HS2

March 2022

Construction Noise and Vibration Monthly Report – January 2022

London Borough of Hillingdon

gov.uk/hs2

List of tables

Non-Technical Summary

This Noise and Vibration Monitoring Report fulfils HS2 Limited's commitment detailed in the Environmental Minimum Requirements (EMRs), Annex 1, Code of Construction Practice, to present the results of noise monitoring carried out within the London Borough of Hillingdon during the month of January 2022.

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

- Colne Valley Viaduct Dews Lane site (ref.: CVV-DL), where jetty piling works, compound operation, construction of Harefield compensation pond, civil works, earthworks, drainage works, ground investigation works, pile testing, concrete drilling, pontoon installation, fencing works and utility works were underway;
- Colne Valley Viaduct Moorhall Road site (ref.: CVV-MR), where jetty pilling works, compound operations, civil works, ground investigation works, earthworks, drainage works, installation of sheet pile, piling works, boring pile, including support plant, installation of reinforcement cage, concrete pouring, bored pile breaking out works, pontoon installation, fencing works, pile cap construction and utility works were underway;
- West Ruislip Portal worksite (ref.: WRP) where main activities included bored and sheet piling, stone column installation, pile trimming, bulk excavations, steelworks and formworks installation, concreting works, dewatering and site set-up for tunnelling activities;
- West Ruislip Retained Embankment worksite (ref.: WRRE), where main activities included bored and sheet piling, stone column installation, pile trimming, footpath construction, bulk excavations, steelworks and formworks installation, dewatering and site set-up for tunnelling activities;
- South Ruislip Ventilation Shaft worksite (ref.: SRVS), where diaphragm walling works, excavation and slurry works, installation of cages, concrete pouring and pumping works were underway;
- Harvil Road worksite (ref.: HR), where main activities included bored and sheet piling, pile trimming, Harvil Road diversion works and bridge installation works.

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

- Ickenham Road where water utility works were underway;
- Harvil Road embankment, where main activities included vegetation clearance, temporary road diversion, haul road installation, embankment construction and installation and use of conveyor system;

- Copthall Retained Embankment / Trough, where main activities included vegetation clearance, haul road installation, bulk excavation, installation and use of conveyor system and works for the Copthall Tunnel West Portal (including piling, excavation and portal construction);
- Northern Sustainable Placement Area, where main activities included vegetation clearance, haul road installation, installation and use of conveyor system, stockpiling and localised service connection works;
- Southern Sustainable Placement Area, where main activities included vegetation clearance, haul road installation, stockpiling and localised service connection works.

There were no exceedances of the HS2 threshold levels for significant noise impacts, which are defined in Information Paper E23 (https://www.gov.uk/government/publications/hs2-information-papers-environment), during the reporting period.

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

Ten (10) complaints were received during the monitoring period. A description of complaints, the results of investigation and any actions taken are detailed in Table 7 of this report.

Abbreviations and Descriptions

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

Table 1: Table of Abbreviations

Acronym/Term	Definition
$L_{Aeq,T}$	See equivalent continuous sound pressure level
Ambient sound	A description of the all-encompassing sound at a given location and time which will include sound from many sources near and far. Ambient sound can be quantified in terms of the equivalent continuous sound pressure level, $L_{pAeq,T}$
Decibel(s), or dB	Between the quietest audible sound and the loudest tolerable sound there is a million to one ratio in sound pressure (measured in Pascal (Pa)). Because of this wide range, a level scale called the decibel (dB) scale, based on a logarithmic ratio, is used in sound measurement. Audibility of sound covers a range of approximately 0-140dB.
Decibel(s) A-weighted, or dB(A)	The human ear system does not respond uniformly to sound across the detectable frequency range and consequently instrumentation used to measure sound is weighted to represent the performance of the ear. This is known as the 'A weighting' and is written as 'dB(A)'.
Equivalent continuous sound pressure level, or $L_{Aeq,T}$	An index used internationally for the assessment of environmental sound impacts. It is defined as the notional unchanging level that would, over a given period of time (T), deliver the same sound energy as the actual time-varying sound over the same period. Hence fluctuating sound levels can be described in terms of an equivalent single figure value, typically expressed as a decibel level.
Exclusion of data	Measurement of noise levels can be affected by weather conditions such as prolonged periods of rain, winds speeds higher than 5m/s and snow/ice ground cover. Noise levels measured during these periods are considered not representative of normal noise conditions at the site and, for the purposes of this report, are excluded from the assessment of exceedances and calculation of typical noise levels and are also greyed out in charts. Identifiable incongruous noise and vibration events not attributable to HS2 construction noise are also excluded.
Façade	A facade noise level is the noise level 1m in front of a large reflecting surface. The effect of reflection, is to produce a slightly higher (typically +3 dB) sound level than it would be if the reflecting surface was not there.
Free-field	A free-field noise level is the noise level measured at a location where no reflective surfaces, other than the ground, lies within 3.5 metres of the microphone position.
LOAEL	Lowest Observed Adverse Effect Level - the level above which adverse effects on health and quality of life can be detected.
Peak particle velocity, or PPV	Instantaneous maximum velocity reached by a vibrating element as it oscillates about its rest position. The PPV is a simple indicator of perceptibility and risk of damage to structures due to vibration. It is usually measured in mm/s.
SOAEL	Significant Observed Adverse Effect Level - the level above which significant adverse effects on health and quality of life occur.
Sound pressure level	The parameter by which sound levels are measured in air. It is measured in decibels. The threshold of hearing has been set at 0dB, while the threshold of pain is approximately 120dB. Normal speech is approximately 60dB at a distance of 1 metre and a change of 3dB in a time varying sound signal is commonly regarded as being just detectable. A change of 10dB is subjectively twice, or half, as loud.
Vibration dose value, or VDV	An index used to evaluate human exposure to vibration in buildings. While the PPV provides information regarding the magnitude of single vibration events, the VDV provides a measure of the total vibration experienced over a specified period of time (typically 16h daytime and 8h night-time). It takes into account the magnitude, the number and the duration of vibration events and can be used to quantify exposure to continuous, impulsive, occasional and intermittent vibration. The vibration dose value is measured in $m/s^{1.75}$.

1 Introduction

1.1.1 HS2 is required to undertake noise (and vibration) monitoring as necessary to comply with the requirements of the High Speed Rail (London-West Midlands) Environmental Minimum Requirements, including specifically Annex 1: Code of Construction Practice, in addition to any monitoring requirements arising from conditions imposed through consents under Section 61 of the Control of Pollution Act, 1974 or through Undertakings & Assurances given to third parties. Such monitoring may be undertaken for the following purposes:

- monitoring the impact of construction works;
- to investigate complaints, incidents and exceedance of trigger levels; or
- monitoring the effectiveness of noise and vibration control measures.

1.1.2 Monitoring data and interpretive reports are to be provided to each relevant local authority on a monthly basis and shall include a summary of the construction activities occurring, the data recorded over the monitoring period, any complaints received, any periods in exceedance of agreed trigger levels, the results of any investigations and any actions taken or mitigation measures implemented. This report provides noise data, and interpretation thereof, for monitoring carried out by HS2 within the London Borough of Hillingdon (LBH) for the period 1st to 31st January 2022.

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

- Colne Valley Viaduct Dews Lane site, ref.: CVV-DL (see Plan 1 in Appendix A), where work activities included:
  - jetty pilling works;
  - compound operations (including de-sanding works);
  - piling works, including support plant, installation of reinforcement cage, concrete pouring and bored pile breaking out works;
  - construction of Harefield compensation pond;
  - civil works;
  - earthworks;
  - drainage works;
  - ground investigation works;
  - pile testing;

- concrete drilling;
- pontoon installation;
- pile trimming;
- fencing works; and
- utility works.

- Colne Valley Viaduct Moorhall Road site, ref.: CVV-MR (see Plan 1 in Appendix A), where work activities included:
  - jetty piling works;
  - compound operations (including de-sanding works);
  - civil works;
  - earthworks;
  - drainage works;
  - ground investigation works;
  - piling works, support plant, installation of reinforcement cage, concrete pouring and bored pile breaking out works;
  - pontoon installation;
  - fencing works;
  - pile cap construction; and
  - utility works.
- West Ruislip Portal Worksite, ref.: WRP (see Plan 3 in Appendix A), where work activities included:
  - bored and sheet piling;
  - stone column installation;
  - pile trimming;
  - excavation works;
  - steelworks and formworks installation;
  - concreting works;
  - dewatering; and
  - tunnelling activities set-up.

- West Ruislip Retained Embankment Worksite, ref.: WRRE, where work activities included:
    - bored and sheet pilling;
    - stone column installation;
    - pile trimming;
    - footpath construction;
    - bulk excavation;
    - steelworks and formworks installation;
    - dewatering; and
    - tunnelling activities set-up.
- South Ruislip Ventilation Shaft worksite, ref.: SRVS (see Plan 4 in Appendix A), where work activities included:
    - diaphragm walling works, including excavation and slurry works, installation of cages, concrete pouring and pumping works.
- Harvil Road worksite, ref.: HR (see Plan 2 in Appendix A), where work activities included:
    - bored and sheet piling;
    - pile trimming;
    - Harvil Road diversion works; and
    - bridge installation works.

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

- Ickenham Road where water utility works were underway;
- Harvil Road embankment, where main activities included vegetation clearance, temporary road diversion, haul road installation, embankment construction and installation and use of conveyor system;
- Copthall Retained Embankment / Trough, where main activities included vegetation clearance, haul road installation, bulk excavation, installation and use of conveyor

system and works for the Copthall Tunnel West Portal (including piling, excavation and portal construction);

- Northern Sustainable Placement Area, where main activities included vegetation clearance, haul road installation, installation and use of conveyor system, stockpiling and localised service connection works;
- Southern Sustainable Placement Area, where main activities included vegetation clearance, haul road installation, stockpiling and localised service connection works.

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

1.2 Measurement Locations

1.2.1 Thirteen noise and two vibration monitoring installations were active in January in the LBH area. Table 2 summarises the position of noise and vibration monitoring installations within the LBH area in January 2022.

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

Table 2: Monitoring Locations

Worksite Reference	Measurement Reference	Address
Colne Valley Viaduct Dews Lane (CVV-DL)	CVV-DL-NMP2	Highway Farm House, Harvil Rd, Harefield, Uxbridge
	CVV-DL-NMP3	Dew's Farm Cottages, Dews Lane, Harefield, Uxbridge
Colne Valley Viaduct Moorhall Road (CVV-MR)	CVV-MR-NMP1	Weir Cottage, Denham Garden Village, Denham, Buckinghamshire
	CVV-MR-NMP2	Harefield Marina, Moorhall Road, London Borough of Hillingdon, London, Greater London
	CVV-MR-NMP3	Peerless Drive, Harefield, Uxbridge
West Ruislip Portal (WRP)	N048	Ruislip Golf Course, Ickenham Rd, Ruislip
	N056	83 The Greenway, Ickenham, Ruislip
	N057	123 The Greenway, Ickenham, Ruislip
West Ruislip Retained Embankment (WRRE)	N065	Breakspear Road South, Harefield, Uxbridge
	N066	Hoylake Crescent, Ickenham, Uxbridge

Worksite Reference	Measurement Reference	Address
	HL-V001	152 Hoylake Crescent, Ickenham, Uxbridge
South Ruislip Ventilation Shaft (SRVS)	N061	Cineworld South Ruislip car park, Ruislip
	SRVS-V001	Braintree Industrial Estate - Building D4
Harvil Road (HR)	N067	Harvil Road worksite south boundary
	HR-N002	Certas Energy Bunker Site – Harefield

2 Summary of Results

2.1 Summary of Measured Noise Levels

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

Table 3: Summary of Measured dB L_{Aeq} Data over the Monitoring Period

Worksite Reference	Measurement Reference	Site Address	Free-field or Façade Measurement	Weekday Average $L_{Aeq,T}$ (highest day $L_{Aeq,T}$)					Saturday Average $L_{Aeq,T}$ (highest day $L_{Aeq,T}$)					Sunday / Public Holiday Average $L_{Aeq,T}$ (highest day $L_{Aeq,T}$)	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
CVV-DL	CVV-DL-NMP2	Highway Farm House, Harvil Rd, Harefield, Uxbridge	Free-field	58.0 (59.1)	58.1 (59.8)	56.9 (58.3)	56.5 (59.7)	56.0 (58.1)	56.6 (57.4)	58.4 (61.1)	58.0 (59.5)	56.9 (60.0)	55.7 (56.8)	57.0 (62.3)	55.7 (57.2)
	CVV-DL-NMP3	Dew's Farm Cottages, Dews Lane, Harefield, Uxbridge,	Free-field	57.4 (65.4)	61.5 (64.5)	51.0 (55.0)	49.1 (57.0)	46.3 (55.3)	53.6 (57.5)	59.6 (63.9)	55.3 (60.7)	48.6 (52.6)	43.9 (51.0)	49.4 (56.3)	45.5 (53.2)
CVV-MR	CVV-MR-NMP1	Weir Cottage, Denham Garden Village, Denham, Buckinghamshire	Free-field	53.5 (56.7)	55.3 (65.4)	51.1 (52.6)	49.4 (54.3)	46.9 (62.7)	50.2 (51.9)	52.2 (53.2)	51.4 (52.5)	50.3 (54.2)	44.3 (48.0)	50.3 (55.6)	46.0 (54.4)
	CVV-MR-NMP2	Harefield Marina, Moorhall Road, London, Greater London	Free-field	51.6 (54.1)	56.9 (67.2)	48.6 (52.2)	47.2 (51.5)	45.0 (60.0)	48.1 (51.9)	52.1 (56.8)	50.3 (53.1)	48.1 (55.3)	42.5 (49.6)	47.2 (51.3)	44.7 (52.0)
	CVV-MR-NMP3	Peerless Drive, Harefield, Uxbridge	Free-field	54.9 (58.6)	57.9 (61.9)	49.9 (52.8)	47.7 (52.6)	46.8 (72.8)	51.8 (53.1)	52.4 (54.4)	52.9 (55.0)	50.3 (54.9)	43.6 (48.9)	56.0 (74.7)	45.5 (53.0)
WRP	N048	West Ruislip Golf Club, Ickenham Rd, Ruislip	Free-field	61.7 (65.0)	64.3 (69.3)	56.1 (65.2)	52.6 (59.6)	52.0 (67.4)	58.2 (61.9)	62.7 (68.2)	57.5 (64.3)	53.7 (63.6)	49.1 (53.0)	52.9 (56.3)	51.8 (62.2)
	N056	83 The Greenway, Ickenham, Ruislip	Free-field	61.7 (63.1)	61.4 (67.8)	62.3 (63.5)	60.1 (62.8)	54.5 (61.2)	57.0 (59.5)	60.9 (66.3)	59.7 (60.7)	60.3 (69.4)	52.6 (59.6)	55.7 (66.0)	53.4 (61.6)

Worksite Reference	Measurement Reference	Site Address	Free-field or Façade Measurement	Weekday Average $L_{Aeq,T}$ (highest day $L_{Aeq,T}$)					Saturday Average $L_{Aeq,T}$ (highest day $L_{Aeq,T}$)					Sunday / Public Holiday Average $L_{Aeq,T}$ (highest day $L_{Aeq,T}$)	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
	N057	123 The Greenway, Ickenham, Ruislip	Free-field	57.6 (59.6)	57.1 (58.4)	58.3 (59.6)	56.3 (59.5)	51.6 (63.3)	53.5 (55.8)	56.2 (58.0)	56.1 (57.5)	55.5 (58.8)	49.1 (54.9)	52.5 (58.1)	50.1 (56.9)
WRRE	N065	Breakspear Road South, Harefield, Uxbridge	Free-field	66.3 (68.4)	66.2 (67.6)	66.0 (66.8)	63.9 (67.5)	59.0 (65.4)	62.4 (63.9)	64.9 (66.4)	67.6 (69.4)	65.4 (68.5)	58.0 (61.7)	64.7 (66.7)	58.8 (66.5)
	N066	Hoylake Crescent, Ickenham, Uxbridge	Free-field	57.4 (59.8)	57.7 (60.3)	57.8 (59.5)	55.6 (59.2)	50.7 (63.8)	53.8 (55.5)	55.9 (57.0)	55.8 (56.8)	54.9 (56.9)	48.5 (54.2)	52.5 (56.6)	49.8 (56.7)
SRVS	N061	Cineworld South Ruislip car park, Ruislip	Free-field	61.1 (65.3)	63.5 (65.2)	63.1 (65.5)	62.1 (64.0)	57.8 (74.1)	58.9 (61.4)	62.9 (64.9)	64.7 (67.2)	62.8 (66.3)	56.3 (63.2)	61.9 (68.0)	55.8 (60.5)
HR	N067	Harvil Road worksite south boundary	Free-field	57.1 (61.3)	60.8 (68.8)	55.9 (63.5)	55.7 (61.7)	51.4 (59.5)	53.4 (55.0)	60.1 (62.1)	64.0 (69.4)	56.6 (69.8)	51.4 (61.5)	56.8 (64.2)	50.2 (57.9)
	HR-N002	Certas Energy Bunker Site – Harefield	Free-field	64.1 (65.6)	63.8 (65.7)	61.8 (64.2)	59.6 (61.7)	57.3 (66.0)	59.3 (60.6)	61.5 (63.3)	62.6 (63.9)	60.3 (62.6)	53.9 (57.5)	60.4 (63.6)	56.7 (65.6)

2.1.2 Table 4: Summary of Measured PPV Data over the Monitoring Period 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
WRRE	HL-V001	152 Hoylake Crescent, Ickenham, Uxbridge	0.53 (Z-axis)
SRVS	SRVS-V001	Braintree Industrial Estate - Building D4	1.17 (Z-axis)

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

2.2 Exceedances of the LOAEL and SOAEL

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

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

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

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

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

Table 5: Summary of Exceedances of LOAEL and SOAEL

Worksite Reference	Measurement Reference	Site Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
CVV-DL	CVV-DL-NMP2	Highway Farm House, Harvil Rd, Harefield, Uxbridge	All days	All periods	No exceedance	No exceedance
	CVV-DL-NMP3*	Dew's Farm Cottages, Dews Lane, Harefield, Uxbridge	All days	All periods	No exceedance	No exceedance
CVV-MR	CVV-MR-NMP1	Weir Cottage, Denham Garden Village, Denham, Buckinghamshire	Weekdays	0800-1800	2	No exceedance
	CVV-MR-NMP2	Harefield Marina, Moorhall Road, London, Greater London	Weekdays	0800-1800	3	No exceedance
	CVV-MR-NMP3	Peerless Drive, Harefield, Uxbridge	All days	All periods	No exceedance	No exceedance
WRP	N048	West Ruislip Golf Club, Ickenham Rd, Ruislip	Weekdays Saturdays	0800-1800 0800-1300	10 2	No exceedance
	N056	83 The Greenway, Ickenham, Ruislip	Weekdays Saturdays	0800-1800 0800-1300	1 1	No exceedance
	N057	123 The Greenway, Ickenham, Ruislip	All days	All periods	No exceedance	No exceedance
WRRE	N065	Breakspear Road South, Harefield, Uxbridge	Weekdays Saturdays	0800-1800 0800-1300	21 3	No exceedance

Worksite Reference	Measurement Reference	Site Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
WRRE	N066	Hoylake Crescent, Ickenham, Uxbridge	All days	All period	No exceedance	No exceedance
SRVS	N061	Hoylake Crescent, Ickenham, Uxbridge	All days	All period	Not applicable**	Not applicable**
HR	N067	Harvil Road worksite south boundary	Weekdays	0800-1800	2	No exceedance
	HR-N002	Certas Energy Bunker Site – Harefield	Weekdays Saturdays	0800-1800 0800-1300	20 2	No exceedance

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

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

2.2.6 No exceedances of the SOAEL were recorded due to HS2 construction works during January 2022. LOAEL exceedances have been recorded at noise monitoring location ref.: ref.: CVV-MR-NMP1, ref.: CVV-MR-NMP2, ref.: N048, ref.: N056, ref.: N065, ref.: N067 and ref.: HR-N002 during core hours.

2.3 Exceedances of Trigger Level

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

Table 6: Summary of Exceedances of Trigger Levels

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

2.4 Complaints

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

Table 7: Summary of Complaints

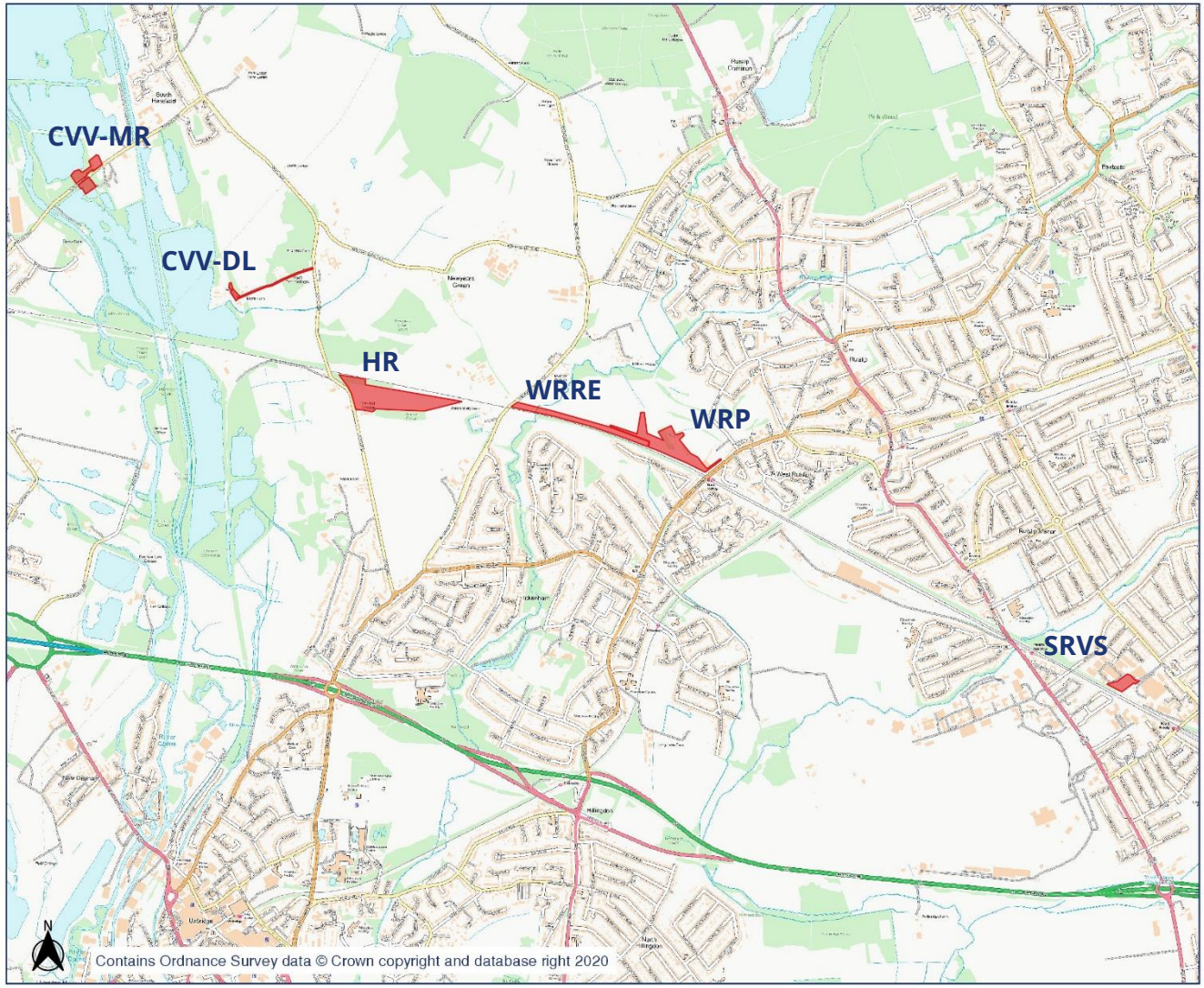
Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
HS2-22-43140-C	CVV-MR	Complaint due to noise disturbance from works at night near Harefield Marina. The complainant sought compensation	Requests for compensation not considered under the HS2 complaints process.	The complaint has been referred to relevant department.
HS2-22-43142-C	CVV-DL	Complaint about noise disturbance from progressively louder piling taking place throughout the day, longer than stated period.	Piling works were underway throughout the month.	The contractor held a meeting on 24th January 2022 regarding noise concerns. Decision pending. Noise is main concern so additional mitigations are in the interim.
HS2-22-43210-C HS2-22-43212-C HS2-22-43214-C HS2-22-43216-C	N/A (Utility Works)	Residents at West Ruislip were disturbed by noise and vibration from drilling/digging outside property.	Investigation showed that sub-contracted road works were undertaken outside of core working hours carried without prior notification.	A response was provided to the complainant detailing the findings of the investigation and informing that remaining works were not high impact. The team was also instructed to undertake

Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
				the works swiftly to minimise disturbance.
HS2-22-43219-C	WRP/WRRE	Complaint due to noise disturbance from piling during the day.	The investigation showed that the piling works in question were pre-augering the ground to break up the surface, with piles then being pressed in - vibratory piling was reduced to a practicable minimum. Works were undertaken sequentially along the pile line, and all were undertaken in core hours 08:00 - 18:00. On the day of complaint, the site team needed to remove old brickwork obstructions that had only just been exposed at 4pm. The removal works took less than one hour, noise were within Section 61 predictions and BPM were adopted throughout.	A response was provided to the complainant detailing results of investigation.
HS2-22-43221-C	WRP/WRRE	Complaint about noise disturbance from loud banging at 11PM and during night-time throughout the week commencing 24th January 2022.	Site security attended to investigate noise at the time of the complaint. The majority of sites in the area (Breakspear Road South compound, compounds at Harvil Road) were not undertaking any works out of normal hours. Works at West Ruislip compound were limited to welding inside noise attenuation tents or steel fixing in excavated area. It was therefore summarised that the banging noise in question was not a result of HS2 works. All works were undertaken in compliance with S61 consent and Best Practicable Means were adopted throughout.	The complainant was informed that investigation showed the noise in question was not from HS2 works.
HS2-22-43234-C	CVV-DL	Complaint regarding high noise levels from worksite due to	On-going	On-going

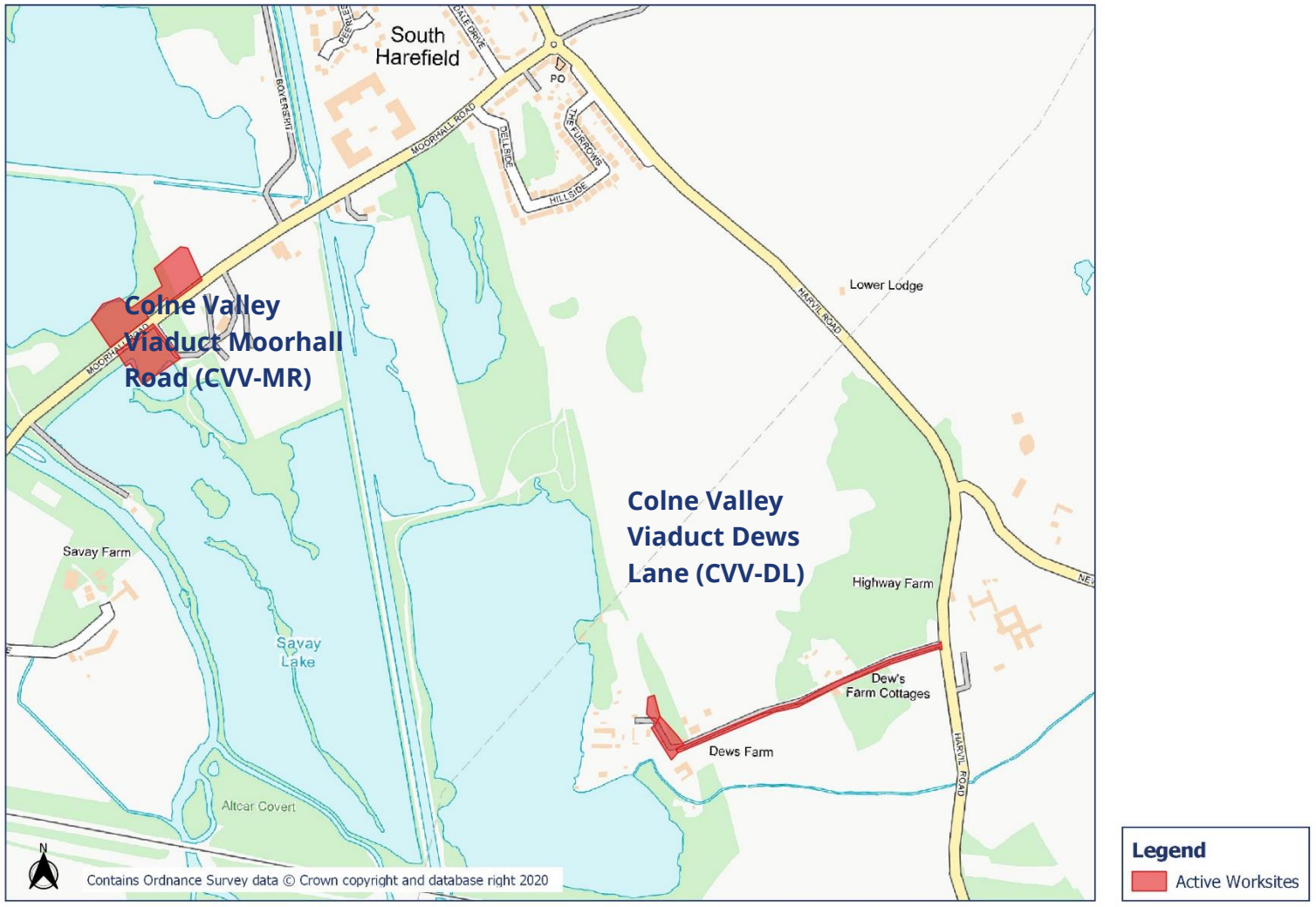
Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
		hammering during morning and evening causing disturbance.		
HS2-22-43242-C	WRP	Complaint due to noise disturbance from loud construction works starting from 8AM on Sunday morning.	No address was attached to this complaint and so it was assumed to refer to West Ruislip Compound. Complaint has been discussed with site team, who confirmed that works on the day of complaint were limited to placement and reinforcement of bars in excavated areas. Noise monitoring data also reviewed, and noise were within Section 61 predictions and Best Practicable Means were adopted throughout.	The complainant was asked to provide further information regarding location, so that a more detailed assessment could be undertaken, and mitigation identified if necessary.

Appendix A Site Locations

Noise monitoring plan - Overview

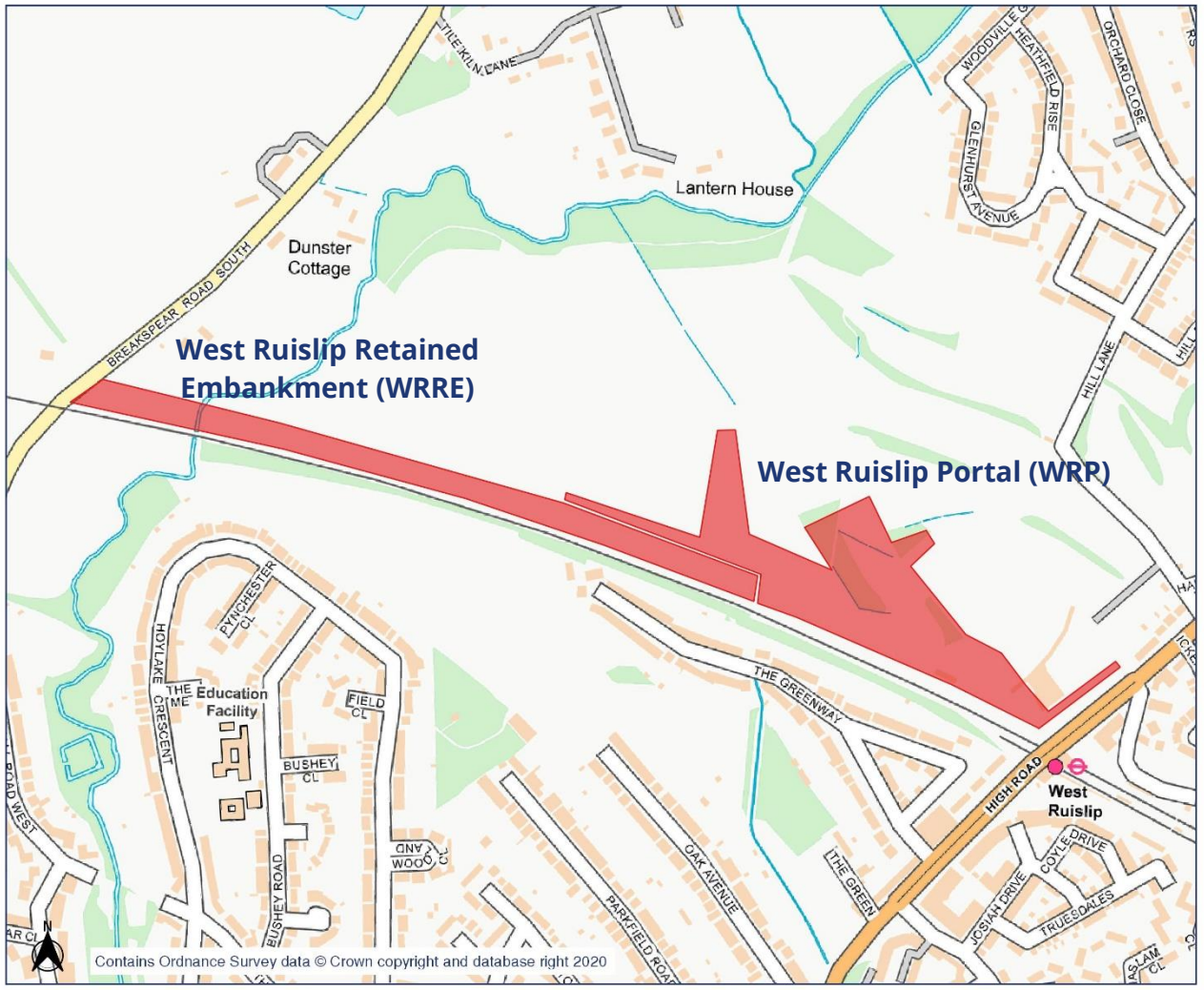


HS2 Worksite Identification Plan - 1

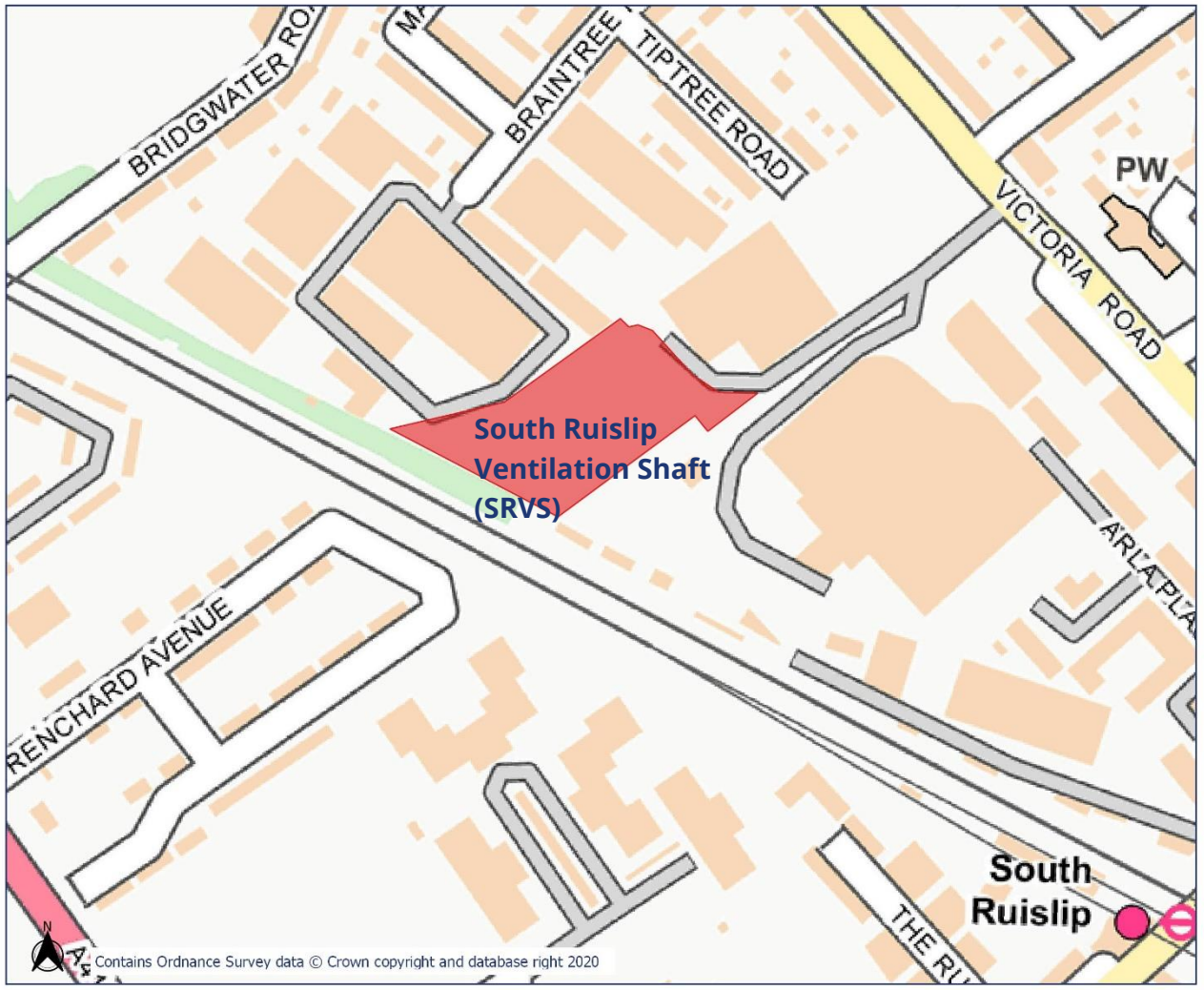


Worksite Identification Plan - 2

HS2 Worksite identification plan - 3



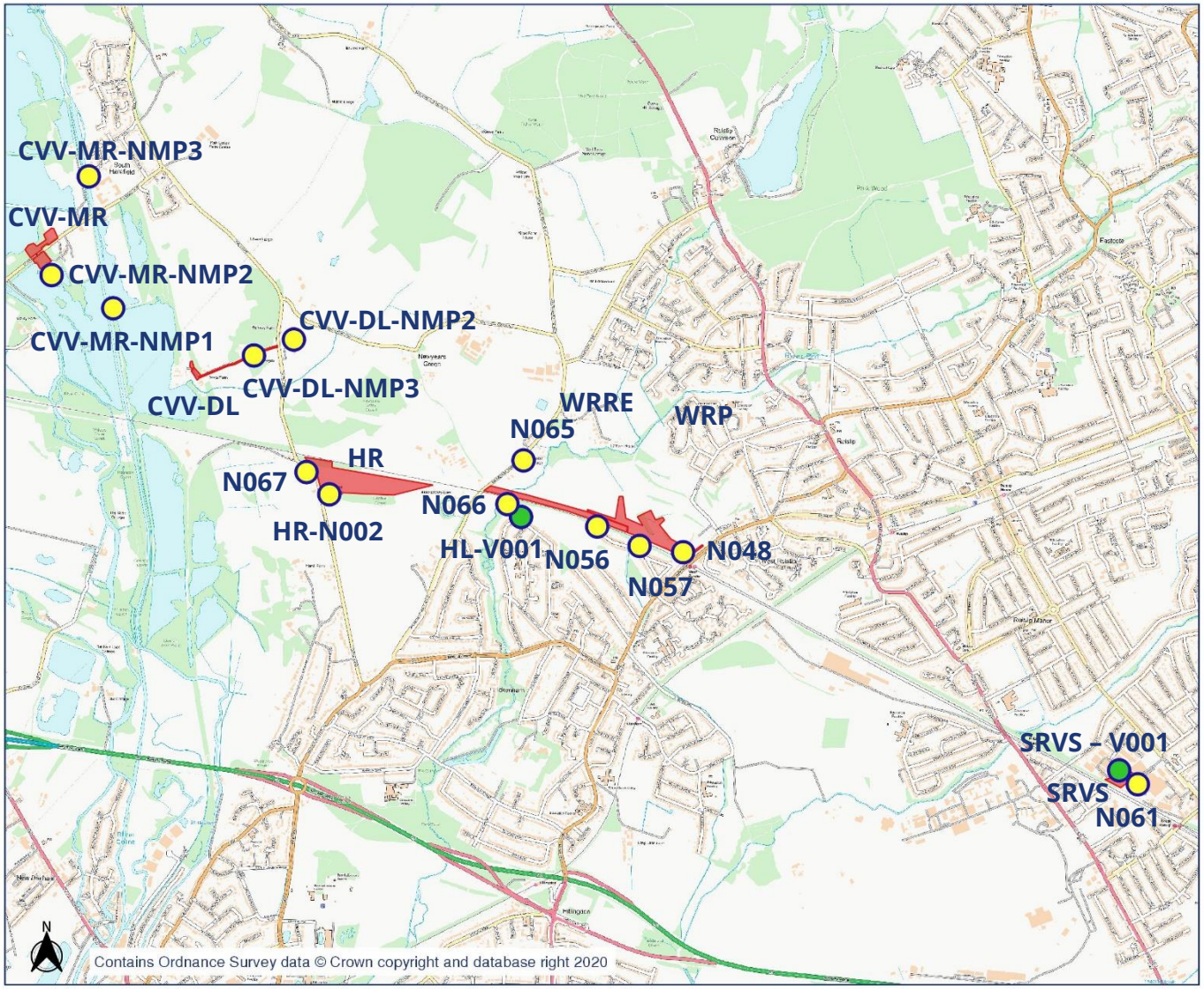
HS2 Worksite Identification Plan - 4



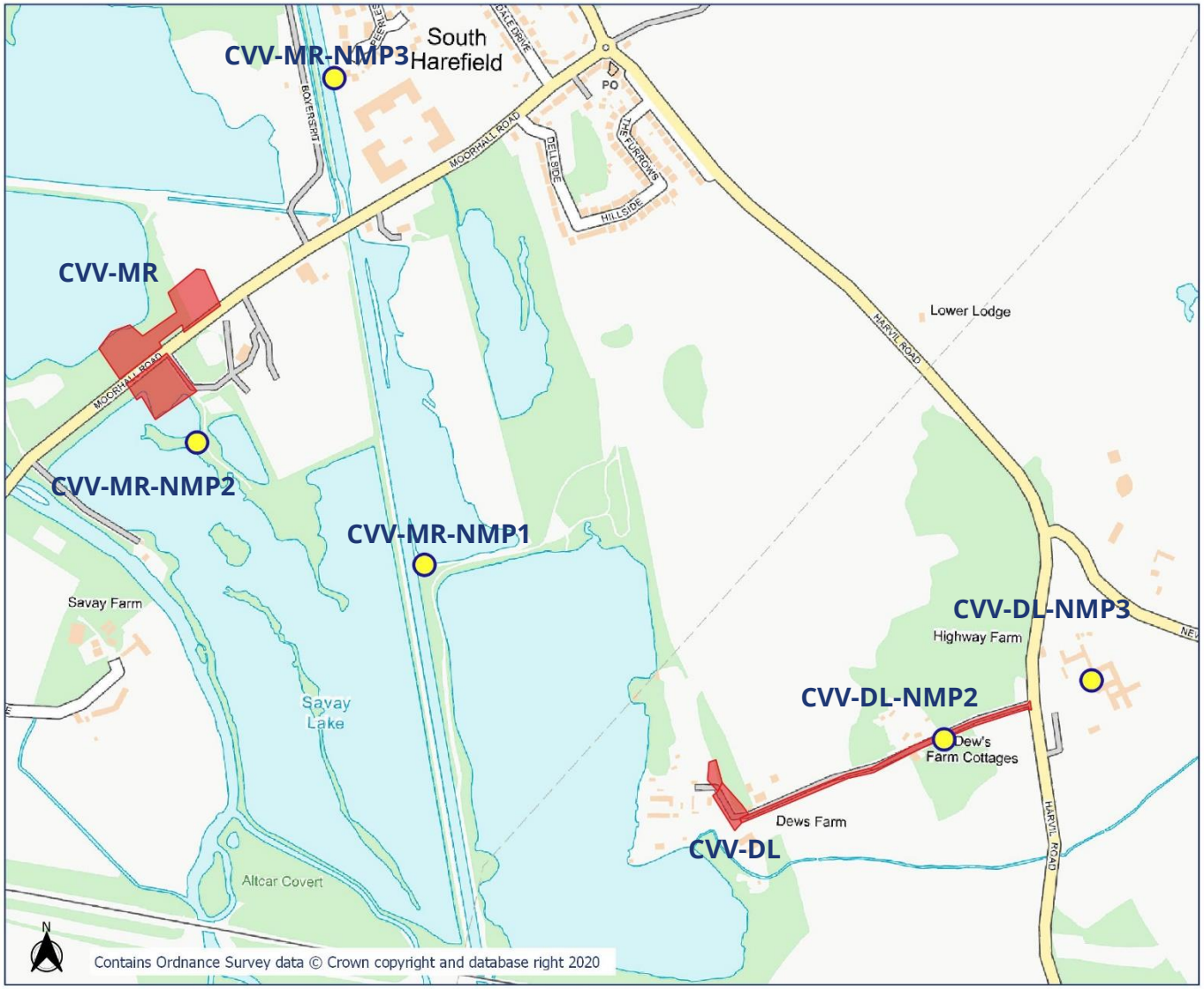
Appendix B Monitoring Locations

HS2

Noise monitoring plan - Overview

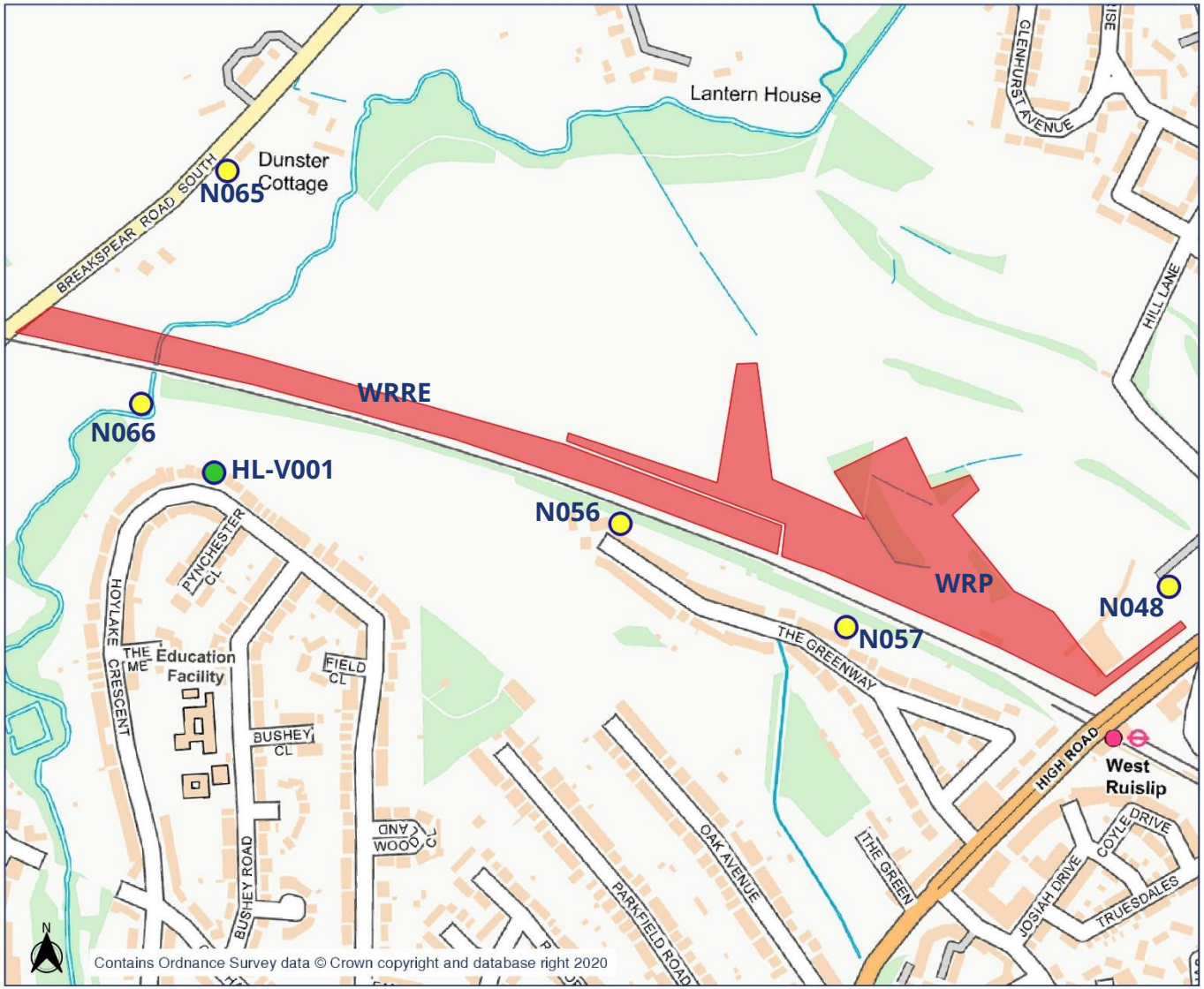


Noise Monitoring Plan - 1

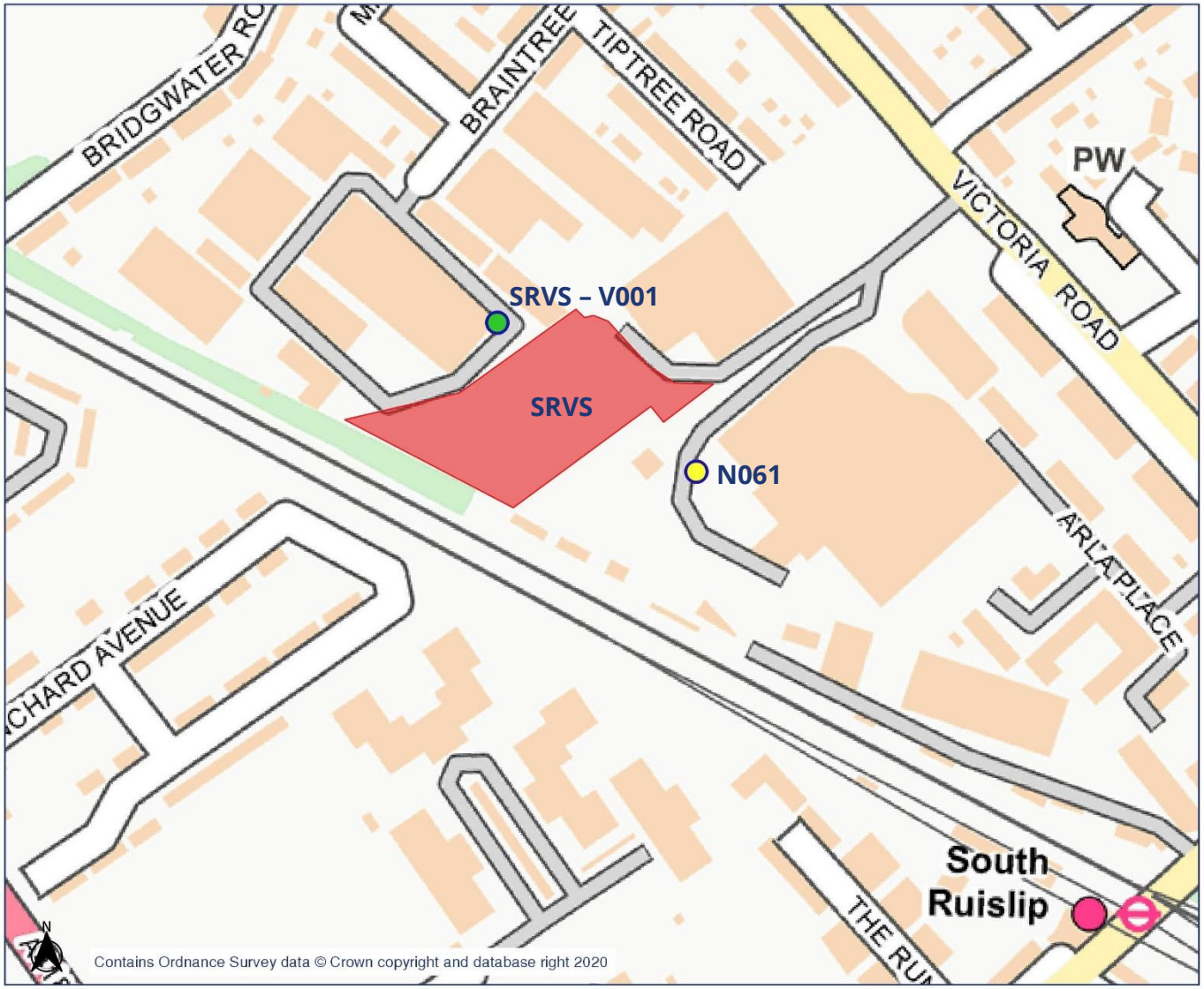


Noise Monitoring Plan - 2

Noise monitoring plan - 3



Noise monitoring plan - 4



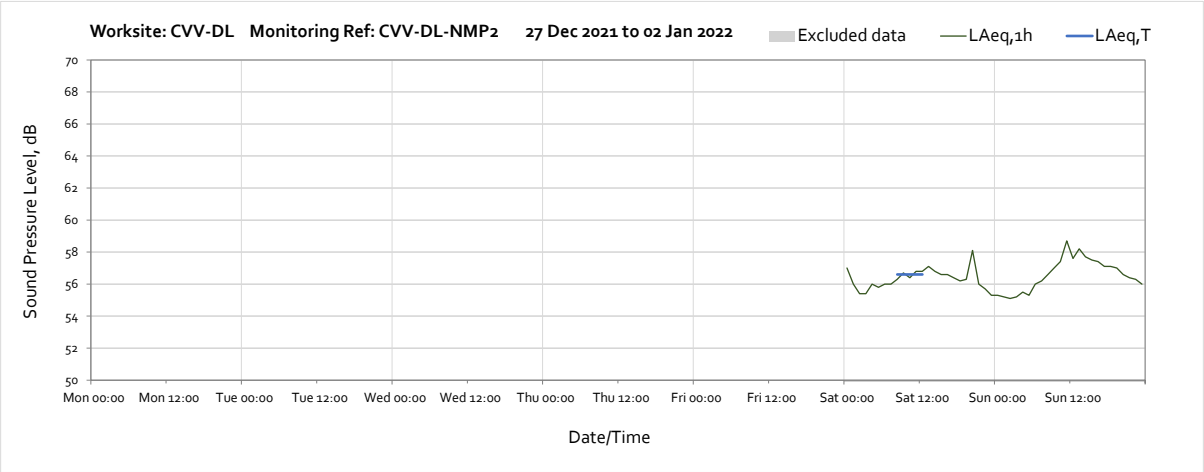
Appendix C Data

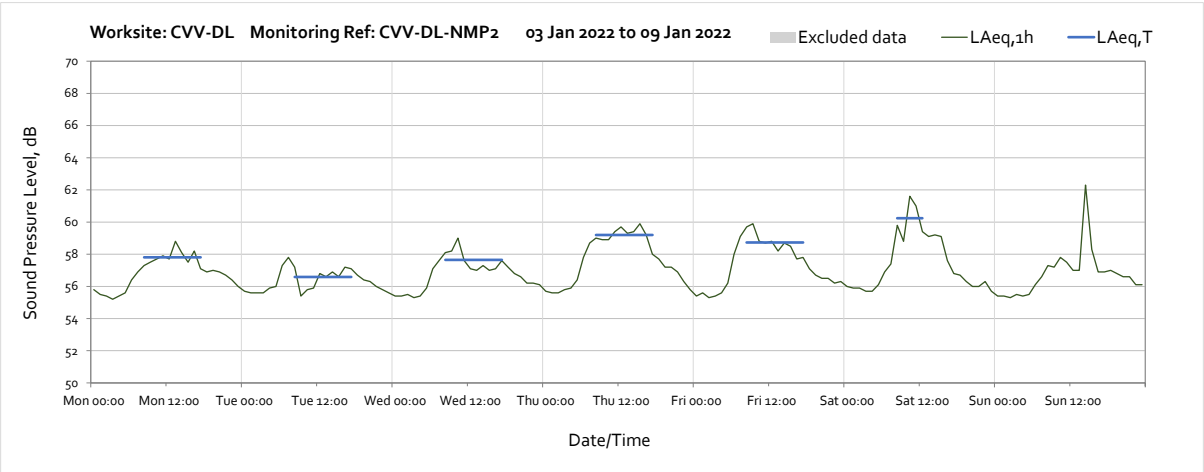
Noise

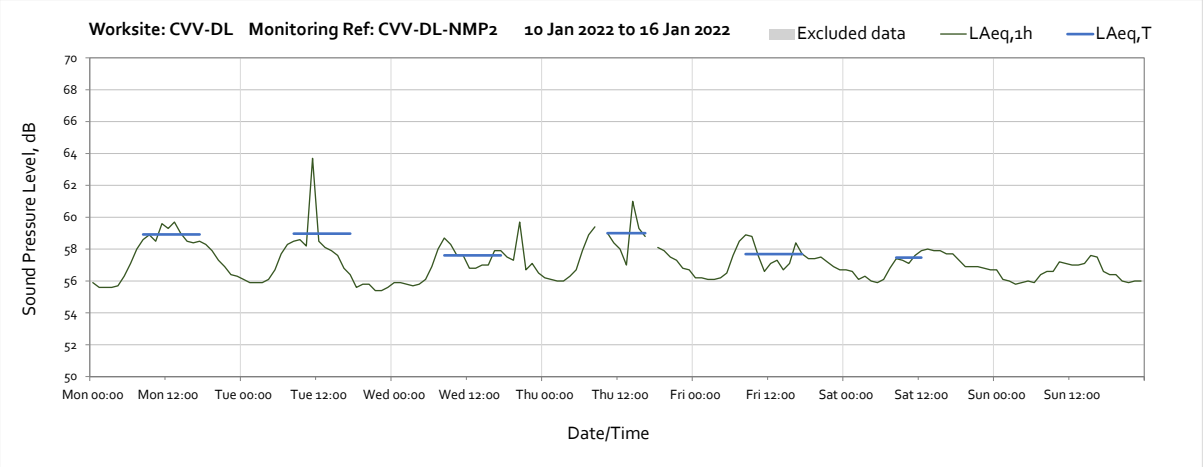
The following graphs show the hourly measured ambient noise level $L_{Aeq,1h}$ and, where relevant, the averaged noise level $L_{Aeq,T}$ values, where the time period T is as specified in Table 1 of HS2 Information Paper E23. Periods with adversely weather affected noise levels are greyed out and have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

Worksite: Colne Valley Viaduct Dews Lane (CVV-DL)

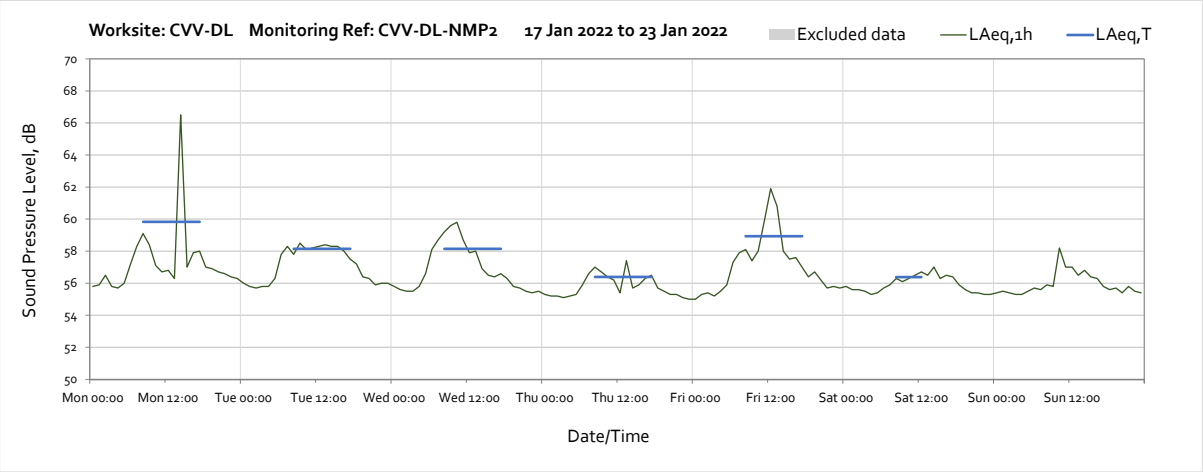
Monitoring Ref: CVV-DL-NMP2

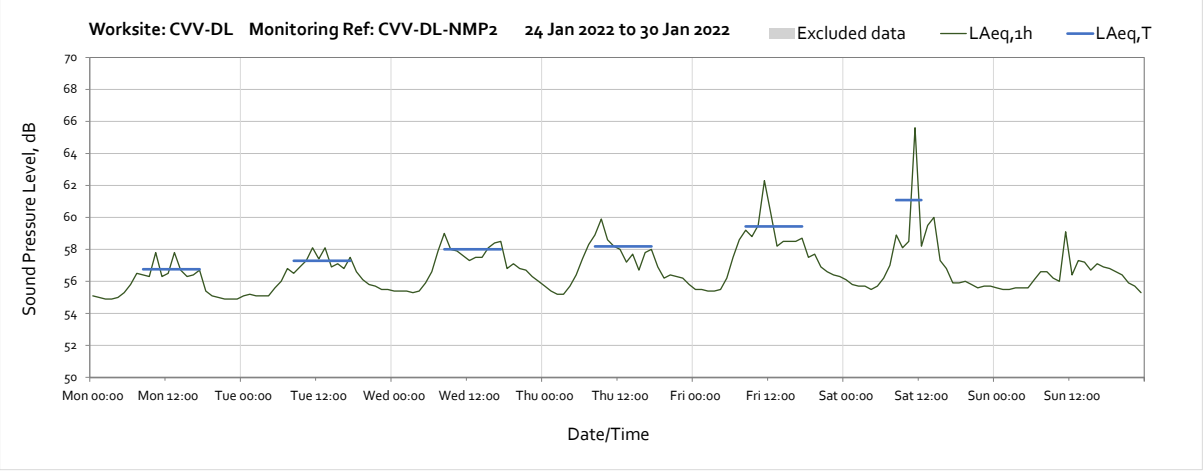


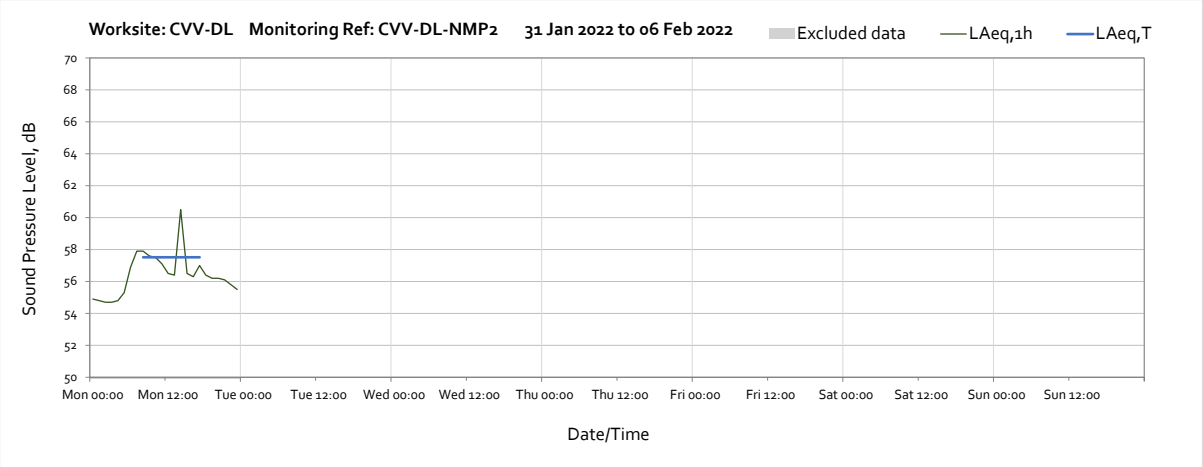




Note: Missing data at 09:00 and 17:00 on Thursday 13th January 2022 was due to monitoring station loss of connection.

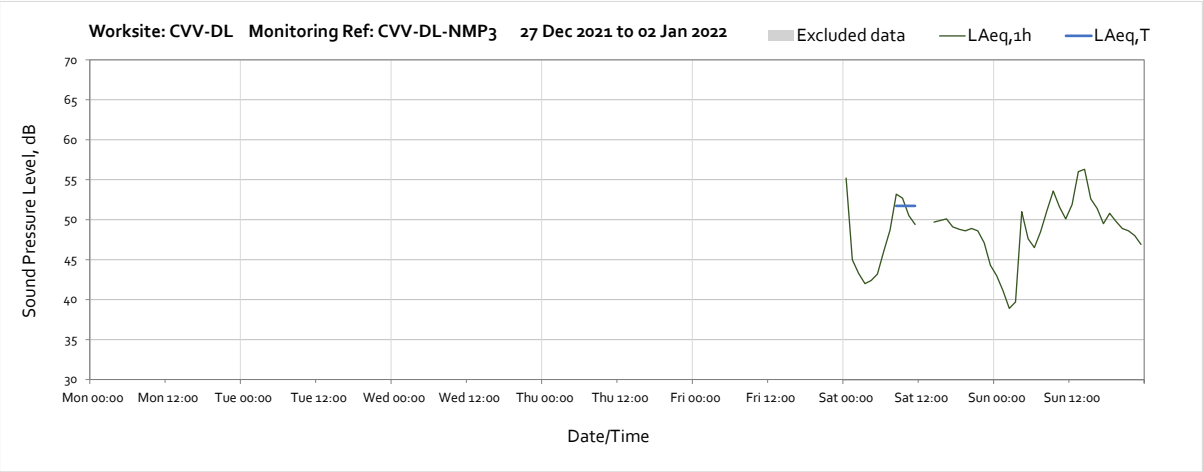




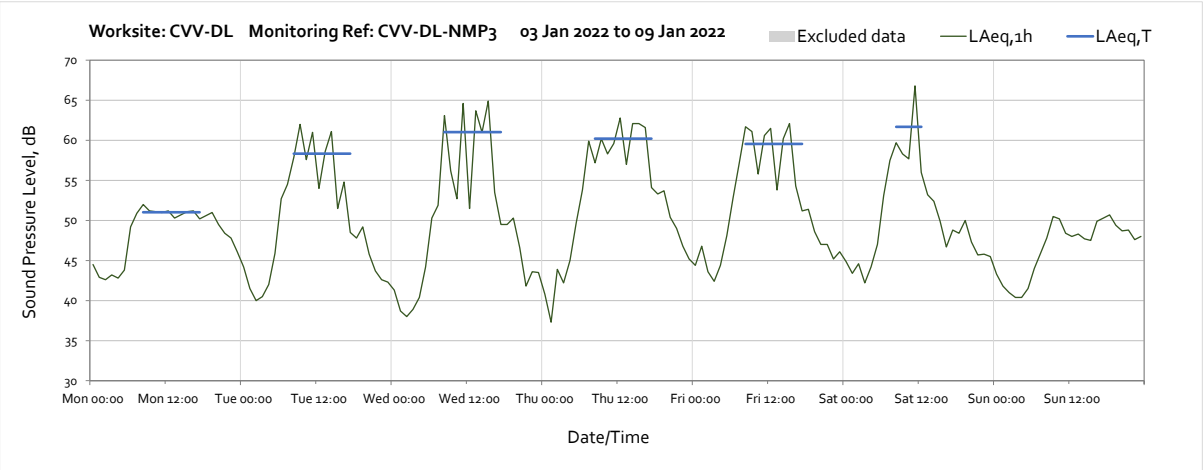


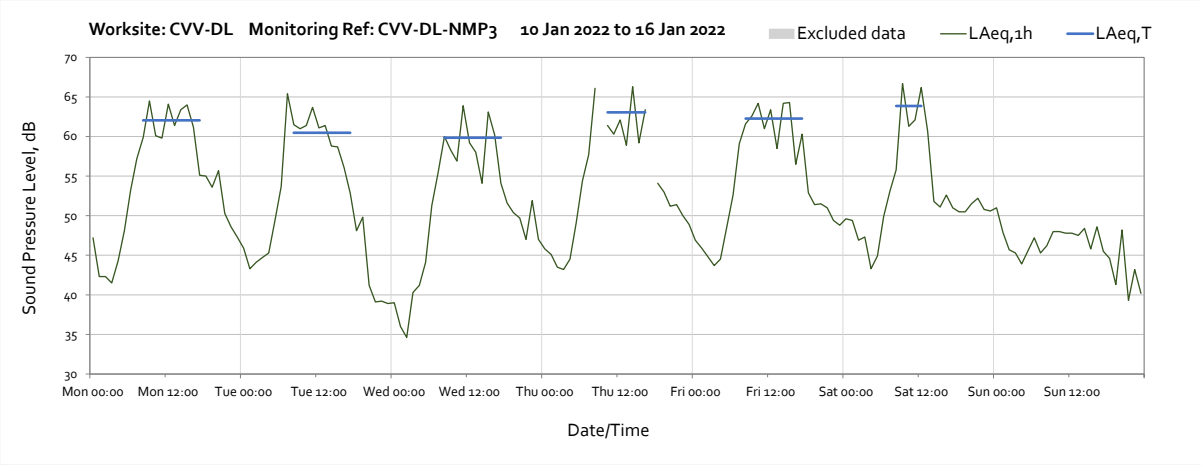
Worksite: Colne Valley Viaduct Dews Lane (CVV-DL)

Monitoring Ref: CVV-DL-NMP3

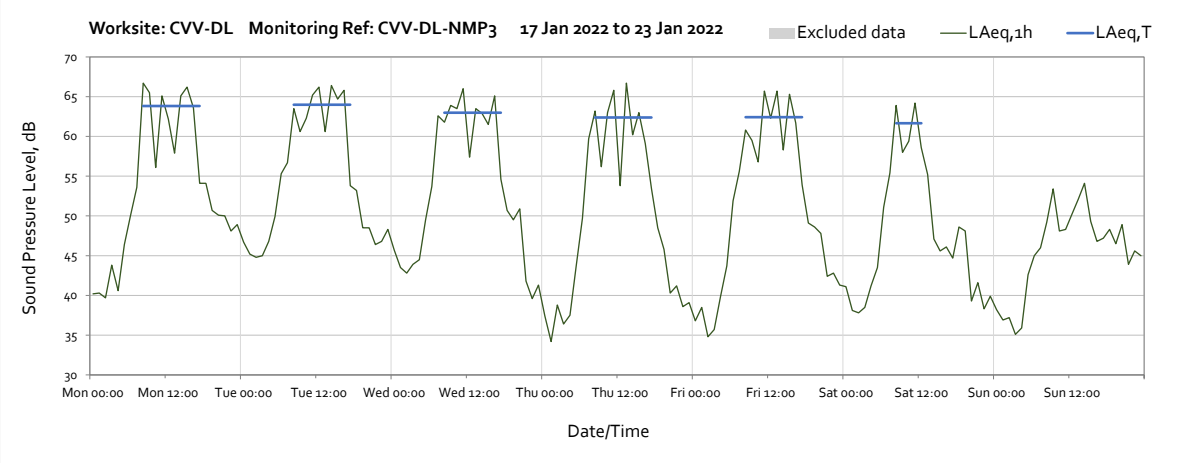


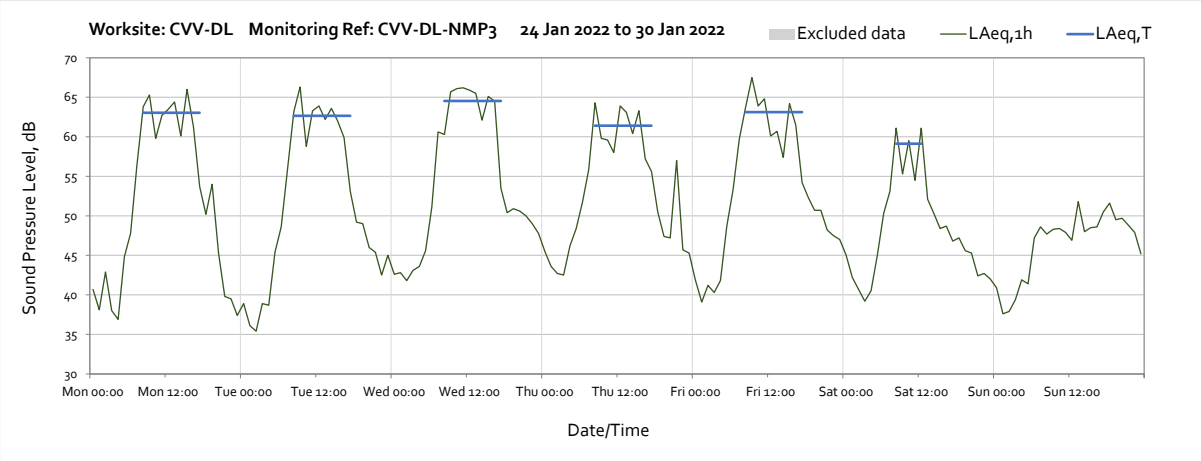
Note: Missing data between 12:00 and 13:00 on Saturday 1st January 2022 was due to monitoring station loss of connection. High noise levels measured at 00:00 on Saturday 1st January were due to New Year Night celebration.

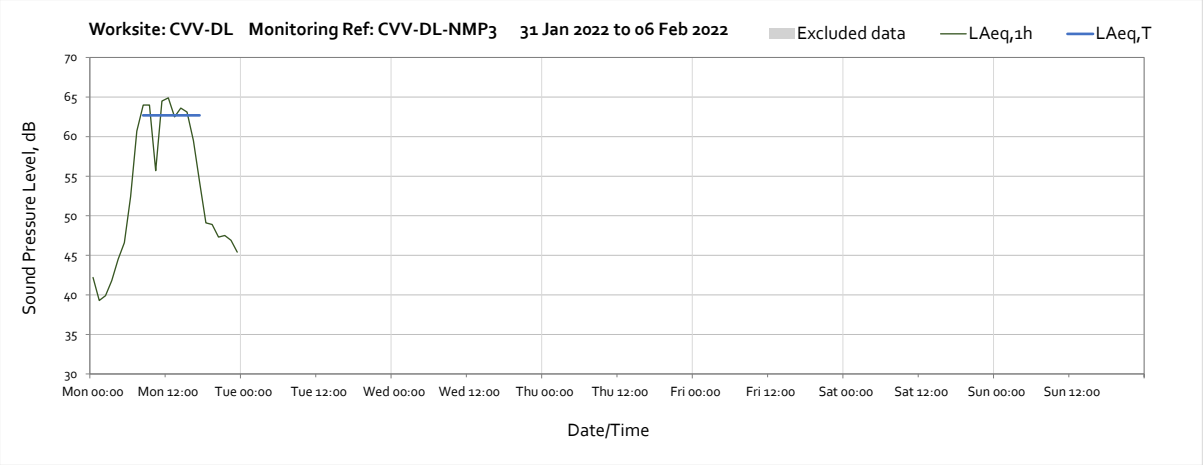




Note: Missing data at 09:00 and 17:00 on Thursday 13th January 2022 was due to monitoring station loss of connection.

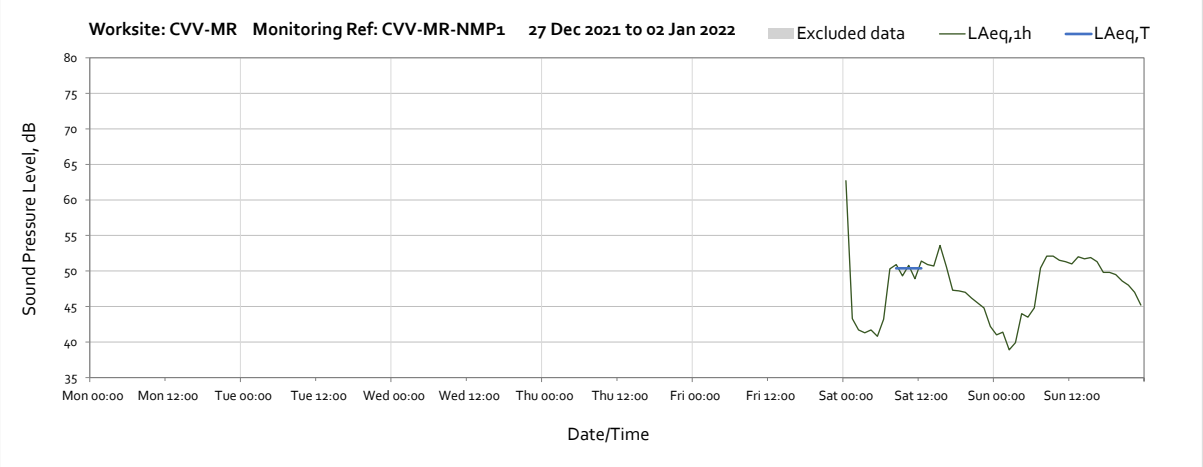




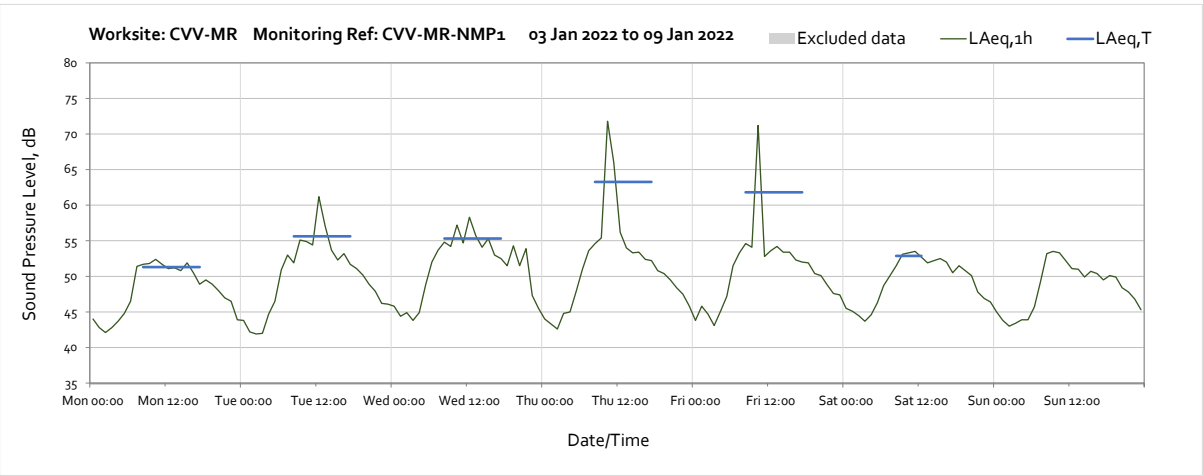


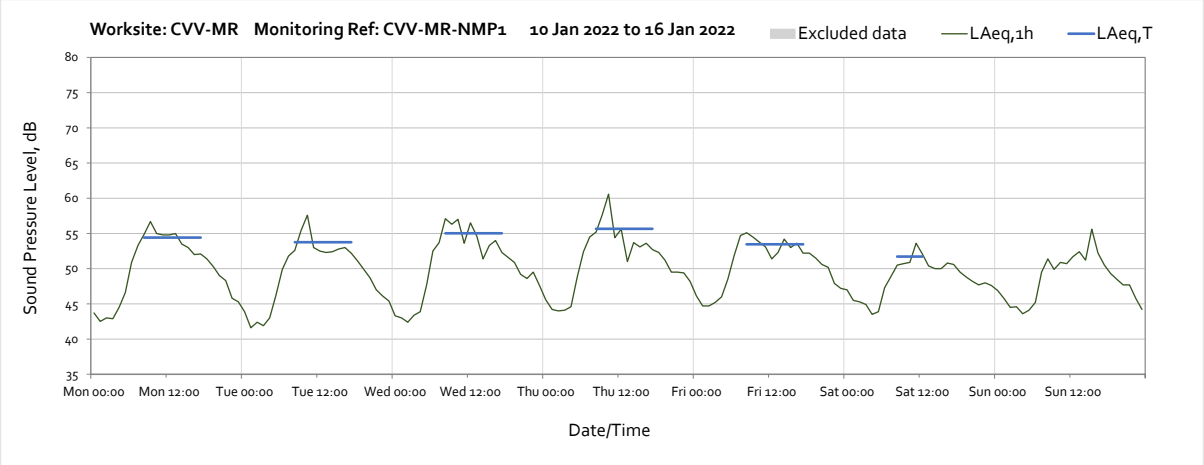
Worksite: Colne Valley Viaduct Moorhall Road (CVV-MR)

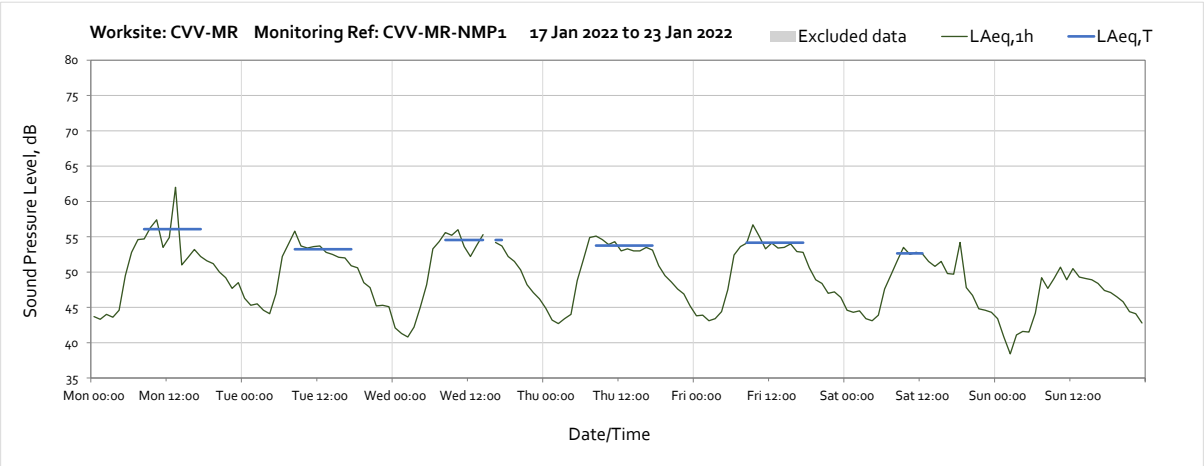
Monitoring Ref: CVV-MR-NMP1



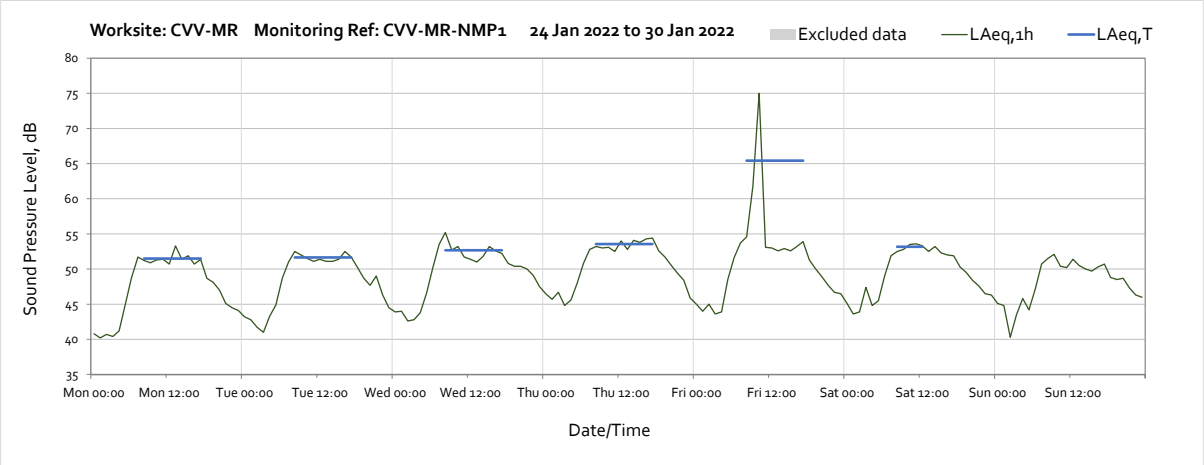
Note: High noise levels measured at 00:00 on Saturday 1st January were due to New Year Night celebration.

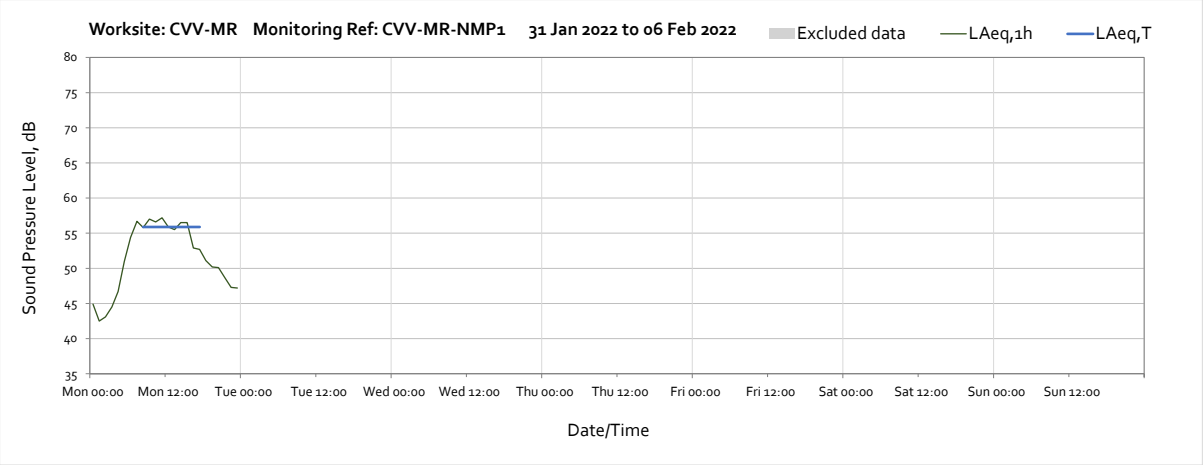






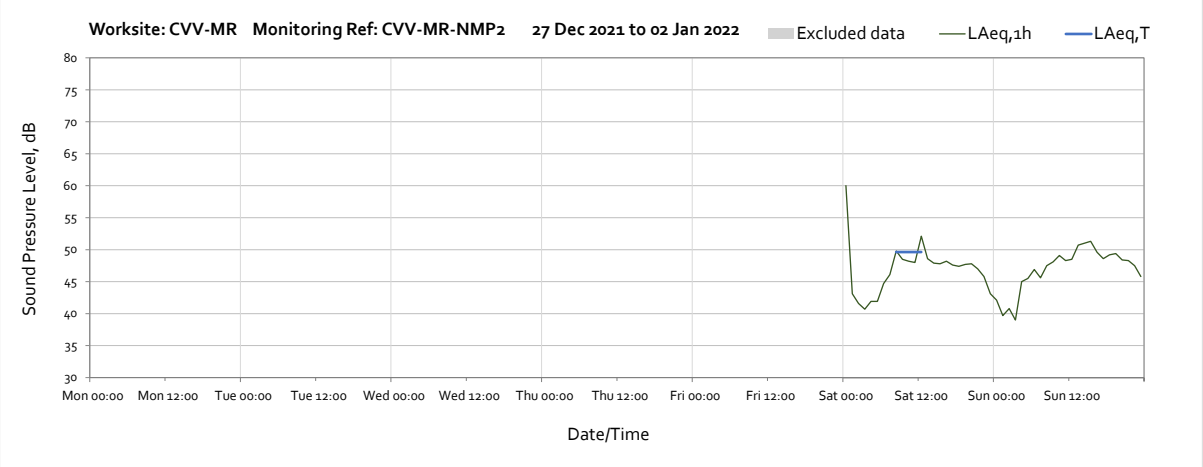
Note: Missing data at 15:00 on Wednesday 19th January 2022 was due to field calibration.



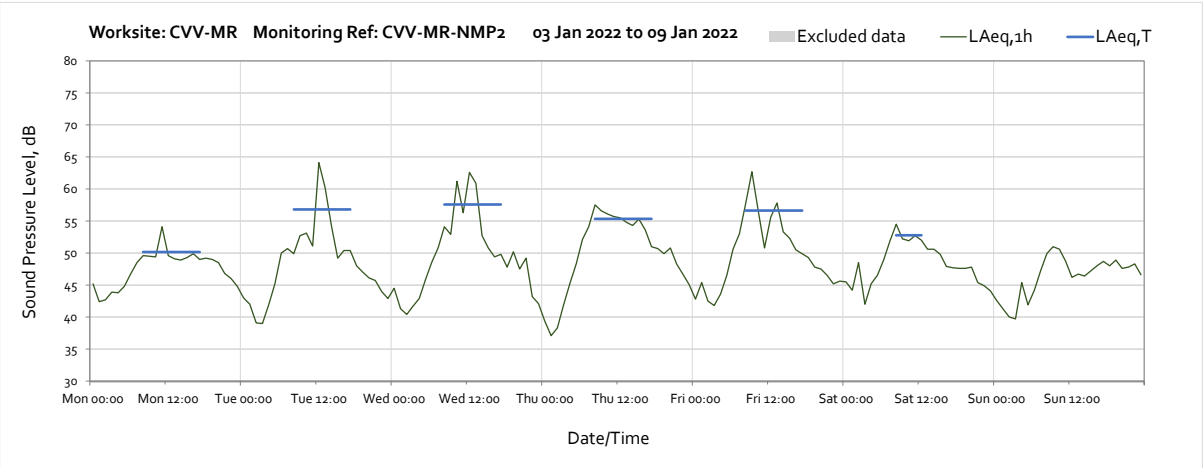


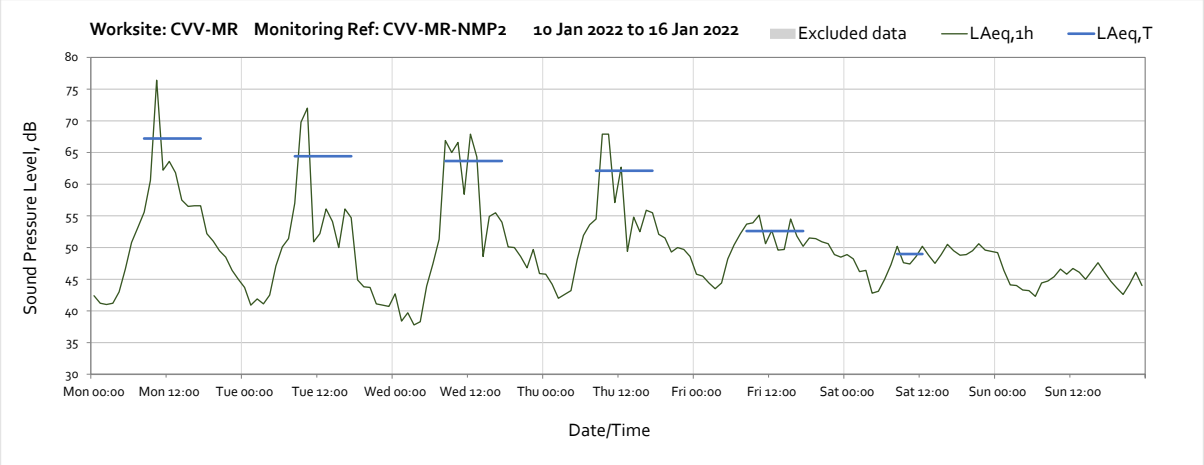
Worksite: Colne Valley Viaduct Moorhall Road (CVV-MR)

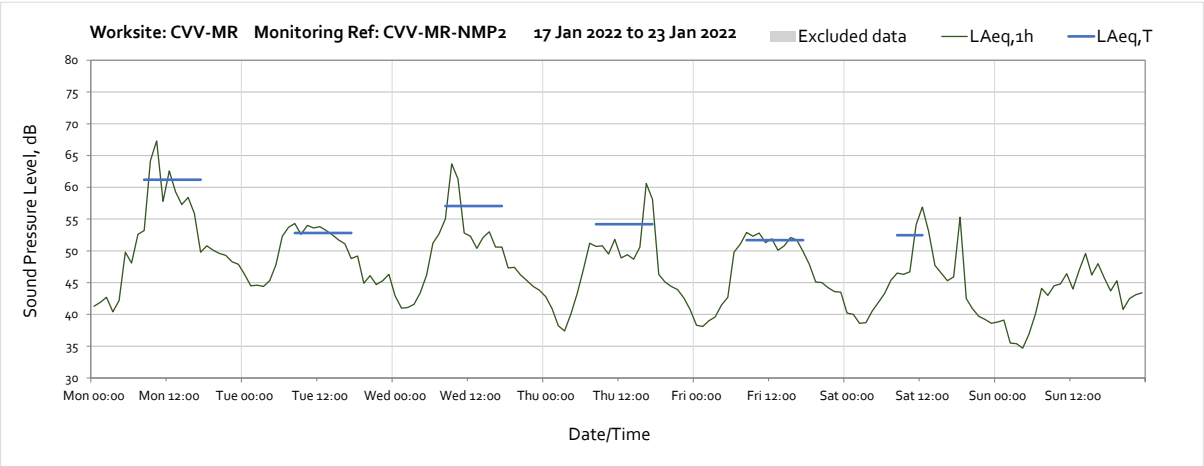
Monitoring Ref: CVV-MR-NMP2



Note: High noise levels measured at 00:00 on Saturday 1st January were due to New Year Night celebration.




Worksite: CVV-MR Monitoring Ref: CVV-MR-NMP2 10 Jan 2022 to 16 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
80
75
70
65
60
55
50
45
40
35
30
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: CVV-MR Monitoring Ref: CVV-MR-NMP2 17 Jan 2022 to 23 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
80
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50
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30
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
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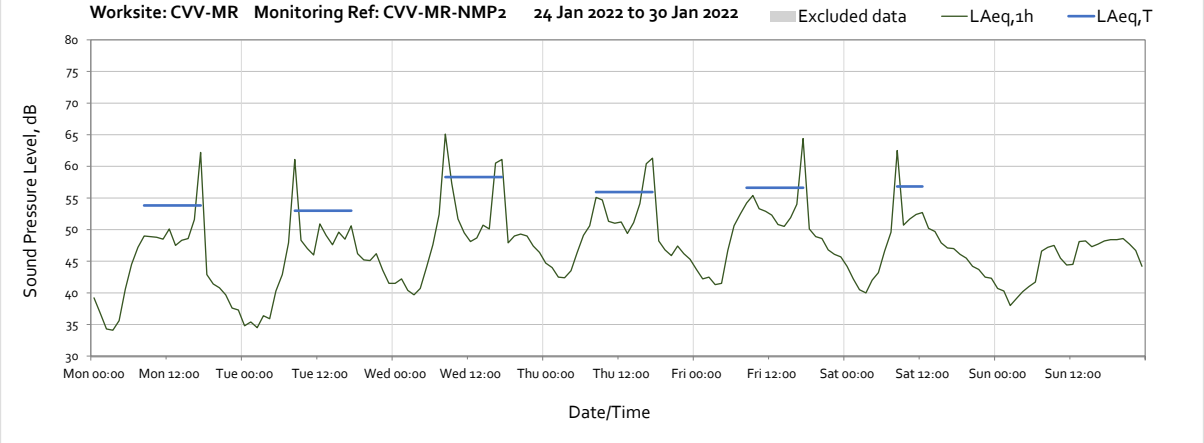
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: CVV-MR Monitoring Ref: CVV-MR-NMP2 24 Jan 2022 to 30 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
80
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30
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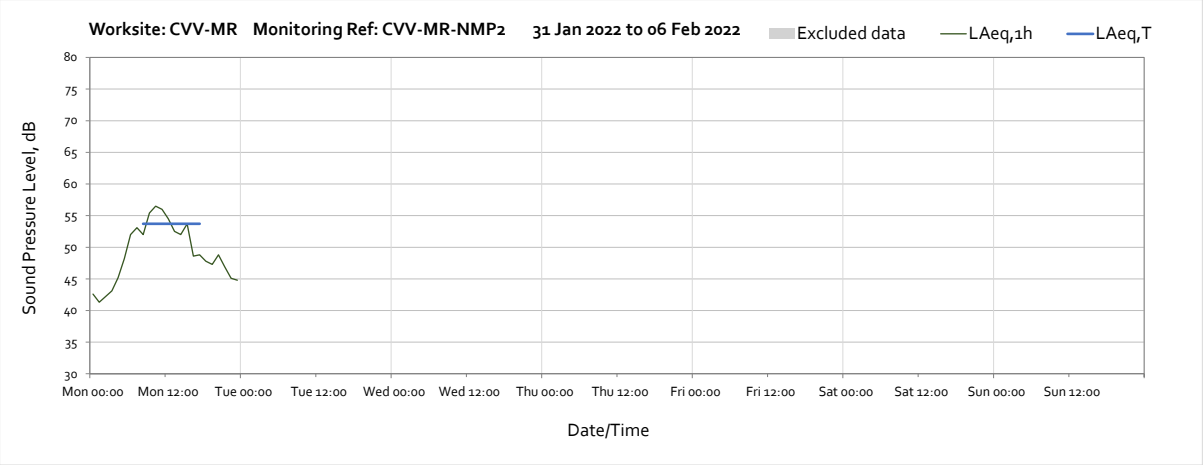
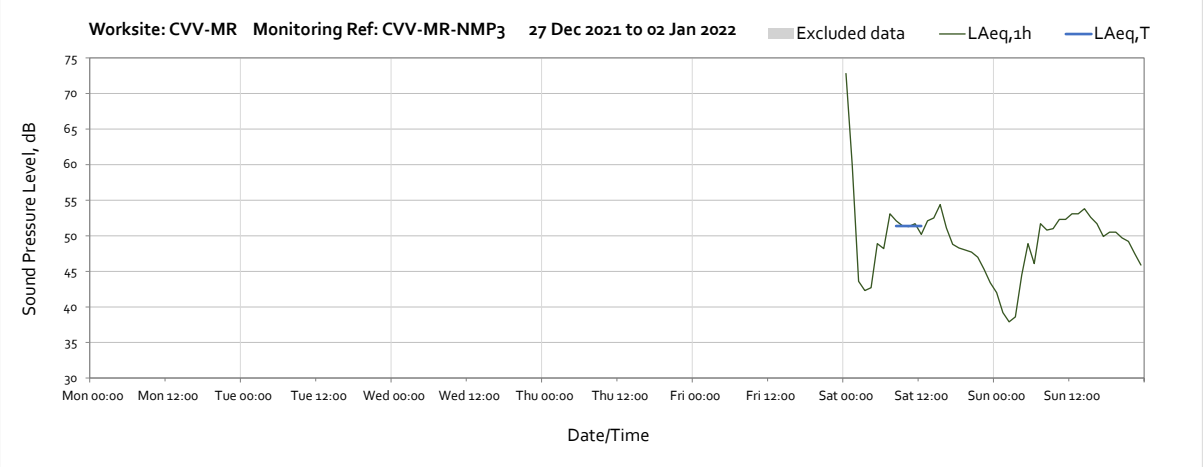
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

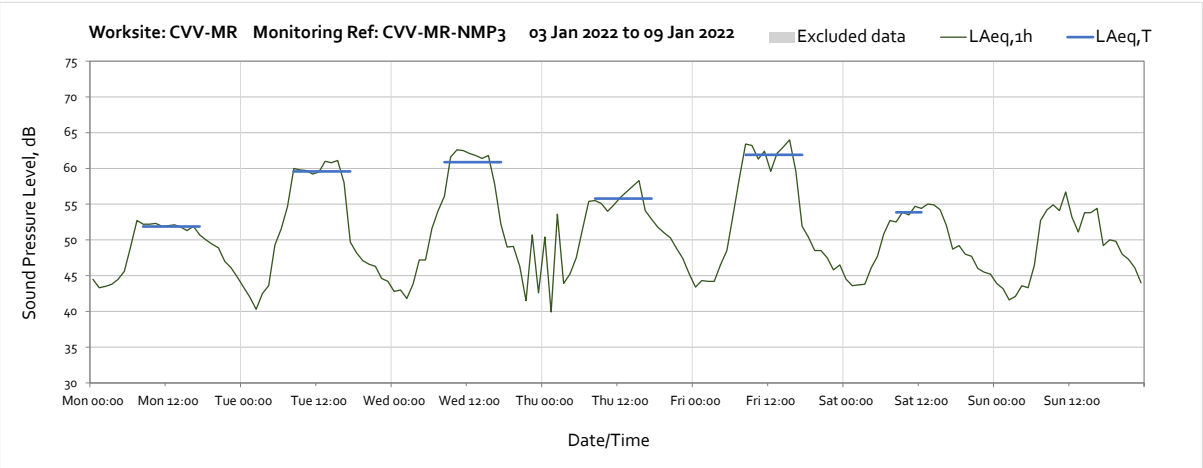


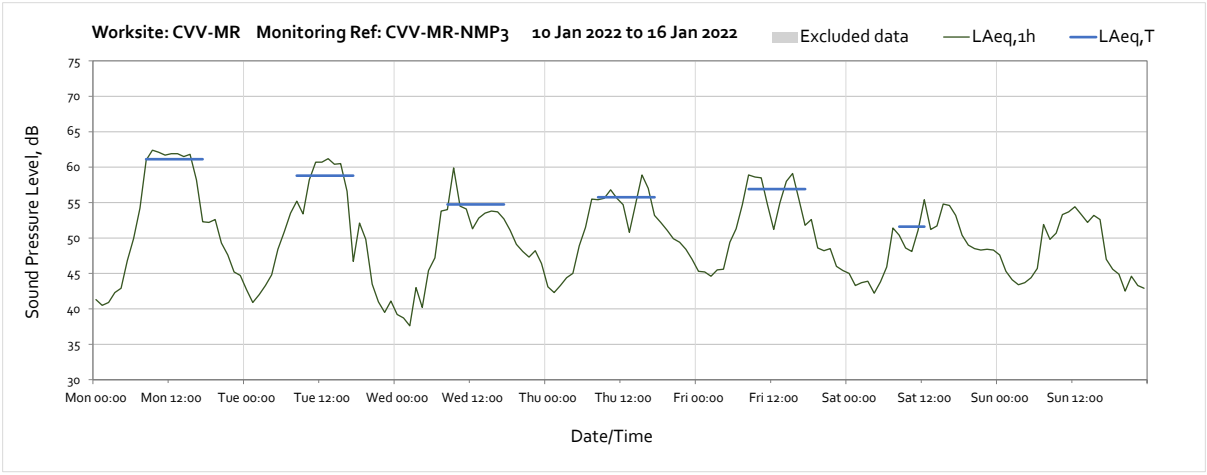
Worksite: Colne Valley Viaduct Moorhall Road (CVV-MR)

Monitoring Ref: CVV-MR-NMP3



Note: High noise levels measured at 00:00 on Saturday 1st January were due to New Year Night celebration.




Worksite: CVV-MR Monitoring Ref: CVV-MR-NMP3 10 Jan 2022 to 16 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
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60
55
50
45
40
35
30
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
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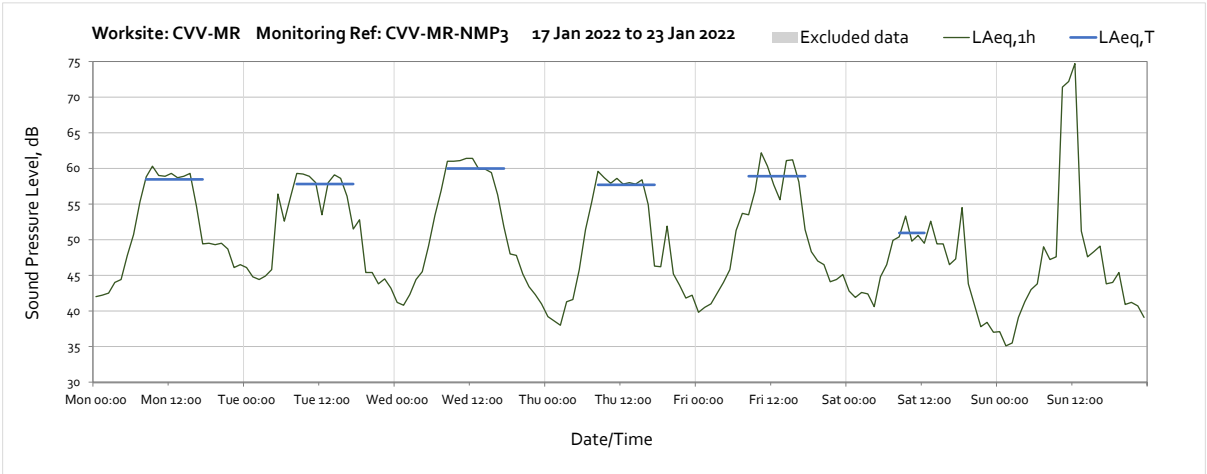
Sun 00:00
Sun 12:00
Date/Time


Worksite: CVV-MR Monitoring Ref: CVV-MR-NMP3 17 Jan 2022 to 23 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
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50
45
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35
30
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
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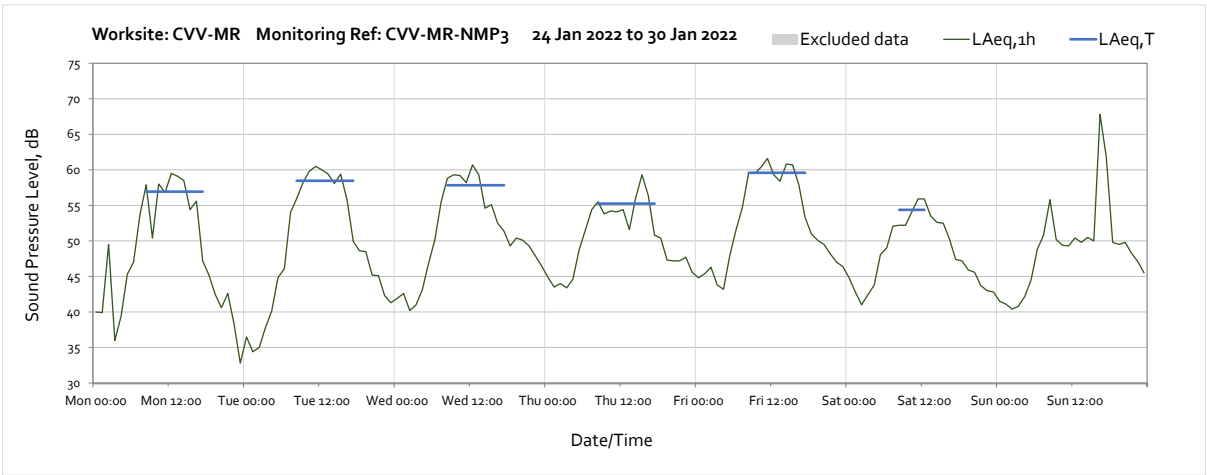
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time


Worksite: CVV-MR Monitoring Ref: CVV-MR-NMP3 24 Jan 2022 to 30 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
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Mon 12:00
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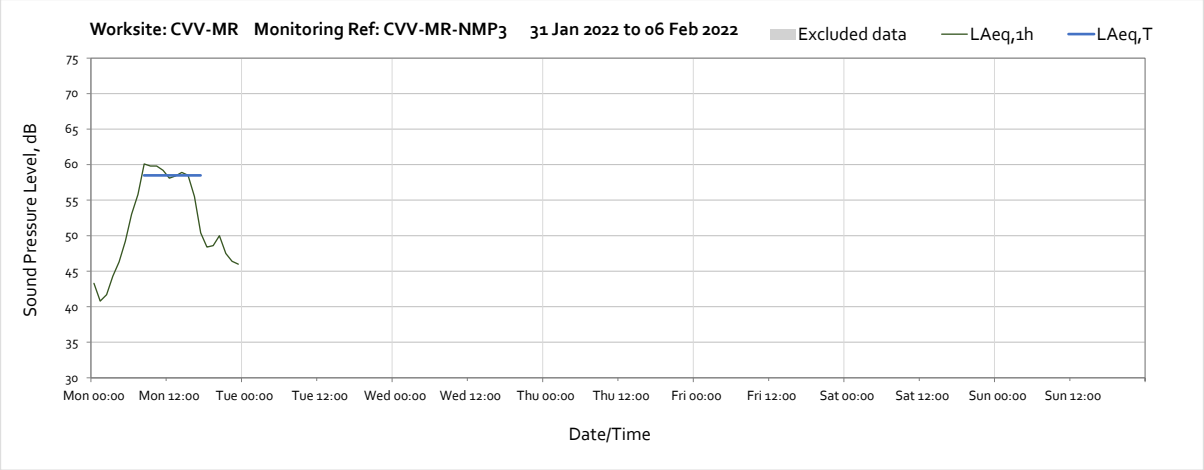
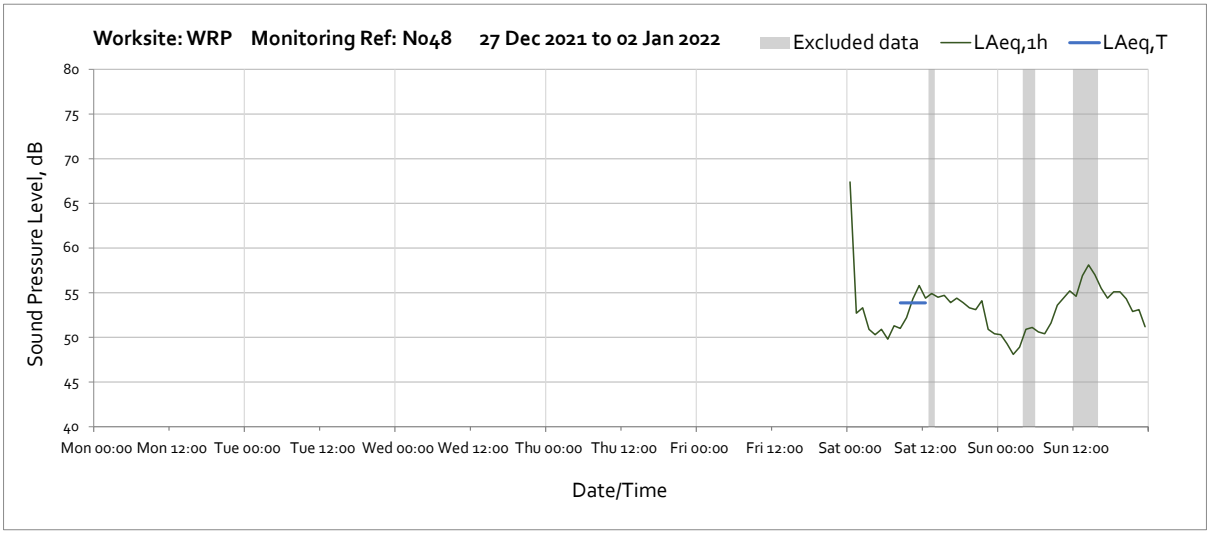
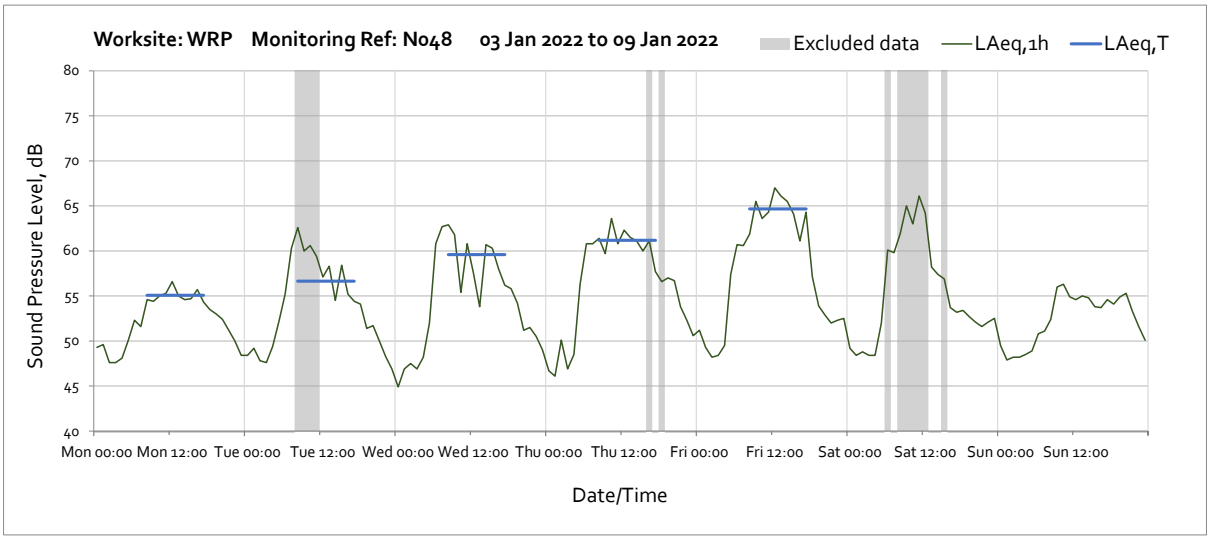
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

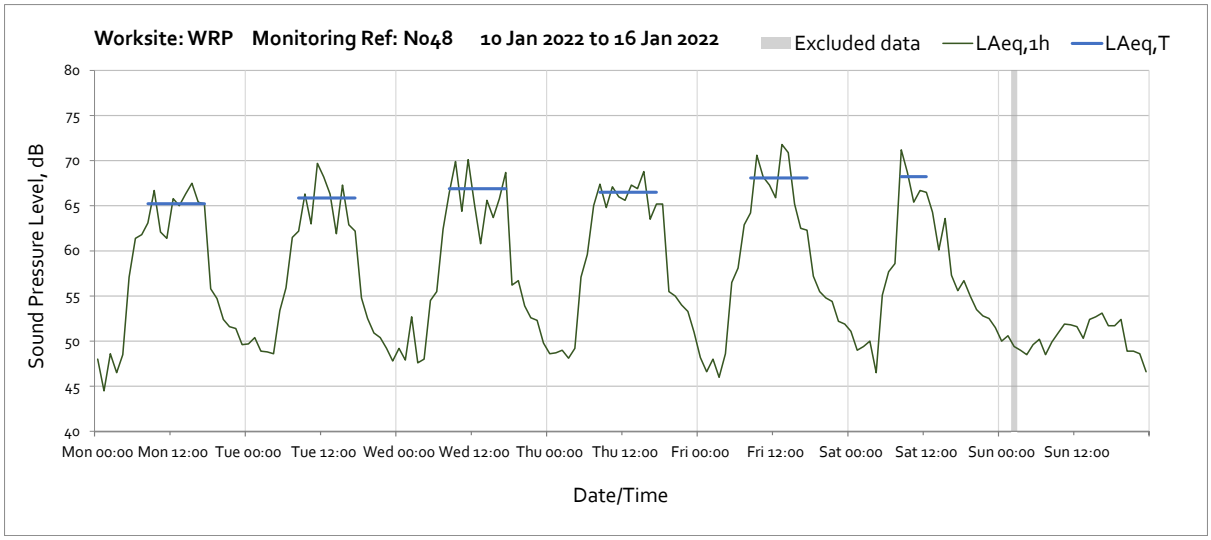


Worksite: West Ruislip Portal (WRP) – Monitoring Ref: N048



Note: High noise levels measured at 00:00 on Saturday 1st January were due to New Year Night celebration.




Worksite: WRP Monitoring Ref: No48 10 Jan 2022 to 16 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
80
75
70
65
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55
50
45
40
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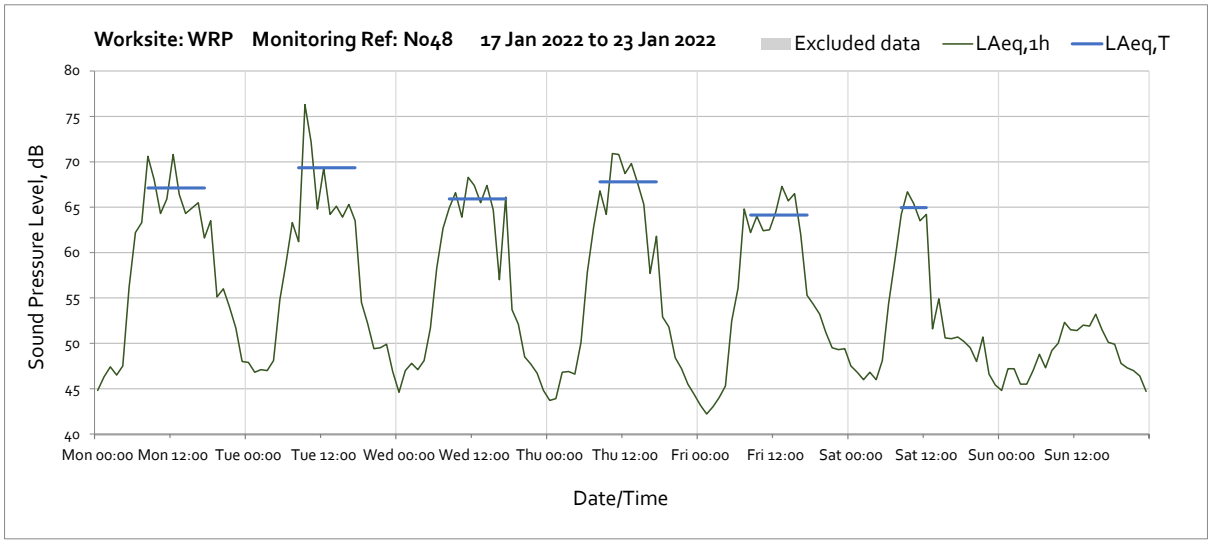
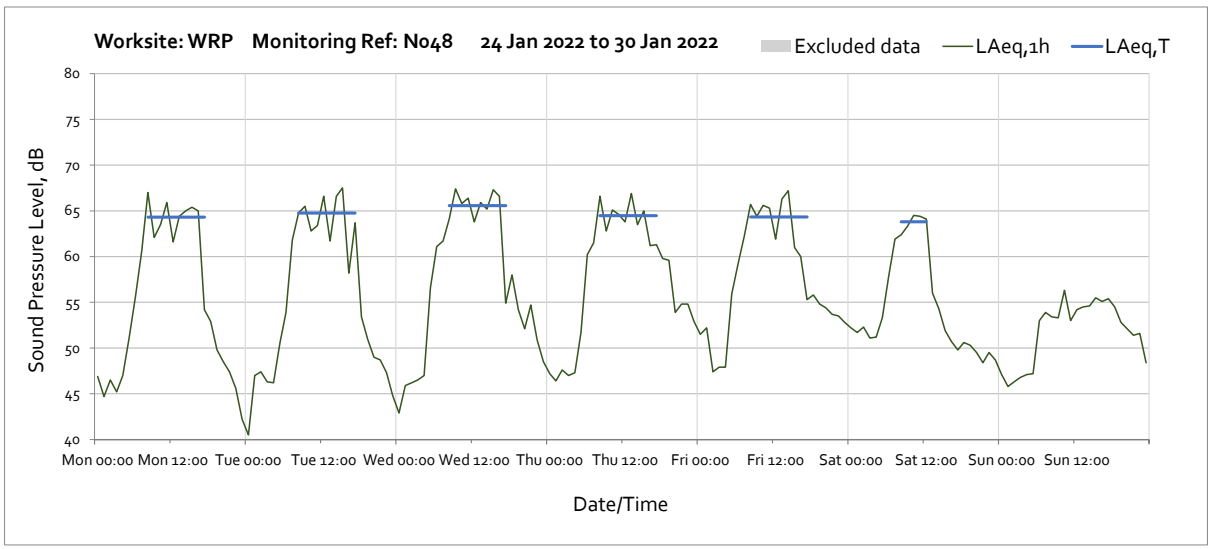
Date/Time


Worksite: WRP Monitoring Ref: No48 17 Jan 2022 to 23 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
80
75
70
65
60
55
50
45
40
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time


Worksite: WRP Monitoring Ref: No48 24 Jan 2022 to 30 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
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75
70
65
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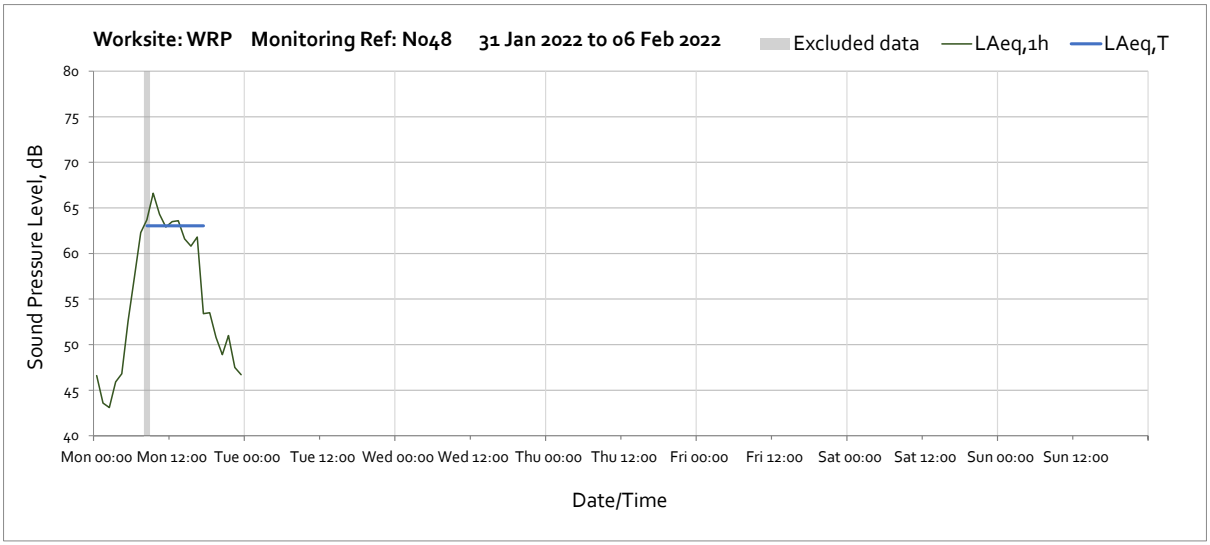
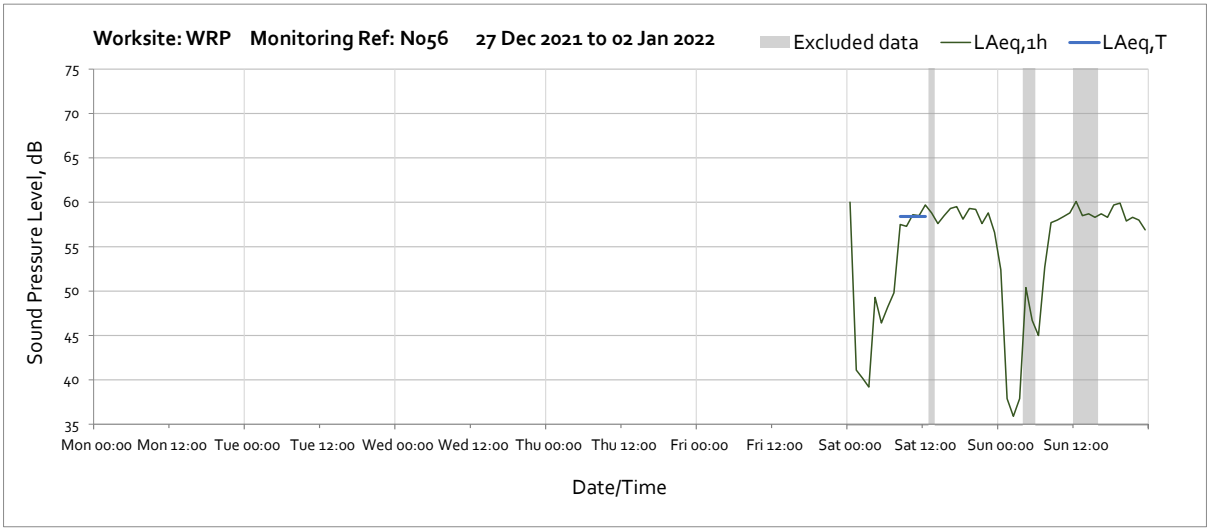
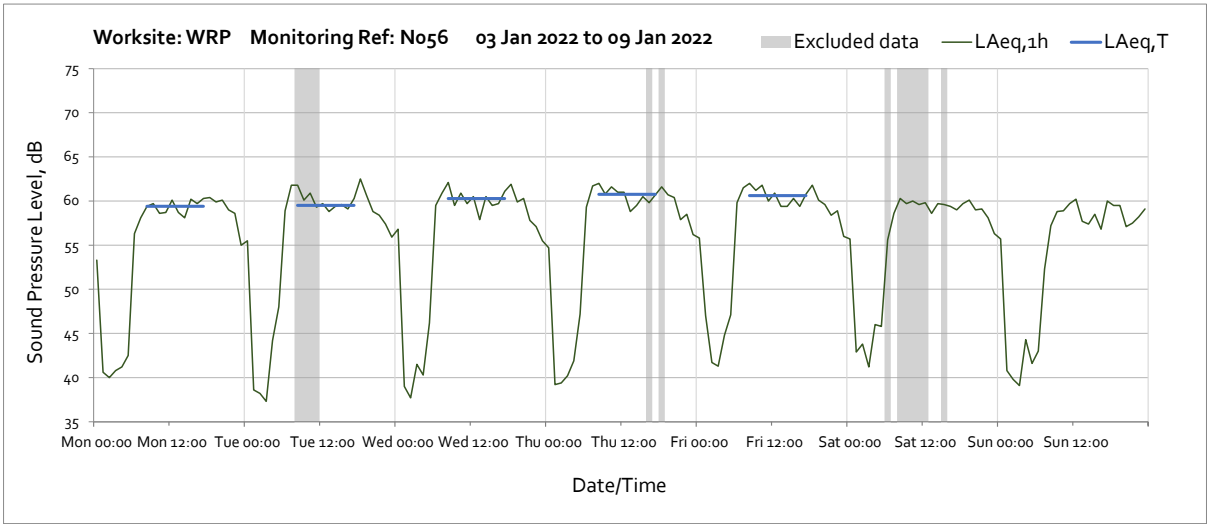
45
40
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time

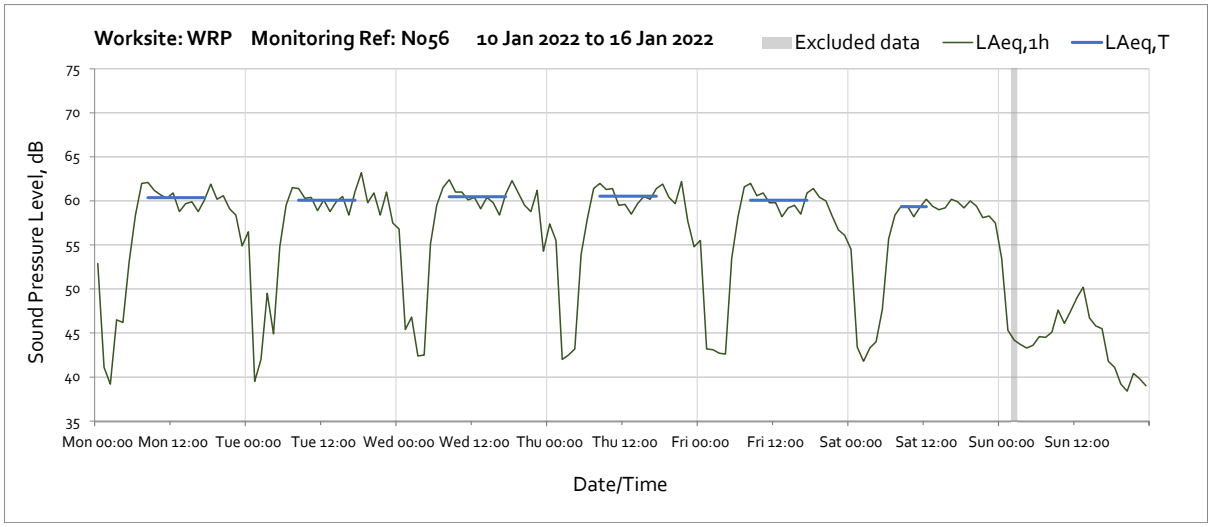


Worksite: West Ruislip Portal (WRP) – Monitoring Ref: N056



Note: High noise levels measured at 00:00 on Saturday 1st January were due to New Year Night celebration.




Worksite: WRP Monitoring Ref: No56 10 Jan 2022 to 16 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
65
60
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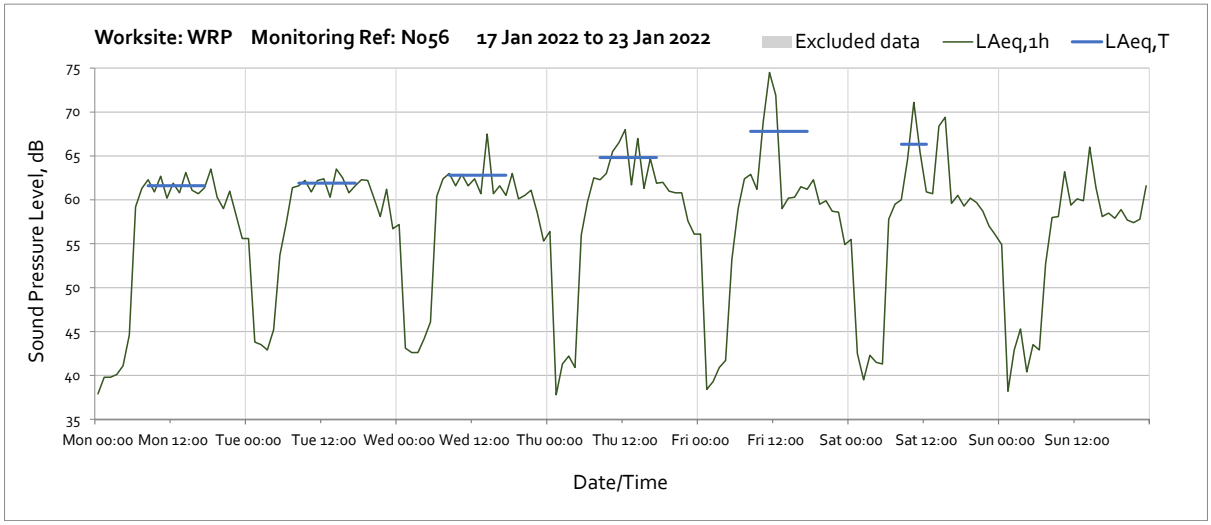
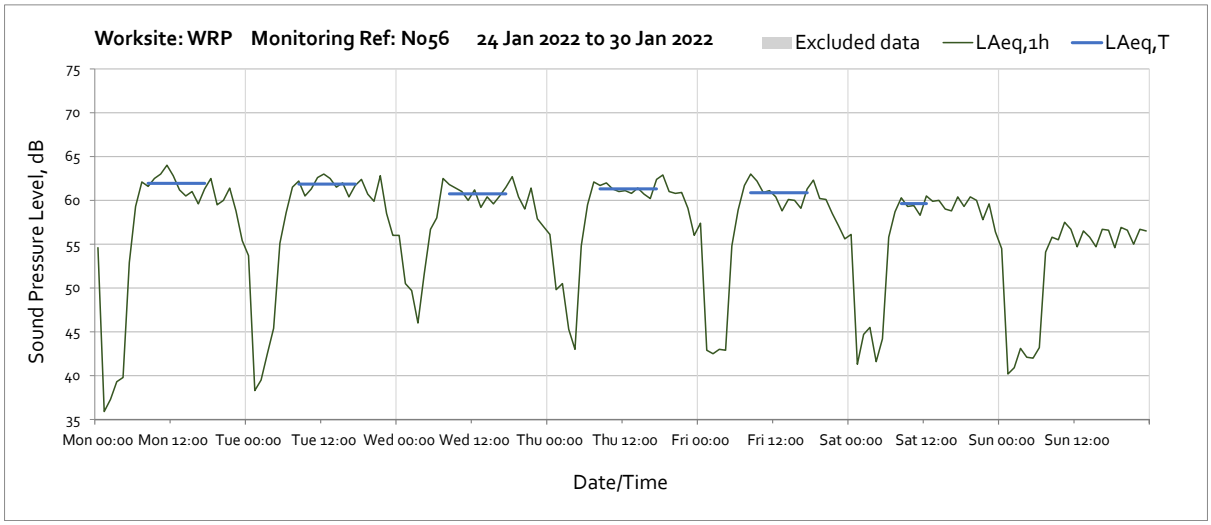
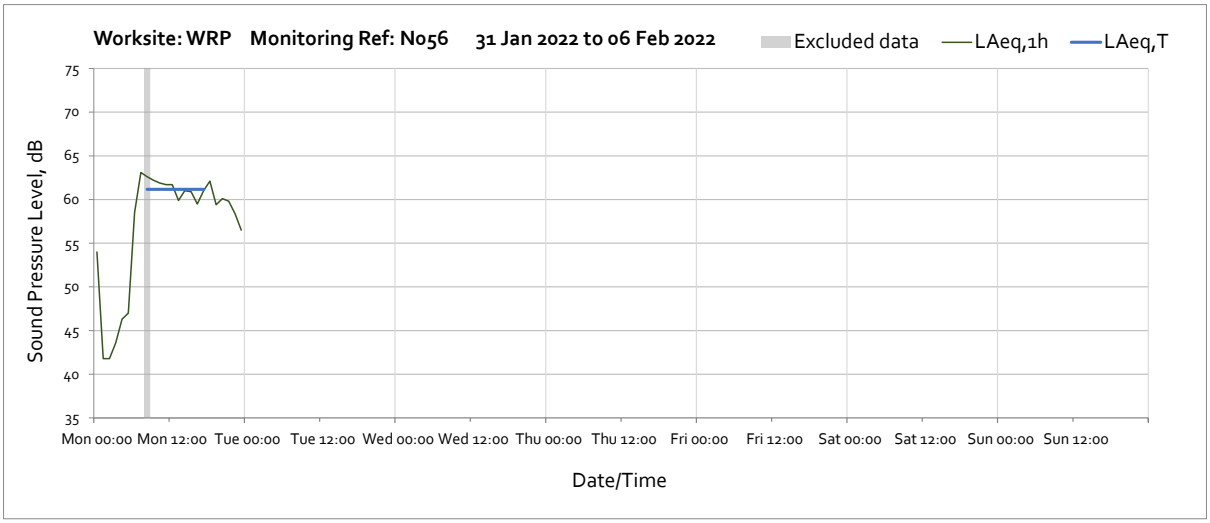
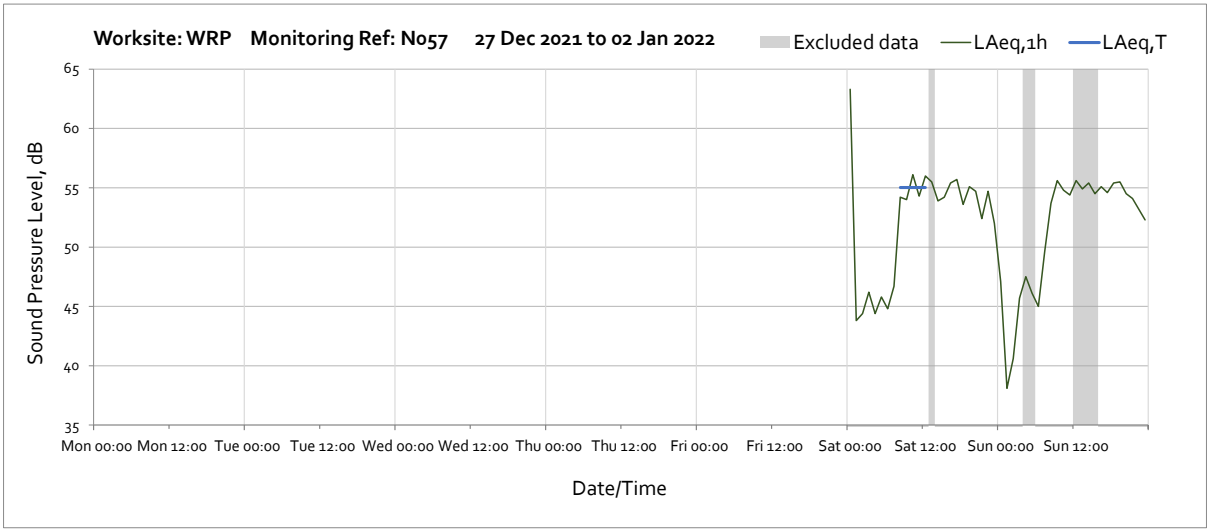
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time


Worksite: WRP Monitoring Ref: No56 17 Jan 2022 to 23 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
65
60
55
50
45
40
35
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time

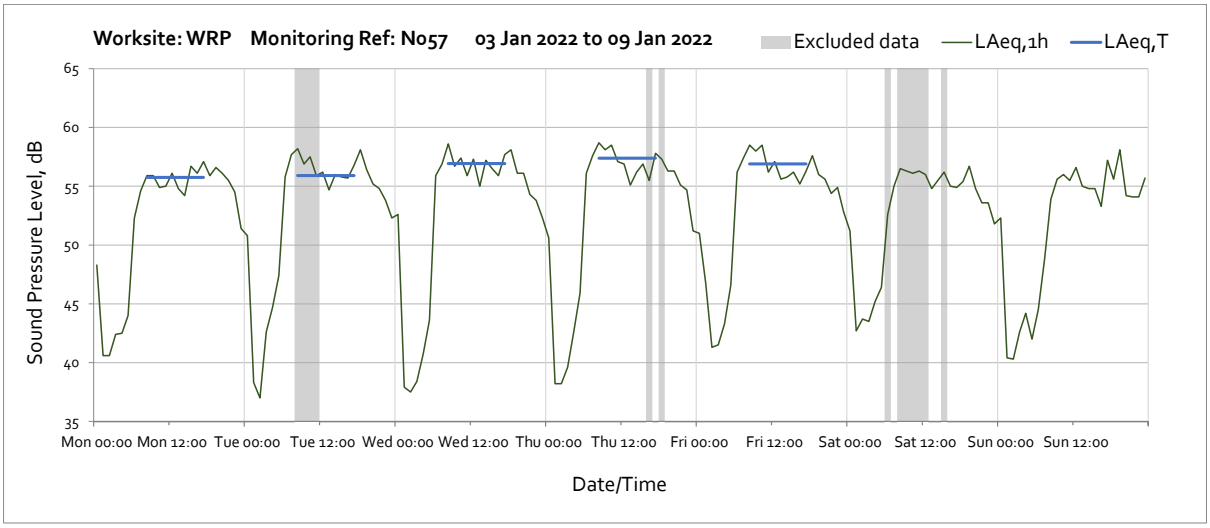

Worksite: WRP Monitoring Ref: No56 24 Jan 2022 to 30 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
65
60
55
50
45
40
35
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time

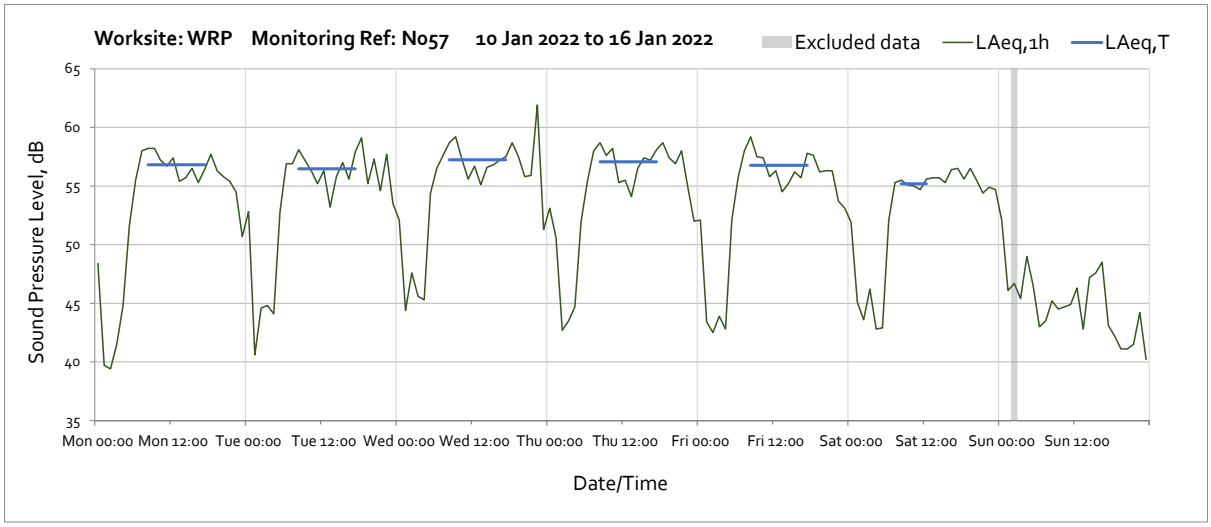


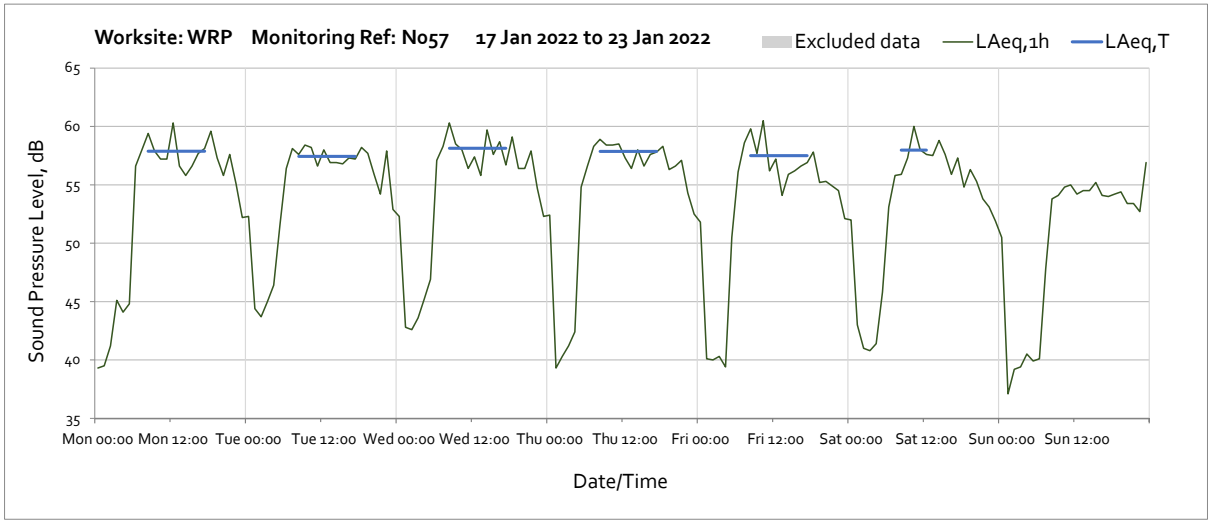
Worksite: West Ruislip Portal (WRP) – Monitoring Ref: N057

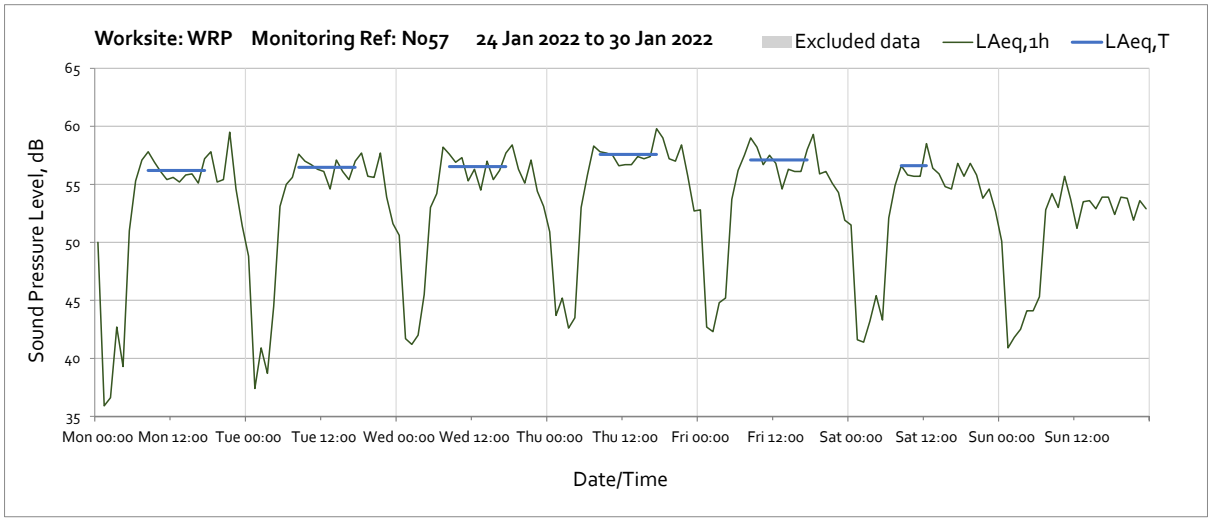


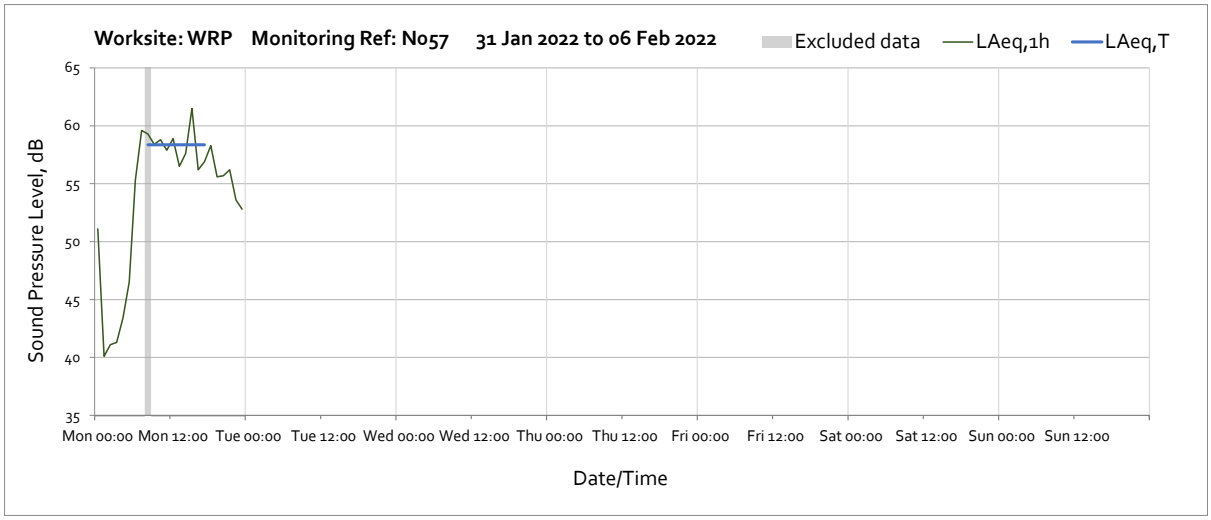
Note: High noise levels measured at 00:00 on Saturday 1st January were due to New Year Night celebration.



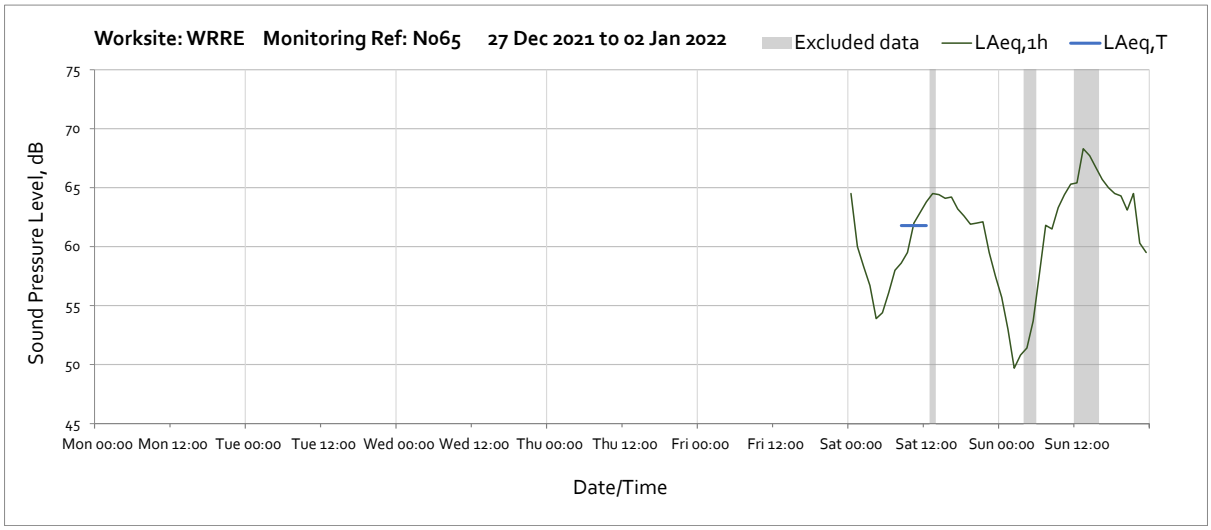

Worksite: WRP Monitoring Ref: No57 10 Jan 2022 to 16 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
65
60
55
50
45
40
35
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time


Worksite: WRP Monitoring Ref: No57 17 Jan 2022 to 23 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
65
60
55
50
45
40
35
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time

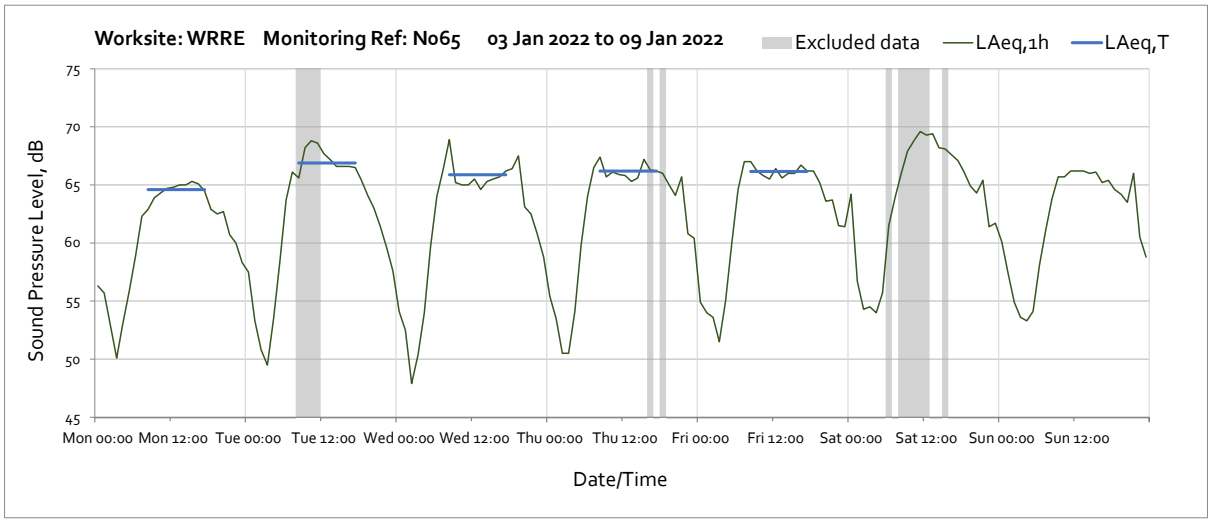

Worksite: WRP Monitoring Ref: No57 24 Jan 2022 to 30 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
65
60
55
50
45
40
35
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time

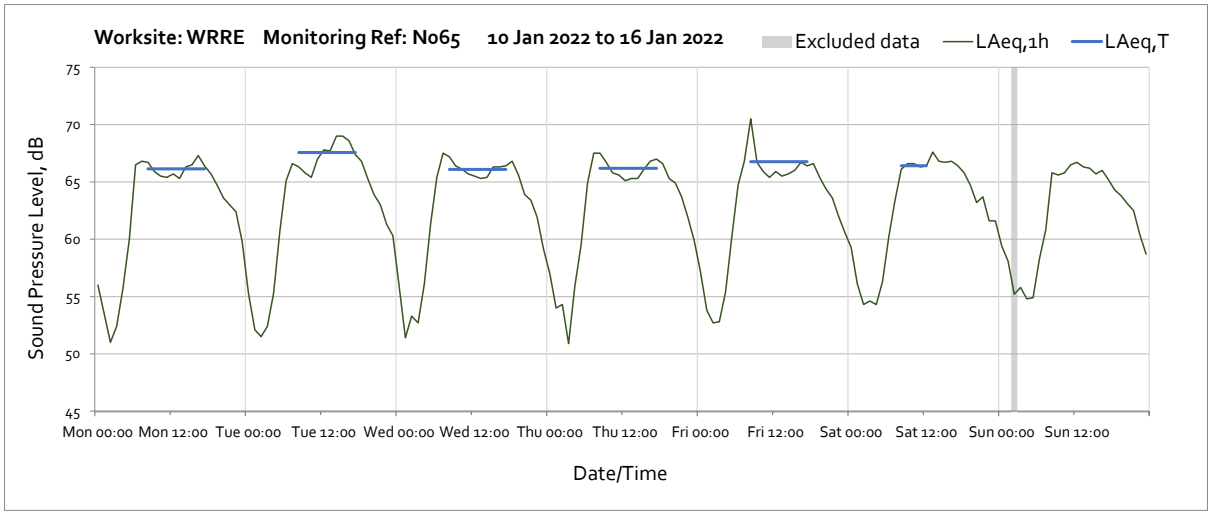


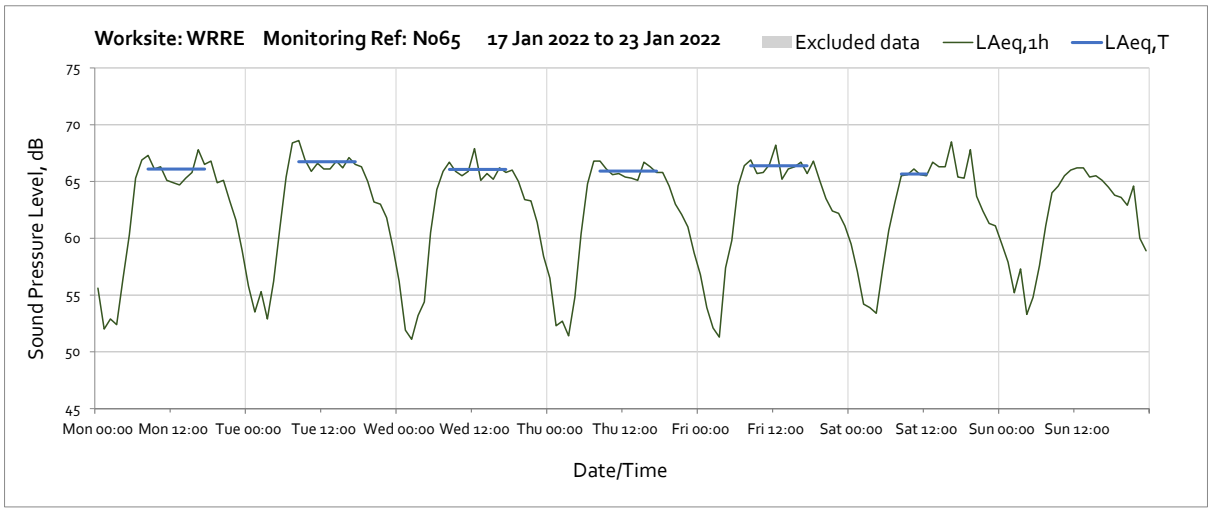
Worksite: West Ruislip Retained Embankment (WRRE) – Monitoring Ref: N065

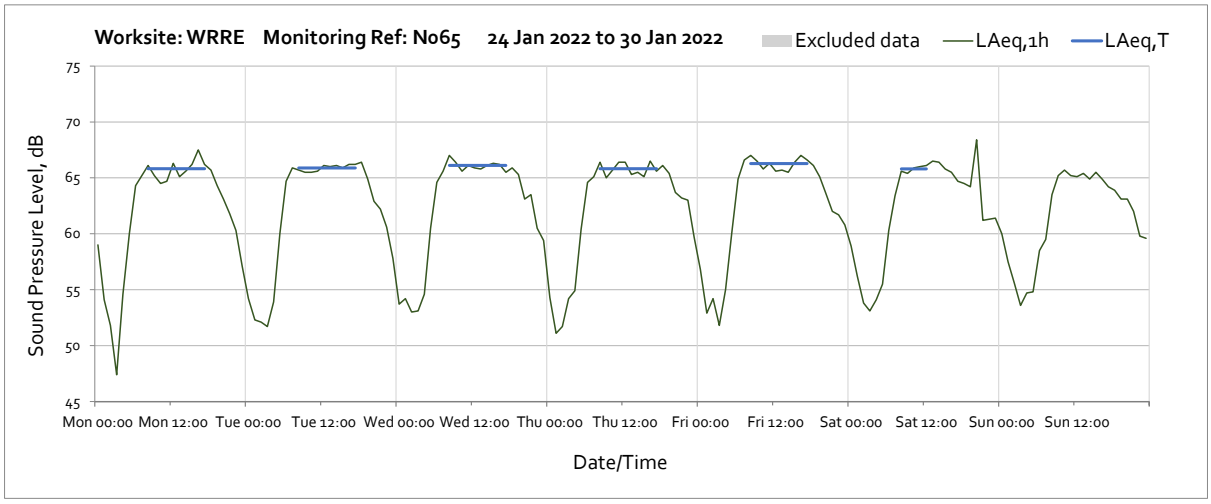


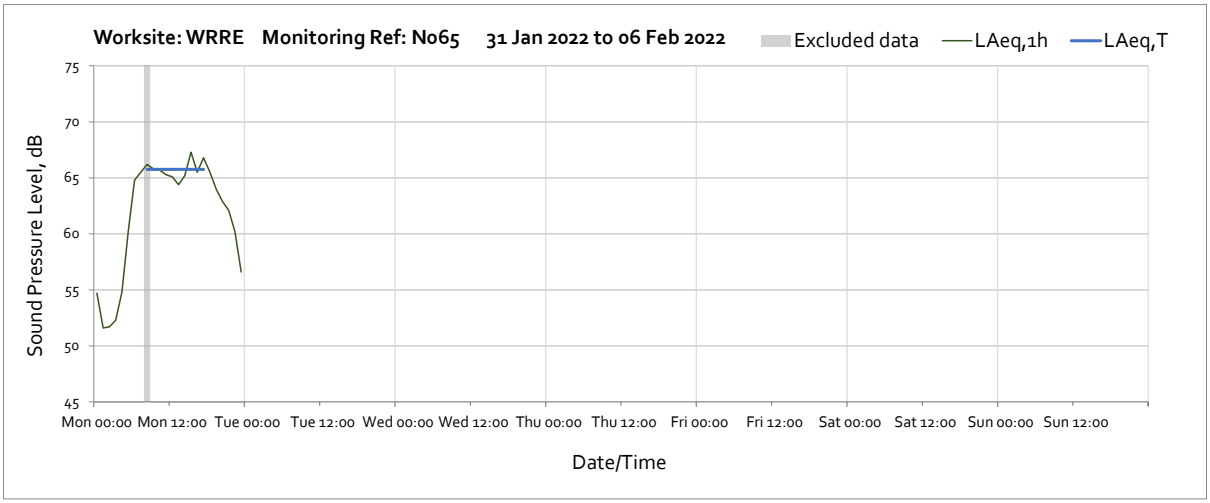
Note: High noise levels measured at 00:00 on Saturday 1st January were due to New Year Night celebration.



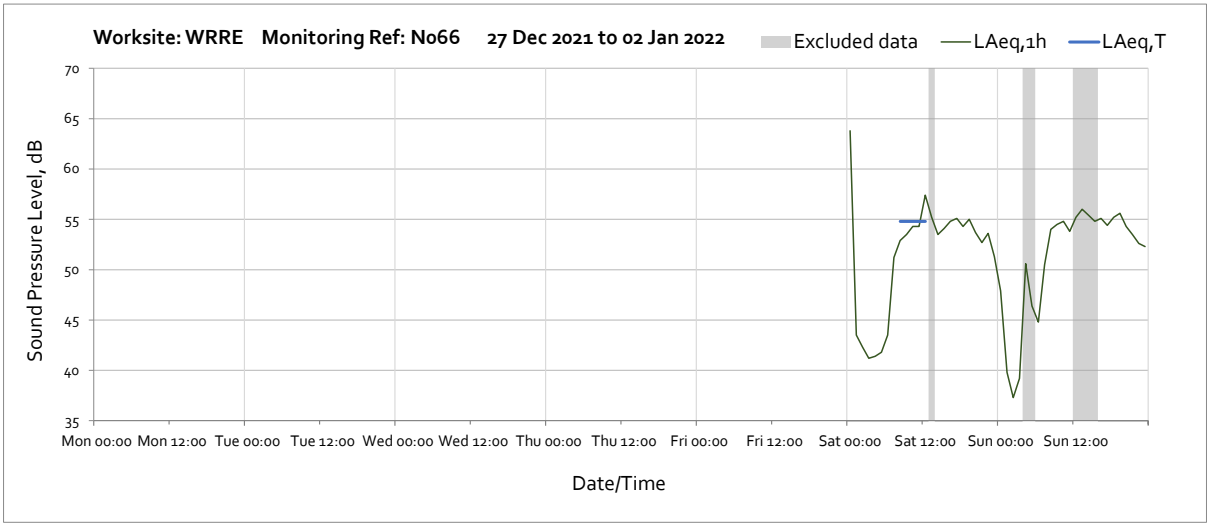

Worksite: WRRE Monitoring Ref: No65 10 Jan 2022 to 16 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
65
60
55
50
45
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time


Worksite: WRRE Monitoring Ref: No65 17 Jan 2022 to 23 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
65
60
55
50
45
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

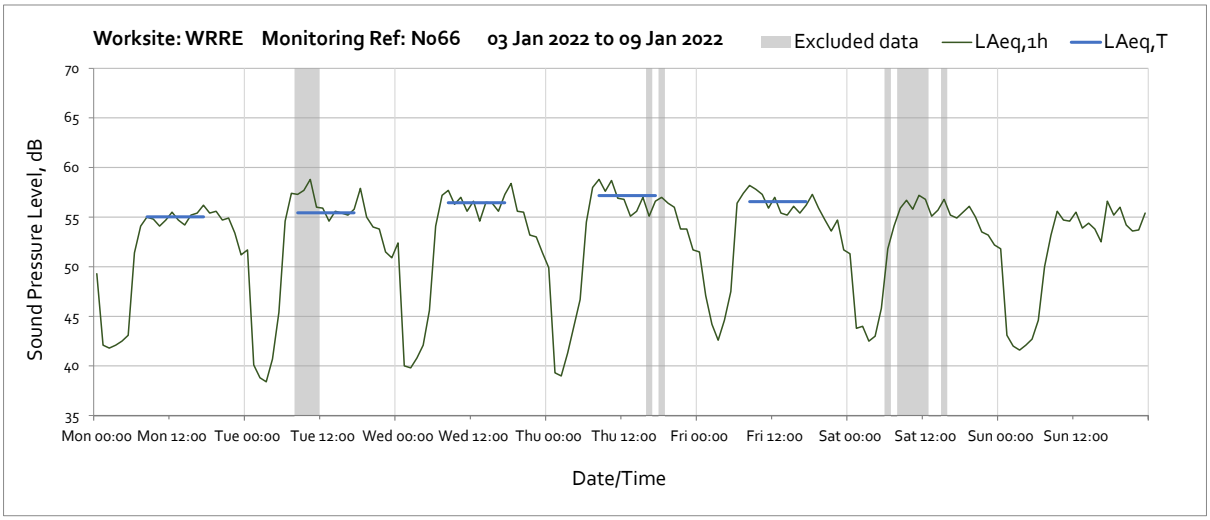

Worksite: WRRE Monitoring Ref: No65 24 Jan 2022 to 30 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
65
60
55
50
45
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time

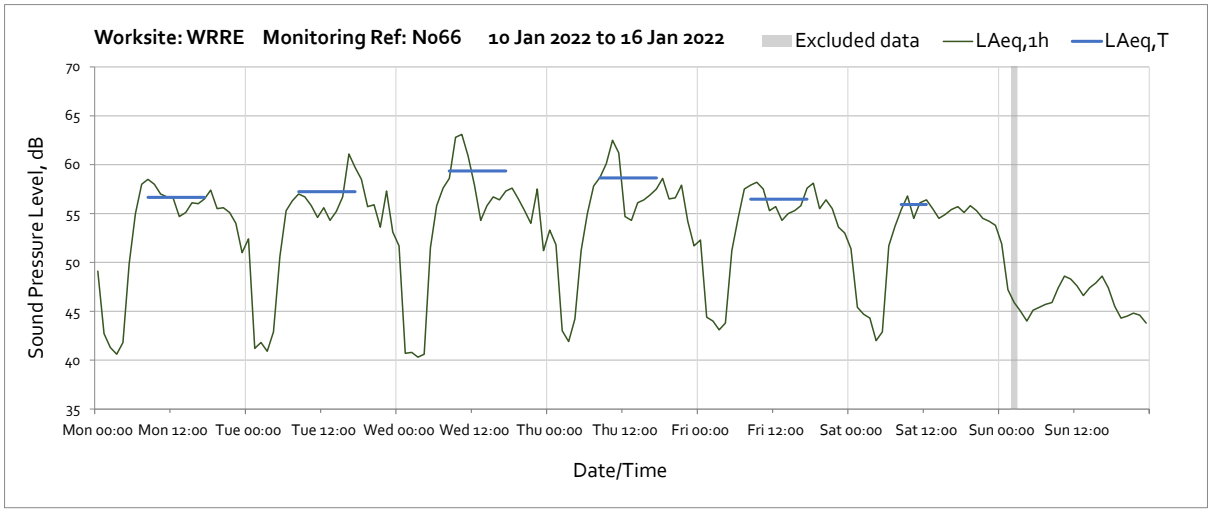


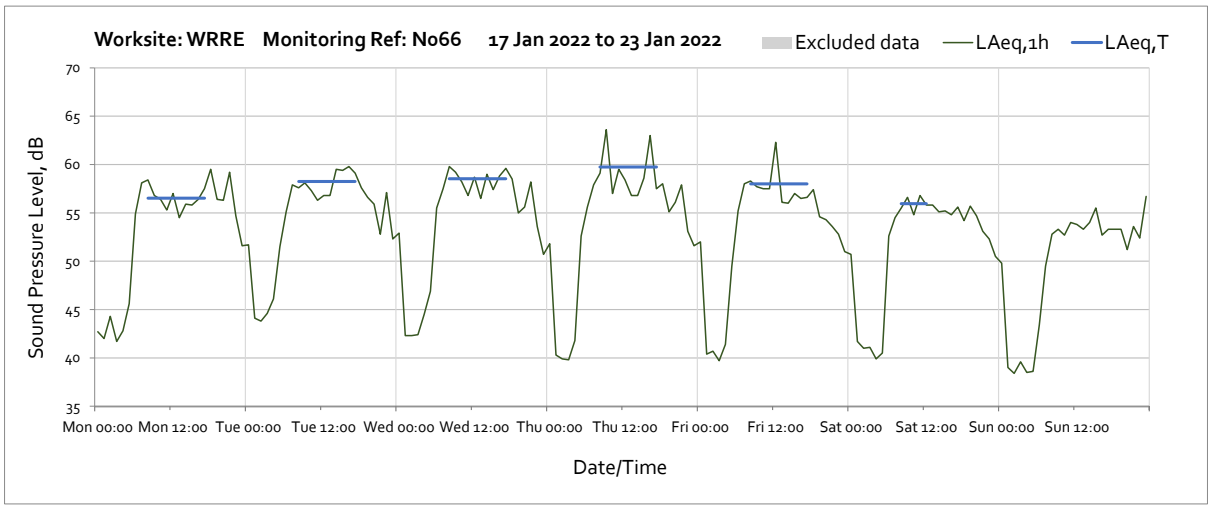
Worksite: West Ruislip Retained Embankment (WRRE) – Monitoring Ref: N066

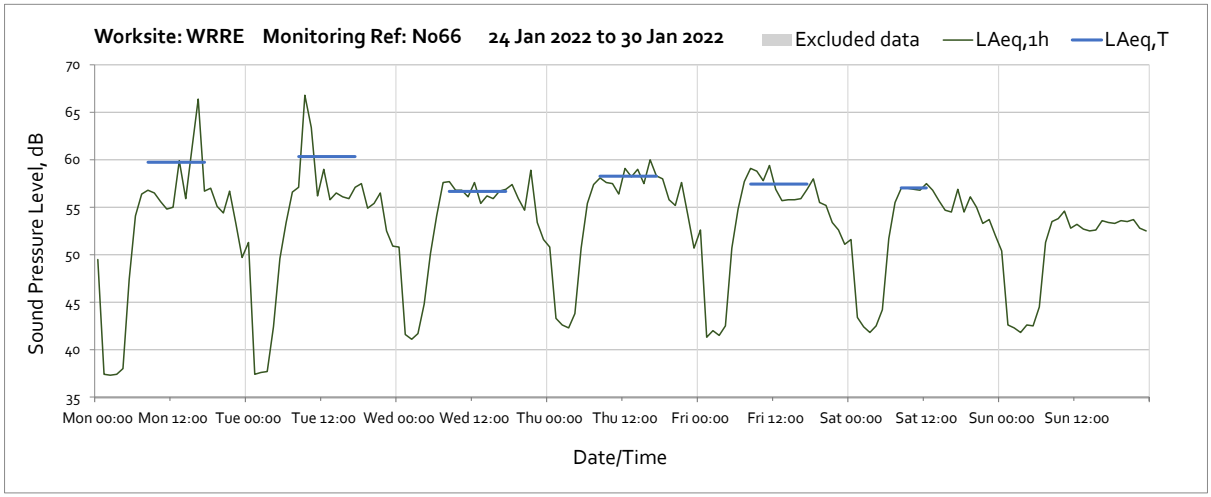


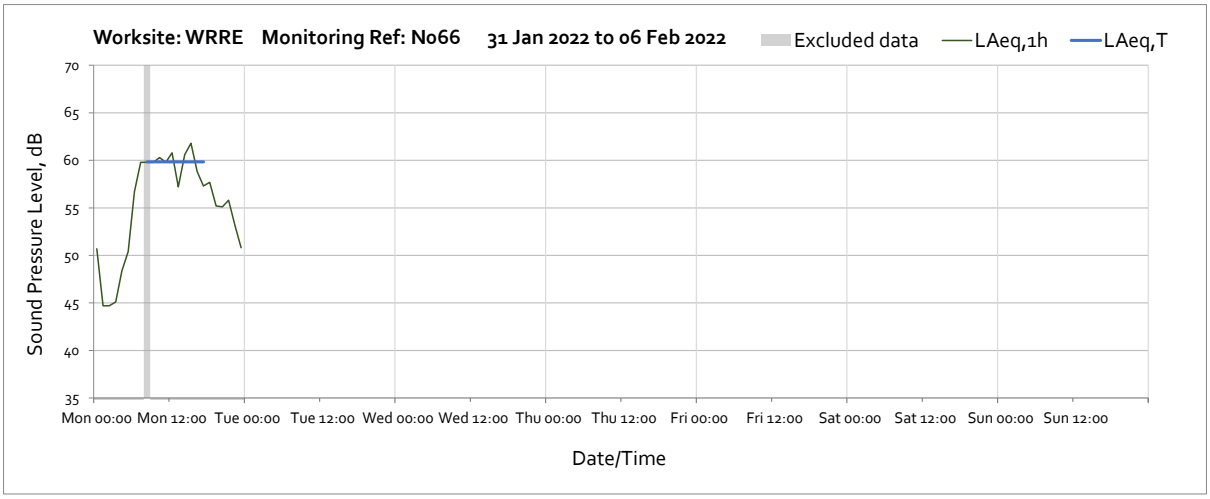
Note: High noise levels measured at 00:00 on Saturday 1st January were due to New Year Night celebration.



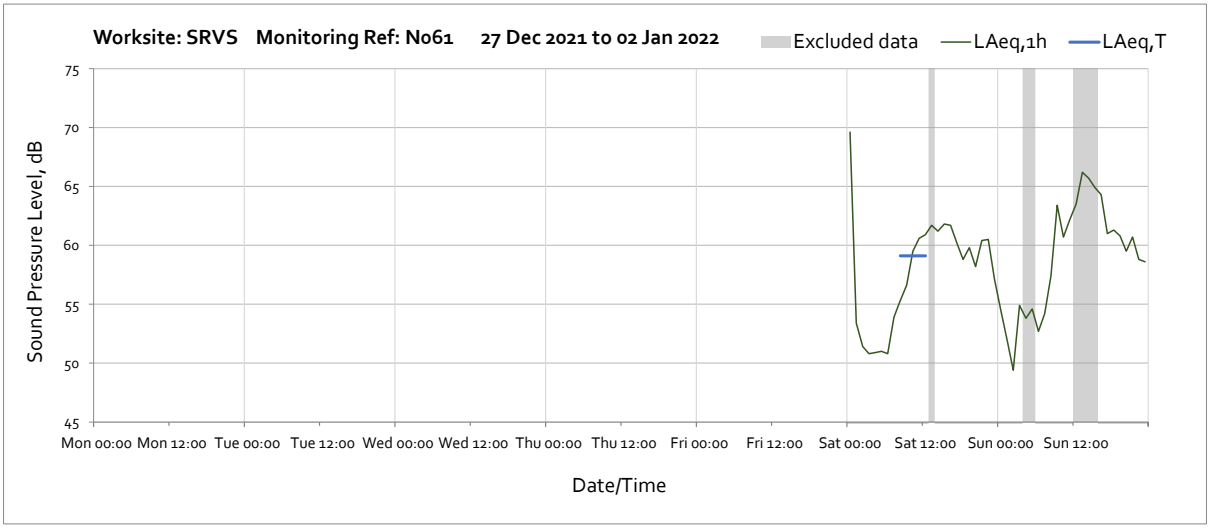

Worksite: WRRE Monitoring Ref: No66 10 Jan 2022 to 16 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
55
50
45
40
35
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time


Worksite: WRRE Monitoring Ref: No66 17 Jan 2022 to 23 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
55
50
45
40
35
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 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

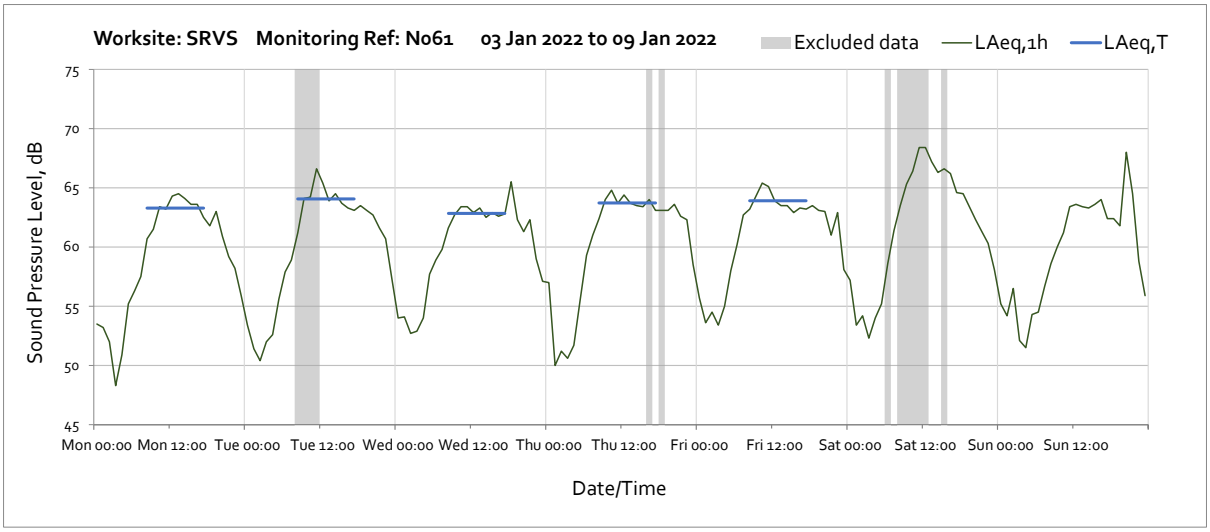

Worksite: WRRE Monitoring Ref: No66 24 Jan 2022 to 30 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
55
50
45
40
35
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time

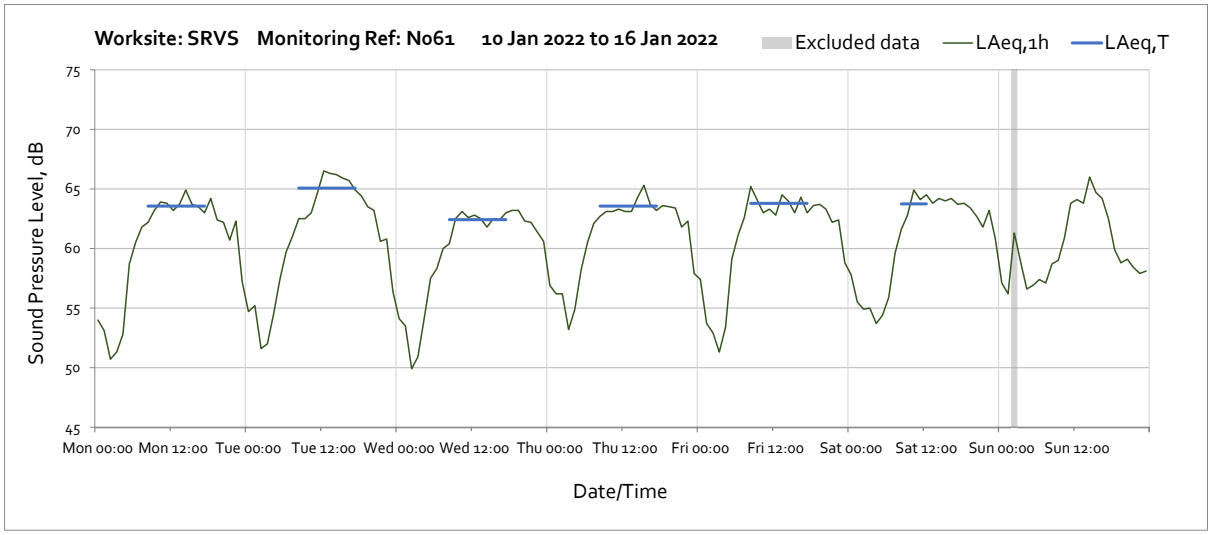


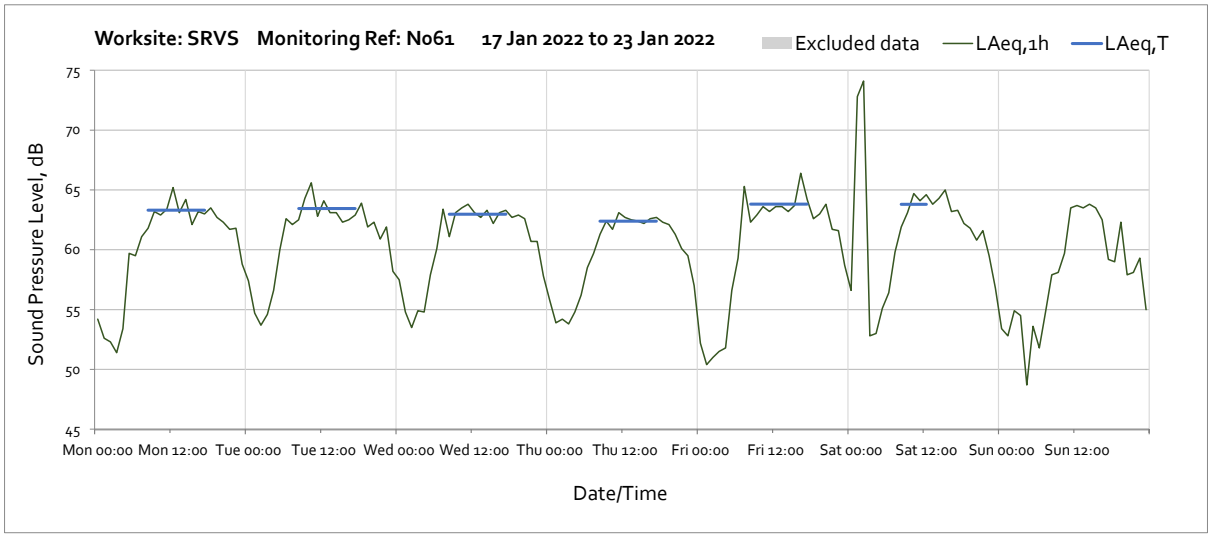
Worksite: South Ruislip Ventilation Shaft (SRVS) – Monitoring Ref: N061

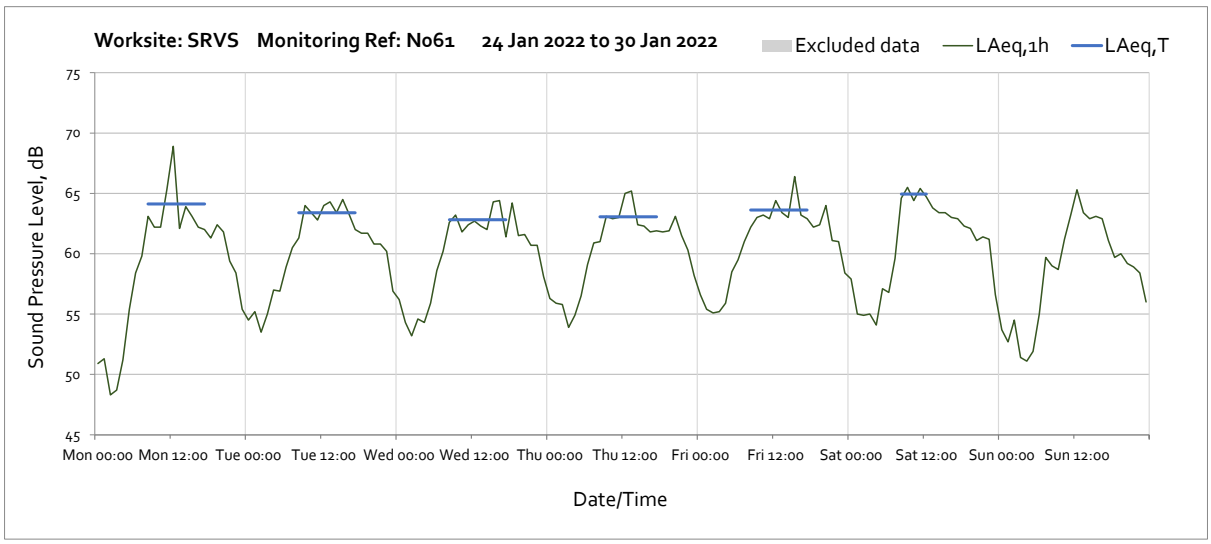


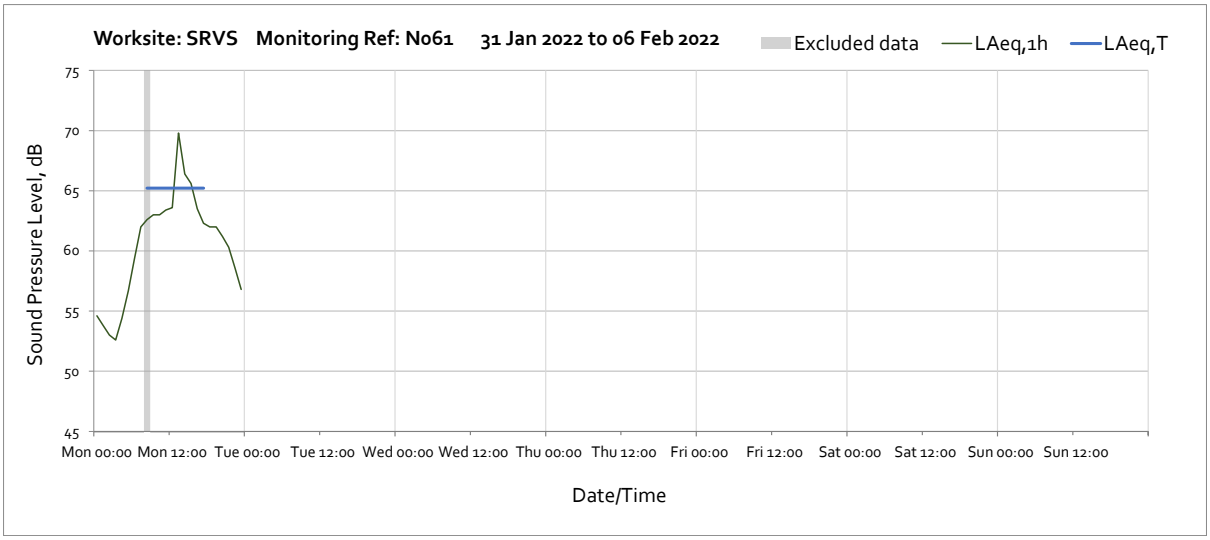
Note: High noise levels measured at 00:00 on Saturday 1st January were due to New Year Night celebration.



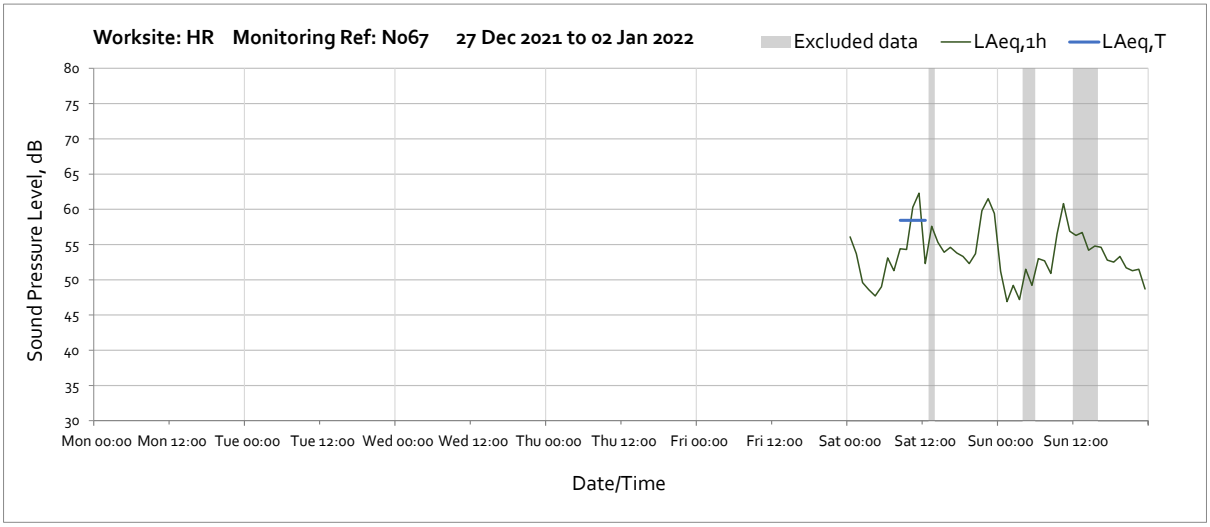

Worksite: SRVS Monitoring Ref: No61 10 Jan 2022 to 16 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
65
60
55
50
45
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time

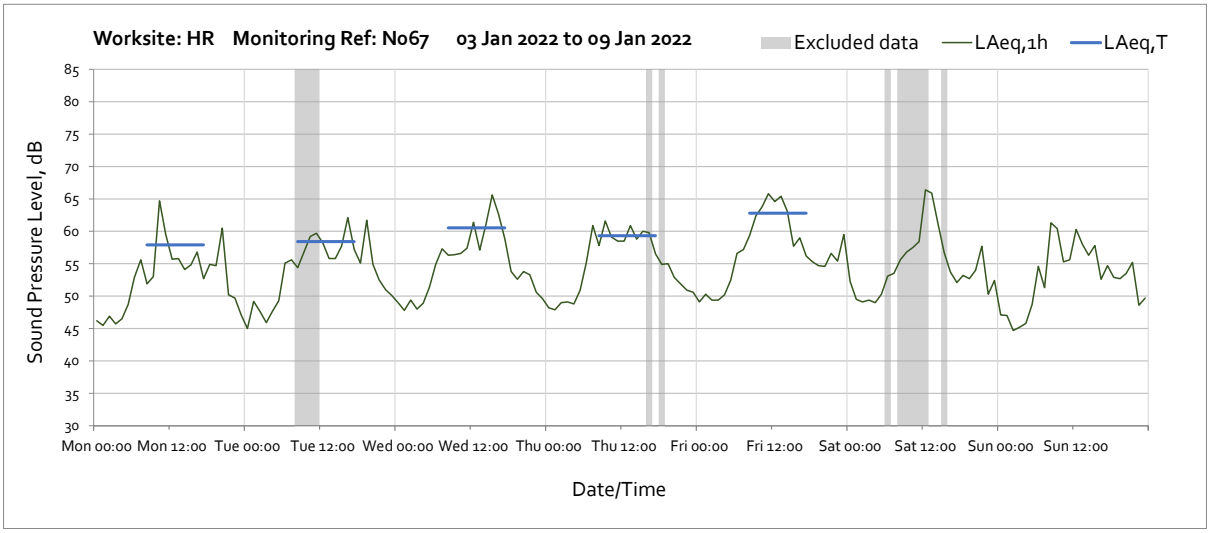

Worksite: SRVS Monitoring Ref: No61 17 Jan 2022 to 23 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
65
60
55
50
45
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time

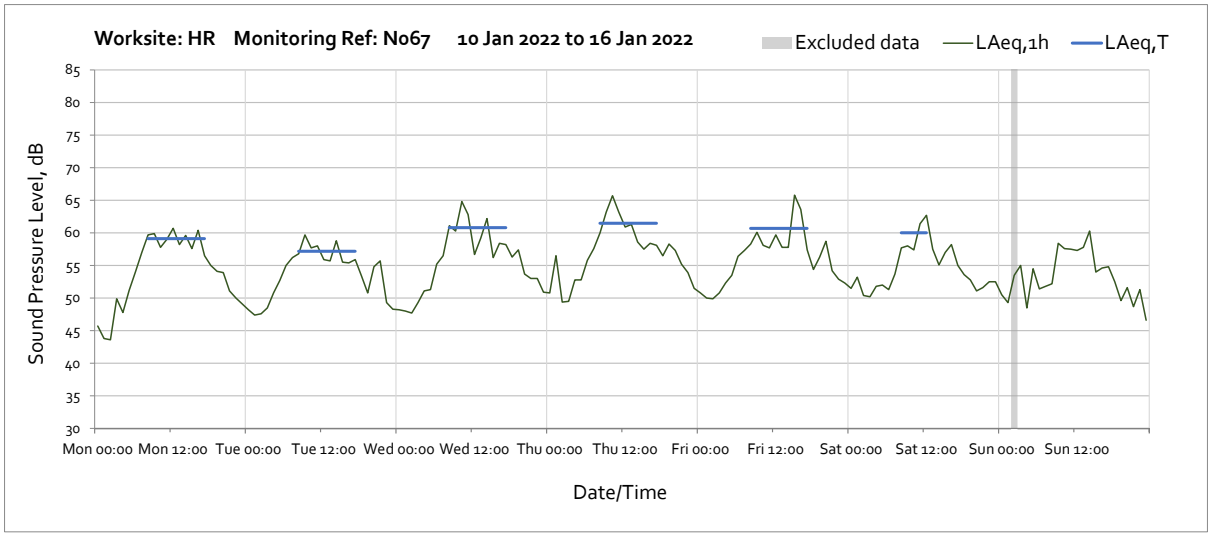

Worksite: SRVS Monitoring Ref: No61 24 Jan 2022 to 30 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
75
70
65
60
55
50
45
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time

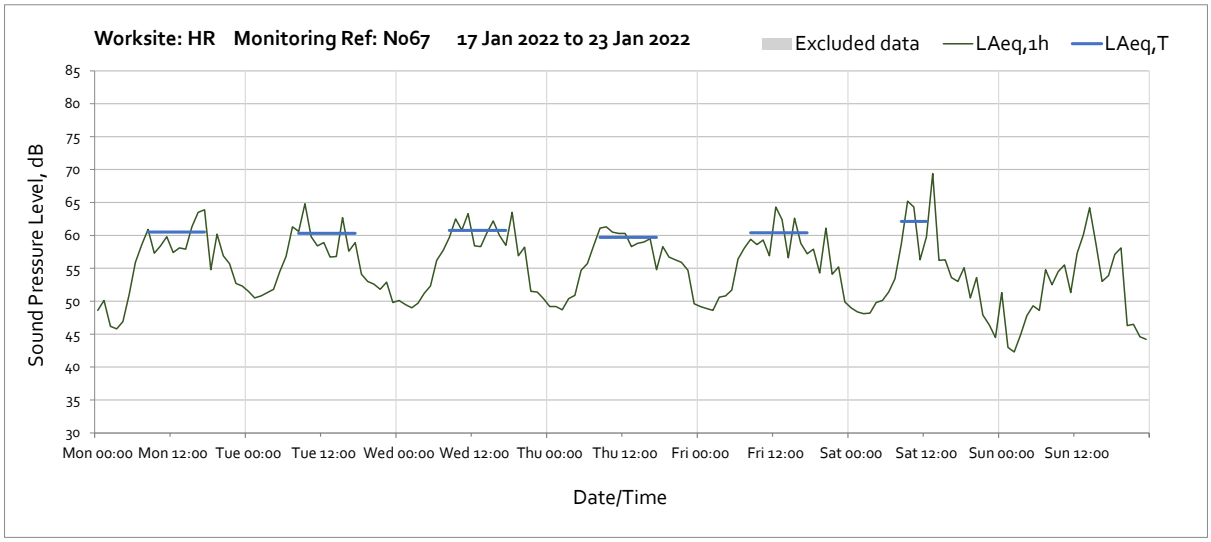


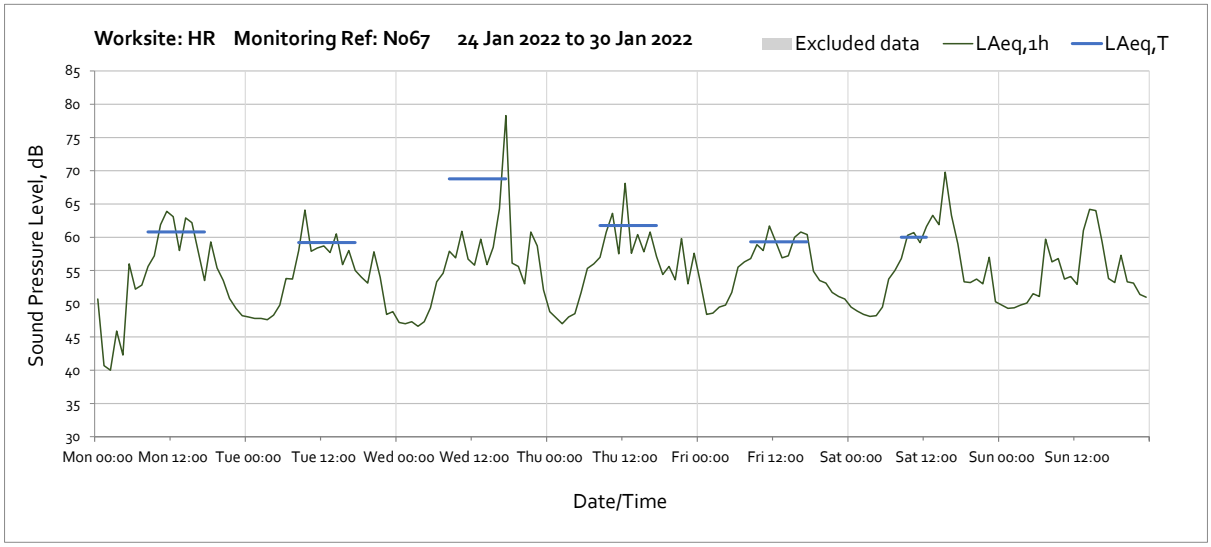
Worksite: Harvil Road (HR) – Monitoring Ref: N067

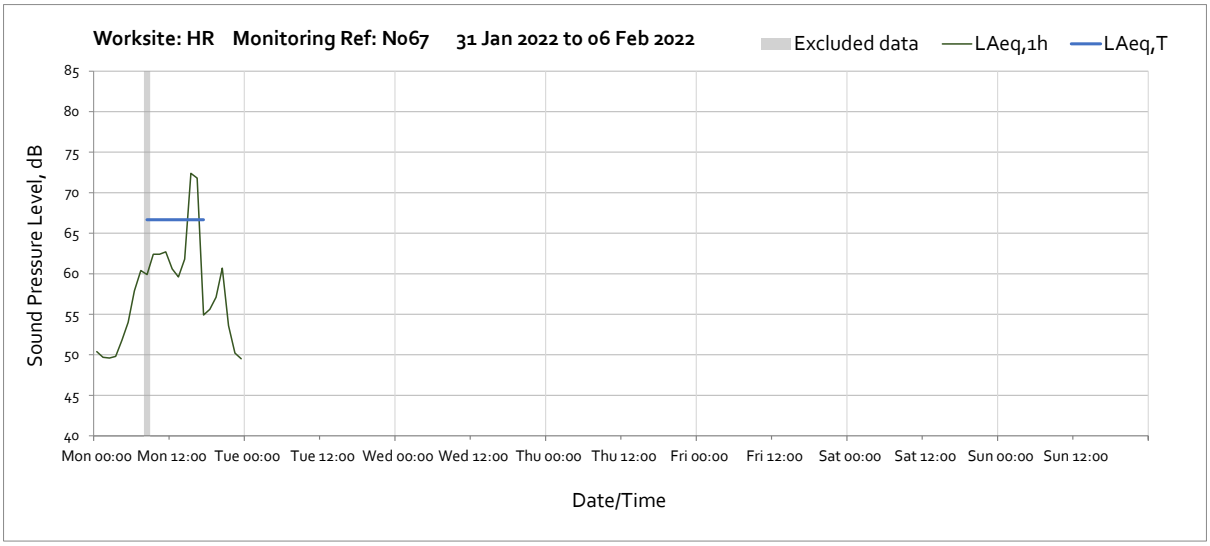




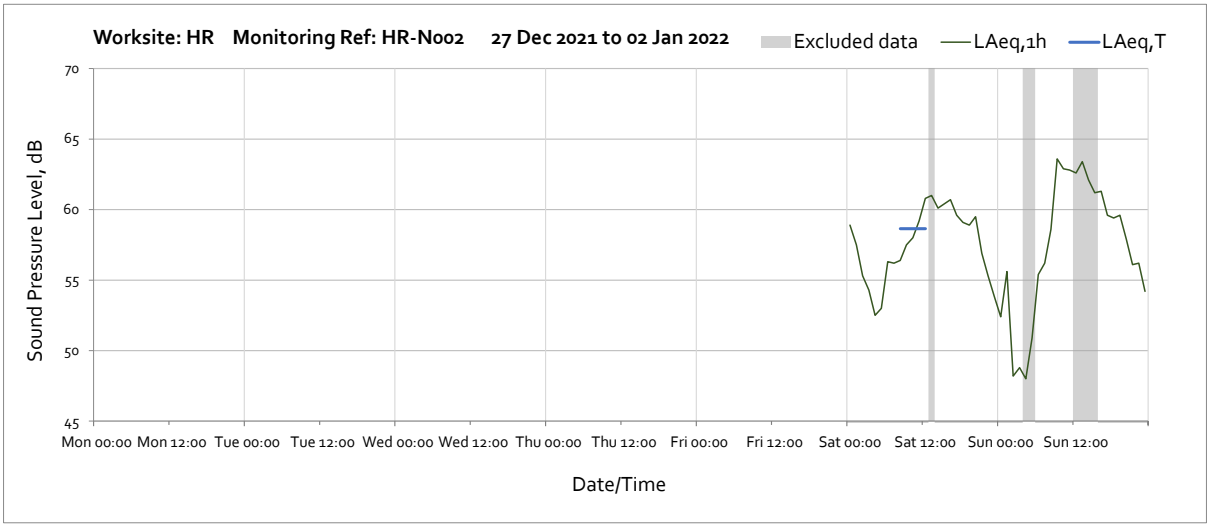

Worksite: HR Monitoring Ref: No67 10 Jan 2022 to 16 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
80
75
70
65
60
55
50
45
40
35
30
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time

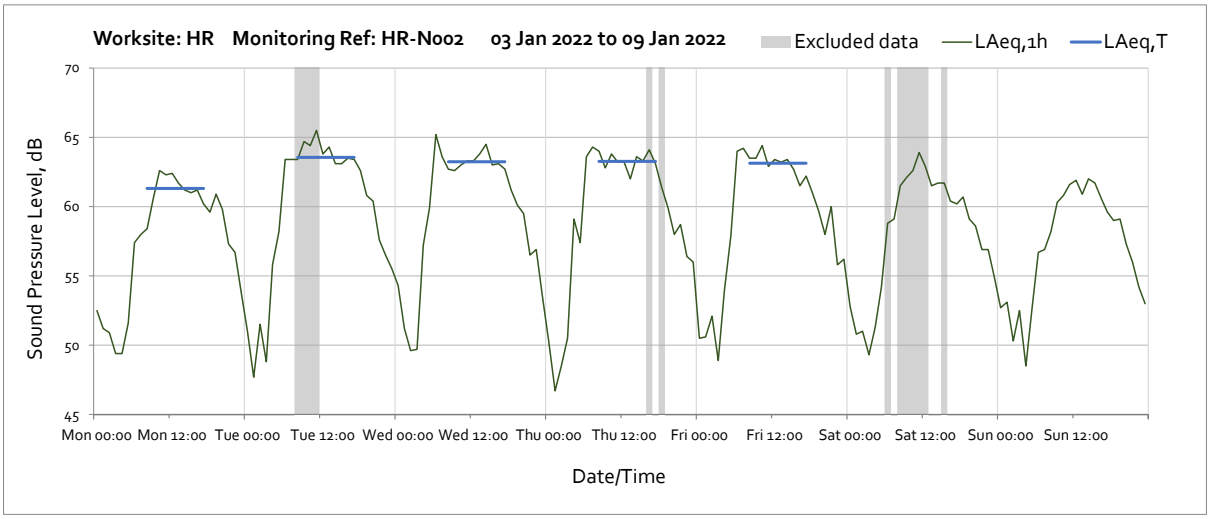

Worksite: HR Monitoring Ref: No67 17 Jan 2022 to 23 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
80
75
70
65
60
55
50
45
40
35
30
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time

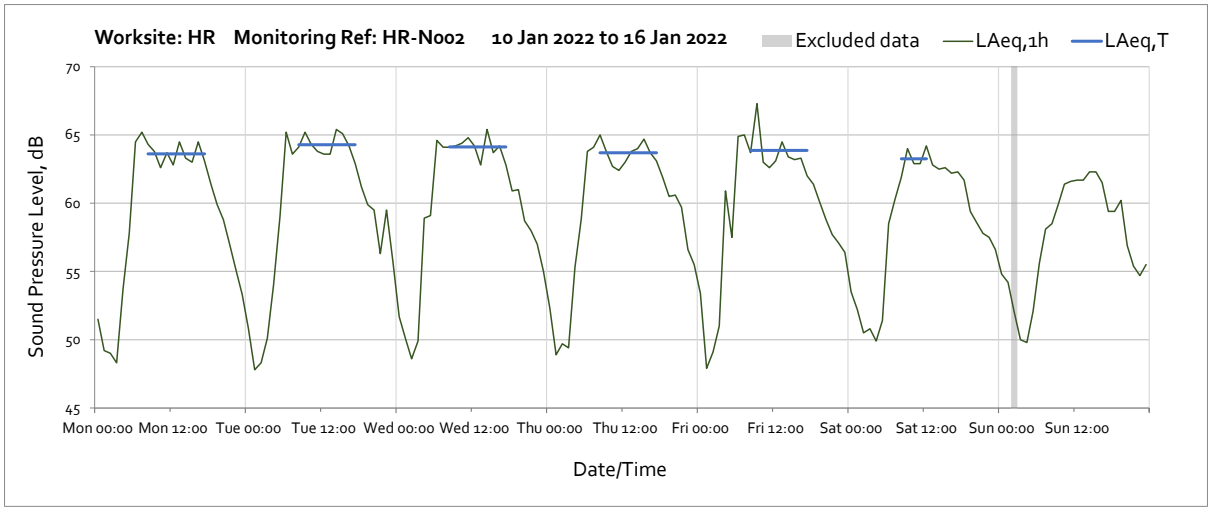

Worksite: HR Monitoring Ref: No67 24 Jan 2022 to 30 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
85
80
75
70
65
60
55
50
45
40
35
30
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time

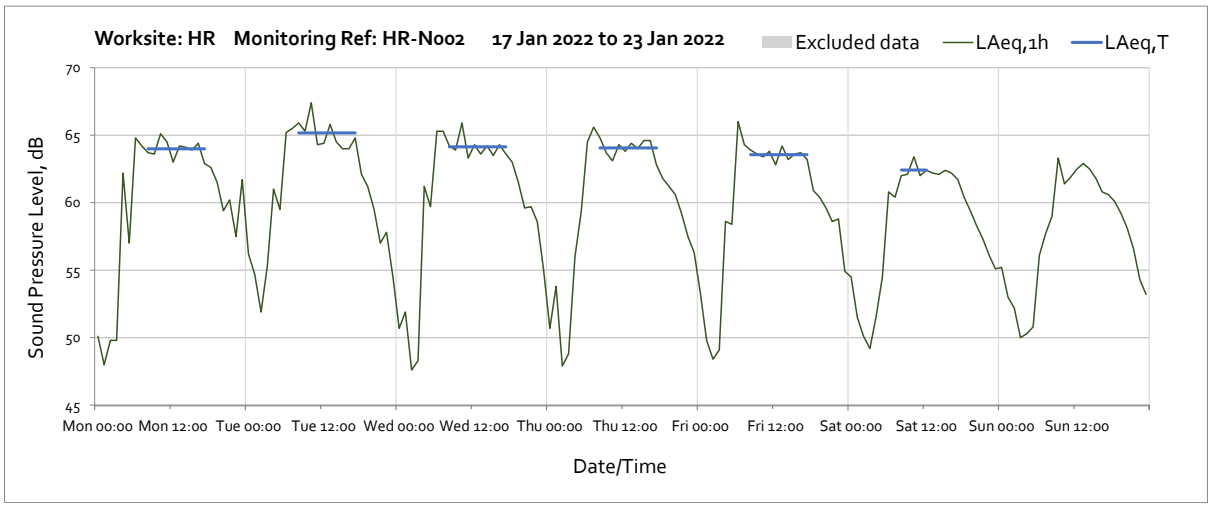


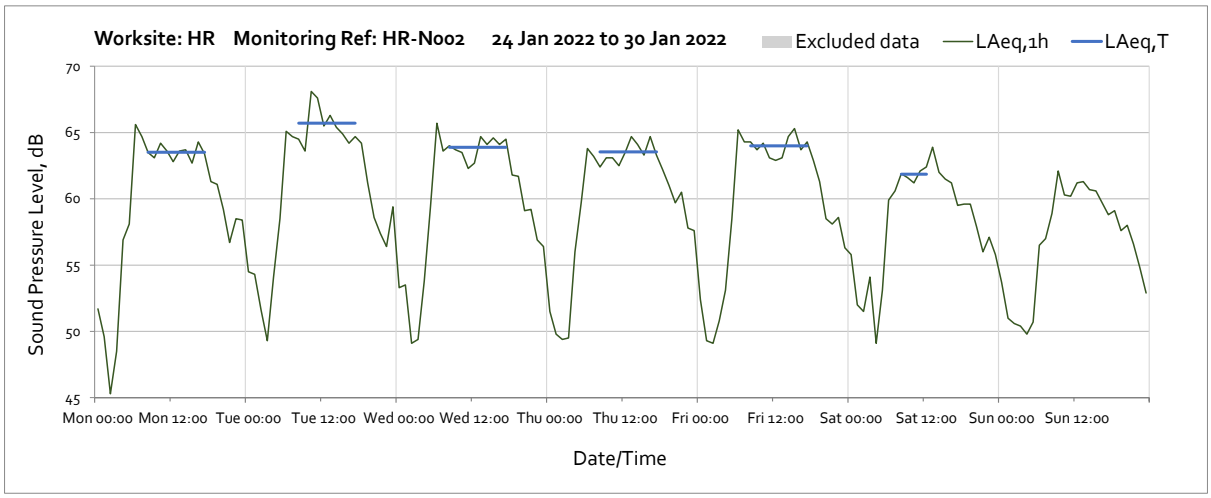
Worksite: Harvil Road (HR) – Monitoring Ref: HR-N002

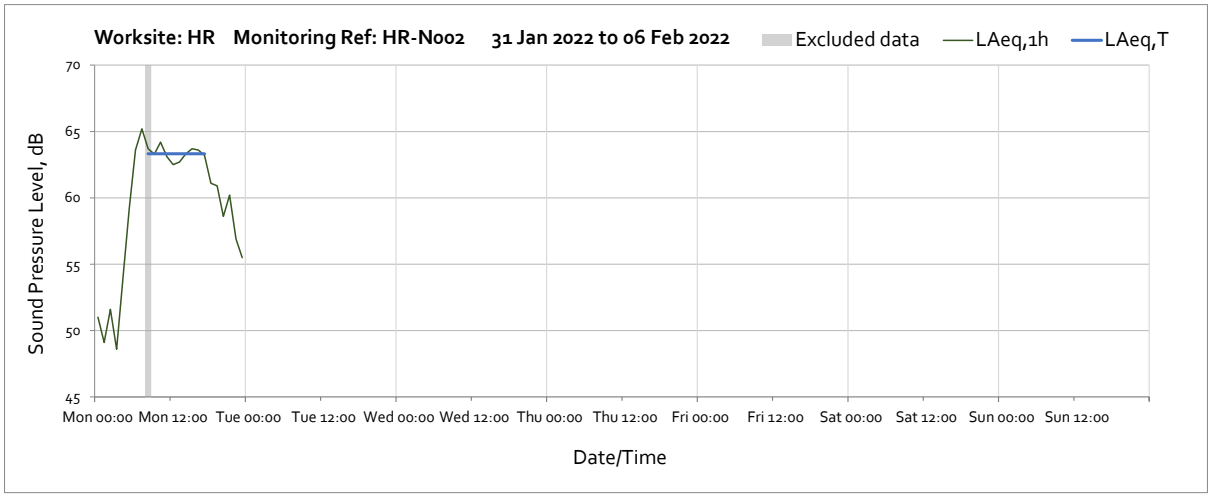





Worksite: HR Monitoring Ref: HR-N002 10 Jan 2022 to 16 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
55
50
45
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time


Worksite: HR Monitoring Ref: HR-N002 17 Jan 2022 to 23 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
55
50
45
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

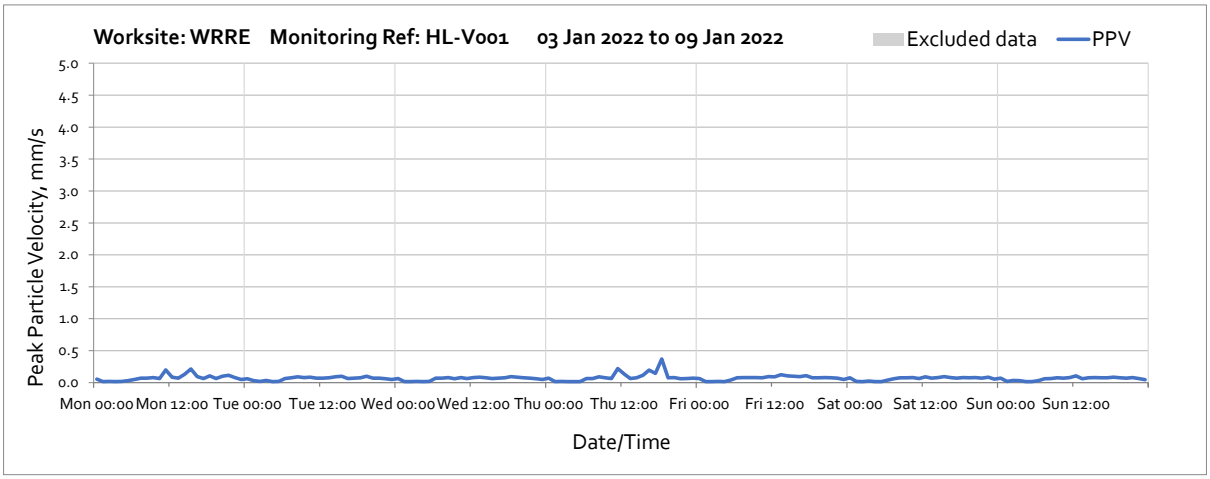

Worksite: HR Monitoring Ref: HR-N002 24 Jan 2022 to 30 Jan 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
55
50
45
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time

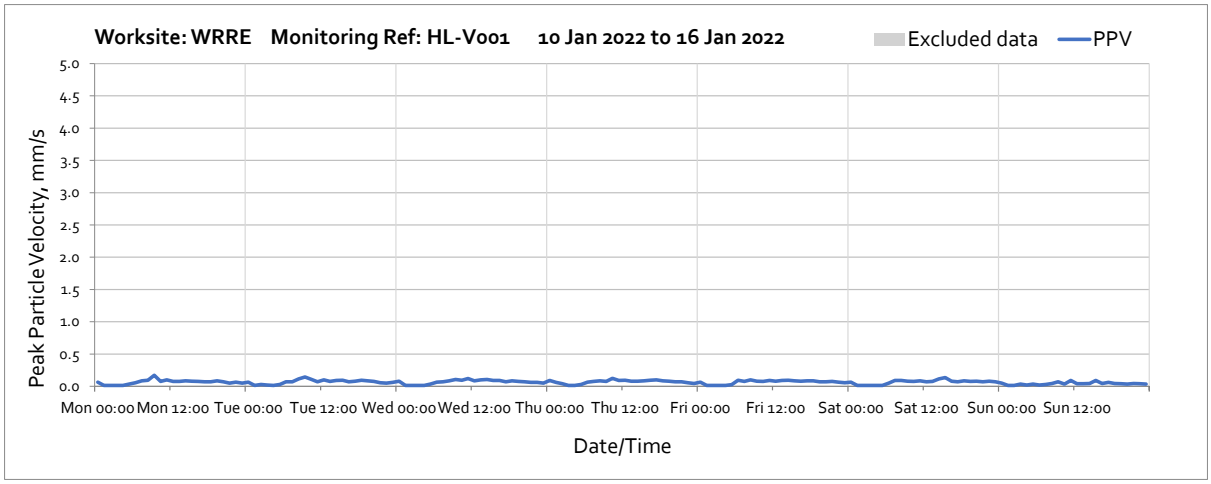

Worksite: HR Monitoring Ref: HR-N002 31 Jan 2022 to 06 Feb 2022
Excluded data
LAeq,1h
LAeq,T
Sound Pressure Level, dB
70
65
60
55
50
45
Mon 00:00
Mon 12:00
Tue 00:00
Tue 12:00
Wed 00:00
Wed 12:00
Thu 00:00
Thu 12:00
Fri 00:00
Fri 12:00
Sat 00:00
Sat 12:00
Sun 00:00
Sun 12:00
Date/Time

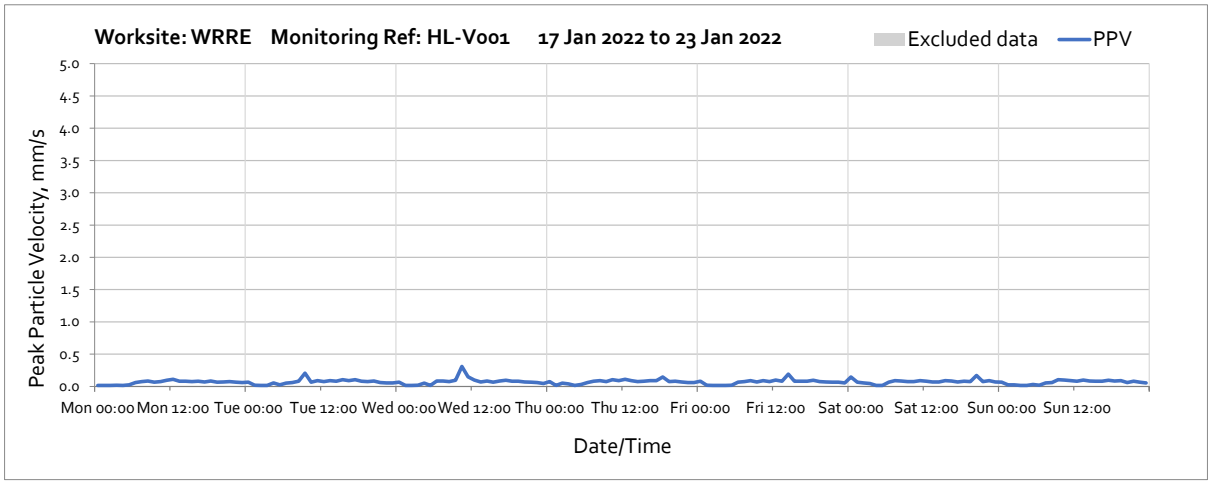
Vibration

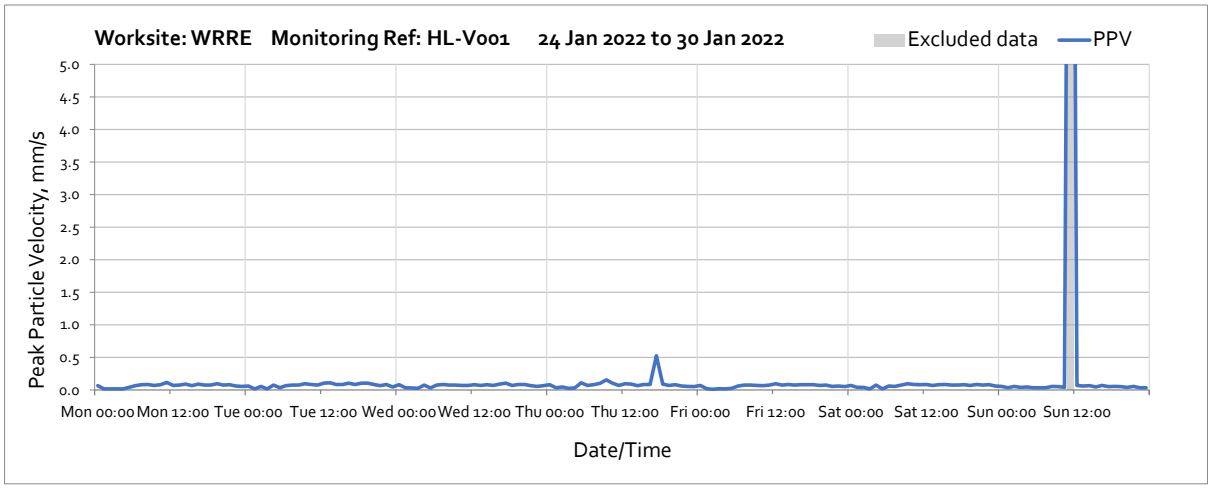
The following graphs show the hourly measured peak particle velocity PPV recorded during the monitoring period. The graphs show the highest PPV of the three orthogonal axis x, y and z. Where high values of PPV were caused by local interference with the vibration monitor, which are not representative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

Worksite: West Ruislip Retained Embankment (WRRE) – Monitoring Ref: HL-V001

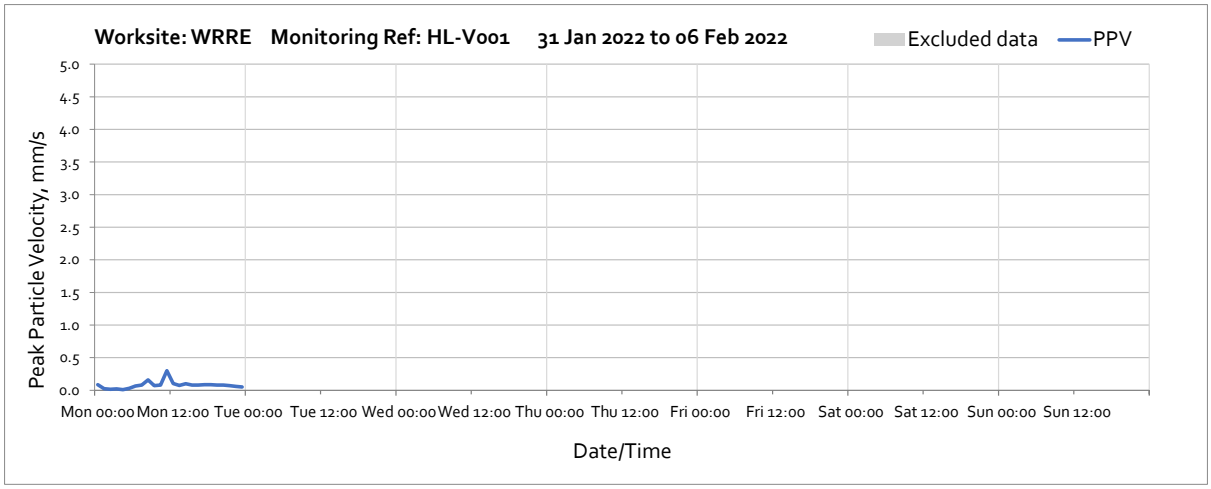




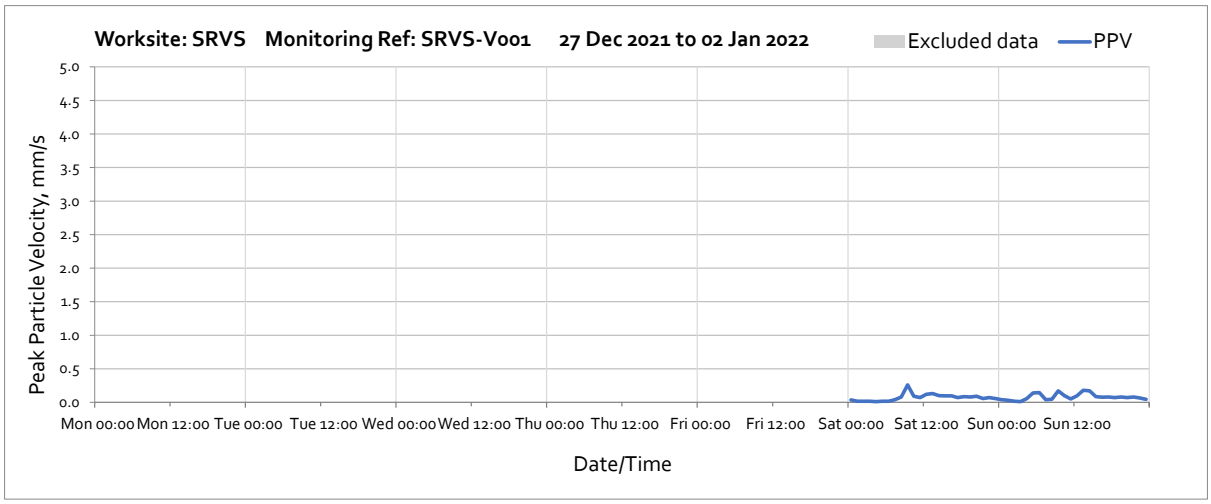


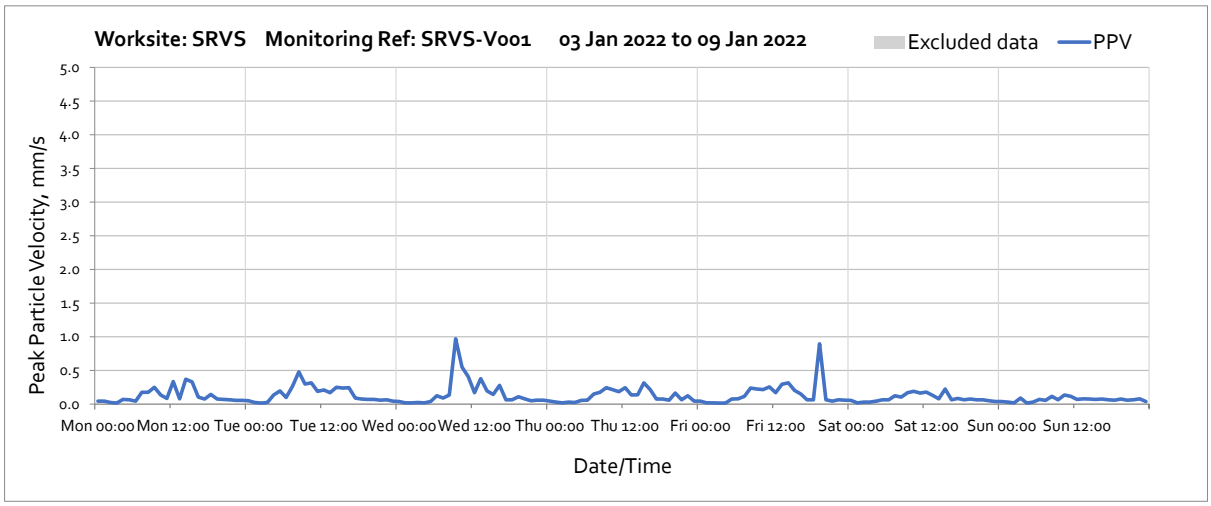


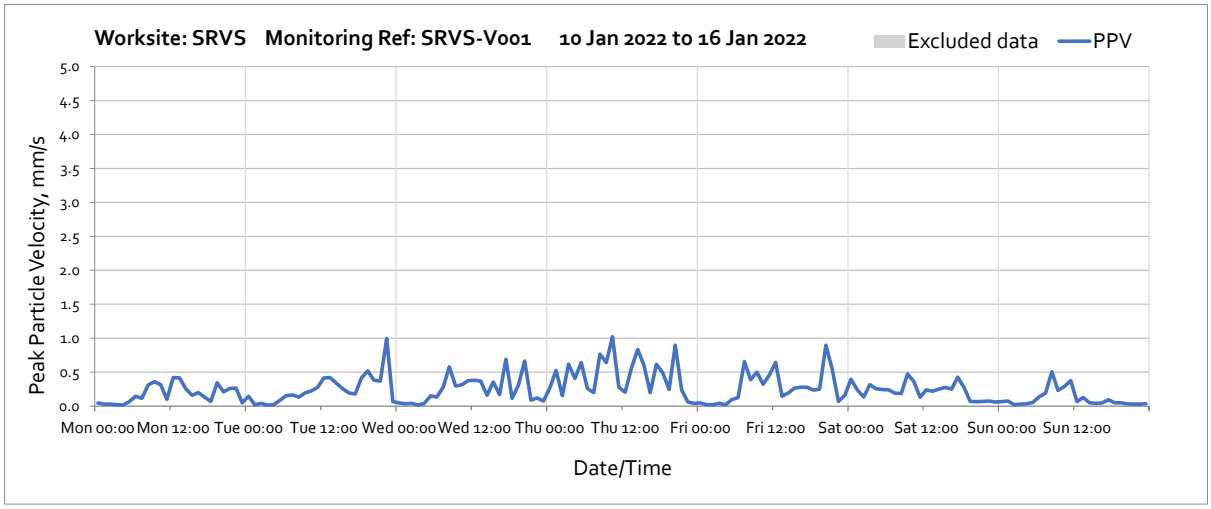
Note: High vibration levels measured at 11:00 on Sunday 30th January are due to local interference and not related to HS2 works.

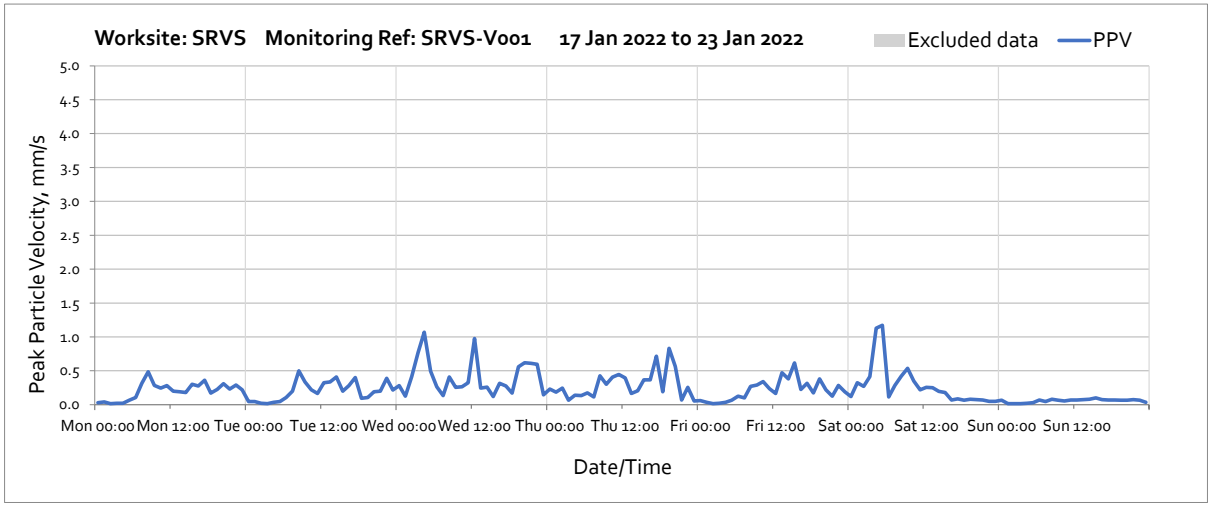


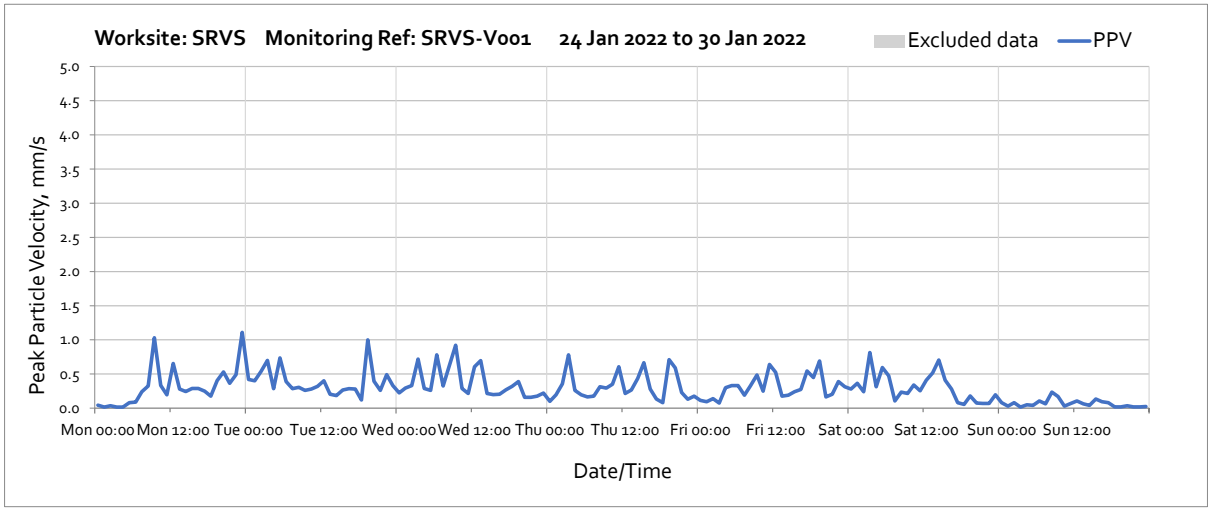
Worksite: South Ruislip Ventilation Shaft (SRVS) – Monitoring Ref: SRVS-V001

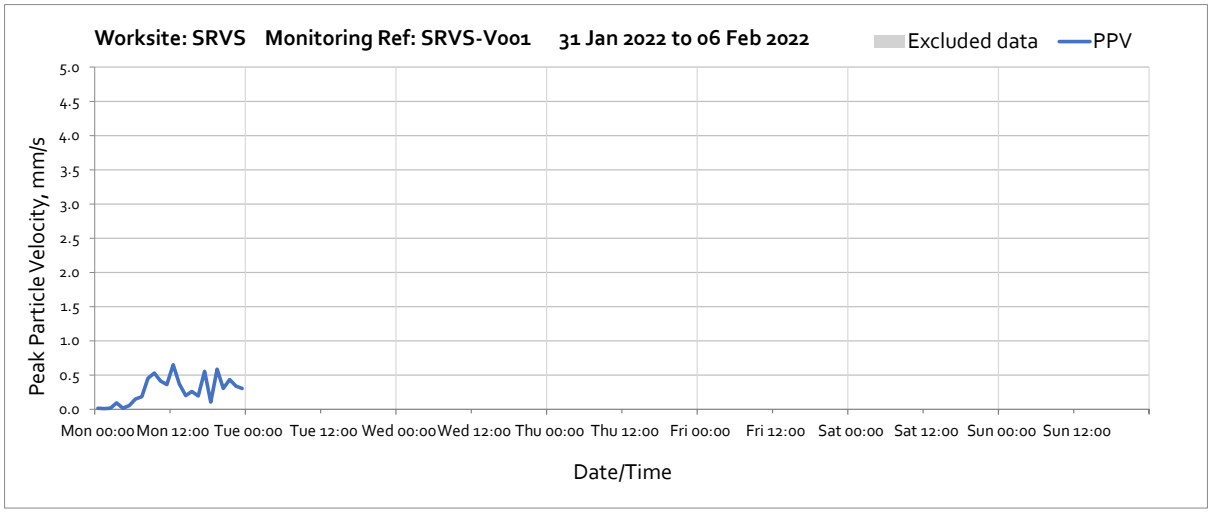





Worksite: SRVS Monitoring Ref: SRVS-V001 10 Jan 2022 to 16 Jan 2022
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time


Worksite: SRVS Monitoring Ref: SRVS-V001 17 Jan 2022 to 23 Jan 2022
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time


Worksite: SRVS Monitoring Ref: SRVS-V001 24 Jan 2022 to 30 Jan 2022
Excluded data
PPV
Peak Particle Velocity, mm/s
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mon 00:00 Mon 12:00 Tue 00:00 Tue 12:00 Wed 00:00 Wed 12:00 Thu 00:00 Thu 12:00 Fri 00:00 Fri 12:00 Sat 00:00 Sat 12:00 Sun 00:00 Sun 12:00
Date/Time


Worksite: SRVS Monitoring Ref: SRVS-V001 31 Jan 2022 to 06 Feb 2022
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