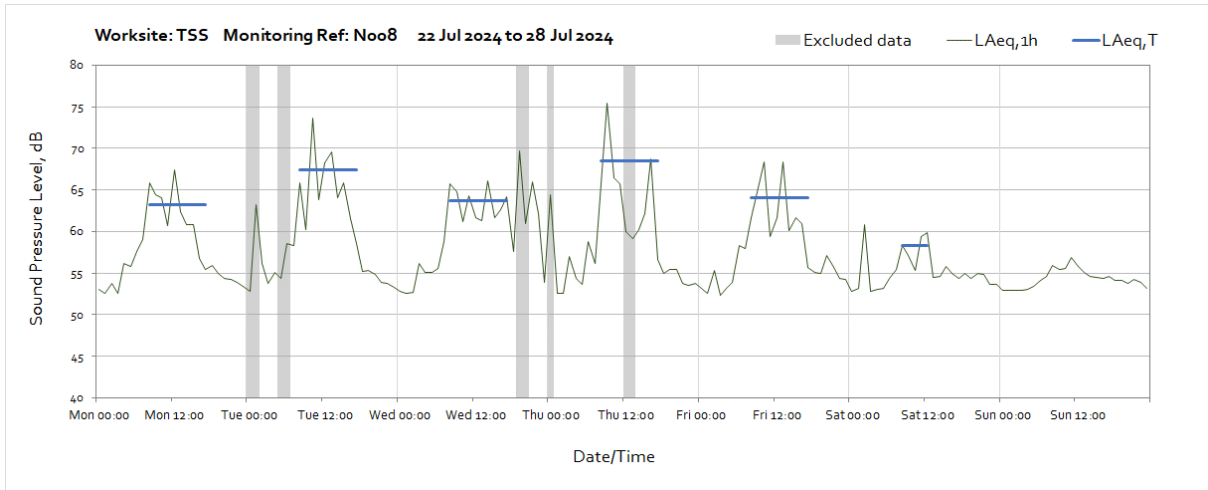




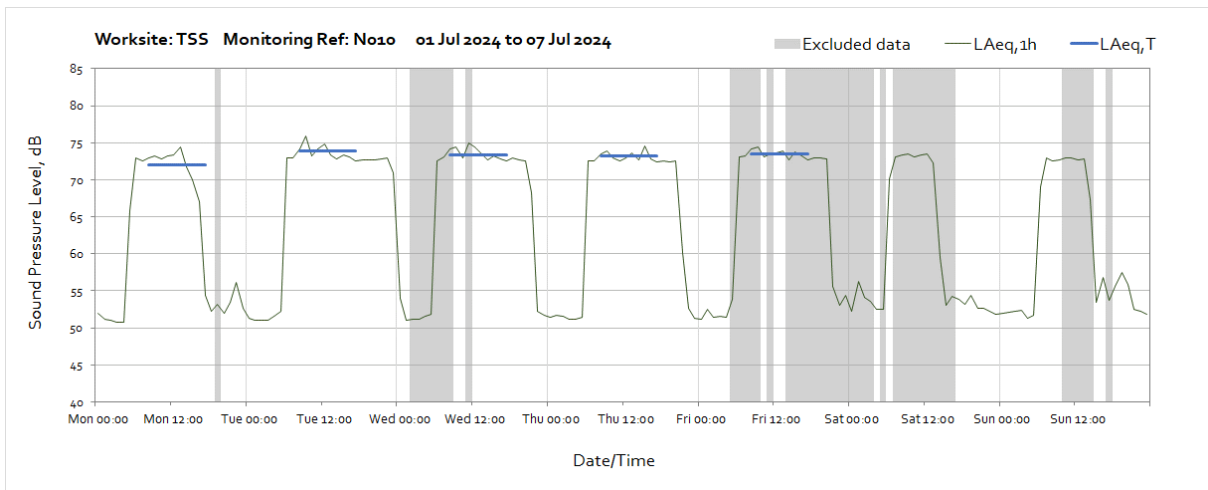
## Worksite: TSS – Monitoring Ref: N008

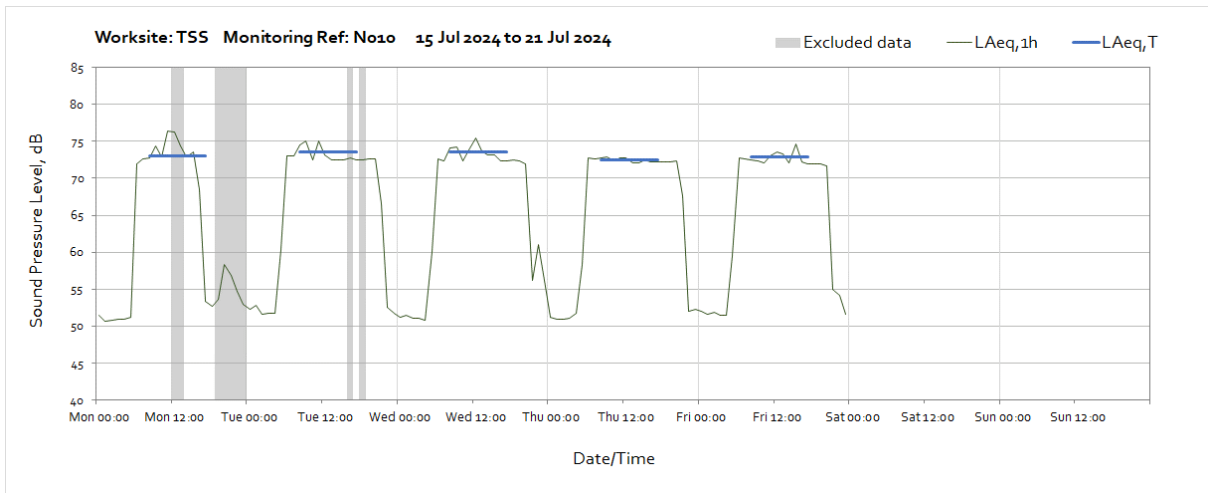
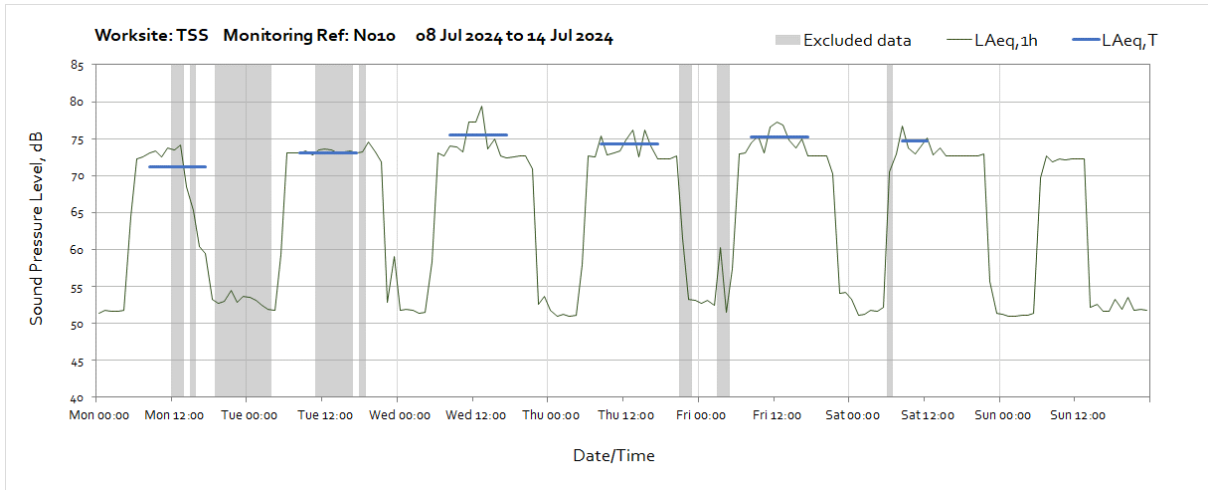


OFFICIAL

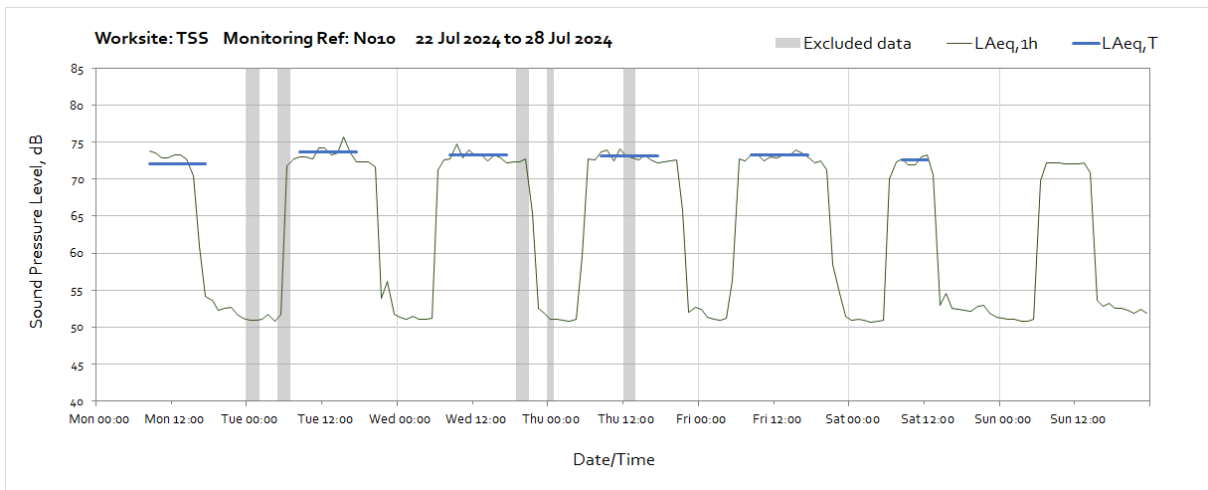


**Worksite: TSS - Monitoring Ref: N010**



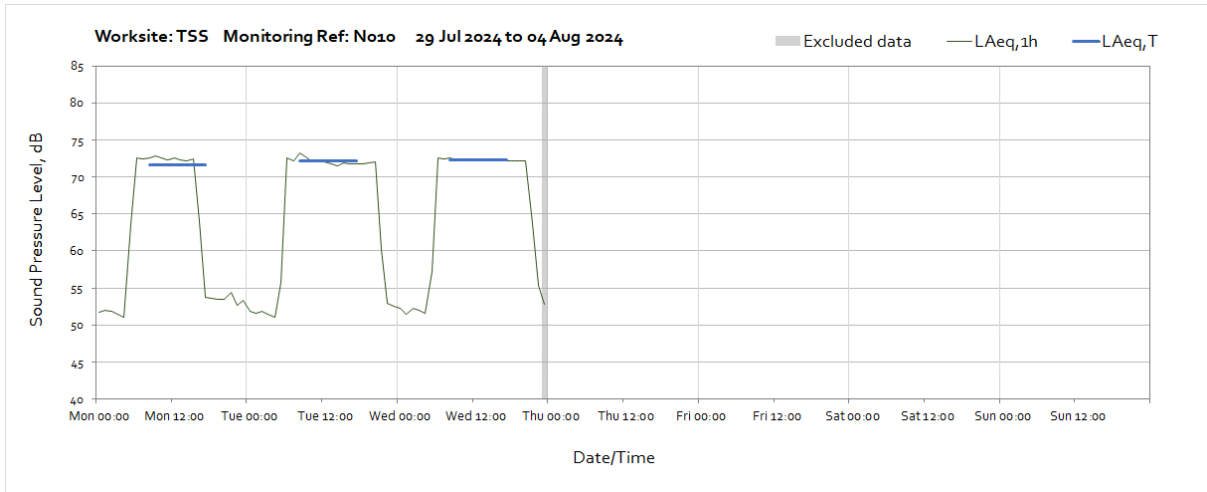


Note: Missing data between 00:00 on Saturday 20<sup>th</sup> July and 07:00 on Monday 22<sup>nd</sup> July was due to a memory card error at the monitoring station.

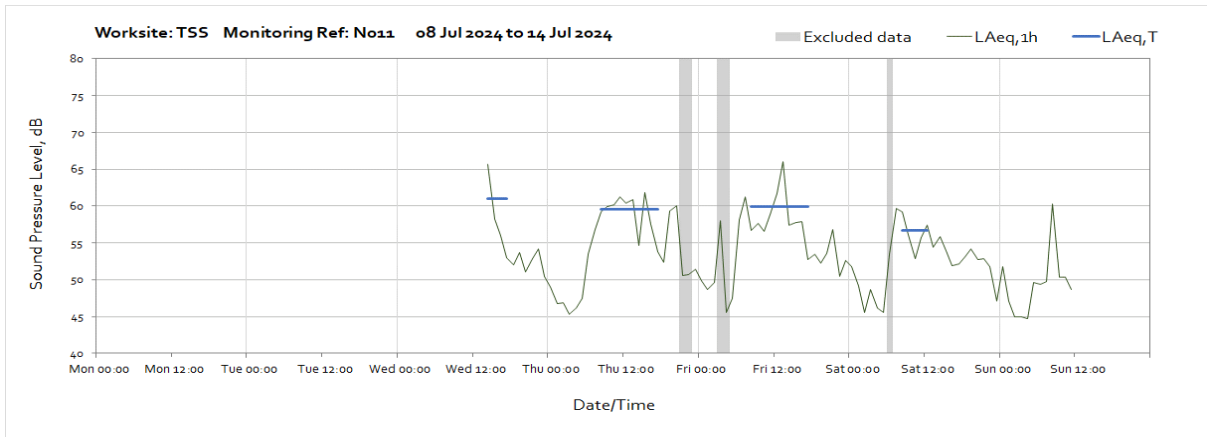


Note: Missing data between 00:00 on Saturday 20<sup>th</sup> July and 07:00 on Monday 22<sup>nd</sup> July was due to a memory card error at the monitoring station.

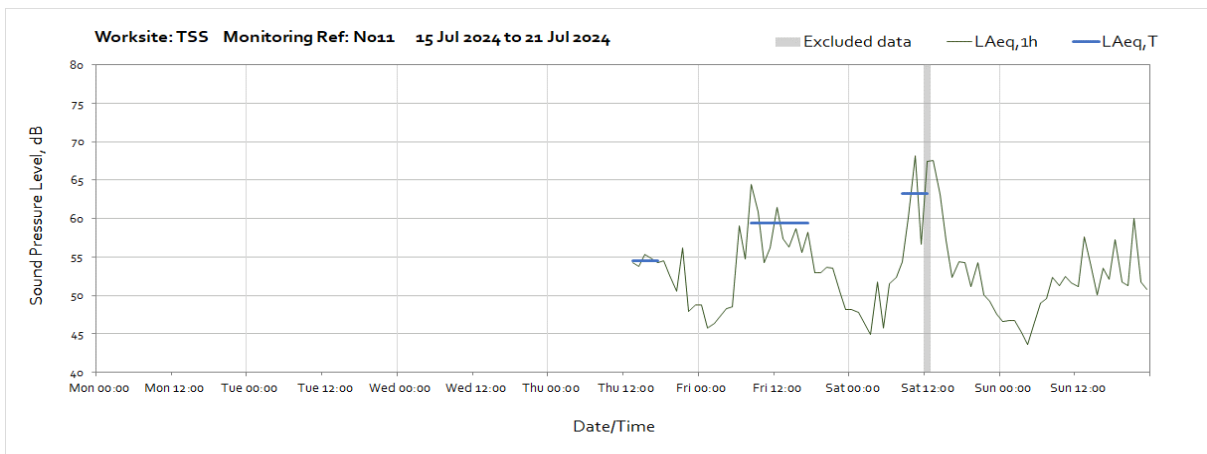
OFFICIAL



### Worksite: TSS – Monitoring Ref: N011

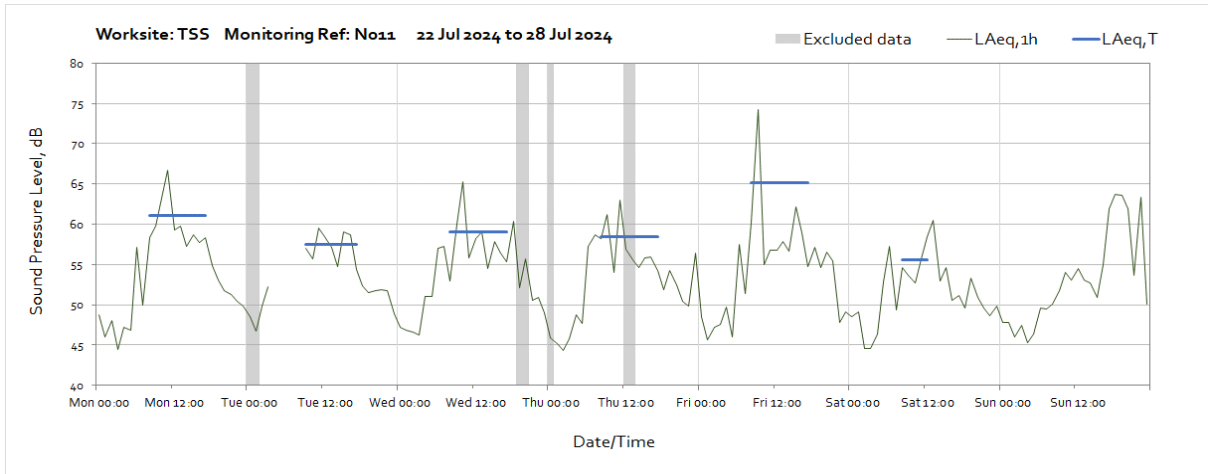


Note: Missing data between the start of the month and 13:00 on Wednesday 10<sup>th</sup> July was due to a system error at the monitoring station.

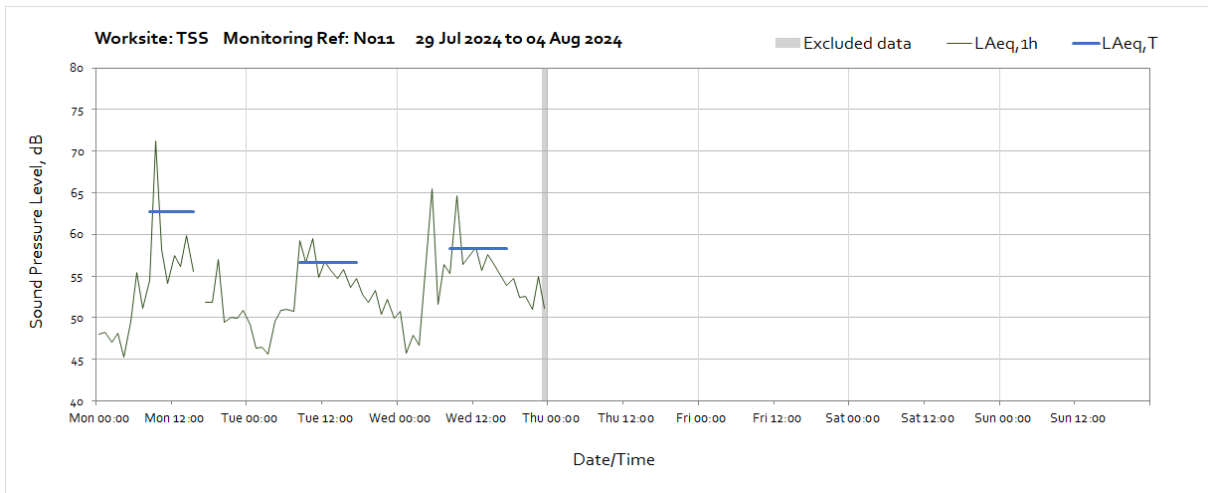


Note: Missing data between 12:00 on Sunday 14<sup>th</sup> July and 12:00 on Thursday 18<sup>th</sup> July was due to a loss of power at the monitoring station.

OFFICIAL



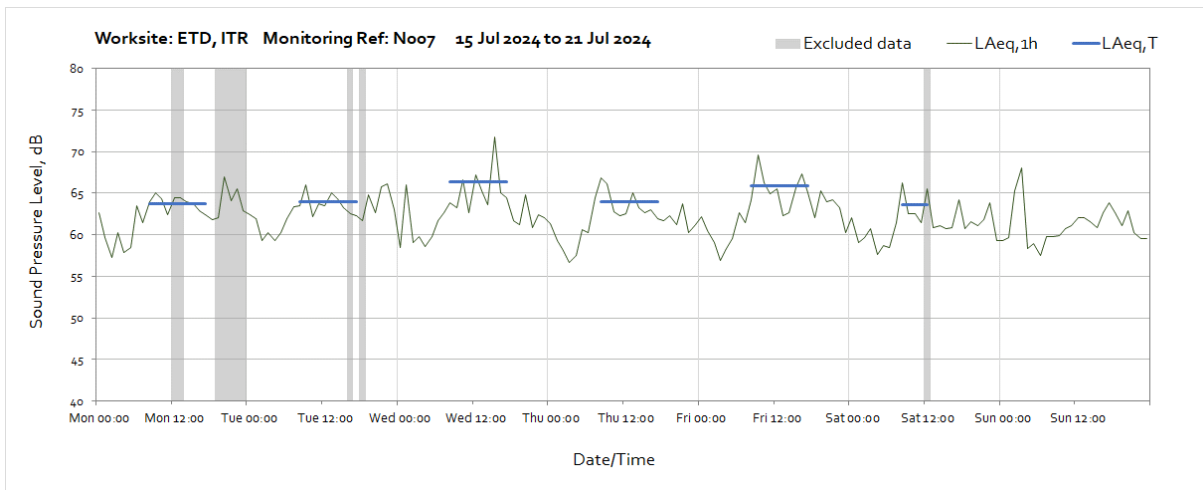
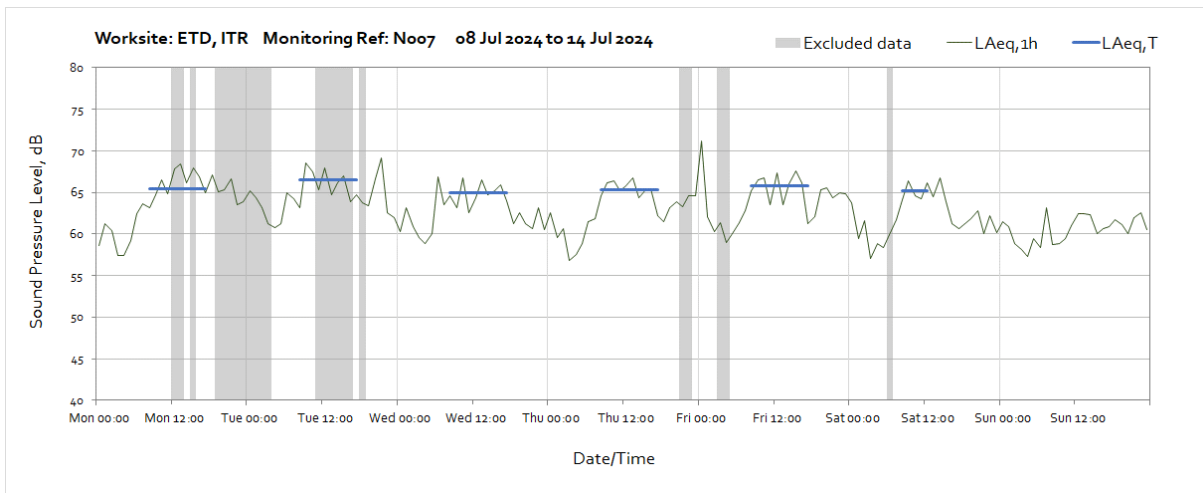
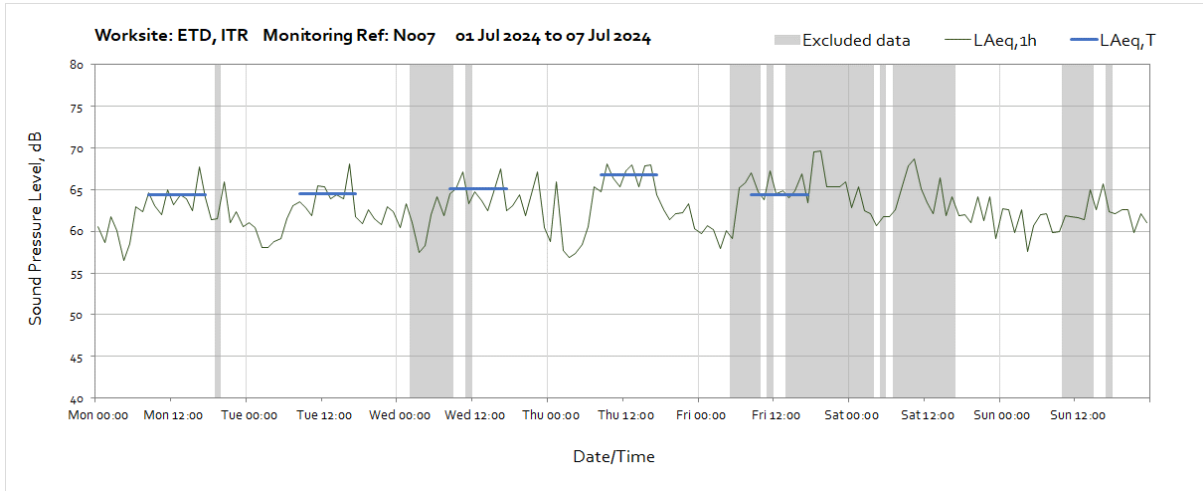
Note: Missing data between 04:00 and 08:00 on Tuesday 23<sup>rd</sup> of July was due to a monitoring station system reboot.



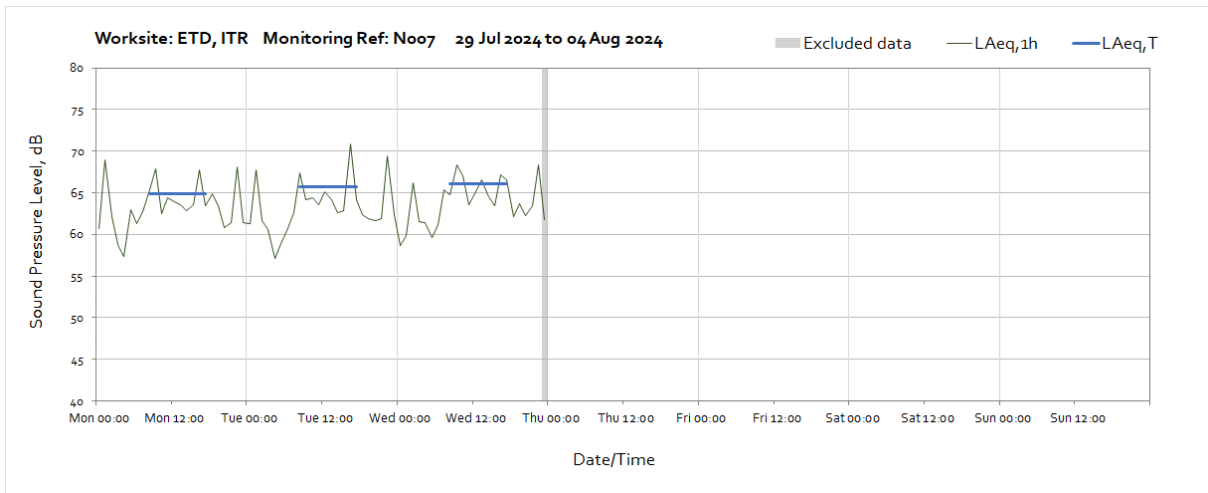
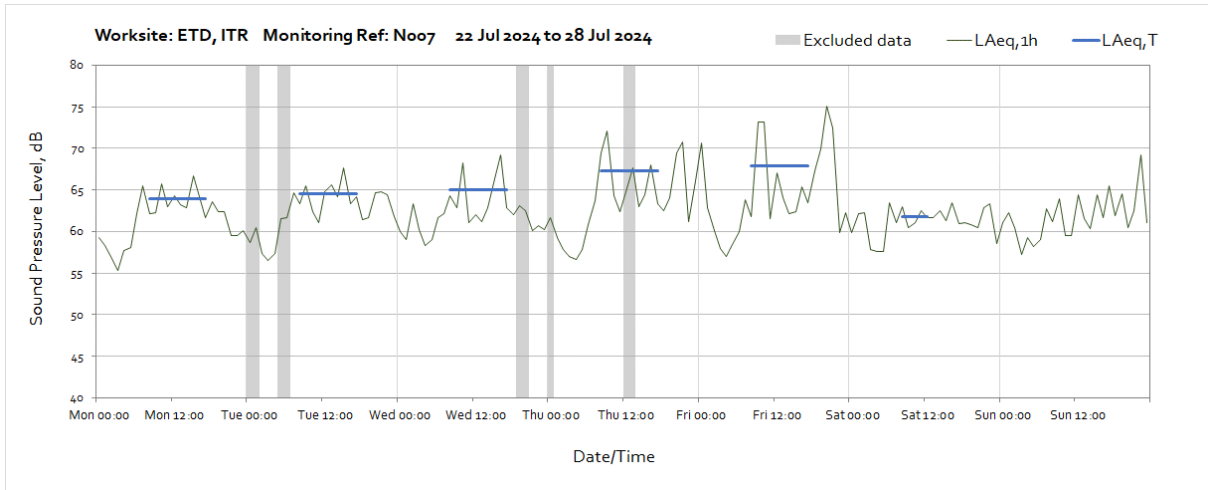
Note: Missing data between 15:00 and 17:00 on Monday 29<sup>th</sup> of July was due to a monitoring station system reboot.



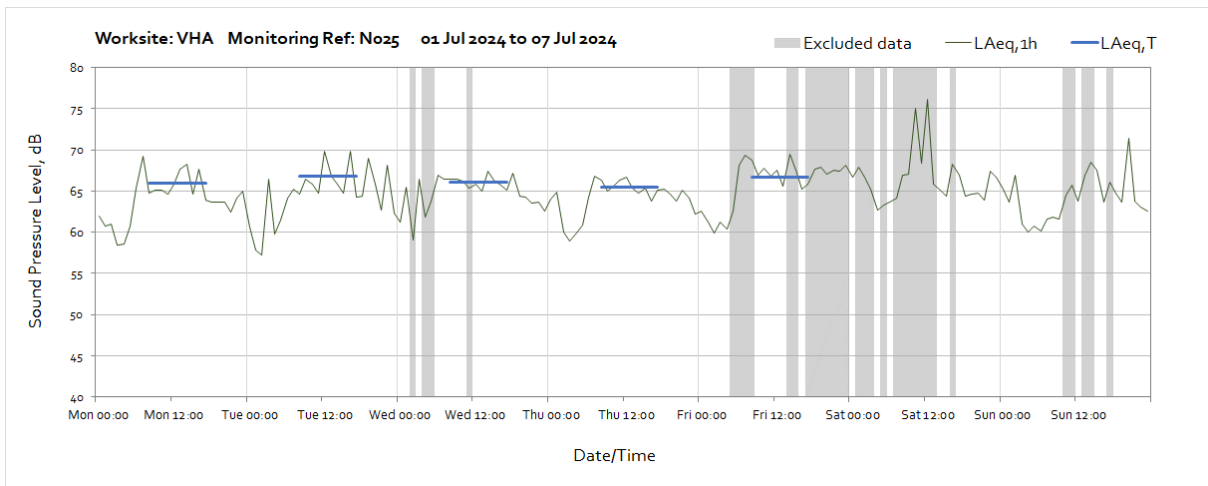
### Worksite: ETD, ITR – Monitoring Ref: N007

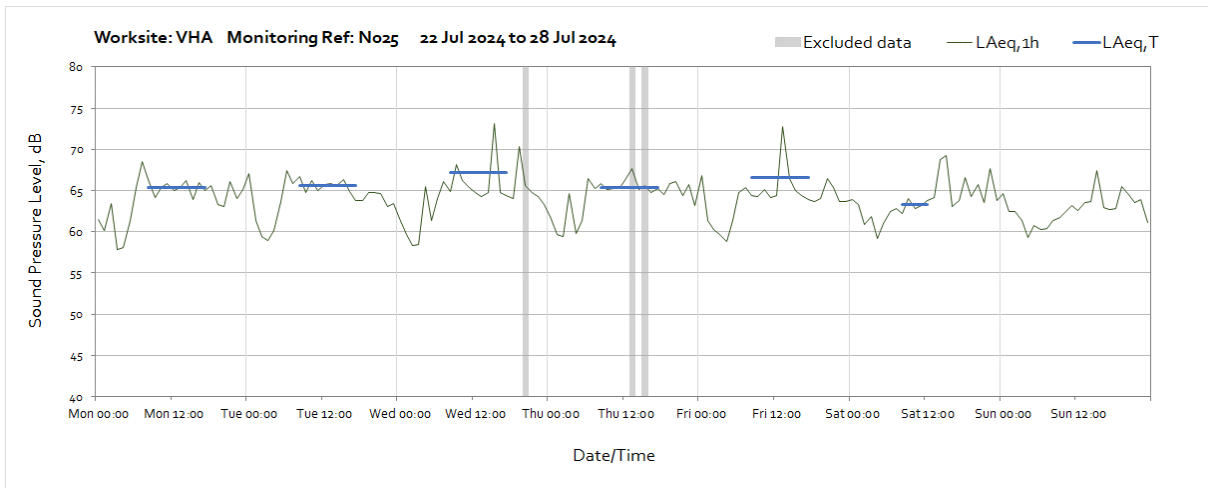
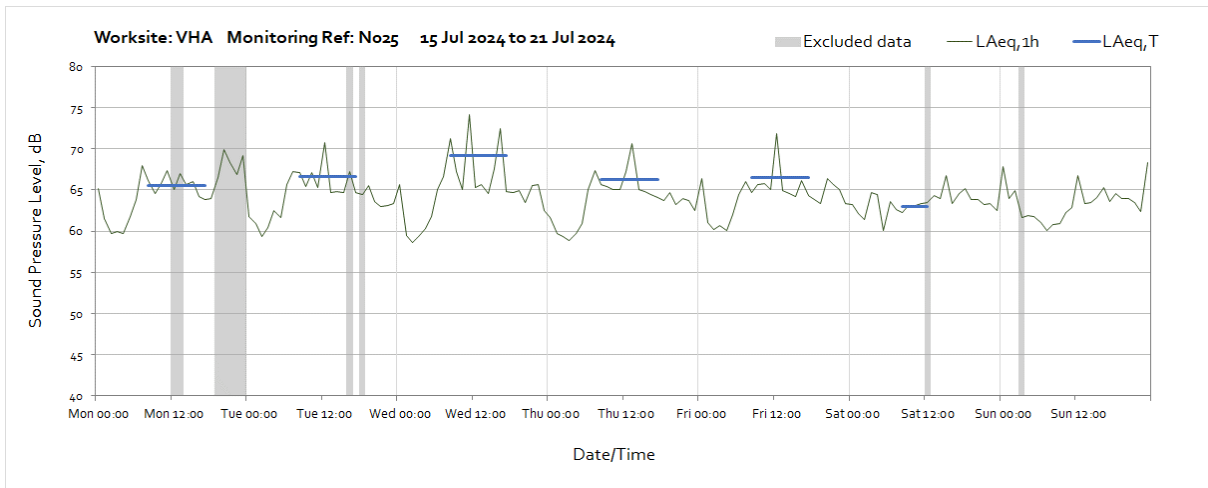
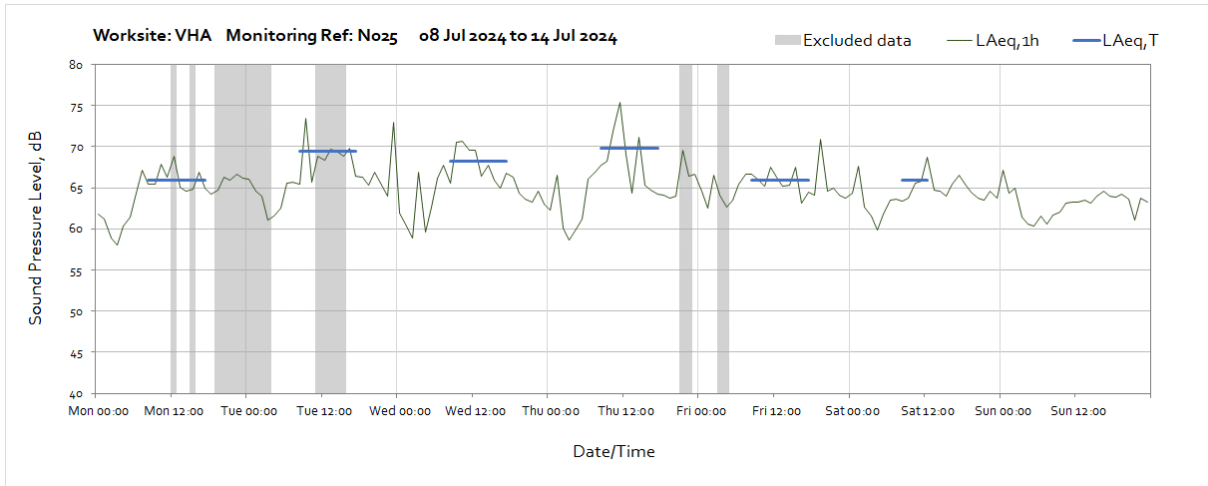


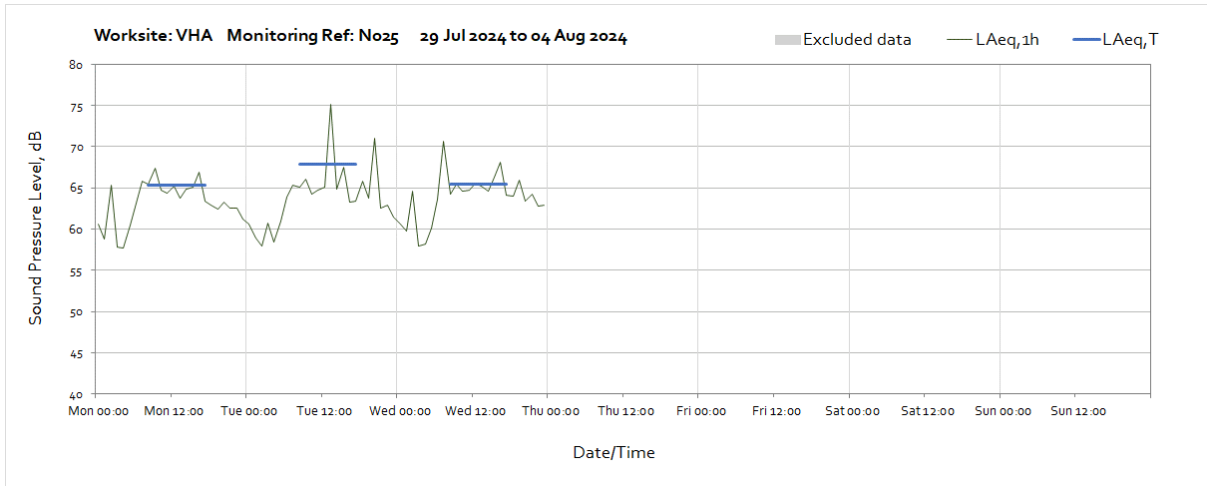
OFFICIAL



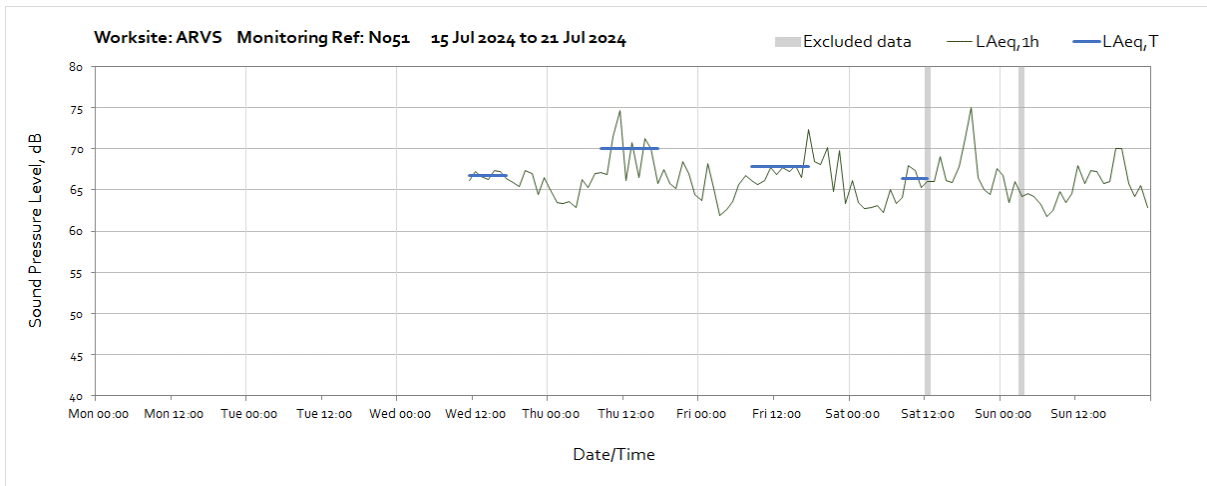
**Vehicle Holding Area (VHA) - Monitoring Ref: N025**



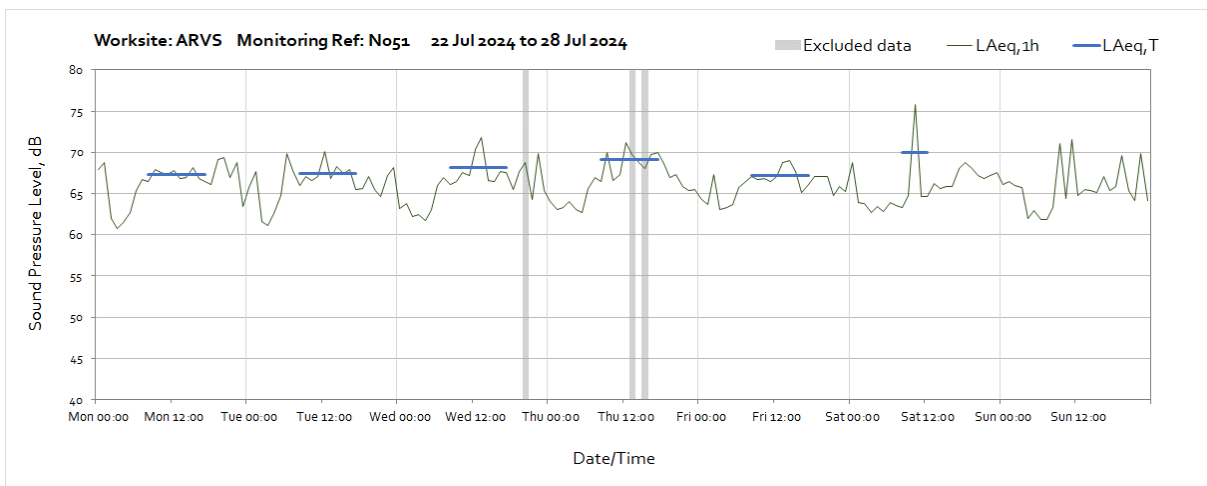


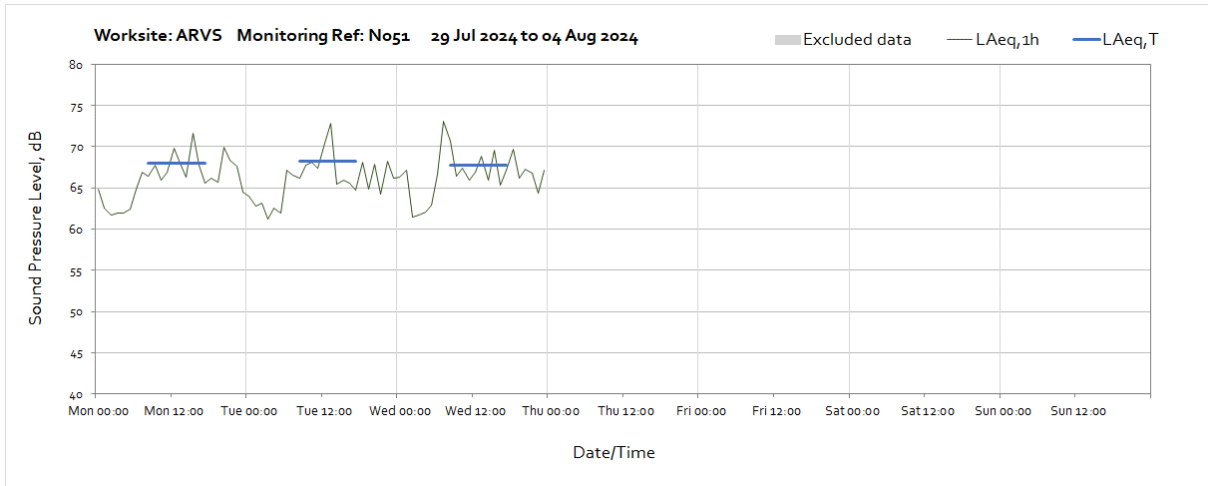


### Adelaide Road Ventilation Shaft (ARVS) – Monitoring Ref: N051

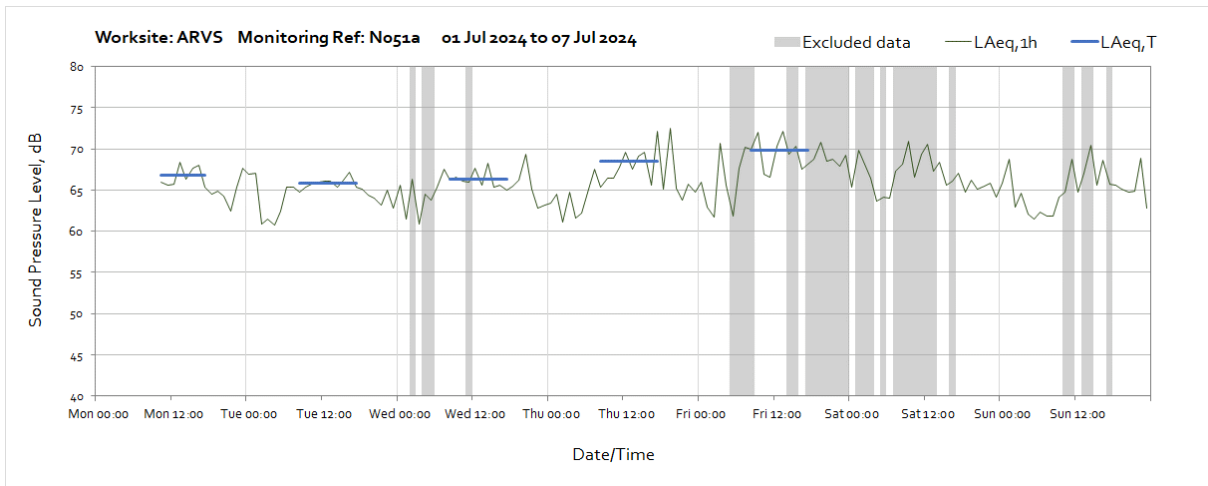


Note: Monitoring station reinstalled at 10:00 on Wednesday 17<sup>th</sup> July.

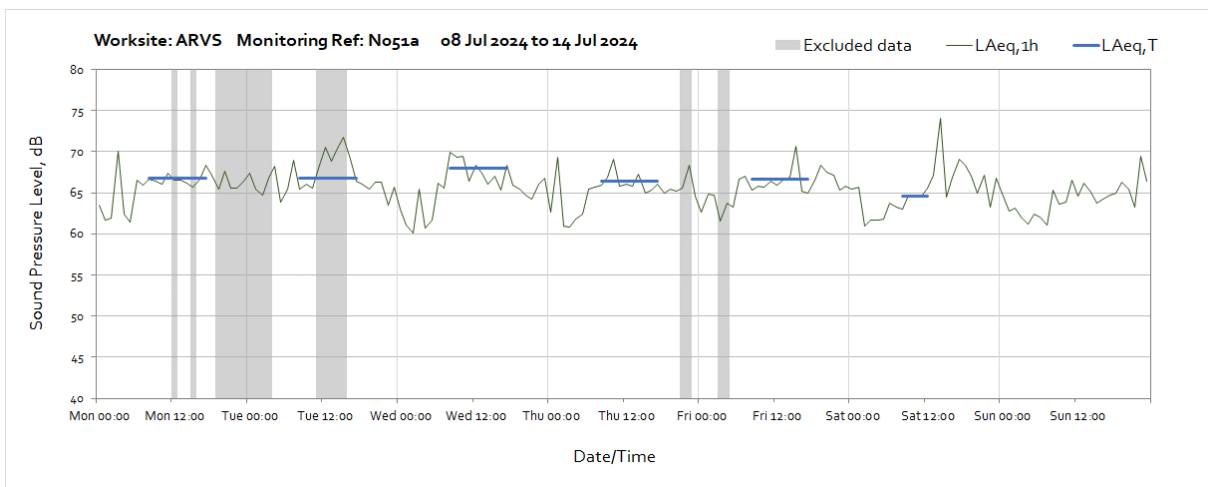


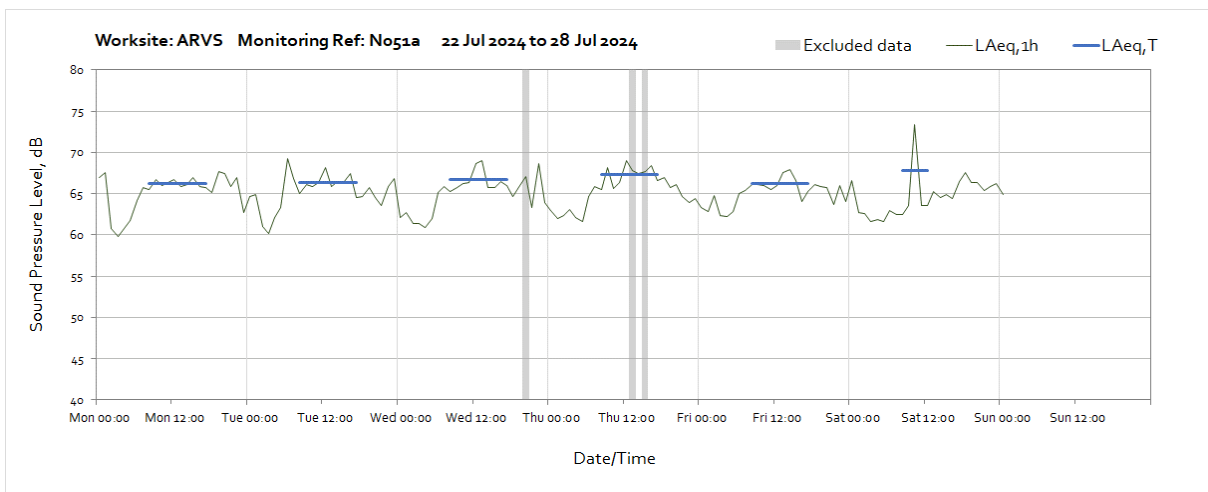
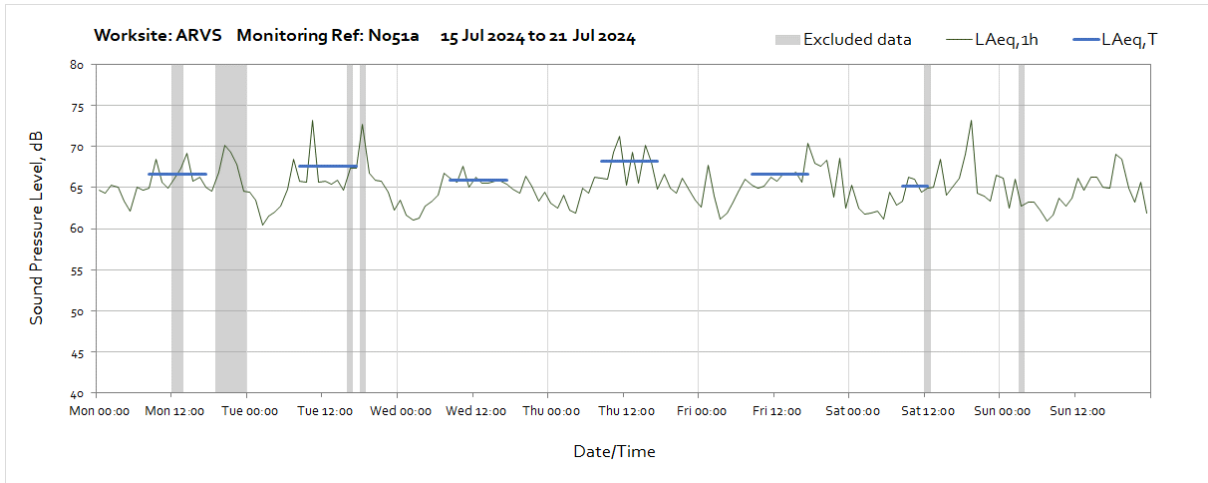


### Adelaide Road Ventilation Shaft (ARVS) – Monitoring Ref: N051a

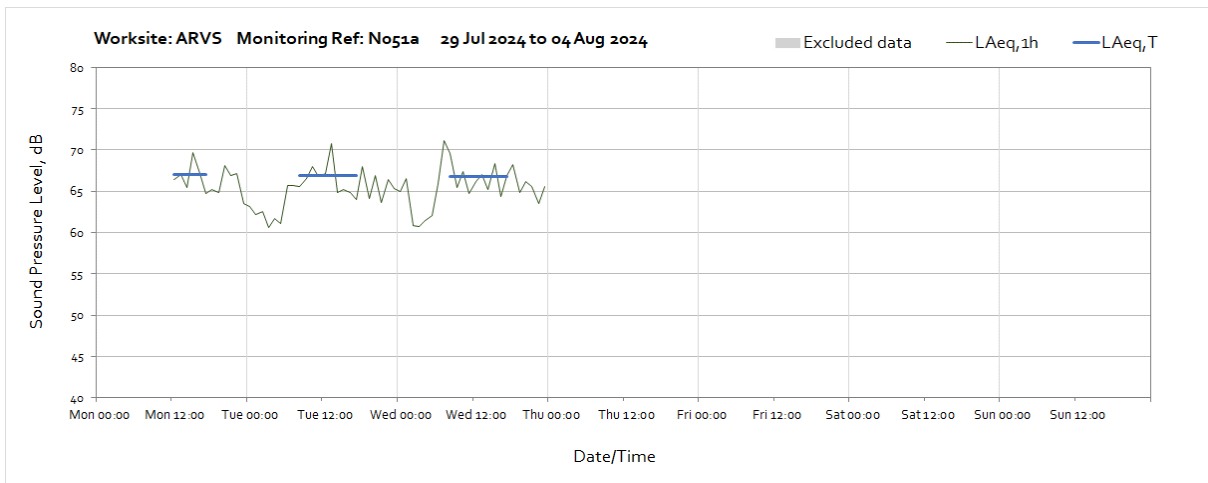


Note: Missing data between the start of the month and 09:00 on Monday 01<sup>st</sup> July was due to a fault at the monitoring station.



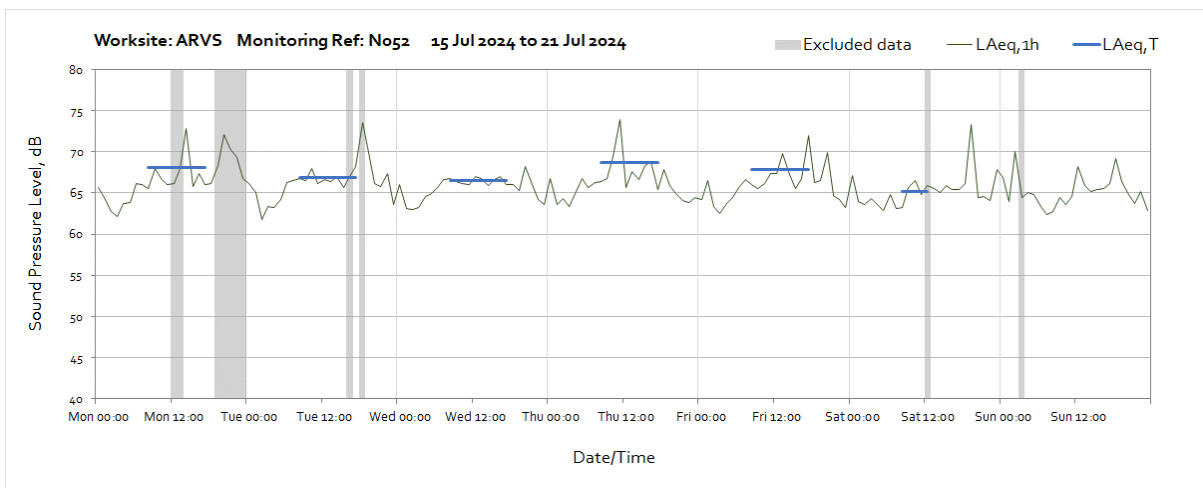
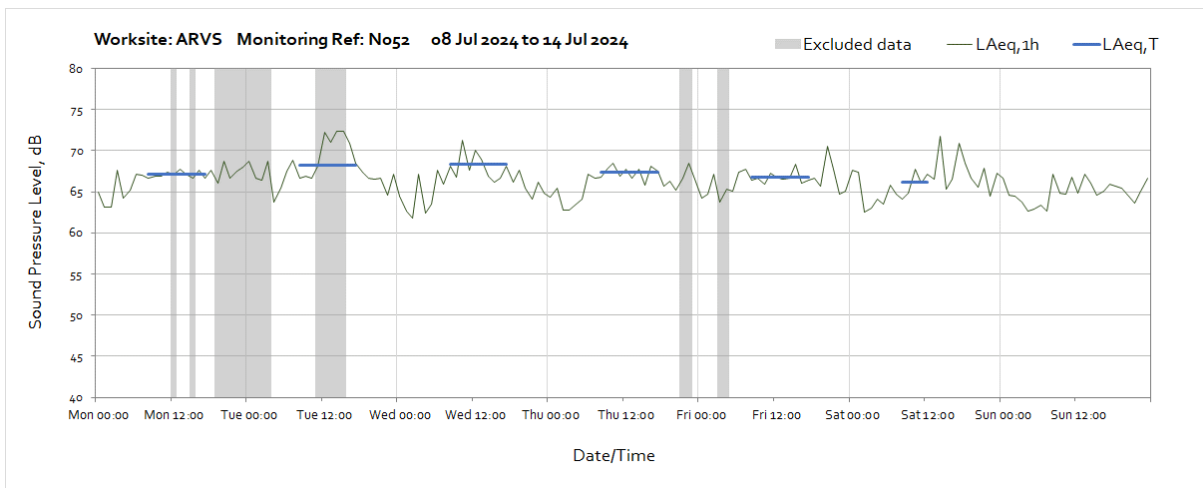
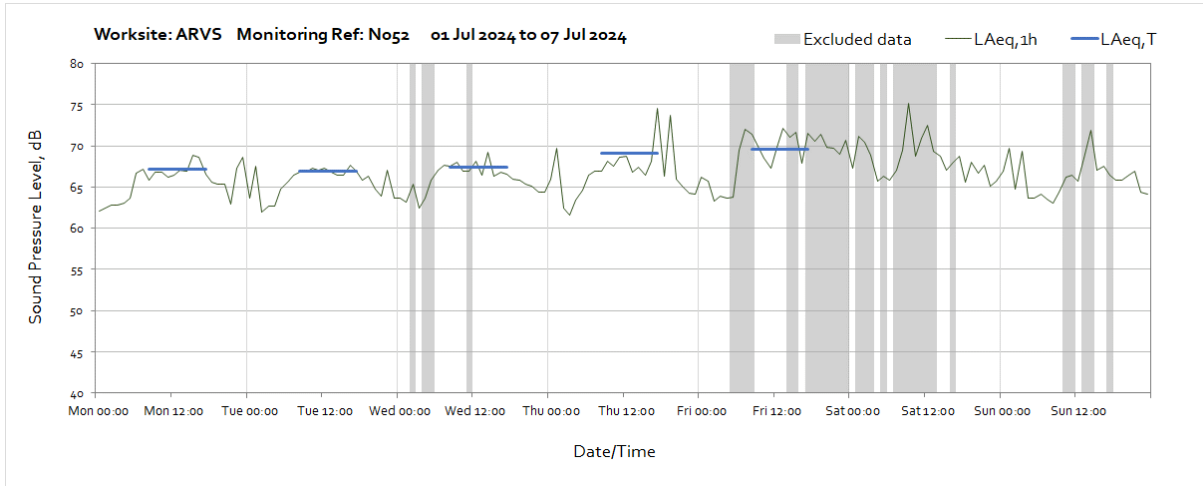


Note: Missing data between 01:00 on Sunday 28<sup>th</sup> July and 11:00 on Monday 29<sup>th</sup> July was due to a monitoring station automatic restart.

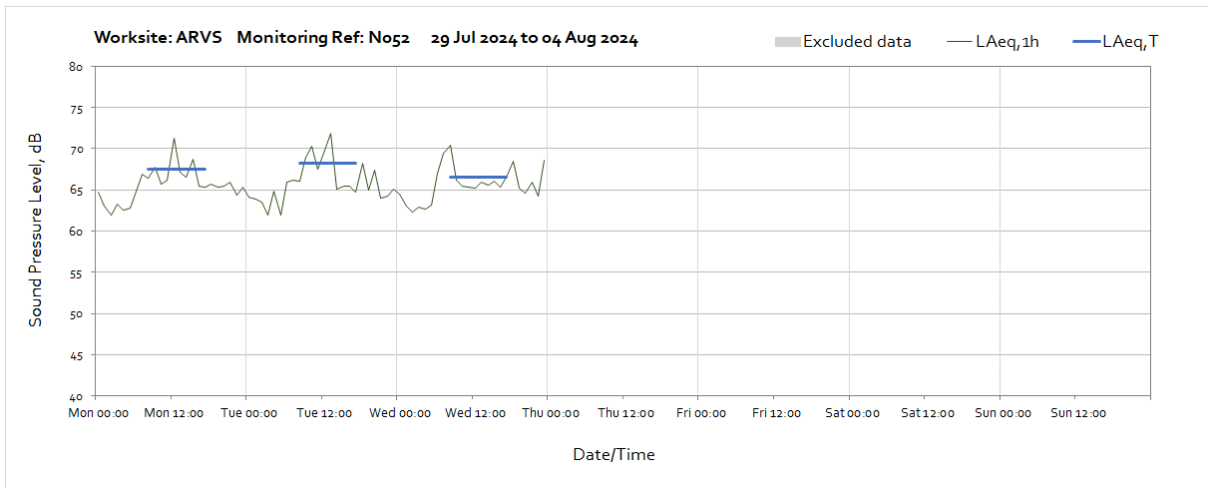
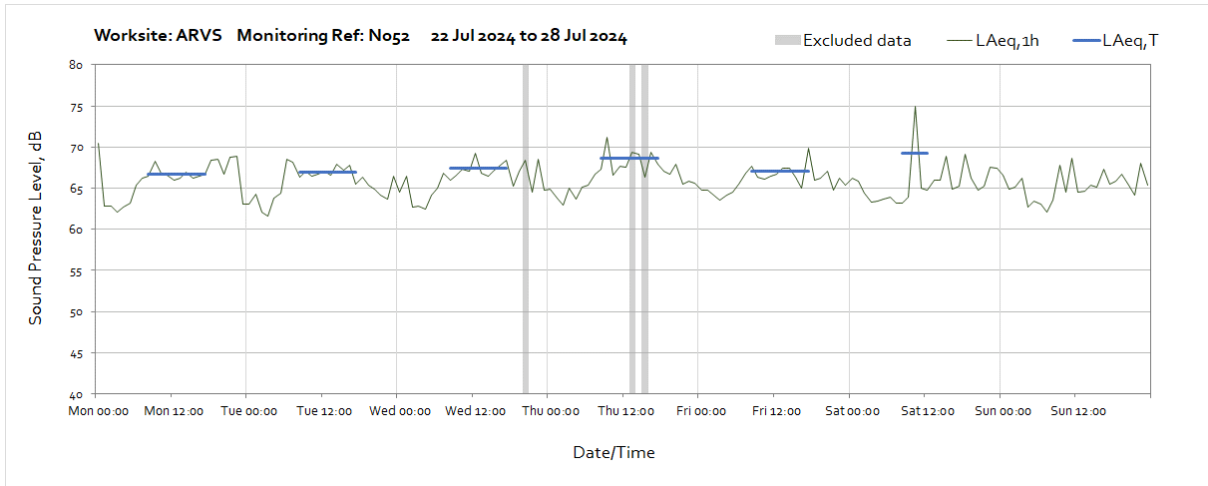


Note: Missing data between 01:00 on Sunday 28<sup>th</sup> July and 11:00 on Monday 29<sup>th</sup> July was due to a monitoring station automatic restart.

## Adelaide Road Ventilation Shaft (ARVS) – Monitoring Ref: N052



OFFICIAL

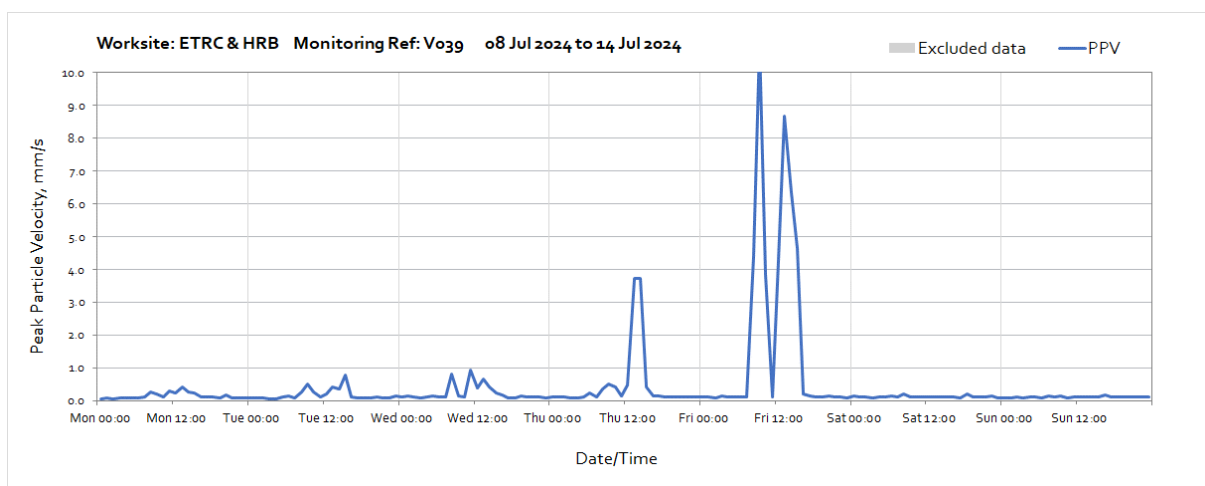
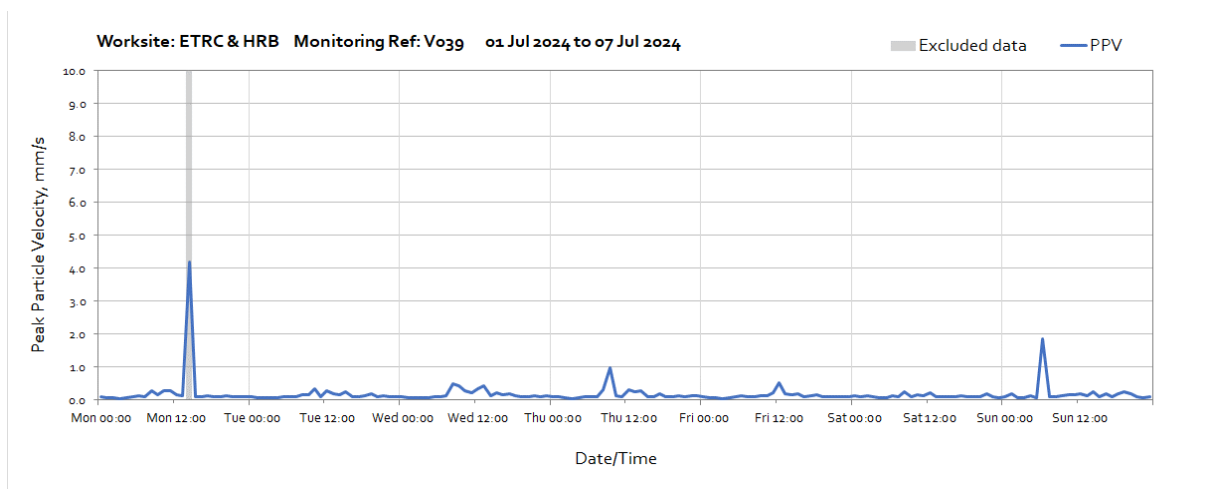


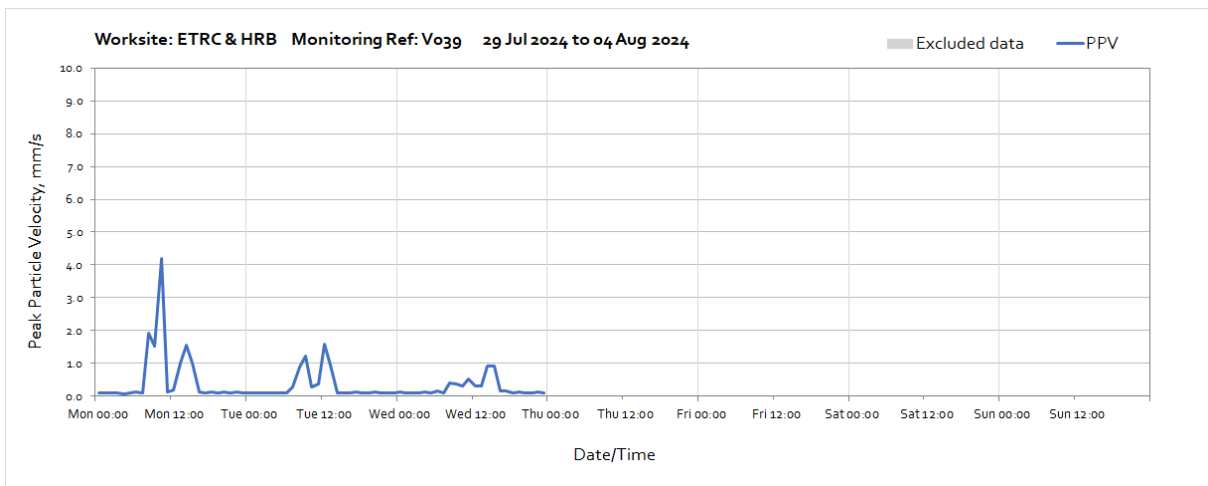
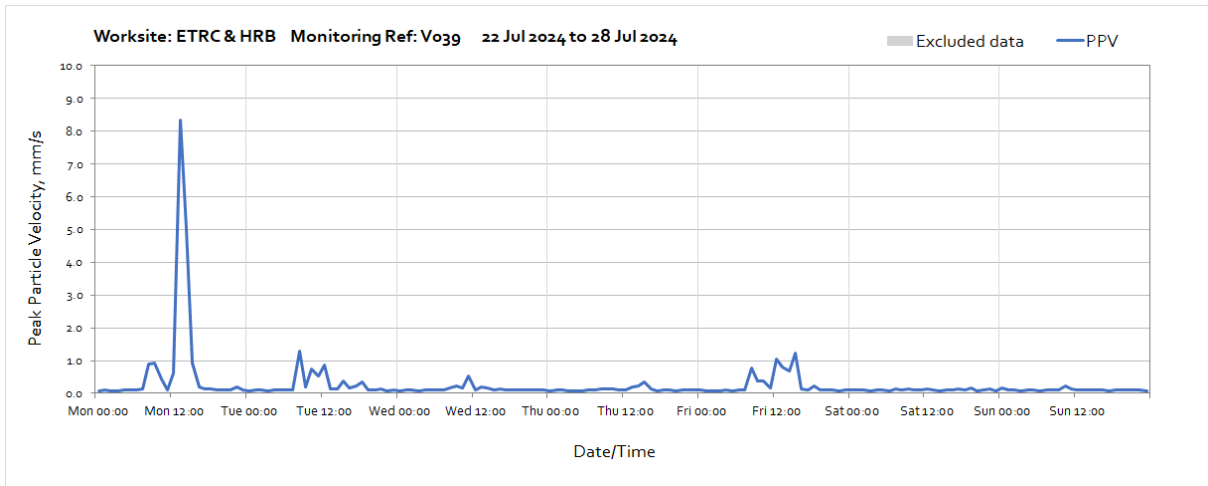
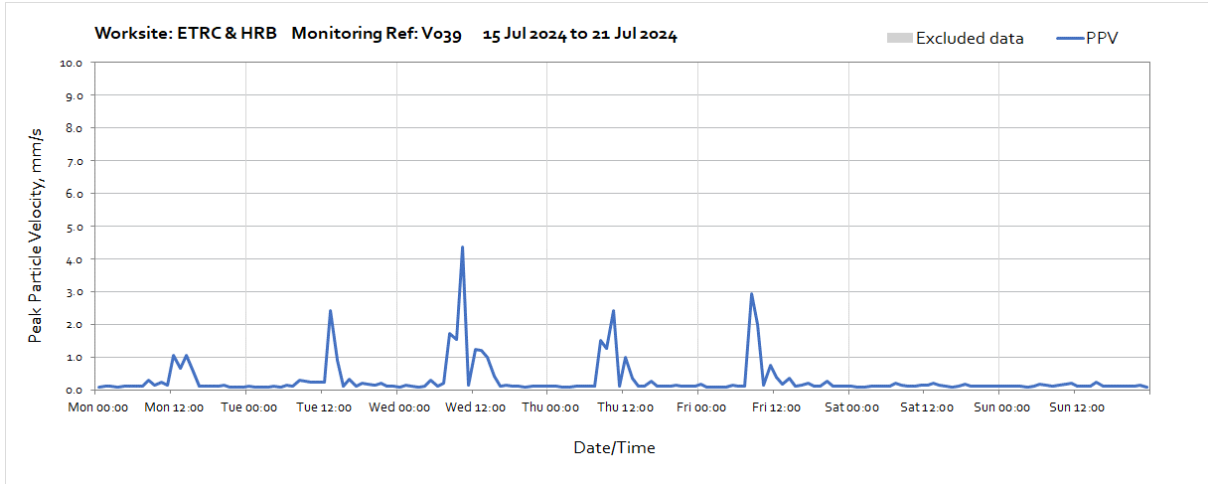


## Vibration

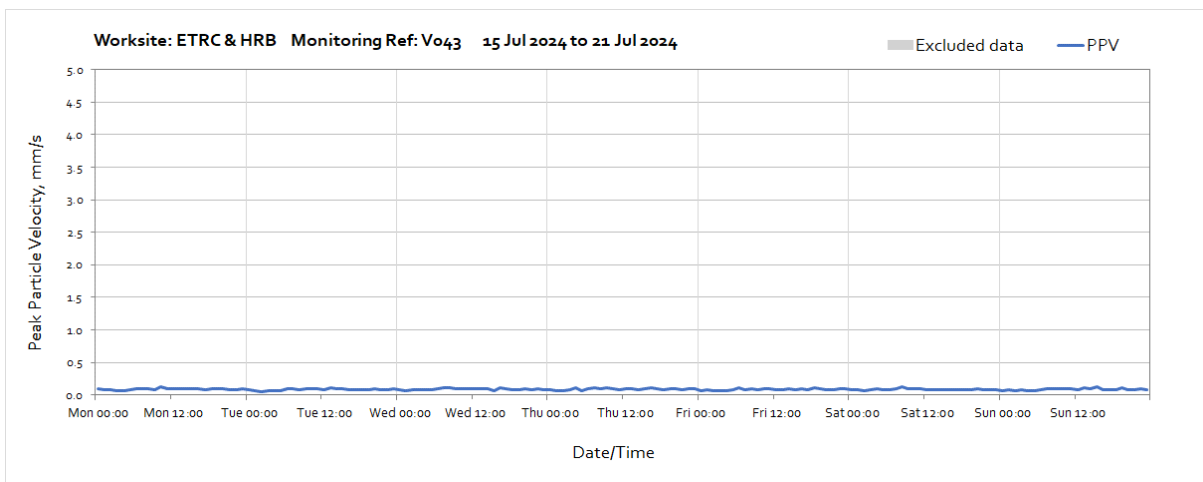
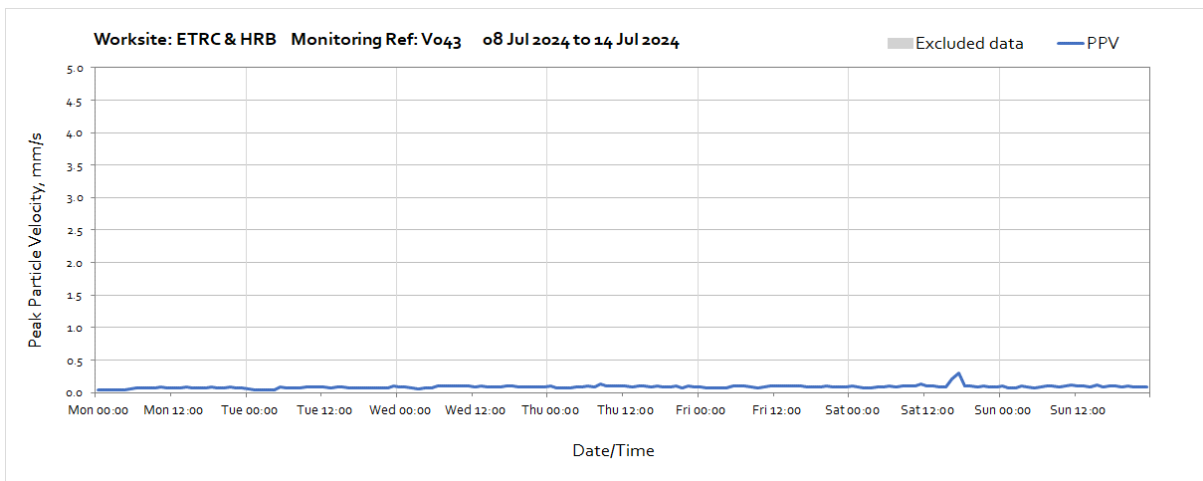
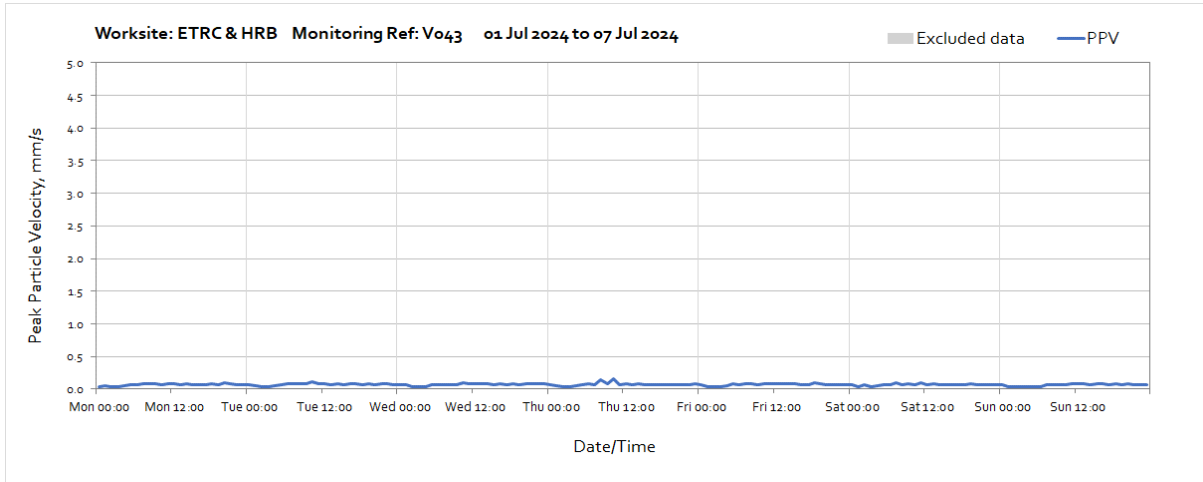
The following graphs show the hourly measured peak particle velocity PPV recorded during the monitoring period. The graphs show the highest PPV of the three orthogonal axes x, y and z . Periods where PPV values have been affected by local interference with the vibration monitor or only measured for part of the period, which are not representative of HS2 construction works , have been greyed out and excluded when calculating values in Table 4 of the main report.

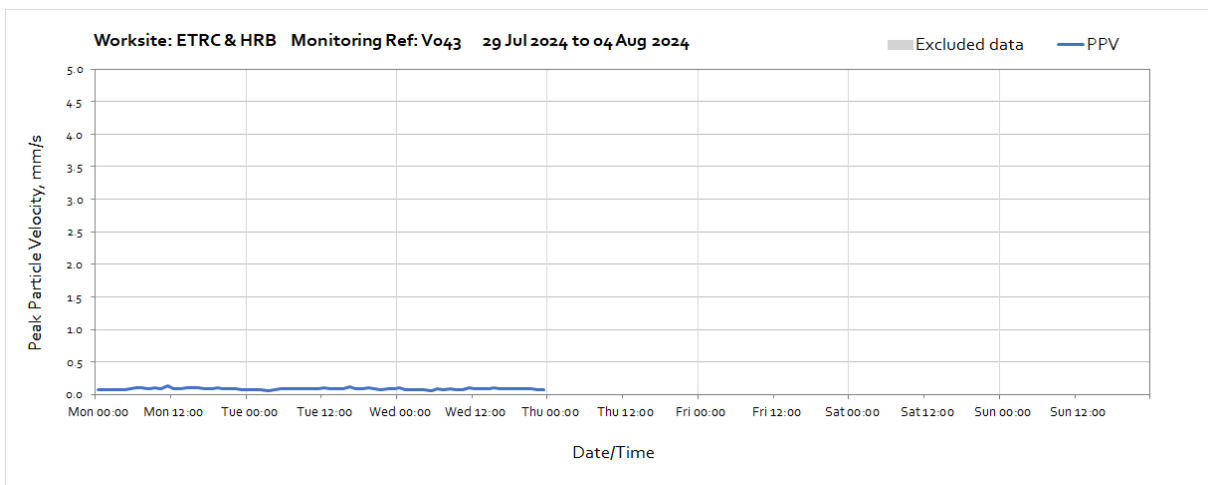
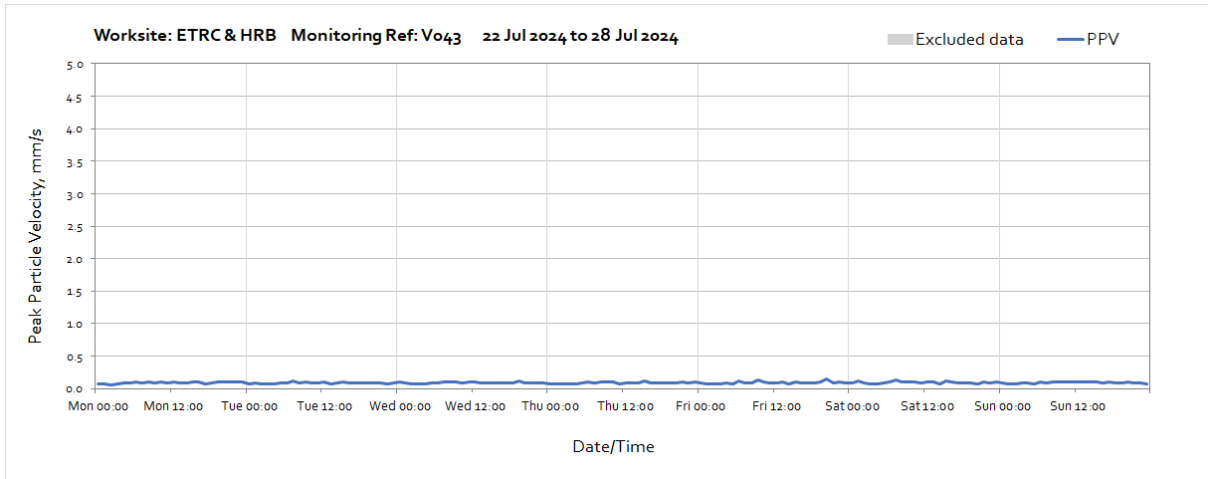
### Worksite: ETRC & HRB – Monitoring Ref: V039



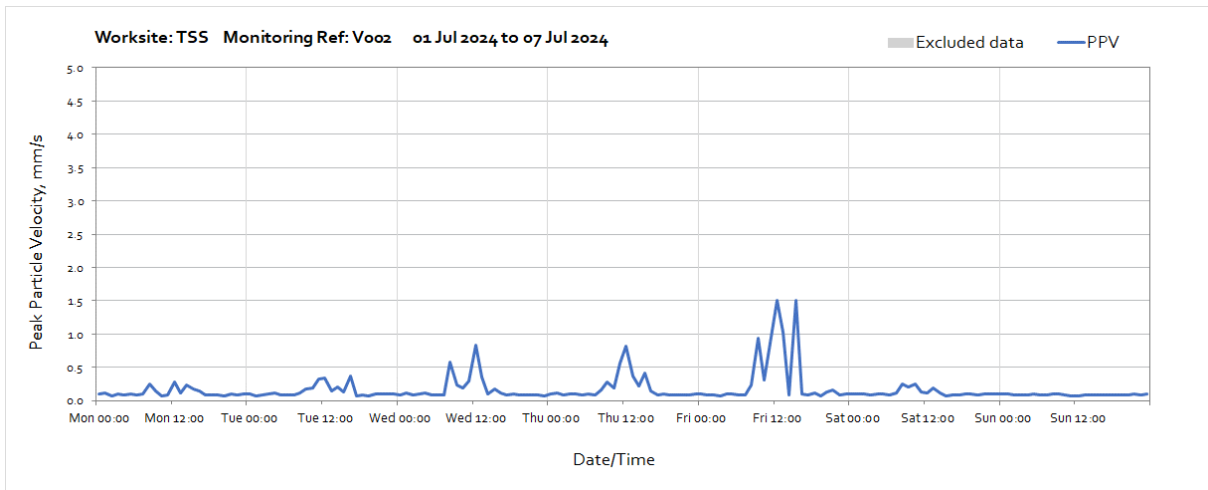


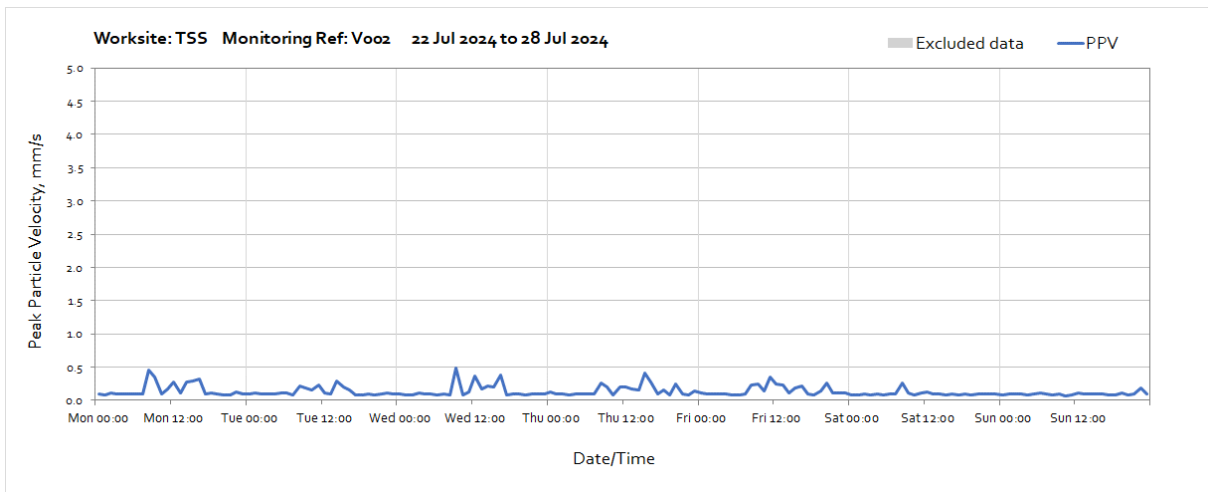
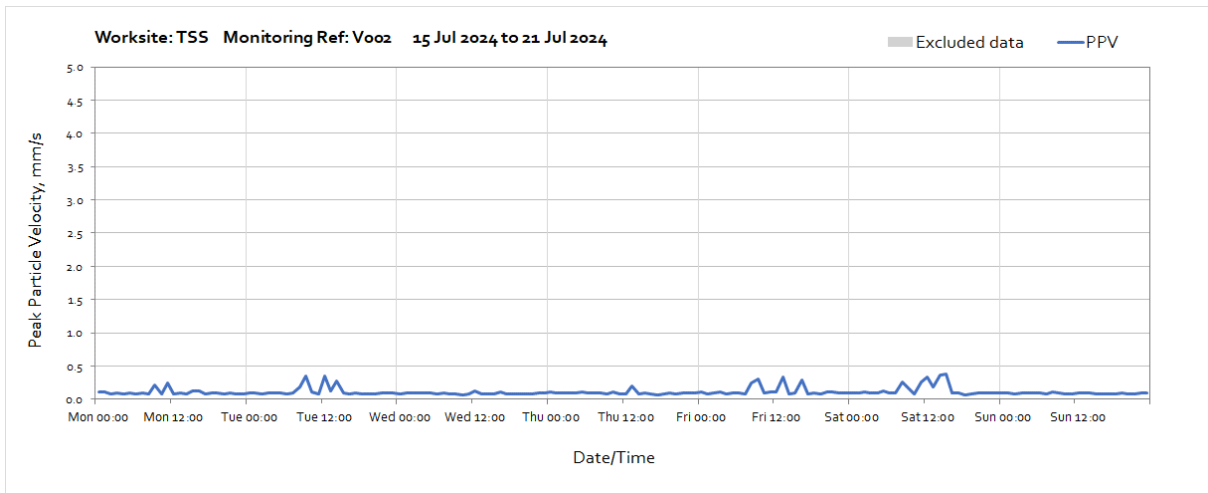
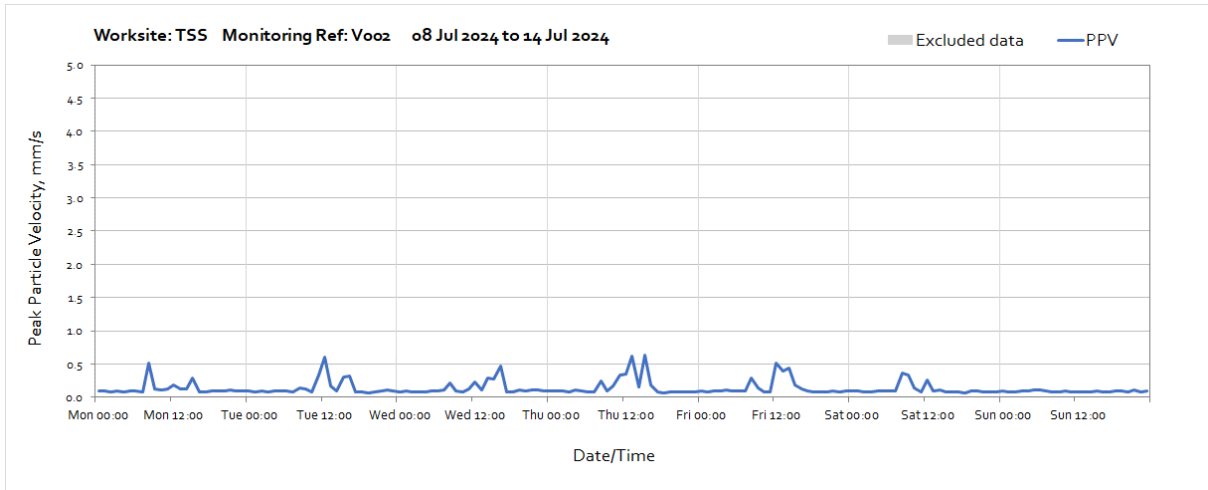
## Worksite: ETRC & HRB – Monitoring Ref: V043

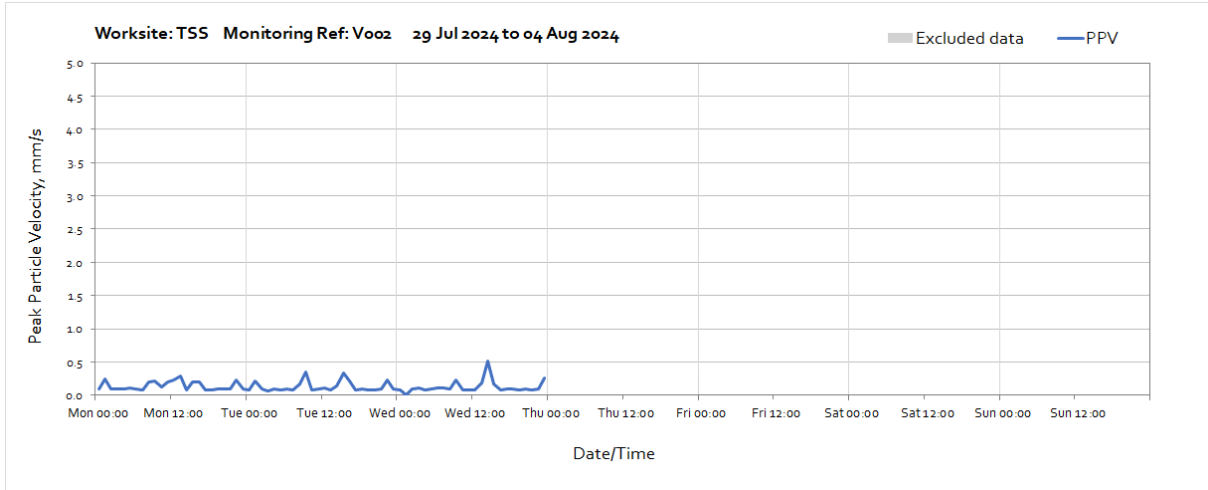




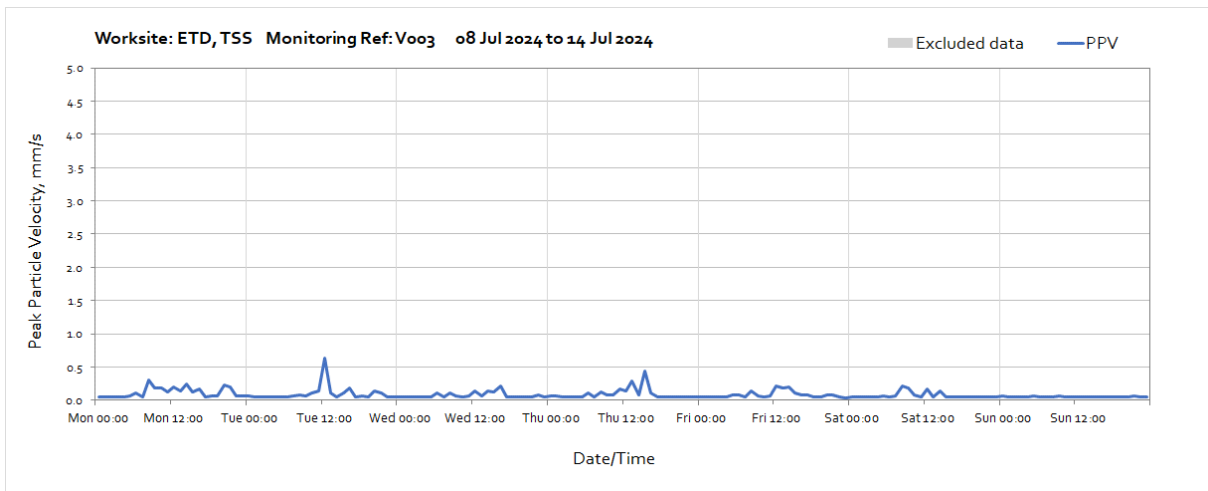
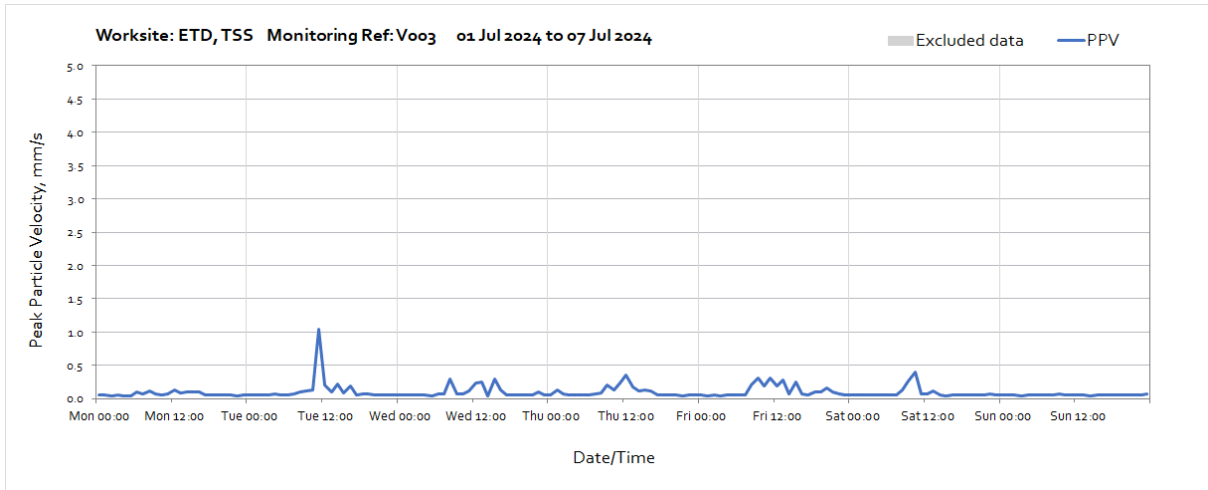
**Worksite: TSS - Monitoring Ref: V002**

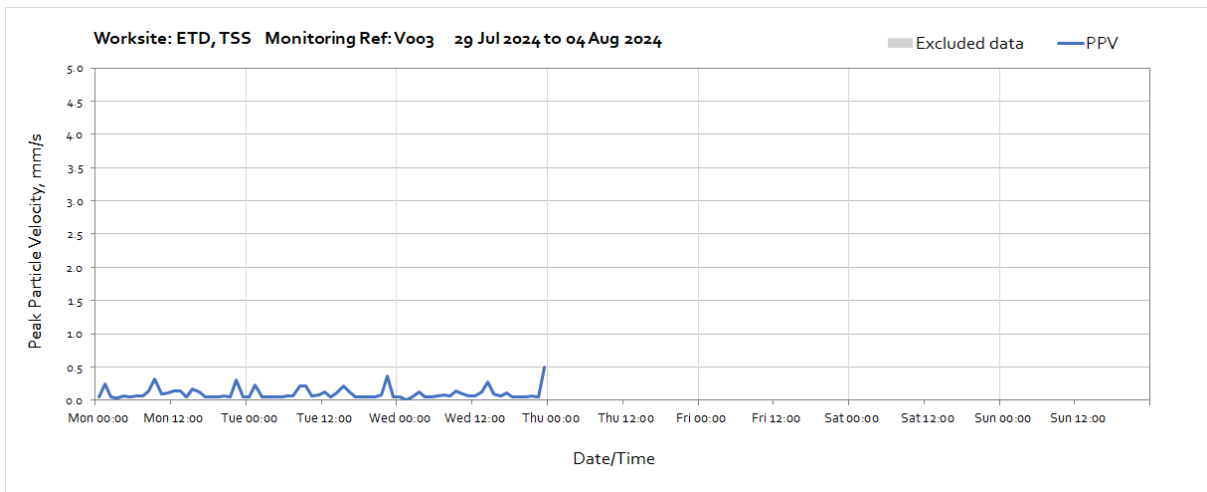
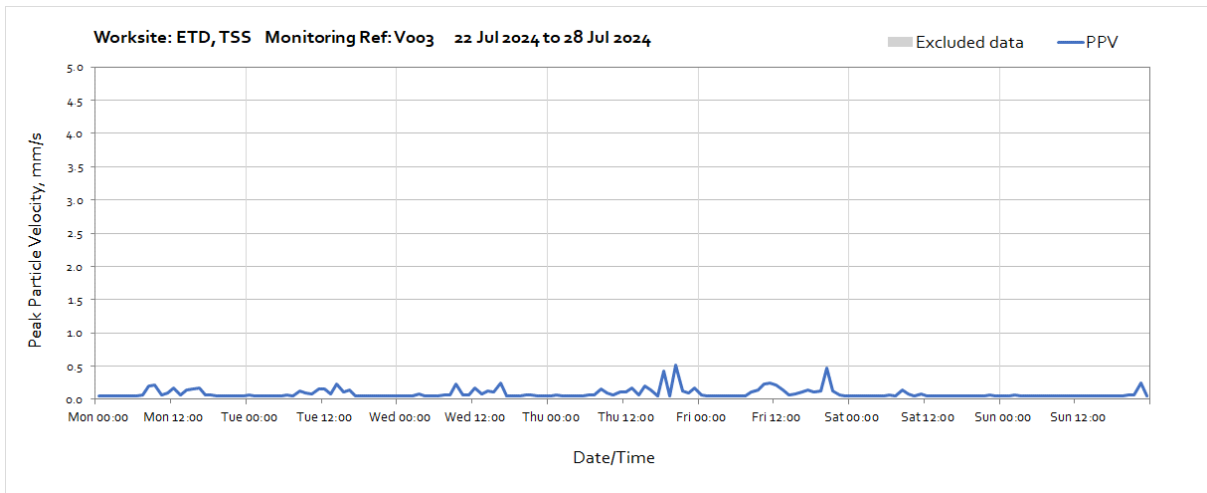
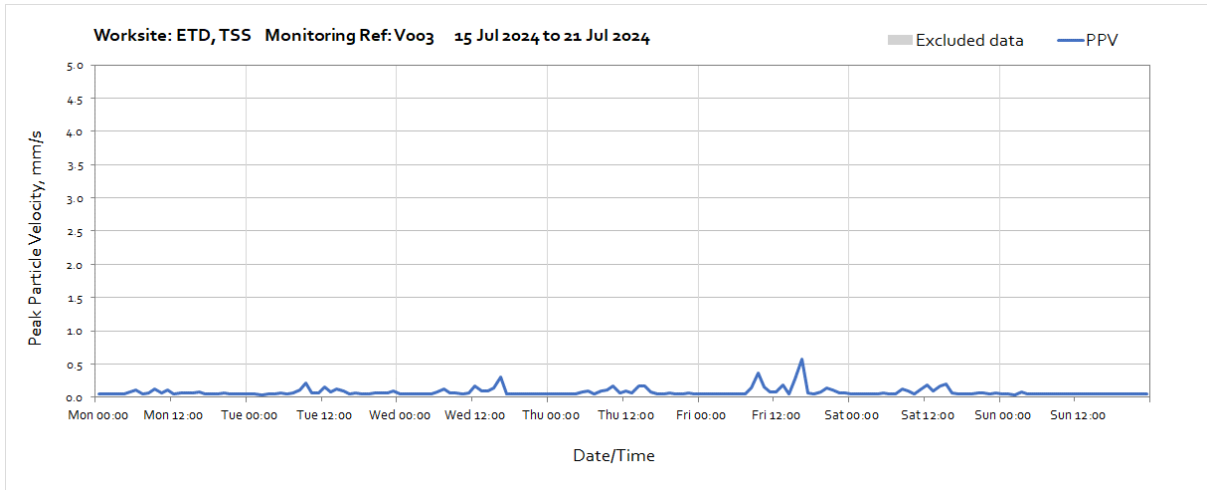




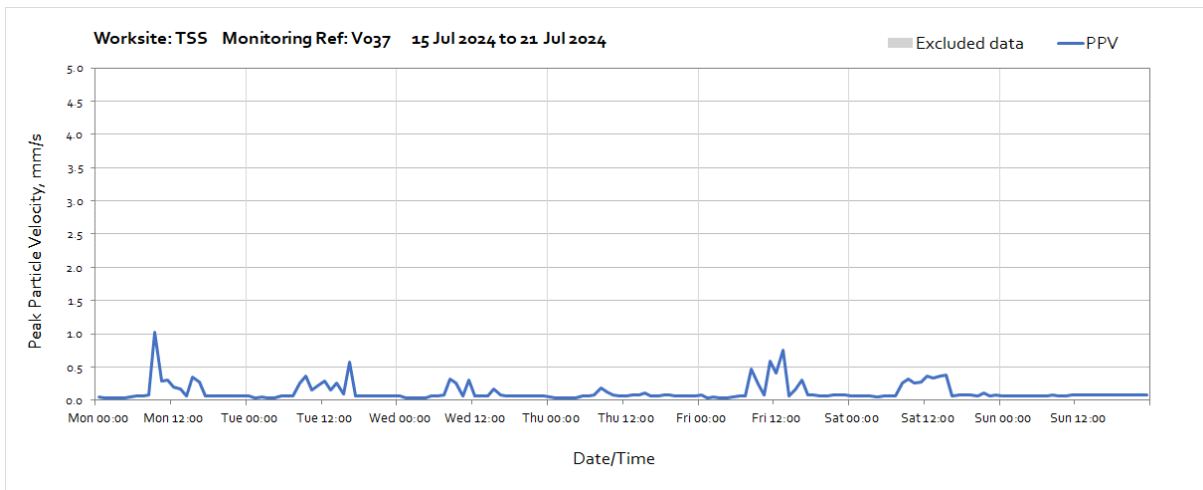
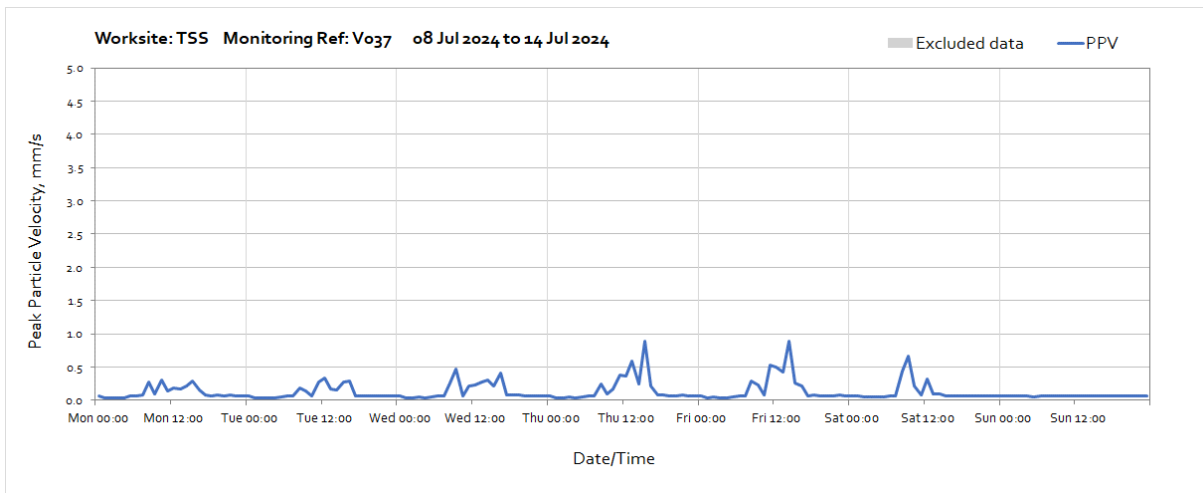
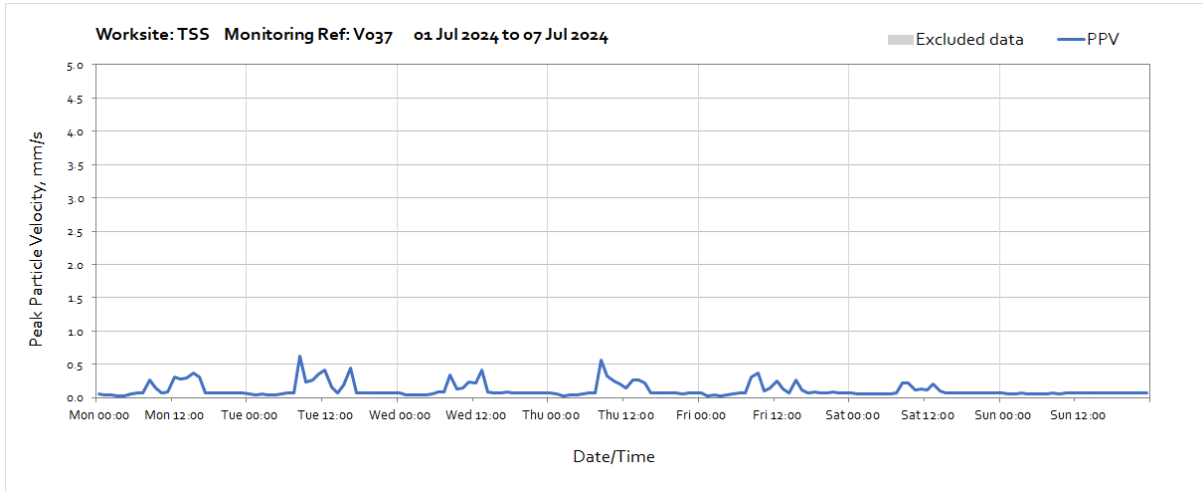


**Worksite: ETD, TSS – Monitoring Ref: V003**



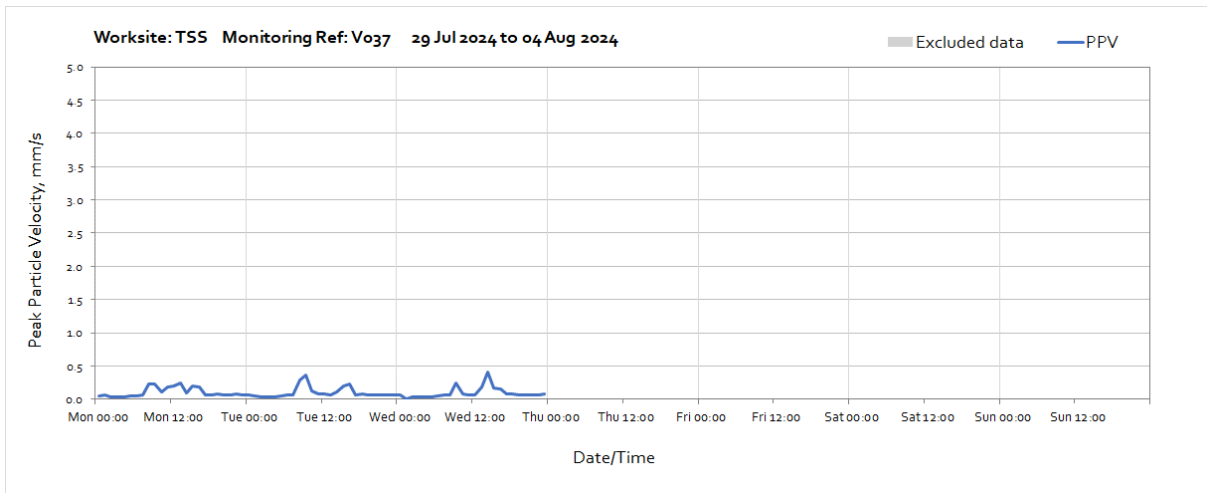
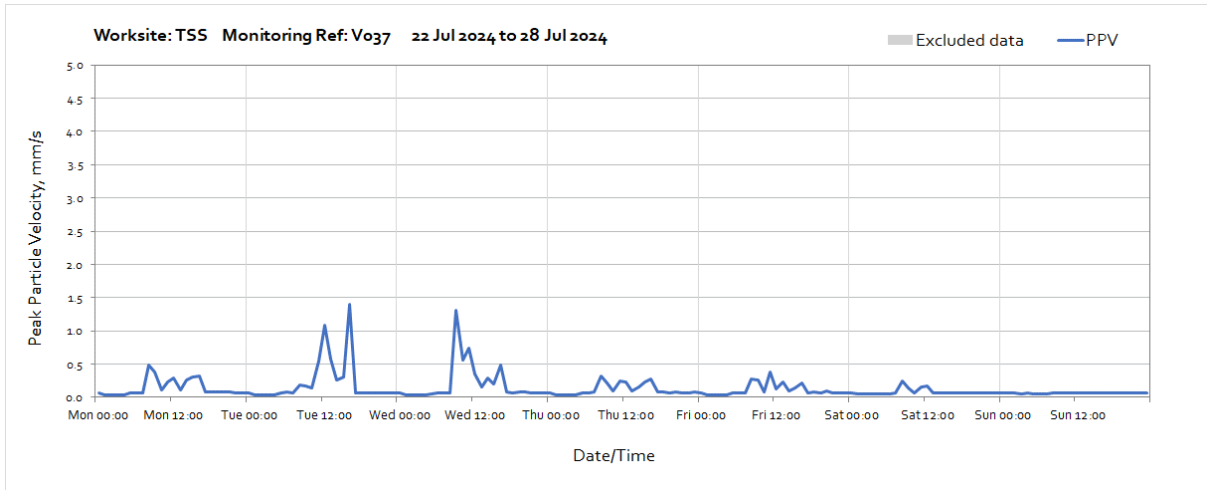


## Worksite: TSS - Monitoring Ref: V037

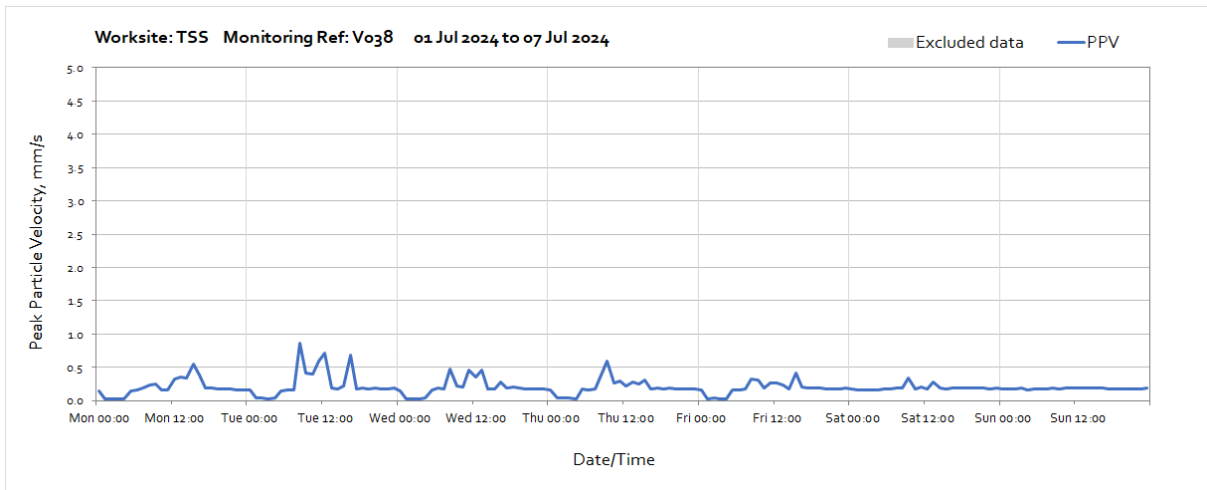


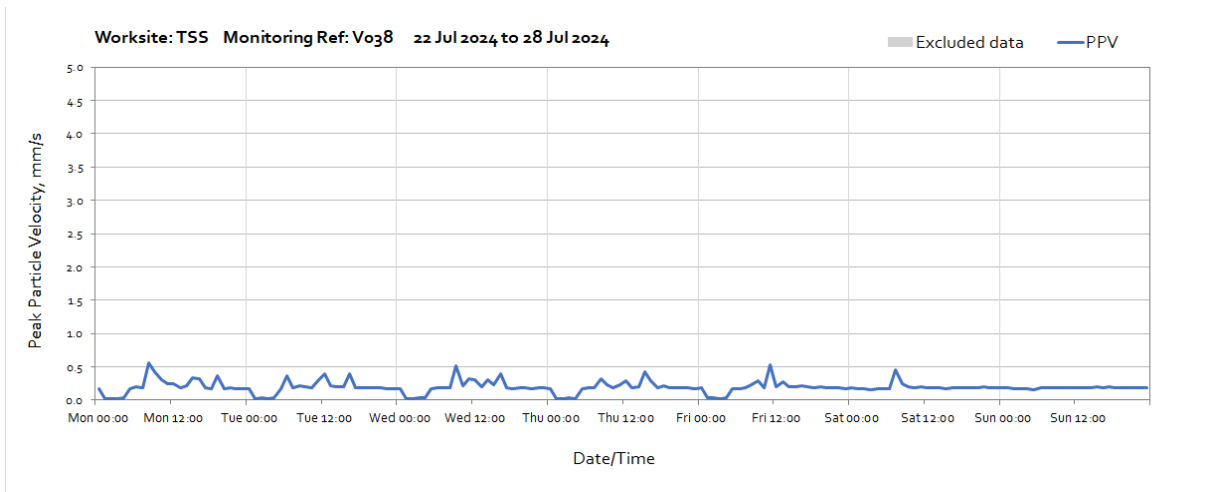
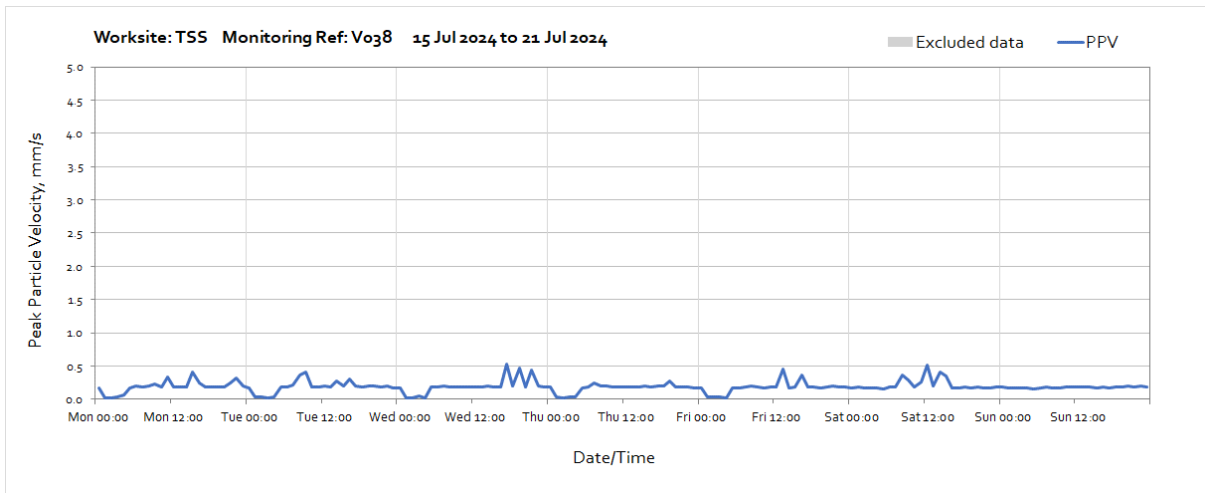
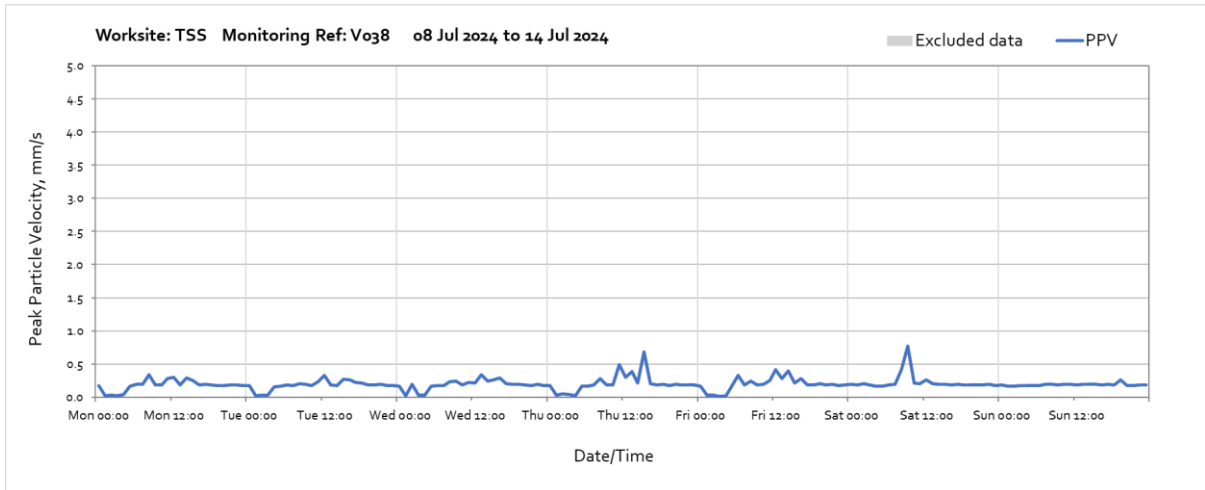
OFFICIAL

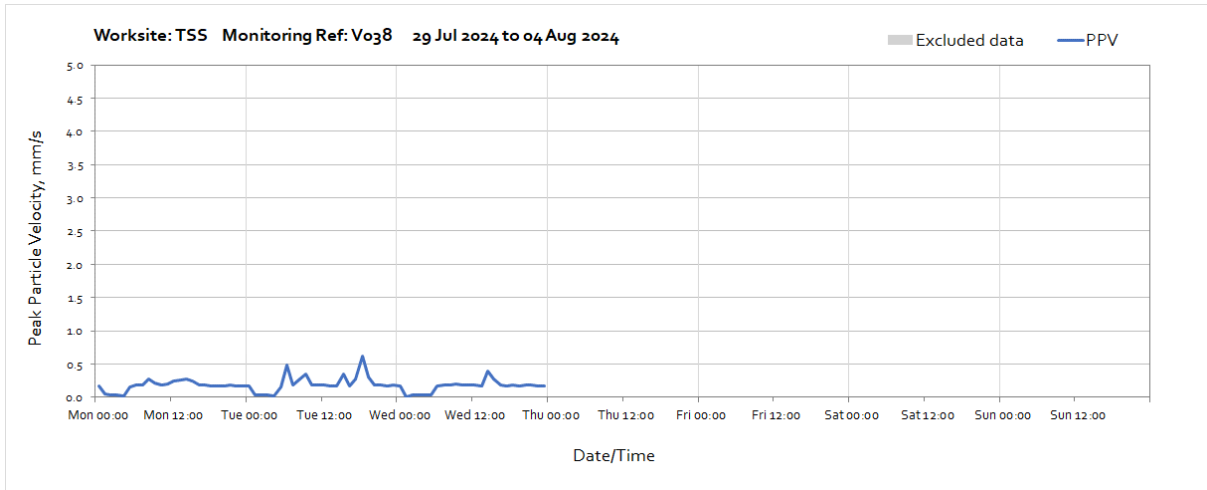




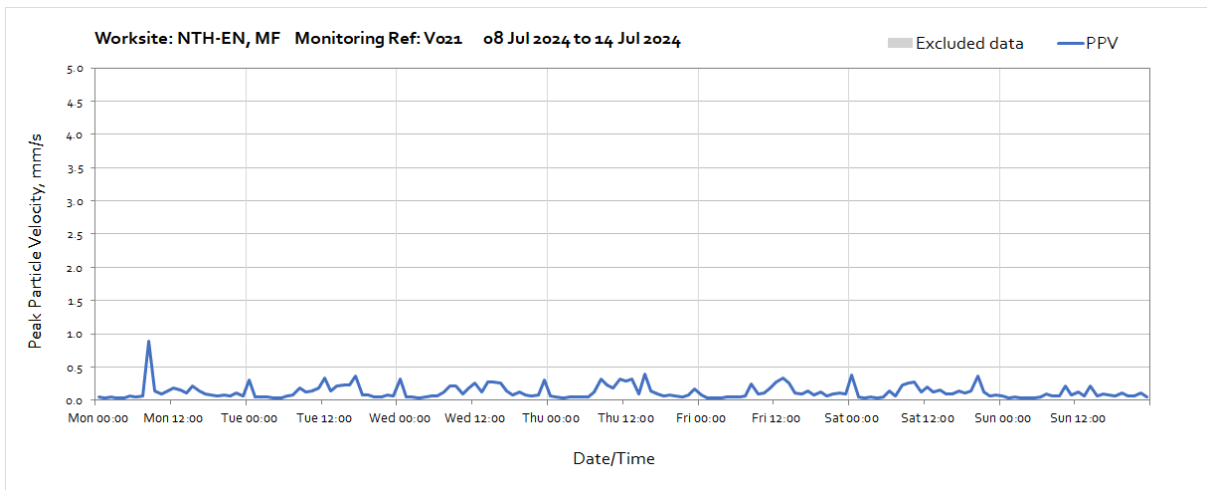
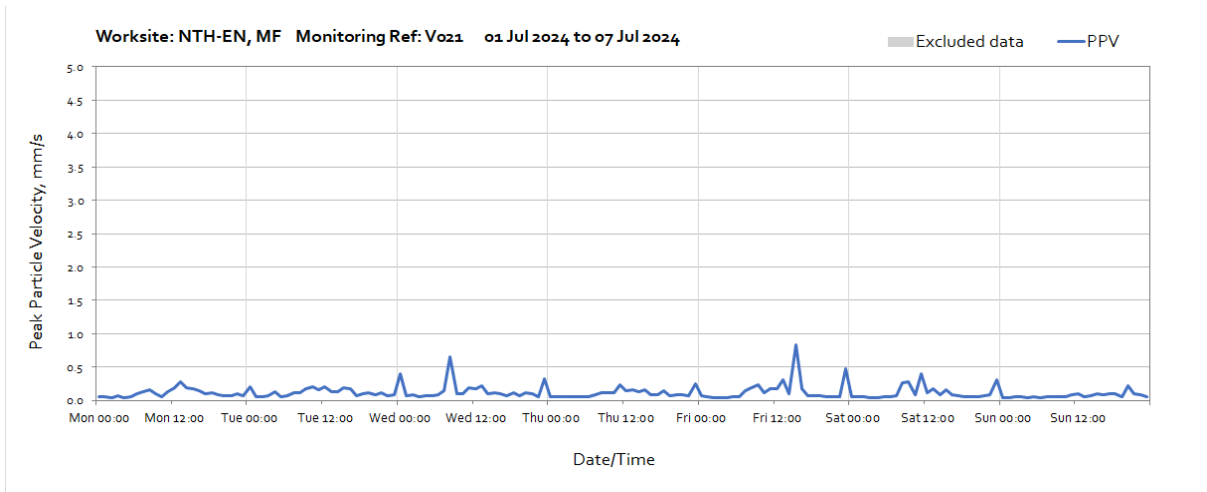
**Worksite: TSS - Monitoring Ref: V038**

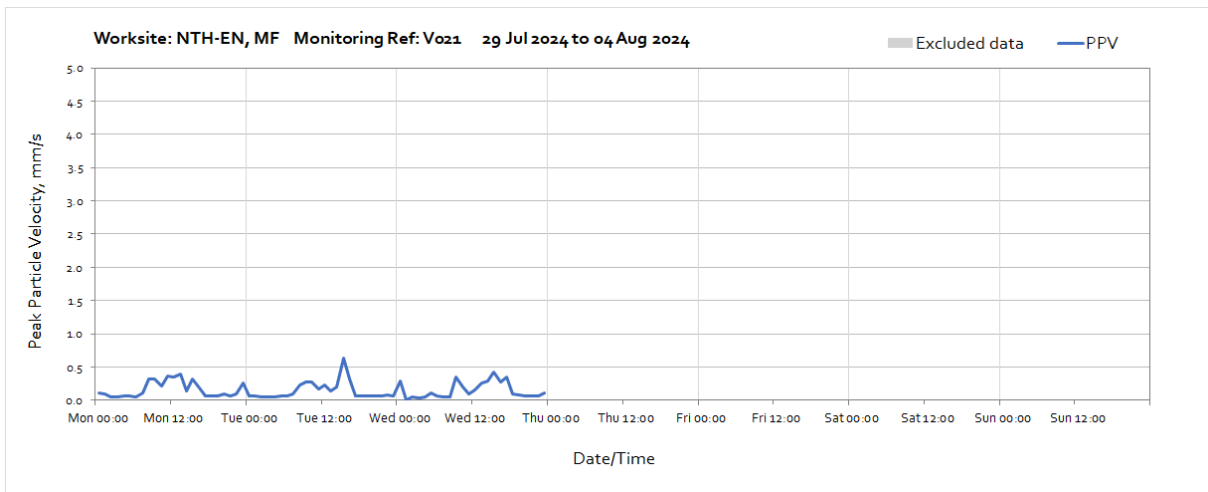
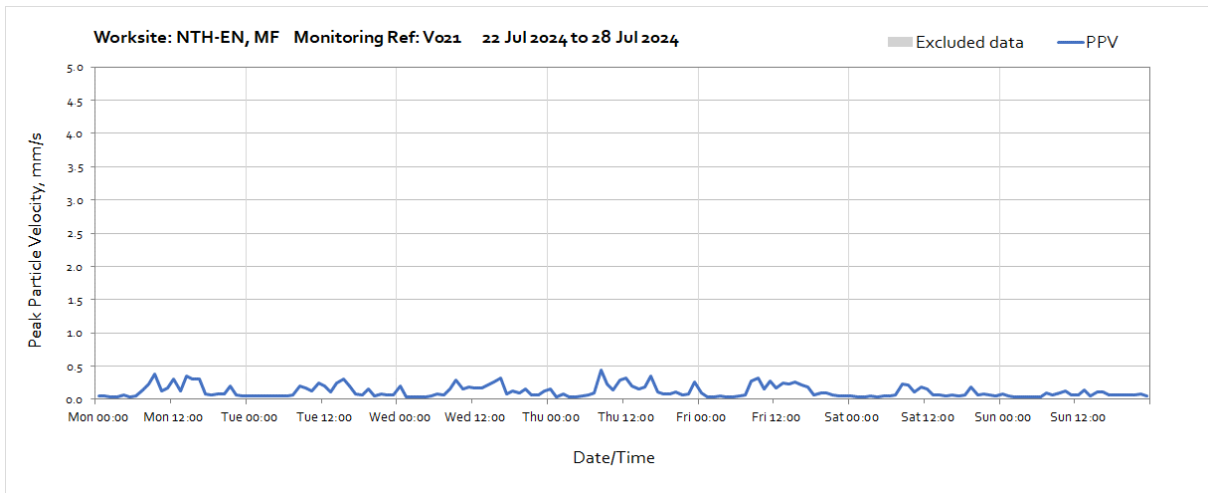
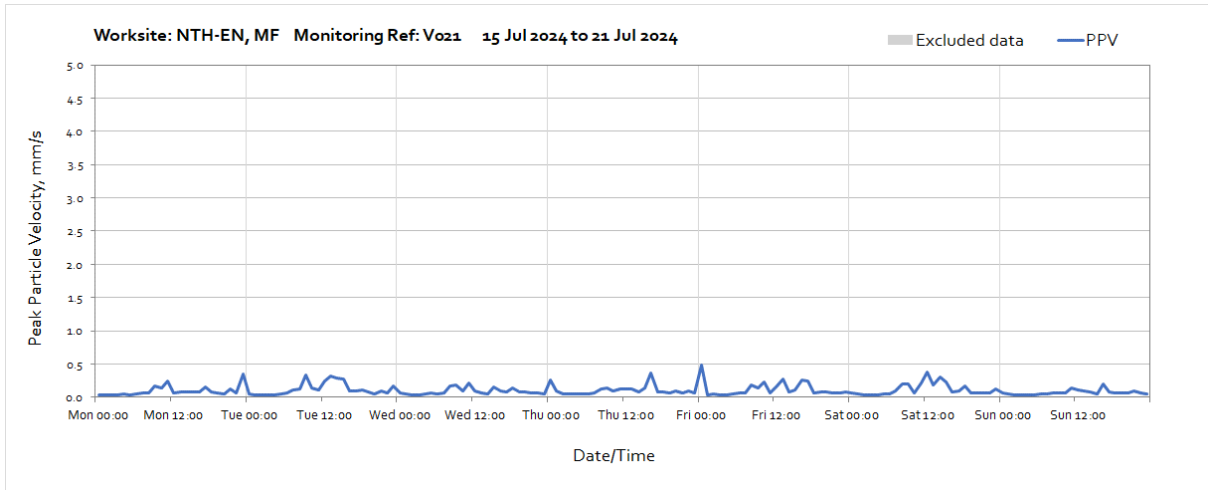




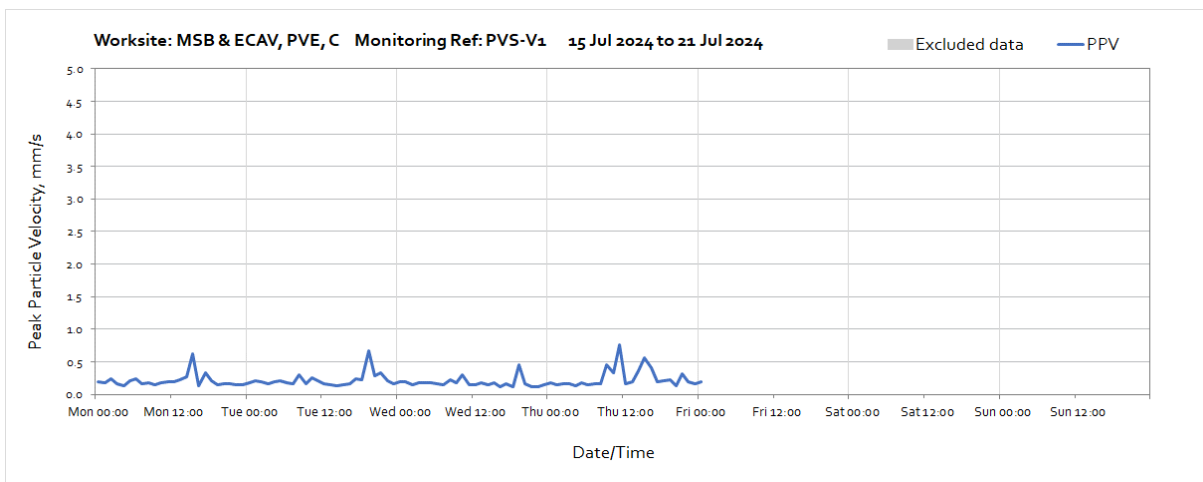
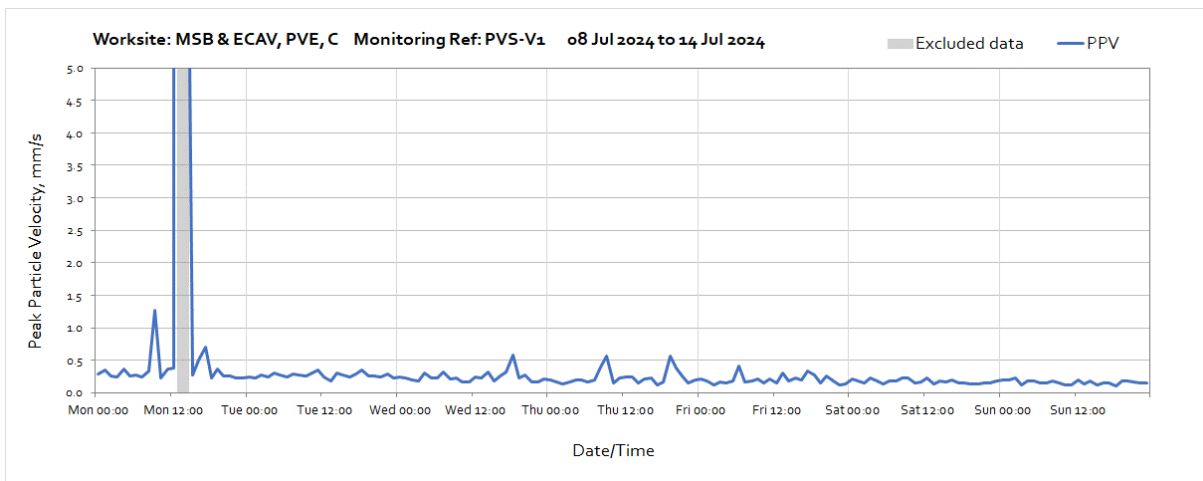
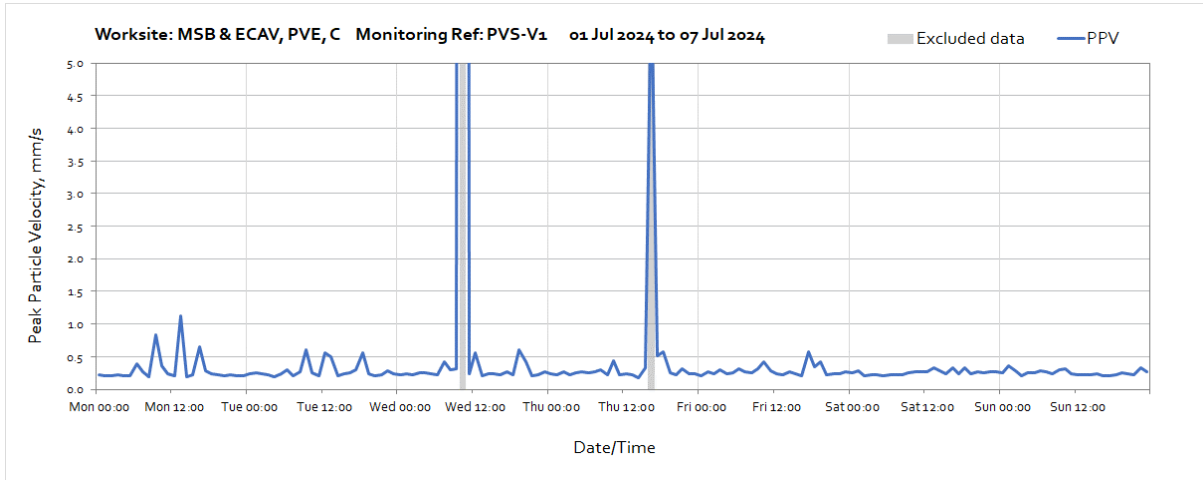


**Worksite: NTH-EN, MF - Monitoring Ref: V021**



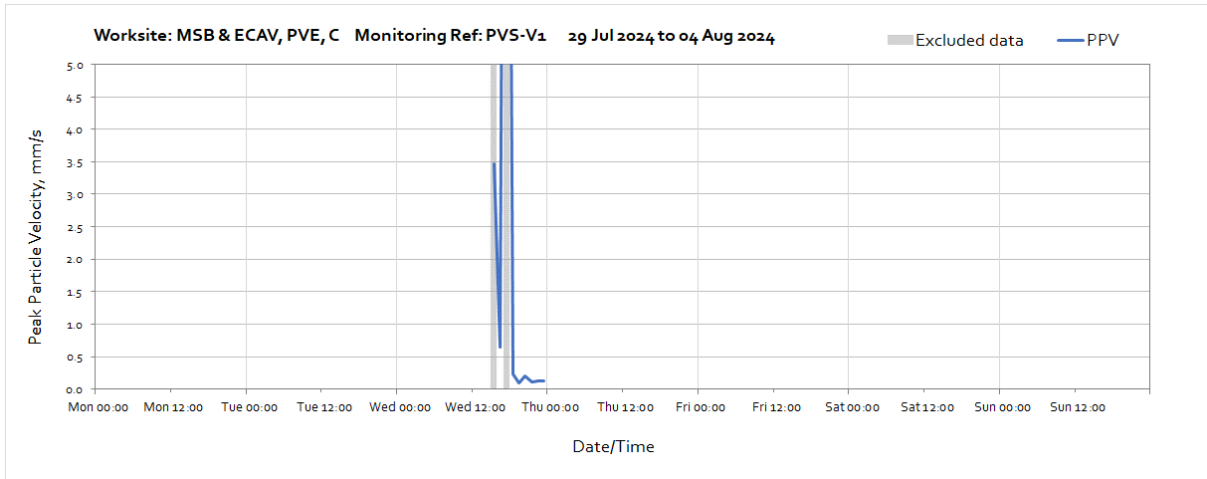


## Worksite: MSB & ECAV, PVE, C - Monitoring Ref: PVS-V1



Note: Missing data between 01:00 on Friday 19<sup>th</sup> July and 14:00 on Wednesday 31<sup>st</sup> July was due to a fault at the monitoring station.

OFFICIAL



Note: Missing data between 01:00 on Friday 19<sup>th</sup> July and 14:00 on Wednesday 31<sup>st</sup> July was due to a fault at the monitoring station.

### Worksite: ESB & GTB, PVE, D – Monitoring Ref: SH-V1

