HS2

August 2023

Construction noise and vibration Monthly Report – June 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 June 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 works, bulk earthworks, drainage works, water pumping works, installation of satellite welfare and generator farms, concrete drilling, South Abutment works, pile trimming, canal works, fencing works, environmental maintenance works, cofferdam excavation, stockpiling, river crossing construction, landscaping works, launching girder and deck works, construction of diaphragm wall and concrete works were underway.
- West Ruislip Portal worksite (ref.: WRP) where tunnel boring machine operations, conveyor belt installation, operation and extension, material delivery and removal, segment yard operation, attenuation pond depth increase, construction of tunnel boring machine water treatment plant, redevelopment of Golf Course and car park expansion works were underway.
- Breakspear Road worksite (ref.: BR), where earthworks, tunnel boring machine material storage and in situ treatment, drainage works, construction of bridges and embankment wall, and construction of protection slab were underway.
- South Ruislip Ventilation Shaft worksite (ref.: SRVS), where road sweeping, waterproofing, steel fixing, general site management, dewatering operations concrete pours and secondary lining and foam concreting were underway.
- Harvil Road worksite (ref.: HR), where road works, drainage and water treatment works, vegetation clearance, Siltbuster operations, assembly of conveyor belt, earthworks, soil compacting, construction of treatment silos and bridges, and tunnel boring machine material storage were underway.
- Northern Sustainable Placement Area worksite (ref.: NSPA) where construction of placement area was underway.

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

- Copthall North, where excavation works, material movement, vegetation clearance, construction of Copthall Tunnel, construction of site access gate, tunnel boring machine material storage and treatment works were underway.
- Bridgewater Road, Great Central Avenue, West End Road and The Greenway (West Ruislip) where utility works for sewer lining 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 not exceeded during the reporting period.

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

Ten (10) complaints were received during the monitoring period. A description of the complaints, 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 London Borough of Hillingdon (LBH) for the period 1st to 30th June 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.
    - Bulk earthworks.
    - Drainage works.
    - Water pumping management works.
    - Installation of satellite welfare and generator farms.

- Concrete drilling.
- South Abutment works, including earthworks, stabilisation works, fibre-reinforced concrete works, drainage works, removal of sheet piles and yard supporting activities.
- Pile trimming.
- Canal works, including operation and maintenance.
- Fencing works.
- Environmental maintenance works.
- Cofferdam excavation.
- Stockpiling.
- Construction of River Colne crossing including emergency obstruction dismantling works.
- Launching girder works, including grouting works, launching gantry, post tensioning works, steel structure erection 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, access ramps, steel works, foundation works, material movements, concrete works, construction of diaphragm walls, support plant operations, construction of kerbs and concrete stitch, filling of voids.
- Landscaping works, including removal of cofferdams.

- West Ruislip Portal worksite, ref.: WRP (see Plan 2 in Appendix A), where work activities included:
  - Tunnel boring machine operations, including in situ treatment.
  - Conveyor belt installation, operation and extension.
  - Material delivery and removal.
  - Segment yard operation.
  - Attenuation ponds depth increase works, including removal of concrete.
  - Construction of tunnel boring machine water treatment plant.
  - Redevelopment of golf course, including vegetation clearance and ecological mitigation works.
  - Car park expansion works.

- Breakspear Road worksite, ref.: BR (see Plan 2 in Appendix A), where work activities included:
    - Earthworks, including backfill.
    - Tunnel boring machine material storage and in situ treatment.
    - Drainage works.
    - Construction of bridges, including concrete pours, installation of deck, steel fixing, waterproofing, installation of formworks and shutters.
    - Construction of protection slab.
    - Construction of embankment wall.
- South Ruislip Ventilation Shaft worksite, ref.: SRVS (see Plan 4 in Appendix A), where work activities included:
    - Road sweeping.
    - Waterproofing.
    - Steel fixing.
    - General site management.
    - Dewatering operations.
    - Secondary lining and foam concreting.
    - Concrete pours.
- Harvil Road worksite, ref.: HR (see Plan 2 in Appendix A), where work activities included:
    - Road works, including haul road and excavation works.
    - Drainage and water treatment works.
    - Vegetation clearance.
    - Siltbuster operations.
    - Assembly of conveyor belt.
    - Earthworks.
    - Soil compacting works, including soil movements.
    - Construction of treatment silos and tunnel boring machine testing area, including roof and pug mill installation.
    - Construction of bridges, including concreting and backfill works.

- Tunnel boring machine material storage.

- Northern Sustainable Placement Area worksite, ref.: NSPA (see Plan 3 in Appendix A), where construction of placement area was underway.

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, vegetation clearance, construction of Copthall Tunnel, construction of site access gate, tunnel boring machine material storage and treatment works were underway.

- Bridgewater Road, Great Central Avenue, West End Road and The Greenway (West Ruislip) where utility works including sewer lining 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 (19) noise and two (2) vibration monitoring installations were active in June in the LBH area. Table 2 summarises the position of noise and vibration monitoring installations within the LBH area in June 2023.

1.2.2 A new noise monitor ref: WRP-N001 was installed at the West Ruislip Portal worksite, ref.: WRP on 13th June 2023.

1.2.3 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
	WRC-NMP	Weir Cottage, Denham Garden Village, Denham, Buckinghamshire
	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

Worksite Reference	Measurement Reference	Address
	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 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
CVV	DLC-NMP	Dew's Farm Cottages, Dews Lane, Harefield, Uxbridge,	Façade	55.8 (58.5)	64.6 (66.4)	53.2 (54.7)	48.7 (65.3)	47.9 (59.0)	55.0 (56.5)	63.6 (65.9)	59.1 (63.8)	50.8 (61.0)	44.5 (51.6)	48.5 (52.1)	48.3 (55.4)
	WRC-NMP	Weir Cottage, Denham Garden Village, Denham,	Free-field	52.0 (63.4)	52.0 (53.6)	49.9 (53.4)	47.8 (51.7)	47.9 (58.4)	50.9 (52.0)	51.7 (53.2)	51.2 (52.3)	49.1 (52.8)	47.6 (54.9)	49.2 (52.3)	47.8 (54.2)
	HFM-NMP	Harefield Marina, Moorhall Road, London	Free-field	51.6 (60.8)	56.0 (61.3)	48.0 (50.6)	46.4 (49.9)	44.2 (52.4)	47.1 (48.1)	52.7 (54.2)	50.5 (51.7)	49.3 (61.1)	44.4 (51.2)	49.0 (61.5)	44.8 (50.8)
	PLD-NMP	Peerless Drive, Harefield, Uxbridge	Façade	52.8 (62.1)	57.8 (62.4)	48.1 (52.8)	47.5 (54.5)	46.8 (55.5)	51.5 (54.6)	49.3 (50.1)	47.4 (48.1)	46.9 (51.7)	47.0 (55.3)	50.3 (57.3)	47.2 (54.5)
WRP	WRP-N001	West Ruislip Golf Club, Ickenham Rd, Ruislip	Free-field	45.7 (48.2)	49.5 (58.6)	46.4 (52.2)	44.5 (48.6)	43.1 (48.4)	44.6 (46.0)	47.1 (47.3)	46.7 (47.1)	45.4 (50.4)	43.7 (53.1)	47.3 (51.8)	42.5 (45.8)
	N048	West Ruislip Golf Club, Ickenham Rd, Ruislip	Free-field	57.6 (61.9)	56.8 (59.6)	51.1 (55.0)	49.7 (61.7)	47.9 (56.4)	56.1 (59.2)	54.1 (57.7)	52.0 (54.8)	49.9 (55.4)	45.0 (48.9)	52.4 (62.8)	47.6 (56.1)
	N056	83 The Greenway, Ickenham, Ruislip	Façade	61.5 (63.3)	60.5 (61.3)	60.8 (62.0)	59.7 (62.0)	56.4 (62.3)	55.6 (59.9)	57.7 (60.4)	57.9 (59.5)	58.3 (62.2)	53.9 (61.4)	59.9 (67.0)	55.2 (62.0)
	N057	123 The Greenway, Ickenham, Ruislip	Façade	57.0 (58.7)	56.7 (61.4)	56.8 (59.2)	55.4 (58.1)	51.8 (58.4)	52.0 (55.1)	56.1 (57.3)	53.2 (56.2)	54.0 (58.3)	48.7 (57.3)	54.0 (57.0)	50.5 (55.9)

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
BR	N065	Breakspear Road South, Harefield, Uxbridge	Free-field	65.5 (68.8)	65.2 (72.7)	65.4 (67.5)	63.9 (67.7)	59.6 (67.8)	63.3 (63.7)	64.5 (65.0)	64.3 (65.3)	64.3 (67.7)	58.0 (61.9)	63.6 (68.0)	58.9 (65.0)
	N066	Hoylake Crescent, Ickenham, Uxbridge	Free-field	58.4 (62.2)	57.8 (73.1)	56.1 (57.5)	55.2 (59.5)	56.6 (73.2)	55.7 (61.7)	54.9 (58.3)	53.7 (56.0)	54.2 (57.6)	56.4 (64.2)	55.2 (63.6)	55.8 (64.7)
	TKL-N001	Tile Kiln Lane, Harefield, Uxbridge	Free-field	47.5 (50.8)	49.4 (53.2)	47.1 (51.0)	47.0 (60.3)	46.6 (62.2)	46.4 (48.0)	47.4 (48.5)	47.4 (47.8)	46.6 (51.6)	45.6 (54.3)	47.0 (50.7)	49.0 (62.9)
SRVS	N061	Cineworld South Ruislip car park, Ruislip	Free-field	59.0 (64.0)	62.2 (68.9)	61.7 (66.8)	62.0 (69.9)	55.2 (68.4)	57.4 (57.8)	62.0 (63.2)	61.8 (63.7)	61.6 (65.8)	54.8 (63.3)	60.5 (65.9)	53.3 (59.1)
	TCA-N001	Trenchard Avenue, Ruislip	Free-field	59.1 (63.4)	60.3 (63.1)	59.7 (61.9)	58.7 (63.4)	54.4 (62.0)	56.8 (58.9)	59.0 (61.8)	58.7 (63.4)	58.7 (64.6)	53.0 (65.1)	56.7 (63.6)	52.3 (57.9)
HR	N067	Harvil Road worksite south boundary	Free-field	56.0 (63.1)	58.0 (62.4)	58.2 (64.5)	58.0 (66.3)	50.2 (62.6)	54.8 (58.6)	56.4 (57.6)	55.3 (57.3)	57.0 (64.3)	48.6 (58.3)	57.0 (65.5)	50.5 (61.4)
	SSPA-HR	Harvil Road	Free-field	58.3 (60.3)	60.8 (63.6)	55.3 (59.0)	51.3 (57.8)	51.4 (60.0)	57.1 (58.6)	59.5 (61.8)	56.8 (60.4)	53.5 (58.8)	48.9 (55.3)	53.9 (58.6)	51.5 (59.3)
	BSR-N001	Breakspear Road	Free-field	68.1 (72.0)	66.6 (67.8)	65.6 (68.3)	64.4 (67.5)	60.5 (70.2)	64.5 (64.7)	66.6 (67.4)	65.7 (66.8)	64.7 (67.1)	58.3 (62.4)	64.7 (69.4)	60.1 (67.1)
	DGT-N001	Dogs Trust West London	Façade	51.7 (57.5)	53.6 (58.0)	45.7 (49.0)	42.4 (45.3)	42.9 (55.2)	50.7 (56.2)	51.7 (53.5)	52.3 (55.7)	48.4 (55.7)	41.8 (46.0)	47.1 (59.2)	43.0 (55.1)

Worksite Reference	Measurement Reference	Site Address	Free-field or Façade Measurement	Weekday Average $L_{Aeq,T}$ (highest day $L_{Aeq,T}$)					Saturday Average $L_{Aeq,T}$ (highest day $L_{Aeq,T}$)					Sunday / Public Holiday Average $L_{Aeq,T}$ (highest day $L_{Aeq,T}$)	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
NSPA	NSPA-N001	Newyears Green Lane	Free-field	57.6 (59.6)	60.8 (63.7)	58.6 (61.4)	46.0 (51.1)	44.8 (55.0)	57.4 (58.5)	59.7 (60.4)	58.3 (60.8)	57.0 (64.2)	43.3 (47.0)	47.3 (51.7)	46.0 (54.0)
	NSPA-N002	Newyears Green Lane	Free-field	50.9 (53.3)	52.1 (54.3)	49.3 (53.8)	43.2 (49.4)	43.1 (51.6)	48.5 (50.0)	49.6 (50.6)	50.3 (52.9)	47.6 (53.4)	43.3 (50.7)	46.0 (51.2)	43.1 (49.8)

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	0.58 (Y-axis)
SRVS	SRVS-V001a	Braintree Road, Ruislip	1.79 (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	Weekdays Saturdays Saturdays Saturdays	0800-1800 0800-1300 1300-1400 1400-2200	3 1 1 2	No exceedance
	WRC-NMP	Weir Cottage, Denham Garden Village, Denham,	All days	All periods	No exceedance	No exceedance
	HFM-NMP	Harefield Marina, Moorhall Road, London	All days	All periods	No exceedance	No exceedance
	PLD-NMP	Peerless Drive, Harefield, Uxbridge	All days	All periods	No exceedance	No exceedance
WRP	WRP-N001	West Ruislip Golf Club, Ickenham Rd, Ruislip	All days	All periods	No exceedance	No exceedance
	N048	West Ruislip Golf Club, Ickenham Rd, Ruislip	All days	All periods	No exceedance	No exceedance
	N056	83 The Greenway, Ickenham, Ruislip	All days	All periods	No exceedance	No exceedance
	N057	123 The Greenway, Ickenham, Ruislip	All days	All periods	No exceedance	No exceedance
BR	N065	Breakspear Road South, Harefield, Uxbridge	Weekdays Saturdays	0800-1800 0800-1300	22 3	No exceedance
	N066	Hoylake Crescent, Ickenham, Uxbridge	Weekdays	0800-1800	1	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
	TKL-N1	Tile Kiln Lane, Harefield, Uxbridge	All days	Night	88	No exceedance
SRVS	N061	Hoylake Crescent, Ickenham, Uxbridge	All days	All periods	Not applicable*	Not applicable*
	TCA-N001	Trenchard Avenue, Ruislip	All days	All periods	No exceedance	No exceedance
HR	N067	Harvil Road worksite south boundary	Weekdays Weekdays Weekdays Saturdays Sunday Night	0700-0800 1800-1900 1900-2200 1400-2200 0700-2200 2200-0700	1 4 17 5 26 16	No exceedance
	SSPA-HR	Harvil Road	All days	All periods	No exceedance	No exceedance
	BSR-N001	Breakspear Road	All days	All periods	No exceedance	No exceedance
	DGT-N001	Dogs Trust West London	All days	All periods	No exceedance	No exceedance
NSPA	NSPA-N001	Newyears Green Lane	All days	All periods	No exceedance	No exceedance
	NSPA-N002	Newyears Green Lane	All days	All periods	No exceedance	No exceedance

* The defined SOAEL criteria are not applicable to non-residential properties.

2.2.6 Exceedances of the LOAEL were recorded at five (5) monitoring locations. The LOAEL exceedances were recorded during weekdays, and Saturdays.

2.2.7 No exceedances of the SOAEL were recorded at any monitoring location during June 2023.

2.3 Exceedances of Trigger Level

2.3.1 Table 6 provides a summary of exceedances of the Section 61 trigger noise levels determined to be due to HS2 related construction noise measured during the reporting period, along with the findings of any investigation.

Table 6: Summary of Exceedances of Trigger Levels

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

2.4 Complaints

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

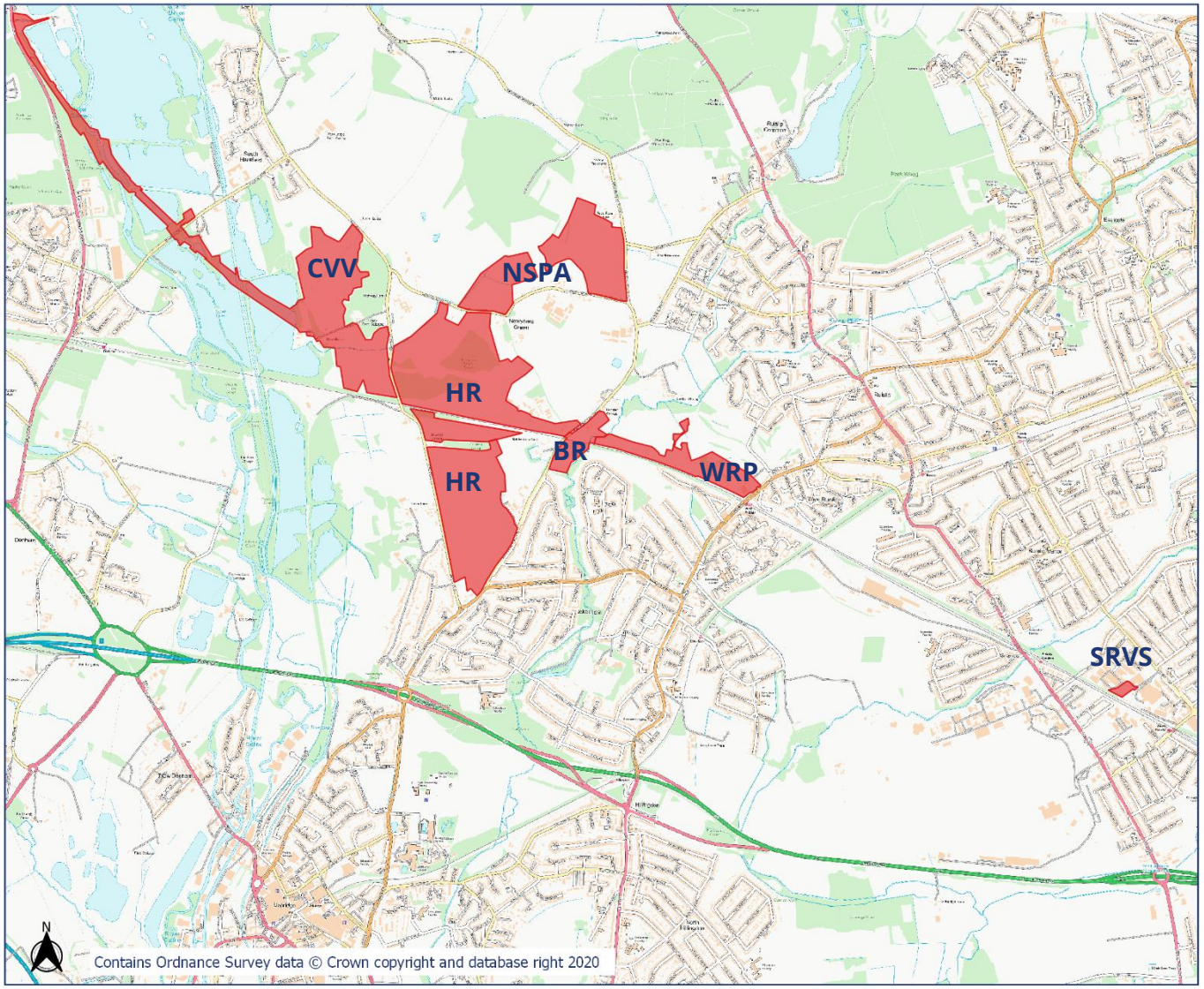
Table 7: Summary of Complaints

Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
HS2-23-95583-E-C	WRP	Complaint regarding loud humming noise from site.	The complaint was investigated by mobile supervisor immediately and no noise source was found within the site.	A response was provided to the complainant detailing the results of the investigation.
HS2-23-95560-E-C	BR	Complaint about noise from road sweeper vehicle.	The road sweepers are authorised for 24 hours use due to nearby tunnel boring works.	An explanation was provided to the complainant for the use of road sweepers.
HS2-23-44705-C	HR	Complaint about noise from road sweeper vehicle.	The road sweepers are authorised for 24 hours use due to nearby tunnel boring works.	An explanation was provided to the complainant for the use of road sweepers.
HS2-23-95883-E-C	WRP	Complaint due to horn noise from site.	Disturbance caused due to use of warning signals used on site.	The use of warning signals on site will be reduced as site teams will be using hand signals and radio communication to avoid the use of horn. A response was provided to the complainant.

Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
HS2-23-96288-E-C	SRVS	Complaint regarding noise and vibration felt at the property.	Vibration was due to tunnel boring machine passing in close proximity under property.	The tunnel boring machine has now passed the property and resident has been offered respite when another tunnel bore machine pass occurs close to the property next month.
HS2-23-96223-E-C	SRVS	Complaint regarding noise at night due to sound like vacuum cleaning.	The investigation found that the noise were linked to works undertaken by UKPN and were not related to HS2.	Attempts to contact the complainant to discuss the findings were not successful. Therefore, complaint closed due to no response.
HS2-23-44748-C	HR	Complaint regarding noise at night.	Investigation found the noise was due to street cleaning. Two road sweeping vehicles were used, upon inspection one of the road sweepers was found to be louder than the other.	The louder machine was removed from service. The findings and outcomes of the investigation were communicated to the complainant.
HS2-23-44749-C	CVV	Complaint regarding noise which sounded like a foghorn.	Noise monitoring data was reviewed, and the likely source of noise was identified as viaduct segment factory. The noise is likely due to vibration of concrete during the casting process. Large acoustic enclosure covers the factory and other mitigation measures are in place. Noise monitors have shown no exceedance of noise levels and the factory is working within consents.	The site team are advised to continually look at ways to further minimise noise levels. The complainant has been briefed on the investigation and confirmed that the works were undertaken within the consents provided.
HS2-23-96544-E-C	BR	Complaint regarding beeping sound from reversing vehicles on site.	The source of noise was identified to be a plant within the site boundary.	The plant was removed from site and the complainant briefed about the actions taken to mitigate noise.
HS2-23-96708-E-C	CVV	Complaint regarding night time noise believed to be from concrete batching factory.	Investigation shows no noise from the site on the night of complaint.	The complainant was briefed on the findings and a noise monitor was offered in case of further occurrence.

Appendix A Site Locations

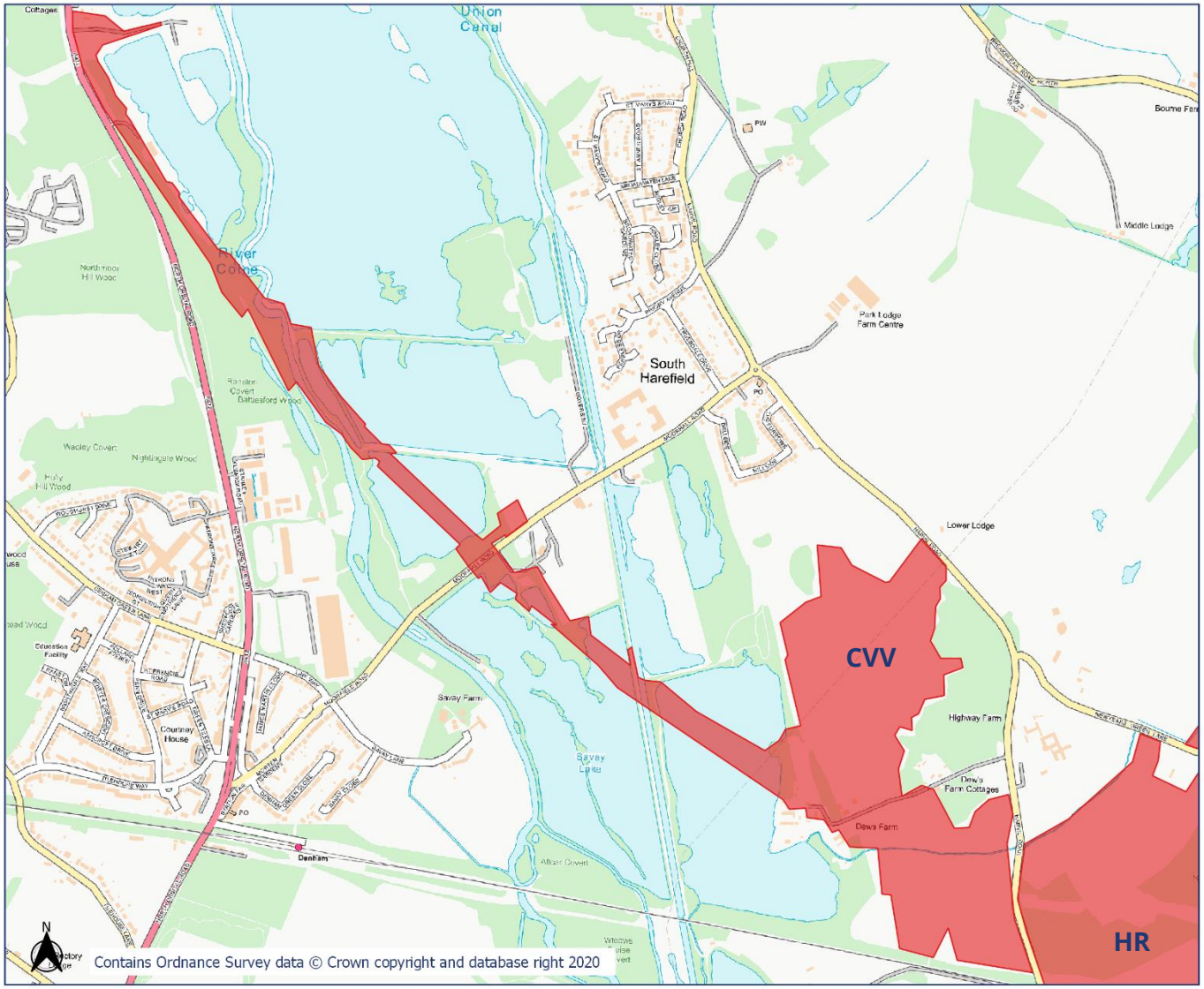
Worksite Identification Plan - Overview



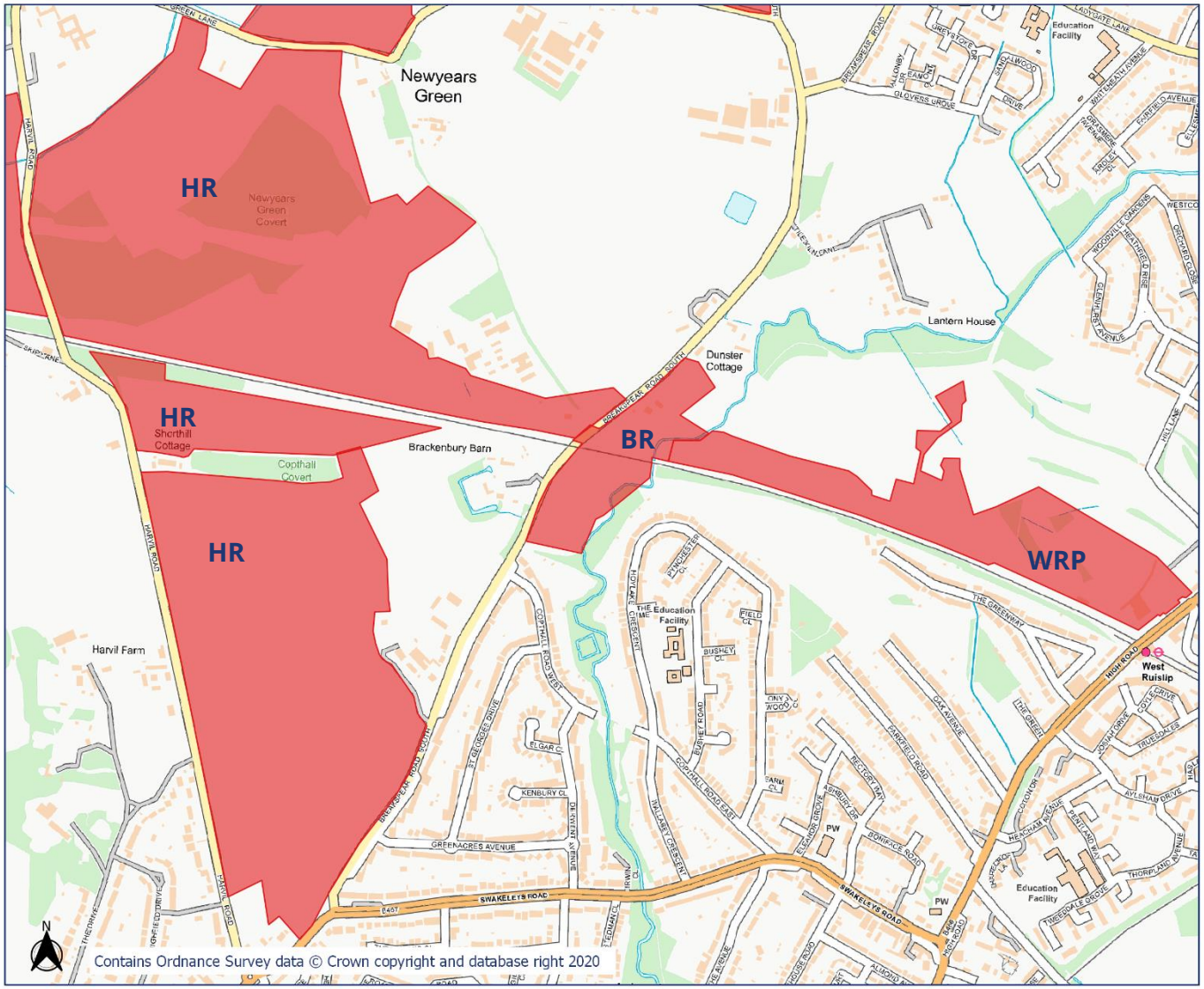
Legend

Active Worksites

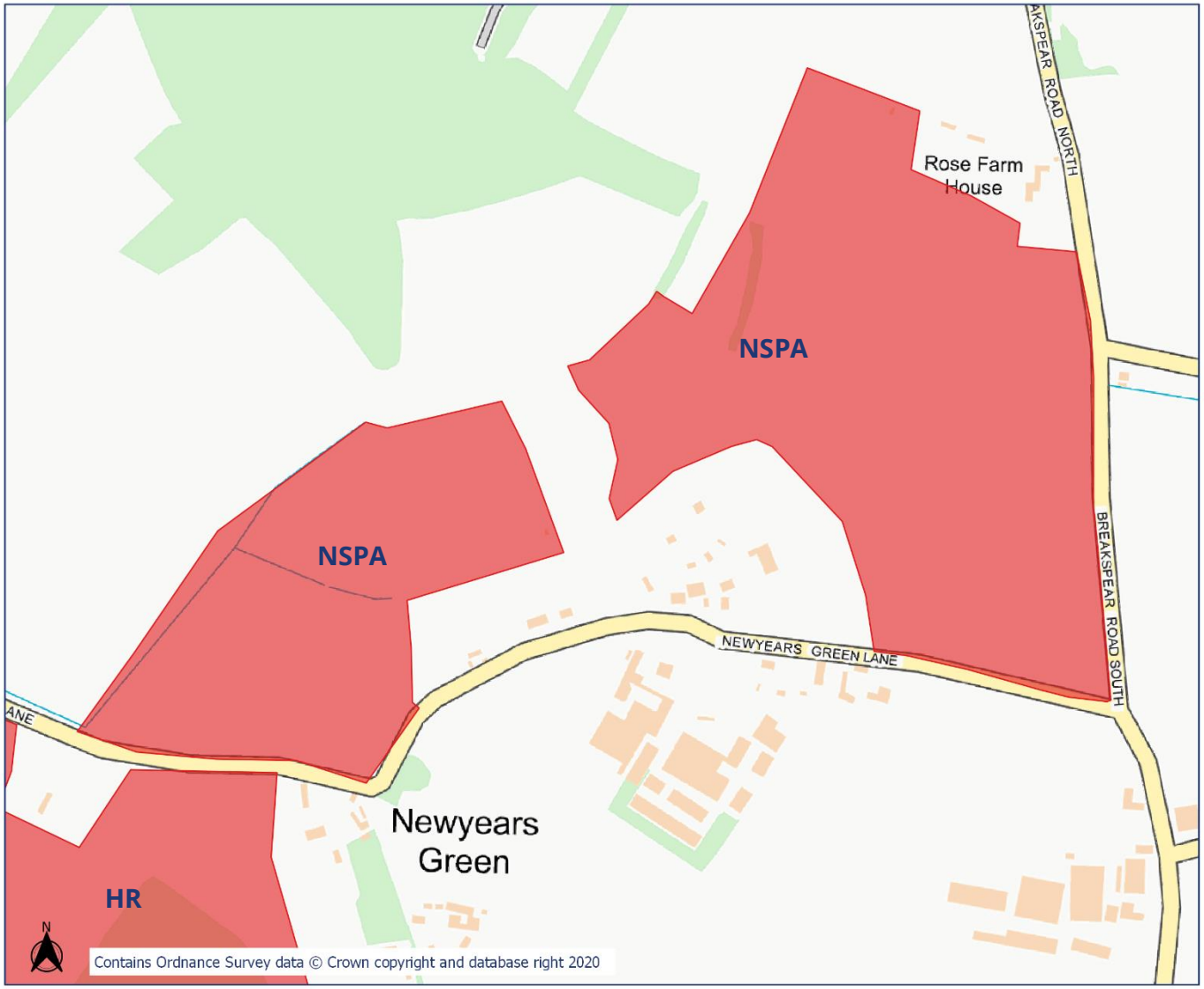
Worksite Identification Plan - 1



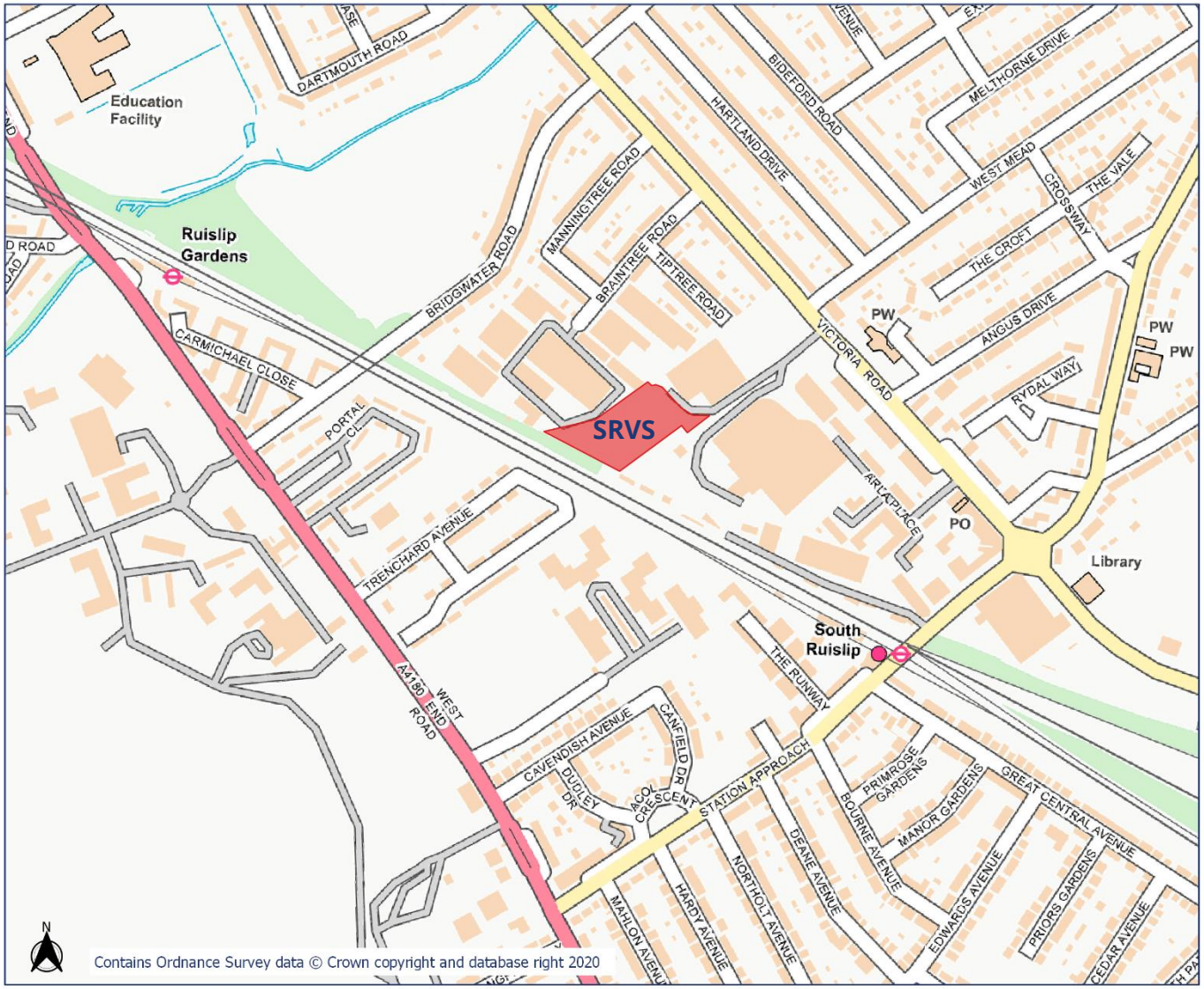
Worksite Identification Plan - 2



Worksite Identification Plan - 3

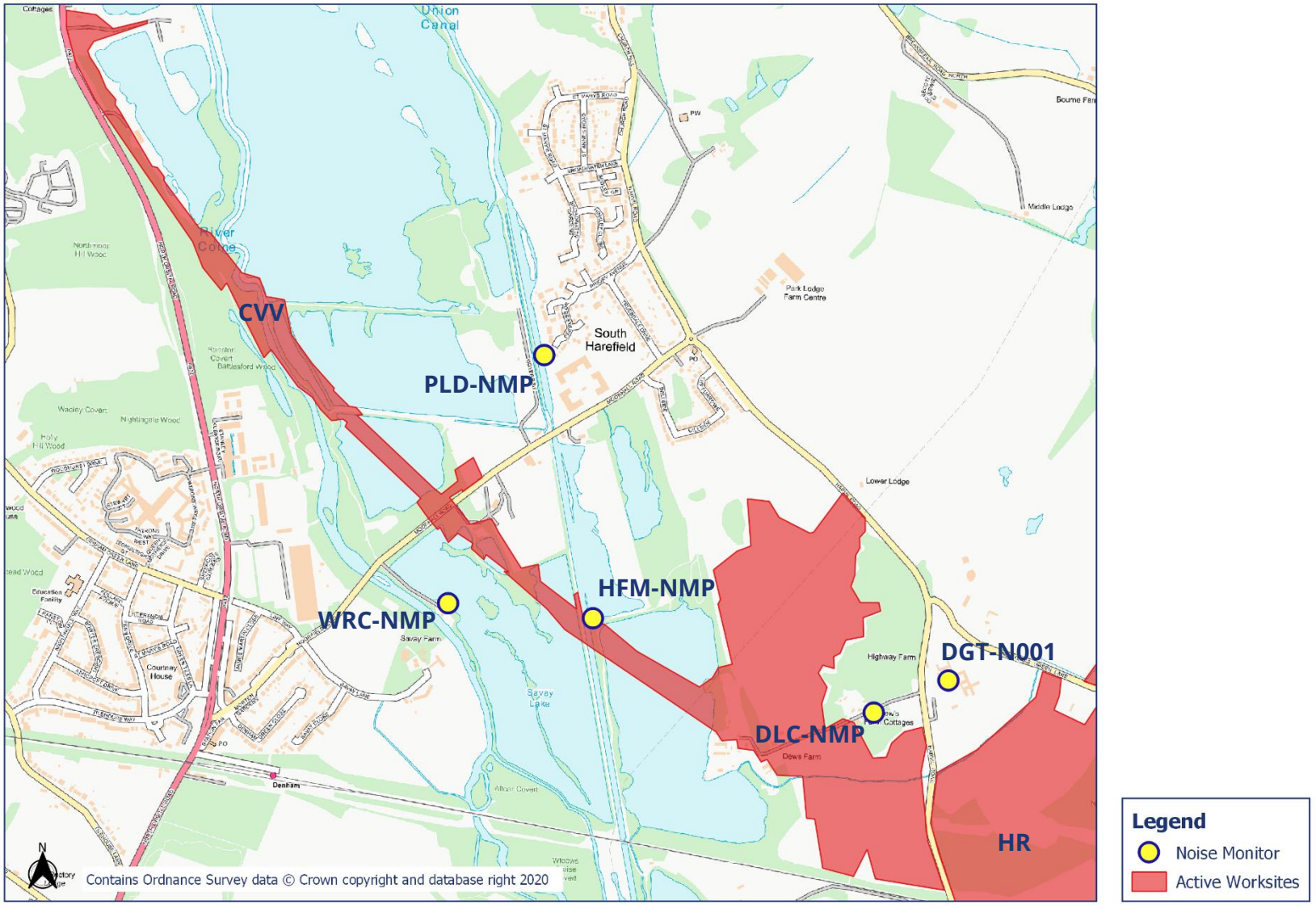


HS2 Worksite Identification Plan - 4

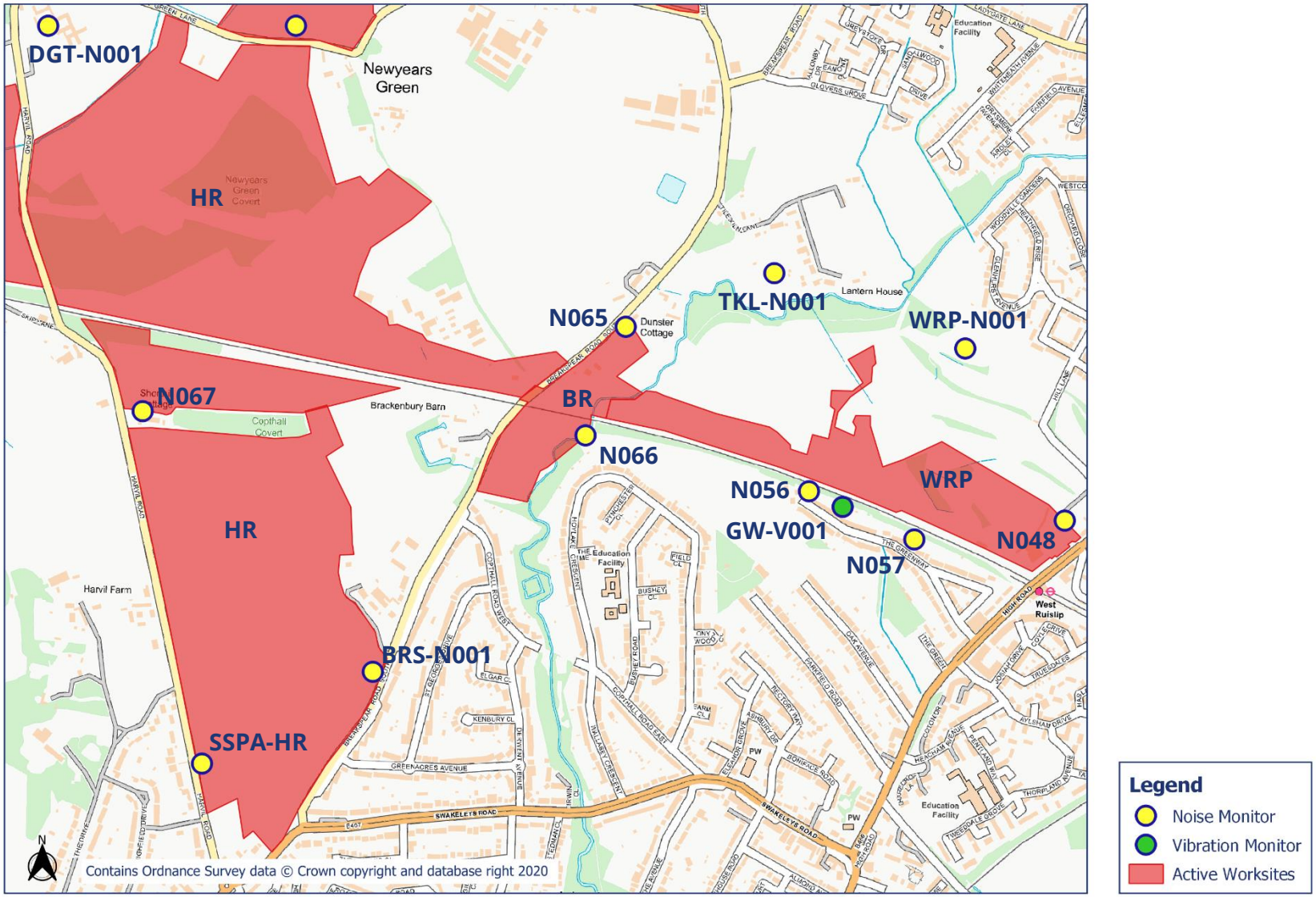


Appendix B Monitoring Locations

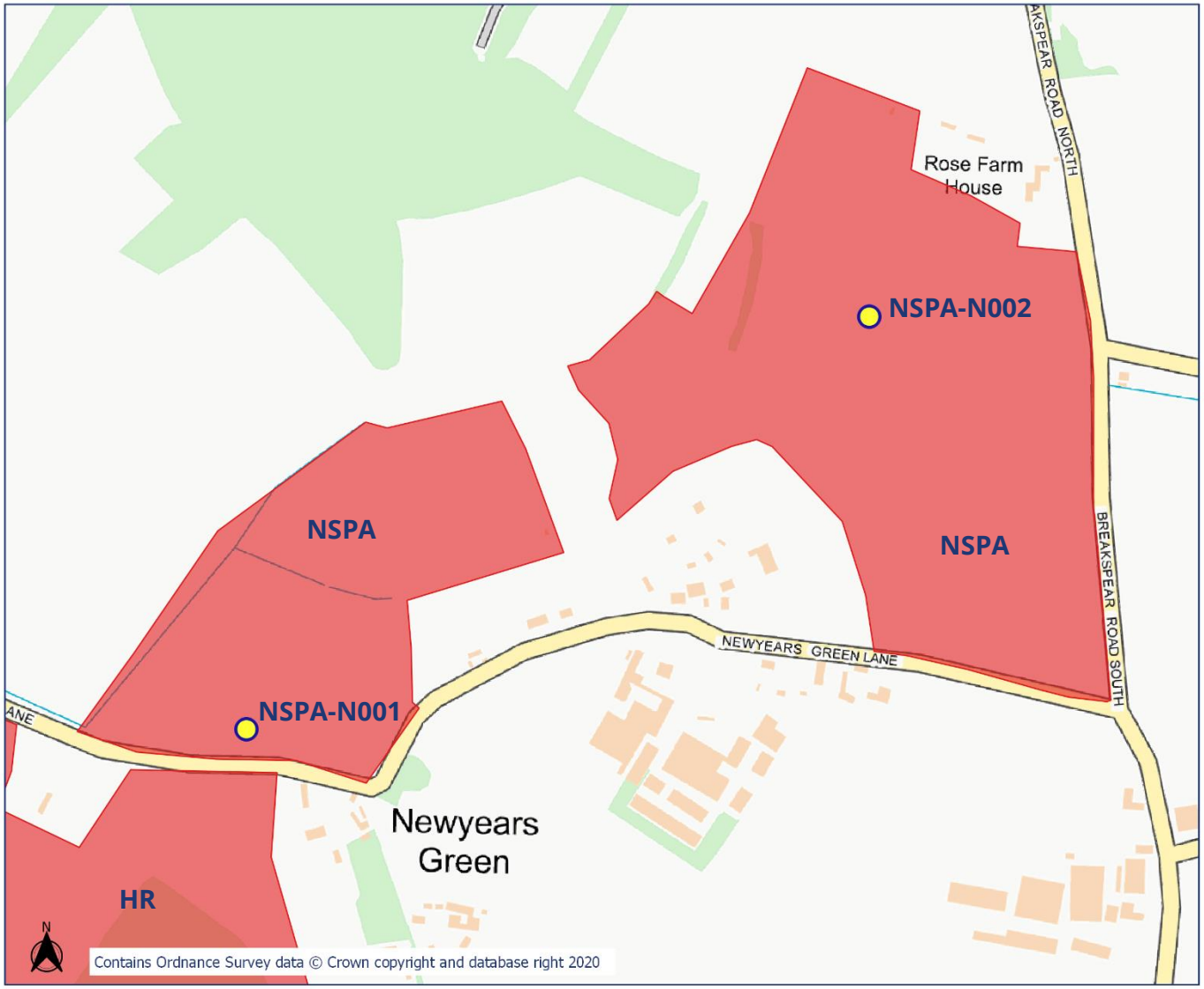
Noise and Vibration Monitoring Plan - 1



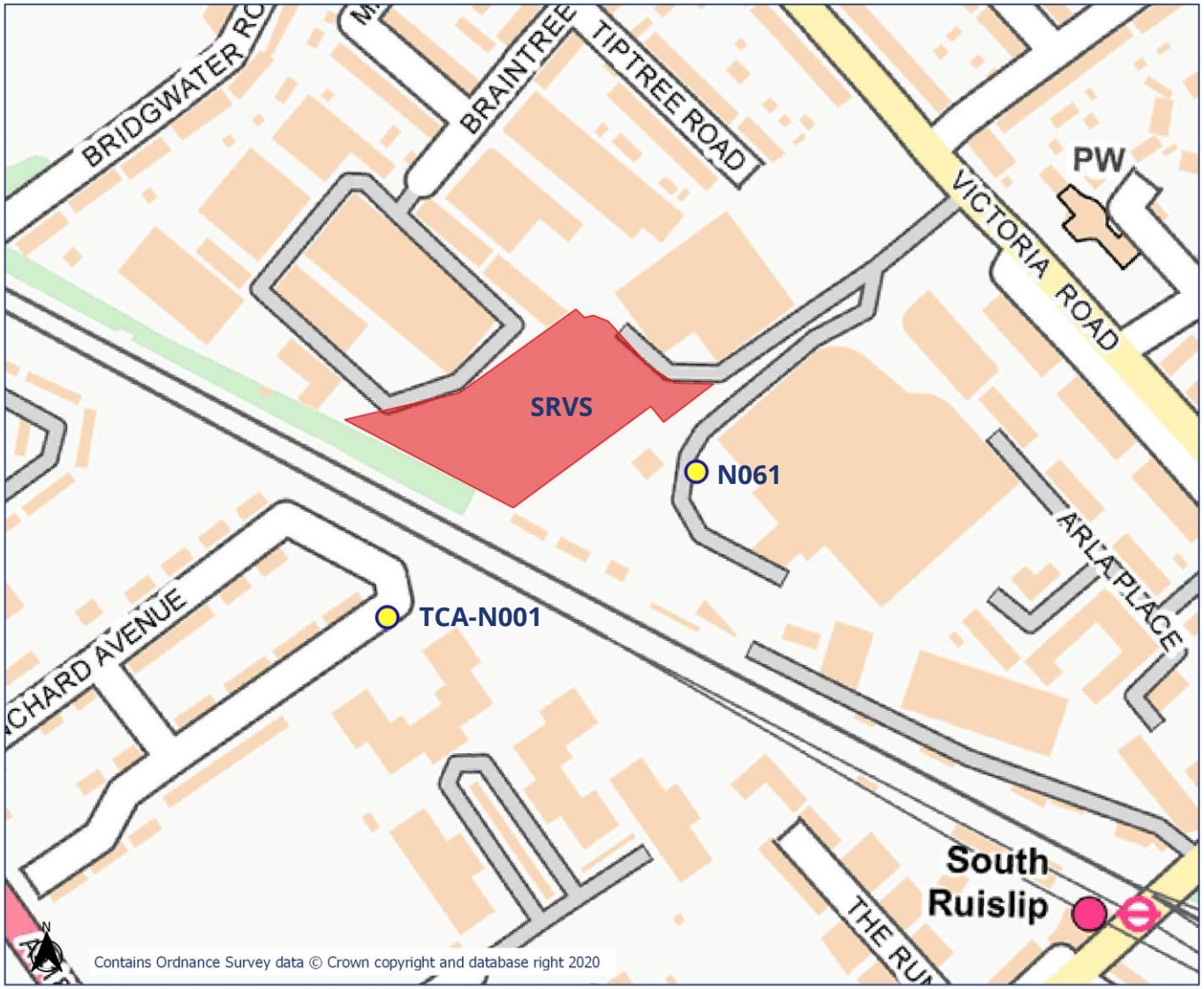
HS2 Noise and Vibration Monitoring Plan - 2



Noise and Vibration Monitoring Plan - 3



HS2 Noise and Vibration Monitoring Plan - 4

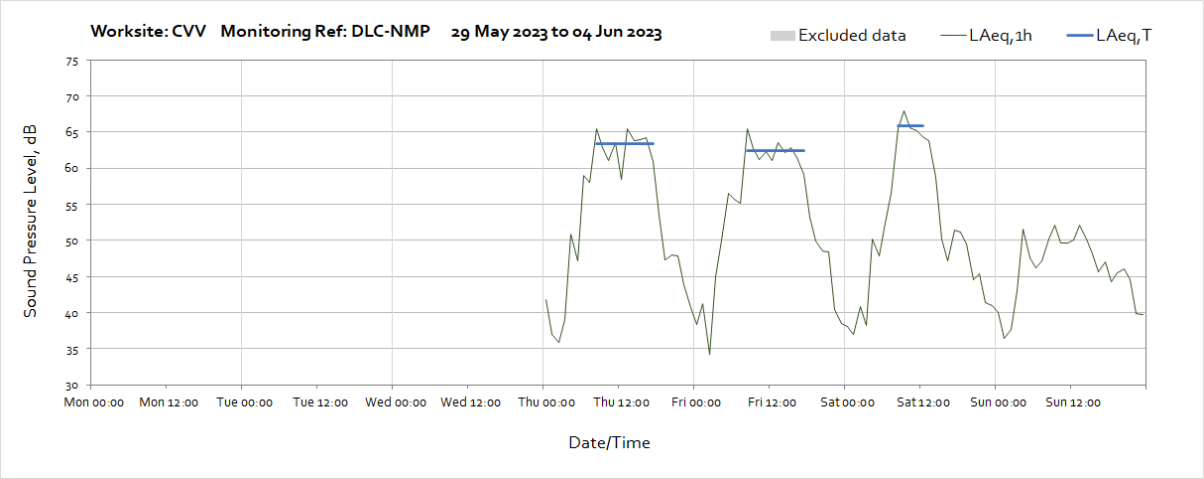


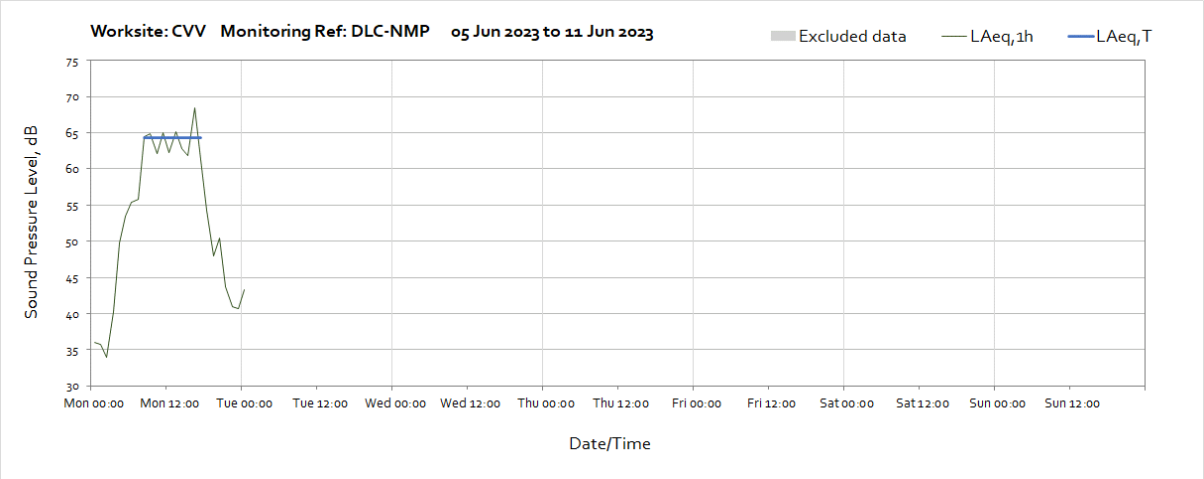
Appendix C Data

Noise

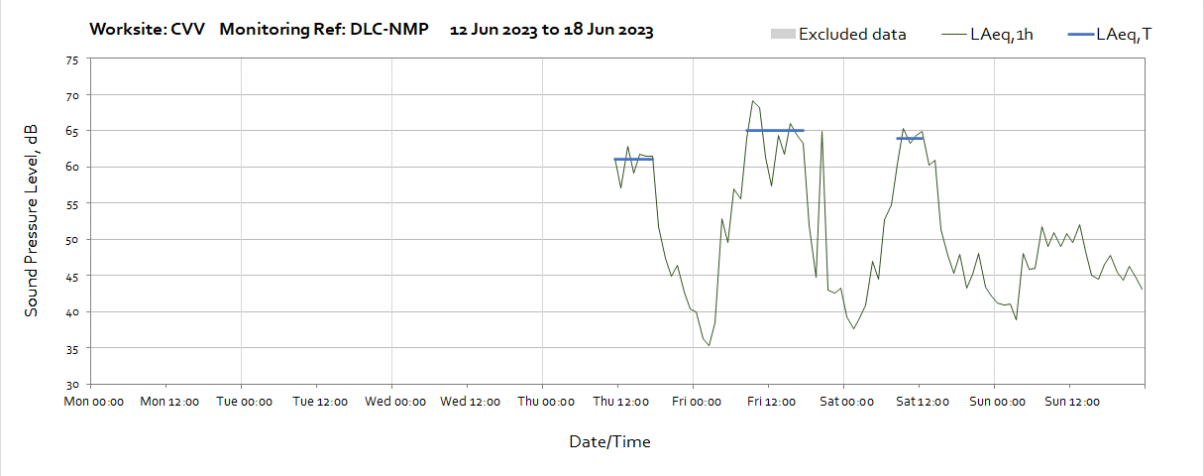
The following graphs show the hourly measured ambient noise level $L_{Aeq,1h}$ and, where relevant, the averaged noise level $L_{Aeq,T}$ values, where the time period T is as specified in Table 1 of HS2 Information Paper E23. Periods with adversely weather affected noise levels are greyed out and have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

Worksite: CVV – Monitoring Ref: DLC-NMP

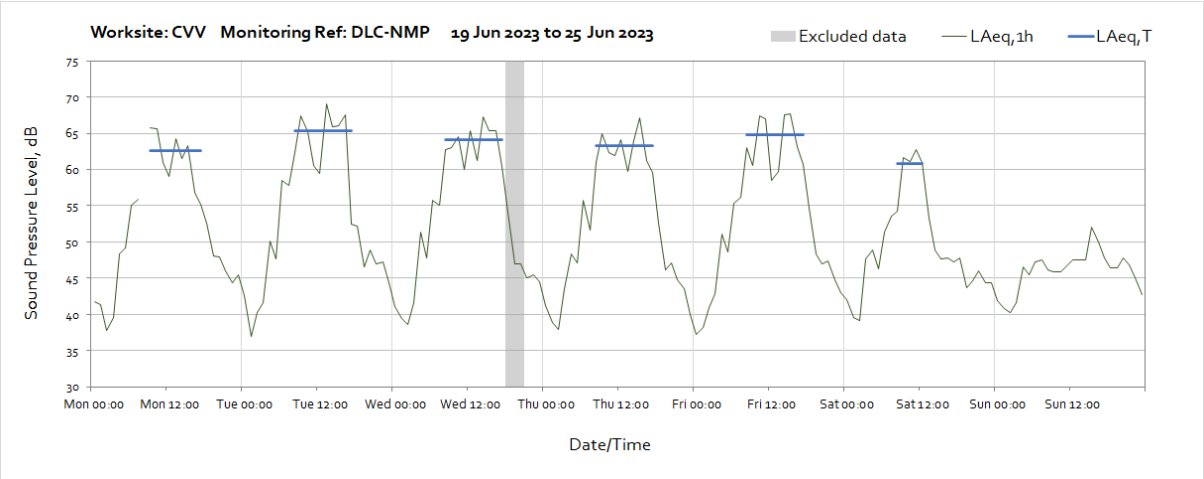




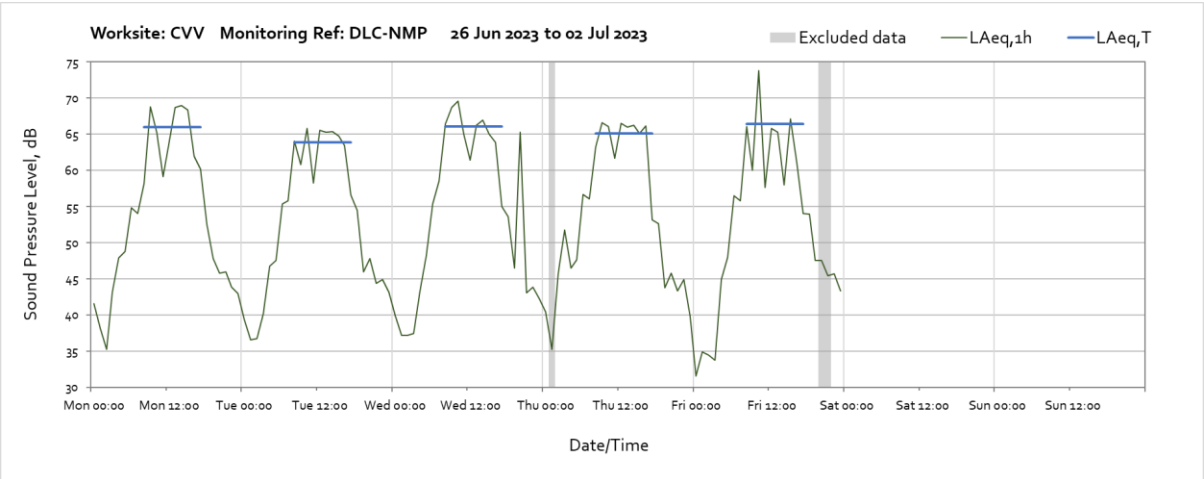
Note: Missing data between 01:00 on Tuesday 6th June and 11:00 on Thursday 15th June was due to a loss of power to monitoring caused from water damage to power outlet.



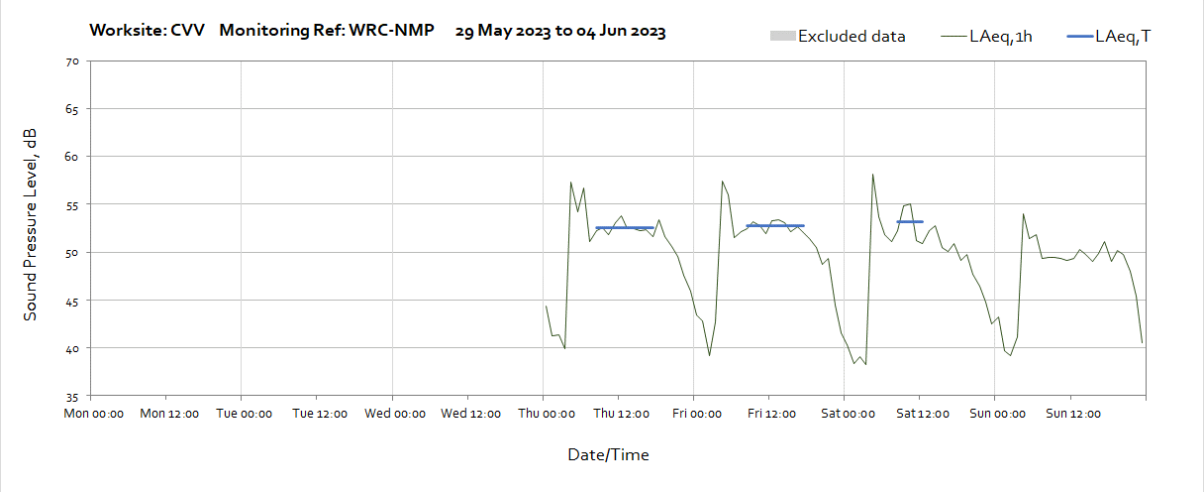
Note: Missing data between 01:00 on Tuesday 6th June and 11:00 on Thursday 15th June was due to a loss of power to monitoring caused from water damage to power outlet.

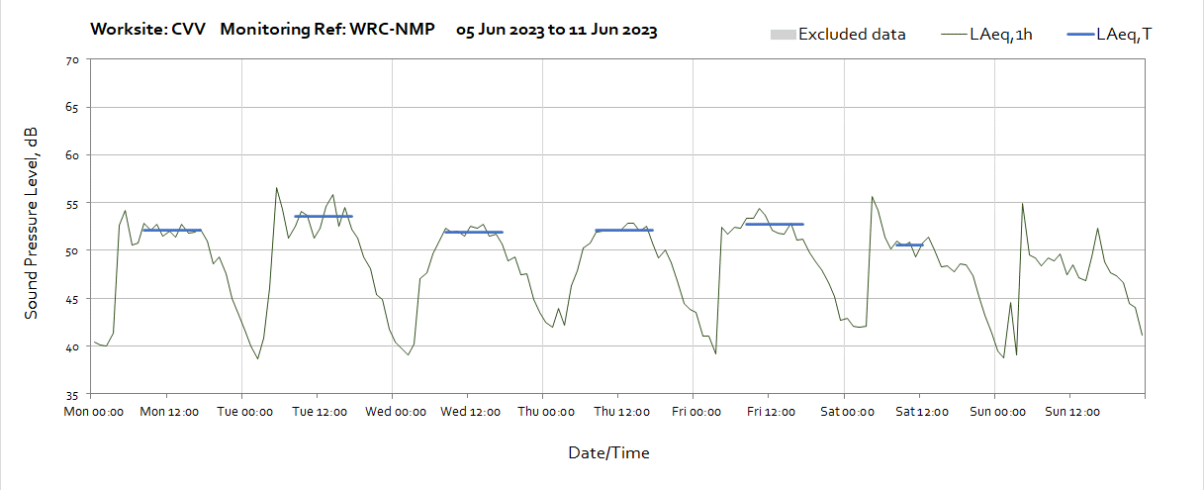


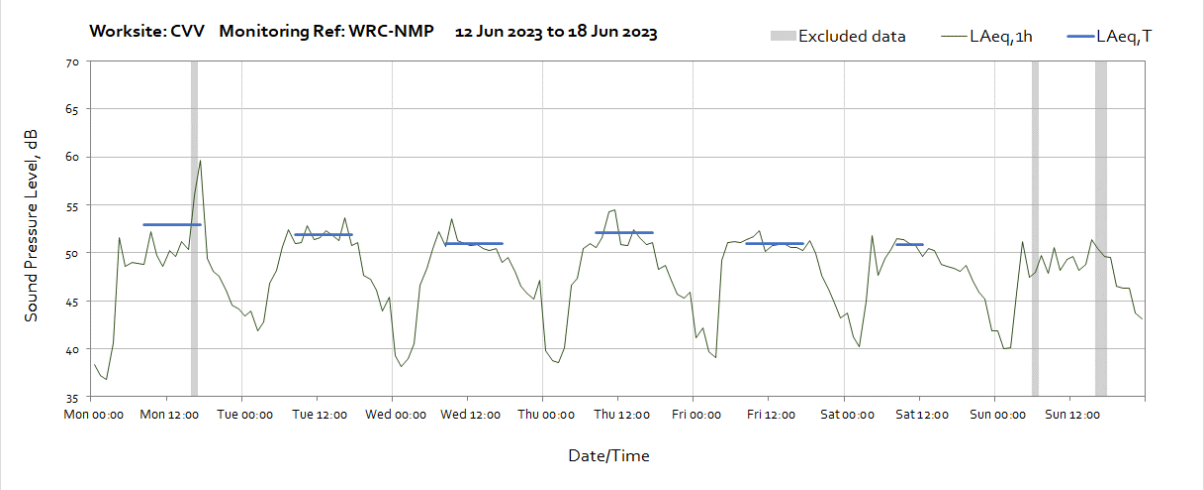
Note: Missing data between 08:00 and 09:00 on Monday 19th June was due to monitor being paused for regular maintenance.

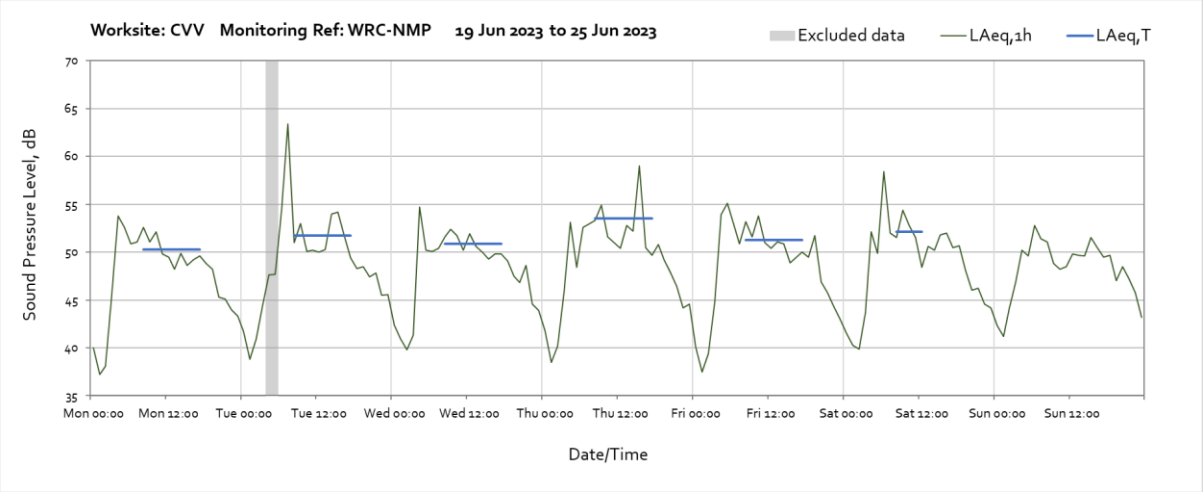


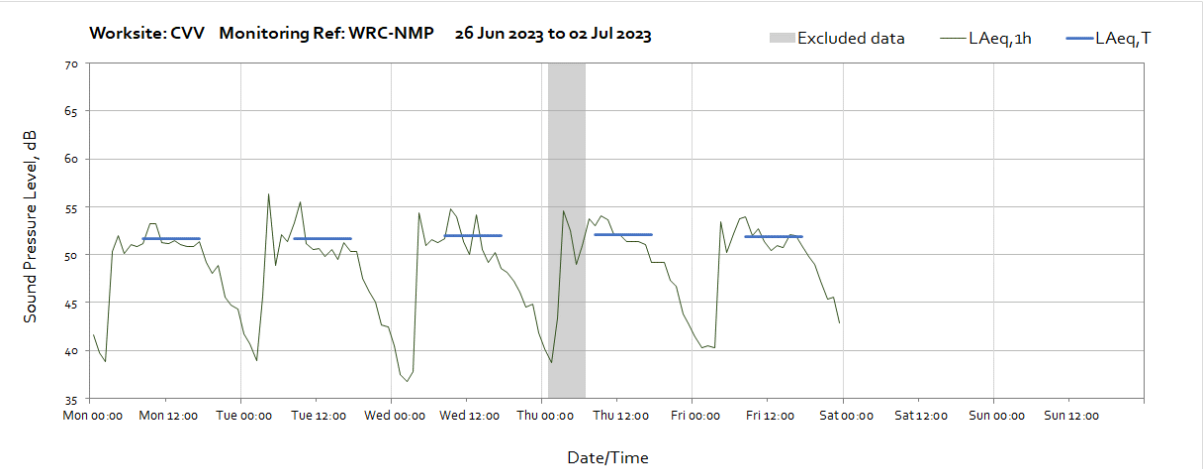
Worksite: CVV – Monitoring Ref: WRC-NMP



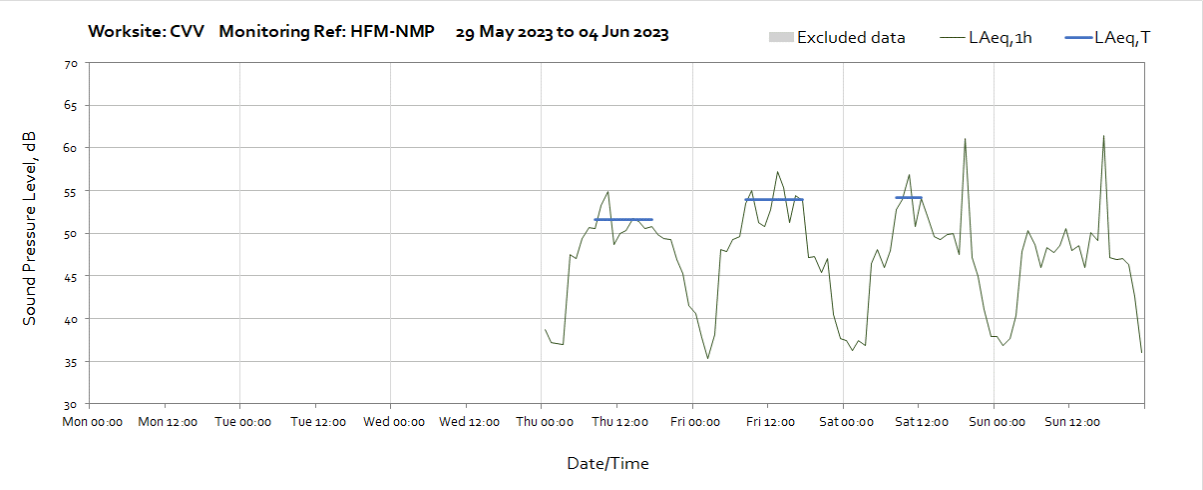


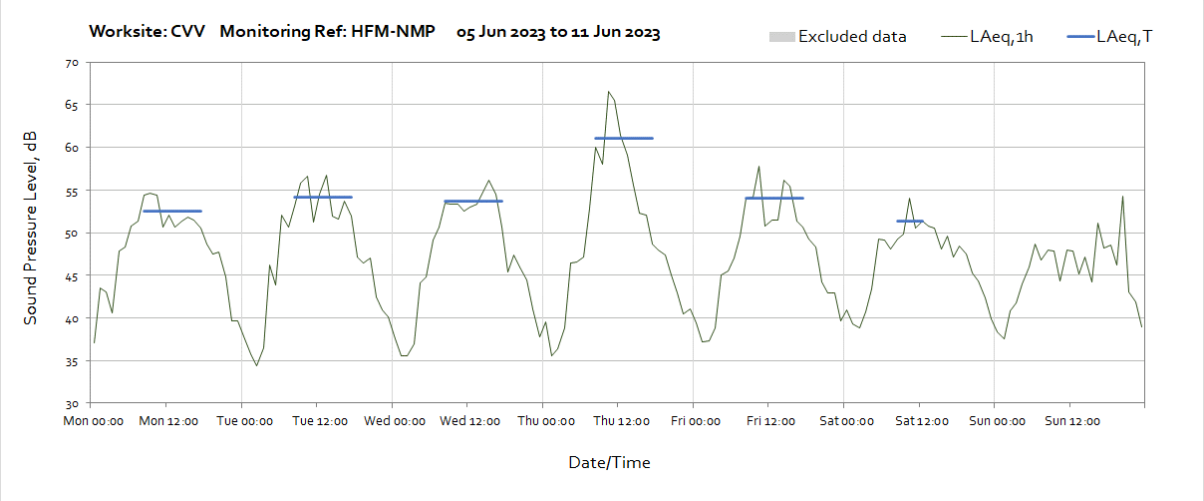


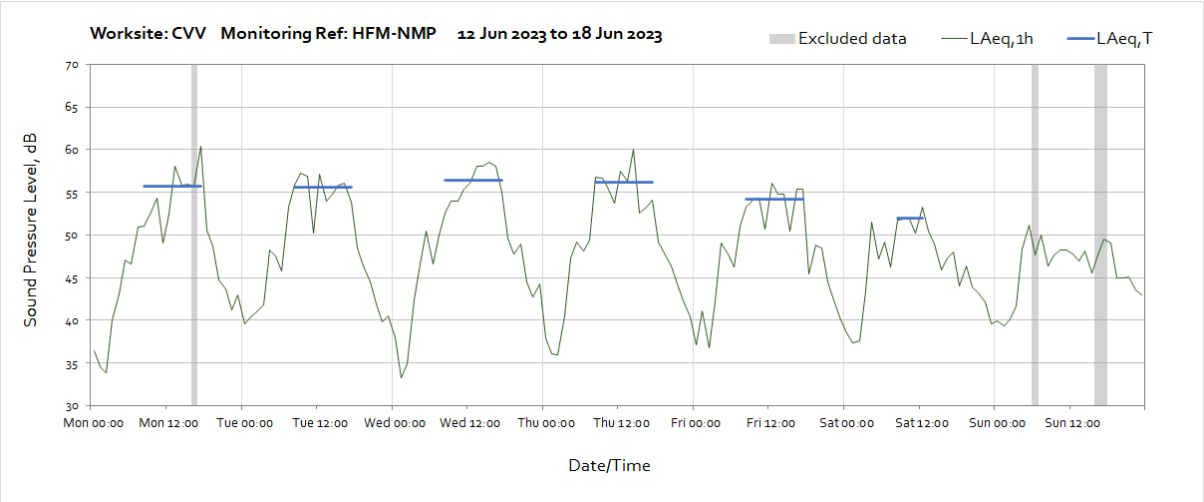


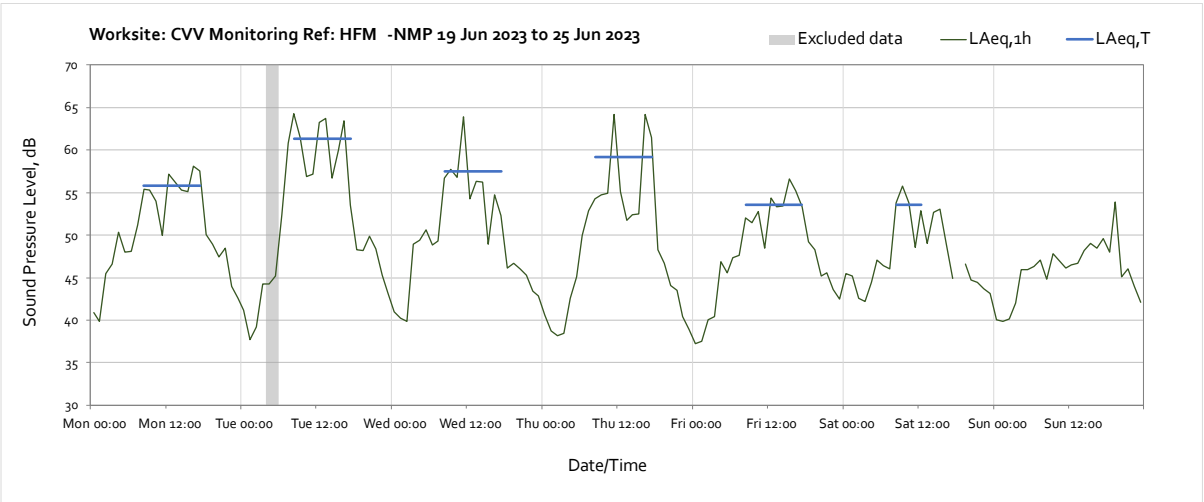


Worksite: CVV – Monitoring Ref: HFM-NMP

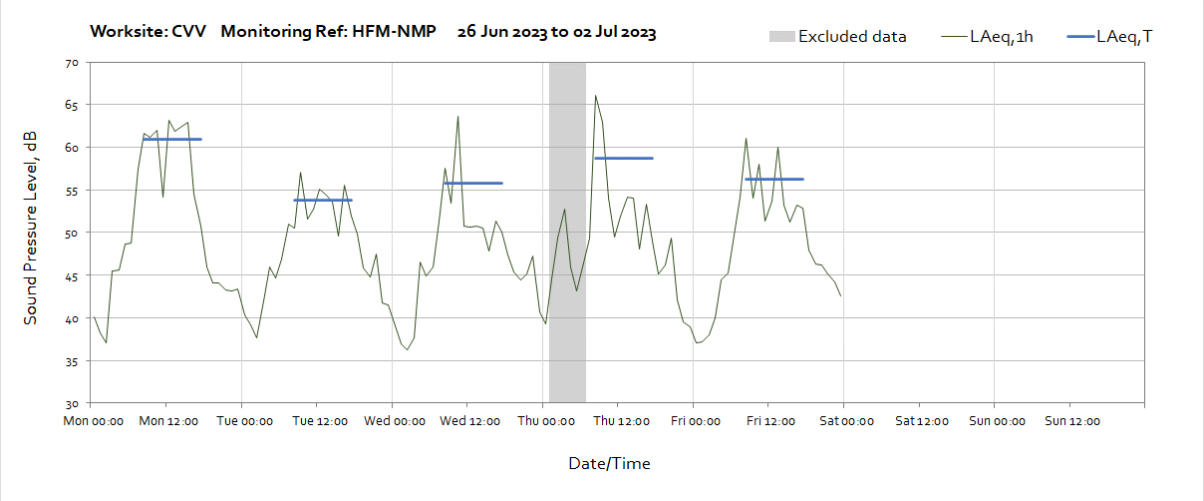




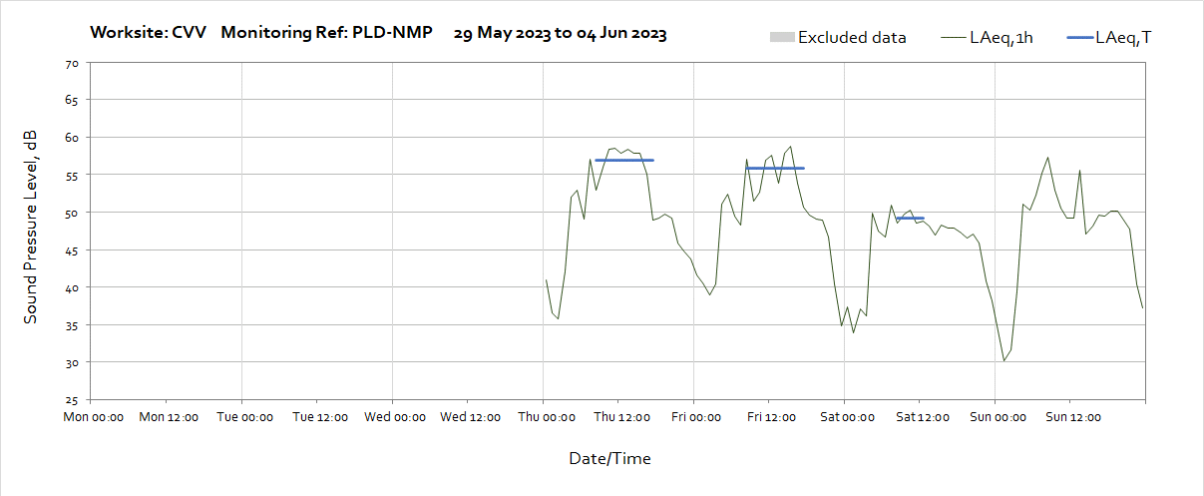


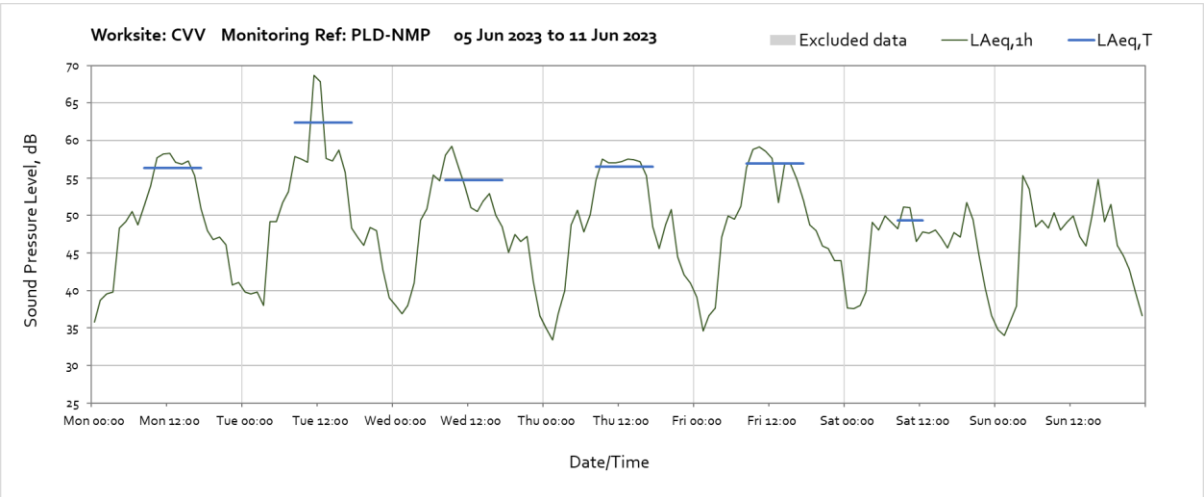


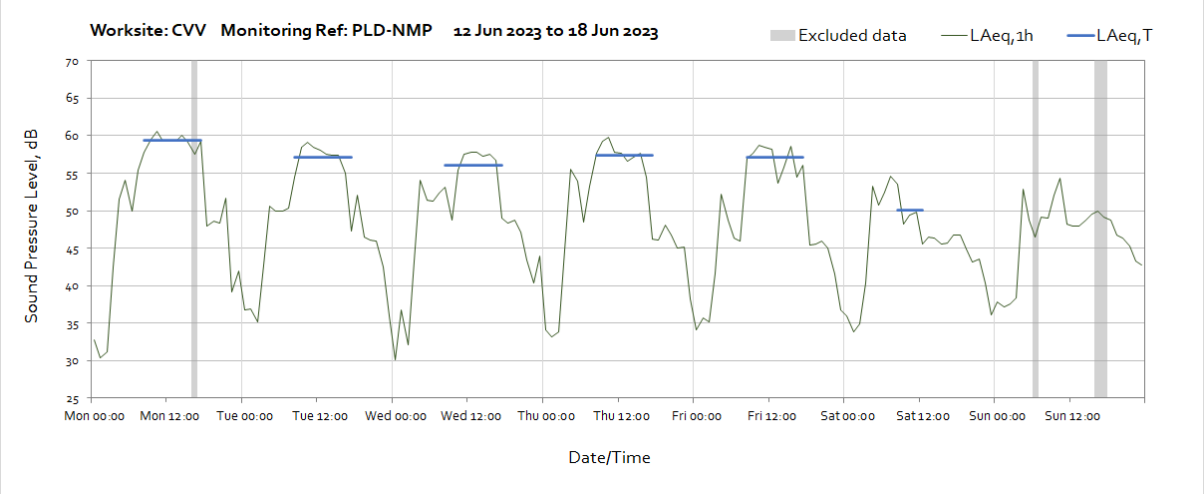
Note: Missing data between 18:00 and 19:00 on Saturday 24th June was due to server and monitor communication issues.

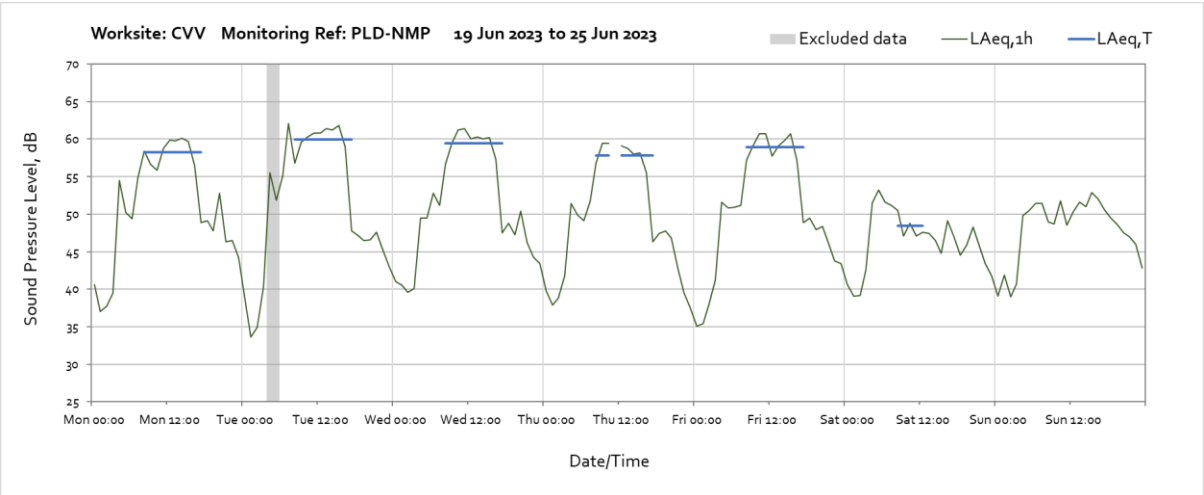


Worksite: CVV – Monitoring Ref: PLD-NMP

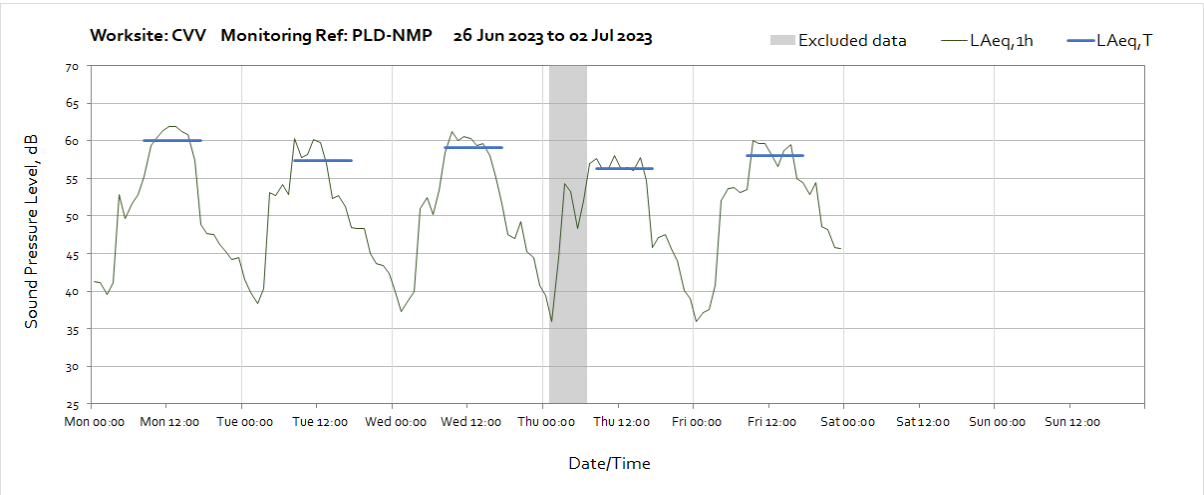




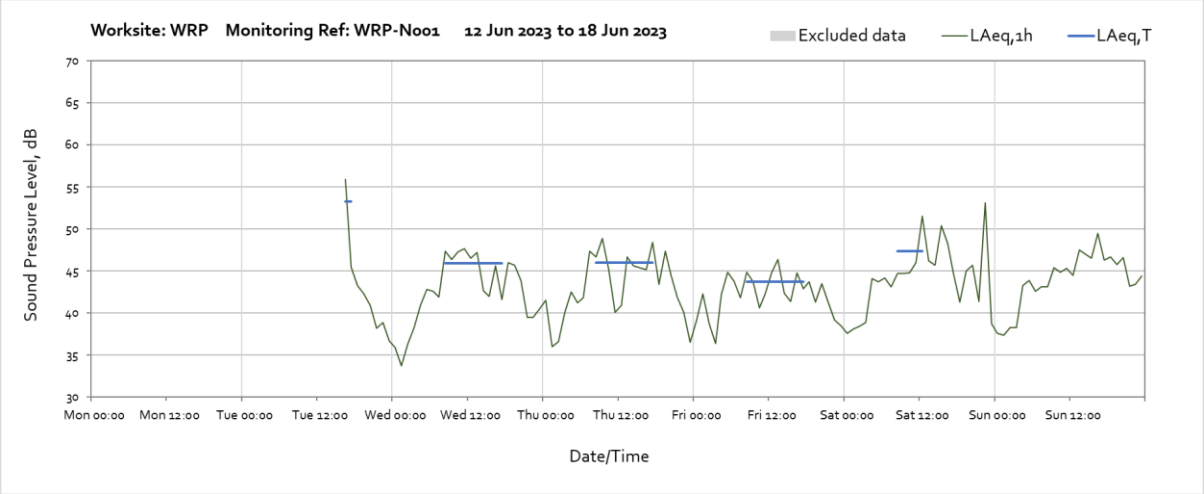




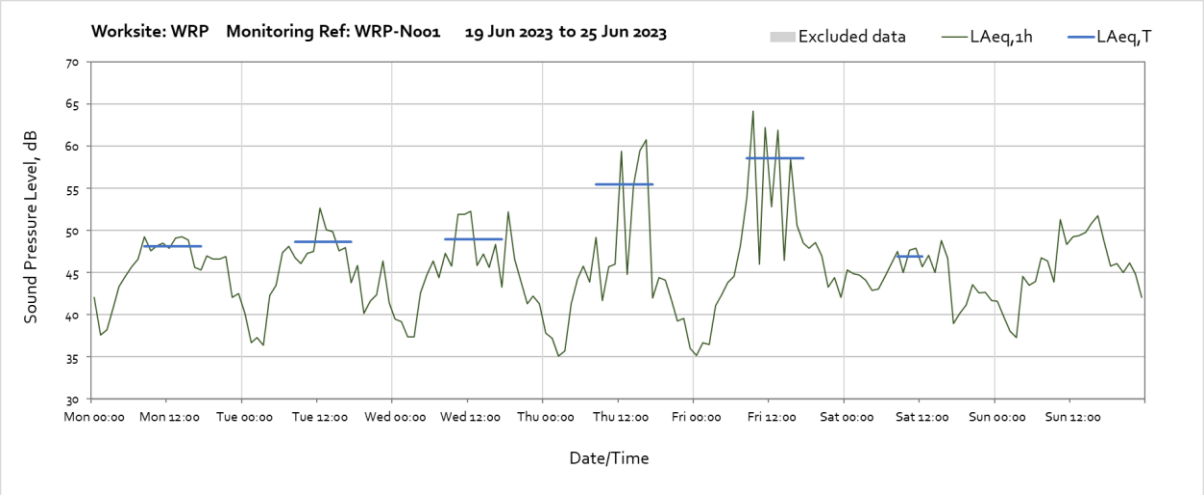
Note: Missing data between 11:00 and 12:00 on Thursday 22nd June was due to monitor being paused for field calibration.

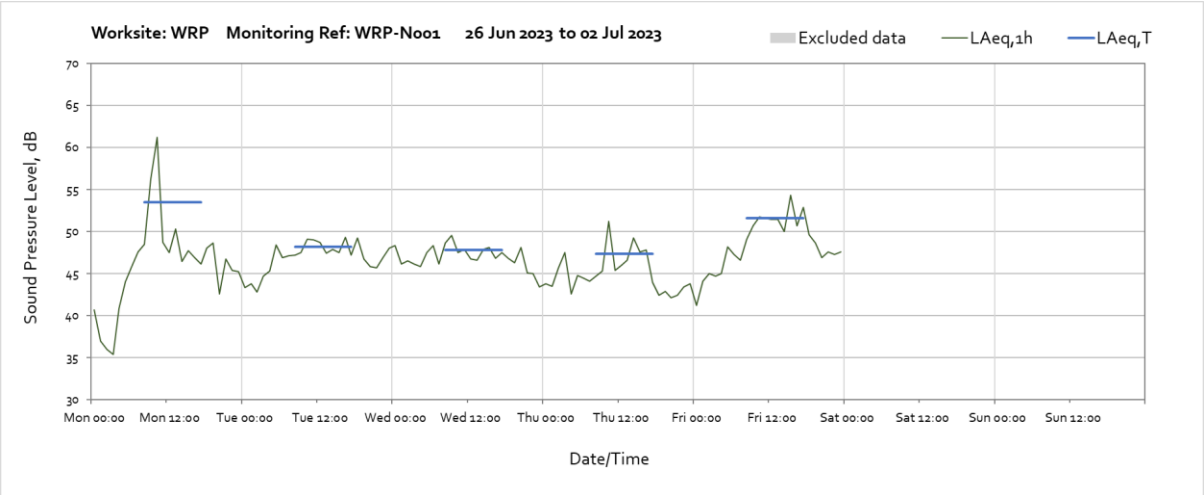


Worksite: WRP – Monitoring Ref: WRP-N001



Note: Noise monitor was installed at 16:00 on 13th June 2023.





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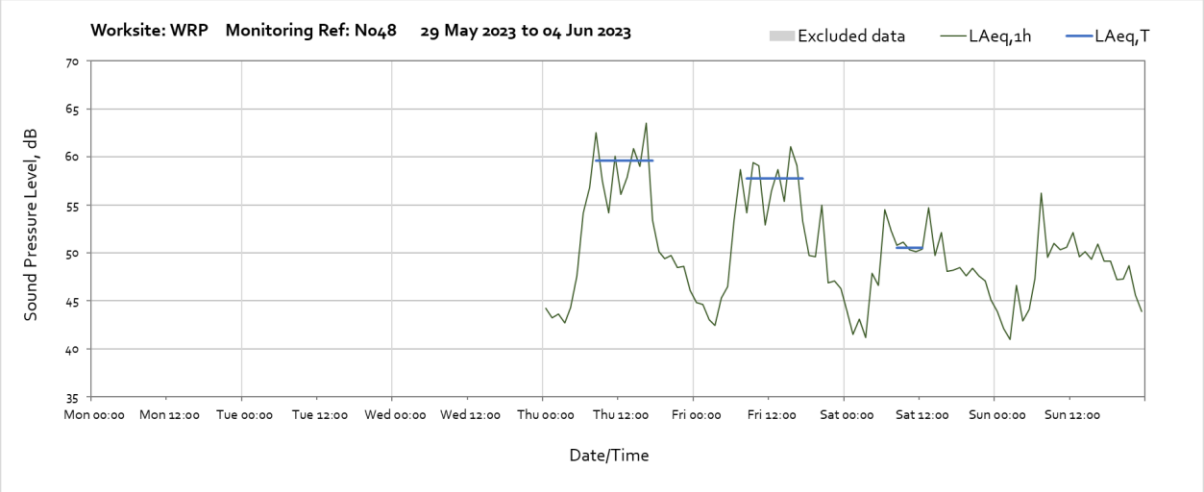

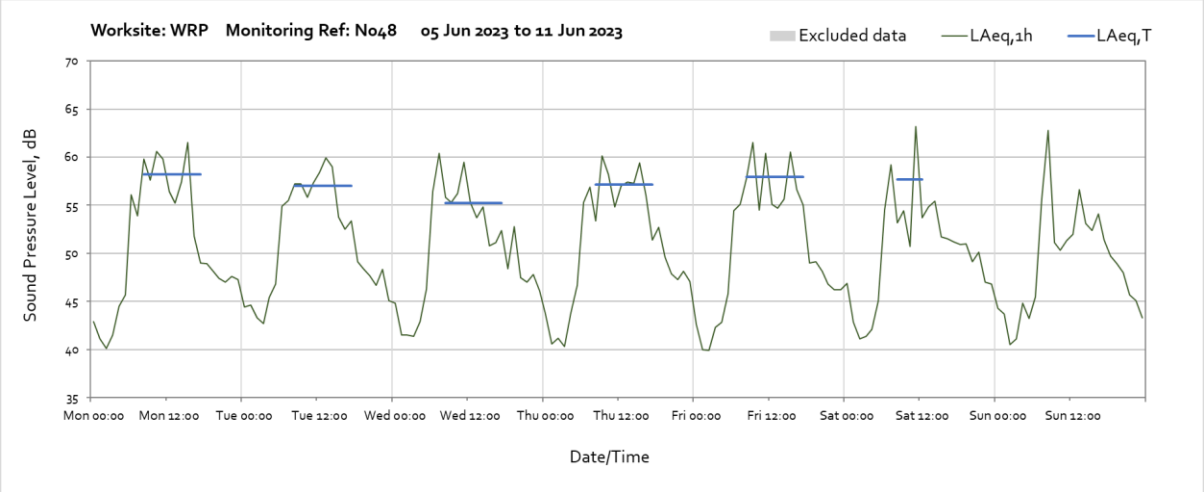

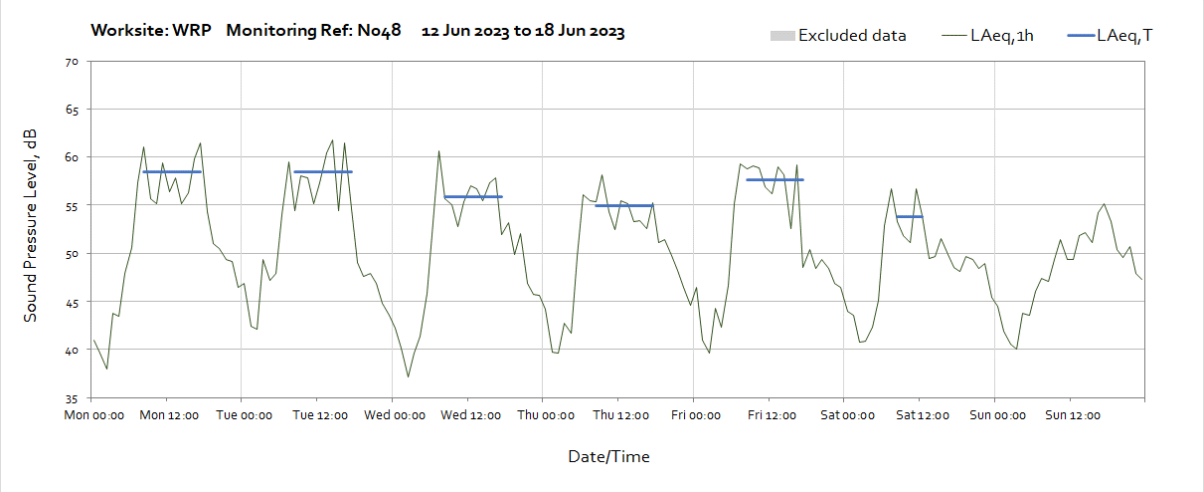

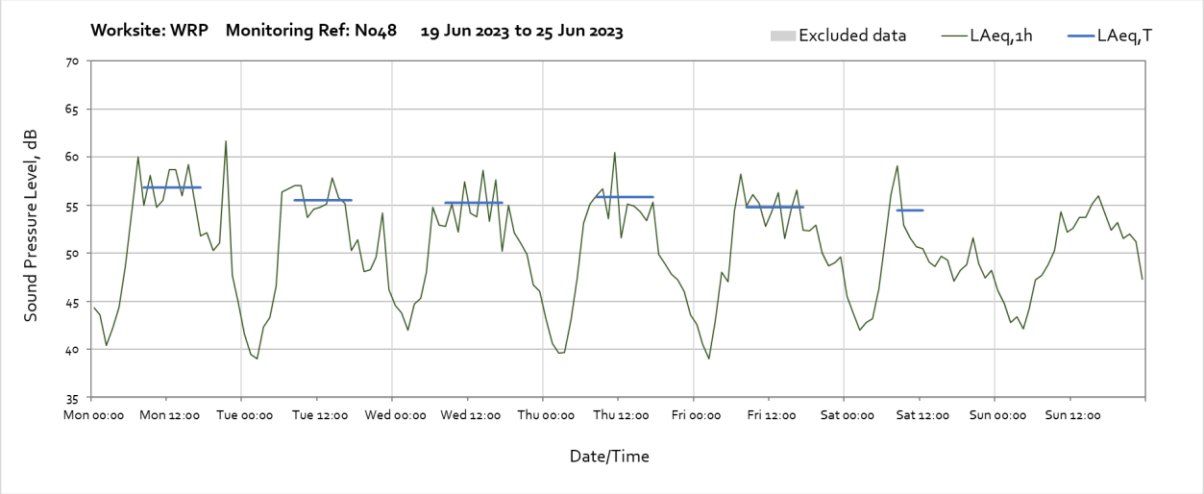

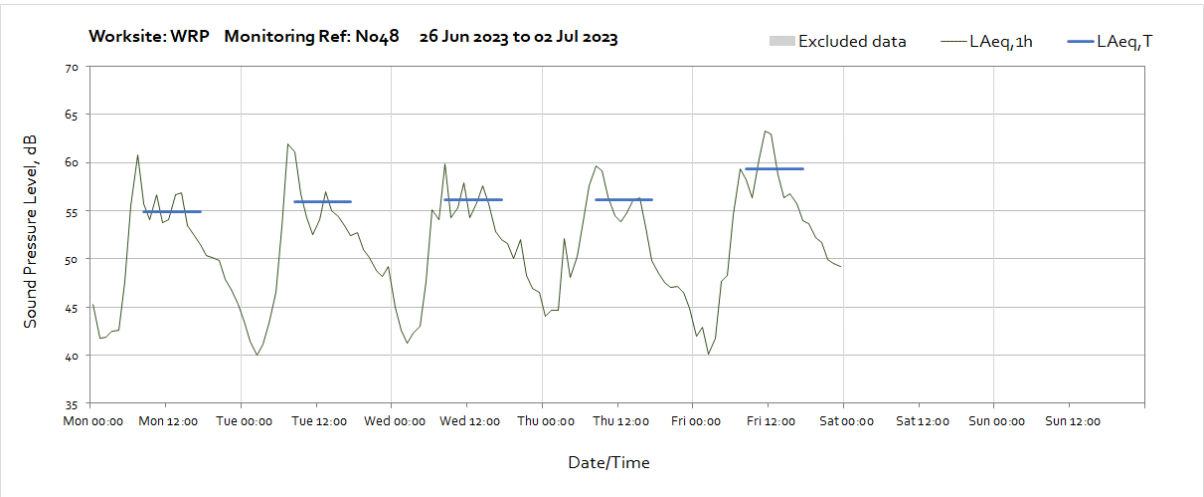

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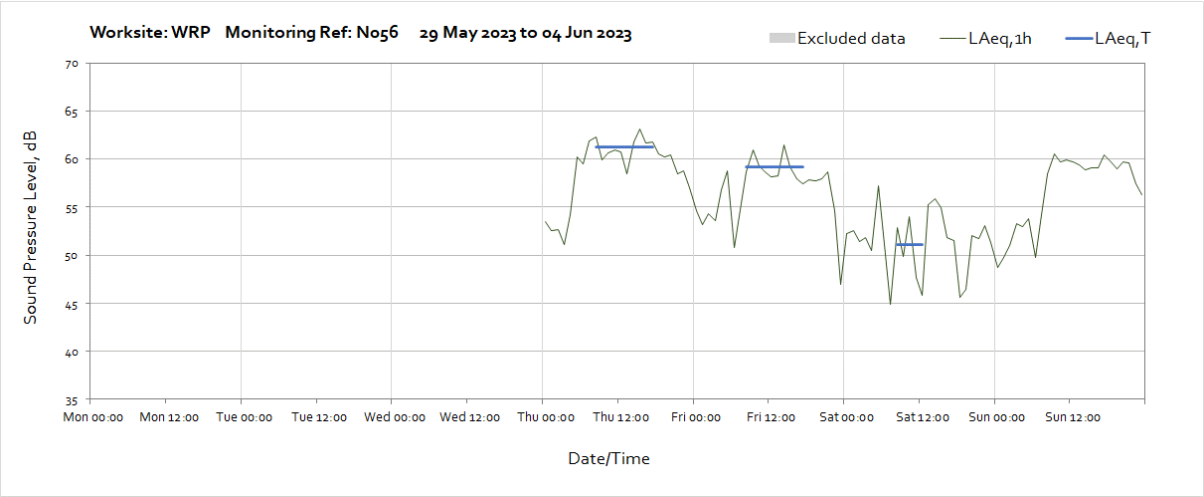

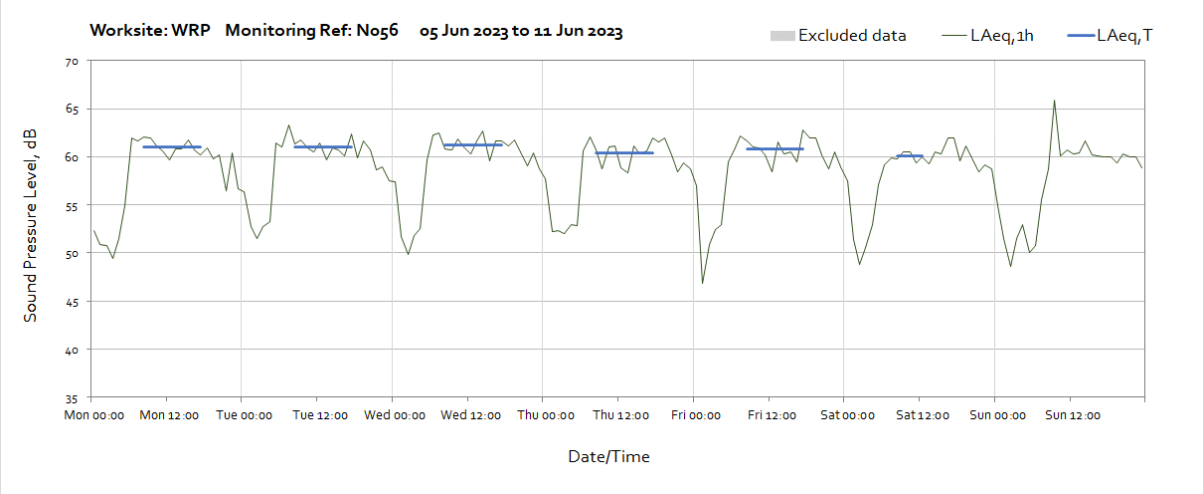
Worksite: WRP Monitoring Ref: No56 05 Jun 2023 to 11 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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65
60
55
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45
40
35
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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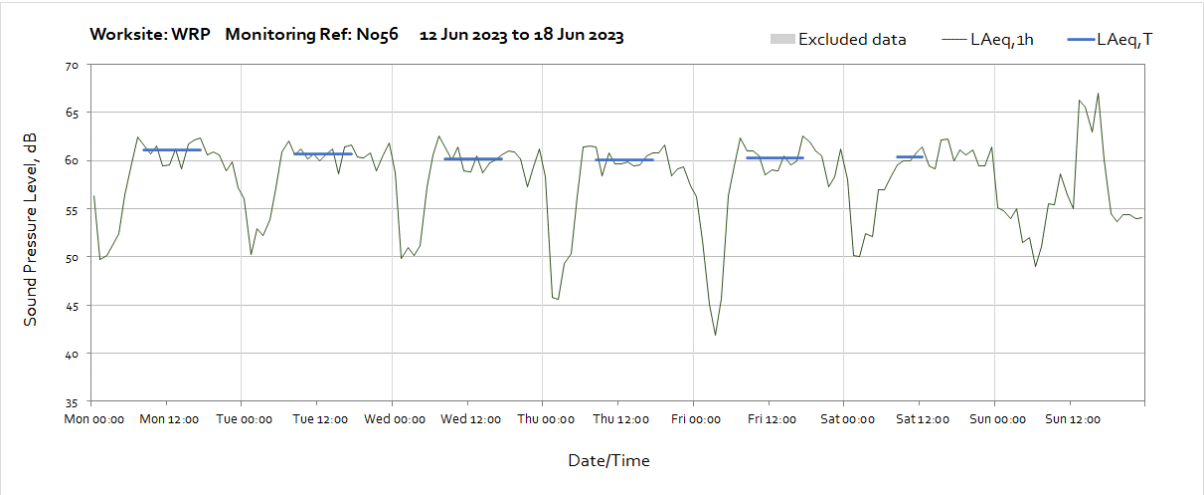
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: WRP Monitoring Ref: No56 12 Jun 2023 to 18 Jun 2023
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LAeq,T
Sound Pressure Level, dB
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55
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Tue 12:00
Wed 00:00
Wed 12:00
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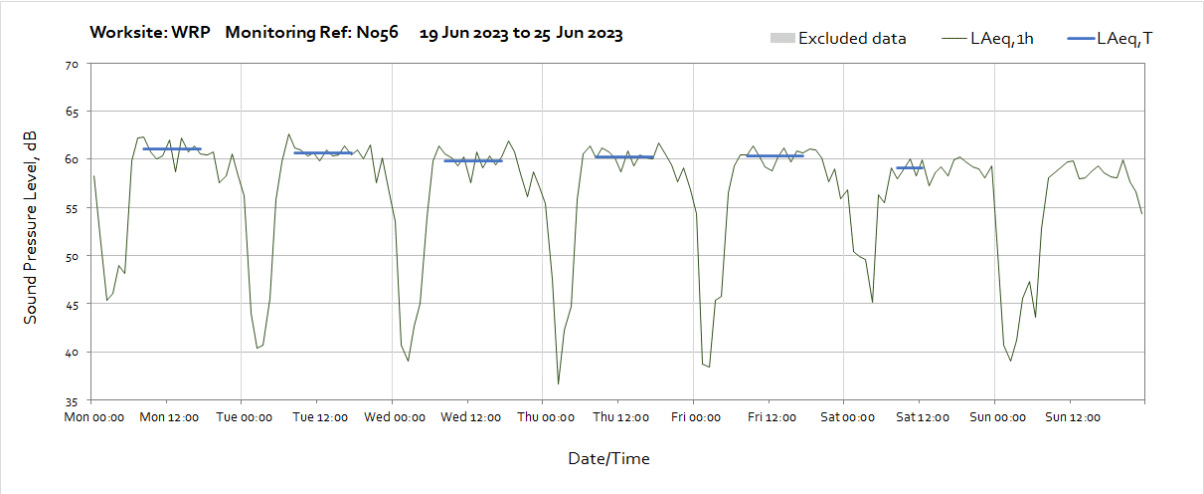
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time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Sound Pressure Level, dB
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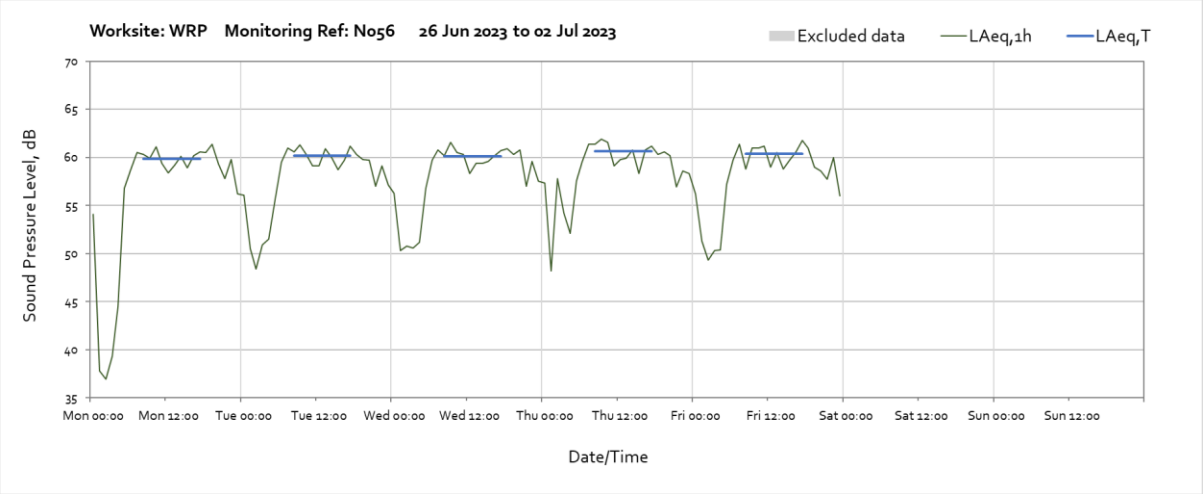

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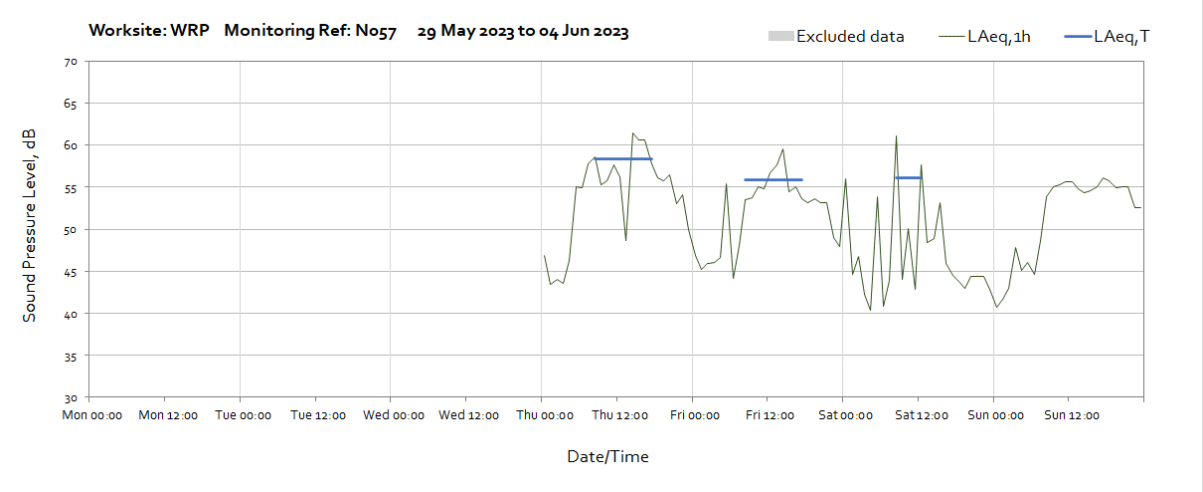

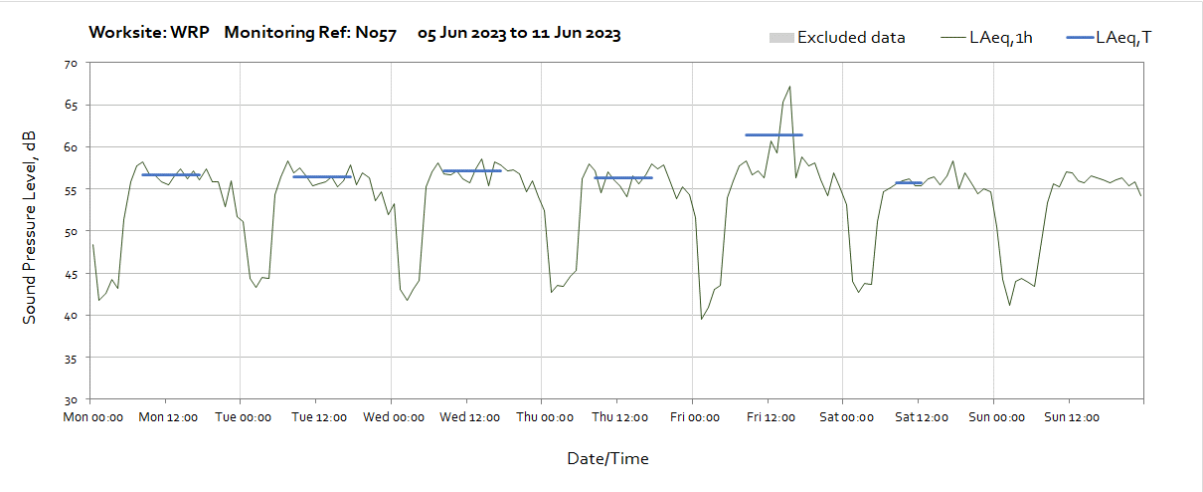

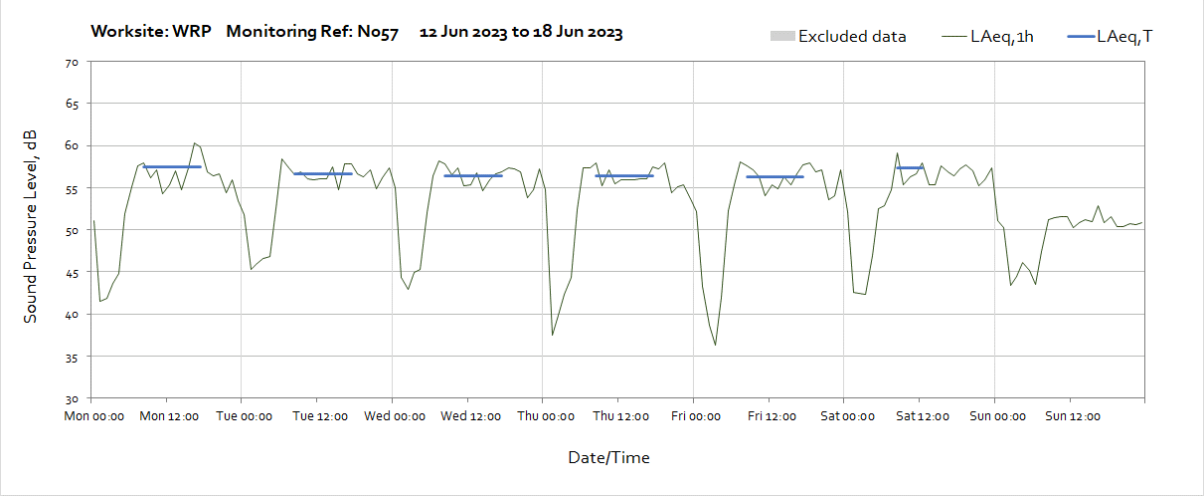
Worksite: WRP Monitoring Ref: No57 12 Jun 2023 to 18 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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60
55
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Tue 12:00
Wed 00:00
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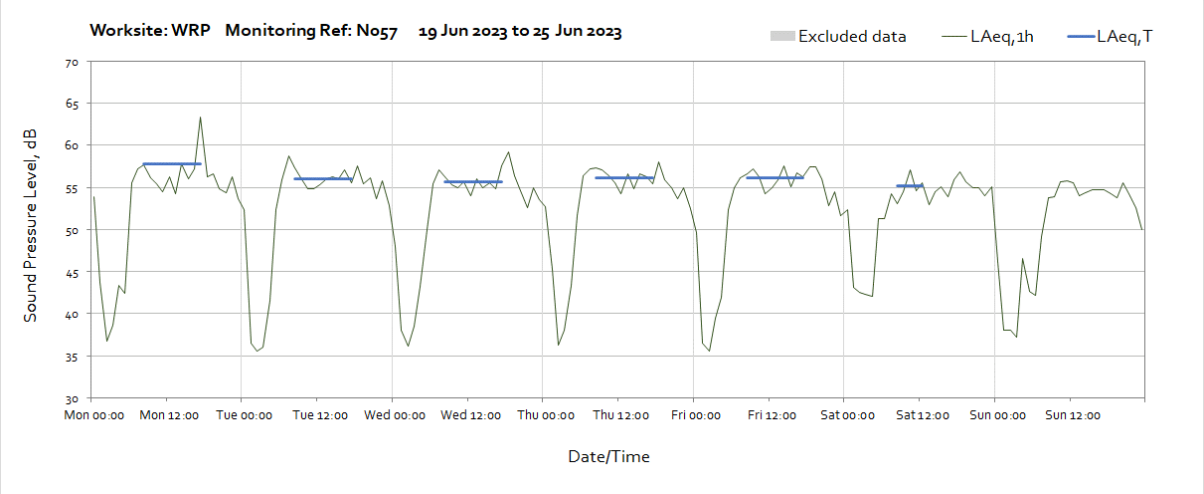
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: WRP Monitoring Ref: No57 19 Jun 2023 to 25 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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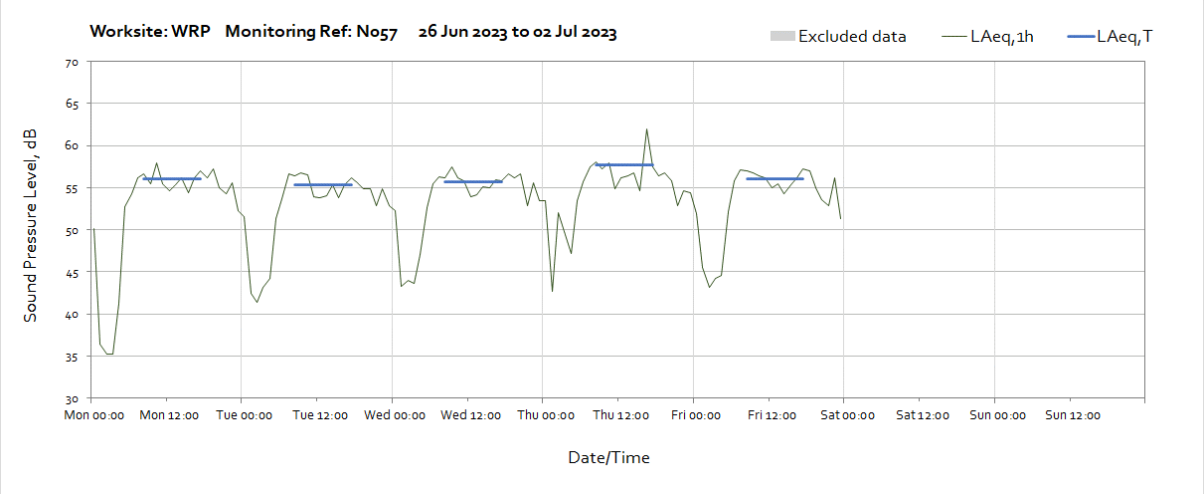
65
60
55
50
45
40
35
30
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: WRP Monitoring Ref: No57 26 Jun 2023 to 02 Jul 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
55
50
45
40
35
30
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
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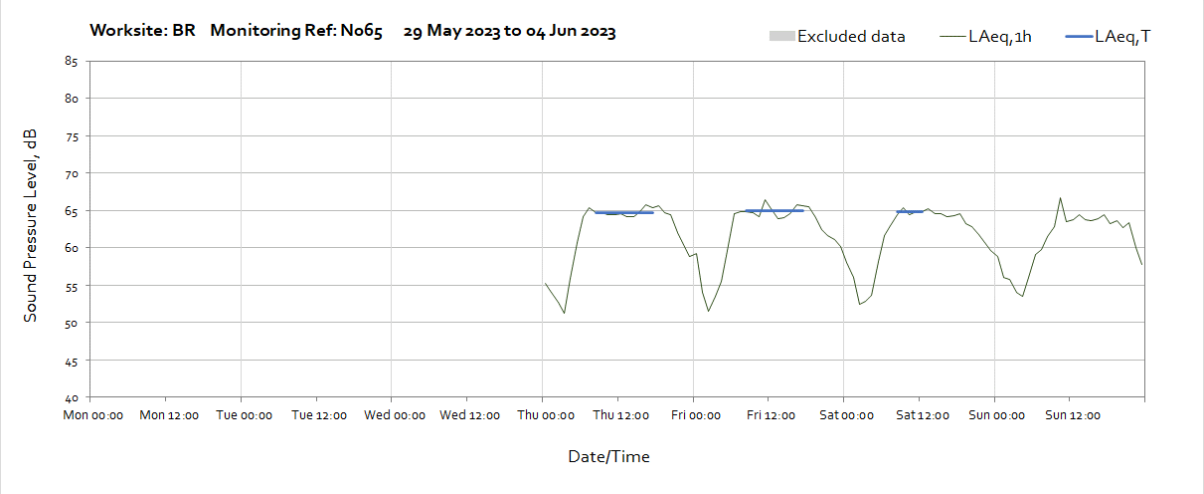
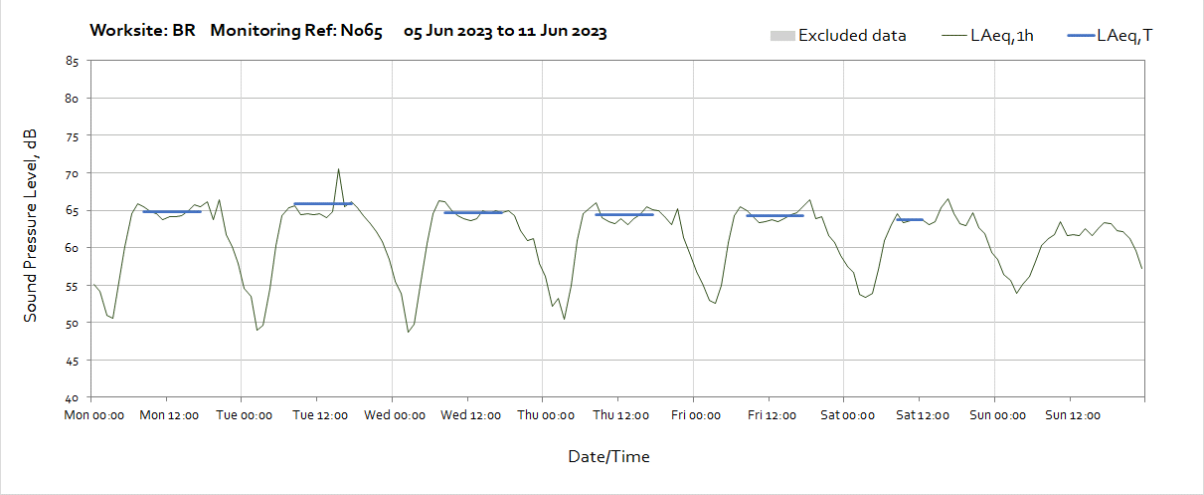
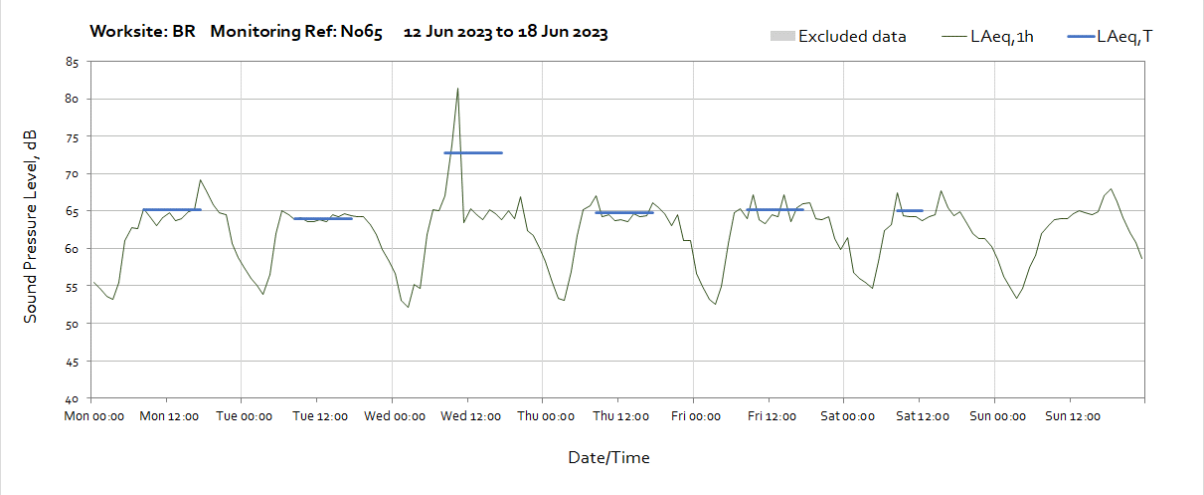
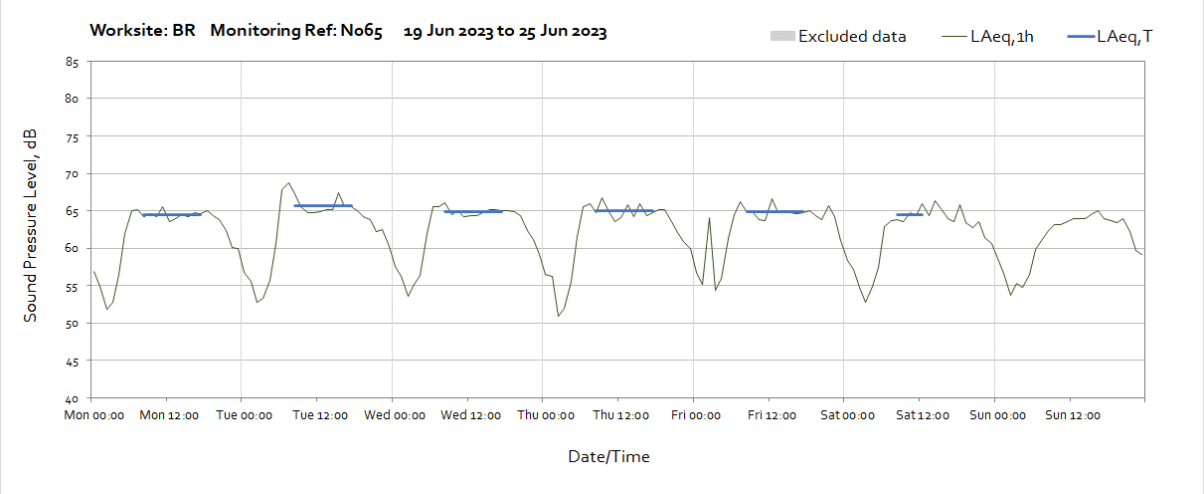
Sun 00:00
Sun 12:00
Date/Time

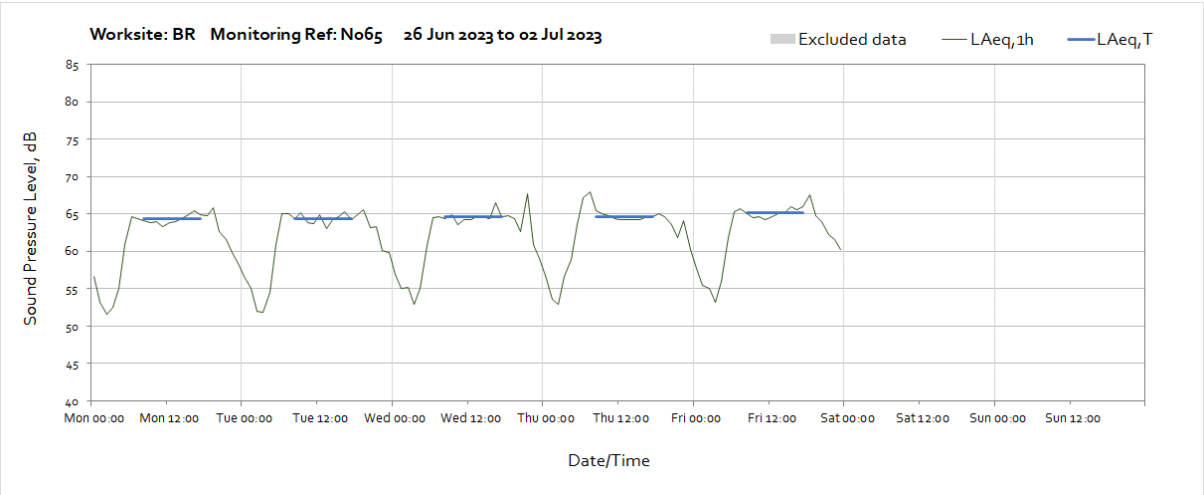
Worksite: BR – Monitoring Ref: N065



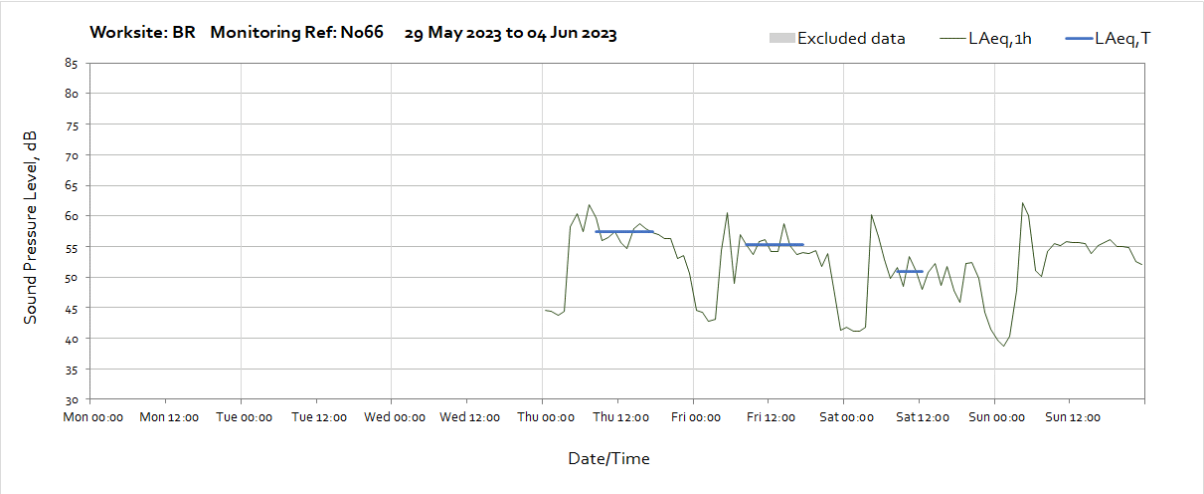


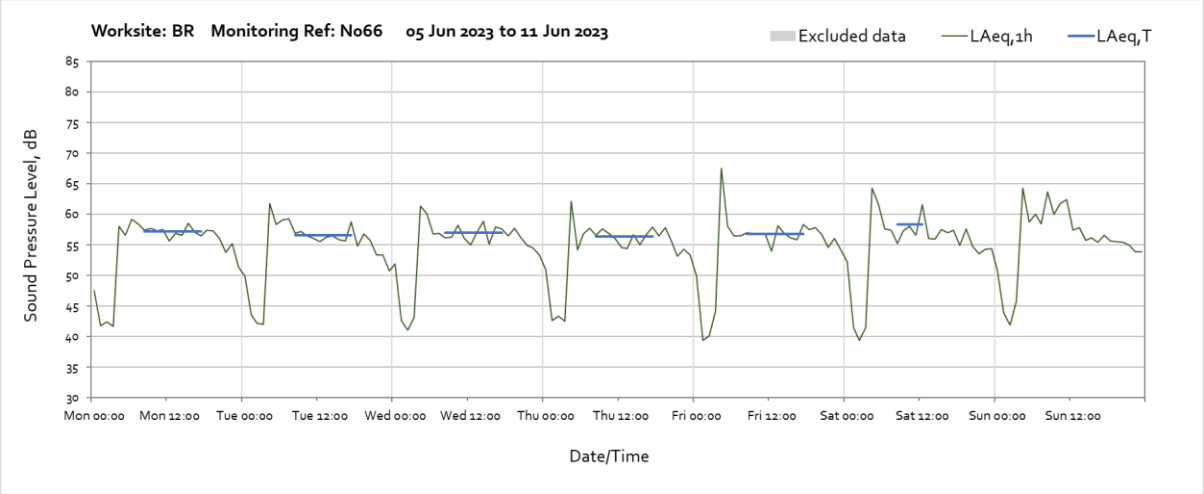






Worksite: BR – Monitoring Ref: N066




Worksite: BR Monitoring Ref: No66 05 Jun 2023 to 11 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
80
75
70
65
60
55
50
45
40
35
30
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
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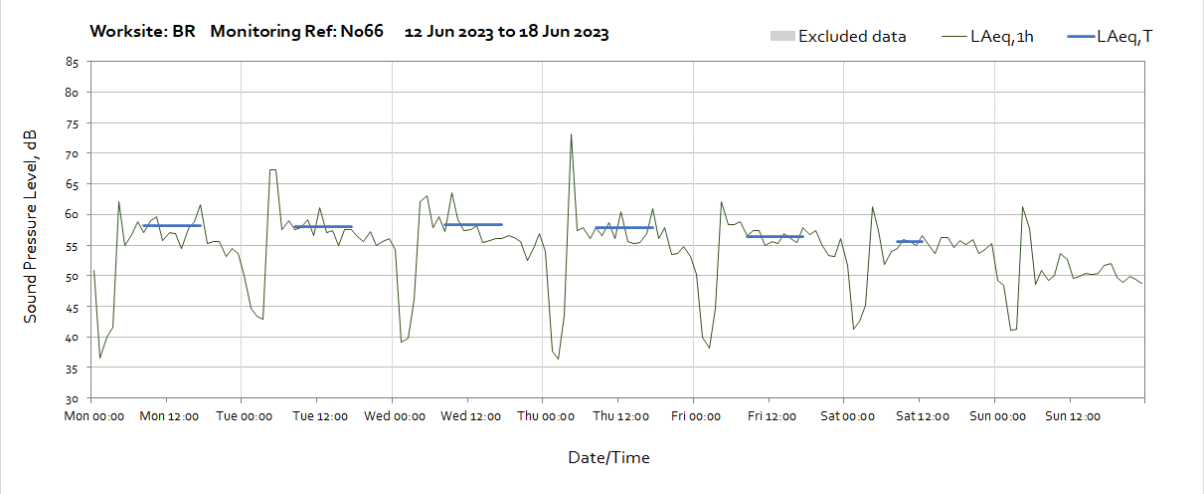
Sun 00:00
Sun 12:00
Date/Time


Worksite: BR Monitoring Ref: No66 12 Jun 2023 to 18 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
80
75
70
65
60
55
50
45
40
35
30
Mon 00:00
Mon 12:00
Tue 00:00
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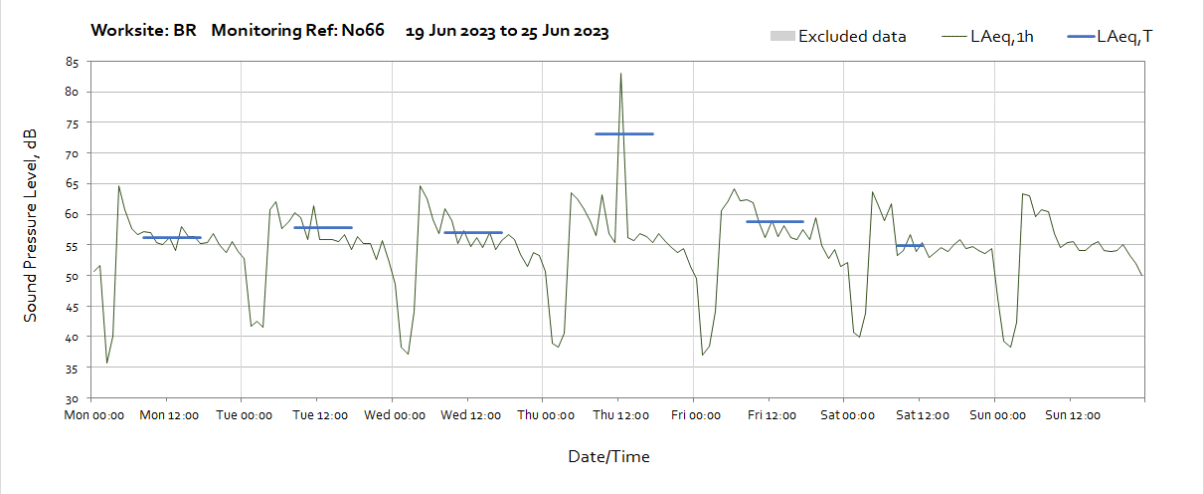
Sun 00:00
Sun 12:00
Date/Time


Worksite: BR Monitoring Ref: No66 19 Jun 2023 to 25 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
80
75
70
65
60
55
50
45
40
35
30
Mon 00:00
Mon 12:00
Tue 00:00
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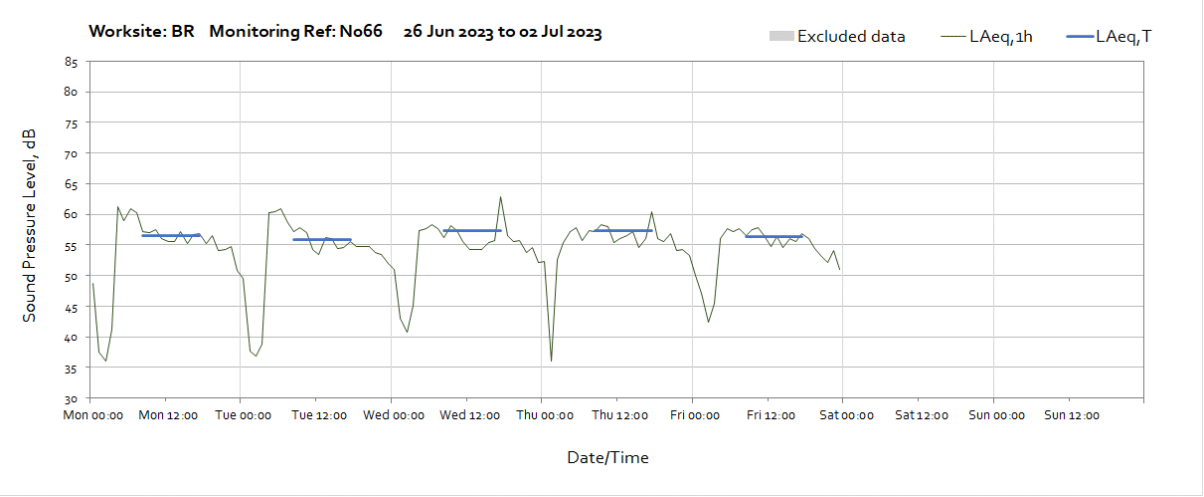
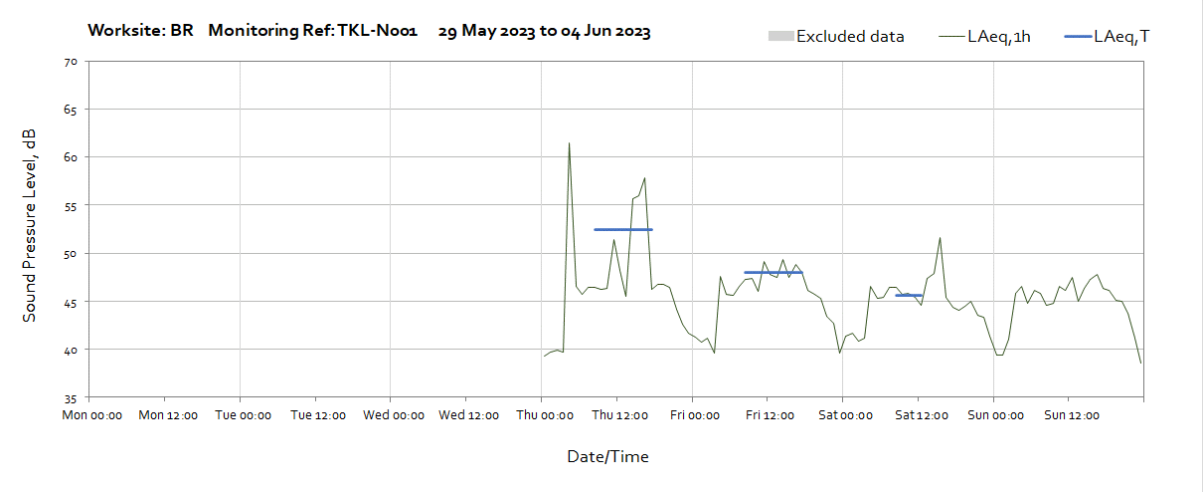
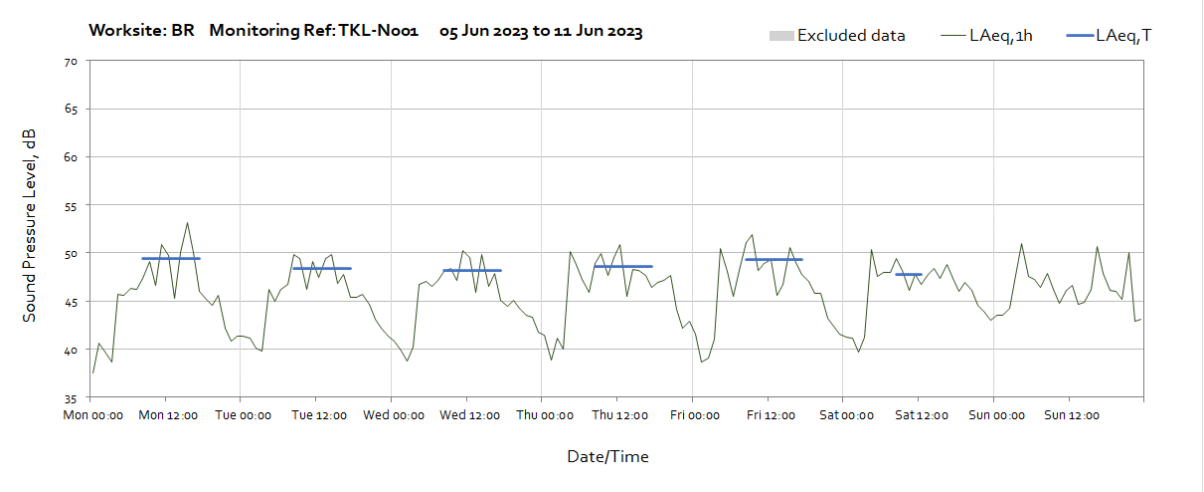
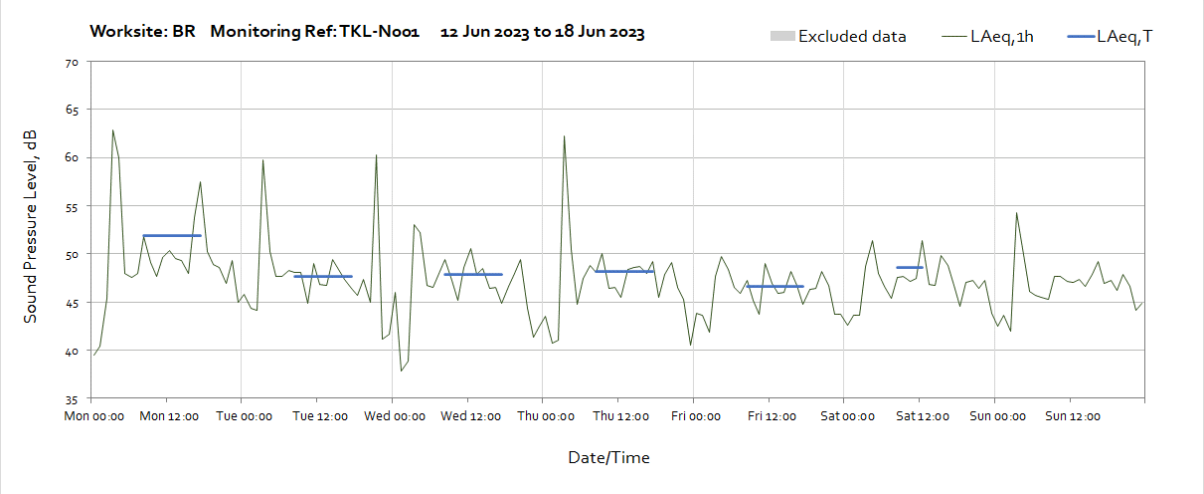
Sun 00:00
Sun 12:00
Date/Time



Worksite: BR – Monitoring Ref: TKL-N001






Worksite: BR Monitoring Ref: TKL-N001 12 Jun 2023 to 18 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
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45
40
35
Mon 00:00
Mon 12:00
Tue 00:00
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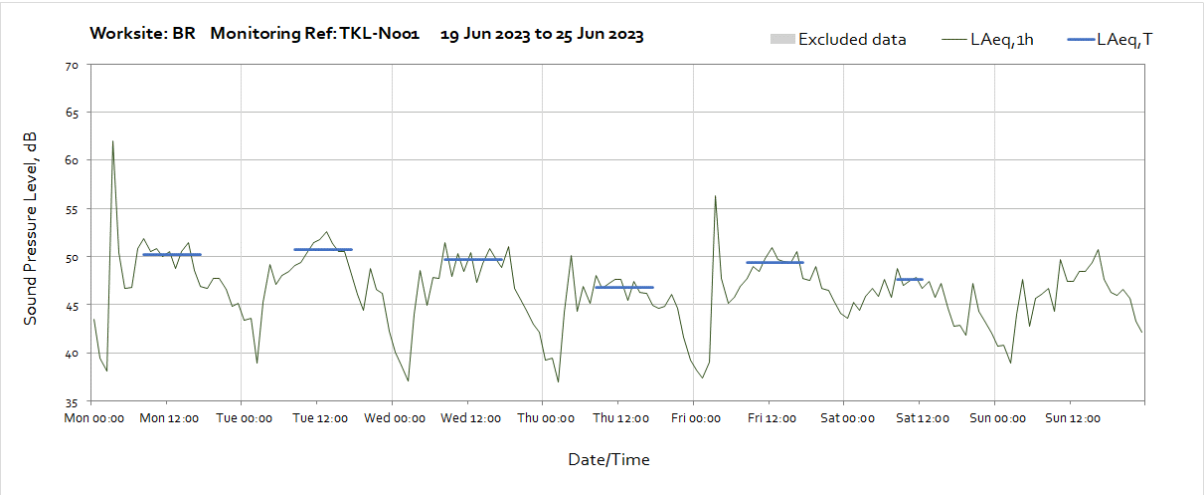
Date/Time


Worksite: BR Monitoring Ref: TKL-N001 19 Jun 2023 to 25 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
55
50
45
40
35
Mon 00:00
Mon 12:00
Tue 00:00
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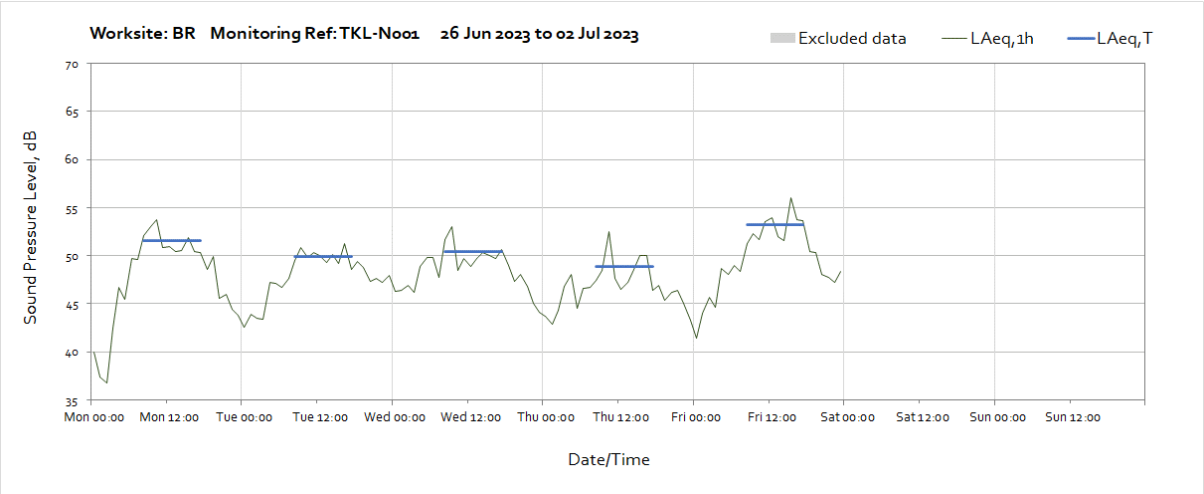
Sun 12:00
Date/Time


Worksite: BR Monitoring Ref: TKL-N001 26 Jun 2023 to 02 Jul 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
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50
45
40
35
Mon 00:00
Mon 12:00
Tue 00:00
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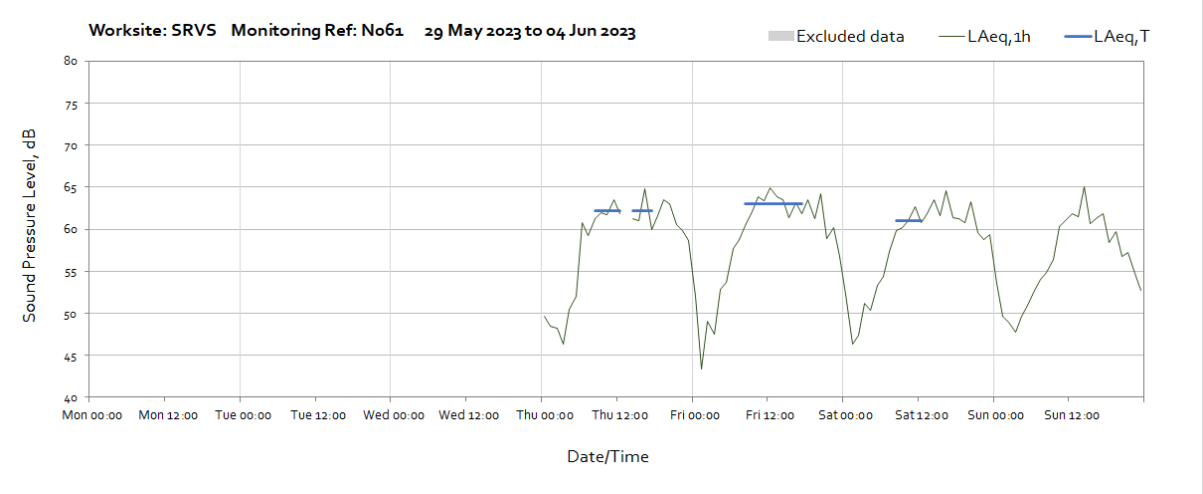
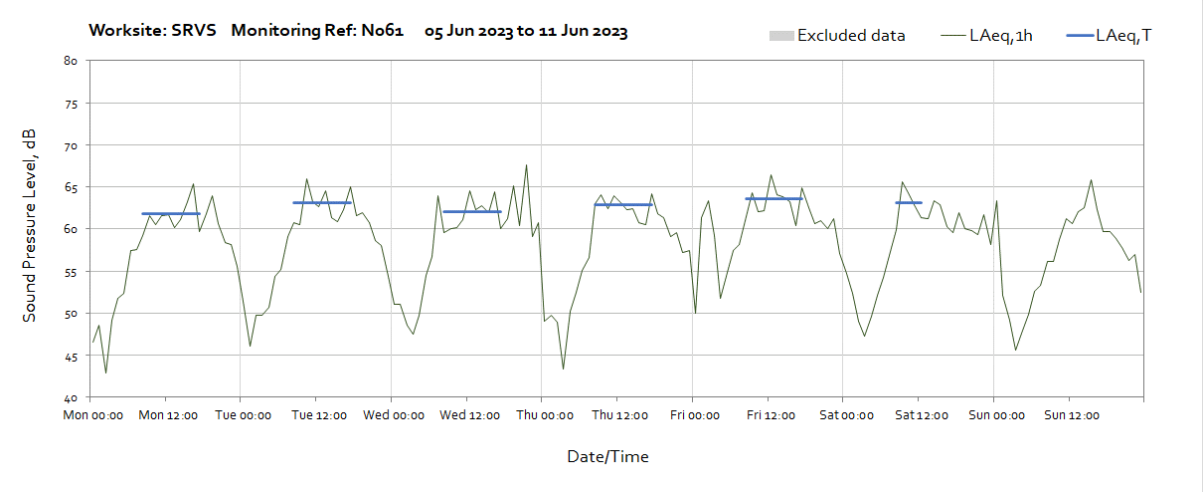
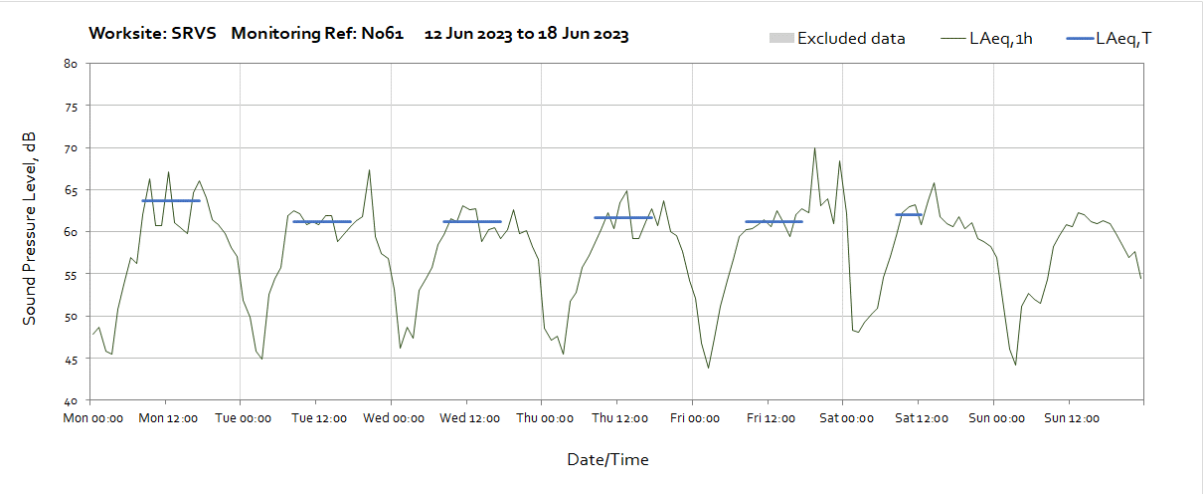
Sun 12:00
Date/Time

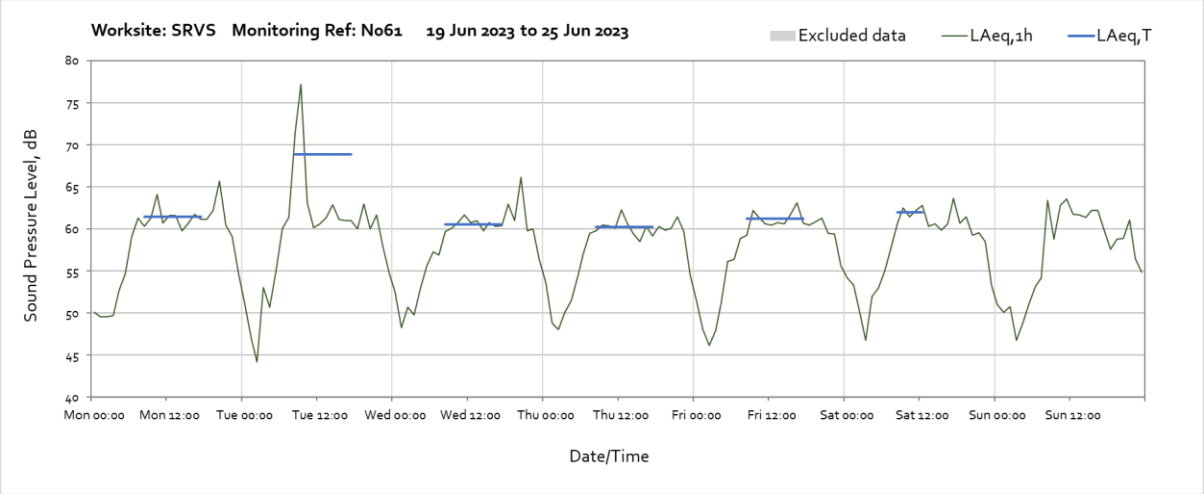
Worksite: SRVS – Monitoring Ref: N061

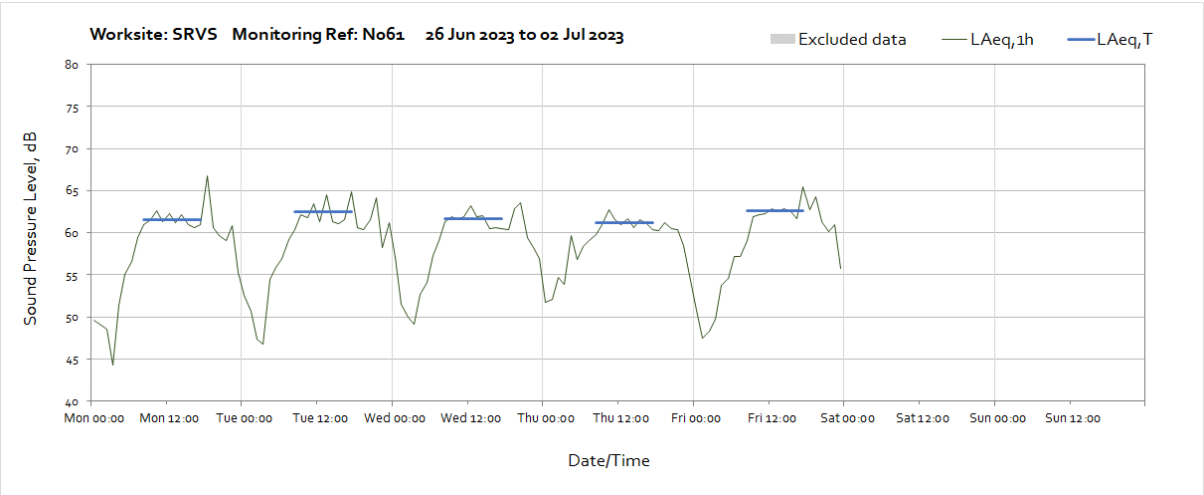


Note: Missing data between 13:00 and 14:00 on Thursday 1st June was due to monitor being paused for regular maintenance.

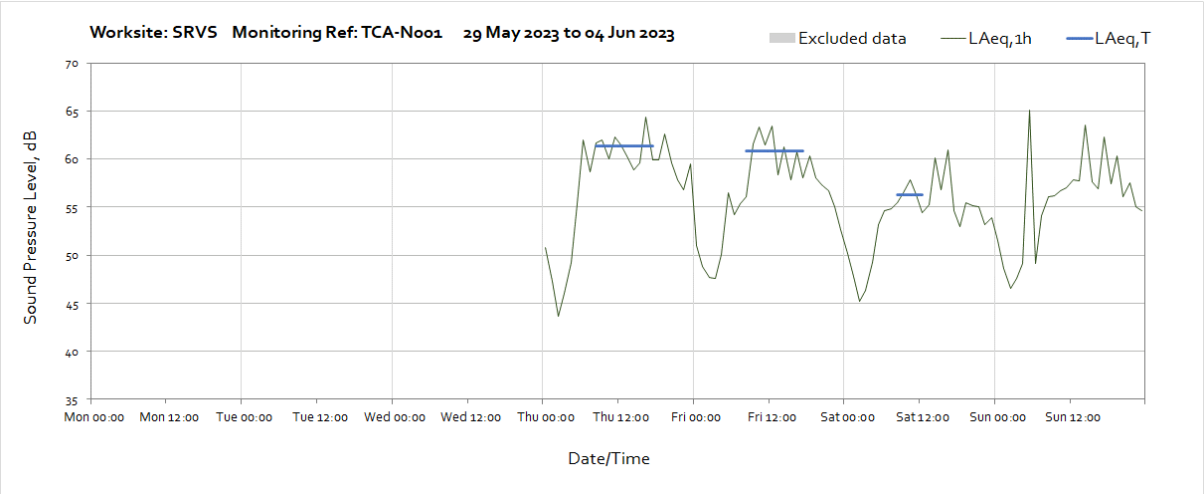


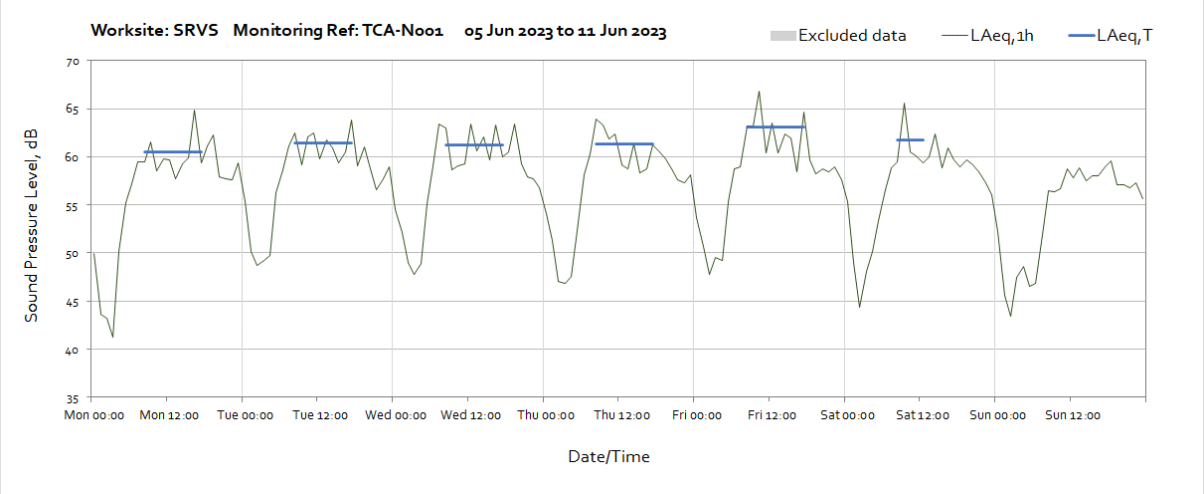






Worksite: SRVS – Monitoring Ref: TCA-N001




Worksite: SRVS Monitoring Ref: TCA-N001 05 Jun 2023 to 11 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
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50
45
40
35
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
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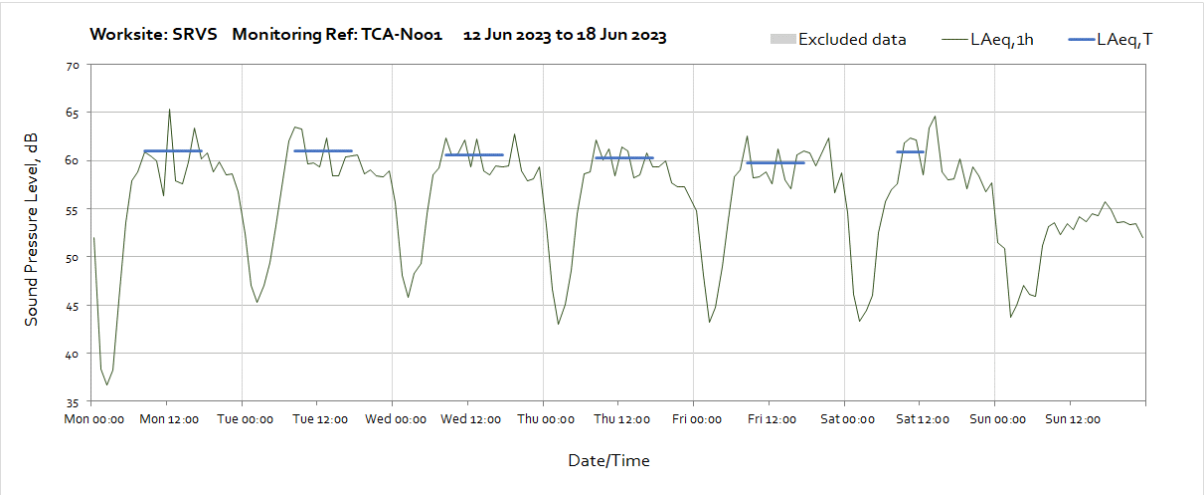
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: SRVS Monitoring Ref: TCA-N001 12 Jun 2023 to 18 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
55
50
45
40
35
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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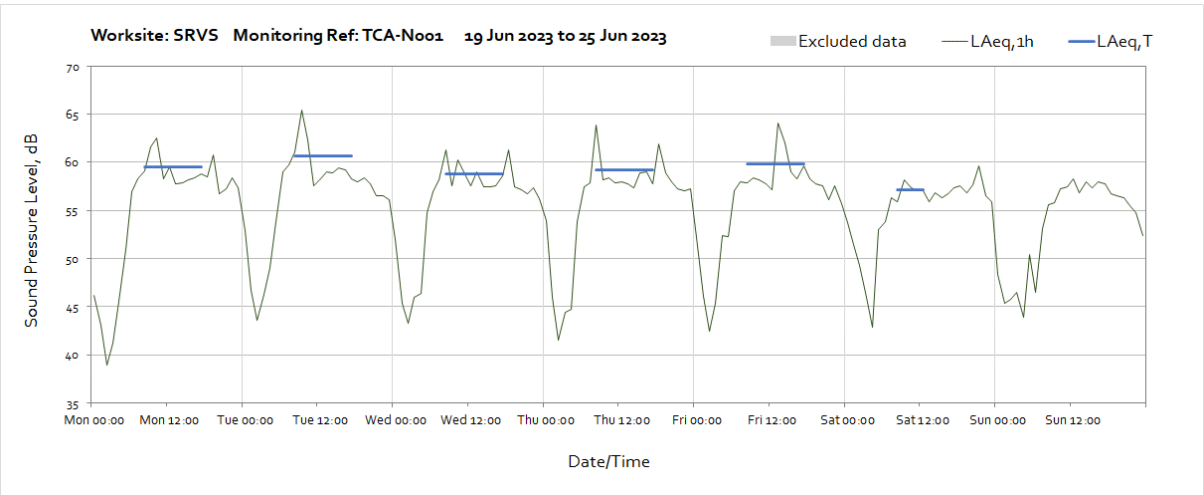
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: SRVS Monitoring Ref: TCA-N001 19 Jun 2023 to 25 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
55
50
45
40
35
Mon 00:00
Mon 12:00
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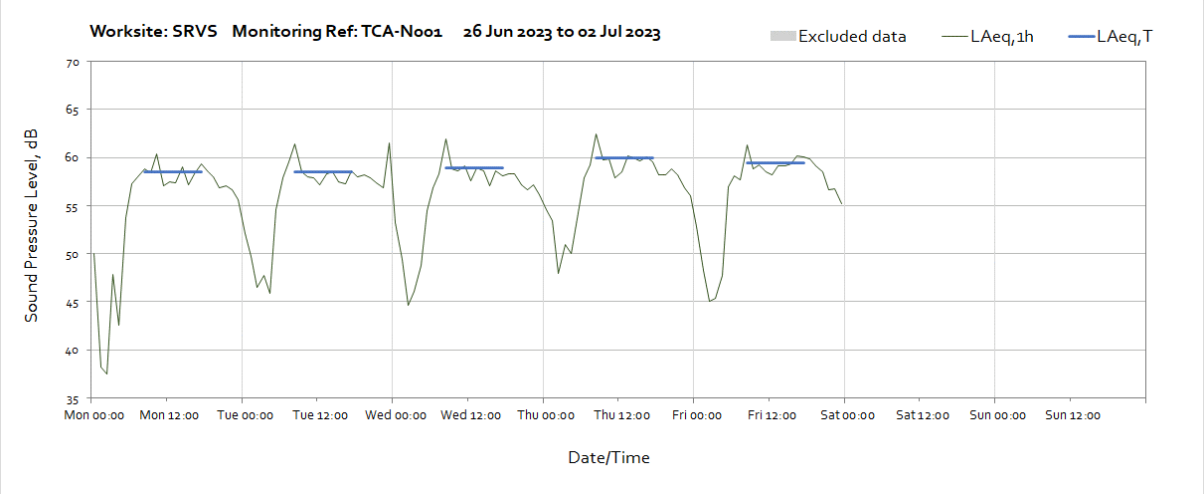
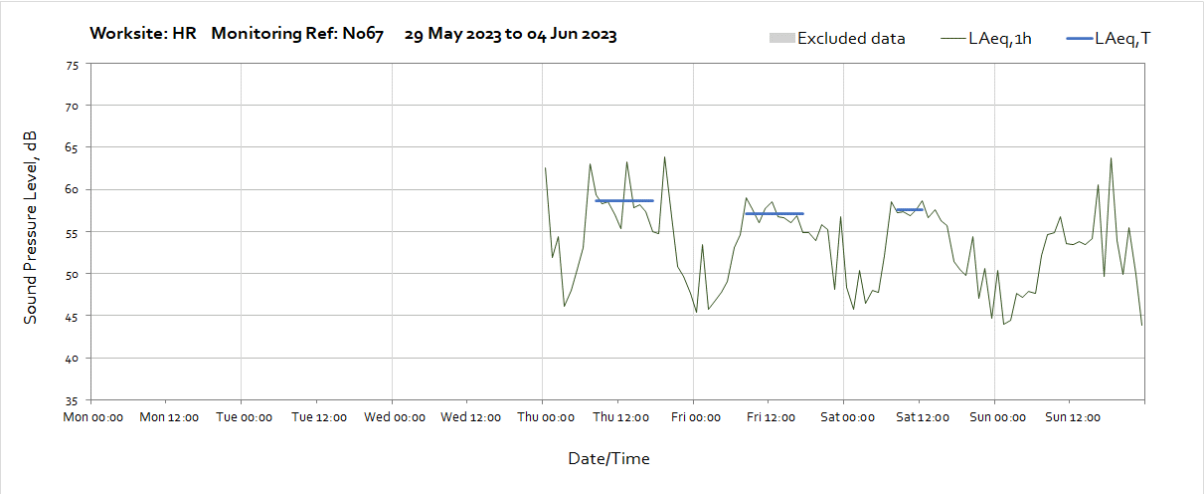
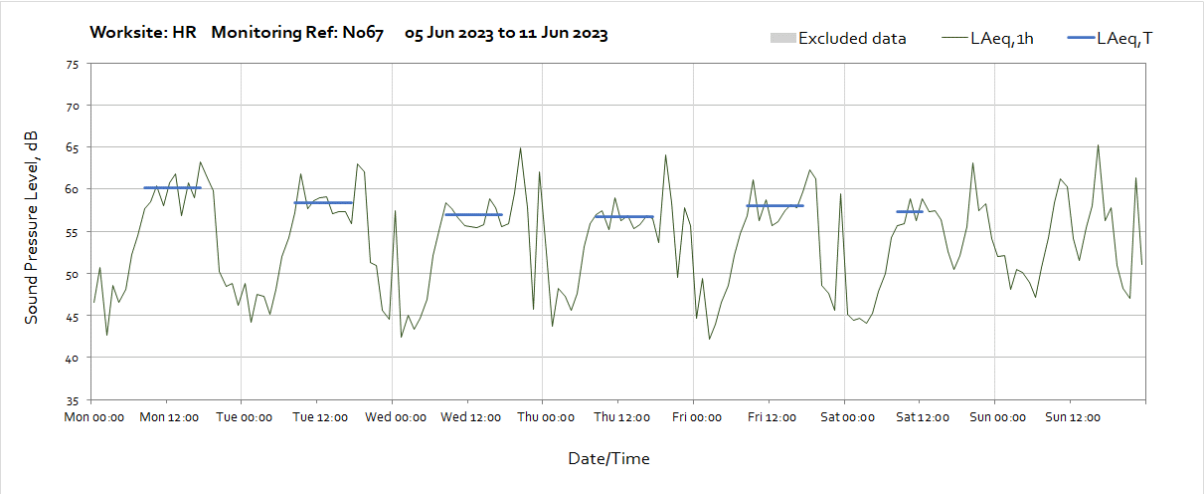
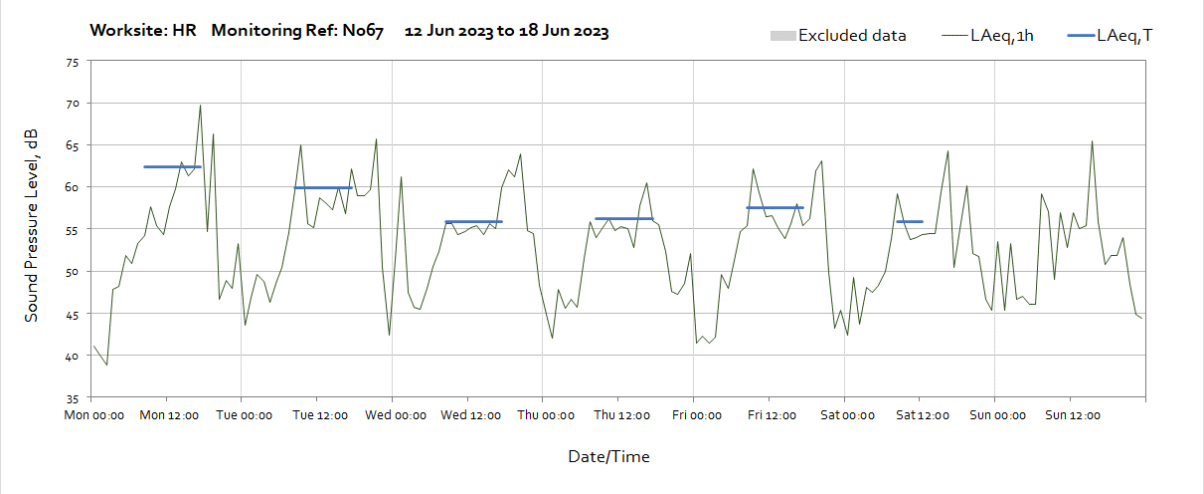
Sun 00:00
Sun 12:00
Date/Time



Worksite: HR – Monitoring Ref: N067






Worksite: HR Monitoring Ref: No67 12 Jun 2023 to 18 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
65
60
55
50
45
40
35
Mon 00:00
Mon 12:00
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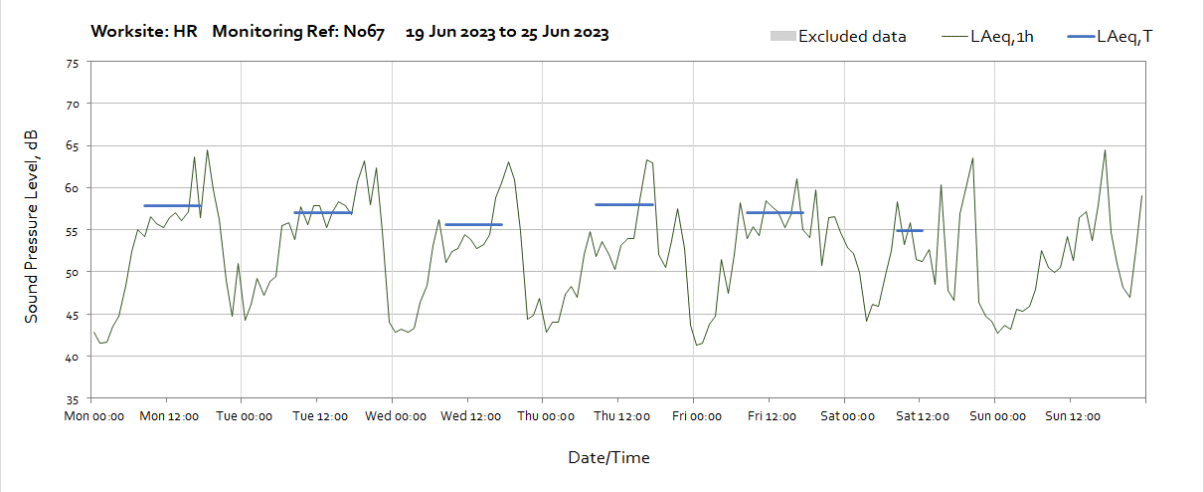
Date/Time


Worksite: HR Monitoring Ref: No67 19 Jun 2023 to 25 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
65
60
55
50
45
40
35
Mon 00:00
Mon 12:00
Tue 00:00
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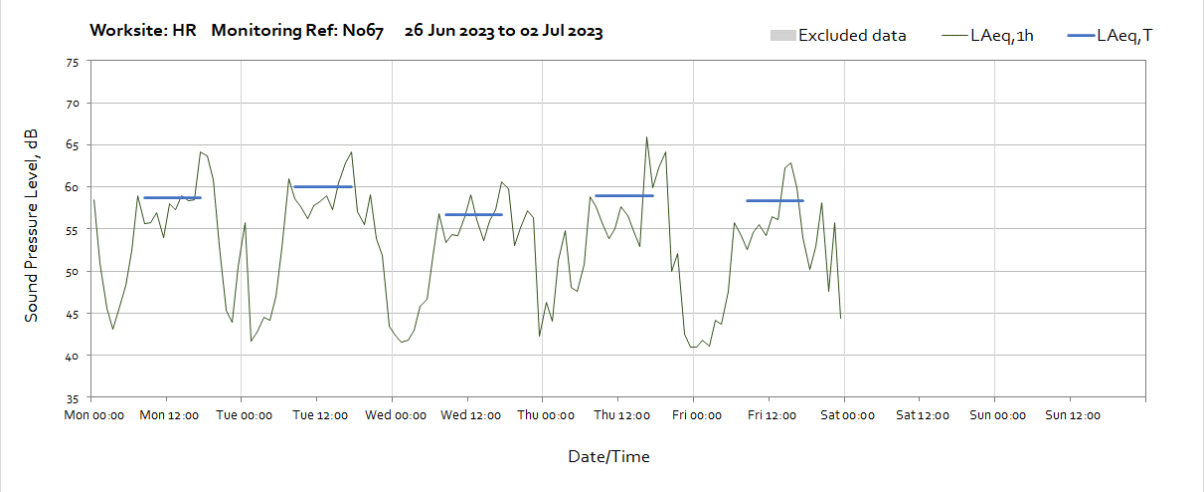
Sun 12:00
Date/Time


Worksite: HR Monitoring Ref: No67 26 Jun 2023 to 02 Jul 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
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60
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50
45
40
35
Mon 00:00
Mon 12:00
Tue 00:00
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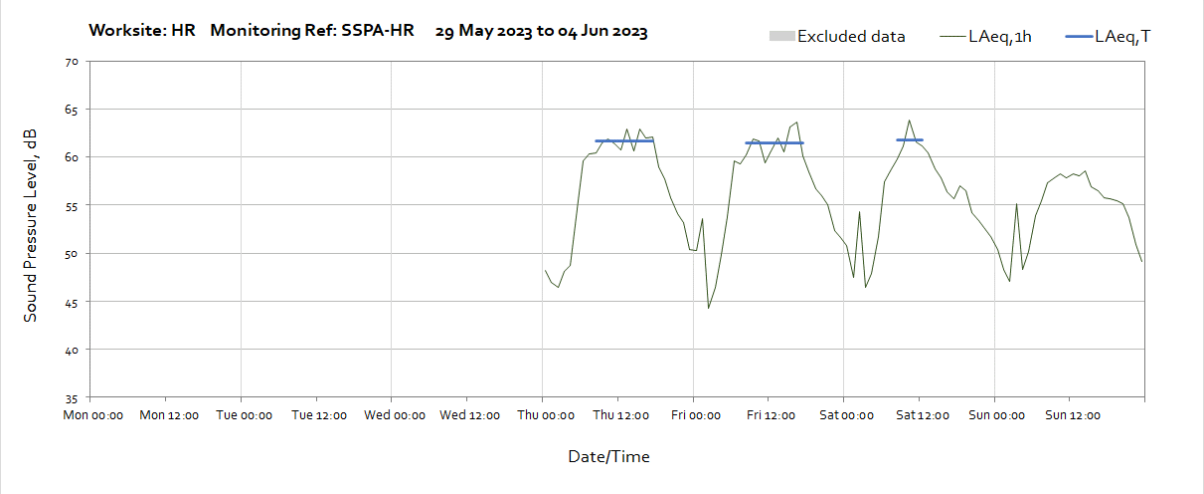
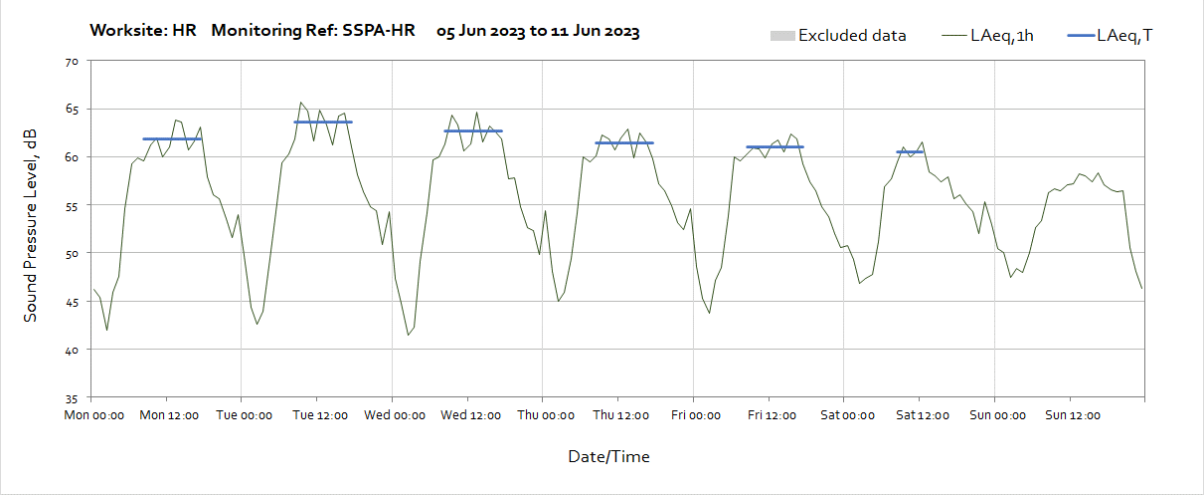
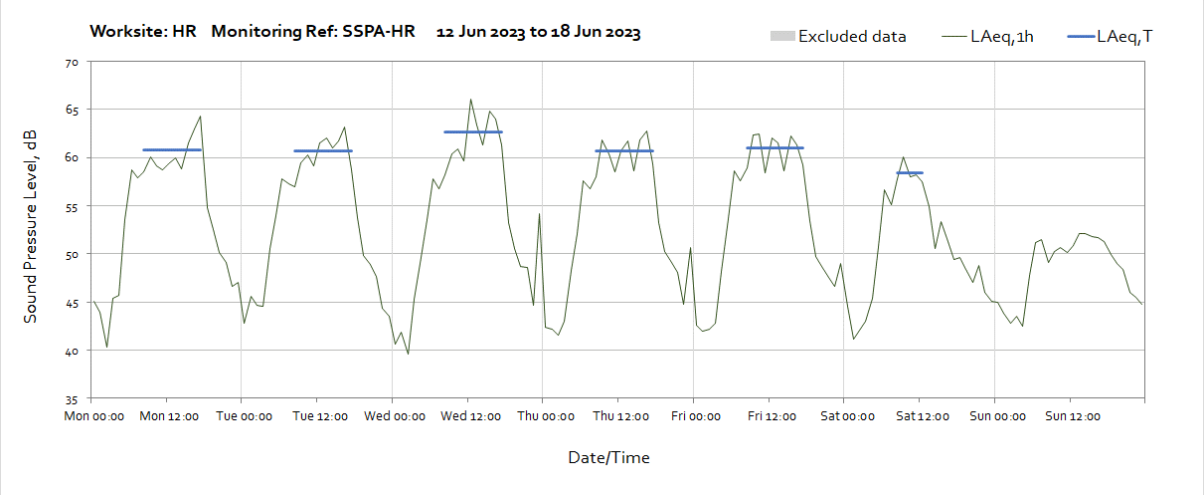
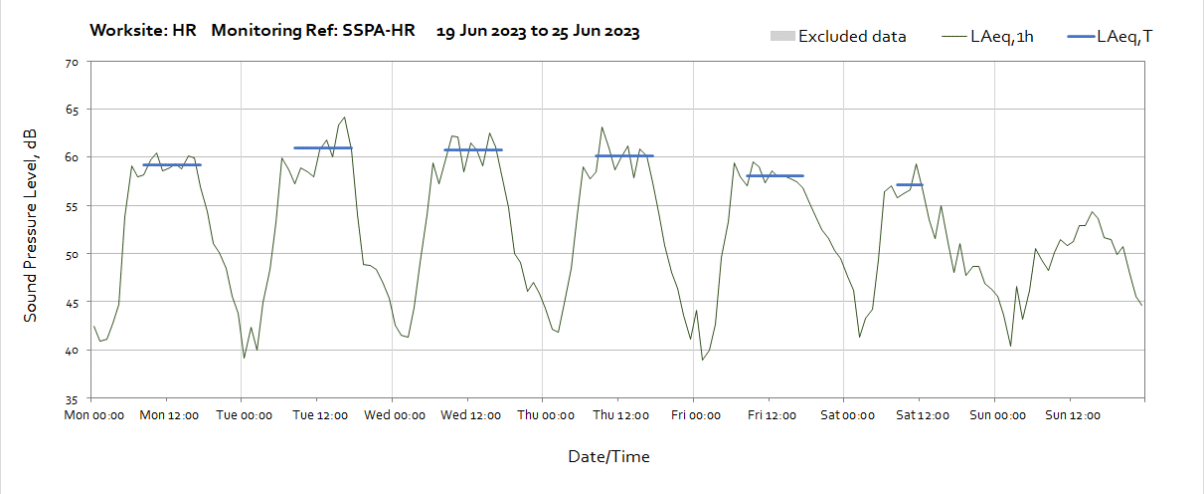
Sun 12:00
Date/Time

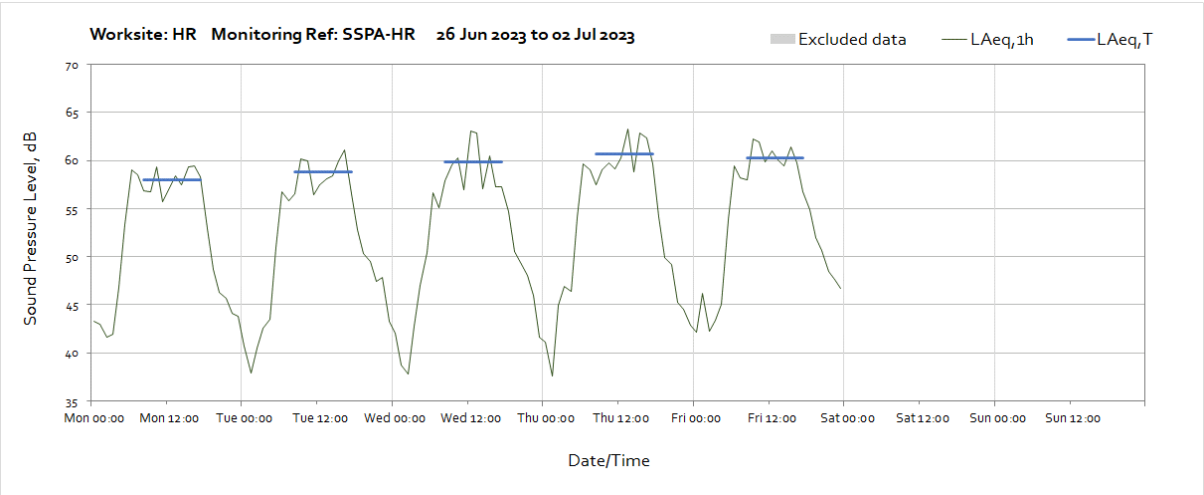
Worksite: HR – Monitoring Ref: SSPA-HR



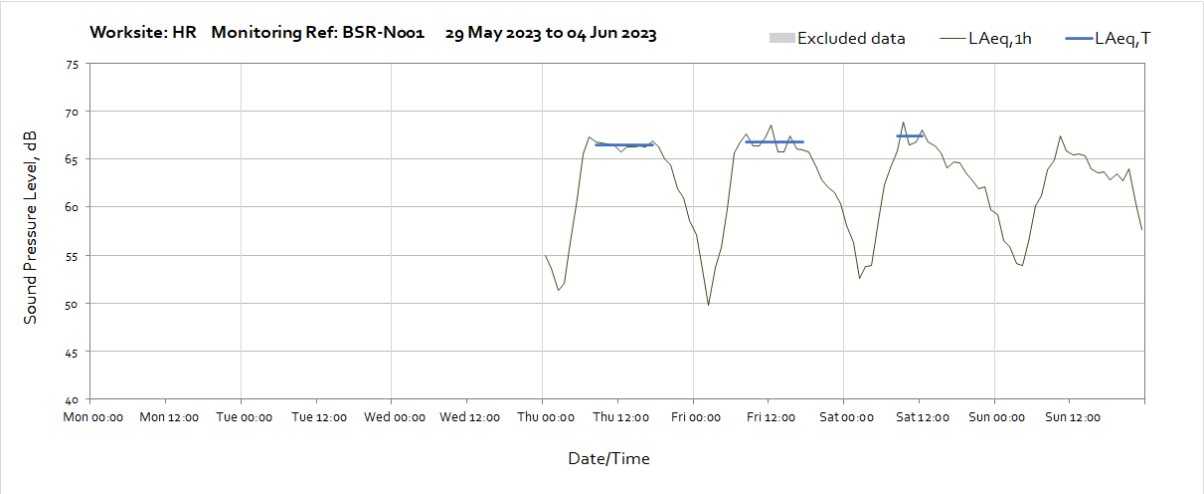


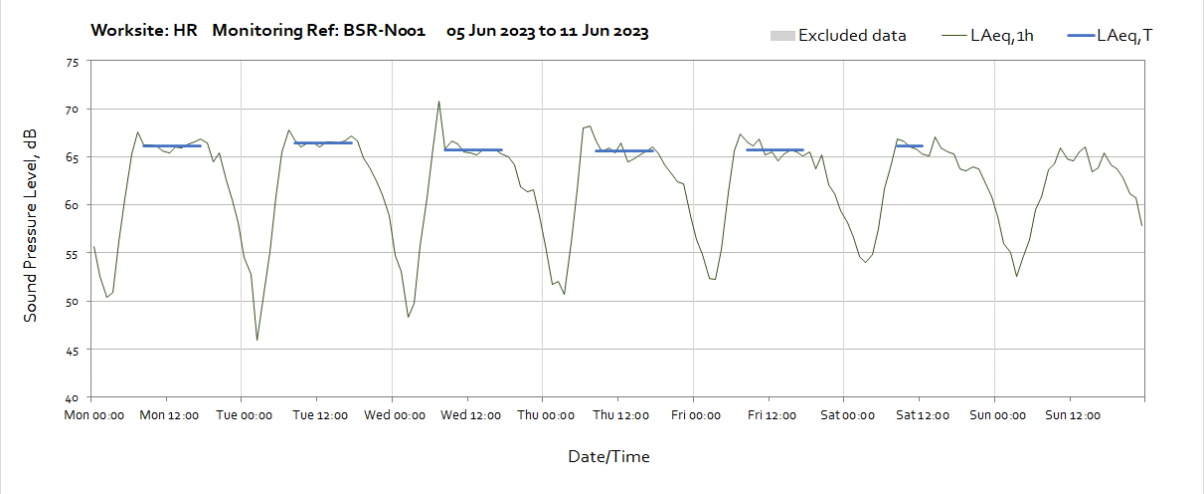






Worksite: HR – Monitoring Ref: BSR-N001




Worksite: HR Monitoring Ref: BSR-N001 05 Jun 2023 to 11 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
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60
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45
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Mon 00:00
Mon 12:00
Tue 00:00
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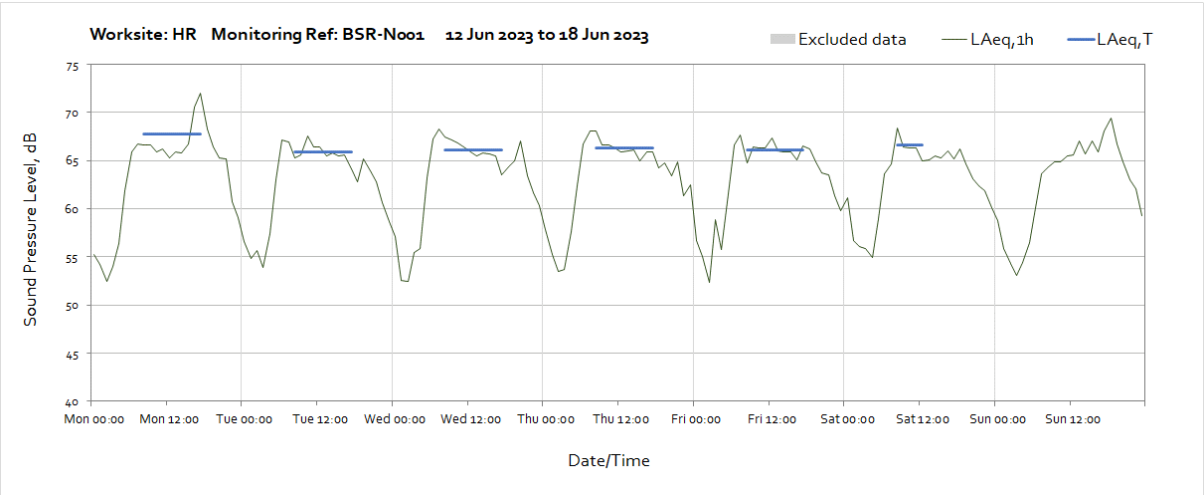
Sun 12:00
Date/Time


Worksite: HR Monitoring Ref: BSR-N001 12 Jun 2023 to 18 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
65
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55
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Mon 00:00
Mon 12:00
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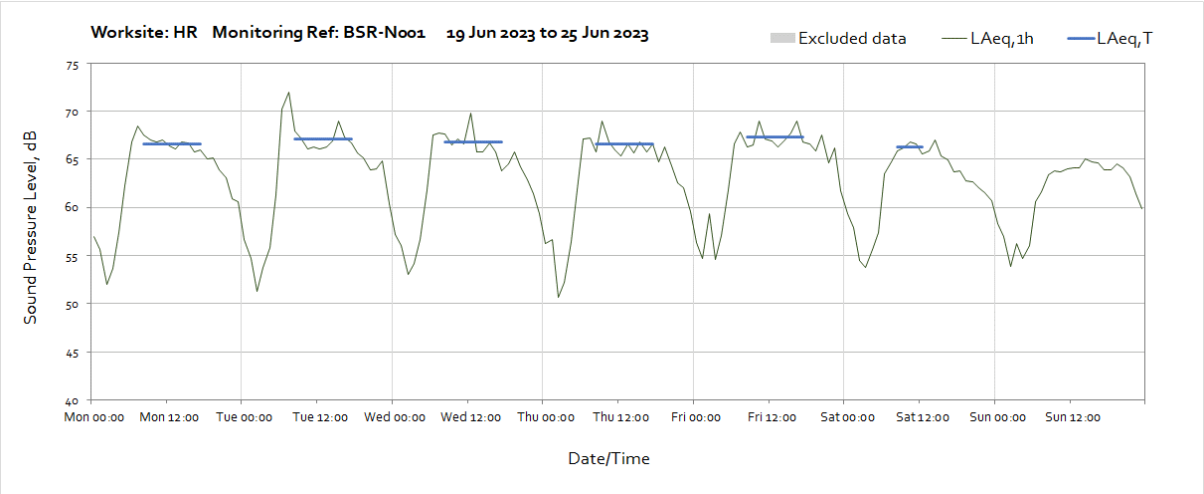
Date/Time


Worksite: HR Monitoring Ref: BSR-N001 19 Jun 2023 to 25 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
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60
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Mon 00:00
Mon 12:00
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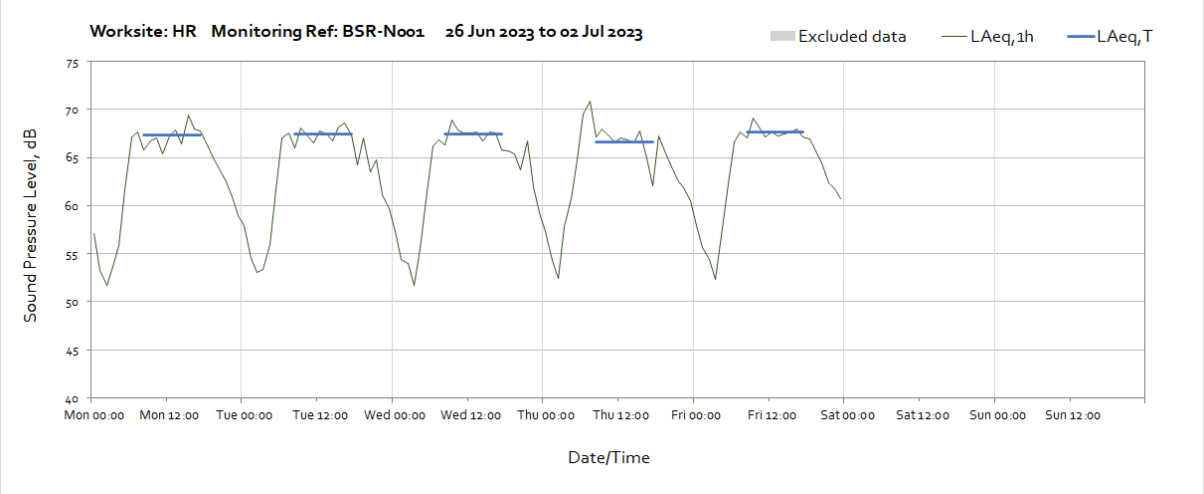
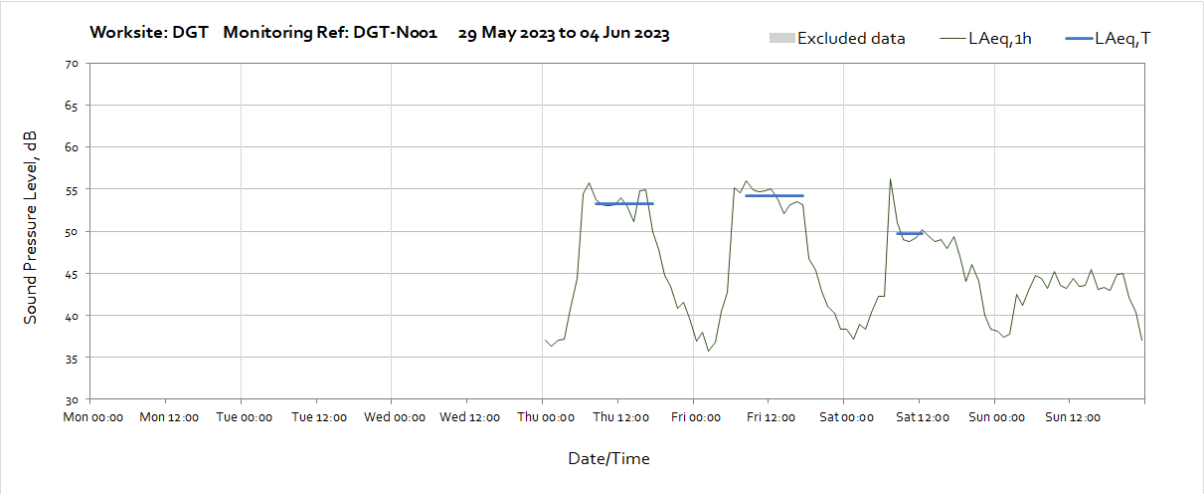
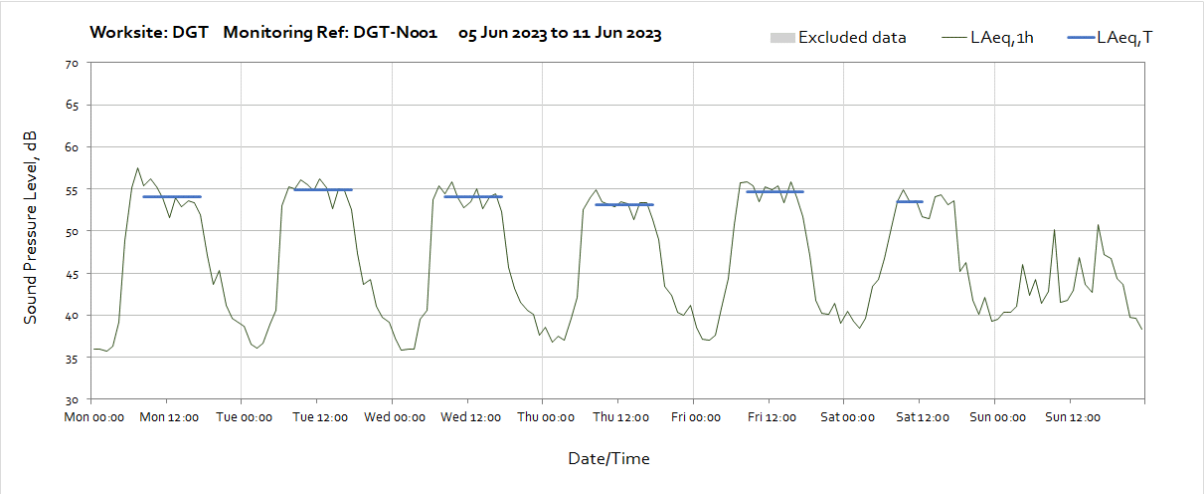
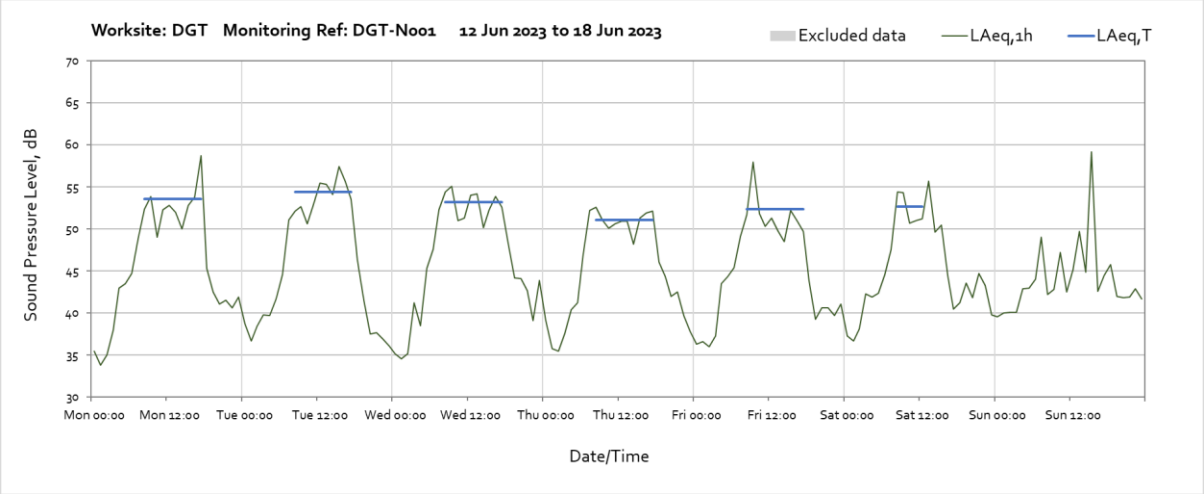
Date/Time

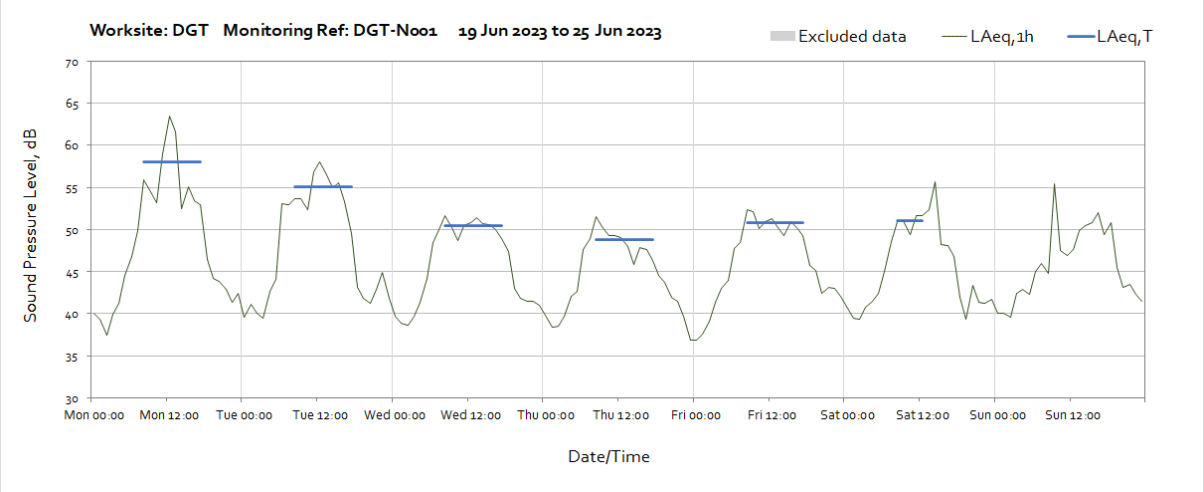


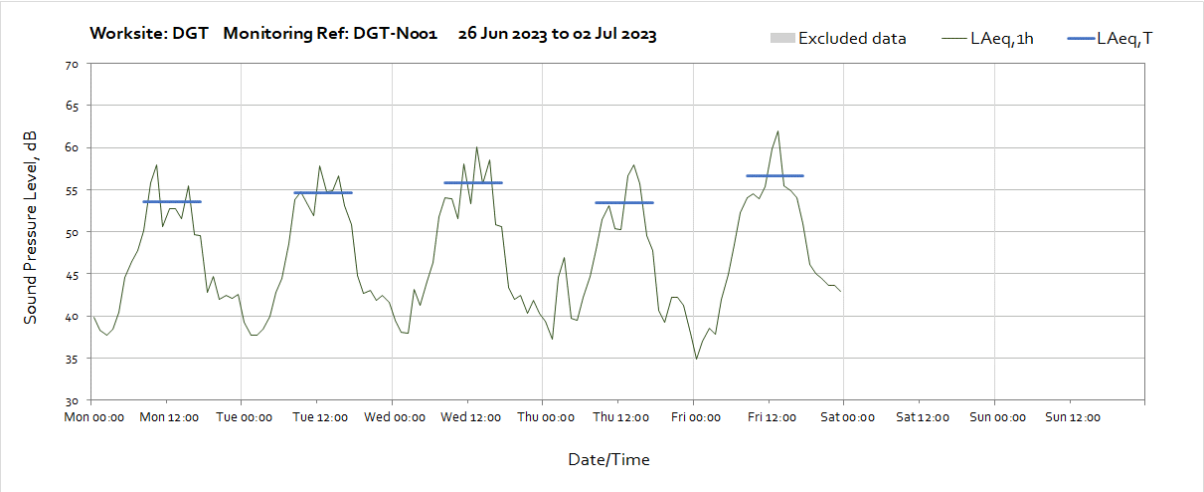
Worksite: HR – Monitoring Ref: DGT-N001



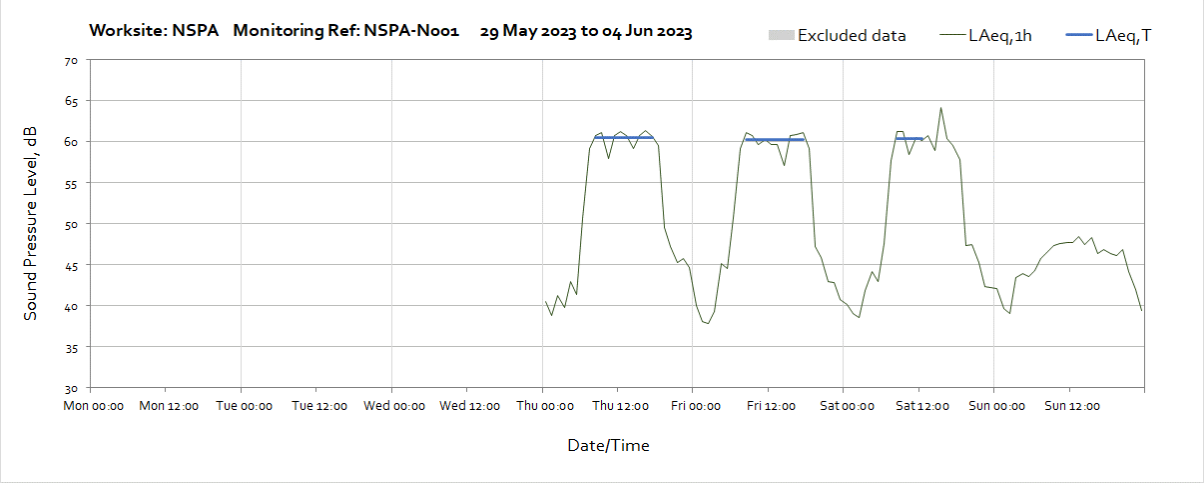


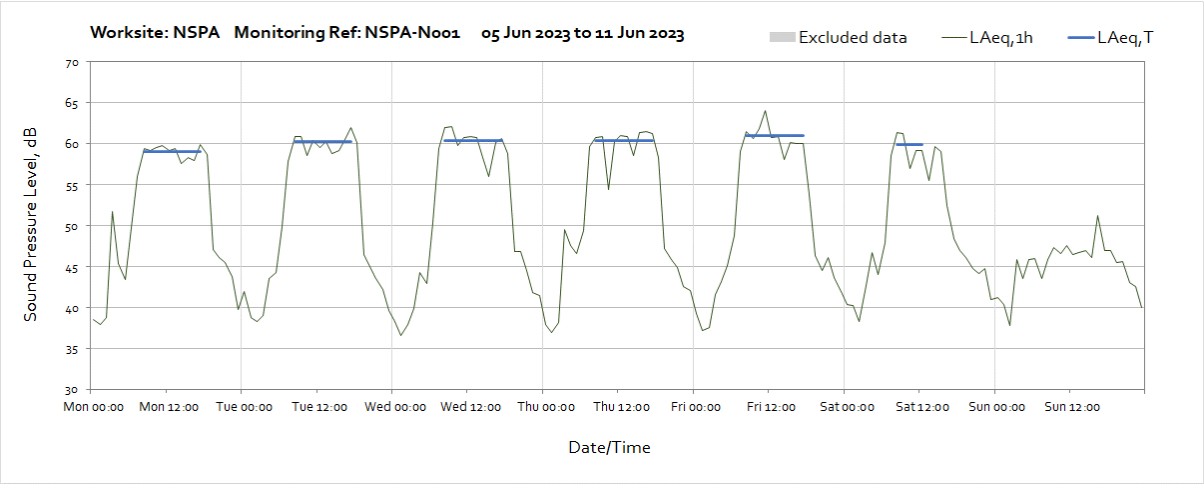

Worksite: DGT Monitoring Ref: DGT-N001 12 Jun 2023 to 18 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
55
50
45
40
35
30
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

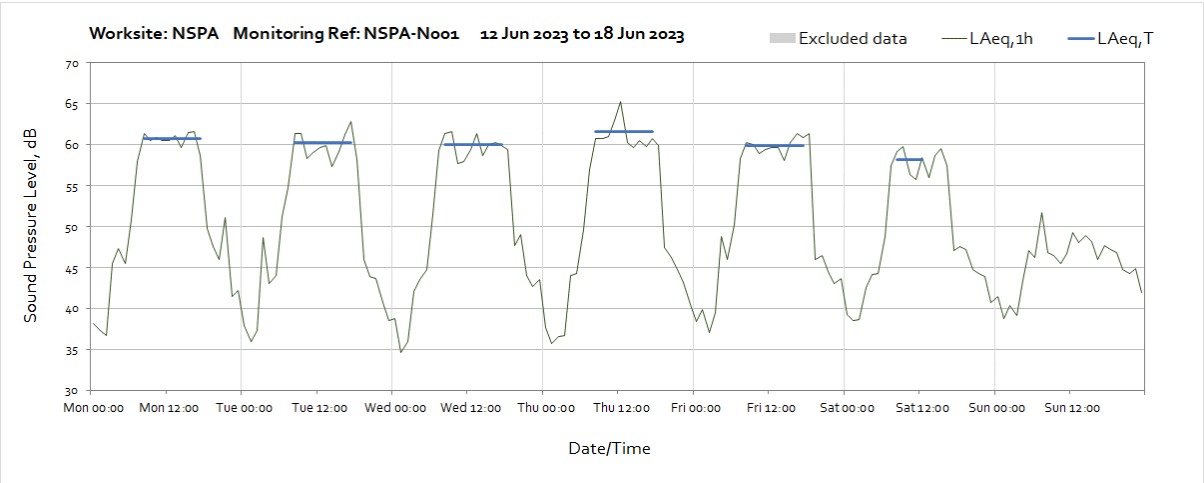

Worksite: DGT Monitoring Ref: DGT-N001 19 Jun 2023 to 25 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
55
50
45
40
35
30
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

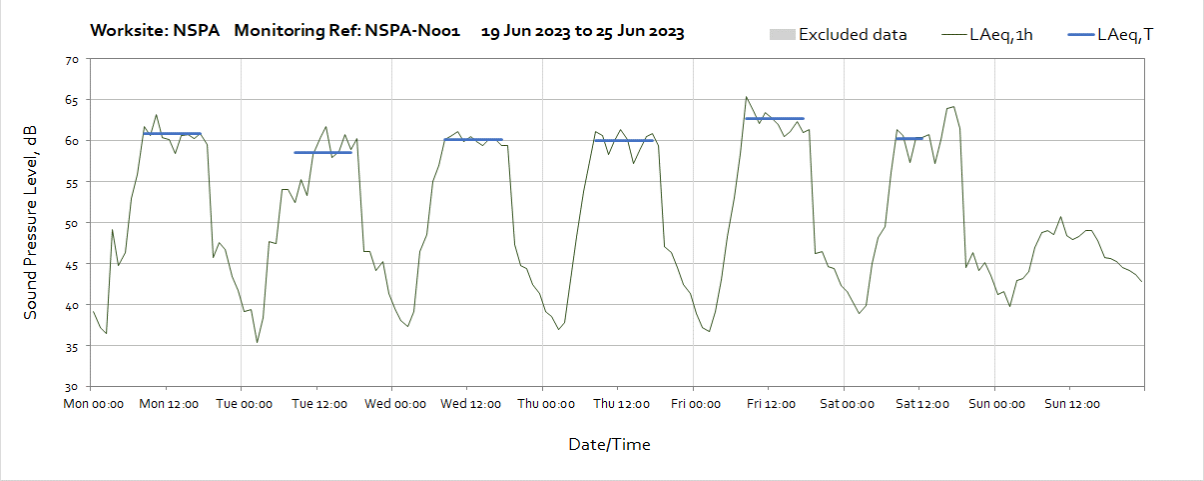

Worksite: DGT Monitoring Ref: DGT-N001 26 Jun 2023 to 02 Jul 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
55
50
45
40
35
30
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

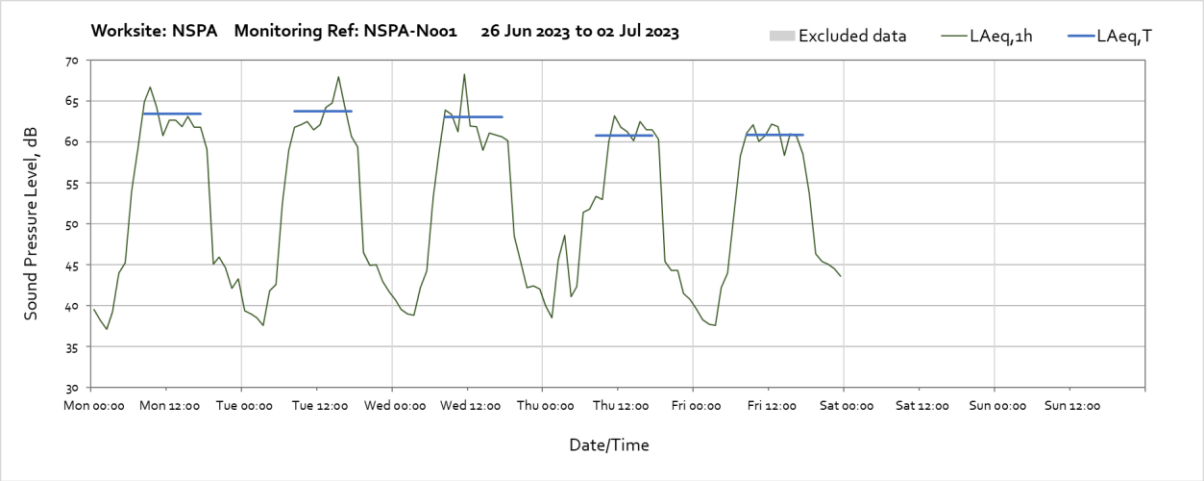
Worksite: NSPA – Monitoring Ref: NSPA-N001



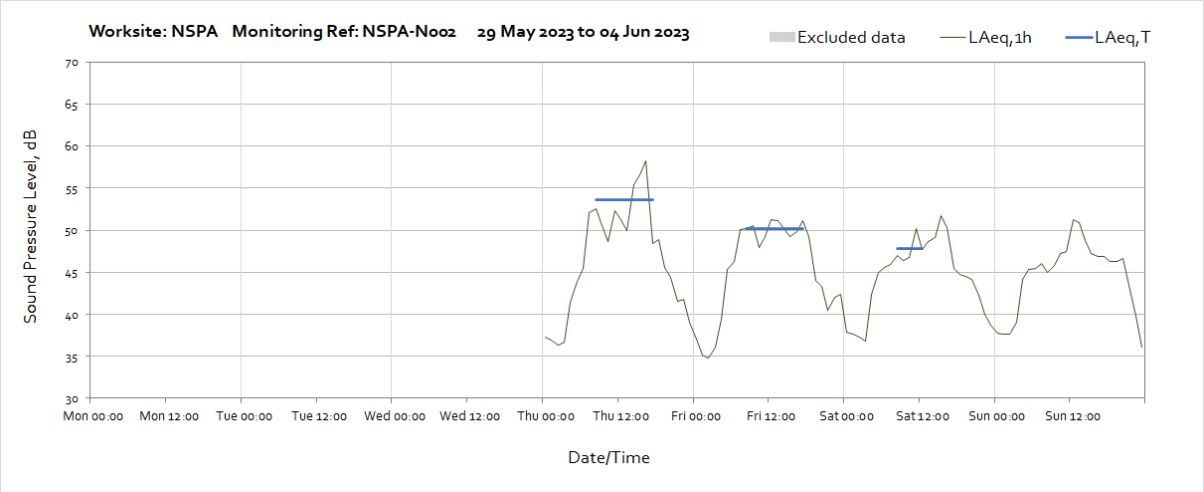


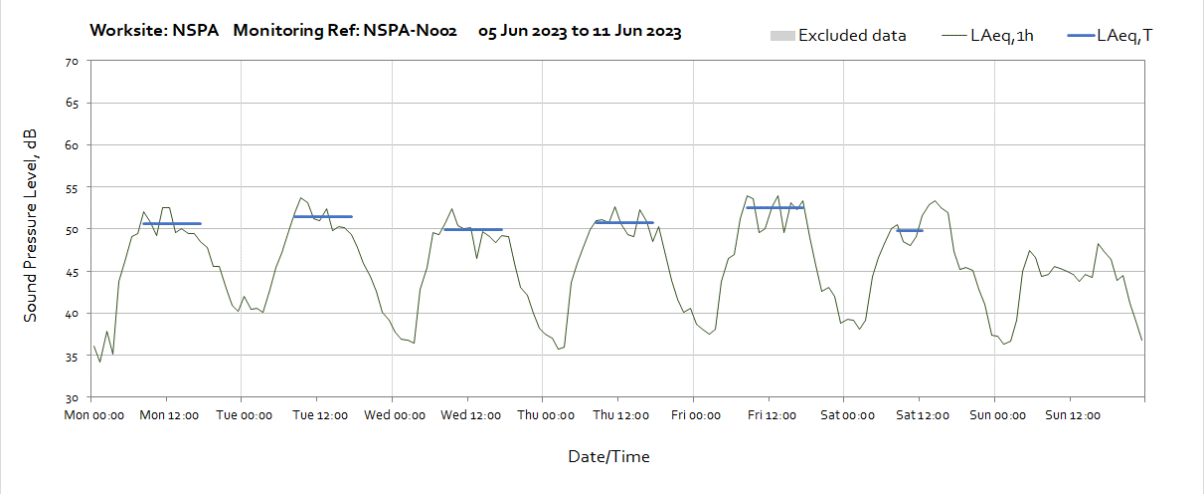


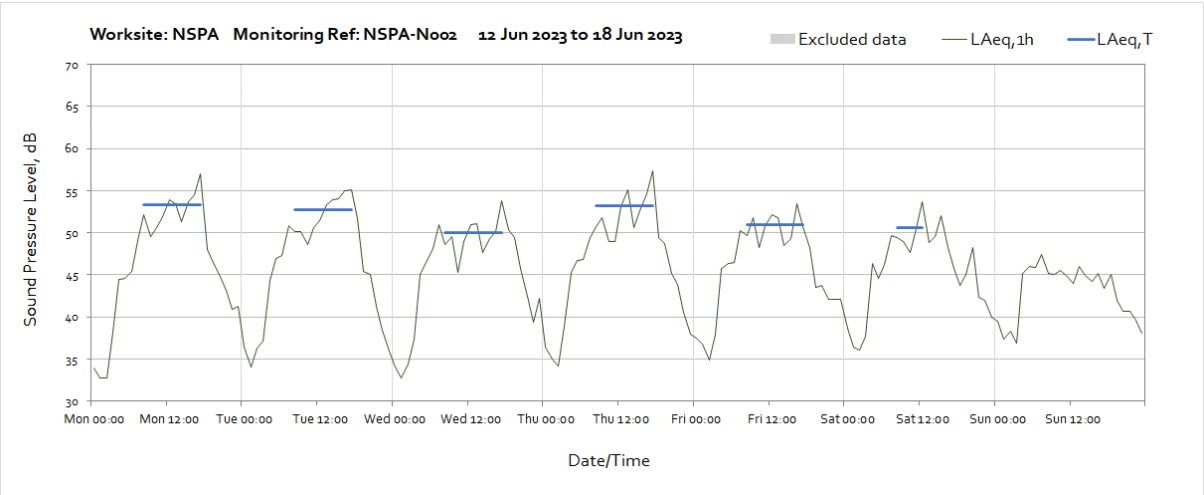




Worksite: NSPA – Monitoring Ref: NSPA-N002




Worksite: NSPA Monitoring Ref: NSPA-N002 05 Jun 2023 to 11 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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


Worksite: NSPA Monitoring Ref: NSPA-N002 12 Jun 2023 to 18 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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
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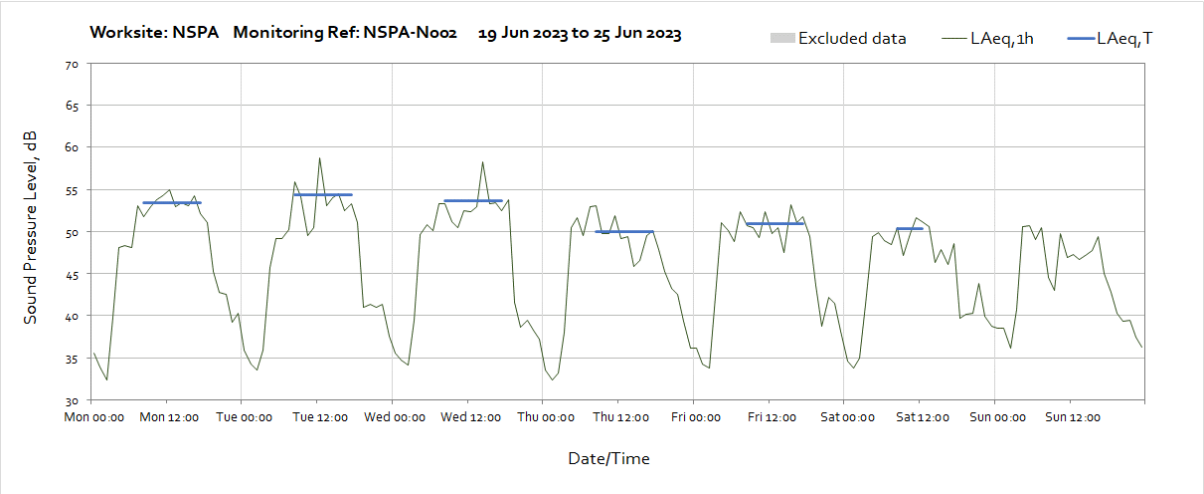
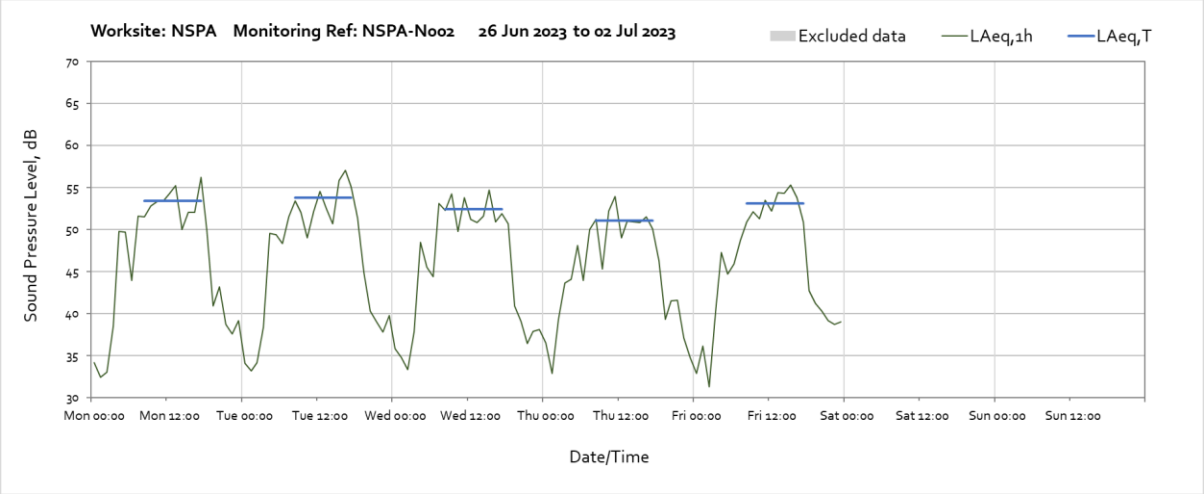
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

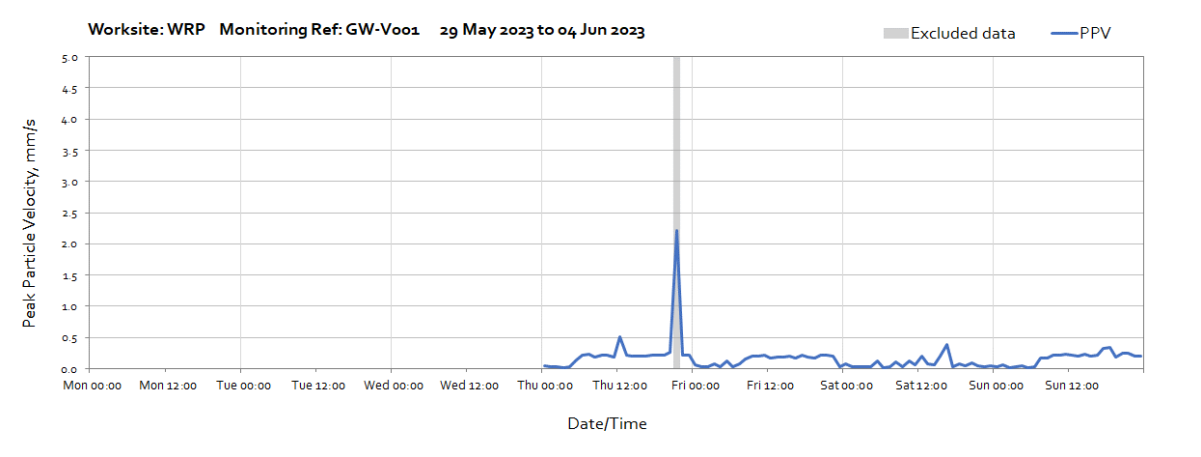

Worksite: NSPA Monitoring Ref: NSPA-N002 19 Jun 2023 to 25 Jun 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
55
50
45
40
35
30
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

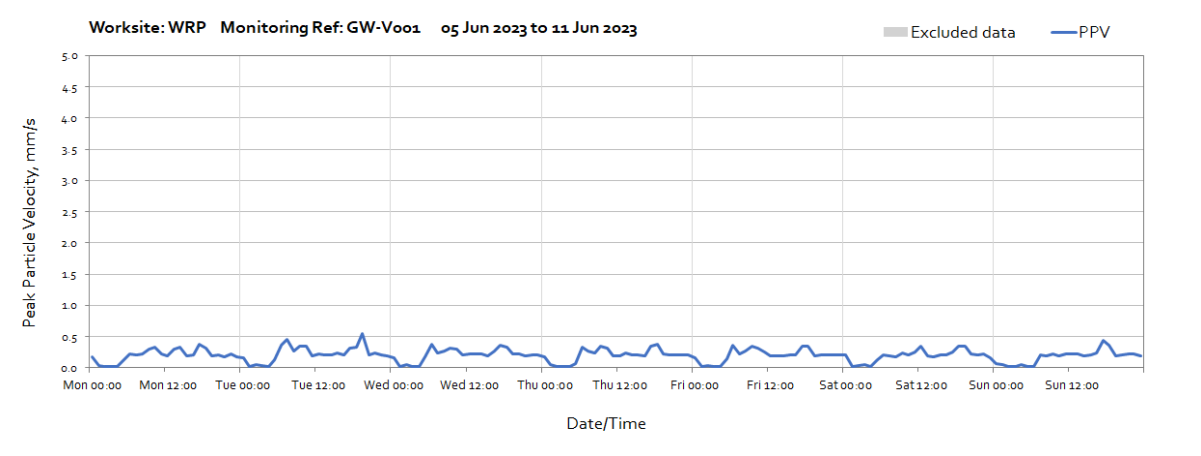

Worksite: NSPA Monitoring Ref: NSPA-N002 26 Jun 2023 to 02 Jul 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
55
50
45
40
35
30
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

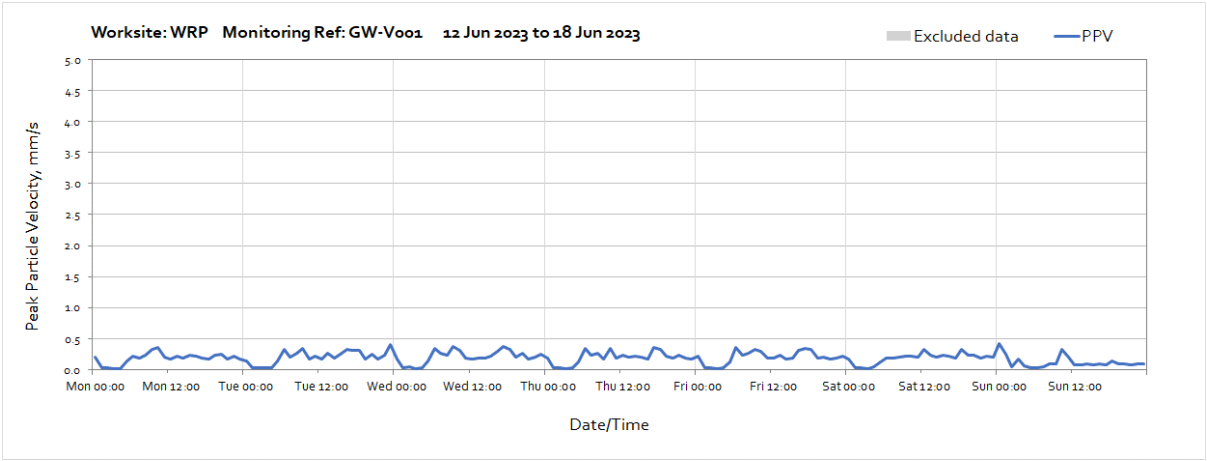
Vibration

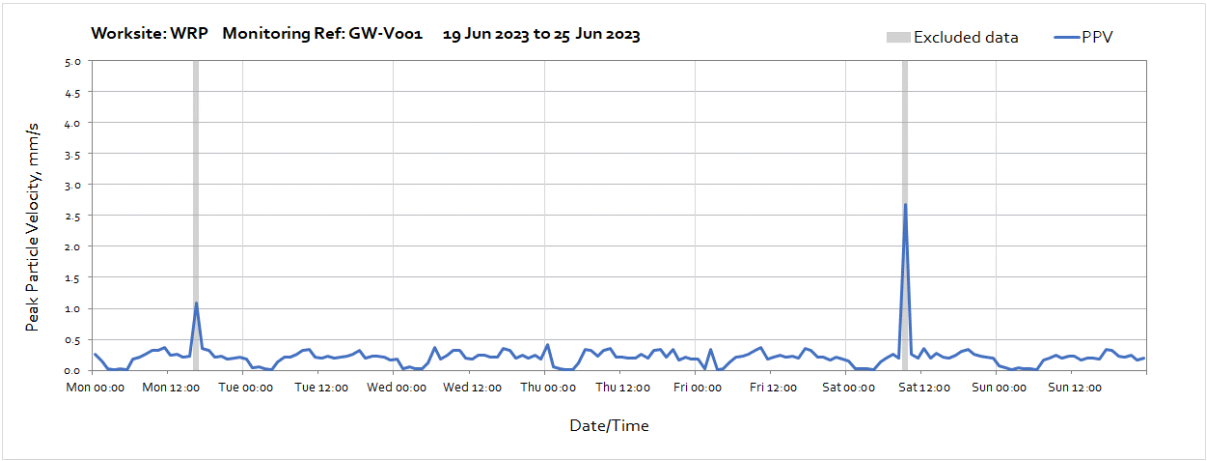
The following graphs show the hourly measured peak particle velocity PPV recorded during the monitoring period. The graphs show the highest PPV of the three orthogonal axis x, y, and z. Where high values of PPV were caused by local interference with the vibration monitor, which are not representative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

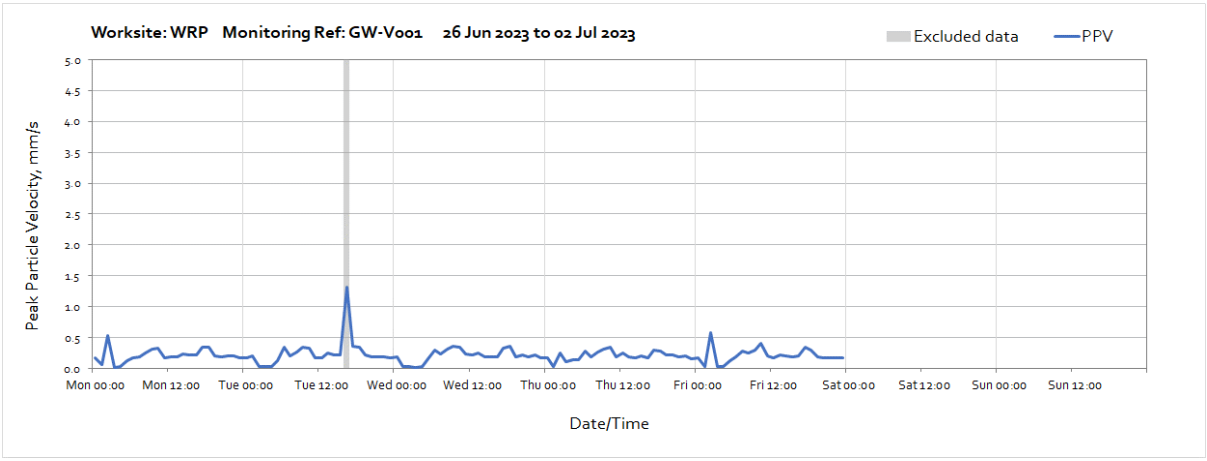
Worksite: WRP – Monitoring Ref: GW-V001



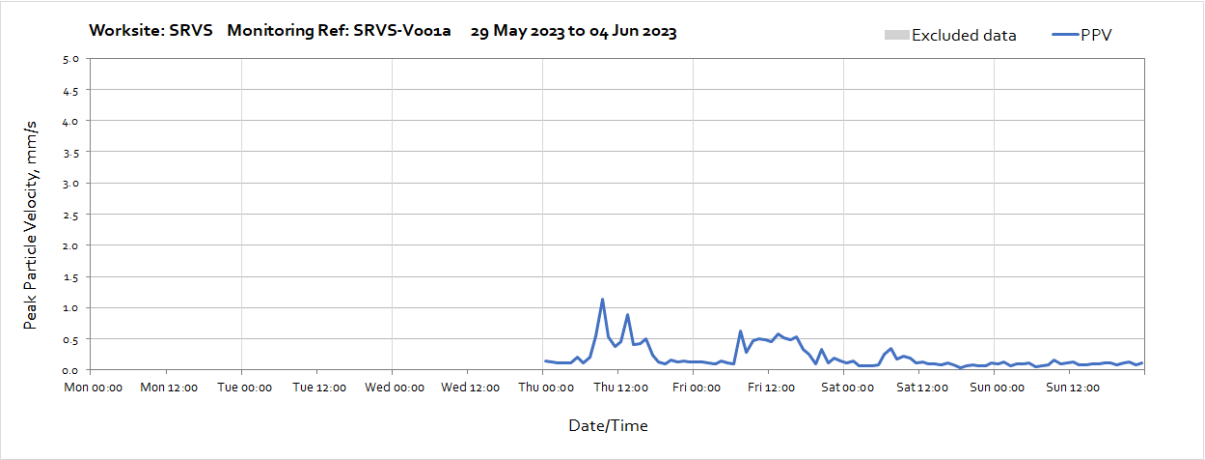


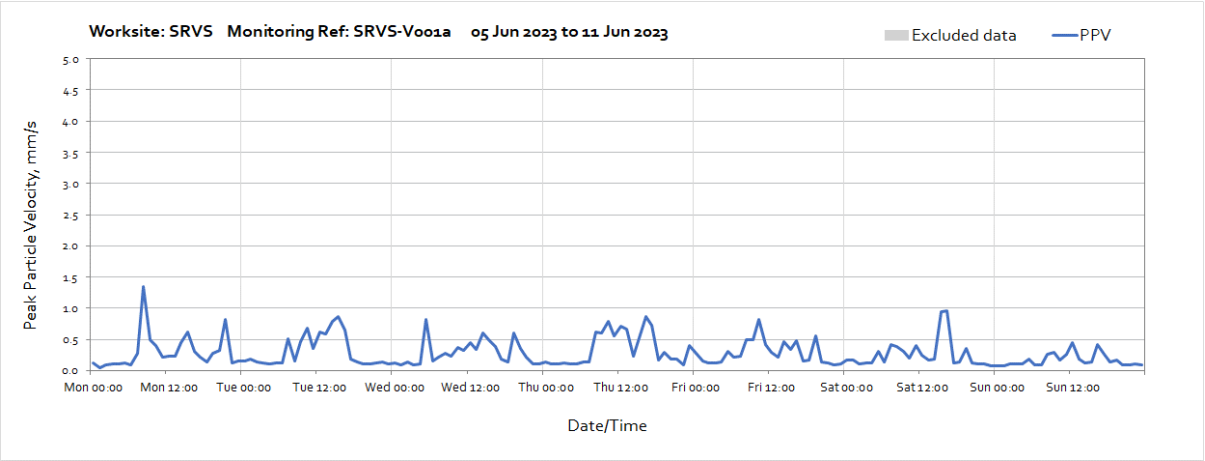

Worksite: WRP Monitoring Ref: GW-V001 12 Jun 2023 to 18 Jun 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

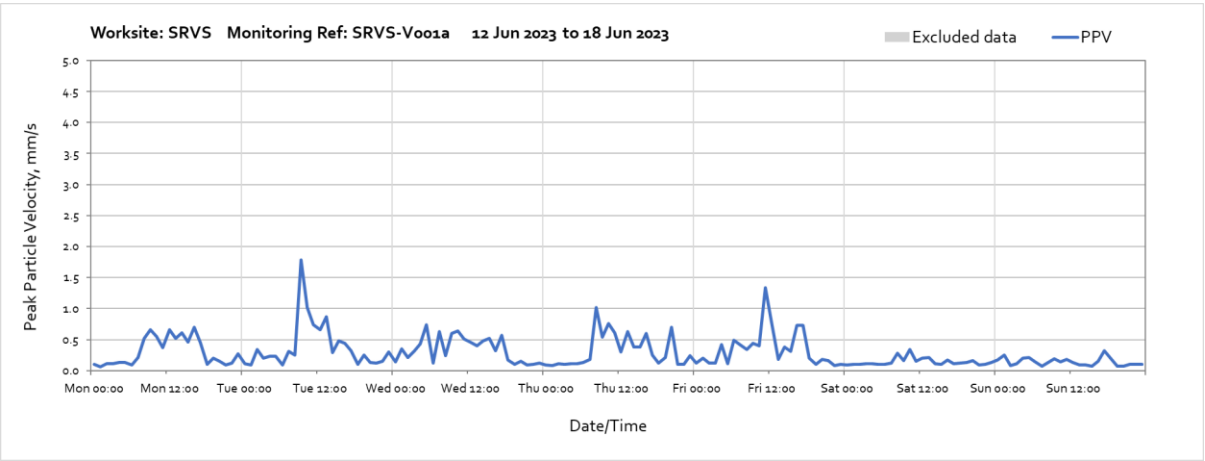

Worksite: WRP Monitoring Ref: GW-V001 19 Jun 2023 to 25 Jun 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

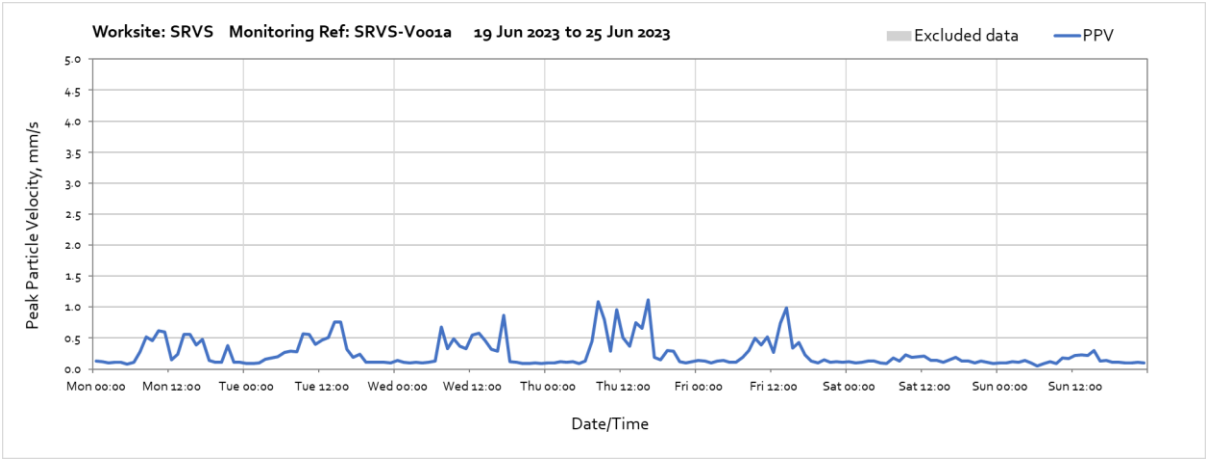

Worksite: WRP Monitoring Ref: GW-V001 26 Jun 2023 to 02 Jul 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

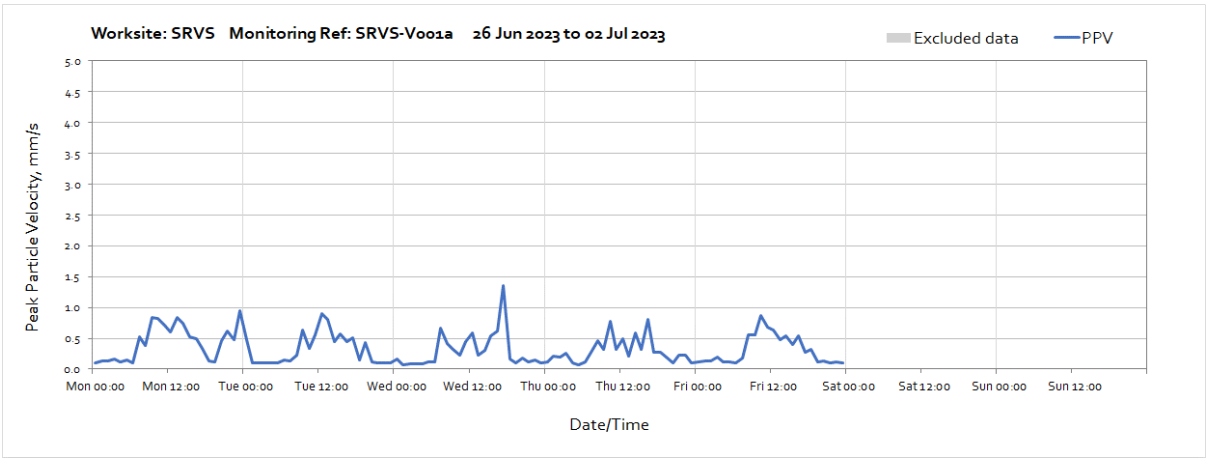
Worksite: SRVS – Monitoring Ref: SRVS-V001a








Worksite: SRVS Monitoring Ref: SRVS-V001a 19 Jun 2023 to 25 Jun 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: SRVS Monitoring Ref: SRVS-V001a 26 Jun 2023 to 02 Jul 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