

Construction Noise and Vibration Monthly Report – May 2023

North Warwickshire Borough Council

Non-Technical Summary	1
Abbreviations and Descriptions	3
1 Introduction	4
1.2 Measurement Locations	7
2 Summary of Results	9
2.1 Summary of Measured Noise and Vibration Levels	9
2.2 Exceedances of the LOAEL and SOAEL	12
2.3 Exceedances of Trigger Level	15
2.4 Complaints	15
Appendix A Site Locations	16
Appendix B Monitoring Locations	22
Appendix C Data	30

List of tables

Table 1: Table of Abbreviations	3
Table 2: Monitoring Locations	7
Table 3: Summary of Measured dB LAeq Data over the Monitoring Period	10
Table 4: Summary of Measured PPV Data over the Monitoring Period	12
Table 5: Summary of Exceedances of LOAEL and SOAEL	13
Table 6: Summary of Total Exceedances of SOAEL	14
Table 7: Summary of Exceedances of Trigger Levels	15
Table 8: Summary of Complaints	15

Non-Technical Summary

This Noise and Vibration Monitoring Report fulfils HS2 Limited's commitment detailed in the Environmental Minimum Requirements (EMRs), Annex 1, Code of Construction Practice, to present the results of noise and vibration monitoring carried out within North Warwickshire Borough Council (NWBC) area during the month of May 2023.

Within this period monitoring was undertaken at the following worksites:

- Noise monitoring was undertaken at the Church Lane Embankment worksite (ref.: CLE), where work activities included plant crossing works.
- Noise monitoring was undertaken at the Kingsbury Main Compound worksite (ref.: KMC), where work activities included material deliveries and plant operation.
- Noise monitoring was undertaken at the Birmingham & Fazeley Canal Viaduct worksite (ref.: BFCV), where work activities included piling, plant operation and backfilling.
- Noise and vibration monitoring was undertaken at the Marston Box/Marston Lane worksite (ref.: MB), where work activities included plant usage, sawing concrete slab, installation of piling platform, removal of dewatering system, removal of sheeting and breaking out tower crane base.
- Noise monitoring was undertaken at the Faraday Avenue Embankment and Underbridge worksite (ref.: FAEU), where work activities included installation of geogrid and construction of embankment.
- Noise monitoring was undertaken at the Water Orton South Compound worksite (ref.: WOSC), where work activities included pile cap excavation.
- Noise monitoring was undertaken at the Chattle Hill Box Structure worksite (ref.: CHBS), where work activities included piling.
- Noise monitoring was undertaken at the Attleboro Lane Overbridge worksite (ref.: ALO), where work activities included realignment of embankment, piling platform construction and pile cap backfilling.
- Noise monitoring was undertaken at the Gilson Embankment worksite (ref.: GE), where work activities included plant usage, stockpile relocation, topsoil stripping, trial pad works, piling platform construction and relocation of materials.
- Noise monitoring was undertaken at the Gilson Drive worksite (ref.: GLD), where work activities included topsoil strip, installing and compacting embankment fill,

lime stabilisation, drainage ditches and ponds installation, road sweeping, dust suppression, water extraction, site deliveries, and wheel wash use.

- Noise monitoring was undertaken at the Birmingham Road worksite (ref.: BRD), where work activities included water crossing and diversions, underbridge abutment, haul roads, poling platform construction, bored piling and substructure construction.

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 three (3) occasions during May 2023.

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

Four (4) complaints were received within the North Warwickshire area during the monitoring period. A description of the complaint, the results of investigations and any actions taken are detailed in Table 7 of this report.

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 North Warwickshire Borough Council (NWBC) area for the period 1st to 31st May 2023.

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

- Church Lane Embankment worksite, ref.: CLE (see Plan 1 in Appendix A), where work activities included:
 - Plant crossing works.
- Kingsbury Main Compound worksite, ref.: KMC (see Plan 2 in Appendix A), where work activities included:
 - Material deliveries.
 - Plant operation.
- Birmingham & Fazeley Canal Viaduct worksite, ref.: BFCV (see Plan 2 in Appendix A), where works included:
 - Piling.
 - Plant operation.

- Backfilling.
- Marston Box/Marston Lane worksite (ref.: MB), where work activities included:
 - Plant usage.
 - Sawing concrete slab.
 - Installation of piling platform.
 - Removal of dewatering system.
 - Removal of sheeting.
 - Breaking out tower crane base.
- Faraday Avenue Embankment and Underbridge worksite, ref.: FAEU (see Plan 3 in Appendix A), work activities included:
 - Installation of geogrid
 - Construction of embankment .
- Water Orton South Compound worksite, ref.: WOSC (see Plan 4 in Appendix A), work activities included:
 - Pile cap excavation.
- Chattle Hill Box Structure worksite, ref.: CHBS (see Plan 4 in Appendix A), where work activities included:
 - Piling.
- Attleboro Lane Overbridge worksite, ref.: ALO (see Plan 4 in Appendix A), where work activities included:
 - Realignment of embankment.
 - Piling platform construction.
 - Pile cap backfilling.
- Gilson Embankment worksite, ref.: GE (see Plan 4 in Appendix A)
 - Plant operation.

- Stockpile relocation.
- Topsoil strip.
- Trial pad works.
- Piling platform construction.
- Relocation of materials.
- Gilson Drive worksite, ref.: GLD (see Plan 4 in Appendix A), works activities included:
 - Topsoil strip.
 - Installing and compacting embankment fill.
 - Lime stabilisation.
 - installing drainage ditches and ponds.
 - Road sweeping.
 - Dust suppression.
 - Water extraction from pond.
 - Site deliveries.
 - Wheel wash use & maintenance.
- Birmingham Road worksite, ref.: BRD (see Plan 4 in Appendix A), work activities included:
 - Water crossing and diversions.
 - Underbridge abutment.
 - Haul roads.
 - Poling platform construction.
 - Bored piling.

- Substructure construction.

1.1.4 The applicable standards, guidance, and monitoring methodology is 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 Fifteen (15) noise monitoring installations and eight (8) vibration monitoring installations were active in May in the NWBC area. Table 2 summarises the position of noise and vibration monitoring installations within the NWBC area in May 2023.

1.2.2 An additional noise monitor ref. CM-N1 was installed at Coleshill Manor Office Campus, Birmingham worksite GLD worksite on the 4th of May.

1.2.3 Maps showing the position of noise and vibration monitoring installations are presented in Appendix B.

Table 2: Monitoring Locations

Worksite Reference	Measurement Reference	Address
Church Lane Embankment (CLE)	CLE-N1	Highfields Cottage, Middleton, North Warwickshire
Kingsbury Main Compound (KMC)	KMC-N1	Kingsbury Road, Curdworth CP, Marston, Warwick, West Midlands
	KMC-N2	Kingsbury Road, Curdworth CP, Marston, Warwick, West Midlands
Birmingham Fazeley Canal Viaduct (BFCV)	BFCV-N2	Lock Cottage, Marston Lane, Curdworth CP, North Warwickshire
	BFCV-V4	Lock Cottage, Marston Lane, Curdworth CP, North Warwickshire
Marston Box (MB)	MB-N1	Kingsbury Road, Curdworth, Sutton Coldfield, West Midlands
	MB-V1	Kingsbury Road, Curdworth, Sutton Coldfield, West Midlands
Faraday Avenue Embankment and Underbridge (FAEU)	FAEU-N1	Orchard Cottage, Newlands Lane, Curdworth, Warwickshire
	FAEU-V1	Orchard Cottage, Newlands Lane, Curdworth, Warwickshire
Water Orton South Compound (WOSC)	WOSC-N1	53 Watton Lane, Water Orton CP, Warwickshire
	WOSC-V1	53 Watton Lane, Water Orton CP, Warwickshire
Chattle Hill Box Structure (CHBS)	CHBS-N1	6 Gorseway, Coleshill, Warwickshire, Birmingham
Attleboro Lane Overbridge (ALO)	ALO-N1	47 Attleboro Lane, Water Orton, Birmingham
	ALO-V1	47 Attleboro Lane, Water Orton, Birmingham

Worksite Reference	Measurement Reference	Address
Gilson Embankment (GE)	GE-N1	The Cottage, Gilson Road, Coleshill, Warwickshire
	GE-N2	Lovelock Cottage, Gilson Road, Warwickshire
	GE-V1	The Cottage, Gilson Road, Coleshill, Warwickshire
Gilson Drive (GLD)	GLD-N1	Gilson Dr, Coleshill, Birmingham
	GLD-V1	Gilson Dr, Coleshill, Birmingham
	CM-N1	Coleshill Manor Office Campus, Birmingham
Birmingham Road (BRD)	BRD-N2	New Cottages, Birmingham Road, Coleshill, Birmingham
	BRD-N3	1 New Cottages, Birmingham Road, Coleshill, Birmingham
	BRD-V1	New Cottages, Birmingham Road, Coleshill, Birmingham

2 Summary of Results

2.1 Summary of Measured Noise and Vibration Levels

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

Table 3: Summary of Measured dB L_{Aeq} Data over the Monitoring Period

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
CLE	CLE-N1	Highfields Cottage, Middleton	Free-field	46.7 (51.3)	46.7 (55.5)	45.8 (51.8)	44.7 (50.7)	44.7 (57.9)	43.9 (46.8)	46.2 (48.4)	45.5 (48.3)	44.8 (48.9)	43.0 (55.6)	45.5 (53.1)	44.4 (55.7)
KMC	KMC-N1	Kingsbury Road, Curdworth CP, Marston	Free-field	56.6 (62.3)	57.6 (61.0)	54.9 (59.0)	54.1 (59.3)	53.2 (60.1)	53.4 (55.2)	53.6 (55.3)	51.9 (52.8)	52.1 (54.2)	52.3 (54.7)	53.7 (57.8)	54.2 (59.4)
	KMC-N2	Kingsbury Road, Curdworth CP, Marston	Free-field	57.1 (61.8)	57.1 (66.6)	54.2 (56.6)	53.6 (58.6)	53.3 (61.8)	53.5 (55.9)	53.5 (54.1)	52.7 (53.5)	52.6 (54.0)	52.2 (53.7)	53.0 (56.5)	53.1 (57.8)
BFCV	BFCV-N2	(North of) Lock Cottage, Marston Lane, Curdworth CP	Free-field	67.4 (70.5)	67.5 (69.8)	67.4 (70.2)	66.3 (69.6)	64.7 (69.9)	65.9 (67.2)	67.5 (68.3)	67.9 (69.2)	66.3 (68.6)	61.5 (64.9)	66.2 (71.5)	62.8 (68.3)
MB	MB-N1	Kingsbury Road, Curdworth, Sutton Coldfield	Free-field	56.7 (60.1)	55.9 (58.3)	56.0 (58.6)	55.1 (59.4)	53.1 (58.9)	54.5 (56.4)	54.2 (56.8)	52.3 (54.2)	54.6 (59.4)	52.8 (56.0)	55.0 (58.3)	53.4 (59.5)
FAEU	FAEU-N1	Orchard Cottage, Newlands Lane, Curdworth	Free-field	56.8 (62.2)	61.9 (67.5)	54.1 (58.4)	53.2 (59.3)	52.6 (61.9)	56.8 (65.5)	56.0 (64.2)	50.5 (52.0)	52.0 (56.8)	50.2 (55.2)	53.8 (60.3)	52.8 (59.3)
WOSC	WOSC-N1	53 Watton Lane, Water Orton CP	Free-field	67.4 (70.6)	67.8 (70.0)	67.4 (68.9)	65.2 (68.9)	62.2 (68.5)	64.4 (65.0)	67.0 (68.0)	66.5 (68.6)	64.9 (67.4)	58.7 (62.8)	64.8 (67.3)	61.0 (67.1)

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
CHBS	CHBS-N1	6 Gorsey Way, Coleshill	Free-field	64.0 (66.1)	64.1 (66.2)	63.4 (65.0)	62.0 (66.6)	60.0 (66.1)	60.3 (61.2)	63.8 (64.8)	63.1 (65.1)	62.4 (65.1)	57.2 (60.9)	62.8 (66.6)	58.5 (66.0)
ALO	ALO-N1	47 Attleboro Lane, Water Orton	Free-field	54.5 (63.1)	57.8 (62.2)	54.6 (57.8)	53.3 (58.8)	51.9 (60.7)	51.7 (54.1)	53.8 (55.7)	54.3 (57.3)	54.0 (58.6)	49.9 (55.5)	52.8 (57.0)	51.4 (60.5)
GE	GE-N1	The Cottage, Gilson Road, Coleshill	Free-field	59.3 (62.9)	60.0 (63.4)	57.4 (61.6)	56.3 (61.1)	55.2 (64.5)	55.8 (56.1)	57.4 (59.4)	55.6 (59.7)	55.9 (63.7)	54.1 (58.1)	55.5 (60.3)	54.8 (61.7)
	GE-N2	Lovelock Cottage, Gilson Road	Free-field	59.9 (63.2)	60.1 (63.2)	59.6 (63.1)	58.3 (61.9)	55.6 (62.6)	56.4 (57.5)	56.6 (58.3)	56.8 (59.9)	56.3 (59.5)	54.0 (56.9)	57.4 (61.7)	55.4 (62.8)
GLD	GLD-N1	10 Gilson Dr, Coleshill	Free-field	57.5 (61.3)	58.7 (63.0)	58.3 (62.4)	56.5 (61.6)	54.9 (62.1)	55.2 (56.1)	58.2 (60.4)	56.6 (60.8)	56.0 (60.1)	51.7 (55.8)	55.8 (66.4)	53.0 (57.5)
	CM-N1	Coleshill Manor Office Campus, Birmingham	Free-field	57.6 (61.9)	59.5 (68.9)	58.3 (61.8)	57.1 (61.1)	56.1 (63.8)	56.5 (58.2)	57.4 (59.3)	57.3 (59.5)	56.5 (59.7)	52.8 (62.2)	55.6 (60.7)	54.9 (62.0)
BRD	BRD-N2	1 New Cottages, Birmingham Road, Coleshill	Free-field	63.1 (72.0)	64.7 (73.5)	62.6 (64.8)	61.1 (63.9)	58.7 (64.1)	59.9 (61.1)	63.9 (65.9)	61.3 (63.1)	61.1 (68.4)	56.8 (60.4)	60.3 (62.9)	57.4 (63.1)
	BRD-N3		Free-field	68.9 (70.2)	69.7 (70.4)	69.1 (70.2)	67.2 (68.9)	64.2 (69.7)	65.7 (66.4)	70.0 (70.8)	68.9 (69.4)	67.7 (69.2)	63.0 (67.1)	67.5 (69.2)	63.0 (69.5)

2.1.2 Table 4 presents a summary of the measured vibration levels at the 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
BFCV	BFCV-V4	(North of) Lock Cottage, Marston Lane, Curdworth CP, North Warwickshire	2.76 (Y-axis)
MB	MB-V1	Kingsbury Road, Curdworth, Sutton Coldfield, West Midland	0.83 (X-axis)
FAEU	FAEU-V1	Orchard Cottage, Newlands Lane, Curdworth, Warwickshire	3.32 (Z-axis)
WOSC	WOSC-V1	53 Watton Lane, Water Orton CP, Warwickshire	1.27 (Z-axis)
ALO	ALO-V1	47 Attleboro Lane, Water Orton, Birmingham	1.22 (X-axis)
GE	GE-V1	The Cottage, Gilson Road, Coleshill, Warwickshire	0.59 (Z-axis)
GLD	GLD-V1	10 Gilson Dr, Coleshill, Birmingham	0.59 (Z-axis)
BRD	BRD-V1	1, New Cottages, Birmingham Road, Coleshill, Birmingham	1.34 (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
CLE	CLE-N1	Highfields Cottage, Middleton	All days	All periods	No exceedances	No exceedances
KMC	KMC-N1	Wheatley House, Kingsbury Road, Sutton Coldfield	All days	All periods	No exceedances	No exceedances
	KMC-N2	Wheatley House, Kingsbury Road, Sutton Coldfield	All days	All periods	No exceedances	No exceedances
BFCV	BFCV-N2	(north of) Lock Cottage, Marston Lane, Curdworth	All days	All periods	No exceedances	No exceedances
MB	MB-N1	Kingsbury Road, Curdworth	All days	All periods	No exceedances	No exceedances
FAEU	FAEU-N1	Orchard Cottage, Newlands Lane, Curdworth	All days	All periods	No exceedances	No exceedances
WOSC	WOSC-N1	53 Watton Lane, Water Orton CP	All days	All periods	No exceedances	No exceedances

Worksite Reference	Measurement Reference	Site Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
CHBS	CHBS-N1	6 Gorsey Way, Coleshill	Weekday	08:00–18:00	2	No exceedances
ALO	ALO-N1	47 Attleboro Lane, Water Orton	All days	All periods	No exceedances	No exceedances
GE	GE-N1	(west of) 47 Attleboro Lane, Water Orton	All days	All periods	No exceedances	No exceedances
	GE-N2	Lovelock Cottage, Gilson Road	All days	All periods	No exceedances	No exceedances
GLD	GLD-N1	Gilson Dr, Coleshill	Weekday	08:00–18:00	1	No exceedances
	CM-N1	Coleshill Manor Office Campus, Birmingham	Weekday	08:00–18:00	3	No exceedances
BRD	BRD-N2	New Cottages, Birmingham Road, Coleshill	Weekday	08:00–18:00	3	1
	BRD-N3	1 New Cottages, Birmingham Road, Coleshill	Weekday Saturday	08:00–18:00 08:00–13:00	23 4	2 No exceedances

2.2.6 Exceedances of the LOAEL were recorded at five monitoring locations during weekday and Saturday daytime periods only.

2.2.7 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
BRD	BR-N2	1 New Cottages, Birmingham Road, Coleshill	1
BRD	BR-N3	1 New Cottages, Birmingham Road, Coleshill	2

2.2.8 Three (3) exceedances of the SOAEL were recorded due to HS2 construction works during May 2023.

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
-	-	-	-	-	-

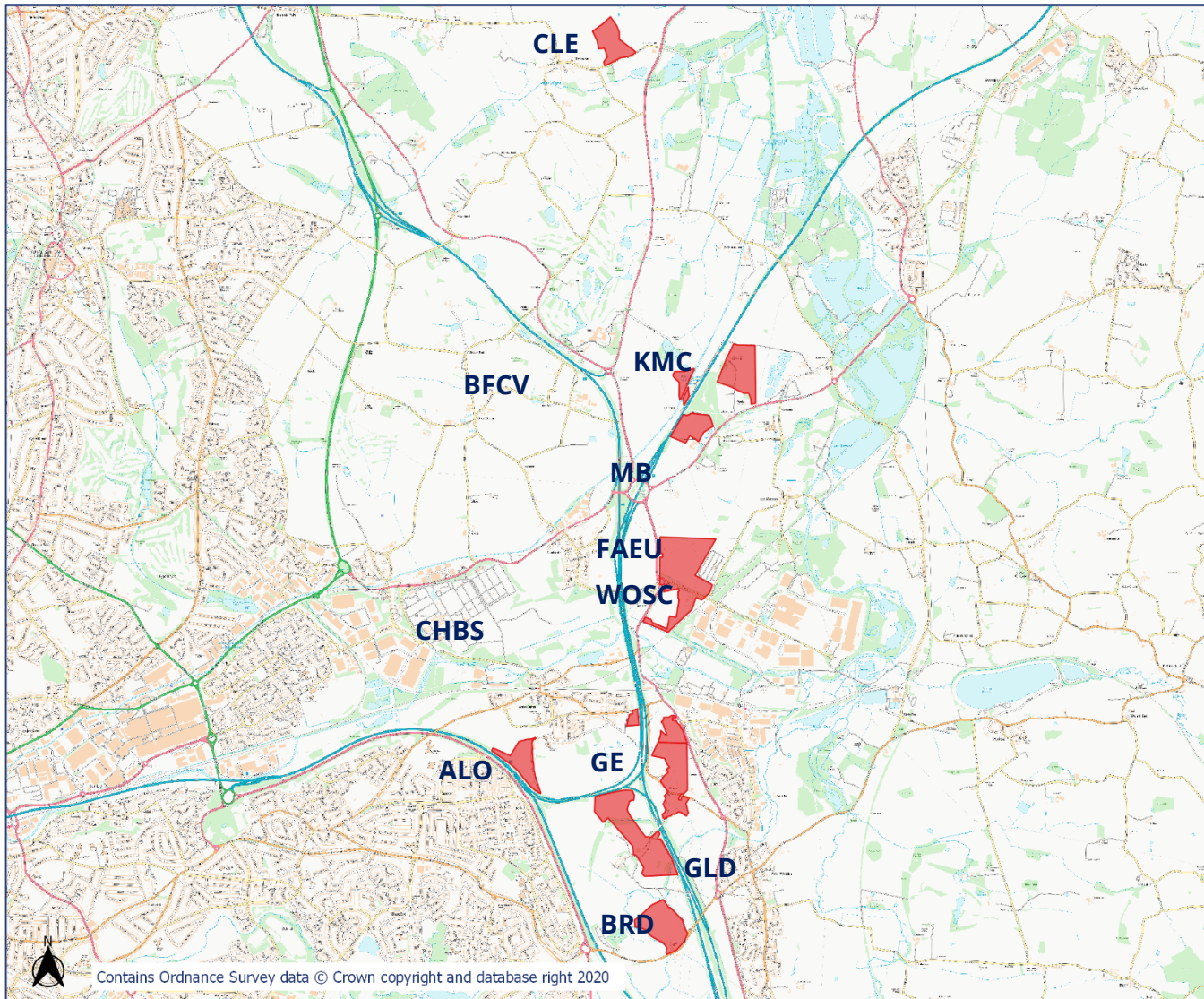
2.4 Complaints

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

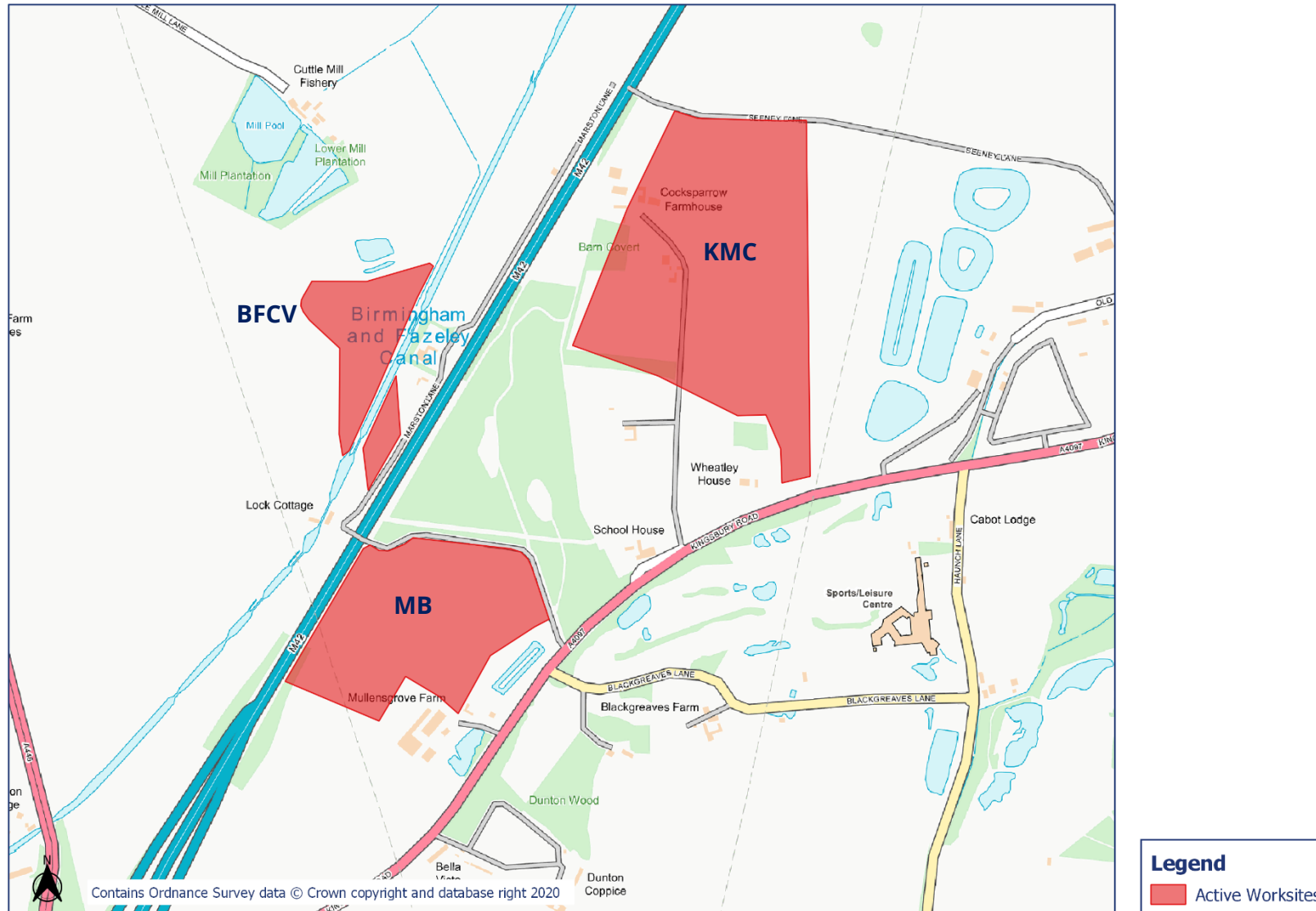
Table 8: Summary of Complaints

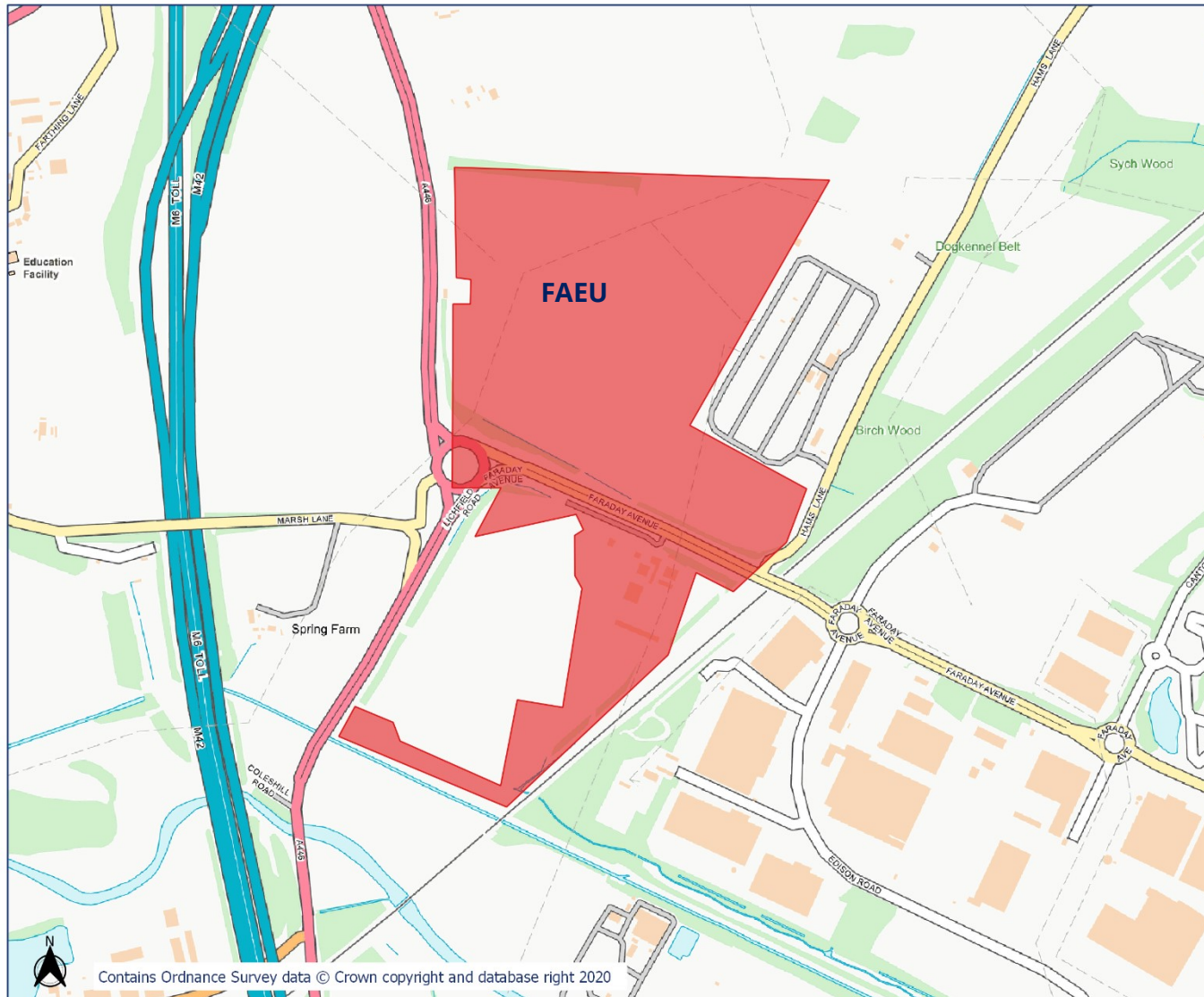
Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
HS2-23-44603-C	ALO	Complaint due to vibration.	A vibratory roller is the main cause of the vibrations.	Use of the vibratory roller has been put on hold while other strategies for the works are investigated with view of minimising vibration.
HS2-23-44626-C HS2-23-44634-C HS2-23-44647-C	WOSC	Complaint due to an alarm sounding intermittently throughout day.	The alarm was located and reset.	Information confirming that the alarm had been reset was provided to the stakeholder.

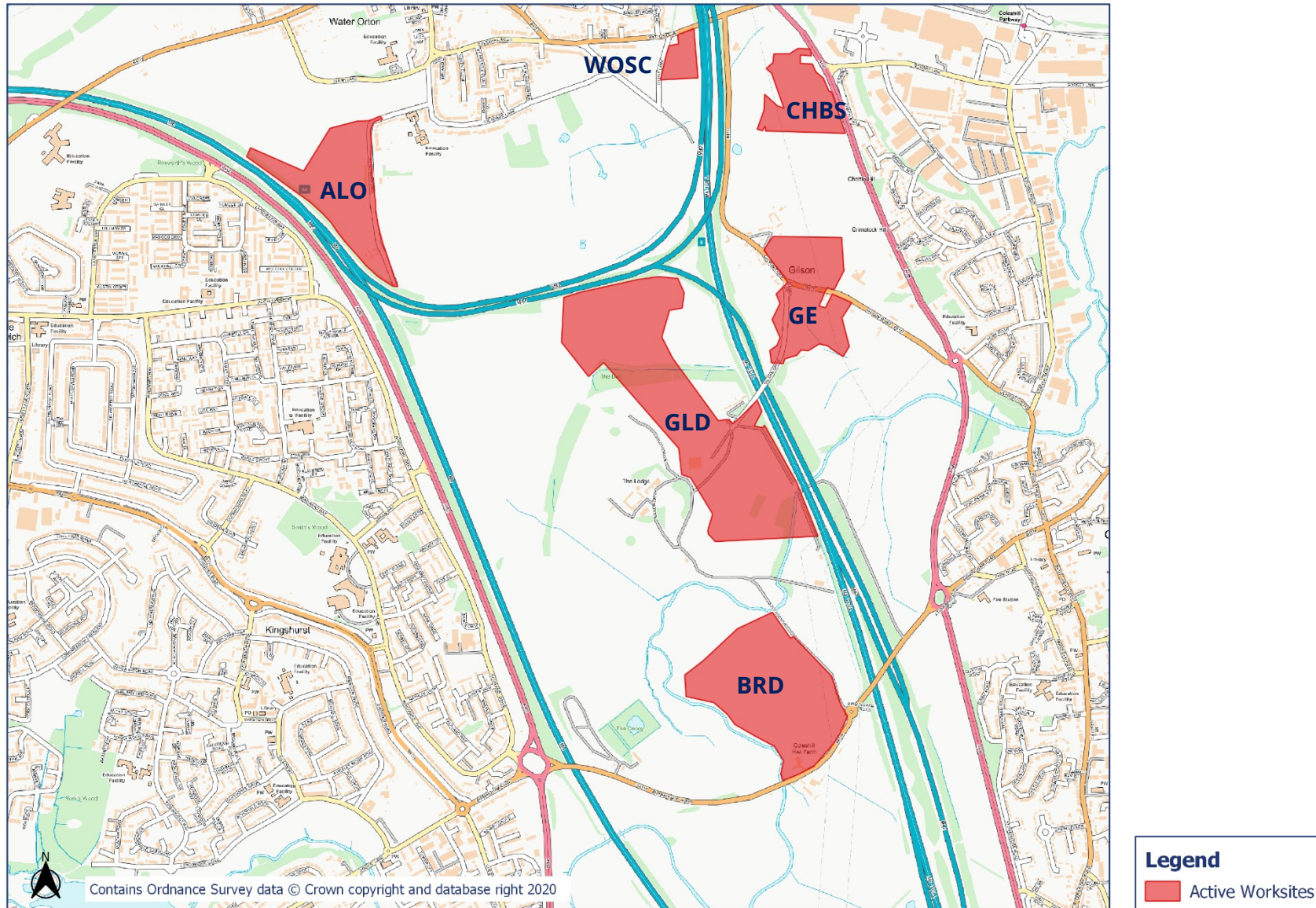
Appendix A Site Locations



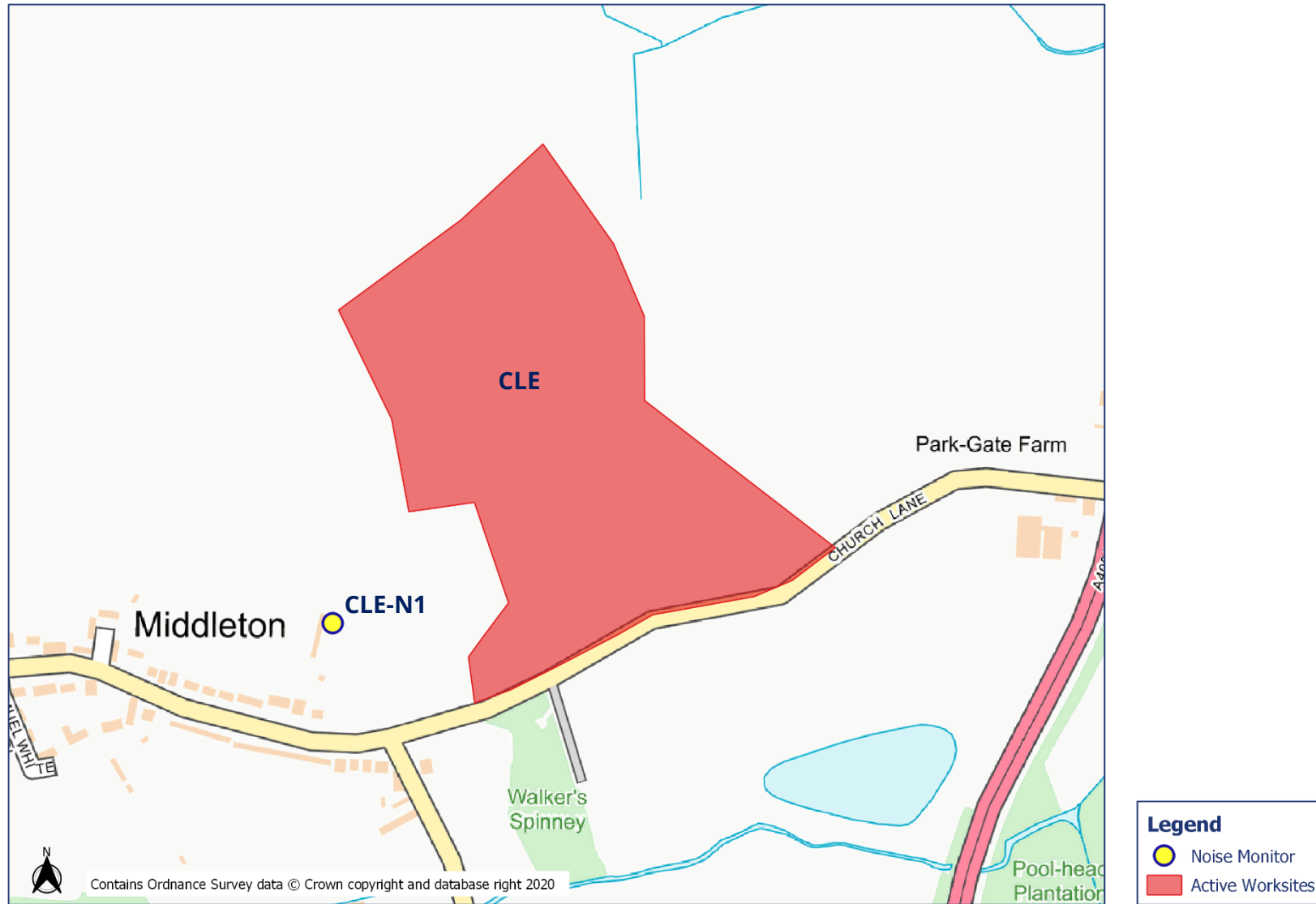


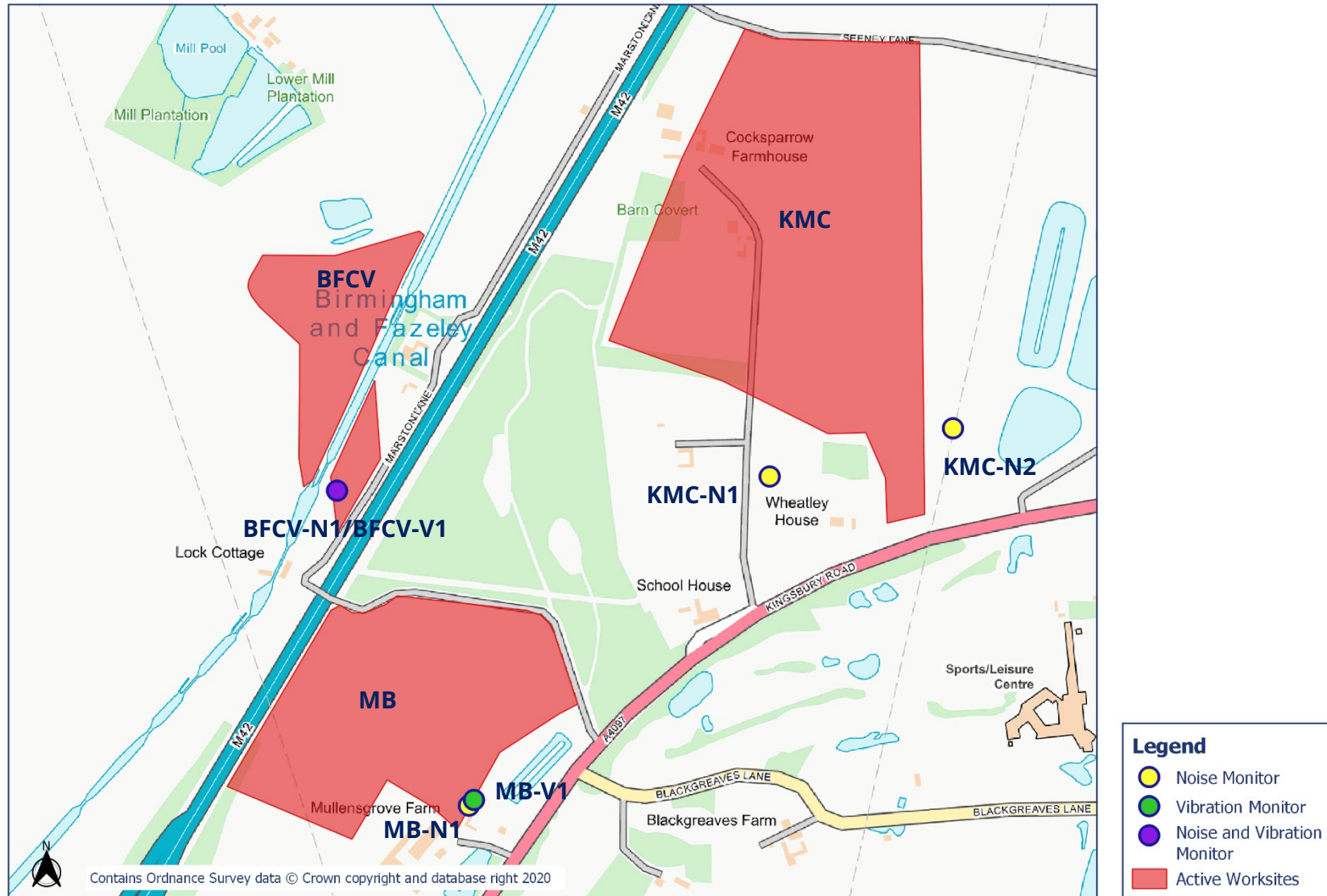


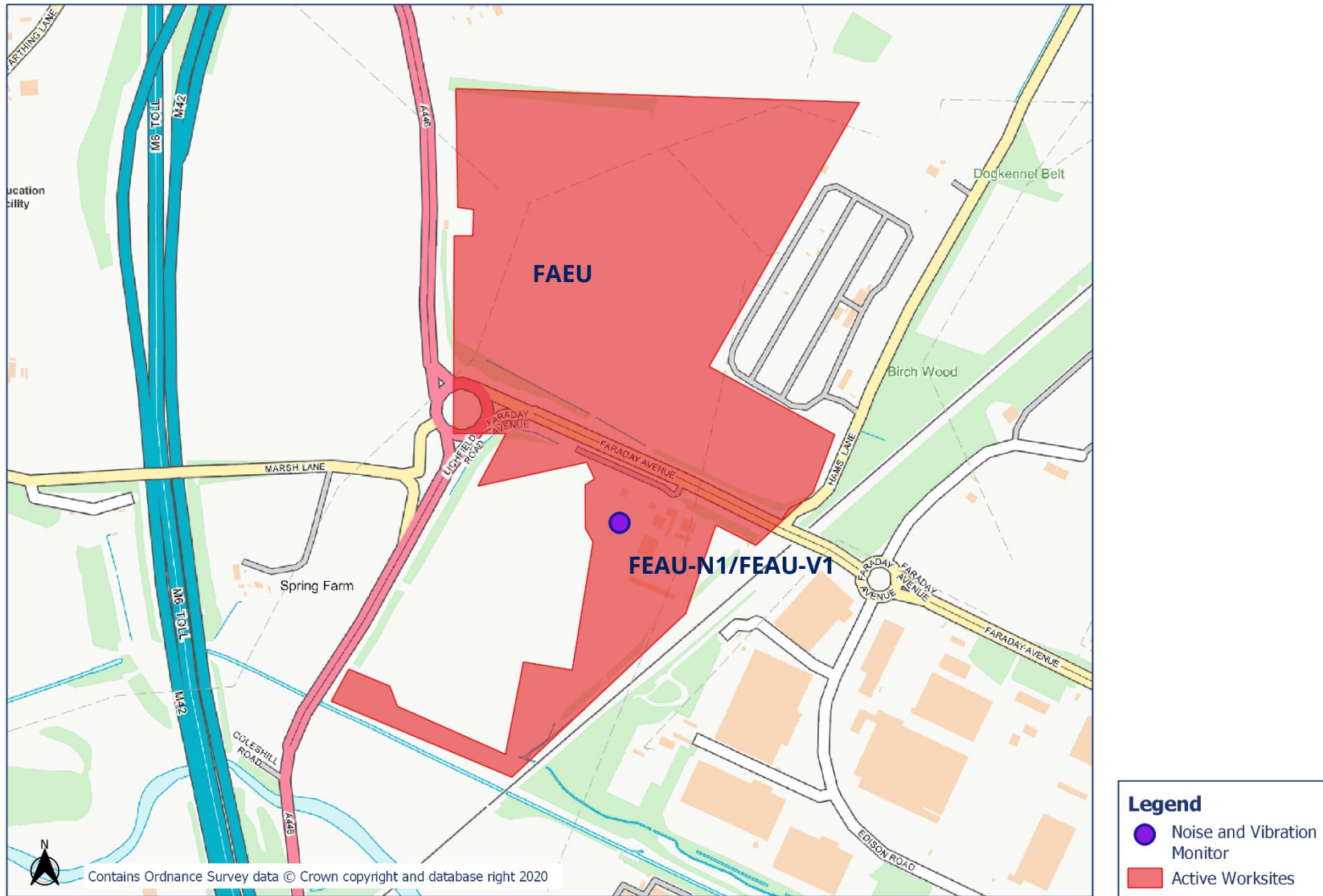




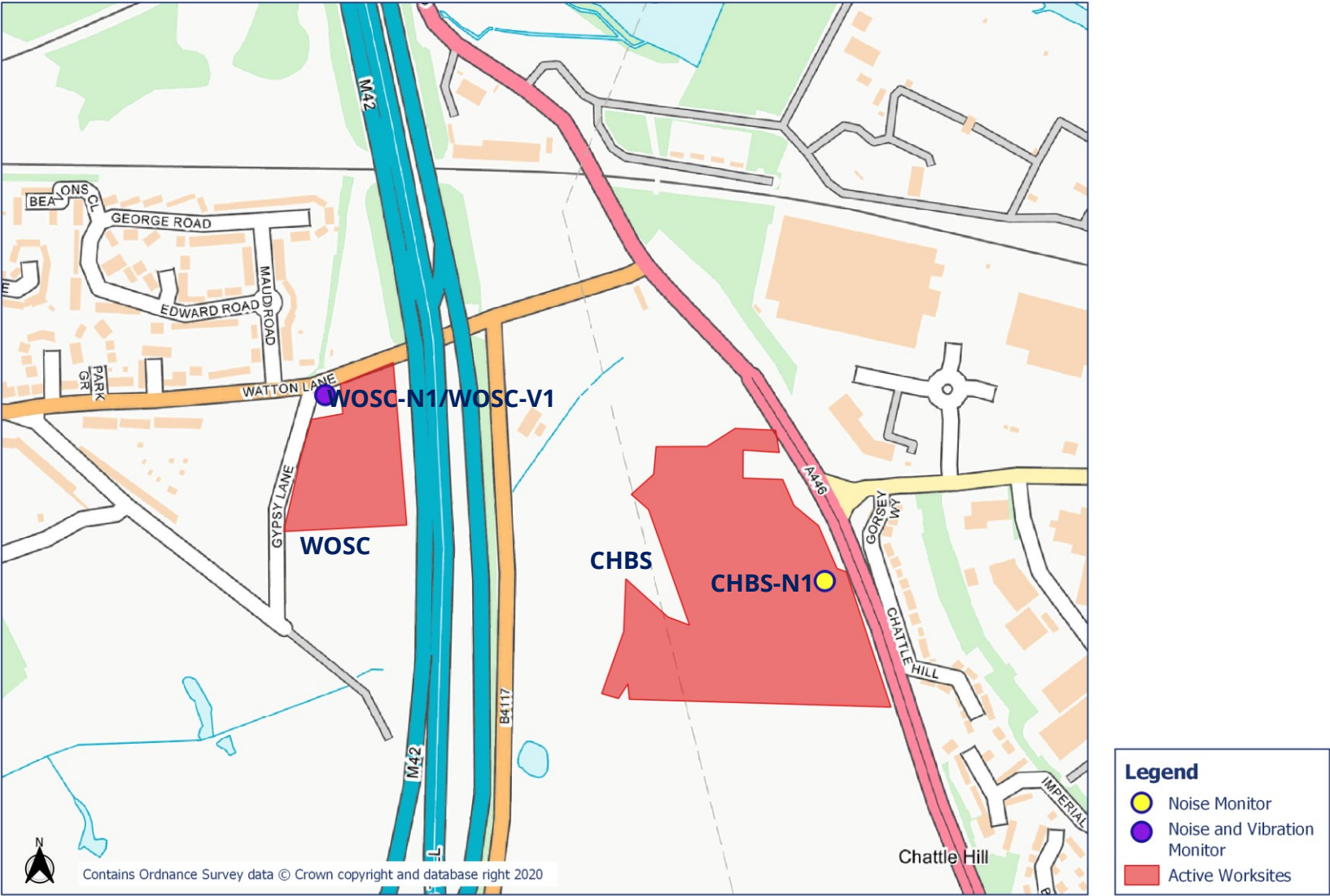
Appendix B Monitoring Locations



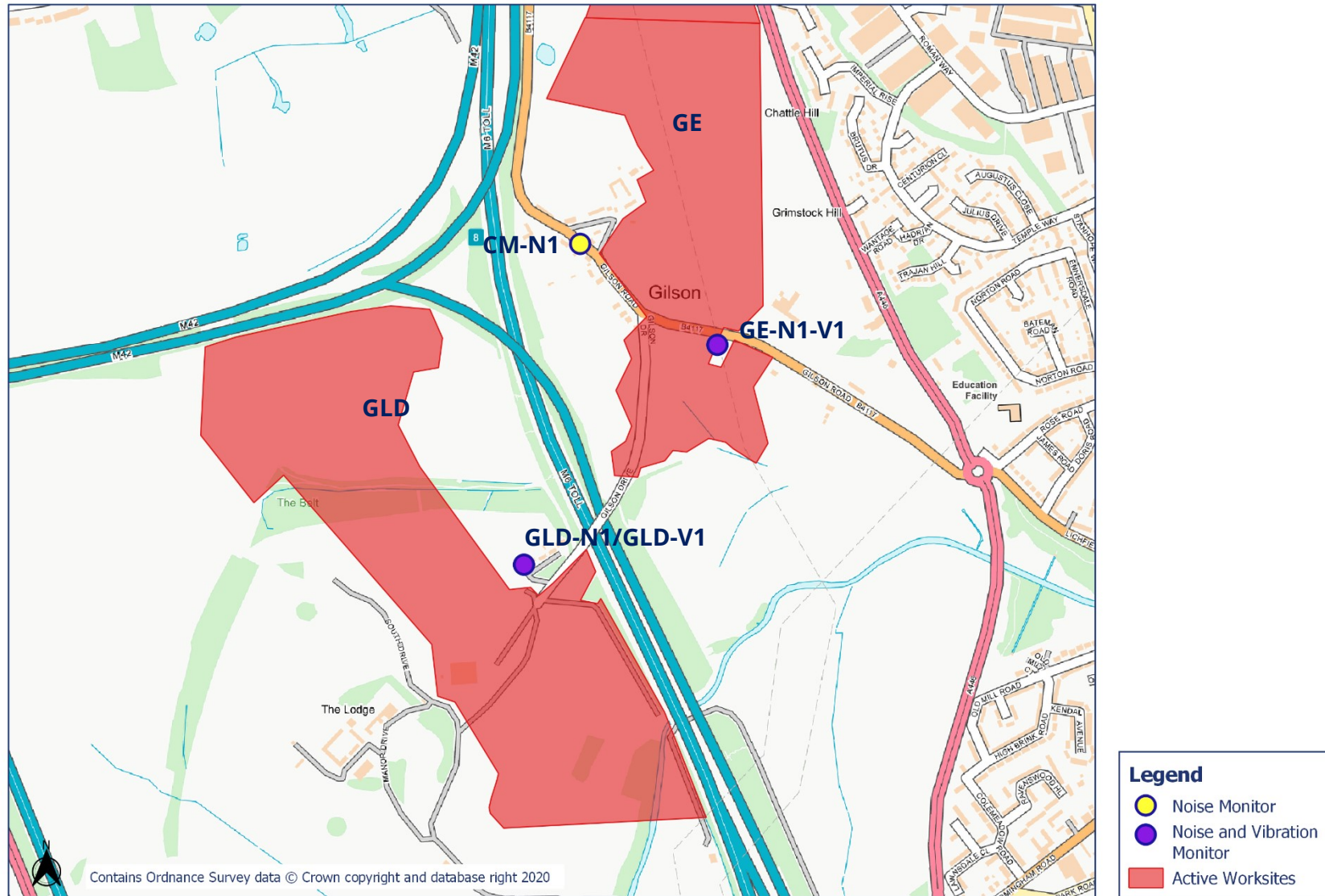


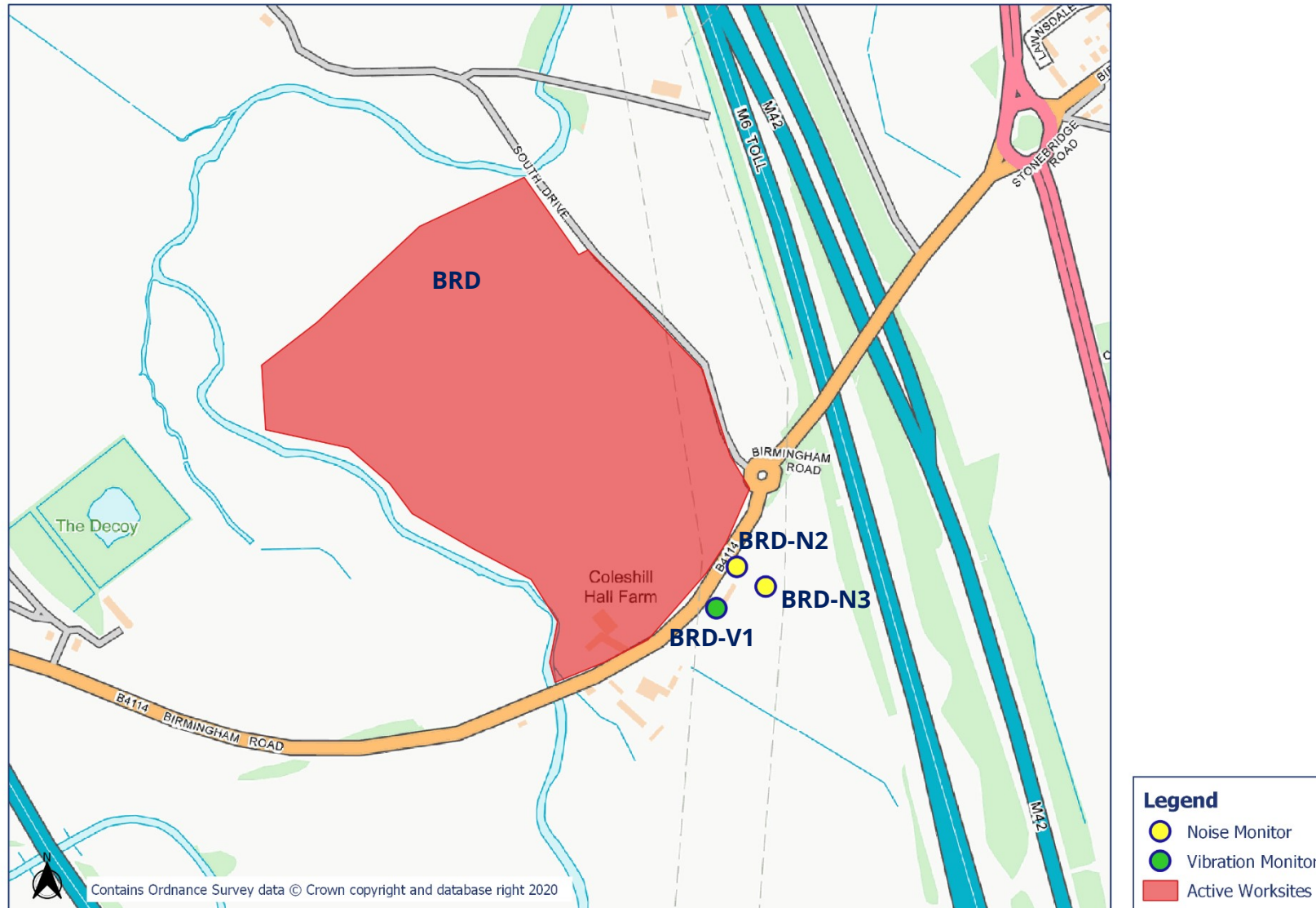


HS2 Noise and Vibration Monitoring Plan - 4







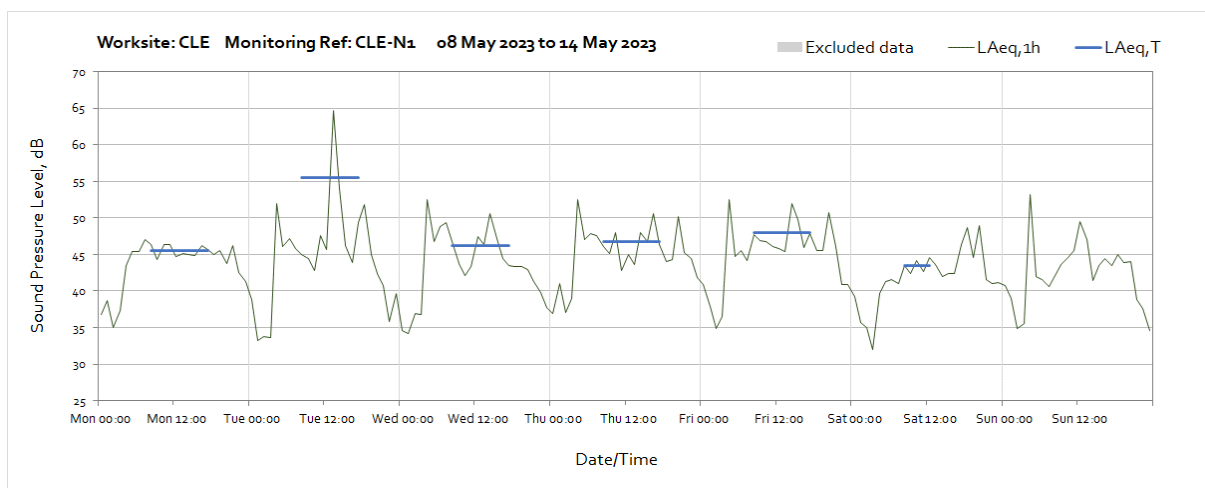
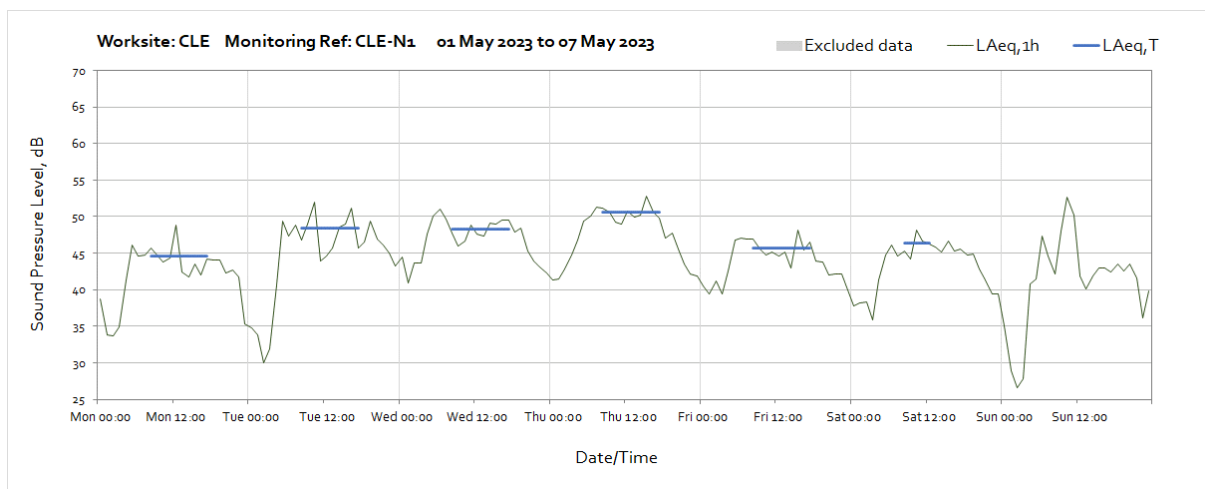


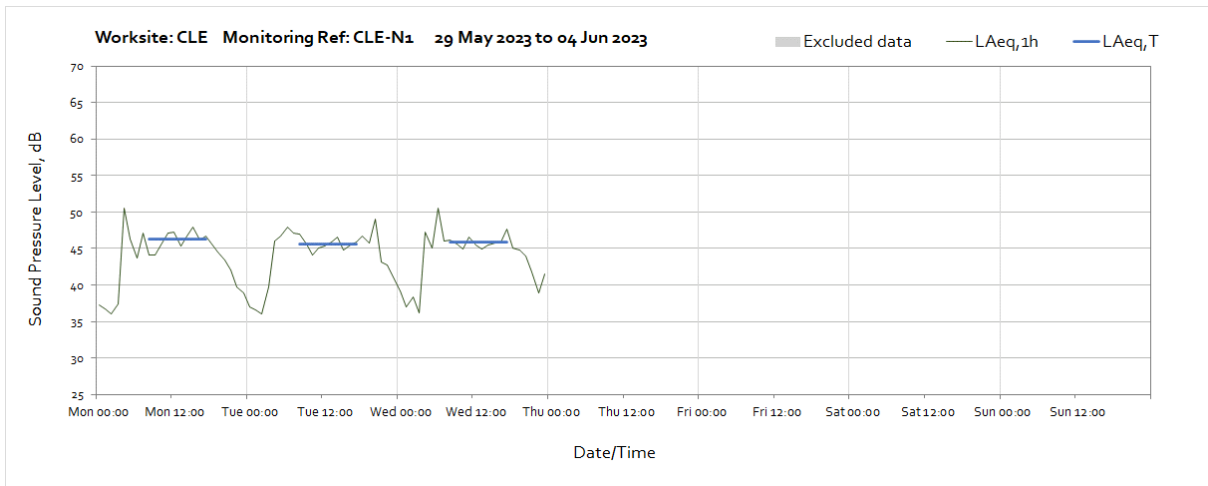
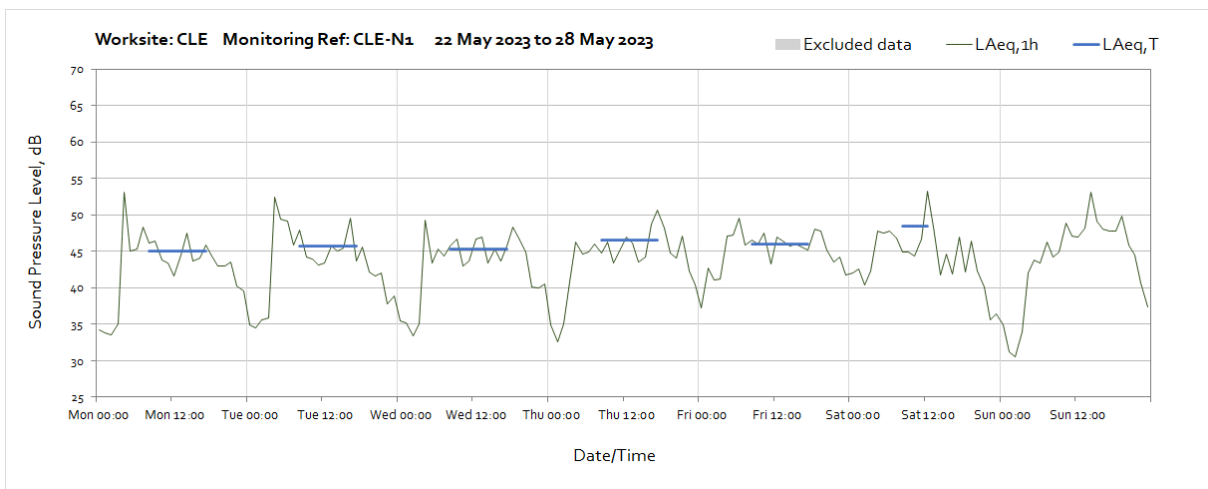
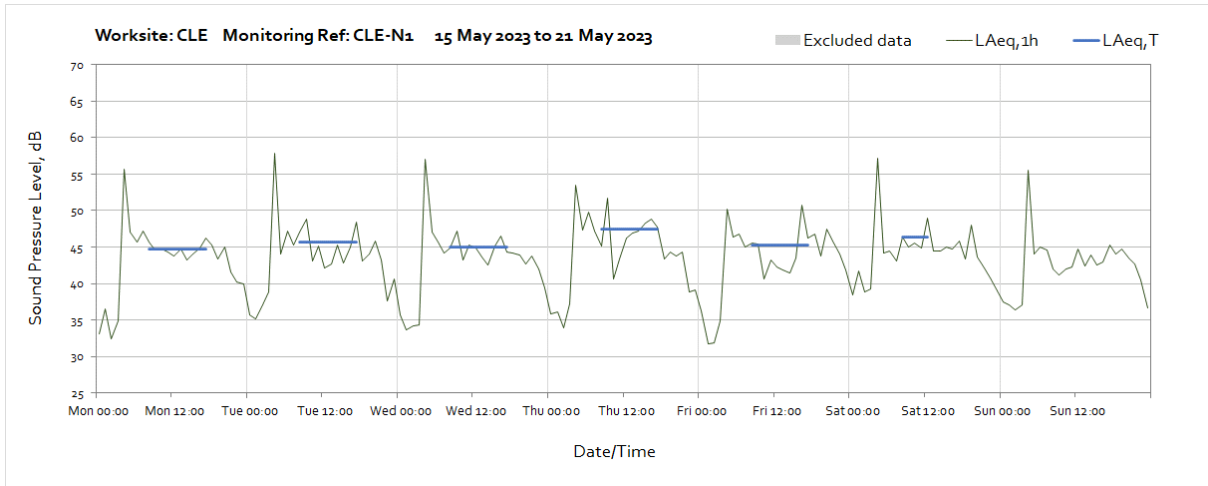
Appendix C Data

Noise

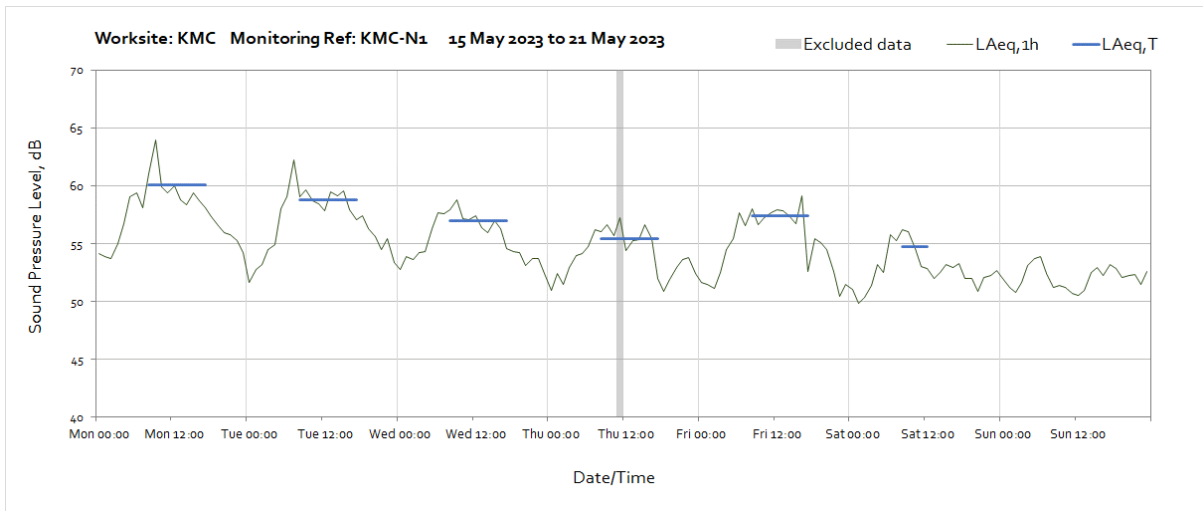
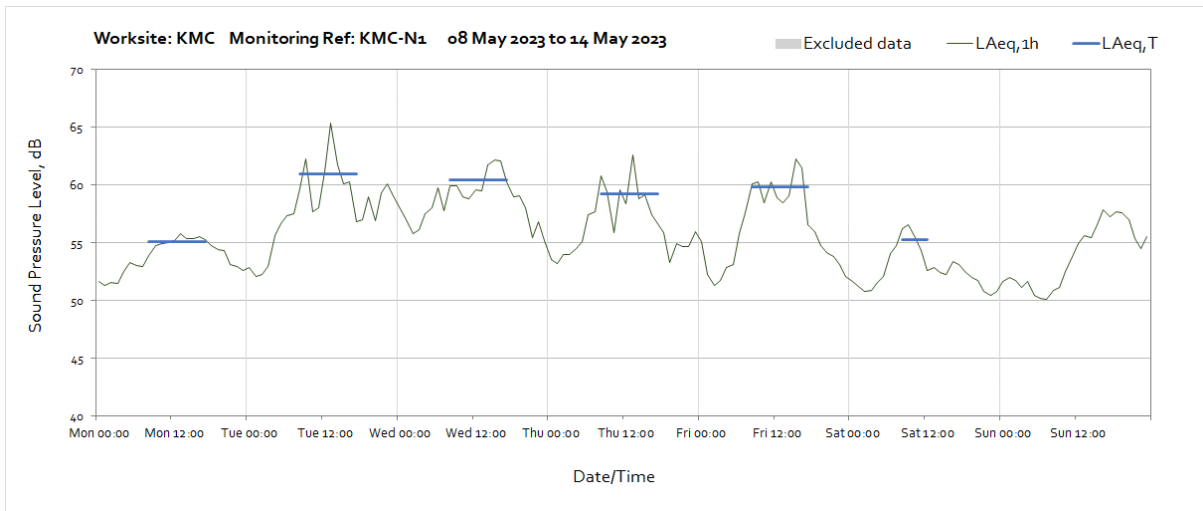
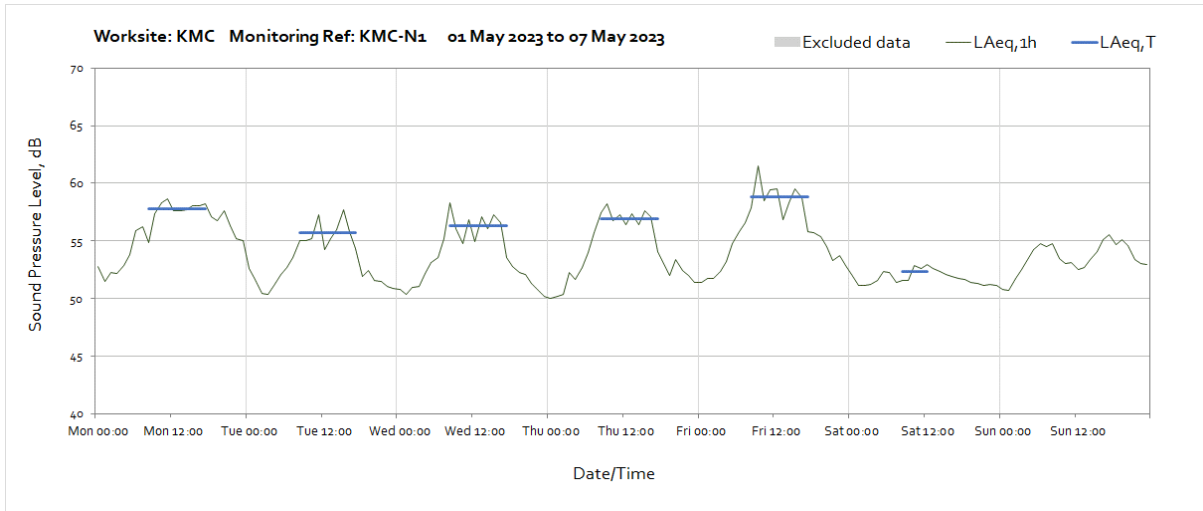
The following graphs show the hourly measured ambient noise level $L_{Aeq,1h}$ and, where relevant, the averaged noise level $L_{Aeq,T}$ values, where the time period T is as specified in Table 1 of HS2 Information Paper E23. Periods with adversely weather affected noise levels are greyed out and have been excluded from the calculation of the $L_{Aeq,T}$ values in Table 3 of the main report.:

Worksite: CLE – Monitoring Ref: CLE-N1

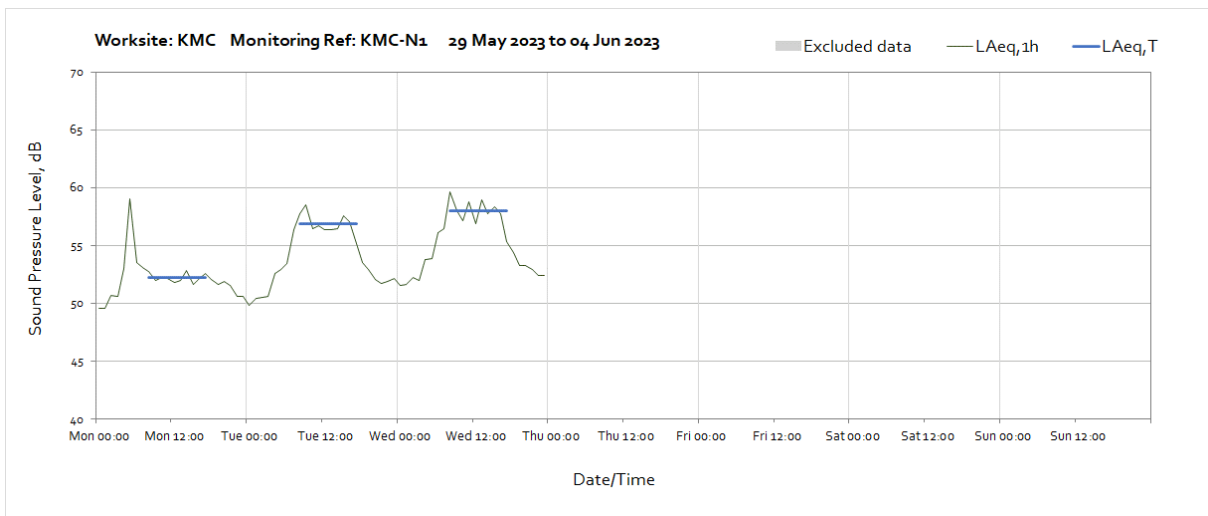
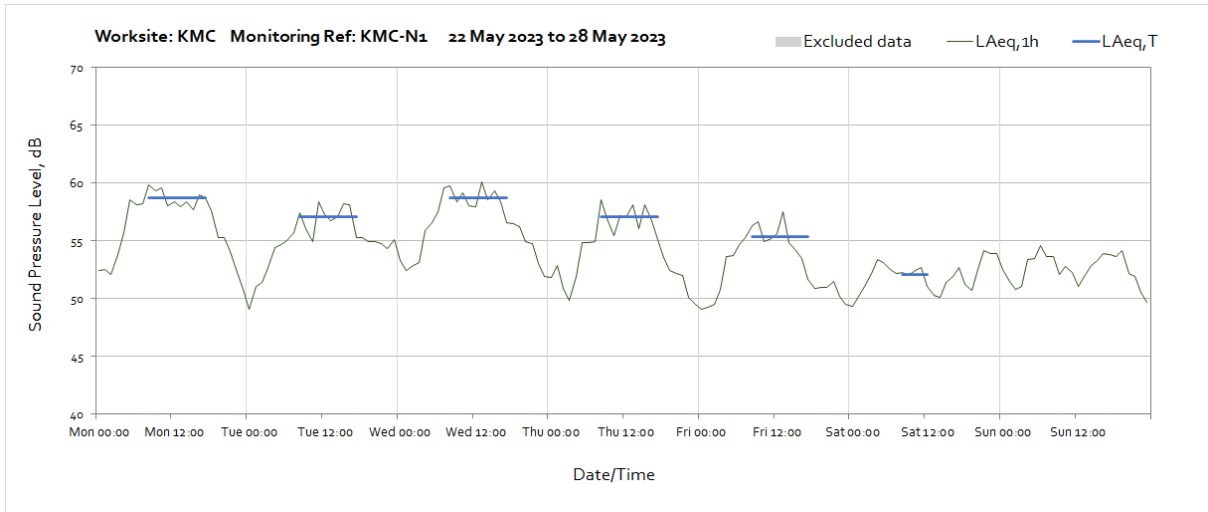




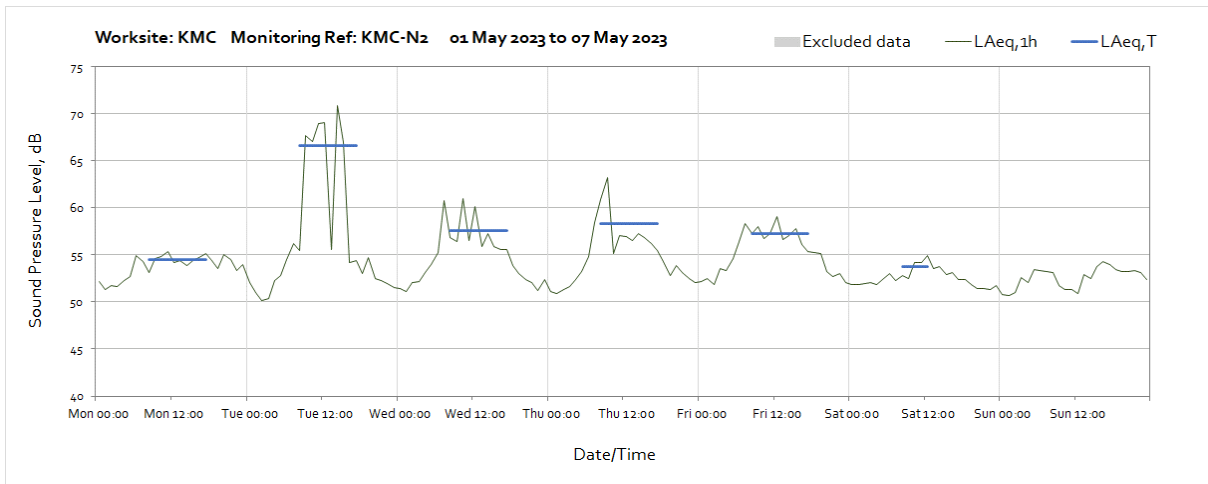
Worksite: KMC – Monitoring Ref: KMC-N1

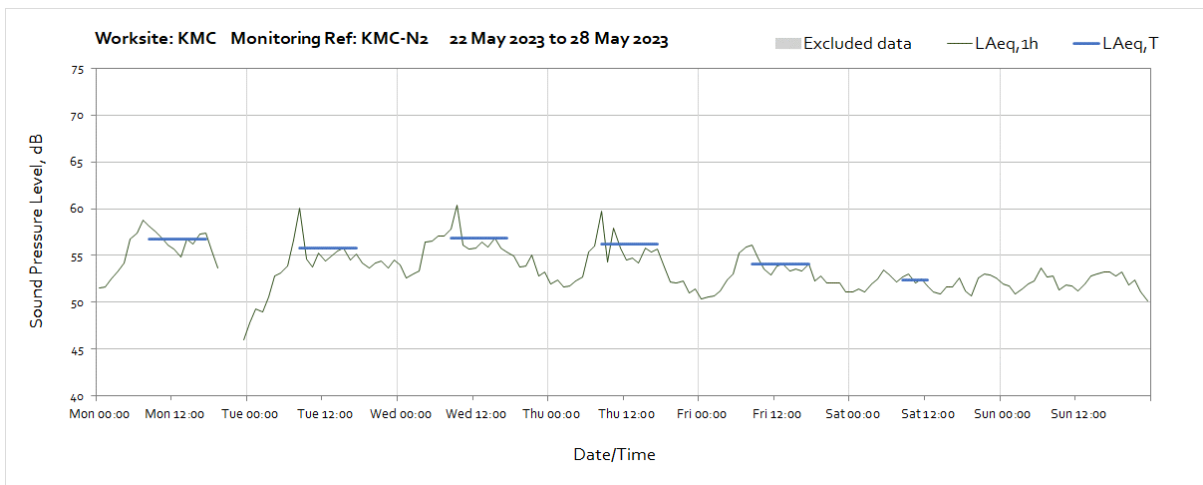
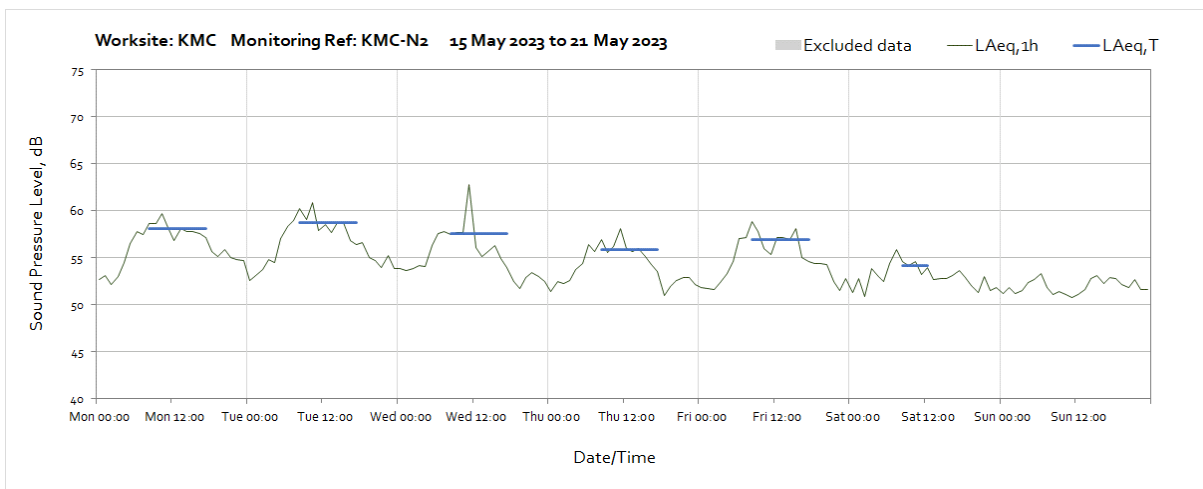
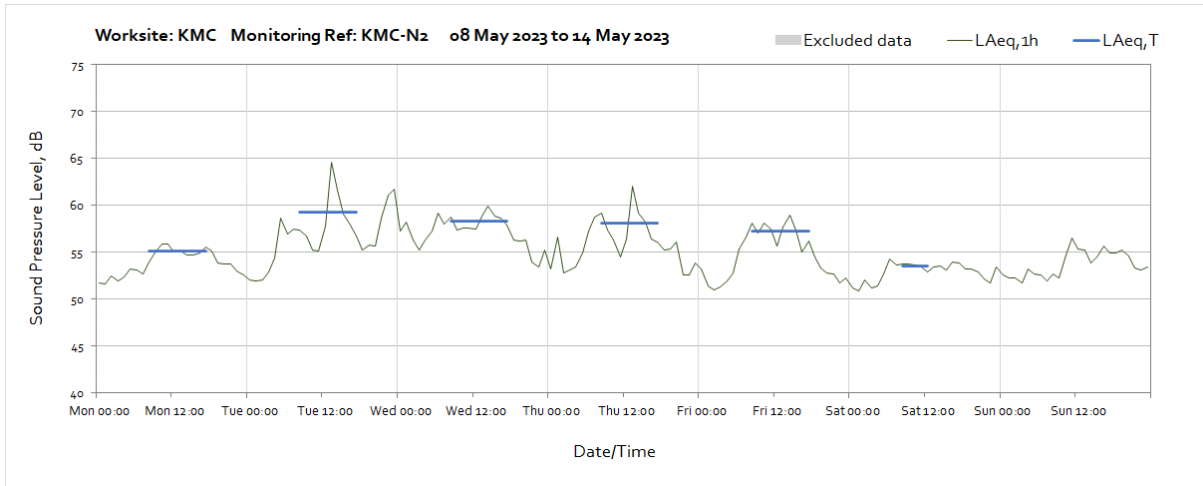


OFFICIAL



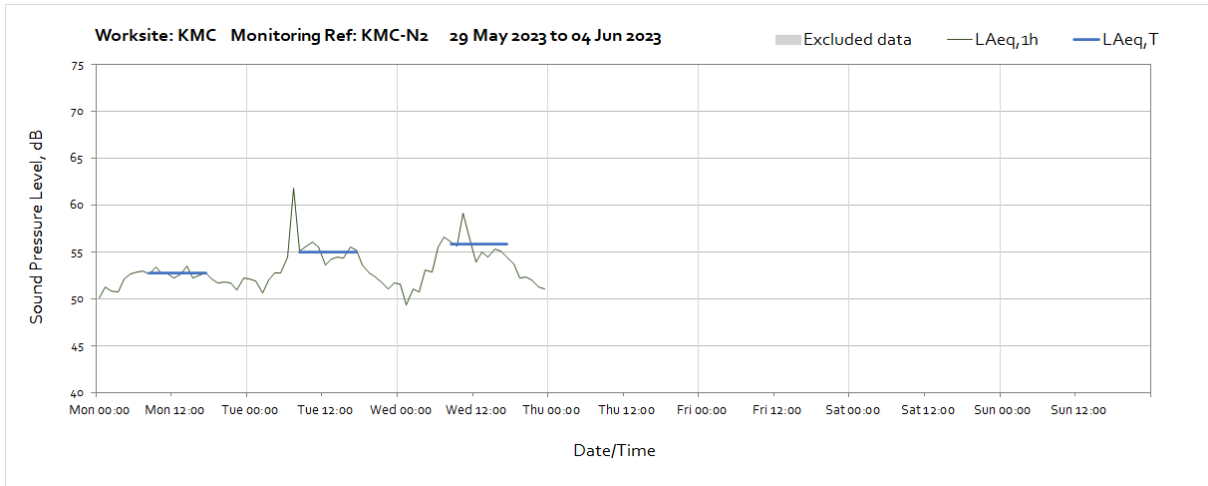
Worksite: KMC - Monitoring Ref: KMC-N2



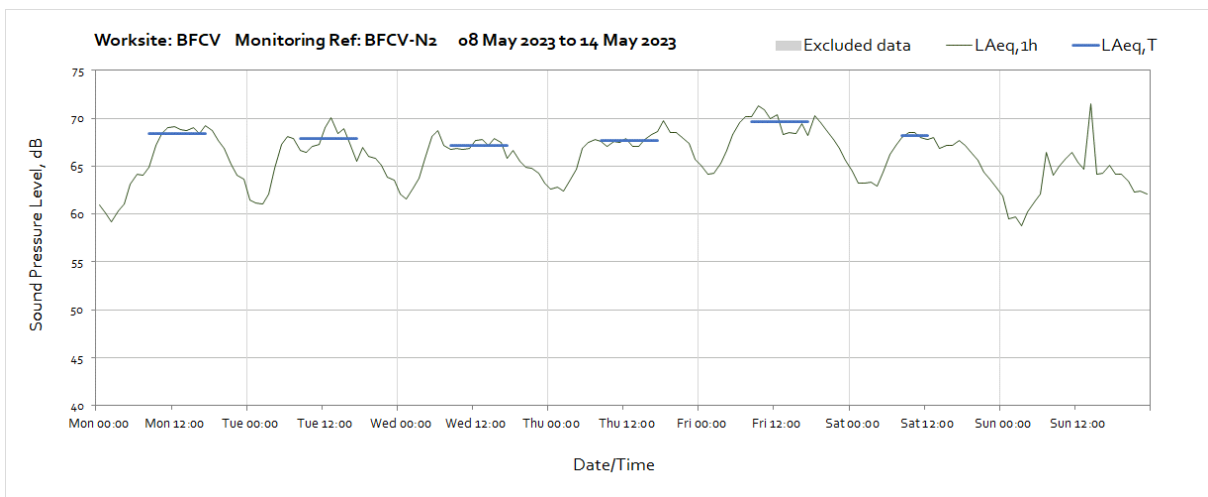
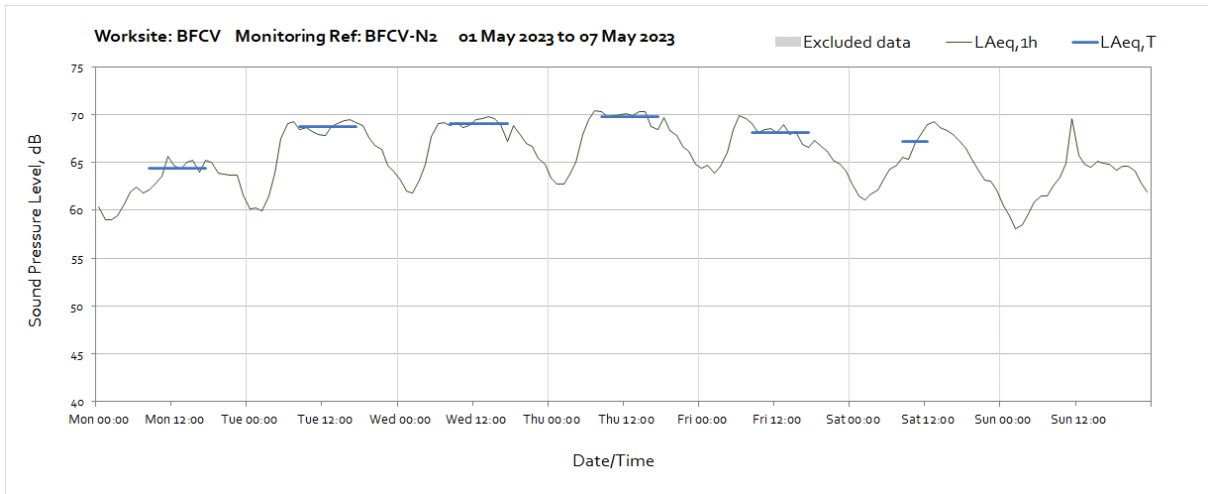


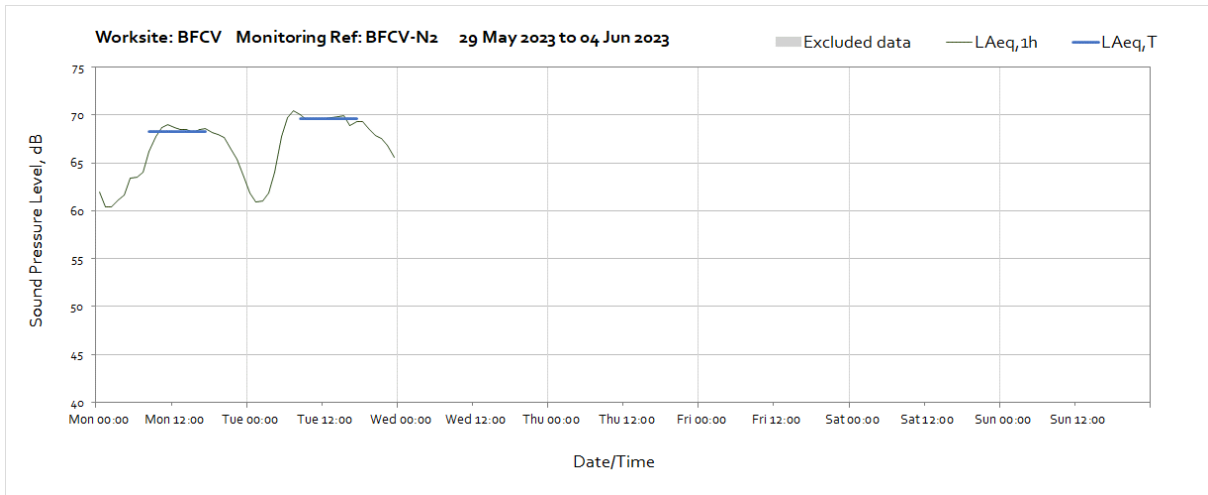
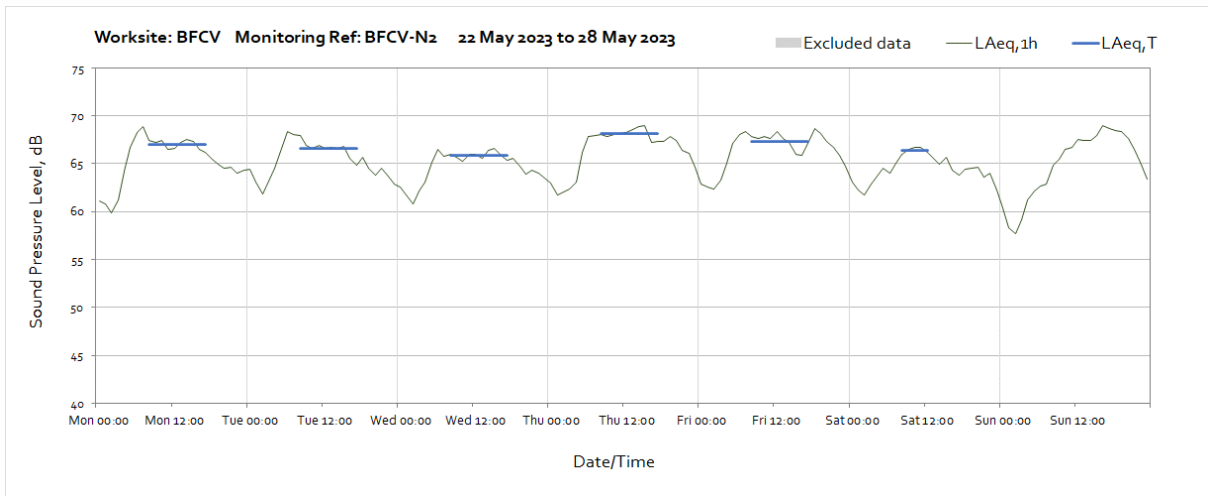
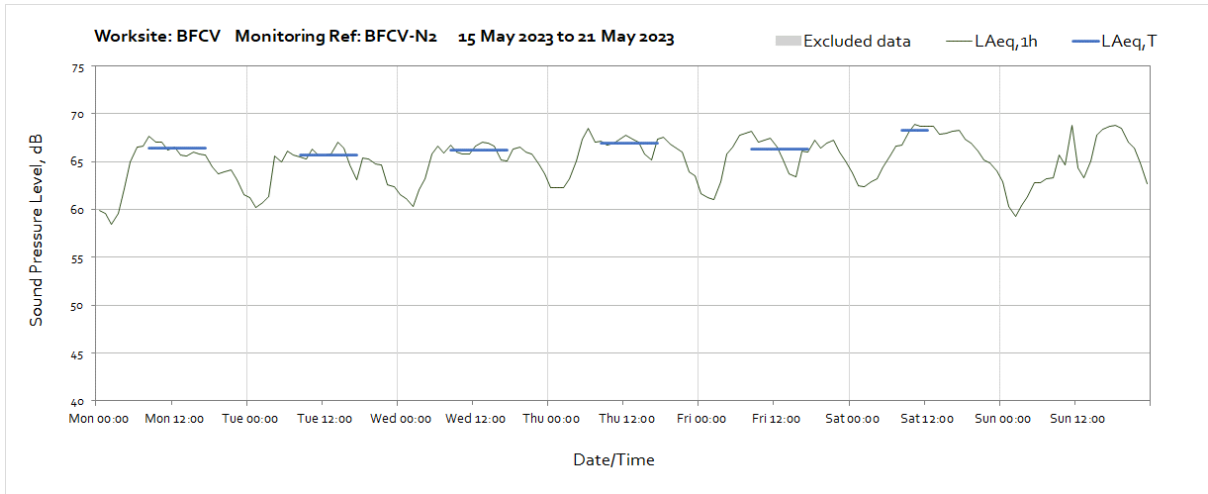
Note: Missing data between 22nd 20:00 and 23rd 05:00 due to ongoing issue connecting to system. The issue is still under investigation.

OFFICIAL

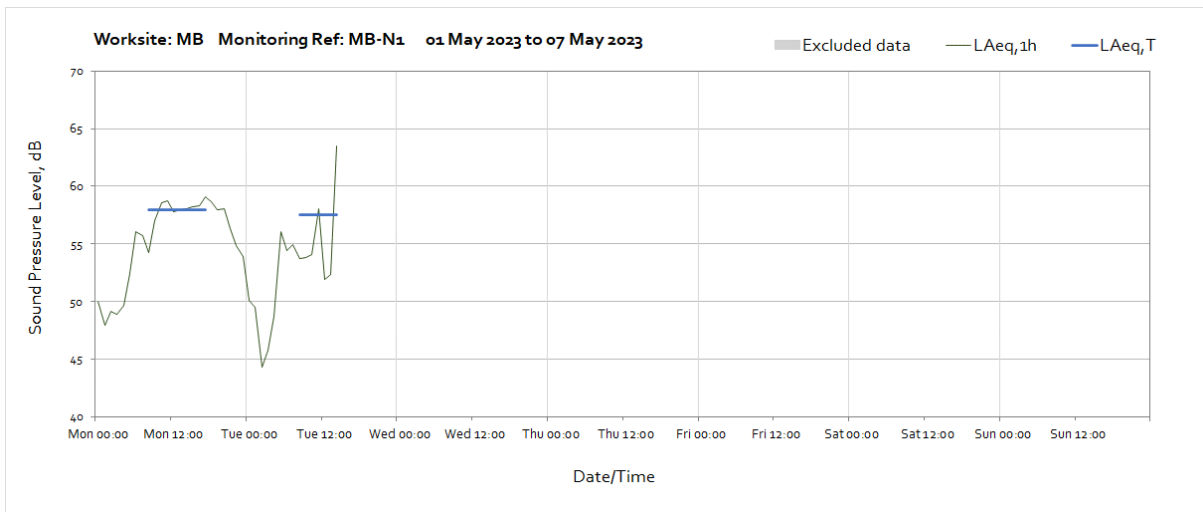


Worksite: BFCV – Monitoring Ref: BFCV-N2

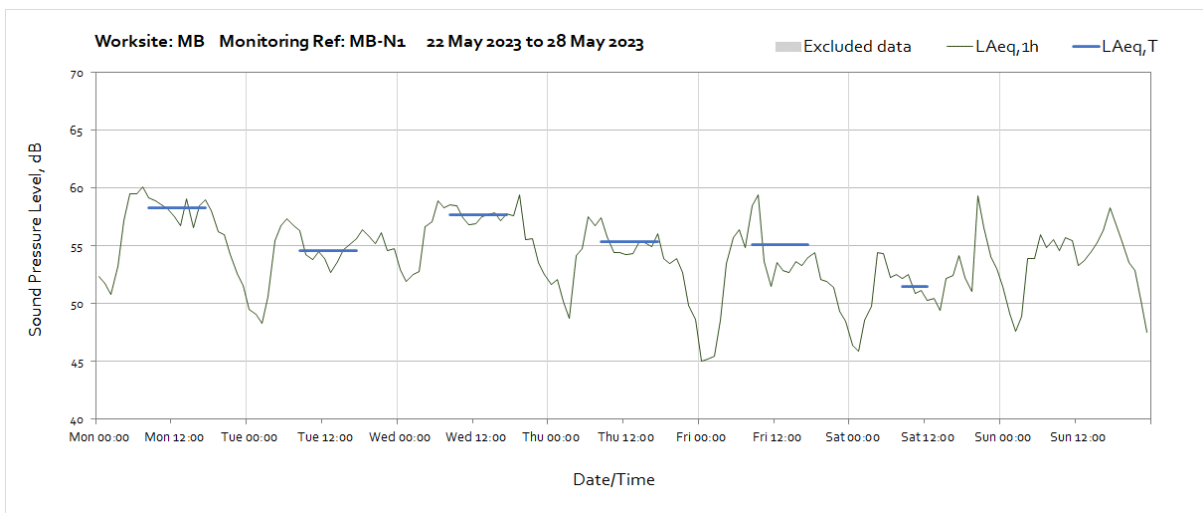


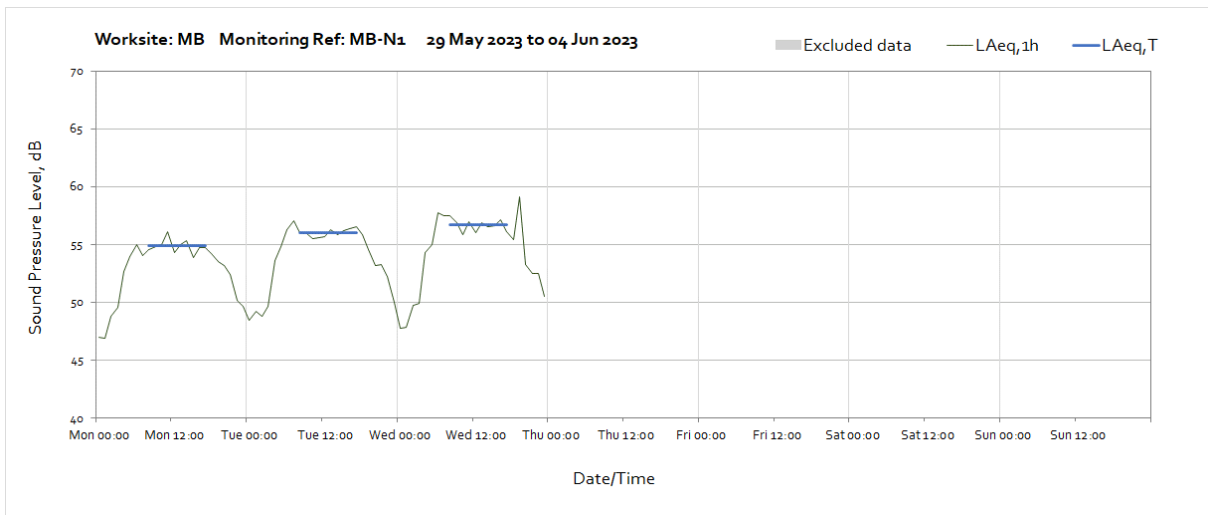
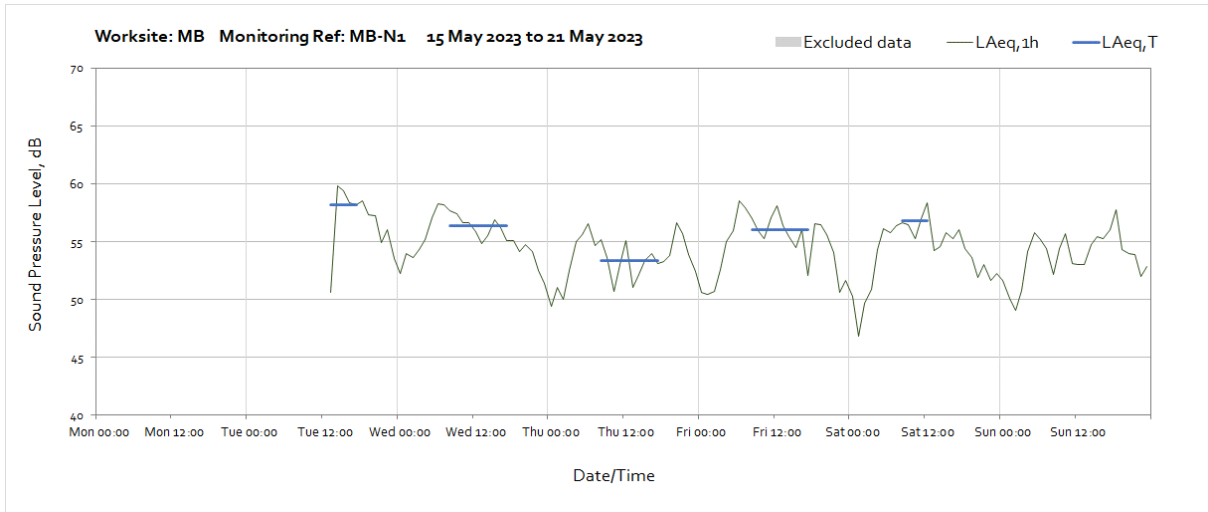


Worksite: MB – Monitoring Ref: MB-N1

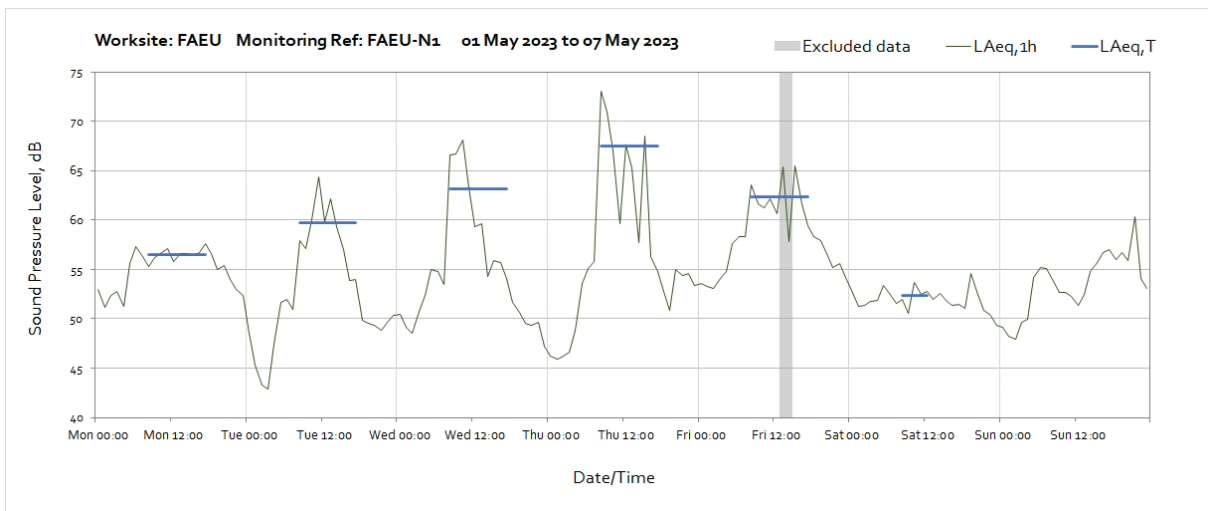


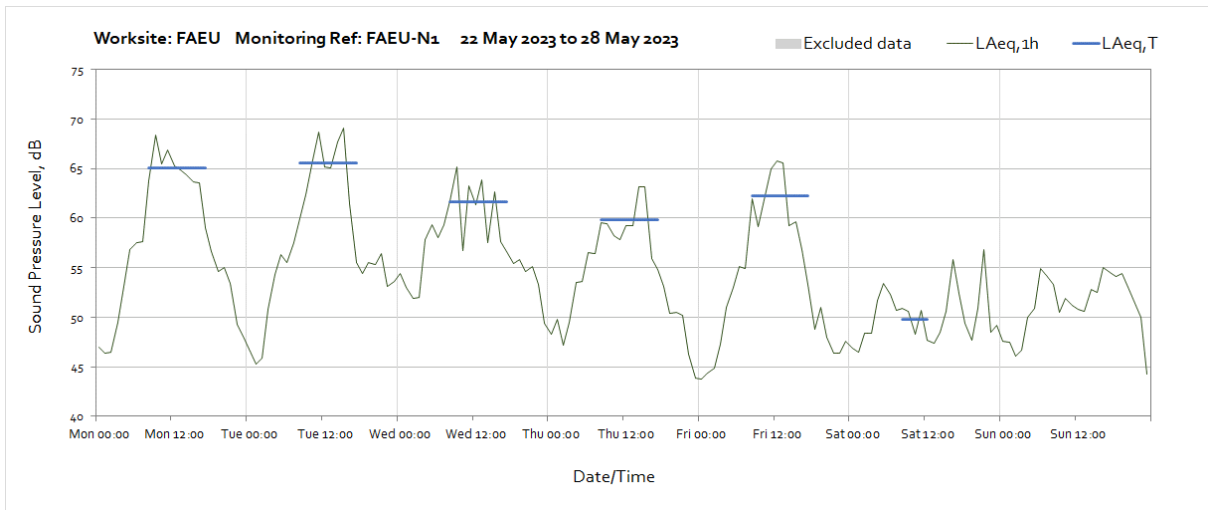
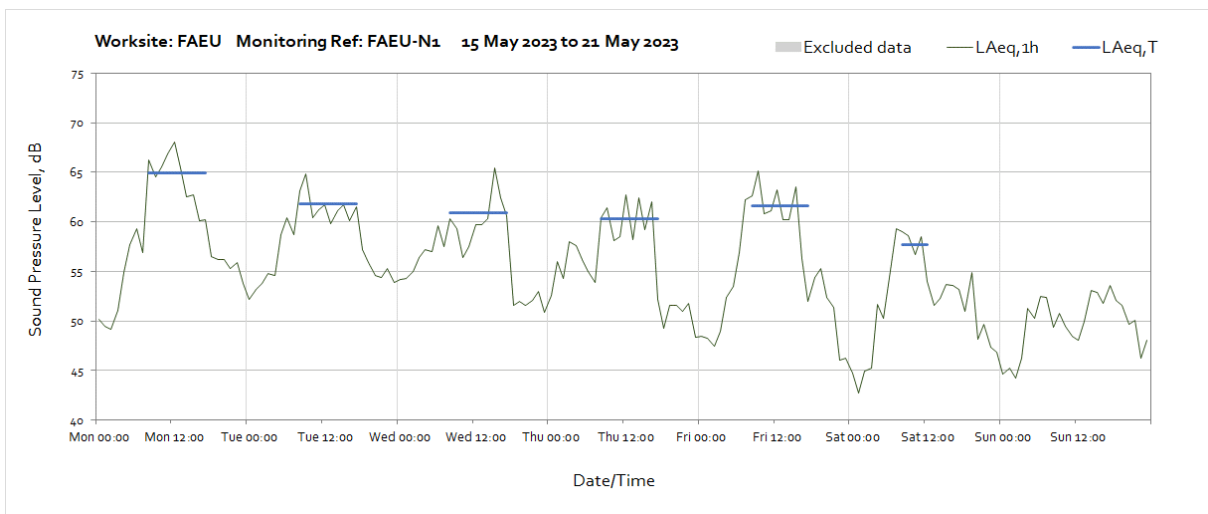
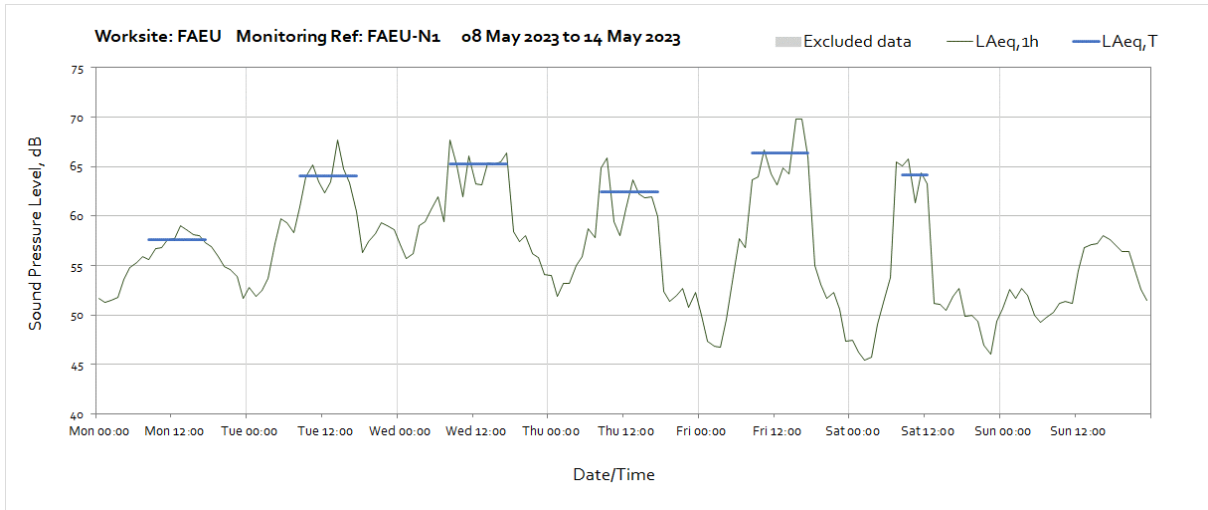
Note: Missing data between 02nd May and 16th May due to the meter being offline due to power supply issue.

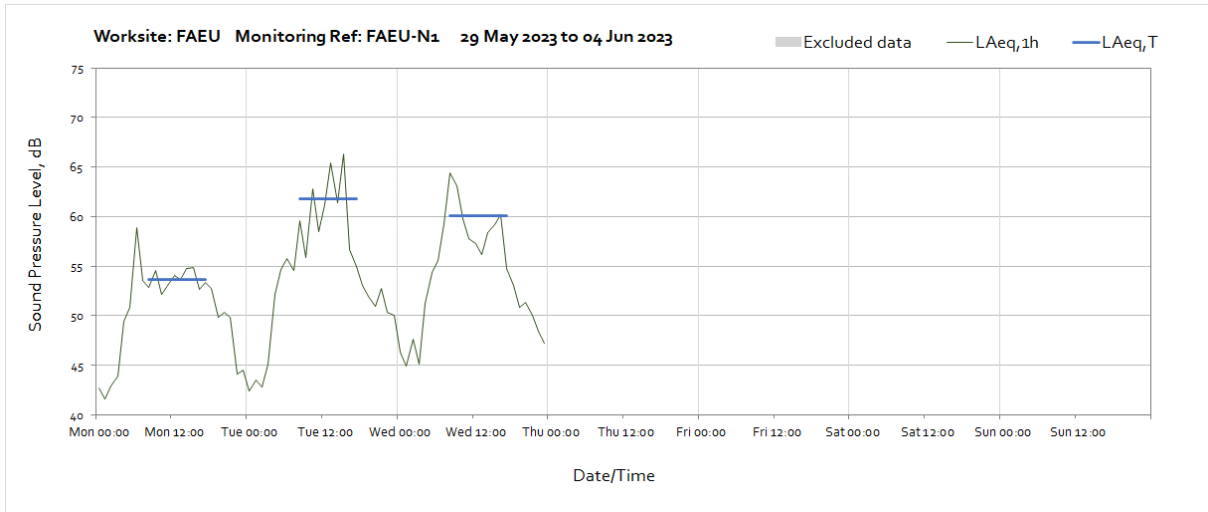




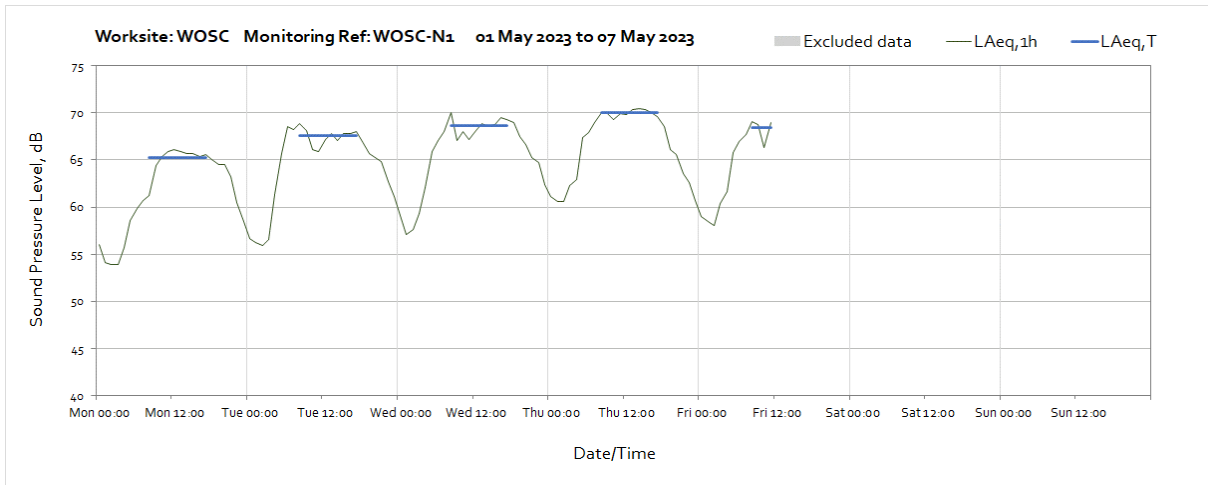
Worksite: FAEU – Monitoring Ref: FAEU-N1



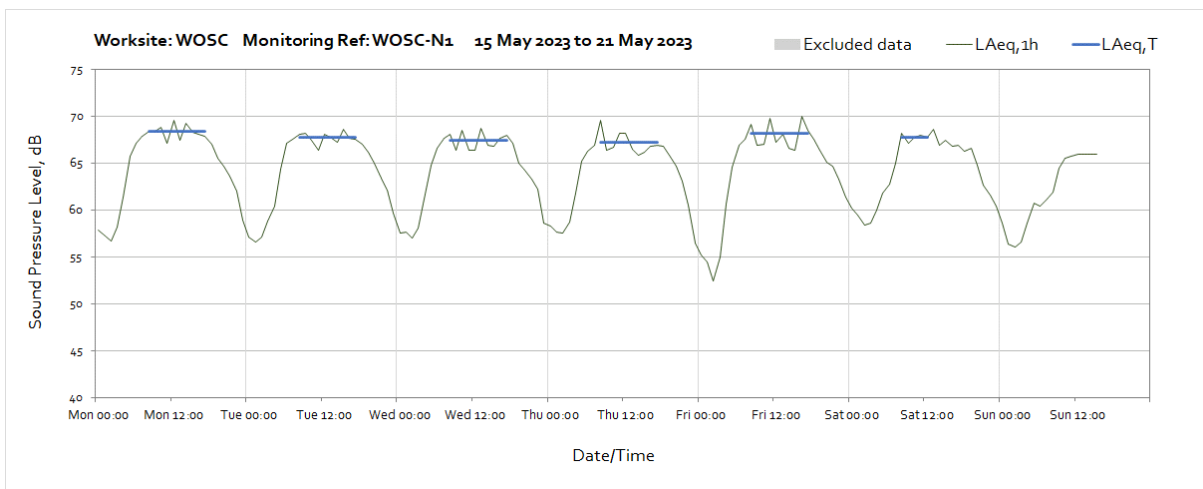
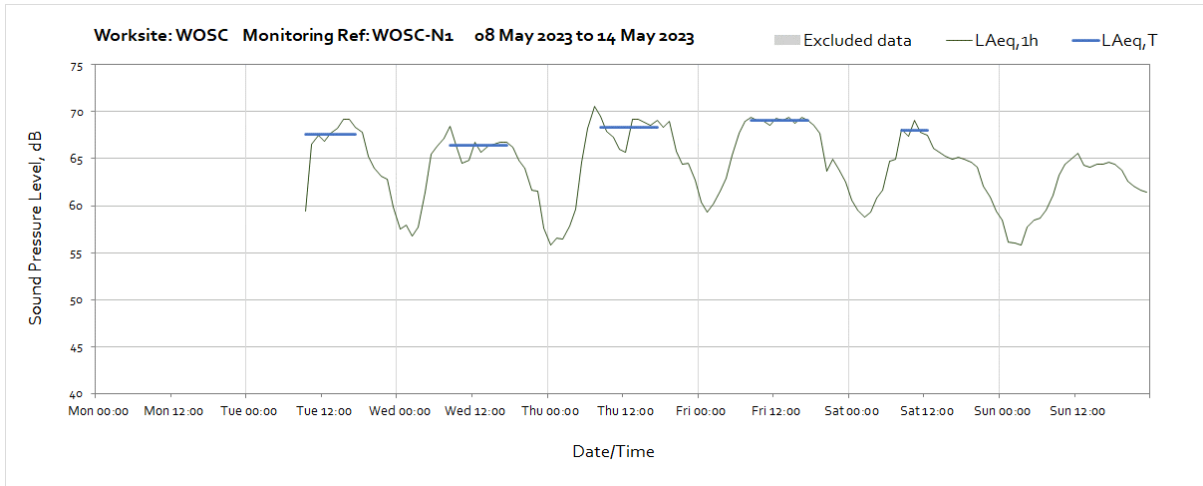




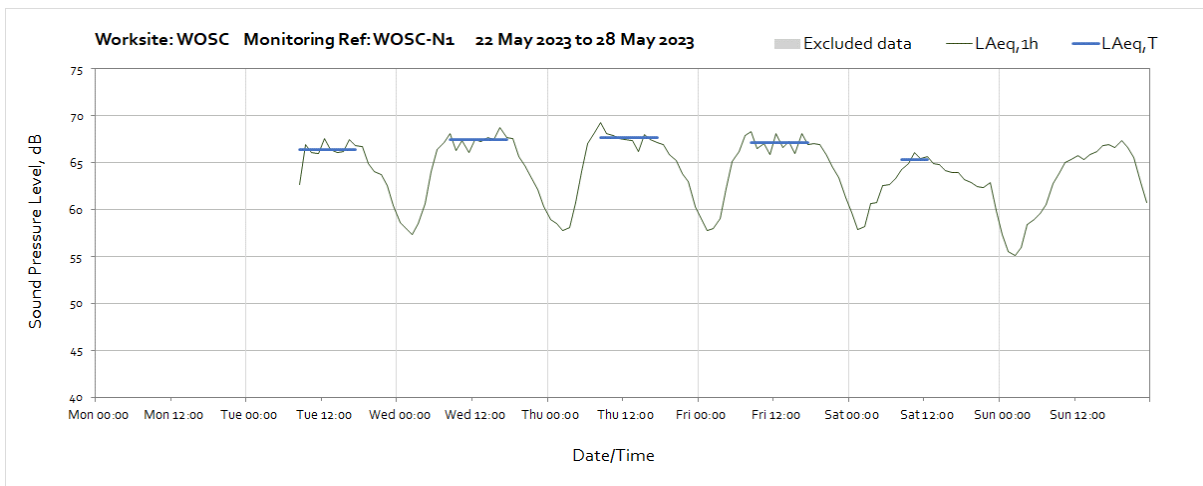
Worksite: WOSC – Monitoring Ref: WOSC-N1

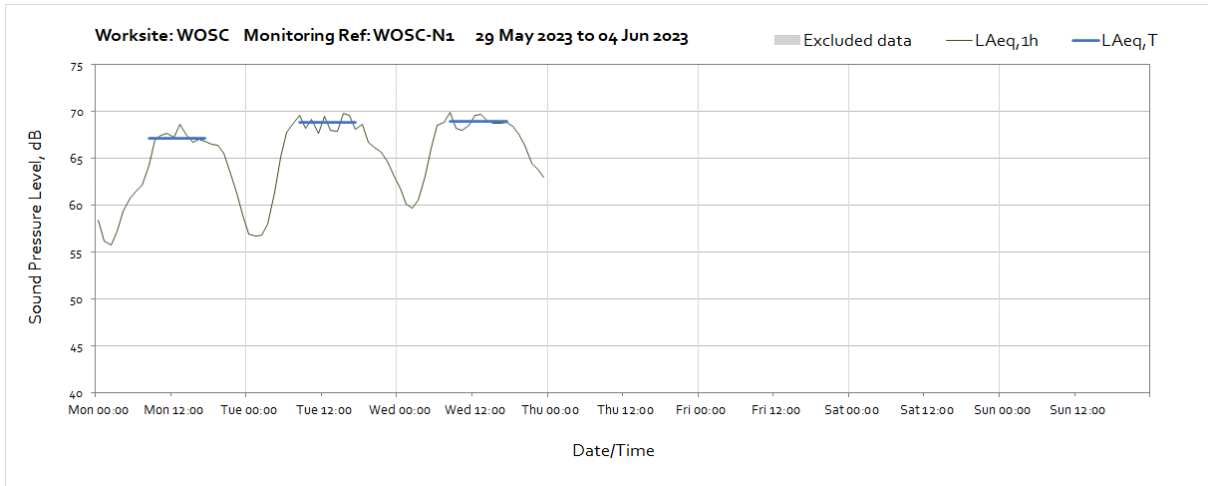


Note: Missing data between 11:00 on Friday 5th May and 09:00 on Tuesday 9th May due to a memory card err

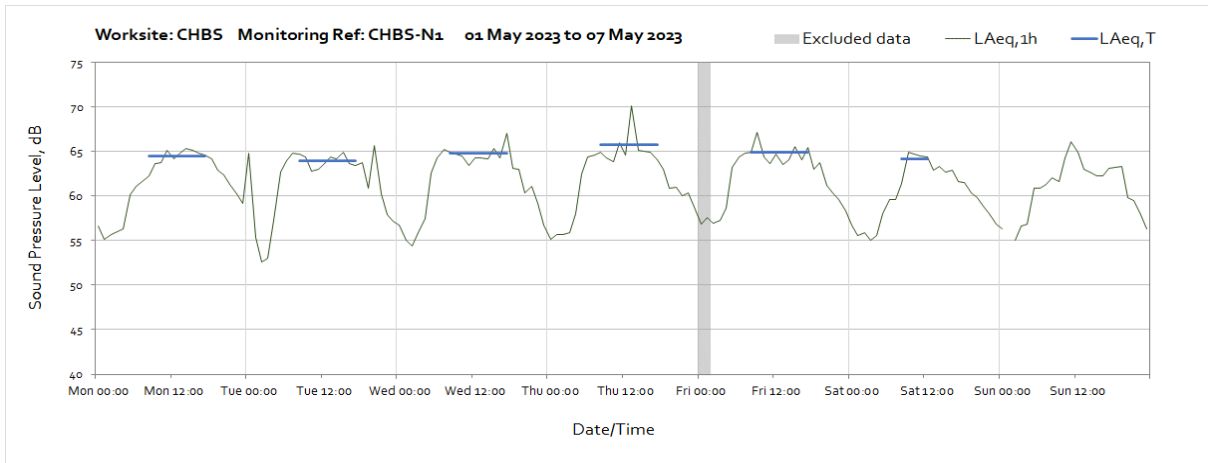


Note: Missing data between 16:00 on Sunday 21st May and 08:00 on Tuesday 23rd May due to a memory card error. The memory card was replaced with view of minimising loss data in the future.

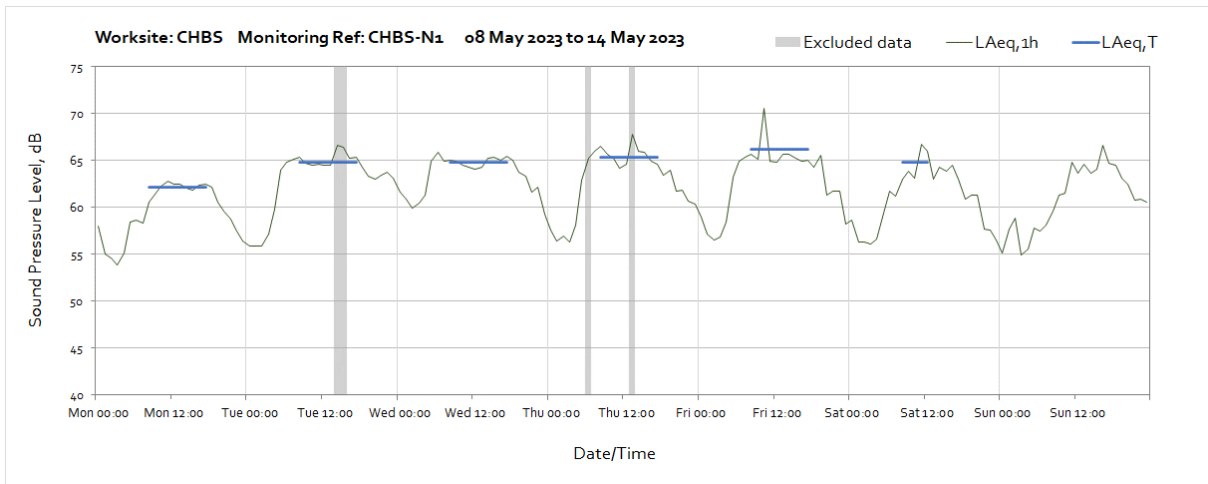


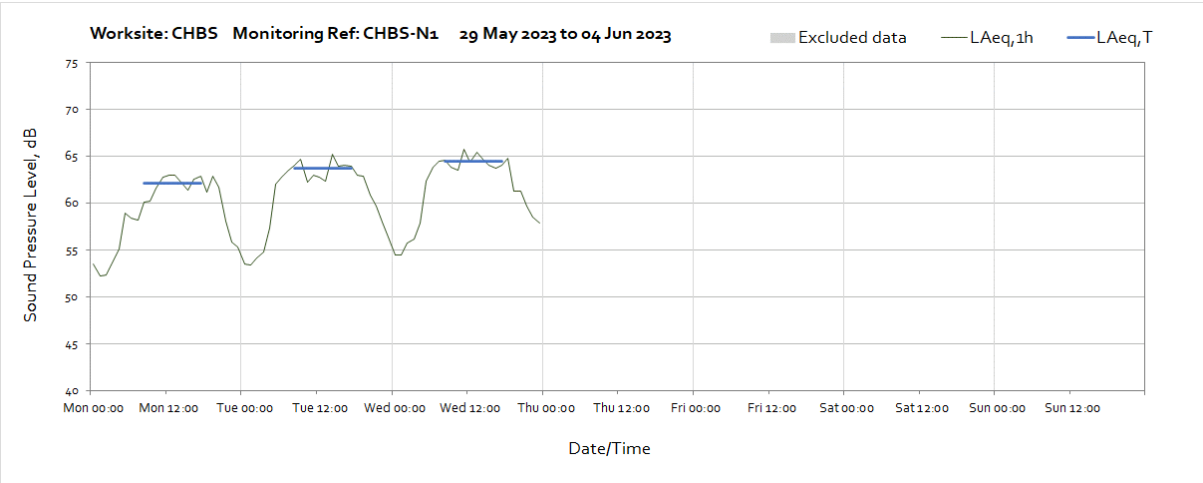
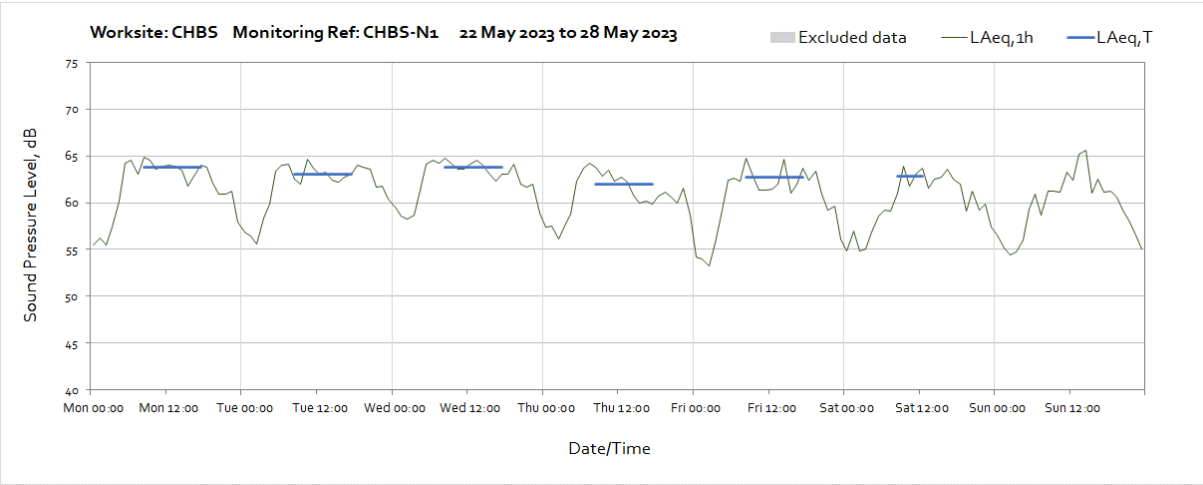
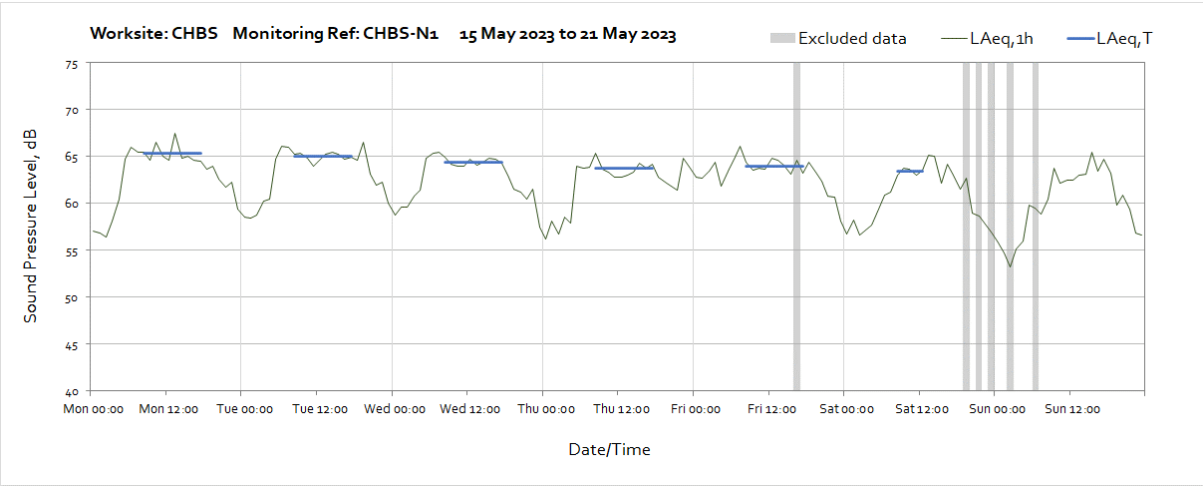


Worksite: CHBS – Monitoring Ref: CHBS-N1

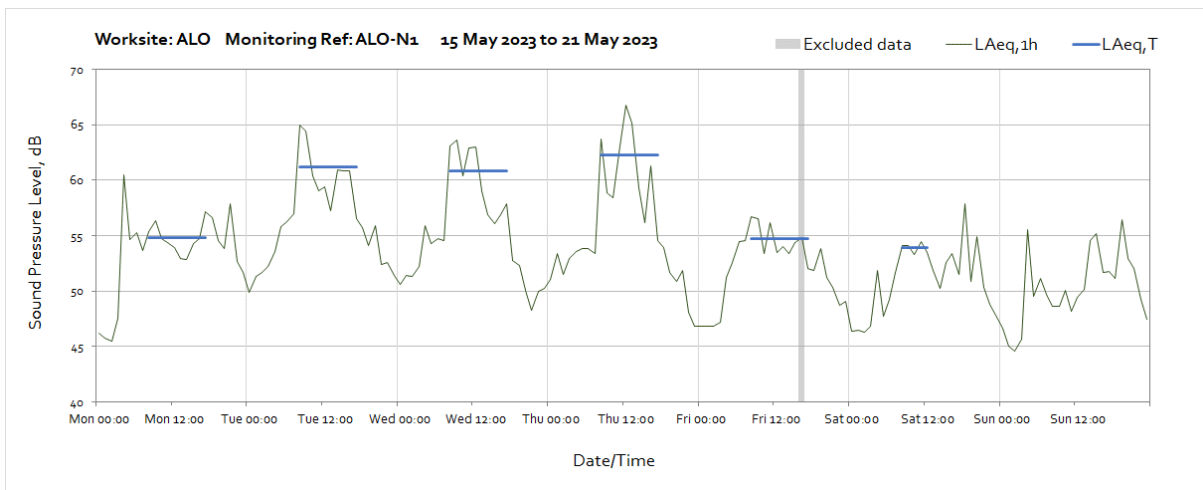
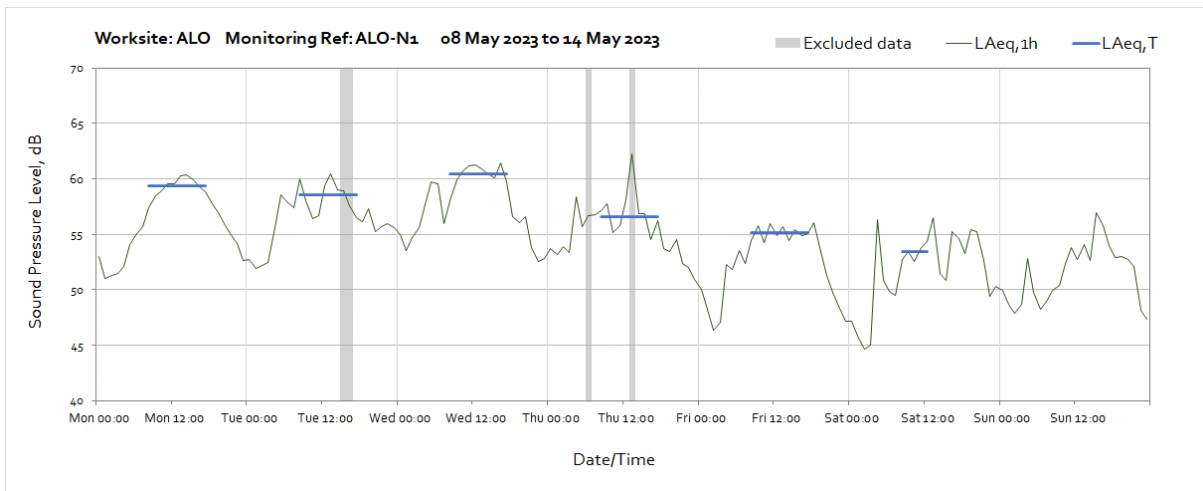
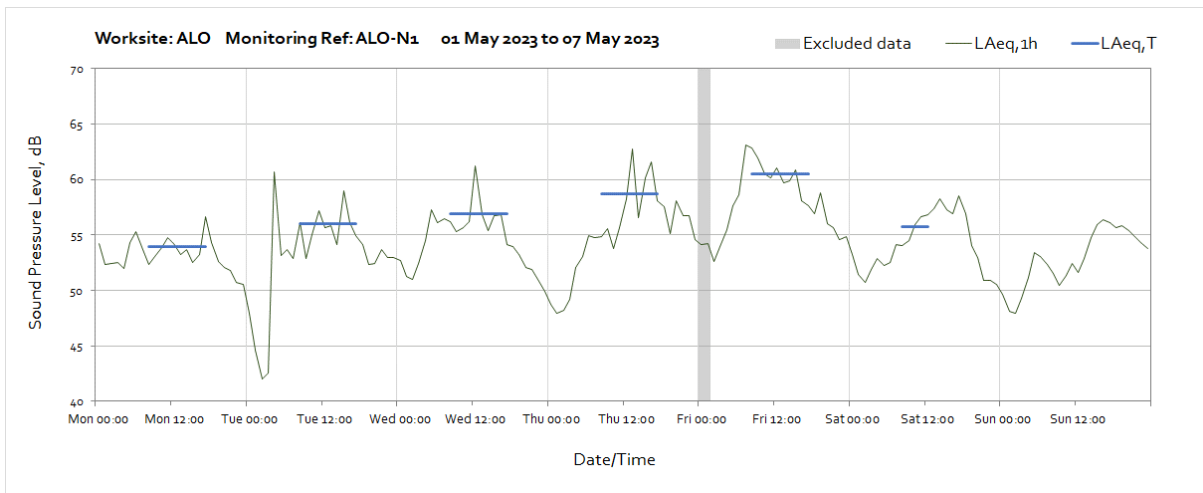


Note: Missing data between 00:00 and 01:00 07th May due to a system update within the monitoring station.

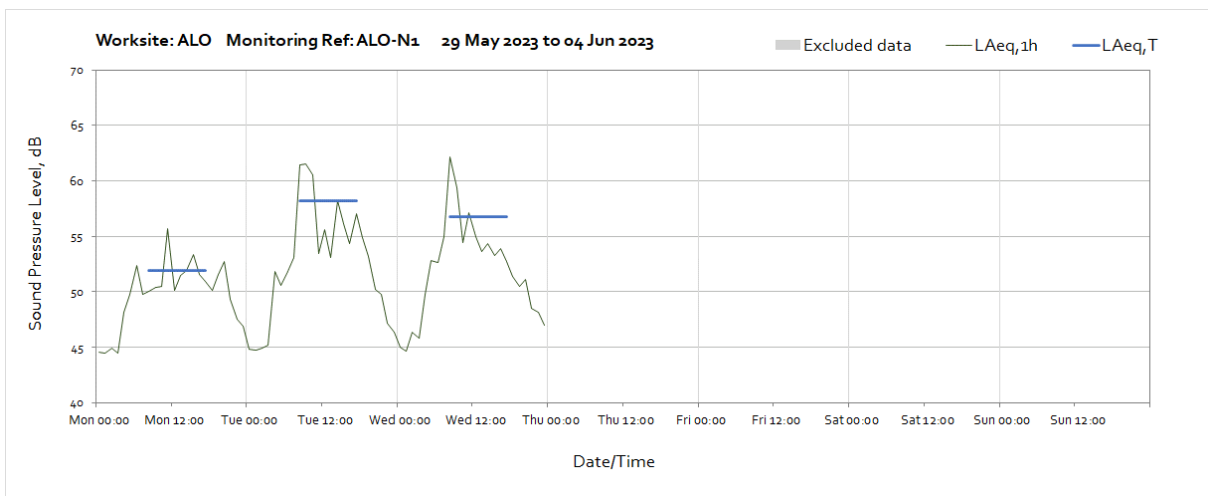
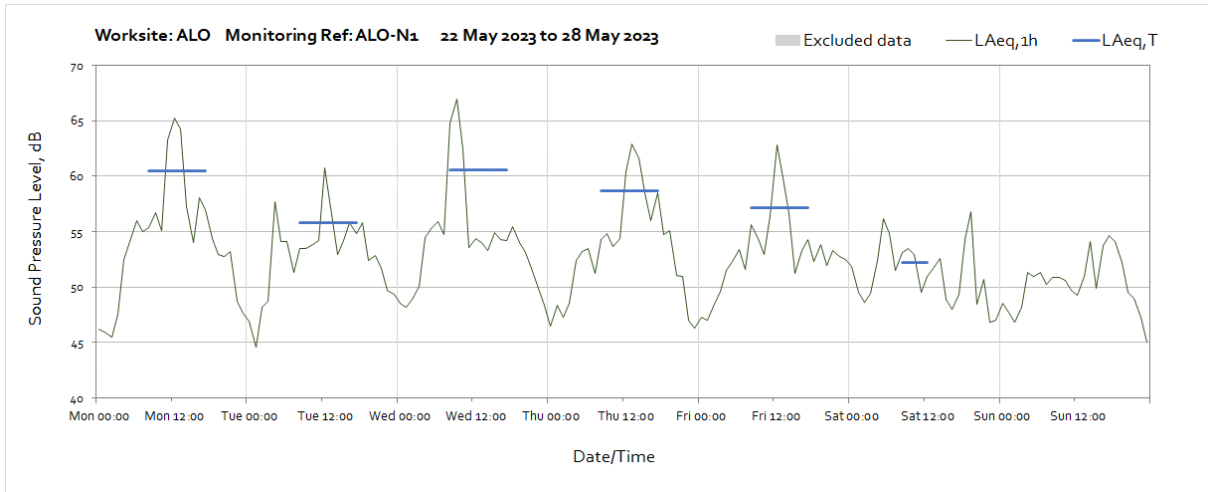




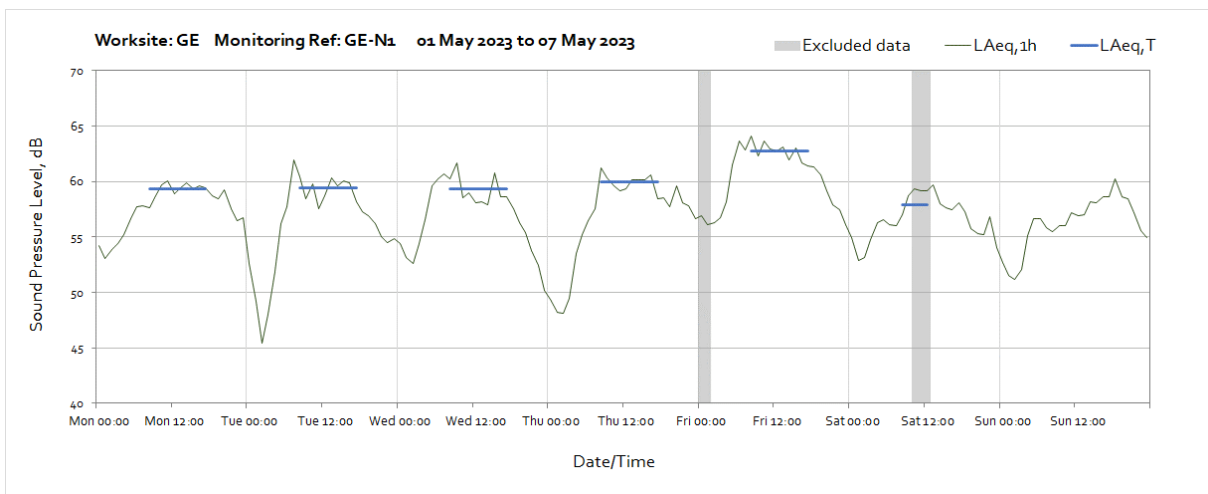
Worksite: ALO – Monitoring Ref: ALO-N1



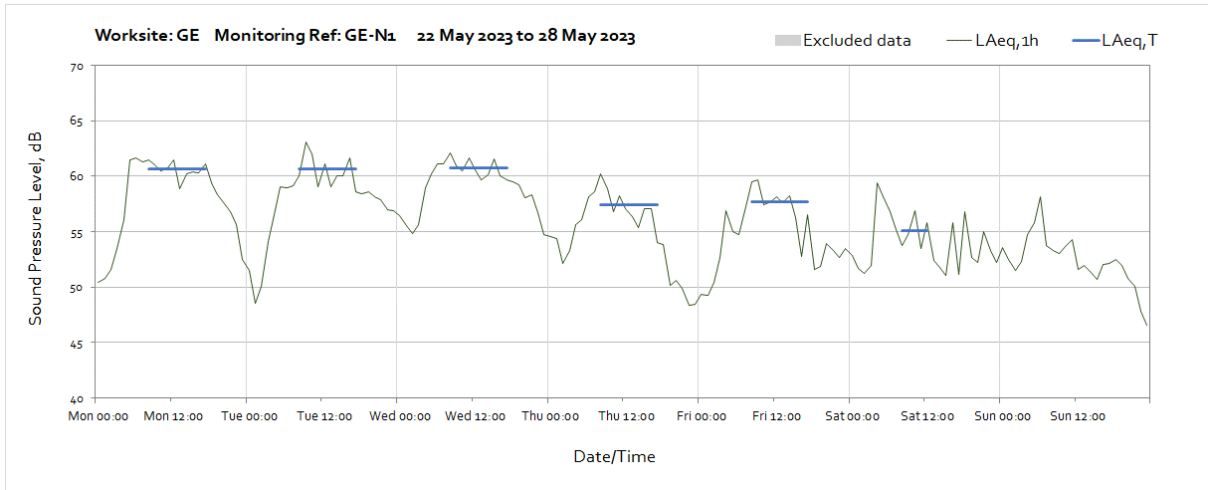
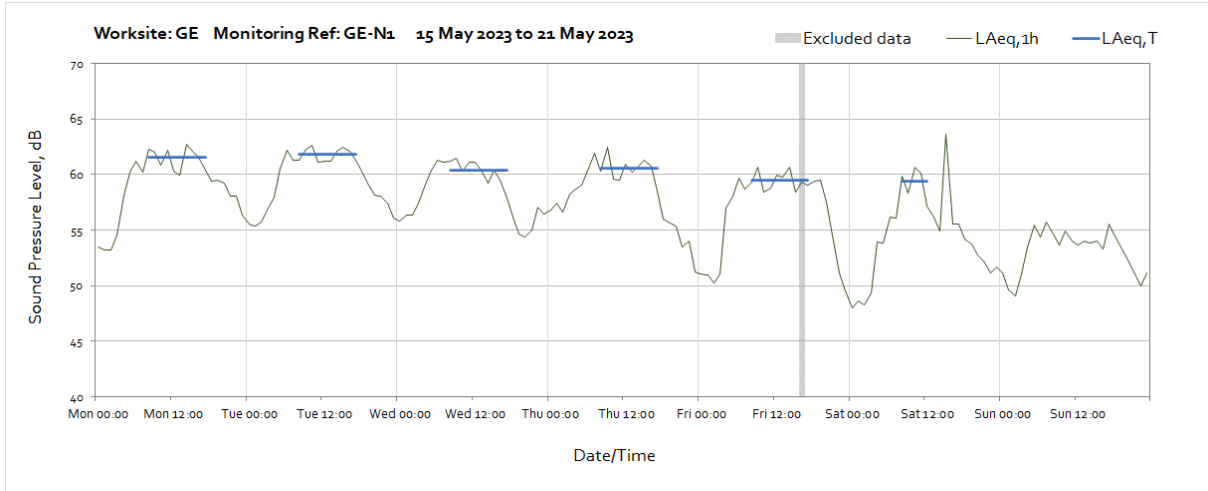
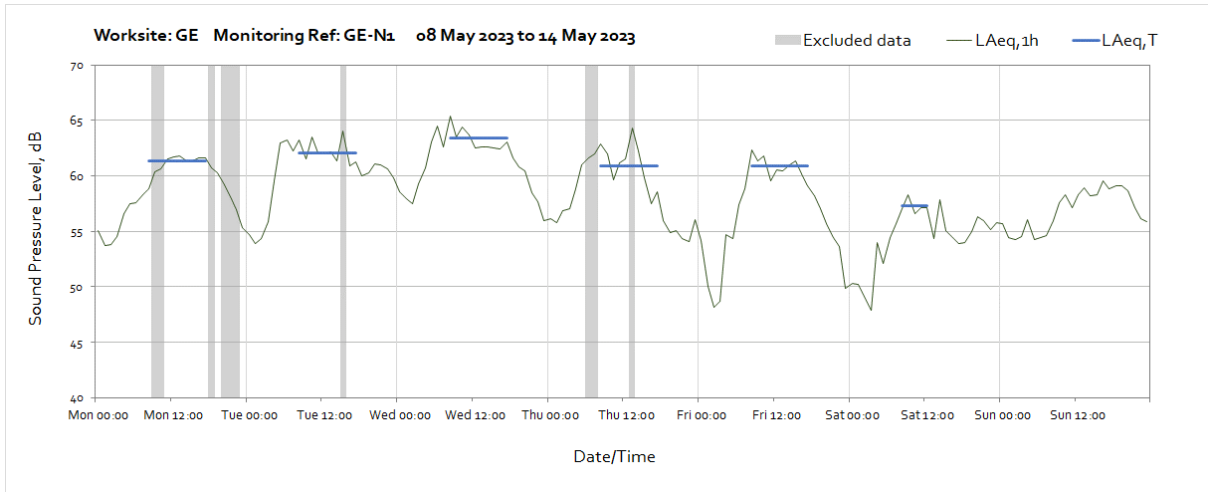
OFFICIAL

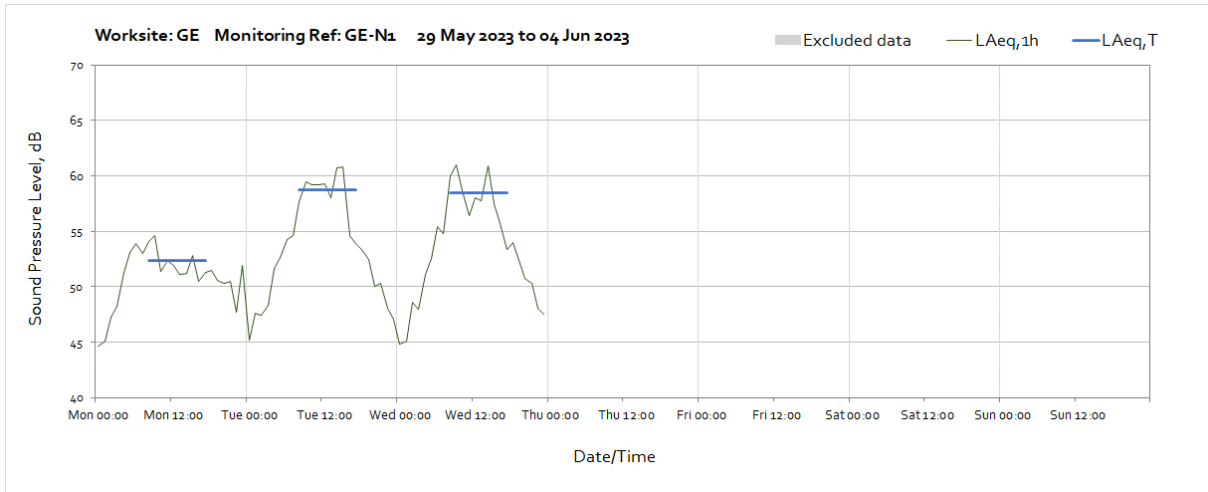


Worksite: GE - Monitoring Ref: GE-N1

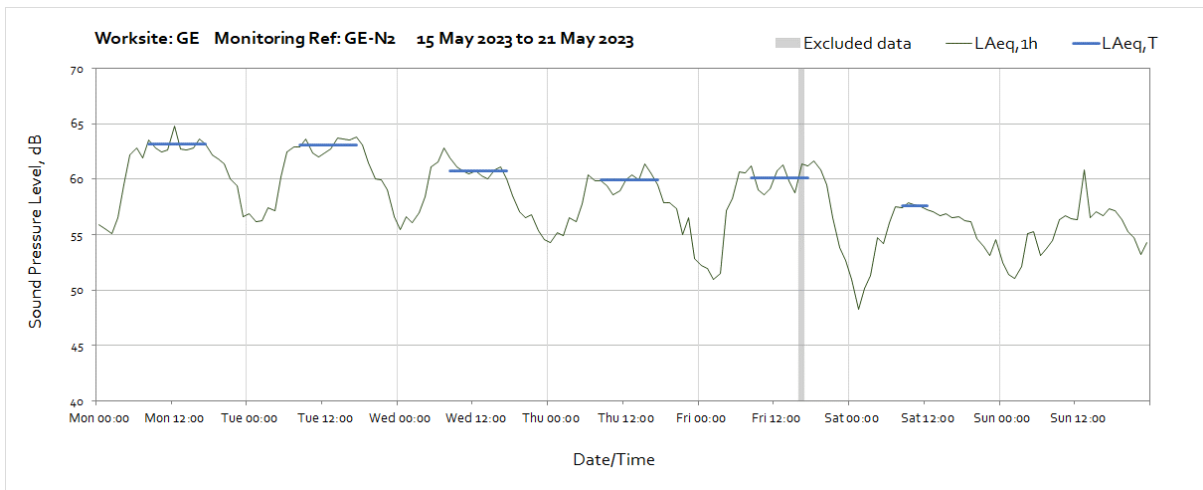
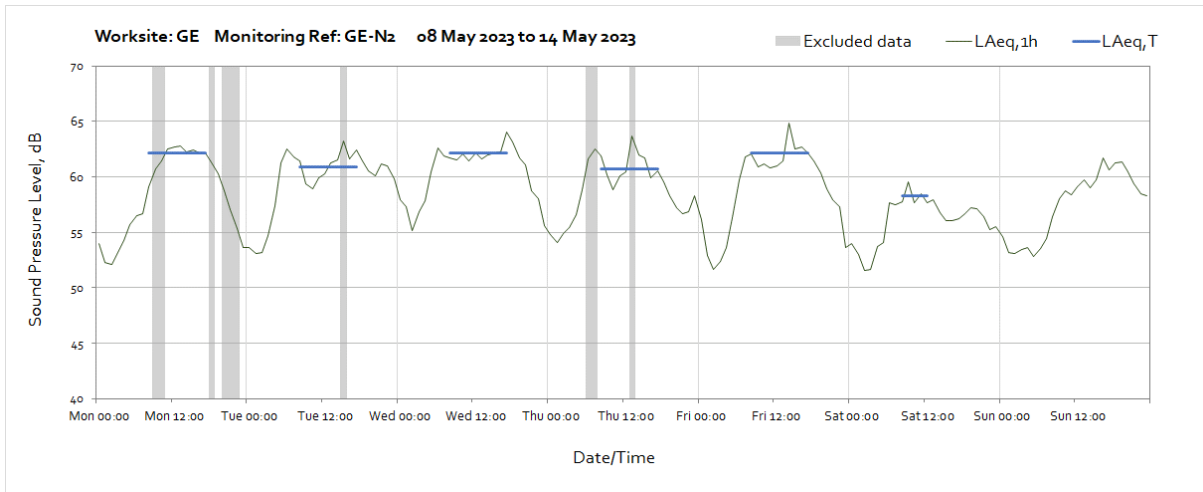
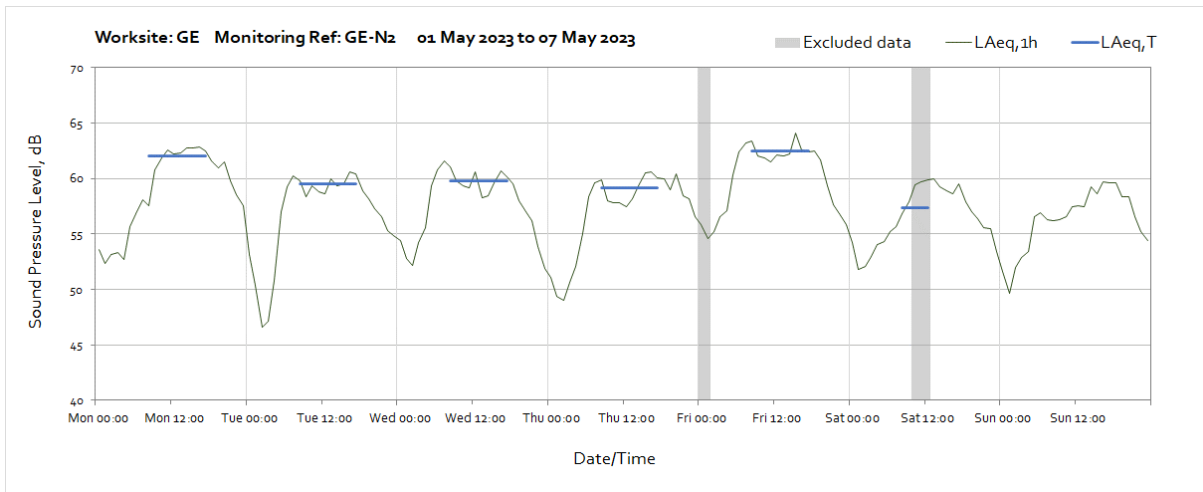


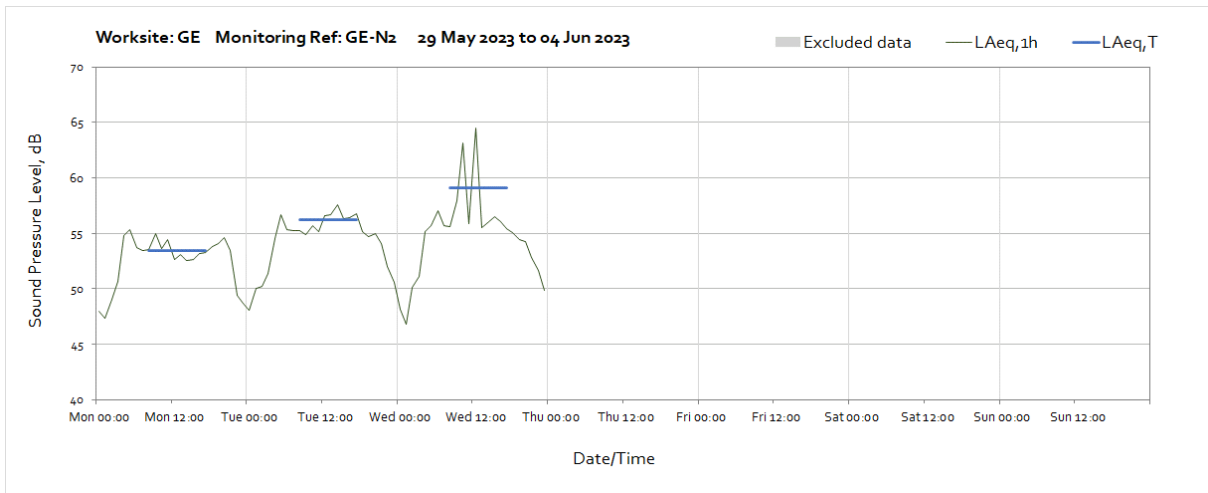
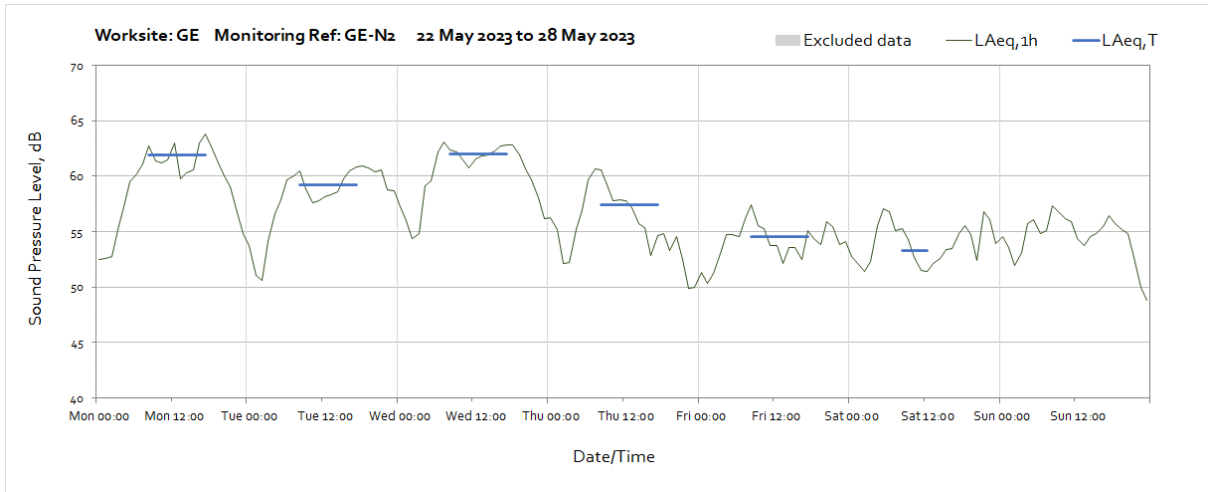
OFFICIAL



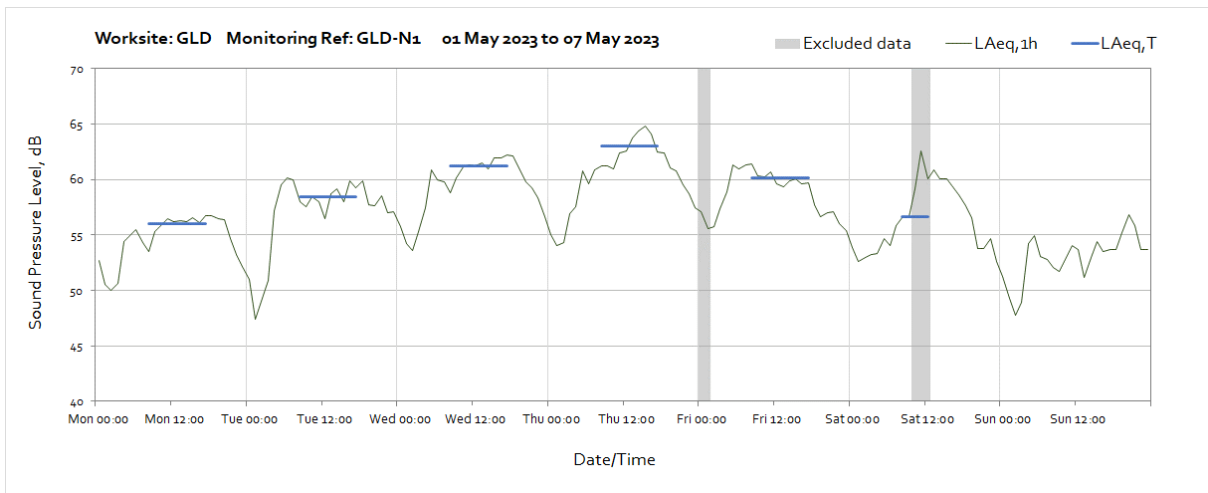


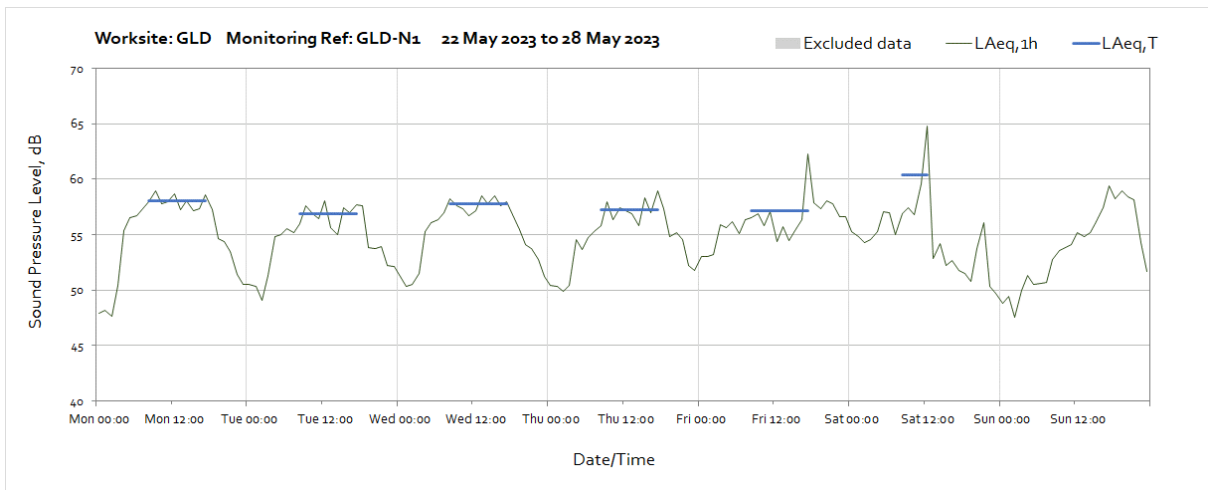
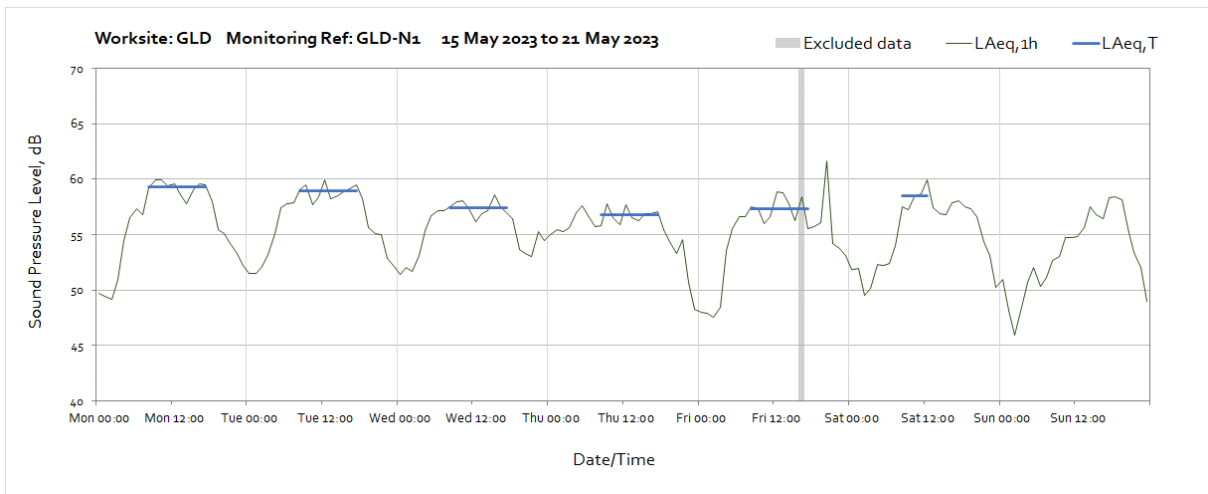
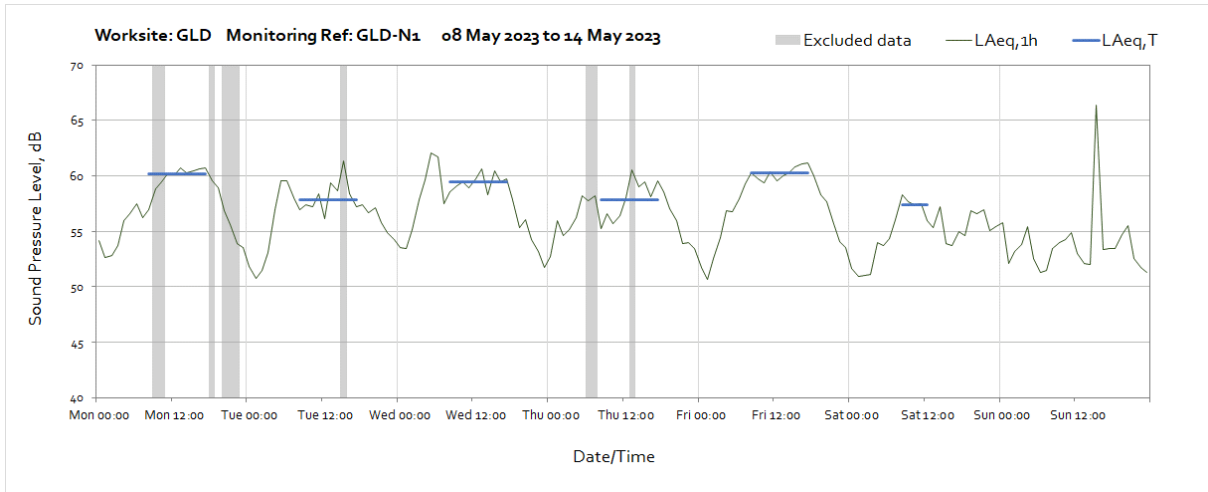
Worksite: GE – Monitoring Ref: GE-N2

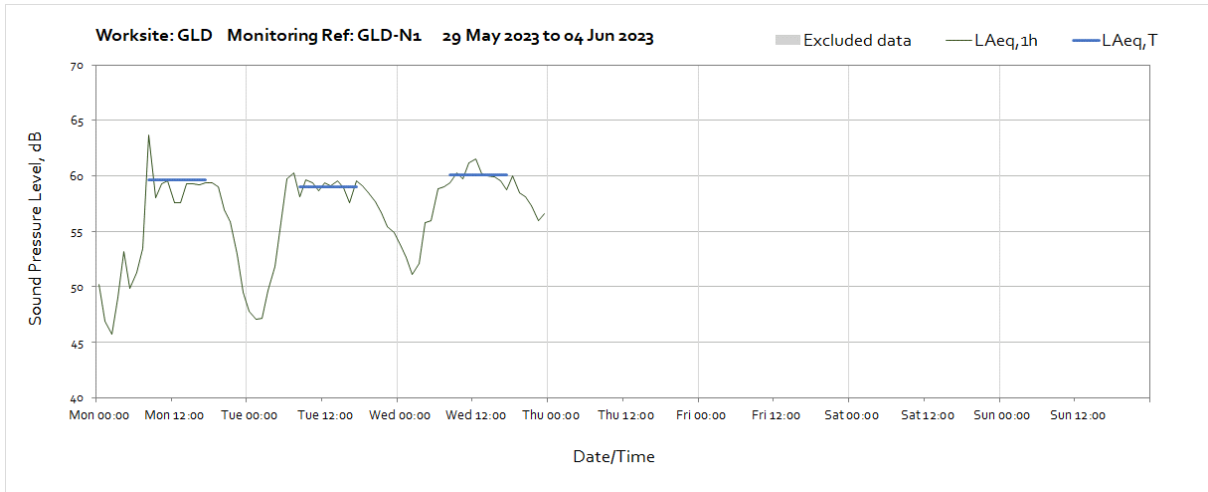




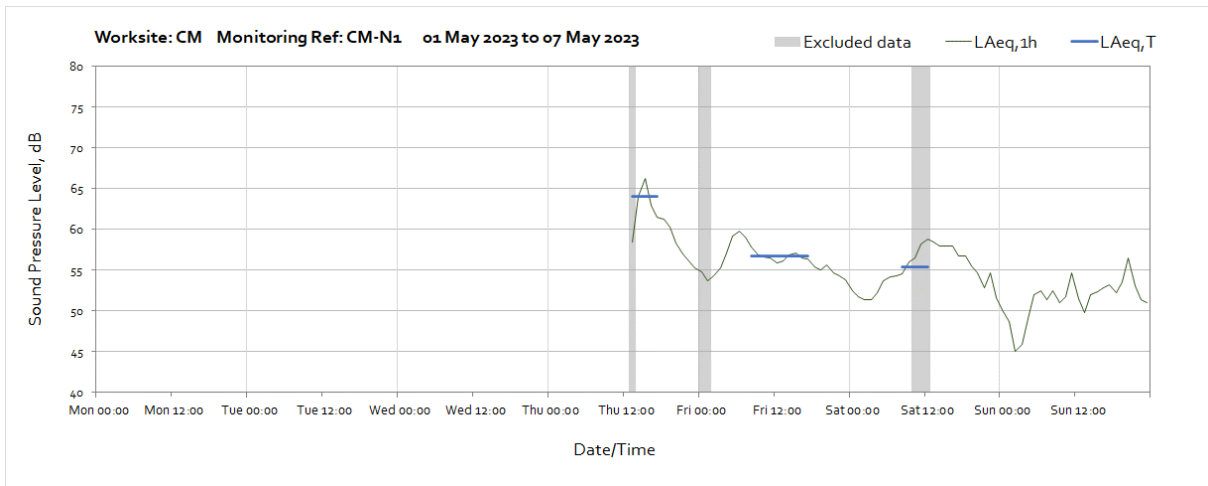
Worksite: GLD - Monitoring Ref: GLD-N1



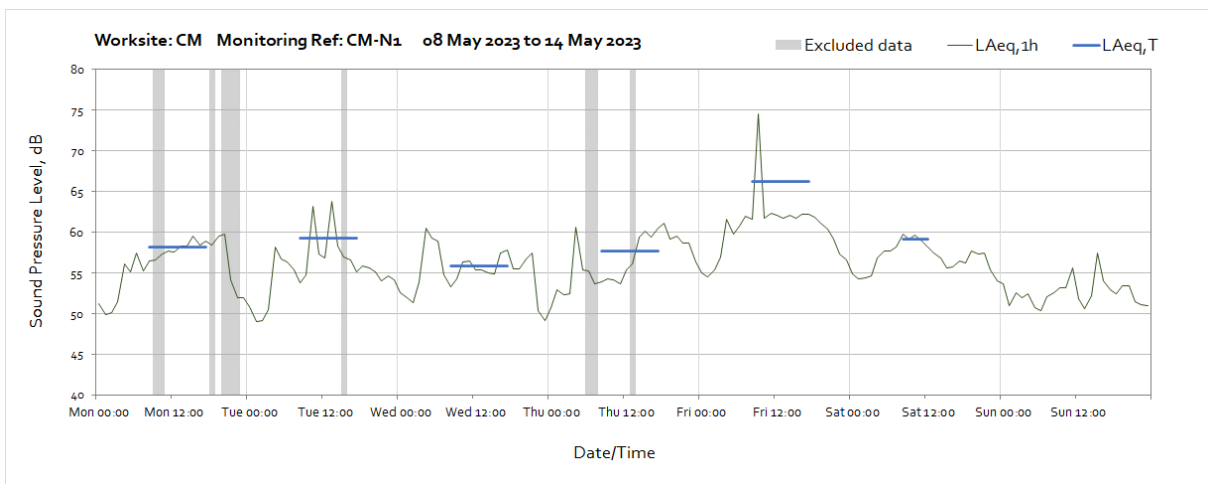


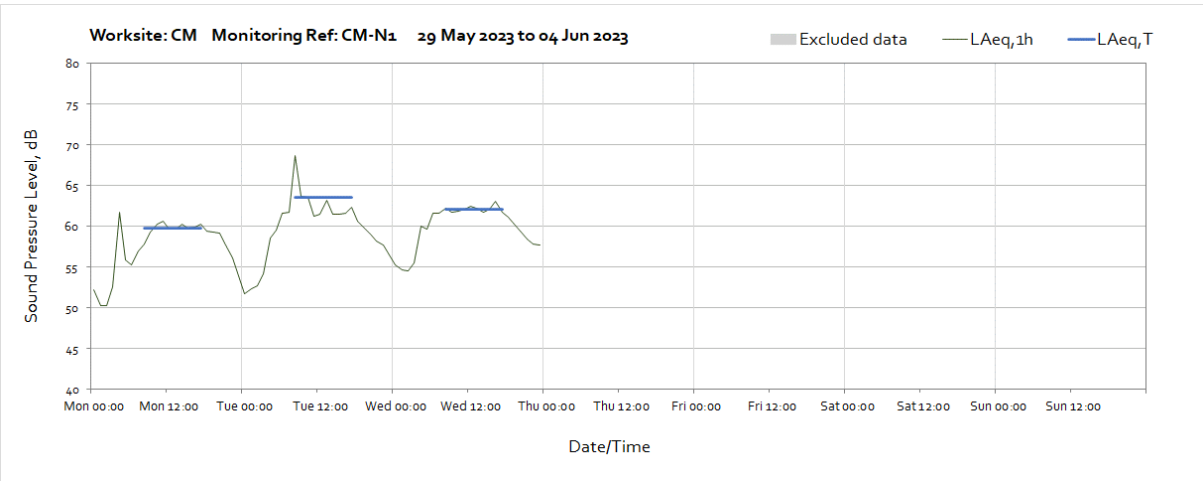
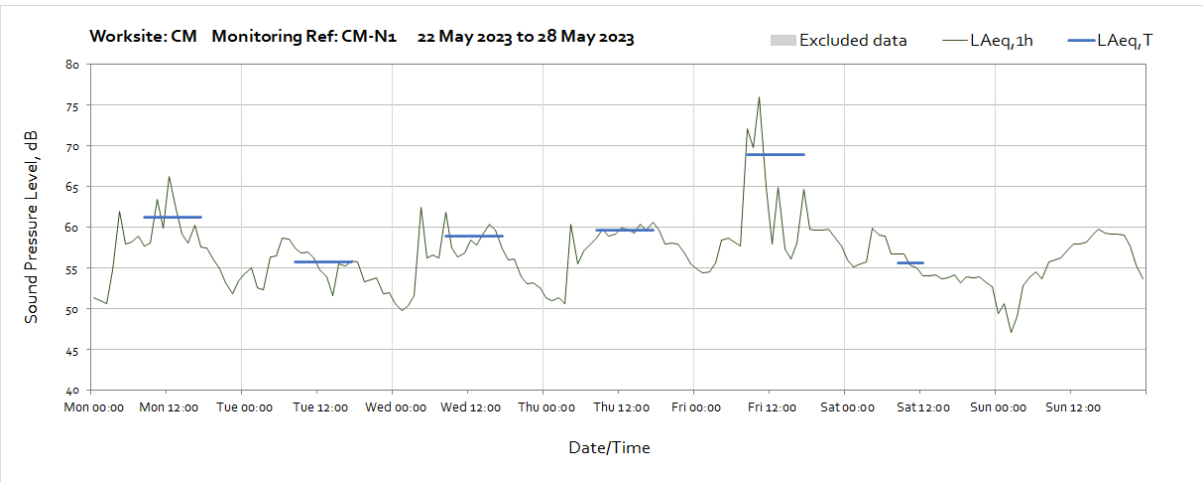
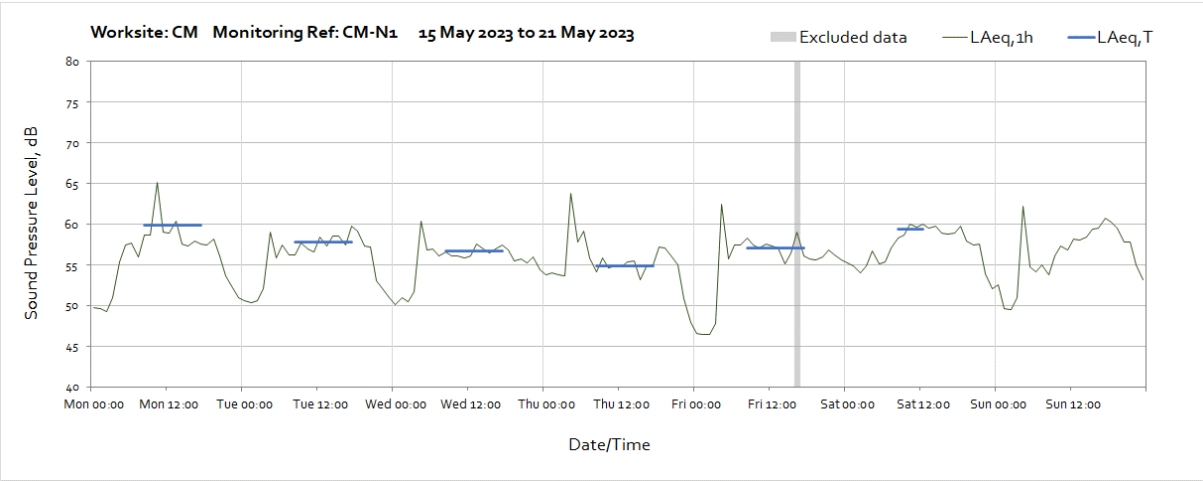


Worksite: GLD - Monitoring Ref: CM-N1

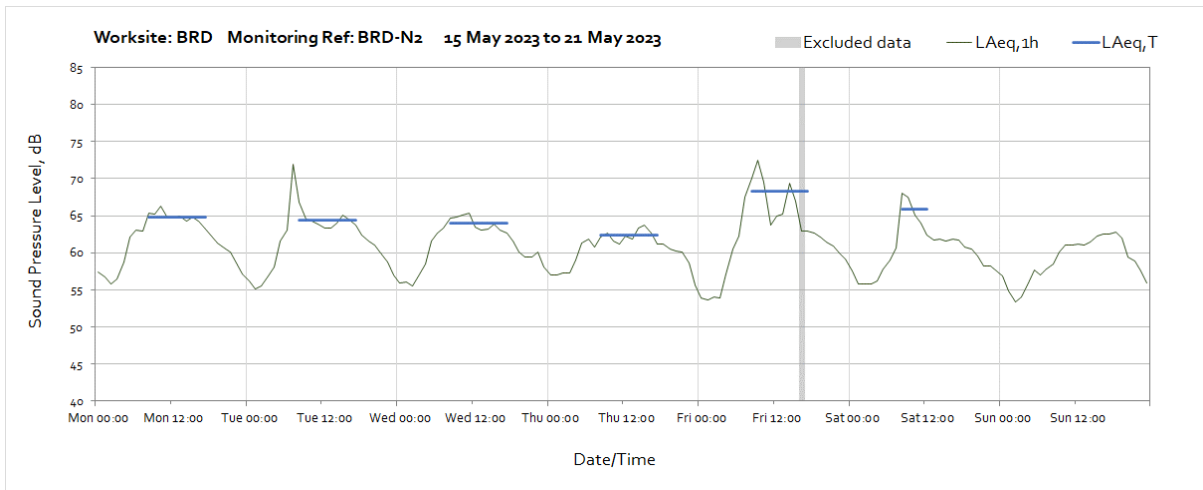
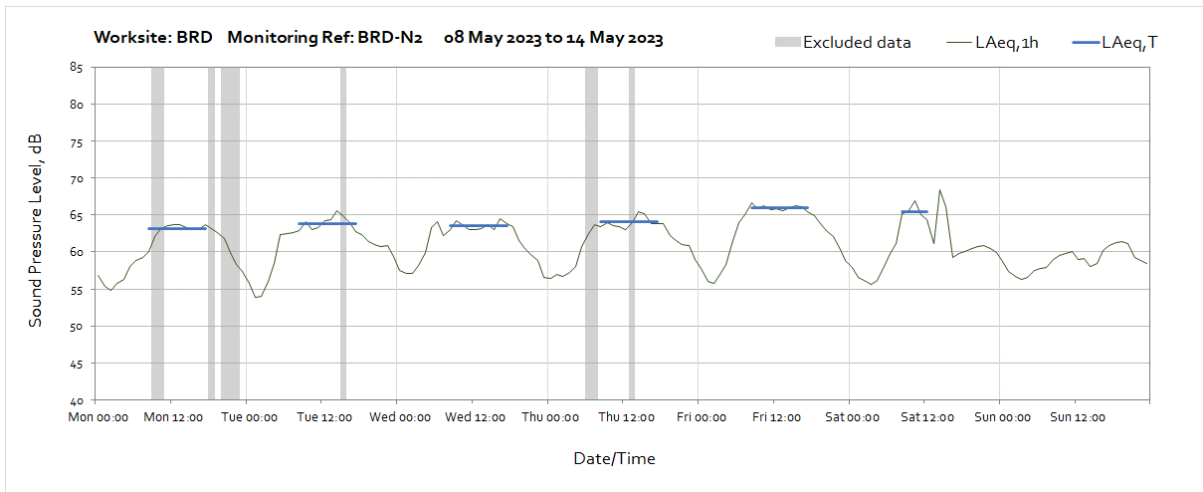
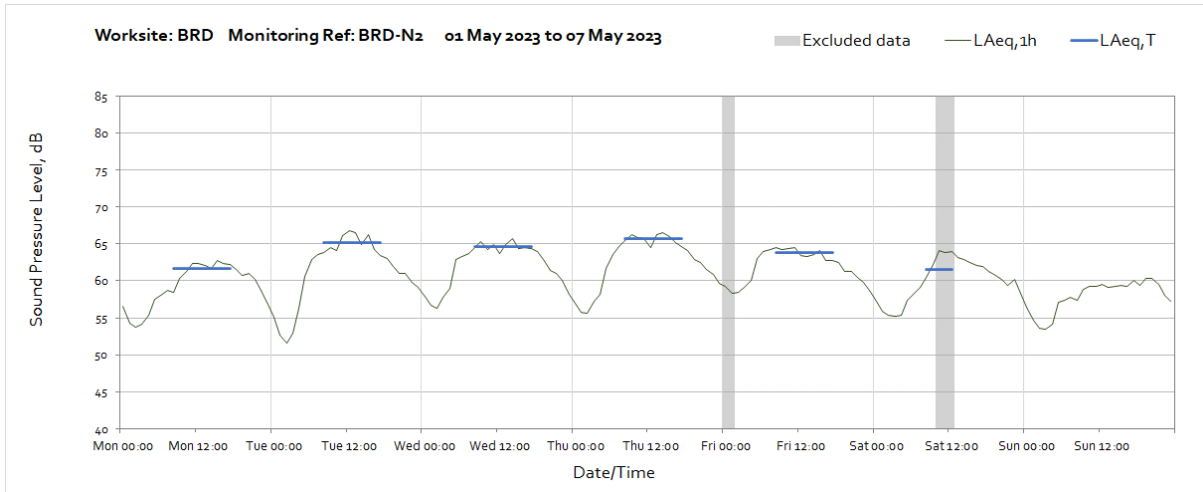


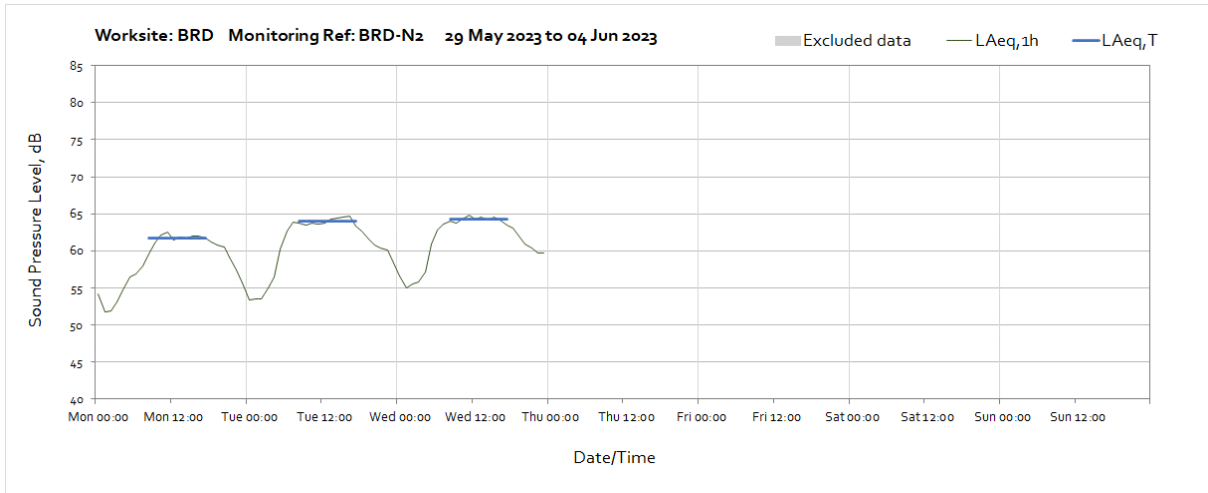
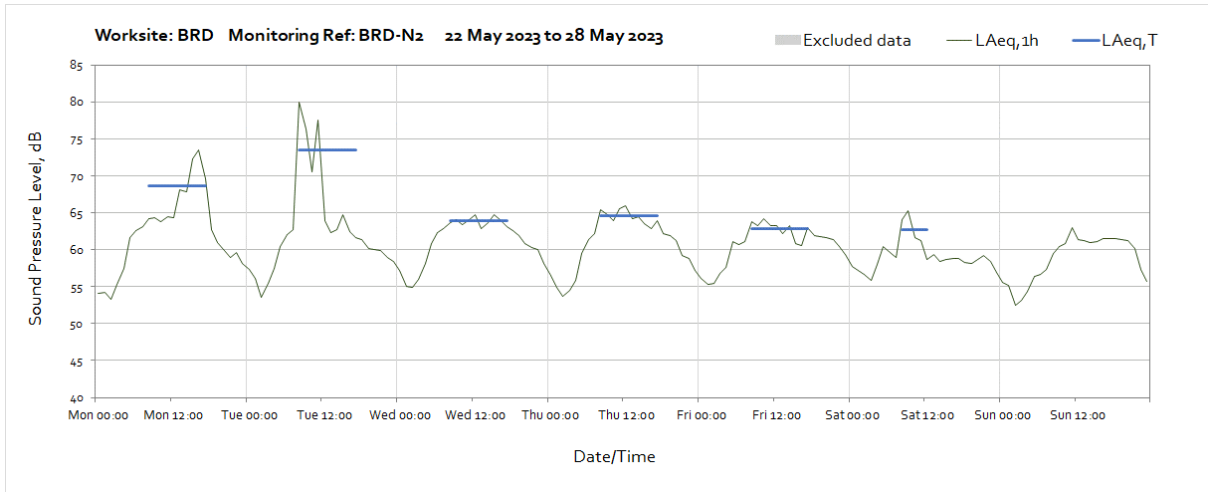
Note: Monitoring station was installed at 13:00 on Thursday 4th May.



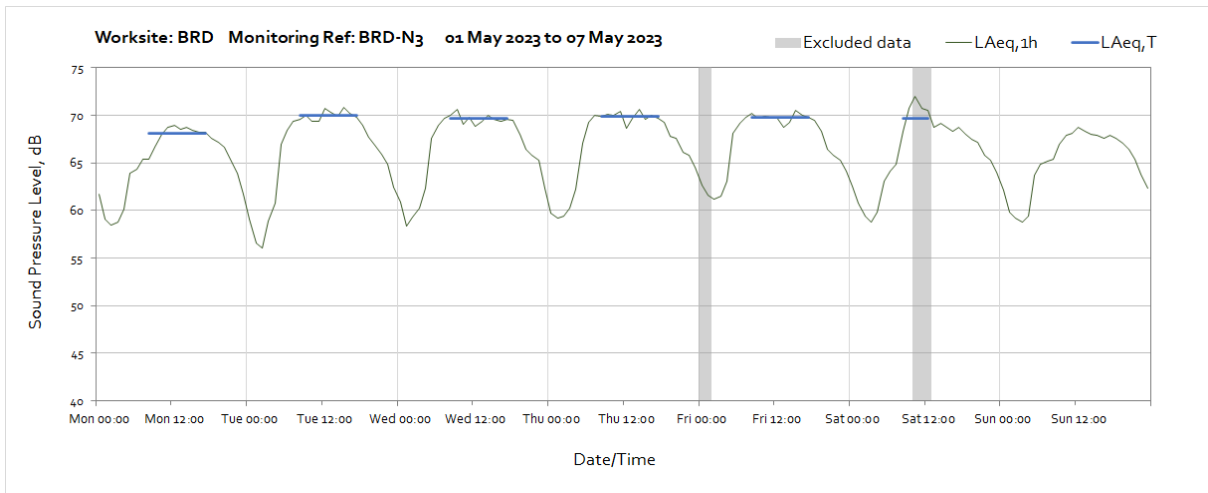


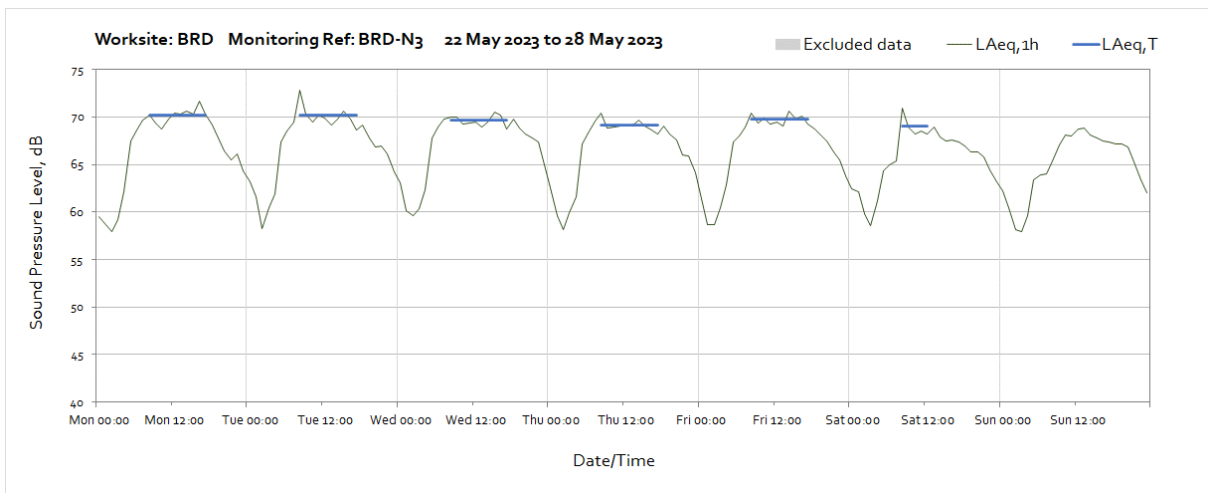
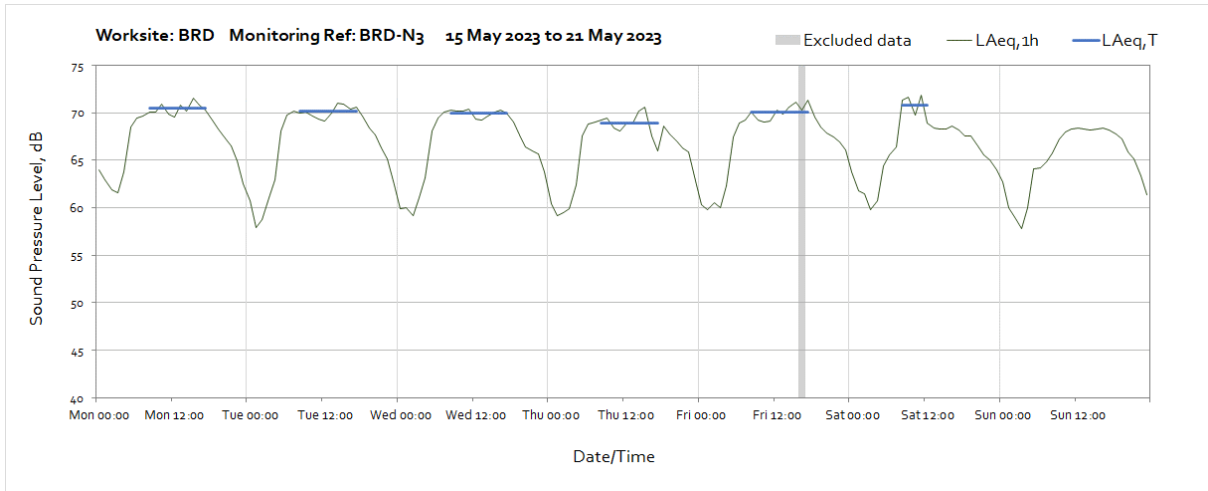
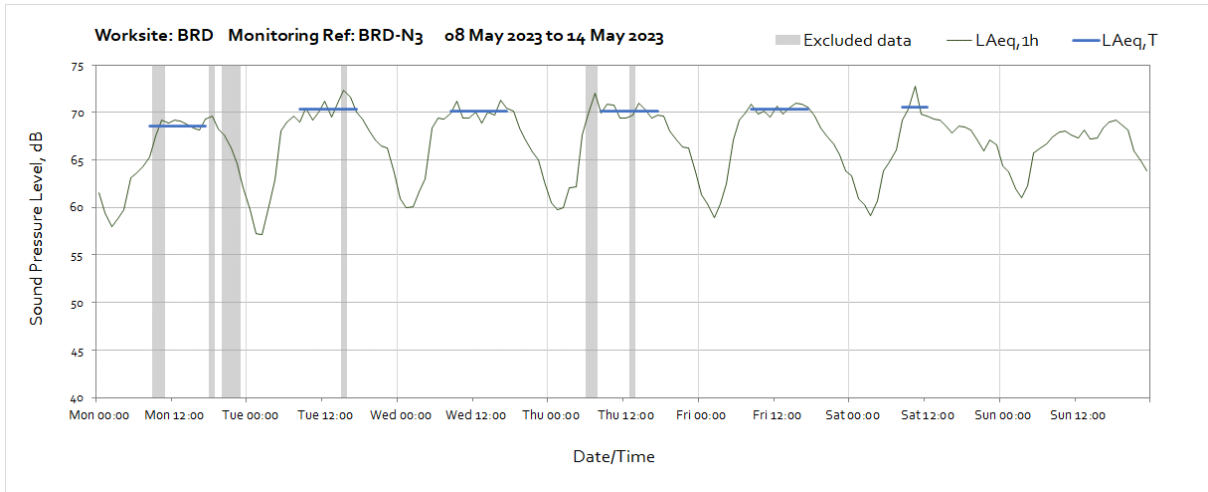
Worksite: BRD - Monitoring Ref: BRD-N2

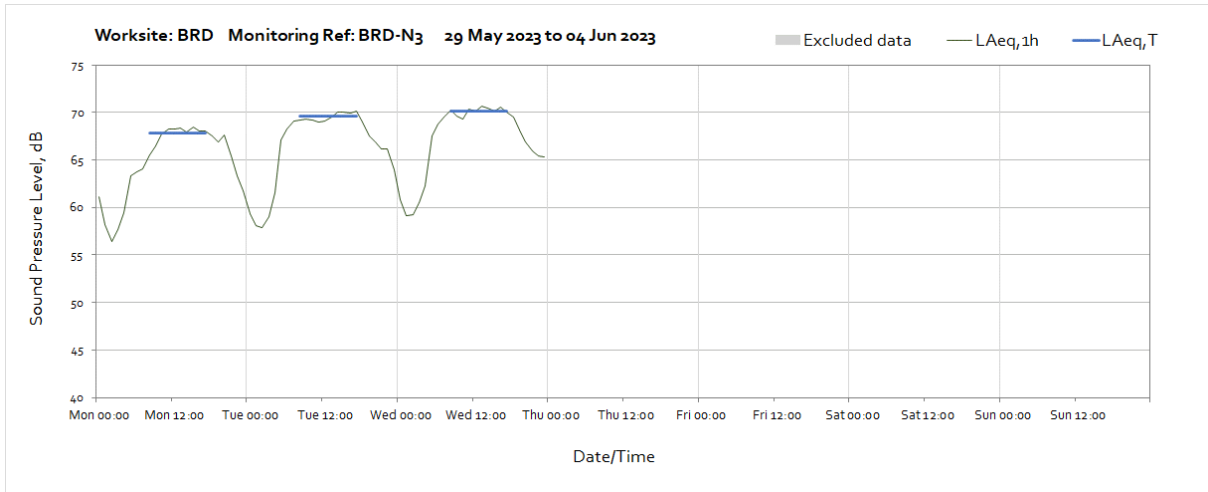




Worksite: BRD - Monitoring Ref: BRD-N3



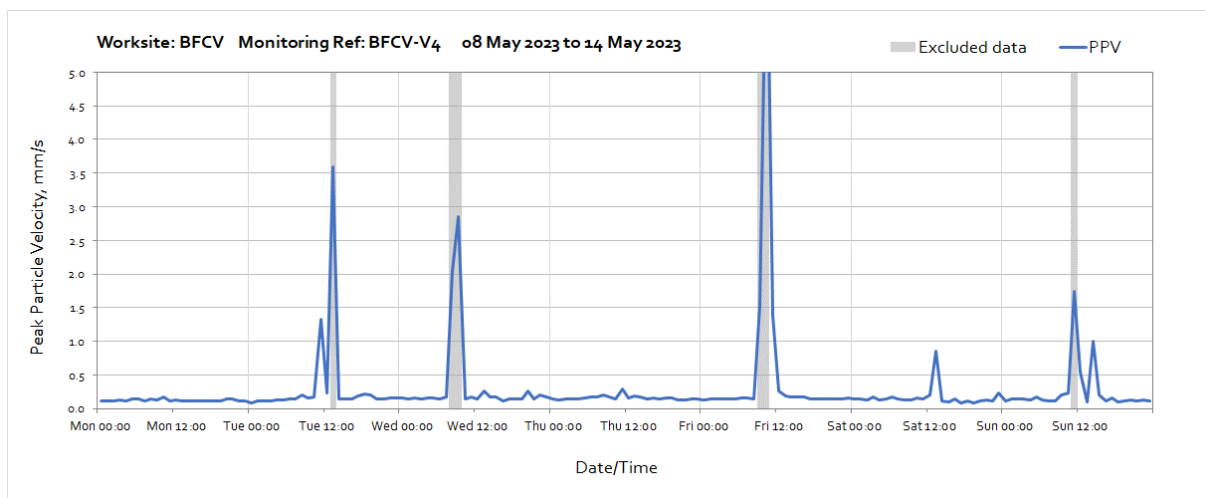
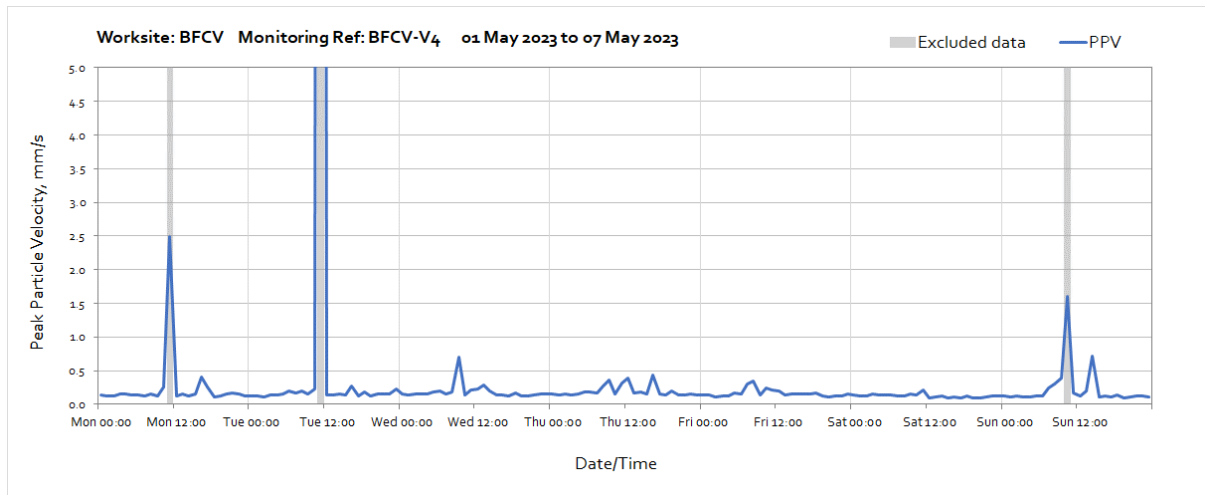


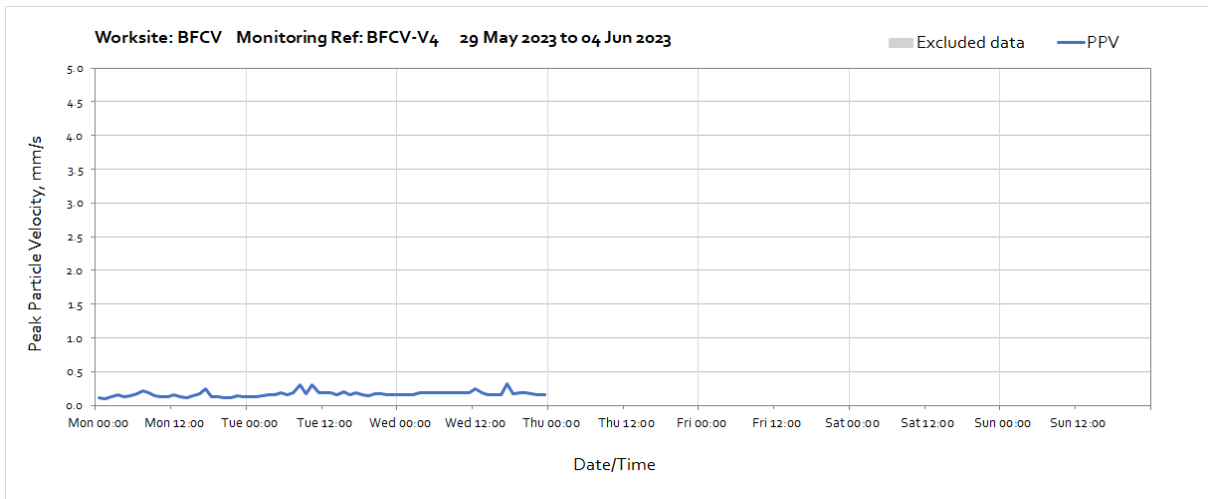
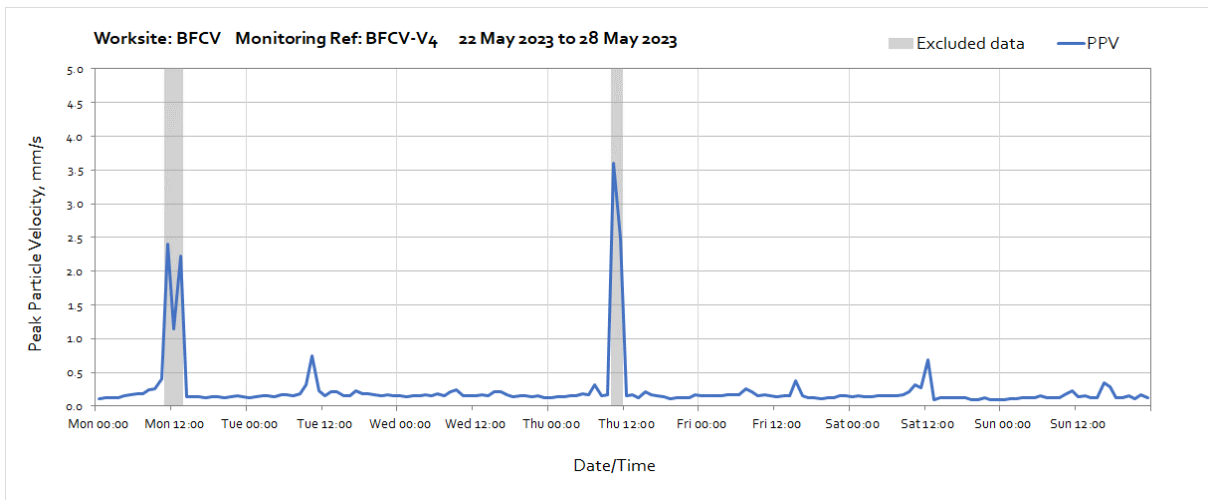
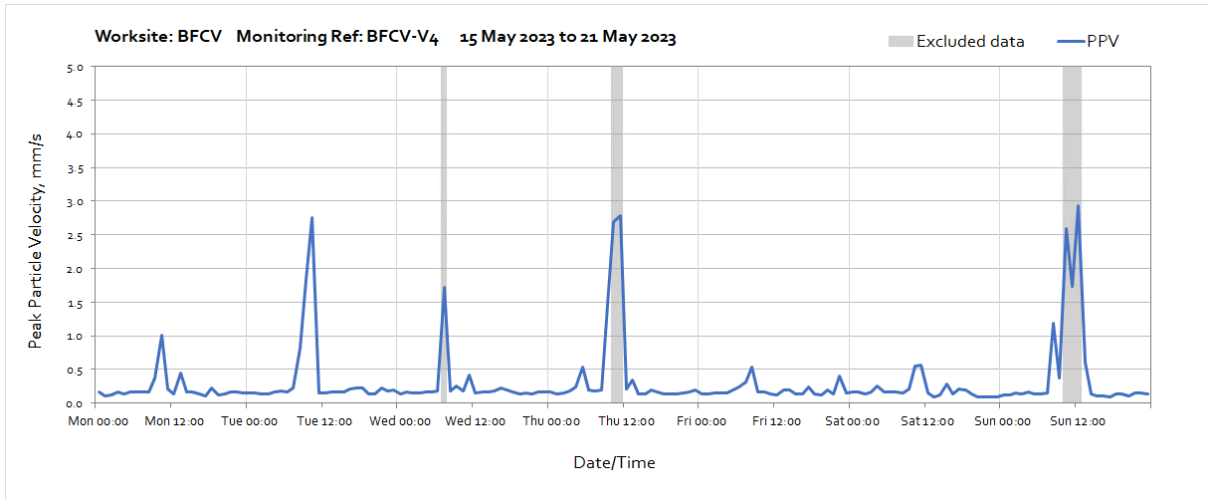


Vibration

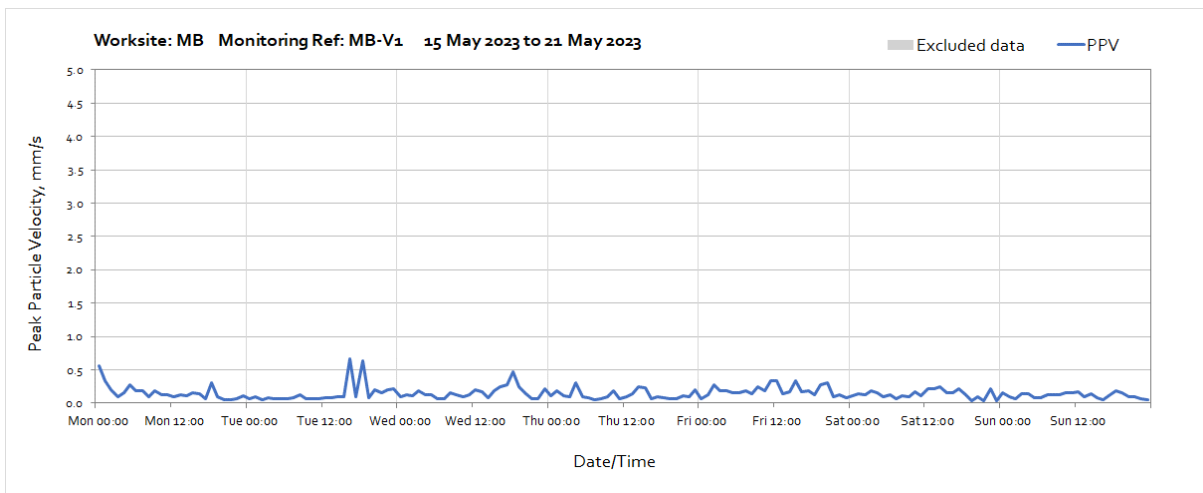
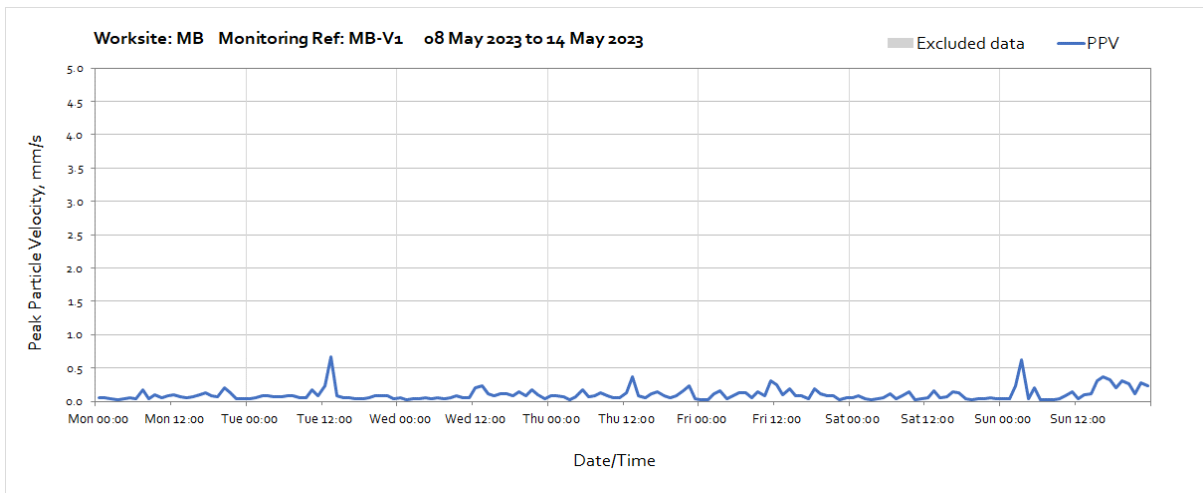
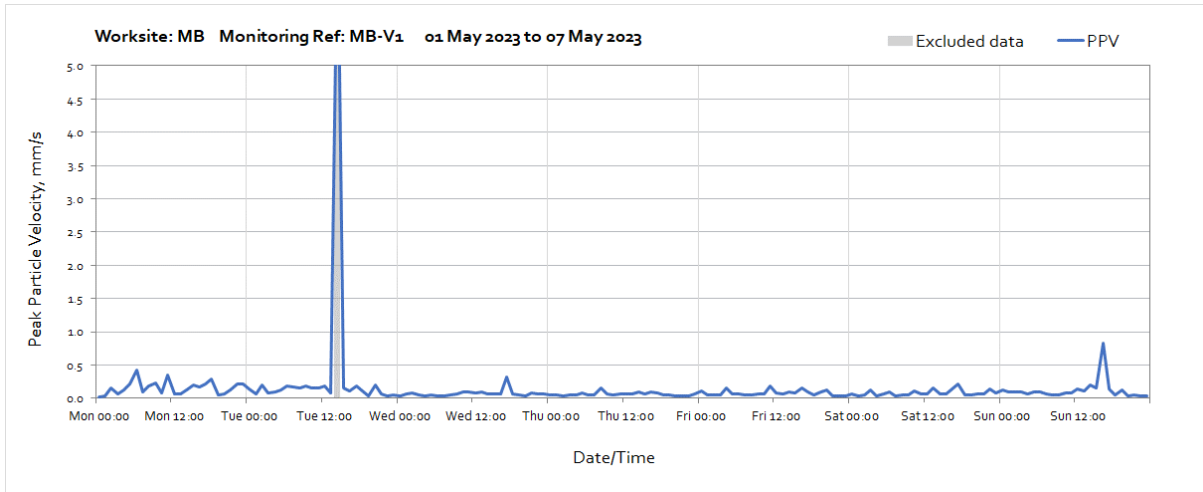
The following graphs show the hourly measured peak particle velocity PPV recorded during the monitoring period. The graphs show the highest PPV of the three orthogonal axes x, y and z. Where high values of PPV were caused by local interference with the vibration monitor, which are not representative of HS2 construction works, these values have been greyed out in the following charts and have been excluded to calculate values in Table 4 of the main report.

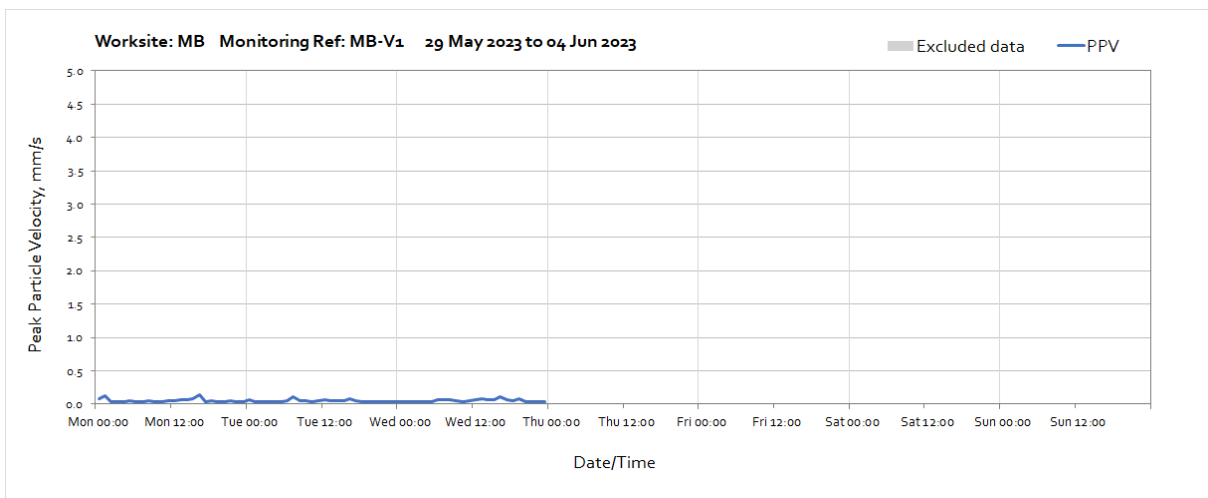
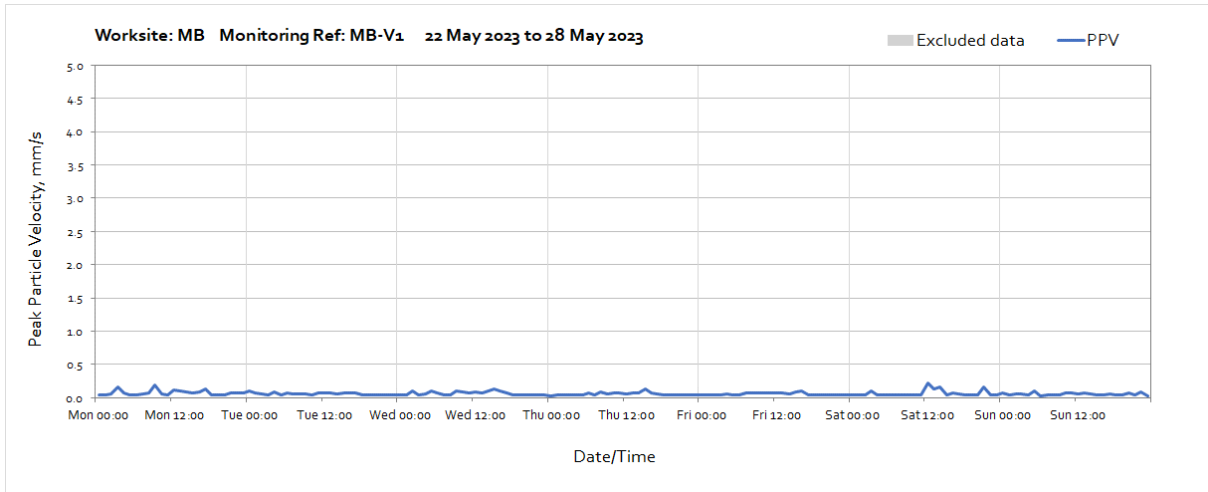
Worksite: BFCV - Monitoring Ref: BFCV-V4



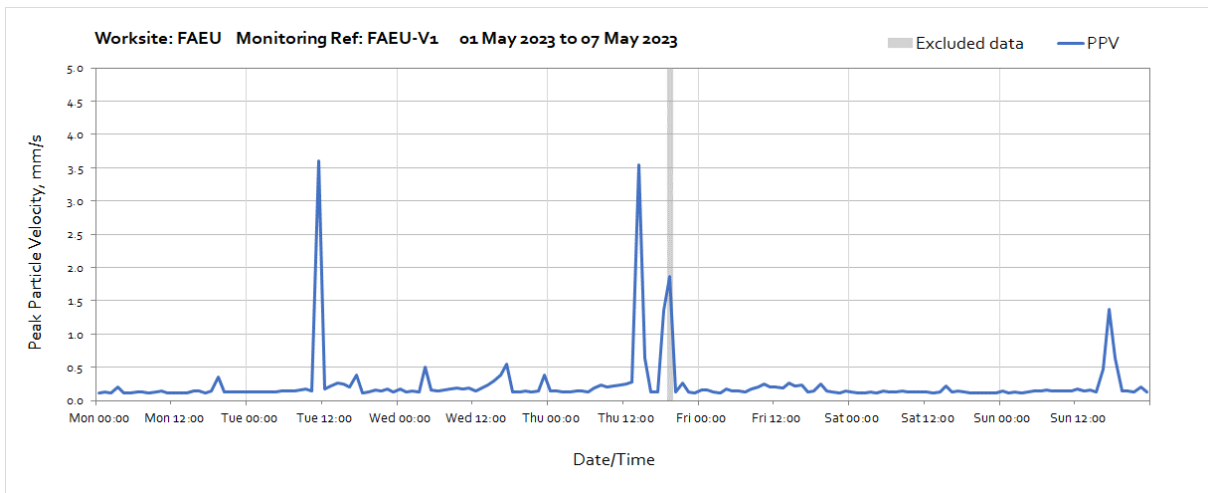


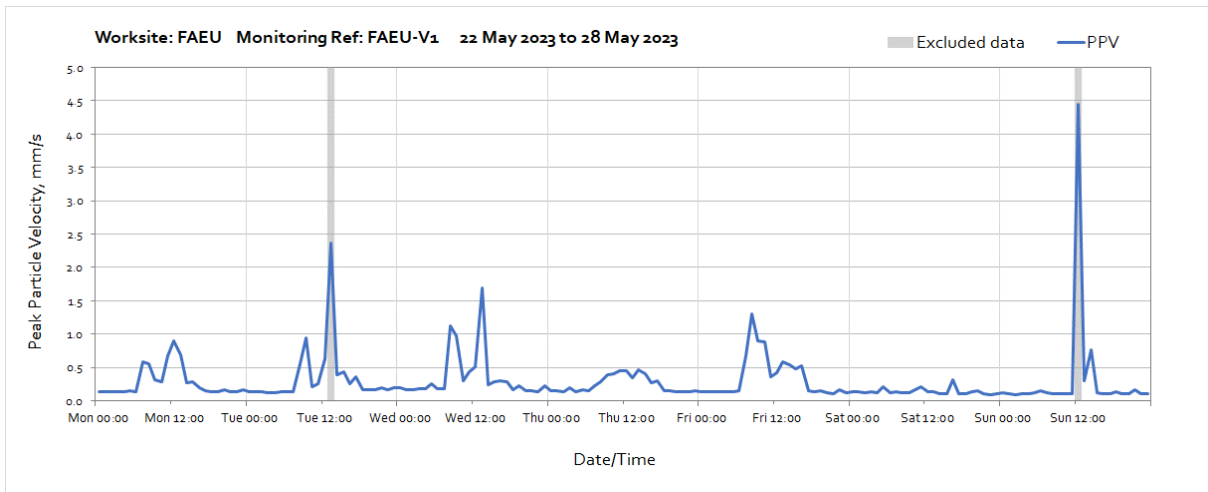
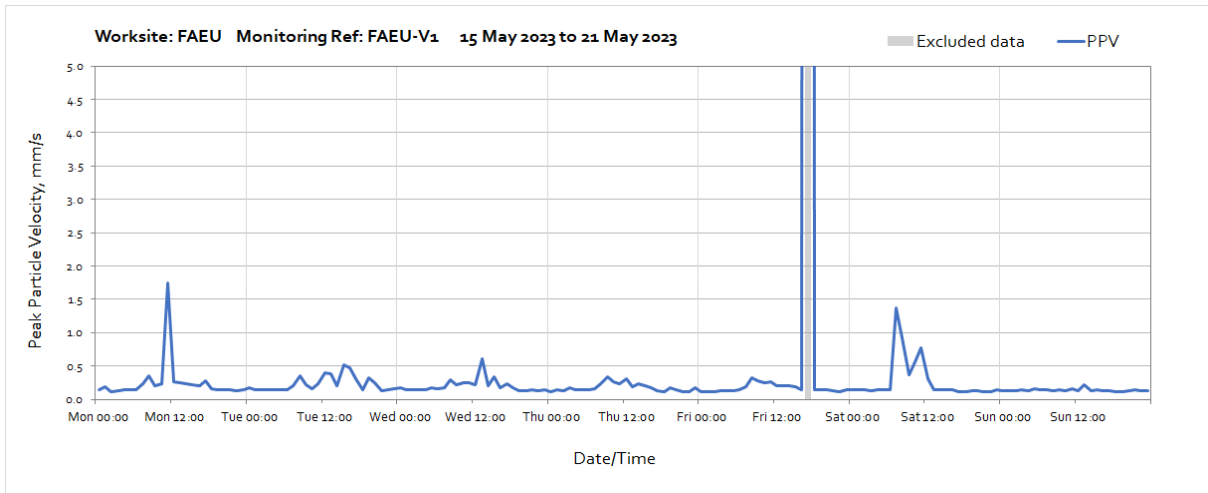
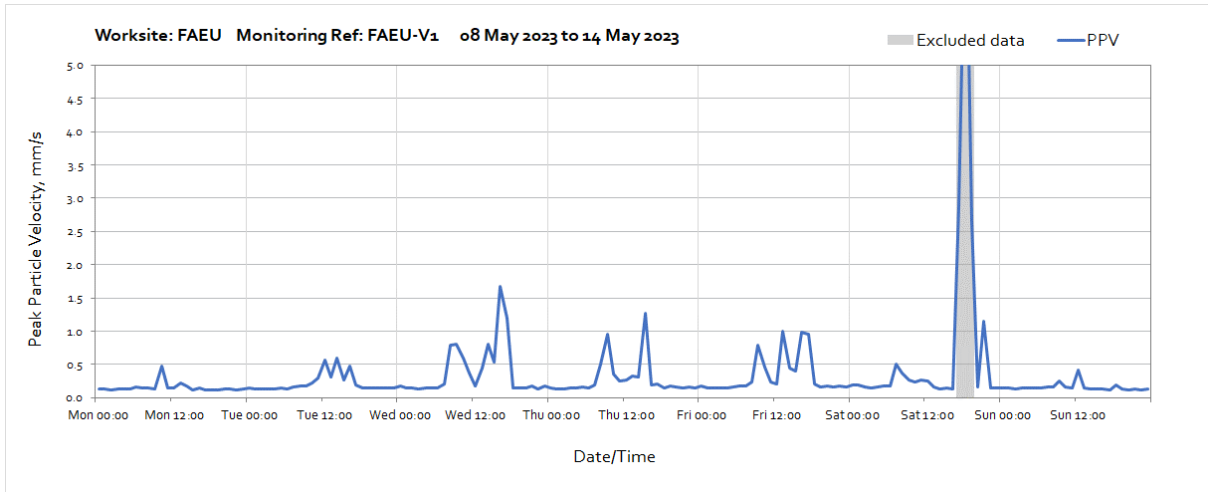
Worksite: MB – Monitoring Ref: MB-V1

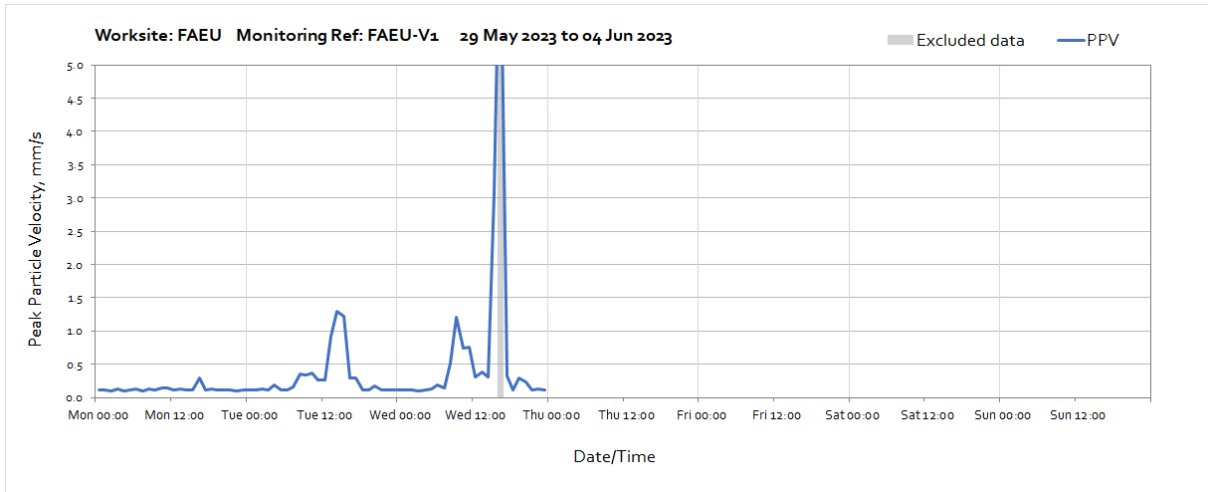




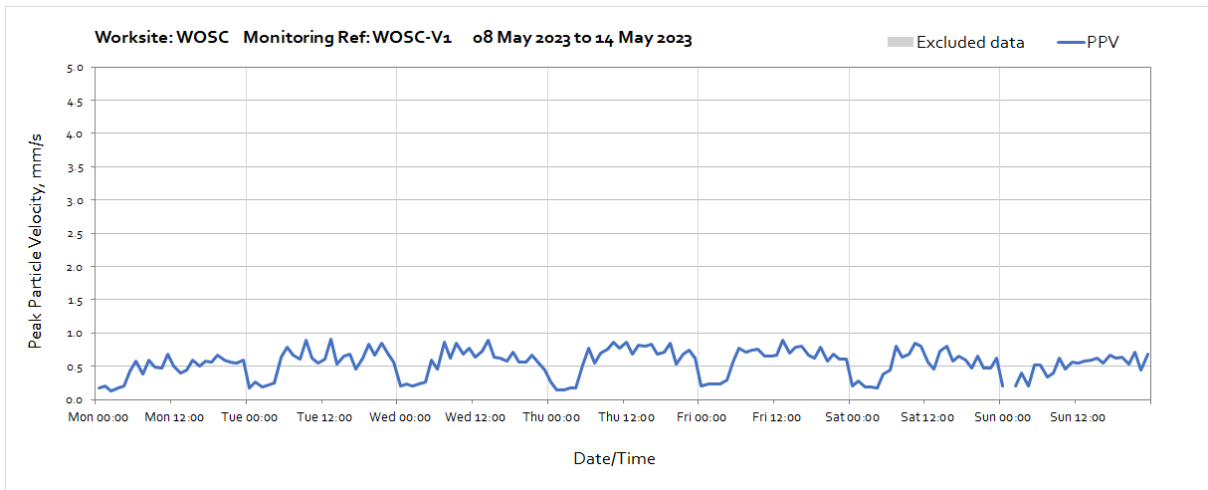
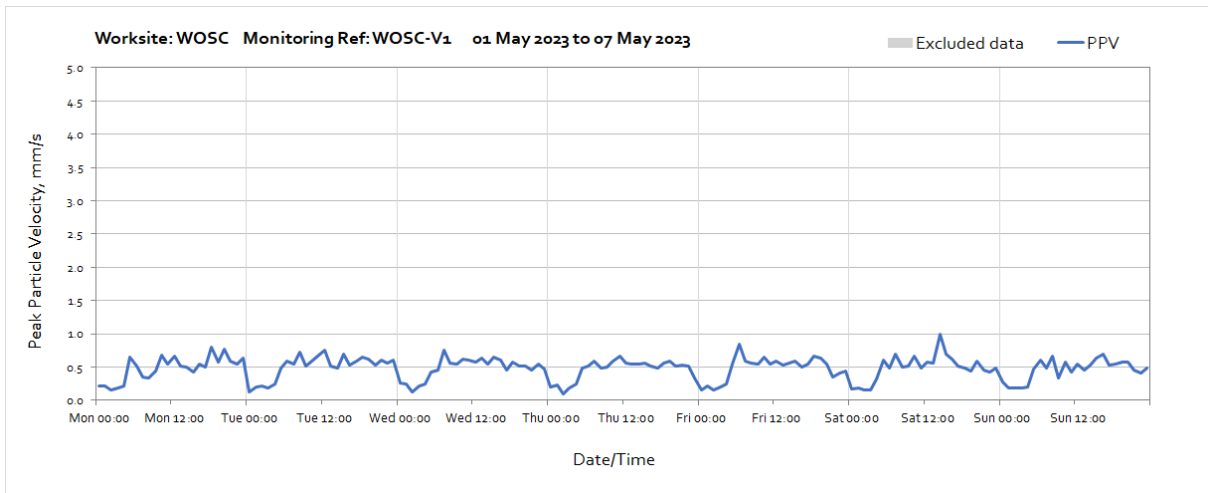
Worksite: FAEU – Monitoring Ref: FAEU-V1





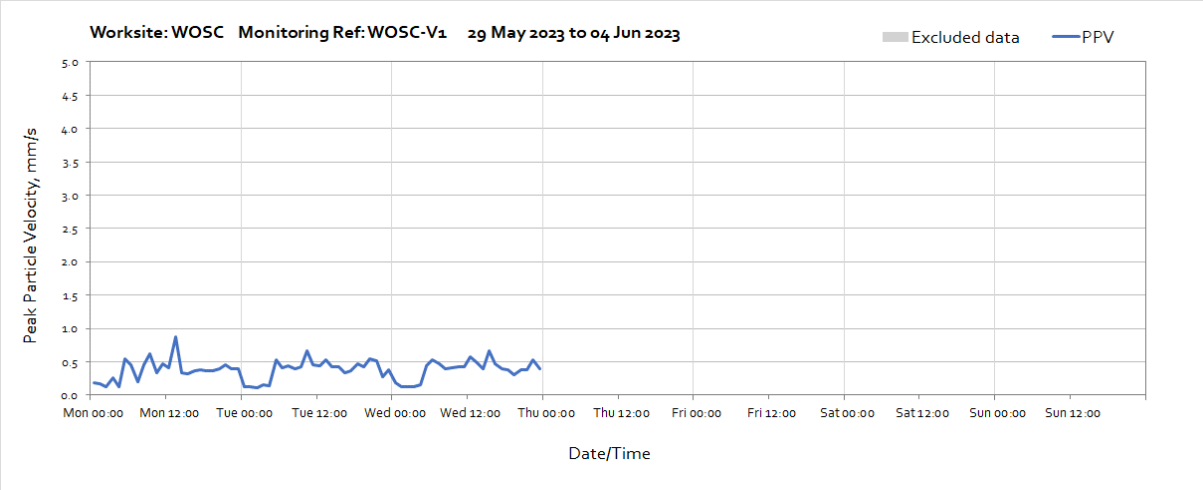
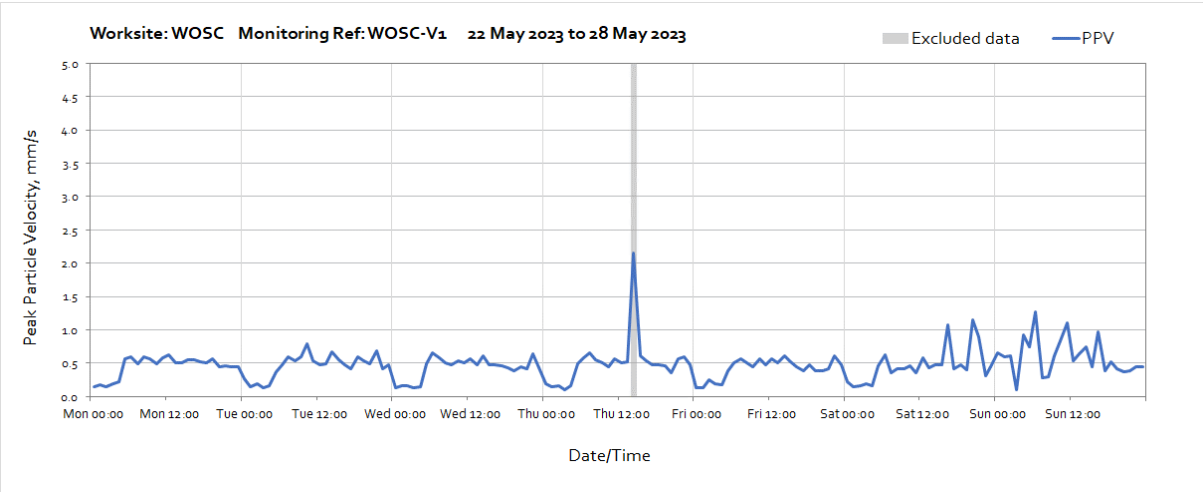
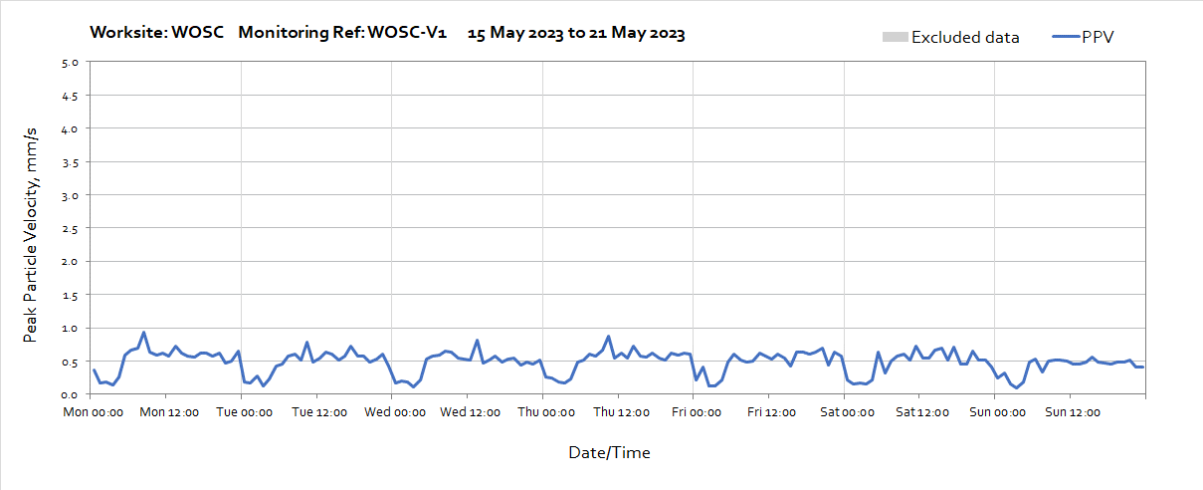


Worksite: WOSC – Monitoring Ref: WOSC-V1

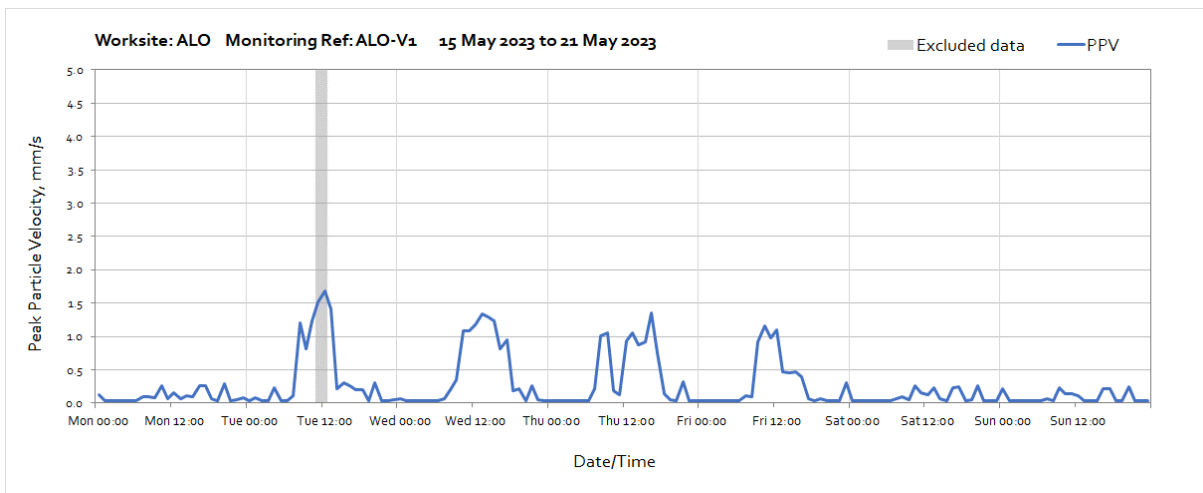
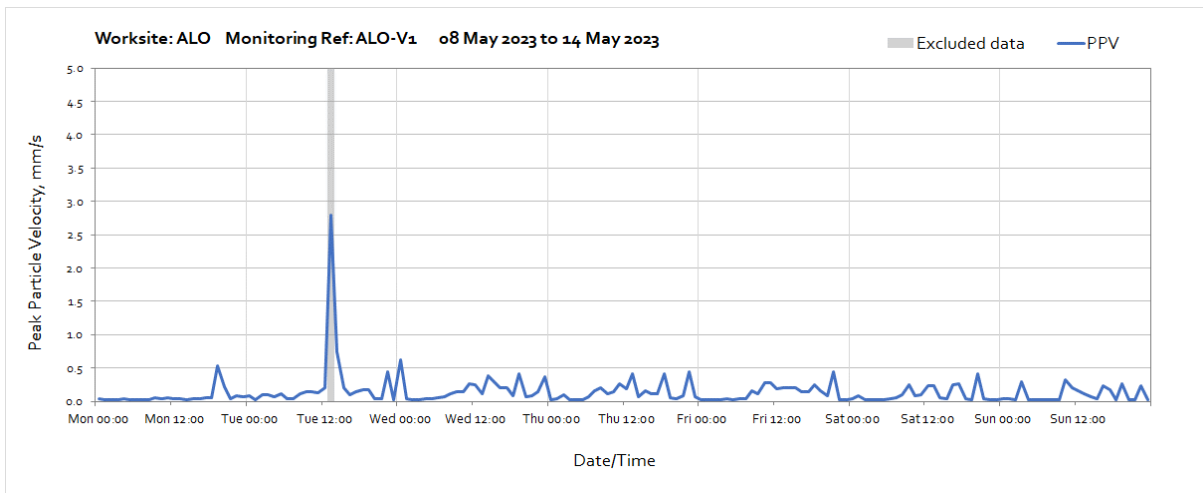
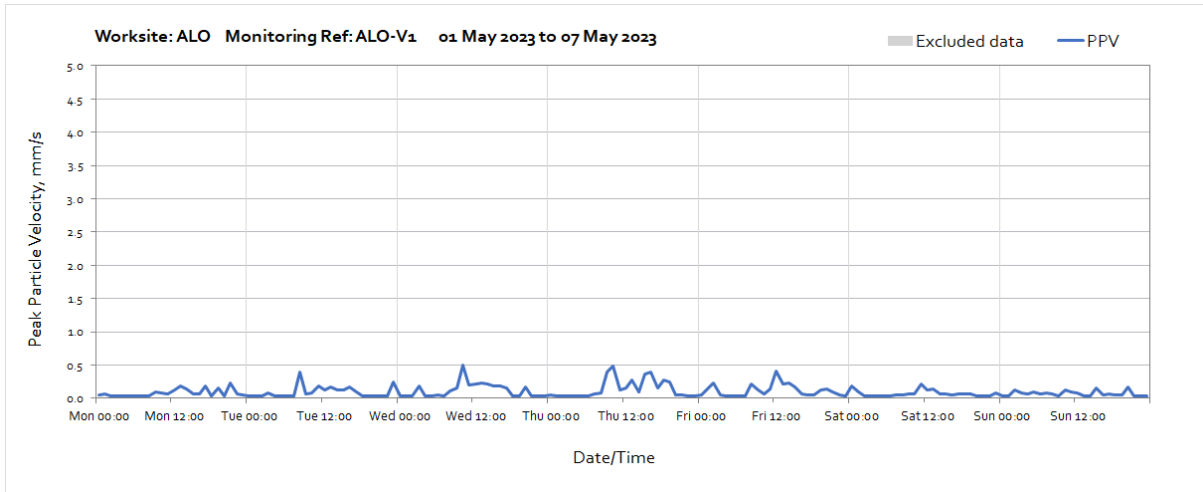


Note: Missing data between 14th 01:00 and 02:00 due to glitch with clock update. The system was corrected on the following hourly update.

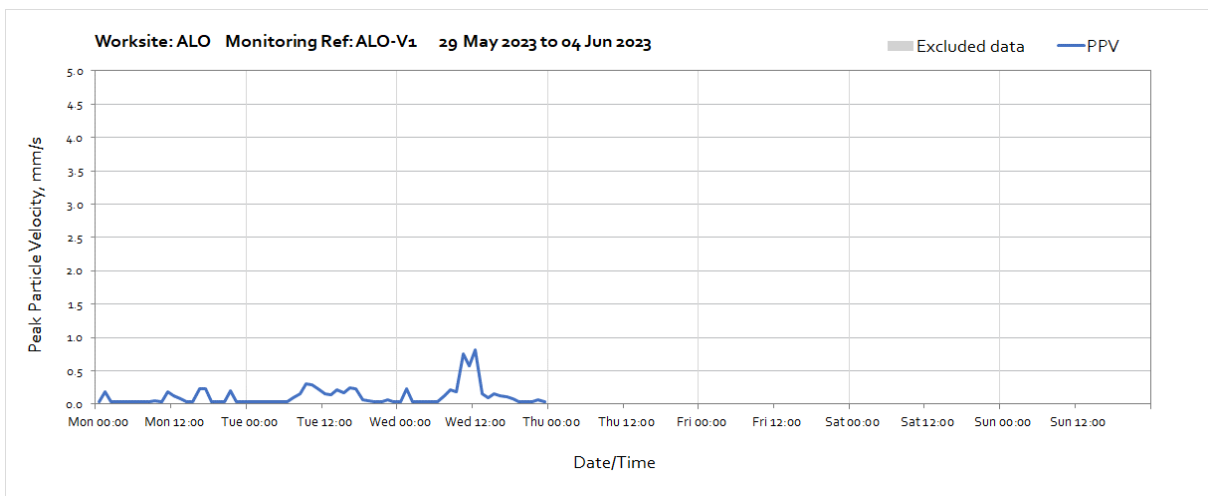
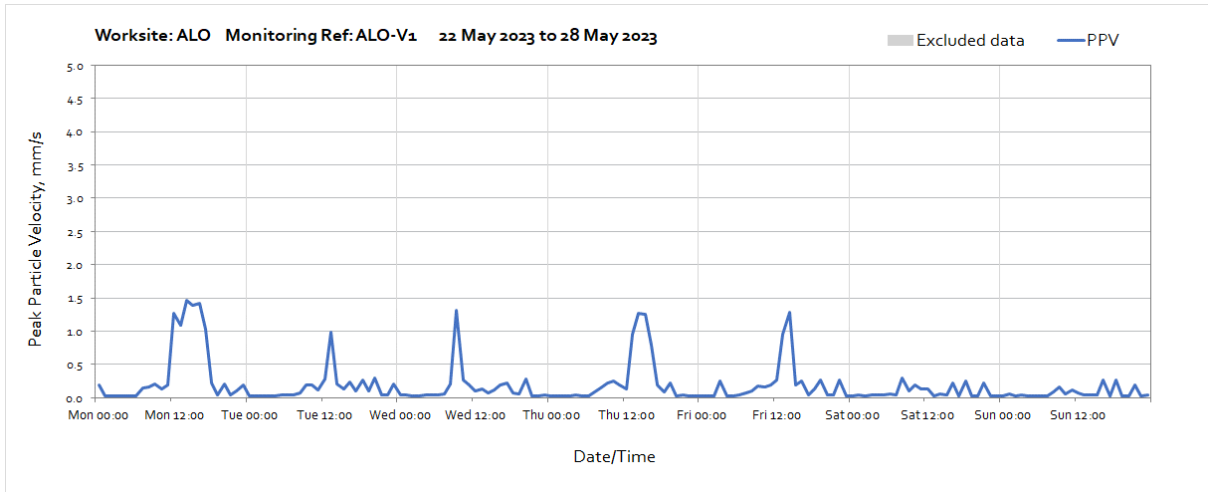
OFFICIAL



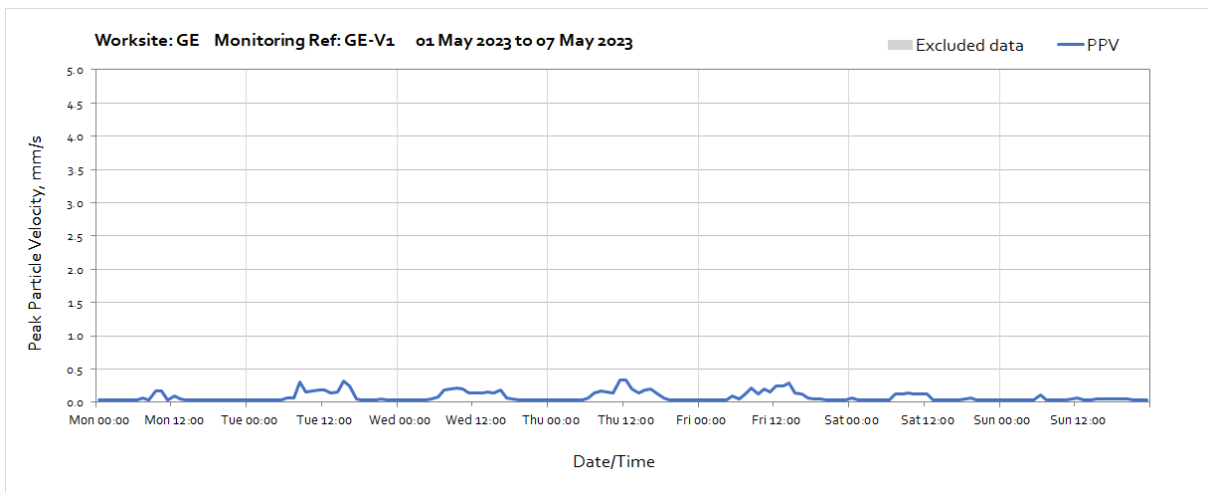
Worksite: ALO – Monitoring Ref: ALO-V1

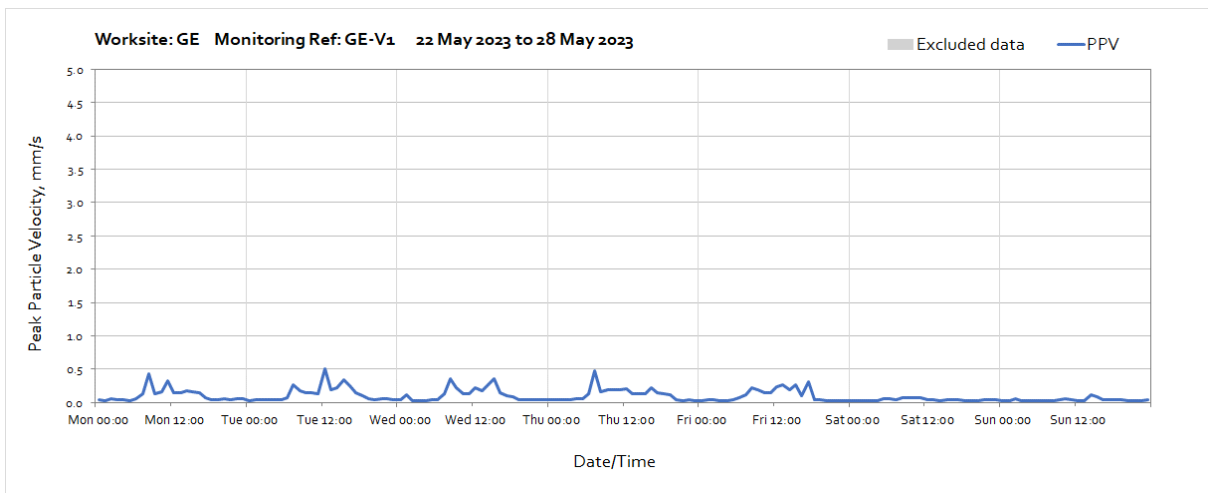
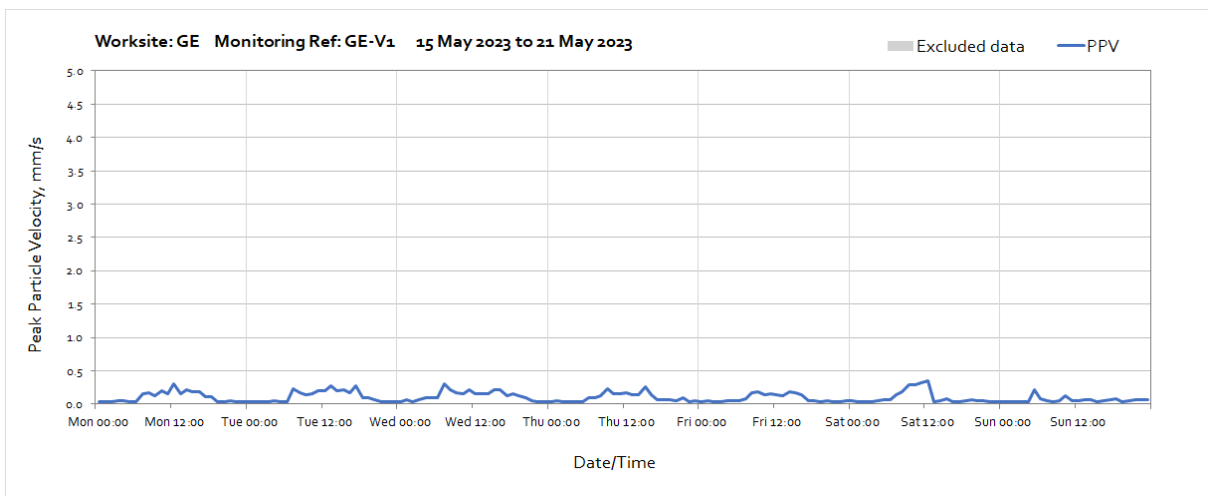
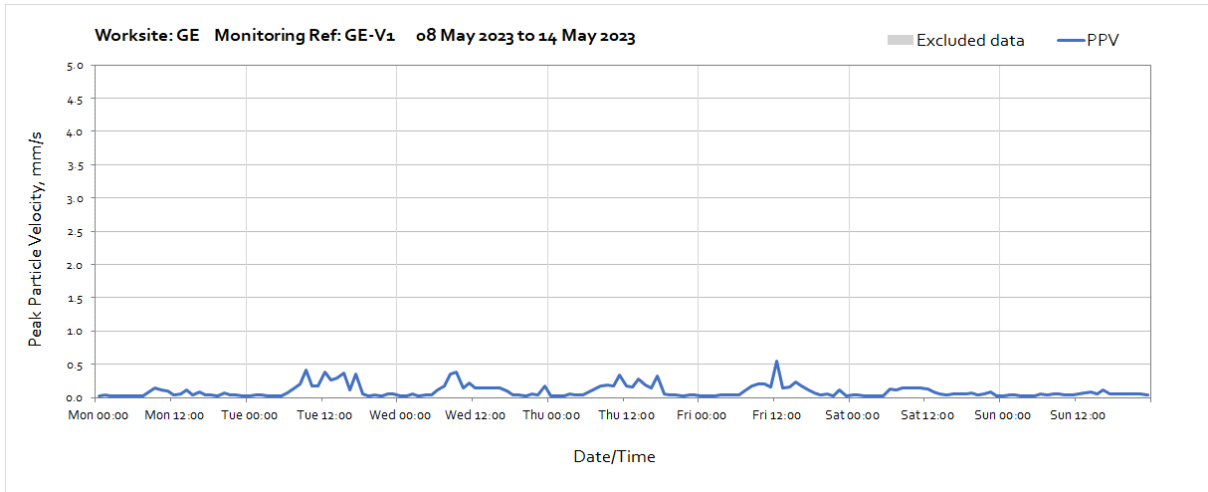


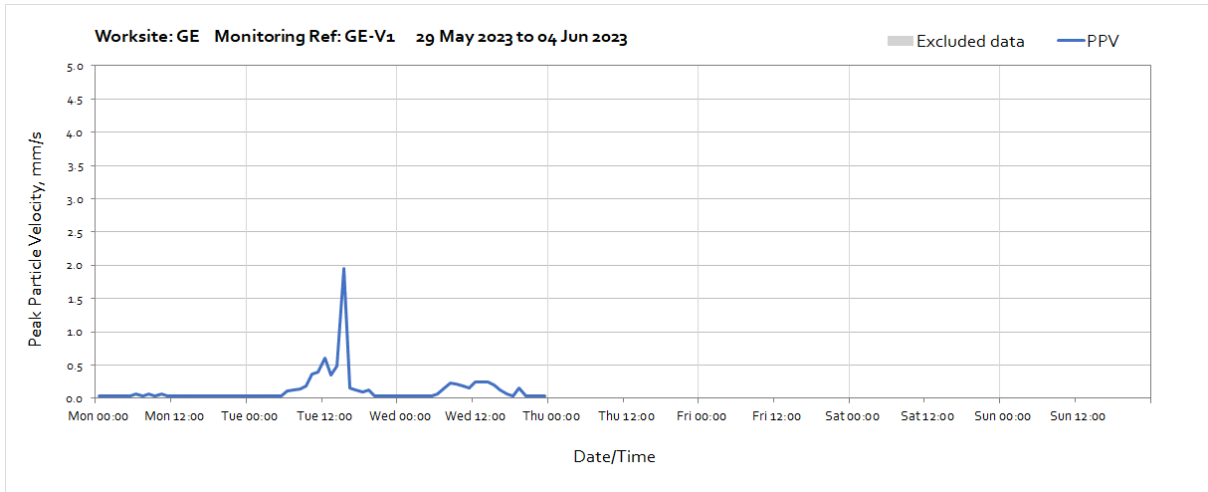
OFFICIAL



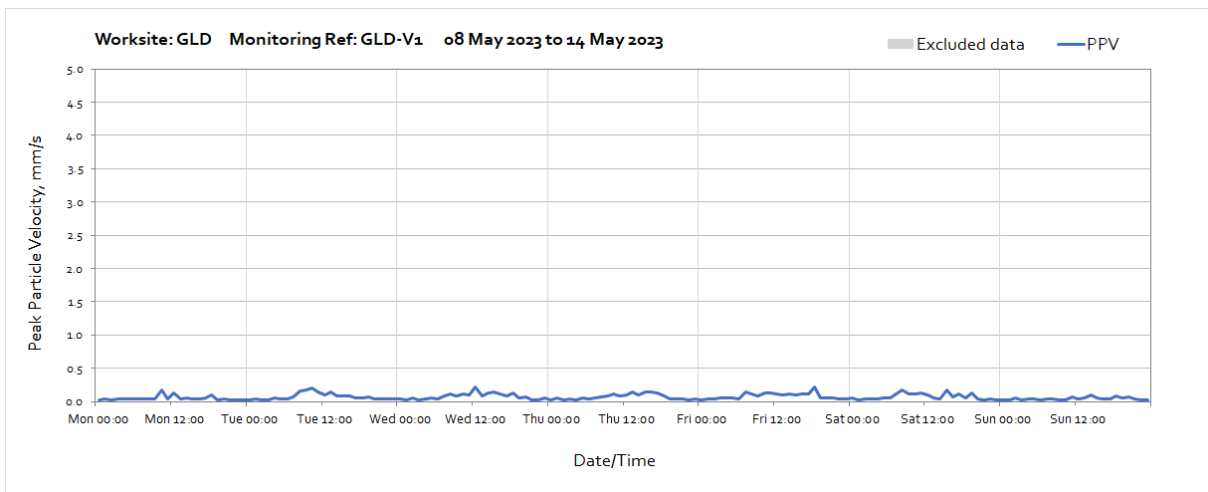
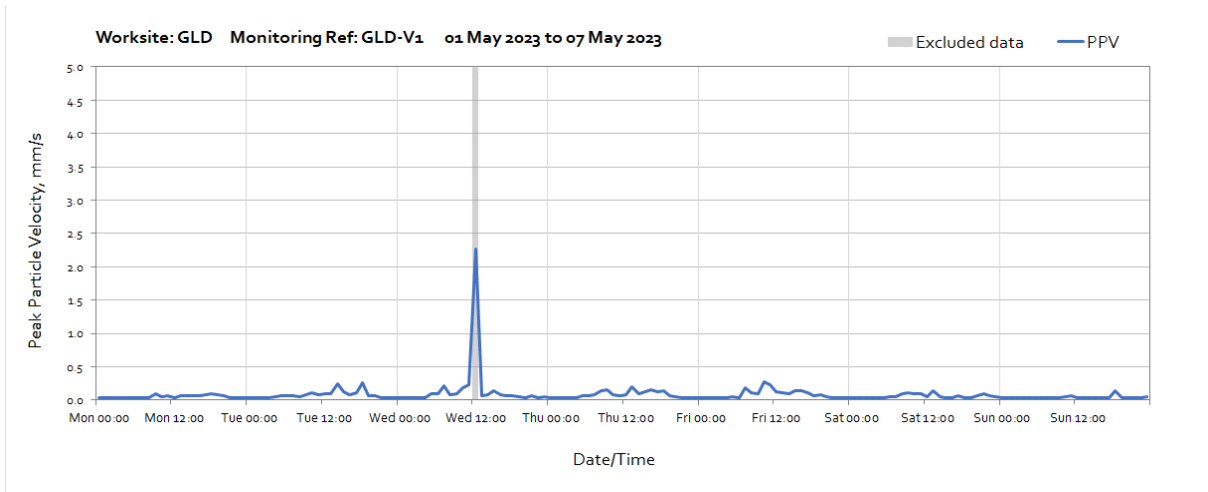
Worksite: GE – Monitoring Ref: GE-V1

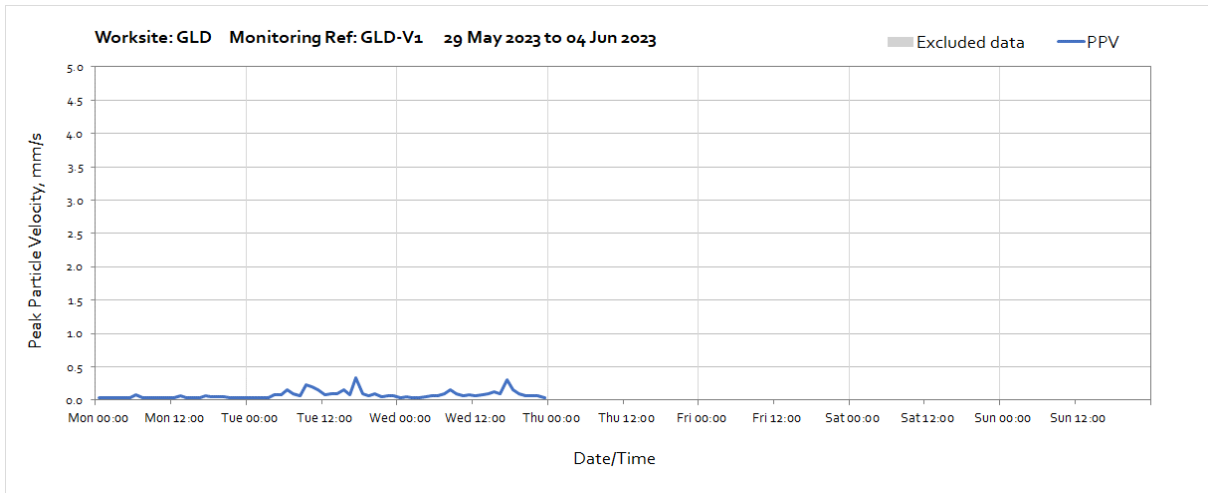
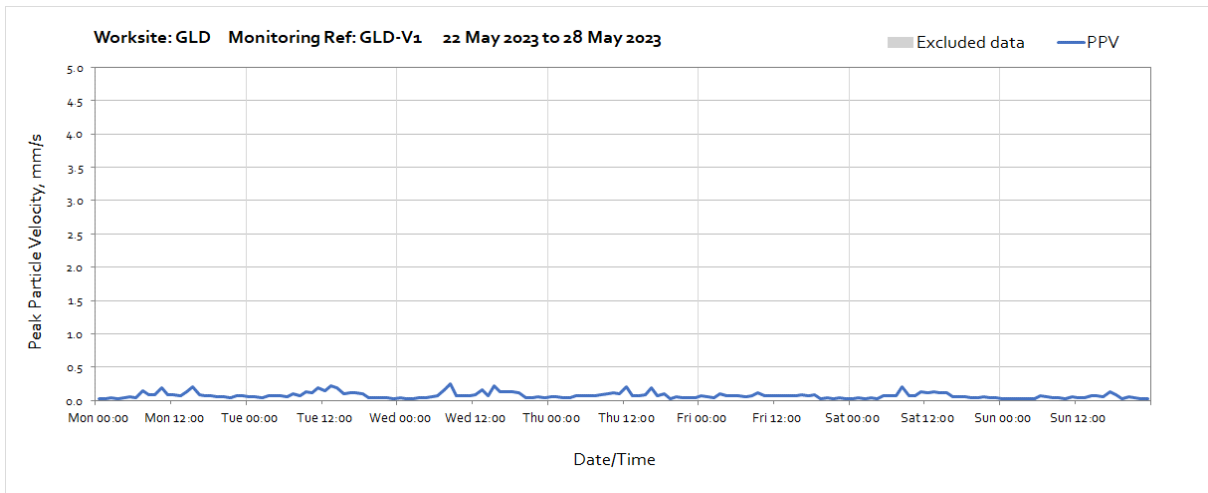
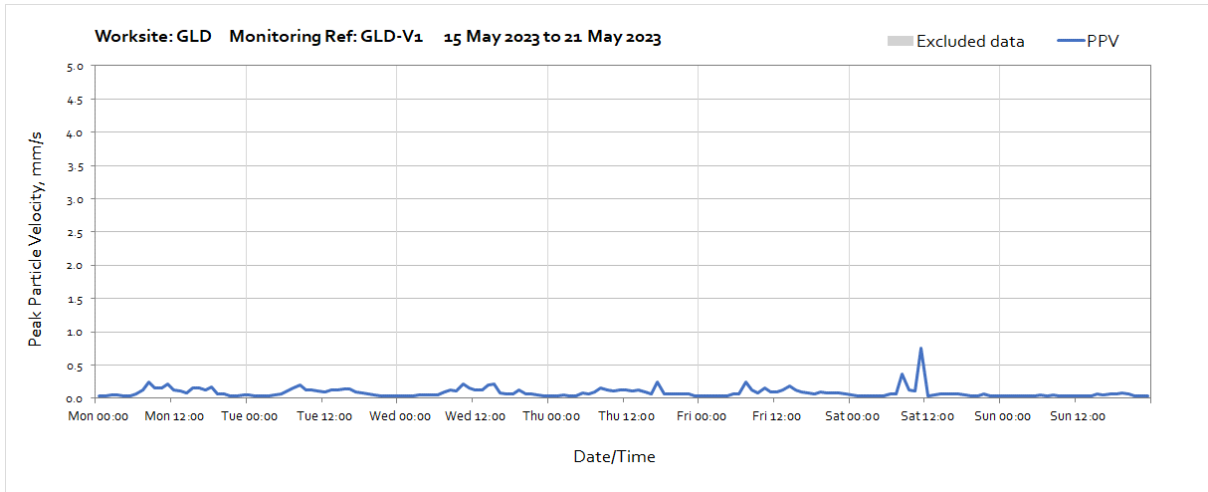




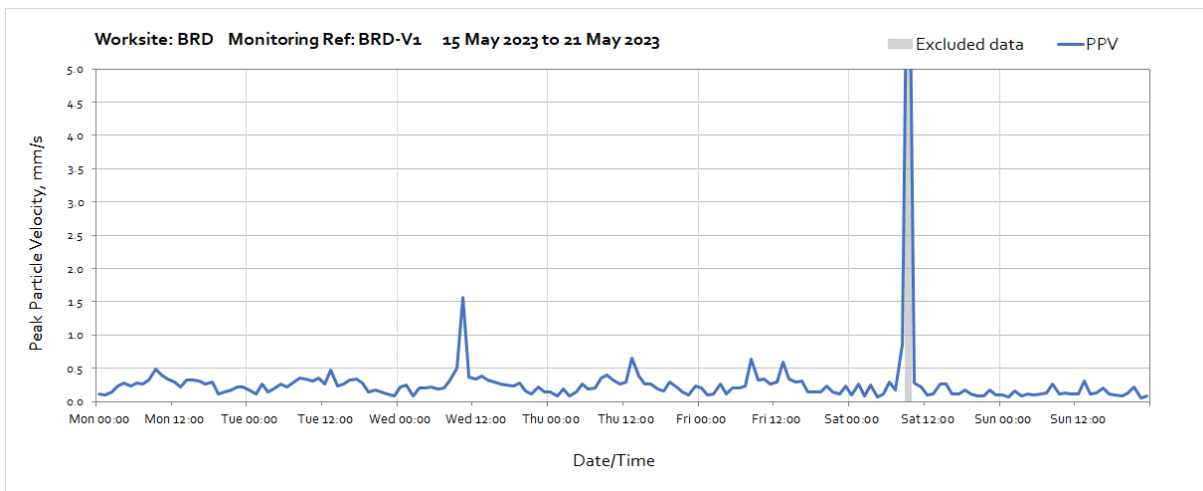
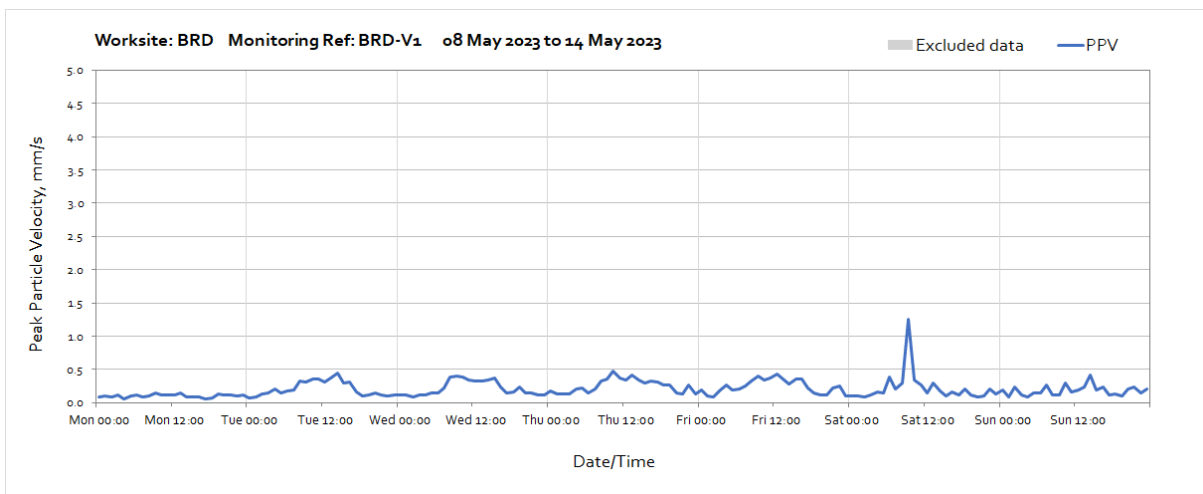
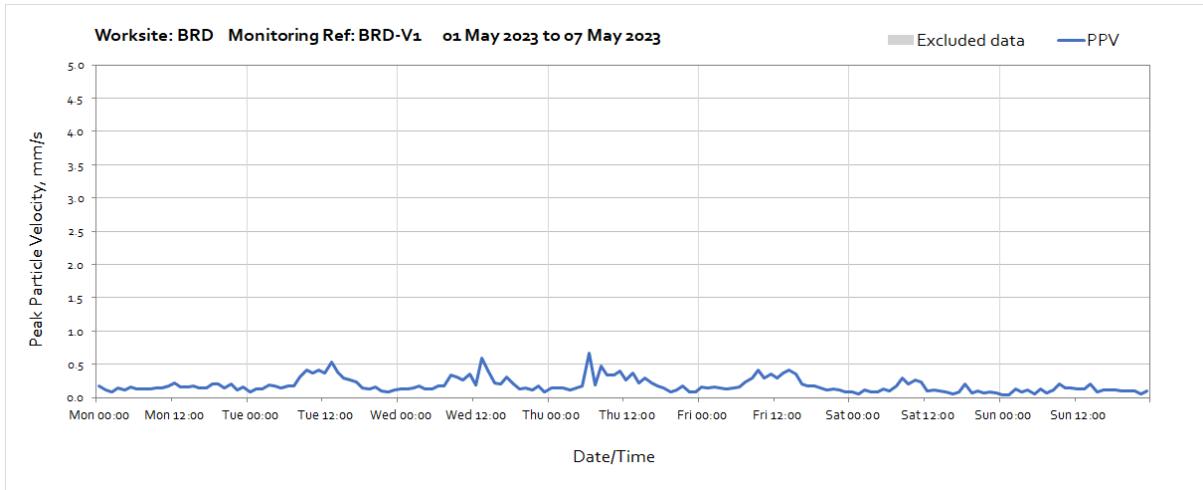


Worksite: GLD - Monitoring Ref: GLD-V1





Worksite: BRD – Monitoring Ref: BRD-V1



OFFICIAL

