HS2

November 2023

Construction Noise and Vibration Monthly Report – September 2023

London Borough of Ealing

gov.uk/hs2

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Non-Technical Summary

This Noise and Vibration Monitoring Report fulfils HS2 Limited's commitment detailed in the Environmental Minimum Requirements (EMRs), Annex 1, Code of Construction Practice, to present the results of noise and vibration monitoring carried out within the London Borough of Ealing (LBE) (including one monitoring location on the boundary with the London Borough of Hammersmith and Fulham) during the month of September 2023.

Within this period monitoring was undertaken at the following worksites:

- Noise monitoring was undertaken in proximity of the Mandeville Road Ventilation Shaft worksite (ref.: MRVS), where site maintenance, dewatering, deliveries, possession preparation, sheet piling during a weekend possession and clearing up were underway.
- Noise and vibration monitoring were undertaken in proximity of the Green Park Way Ventilation Shaft worksite (ref.: GPWVS), where general site operations, road sweeping, electrical works, drilling works, shaft construction were underway.
- Noise monitoring was undertaken in proximity of the Westgate Ventilation Shaft (ref.: WVS), where adit construction, probe drilling, removal of platforms and shutters, installation of staircase, cross passage excavation, tunnel lining, construction of concrete slabs, piling works, excavation were underway.
- Noise monitoring was undertaken in the vicinity of the Atlas Road worksite (ref.: AR) where excavation, concrete works, backfilling, barrier installation and maintenance, workshop fit-out, tunnelling works, back grouting, installation of conveyor sections, tunnel boring machine works, shed installation, material deliveries, maintenance works, scaffolding works, electrical works, block placing, vegetation works and shaft construction were underway.
- Noise and vibration monitoring were undertaken in the vicinity of the Willesden EuroTerminal worksite (ref.: WET), where utility works, Welcome Centre works, installation of decking, fencing, lighting columns, refurbishment works, deliveries and material loading were underway.
- Noise monitoring was undertaken in the vicinity of the Victoria Road Crossover Box worksite (worksite ref.: VRCB), where excavation, diaphragm wall hydro-demolition , steel fixing, shuttering, installation of props and grouts, installation of hydrophilic strip and re-injectable hose, drilling works, concrete pours, wire sawing, diaphragm wall break out and block removal, tunnel invert cleaning, coring holes, preparation for jet grouting, drainage works, installation of staircase, fencing installation, tunnel boring machine assembly, construction of concrete base slabs, installation of tanks and pipes, installation of ventilation fans, crane base slab works and substation construction were underway.

- Noise monitoring was undertaken in the vicinity of the Flat Iron compound (worksite ref.: FIC), where tunnel boring machine assembly, was underway.
- Noise and vibration monitoring were undertaken in proximity of the Old Oak Common depot worksite (ref.: OOC), where concrete works including breaking, backfilling and concrete cutting, drainage, kerb installation, diaphragm wall breakdown, steel fixing, excavation, piling platform construction, concrete works, road sweeping, pile mat construction, piling and slit trench excavation, paving slabs installation were underway.
- Noise and vibration monitoring were undertaken in proximity of the Scheme 6 worksite (ref.: S6), where civil, electrification and plant works were underway.

1.1.1 Further works, where monitoring did not take place, were undertaken at Atlas Road Sub-Station where sinking of shafts and ducting works were underway and at Western Avenue Gas Main where gas main lining and replacement and temporary road alterations 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), was exceeded nine (9) times during the reporting period.

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

Four (4) complaints were received during the monitoring period. A description of complaints, the results of investigation 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 Ealing (LBE) (including one monitoring location on the boundary with the London Borough of Hammersmith and Fulham) during the month for the period 1st to 30th September 2023.

1.1.3 Active construction sites in the local authority area, where noise and vibration monitoring were conducted during this period, include:

- Mandeville Road Ventilation Shaft worksite, reference MRVS (see plan 1 in Appendix A), where work activities included:
  - Site maintenance.
  - Dewatering.
  - Deliveries.
  - Preparation for weekend possession working.
  - Sheet piling during possession.
  - Clearing up after weekend possession working.
- Green Park Way Ventilation Shaft worksite, reference GPWVS (see plan 2 in Appendix A), where work activities included:
  - General site operations, including housekeeping works.

- Road sweeping.
- Electrical works.
- Shaft construction, including excavation and concrete lining.

- Westgate Ventilation Shaft worksite, reference WVS (see plan 3 in Appendix A), where work activities included:
  - Adit construction, including waterproofing and concrete lining.
  - Probe drilling.
  - Removal of platforms and shutters from the shaft.
  - Installation of staircase.
  - Cross passage excavation.
  - Cross passage lining.
  - Construction of concrete slabs.
  - Piling works.
  - Gas main lining and replacement.
- Atlas Road worksite, ref. AR (see plan 4 in Appendix A), where work activities included:
  - Excavation.
  - Concrete works.
  - Installation of blinding.
  - Installation of concrete retaining wall.
  - Backfilling.
  - Barrier installation and maintenance.
  - Workshop fit-out.
  - Tunnelling works, including pre-cast tunnel segment installation.
  - Back grouting.
  - Installation of conveyor sections.
  - Tunnel boring machine refuge chamber installation.
  - Material deliveries.
  - Maintenance works including existing conveyers , substations and

- Installation of transformer shed.
- Scaffolding works.
- Electrical testing and commissioning works.
- Placing of concrete blocks.
- Vegetation management.
- Shaft construction, including excavation, concrete lining and ring back grouting.

- Willesden EuroTerminal worksite, ref. WET (see plan 4 in Appendix A), where work activities included:
  - Utility works, including installation of site lighting and cabling works.
  - Installation of modular units and internal fit-out works.
  - Installation of decking.
  - Installation of fencing.
  - Installation of lighting columns.
  - Refurbishment works.
  - Deliveries and material loading.
- Victoria Road Crossover Box worksite, ref. VRCB (see plan 4 in Appendix A), where work activities included:
  - Excavation.
  - Diaphragm wall hydro-demolition.
  - Steel fixing.
  - Shuttering
  - Installation of props and grouting.
  - Installation of hydrophilic strip and re-injectable hose.
  - Drilling works.
  - Concrete pours.
  - Wire sawing.
  - Diaphragm walls break out, including removal of blocks.
  - Coring holes.
  - Preparation for jet grouting.

- Drainage works.
- Installation of staircase.
- Installation of fencing.
- Tunnel boring machine assembly, including welding.
- Construction of concrete base slabs.
- Installation of tanks and pipes.
- Material deliveries.
- Installation of ventilation fans.
- Bridge crane base slab excavation.
- High voltage substation construction.
- Tunnel excavation and sprayed concrete lining.
- Removing of items from tunnel pit bottoms.
- Break out works and excavation within tunnels.
- Concrete casting within tunnels.
- Cleaning of tunnel inverts.
- Coring and wire sawing in tunnels.

- Flat Iron compound, worksite ref. FIC (see plan 4 in Appendix A), where work activities included:
  - Tunnel boring machine assembly.

- Old Oak Common depot worksite, located in the London Borough of Hammersmith and Fulham (LBHF), ref. OOC (see plan 4 in Appendix A), where work activities included:
  - Concrete works including breaking, backfilling and concrete cutting.
  - Drainage.
  - Kerb installation.
  - Diaphragm wall breakdown.
  - Steel fixing.
  - Excavation.

- Piling platform construction.
- Road sweeping.
- Pile mat construction.
- Piling and slit trench excavation.
- Paving slabs installation.

- Scheme 6 worksite, which is partly located in the London Borough of Hammersmith and Fulham (LBHF), ref. S6 (see plan 4 in Appendix A), where work activities included:
  - Civil works.
  - Electrification and plant works.

1.1.4 Further works, where monitoring did not take place, were undertaken at Atlas Road Sub-Station where sinking of shafts and ducting works were underway and at Western Avenue where excavation for gas main works and construction of temporary road alterations for gas main 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 Twenty-two (22) noise and eight (8) vibration monitoring installations were active in September in the LBE area. Table 2 summarises the position of noise and vibration monitoring installations within the LBE area in September 2023.

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

Table 2: Monitoring Locations

Worksite Reference	Measurement Reference	Address
MRVS	N040	Badminton Close
	N058	Mandeville Road North hoarding, Northeast Part of Site

Worksite Reference	Measurement Reference	Address
	N063	Mandeville Road, North Hoarding, Northwest part of Site
	BLV-N001	45 Belvue Road
	V055	Mandeville Road North hoarding, Northeast Part of Site
	V056	Mandeville Road, North Hoarding, Northwest part of Site
GPWVS	N059	Greenpark Way East boundary on hoarding
	N064	Greenpark Way outside Tetris building
	V053	Greenpark Way Eastern boundary
	V054	Greenpark Way outside Tetris building (West of Site)
WVS	N062	Westgate Ventilation Shaft, on site hoarding in Northeast corner of site.
AR	N032	Shaftesbury Gardens
	N033	Outside The Collective, Atlas Road / Victoria Road
	N060	Atlas Road next to Bashey Road
WET	N034	Stephenson Street (north)
	N035	Stephenson Street (south)
	N041	Junction of Stephenson Street / Goodhall Street
	V057	37, Stephenson Street
	V052	63, Stephenson Street
VRCB	N031	School Road, outside Acton Business Centre
	N050	Acton Square, outside North Acton Station
FIC	N029	Braitrim House, Victoria Road
	N042	Boden House Car Park
	N049	Flat Iron compound railway fence, Victoria Rd North Acton
OOC	OOC-N01	Adjacent to 205 Old Oak Common Lane
	OOC-N02	Old Oak Common Lane, Hilltop Works
	OOC-N03	Wycombe Triangle at the rear of 63 Wells House Road
	OOC-V02	Kildun Court, Old Oak Common Lane
	OOC-V03	Wells House Road Alleyway
S6	WT-N01	Wycombe Triangle at the rear of 75 Wells House Road

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
MRVS	N040	Badminton Close	Free field	52.2 (56.0)	54.0 (59.4)	52.5 (57.2)	52.3 (57.4)	49.8 (55.8)	52.8 (56.3)	52.1 (53.1)	51.9 (53.3)	51.9 (54.3)	50.2 (54.2)	52.2 (56.7)	49.7 (53.6)
	N058	Mandeville Road	Free field	58.8 (70.8)	61.6 (73.0)	59.1 (70.1)	59.7 (70.0)	57.3 (69.1)	58.1 (60.2)	58.6 (60.0)	58.5 (62.5)	59.6 (63.8)	59.2 (62.0)	61.8 (69.3)	58.5 (63.5)
	N063	Mandeville Road	Free field	57.8 (61.4)	63.4 (71.1)	56.9 (59.4)	57.0 (60.1)	54.3 (59.0)	56.7 (57.9)	56.9 (57.2)	55.8 (57.3)	56.8 (59.1)	54.6 (58.5)	56.4 (59.6)	54.1 (58.3)
	BLV-N001	45 Belvue Road	Free field	56.8 (57.9)	57.1 (59.7)	55.5 (56.9)	55.8 (57.7)	52.8 (56.9)	56.6 (57.8)	55.9 (57.2)	54.9 (55.7)	56.2 (58.6)	55.3 (58.1)	56.9 (59.9)	52.6 (56.1)
GPWVS	N059	Green Park Way Ventilation Shaf	Free field	57.4 (60.0)	61.1 (66.0)	55.9 (59.9)	56.7 (63.5)	55.0 (62.6)	57.8 (60.8)	57.4 (61.4)	55.8 (57.2)	56.3 (61.7)	53.4 (59.8)	56.5 (61.6)	54.4 (61.2)
	N064	Green Park Way Ventilation Shaft	Façade	55.5 (58.8)	60.3 (73.9)	56.6 (59.4)	56.5 (62.6)	53.6 (57.8)	54.7 (56.0)	55.4 (57.5)	55.6 (56.7)	57.3 (67.9)	54.5 (60.6)	56.5 (60.2)	54.0 (61.5)
WVS	N062	Westgate Ventilation Shaft	Free field	67.7 (77.5)	69.8 (72.7)	60.6 (65.7)	61.1 (66.4)	59.7 (68.4)	67.8 (72.9)	68.4 (72.1)	60.0 (67.8)	60.5 (73.7)	58.2 (59.8)	61.4 (78.4)	57.7 (62.0)
AR	N032	Shaftesbury Gardens	Free field	65.3 (66.9)	67.4 (80.5)	63.7 (67.7)	61.3 (64.5)	58.3 (65.4)	63.8 (71.7)	65.9 (72.9)	63.0 (64.9)	62.2 (65.4)	59.1 (64.8)	61.3 (68.4)	58.9 (62.8)

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
	N033	Outside The Collective, Atlas Road/Victoria Road	Free field	67.1 (68.6)	70.4 (82.8)	65.1 (72.6)	63.5 (67.8)	60.0 (65.5)	67.3 (79.3)	67.6 (74.1)	63.9 (65.2)	63.5 (68.8)	59.9 (65.1)	62.0 (67.7)	60.6 (65.2)
	N060	Atlas Road next to Bashey Road	Free field	55.8 (61.8)	62.5 (64.5)	55.9 (60.6)	59.6 (67.6)	56.3 (65.2)	55.8 (62.1)	60.4 (64.4)	58.7 (63.7)	53.8 (60.5)	52.4 (62.7)	55.3 (63.3)	55.2 (62.2)
WET	N034	Stephenson Street (north)	Free field	54.2 (60.0)	60.7 (69.9)	55.0 (61.2)	53.5 (61.0)	47.4 (56.1)	51.3 (52.7)	54.9 (59.5)	54.9 (64.9)	55.4 (65.0)	47.4 (56.0)	54.7 (62.7)	46.4 (54.4)
	N035	Stephenson Street (south)	Free field	55.3 (61.9)	58.2 (74.2)	52.2 (54.2)	50.4 (57.3)	46.7 (55.4)	49.9 (51.3)	54.2 (57.5)	49.3 (53.3)	50.6 (57.7)	46.1 (55.0)	54.2 (60.3)	46.9 (53.6)
	N041	Junction of Stephenson Street/Goodhall Street	Free field	55.5 (62.8)	59.6 (68.6)	54.9 (57.1)	54.4 (76.4)	48.8 (69.4)	53.7 (61.8)	55.4 (59.3)	54.1 (58.6)	54.3 (60.6)	51.2 (72.4)	54.4 (66.3)	48.1 (53.9)
VRCB	N031	School Road, outside Acton Business Centre	Free field	61.9 (63.9)	63.3 (65.2)	60.3 (62.5)	59.2 (62.8)	56.1 (64.7)	57.6 (61.1)	63.0 (65.0)	63.3 (65.0)	61.2 (66.4)	55.7 (59.3)	60.1 (65.4)	56.1 (60.6)
	N050	Acton Square, outside North Acton Station	Free field	64.4 (67.5)	65.7 (68.4)	62.7 (64.9)	62.0 (64.4)	58.8 (67.9)	62.7 (64.3)	64.0 (64.5)	65.7 (74.7)	62.6 (66.0)	59.1 (62.2)	61.8 (67.4)	58.5 (66.6)
FIC	N029	Braitrim House, Victoria Road	Free field	58.7 (62.1)	64.3 (71.5)	51.7 (56.6)	55.7 (66.0)	54.5 (64.5)	59.0 (64.0)	71.7 (79.4)	55.2 (65.0)	51.2 (58.0)	47.2 (55.7)	53.3 (74.0)	52.2 (59.4)
	N042	Bodens car park	Free field	59.3 (62.4)	60.8 (63.4)	56.1 (57.4)	55.1 (56.6)	54.0 (57.0)	57.2 (58.7)	59.0 (60.7)	58.3 (60.5)	56.1 (59.3)	53.6 (56.6)	56.0 (59.7)	53.6 (56.8)

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
	N049	Flat Iron compound	Free field	60.8 (67.3)	74.4 (75.9)	55.7 (58.2)	59.3 (70.9)	57.8 (69.1)	53.9 (57.8)	60.9 (63.0)	56.6 (67.9)	53.3 (56.0)	48.9 (56.7)	52.8 (56.8)	54.5 (59.6)
OOC	OOC-N01	Adjacent to 205 Old Oak Common Lane	Free-field	66.0 (67.5)	69.0 (70.4)	67.7 (71.7)	65.2 (72.7)	60.1 (68.2)	58.8 (63.3)	65.5 (72.6)	61.6 (66.9)	60.8 (67.3)	56.5 (63.5)	60.7 (67.1)	59.8 (65.4)
	OOC-N02	Old Oak Common Lane, Hilltop Works	Free-field	65.0 (66.9)	70.0 (72.4)	66.5 (71.2)	64.0 (69.9)	59.0 (68.5)	59.9 (61.6)	63.0 (64.1)	63.0 (65.7)	62.7 (66.9)	58.4 (64.9)	61.2 (65.8)	58.3 (63.1)
	OOC-N03	Old Oak Lane Halt, Wells House Road	Free-field	57.2 (60.4)	61.3 (63.3)	57.4 (60.2)	57.0 (60.9)	53.0 (58.7)	54.7 (56.5)	56.6 (59.0)	56.6 (61.6)	56.4 (63.1)	51.8 (56.9)	56.6 (59.7)	53.4 (58.3)
S6	WT-N01	Old Oak Lane Halt, Wells House Road	Free-field	56.3 (60.0)	61.1 (63.3)	57.5 (60.0)	56.8 (62.0)	52.8 (60.0)	55.0 (57.0)	59.5 (63.7)	59.0 (62.0)	57.2 (62.0)	52.7 (58.0)	56.1 (61.0)	52.1 (57.0)

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
GPWVS	V053	Green Park Way, Greenford	1.92 (Z-axis)
	V054	Green Park Way Ventilation Shaft	1.31 (X-axis)
MRVS	V055	Mandeville Road	2.14 (X-axis)
	V056	Mandeville Road	2.25 (X-axis)
WET	V052	63, Stephenson Street	5.19 (Z-axis)
	V057	37, Stephenson Street	1.04 (Y-axis)
OOC	OOC-V02	Kildun Court, Old Oak Common Lane	0.59 (Y-axis)
	OOC-V03	Wells House Road Alleyway	0.68 (X-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 SOAEL

2.2.1 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."

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

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

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

Table 5: Summary of Exceedances of SOAEL

Worksite Reference	Measurement Reference	Site Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of SOAEL
MRVS	N040	Badminton Close	All days	All periods	No exceedance
	N058	Mandeville Road	Night	2200-0700	1
	N063	Mandeville Road	All days	All periods	No exceedance
	BLV-N001	45 Belvue Road	Night	2200-0700	3
GPWVS	N059	Green Park Way Ventilation Shaft	All days	All periods	Not applicable*
	N064	Green Park Way Ventilation Shaft	All days	All periods	Not applicable*
WVS	N062	Westgate Ventilation Shaft	All days	All periods	Not applicable*
AR	N032	Shaftesbury Gardens	All days	All periods	No exceedance
	N033	Outside The Collective, Atlas Road / Victoria Road	All days	All periods	No exceedance
	N060	Atlas Road next to Bashey Road	All days	All periods	No exceedance
WET	N034	Stephenson Street (north)	All days	All periods	No exceedance
	N035	Stephenson Street (south)	All days	All periods	No exceedance
	N041	Junction of Stephenson Street / Goodhall Street	All days	All periods	No exceedance
VRCB	N031	School Road, outside Acton Business Centre	All days	All periods	Not applicable*
	N050	Acton Square, outside North Acton Station	All days	All periods	No exceedance

Worksite Reference	Measurement Reference	Site Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of SOAEL
FIC	N029	Braitrim House, Victoria Road	All days	All periods	No exceedance
	N042	Bodens Car Park	All days	All periods	No exceedance
	N049	Flat Iron compound	All days	All periods	No exceedance
OOC	OOC-N01	Adjacent to 205 Old Oak Common Lane	All days	All periods	No exceedance
	OOC-N02	Old Oak Common Lane, Hilltop Works	All days	All periods	No exceedance
	OOC-N03	Old Oak Lane Halt, Wells House Road	All days	All periods	No exceedance
S6	WT-N01	Old Oak Lane Halt, Wells House Road	Nights	2200-0700	8

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

2.2.5 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
MRVS	N058	Mandeville Road	1
MRVS	BLV-N001	45 Belvue Road	3
S6	WT-N01	Old Oak Lane Halt, Wells House Road	5

2.2.6 SOAEL exceedances were recorded at three (3) monitors, N058, OOC-N03 and WT-N01. Nine (9) 24-hour periods that experienced an exceedance of the SOAEL were recorded due to HS2 construction works during September 2023. The SOAEL exceedances were recorded 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

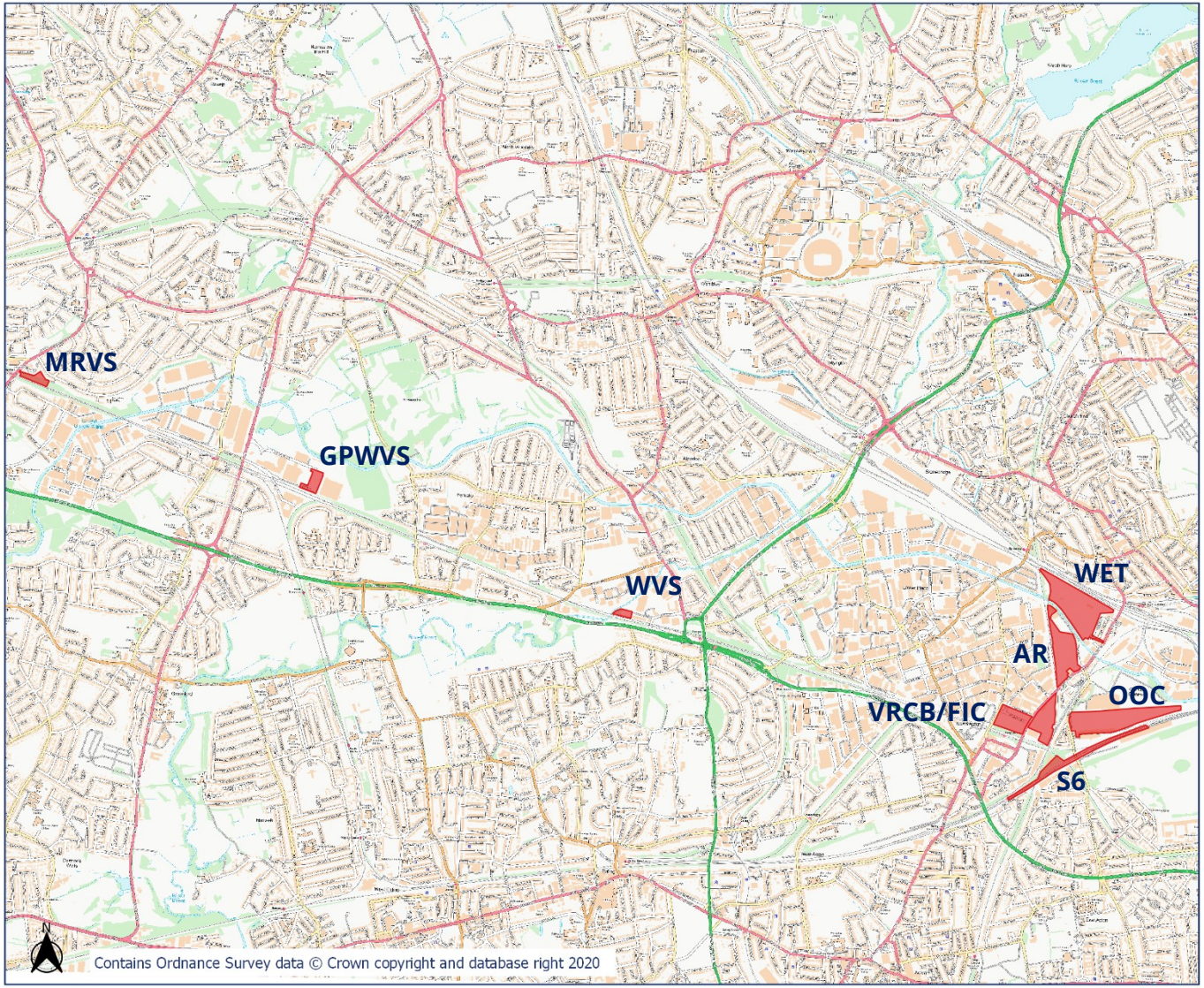
2.4.1 Table 8 provides a summary of complaint information related to noise and vibration received during the reporting period, along with the findings of any investigation.

Table 8: Summary of Complaints

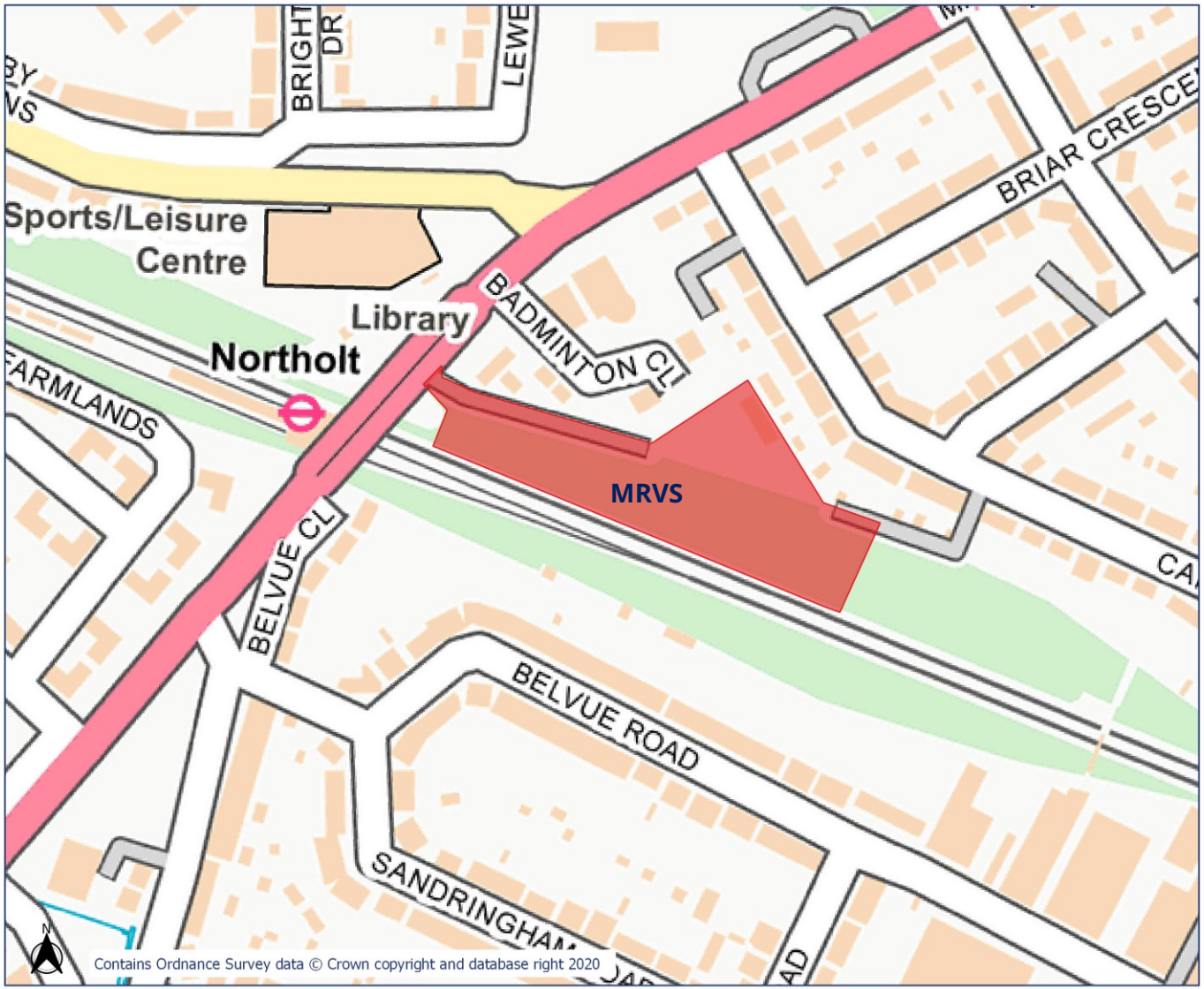
Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
HS2-23-100140-E-C	MRVS	High pitched squealing noise during the day.	Noise could not be identified because no exceedances were found.	A response was provided to the complainant detailing the results of the investigation.
HS2-23-100584-E-C	VRCB	Loud noise coming from nearby site.	No HS2 works were taking place in the area.	A response was provided to the complainant detailing the results of the investigation.
HS2-23-100769-E-C	WVS/VRCB	Generator noise during the day.	Acoustic blankets being utilised to mitigate noise until new generators are installed.	A response was provided to the complainant detailing the results of the investigation.
HS2-23-100988-E-C	WVS/VRCB	Generator noise at night.	Acoustic blankets being utilised to mitigate noise until new generators are installed.	A response was provided to the complainant detailing the results of the investigation.

Appendix A Site Locations

Worksite identification plan - Overview

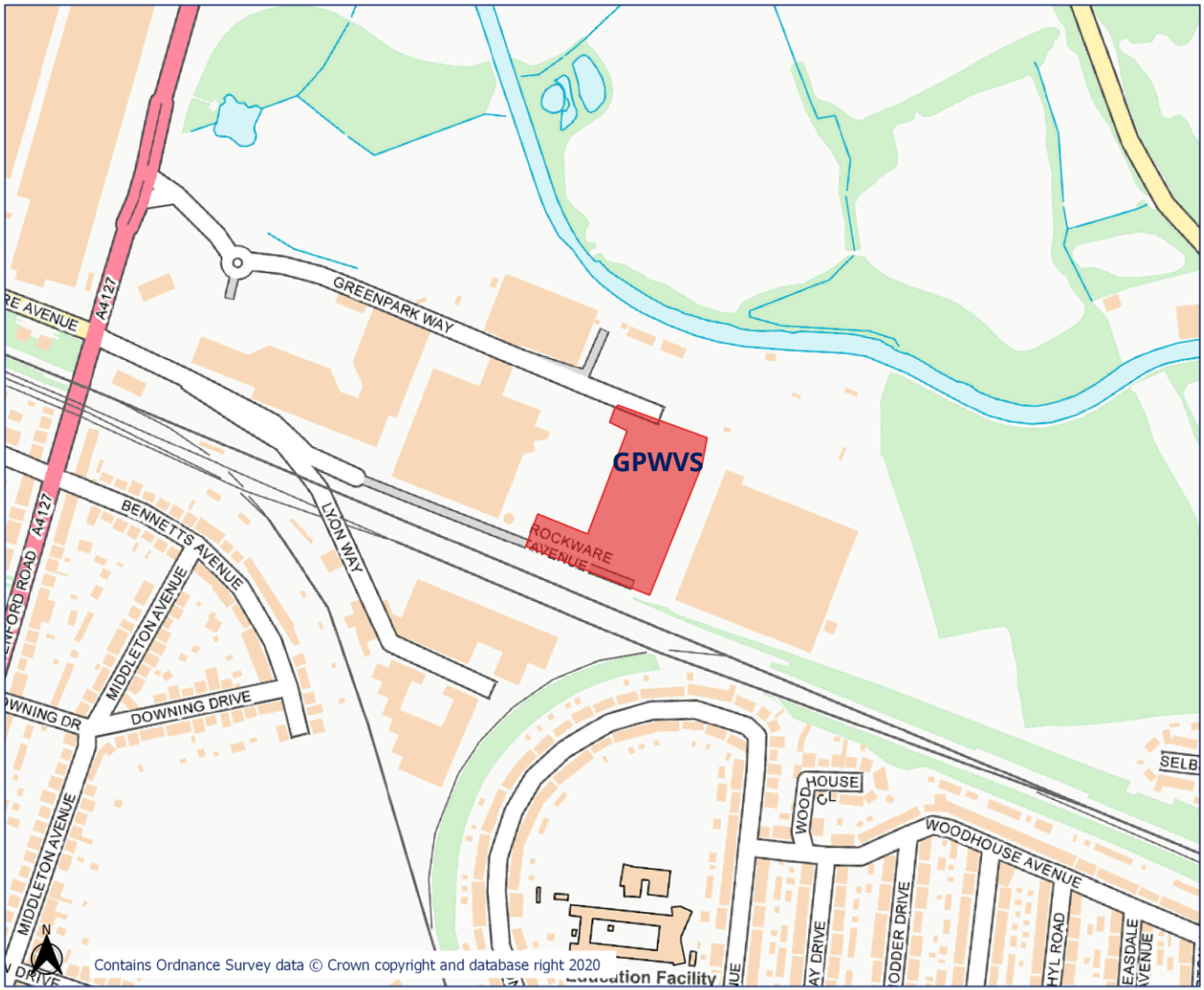


HS2 Worksite Identification Plan - 1

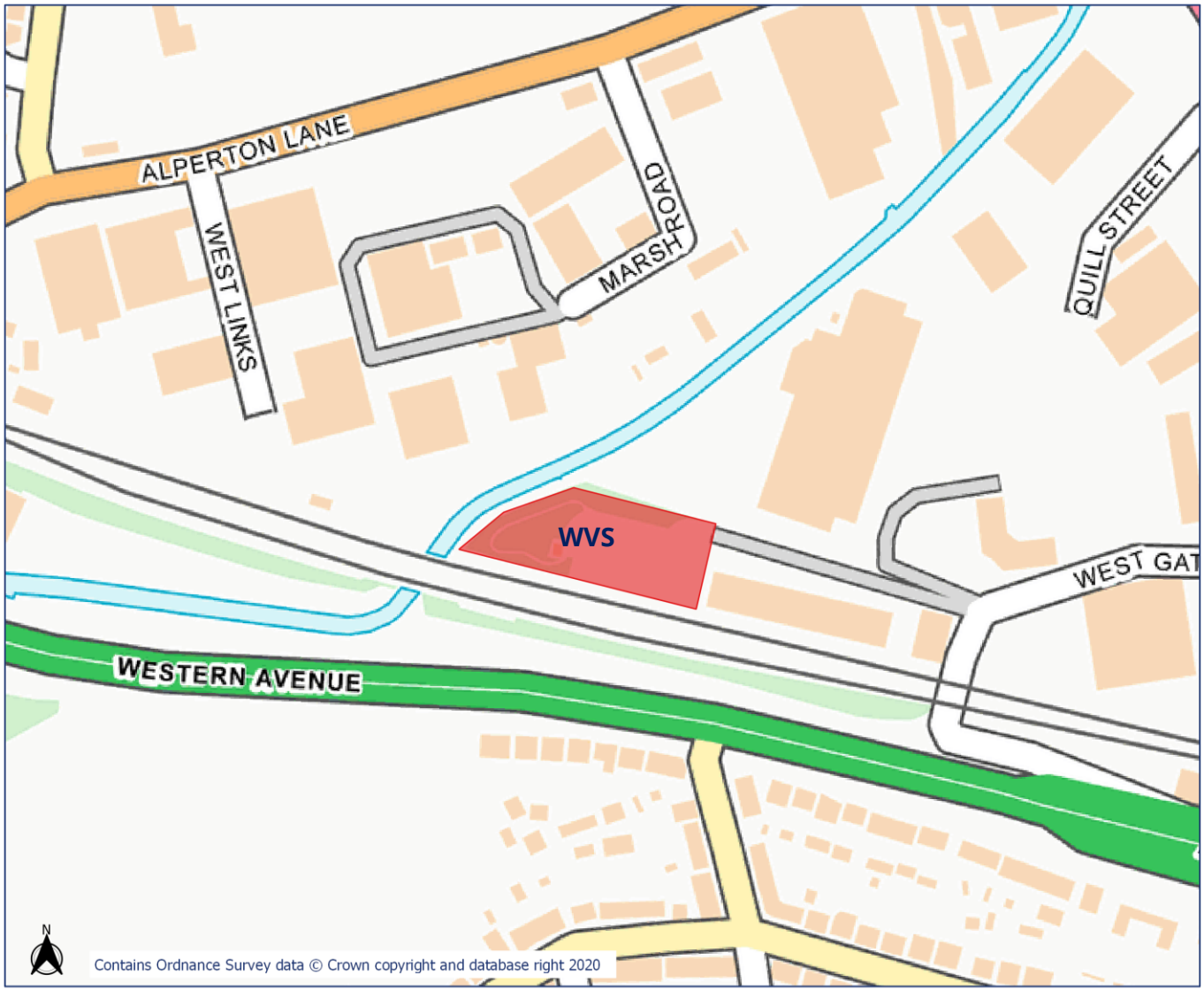


Legend
Active Worksites

Worksite Identification Plan - 2

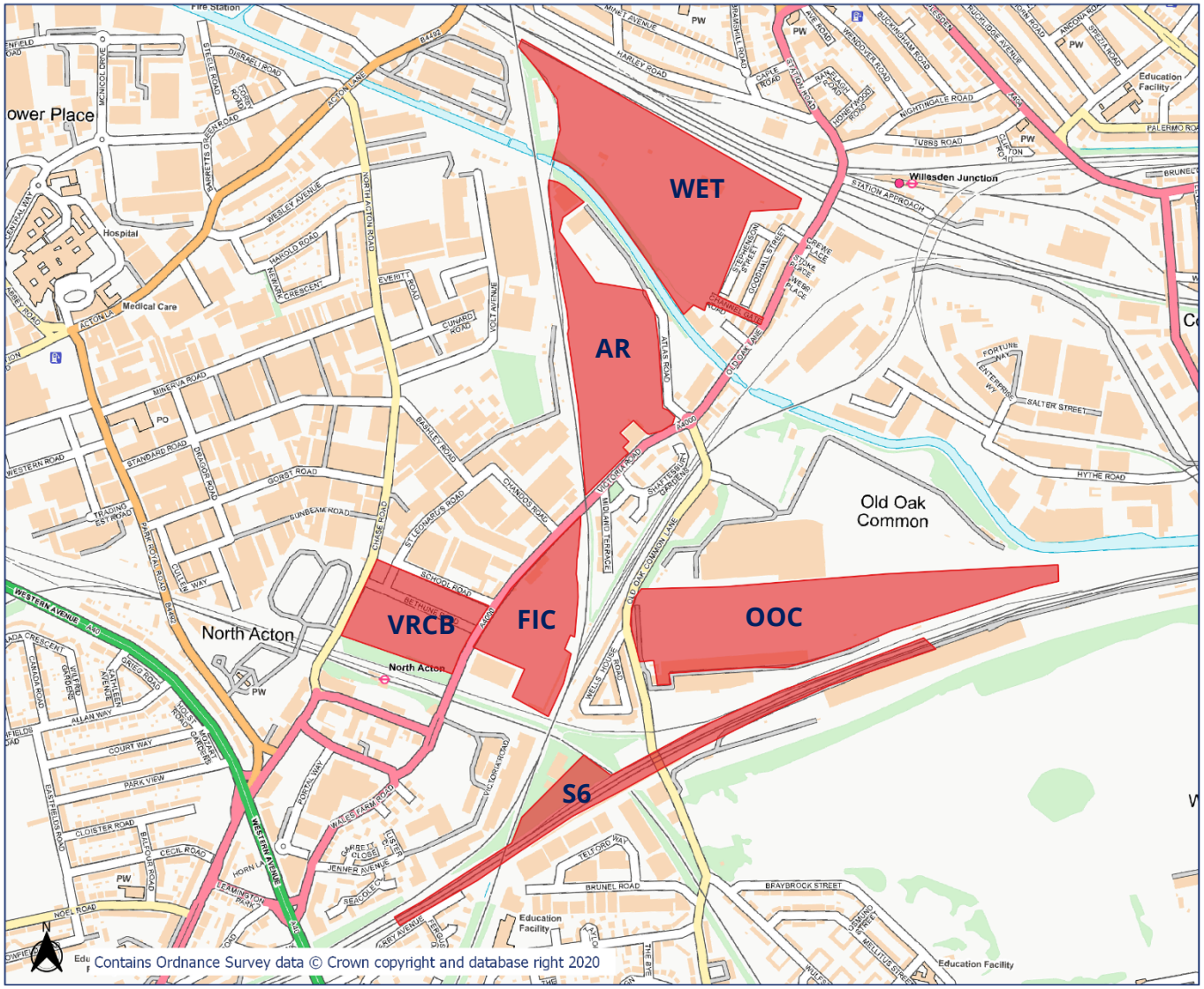


Worksite Identification Plan - 3



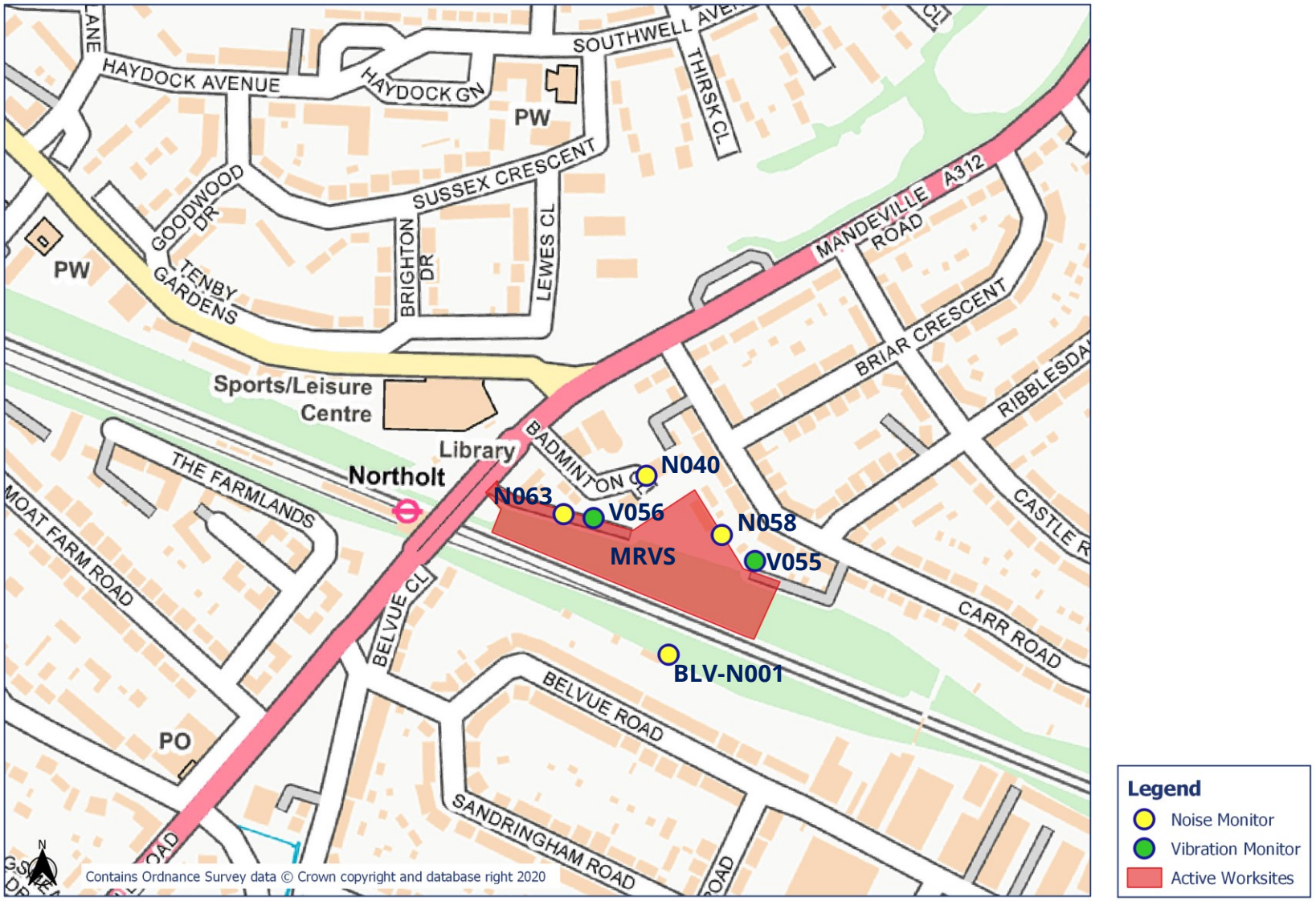
Legend
Active Worksites

Worksite Identification Plan - 4

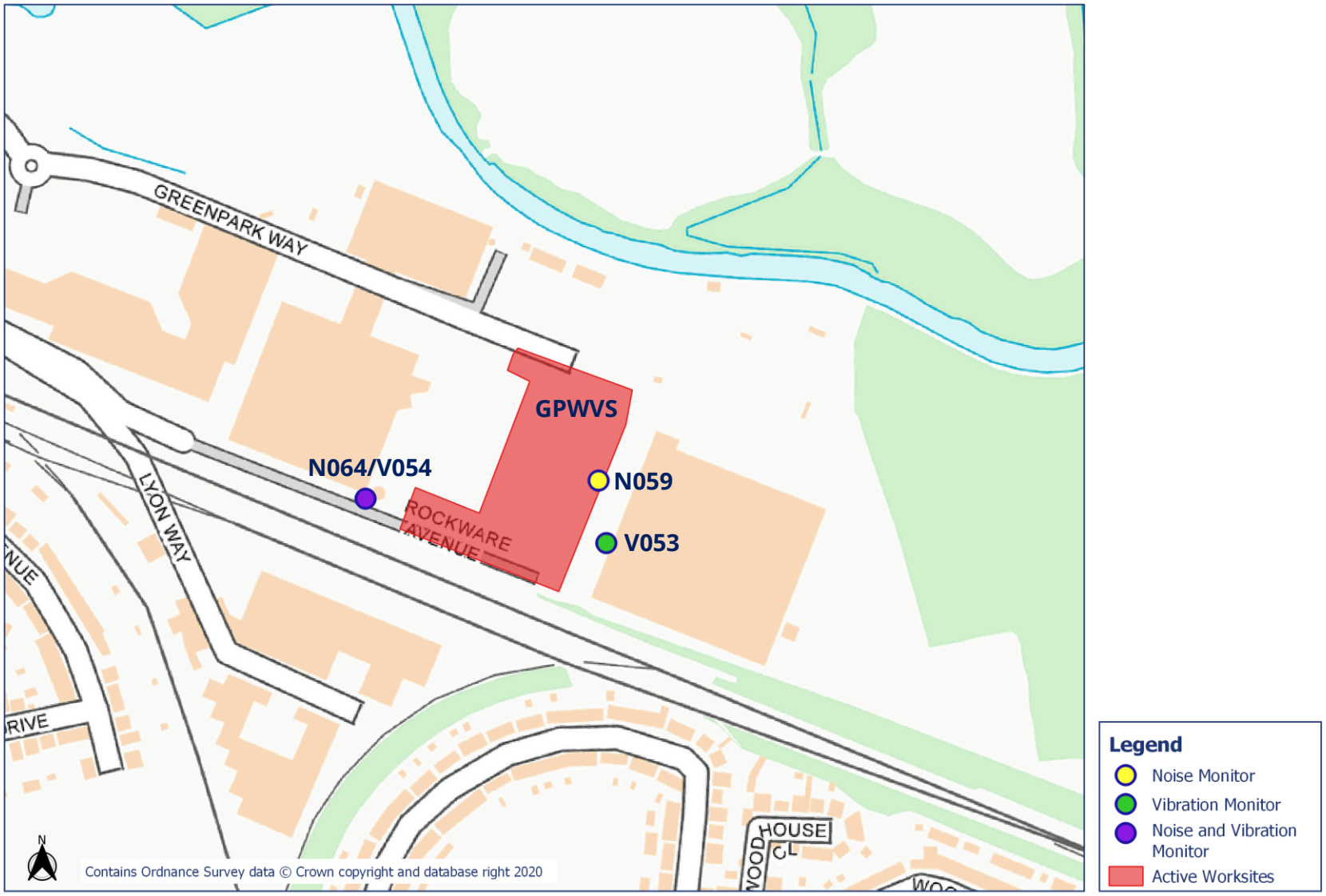


Appendix B Monitoring Locations

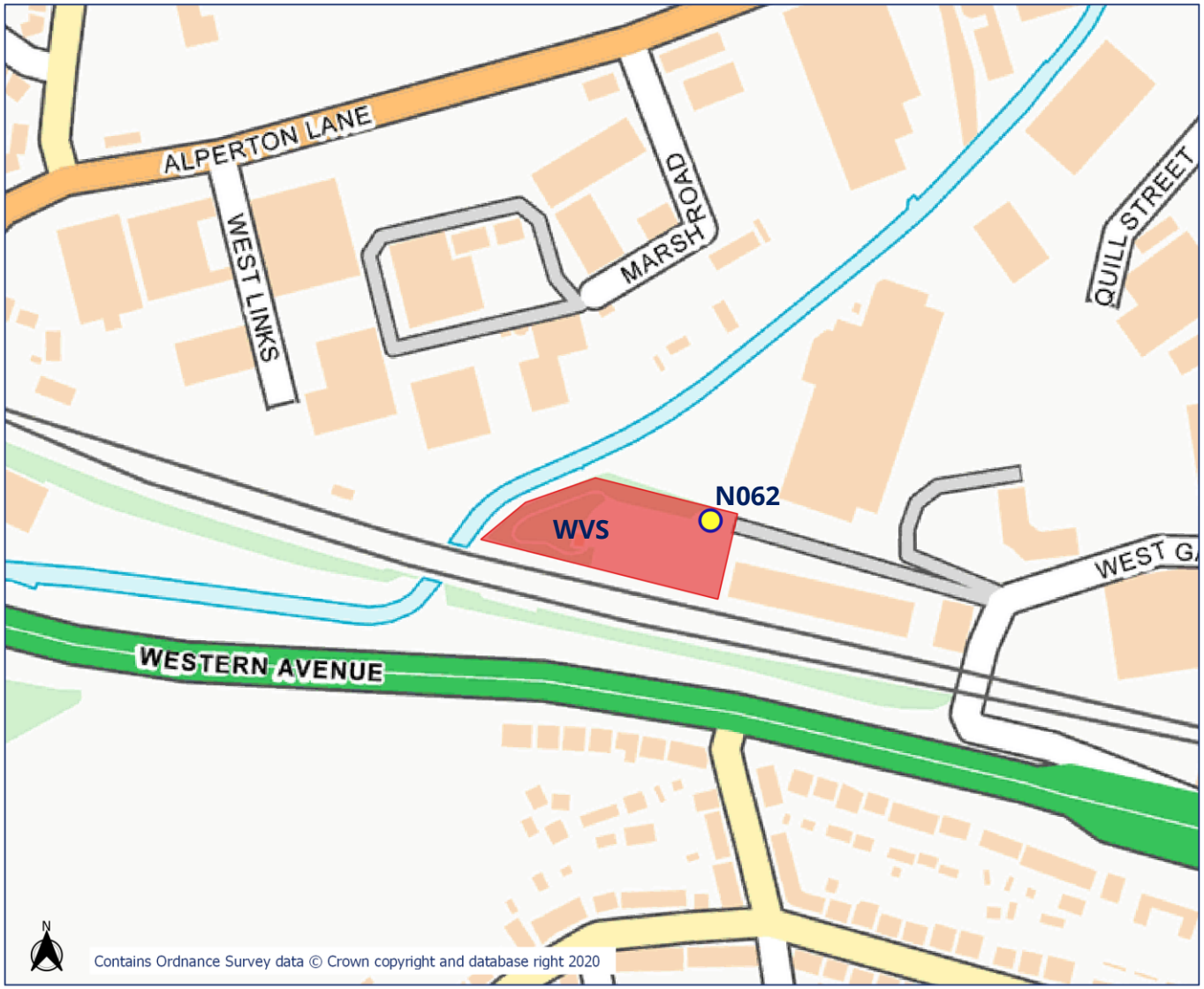
HS2 Noise and Vibration Monitoring Plan - 1



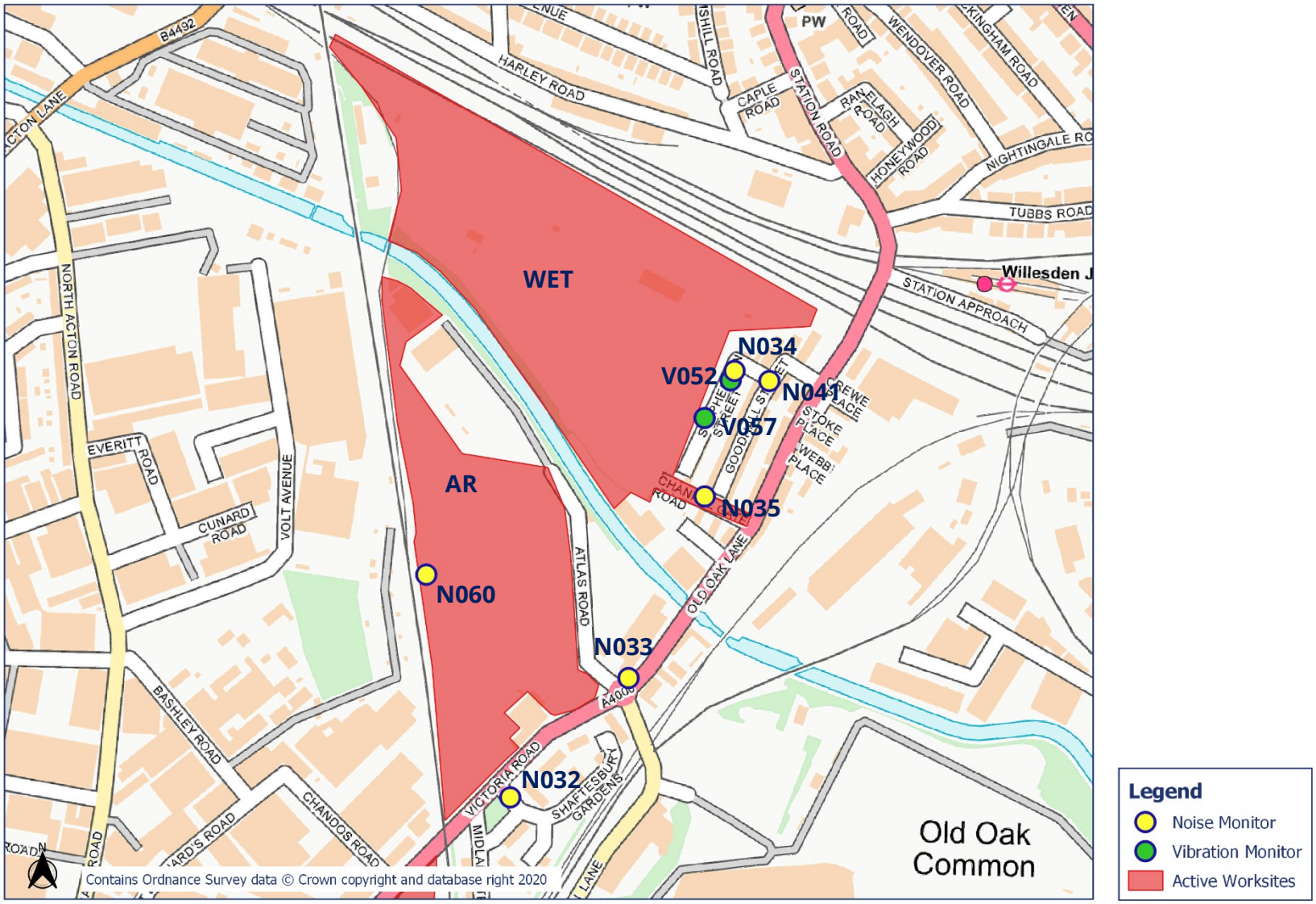
Noise and Vibration Monitoring Plan - 2



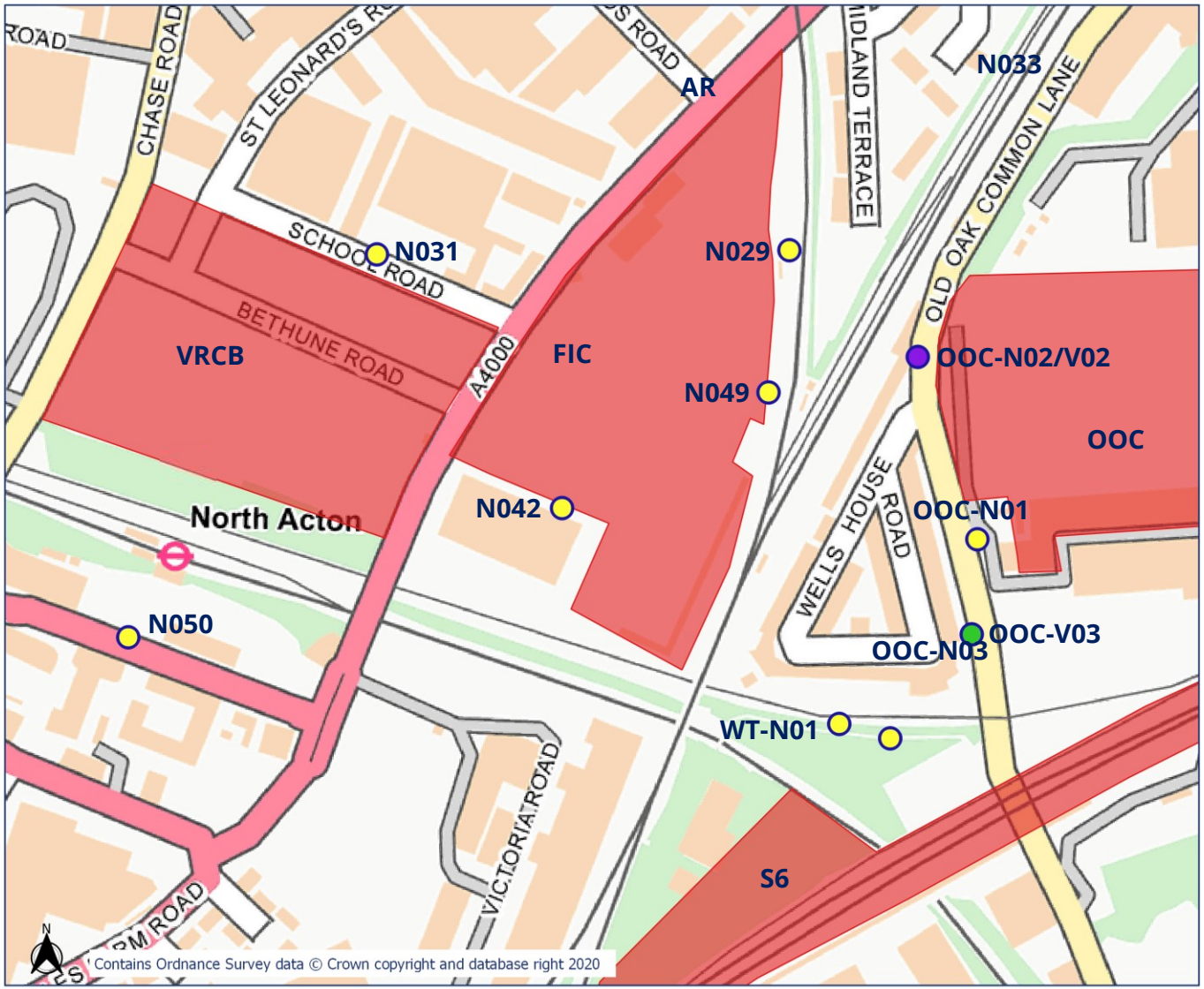
Noise and Vibration Monitoring Plan - 3



Noise and Vibration Monitoring Plan - 4



Noise and Vibration Monitoring Plan - 5



Appendix C Data

Noise

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

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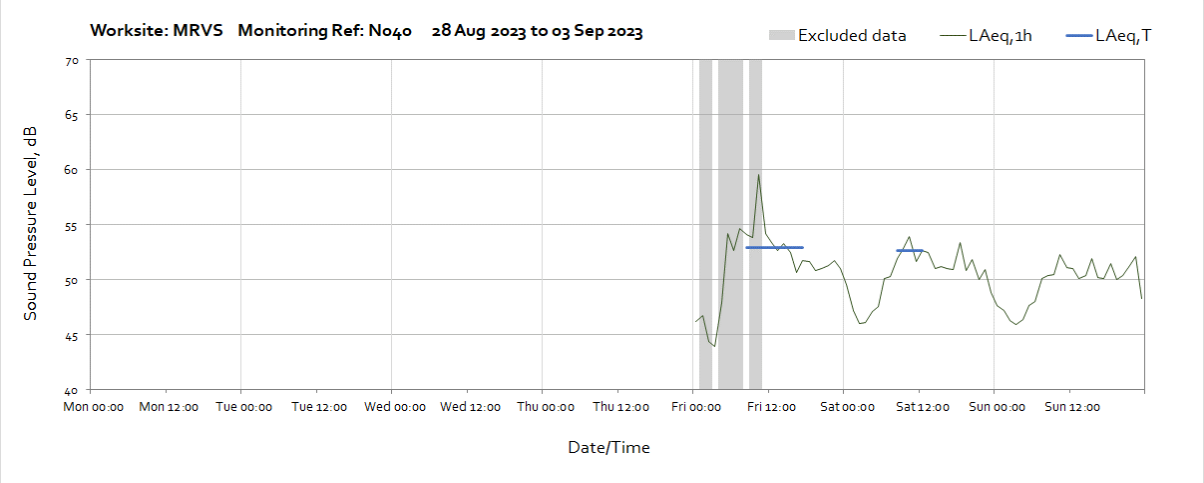

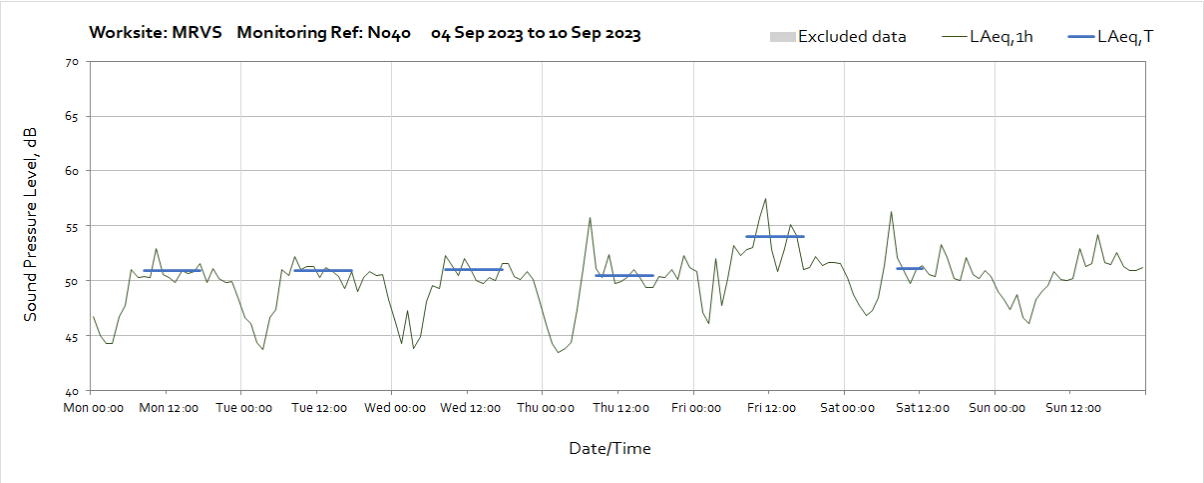

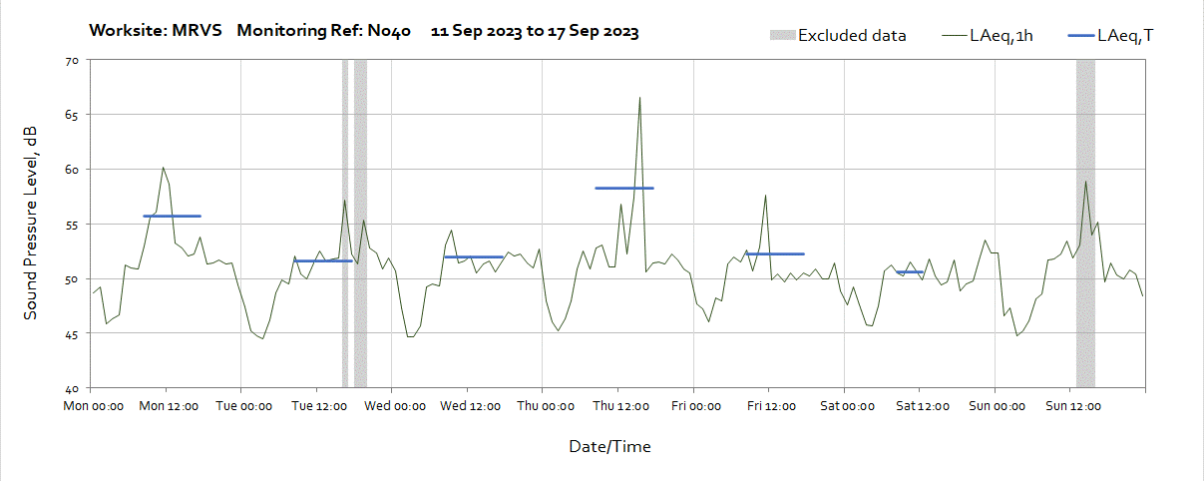
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55
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45
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Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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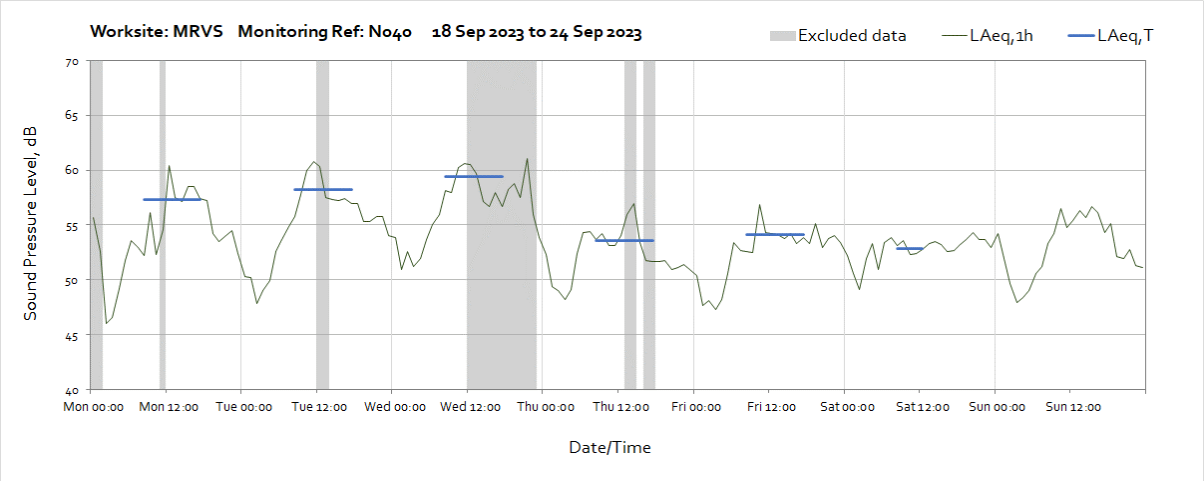
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time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Excluded data
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Sound Pressure Level, dB
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55
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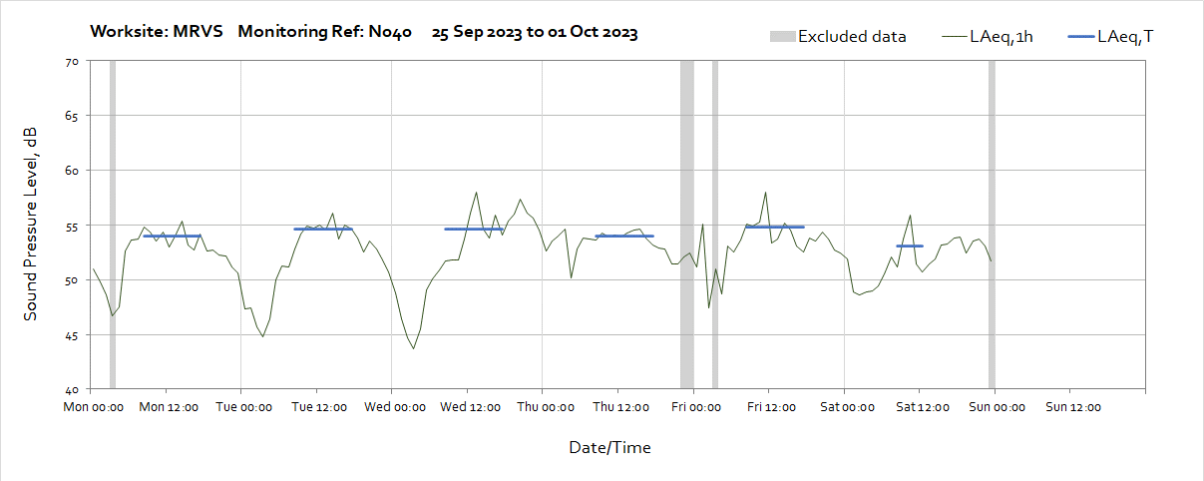
Sun 12:00
Date/Time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55
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Date/Time

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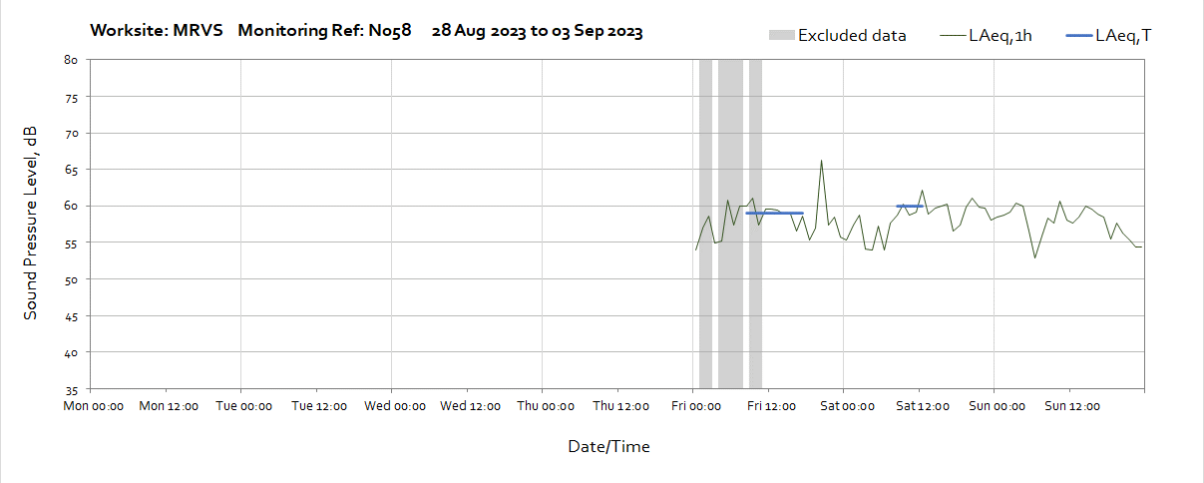

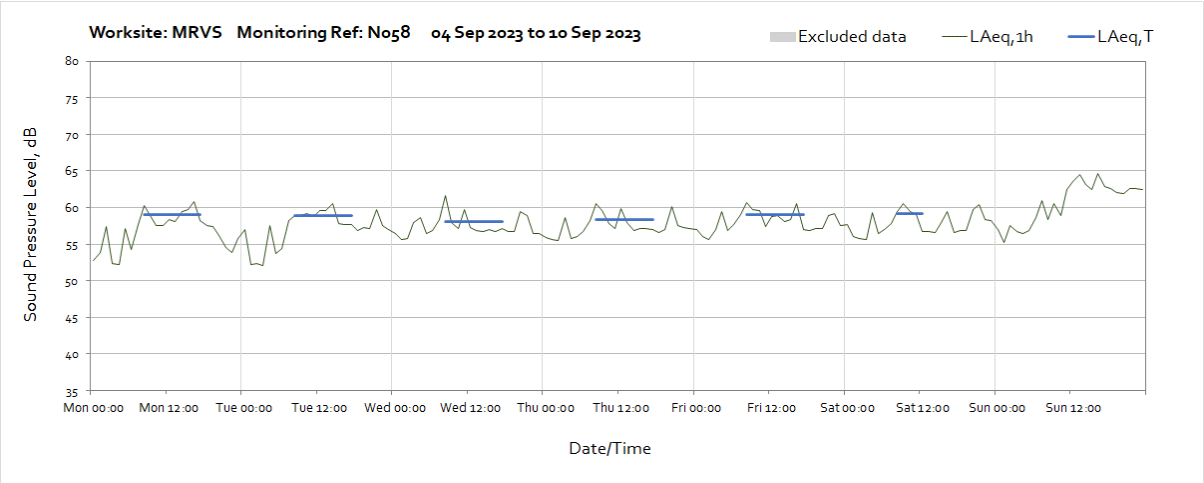

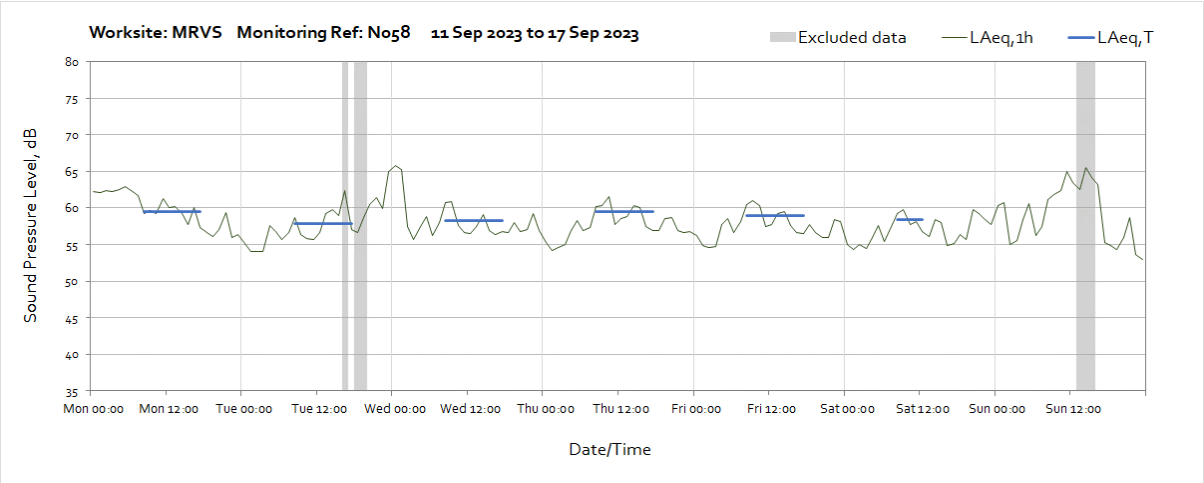

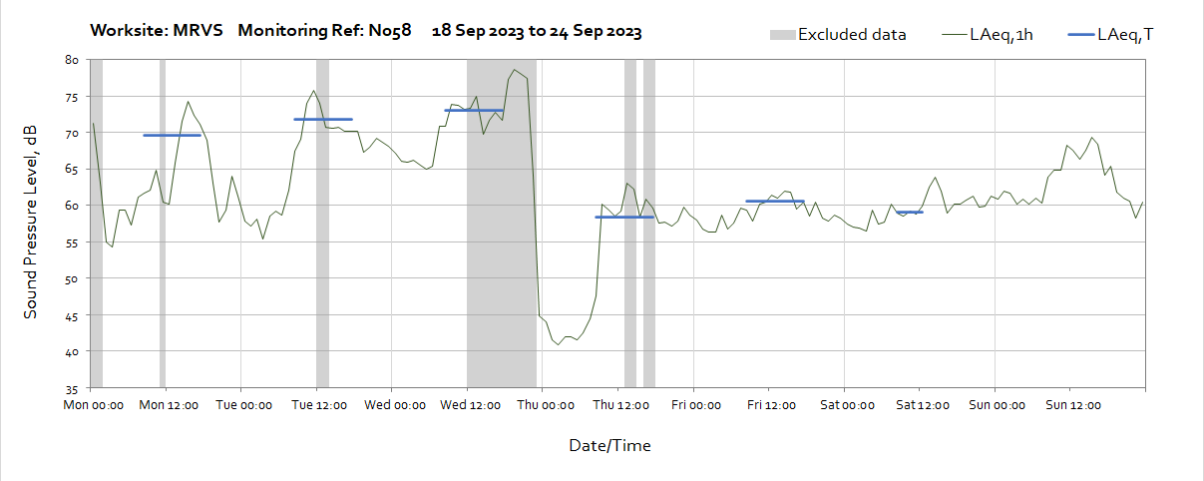

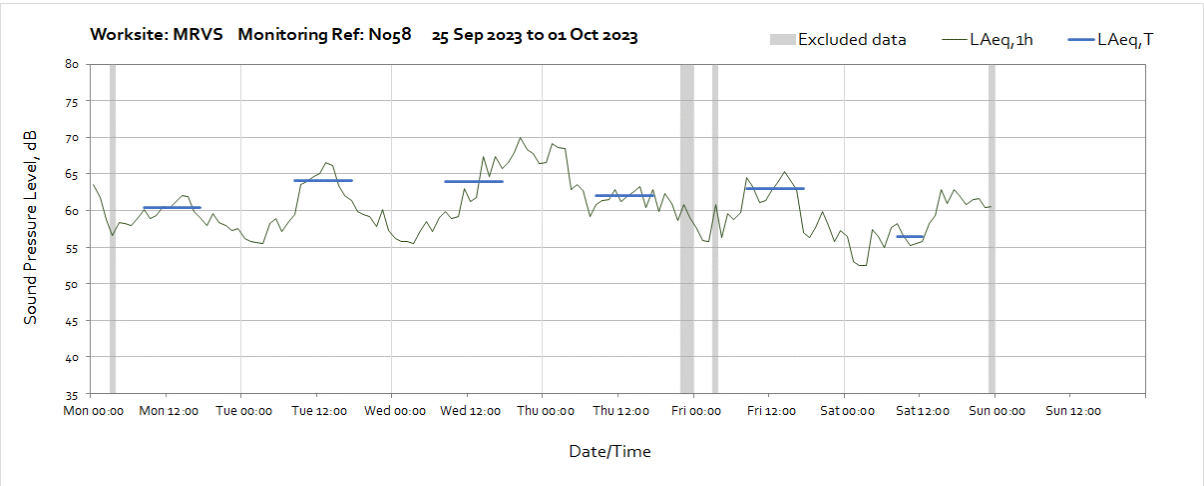

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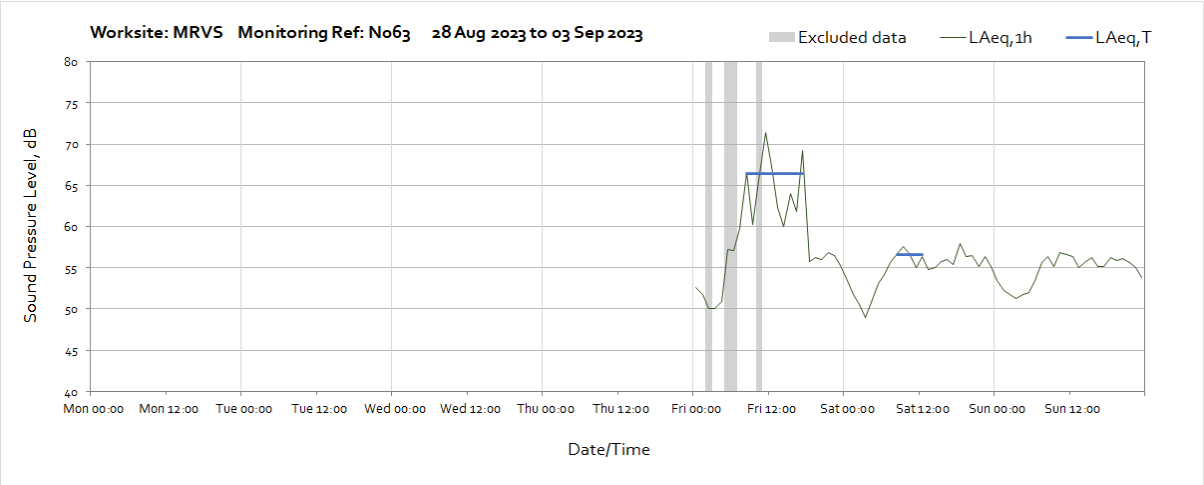

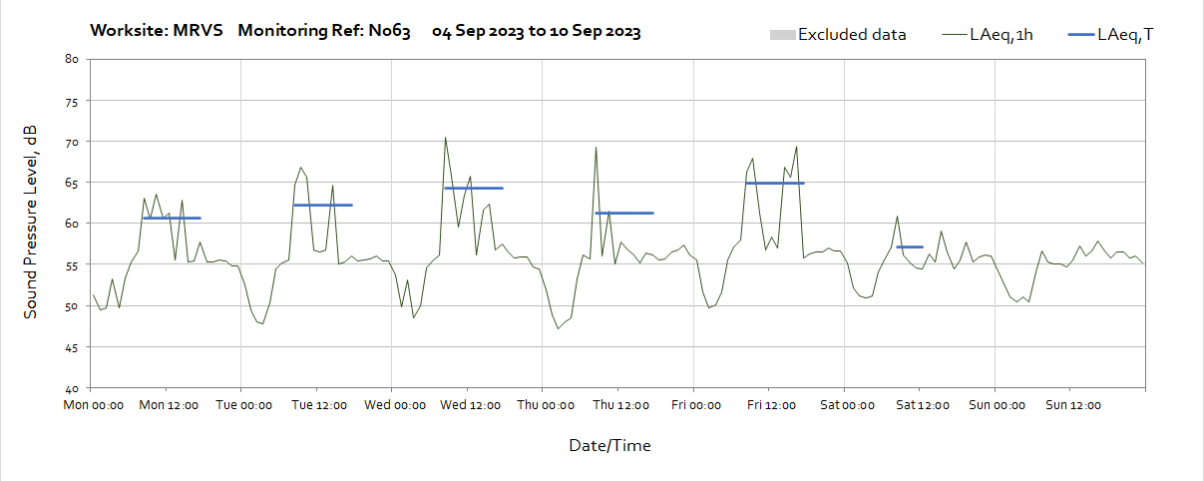
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65
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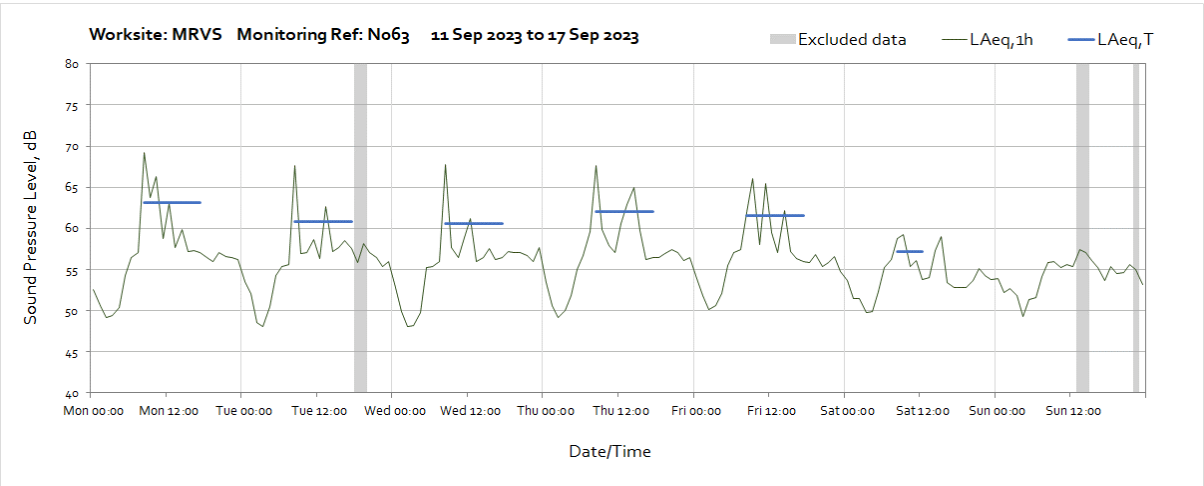
Date/Time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LAeq,T
Sound Pressure Level, dB
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Mon 00:00
Mon 12:00
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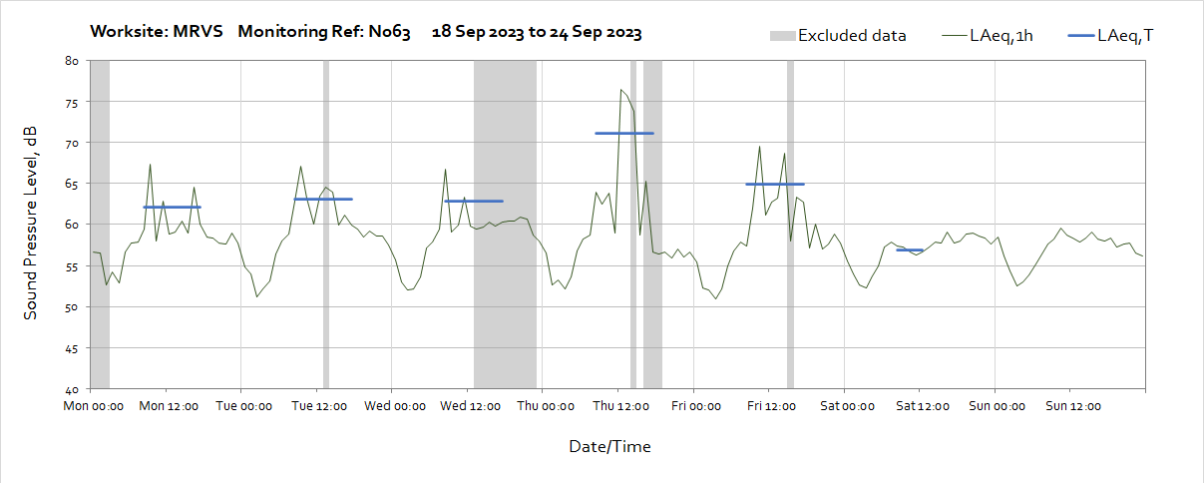
Date/Time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LAeq,T
Sound Pressure Level, dB
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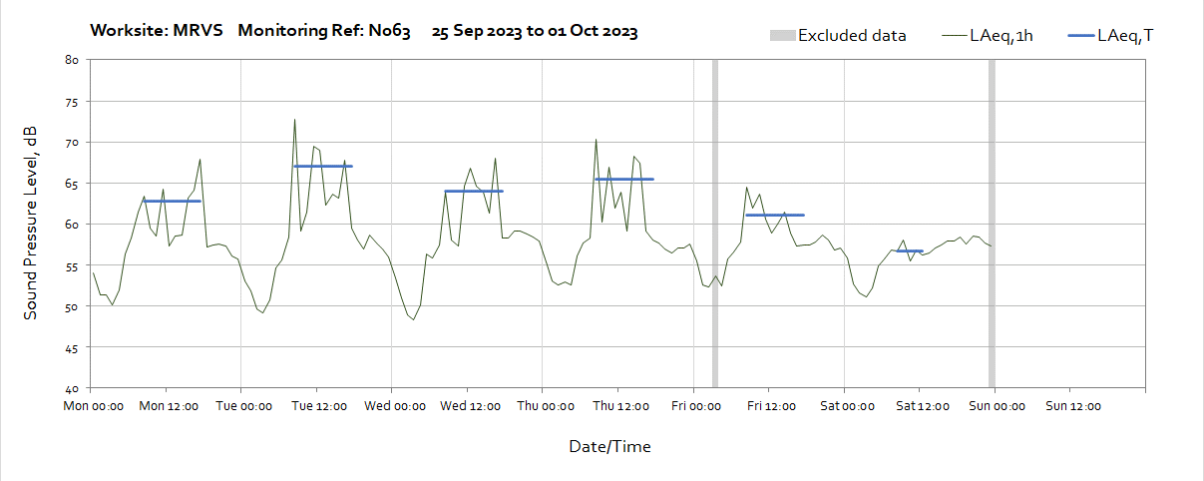

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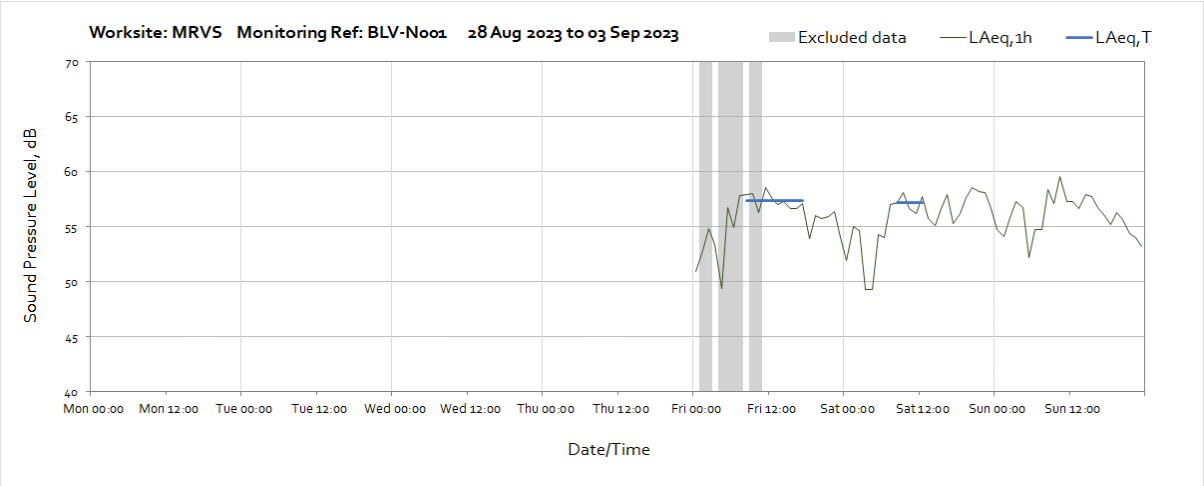

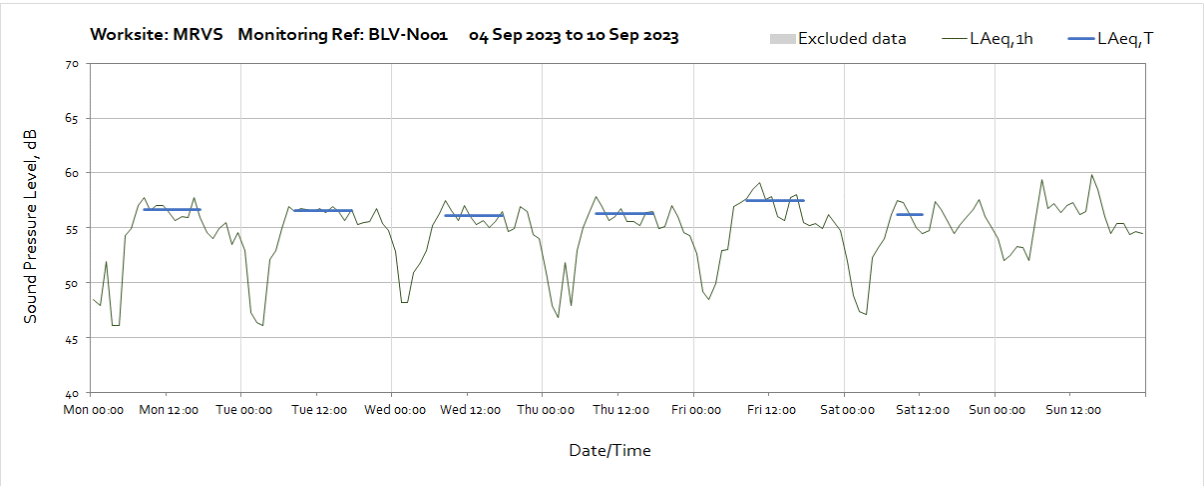

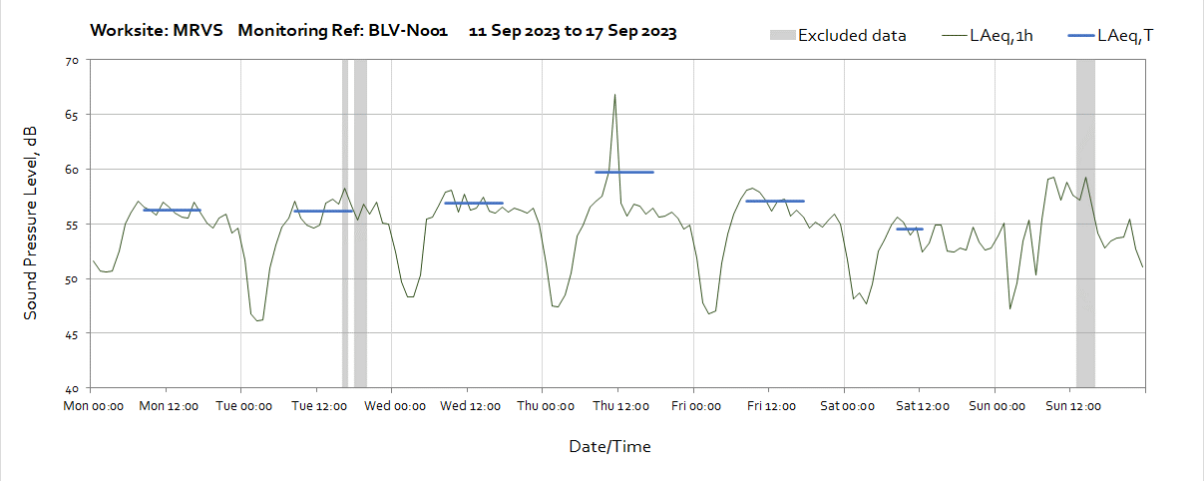
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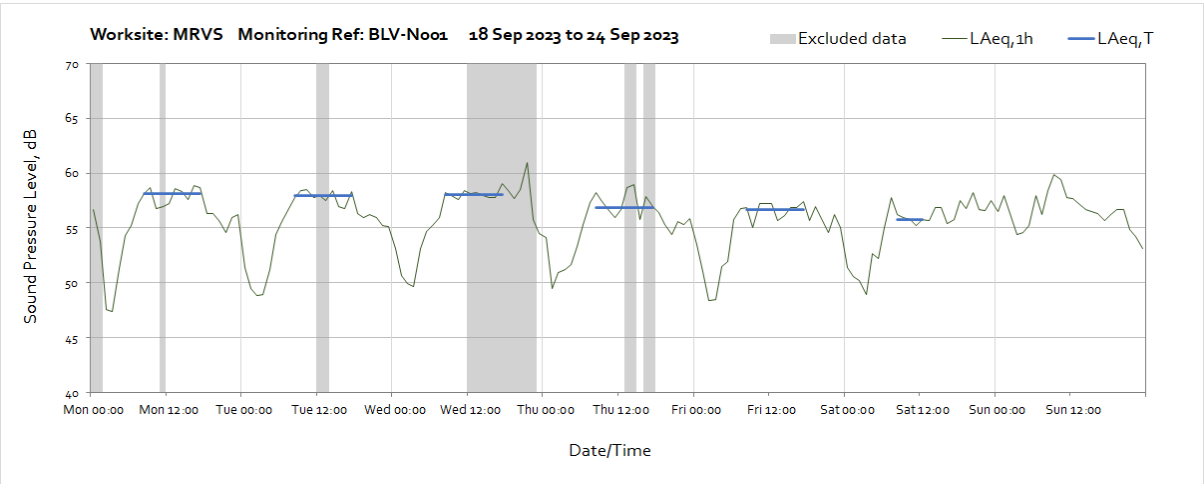
Sun 12:00
Date/Time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LAeq,T
Sound Pressure Level, dB
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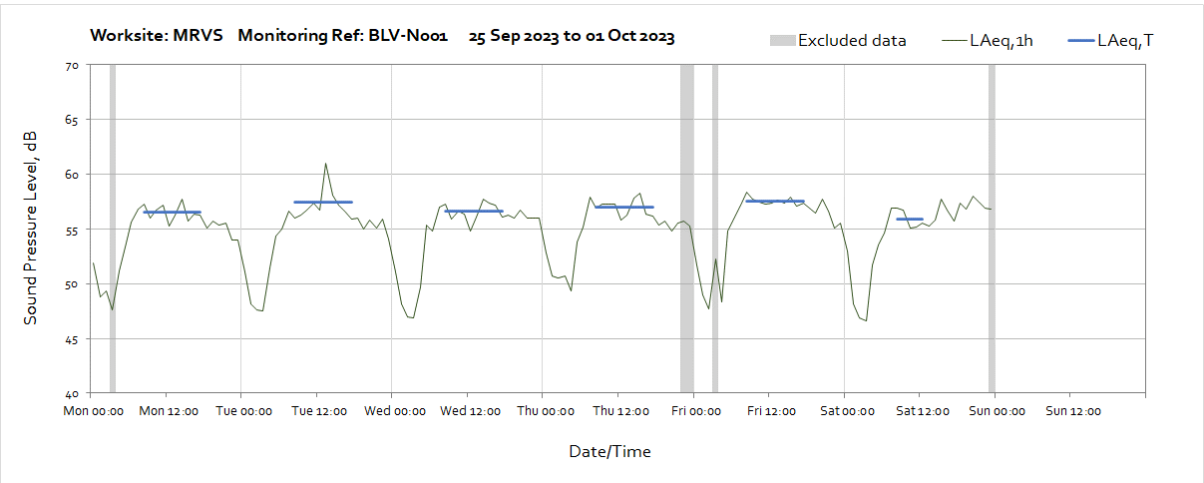
Date/Time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Excluded data
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Sound Pressure Level, dB
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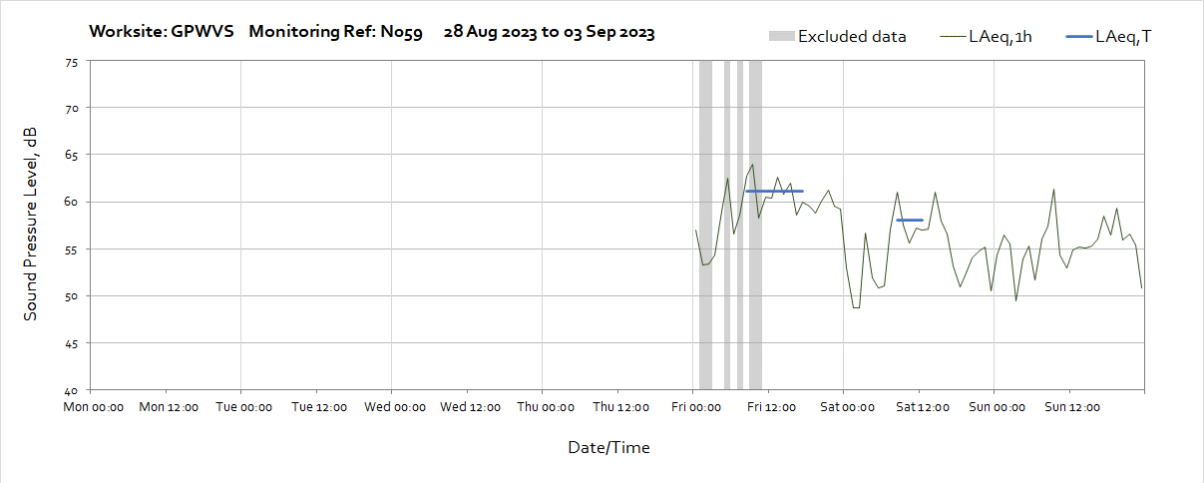
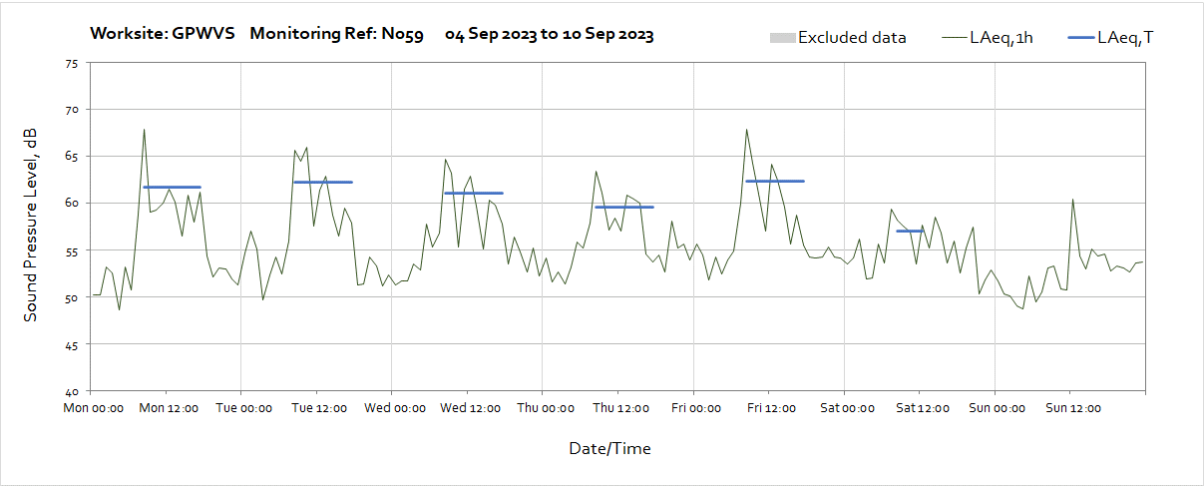
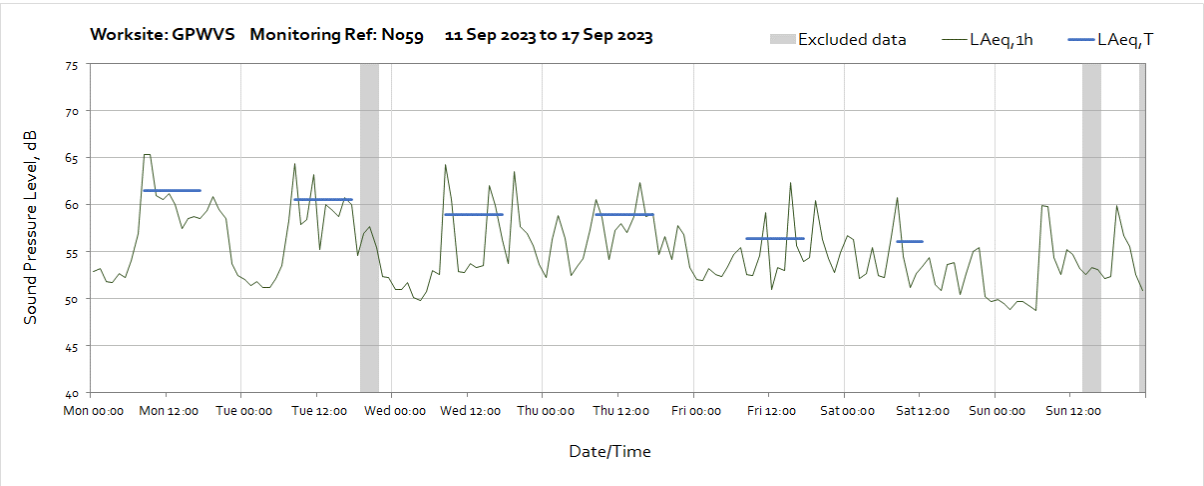
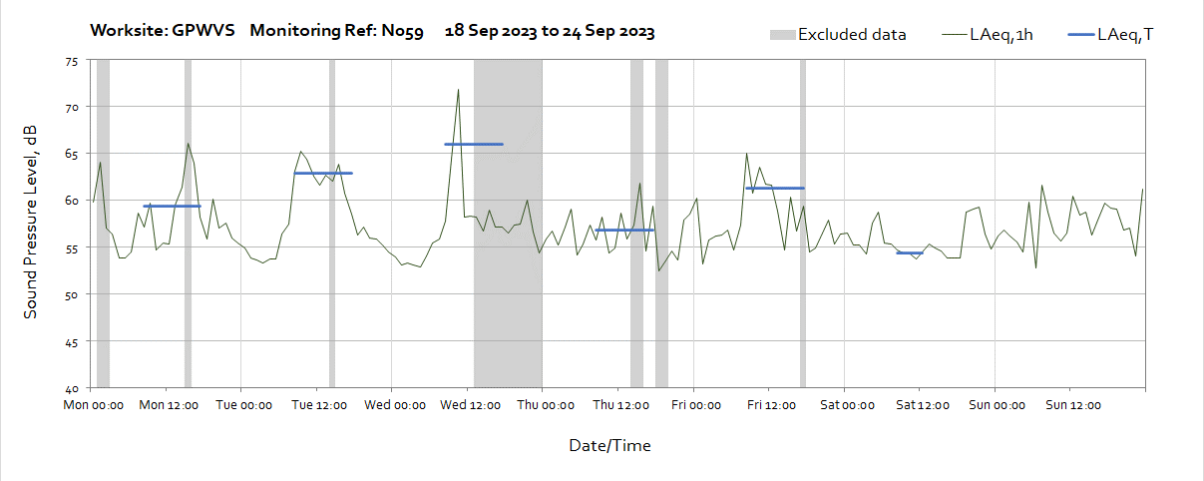
Sun 12:00
Date/Time

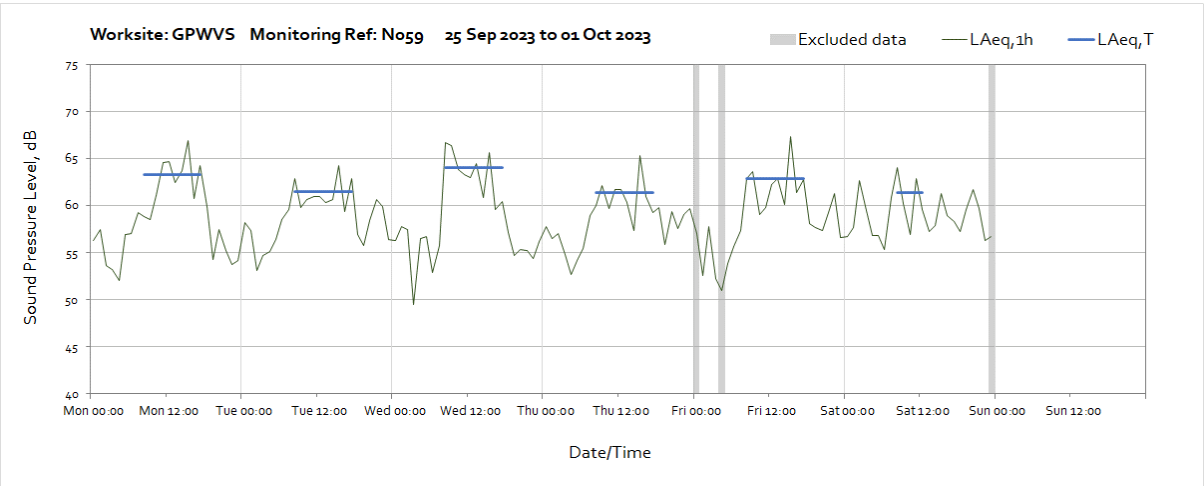
Worksite: GPWVS – Monitoring Ref: N059











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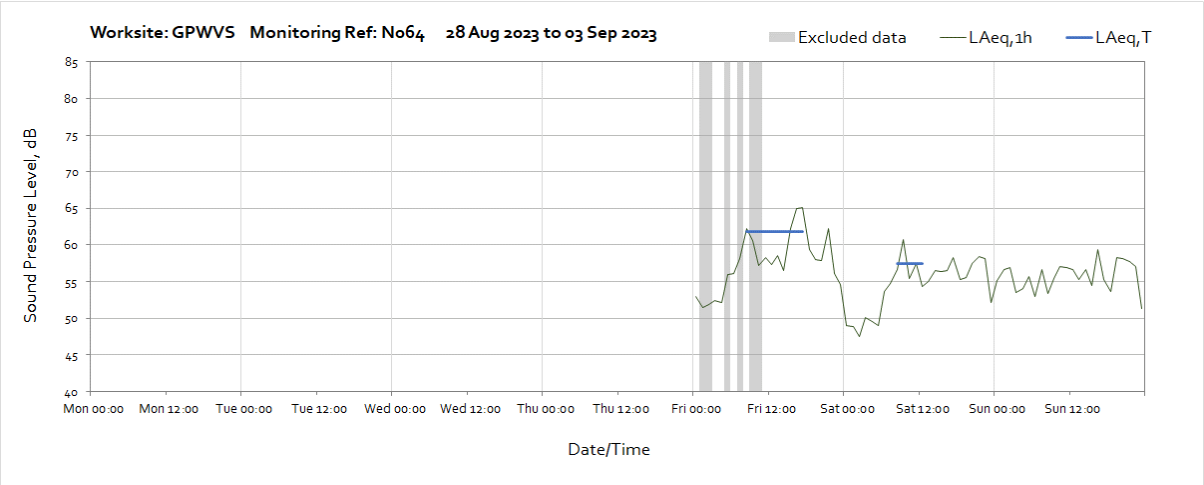

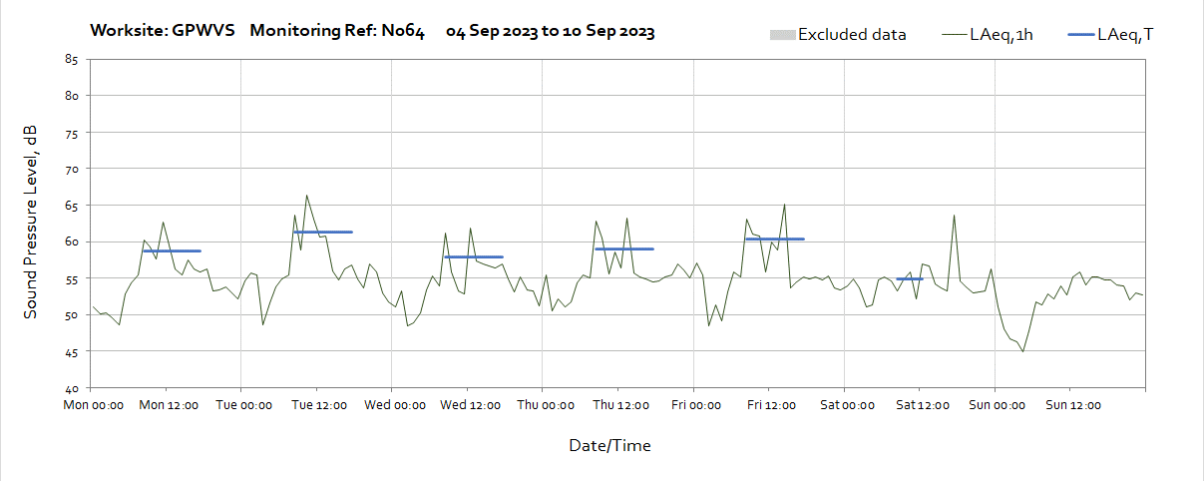
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75
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Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
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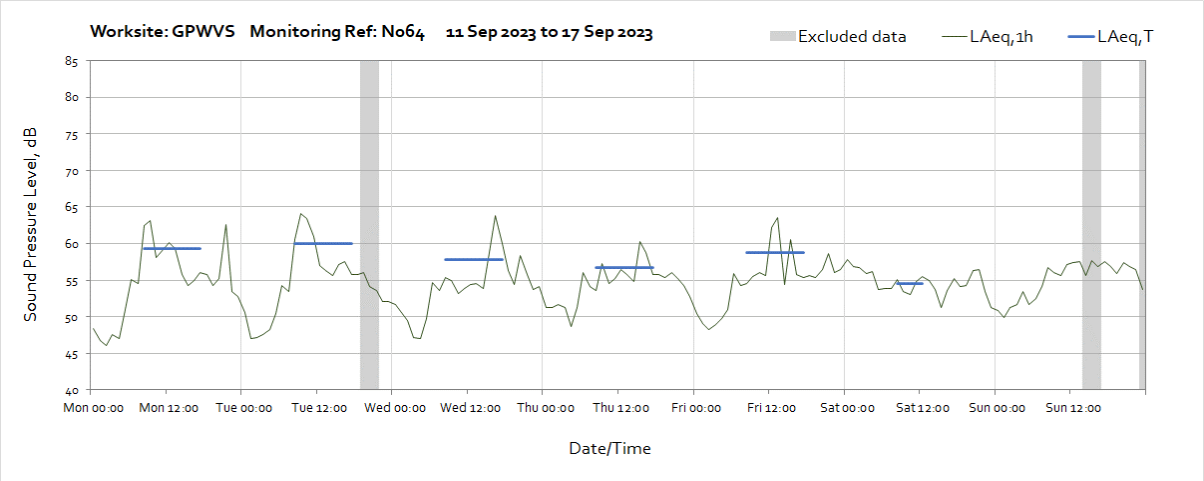
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time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Sound Pressure Level, dB
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75
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Wed 12:00
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Fri 12:00
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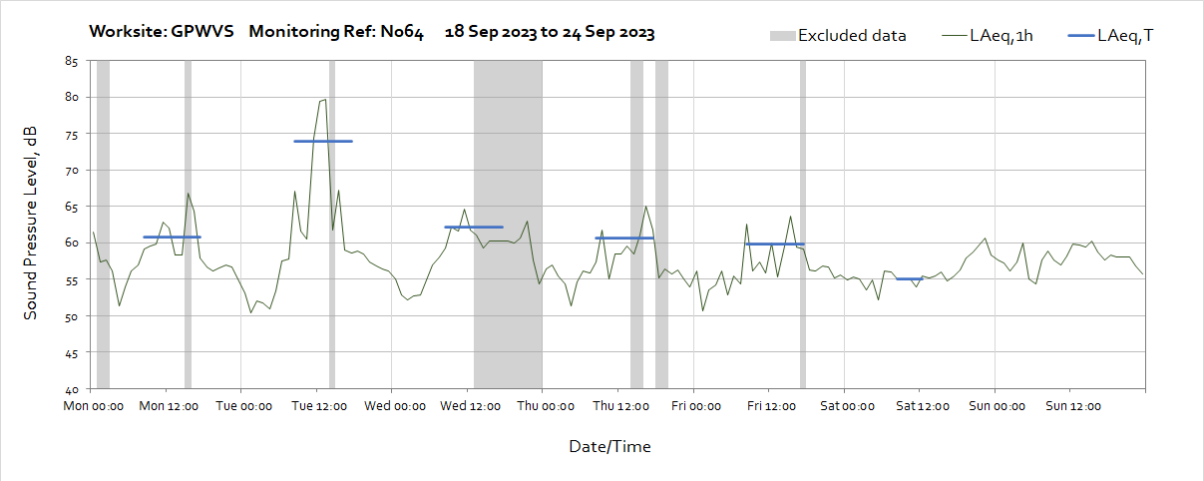
Sun 00:00
Sun 12:00
Date/Time


Worksite: GPWVS Monitoring Ref: No64 18 Sep 2023 to 24 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
80
75
70
65
60
55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
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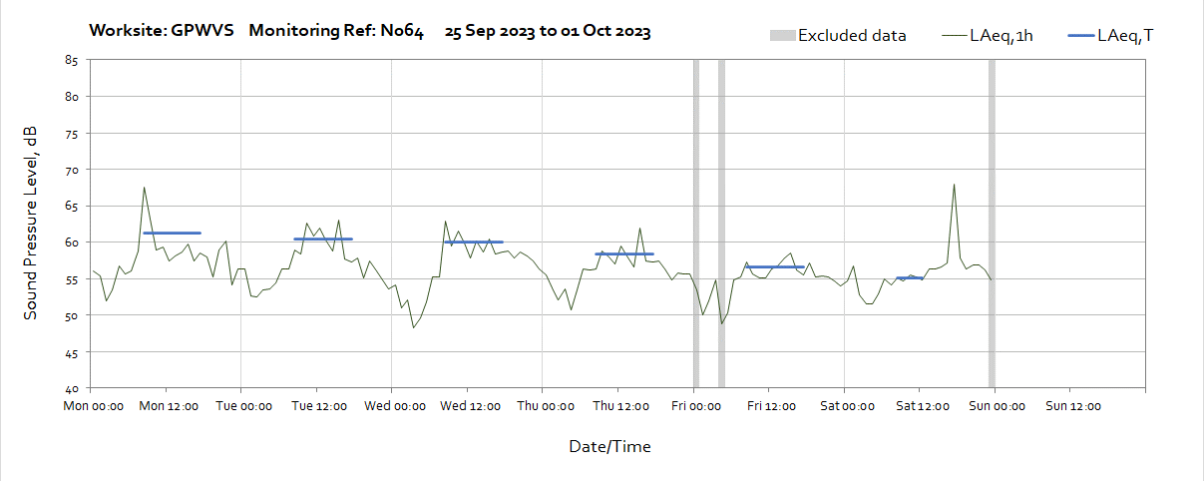
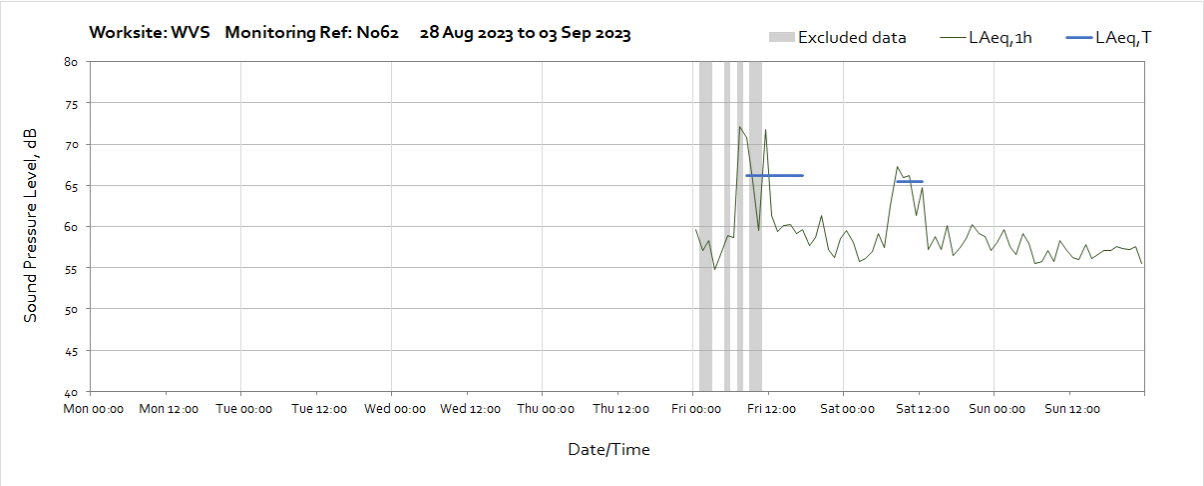
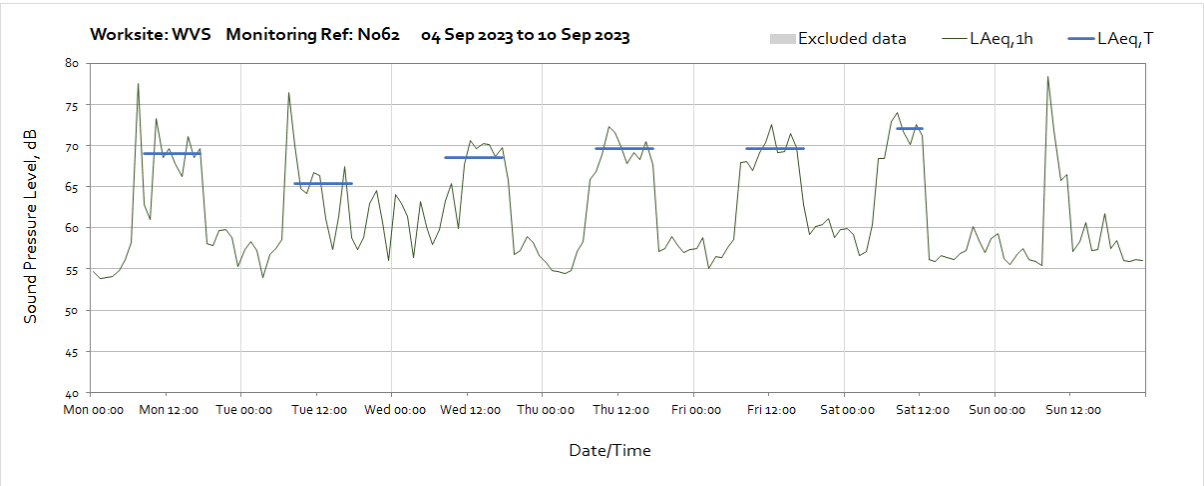
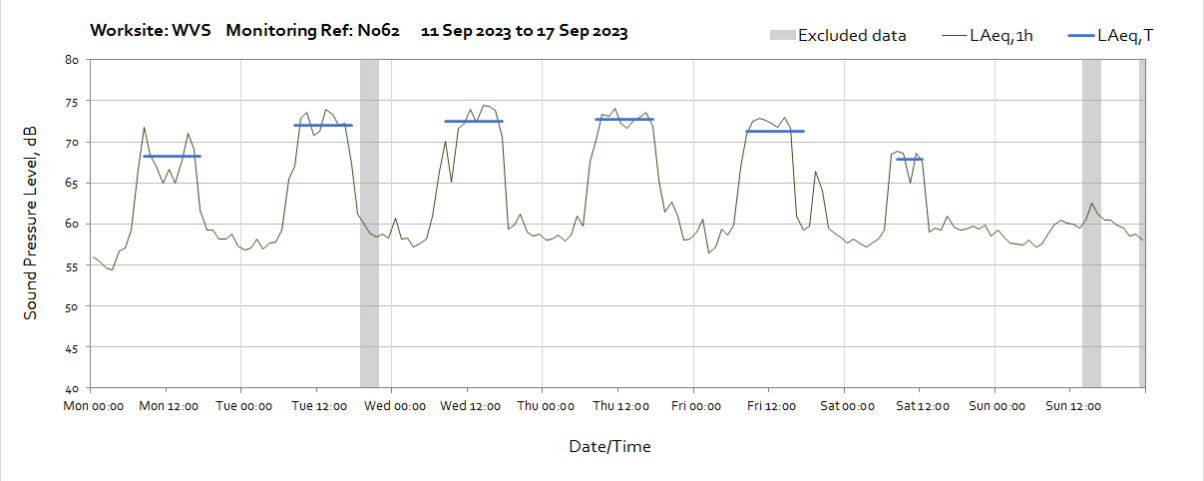
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time



Worksite: WVS – Monitoring Ref: N062






Worksite: WVS Monitoring Ref: No62 11 Sep 2023 to 17 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
80
75
70
65
60
55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
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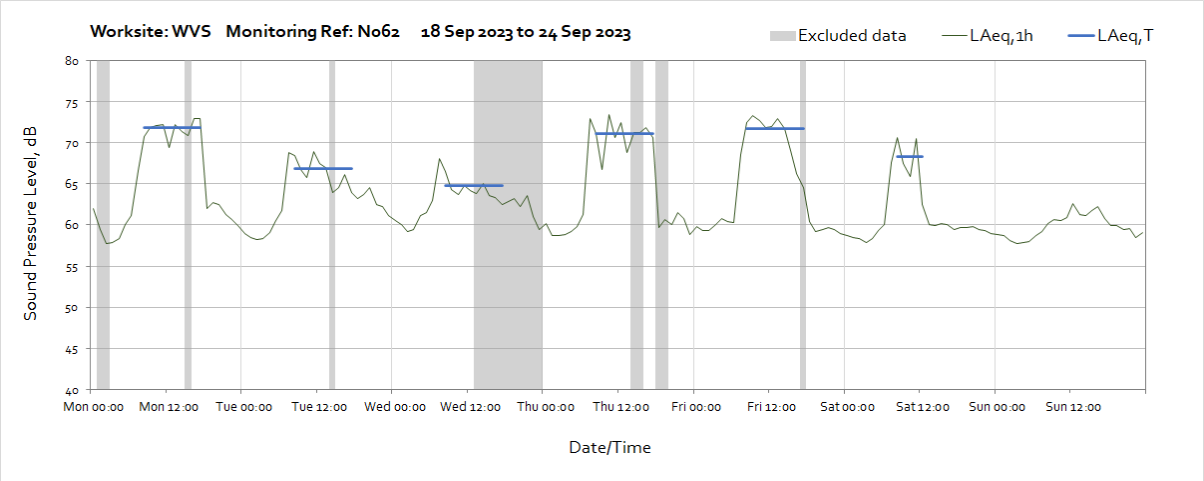
Sun 00:00
Sun 12:00
Date/Time


Worksite: WVS Monitoring Ref: No62 18 Sep 2023 to 24 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
80
75
70
65
60
55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
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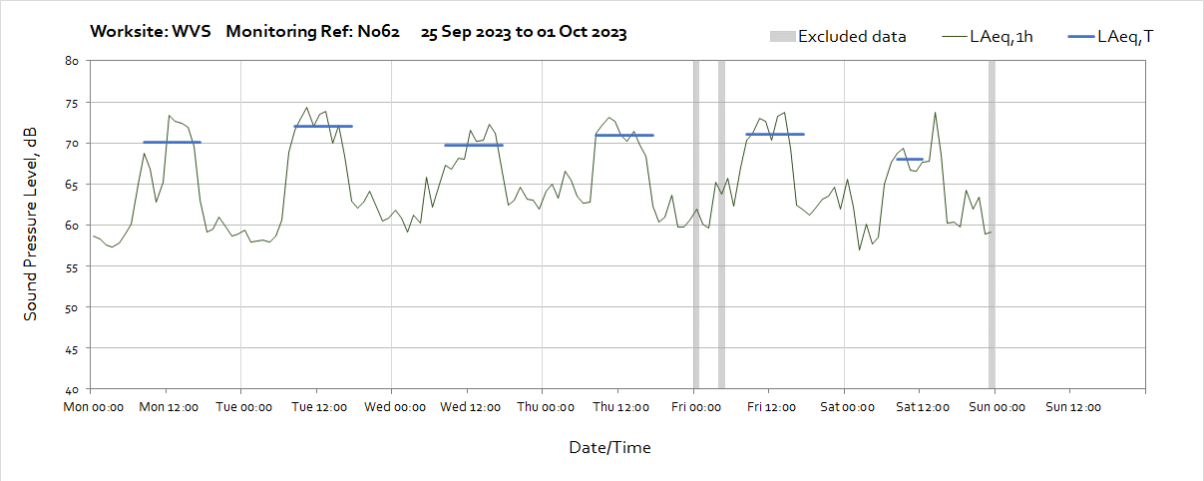
Sun 12:00
Date/Time


Worksite: WVS Monitoring Ref: No62 25 Sep 2023 to 01 Oct 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
80
75
70
65
60
55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
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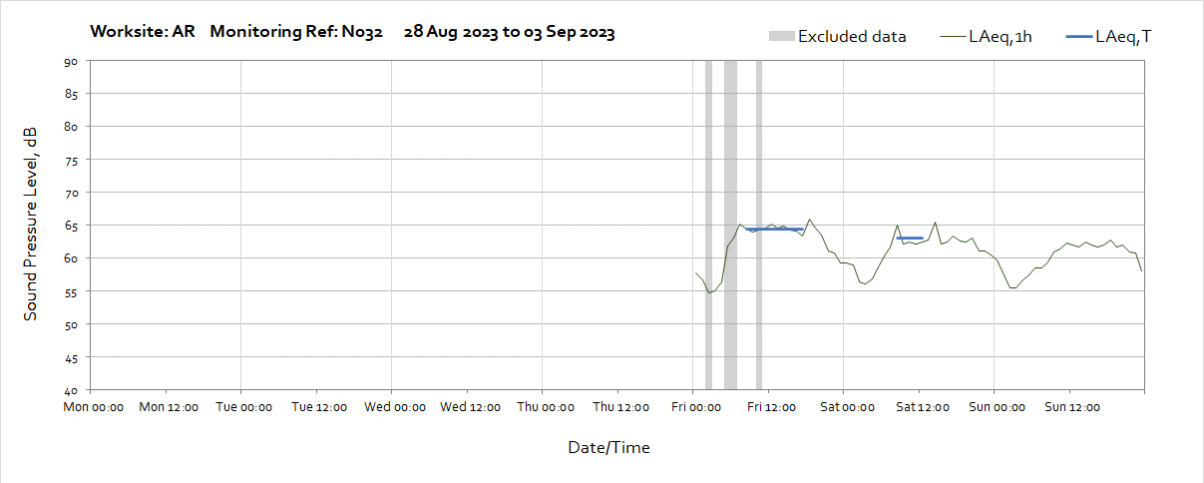
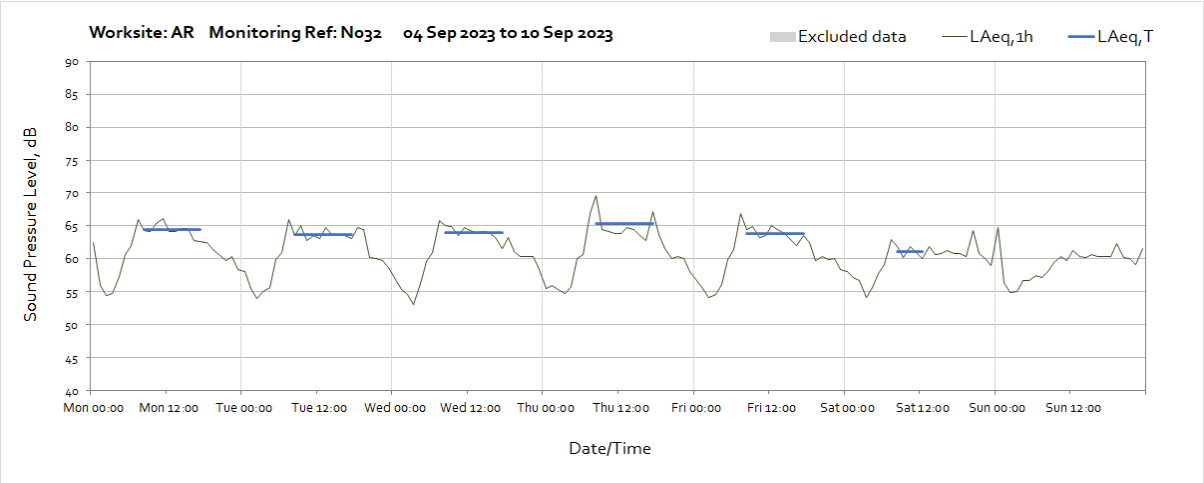
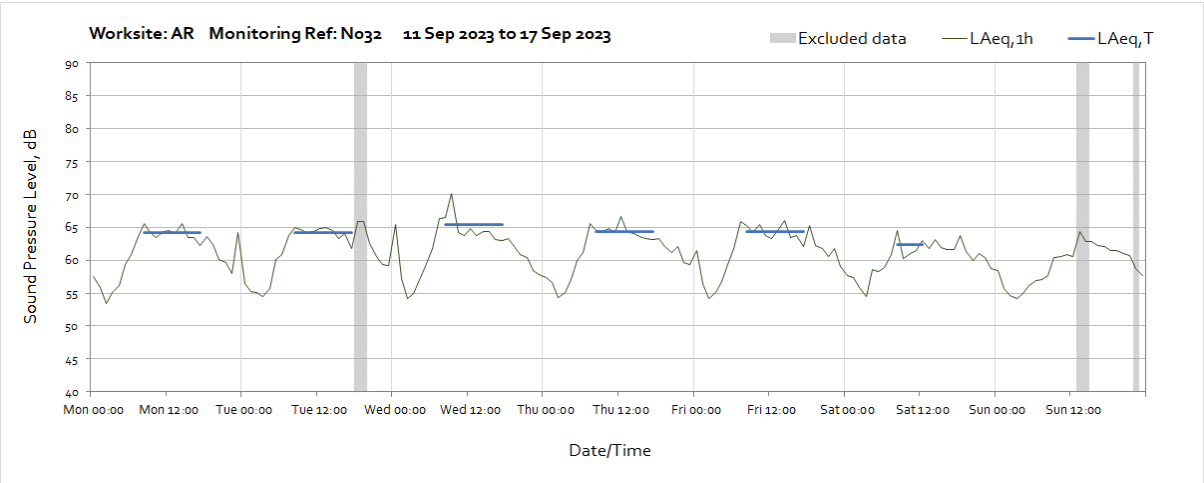
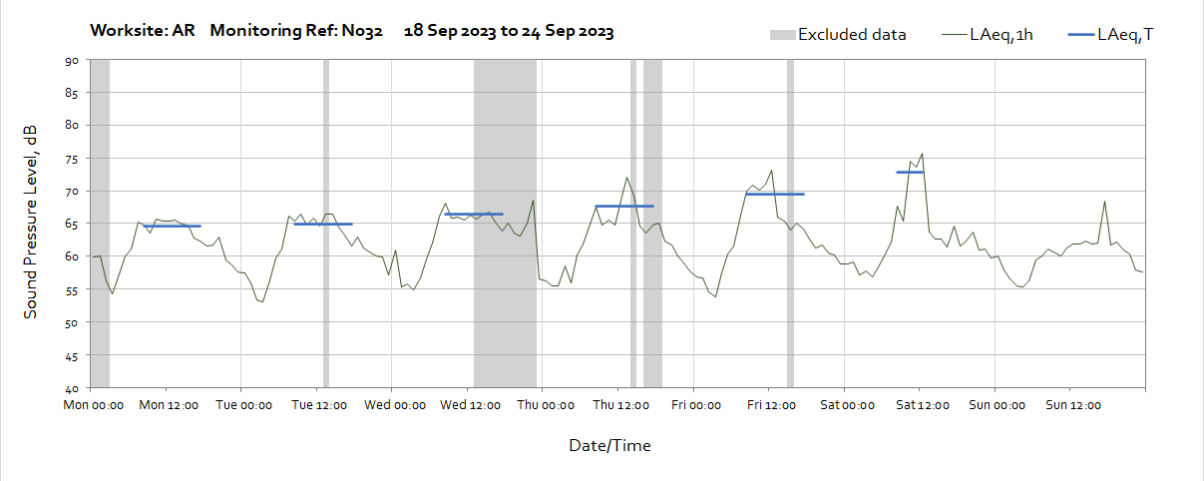
Sun 12:00
Date/Time

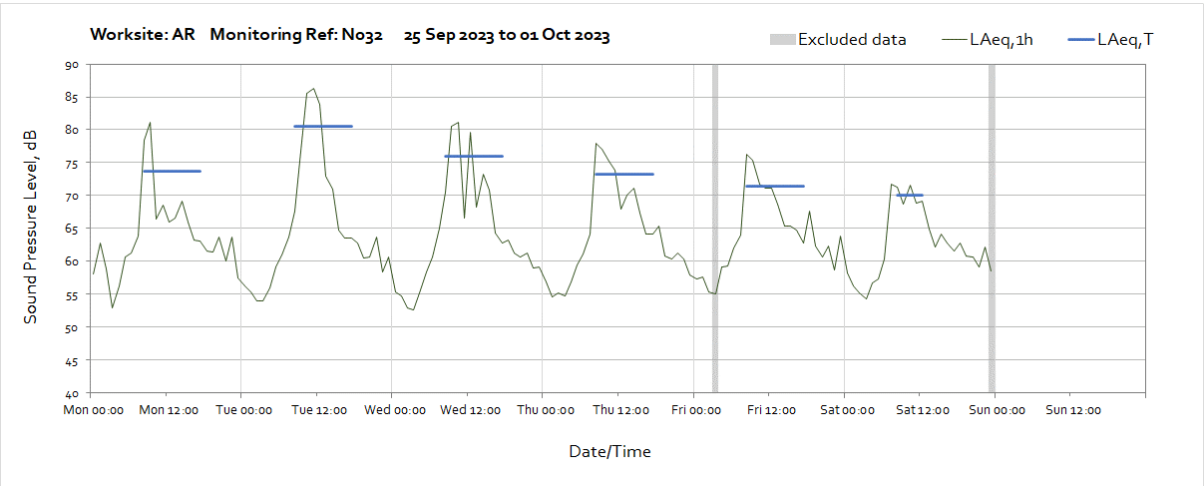
Worksite: AR – Monitoring Ref: N032



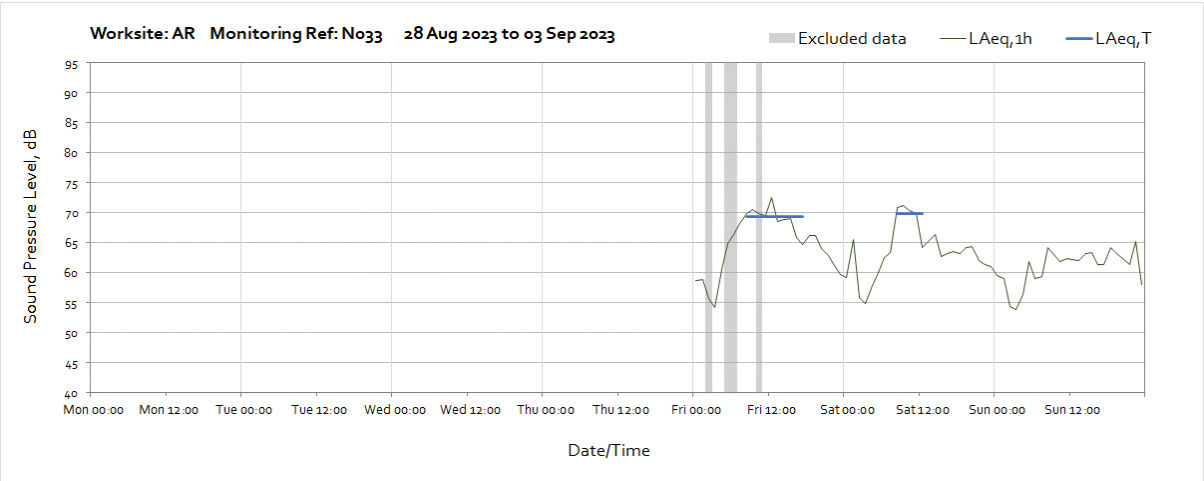


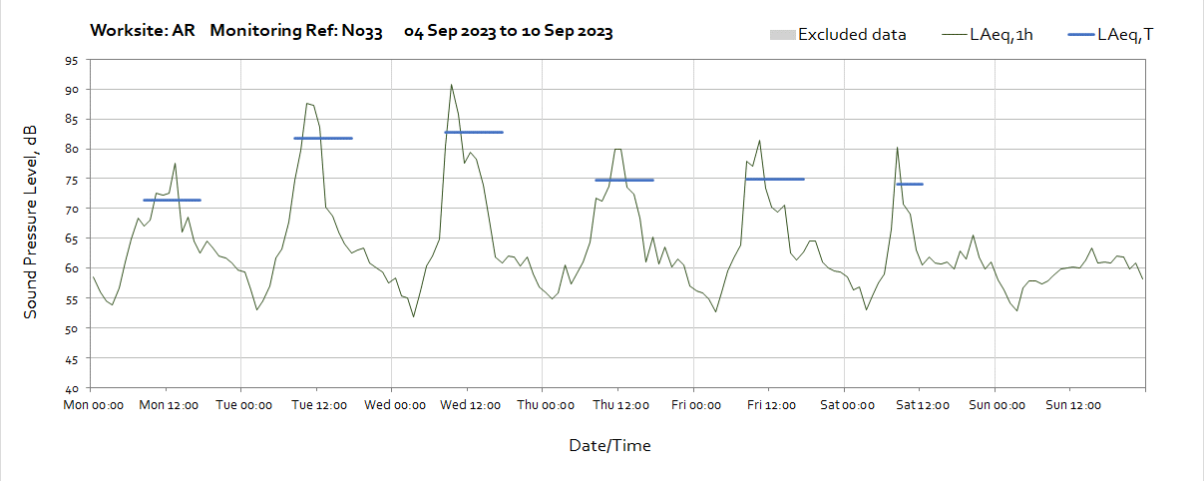






Worksite: AR – Monitoring Ref: N033




Worksite: AR Monitoring Ref: No33 04 Sep 2023 to 10 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
95
90
85
80
75
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65
60
55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
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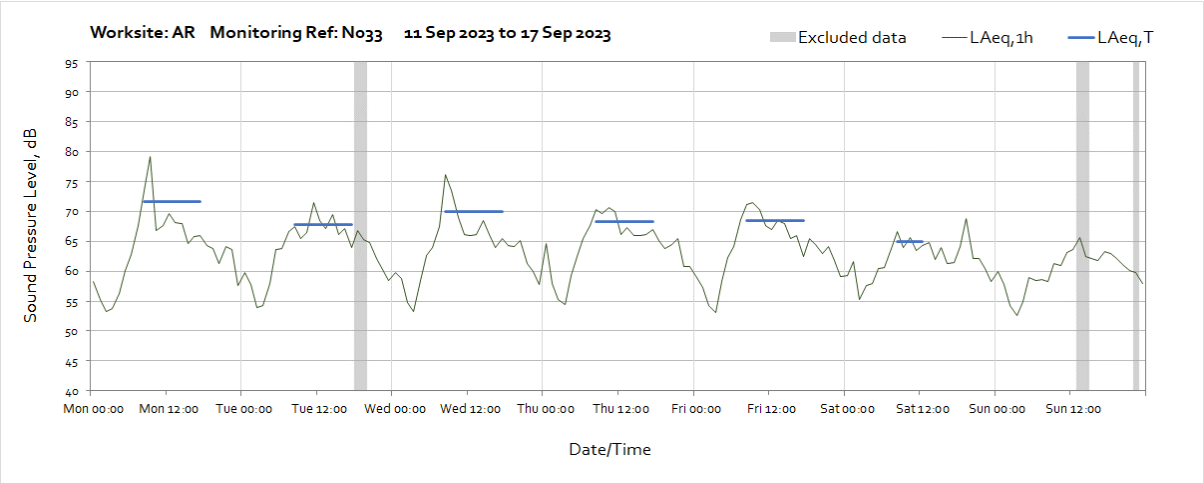
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: AR Monitoring Ref: No33 11 Sep 2023 to 17 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
95
90
85
80
75
70
65
60
55
50
45
40
Mon 00:00
Mon 12:00
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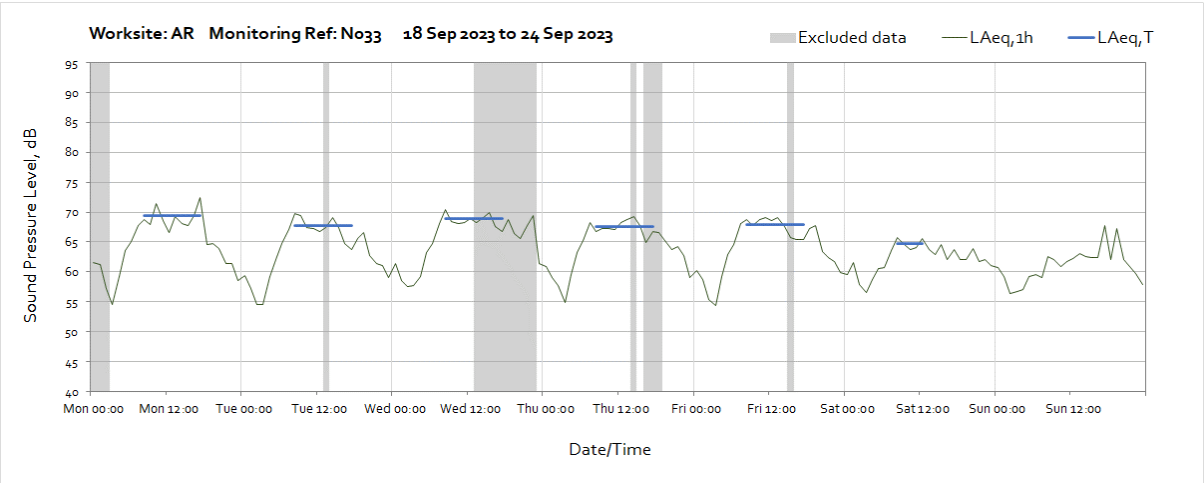
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: AR Monitoring Ref: No33 18 Sep 2023 to 24 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
95
90
85
80
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70
65
60
55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
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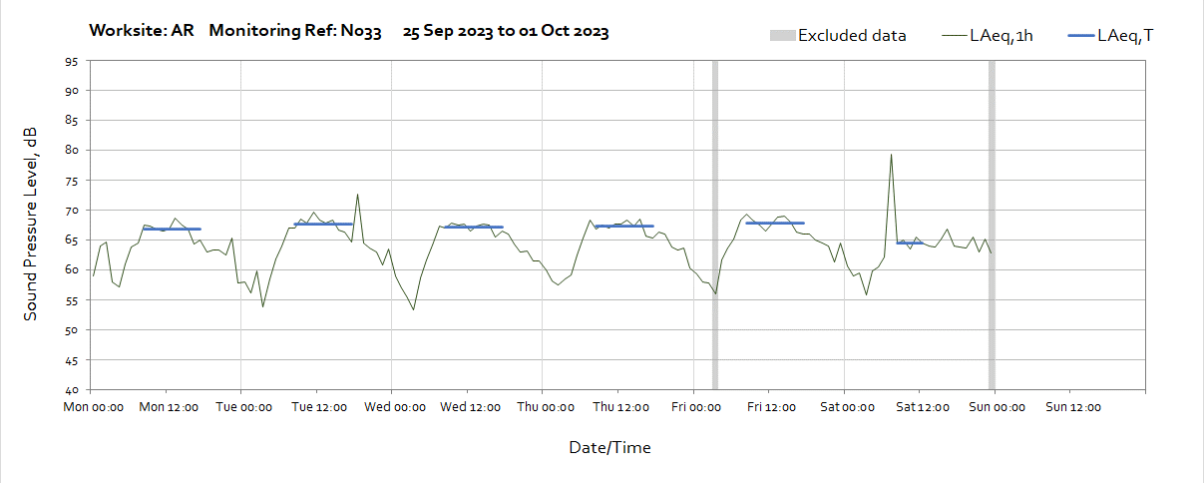
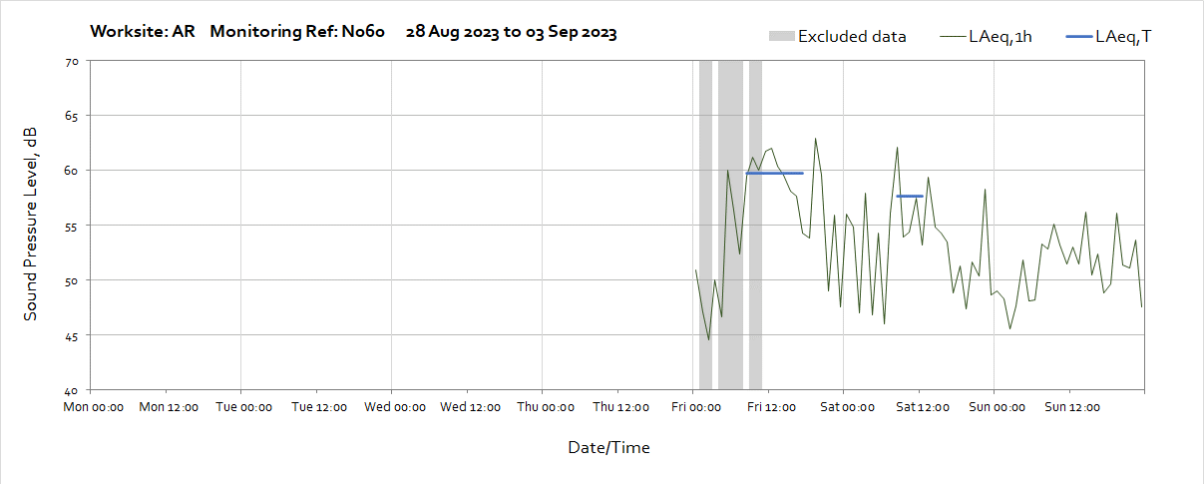
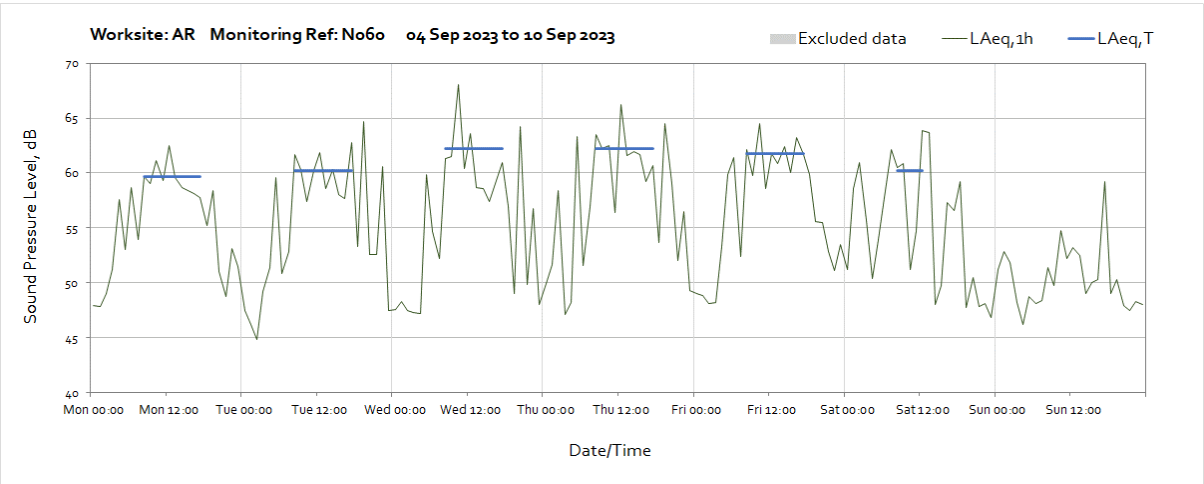
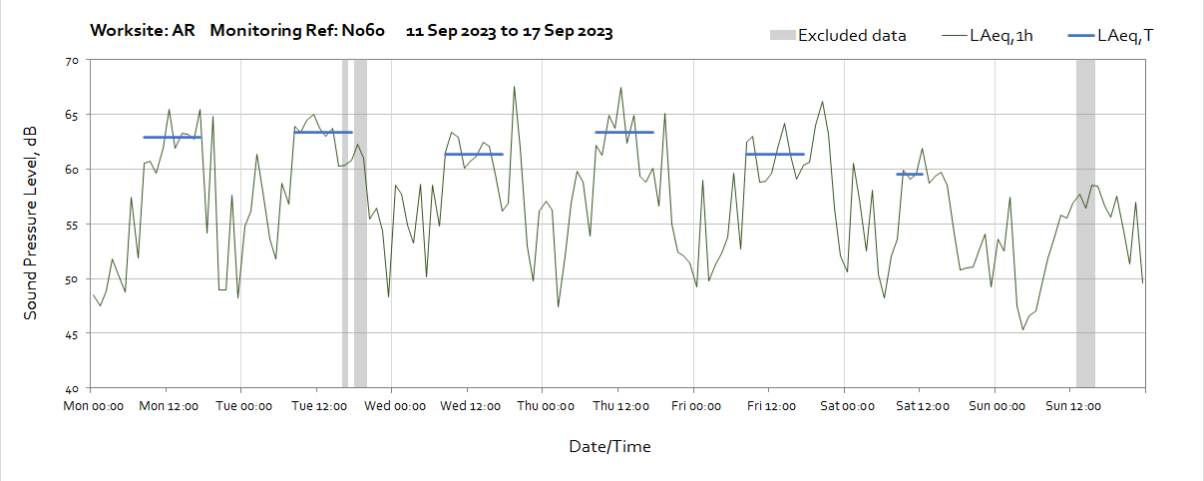
Sun 12:00
Date/Time



Worksite: AR – Monitoring Ref: N060






Worksite: AR Monitoring Ref: No60 11 Sep 2023 to 17 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
55
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40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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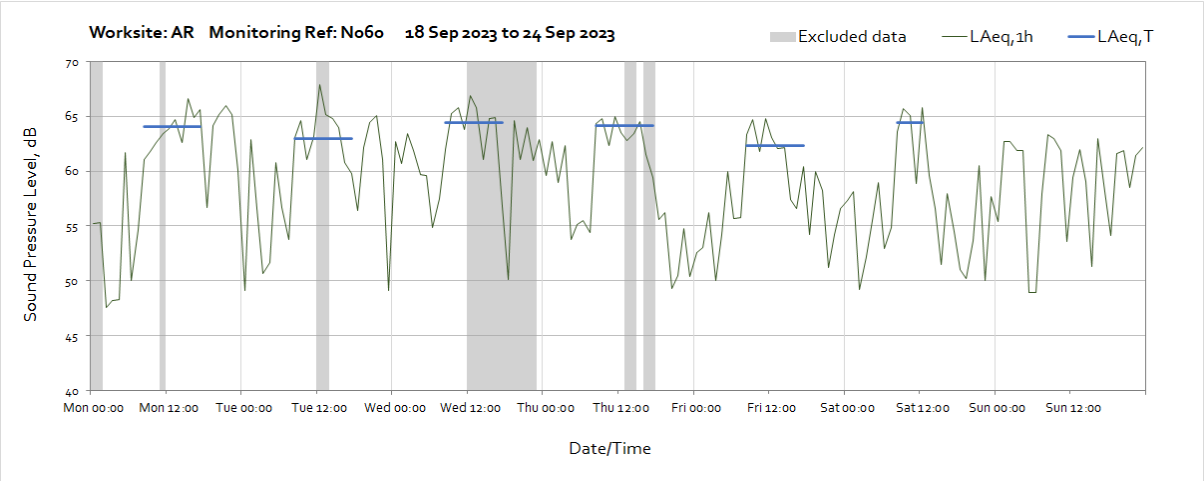
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: AR Monitoring Ref: No60 18 Sep 2023 to 24 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
55
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45
40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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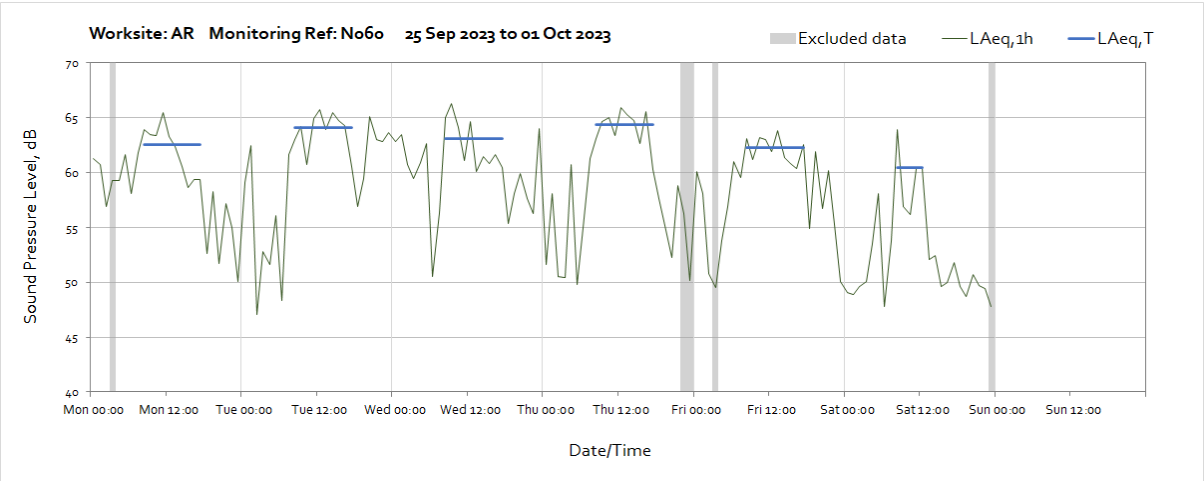
Sun 12:00
Date/Time


Worksite: AR Monitoring Ref: No60 25 Sep 2023 to 01 Oct 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
55
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45
40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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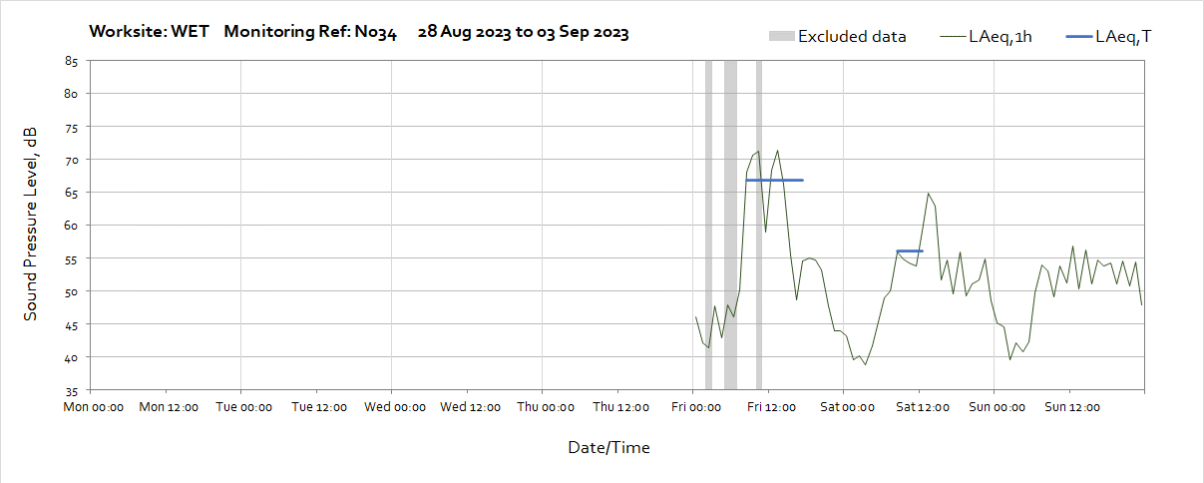
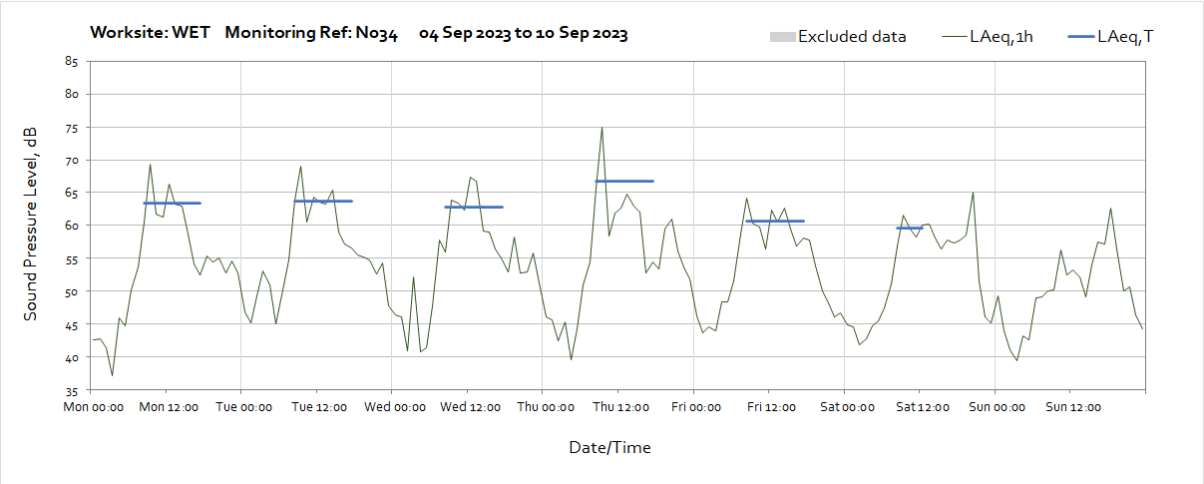
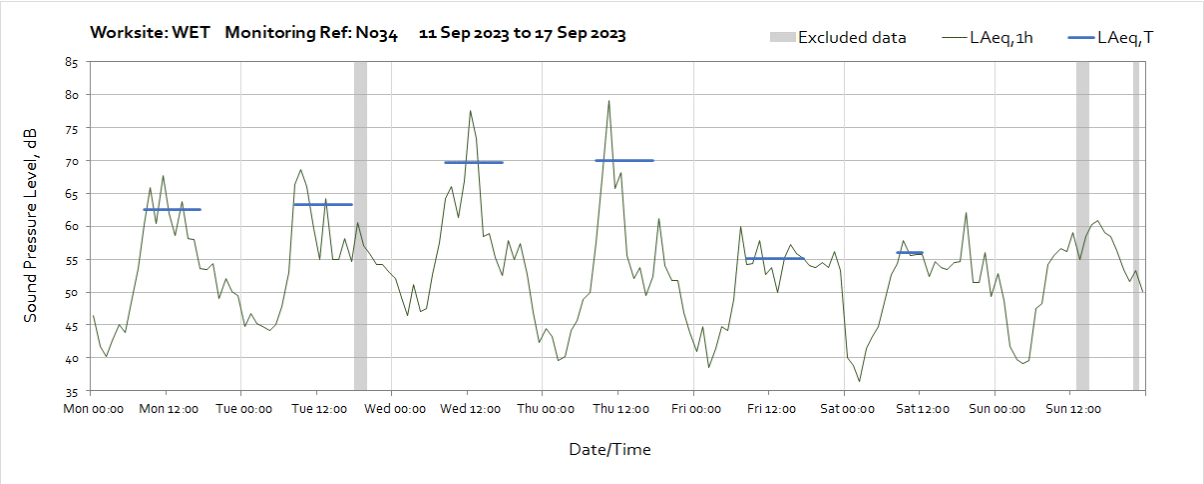
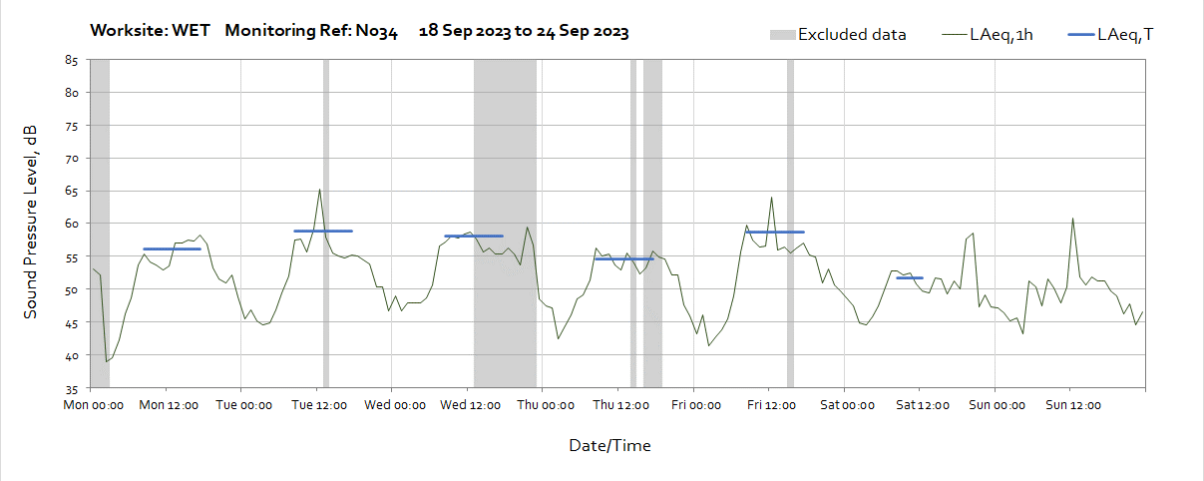
Sun 00:00
Sun 12:00
Date/Time

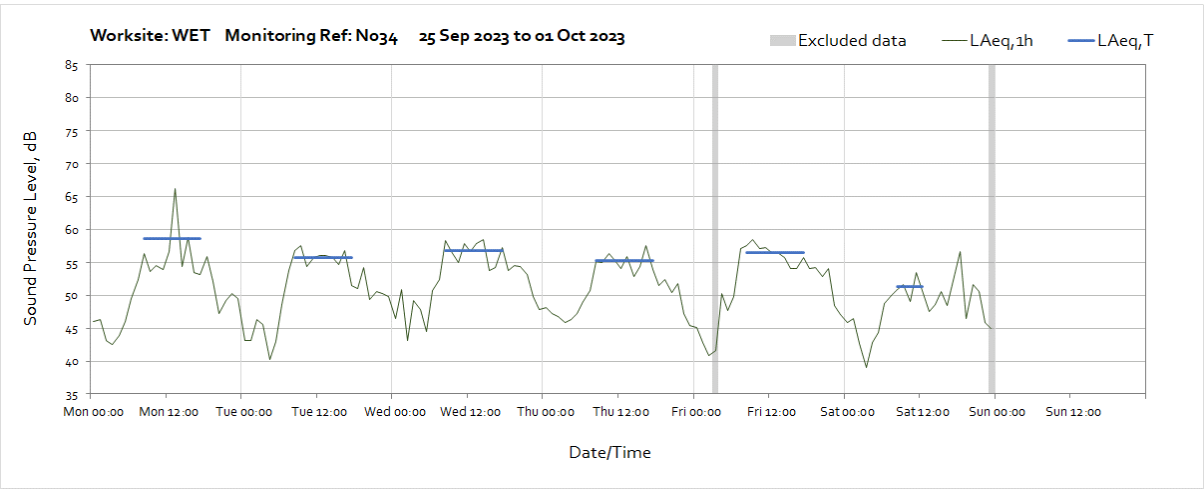
Worksite: WET – Monitoring Ref: N034



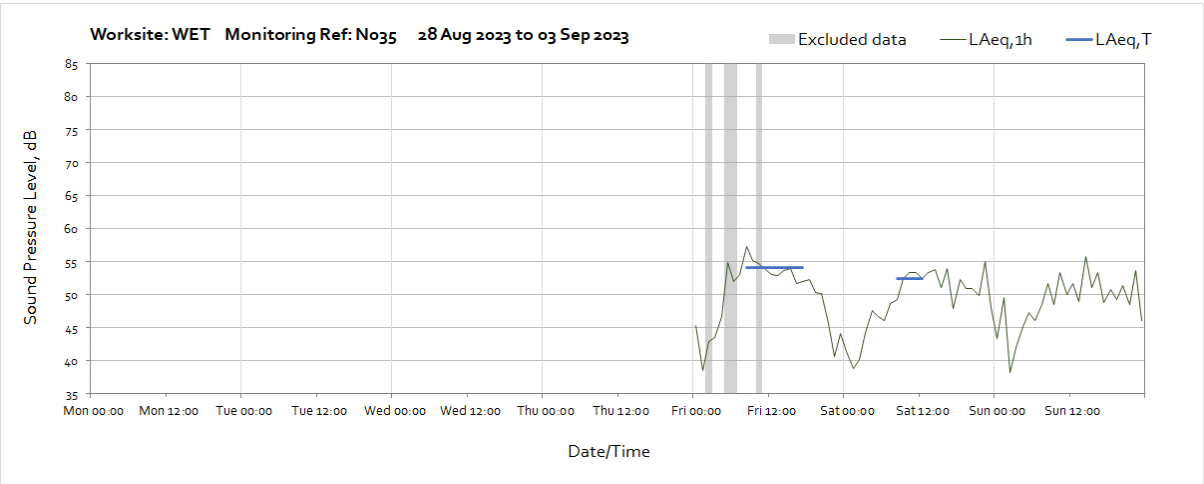


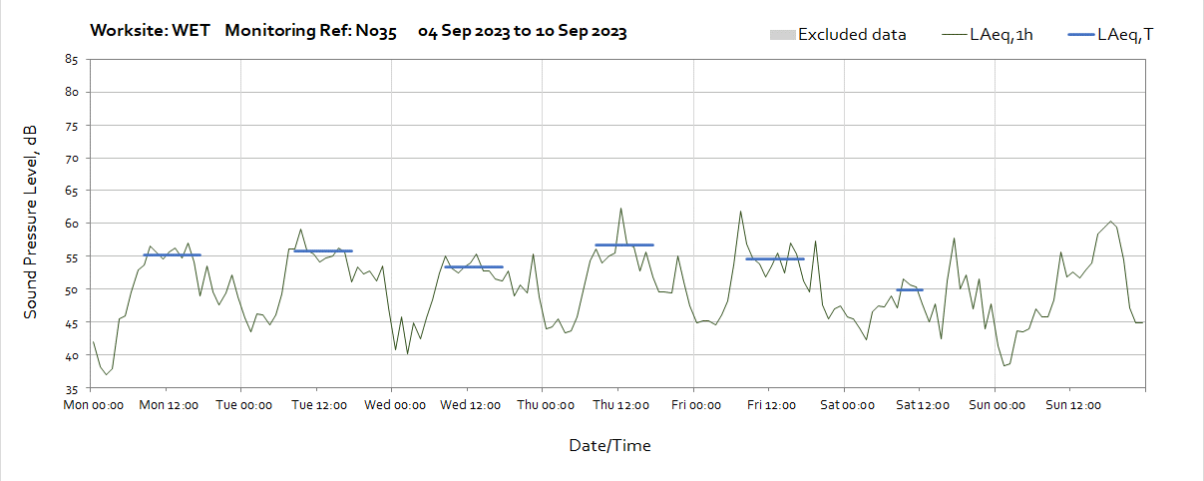


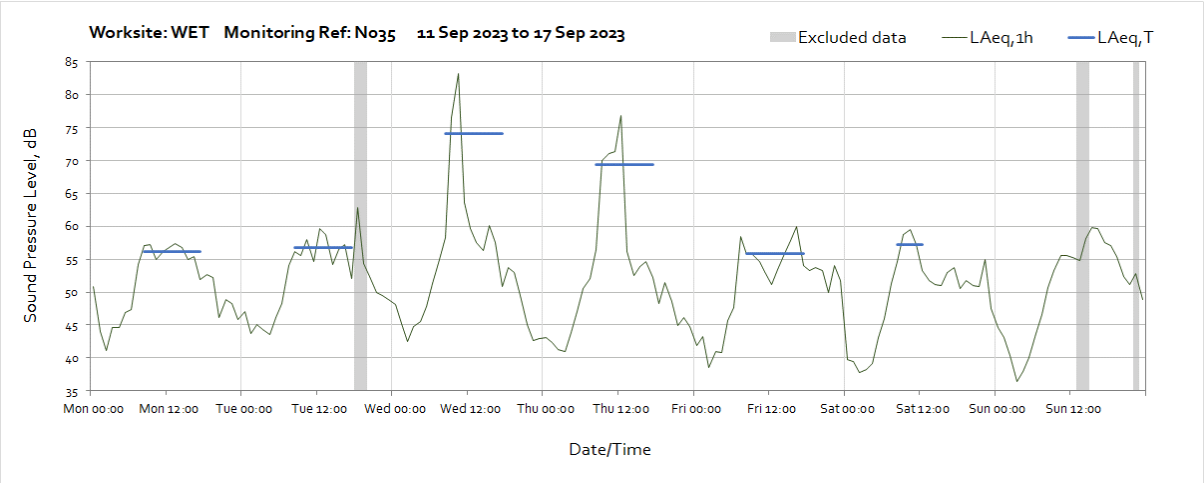


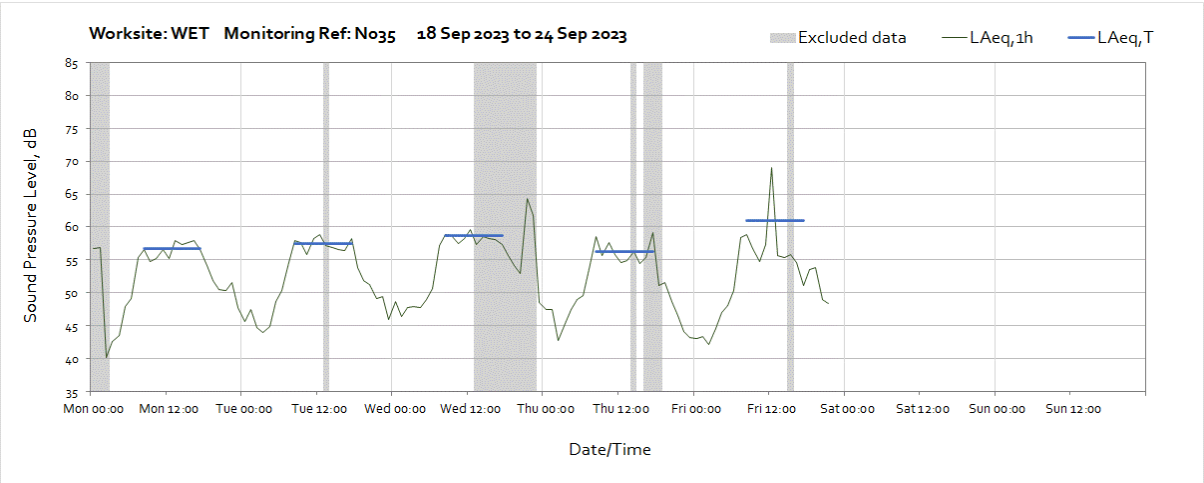


Worksite: WET – Monitoring Ref: N035

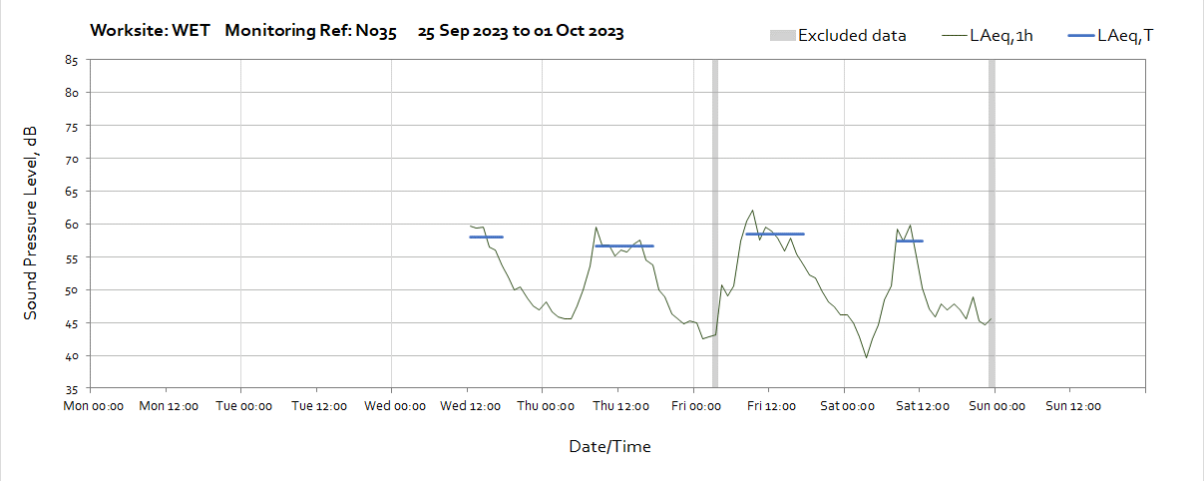






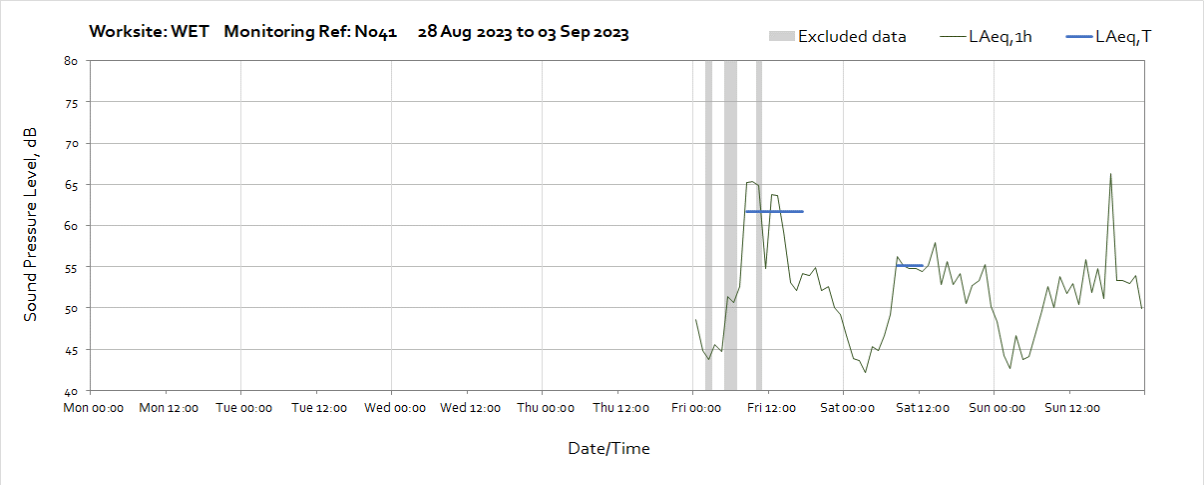


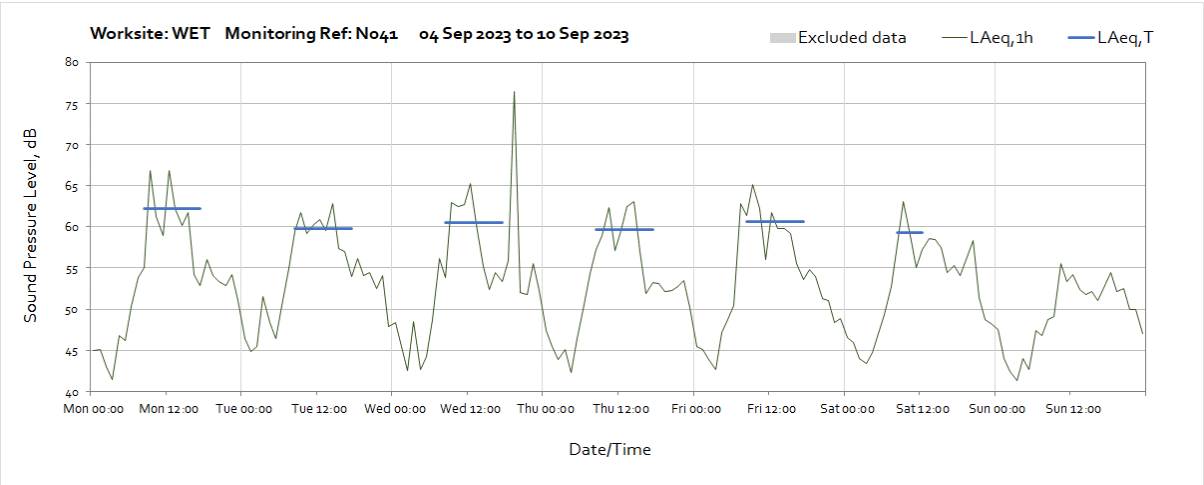
Note: Missing data from 22:00 on Friday 22nd September to 12:00 on Wednesday 27th September was due to an SD card error. The problem has now been resolved.

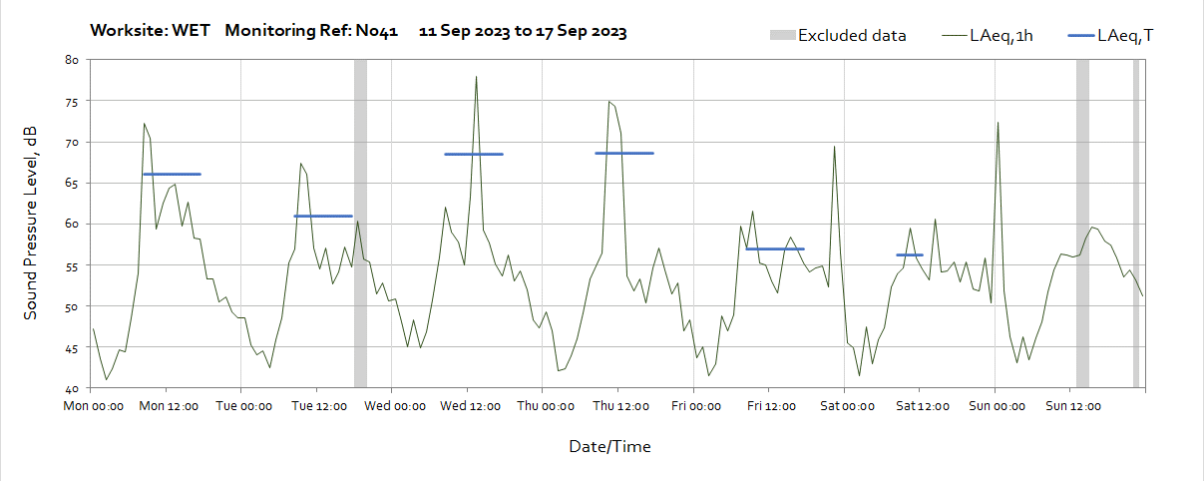


Note: Missing data from 22:00 on Friday 22nd September to 12:00 on Wednesday 27th September was due to an SD card error. The problem has now been resolved.

Worksite: WET – Monitoring Ref: N041






Worksite: WET Monitoring Ref: No41 11 Sep 2023 to 17 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
80
75
70
65
60
55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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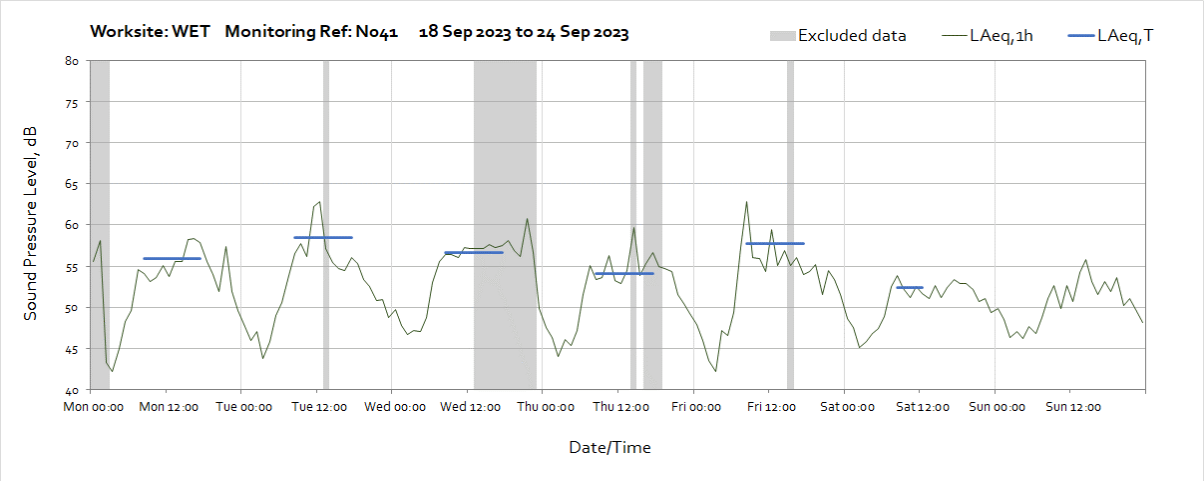
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: WET Monitoring Ref: No41 18 Sep 2023 to 24 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
80
75
70
65
60
55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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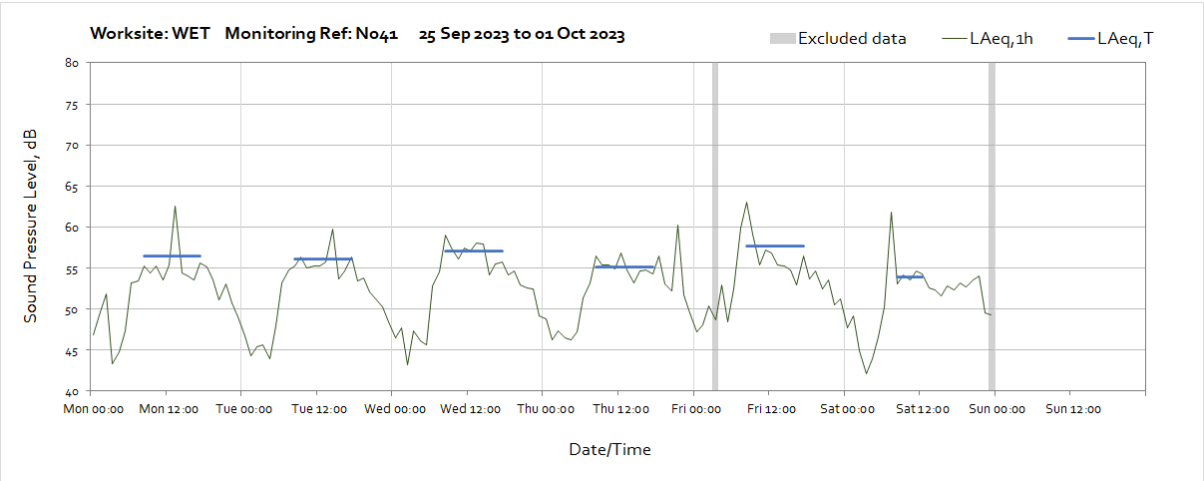
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: WET Monitoring Ref: No41 25 Sep 2023 to 01 Oct 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
80
75
70
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60
55
50
45
40
Mon 00:00
Mon 12:00
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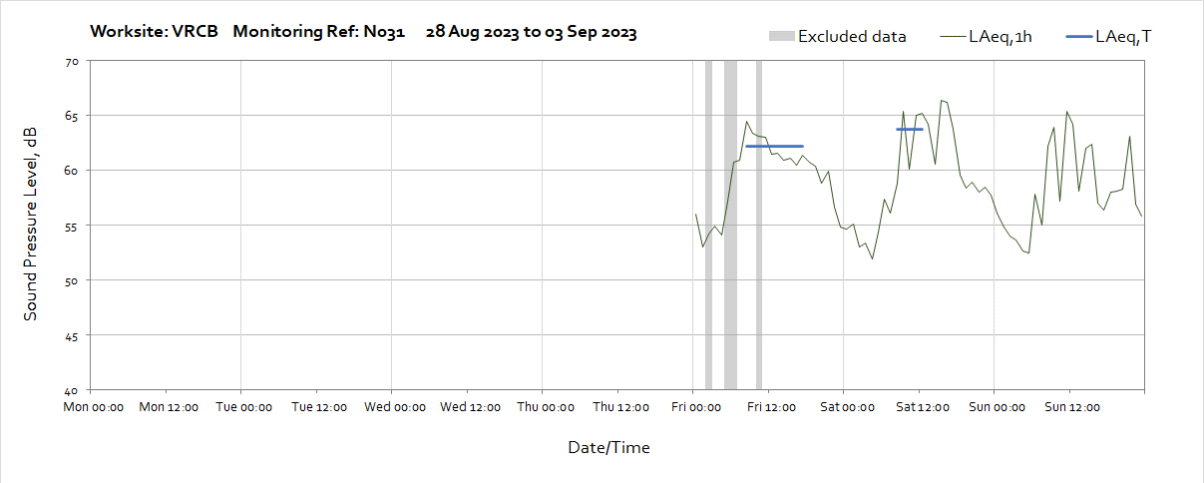
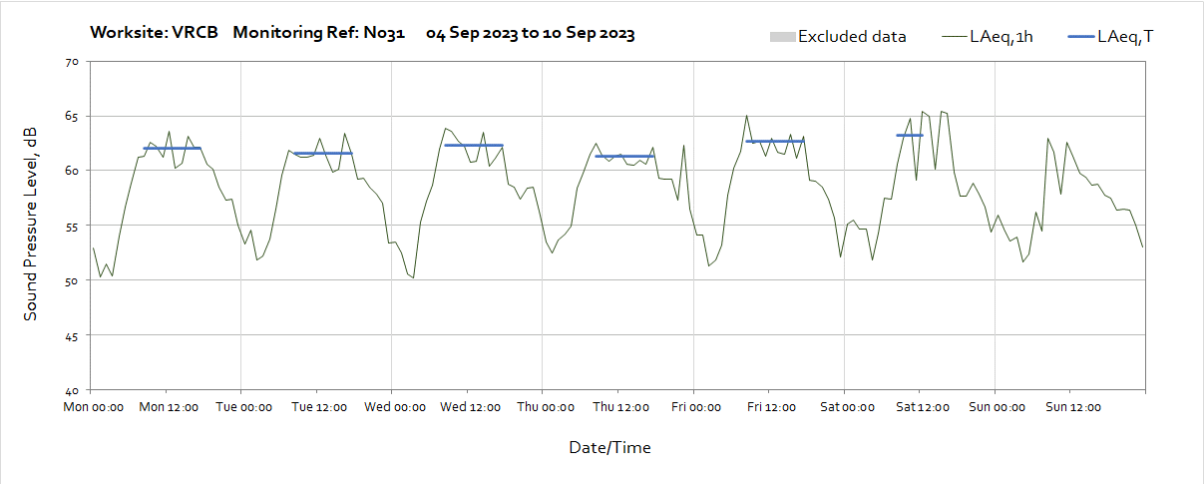
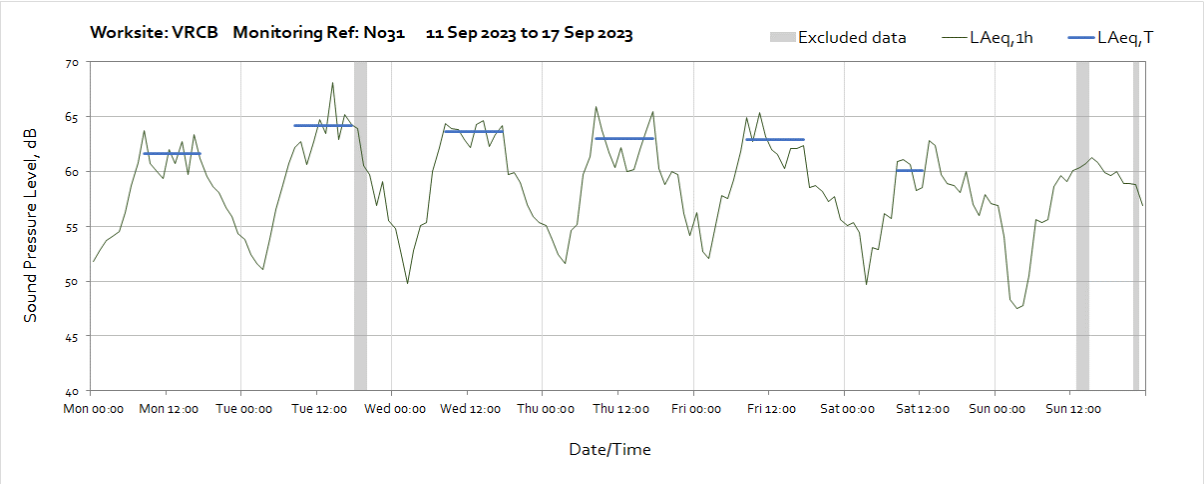
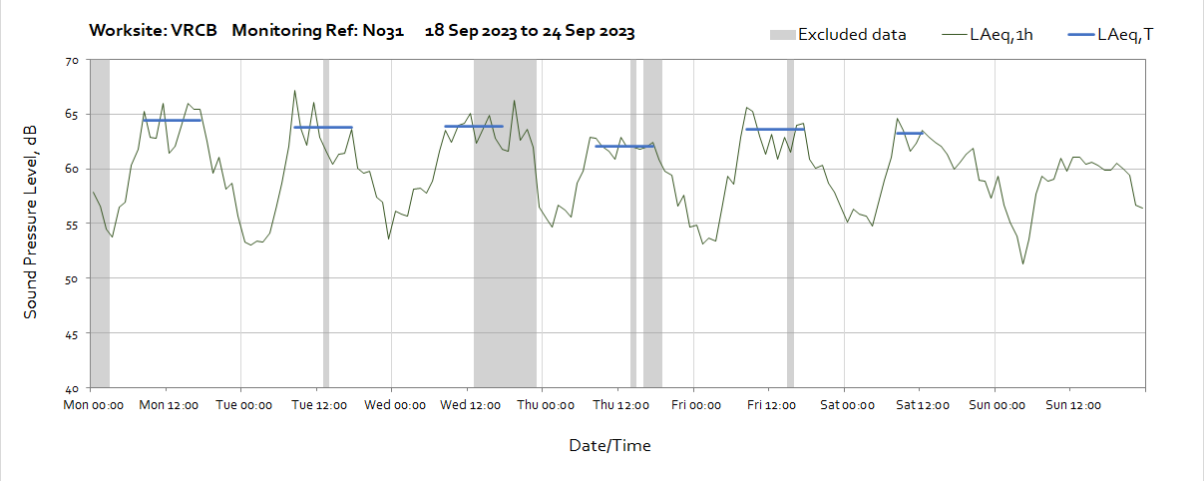
Sun 00:00
Sun 12:00
Date/Time

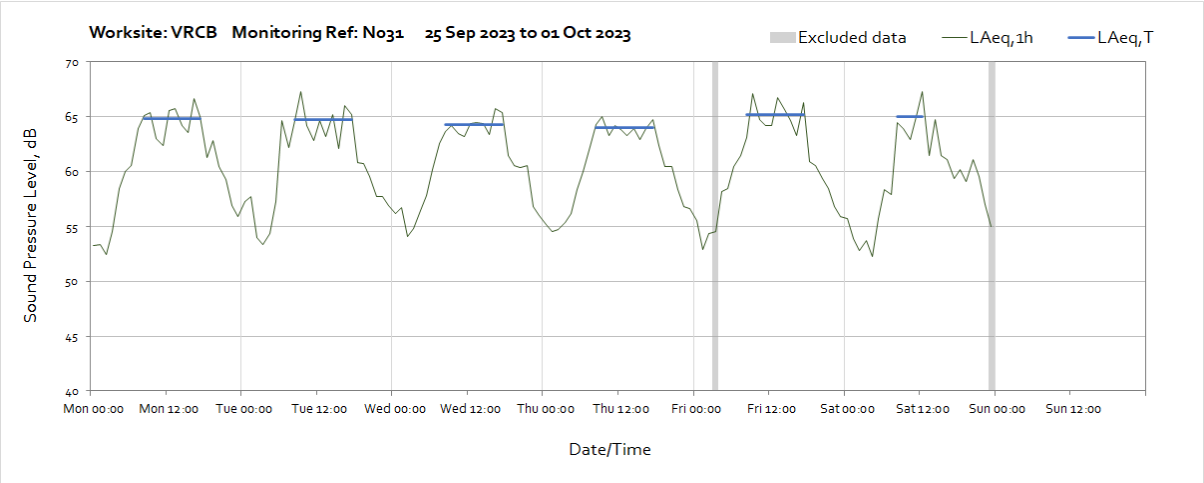
Worksite: VRCB – Monitoring Ref: N031



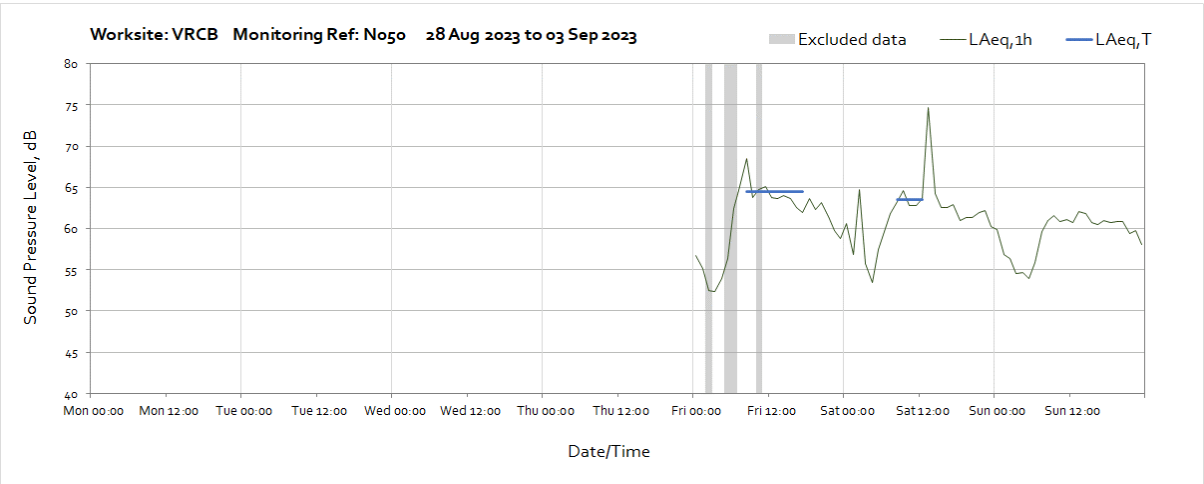


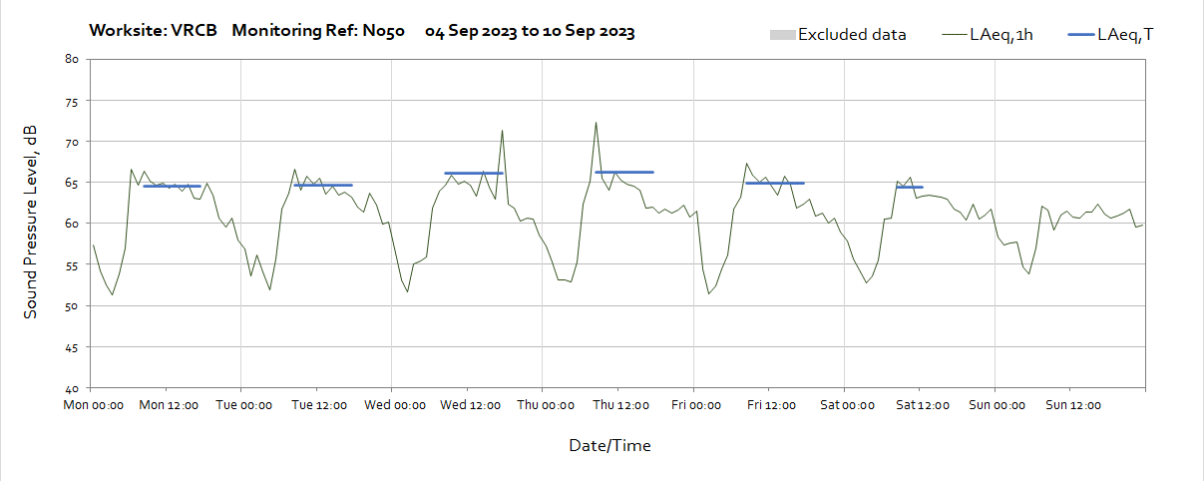


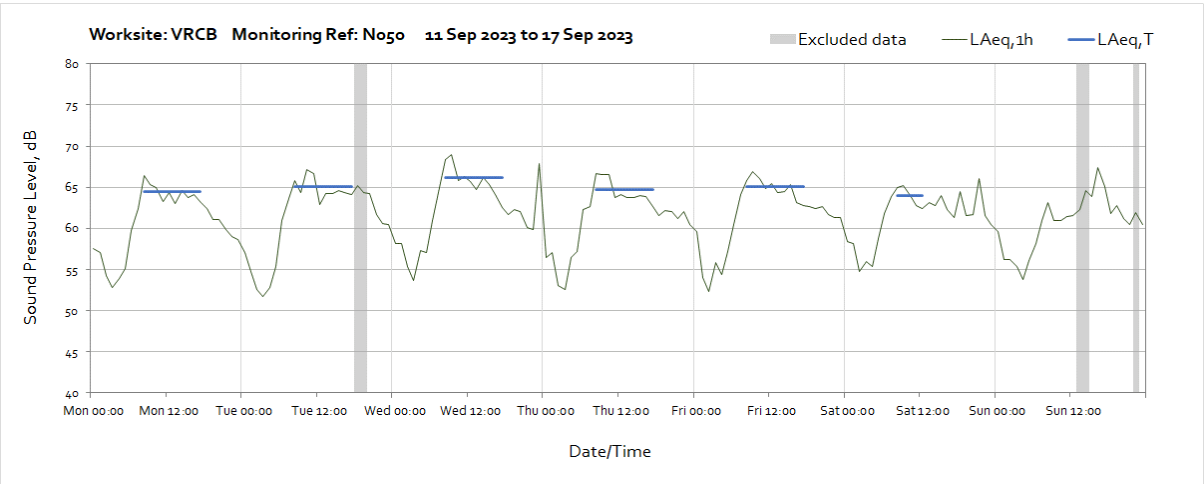




Worksite: VRCB – Monitoring Ref: N050




Worksite: VRCB Monitoring Ref: No50 04 Sep 2023 to 10 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
80
75
70
65
60
55
50
45
40
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: VRCB Monitoring Ref: No50 11 Sep 2023 to 17 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
80
75
70
65
60
55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
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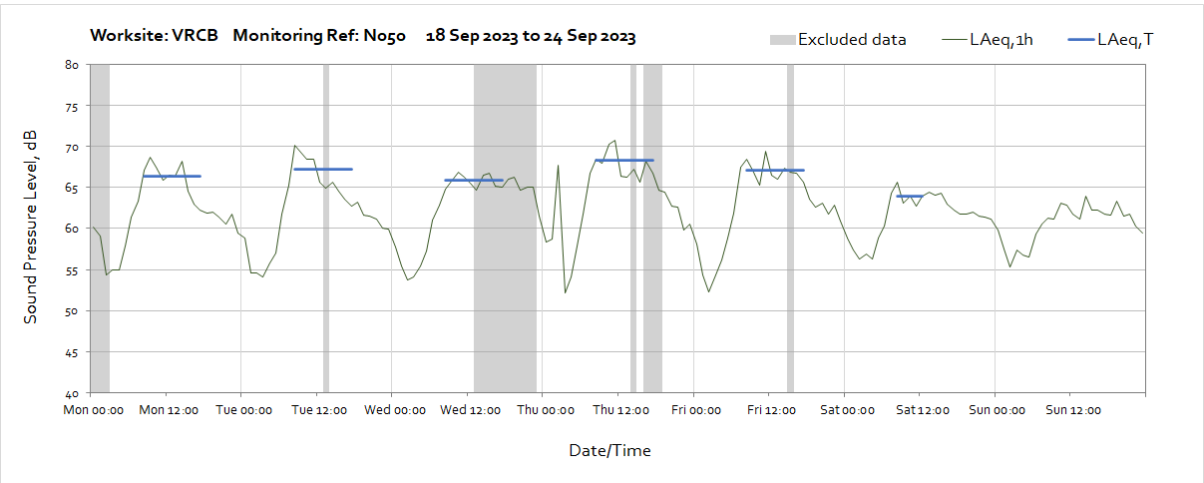
Date/Time


Worksite: VRCB Monitoring Ref: No50 18 Sep 2023 to 24 Sep 2023
Excluded data
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LAeq,T
Sound Pressure Level, dB
80
75
70
65
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55
50
45
40
Mon 00:00
Mon 12:00
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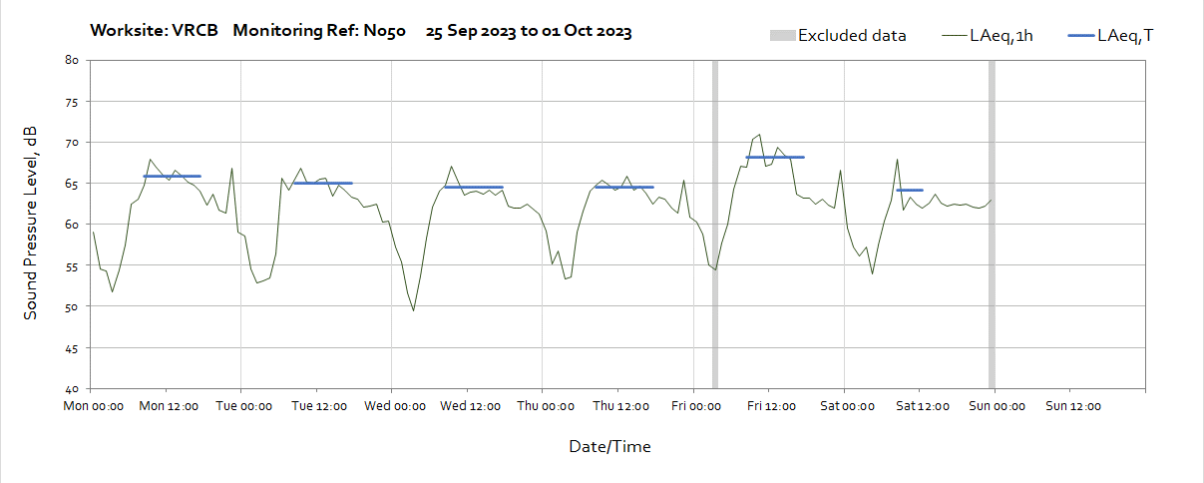
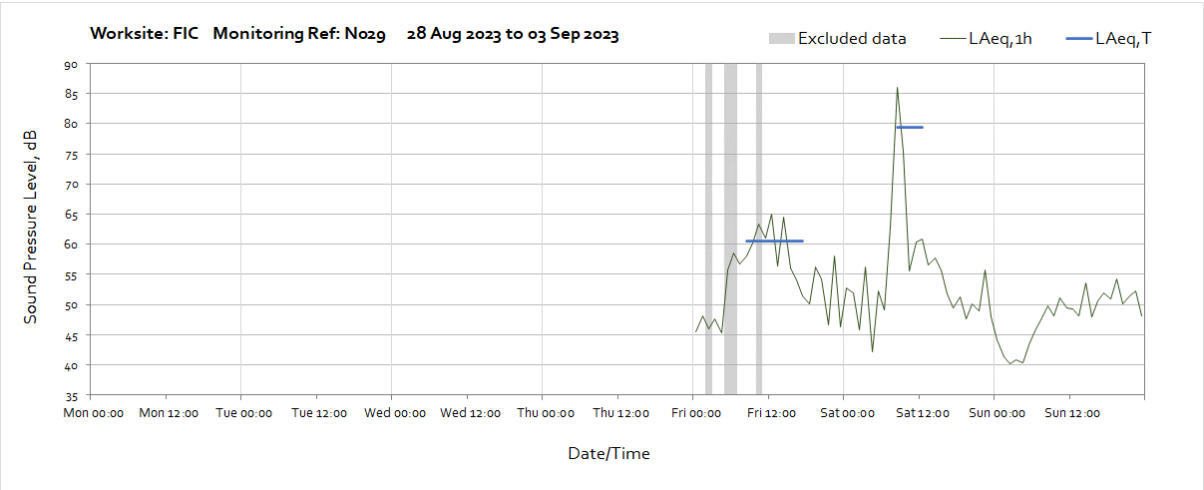
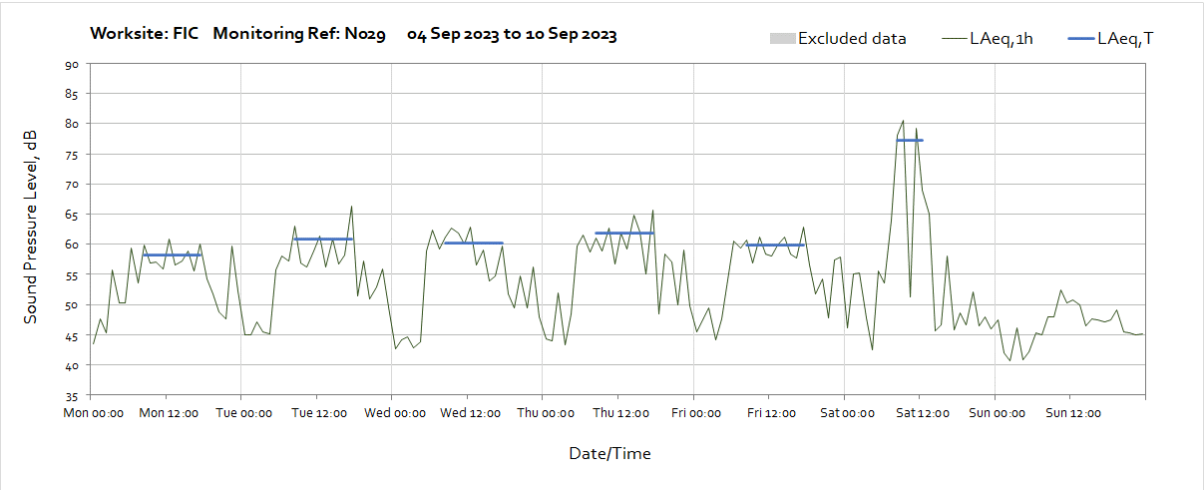
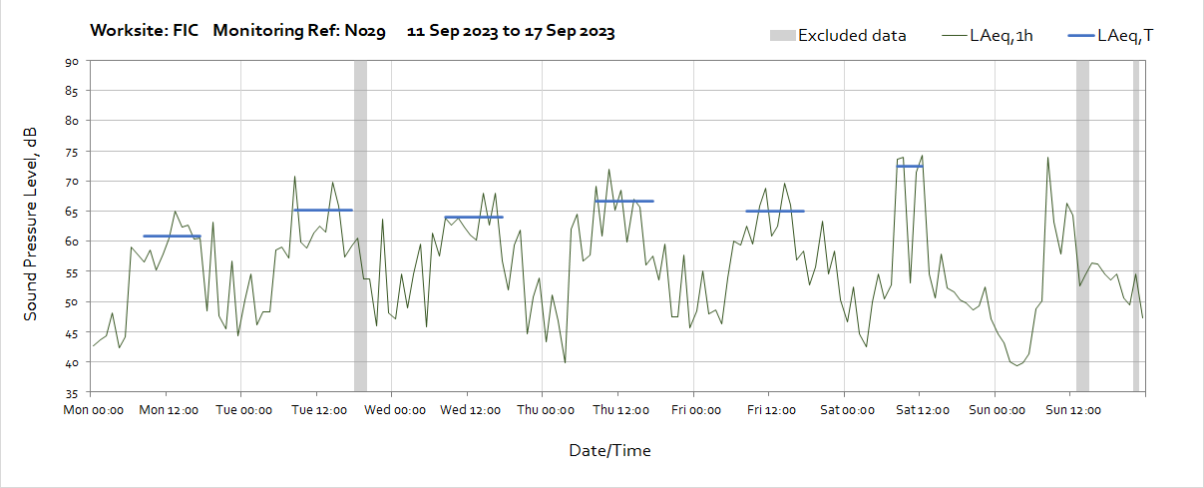
Date/Time



Worksite: FIC – Monitoring Ref: N029






Worksite: FIC Monitoring Ref: No29 11 Sep 2023 to 17 Sep 2023
Excluded data
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LAeq,T
Sound Pressure Level, dB
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85
80
75
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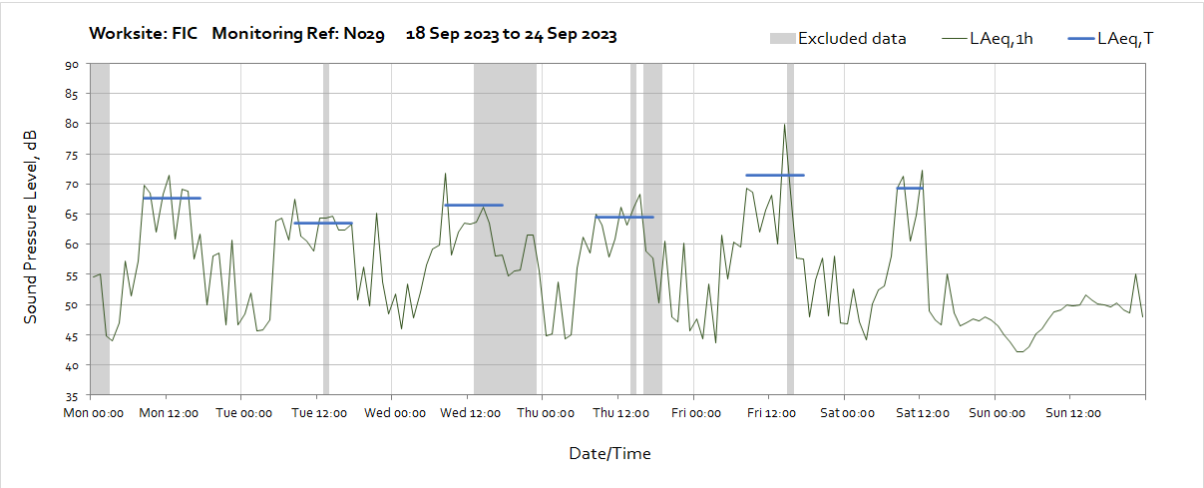
Date/Time


Worksite: FIC Monitoring Ref: No29 18 Sep 2023 to 24 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
90
85
80
75
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65
60
55
50
45
40
35
Mon 00:00
Mon 12:00
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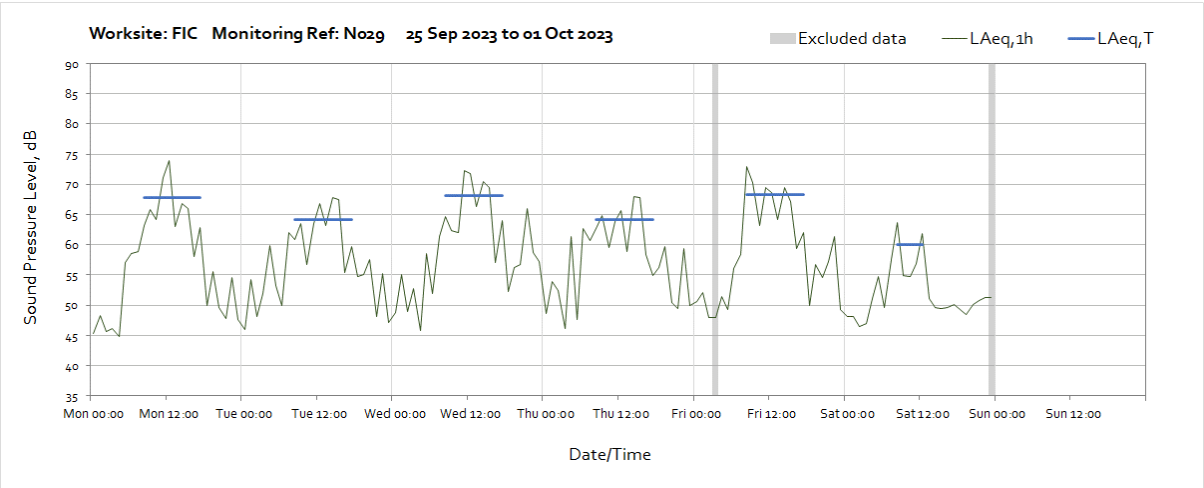
Date/Time


Worksite: FIC Monitoring Ref: No29 25 Sep 2023 to 01 Oct 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
90
85
80
75
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Mon 00:00
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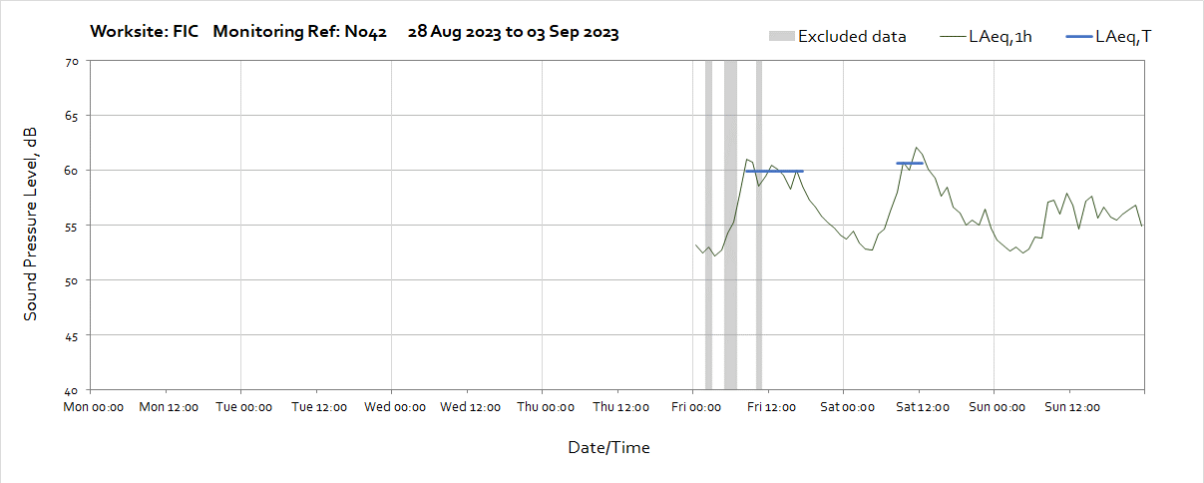
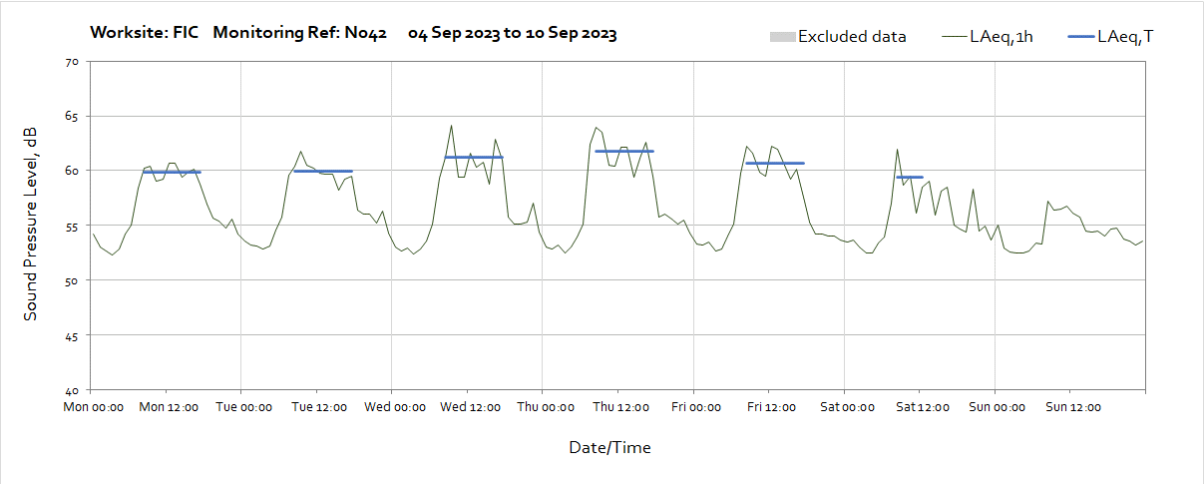
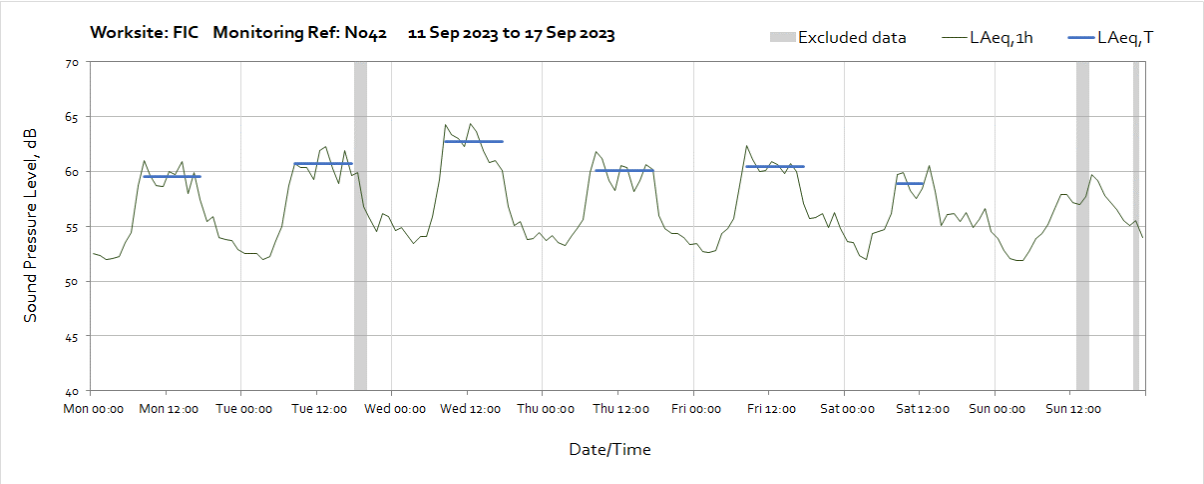
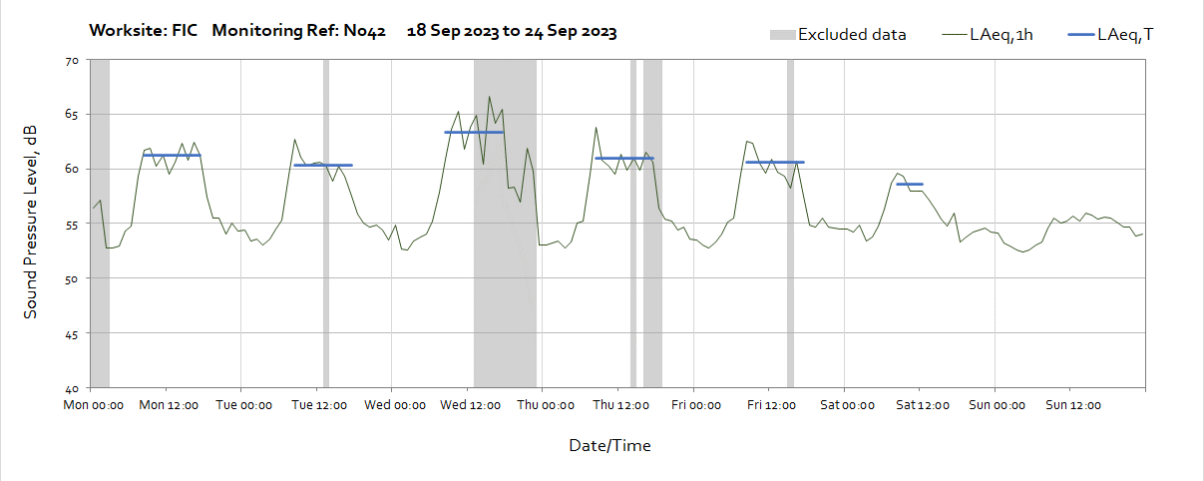
Date/Time

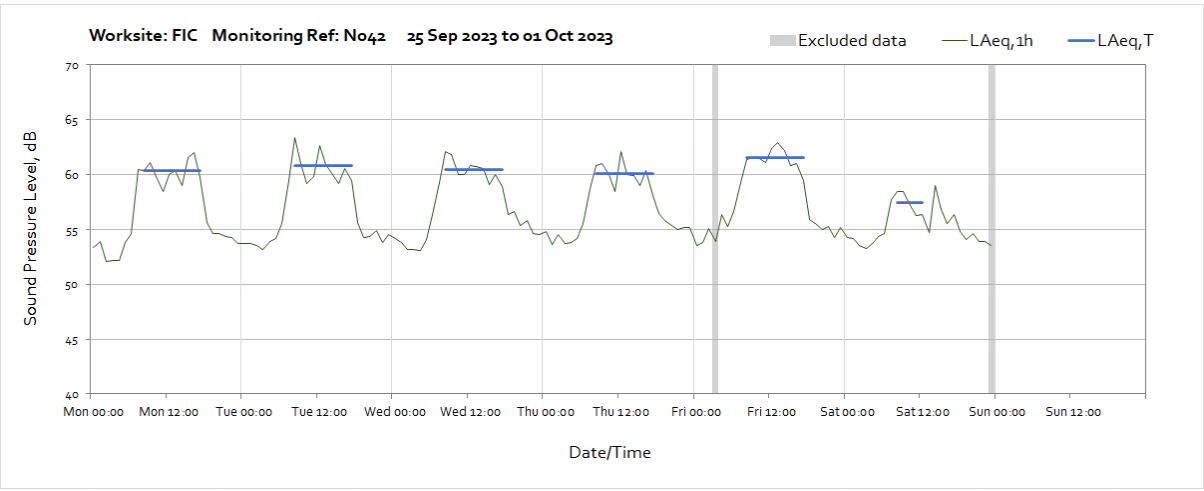
Worksite: FIC – Monitoring Ref: N042



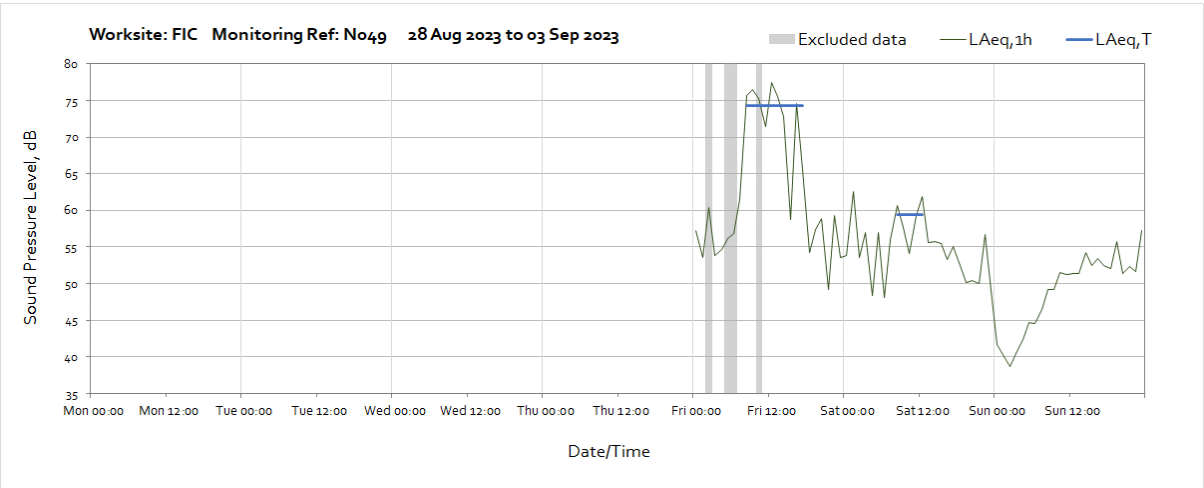


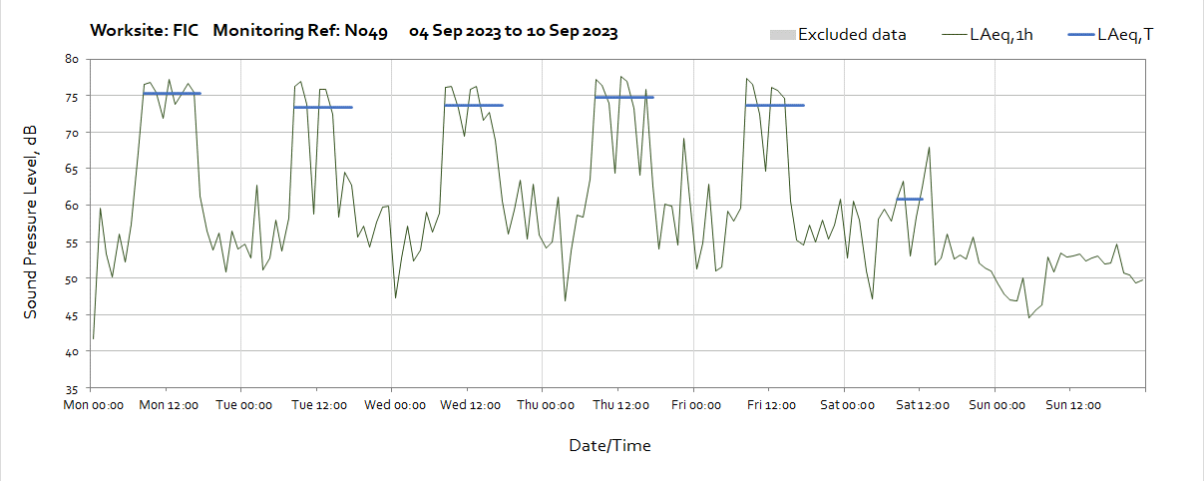






Worksite: FIC – Monitoring Ref: N049




Worksite: FIC Monitoring Ref: No49 04 Sep 2023 to 10 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
80
75
70
65
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50
45
40
35
Mon 00:00
Mon 12:00
Tue 00:00
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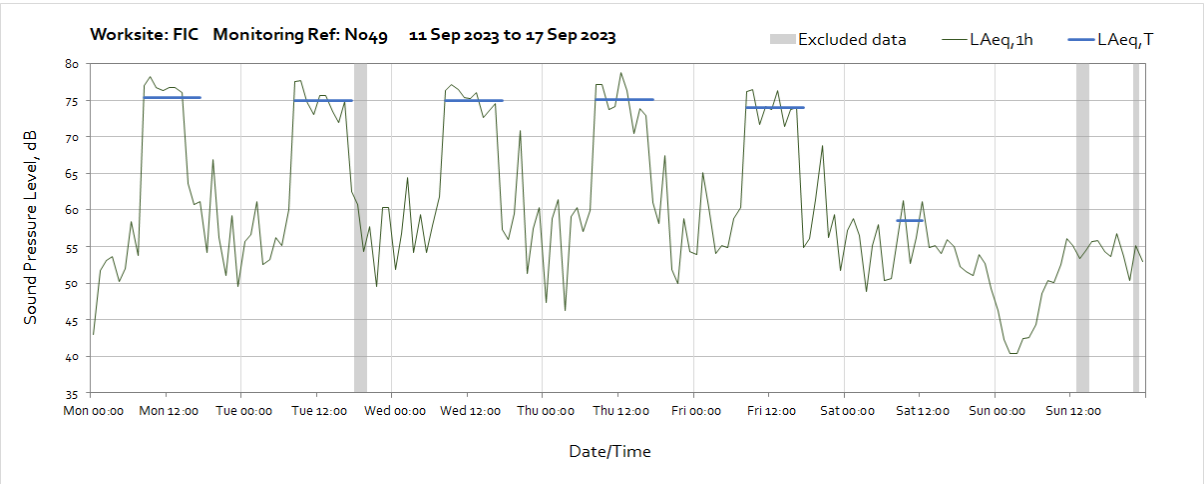
Sun 12:00
Date/Time


Worksite: FIC Monitoring Ref: No49 11 Sep 2023 to 17 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
80
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70
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60
55
50
45
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35
Mon 00:00
Mon 12:00
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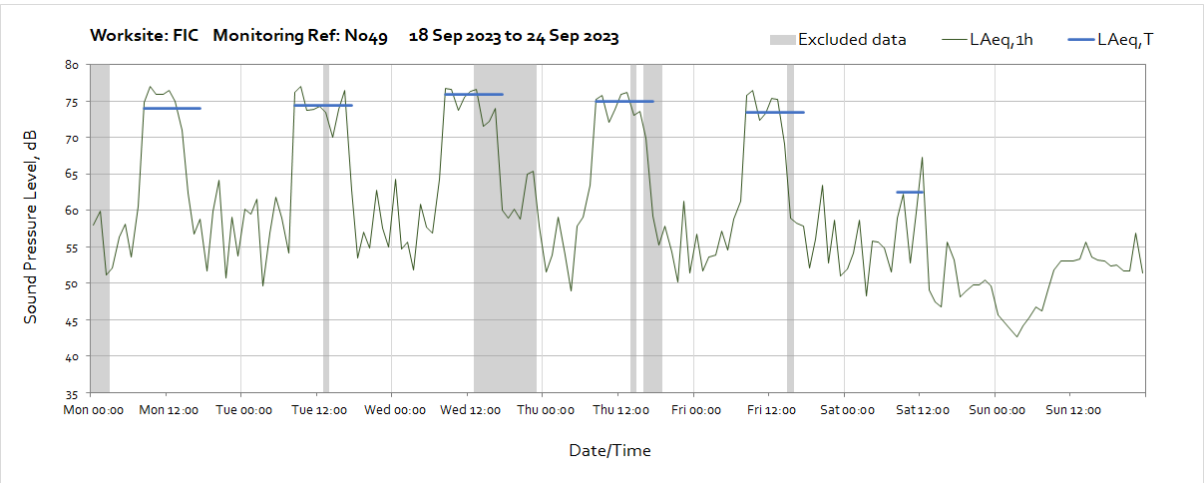
Date/Time


Worksite: FIC Monitoring Ref: No49 18 Sep 2023 to 24 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
80
75
70
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50
45
40
35
Mon 00:00
Mon 12:00
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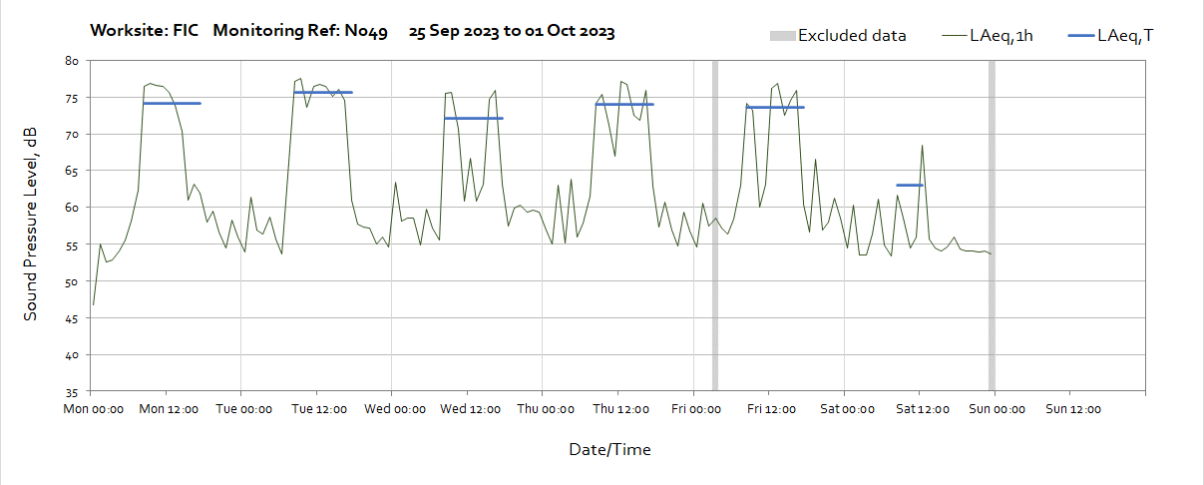
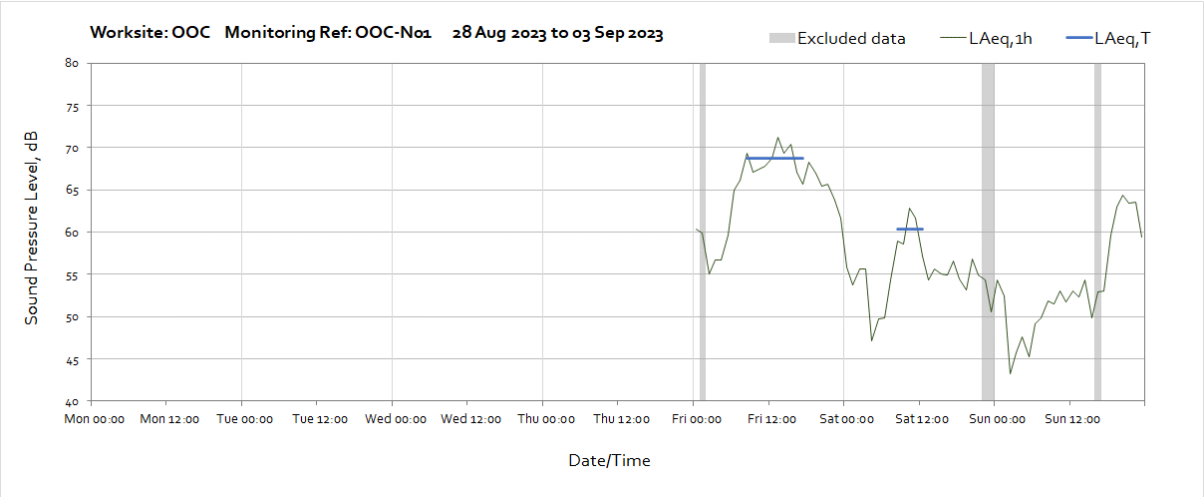
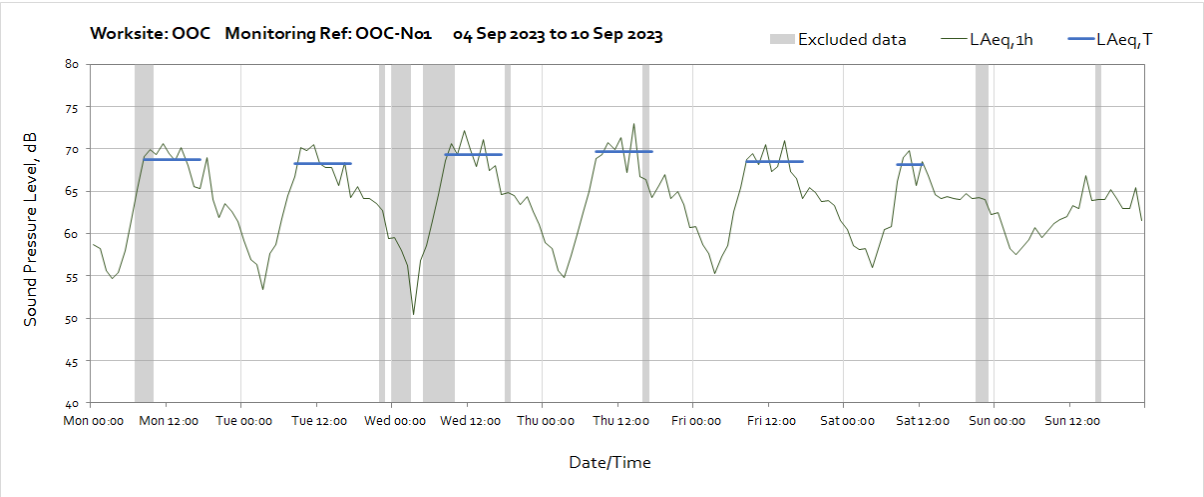
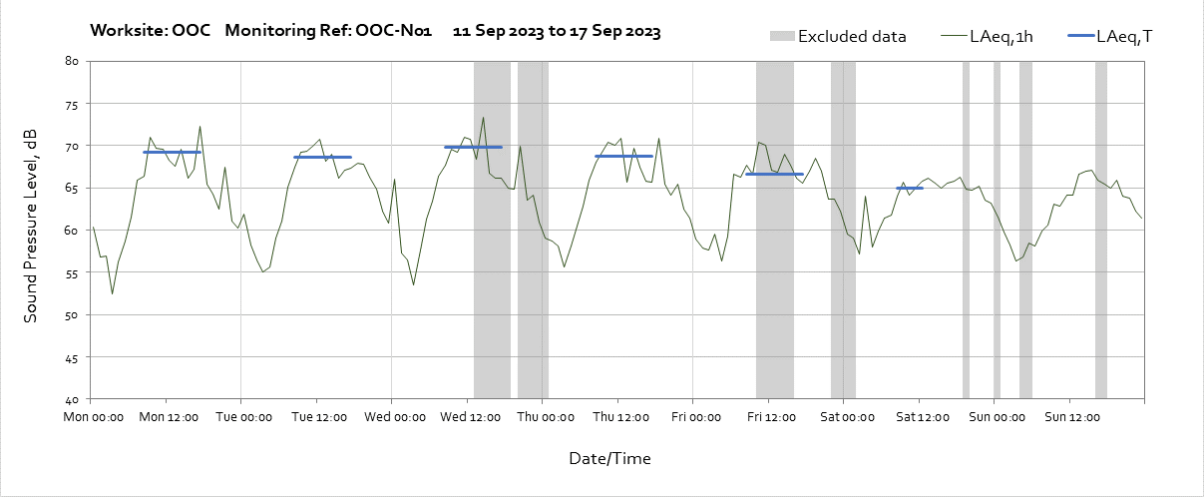
Date/Time



Worksite: OOC – Monitoring Ref: OOC-N01






Worksite: OOC Monitoring Ref: OOC-No1 11 Sep 2023 to 17 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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75
70
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Mon 12:00
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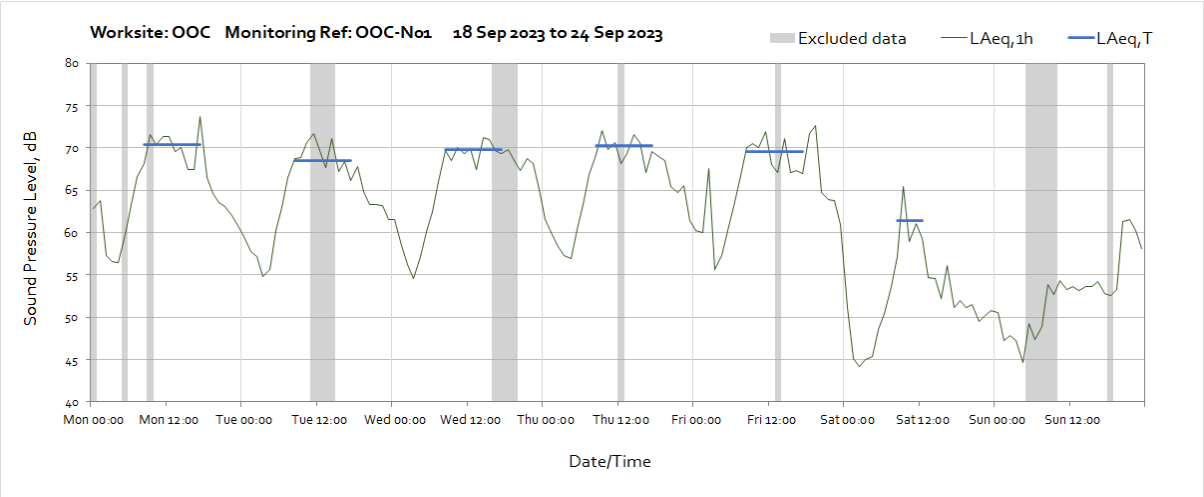
Date/Time


Worksite: OOC Monitoring Ref: OOC-No1 18 Sep 2023 to 24 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
80
75
70
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Mon 00:00
Mon 12:00
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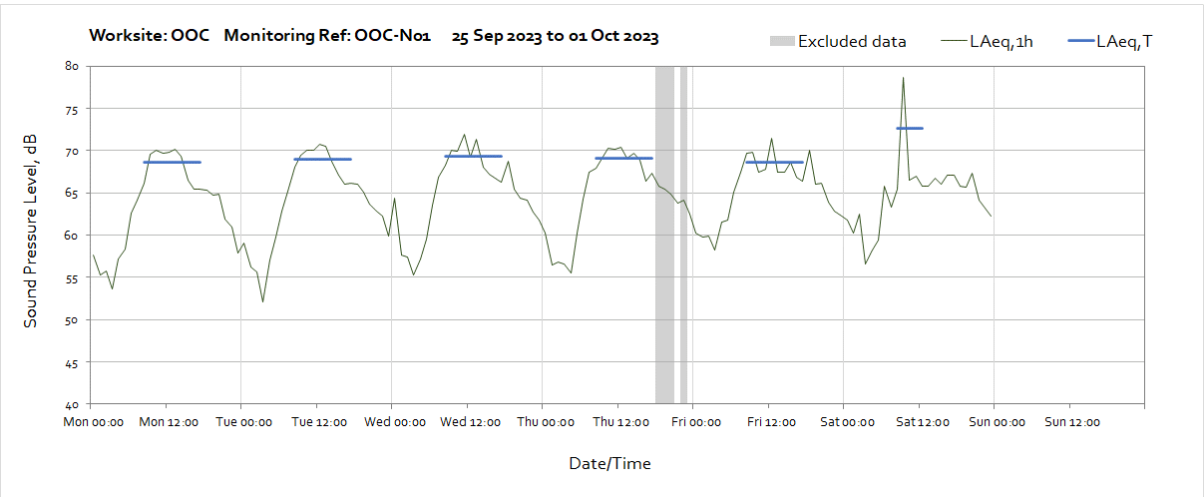
Date/Time


Worksite: OOC Monitoring Ref: OOC-No1 25 Sep 2023 to 01 Oct 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
80
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60
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Mon 00:00
Mon 12:00
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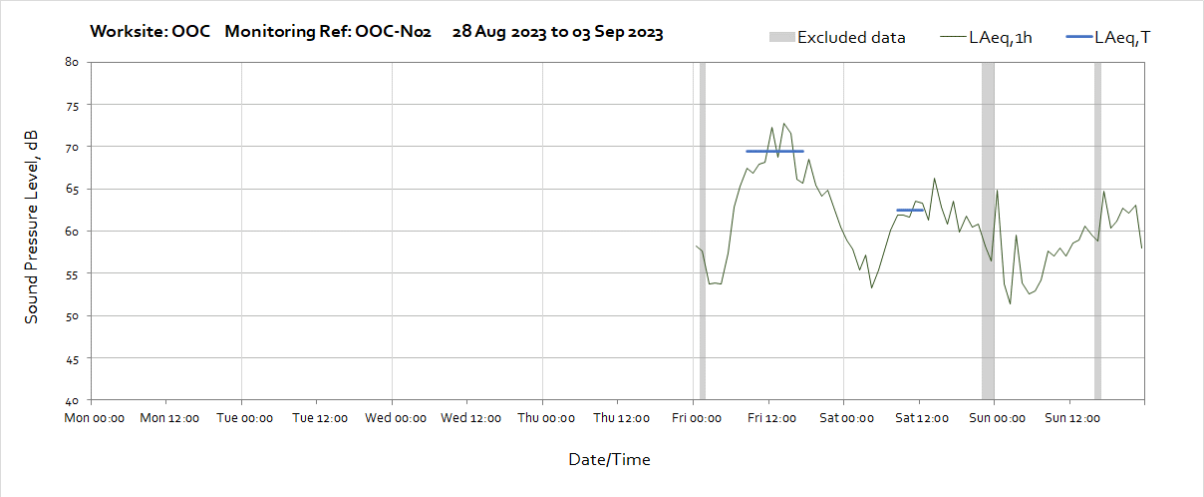
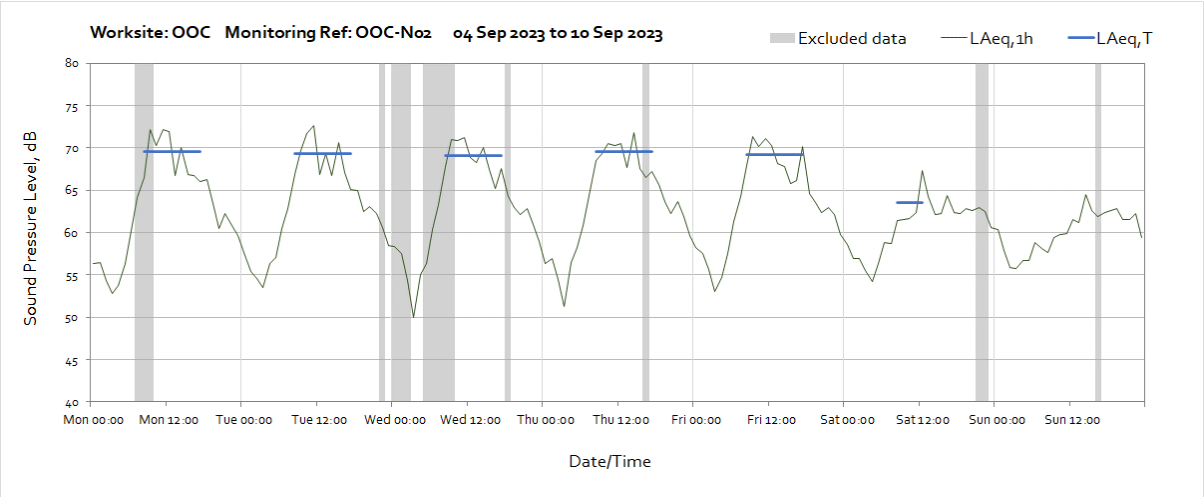
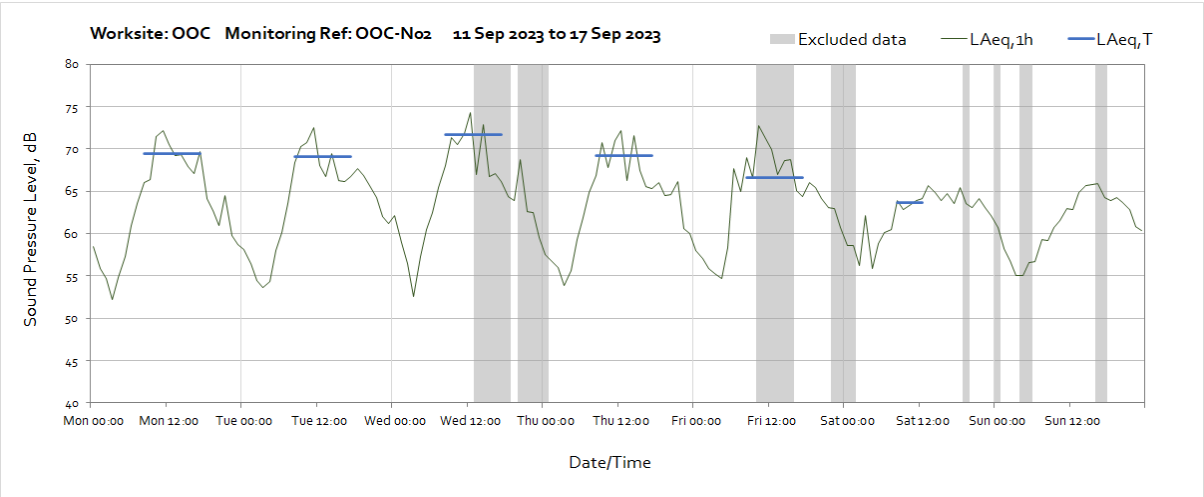
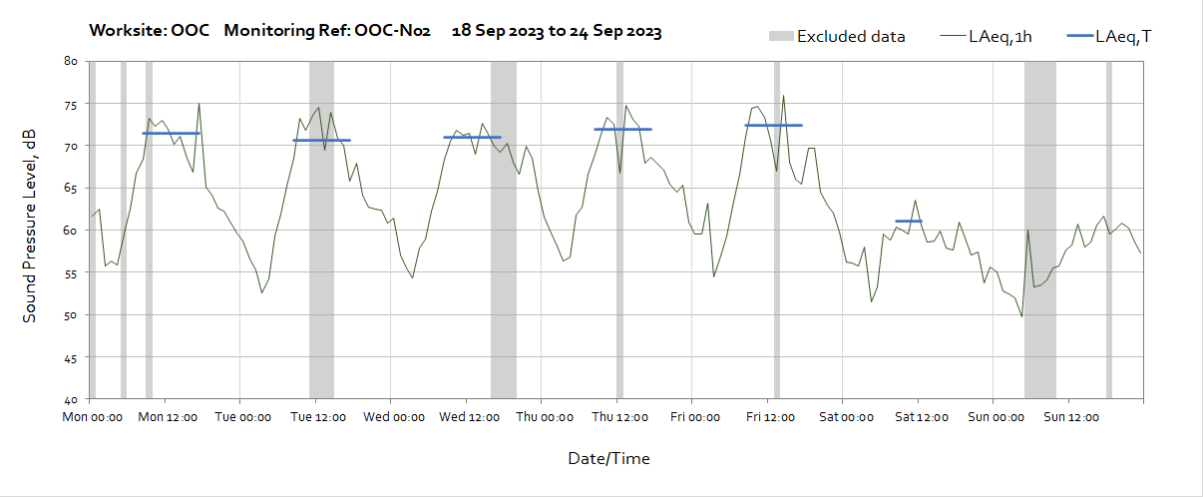
Date/Time

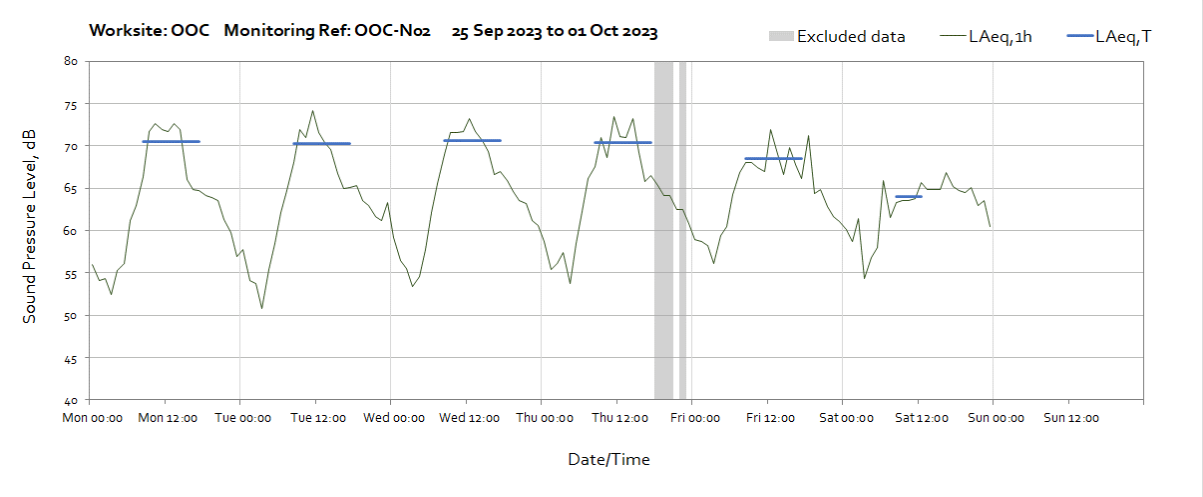
Worksite: OOC – Monitoring Ref: OOC-N02



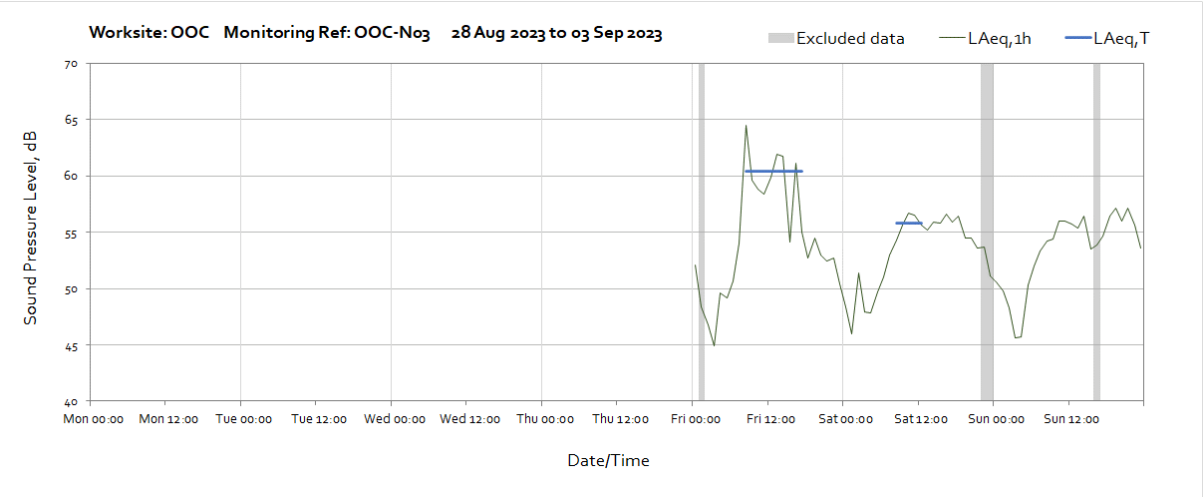


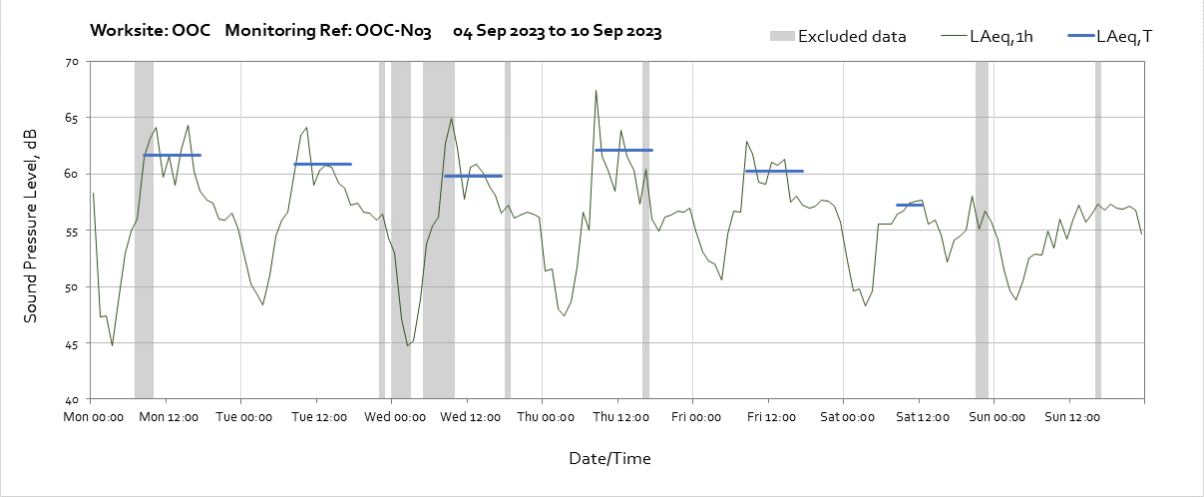






Worksite: OOC – Monitoring Ref: OOC-N03




Worksite: OOC Monitoring Ref: OOC-No3 04 Sep 2023 to 10 Sep 2023
Excluded data
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LAeq,T
Sound Pressure Level, dB
70
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Mon 00:00
Mon 12:00
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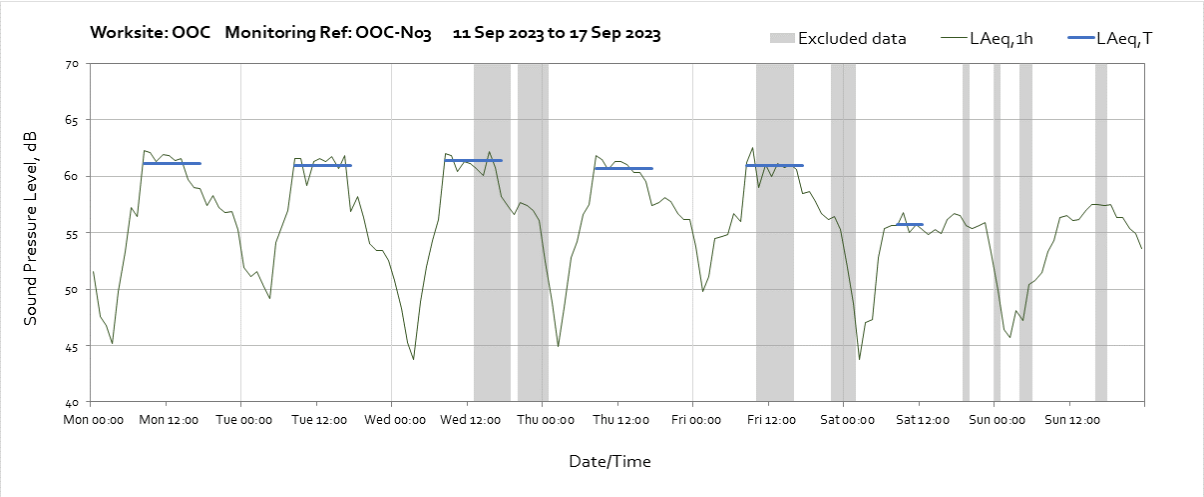
Sun 12:00
Date/Time


Worksite: OOC Monitoring Ref: OOC-No3 11 Sep 2023 to 17 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
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50
45
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Mon 00:00
Mon 12:00
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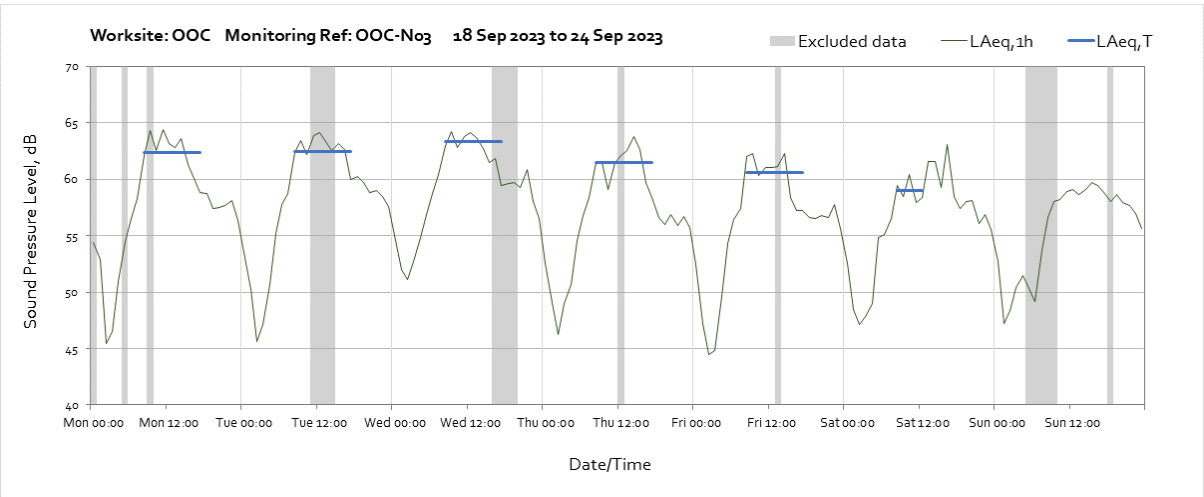
Sun 12:00
Date/Time


Worksite: OOC Monitoring Ref: OOC-No3 18 Sep 2023 to 24 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
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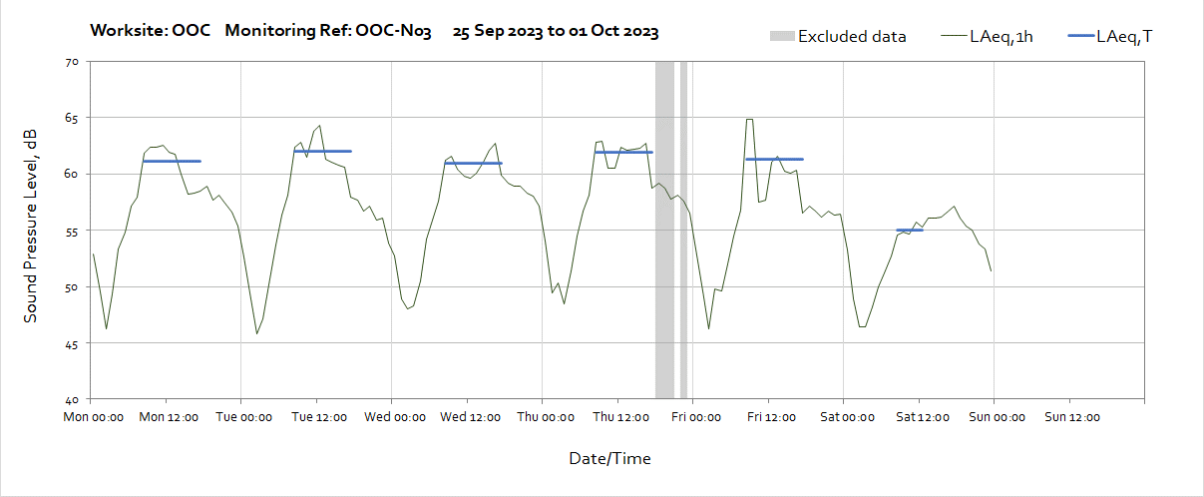
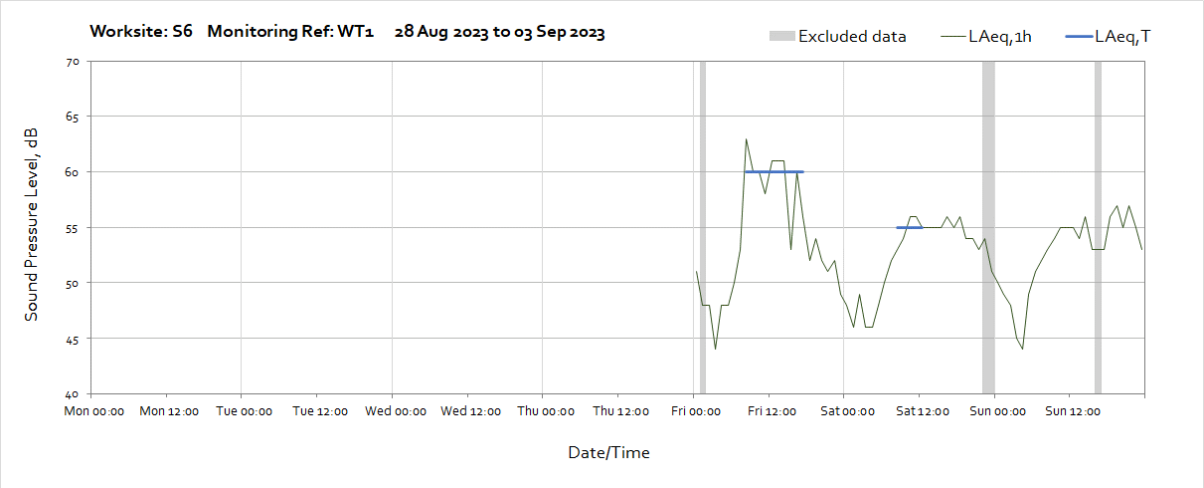
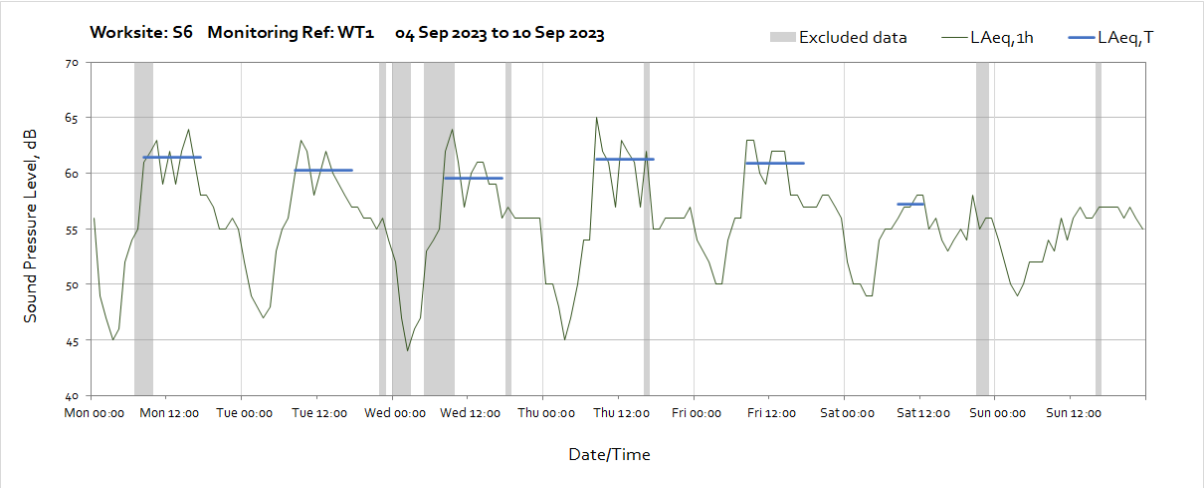
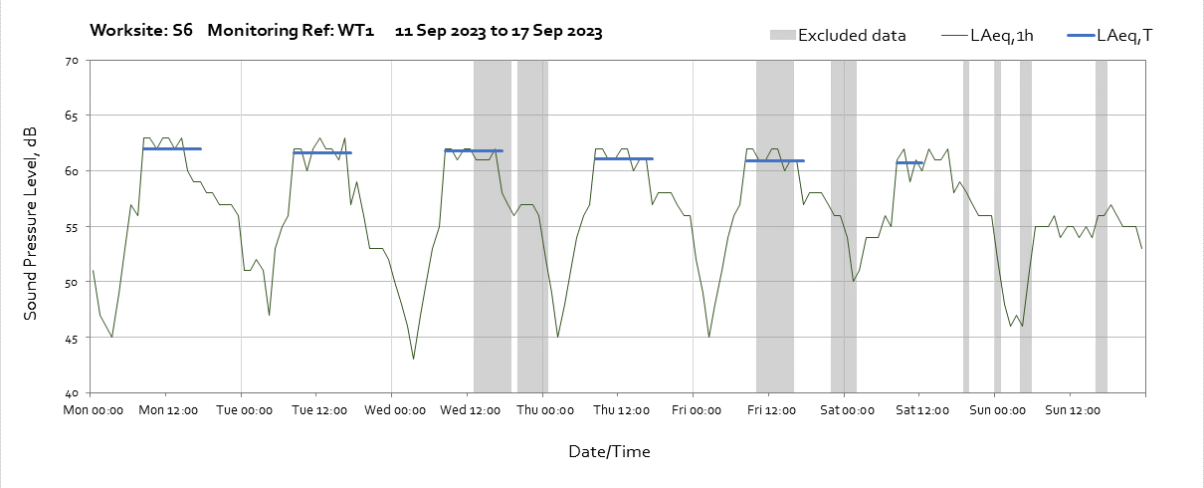
Date/Time



Worksite: S6 – Monitoring Ref: WT-N01






Worksite: S6 Monitoring Ref: WT1 11 Sep 2023 to 17 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
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45
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Mon 00:00
Mon 12:00
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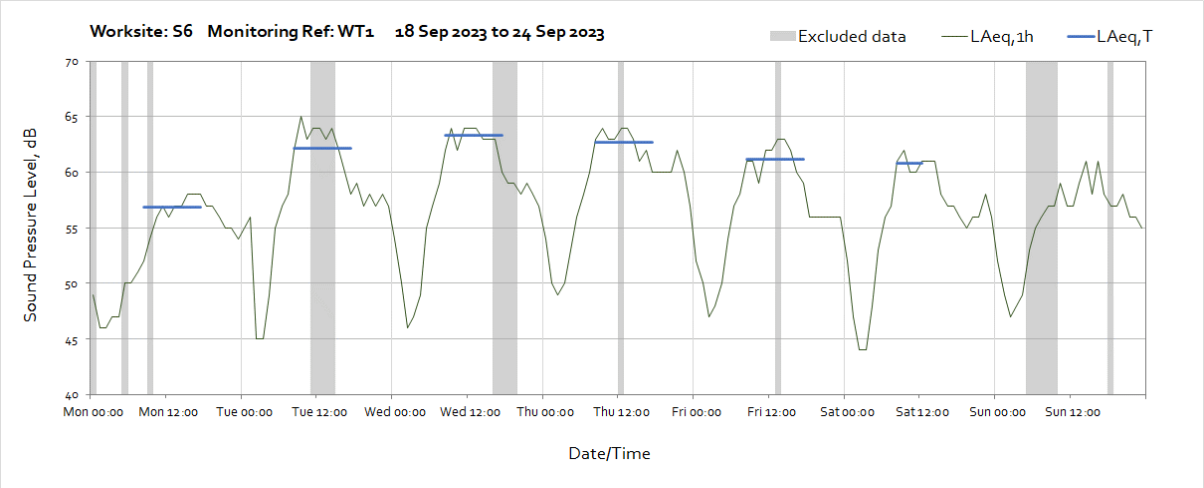
Date/Time


Worksite: S6 Monitoring Ref: WT1 18 Sep 2023 to 24 Sep 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
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Mon 00:00
Mon 12:00
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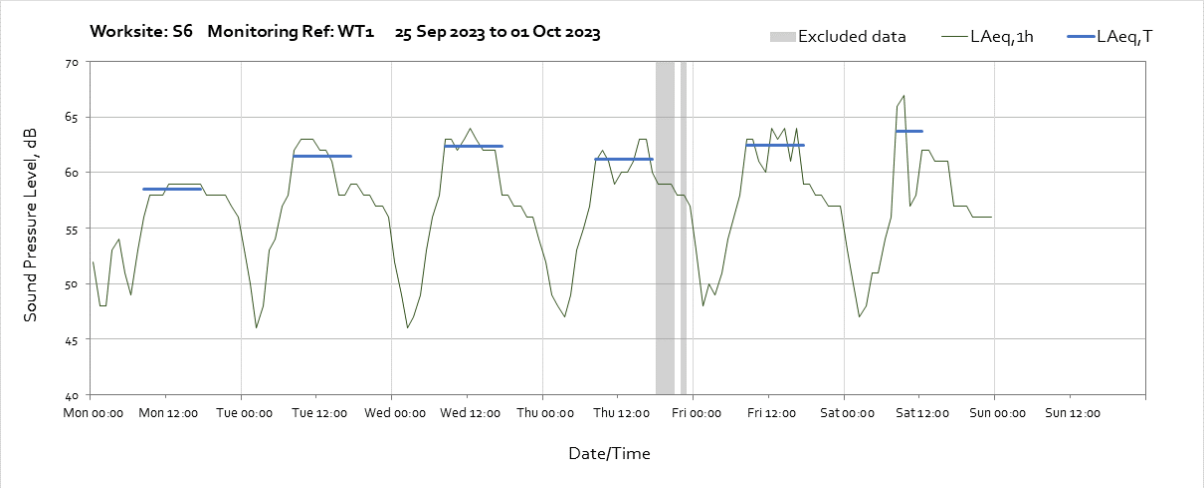
Date/Time


Worksite: S6 Monitoring Ref: WT1 25 Sep 2023 to 01 Oct 2023
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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Mon 00:00
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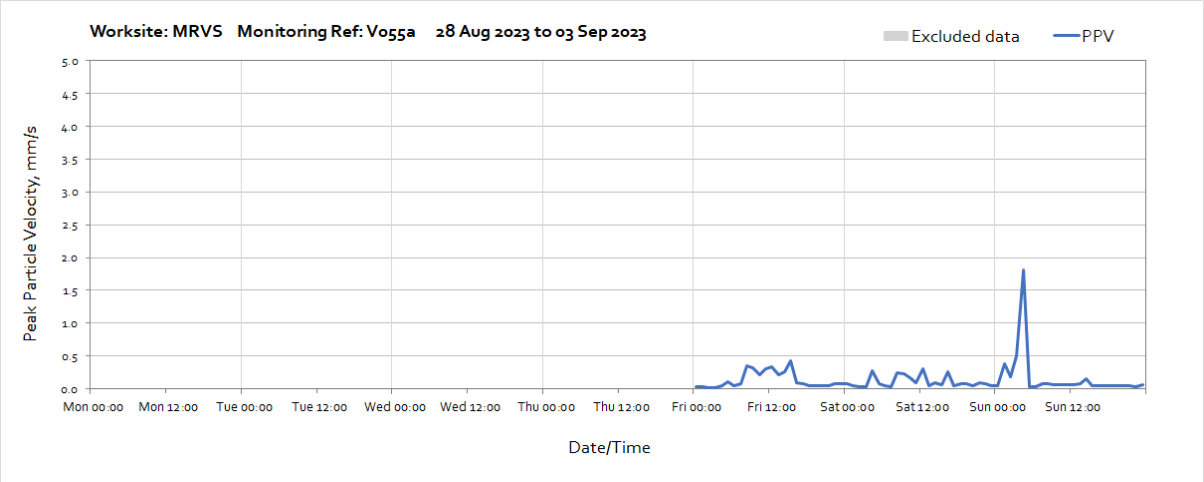
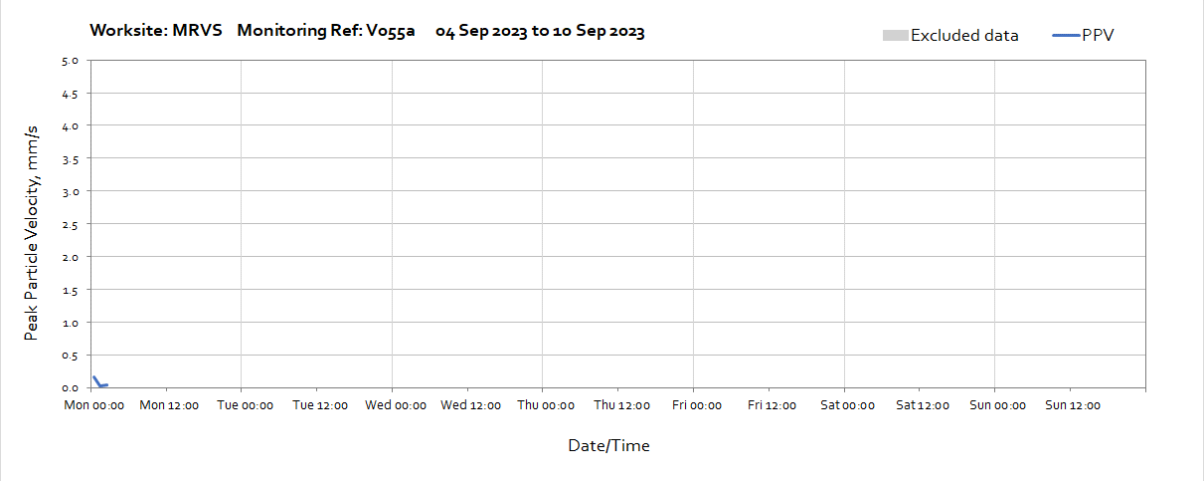
Date/Time

Vibration

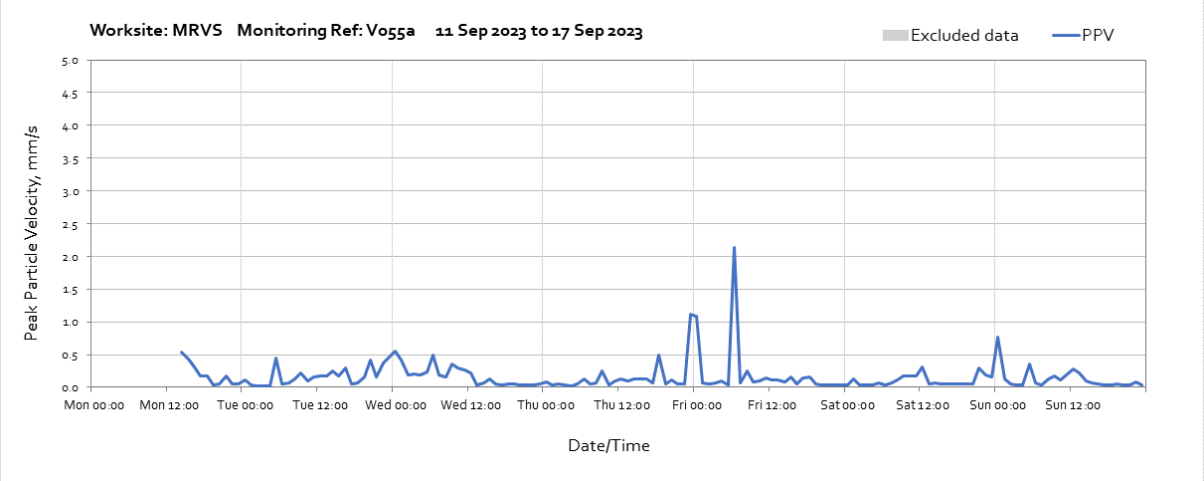
The following graphs show the hourly measured peak particle velocity PPV recorded during the monitoring period. The graphs show the highest PPV of the three orthogonal axis x, y and z. Periods where PPV values have been affected by local interference with the vibration monitor or only measured for part 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: MRVS – Monitoring Ref: V055a

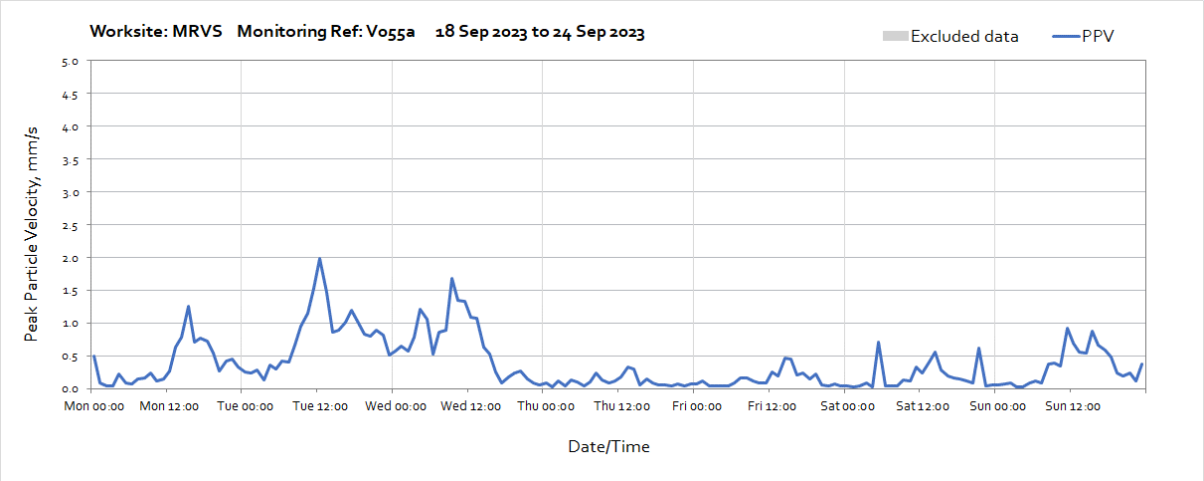


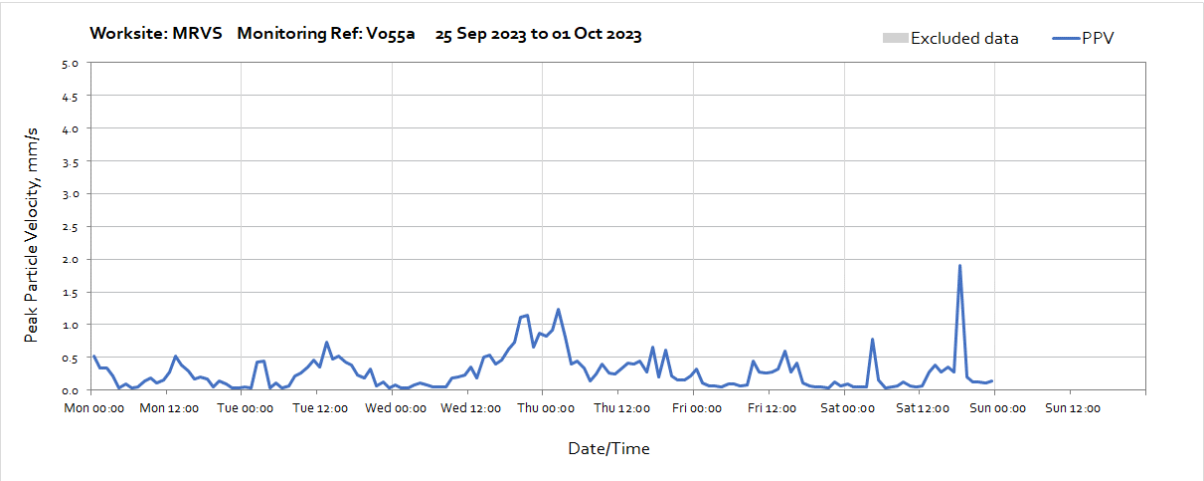


Note: Missing data from 03:00 on Monday 4th September to 14:00 on Monday 11th September is due to a battery problem.

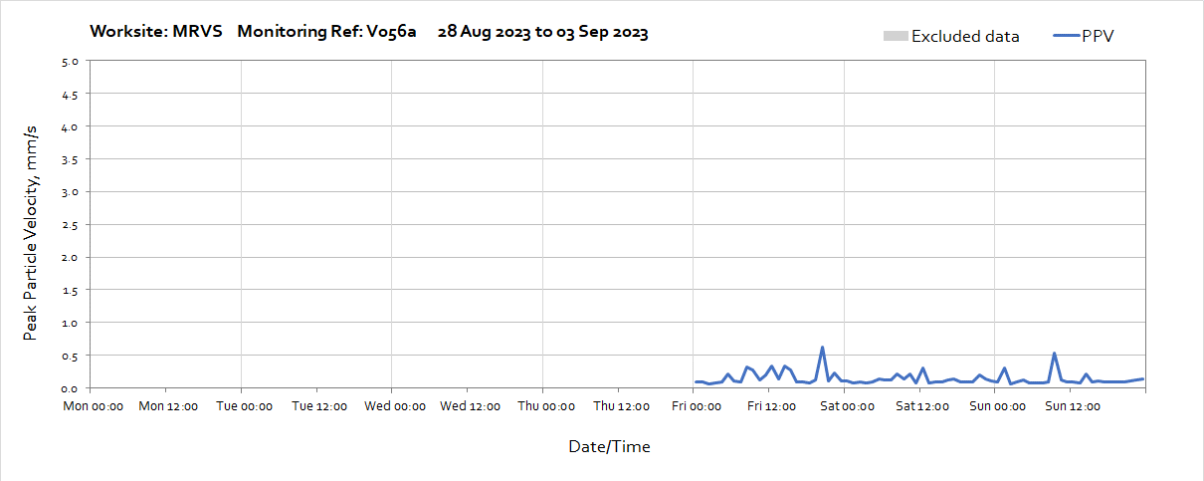


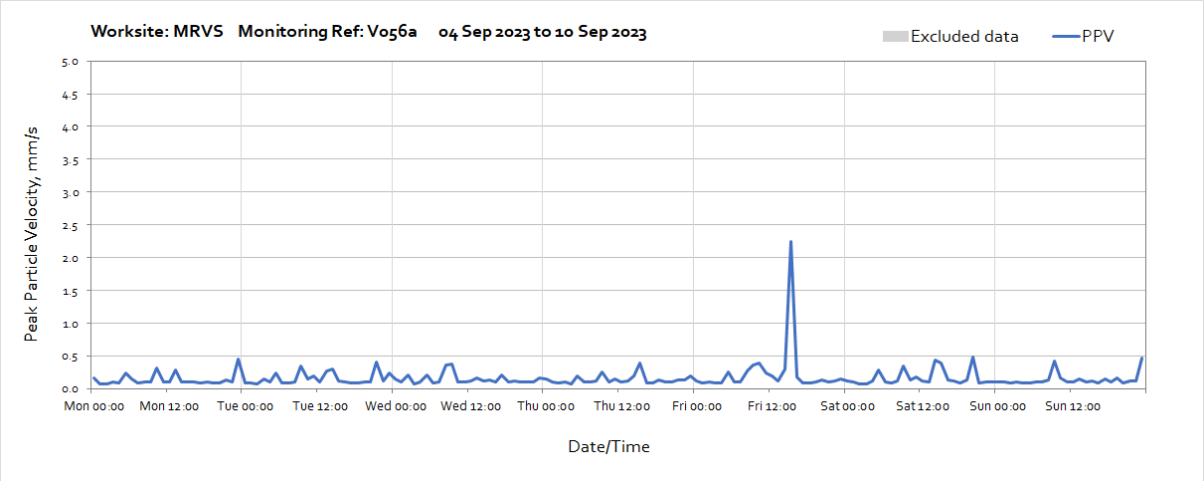
Note: Missing data from 03:00 on Monday 4th September to 14:00 on Monday 11th September is due to a battery problem.

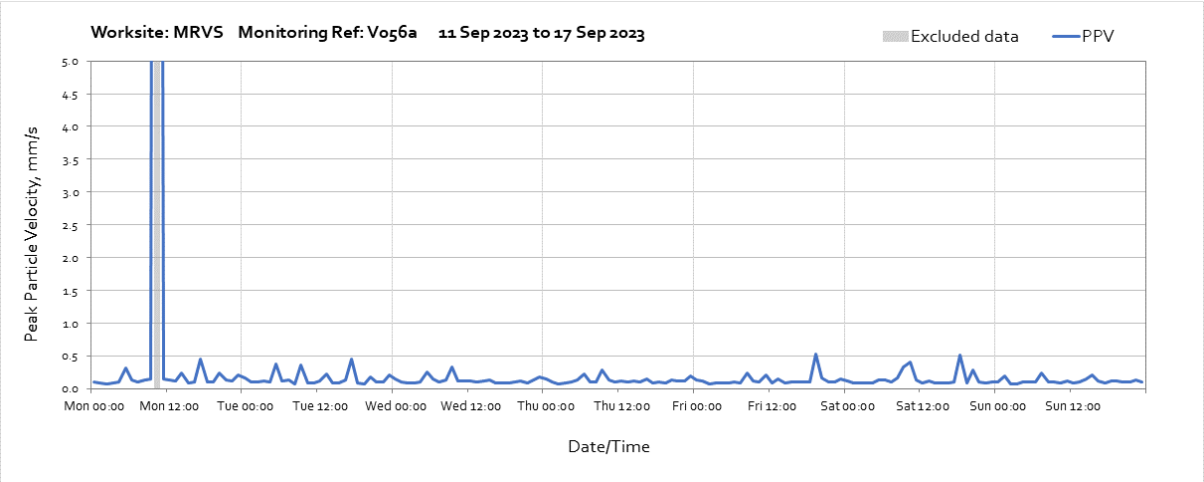




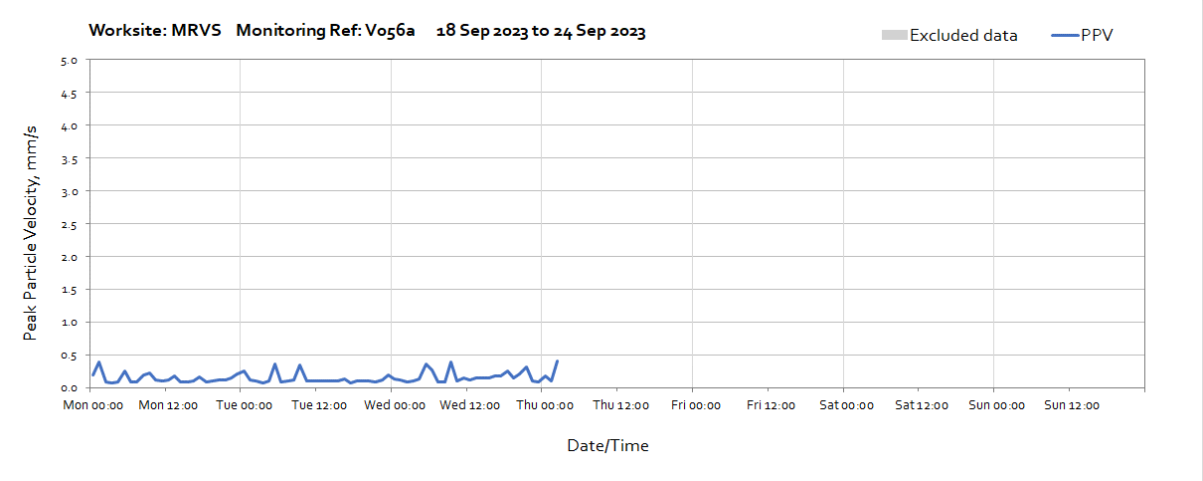
Worksite: MRVS – Monitoring Ref: V056



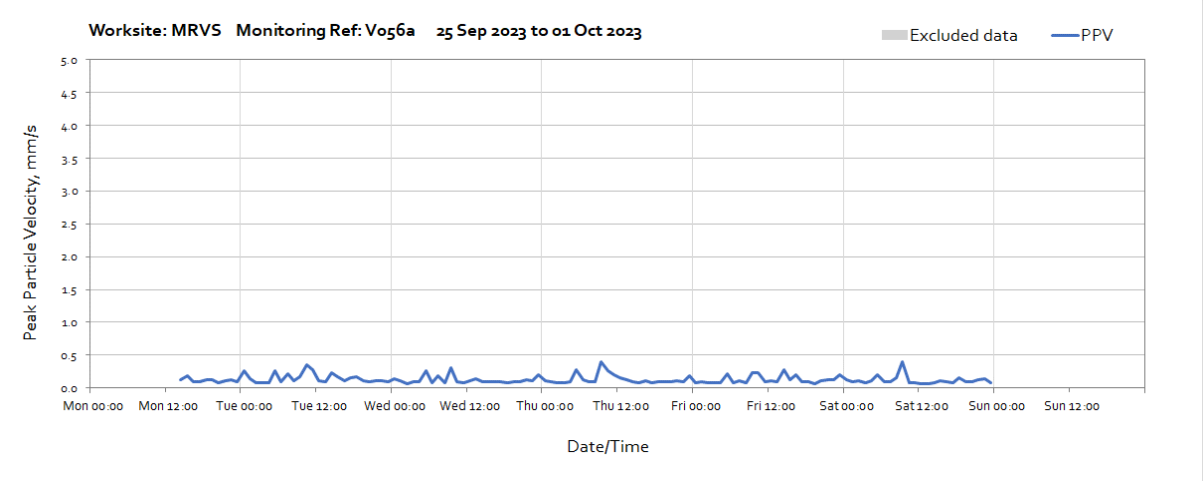




Note: The high vibration levels that occurred between 10:00 and 11:00 on Monday 11th September indicates handling or direct contact with the monitor as no significant works occurred on site then.

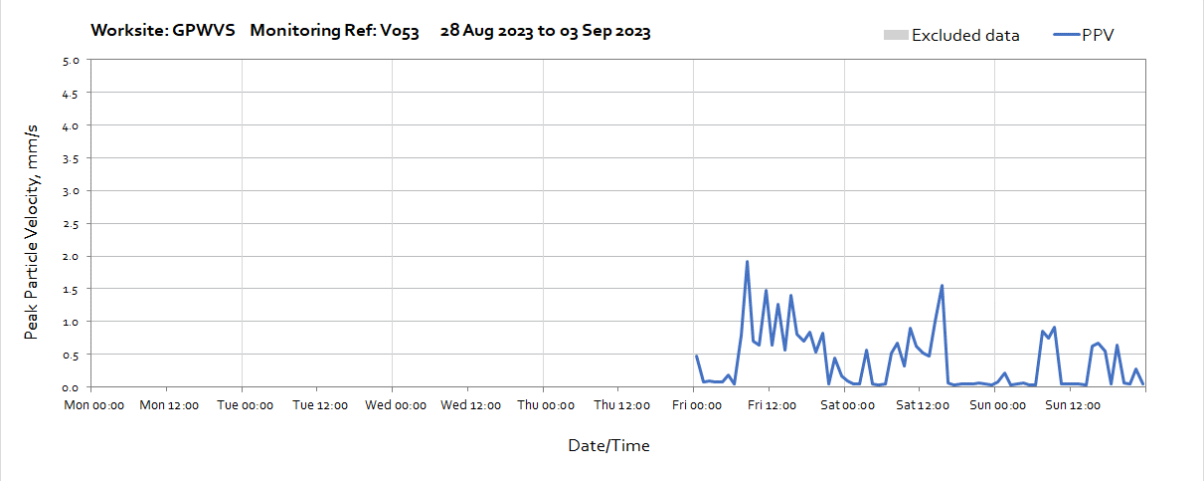


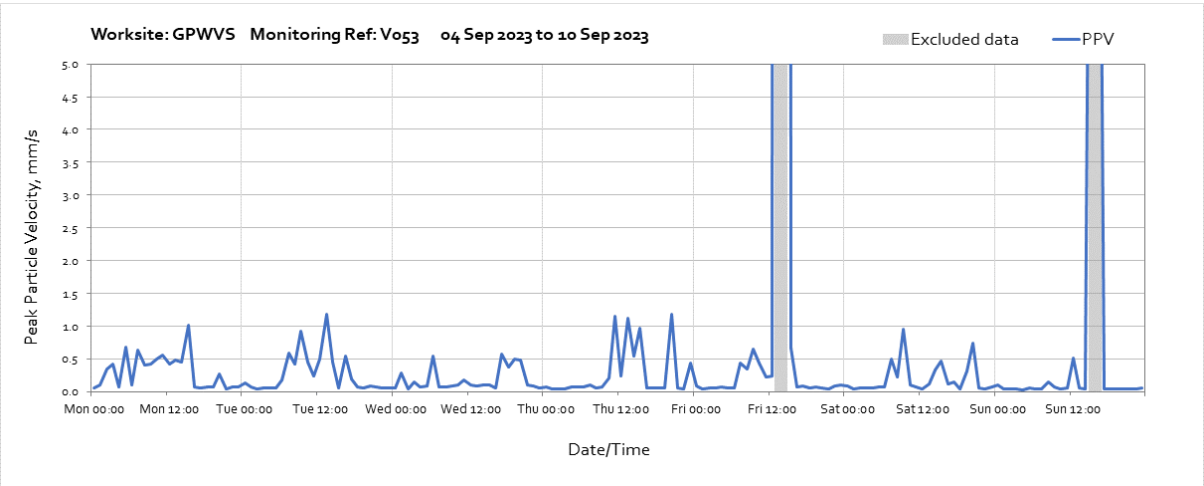
Note: Missing data from 03:00 on Thursday 21st September to 14:00 on Monday 25th September is due to a monitor fault.



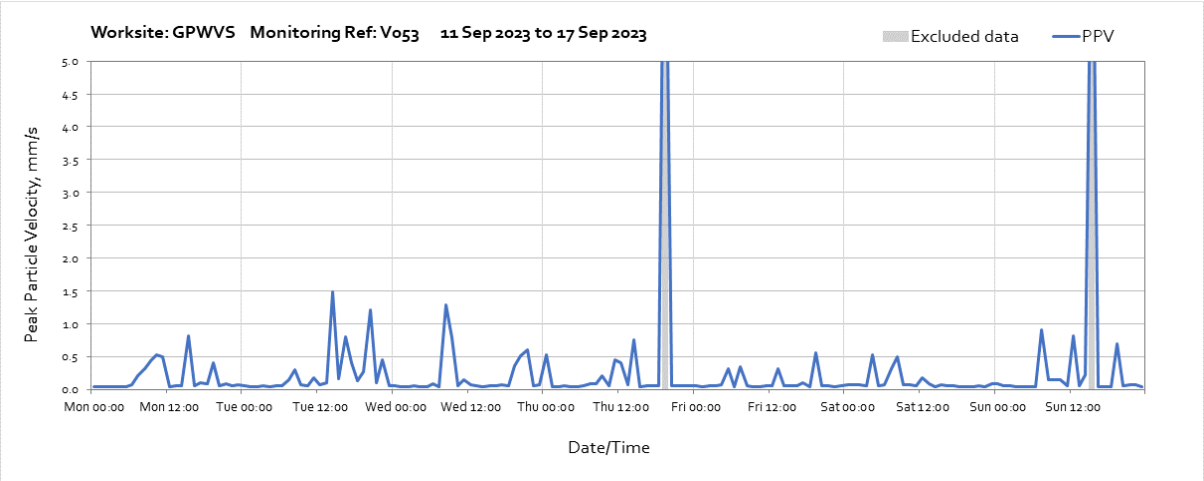
Note: Missing data from 03:00 on Thursday 21st September to 14:00 on Monday 25th September is due to a monitor fault.

Worksite: GPWVS – Monitoring Ref: V053

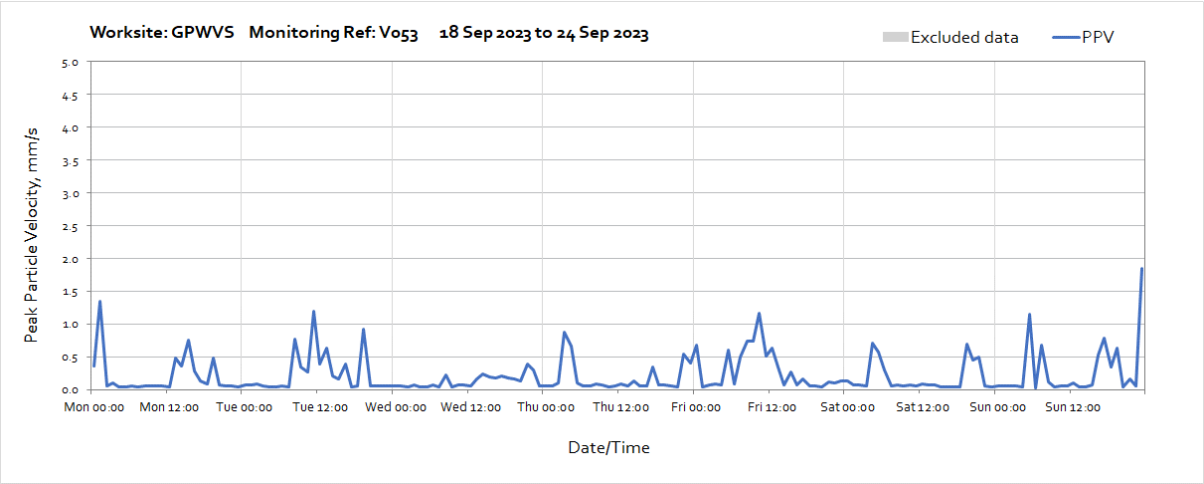


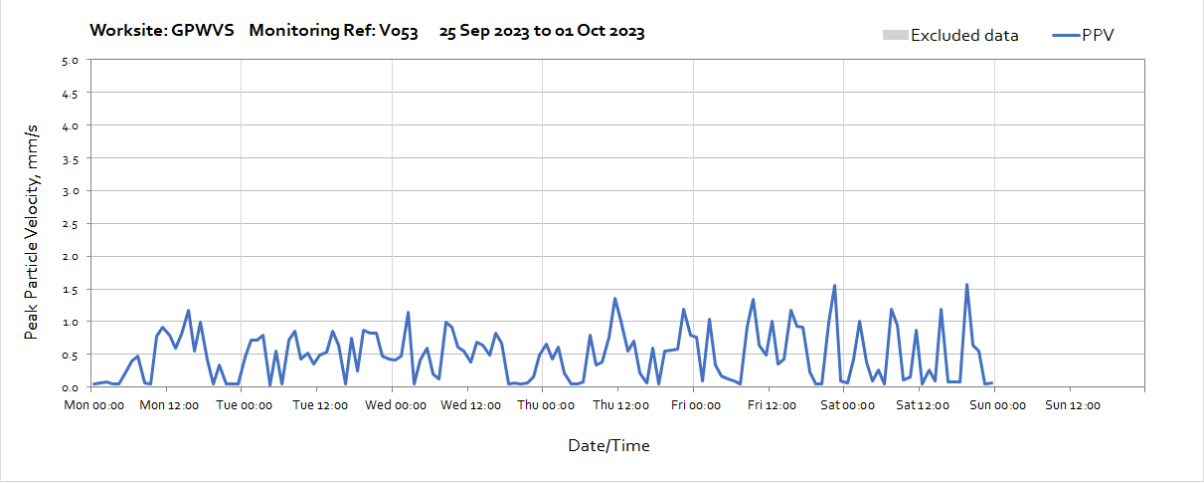


Note: The high vibration levels occurring between 13:00 and 15:00 on Friday 8th September and on 15:00 to 17:00 on Sunday 10th September were due to local disturbance to the monitor rather than to construction activity.

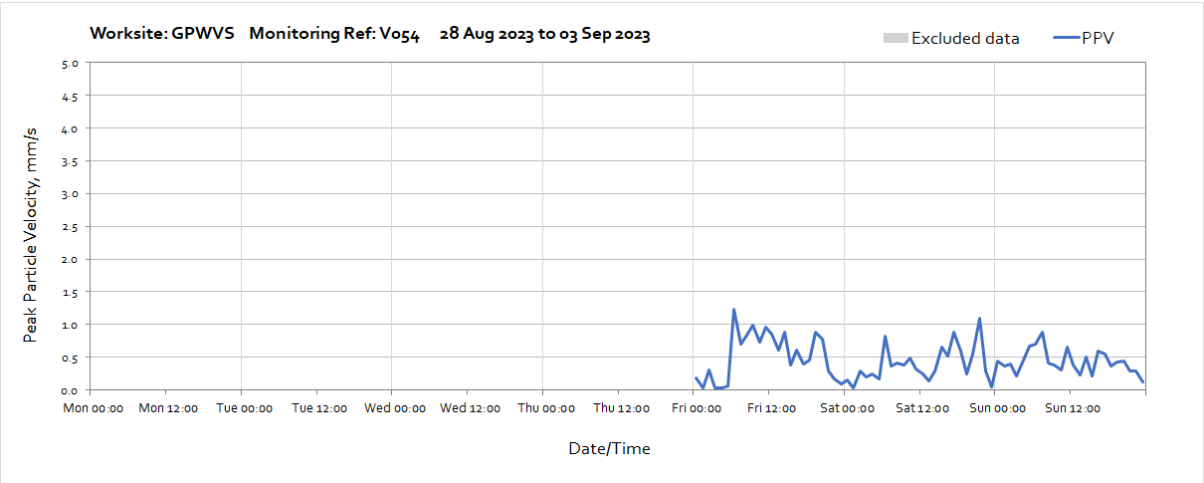


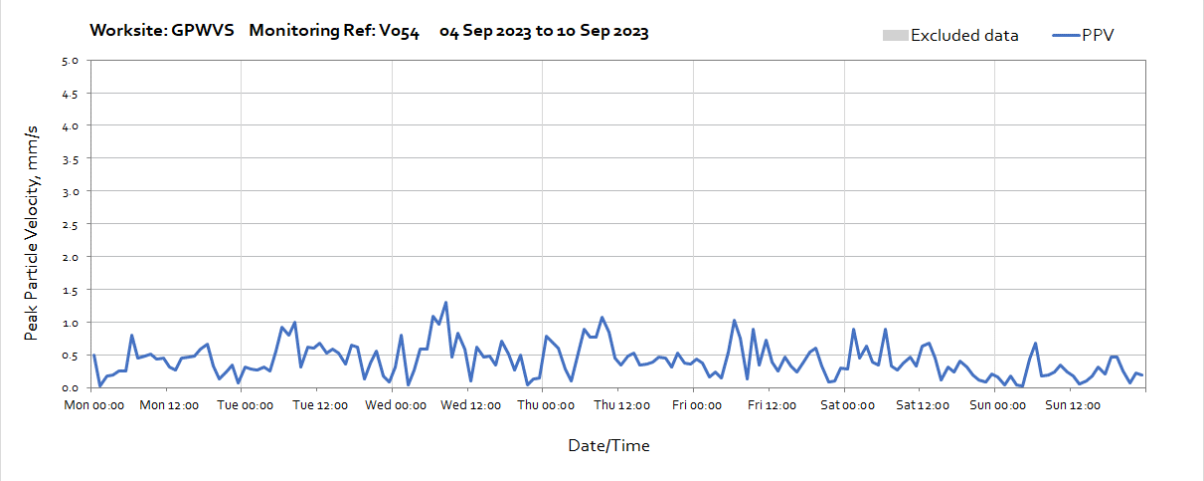
Note: The high vibration levels occurring between 19:00 and 20:00 on Thursday 14th September and on 15:00 to 16:00 on Sunday 17th September were due to local disturbance to the monitor rather than to construction activity.

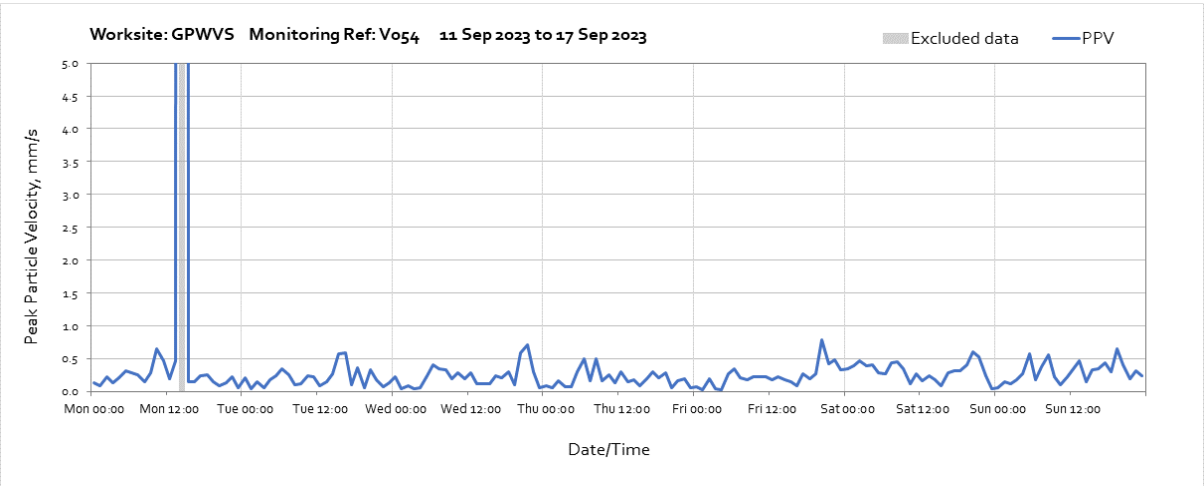




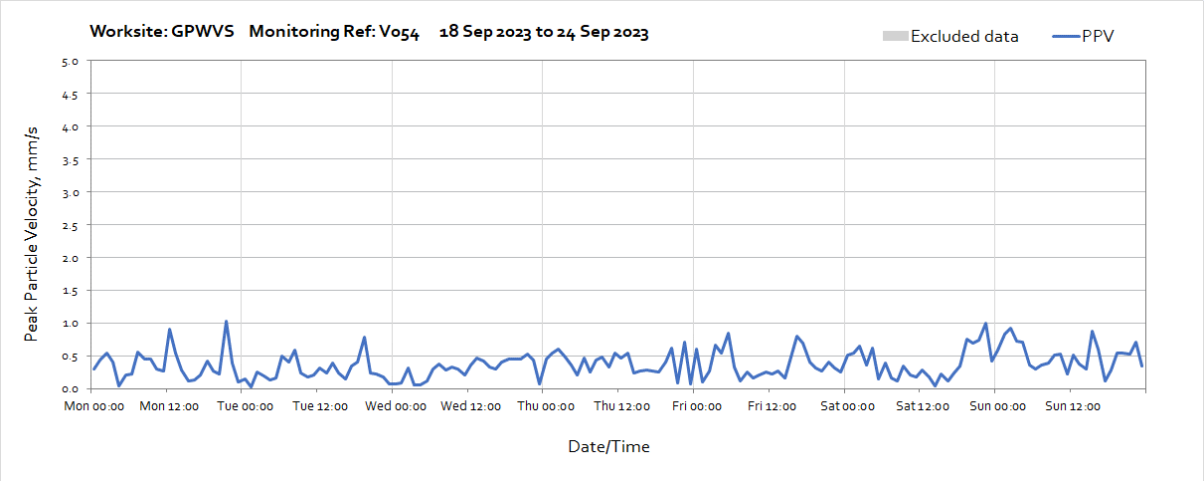
Worksite: GPWVS – Monitoring Ref: V054

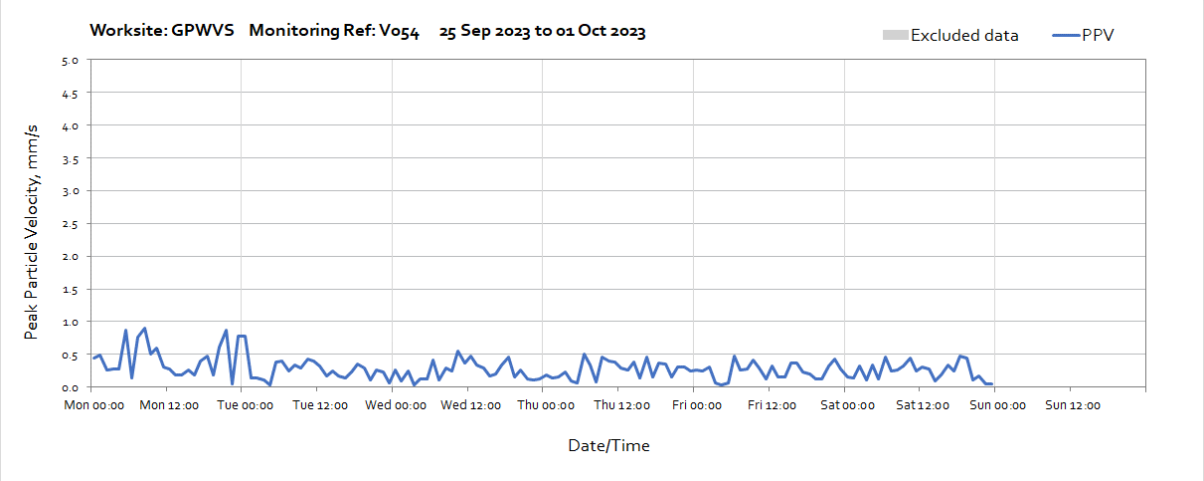




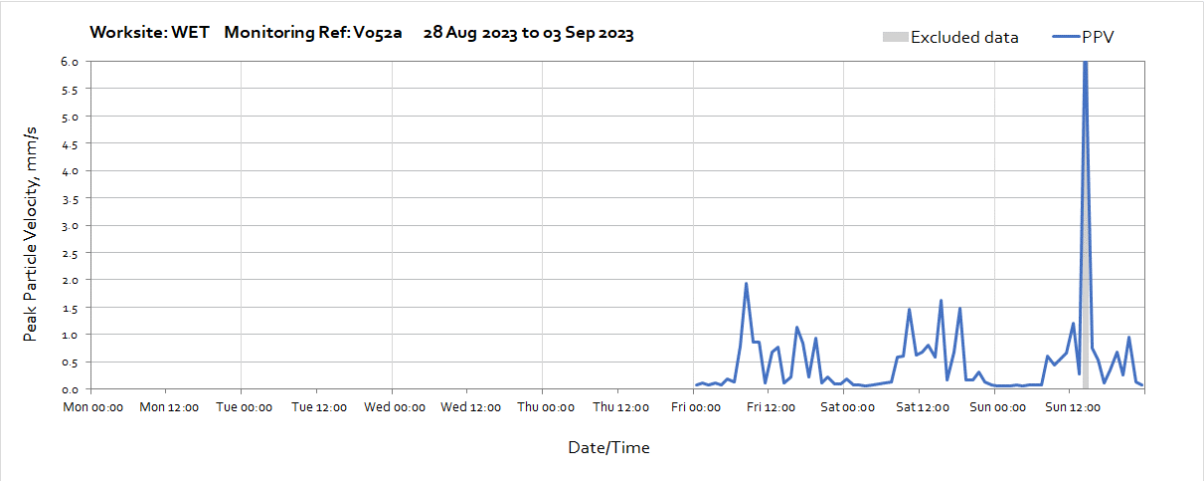


Note: The high vibration levels occurring between 14:00 and 15:00 on Monday 11th September were due to local disturbance to the monitor rather than to construction activity.

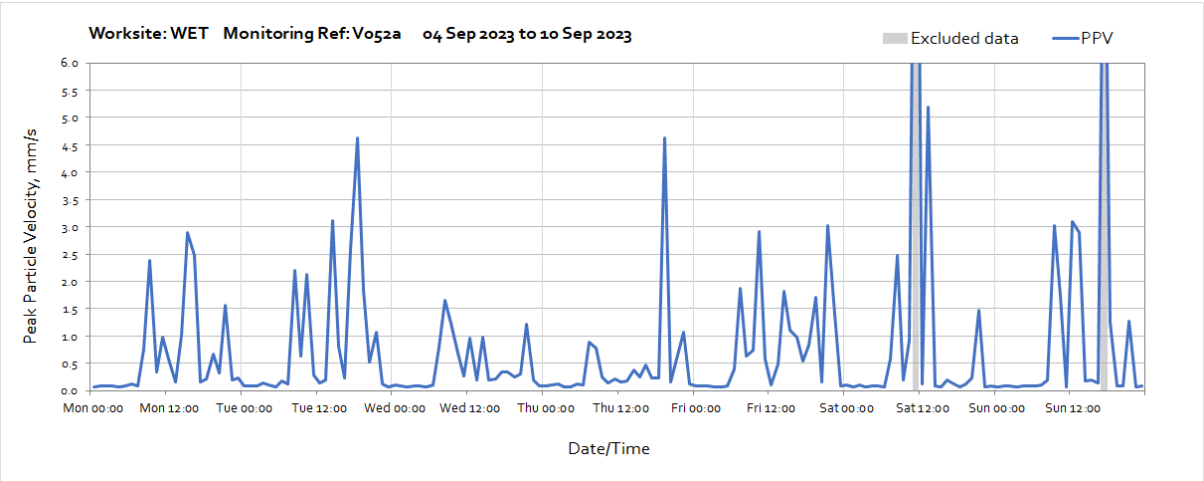




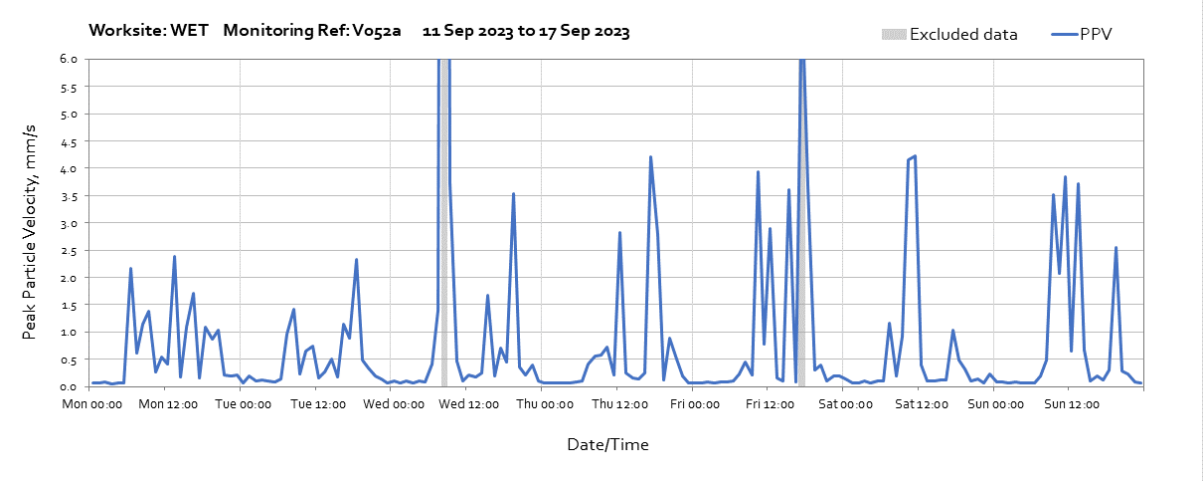
Worksite: WET – Monitoring Ref: V052



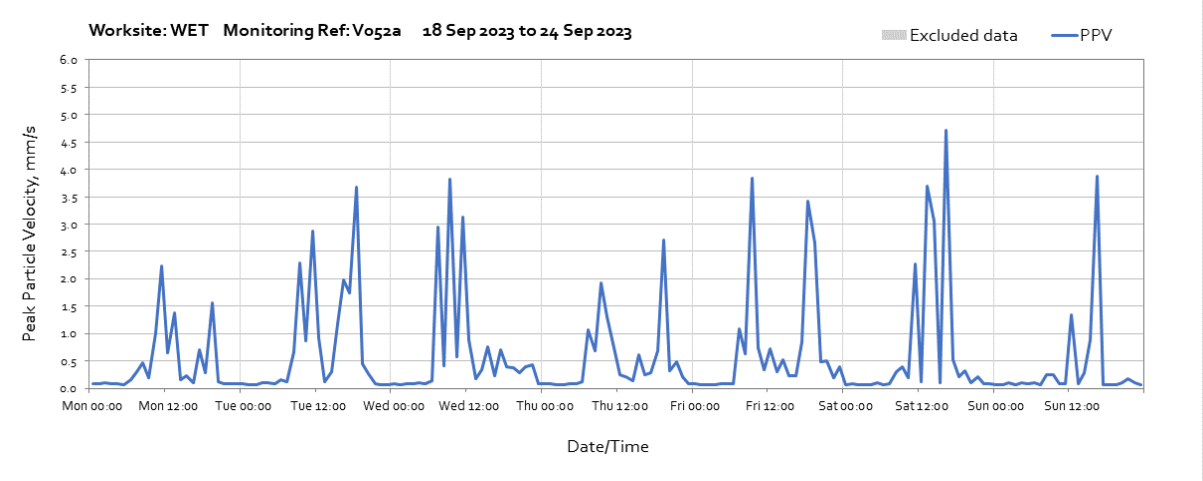
Note: The high vibration levels occurring between 14:00 and 15:00 on Sunday 3rd September were due to local disturbance to the monitor rather than to construction activity.



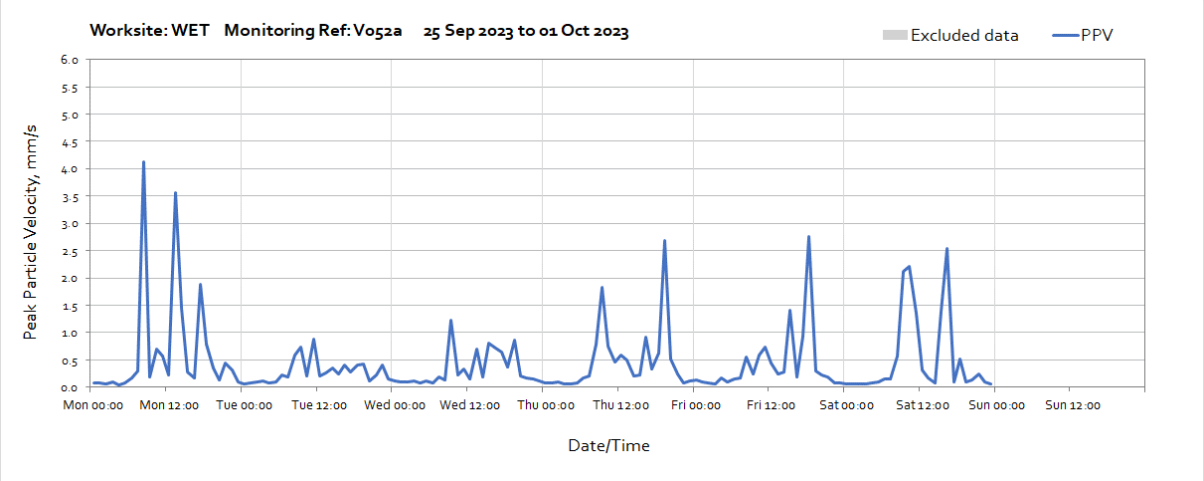
Note: The high vibration levels occurring intermittently throughout the week were due to local disturbance to the monitor rather than to construction activity.



Note: The high vibration levels occurring intermittently throughout the week were due to local disturbance to the monitor rather than to construction activity.

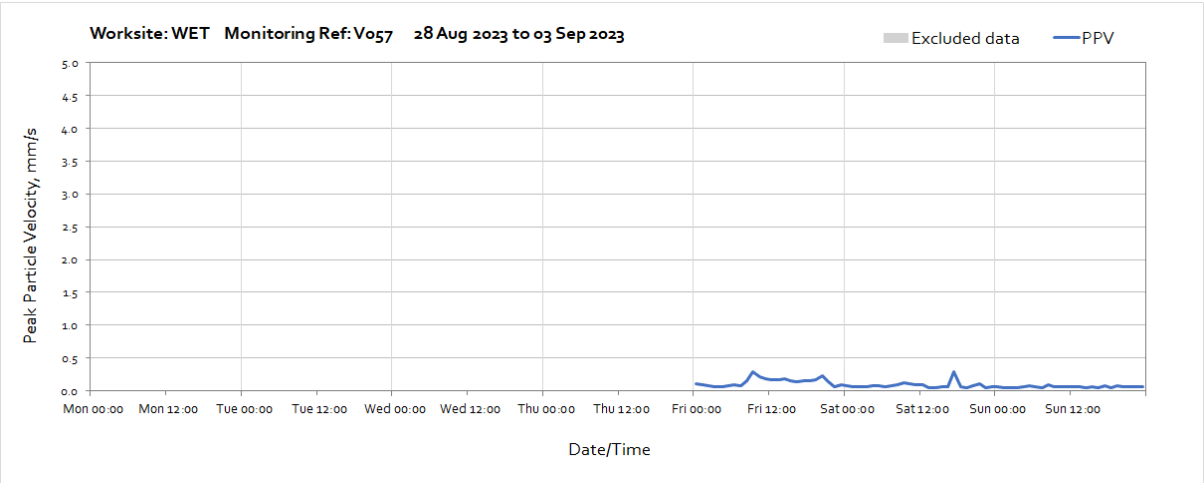


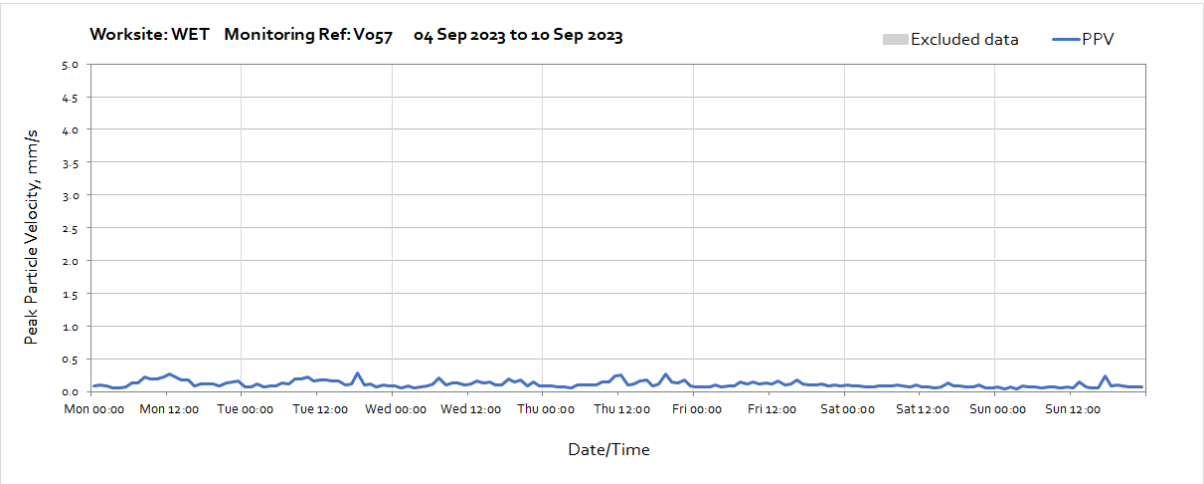
Note: The high vibration levels occurring intermittently throughout the week were due to local disturbance to the monitor rather than to construction activity.

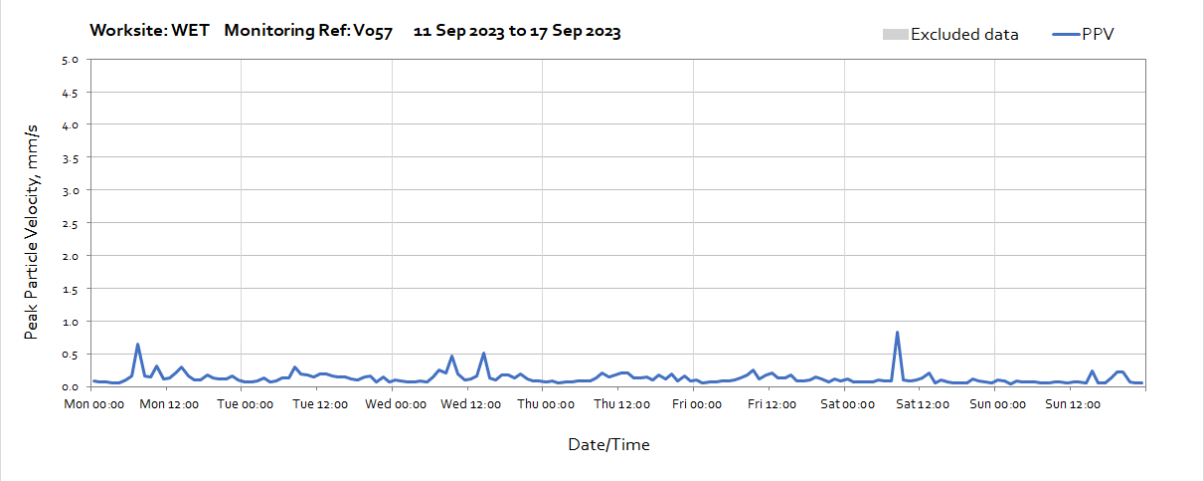


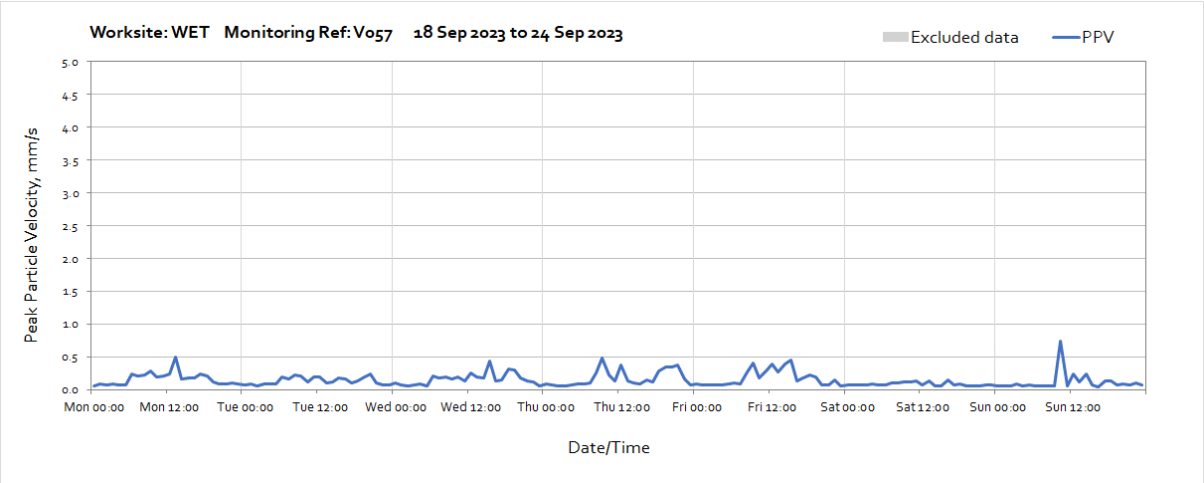
Note: The high vibration levels occurring between 08:00 and 09:00 and 13:00 and 14:00 on Monday 25th September were due to local disturbance to the monitor rather than to construction activity.

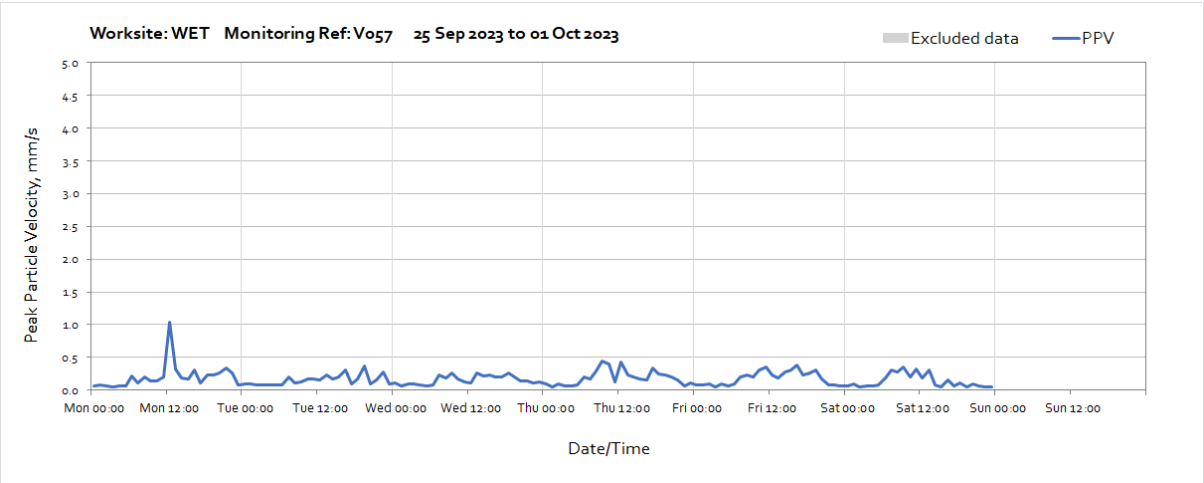
Worksite: WET – Monitoring Ref: V057



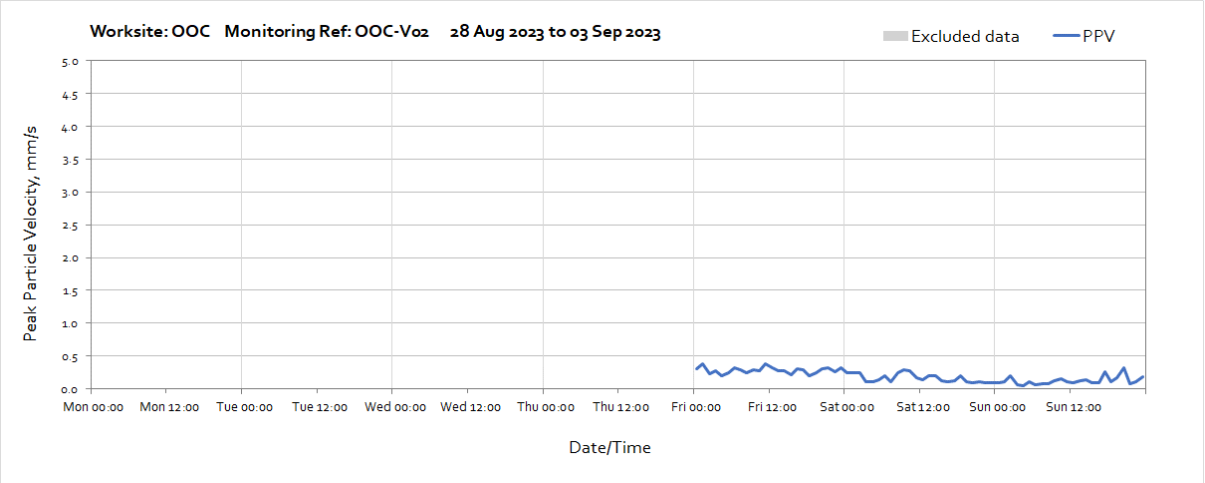


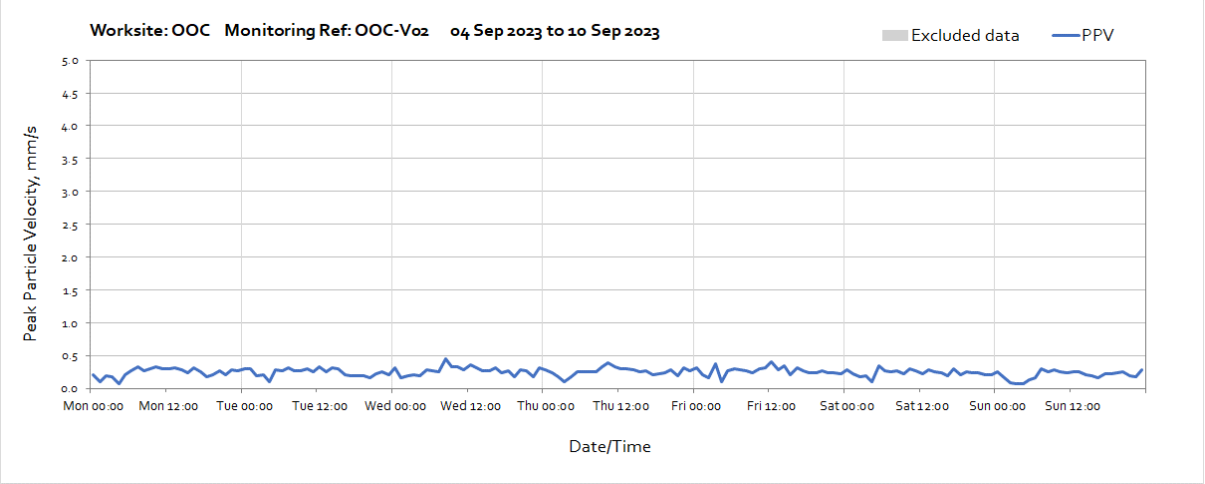

Worksite: WET Monitoring Ref: Vo57 11 Sep 2023 to 17 Sep 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

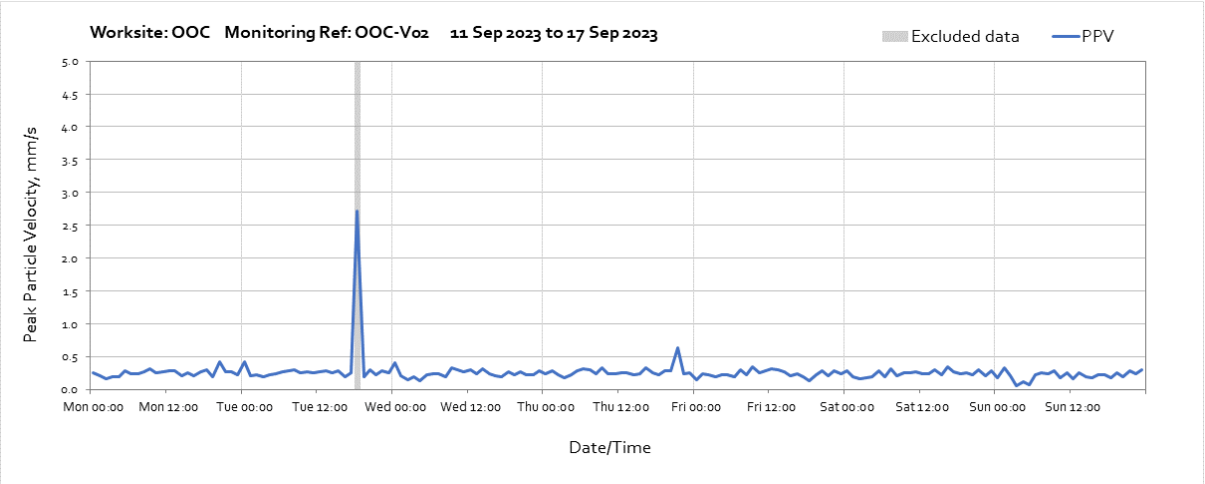

Worksite: WET Monitoring Ref: Vo57 18 Sep 2023 to 24 Sep 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

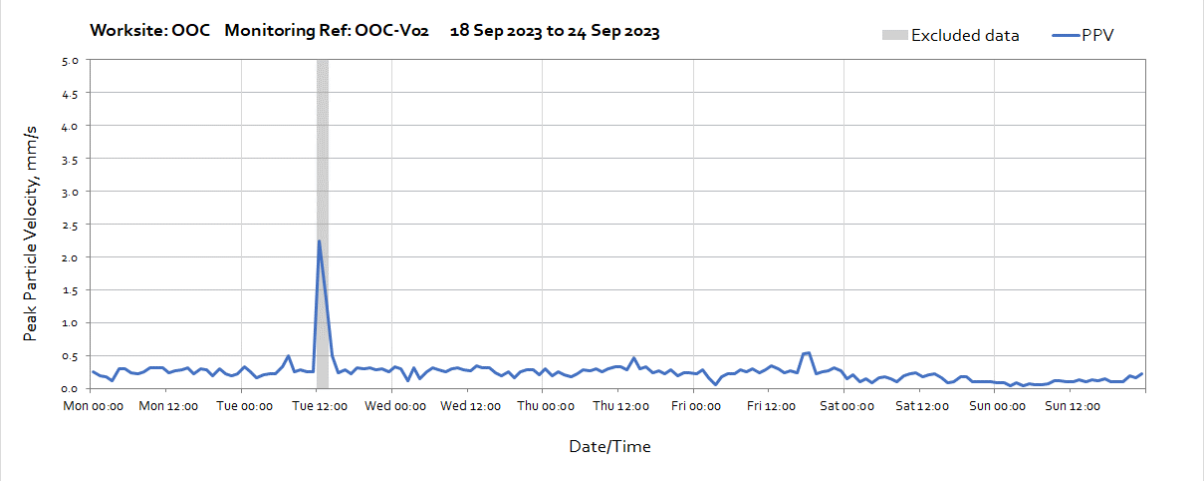

Worksite: WET Monitoring Ref: Vo57 25 Sep 2023 to 01 Oct 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

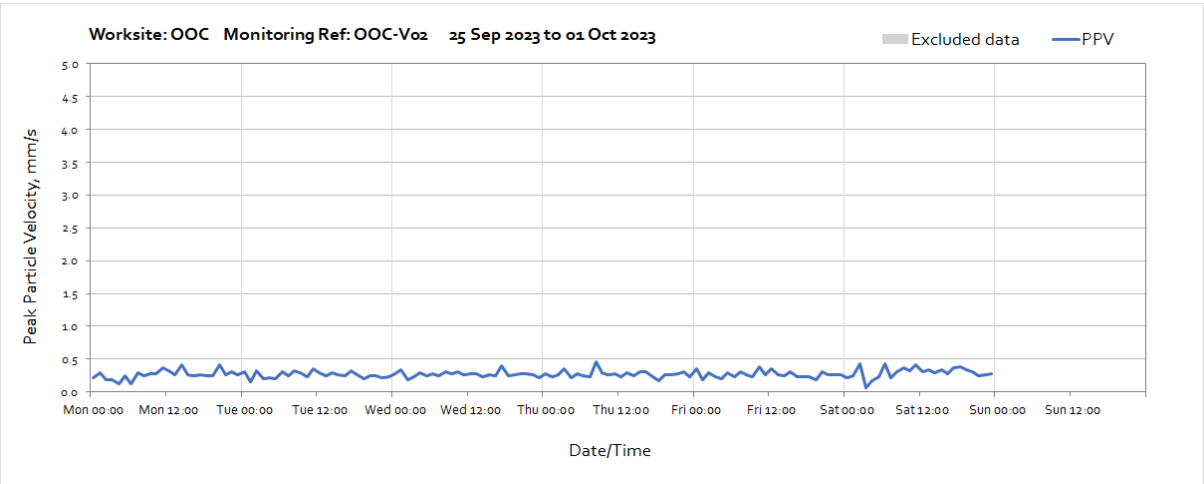
Worksite: OOC – Monitoring Ref: OOC-V02



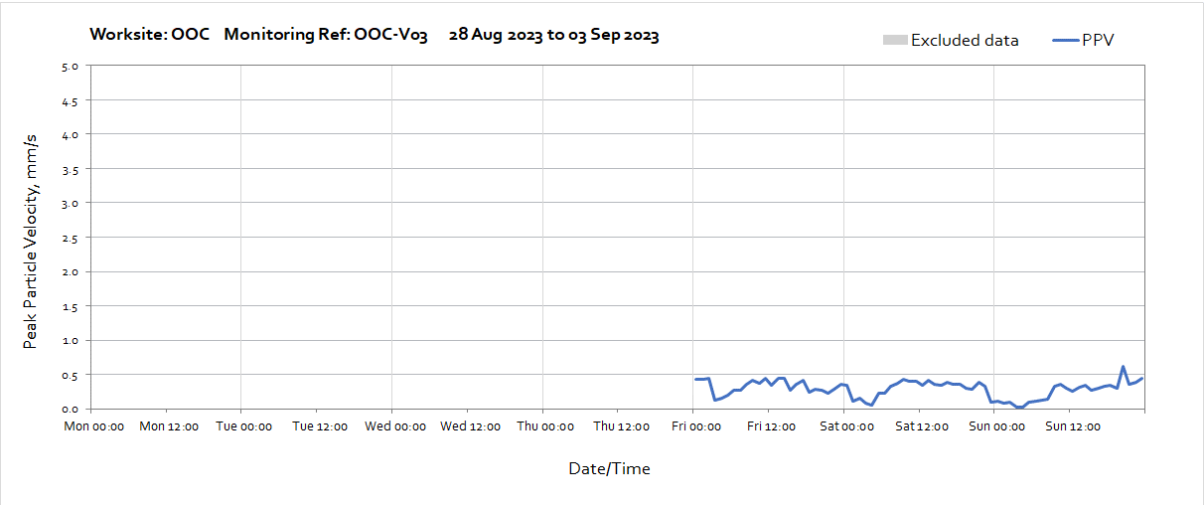


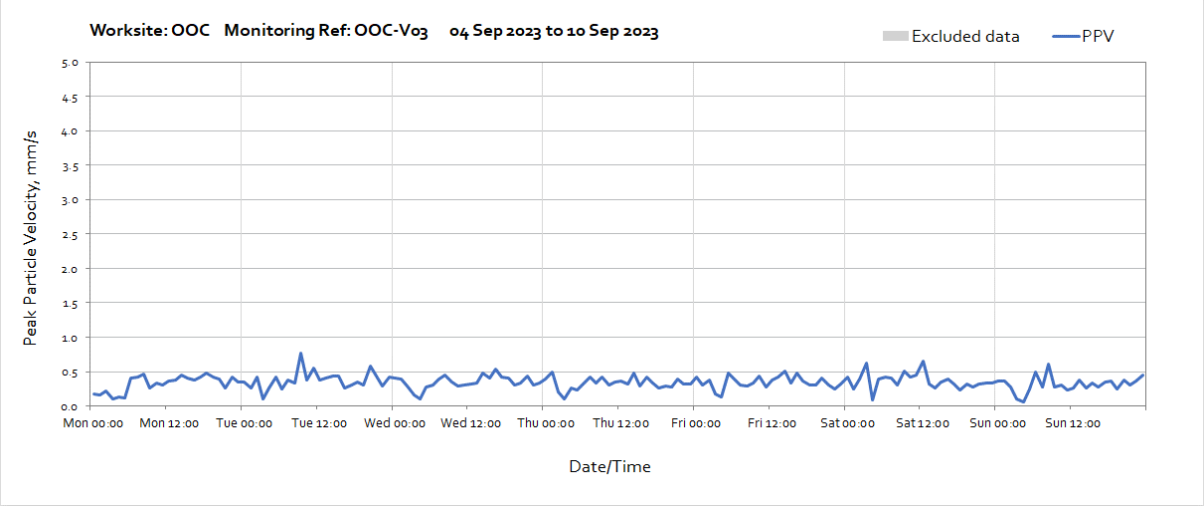


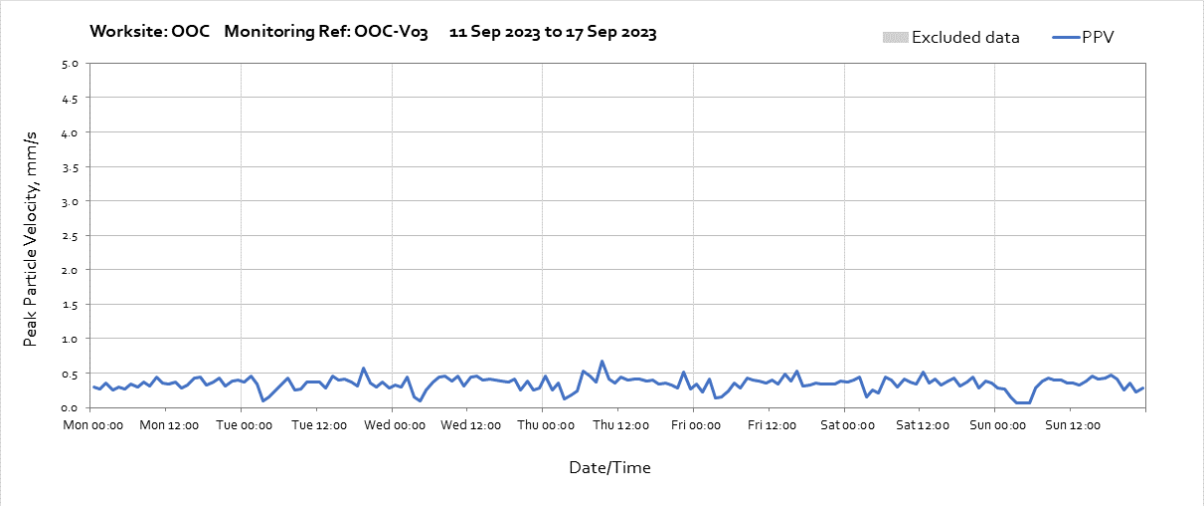


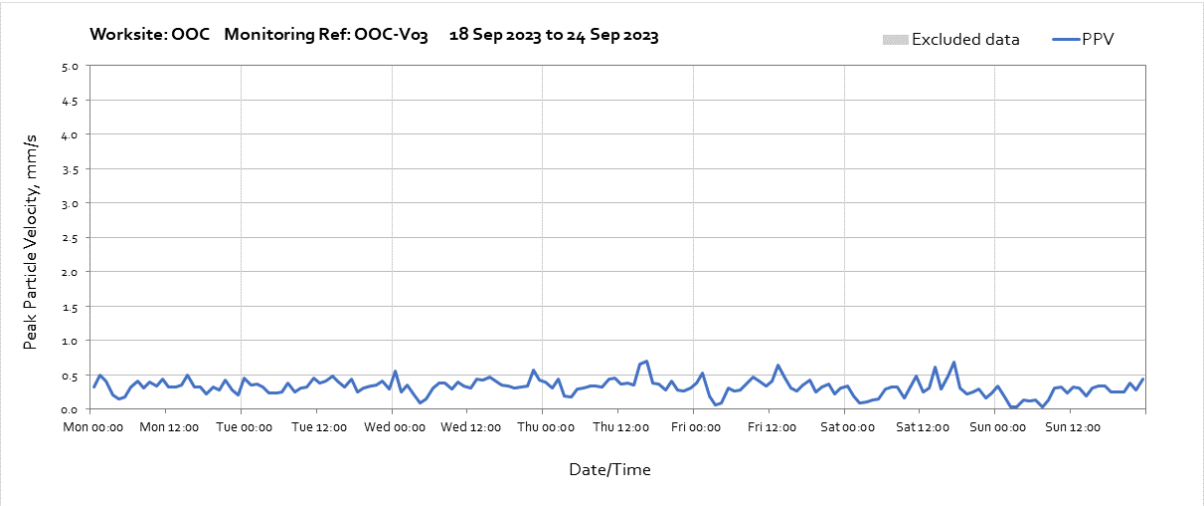


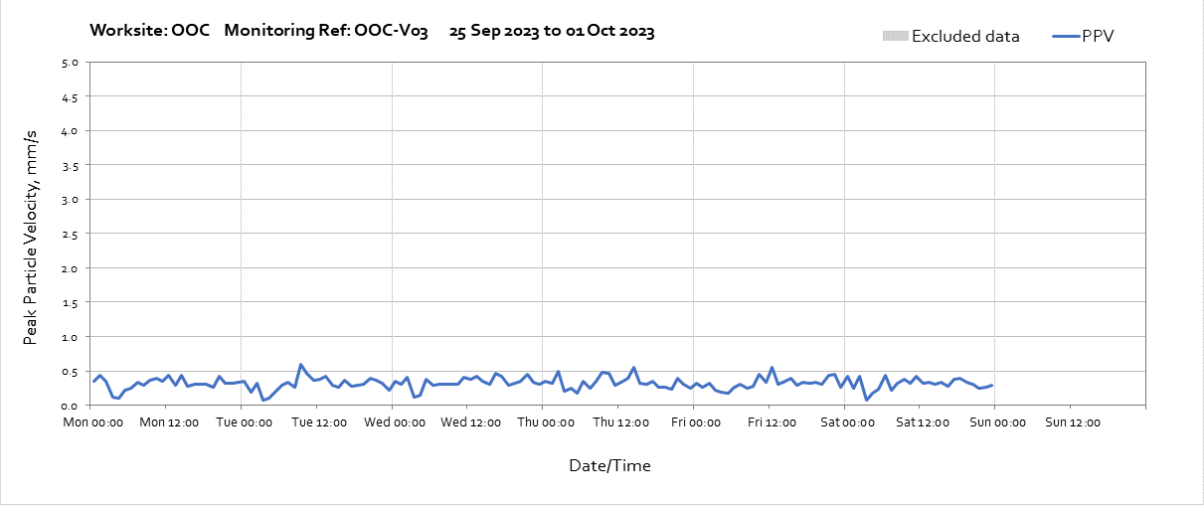
Worksite: OOC – Monitoring Ref: OOC-V03




Worksite: OOC Monitoring Ref: OOC-V03 04 Sep 2023 to 10 Sep 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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: OOC Monitoring Ref: OOC-V03 11 Sep 2023 to 17 Sep 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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: OOC Monitoring Ref: OOC-V03 18 Sep 2023 to 24 Sep 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: OOC Monitoring Ref: OOC-V03 25 Sep 2023 to 01 Oct 2023
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time