

## **Construction noise and vibration Monthly Report – September 2024**

**London Borough of Hillingdon**

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# 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 monitoring carried out within the London Borough of Hillingdon during the month of September 2024.

Within this period noise and vibration monitoring was undertaken at the following worksites:

- Colne Valley Viaduct site (ref.: CVV), where compound operation, maintenance and operation of the haul road and jetty, pier construction, auto-transformer feeder station works, water pumping, installation of satellite welfare facilities and generator farms, South Abutment works, environmental maintenance, stockpiling, river crossing works, launching girder, deck finishes works, landscaping works and jetty removal works were underway.
- West Ruislip Portal worksite (ref.: WRP) where construction of attenuation tanks, construction of concrete plant area, golf course maintenance works, removal of temporary conveyor structure, segment delivery and storage operation and main conveyor operation were underway.
- Breakspear Road worksite (ref.: BR), where installation of backfilling, installation of permanent drainage, works for the realignment of the river Pinn, aggregate storage, conveyor operations and noise barrier testing were underway.
- South Ruislip Ventilation Shaft worksite (ref.: SRVS), where road sweeping, dewatering, main shaft maintenance, shuttering, steel fixing, concrete pouring and site management were underway.
- Harvil Road worksite (ref.: HR), where tunnel boring machine material treatment, mound construction, permanent pond preparation, operation of conveyor, spoil handling, pugmill and water treatment plant were underway.
- Northern Sustainable Placement Area worksite (ref.: NSPA) where vegetation clearance, earthworks and bridleway works were underway.

Further works, where monitoring did not take place, were also undertaken at the following locations:

- Copthall North, where material movement, backfilling, construction of Copthall Tunnel, attenuation pond works, headhouse construction, and access road construction 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 not exceeded during the reporting period.

There were no exceedances of trigger levels as defined in Section 61 consents during the reporting period.

Two (2) 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.

1.1.2 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 Hillingdon (LBH) for the period 1<sup>st</sup> to 30<sup>th</sup> September 2024.

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

- Colne Valley Viaduct worksite, ref.: CVV (see Plan 1 in Appendix A), where work activities included:
  - Compound operations.
  - Maintenance and operation of the haul road and jetty.
  - Pier construction, including drilling and concrete works.
  - Auto-transformer feeder station, including site preparations, bulk earthworks fill, drainage and tree removal.
  - Water pumping management works.
  - Installation of satellite welfare and generator farms.
  - South Abutment works, including earthworks, stabilisation, abutment construction, yard supporting activities, soiling and seeding and concrete reinforcement works.
  - Environmental maintenance works.

- Stockpiling.
- Construction of River Colne crossing, including emergency obstruction dismantling works.
- Launching girder and deck works, including launching gantry erection, steel structure erection and dismantling, post tensioning works, stressing, grouting and crane assembly and dismantling works.
- Deck finishes works, including preparation and operation of storage yards, installation of access provision, traffic management, installation of parapets, stairs, noise barriers, troughs, pipes, steel works, storage of minor materials, construction of kerbs and concrete stitch, filling of voids and top openings, waterproofing, concrete works, steel works and drainage.
- Landscaping works, including removal of cofferdams, earthworks, ground profiling and cut, ground drainage, hardstanding removal, soil placement and de-vegetation.
- Jetty removal works, including excavation, backfill, landscaping, cutting piles, and steelworks.
- West Ruislip Portal worksite, ref.: WRP (see Plan 2 in Appendix A), where work activities included:
  - Construction of permanent attenuation tanks.
  - Construction of concrete plant area.
  - Removal of temporary conveyor structure.
  - Golf course maintenance works, including vegetation clearance and wildlife habitat maintenance.
  - Segment delivery and storage operations.
  - Main conveyor operation, including rail deliveries.
- Breakspear Road worksite, ref.: BR (see Plan 2 in Appendix A), where work activities included:
  - Backfilling.
  - Installation of permanent drainage.
  - Works for the realignment of the river Pinn
  - Aggregate storage, including material deliveries and movements.
  - Conveyor operations.
  - Noise barrier testing.

- South Ruislip Ventilation Shaft worksite, ref.: SRVS (see Plan 4 in Appendix A), where work activities included:
  - Road sweeping.
  - Dewatering.
  - Main shaft general maintenance.
  - Shuttering.
  - Steel fixing.
  - Concrete pouring.
  - Site management including site security and de watering.
- Harvil Road worksite, ref.: HR (see Plan 2 in Appendix A), where work activities included:
  - Tunnel boring machine material treatment.
  - Construction of mounds, including drainage, material placement and compaction.
  - Permanent pond preparation.
  - Conveyor operation.
  - Pugmill operation.
  - Spoil handling.
  - Operation of water treatment plant including maintenance and drainage works.
- Northern Sustainable Placement Area worksite, ref.: NSPA (see Plan 3 in Appendix A), where activities included:
  - Vegetation clearance.
  - Earthworks including placement of material and excavation of pond.
  - Bridleway works including vegetation clearance, earthworks and pond excavation.

Further works, where monitoring did not take place, were also undertaken at the following location:

- Copthall North, where material movement, backfilling, construction of Copthall Tunnel, attenuation pond works, headhouse construction, and access road construction were underway.



1.1.4 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 Nineteen (19) noise and two (2) vibration monitoring installations were active in September in the LBH area. Table 2 summarises the location of noise and vibration monitoring installations within the LBH area in September 2024.

1.2.2 Maps showing the position of noise monitoring installations are presented in Appendix B.

Table 2: Monitoring Locations

| Worksite Reference | Measurement Reference | Address   |
|--------------------|-----------------------|---|
| CVV                | DLC-NMP               | Dew's Farm Cottages, Dews Lane, Harefield, Uxbridge           |
|                    | HFM-NMP               | Harefield Marina, Moorhall Road, London Borough of Hillingdon |
|                    | PLD-NMP               | Peerless Drive, Harefield, Uxbridge                           |
|                    | WRC-NMP               | Savay Lane, Denham, Uxbridge                                  |
| WRP                | WRP-N001              | Ruislip Golf Course, Ickenham Rd, Ruislip                     |
|                    | N048                  | Ruislip Golf Course, Ickenham Rd, Ruislip                     |
|                    | N056                  | 83 The Greenway, Ickenham, Ruislip                            |
|                    | N057                  | 123 The Greenway, Ickenham, Ruislip                           |
|                    | GW-V001               | 95 The Greenway, Ickenham, Uxbridge                           |
| BR                 | N065                  | Breakspear Road South, Harefield, Uxbridge                    |
|                    | N066                  | Hoylake Crescent, Ickenham, Uxbridge                          |
|                    | TKL-N001              | Tile Kiln Lane, Harefield, Uxbridge                           |
| SRVS               | N061                  | Cineworld South Ruislip car park, Ruislip                     |
|                    | TCA-N001              | Trenchard Avenue, Ruislip                                     |
|                    | SRVS-V001a            | Braintree Road, Ruislip                                       |
| HR                 | N067                  | Harvil Road worksite south boundary                           |
|                    | SSPA-HR               | Harvil Road   |
|                    | BSR-N001              | Breakspear Road   |
|                    | DGT-N001              | Dogs Trust West London  |

| Worksite Reference | Measurement Reference | Address             |
|--------------------|-----------------------|---------------------|
| NSPA               | NSPA-N001             | Newyears Green Lane |
|                    | NSPA-N002             | Newyears Green Lane |

## 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 LAeq Data over the Monitoring Period

| Worksite Reference | Measurement Reference | Site Address                                 | Free-field or Façade Measurement | Weekday Average LAeq,T (Highest Day LAeq,T) |                |                |                |                | Saturday Average LAeq,T (Highest Day LAeq,T) |                |                |                |                | Sunday / Public Holiday Average LAeq,T (Highest Day LAeq,T) |                |
|--------------------|-----------------------|--|----------------------------------|---|----------------|----------------|----------------|----------------|--|----------------|----------------|----------------|----------------|---|----------------|
|                    |                       |  |                                  | 0700 - 0800                                 | 0800 - 1800    | 1800 - 1900    | 1900 - 2200    | 2200 - 0700    | 0700 - 0800                                  | 0800 - 1300    | 1300 - 1400    | 1400 - 2200    | 2200 - 0700    | 0700 - 2200   | 2200 - 0700    |
| CVV                | DLC-NMP               | Dew's Farm Cottages, Dews Lane, Harefield    | Façade                           | 57.7<br>(61.1)                              | 61.4<br>(64.0) | 52.0<br>(55.3) | 48.1<br>(53.7) | 48.6<br>(59.9) | 55.3<br>(56.4)                               | 60.8<br>(61.1) | 53.0<br>(57.0) | 49.8<br>(55.3) | 47.6<br>(56.4) | 51.2<br>(57.1)  | 50.8<br>(59.4) |
|                    | HFM-NMP               | Harefield Marina, Moorhall Road, London      | Free-field                       | 51.0<br>(59.2)                              | 58.4<br>(67.9) | 47.1<br>(50.9) | 45.5<br>(56.0) | 43.4<br>(52.9) | 49.0<br>(49.7)                               | 52.8<br>(56.8) | 50.0<br>(54.6) | 46.5<br>(51.3) | 44.3<br>(53.4) | 47.7<br>(57.5)  | 45.4<br>(52.3) |
|                    | PLD-NMP               | Peerless Drive, Harefield, Uxbridge          | Façade                           | 50.7<br>(54.9)                              | 57.3<br>(69.2) | 47.8<br>(54.0) | 46.2<br>(54.6) | 43.4<br>(53.0) | 47.1<br>(49.3)                               | 57.0<br>(66.8) | 59.0<br>(73.4) | 57.1<br>(74.3) | 45.3<br>(55.2) | 49.6<br>(64.1)  | 45.8<br>(55.2) |
|                    | WRC-NMP               | Savay Lane, Denham, Uxbridge                 | Façade                           | 53.6<br>(55.6)                              | 54.8<br>(60.9) | 51.4<br>(53.9) | 49.3<br>(54.6) | 46.2<br>(53.7) | 50.6<br>(51.6)                               | 52.1<br>(53.2) | 51.4<br>(53.5) | 49.6<br>(52.1) | 46.9<br>(55.5) | 50.2<br>(59.2)  | 47.8<br>(54.2) |
| WRP                | WRP-N001              | West Ruislip Golf Club, Ickenham Rd, Ruislip | Free-field                       | 46.6<br>(51.3)                              | 48.2<br>(52.1) | 46.3<br>(52.4) | 44.6<br>(57.9) | 41.2<br>(50.1) | 45.7<br>(50.2)                               | 47.6<br>(50.8) | 48.6<br>(50.1) | 45.9<br>(50.6) | 41.5<br>(47.9) | 46.1<br>(54.9)  | 41.7<br>(48.2) |
|                    | N048                  | West Ruislip Golf Club, Ickenham Rd, Ruislip | Free-field                       | 58.3<br>(62.9)                              | 61.6<br>(65.1) | 52.6<br>(56.1) | 52.5<br>(60.8) | 49.1<br>(57.8) | 55.9<br>(58.4)                               | 56.7<br>(59.8) | 56.7<br>(60.0) | 52.2<br>(55.1) | 48.5<br>(52.3) | 52.9<br>(59.0)  | 50.6<br>(58.9) |
|                    | N056                  | 83 The Greenway, Ickenham, Ruislip           | Façade                           | 60.9<br>(62.2)                              | 59.7<br>(60.9) | 60.2<br>(61.6) | 58.9<br>(61.8) | 55.3<br>(65.6) | 58.8<br>(60.8)                               | 59.3<br>(59.9) | 58.2<br>(59.2) | 59.2<br>(61.7) | 53.2<br>(60.2) | 58.4<br>(61.5)  | 55.5<br>(59.6) |
|                    | N057                  | 123 The Greenway, Ickenham, Ruislip          | Façade                           | 58.6<br>(59.7)                              | 58.0<br>(60.7) | 57.7<br>(59.2) | 56.3<br>(59.8) | 52.1<br>(59.1) | 56.2<br>(56.8)                               | 58.2<br>(61.0) | 56.0<br>(57.3) | 56.5<br>(59.3) | 50.7<br>(57.1) | 56.8<br>(59.4)  | 53.6<br>(57.1) |

| Worksite Reference | Measurement Reference | Site Address                              | Free-field or Façade Measurement | Weekday Average $L_{Aeq,T}$<br>(Highest Day $L_{Aeq,T}$ ) |                |                |                |                | Saturday Average $L_{Aeq,T}$<br>(Highest Day $L_{Aeq,T}$ ) |                |                |                |                | Sunday / Public Holiday<br>Average $L_{Aeq,T}$<br>(Highest Day $L_{Aeq,T}$ ) |                |
|--------------------|-----------------------|---|----------------------------------|---|----------------|----------------|----------------|----------------|--|----------------|----------------|----------------|----------------|--|----------------|
|                    |                       |   |                                  | 0700 - 0800   | 0800 - 1800    | 1800 - 1900    | 1900 - 2200    | 2200 - 0700    | 0700 - 0800  | 0800 - 1300    | 1300 - 1400    | 1400 - 2200    | 2200 - 0700    | 0700 - 2200  | 2200 - 0700    |
| BR                 | N065                  | Breakspear Road South, Harefield          | Free-field                       | 66.0<br>(68.6)  | 65.4<br>(67.1) | 65.6<br>(67.1) | 63.4<br>(68.5) | 58.5<br>(65.8) | 63.3<br>(64.5)   | 64.9<br>(66.0) | 65.7<br>(67.5) | 64.6<br>(66.6) | 58.1<br>(61.4) | 64.1<br>(67.5)   | 60.2<br>(65.6) |
|                    | N066                  | Hoylake Crescent, Ickenham, Uxbridge      | Free-field                       | 56.5<br>(58.1)  | 57.0<br>(60.5) | 56.2<br>(58.3) | 54.9<br>(61.7) | 51.9<br>(62.6) | 54.4<br>(56.1)   | 55.9<br>(56.5) | 54.8<br>(55.5) | 54.9<br>(57.7) | 49.8<br>(55.5) | 54.5<br>(58.6)   | 52.0<br>(55.7) |
|                    | TKL-N001              | Tile Kiln Lane, Harefield, Uxbridge       | Free-field                       | 47.8<br>(51.4)  | 49.2<br>(52.8) | 46.5<br>(52.2) | 45.6<br>(61.9) | 42.2<br>(52.9) | 46.1<br>(49.1)   | 48.6<br>(51.6) | 48.4<br>(50.2) | 46.6<br>(50.6) | 42.5<br>(48.1) | 46.1<br>(53.1)   | 42.1<br>(46.8) |
| SRVS               | N061                  | Cineworld South Ruislip car park, Ruislip | Free-field                       | 59.0<br>(62.5)  | 62.4<br>(64.5) | 63.1<br>(67.8) | 61.9<br>(68.9) | 56.3<br>(75.8) | 58.7<br>(61.8)   | 62.6<br>(64.2) | 63.0<br>(63.7) | 61.2<br>(63.1) | 55.3<br>(62.7) | 61.8<br>(66.5)   | 54.7<br>(61.4) |
|                    | TCA-N001              | Trenchard Avenue, Ruislip                 | Free-field                       | 57.9<br>(59.4)  | 59.7<br>(63.4) | 59.3<br>(62.6) | 56.7<br>(62.6) | 52.2<br>(60.0) | 56.0<br>(56.5)   | 58.5<br>(60.7) | 58.5<br>(61.4) | 56.9<br>(60.1) | 49.8<br>(56.9) | 57.8<br>(63.3)   | 52.9<br>(56.8) |
| HR                 | N067                  | Harvil Road worksite south boundary       | Free-field                       | 55.5<br>(58.7)  | 57.8<br>(61.9) | 56.3<br>(65.8) | 54.8<br>(62.4) | 50.9<br>(60.5) | 53.9<br>(55.3)   | 57.3<br>(58.7) | 52.8<br>(54.0) | 56.8<br>(62.4) | 51.4<br>(61.5) | 55.1<br>(65.5)   | 51.3<br>(56.8) |
|                    | SSPA-HR               | Harvil Road                               | Free-field                       | 60.7<br>(63.1)  | 60.5<br>(68.4) | 58.4<br>(59.6) | 56.1<br>(59.9) | 53.7<br>(61.9) | 58.4<br>(59.2)   | 58.5<br>(59.3) | 58.4<br>(59.6) | 57.0<br>(58.9) | 51.8<br>(55.7) | 57.1<br>(60.1)   | 54.1<br>(60.4) |
|                    | BSR-N001              | Breakspear Road                           | Free-field                       | 69.1<br>(71.2)  | 68.0<br>(69.6) | 67.7<br>(69.3) | 65.2<br>(70.8) | 60.7<br>(68.6) | 65.4<br>(67.0)   | 67.1<br>(68.0) | 67.0<br>(68.7) | 66.8<br>(69.7) | 59.2<br>(63.6) | 65.8<br>(68.3)   | 62.4<br>(69.2) |
|                    | DGT-N001              | Dogs Trust West London                    | Façade                           | 54.3<br>(58.0)  | 54.6<br>(59.7) | 50.2<br>(54.1) | 47.6<br>(52.6) | 45.7<br>(55.7) | 51.4<br>(53.5)   | 53.4<br>(55.1) | 52.5<br>(56.6) | 51.3<br>(58.0) | 44.8<br>(51.0) | 50.0<br>(58.7)   | 46.7<br>(55.5) |

| Worksite Reference | Measurement Reference | Site Address        | Free-field or Façade Measurement | Weekday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$ ) |                |                |                |                | Saturday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$ ) |                |                |                |                | Sunday / Public Holiday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$ ) |                |
|--------------------|-----------------------|---------------------|----------------------------------|--|----------------|----------------|----------------|----------------|---|----------------|----------------|----------------|----------------|--|----------------|
|                    |                       |                     |                                  | 0700 - 0800  | 0800 - 1800    | 1800 - 1900    | 1900 - 2200    | 2200 - 0700    | 0700 - 0800   | 0800 - 1300    | 1300 - 1400    | 1400 - 2200    | 2200 - 0700    | 0700 - 2200  | 2200 - 0700    |
| NSPA               | NSPA-N001             | Newyears Green Lane | Free-field                       | 58.4<br>(62.2)   | 59.4<br>(62.1) | 56.5<br>(64.1) | 52.4<br>(55.2) | 49.5<br>(59.1) | 54.7<br>(57.1)  | 59.7<br>(66.0) | 57.4<br>(59.4) | 55.8<br>(66.4) | 46.4<br>(53.2) | 54.3<br>(59.0)   | 52.2<br>(59.9) |
|                    | NSPA-N002             | Newyears Green Lane | Free-field                       | 46.5<br>(50.3)   | 52.6<br>(62.3) | 43.9<br>(49.1) | 41.9<br>(48.9) | 39.7<br>(62.0) | 44.9<br>(48.4)  | 52.9<br>(64.2) | 46.9<br>(48.3) | 45.8<br>(54.3) | 40.3<br>(46.0) | 45.2<br>(52.0)   | 40.9<br>(47.1) |

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 |
|--------------------|-----------------------|-------------------------------------|--|
| WRP                | GW-V001               | 95 The Greenway, Ickenham, Uxbridge | 1.24 (Y-axis)                          |
| SRVS               | SRVS-V001a            | Braintree Road, Ruislip             | 5.06 (Z-axis)                          |

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 LOAEL and SOAEL

2.2.1 The lowest observed adverse effect level (LOAEL) is defined in the Planning Practice Guidance – Noise (PPG) as the level above which "noise starts to cause small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life".

2.2.2 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."

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

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

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

Table 5: Summary of Exceedances of LOAEL and SOAEL

| Worksite Reference | Measurement Reference               | Site Address  | Day (Weekday, Saturday, Sunday, Night) | Time period | Number of exceedances of LOAEL | Number of exceedances of SOAEL |
|--------------------|-------------------------------------|---|--|-------------|--------------------------------|--------------------------------|
| CVV                | DLC-NMP                             | Dew's Farm Cottages, Dews Lane, Harefield, Uxbridge | Weekday                                | 0700-0800   | 1                              | No exceedance                  |
|                    |                                     |   | Sunday                                 | 0700-2200   | 2                              |                                |
|                    |                                     |   | Night                                  | 2200-0700   | 1                              |                                |
|                    | HFM-NMP                             | Harefield Marina, Moorhall Road, London             | Weekday                                | 0700-0800   | 2                              | No exceedance                  |
| Weekday            | 0800-1800                           | 5   |  |             |                                |                                |
| Weekday            | 1900-2200                           | 1   |  |             |                                |                                |
| Sunday             | 0700-2200                           | 2   |  |             |                                |                                |
| Night              | 2200-0700                           | 9   |  |             |                                |                                |
| PLD-NMP            | Peerless Drive, Harefield, Uxbridge | Weekday   | 0800-1800                              | 1           | No exceedance                  |                                |
|                    |                                     | Saturday  | 0800-1300                              | 1           |                                |                                |
|                    |                                     | Sunday  | 0700-2200                              | 2           |                                |                                |
| WRC-NMP            | Savay Lane, Denham, Uxbridge        | Night   | 2200-0700                              | 2           | No exceedance                  |                                |
|                    |                                     |   |  |             |                                |                                |
| WRP                | WRP-N001                            | West Ruislip Golf Club, Ickenham Rd, Ruislip        | All days                               | All periods | No exceedance                  | No exceedance                  |
|                    | N048                                | West Ruislip Golf Club, Ickenham Rd, Ruislip        | Weekday                                | 0800-1800   | 1                              | No exceedance                  |
|                    | N056                                | 83 The Greenway, Ickenham, Ruislip                  | All days                               | All periods | No exceedance                  | No exceedance                  |
|                    | N057                                | 123 The Greenway, Ickenham, Ruislip                 | All days                               | All periods | No exceedance                  | No exceedance                  |



| Worksite Reference | Measurement Reference | Site Address                               | Day (Weekday, Saturday, Sunday, Night) | Time period | Number of exceedances of LOAEL | Number of exceedances of SOAEL |
|--------------------|-----------------------|--|--|-------------|--------------------------------|--------------------------------|
| BR                 | N065                  | Breakspear Road South, Harefield, Uxbridge | All days                               | All periods | Not applicable*                | No exceedance                  |
|                    | N066                  | Hoyle Crescent, Ickenham, Uxbridge         | All days                               | All periods | No exceedance                  | No exceedance                  |
|                    | TKL-N001              | Tile Kiln Lane, Harefield, Uxbridge        | All days                               | All periods | No exceedance                  | No exceedance                  |
| SRVS               | N061                  | Hoyle Crescent, Ickenham, Uxbridge         | All days                               | All periods | Not applicable**               | Not applicable**               |
|                    | TCA-N001              | Trenchard Avenue, Ruislip                  | Night                                  | 2200-0700   | Not applicable*                | No exceedance                  |
| HR                 | N067                  | Harvil Road worksite south boundary        | All days                               | All periods | No exceedance                  | No exceedance                  |
|                    | SSPA-HR               | Harvil Road                                | Weekday                                | 0800-1800   | 1                              | No exceedance                  |
|                    | BSR-N001              | Breakspear Road                            | All days                               | All periods | Not applicable*                | No exceedance                  |
|                    | DGT-N001              | Dogs Trust West London                     | All days                               | All periods | No exceedance                  | No exceedance                  |
| NSPA               | NSPA-N001             | Newyears Green Lane                        | Saturday                               | 0800-1300   | 1                              | No exceedance                  |
|                    | NSPA-N002             | Newyears Green Lane                        | Saturday                               | 0800-1300   | 1                              | No exceedance                  |

\* The LOAEL has not been assessed due to high baseline levels

\*\* The defined LOAEL and SOAEL criteria are not applicable to non-residential receptor

2.2.6 Exceedances of the LOAEL were recorded at eight (8) monitoring locations during weekday, Saturday and Sunday daytime, evening and night-time periods.

2.2.7 No exceedances of the SOAEL were recorded at any monitoring location during September 2024.

## 2.3 Exceedances of Trigger Level

2.3.1 Table 6 provides a summary of exceedances of the Section 61 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 6: 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 |
|--|--------------------|----------------------|-------------------|---|---------------|
| -  | -                  | -                    | -                 | -   | -             |

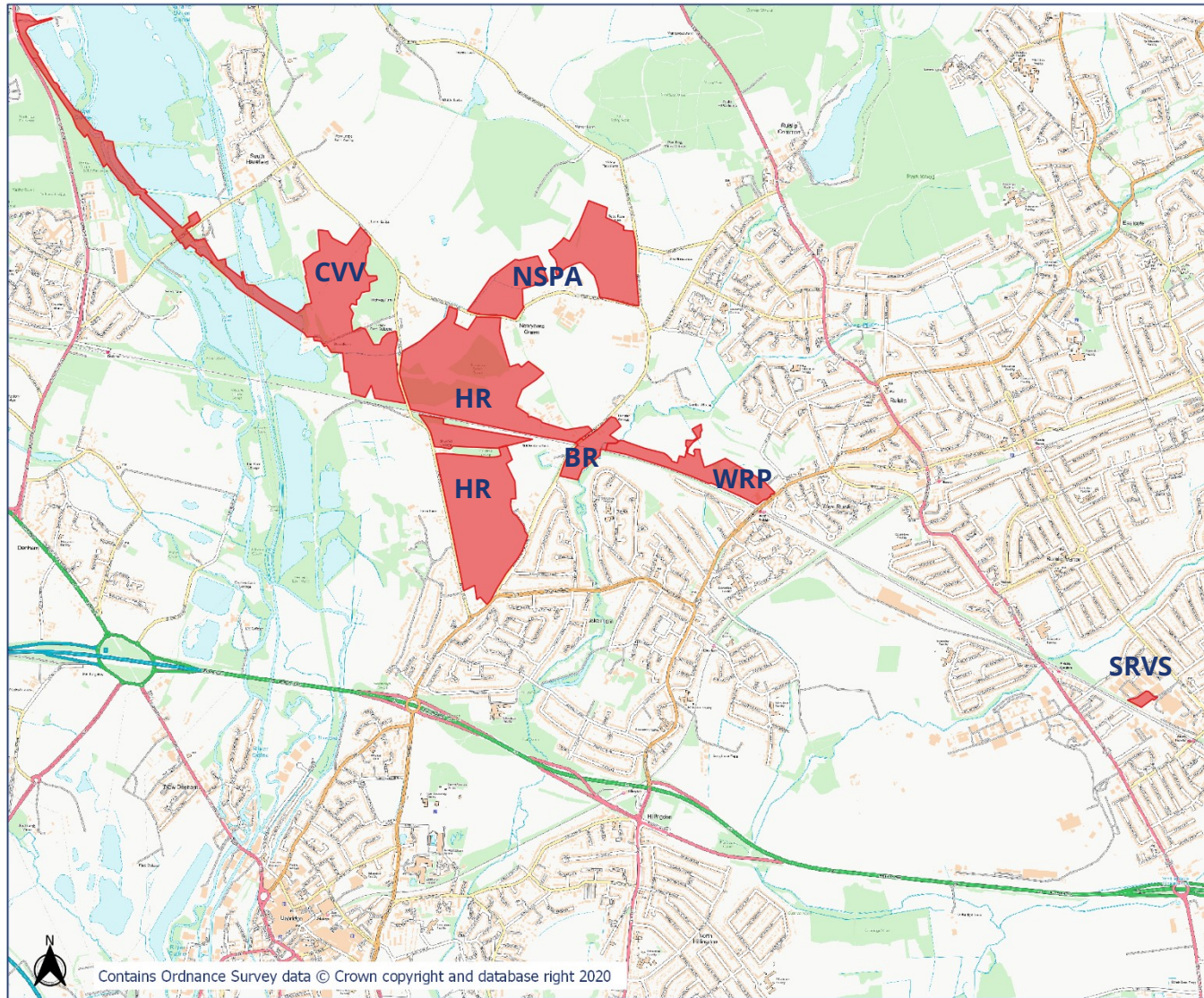
## 2.4 Complaints

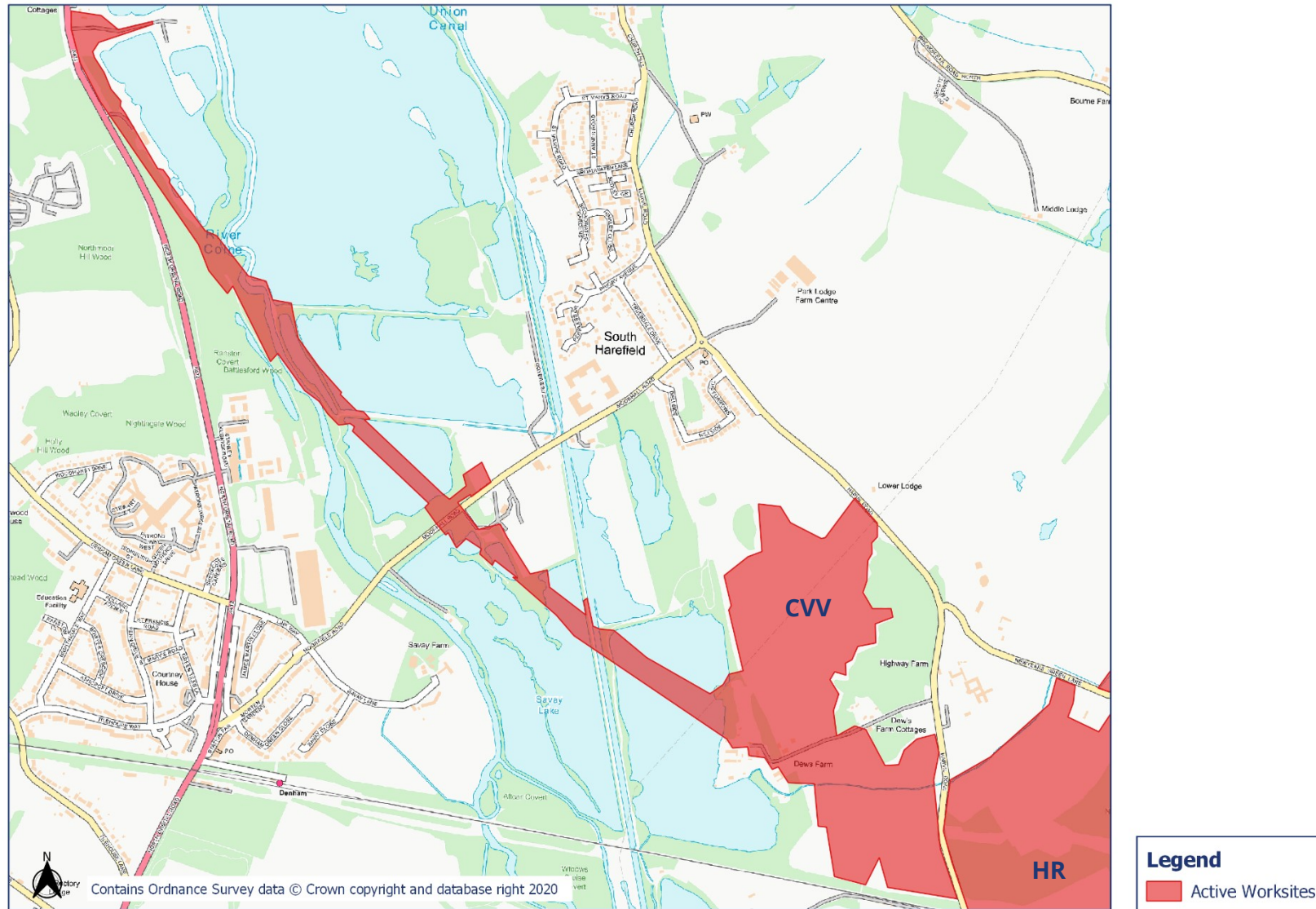
2.4.1 Table 7 provides a summary of complaint information related to noise and vibration received during the reporting period, along with the findings of any investigation.

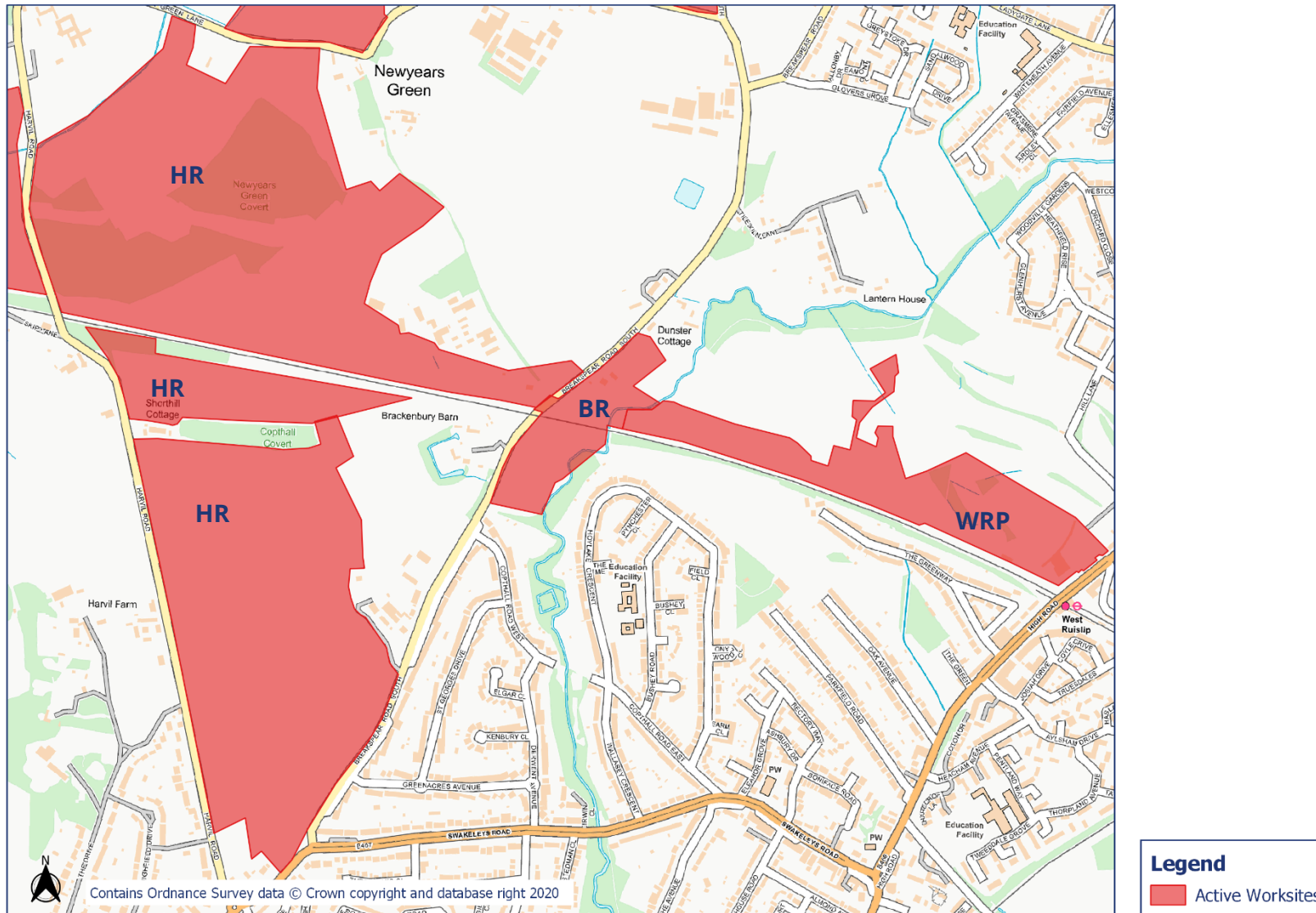
Table 7: Summary of Complaints

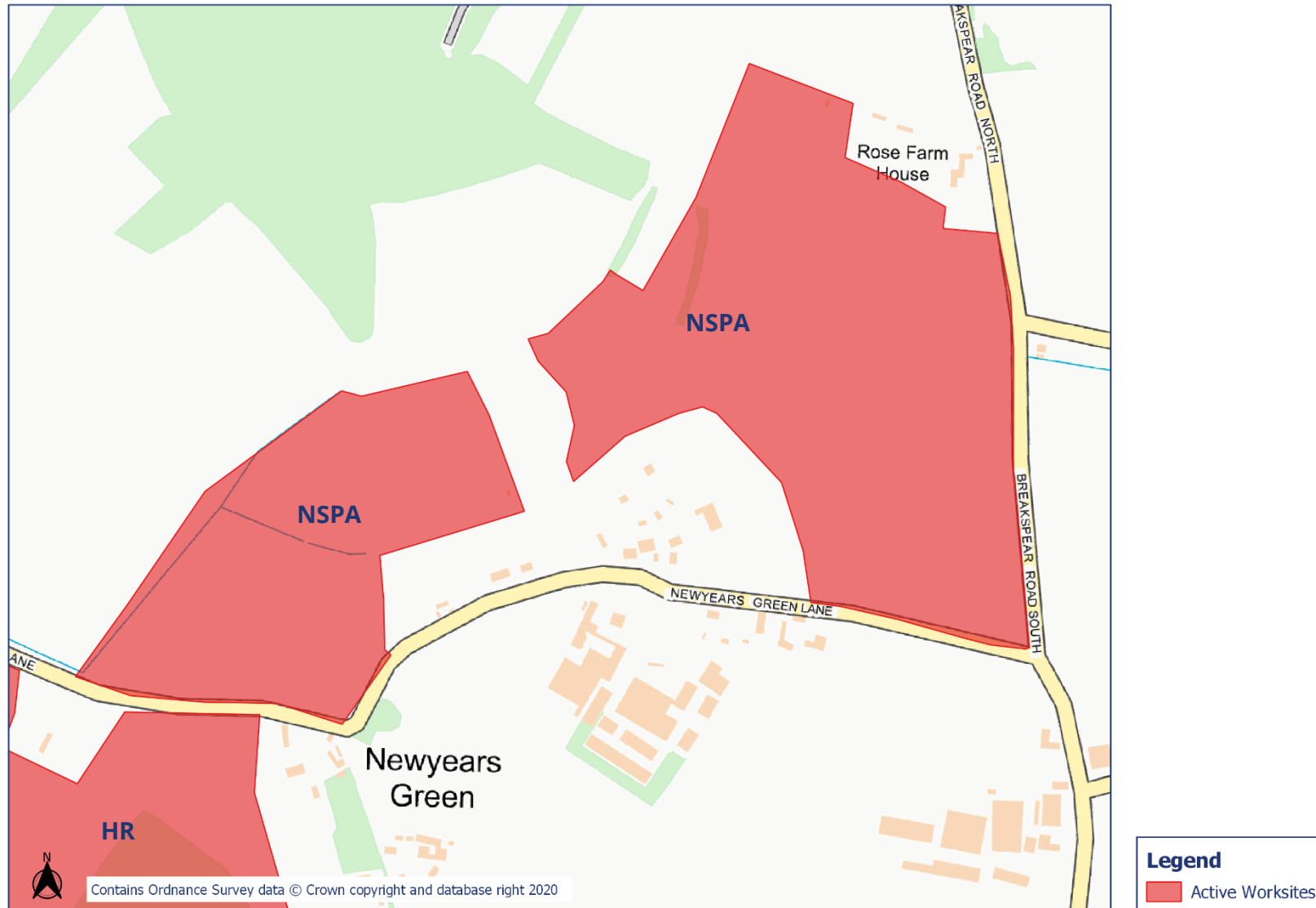
| Complaint Reference Number | Worksite Reference | Description of Complaint                               | Results of Investigation  | Actions Taken  |
|----------------------------|--------------------|--|---|--|
| HS2-24-113397-E - C        | WRP                | Noisy tractor alarm warning.                           | Alarm due to site vehicle. Activity within consented levels, no exceedances found.                  | Steps being taken to reduce noise levels on site, however alarms on site vehicles are mandatory for health and safety reasons. Explanation provided to the resident. |
| HS2-24-113505-E - C        | SRVS               | Banging, thumping and screeching noise during the day. | Noise due to concrete pouring and breaking. Activity within consented levels, no exceedances found. | Explanation provided to the resident.  |

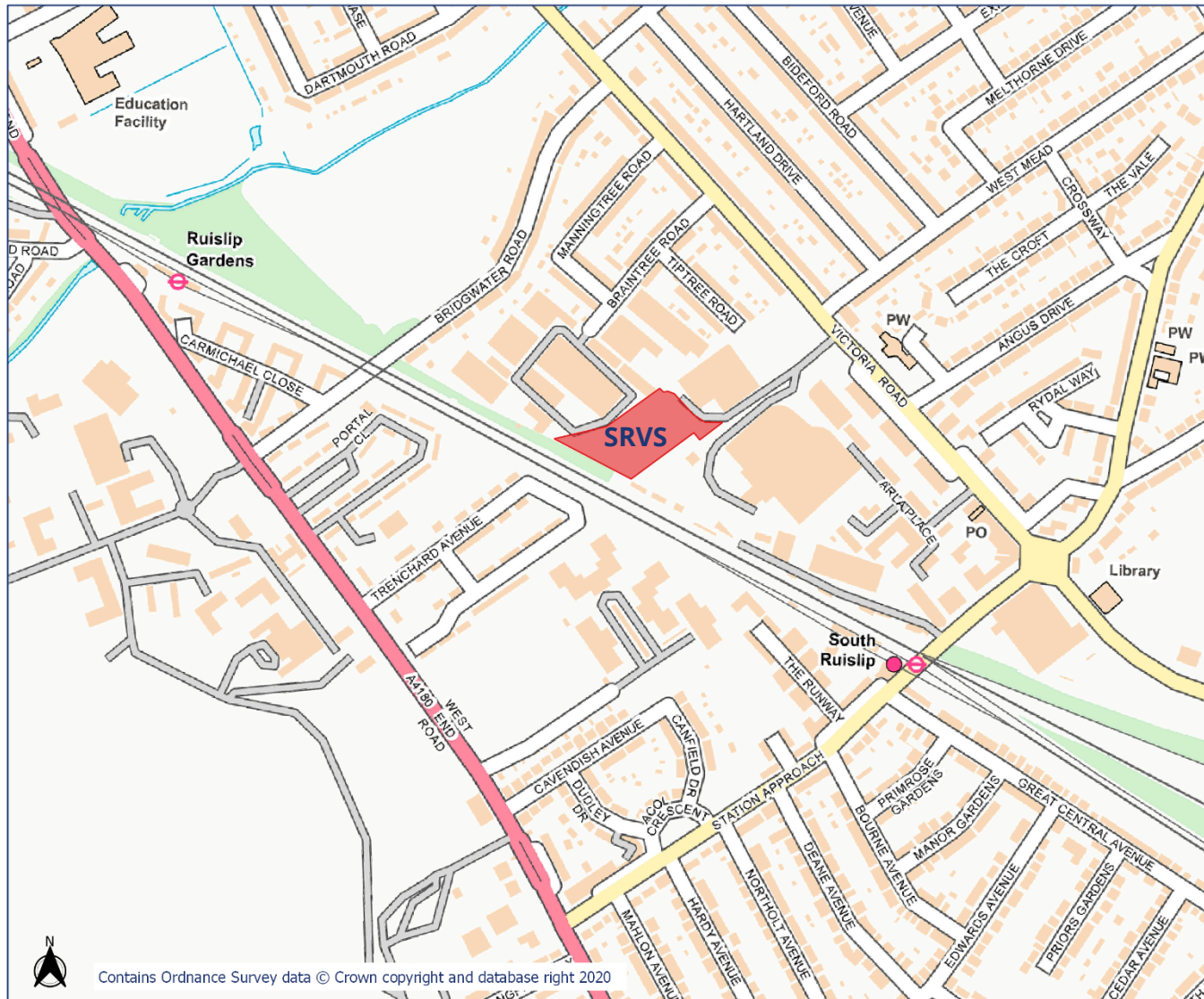
# Appendix A Site Locations





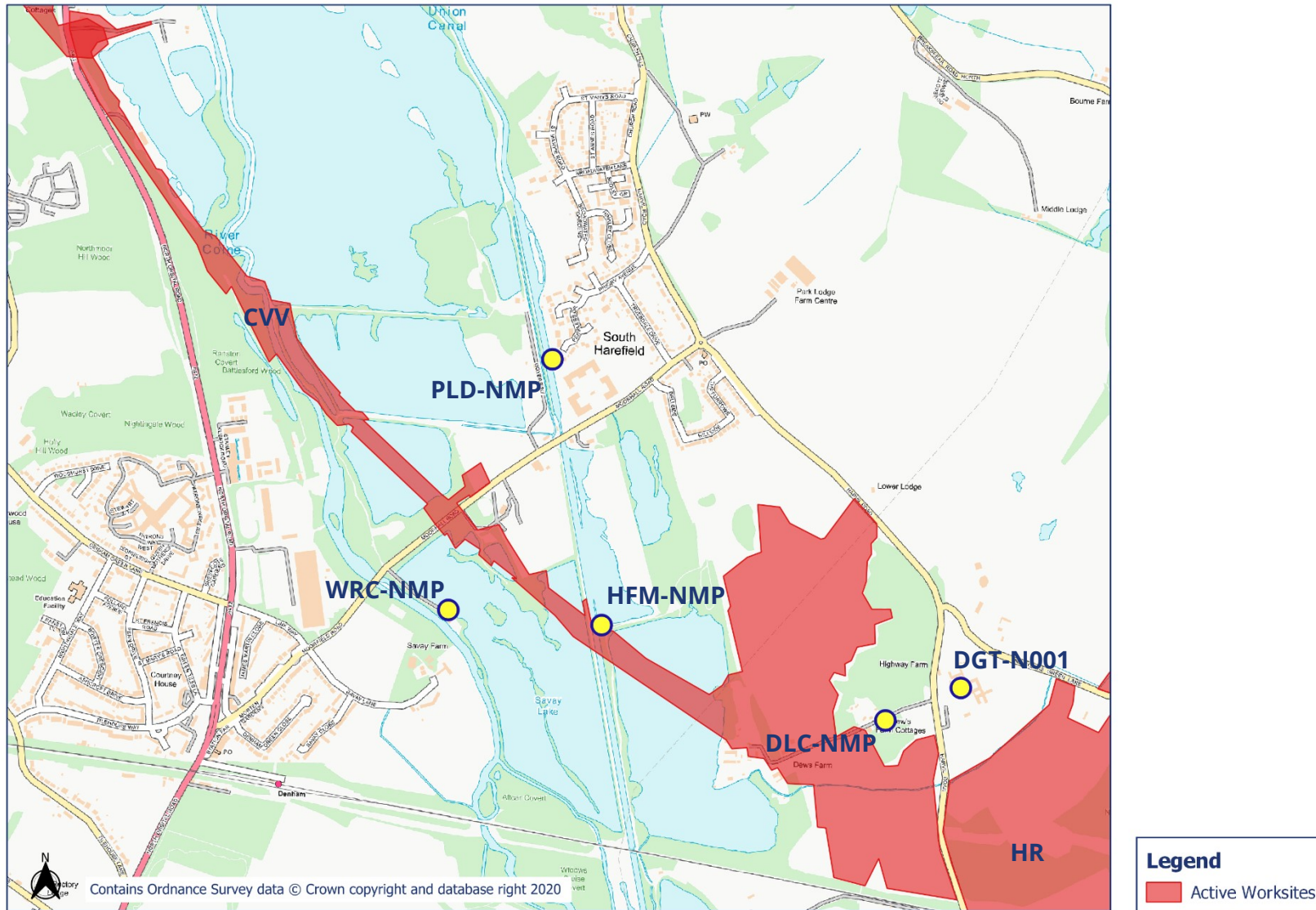


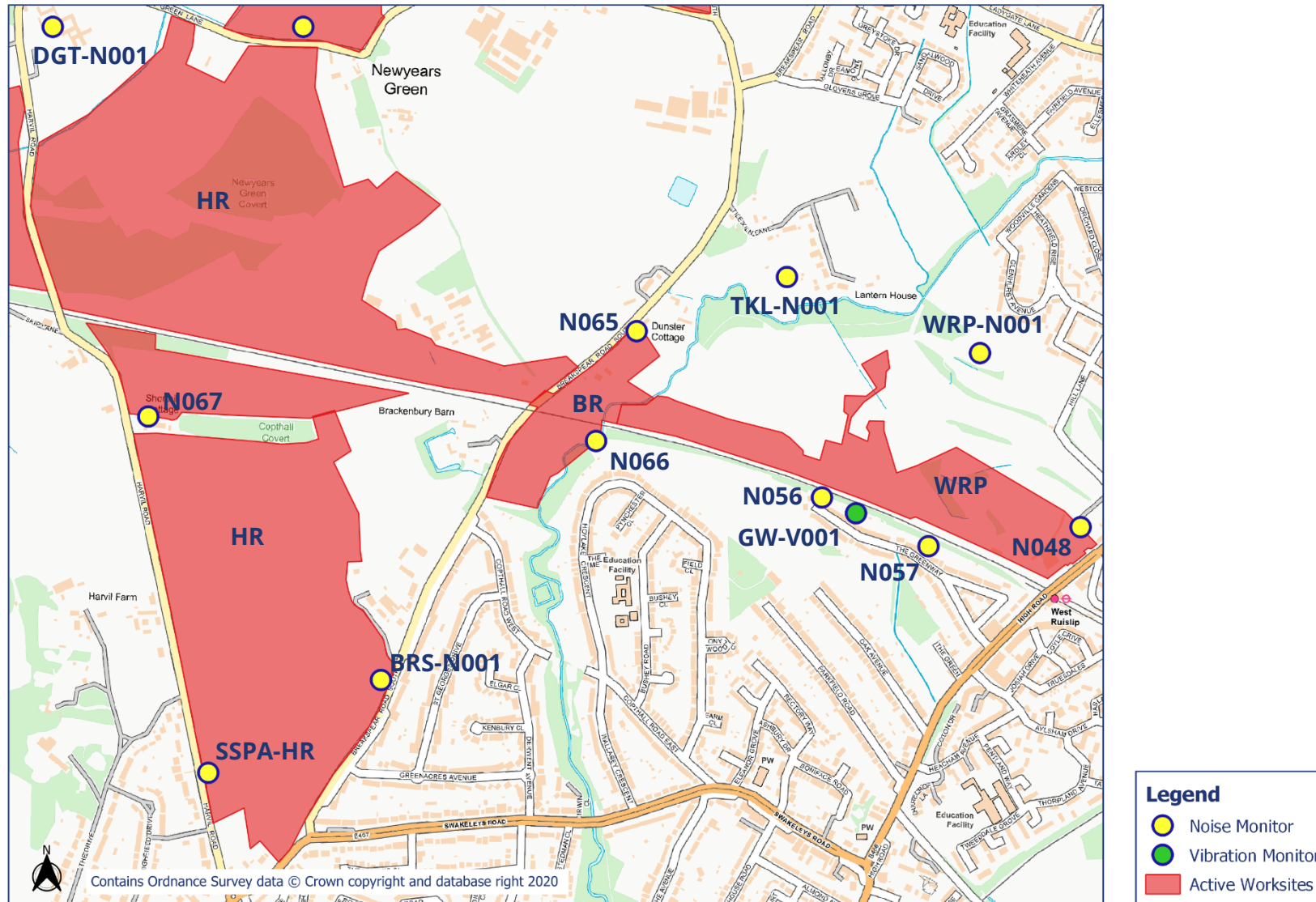


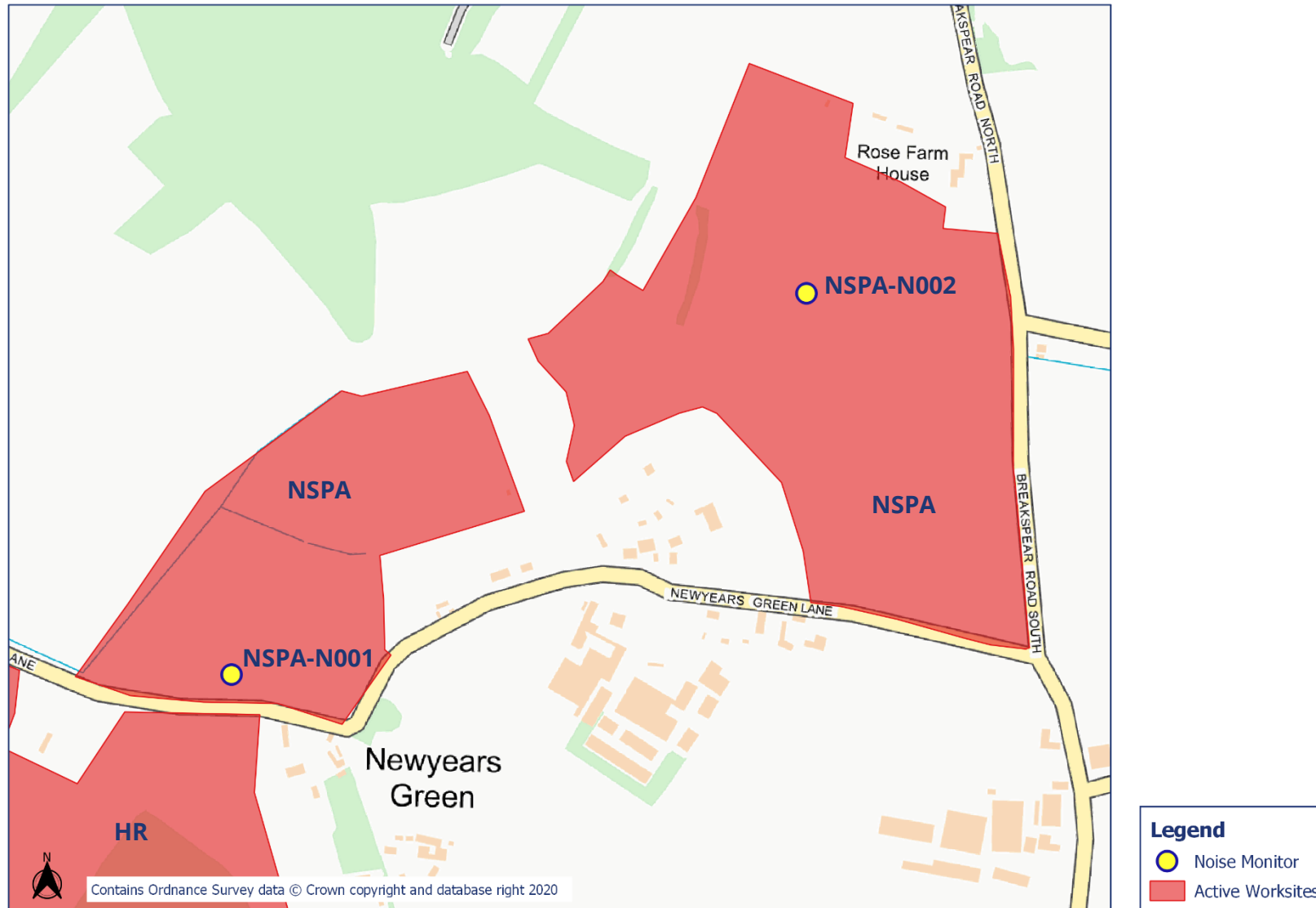


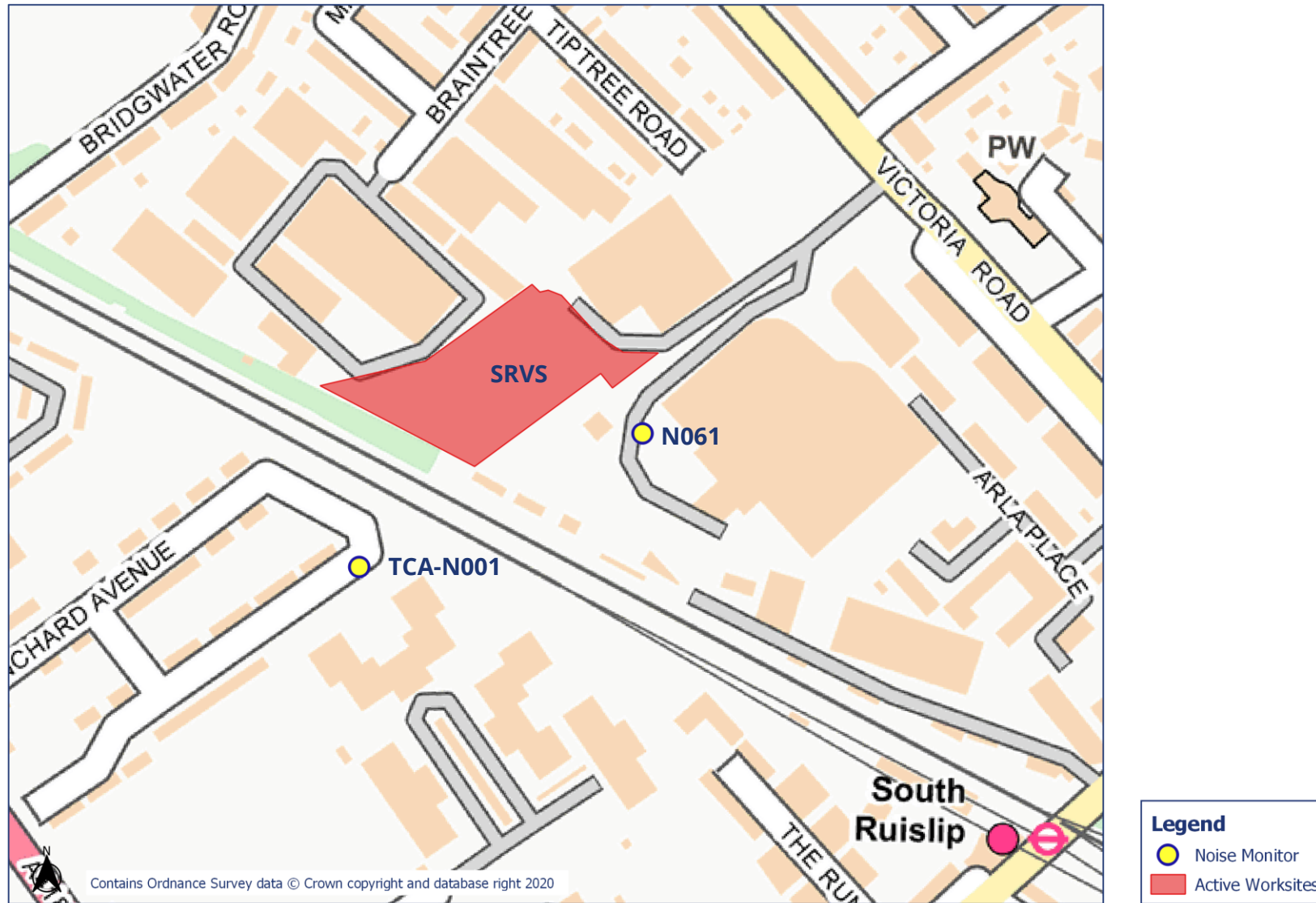


# Appendix B Monitoring Locations







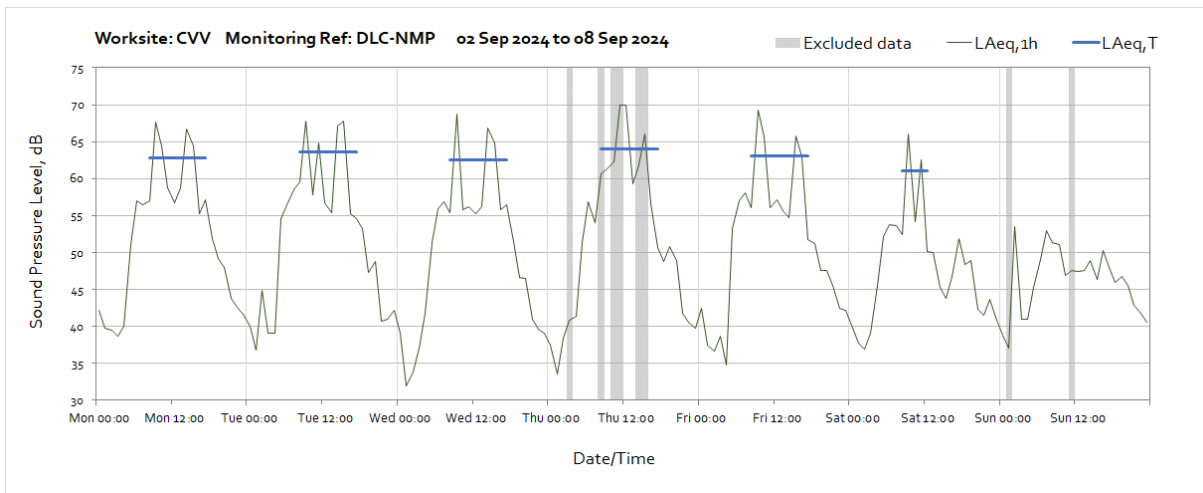
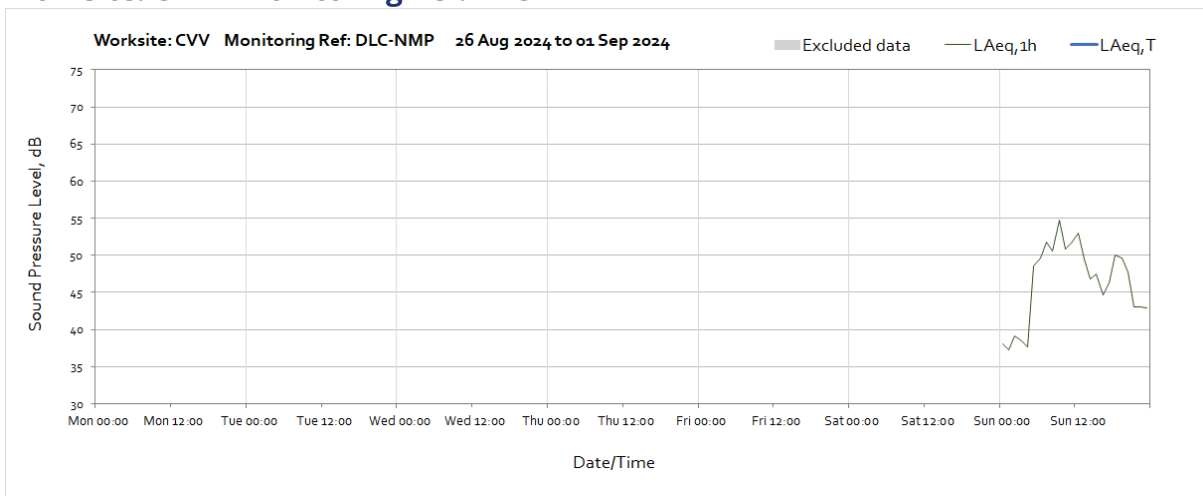


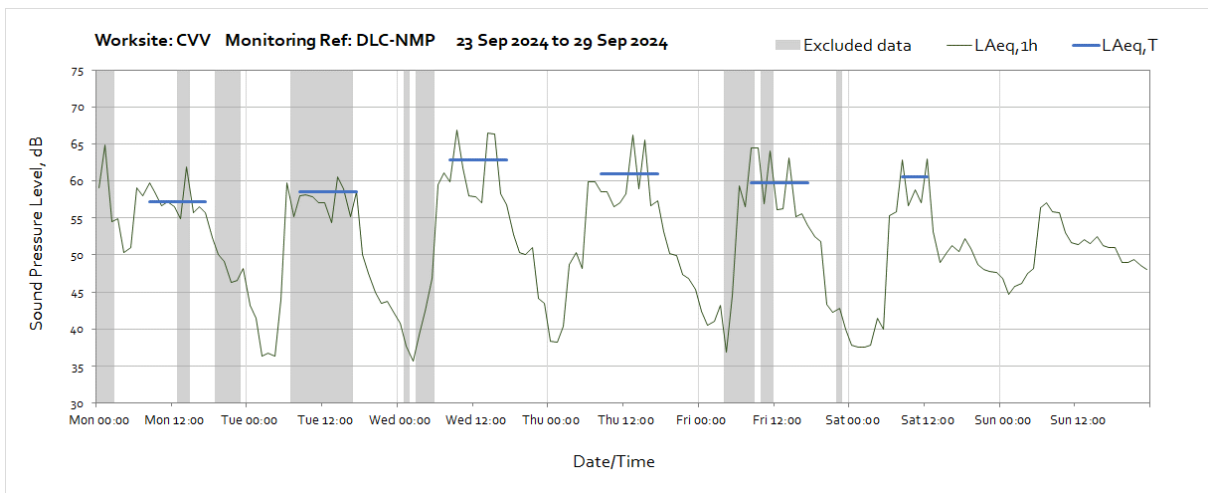
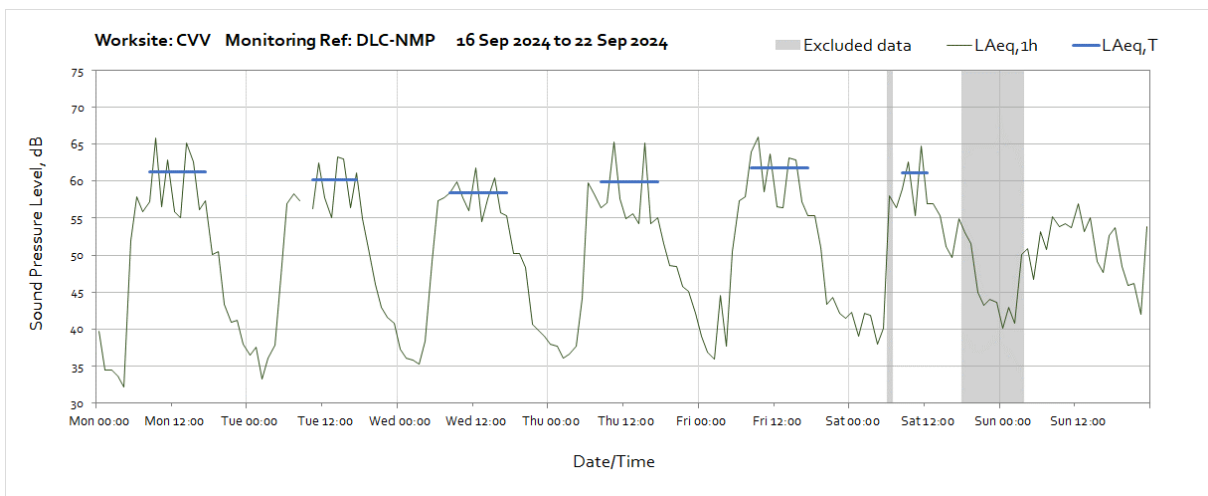
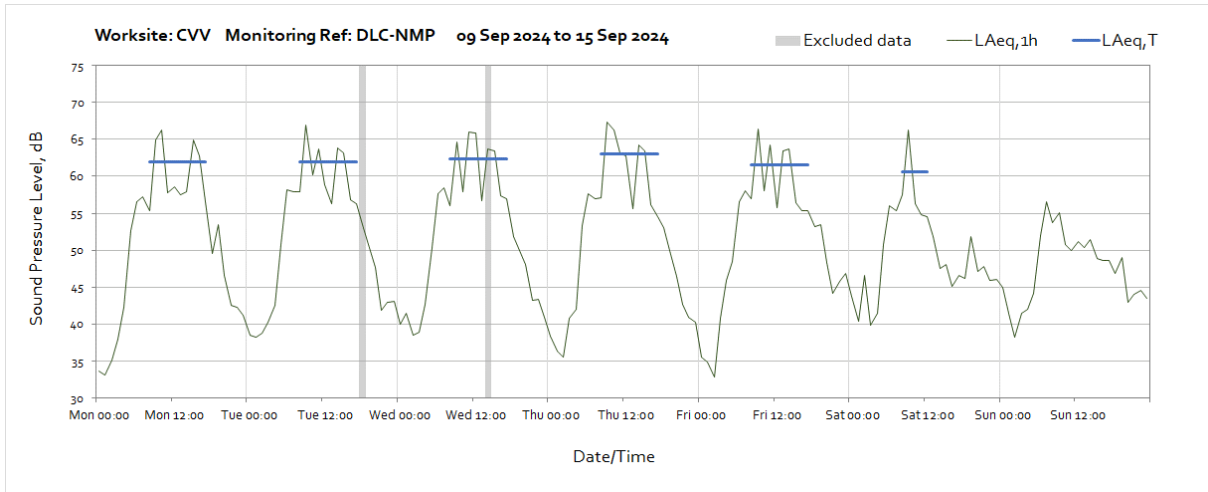
# Appendix C Data

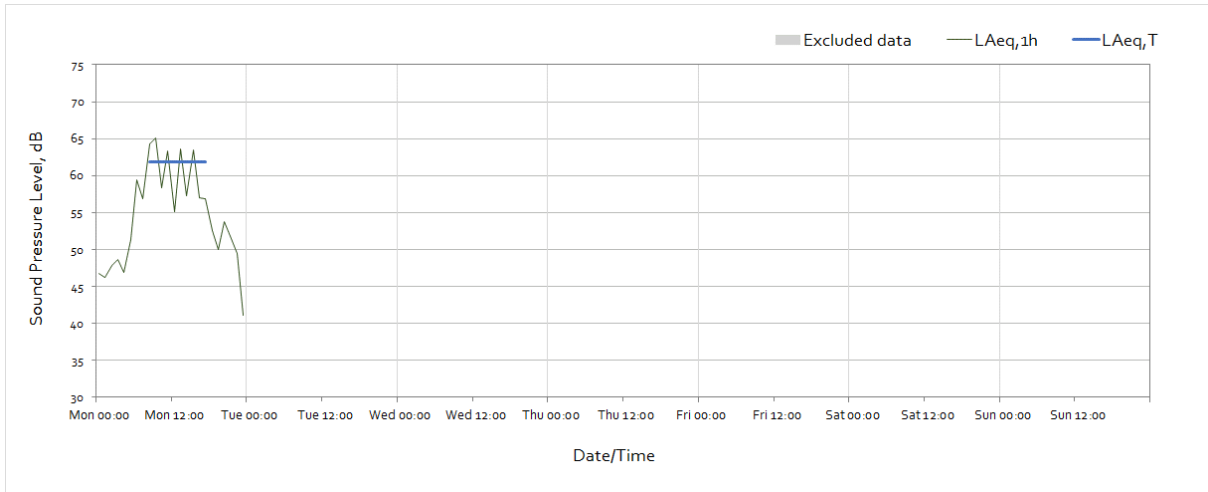
## Noise

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 Table 3 of the main report.

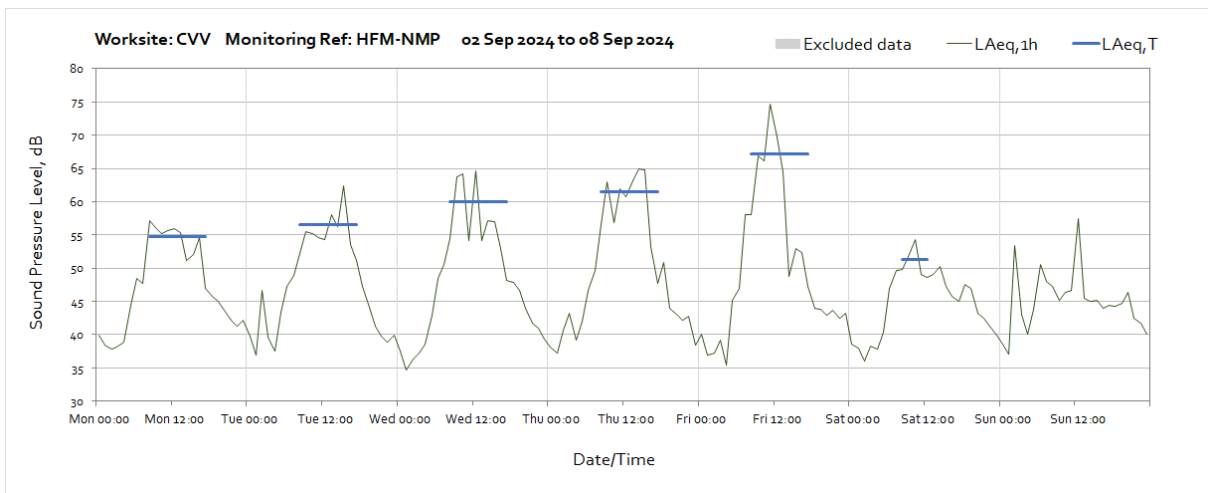
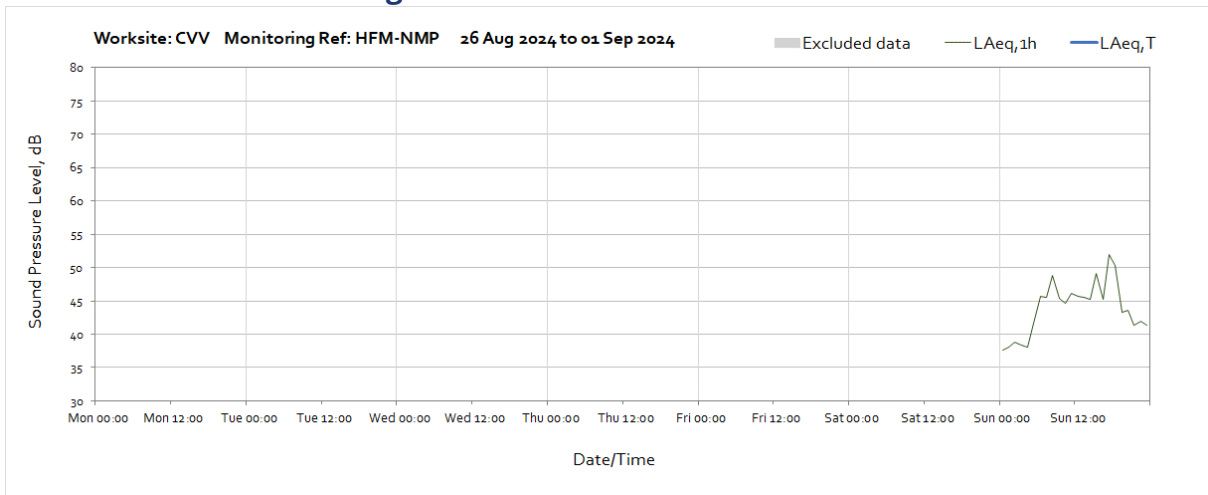
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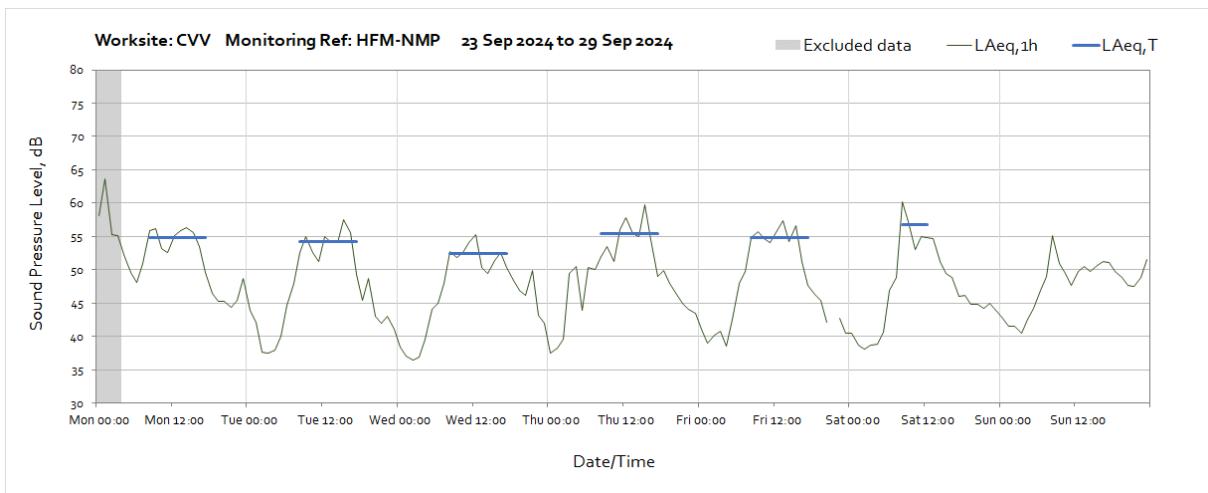
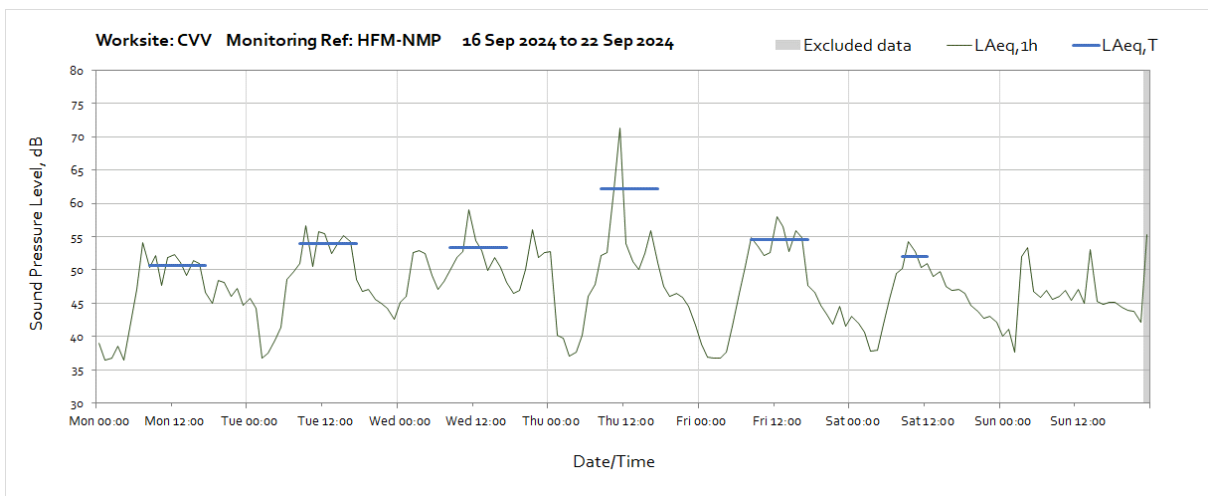
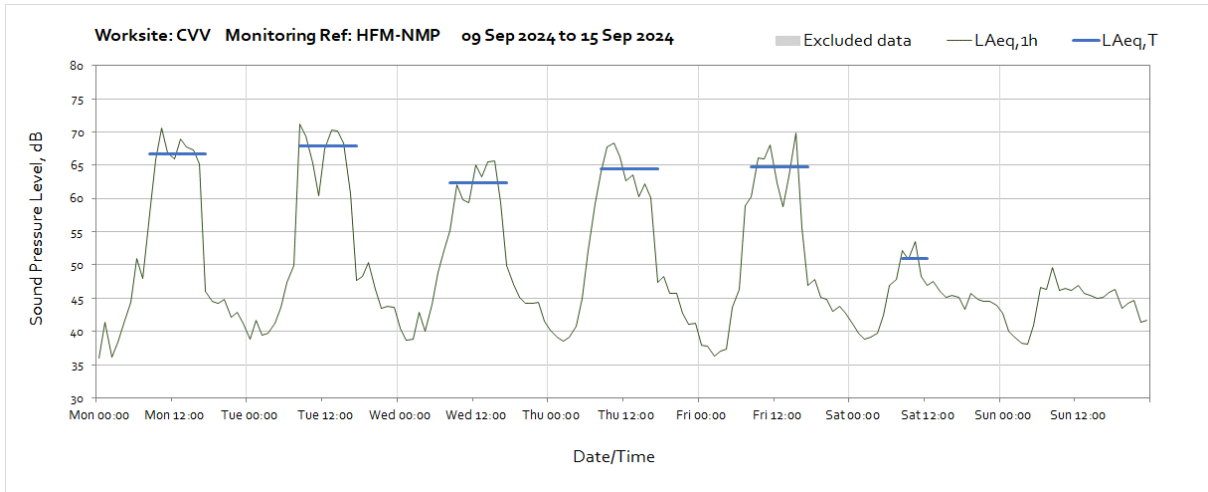




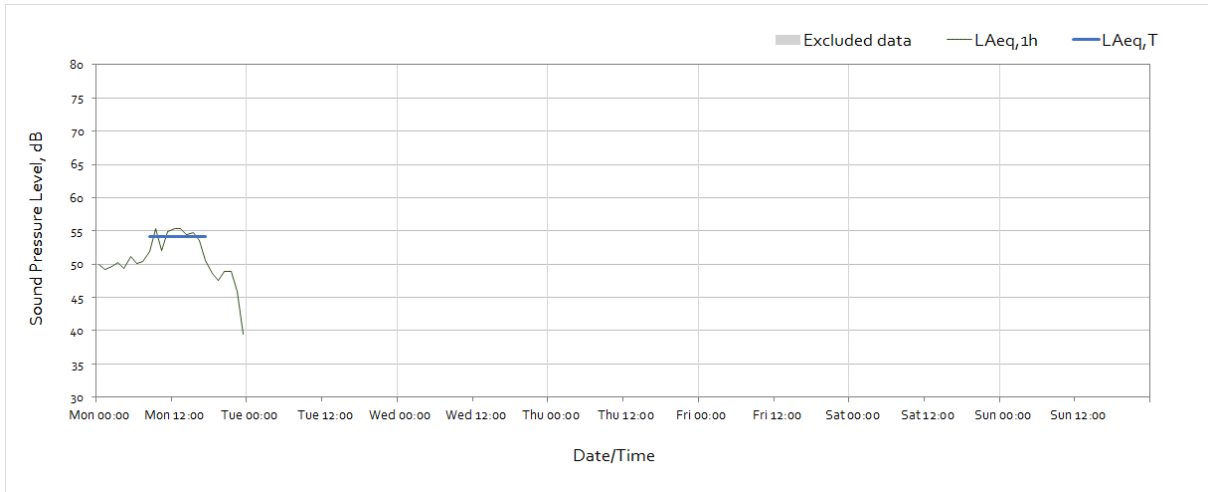
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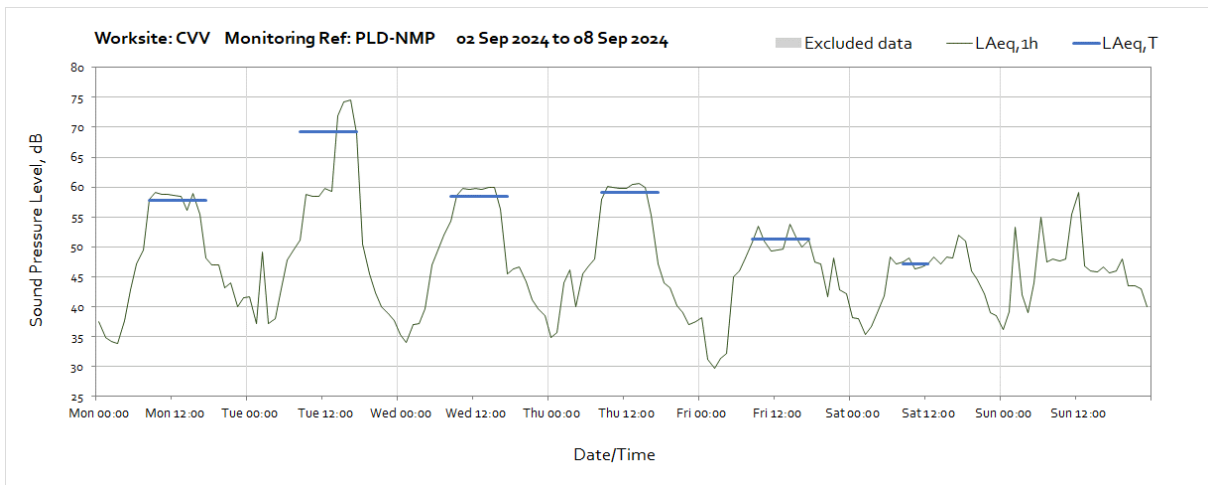
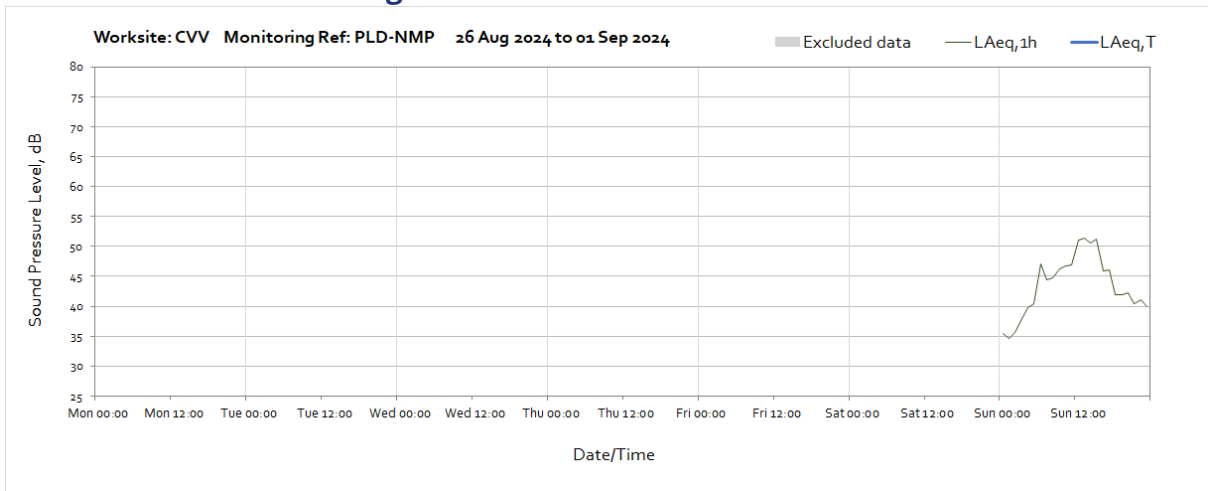


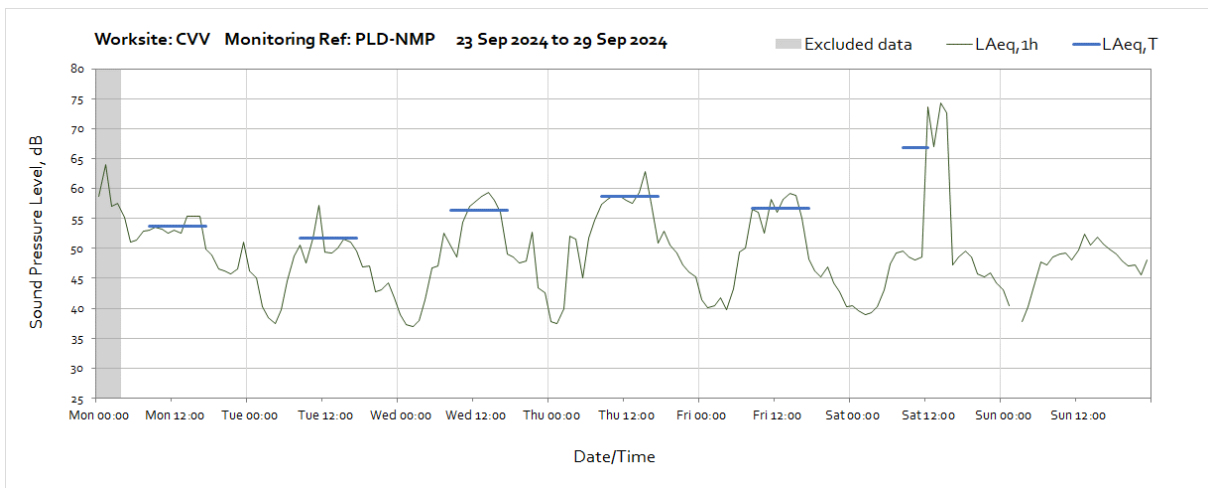
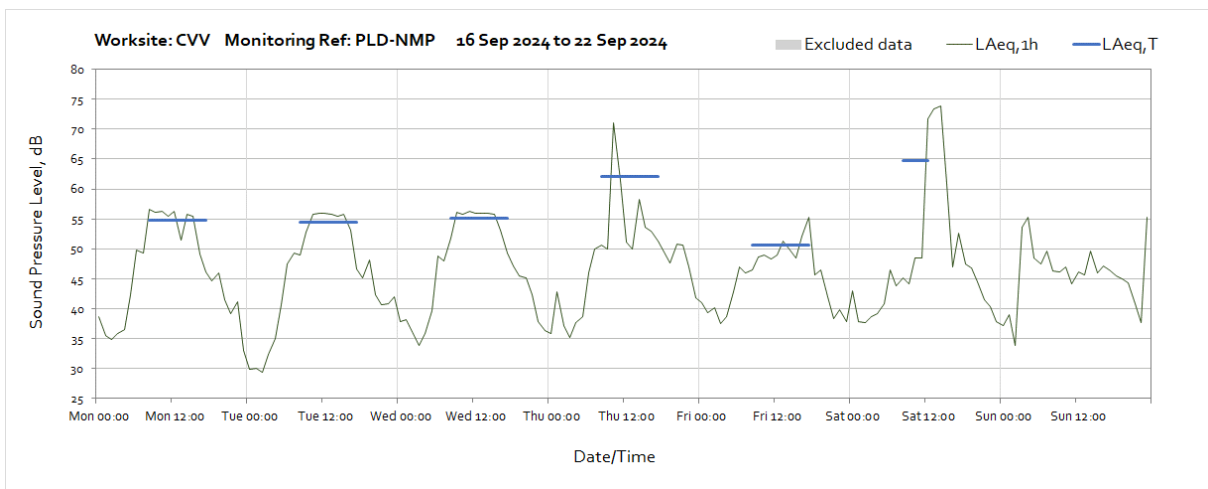
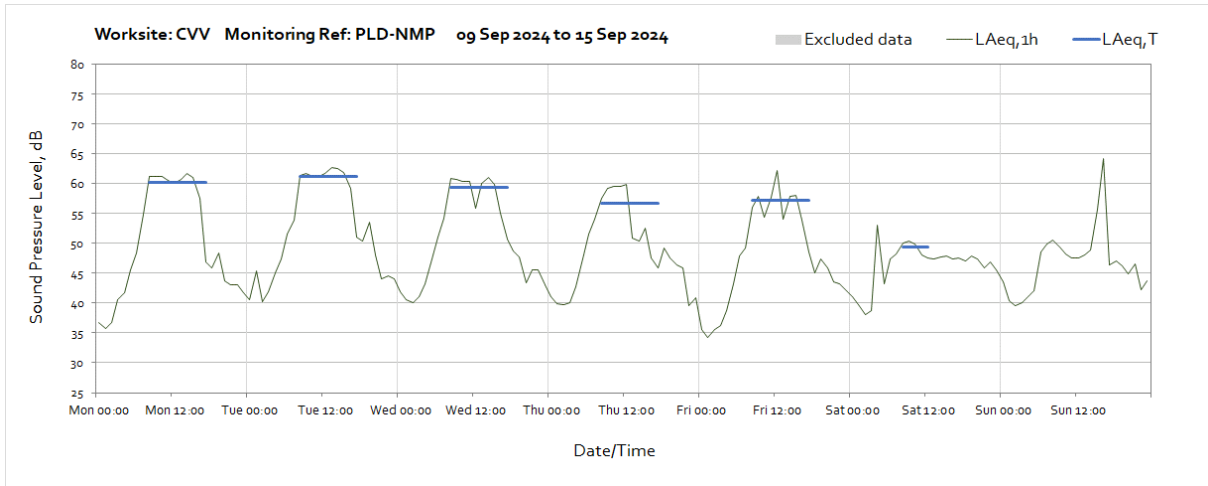


Note: Missing data between 20:00 and 21:00 on Friday 27<sup>th</sup> of September was due to a communication error between the monitoring station and the server.

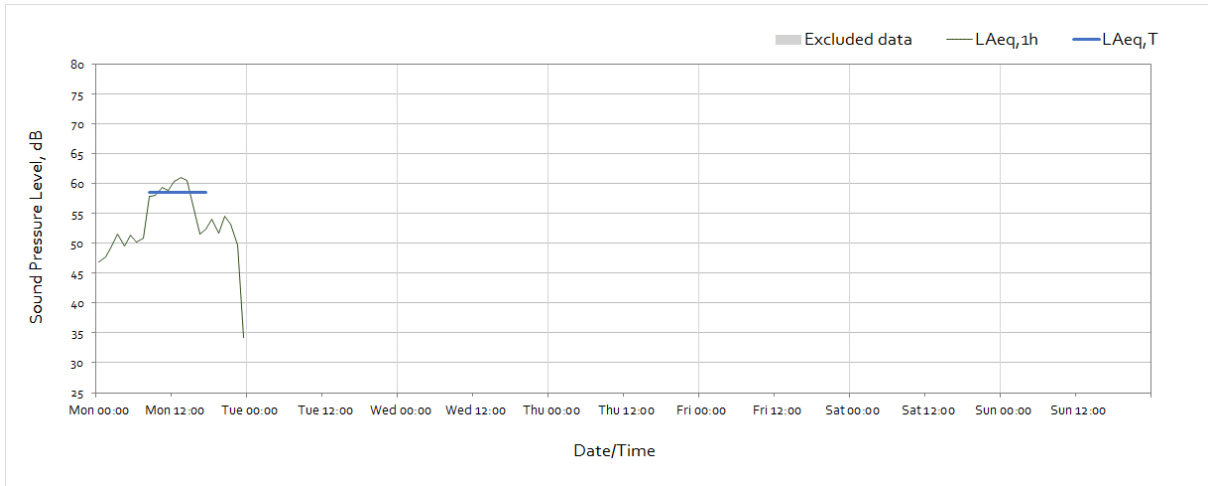


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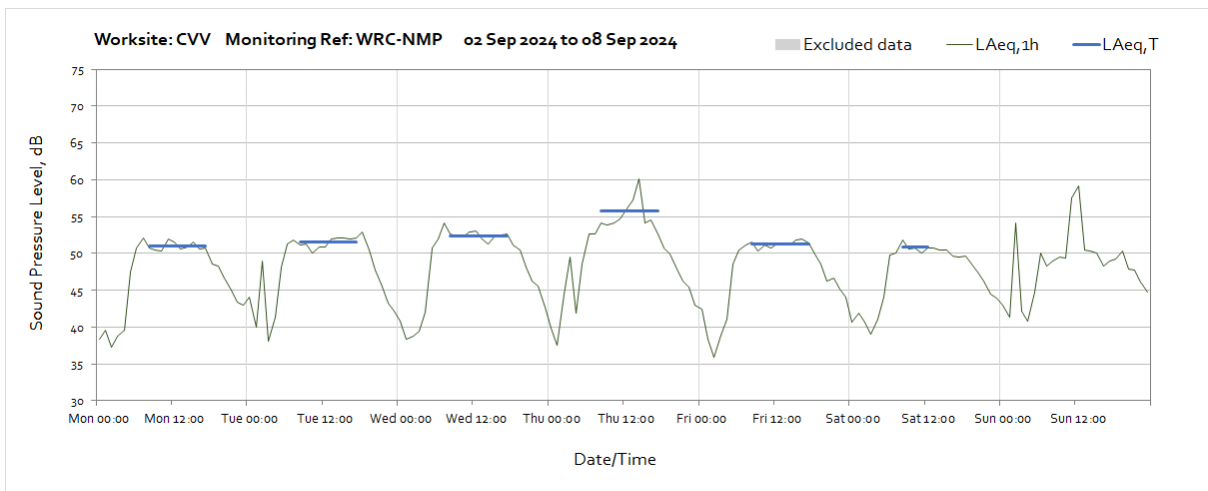
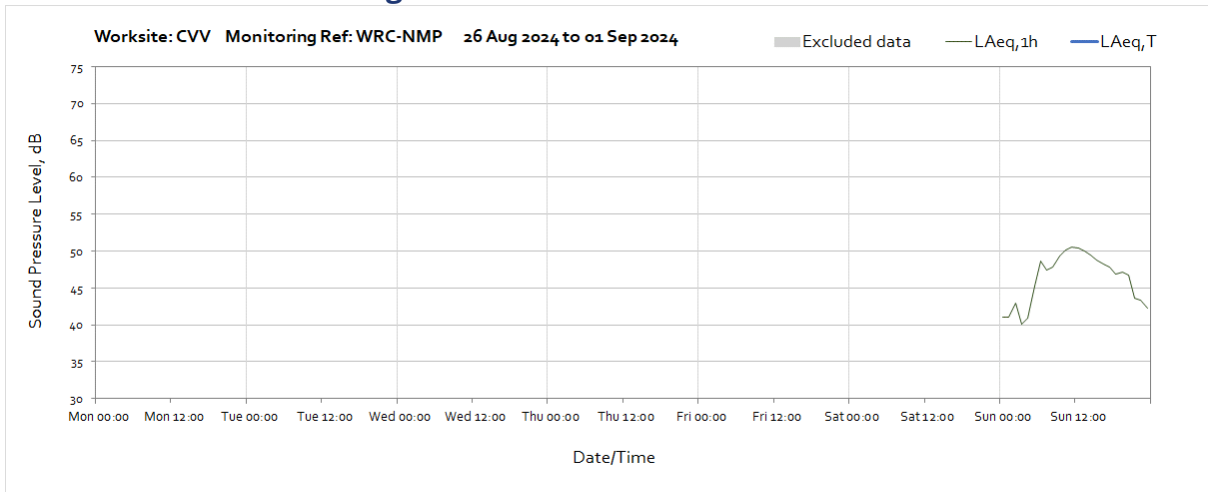


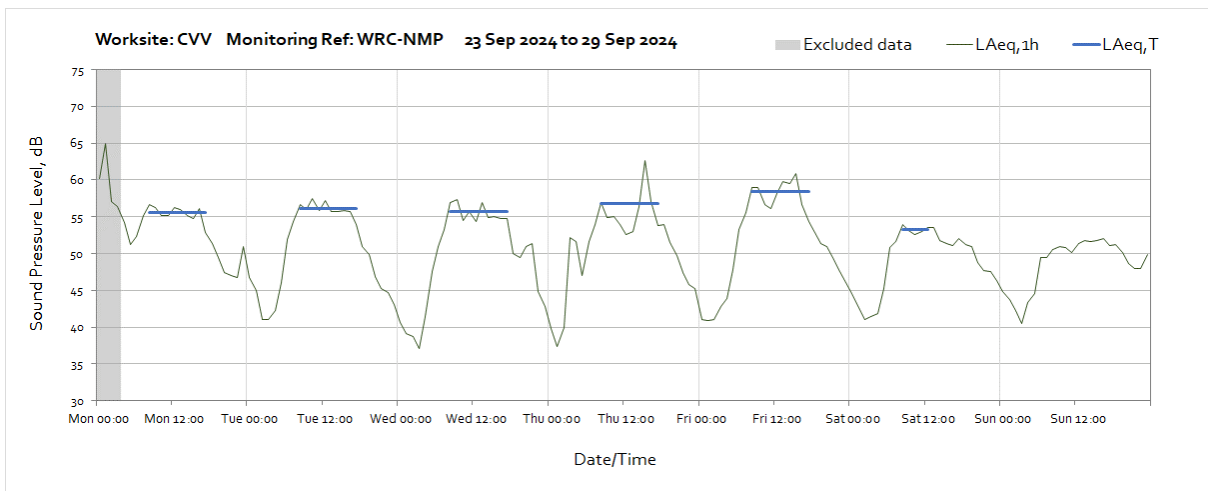
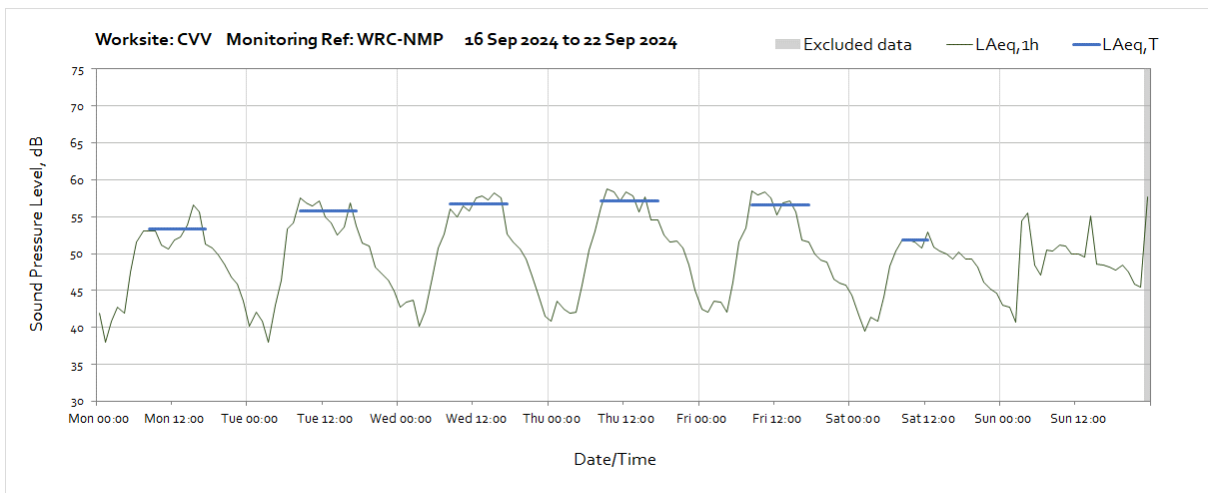
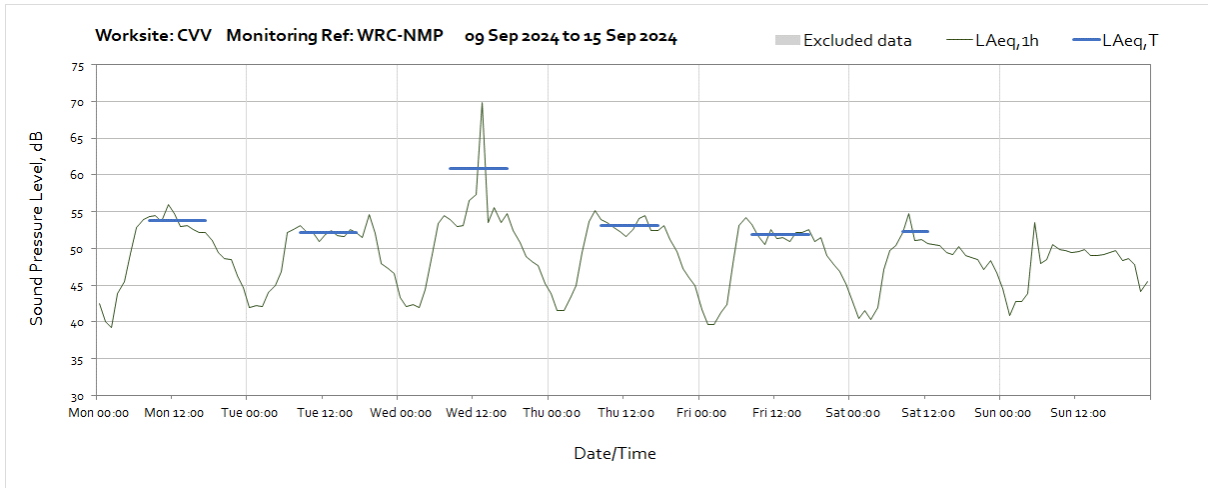


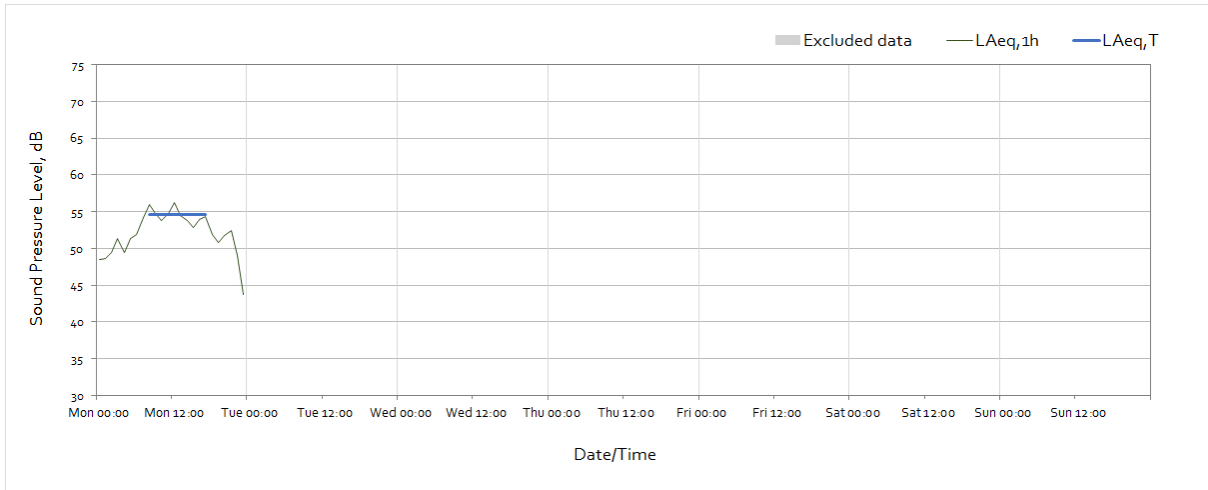
Note: Missing data between 01:00 and 03:00 on Sunday 29<sup>th</sup> of September was due to a communication error between the monitoring station and the server.



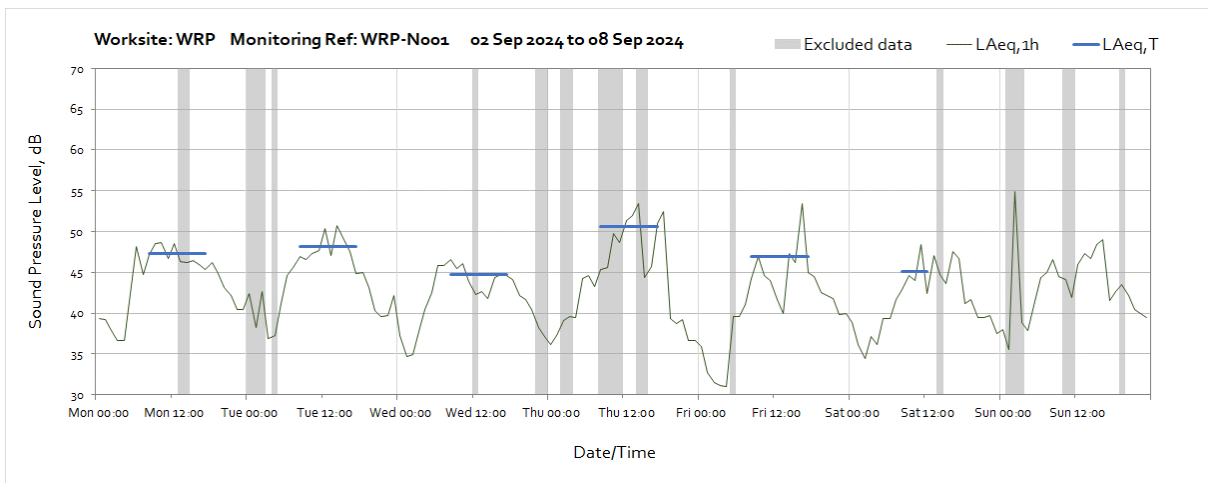
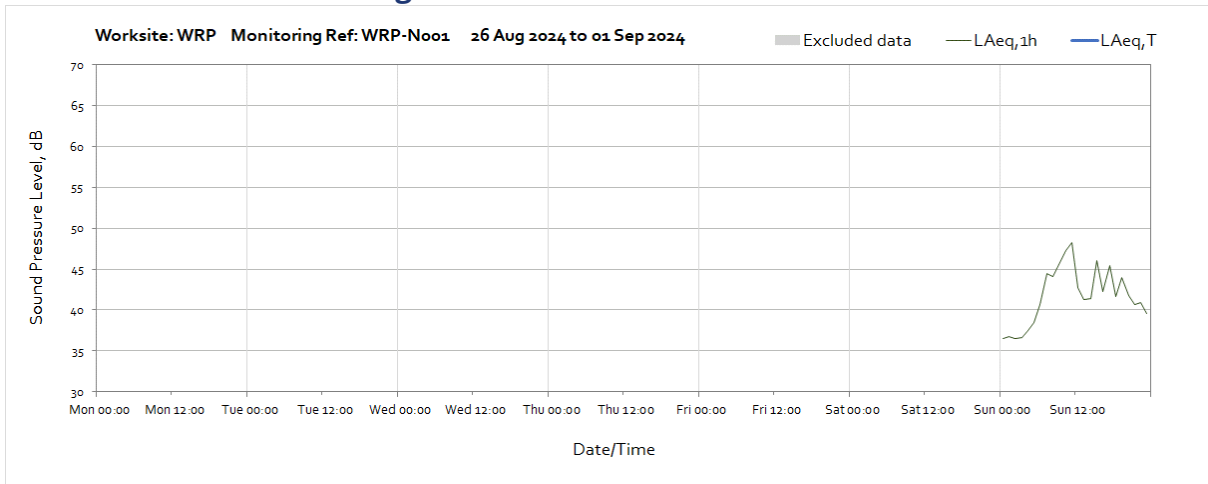
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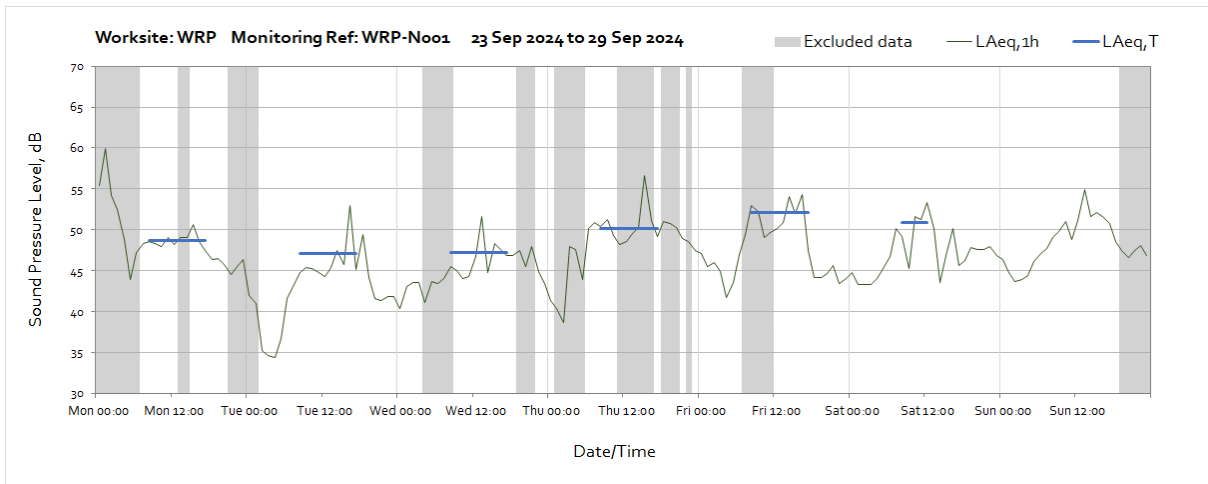
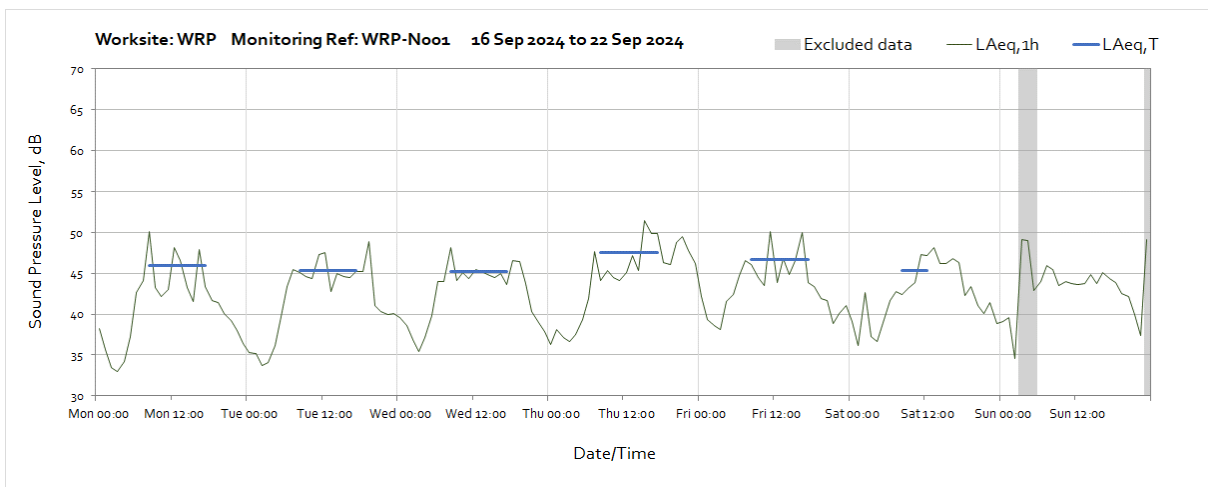
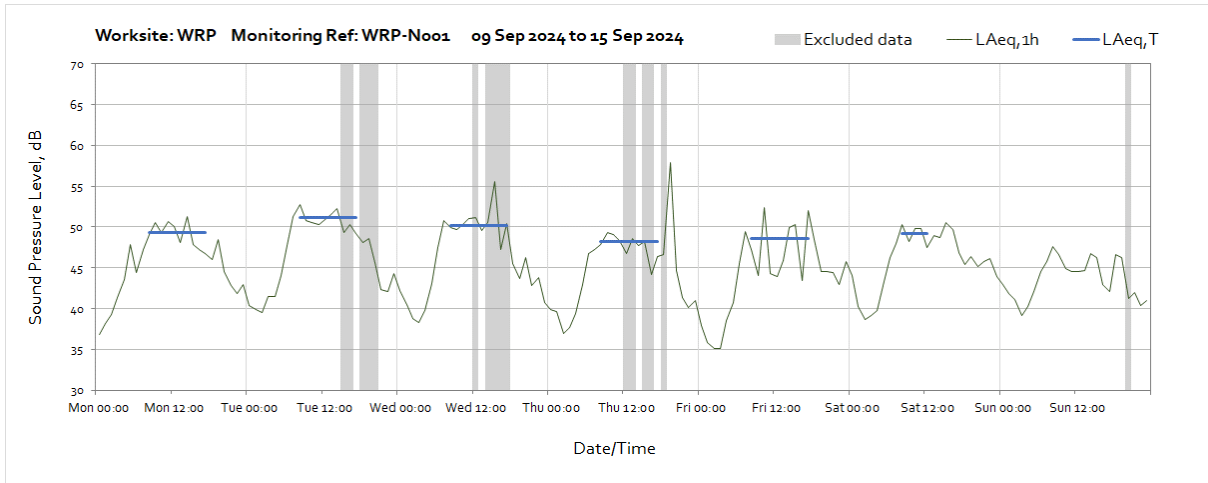


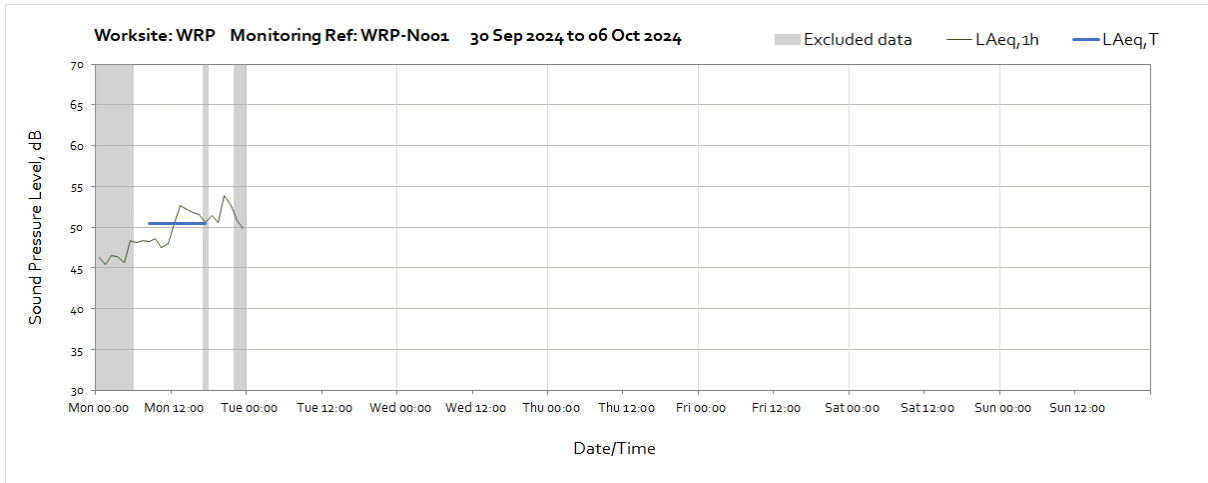




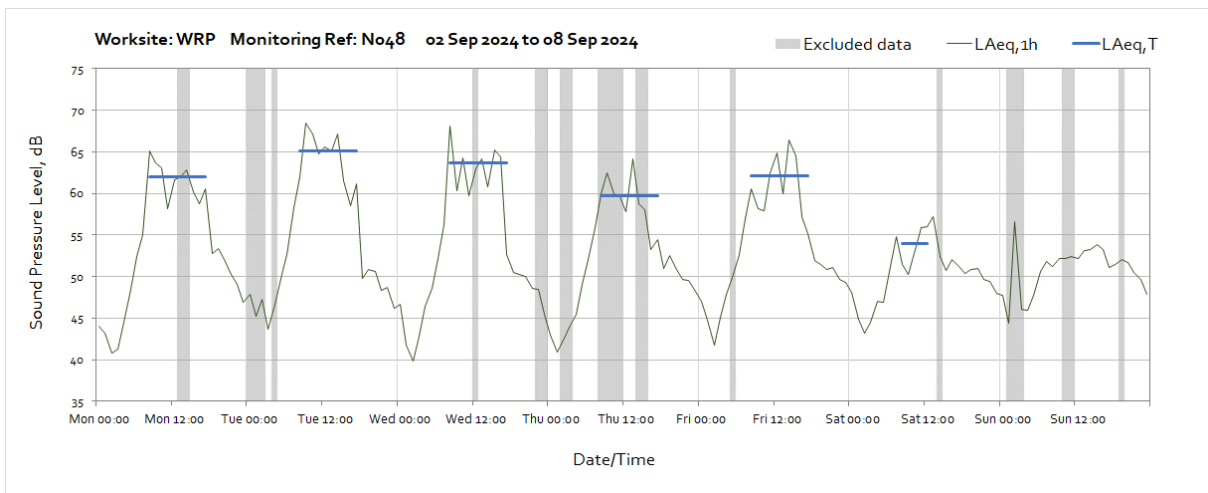
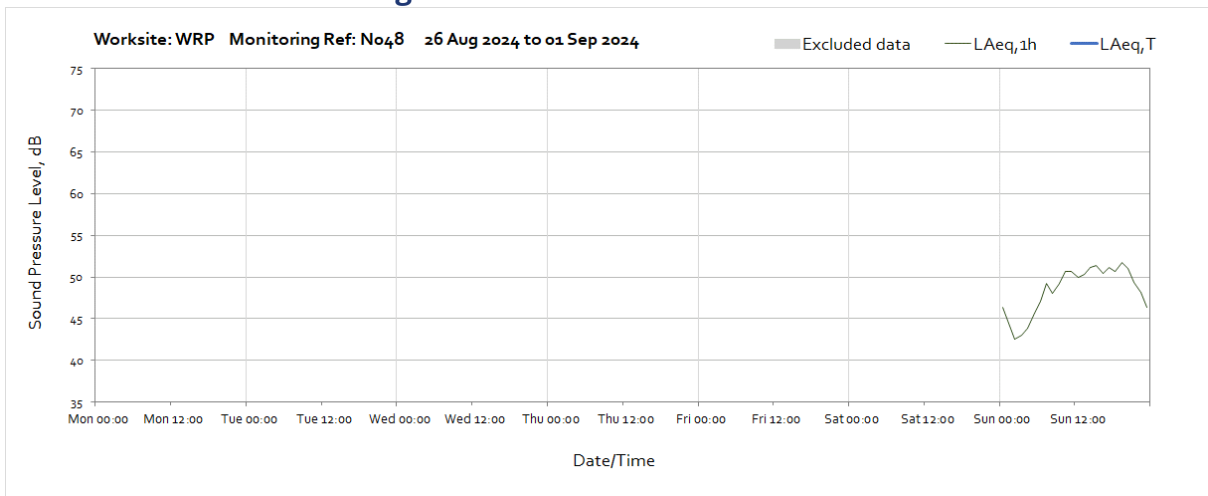
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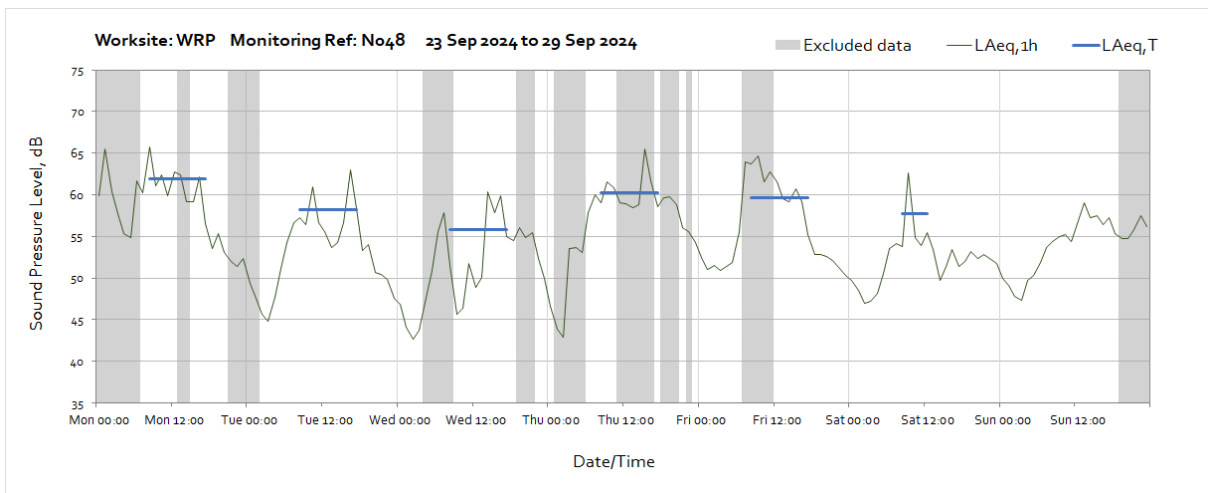
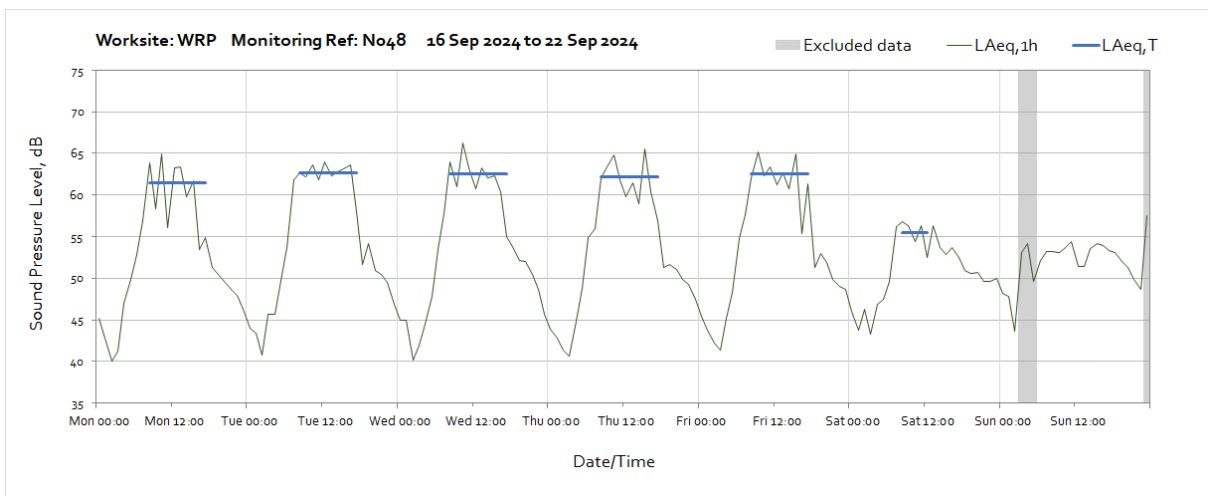
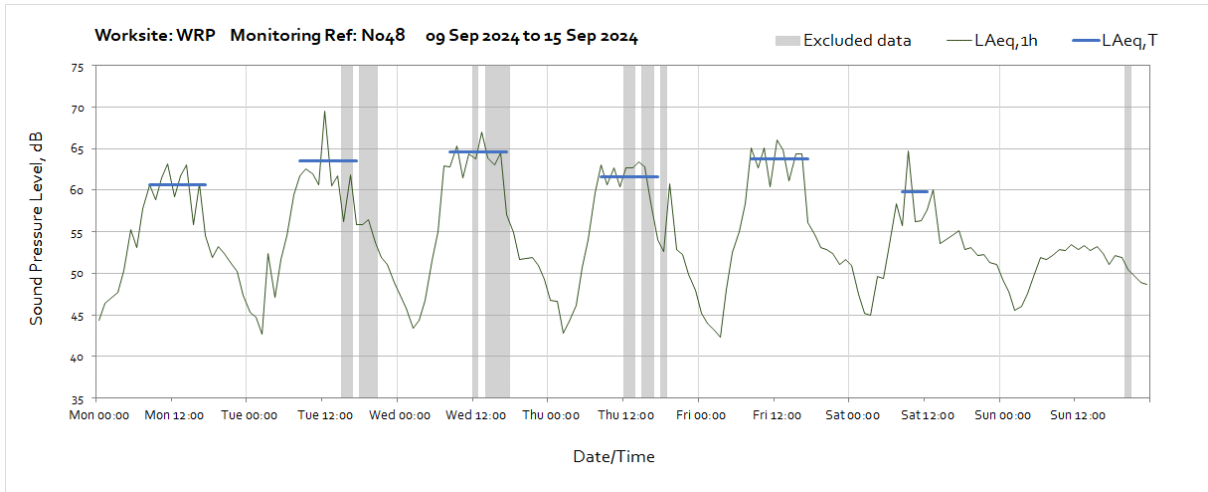


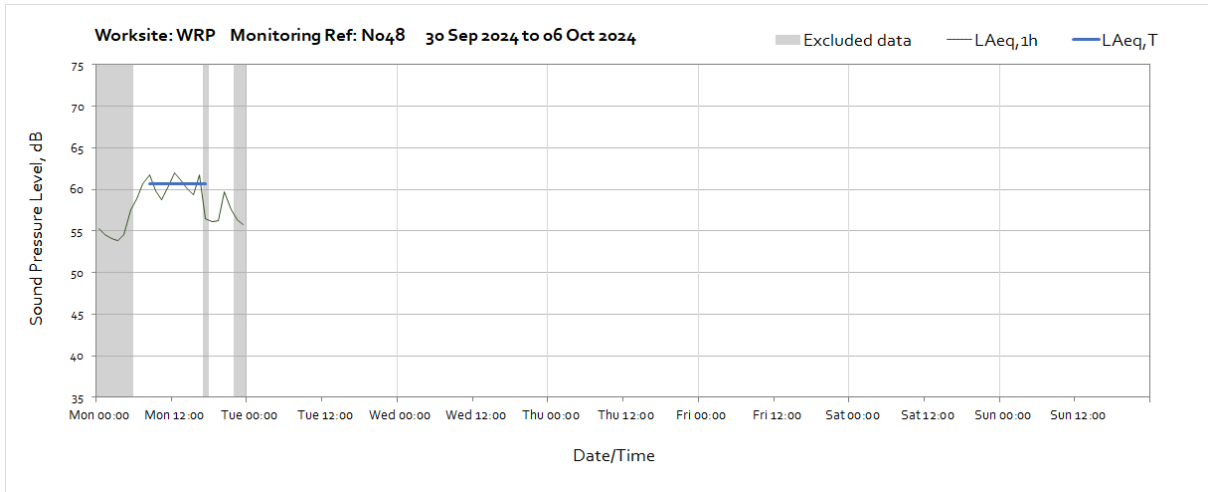


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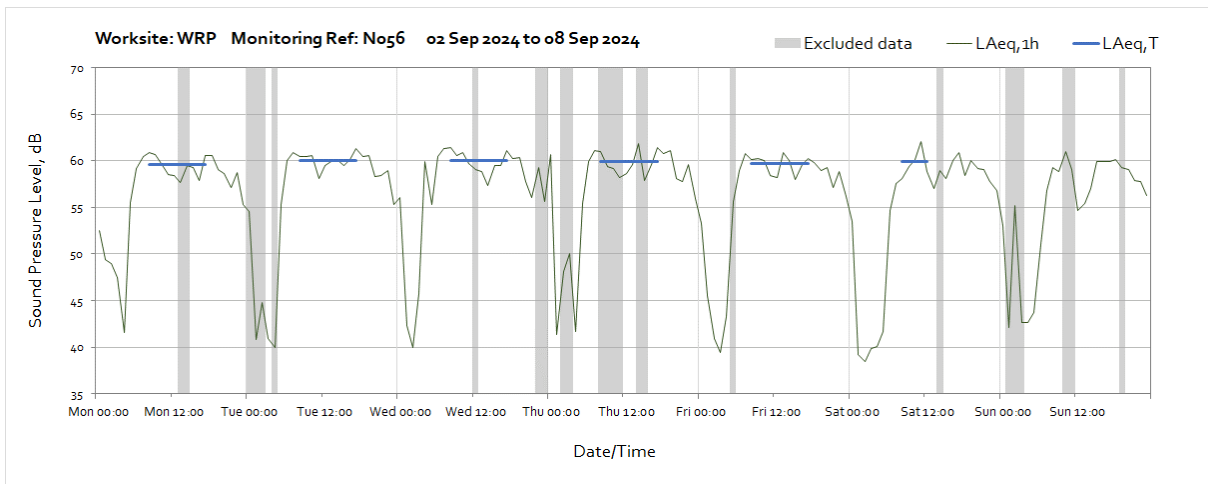
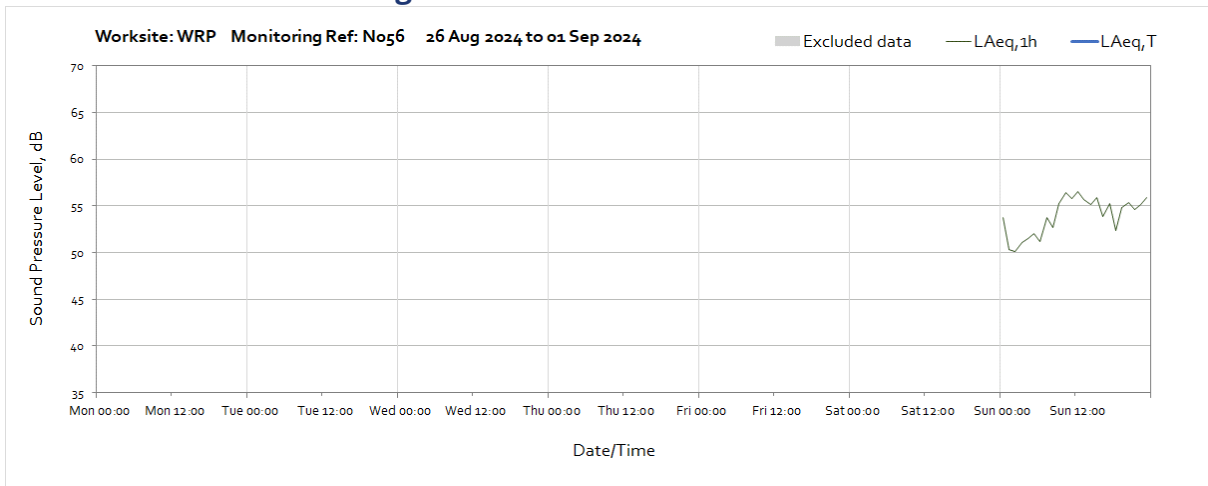


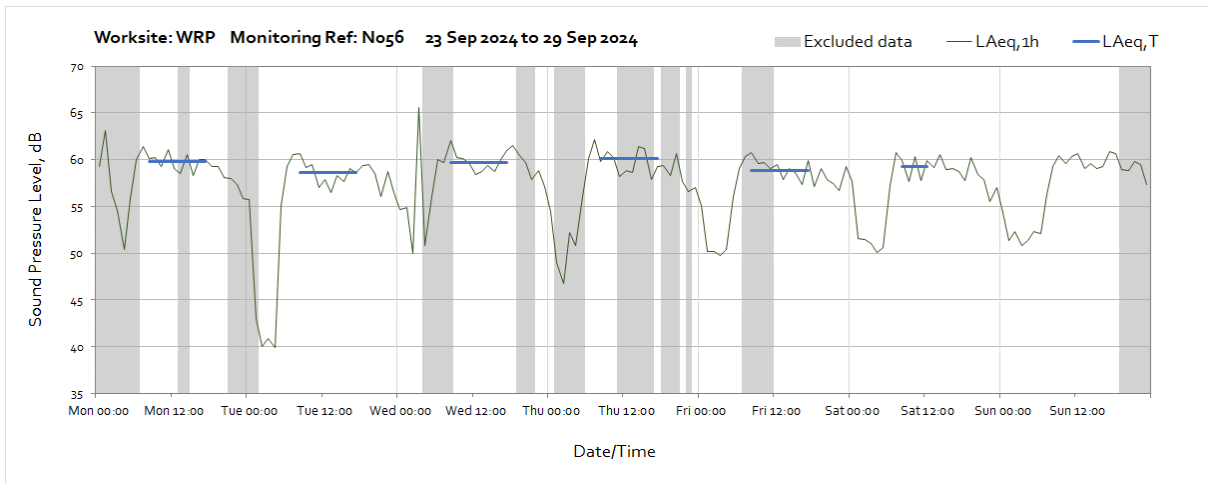
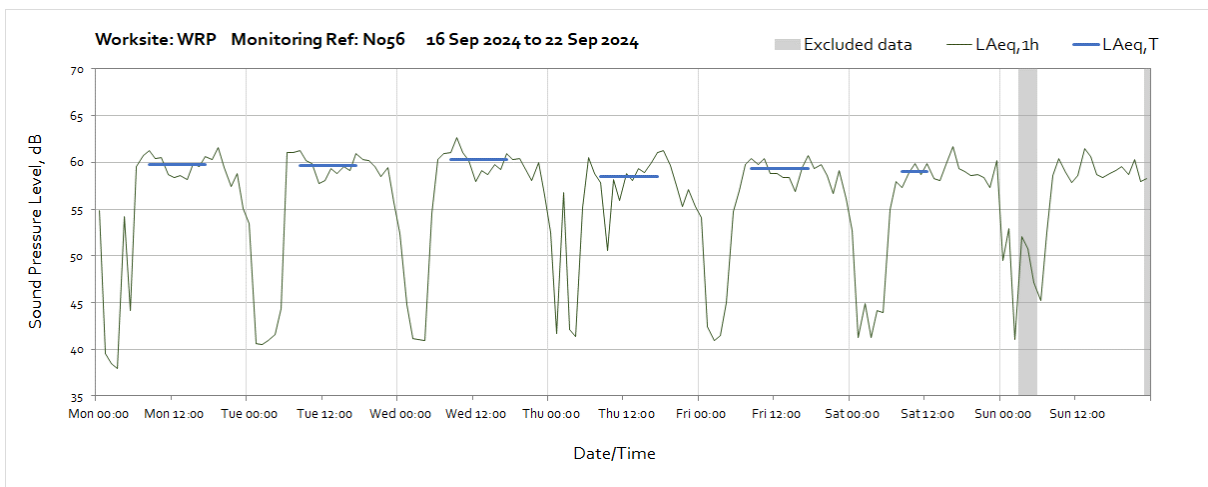
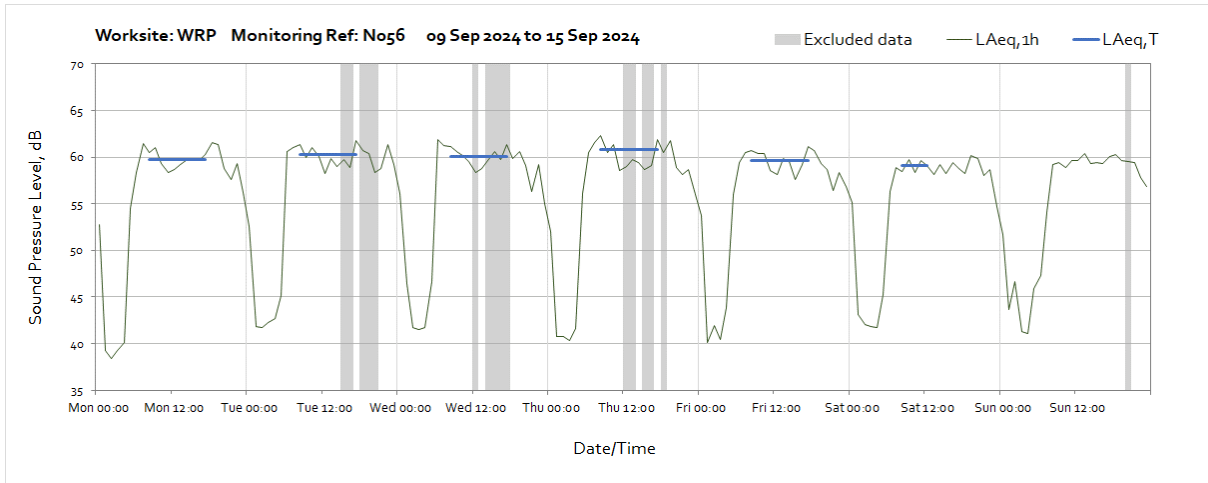


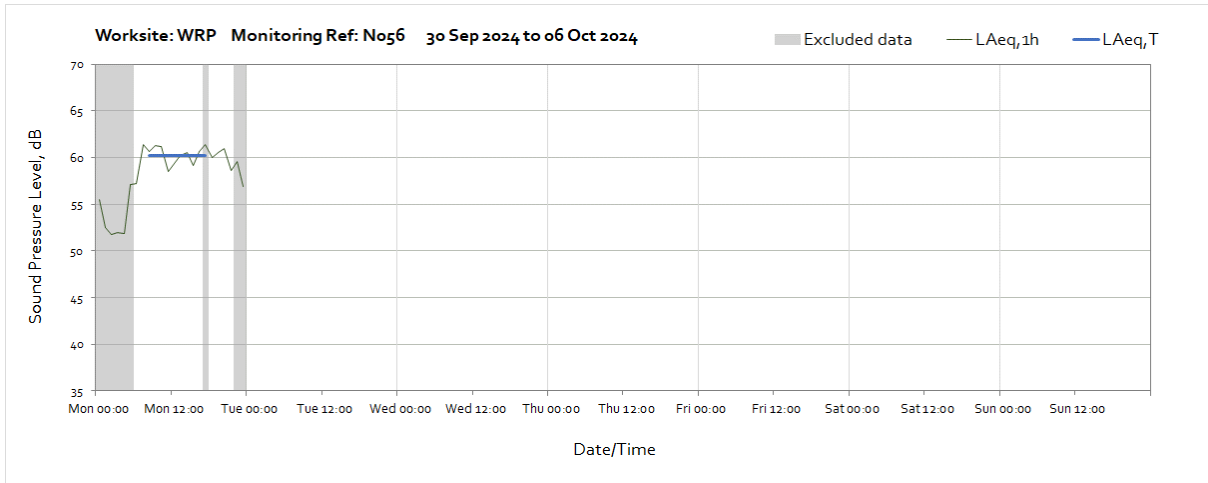




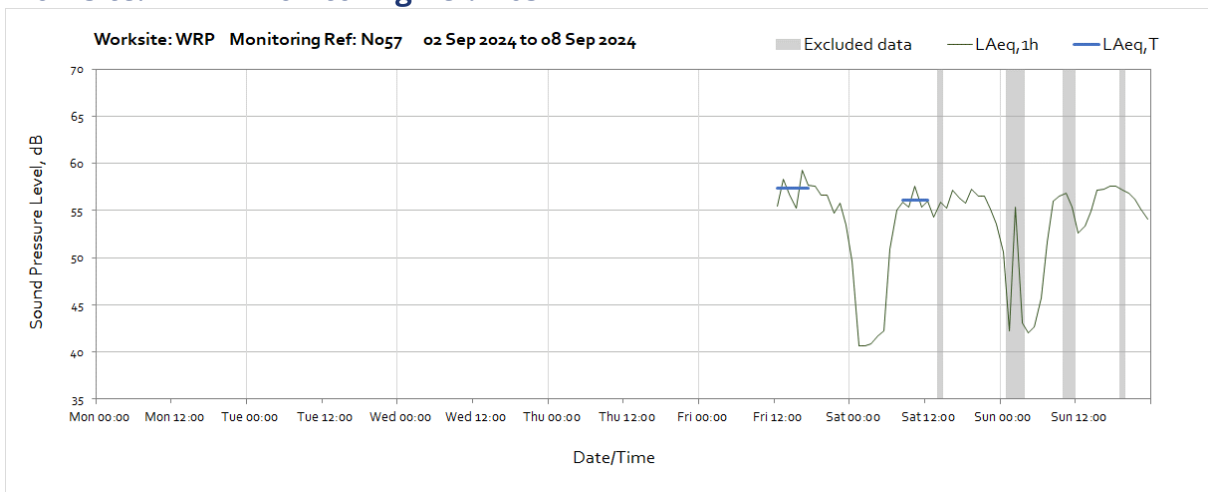
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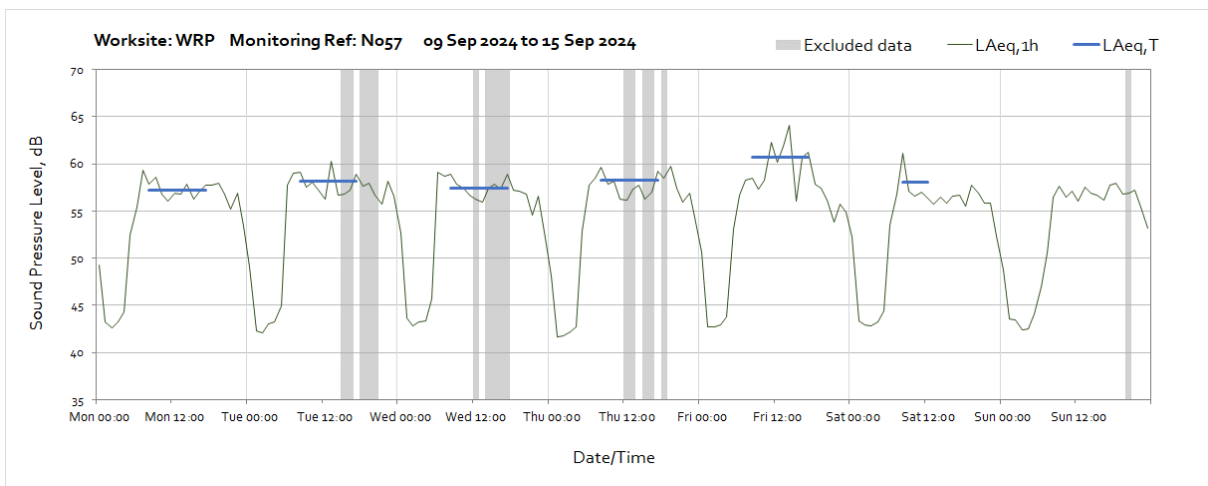


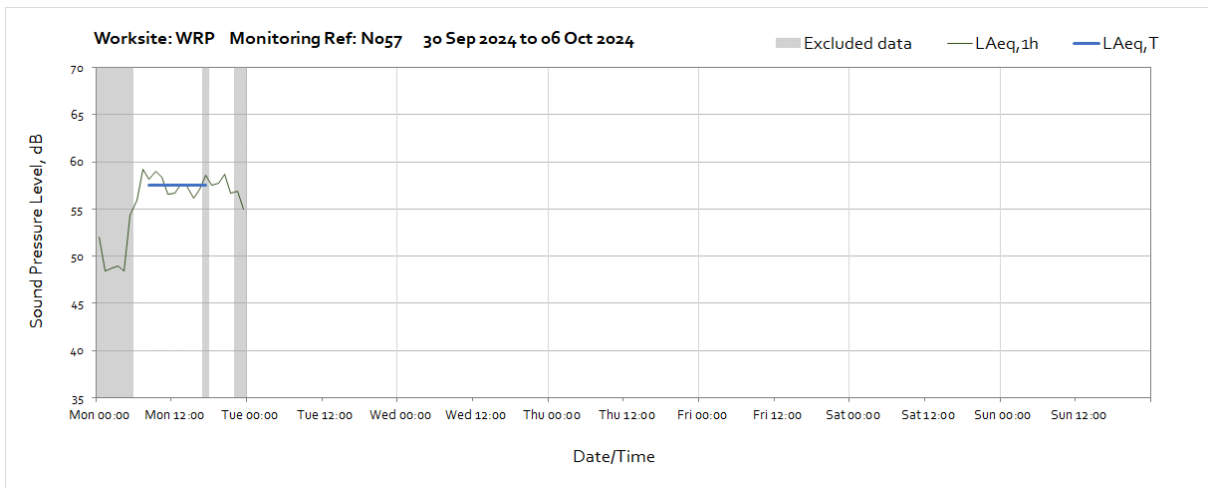
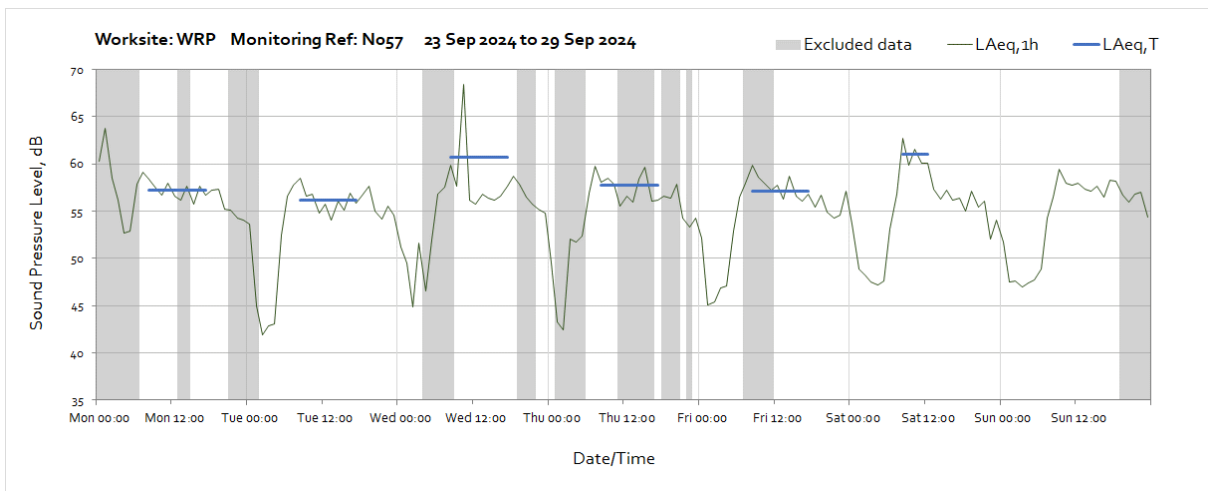
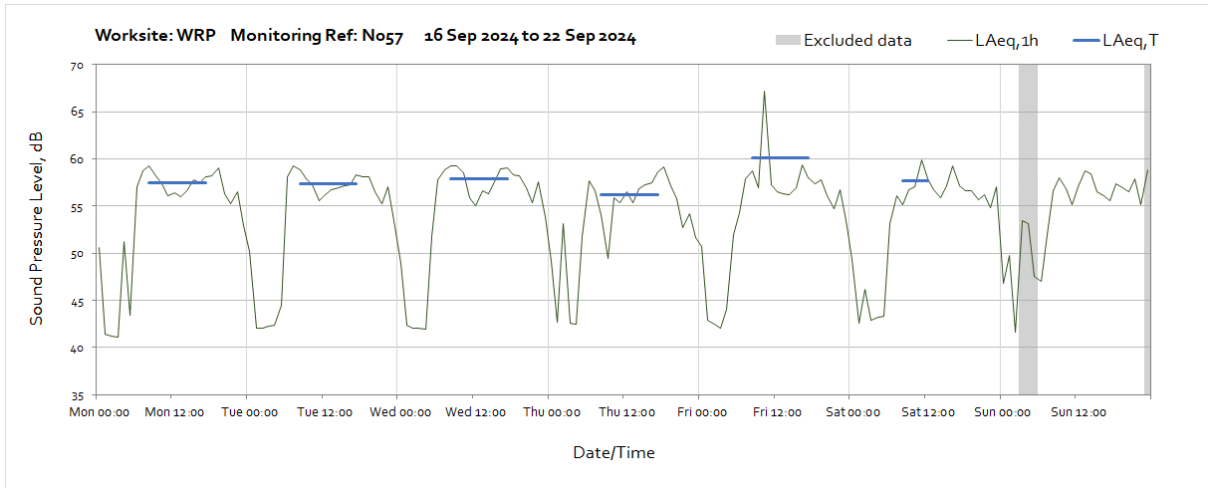


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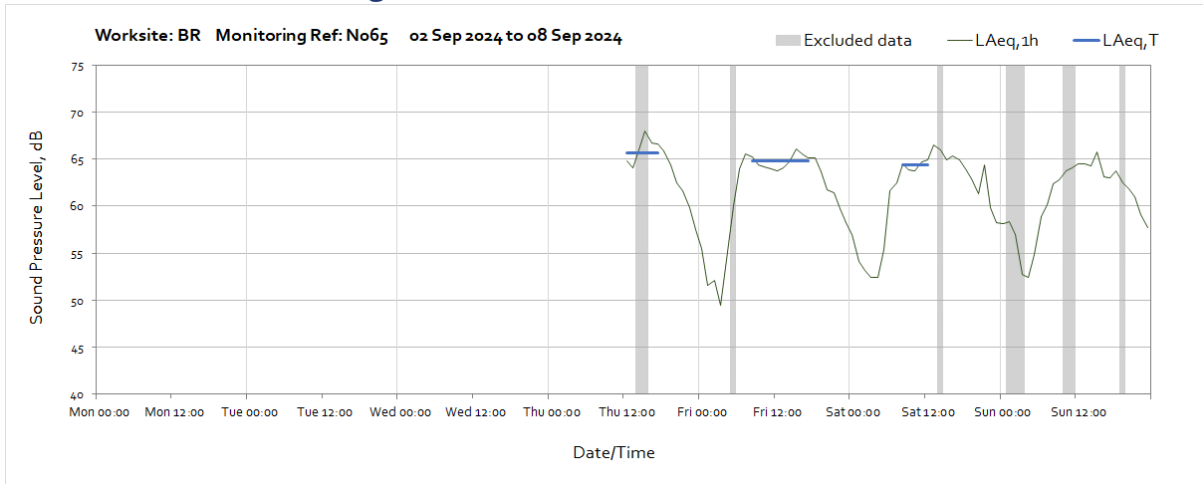


Note: Missing data between the start of the month and 11:00 on Friday 6<sup>th</sup> of September was due to a memory card error.

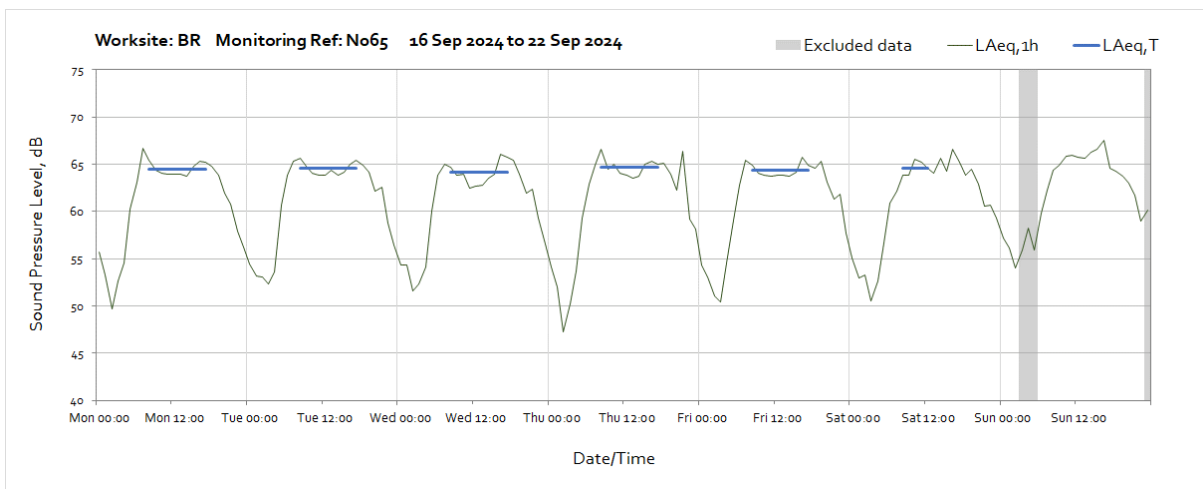
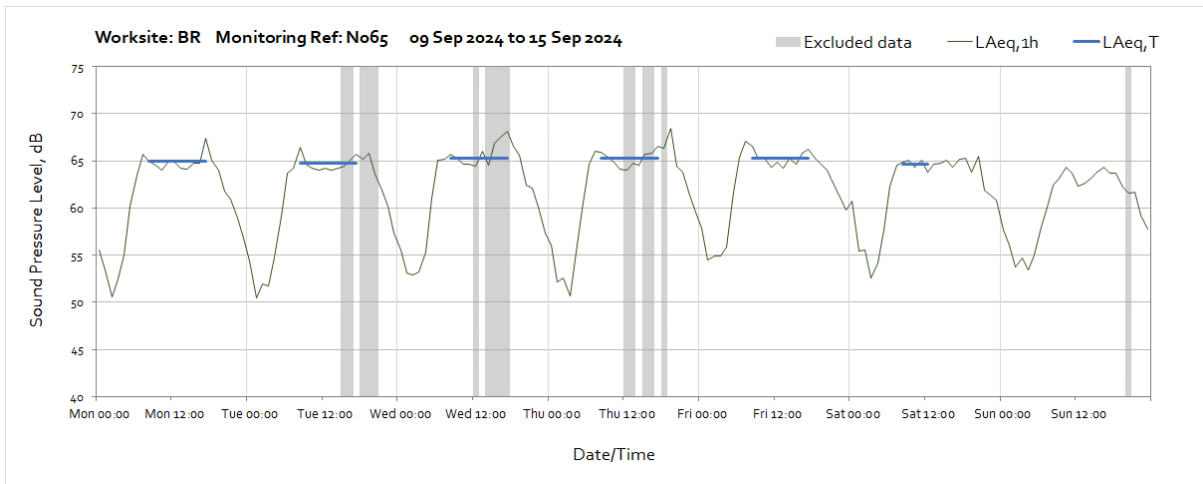


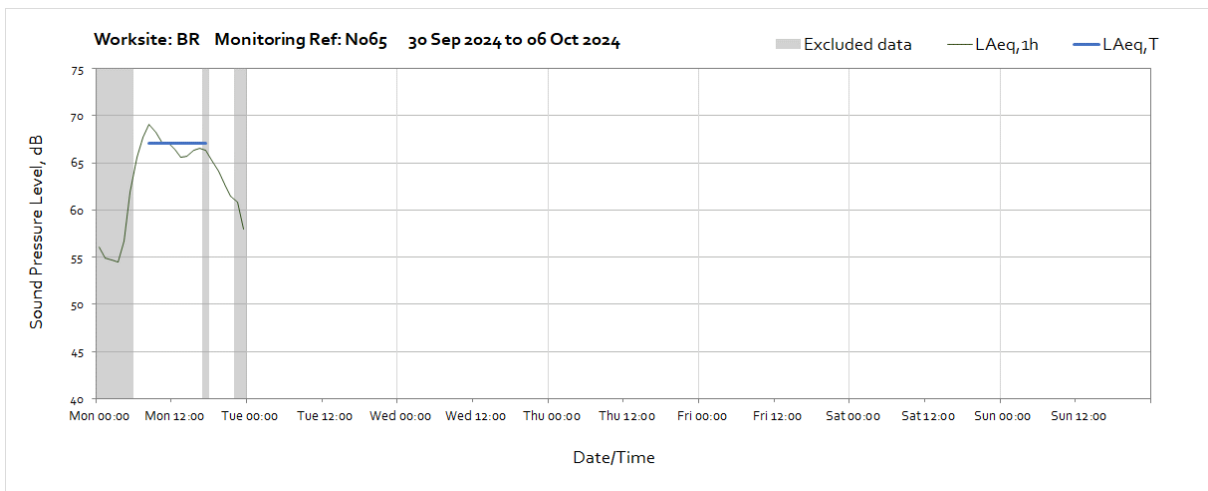
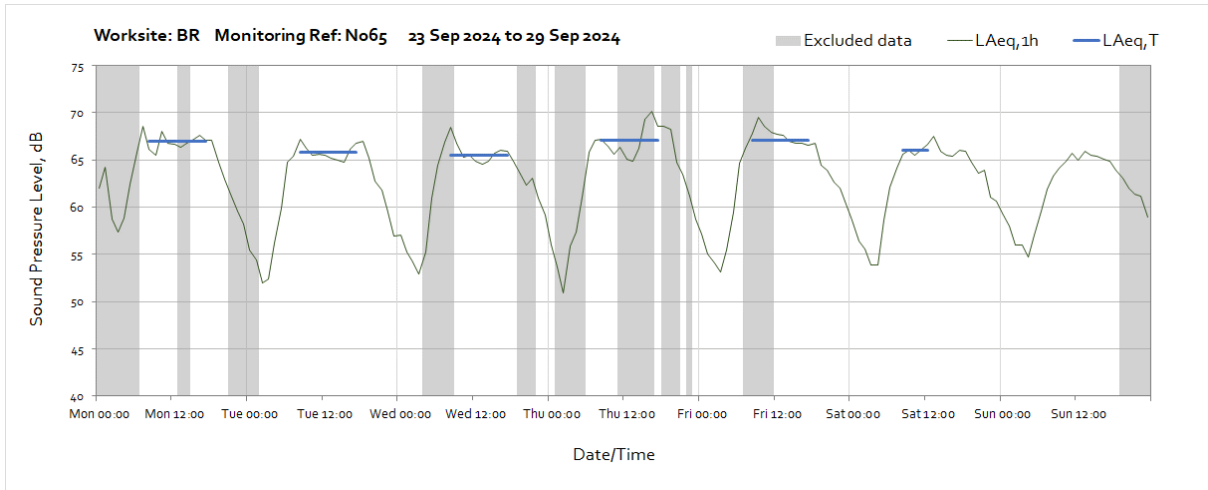


## Worksite: BR – Monitoring Ref: N065

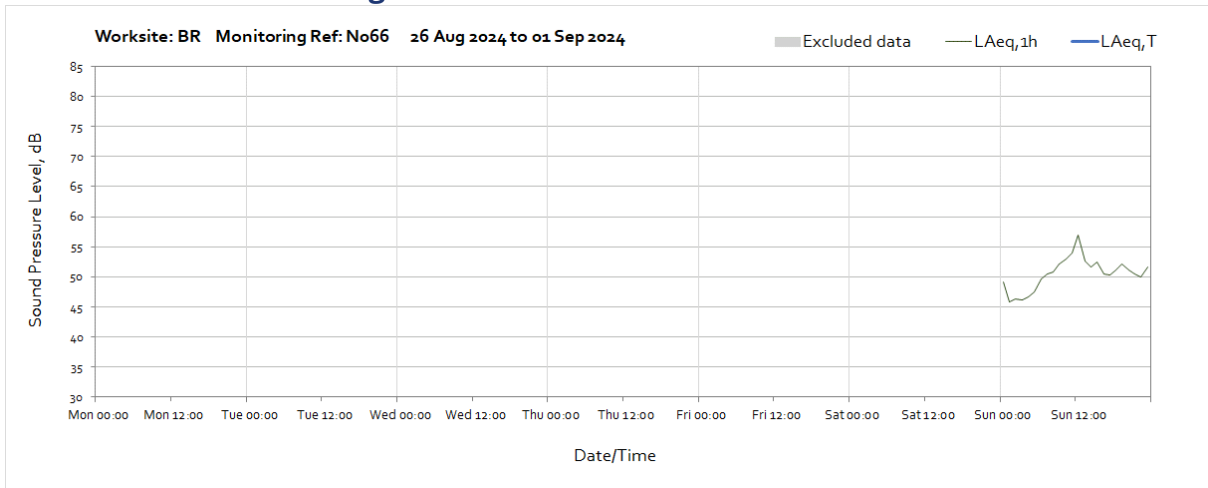


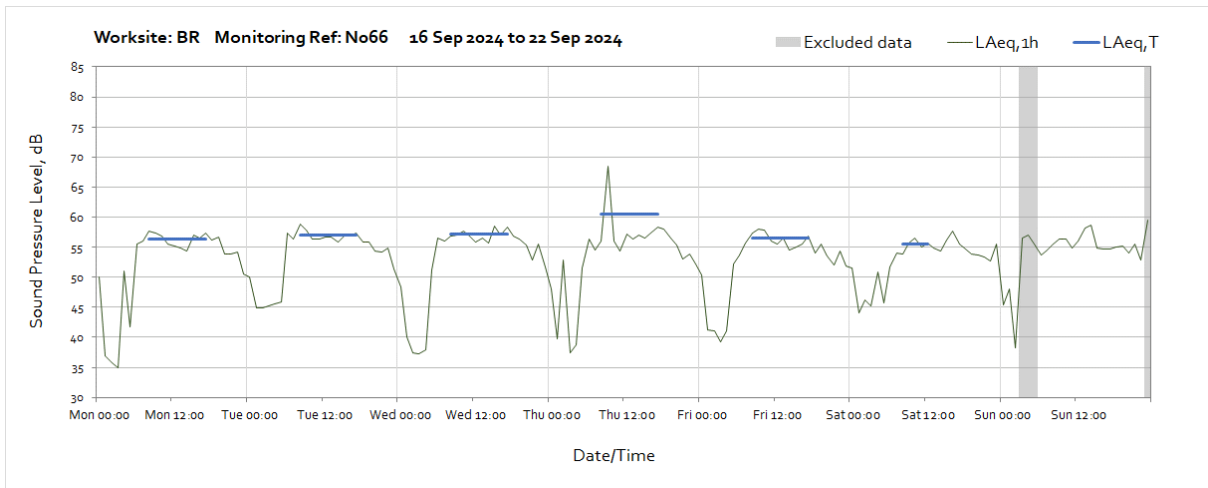
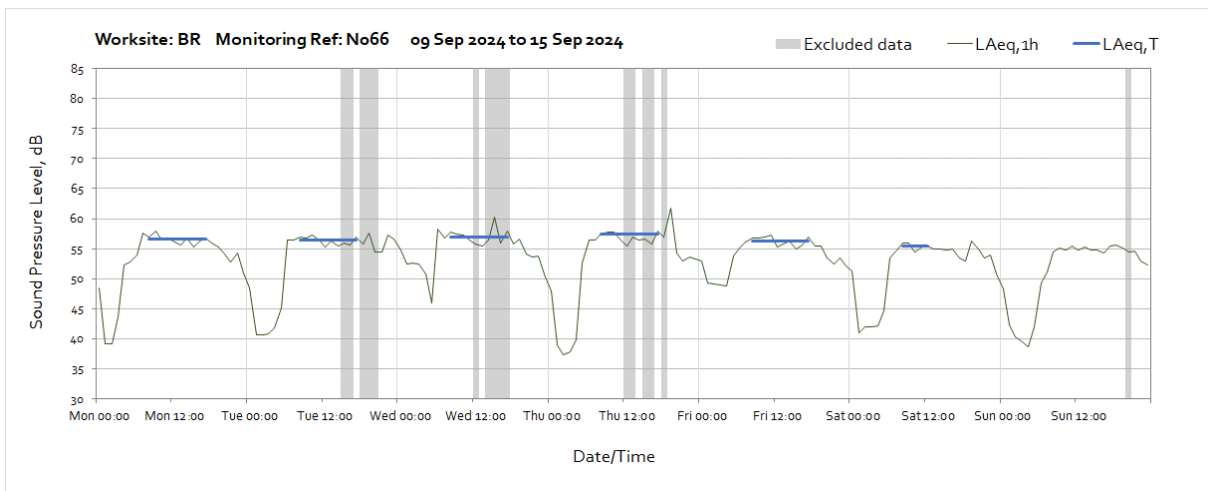
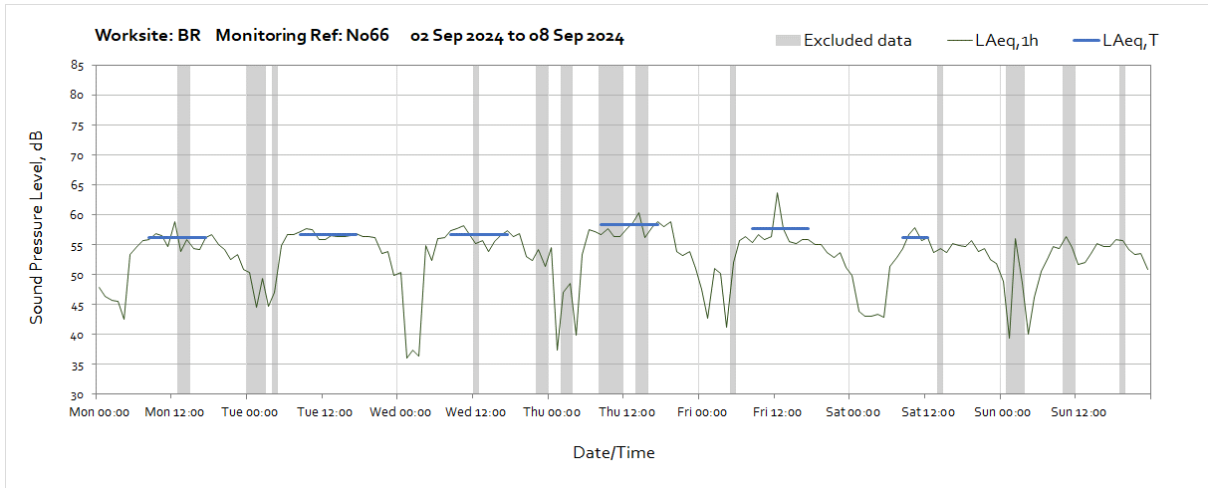
Note: Missing data from the start of the month until 11:00 on Thursday 05<sup>th</sup> of September was due to a loss of power to the monitoring station caused by poor weather conditions preventing sufficient light reach the solar panel.



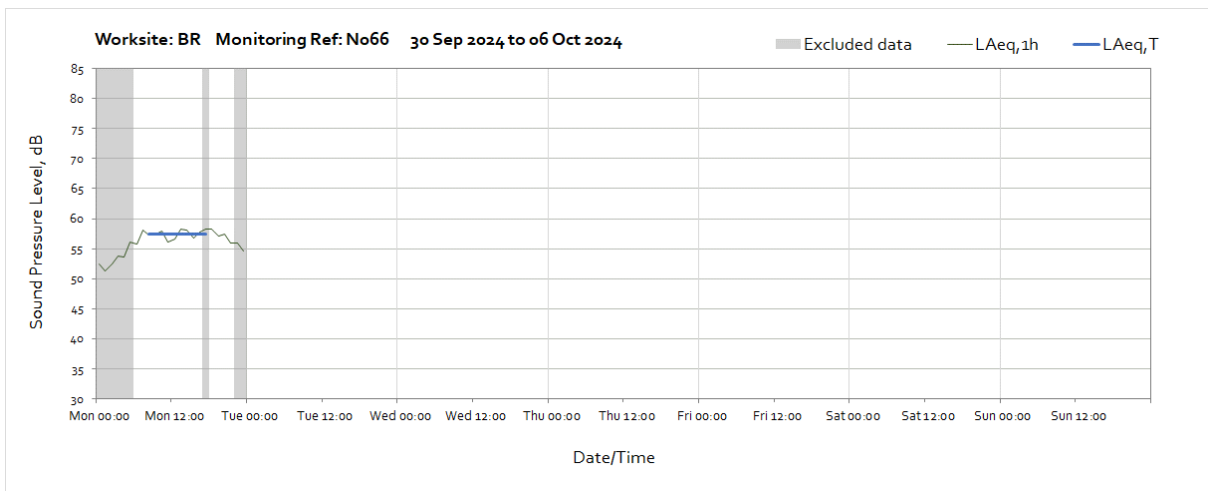
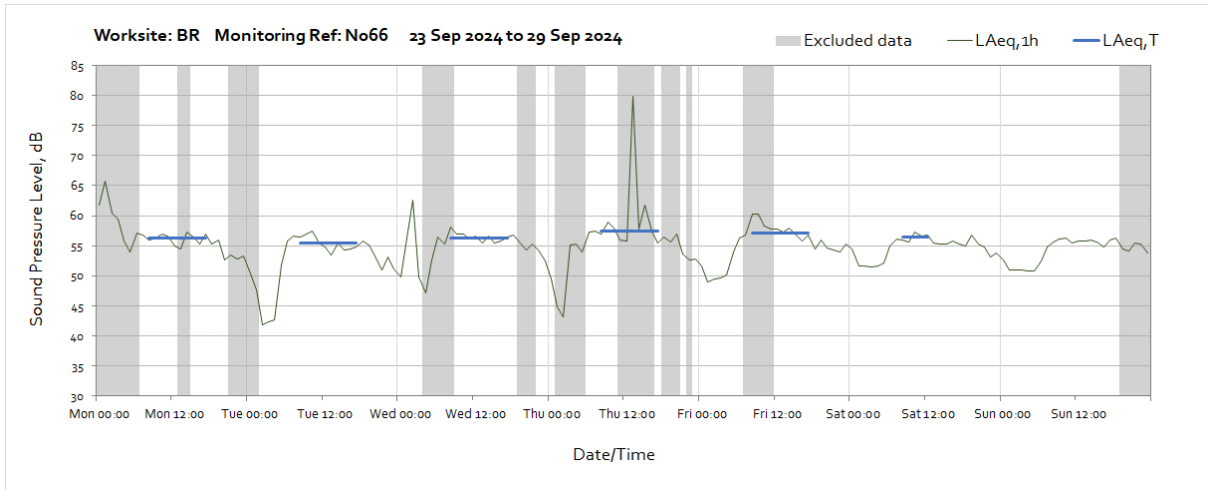


**Worksite: BR – Monitoring Ref: N066**

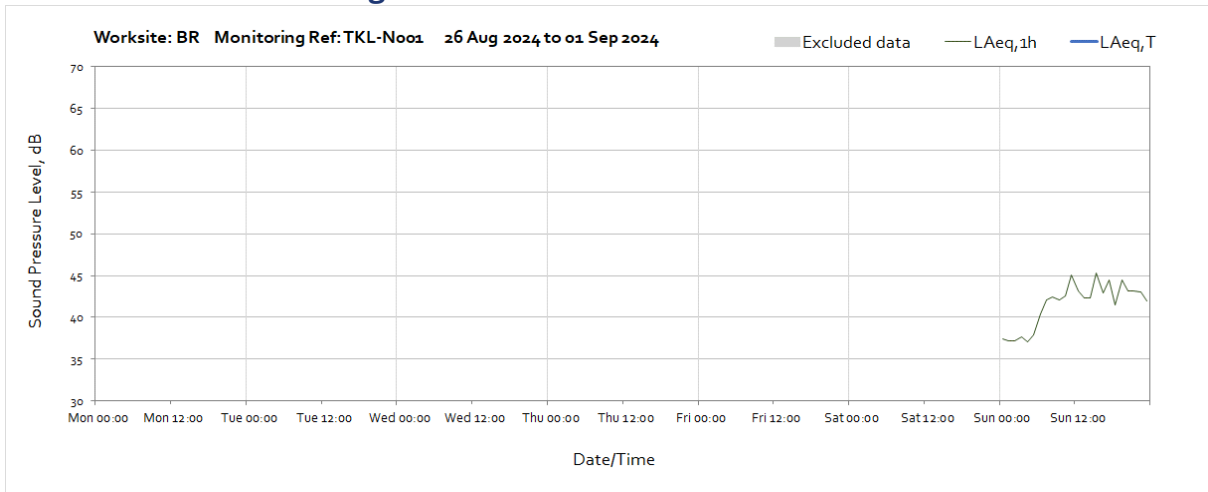


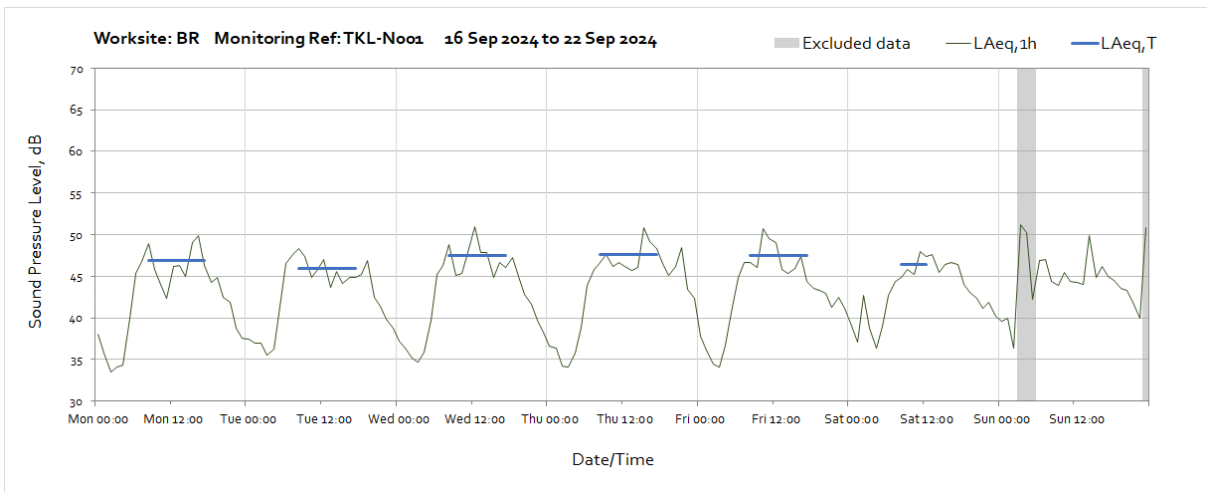
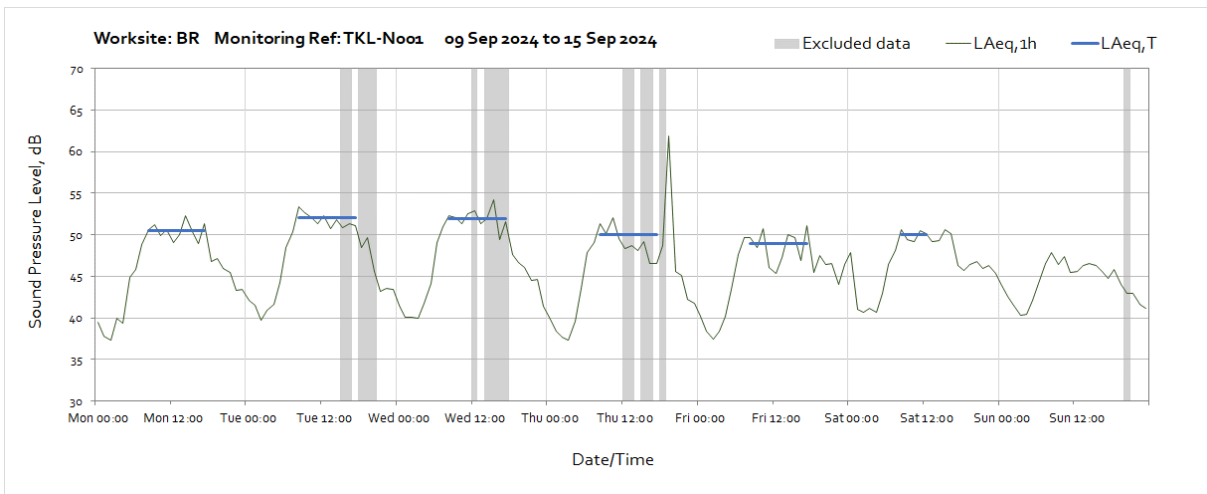
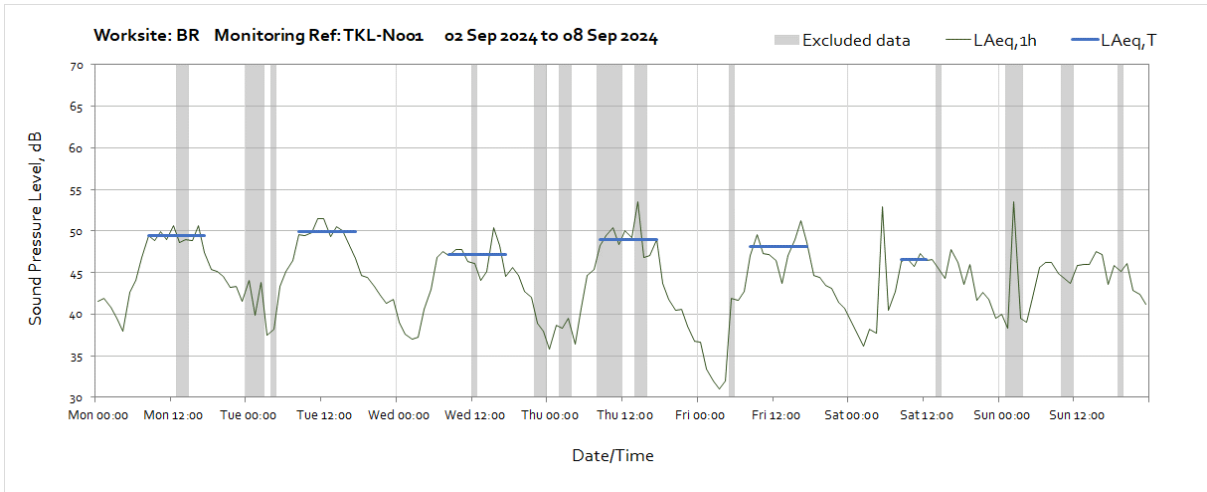


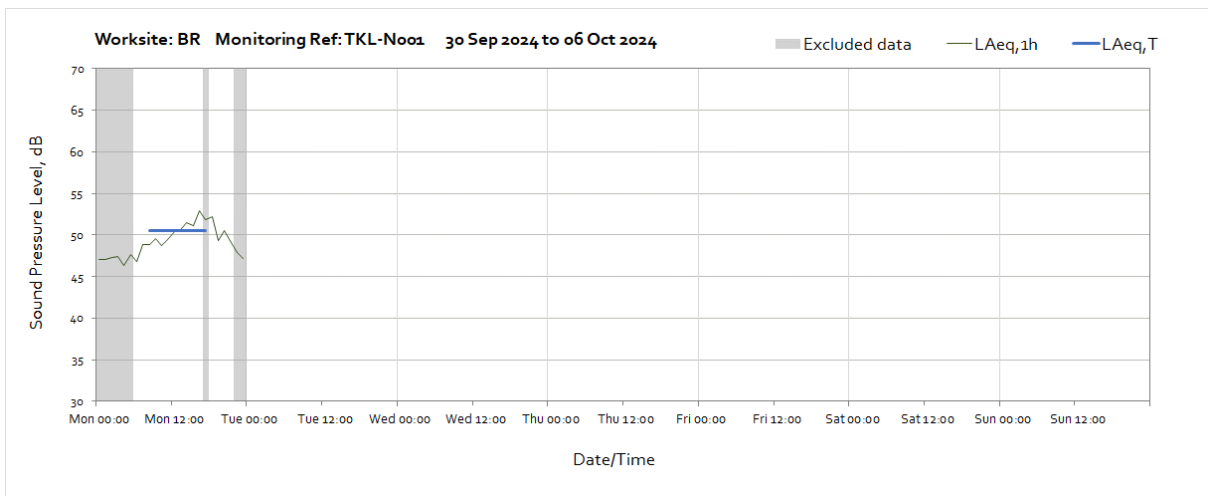
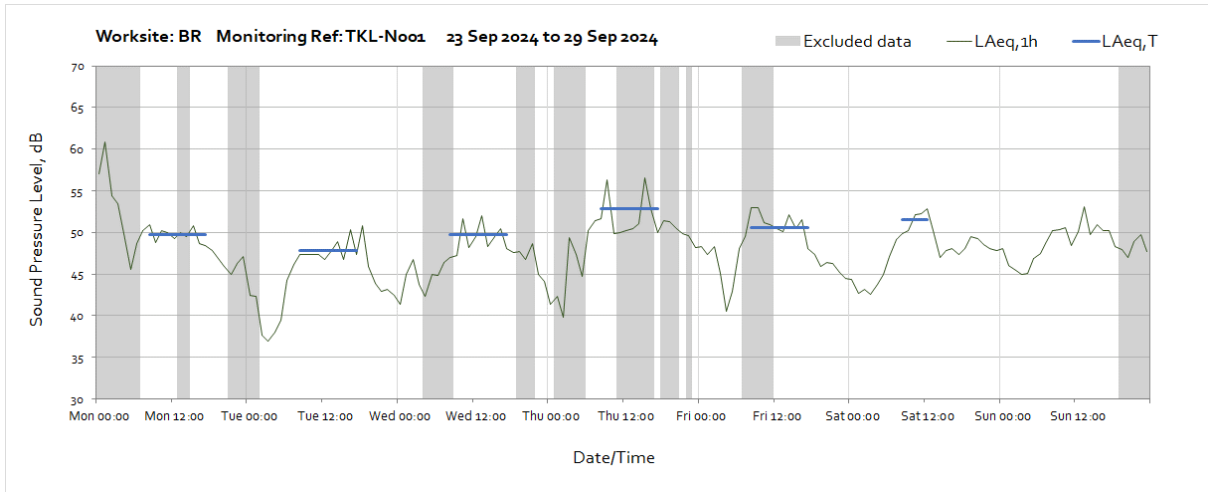




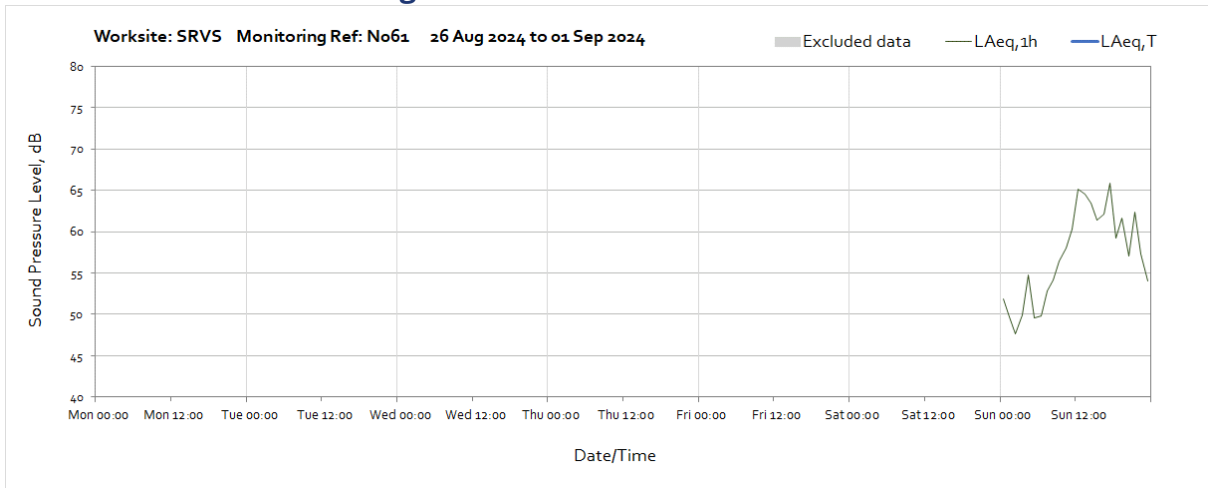
**Worksite: BR – Monitoring Ref: TKL-N001**

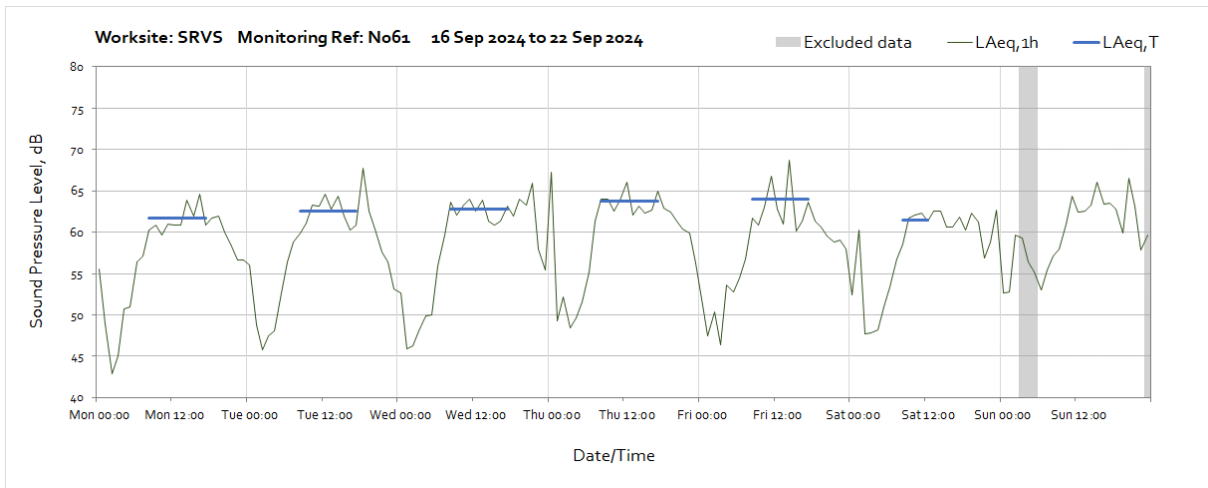
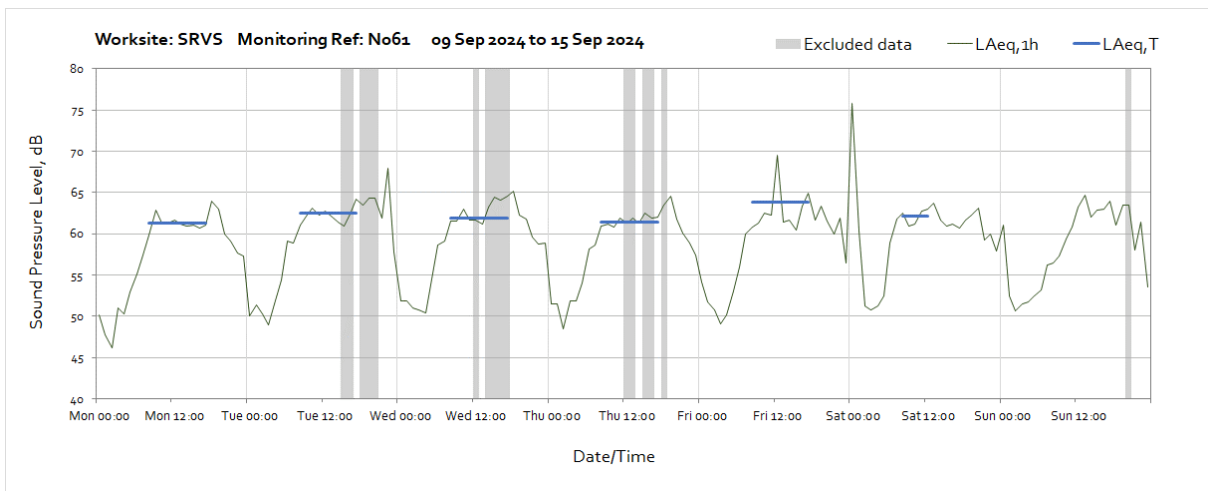
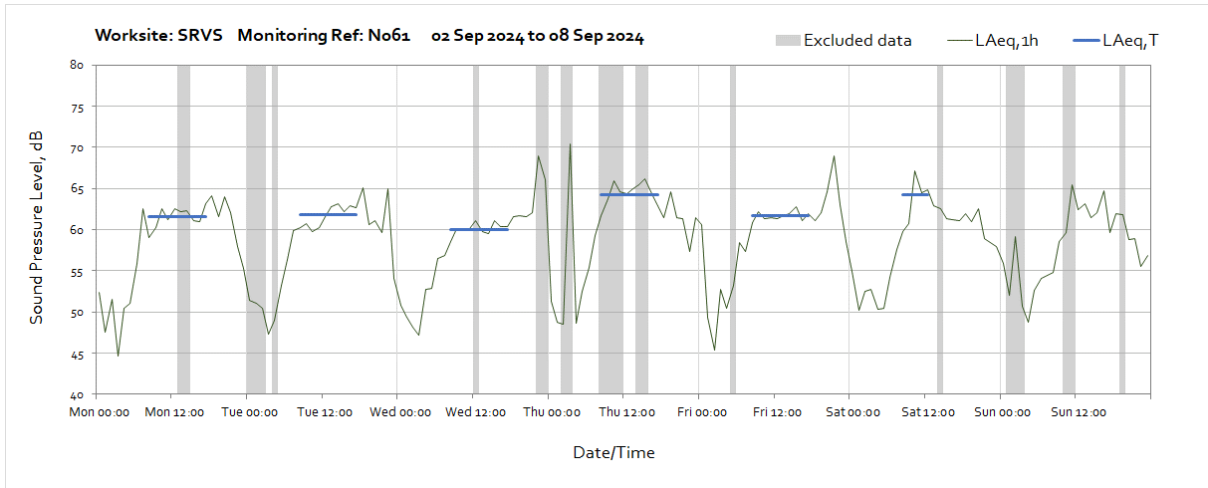


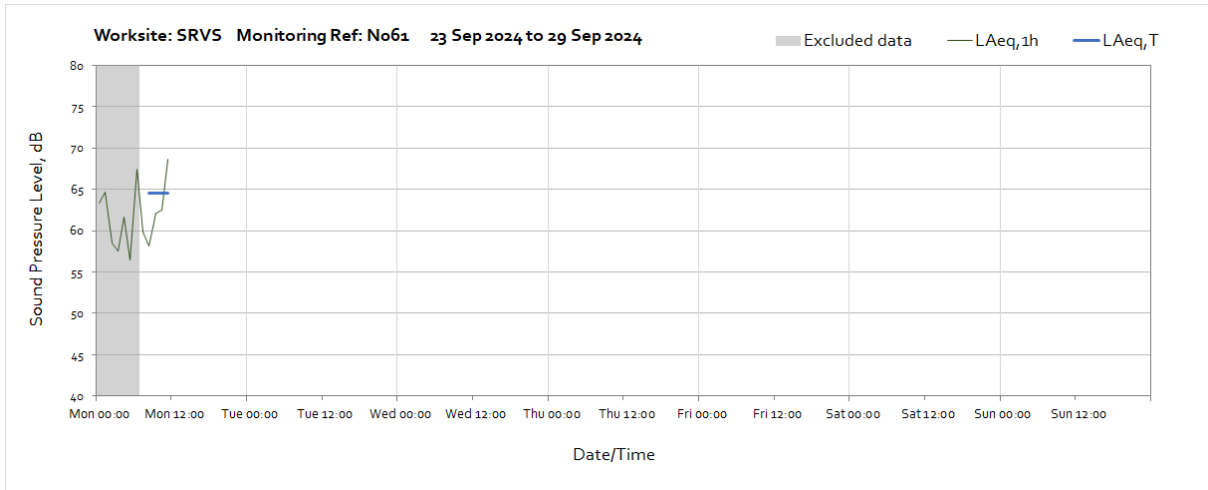




**Worksite: SRVS – Monitoring Ref: N061**

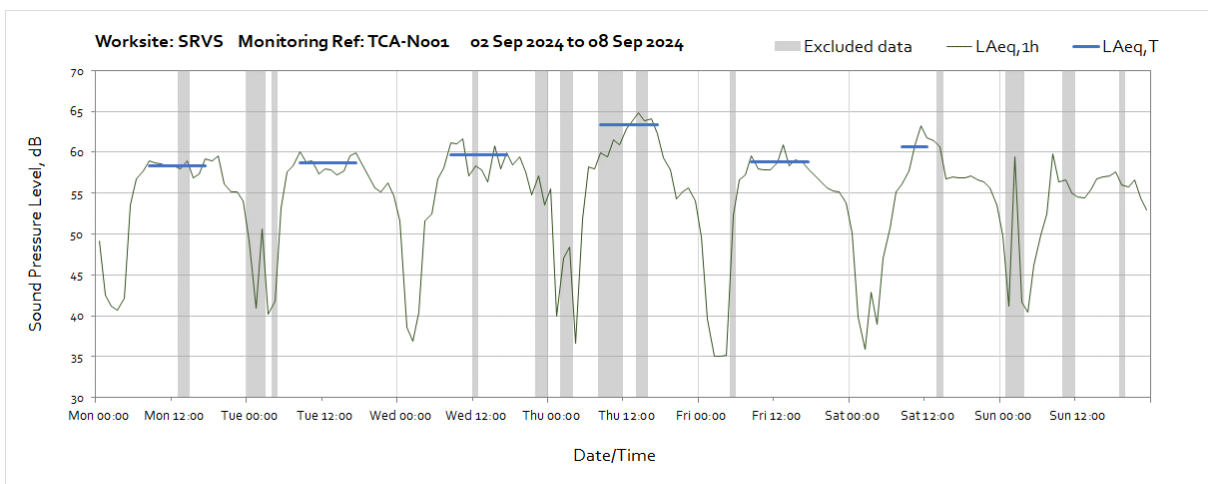
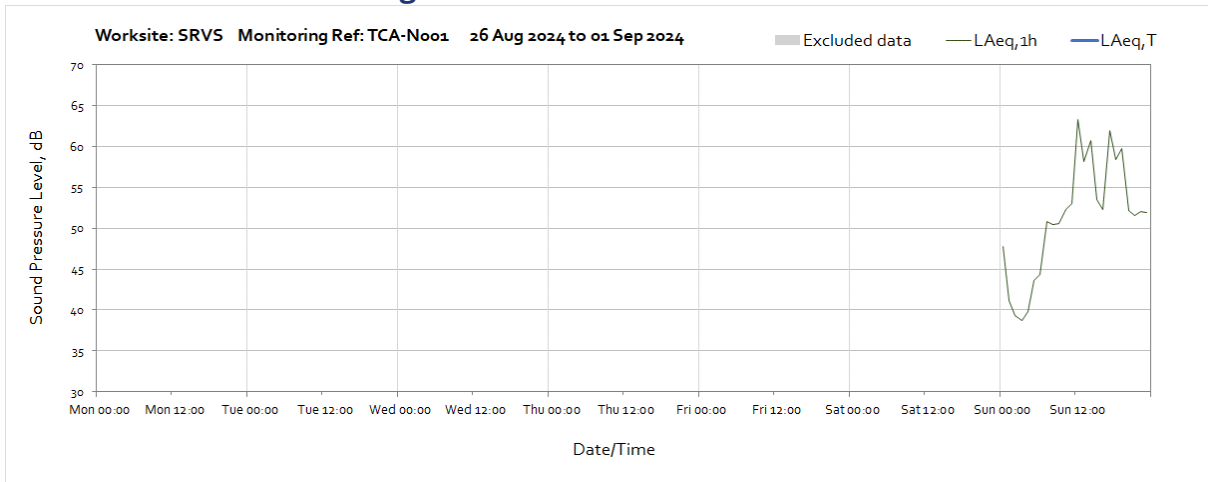


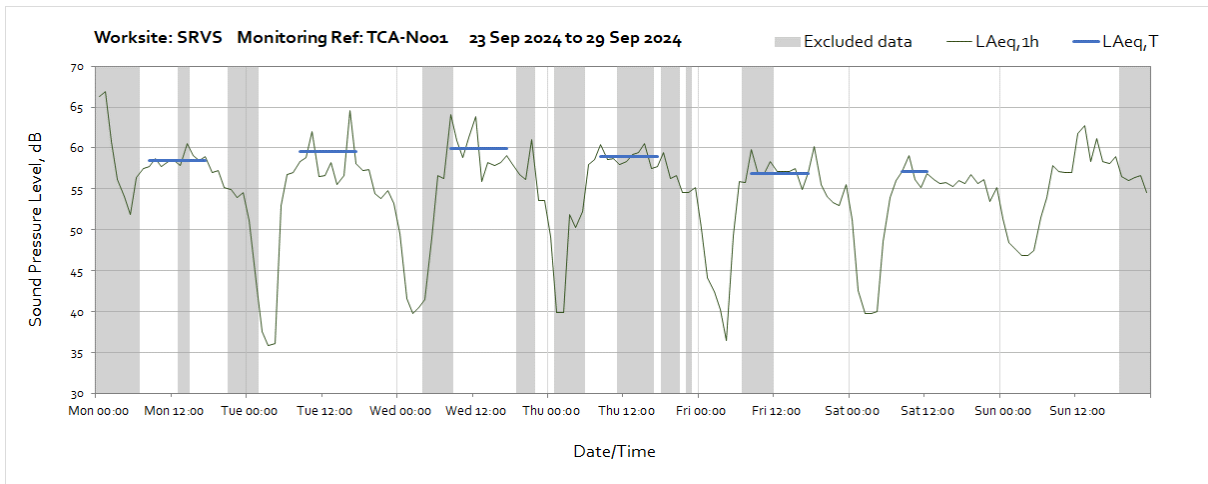
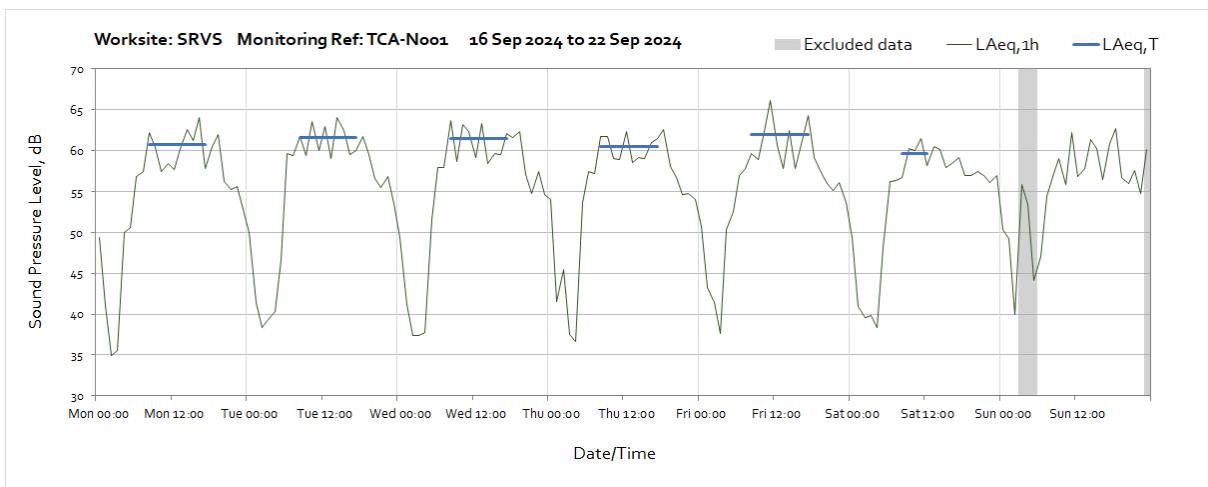
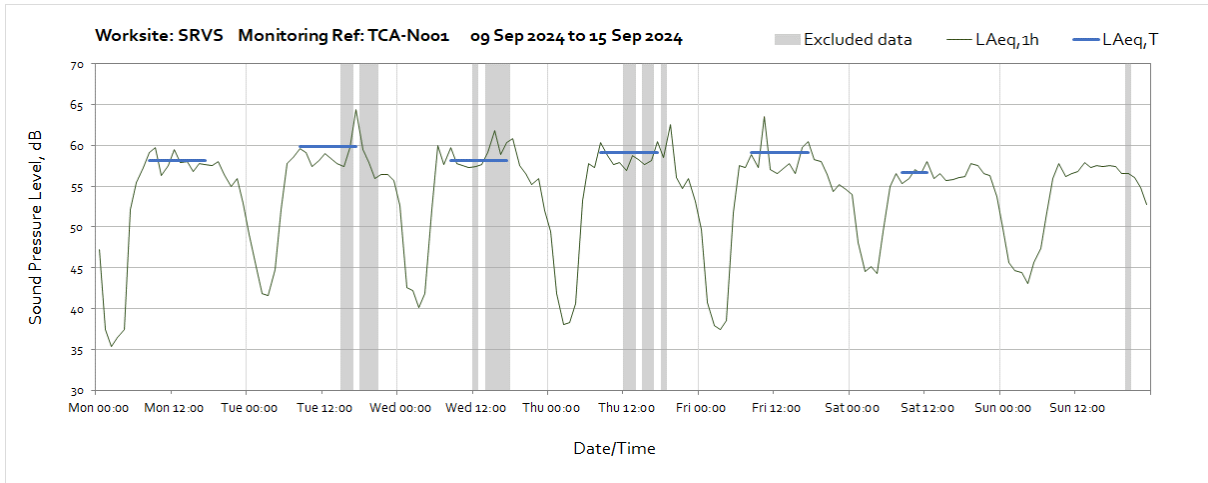


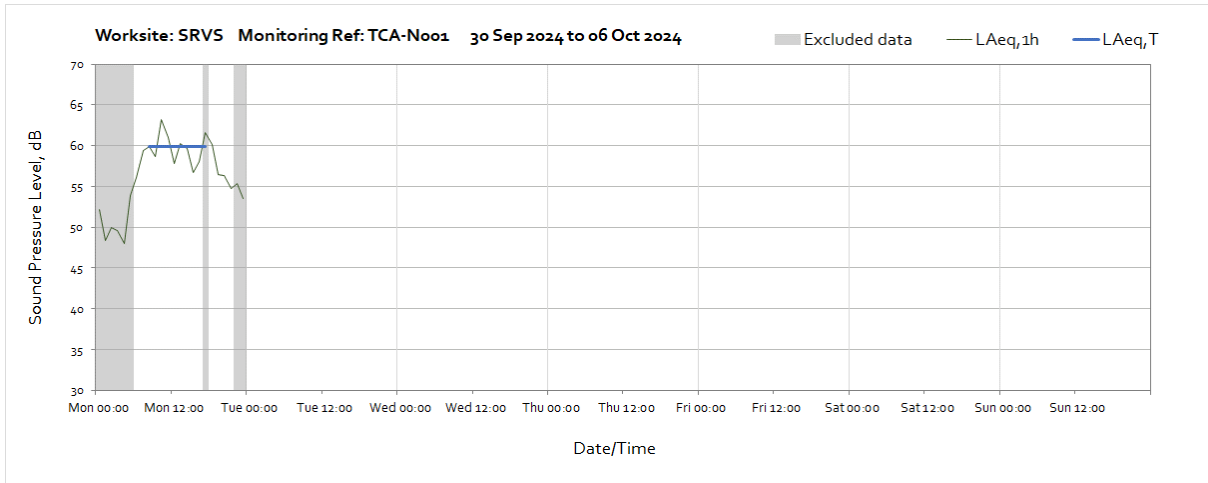


Note: Missing data from the 12:00 on Monday 23<sup>rd</sup> of September until the end of the month was due to loss of power at the monitoring station.

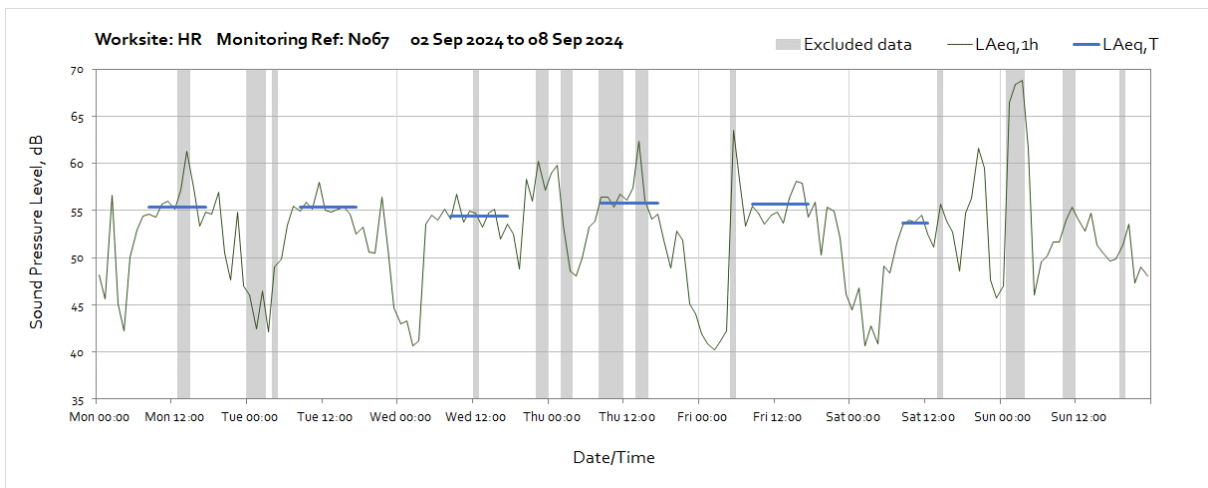
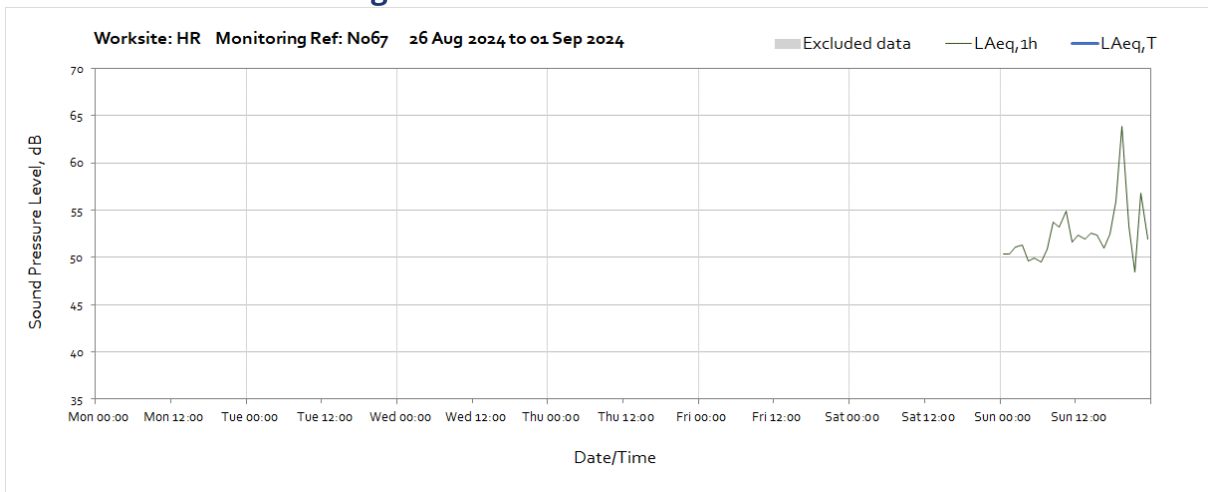
### Worksite: SRVS – Monitoring Ref: TCA-N001

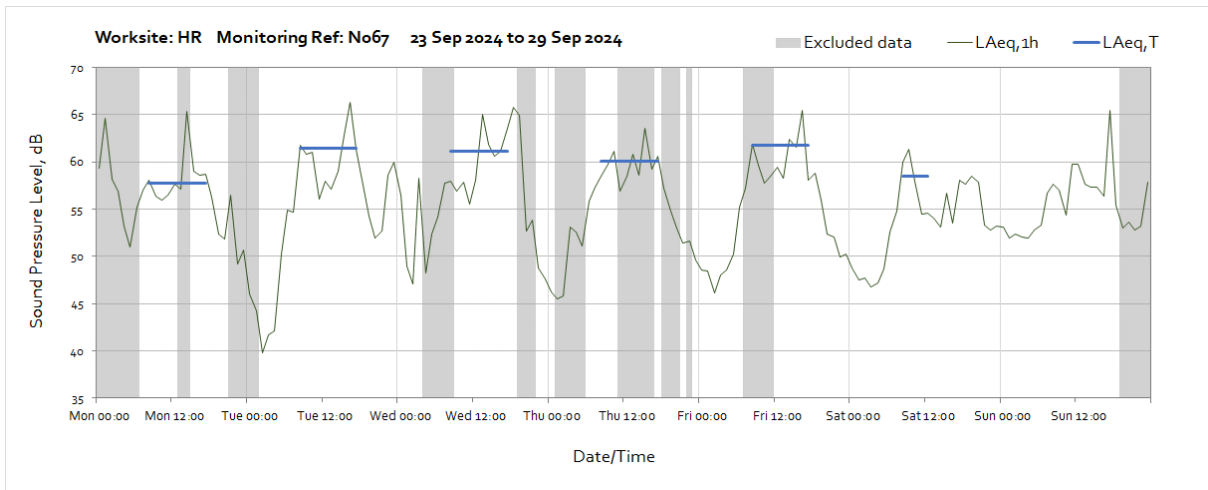
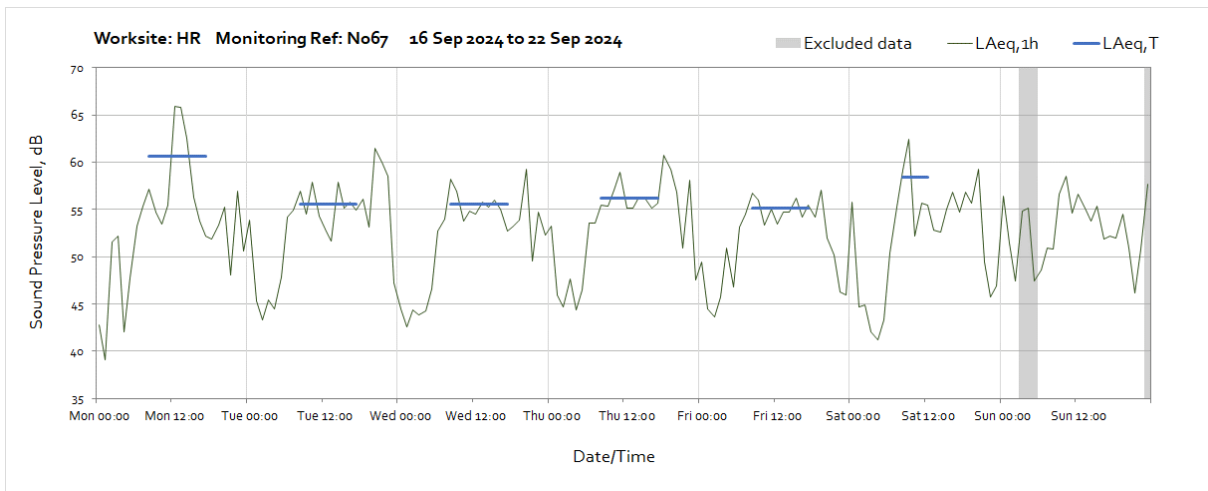
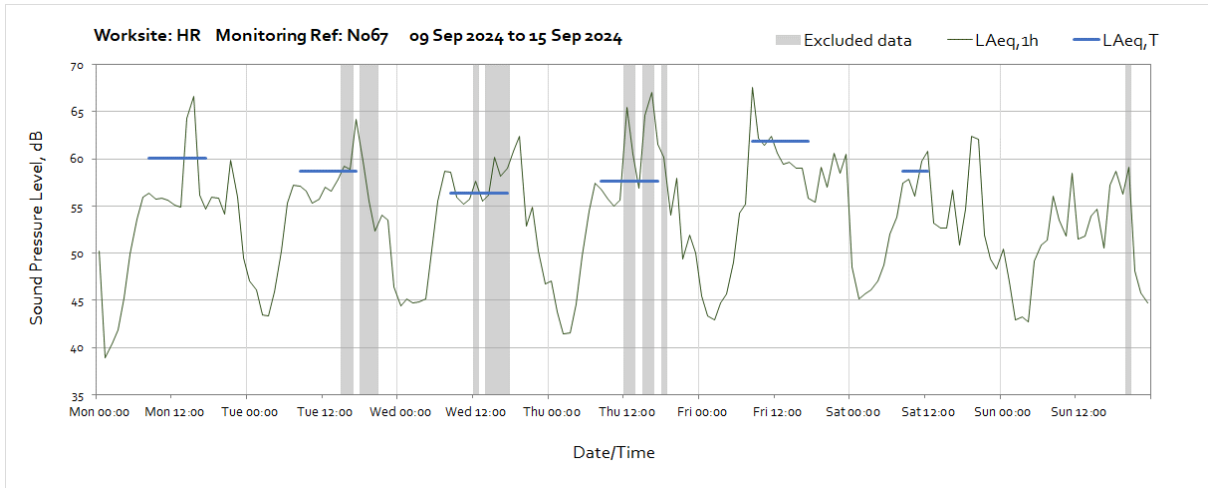




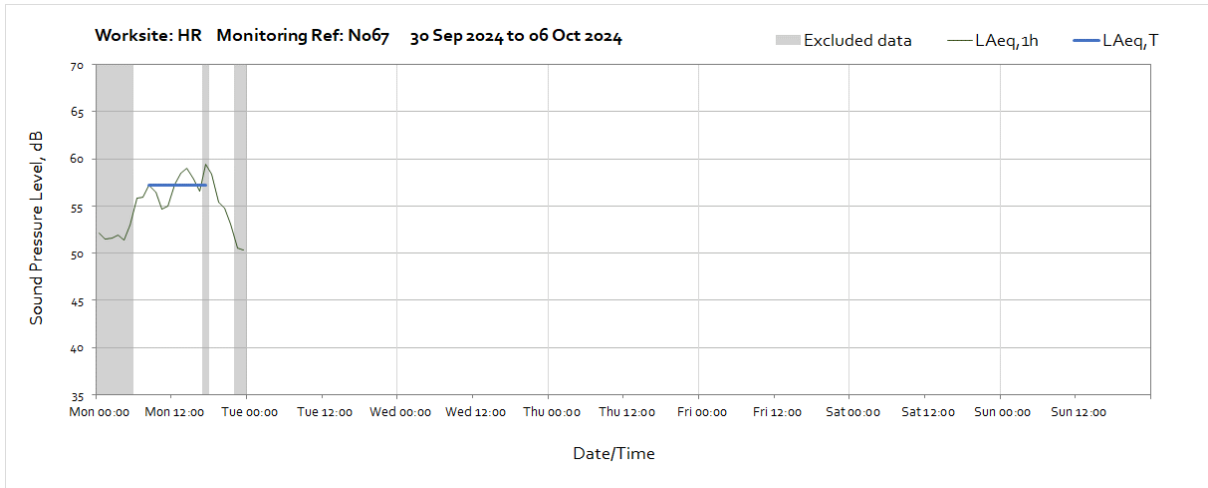


**Worksite: HR - Monitoring Ref: N067**

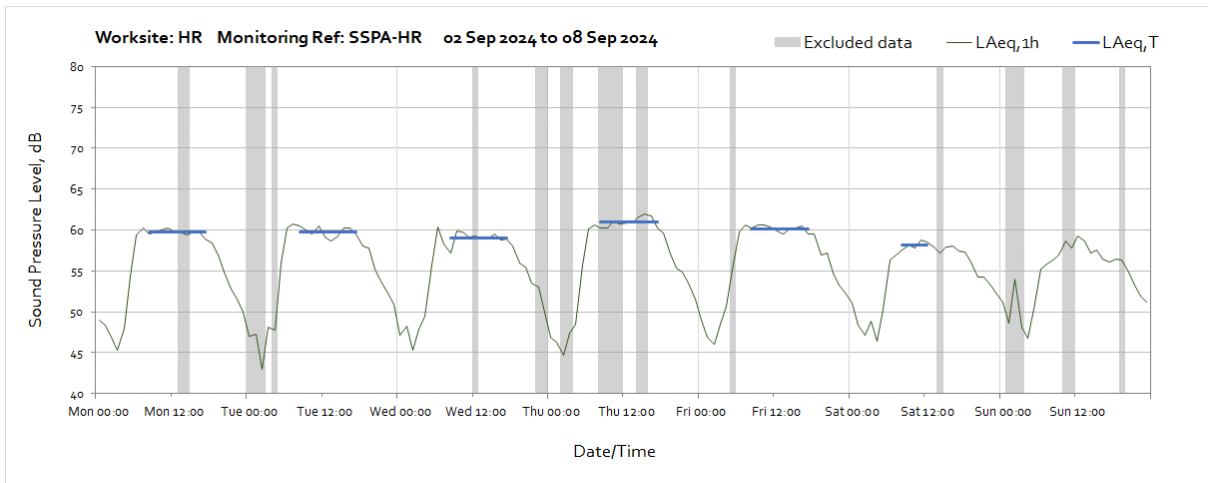
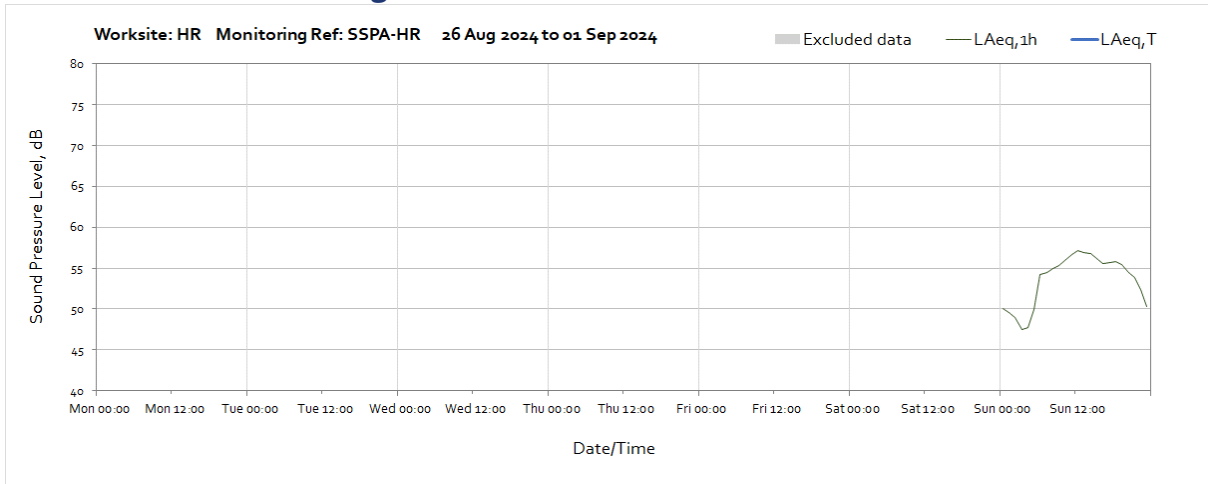


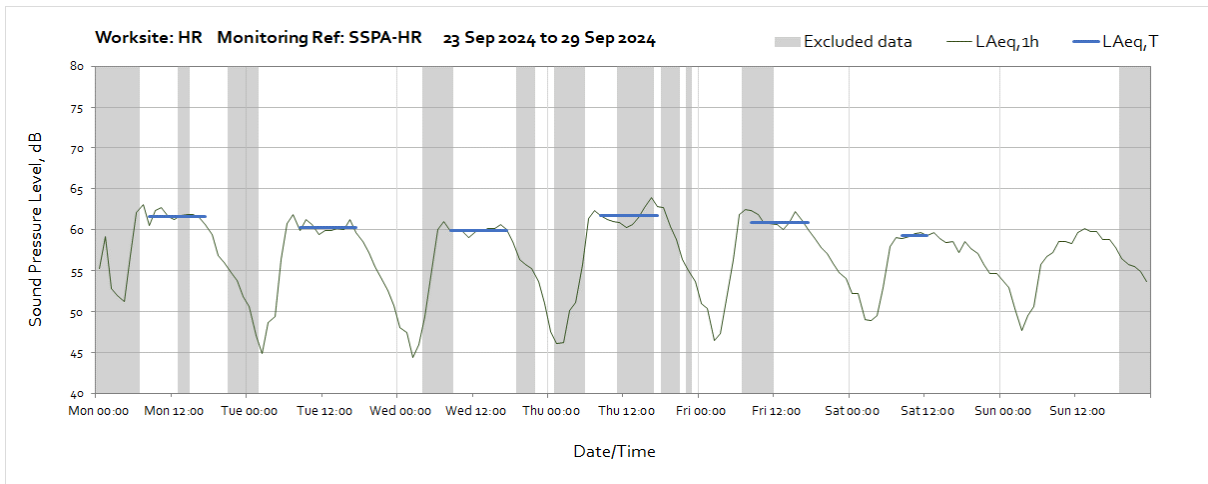
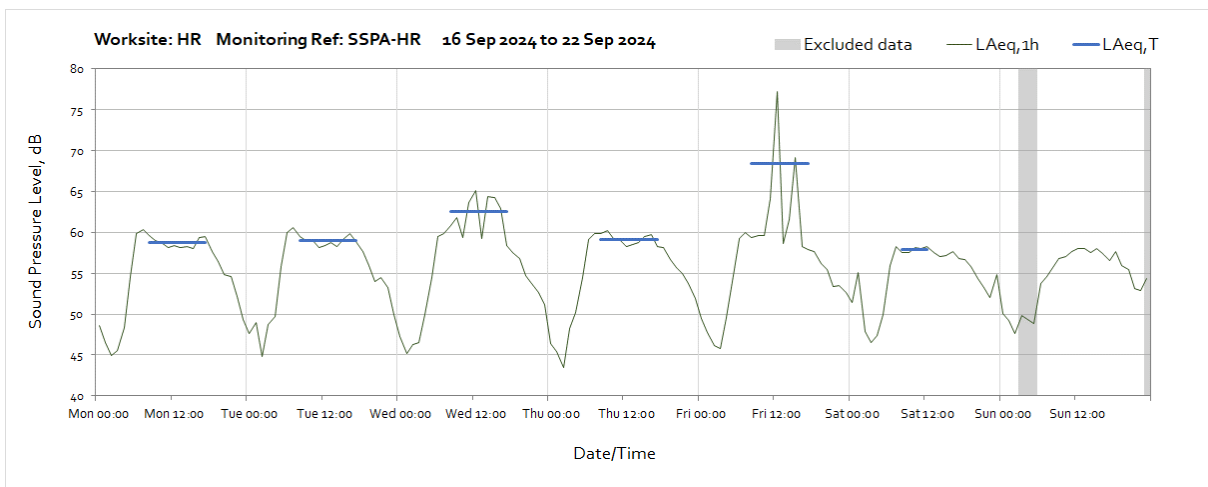
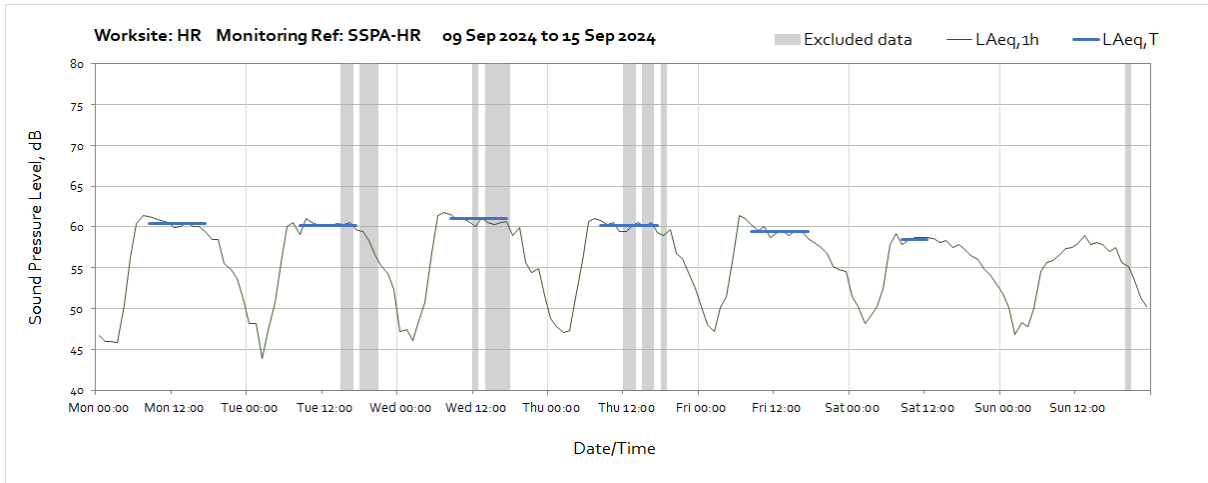


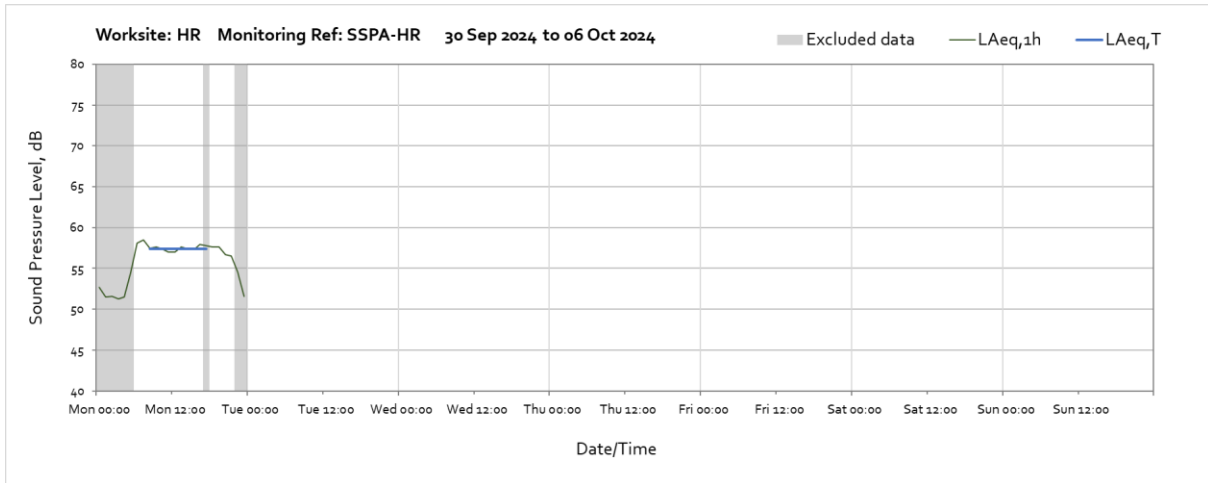




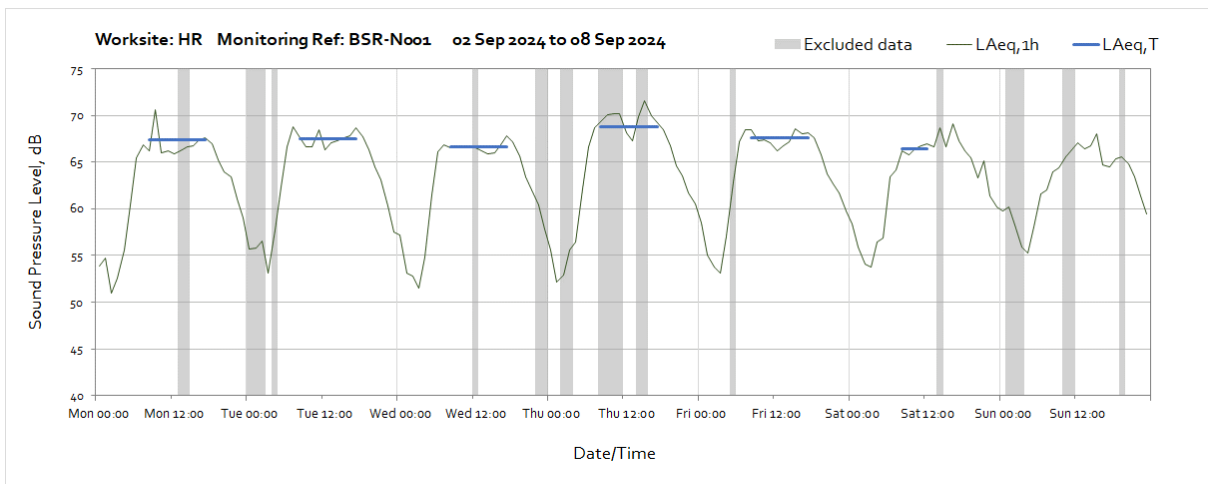
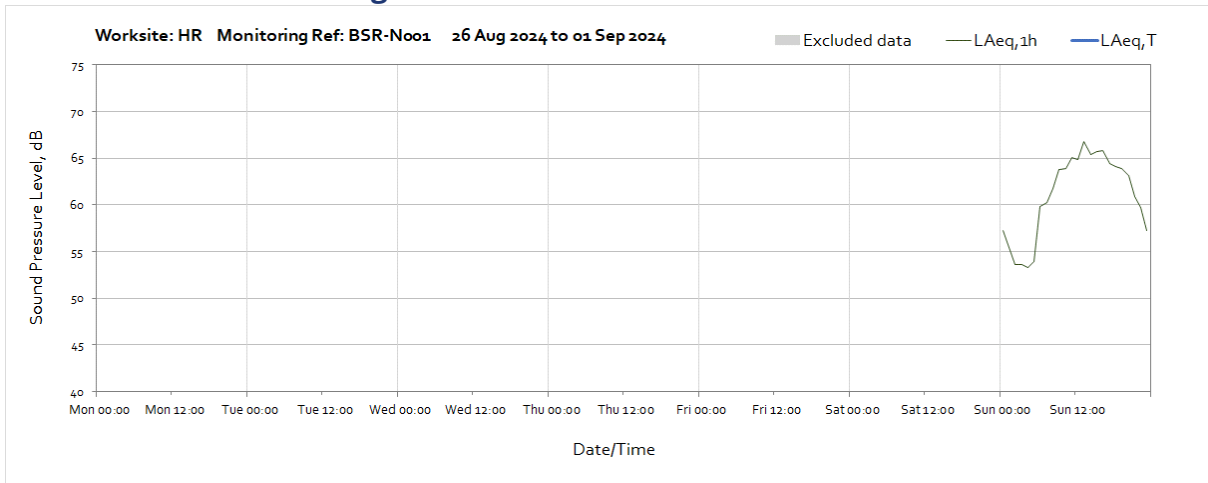
**Worksite: HR – Monitoring Ref: SSPA-HR**

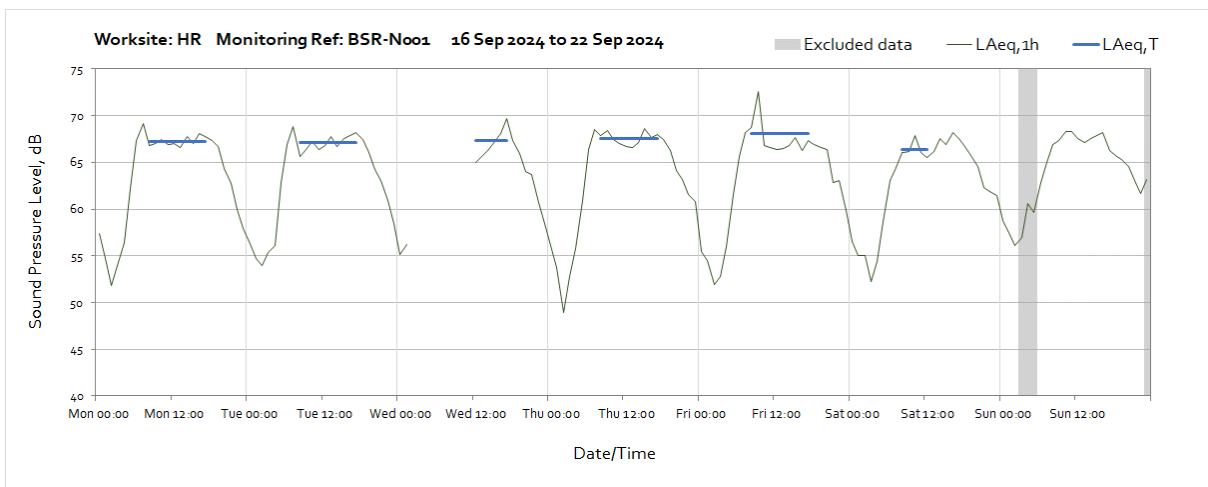
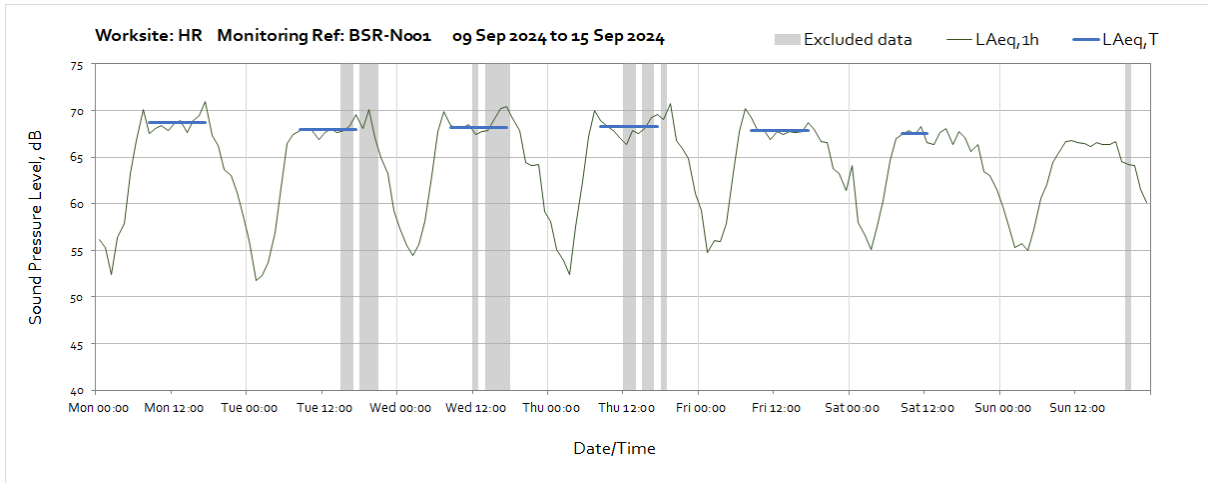




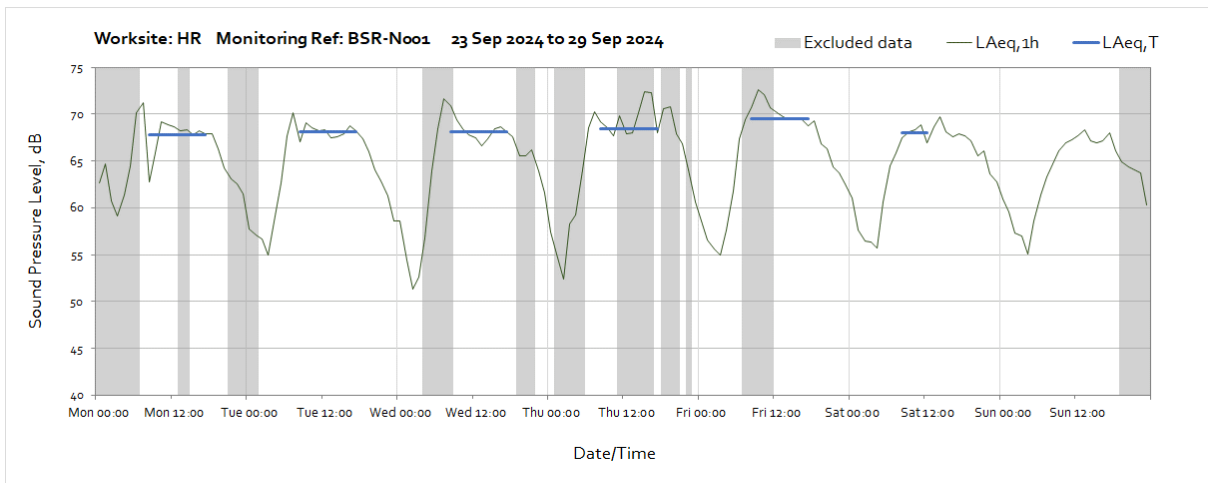


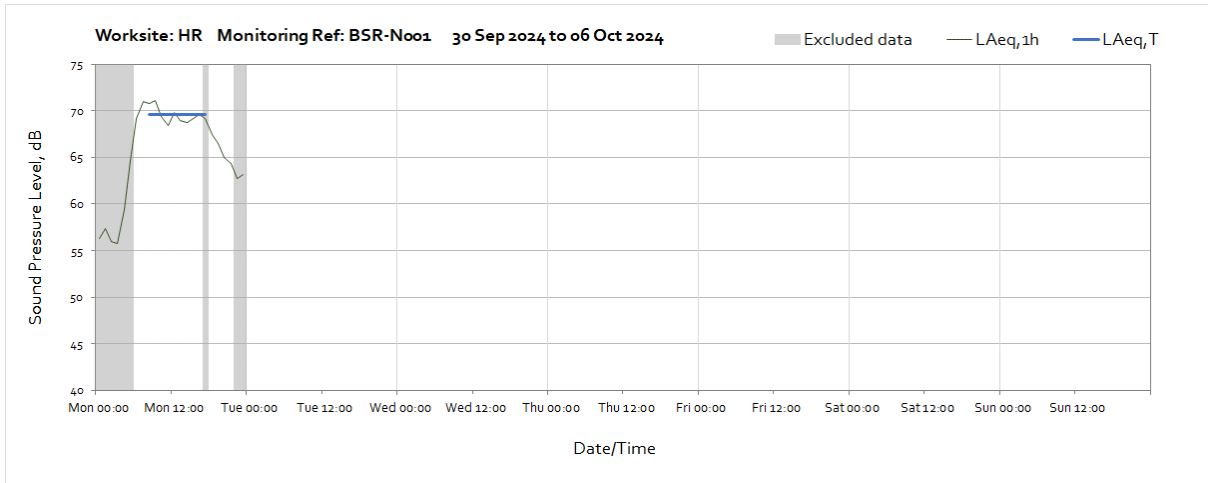
**Worksite: HR – Monitoring Ref: BSR-N001**



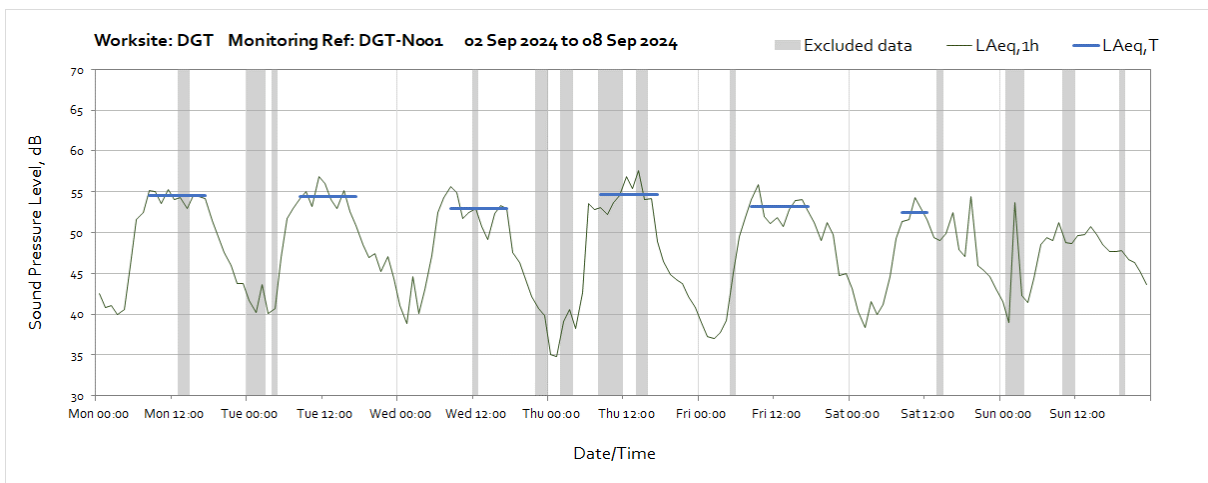
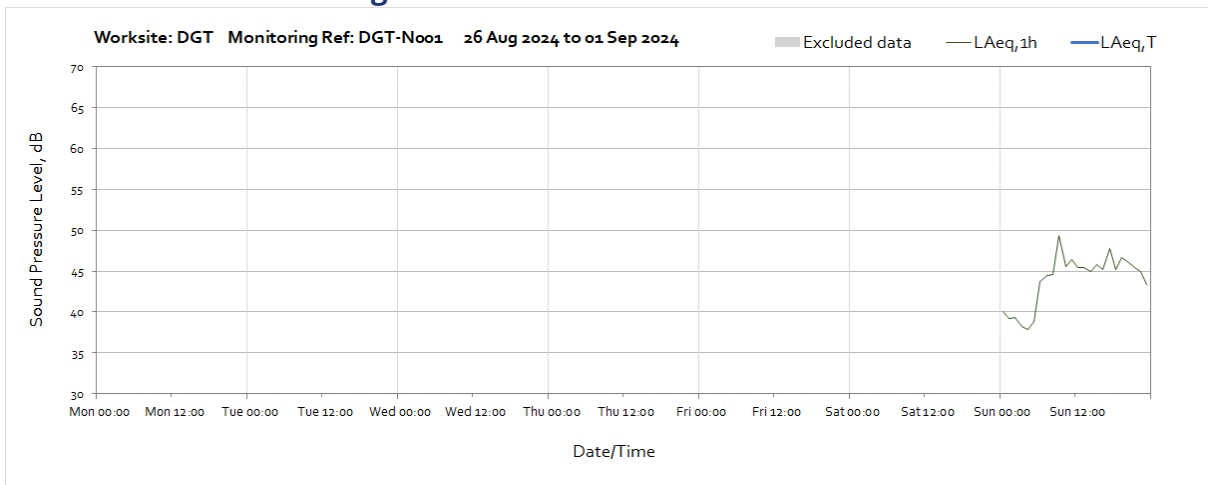


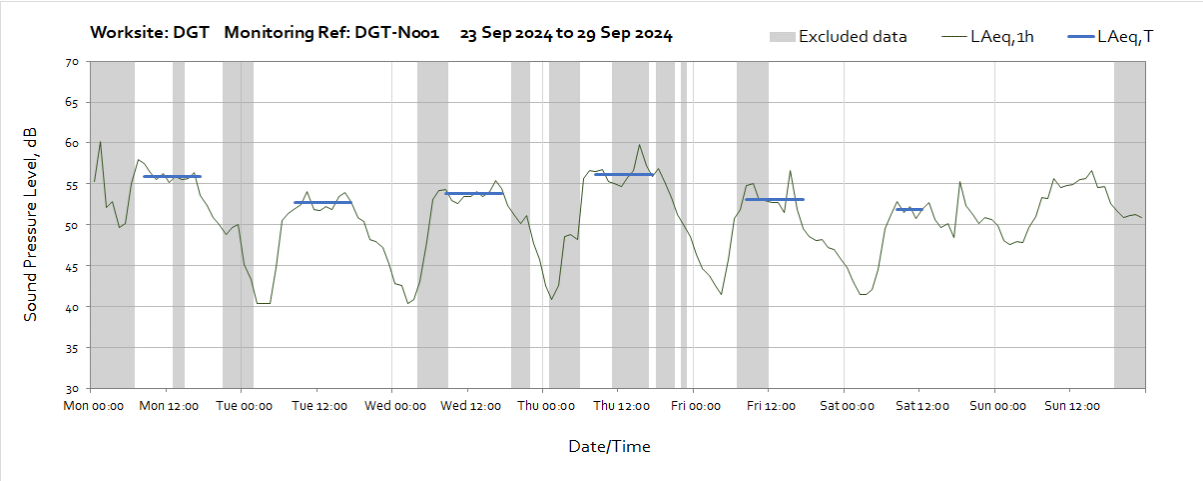
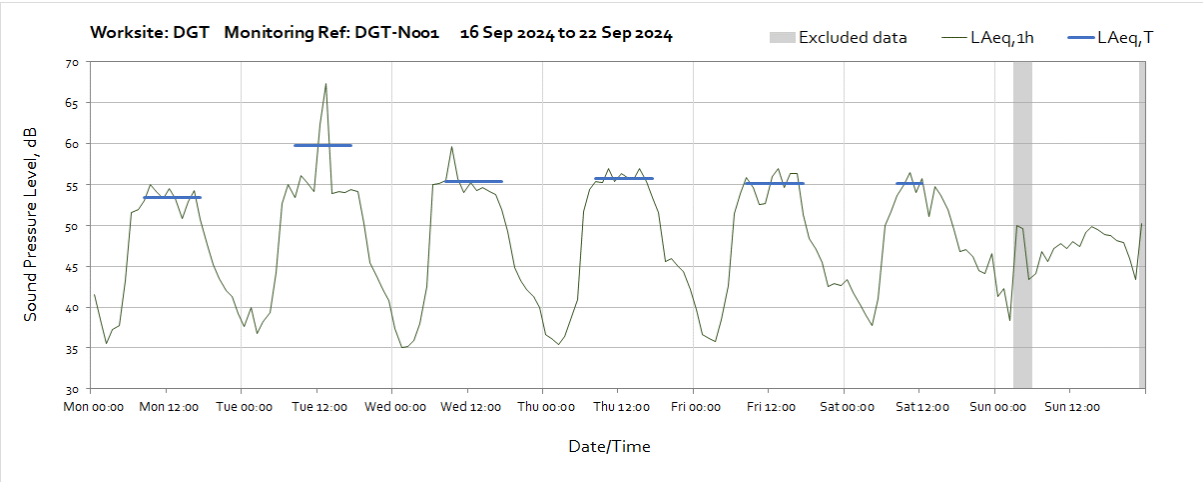
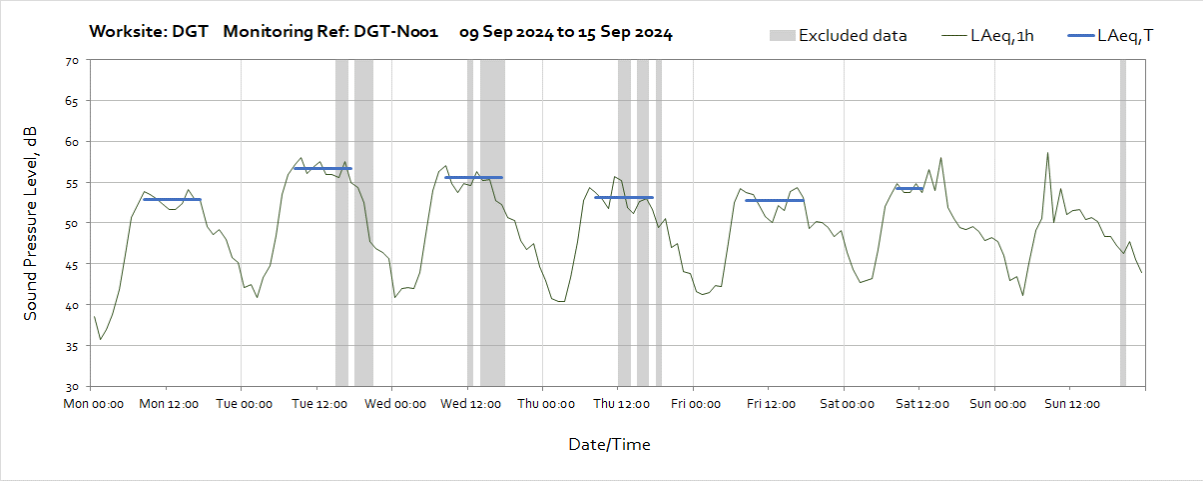
Note: Missing data between 02:00 and 11:00 on Wednesday 18<sup>th</sup> of September was due to loss of power at the monitoring station.

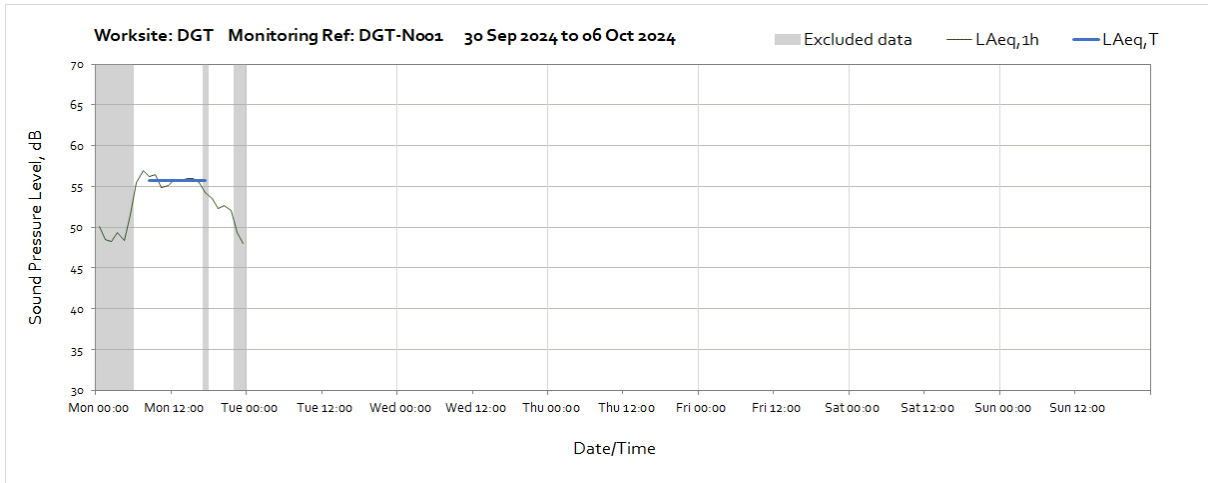




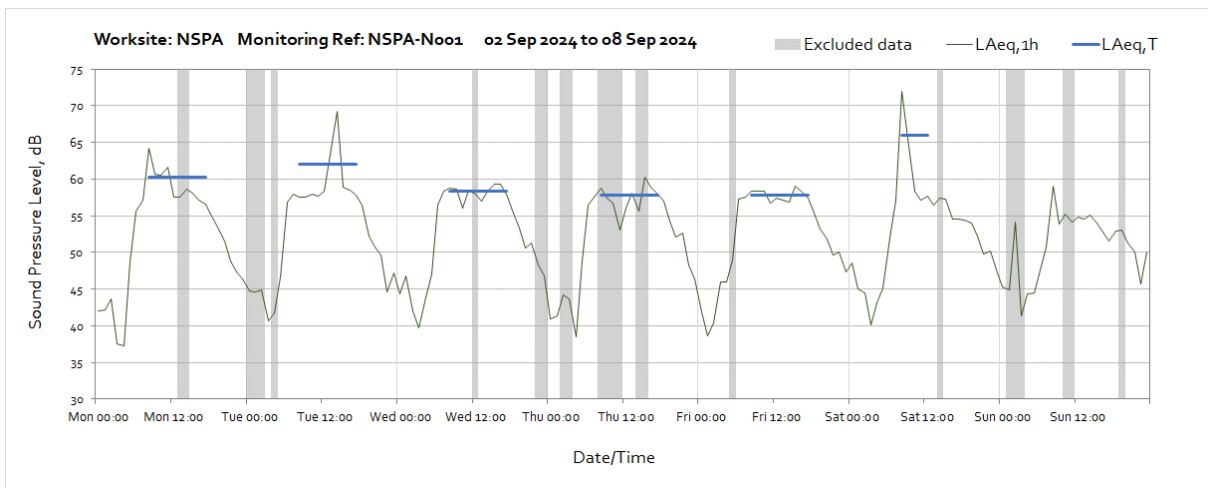
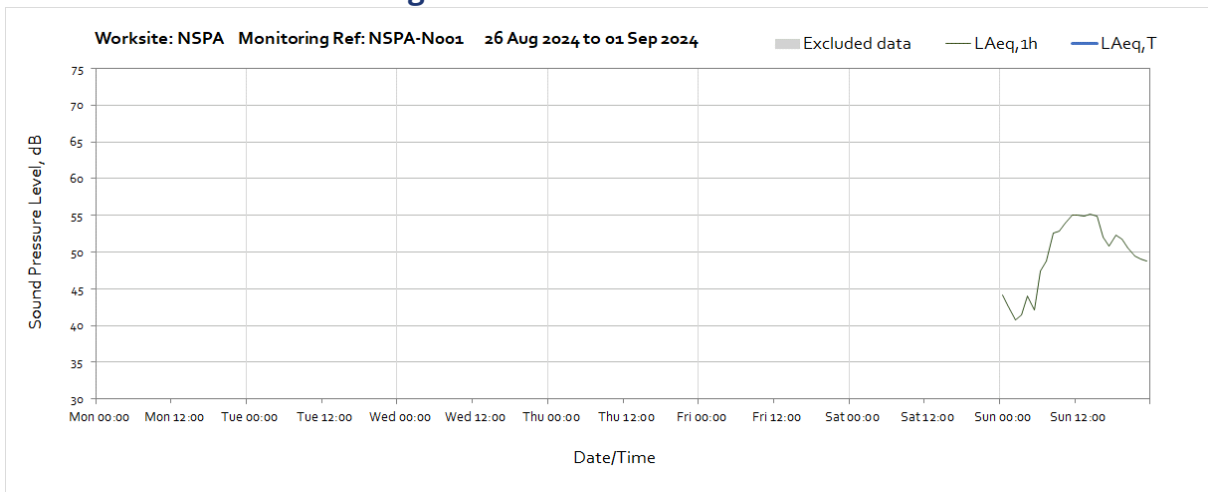
**Worksite: HR - Monitoring Ref: DGT-N001**

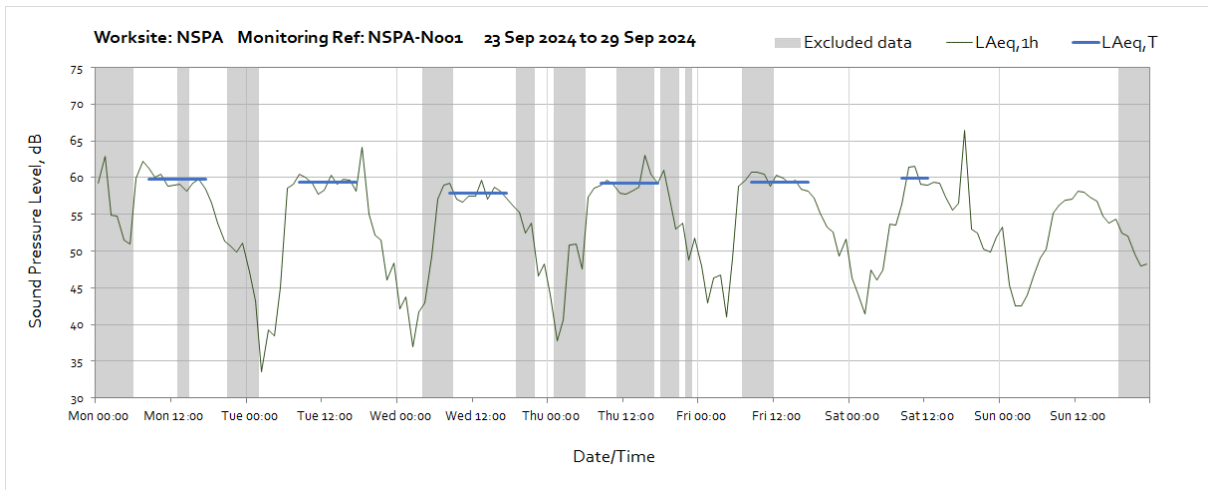
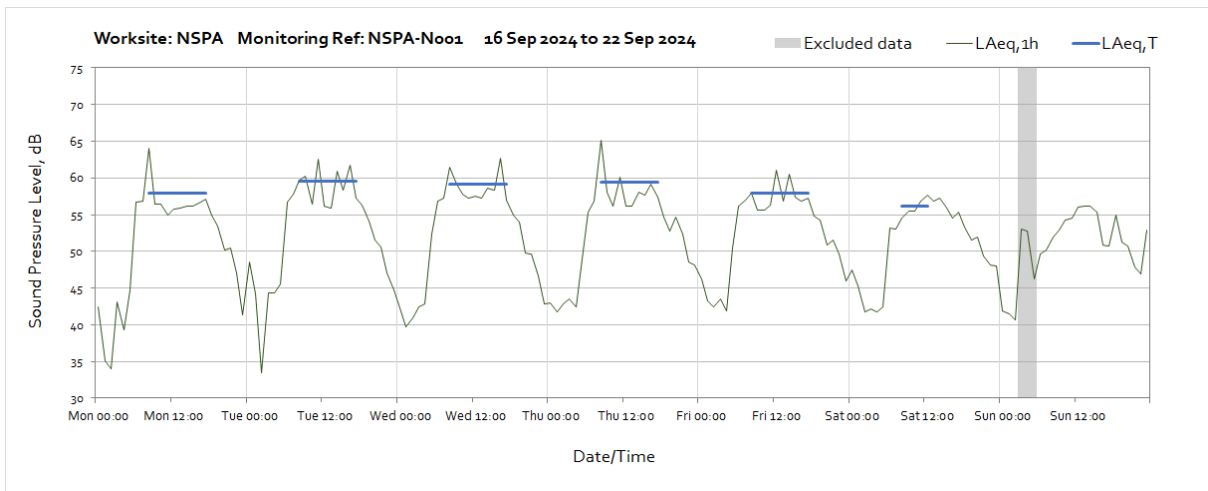
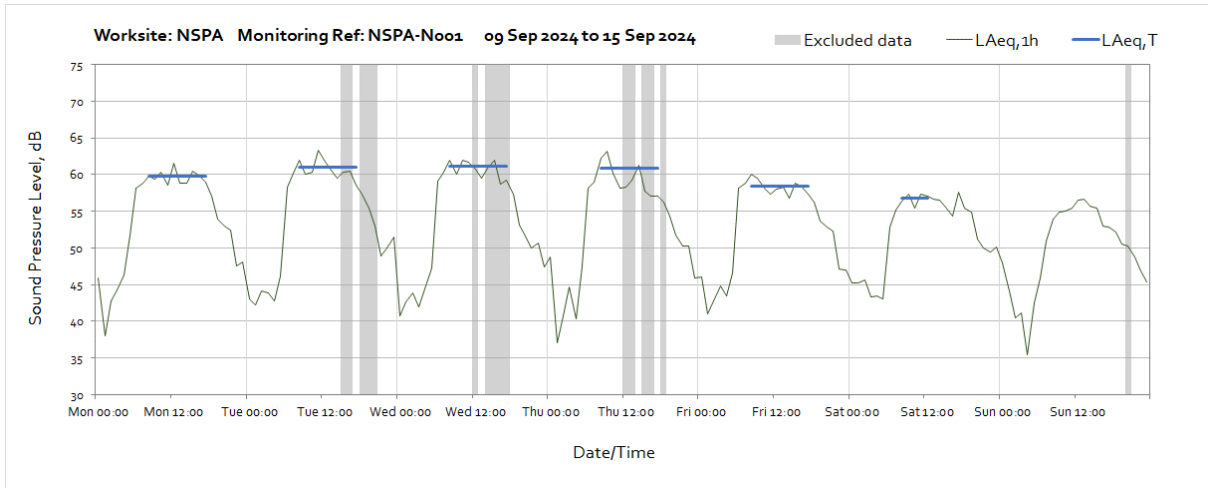




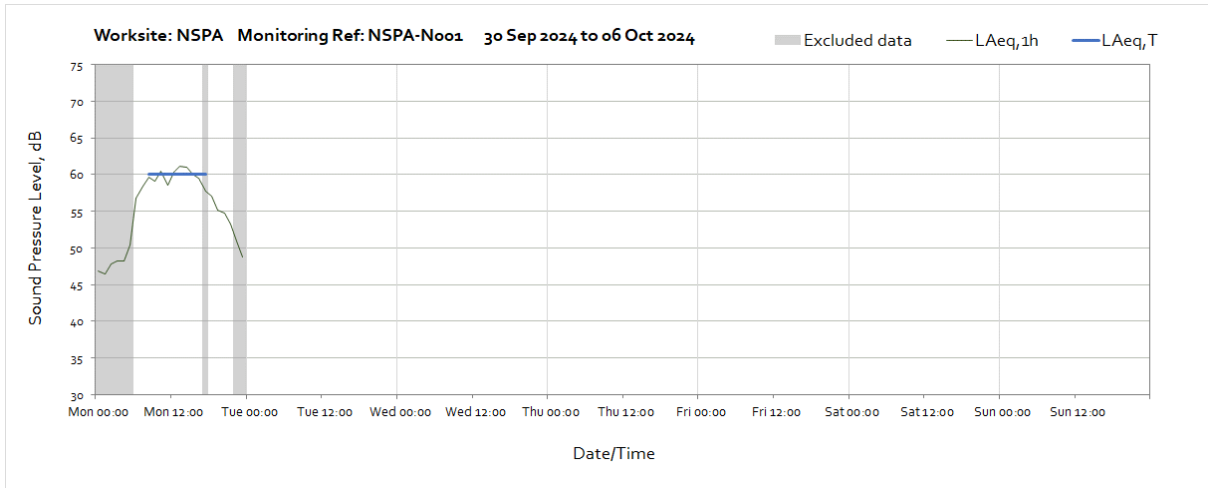


**Worksite: NSPA - Monitoring Ref: NSPA-N001**

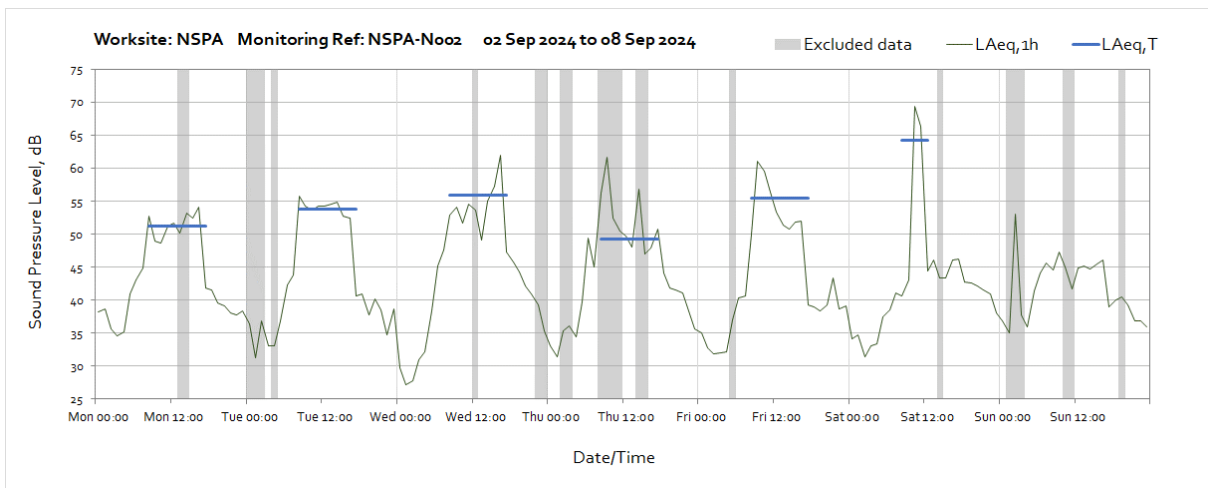
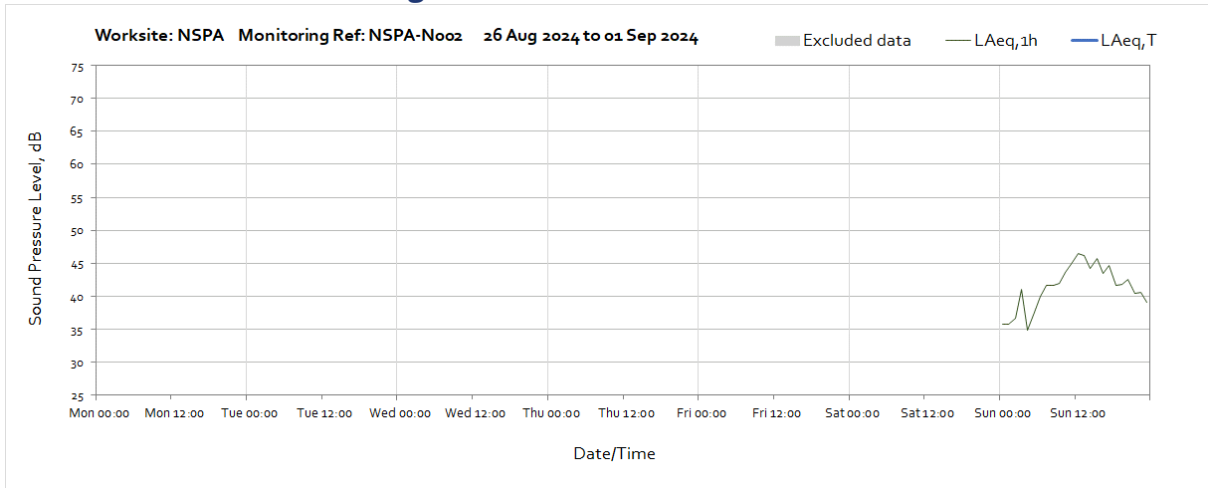


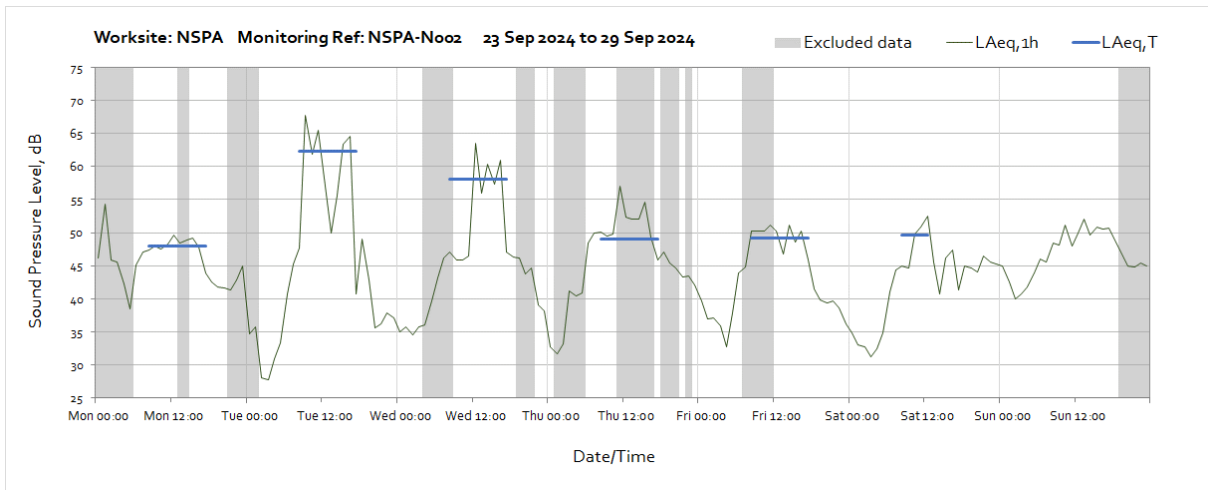
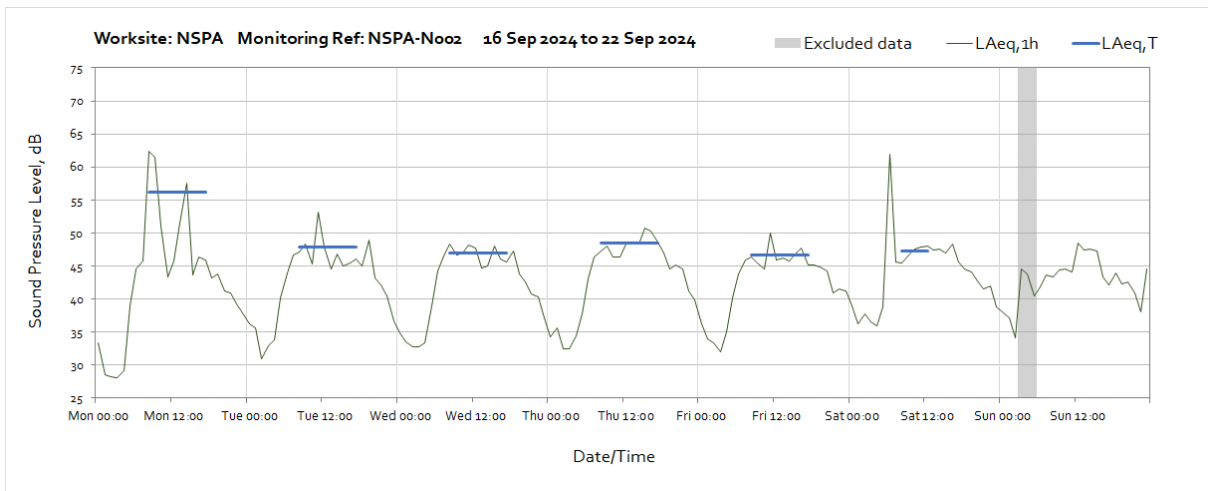
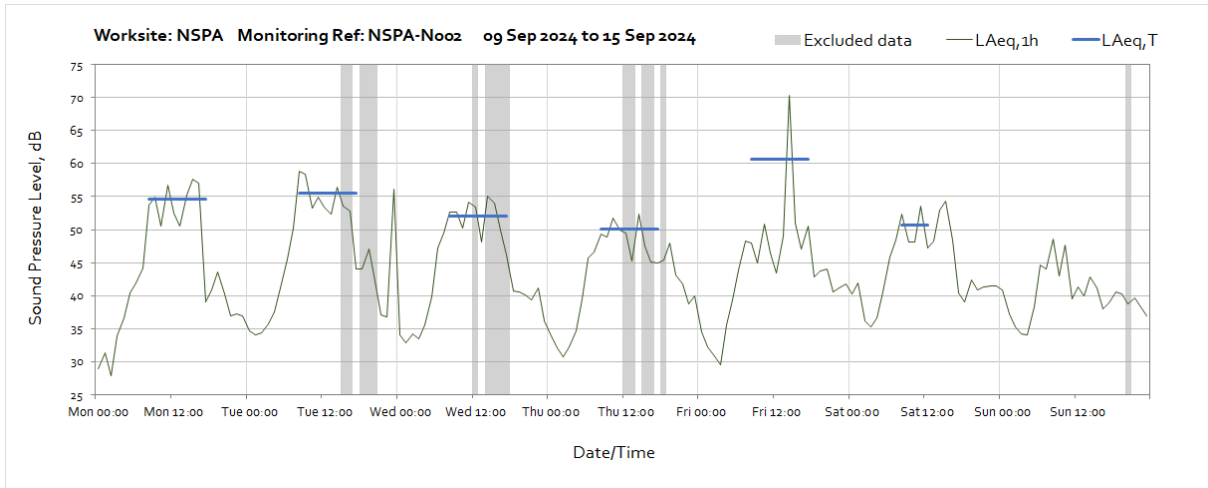


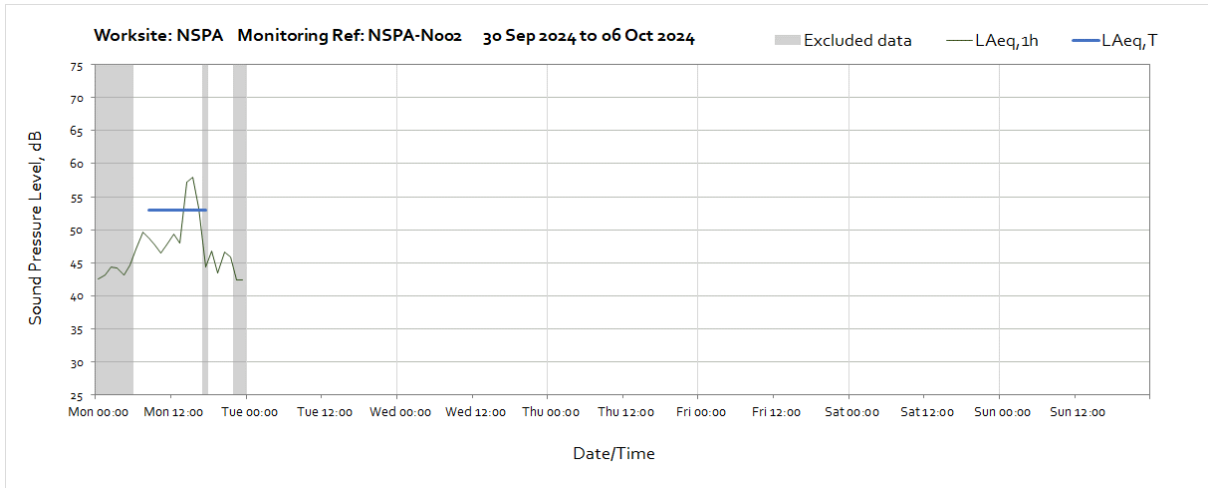




**Worksite: NSPA - Monitoring Ref: NSPA-N002**



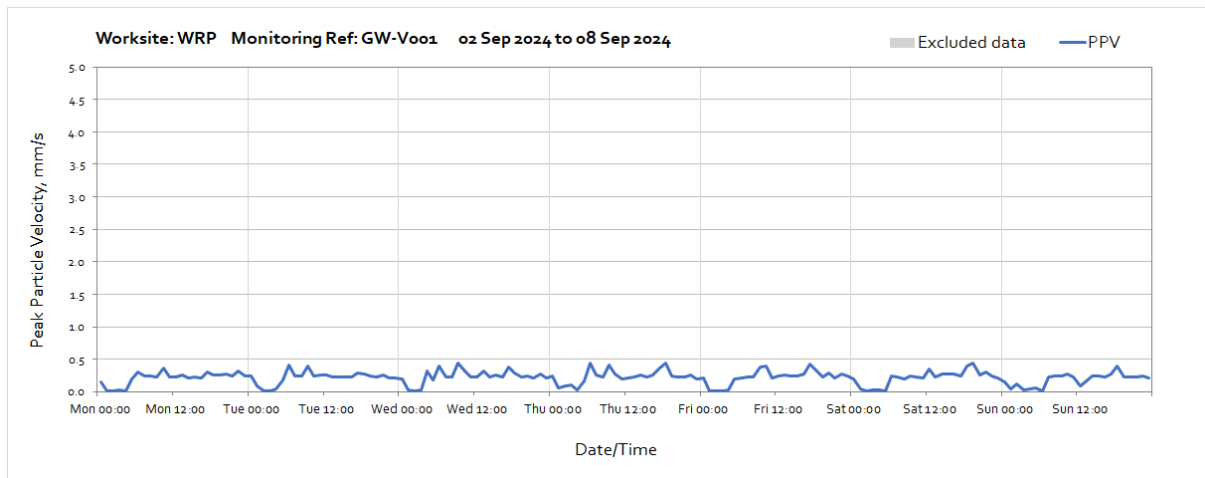
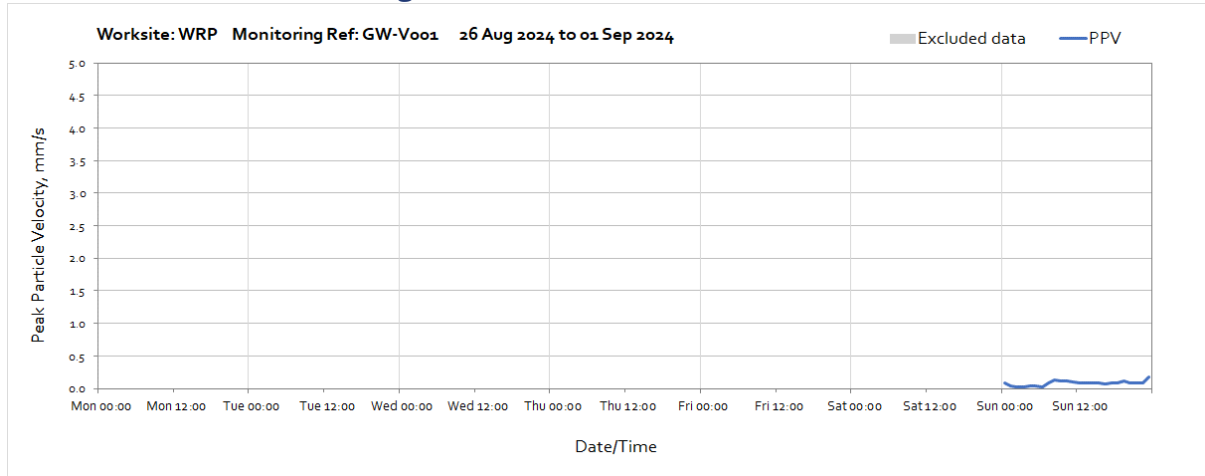


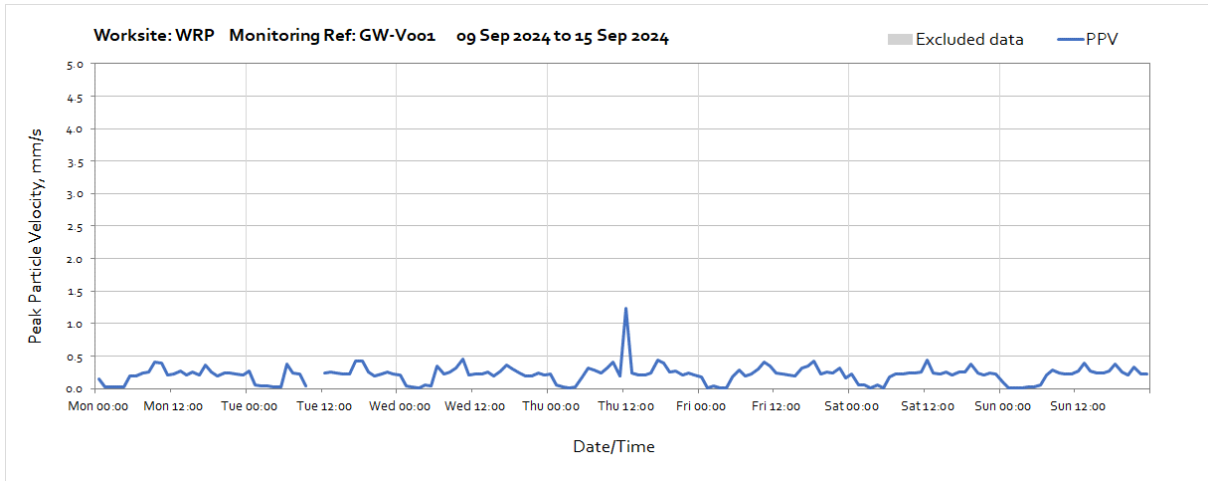


## Vibration

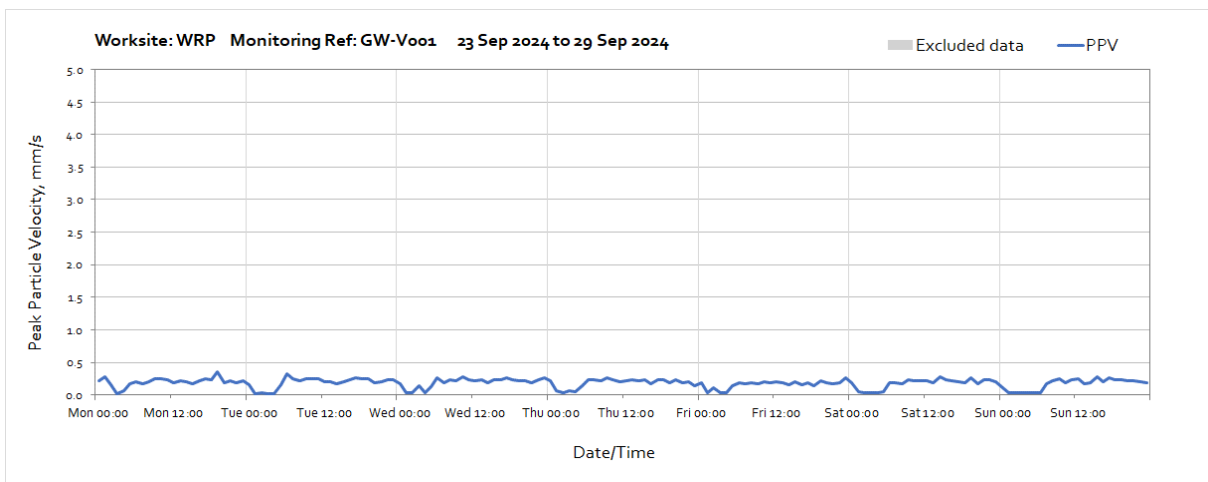
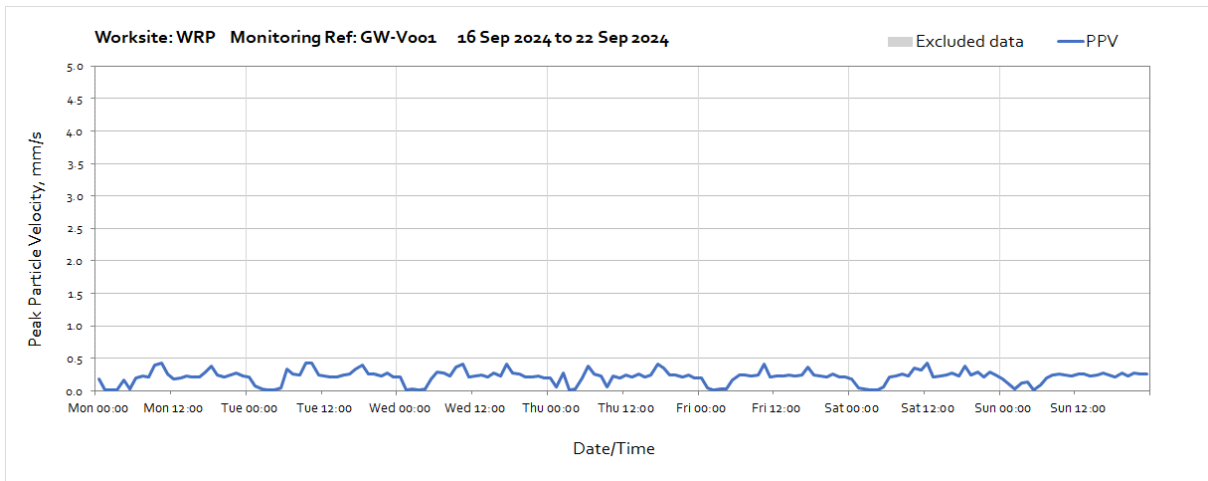
The following graphs show the hourly measured peak particle velocity PPV recorded during the monitoring period. The graphs show the highest PPV of the three orthogonal axis x, y, and z. Periods where PPV values have been affected by local interference with the vibration monitor or only measured for part 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.

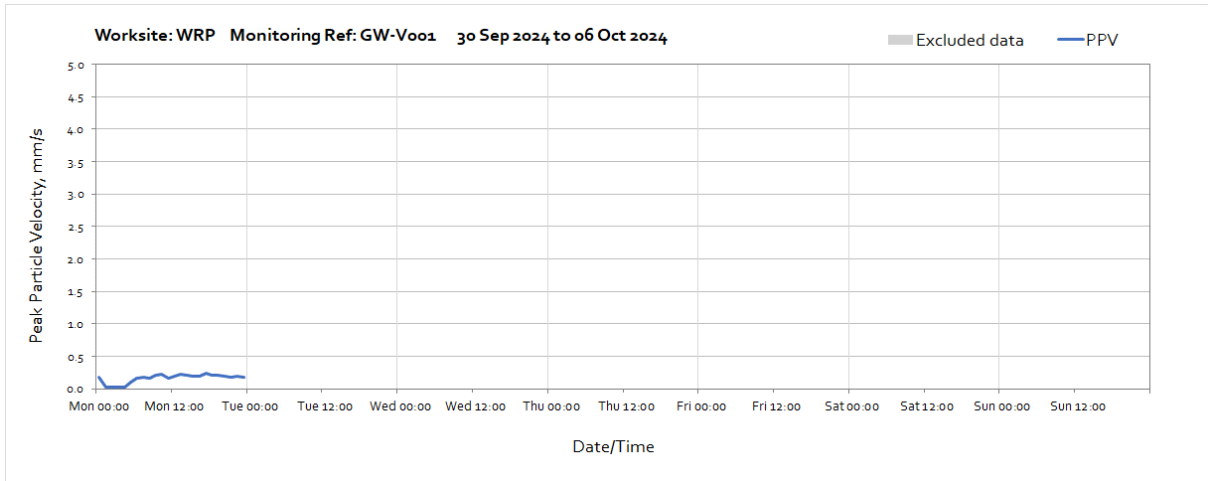
### Worksite: WRP – Monitoring Ref: GW-V001





Note: Missing data between 11:00 and 12:00 on Tuesday 10<sup>th</sup> of September was due to maintenance at the monitoring station.





**Worksite: SRVS – Monitoring Ref: SRVS-V001a**

