HS2

November 2023

Construction Noise and Vibration Monthly Report – September 2023

Solihull Metropolitan Borough Council

gov.uk/hs2

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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 and vibration monitoring carried out within the Solihull Metropolitan Borough Council (SMBC) during the month of September 2023.

Within this period monitoring was undertaken at the following worksites:

- Noise monitoring was undertaken at the Coleshill Heath Road worksite (ref.: CHR), where work activities included striking formwork, concrete works, pile capping, piling, pile cropping, slab construction, piling platform works, excavation, installation of stability towers, topsoil stripping, terram installation and ducting.
- Noise monitoring was undertaken at the Bickenhill Cutting worksite (ref.: BIC), where work activities included excavation, lime stabilisation, technical backfilling, reinforcement and formwork, and scaffolding.
- Noise monitoring was undertaken at the Birmingham Interchange Station worksite (ref.: BIS), where work activities included piling, technical backfill, foundation construction, and stabilisation works.
- Noise monitoring was undertaken at Diddington Lane Embankment (ref.: DLE), where work activities included piling, including excavation, ducting, backfilling, asbestos removal, cable pull testing and jointing, earthworks, piling platform construction and moving and laying stone.
- Noise monitoring was undertaken in the vicinity of the Blythe Bypass Embankment Worksite (ref.: BBE), where activities included topsoil stripping and platform construction.
- Noise monitoring was undertaken in the vicinity of the A452 compound (ref.: A452), where activities included piling and embankment work.
- Noise monitoring was undertaken in the vicinity of the Park Lane Worksite (ref.: PL) where work activities included stockpiling, plant movement, earthworks, traffic diversion, and footbridge construction works.
- Noise and Vibration monitoring was undertaken in the vicinity of the Balsall Common Viaduct Worksite (ref.: BCV) where work activities included vehicle movements and platform rolling works.
- Noise monitoring was undertaken in the vicinity of the Carol Green Rail Underbridge Worksite (ref.: CGRU), where work activities included material haulage including

freight movement by train, plant movement, piling backfilling, deliveries and road sweeping.

- Noise and vibration monitoring were undertaken in the vicinity of the Waste Lane Overbridge and Satellite Worksite (ref.: WLOS), where work activities included demolition works, utility works, sheet piling, maintenance works plant movements and road sweeping.
- Further works, where monitoring did not take place, were undertaken at the Packington Embankment worksite (ref.: PE), where work activities included excavation, lay and compaction, duct installation, backfilling, substation building, and installation of traffic signs and controllers.

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 twenty-six (26) times 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.

One complaint was received 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 Solihull Metropolitan District (SMBC) for the period 1st to 31st September 2023.

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

- Coleshill Heath Road worksite, ref.: CHR (see Plan 1 in Appendix A), where works activities included:
    - Striking formwork.
    - Concrete works including blackjacking and backfilling.
    - Pile capping.
    - Piling, including anchor piles.
    - Pile cropping.
    - Slab construction.
    - Piling platform works, including removal of gantry foundations.
    - Excavation.
    - Installation of stability towers.
    - Topsoil stripping.

    - Terram installation.
    - Ducting.
- Bickenhill Cutting worksite, ref.: BIC (see Plan 3 in Appendix A), where works activities included:
    - Excavation.
    - Lime stabilisation.
    - Technical backfilling.
    - Reinforcement and formwork.
    - Scaffolding.
- Birmingham Interchange Station worksite, ref.: BIS (see Plan 3 in Appendix A), where works activities included:
    - Piling.
    - Technical backfilling.
    - Foundation construction.
    - Stabililsation works including ex-situ and filling.
- Diddington Lane Embankment worksite: ref.: DLE (see Plan 3 in Appendix A), where works activities included:
    - Excavation.
    - Ducting.
    - Backfilling.
    - Asbestos removal.
    - Cable pull testing and jointing.
    - Earthworks.
    - Piling platform construction.
    - Moving and laying stone
- Blythe Bypass Embankment worksite, reference - BBE (see plan 4 in Appendix A), where works activities included:
    - Topsoil stripping.
    - Platform construction.
- A452 worksite, reference - A452 (see plan 5 in Appendix A), where work activities included:
    - Piling.

    - Embankment works.
- Park Lane worksite, reference - PL (see plan 6 in Appendix A), where work activities included:
    - Stockpiling.
    - Plant movement and material haulage.
    - Earthworks.
    - Traffic diversion works.
    - Footbridge construction involving rollers and diggers.
- Balsall Common Viaduct worksite, reference - BCV (see plan 7 in Appendix A), where work activities included:
    - Use of haul road.
    - Use of vibratory rollers.
- Carol Green Rail Underbridge worksite, reference - CGRU (see plan 7 in Appendix A), where work activities included:
    - Material haulage, including freight train.
    - Plant movement.
    - Piling.
    - Backfilling.
    - Deliveries.
    - Road sweeping.
- Waste Lane Overbridge and Satellite worksite, reference WLOS (see plan 8 in Appendix A), where work activities included:
    - Demolition works including hydro-demolition and Hodgetts demolition..
    - Utility works.
    - Sheet piling.
    - Maintenance works.
    - Plant movements.
    - Road sweeping.
- Further works, where monitoring did not take place, were undertaken at the Packington Embankment worksite (ref.: PE), where work activities included

excavation, lay and compaction, duct installation, backfilling, substation building, and installation of traffic signs and controllers.

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

1.2 Measurement Locations

1.2.1 Eighteen (18) noise and seven (7) vibration monitoring installations were active in September in the SMBC area. Table 2 summarises the position of noise and vibration monitoring installations within the SMBC area in September 2023.

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

Table 2: Monitoring Locations

Worksite Reference	Measurement Reference	Address
CHR	CHR-1	Coleshill Heath Road, Coleshill Heath, Solihull
	CHRU-1	276 Yorkminster Drive, Birmingham
	CHRU-V1	276 Yorkminster Drive, Birmingham
BIC	BIC-1	Park Farm Barns, Chester Rd, Marston Green, Coventry
BIS	BIS-1	Hollywell Brook, Middle Bickenhill Lane, Solihull
DLE	DLE-1	Hampton Hill Hounds, Nursery Cottage, Coventry Road, Bickenhill
	DLE-2	Diddington Ln, Hampton in Arden
BBE	BBE-1	Patrick Farm House, Meriden Road, Hampton in Arden
A452	A452-1	Marsh House Farm, Brandocks Marsh, Solihull
	A452-V1	Mercote Cottage, Marsh House, Farm Lane, Brandocks Marsh, Solihull
PL	PL-1	(east of) Final Home, Park Lane, Balsall Common
	PL-2	(north of)The Laurel, Lavender Hall Lane, Balsall Common, Solihull
	PL-3	(north-east of) Holly Acre Lodge, Kenilworth Road, Solihull
	PL-5	Lavender Hall Lane, Balsall Common, Solihull
	PL-V1	(east of) Final Home, Park Lane, Balsall Common, Coventry, West Midlands
	PL-V3	Lavender Hall Lane, Balsall Common, Solihull

Worksite Reference	Measurement Reference	Address
	PL-V4	(north-east of) Holly Acre Lodge, Kenilworth Road, Berkswell, Solihull
BCV	BCV-1	(north-west of) Cherry Tree Cottage, Truggist Lane, Balsall Common, Solihull
CGRU	CGRU-1	(west of) The Stables, Truggist Lane, Balsall Common, Solihull
	CGRU-3	Annora House, 314 Station Rd, Balsall Common
WLOS	WLOS-1	(south of) 19 Hodgetts Lane, Burton Green, Warwickshire
	WLOS-2	Little Beanitt Farm, Waste Lane, Balsall Common, Solihull
	WLOS-3	(north of)Dragonflies, Waste Lane, Balsall Common, Solihull
	WLOS-V1	19 Hodgetts Lane, Burton Green, Warwickshire
	WLOS-V2	Little Beanitt Farm, Waste Lane, Balsall Common, Solihull

2 Summary of Results

2.1 Summary of Measured Noise 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
CHR	CHR-1	Coleshill Heath Road, Coleshill Heath, Solihull	Free field	60.7 (65.2)	60.9 (65.2)	60.3 (65.6)	59.8 (64.9)	57.5 (64.1)	59.8 (62.6)	59.4 (64.7)	60.6 (63.2)	60.6 (64.8)	57.8 (64.0)	60.6 (66.4)	56.9 (64.8)
	CHRU-1	276 Yorkminster Drive, Birmingham	Free field	64.2 (65.6)	63.9 (64.9)	63.0 (64.0)	62.1 (71.4)	59.6 (65.3)	61.4 (62.0)	62.2 (63.7)	62.6 (63.5)	62.0 (65.1)	58.4 (62.0)	61.5 (63.5)	59.1 (65.2)
BIC	BIC-1	Park Farm Barns, Chester Rd, Marston Green	Free field	57.6 (62.7)	56.2 (58.9)	55.0 (59.9)	53.6 (58.4)	51.6 (61.7)	53.9 (57.9)	51.6 (54.6)	51.4 (54.0)	52.5 (57.0)	49.2 (55.9)	52.9 (57.2)	52.8 (60.2)
BIS	BIS-1	Hollywell Brook, Middle Bickenhill Lane, Solihull	Free field	55.7 (59.5)	59.2 (68.9)	53.4 (65.0)	52.7 (63.4)	50.4 (59.5)	51.9 (58.0)	50.3 (55.0)	50.0 (58.0)	50.7 (55.1)	48.4 (55.4)	50.5 (56.5)	51.0 (58.3)
DLE	DLE-1	Hampton Hill Hounds, Nursery Cottage, Coventry Road	Free field	54.4 (58.7)	54.3 (59.6)	52.0 (63.3)	52.1 (58.9)	49.8 (59.6)	53.9 (58.0)	54.1 (56.1)	48.0 (54.3)	51.4 (57.4)	48.5 (55.4)	52.3 (60.1)	48.1 (58.5)
	DLE-2	Diddington Ln, Hampton in Arden, Solihull	Free field	54.1 (61.9)	54.8 (59.7)	50.4 (54.4)	49.2 (52.6)	48.0 (61.4)	49.7 (53.8)	53.1 (54.5)	50.8 (55.9)	48.9 (51.0)	45.0 (52.4)	48.7 (52.9)	48.1 (61.1)
BBE	BBE-1	Patrick Farm House	Free field	56.0 (57.1)	60.9 (64.4)	54.7 (57.8)	51.6 (56.4)	47.8 (55.4)	51.0 (53.1)	54.0 (56.4)	52.4 (53.4)	52.1 (54.5)	46.2 (50.5)	52.4 (55.6)	48.6 (55.2)

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
A452	A452-1	Marsh House Farm	Free field	59.3 (62.5)	58.5 (68.9)	58.0 (63.2)	49.8 (54.5)	46.6 (55.4)	48.8 (50.9)	49.0 (51.5)	49.0 (52.2)	49.1 (53.5)	45.2 (53.2)	49.8 (54.6)	48.1 (54.9)
PL	PL-1	Park Lane	Free field	55.0 (58.2)	59.6 (61.8)	51.6 (56.4)	48.9 (56.7)	44.6 (56.1)	47.1 (50.4)	49.4 (53.5)	48.4 (50.4)	47.9 (52.5)	43.2 (47.8)	50.3 (56.8)	46.2 (54.0)
	PL-2	The Laurel	Free field	49.1 (55.6)	58.7 (65.7)	49.5 (62.6)	45.7 (50.6)	41.7 (68.8)	44.1 (50.7)	47.5 (53.7)	44.7 (47.9)	45.2 (50.4)	38.4 (43.1)	49.0 (62.6)	42.0 (49.7)
	PL-3	Holly Acre Lodge	Free field	58.2 (61.3)	57.6 (62.0)	56.3 (59.5)	52.0 (57.4)	48.5 (57.7)	50.7 (53.7)	52.4 (55.2)	53.3 (56.7)	52.6 (57.3)	47.2 (52.8)	53.4 (58.3)	50.7 (58.0)
	PL-5	Lavender Hall Lane	Free field	53.3 (59.7)	63.6 (70.3)	51.6 (62.6)	49.4 (59.9)	45.1 (56.3)	51.3 (59.6)	55.6 (65.2)	48.4 (58.0)	49.5 (59.6)	44.8 (52.3)	50.4 (59.1)	46.0 (53.3)
BCV	BCV-1	Cherry Tree Cottage	Free field	53.3 (56.0)	60.4 (63.9)	51.9 (56.7)	50.2 (54.9)	46.6 (54.6)	47.2 (49.8)	50.3 (53.6)	49.2 (50.6)	48.9 (52.7)	42.9 (49.1)	49.9 (55.8)	47.1 (53.4)
CGRU	CGRU-1	The Stables	Free field	51.8 (55.0)	57.8 (63.2)	49.8 (53.7)	49.5 (54.0)	47.4 (57.1)	45.9 (50.2)	47.2 (49.4)	47.1 (49.8)	48.4 (55.9)	41.9 (50.8)	48.4 (56.8)	46.9 (52.7)
	CGRU-3	Annora House, 314 Station Rd	Free field	56.3 (58.7)	65.4 (68.3)	54.3 (61.8)	49.9 (52.3)	46.9 (54.1)	52.3 (58.0)	58.6 (65.6)	49.1 (52.3)	49.2 (53.4)	43.5 (50.3)	49.1 (52.5)	46.0 (51.6)

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
WLOS	WLOS-1	19 Hodgetts Lane	Façade	48.5	59.4	47.8	43.0	38.9	45.9	53.5	40.9	42.2	37.4	42.9	38.4
				(54.0)	(67.9)	(59.3)	(53.7)	(50.0)	(51.1)	(58.5)	(41.9)	(47.6)	(44.4)	(50.7)	(45.7)
	WLOS-2	Waste Lane (East)	Free field	52.2	54.7	50.8	47.8	43.0	48.6	51.9	49.5	48.1	42.1	48.9	42.7
				(54.1)	(60.8)	(53.6)	(51.5)	(51.4)	(50.0)	(52.6)	(51.0)	(51.4)	(47.5)	(54.3)	(51.1)
	WLOS-3	Waste Lane (West)	Free field	61.8	61.3	60.4	56.8	51.0	56.5	59.6	59.4	58.0	50.3	57.9	51.6
				(63.2)	(63.3)	(62.0)	(61.9)	(58.8)	(57.0)	(60.2)	(60.0)	(63.2)	(56.0)	(60.7)	(58.6)

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
CHR	CHRU-V1	276 Yorkminster Drive, Birmingham	3.46 (X-axis)*
A452	A452-V1	Mercote Cottage, Marsh House, Farm Lane, Brandocks Marsh, Solihull	2.02 (Y-axis)
PL	PL-V1	(east of) Final Home, Park Lane, Balsall Common	0.79 (Y-axis)
	PL-V3	Lavender Hall Lane, Balsall Common, Solihull	3.04 (X-axis)
	PL-V4	(north-east of) Holly Acre Lodge, Kenilworth Road, Berkswell, Solihull	1.29 (Y-axis)
WLOS	WLOS-V1	19 Hodgetts Lane, Burton Green, Warwickshire	1.75 (Y-axis)
	WLOS-V2	Little Beanitt Farm, Waste Lane, Berkswell, Balsall Common, Solihull	1.89 (X-axis)

* High vibration levels were caused by piling works close to the receptor.

2.1.3 Appendix C presents graphs of the noise and vibration monitoring data over the month for each of the measurement locations. Noise data presented consists of the hourly L_{Aeq} values and, where relevant, the $L_{Aeq,T}$ values (where the time period T has been taken to be the averaging period as specified in Table 1 of HS2 Information Paper E23). Vibration data presented consist of hourly PPV values. The full data set for the monitoring equipment can be found at the following location: https://data.gov.uk/dataset/24542ae7-dd44-444f-b259-871c4cc43b5e/environmental-monitoring-data.

2.2 Exceedances of the 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 n 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
CHR	CHRU-1*	(east of) 276 Yorkminster Drive, Birmingham	Nights	2200 - 0700	Not applicable**	7
	CHR-1*	Coleshill Heath Road	Nights	2200 - 0700	Not applicable**	9
BIC	BIC-1	Park Farm Barns	Weekdays Weekdays	0700-0800 2200-0700	1 21	0 4
BIS	BIS-1*	Hollywell Brook, Middle Bickenhill Lane	Weekdays Weekdays Nights	0800-1800 1900-2200 2200 - 0700	1 1 11	No exceedance
DLE	DLE-1	Hampton Hill Hounds	Night	2200-0700	Not applicable**	10
	DLE-2*	Diddington Ln, Hampton in Arden	Night	2200-0700	Not applicable**	6

Worksite Reference	Measurement Reference	Site Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
BBE	BBE-1*	Patrick Farm House	All Days	All Periods	No exceedance	No exceedance
A452 Compound	A452-1	Marsh House Farm	Weekdays	0800-1800	1	No exceedance
PL	PL-1*	Park Lane	All Days	All Periods	No exceedance	No exceedance
	PL-2*	The Laurel	Weekdays	0800-1800	1	No exceedance
	PL-3*	Holly Acre Lodge	All Days	All Periods	No exceedance	No exceedance
	PL-5	Lavender Hall Lane	Weekdays Saturday	0800-1800 0800-1300	14 1	No exceedance
BCV	BCV-1*	Cherry Tree Cottage	All Days	All Periods	No exceedance	No exceedance
CGRU	CGRU-1*	The Stables	All Days	All Periods	No exceedance	No exceedance
	CGRU-3*	Annora House, 314 Station Rd	All Days	All Periods	No exceedance	No exceedance
WLOS	WLOS-1*	19 Hodgetts Lane	All Days	All Periods	No exceedance	No exceedance
	WLOS-2	Waste Lane (East)	All Days	All Periods	No exceedance	No exceedance
	WLOS-3*	Waste Lane (West)	All Days	All Periods	No exceedance	No exceedance

*A distance correction has been applied when calculating exceedances of the LOAEL and SOAEL.

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

2.2.6 Exceedances of the LOAEL were recorded at five (5) noise monitors. The LOAEL exceedances were recorded during weekday daytime, weekend and night-time periods.

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
CHR	CHRU-1	(east of) 276 Yorkminster Drive, Birmingham	7
	CHR-1	Coleshill Heath Road	9
DLE	DLE-1	Hampton Hill Hounds	7
	DLE-2	Diddington Ln, Hampton in Arden	3

2.2.8 Twenty-six (26) 24-hour periods that experienced an exceedance of the SOAEL were recorded due to HS2 construction works during September 2023. Exceedances occurred at noise monitor CHRU-1, CHR-1, DLE-1 and DLE-2 during night-time periods.

2.3 Exceedances of Trigger Level

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

Table 7: Summary of Exceedances of Trigger Levels

Complaint Reference Number (if applicable)	Worksite Reference	Date and Time Period	Identified Source	Results of Investigation (including noise monitoring results)	Actions Taken
-	-	-	-	-	-

2.1 Complaints

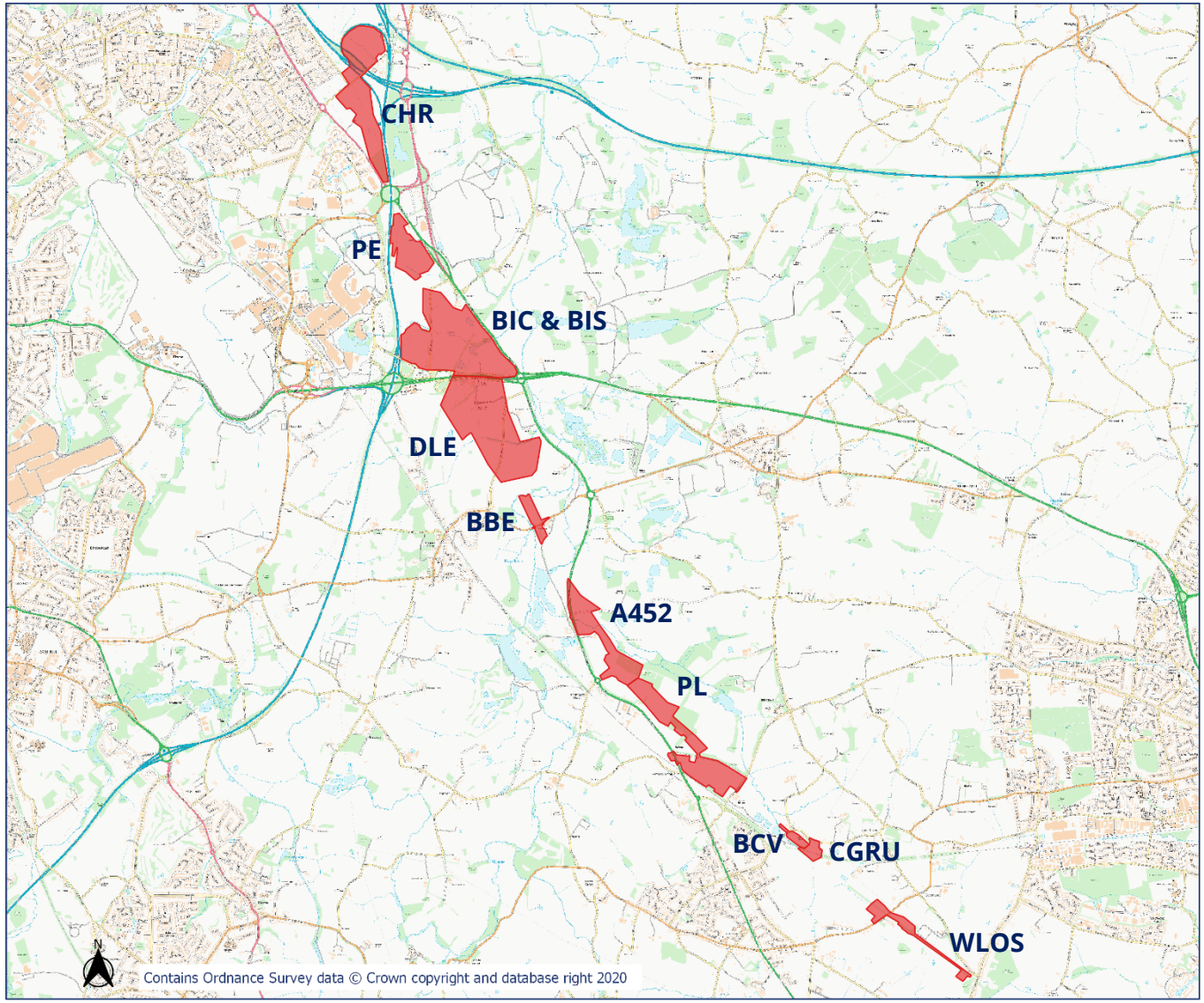
2.1.1 Table 8 provides a summary of complaint information related to noise and vibration received during the reporting period, along with the findings of any investigation.

Table 8: Summary of Complaints

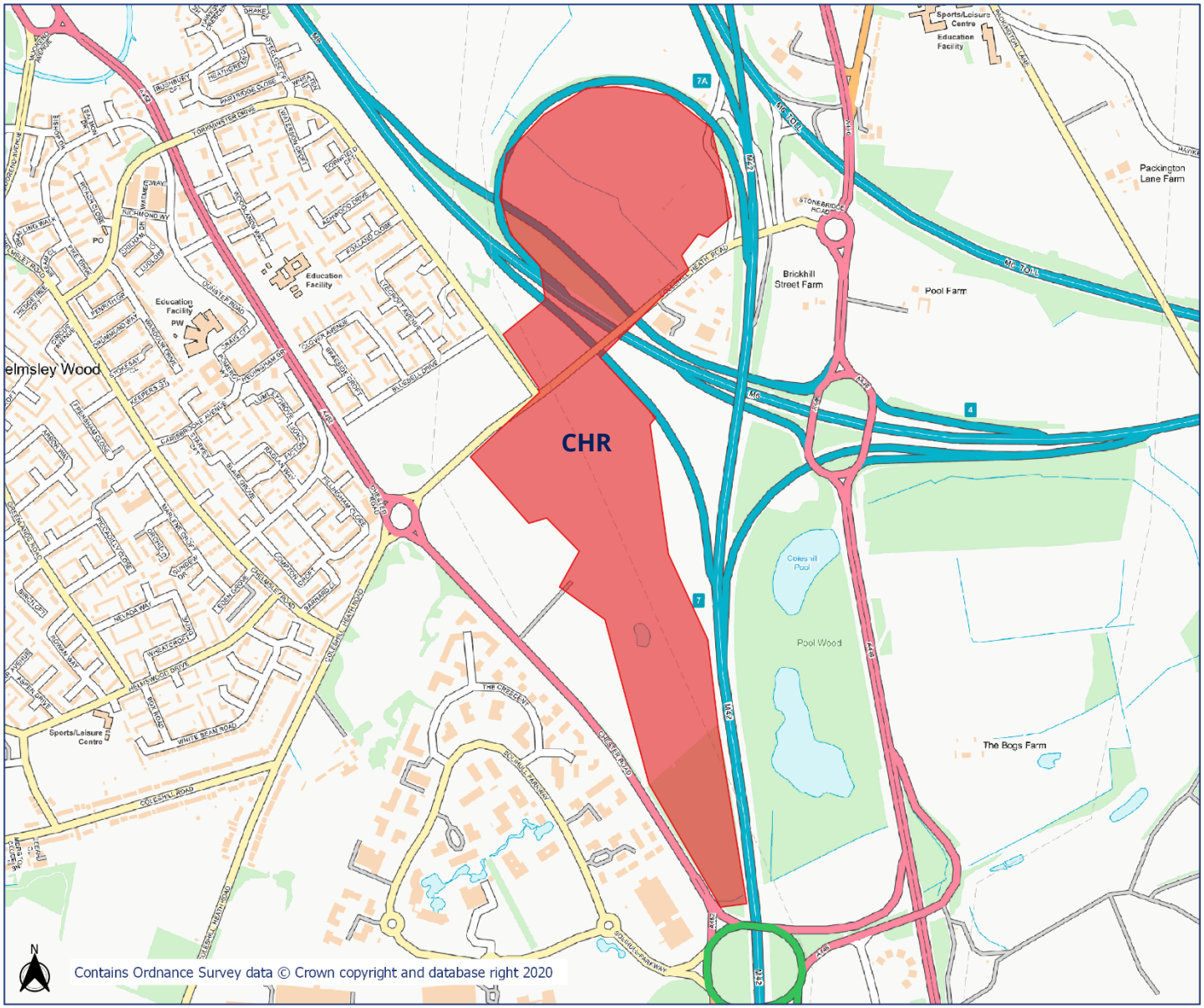
Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
HS2-23-44930-C	PE	Complaint regarding banging and noise from horns during the night.	Major overnight works were taking place during this period. No exceedances of threshold levels were recorded, and mitigation measure are in place.	Results of the investigation were provided to the complainant.

Appendix A Site Locations

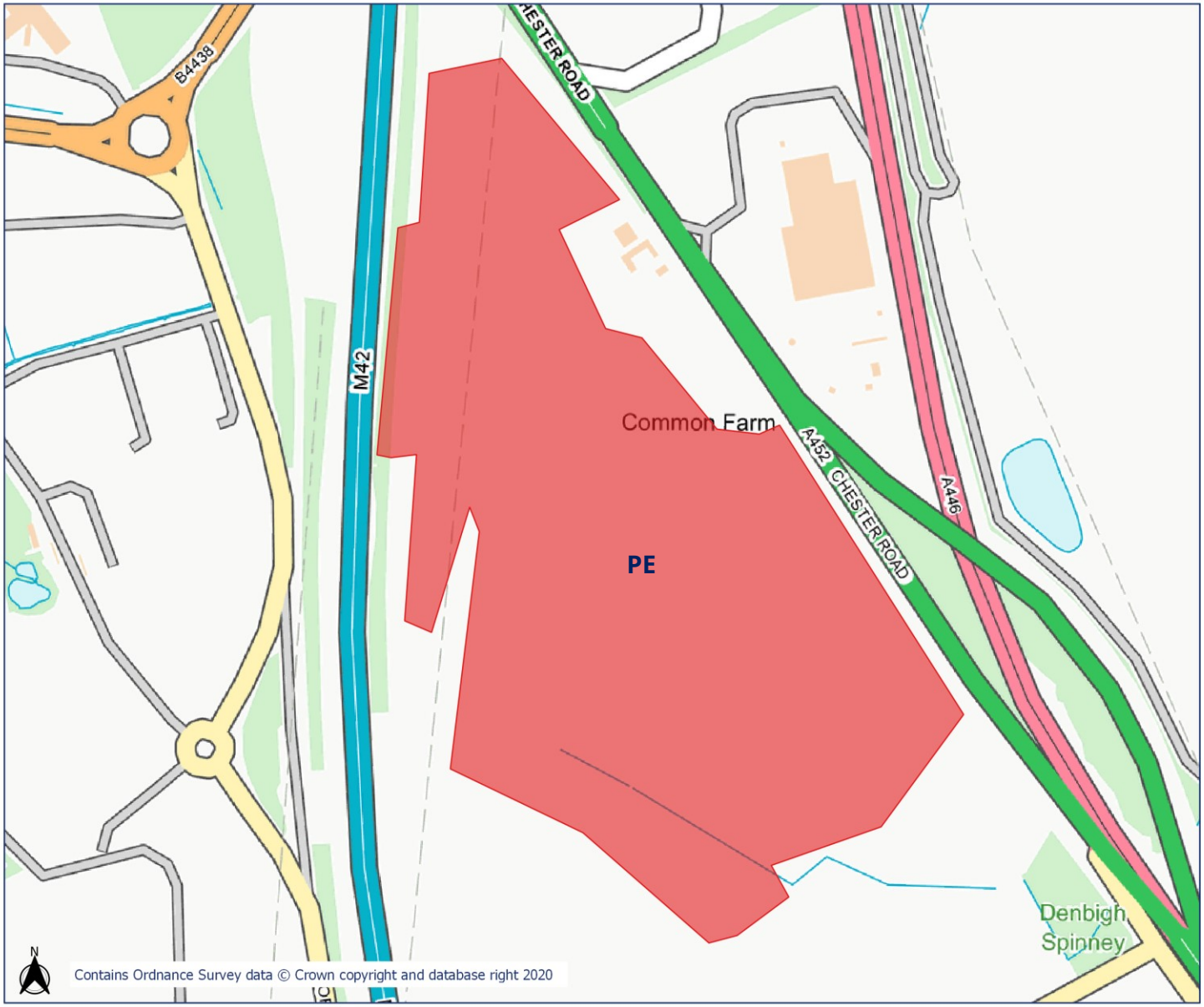
Worksite Identification Plan - Overview



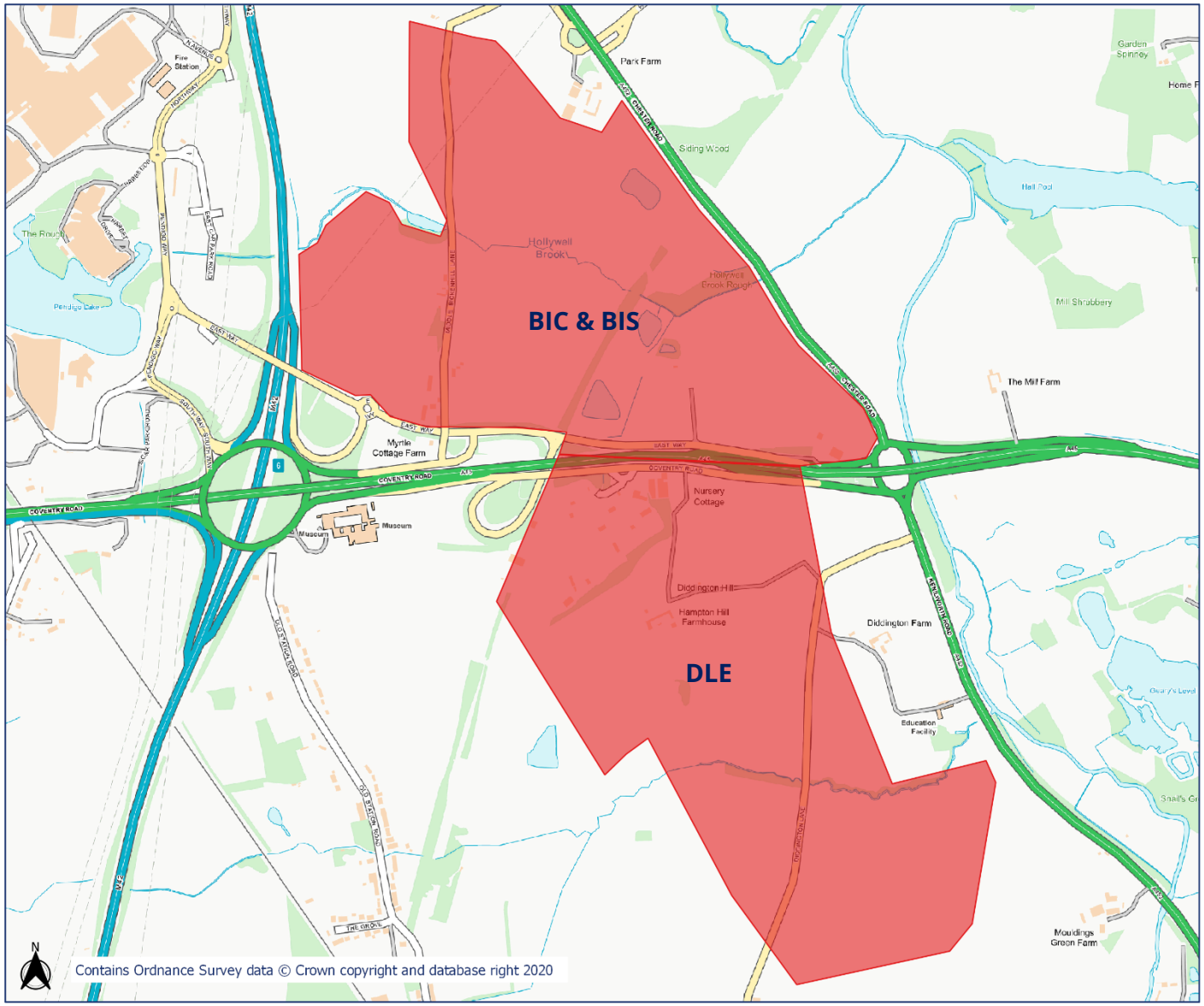
Worksite Identification Plan - 1



Worksite Identification Plan - 2

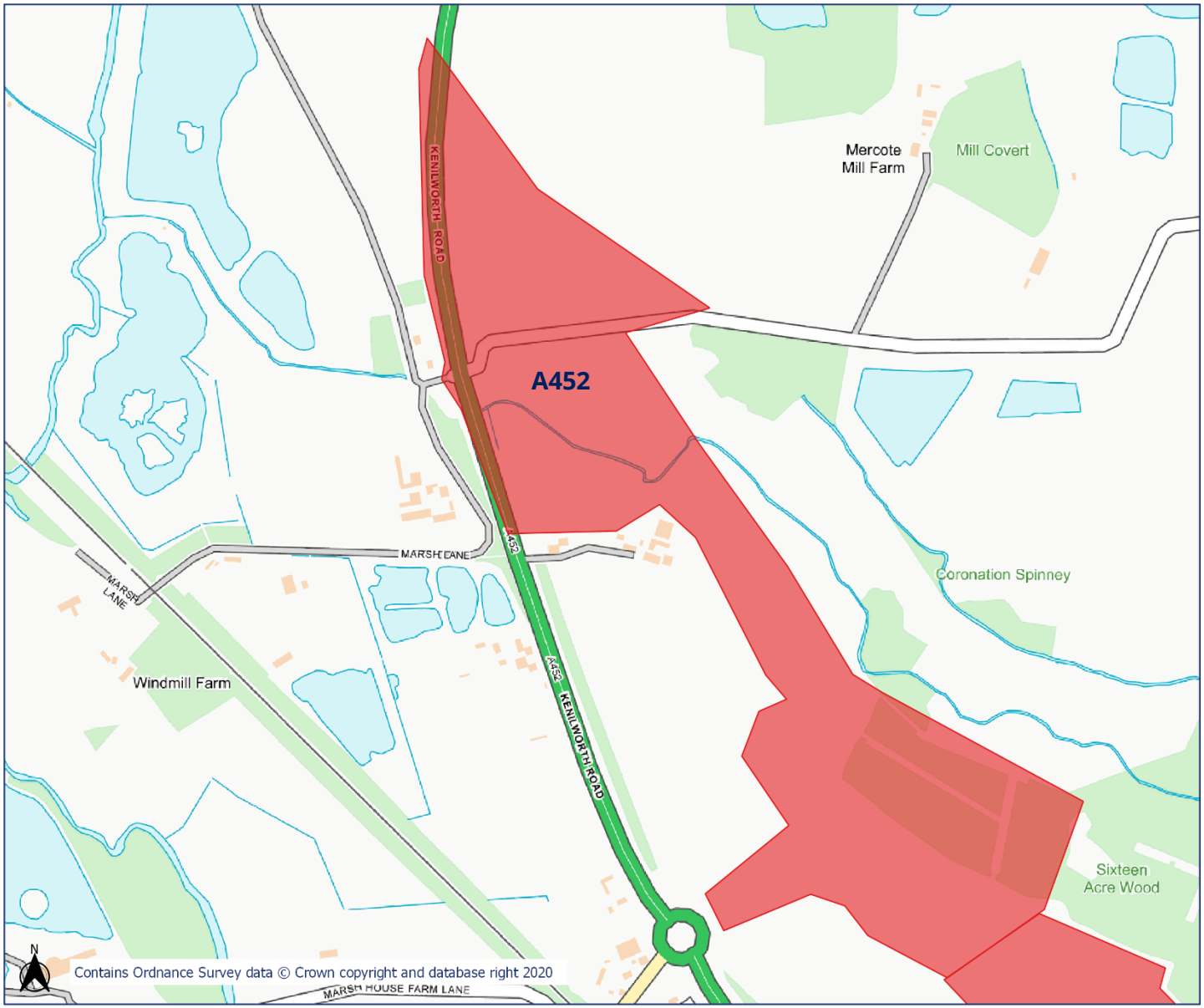


Worksite Identification Plan - 3

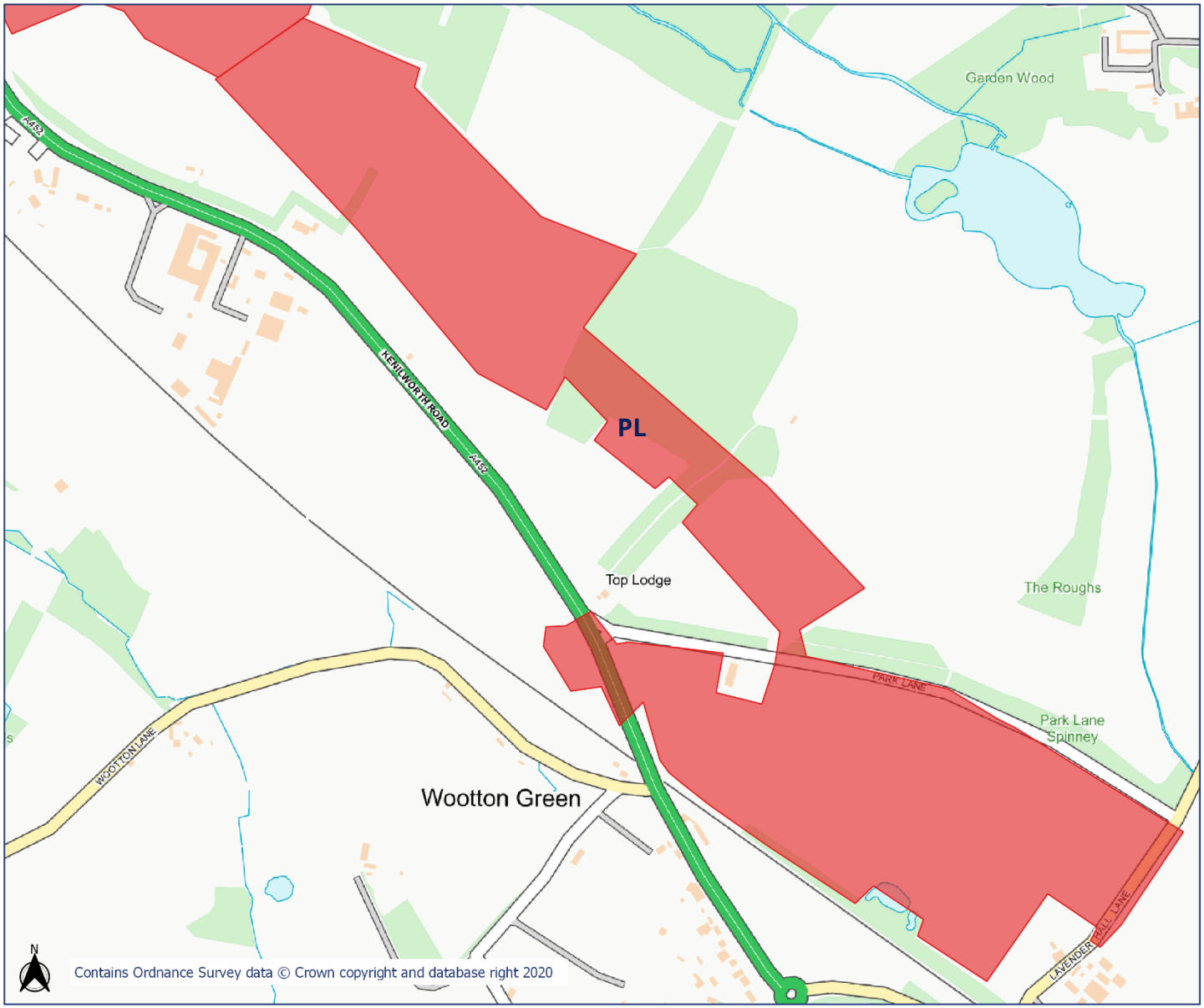


Worksite Identification Plan - 4

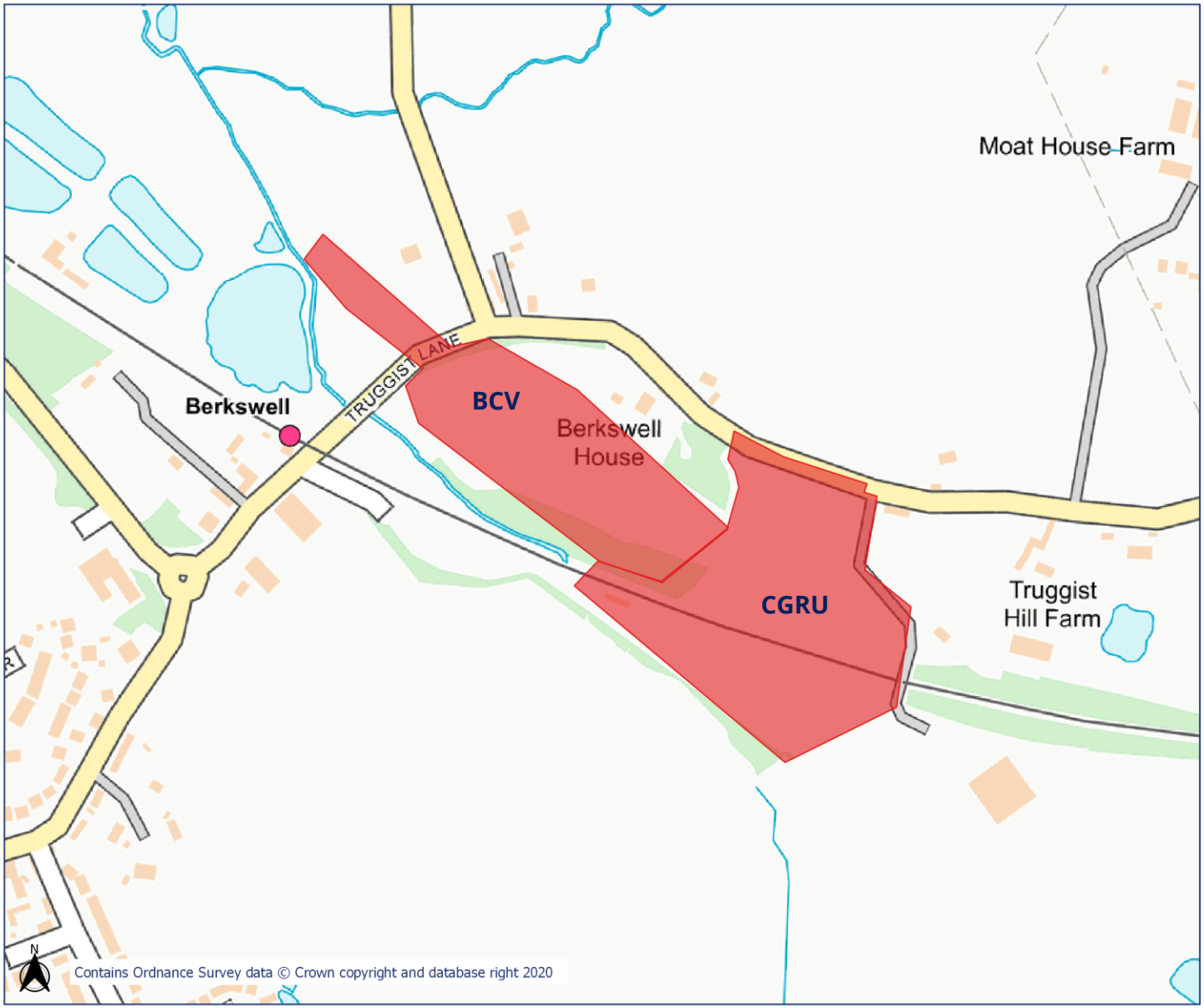
Worksite Identification Plan - 5



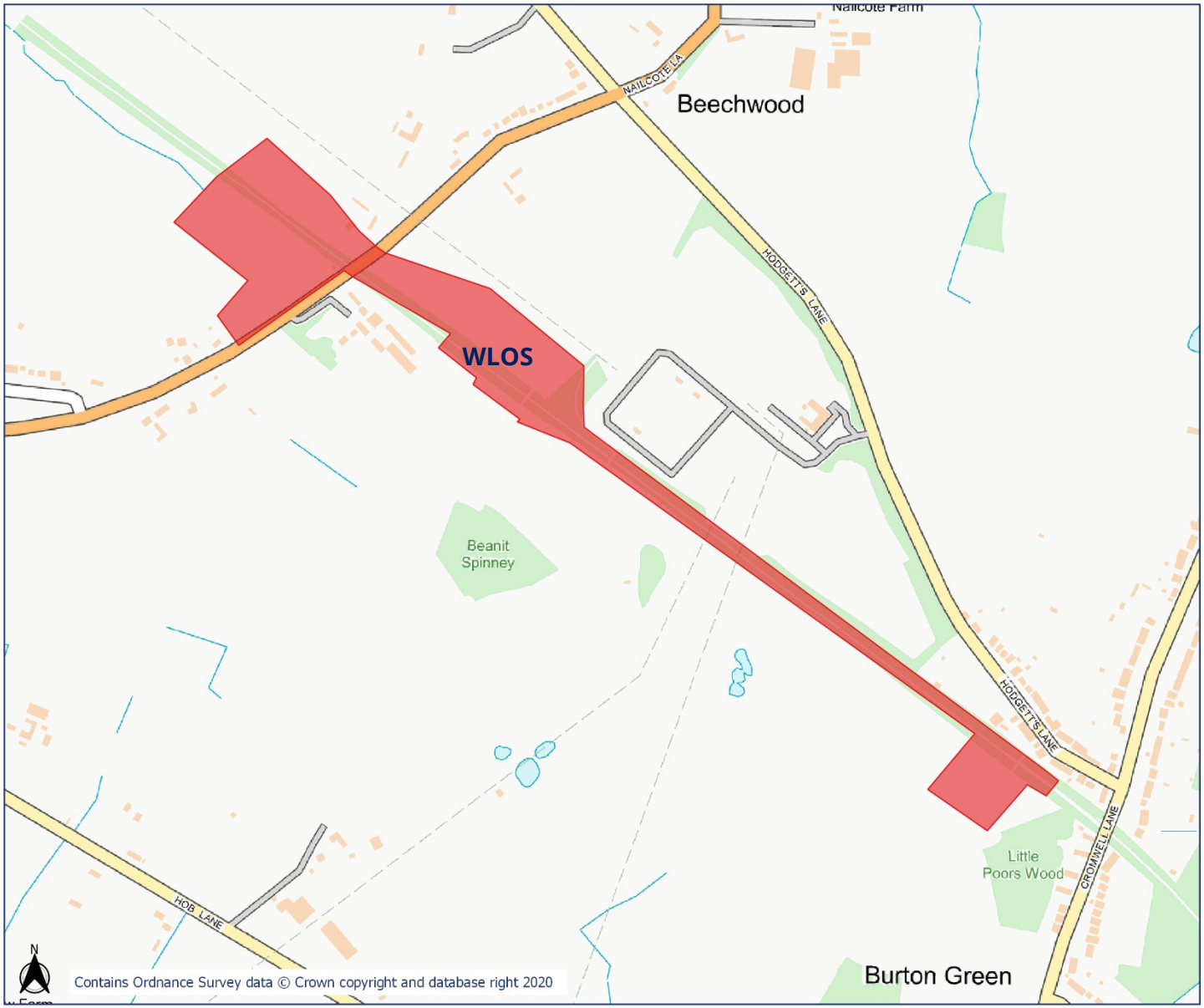
Worksite Identification Plan - 6



Worksite Identification Plan - 7

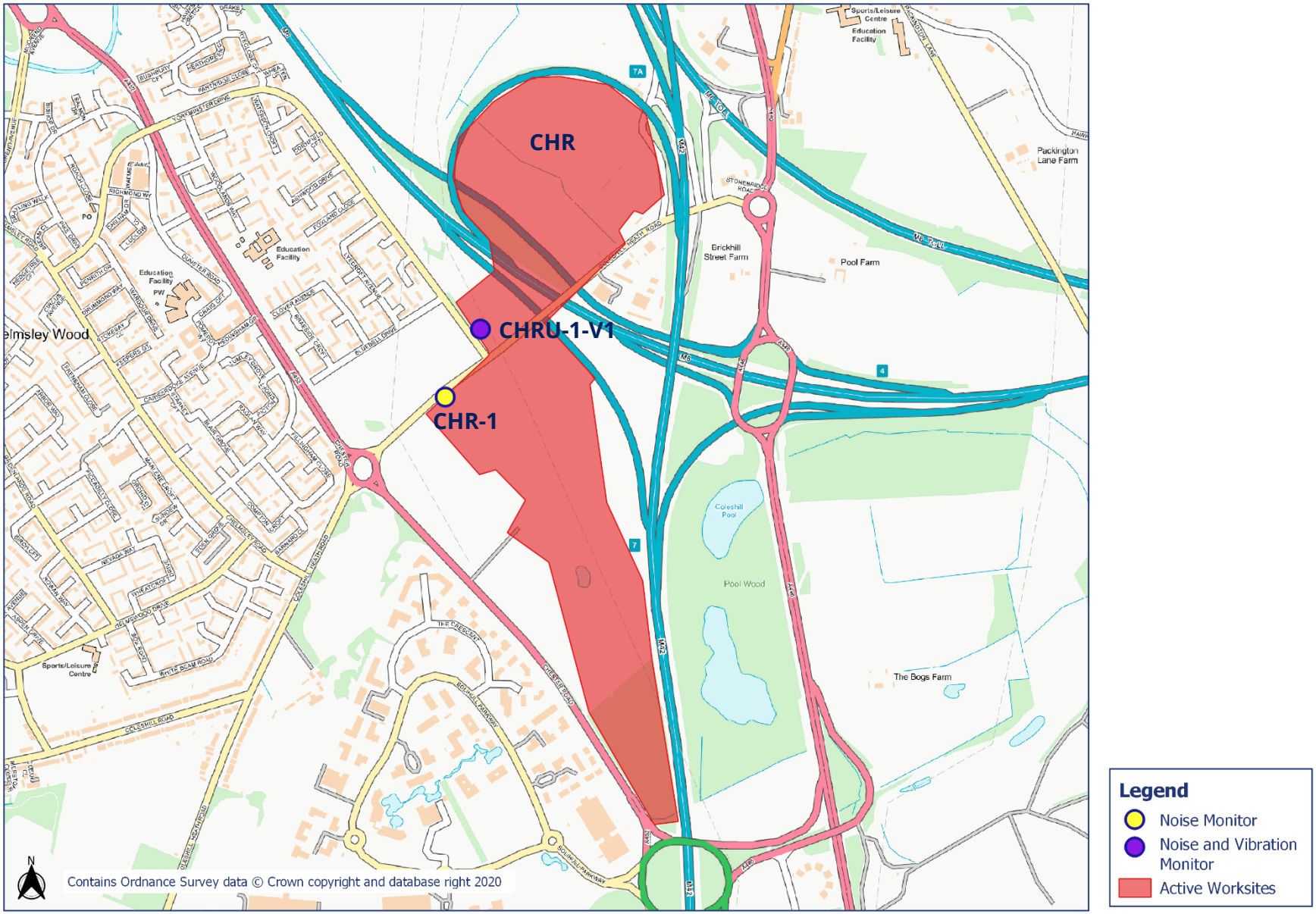


Worksite Identification Plan - 8

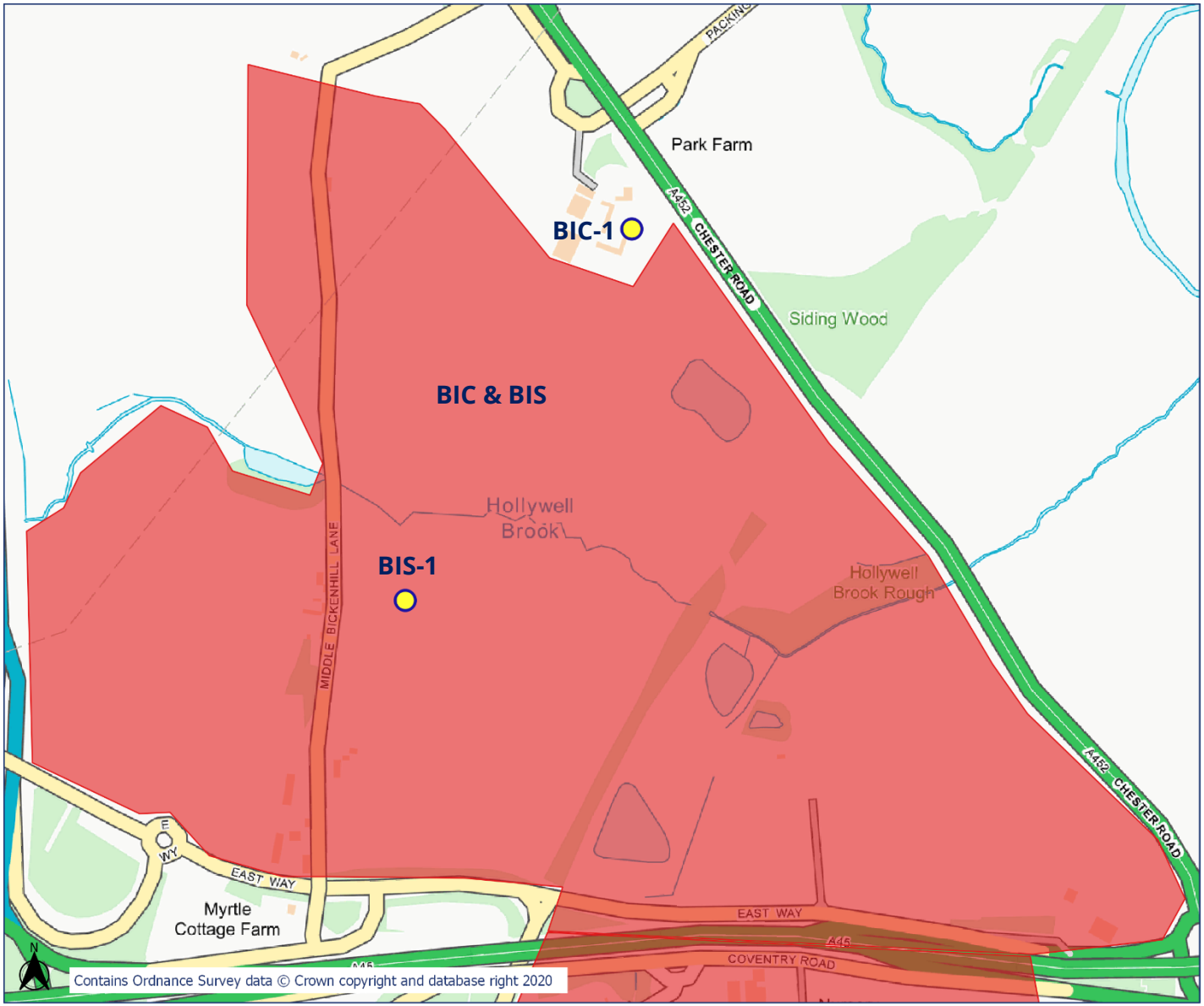


Appendix B Monitoring Locations

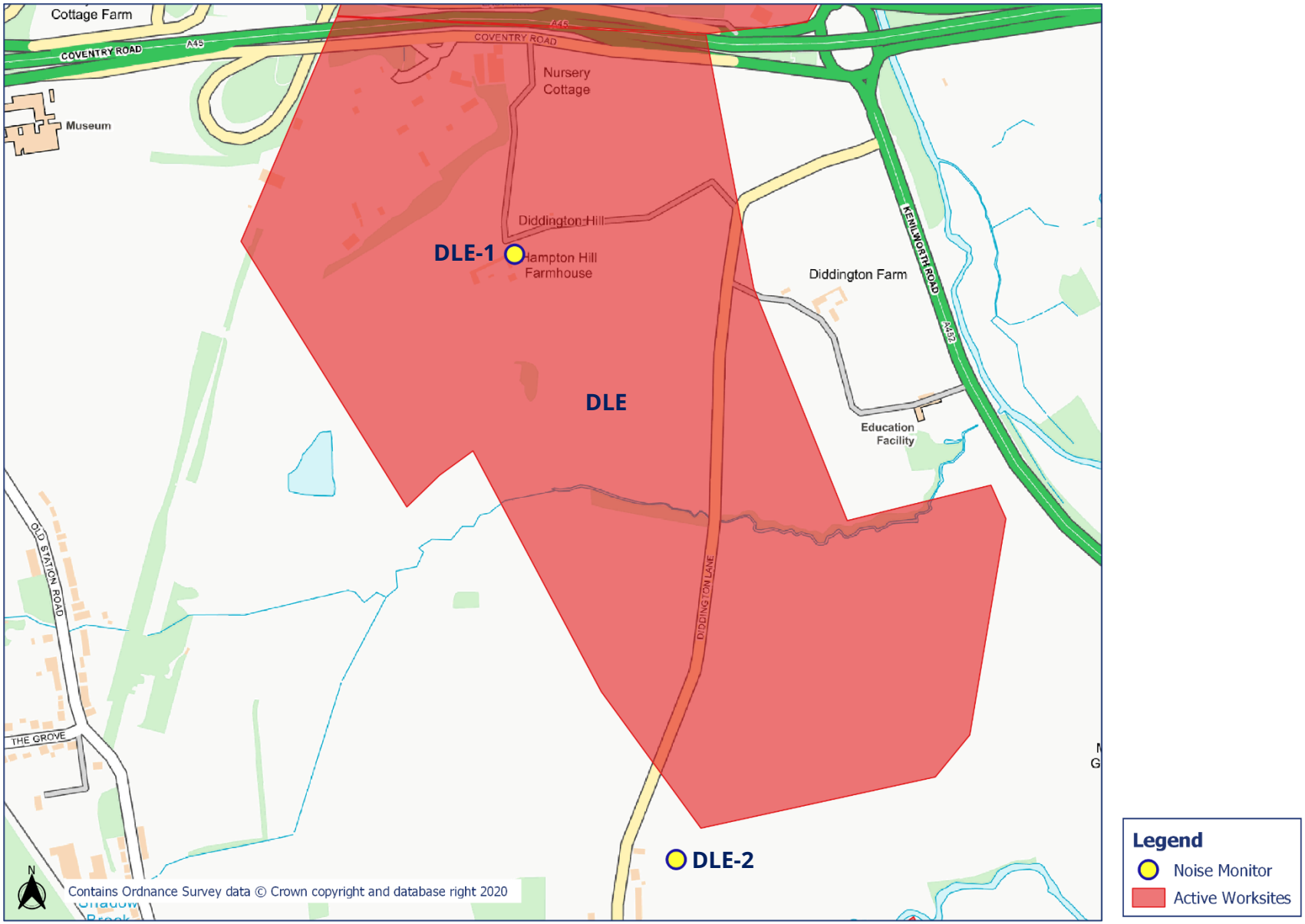
Noise and Vibration Monitoring Plan - 1



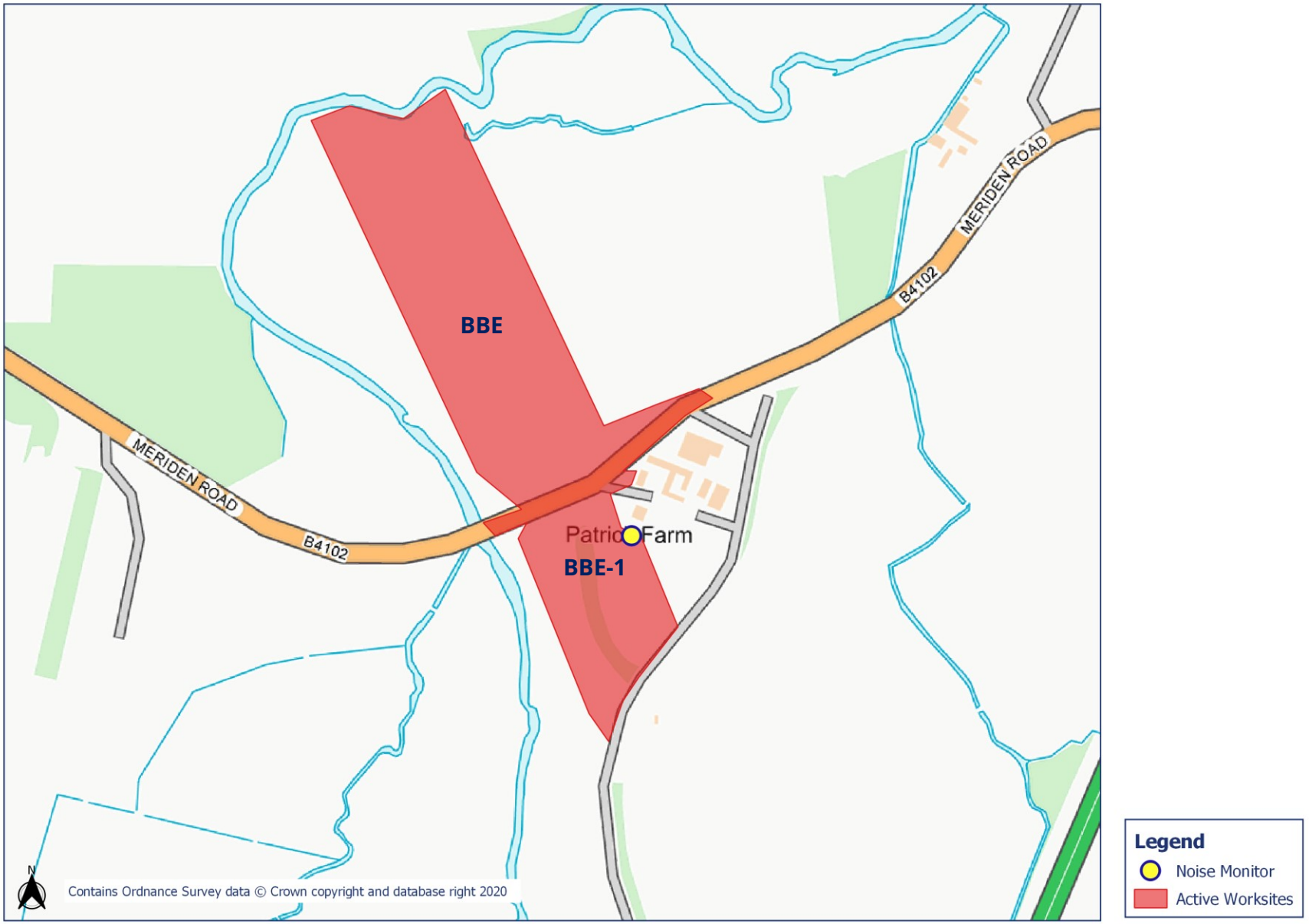
Noise and Vibration Monitoring Plan - 2



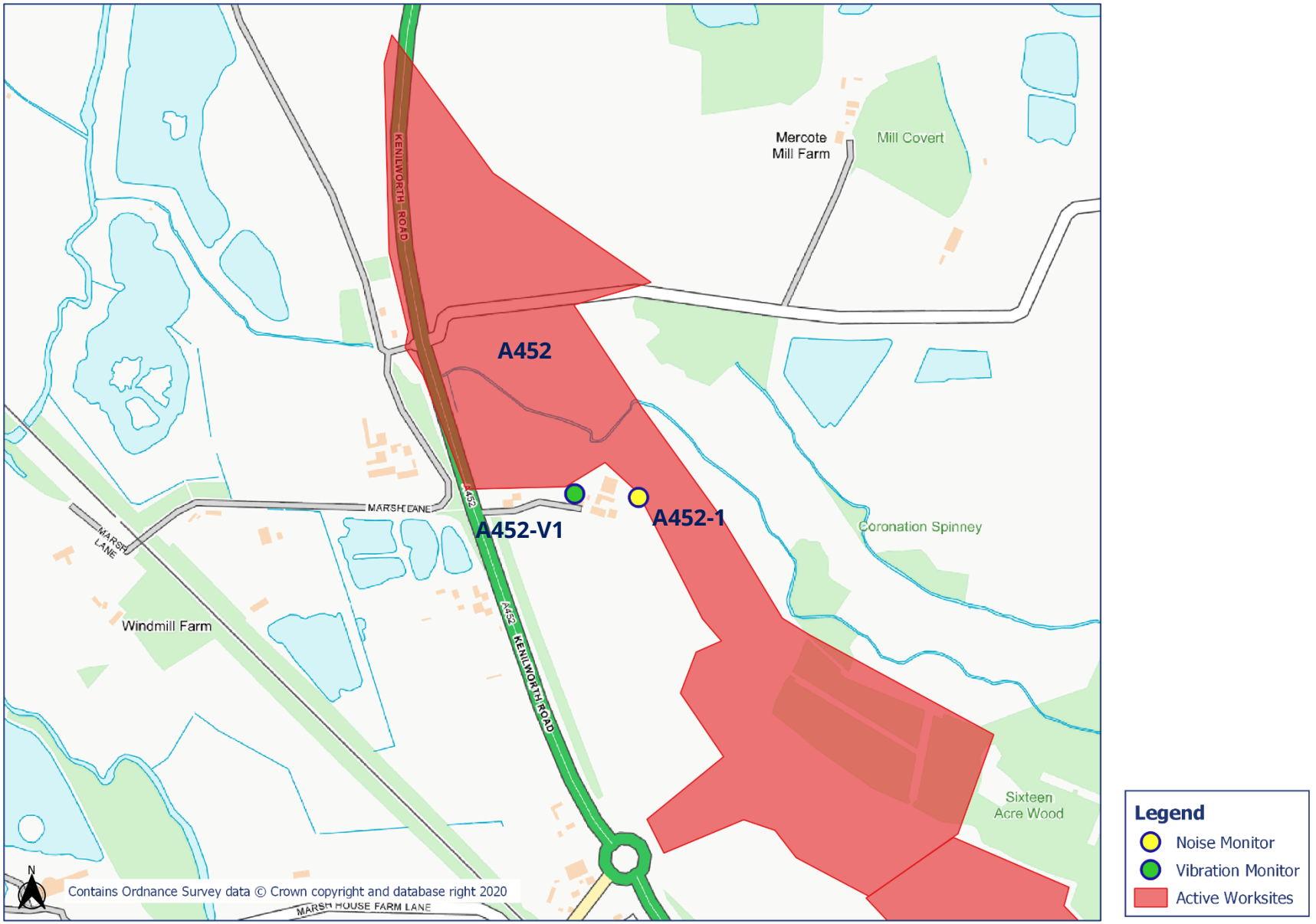
Noise and Vibration Monitoring Plan - 3



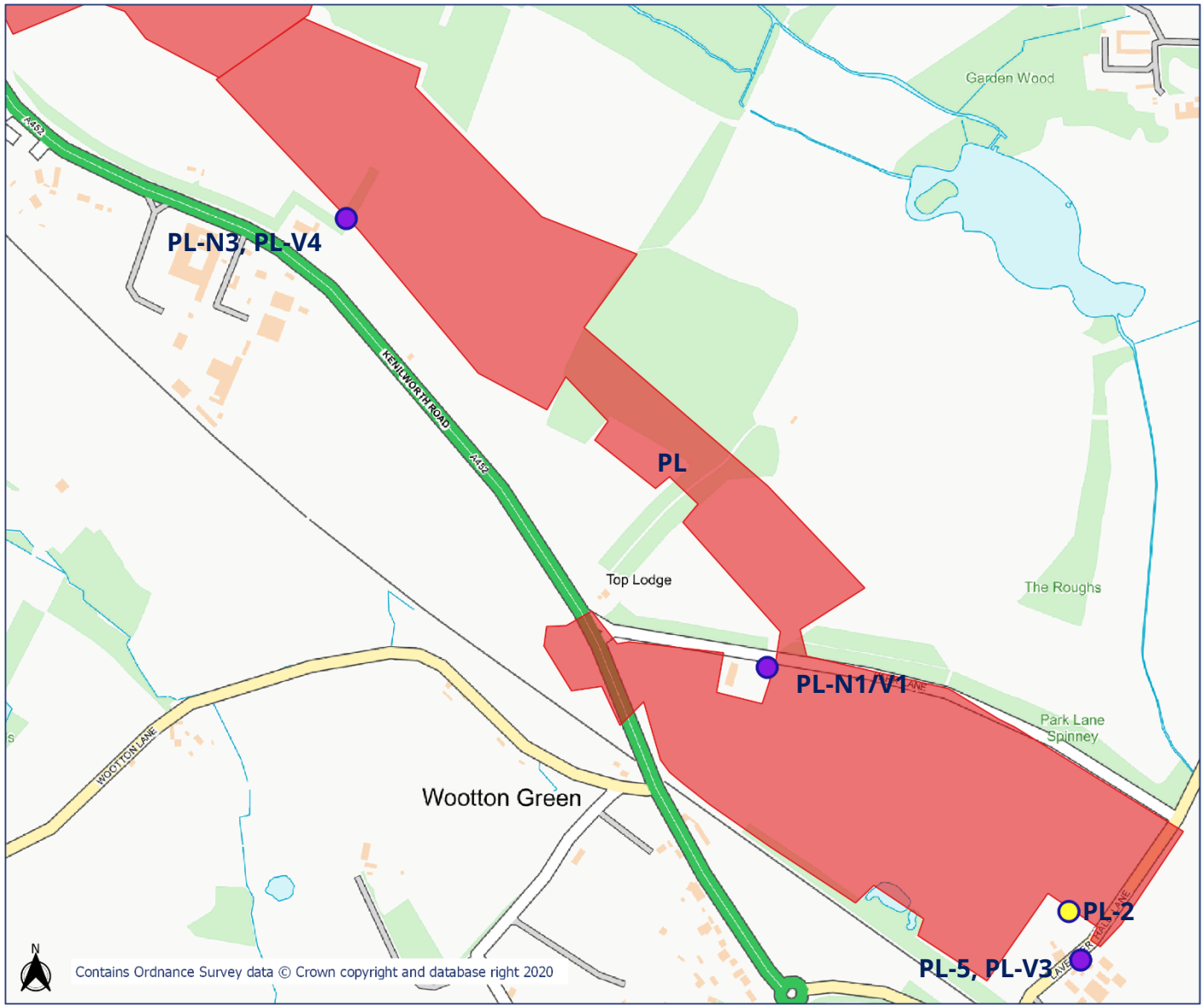
Noise and Vibration Monitoring Plan - 4



Noise and Vibration Monitoring Plan - 5



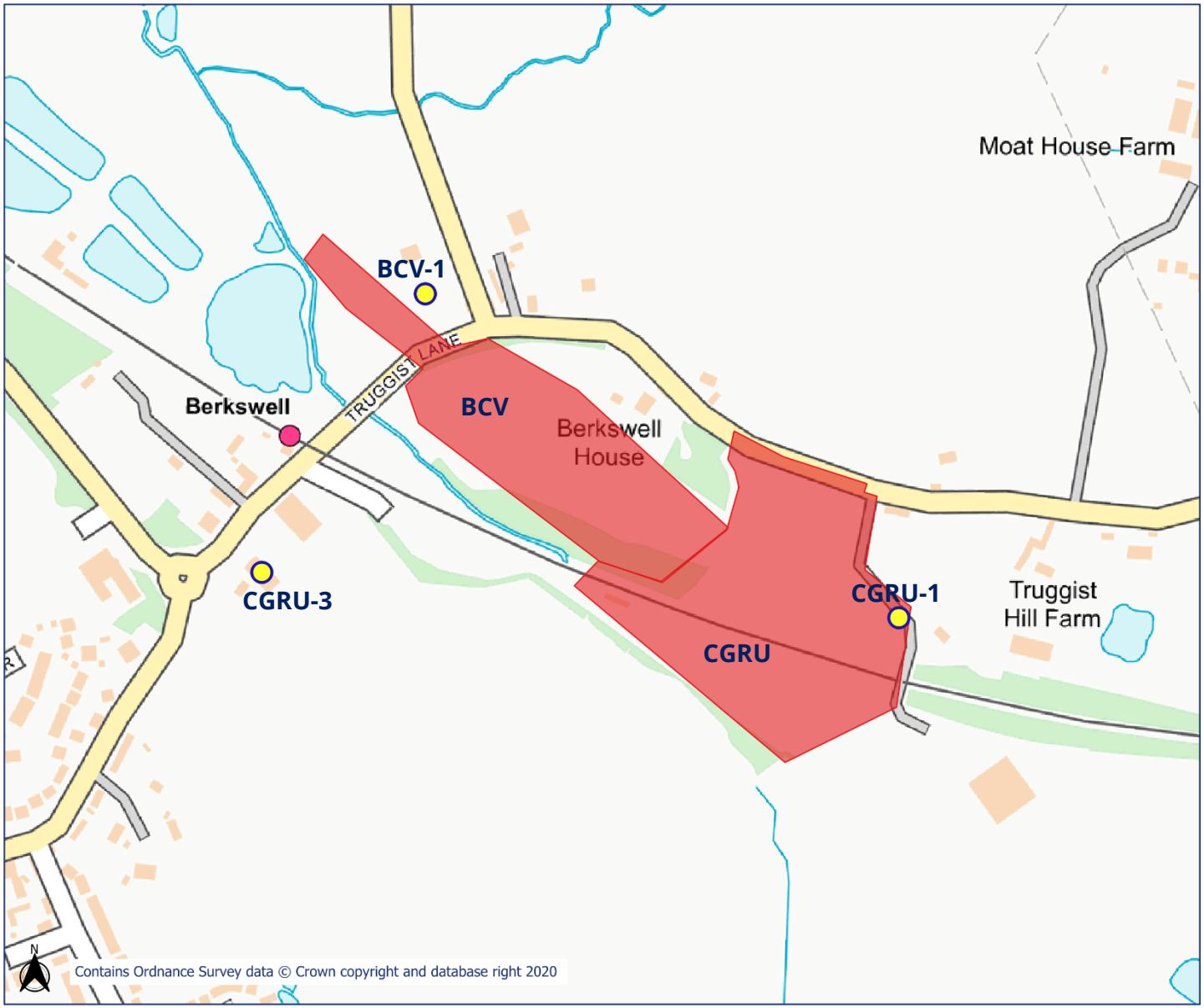
Noise and Vibration Monitoring Plan - 6



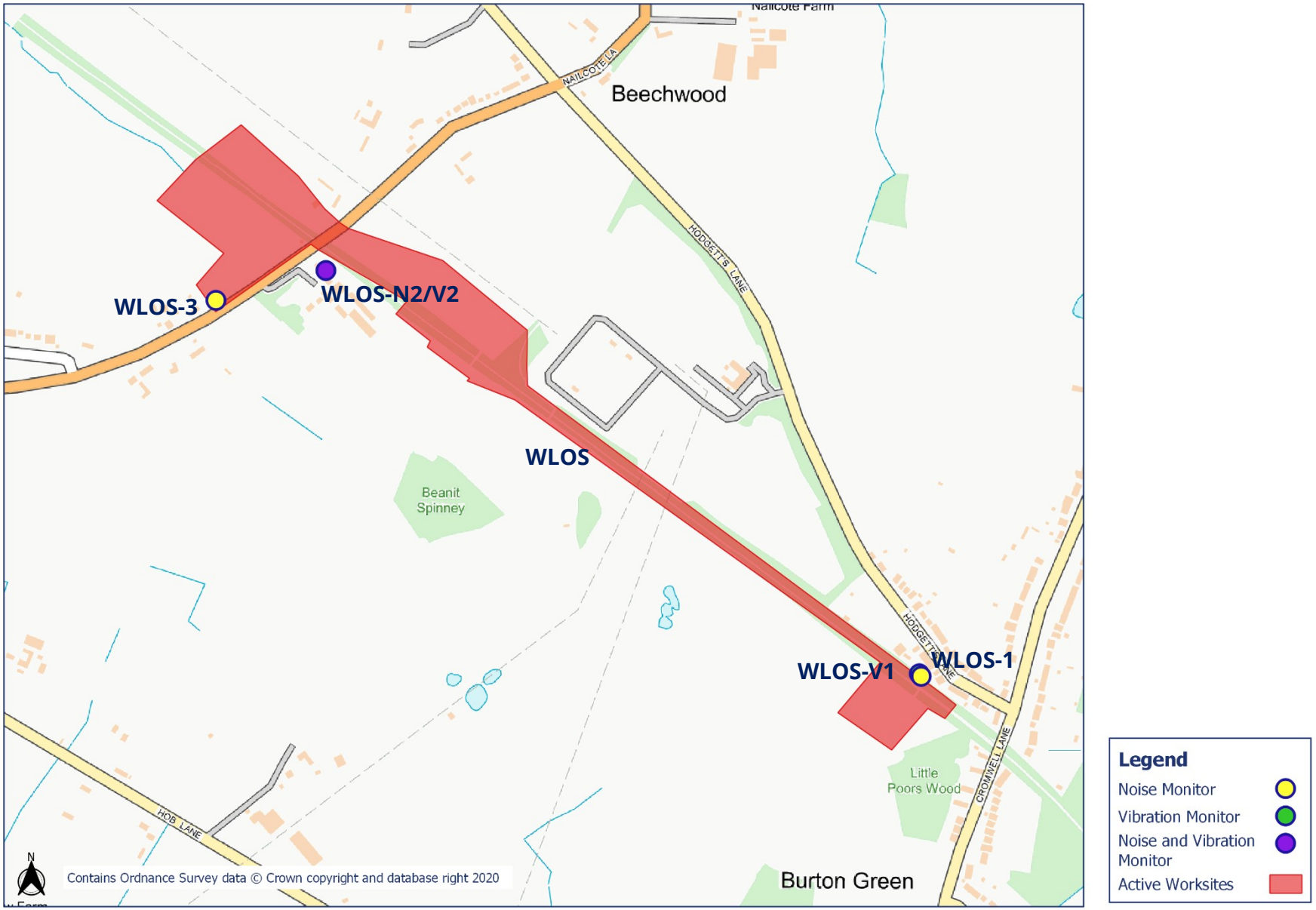
Legend

- Noise Monitor
- Noise and Vibration Monitor
- Active Worksites

Noise and Vibration Monitoring Plan - 7



Noise and Vibration Monitoring Plan - 8

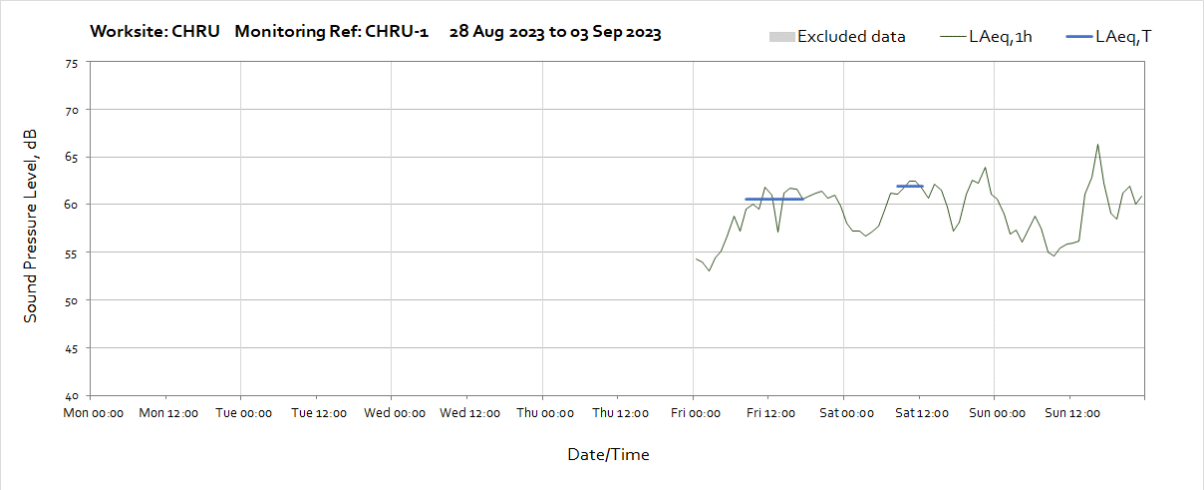


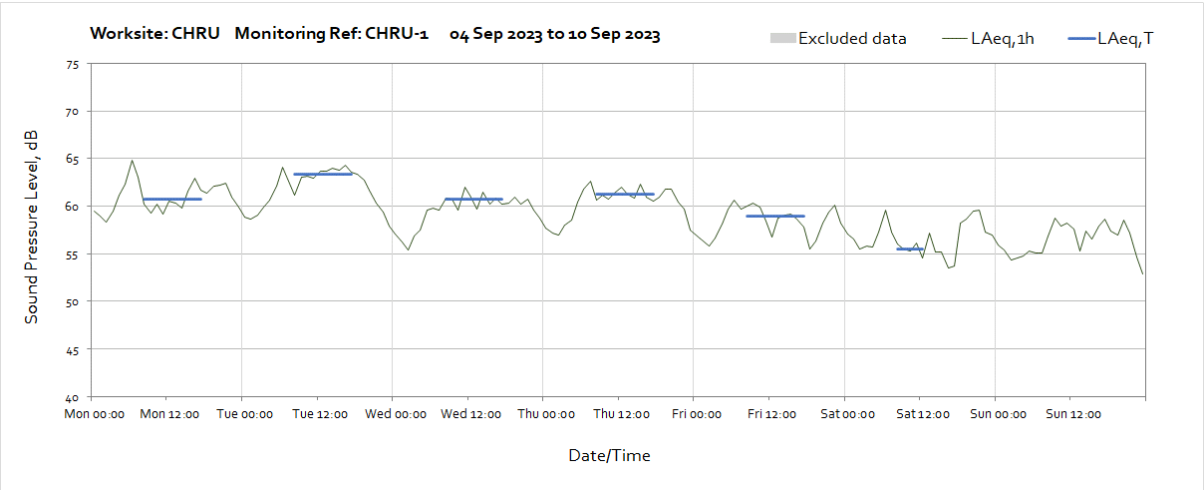
Appendix C Data

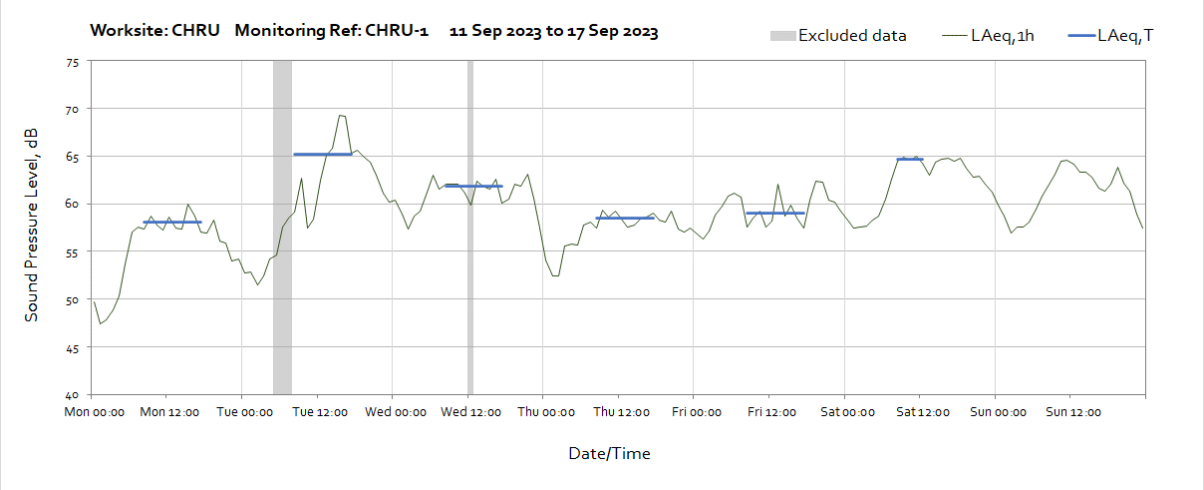
Noise

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.

Worksite: CHR - Monitoring Ref: CHRU-1



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Excluded data
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LAeq,T
Sound Pressure Level, dB
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70
65
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55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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Sat 12:00
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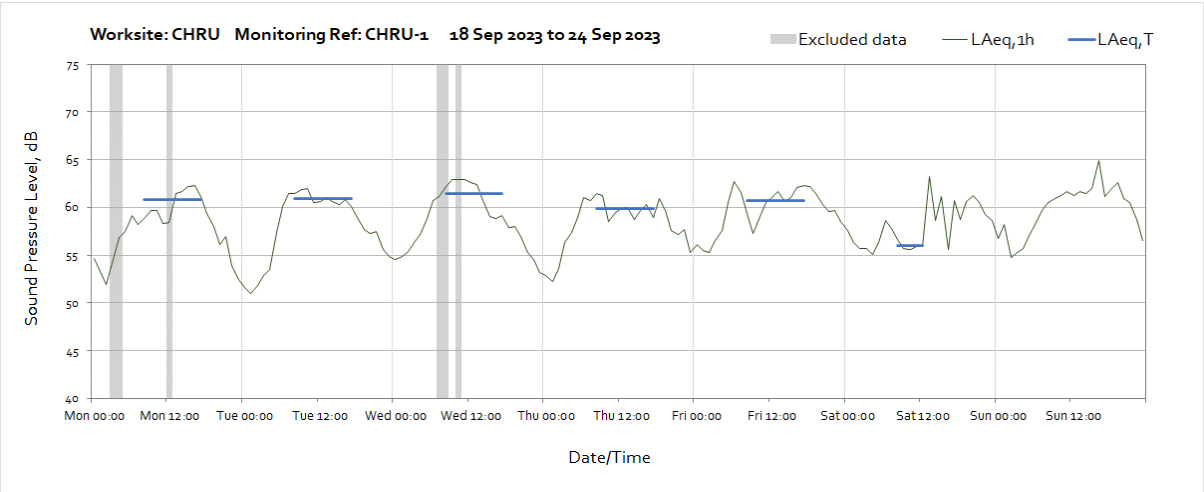
Sun 12:00
Date/Time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Excluded data
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LAeq,T
Sound Pressure Level, dB
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65
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Tue 12:00
Wed 00:00
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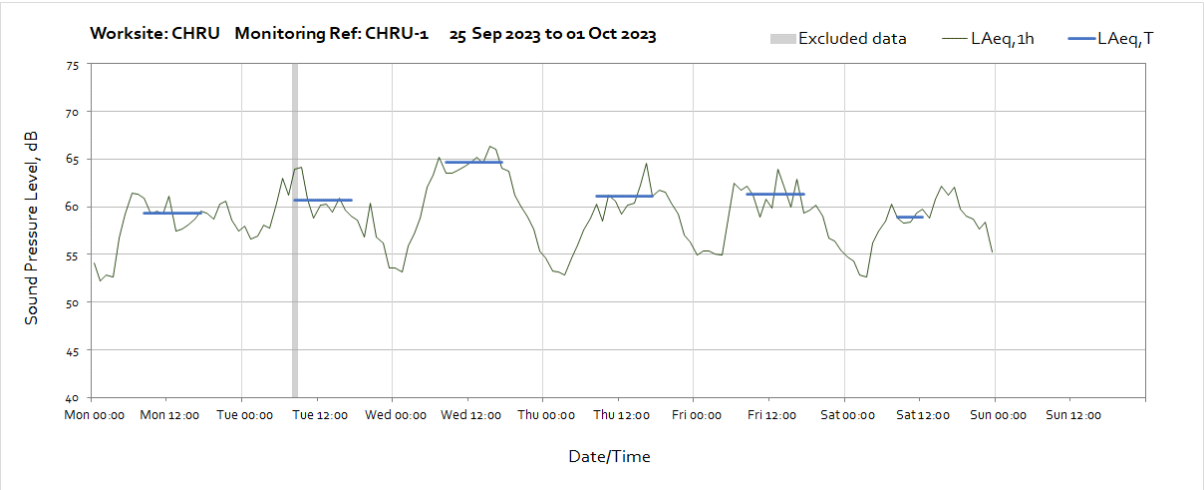
Date/Time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LAeq,T
Sound Pressure Level, dB
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65
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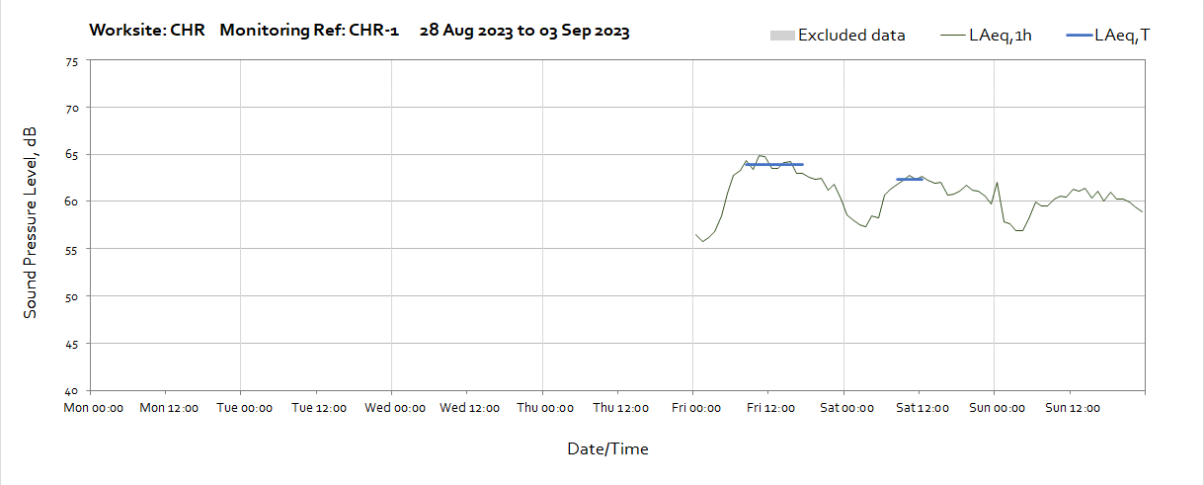
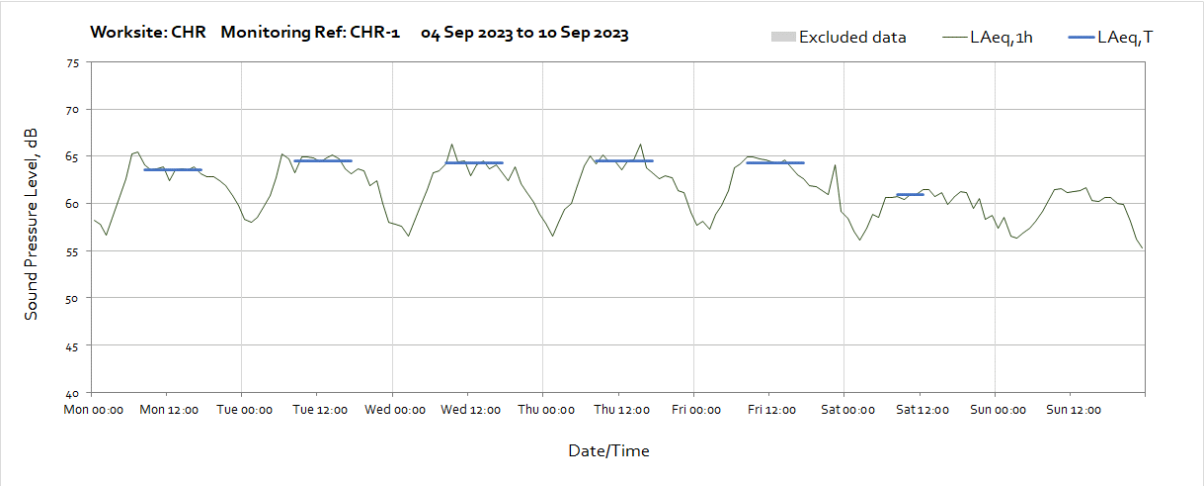
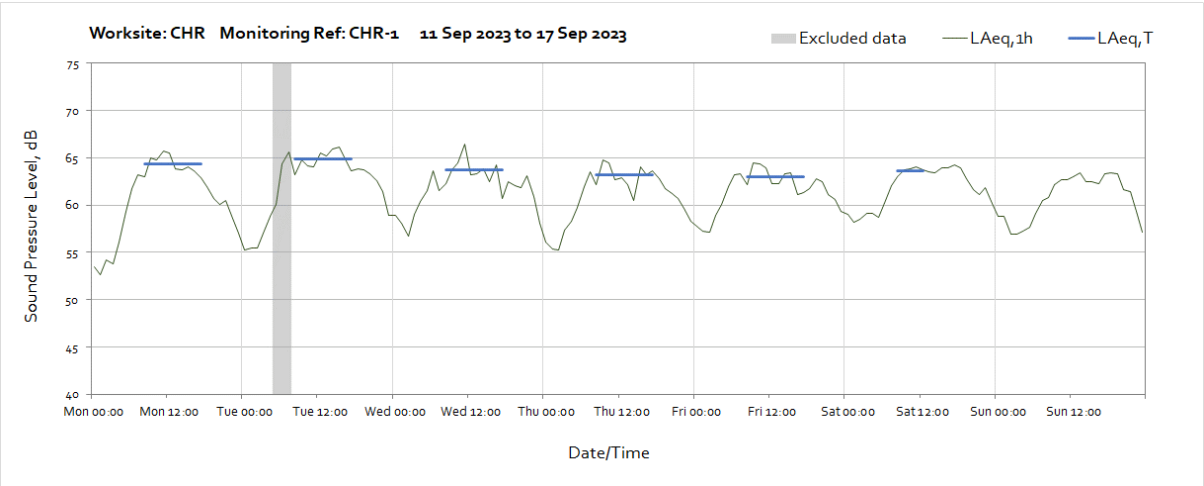
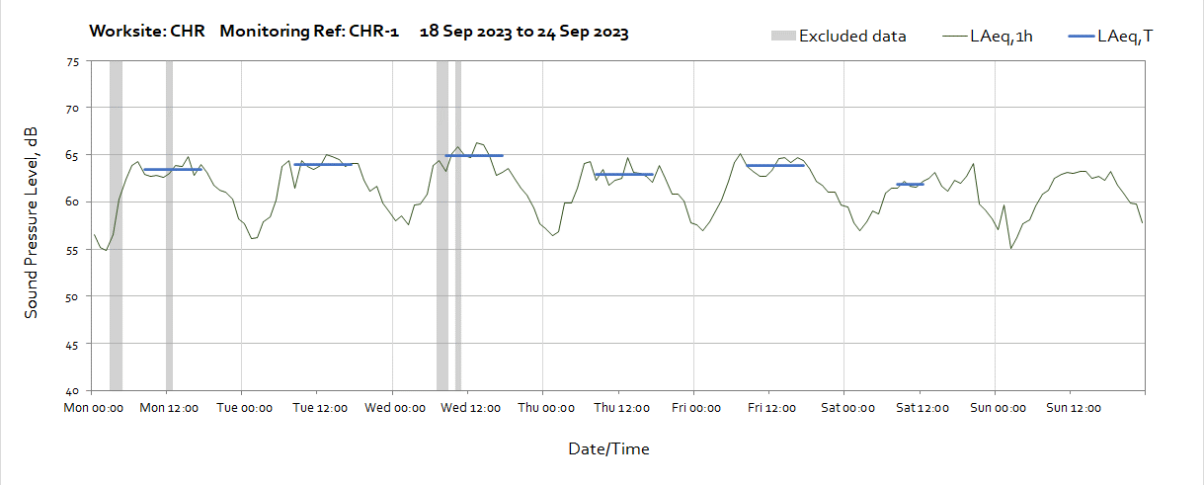
Date/Time

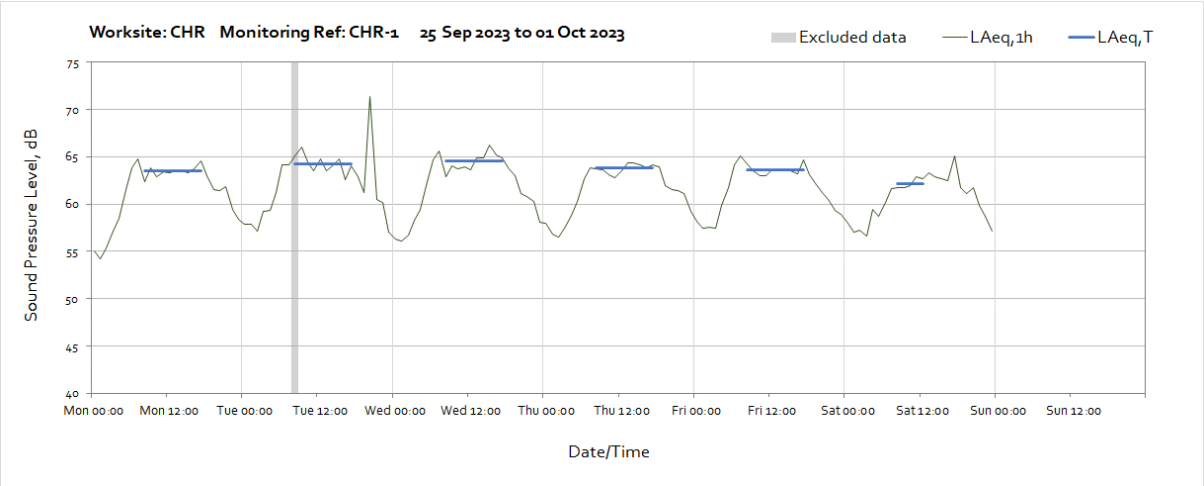
Worksite: CHR - Monitoring Ref: CHR-1



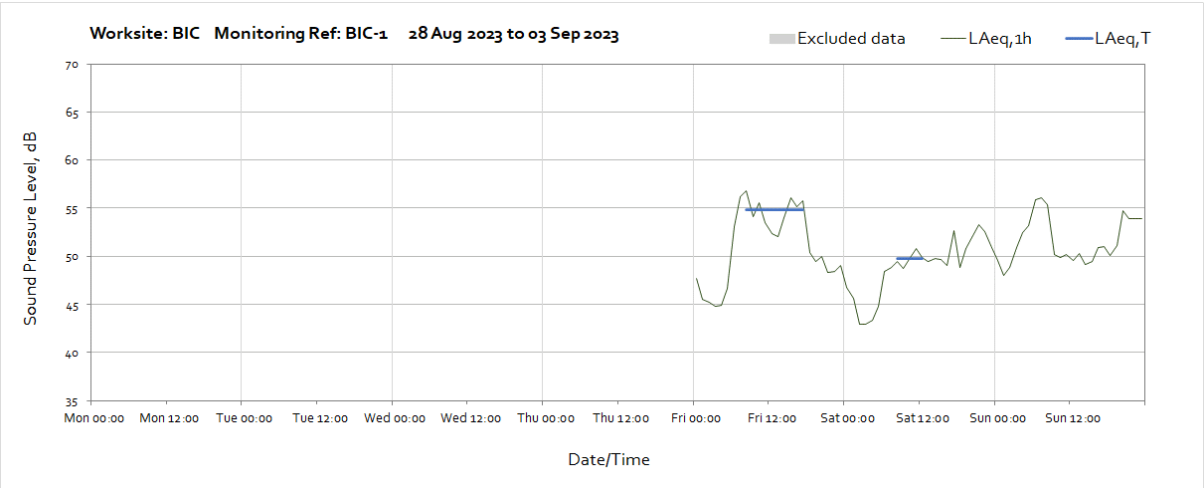


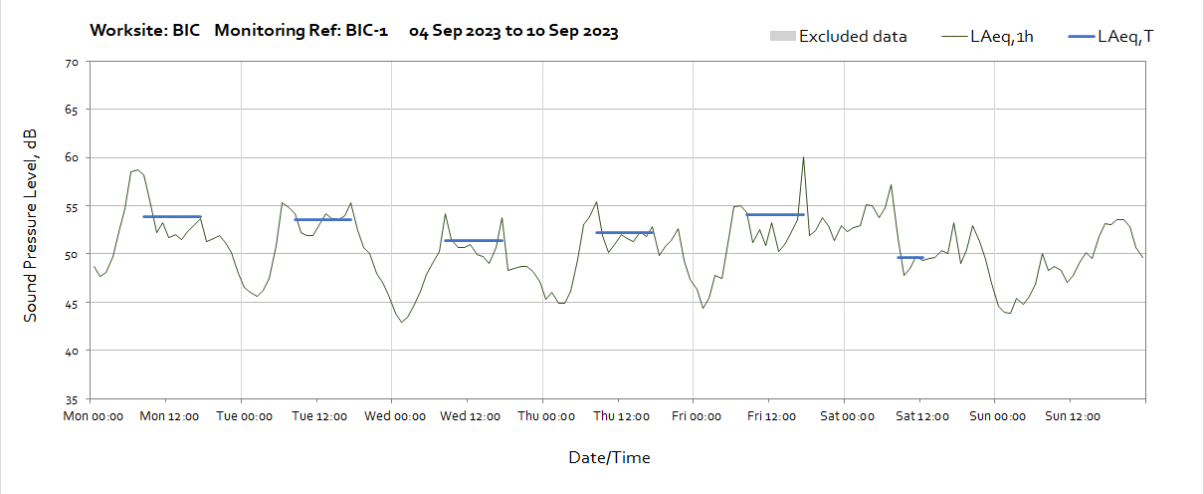






Worksite: BIC - Monitoring Ref: BIC-1

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Excluded data
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LAeq,T
Sound Pressure Level, dB
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65
60
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Mon 12:00
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Tue 12:00
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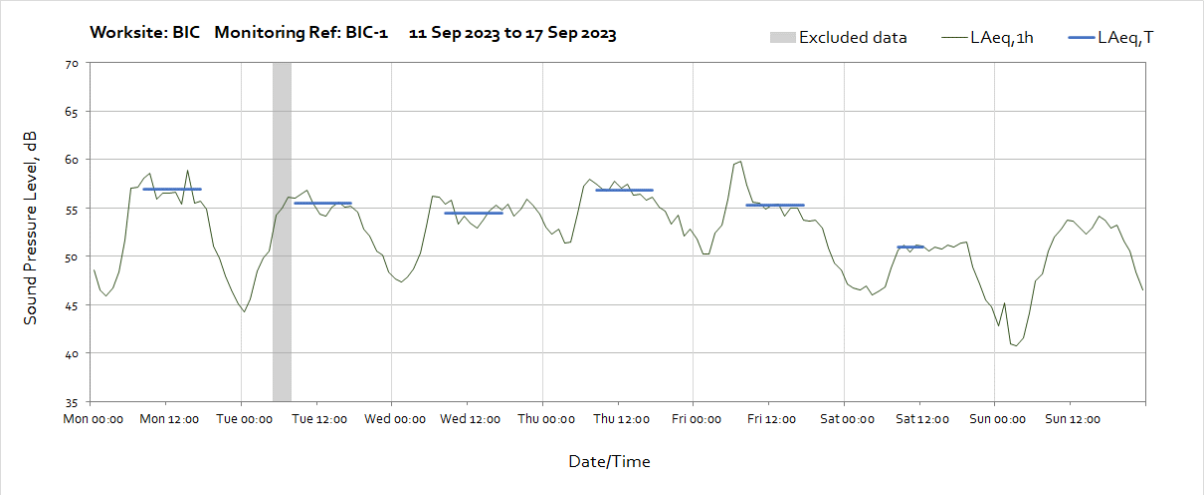
Date/Time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Excluded data
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LAeq,T
Sound Pressure Level, dB
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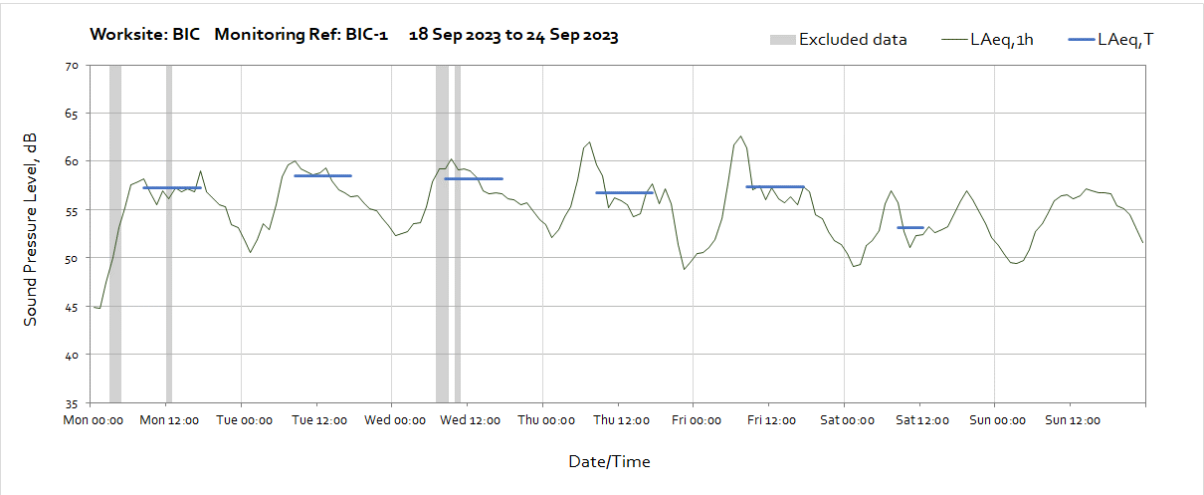
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LAeq,T
Sound Pressure Level, dB
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60
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Tue 12:00
Wed 00:00
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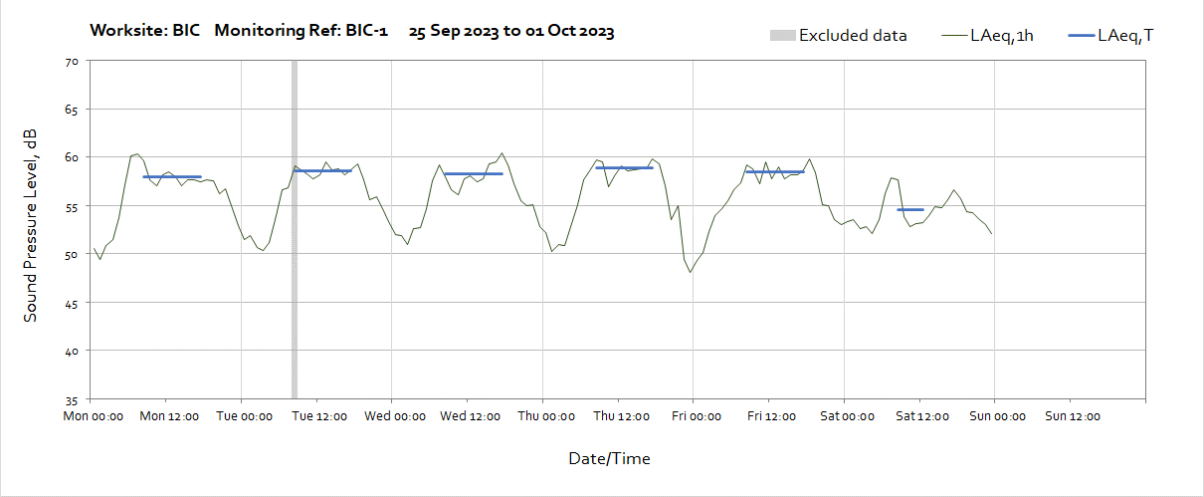
Date/Time



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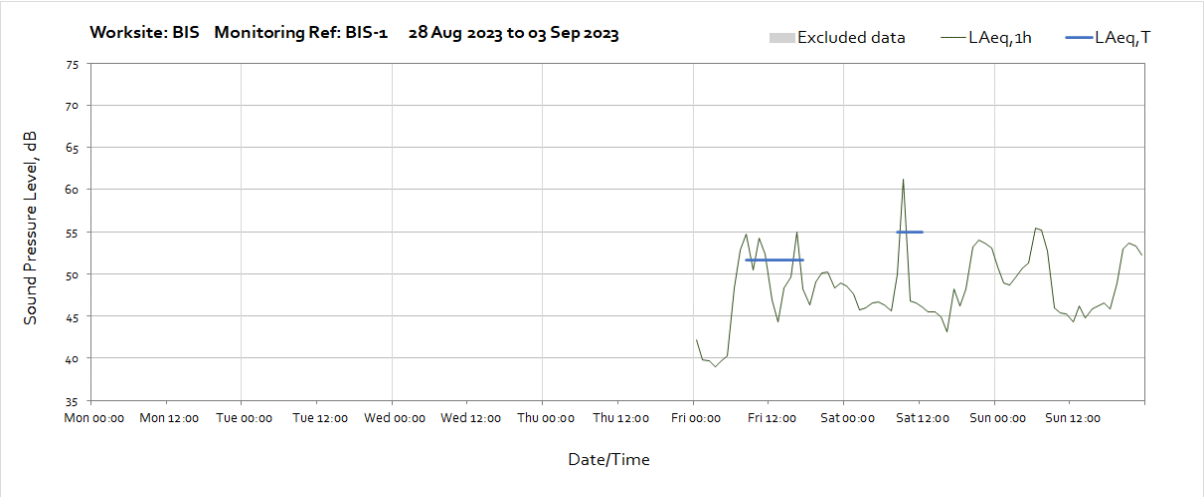

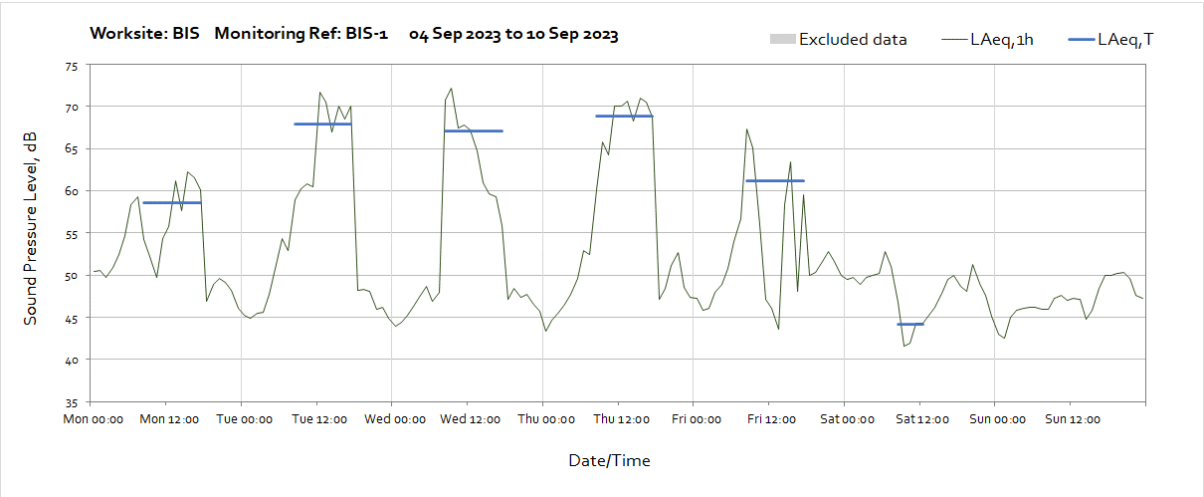

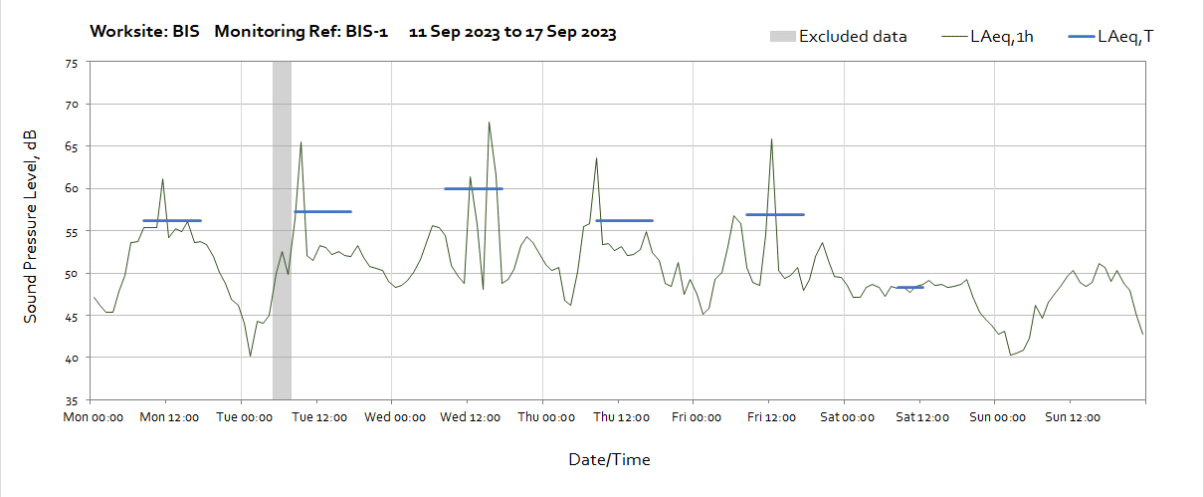
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LAeq,T
Sound Pressure Level, dB
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65
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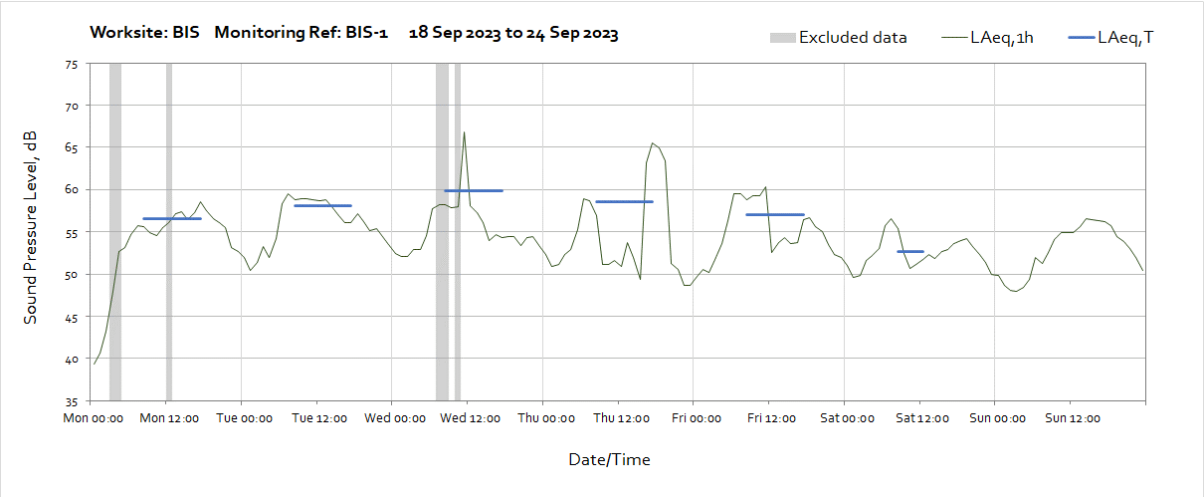
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LAeq,T
Sound Pressure Level, dB
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70
65
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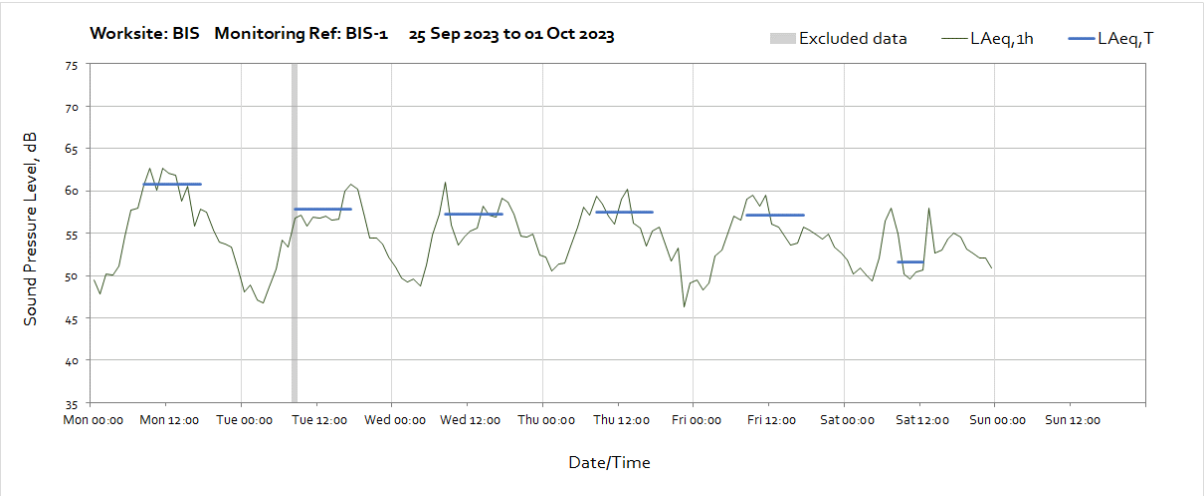
Date/Time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Excluded data
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LAeq,T
Sound Pressure Level, dB
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65
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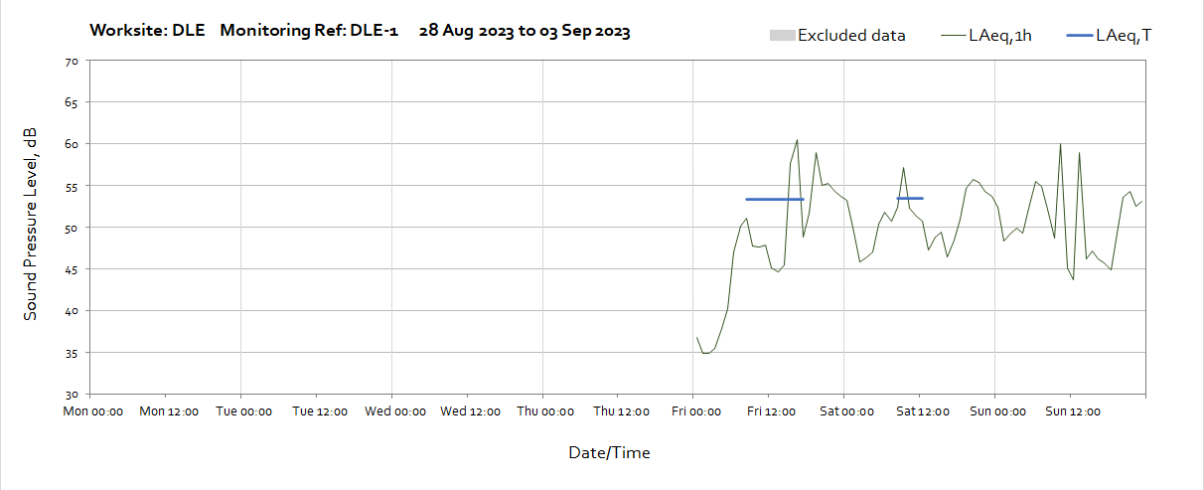
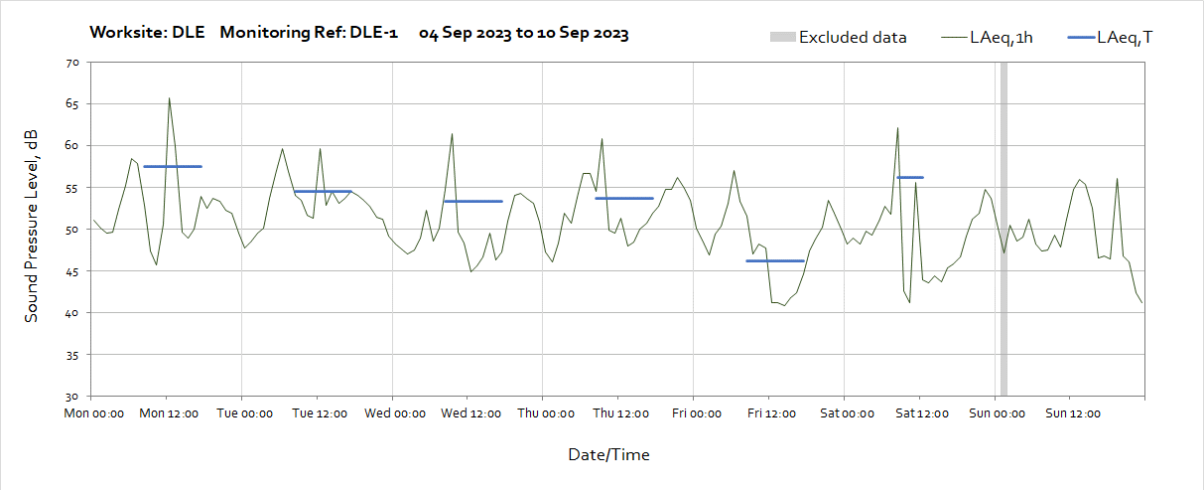
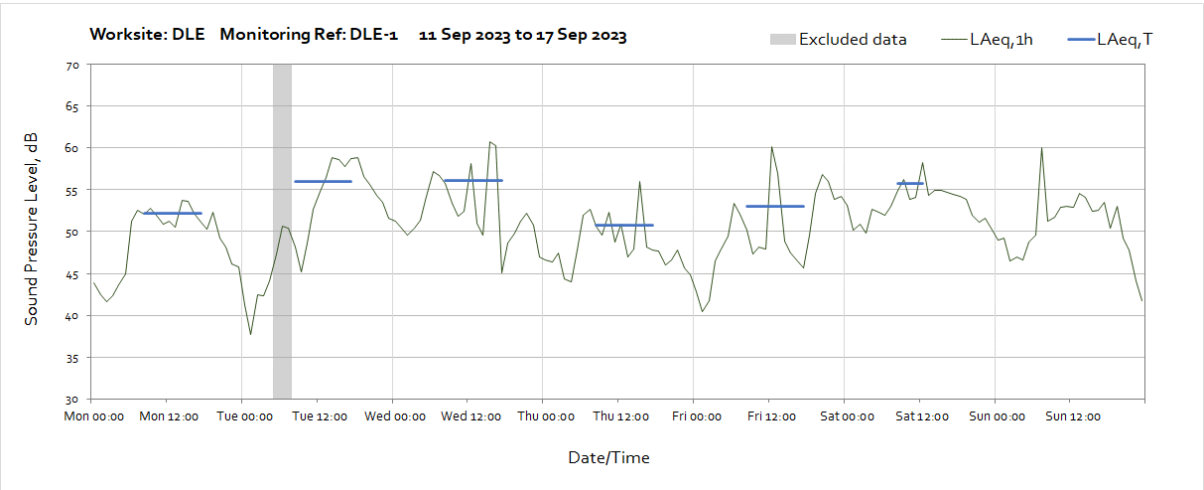
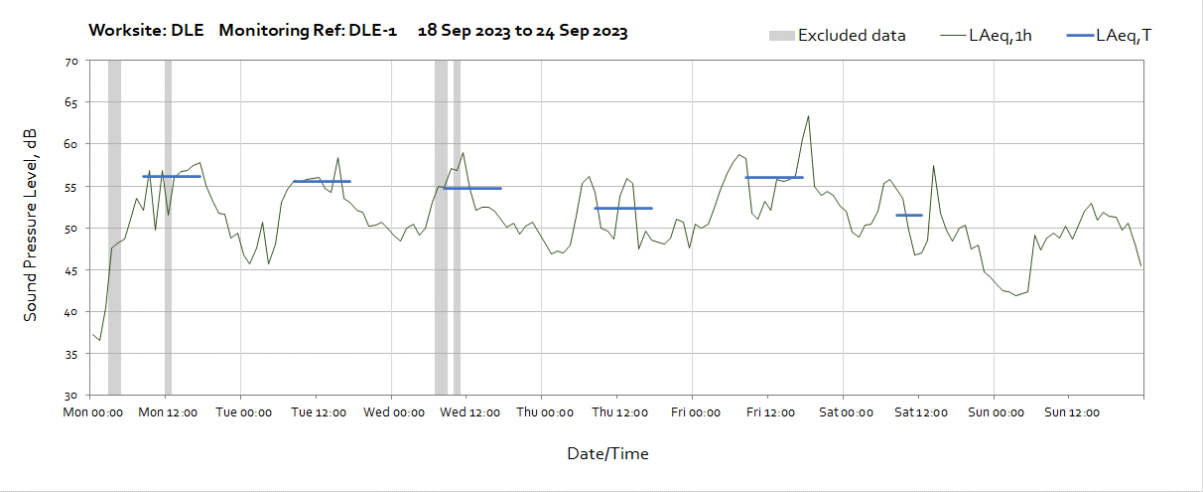
Date/Time

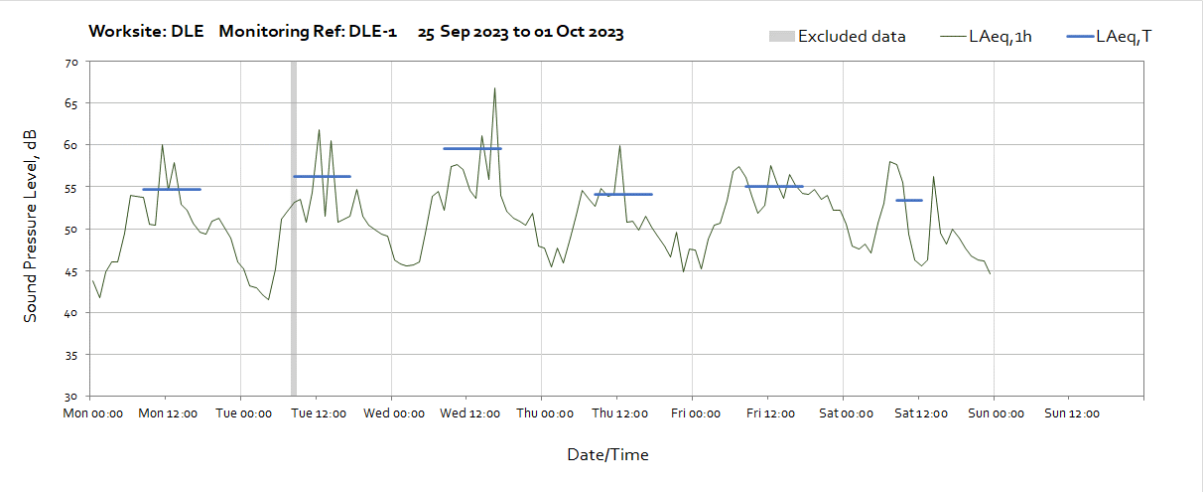
Worksite: DLE - Monitoring Ref: DLE-1



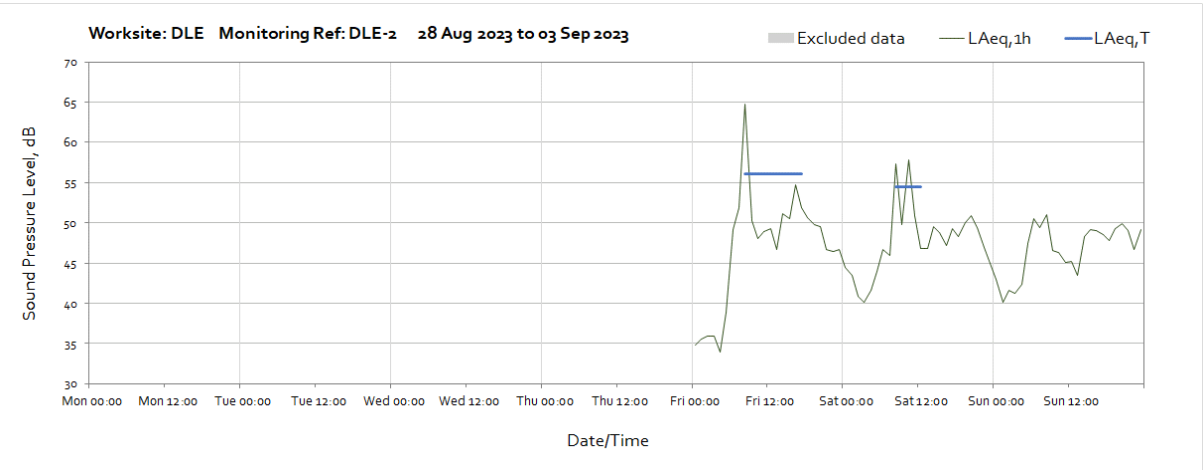


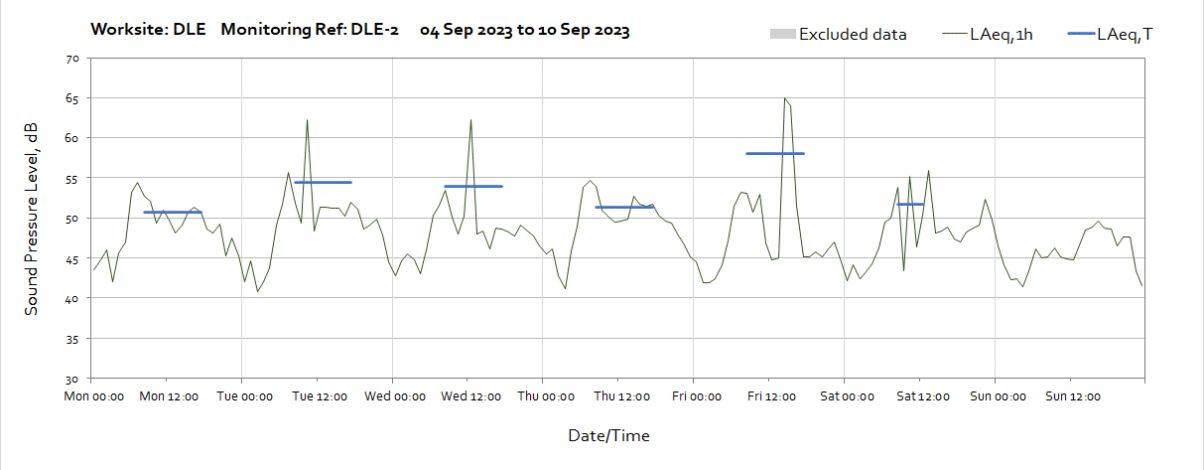






Worksite: DLE - Monitoring Ref: DLE-2

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LAeq,T
Sound Pressure Level, dB
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65
60
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Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
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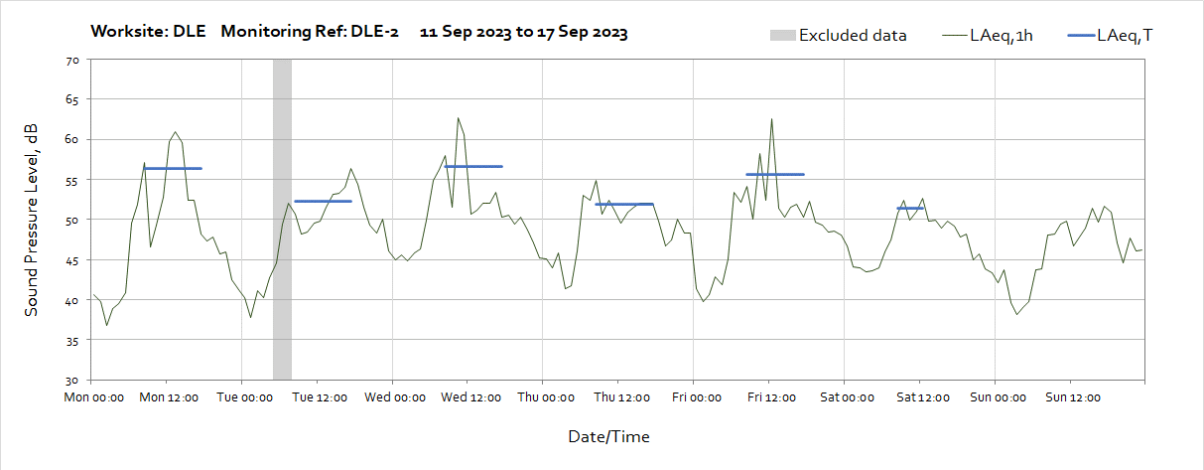
Date/Time


Worksite: DLE Monitoring Ref: DLE-2 11 Sep 2023 to 17 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
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Mon 00:00
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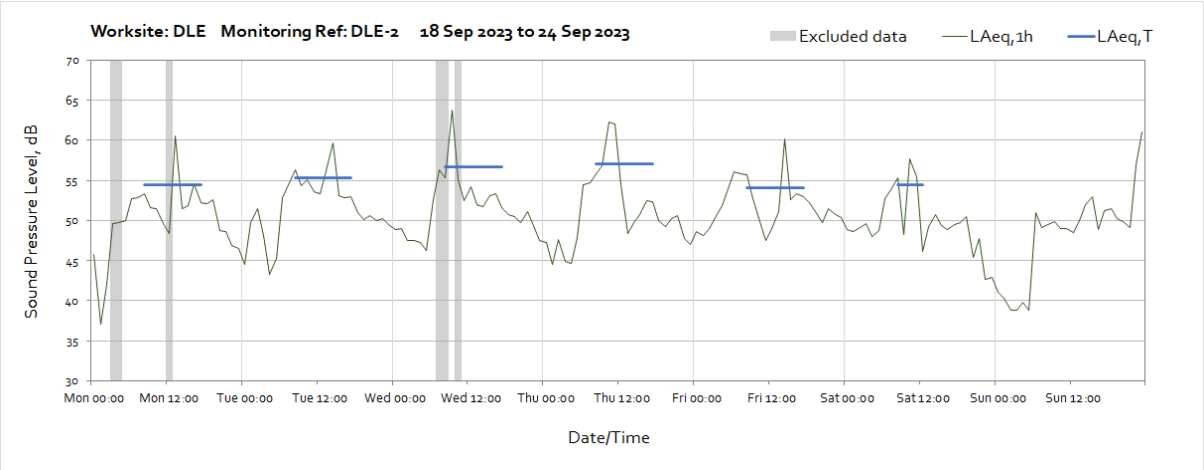
Worksite: DLE Monitoring Ref: DLE-2 18 Sep 2023 to 24 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
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Mon 00:00
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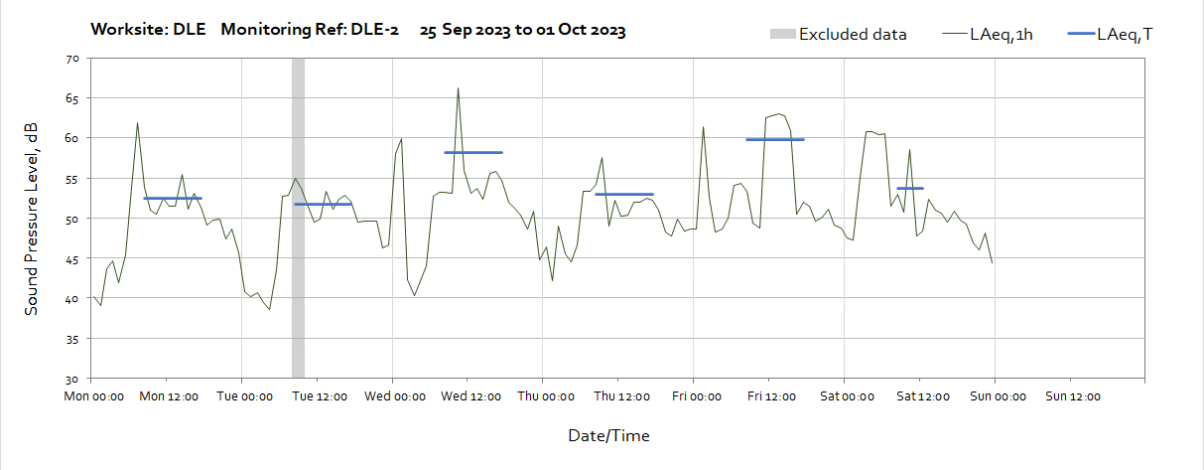
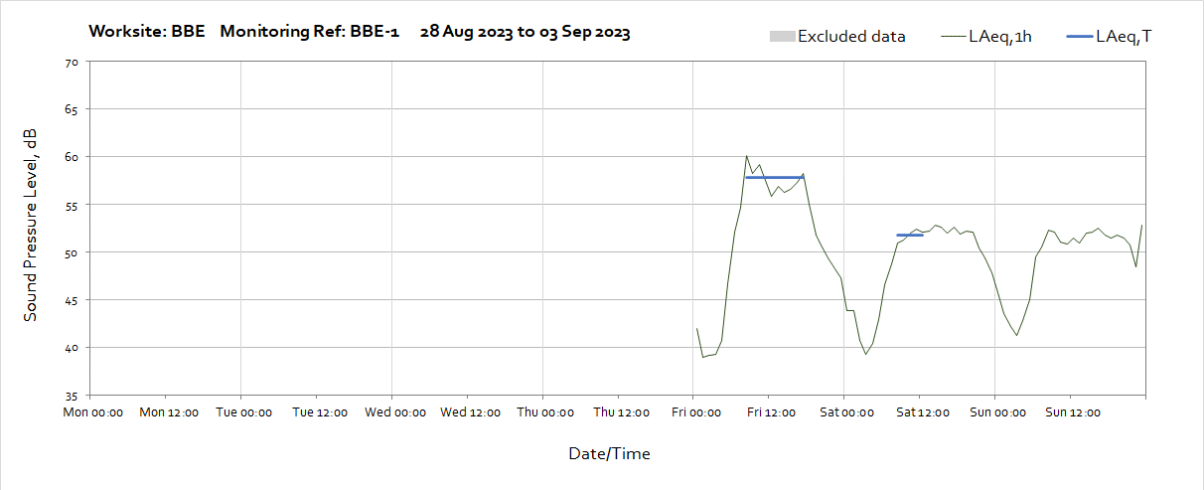
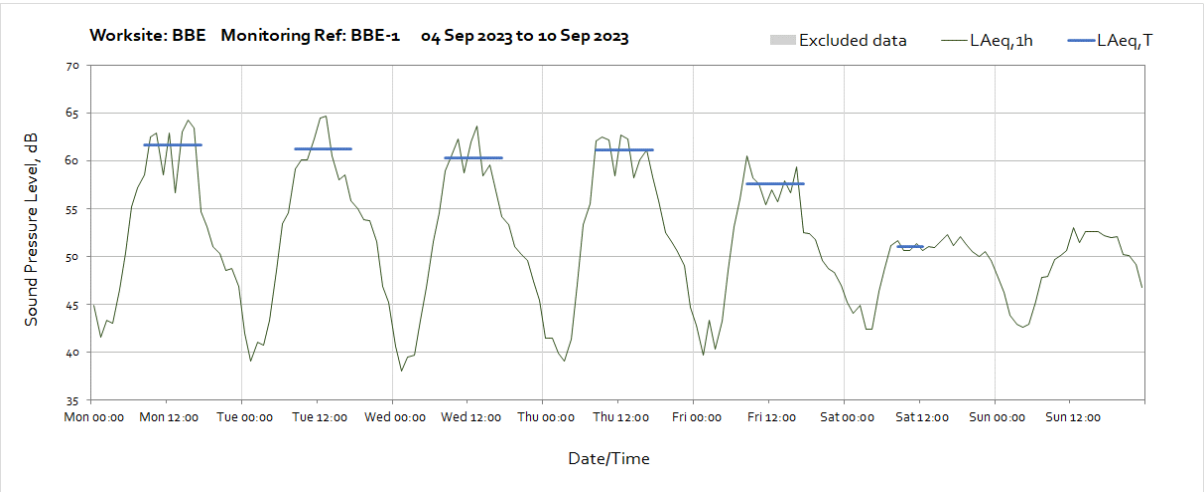
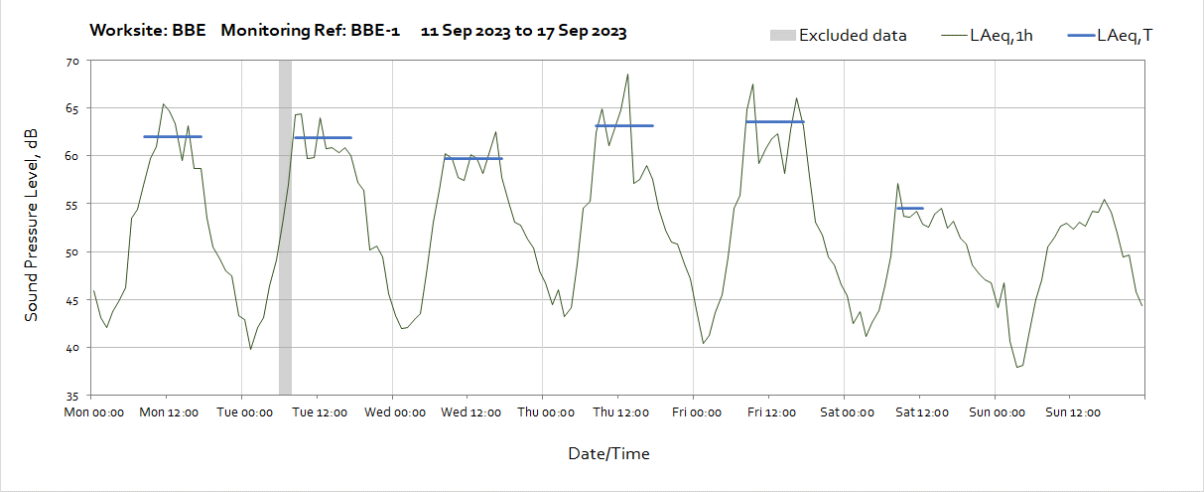
Date/Time



Worksite: BBE – Monitoring Ref: BBE-1






Worksite: BBE Monitoring Ref: BBE-1 11 Sep 2023 to 17 Sep 2023
Excluded data
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LAeq,T
Sound Pressure Level, dB
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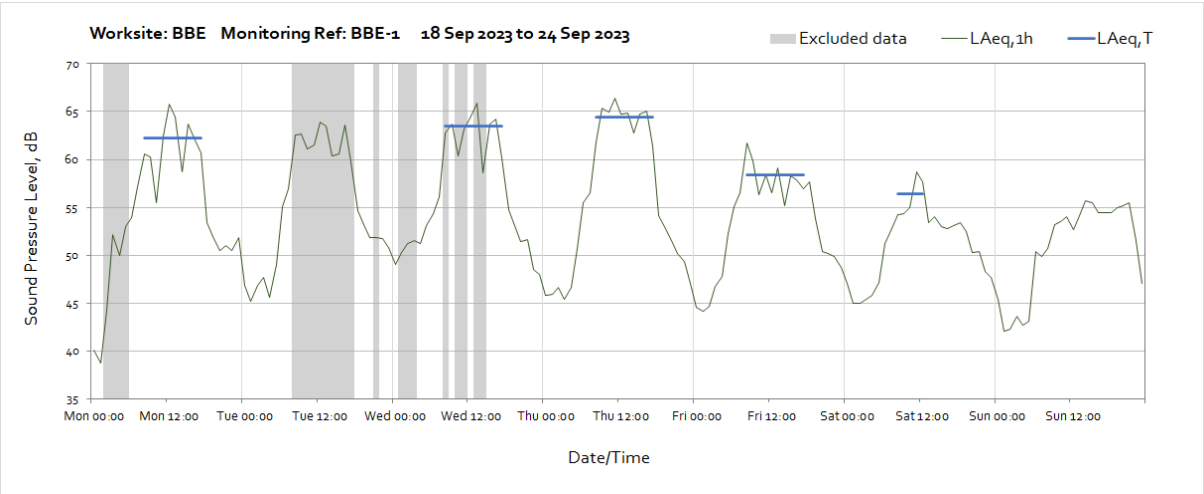
Date/Time


Worksite: BBE Monitoring Ref: BBE-1 18 Sep 2023 to 24 Sep 2023
Excluded data
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LAeq,T
Sound Pressure Level, dB
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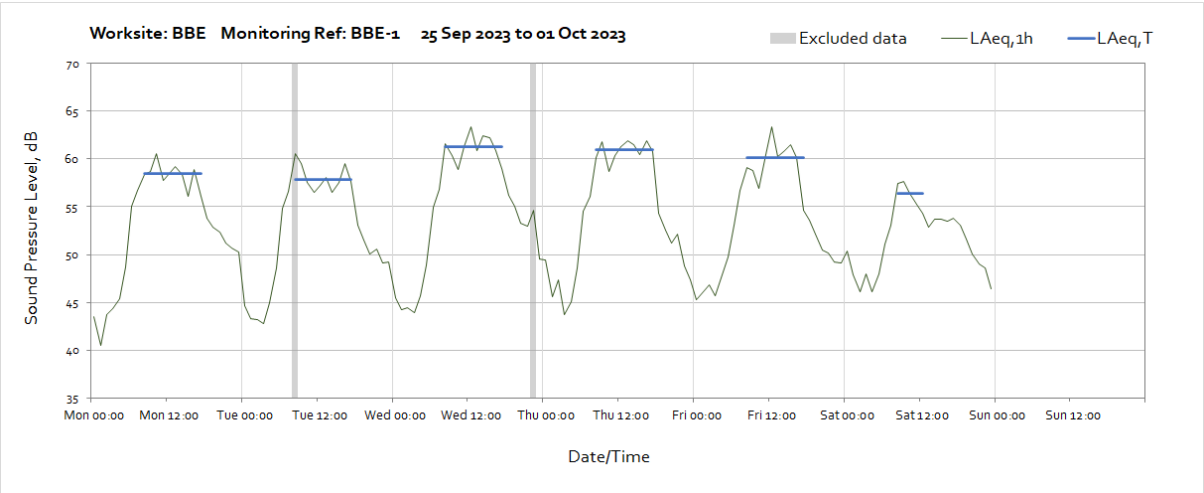
Date/Time


Worksite: BBE Monitoring Ref: BBE-1 25 Sep 2023 to 01 Oct 2023
Excluded data
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LAeq,T
Sound Pressure Level, dB
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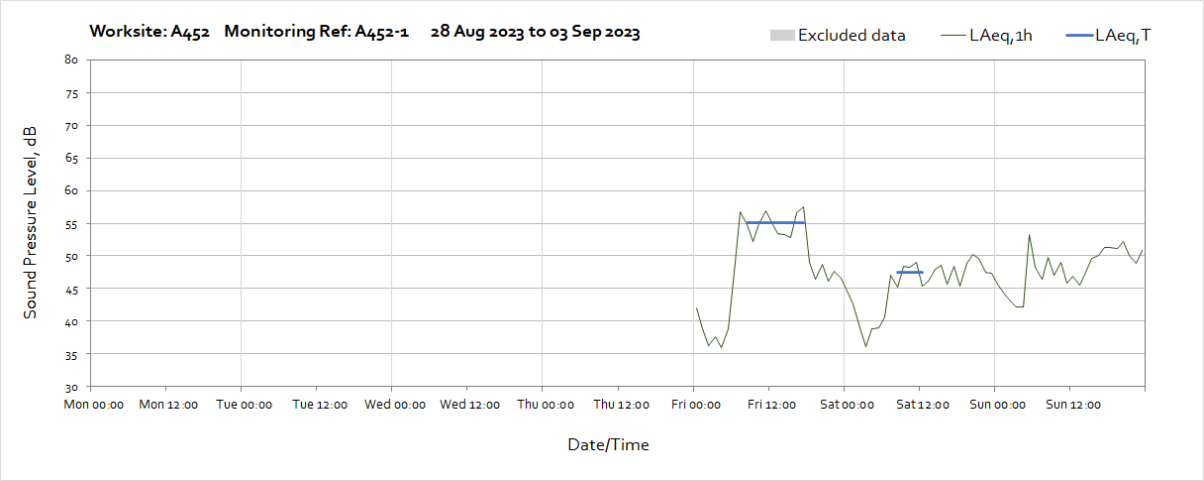
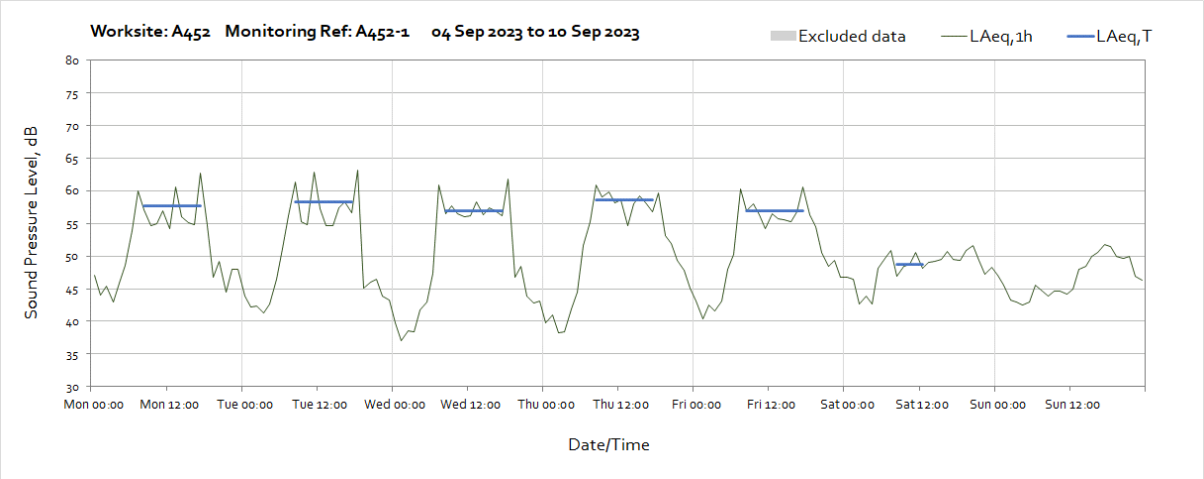
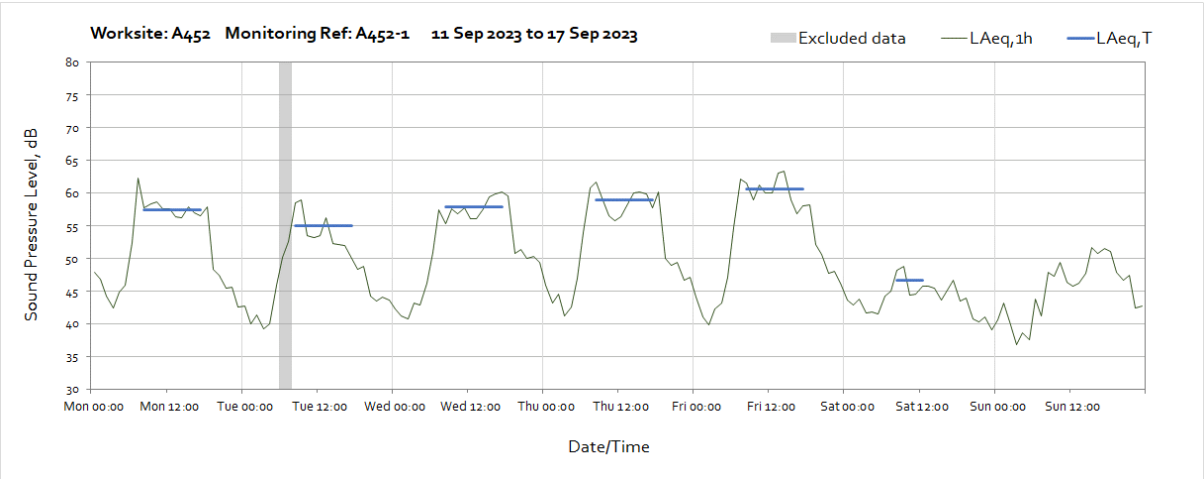
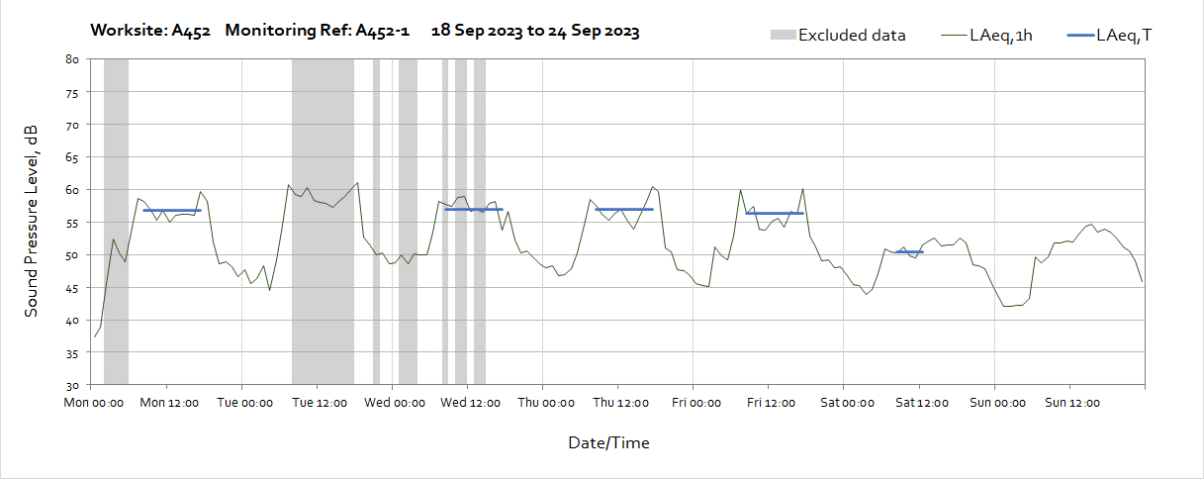
Date/Time

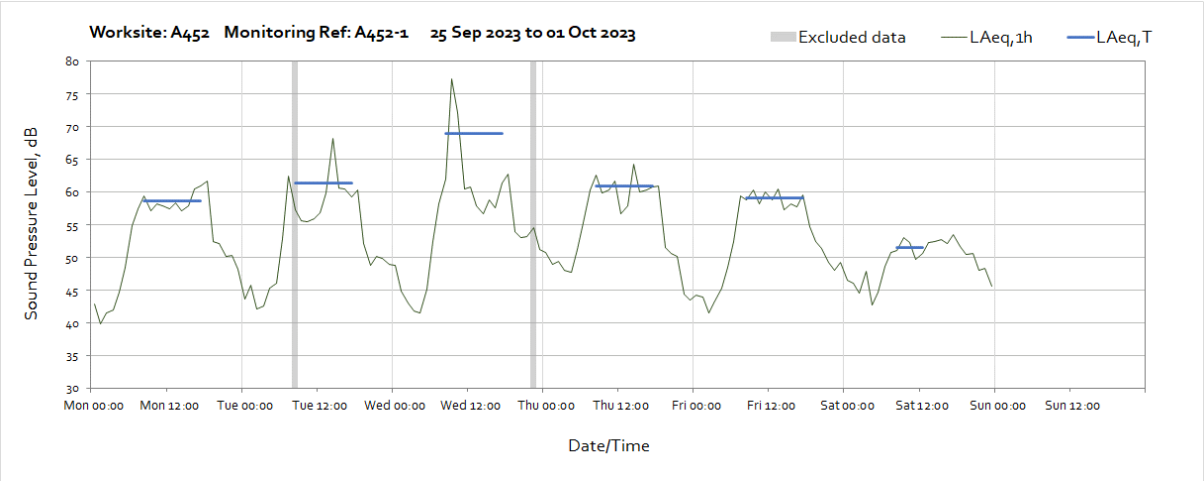
Worksite: A452 Compound – Monitoring Ref: A452-1



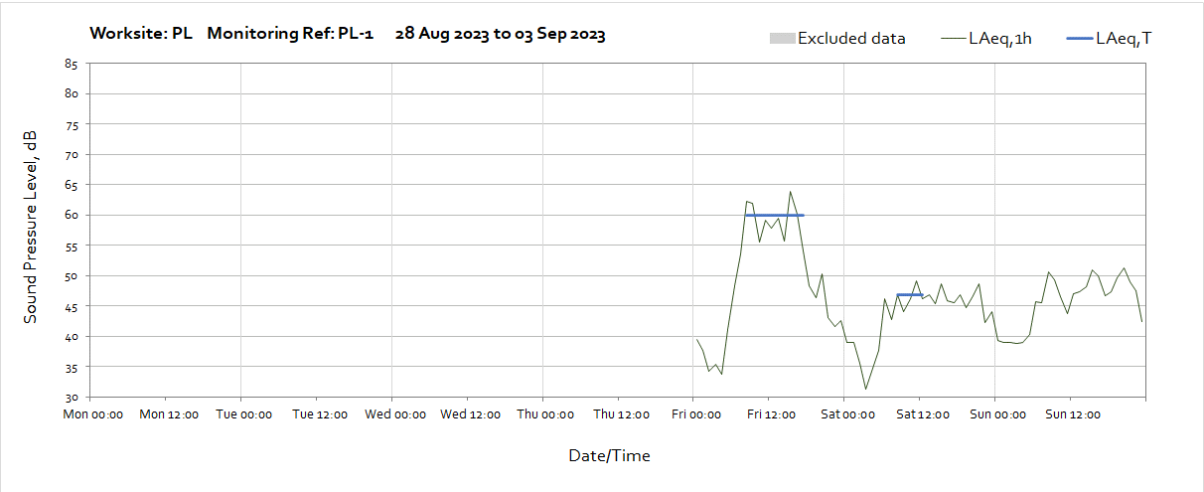


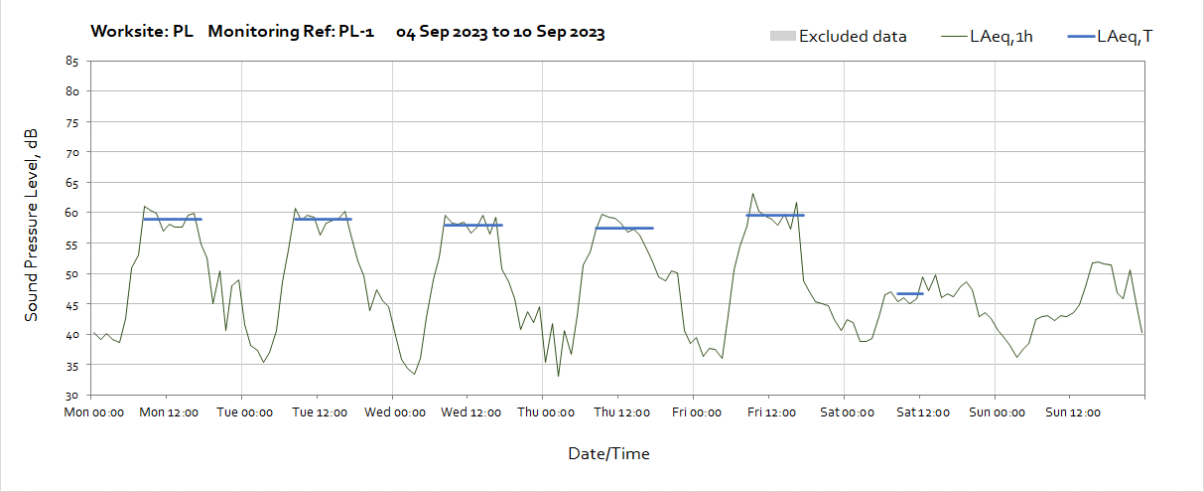






Worksite: PL – Monitoring Ref: PL-1




Worksite: PL Monitoring Ref: PL-1 04 Sep 2023 to 10 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
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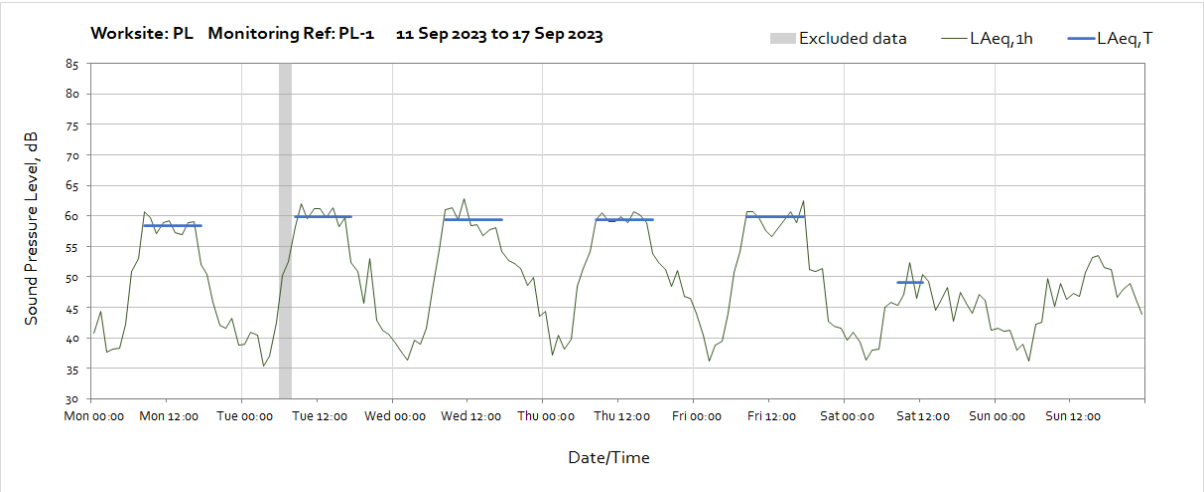
Date/Time


Worksite: PL Monitoring Ref: PL-1 11 Sep 2023 to 17 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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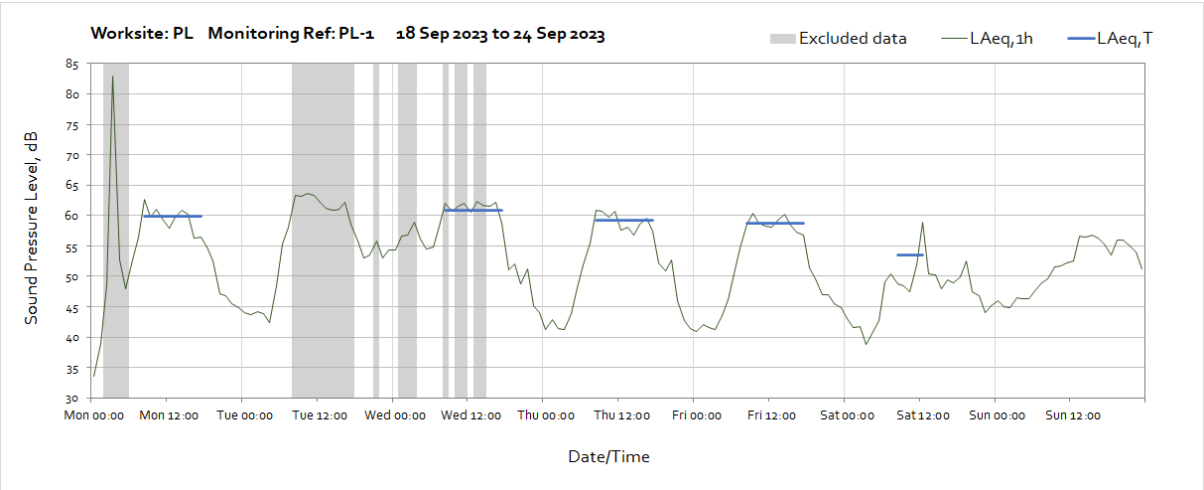
Date/Time


Worksite: PL Monitoring Ref: PL-1 18 Sep 2023 to 24 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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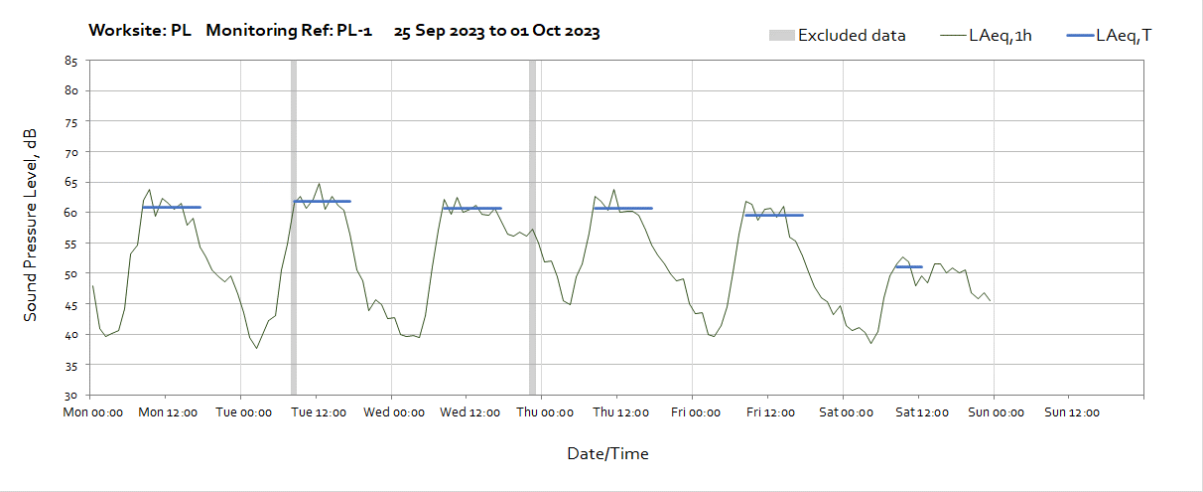
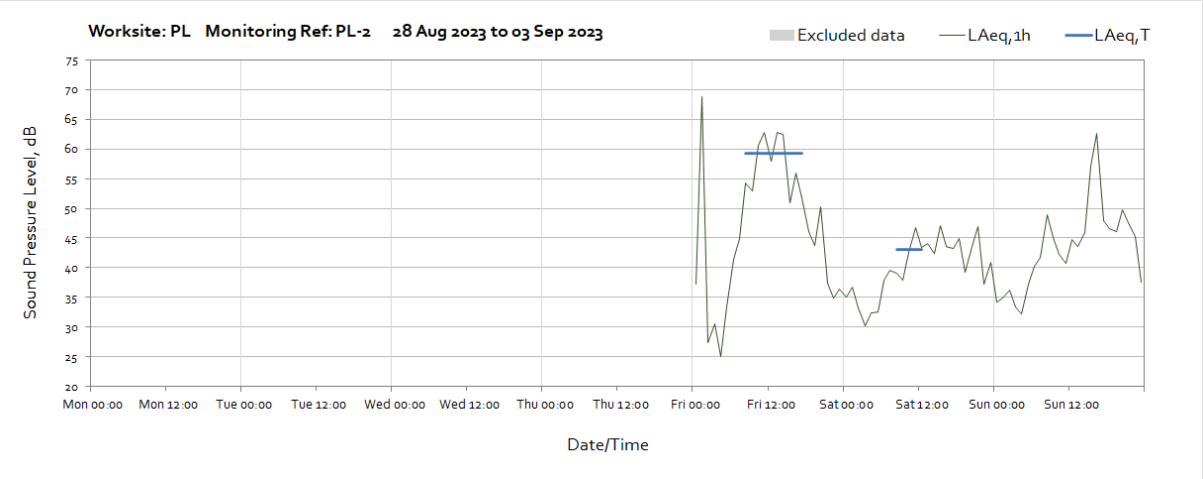
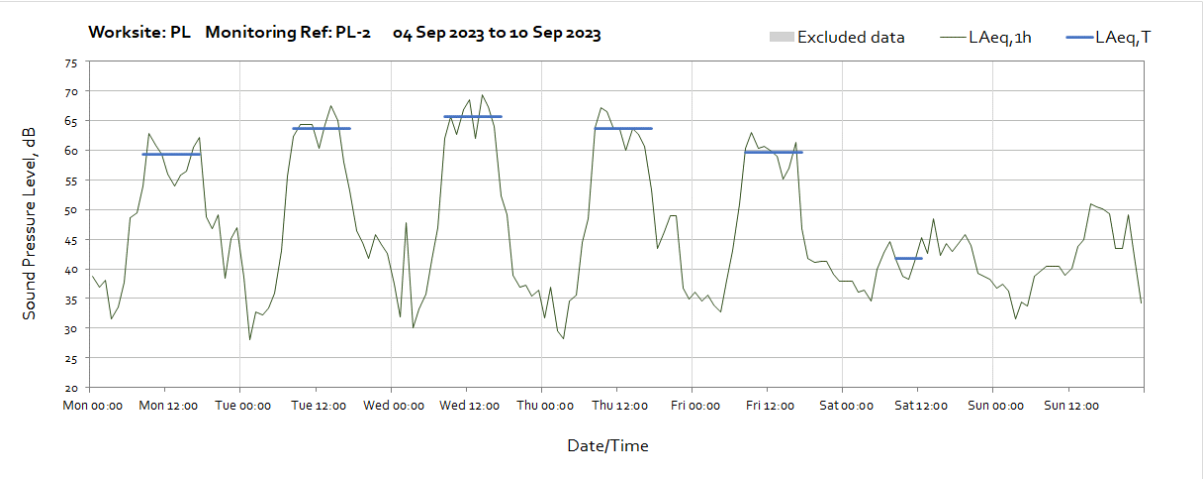
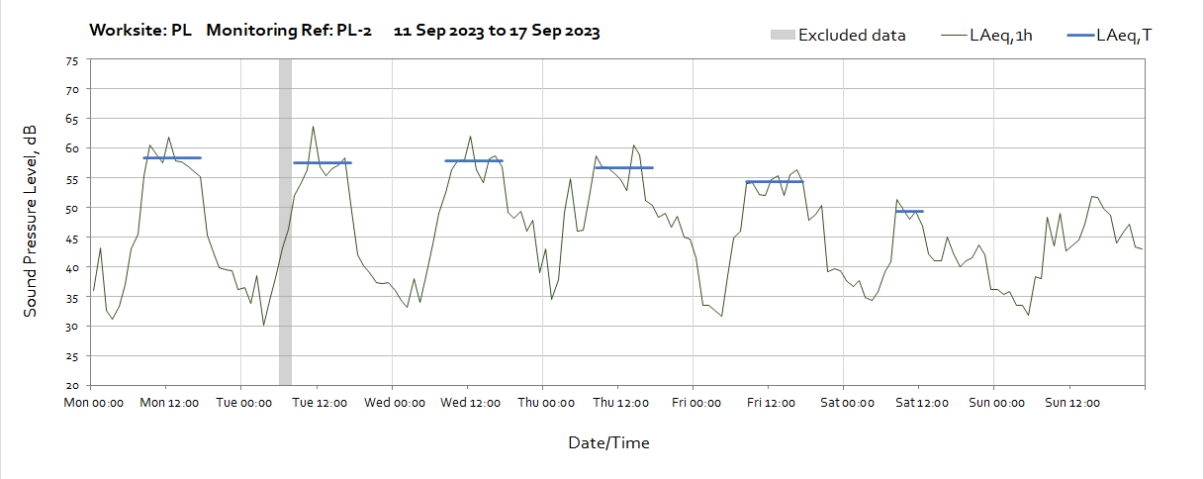
Date/Time



Worksite: PL – Monitoring Ref: PL-2






Worksite: PL Monitoring Ref: PL-2 11 Sep 2023 to 17 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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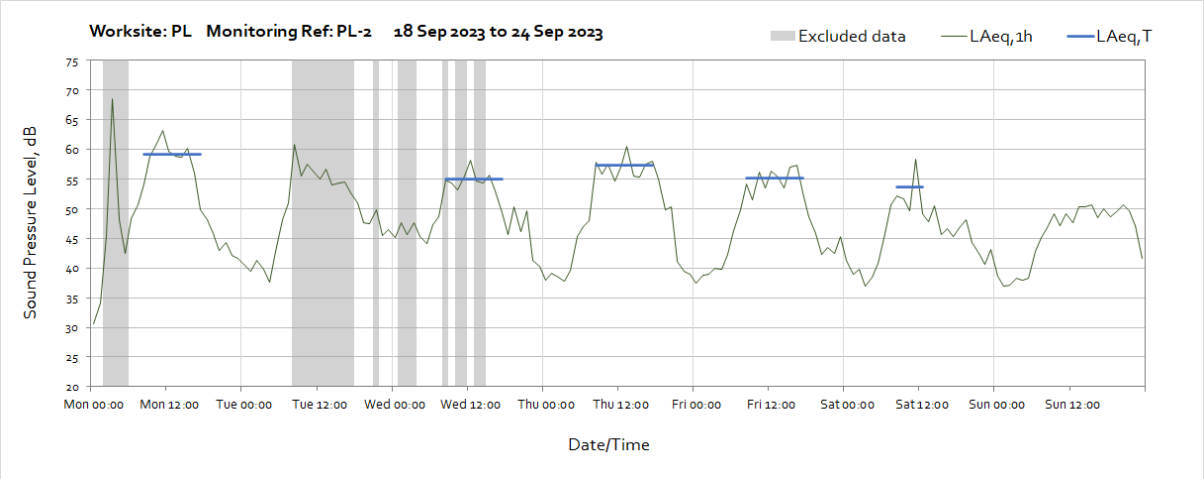
Date/Time


Worksite: PL Monitoring Ref: PL-2 18 Sep 2023 to 24 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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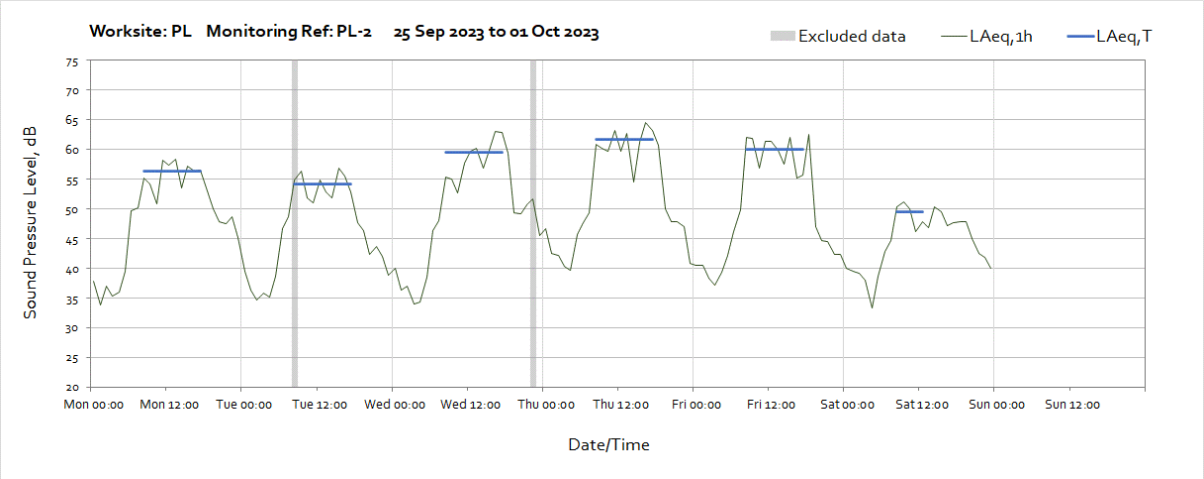
Date/Time


Worksite: PL Monitoring Ref: PL-2 25 Sep 2023 to 01 Oct 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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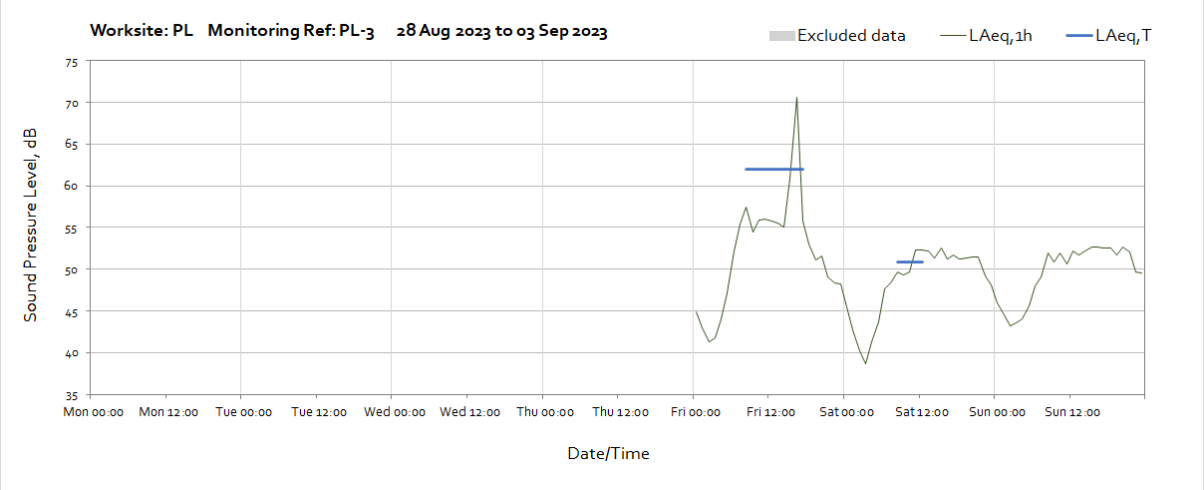
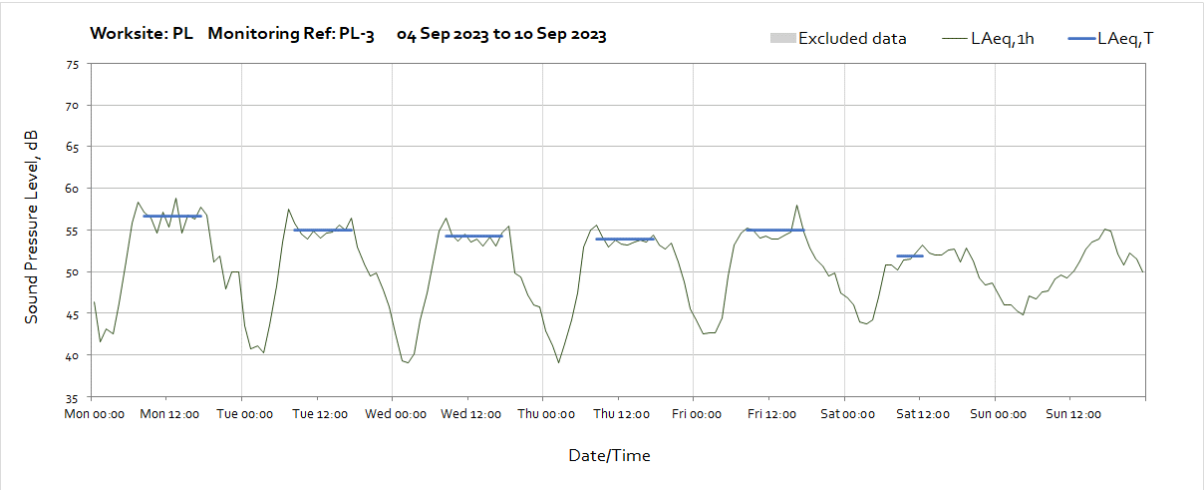
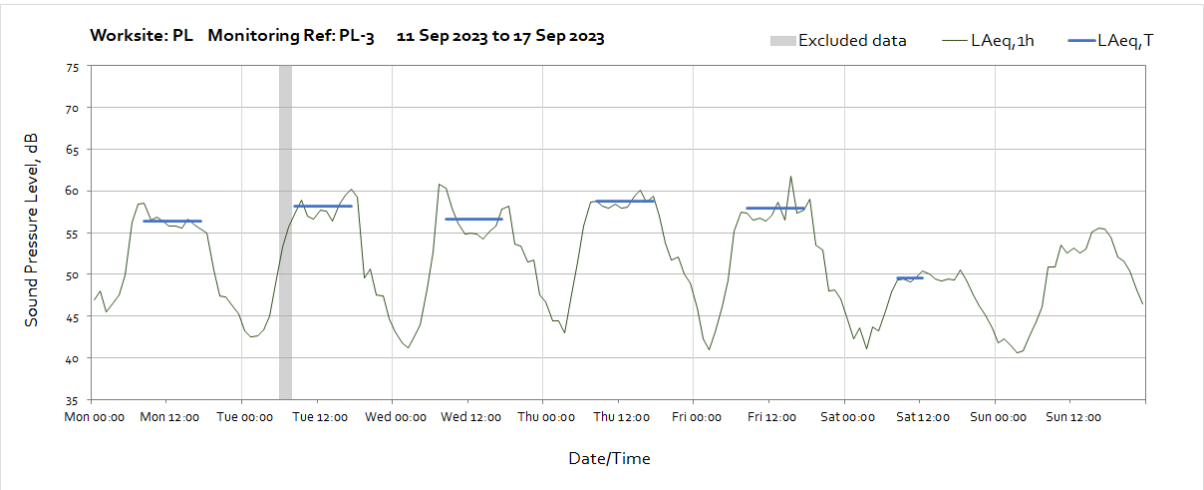
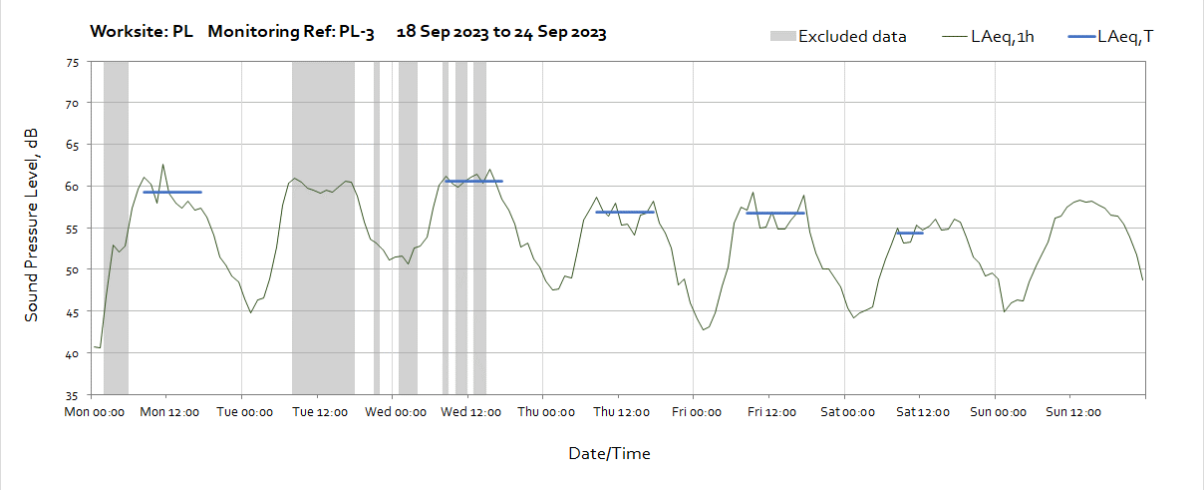
Date/Time

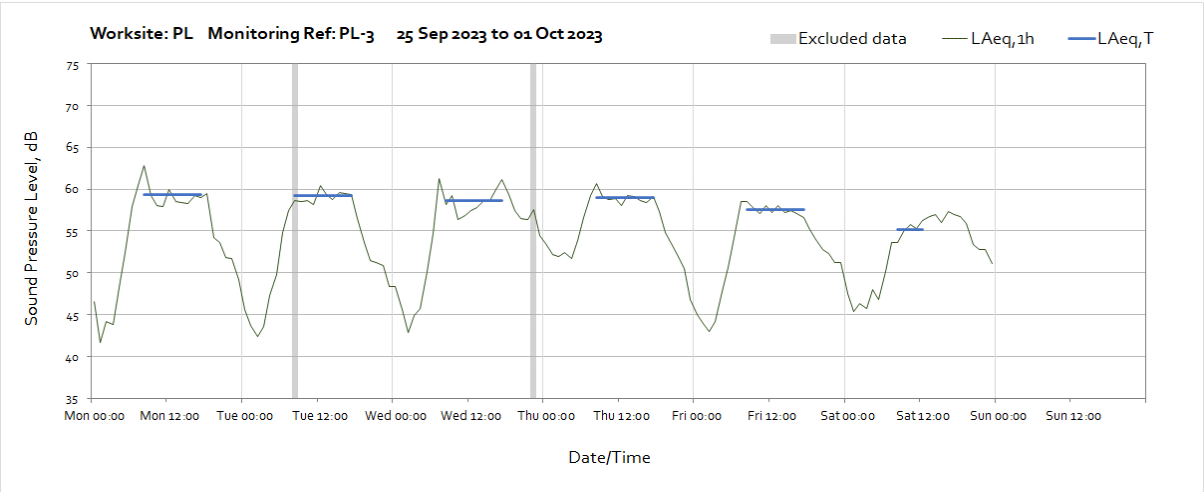
Worksite: PL – Monitoring Ref: PL-3



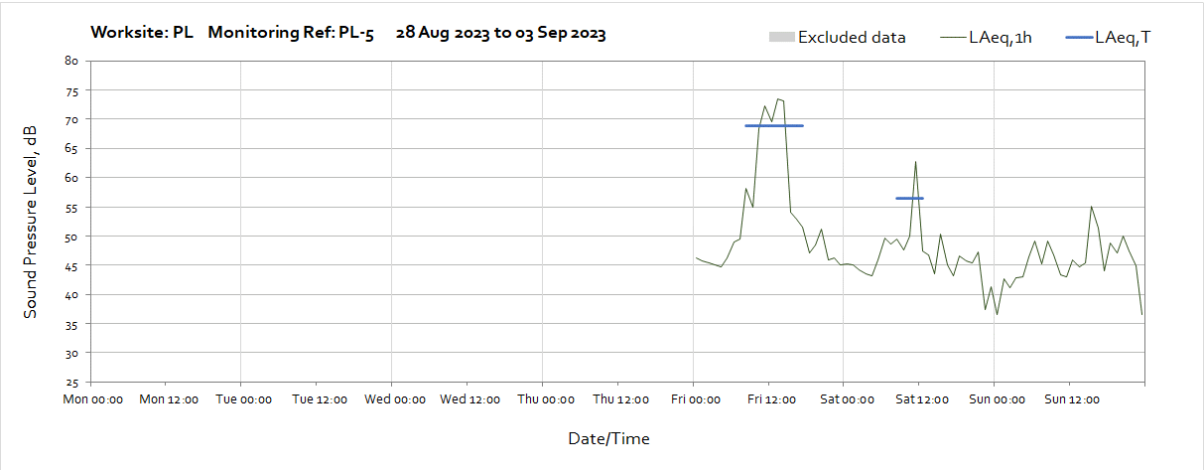


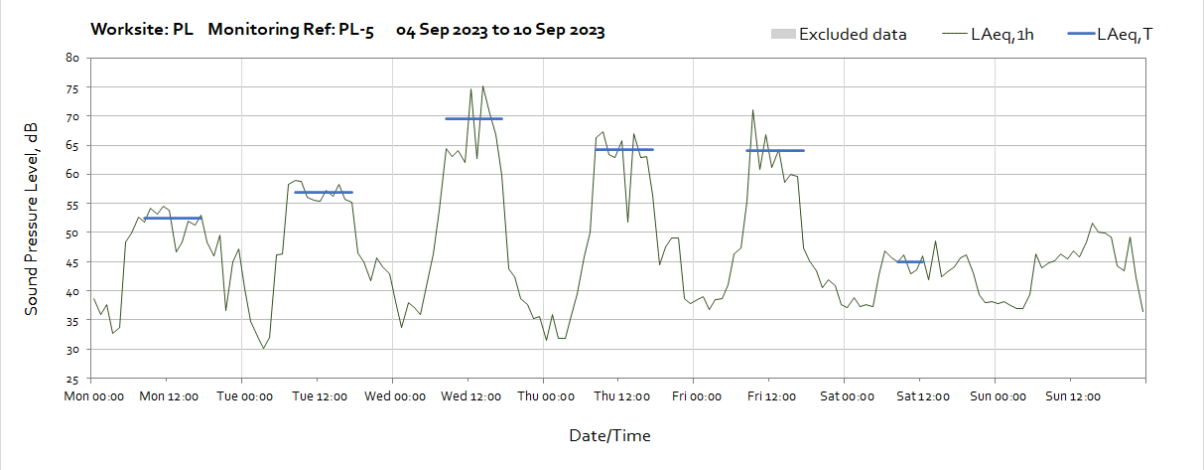






Worksite: PL – Monitoring Ref: PL-5




Worksite: PL Monitoring Ref: PL-5 04 Sep 2023 to 10 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
80
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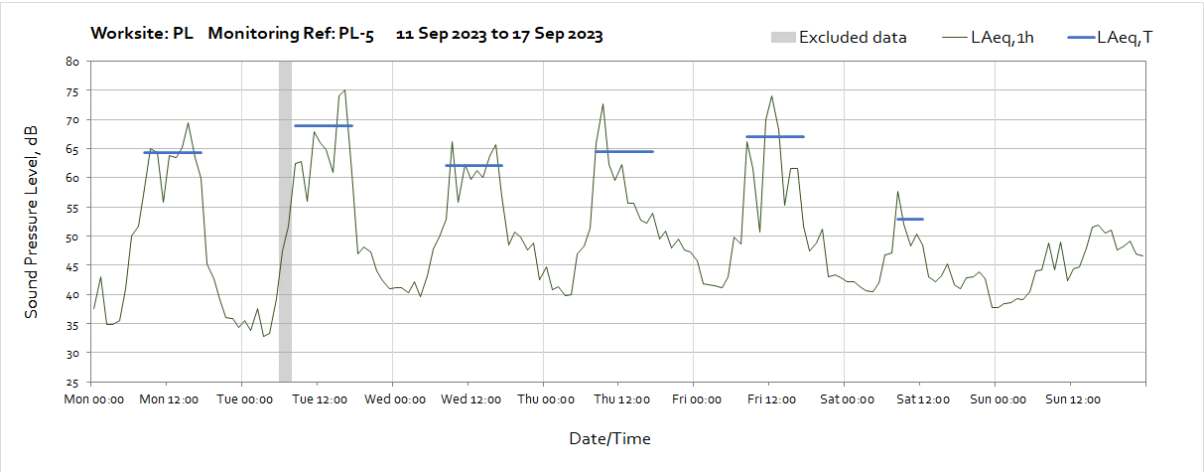
Date/Time


Worksite: PL Monitoring Ref: PL-5 11 Sep 2023 to 17 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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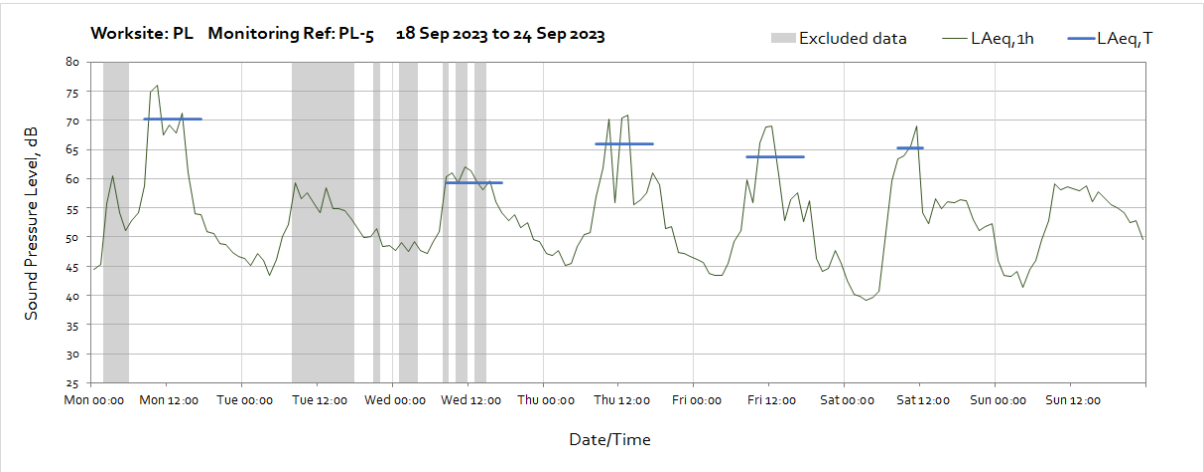
Date/Time


Worksite: PL Monitoring Ref: PL-5 18 Sep 2023 to 24 Sep 2023
Excluded data
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LAeq,T
Sound Pressure Level, dB
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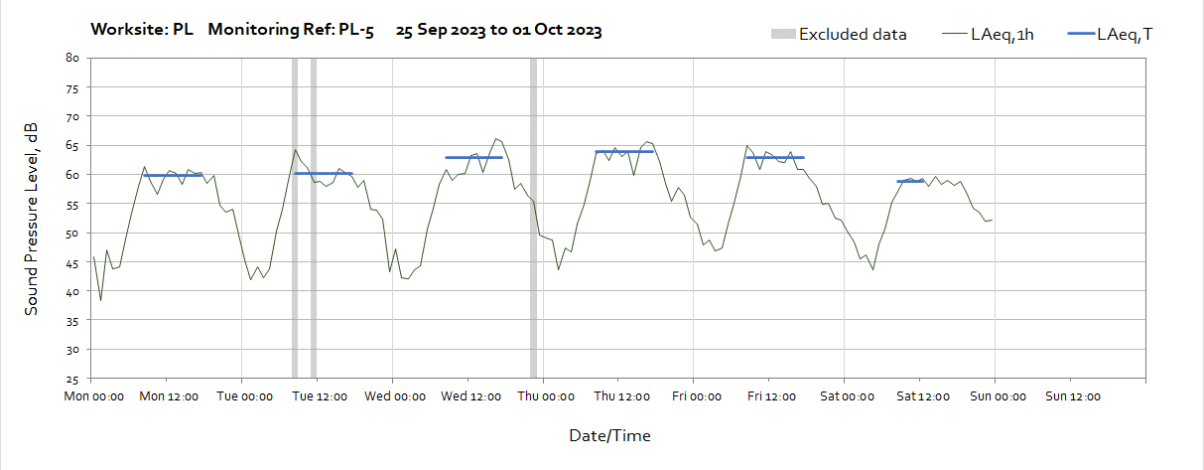
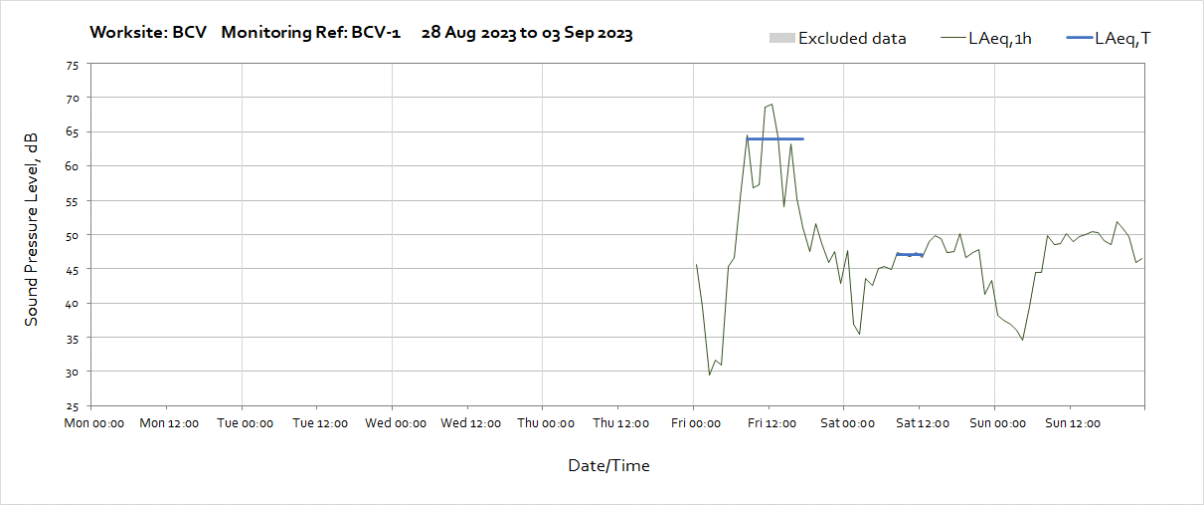
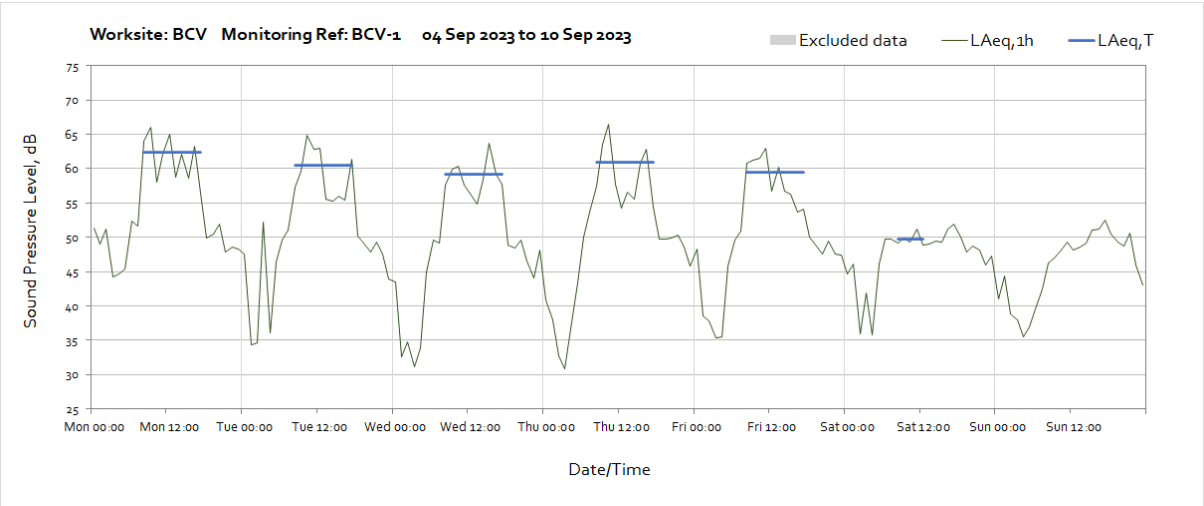
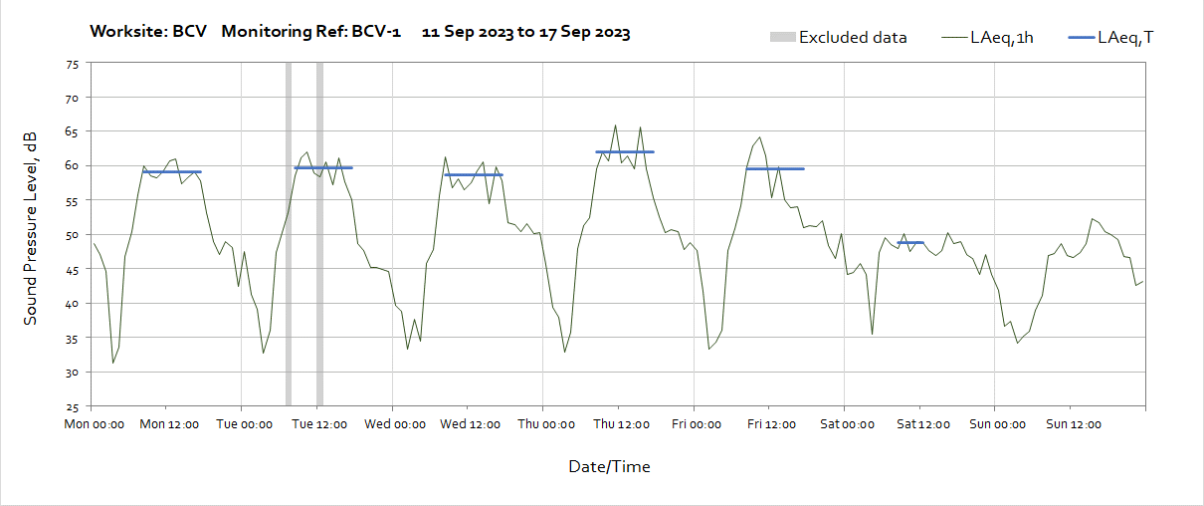
Date/Time



Worksite: BCV – Monitoring Ref: BCV-1






Worksite: BCV Monitoring Ref: BCV-1 11 Sep 2023 to 17 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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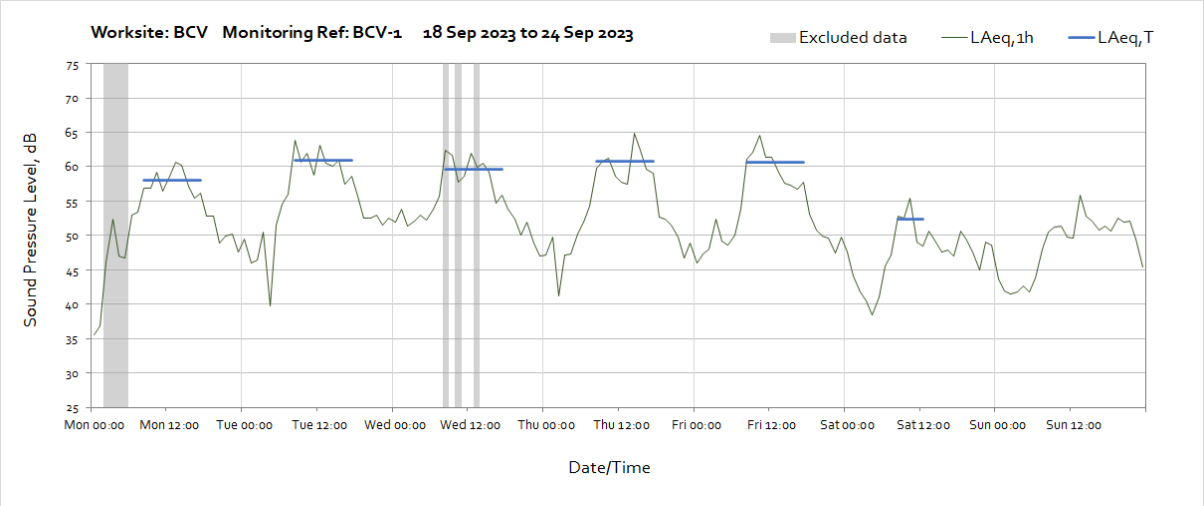
Date/Time


Worksite: BCV Monitoring Ref: BCV-1 18 Sep 2023 to 24 Sep 2023
Excluded data
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LAeq,T
Sound Pressure Level, dB
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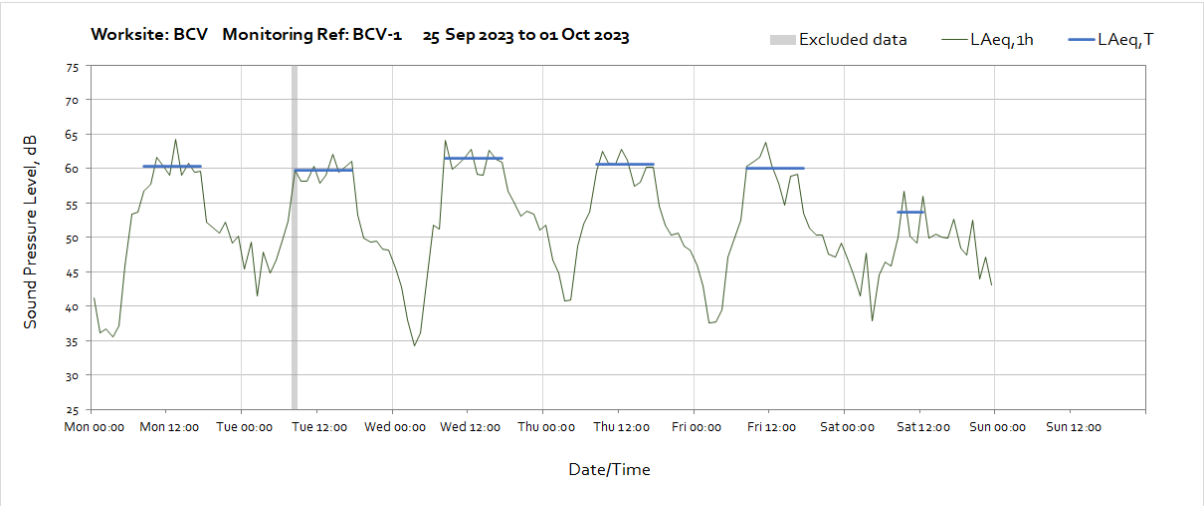
Date/Time


Worksite: BCV Monitoring Ref: BCV-1 25 Sep 2023 to 01 Oct 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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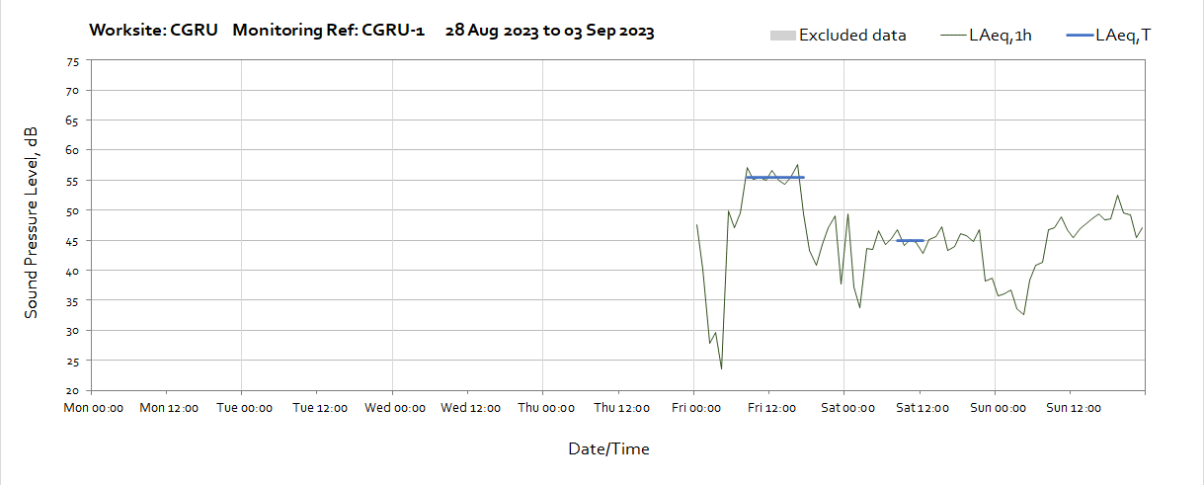
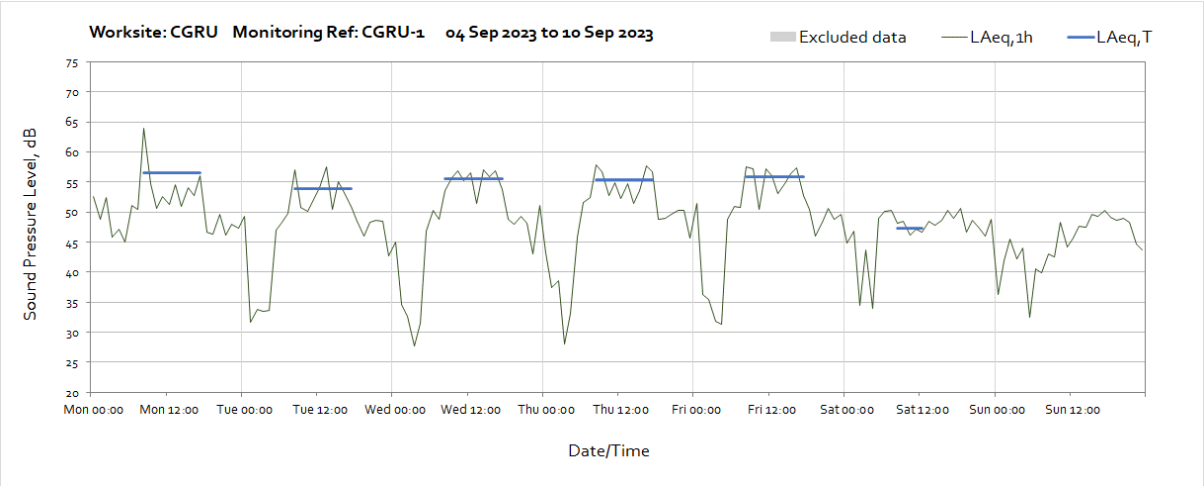
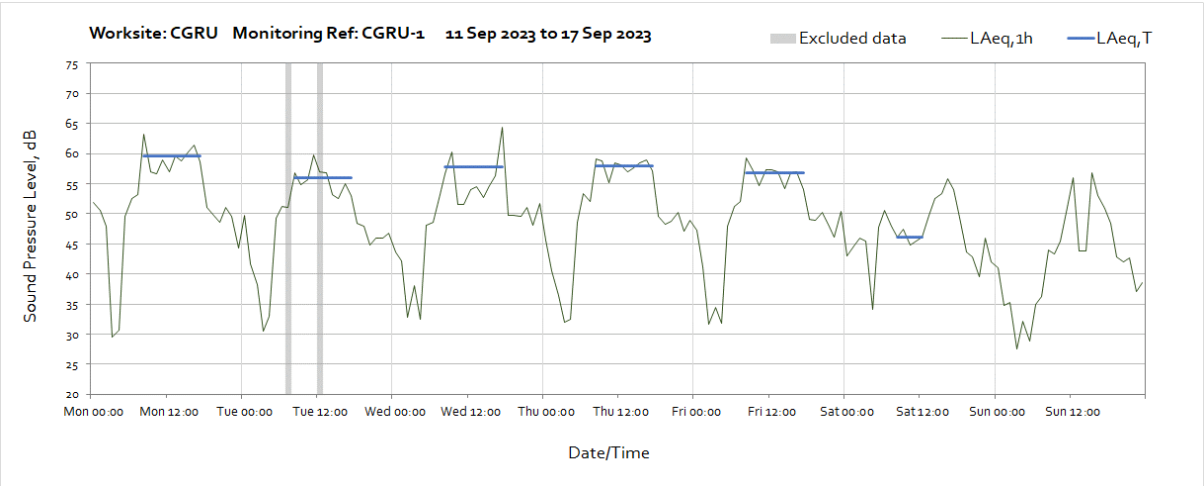
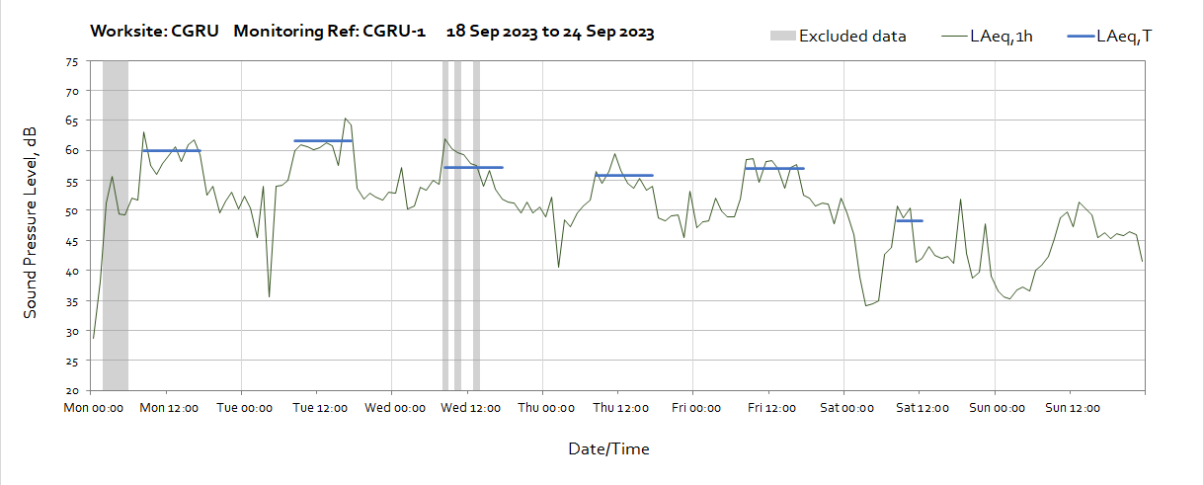
Date/Time

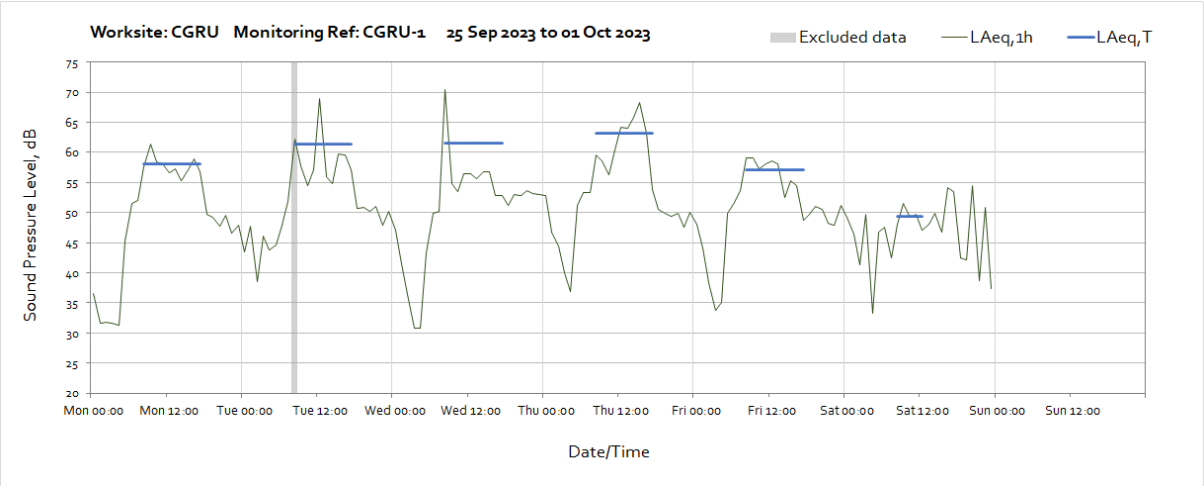
Worksite: CGRU– Monitoring Ref: CGRU-1



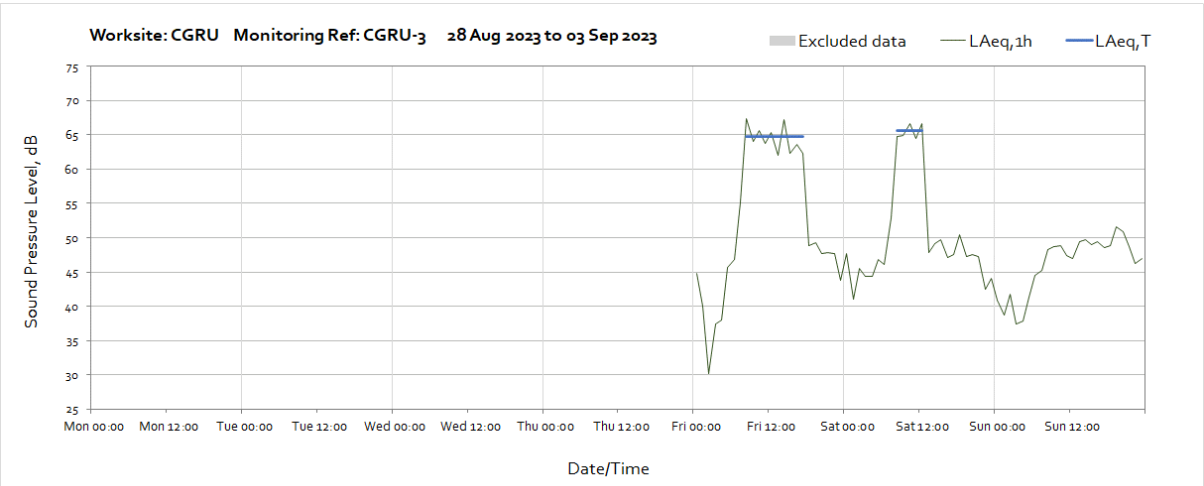


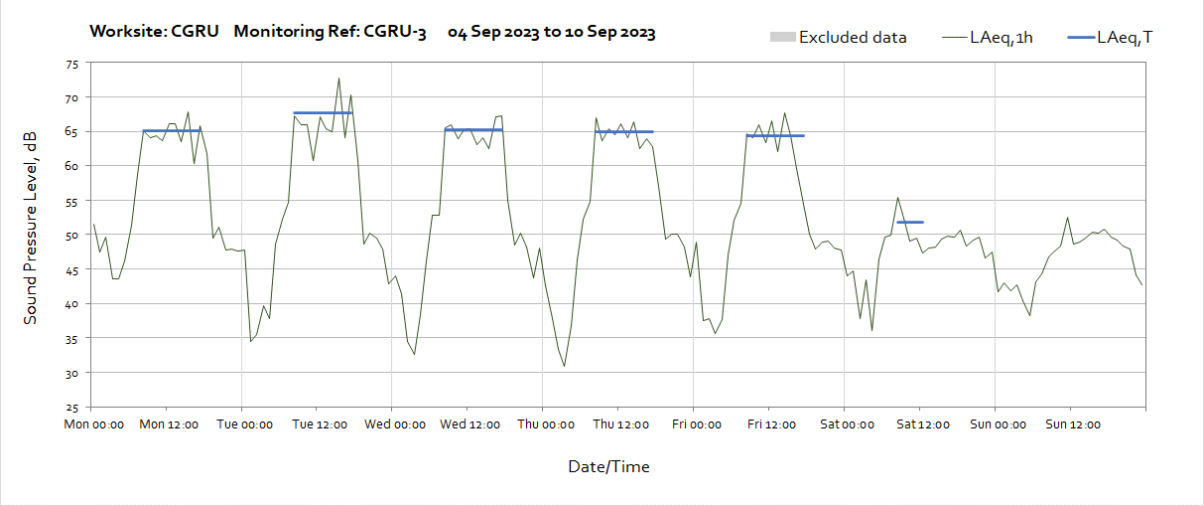






Worksite: CGRU– Monitoring Ref: CGRU-3




Worksite: CGRU Monitoring Ref: CGRU-3 04 Sep 2023 to 10 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
65
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55
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45
40
35
30
25
Mon 00:00
Mon 12:00
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Tue 12:00
Wed 00:00
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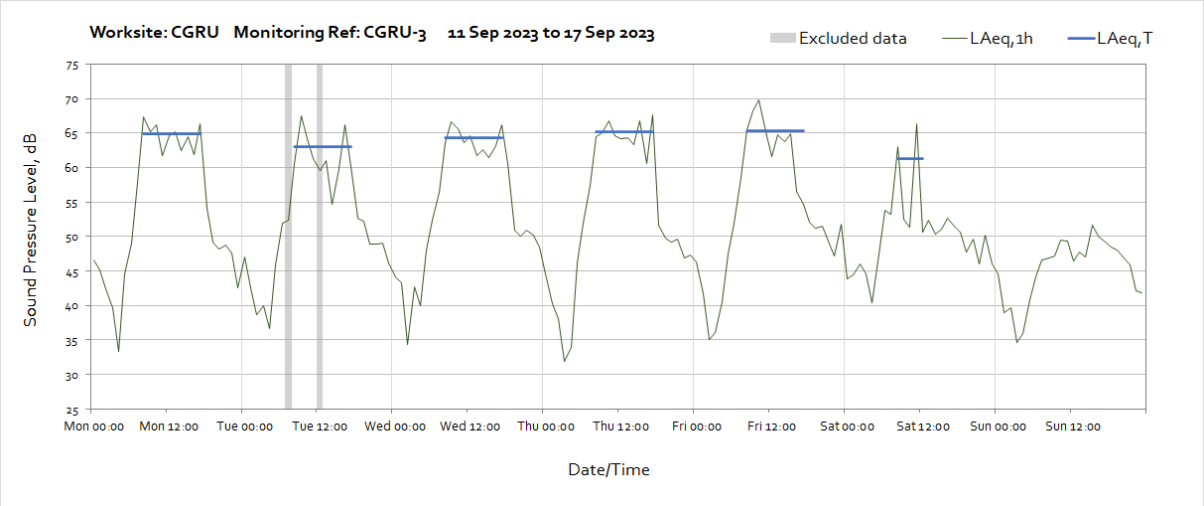
Sun 12:00
Date/Time


Worksite: CGRU Monitoring Ref: CGRU-3 11 Sep 2023 to 17 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
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50
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40
35
30
25
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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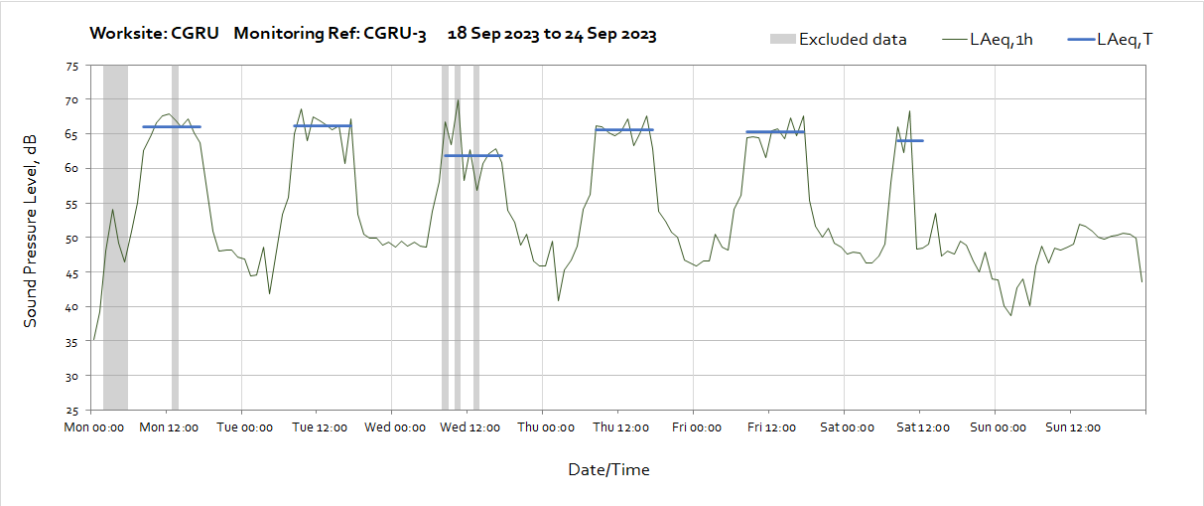
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: CGRU Monitoring Ref: CGRU-3 18 Sep 2023 to 24 Sep 2023
Excluded data
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LAeq,T
Sound Pressure Level, dB
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70
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Tue 12:00
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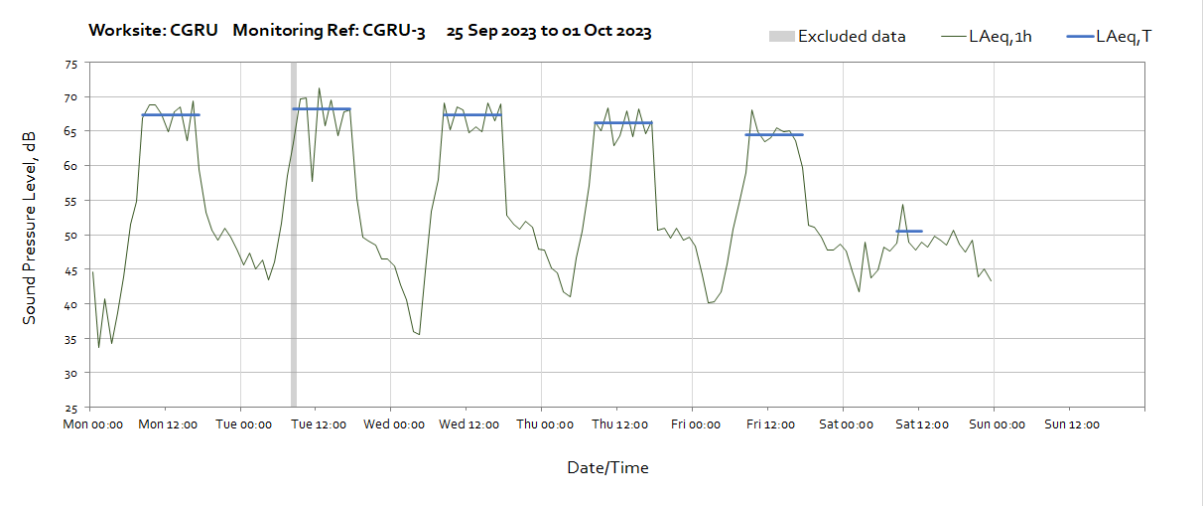
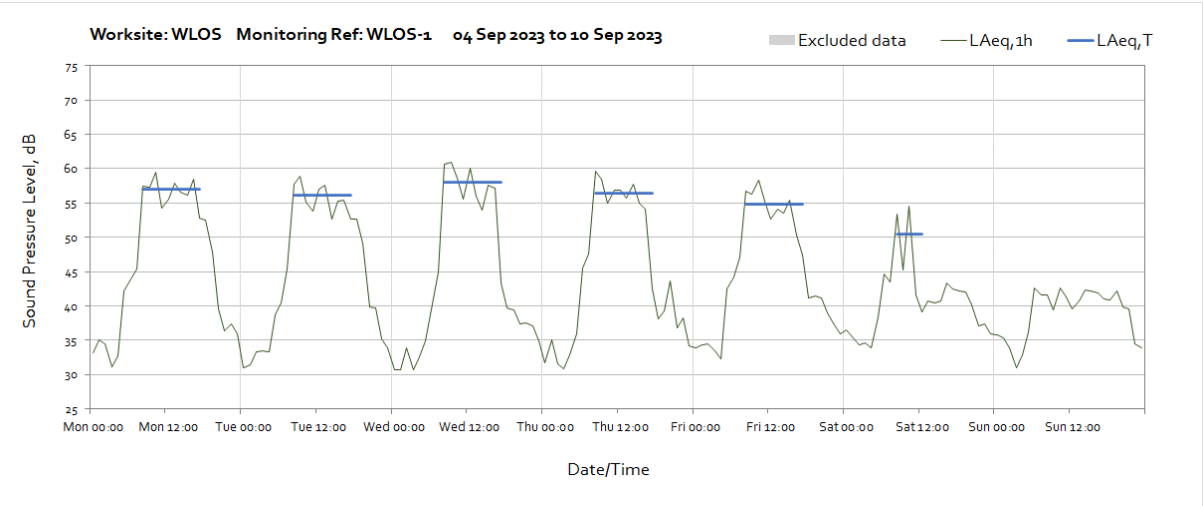
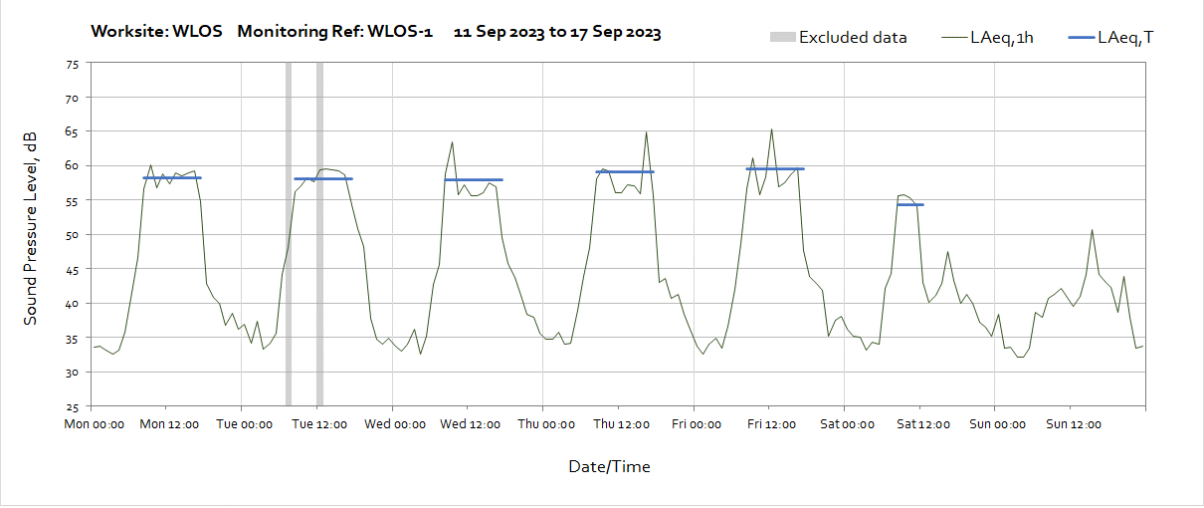
Date/Time



Worksite: WLOS – Monitoring Ref: WLOS-1




Worksite: WLOS Monitoring Ref: WLOS-1 11 Sep 2023 to 17 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
65
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50
45
40
35
30
25
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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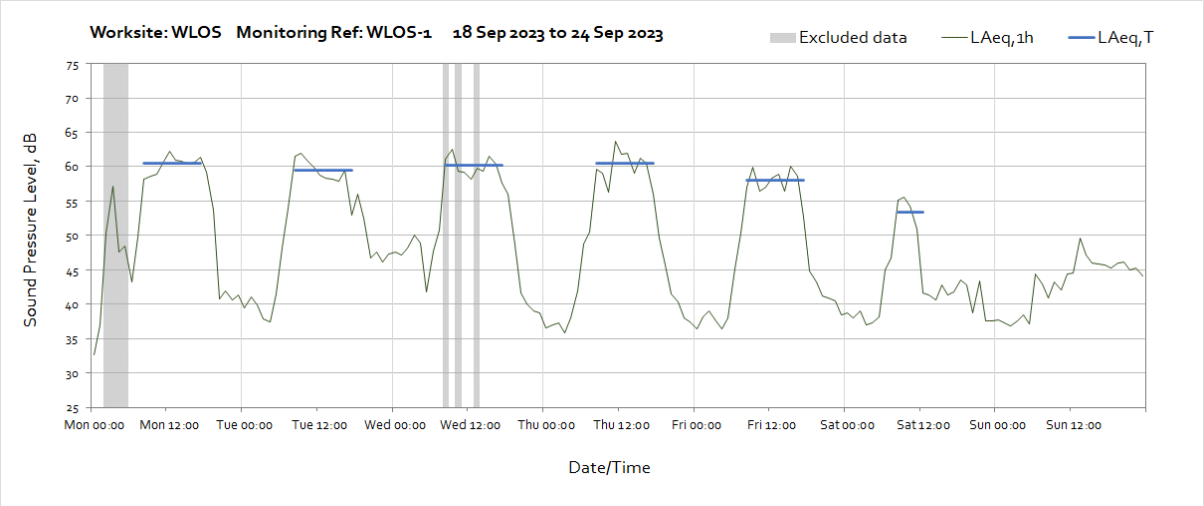
Sun 00:00
Sun 12:00
Date/Time


Worksite: WLOS Monitoring Ref: WLOS-1 18 Sep 2023 to 24 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
65
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50
45
40
35
30
25
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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Fri 00:00
Fri 12:00
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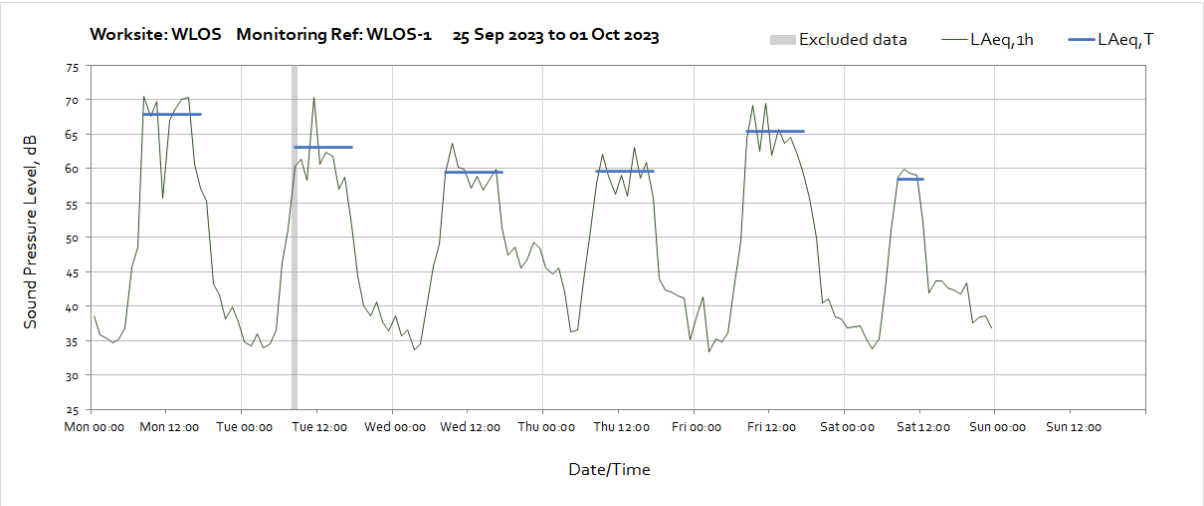
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: WLOS Monitoring Ref: WLOS-1 25 Sep 2023 to 01 Oct 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
65
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40
35
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25
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
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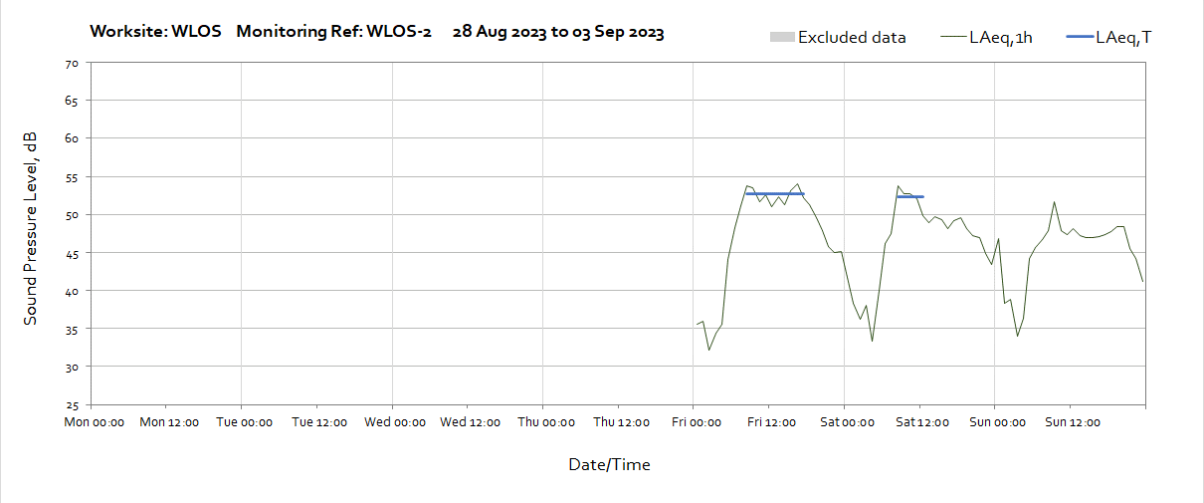
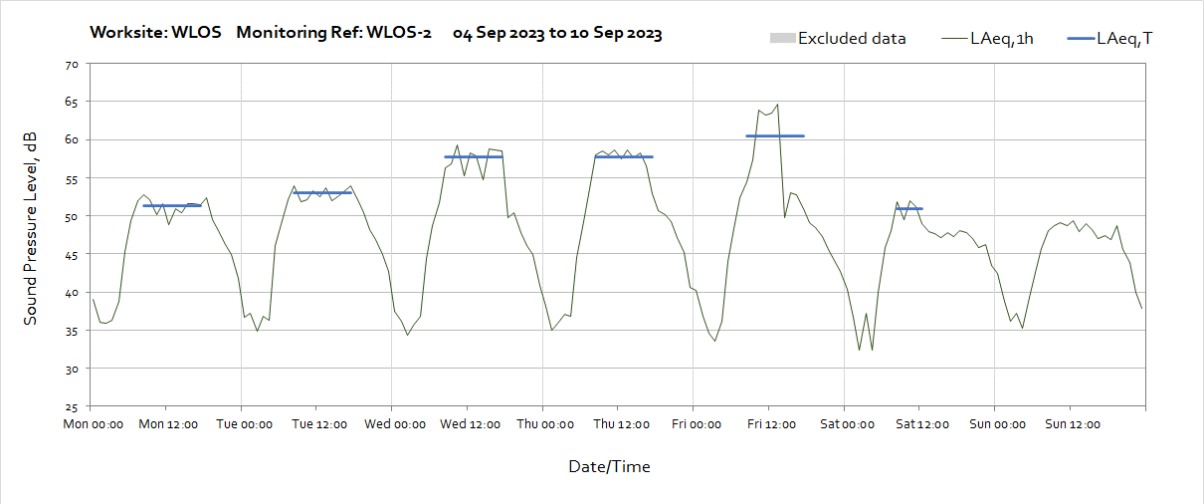
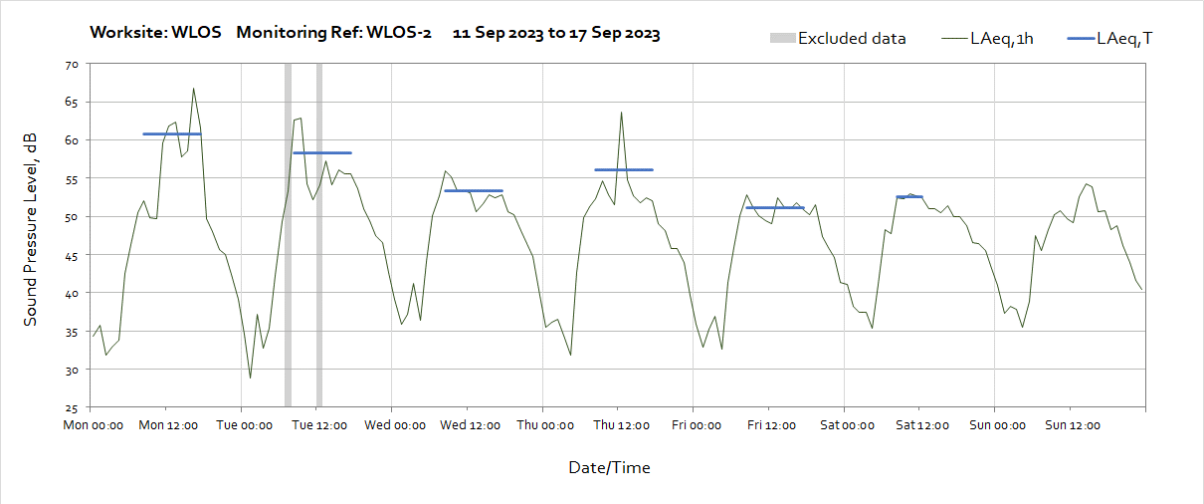
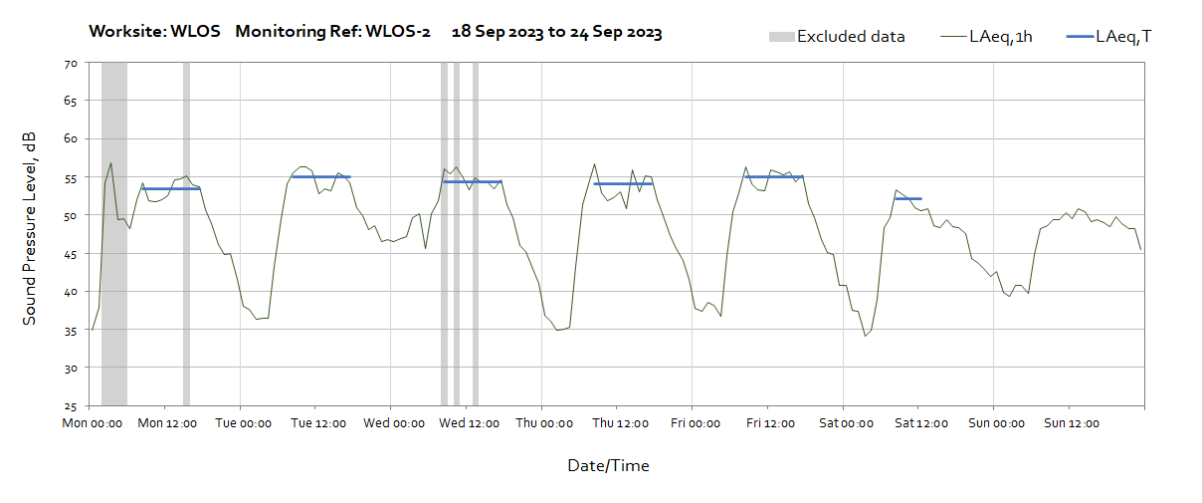
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

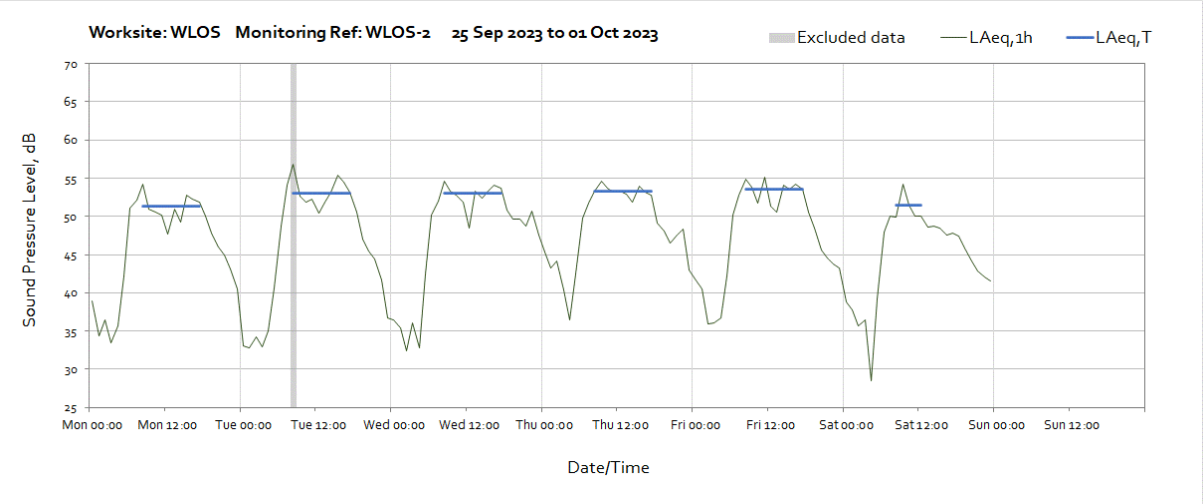
Worksite: WLOS – Monitoring Ref: WLOS-2



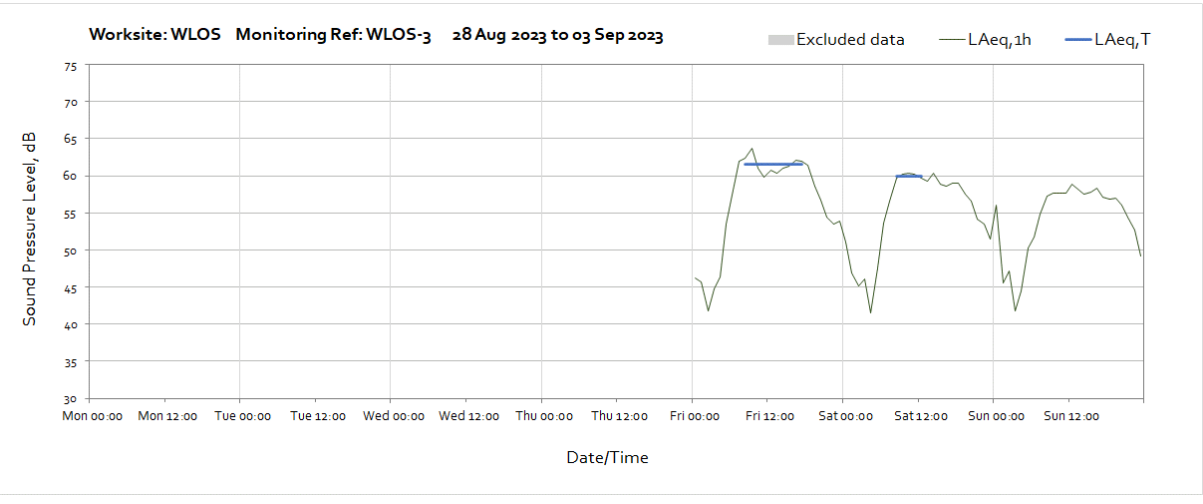


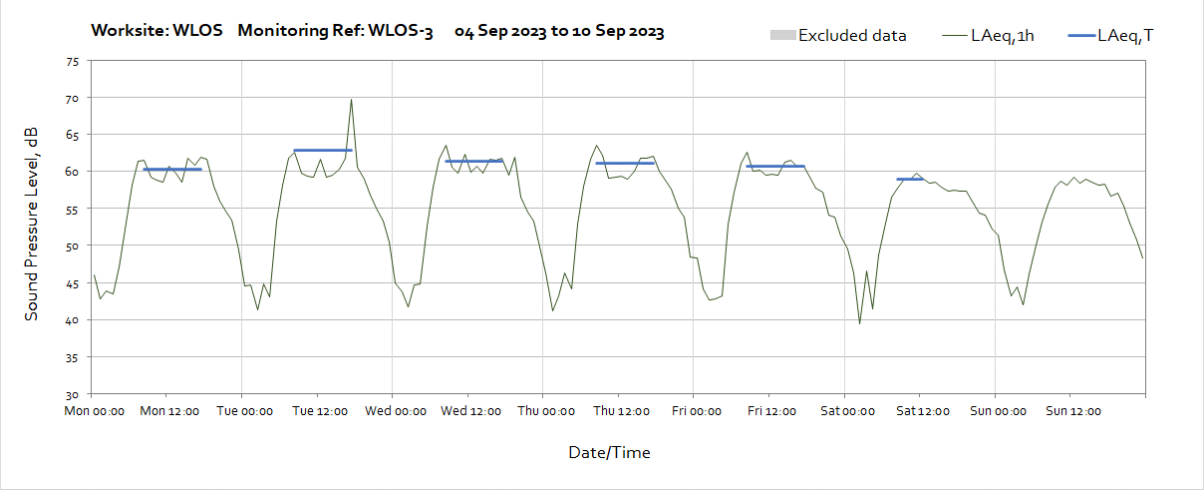






Worksite: WLOS – Monitoring Ref: WLOS-3




Worksite: WLOS Monitoring Ref: WLOS-3 04 Sep 2023 to 10 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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70
65
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45
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35
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Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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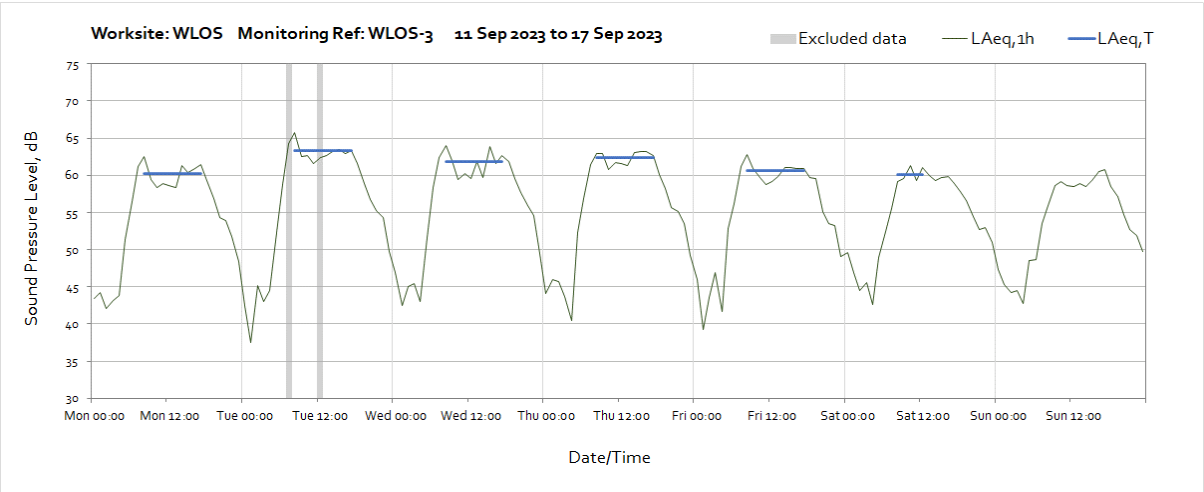
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: WLOS Monitoring Ref: WLOS-3 11 Sep 2023 to 17 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
65
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55
50
45
40
35
30
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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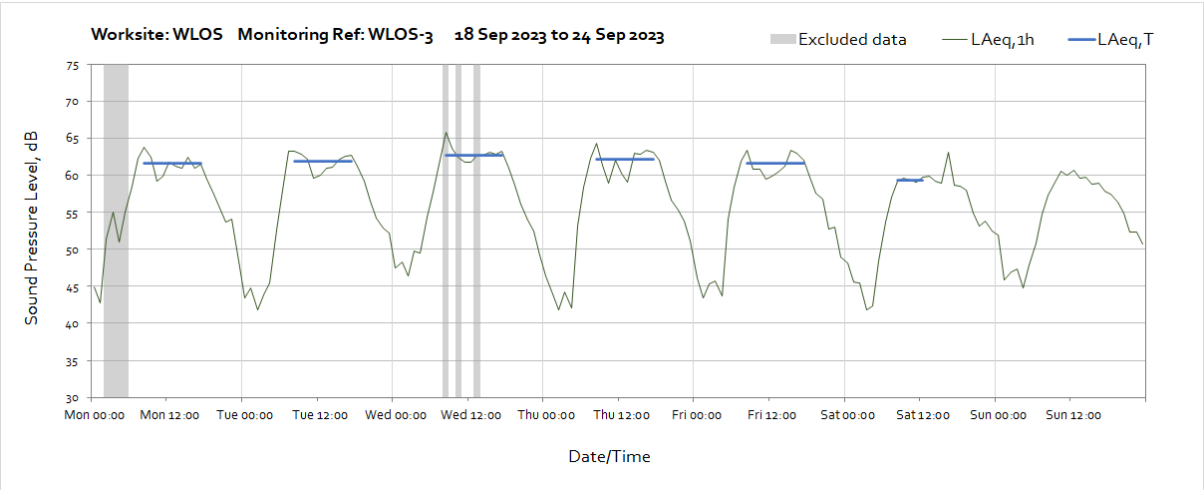
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: WLOS Monitoring Ref: WLOS-3 18 Sep 2023 to 24 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
65
60
55
50
45
40
35
30
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
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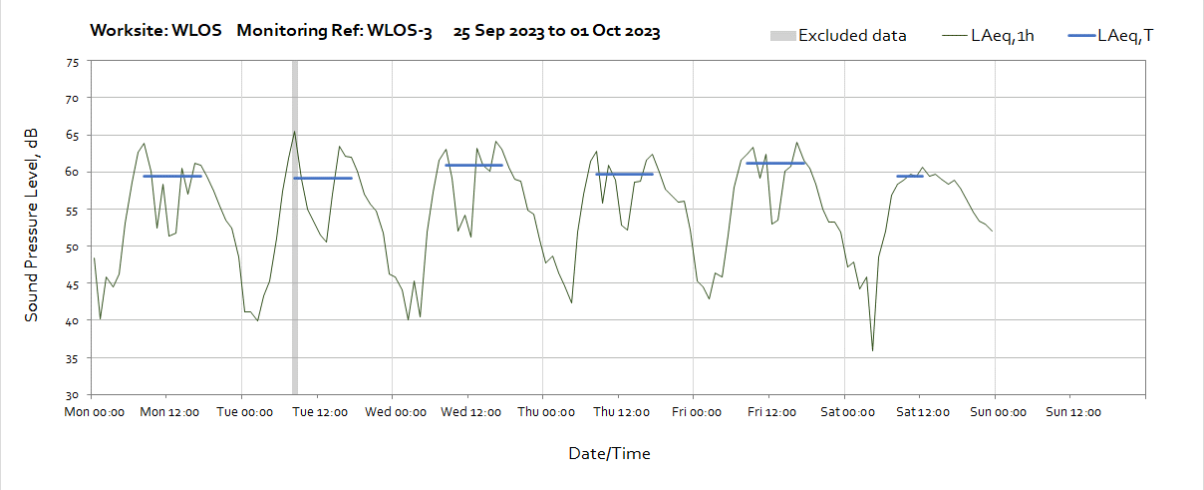
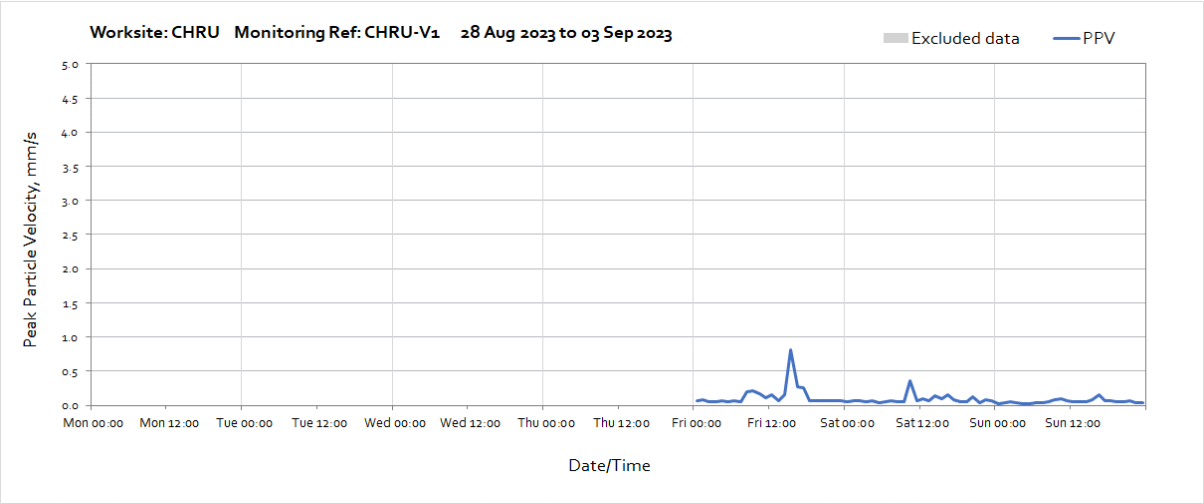
Sun 00:00
Sun 12:00
Date/Time

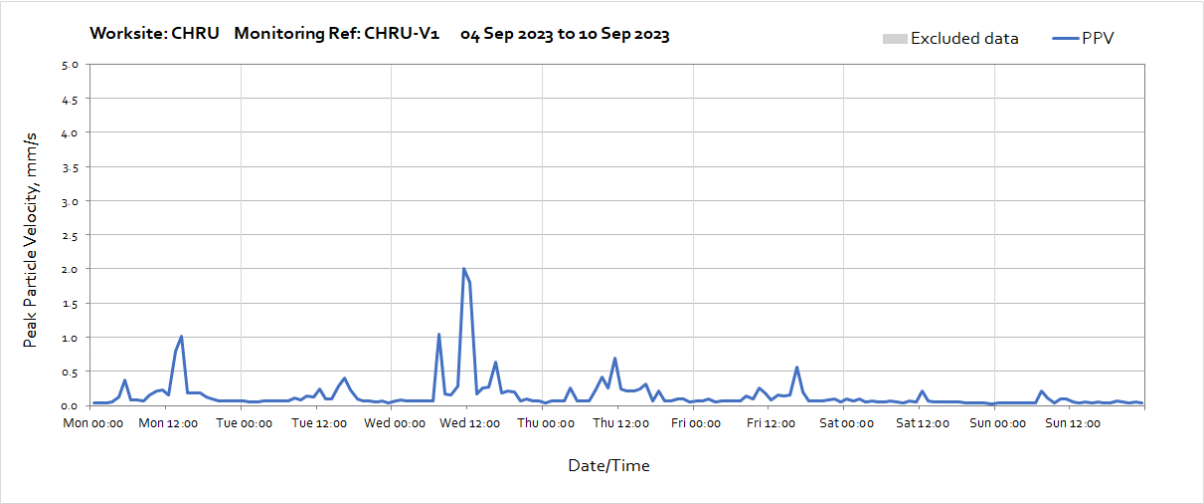

Worksite: WLOS Monitoring Ref: WLOS-3 25 Sep 2023 to 01 Oct 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
65
60
55
50
45
40
35
30
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

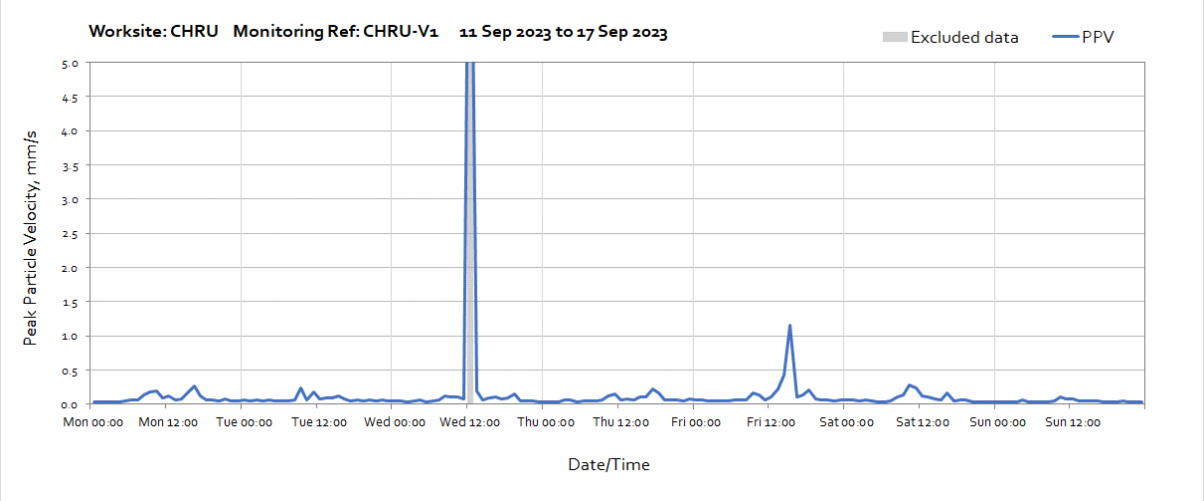
Vibration

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 of the main report.

Worksite: CHR – Monitoring Ref: CHRU-V1






Worksite: CHRU Monitoring Ref: CHRU-V1 11 Sep 2023 to 17 Sep 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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Thu 12:00
Fri 00:00
Fri 12:00
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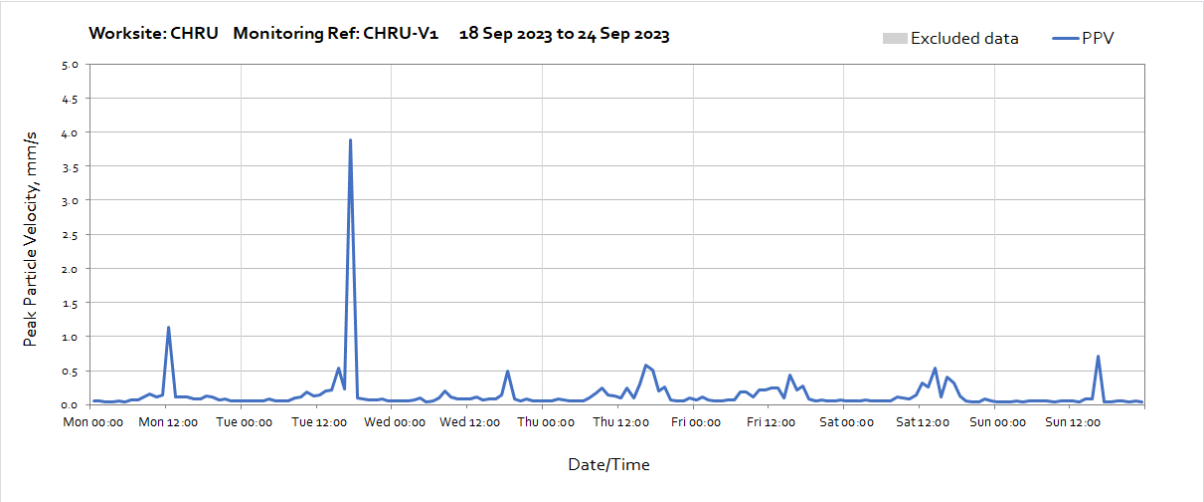
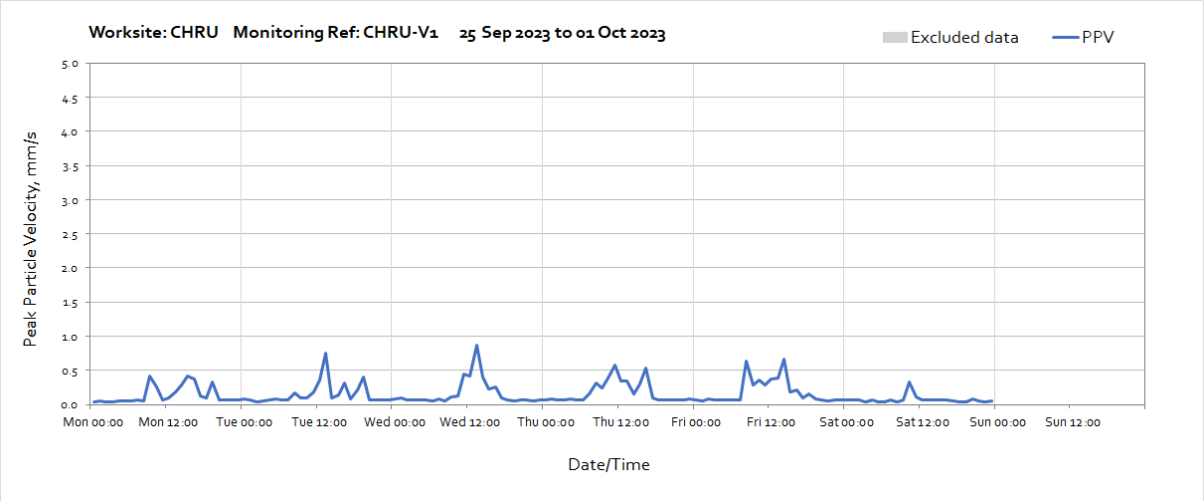
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: CHRU Monitoring Ref: CHRU-V1 18 Sep 2023 to 24 Sep 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: CHRU Monitoring Ref: CHRU-V1 25 Sep 2023 to 01 Oct 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
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0.0
Mon 00:00
Mon 12:00
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Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
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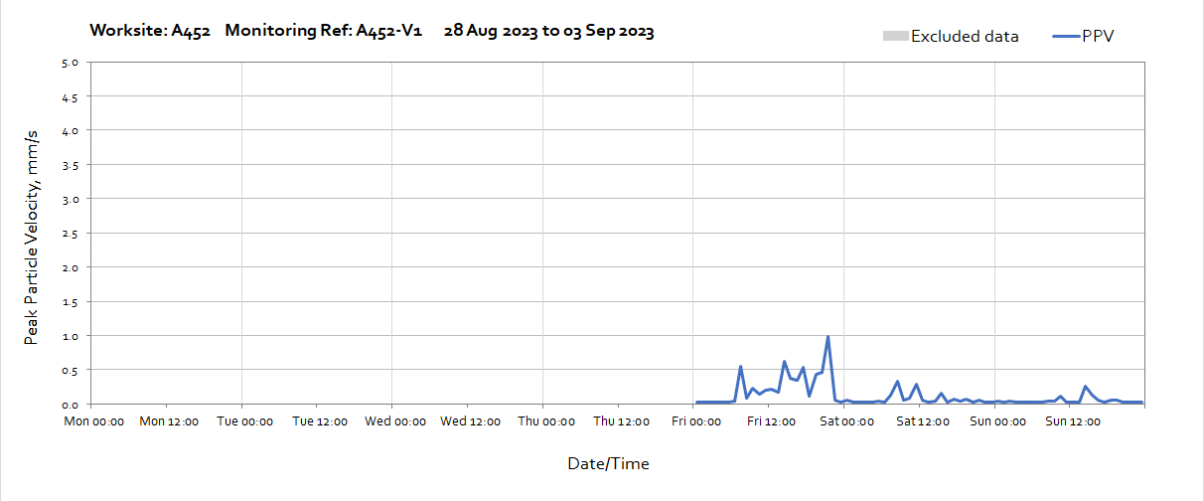
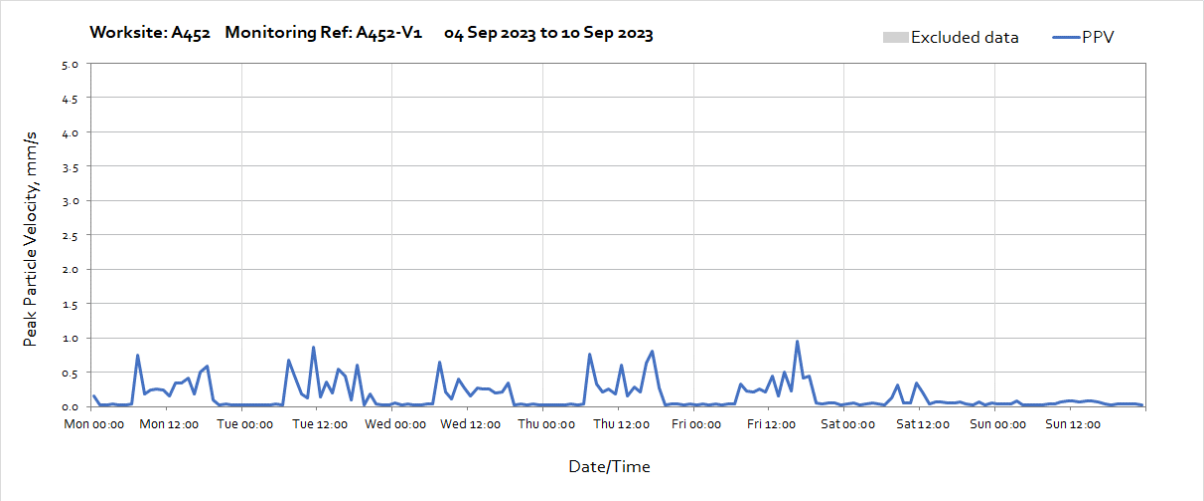
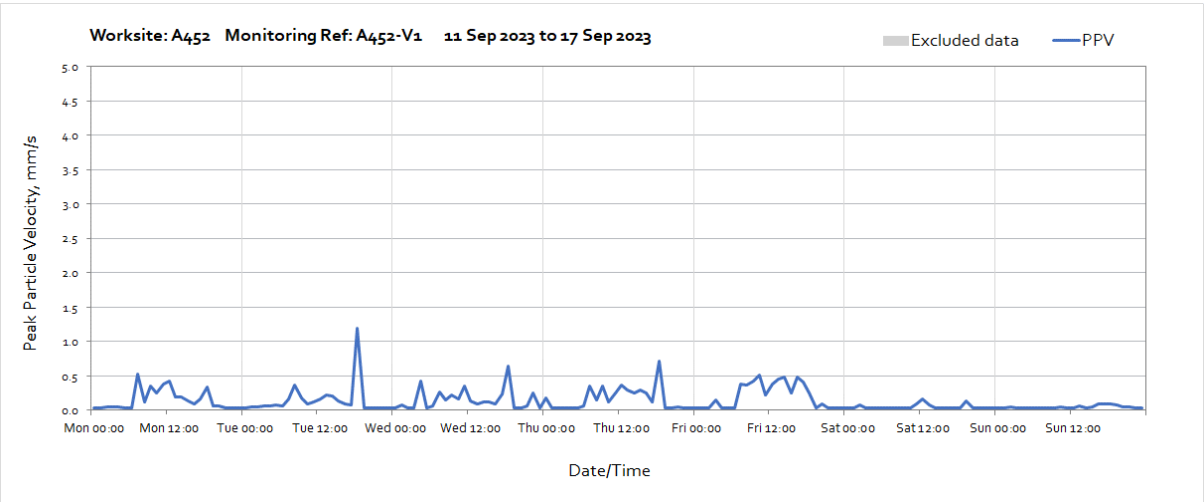
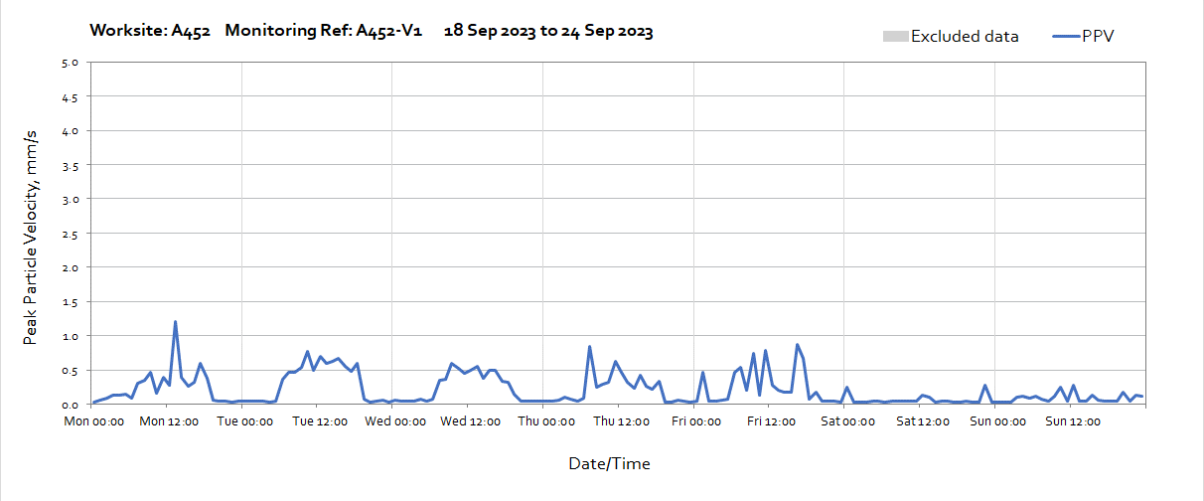
Sun 12:00
Date/Time

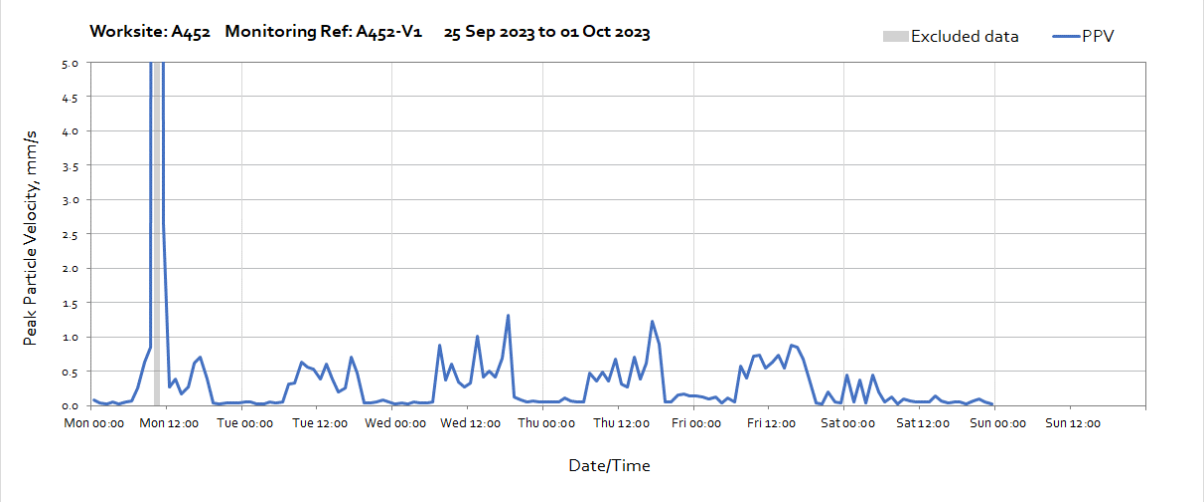
Worksite: A452 – Monitoring Ref: A452-V1



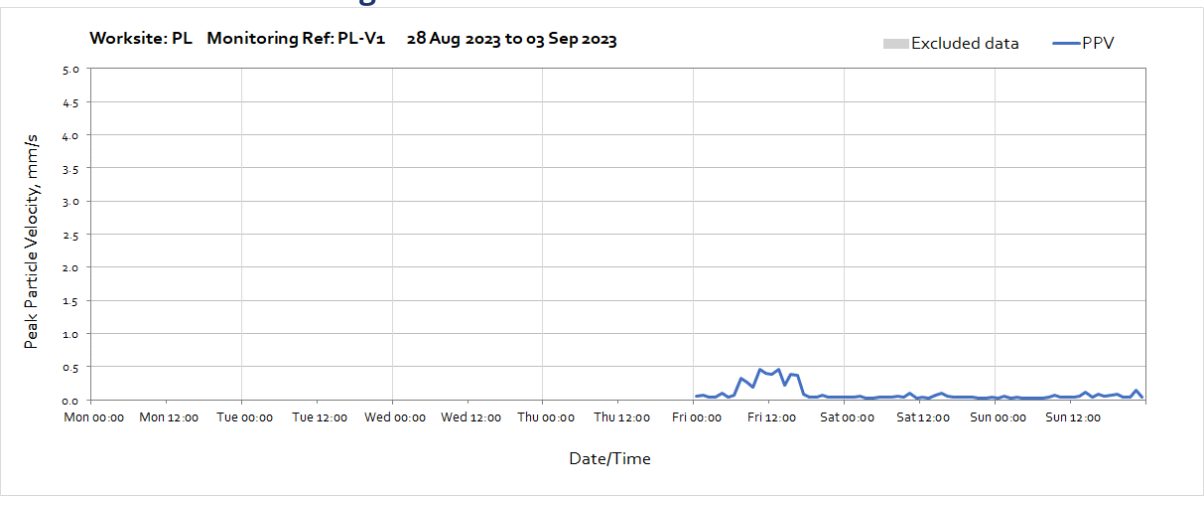


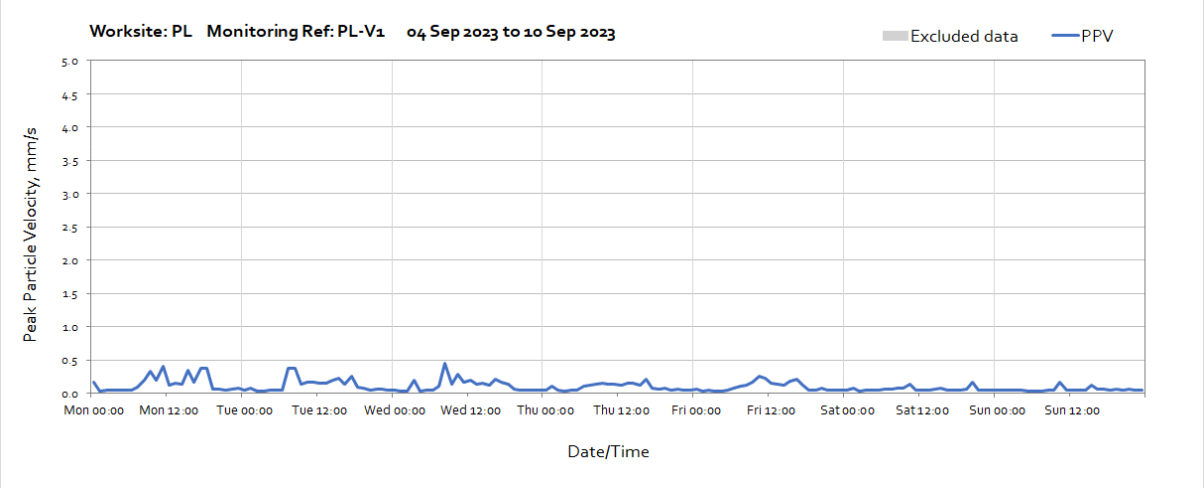






Worksite: PL – Monitoring Ref: PL-V1




Worksite: PL Monitoring Ref: PL-V1 04 Sep 2023 to 10 Sep 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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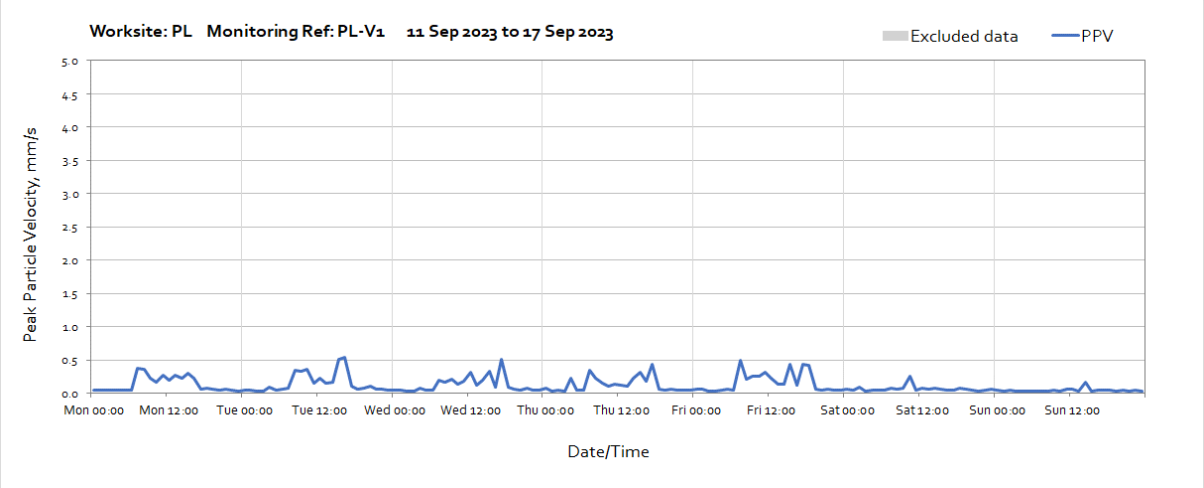
Date/Time


Worksite: PL Monitoring Ref: PL-V1 11 Sep 2023 to 17 Sep 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
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4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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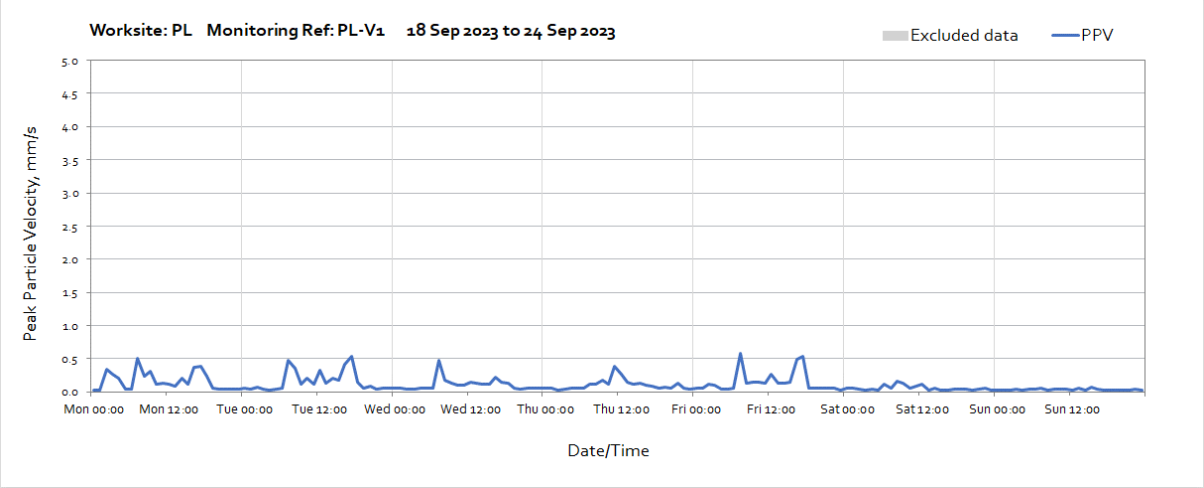
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: PL Monitoring Ref: PL-V1 18 Sep 2023 to 24 Sep 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
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4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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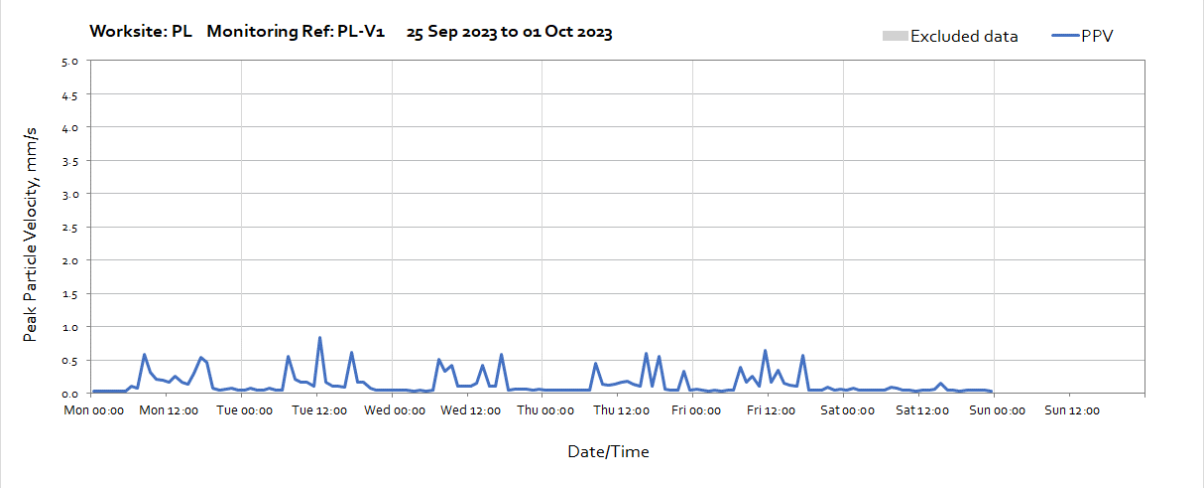
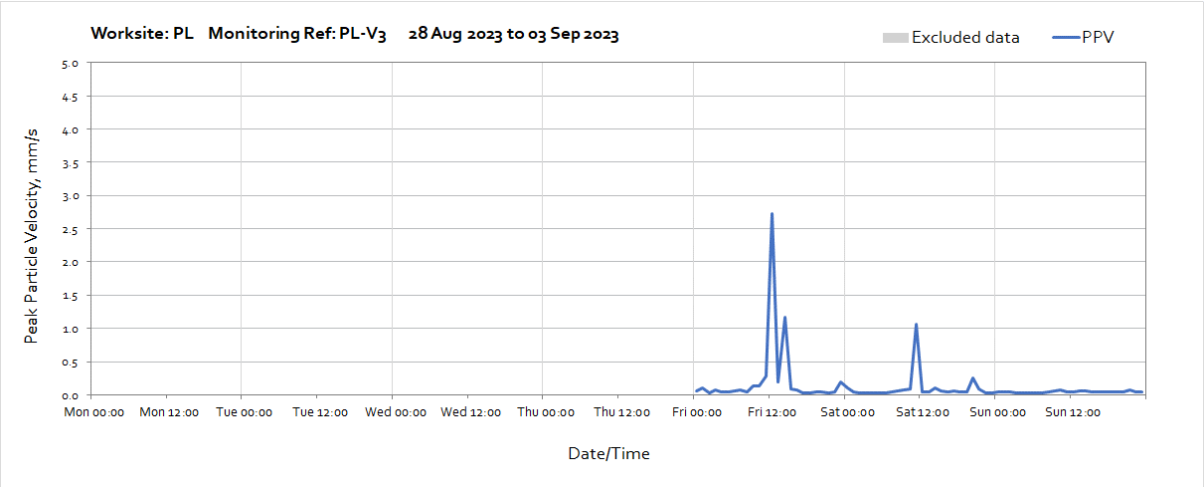
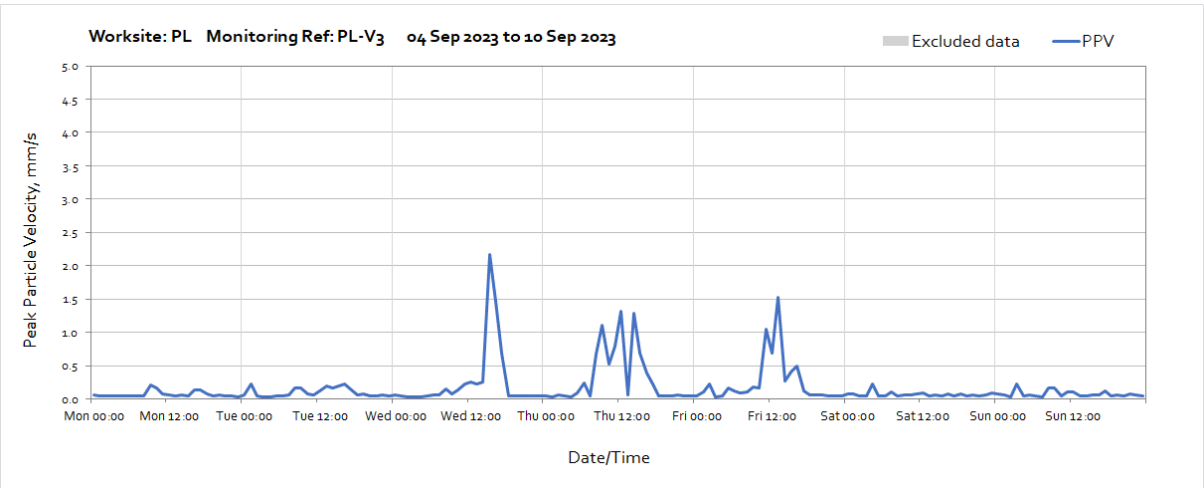
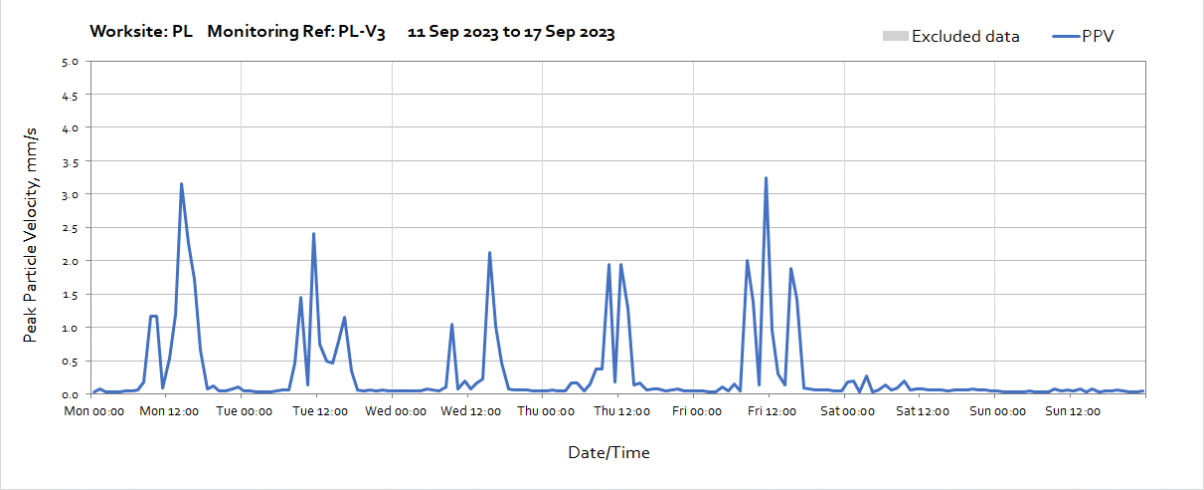
Date/Time



Worksite: PL – Monitoring Ref: PL-V3






Worksite: PL Monitoring Ref: PL-V3 11 Sep 2023 to 17 Sep 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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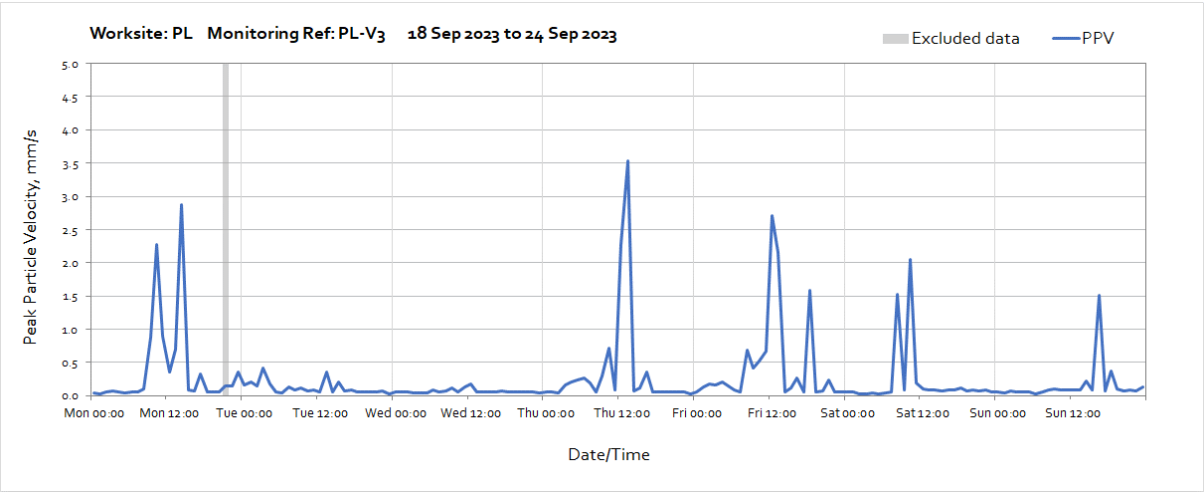
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: PL Monitoring Ref: PL-V3 18 Sep 2023 to 24 Sep 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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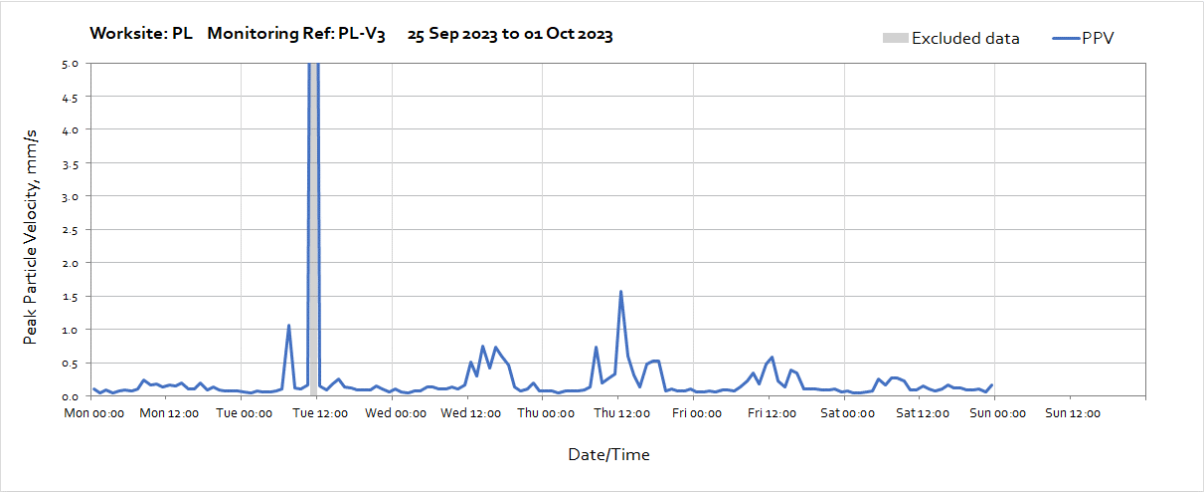
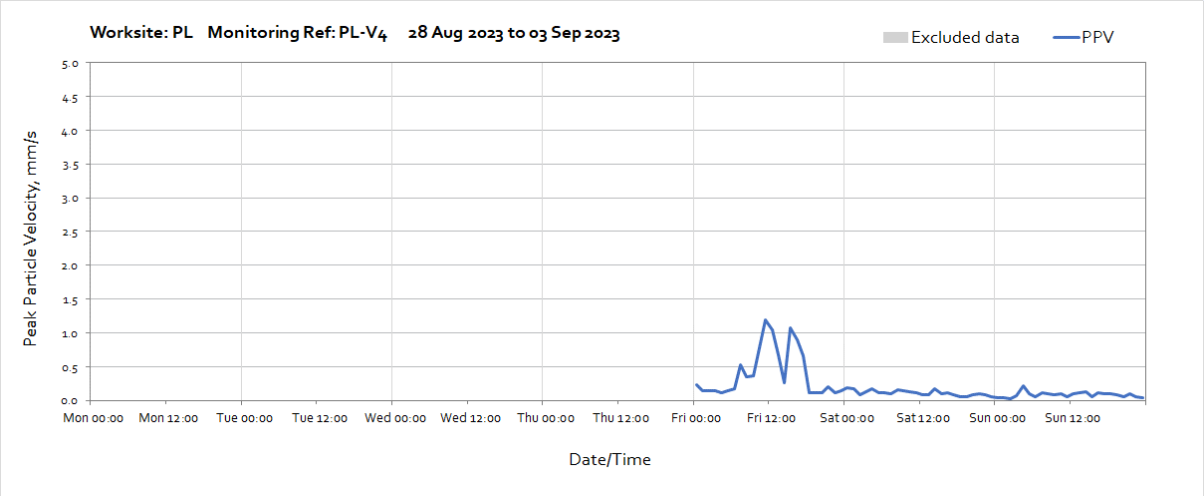
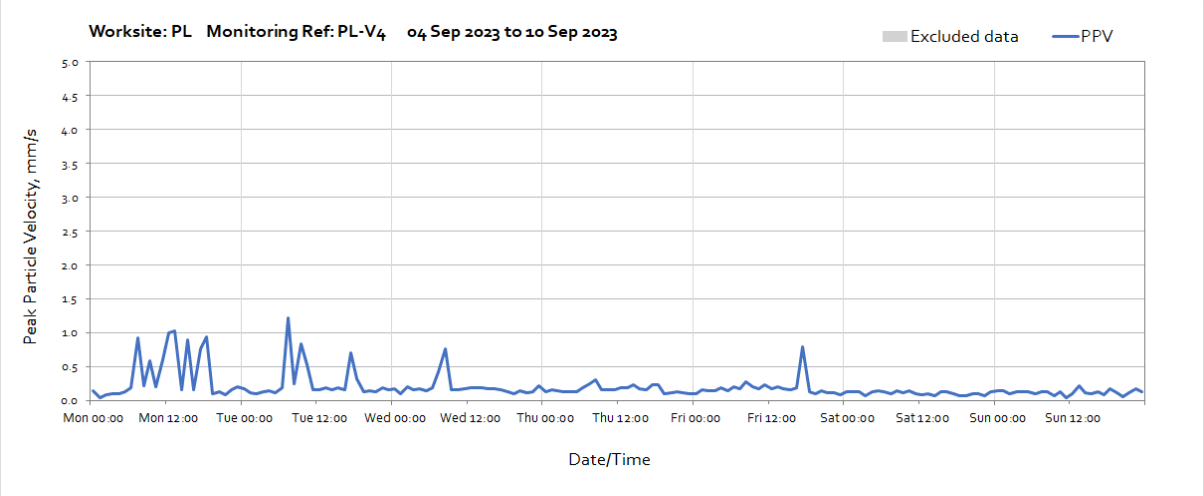
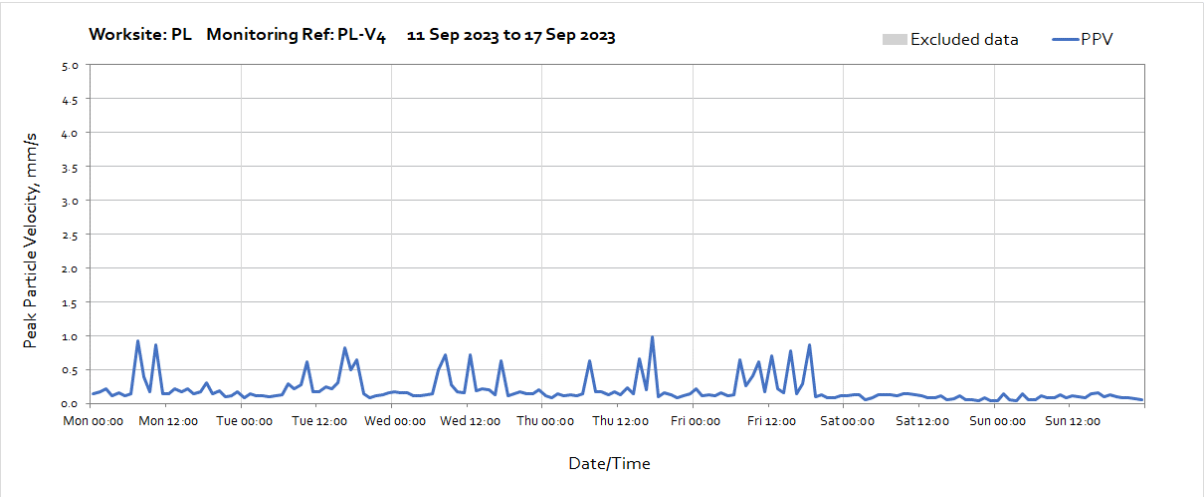
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

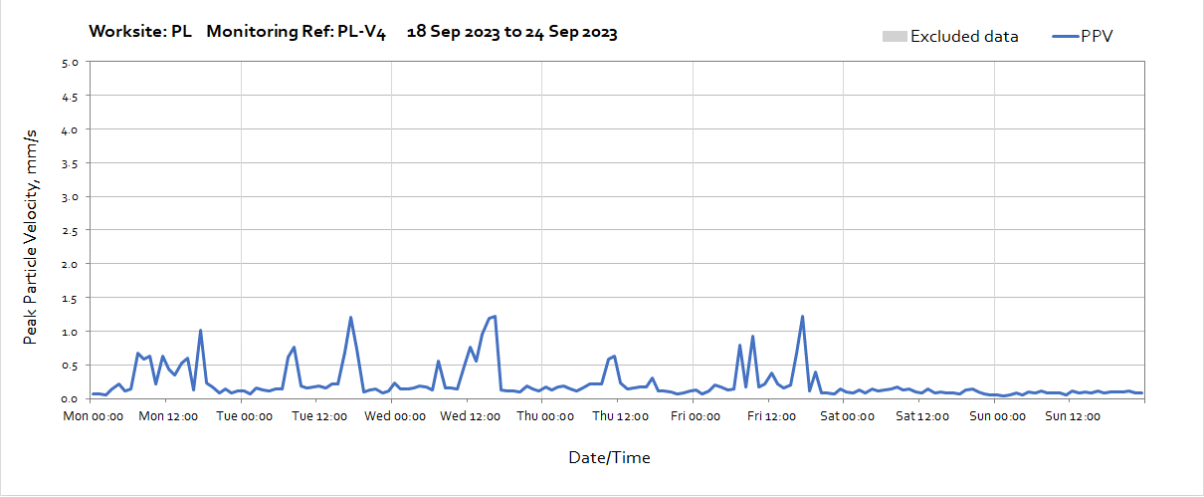

Worksite: PL Monitoring Ref: PL-V3 25 Sep 2023 to 01 Oct 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

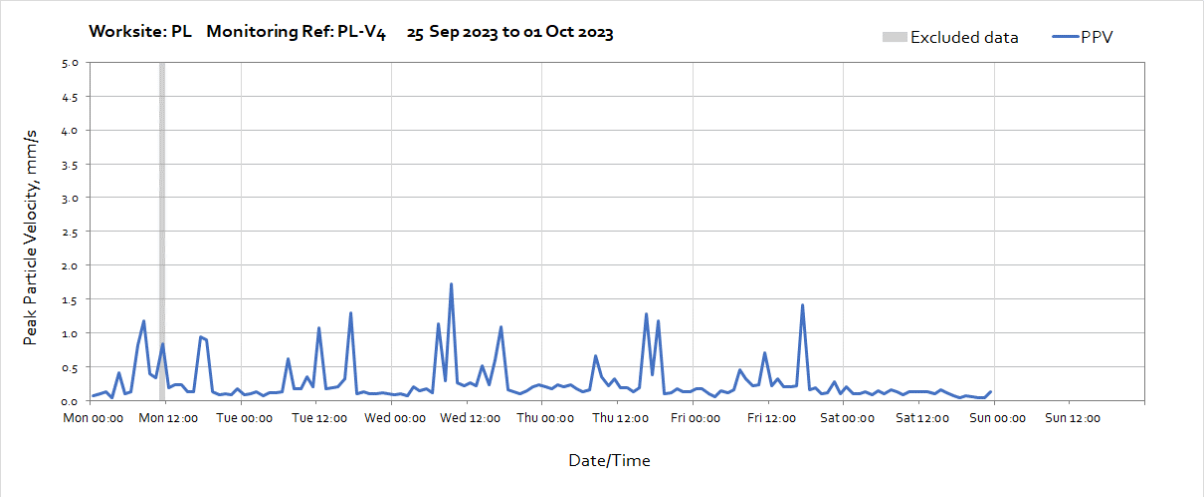
Worksite: PL – Monitoring Ref: PL-V4



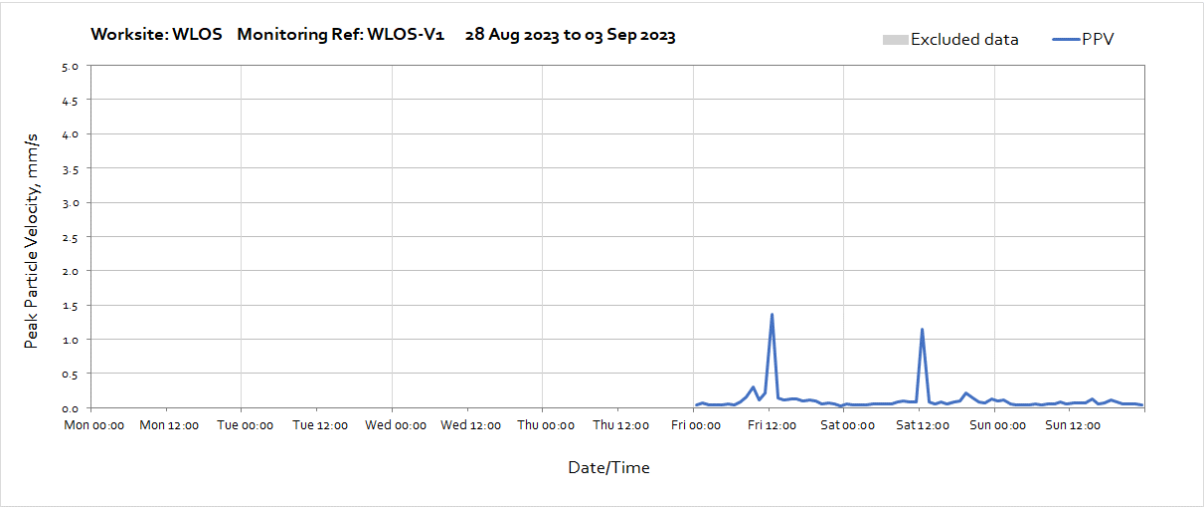


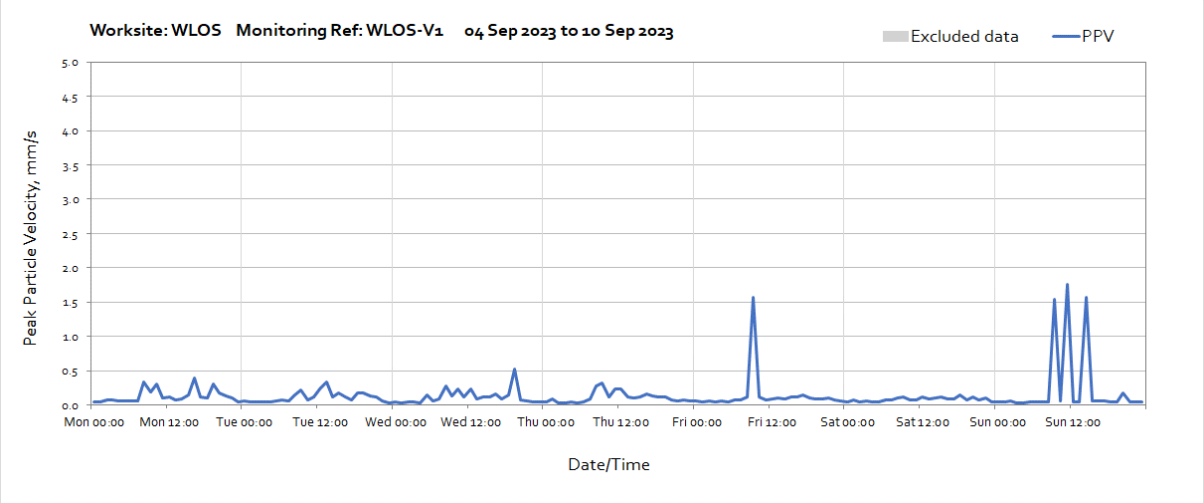






Worksite: WLOS – Monitoring Ref: WLOS-V1




Worksite: WLOS Monitoring Ref: WLOS-V1 04 Sep 2023 to 10 Sep 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
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4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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Thu 12:00
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Fri 12:00
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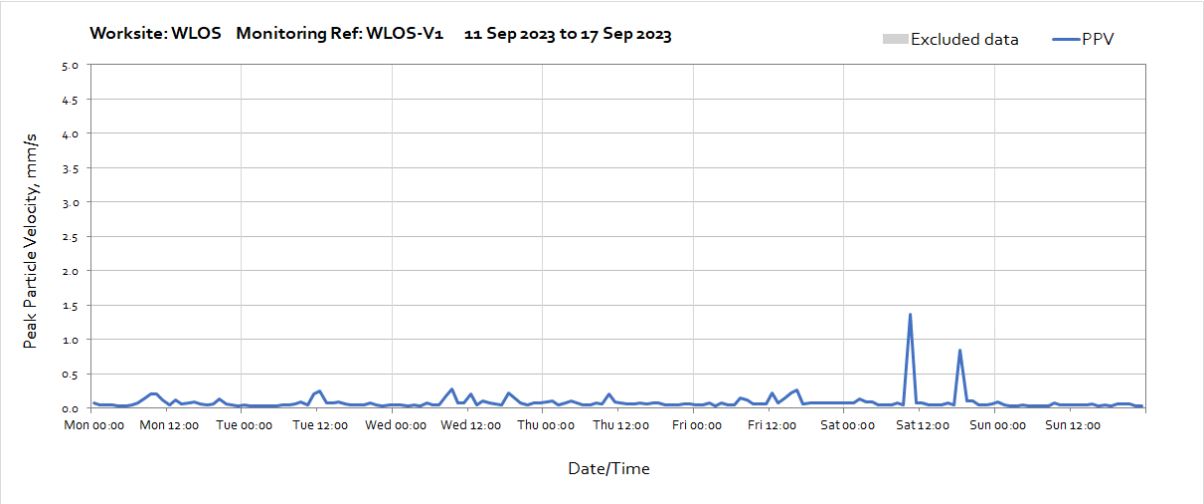
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: WLOS Monitoring Ref: WLOS-V1 11 Sep 2023 to 17 Sep 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
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4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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Thu 12:00
Fri 00:00
Fri 12:00
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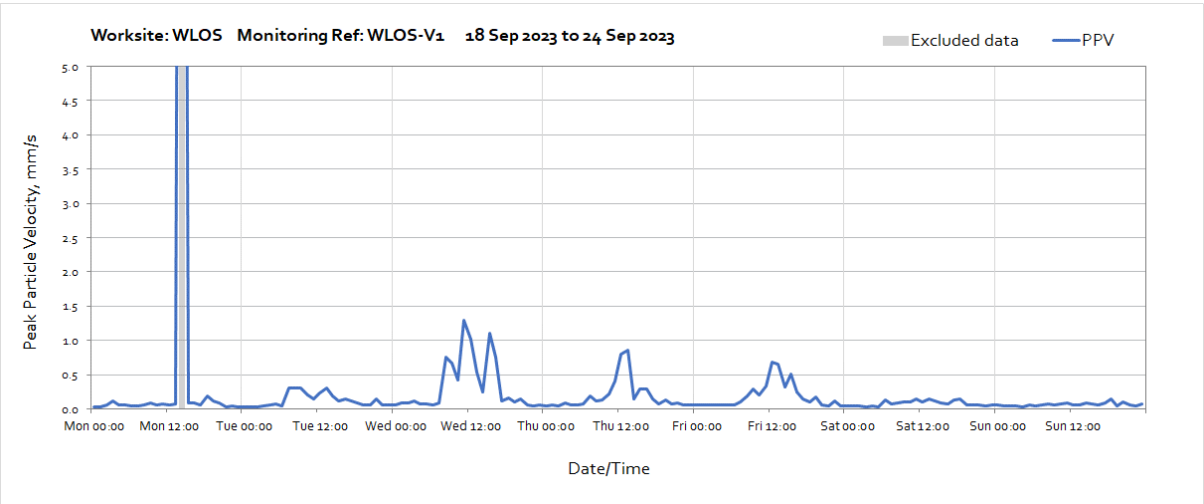
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: WLOS Monitoring Ref: WLOS-V1 18 Sep 2023 to 24 Sep 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
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4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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Fri 12:00
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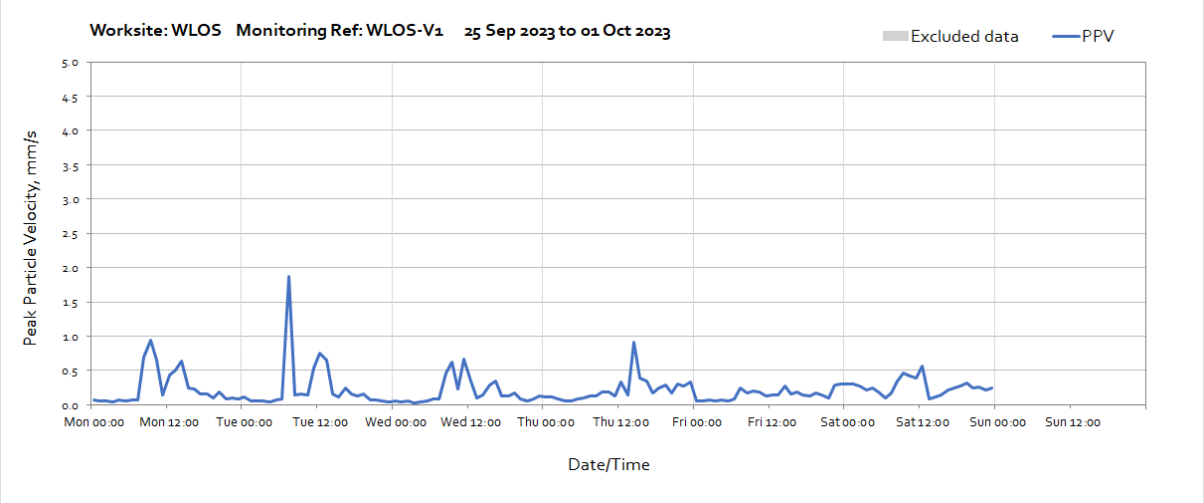
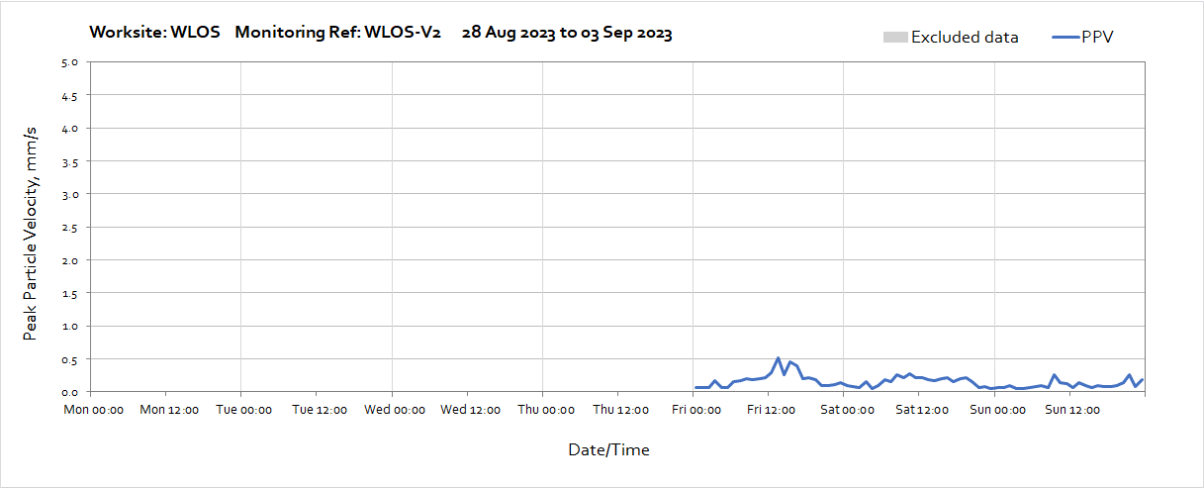
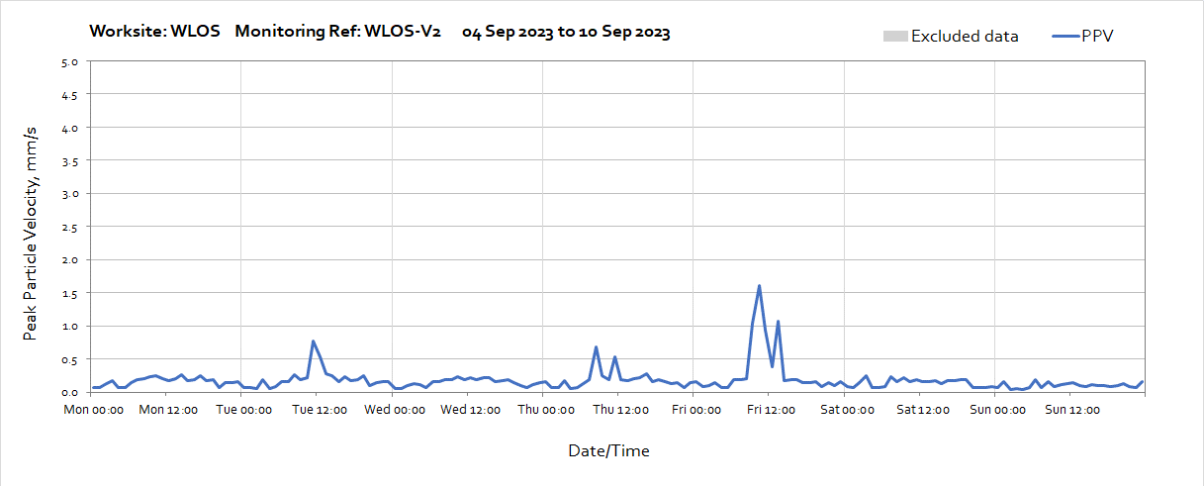
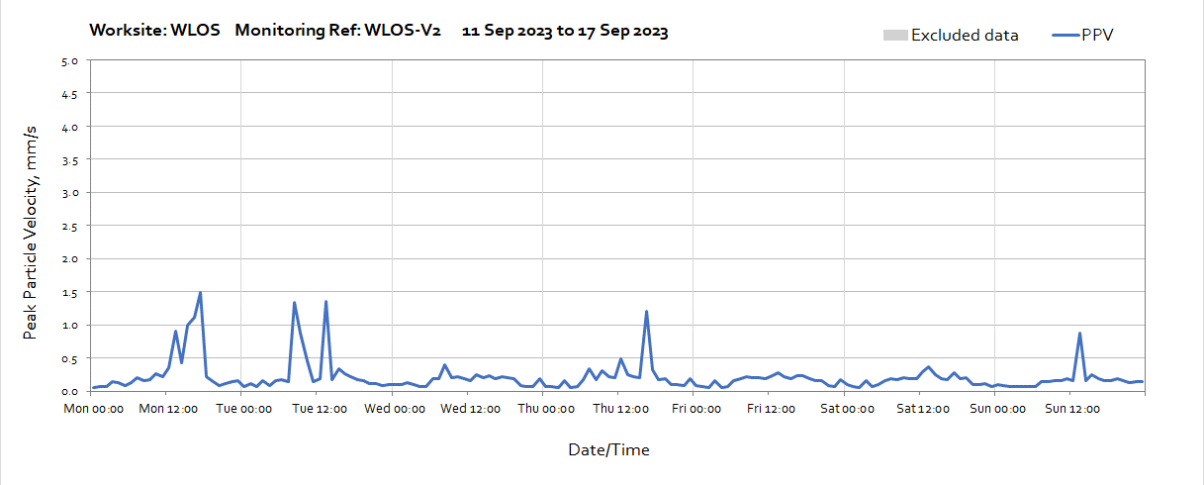
Date/Time



Worksite: WLOS – Monitoring Ref: WLOS-V2






Worksite: WLOS Monitoring Ref: WLOS-V2 11 Sep 2023 to 17 Sep 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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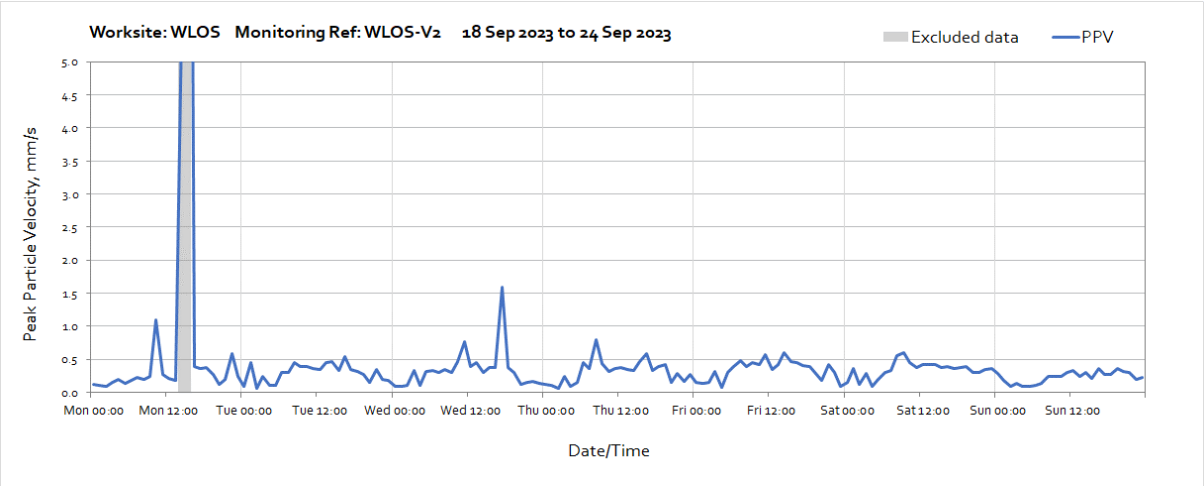
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: WLOS Monitoring Ref: WLOS-V2 18 Sep 2023 to 24 Sep 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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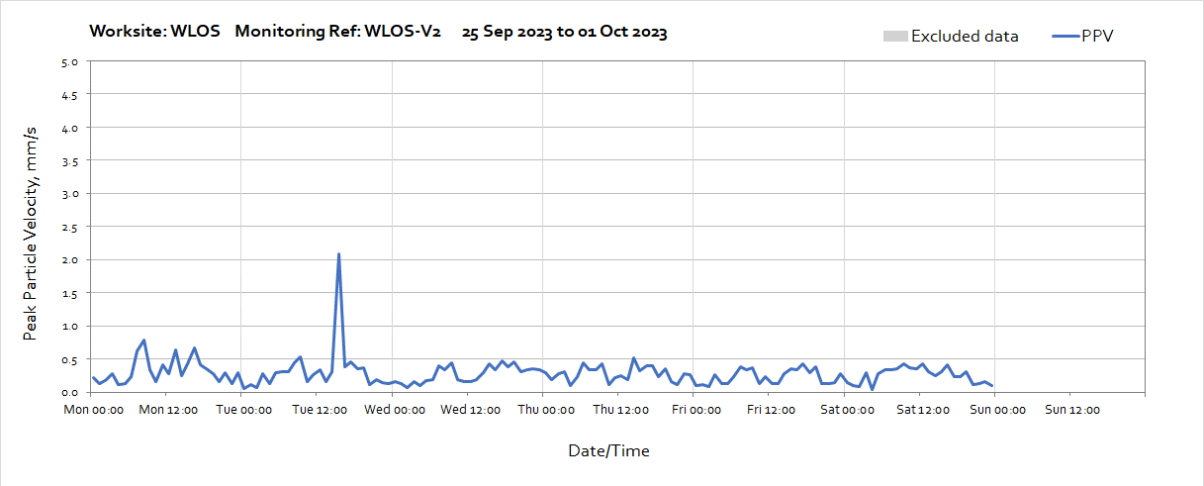
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: WLOS Monitoring Ref: WLOS-V2 25 Sep 2023 to 01 Oct 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
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4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
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Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time