HS2

November 2020

Construction noise and vibration Monthly Report – October 2020

London Borough of Camden

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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 Camden during the month of October 2020.

Within this period monitoring was undertaken at the following worksites:

- Noise monitoring was undertaken in the vicinity of Euston Cavern worksite (ref.: ECAV), where vegetation removal, surveying and site setup activities were underway.
- Noise monitoring was undertaken in the vicinity of Euston Scissor Box worksite (ref.: ESC), where site setup, surveys, vegetation clearance, concrete breaking, extension and widening of access ramp and deliveries were underway.
- Noise monitoring was undertaken in the vicinity of Euston Throat Retained Cut worksite (ref.: ETRC) where site setup, tree felling and preparation for main piling were underway.
- Noise monitoring was undertaken in the vicinity of On-Network worksites (ref.: C & E), where wall repair work and relocation of signalling assets were underway.
- Noise monitoring was undertaken in the vicinity of On-Network worksites (ref.: G and ref.: H), where cable management system installation was underway.
- Noise monitoring was undertaken in the vicinity of the 132 and 140 Hampstead Road and Petrol Station worksite (ref.: S001-WS02), where groundworks and site setup were underway.
- Noise and vibration monitoring was undertaken in the vicinity of the Regent's Park Estate worksite (ref.: S001-WS07), where groundworks and materials processing were underway.
- Noise monitoring was undertaken in the vicinity of the St James's Gardens worksite (ref.: S003-WS01), where wall construction, removal and reconstruction of internal access ramp, trial bores and piling were underway.
- Noise and vibration monitoring was undertaken in the vicinity of the Wolfson House, Walkden House, 67-75 & 77-79 Euston Road worksite (ref.: S003-WS03) where demolition and groundworks were underway.
- Noise and vibration monitoring was undertaken in the vicinity of the Ibis Hotel, 3 Cardington Street worksite (ref.: S003-WS05), where wall construction was underway.
- Noise monitoring was undertaken in the vicinity of the Former National Temperance Hospital, 110 Hampstead Road worksite (ref.: S003-WS06), where deliveries were underway.

- Noise monitoring was undertaken in the vicinity of the 93-103 Drummond Street, 11-15 Melton Street, 54-64 Euston Street and 69 Cobourg Street worksite (ref.: S003-WS07), where erection of steelwork and cladding were underway.
- Noise monitoring was undertaken in the vicinity of the Vehicle Holding Area worksite (ref.: VHA), where surveys, vegetation clearance and site setup were underway.
- Vibration monitoring was undertaken in the vicinity of the Royal College of General Practitioners (RCGP) worksite (ref.: S003-WS08). Whilst works were not undertaken on worksite ref.: S003-WS08, vibration levels at the associated monitors may be influenced by work undertaken on nearby worksite ref.: S003-WS03.

Further works were also undertaken at the Adelaide Road Ventilation Shaft where vegetation clearance, site setup and surveys were underway, and on Stephenson Way, North Gower Street, Euston Street and Harrington Street, where utilities works were underway. There were two (2) exceedances of the HS2 threshold levels for significant noise effects during the reporting period at two monitoring positions.

There were no exceedances of trigger levels as defined in section 61 consents during the reporting period at any monitoring position.

Sixteen (16) complaints were received during the monitoring period. A description of complaints, the results of investigations and any actions taken are detailed in Table 8 of this report.

Abbreviations and Descriptions

The abbreviations, descriptions and project terminology used within this report can be found in Table 1.

Table 1: Table of Abbreviations

Acronym/Term	Definition
$L_{Aeq,T}$	See equivalent continuous sound pressure level
Ambient sound	A description of the all-encompassing sound at a given location and time which will include sound from many sources near and far. Ambient sound can be quantified in terms of the equivalent continuous sound pressure level, $L_{pAeq,T}$
Decibel(s), or dB	Between the quietest audible sound and the loudest tolerable sound there is a million to one ratio in sound pressure (measured in Pascal (Pa)). Because of this wide range, a level scale called the decibel (dB) scale, based on a logarithmic ratio, is used in sound measurement. Audibility of sound covers a range of approximately 0-140dB.
Decibel(s) A-weighted, or dB(A)	The human ear system does not respond uniformly to sound across the detectable frequency range and consequently instrumentation used to measure sound is weighted to represent the performance of the ear. This is known as the 'A weighting' and is written as 'dB(A)'.
Equivalent continuous sound pressure level, or $L_{Aeq,T}$	An index used internationally for the assessment of environmental sound impacts. It is defined as the notional unchanging level that would, over a given period of time (T), deliver the same sound energy as the actual time-varying sound over the same period. Hence fluctuating sound levels can be described in terms of an equivalent single figure value, typically expressed as a decibel level.
Exclusion of data	Measurement of noise levels can be affected by weather conditions such as prolonged periods of rain, winds speeds higher than 5m/s and snow/ice ground cover. Noise levels measured during these periods are considered not representative of normal noise conditions at the site and, for the purposes of this report, are excluded from the assessment of exceedances and calculation of typical noise levels and are also greyed out in charts. Identifiable incongruous noise and vibration events not attributable to HS2 construction noise are also excluded.
Façade	A facade noise level is the noise level 1m in front of a large reflecting surface. The effect of reflection, is to produce a slightly higher (typically +2.5 to +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.

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 Camden (LBC) for the period 1st to 31st October 2020.

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

- Euston Cavern worksite ref.: ECAV (see plan 2 in Appendix A), where work activities included:
  - Vegetation removal;
  - Surveys;
  - Site setup.
- Euston Scissor Box worksite ref.: ESC (see plan 2 in Appendix A), where work activities included:
  - Installation of site services, working platforms and scaffolding;
  - Surveying and monitoring of assets and surrounding structures;
  - Site clearance including vegetation clearance;
  - Installation, adaption and removal of hoarding;
  - Construction of drilling fluid slabs;

- Preparation activities for the main piling works, including removal of DB Cargo shed foundations and slab construction;
- Extension and widening of access ramp;
- Deliveries of abnormal loads (crane and piling rig).

- Euston Throat Retained Cut worksite ref.: ETRC (see plan 2 in Appendix A), where work activities included:
  - Setup of site offices;
  - Tree felling;
  - Preparations for and undertaking of test piling including pile mat installation, plate bearing tests, test piling rig mobilisation, anchor pile installation and test pile installation.
- On-Network worksite ref.: C and E (see plan 3 in Appendix A), where work activities included:
  - Wall repair works on Gloucester Avenue and Granby Terrace;
  - Relocation of signalling assets.
- On-Network worksite ref.: G and ref.: H (see plan 3 in Appendix A), where work activities included:
  - Cable management system installation.
- 132 and 140 Hampstead Road and Petrol Station worksite ref.: S001-WS02 (see plan 2 in Appendix A), where work activities included:
  - Groundworks (ground remediation);
  - Site setup.
- Regent's Park Estate worksite ref.: S001-WS07 (see plan 3 in Appendix A), where work activities included:
  - Groundworks (substructure backfilling);
  - Materials processing.
- St James' Gardens, worksite ref. S003-WS01 (see plan 2 in Appendix A), where works activities included:
  - Guide wall construction;
  - Removal of internal access ramp (concrete breaking) and reconstruction of access ramp;
  - Trial bore hole works;

- Piling.

- Wolfson House, Walkden House, 67-75 & 77-79 Euston Road worksite ref.: S003-WS03 (see plan 3 in Appendix A), where work activities included:
  - Demolition;
  - Groundworks (backfilling).
- Ibis Hotel, 3 Cardington Street worksite ref.: S003-WS05 (see plan 3 in Appendix A), where work activities included:
  - Guide wall construction.
- Former National Temperance Hospital, 110 Hampstead Road worksite ref.: S003-WS06 (see plan 3 in Appendix A), where work activities included:
  - Deliveries.
- 93-103 Drummond Street, 11-15 Melton Street, 54-64 Euston Street and 69 Cobourg Street worksite ref.: S003-WS07 (see plan 3 in Appendix A), where work activities included:
  - Erection of steelwork;
  - Cladding.
- Vehicle Holding Area worksite ref.: VHA (see plan 1 in Appendix A), where work activities included:
  - Surveying and monitoring of assets and surrounding structures;
  - Site clearance including vegetation clearance;
  - Installation, adaption and removal of hoarding;
  - Installation of lighting systems.

1.1.3 Vibration monitoring was undertaken in the vicinity of the Royal College of General Practitioners (RCGP) worksite (ref.: S003-WS08). Whilst works were not undertaken on worksite ref.: S003-WS08, vibration levels at the associated monitors may be influenced by work undertaken on nearby worksite ref.: S003-WS03.

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

- The Adelaide Road ventilation shaft, where work activities included:
  - Vegetation clearance;

- Removal of tree stumps;
- Installation of hoarding;
- Excavation of trial holes;
- Ecological surveys.

- Stephenson Way, North Gower Street, Euston Street and Harrington Street, where utilities works were undertaken.

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

1.2 Measurement Locations

1.2.1 Thirty (30) noise and seven (7) vibration monitoring installations were active across thirteen (13) worksites in October in the LBC area. Table 2 summarises the position of noise and vibration monitoring installations within the LBC area in October 2020.

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

1.2.3 The noise monitor at measurement location N019, worksite ref.: S001-WS02, was relocated on the 21st of October to allow the hoarding works to be undertaken. The monitor has since been awaiting power supply connection at its new location.

Table 2: Monitoring Locations

Worksite Reference	Measurement Reference	Address
B	JC	Juniper Crescent
ESC	N022	External to 34 Mornington Terrace
	N024	External to Park Village Studios, Park Village East
	N046	Lamppost opposite to 49 Mornington Terrace
	N047	Park Village East/Mornington Street bridge, lamppost #13
ETRC	N001	Park Village East, lamppost #1 (external to Cubitt Court, 100 Park Village East)
	N002	Park Village East, lamppost #2 (external to Richmond Court)
	N003	Park Village East, lamppost #9 (external to Silsoe House)
	N004	Mornington Terrace, lamppost #7 (junction of Mornington Terrace, Mornington Place and Clarkson Row)

Worksite Reference	Measurement Reference	Address
	N005	5A Granby Terrace
	N023	Lamppost #21 on Hampstead Road
G	HH	Euston Station Parcel Deck, Barnby Street
	BS	Roof of Stockbeck House, Barnby Street
S001-WS02	N018	Outside replacement housing, Hampstead Road
	N019	Outside Cartmel, Hampstead Road
S001-WS07	N020	Mackworth Street, lamppost #1
	N021	Stanhope Street, lamppost #2
	N044	Regents Park Estate west, near Langdale (temporarily removed from site on 31st August)
	N045	Regents Park Estate south, external to Coniston
	V039	Coniston, Regents Park Estate
	V043	Cubitt Court, Park Village East
S003-WS01	N016	Margaret Centre roof
S003-WS03	N006	Royal College of General Practitioners roof level
	N008	Stephenson's Way lamppost (external to RCGP)
	N010	Wesley Hotel
	N011	Euston Street, lamppost #4 (external to 82 Euston Street)
	V002	Royal College of General Practitioners basement boiler room by Stephenson Way
	V037	Magic Circle, basement
	V038	Wesley Hotel, basement lightwell, Euston Street
S003-WS05	N014	Starcross Street lamppost (external to Exmouth Arms)
	V021	42-44 Cobourg Street
S003-WS06	N017	Hampstead Road, lamppost #48
S003-WS07	N012	Drummond Street, lamppost #14 (opposite to 92-94 Drummond Street)
S003-WS08	N007	Royal College of General Practitioners, Melton Street
	V003	Royal College of General Practitioners basement vaults under Melton St
Vehicle Holding Area (VHA)	N025	External to 3 Prince Albert Road
	N026	Thames Water Compound (temporarily removed from site on 21st June)

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	Weekly 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
B	JC	Juniper Crescent	Free-field	58.3 (60.4)	59.5 (62.2)	59.6 (60.9)	59.3 (60.2)	55.9 (60.0)	56.8 (59.3)	59.7 (61.6)	59.4 (60.6)	58.8 (61.6)	53.3 (60.2)	57.0 (59.9)	53.4 (57.2)
ESC	N047	Park Village East/Mornington Street bridge, lampost #13	Free-field	59.4 (61.0)	61.8 (65.9)	60.7 (62.9)	59.2 (63.9)	54.1 (65.1)	56.3 (57.0)	59.8 (63.2)	60.5 (62.4)	60.1 (63.6)	53.0 (59.4)	58.8 (65.2)	52.7 (57.8)
	N046	Mornington Terrace near The Edinboro Castle pub, lamppost #18	Free-field	62.5 (63.5)	63.6 (65.7)	63.1 (64.7)	62.4 (63.9)	58.1 (65.4)	62.6 (62.9)	62.9 (63.1)	62.8 (63.1)	62.1 (66.9)	54.8 (62.1)	60.6 (62.6)	56.7 (61.7)
	N022	External to 34 Mornington Terrace	Free-field	60.2 (61.5)	61.7 (63.7)	61.0 (64.0)	60.3 (62.4)	55.6 (61.3)	60.3 (61.1)	60.8 (61.7)	60.9 (62.7)	60.3 (62.5)	52.9 (59.6)	58.6 (60.7)	54.2 (58.5)
	N024	External to Park Village Studios, Park Village East	Free-field	59.5 (62.5)	61.6 (71.6)	59.6 (62.8)	57.9 (62.5)	53.7 (64.2)	55.0 (57.0)	58.4 (59.8)	59.4 (61.8)	59.5 (61.8)	53.4 (59.8)	58.0 (63.6)	53.1 (57.5)

Worksite Reference	Measurement Reference	Site Address	Free-field or Façade Measurement	Weekly 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
ETRC	N005	5A Granby Terrace	Free-field	65.4 (66.0)	67.6 (69.0)	65.3 (66.7)	64.7 (66.3)	62.9 (65.8)	65.1 (65.5)	69.6 (79.8)	65.3 (66.0)	65.1 (67.4)	62.9 (64.8)	64.5 (65.9)	63.2 (65.0)
	N023	Ampthill Estate, Hampstead Road	Free-field	69.8 (71.4)	70.8 (73.1)	70.0 (72.8)	68.4 (71.5)	65.3 (73.2)	68.0 (69.4)	69.0 (69.3)	69.2 (70.1)	69.6 (74.9)	66.0 (70.4)	68.6 (70.9)	65.5 (70.6)
	N001	External to Cubitt Court, 100 Park Village East	Façade	59.9 (66.8)	66.9 (69.0)	59.6 (61.3)	58.6 (63.1)	54.1 (67.6)	56.4 (57.1)	66.2 (74.5)	58.6 (59.4)	58.5 (60.8)	52.6 (56.1)	57.7 (61.6)	53.0 (59.1)
	N002	Richmond Court, Park Village East	Free-field	59.3 (62.0)	63.0 (66.6)	60.9 (63.5)	59.4 (64.1)	54.1 (68.4)	56.5 (57.4)	60.4 (61.6)	60.3 (60.8)	60.1 (61.8)	53.0 (58.3)	59.0 (64.2)	53.6 (59.8)
	N003	Silsoe House, Park Village East	Free-field	59.2 (61.2)	61.9 (66.8)	61.3 (65.1)	59.4 (65.5)	53.8 (65.1)	55.2 (56.0)	58.3 (58.8)	60.5 (61.4)	59.9 (62.8)	53.7 (59.8)	59.0 (64.2)	52.9 (59.0)
	N004	Mornington Terrace, lamppost #7	Free-field	63.8 (65.1)	65.3 (66.7)	63.9 (65.5)	63.7 (66.4)	59.7 (66.4)	63.7 (64.6)	64.4 (65.3)	63.4 (64.0)	63.0 (64.2)	55.3 (64.9)	61.7 (65.9)	58.1 (63.7)
G	HH	Euston Station Parcel Deck, Barnby Street	Free-field	60.3 (64.1)	61.8 (66.8)	61.5 (66.7)	61.0 (69.6)	58.1 (66.2)	62.8 (63.8)	62.0 (63.2)	61.3 (62.2)	64.3 (76.9)	60.0 (64.5)	62.6 (70.0)	58.6 (66.6)
	BS	Roof of Stockbeck House, Barnby Street	Free-field	60.3 (61.9)	62.0 (63.0)	61.0 (64.3)	60.9 (64.8)	57.3 (64.1)	60.7 (61.2)	61.9 (62.5)	61.0 (62.2)	60.6 (63.1)	57.1 (60.1)	59.8 (63.8)	57.4 (64.9)
S001-WS02	N018	Outside replacement housing, Hampstead Road	Free-field	69.7 (72.9)	71.2 (74.0)	69.9 (74.4)	69.4 (75.1)	67.0 (77.2)	67.5 (68.2)	69.7 (70.8)	69.6 (71.2)	70.7 (75.2)	67.4 (70.8)	70.0 (75.0)	66.6 (71.3)
	N019	Outside Cartmel, Hampstead Road	Free-field	66.3 (72.3)	69.2 (73.0)	66.3 (69.6)	65.3 (67.4)	64.7 (79.7)	65.3 (66.2)	67.9 (68.2)	65.2 (66.5)	66.2 (69.9)	63.4 (68.5)	68.0 (76.8)	63.3 (68.1)

Worksite Reference	Measurement Reference	Site Address	Free-field or Façade Measurement	Weekly 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
S001-WS07	N020	Mackworth Street	Free-field	52.6 (55.4)	64.3 (72.3)	51.9 (57.8)	51.3 (59.5)	47.7 (62.3)	50.3 (51.6)	56.9 (60.5)	52.9 (55.8)	52.7 (65.3)	46.8 (50.9)	51.2 (58.4)	47.9 (60.6)
	N021	Stanhope Street, lamppost #2	Free-field	58.0 (62.6)	65.6 (75.9)	58.6 (67.8)	56.9 (63.7)	52.3 (62.6)	54.6 (55.7)	62.8 (65.1)	57.9 (59.1)	58.2 (64.3)	53.7 (63.4)	56.3 (60.0)	51.0 (59.0)
	N044	Regents Park Estate west	Free-field	53.9 (59.4)	66.1 (70.0)	53.0 (60.7)	52.6 (59.6)	49.4 (55.7)	53.1 (54.1)	67.0 (71.9)	52.9 (54.0)	52.7 (56.0)	48.0 (51.9)	52.0 (57.5)	49.3 (57.9)
	N045	Regents Park Estate south, external to Coniston	Free-field	54.5 (55.8)	66.2 (69.4)	55.0 (61.0)	54.7 (61.5)	51.6 (59.1)	53.7 (53.9)	59.4 (63.6)	53.9 (56.2)	54.7 (58.0)	51.8 (55.5)	53.6 (56.5)	51.8 (61.6)
S003-WS03	N006	RCGP Roof level	Free-field	61.5 (65.4)	67.5 (75.4)	55.5 (58.1)	55.1 (59.1)	54.4 (61.4)	55.6 (56.3)	56.2 (58.7)	55.2 (55.5)	55.0 (56.5)	54.1 (55.7)	55.0 (62.2)	55.3 (69.3)
	N008	RCGP Stephenson Way	Façade	58.9 (64.5)	67.2 (72.3)	55.8 (74.7)	54.3 (62.8)	53.6 (59.6)	55.3 (55.8)	60.0 (63.1)	54.6 (55.2)	54.7 (57.1)	53.7 (55.0)	54.5 (60.9)	55.1 (69.4)
	N010	Wesley Hotel	Façade	67.0 (68.1)	69.4 (73.1)	66.0 (67.3)	63.4 (67.0)	52.7 (62.8)	66.4 (66.9)	66.5 (66.9)	66.4 (66.7)	65.4 (67.2)	53.5 (62.2)	62.0 (67.0)	56.0 (67.9)
	N011	Outside 82 Euston Street	Free-field	57.5 (60.6)	62.4 (72.3)	53.3 (62.4)	51.7 (64.1)	50.2 (61.8)	54.1 (57.0)	60.3 (73.0)	52.8 (55.0)	52.6 (57.1)	49.6 (53.0)	51.8 (61.3)	52.5 (69.5)
S003-WS05	N014	Starcross Street	Free-field	55.2 (62.5)	59.6 (67.5)	58.0 (64.0)	58.0 (64.9)	51.0 (63.7)	52.8 (53.2)	55.8 (59.4)	55.6 (56.7)	55.4 (58.9)	49.7 (56.2)	55.3 (61.8)	54.8 (69.3)
S003-WS01	N016	Margaret Centre roof	Free-field	55.3 (57.5)	59.1 (61.9)	54.3 (55.8)	53.4 (57.1)	51.8 (59.1)	53.8 (55.8)	56.6 (61.6)	55.4 (56.4)	54.9 (60.6)	52.3 (56.1)	54.1 (59.5)	53.4 (66.6)

Worksite Reference	Measurement Reference	Site Address	Free-field or Façade Measurement	Weekly 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
S003-WS06	N017	Hampstead Road, lamppost #48	Free-field	70.3 (73.7)	71.3 (73.6)	70.2 (73.4)	69.5 (75.7)	67.1 (80.4)	68.1 (69.4)	69.3 (70.4)	70.1 (73.1)	70.8 (78.7)	67.9 (72.0)	69.6 (74.4)	67.1 (72.3)
S003-WS07	N012	Opposite 92-94 Drummond Street	Free-field	57.4 (60.1)	61.3 (63.8)	58.6 (63.9)	58.2 (60.9)	55.9 (62.7)	57.1 (59.9)	59.9 (66.0)	58.9 (60.8)	58.6 (60.7)	55.3 (57.2)	58.0 (62.5)	57.3 (70.0)
S003-WS08	N007	RCGP, Melton Street	Free-field	63.6 (65.7)	65.7 (68.8)	62.9 (66.8)	62.6 (65.1)	61.2 (66.5)	61.5 (62.3)	62.9 (67.3)	62.4 (63.8)	62.7 (66.8)	61.7 (66.0)	62.4 (64.8)	61.2 (67.3)
VHA	N025	External to 3 Prince Albert Road	Free-field	62.8 (70.0)	70.5 (82.1)	61.1 (72.9)	60.5 (69.2)	57.8 (70.2)	58.8 (66.2)	71.3 (78.8)	69.4 (76.6)	64.2 (68.1)	59.7 (67.7)	64.5 (70.4)	60.7 (69.3)
	N026	Thames Water Compound	Free-field	67.9 (76.2)	66.9 (74.2)	57.2 (60.4)	59.4 (75.9)	57.9 (72.9)	73.1 (75.6)	71.6 (73.3)	61.9 (75.3)	59.6 (73.7)	54.6 (57.0)	56.8 (59.5)	61.8 (74.0)

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
S001-WS07	V039	Coniston, Regents Park Estate	7.77 (X-axis)
	V043	Cubitt Court, Park Village East	2.64 (Y-axis)
S003-WS03	V002	RCGP. basement boiler room. 305 Euston Road	1.77 (Z-axis)
	V037	Magic Circle, basement	2.92 (Z-axis)
	V038	Wesley Hotel, basement lightwell, Euston Street	2.61 (X-axis)
S003-WS05	V021	42-44 Cobourg Street (floor)	0.84 (Z-axis)
S003-WS09	V003	RCGP. basement vaults, 305 Euston Road	1.48 (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 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 construction noise levels exceed the SOAEL, relevant periods will be identified, and summary statistics provided in order to evaluate ongoing qualification for noise insulation and temporary rehousing.

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
B	JC	Juniper Crescent	All days	All periods	No exceedance
ESC	N022	External to 34 Mornington Terrace	All days	All periods	No exceedance
	N024	External to Park Village Studios, Park Village East	All days	All periods	No exceedance
	N046	Lamppost opposite to 49 Mornington Terrace	All days	All periods	No exceedance
	N047	Park Village East/Mornington Street bridge, lamppost #13	All days	All periods	No exceedance
ETRC-HRB-GTB	N001	Park Village East Lamppost #1	All days	All periods	No exceedance
	N002	Park Village East Lamppost #2	All days	All periods	No exceedance
	N003	Park Village East Lamppost #9	All days	All periods	No exceedance
	N004	Mornington Terrace, lamppost #7	All days	All periods	No exceedance
	N005	5A Granby Terrace	All days	All periods	No exceedance
	N023	Ampthill Estate, lamppost #21, Hampstead Road	All days	All periods	No exceedance
G	HH	Euston Station Parcel Deck, Barnby Street	All days	All periods	No exceedance
	BS	Barnby Street	All days	All periods	No exceedance
S001-WS02	N018	132 and 140 Hampstead Road and Petrol Station	All days	All periods	No exceedance
	N019	132 and 140 Hampstead Road and Petrol Station	Sunday	08:00-13:00	1
S001-WS07	N020	Mackworth Street, lamppost #1	All days	All periods	No exceedance
	N021	Stanhope Street, lamppost #2	All days	All periods	No exceedance
	N044	Regents Park Estate West, near Langdale	All days	All periods	No exceedance
	N045	Regents Park Estate south, external to Coniston	All days	All periods	No exceedance

Worksite Reference	Measurement Reference	Site Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of SOAEL
S003-WS01	N016	Margarete Centre roof	All days	All periods	No exceedance
S003-WS03	N006	Royal College of General Practitioners Roof level	All days	All periods	No exceedance
	N008	Walkden House, 67-75 & 77-79 Euston Rd	All days	All periods	No exceedance
	N010	Wesley Hotel	All days	All periods	No exceedance
	N011	Walkden House, 67-75 & 77-79 Euston Rd	Saturday	08:00-13:00	1
S003-WS05	N014	Ibis Hotel, 3 Cardington Street & 1-3 Cobourg Street	All days	All periods	No exceedance
S003-WS06	N017	Hampstead Road, lamppost #48	All days	All periods	No exceedance
S003-WS07	N012	93-103 Drummond Street, 11-15 Melton Street, 54-64 Euston Street, 69 Cobourg Street	All days	All periods	No exceedance
S003-WS08	N007	Euston Square Gardens (west)	All days	All periods	No exceedance
VHA	N025	External to 3 Prince Albert Road	All days	All periods	No exceedance
	N026	Thames Water Compound	All days	All periods	No exceedance

2.2.5 For the purpose of assessing eligibility for noise insulation or temporary rehousing, multiple exceedances of the SOAEL in a 24-hour period would be counted as a single exceedance during that day. Over the reporting period, the overall number of SOAEL exceedances at each measurement location is shown in Table 6 and may be lower than the total sum of individual exceedances reported in Table 5 for each location.

Table 6: Summary of Total Exceedances of SOAEL

Worksite Reference	Measurement Reference	Monitor Address	Total of SOAEL exceedances in the month
S001-WS02	N019	132 and 140 Hampstead Road and Petrol Station	1
S003-WS03	N011	Walkden House, 67-75 & 77-79 Euston Rd	1

2.3 Exceedances of Trigger Level

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

Table 7: Summary of Exceedances of Trigger Levels

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

2.4 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
HS2-20-40678-C	S003-WS01 / S003-WS03	Complaint due to construction noise.	The construction noise was associated with HS2. Acoustic barriers were in use on site and noisier tasks such as concrete breaking were avoided first thing in the morning and are staggered. Monitoring data demonstrates compliance with Section 61 and works were in line with best practical means.	Programme of works communicated to complainant, also noted that other non HS2 works were ongoing in the area.
HS2-20-40687-C	Adelaide Road Ventilation Shaft	Complaint due to construction noise.	The construction noise was associated with HS2 and works were in line with best practical means.	The complainant was provided with an update on traffic management, installation of worksite hoarding and the mitigation measures in place to reduce noise.
HS2-20-40698-C	S003-WS03 / ETRC	Complaint due to noise associated with vegetation clearance.	Work had to be completed at night when road could be closed.	The complainant was informed that work will be ongoing in the area and that their details have been added to mailing list to be made aware in advance of any works.
HS2-20-40718-C	S003-WS03 / ETRC	Complaint due noise associated with vegetation clearance and contractors conversing loudly.	Windows have been manufactured for the complainant to assist with noise insulation, however the resident has not contacted contractor back about this despite a number of attempts made by contractor.	Confirmed to the complainant that windows have been made but that they need to speak with contractor in order to take forward.
HS2-20-40799-C	S001-WS02 / S001-WS07	Complaint due to fixed plant noise occurring in early morning hours.	Mechanical ventilation is to be installed at the property to improve noise insulation; however, the installation has been delayed due to COVID-19.	The contractor will be in contact with complainant to take forward as quickly as possible.

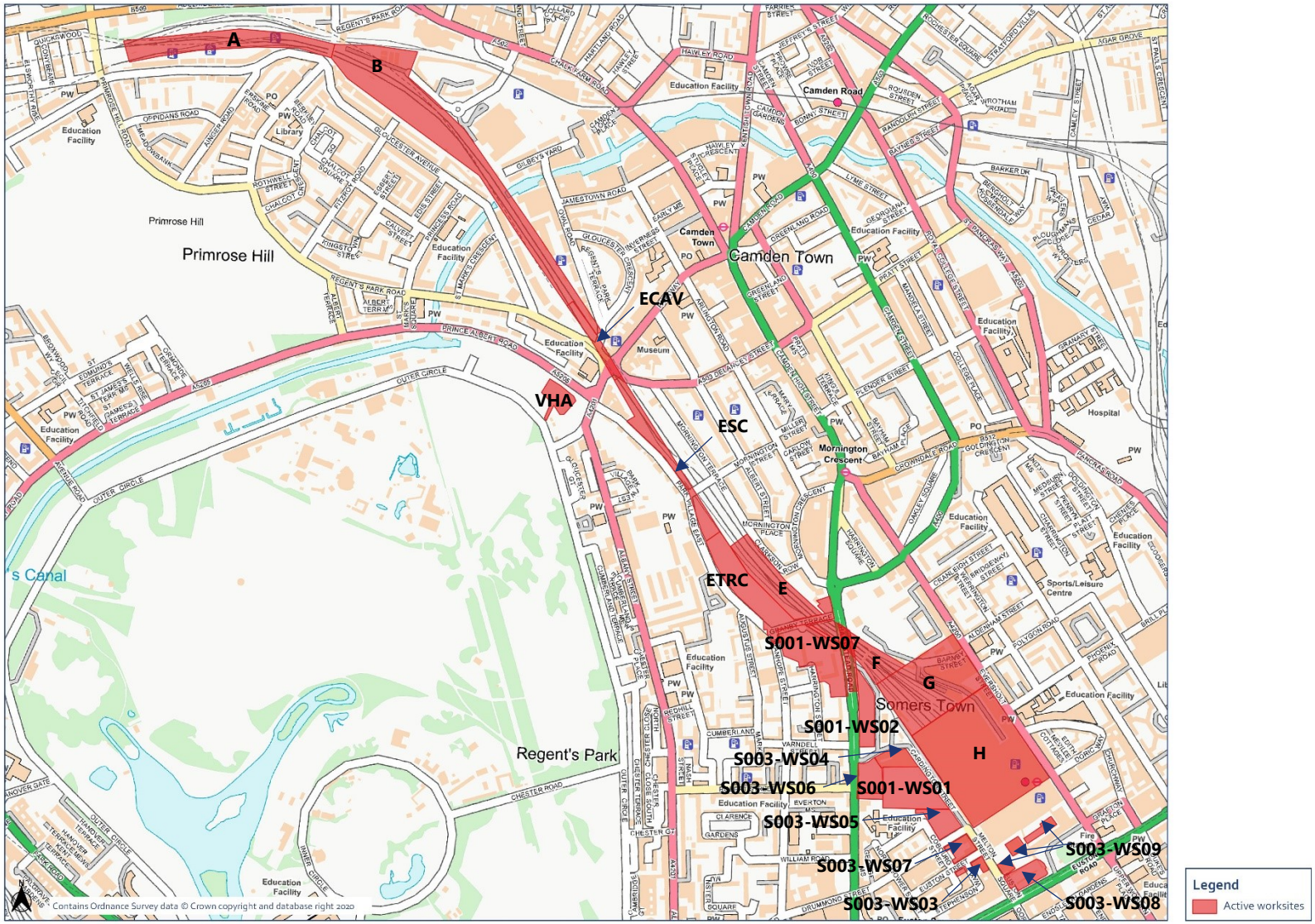
Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
HS2-20-40732-C	S003-WS03 / ETRC	Complaint due to noise associated with vegetation clearance.	The complainant is being considered for a special case.	The special case process is on-going.
HS2-20-40754-C	S003-WS03 / ETRC	Complaint due to noise associated with vegetation clearance.	The vegetation clearance was authorised and in line with best practical means.	Information was provided to the complainant.
HS2-20-40757-C	S003-WS03	Complaint due to construction noise associated with weekend works.	Works were undertaken within Saturday's core working hours.	The complainant was informed that core hours includes Saturday between 08:00 and 13:00
HS2-20-40767-C	Adelaide Road Ventilation Shaft	Complaint due to generator noise.	A generator was in use on the worksite. The generator is screened by acoustic barriers. Monitoring data demonstrates compliance with Section 61 and works were in line with best practical means.	Hoardings works are currently being undertaken. Following completion of the hoarding works, the generator will be located behind the hoarding with view of reducing the generator noise emissions further.
HS2-20-40779-C	H	Complaint due to construction noise and contractors conversing loudly.	Investigation is on-going. An update will be provided in the next LBC monthly report.	Investigation is on-going. An update will be provided in the next LBC monthly report.
HS2-20-40800-C	N/A	Complaint due to noise associated with a generator.	Following the log of the complaint, the complainant contacted HS2 to inform that the generator was not associated with HS2 construction works.	No additional actions required.
HS2-20-40796-C	S001-WS07	Complaint due to construction noise during the night-time.	Windows have been manufactured for the complainant to assist with noise insulation, however the resident has not contacted contractor back about this despite a number of attempts made by contractor.	Confirmed to the complainant that windows have been made but that they need to speak with contractor in order to take forward.
HS2-20-40828-C	S003-WS03 / S003-WS07	Complaint due to construction noise.	Noise barriers had to be removed on-site due to high winds. The noise barriers were reinstated when winds eased.	Information was provided to the complainant and it was confirmed that the noise barriers have been reinstated.

Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
HS2-20-40795-C	Adelaide Road Ventilation Shaft	Complaint due to noise associated with a generator.	The on-site generator is associated with a welfare unit. Monitoring data demonstrates compliance with Section 61 and works were in line with best practical means.	The complainant was advised that workers were reminded to only use generators during breaks. A welfare van has been ordered that will remove the need for a generator.
HS2-20-40833-C	S001-WS07	Complaint due to noise associated with a generator.	Due to high wind speeds the acoustic barriers could not be left surrounding the generator overnight.	The acoustic barriers have since been put back in place. Also explained to stakeholder that while core hours are from 8am staff may be on site from 7am for briefings etc and generator needs to be on for staff welfare facilities.
HS2-20-40714-C	S003-WS03 / ETRC	Complaint due noise associated with vegetation clearance occurring on a Sunday.	Work was delayed which required weekend working. Monitoring data demonstrates compliance with Section 61 and works were in line with best practical means.	The complainant was informed that the work was agreed with local council and an update was placed on Commonplace.

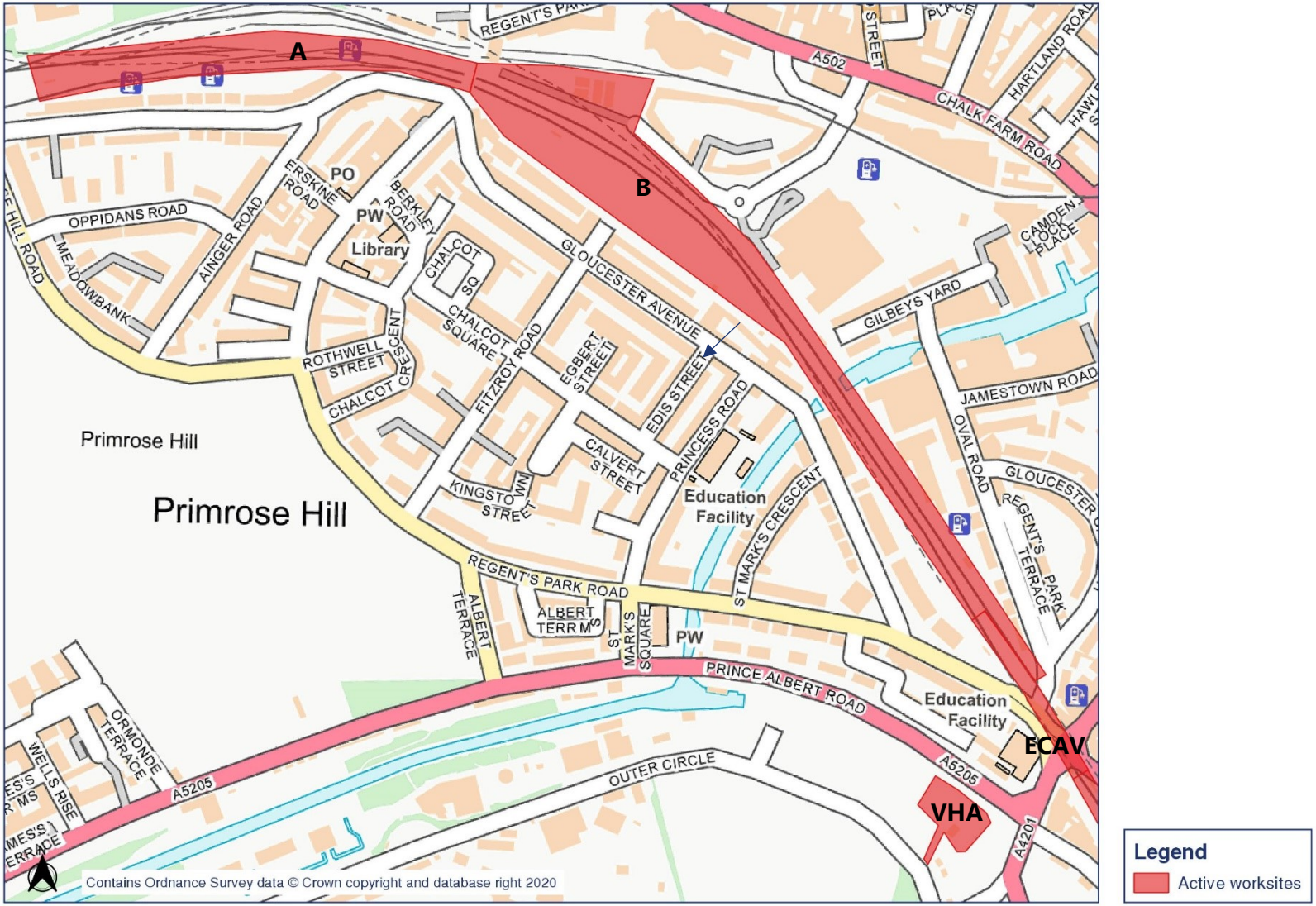
Appendix A Site Locations

HS2

Worksite identification plan - Overview

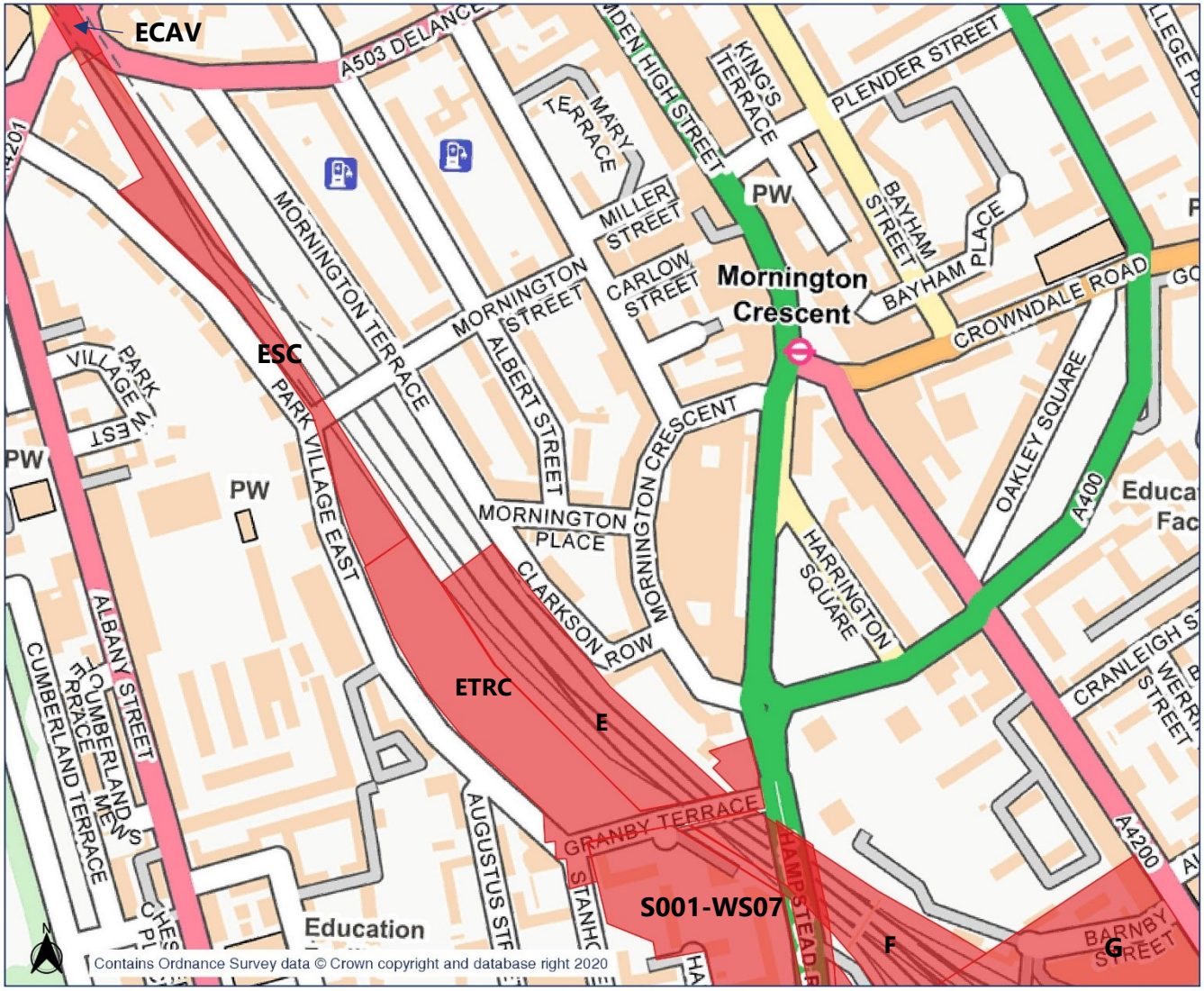


HS2 Worksite identification plan - 1

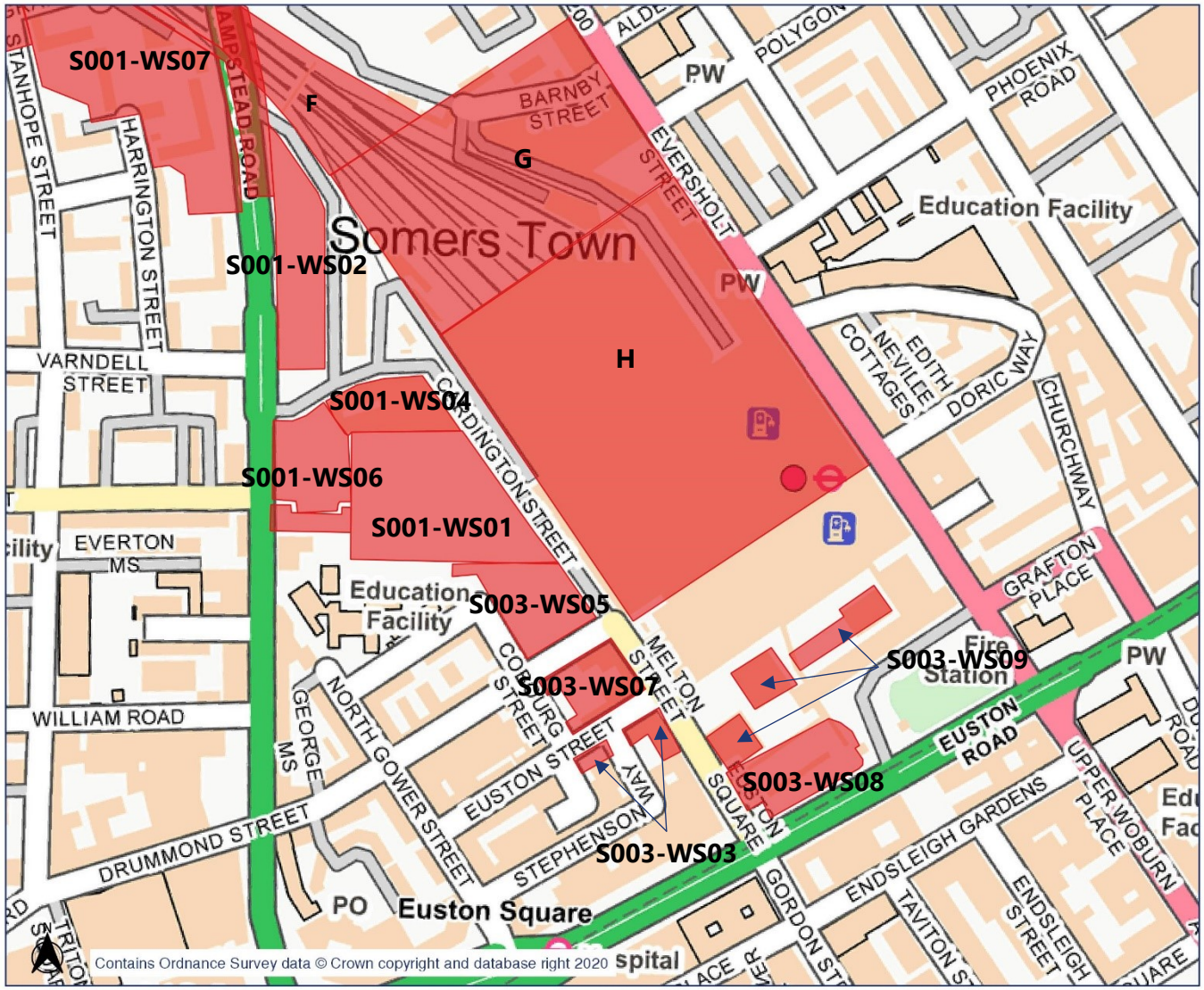


HS2

Worksite identification plan - 2



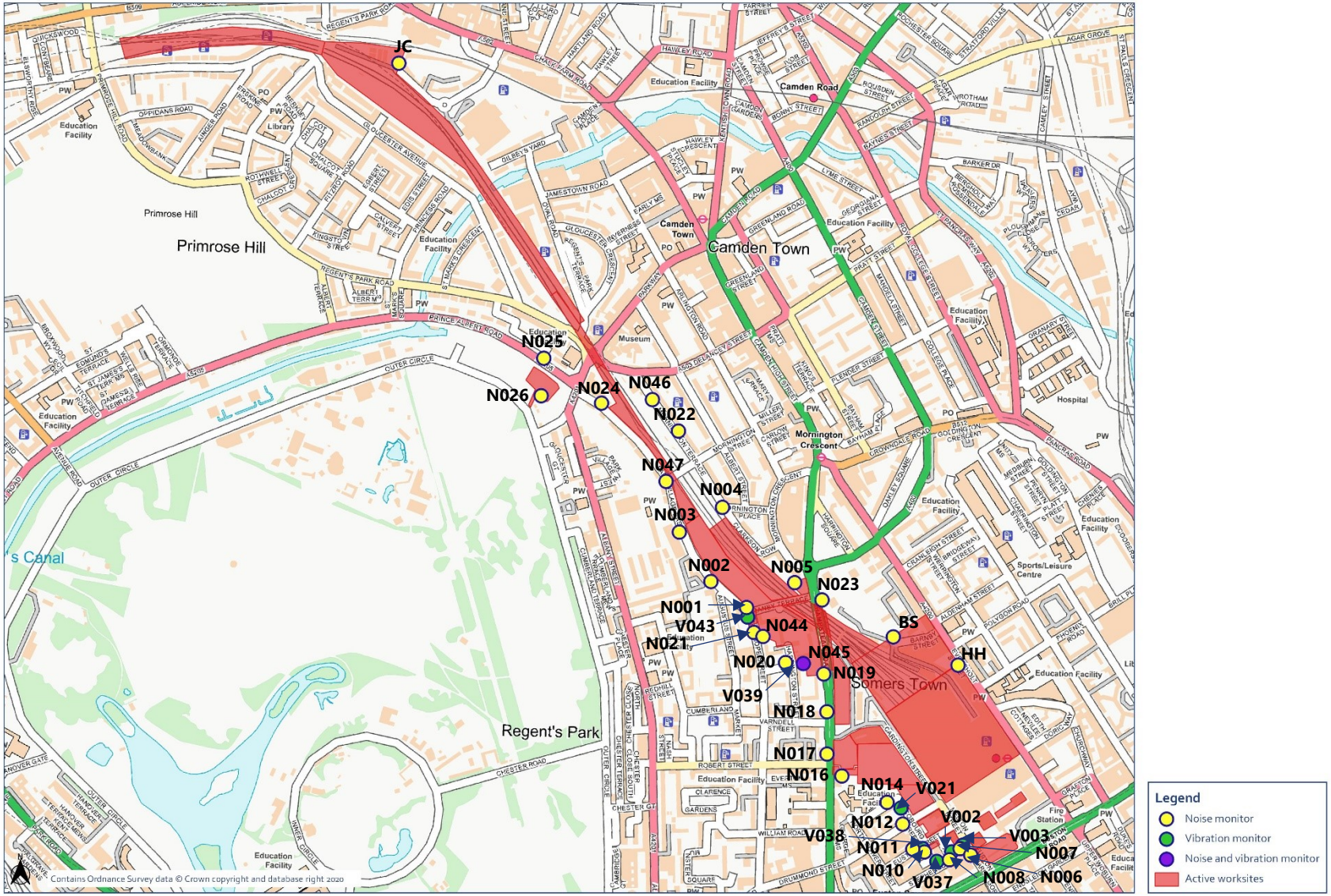
HS2 Worksite identification plan - 3



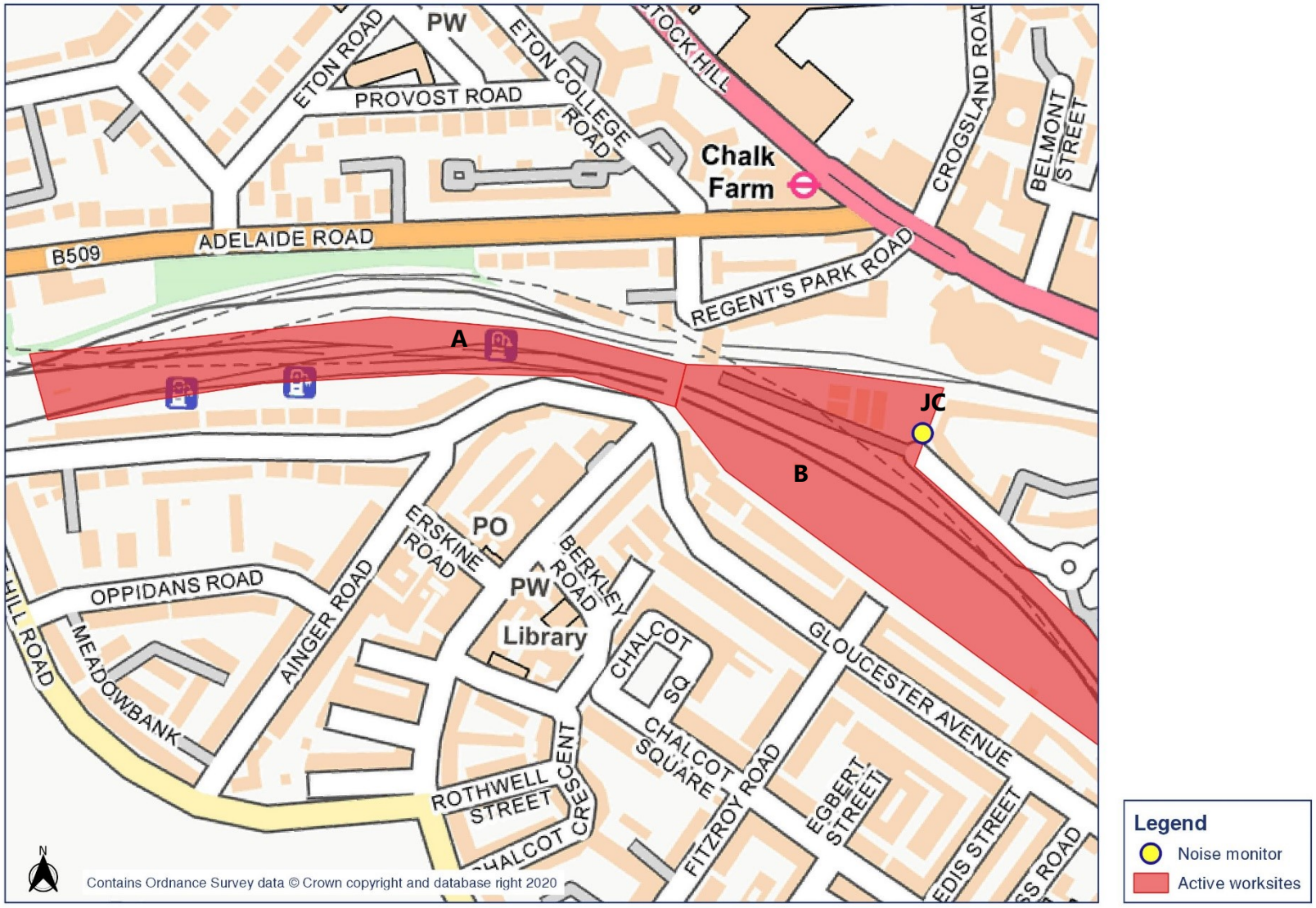
Appendix B Monitoring Locations

HS2

Noise and vibration monitoring plan - Overview

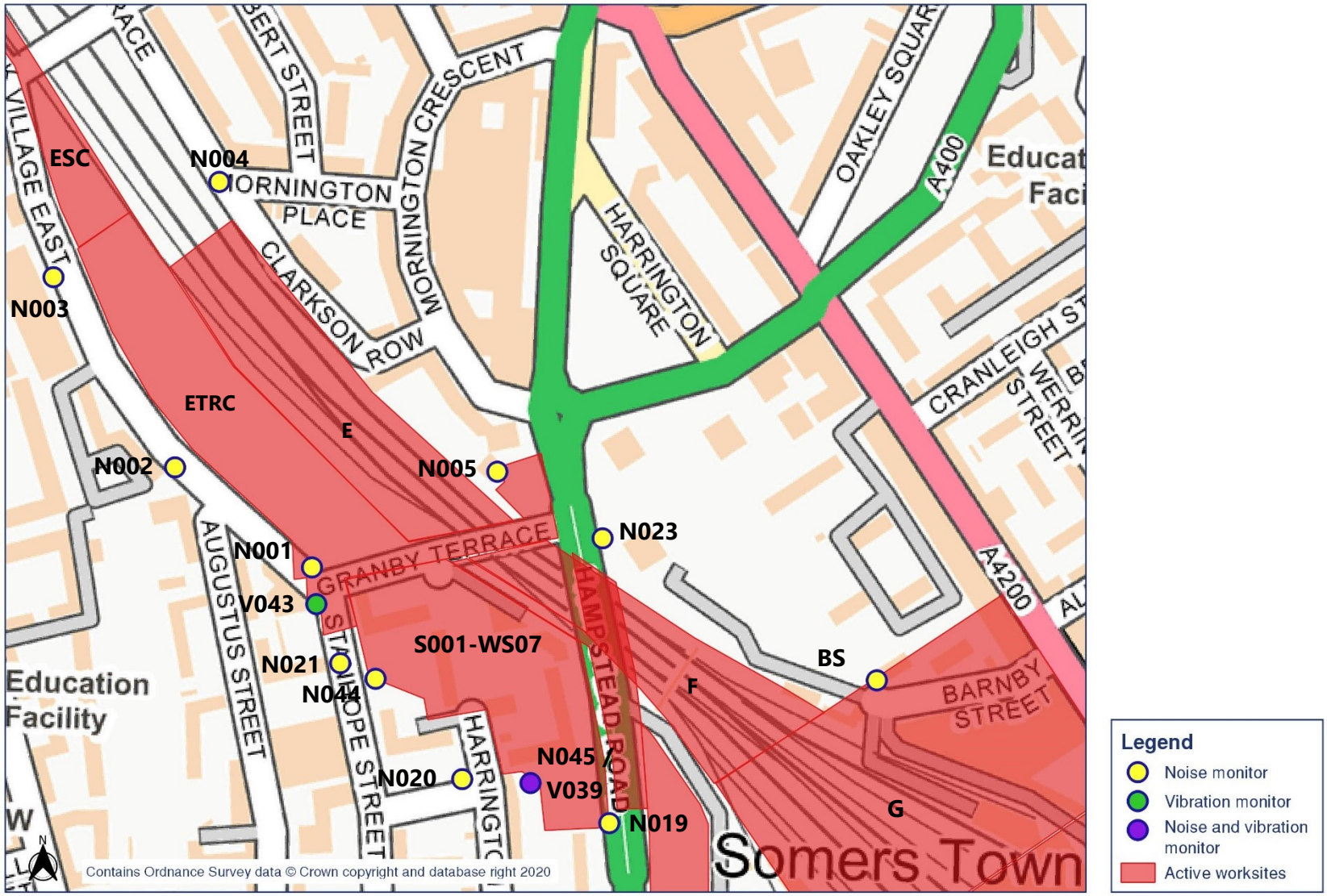


HS2 Noise and vibration monitoring plan - 1



HS2 Noise and vibration monitoring plan - 2

HS2 Noise and vibration monitoring plan - 3



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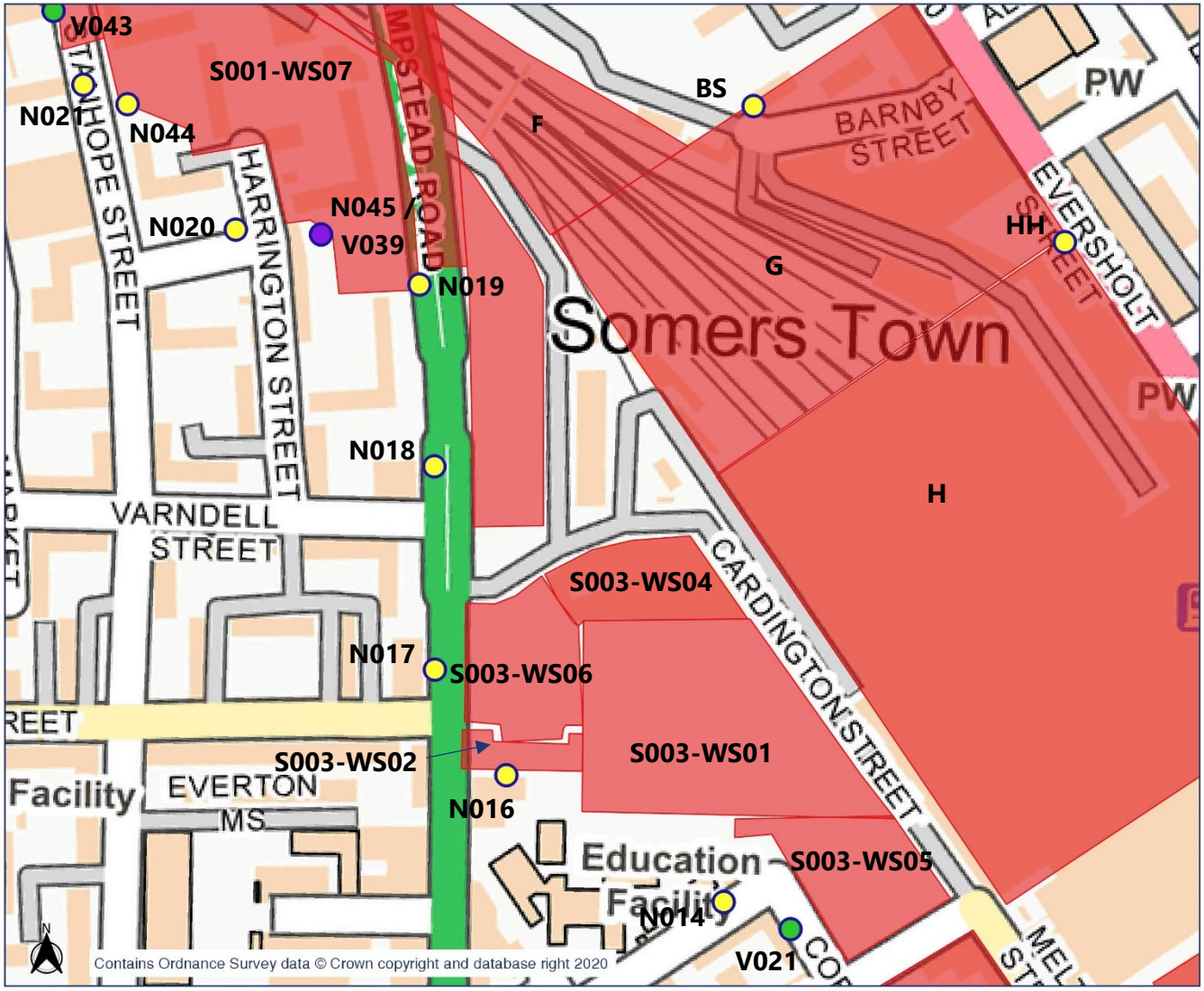
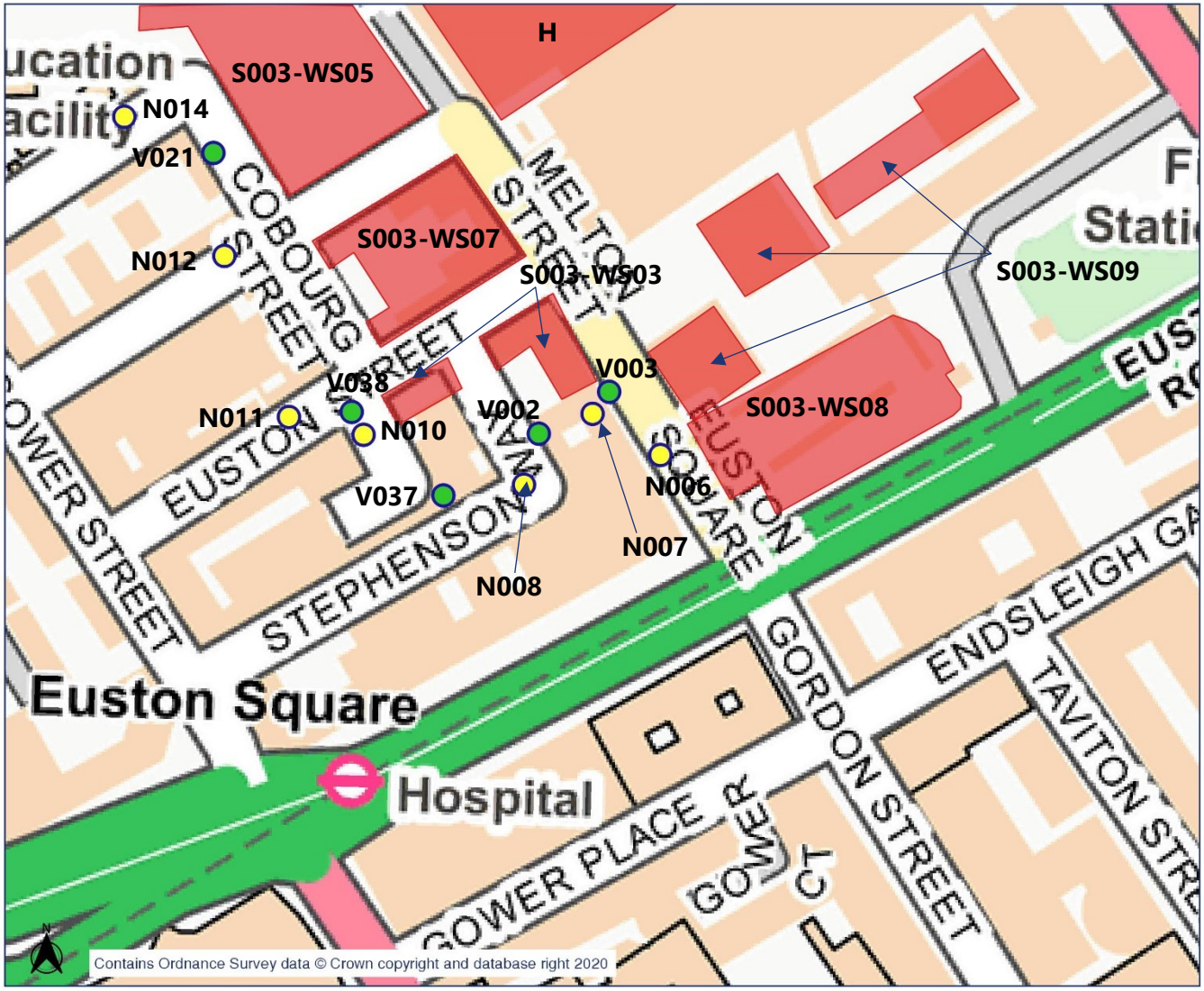


HS2 Noise and vibration monitoring plan - 5



Appendix C Data

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.

Noise

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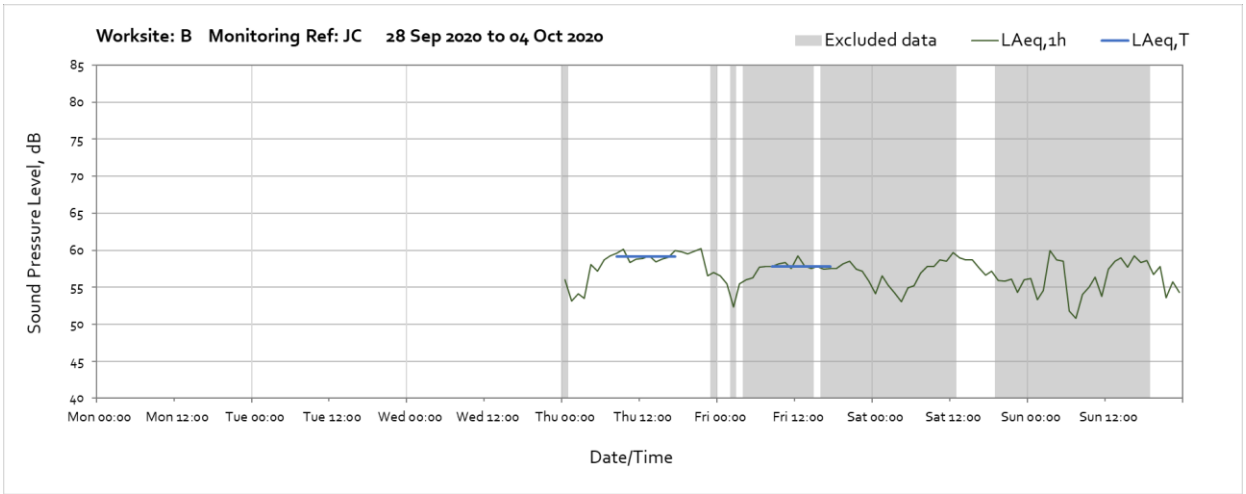

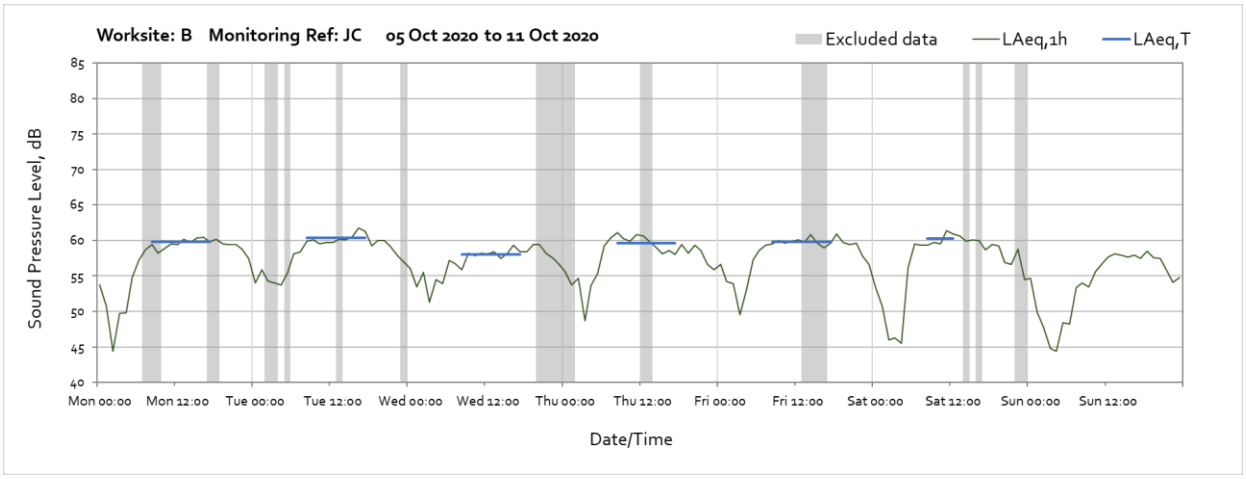

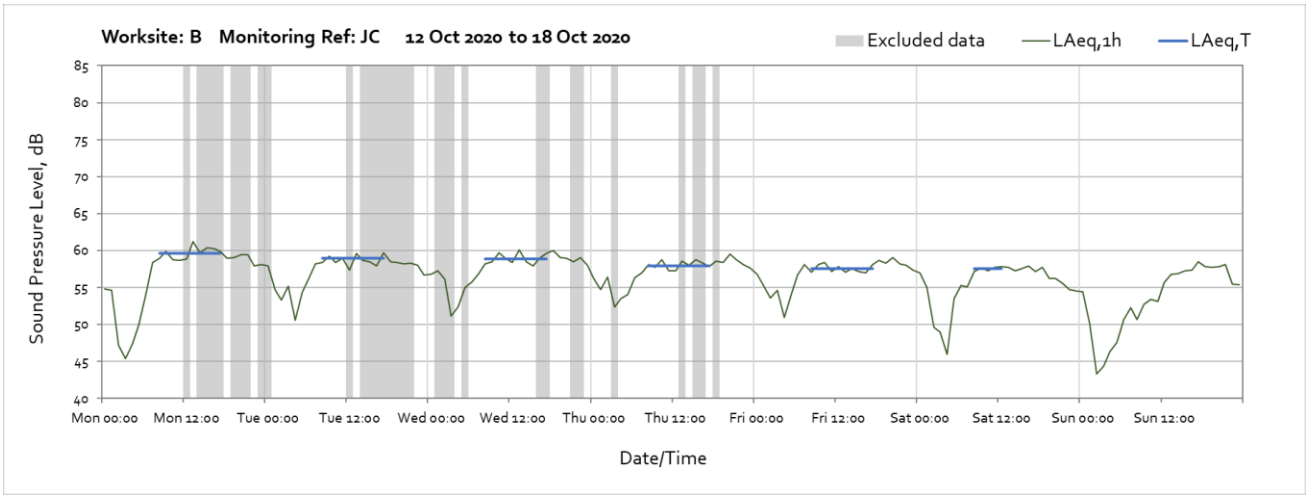
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70
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50
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40
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Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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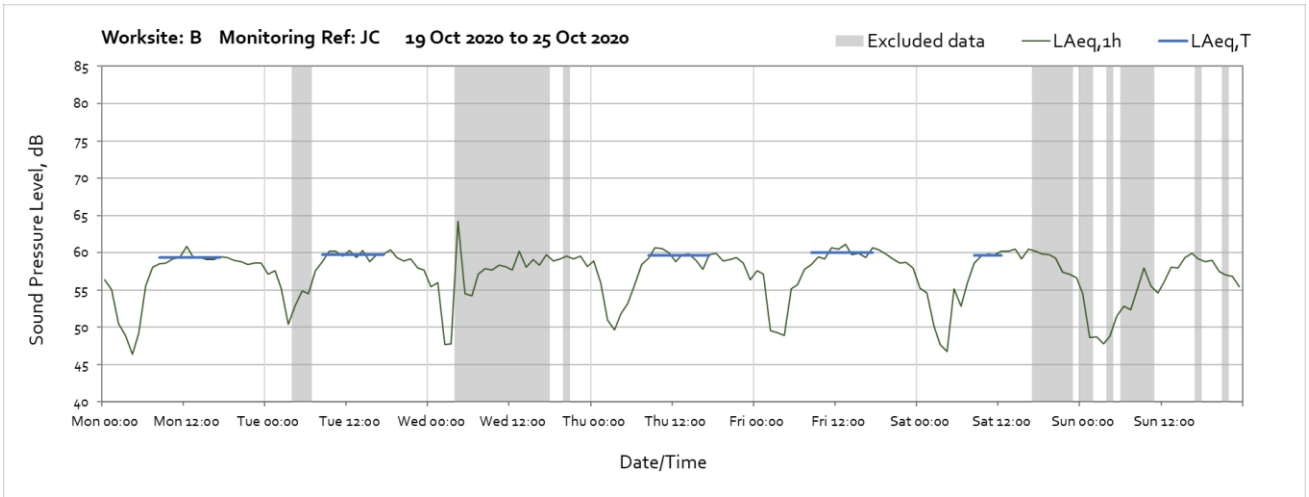
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time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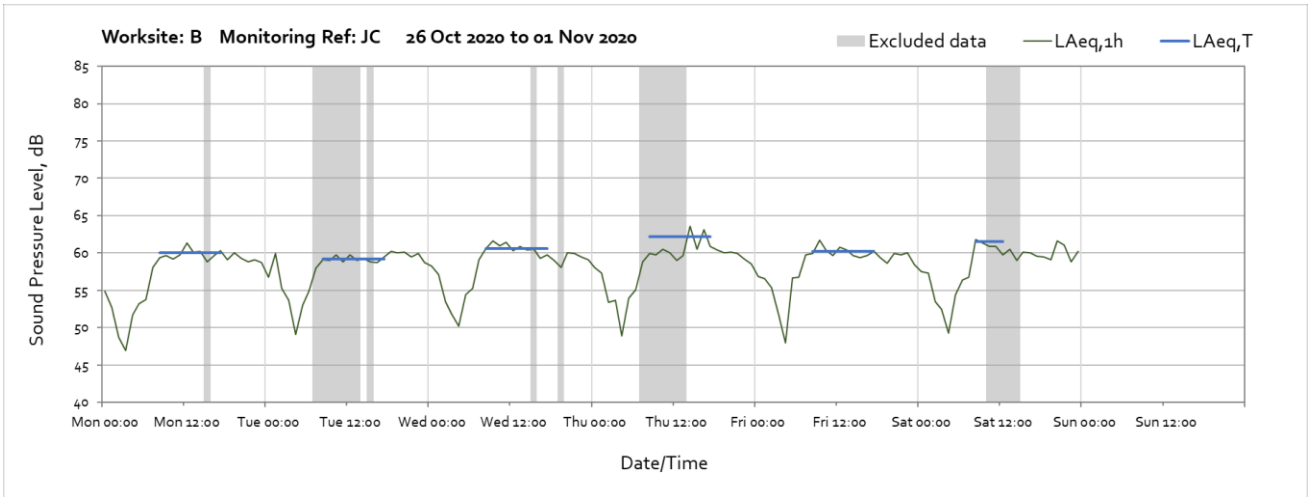
Sun 12:00
Date/Time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Tue 12:00
Wed 00:00
Wed 12:00
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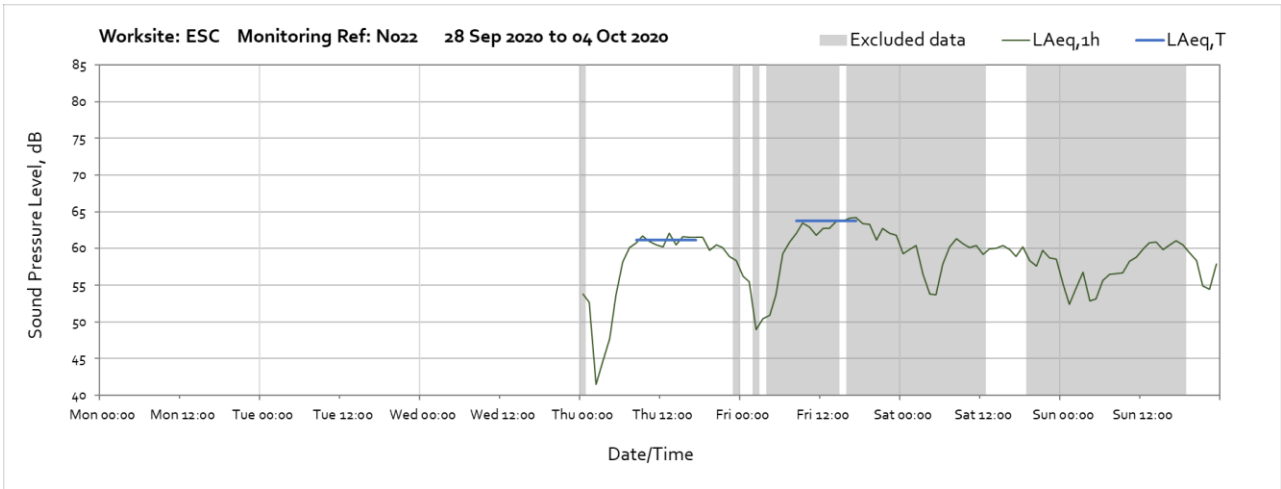

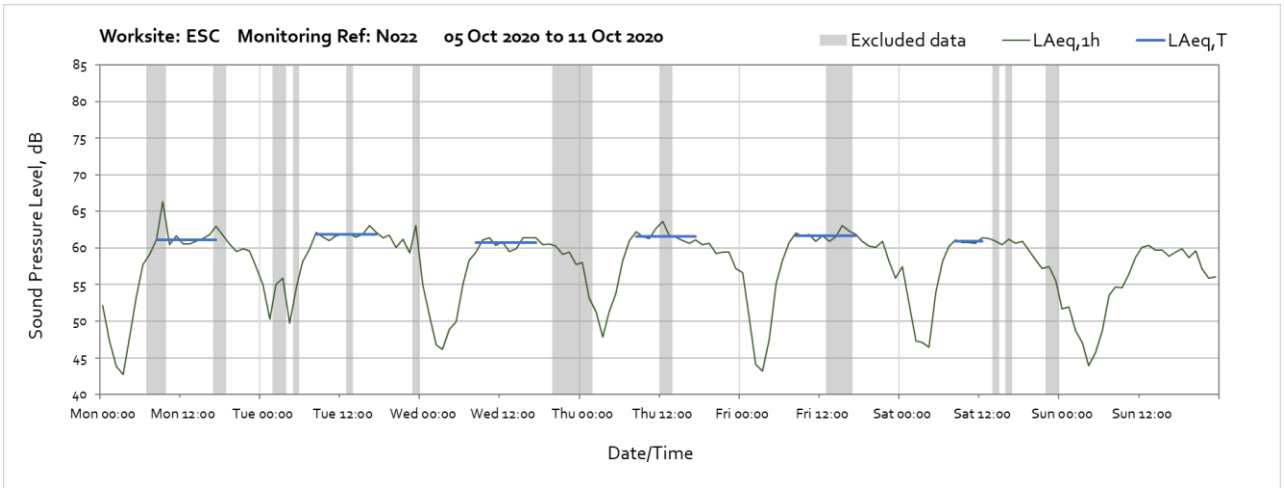

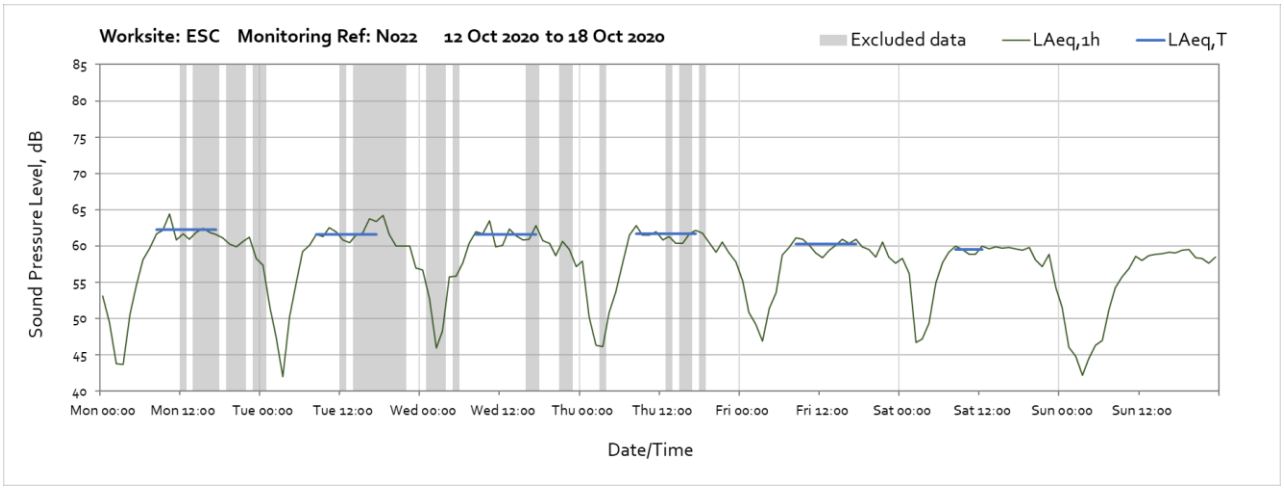

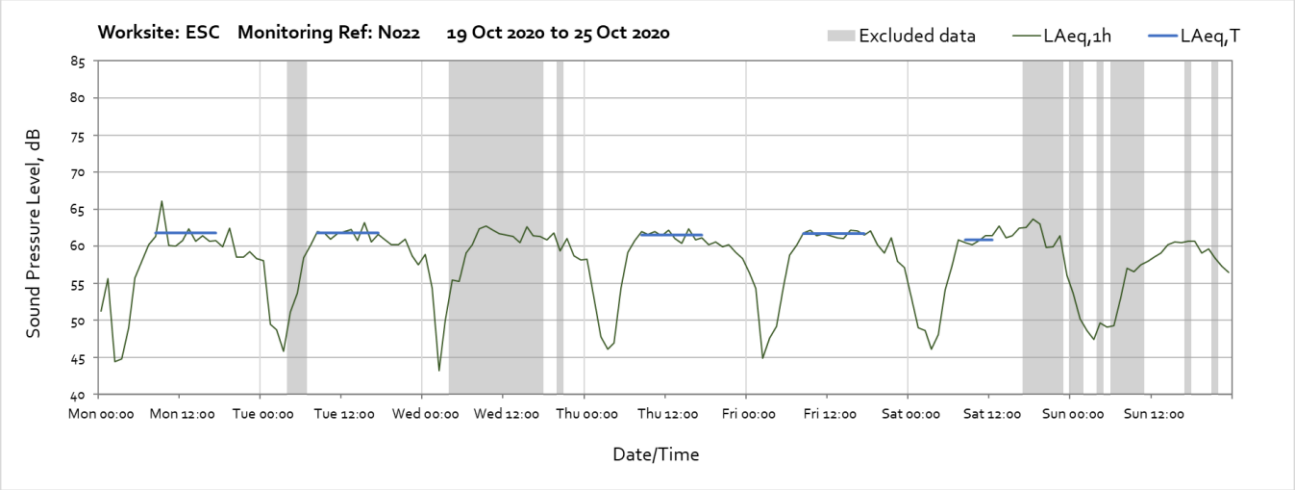

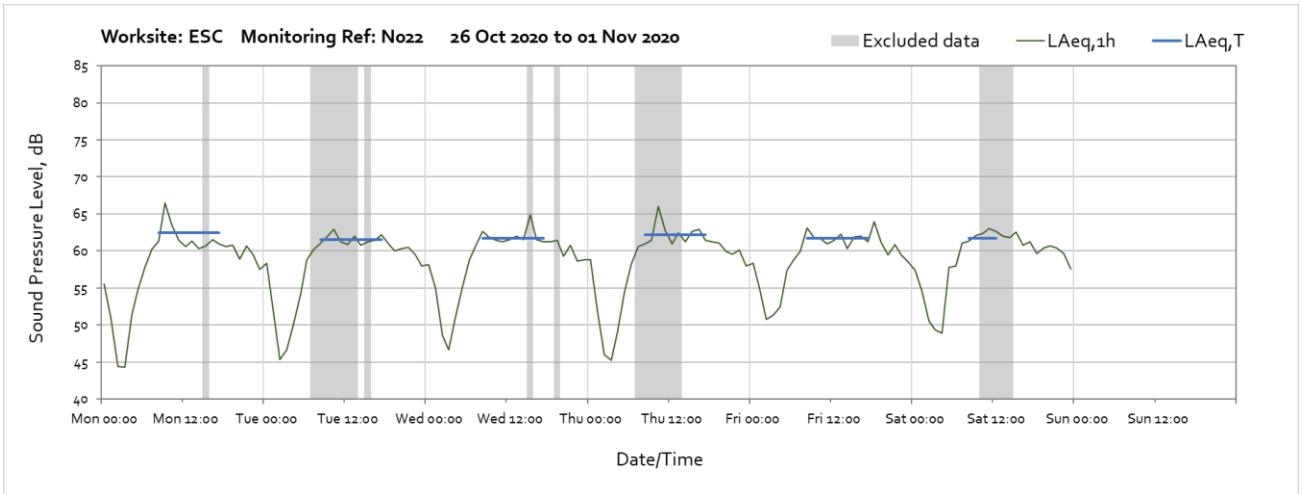

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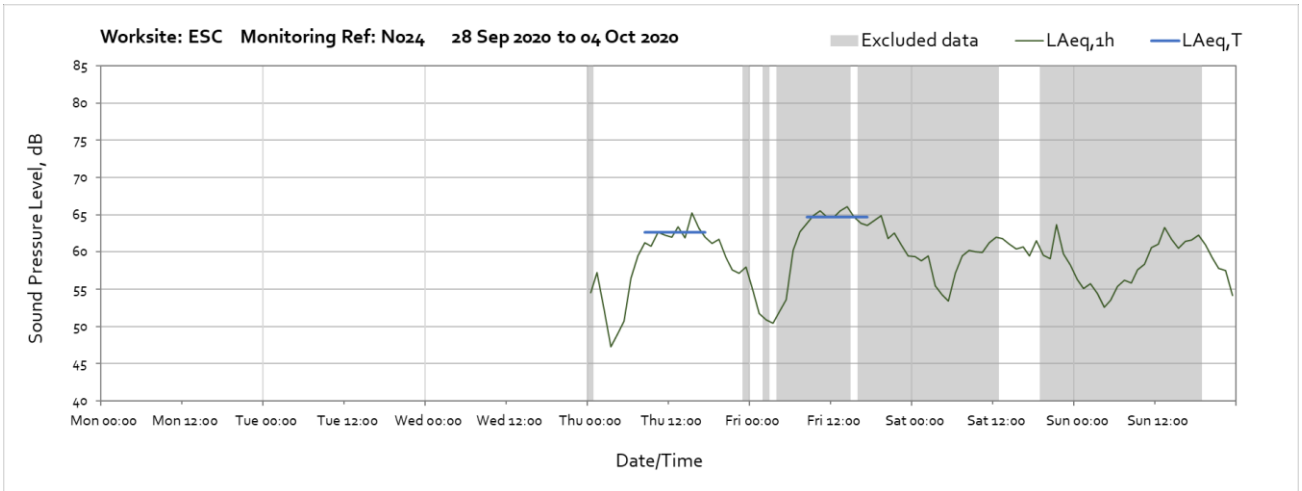

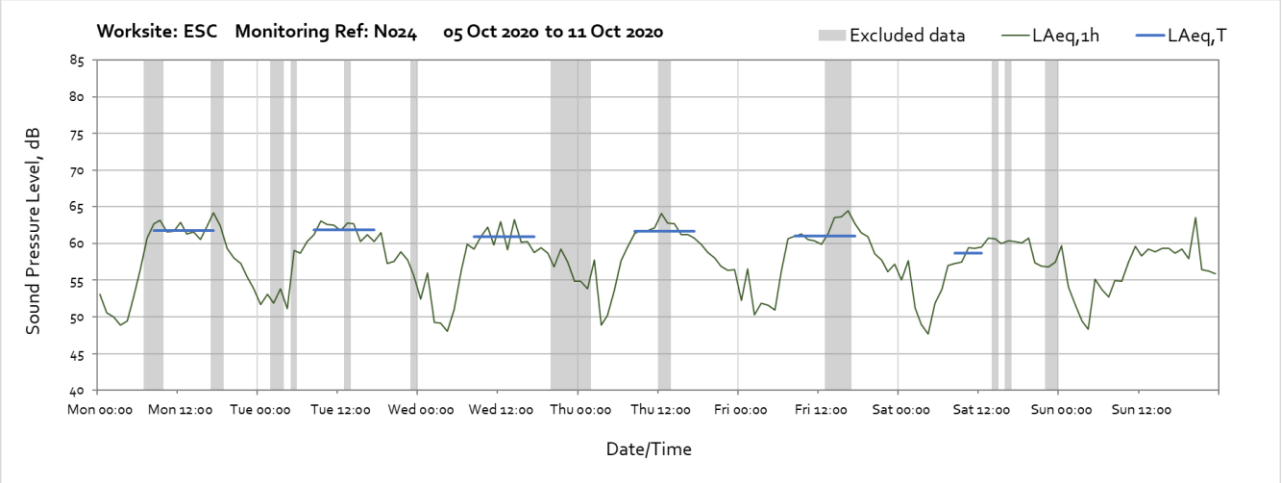
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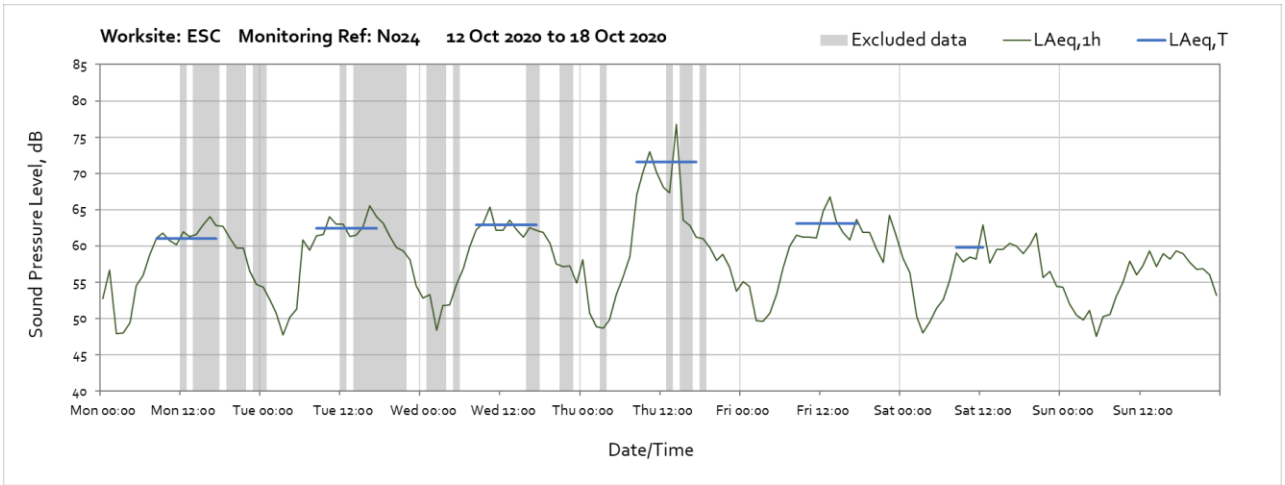
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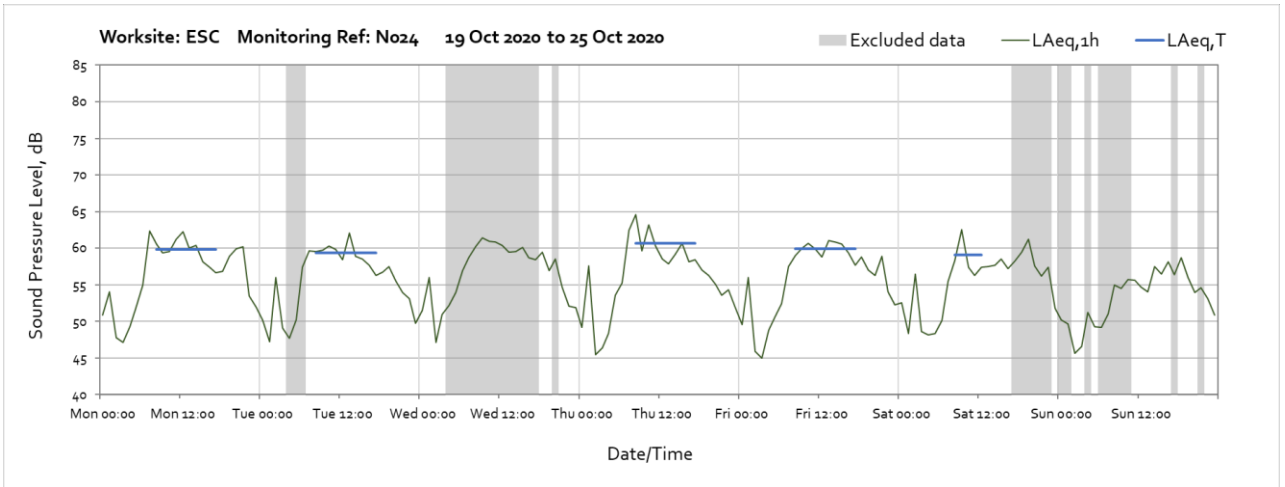
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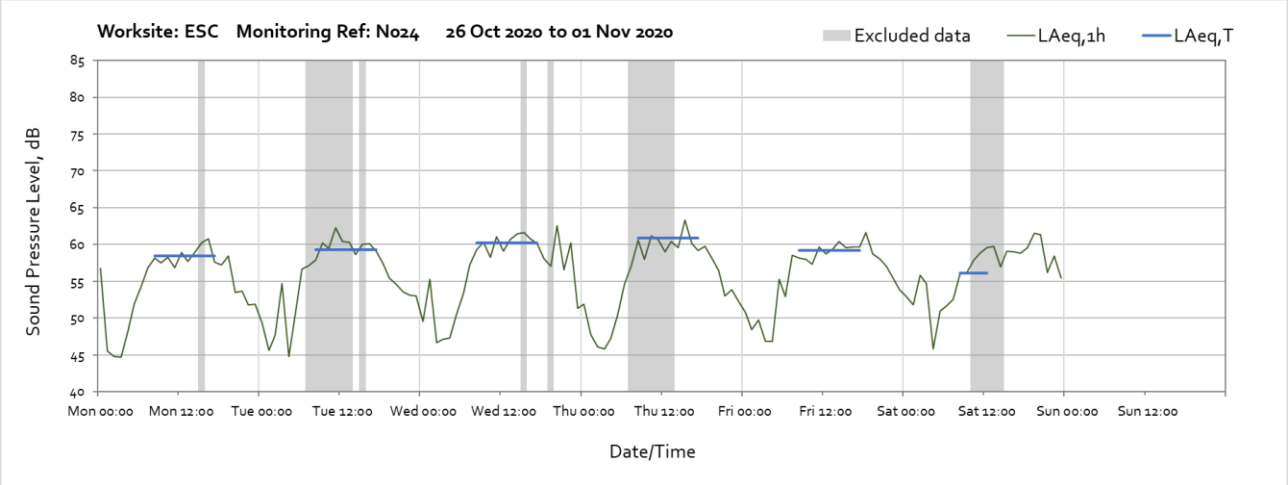
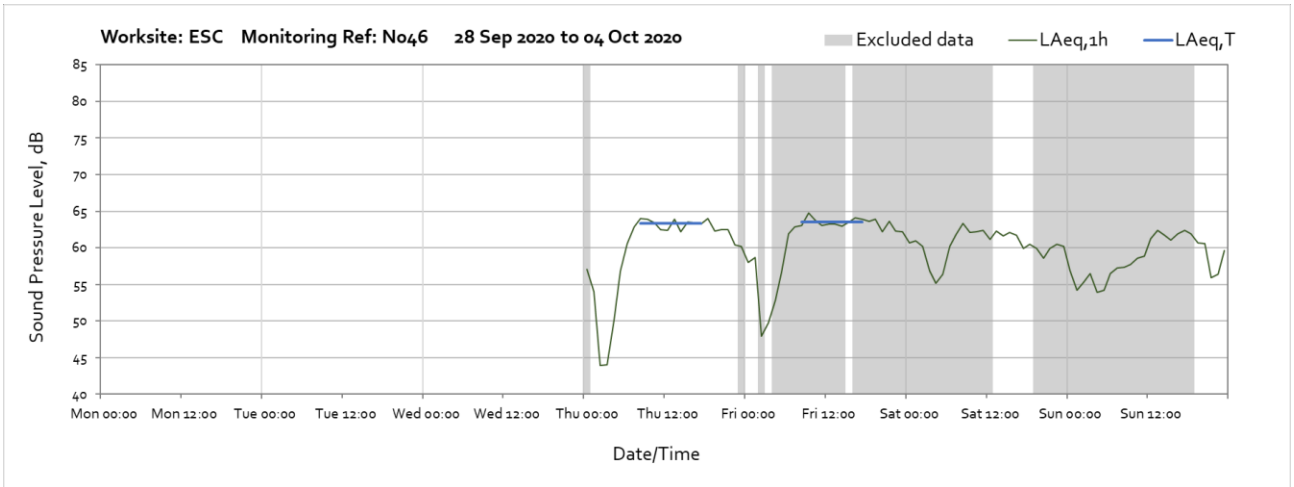
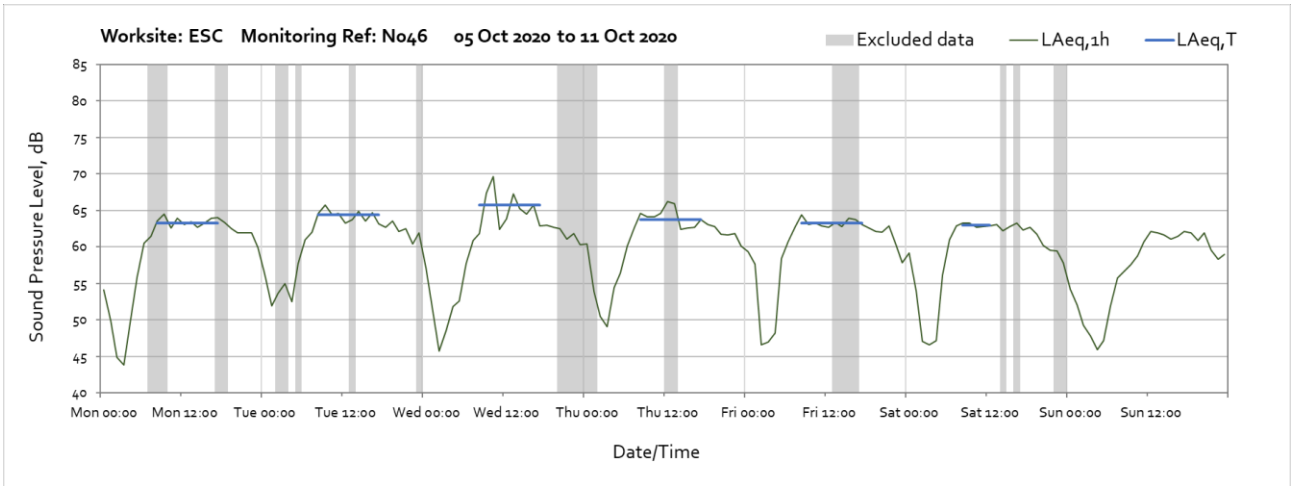
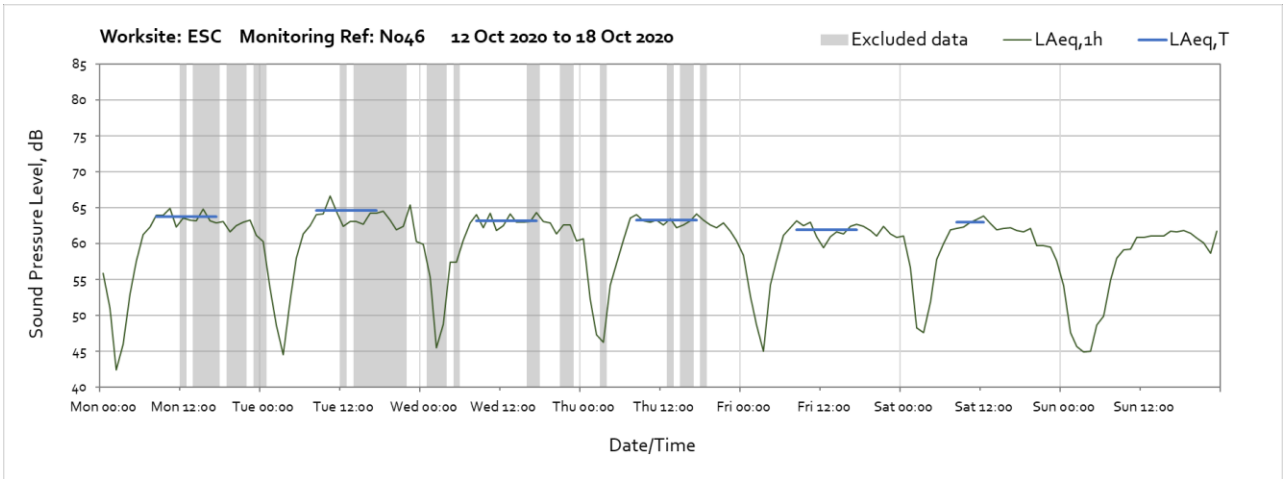
Date/Time



Worksite: ESC – Monitoring Ref: N046






Worksite: ESC Monitoring Ref: No46 12 Oct 2020 to 18 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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Mon 00:00
Mon 12:00
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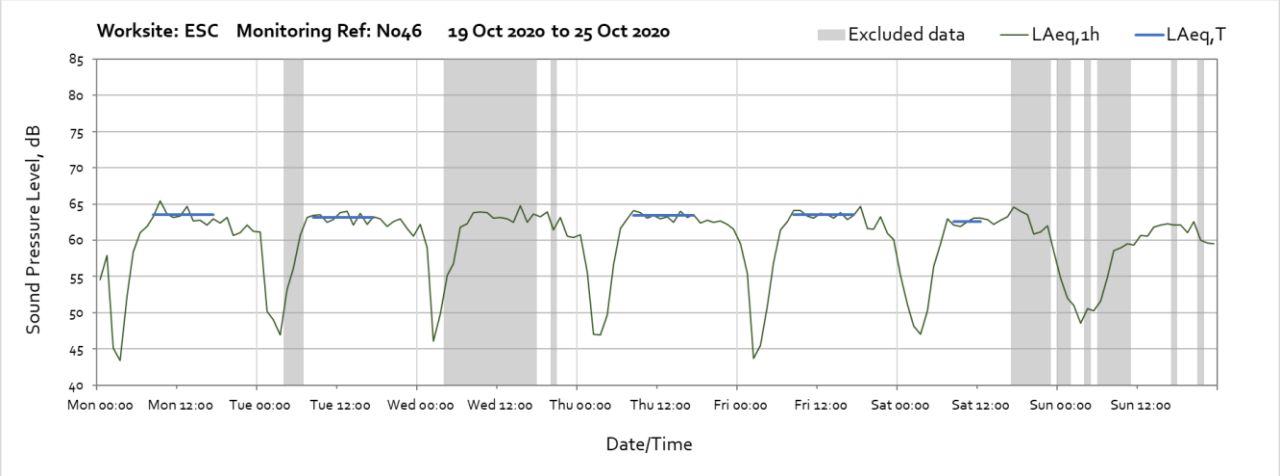
Date/Time


Worksite: ESC Monitoring Ref: No46 19 Oct 2020 to 25 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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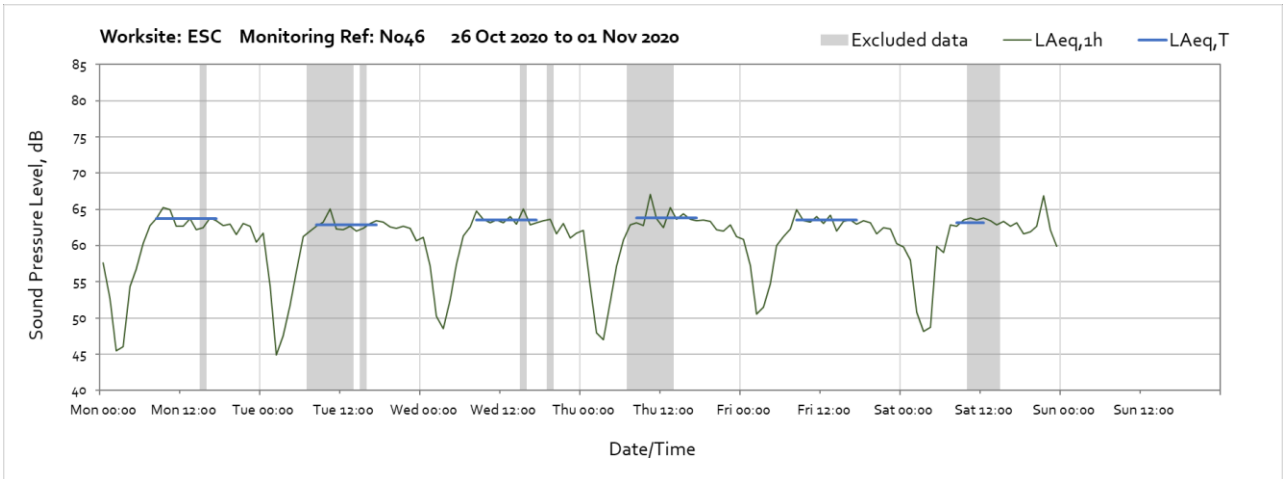
Date/Time


Worksite: ESC Monitoring Ref: No46 26 Oct 2020 to 01 Nov 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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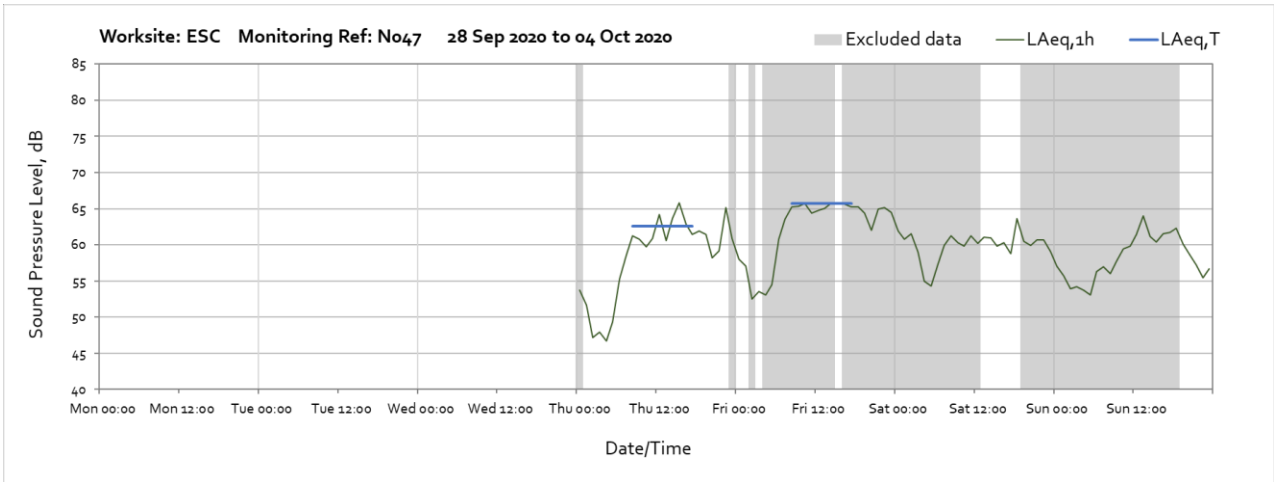
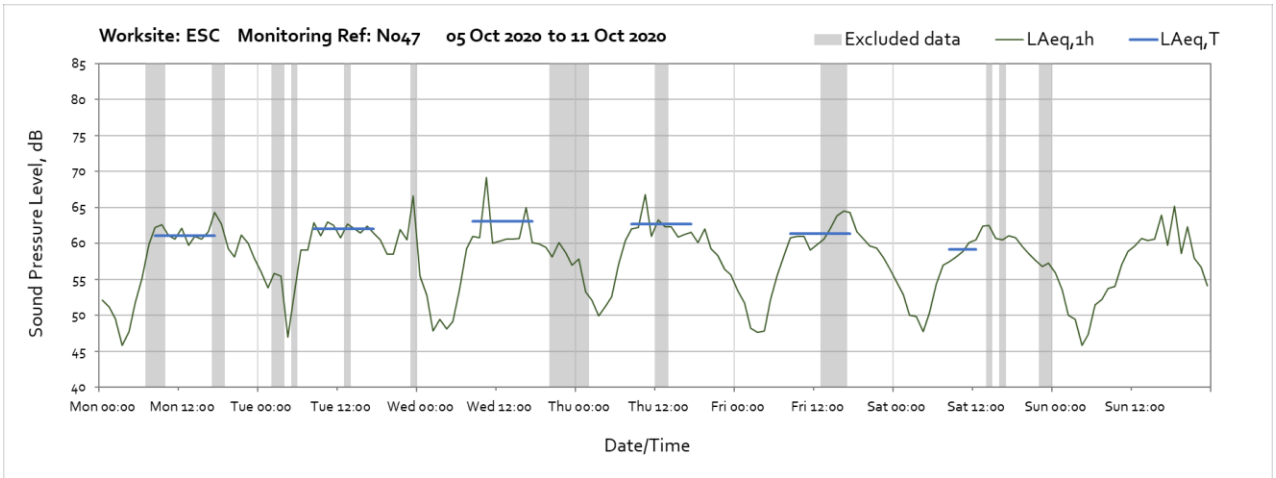
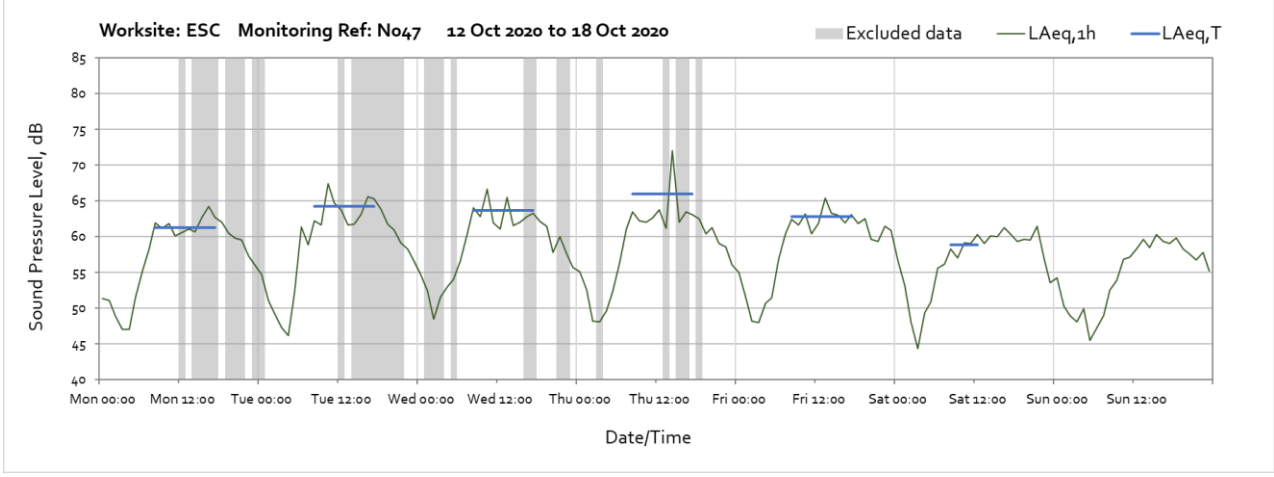
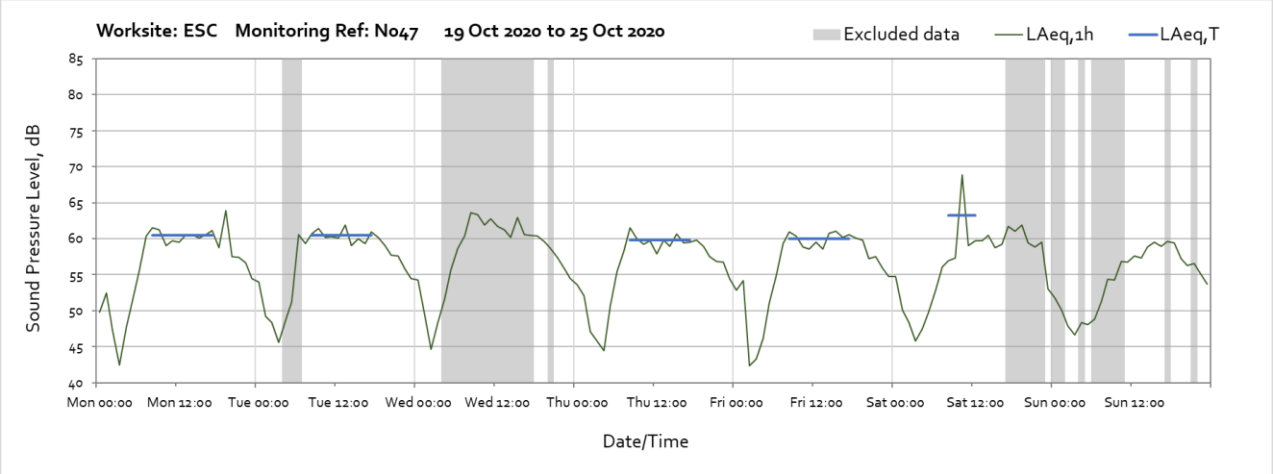
Date/Time

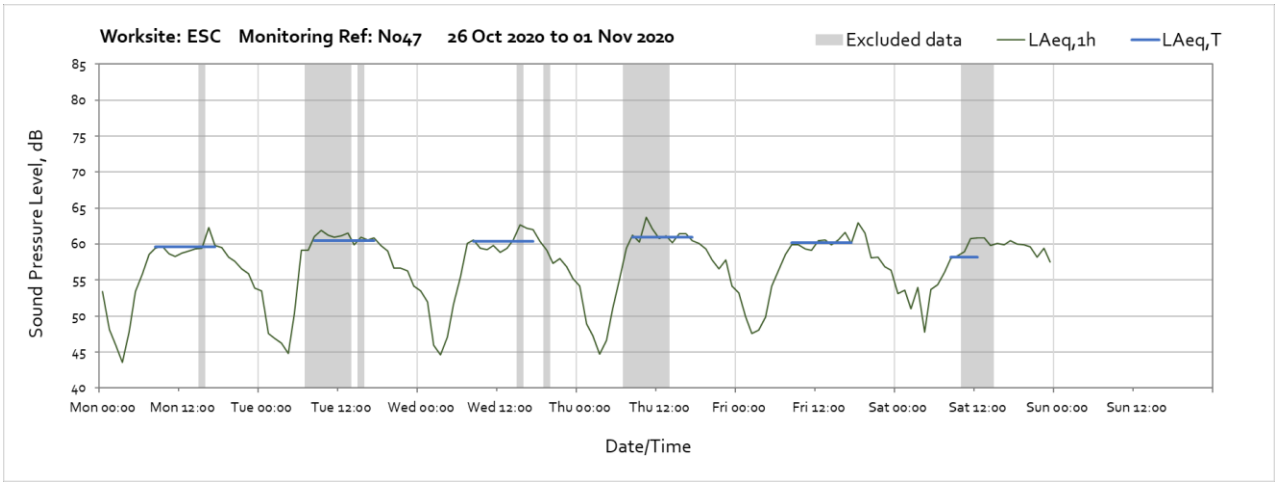
Worksite: ESC – Monitoring Ref: N047



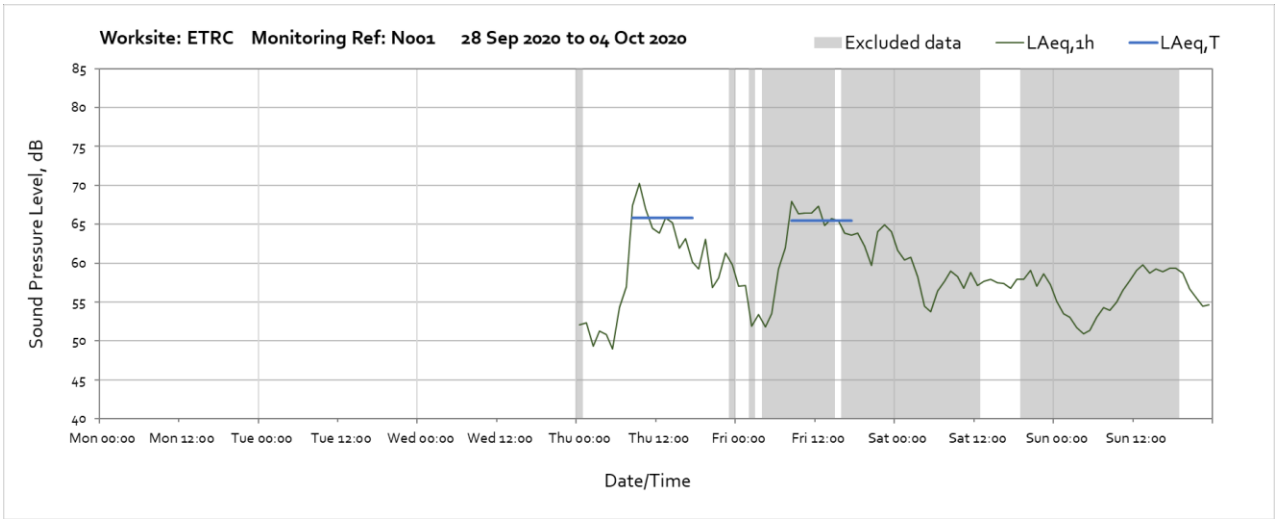


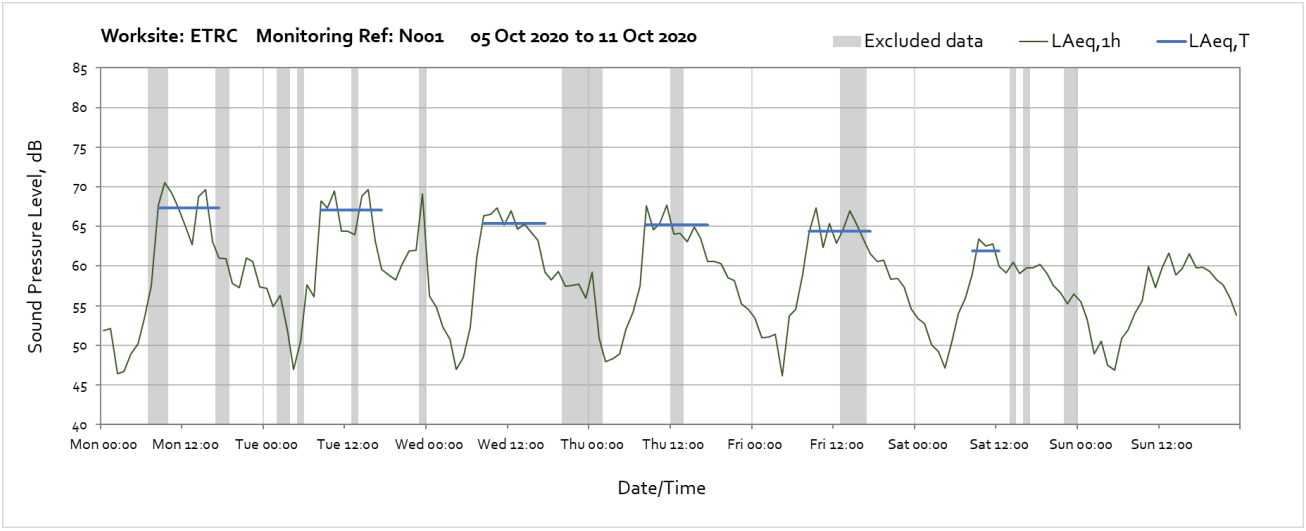






Worksite: ETRC – Monitoring Ref: N001




Worksite: ETRC Monitoring Ref: No01 05 Oct 2020 to 11 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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Mon 00:00
Mon 12:00
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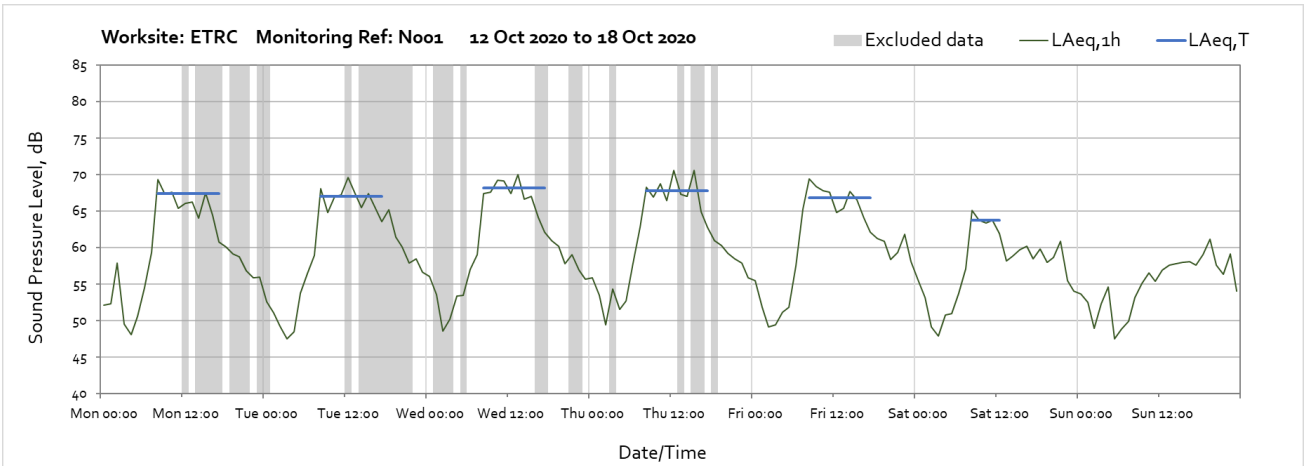
Date/Time


Worksite: ETRC Monitoring Ref: No01 12 Oct 2020 to 18 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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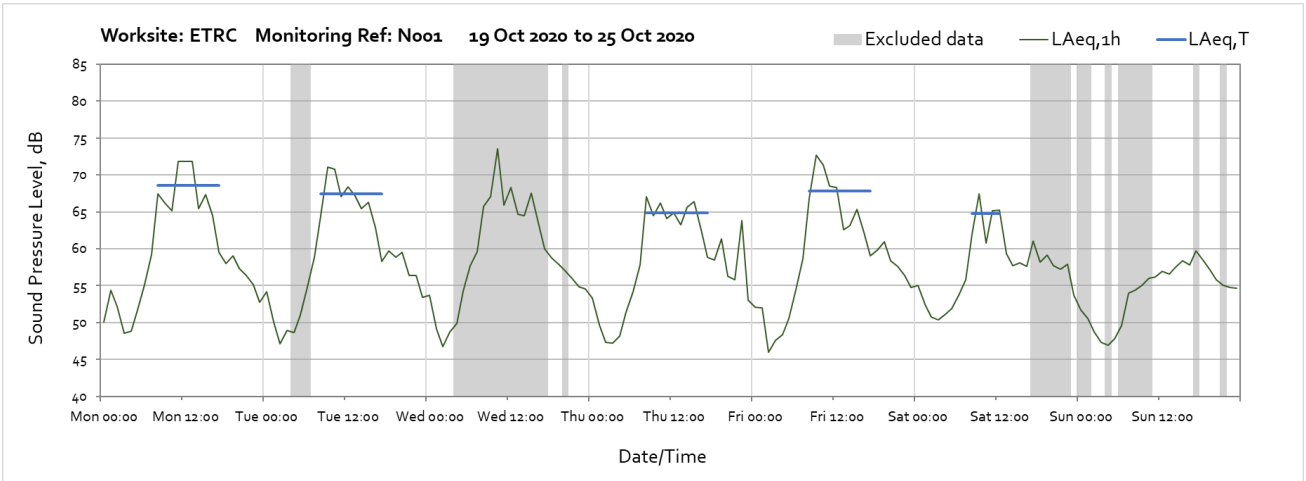
Date/Time


Worksite: ETRC Monitoring Ref: No01 19 Oct 2020 to 25 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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Mon 00:00
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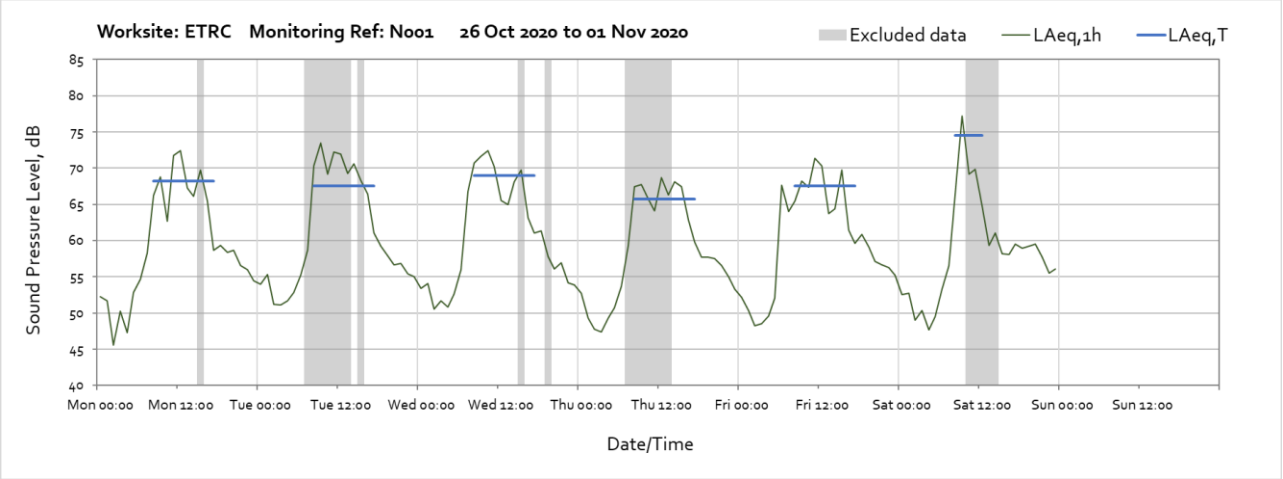
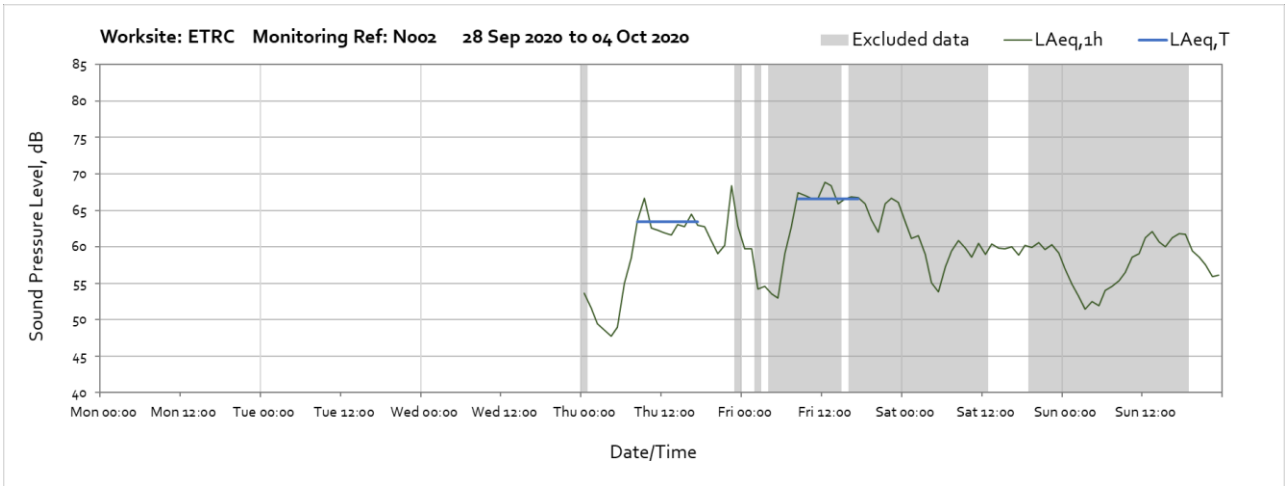
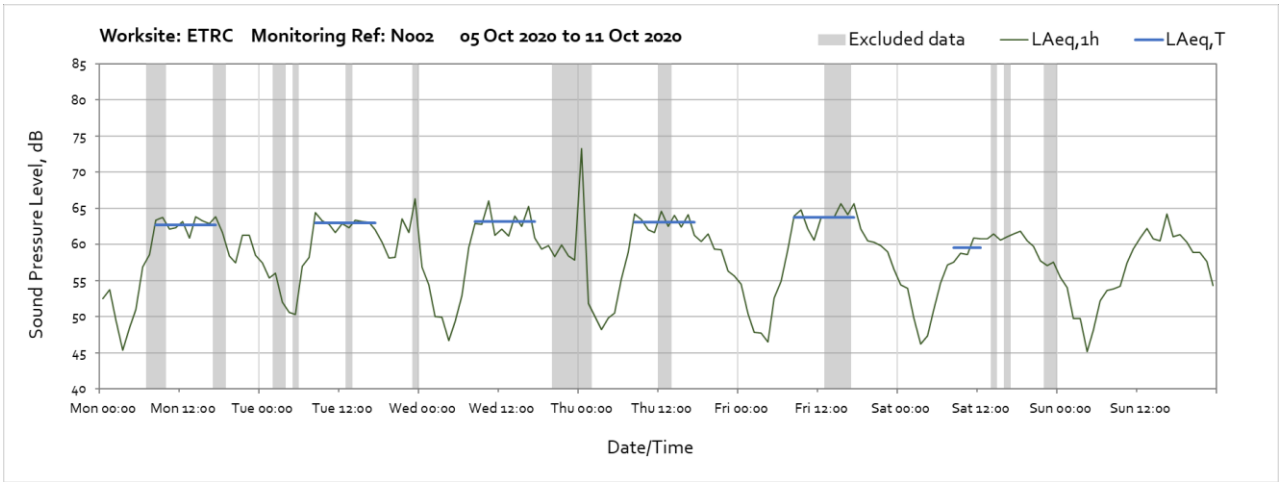
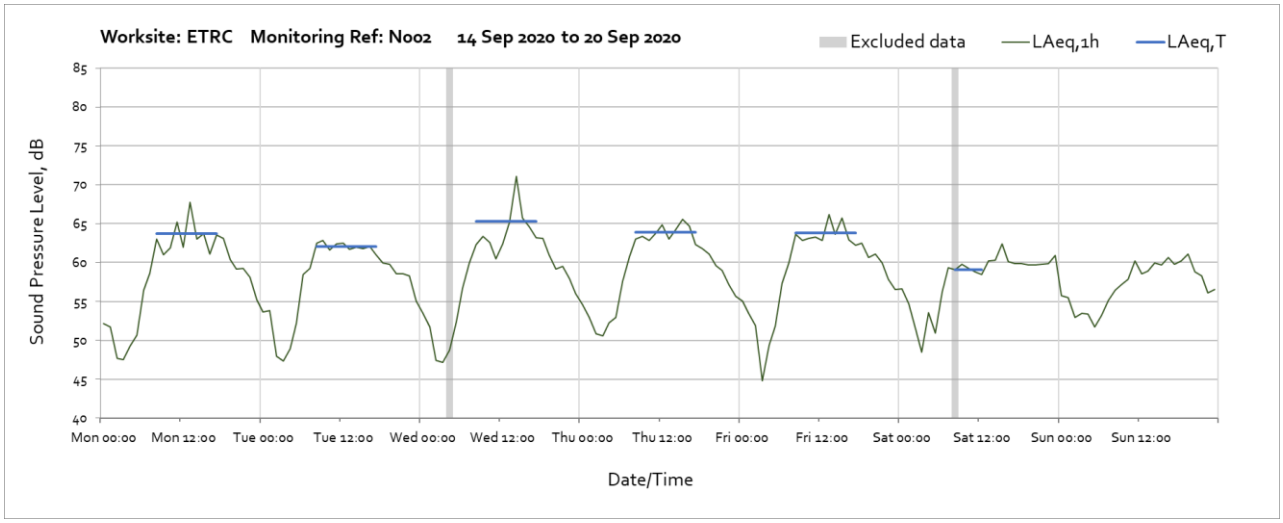
Date/Time



Worksite: ETRC – Monitoring Ref: N002






Worksite: ETRC Monitoring Ref: No02 14 Sep 2020 to 20 Sep 2020
Excluded data
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LAeq,T
Sound Pressure Level, dB
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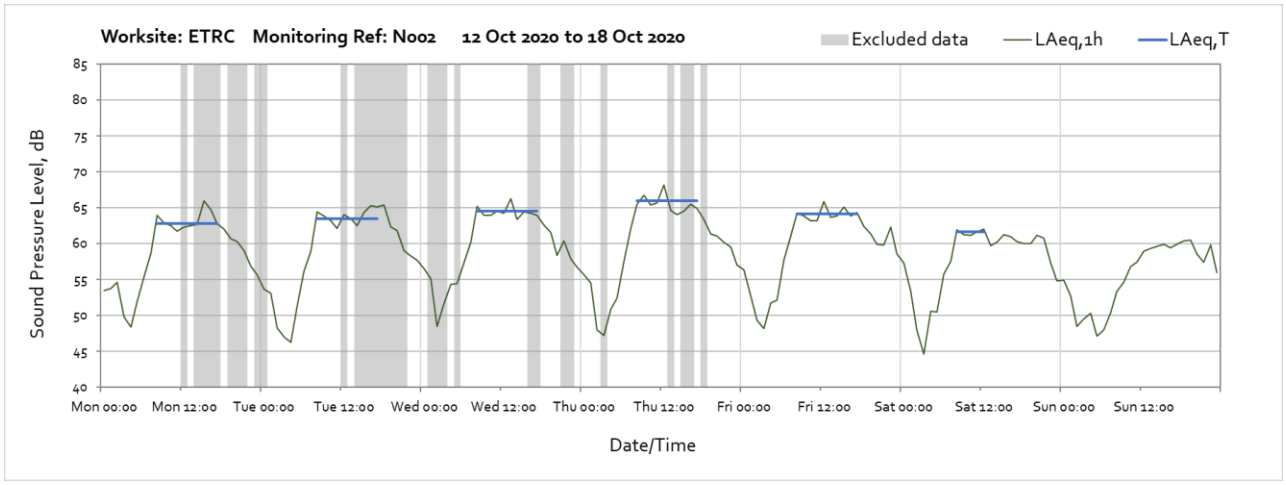
Date/Time


Worksite: ETRC Monitoring Ref: No02 12 Oct 2020 to 18 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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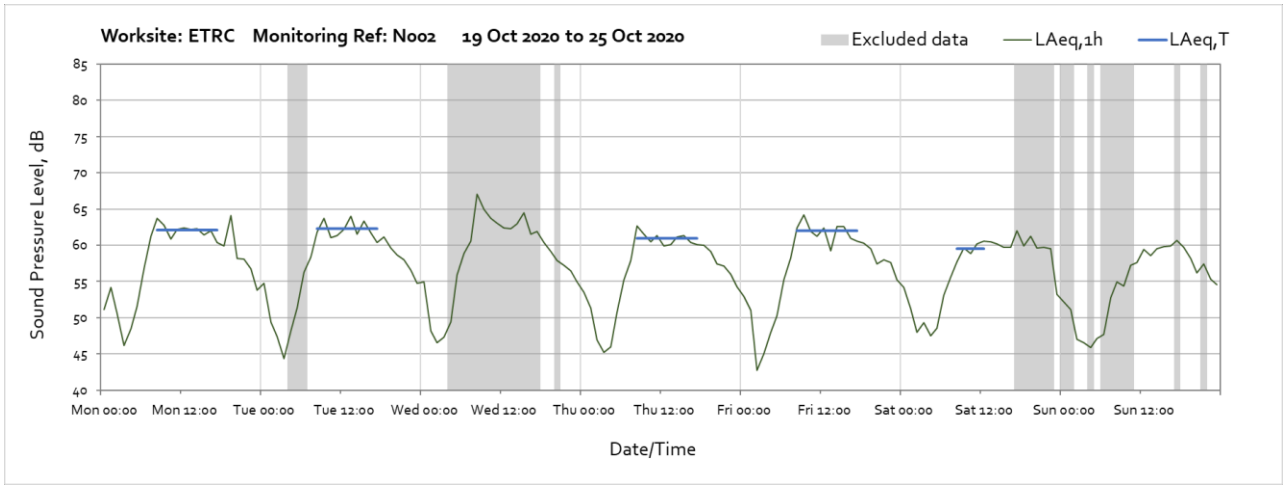
Date/Time


Worksite: ETRC Monitoring Ref: No02 19 Oct 2020 to 25 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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Mon 00:00
Mon 12:00
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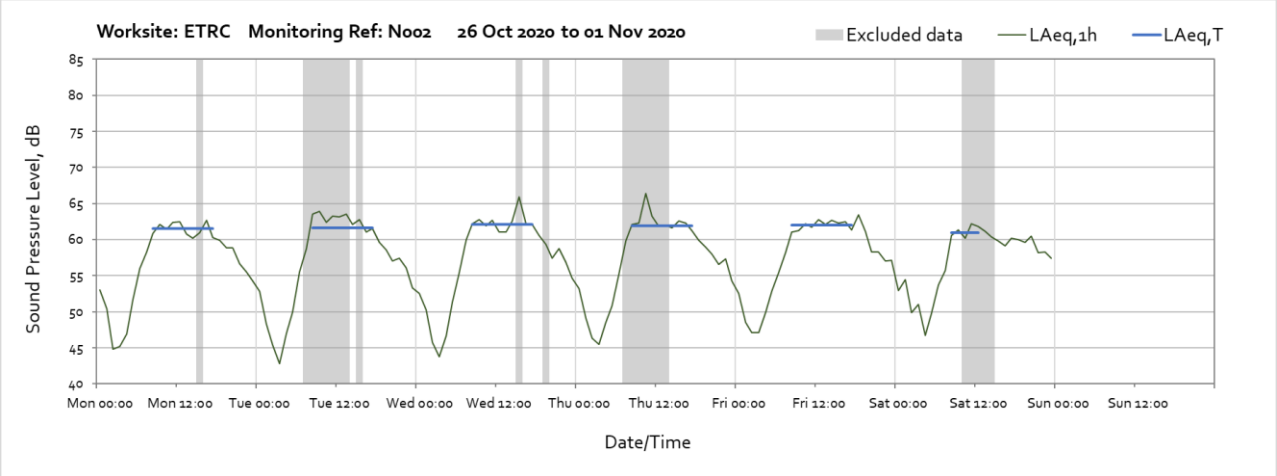
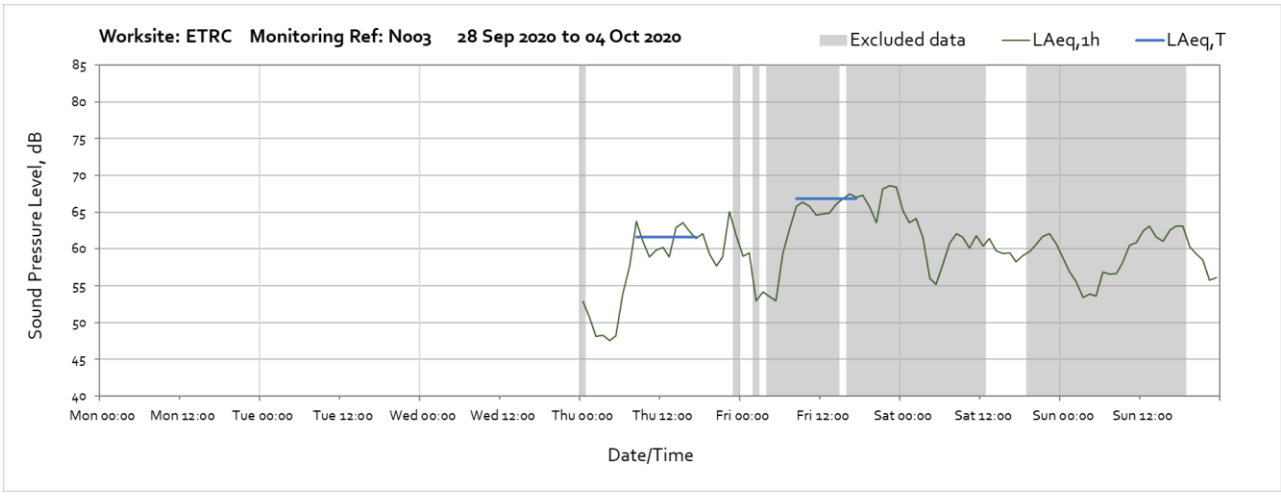
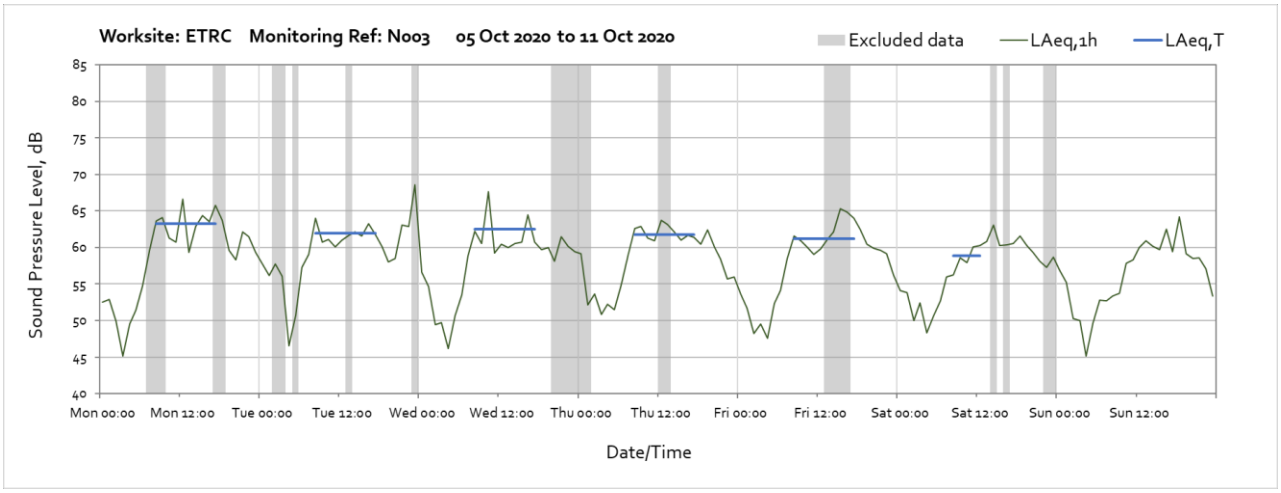
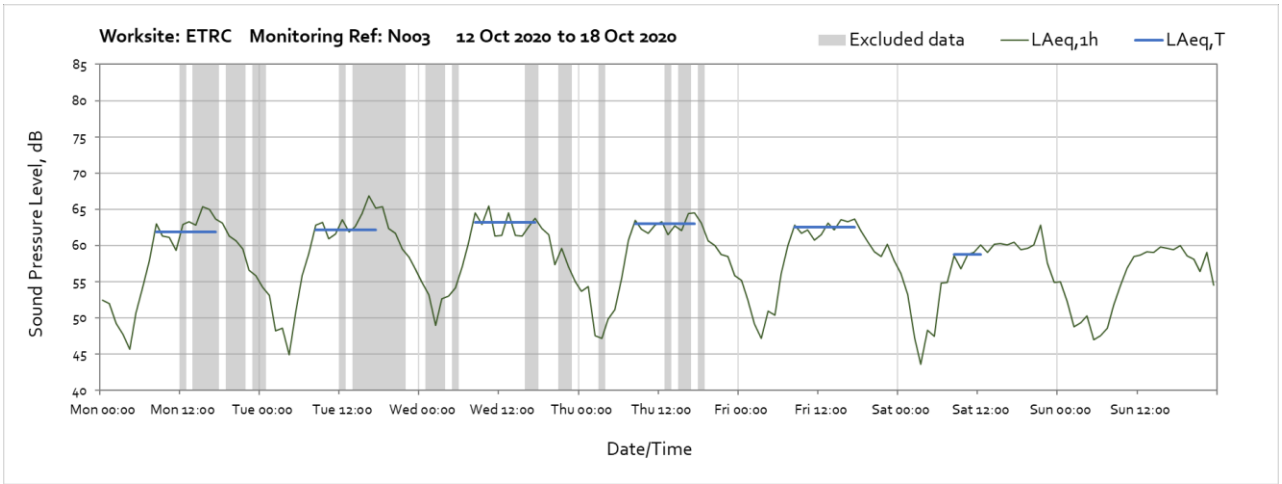
Date/Time



Worksite: ETRC – Monitoring Ref: N003






Worksite: ETRC Monitoring Ref: No03 12 Oct 2020 to 18 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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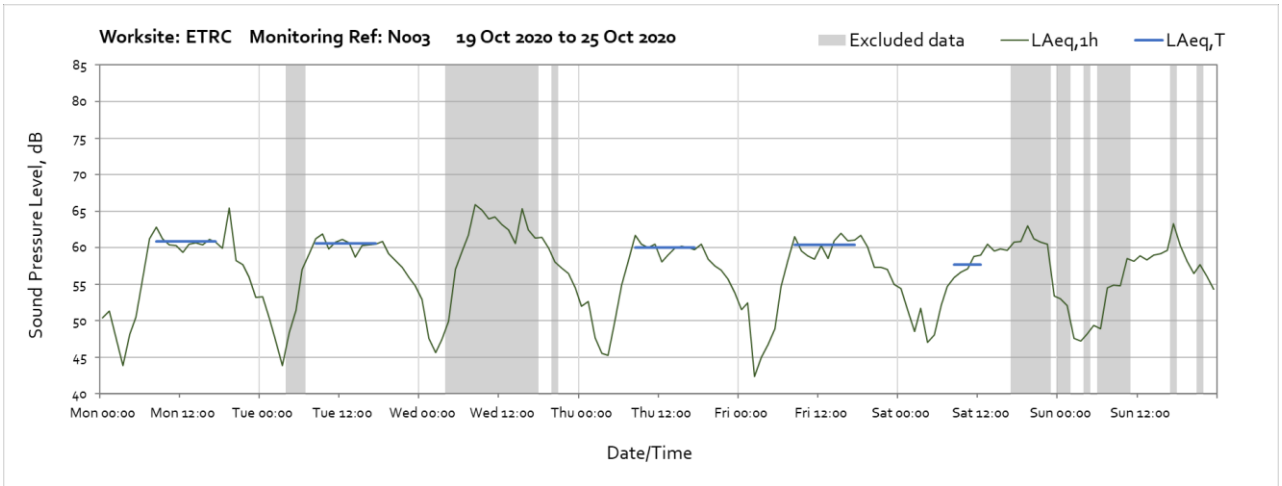
Date/Time


Worksite: ETRC Monitoring Ref: No03 19 Oct 2020 to 25 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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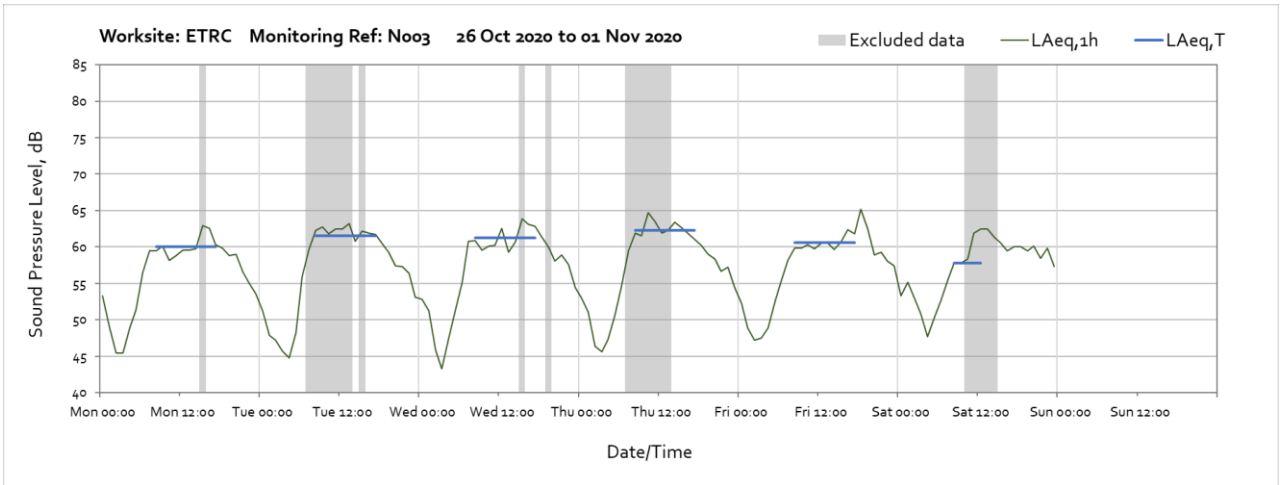
Date/Time


Worksite: ETRC Monitoring Ref: No03 26 Oct 2020 to 01 Nov 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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Mon 00:00
Mon 12:00
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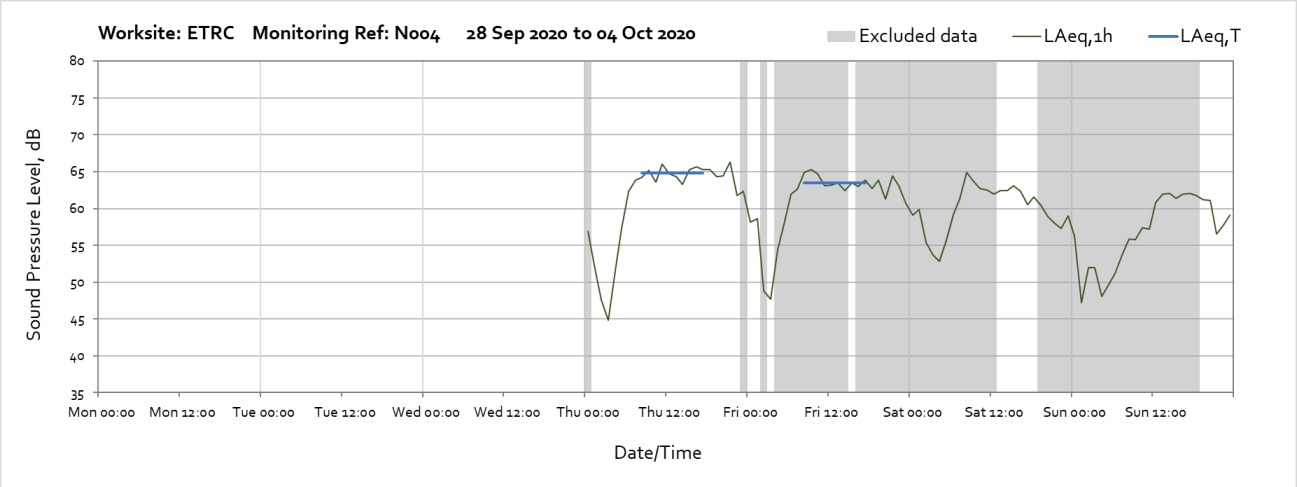
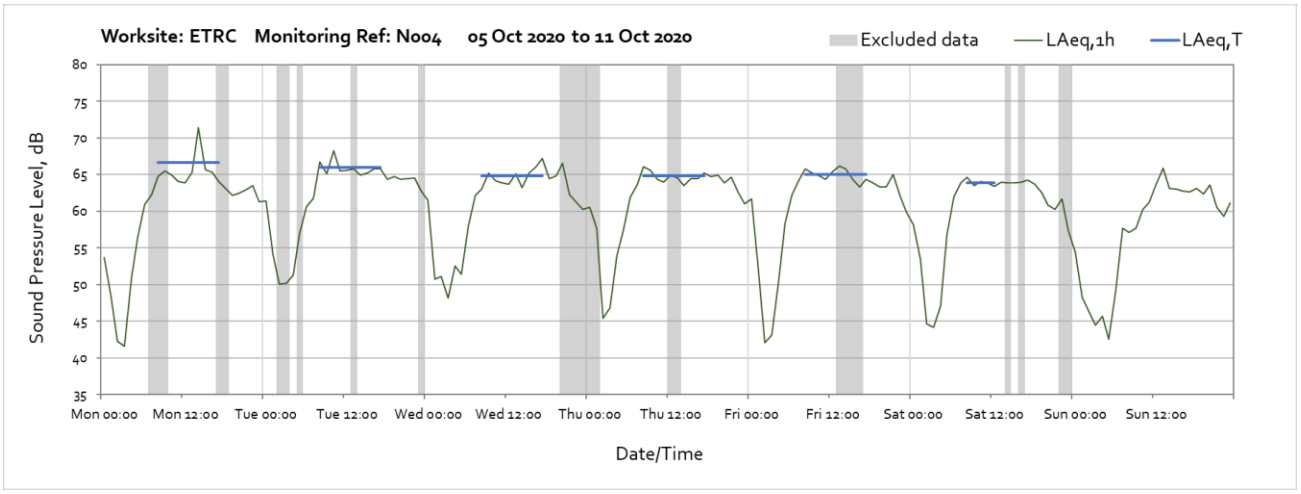
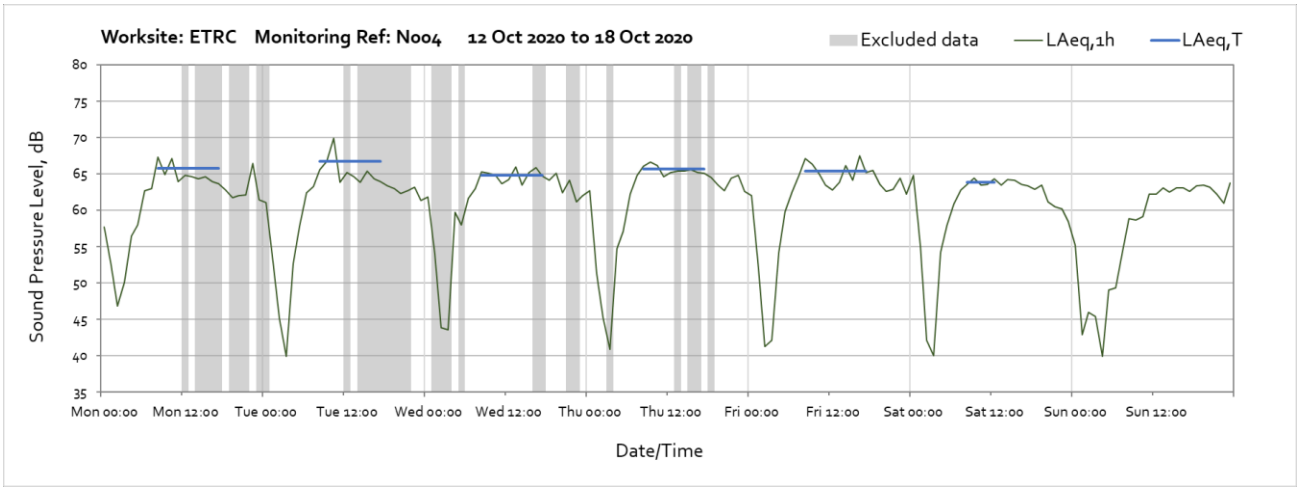
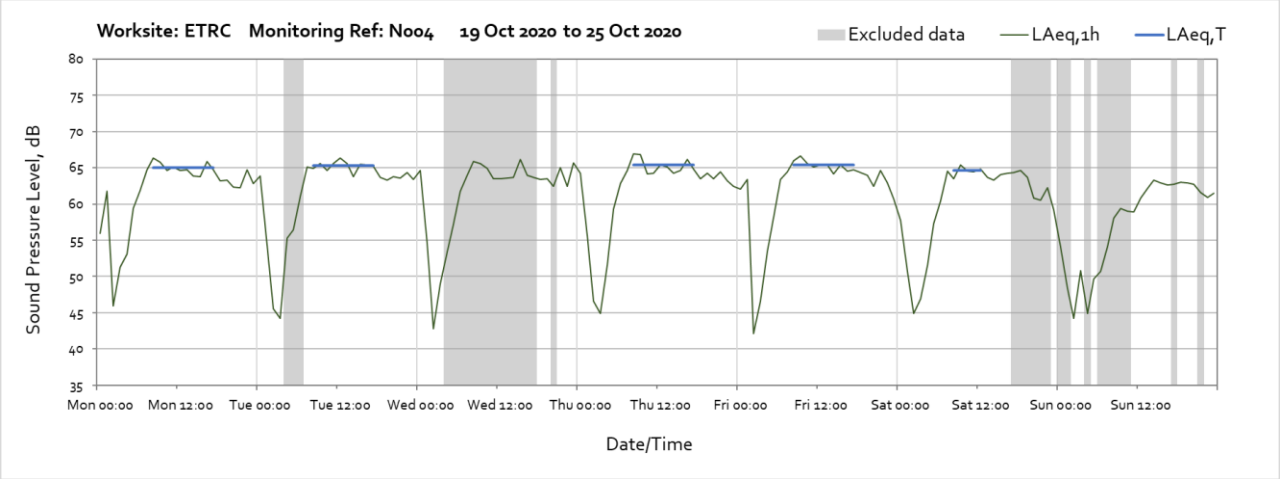
Date/Time

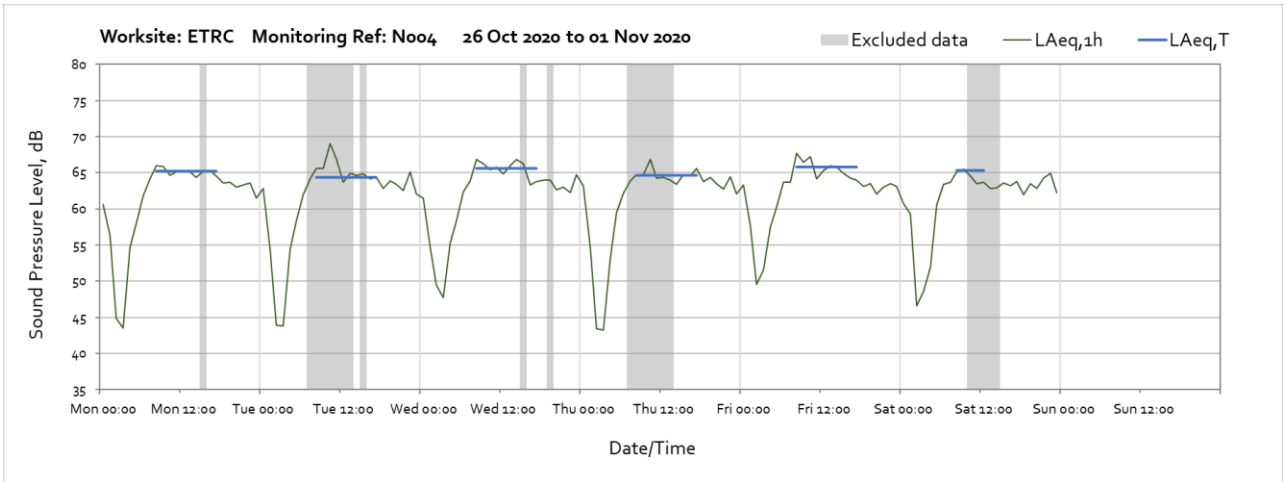
Worksite: ETRC – Monitoring Ref: N004



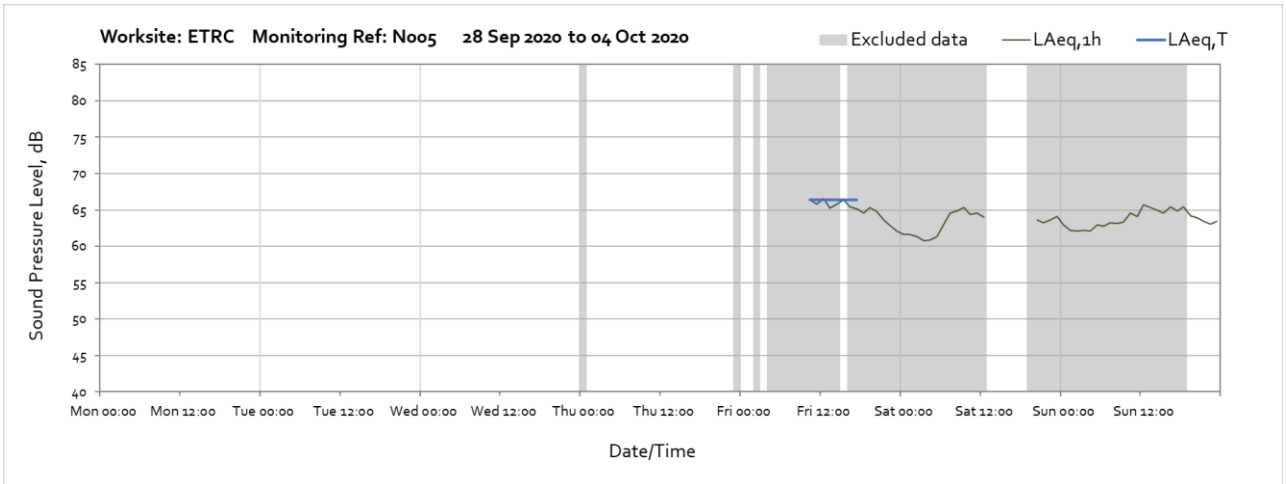




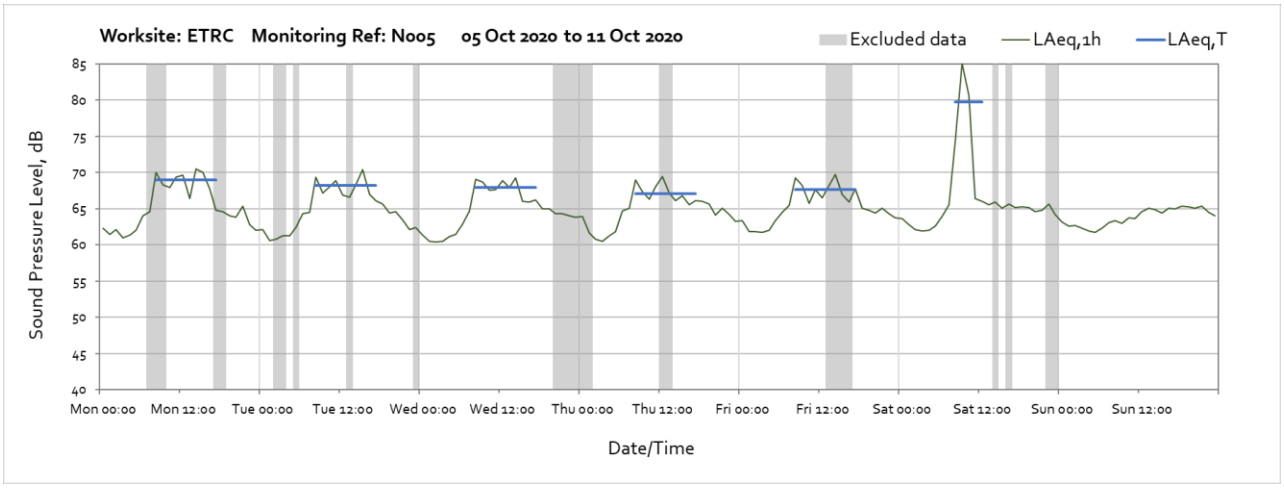




Worksite: ETRC – Monitoring Ref: N005



Note: Missing data between 00:00 on Thursday 1st October until 10:00 on Friday 2nd October was due to loss of site power and missing data between 13:00 and 20:00 on Saturday 3rd October was due to an SD card error within the monitor.


Worksite: ETRC Monitoring Ref: No05 05 Oct 2020 to 11 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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Mon 00:00
Mon 12:00
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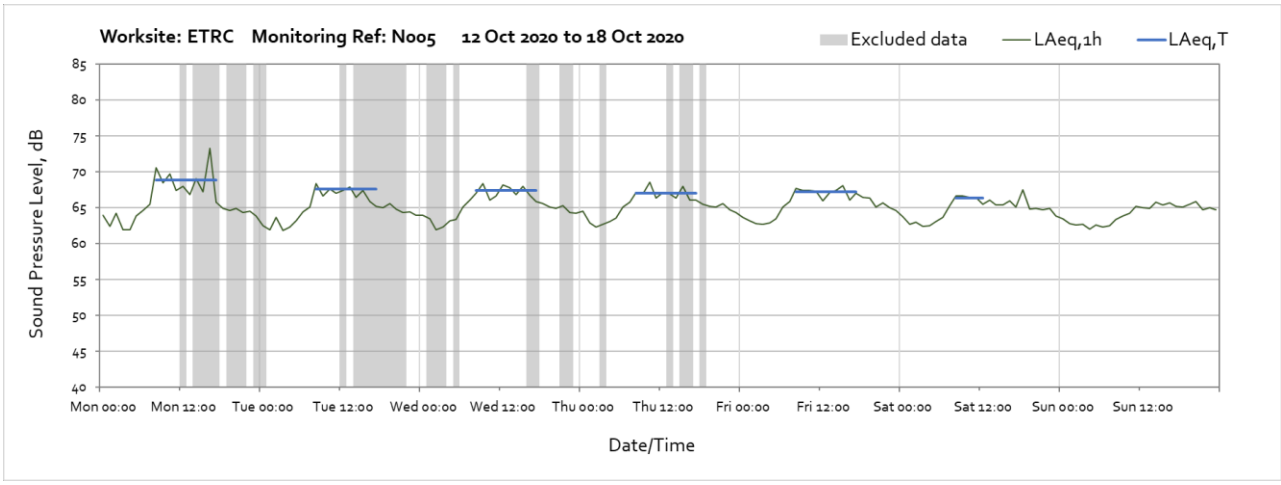
Date/Time


Worksite: ETRC Monitoring Ref: No05 12 Oct 2020 to 18 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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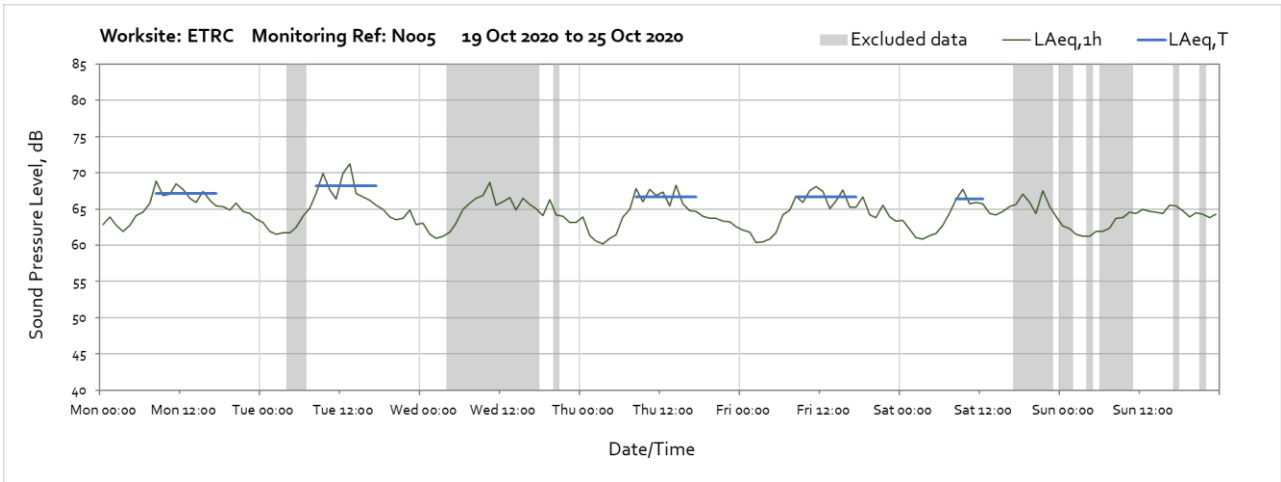
Date/Time


Worksite: ETRC Monitoring Ref: No05 19 Oct 2020 to 25 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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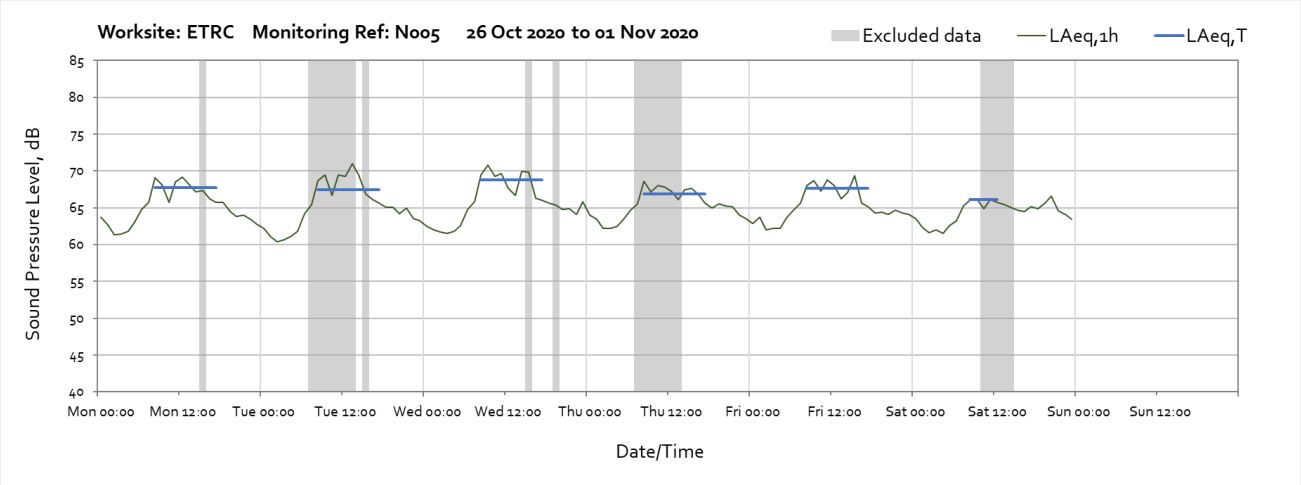
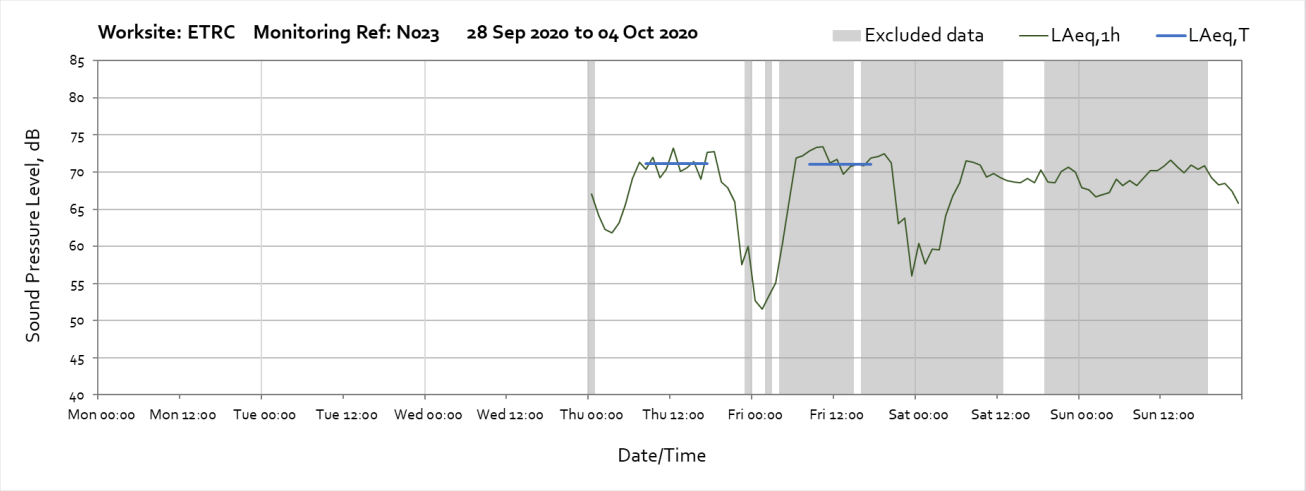
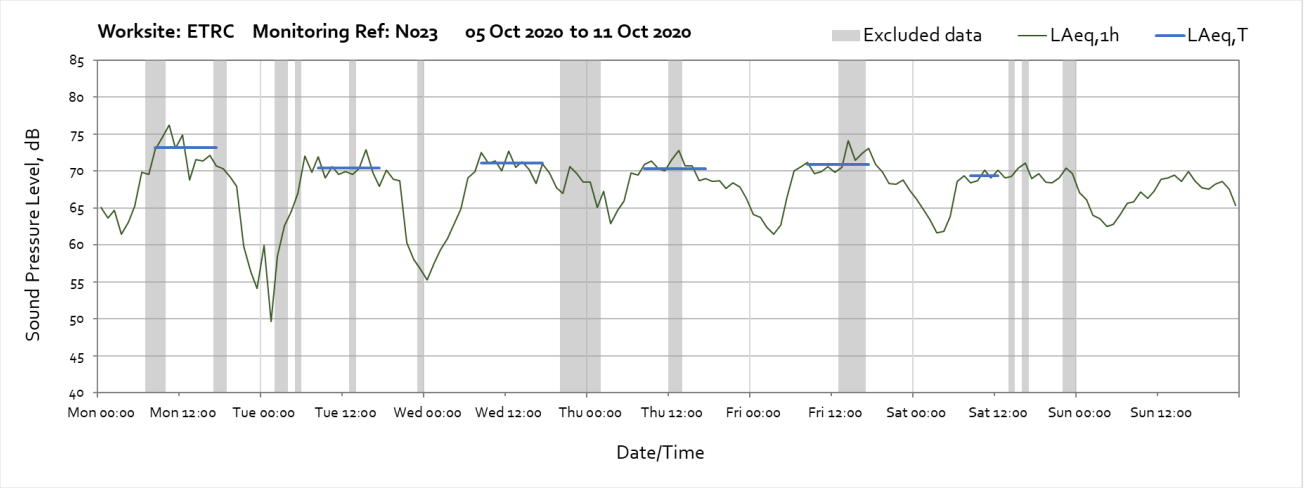
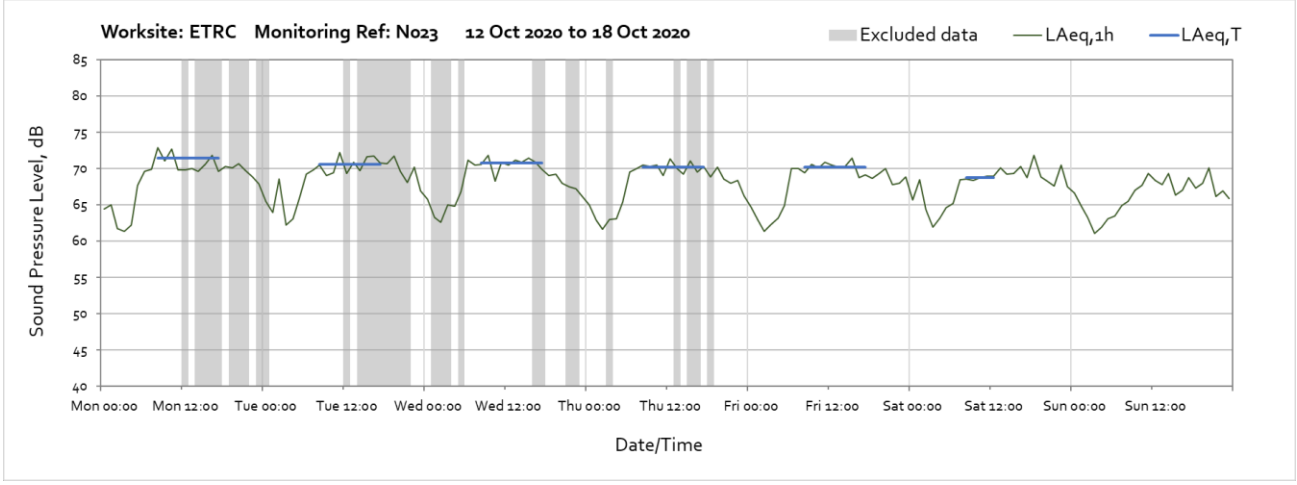


Worksite: ETRC – Monitoring Ref: N023






Worksite: ETRC Monitoring Ref: No23 12 Oct 2020 to 18 Oct 2020
Excluded data
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LAeq,T
Sound Pressure Level, dB
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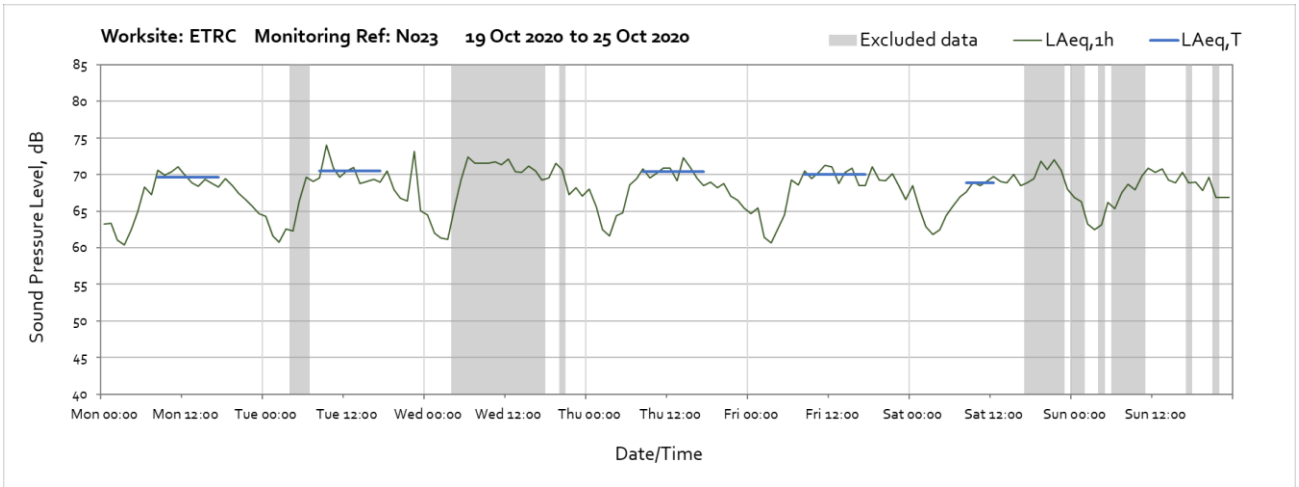
Date/Time


Worksite: ETRC Monitoring Ref: No23 19 Oct 2020 to 25 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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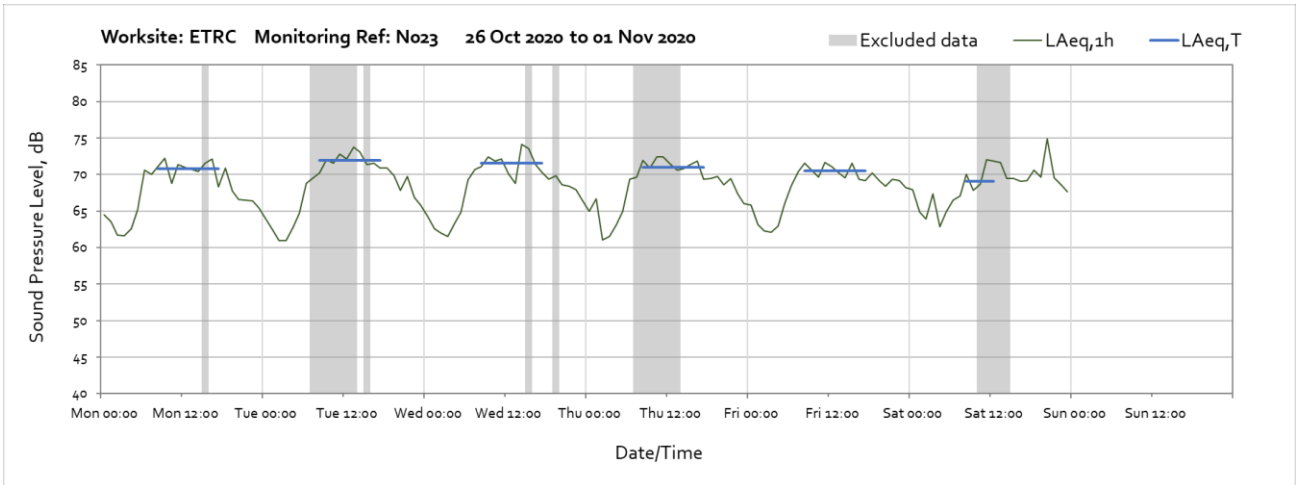
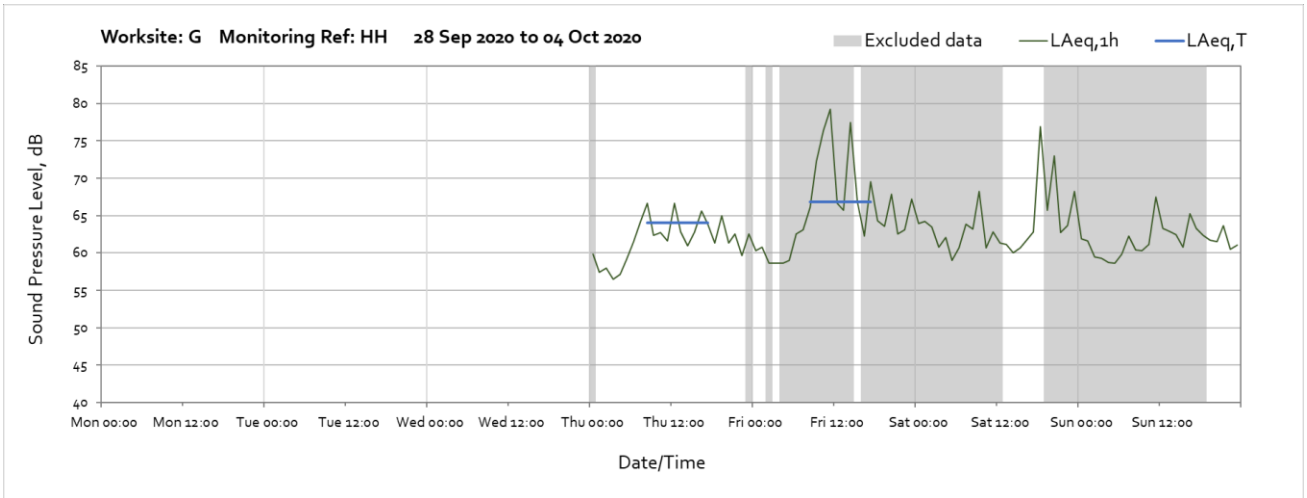
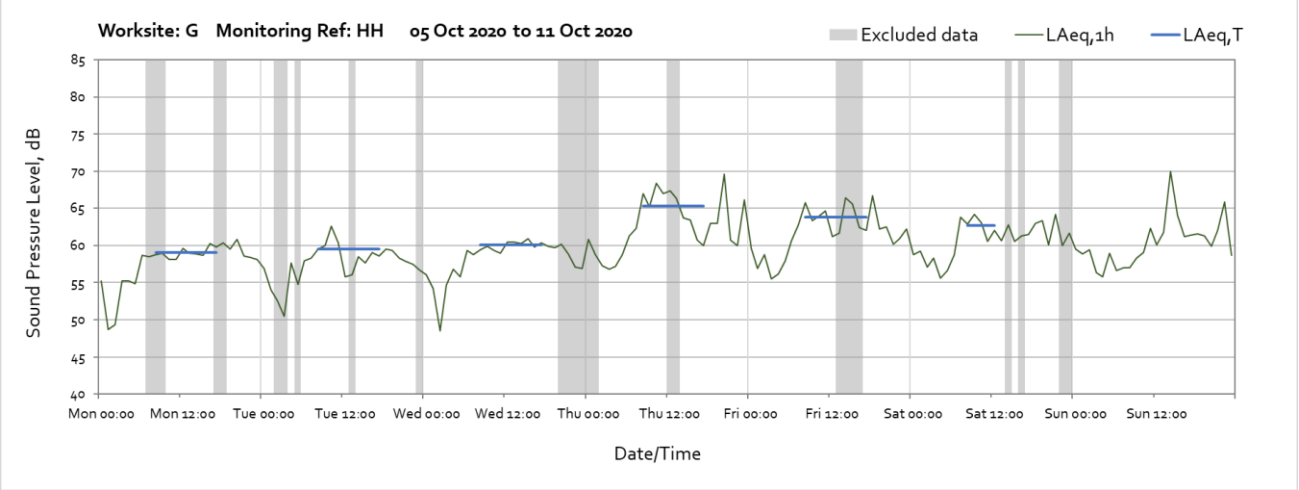
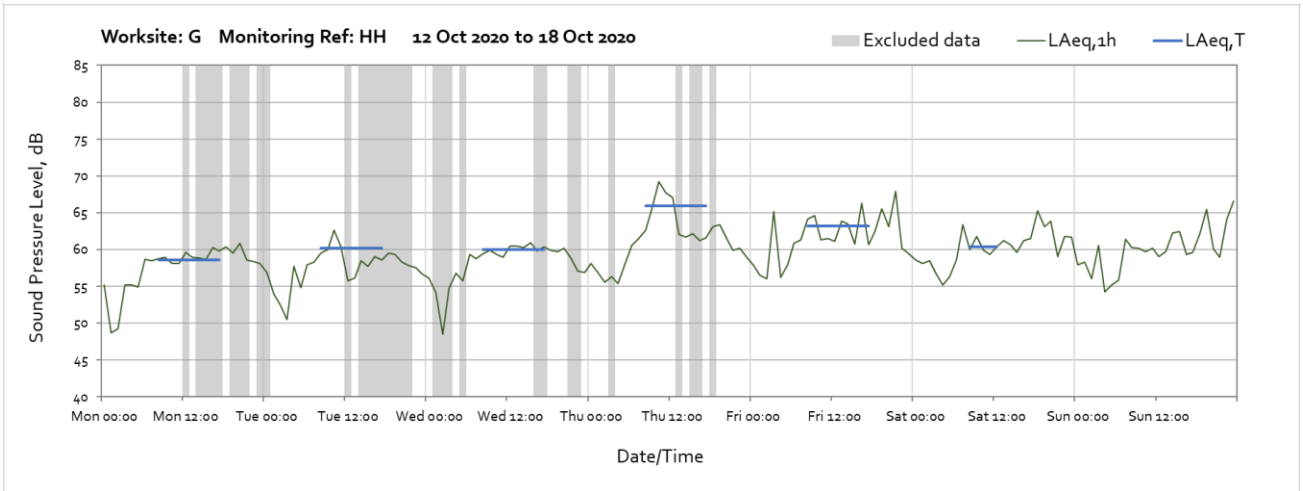
Sun 12:00
Date/Time

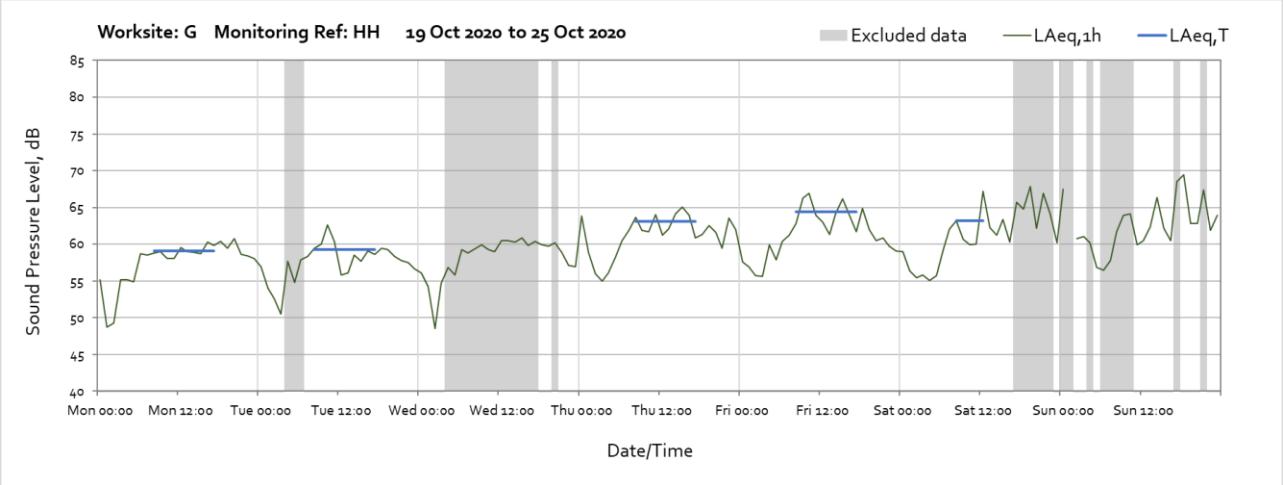

Worksite: ETRC Monitoring Ref: No23 26 Oct 2020 to 01 Nov 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
80
75
70
65
60
55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

Worksite: G – Monitoring Ref: HH

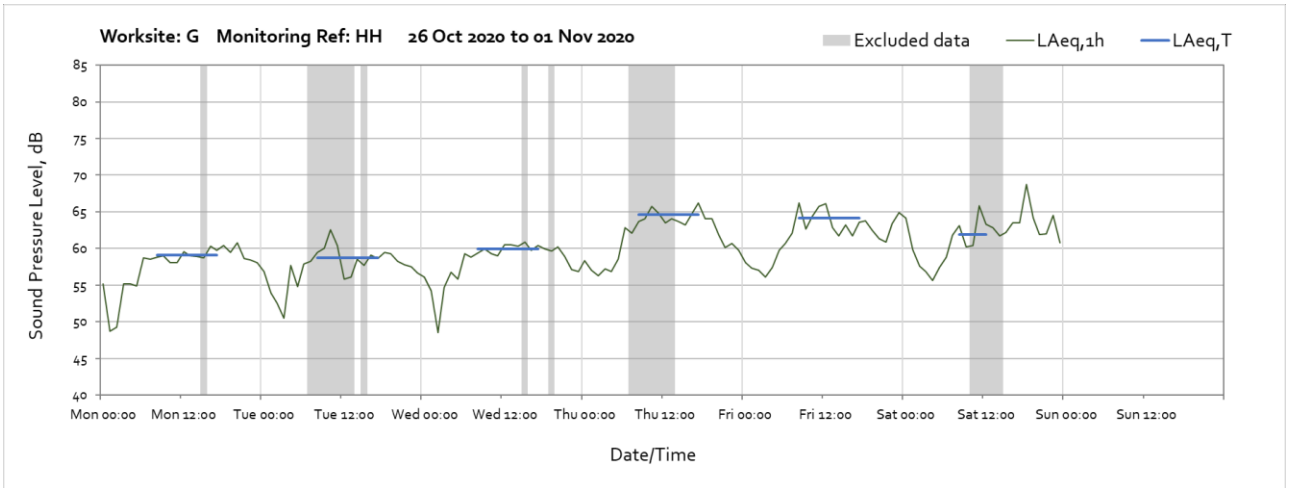




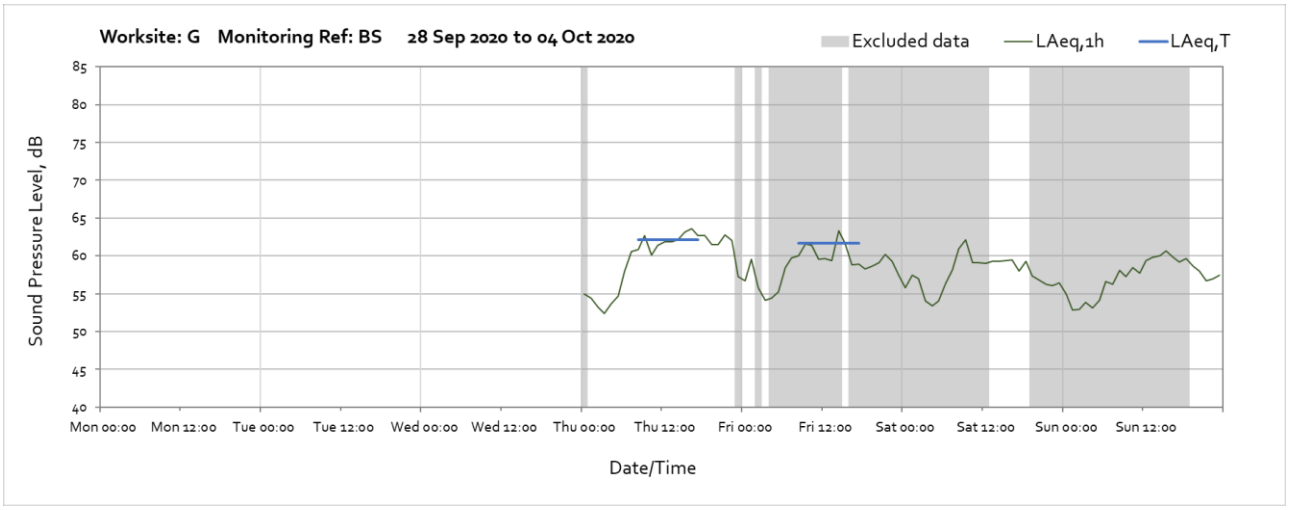


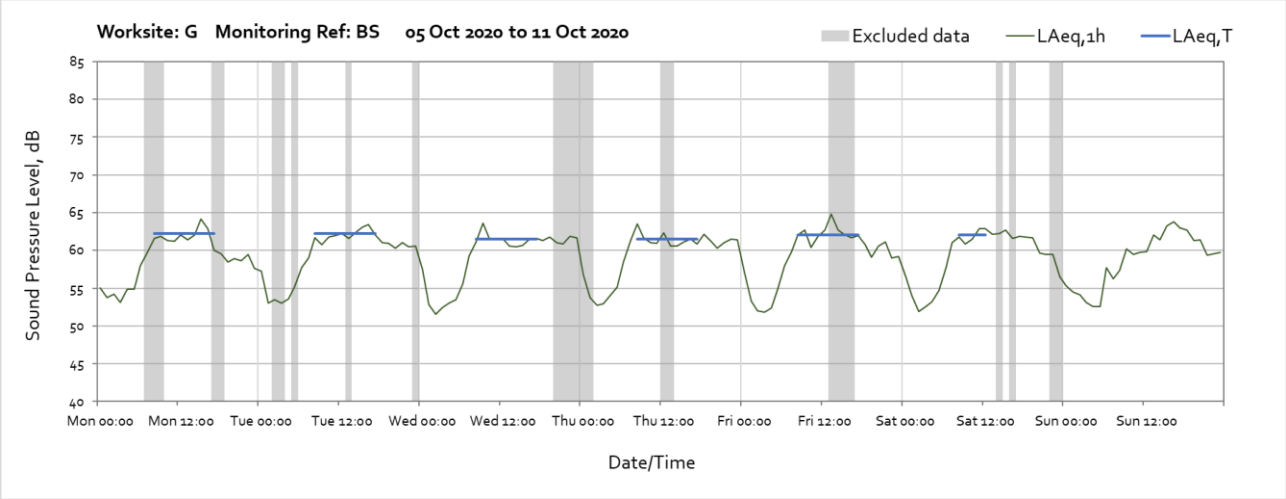


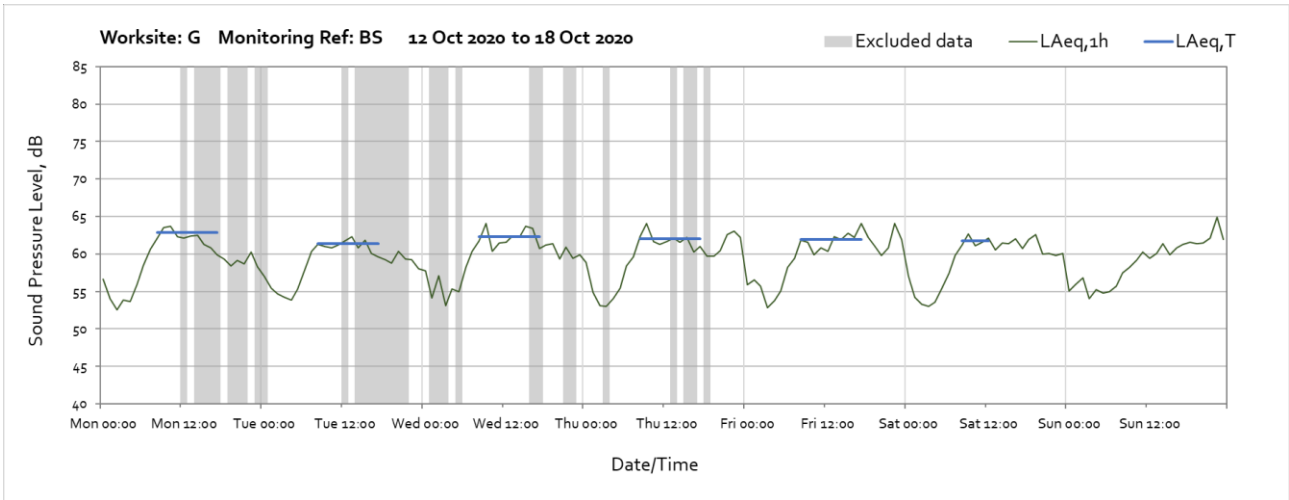
Note: Missing data between 01:00-02:00 on Sunday 25th October was due to a technical fault with the monitoring station caused by the clocks going back 1hr at the start of daylight savings.

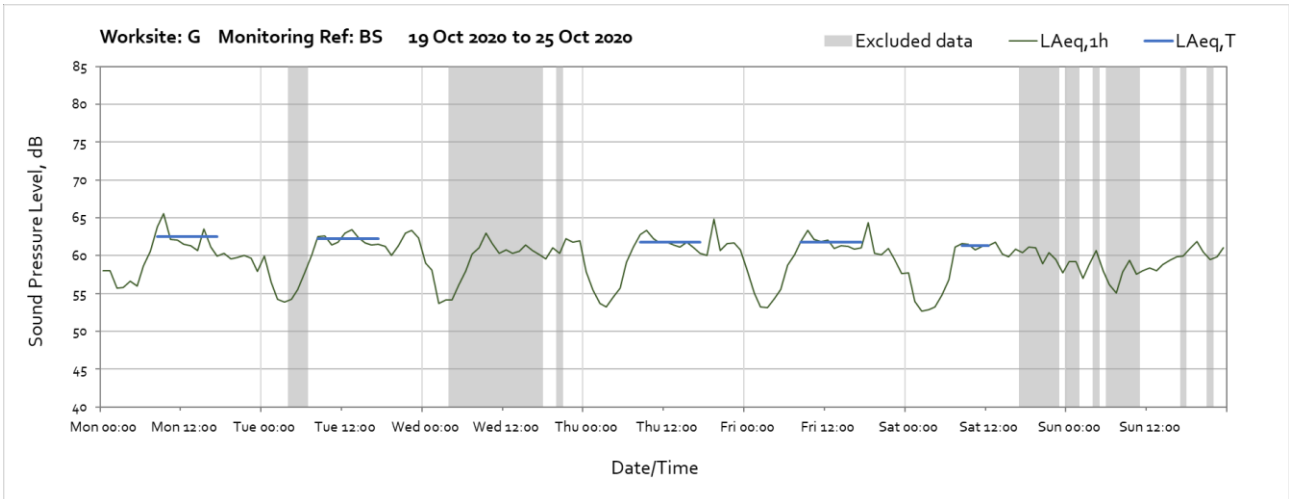


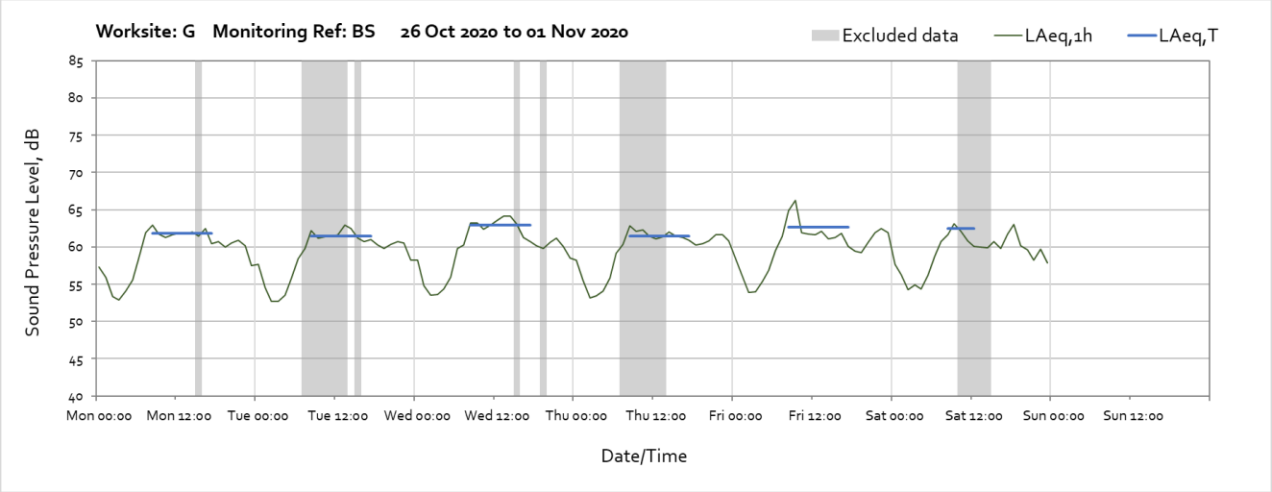
Worksite: G – Monitoring Ref: BS



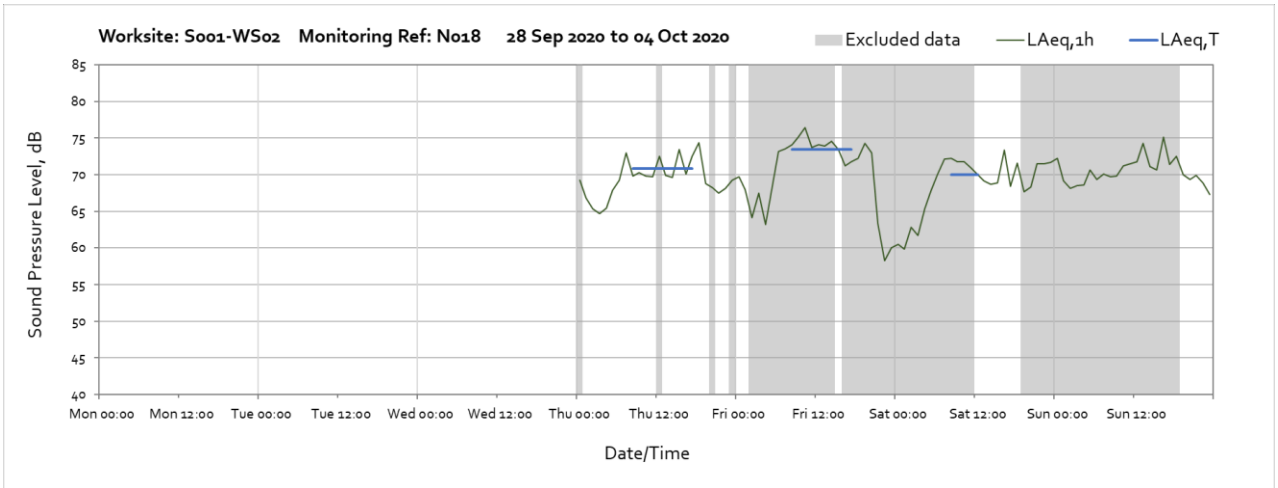

Worksite: G Monitoring Ref: BS 05 Oct 2020 to 11 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
80
75
70
65
60
55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

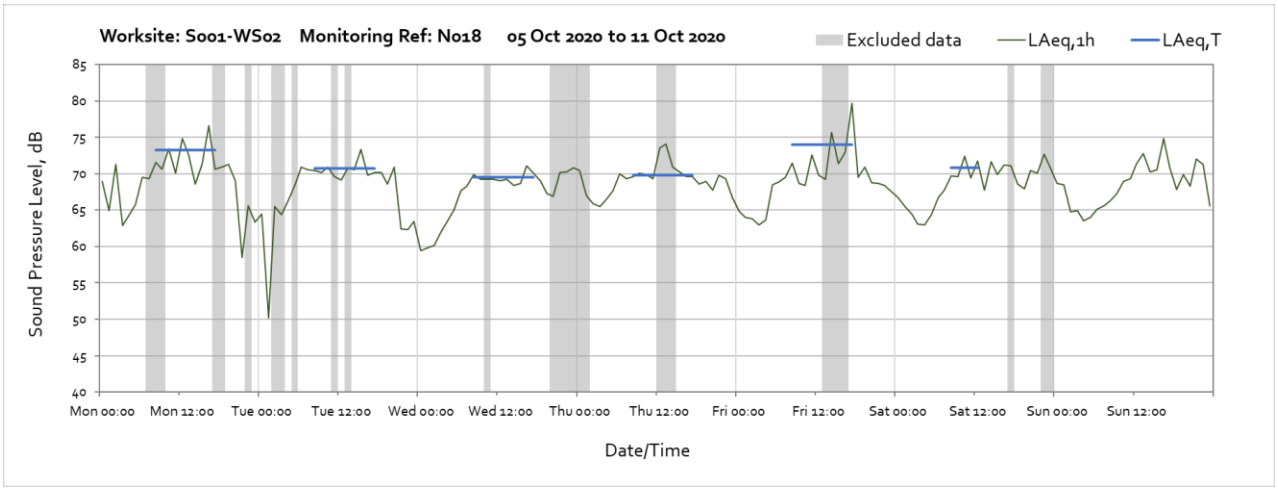

Worksite: G Monitoring Ref: BS 12 Oct 2020 to 18 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
80
75
70
65
60
55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

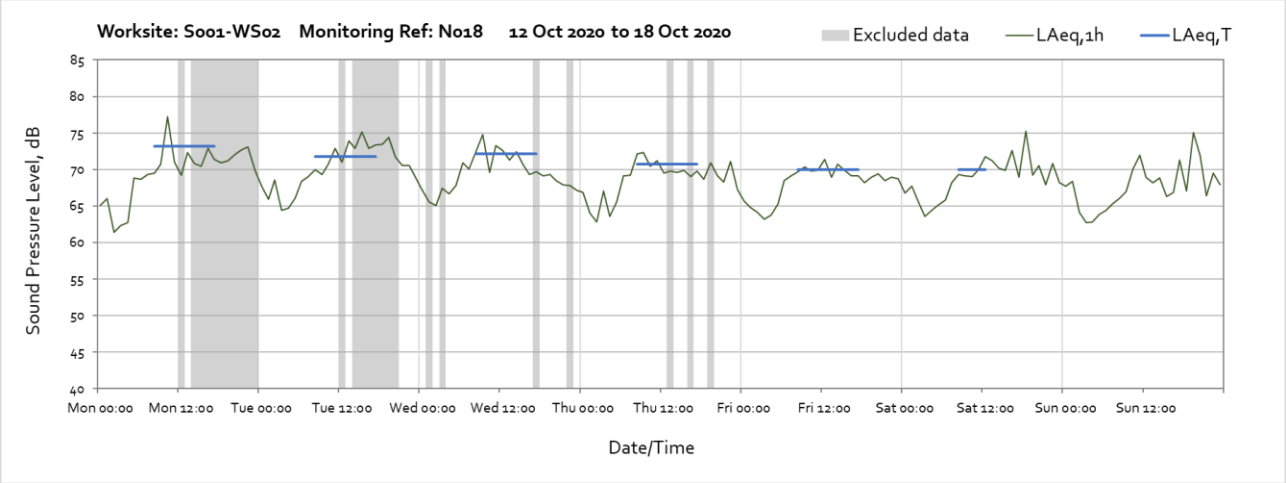

Worksite: G Monitoring Ref: BS 19 Oct 2020 to 25 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
80
75
70
65
60
55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

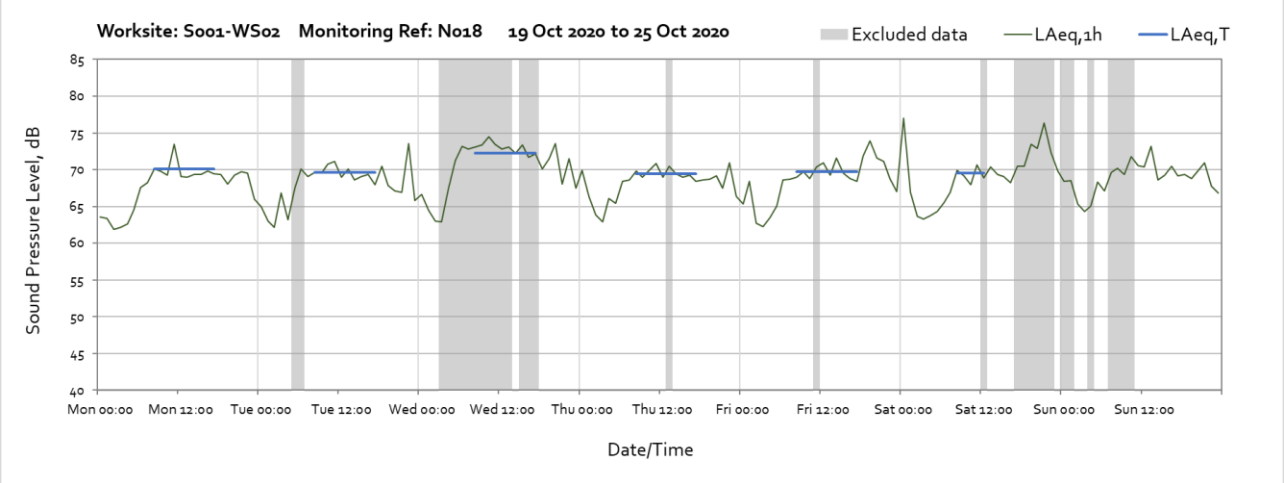


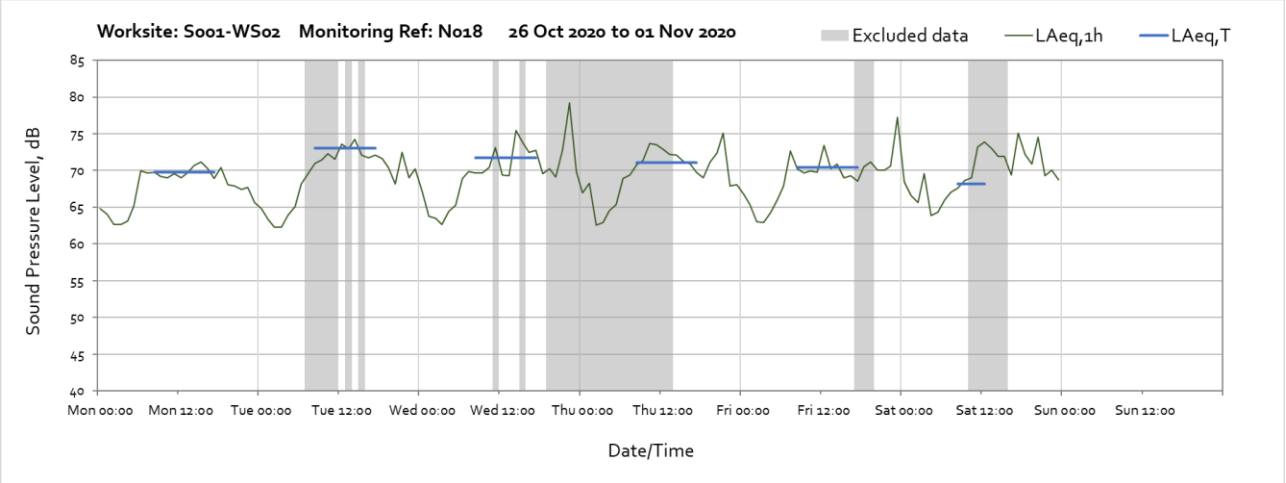
Worksite: S001-WS02 – Monitoring Ref: N018



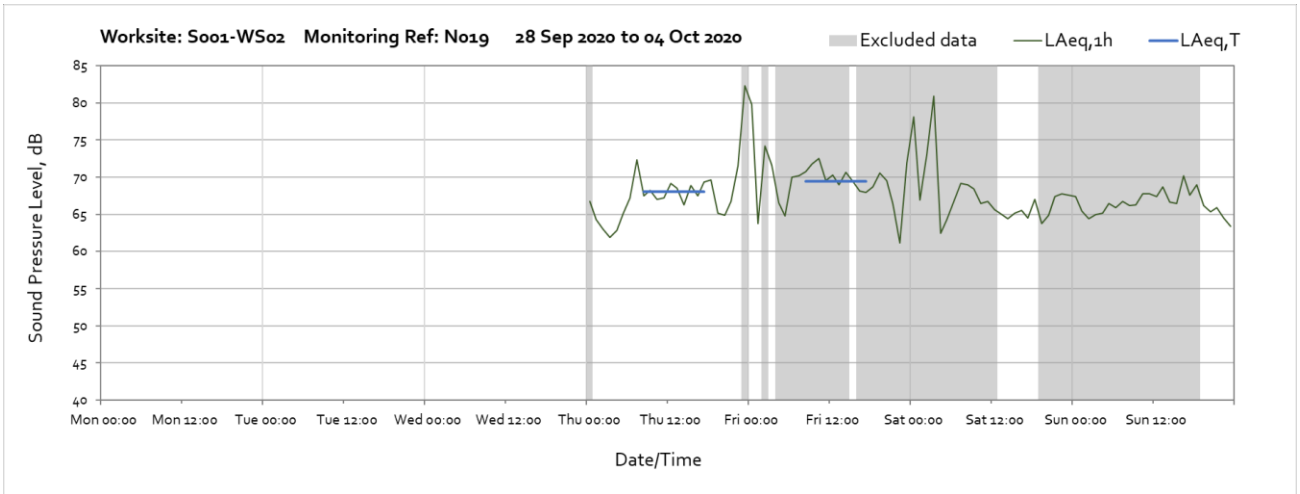


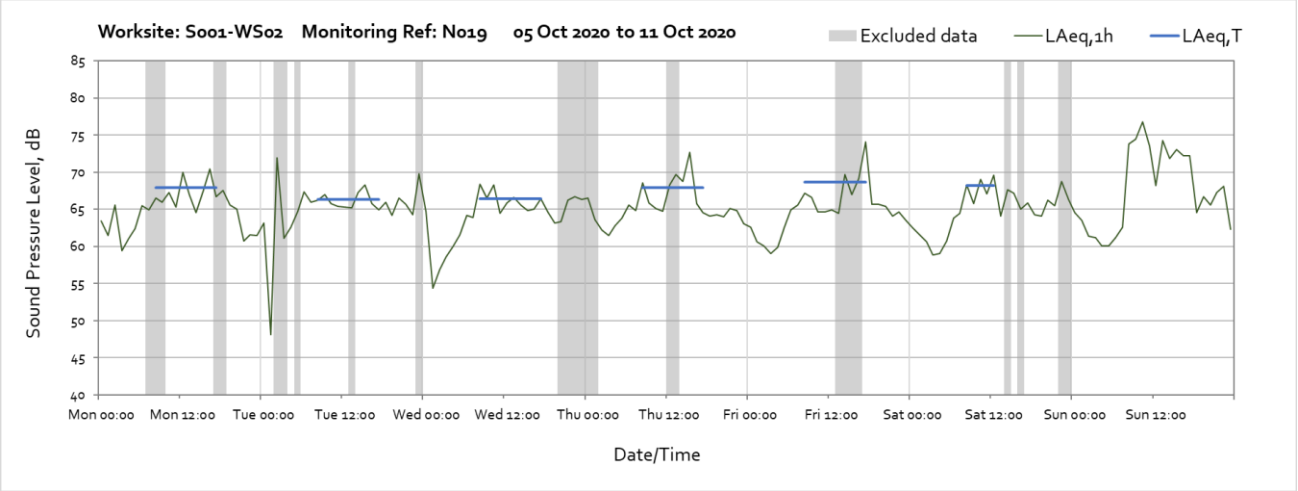

Worksite: S001-WS02 Monitoring Ref: N018 12 Oct 2020 to 18 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
80
75
70
65
60
55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

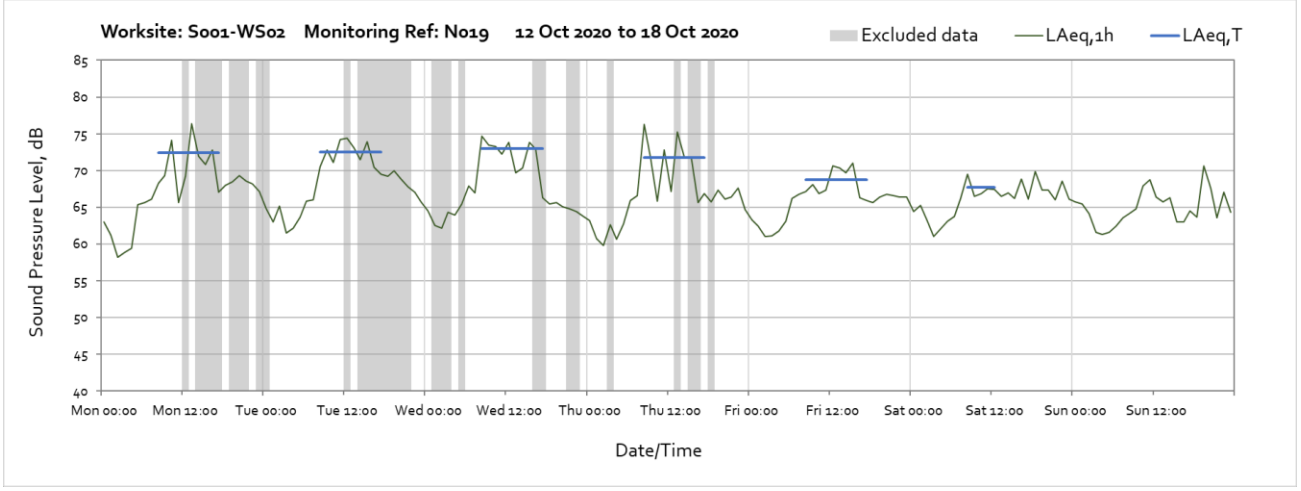

Worksite: S001-WS02 Monitoring Ref: N018 19 Oct 2020 to 25 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
80
75
70
65
60
55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

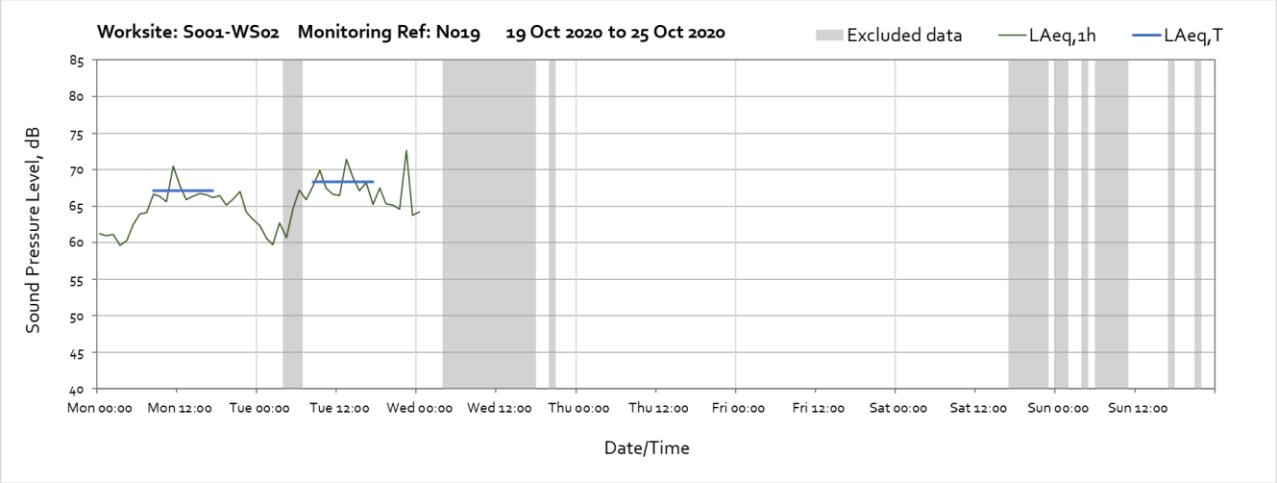

Worksite: S001-WS02 Monitoring Ref: N018 26 Oct 2020 to 01 Nov 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
80
75
70
65
60
55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

Worksite: S001-WS02 – Monitoring Ref: N019



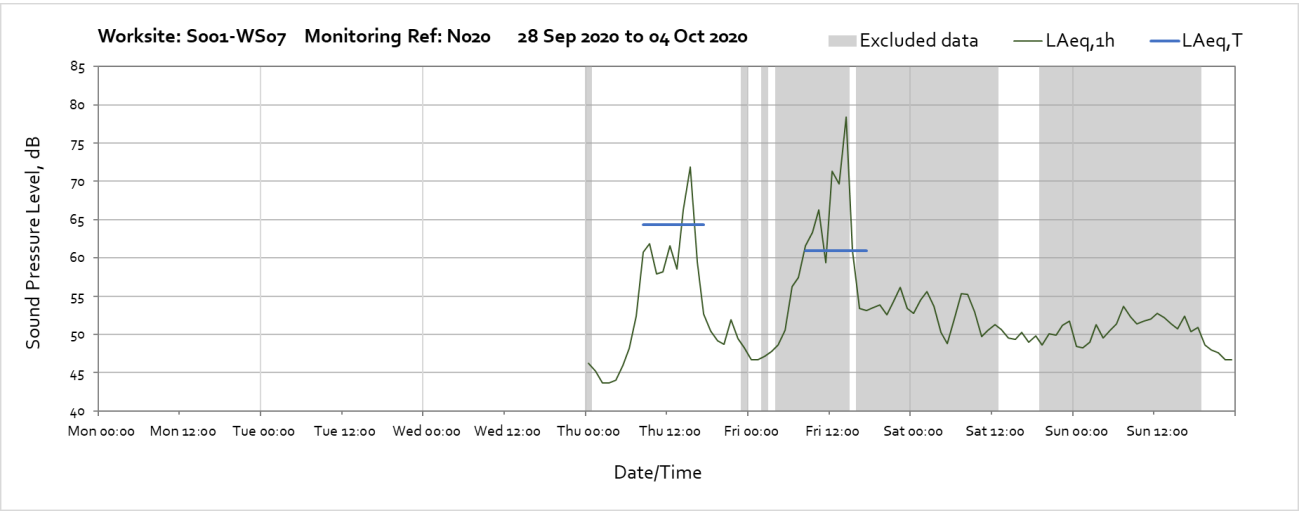


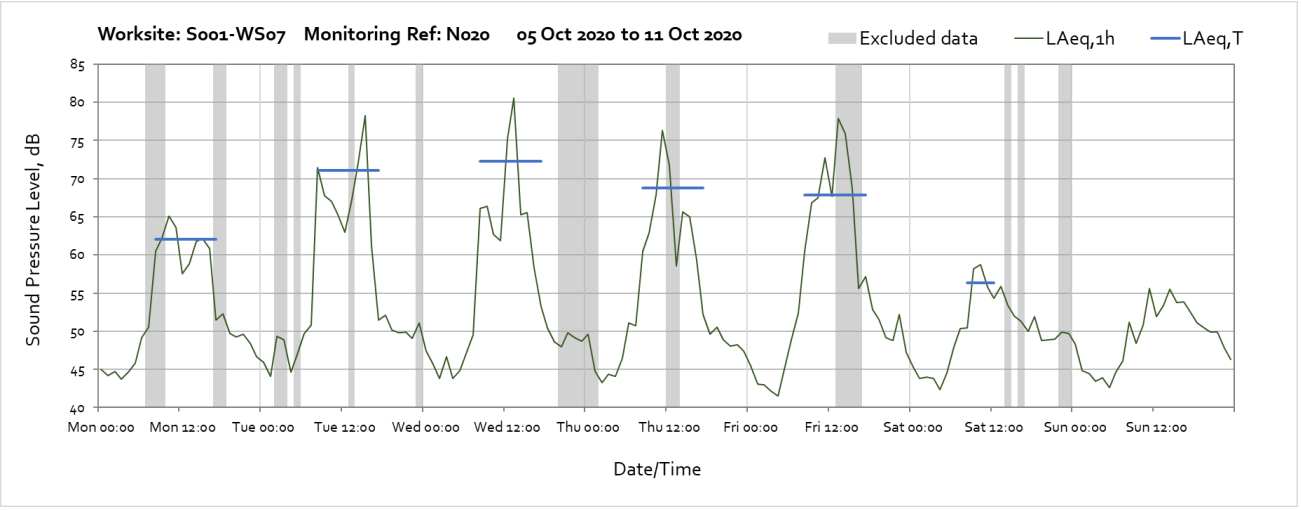


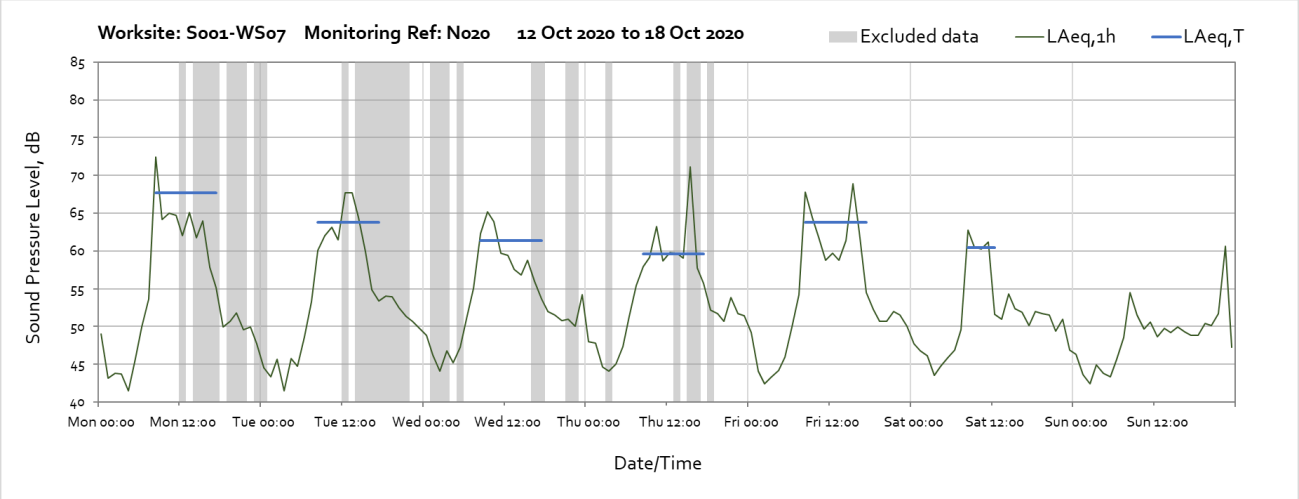


Note: Missing data between 01:00 on Wednesday 21st October and 00:00 on Sunday 1st November was due to the relocation of the monitor to allow hoarding works to take place. The monitor is awaiting a supply of power at the new location.

Worksite: S001-WS07 – Monitoring Ref: N020






Worksite: S001-WS07 Monitoring Ref: N020 12 Oct 2020 to 18 Oct 2020
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
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
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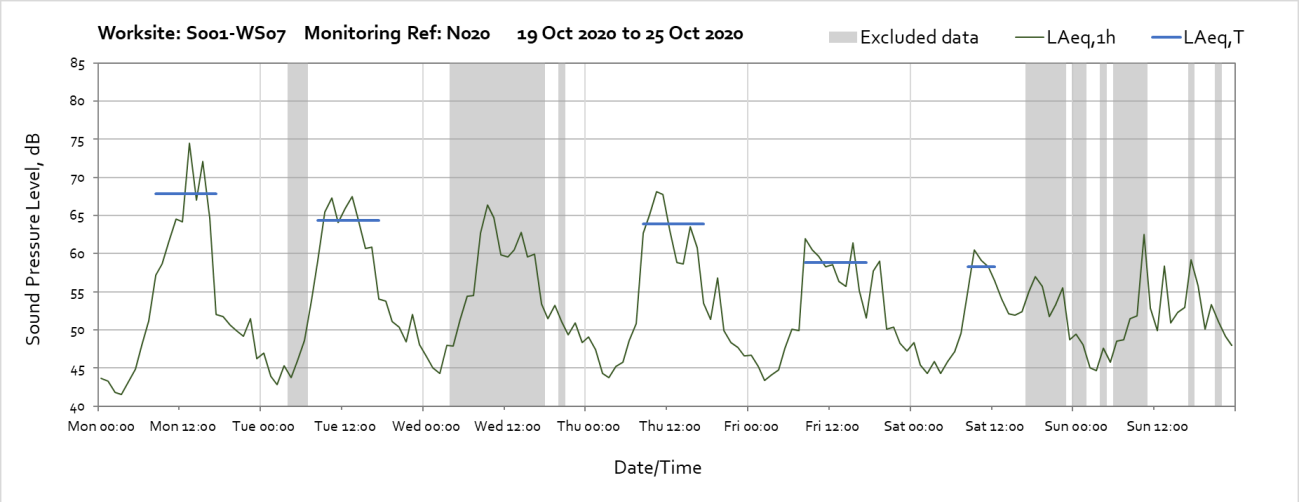
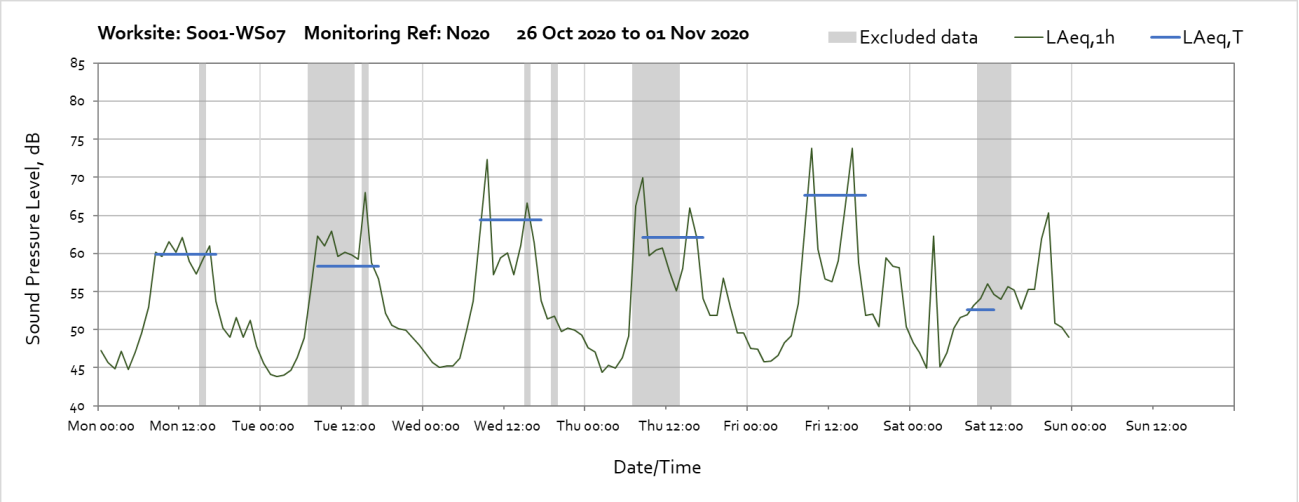
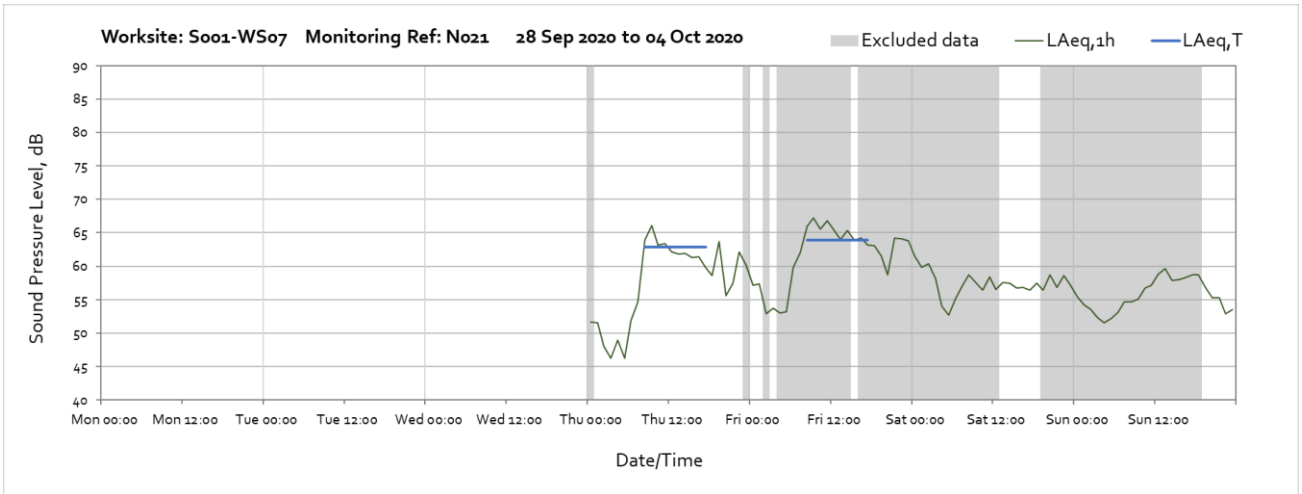
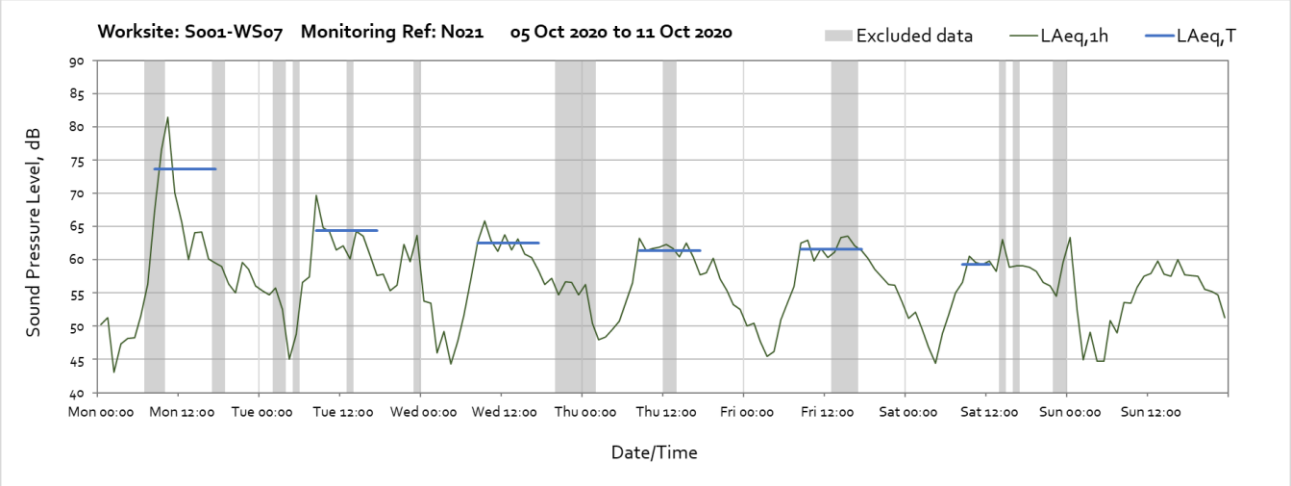
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

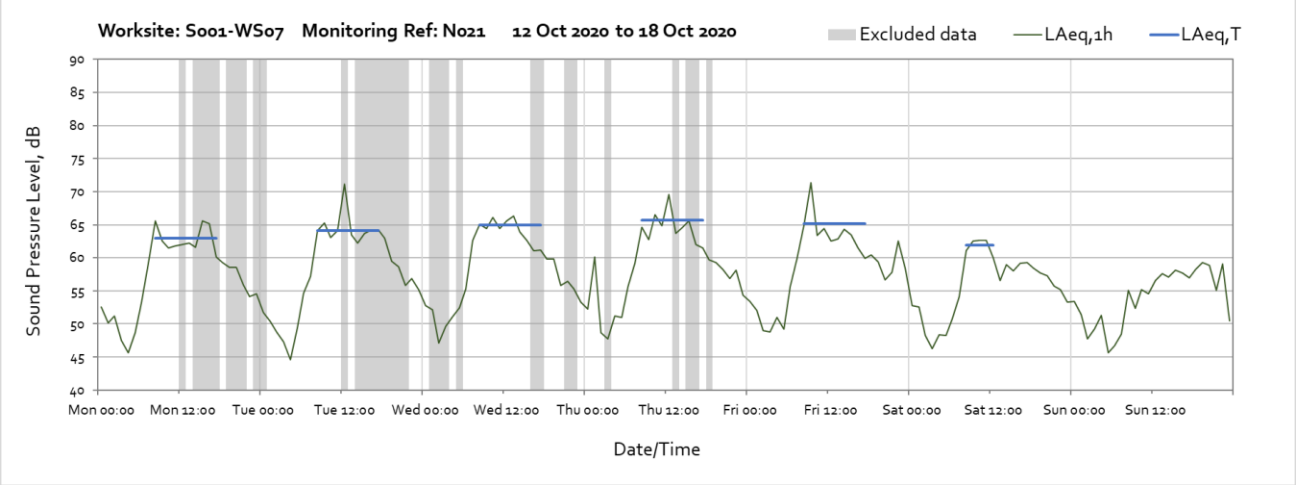

Worksite: S001-WS07 Monitoring Ref: N020 19 Oct 2020 to 25 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
80
75
70
65
60
55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

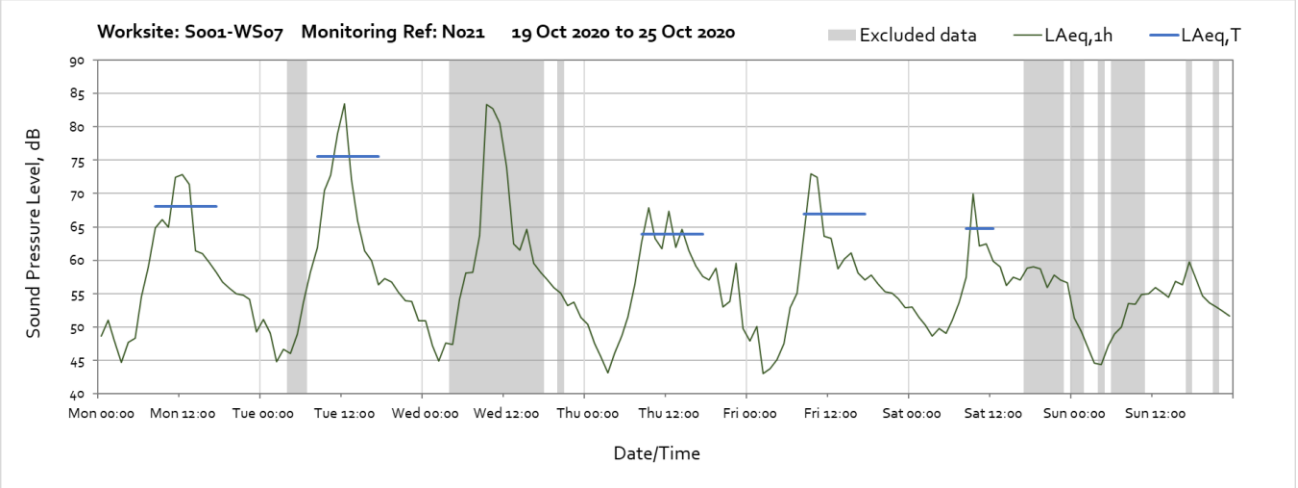

Worksite: S001-WS07 Monitoring Ref: N020 26 Oct 2020 to 01 Nov 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
80
75
70
65
60
55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

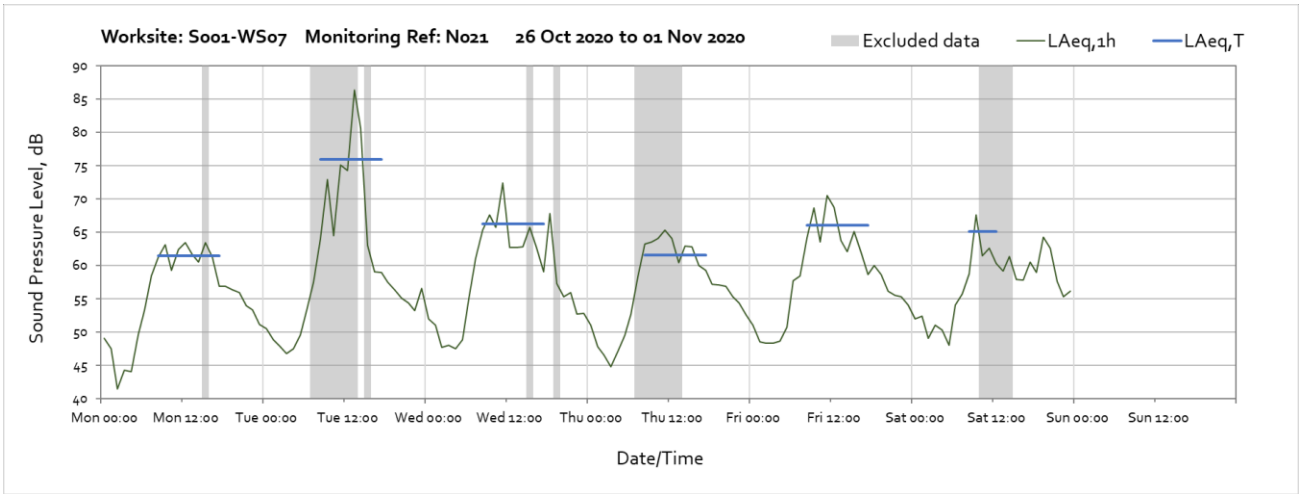
Worksite: S001-WS07 – Monitoring Ref: N021



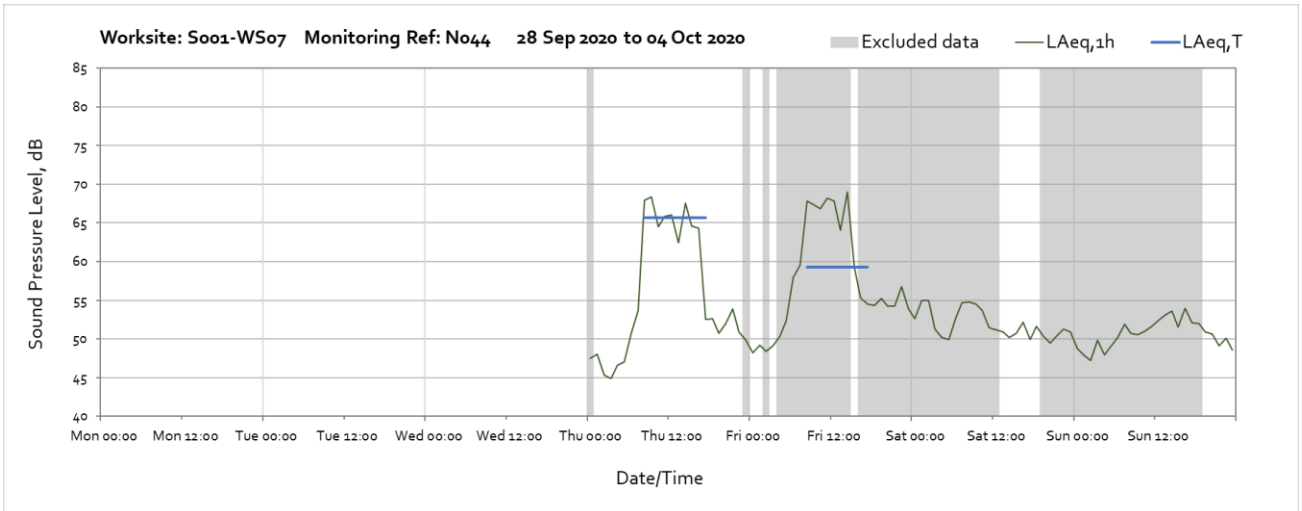


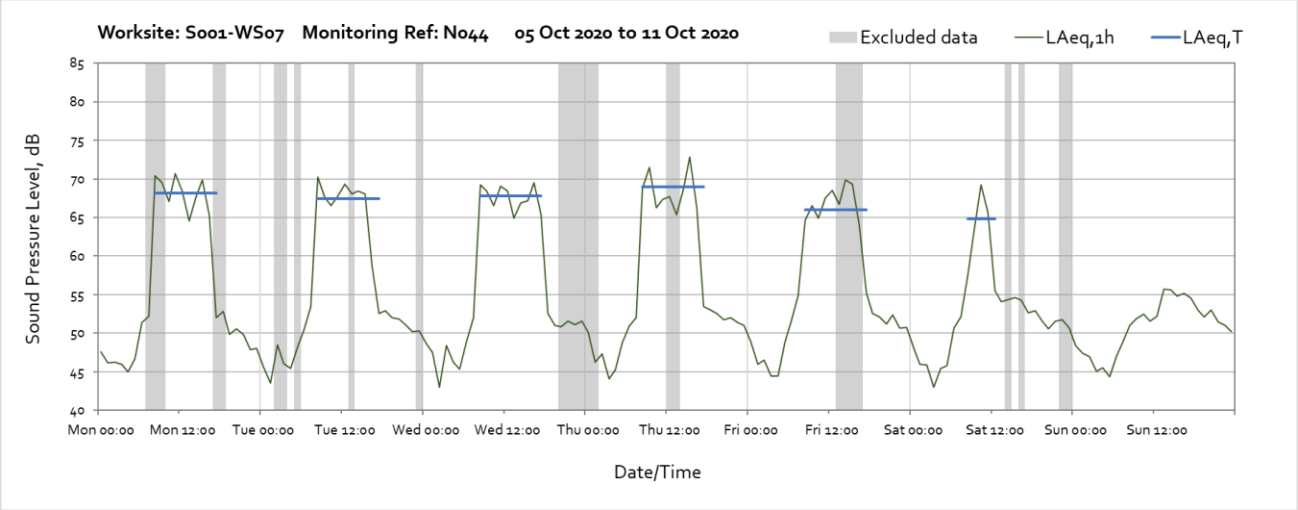






Worksite: S001-WS07 – Monitoring Ref: N044




Worksite: S001-WS07 Monitoring Ref: N044 05 Oct 2020 to 11 Oct 2020
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
Tue 12:00
Wed 00:00
Wed 12:00
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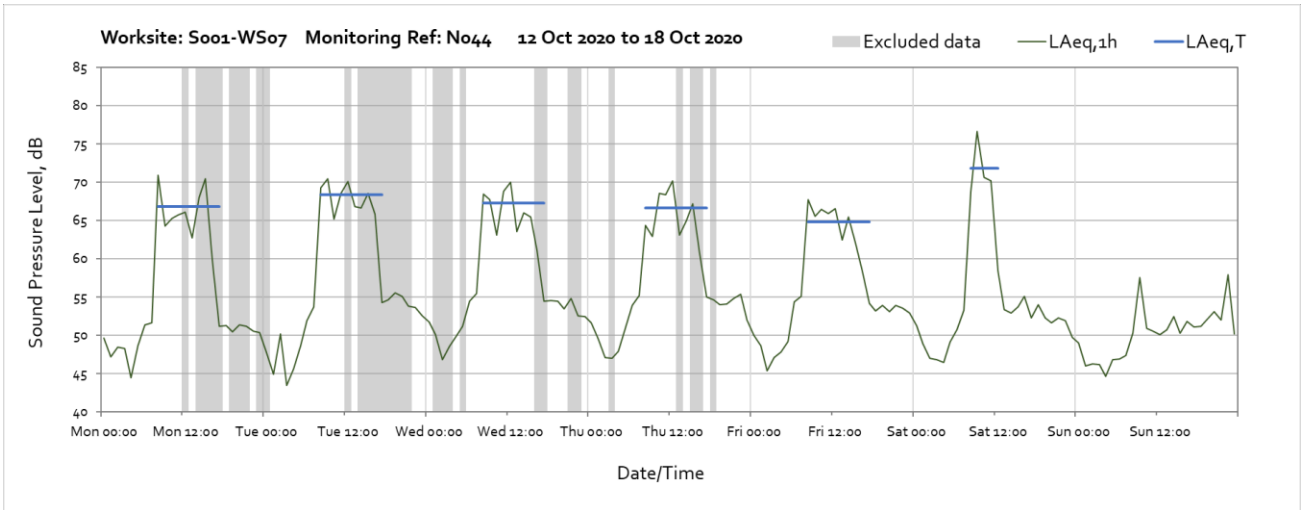
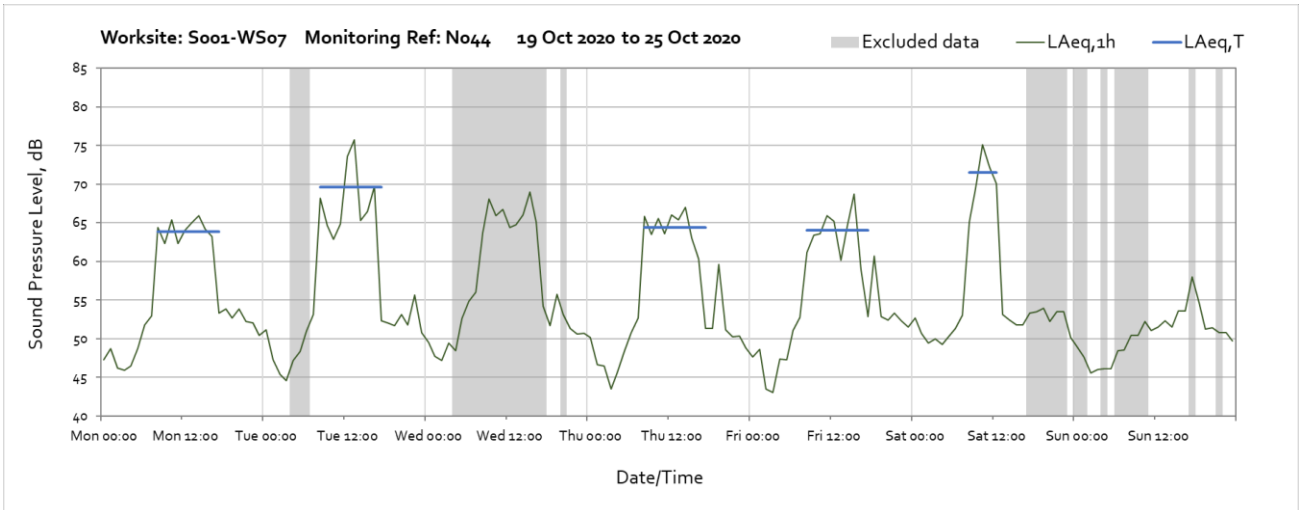
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: S001-WS07 Monitoring Ref: N044 12 Oct 2020 to 18 Oct 2020
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
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: S001-WS07 Monitoring Ref: N044 19 Oct 2020 to 25 Oct 2020
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
Tue 12:00
Wed 00:00
Wed 12:00
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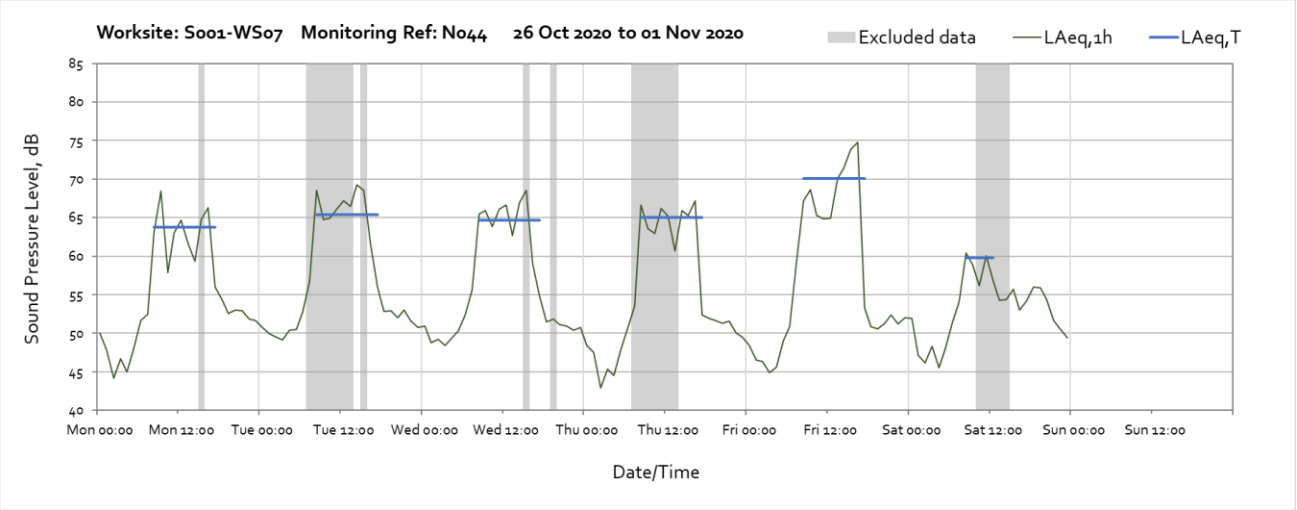
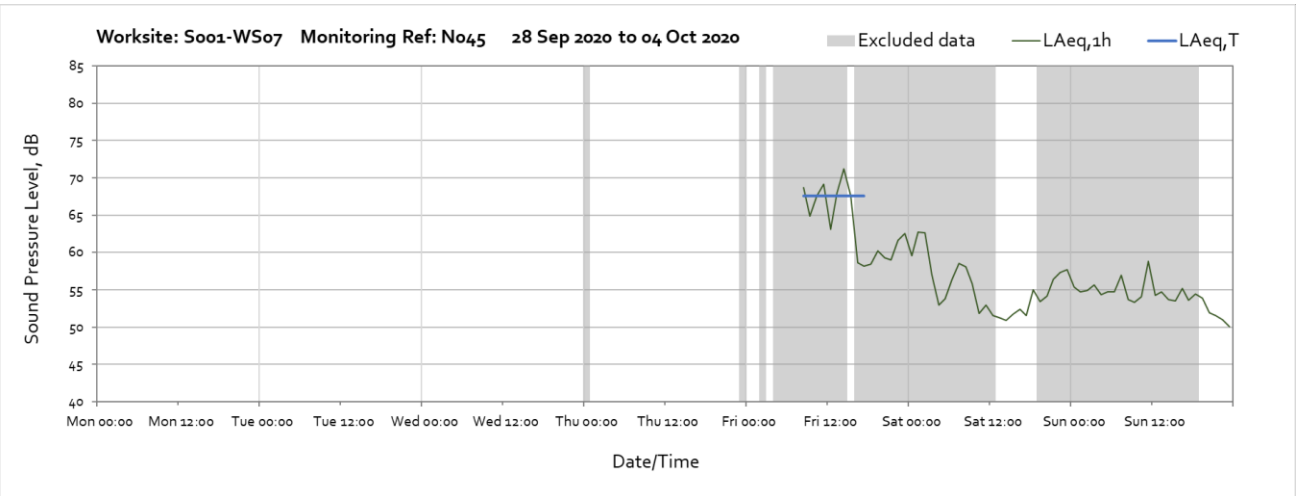
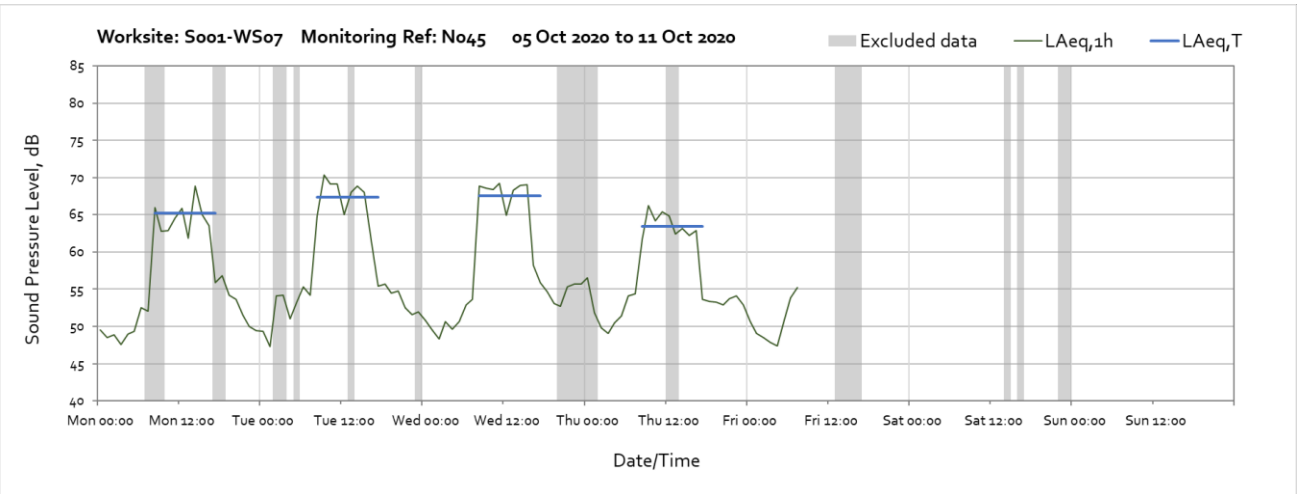
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time



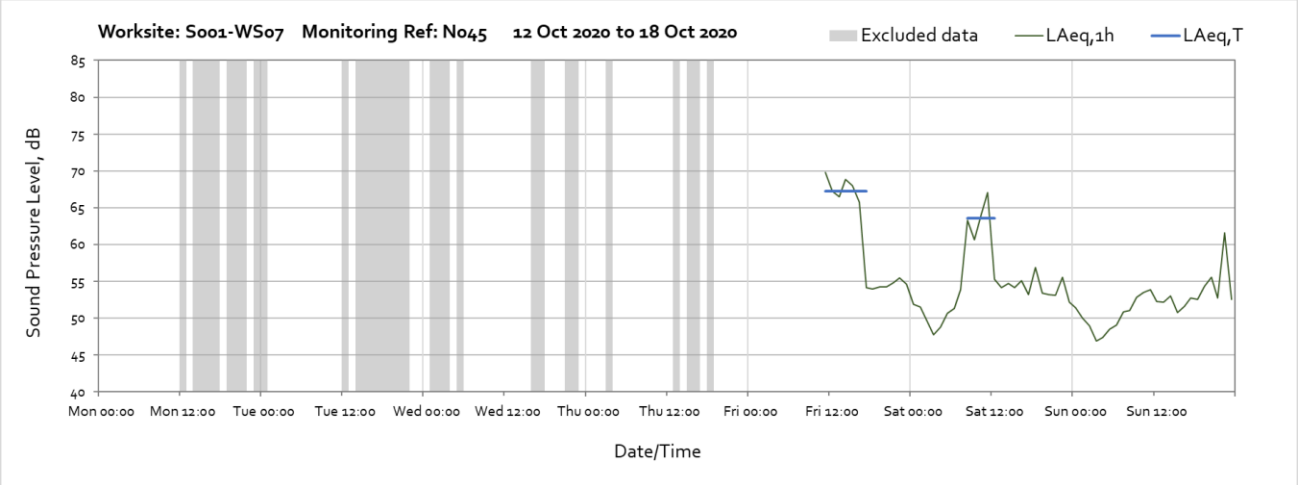
Worksite: S001-WS07 – Monitoring Ref: N045



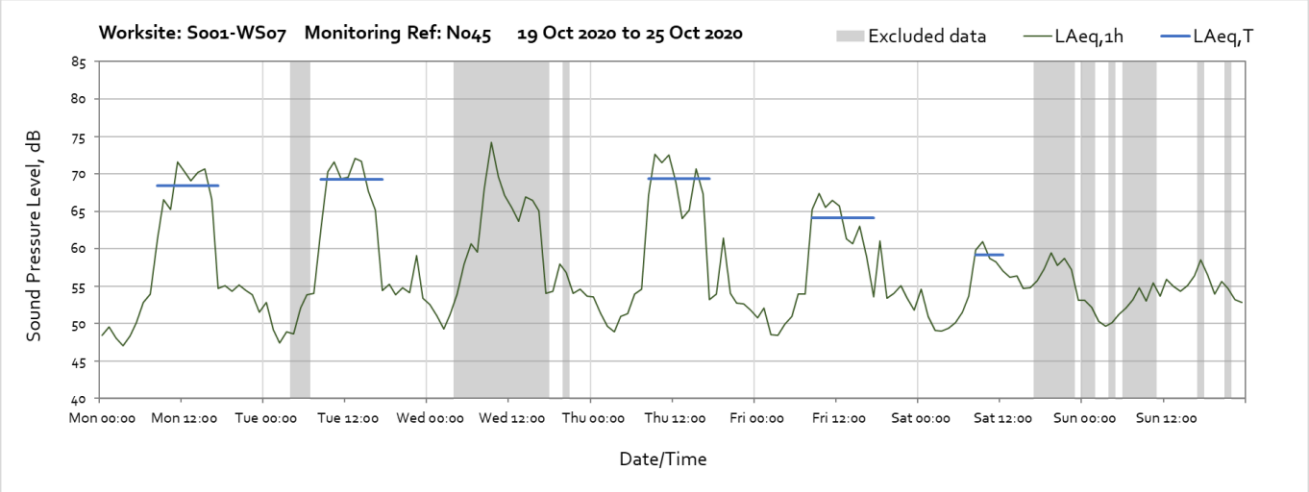
Note: Missing data from 00:00 on Thursday 1st October until 08:00 on Friday 2nd October was due to loss of site power.

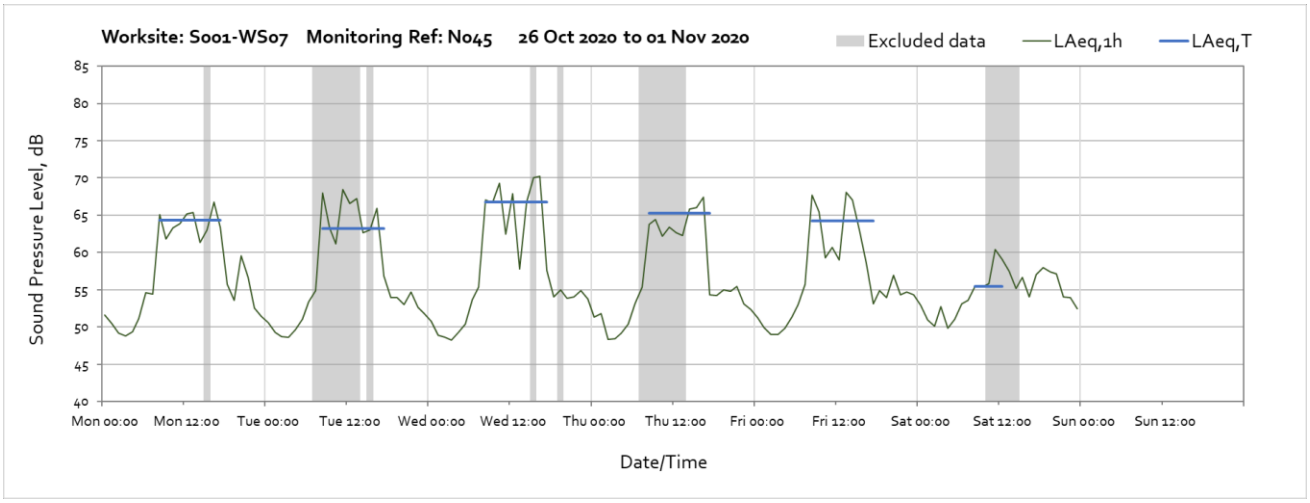


Note: Missing data from 08:00 on Friday 8th October until 00:00 on Monday 12th October was due to loss of site power.

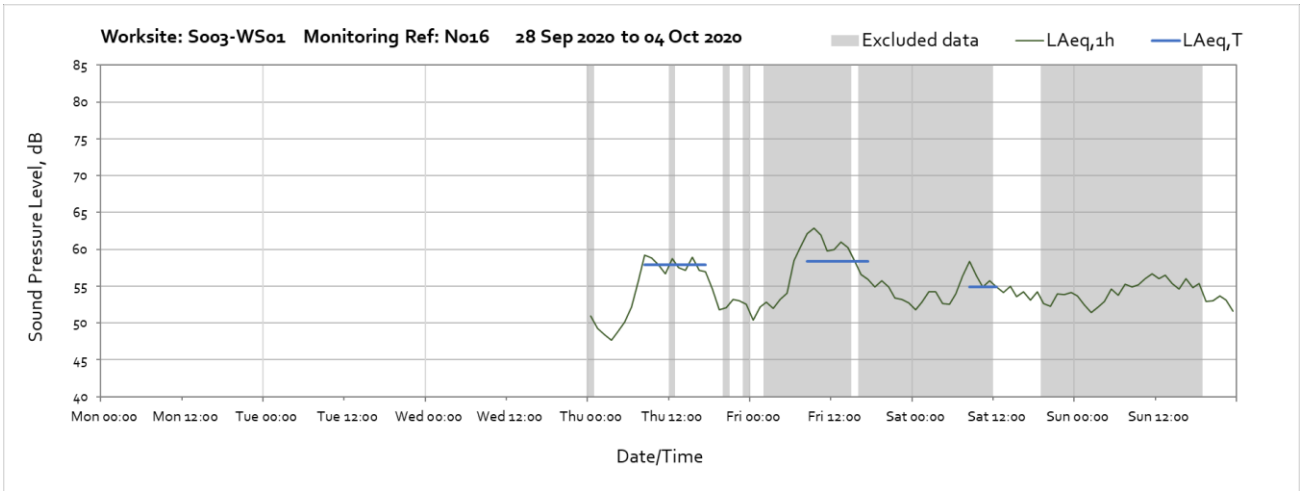


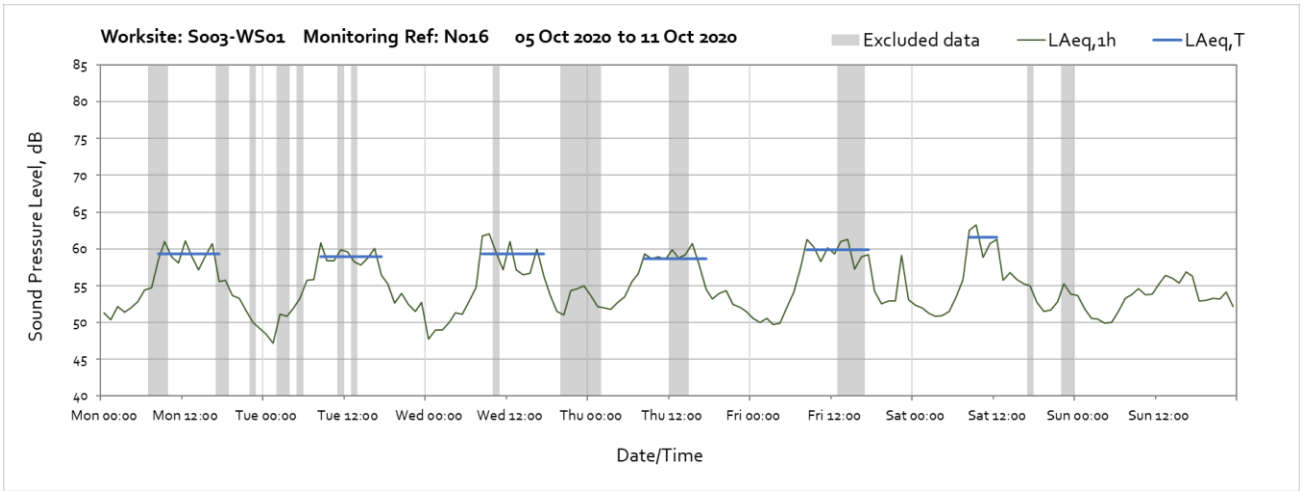
Note: Missing data from 00:00 on Monday 12th October until 11:00 on Friday 16th October was due to loss of site power.

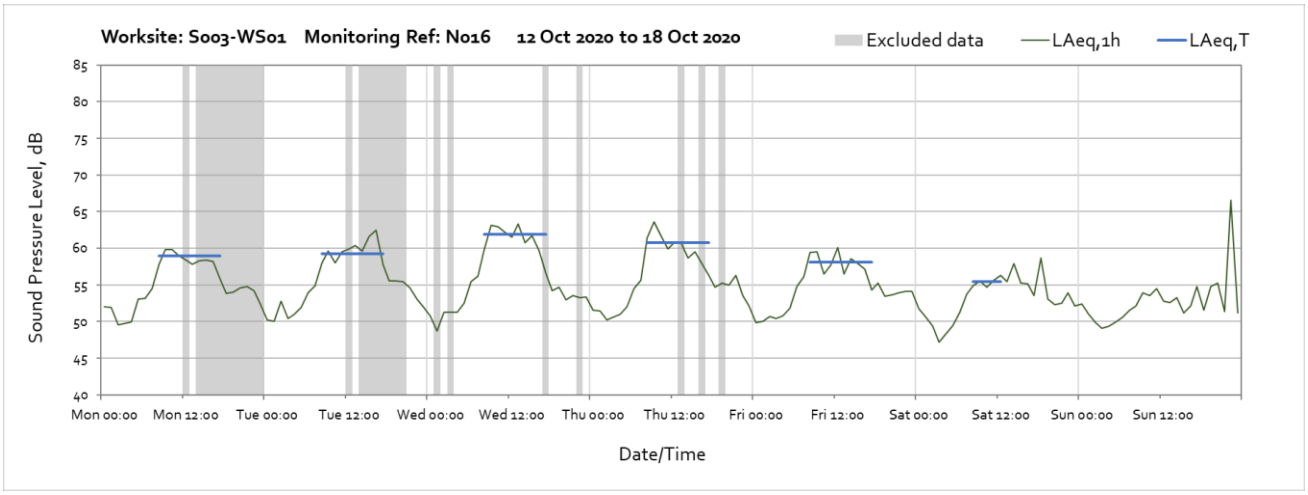


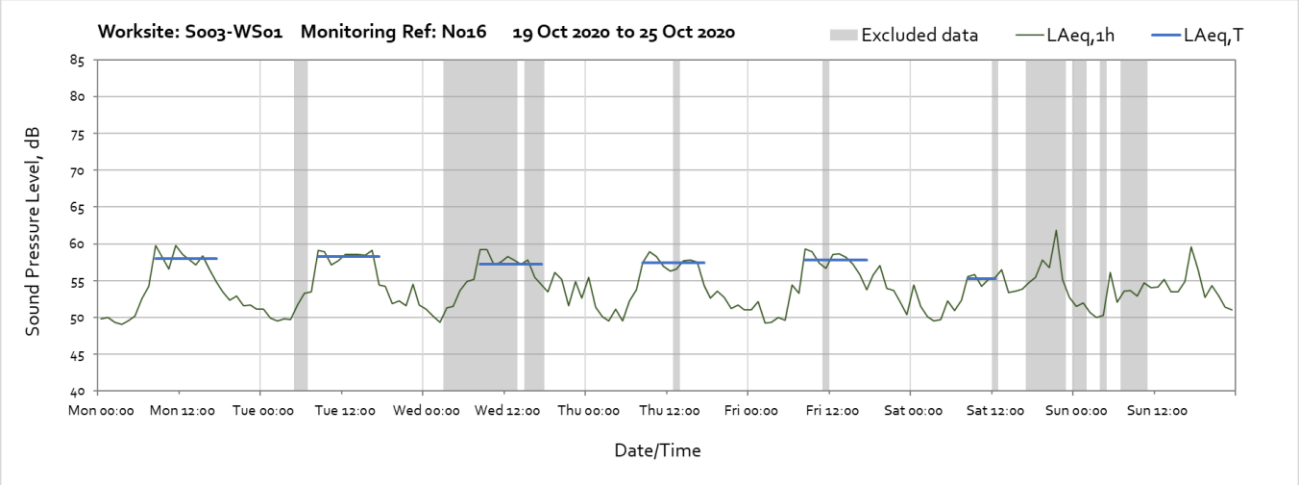


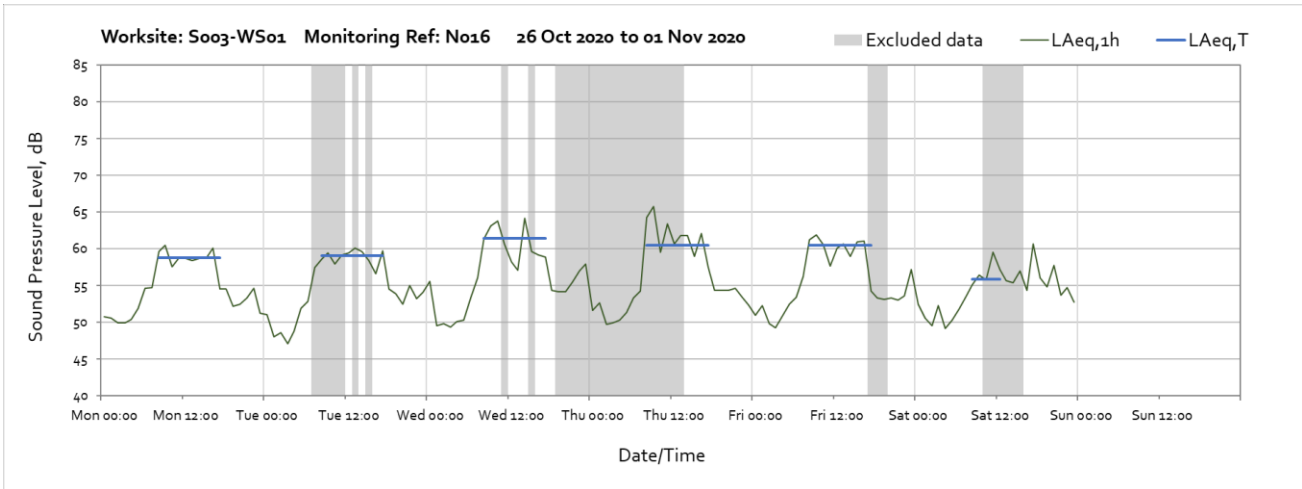
Worksite: S003-WS01 – Monitoring Ref: N016



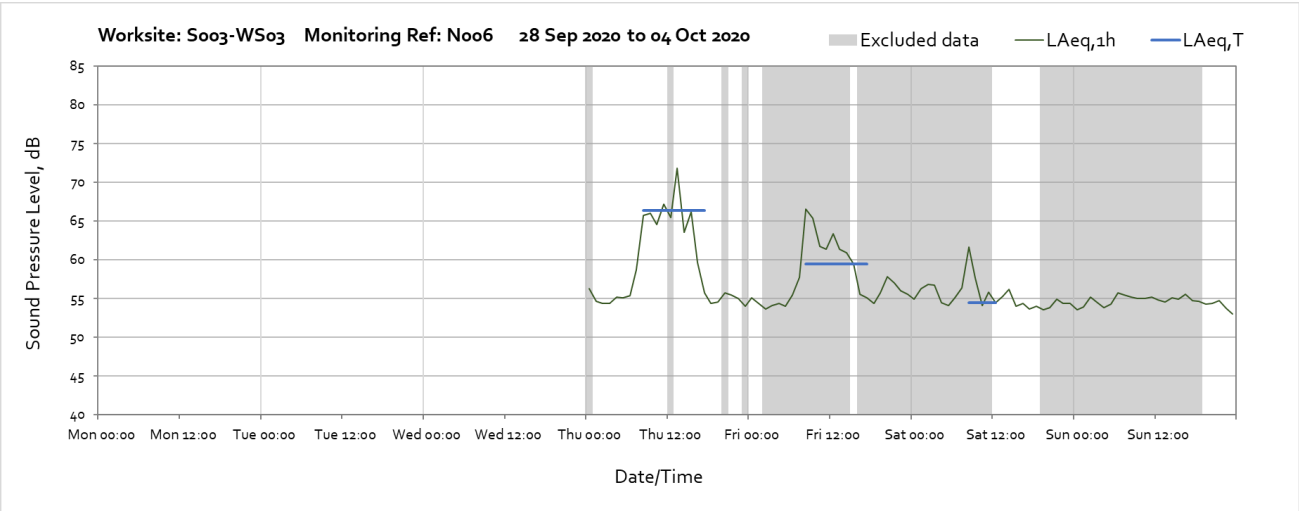


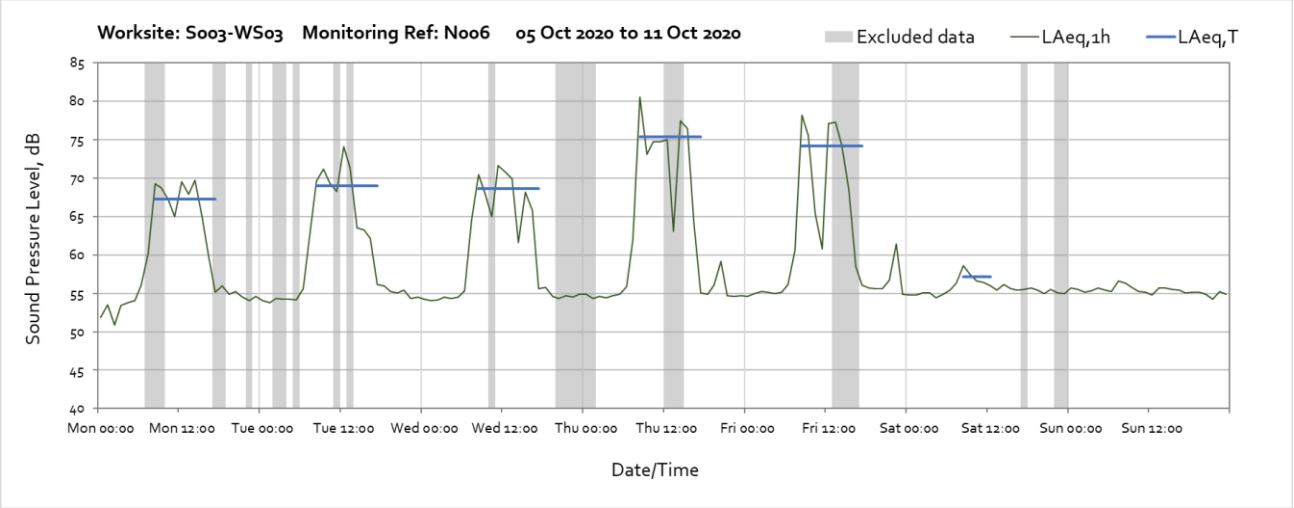






Worksite: S003-WS03 – Monitoring Ref: N006




Worksite: S003-WS03 Monitoring Ref: N006 05 Oct 2020 to 11 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
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Mon 00:00
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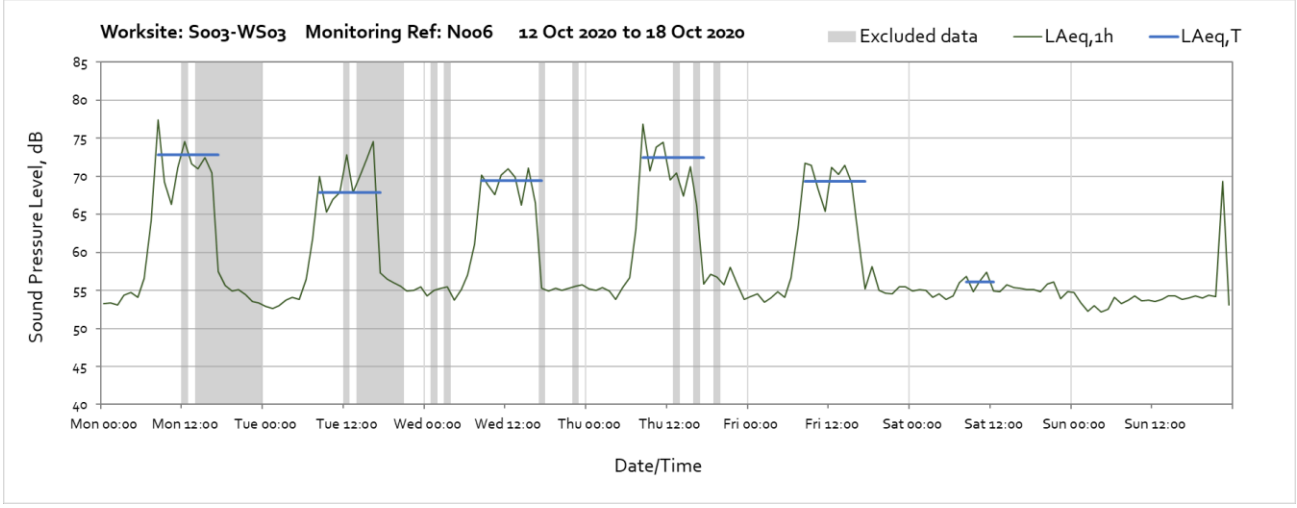
Date/Time


Worksite: S003-WS03 Monitoring Ref: N006 12 Oct 2020 to 18 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
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Mon 00:00
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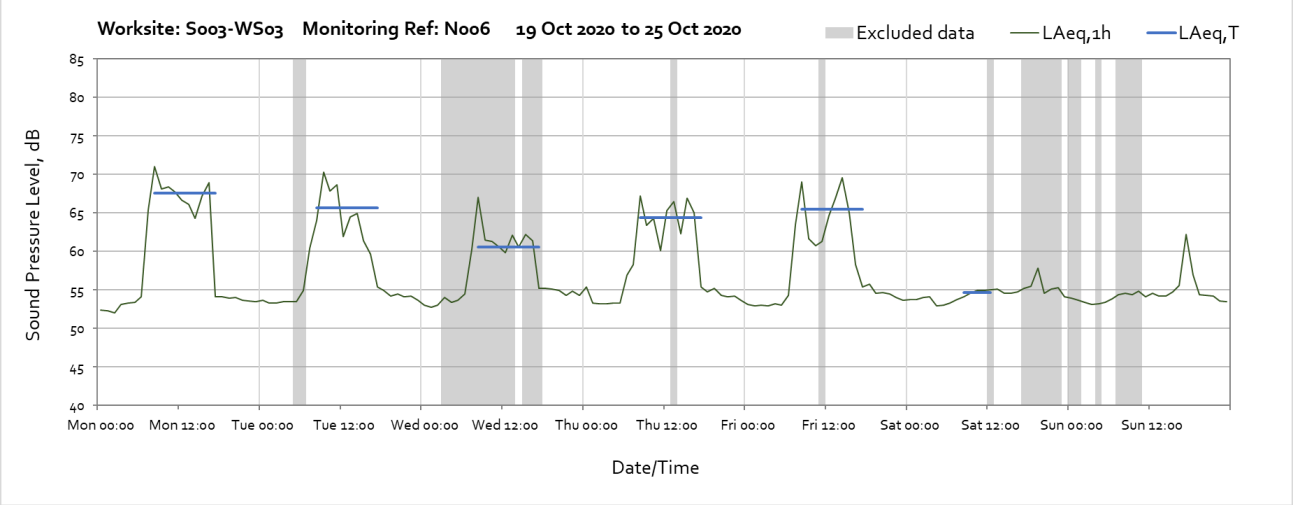
Date/Time


Worksite: S003-WS03 Monitoring Ref: N006 19 Oct 2020 to 25 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
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Mon 00:00
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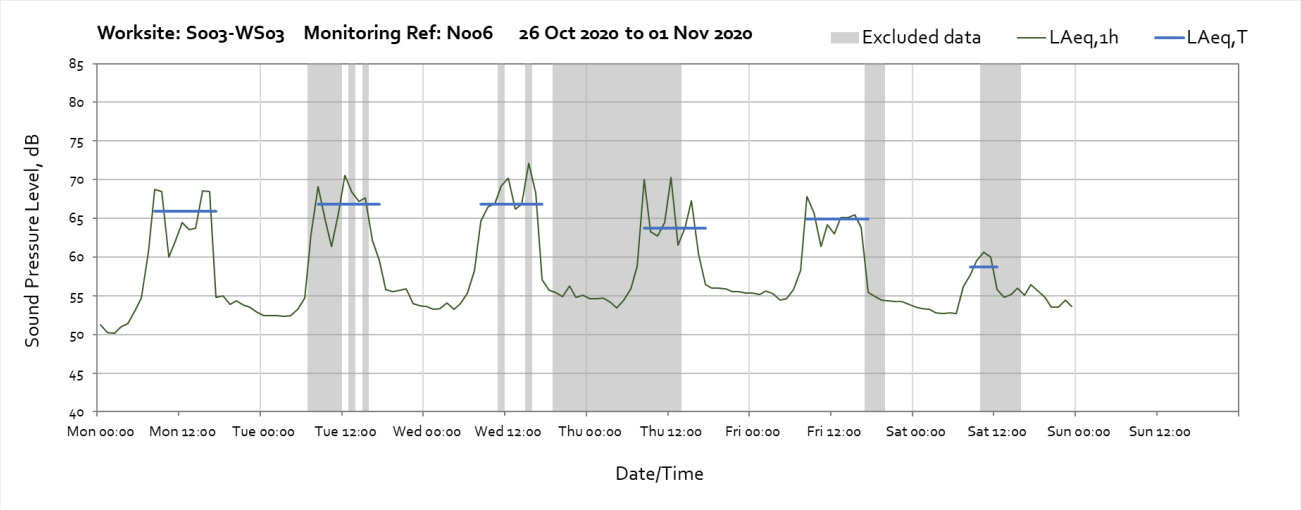
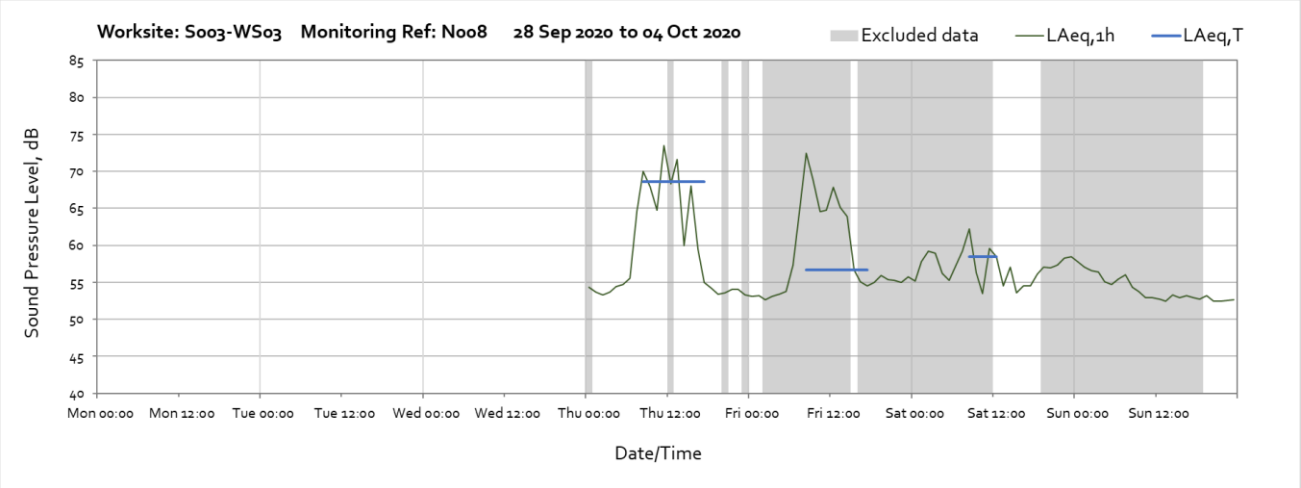
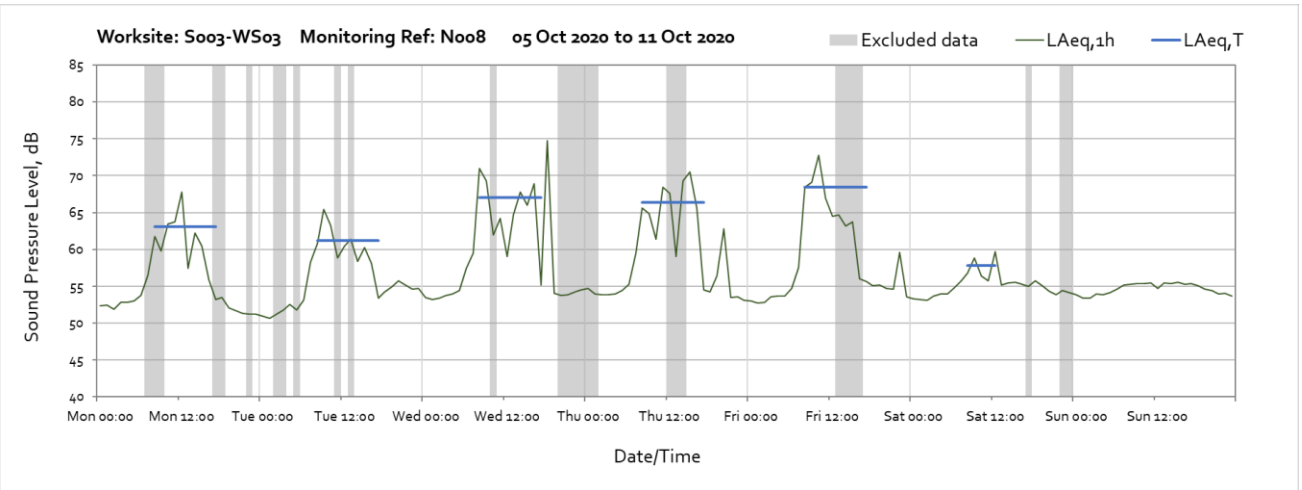
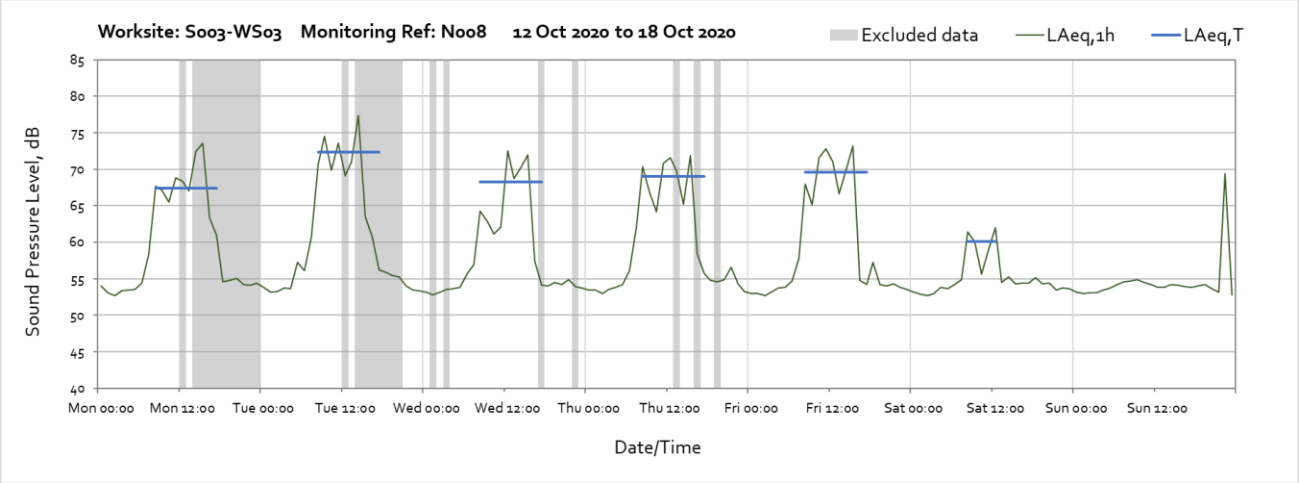
Date/Time



Worksite: S003-WS03 – Monitoring Ref: N008






Worksite: S003-WS03 Monitoring Ref: N008 12 Oct 2020 to 18 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
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60
55
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45
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Mon 00:00
Mon 12:00
Tue 00:00
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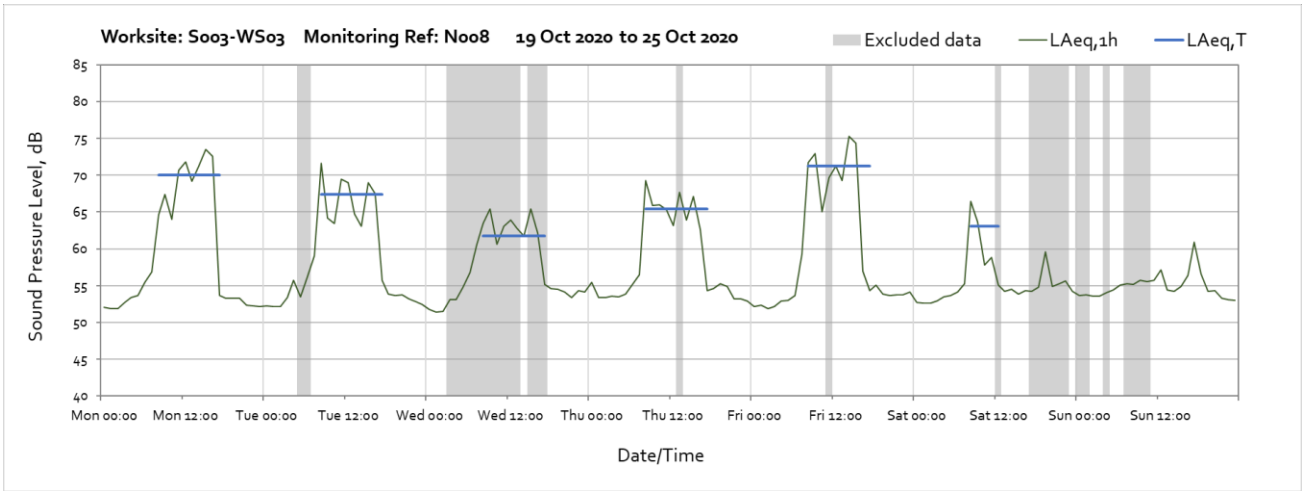
Date/Time


Worksite: S003-WS03 Monitoring Ref: N008 19 Oct 2020 to 25 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
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Mon 00:00
Mon 12:00
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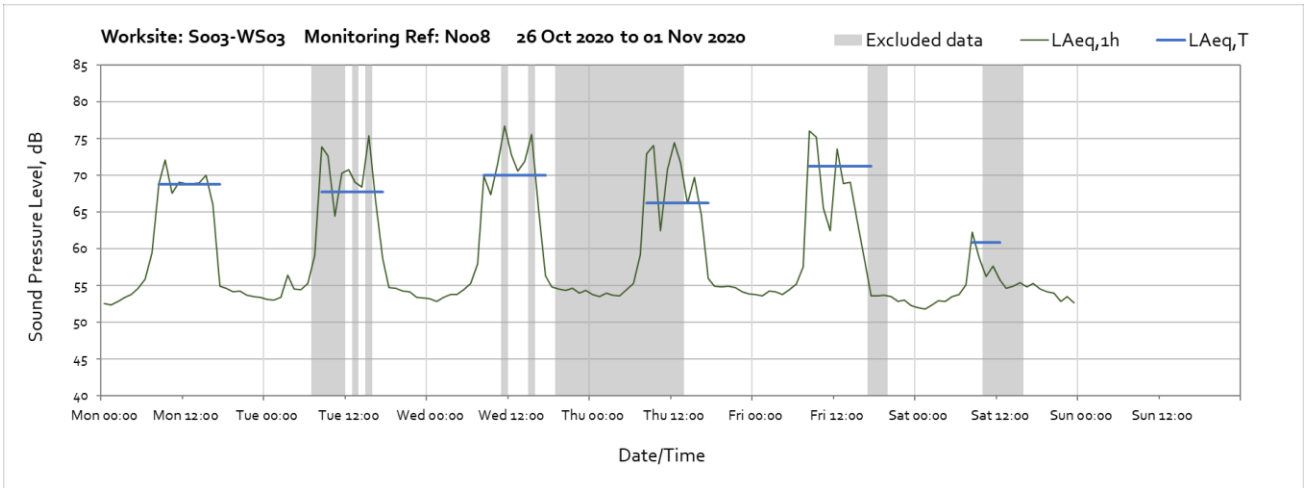
Date/Time


Worksite: S003-WS03 Monitoring Ref: N008 26 Oct 2020 to 01 Nov 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
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60
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Mon 00:00
Mon 12:00
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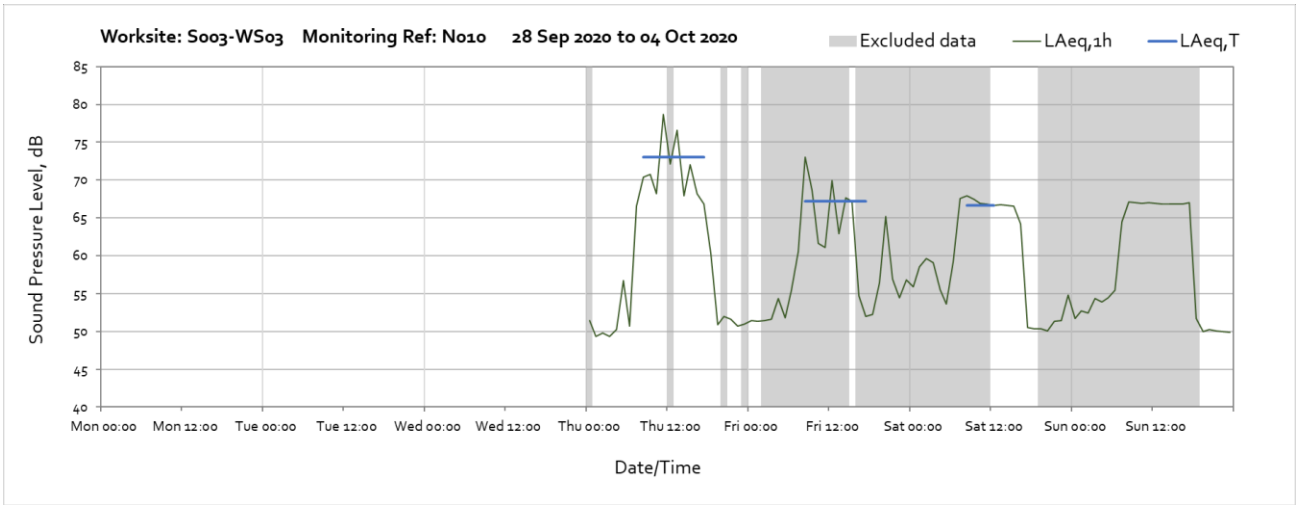
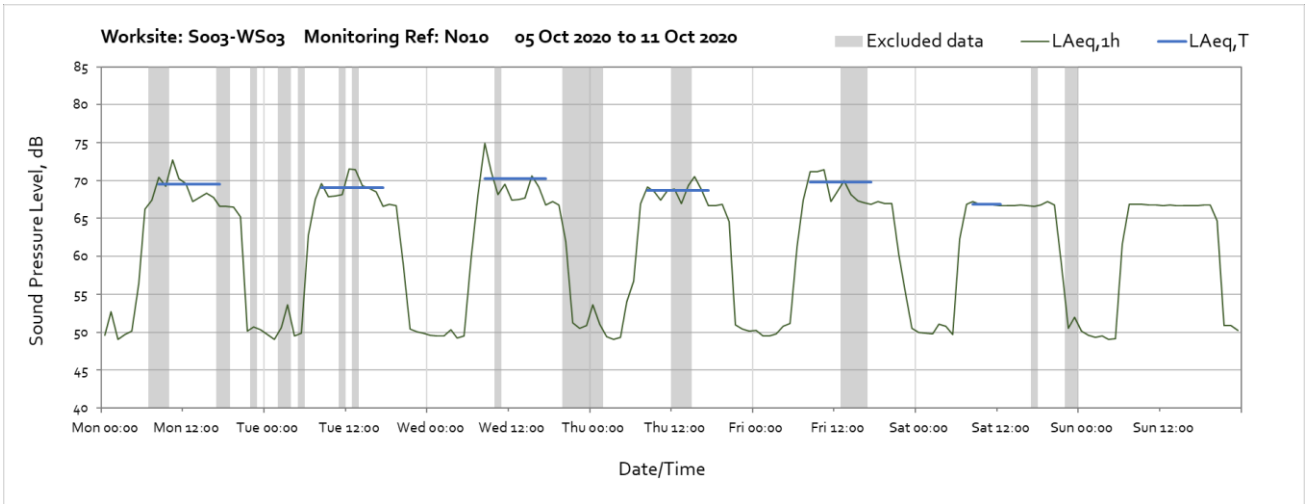
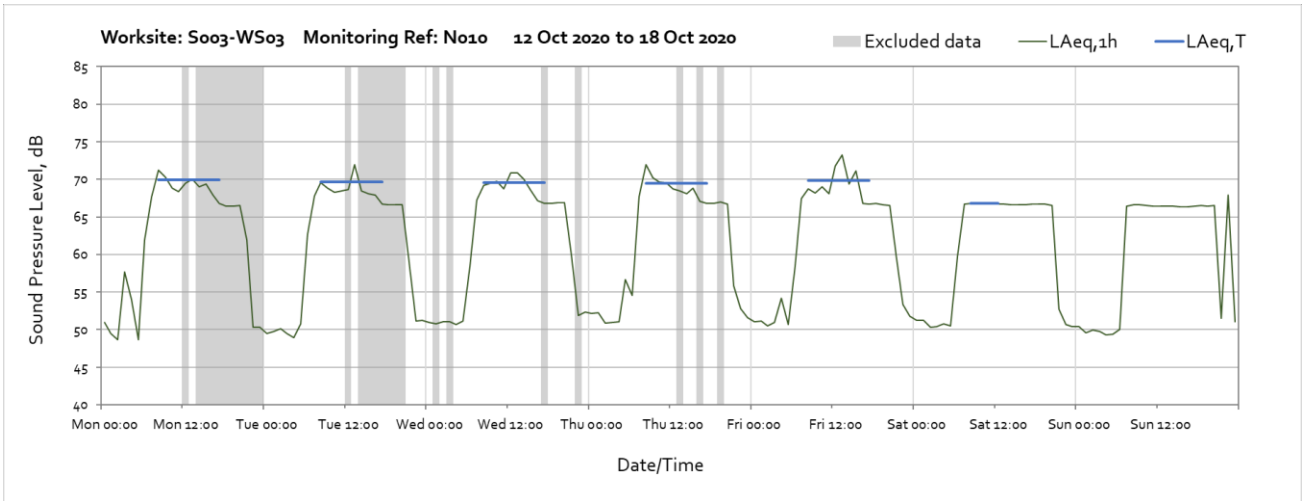
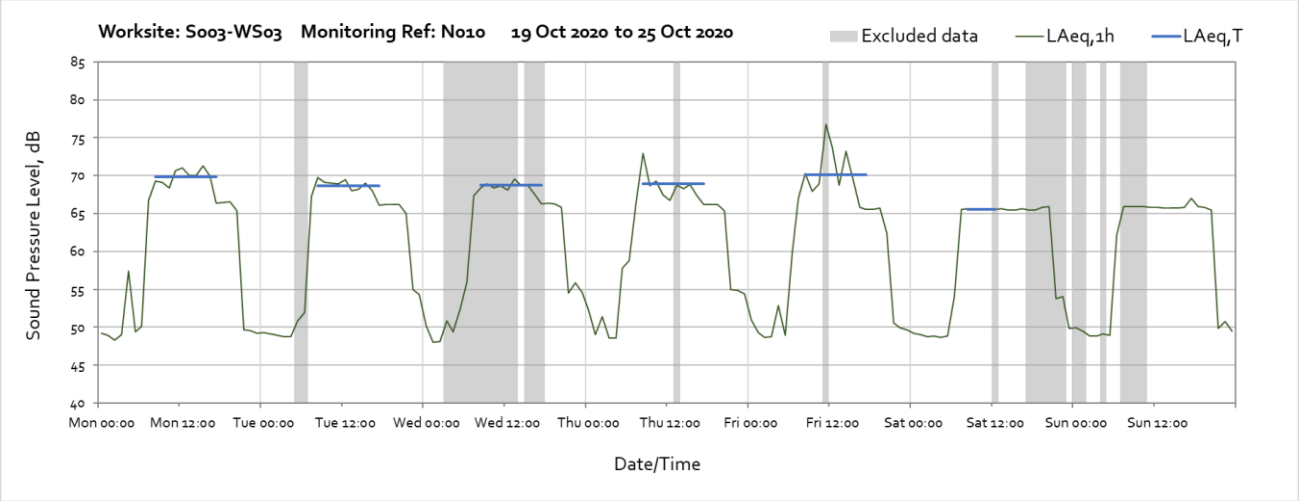
Date/Time

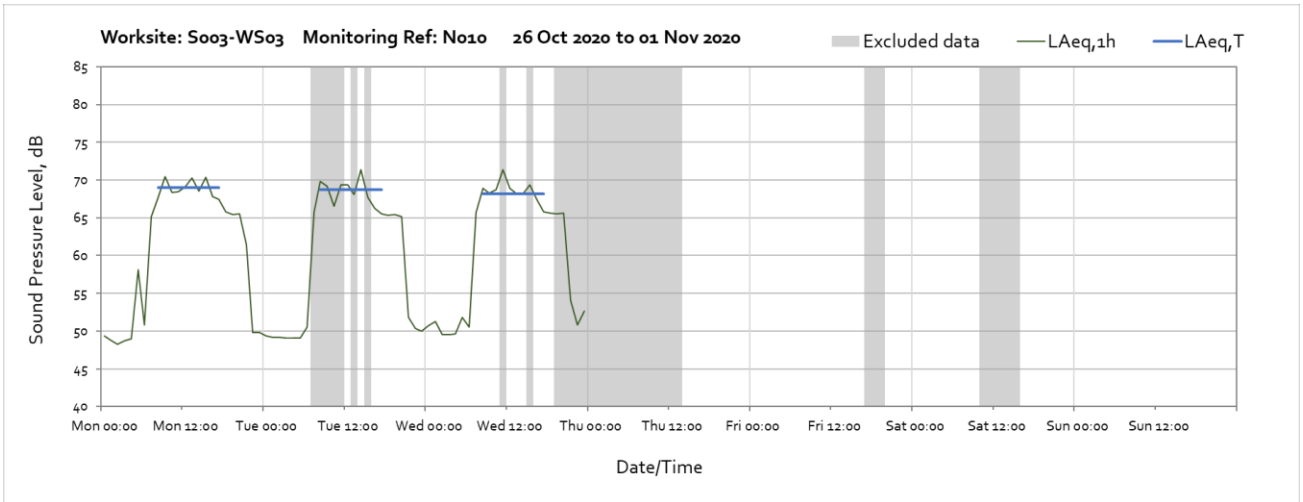
Worksite: S003-WS03 – Monitoring Ref: N010





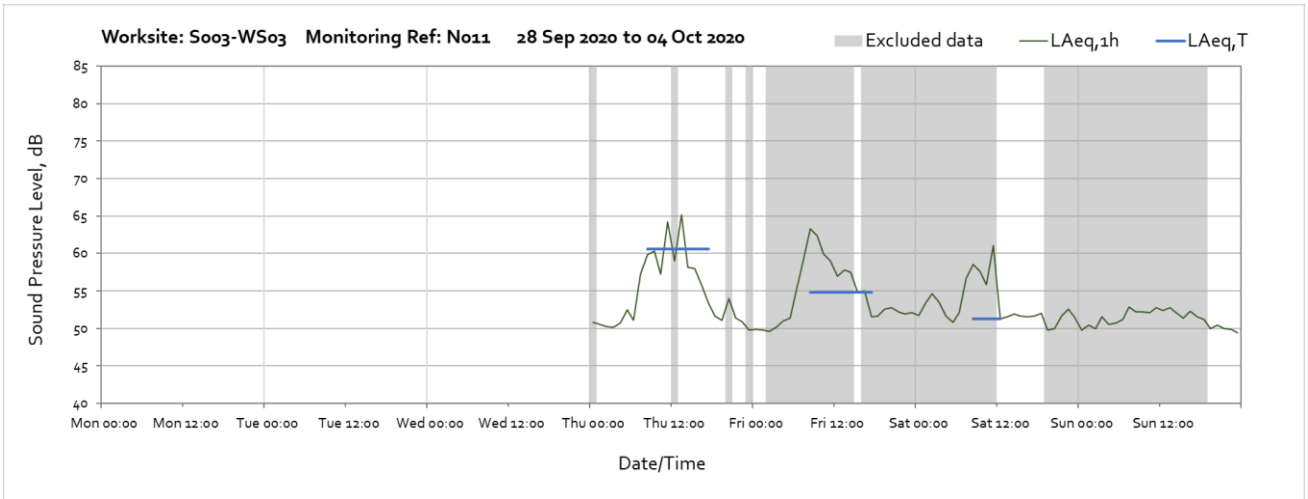


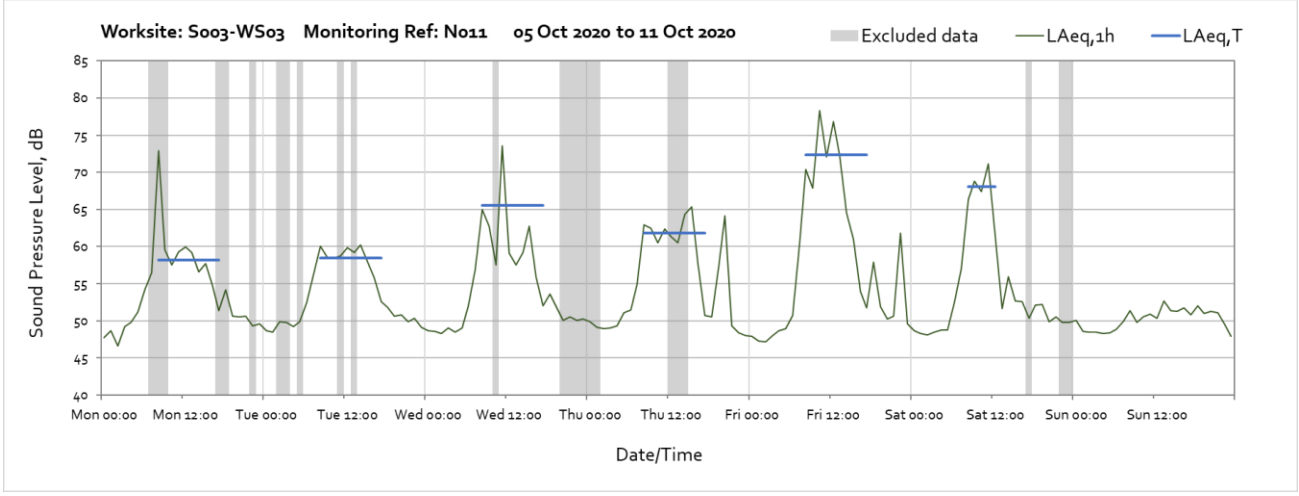




Note: Missing data from 00:00 on Thursday 29th October until the end of the month was due to an SD card error within the monitor.

Worksite: S003-WS03 – Monitoring Ref: N011




Worksite: S003-WS03 Monitoring Ref: N011 05 Oct 2020 to 11 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
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70
65
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45
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Mon 00:00
Mon 12:00
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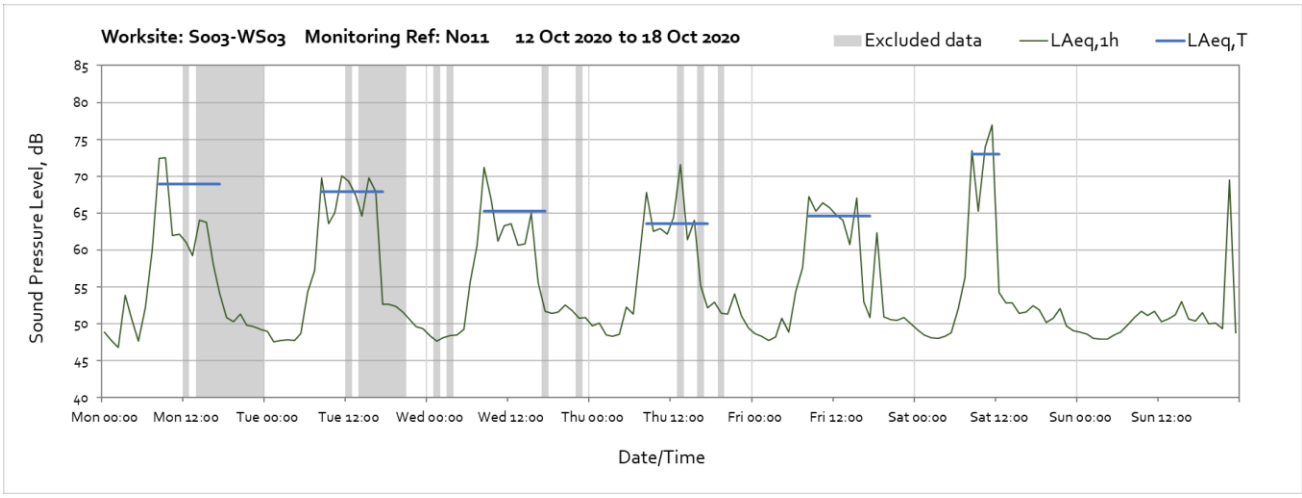
Date/Time


Worksite: S003-WS03 Monitoring Ref: N011 12 Oct 2020 to 18 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
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65
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Mon 00:00
Mon 12:00
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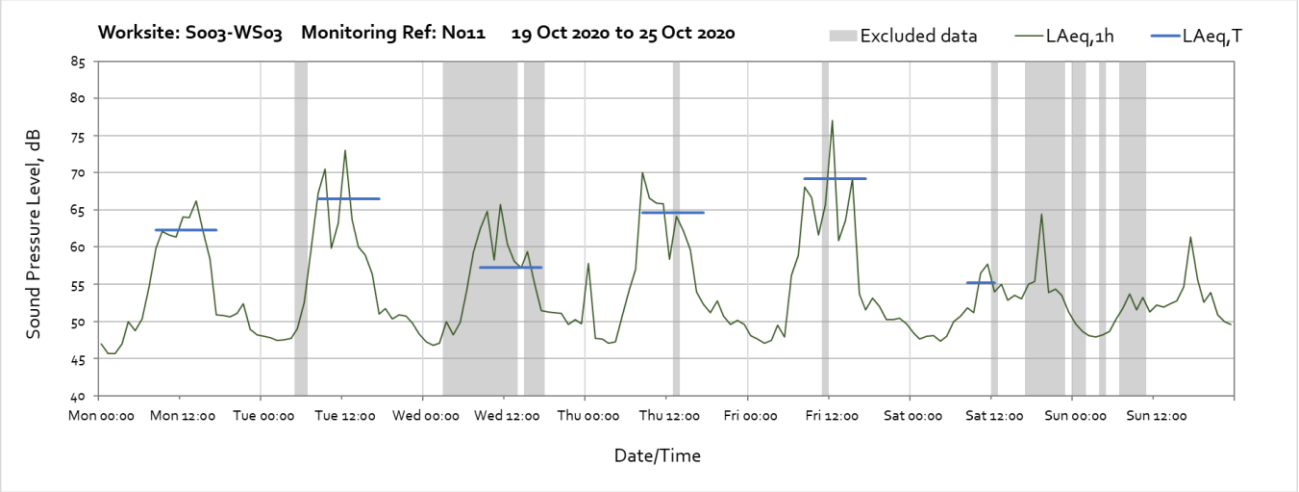
Date/Time


Worksite: S003-WS03 Monitoring Ref: N011 19 Oct 2020 to 25 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
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70
65
60
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Mon 00:00
Mon 12:00
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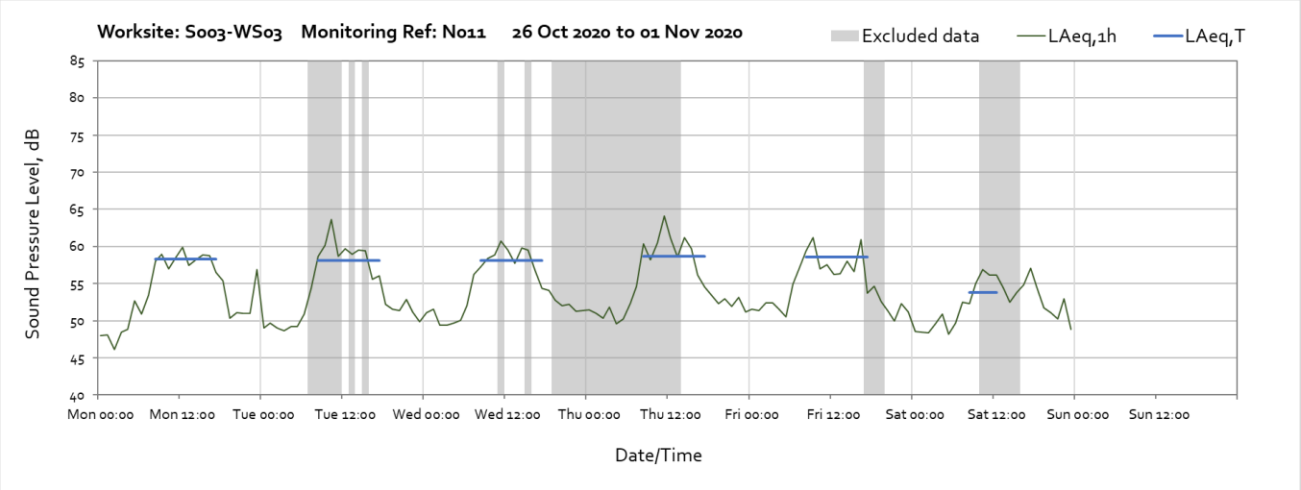
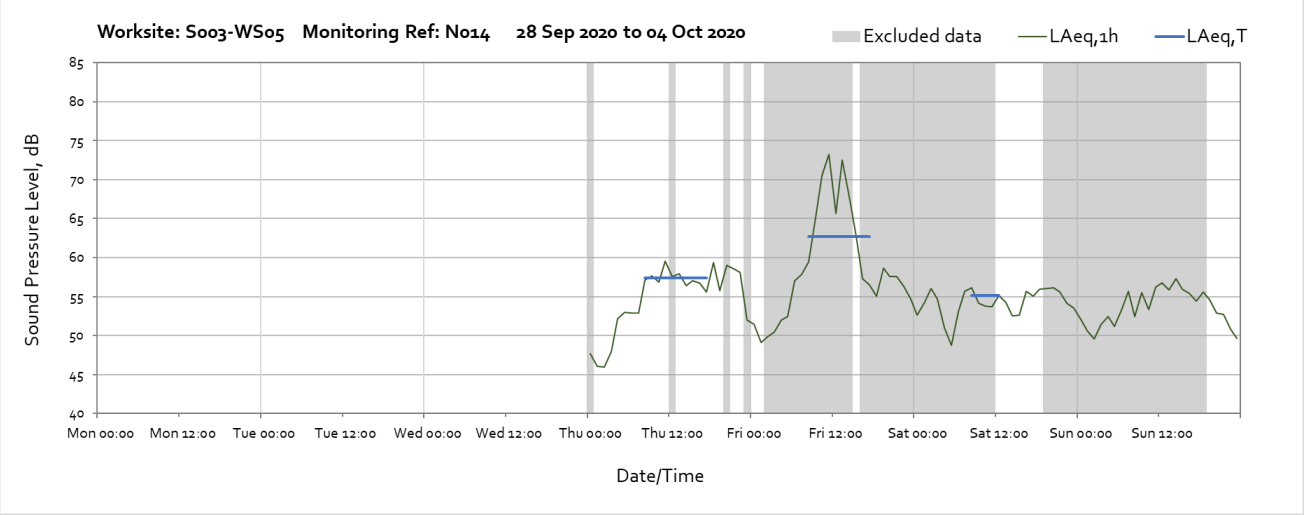
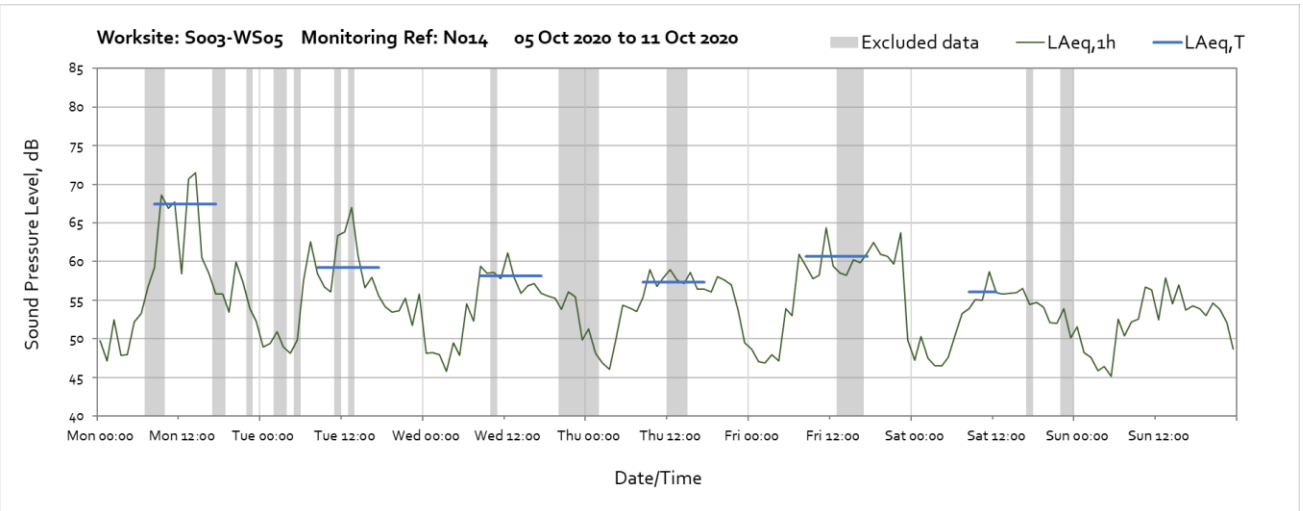
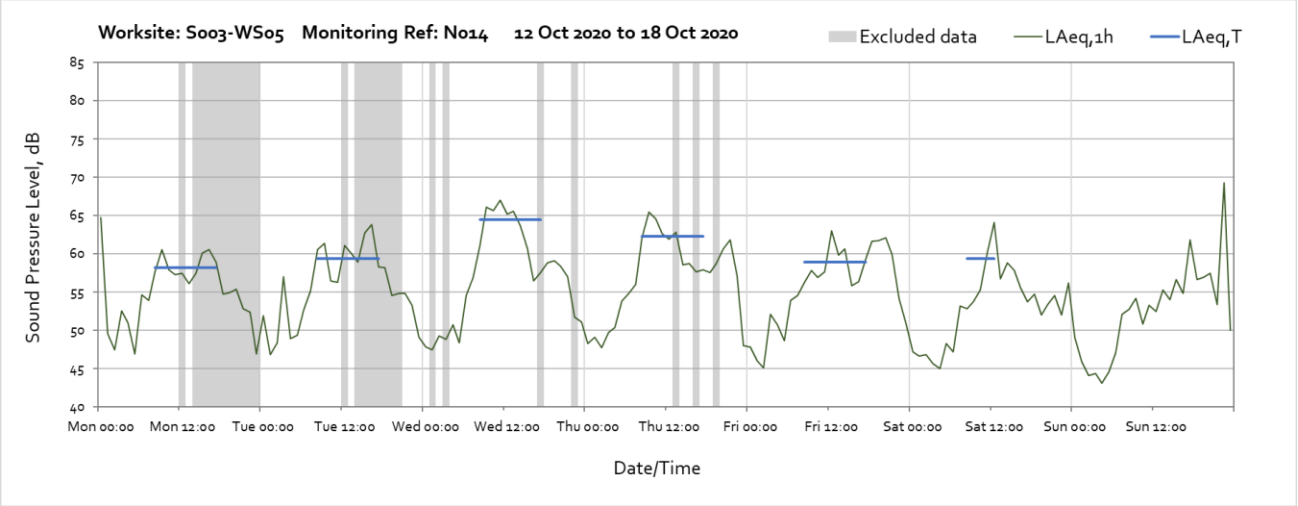
Date/Time



Worksite: S003-WS05 – Monitoring Ref: N014






Worksite: S003-WS05 Monitoring Ref: N014 12 Oct 2020 to 18 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
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60
55
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45
40
Mon 00:00
Mon 12:00
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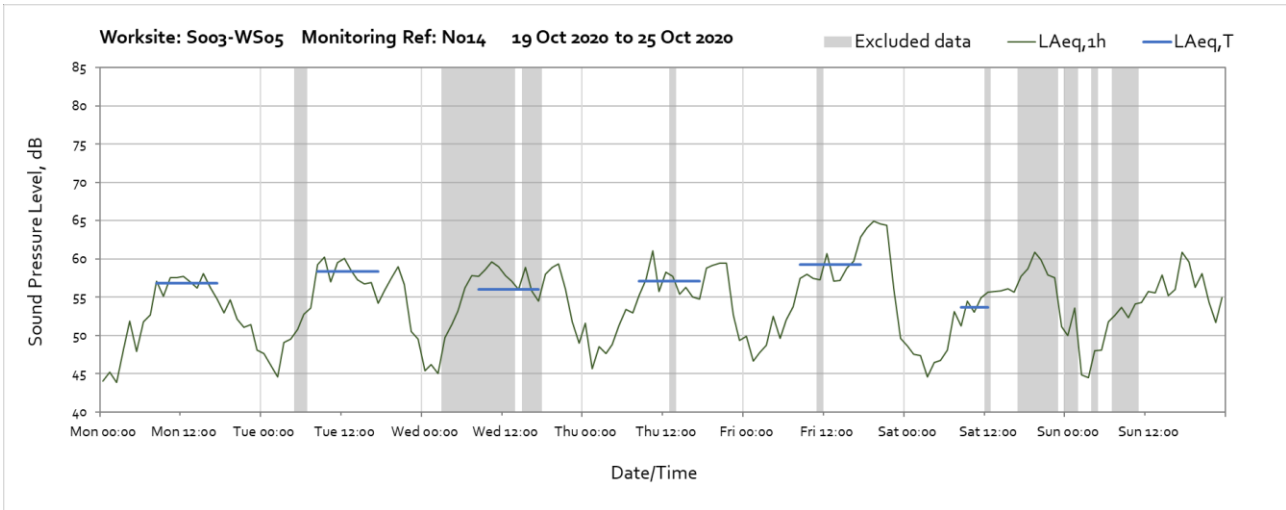
Date/Time


Worksite: S003-WS05 Monitoring Ref: N014 19 Oct 2020 to 25 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
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40
Mon 00:00
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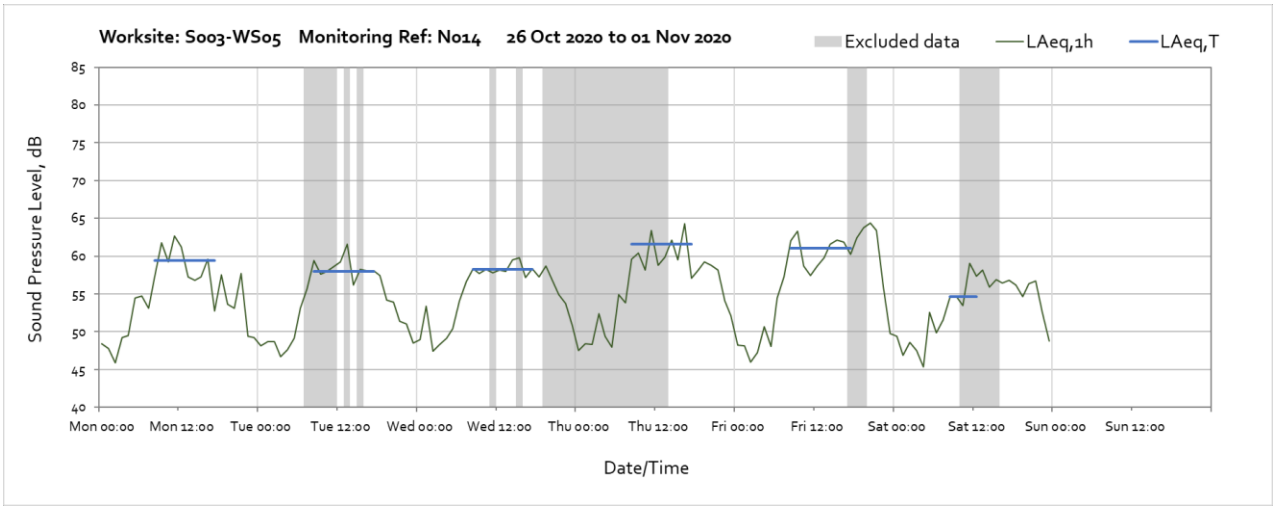
Date/Time


Worksite: S003-WS05 Monitoring Ref: N014 26 Oct 2020 to 01 Nov 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
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Mon 00:00
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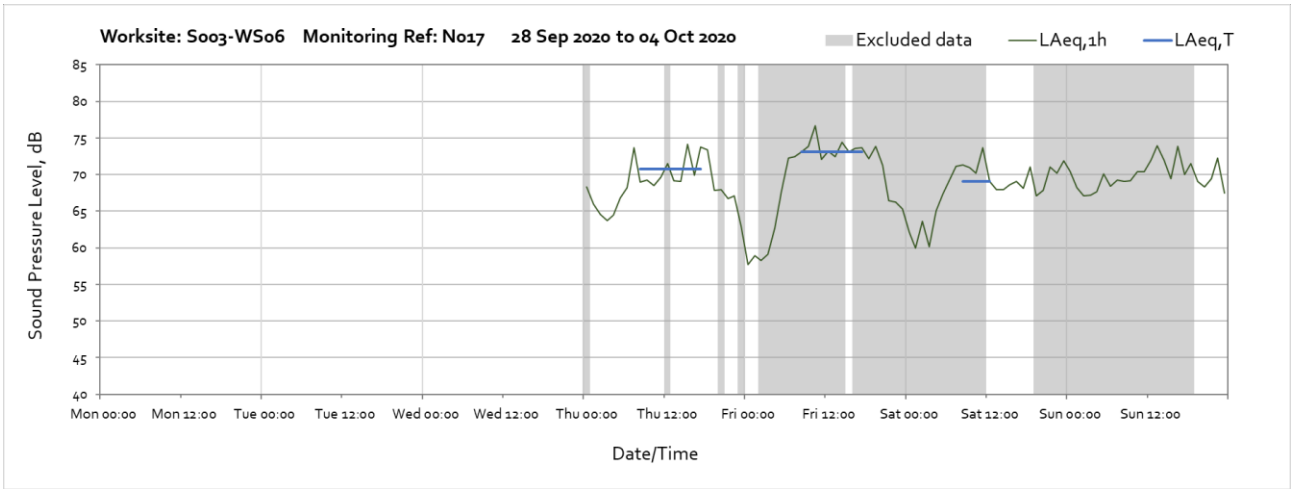
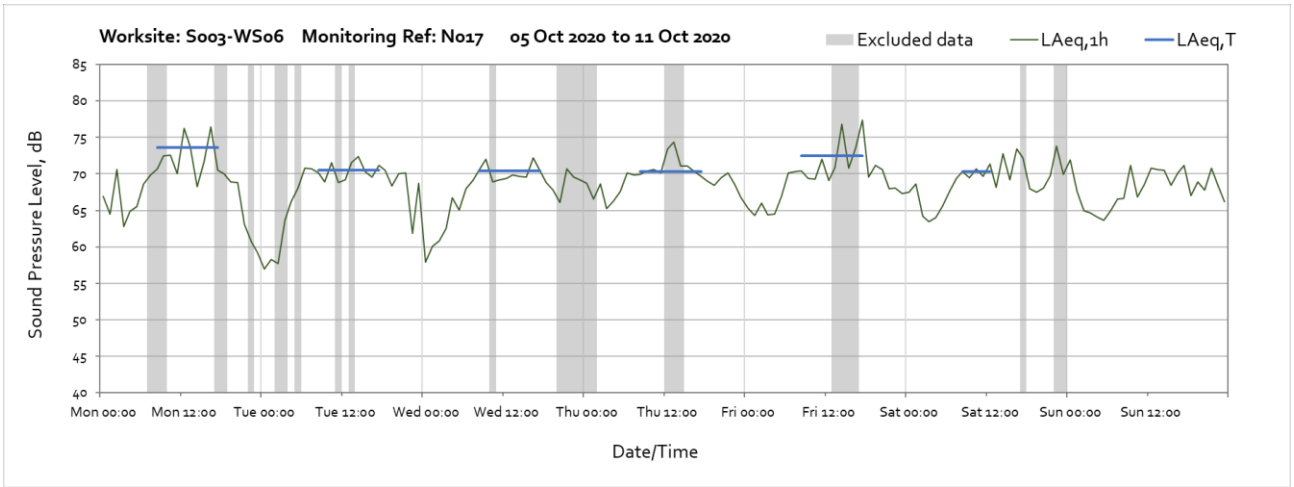
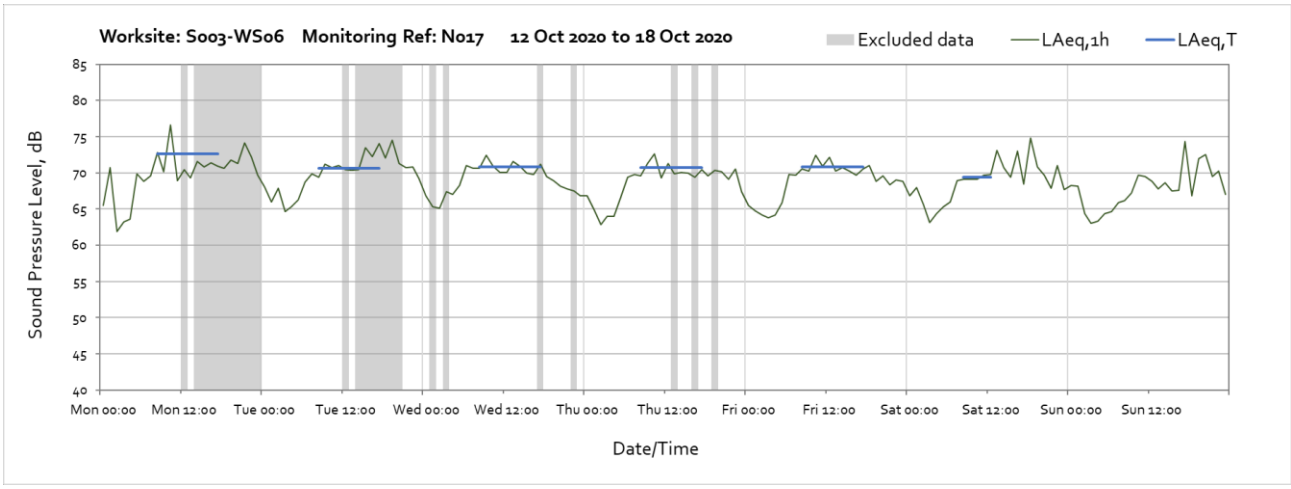
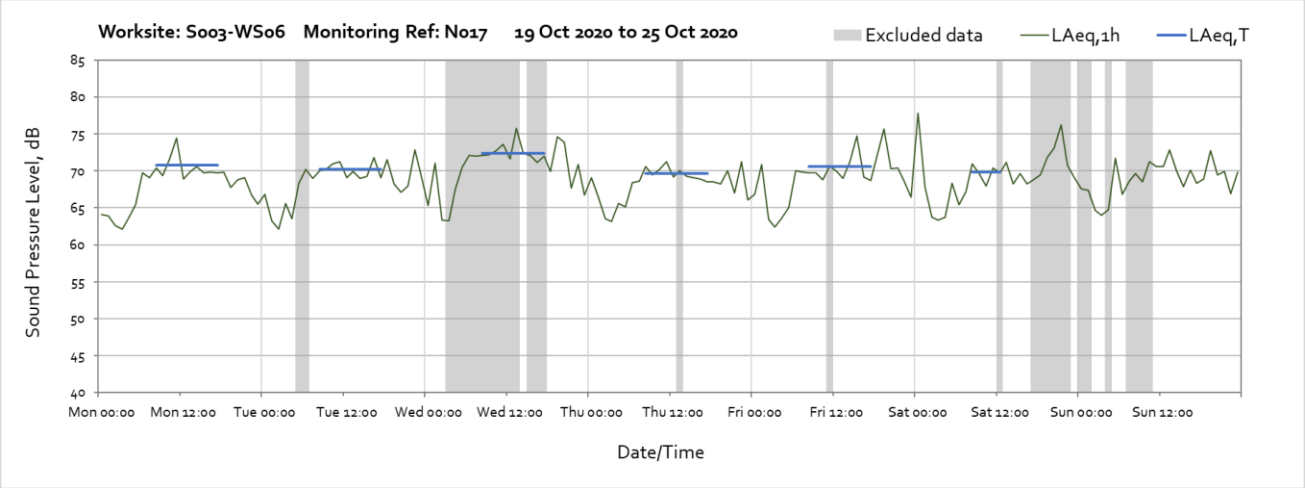
Date/Time

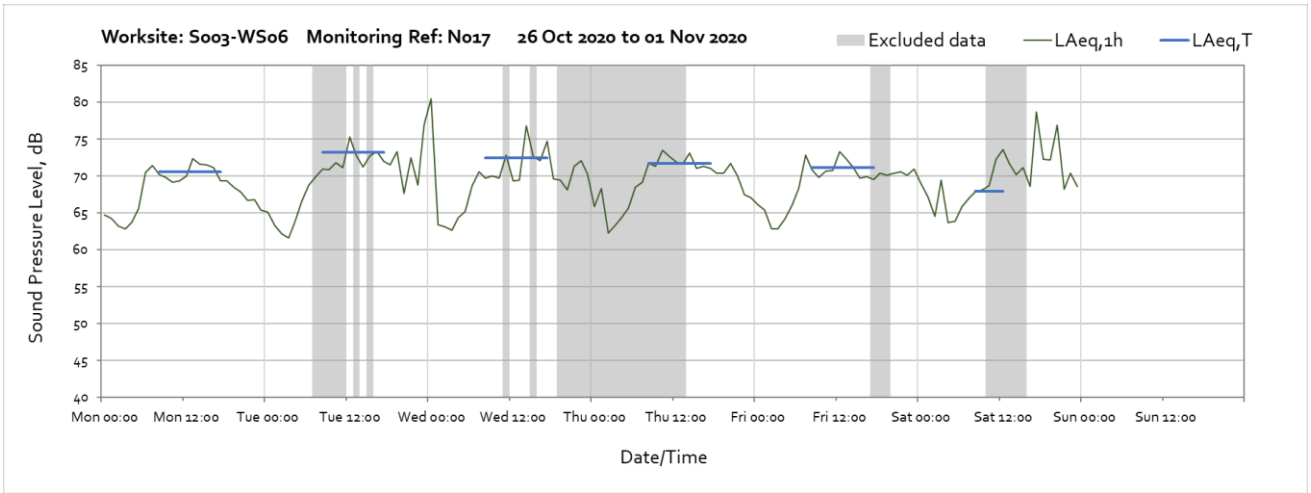
Worksite: S003-WS06 – Monitoring Ref: N017



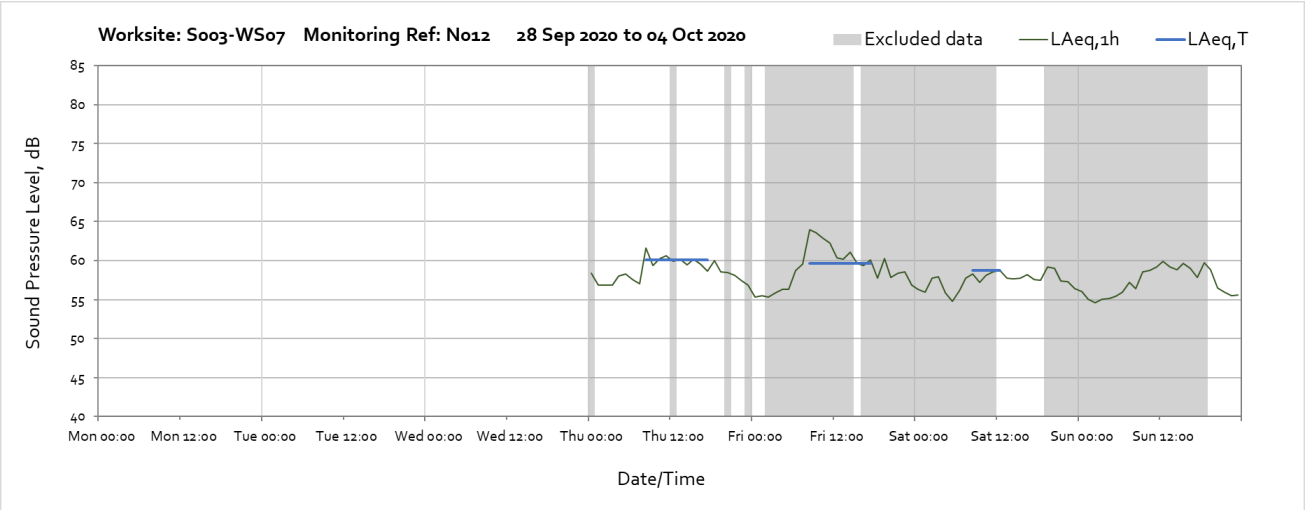


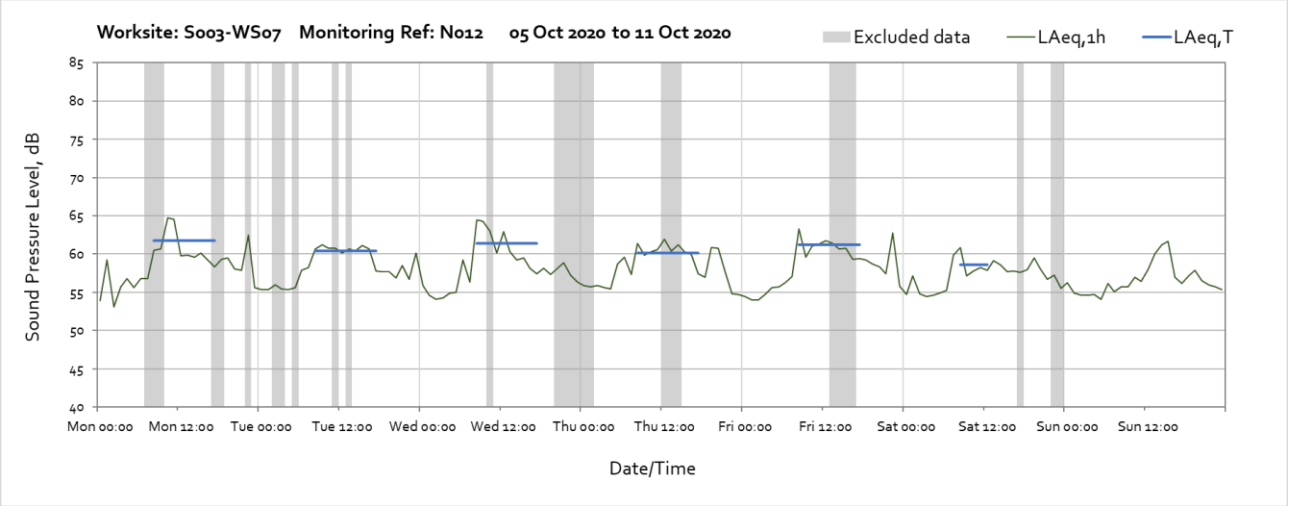






Worksite: S003-WS07 – Monitoring Ref: N012




Worksite: S003-WS07 Monitoring Ref: N012 05 Oct 2020 to 11 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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Mon 00:00
Mon 12:00
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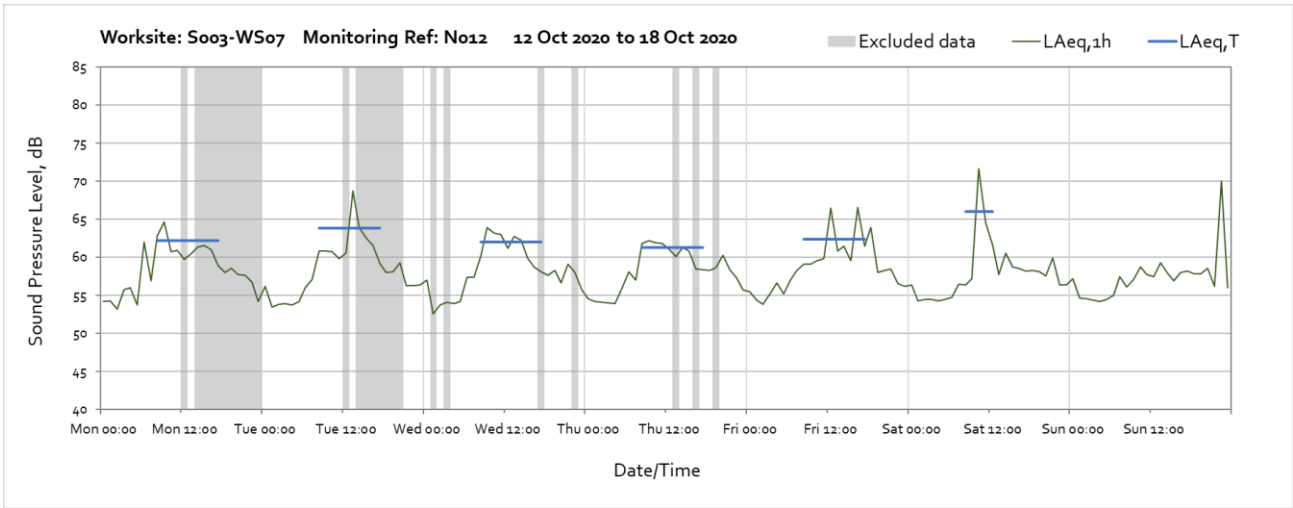
Sun 12:00
Date/Time


Worksite: S003-WS07 Monitoring Ref: N012 12 Oct 2020 to 18 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
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Mon 00:00
Mon 12:00
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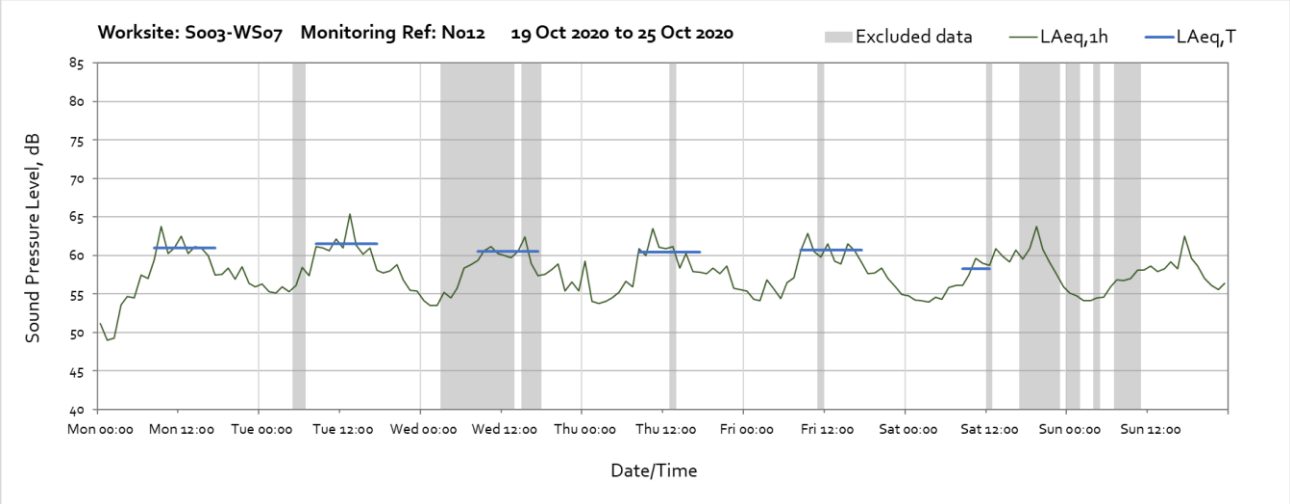
Date/Time


Worksite: S003-WS07 Monitoring Ref: N012 19 Oct 2020 to 25 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
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Mon 00:00
Mon 12:00
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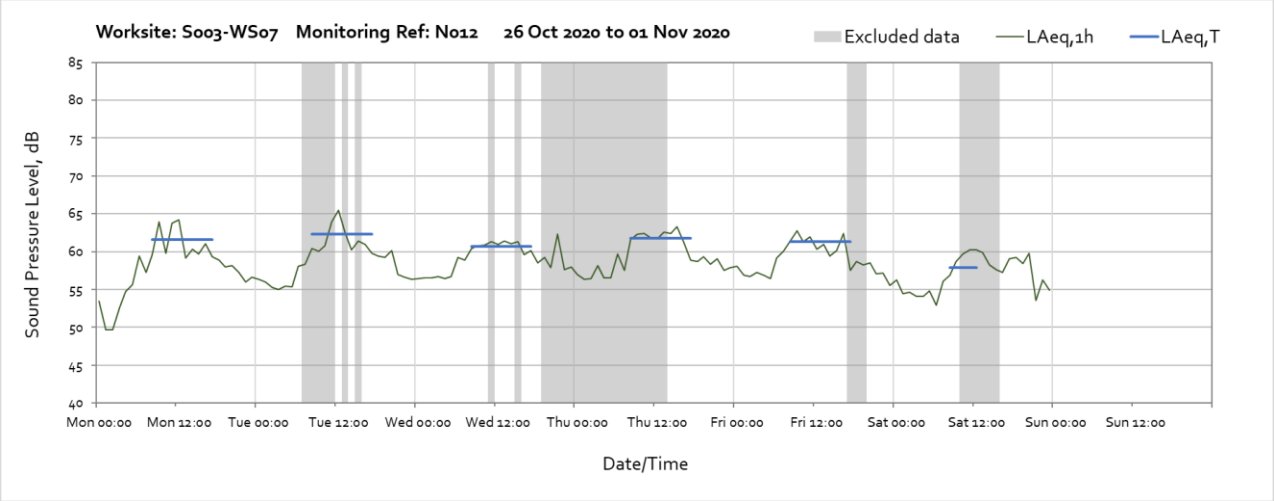
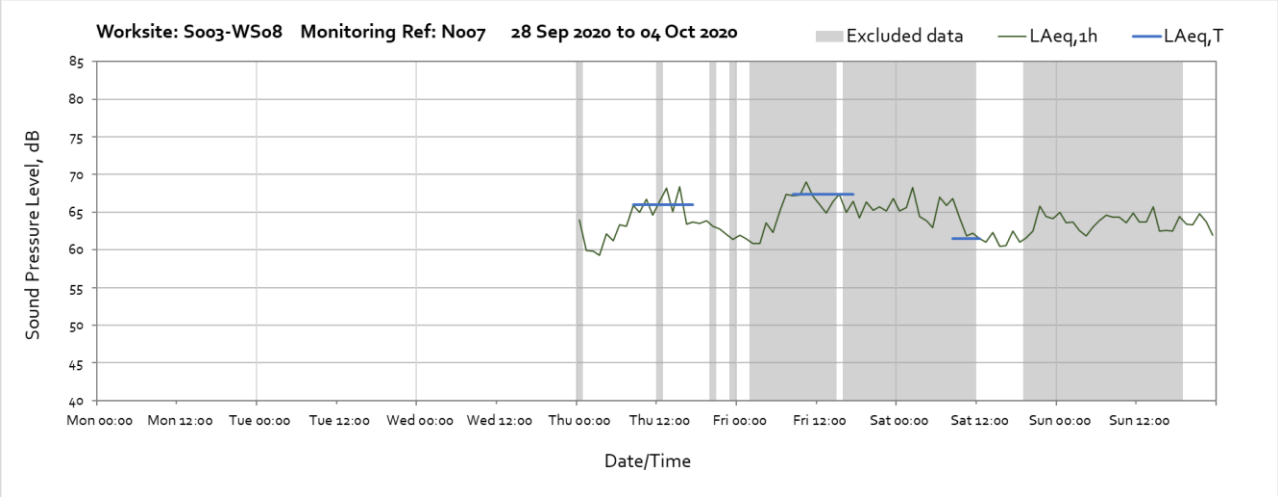
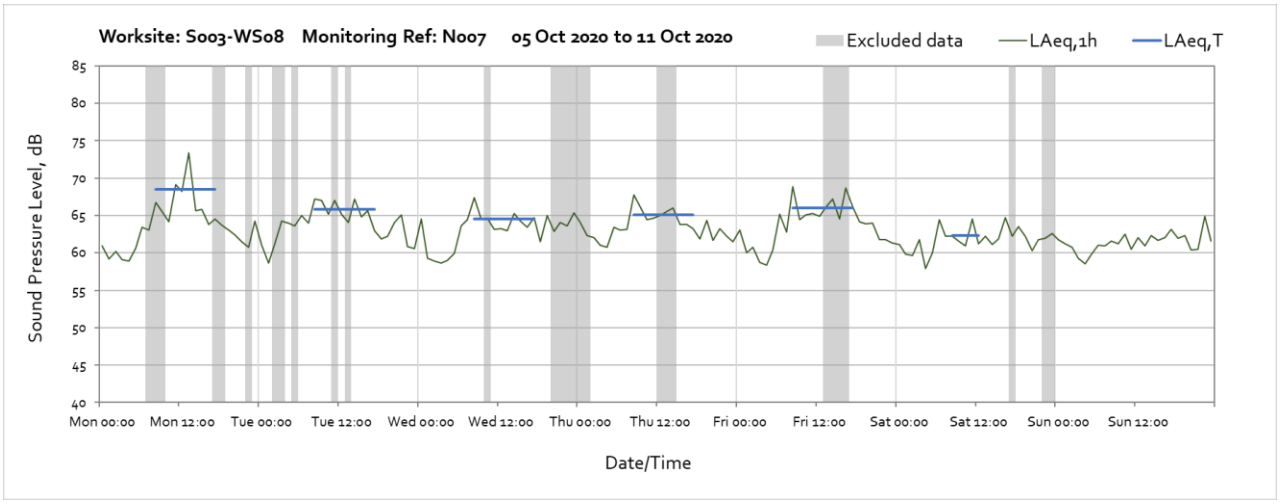
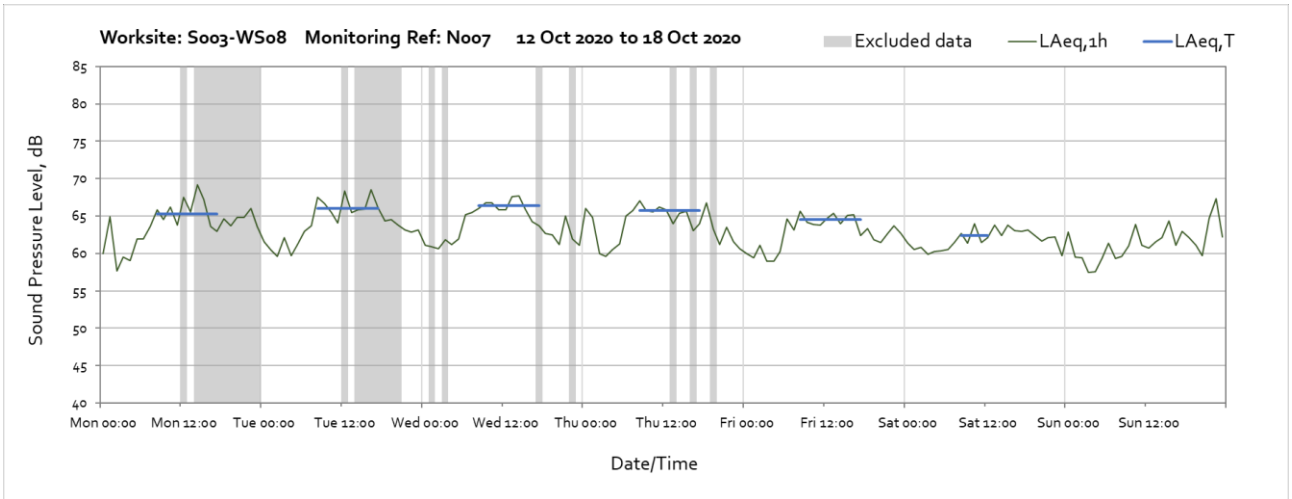
Date/Time



Worksite: S003-WS08 – Monitoring Ref: N007






Worksite: S003-WS08 Monitoring Ref: N007 12 Oct 2020 to 18 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
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75
70
65
60
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Mon 00:00
Mon 12:00
Tue 00:00
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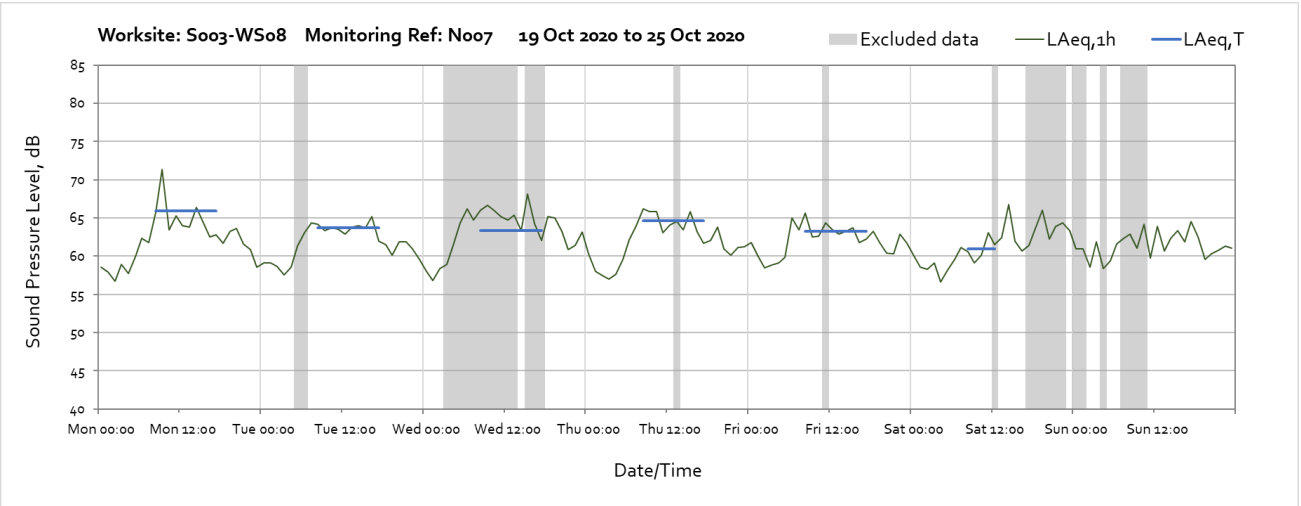
Sun 12:00
Date/Time


Worksite: S003-WS08 Monitoring Ref: N007 19 Oct 2020 to 25 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
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Mon 00:00
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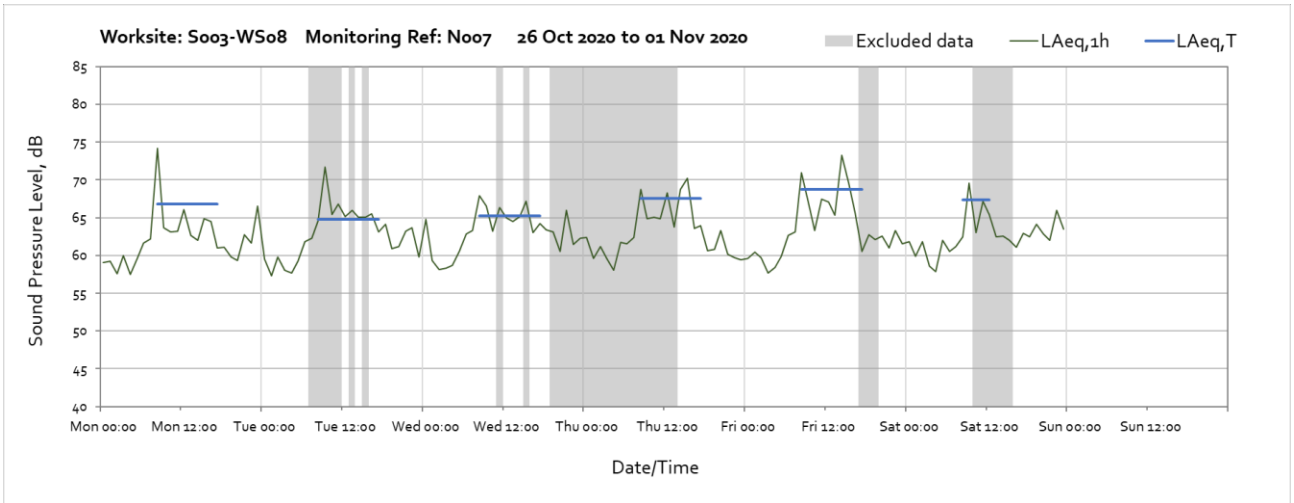
Date/Time


Worksite: S003-WS08 Monitoring Ref: N007 26 Oct 2020 to 01 Nov 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
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Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
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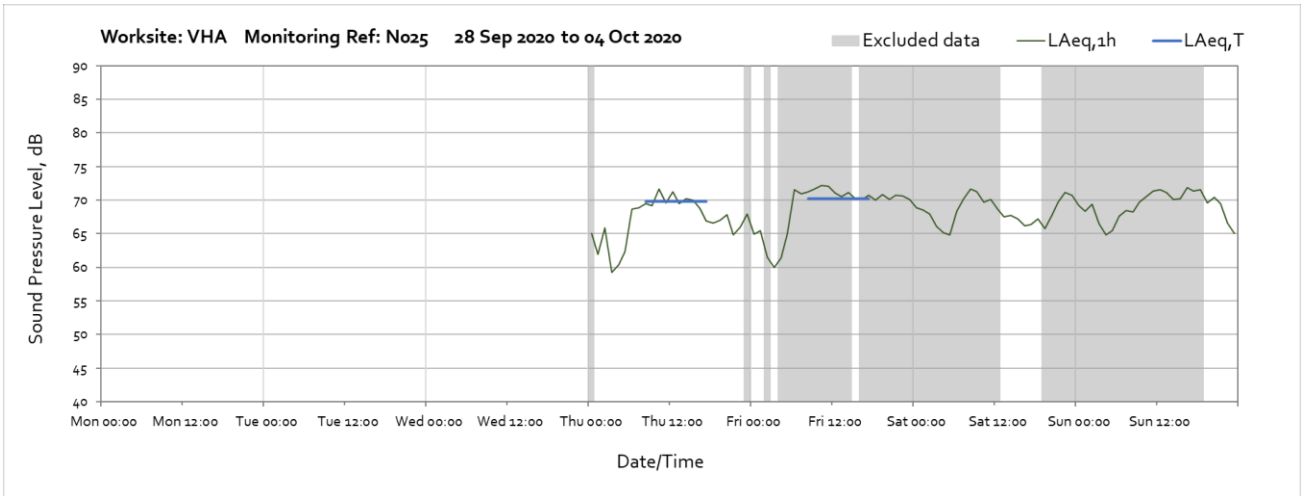
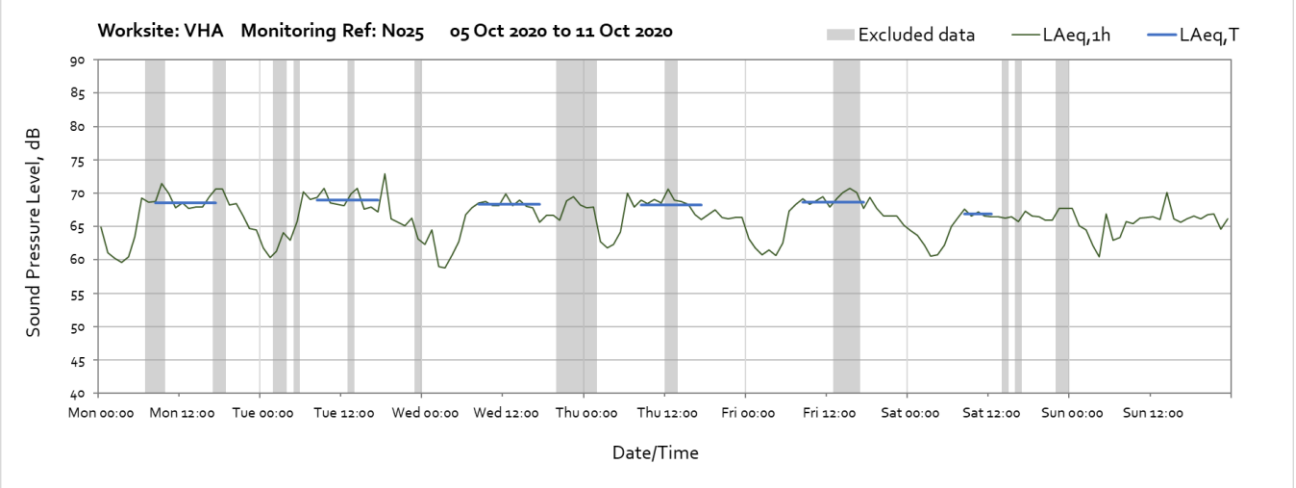
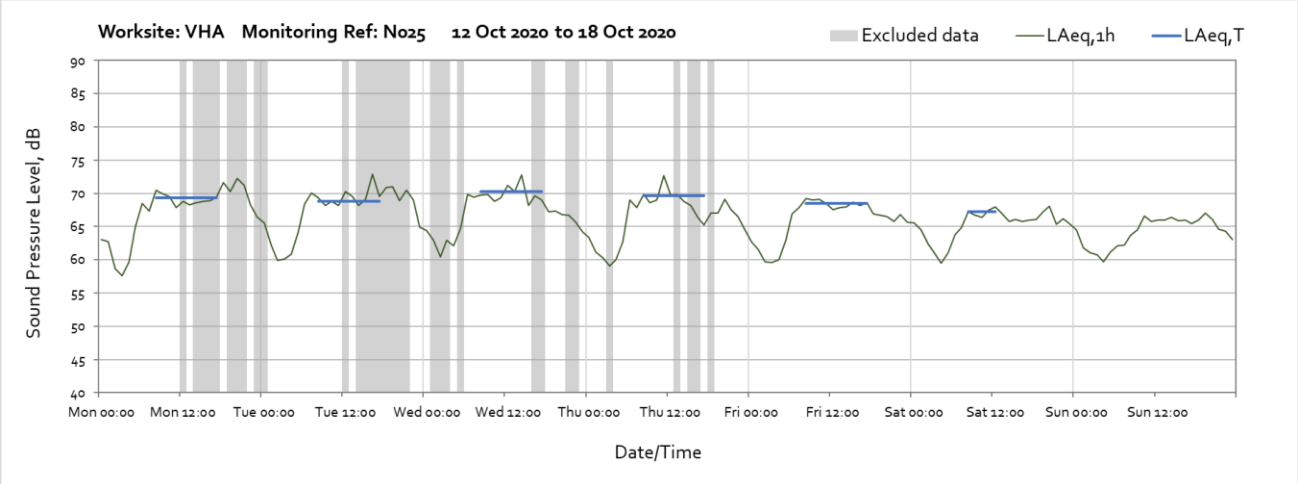
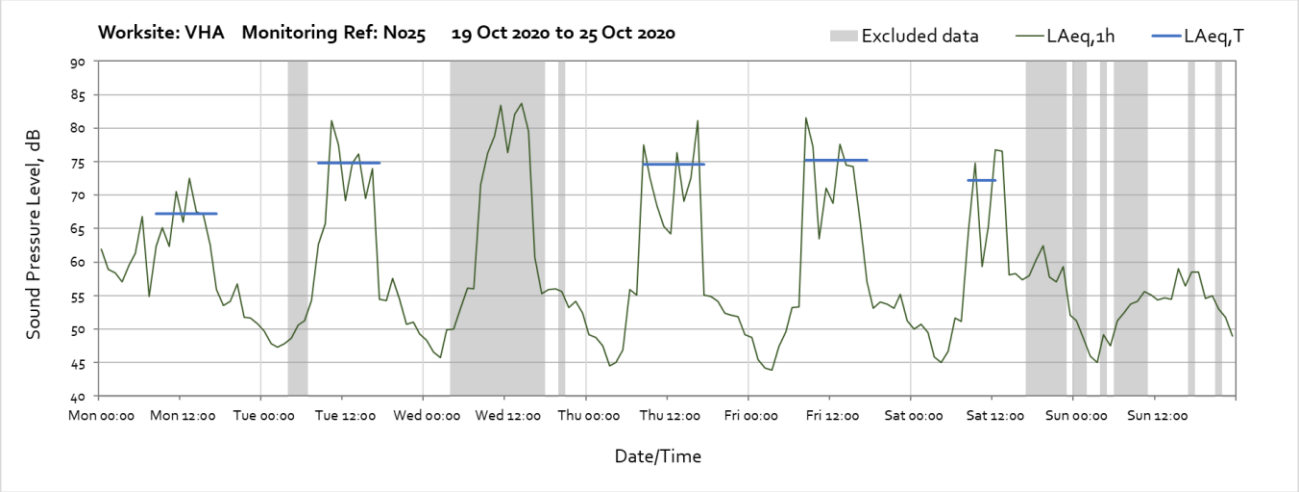
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

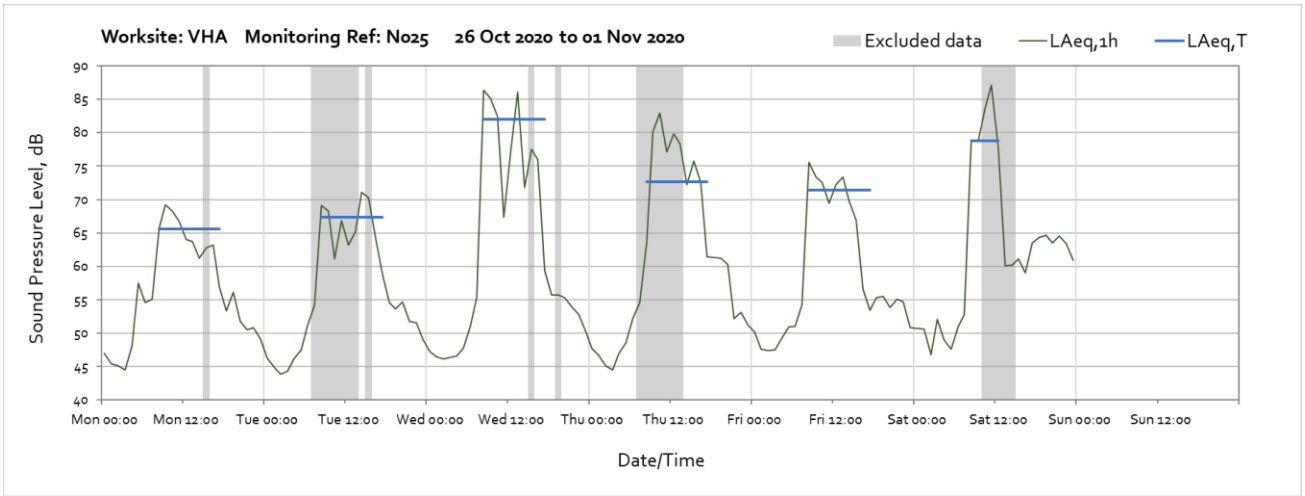
Vehicle Holding Area (VHA) – Monitoring Ref: N025



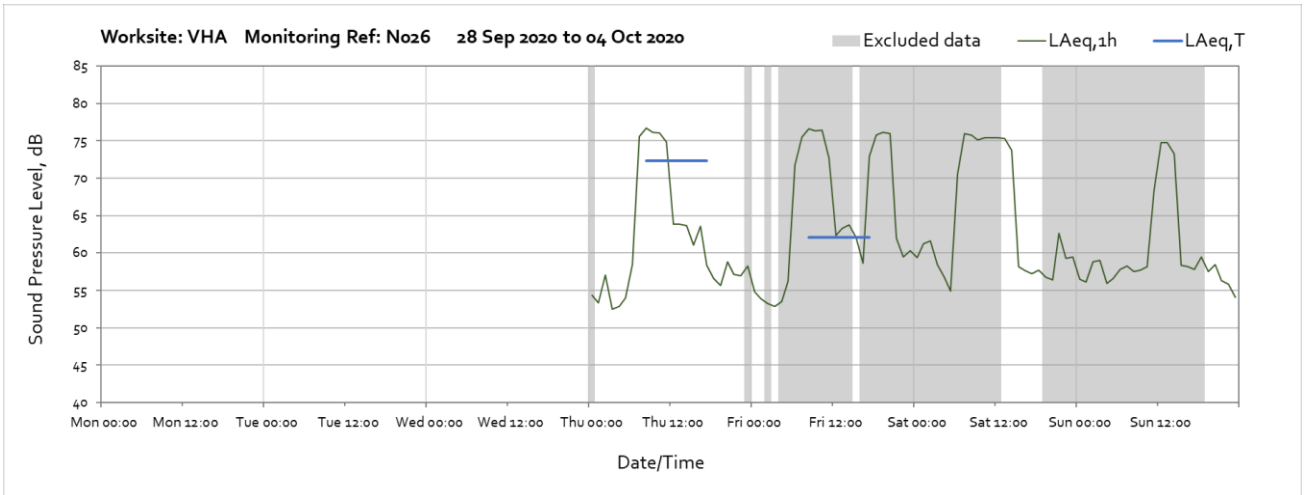


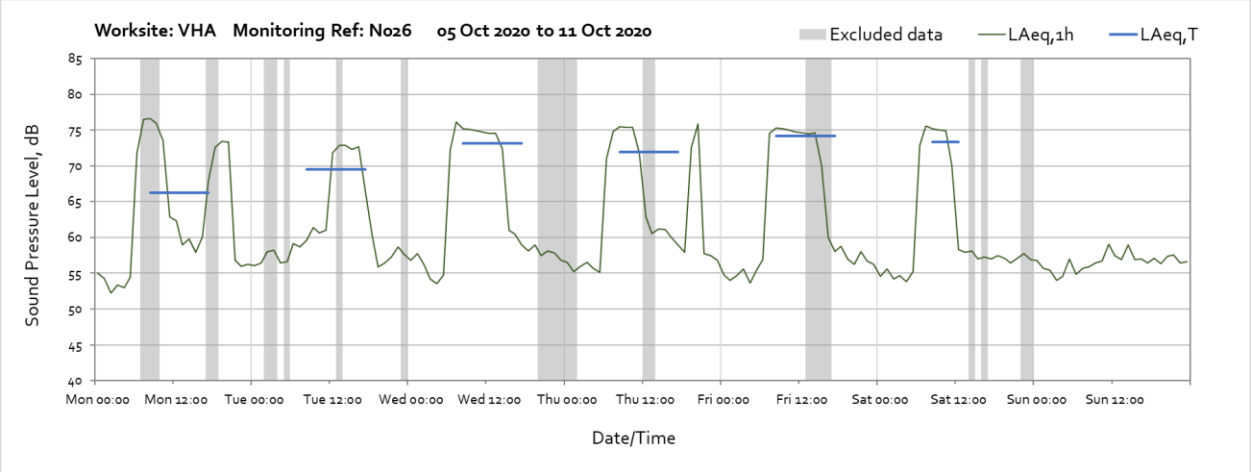


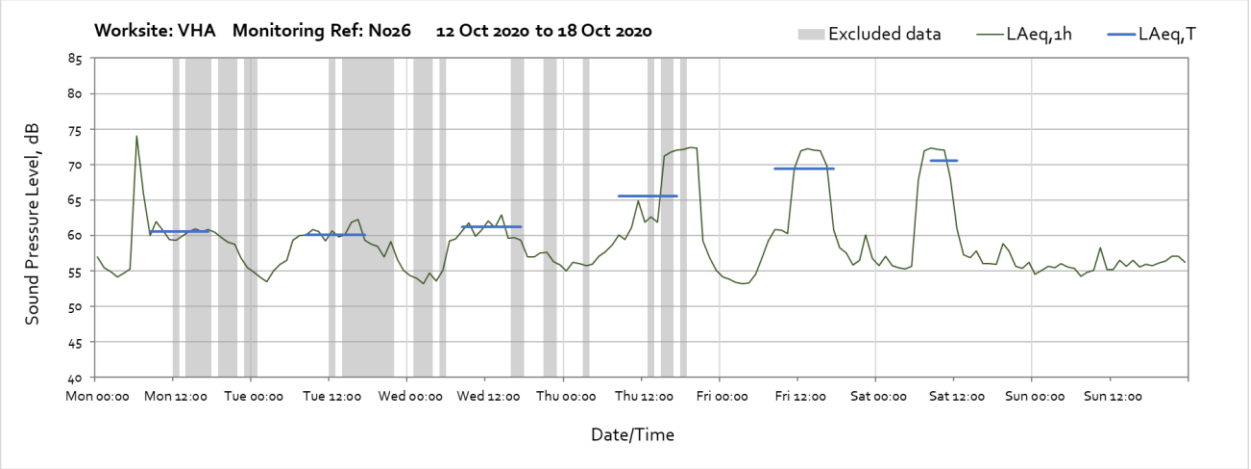




Vehicle Holding Area (VHA) – Monitoring Ref: N026




Worksite: VHA Monitoring Ref: No26 05 Oct 2020 to 11 Oct 2020
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
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: VHA Monitoring Ref: No26 12 Oct 2020 to 18 Oct 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
80
75
70
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55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
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Fri 00:00
Fri 12:00
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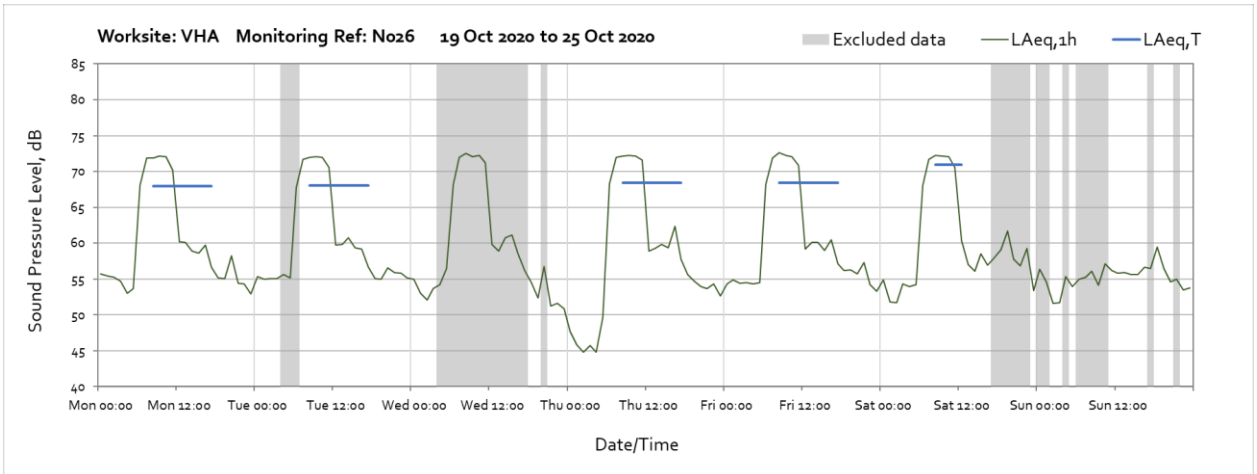
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: VHA Monitoring Ref: No26 19 Oct 2020 to 25 Oct 2020
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
Tue 12:00
Wed 00:00
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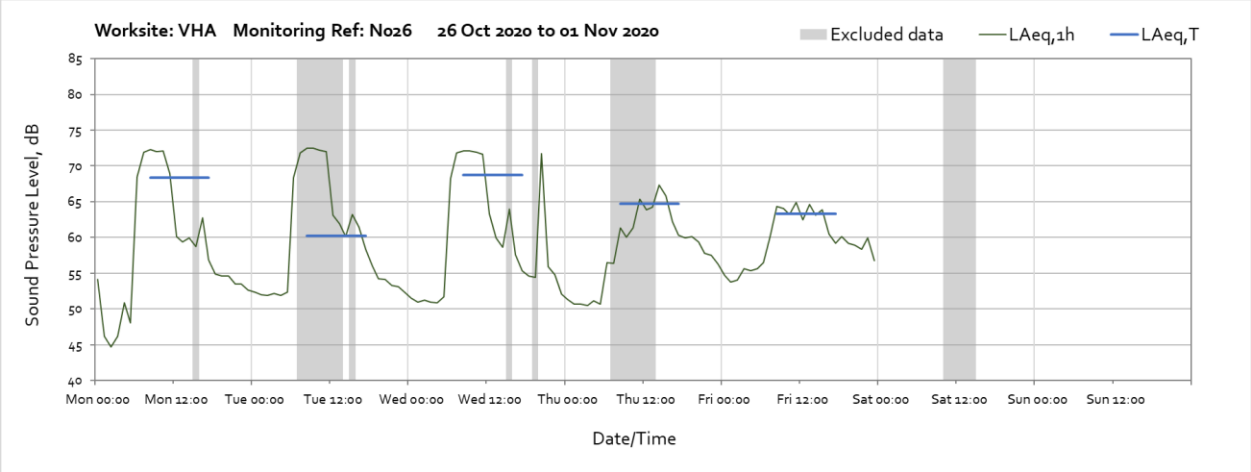
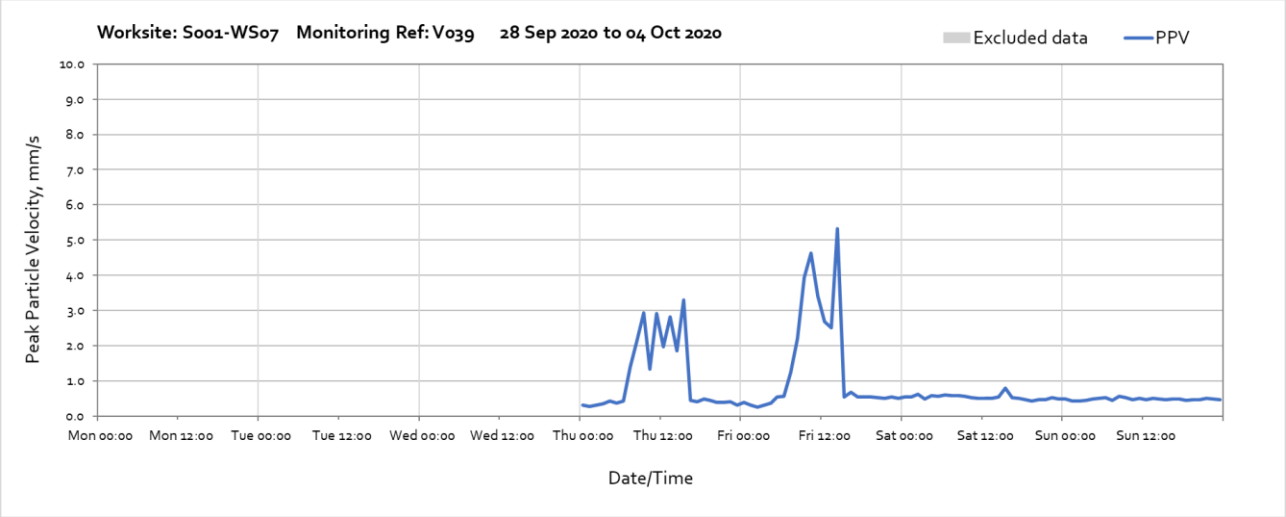
Date/Time

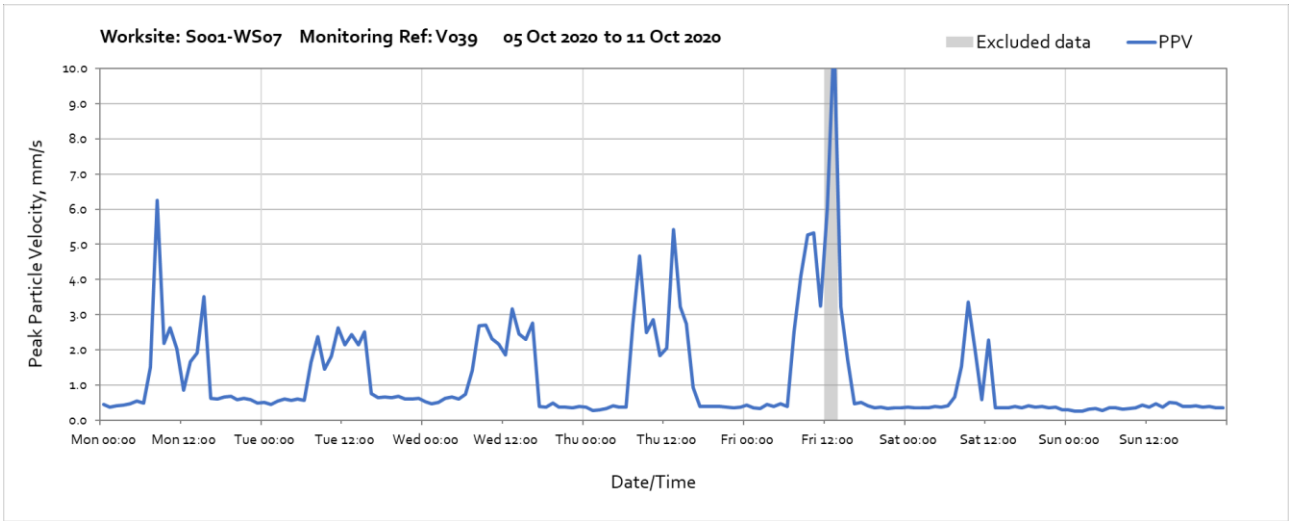

Worksite: VHA Monitoring Ref: No26 26 Oct 2020 to 01 Nov 2020
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
80
75
70
65
60
55
50
45
40
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

Vibration

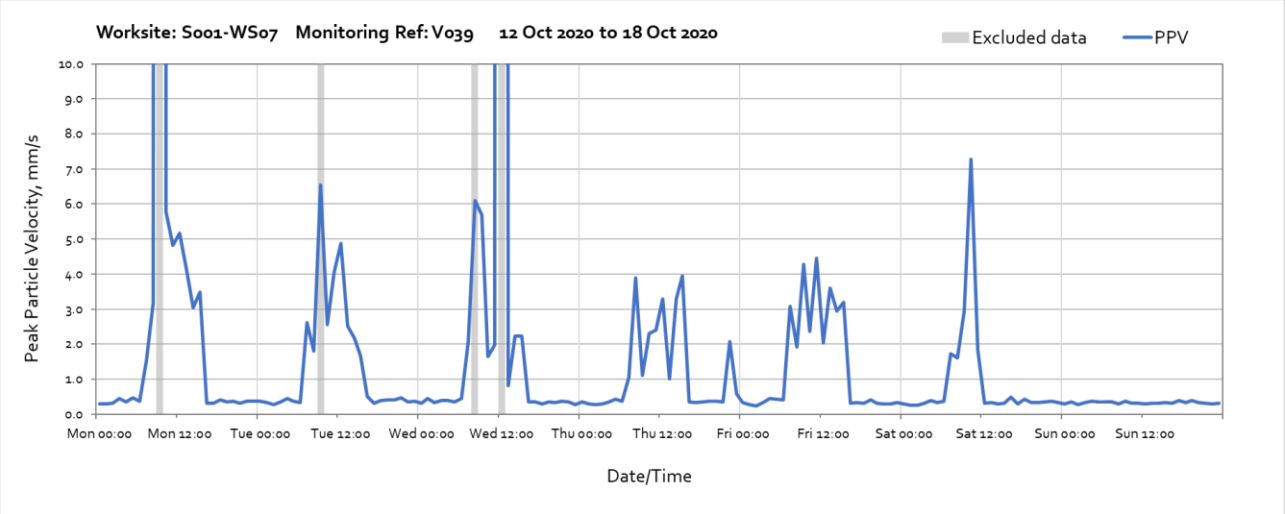
The following graphs show the hourly measured peak particle velocity PPV recorded during the monitoring period. The graphs show the resultant PPV due to vibration components on three orthogonal axis x, y and z. Where high values of PPV were caused by local interference with the vibration monitor, which 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: S001-WS07 – Monitoring Ref: V039

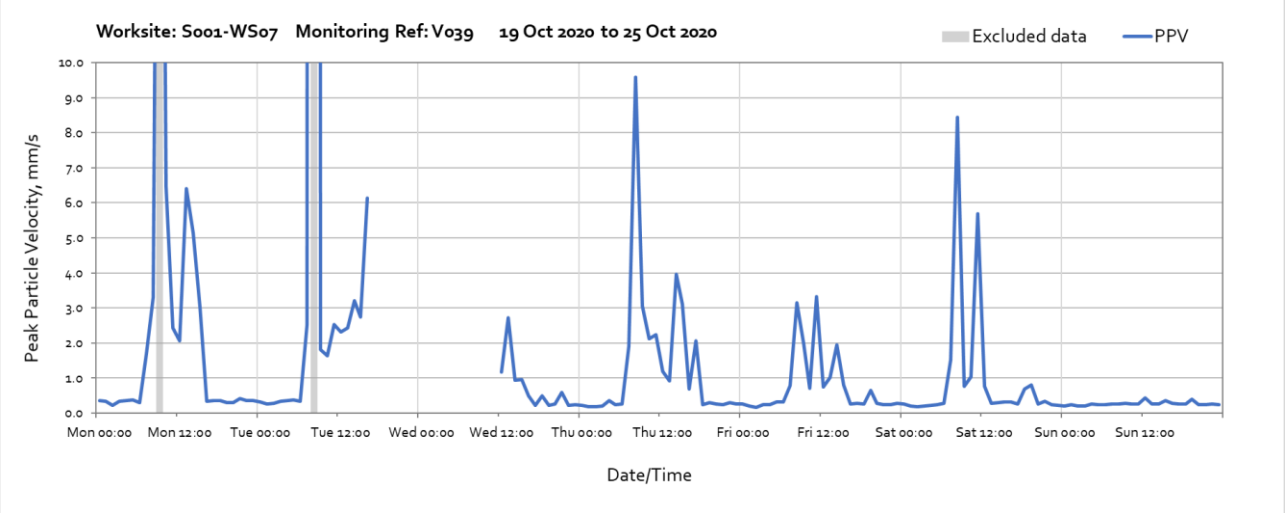




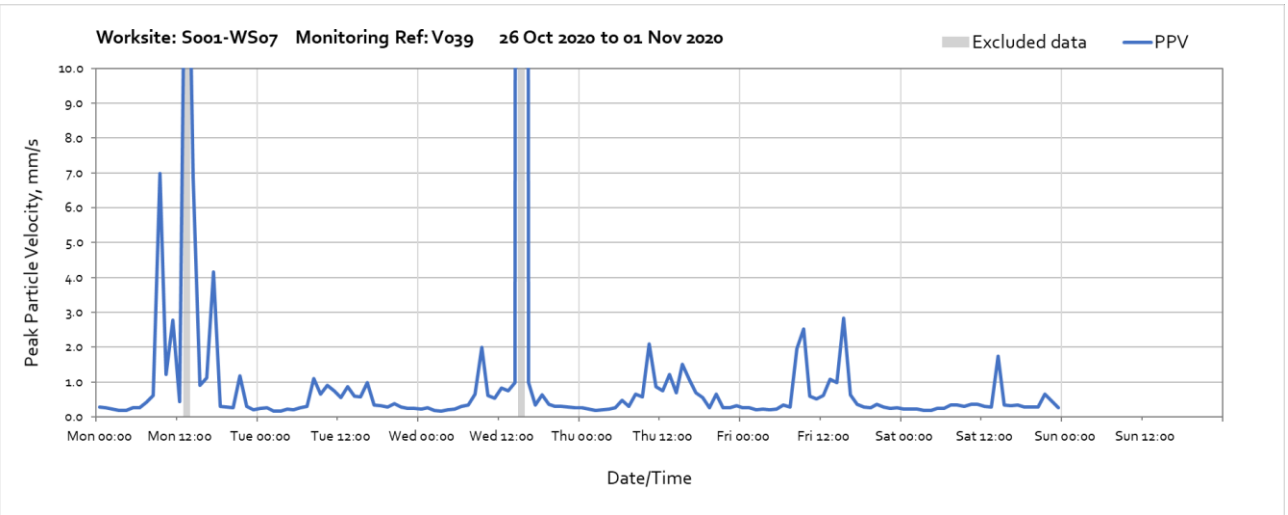
Note: High vibration levels measured between 12:00 and 14:00 on Friday 9th of October were due to local disturbance of the vibration monitor and are not representative of HS2 vibration levels.



Note: High vibration levels measured throughout the week were due to local disturbance of the vibration monitor and are not representative of HS2 vibration levels.

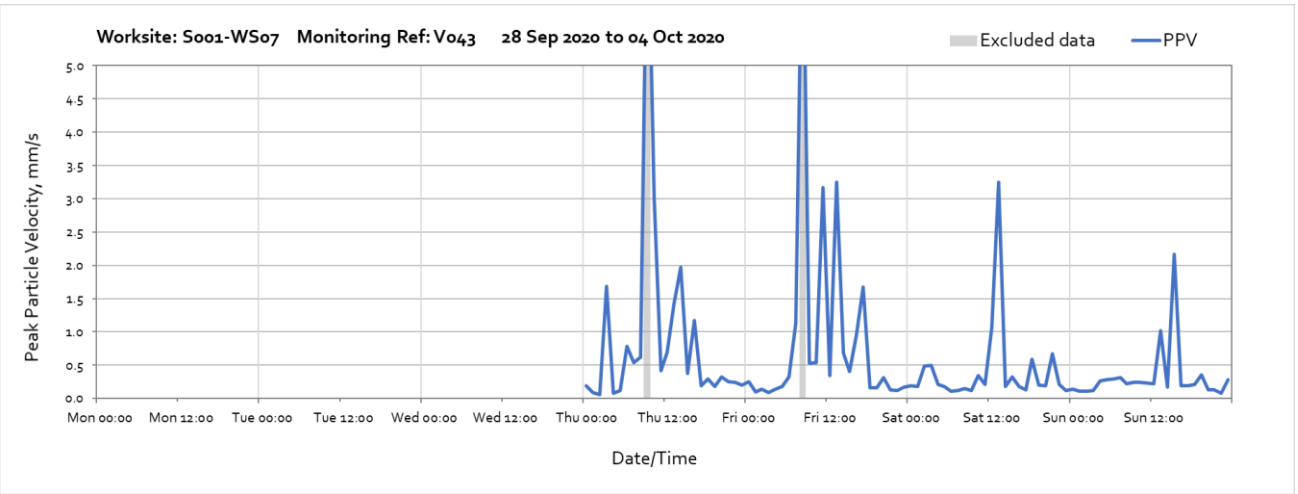


Note: High vibration levels measured throughout the week were due to local disturbance of the vibration monitor and are not representative of HS2 vibration levels. Missing data between 17:00 on Tuesday 21st of October and 12:00 on Wednesday 22nd of October were due to loss of power at the monitor.

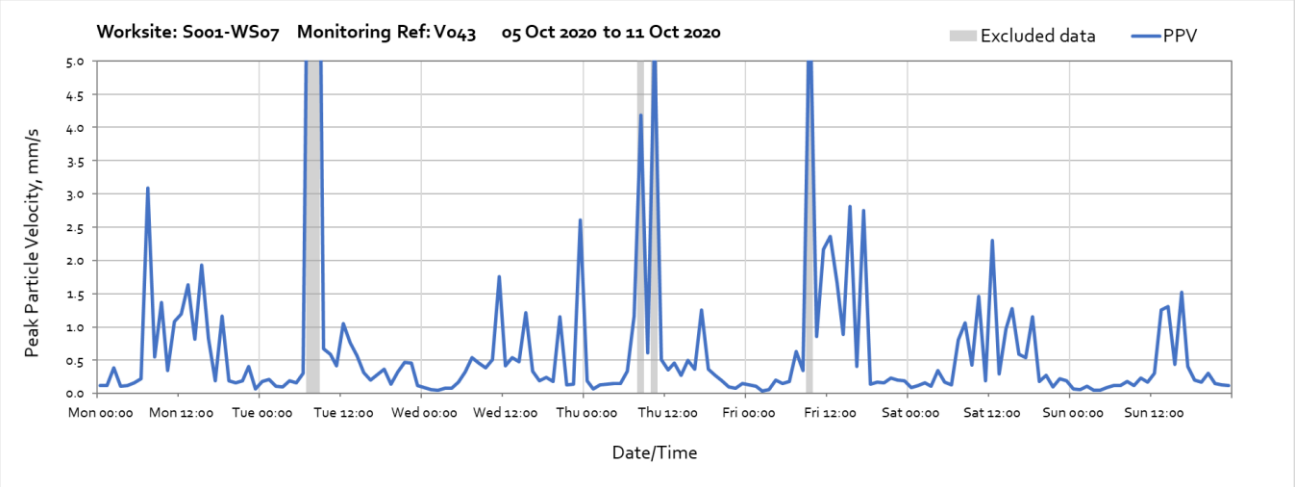


Note: High vibration levels measured throughout the week were due to local disturbance of the vibration monitor and are not representative of HS2 vibration levels.

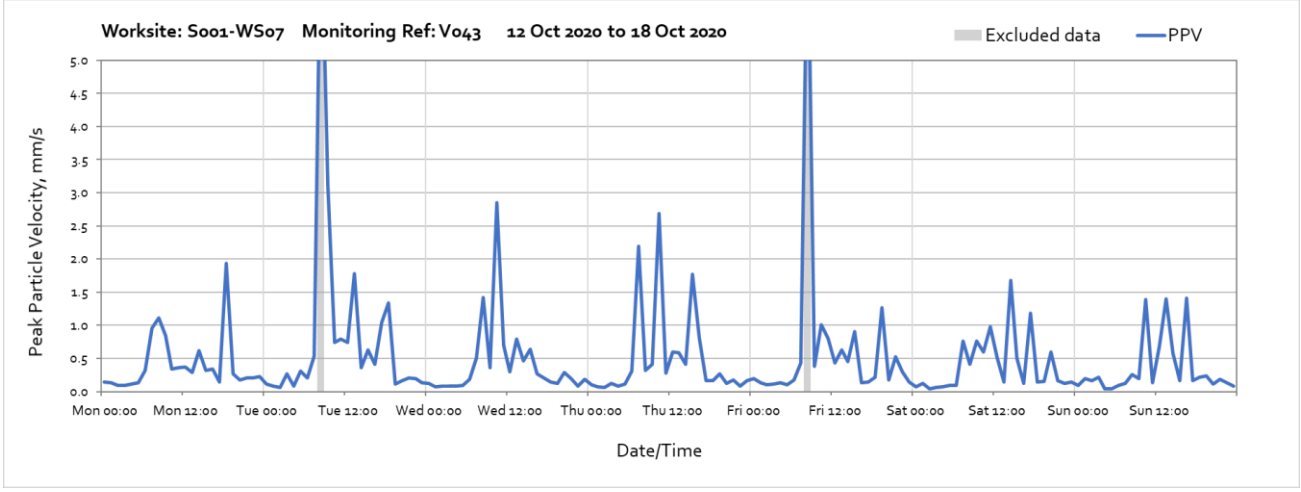
Worksite: S001-WS07 – Monitoring Ref: V043



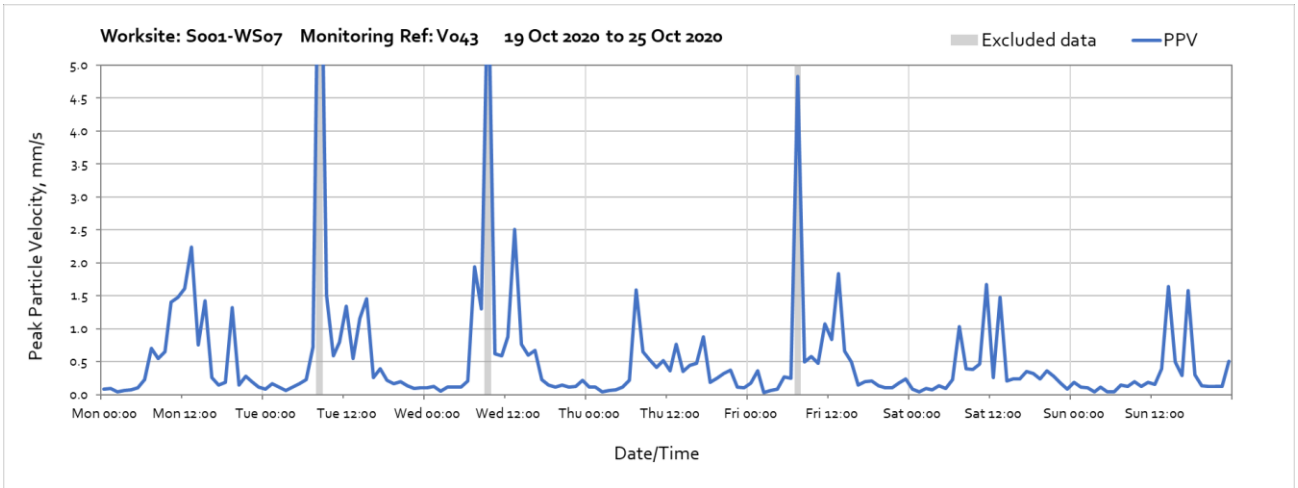
Note: High vibration levels measured throughout the week were due to the use of the neraby residential bin store and are not representative of HS2 vibration levels.



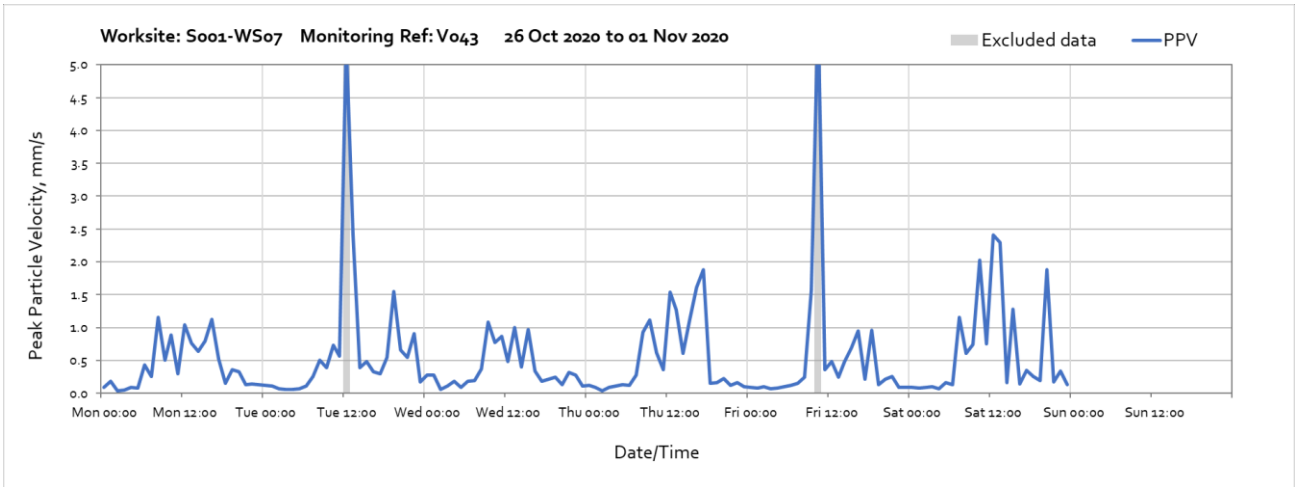
Note: High vibration levels measured throughout the week were due to the use of the neraby residential bin store and are not representative of HS2 vibration levels.



Note: High vibration levels measured throughout the week were due to the use of the neraby residential bin store and are not representative of HS2 vibration levels.

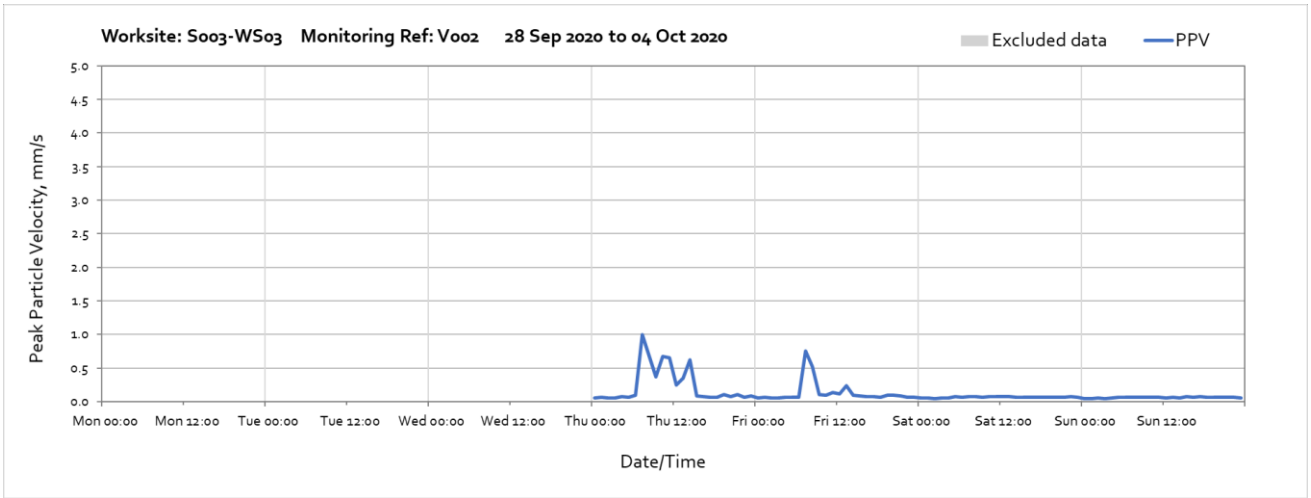


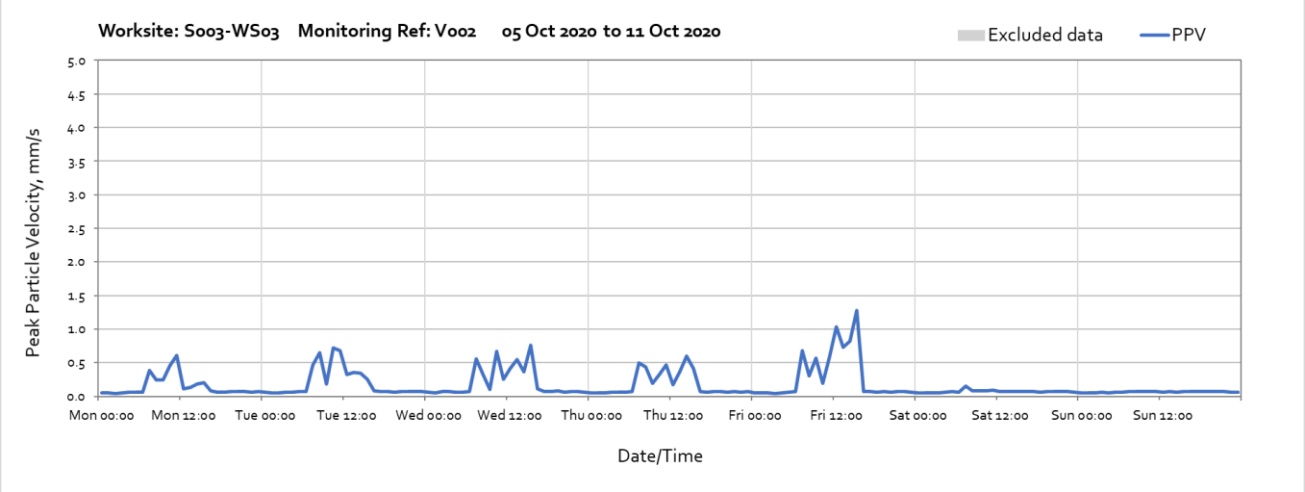
Note: High vibration levels measured between 10:00 and 11:00 on Tuesday 22nd of September were due to local disturbance of the monitor and are not representative of HS2 vibration levels.

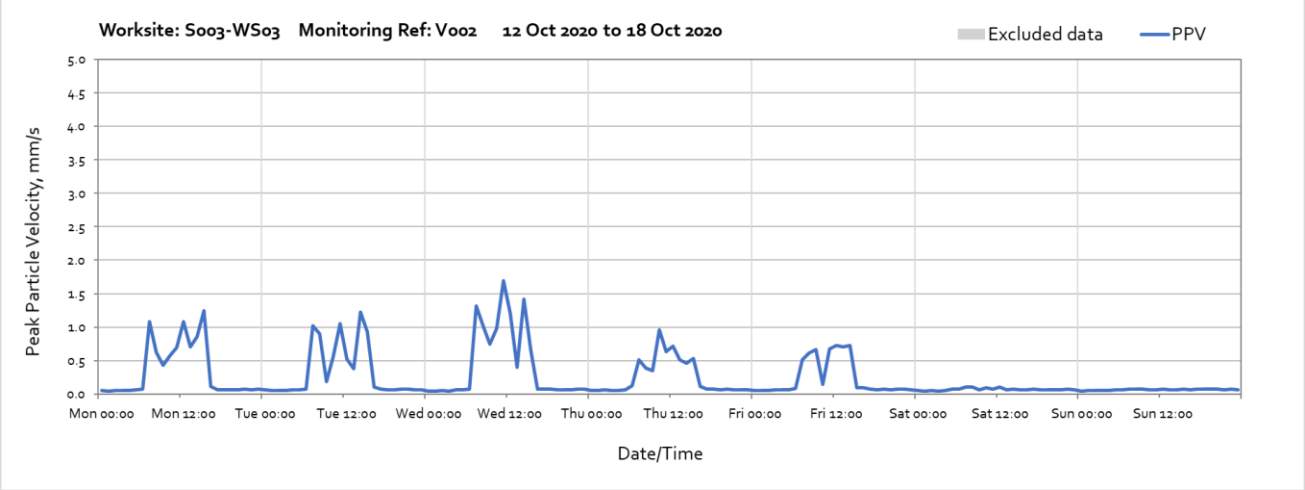


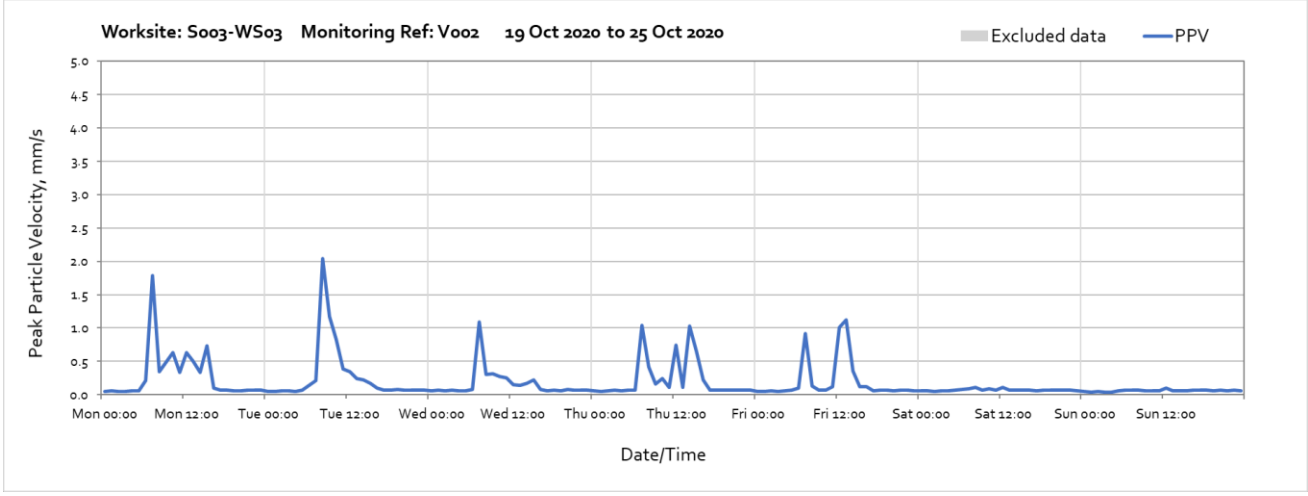
Note: High vibration levels measured throughout the week were due to the use of the neraby residential bin store and are not representative of HS2 vibration levels.

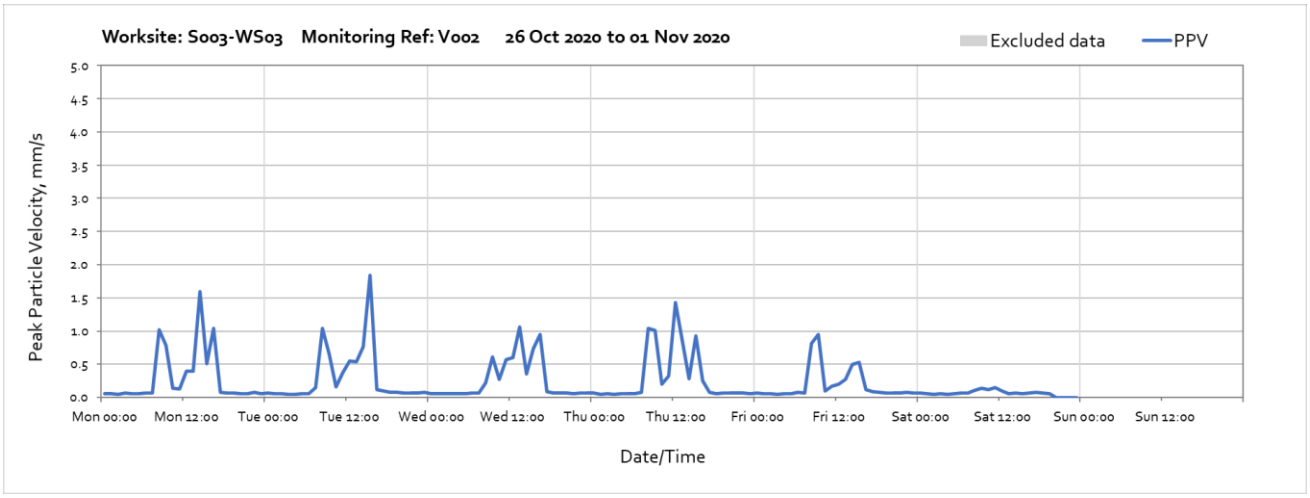
Worksite: S003-WS03 – Monitoring Ref: V002



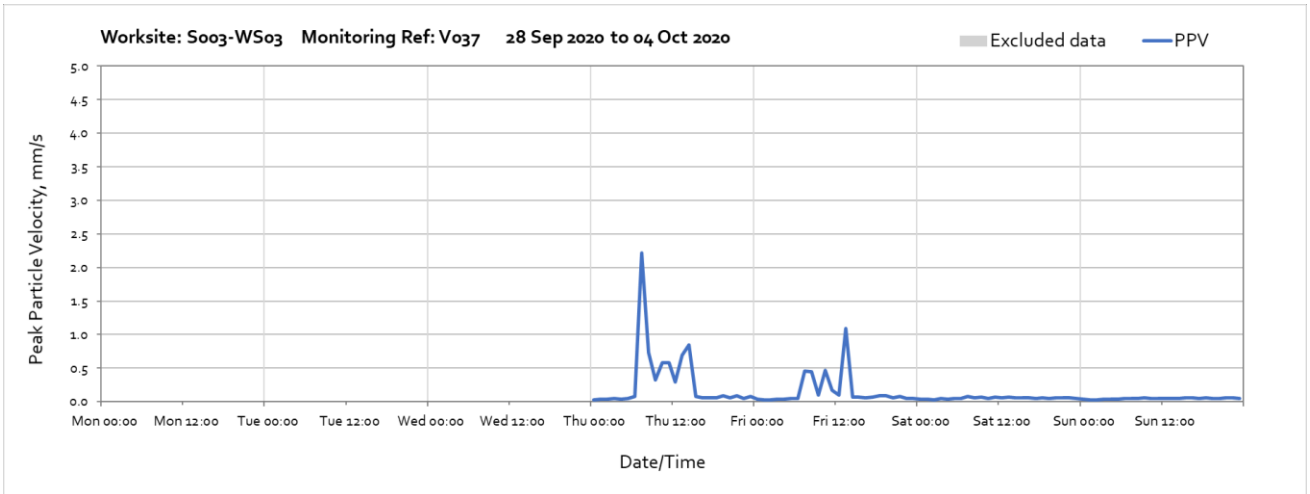


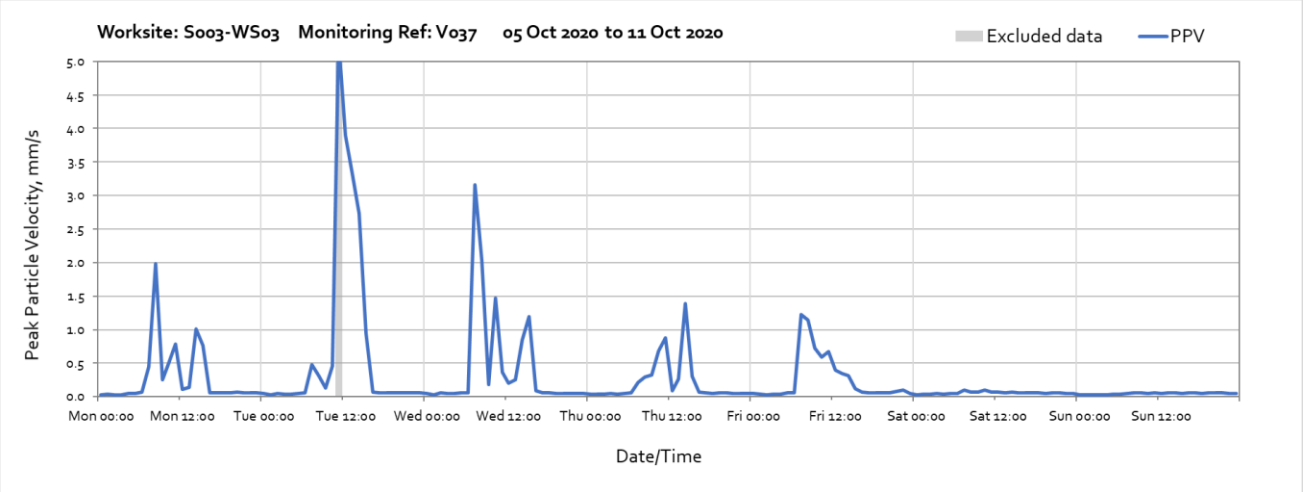




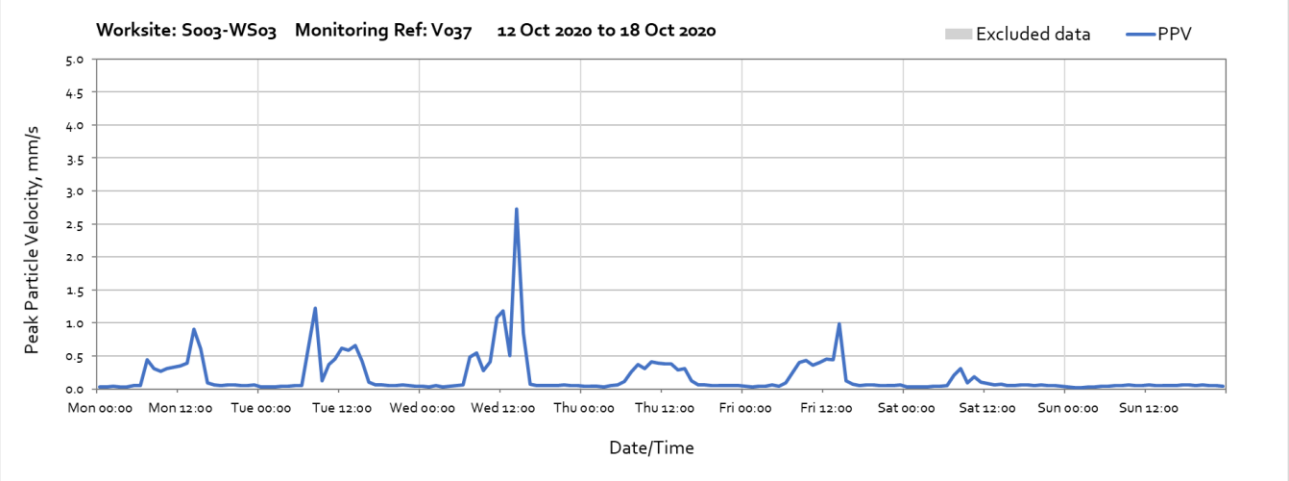


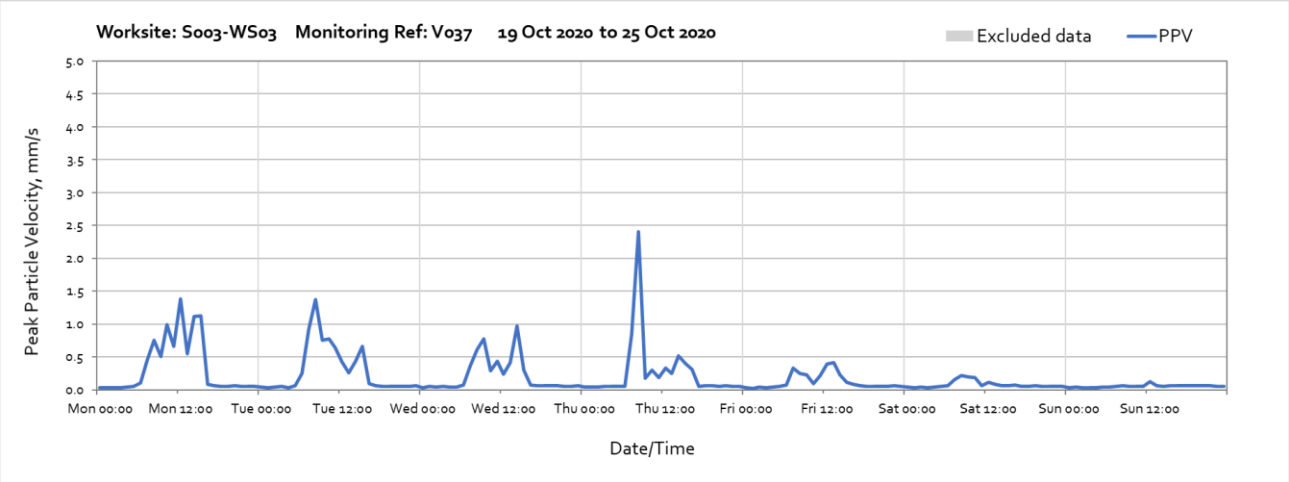
Worksite: S003-WS03 – Monitoring Ref: V037

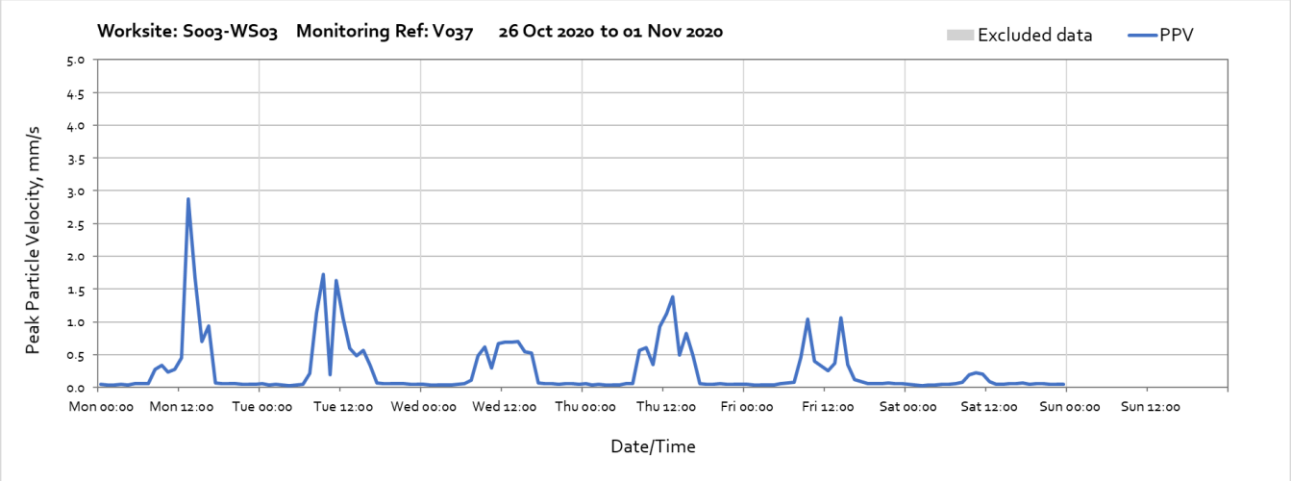




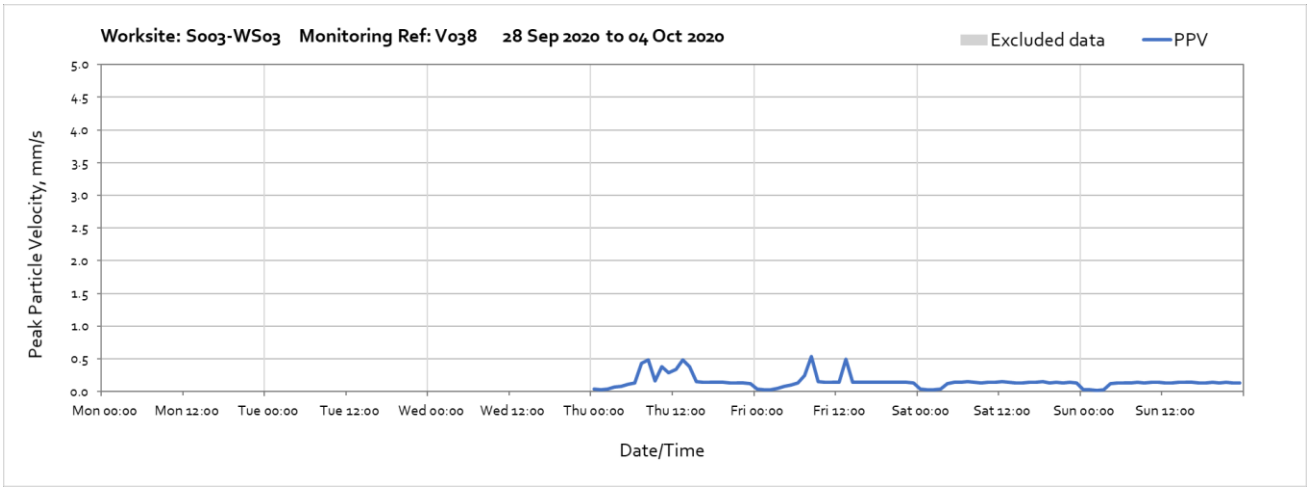
Note: High vibration levels measured at 11:00 on Tuesday 6th October were due to local disturbance of the monitor and are not representative of HS2 vibration levels.

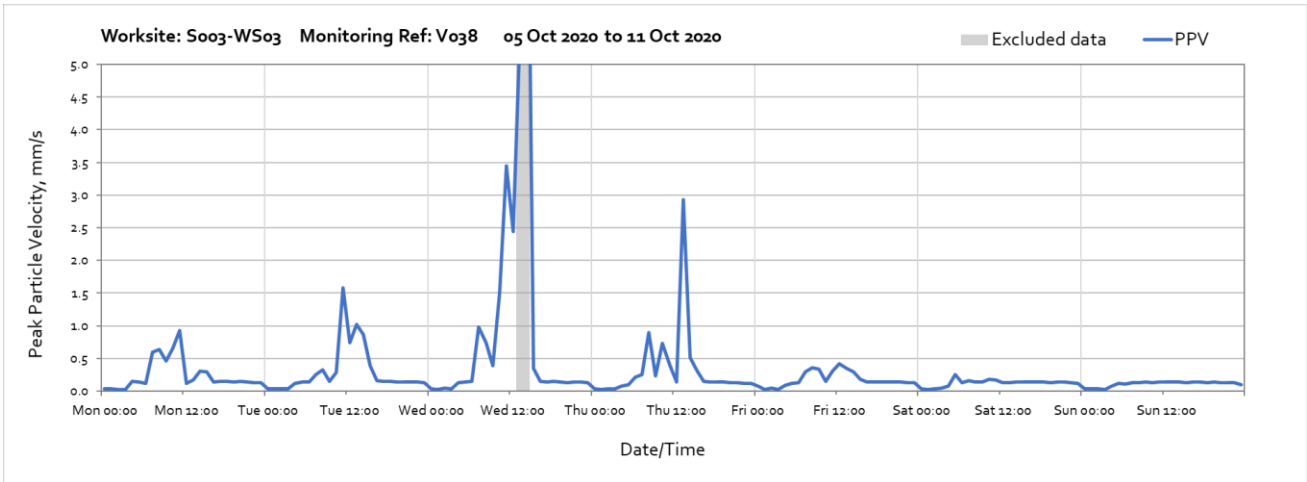




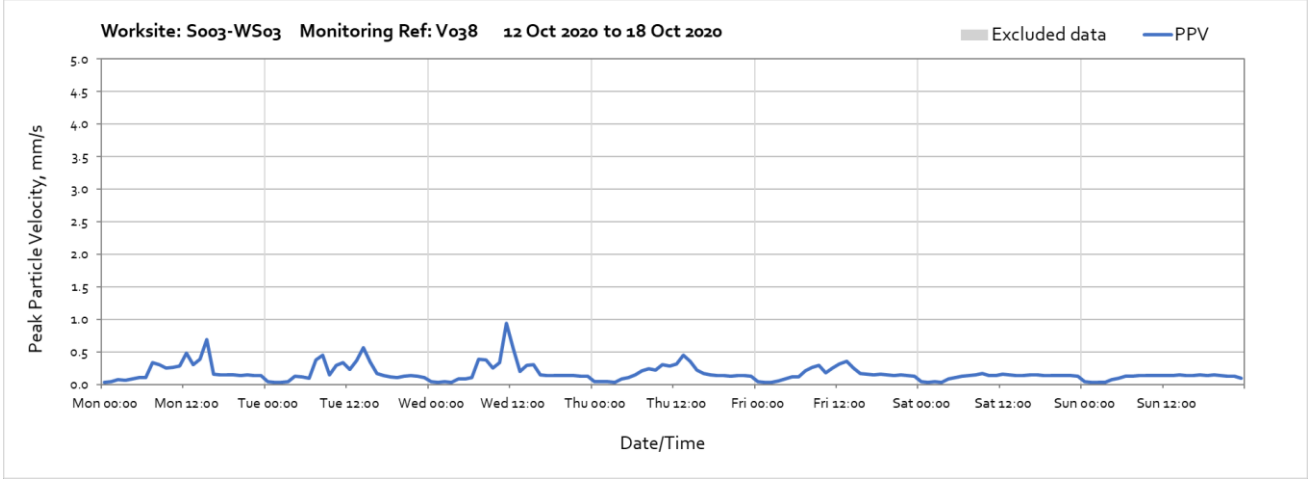


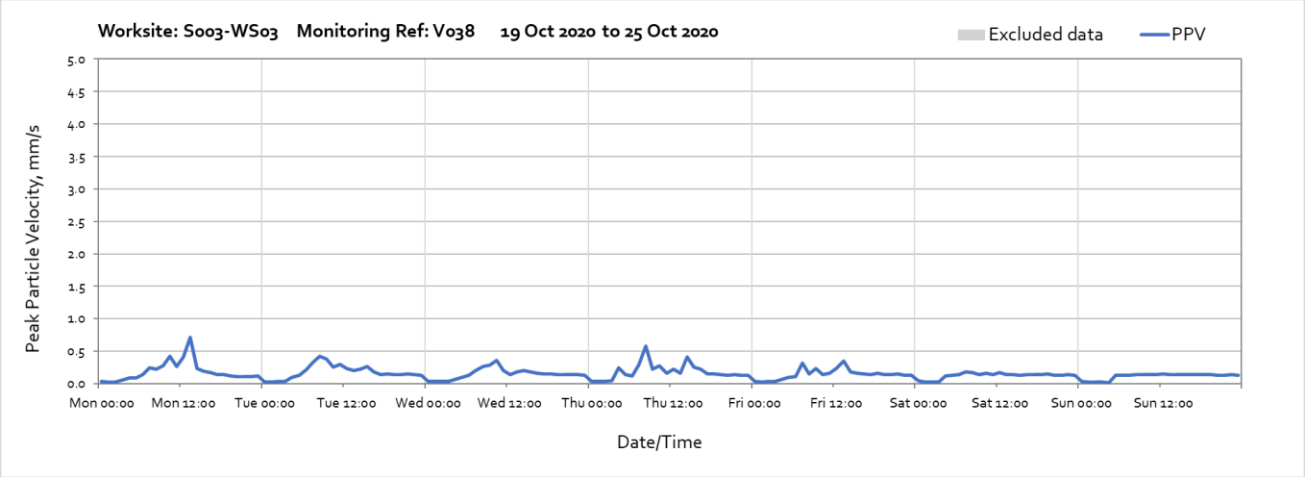
Worksite: S003-WS03 – Monitoring Ref: V038





Note: High vibration levels measured at 14:00 on Wednesday 7th October were due to local disturbance of the monitor and are not representative of HS2 vibration levels.


Worksite: S003-WS03 Monitoring Ref: V038 12 Oct 2020 to 18 Oct 2020
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: S003-WS03 Monitoring Ref: V038 19 Oct 2020 to 25 Oct 2020
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
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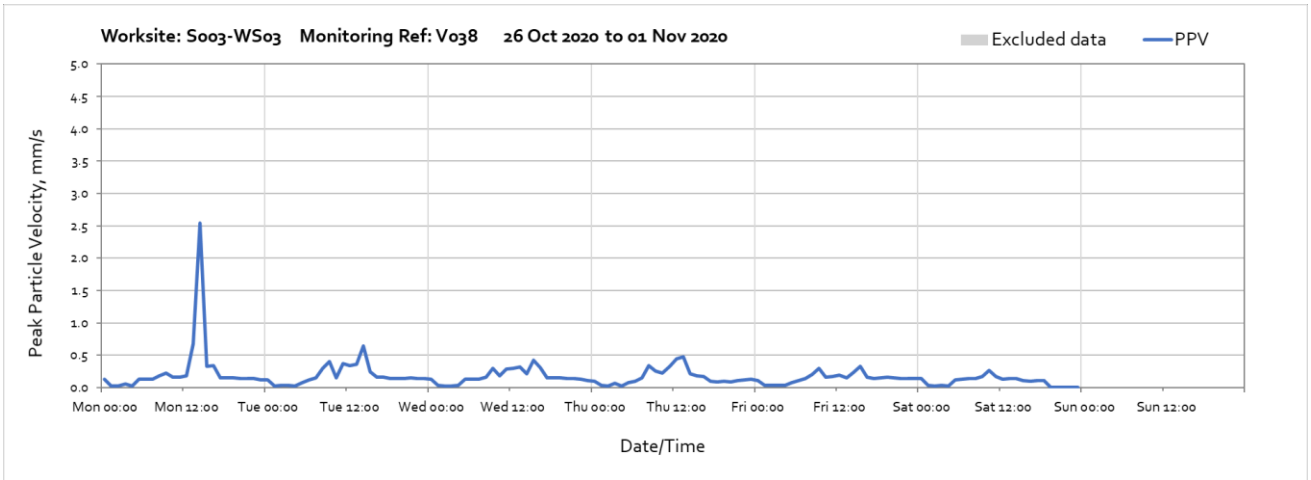
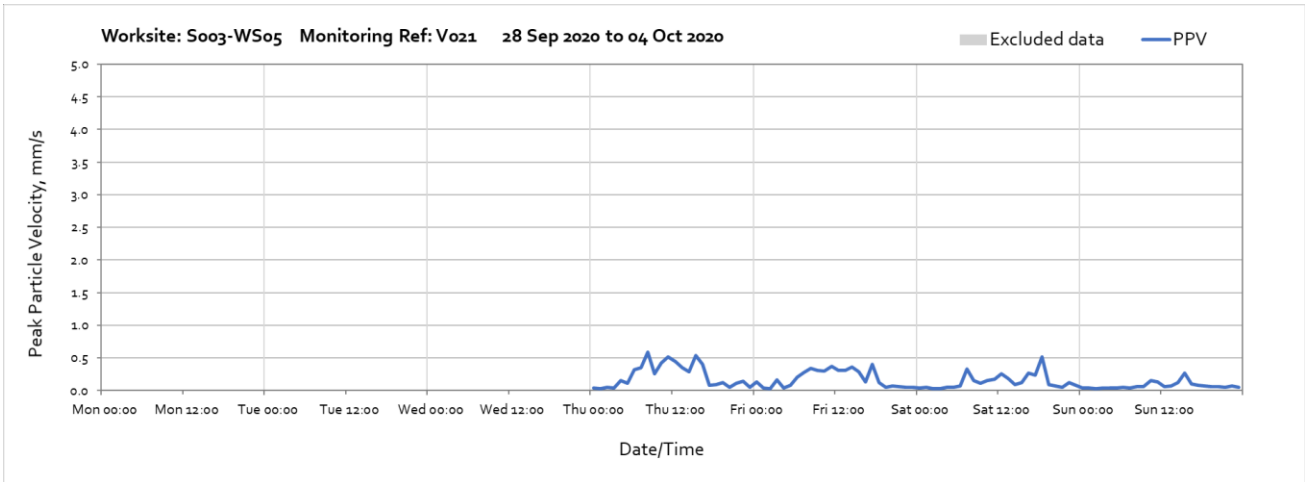
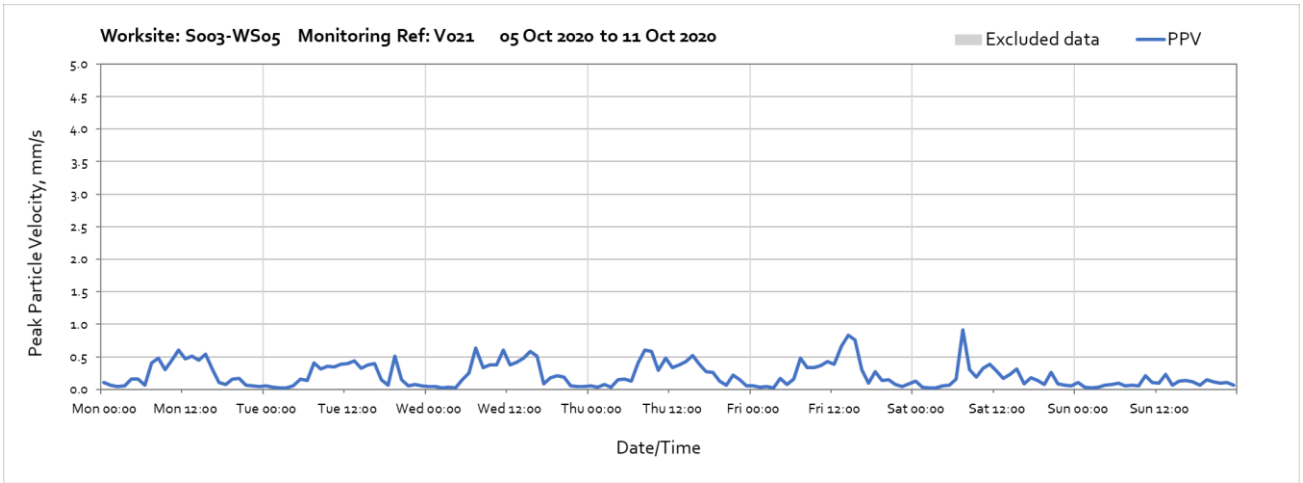
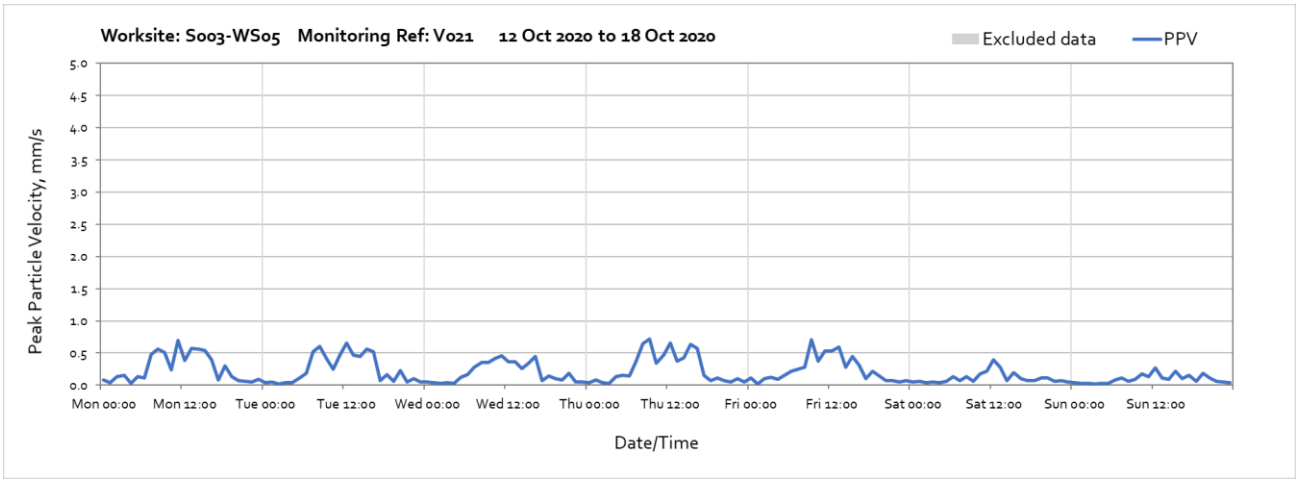
Sun 12:00
Date/Time

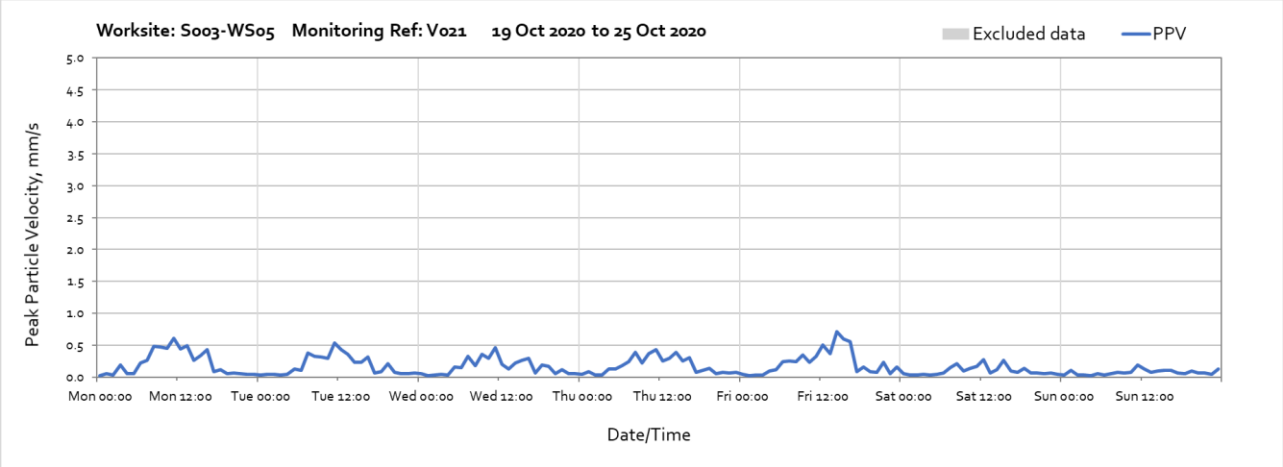

Worksite: S003-WS03 Monitoring Ref: V038 26 Oct 2020 to 01 Nov 2020
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

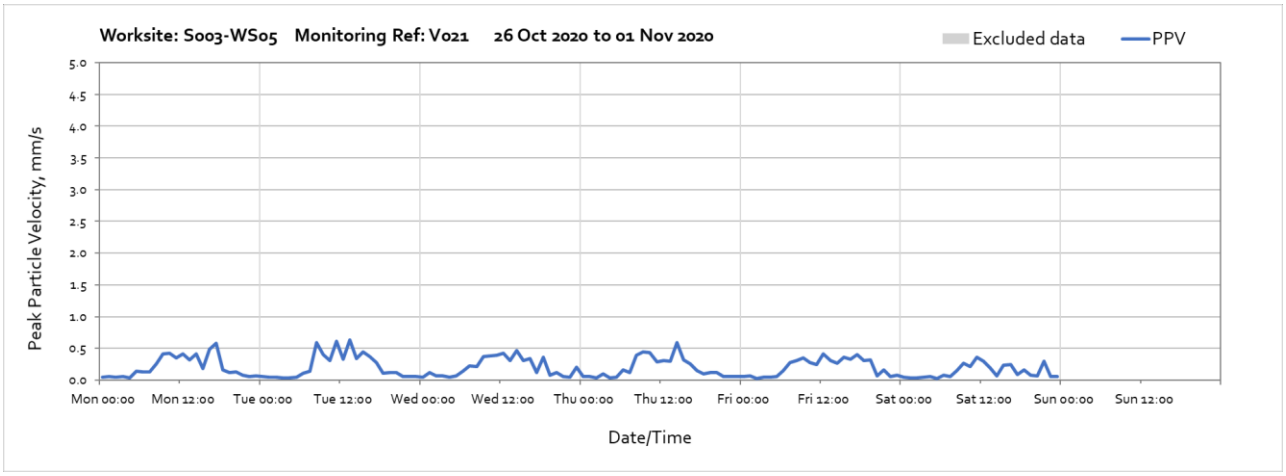
Worksite: S003-WS05 – Monitoring Ref: V021



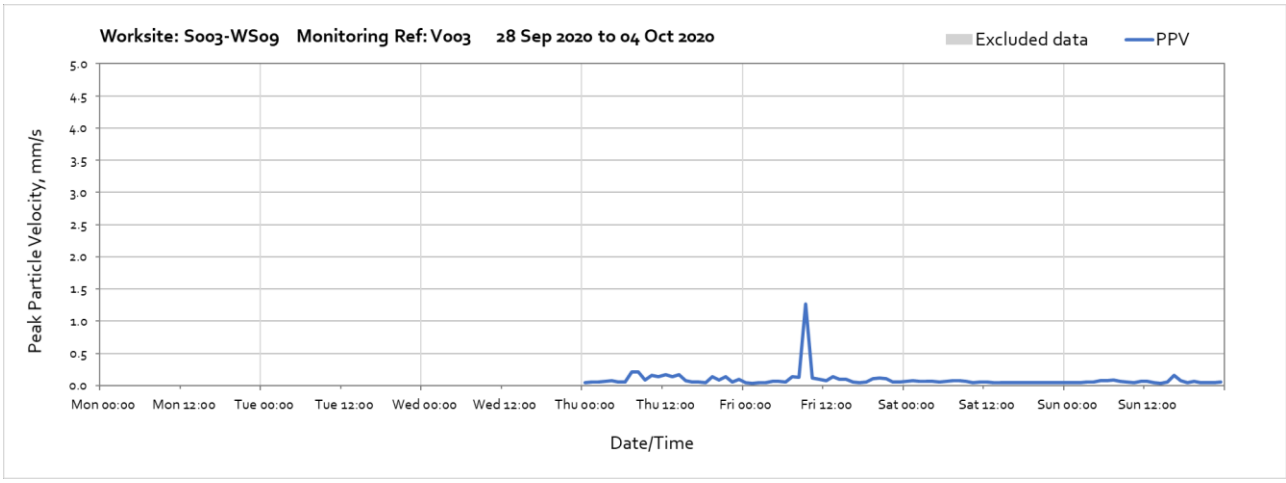


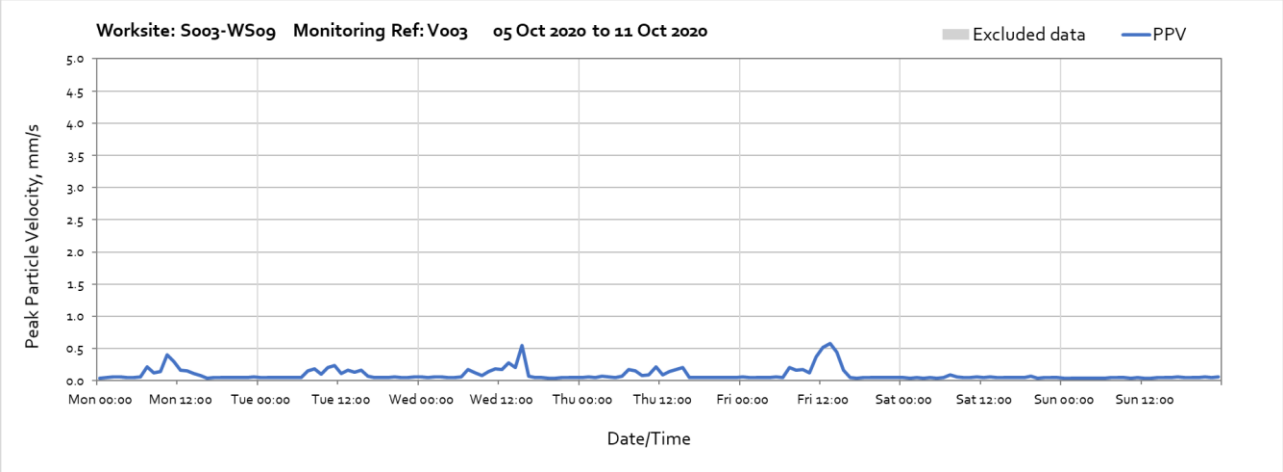


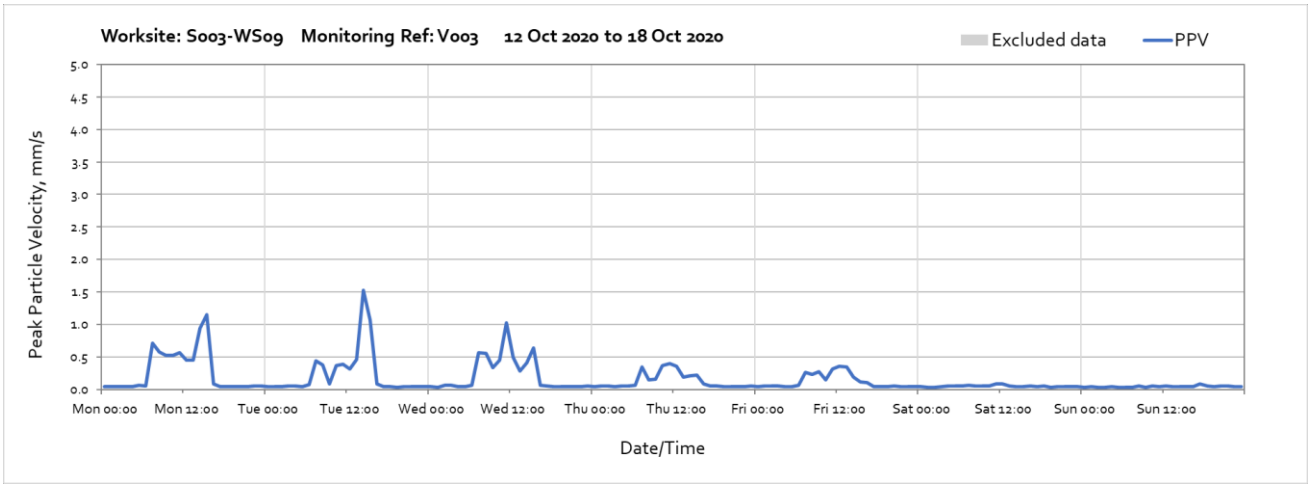




Worksite: S003-WS09 – Monitoring Ref: V003




Worksite: S003-WS09 Monitoring Ref: V003 05 Oct 2020 to 11 Oct 2020
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: S003-WS09 Monitoring Ref: V003 12 Oct 2020 to 18 Oct 2020
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
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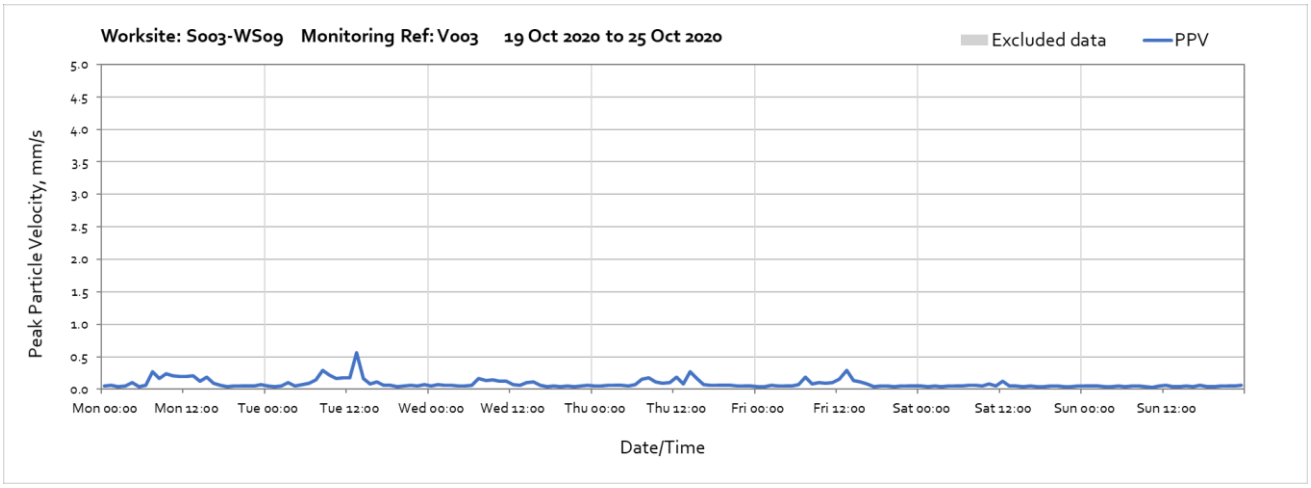
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: S003-WS09 Monitoring Ref: V003 19 Oct 2020 to 25 Oct 2020
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
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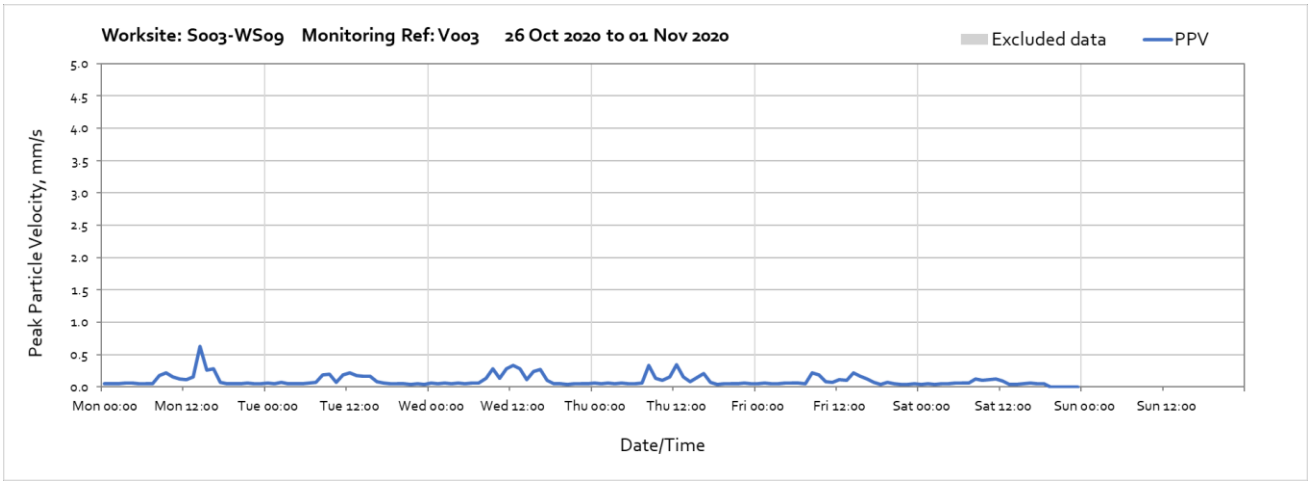
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: S003-WS09 Monitoring Ref: V003 26 Oct 2020 to 01 Nov 2020
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