

Construction Noise and Vibration Monthly Report – September 2023

London Borough of Hillingdon

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Non-Technical Summary

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

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

- Colne Valley Viaduct site (ref.: CVV), where compound operation, maintenance and operation of the haul road and jetty, ground investigation works, pier construction, site preparation, bulk earthworks fill, backfilling, tree removal, water pumping, installation of satellite welfare and generator farms, South Abutment works, stabilisation, drainage, piling platform construction, maintenance and operation of Grand Union Canal, fencing, environmental maintenance, stockpiling, river crossing works, launching girder, deck and landscaping works were underway.
- West Ruislip Portal worksite (ref.: WRP) where construction of attenuation tanks, removal of tunnel ramp, concrete system preparation works; construction of tunnel boring machine water treatment plant, platform installation works, wildlife habitat creation; Golf Course maintenance works, delivery and storage operations, conveyor operations and train movements were underway.
- Breakspear Road worksite (ref.: BR), where geotechnical surveys, removal of haul road and concrete foundation, earthworks, material movements and storage, drainage, piling platform preparation, construction of embankment retaining walls, stockpile area preparation, bridge construction works and conveyor operation were underway.
- South Ruislip Ventilation Shaft worksite (ref.: SRVS), where waterproofing, steel fixing, fire retention tank works, sheet pile installation and removal, ventilation basement, steel piling installation, concrete pour, road sweeping, hoarding works, fire supply tank construction, striking shutters, tunnel boring machine intervention, hydro-demolition, dewatering operations and general site management were underway.
- Harvil Road worksite (ref.: HR), where mound construction, soil nailing works, piling platform preparations, tunnel boring machine material treatment and removal, conveyor operation and siltbuster operations were underway.
- Northern Sustainable Placement Area worksite (ref.: NSPA) where earthworks mound construction, grass seeding and landscaping, fencing relocation and conveyor operation were underway.

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

- Copthall North, where excavation works, material movement, construction of Copthall Tunnel, drainage, installation of utility infrastructure and highway construction works were underway.
- Great Central Avenue where utility works were underway.

The HS2 threshold levels for significant noise impacts, which are defined in Information Paper E23 (<https://www.gov.uk/government/publications/hs2-information-papers-environment>), were exceeded one (1) time during the reporting period.

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

Five (5) complaints were received during the monitoring period. A description of the complaints, the results of investigations and any actions taken are detailed in Table 8 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 London Borough of Hillingdon (LBH) for the period 1st to 30th September 2023.

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

- Colne Valley Viaduct worksite, ref.: CVV (see Plan 1 in Appendix A), where work activities included:
 - Compound operations, including de-sanding works.
 - Maintenance and operation of the haul road and jetty.
 - Ground investigation works.
 - Pier construction, including fibre-reinforced concrete works, post tensioning and tower crane mobilisation and demobilisation.
 - Site preparation works, including bulk earthworks fill and tree removal.
 - Water pumping management works.
 - Installation of satellite welfare and generator farms.
 - South Abutment works, including earthworks, stabilisation, fibre-reinforced concrete works, drainage works, abutment construction,

earthworks, yard supporting activities, piling platform construction, and load transfer platform construction.

- Grand Union Canal works, including operation and maintenance.
 - Fencing works.
 - Environmental maintenance works.
 - Stockpiling.
 - Construction of River Colne crossing including emergency obstruction dismantling works.
 - Launching girder works, including launching gantry, steel structure erection, post tensioning works, stressing, grouting and crane assembly and dismantling works.
 - Deck works, including preparation and operation of storage yards, installation of access provision, traffic management, installation of parapets, noise barriers, troughs, pipes, steel works, installation of stairs, construction of kerbs and concrete stitch, filling of voids, waterproofing.
 - Landscaping works, including removal of cofferdams, earthworks, ground profiling and cut, ground drainage, soil placement and tree removal and de-vegetation.
- West Ruislip Portal worksite, ref.: WRP (see Plan 2 in Appendix A), where work activities included:
 - Construction of permanent attenuation tank, including excavation.
 - Removal of tunnel internal ramp including breaking out of concrete and excavation works.
 - Concrete system preparation works.
 - Construction of tunnel boring machine water treatment plant.
 - Platform installation works including excavation.
 - Wildlife habitat creation including backfilling pond and stockpile.
 - Golf Course maintenance works including vegetation clearance, tree pruning and reinstatement of archaeological areas.
 - Segment delivery and storage operations.
 - Main conveyor operation.
 - Segment train movements.

- Breakspear Road worksite, ref.: BR (see Plan 2 in Appendix A), where work activities included:
 - Geotechnical surveys.
 - Removal of haul road and concrete foundation including concrete breaking.
 - Earthworks including preparation for tunnel boring machine.
 - Material movements and storage including removal of tunnel boring machine material and sheet piles.
 - Drainage works.
 - Piling platform preparation.
 - Construction of embankment retaining walls including excavation and concreting works.
 - Stockpile area preparation including concrete breaking.
 - Bridge construction works.
 - Conveyor operation.
- South Ruislip Ventilation Shaft worksite, ref.: SRVS (see Plan 4 in Appendix A), where work activities included:
 - Waterproofing.
 - Steel fixing.
 - Fire retention tank works.
 - Sheet pile installation and removal.
 - Ventilation basement.
 - Concrete pours.
 - Road sweeping.
 - Hoarding works.
 - Fire supply tank construction.
 - Striking shutters.
 - Tunnel boring machine intervention.
 - Hydro-demolition.
 - Dewatering operations.

- General site management.
- Harvil Road worksite, ref.: HR (see Plan 2 in Appendix A), where work activities included:
 - Mound construction including placement and compaction of materials.
 - Soil nailing works including installation of gravity retaining wall.
 - Piling platform preparation.
 - Tunnel boring machine material treatment and removal.
 - Conveyor operation.
 - Siltbuster operations including maintenance and drainage works.
- Northern Sustainable Placement Area worksite, ref.: NSPA (see Plan 3 in Appendix A), where work activities included:
 - Earthworks mound construction including placement of subsoil, topsoil, grass seeding and landscaping.
 - Fencing relocation.
 - Conveyor operation.

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

- Copthall North, where excavation works, material movement, construction of Copthall Tunnel, drainage, installation of utility infrastructure and highway construction works were underway.
- Great Central Avenue utility works were underway.

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

1.2 Measurement Locations

1.2.1 Eighteen (18) noise and two (2) vibration monitoring installations were active in September in the LBH area. Table 2 summarises the position of noise and vibration monitoring installations within the LBH 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
CVV	DLC-NMP	Dew's Farm Cottages, Dews Lane, Harefield, Uxbridge
	HFM-NMP	Harefield Marina, Moorhall Road, London Borough of Hillingdon
	PLD-NMP	Peerless Drive, Harefield, Uxbridge
WRP	WRP-N001	Ruislip Golf Course, Ickenham Rd, Ruislip
	N048	Ruislip Golf Course, Ickenham Rd, Ruislip
	N056	83 The Greenway, Ickenham, Ruislip
	N057	123 The Greenway, Ickenham, Ruislip
	GW-V001	95 The Greenway, Ickenham, Uxbridge
BR	N065	Breakspear Road South, Harefield, Uxbridge
	N066	Hoylake Crescent, Ickenham, Uxbridge
	TKL-N001	Tile Kiln Lane, Harefield, Uxbridge
SRVS	N061	Cineworld South Ruislip car park, Ruislip
	TCA-N001	Trenchard Avenue, Ruislip
	SRVS-V001a	Braintree Road, Ruislip
HR	N067	Harvil Road worksite south boundary
	SSPA-HR	Harvil Road
	BSR-N001	Breakspear Road
	DGT-N001	Dogs Trust West London
NSPA	NSPA-N001	Newyears Green Lane
	NSPA-N002	Newyears Green Lane

2 Summary of Results

2.1 Summary of Measured Noise and Vibration Levels

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

Table 3: Summary of Measured dB LAeq Data over the Monitoring Period

Worksite Reference	Measurement Reference	Site Address	Free-field or Façade Measurement	Weekday Average LAeq,T (Highest Day LAeq,T)					Saturday Average LAeq,T (Highest Day LAeq,T)					Sunday / Public Holiday Average LAeq,T (Highest Day LAeq,T)	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
CVV	DLC-NMP	Dew's Farm Cottages, Dews Lane, Harefield	Façade	55.4 (58.2)	61.4 (66.1)	54.1 (69.0)	48.5 (63.8)	48.4 (58.9)	53.3 (56.0)	57.5 (60.7)	53.3 (57.0)	49.7 (63.3)	44.2 (50.6)	50.1 (63.4)	49.6 (57.8)
	HFM-NMP	Harefield Marina, Moorhall Road, London	Free-field	52.3 (58.1)	54.5 (58.8)	48.2 (55.3)	46.5 (56.7)	43.6 (50.5)	48.8 (51.6)	49.9 (51.0)	53.4 (62.3)	48.7 (60.1)	43.5 (48.0)	50.2 (65.0)	43.2 (49.8)
	PLD-NMP	Peerless Drive, Harefield, Uxbridge	Façade	50.5 (52.9)	55.4 (61.4)	49.6 (64.7)	46.5 (51.9)	44.0 (59.1)	48.0 (52.4)	48.6 (50.0)	50.4 (60.2)	48.3 (54.8)	43.1 (49.7)	47.9 (54.7)	44.1 (52.1)
WRP	WRP-N001	West Ruislip Golf Club, Ickenham Rd, Ruislip	Free-field	47.6 (51.7)	48.2 (54.7)	46.5 (51.7)	45.5 (52.5)	43.5 (51.1)	45.3 (47.3)	46.7 (47.3)	47.6 (49.2)	45.8 (49.9)	42.1 (49.0)	46.6 (52.2)	43.5 (47.3)
	N048	West Ruislip Golf Club, Ickenham Rd, Ruislip	Free-field	54.2 (58.0)	56.2 (62.4)	51.8 (56.6)	50.9 (56.4)	51.1 (61.7)	53.7 (56.3)	55.2 (58.5)	51.1 (52.1)	50.6 (54.8)	47.6 (50.6)	51.7 (57.0)	51.4 (61.6)
	N056	83 The Greenway, Ickenham, Ruislip	Façade	61.2 (63.0)	60.2 (61.8)	60.1 (62.5)	58.9 (62.3)	55.6 (63.5)	57.4 (61.6)	57.4 (60.9)	57.4 (61.0)	56.5 (61.9)	51.4 (60.9)	59.1 (63.6)	56.1 (60.2)
	N057	123 The Greenway, Ickenham, Ruislip	Façade	56.8 (58.7)	56.3 (65.3)	56.2 (57.8)	54.6 (58.2)	50.5 (58.9)	51.7 (55.7)	53.4 (57.7)	52.8 (56.2)	52.6 (60.0)	47.1 (55.6)	54.5 (58.0)	50.5 (56.2)
BR	N065	Breakspear Road South, Harefield	Free-field	66.3 (68.6)	65.3 (66.9)	65.7 (68.1)	63.3 (68.1)	59.0 (67.3)	63.6 (64.5)	64.9 (65.8)	64.8 (66.1)	64.0 (66.3)	58.1 (64.9)	63.6 (66.8)	58.7 (65.5)
	N066	Hoylake Crescent, Ickenham, Uxbridge	Free-field	55.4 (57.1)	55.5 (57.9)	55.6 (56.9)	53.7 (57.0)	49.9 (62.5)	52.2 (55.4)	52.7 (56.2)	52.3 (55.9)	52.4 (56.7)	48.5 (56.8)	53.9 (57.8)	50.1 (55.2)

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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
	TKL-N001	Tile Kiln Lane, Harefield, Uxbridge	Free-field	48.3 (51.9)	49.1 (53.9)	47.3 (51.8)	45.9 (50.1)	44.1 (53.6)	46.0 (48.2)	46.7 (47.7)	47.5 (50.3)	45.8 (49.6)	42.2 (48.5)	46.1 (50.8)	43.9 (47.4)
SRVS	N061	Cineworld South Ruislip car park, Ruislip	Free-field	58.4 (61.6)	61.6 (63.2)	61.8 (64.8)	61.1 (65.2)	55.1 (73.4)	57.8 (58.8)	61.6 (62.8)	61.8 (62.7)	60.9 (64.6)	55.4 (62.2)	60.8 (66.7)	54.6 (61.3)
	TCA-N001	Trenchard Avenue, Ruislip	Free-field	58.8 (63.3)	60.7 (70.4)	58.8 (61.6)	57.3 (60.6)	53.4 (63.4)	55.2 (57.1)	57.8 (61.5)	56.8 (60.2)	57.2 (64.2)	52.6 (65.1)	58.2 (63.6)	52.7 (58.5)
HR	N067	Harvil Road worksite south boundary	Free-field	56.1 (61.2)	56.9 (59.9)	59.3 (66.1)	58.5 (66.5)	55.8 (65.7)	52.7 (54.0)	56.4 (59.9)	57.3 (60.8)	58.8 (65.9)	57.8 (65.6)	57.2 (67.0)	55.9 (62.3)
	SSPA-HR	Harvil Road	Free-field	61.9 (73.9)	63.5 (73.8)	63.0 (78.1)	56.2 (58.7)	53.8 (61.8)	58.7 (59.5)	62.4 (65.9)	58.7 (59.5)	57.4 (60.0)	52.4 (56.4)	57.1 (61.1)	54.1 (61.4)
	BSR-N001	Breakspear Road	Free-field	67.4 (70.1)	66.9 (68.3)	67.3 (68.9)	64.3 (70.0)	59.8 (67.1)	64.4 (65.8)	66.9 (68.7)	66.5 (67.0)	65.1 (67.8)	57.2 (62.6)	64.4 (66.8)	59.8 (66.7)
	DGT-N001	Dogs Trust West London	Façade	52.4 (57.0)	53.6 (57.5)	47.3 (53.8)	44.9 (51.8)	43.7 (56.3)	50.2 (54.1)	51.8 (53.9)	49.8 (53.4)	48.1 (54.2)	42.5 (48.8)	46.3 (54.5)	43.3 (51.1)
NSPA	NSPA-N001	Newyears Green Lane	Free-field	59.1 (64.0)	60.4 (65.4)	55.1 (59.7)	48.8 (55.0)	46.9 (59.3)	57.9 (60.0)	60.9 (62.3)	57.5 (60.6)	54.5 (62.7)	45.0 (50.1)	50.7 (63.9)	47.7 (59.2)
	NSPA-N002	Newyears Green Lane	Free-field	50.4 (56.6)	53.8 (60.3)	47.2 (56.9)	42.5 (47.6)	40.2 (52.5)	52.4 (55.8)	54.7 (58.5)	50.9 (53.2)	49.3 (60.3)	40.0 (45.6)	45.2 (48.5)	40.6 (52.7)

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

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

Worksite Reference	Measurement Reference	Monitor Address	Highest PPV measured in any axis, mm/s
WRP	GW-V001	95 The Greenway, Ickenham, Uxbridge	0.75 (Y-axis)
SRVS	SRVS-V001a	Braintree Road, Ruislip	0.99 (Z-axis)

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

2.2 Exceedances of the LOAEL and SOAEL

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

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

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

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

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

Table 5: Summary of Exceedances of LOAEL and SOAEL

Worksite Reference	Measurement Reference	Site Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
CVV	DLC-NMP	Dew's Farm Cottages, Dews Lane, Harefield, Uxbridge	Weekday	0800-1800	3	No exceedance
			Weekday	1800-1900	1	
			Saturday	1900-2200	2	
			1400-2200	3		
Sunday Night			0700-2200 2200-0700	1 12		
HFM-NMP	Harefield Marina, Moorhall Road, London	Weekday	1900-2200	1	No exceedance	
		Saturday	1300-1400	1		
		Saturday	1400-2200	1		
PLD-NMP	Peerless Drive, Harefield, Uxbridge	Weekday	0800-1800	1	No exceedance	
WRP	WRP-N001	West Ruislip Golf Club, Ickenham Rd, Ruislip	Night	2200-0700	109	No exceedance
	N048	West Ruislip Golf Club, Ickenham Rd, Ruislip	All days	All periods	No exceedance	No exceedance
	N056	83 The Greenway, Ickenham, Ruislip	Nights	2200-0700	13	No exceedance
	N057	123 The Greenway, Ickenham, Ruislip	Saturday Sunday Night	1400-2200 0700-2200 2200-0700	1 3 49	No exceedance
BR	N065	Breakspear Road South,	All days	All periods	Not applicable**	No exceedance

Worksite Reference	Measurement Reference	Site Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
		Harefield, Uxbridge				
	N066	Hoylake Crescent, Ickenham, Uxbridge	Weekdays Saturday Night	1900-2200 1400-2200 2200-0700	10 5 60	No exceedance
	TKL-N1	Tile Kiln Lane, Harefield, Uxbridge	Night	2200-0700	56	No exceedance
SRVS	N061	Hoylake Crescent, Ickenham, Uxbridge	All days	All periods	No exceedance	No exceedance
	TCA-N001	Trenchard Avenue, Ruislip	Weekdays Saturday Sunday Night	0800-1800 1400-2200 0700-2200 2200-0700	1 1 5 52	No exceedance
HR	N067	Harvil Road worksite south boundary	Weekdays Weekdays Saturday Sunday Night	1800-1900 1900-2200 1400-2200 0700-2200 2200-0700	3 10 4 22 22	No exceedance
	SSPA-HR	Harvil Road	Weekdays Weekdays Night	0800-1800 1800-1900 2200-0700	1 2 3	No exceedance 1 No exceedance
	BSR-N001	Breakspear Road	Weekdays Weekdays Saturday Saturday Night	1800-1900 1900-2200 0800-1300 1400-2200 2200-0700	6 2 1 1 34	No exceedance
	DGT-N001	Dogs Trust West London	Night	2200-0700	13	No exceedance
NSPA	NSPA-N001	Newyears Green Lane	Weekday Saturday Saturday	0800-1800 1300-1400 1400-2200	3 3 15	No exceedance
	NSPA-N002	Newyears Green Lane	Saturday	1400-2200	4	No exceedance

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

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

2.2.6 Exceedances of the LOAEL were recorded at fifteenth (15 monitoring locations). The LOAEL exceedances were recorded during weekdays, Saturdays, Sundays and nights.

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2.2.7 For the purpose of reporting the number of days where the SOAEL is exceeded, 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
HR	SSPA-HR	Harvil Road	1

2.2.8 One (1) SOAEL exceedance was recorded due to HS2 construction works during September 2023. Exceedances occurred during night periods.

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.

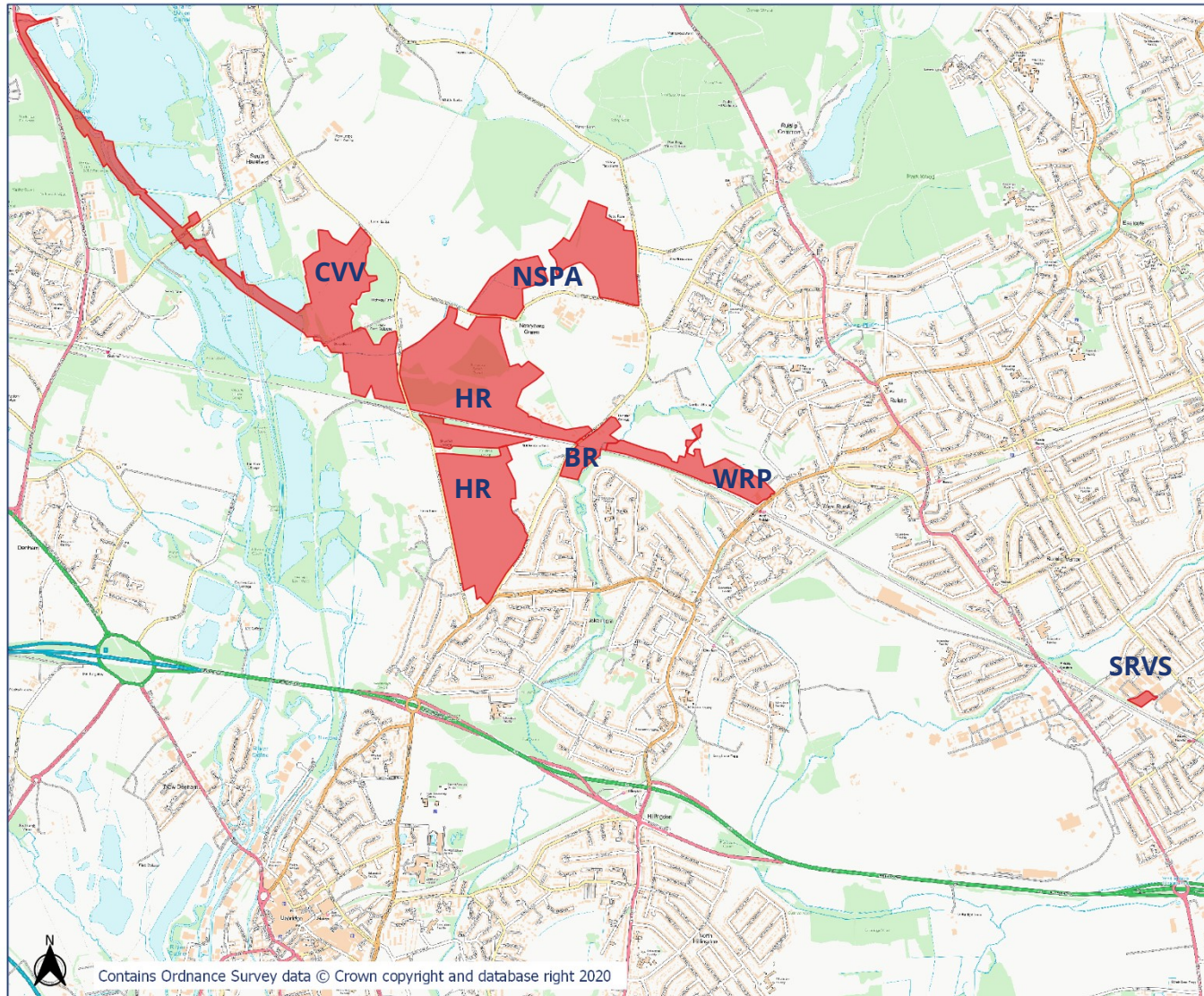
Table 8: Summary of Complaints

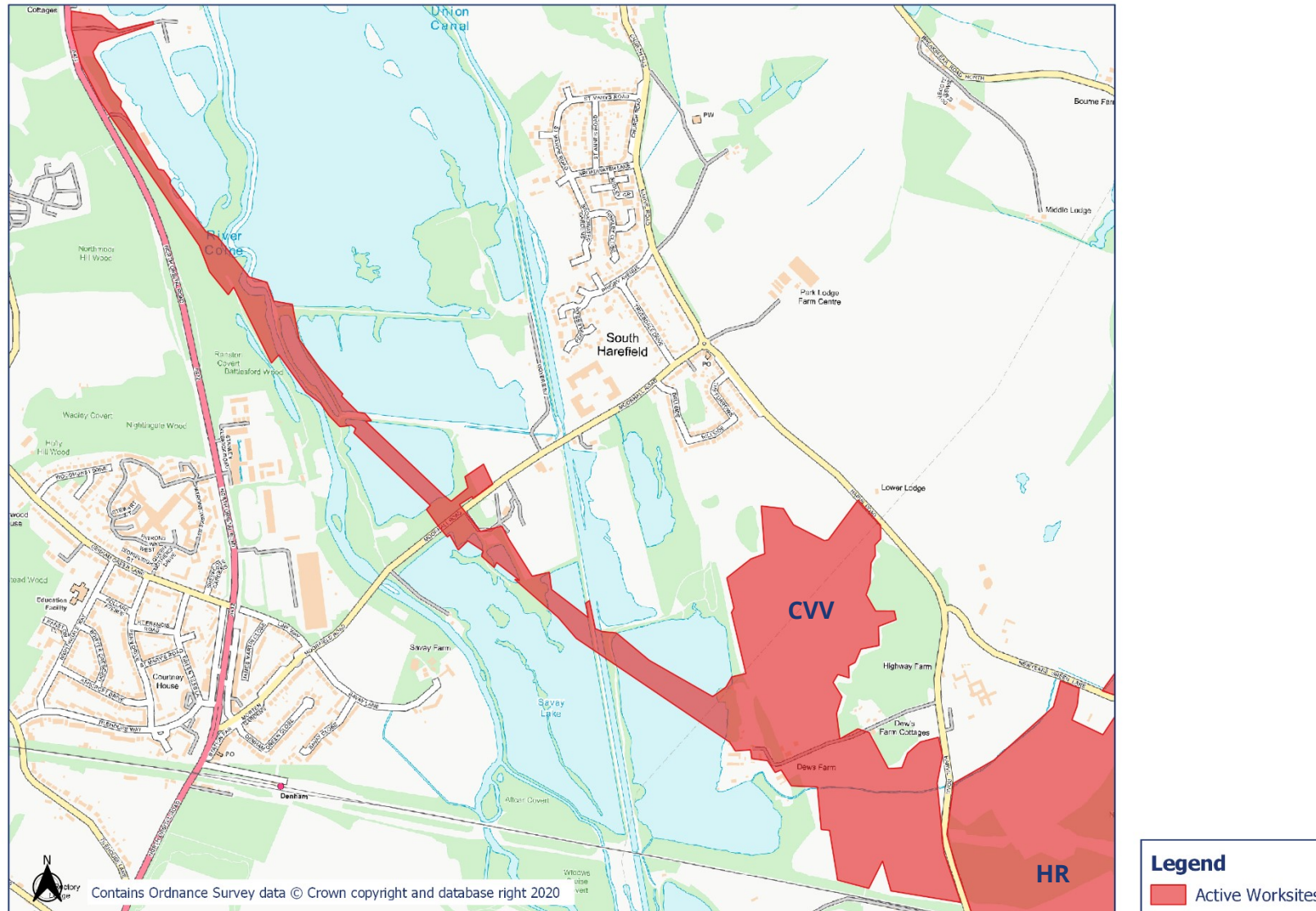
Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
HS2-23-100417-E-C	CWV	Complaint due to foghorn like sound heard during the night.	Complaint associated with noise from viaduct segment factory. No exceedances were found, all mitigations are in place to reduce noise.	Results on investigation provided to complainant.
HS2-23-100426-E-C	NSPA	Complaint regarding noise at night from nearby site.	Complaint was not investigated due to complainant stating that noise had reduced and withdrew the complaint.	No further action was taken.
HS2-23-100586-E-C	Utilities	Complaint regarding noise at night from nearby site.	No exceedances were reported from the nearby noise monitors. A different contractor was also working in the area.	Response provided to complainant.
HS2-23-100643-E-C	Utilities	Complaint about generator noise during night.	Permission to work outside scheduled hours on particular activities has been agreed with the Local Authority. Best practical means and mitigations were in place to reduce noise at night. Works activities are now finished.	Response provided to complainant.
HS2-23-44945-C	WRP	Complaint due to noise experienced at the rear of the property.	Complaint linked with bulldozer operating within permitted levels near property.	Response provided to complainant and noise monitor installation offered to residents.

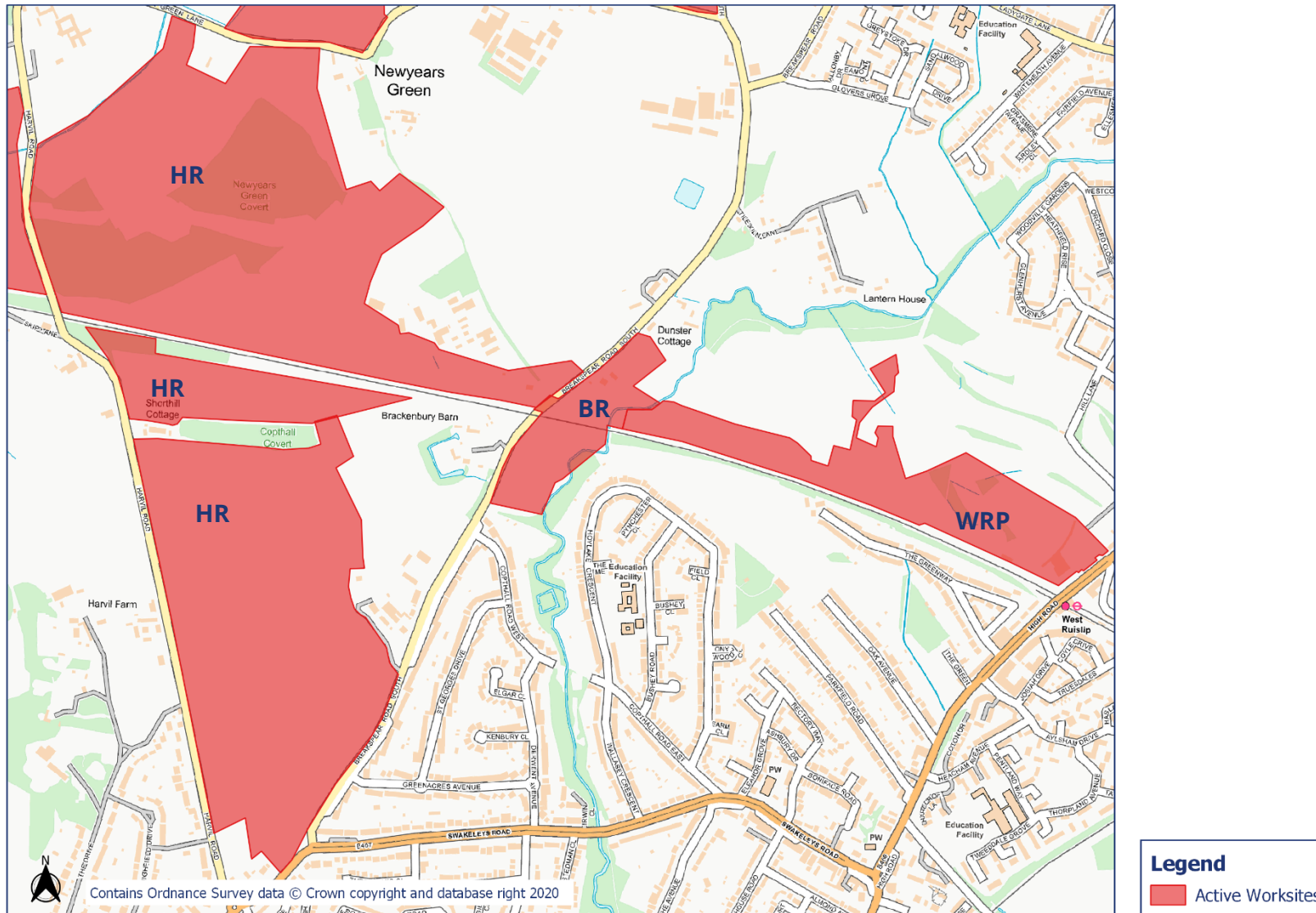
Appendix A Site Locations

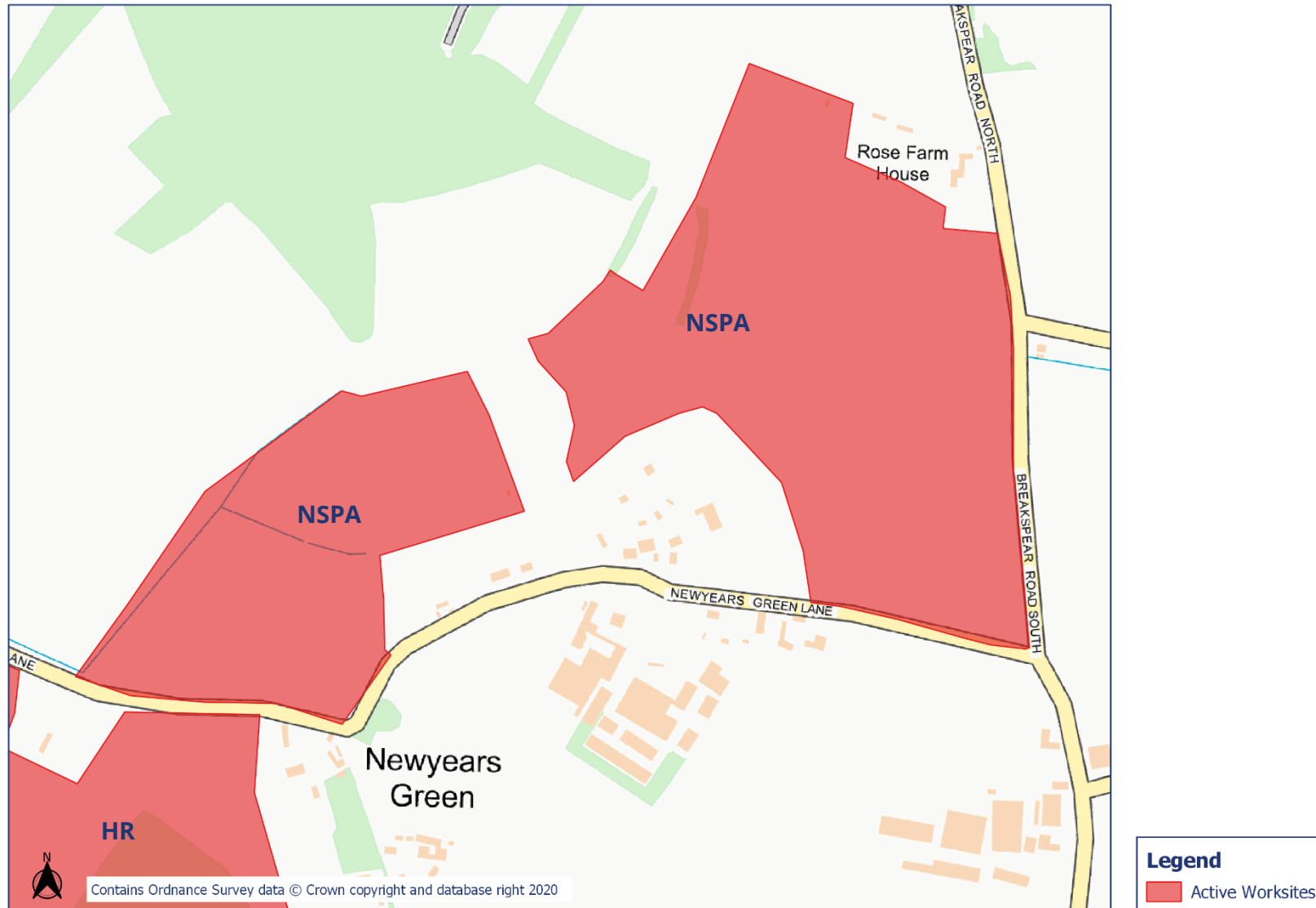
HS2

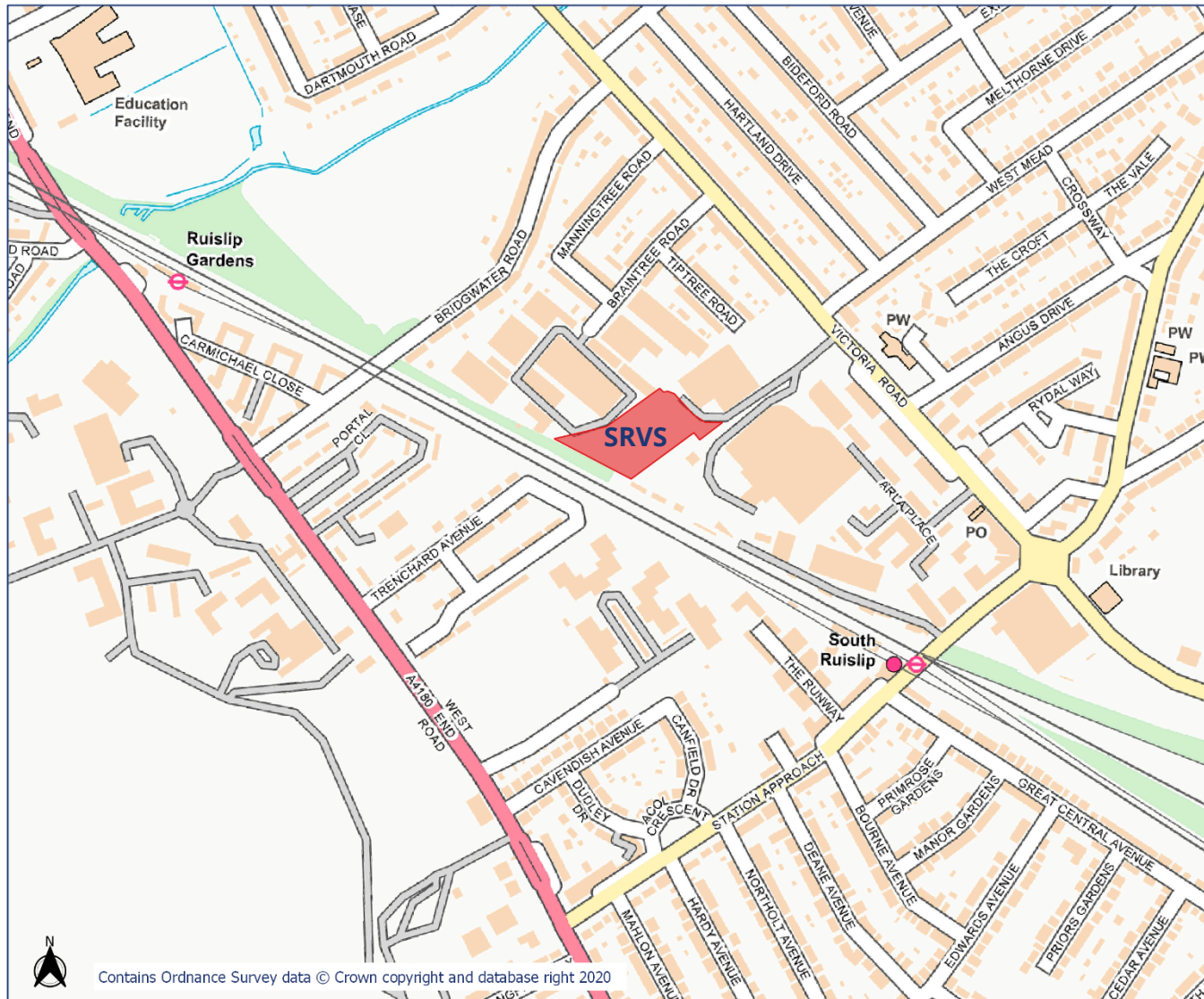
Worksite Identification Plan - Overview



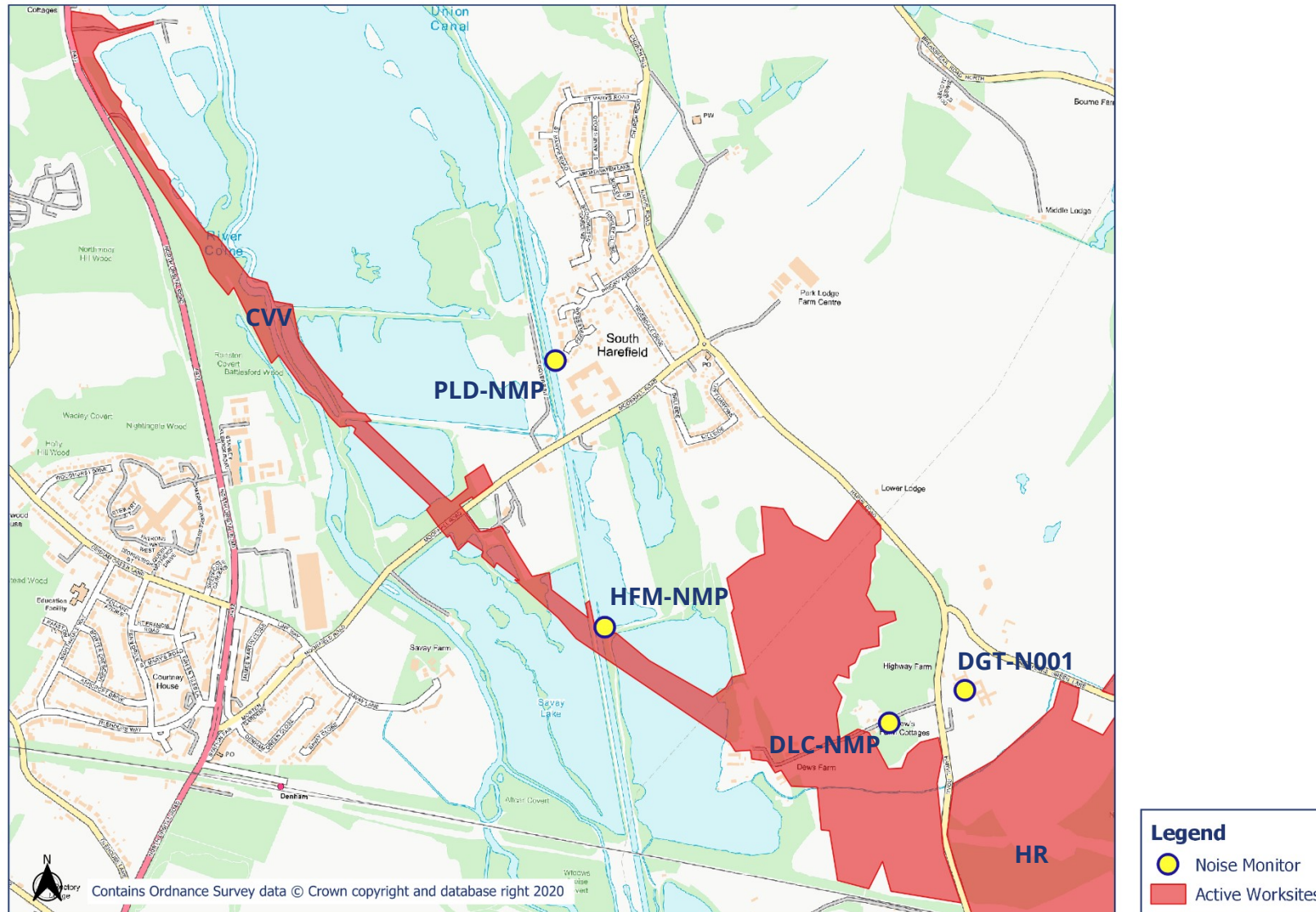


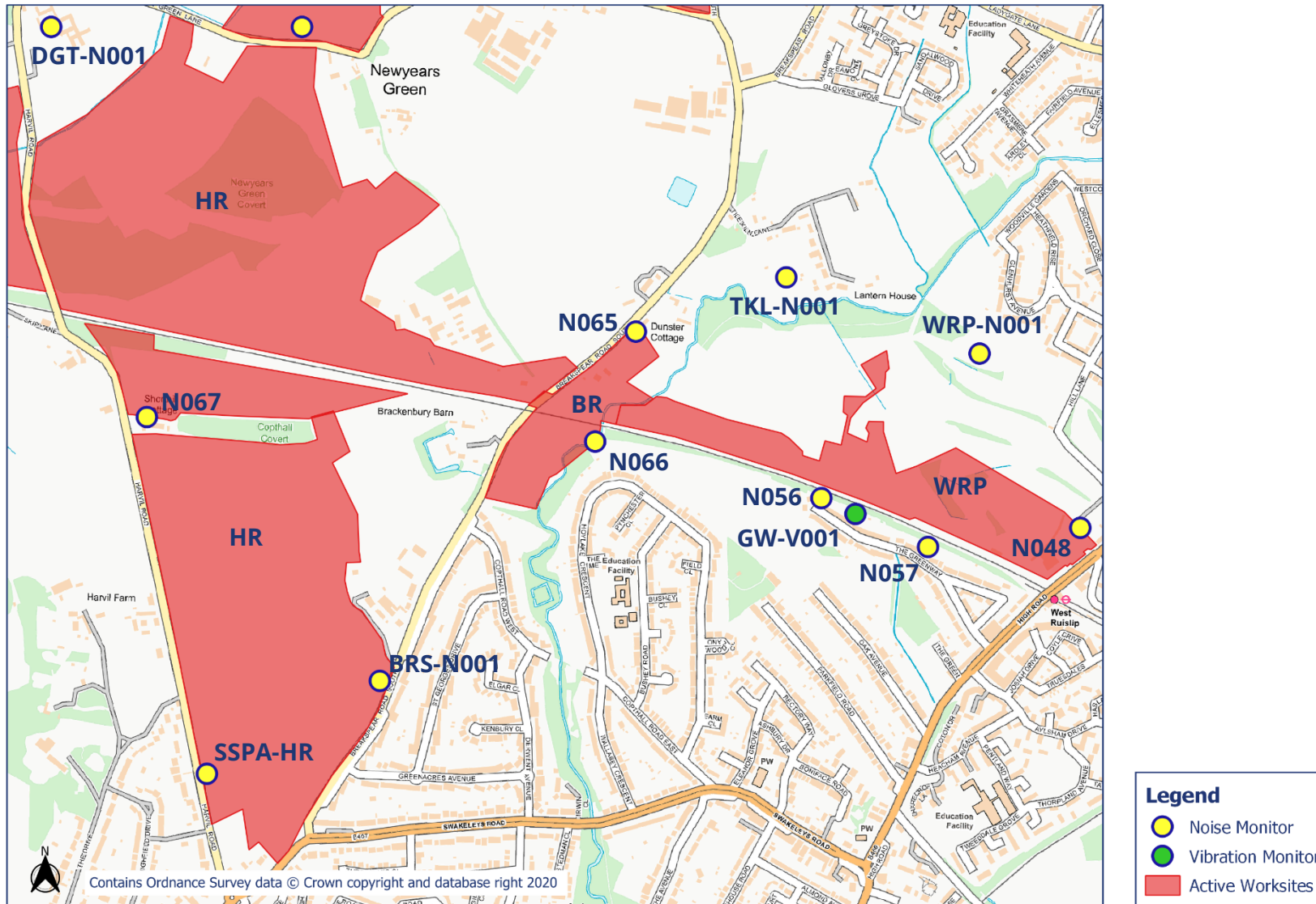


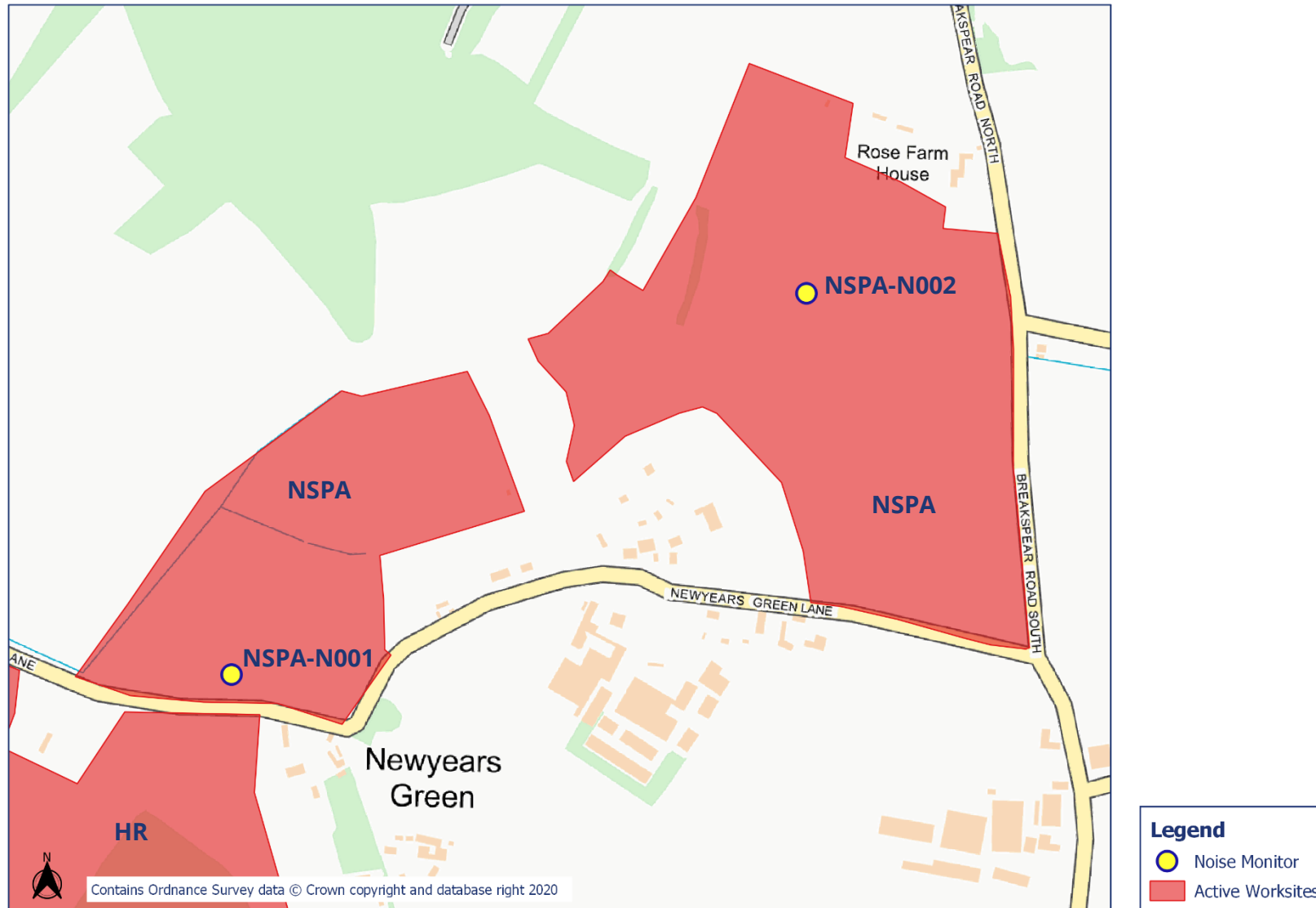


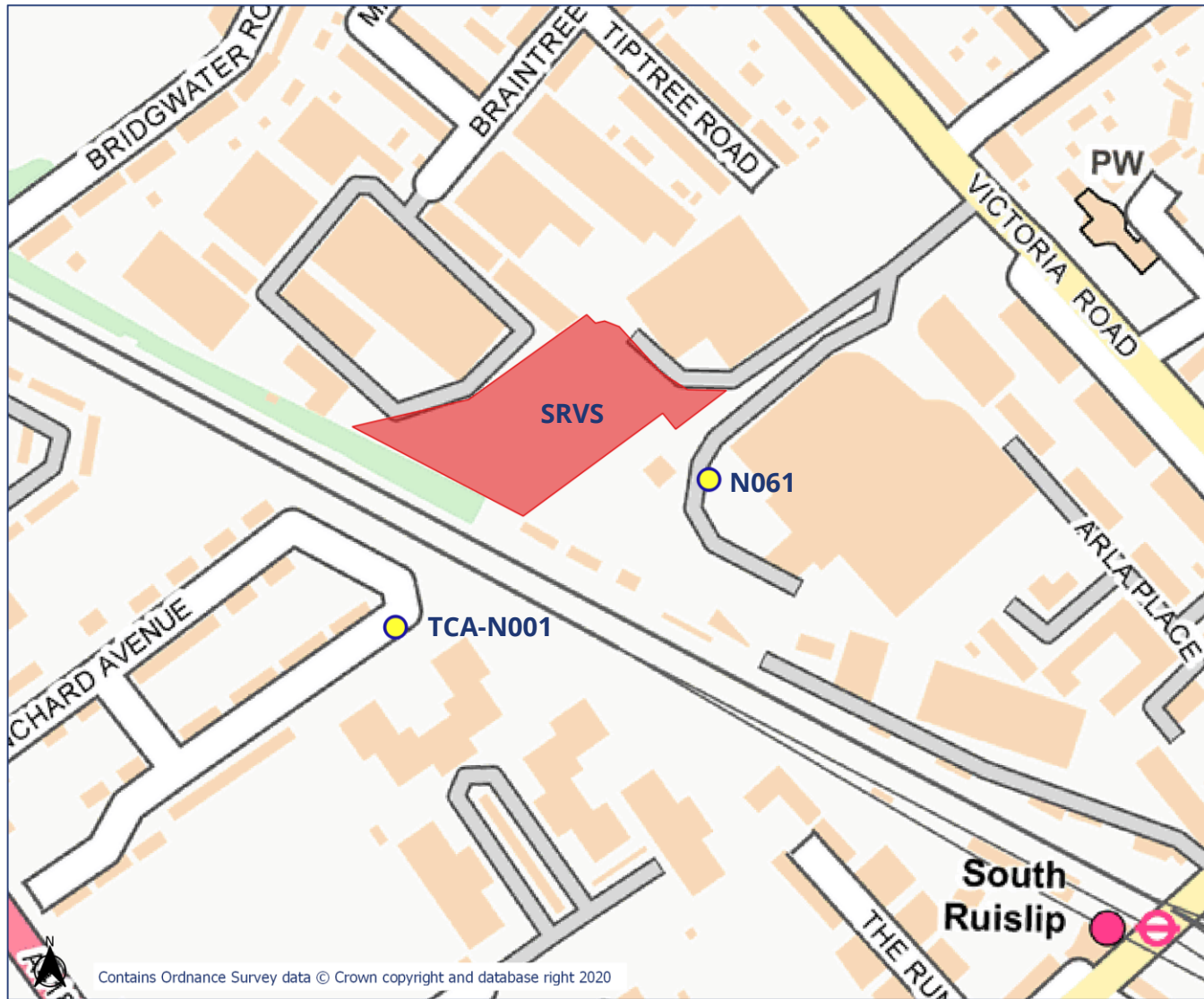


Appendix B Monitoring Locations







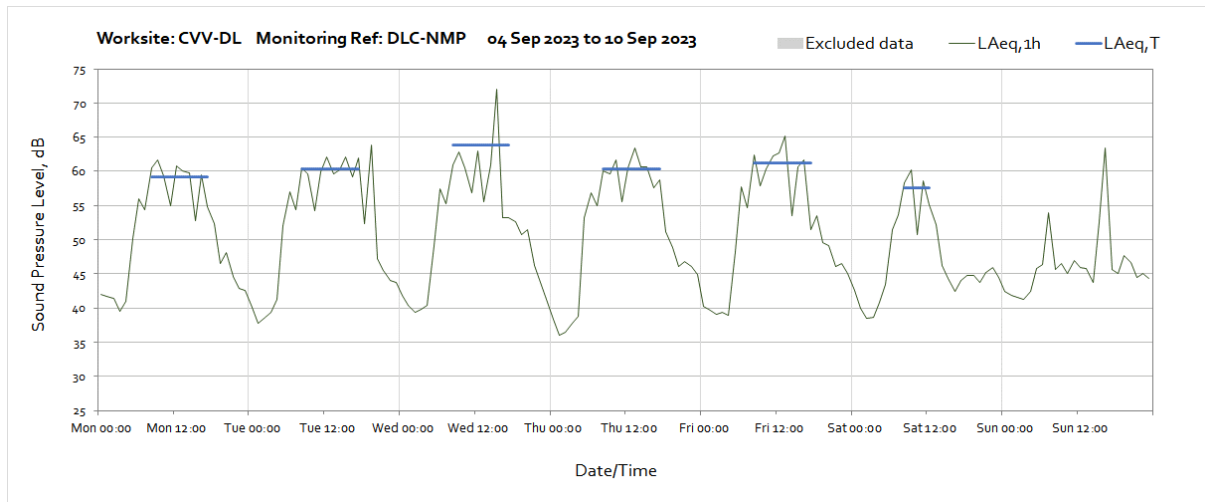
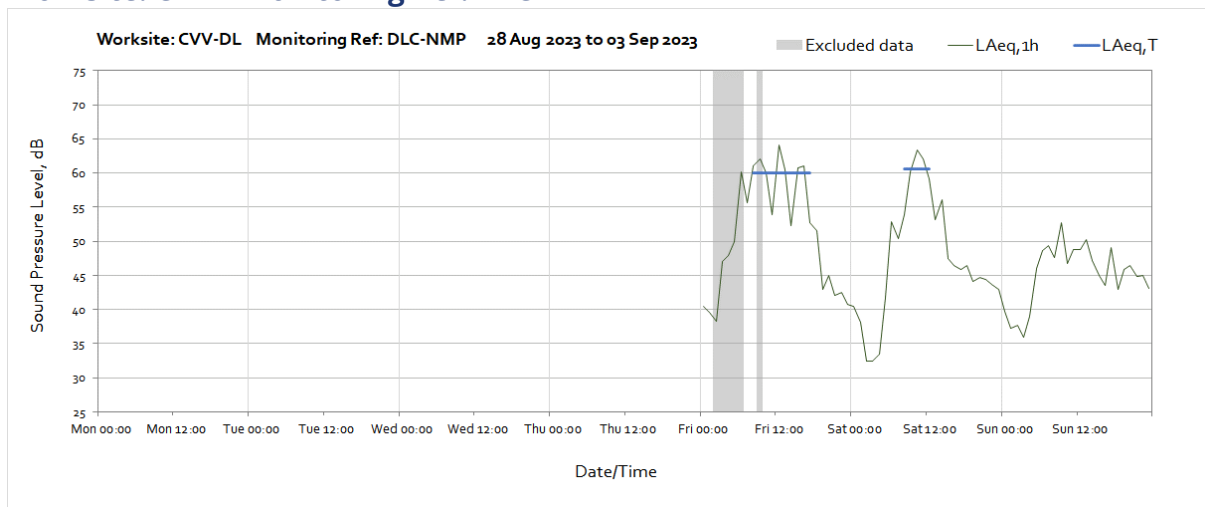


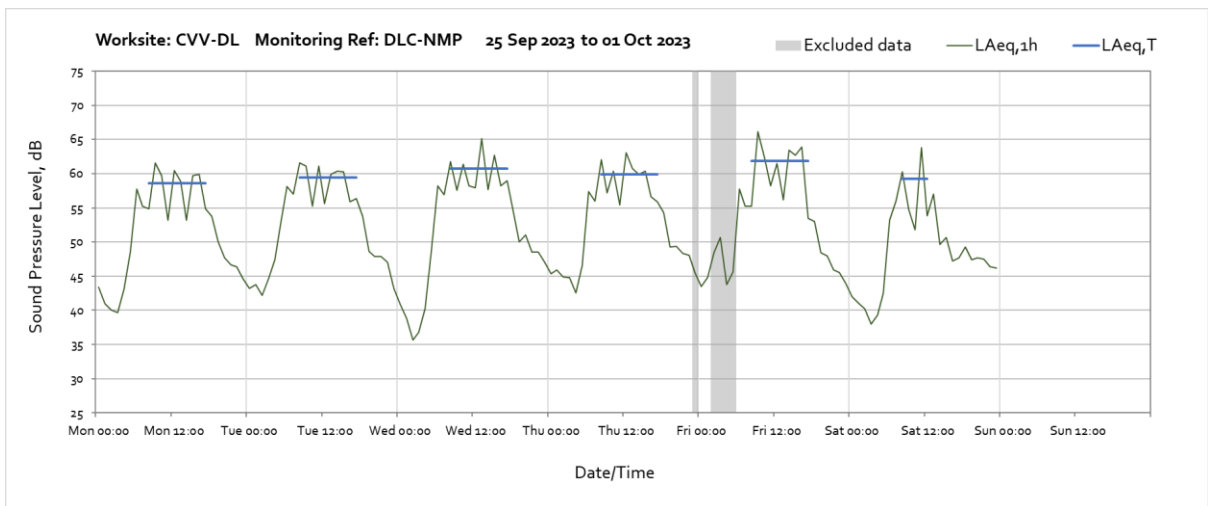
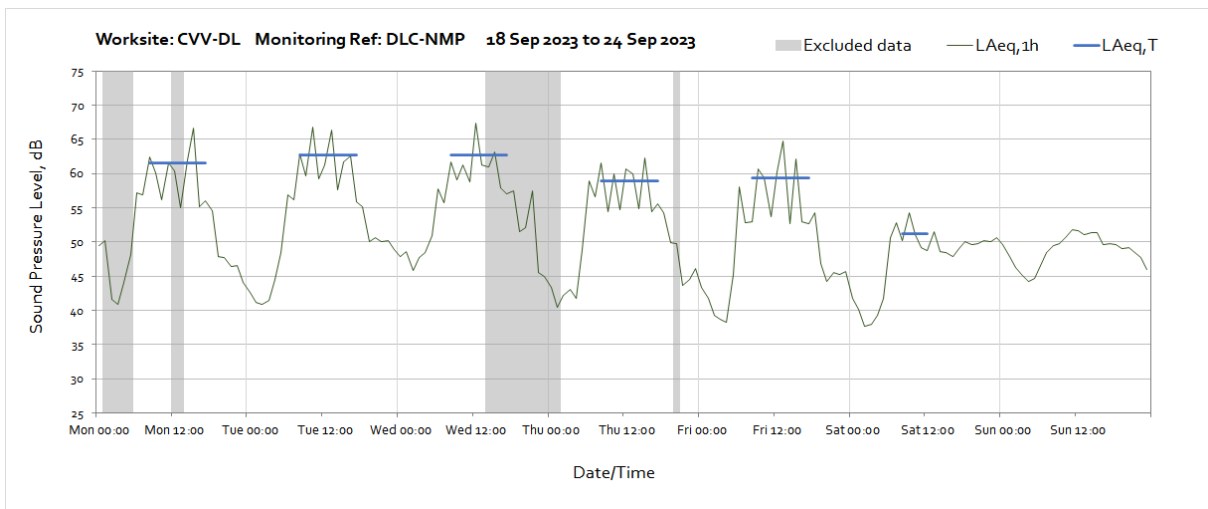
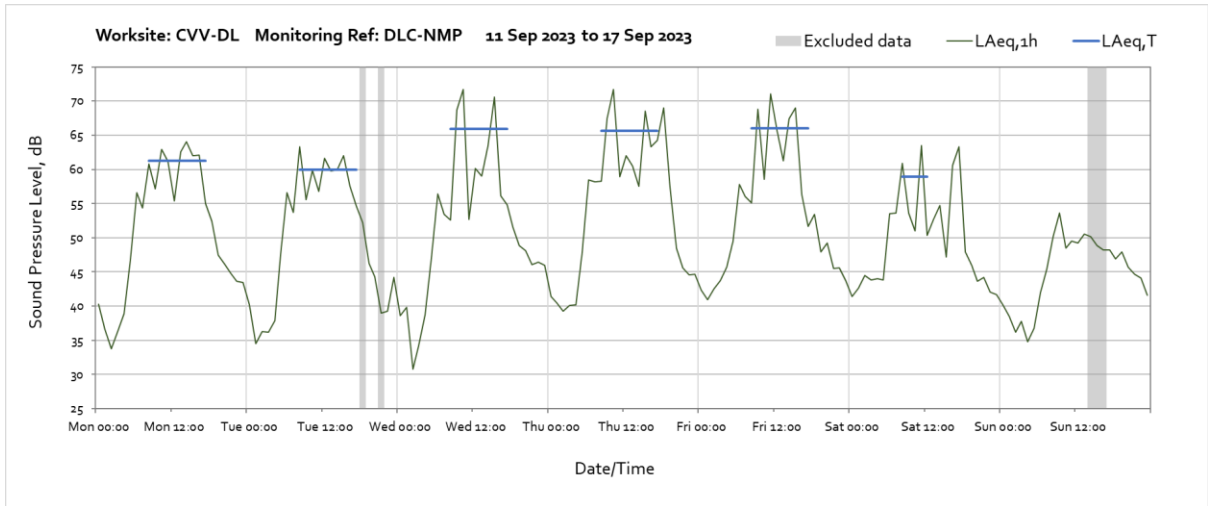
Appendix C Data

Noise

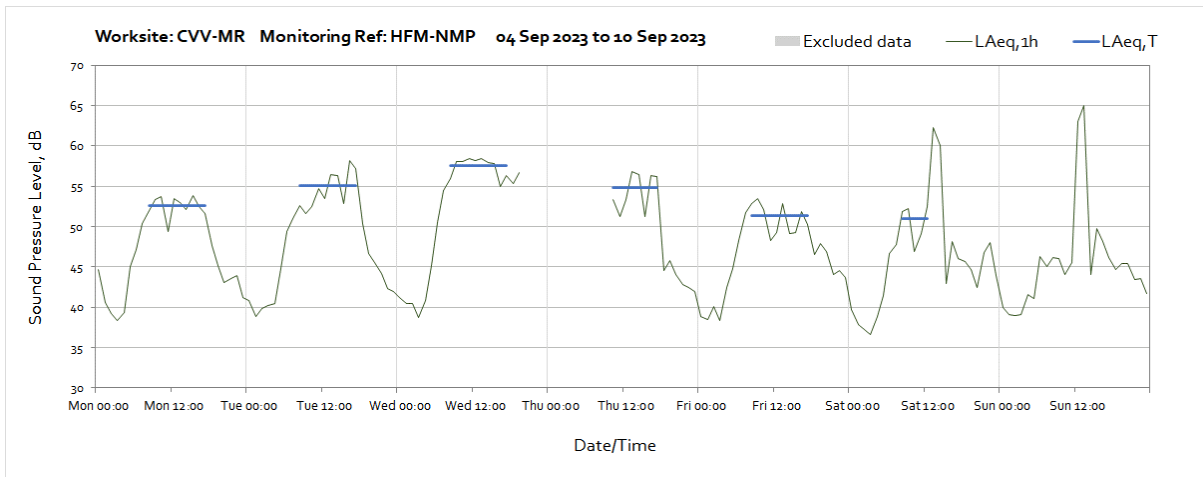
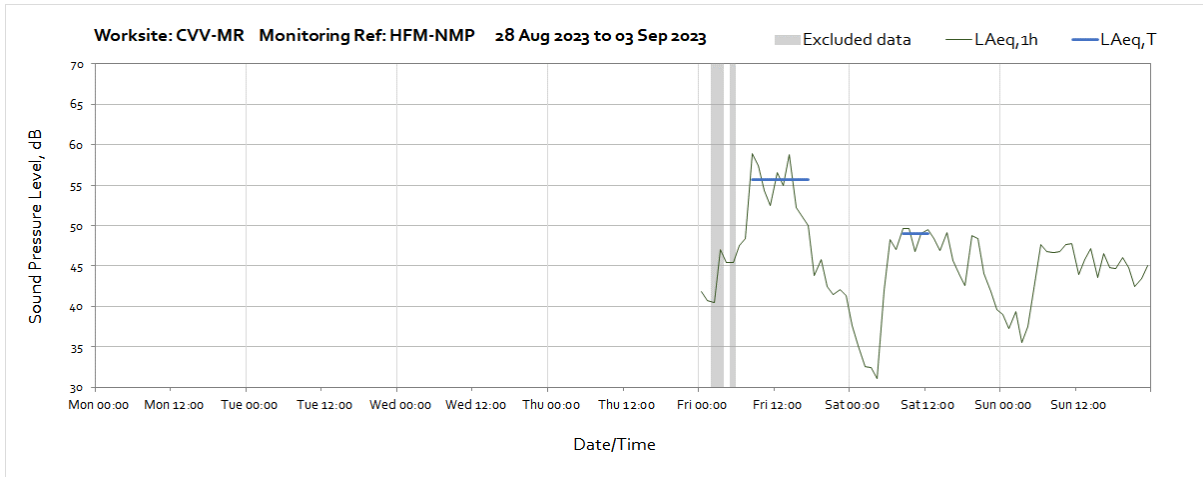
The following graphs show the hourly measured ambient noise level $L_{Aeq,1h}$ and, where relevant, the averaged noise level $L_{Aeq,T}$ values, where the time period T is as specified in Table 1 of HS2 Information Paper E23. Periods where noise levels are adversely affected by weather or only measured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

Worksite: CVV - DL Monitoring Ref: DLC-NMP

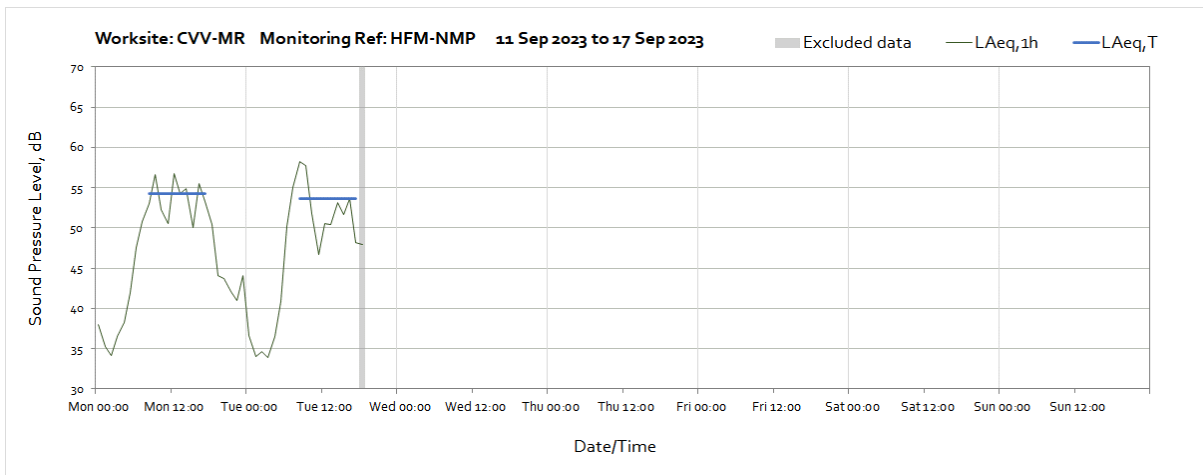




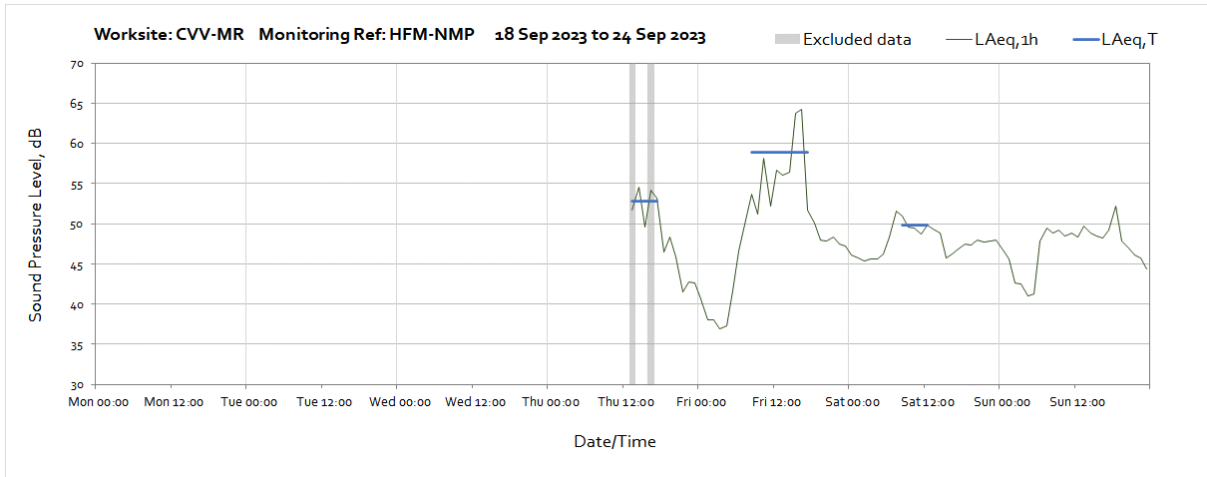
Worksite: CVV – Monitoring Ref: HFM-NMP



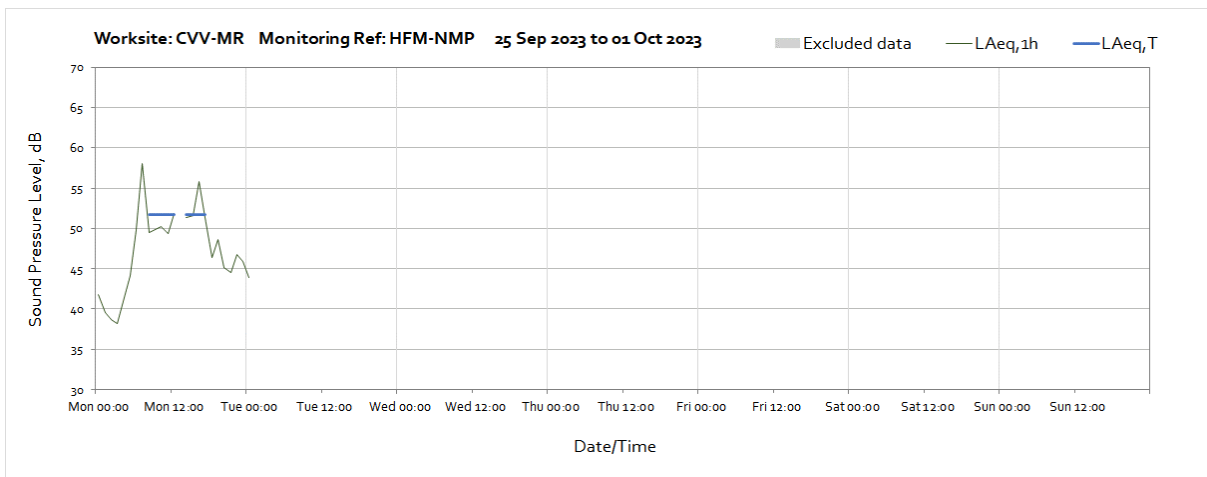
Note Missing data between 20:00 Wednesday 6th of September and 10:00 Thursday 7th September was due to a power issue at the monitoring station.



Note Missing data between 19:00 Tuesday 12th of September and 13:00 Thursday 21st September was due to a power issue at the monitoring station.



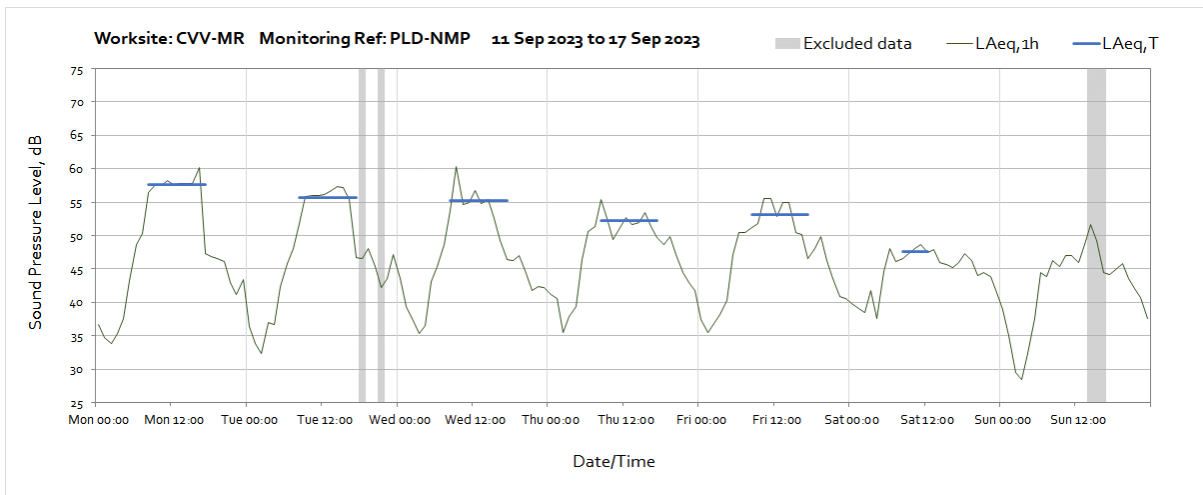
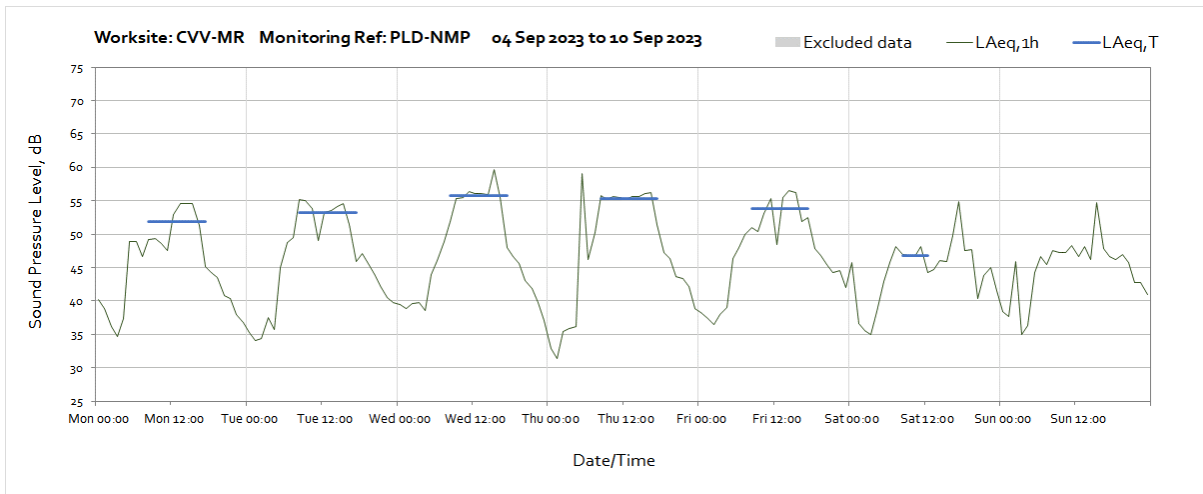
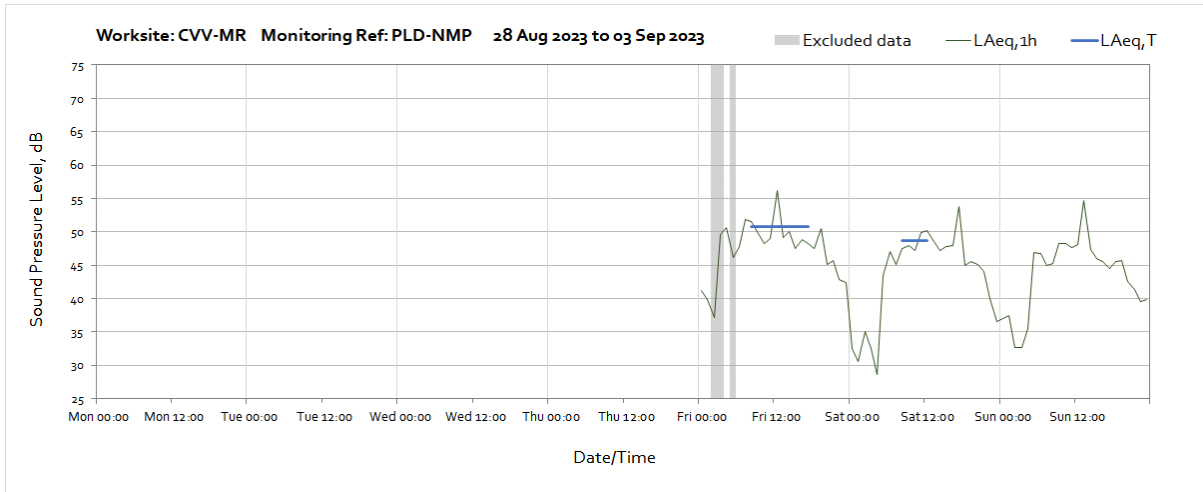
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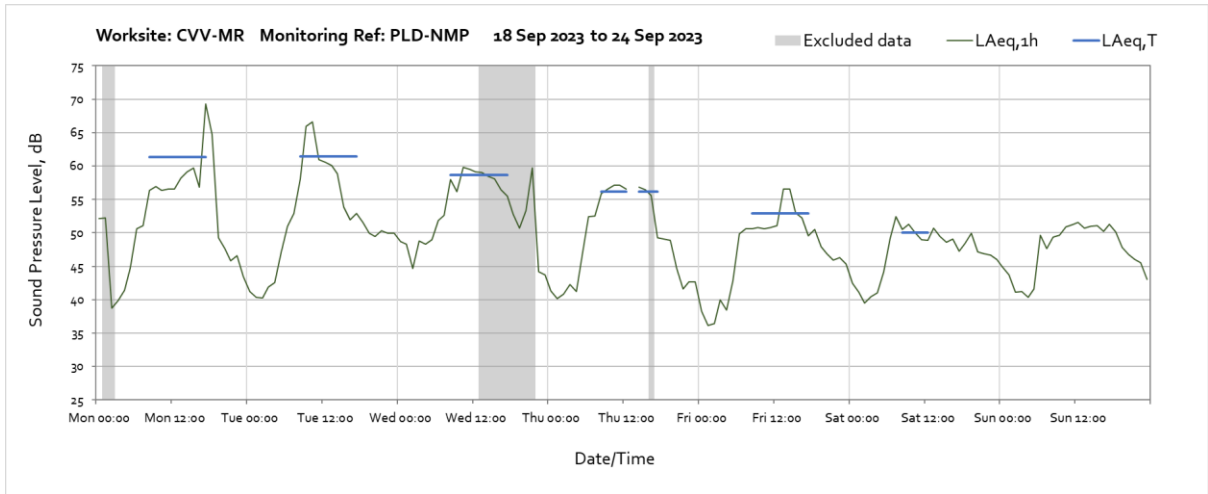


Note Missing data between 13:00 and 14:00 Monday 25th September was due to a remote connection issue to the monitoring station.

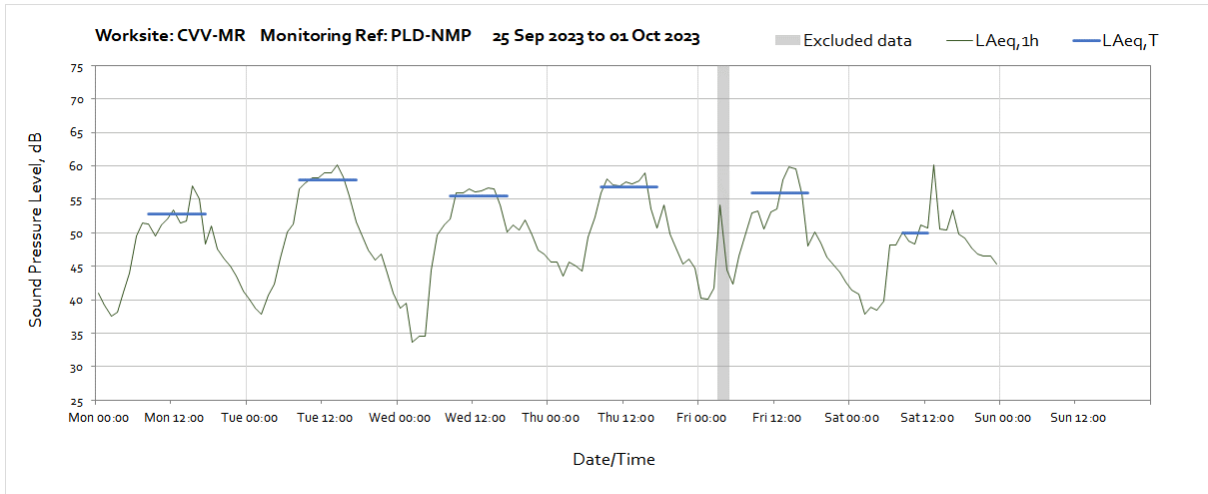
Note Missing data between 01:00 Tuesday 26th of September and the end of September was due to a power issue at the monitoring station.

Worksite: CVV – Monitoring Ref: PLD-NMP

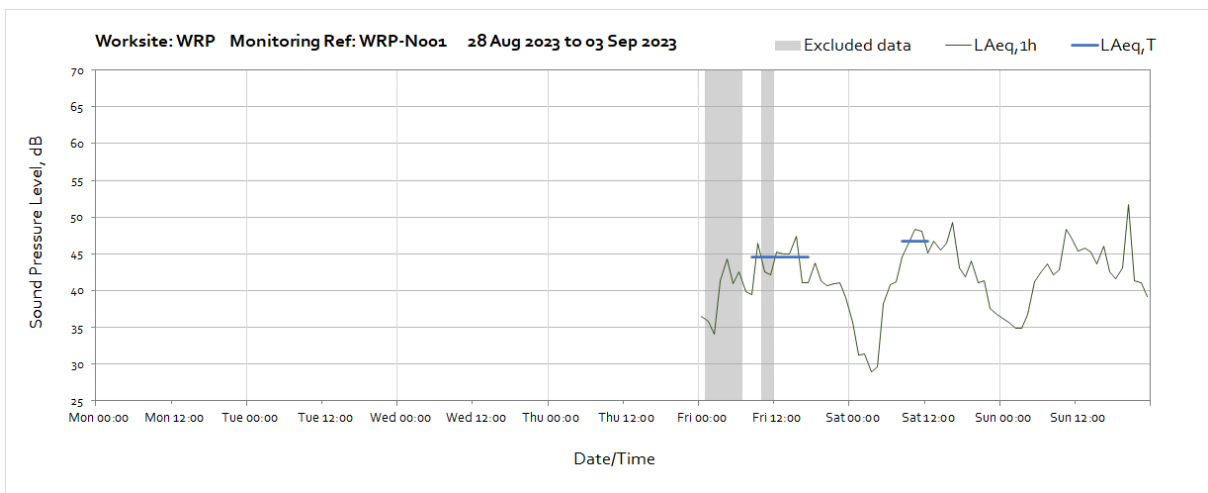


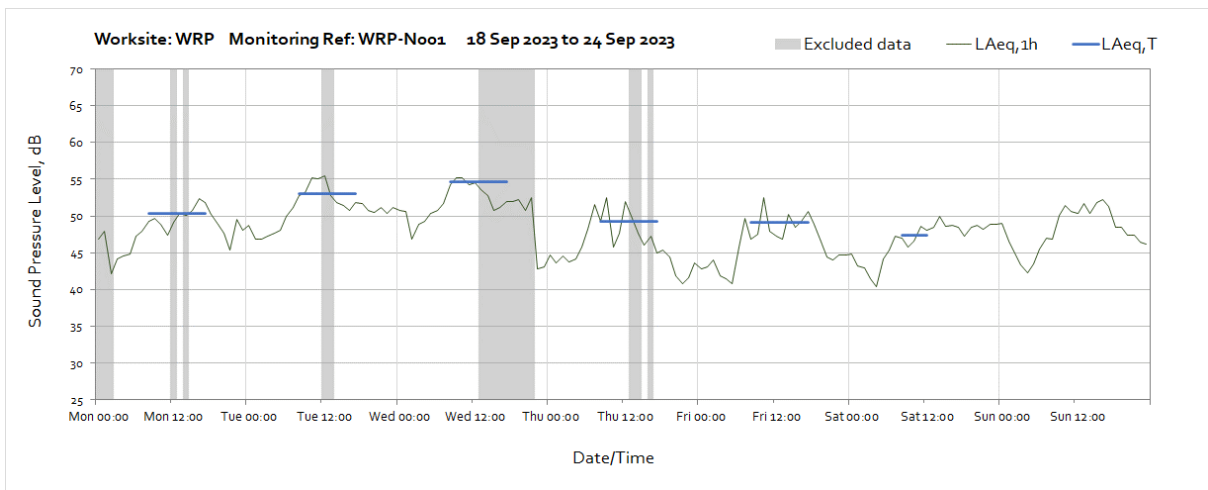
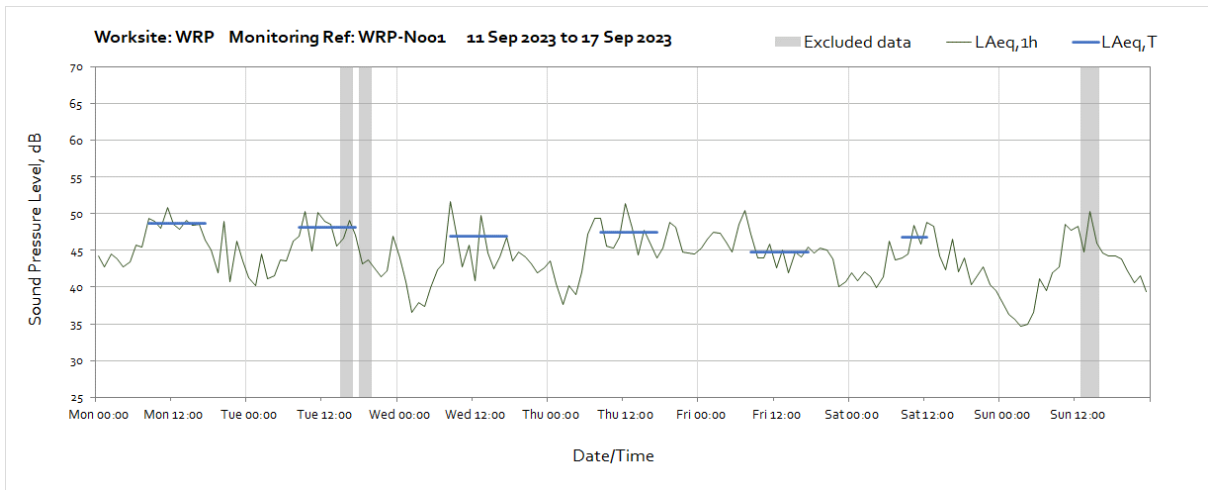
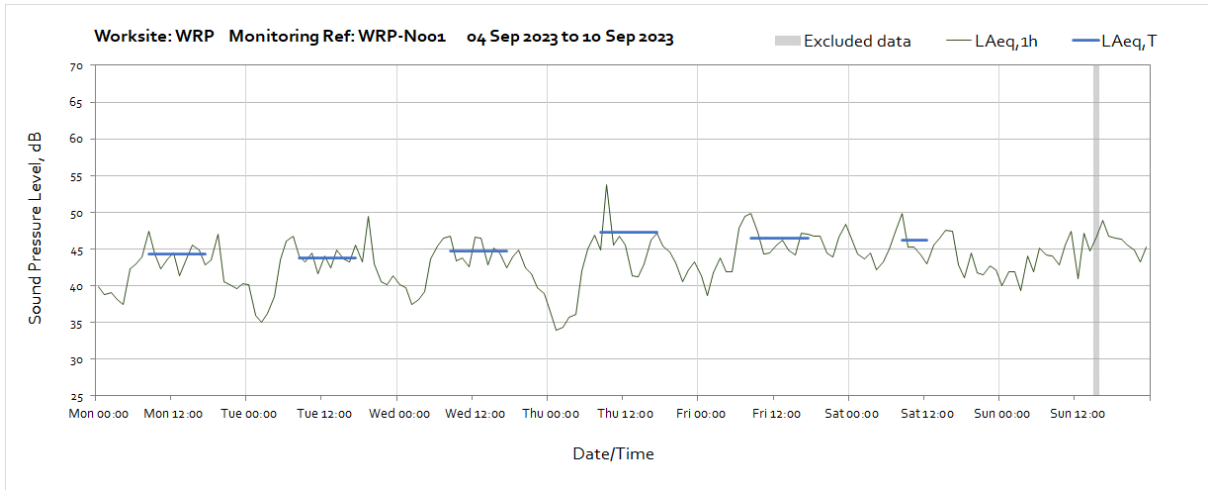


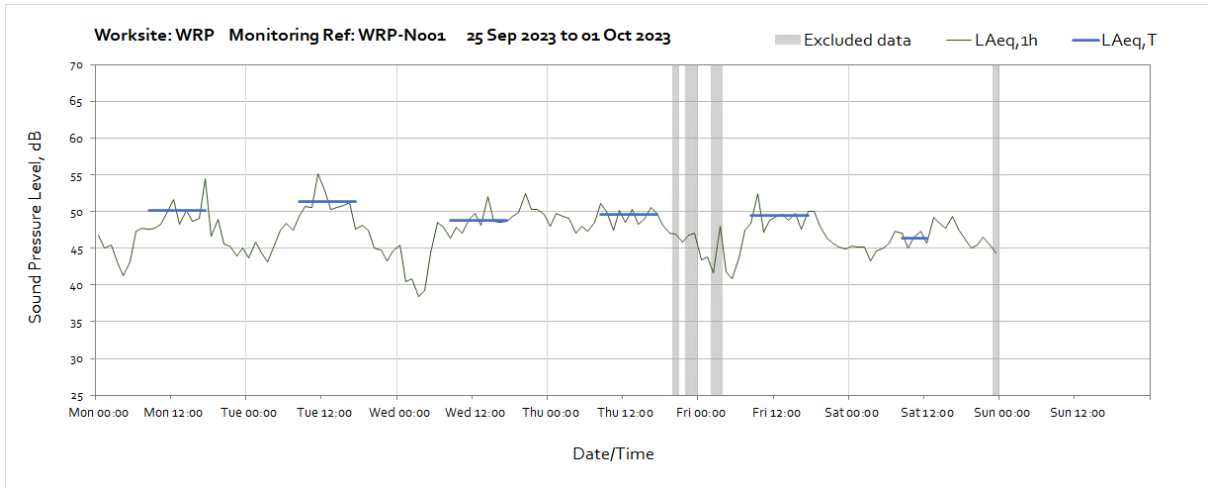
Note Missing data between 12:00 and 13:00 Monday 21st September was due to the monitor field calibration.



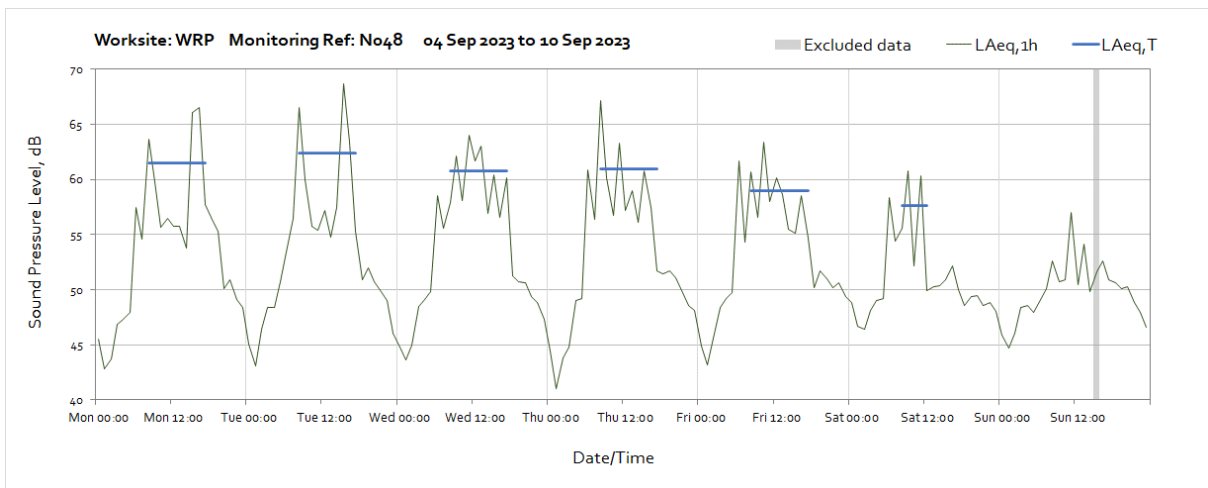
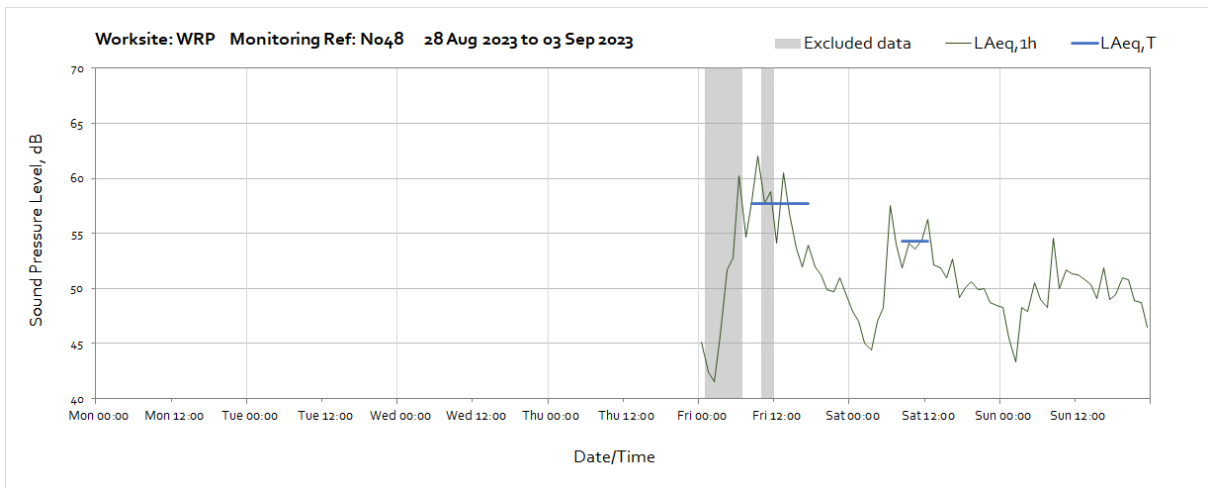
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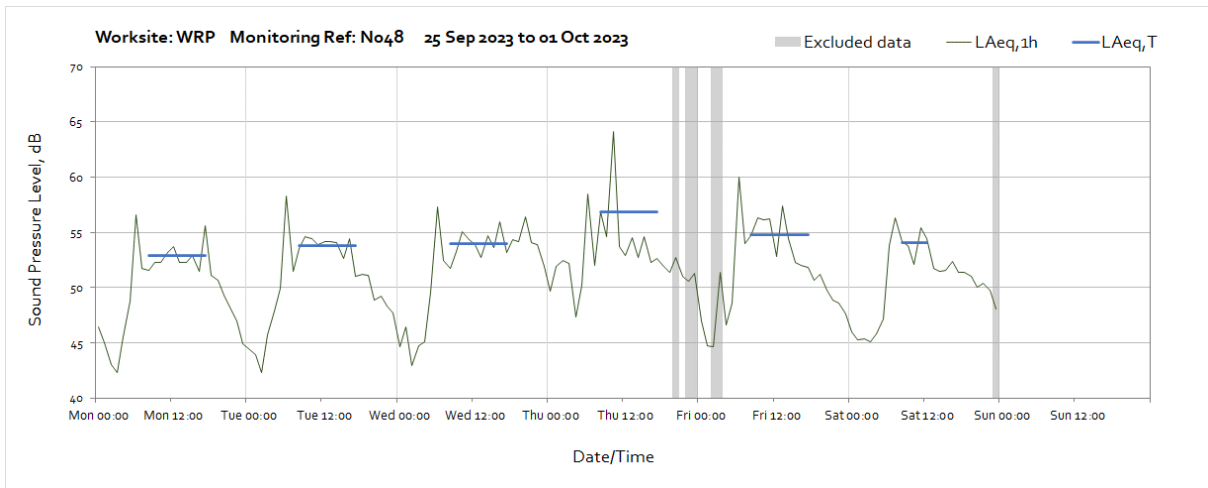
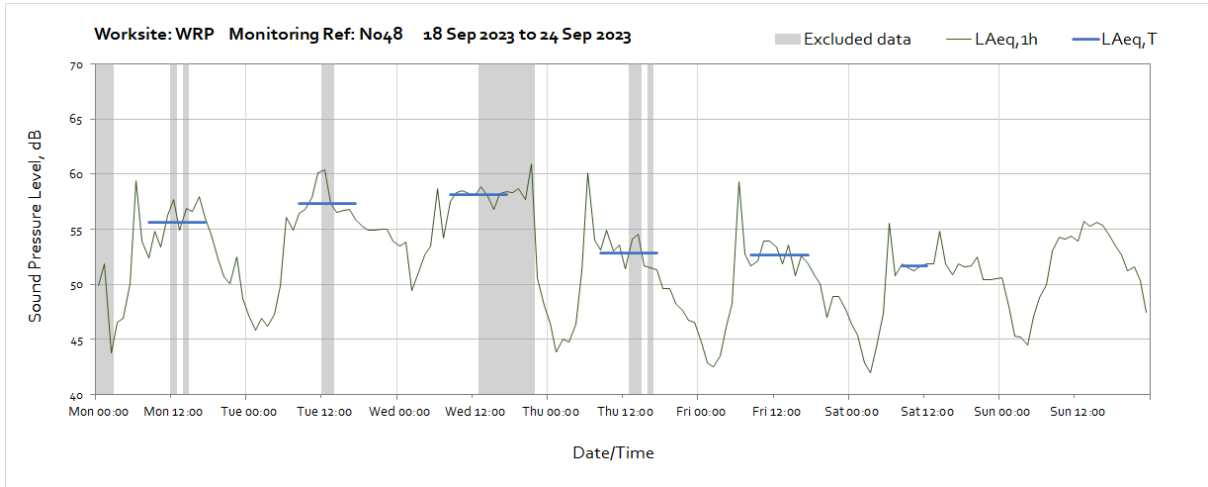
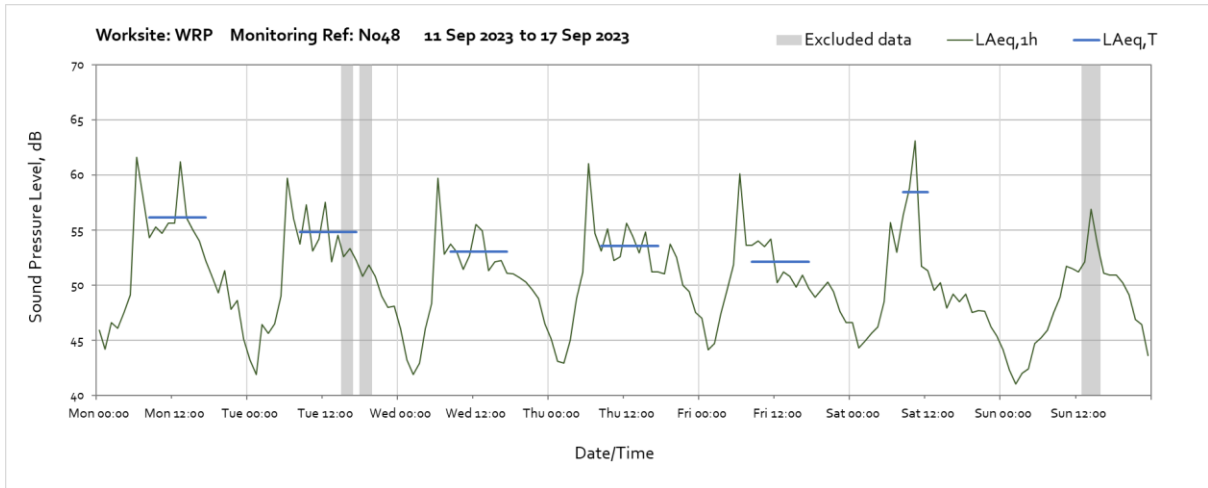




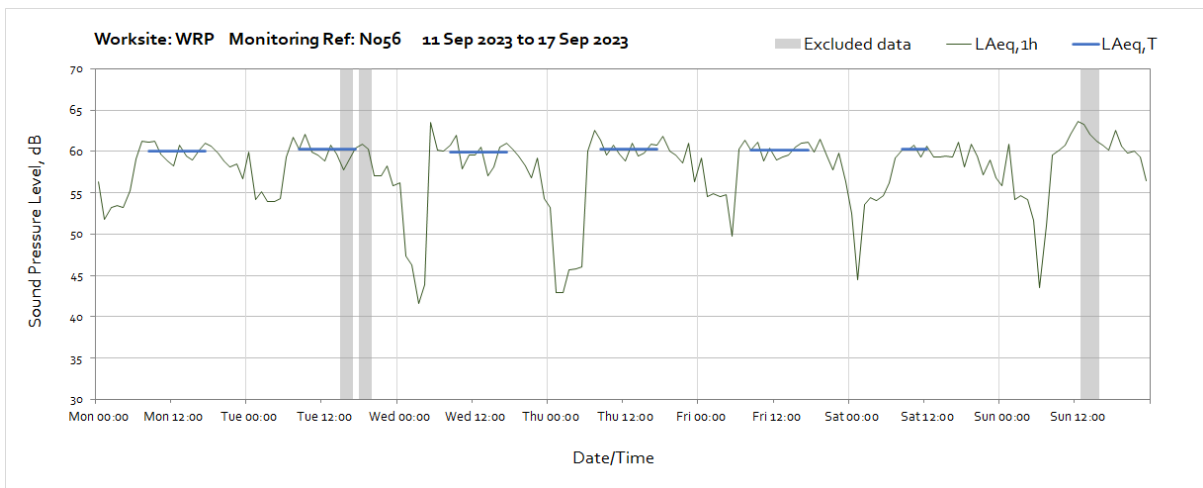
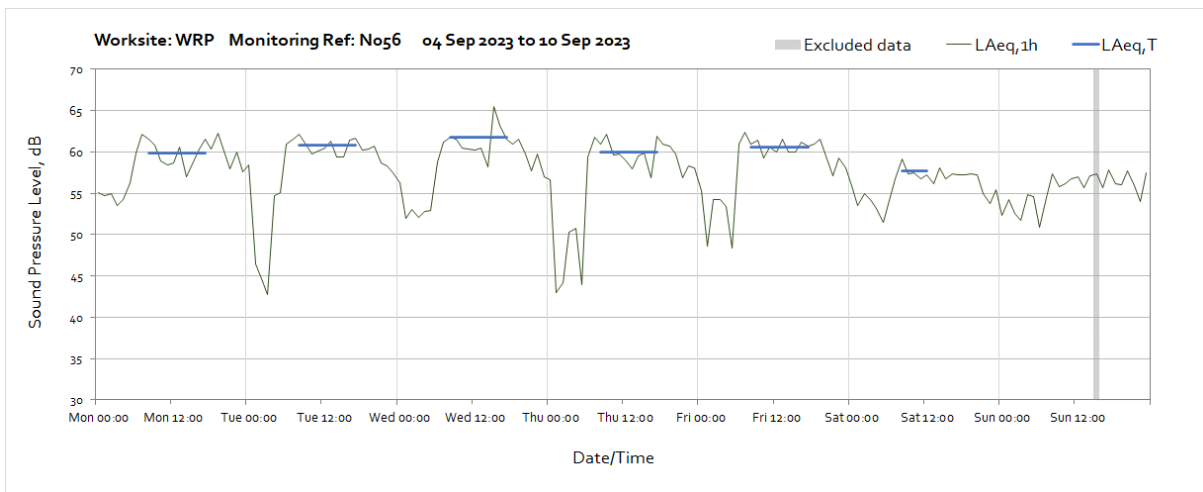
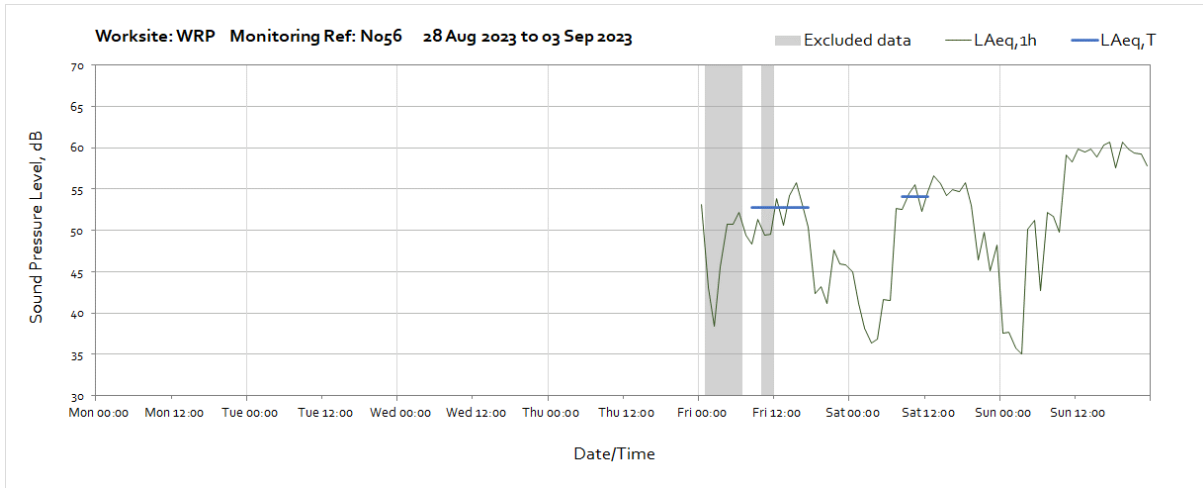


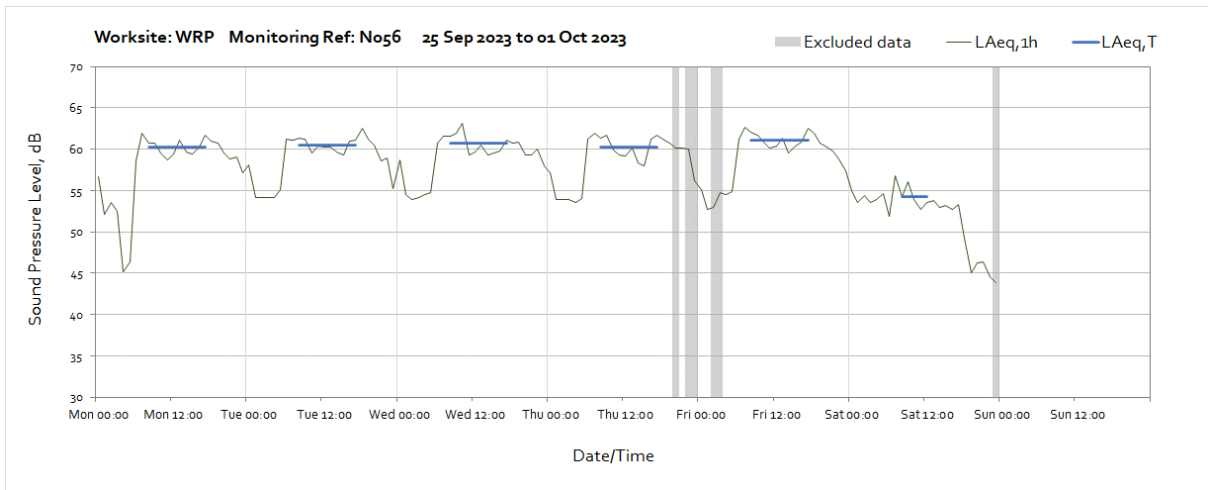
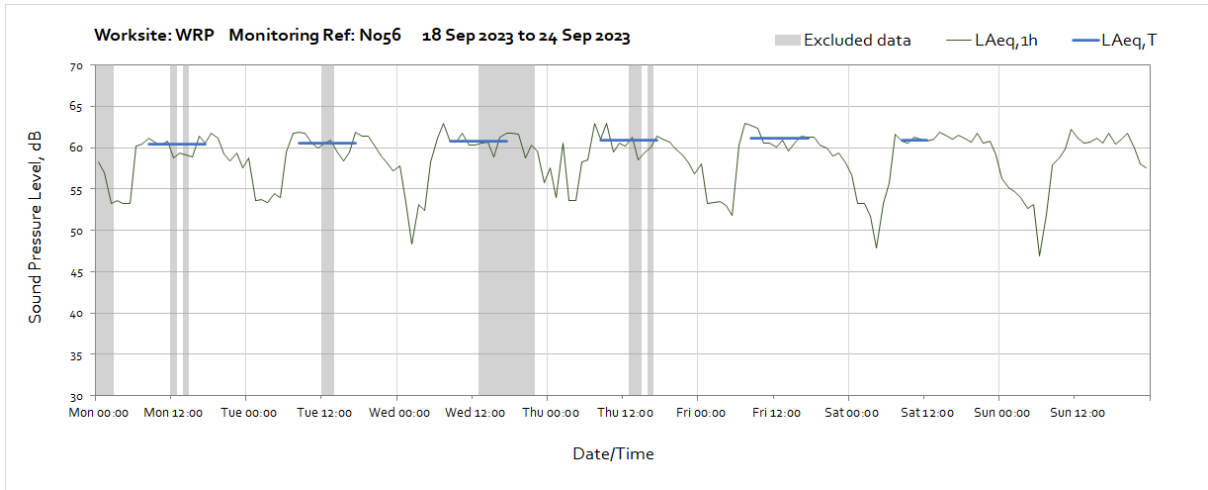
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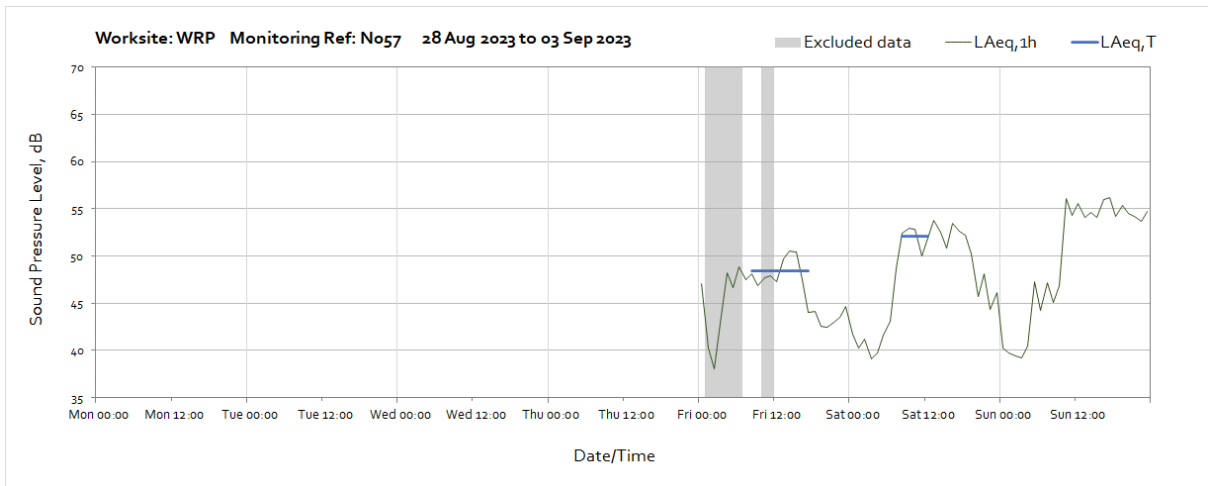


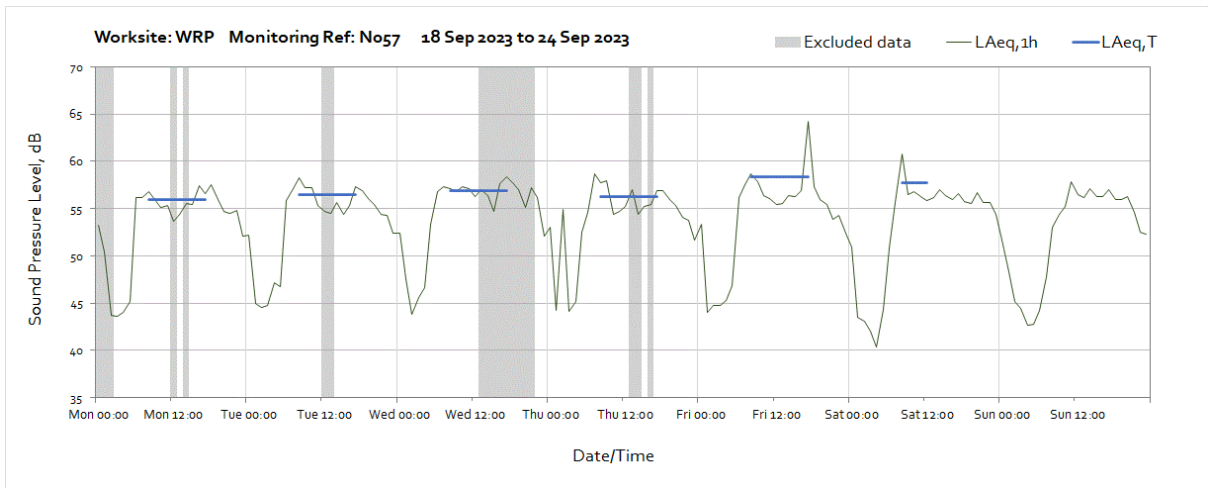
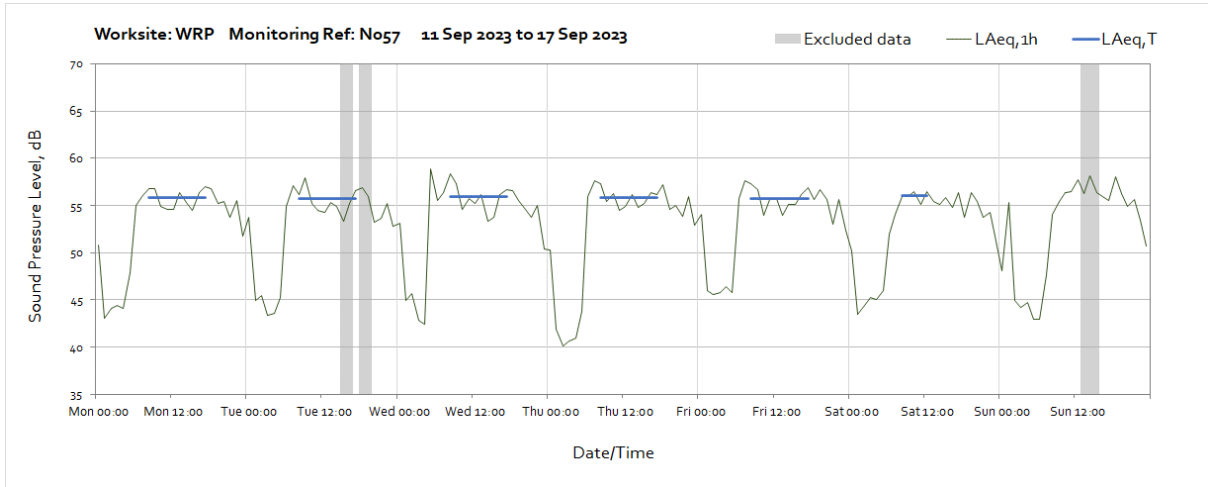
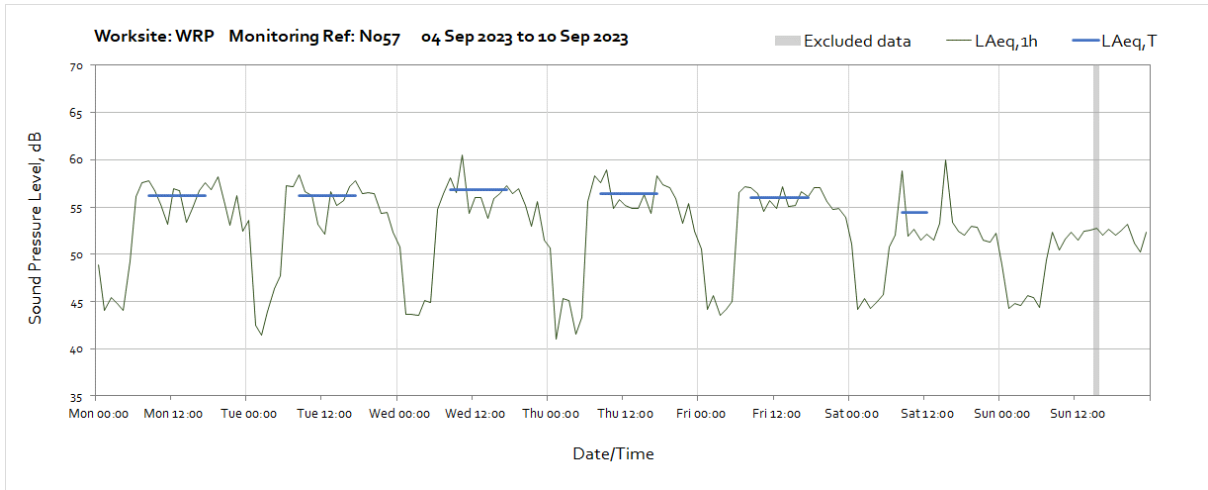
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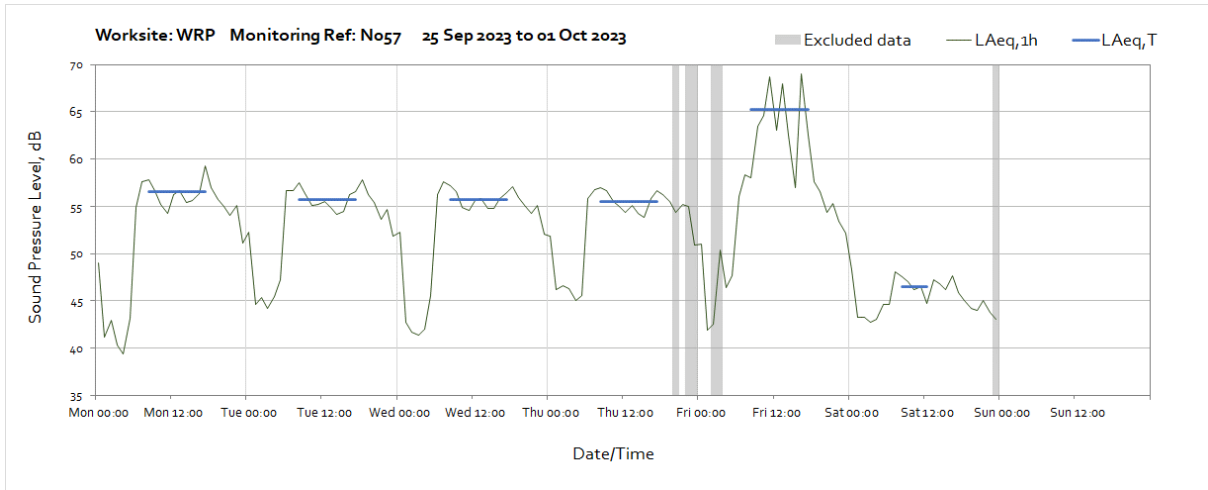




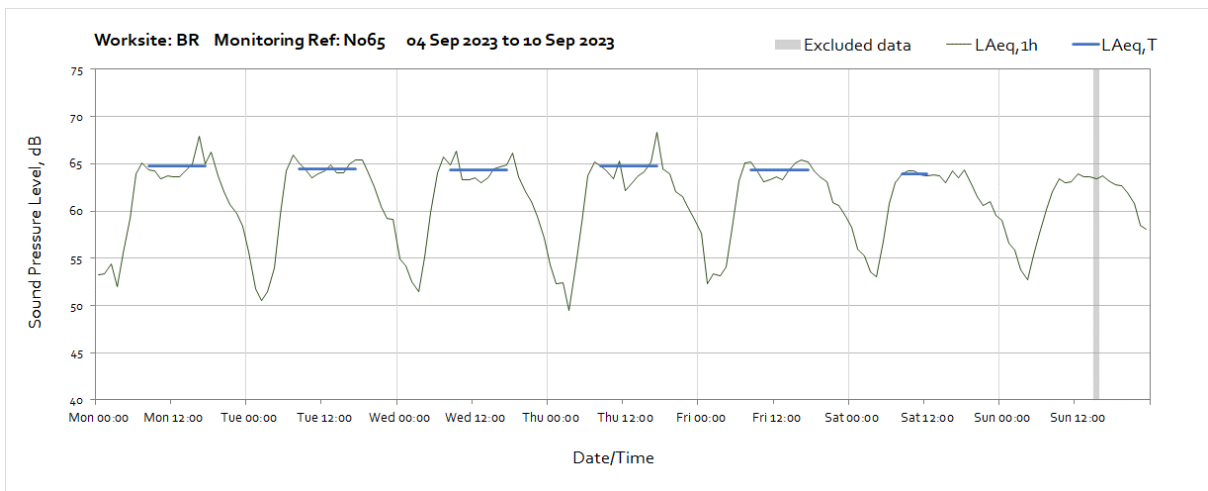
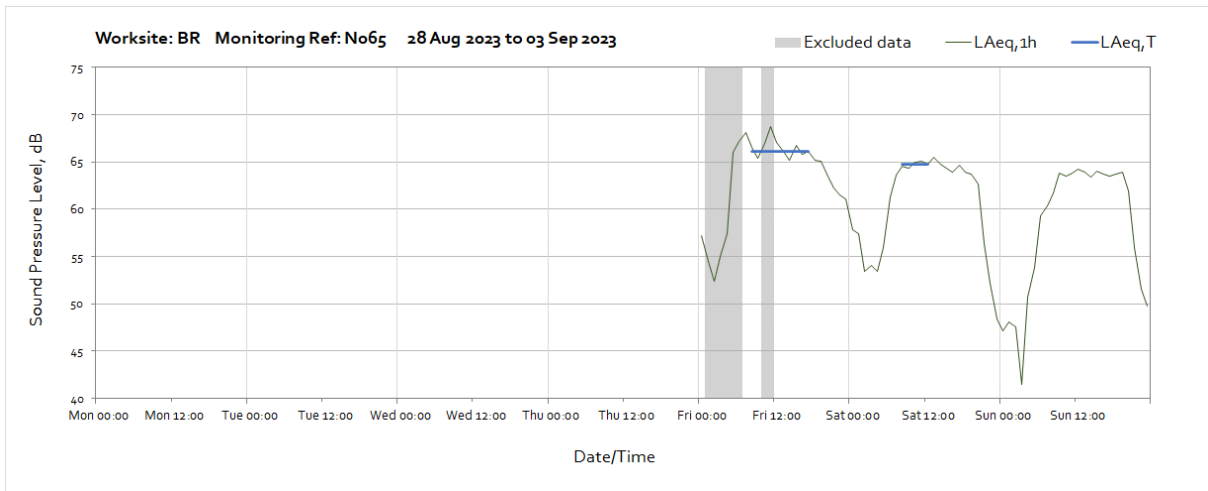
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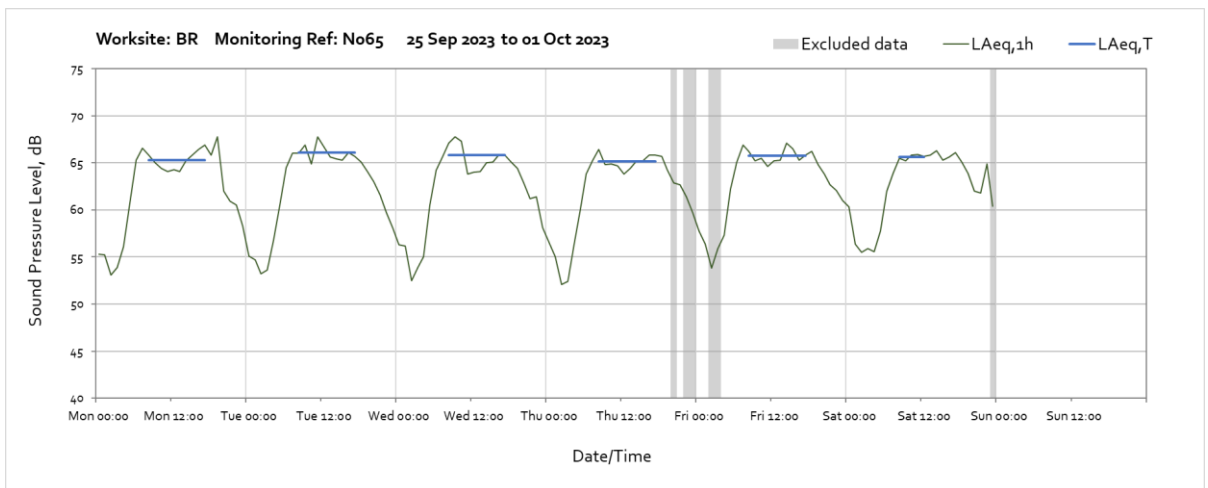
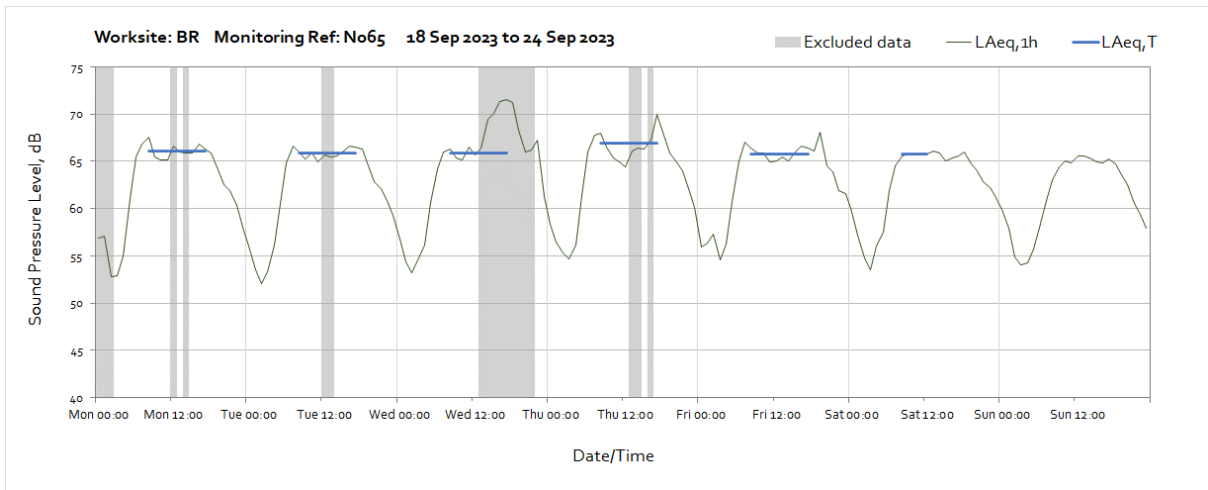
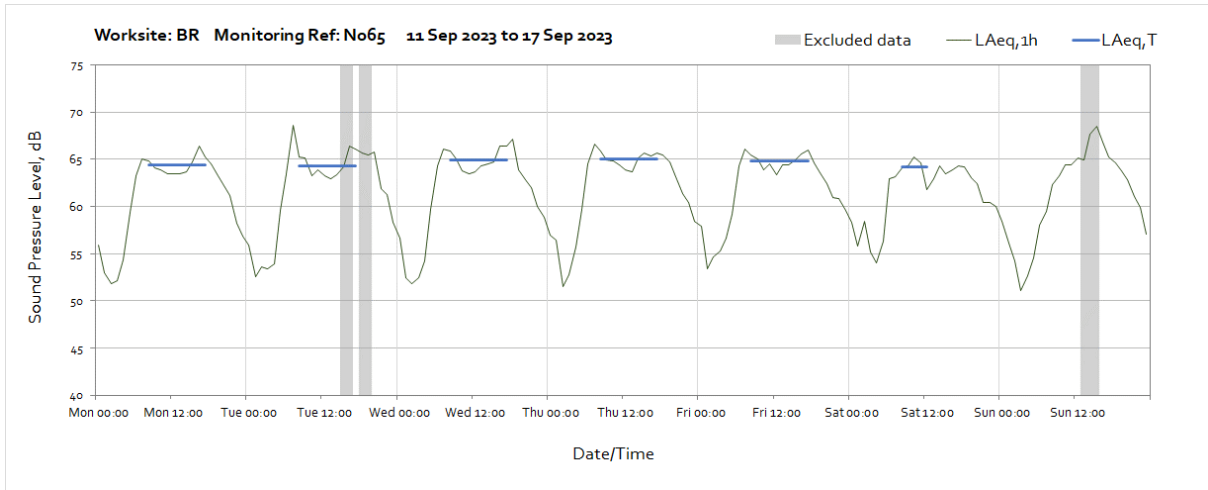




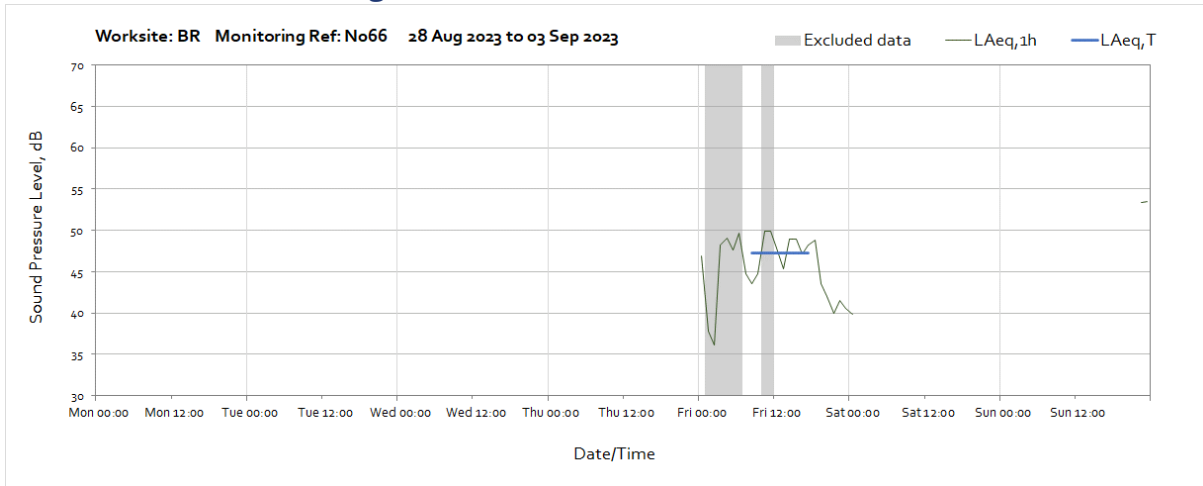


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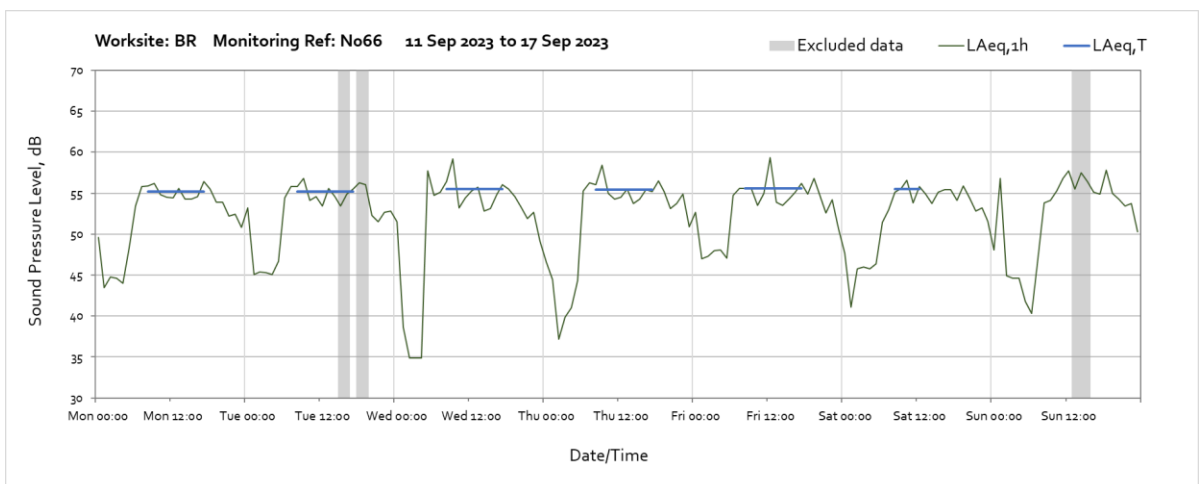
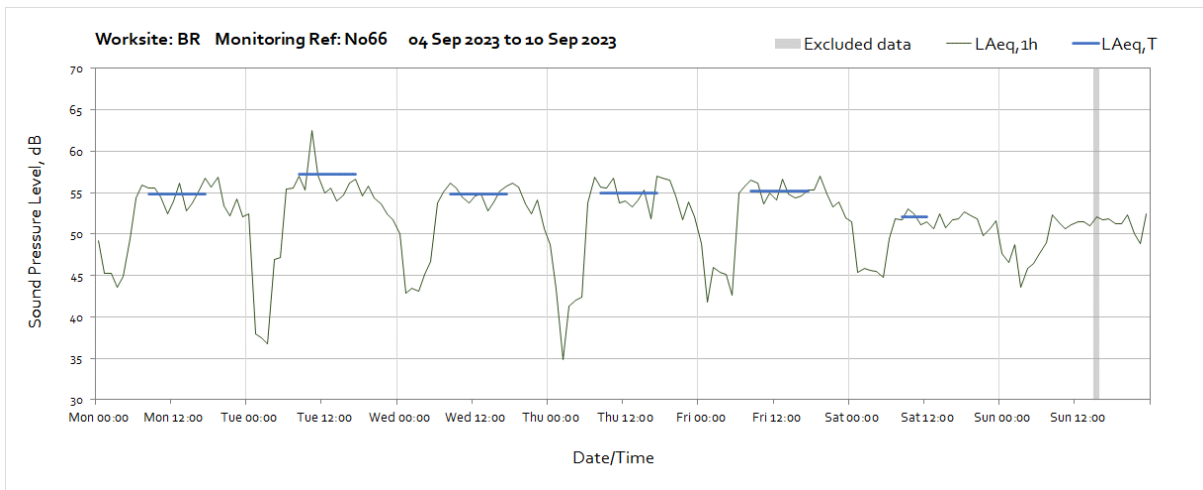


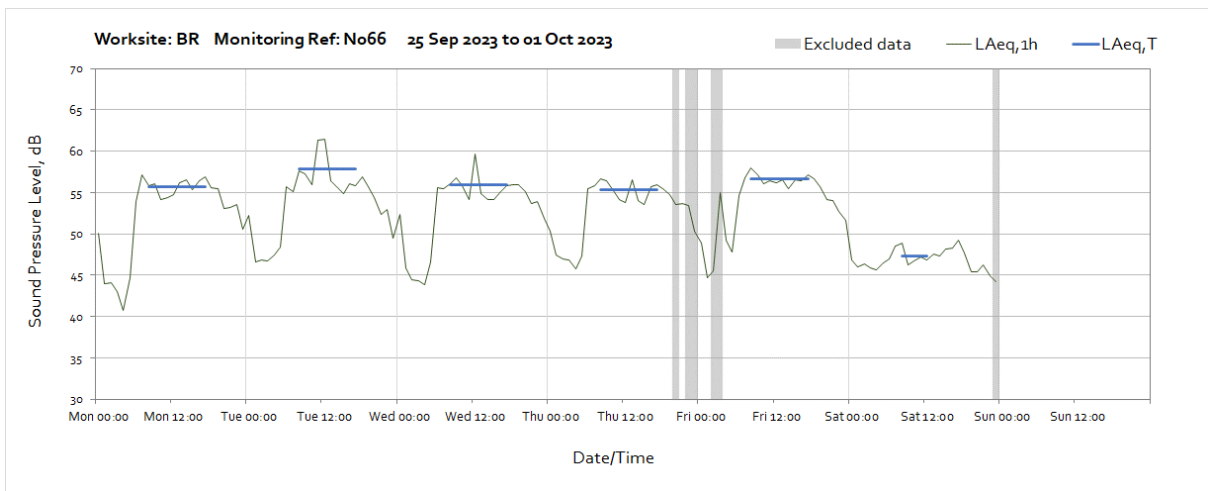
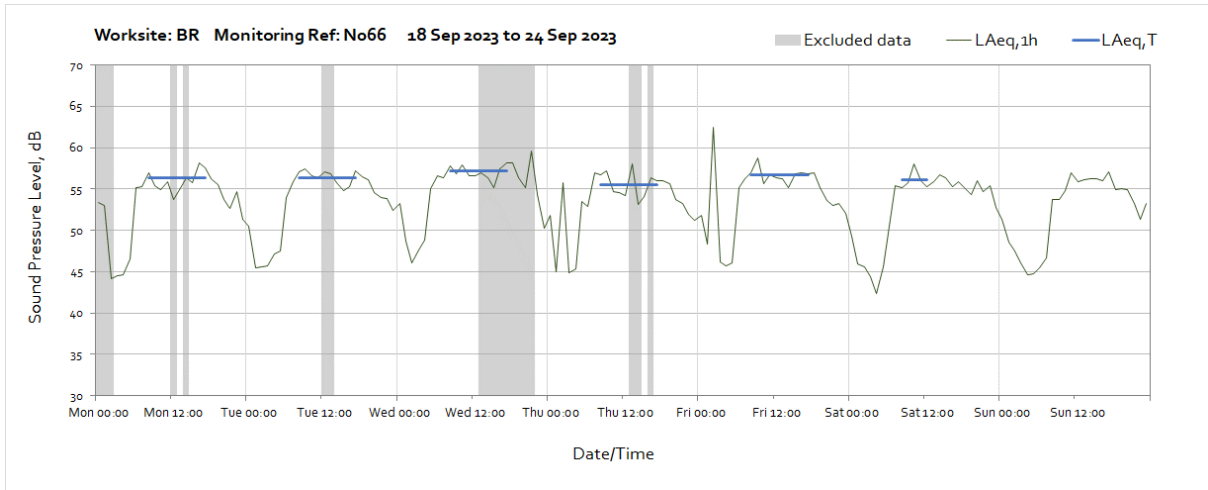


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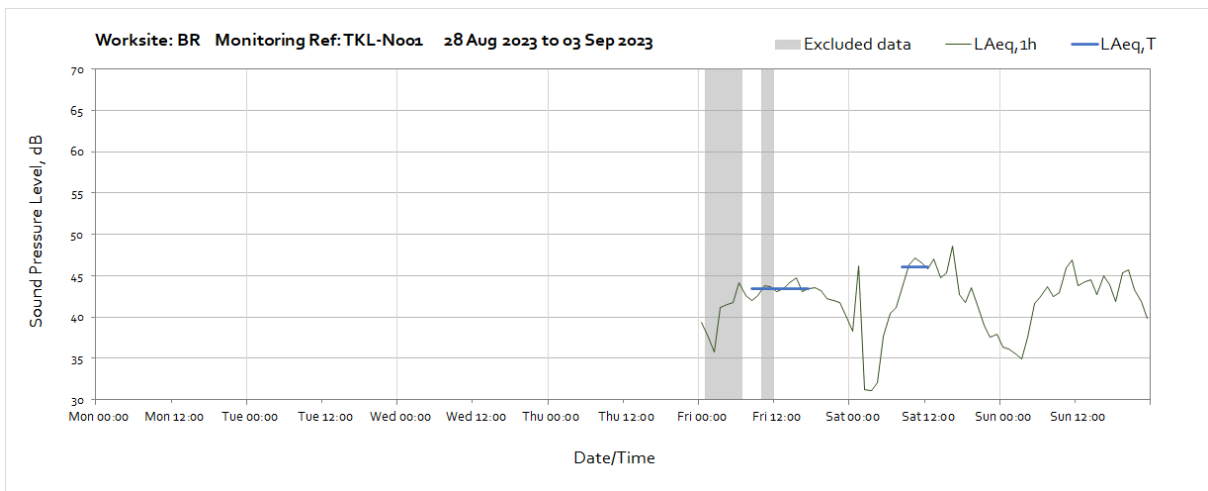


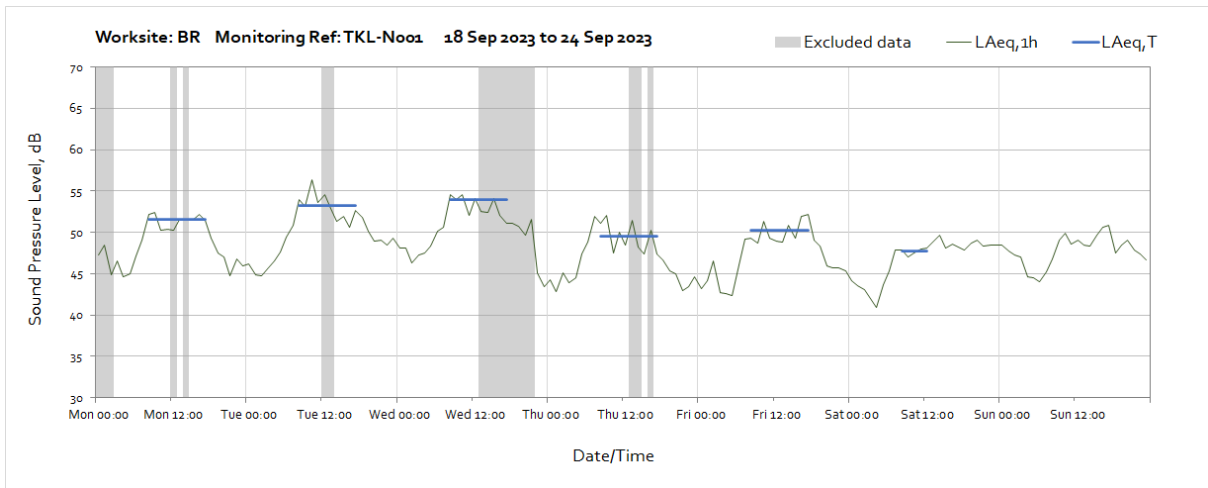
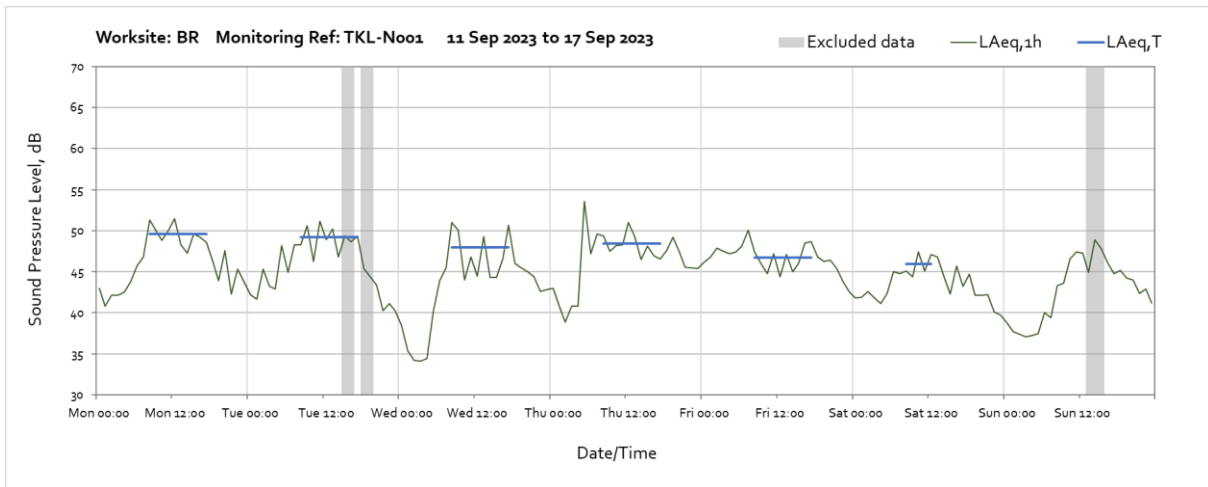
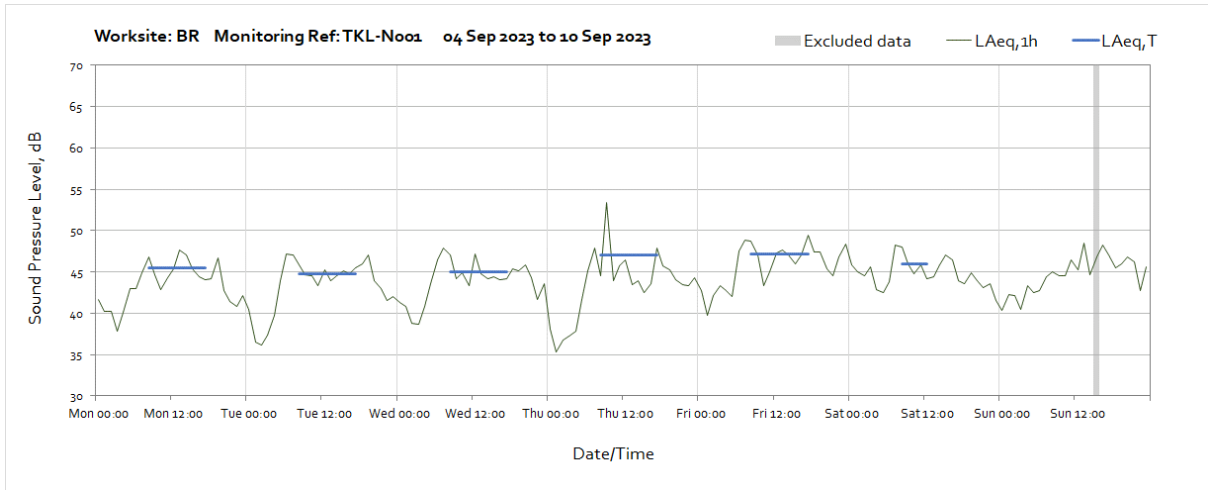
Note Missing data between 01:00 on Saturday 2nd September and 22:00 on Sunday 3rd September was due to a battery fault at the monitoring station.

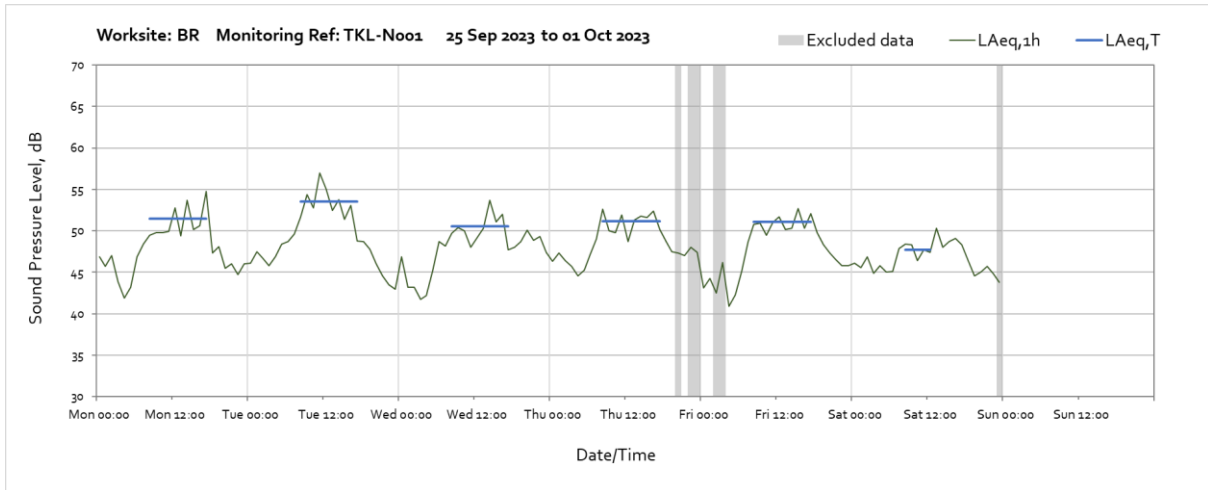




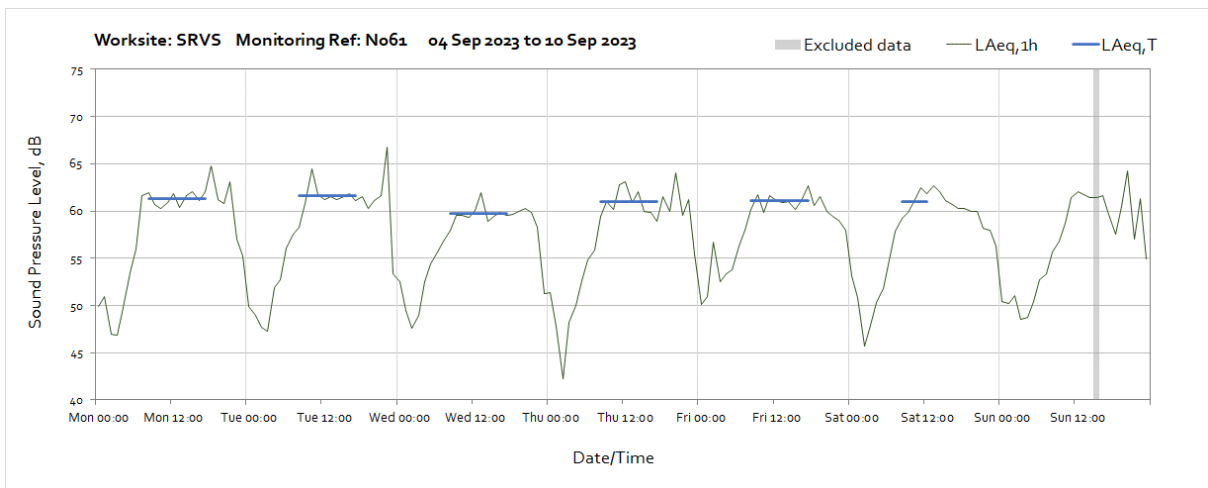
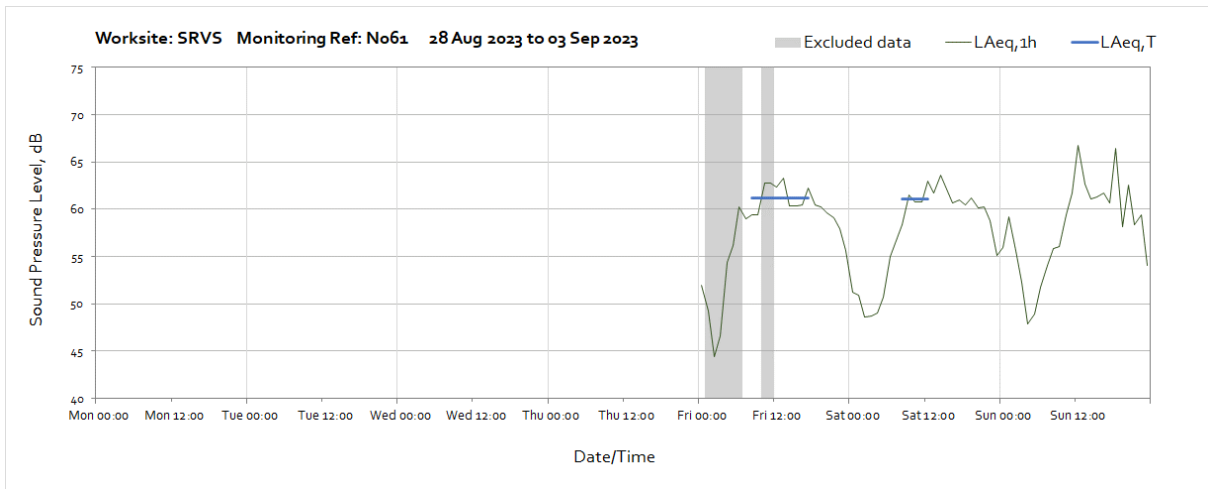
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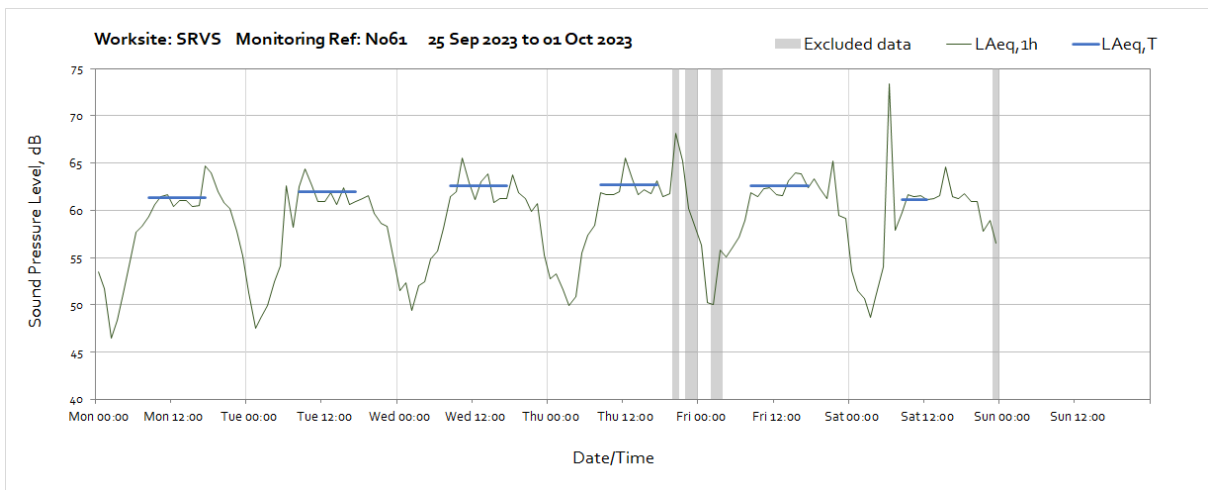
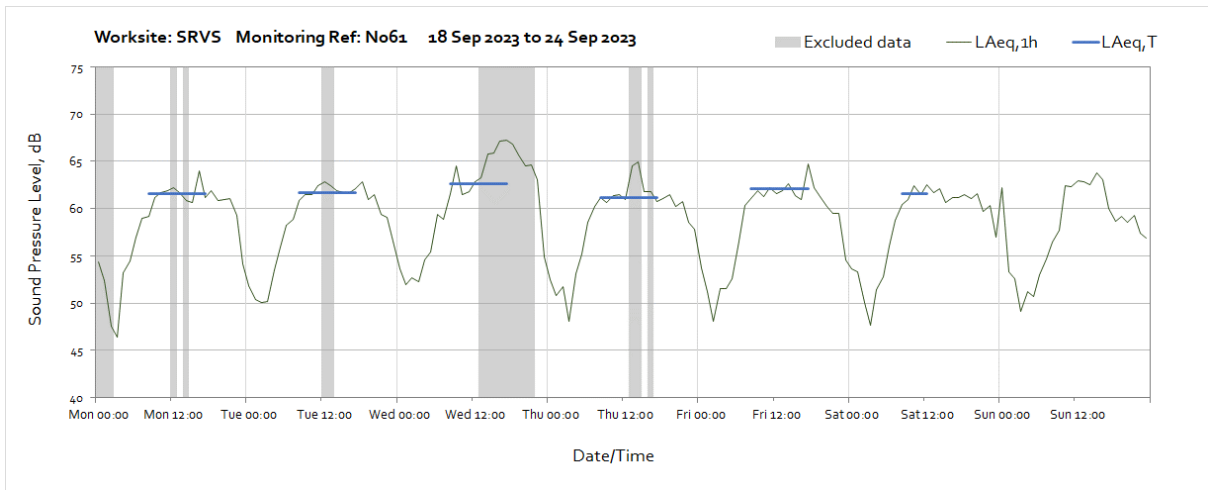
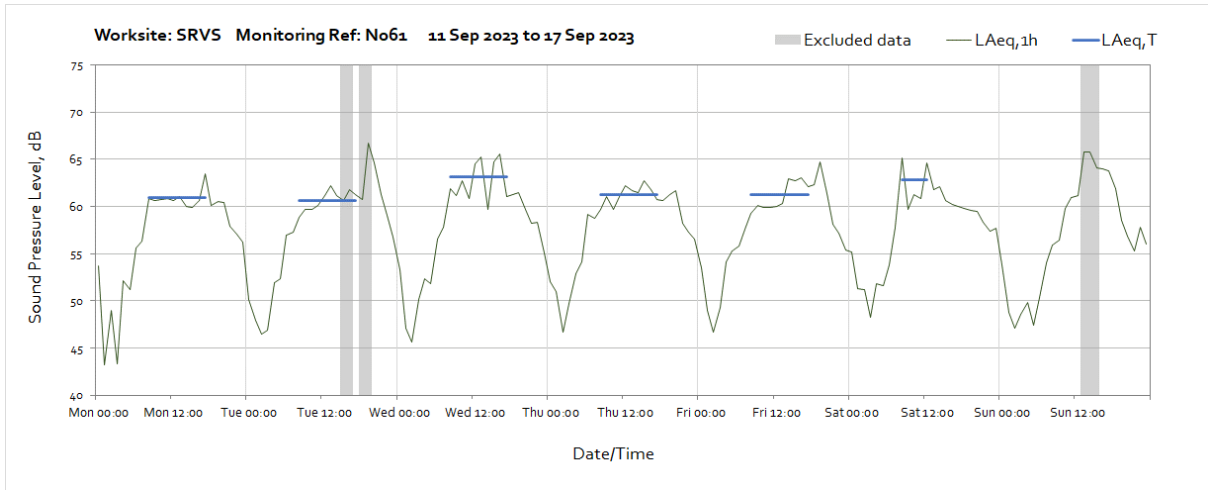




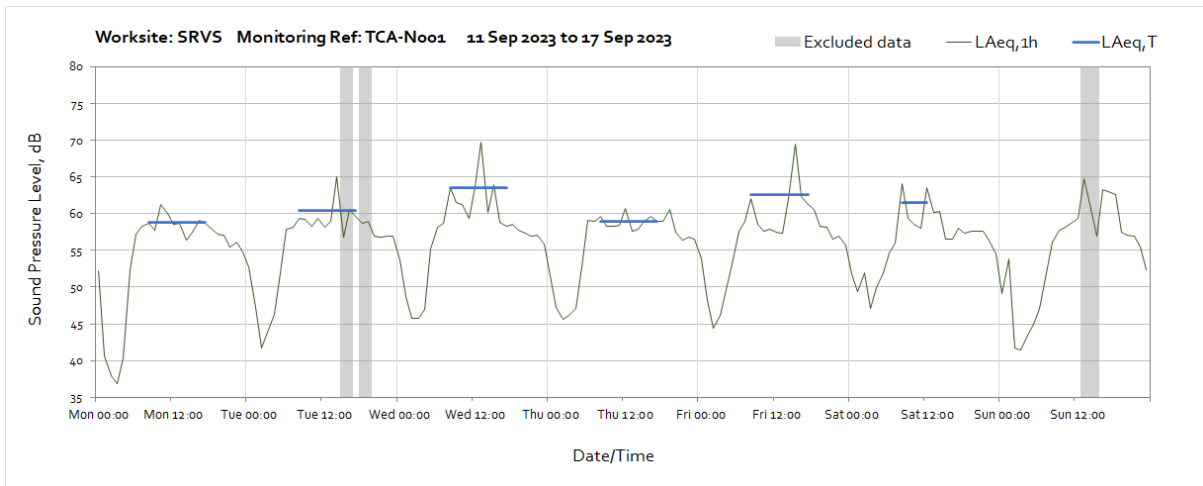
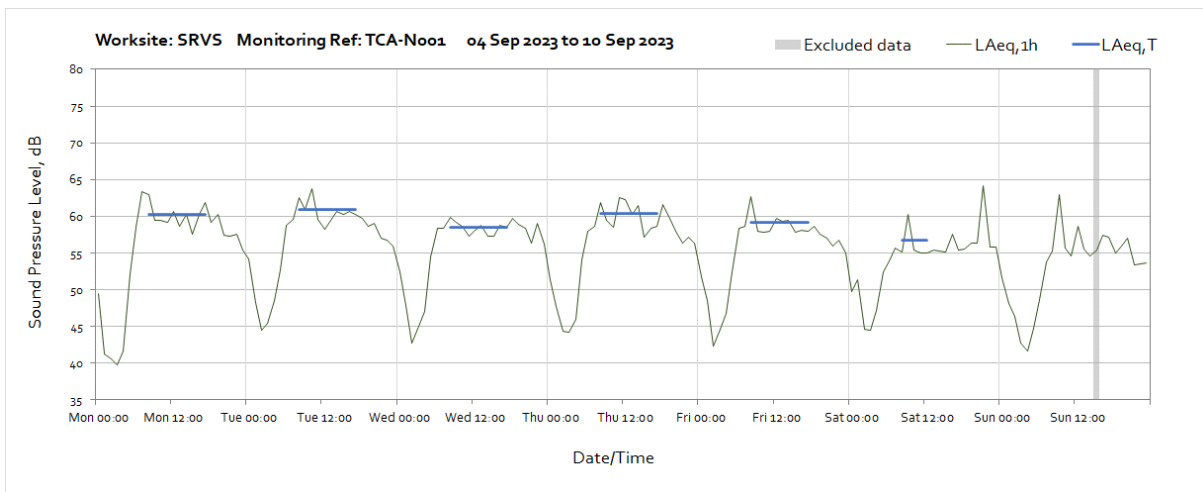
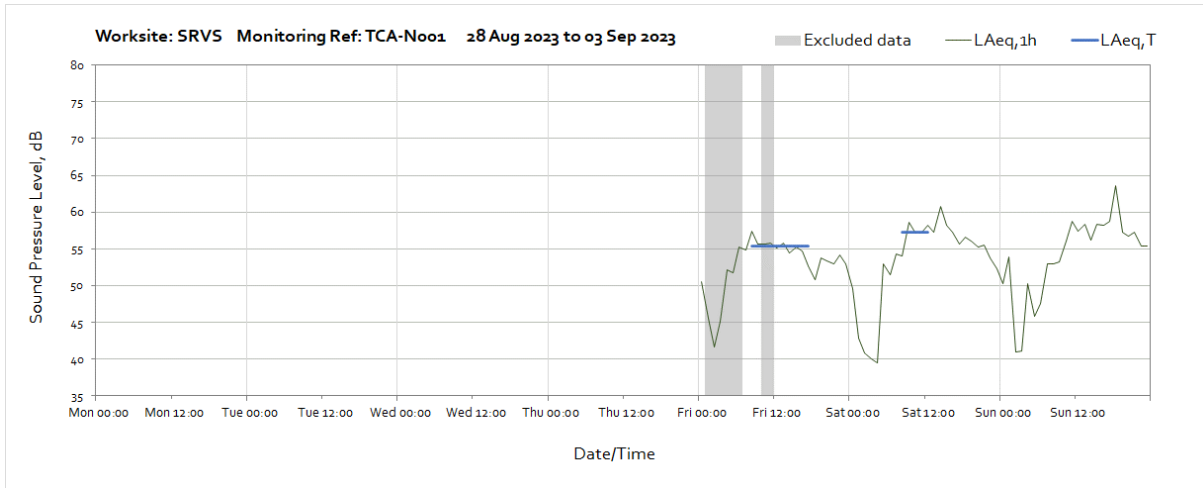


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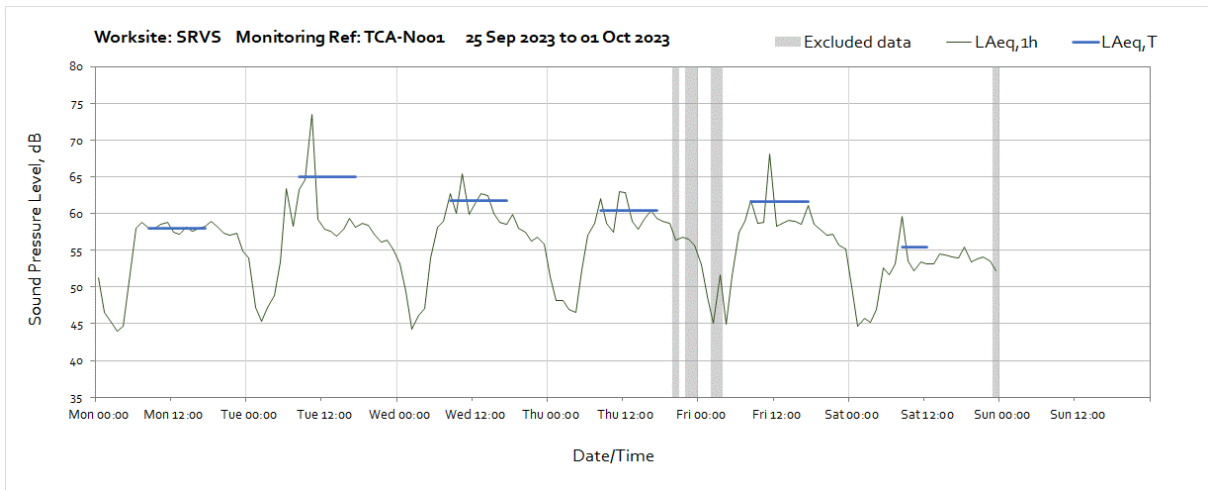
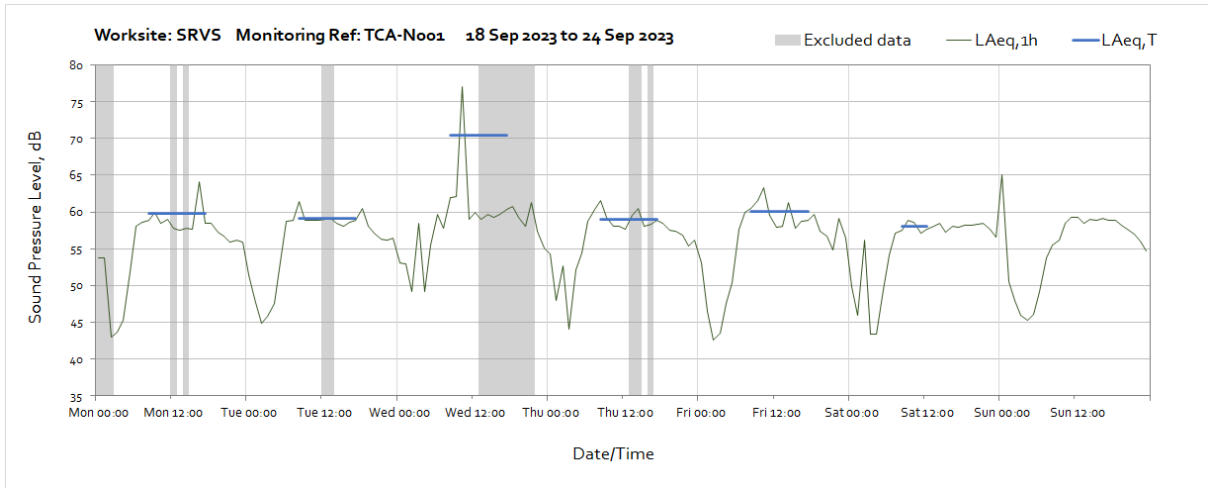




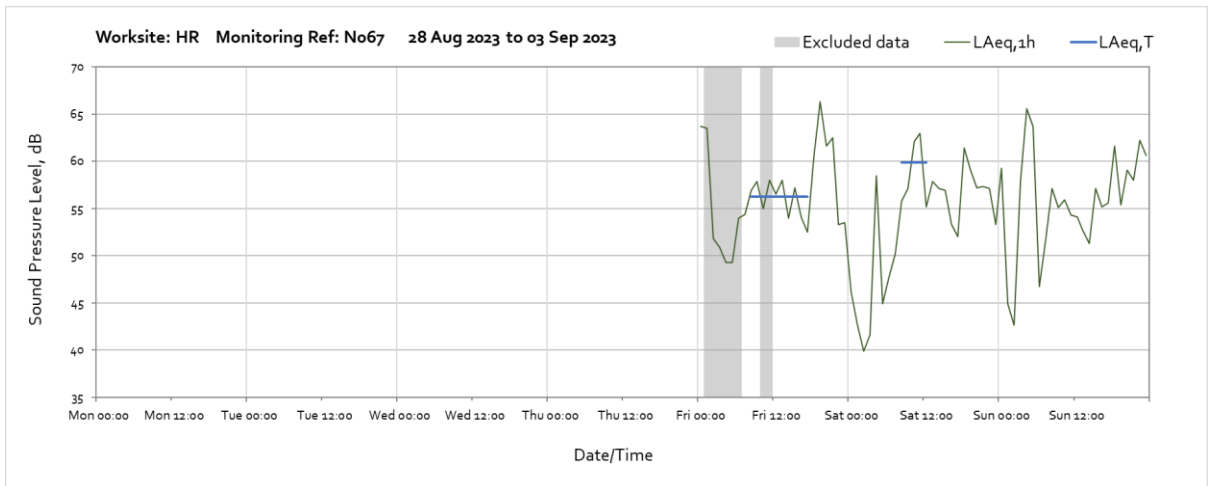
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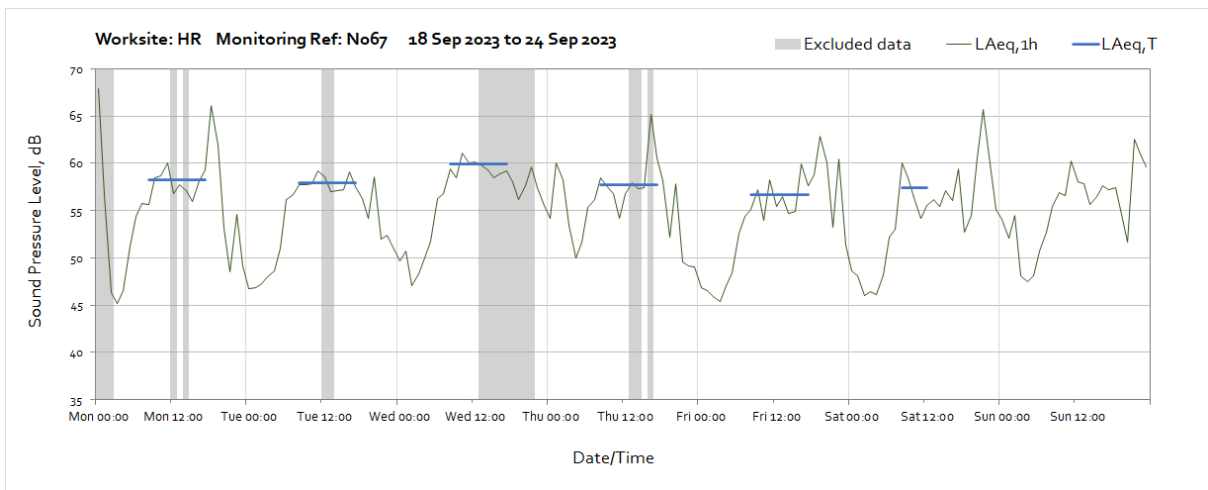
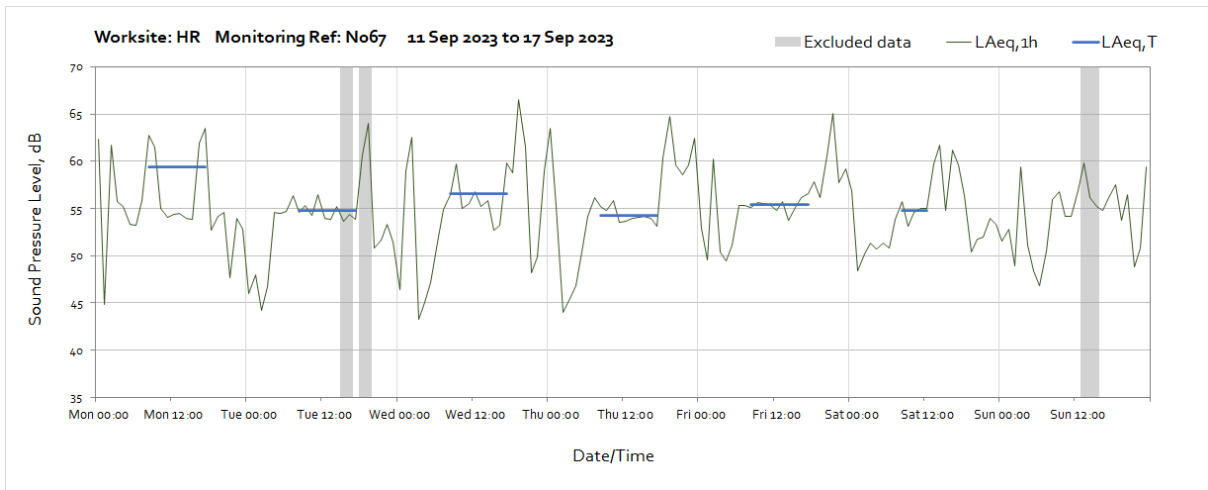
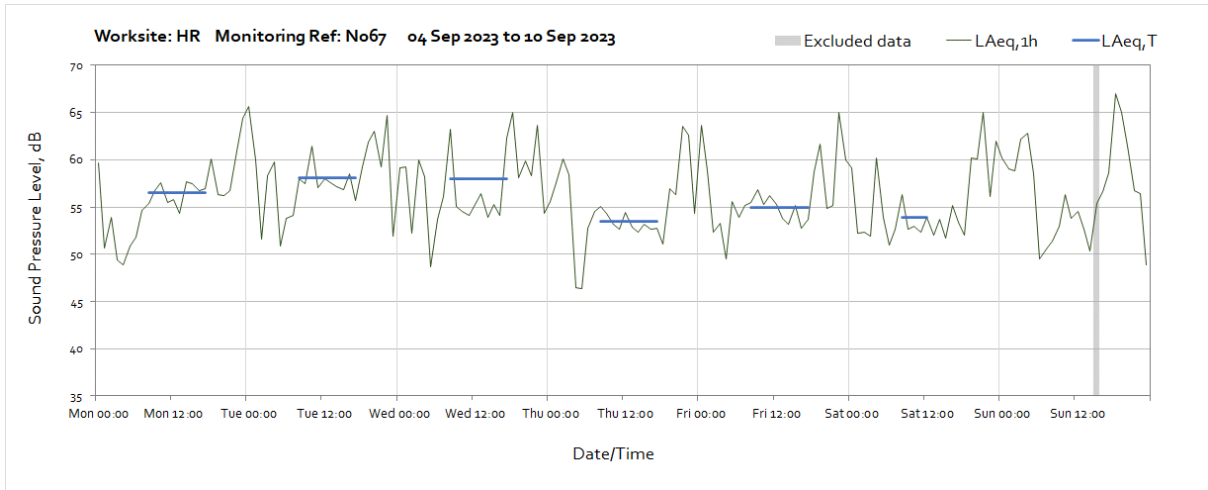


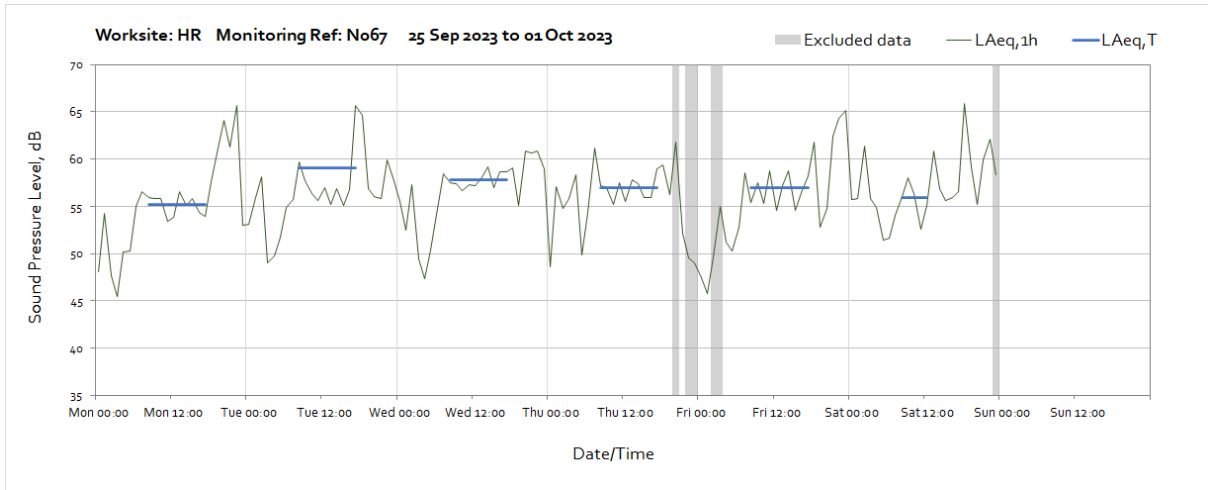
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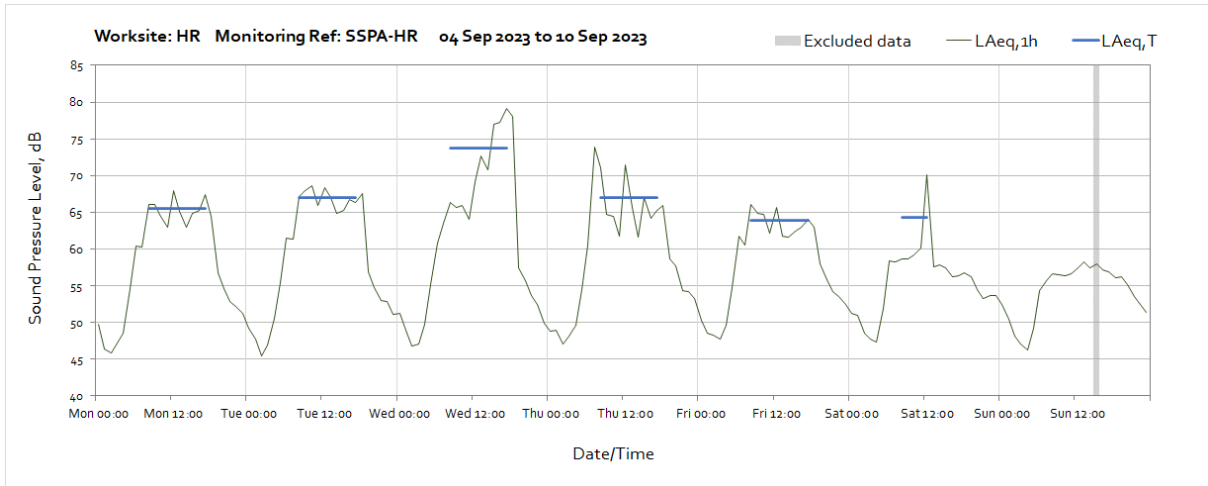
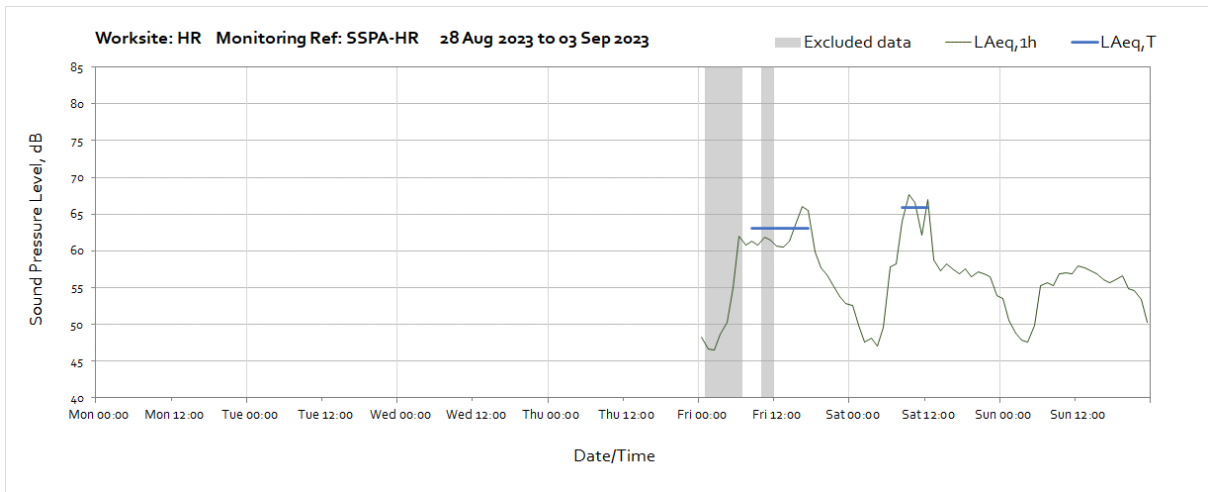
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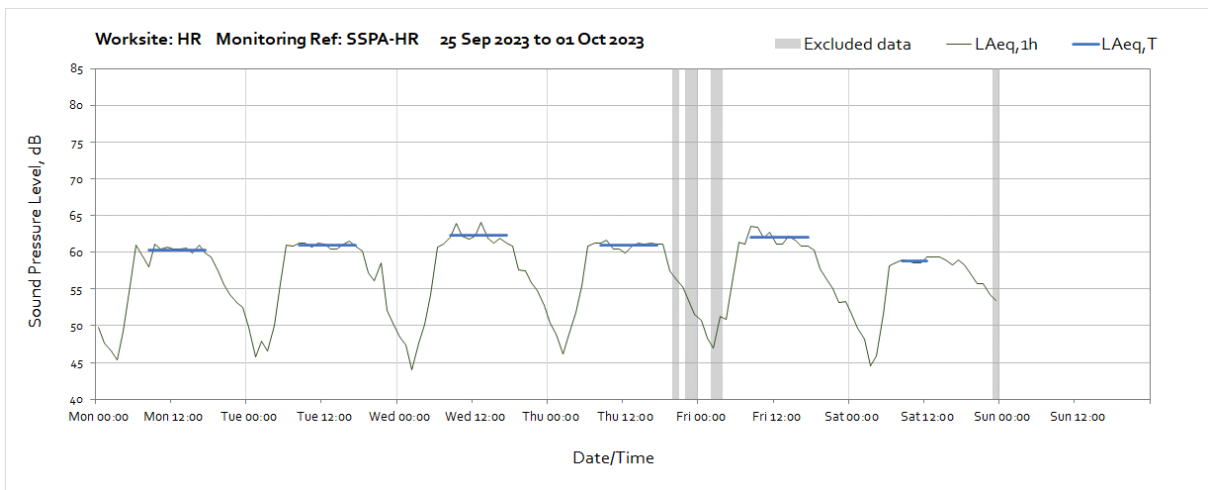
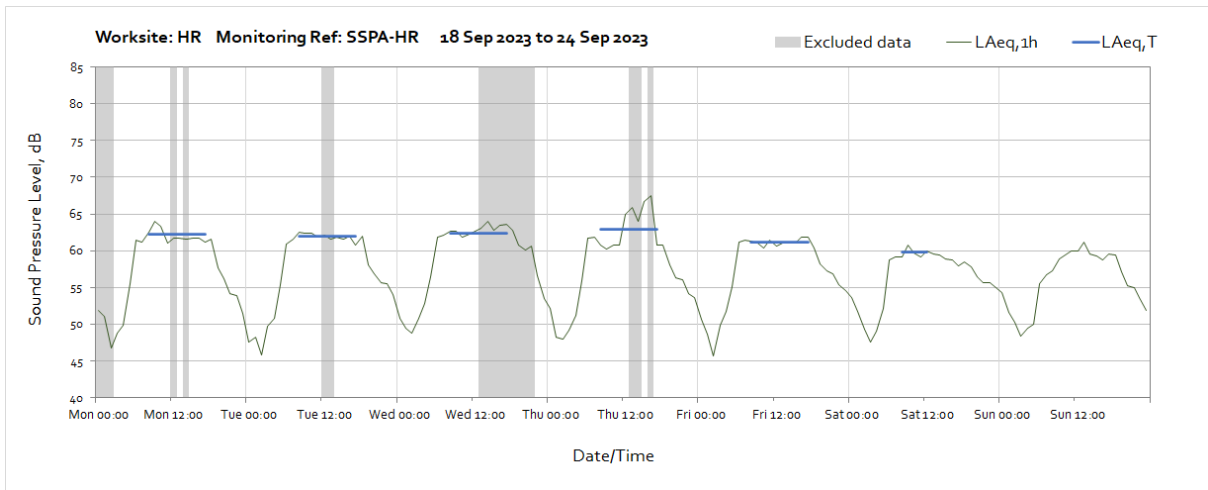
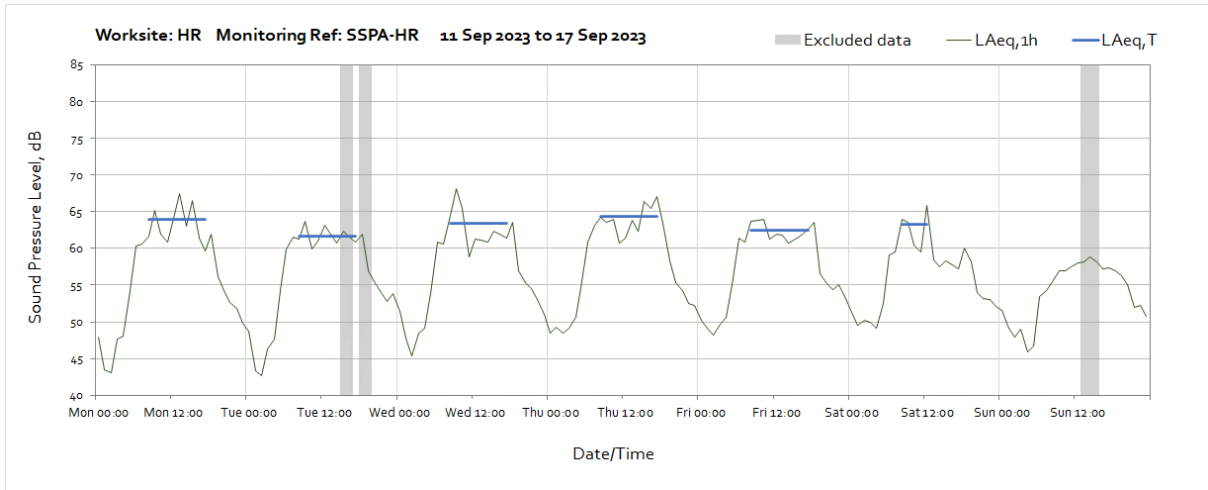




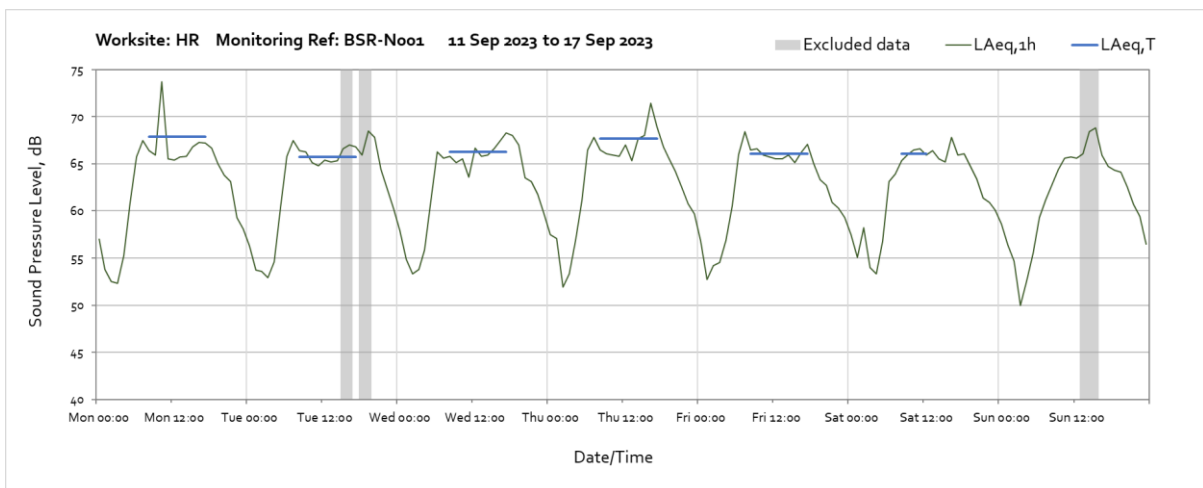
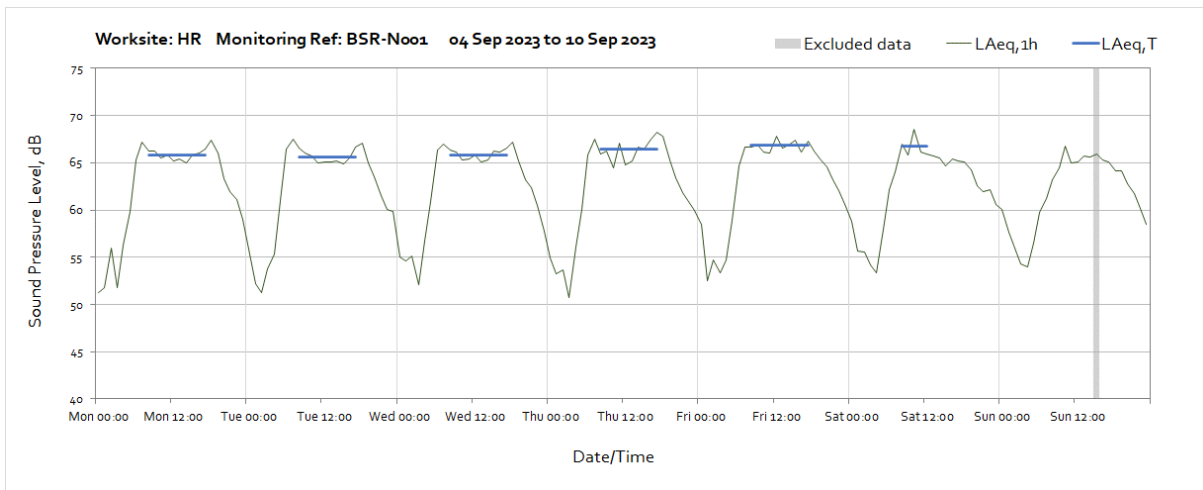
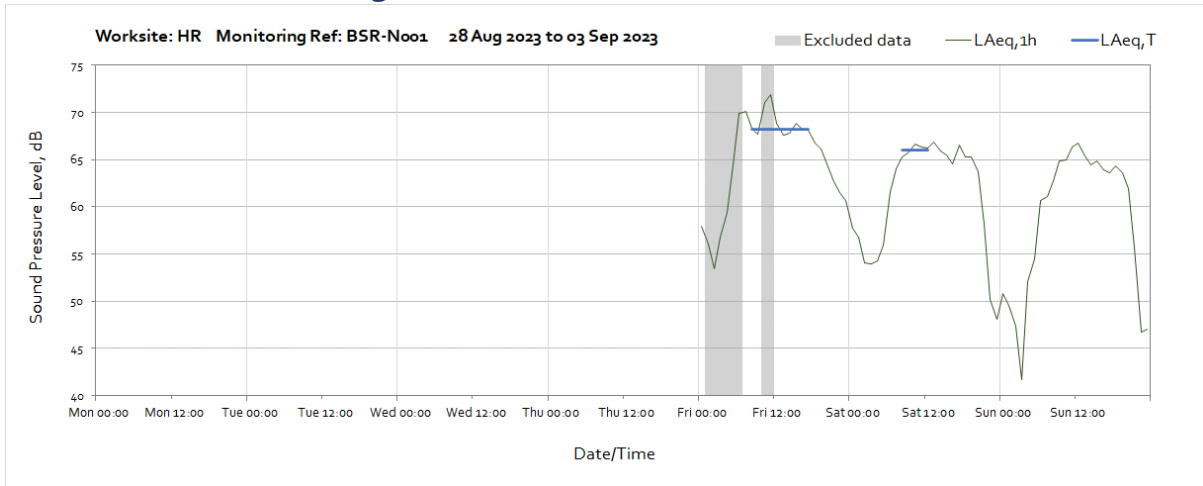


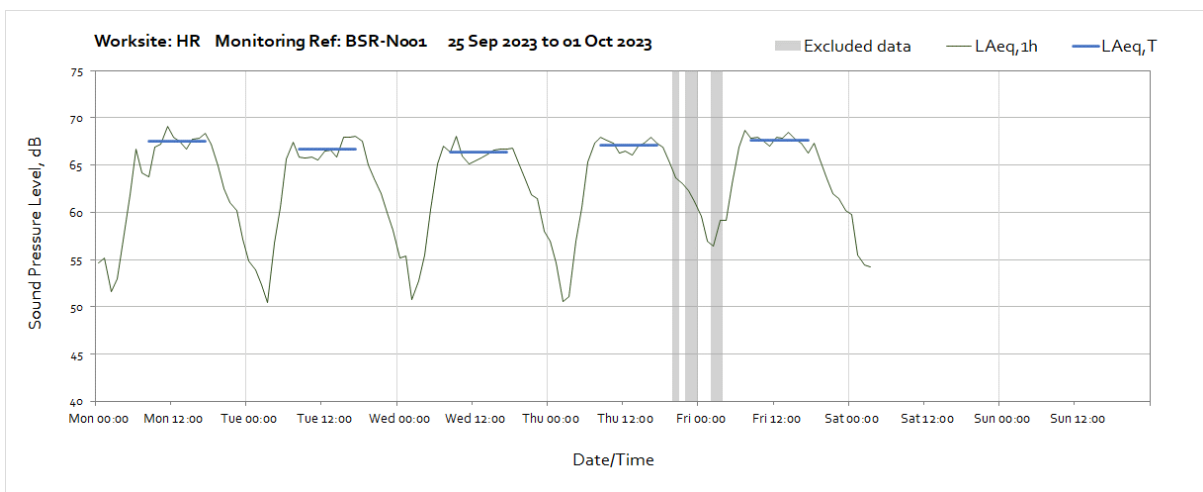
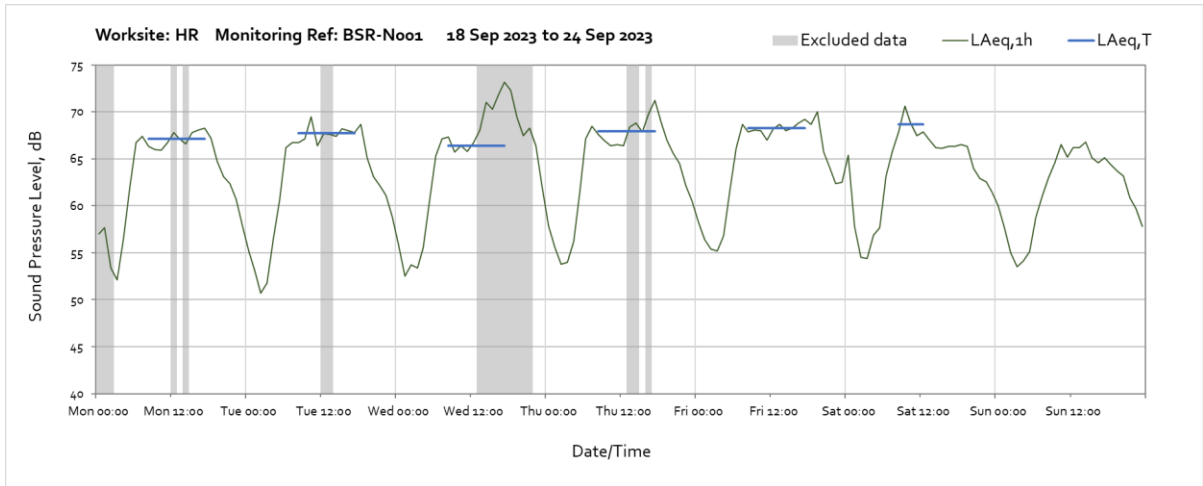
Worksite: HR - Monitoring Ref: SSPA-HR



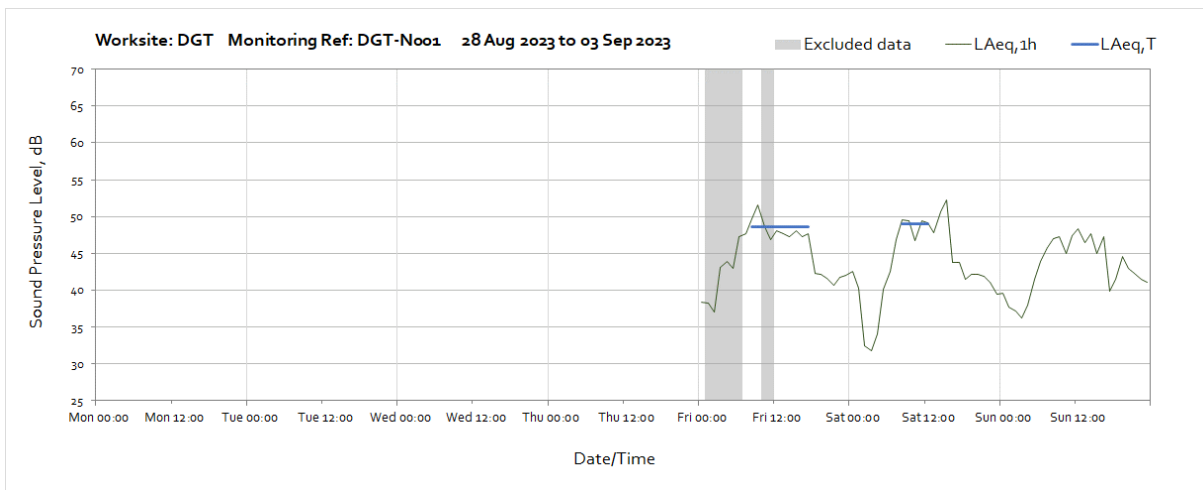


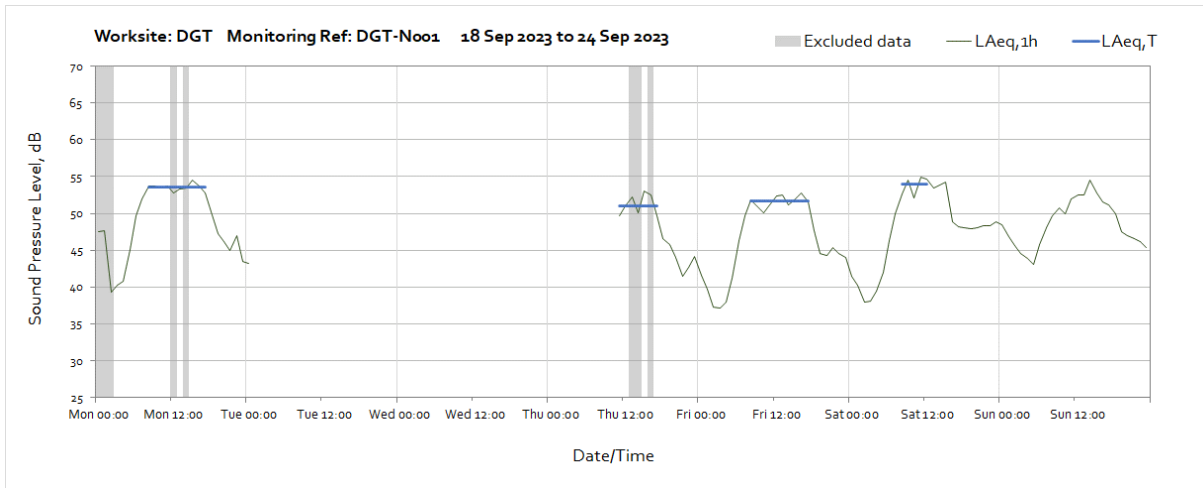
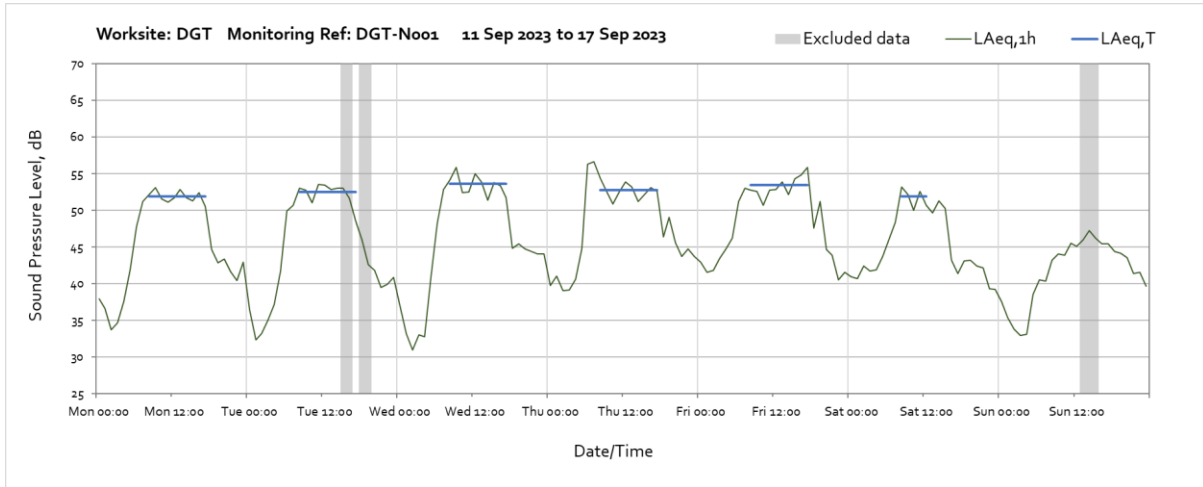
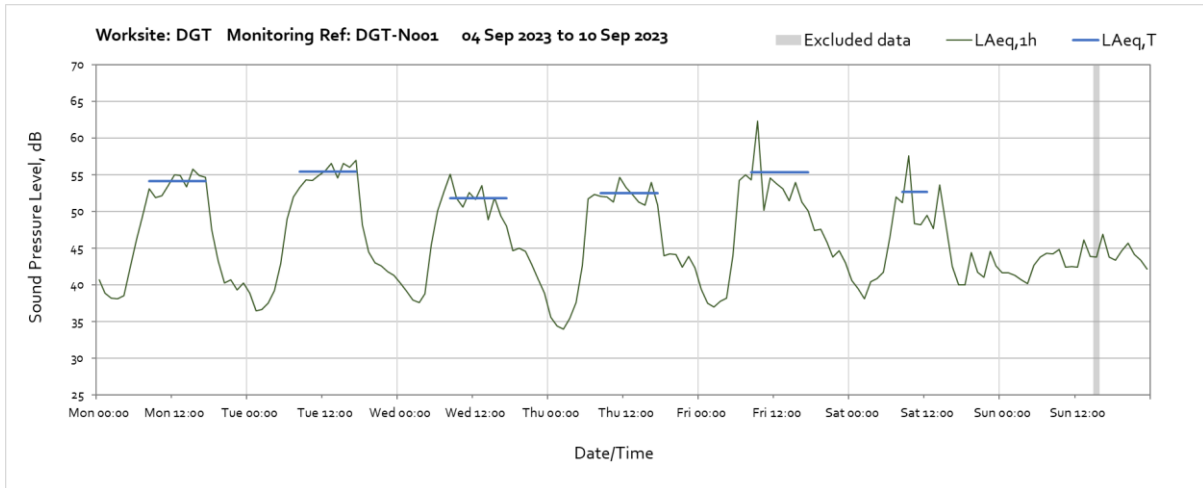
Worksite: HR – Monitoring Ref: BSR-N001



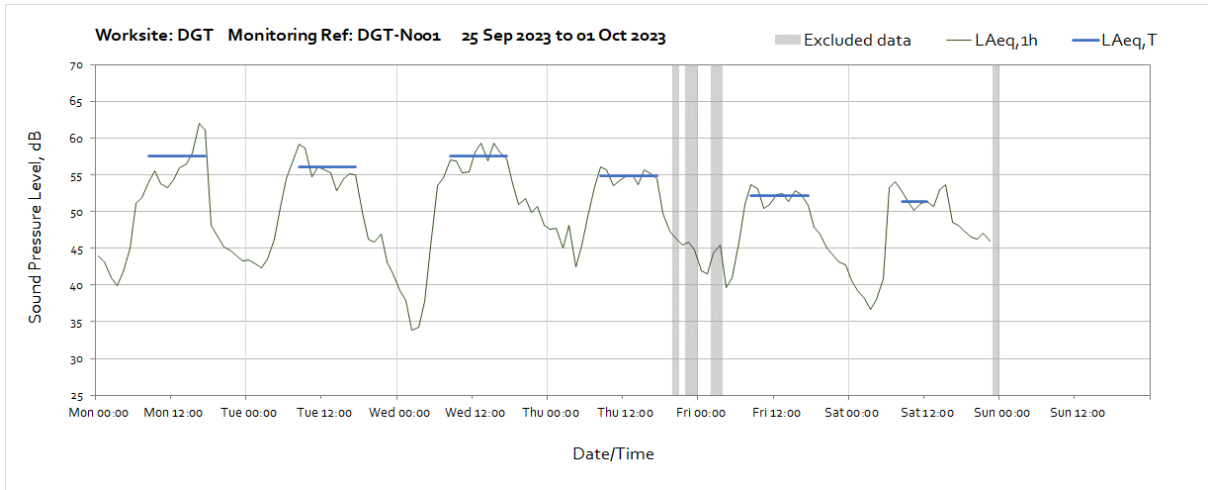


Worksite: HR – Monitoring Ref: DGT-N001

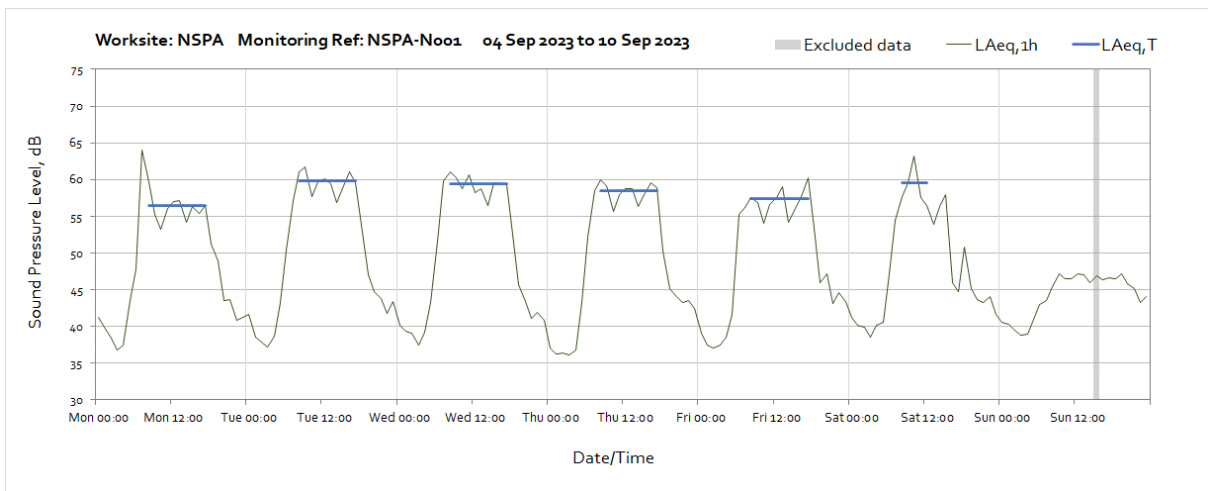
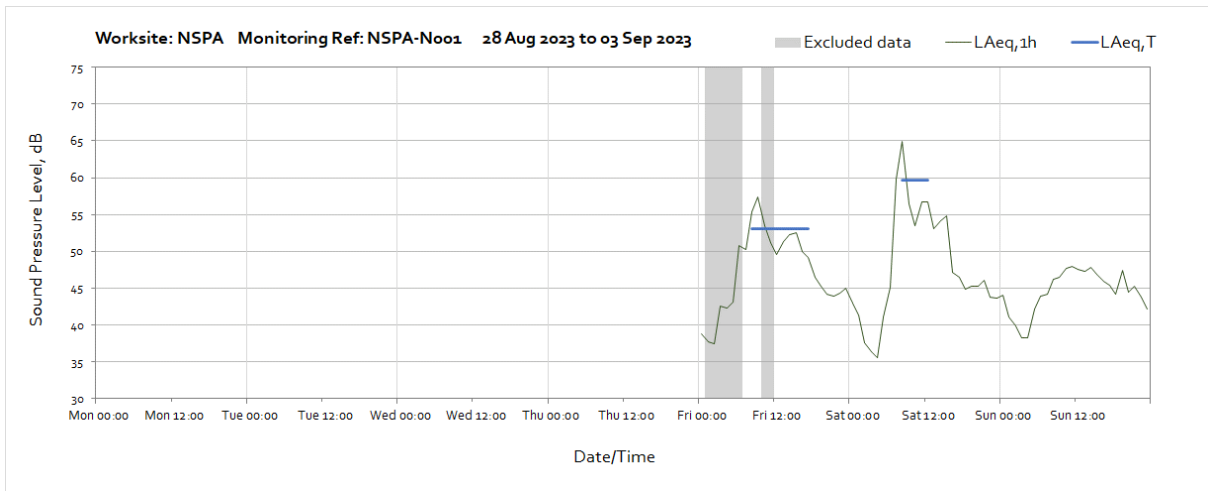


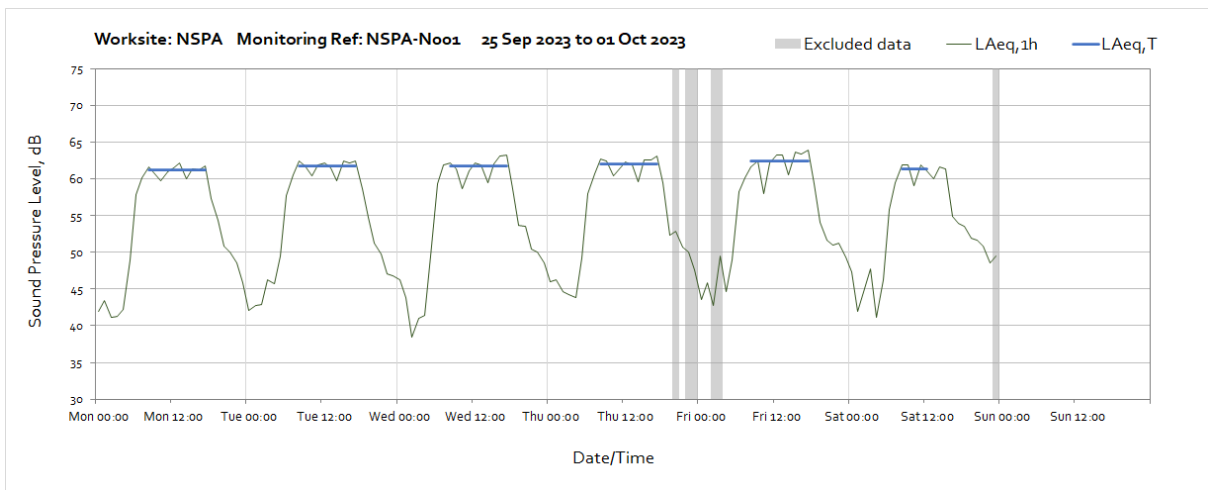
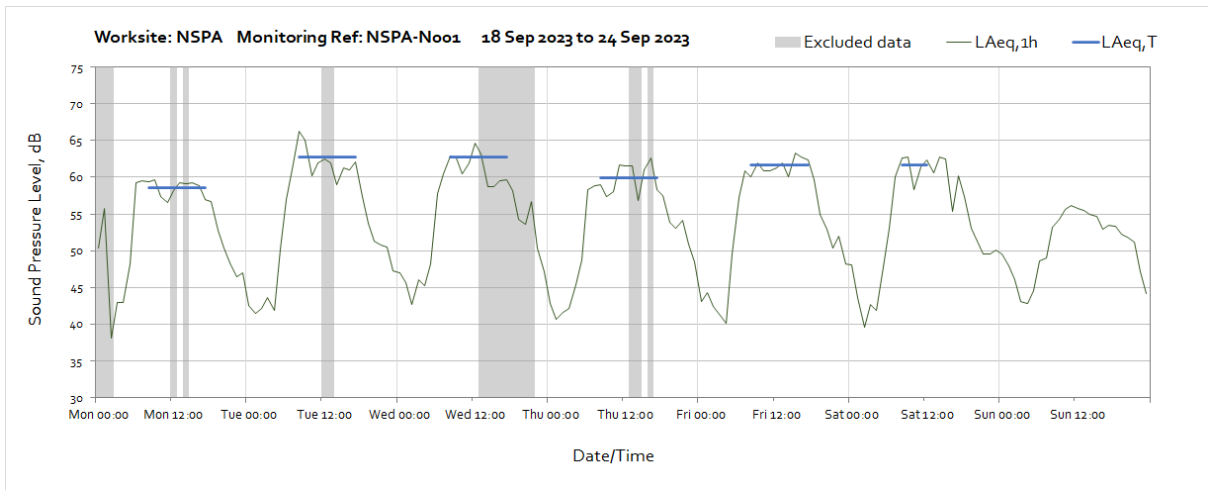
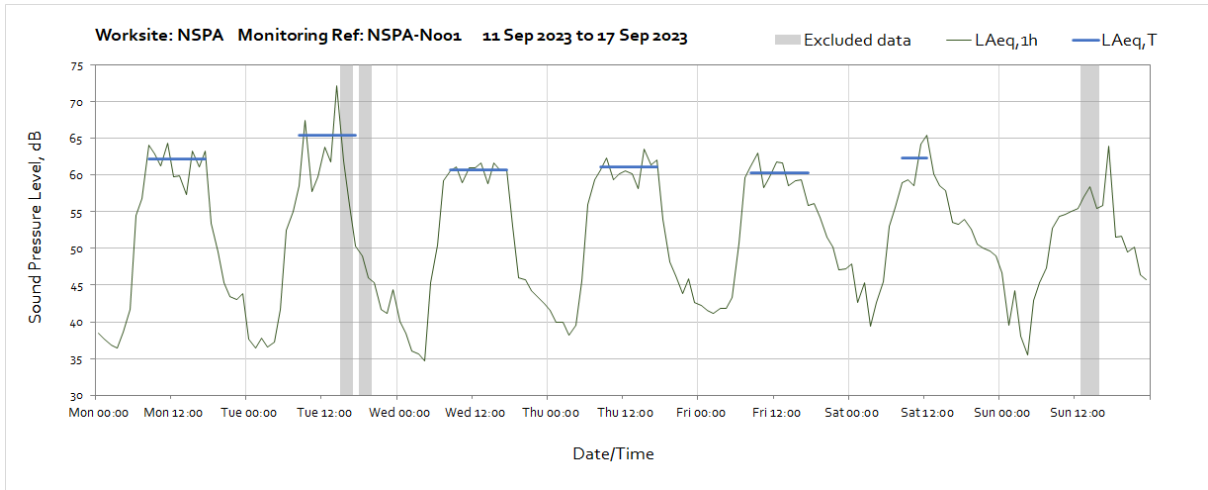


Note Missing data between 01:00 on Tuesday 19th September and 11:00 on Thursday 21st September was suspected to be due to a depleted battery at the monitoring station, this is currently under investigation.

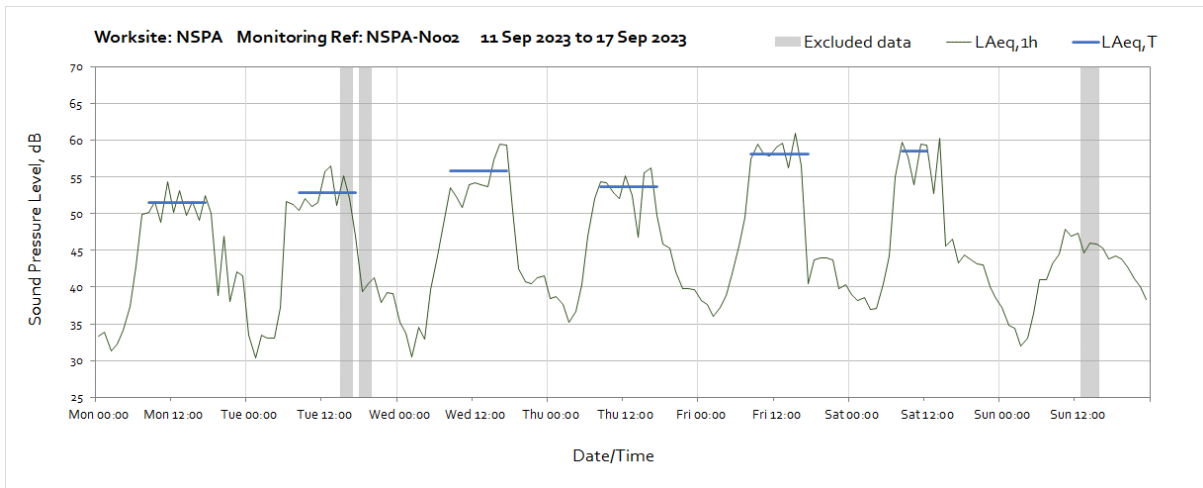
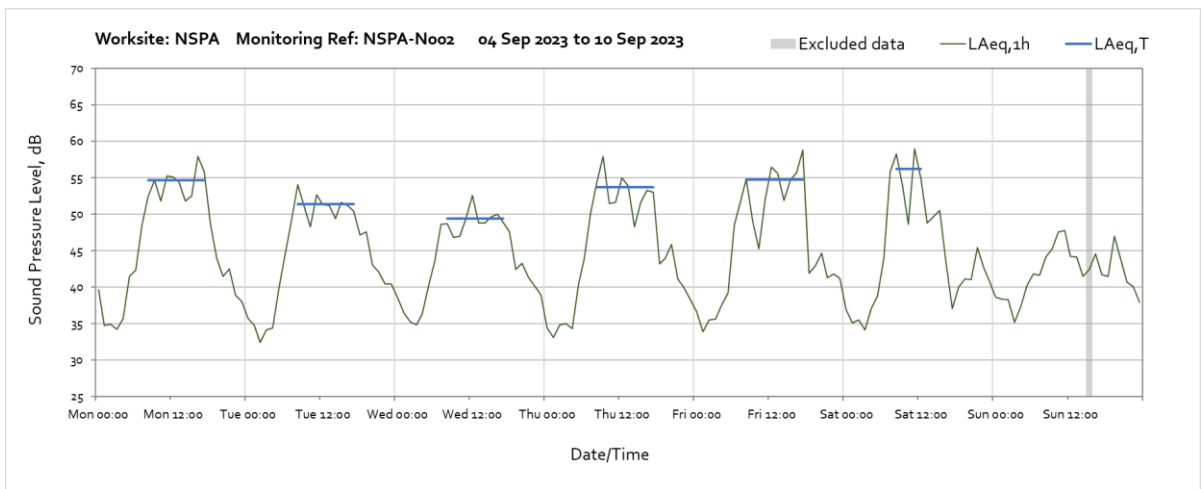
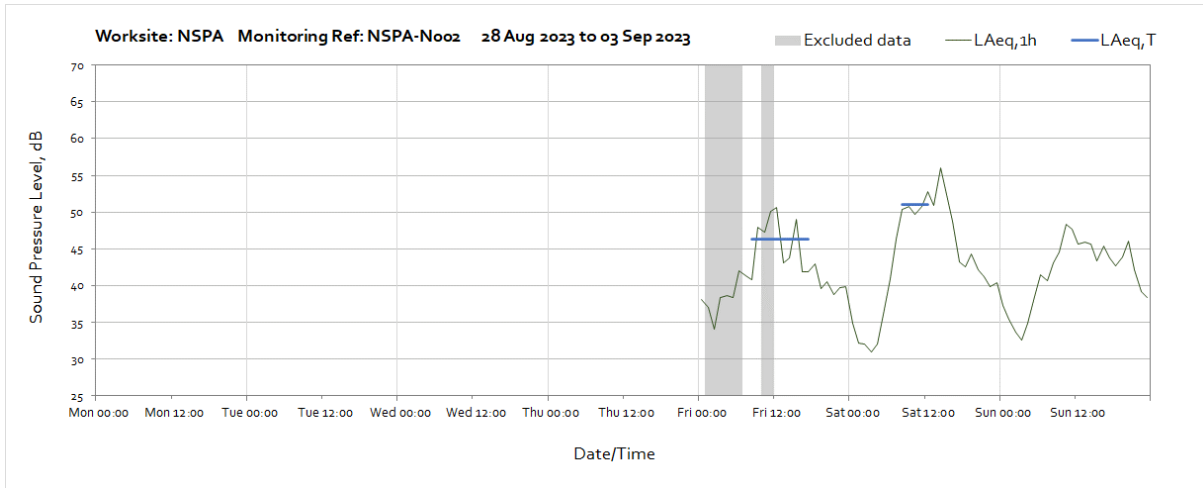


Worksite: NSPA – Monitoring Ref: NSPA-N001

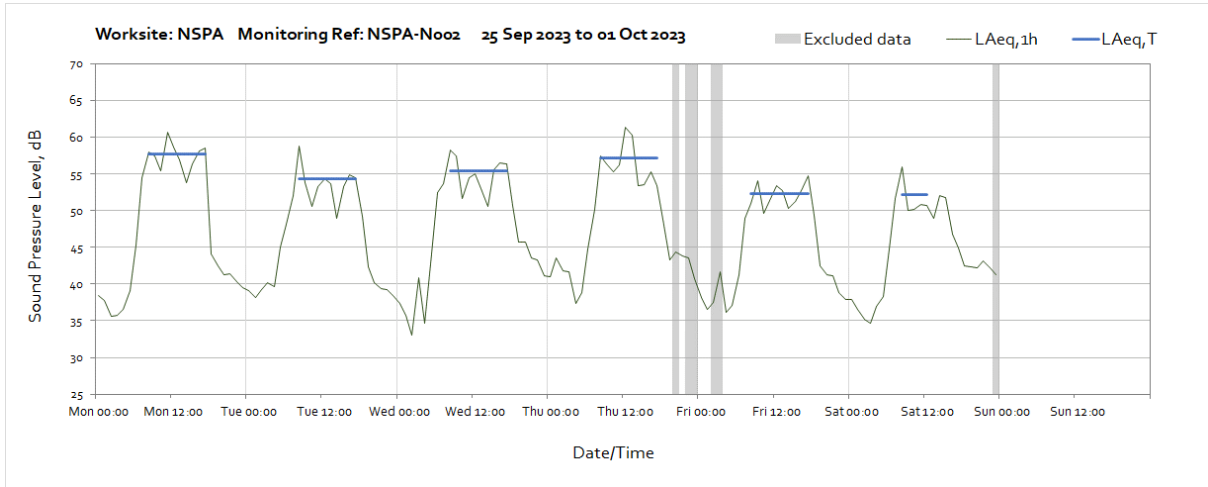
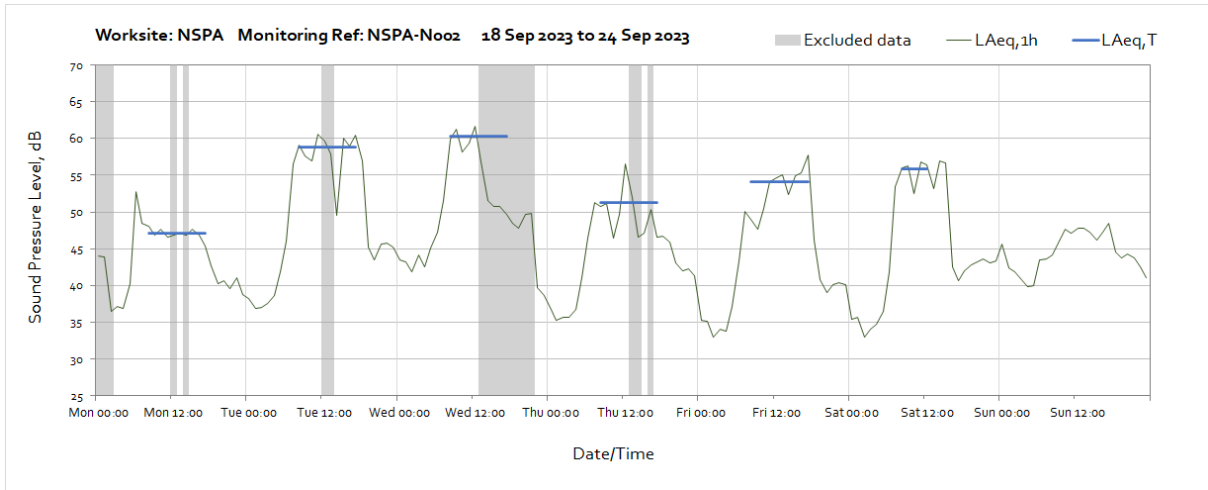




Worksite: NSPA – Monitoring Ref: NSPA-N002



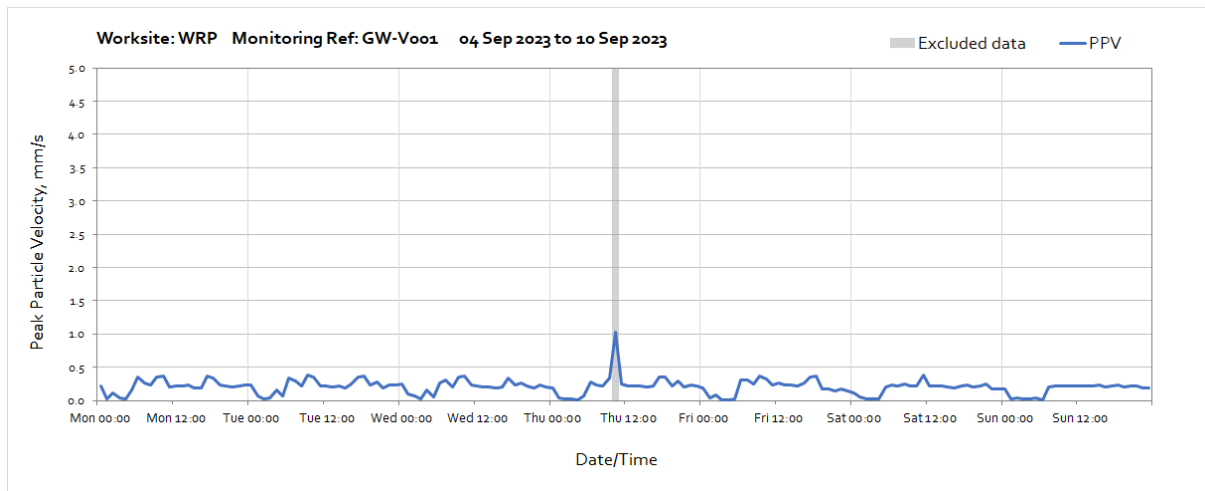
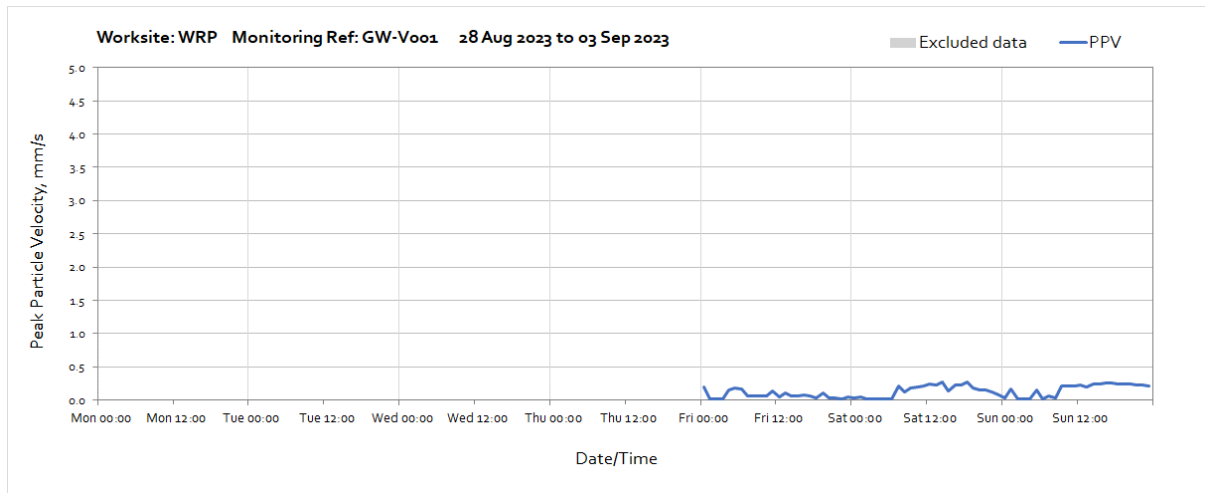
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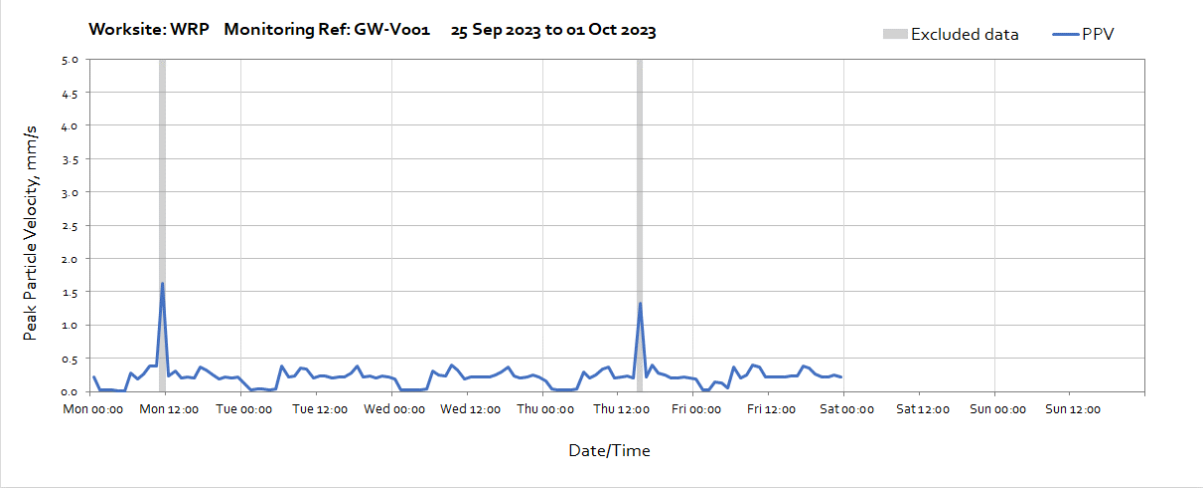
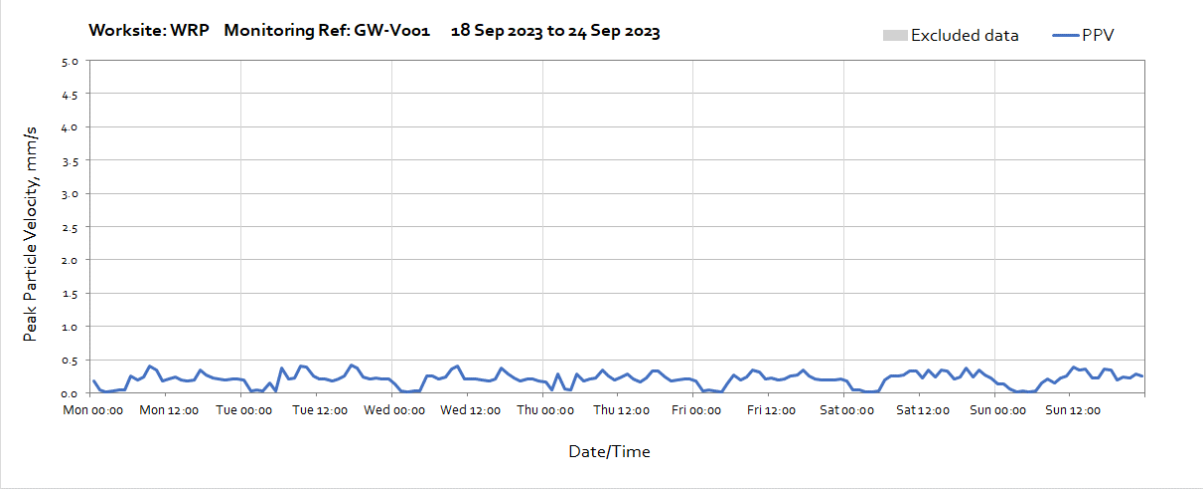
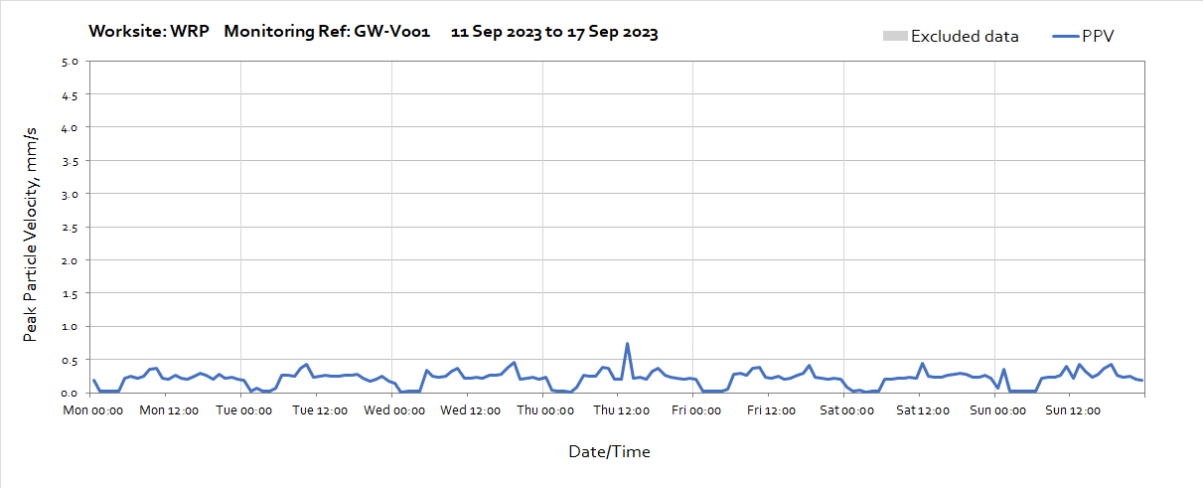


Vibration

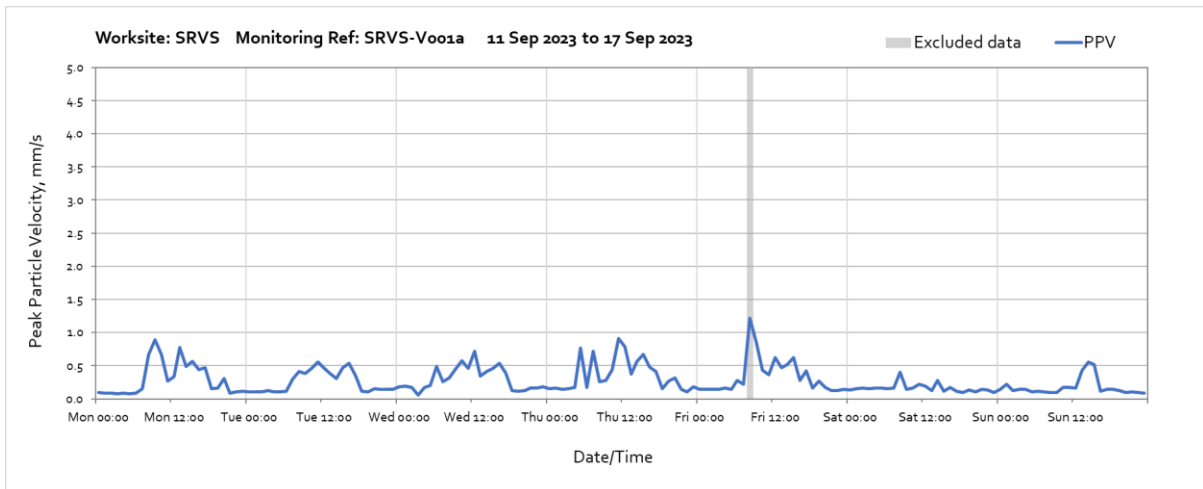
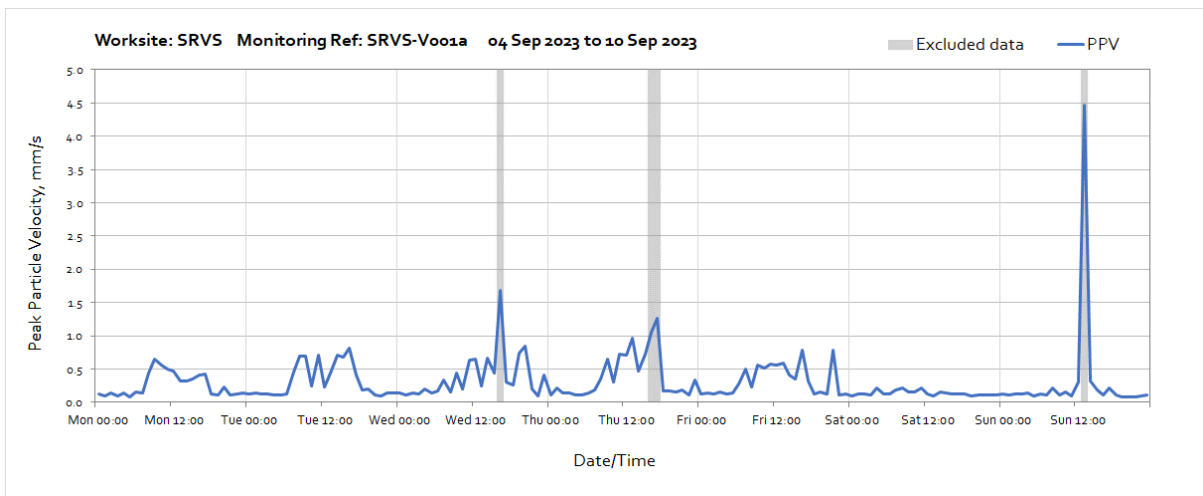
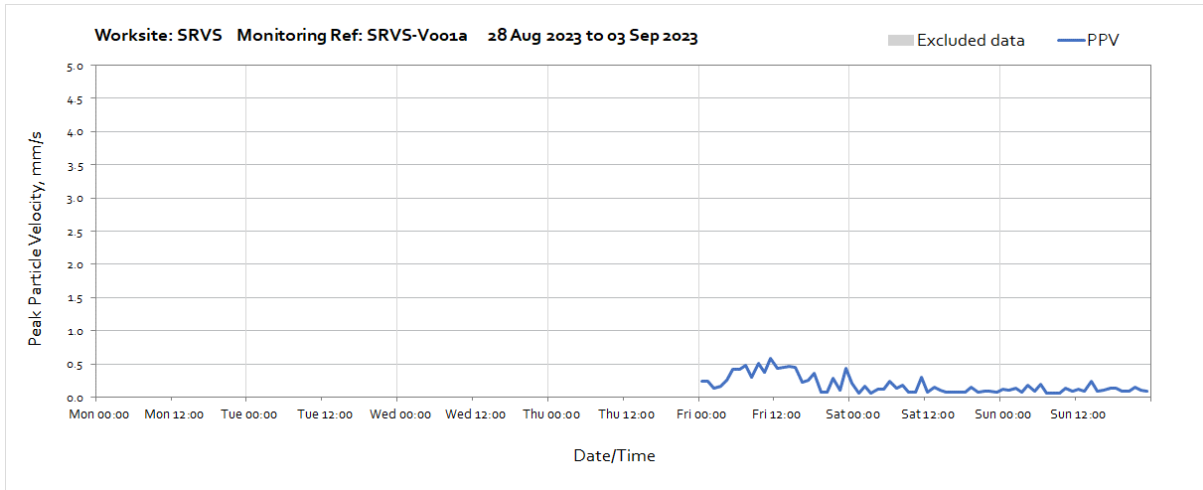
The following graphs show the hourly measured peak particle velocity PPV recorded during the monitoring period. The graphs show the highest PPV of the three orthogonal axis x, y, and z. Periods where PPV values have been affected by local interference with the vibration monitor or only measured for part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

Worksite: WRP – Monitoring Ref: GW-V001





Worksite: SRVS – Monitoring Ref: SRVS-V001a



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