

## **Construction Noise and Vibration Monthly Report – November 2024**

**Lichfield District Council**

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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 Lichfield District Council (LDC) area during the month of November 2024.

Within this period monitoring was undertaken at the following worksites:

- Shaw Lane Embankment (ref.: SLE) worksite no works were undertaken.
- Fradley Wood Embankment (ref.: FEW) worksite where road and footpath diversion were underway.
- A38 Southbound Slip Road Realignment (ref: A38SSRR) worksite where piling works and stone delivery, installation and compaction were underway.
- Streethay Cutting Retaining Structure (ref: SCRS) worksite where piling works; stone delivery, including installation and compaction; deliveries and collections; general maintenance and de-vegetation were underway.
- Staffs Lane (ref: SSL) worksite where piling works, deliveries and collections, general maintenance and vegetation strimming were underway.
- Cappers Lane Compound (ref.: CLC) worksite where no works were undertaken.
- Whittington Common Cutting (ref: WCC) worksite where material deliveries, stockpile shaping and site demobilisation preparation was underway.
- Tamworth Road Overbridge Satellite (ref.: TROS) worksite where excavation, piling platform construction and roadhead operation were underway.
- Swinfen Cutting South (ref: SCS) worksite where general site maintenance was underway.
- Trunk's Road (ref.: N23) worksite where general site maintenance was underway.
- Sutton Road Overbridge (ref.: SRO) worksite where general site maintenance, water pumping, excavation, material movements and stockpiling, and pile cropping and concrete pours were underway.
- Drayton Lane Cutting (ref.: DLC) worksite where steel fixing, material deliveries and lifting and general site maintenance 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 one (1) time during the reporting period.

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

No complaints were received during the reporting 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, wind 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 Lichfield District Council (LDC) area for the period 1<sup>st</sup> to 30<sup>th</sup> November 2024.

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

- Shaw Lane Embankment ref: SLE (see Works Identification Plan 1 in Appendix A), where no works were undertaken.
- Fradley Wood Embankment ref: FEW (see Works Identification Plan 2 in Appendix A), where work activities included:
  - Road diversion including excavation, compaction and tarmac placing.
  - Footpath diversion.
- A38 Southbound Slip Road Realignment ref: A38SSRR (see Works Identification Plan 3 in Appendix A), where work activities included:
  - Piling works, including excavation, removal of casings, crane operation, material deliveries, movements and removal.
  - Stone delivery, installation and compaction.
- Streethay Cutting Retaining Structure ref: SCRS (see Works Identification Plan 3 in Appendix A), where work activities included:

- Piling works, including excavation, removal of casings, material deliveries, movements and removal, and piling platform maintenance.
- Stone delivery, including installation and compaction.
- Deliveries and collections.
- General maintenance.
- De-vegetation .
- South Staffs Lane ref: SSL (see Works Identification Plan 3 in Appendix A), where work activities included:
  - Piling works.
  - Deliveries and collections.
  - General maintenance.
  - De-vegetation.
- Cappers Lane Compound ref: CLC (see Works Identification Plan 4 in Appendix A), where no works were undertaken.
- Whittington Common Cutting ref: WCC (see Works Identification Plan 4 in Appendix A), where work activities included:
  - Material deliveries
  - Stockpiling.
  - Site demobilisation preparation.
- Tamworth Road Overbridge Satellite ref: TROS (see Works Identification Plan 5 in Appendix A), where work activities included:
  - Excavation.
  - Piling platform construction
  - Roadhead operation.
- Swinfen Cutting South ref: SCS (see Works Identification Plan 4 in Appendix A), where work activities included:
  - General site maintenance.
- Trunk's Road ref: N23 (see Works Identification Plan 6 in Appendix A), where work activities included:
  - General site maintenance.
- Sutton Road Overbridge ref: SRO (see Works Identification Plan 8 in Appendix A), where work activities included:
  - General site maintenance.
  - Water pumping.

- Excavation.
- Material movements and stockpiling.
- Pile cropping.
- Concrete pours.
- Drayton Lane Cutting ref: DLC (see Works Identification Plan 9 in Appendix A), where work activities included:
  - Steel fixing.
  - Material deliveries and lifting.
  - General site maintenance.

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/collectons/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 Eighteen (18) noise monitoring and six (6) vibration monitoring installations were active in November 2024 in the LDC area. Table 2 summarises the location of the noise and vibration monitoring installations within the LDC area in November 2024.

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

Table 2: Monitoring Locations

| Worksite Reference | Measurement Reference | Address   |
|--------------------|-----------------------|---|
| SLE                | SLE-N2                | Shaw Lane Carpark, Tuppenhurst Lane             |
|                    | SLE-V1                | Shaw Lane Carpark, Tuppenhurst Lane             |
| FEW                | FEW-N1                | Wood End Farm, Wood End Lane                    |
|                    | FEW-V3                | Wood End Farm, Wood End Lane                    |
| A38SSRR            | A38SSRR-N1            | Thompson Way, Streethay                         |
| SCRS               | SCRS-N1               | Manor House, Burton Road, Streethay             |
|                    | SCRS-N2               | Kings Orchard Marina, Broad Ln, Huddlesford     |
| SSL                | SSL-N1                | Ash Tree Lane, Hill Farm, Fradley and Streethay |
| CLC                | CLC-N1                | Ivy Cottage, Park Lane, Fradley and Streethay   |
|                    | CLC-N4                | Huddlesford Lane, Fradley and Streethay         |

| Worksite Reference | Measurement Reference | Address   |
|--------------------|-----------------------|---|
|                    | CLC-V1                | Ivy Cottage, Park Lane, Fradley and Streethay                 |
| WCC                | WCC-N1                | Whittington Hill Farm, Darnford Lane, Whittington             |
|                    | WCC-N2                | Elfield House, Whittington Common Road, Whittington           |
|                    | WCC-N3                | Whittington Hill Farm DLOB Facade, Darnford Lane, Whittington |
| TROS               | TROS-N1               | Tamworth Road Overbridge Site, Tamworth Road, Whittington     |
|                    | TROS-N2               | The Bungalow, Tamworth Road, Whittington                      |
|                    | TROS-V2               | The Bungalow, Tamworth Road, Whittington                      |
| SCS                | SCS-N1                | The Lodge, Rock Hill, Hints                                   |
| N23                | N23-N1                | 21 Roman Road   |
| SRO                | SRO-N1                | Sutton Road, Drayton Bassett, Mile Oak                        |
|                    | SRO-N3                | White House Farm, Bangley Lane, Tamworth                      |
|                    | SRO-V2                | Bangley Lane, Hints   |
|                    | SRO-V3                | White House Farm, Bangley Lane, Tamworth                      |
| DLC                | DLC-N1                | Oak Dairy Farm, Drayton 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 the monitoring locations 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<br>(Highest Day LAeq,T) |                |                |                |                | Saturday Average LAeq,T<br>(Highest Day LAeq,T) |                |                |                |                | Sunday / Public Holiday Average LAeq,T<br>(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    |
| SLE                | SLE-N2                | Shaw Lane Carpark, Tuppenhurst Lane             | Free-field                       | 53.3<br>(58.6)                                 | 53.6<br>(57.6) | 53.7<br>(60.3) | 52.9<br>(58.6) | 48.5<br>(57.3) | 52.9<br>(55.4)                                  | 54.1<br>(57.5) | 54.6<br>(60.6) | 52.8<br>(58.9) | 43.7<br>(53.7) | 52.6<br>(58.9)   | 46.2<br>(55.7) |
| FEW                | FEW-N1                | Wood End Farm, Wood End Lane                    | Free-field                       | 60.5<br>(62.3)                                 | 59.9<br>(62.6) | 57.8<br>(58.9) | 55.3<br>(57.6) | 53.6<br>(60.7) | 54.7<br>(56.0)                                  | 57.7<br>(58.5) | 58.0<br>(58.9) | 55.5<br>(59.0) | 49.7<br>(54.7) | 56.3<br>(62.9)   | 52.5<br>(58.4) |
| A38SSRR            | A38SSRR-N1            | Thompson Way, Streethay                         | Free-field                       | 60.6<br>(64.2)                                 | 60.2<br>(62.1) | 59.0<br>(61.4) | 58.1<br>(64.8) | 56.3<br>(63.6) | 57.6<br>(63.1)                                  | 58.9<br>(63.3) | 58.8<br>(62.6) | 57.4<br>(61.3) | 52.9<br>(57.0) | 57.2<br>(63.3)   | 54.6<br>(60.6) |
| SCRS               | SCRS-N1               | West of Manor House, Burton Road, Streethay     | Free-field                       | 53.7<br>(59.4)                                 | 54.4<br>(60.4) | 50.8<br>(54.1) | 53.4<br>(82.8) | 50.9<br>(79.6) | 49.5<br>(54.2)                                  | 51.2<br>(54.2) | 51.0<br>(53.7) | 48.5<br>(52.7) | 54.0<br>(80.7) | 58.9<br>(85.1)   | 55.3<br>(82.3) |
|                    | SCRS-N2               | Kings Orchard Marina, Broad Ln, Huddlesford     | Free-field                       | 54.0<br>(58.3)                                 | 52.9<br>(55.4) | 53.6<br>(57.1) | 52.2<br>(56.7) | 50.7<br>(56.4) | 52.1<br>(54.1)                                  | 54.0<br>(57.6) | 53.4<br>(56.6) | 52.5<br>(63.0) | 49.4<br>(58.1) | 50.9<br>(61.5)   | 48.7<br>(54.8) |
| SSL                | SSL-N1                | Ash Tree Lane, Hill Farm, Fradley and Streethay | Free-field                       | 57.3<br>(61.6)                                 | 56.7<br>(60.6) | 56.2<br>(59.8) | 55.0<br>(59.0) | 53.7<br>(61.6) | 53.5<br>(55.9)                                  | 55.3<br>(58.3) | 55.6<br>(58.8) | 54.2<br>(57.9) | 49.6<br>(54.6) | 55.5<br>(62.3)   | 52.3<br>(60.4) |

| 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 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    |
| CLC                | CLC-N1                | Ivy Cottage, Park Lane, Fradley and Streethay        | Free-field                       | 58.8<br>(62.0)  | 58.7<br>(72.8) | 57.1<br>(59.9) | 55.5<br>(59.1) | 51.6<br>(59.5) | 54.9<br>(55.8)   | 56.7<br>(59.3) | 57.0<br>(59.9) | 55.4<br>(59.0) | 48.4<br>(54.2) | 55.6<br>(60.5)  | 50.5<br>(58.3) |
|                    | CLC-N4                | Huddlesford Lane, Fradley and Streethay              | Free-field                       | 63.4<br>(65.5)  | 64.0<br>(65.7) | 64.1<br>(65.5) | 62.8<br>(65.2) | 59.4<br>(66.9) | 62.8<br>(64.2)   | 64.0<br>(65.1) | 63.6<br>(65.9) | 63.1<br>(69.0) | 50.8<br>(59.7) | 61.7<br>(65.6)  | 57.8<br>(64.6) |
| WCC                | WCC-N1                | Whittington Hill Farm, Darnford Lane, Whittington    | Free-field                       | 49.4<br>(54.0)  | 50.4<br>(54.1) | 48.4<br>(53.5) | 47.5<br>(61.1) | 44.0<br>(53.2) | 47.0<br>(50.4)   | 48.2<br>(54.8) | 48.5<br>(56.9) | 48.1<br>(58.5) | 44.0<br>(58.3) | 47.3<br>(54.6)  | 43.9<br>(53.0) |
|                    | WCC-N2                | Ellfield House, Whittington Common Road, Whittington | Free-field                       | 48.9<br>(53.9)  | 50.8<br>(56.4) | 47.7<br>(52.2) | 47.1<br>(58.4) | 43.6<br>(53.8) | 46.2<br>(55.2)   | 49.2<br>(56.9) | 49.9<br>(60.4) | 49.2<br>(62.9) | 44.5<br>(59.6) | 47.4<br>(56.3)  | 43.3<br>(52.2) |
|                    | WCC-N3                | DLOB Facade, Whittington Hill Farm Darnford Lane     | Free-field                       | 48.5<br>(53.5)  | 50.6<br>(56.7) | 47.2<br>(53.1) | 46.4<br>(55.5) | 43.1<br>(53.0) | 44.6<br>(50.0)   | 46.2<br>(52.9) | 46.2<br>(54.5) | 46.0<br>(56.1) | 42.3<br>(54.6) | 45.7<br>(51.1)  | 43.1<br>(52.5) |
| TROS               | TROS-N1               | South Lodge, Tamworth Road, Whittington              | Free-field                       | 62.0<br>(64.7)  | 61.5<br>(71.9) | 59.5<br>(61.4) | 57.4<br>(60.0) | 52.8<br>(60.3) | 55.7<br>(58.2)   | 59.1<br>(61.1) | 60.2<br>(61.5) | 58.1<br>(61.3) | 53.2<br>(59.9) | 57.5<br>(60.4)  | 52.3<br>(59.0) |
|                    | TROS-N2               | The Bungalow, Tamworth Road, Whittington             | Free-field                       | 44.8<br>(47.2)  | 47.4<br>(58.9) | 42.1<br>(44.4) | 42.2<br>(55.2) | 37.3<br>(49.2) | 43.1<br>(43.1)   | 42.9<br>(42.9) | 43.9<br>(43.9) | 46.0<br>(49.6) | 35.5<br>(39.3) | 42.8<br>(47.1)  | 39.7<br>(47.0) |
| SCS                | SCS-N1                | The Lodge, Rock Hill, Hints                          | Freefield                        | 55.3<br>(59.1)  | 53.7<br>(55.6) | 52.7<br>(55.0) | 50.1<br>(52.8) | 47.6<br>(57.1) | 49.6<br>(52.6)   | 52.4<br>(55.9) | 52.9<br>(57.2) | 51.4<br>(56.9) | 46.2<br>(55.1) | 51.8<br>(57.0)  | 47.1<br>(53.2) |



| 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 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    |
| N23                | N23-N1                | 21 Roman Road                            | Free-field                       | 59.9<br>(61.2)  | 58.7<br>(60.7) | 57.3<br>(60.4) | 54.1<br>(57.9) | 51.8<br>(59.6) | 54.4<br>(56.2)   | 57.2<br>(58.7) | 57.9<br>(60.3) | 56.0<br>(59.2) | 49.2<br>(53.4) | 56.3<br>(60.1)  | 51.6<br>(59.2) |
| SRO                | SRO-N1                | Sutton Road, Drayton Bassett, Mile Oak   | Free-field                       | 56.5<br>(68.8)  | 57.3<br>(65.6) | 50.3<br>(53.5) | 48.6<br>(52.2) | 45.4<br>(52.8) | 48.0<br>(49.1)   | 50.1<br>(51.6) | 49.8<br>(51.8) | 49.0<br>(52.3) | 45.6<br>(49.4) | 49.2<br>(52.7)  | 44.8<br>(51.6) |
|                    | SRO-N3                | White House Farm, Bangley Lane, Tamworth | Free-field                       | 49.1<br>(56.2)  | 55.6<br>(65.4) | 45.0<br>(49.2) | 43.9<br>(49.8) | 40.4<br>(49.3) | 44.0<br>(50.1)   | 45.6<br>(49.8) | 44.5<br>(50.1) | 43.7<br>(49.3) | 40.4<br>(49.1) | 45.4<br>(52.2)  | 39.0<br>(46.3) |
| DLC                | DLC-N1                | Oak Dairy Farm, Drayton Lane             | Free-field                       | 46.4<br>(49.3)  | 46.0<br>(48.4) | 43.7<br>(47.3) | 41.9<br>(46.7) | 38.4<br>(46.4) | 44.1<br>(45.6)   | 45.7<br>(45.9) | 44.6<br>(45.1) | 44.1<br>(51.8) | 40.0<br>(44.0) | 45.0<br>(51.9)  | 36.1<br>(42.4) |

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 |
|--------------------|-----------------------|--|--|
| SLE                | SLE-V1                | Shaw Lane Carpark, Tuppenhurst Lane                        | 0.27 (X-axis)                          |
| FEW                | FEW-V3                | Wood End Farm, Wood End Lane                               | 1.53 (Y-axis)                          |
| CLC                | CLC-V1                | Ivy Cottage, Park Lane, Fradley and Streethay, Whittington | 0.30 (Y-axis)                          |
| TROS               | TROS-V2               | The Bungalow, Tamworth Road                                | 2.56 (X-axis)                          |
| SRO                | SRO-V2                | Bangley Lane, Hints  | 0.72 (Z-axis)                          |
|                    | SRO-V3                | White House Farm, Bangley Lane, Tamworth                   | 1.02 (Y-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 |
|--------------------|-----------------------|-------------------------------------|--|-------------------------------------|--------------------------------|--------------------------------|
| SLE                | SLE-N2                | Shaw Lane Carpark, Tuppenhurst Lane | All days                               | All periods                         | No exceedance                  | No exceedance                  |
| FEW                | FEW-N1                | Wood End Farm, Wood End Lane        | Weekday                                | 0800-1800                           | 1                              | No exceedance                  |
| A38SSRR            | A38SSRR-N1            | Thompson Way, Streethay             | Saturday<br>Saturday<br>Saturday       | 0700-8000<br>1300-1400<br>1400-2200 | 1<br>1<br>7                    | No exceedance                  |
| SCRS               | SCRS-N1               | West of Manor House, Burton Road    | All days                               | All periods                         | No exceedance                  | No exceedance                  |
|                    | SCRS-N2               | Kings Orchard Marina, Broad Lane    | Saturday                               | 1400-2200                           | 1                              | No exceedance                  |
| SSL                | SSL-N1                | Ash Tree Lane, Hill Farm            | 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 |
|--------------------|-----------------------|------------------------------------|--|-------------|--------------------------------|--------------------------------|
| CLC                | CLC-N1                | Ivy Cottage, Park Lane             | All days                               | All periods | No exceedance                  | No exceedance                  |
|                    | CLC-N4                | Huddlesford Lane                   | All days                               | All periods | No exceedance                  | No exceedance                  |
| WCC                | WCC-N1                | Whittington Hill Farm              | All days                               | All periods | No exceedance                  | No exceedance                  |
|                    | WCC-N2                | Ellfield House                     | All days                               | All periods | No exceedance                  | No exceedance                  |
|                    | WCC-N3                | DLOB Facade, Whittington Hill Farm | All days                               | All periods | No exceedance                  | No exceedance                  |
| TROS               | TROS-N1               | South Lodge, Tamworth Road         | Weekday                                | 0800-1800   | 1                              | No exceedance                  |
|                    | TROS-N2               | The Bungalow, Tamworth Road        | All days                               | All periods | No exceedance                  | No exceedance                  |
| SCS                | SCS-N1                | The Lodge, Rock Hill, Hints        | All days                               | All periods | No exceedance                  | No exceedance                  |
| N23                | N23-N1                | 21 Roman Road                      | All days                               | All periods | No exceedance                  | No exceedance                  |
| SRO                | SRO-N1                | Sutton Road, Drayton Bassett       | Weekday                                | 0700-0800   | 1                              | 1<br>No exceedance             |
|                    |                       |                                    | Weekday                                | 0800-1800   | 2                              |                                |
|                    | SRO-N3                | White House Farm, Bangley Lane     | Weekday                                | 0800-1800   | 1                              | No exceedance                  |
| DLC                | DLC-N1                | Oak Dairy Farm, Drayton Lane       | All days                               | All periods | No exceedance                  | No exceedance                  |

2.2.6 Exceedances of the LOAEL were recorded at six (6) noise monitor during weekday and Saturday daytime and afternoon periods.

2.2.7 Exceedances of the SOAEL were recorded at one (1) noise monitor during weekday daytime period.

2.2.8 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 |
|--------------------|-----------------------|------------------------------|---|
| SRO                | SRO-N1                | Sutton Road, Drayton Bassett | 1                                       |

2.2.9 One (1) 24-hour period that experienced an exceedance of the SOAEL was recorded due to HS2 construction works during November 2024.

## 2.3 Exceedances of Trigger Level

2.3.1 Table 7 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 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 |
|--|--------------------|----------------------|-------------------|---|---------------|
| -  | -                  | -                    | -                 | -   | -             |

## 2.4 Complaints

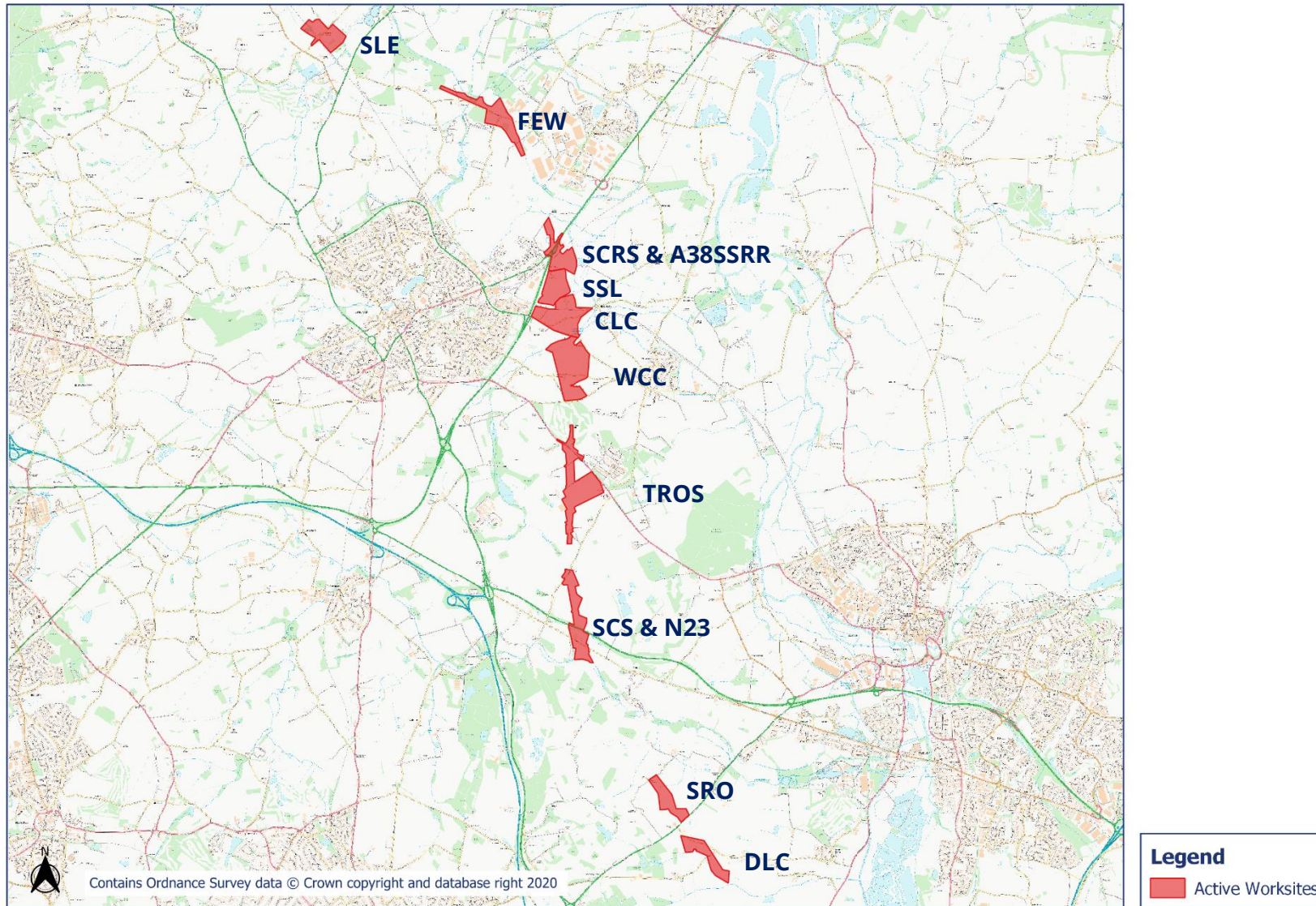
2.4.1 Table 8 provides a summary of complaint information related to noise received during the reporting period, along with the findings of any investigation.

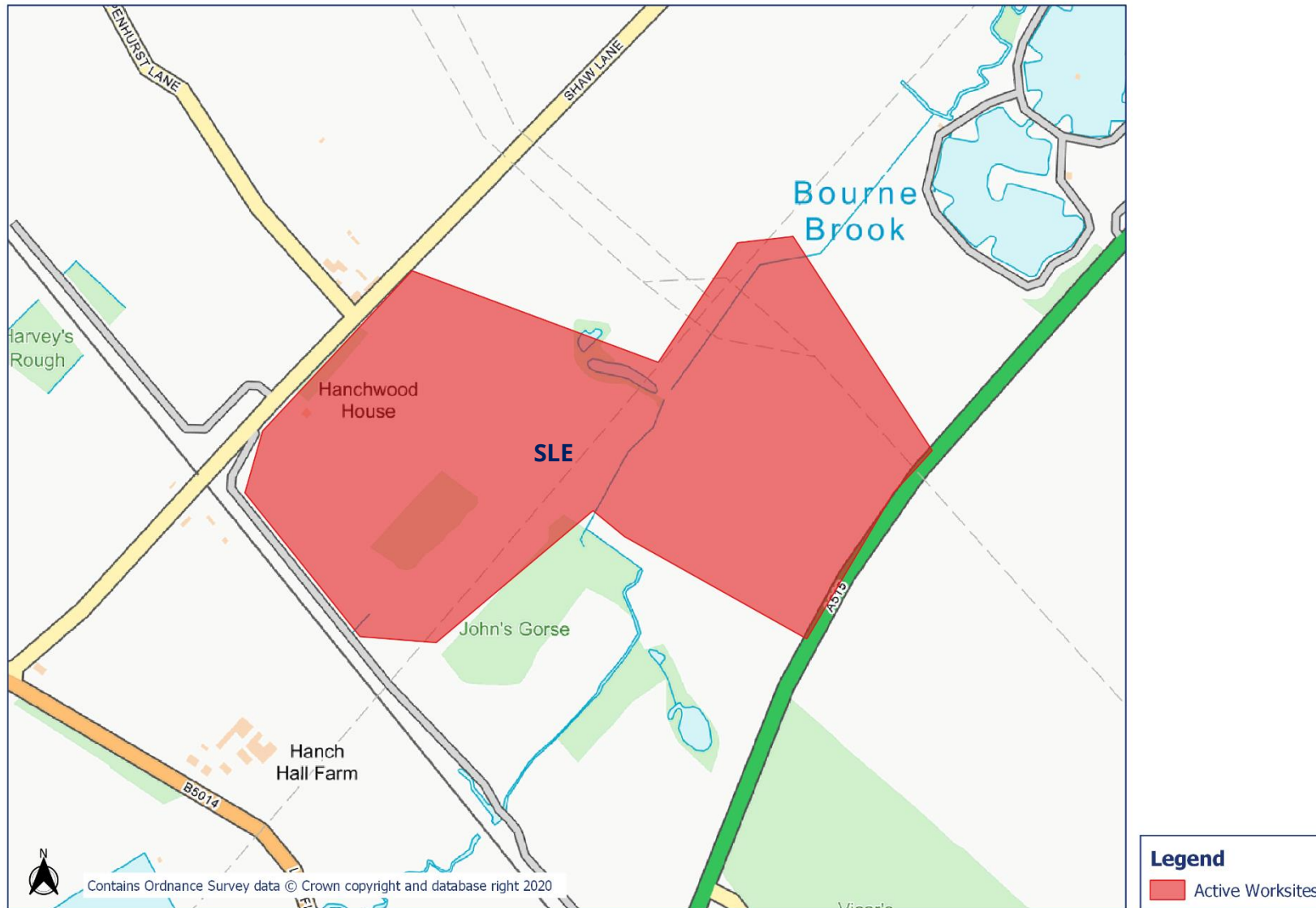
Table 8: Summary of Complaints

| Complaint Reference Number | Worksite Reference | Description of Complaint | Results of Investigation | Actions Taken |
|----------------------------|--------------------|--------------------------|--------------------------|---------------|
| -                          | -                  | -                        | -                        | -             |

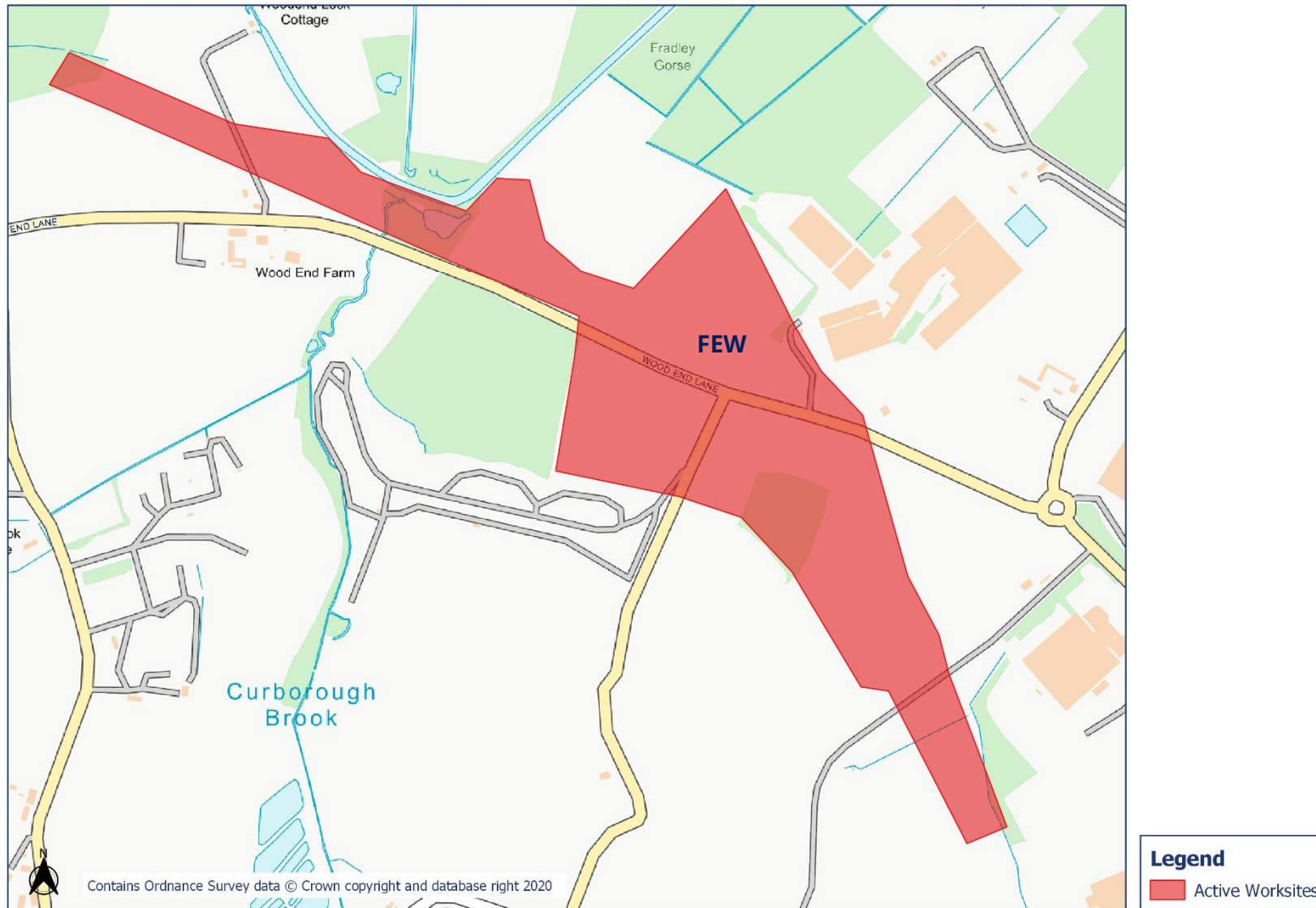
# Appendix A Site Locations

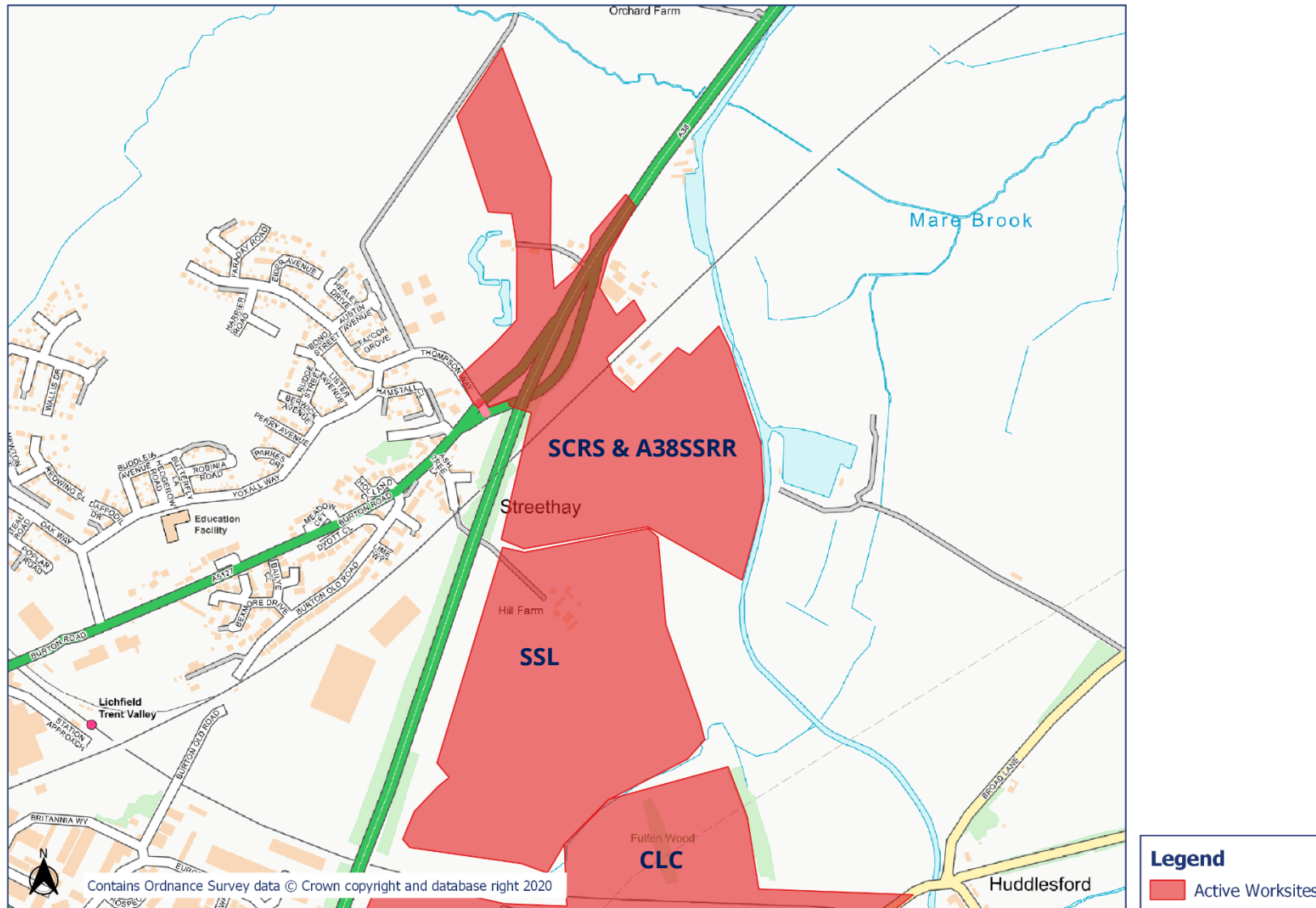


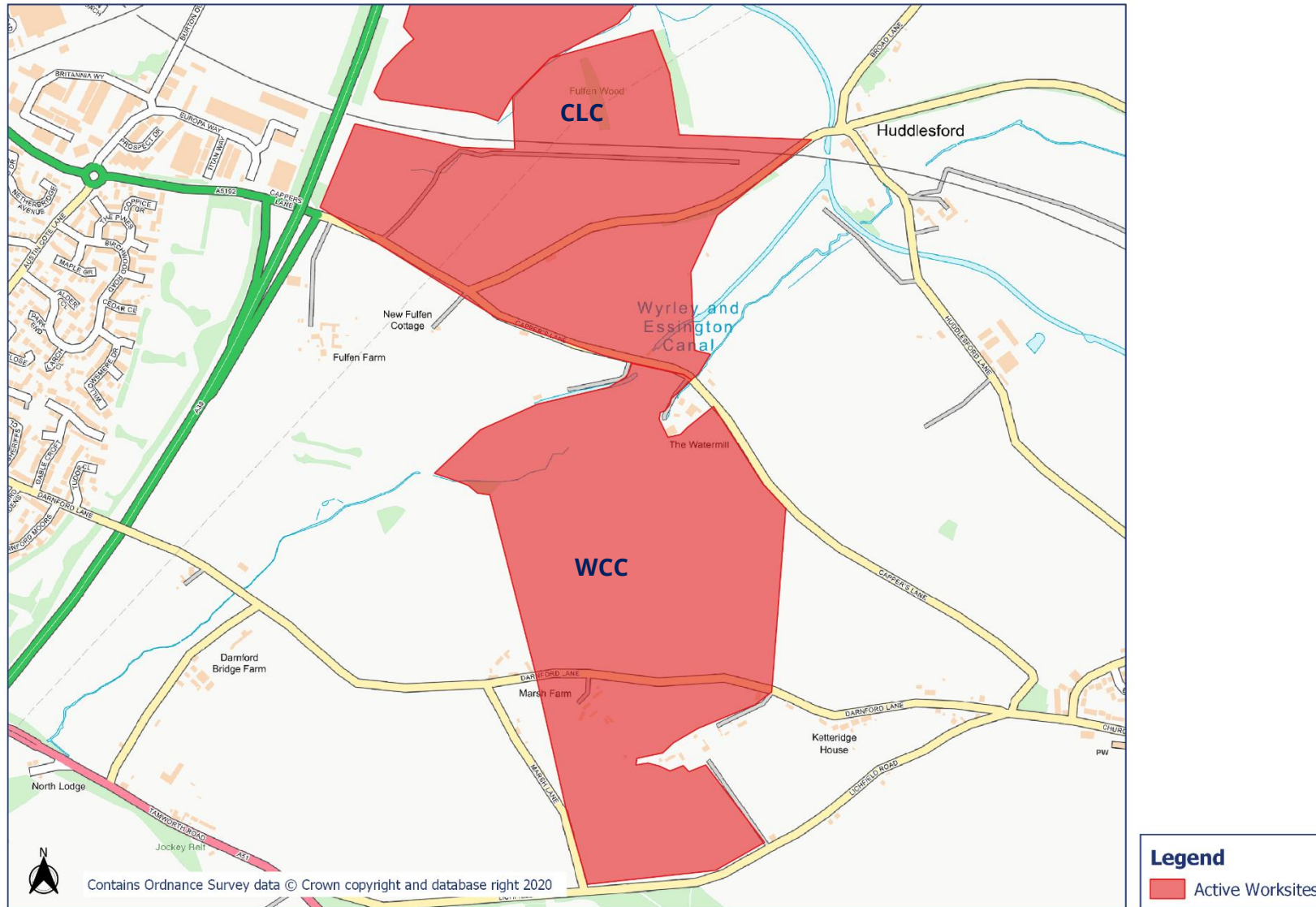


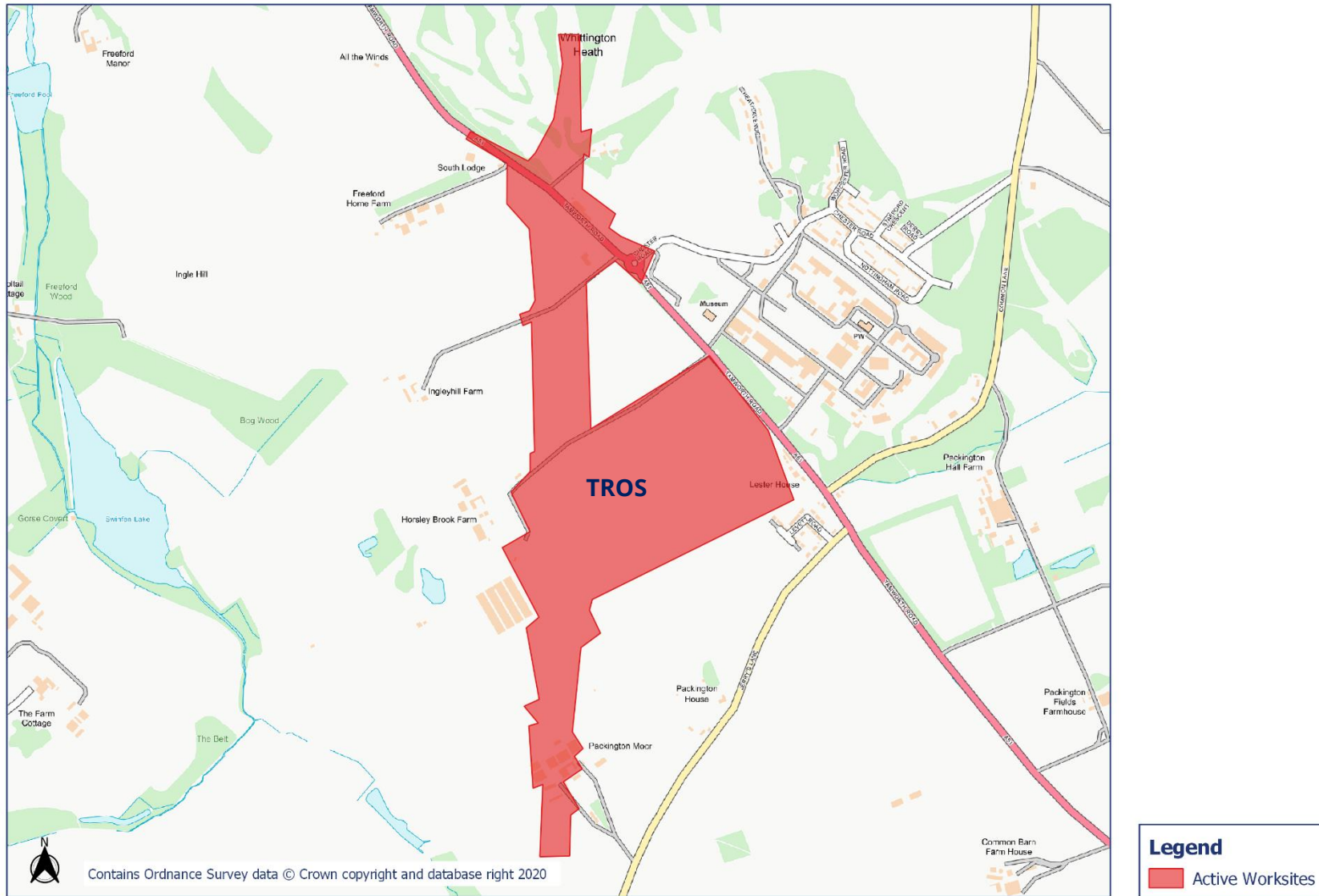




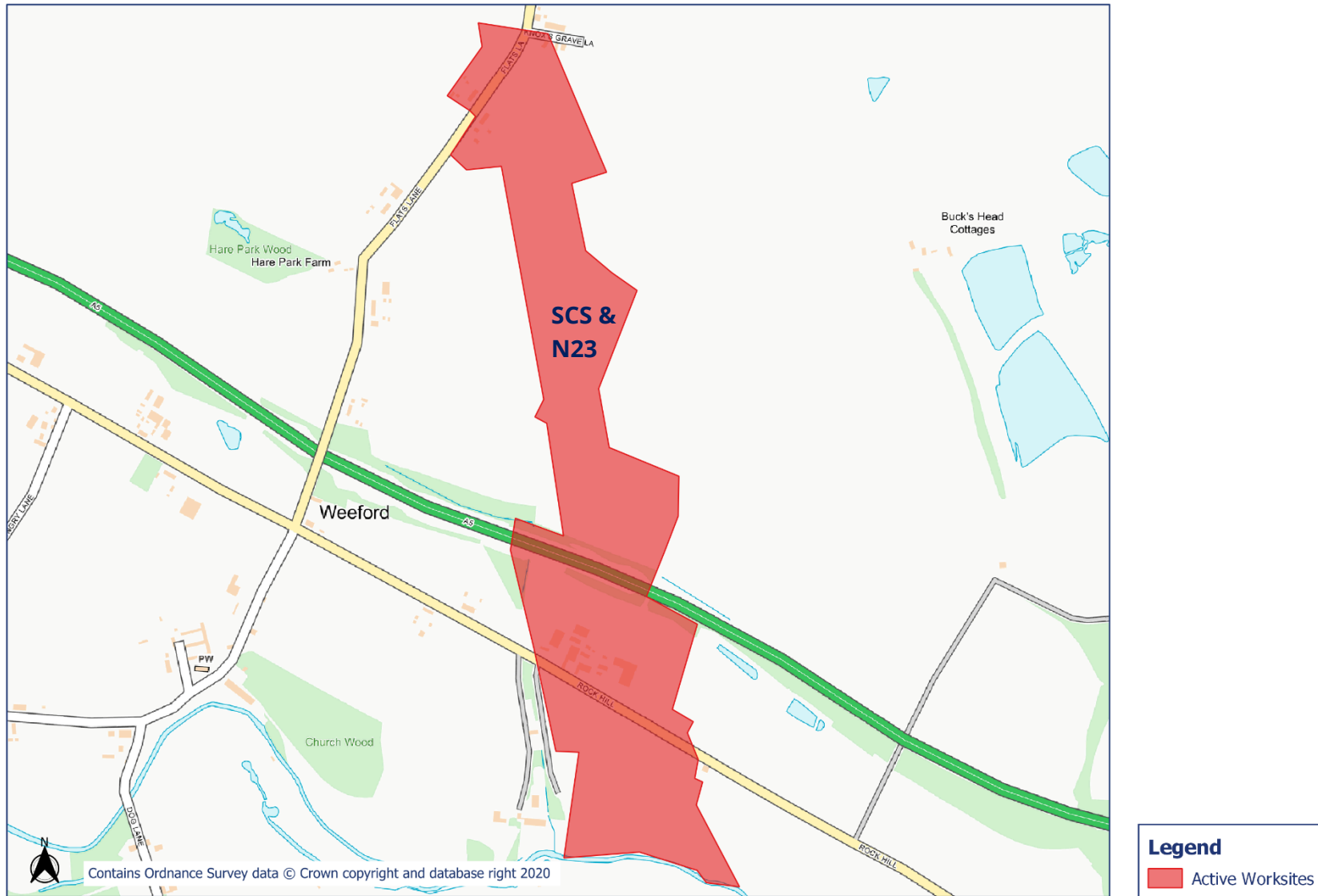


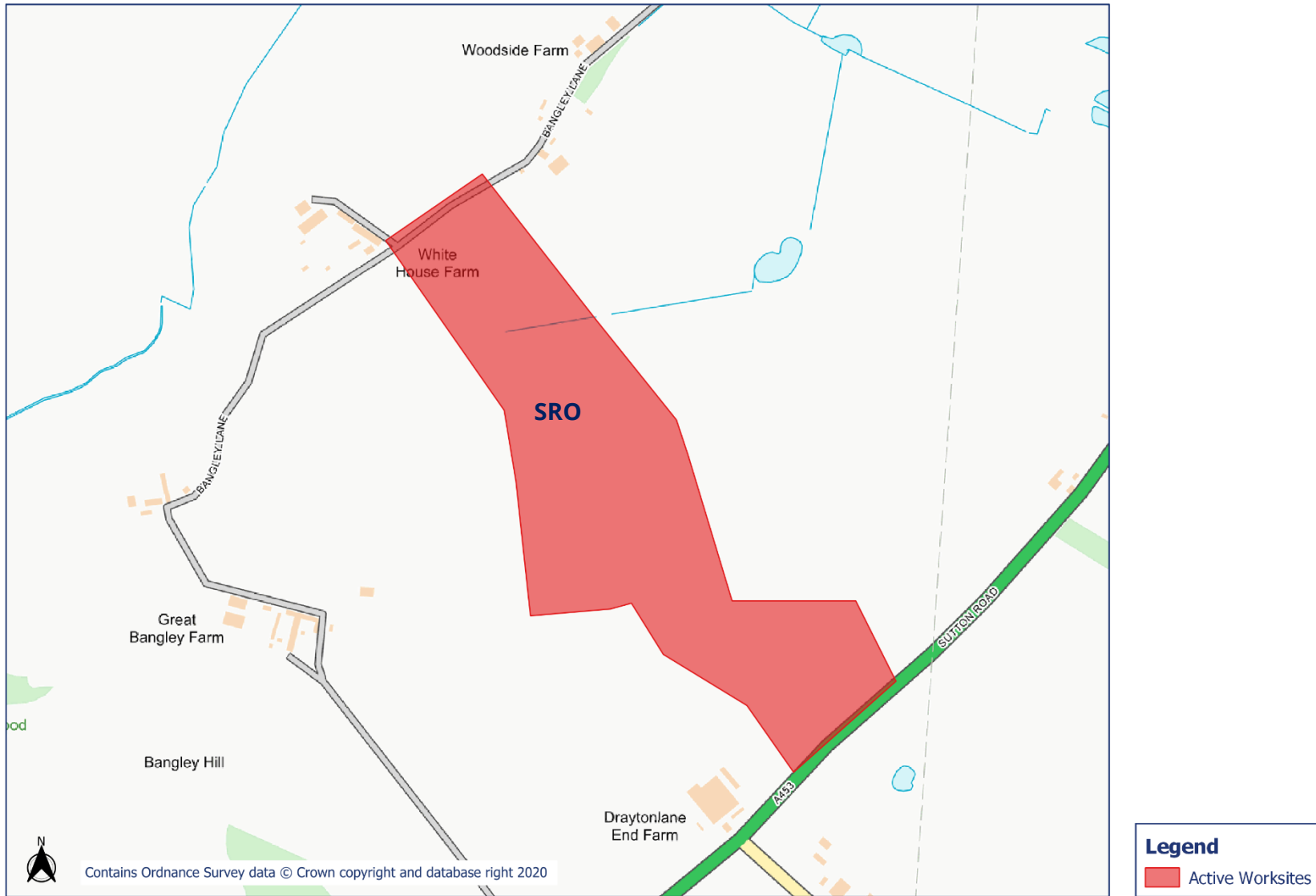


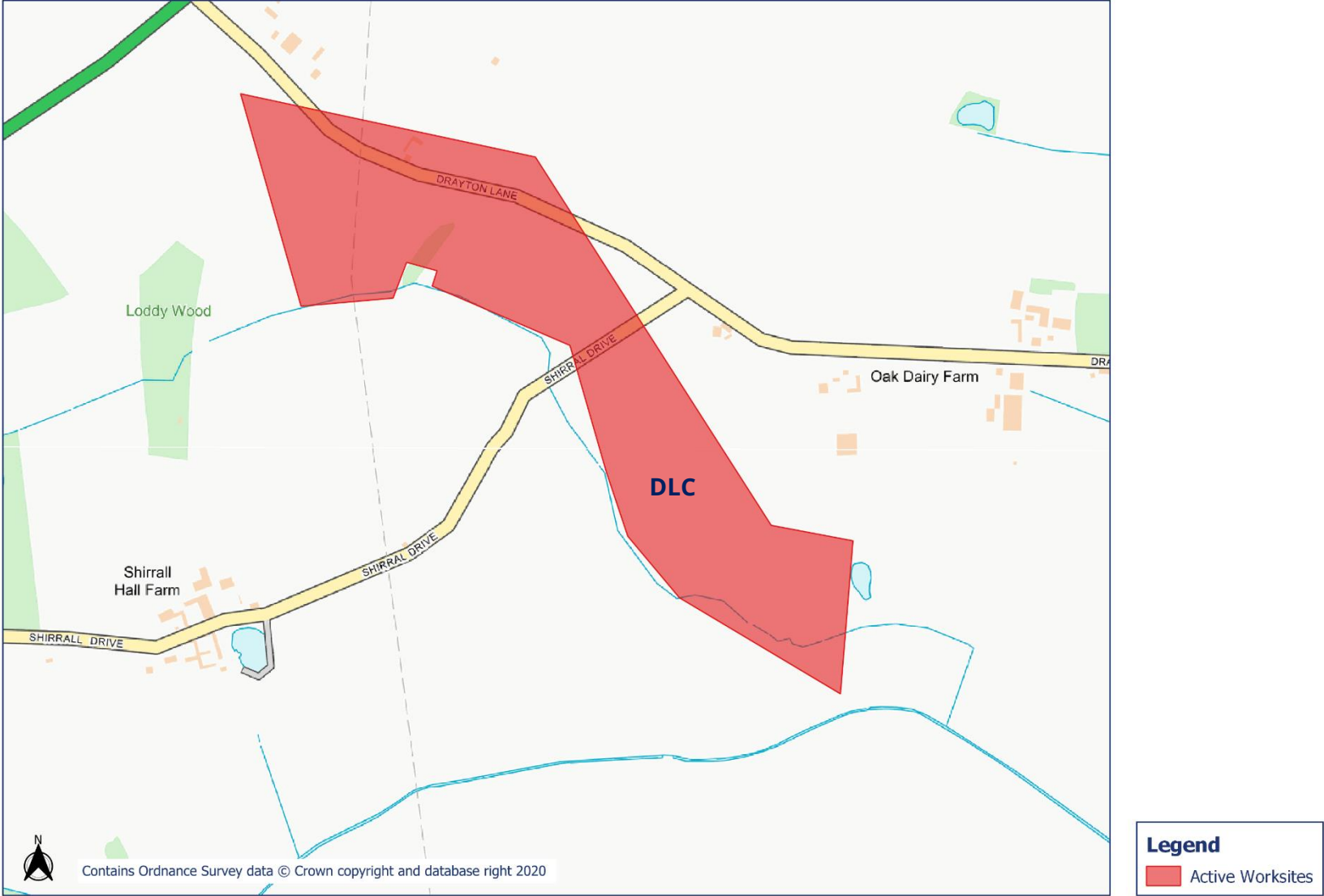






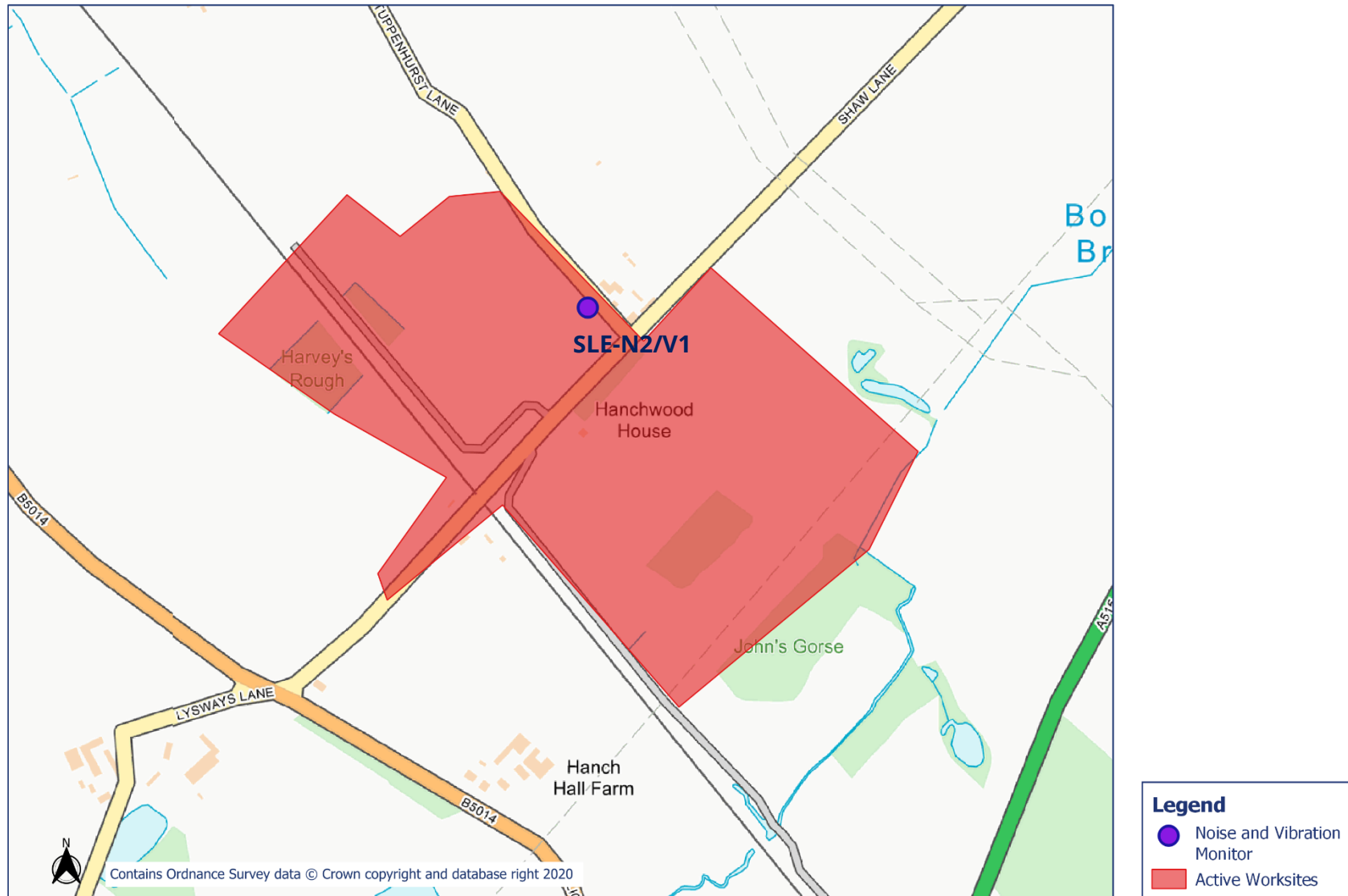




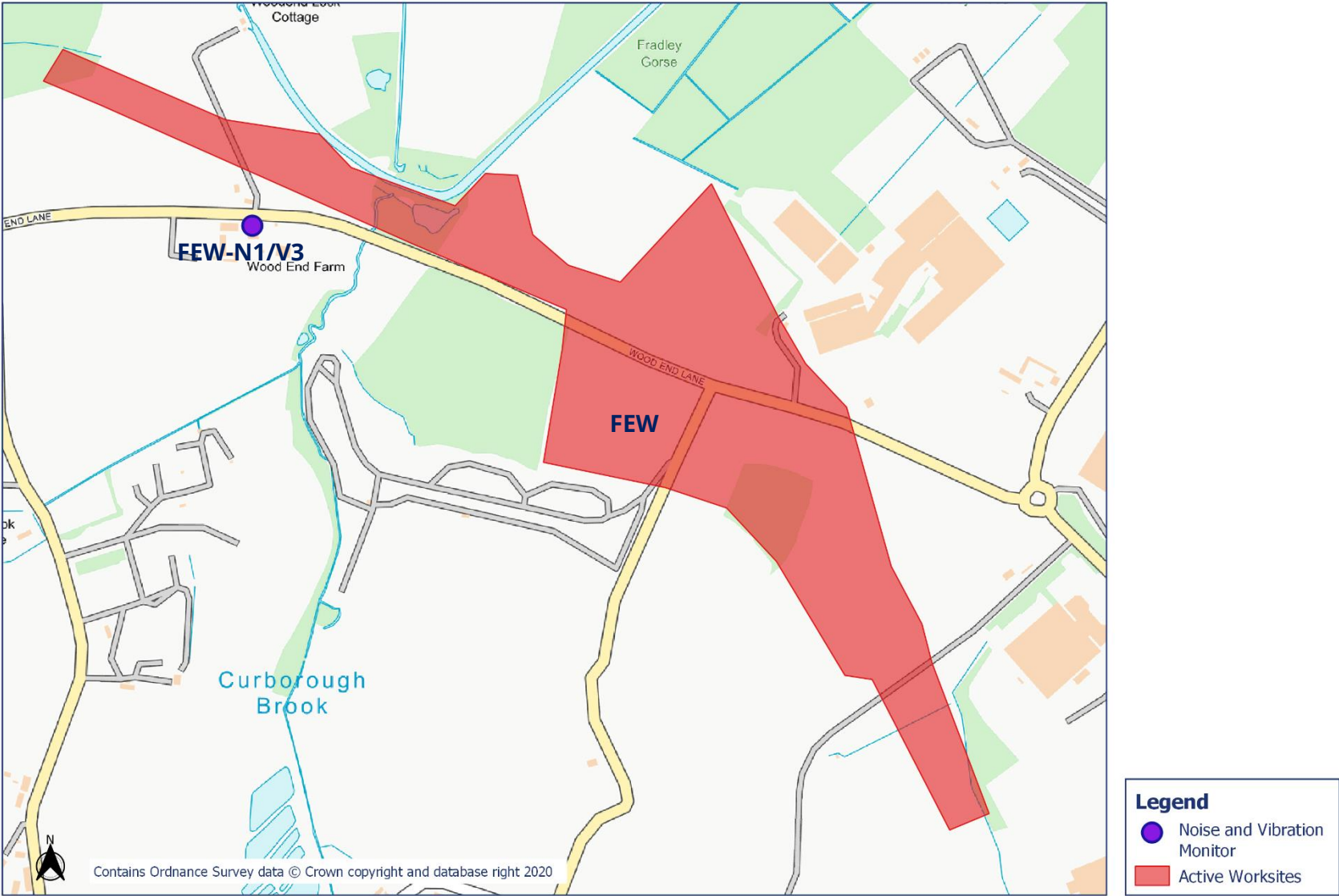


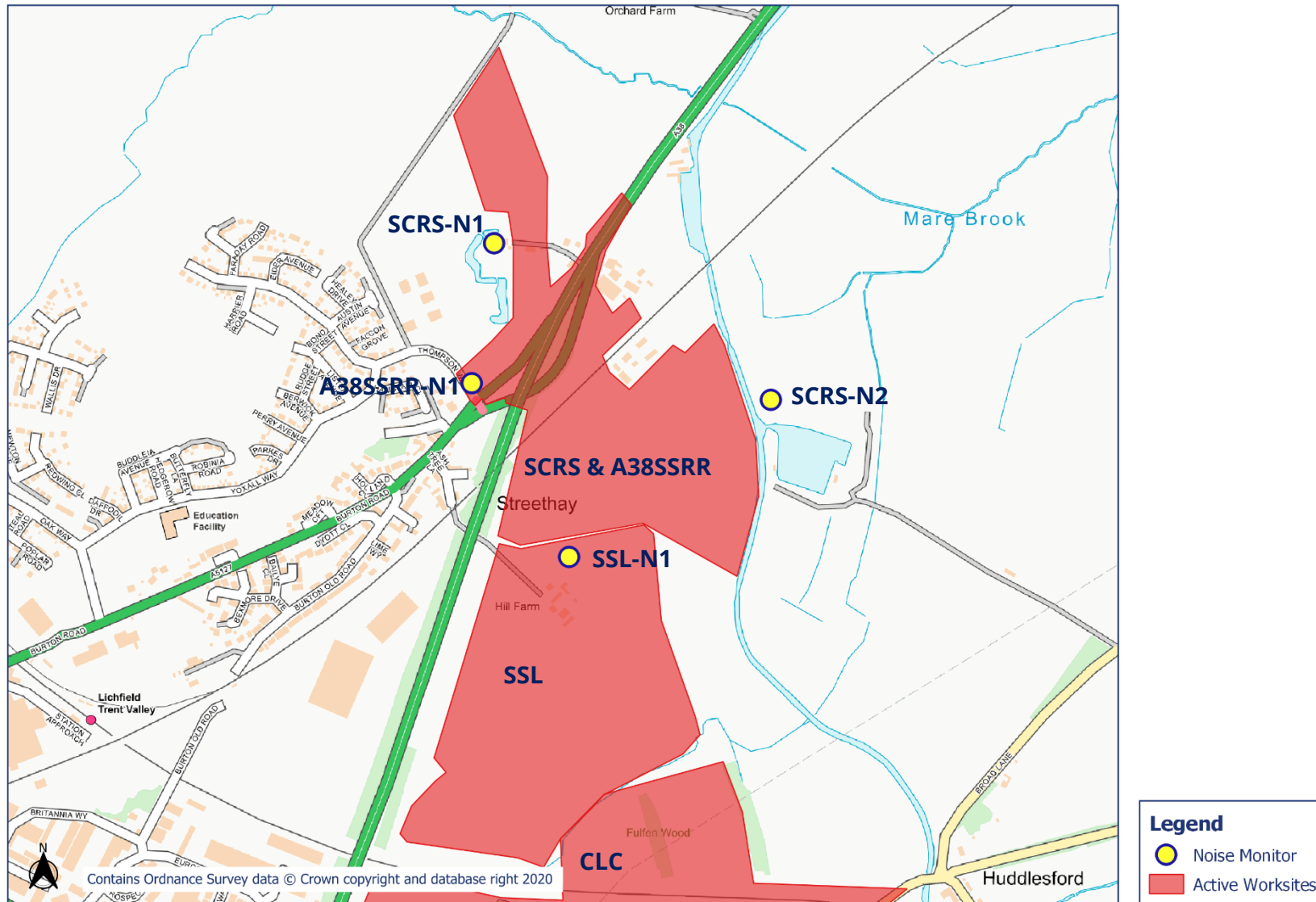
# Appendix B Monitoring Locations

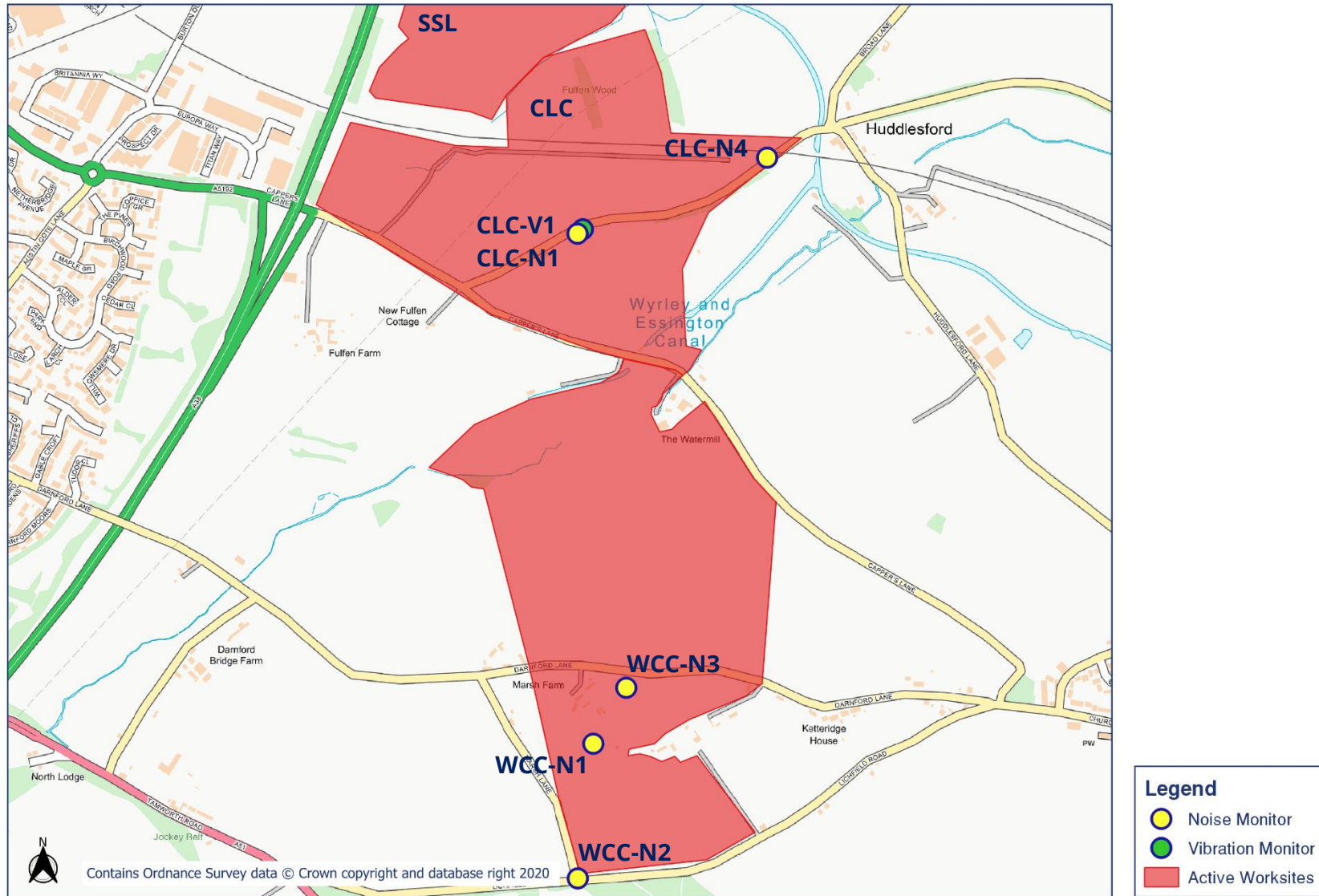




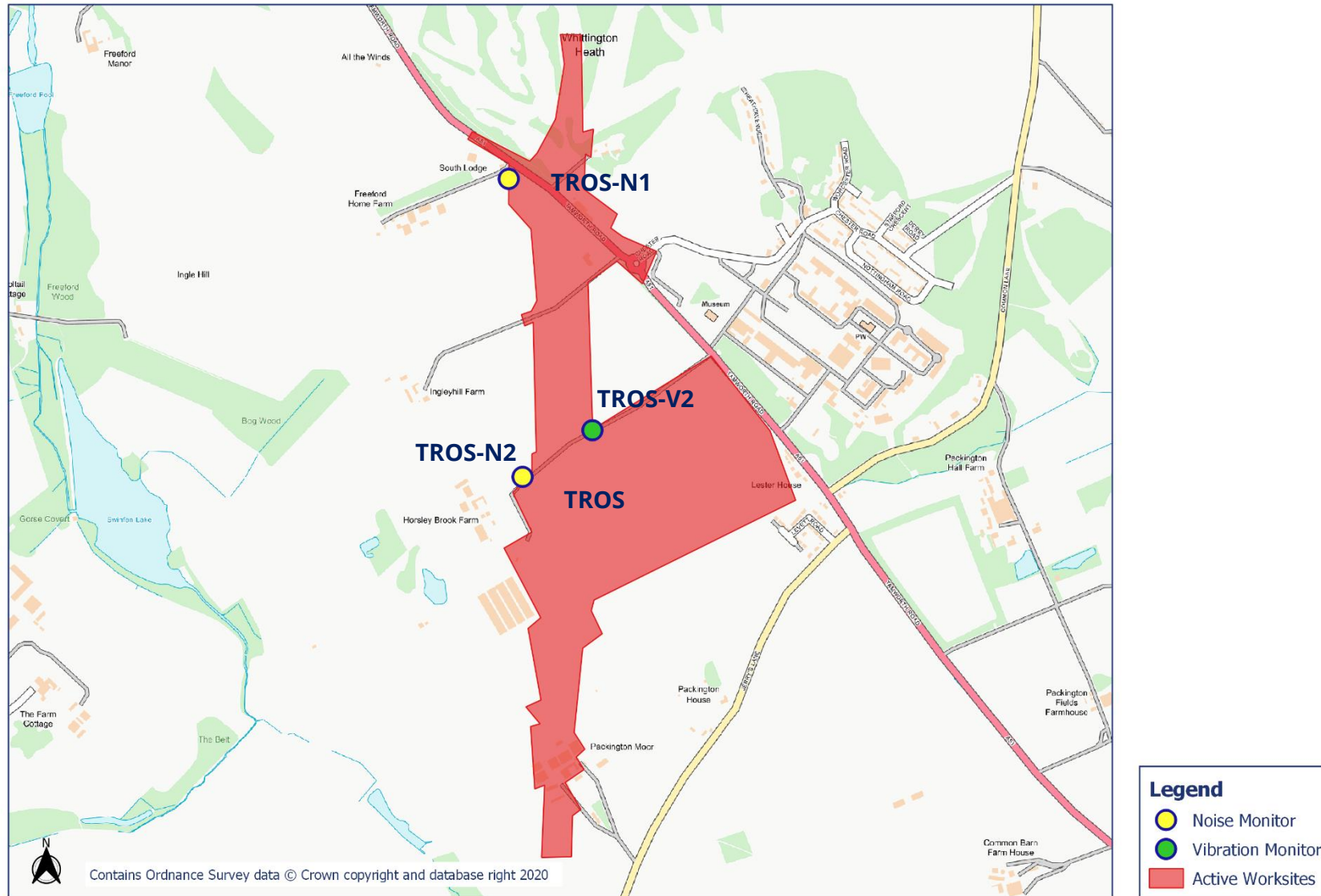
# HS2 Noise and Vibration Monitoring Plan - 2

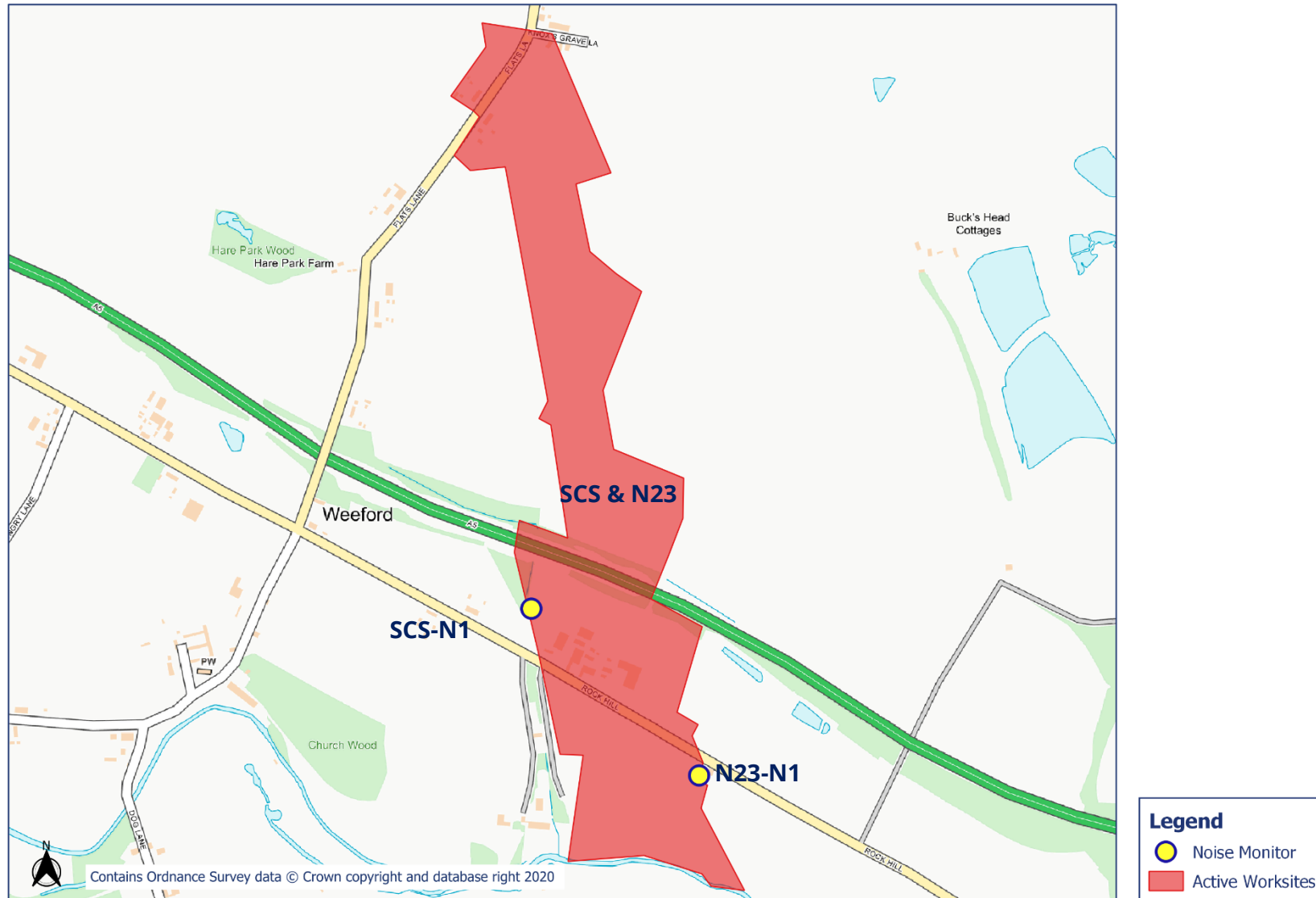


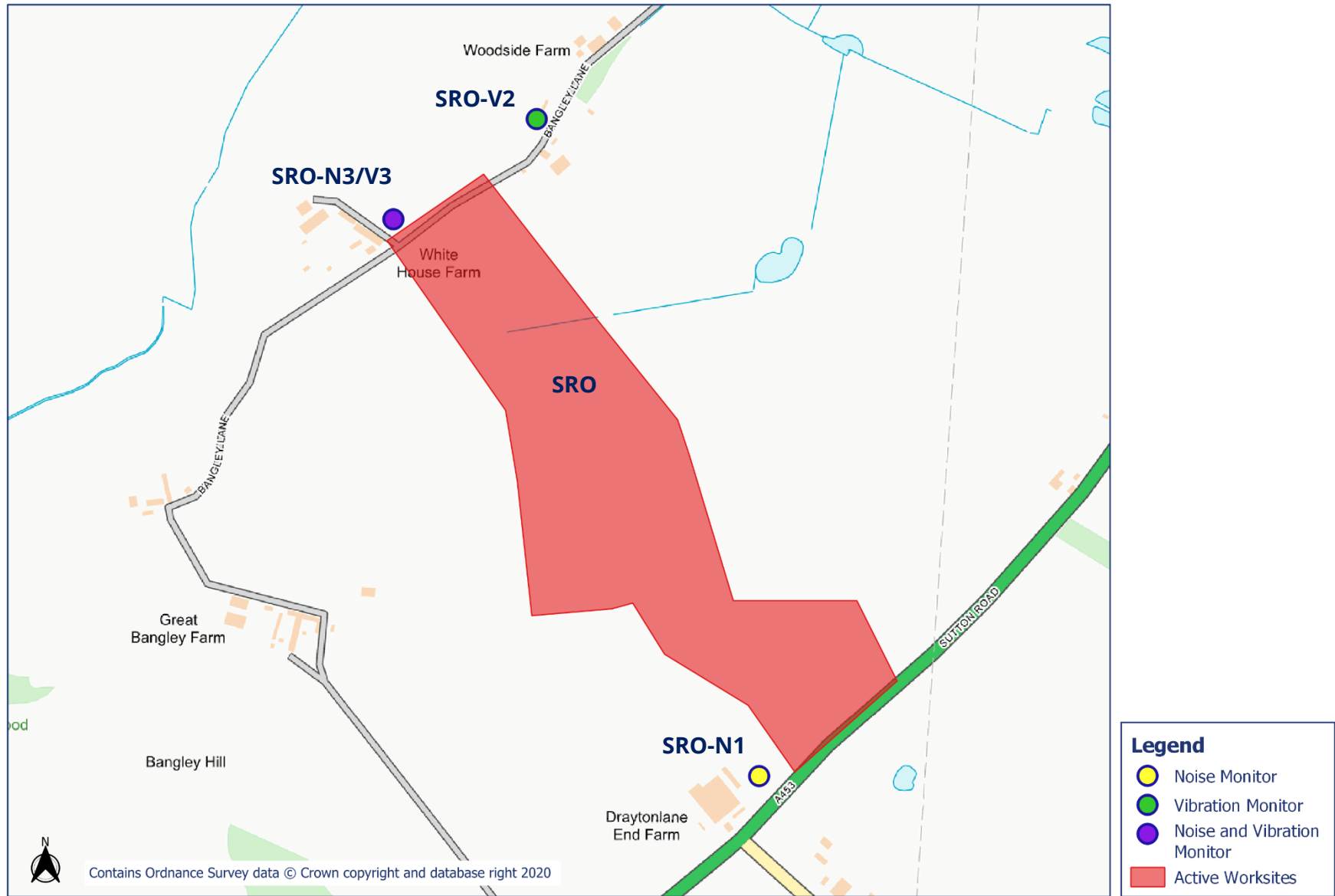


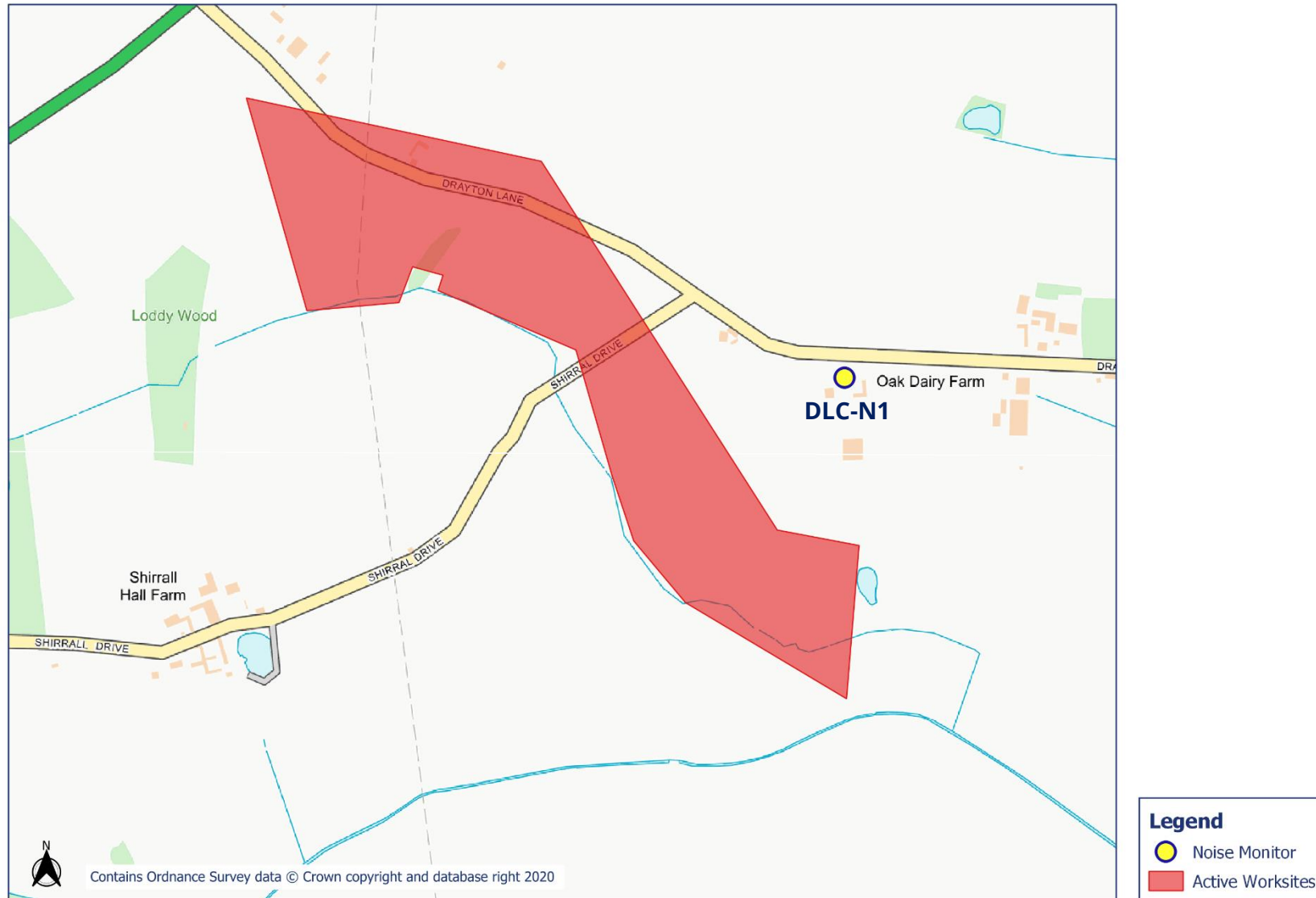












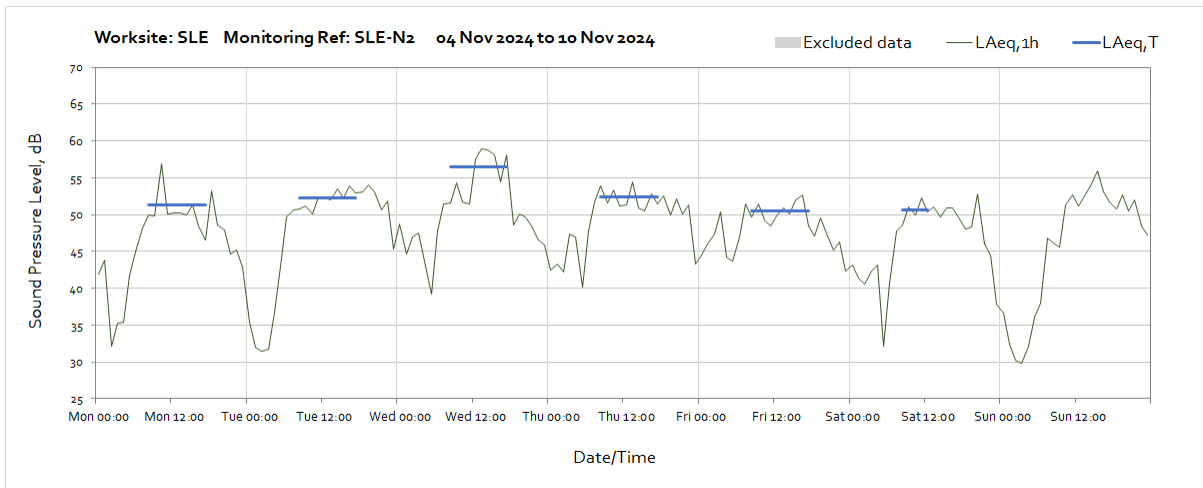
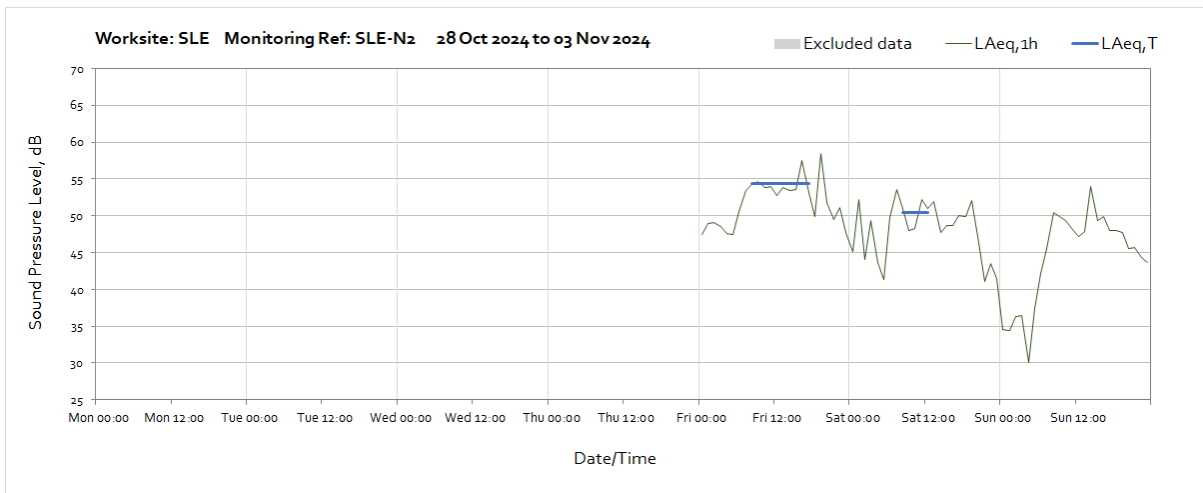


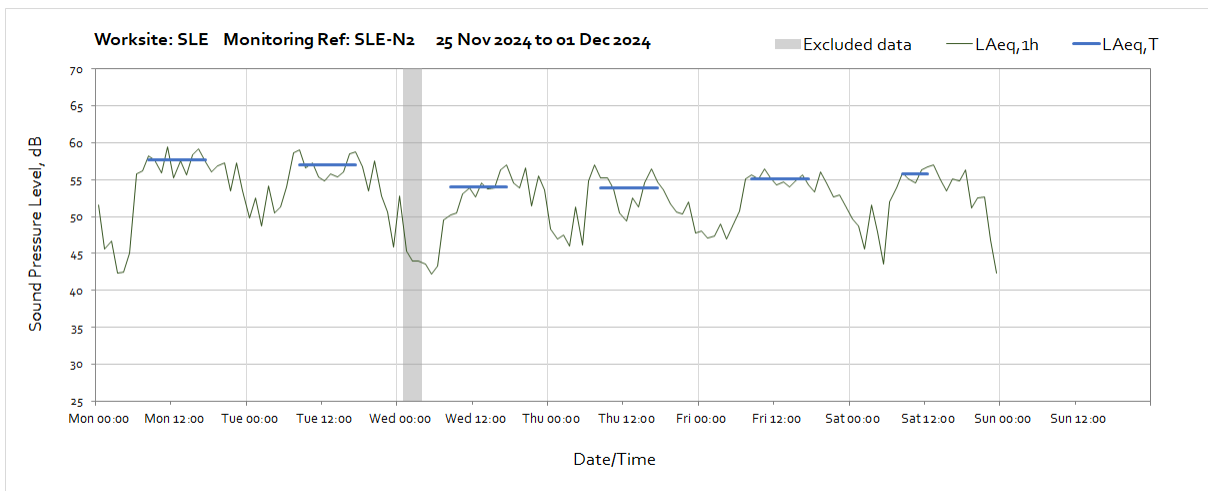
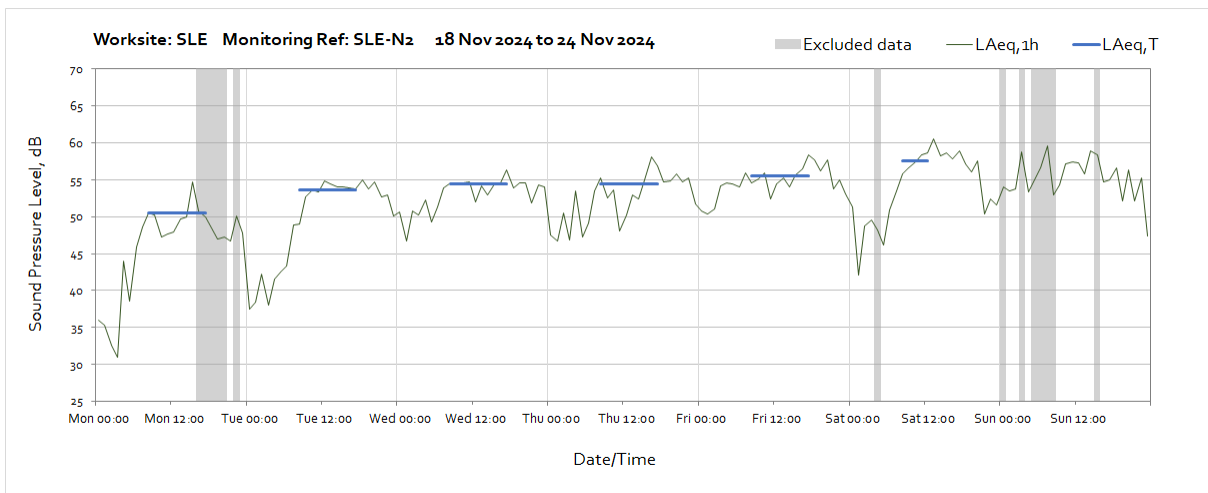
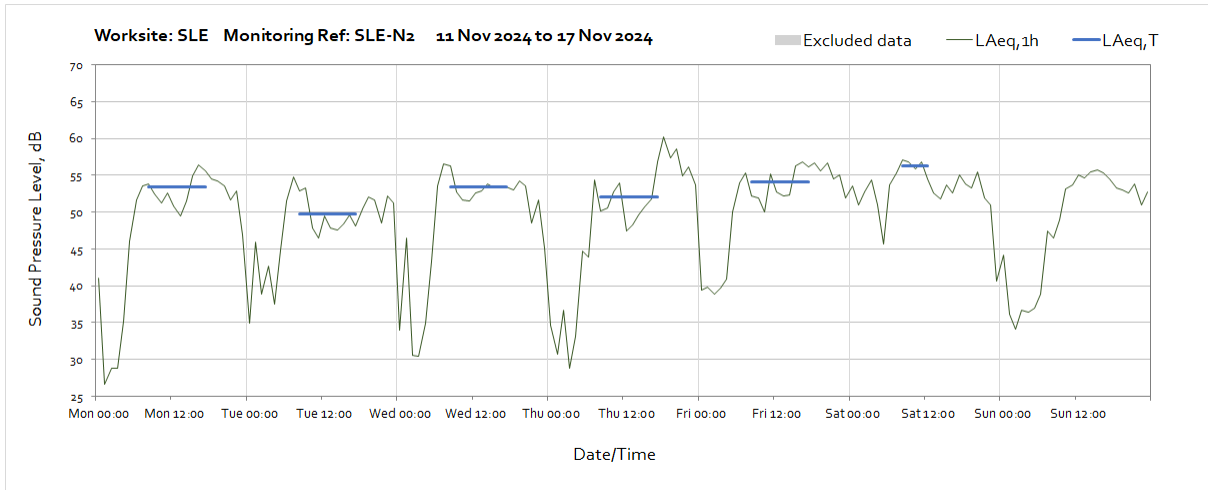
# Appendix C Data

## Noise

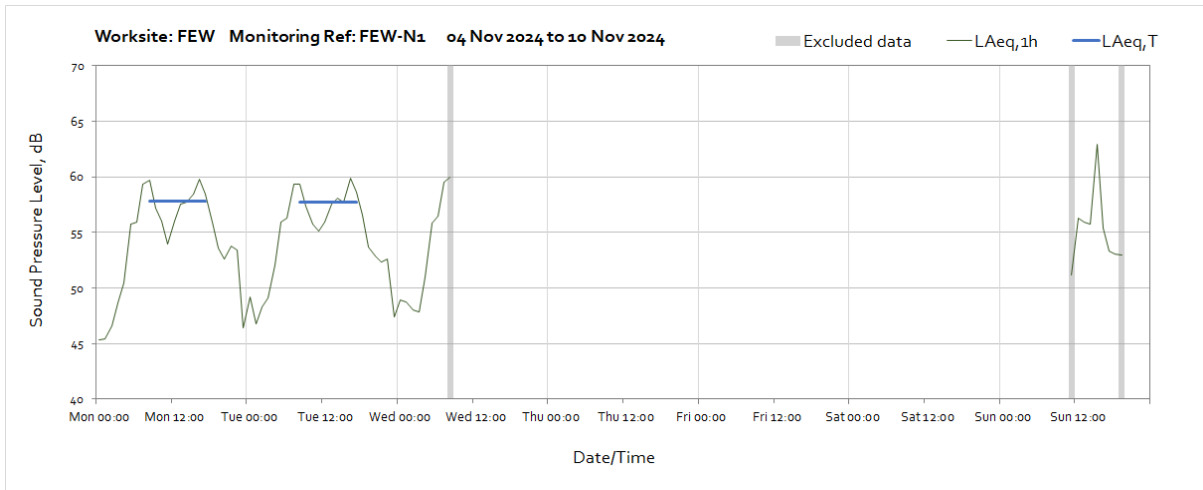
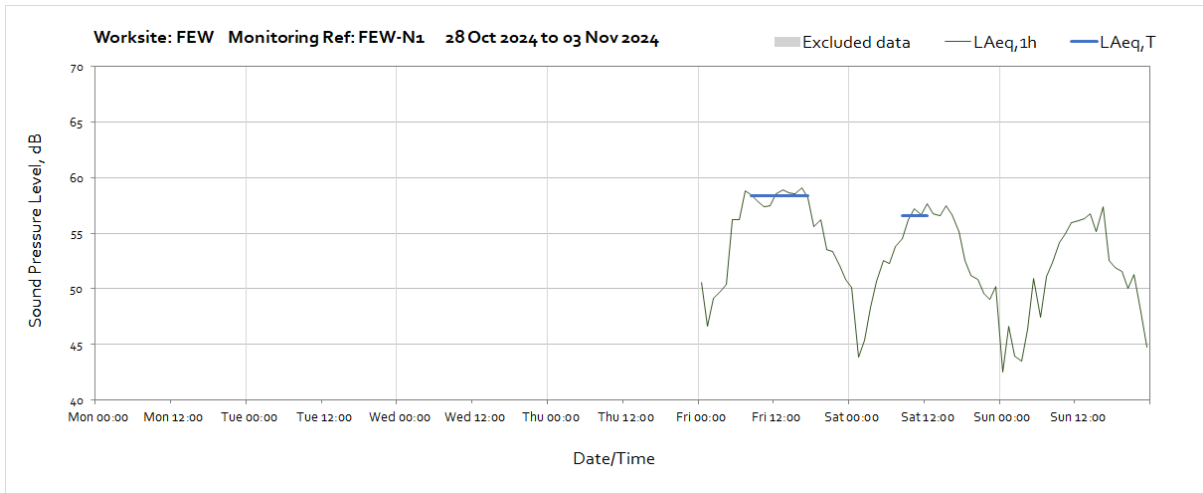
The following graphs show the hourly measured ambient noise level  $L_{Aeq,1h}$  and, where relevant, the averaged noise level  $L_{Aeq,T}$  values, where the time period T is as specified in Table 1 of HS2 Information Paper E23. Periods where noise levels are adversely affected by weather or only measured 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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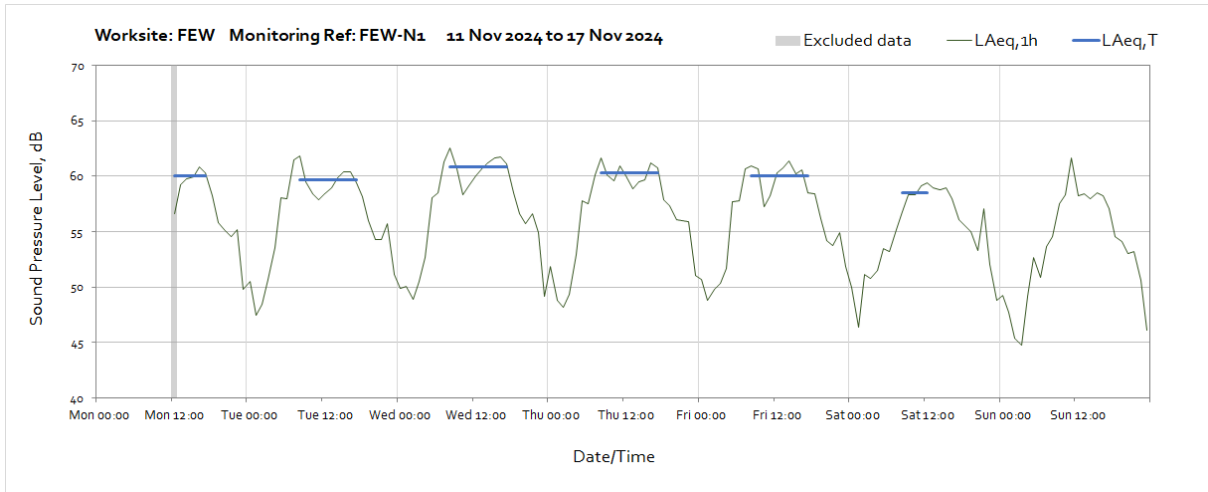




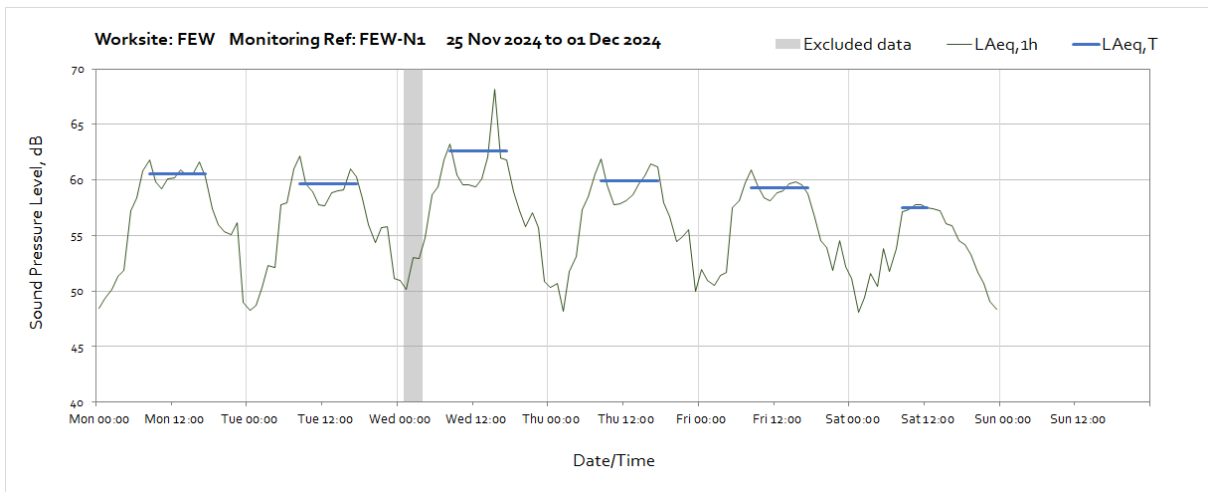
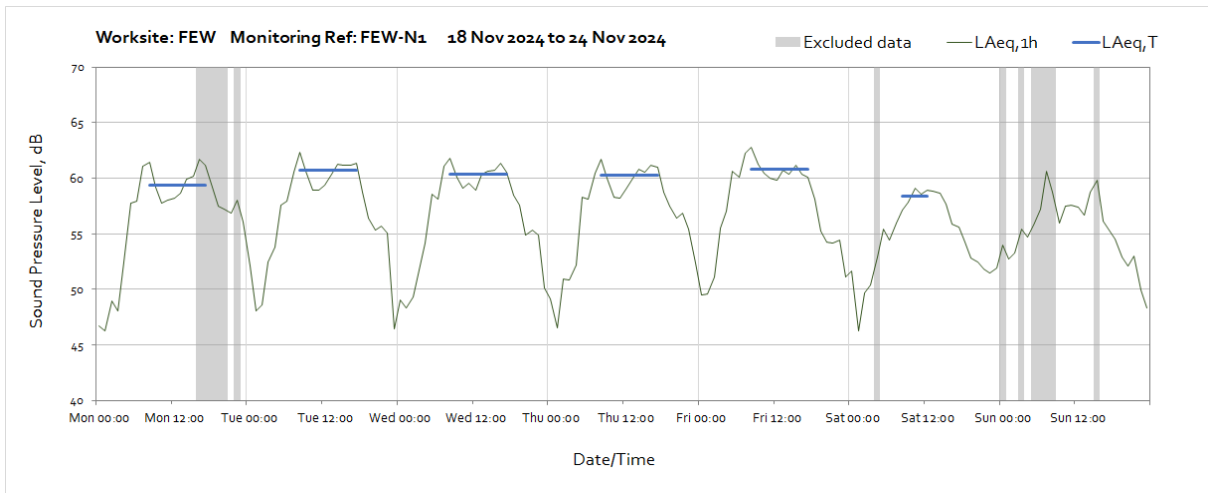
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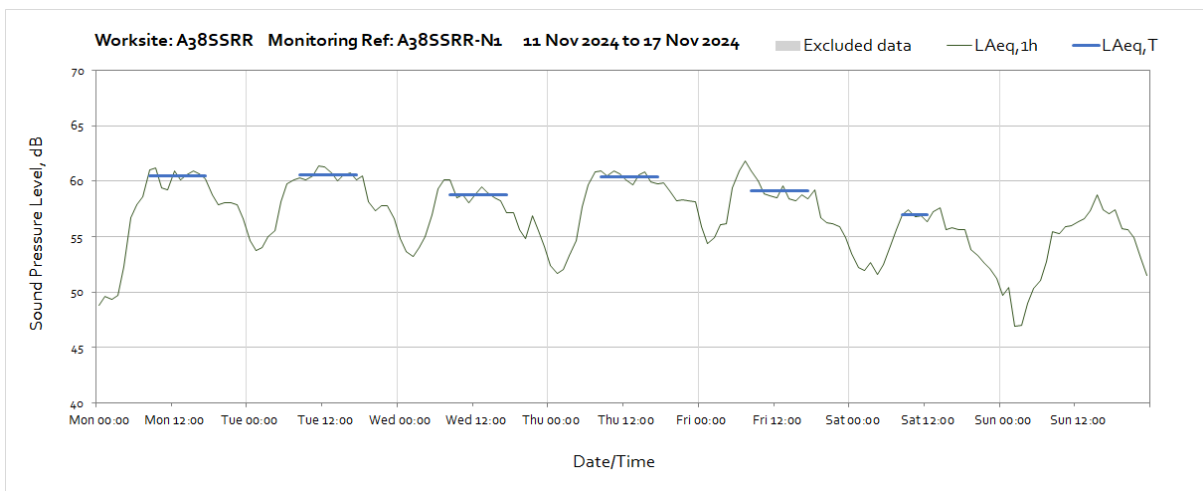
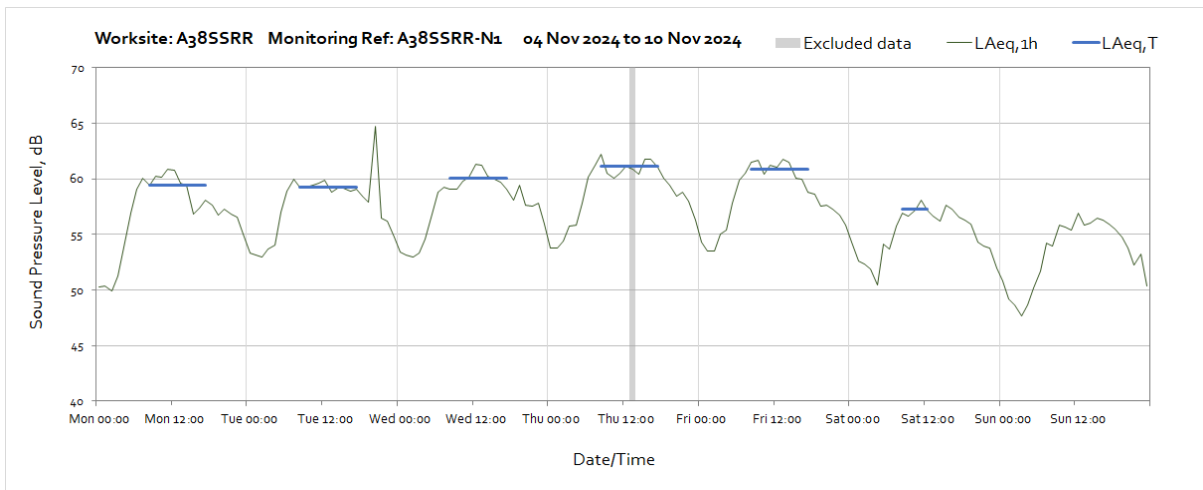
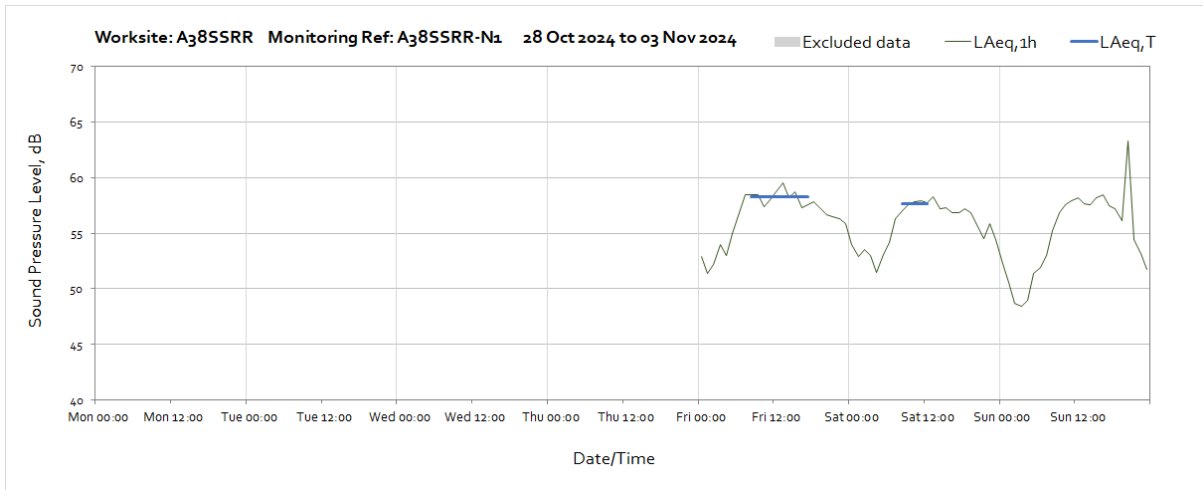
Note: Missing data throughout the month was due to a loss of power to the monitoring station caused by poor weather conditions preventing sufficient light reaching the solar panel.

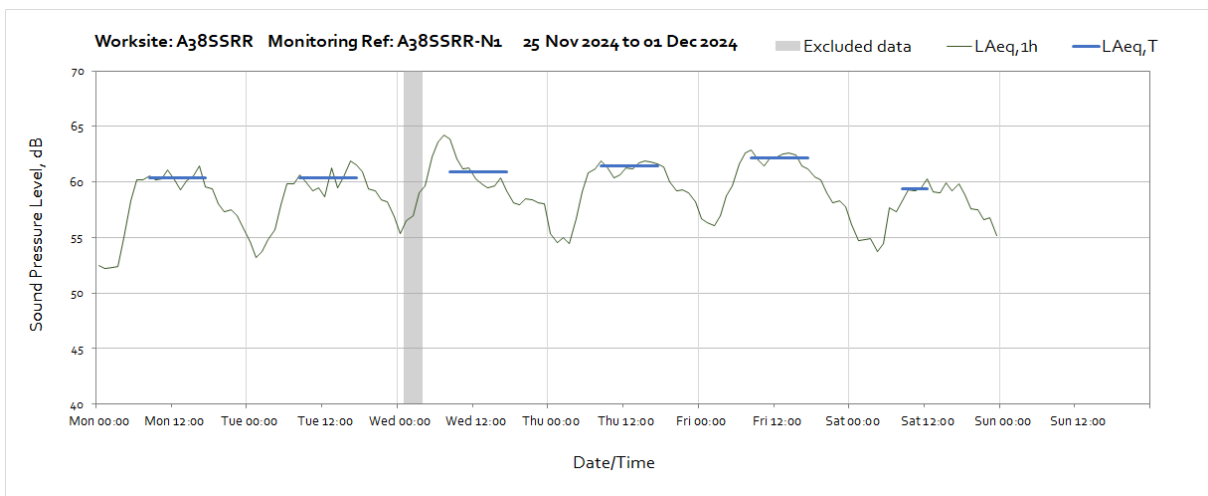
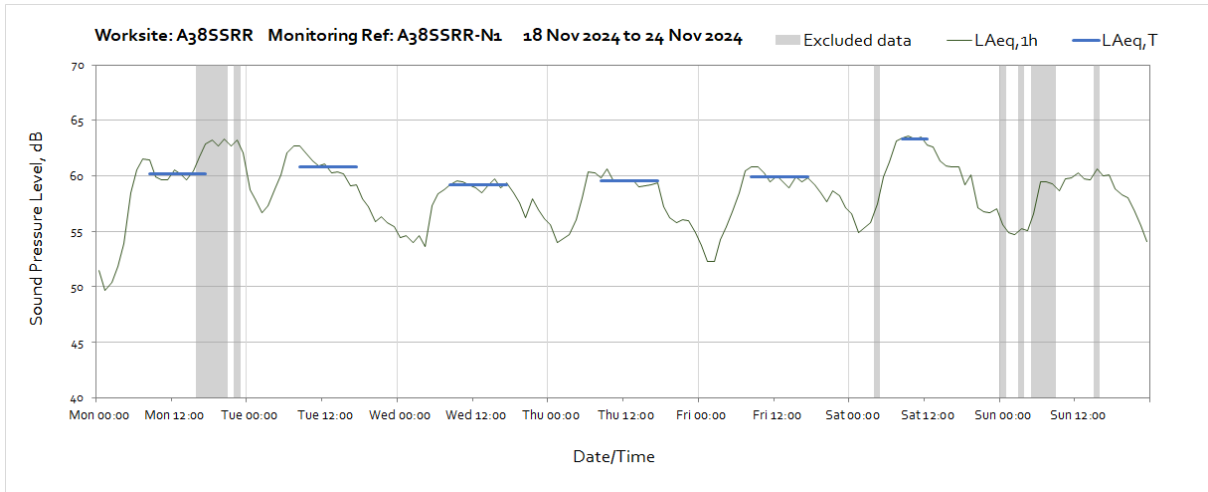


Note: Missing data throughout the month was due to a loss of power to the monitoring station caused by poor weather conditions preventing sufficient light reaching the solar panel.

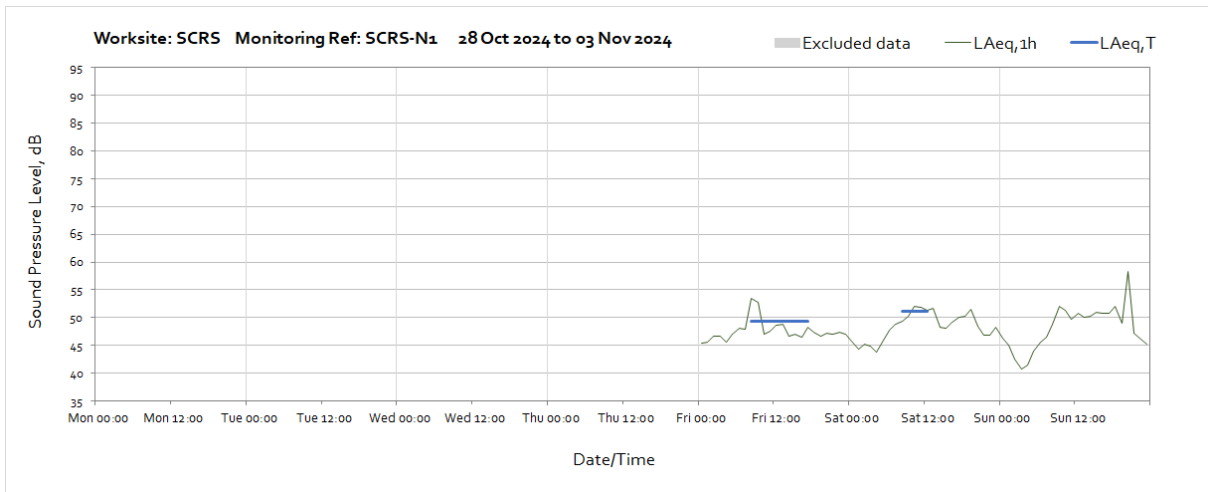


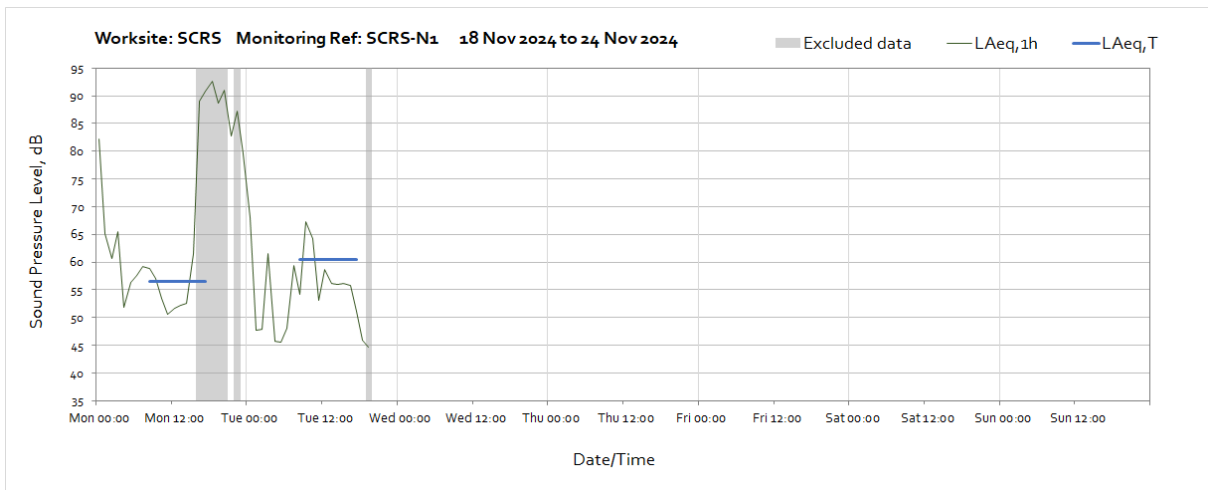
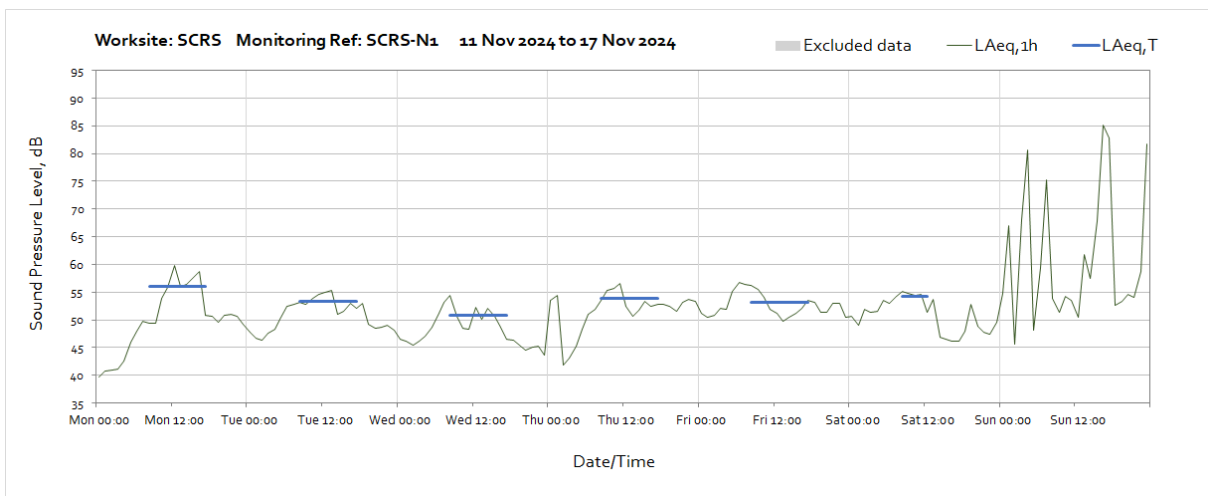
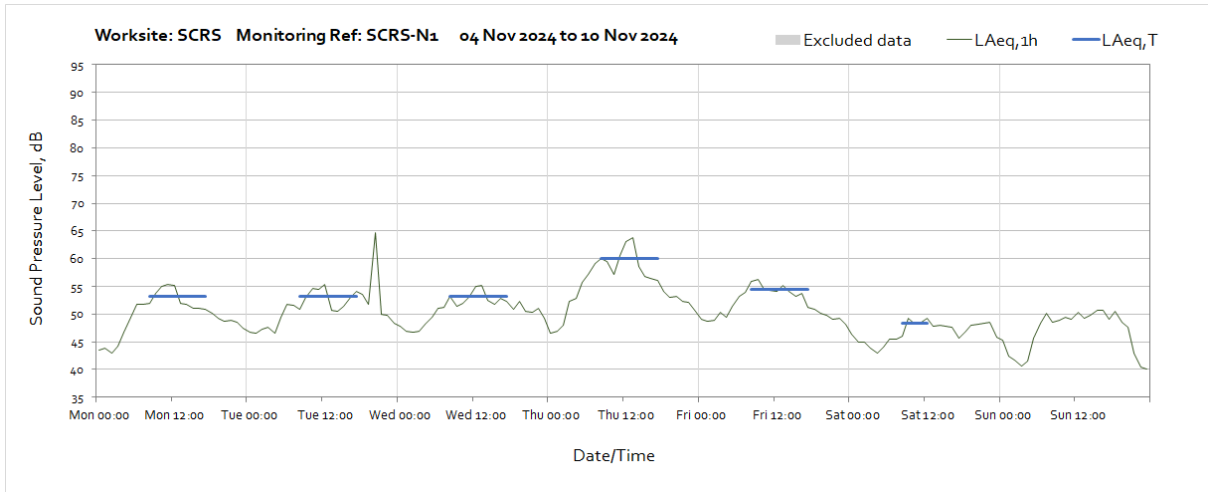
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**Worksite:SCRS – Monitoring Ref: SCRS-N1**

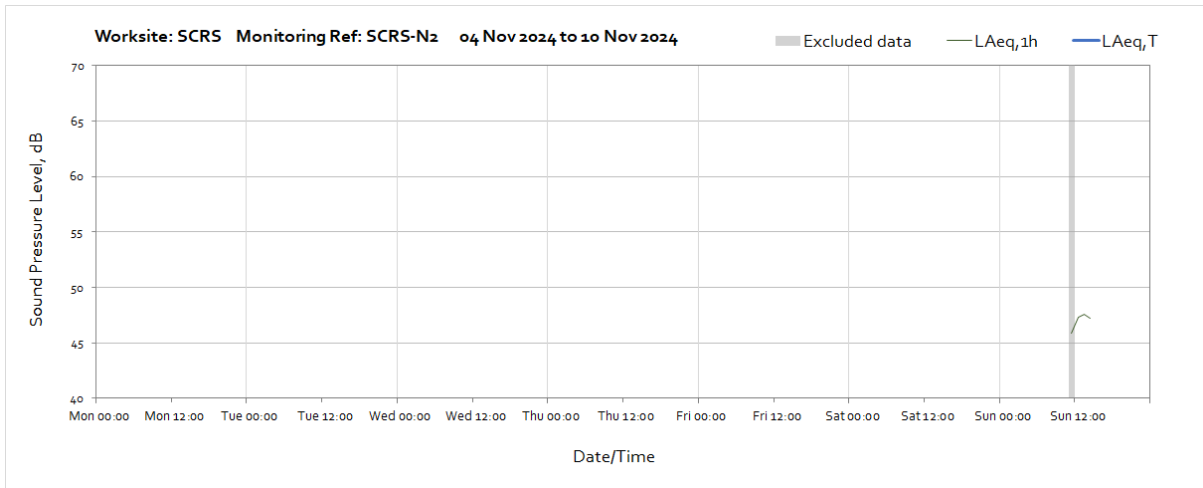




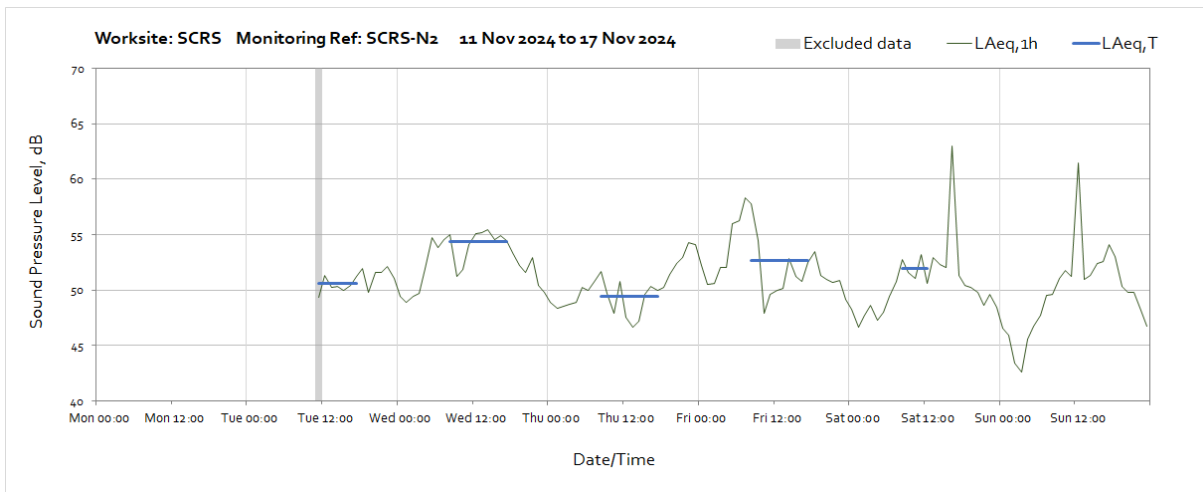
Note: Missing data between 20:00 on Tuesday 19<sup>th</sup> of November and the end of the month was due to a loss of power to the monitoring station caused by poor weather conditions preventing sufficient light reaching the solar panel.



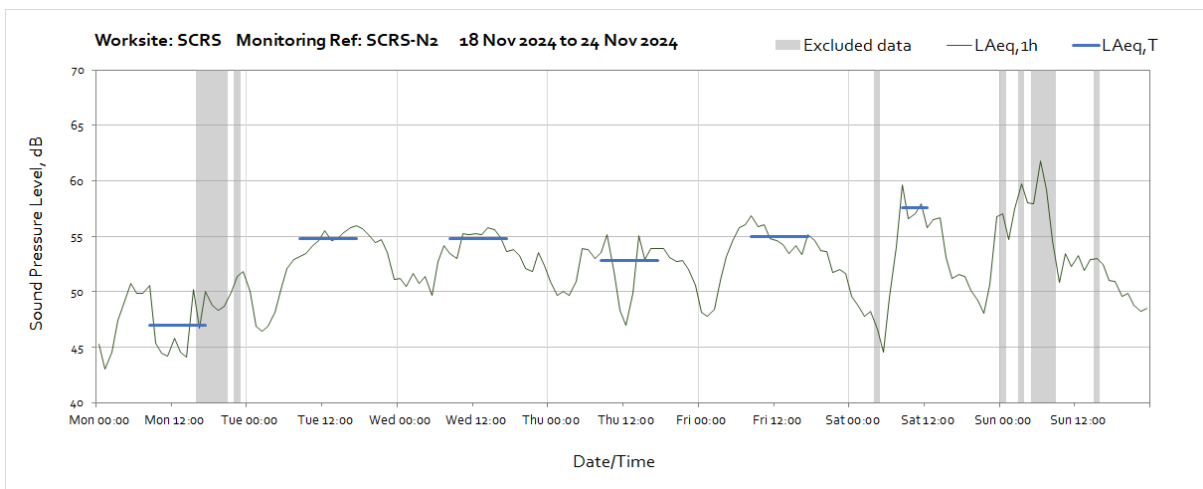
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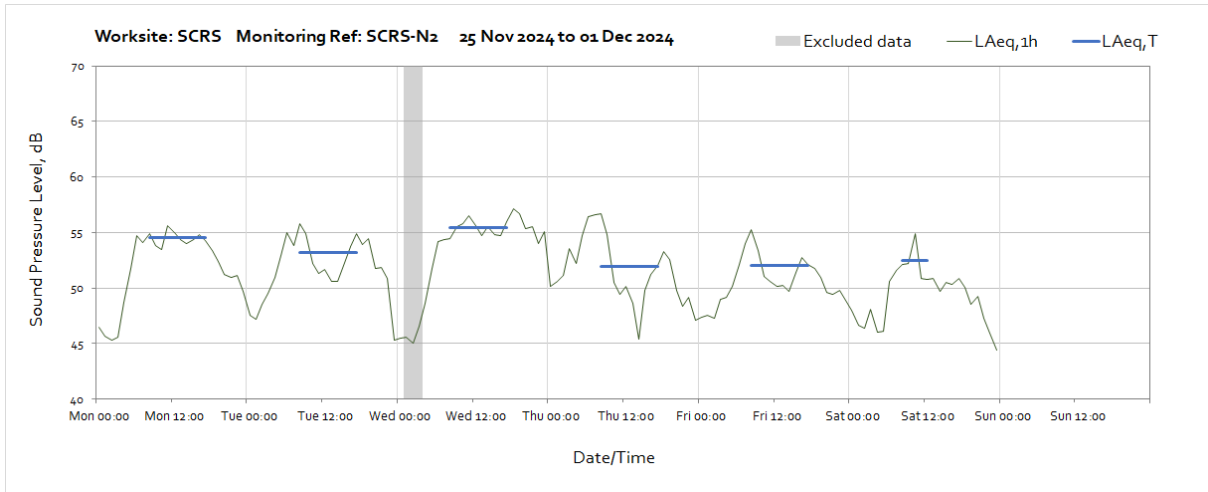
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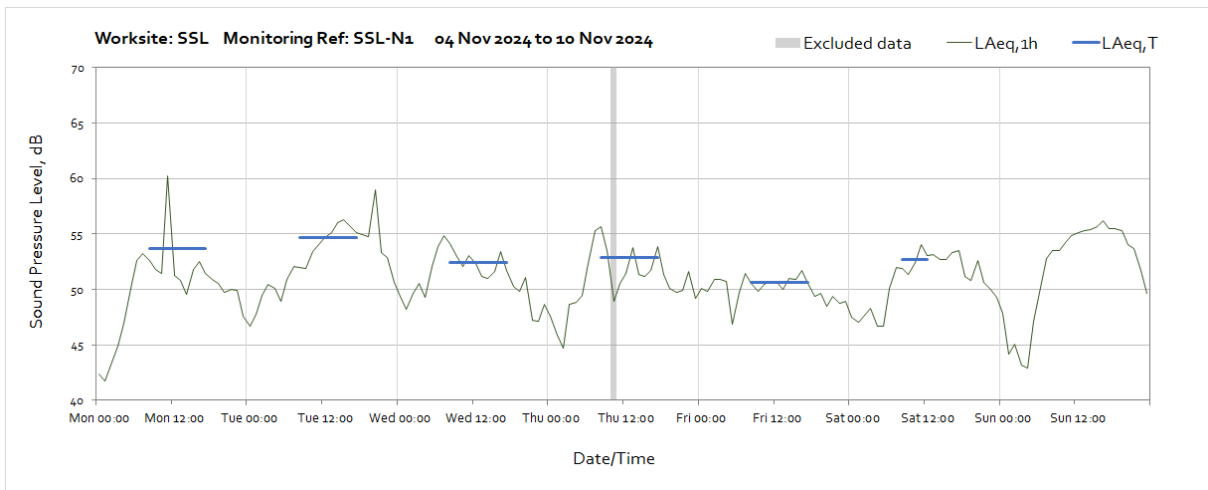
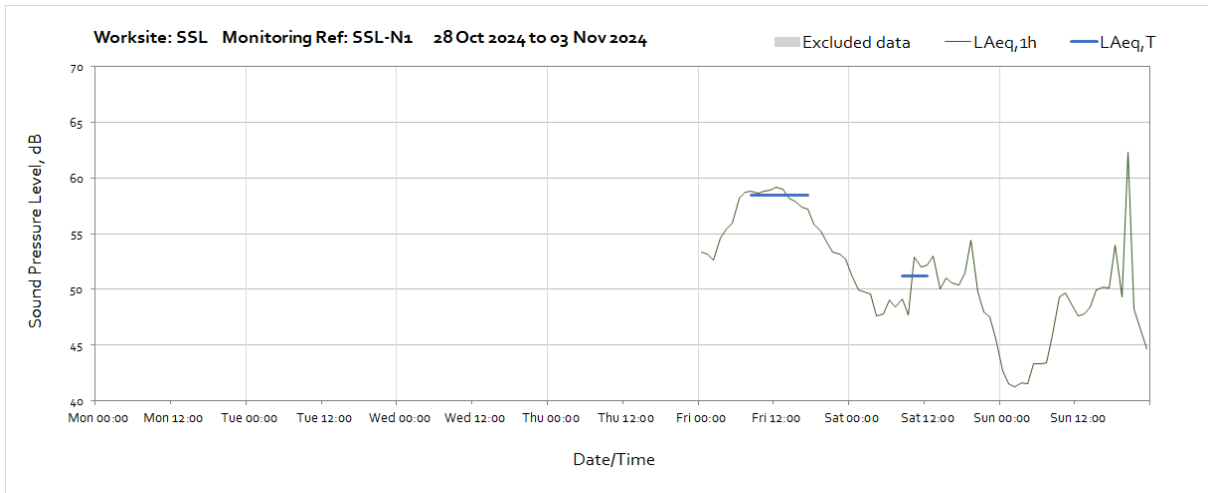
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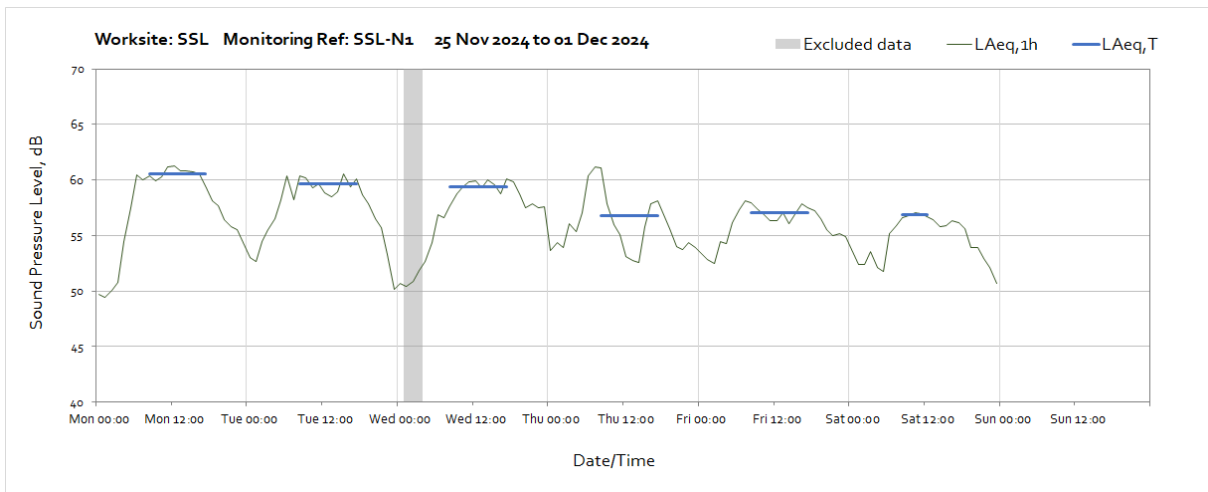
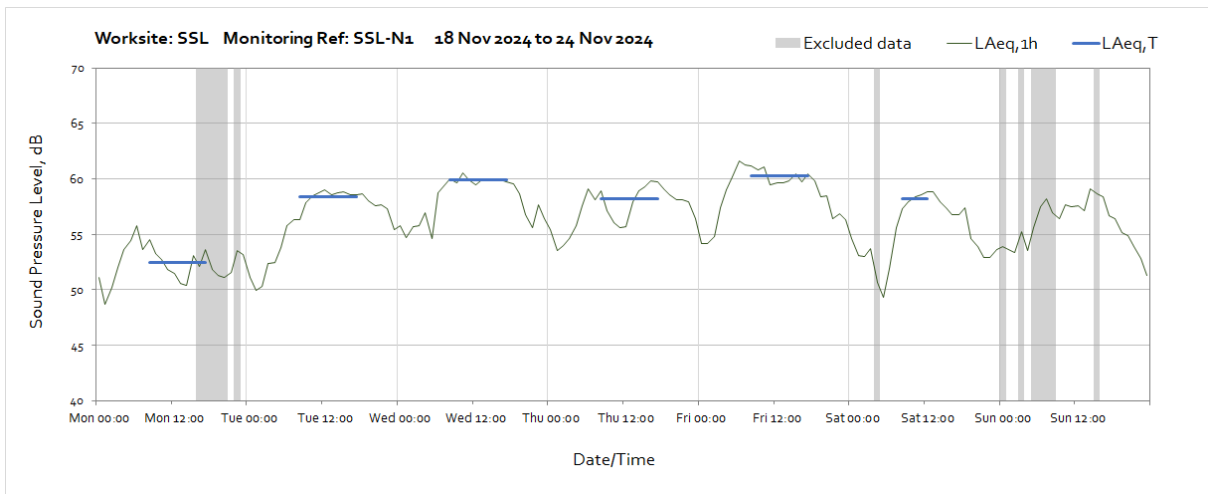
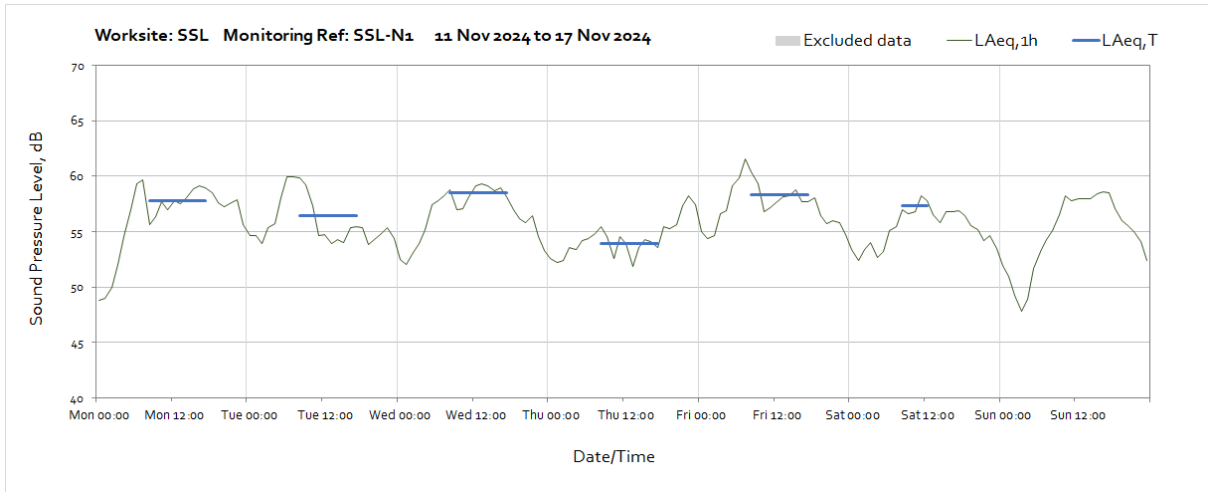


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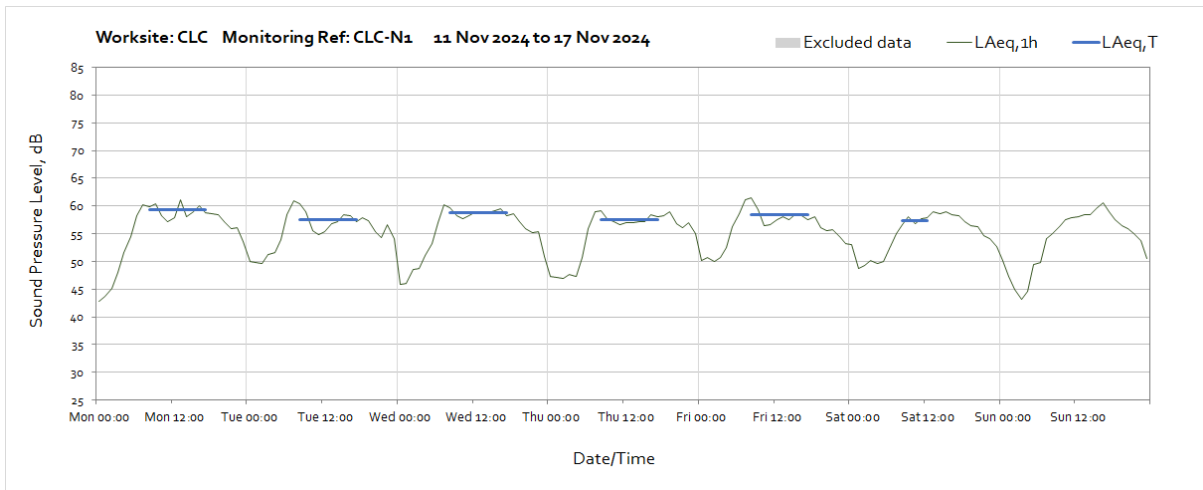
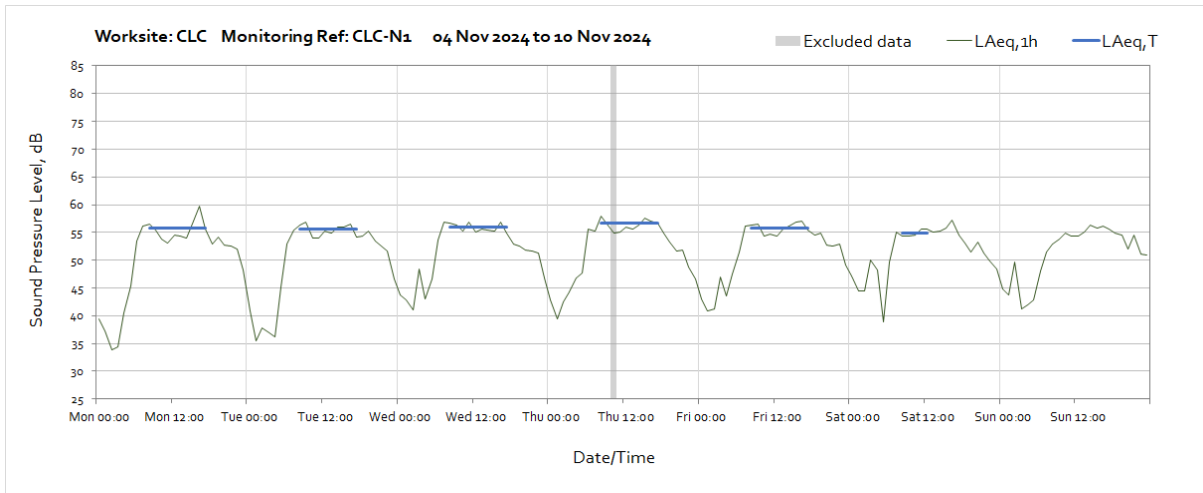


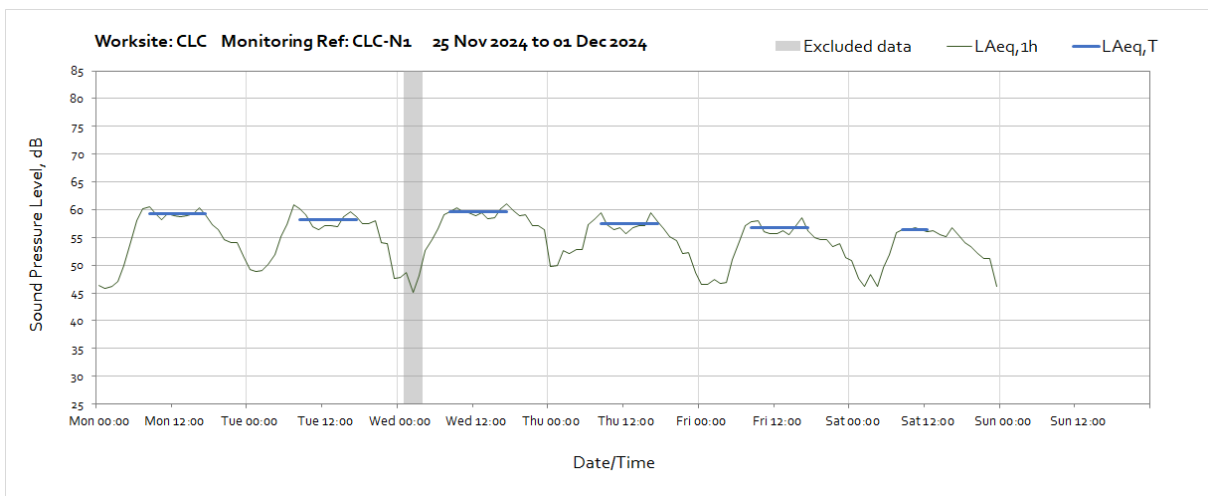
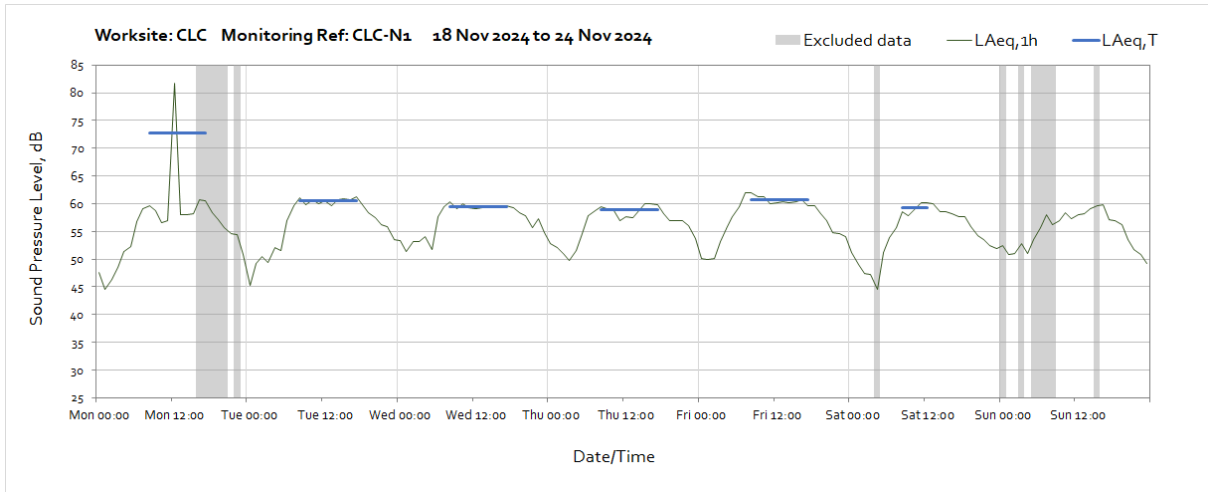
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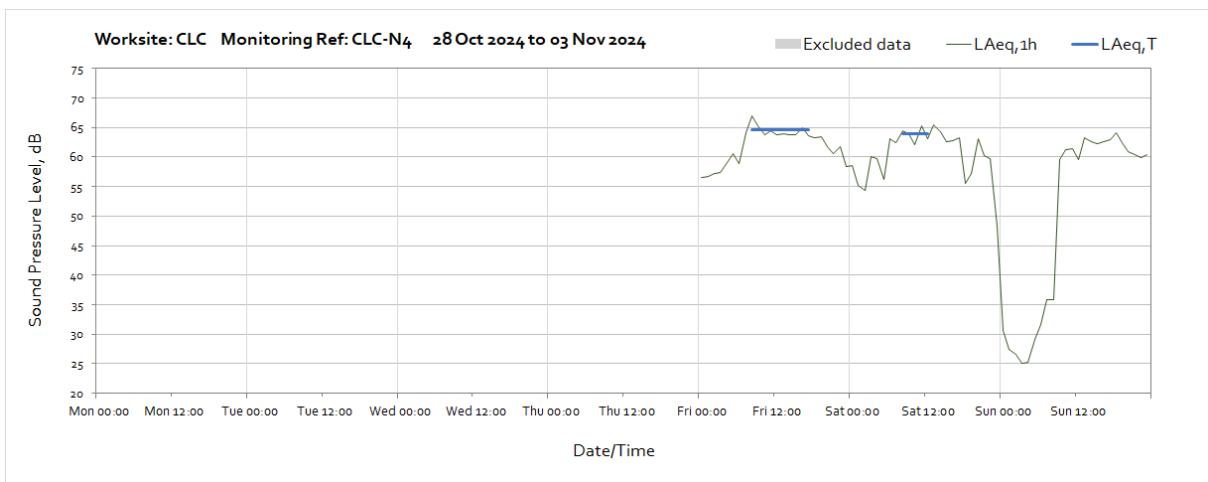


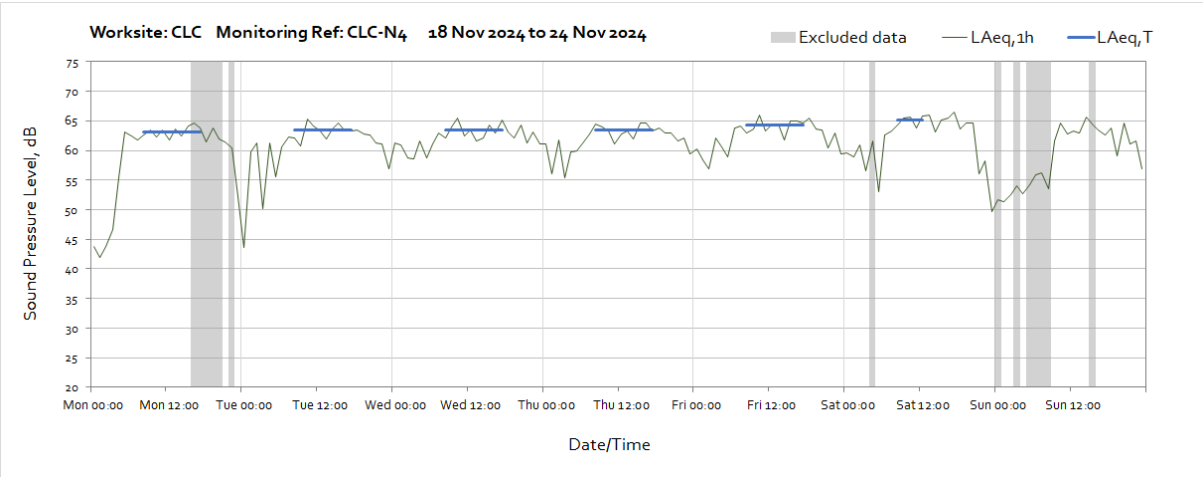
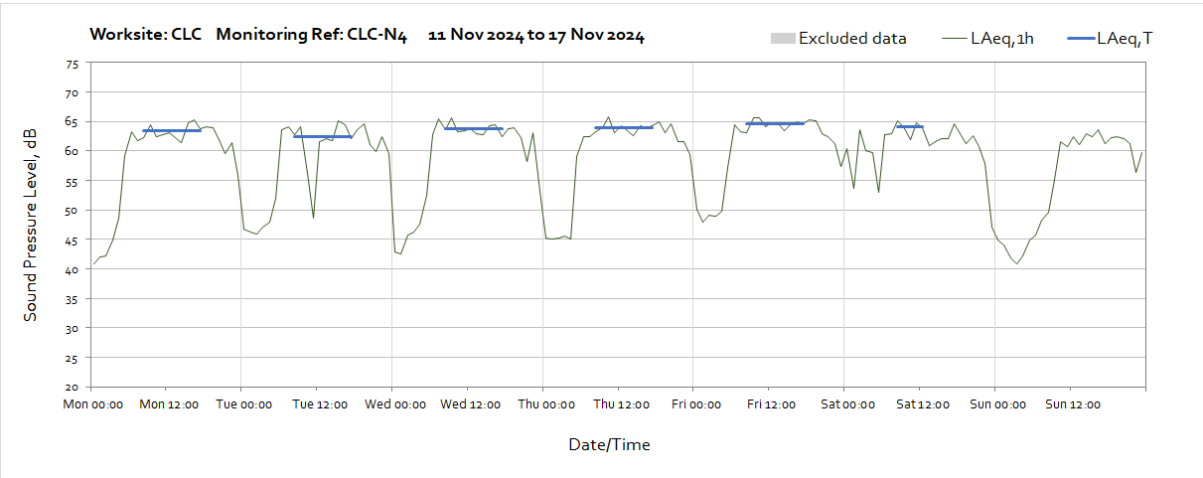
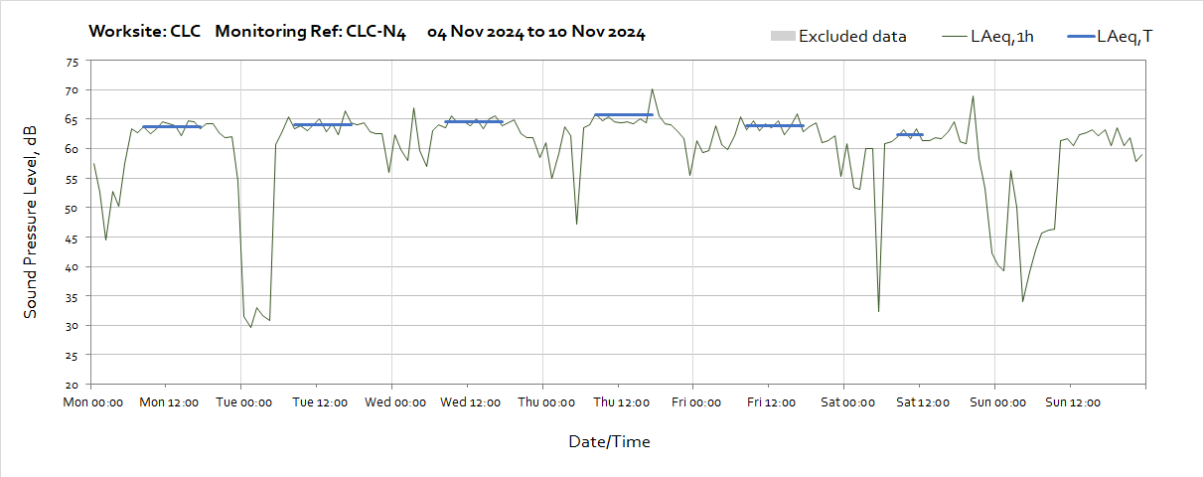
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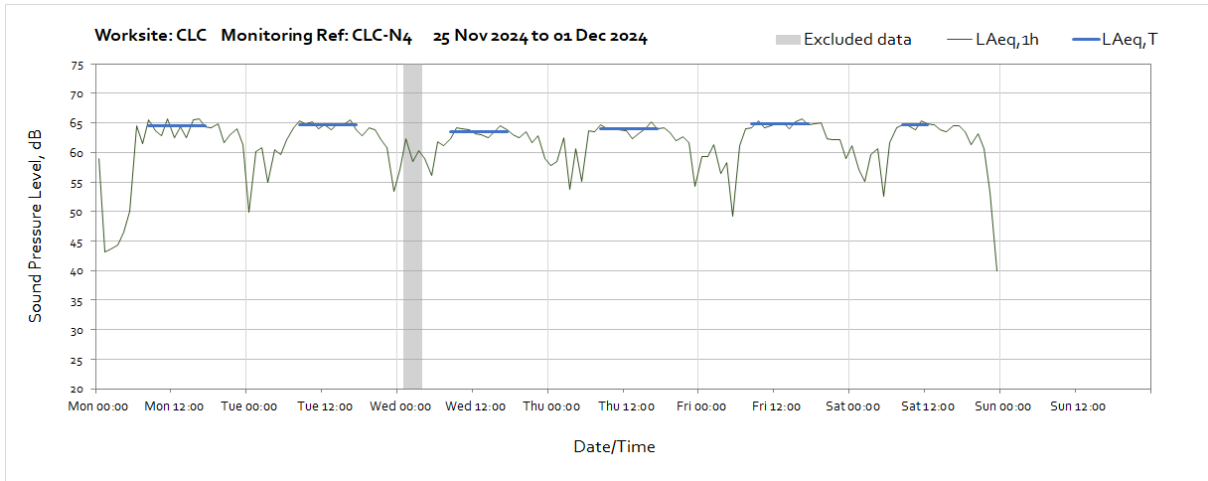




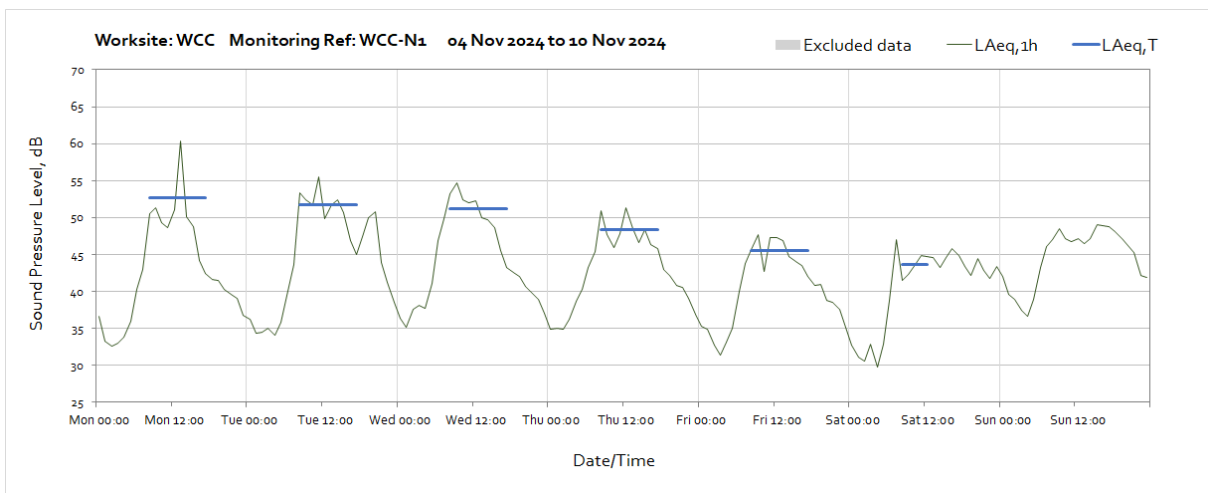
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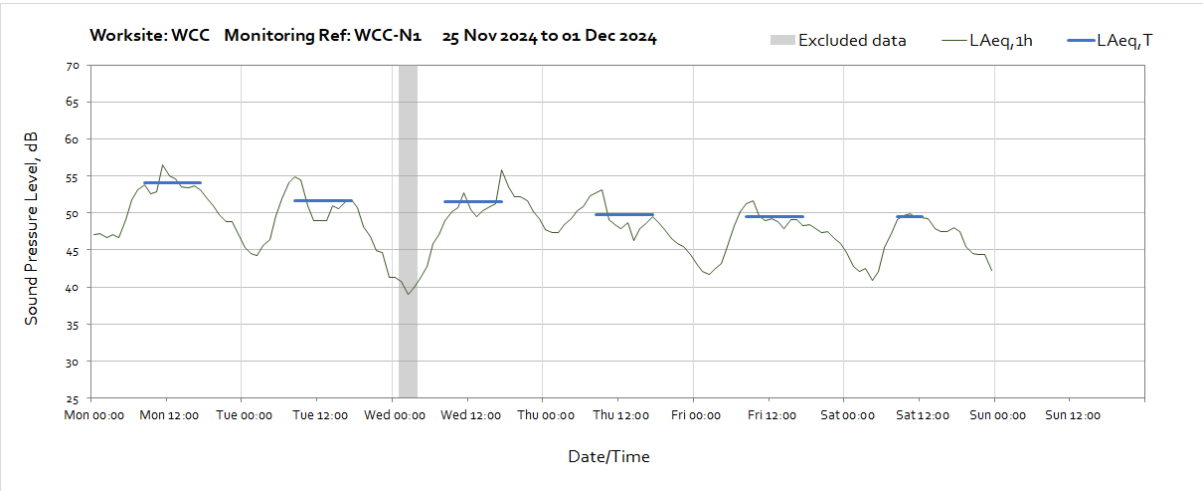
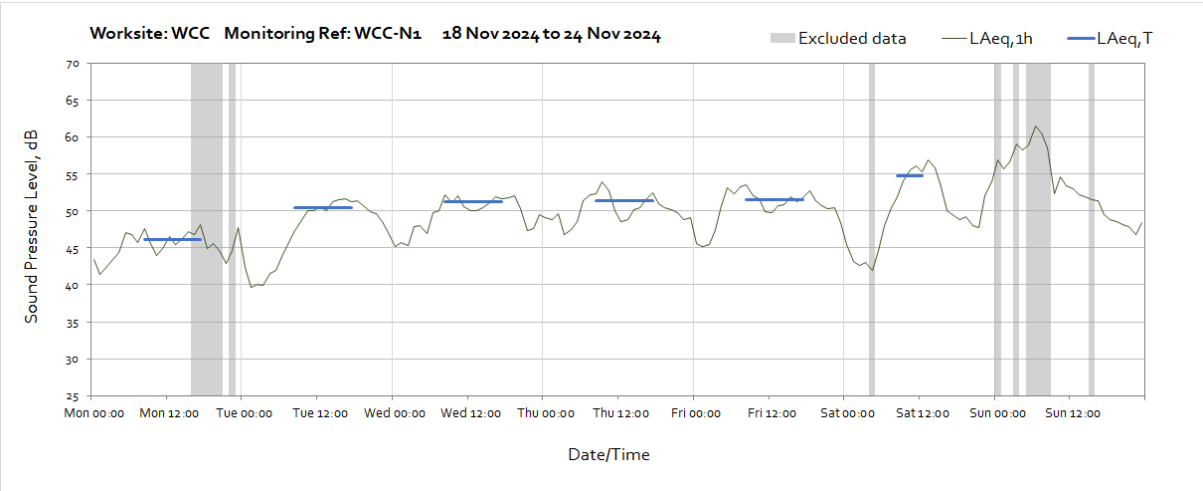
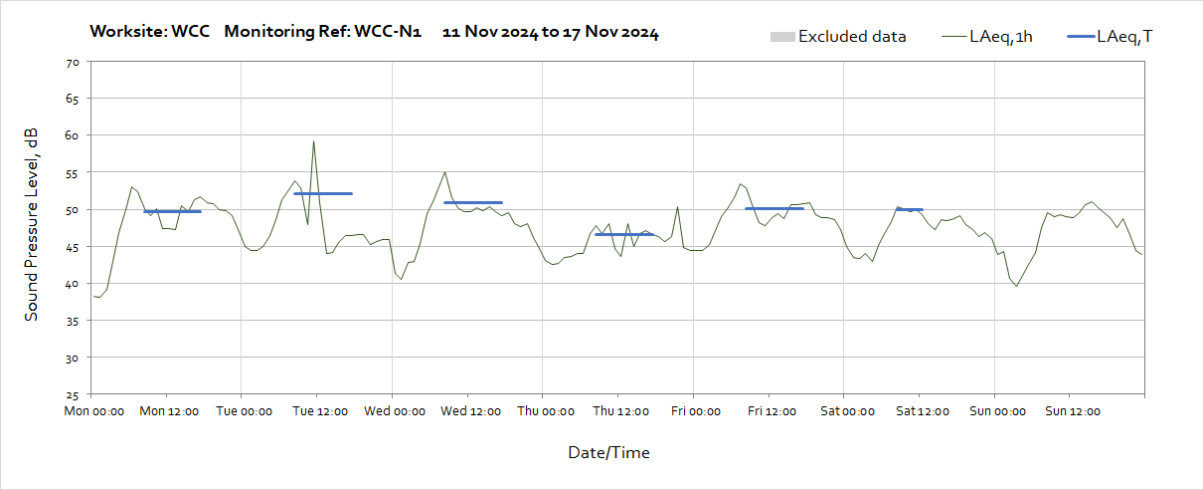




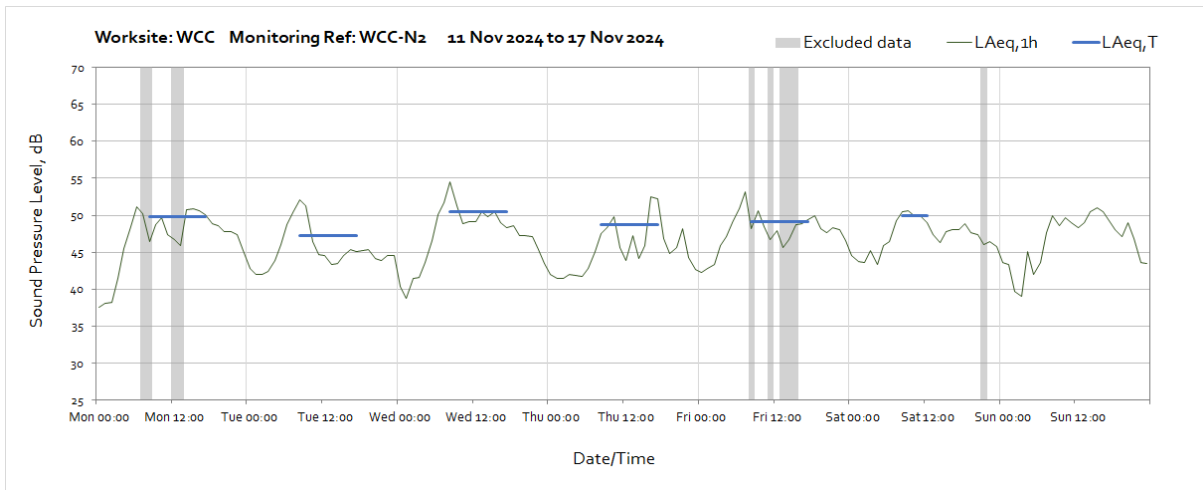
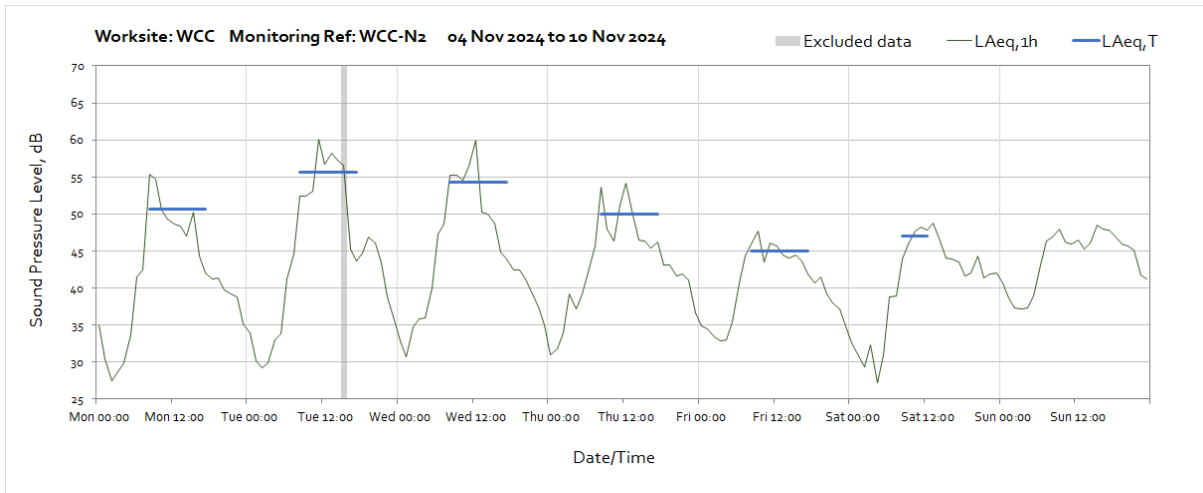
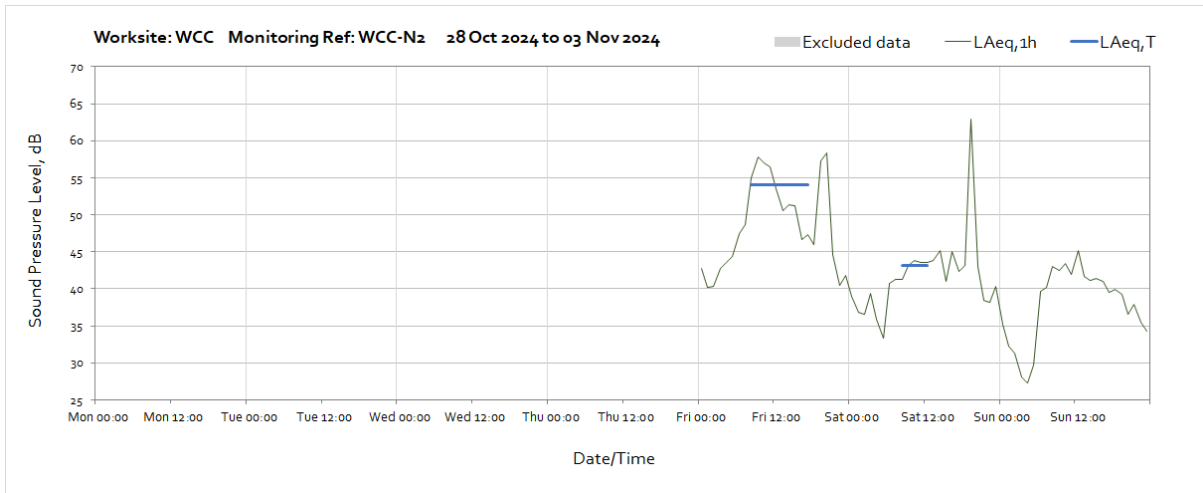
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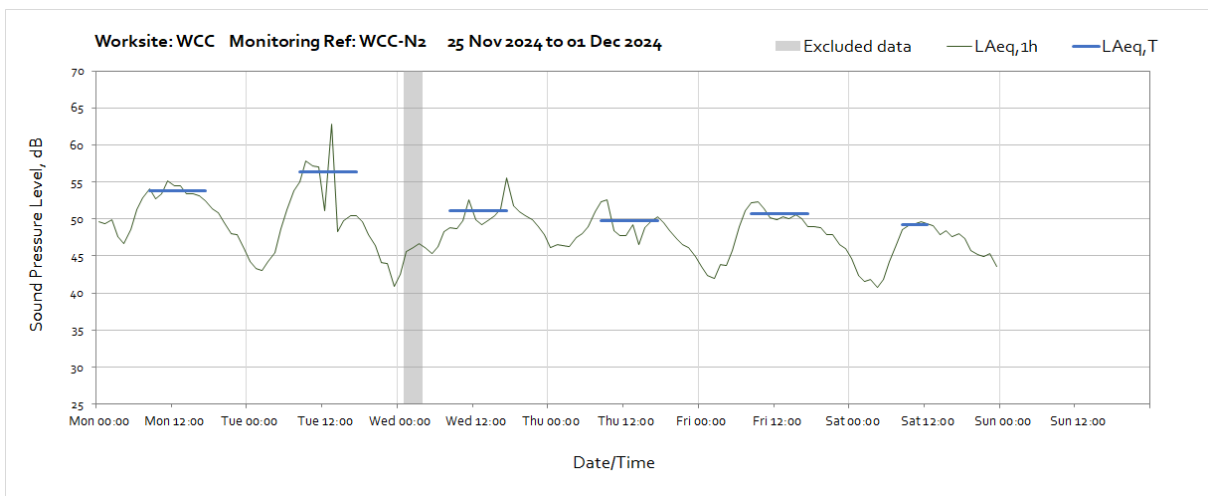
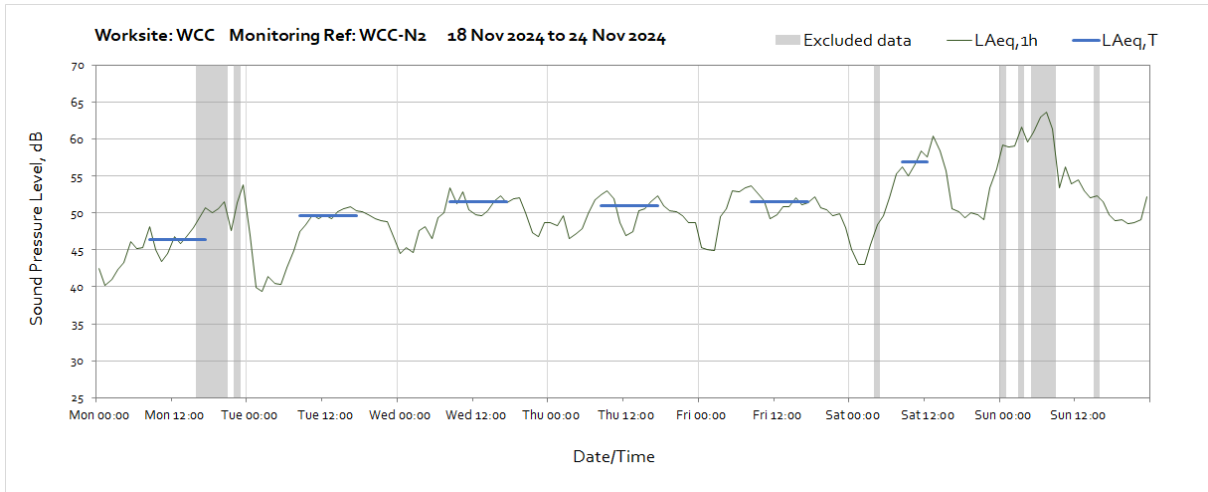




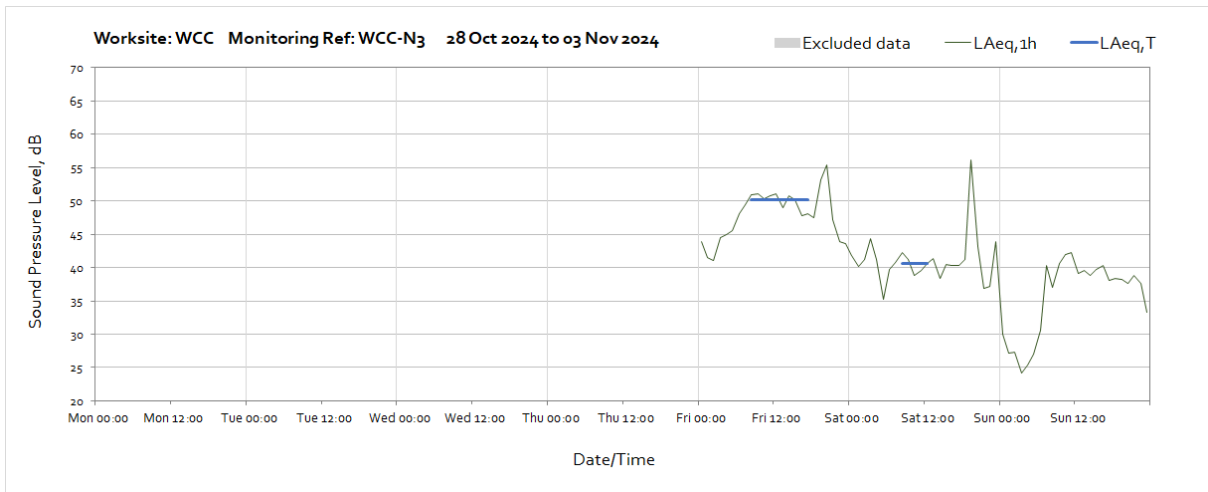
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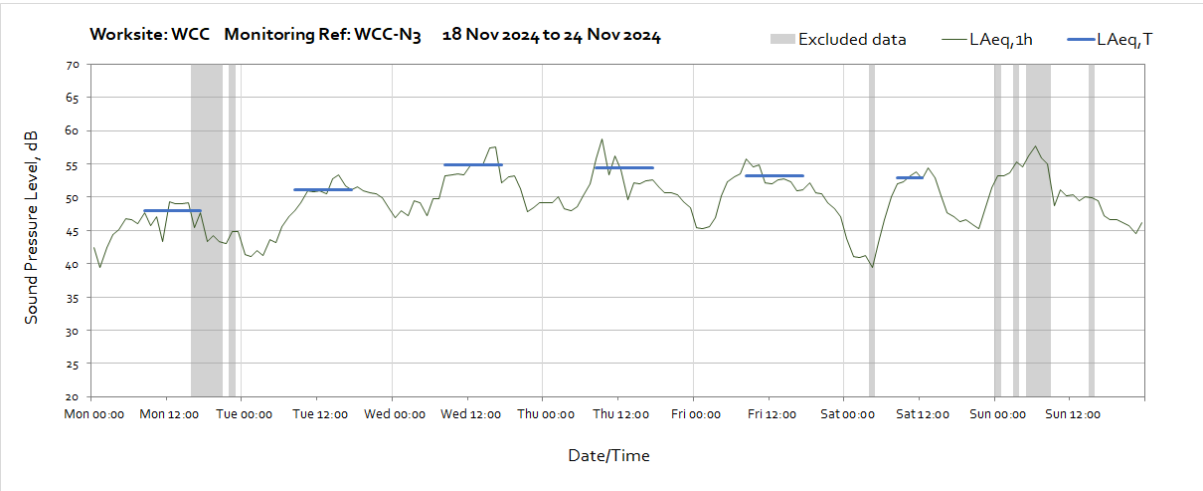
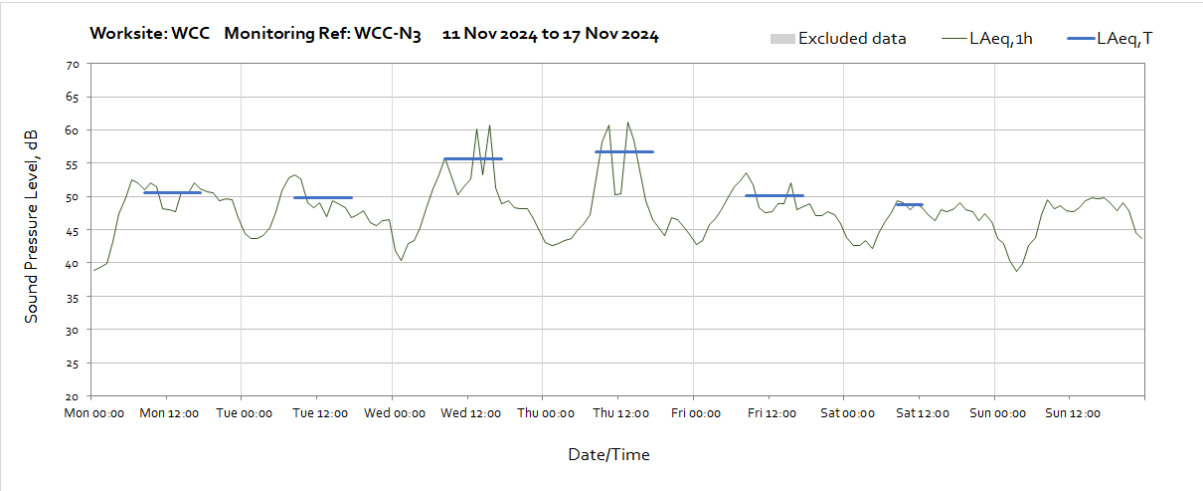
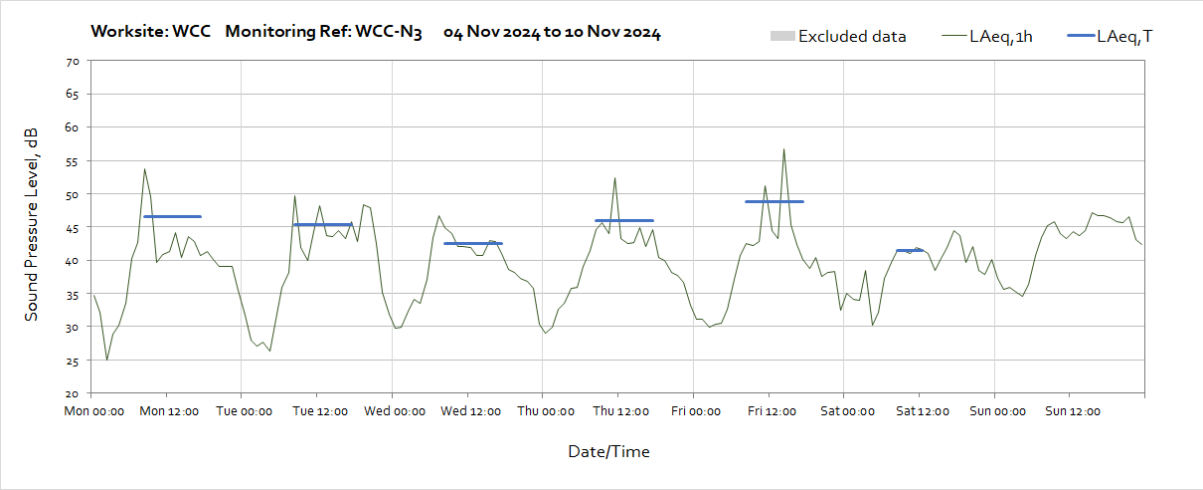


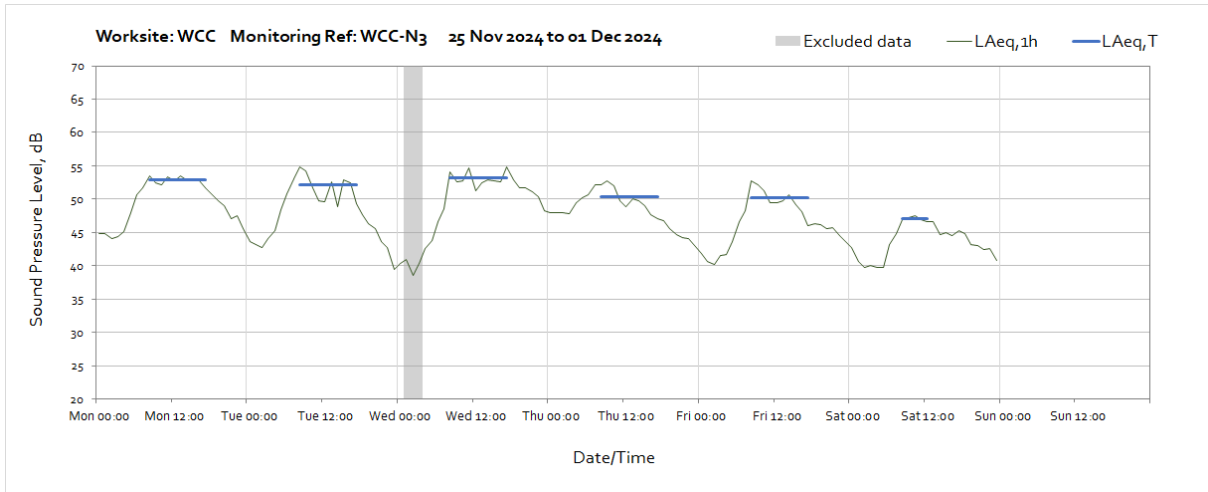
OFFICIAL



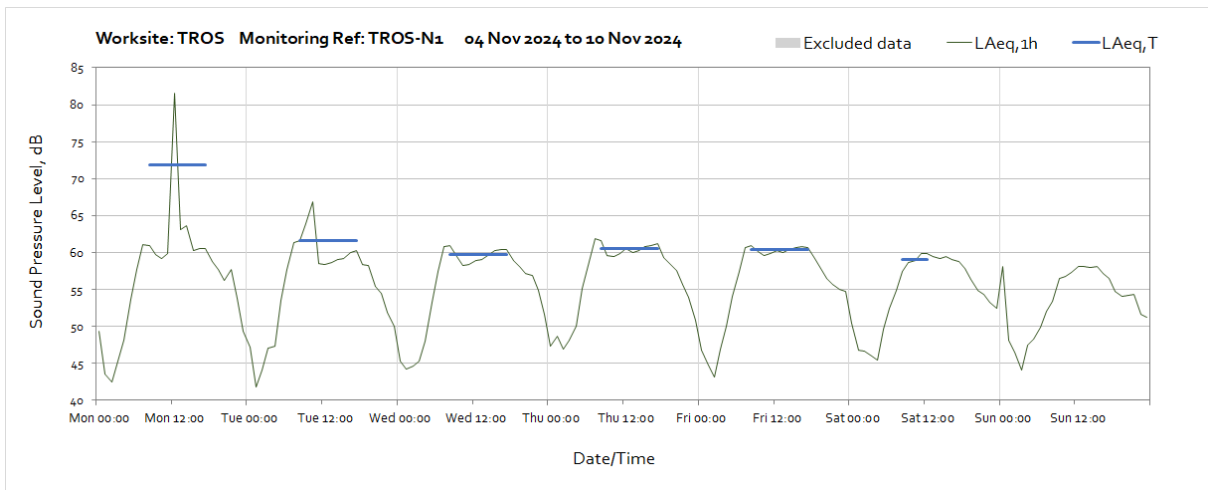
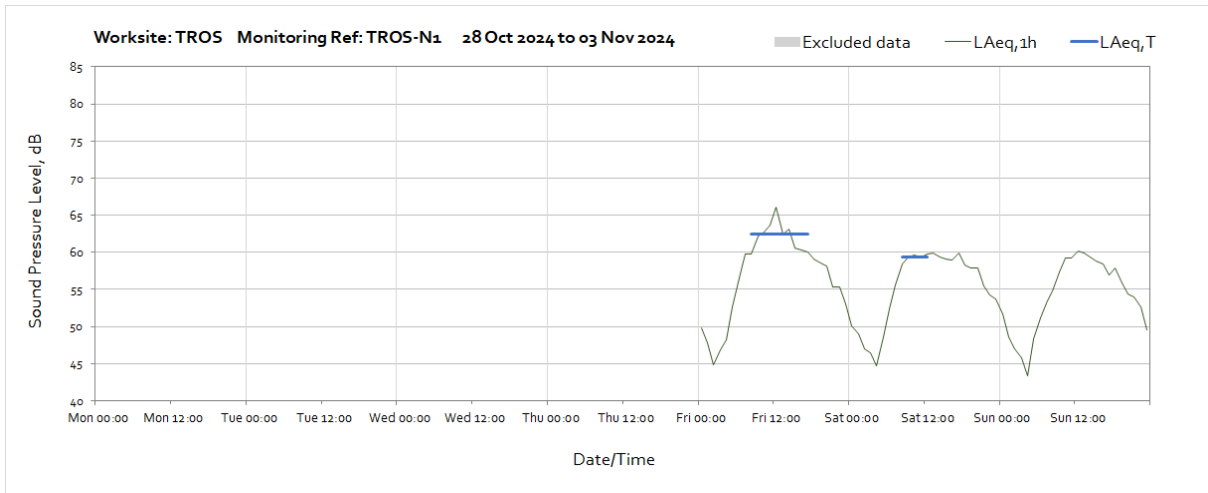
**Worksite:WCC - Monitoring Ref: WCC-N3**

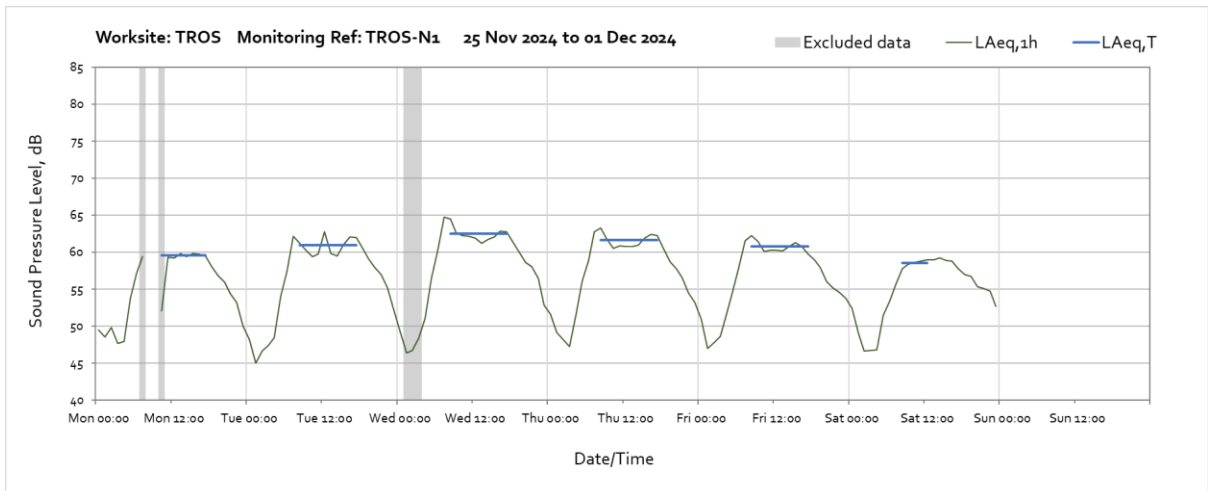
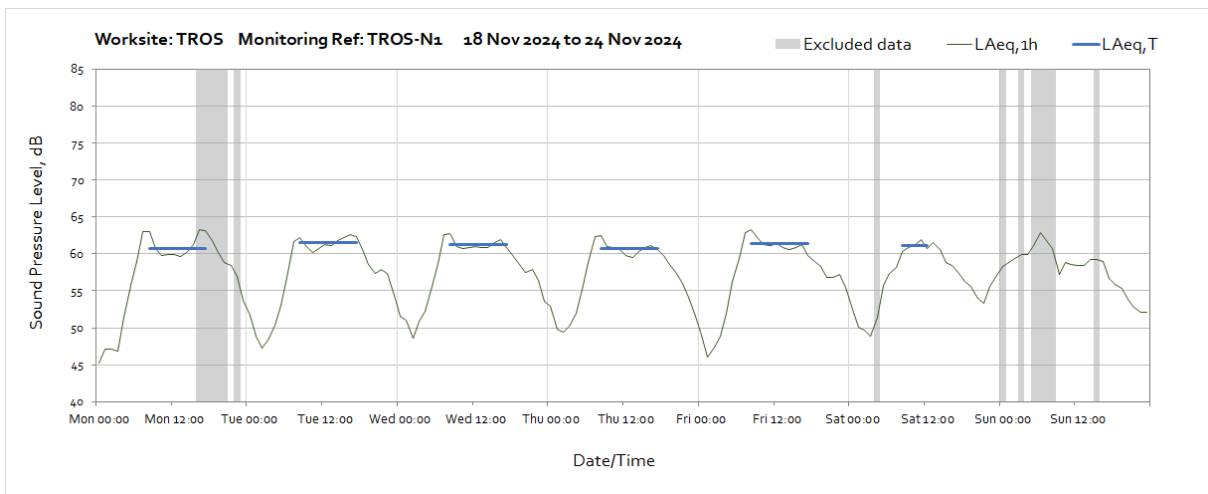
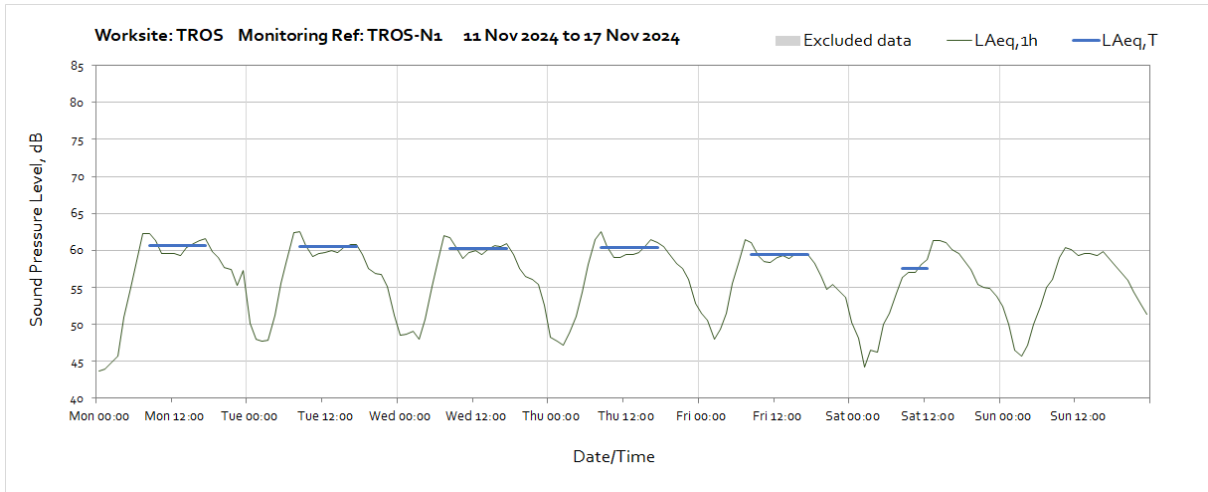






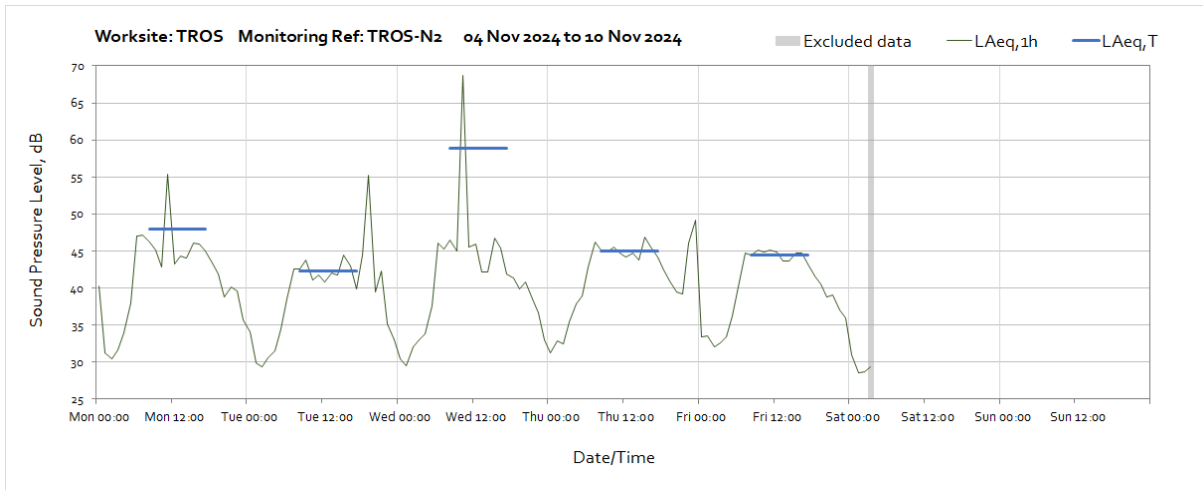
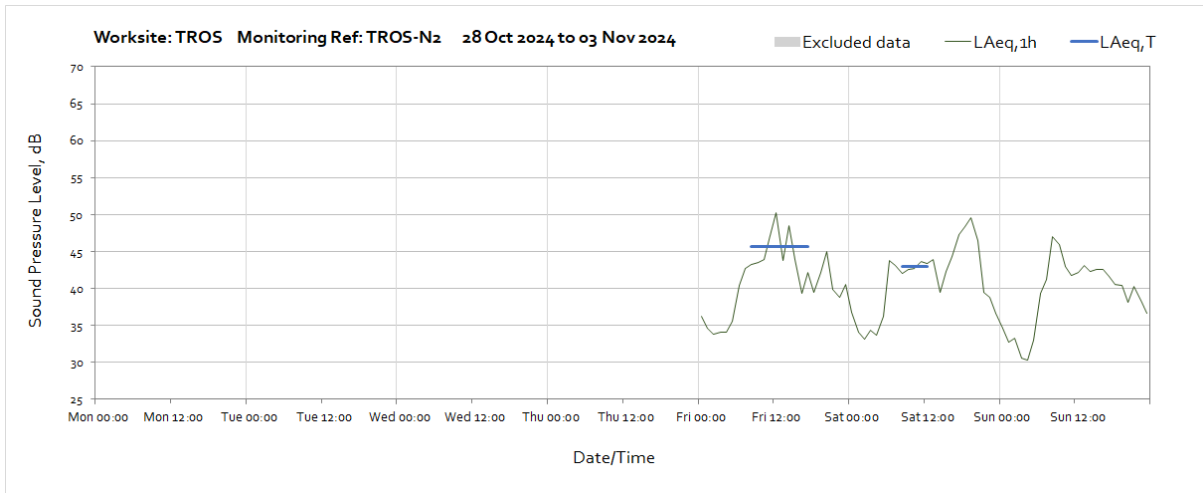
**Worksite:TROS – Monitoring Ref: TROS-N1**





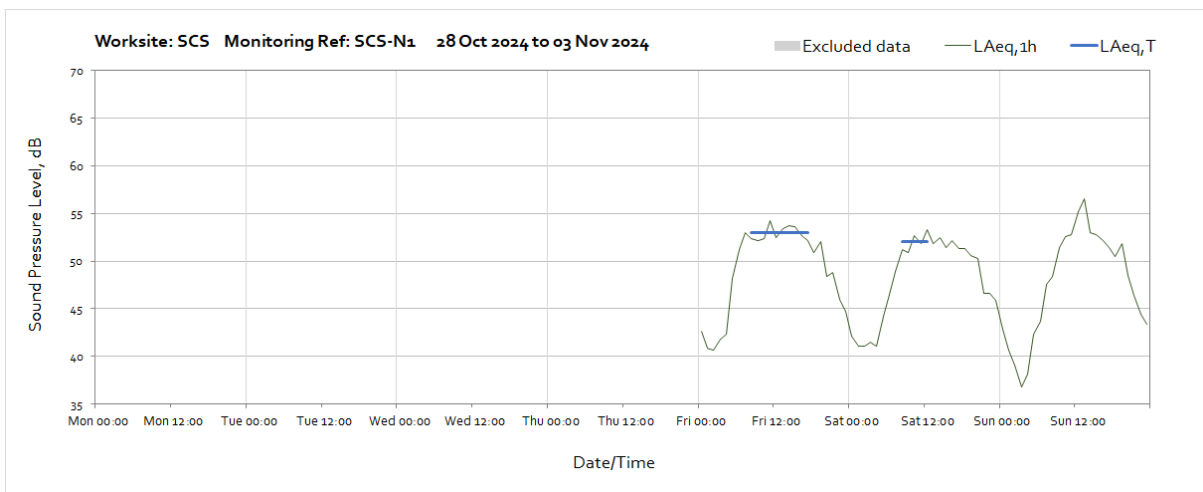
Note: Missing data between 08:00 and 10:00 on Monday 25<sup>th</sup> November was due to a loss of power to the monitoring station caused by poor weather conditions preventing sufficient light reaching the solar panel.

## Worksite:TROS – Monitoring Ref: TROS-N2



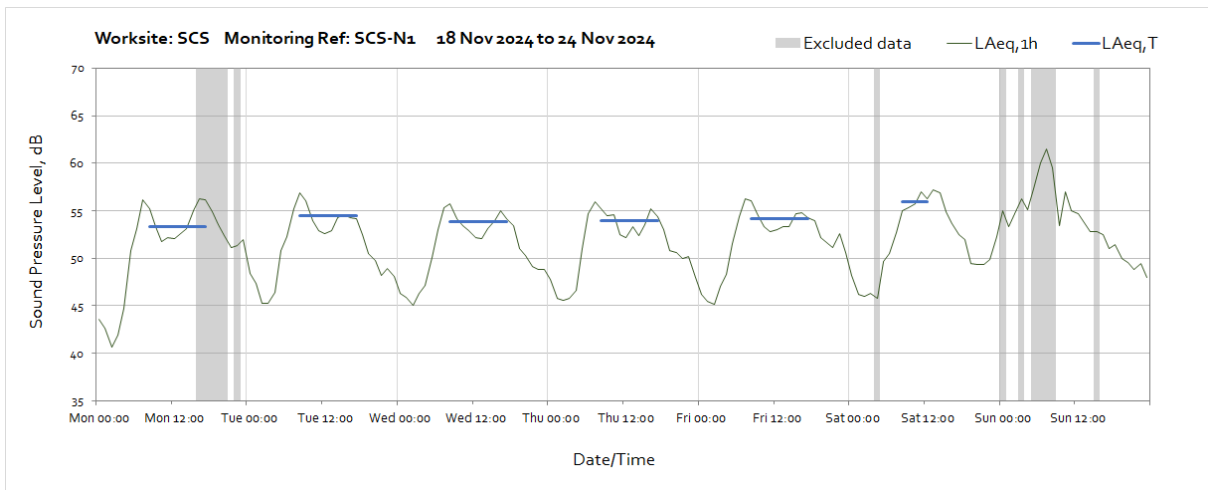
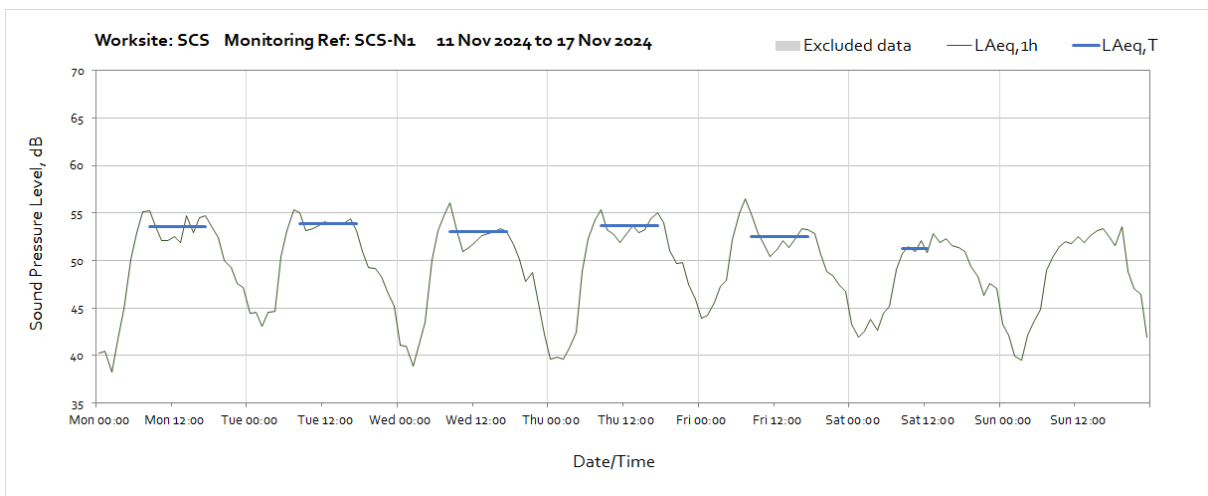
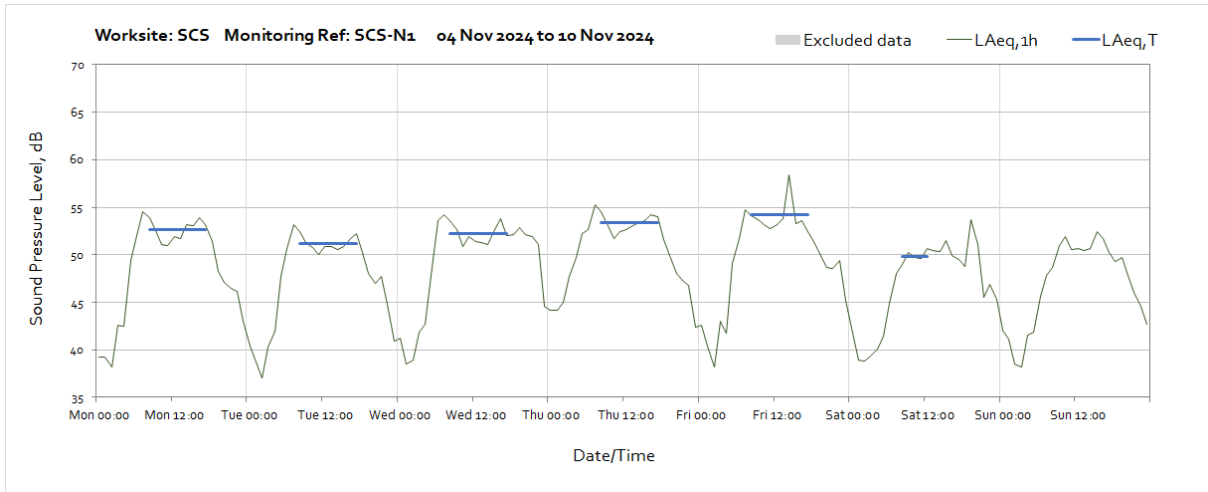
Note: Missing data between 04:00 on Saturday 09<sup>th</sup> of November and the end of the month was due to a loss of power to the monitoring station caused by poor weather conditions preventing sufficient light reaching the solar panel.

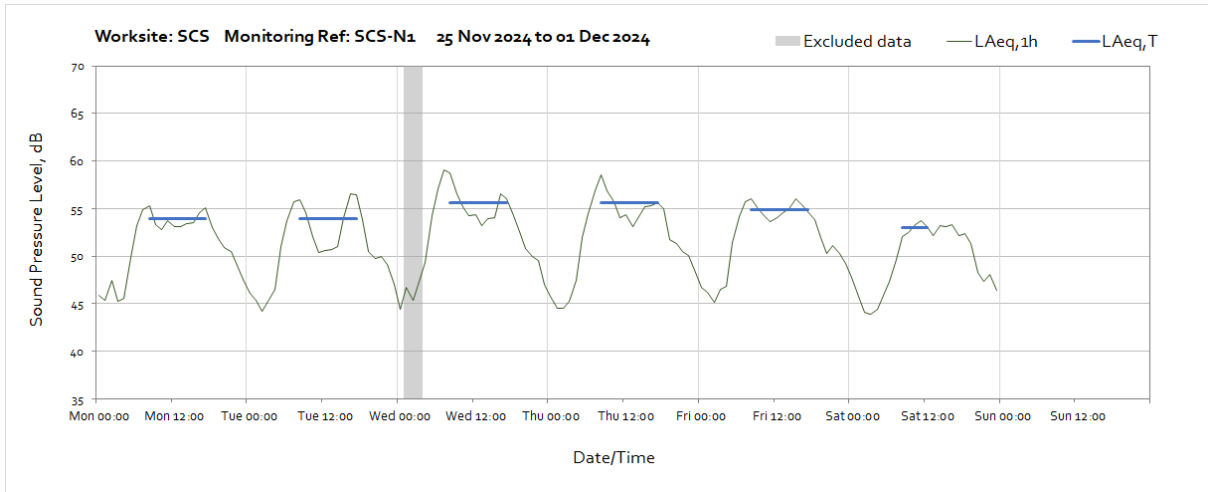
## Worksite: SCS – Monitoring Ref: SCS-N1



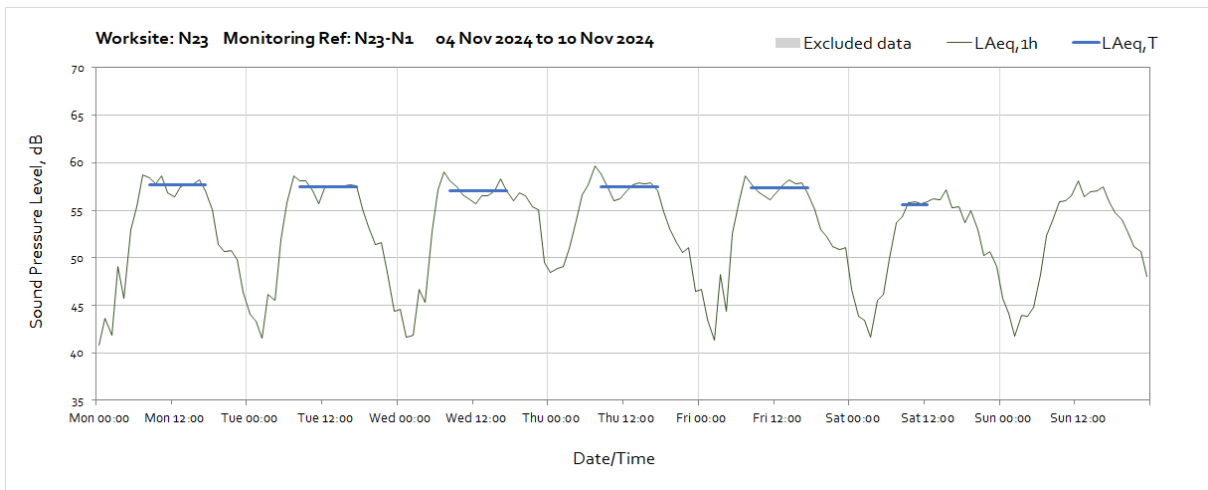
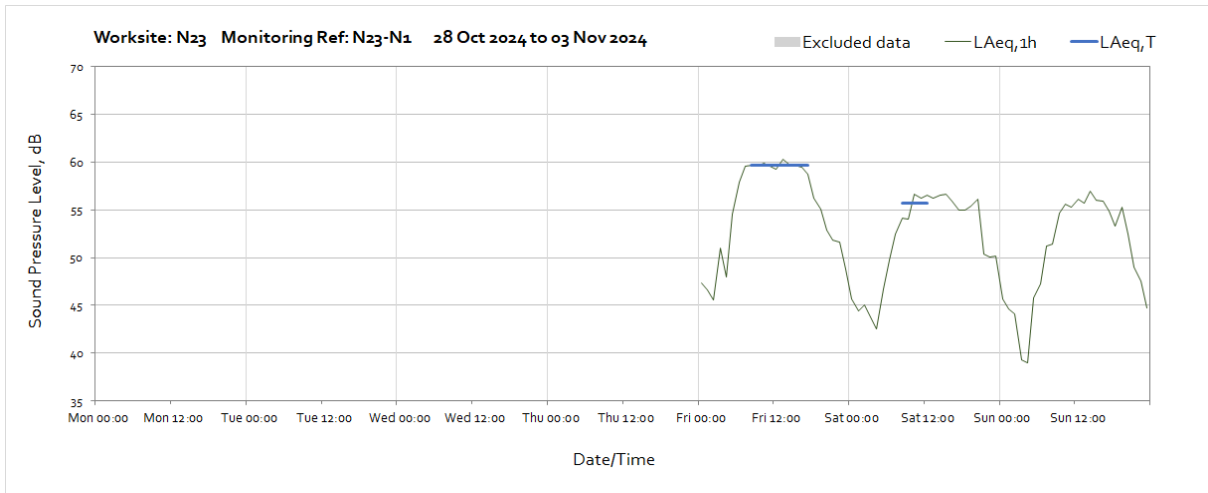
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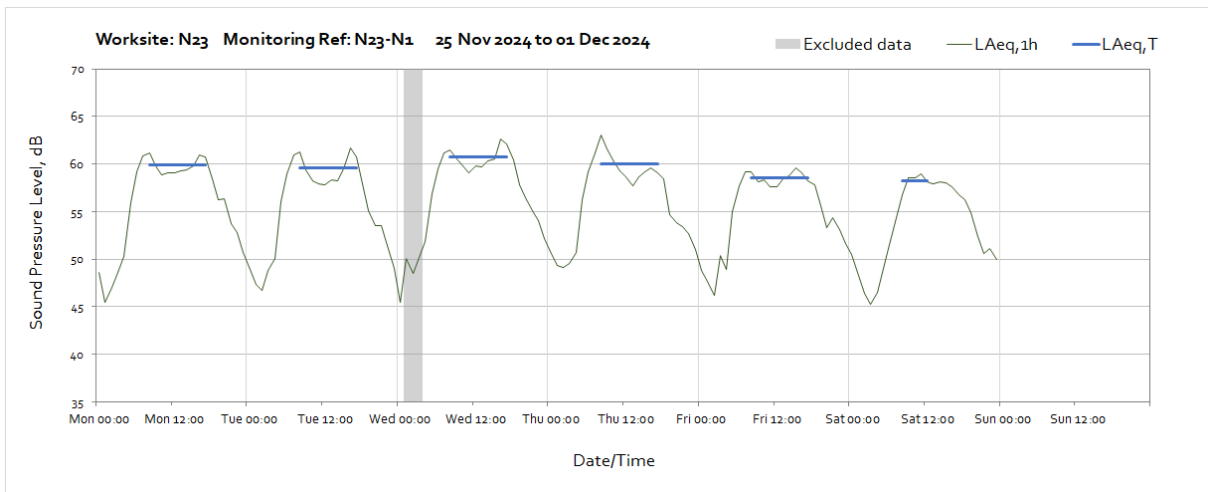
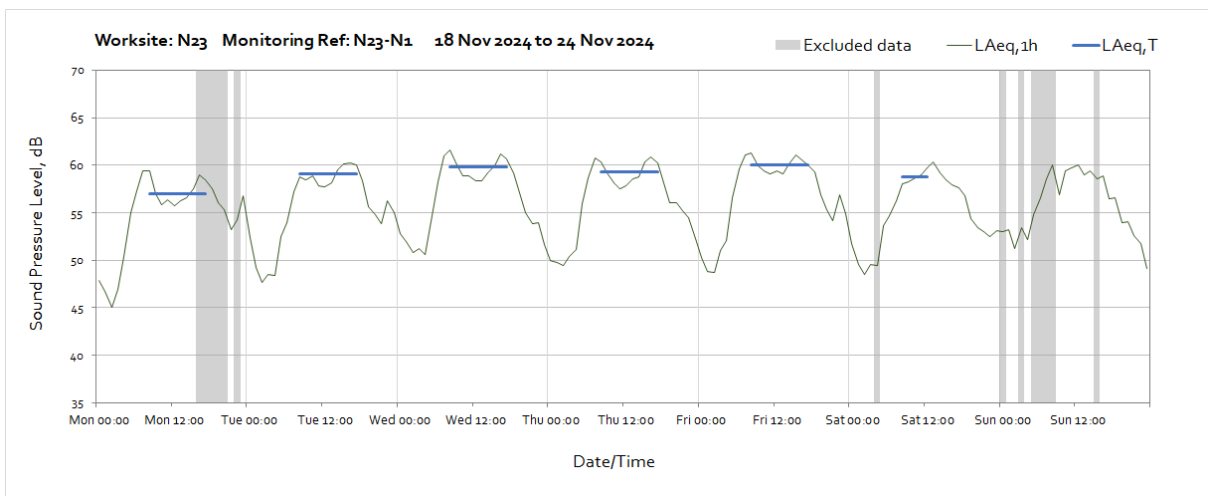
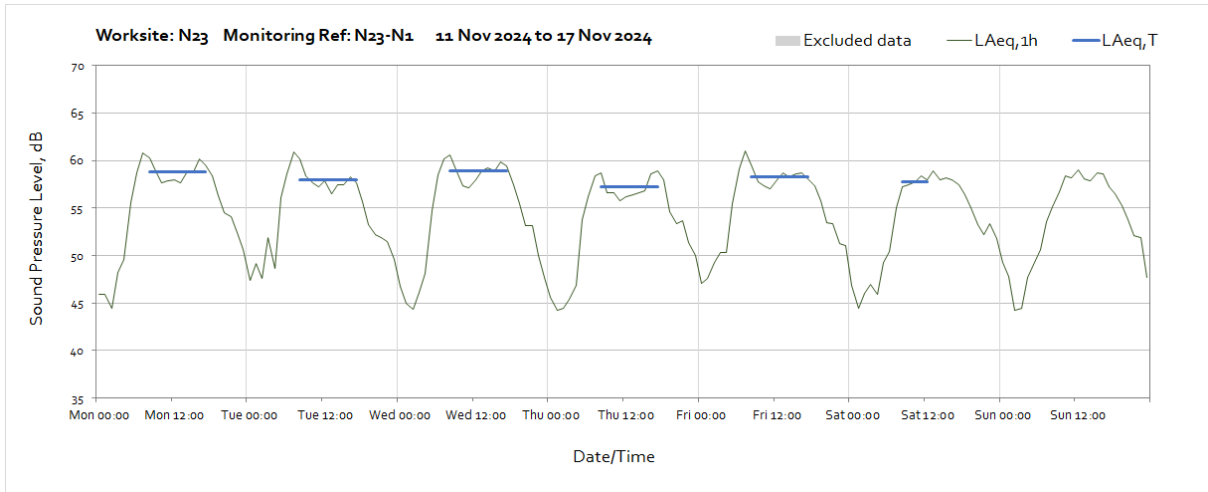




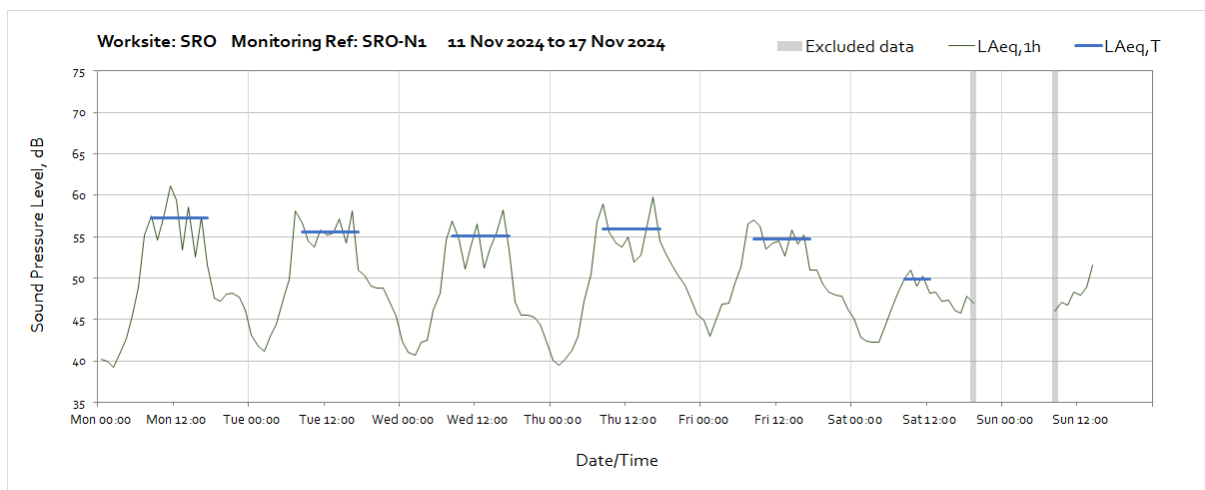
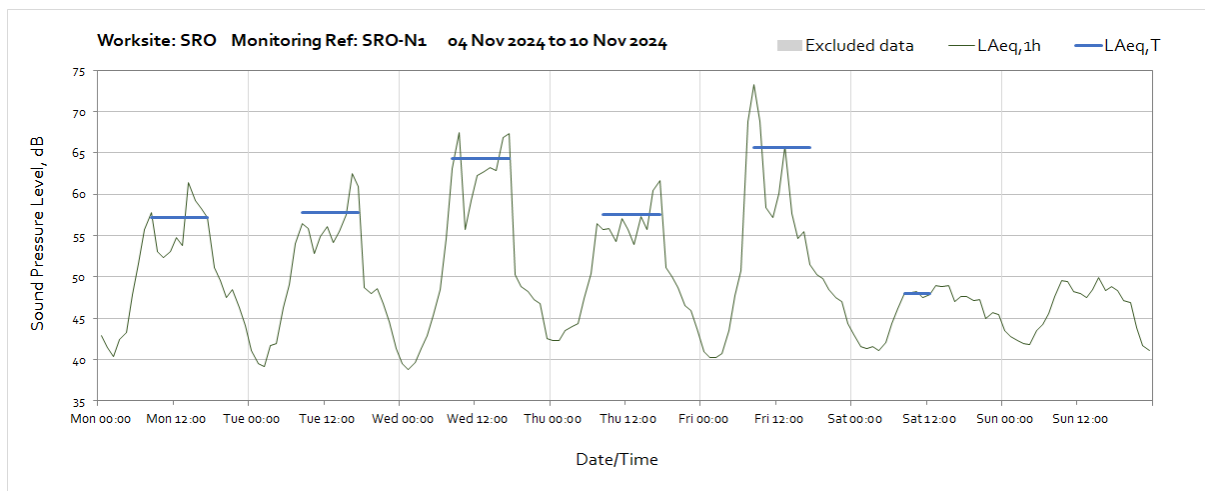
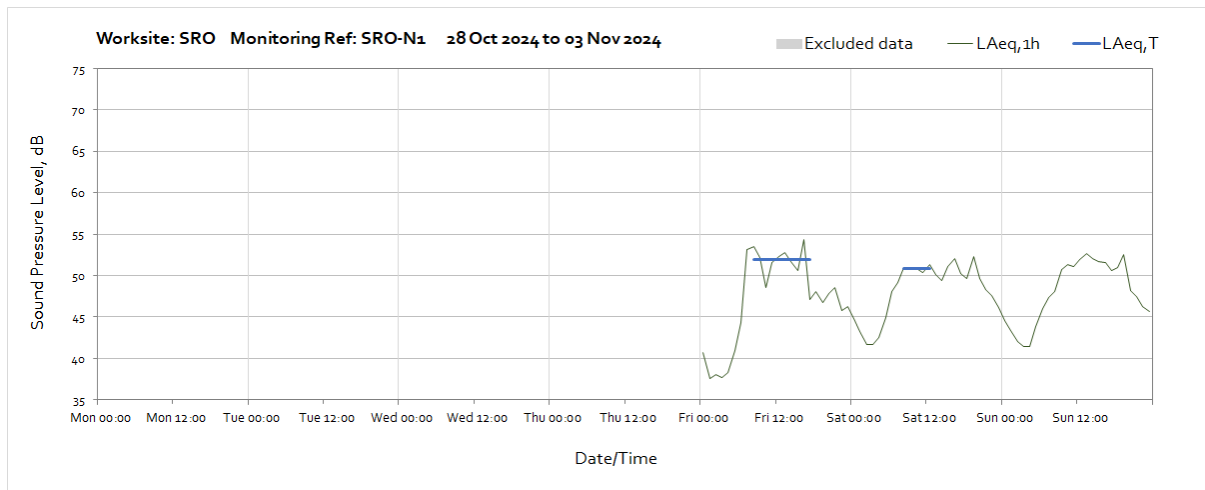


**Worksite: N23 - Monitoring Ref: N23-N1**

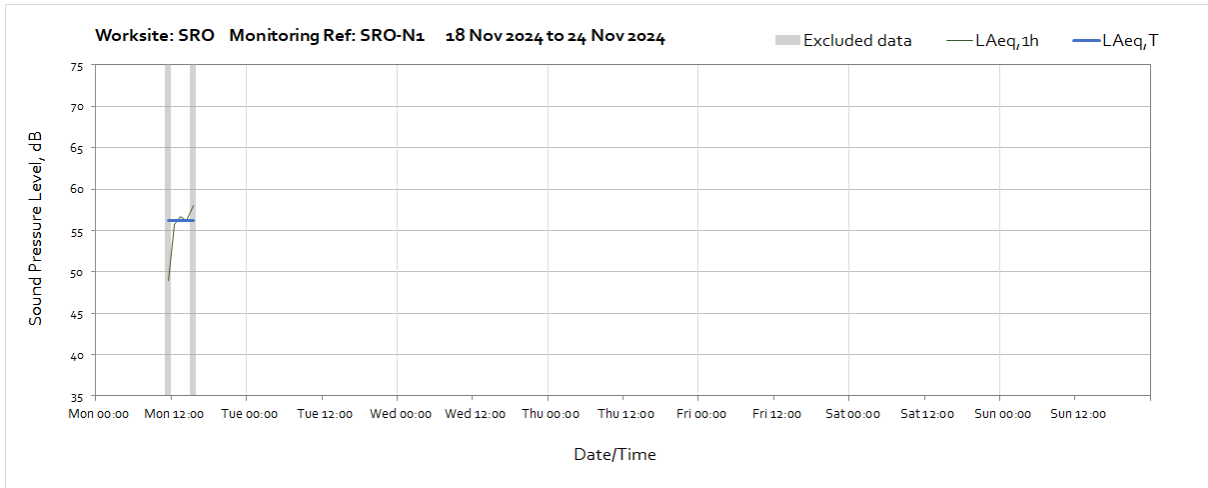




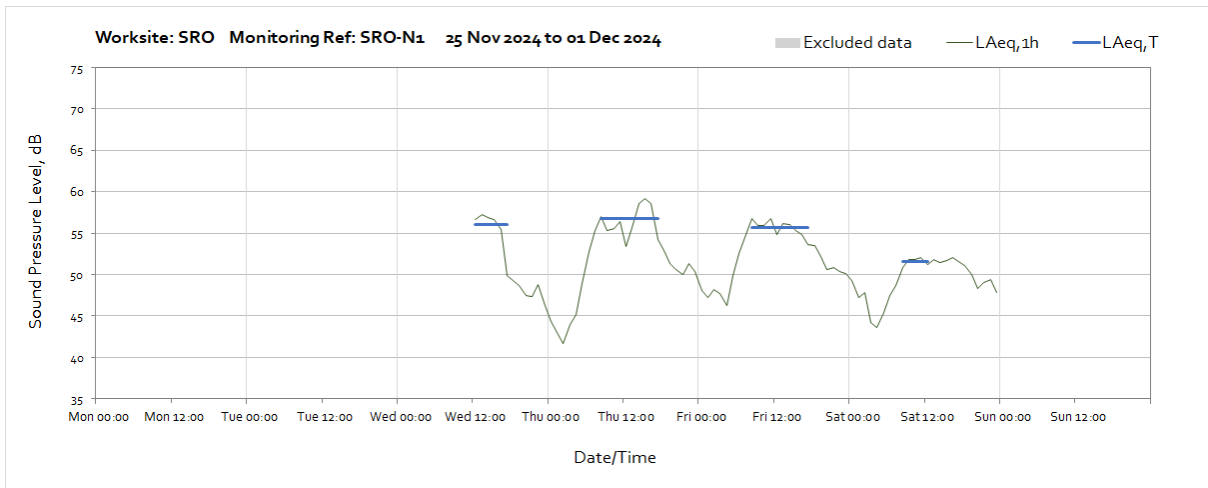
## Worksite: SRO – Monitoring Ref: SRO-N1



Note: Missing data throughout the month was due to a loss of power to the monitoring station caused by poor weather conditions preventing sufficient light reaching the solar panel.

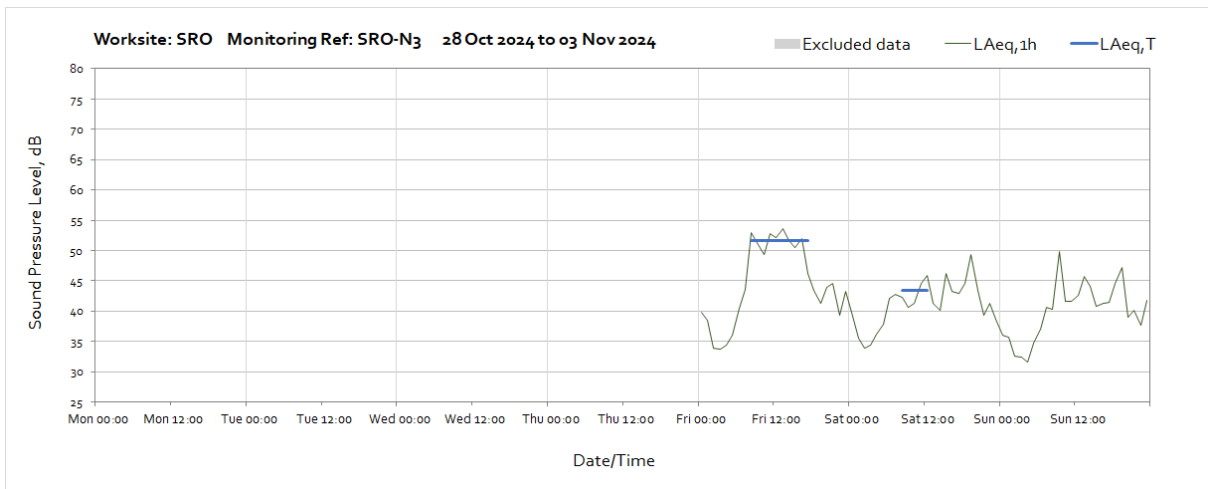


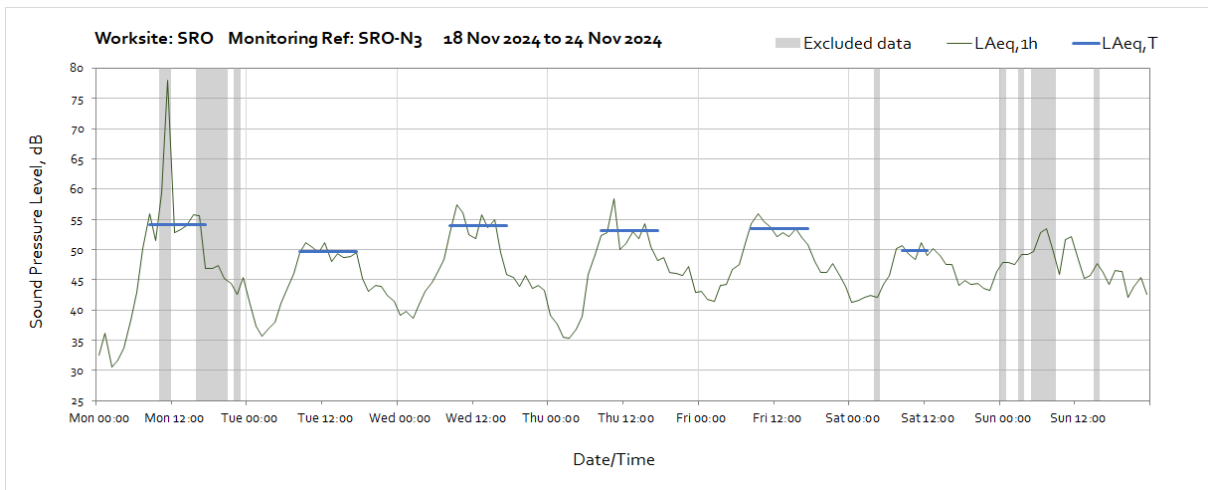
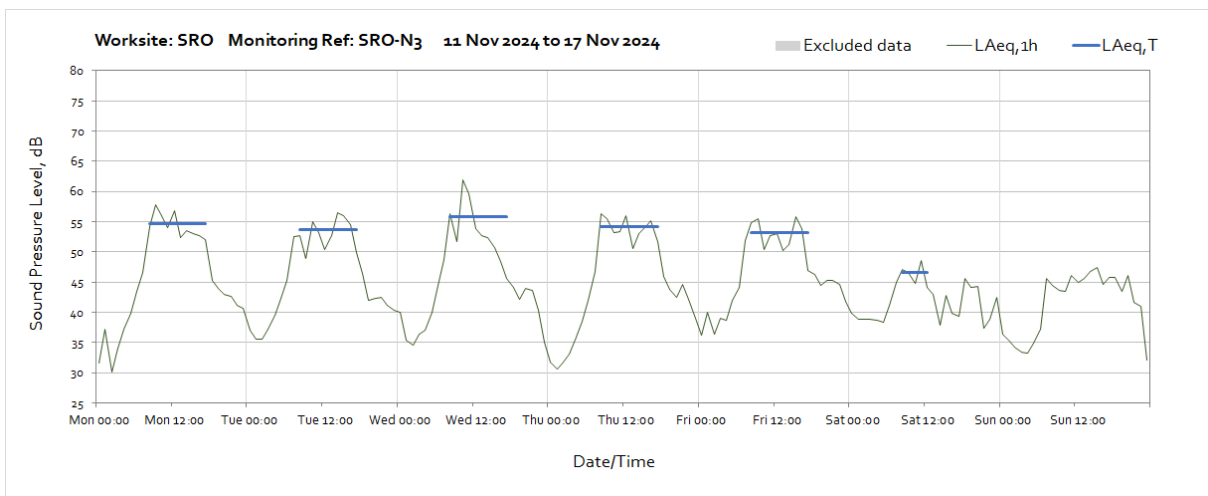
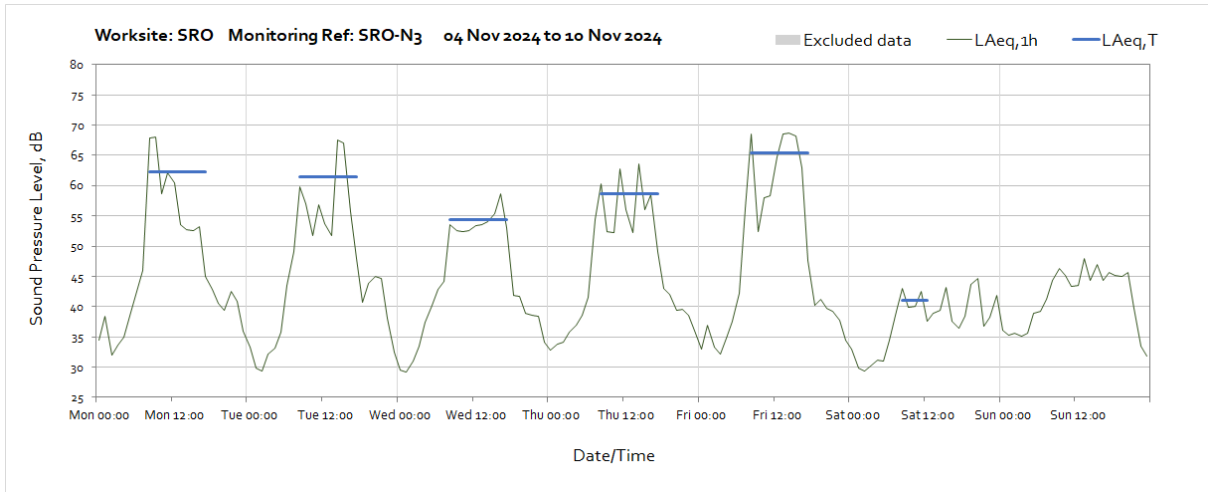
Note: Missing data throughout the month was due to a loss of power to the monitoring station caused by poor weather conditions preventing sufficient light reaching the solar panel.

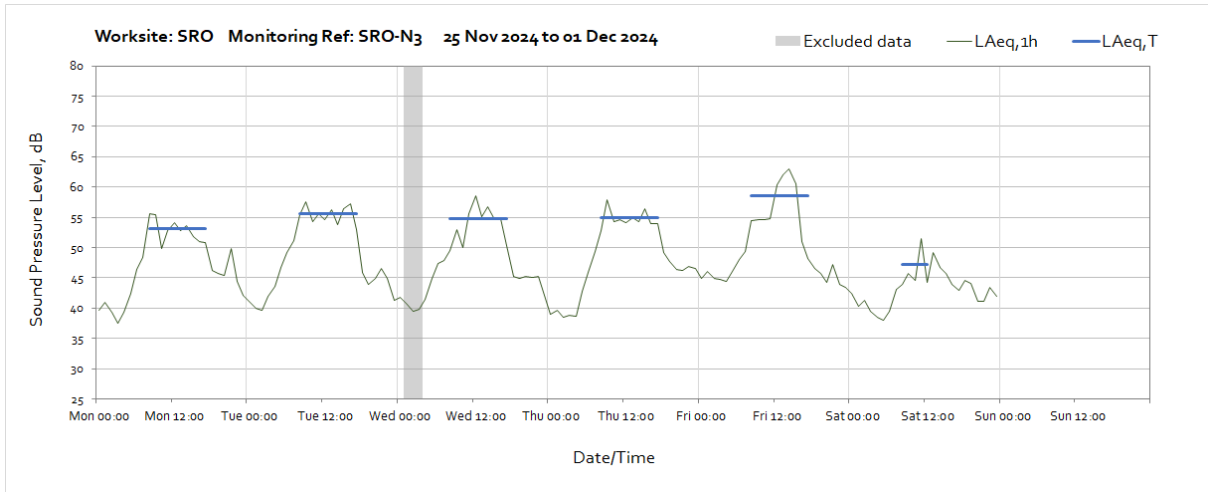


Note: Missing data throughout the week was due to a loss of power to the monitoring station caused by poor weather conditions preventing sufficient light reaching the solar panel.

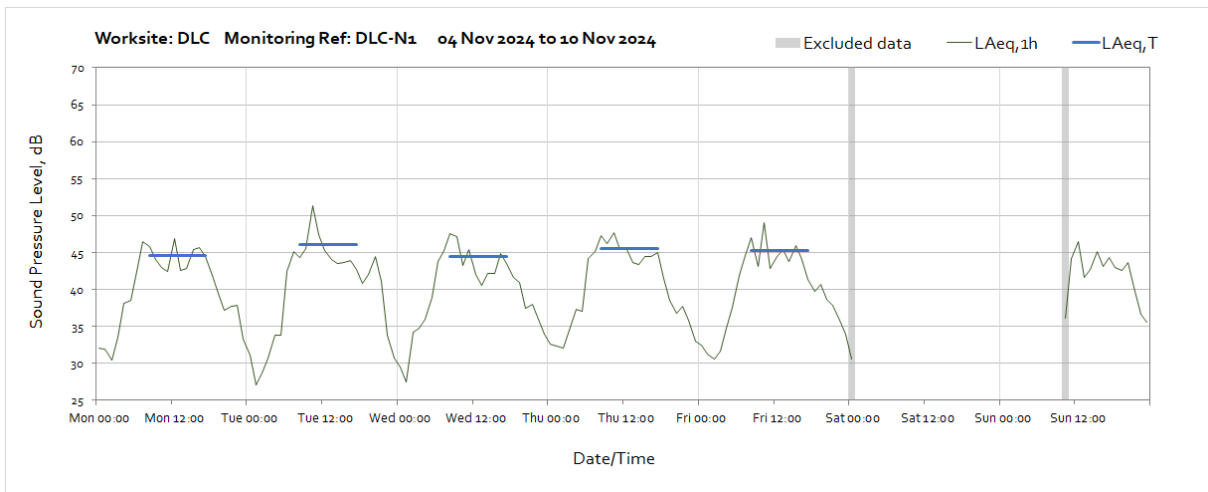
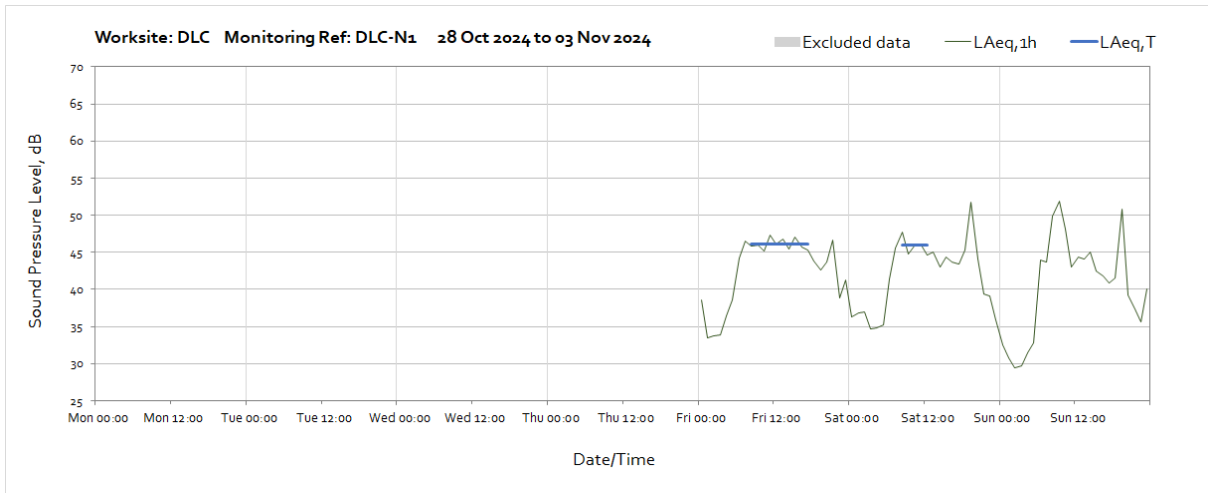
### Worksite: SRO - Monitoring Ref: SRO-N3





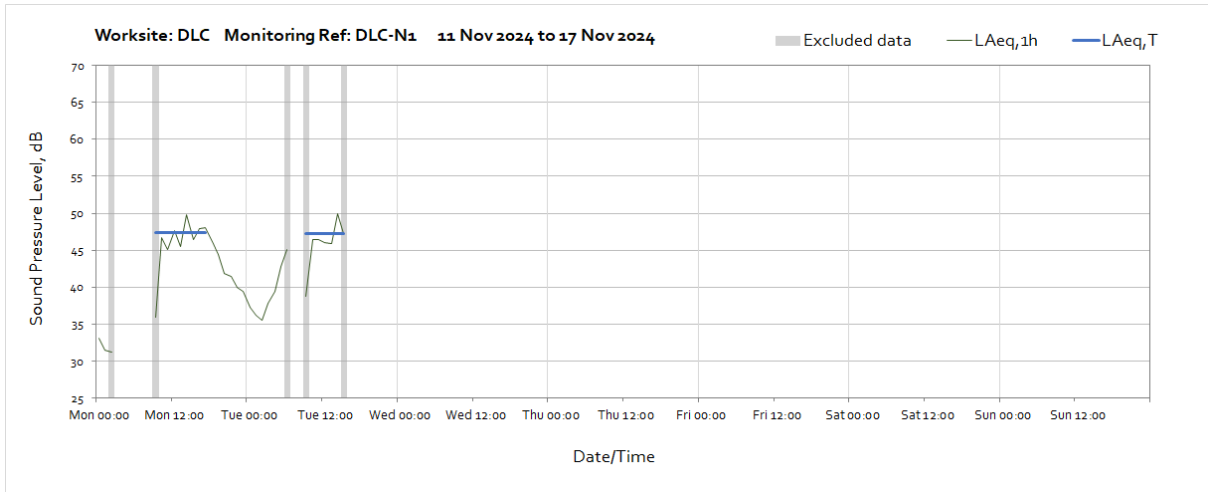


**Worksite: DLC – Monitoring Ref: DLC-N1**

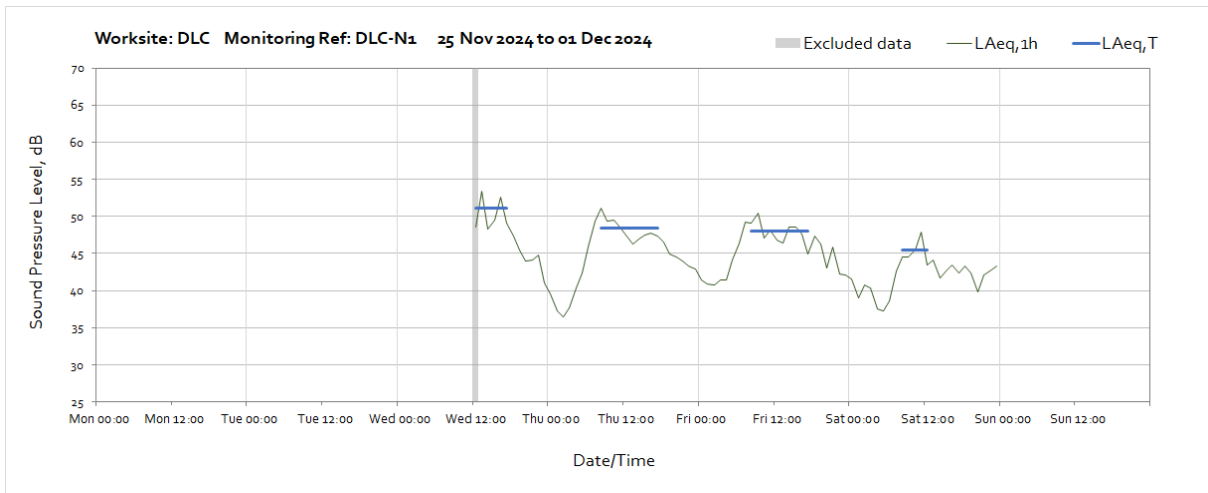


Note: Missing data between 01:00 on Saturday 09<sup>th</sup> of November and 09:00 on Sunday 10<sup>th</sup> of November was due to a loss of power to the monitoring station caused by poor weather conditions preventing sufficient light reaching the solar panel.





Note: Missing data throughout the week was due to a loss of power to the monitoring station caused by poor weather conditions preventing sufficient light reaching the solar panel.

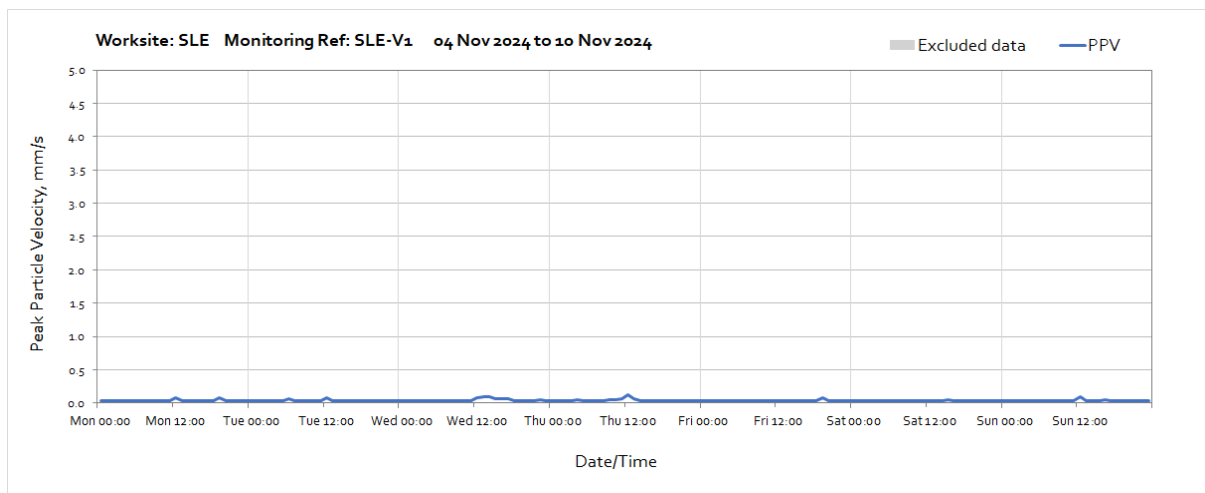
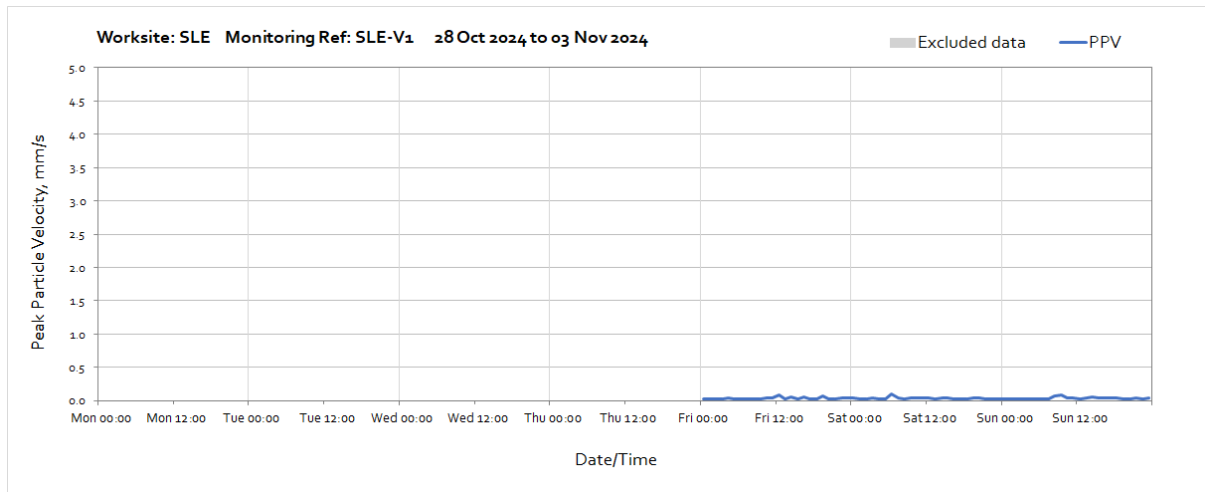


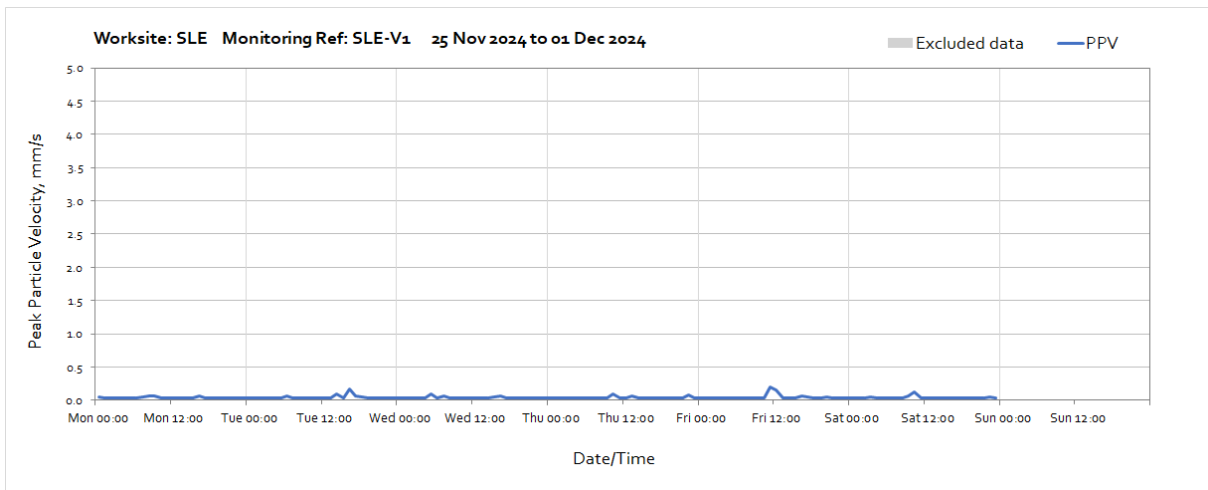
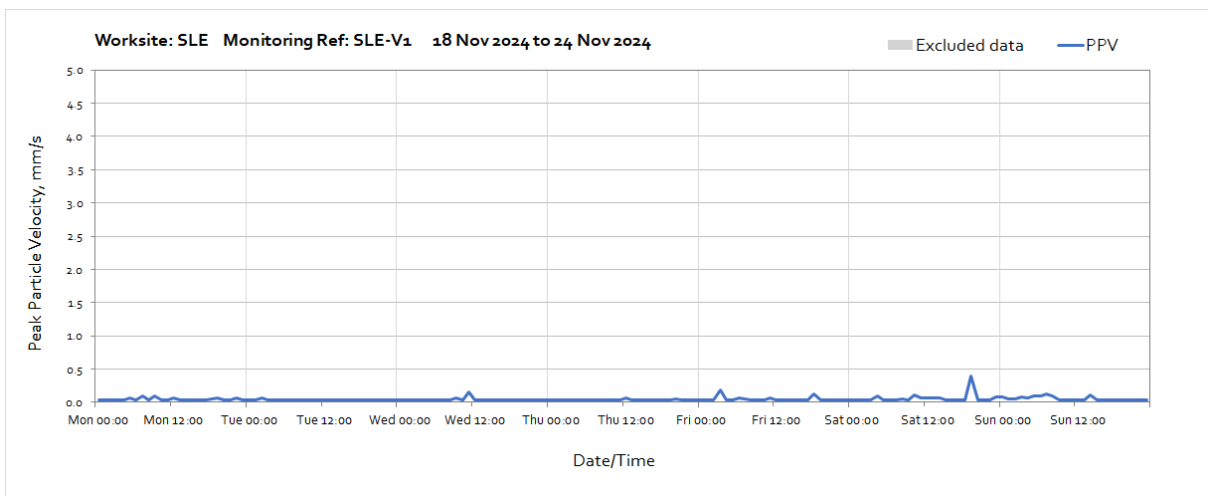
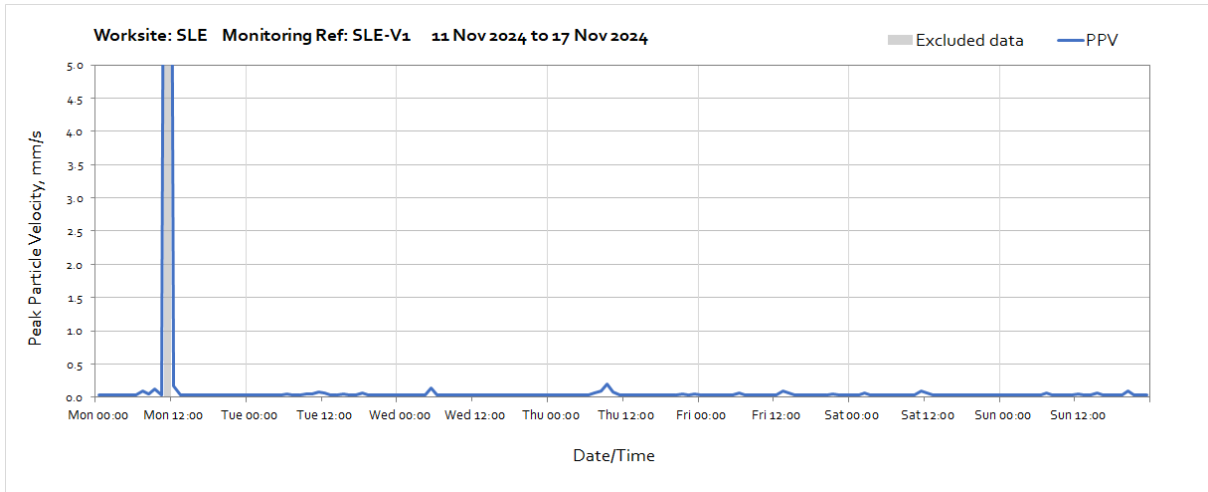
Note: Missing data throughout the week was due to a loss of power to the monitoring station caused by poor weather conditions preventing sufficient light reaching the solar panel.

## Vibration

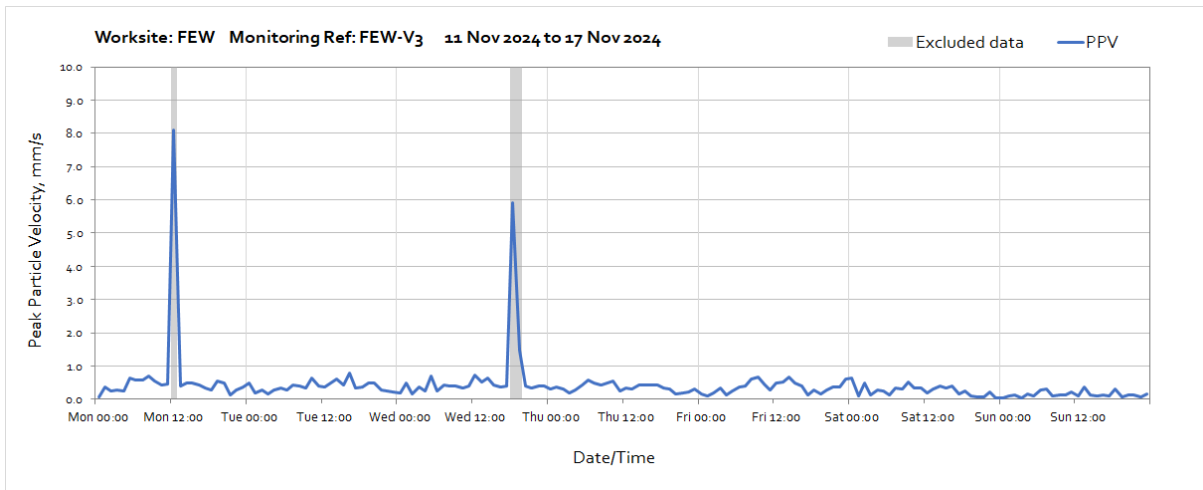
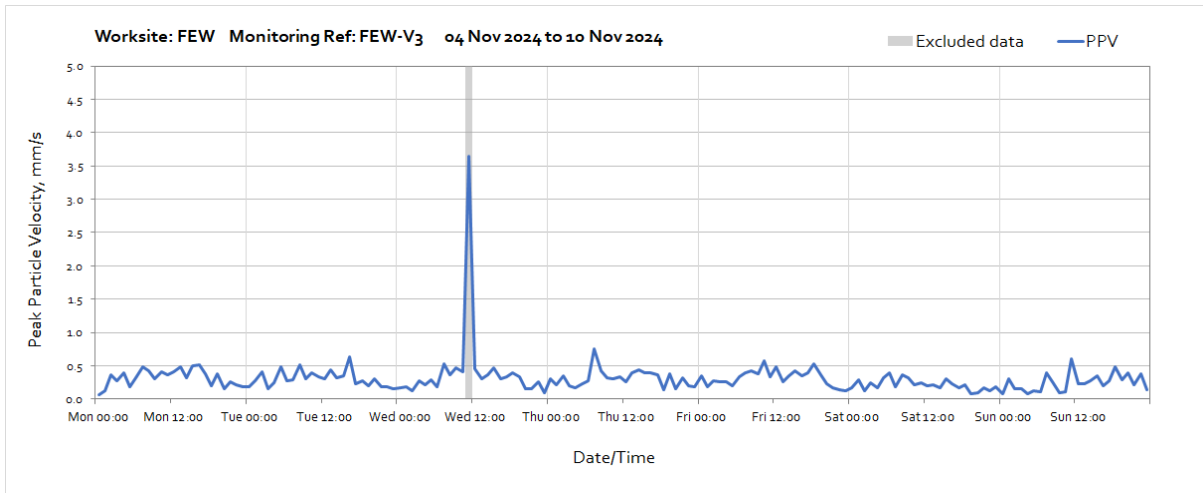
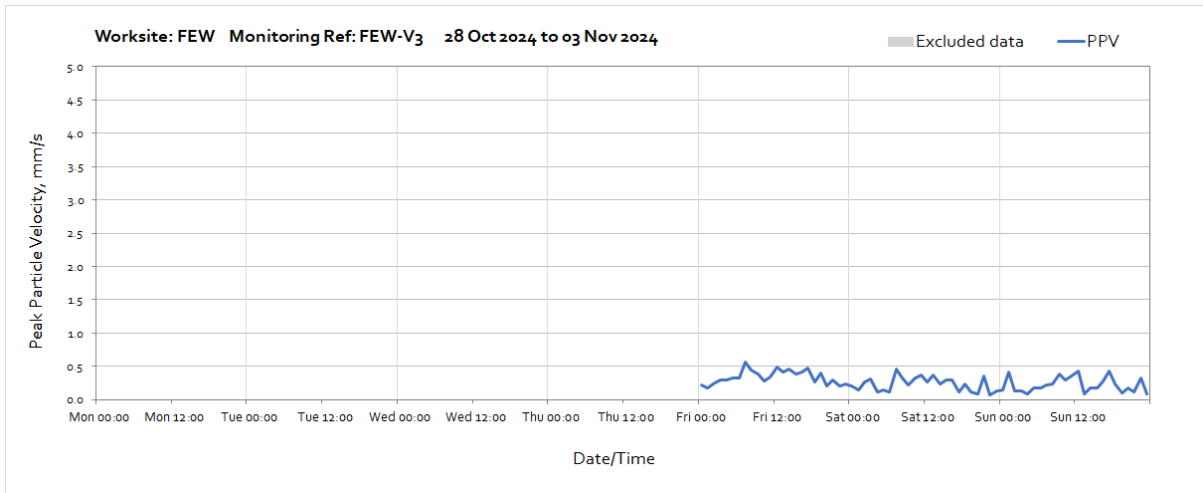
The following graphs show the hourly measured peak particle velocity PPV recorded during the monitoring period. The graphs show the highest PPV of the three orthogonal axes x, y and z. Periods where PPV values have been affected by local interference with the vibration monitor or only measured for part 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: SLE – Monitoring Ref: SLE-V1

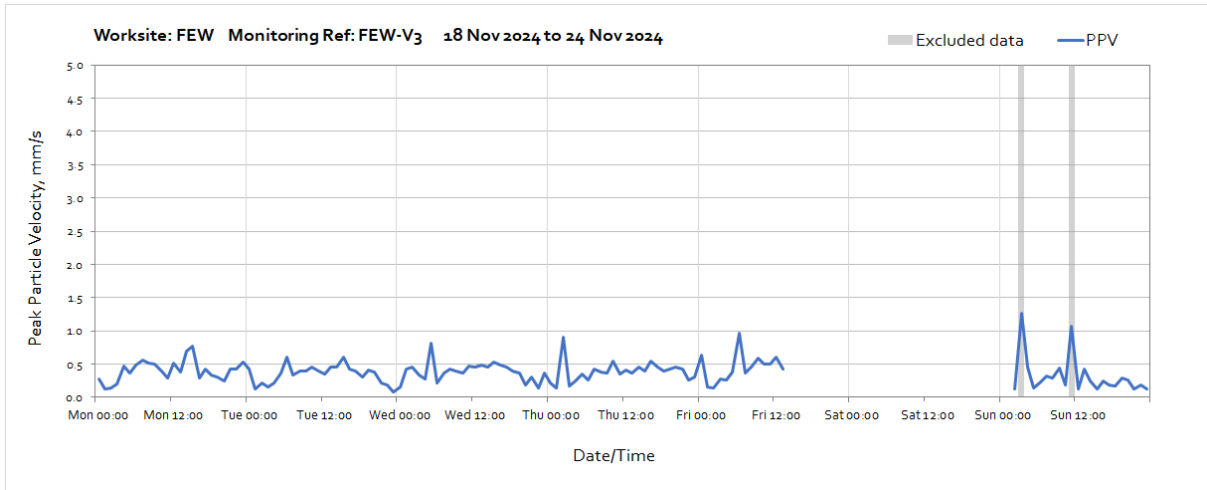




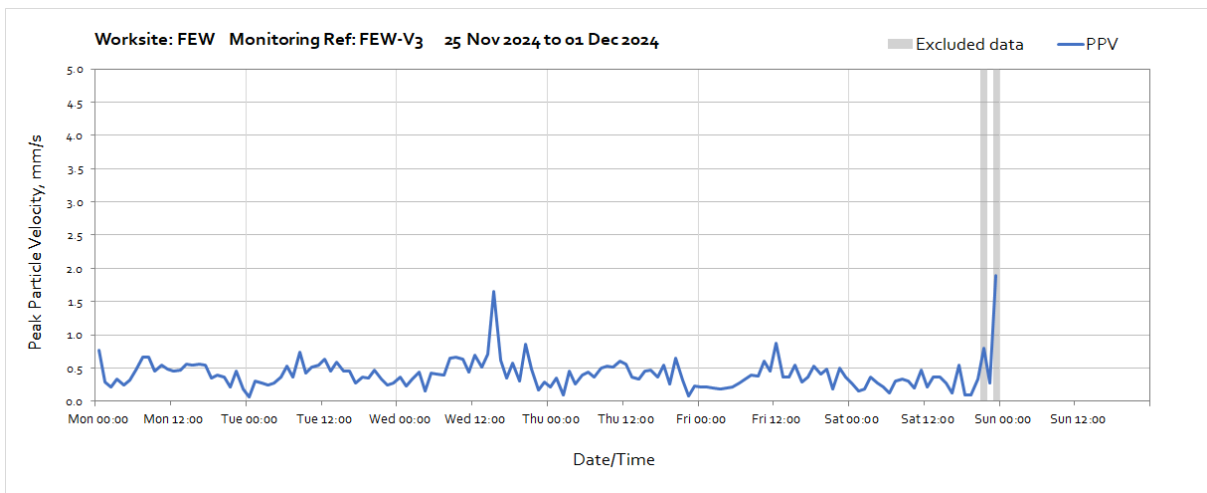
## Worksite: FEW – Monitoring Ref: FEW-V3



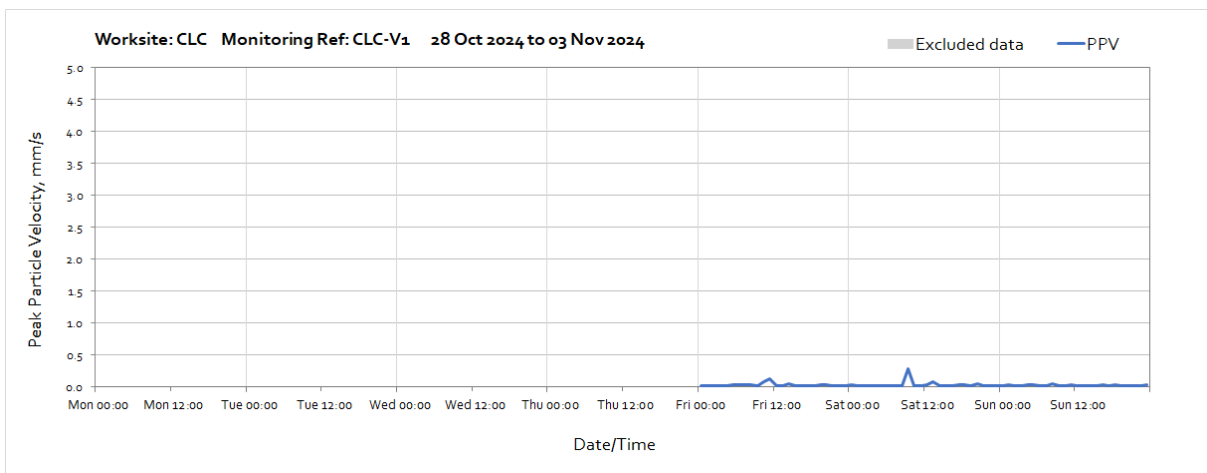
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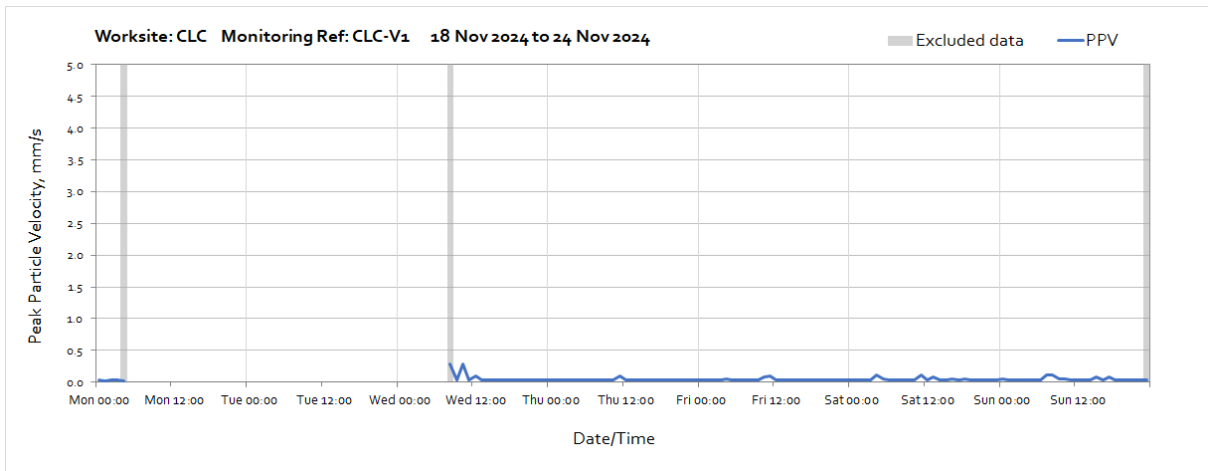
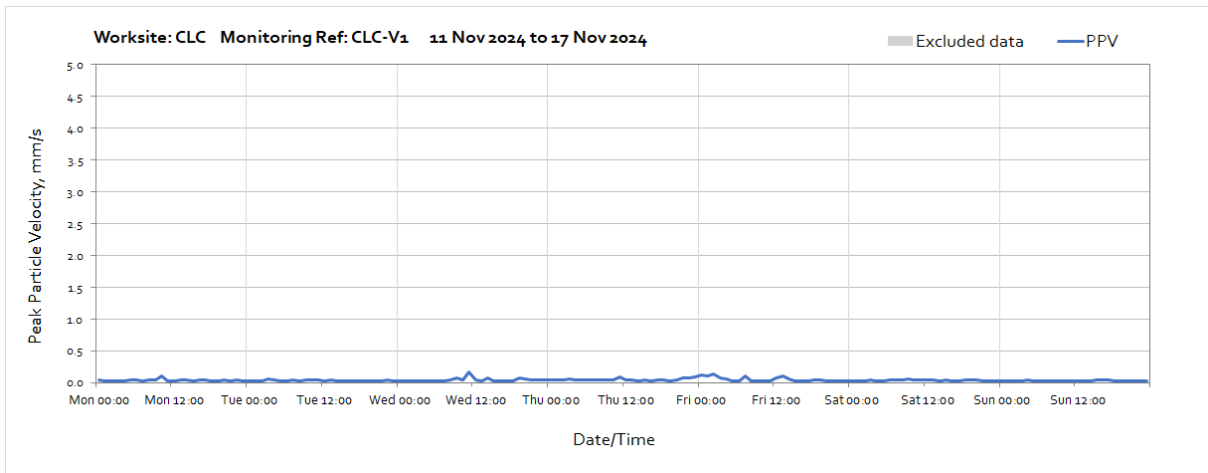
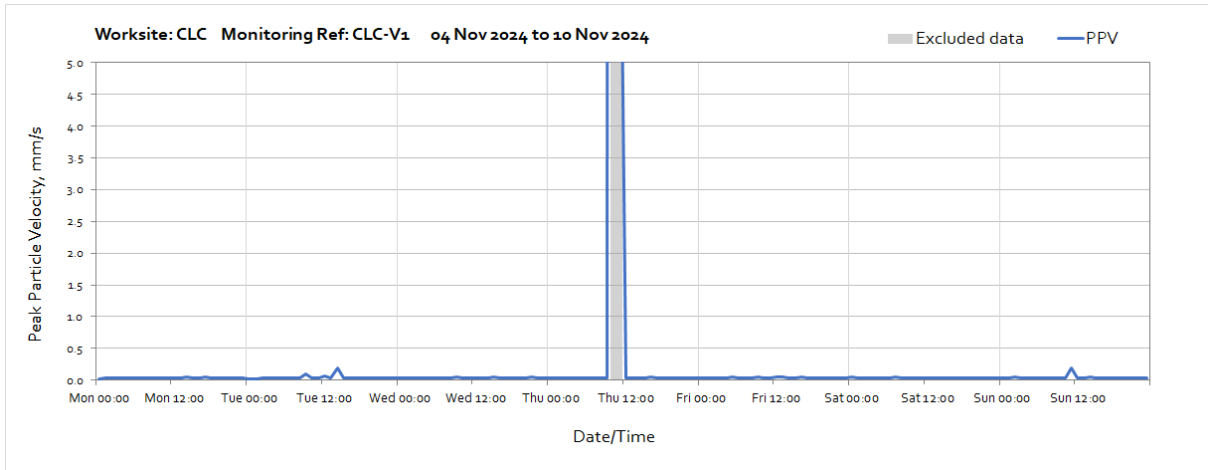


Note: Missing data between 14:00 on Friday 22<sup>nd</sup> November and 02:00 on Saturday 23<sup>rd</sup> November was due to a loss of power to the monitoring station caused by poor weather conditions preventing sufficient light reaching the solar panel.

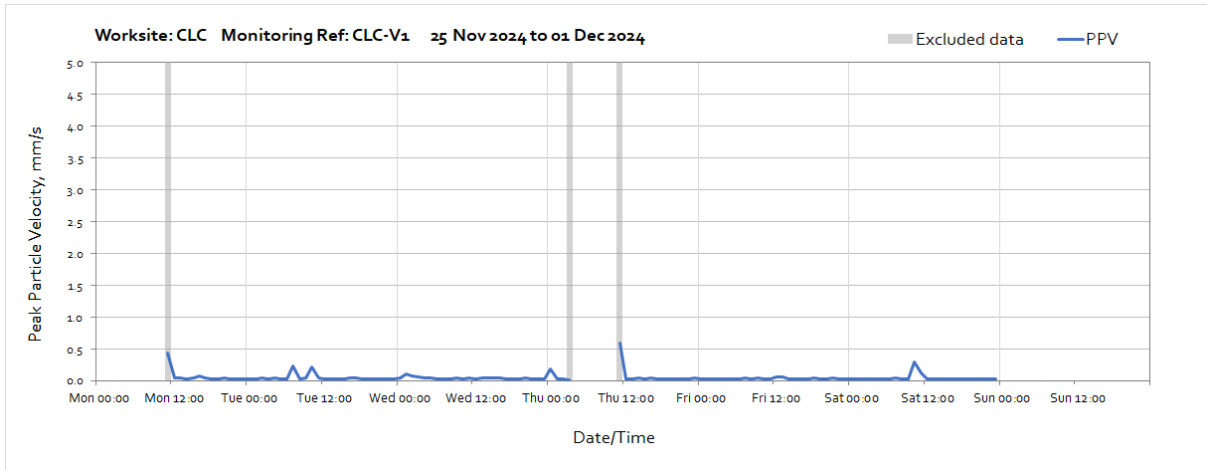


### Worksite: CLC – Monitoring Ref: CLC-V1



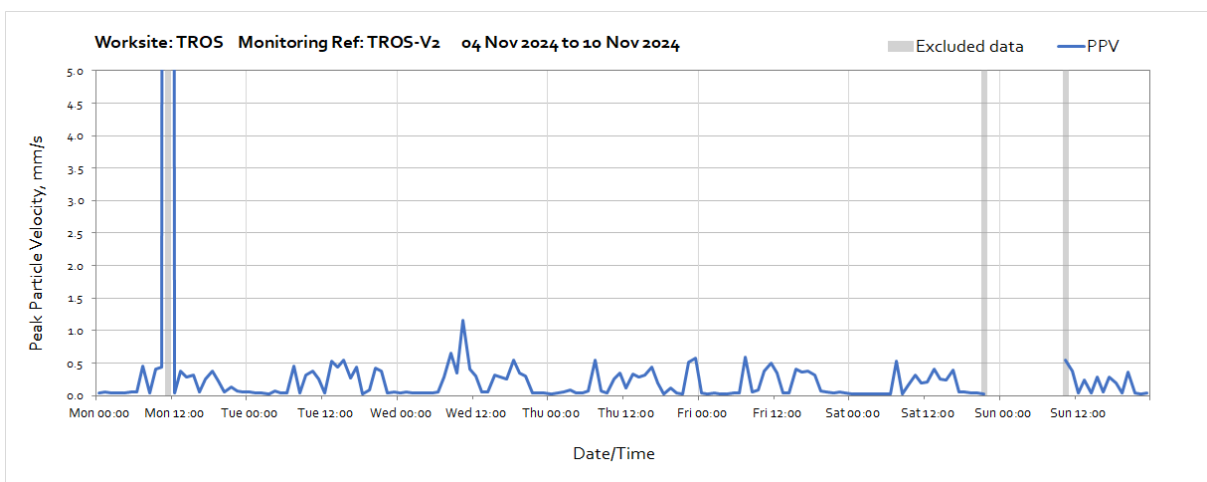
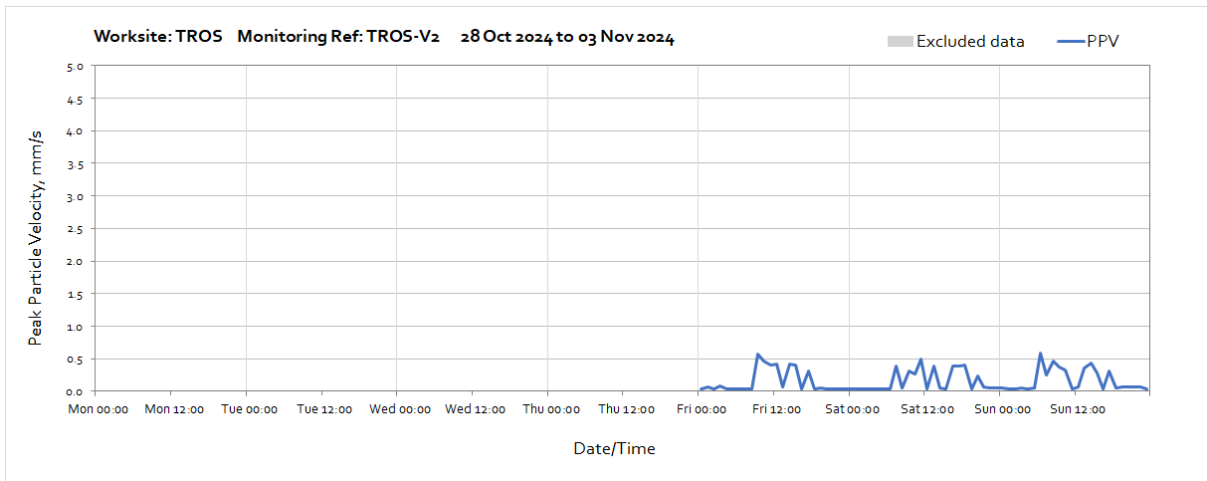


Note: Missing data between 05:00 on Monday 18<sup>th</sup> November and 07:00 on Wednesday 20<sup>th</sup> November was due to a loss of power to the monitoring station caused by poor weather conditions preventing sufficient light reaching the solar panel.



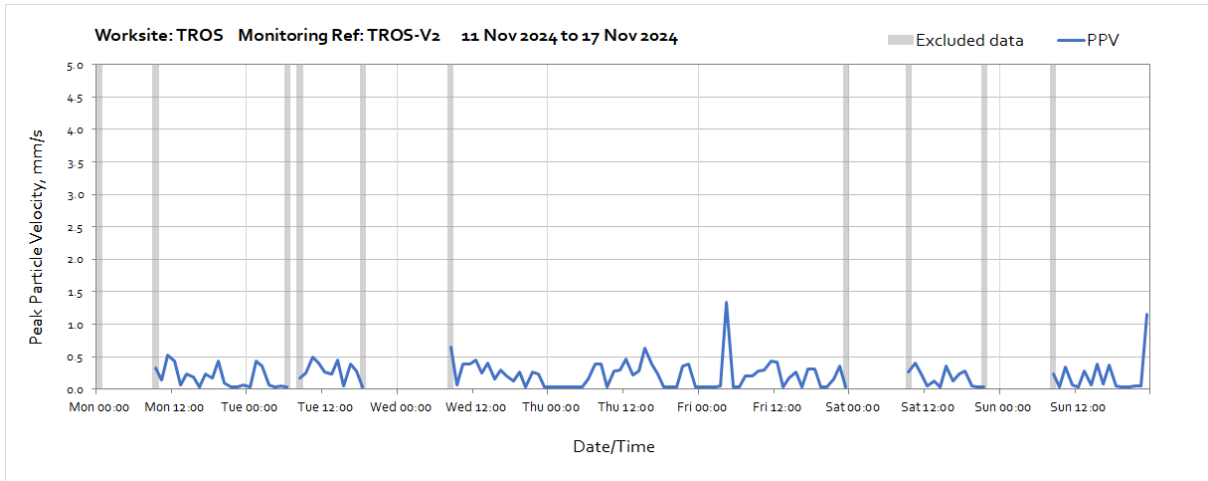
Note: Missing data between 00:00 and 10:00 on Monday 25<sup>th</sup> November and between 04:00 and 10:00 on Thursday 28<sup>th</sup> November was due to a loss of power to the monitoring station caused by poor weather conditions preventing sufficient light reaching the solar panel.

### Worksite: TROS – Monitoring Ref: TROS-V2

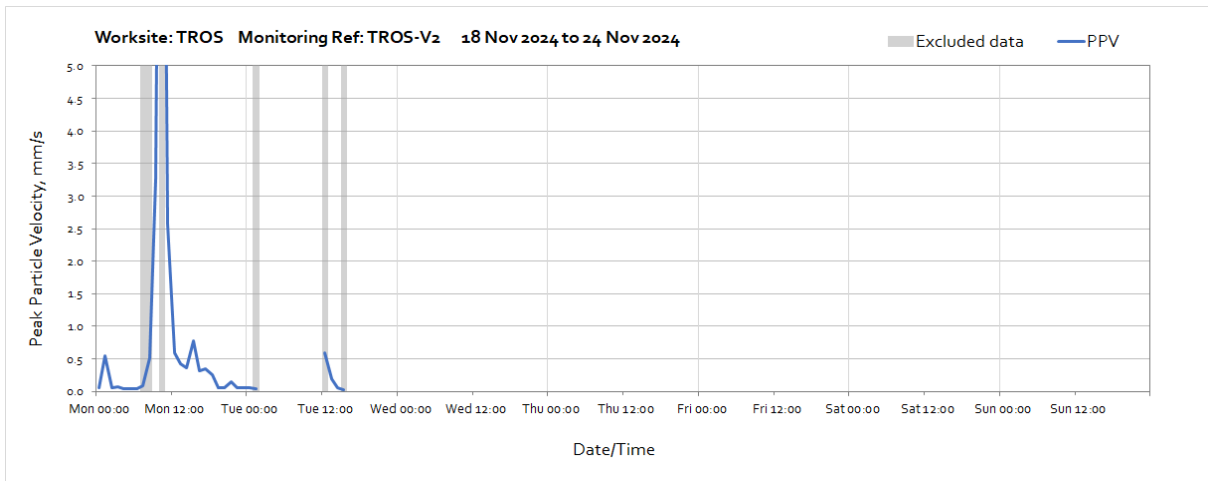


Note: Missing data between 22:00 on Saturday 09<sup>th</sup> November and 09:00 on Sunday 10<sup>th</sup> November was due to a loss of power to the monitoring station caused by poor weather conditions preventing sufficient light reaching the solar panel.

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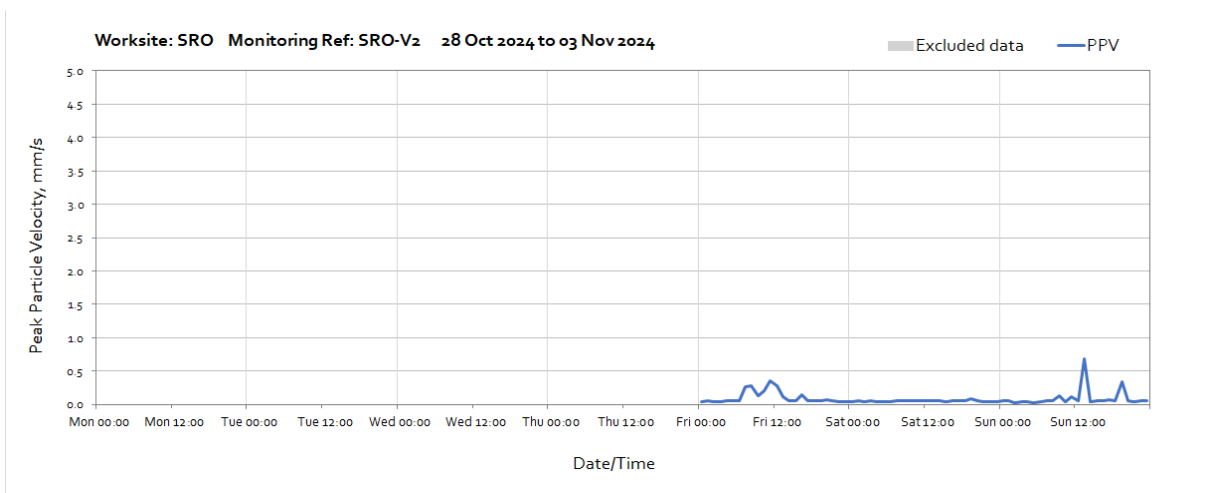


Note: Missing data throughout the week was due to a loss of power to the monitoring station caused by poor weather conditions preventing sufficient light reaching the solar panel.

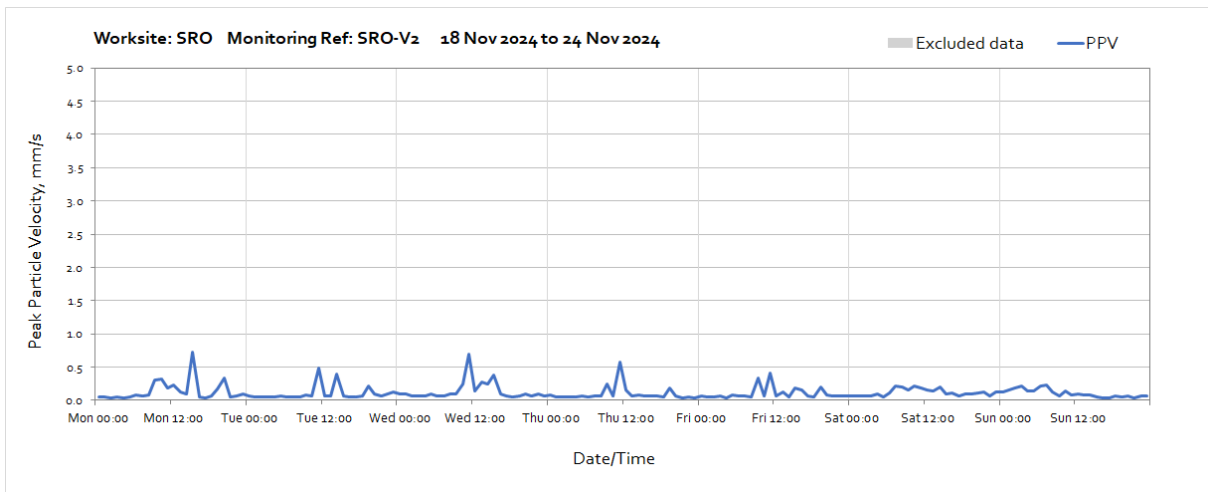
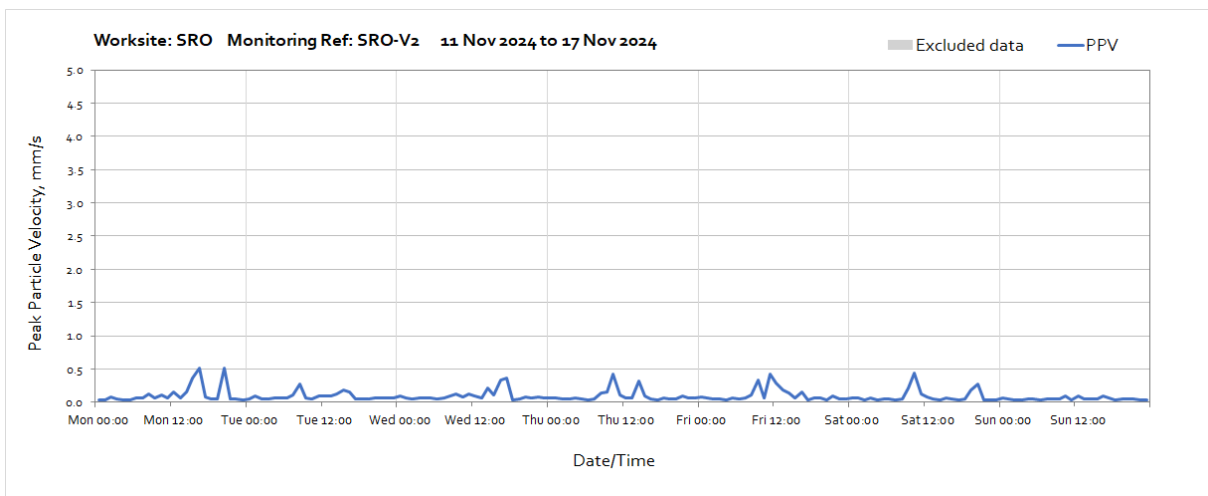
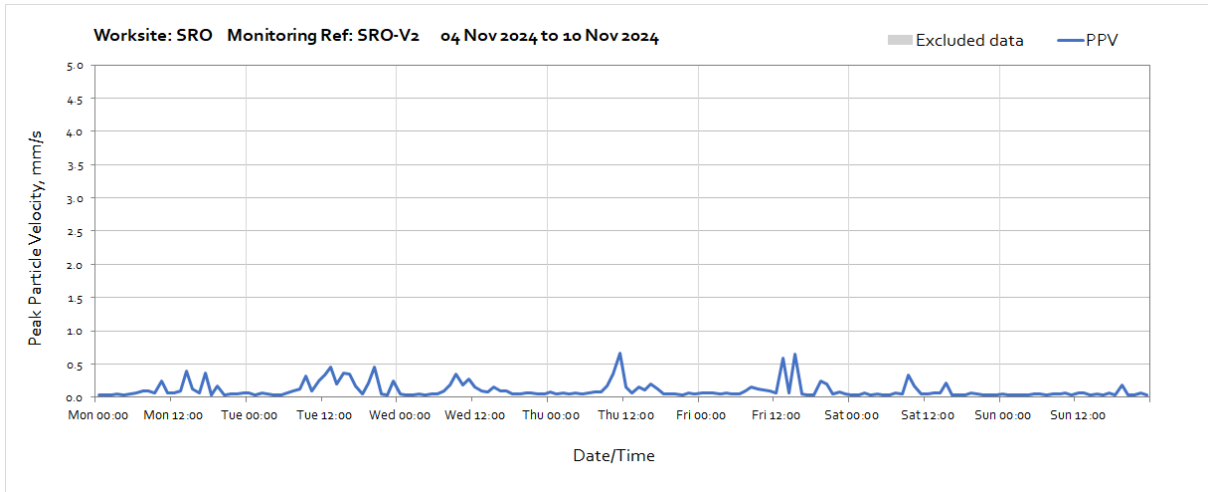


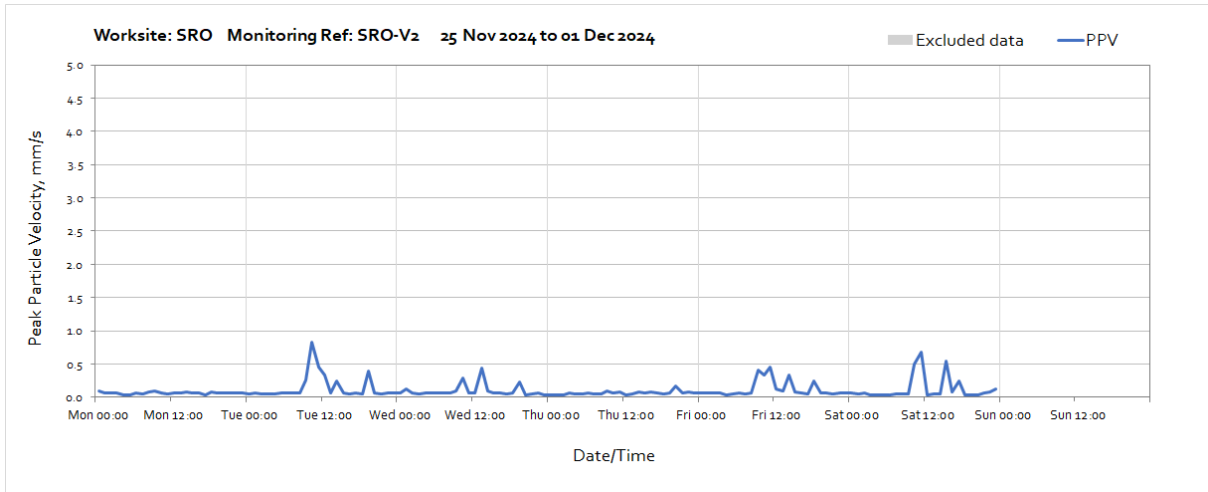
Note: Missing data between 02:00 and 11:00 on Tuesday 19<sup>th</sup> November and between 16:00 on Tuesday 19<sup>th</sup> November and the end of the month was due to a loss of power to the monitoring station caused by poor weather conditions preventing sufficient light reaching the solar panel.

### Worksite: SRO - Monitoring Ref: SRO-V2









### Worksite: SRO – Monitoring Ref: SRO-V3

