

Construction noise and vibration Monthly Report – August 2021

Buckinghamshire

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Non-Technical Summary

This Noise and Vibration Monitoring Report fulfils HS2 Limited's commitment detailed in the Environmental Minimum Requirements (EMRs), Annex 1, Code of Construction Practice, to present the results of noise monitoring carried out within Buckinghamshire (BS) during the month of August 2021.

Within this period monitoring was undertaken at the following worksites:

- Noise monitoring was undertaken in the vicinity of School End worksite (ref.: SE) where construction of access road and tie-in with highway was undertaken.
- Noise monitoring was undertaken in the vicinity of Chetwode Hermitage worksite (ref.: CH) where construction of access road was undertaken.
- Noise monitoring was undertaken in the vicinity of Rosehill Farm worksite (ref.: RF) where drilling of trial holes was undertaken.
- Noise monitoring was undertaken in the vicinity of School Hill Compound worksite (ref.: SHC) where construction of site compound, piling, decommissioning of pipeline, West Street compound mobilisation, enabling works, drainage and earthworks, grade crossing, batching plant compound mobilisation, and construction of abutment were underway.
- Noise monitoring was undertaken in the vicinity of the School Hill UTX worksite (ref.: SHU) where site setup and horizontal drilling works were underway.
- Noise monitoring was undertaken in the vicinity of the Calvert South worksite reference (ref: CALS) where aggregate deliveries were undertaken in the month of August 2021.
- Noise monitoring was undertaken in the vicinity of Quainton Access Road (ref: QAR), where construction of drainage and hardstanding at the Station Road satellite compound, installation of geogrid and aggregates, ground investigations, bearing testing, installation of culvert and construction of concrete slabs were underway.
- Noise monitoring was undertaken in the vicinity of Hall Farm, Bicester Road worksite (ref: HF) where excavation works, installation of drainage and replacing of existing kerbs with new kerbs were undertaken.
- Noise monitoring was undertaken in the vicinity of Rocky Lane Embankment worksite (ref: RLE) where road crossing and site clearance works were undertaken.
- Noise monitoring was undertaken in the vicinity of Leather Lane worksite (ref: LL) where installation of attenuation pond were undertaken.

- Noise monitoring was undertaken in the vicinity of South Heath Cutting worksite (ref: SHCW) where construction of haul road, demolition works, laying tarmac and site clearance works were undertaken.
- Noise monitoring was undertaken in the vicinity of Little Missenden Vent Shaft worksite (ref.: CVV-LM) where general plant operation, earthworks, installation of structural wall and water treatment were underway.
- Noise monitoring was undertaken in the vicinity of Amersham Vent Shaft worksite (ref.: CVV-AM), where general plant operation, earthworks, installation of structural wall, water treatment, and concrete works were underway.
- Noise and vibration monitoring were undertaken in the vicinity of Bottom House Farm Lane worksite (ref.: BHFL), where removal of track mat and soil along temporary access road, stockpiling, digging of trial holes, fencing works, vegetation clearance, ground compaction, installation of membranes, and junction road works were underway.
- Noise monitoring was undertaken in the vicinity of Chalfont St Giles Vent Shaft worksite (ref.: CSG) where operation of general plant, earthworks, ground and water treatment works, temporary capping of beams and structural wall installation works were underway.
- Noise monitoring was undertaken in the vicinity of Chalfont St Peter Vent Shaft worksite (ref.: CSP), where stockpile management, piling, shaft dewatering and excavation, preparatory works for shaft base slab, operation of general and auxiliary plant, road maintenance and post-treatment injection works were in progress.
- Noise monitoring was undertaken in the vicinity of Load Test Pile 1 worksite (ref.: LTP #1), where compound operation, civil works, earthworks, drainage works, ground investigation works, piling, abutment works, construction of retaining walls, integrity test of concrete piles, River Colne realignment and diversion of Thames water utilities were underway.

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

- Amersham and Aylesbury, as part of water utility works.
- Calvert and Turweston, as part of power utility works.
- Fleet Marston where vegetation clearance and archaeological works were undertaken.
- Hollow Barn, Mossycorner where translocation of woodland was underway.
- Junction 2 where vegetation clearance was undertaken.

- Great Missenden where remedial works and repairs for the damaged surface course were undertaken.
- Wendover Dean where archaeological, fencing and translocation were undertaken.
- Frith Hill, Calvert area where vegetation clearance near Leather Lane, Potter Row and Frith Hill were undertaken.
- Hunts Green Farm, Great Missenden where archaeological trenching and the fencing works were undertaken.
- Nash Lee where trial trenching, vegetation clearance, fencing and backfilling works were underway.
- North of Ellesborough Road where vegetation clearance and fencing works were undertaken.
- Three Bridge Mill Twyford where boundary fencing, ecology surveys and HERDS mitigation works were undertaken.
- Rocky Lane Wendover and Bowood Lane where installation of security cabins was undertaken.
- Waddesdon where installation of boundary fencing, archaeological investigations, vegetation clearance and reptile habitat fencing were undertaken.
- Mixbury Area where bat and badger ecological mitigation works were underway.
- Twyford & Padbury where bat mitigation, vegetation clearance, installation of badger and ditch crossing were undertaken.
- Barton Hill, Windmore Farm, Finmere Station and Shelswell Inn where vegetation clearance, badger and bat mitigation were underway.
- A41 Bicester Road Main Compound and Roundabout where construction of the main compound area and roundabout were underway.
- A41 Bicester Road Batch Plant where batch plant setup was undertaken.
- Site access road to A418 Oxford Road Compound where installation of culvert and utility crossing slabs, topsoil stripping and stockpiling were undertaken.
- A418 Oxford Road Main Compound where construction of main compound was undertaken.
- Ground investigation works including rotary borehole drilling and trial pits were undertaken at various locations along the HS2 route.
- Vegetation clearance at various locations along the HS2 route was undertaken.

There were two (2) exceedance of the HS2 threshold levels for significant noise impacts at the HF worksite, 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.

One (1) complaint was received within Buckinghamshire during the monitoring period. A description of complaints, the results of investigations and any action 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.

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 Buckinghamshire (BS) Local Authority area for the period 1st to 31st August 2021.

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

- School End worksite reference SE (see Plan 1 in Appendix A), where works activities included:
 - construction of access road and tie-in with highway.
- Chetwode Hermitage (see Plan 1 in Appendix A), where works activities included:
 - construction of access road.
- Rosehill Farm (see Plan 1 in Appendix A), where works activities included:
 - digging of trial holes.
- School Hill Compound worksite reference SHC (see plan 2 in Appendix A), where works activities included:
 - construction of abutment works at Charndon Lodge underbridge;
 - construction of site compound, concrete blinding, and pile cropping works at East West Rail overbridge;

- removal of the decommissioned pipeline between Gawcott Road and Queens Catherine Road;
- West Street Compound mobilisation works;
- enabling works at Addison Road overbridge;
- Perry Hill overbridge works (including assembly of piling platform and installation of temporary drainage);
- earthworks for Oxford line (including removal of ballast, vegetation clearance, installation of temporary drainage and stockpiling) and
- construction of at-grade crossing.
- batching plant compound mobilisation including laying of protection slabs, protection of verge along highway plaza, installation of underground utilities and ducting, pouring concrete, expansion of carpark, and erection of batching plant and fit out;
- School Hill UTX worksite reference - SHU (see plan 2 in Appendix A), where works activities included:
 - horizontal drilling.
- Calvert South Worksite, near Calvert, reference - CALS (see plan 2 in Appendix A), where works activities included:
 - aggregate deliveries;
- Quainton Access Road Worksite, reference - QAR (see plan 3 in Appendix A), where works activities included:
 - construction of drainage and hardstanding at Station Road satellite compound;
 - installation of geogrid and aggregates;
 - ground investigation survey;
 - bearing testing;
 - installation of culvert; and
 - construction of concrete slabs.
- Hall Farm, Bicester Road Worksite, reference – HF (see plan 4 in Appendix A), where works activities included:
 - excavation works;
 - installation of drainage; and
 - removal of existing kerbs and installation of new kerbs;

- Rocky Lane Embankment Worksite, reference – RLE (see plan 5 in Appendix A), where works activities included:
 - road crossing works; and
 - site clearance along rocky lane north and south.
- Leather Lane Worksite, reference – LL (see plan 6 in Appendix A), where works activities included:
 - Installation of attenuation pond.
- South Heath Cutting Worksite, reference – SHCW (see plan 6 in Appendix A), where works activities included:
 - construction of haul road;
 - demolition of mulberry park;
 - tarmac of security gatehouse; and
 - site clearance.
- Colne Valley Viaduct - Little Missenden Vent Shaft worksite reference – CVV-LM (see plan 7 in Appendix A), where works activities included:
 - operation of general plant at site;
 - earthworks including stockpile management;
 - structural wall installation works including civil works, construct of guide walls, excavation, concreting, de-sanding, mud treatment, delivery, and assembly; and
 - water treatment.
- Colne Valley Viaduct - Amersham Vent Shaft Worksite, reference – CVV - AM (see plan 8 in Appendix A), where works activities included:
 - operation of general plant at site;
 - earthworks including stockpile management;
 - installation of structural wall including excavation, de-sanding, mud treatment, and concreting; and
 - water treatment.
- Bottom House Farm Lane Worksite, reference - BHFL (see plan 9 in Appendix A), where work activities included:
 - removal of track mat and soil along temporary access road;
 - stockpiling;
 - digging of trial holes;

- fencing works;
 - vegetation clearance;
 - compaction of ground and installation of membrane; and
 - junction road works.
- Colne Valley Viaduct - Chalfont St Giles Vent Shaft Worksite, reference - CVV-CSG (see plan 9 in Appendix A), where works activities included:
 - operation of general plant at site;
 - earthworks (stockpile management);
 - ground post treatment (drilling and grouting) and water treatment;
 - temporary capping of beams (including breakout and formation); and
 - water treatment.
 - Colne Valley Viaduct - Chalfont St Peter Vent Shaft Worksite, reference – CVV-CSP (see plan 10 in Appendix A), where works activities included:
 - operation of general and auxiliary plant at site;
 - stockpile management;
 - basement secant piling works (including construction of guide walls and shallow box retaining wall, contiguous and secant piles, excavation, cutting of contiguous and secant piles)
 - preparatory works for shaft base slab;
 - shaft dewatering and excavation;
 - post-treatment injection works including dewatering; and
 - road maintenance works;
 - Colne Valley Viaduct - Load Test Pile 1 Worksite, reference – CVV-LTP #1 (see plan 11 in Appendix A), where works activities included:
 - piling for the construction of the jetty;
 - construction of a cofferdam (including sheet piling, excavation, dewatering, installation of waling beams and concrete plugs;
 - main piling works including boring pile, de-sanding, installation of reinforcement cage and concrete pile, break-out of bored pile to prepare pile cap and installation of grout curtain around viaduct pile;
 - construction of retaining wall;

- Denham Water Ski Club and North Embankment compound operation and de-sanding;
- civil works, earthworks and drainage works on haul road;
- north abutment works (including construction of pile wall and yard support);
- integrity test of concrete piles;
- ground investigation works;
- realignment of River Colne; and
- diversion of Thames water.

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

- Amersham and Aylesbury, as part of water utility works.
- Calvert and Turweston, as part of power utility works.
- Fleet Marston where vegetation clearance and archaeological works were undertaken.
- Hollow Barn, Mossycorner where translocation of woodland was underway.
- Junction 2 where vegetation clearance was undertaken.
- Great Missenden where remedial works and repairs for the damaged surface course were undertaken.
- Wendover Dean where archaeological, fencing and translocation were undertaken.
- Frith Hill, Calvert area where vegetation clearance near Leather Lane, Potter Row and Frith Hill were undertaken.
- Hunts Green Farm, Great Missenden where archaeological trenching and the fencing works were undertaken.
- Nash Lee where trial trenching, vegetation clearance, fencing and backfilling works were underway.
- North of Ellesborough Road where vegetation clearance and fencing works were undertaken.
- Three Bridge Mill Twyford where boundary fencing, ecology surveys and HERDS mitigation works were undertaken.
- Rocky Lane Wendover and Bowood Lane where installation of security cabins was undertaken.
- Waddesdon where installation of boundary fencing, archaeological investigations, vegetation clearance and reptile habitat fencing were undertaken.

- Mixbury Area where bat and badger ecological mitigation works were underway.
- Twyford & Padbury where bat mitigation, vegetation clearance, installation of badger and ditch crossing were undertaken.
- Barton Hill, Windmore Farm, Finmere Station and Shelswell Inn where vegetation clearance, badger and bat mitigation were underway.
- A41 Bicester Road Main Compound and Roundabout where construction of the main compound area and roundabout were underway.
- A41 Bicester Road Batch Plant where batch plant setup was undertaken.
- Site access road to A418 Oxford Road Compound where installation of culvert and utility crossing slabs, topsoil stripping and stockpiling were undertaken.
- A418 Oxford Road Main Compound where construction of main compound was undertaken.
- Ground investigation works including rotary borehole drilling and trial pits were undertaken at various locations along the HS2 route.
- Vegetation clearance at various locations along the HS2 route was undertaken.

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

1.2 Measurement Locations

- 1.2.1 Twenty-Six (26) noise and two (2) vibration monitoring installations were active in August in the BS area. Table 2 summarises the positions of noise and vibration monitoring installations within the BS area in August 2021.
- 1.2.2 An additional noise monitor (ref.: CH-NMP1) was installed at Chetwode Hermitage, in proximity to the Chetwode Hermitage worksite, ref.: CH, on the 10th of August.
- 1.2.3 Additional noise and vibration monitors (ref.: RF-NMP1, RF-Vib1) were installed at Rosehill Farm, in proximity to the Rosehill Farm worksite, ref.: RF, on the 4th of August.
- 1.2.4 An additional noise monitor (ref.: SDVC-NMP1) was installed at Rocky Lane, in proximity to the Rocky Lane Embankment worksite, ref.: RLE, on the 2nd of August.

- 1.2.5 An additional noise monitor (ref.: NCAS6-NMP1) was installed at Chesham Lane, in proximity to the Rocky Lane Embankment worksite, ref.: RLE, on the 23rd of August.
- 1.2.6 An additional noise monitor (ref.: NCAS5-NMP1) was installed at Chesham Lane, in proximity to the Rocky Lane Embankment worksite, ref.: RLE, on the 23rd of August.
- 1.2.7 An additional noise monitor (ref.: HG-NMP1) was installed at Hunts Green, in proximity to the Leather Lane worksite, ref.: LL, on the 23rd of August.
- 1.2.8 An additional noise monitor (ref.: GD-NMP1) was installed at Grimms Ditch, in proximity to the Leather Lane worksite, ref.: LL, on the 23rd of August.
- 1.2.9 An additional noise monitor (ref.: PR-NMP1) was installed at South Heath, in proximity to the South Heath Cutting worksite, ref.: SHCW, on the 23rd of August.
- 1.2.10 An additional noise monitor (ref.: SH-NMP1) was installed at Potters Row, in proximity to the South Heath Cutting worksite, ref.: SHCW , on the 23rd of August.
- 1.2.11 Worksite SFF was demobilised in the month of July and the noise monitor (ref.: SFF-NMP1) was uninstalled from the site.
- 1.2.12 The noise monitor (ref.: QAR-NMP1) at worksite QAR was relocated on 11th of August to a new location at Woodlands Barn, Quainton.
- 1.2.13 Existing vibration monitor (ref.: BHFL-Vib1) at worksite BHFL was uninstalled on 11th of August 2021.
- 1.2.14 Maps showing the positions of noise and vibration monitoring installations are presented in Appendix B.

Table 2: Monitoring Locations

Worksite Reference	Measurement Reference	Address
SE	SE-NMP1	School End, Chetwode
CH	CH-NMP1	Hermitage, Chetwode
RF	RF-NMP1	Old Stable Cottage, Rosehill Farm, Chetwode
	RF-Vib1	Old Stable Cottage, Rosehill Farm, Chetwode
SHC	SHC-NMP1	School Hill Compound, Calvert
SHU	SHU-NMP1	70 Cotswold Way, Calvert
CALS	CALS-NMP1	Site boundary adjacent to Red Kite View, Calvert
QAR	QAR-NMP1 Old	1 Woodlands Farm Cottages, Quainton

Worksite Reference	Measurement Reference	Address
	QAR-NMP1 New	Woodlands Barn, Quainton
HF	HF-NMP1	Hall Farm, Bicester Road, Waddesdon
RLE	SDVC-NMP1	Rocky Lane, Wendover
	NCAS6-NMP1	Chesham Lane, The Lee, Wendover
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover
LL	HG-NMP1	Hunts Green, Leather Lane, The Lee, South Heath
	GD-NMP1	Grimms Ditch, The Lee, South Heath
SHCW	PR-NMP1	Potters Row, South Heath
	SH-NMP1	Bury Farm, South Heath
CVV-AM	CVV-AM-NMP1	Amersham Vent Shaft Worksite, Whielden Lane, Amersham
CVV-LM	CVV-LM-NMP1	Little Missenden Vent Shaft Worksite, Amersham
BHFL	BHFL-NMP1	Elm Tree Cottage, Bottom House Farm Lane
	BHFL-Vib1	Pine Cottage, Bottom House Farm Lane
CVV-CSG	CVV-CSG-NMP1	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane
	CVV-CSG-NMP2	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane
CVV-CSP	CVV-CSP-NMP1	Chalfont St Peter Vent Shaft Worksite, Chesham Lane, Chalfont St. Peter
	CVV-CSP-NMP2	Chalfont St Peter Vent Shaft Worksite, Chesham Lane, Chalfont St. Peter
	CVV-CSP-NMP3	Chalfont St Peter Vent Shaft Worksite, Chesham Lane, Chalfont St. Peter
CVV-LTP #1	CVV-LTP #1-NMP1	Northern boundary, Load Test Pile 1 Worksite, Denham Water Ski Club
	CVV-WYC-NMP1	Wyatt's Covert, Tilehouse Lane, Denham, Denham Garden Village
	CVV-DFS-NMP1	Denham Film Studio, Uxbridge

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	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
SE	SE-NMP1	School End, Chetwode	Free-field	46.0 (58.0)	54.0 (69.9)	45.2 (52.6)	42.7 (52.9)	39.0 (48.6)	44.9 (47.1)	48.9 (50.7)	48.1 (49.4)	45.9 (52.1)	40.0 (49.1)	47.1 (54.8)	39.2 (50.3)
CH	CH-NMP1	Hermitage, Chetwode	Free-field	43.1 (50.3)	50.3 (60.9)	45.2 (48.0)	41.7 (47.0)	39.2 (48.3)	41.8 (44.4)	43.4 (44.5)	44.7 (47.1)	44.4 (50.8)	39.5 (47.1)	44.6 (51.0)	40.3 (44.0)
RF	RF-NMP1	Old Stable Cottage, Rosehill Farm, Chetwode	Free-field	46.9 (52.0)	51.1 (59.8)	47.2 (53.4)	45.0 (54.8)	43.2 (58.2)	44.6 (46.8)	49.6 (55.3)	48.6 (53.6)	46.6 (50.7)	43.9 (51.3)	48.1 (53.3)	42.9 (52.0)
SHC	SHC-NMP1	School Hill Compound, Calvert	Free-field	50.7 (58.0)	62.2 (69.4)	46.0 (48.7)	43.3 (48.4)	40.0 (46.0)	41.7 (42.6)	47.8 (51.5)	45.3 (49.4)	45.2 (48.5)	40.3 (47.2)	44.6 (48.5)	42.7 (46.0)
SHU	SHU-NMP1	70 Cotswold Way, Calvert	Free-field	48.8 (50.5)	52.9 (57.3)	49.3 (52.2)	45.9 (50.0)	41.6 (50.4)	47.2 (48.8)	52.0 (55.5)	51.2 (60.8)	49.2 (61.1)	39.6 (46.8)	47.9 (52.9)	42.4 (50.7)
CALS	CALS-NMP1	Site boundary adjacent to Red Kite View, Calvert	Free-field	56.3 (60.6)	57.8 (58.8)	49.2 (51.4)	46.7 (50.7)	40.5 (52.0)	49.6 (49.6)	53.6 (53.6)	51.3 (51.3)	47.1 (50.9)	36.7 (42.5)	46.0 (52.9)	41.4 (49.4)
QAR	QAR-NMP1 Old	1 Woodlands Farm Cottages, Quainton	Free-field	53.4 (54.9)	54.6 (59.7)	50.9 (51.9)	47.9 (55.9)	43.2 (51.8)	47.4 (47.4)	50.3 (50.3)	50.8 (50.8)	49.8 (51.9)	42.0 (46.5)	50.1 (54.8)	43.4 (51.5)
	QAR-NMP1 New	1 Woodlands Farm Cottages, Quainton	Free-field	41.7 (46.0)	52.4 (61.6)	43.9 (68.7)	38.4 (45.4)	37.2 (44.9)	41.2 (43.6)	43.0 (45.2)	41.3 (42.8)	40.7 (50.2)	39.0 (53.4)	42.0 (48.5)	36.6 (41.3)

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
HF	HF-NMP1	Hall Farm, Bicester Road, Waddesdon	Free-field	60.8 (63.3)	63.7 (67.0)	61.8 (65.0)	59.4 (62.9)	54.6 (60.3)	57.7 (58.9)	62.1 (63.4)	64.1 (68.2)	61.7 (72.5)	53.2 (57.5)	59.8 (63.0)	54.5 (59.6)
RLE	SDVC-NMP1	Rocky Lane, Wendover	Free-field	62.4 (63.4)	62.0 (64.6)	62.0 (62.3)	59.1 (62.8)	55.3 (62.4)	59.3 (59.7)	60.6 (61.0)	60.5 (60.6)	59.9 (61.4)	55.8 (58.9)	60.1 (61.8)	57.0 (61.6)
	NCAS6-NMP1	Chesham Lane, The Lee, Wendover	Free-field	52.4 (52.9)	53.3 (55.4)	51.7 (53.0)	49.7 (51.7)	46.7 (51.9)	N/A* (N/A)*	N/A* (N/A)*	N/A* (N/A)*	N/A* (N/A)*	N/A* (N/A)*	N/A* (N/A)*	N/A* (N/A)*
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	Free-field	45.9 (46.3)	50.1 (51.2)	46.5 (47.2)	45.2 (47.6)	43.6 (46.6)	N/A* (N/A)*	N/A* (N/A)*	N/A* (N/A)*	N/A* (N/A)*	N/A* (N/A)*	N/A* (N/A)*	N/A* (N/A)*
LL	HG-NMP1	Hunts Green, Leather Lane, The Lee, South Heath	Free-field	47.0 (52.8)	51.1 (58.1)	45.6 (48.9)	43.3 (44.2)	45.8 (58.3)	51.4 (51.4)	46.9 (46.9)	50.1 (50.1)	45.1 (47.5)	43.6 (44.6)	45.8 (49.9)	44.8 (48.6)
	GD-NMP1	Grimms Ditch, The Lee, South Heath	Free-field	45.4 (46.0)	47.8 (49.4)	46.5 (48.8)	44.4 (46.9)	44.4 (48.1)	44.4 (44.4)	46.6 (46.6)	48.4 (48.4)	46.3 (48.9)	45.5 (49.4)	57.9 (69.3)	45.1 (46.7)
SHCW	PR-NMP1	Potters Row, South Heath	Free-field	47.4 (48.3)	48.2 (49.2)	48.1 (50.8)	45.5 (49.1)	45.3 (49.3)	46.6 (46.6)	48.6 (48.6)	50.2 (50.2)	46.6 (47.8)	45.3 (47.8)	46.9 (49.9)	44.9 (46.0)
	SH-NMP1	Bury Farm, South Heath	Free-field	44.2 (45.0)	53.7 (59.4)	45.7 (48.5)	43.6 (46.6)	42.7 (44.8)	43.4 (43.4)	48.0 (48.0)	49.0 (49.0)	44.1 (45.1)	42.6 (43.4)	45.6 (48.4)	42.6 (43.6)
CVV-AM	CVV-AM-NMP1	Whielden Lane, Amersham	Free-field	61.0 (65.2)	63.5 (68.3)	61.3 (67.5)	59.5 (67.1)	54.5 (67.0)	55.9 (57.3)	57.8 (58.9)	58.0 (58.7)	56.8 (59.4)	50.9 (59.1)	57.1 (60.7)	51.0 (57.9)
CVV-LM	CVV-LM-NMP1	Little Missenden Vent Shaft Worksite	Free-field	61.7 (63.7)	61.6 (62.8)	62.2 (64.5)	59.1 (62.3)	54.4 (60.7)	58.4 (58.9)	60.6 (60.9)	61.0 (61.2)	60.1 (62.4)	54.0 (59.8)	60.1 (64.3)	53.9 (60.7)

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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
BHFL	BHFL-NMP1	Elm Tree Cottage, Bottom House Farm Lane	Free-field	52.9 (54.9)	54.1 (58.2)	54.4 (65.5)	50.0 (55.7)	45.8 (55.3)	49.7 (50.1)	52.1 (53.4)	54.2 (59.2)	53.3 (60.5)	44.2 (50.3)	53.0 (65.1)	45.1 (53.4)
CVV-CSG	CVV-CSG-NMP1	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane	Free-field	54.4 (58.6)	57.3 (63.6)	49.6 (54.4)	42.4 (56.1)	43.8 (60.3)	51.9 (56.9)	51.5 (54.7)	45.2 (50.6)	44.6 (50.5)	42.9 (57.1)	48.6 (66.4)	43.8 (59.0)
	CVV-CSG-NMP2	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane	Free-field	55.4 (65.1)	59.9 (66.1)	48.7 (55.2)	43.4 (51.9)	42.4 (53.4)	49.7 (54.8)	50.7 (54.1)	44.5 (46.4)	44.7 (50.0)	42.1 (53.0)	46.4 (51.7)	42.0 (49.6)
CVV-CSP	CVV-CSP-NMP1	Chalfont St Peter Vent Shaft Worksite	Free-field	63.3 (66.0)	68.2 (71.6)	61.0 (65.1)	58.6 (65.5)	53.0 (61.6)	58.9 (66.9)	60.1 (60.6)	59.8 (60.0)	58.3 (60.8)	50.6 (54.8)	57.5 (61.1)	51.3 (59.0)
	CVV-CSP-NMP2	Chalfont St Peter Vent Shaft Worksite	Free-field	44.9 (51.5)	52.6 (56.2)	45.3 (51.3)	43.1 (49.4)	38.7 (58.1)	44.9 (51.0)	48.6 (51.8)	46.2 (50.7)	44.9 (52.1)	37.4 (44.5)	47.0 (51.8)	37.2 (44.8)
	CVV-CSP-NMP3	Chalfont St Peter Vent Shaft Worksite	Free-field	55.9 (57.2)	56.5 (57.8)	55.8 (56.9)	53.3 (55.9)	48.8 (59.5)	52.9 (53.7)	55.9 (56.8)	55.8 (56.6)	54.8 (57.1)	48.5 (58.0)	55.2 (58.0)	48.3 (54.8)
CVV-LTP #1	CVV-LTP #1-NMP1	Northern boundary, Load Test Pile 1 Worksite	Free-field	61.5 (63.0)	62.4 (70.8)	61.0 (63.0)	58.9 (62.9)	55.4 (62.6)	59.1 (59.9)	61.3 (61.6)	61.7 (62.2)	59.8 (62.4)	53.1 (58.8)	59.4 (63.9)	54.2 (61.2)
	CVV-WYC-NMP1	Wyatt's Covert, Tilehouse Lane, Denham	Free-field	54.7 (56.1)	57.6 (61.2)	54.7 (58.8)	52.1 (61.2)	48.1 (55.2)	52.2 (52.8)	56.4 (56.9)	55.8 (57.0)	53.3 (57.1)	46.9 (55.8)	54.1 (59.0)	46.9 (54.2)
	CVV-DFS-NMP1	Denham Film Studio, Uxbridge	Free-field	46.7 (54.4)	51.8 (56.3)	51.6 (61.0)	49.7 (63.2)	41.3 (54.1)	49.2 (51.9)	53.4 (60.8)	48.4 (54.0)	51.5 (58.8)	41.8 (55.0)	50.6 (60.6)	42.1 (50.6)

* No data was available on Saturday and Sunday.

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2.1.2 Table 4 presents a summary of the measured vibration levels at the 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
RF	RF-V1	Old Stable Cottage, Rosehill Farm, Chetwode	0.72 (Z-axis)
BHFL	BHFL-Vib 1	Pine Cottage, Bottom House Farm Lane	0.95 (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 at nearby receptors, 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 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	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
SE	SE-NMP1	School End, Chetwode	Weekdays	daytime	2	No exceedance
CH	CH-NMP1	Hermitage, Chetwode	All days	All periods	No exceedance	No exceedance
RF	RF-NMP1	Old Stable Cottage, Rosehill Farm, Chetwode	All days	All periods	No exceedance	No exceedance
SHC	SHC-NMP1*	School Hill Compound, Calvert	All days	All periods	No exceedance	No exceedance
SHU	SHU-NMP1	70 Cotswold Way, Calvert	All days	All periods	No exceedance	No exceedance
CALS	CALS-NMP1	Site boundary adjacent to Red Kite View, Calvert	All days	All periods	No exceedance	No exceedance
QAR	QAR-NMP1 Old	1 Woodlands Farm Cottages, Quainton	All days	All periods	No exceedance	No exceedance
QAR	QAR-NMP1 New	Woodlands Barn, Quainton	All days	All periods	No exceedance	No exceedance
HF	HF-NMP1	Hall Farm, Bicester Road, Waddesdon	Saturday Saturday Sunday Night	1300-1400 1400-2200 0700-2200 2200-0700	1 10 73 20	3
RLE	SDVC-NMP1	Rocky Lane, Wendover	Weekdays	daytime	7	No exceedance
	NCAS6-NMP1	Chesham Lane, The Lee, Wendover	All days	All periods	No exceedance	No exceedance

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	All days	All periods	No exceedance	No exceedance
LL	HG-NMP1	Hunts Green, Leather Lane, The Lee, South Heath	All days	All periods	No exceedance	No exceedance
	GD-NMP1	Grimms Ditch, The Lee, South Heath	All days	All periods	No exceedance	No exceedance
SHCW	PR-NMP1	Potters Row, South Heath	All days	All periods	No exceedance	No exceedance
	SH-NMP1	Bury Farm, South Heath	All days	All periods	No exceedance	No exceedance
CVW-AM	CVW-AM-NMP1*	Whielden Lane, Amersham	All days	All periods	No exceedance	No exceedance
CVW-LM	CVW-LM-NMP1*	Little Missenden Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
BHFL	BHFL-NMP1	Elm Tree Cottage, Bottom House Farm Lane	All days	All periods	No exceedance	No exceedance
CVW-CSG	CVW-CSG-NMP1*	Chalfont St Giles Vent Shaft	All days	All periods	No exceedance	No exceedance
	CVW-CSG-NMP2*	Chalfont St Giles Vent Shaft	All days	All periods	No exceedance	No exceedance
CVW-CSP	CVW-CSP-NMP1*	Chalfont St Peter Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
	CVW-CSP-NMP2*	Chalfont St Peter Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
	CVW-CSP-NMP3*	Chalfont St Peter Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
CVW-LTP #1	CVW-LTP #1-NMP1*	Northern boundary, Load Test Pile 1 Worksite	All days	All periods	No exceedance	No exceedance

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
	CVW-WYC-NMP1	Wyatt's Covert, Tilehouse Lane, Denham	All days	All periods	No exceedance	No exceedance
	CVW-DFS-NMP1	Denham Film Studio, Uxbridge	All days	All periods	No exceedance	No exceedance

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

2.2.6 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
HF	HF-NMP1	Hall Farm, Bicester Road, Waddesdon	2

2.2.7 Two days exceeding the SOAEL were recorded due to HS2 construction at HF worksite during August 2021 due to excavation and drainage works. Exceedances of the LOAEL were recorded at SE-NMP1, HF-NMP1, and SDVC-NMP1.

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

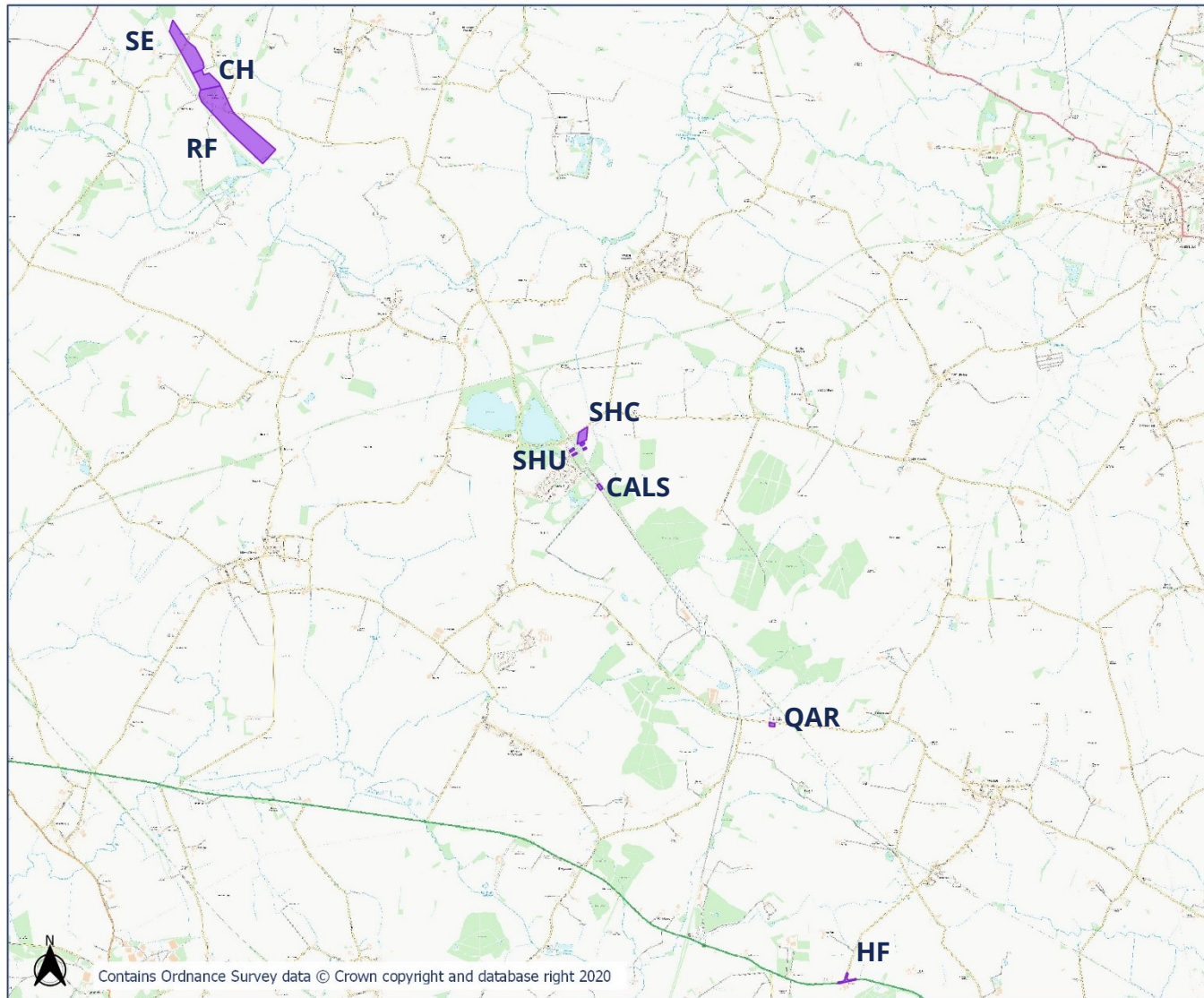
2.4.1 Table 8 provides a summary of complaint information related to noise and vibration received during the reporting period, along with the findings of any investigation.

Table 8: Summary of Complaints

Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
HS2-21-42385-C	HF	Complaint regarding noise and odour disturbance from vegetation clearance.	The noise was confirmed to be from ongoing HS2 related maintenance works undertaken by machine.	Contractor checked and verified that due to the constraints of the area this maintenance task needs to be undertaken by handheld machine not a ride on machine. Given the scale of maintenance the use of shears is not appropriate.

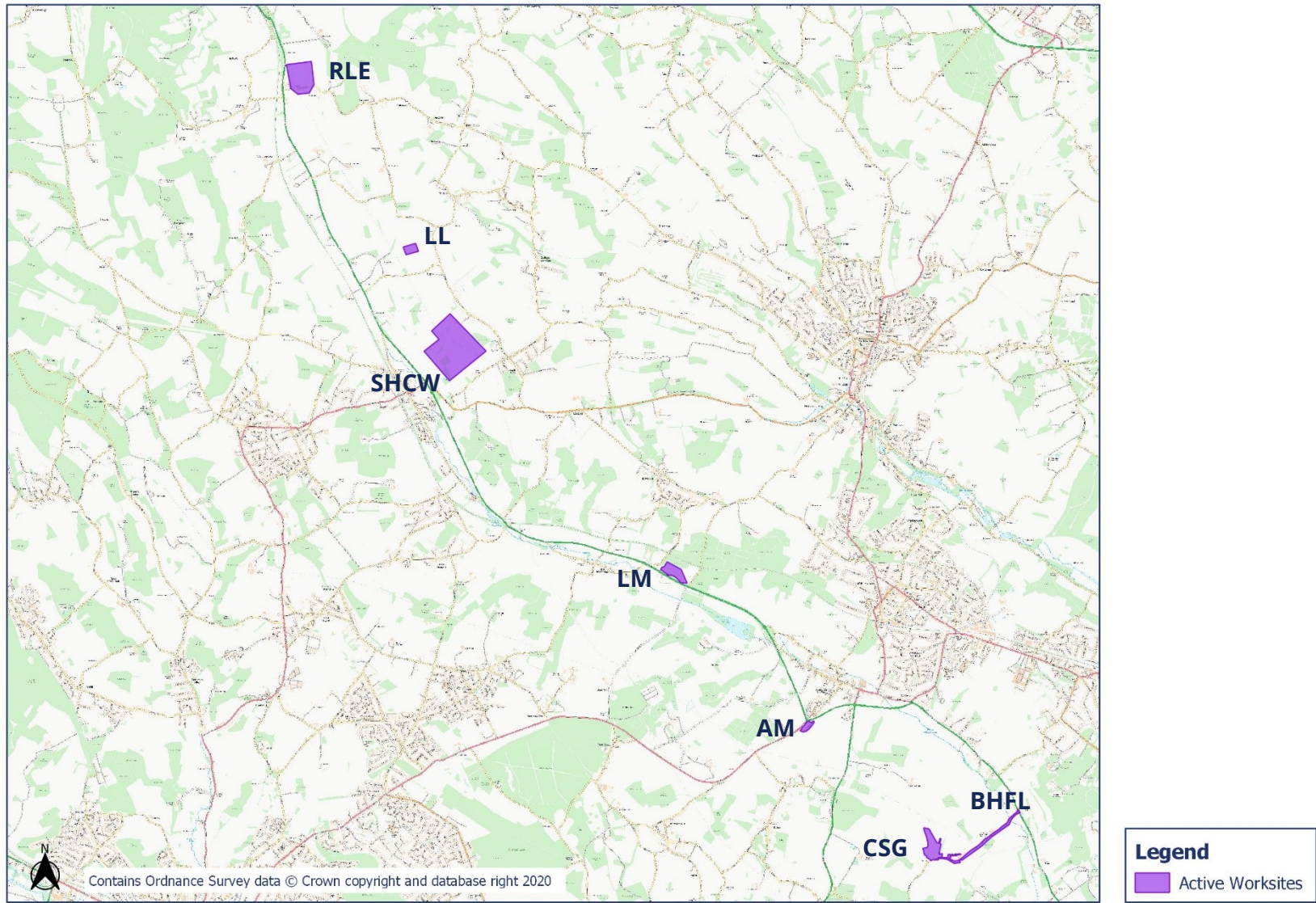
Appendix A Site Locations

HS2 Worksite Identification Plan - Overview 1

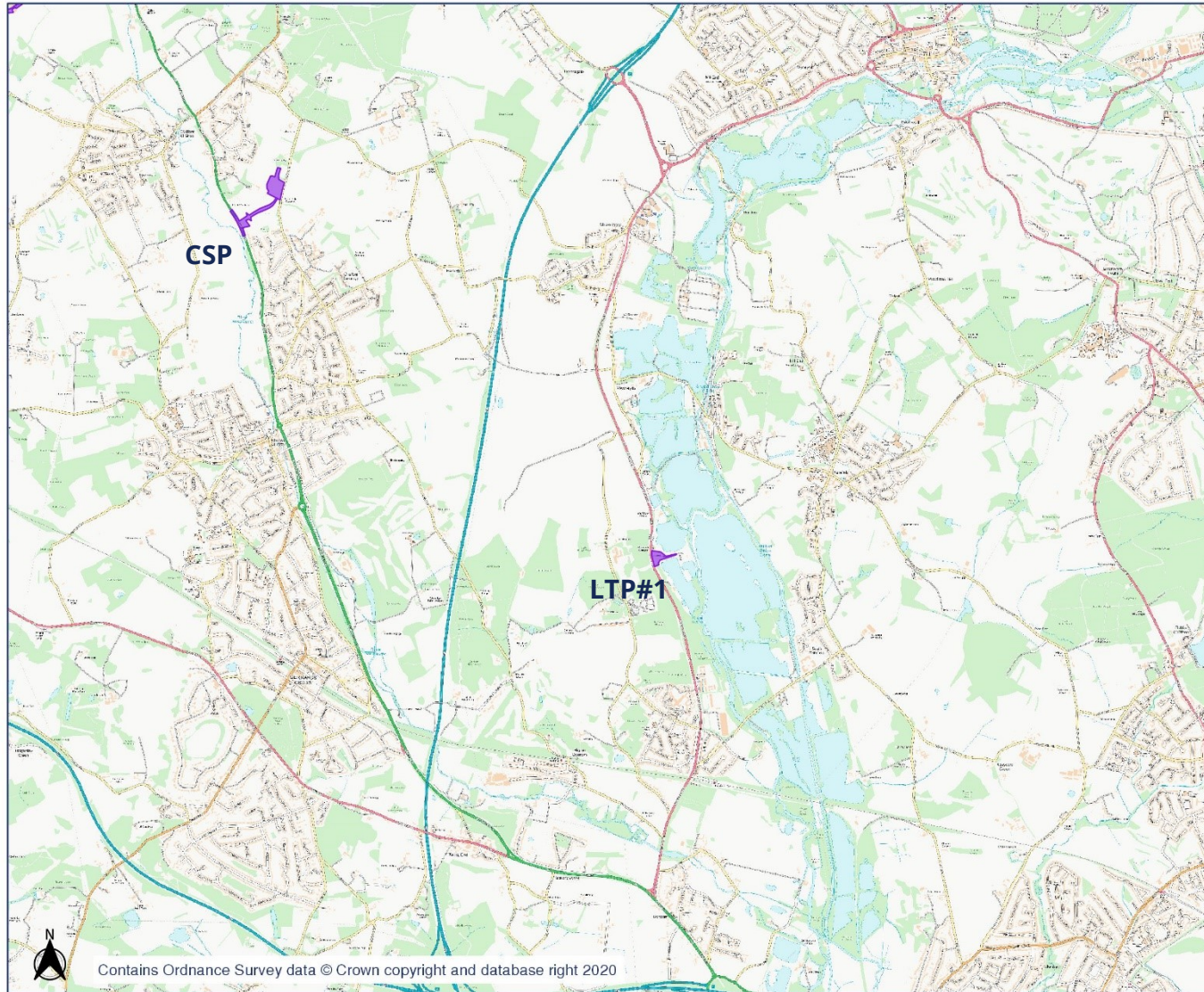


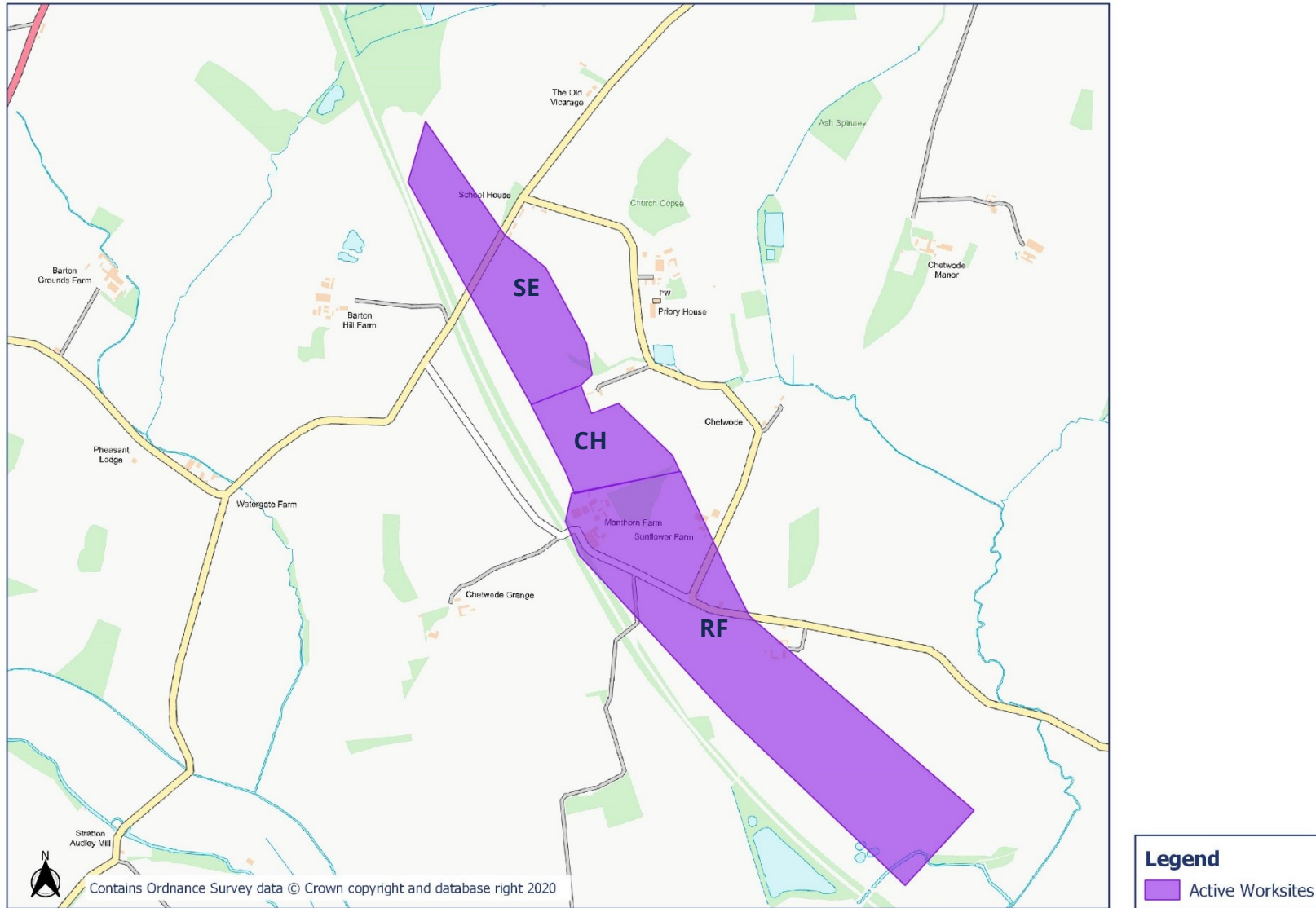
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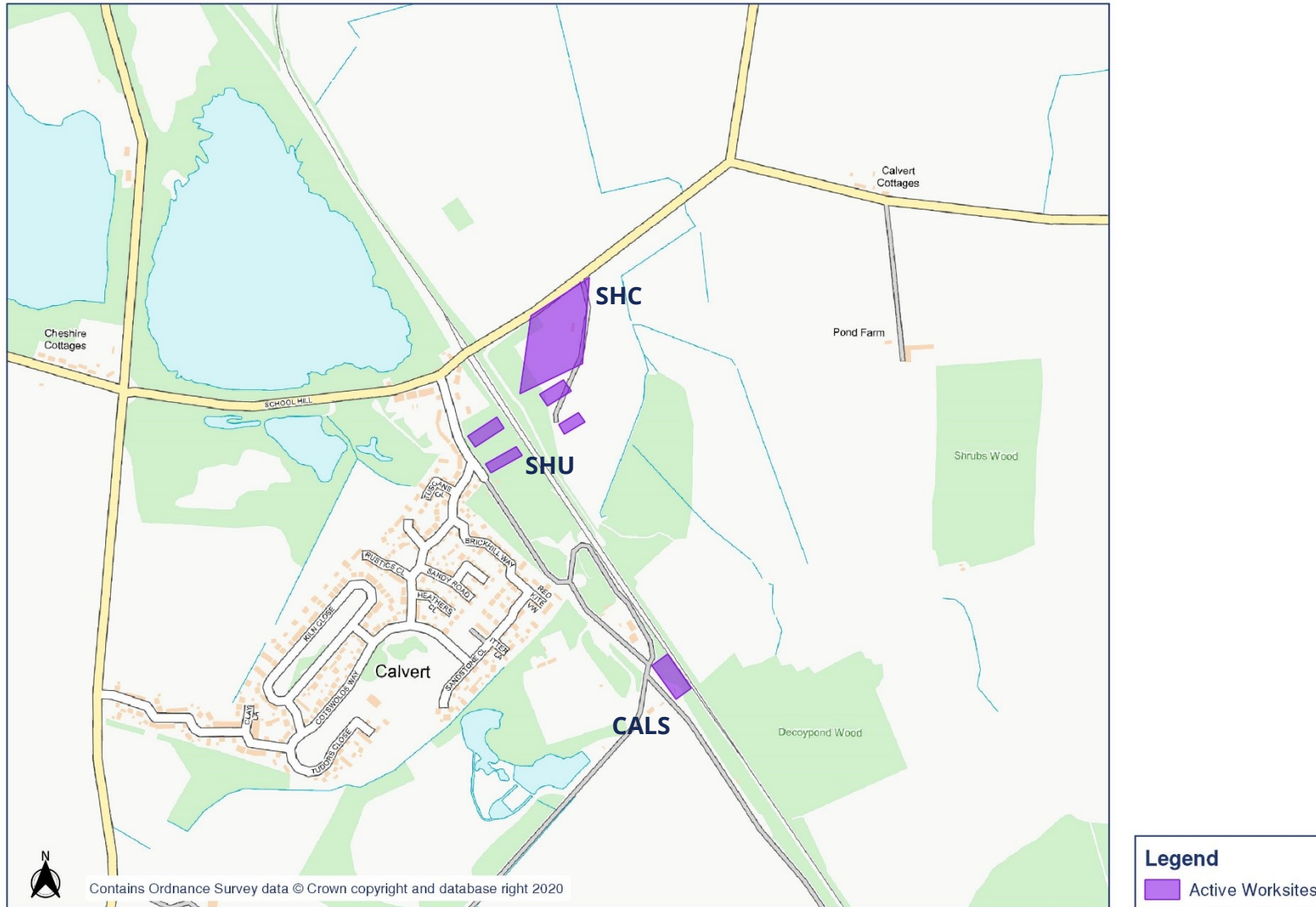
HS2 Worksite Identification Plan - Overview 2



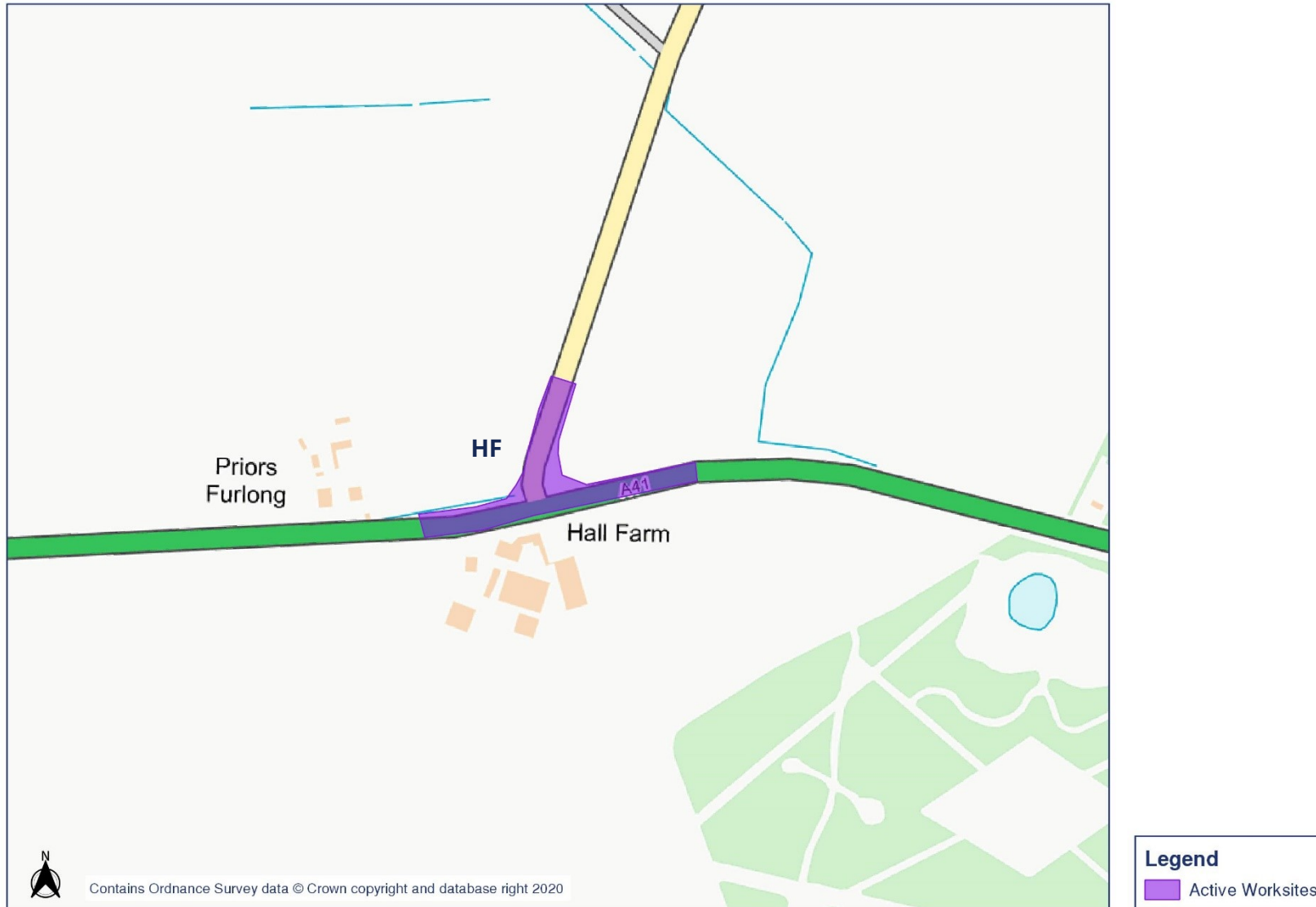
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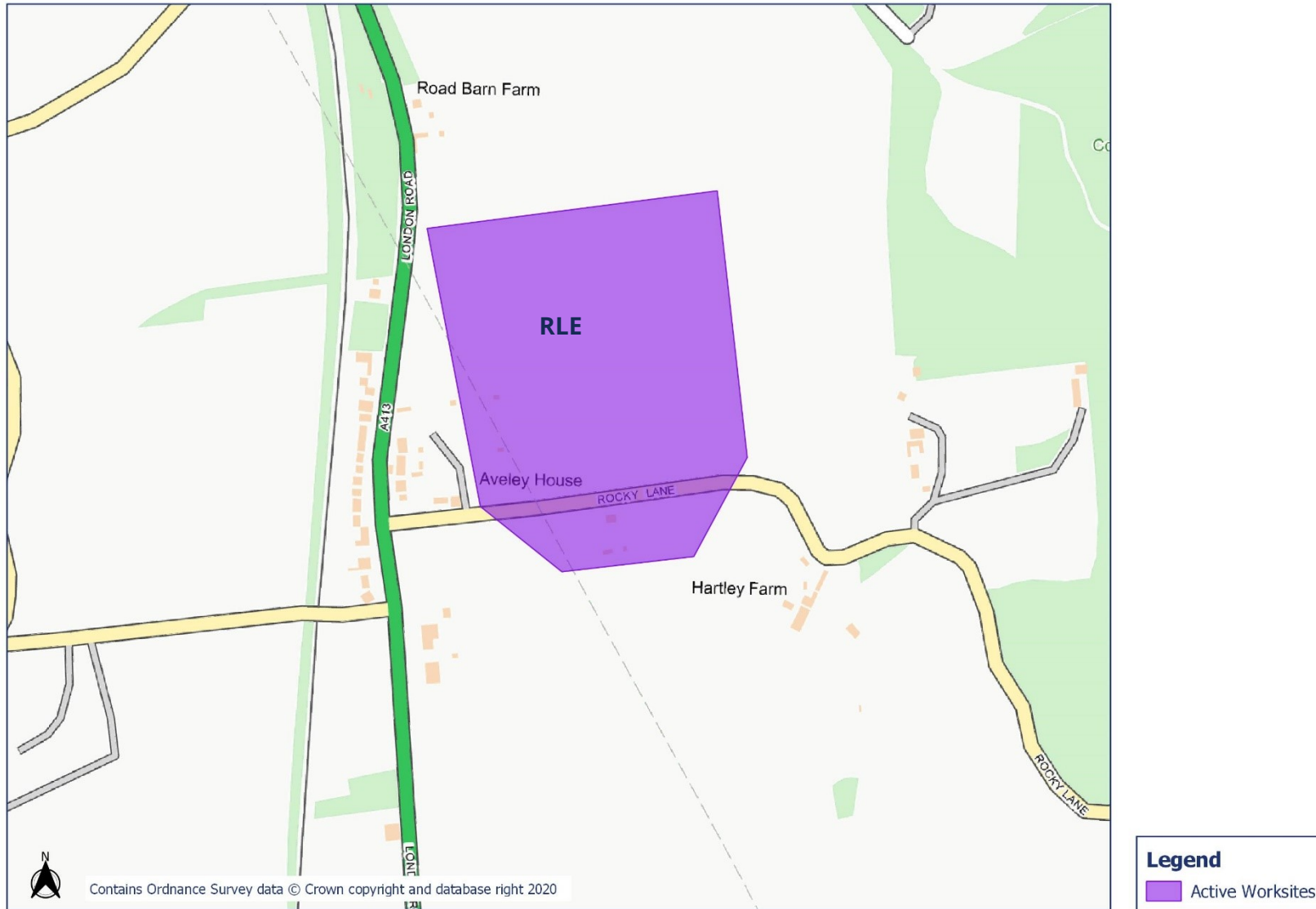


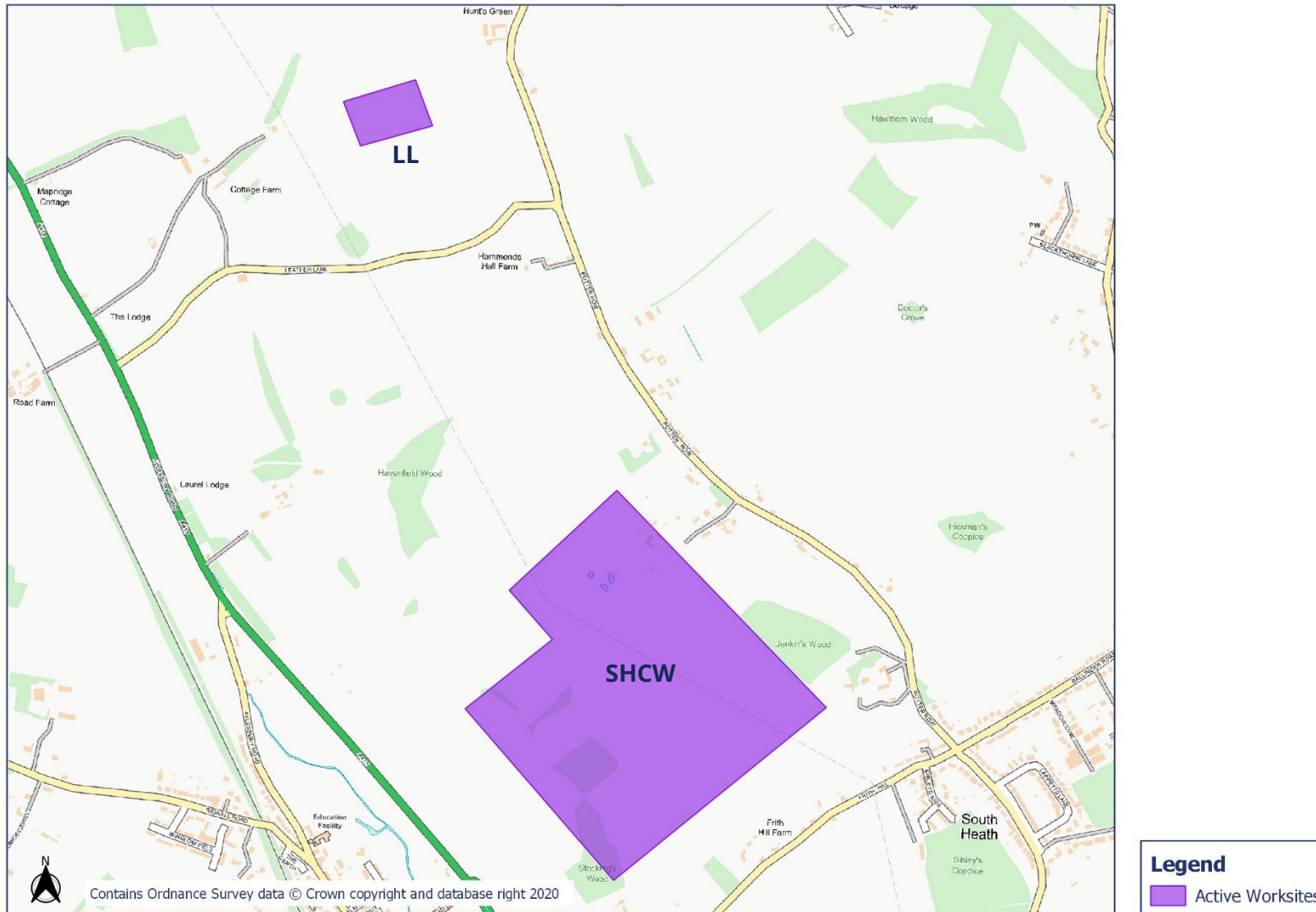




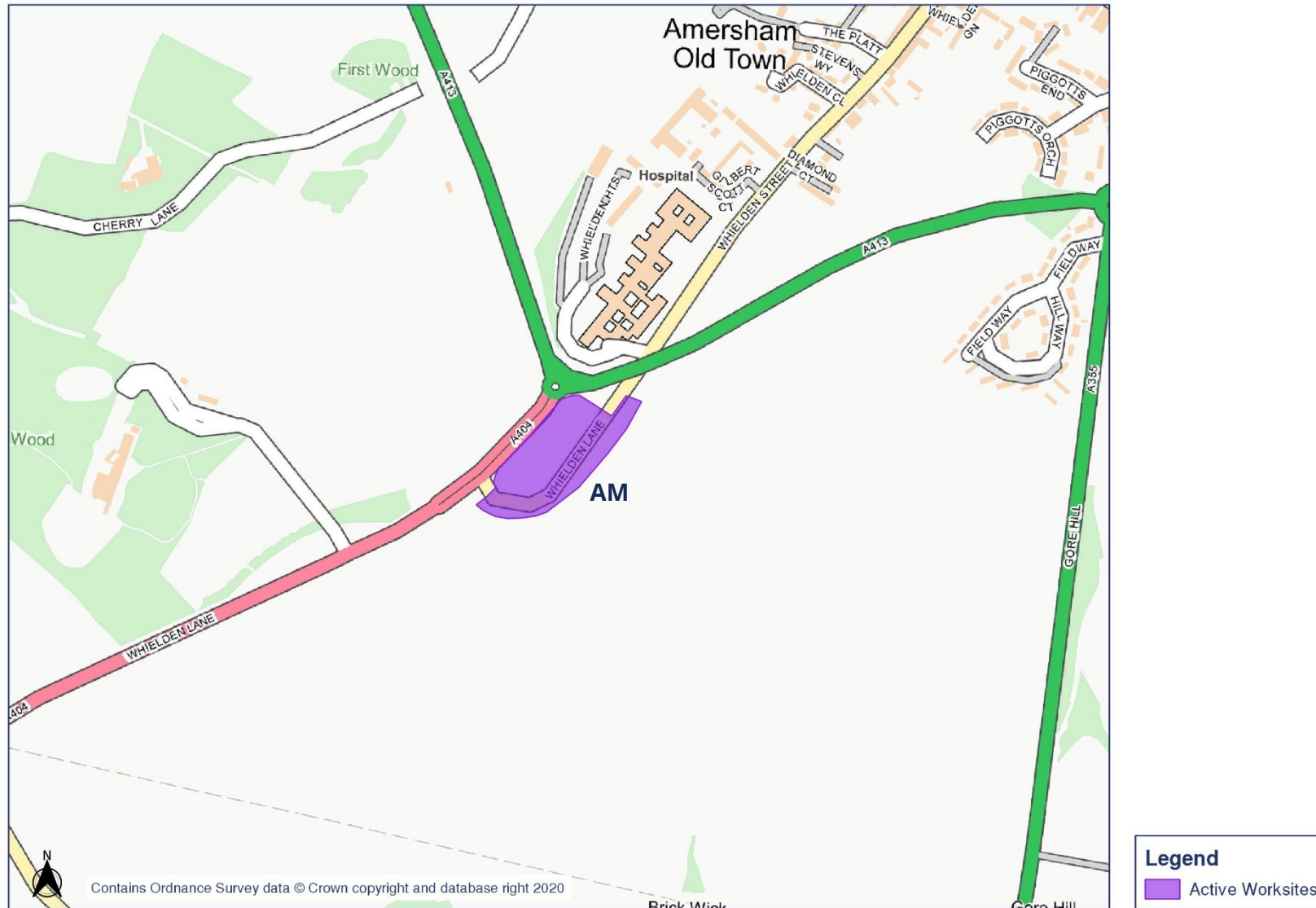


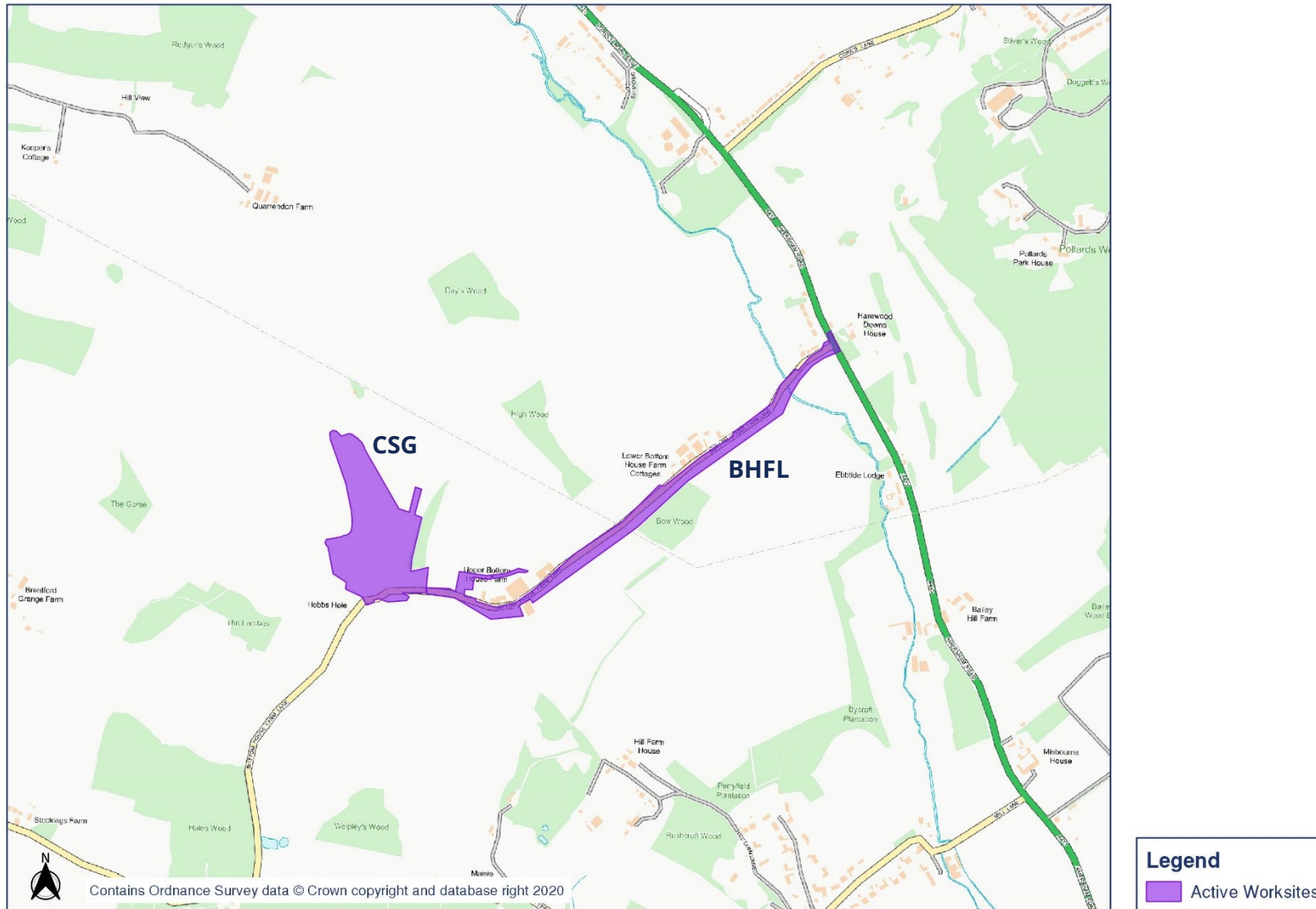


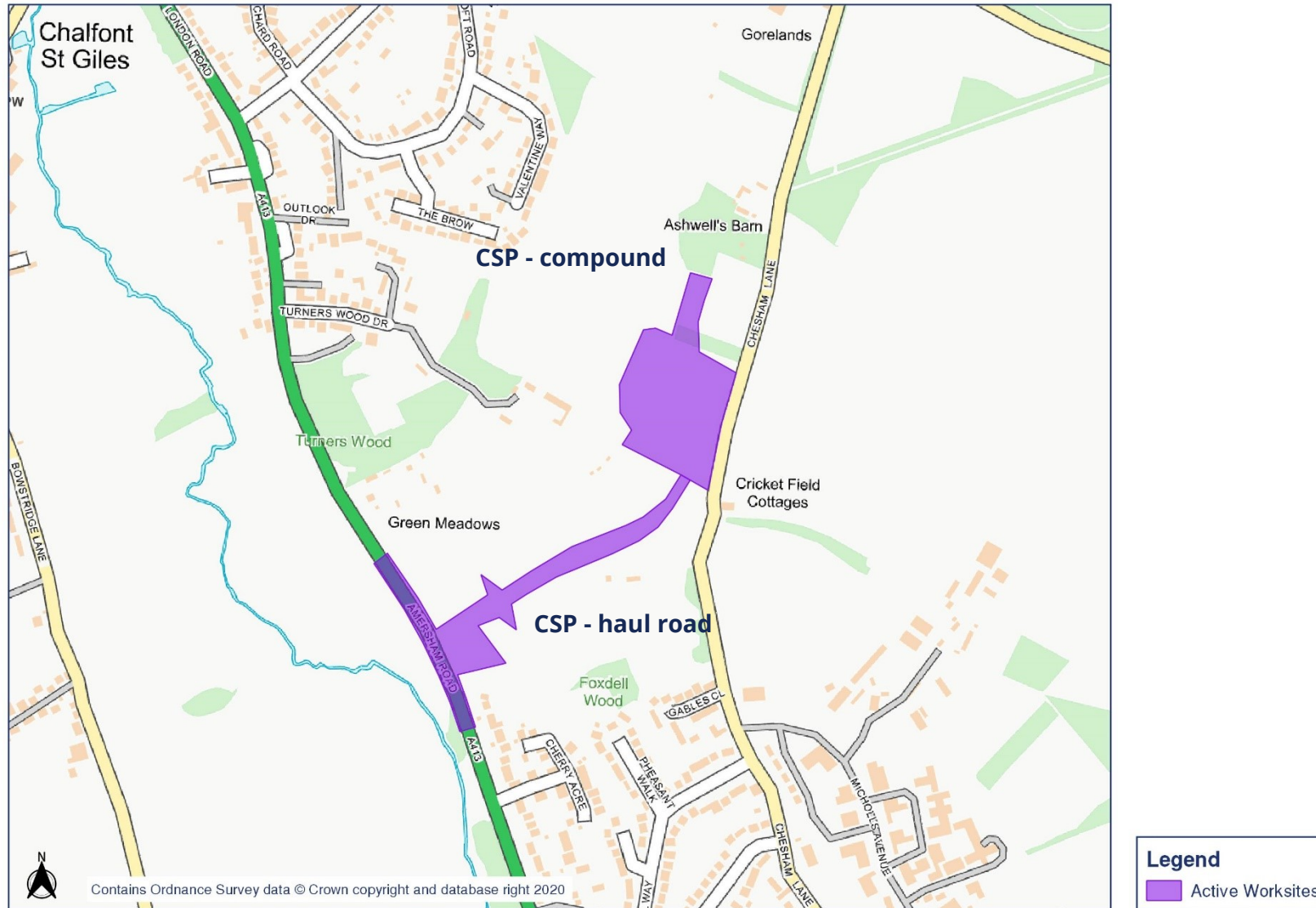






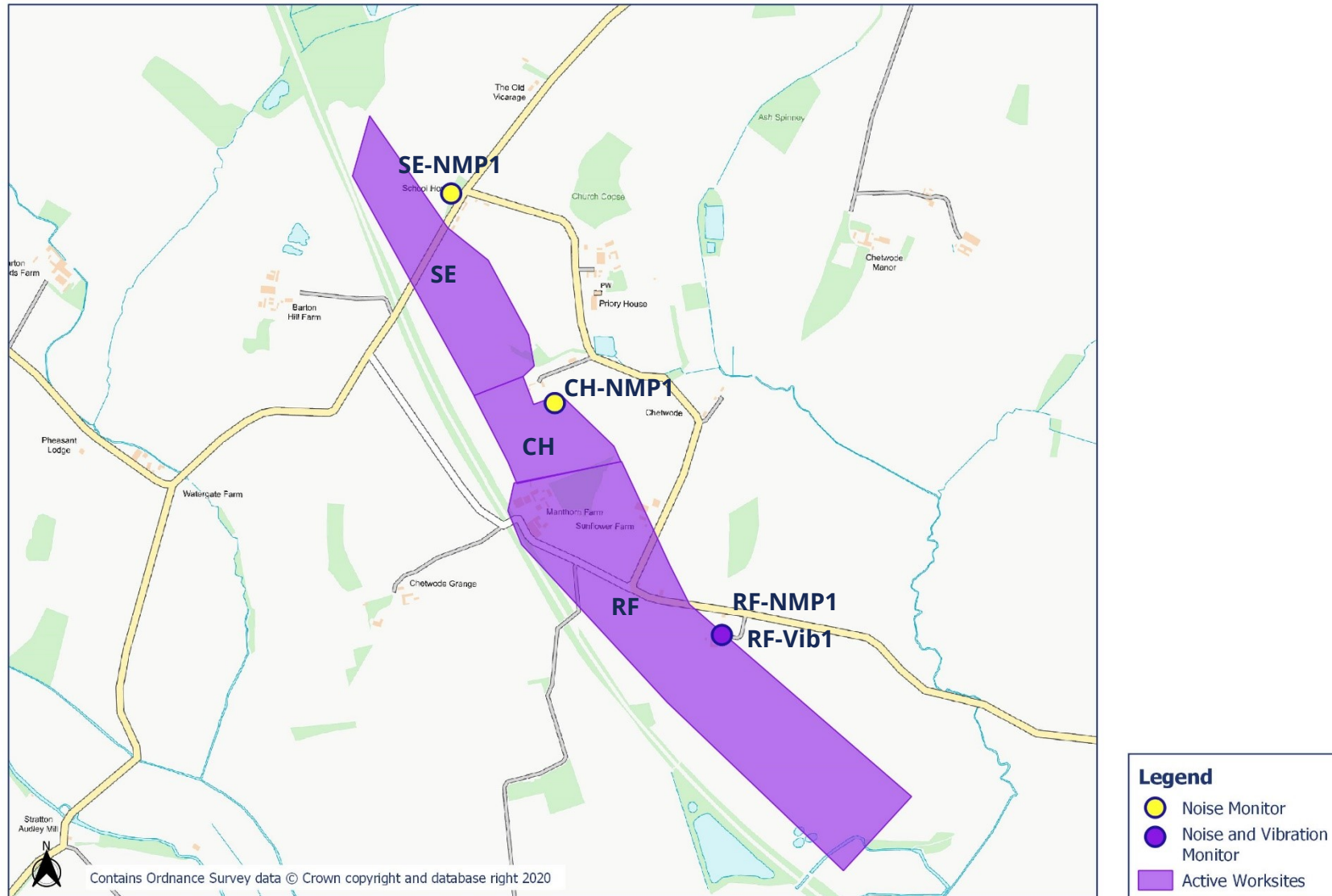


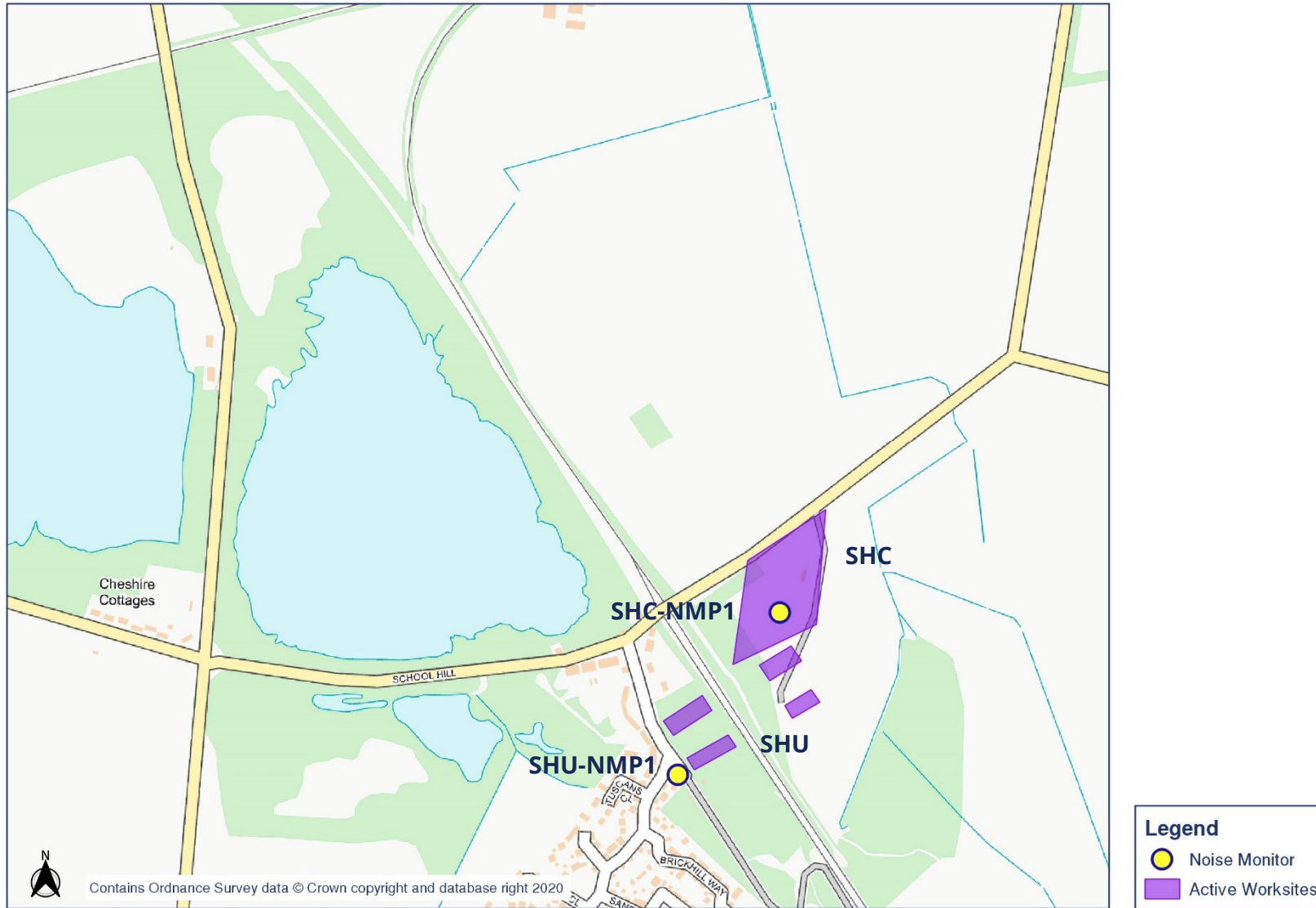


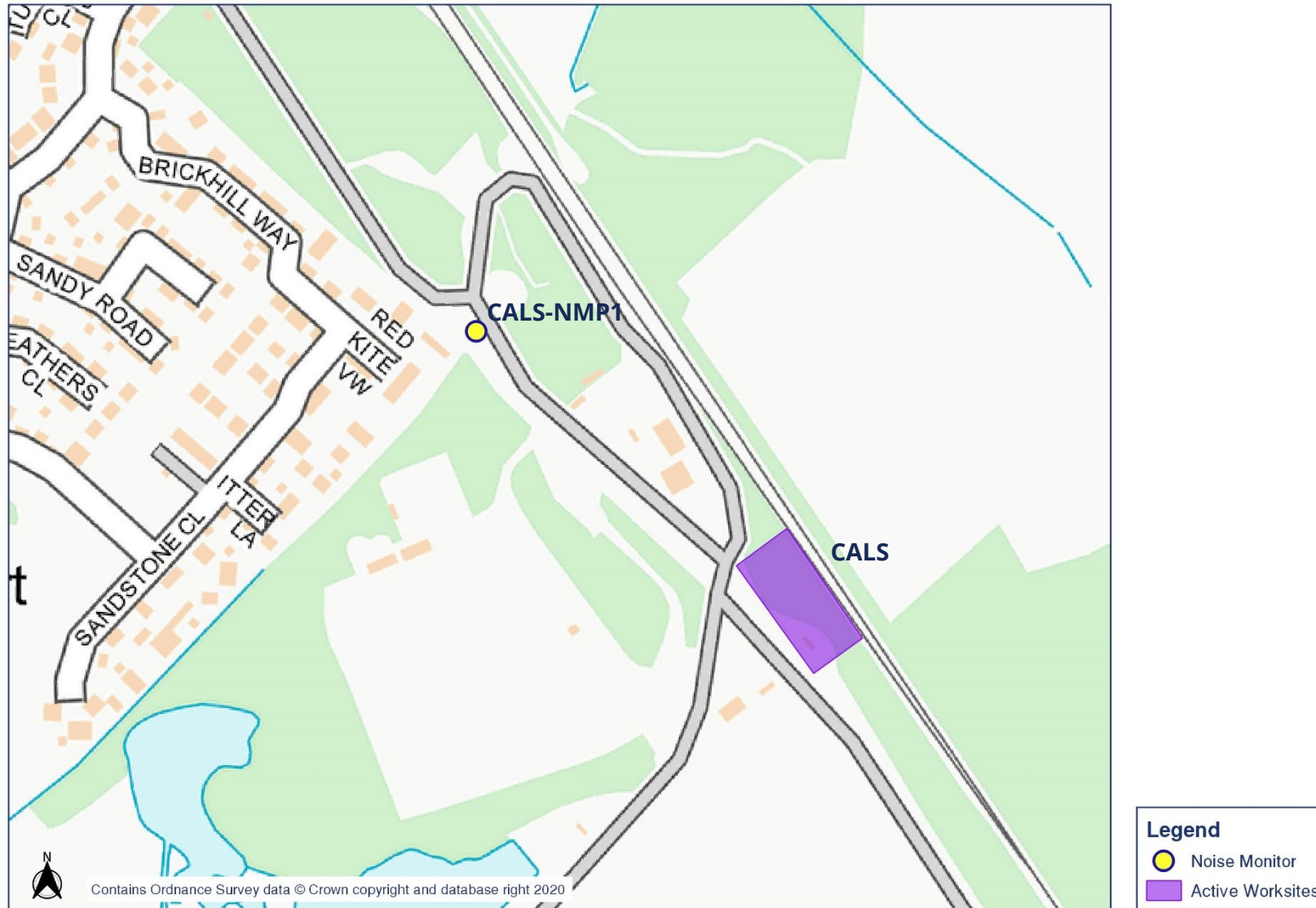




Appendix B Monitoring Locations

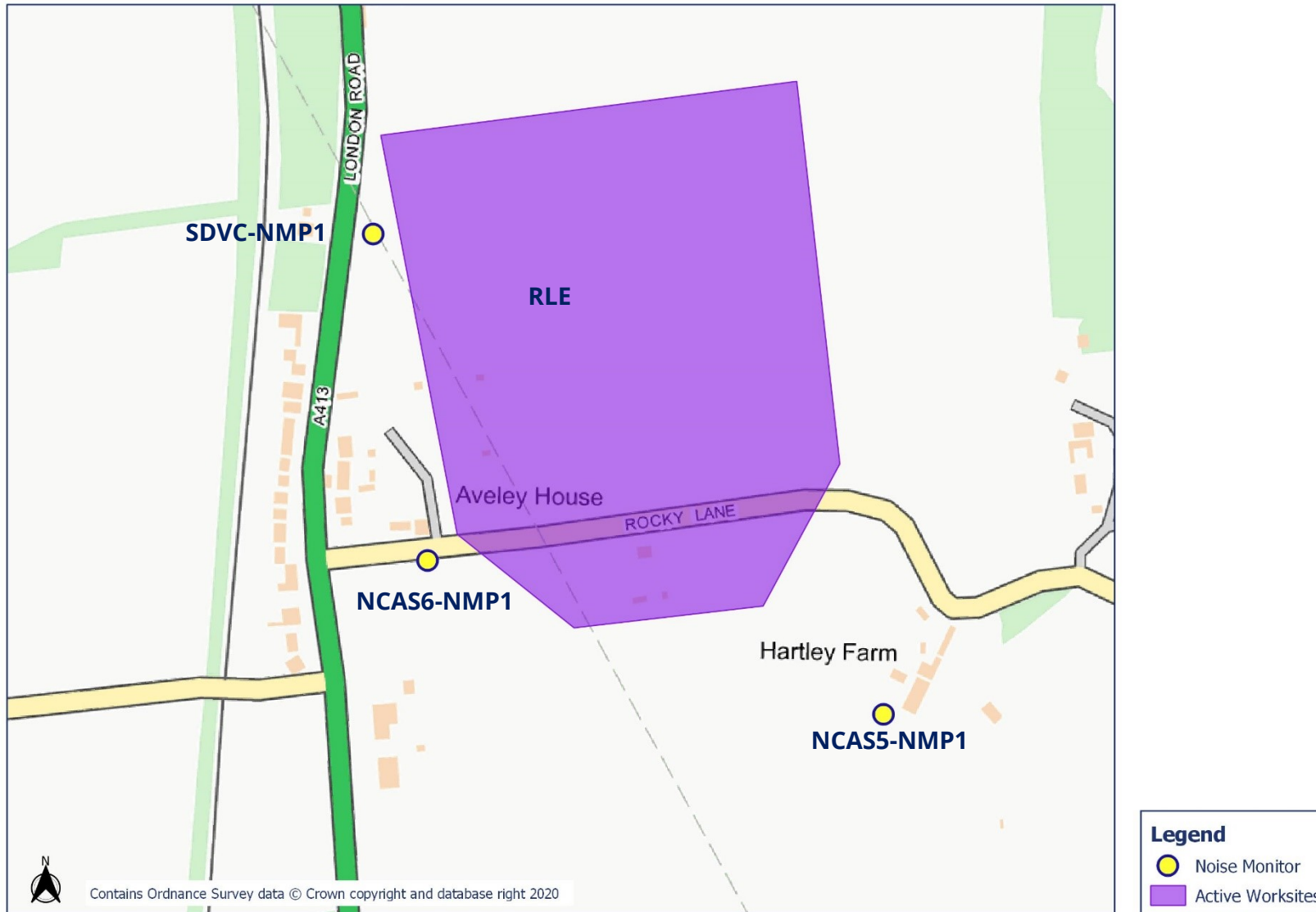


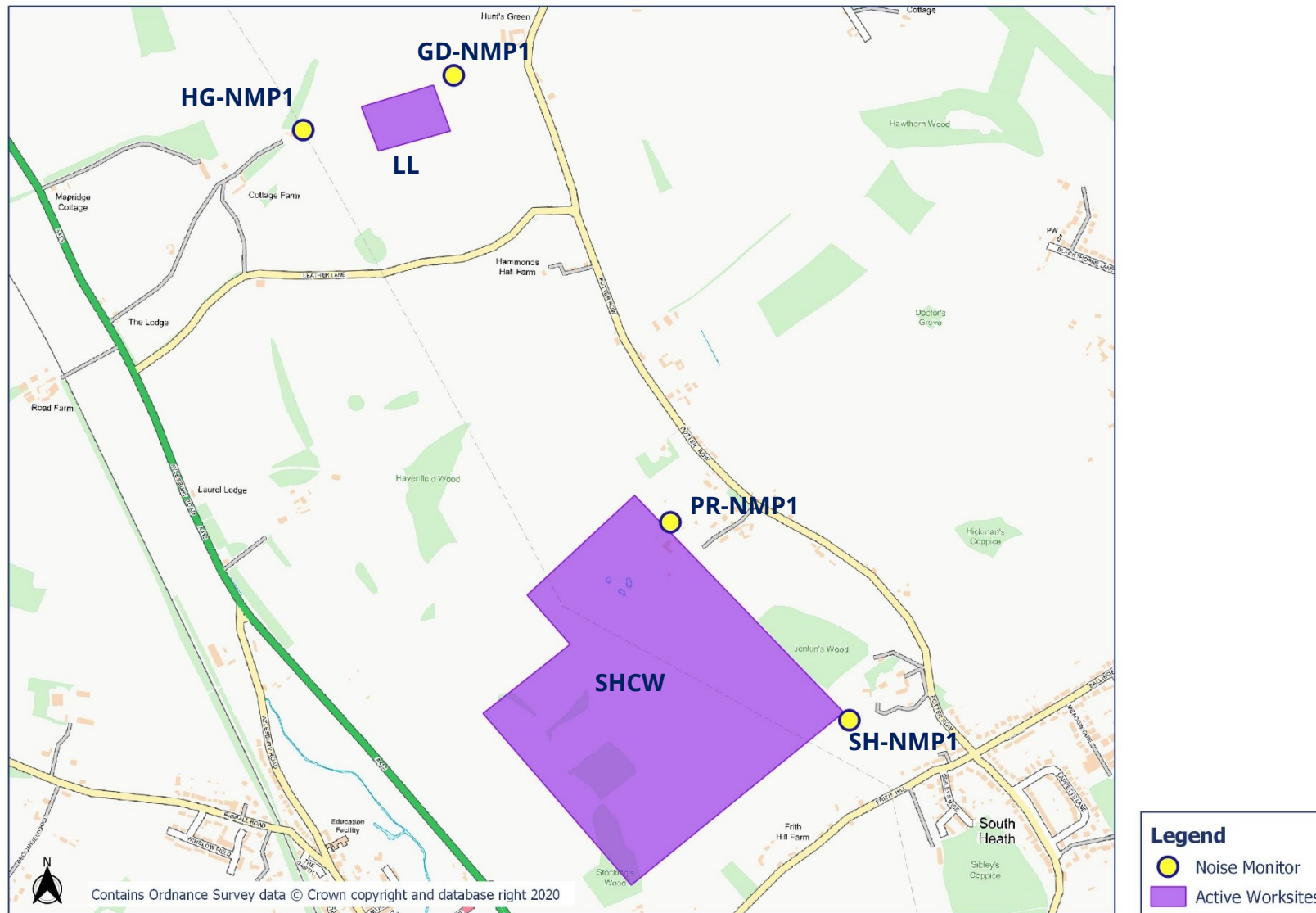




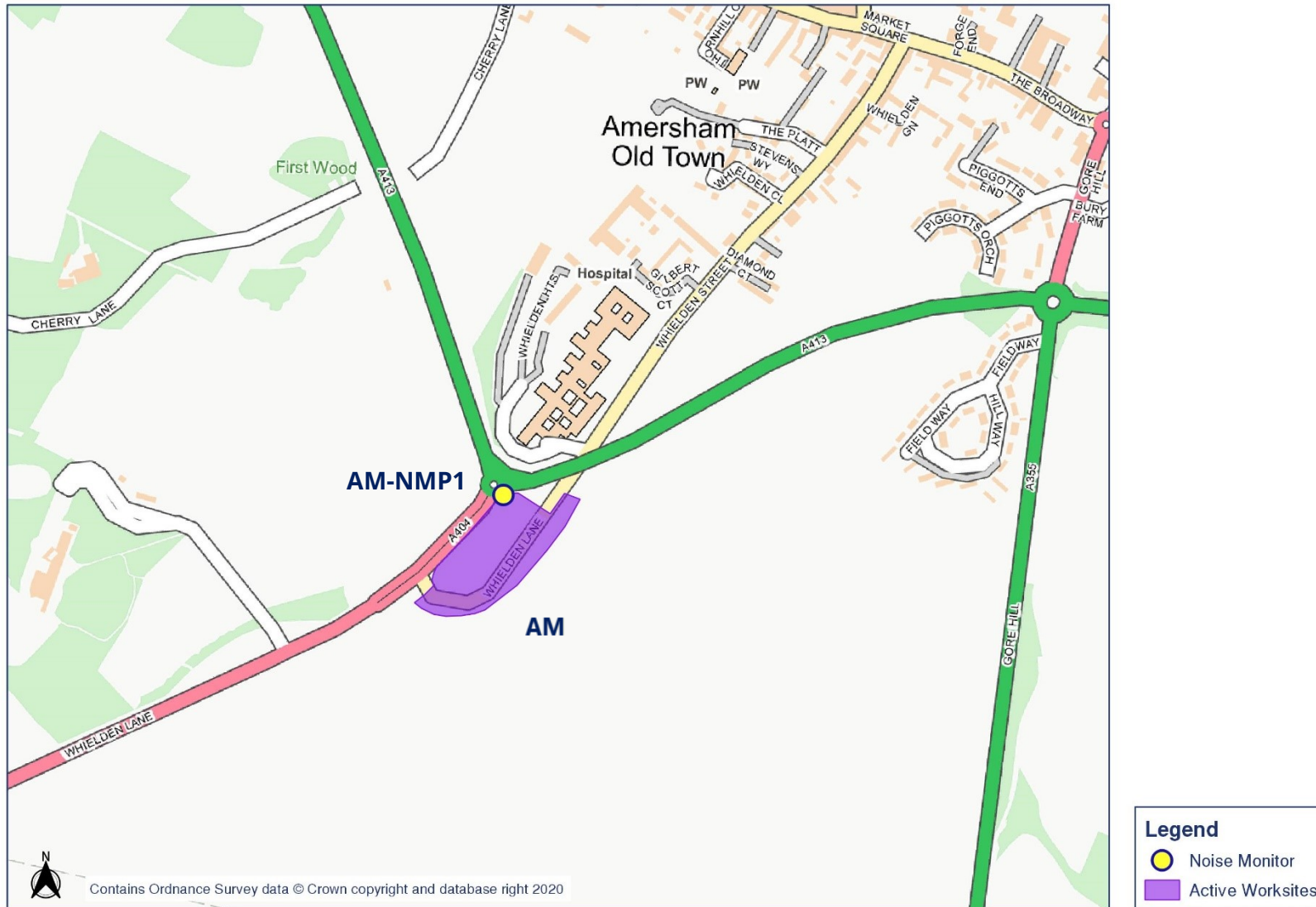


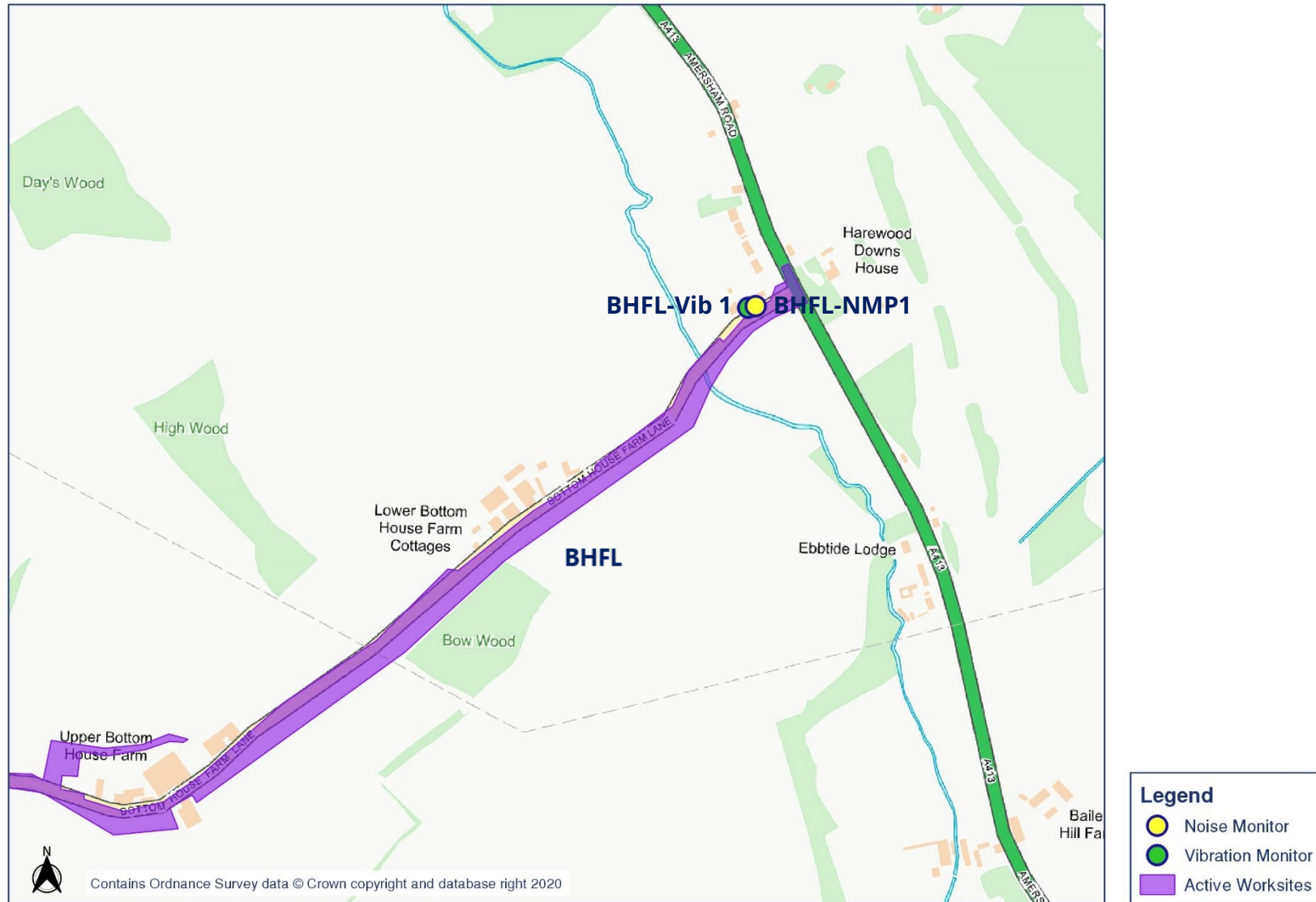


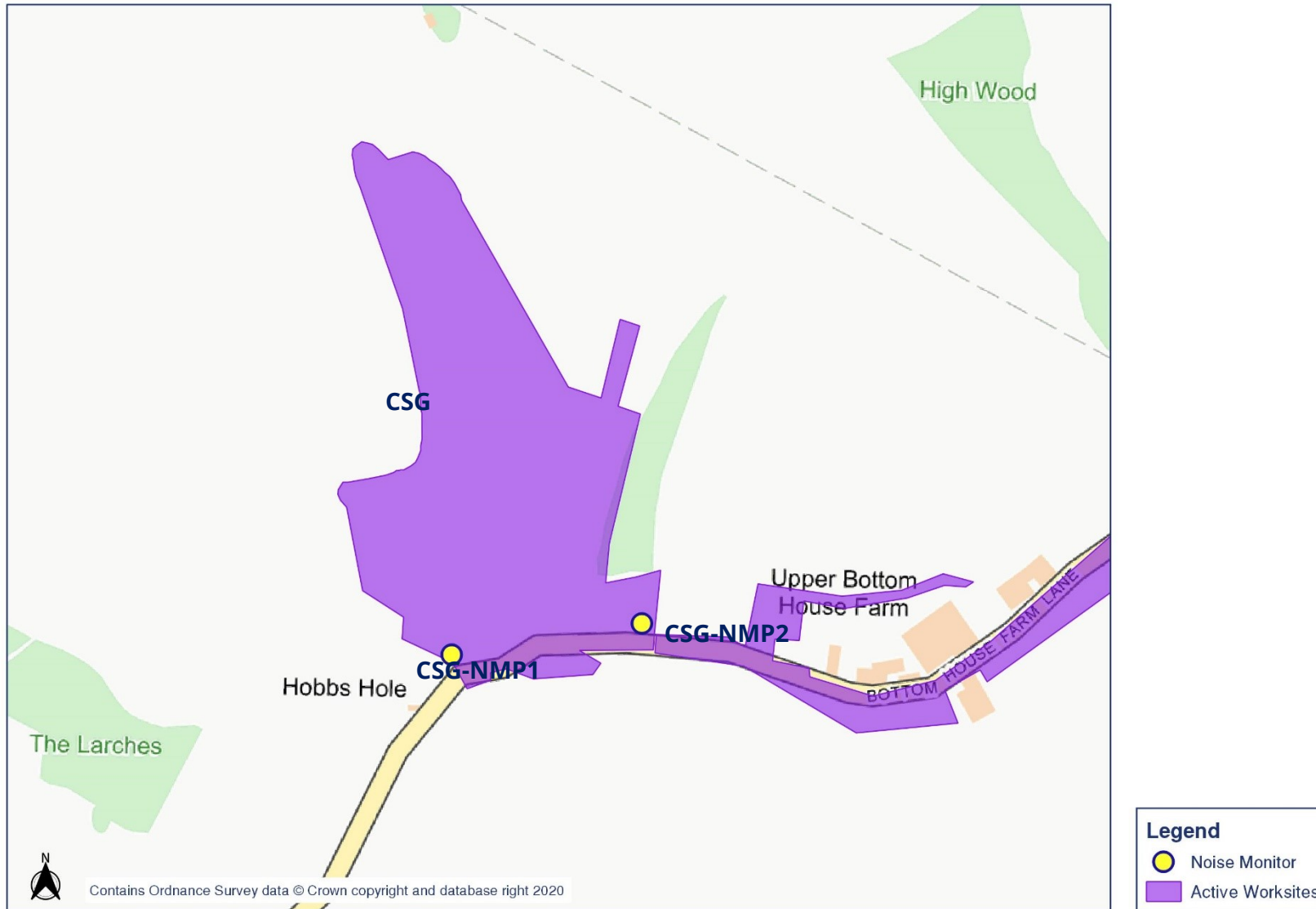


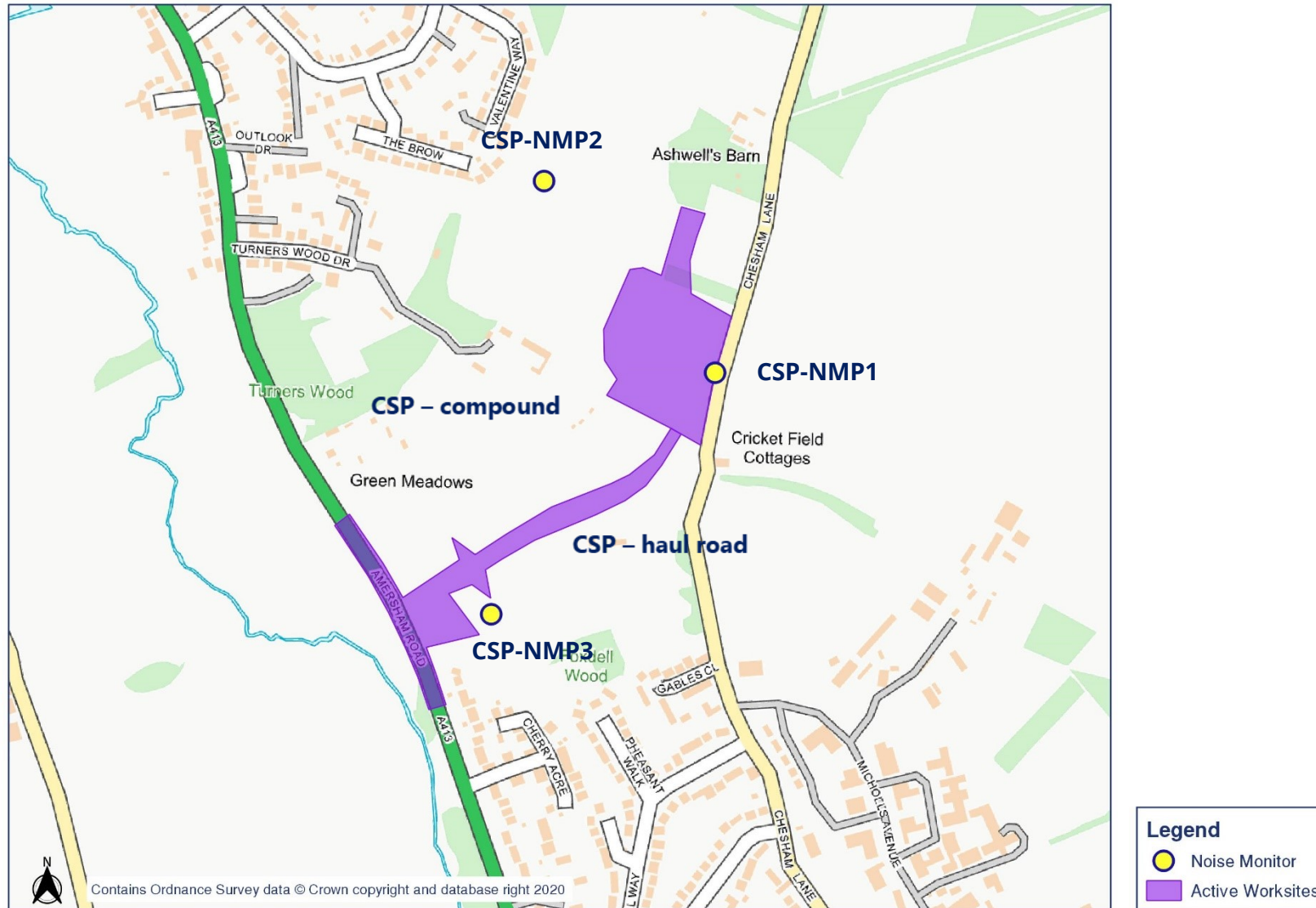












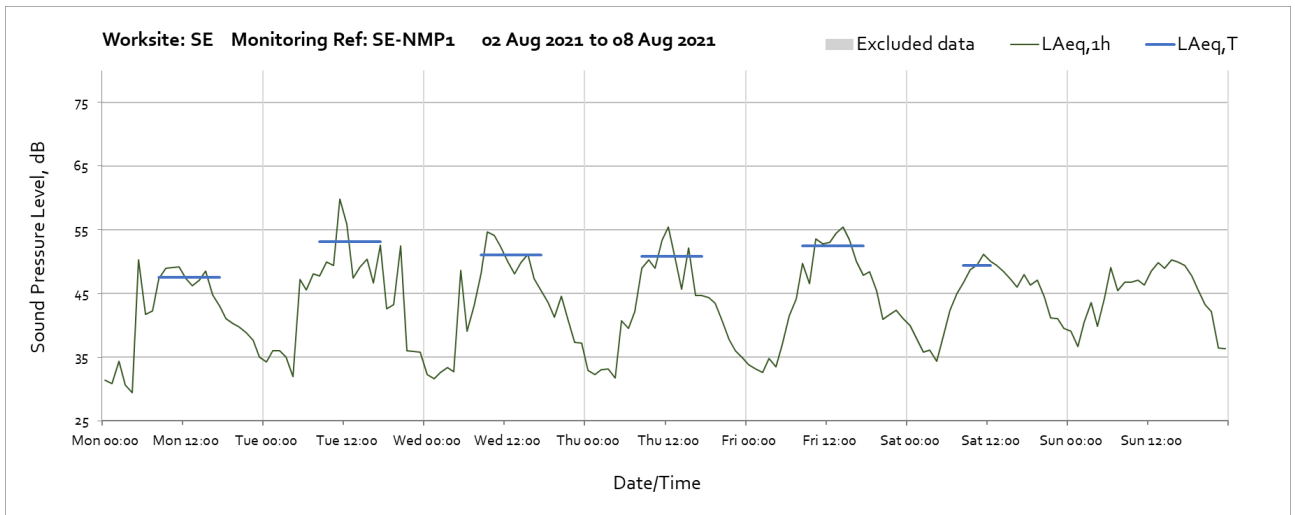
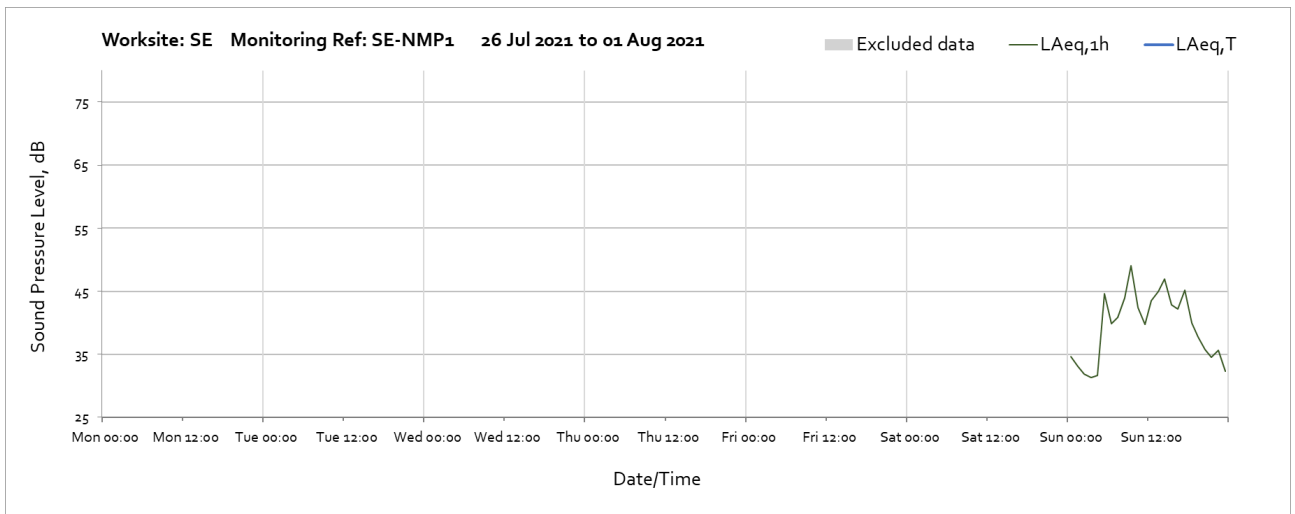


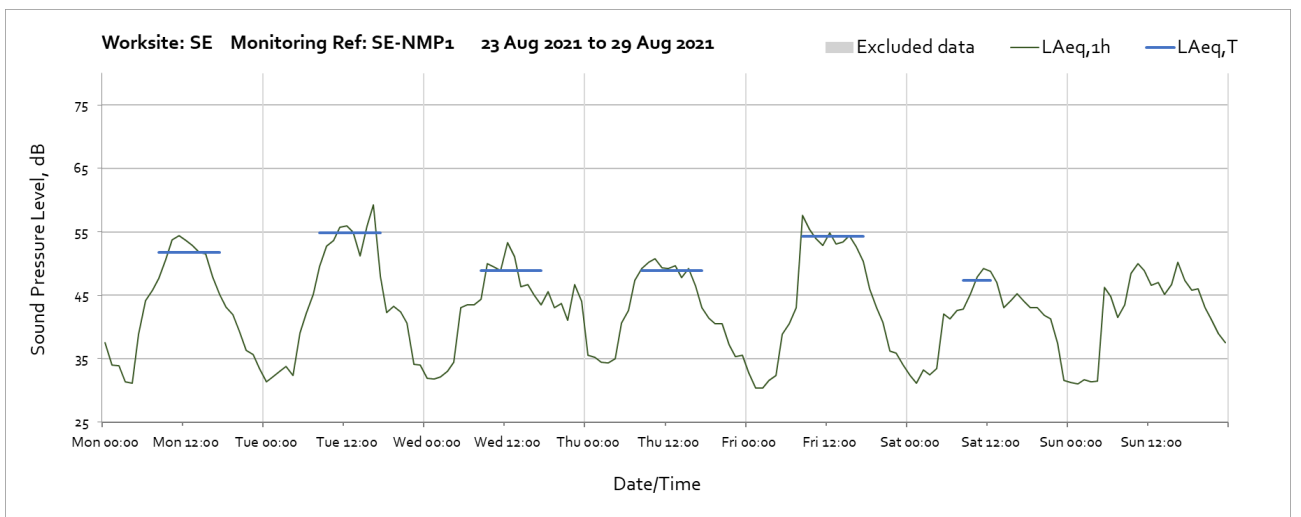
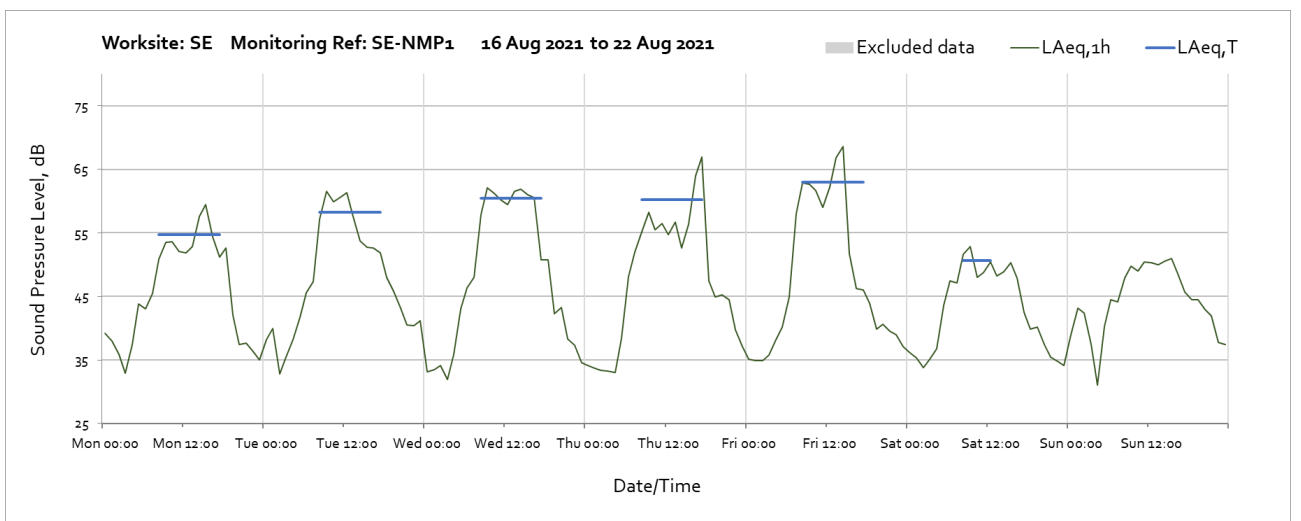
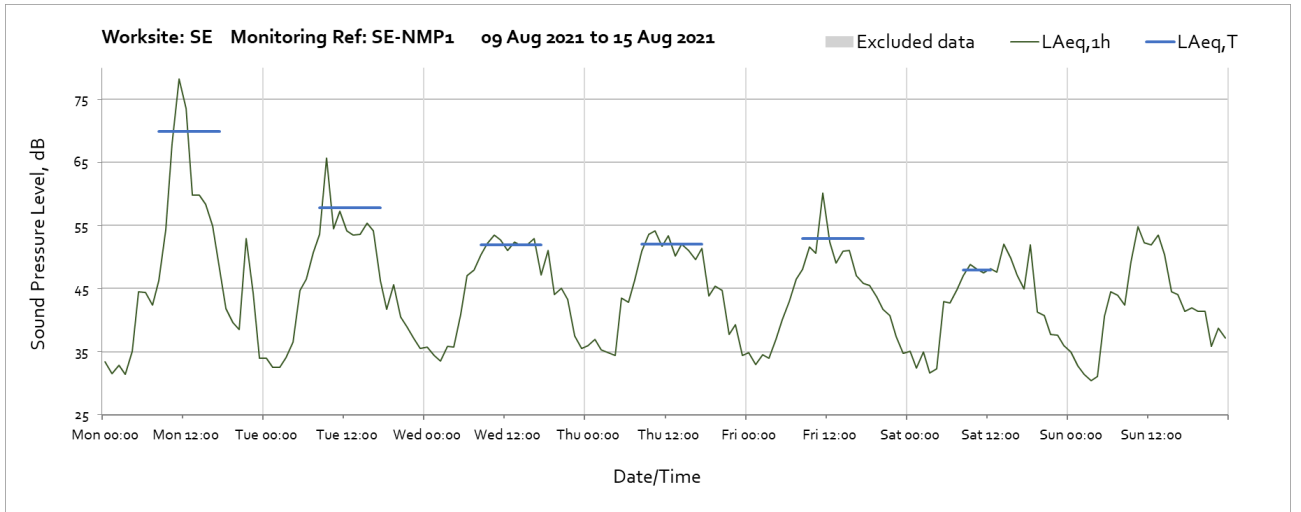
Appendix C Data

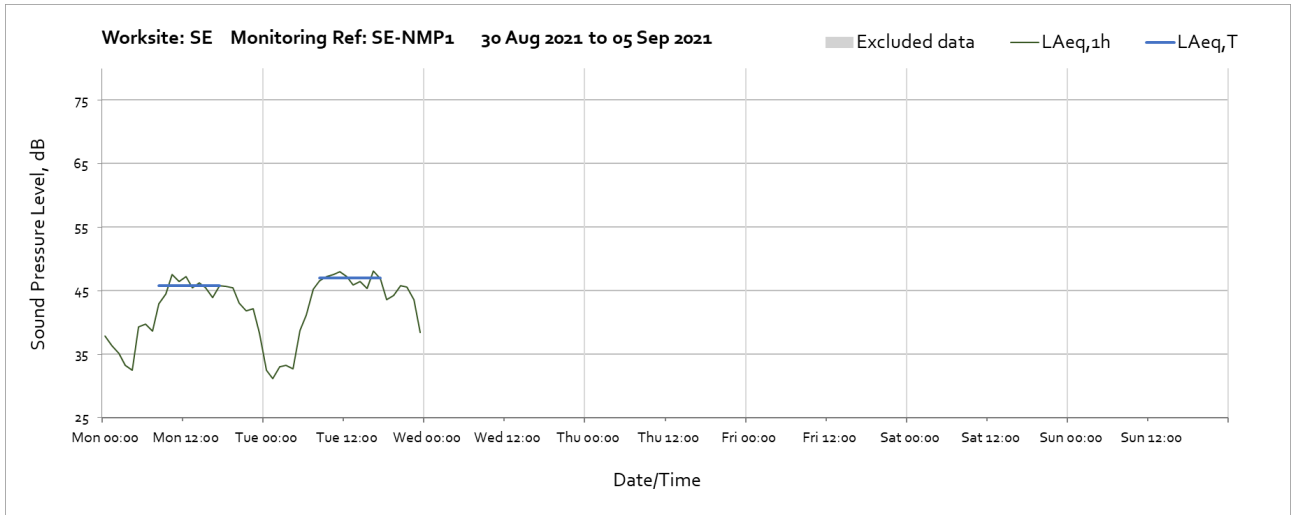
Noise

The following graphs show the hourly measured ambient noise level $L_{Aeq,1h}$ and, where relevant, the averaged noise level $L_{Aeq,T}$ values, where the time period T is as specified in Table 1 of HS2 Information Paper E23. Periods with adversely weather affected noise levels are greyed out and have been excluded from the calculation of the $L_{Aeq,T}$ values in **Error! Reference source not found.** of the main report.

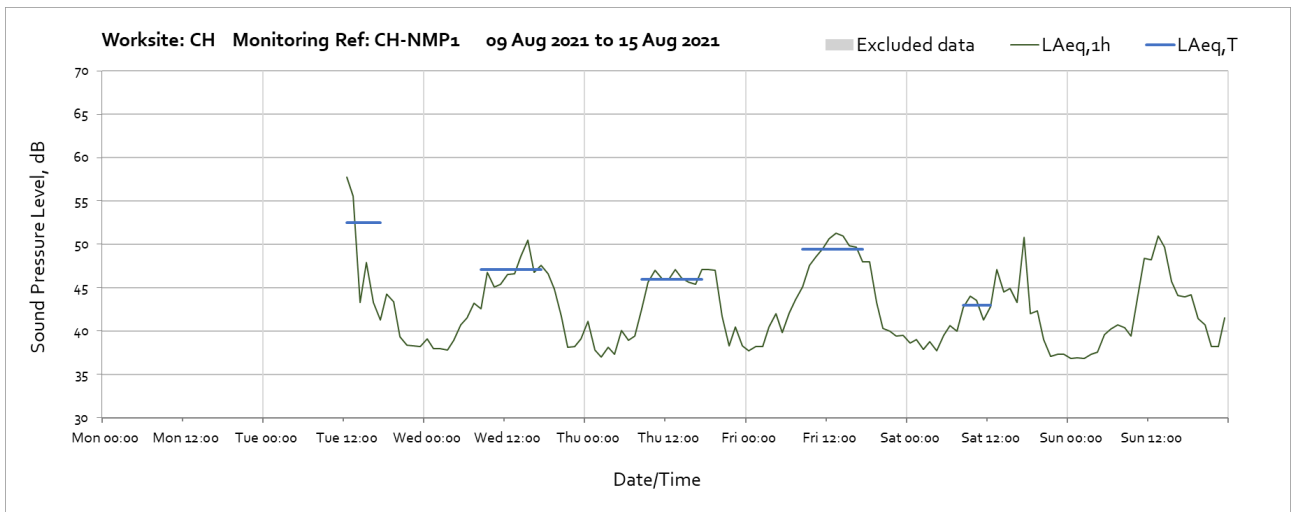
Worksite: SE – Monitoring Ref: SE-NMP1



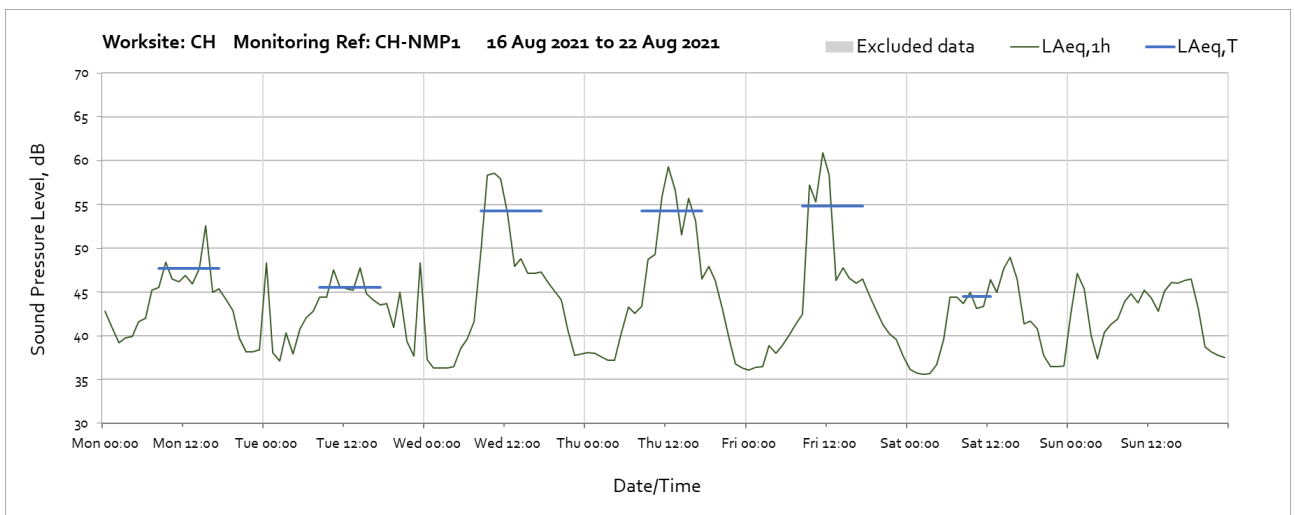


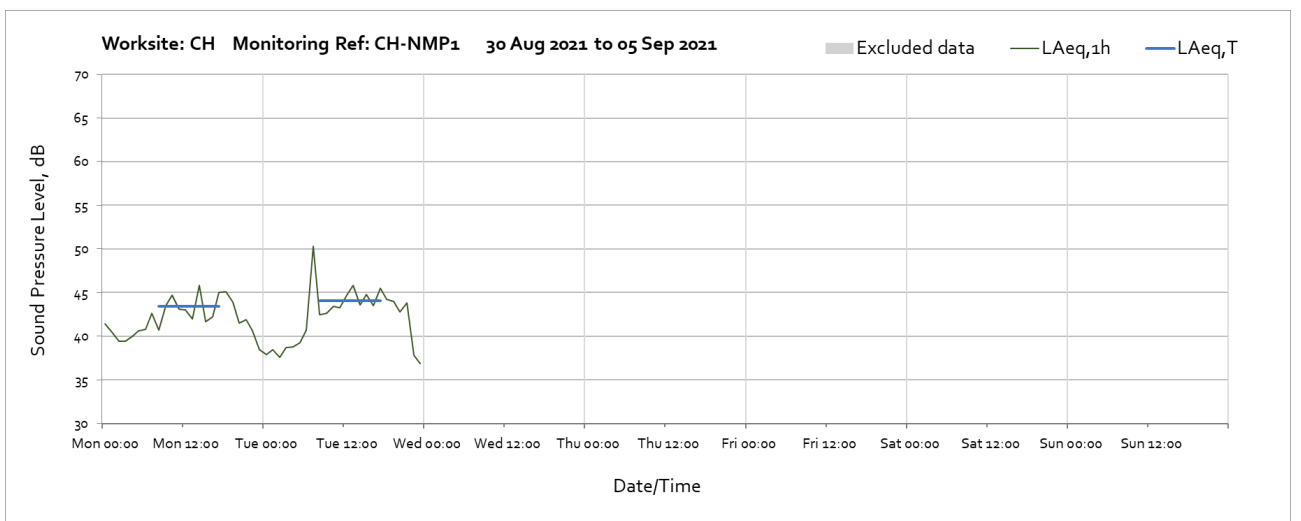
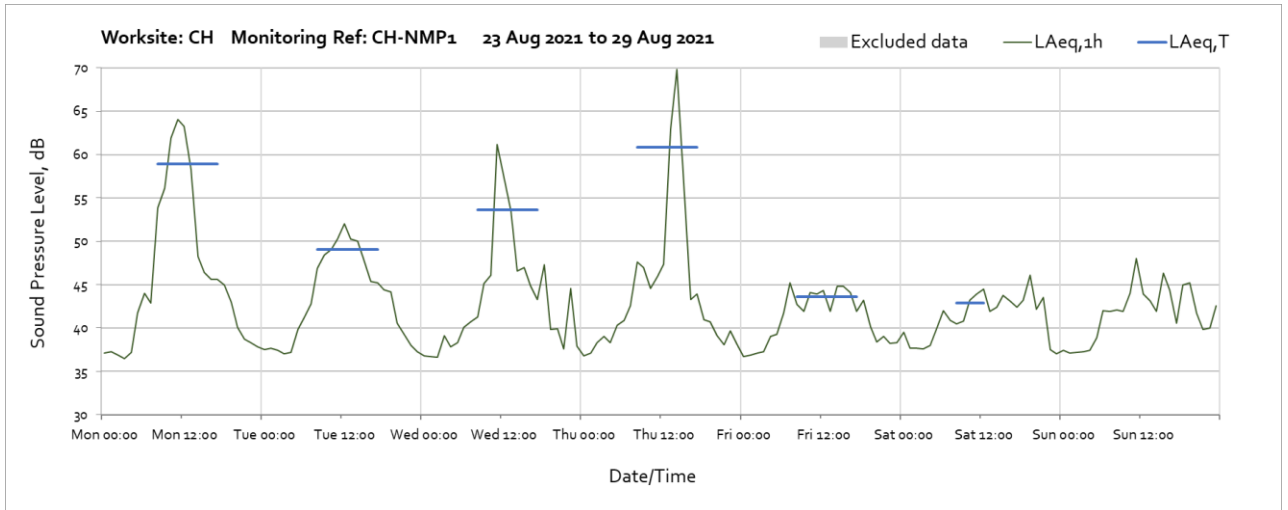


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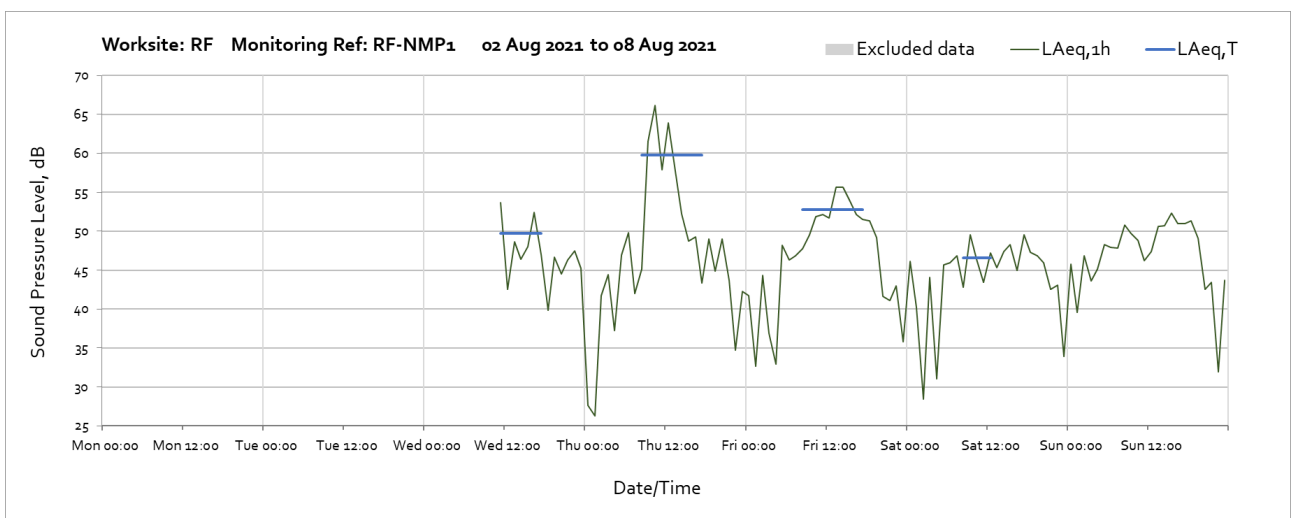


Note: The noise monitor was installed on 10th August 2021

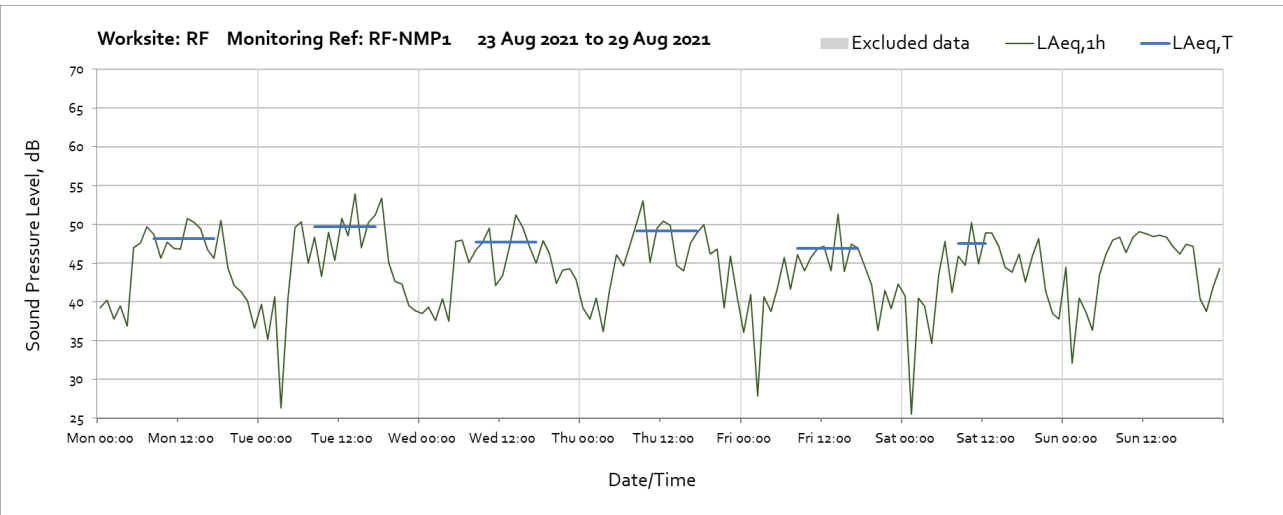
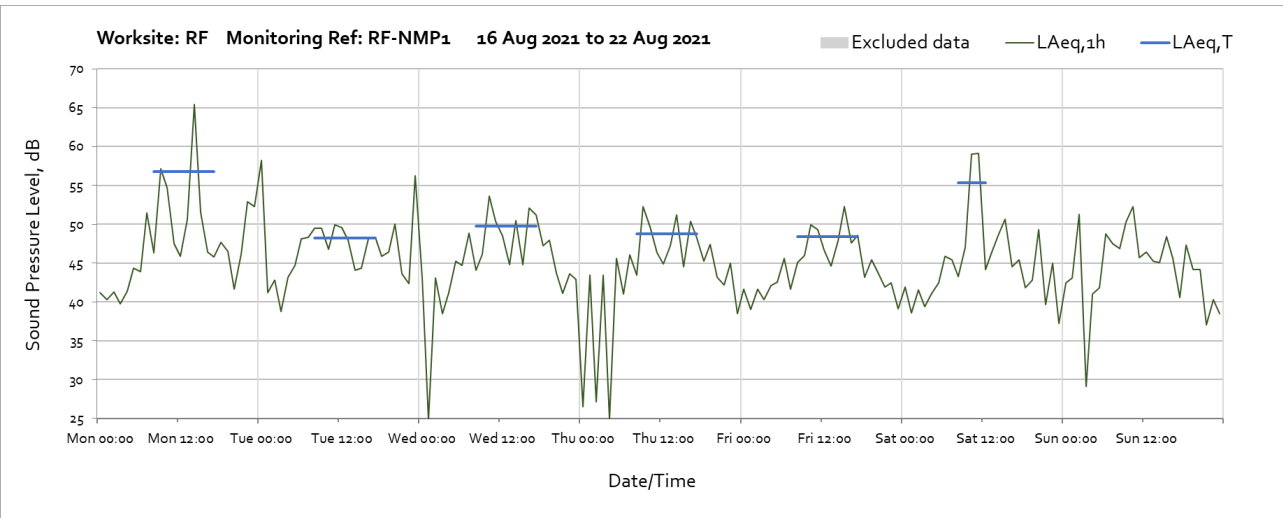
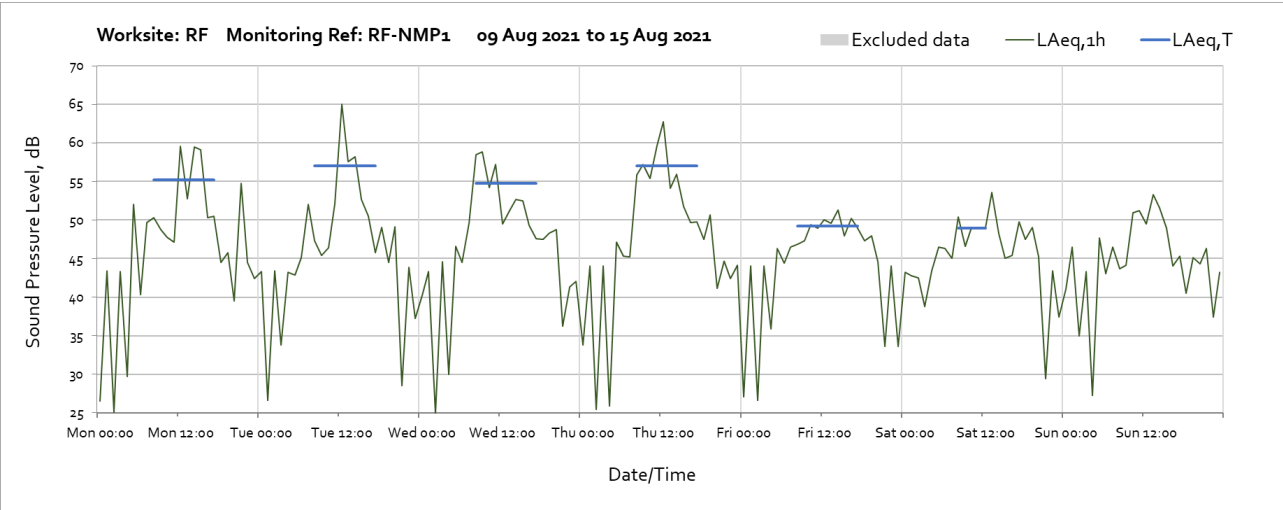


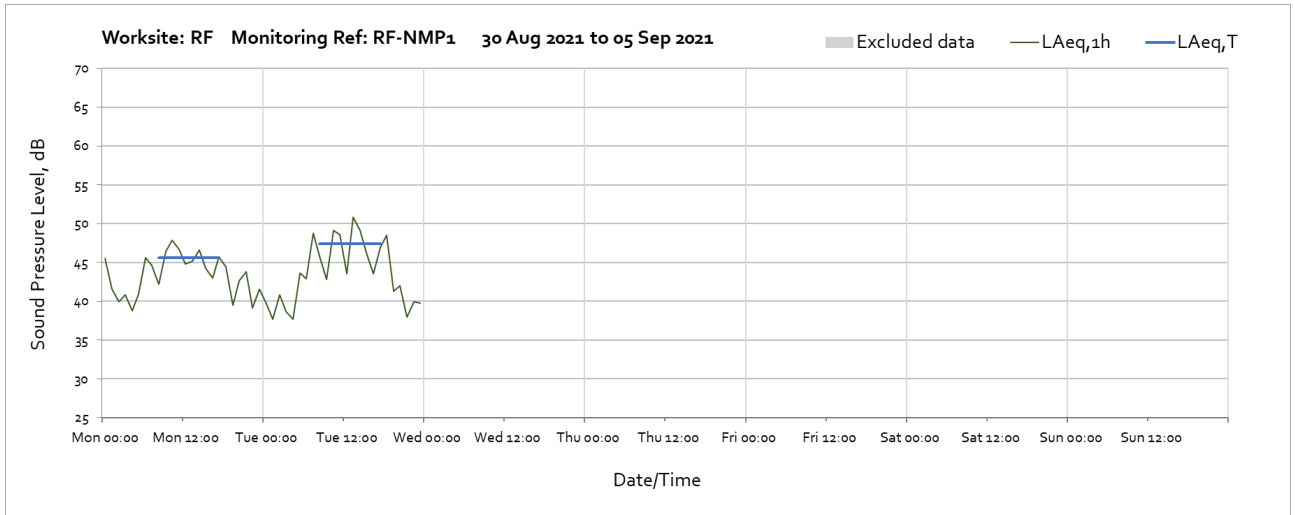


Worksite: RF – Monitoring Ref: RF-NMP1

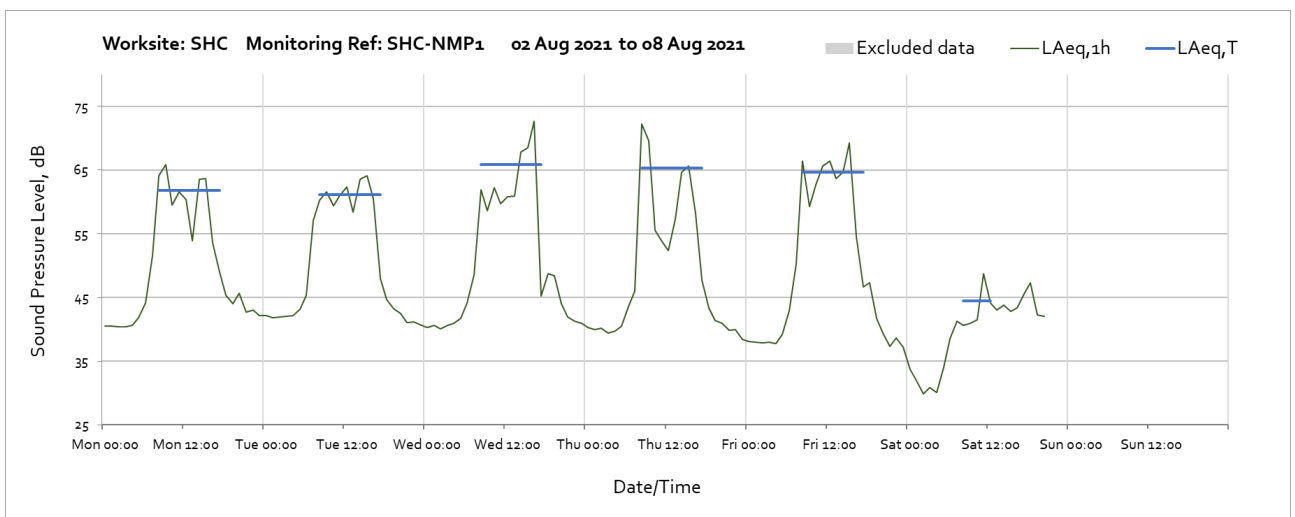
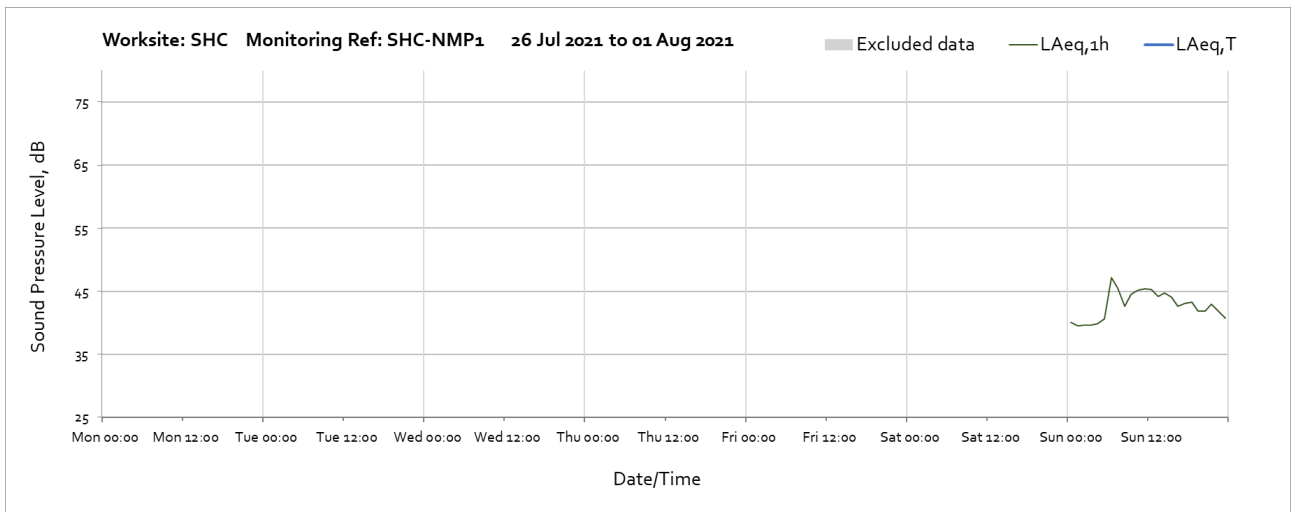


Note: The noise monitor was installed on 4th August 2021

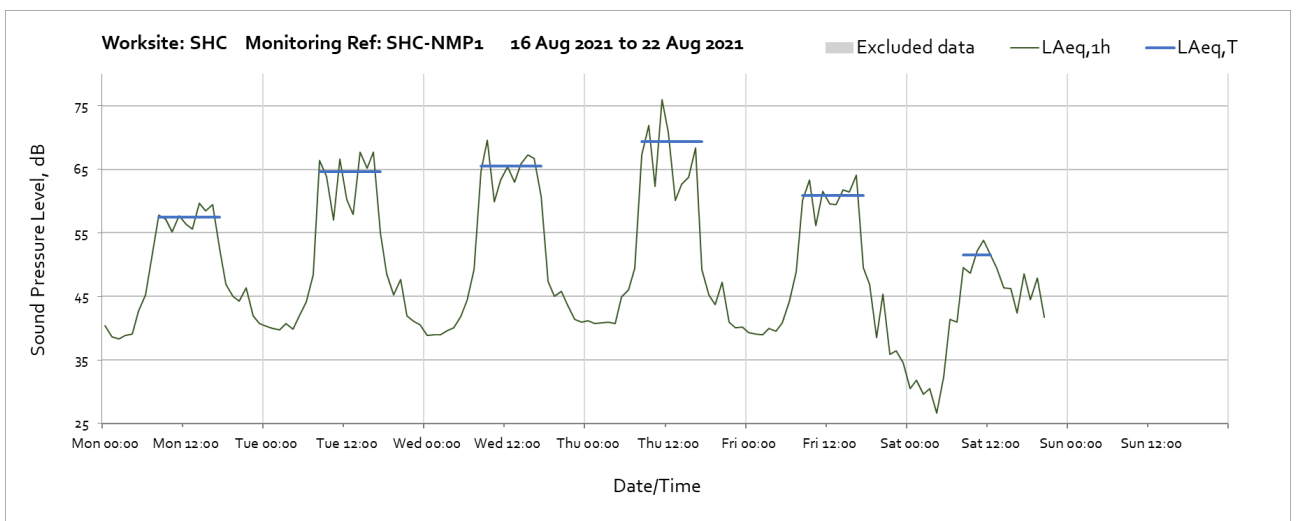
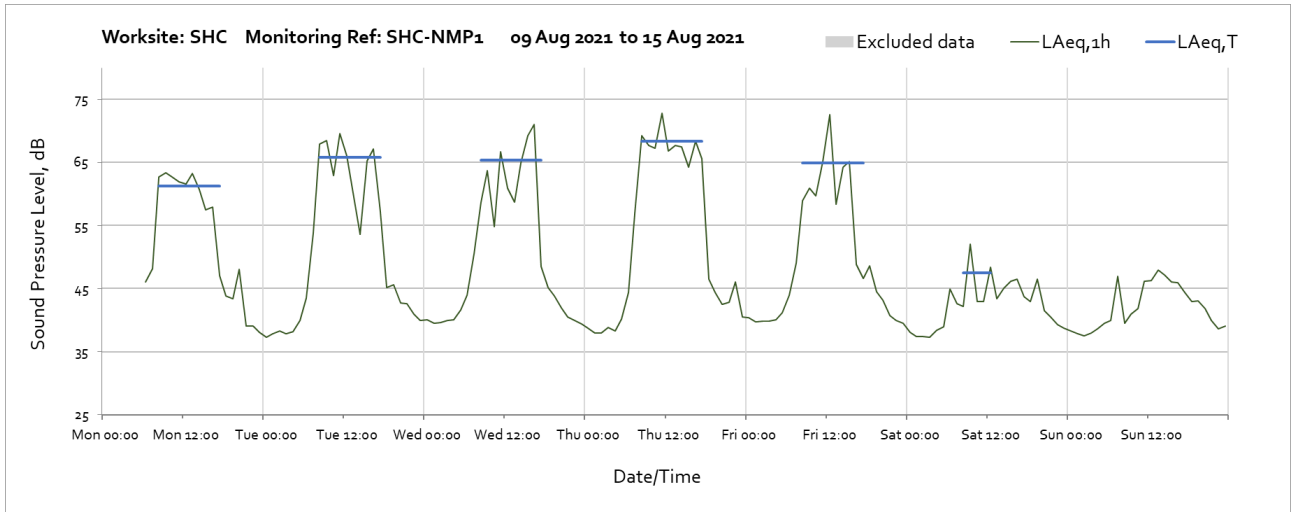




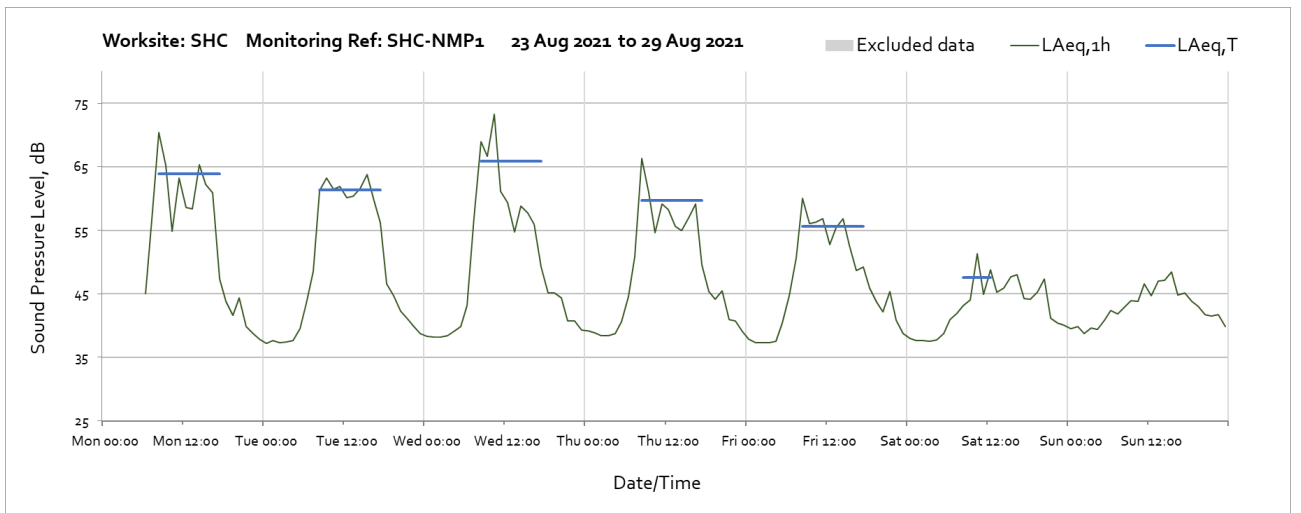
Worksite: SHC - Monitoring Ref: SHC-NMP1

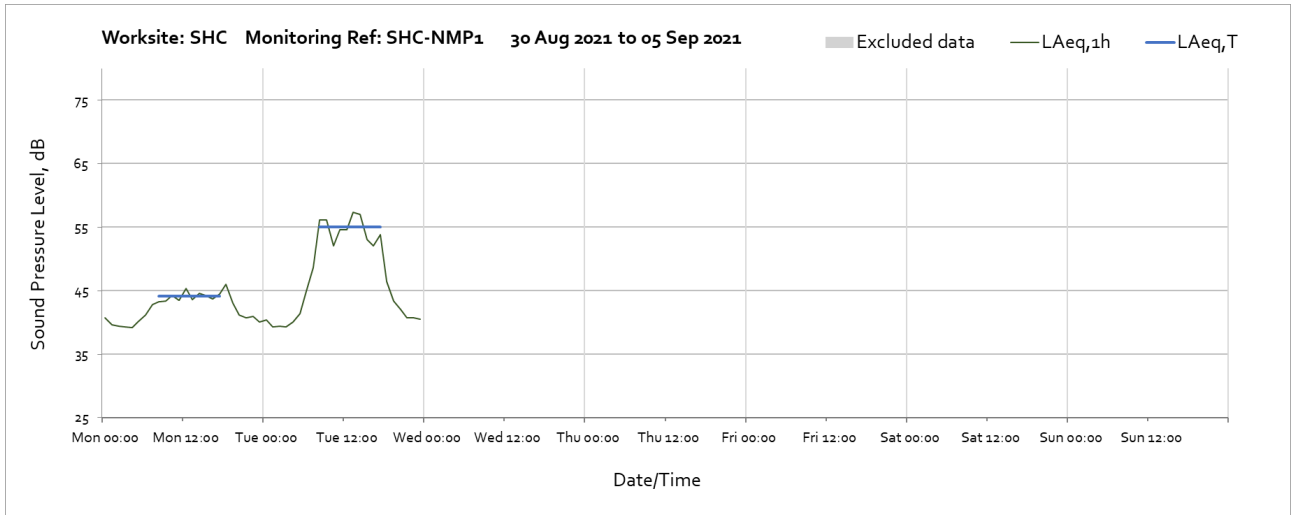


Note: Missing data between 21:00 on Saturday 7th August and 05:00 on Monday 09th August was due to loss of continuous site port to the monitor.

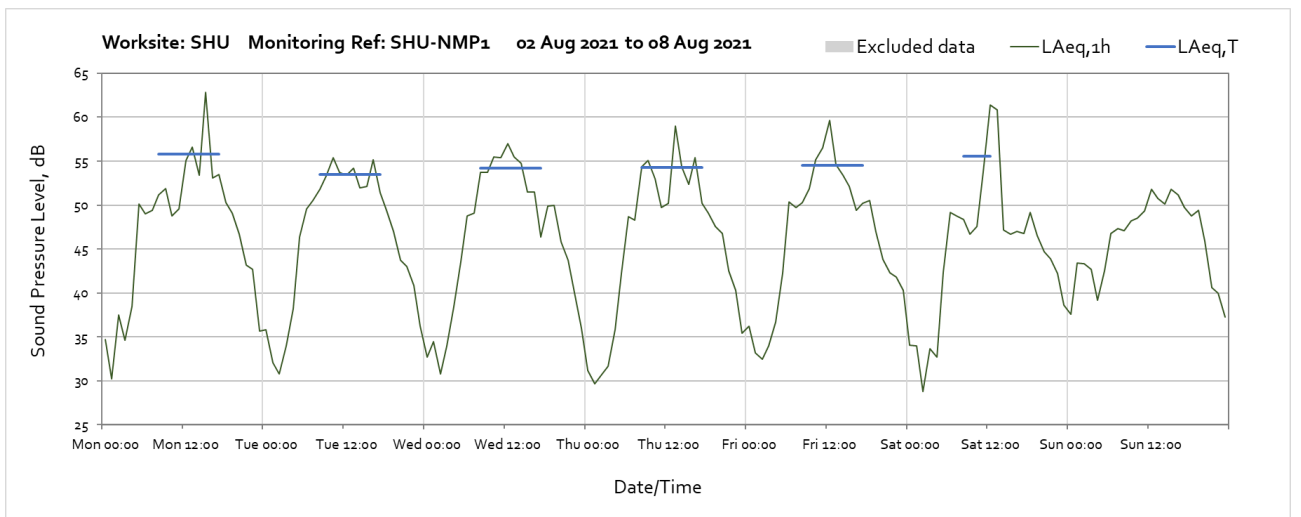
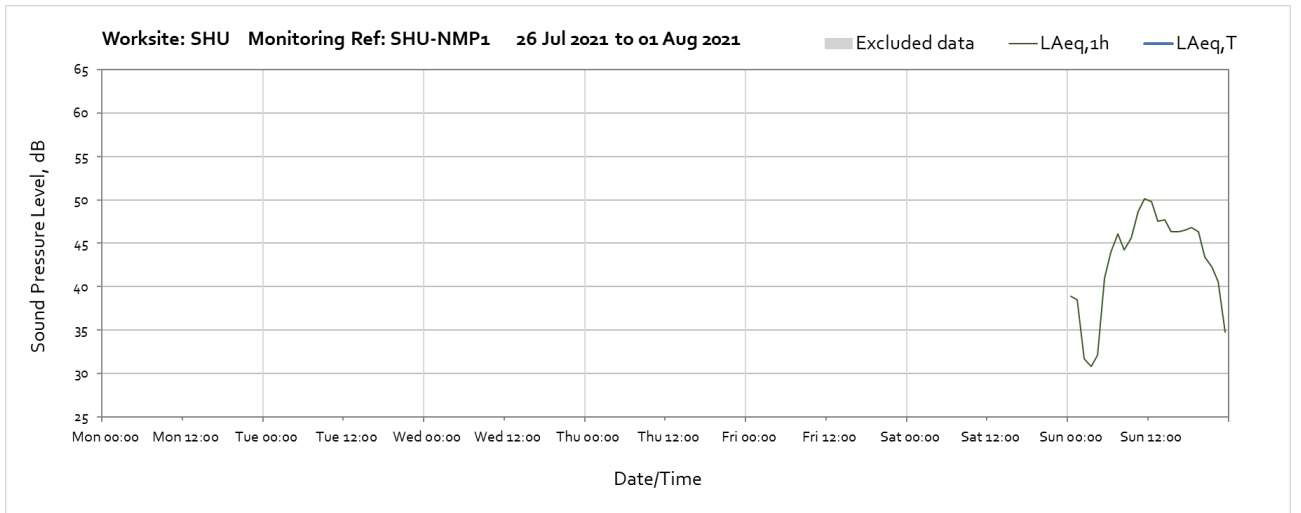


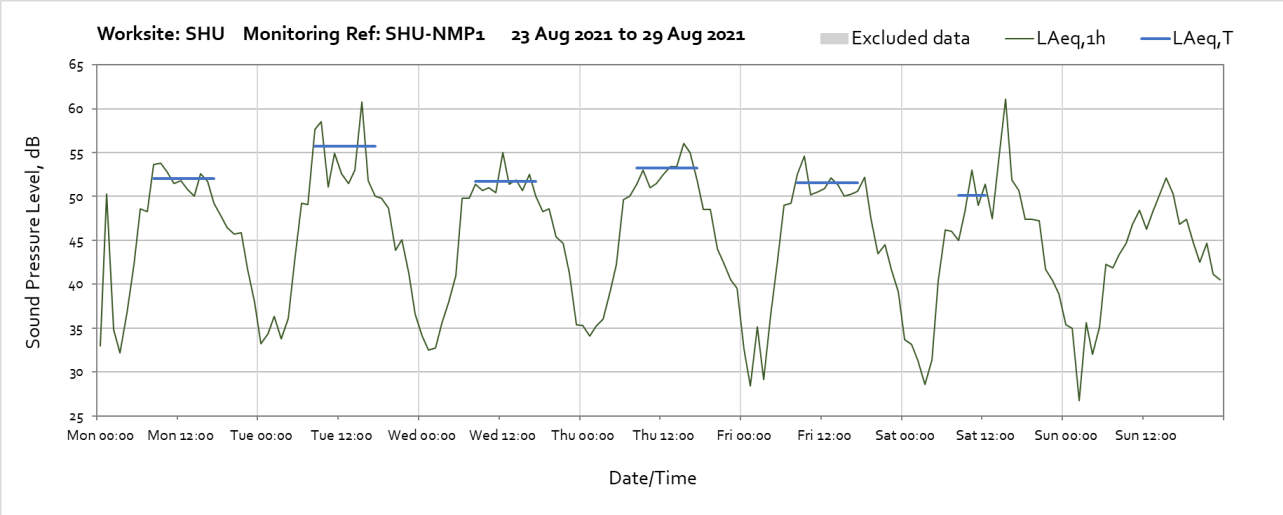
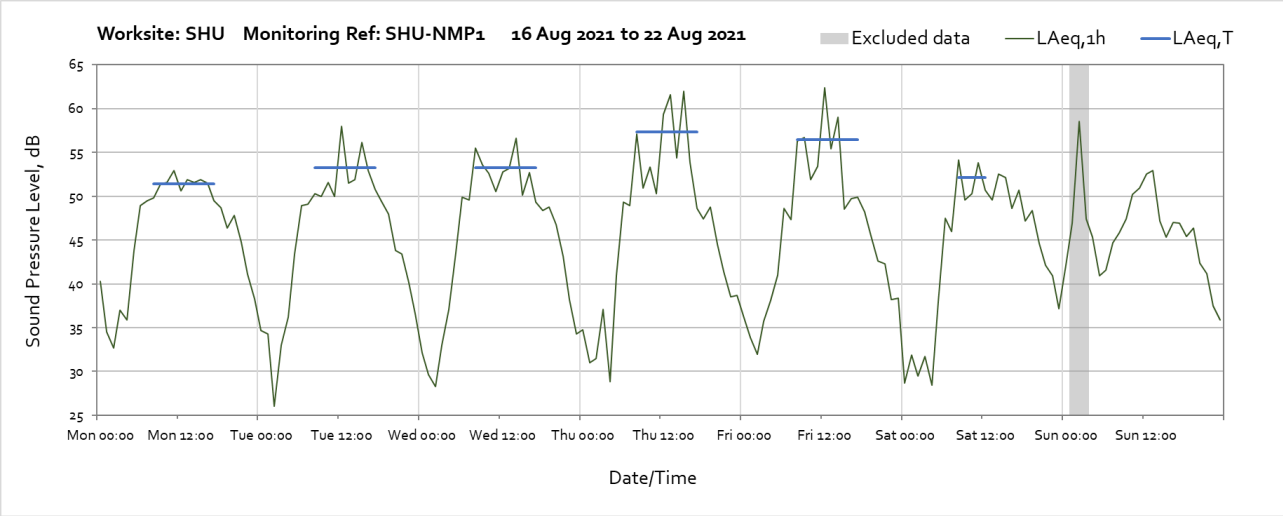
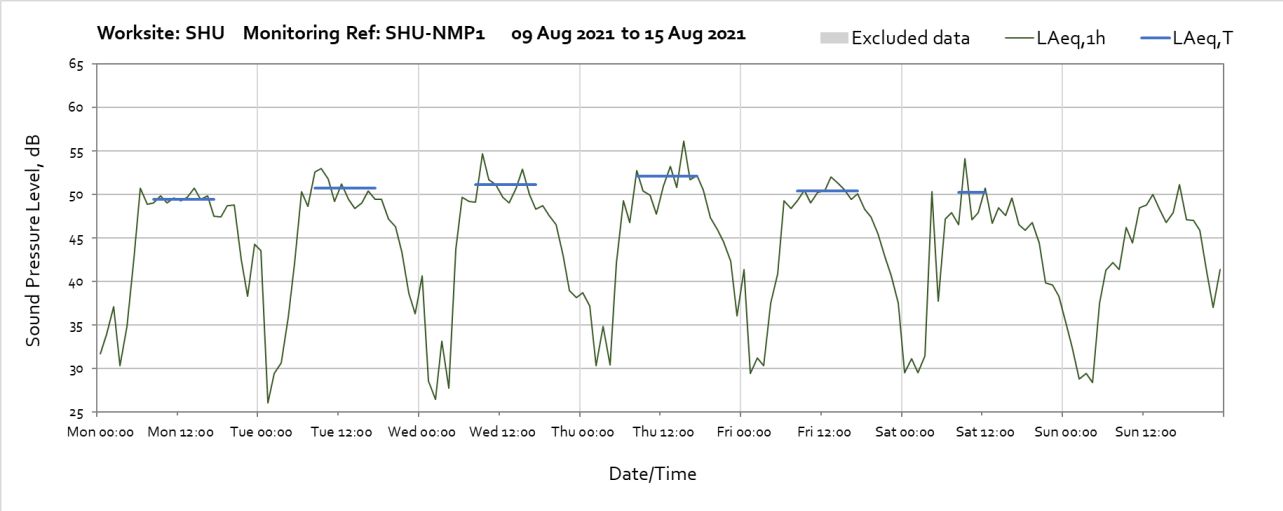
Note: Missing data between 21:00 on Saturday 21st August and 05:00 on Monday 23rd August was due to loss of continuous site power to the monitor.

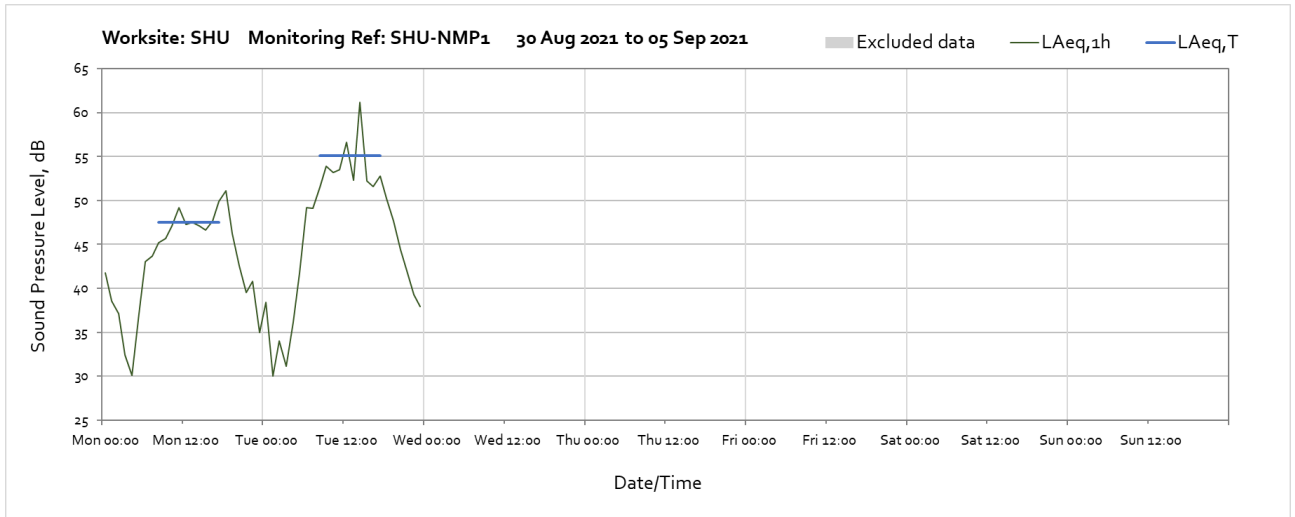




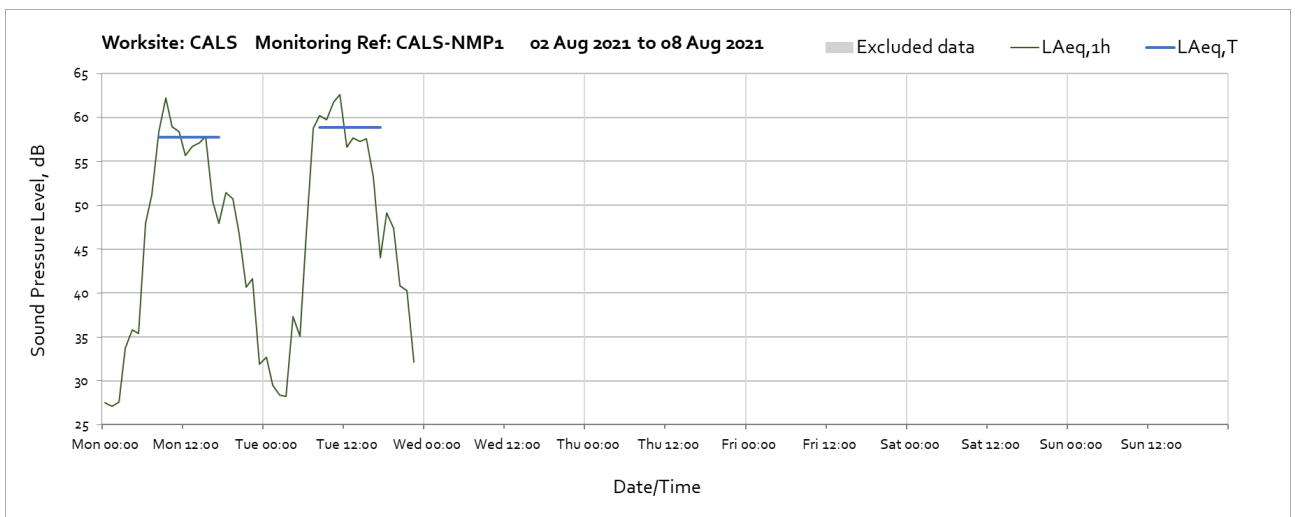
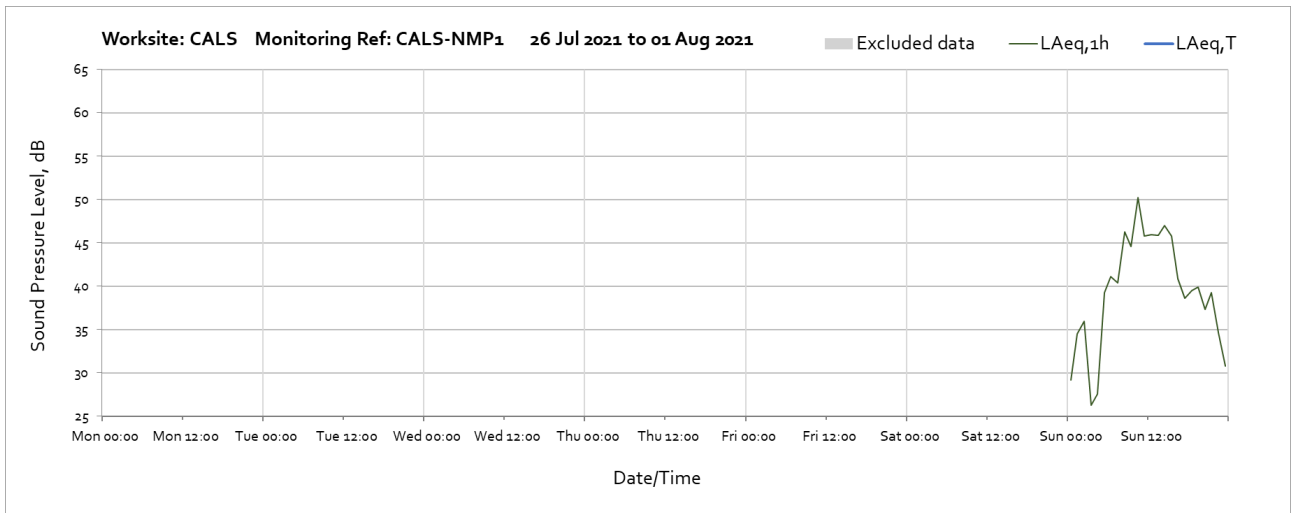
Worksite: SHU – Monitoring Ref: SHU-NMP1





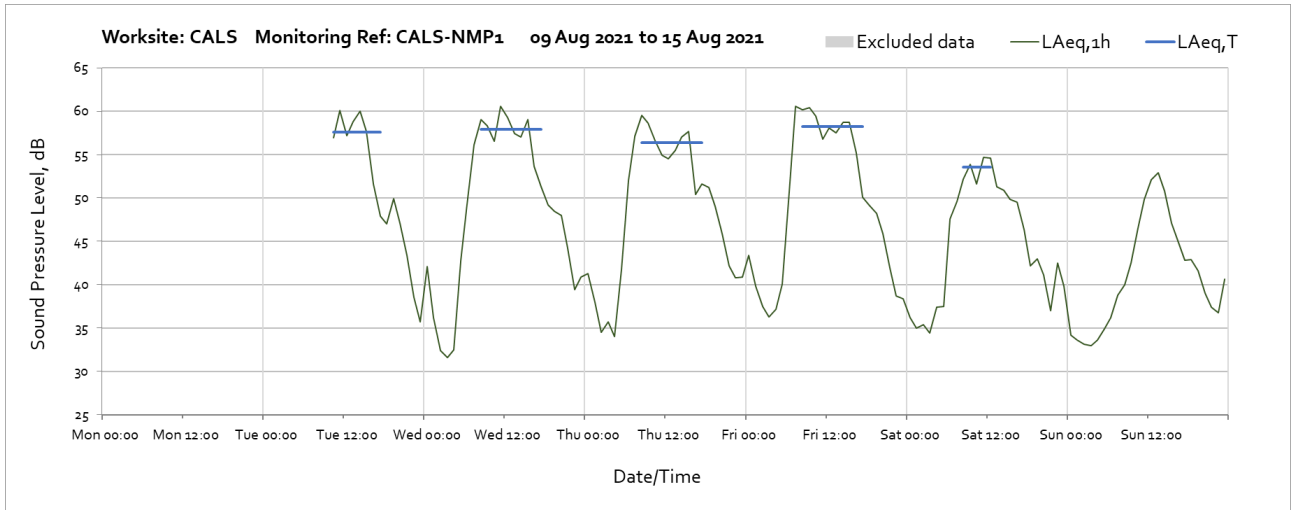


Worksite: CALS – Monitoring Ref: CALS-NMP1

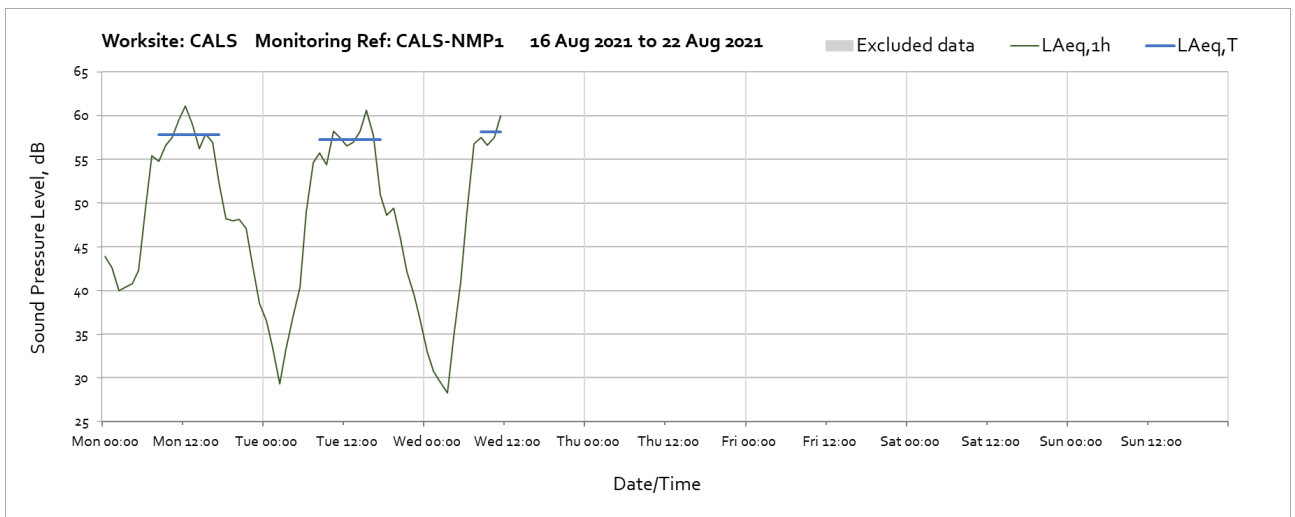


Note: Missing data between 23:00 on Tuesday 3rd August and 00:00 on Monday 9th August was due to loss of power supply to the monitor. As a remedial measure, additional back-up batteries are being installed and frequent online monitoring is undertaken.

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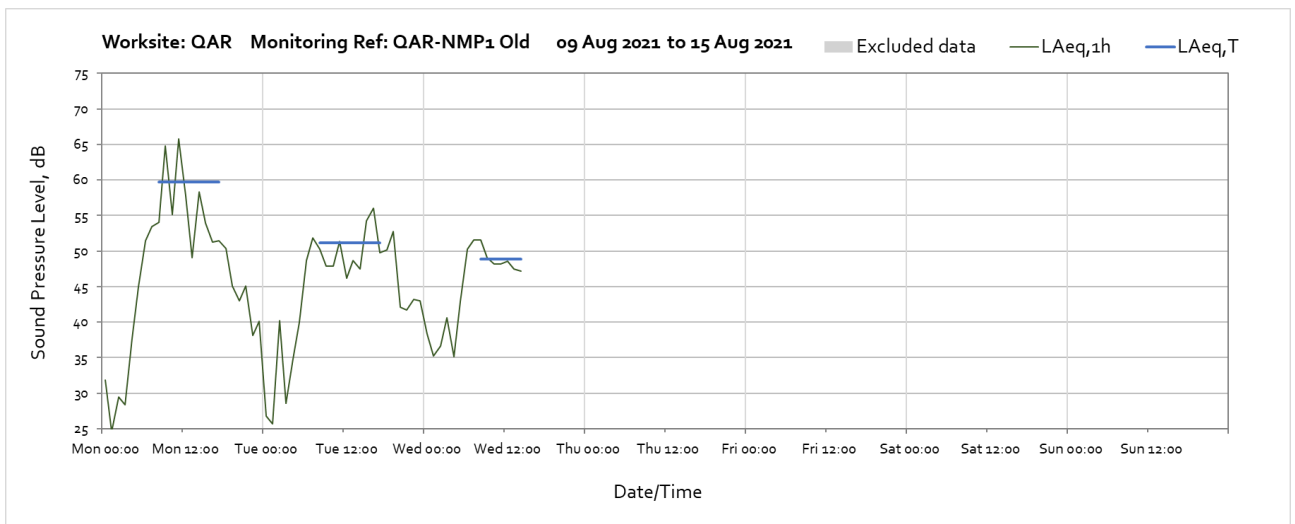
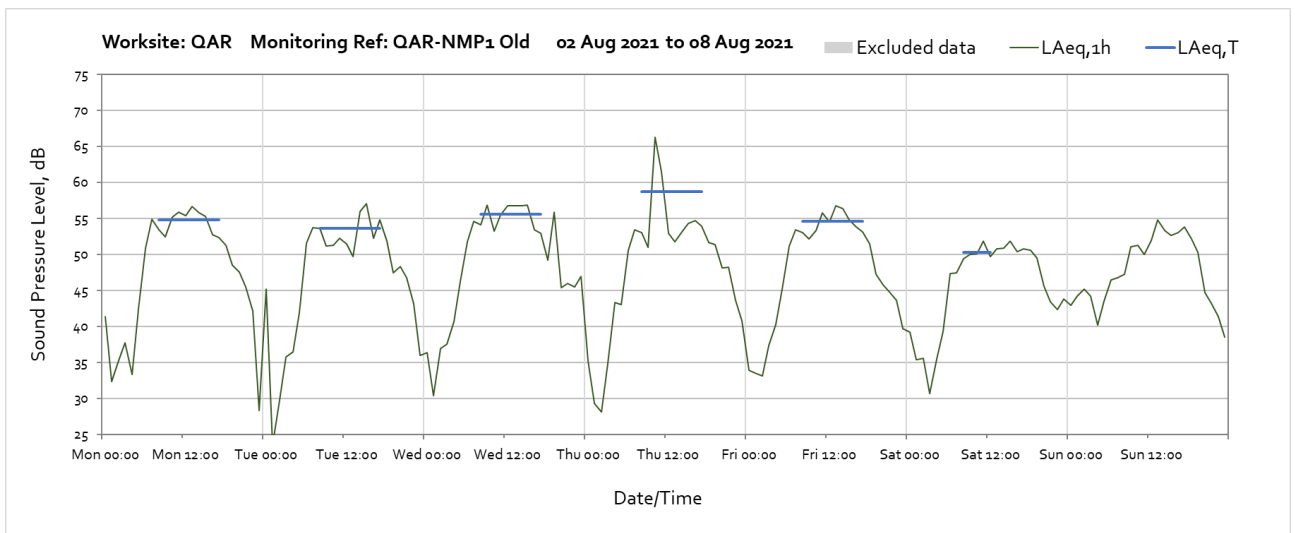
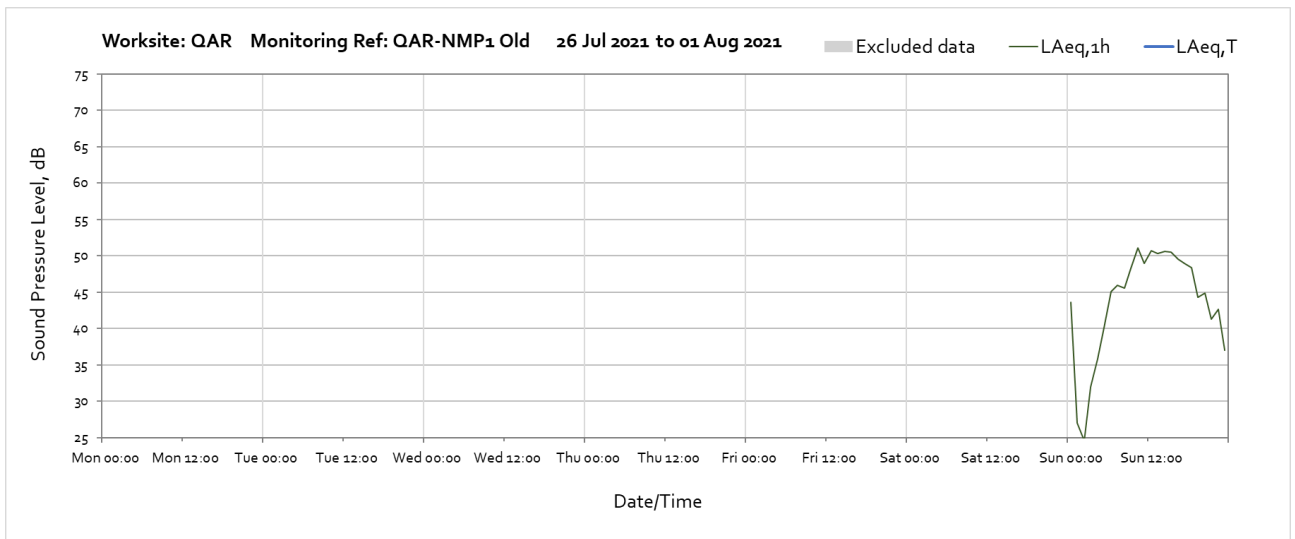


Note: Missing data between 00:00 on Monday 9th August and 10:00 on Tuesday 9th August was due to loss of power supply to the monitor. As a remedial measure, additional back-up batteries are being installed and frequent online monitoring is undertaken.



Note: Missing data between 12:00 on Wednesday 18th August and the end of the month was due to loss of power supply to the monitor. As a remedial measure, additional back-up batteries are being installed and frequent online monitoring is undertaken.

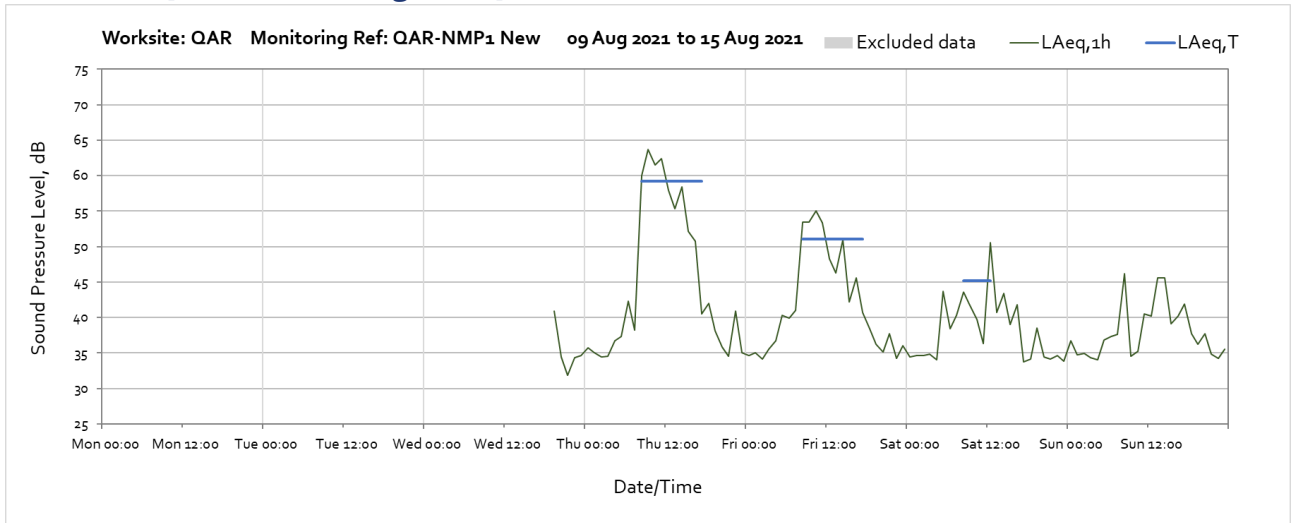
Worksite: QAR – Monitoring Ref: QAR-NMP1 Old



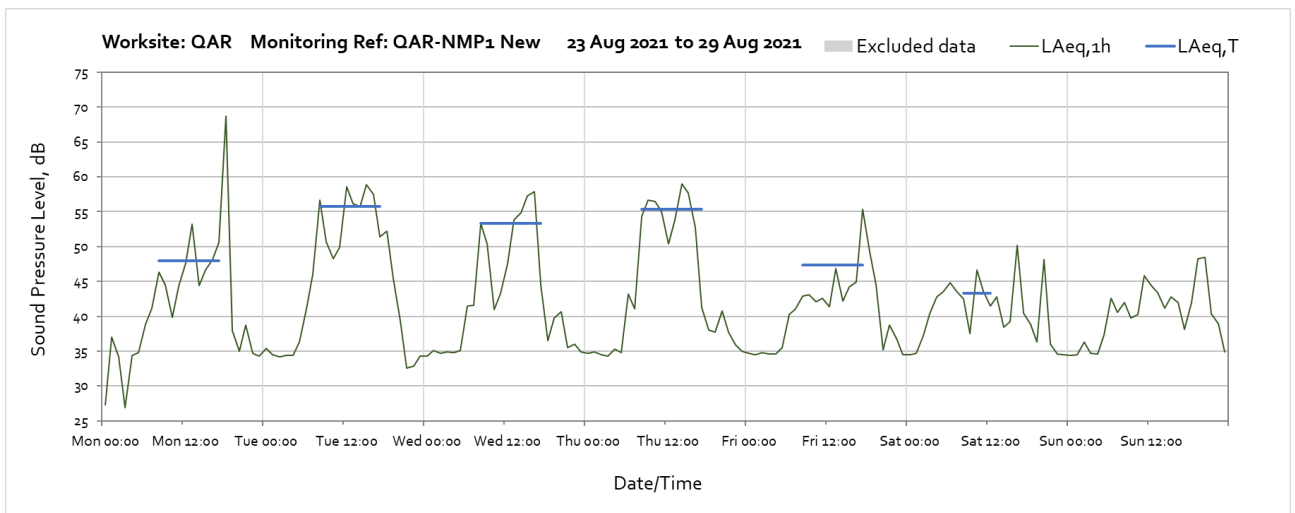
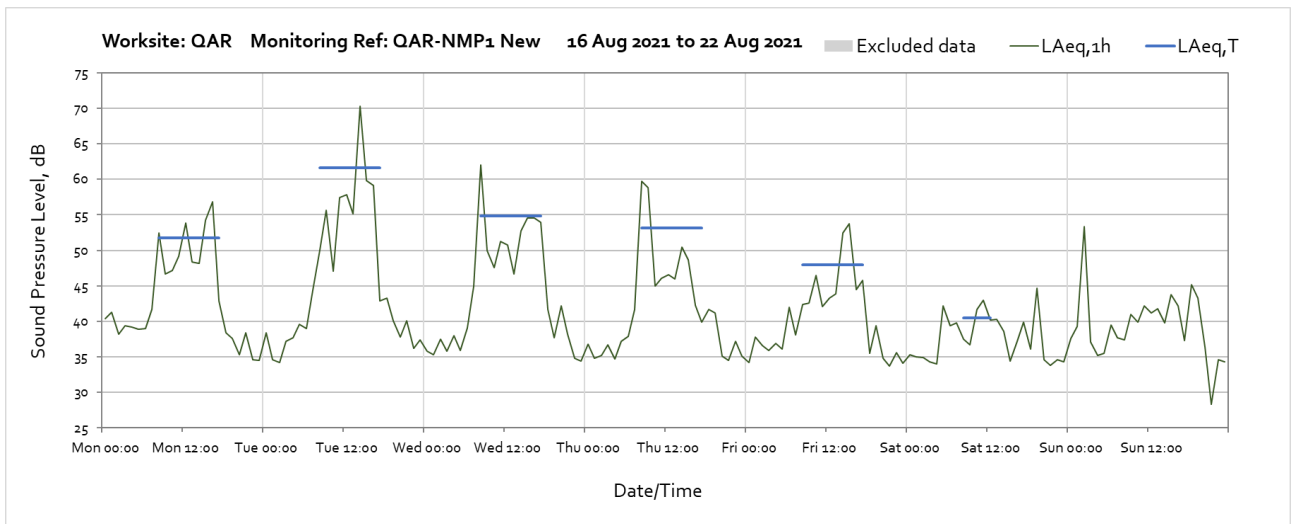
Note: The noise monitor was relocated to a new location on 11th August 2021.

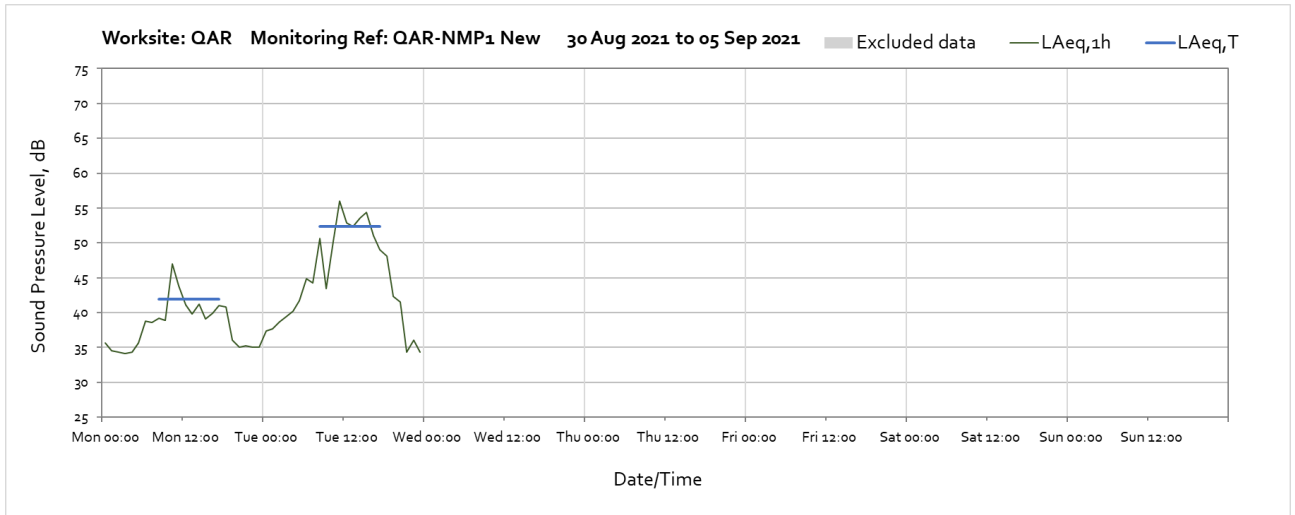
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Worksite: QAR – Monitoring Ref: QAR-NMP1 New

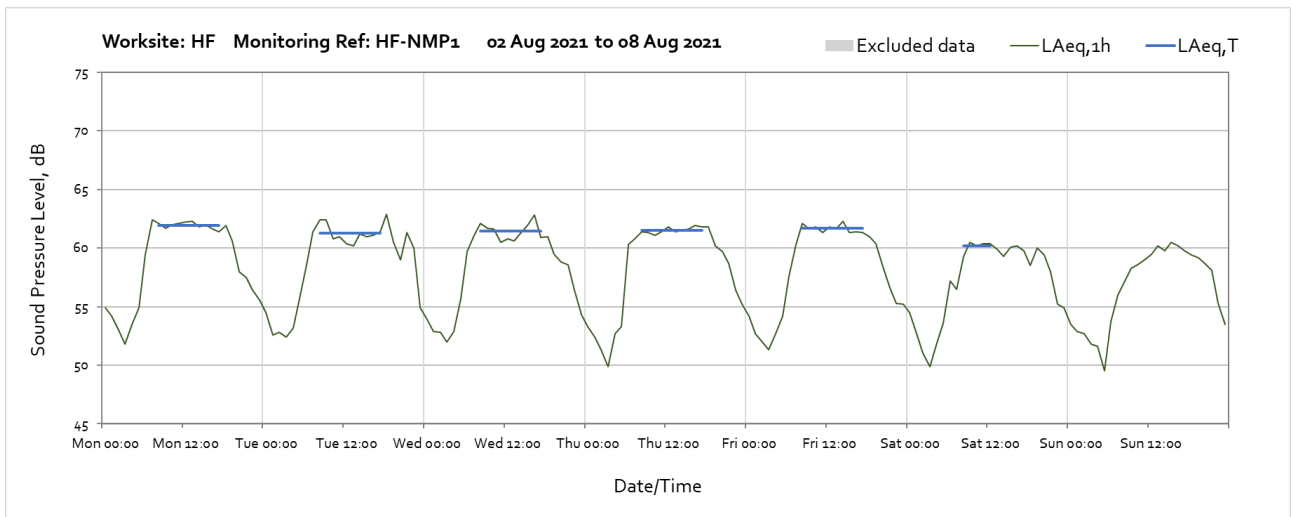
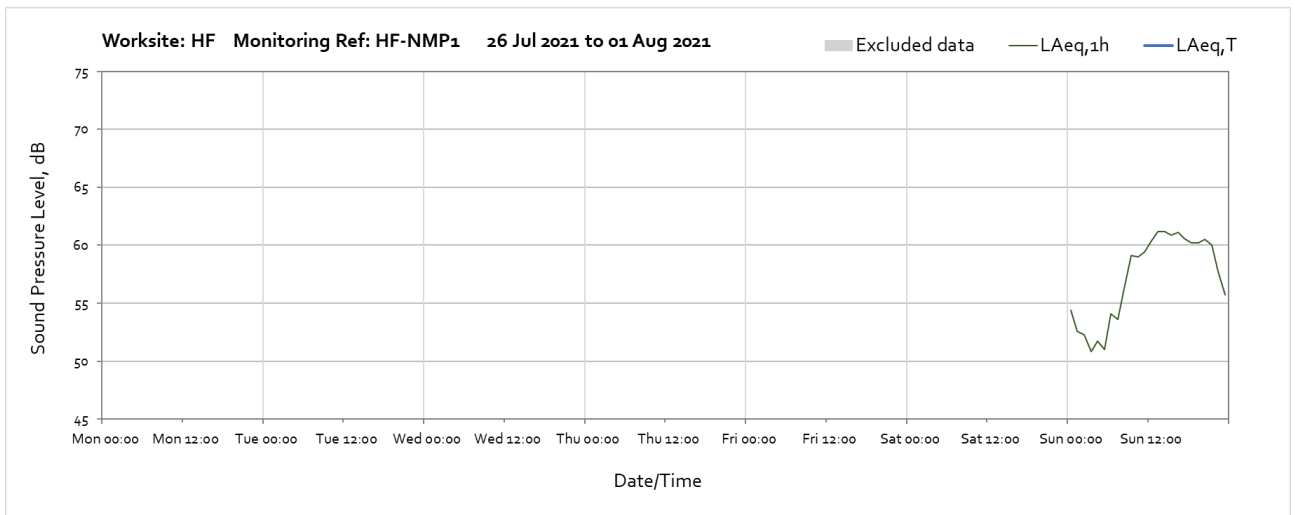


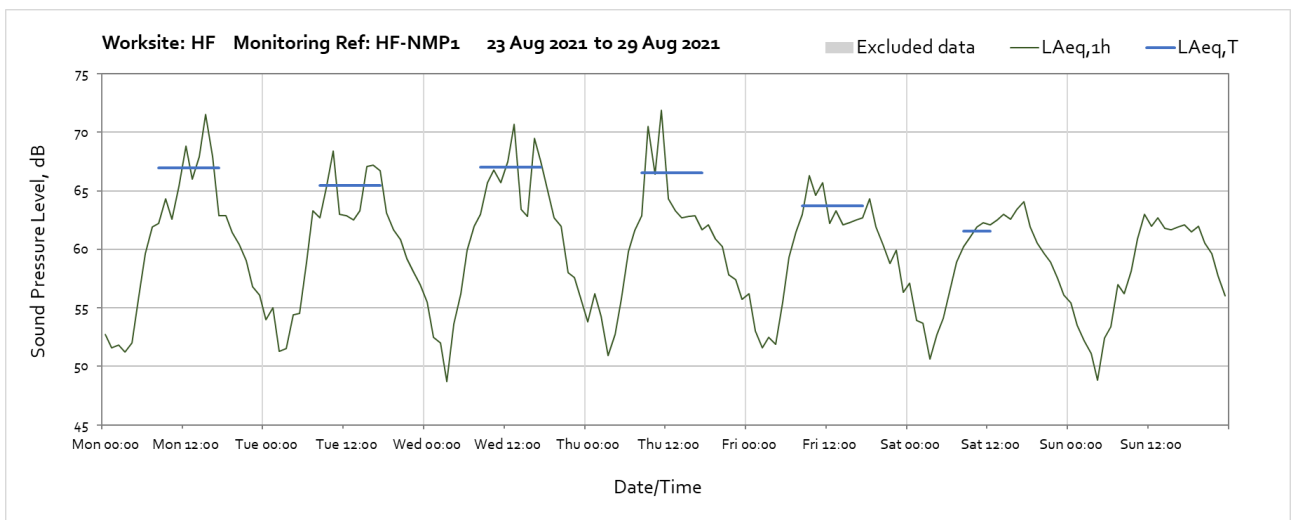
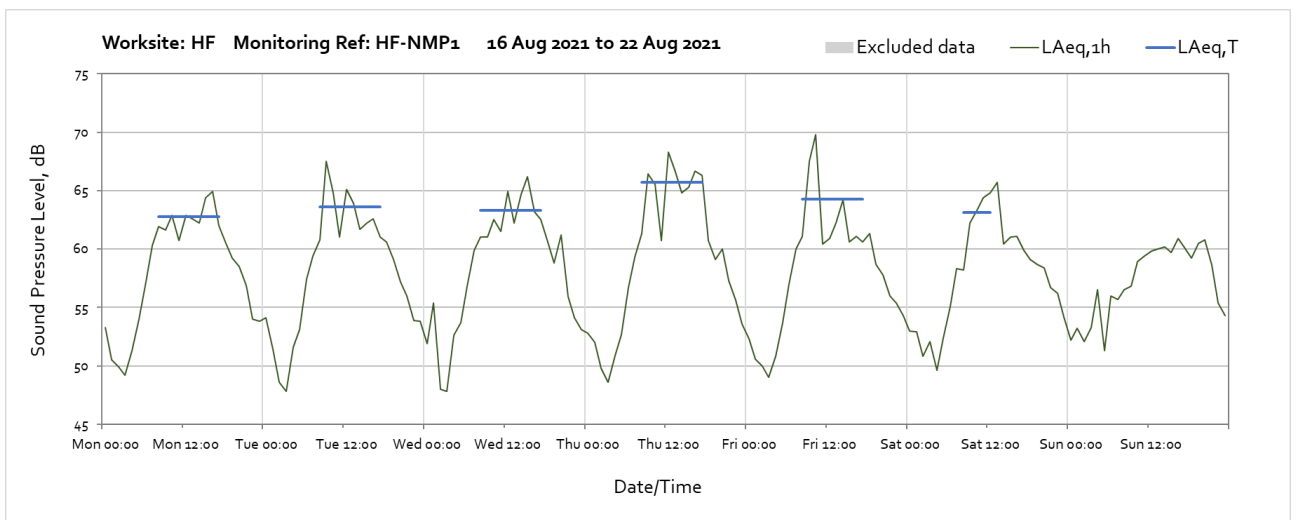
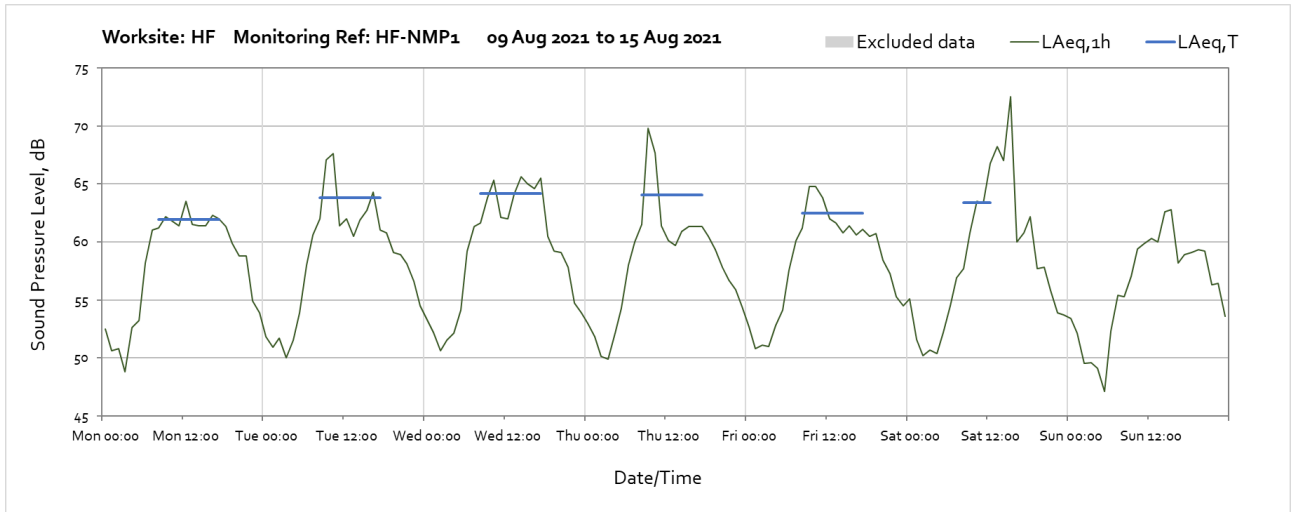
Note: The noise monitor was installed at the new location on 11th August 2021.

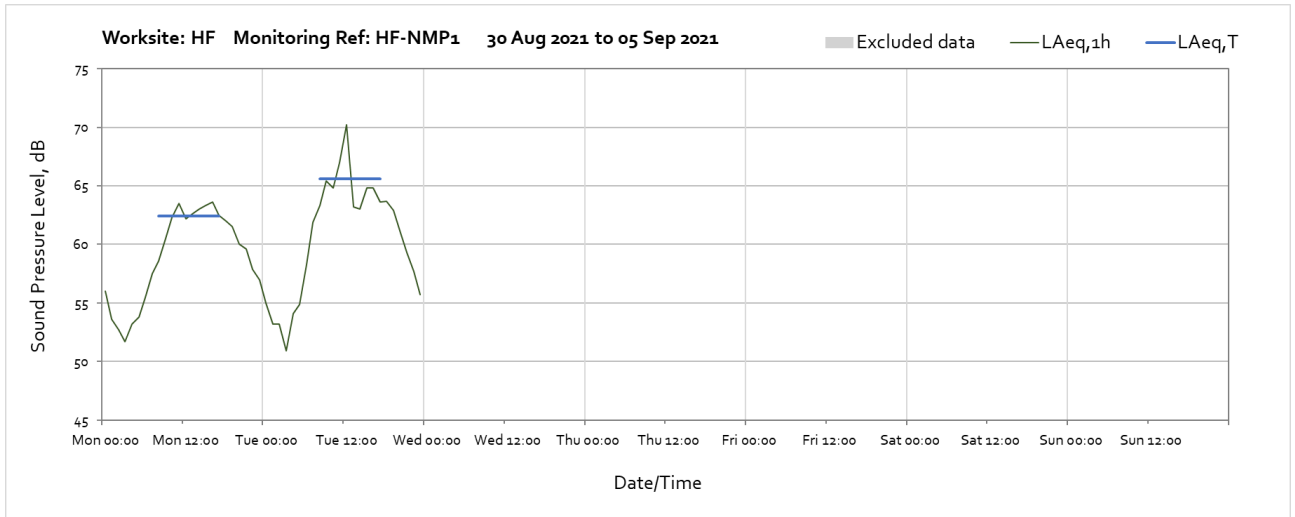




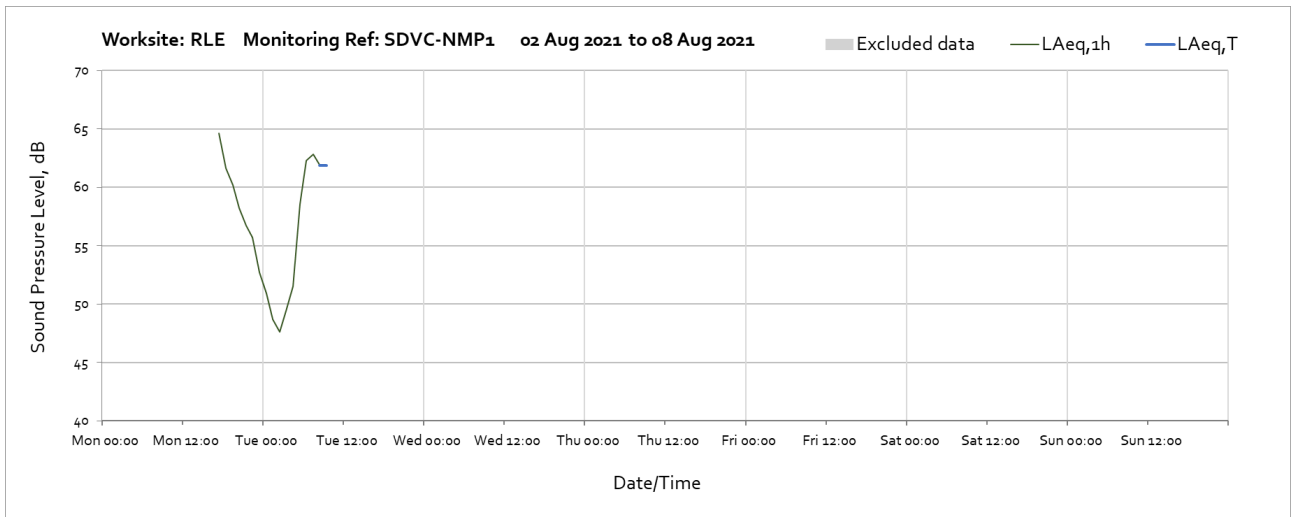
Worksite: HF - Monitoring Ref: HF-NMP1



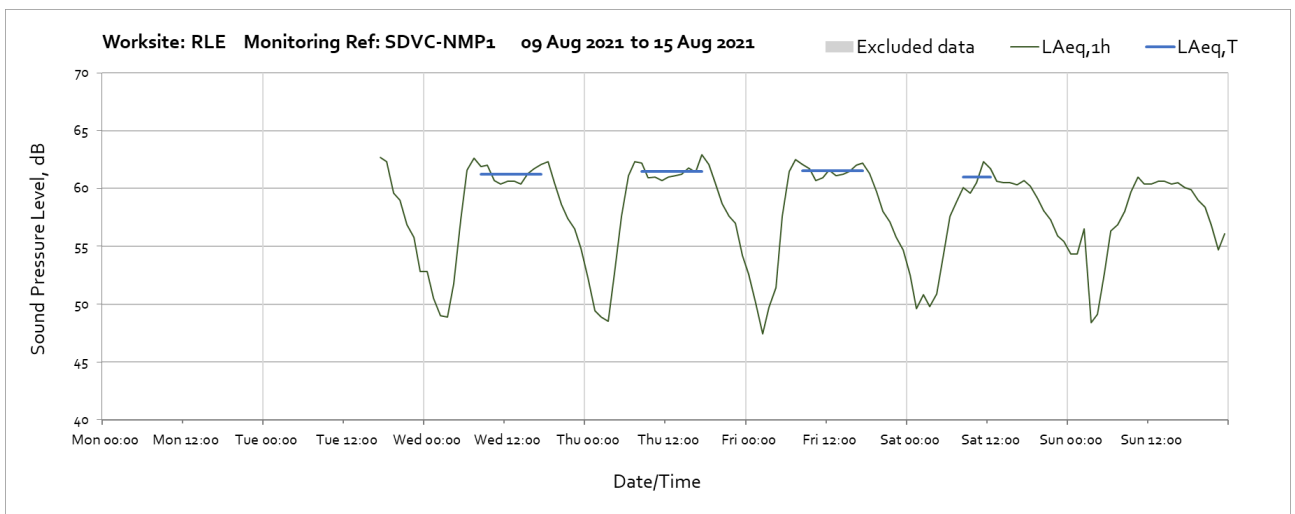


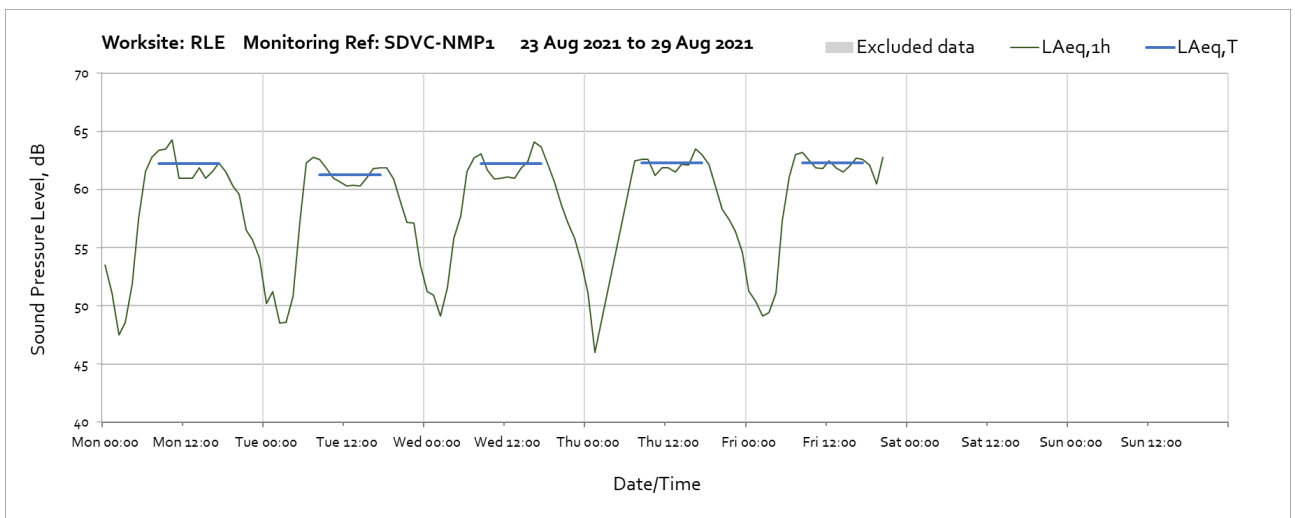
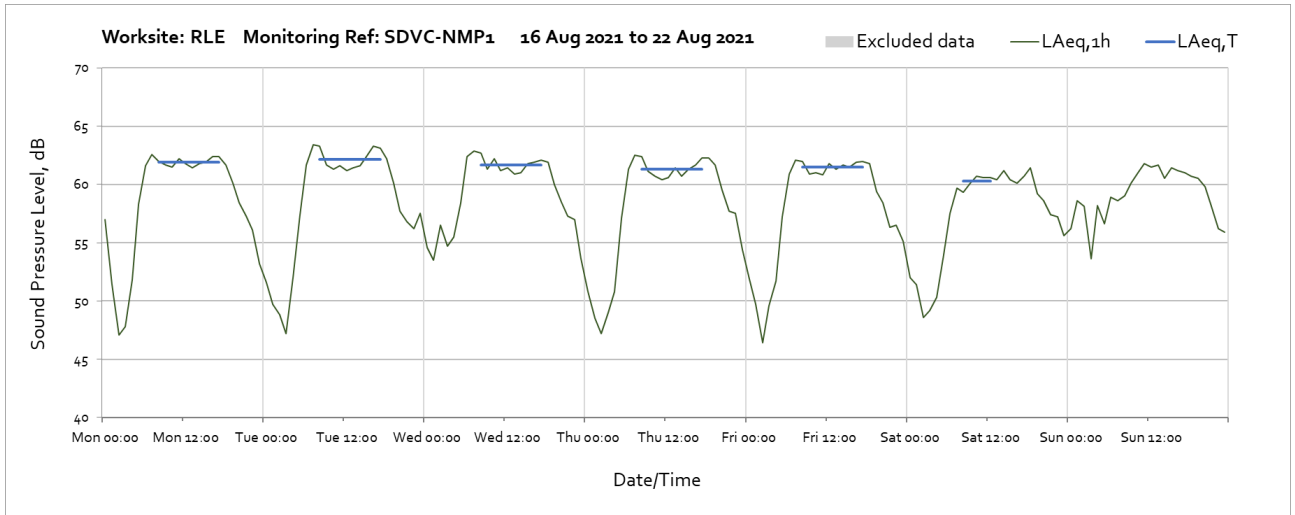


Worksite: RLE - Monitoring Ref: SDVC-NMP1



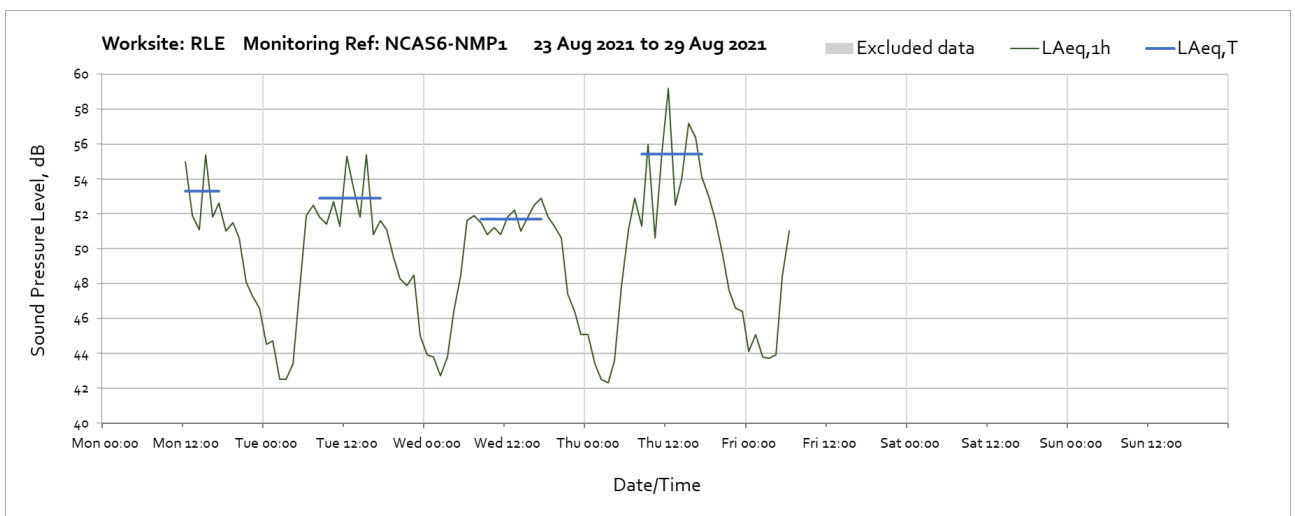
Note: The noise monitor was installed on 2nd August 2021. Missing data between 10:00 on Tuesday 3rd August and 16:00 on Tuesday 10th August was due to a fault in the noise monitor.





Note: Missing data between 21:00 on Friday 27th August and the end of the month was due to a fault in the noise monitor.

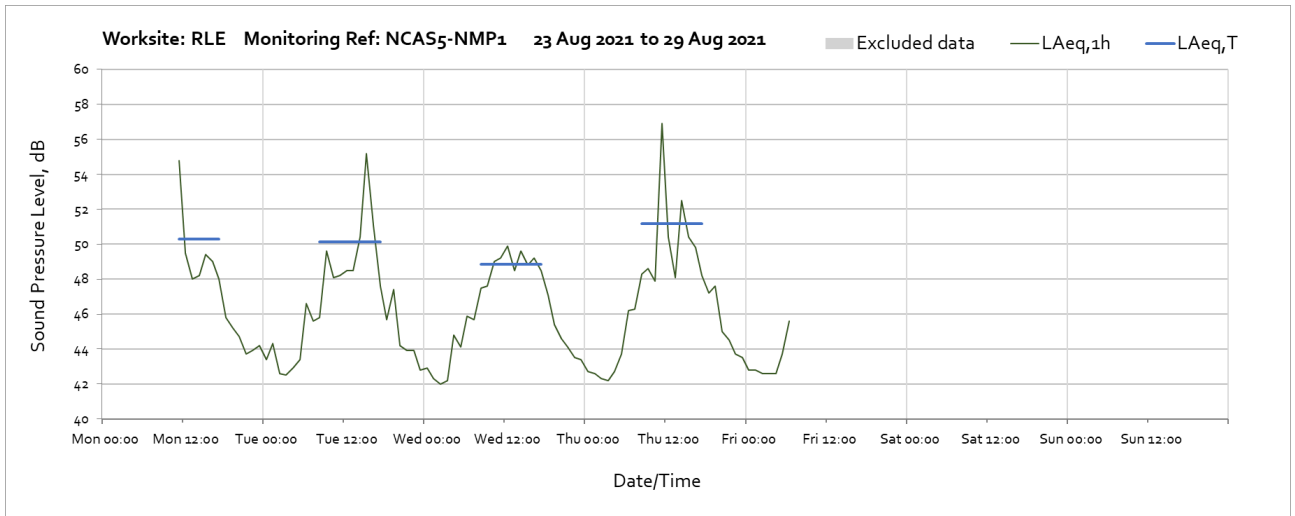
Worksite: RLE – Monitoring Ref: NCAS6-NMP1



Note: The noise monitor was installed on 23rd August 2021. Missing data between 07:00 on Friday 27th August and the end of the month was due to insufficient memory in the monitor.

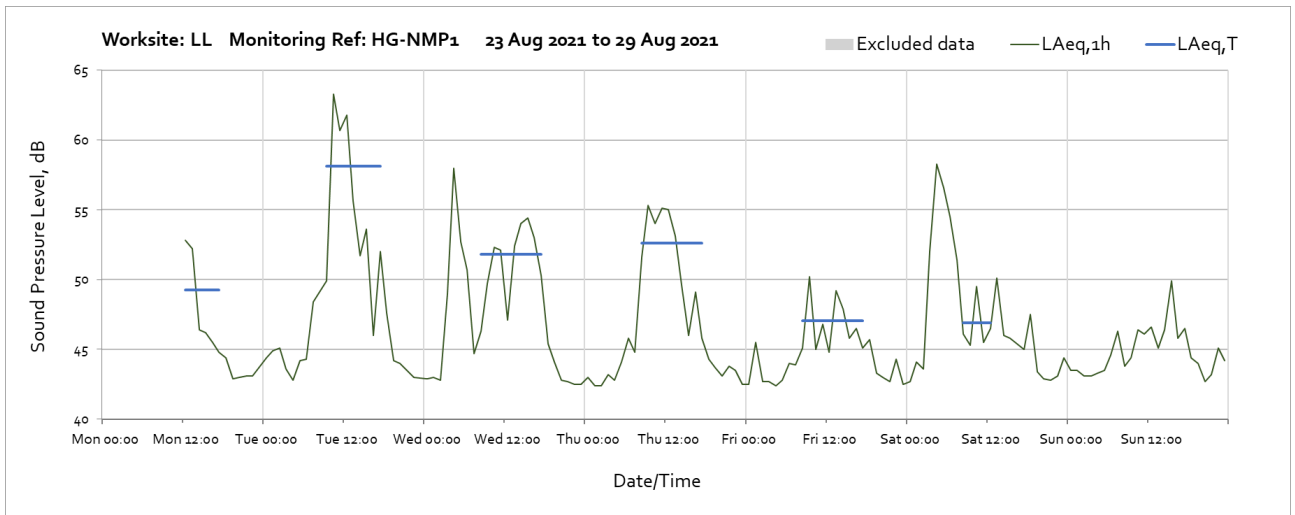
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Worksite: RLE – Monitoring Ref: NCAS5-NMP1

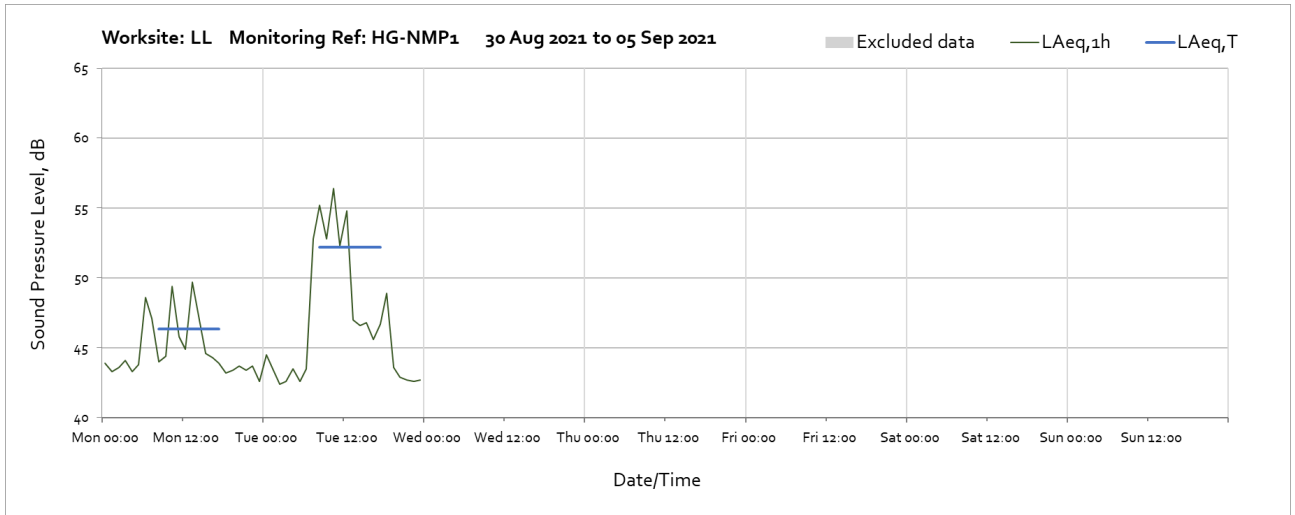


Note: The noise monitor was installed on 23rd August 2021. Missing data between 07:00 on Friday 27th August and the end of the month was due to insufficient memory in the monitor.

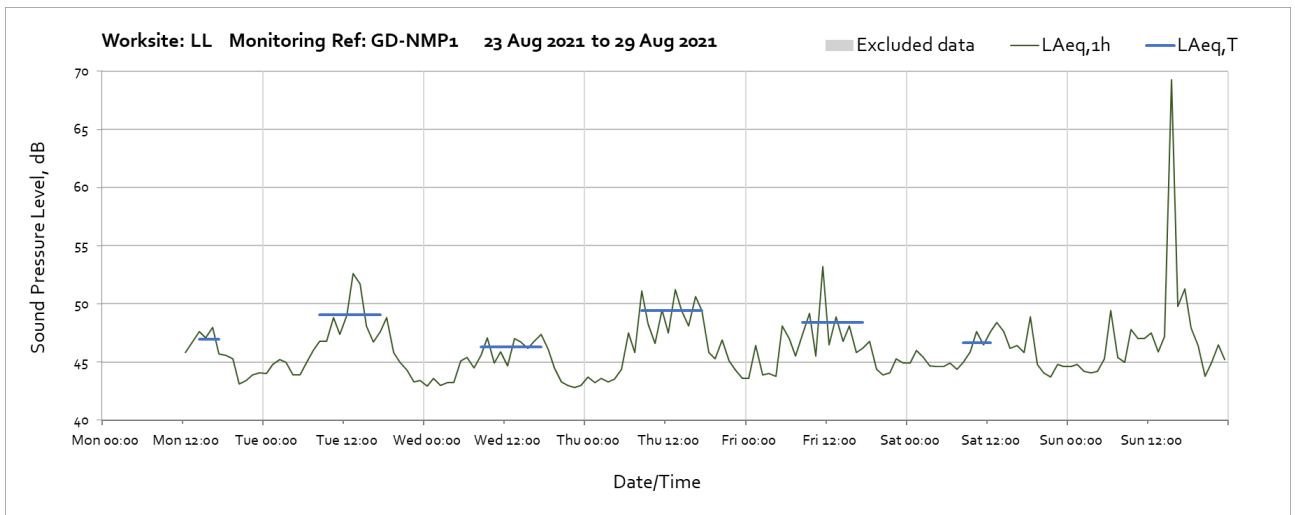
Worksite: LL – Monitoring Ref: HG -NMP1



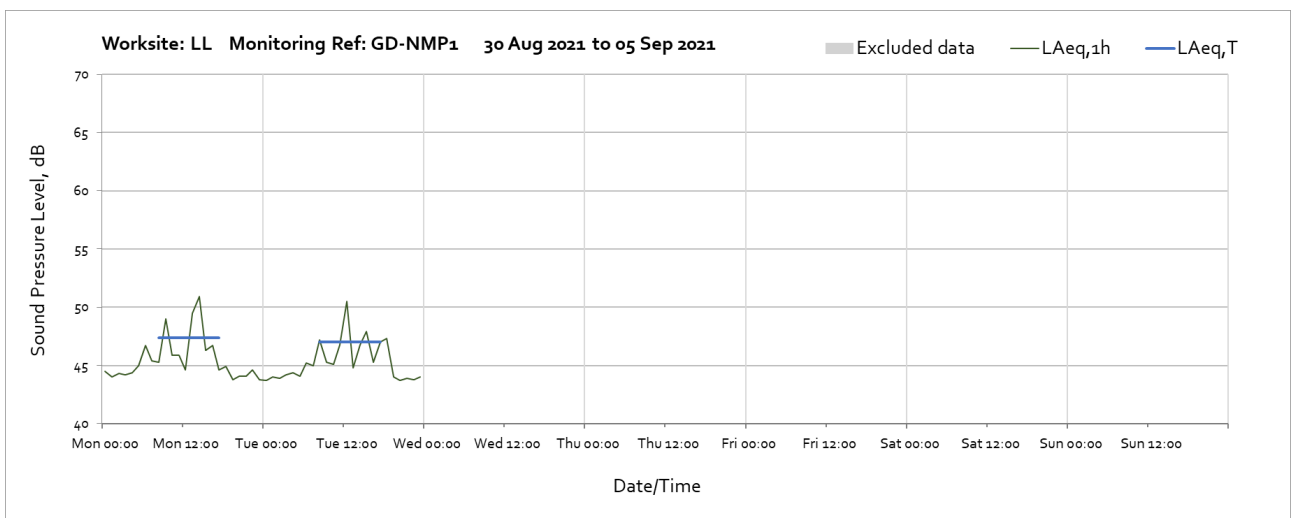
Note: The noise monitor was installed on 23rd August 2021.



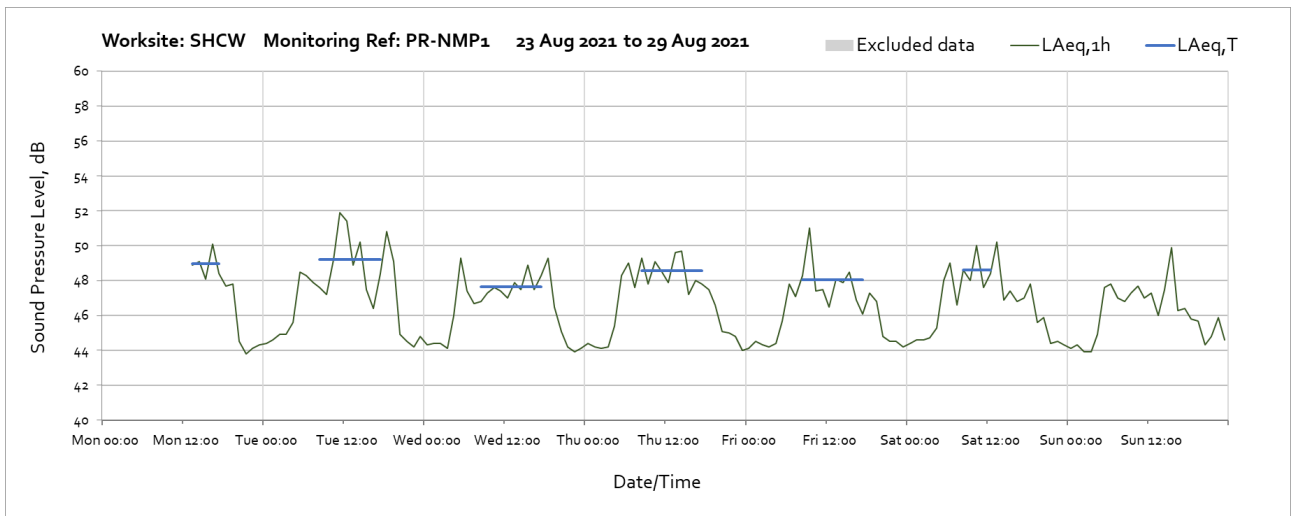
Worksite: LL - Monitoring Ref: GD-NMP1



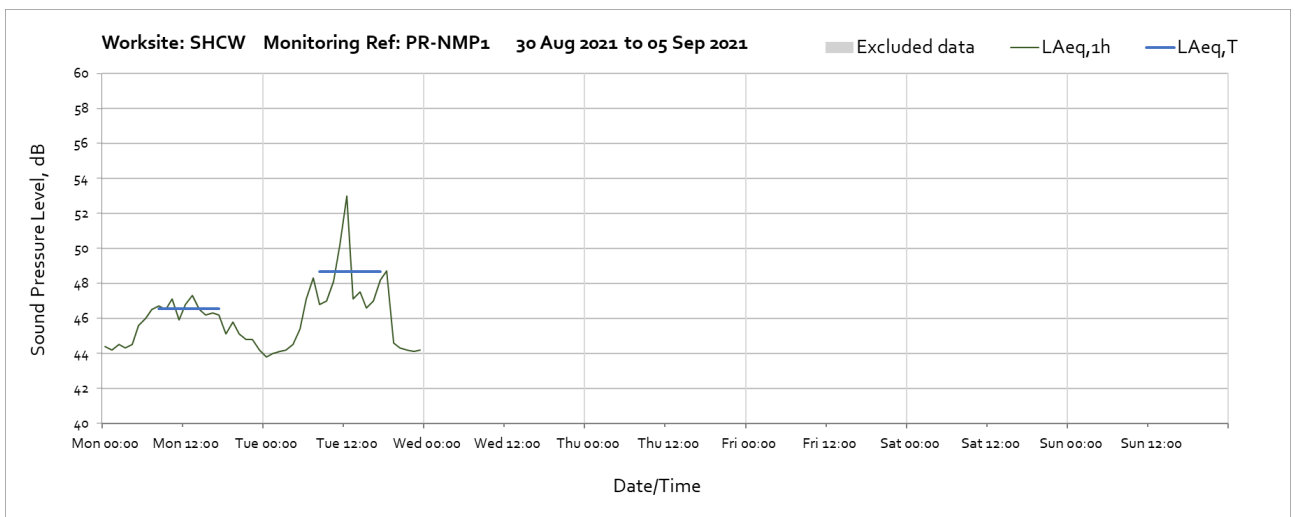
Note: The noise monitor was installed on 23rd August 2021. High peak at 15:00 on 29th September took place outside of site operating hours and is not representative of HS2 construction noise level,



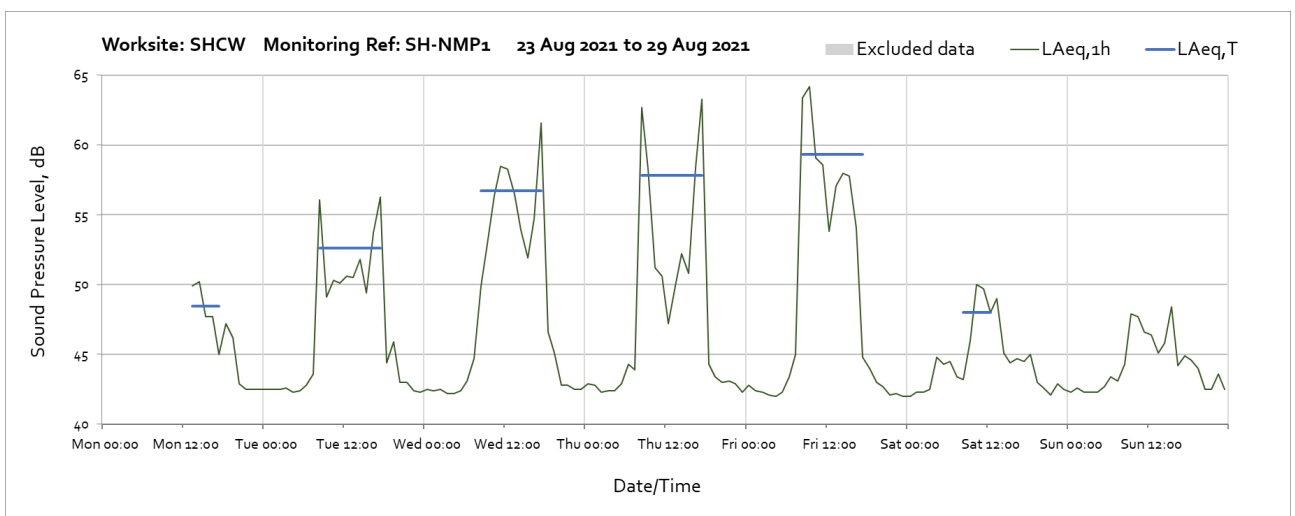
Worksite: SHCW – Monitoring Ref: PR-NMP1



Note: The noise monitor was installed on 23rd August 2021.

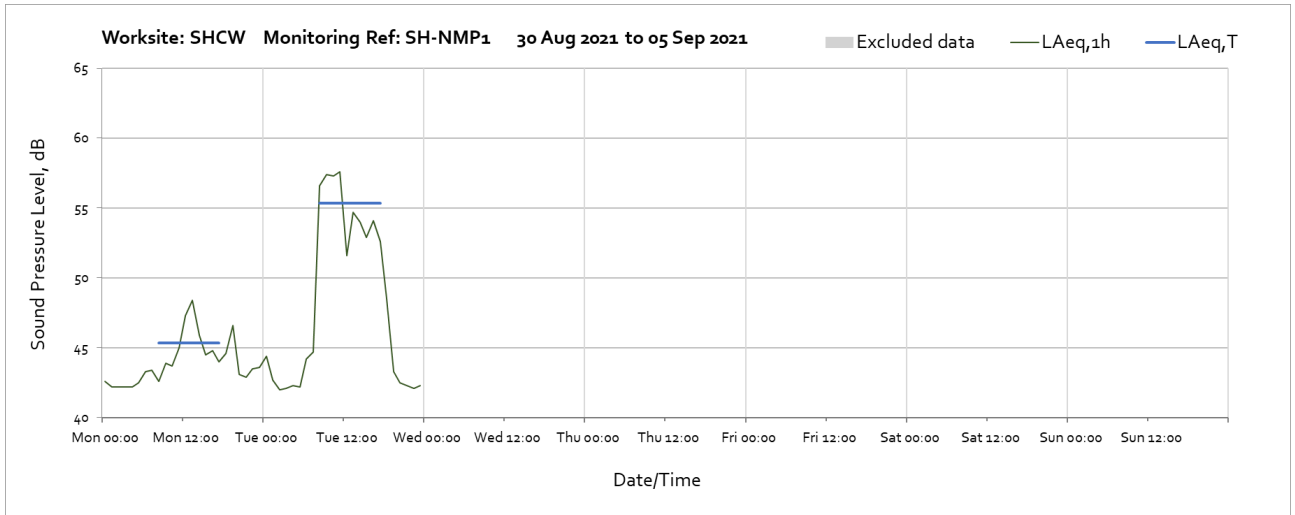


Worksite: SHCW – Monitoring Ref: SH-NMP1

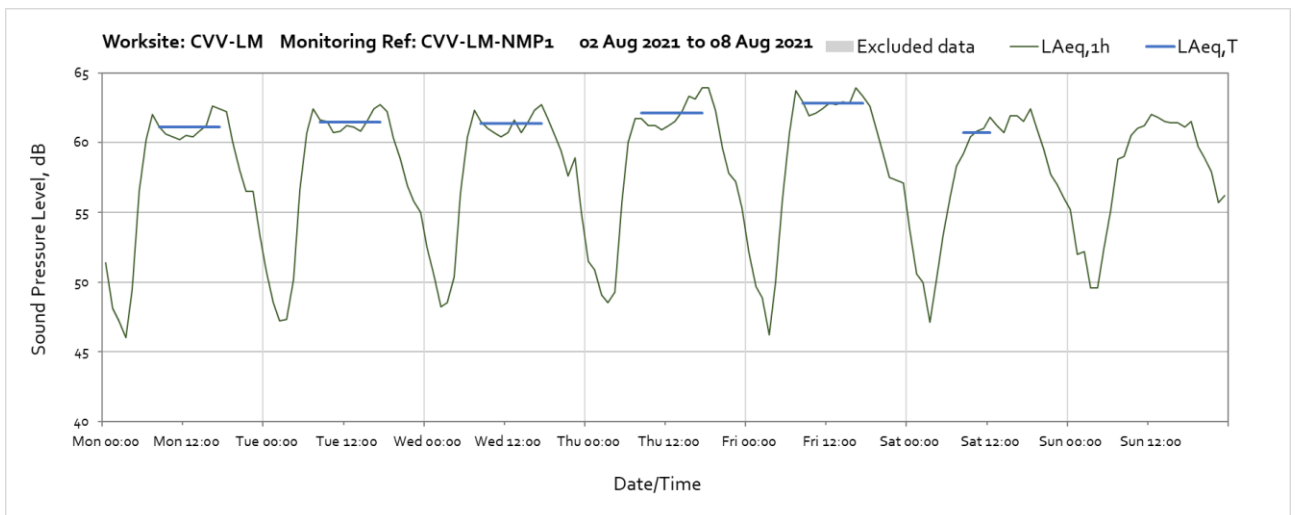
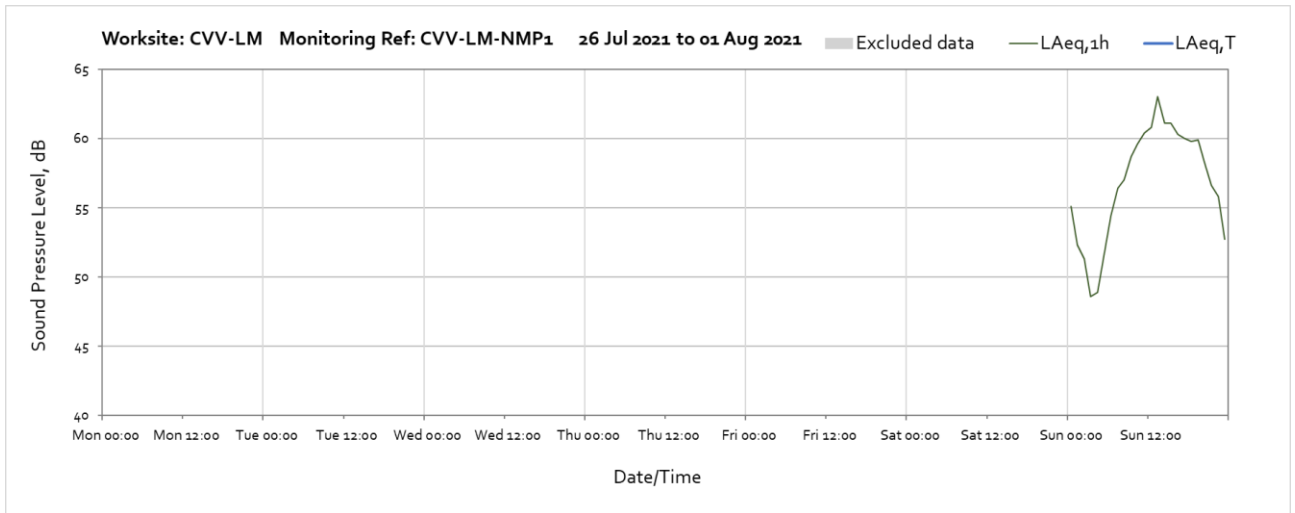


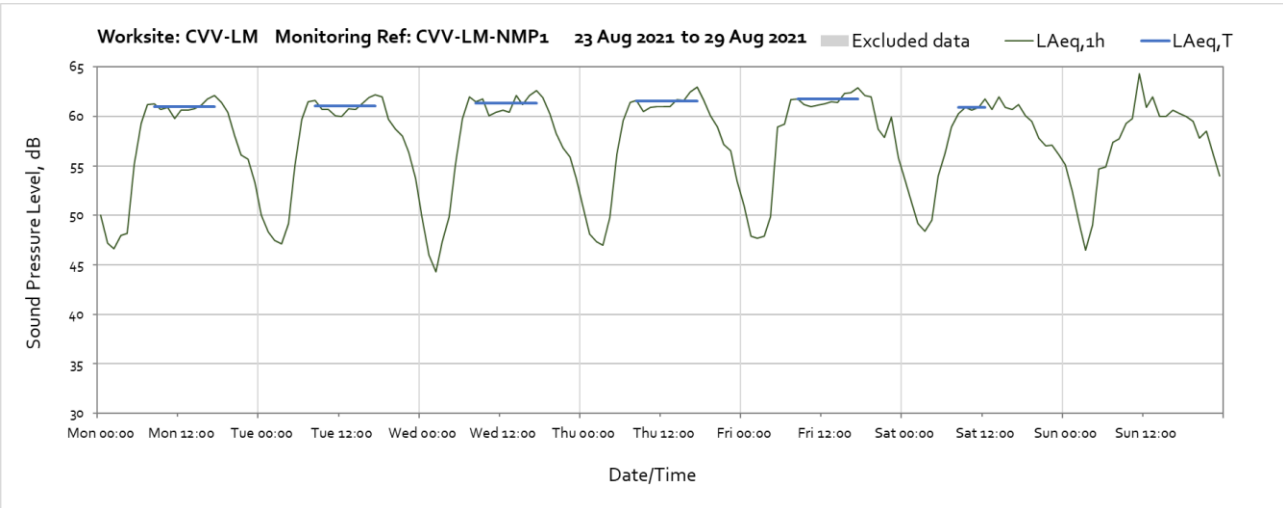
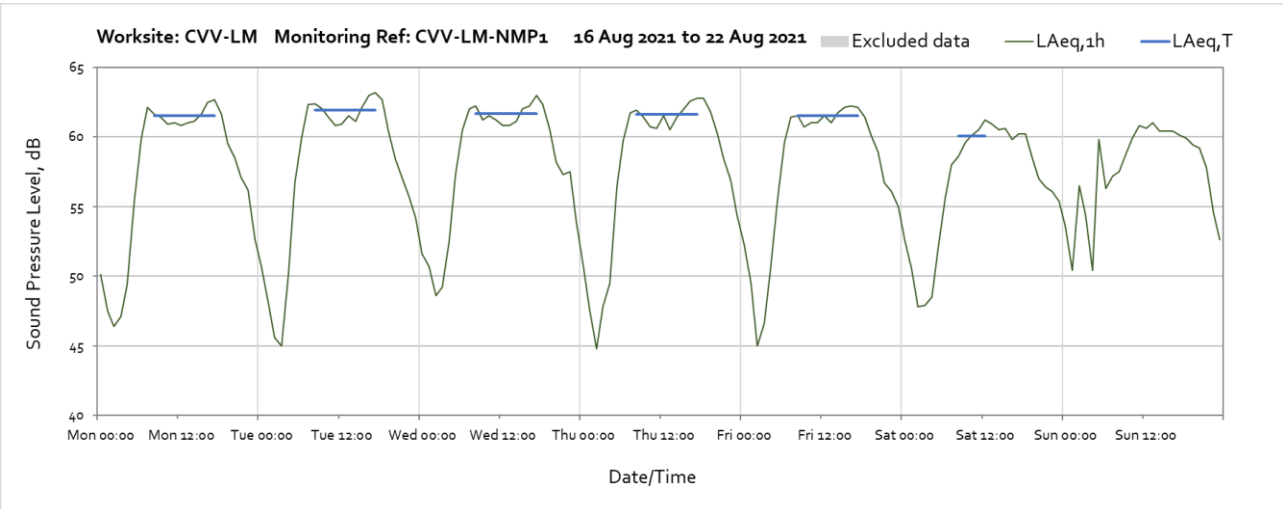
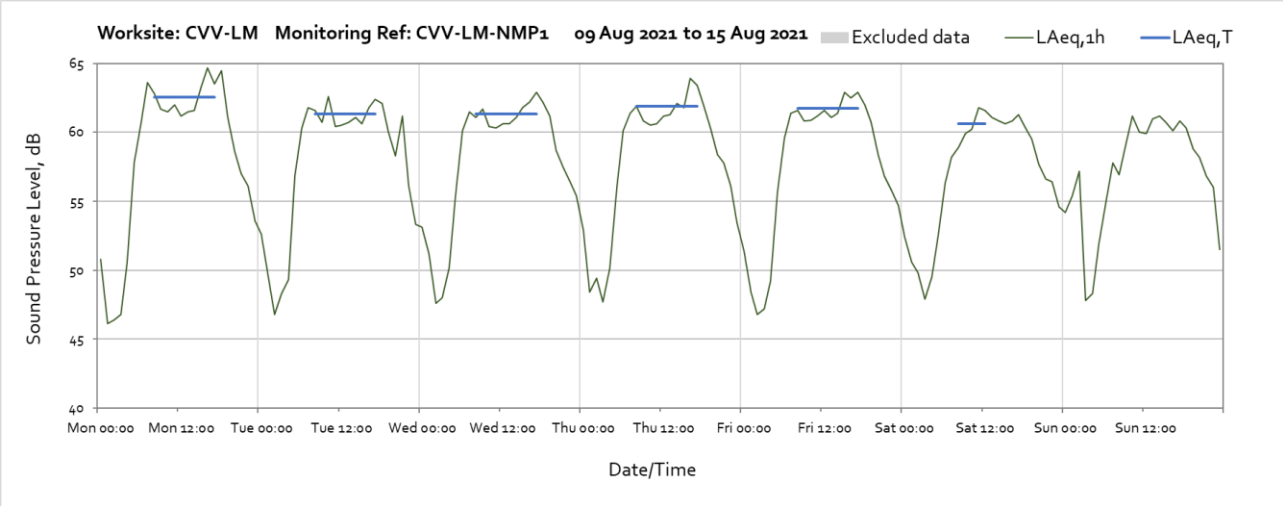
Note: The noise monitor was installed on 23rd August 2021.

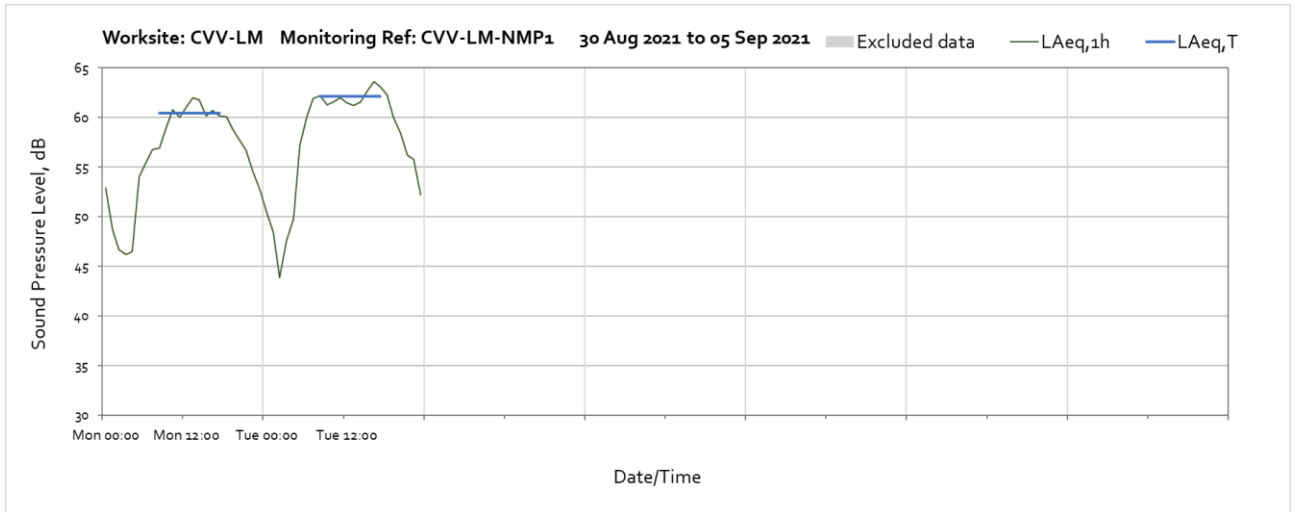
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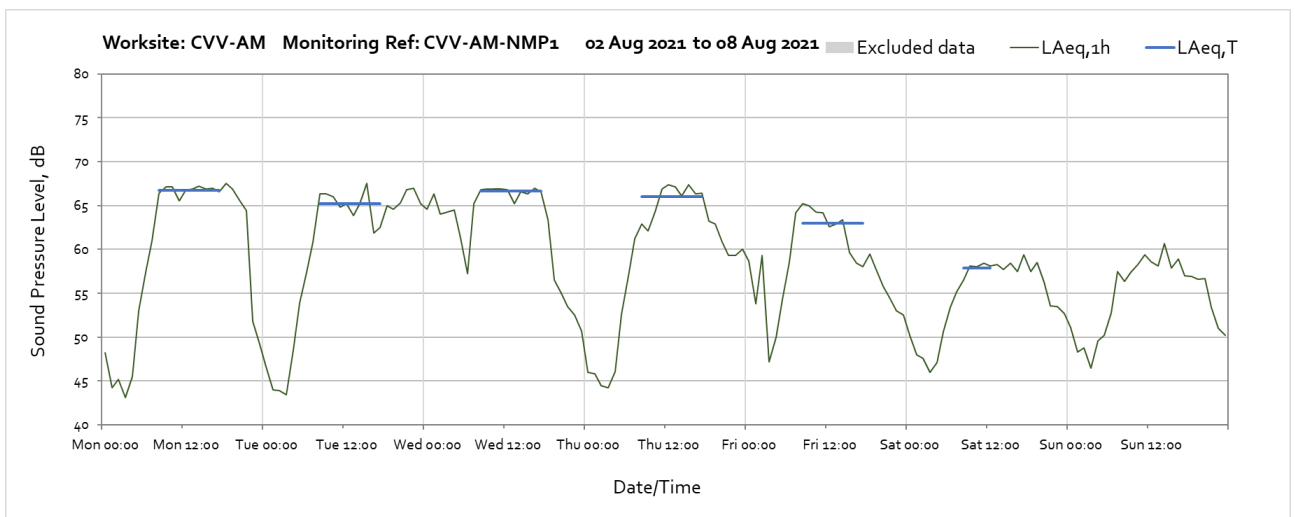
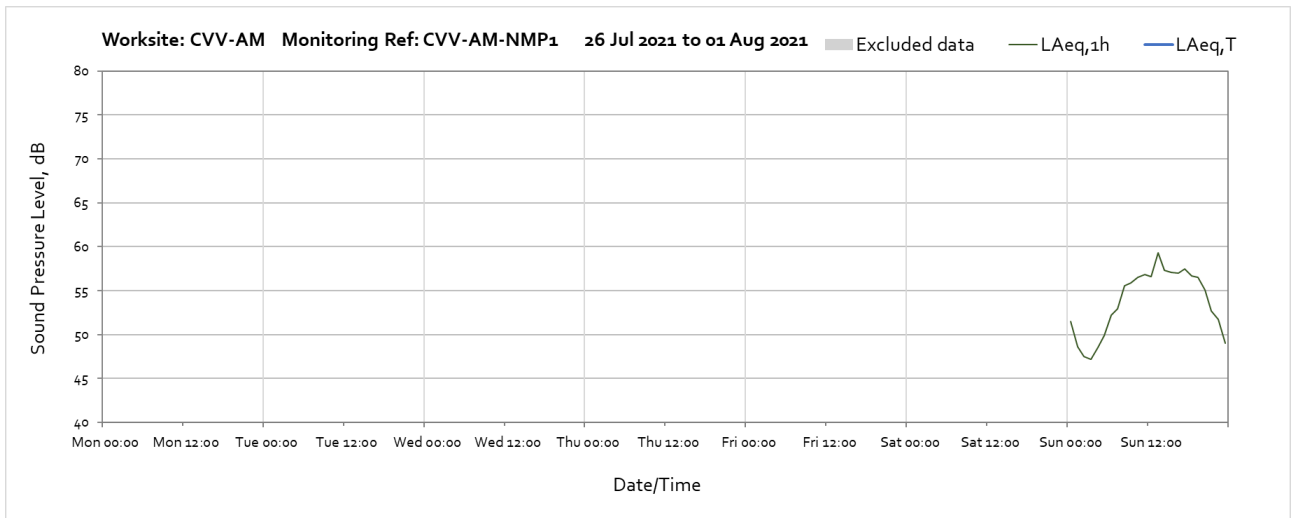
Worksite: CVV-LM - Monitoring Ref: CVV-LM-NMP1

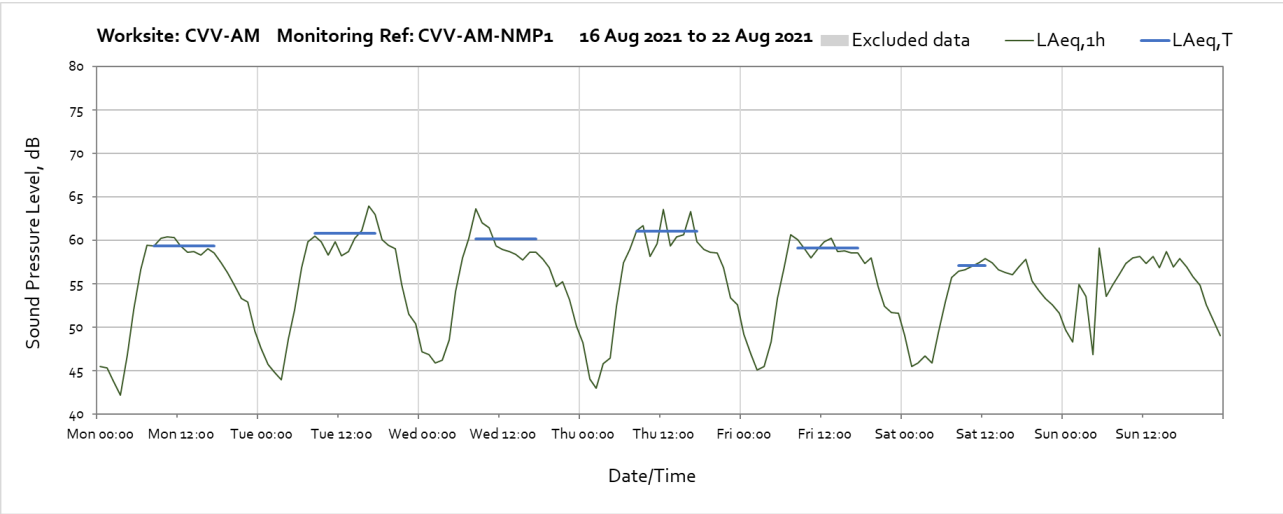
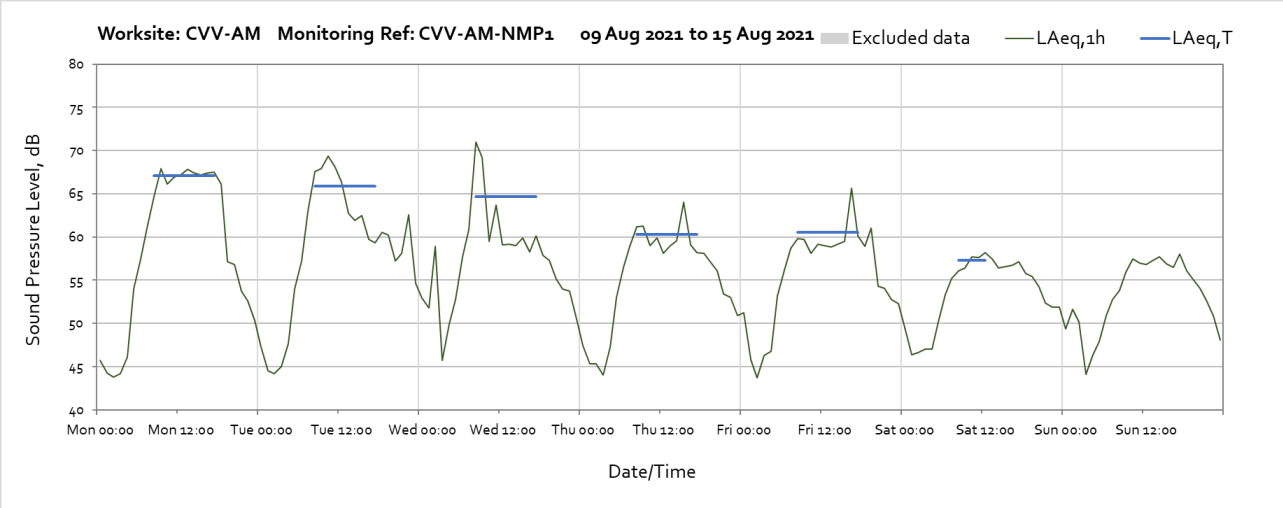


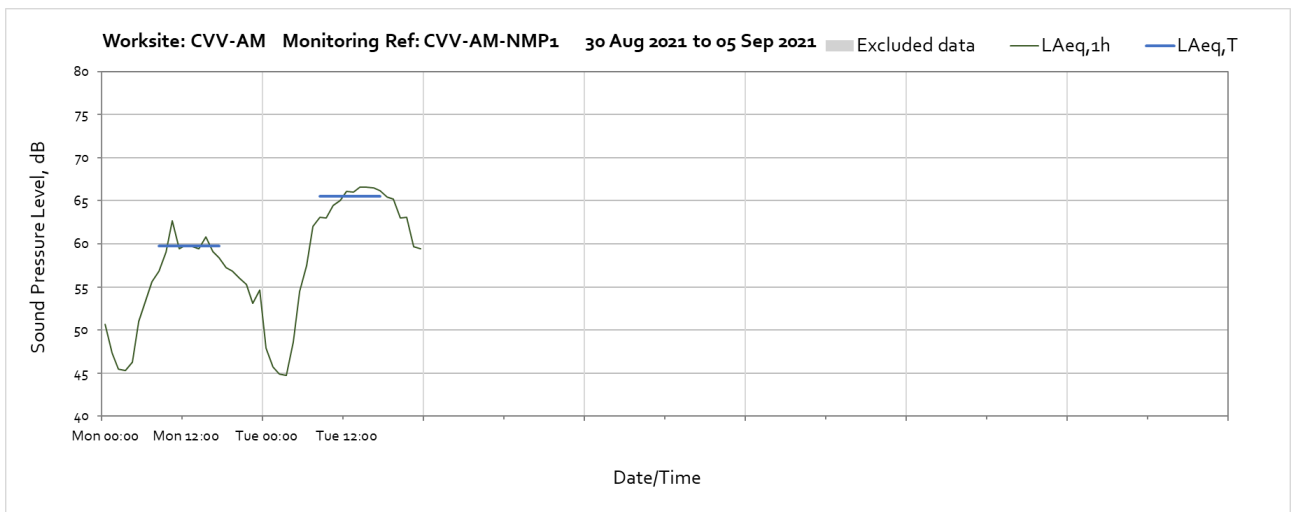
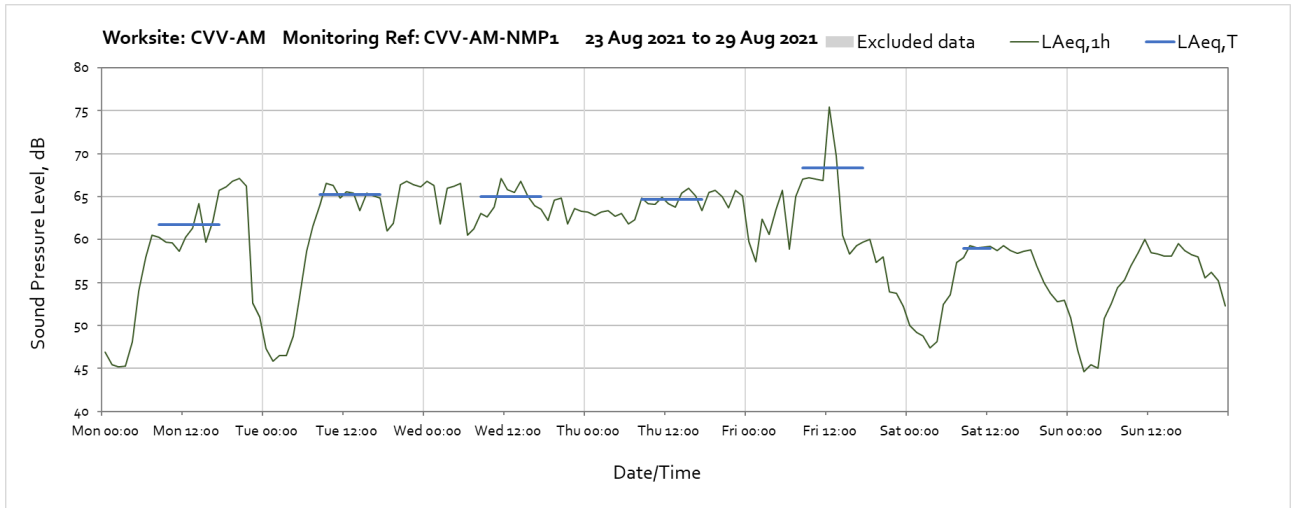




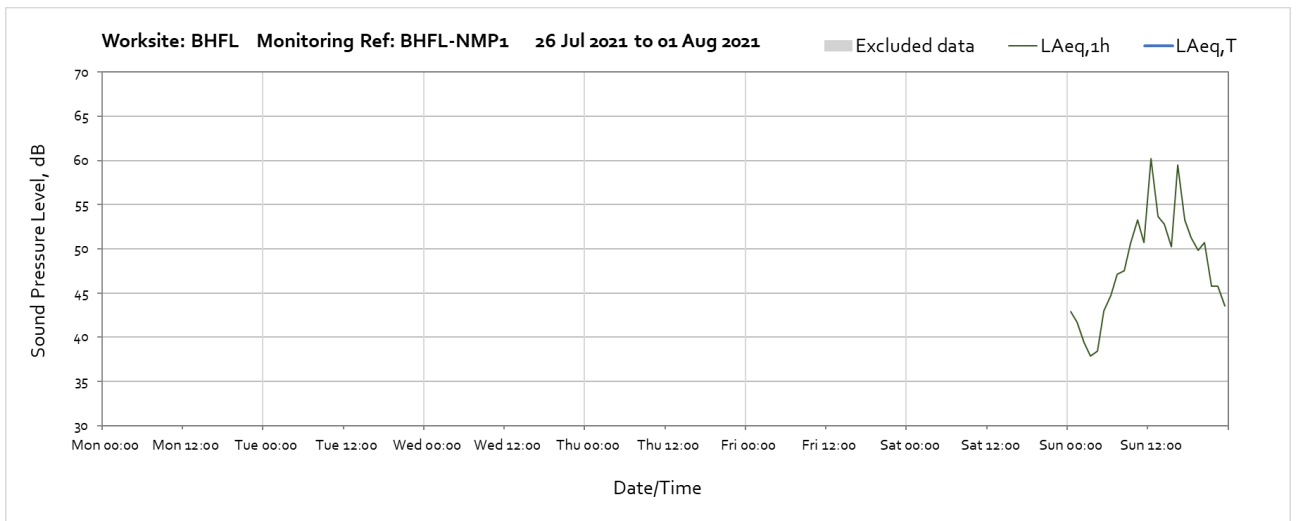
Worksite: CVV-AM - Monitoring Ref: CVV-AM-NMP1

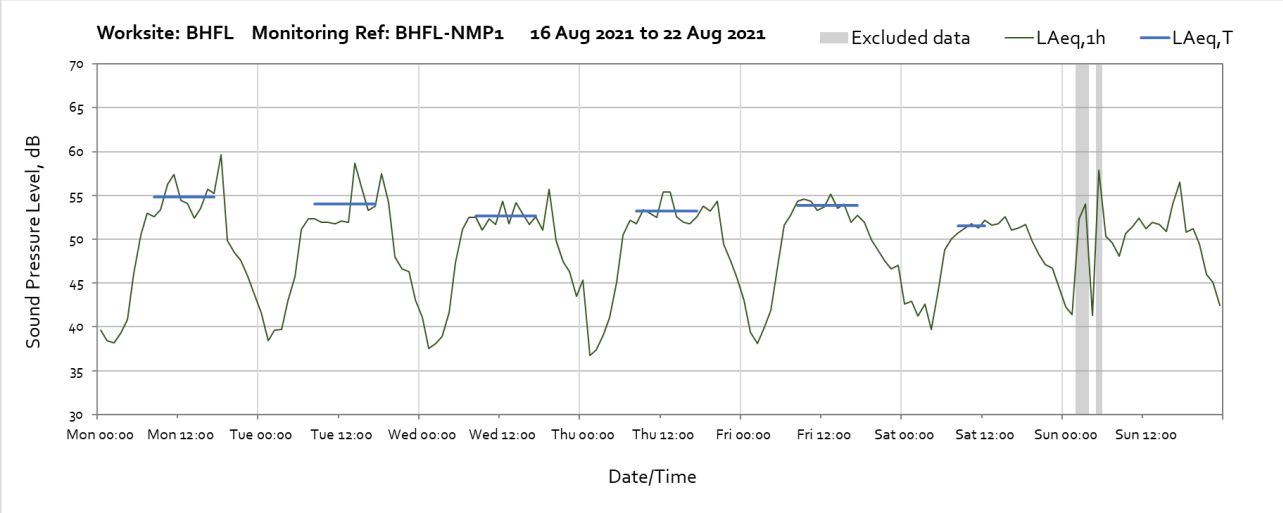
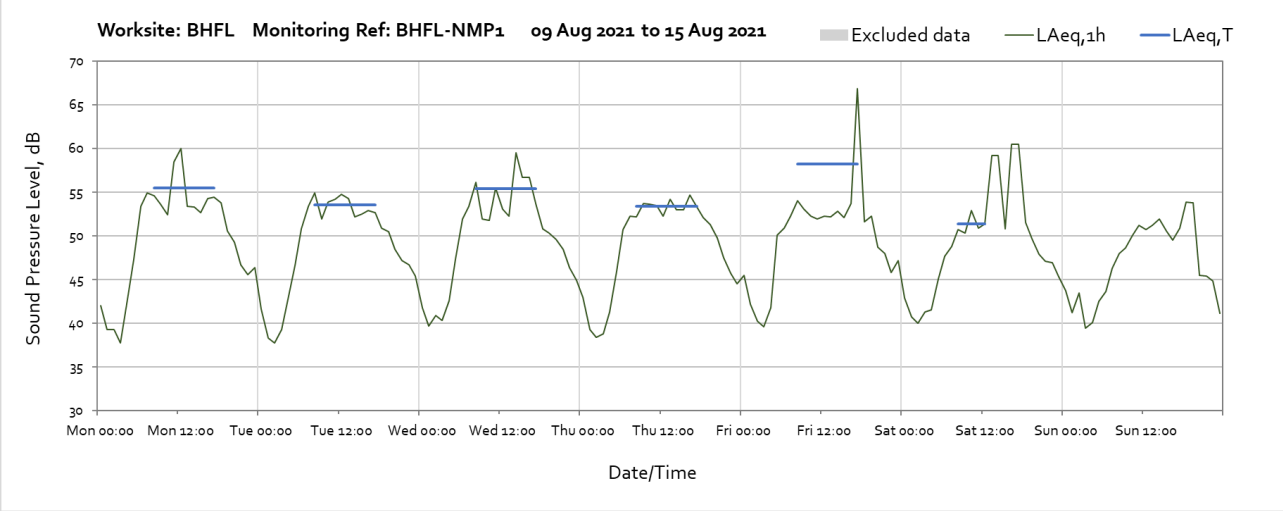
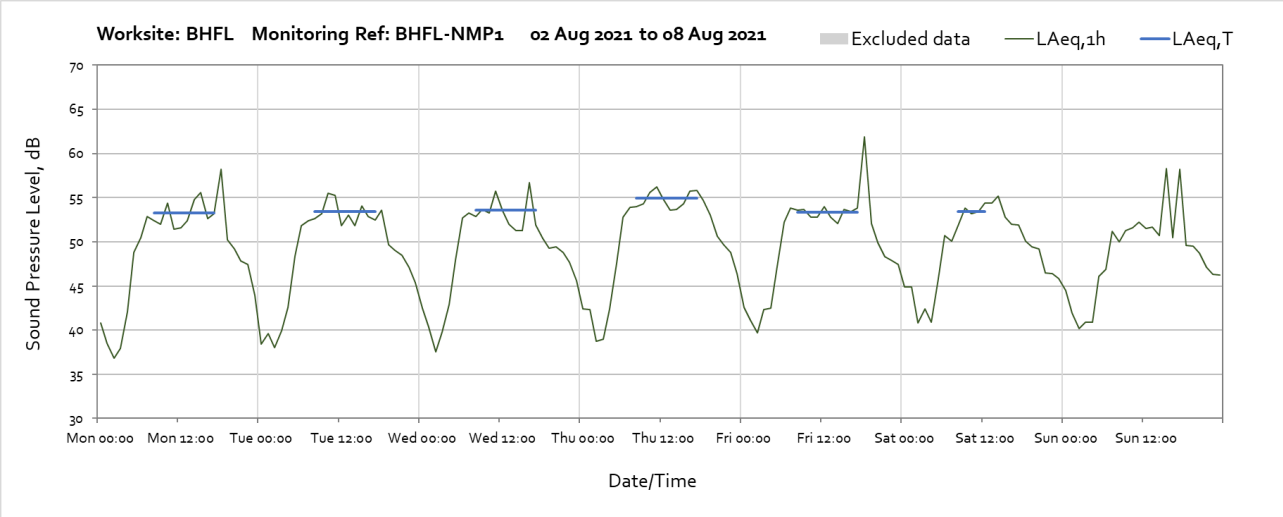


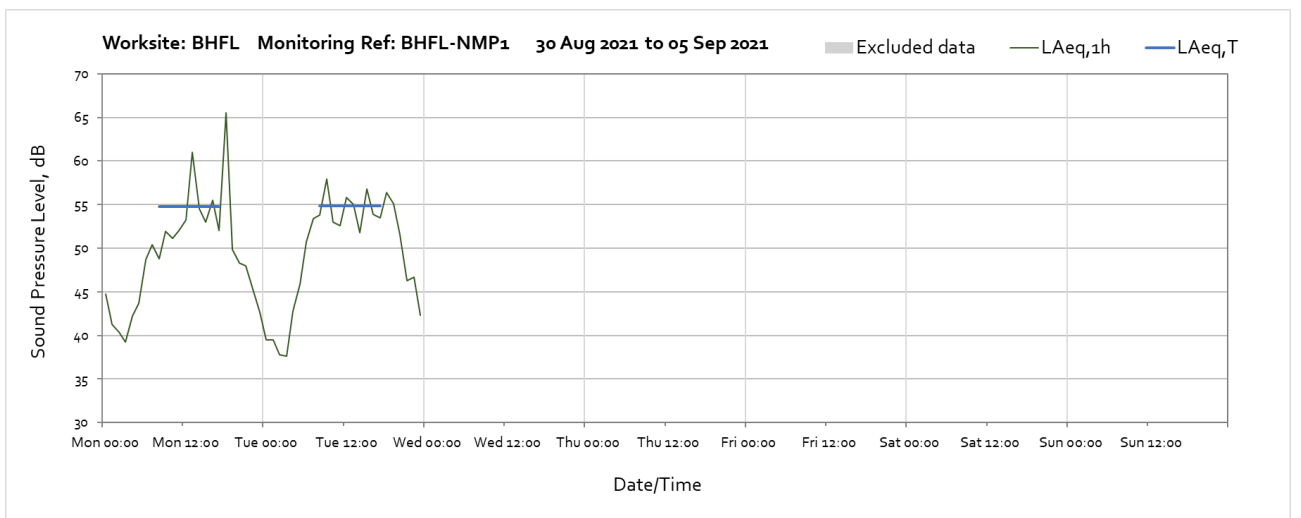
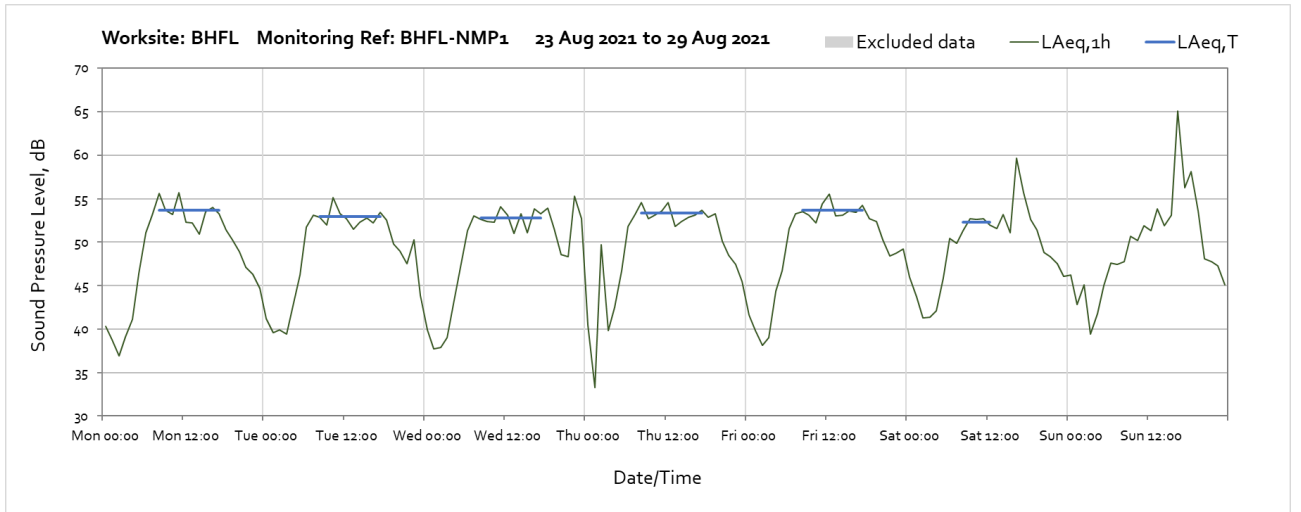




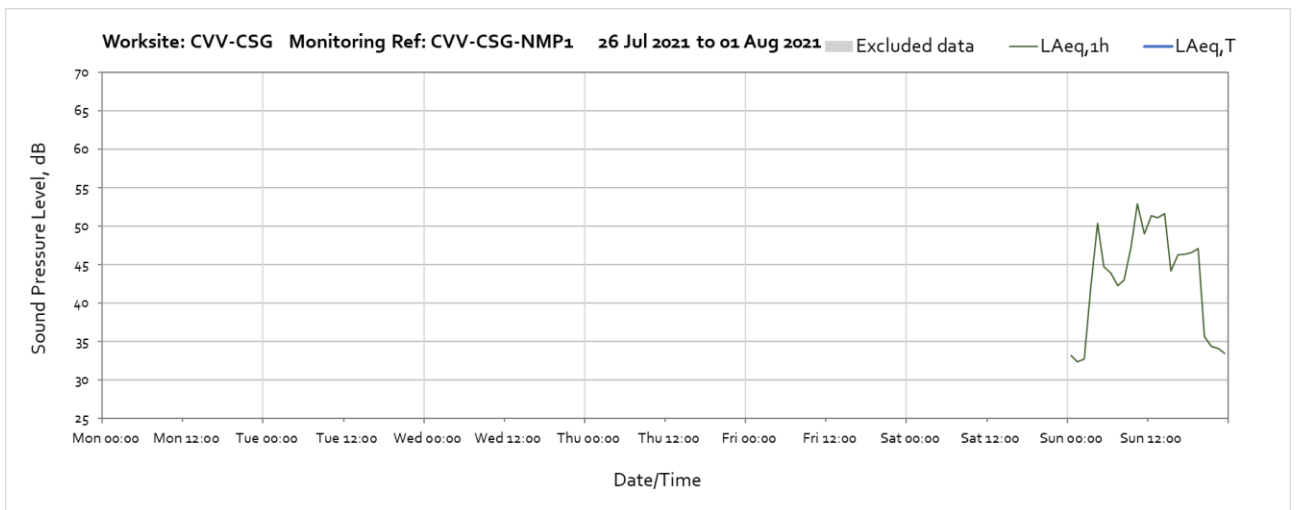
Worksite: BHFL - Monitoring Ref: BHFL-NMP1

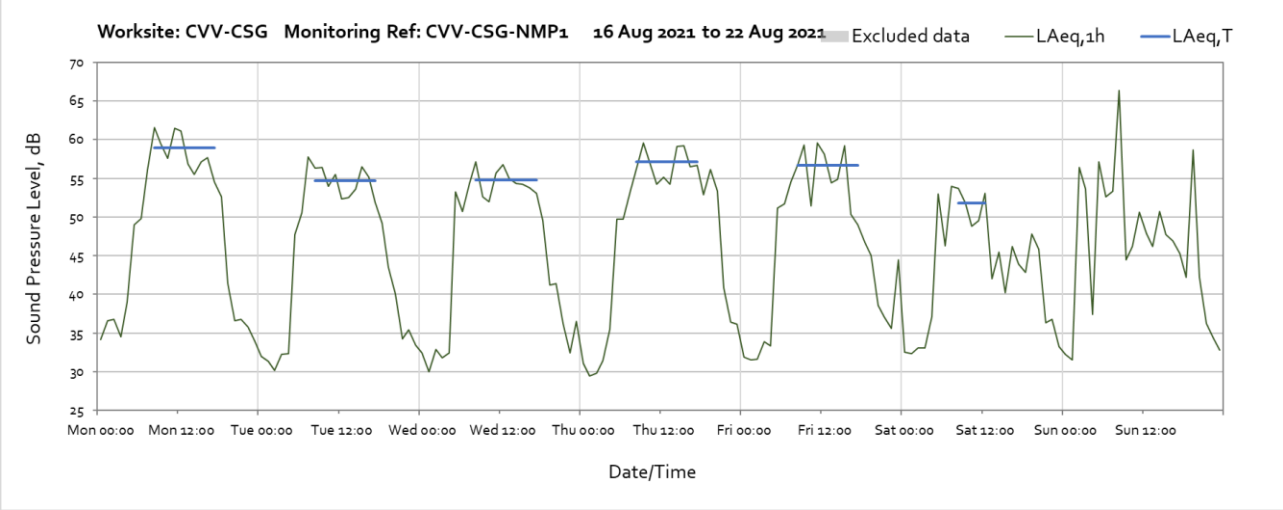
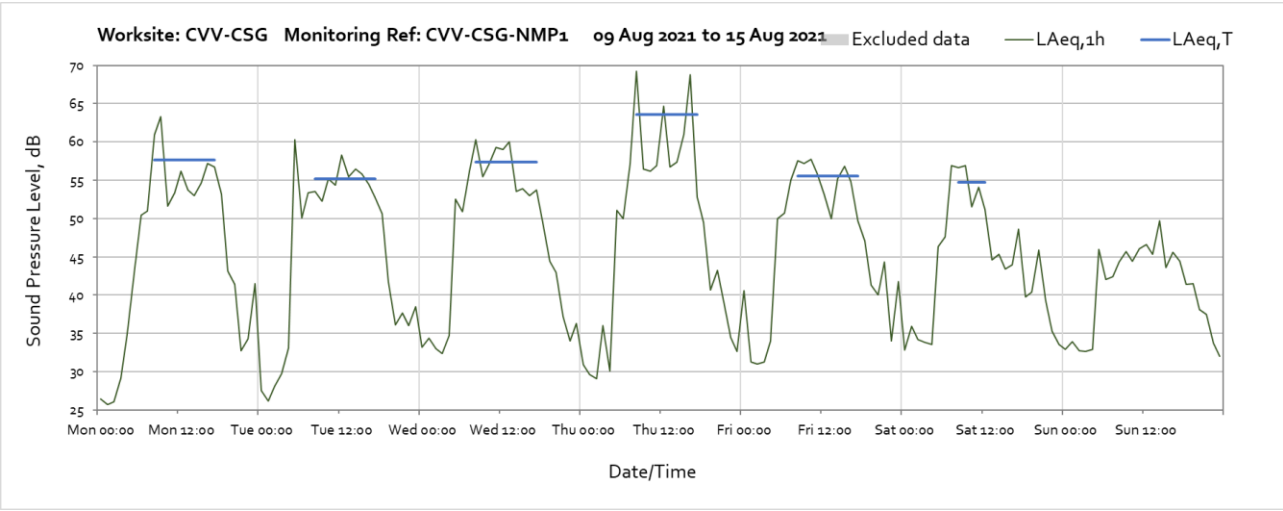
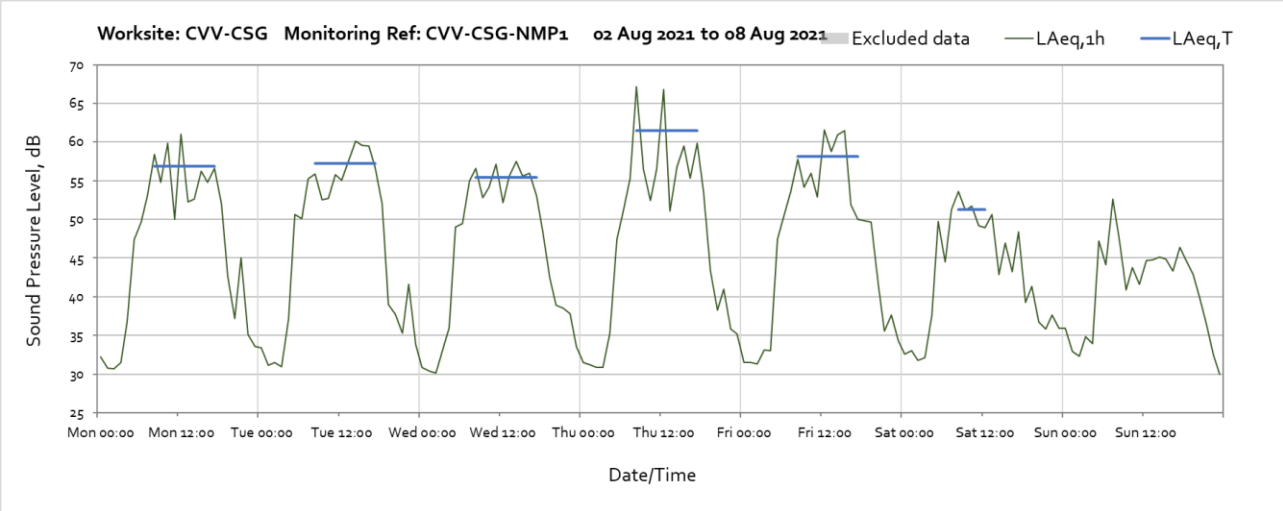


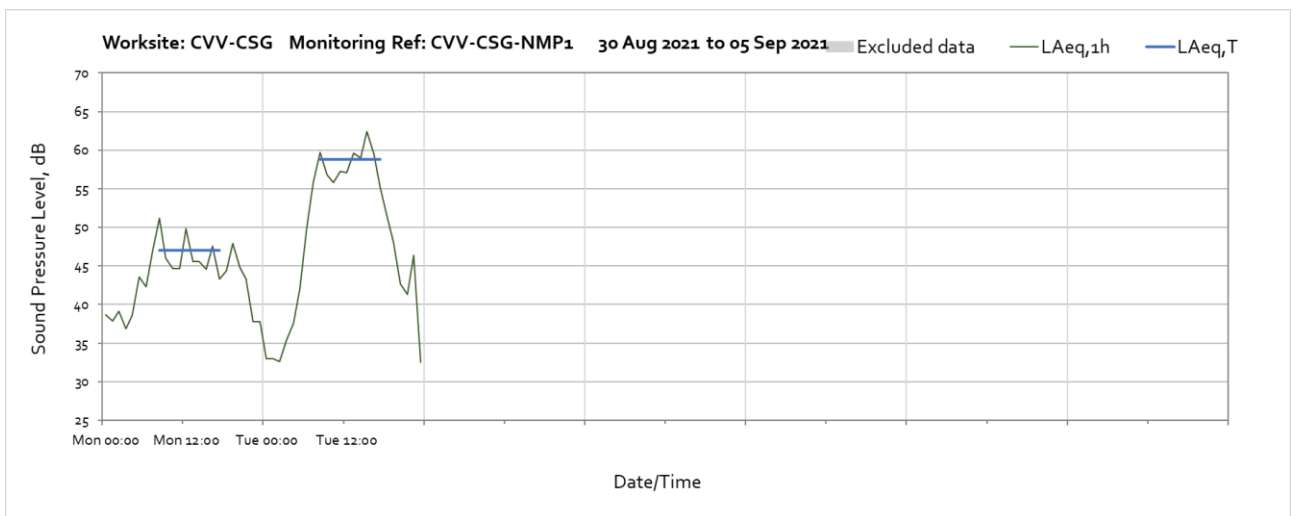
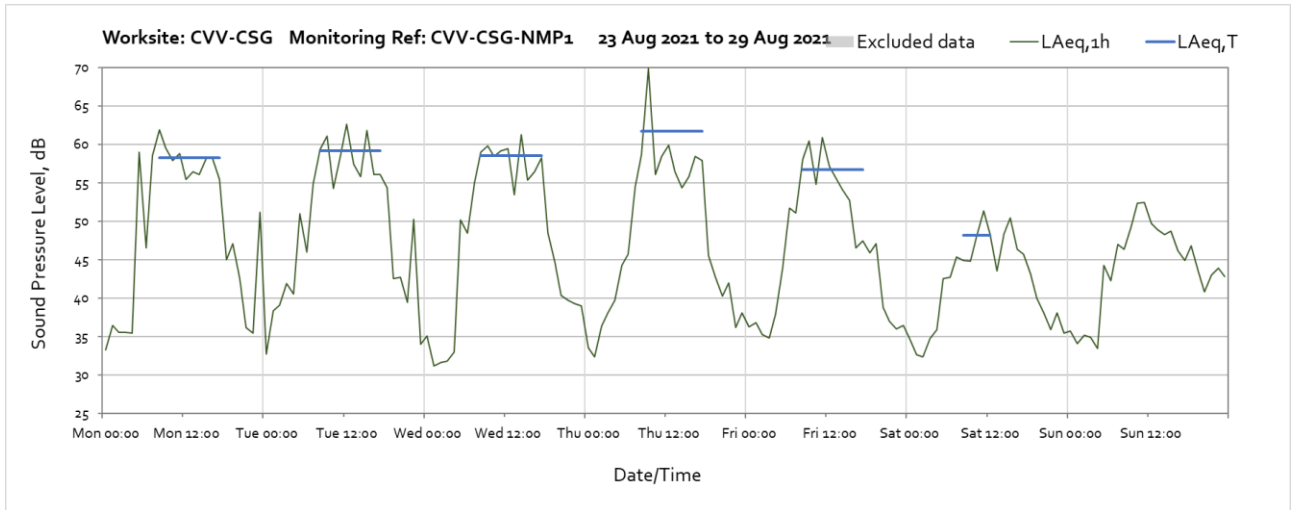




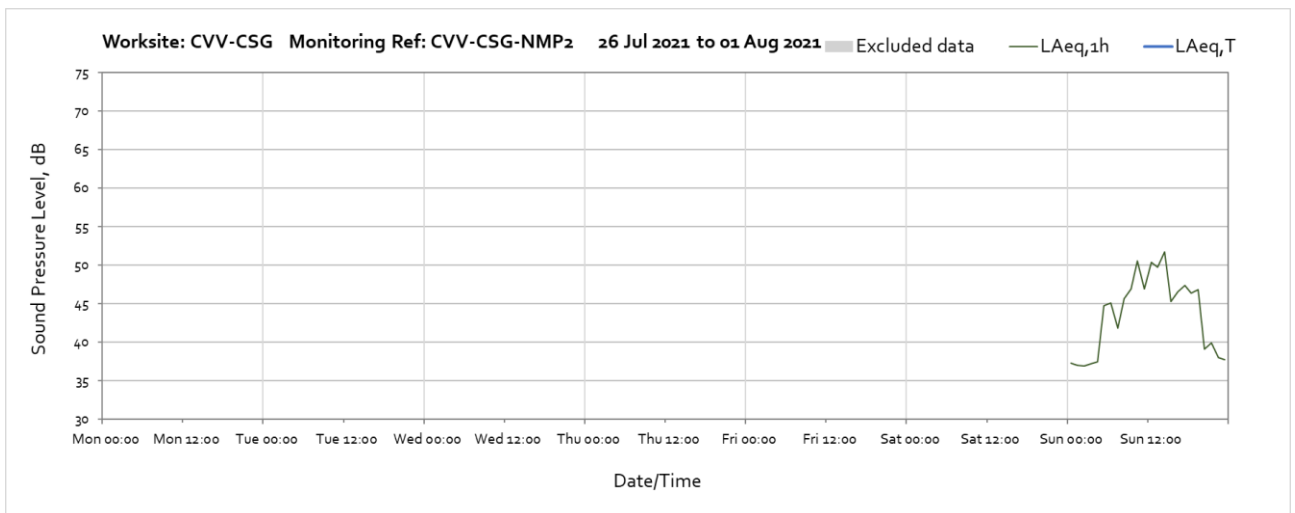
Worksite: CVV-CSG – Monitoring Ref: CVV-CSG-NMP1

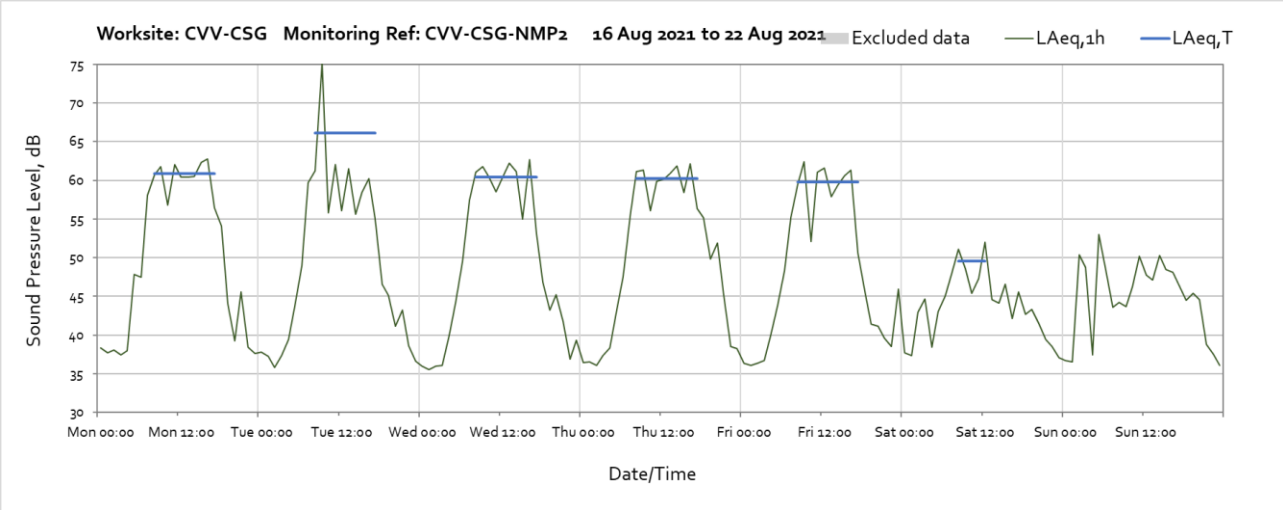
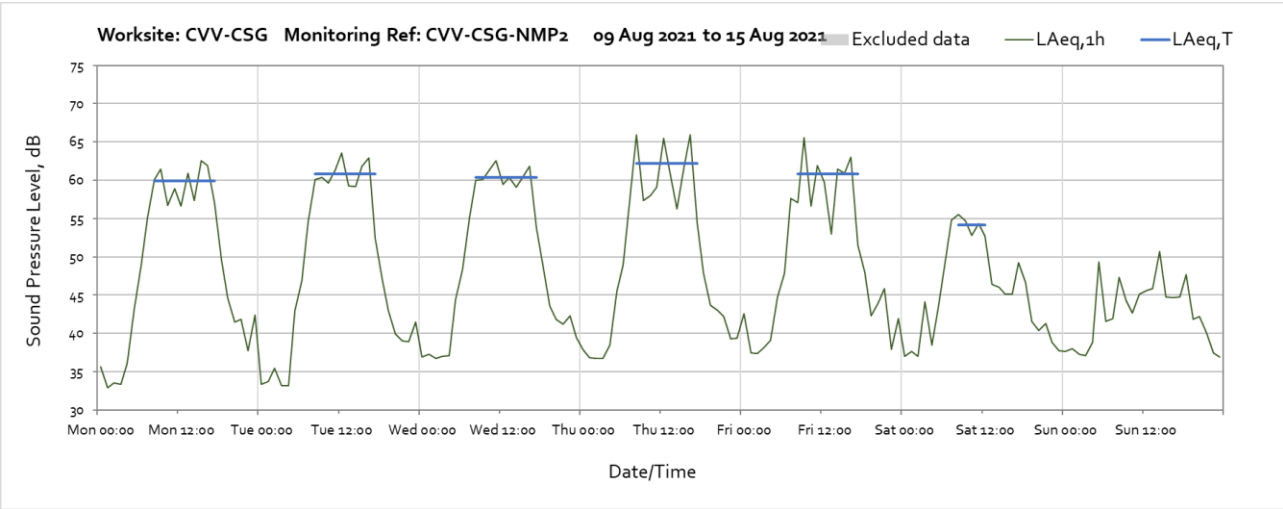
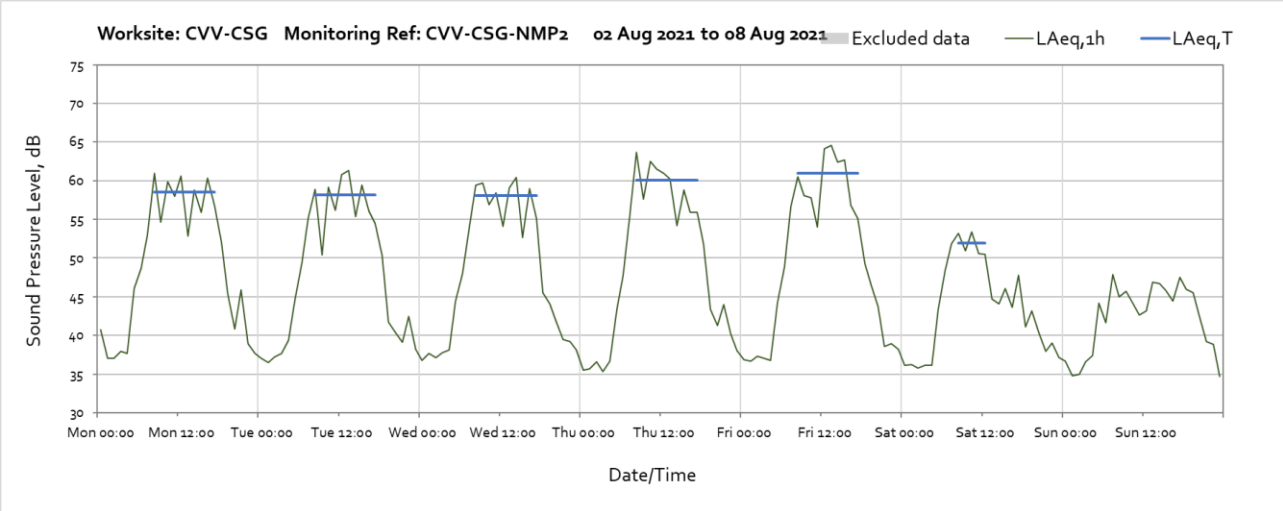


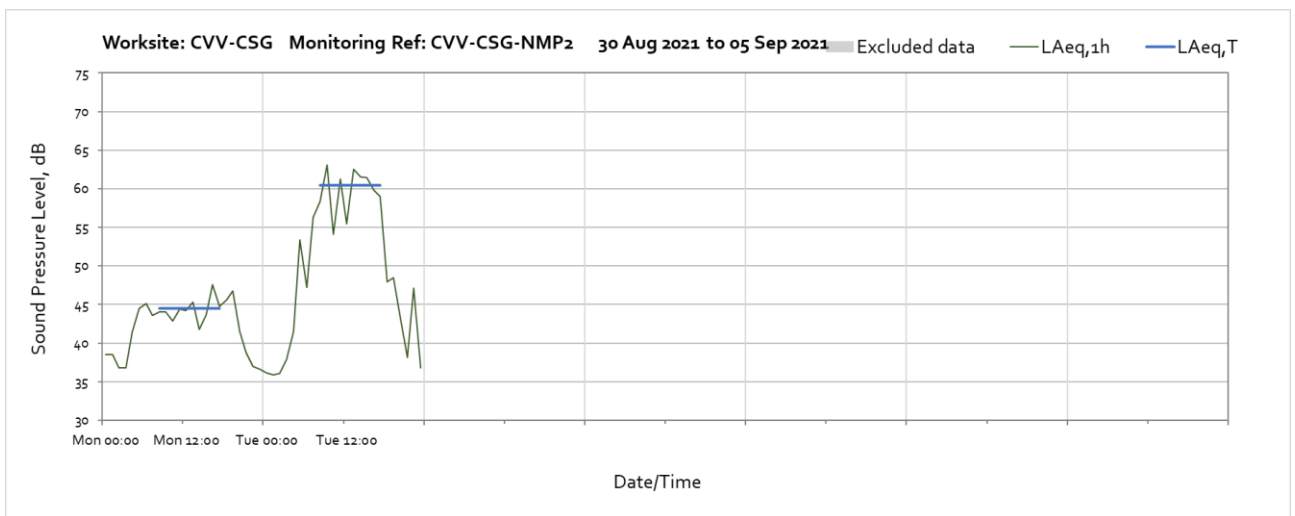
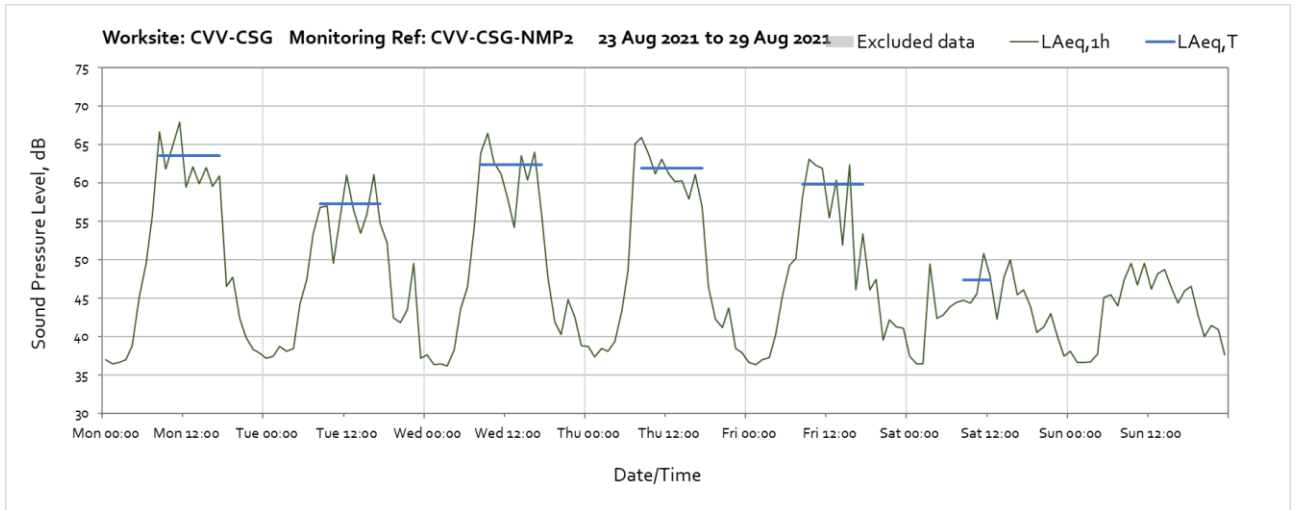




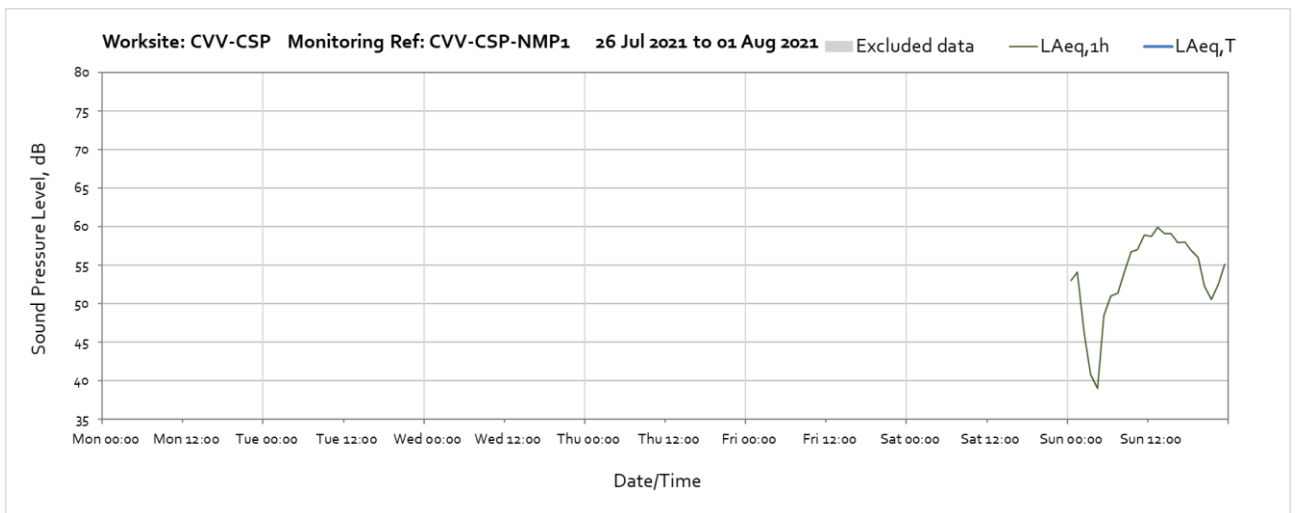
Worksite: CVV-CSG – Monitoring Ref: CVV-CSG-NMP2

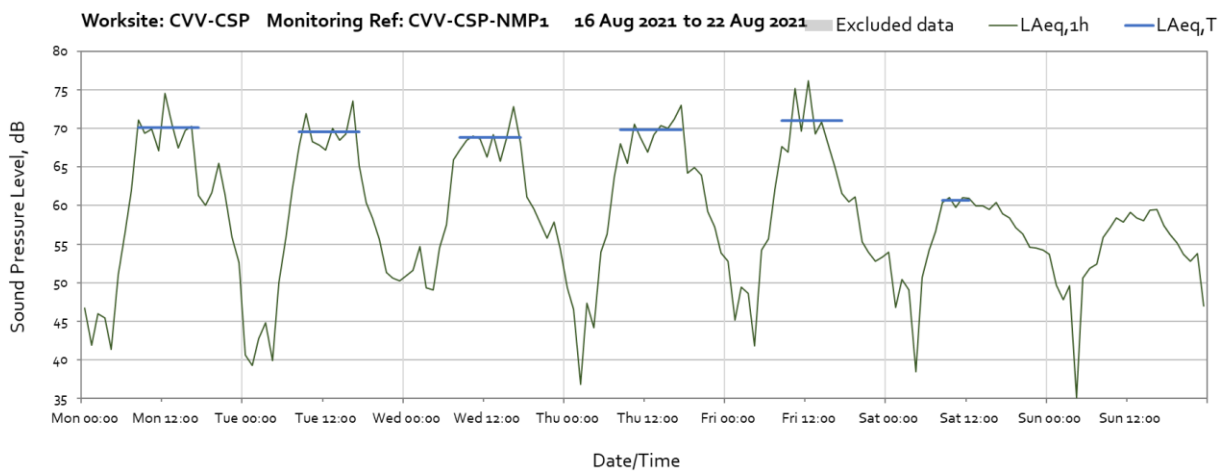
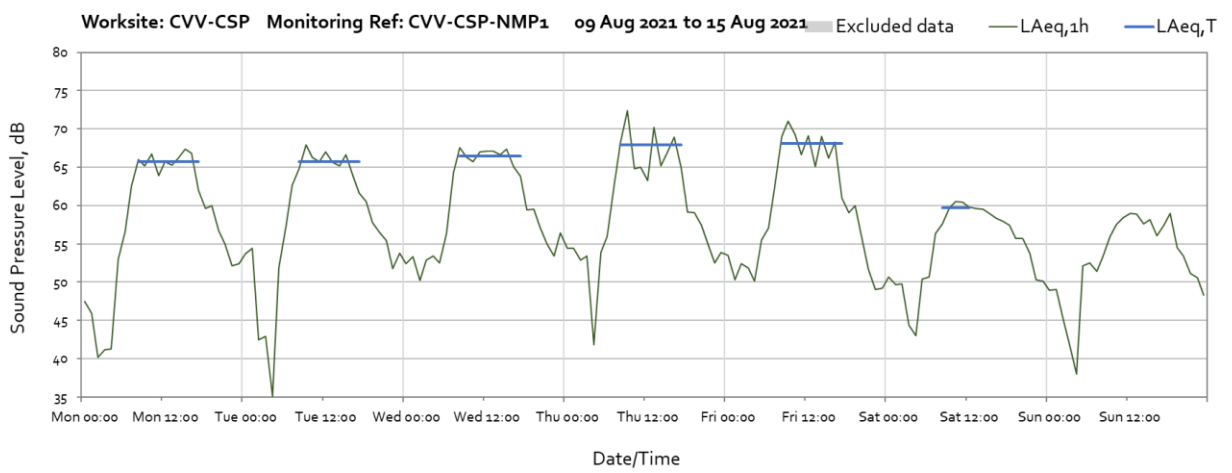
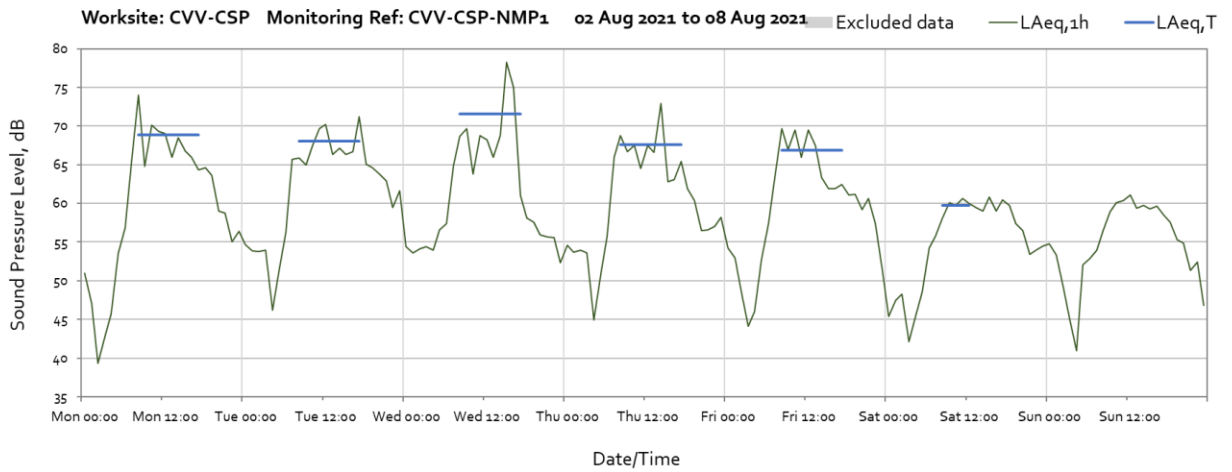


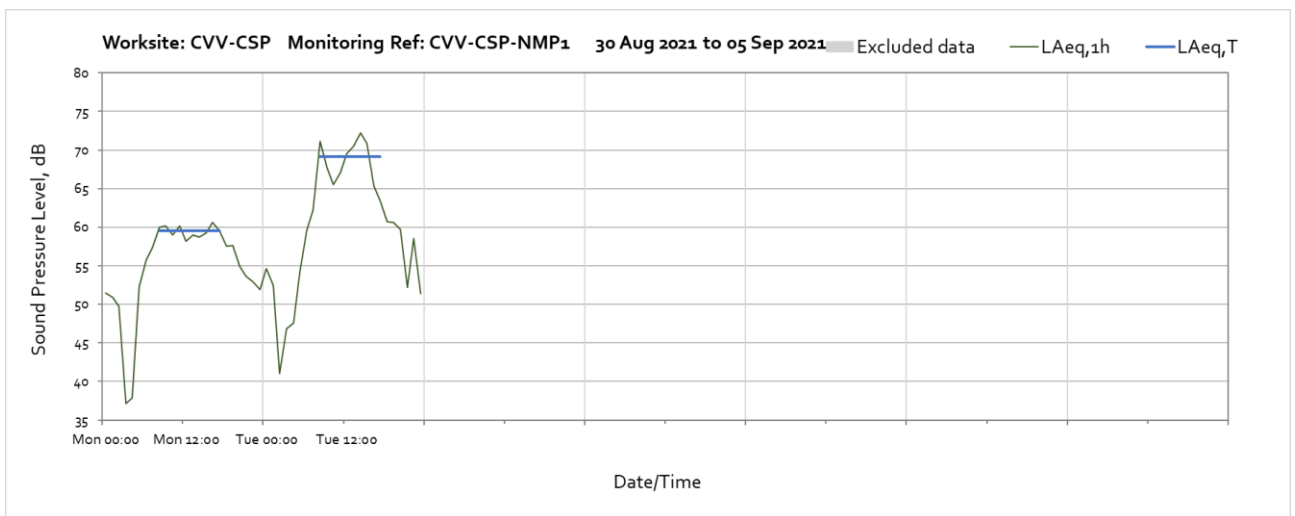
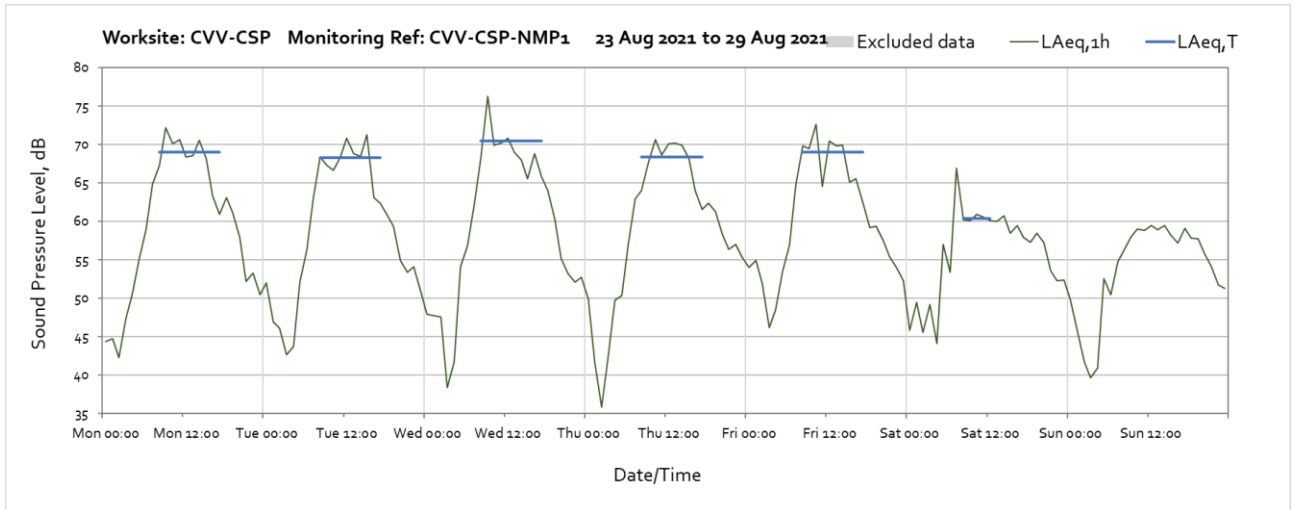




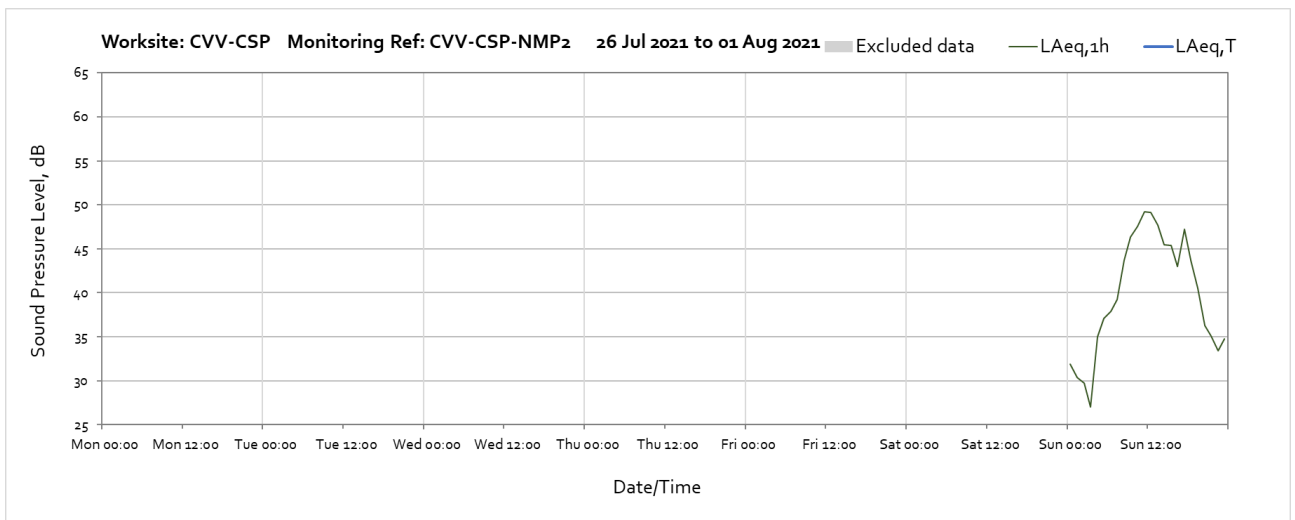
Worksite: CVV-CSP – Monitoring Ref: CVV-CSP-NMP1

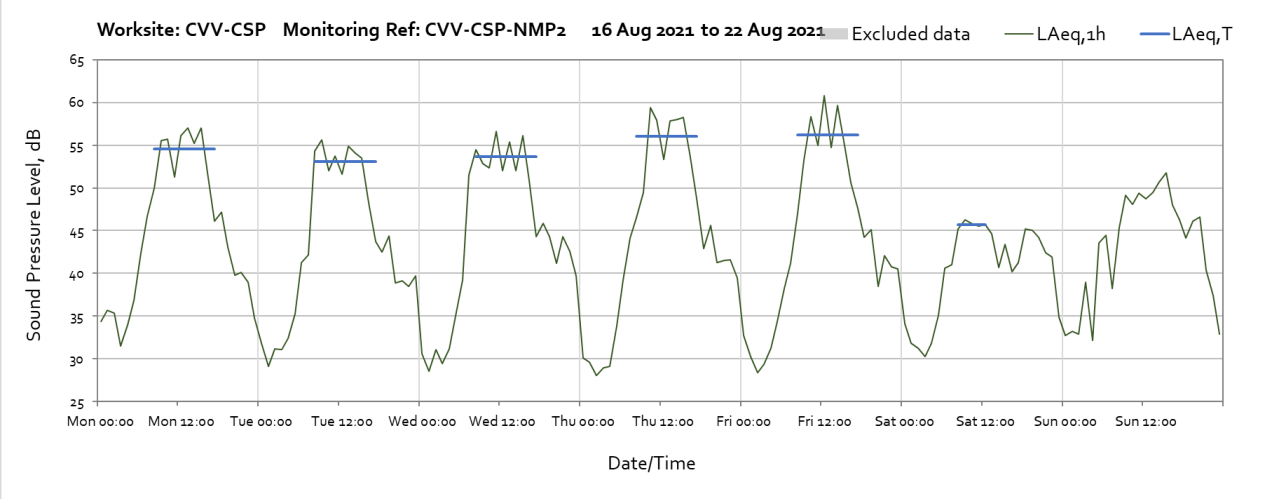
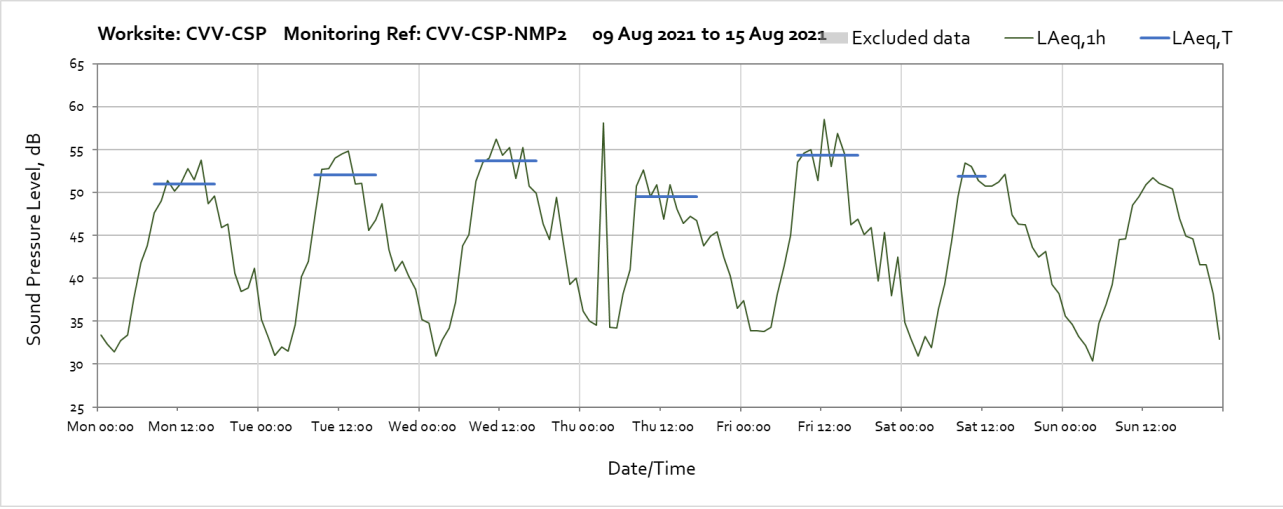
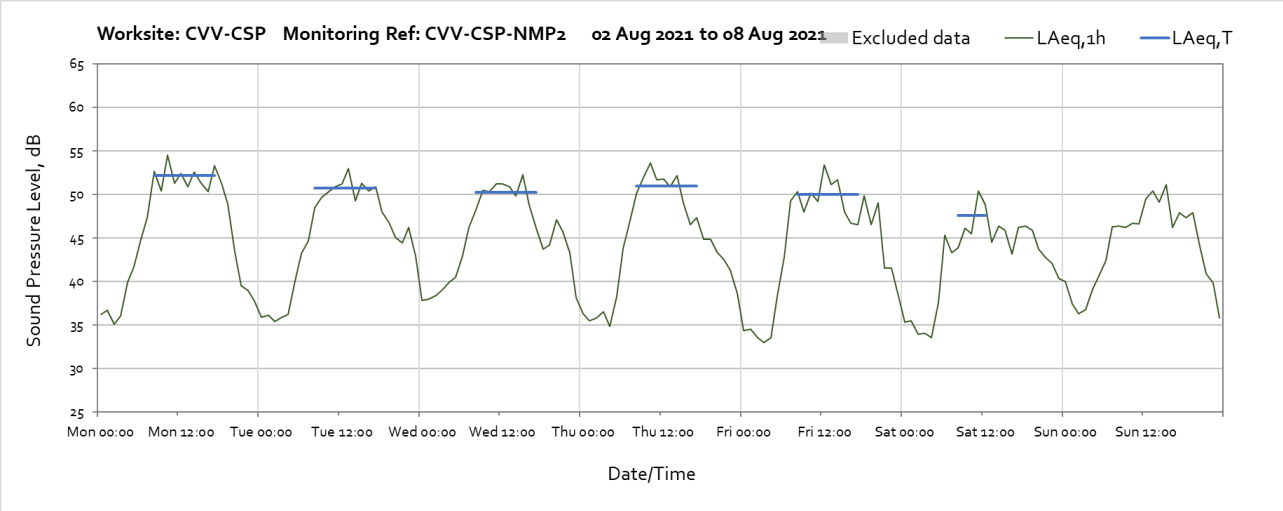


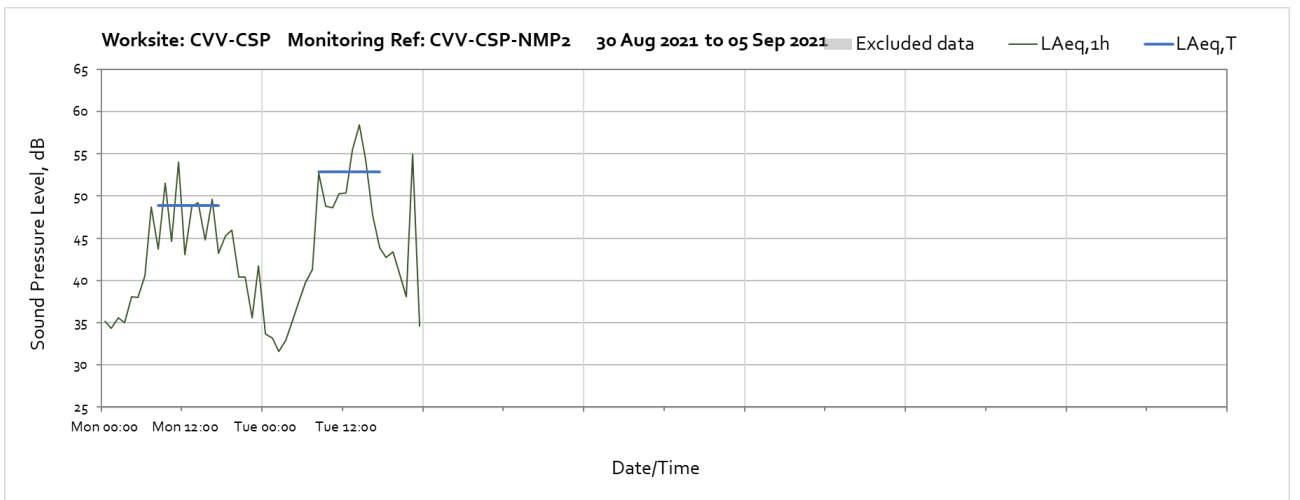
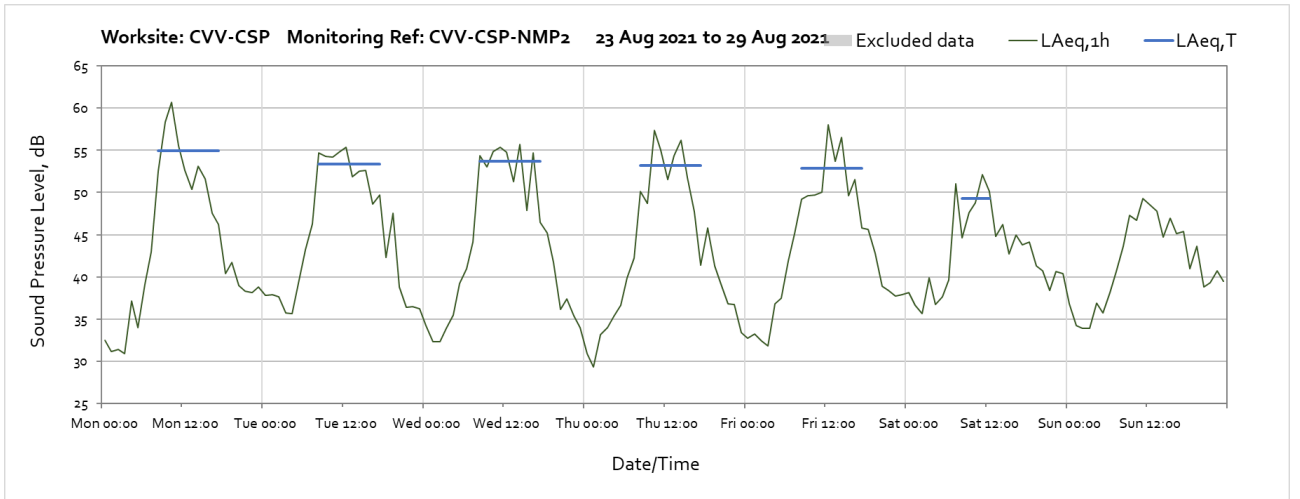




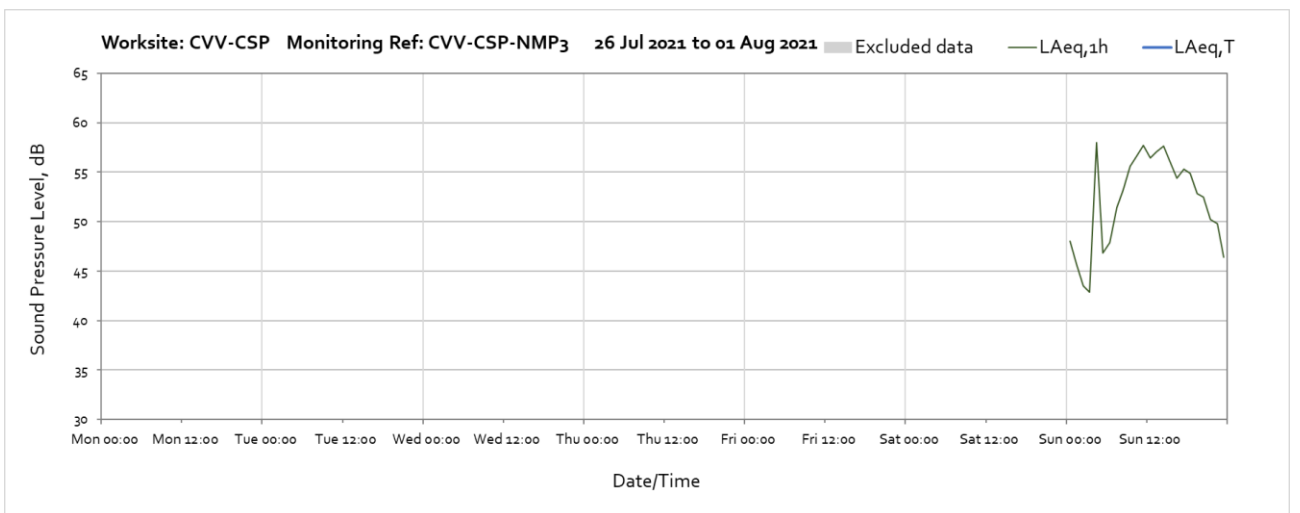
Worksite: CVV-CSP – Monitoring Ref: CVV-CSP-NMP2

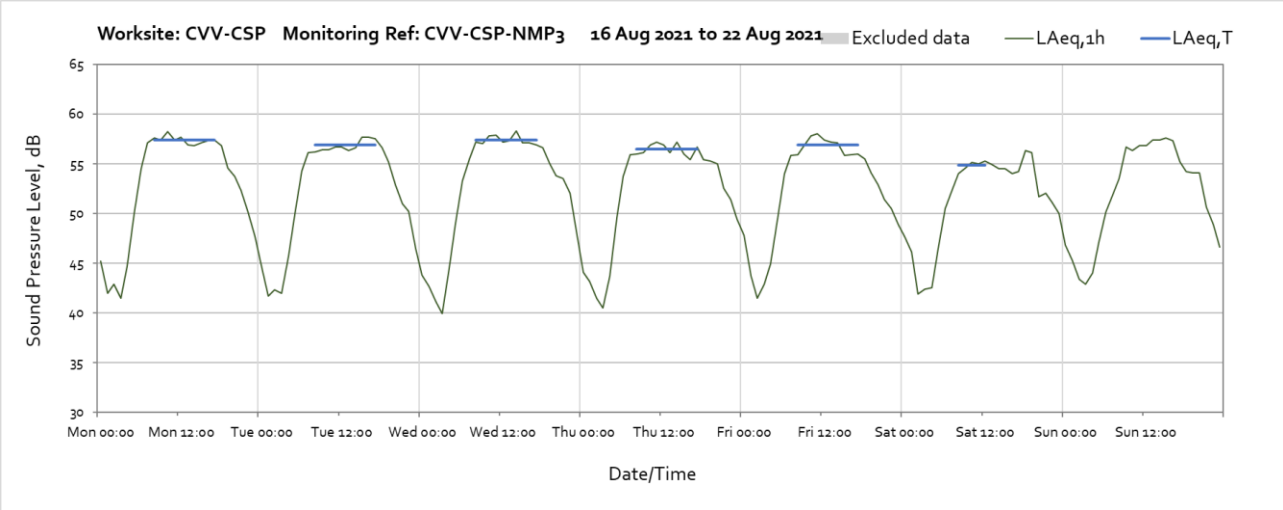
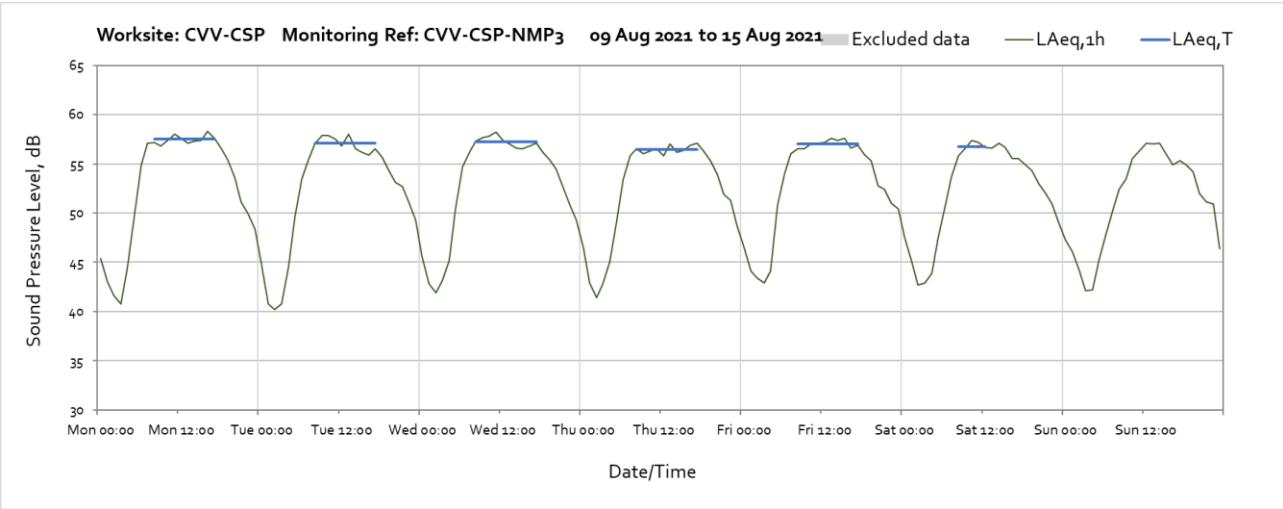
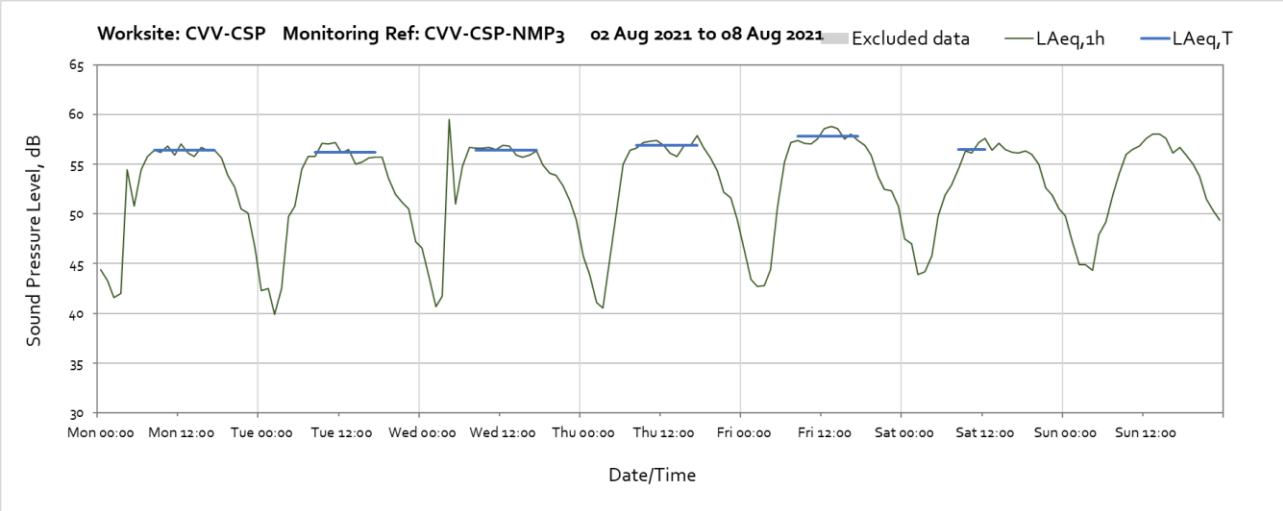


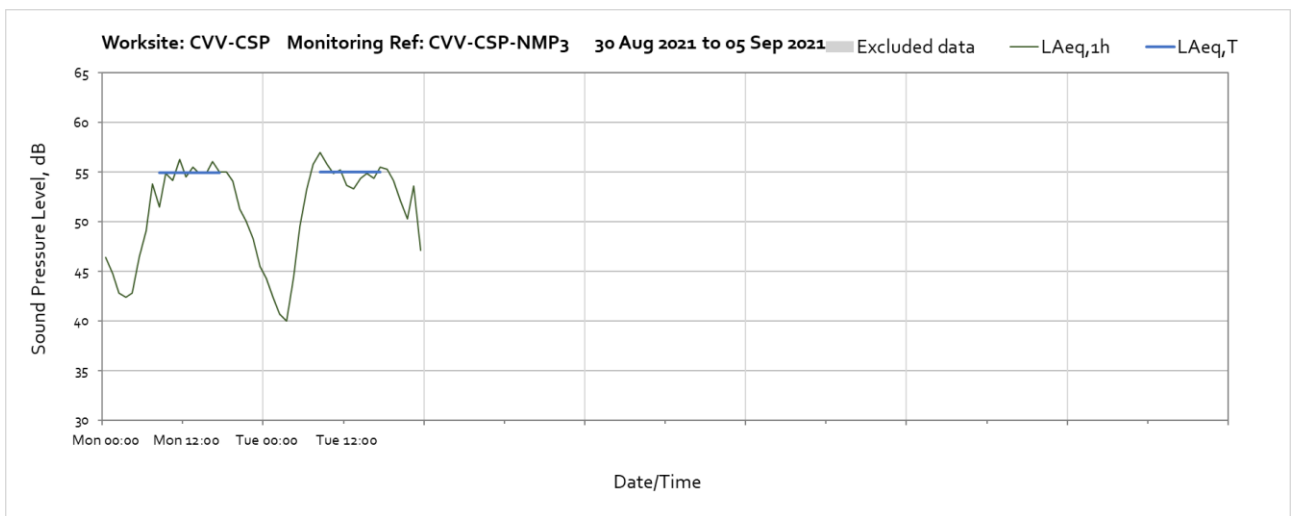
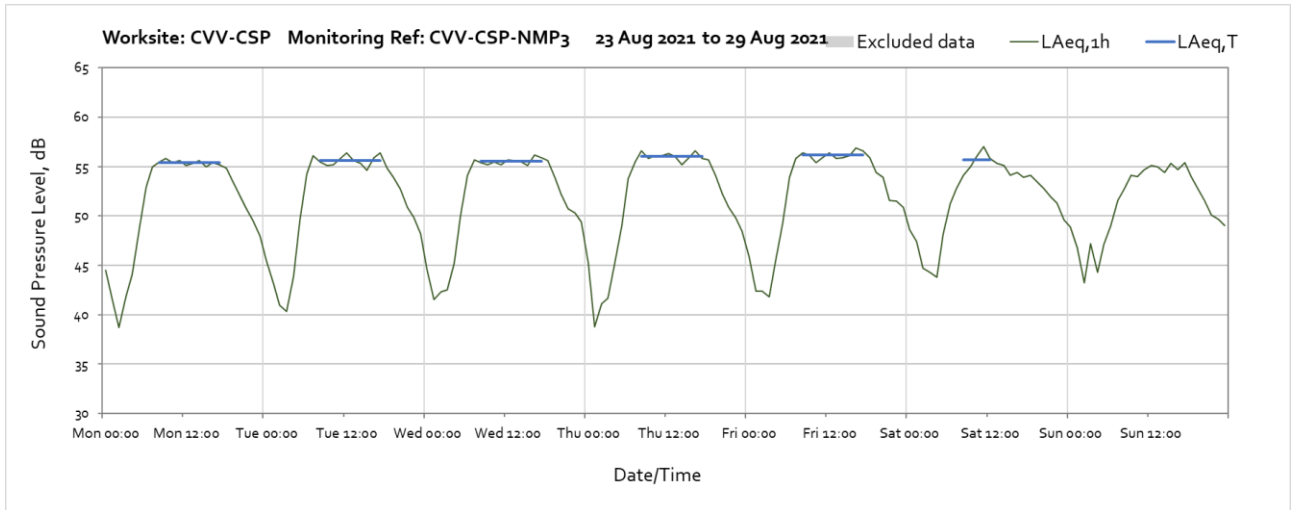




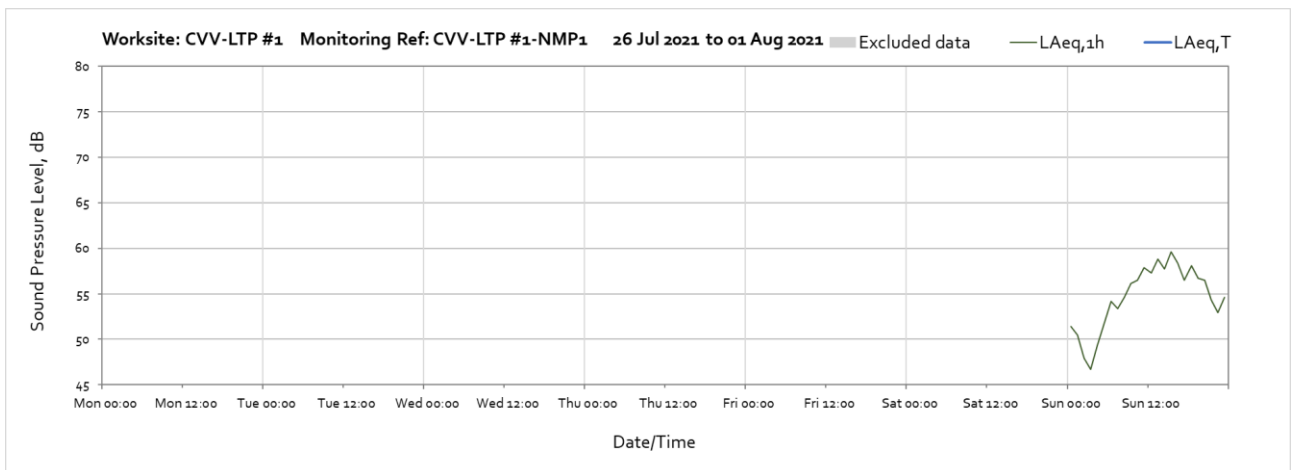
Worksite: CVV-CSP – Monitoring Ref: CVV-CSP-NMP3

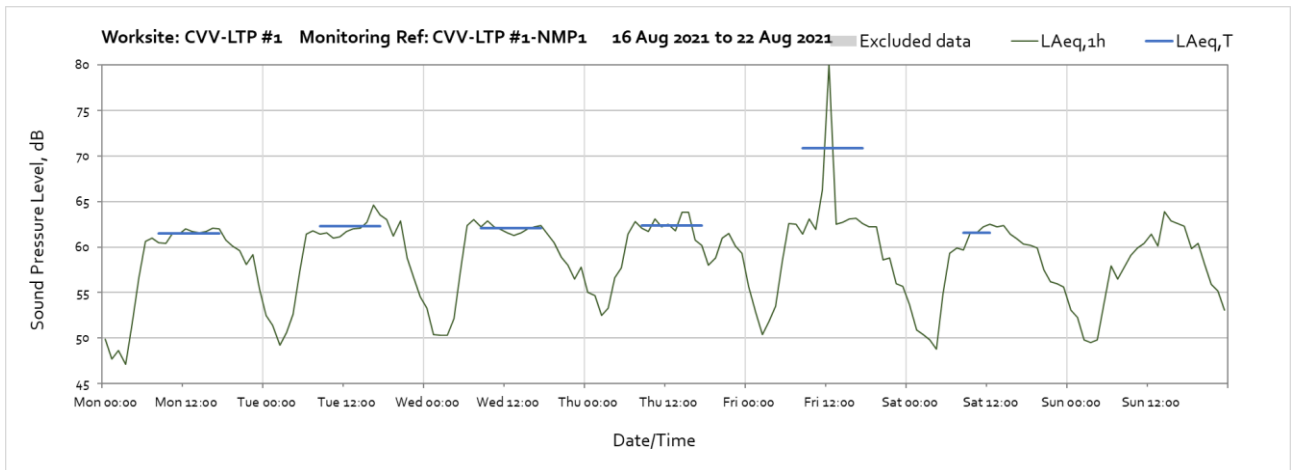
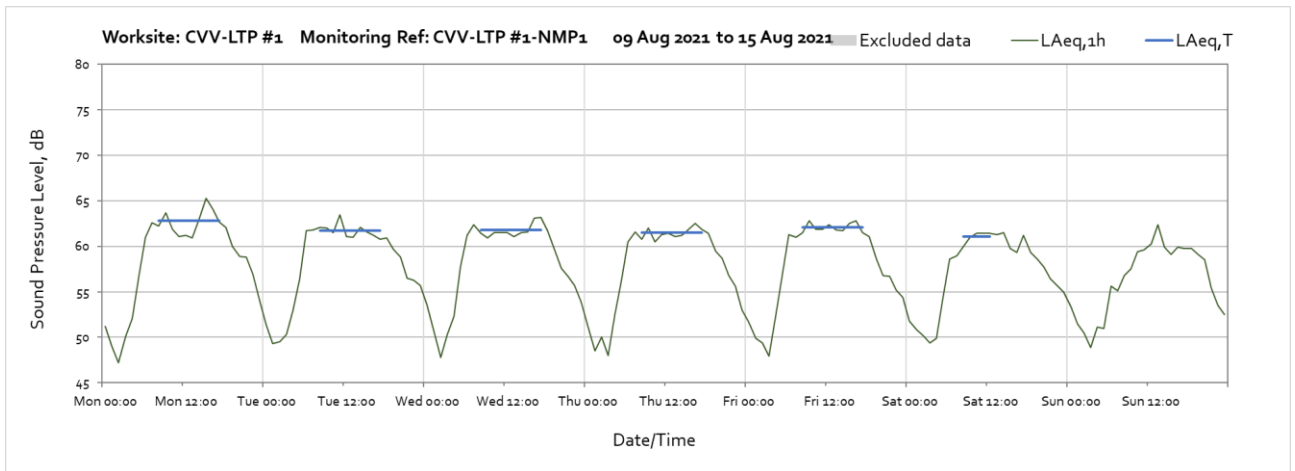
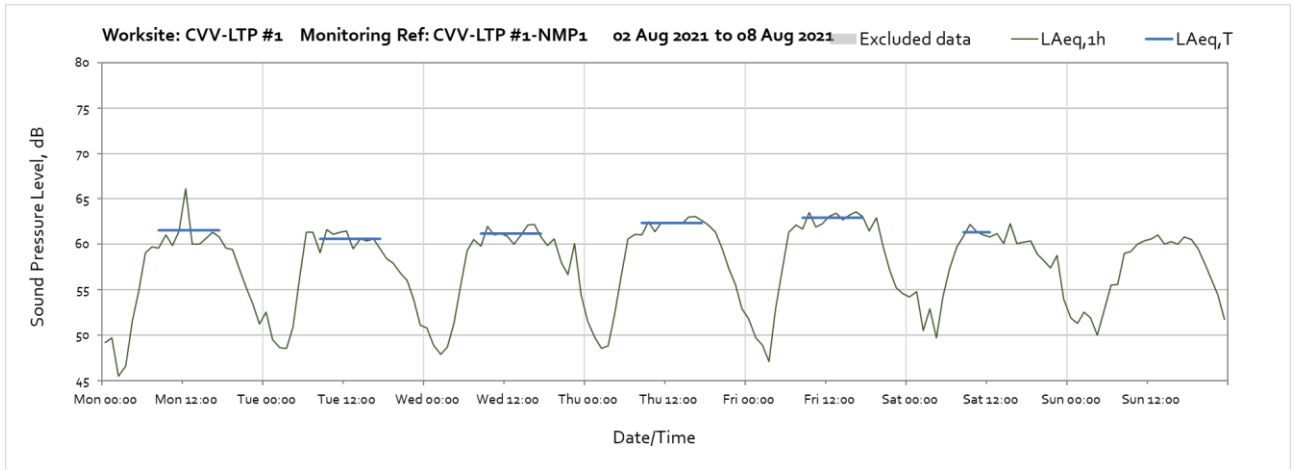


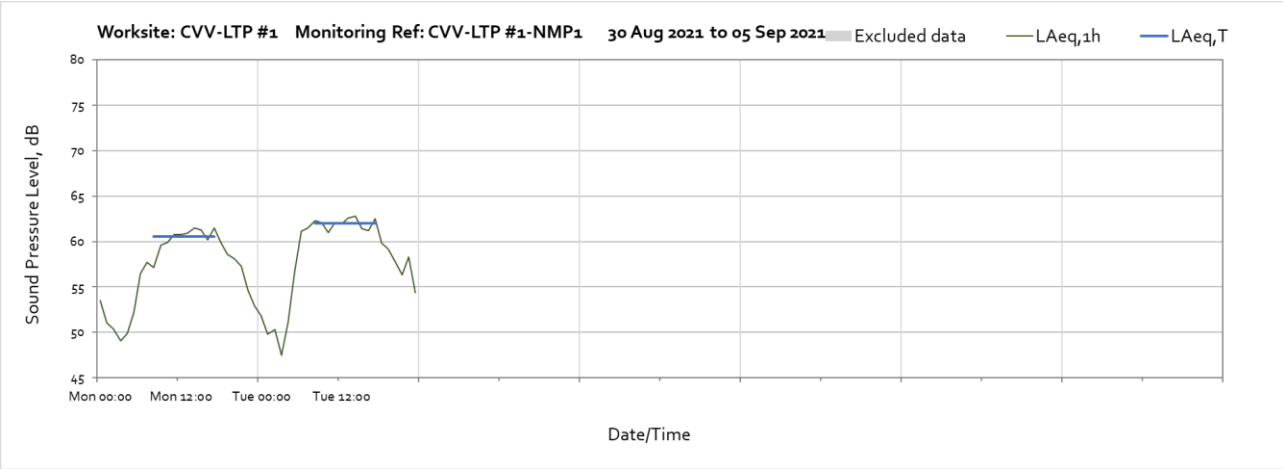
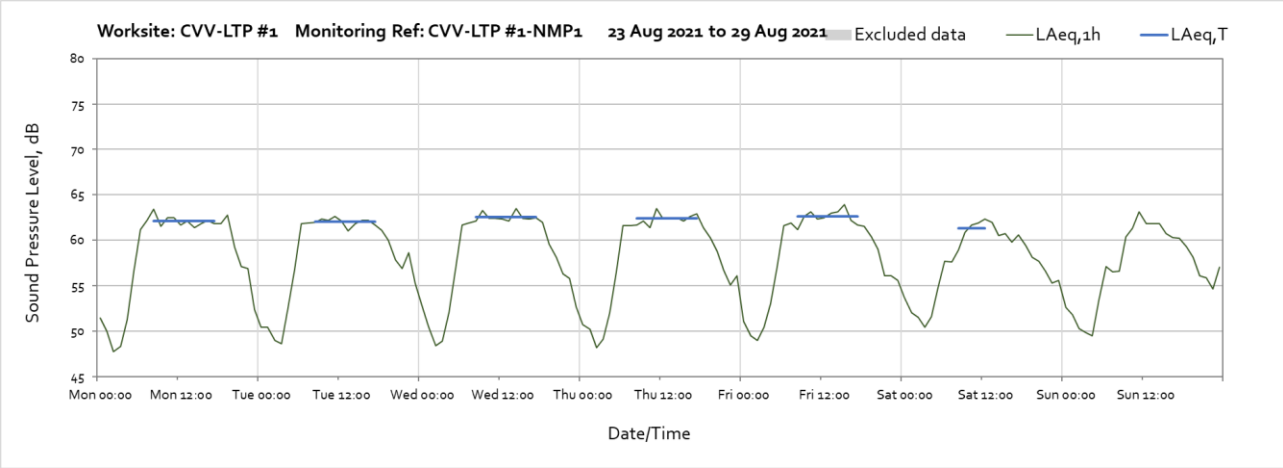




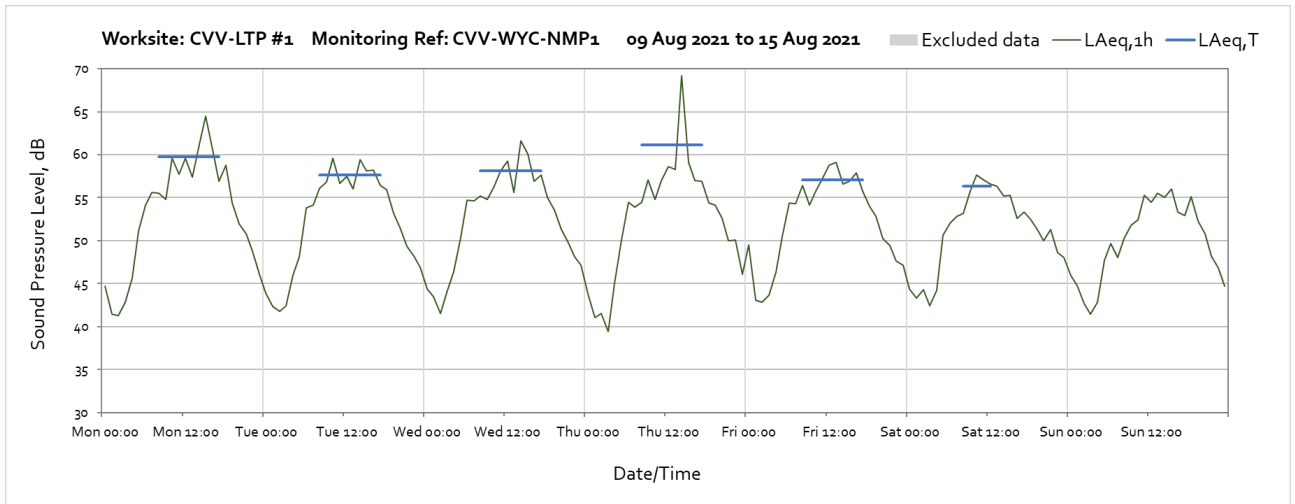
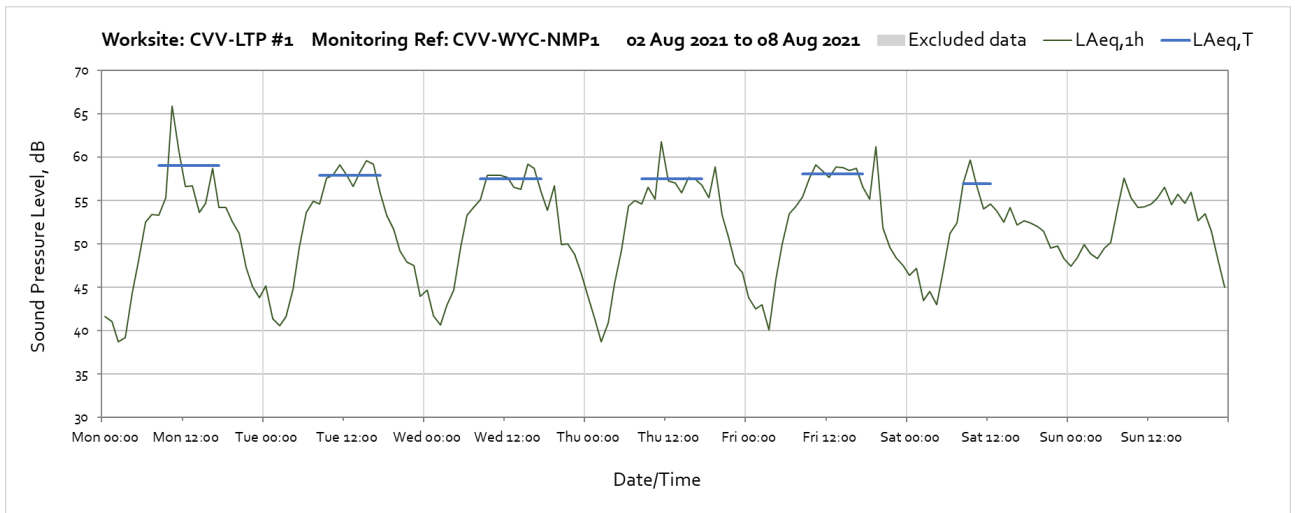
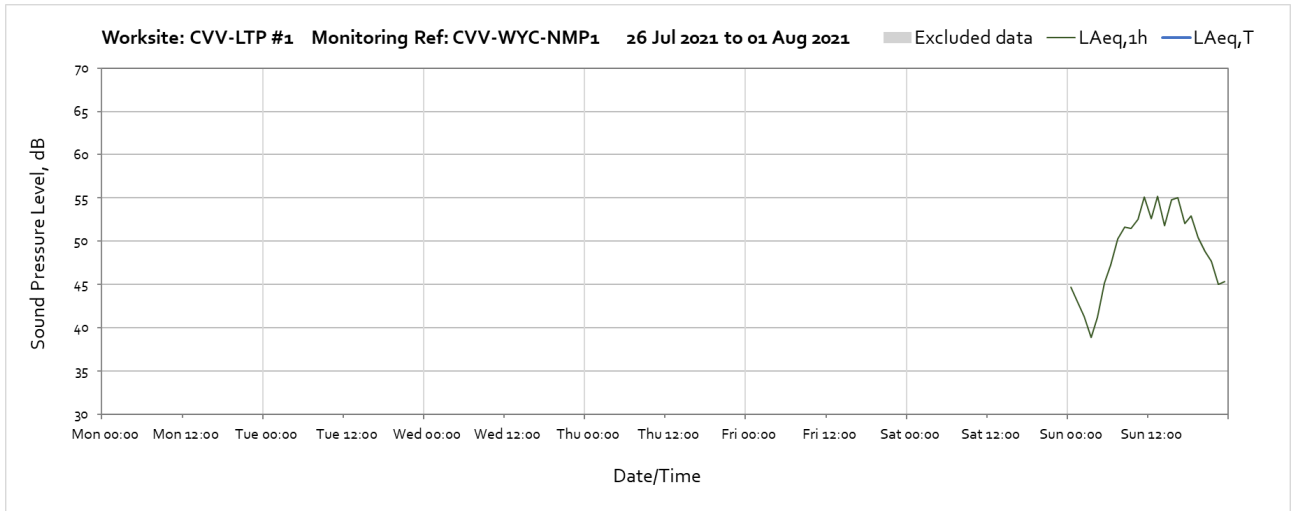
Worksite: CVV-LPT#1 - Monitoring Ref: CVV-LPT#1-NMP1

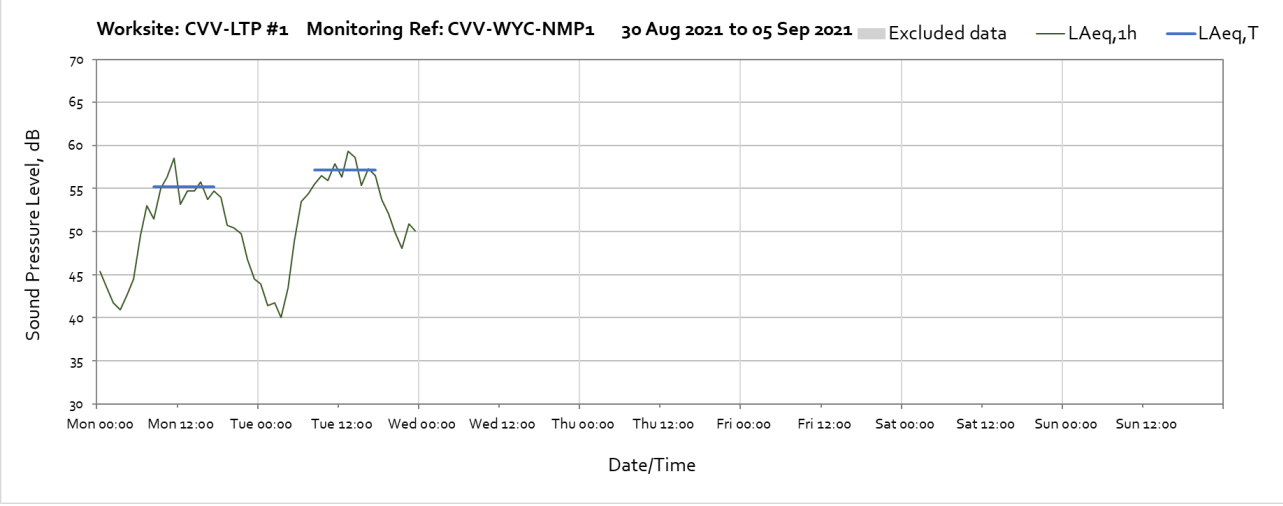
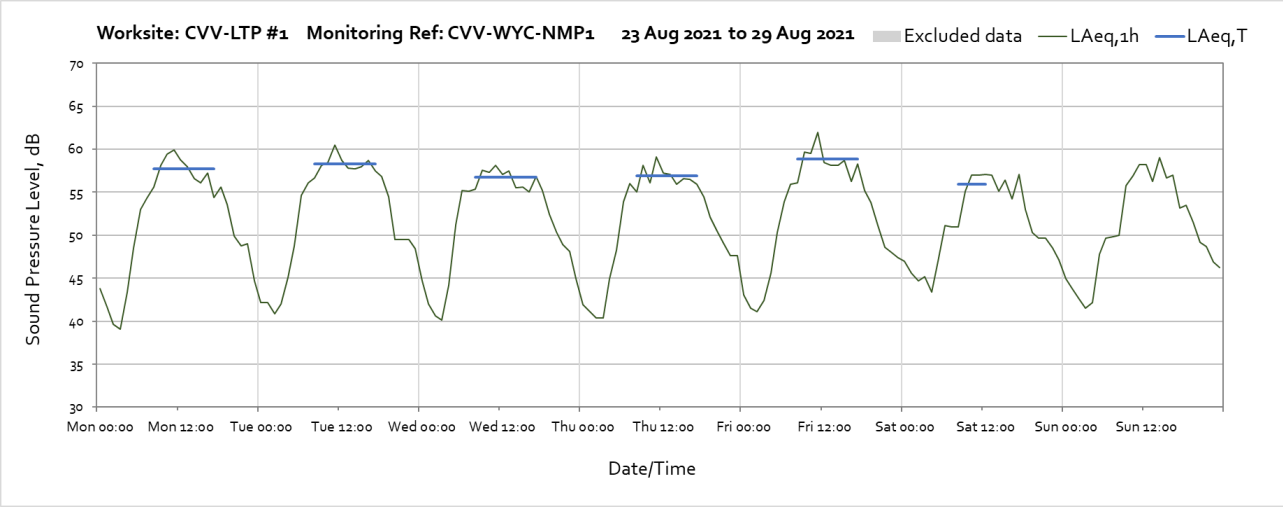
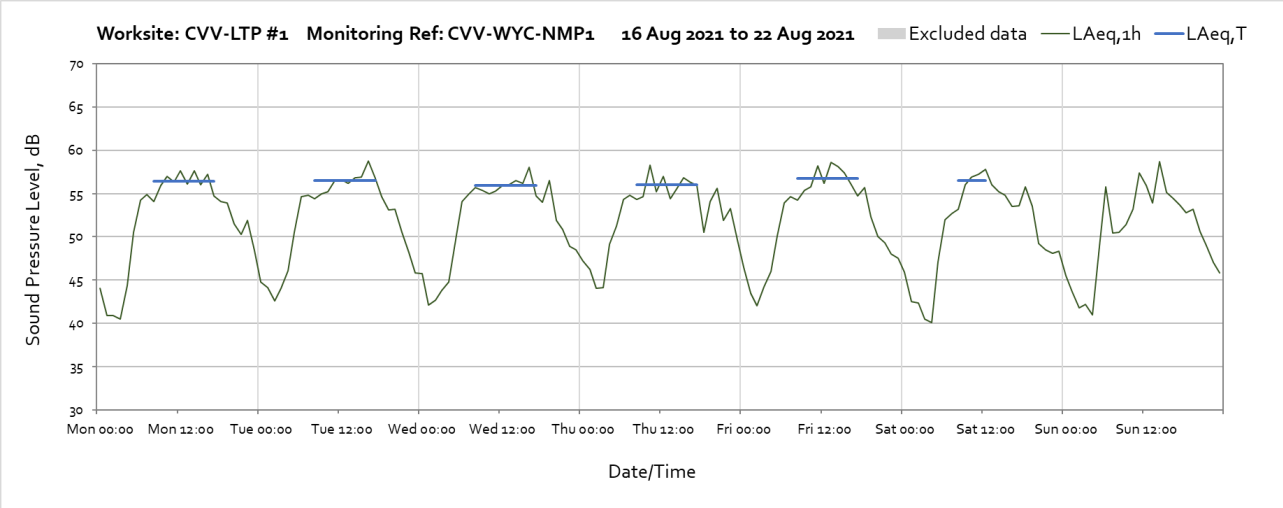




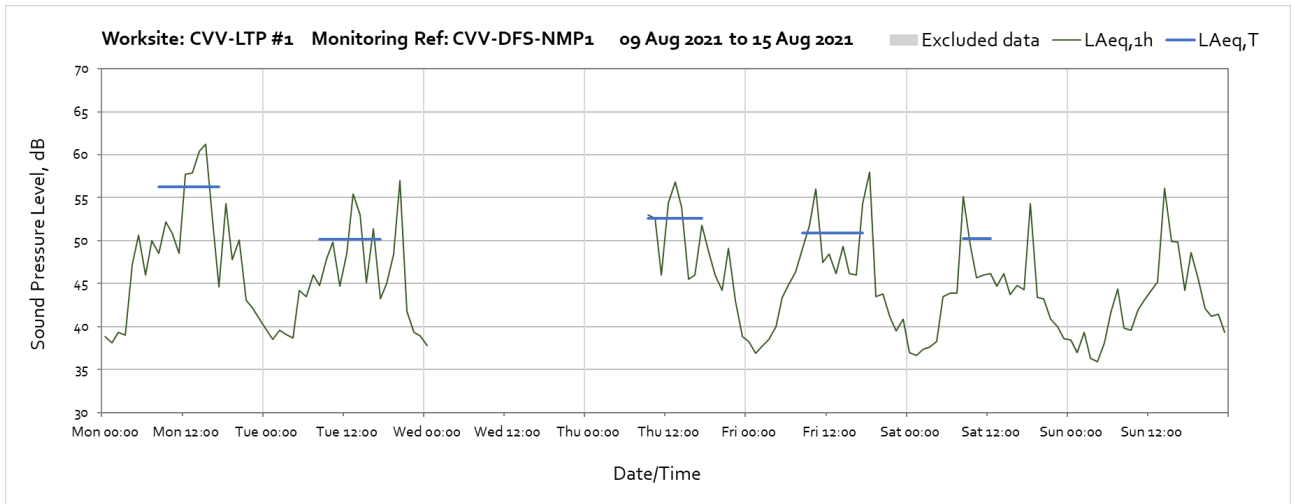
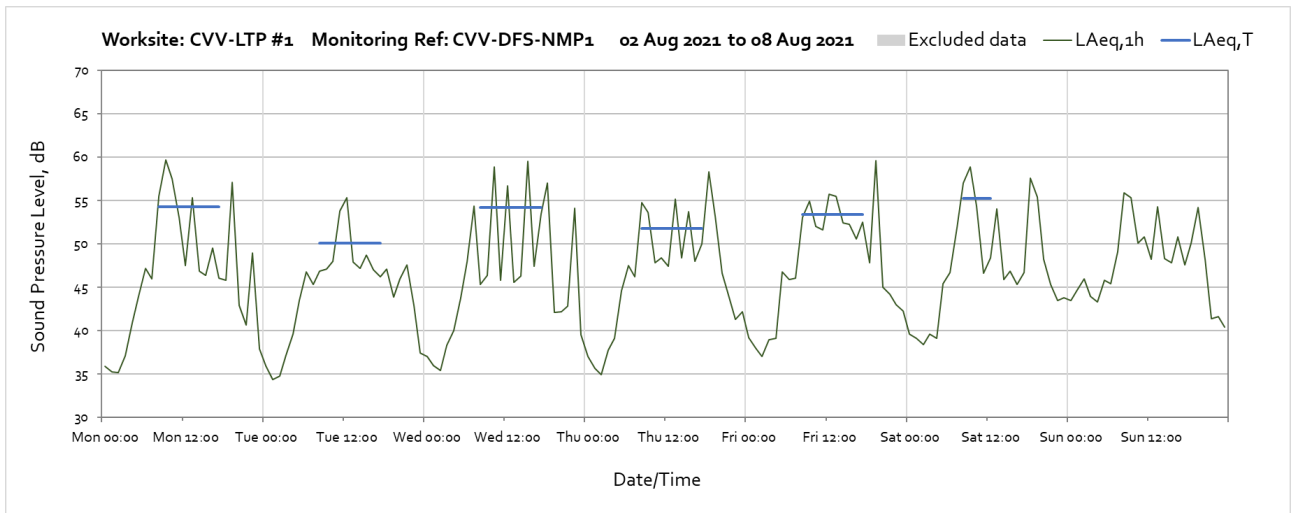
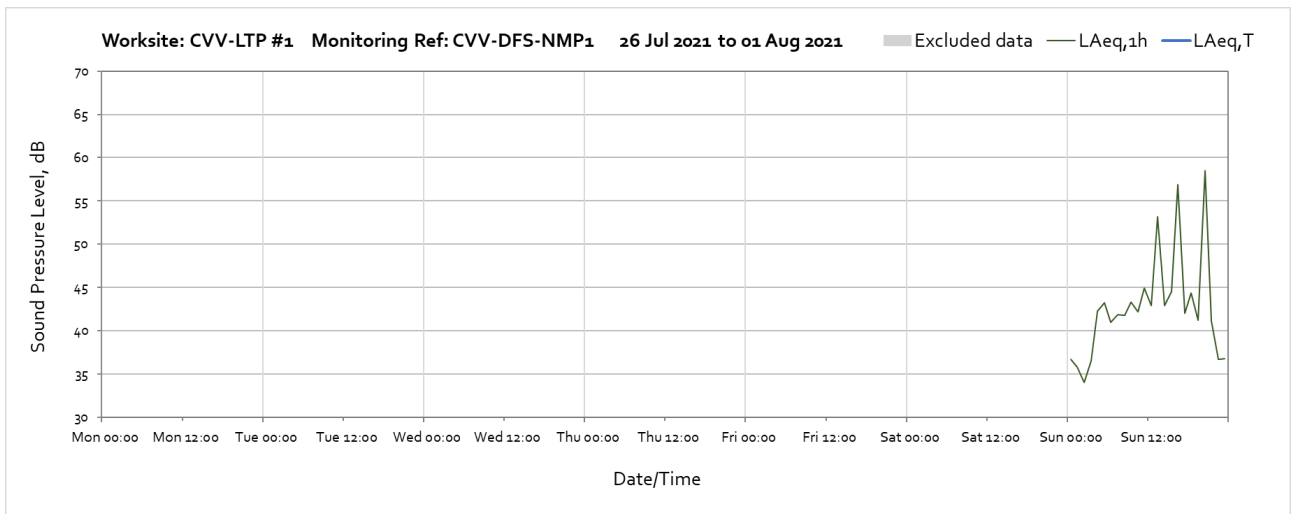


Worksite: CVV-LPT#1 – Monitoring Ref: CVV-WYC-NMP1



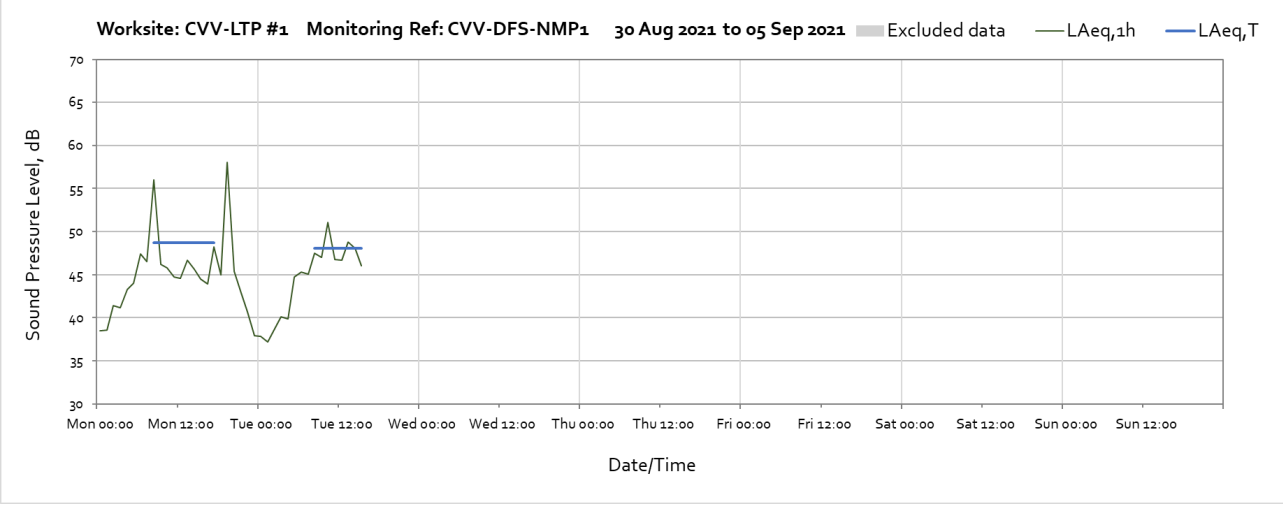
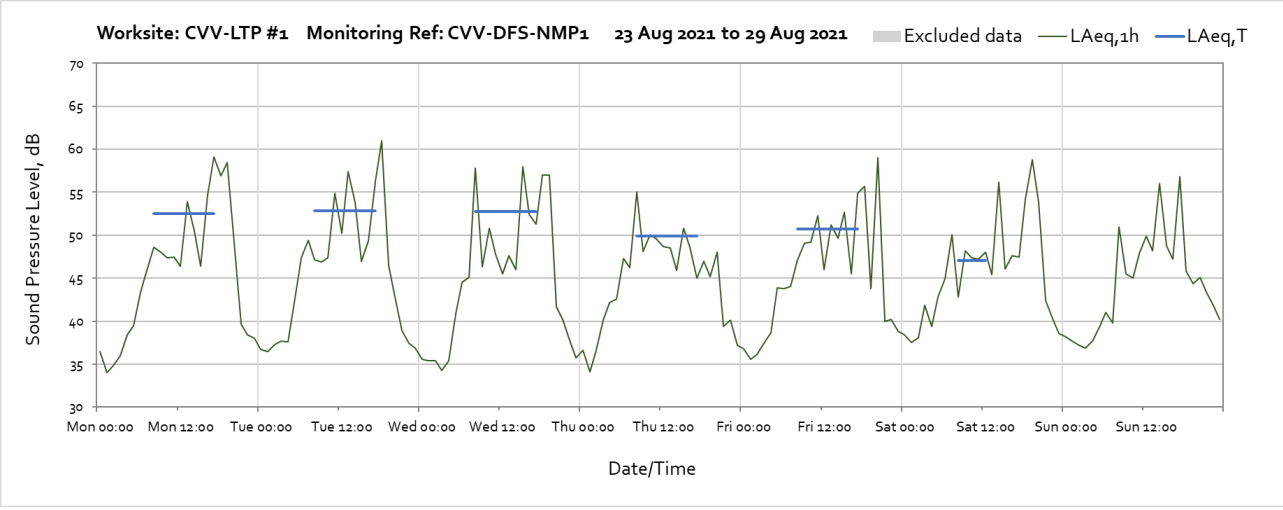
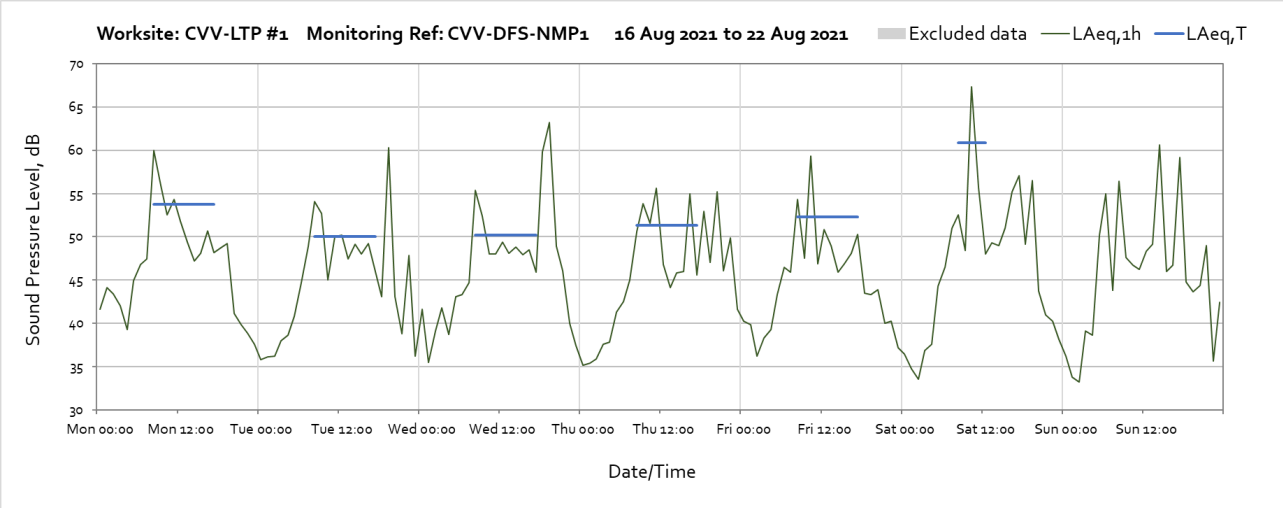


Worksite: CVV-LTP#1 – Monitoring Ref: CVV-DFS-NMP1



Note: Missing data between 01:00 on Wednesday 11th August and 09:00 on Thursday 12th August was due to a loss of battery power to the monitor.

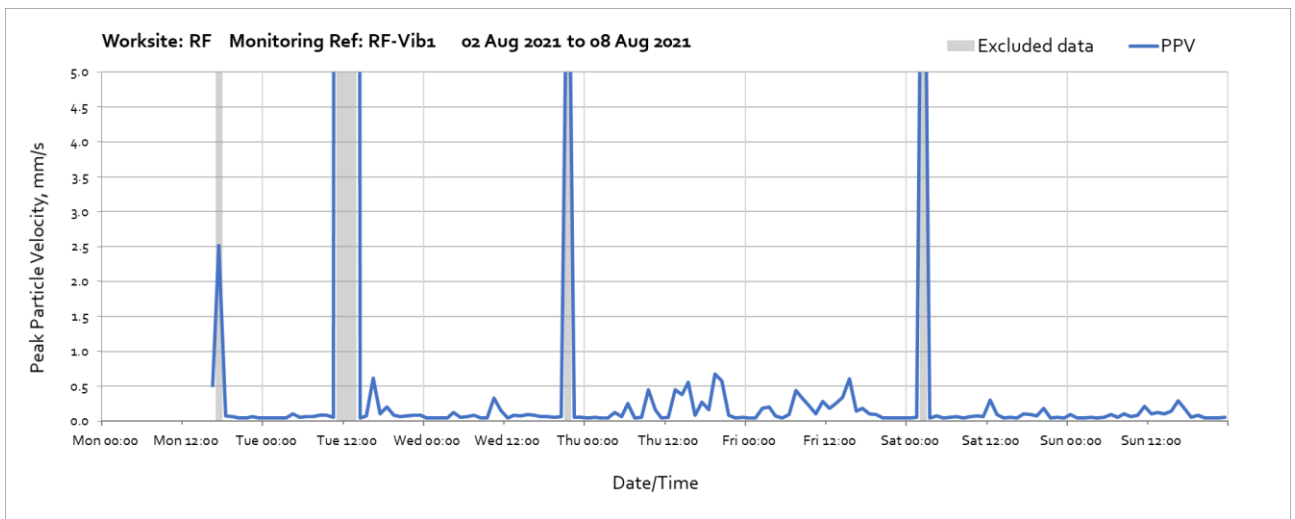
OFFICIAL



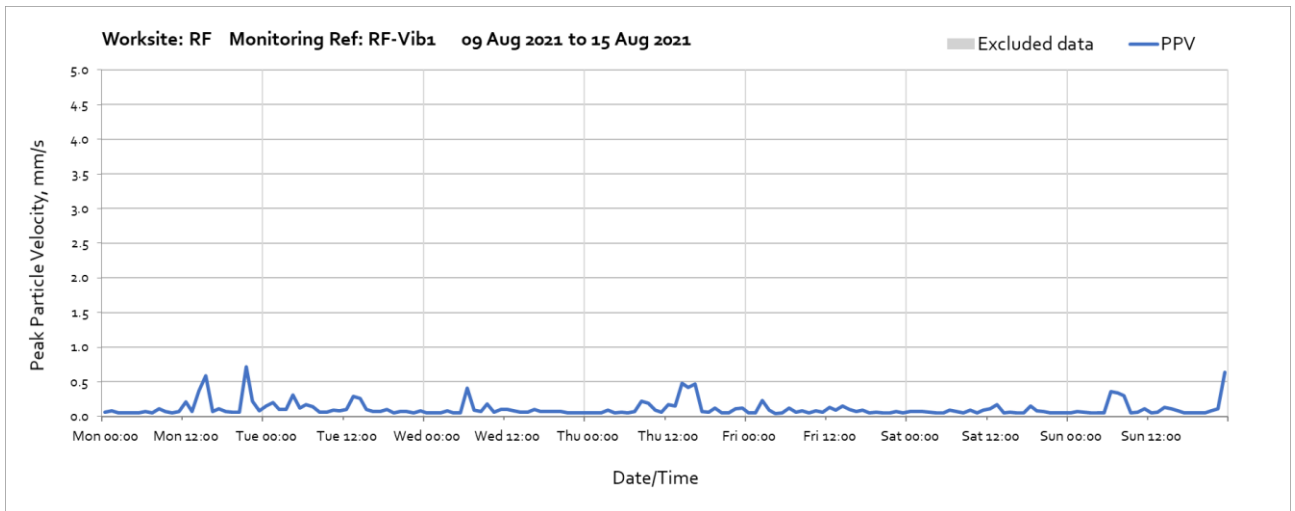
Vibration

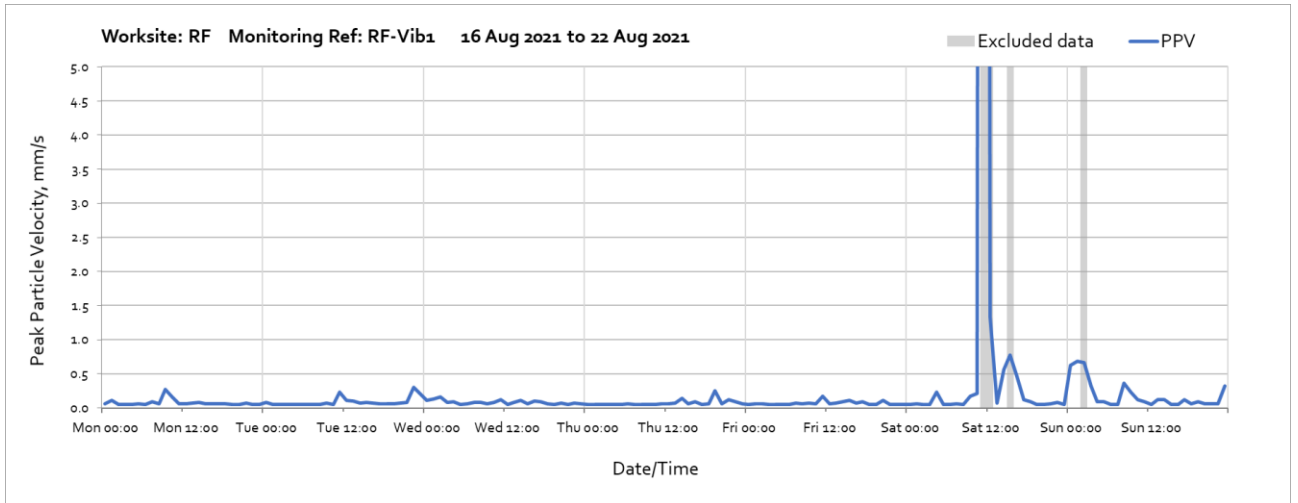
The following graphs show the hourly measured peak particle velocity PPV recorded during the monitoring period. The graphs show the highest PPV of the three orthogonal axes x, y and z. Where high values of PPV were caused by local interference with the vibration monitor, which are not representative 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: RF – Monitoring Ref: RF-Vib 1

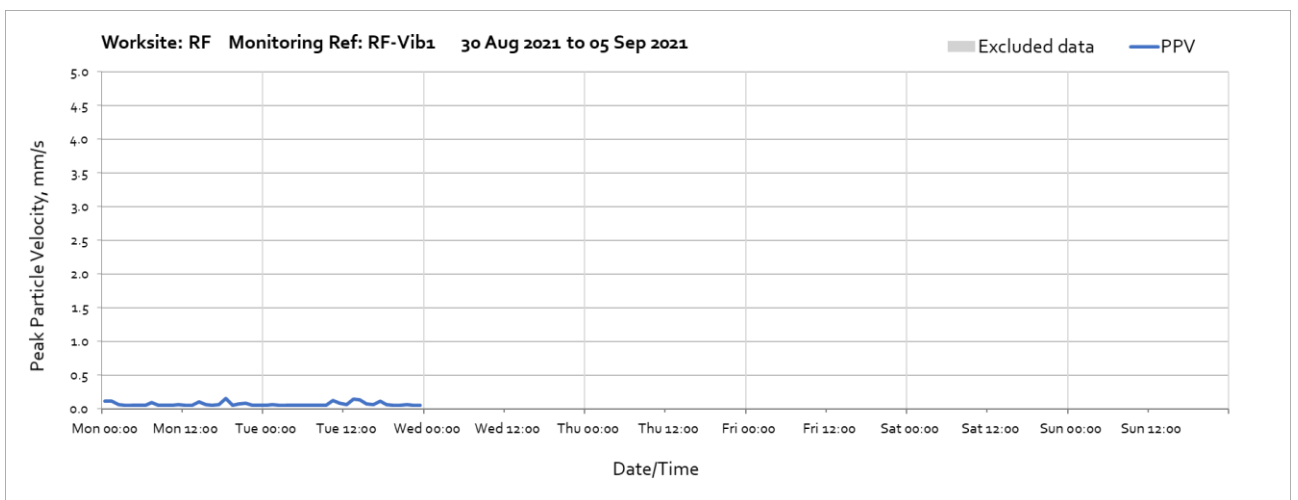
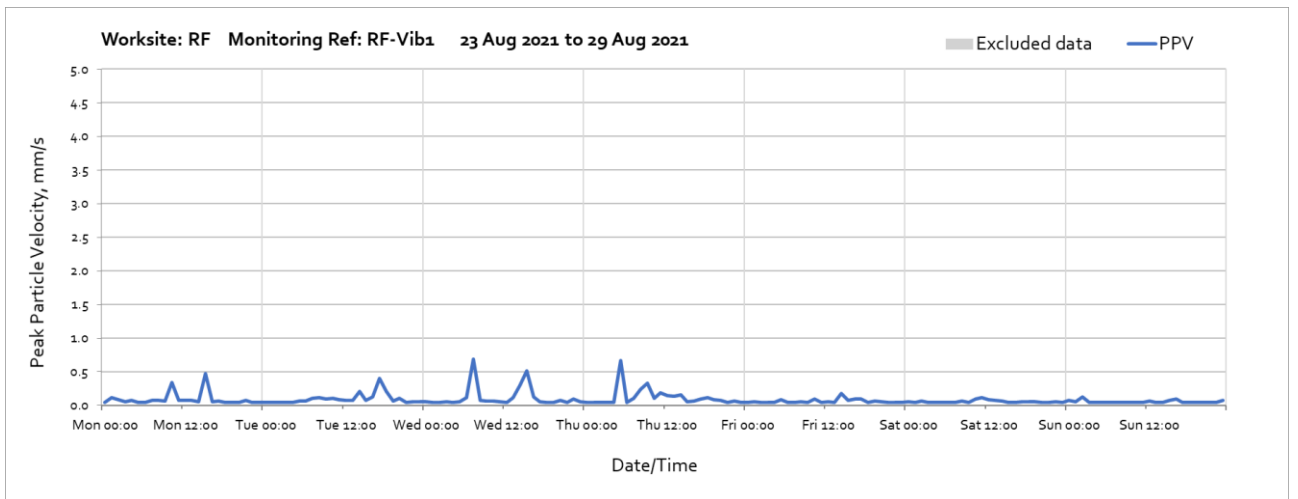


Note: High levels of vibration measured throughout the week were due to local disturbance of the monitor and are not representative of HS2 construction vibration levels.

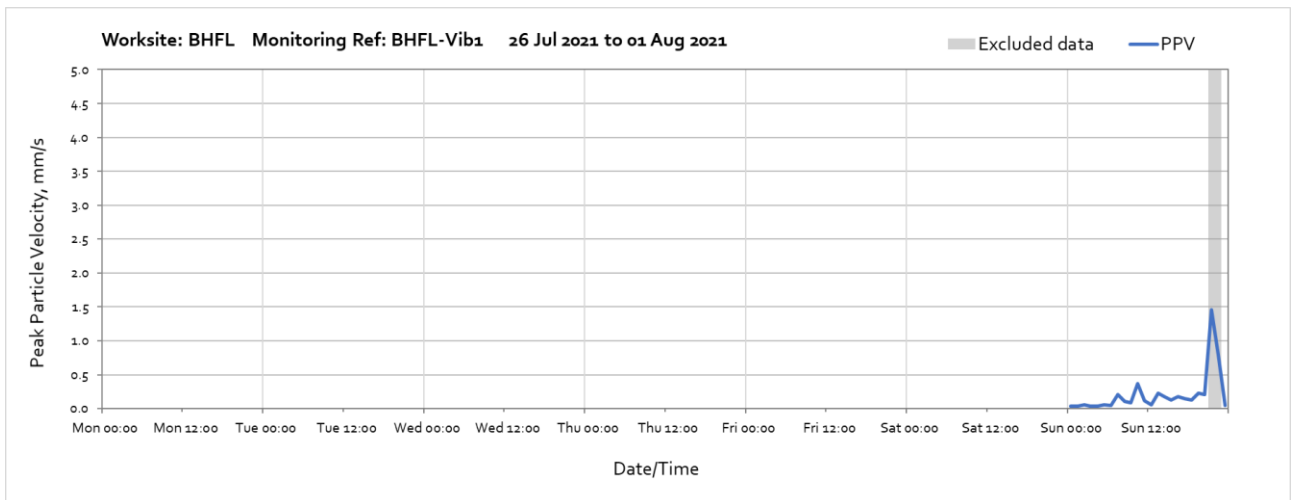




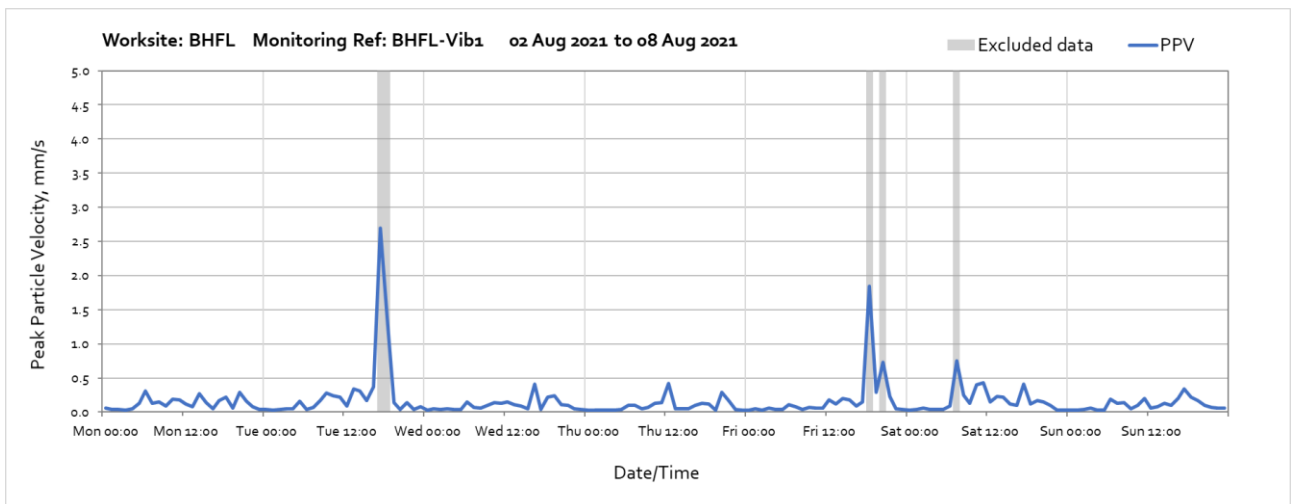
Note: High levels of vibration measured throughout the week were due to local disturbance of the monitor and are not representative of HS2 construction vibration levels.



Worksite: BHFL – Monitoring Ref: BHFL-Vib 1



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



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



Note: High levels of vibration measured throughout the week were due to local disturbance of the monitor and are not representative of HS2 construction vibration levels. The vibration monitor was uninstalled on 11th August 2021.