

Construction Noise and Vibration Monthly Report – December 2022

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 December 2022.

Within this period monitoring was undertaken at the following worksites:

- Noise monitoring was undertaken in the vicinity of the A422 Turweston North worksite (ref.: A422 TN) where drainage and dewatering maintenance works, aggregate deliveries and processing limestone works were underway.
- Noise monitoring was undertaken in the vicinity of the School End (ref.: SE), Rosehill Farm (ref.: RF), and Hermitage Chetwode (ref.: HC) worksites where compound development works, haul road maintenance, bulk excavations, topsoil stripping, drainage works, fencing works, stockpiling and vehicle movements were underway.
- Noise monitoring was undertaken in the vicinity of the Twyford worksite (ref.: TW) where access and site road maintenance works, vehicle movements, drainage works, topsoil stripping and stockpiling were underway.
- Noise monitoring was undertaken in the vicinity of the West Street Overbridge worksite (ref.: WSO), where utility works, concrete works and culvert works were underway.
- Noise monitoring was undertaken in the vicinity of the Addison Road worksite (ref.: AR) where reinforced wall works and embankment earthworks were underway.
- Noise monitoring was undertaken in the vicinity of the School Hill Compound worksite (ref.: SHC) where topsoil stripping and operation of concrete batching plant were underway.
- Noise monitoring was undertaken in the vicinity of the FCC Sidings worksite reference (ref: FCC) where no work activities were undertaken during the reporting period.
- Noise monitoring was undertaken in the vicinity of the Woodlands worksite (ref.: WDL) where no work activities were undertaken during the reporting period.
- Noise monitoring was undertaken in the vicinity of the Quainton worksite (ref.: QAR) where backfilling and utility works were underway.
- Noise monitoring was undertaken in the vicinity of the Meadoway and Glebe House worksite (ref: MW&GH) where earthworks, piling works, stockpiling, construction of piling platforms and site haul road construction were underway.

- Noise monitoring was undertaken in the vicinity of Oat Close worksite (ref: OC) where stockpiling, haul road construction, piling works, overhead utility diversion works, water treatment plant set up, night rail deliveries and earthworks were underway.
- Noise monitoring was undertaken in the vicinity of Nash Lee Lane worksite (ref.: NLL) where road diversion works, temporary bridge installation, installation of fuel storage area and investigation and monitoring works were underway.
- Noise monitoring was undertaken in the vicinity of Wendover Green Tunnel worksite (ref.: WGT) where surface water management works, construction of crane platforms, concrete works, backfilling and investigation and monitoring works were underway.
- Noise monitoring was undertaken in the vicinity of Rocky Lane Embankment worksite (ref: RLE) where compound installation works, maintenance of the surface water management system, ground investigation works, remedial works earthworks and utility works were underway.
- Noise monitoring was undertaken in the vicinity of Wendover Dean Viaduct worksite (ref: WDV) where compound construction works, piling works and concrete works were underway.
- Noise monitoring was undertaken in the vicinity of Leather Lane worksite (ref: LL) where maintenance of surface water management system was underway.
- Noise monitoring was undertaken in the vicinity of South Heath Cutting worksite (ref: SHCW) where culvert installation works were underway.
- Noise monitoring was undertaken in the vicinity of North Portal worksite (ref: NP) where site access and haul road works, piling works, site operations, building platform works, excavation works, drainage works and reinforced concrete works were undertaken.
- Noise monitoring was undertaken in the vicinity of Chesham Road worksite (ref.: CHSM), where site operation and reinforced concrete works were undertaken.
- Noise monitoring was undertaken in the vicinity of Little Missenden Vent Shaft worksite (ref.: LM) where site operation, collar construction, secondary lining and small basement construction were undertaken.
- Noise monitoring was undertaken in the vicinity of Amersham Vent Shaft worksite (ref.: AM), where site operation, construction of internal structure and small basement construction works were undertaken.
- Noise monitoring was undertaken in the vicinity of Chalfont St Giles Vent Shaft worksite (ref.: CSG) where site operation, road maintenance works, reinforced

concreting of walls and floors, connection to tunnels and basement construction works were undertaken.

- Noise monitoring was undertaken in the vicinity of Chalfont St Peter Vent Shaft worksite (ref.: CSP), where site operation, road maintenance, secondary lining works, reinforced concrete works, connection to tunnels and basement construction works were underway.
- Noise monitoring was undertaken in the vicinity of the Colne Valley Viaduct - Load Test Pile 1 worksite, which is partly located in the London Borough of Hillingdon (LBH), (ref.: CVV, formerly CVV-LTP #1), where piling works, construction of a cofferdam, compound operation, maintenance of haul roads, ground investigation works, pier construction, pumping water management, satellite welfare operation, generator farm operation, north abutment works, concrete drilling, gas crossing emergency dismantling works, material storage, fencing, utility diversion works, environmental maintenance, base slab construction, River Colne crossing, girder and deck erection, and deck finishes were underway.

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

- Godington where construction of the site access road, topsoil stripping and vegetation clearance were underway.
- Grovill Embankment – Westbury where excavations were underway.
- North of School End where excavations, vegetation clearance, stockpiling and drainage works were underway.
- Turweston along the A422 where compound development works and temporary road diversion works were underway.
- Along Calvert Mass Haul Road, where aggregate haulage was underway.
- East West Rail (EWR) interfaces where drainage works and concrete repairs were underway.
- Charndon Lodge where concrete works, including rebar fixing, formworks lifting, concrete pours, concrete shaft construction and excavations were underway.
- Infrastructure Maintenance Depot (IMD) where concrete works, including rebar fixing, formworks lifting and concrete pours, were underway.
- Grendon Underwood Rail Overbridge where piling and cropping works were underway.
- Hills Farm where stockpile maintenance was underway.
- Edgcott Road Overbridge where piling works were underway.

- Doddershall Culvert where concrete works, including rebar fixing and shuttering were underway.
- Along the bat mitigation structure in Calvert area where sheet piling and construction of platforms were underway.
- Aylesbury Golf Course where construction of site haul road, stockpiling, earthworks, compound setup and pond construction were underway.
- Thame Valley Viaduct Causeway where temporary bridge construction, piling, aggregate laying, cofferdam construction and compound setup were underway.
- Fleet Marston where earthworks, stockpiling, drainage works, habitat site maintenance works and pond construction were underway.
- Along A41 where concrete batching works, geogrid installation, embankment works, stockpiling and earthworks were underway.
- Waddesdon Embankment and North Cutting where earthworks, stockpiling, compound setup, drainage works and construction of site haul road were undertaken.
- Small Dean North Embankment and Grove Farm area where trial hole construction, construction of concrete slabs and fabrication of steel for pre cast slabs were underway.

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.

One (1) complaint was received within the Buckinghamshire area during the monitoring period. A description of complaints, the results of investigations and any action 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 Buckinghamshire (BS) Local Authority area for the period 1st to 31st December 2022.

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

- A422 Turweston North worksite, reference A422 TN (see Plan 1 in Appendix A), where works activities included:
 - Drainage and dewatering maintenance works.
 - Aggregate deliveries.
 - Processing limestone works.
- School End worksite, reference SE (see Plan 2 in Appendix A), Rosehill Farm worksite reference RF (see Plan 2 in Appendix A), and Hermitage Chetwode Worksite reference HC (see plan 2 in Appendix A), where works activities included:
 - Compound development works.
 - Haul road maintenance.
 - Bulk excavations.

- Topsoil stripping.
- Drainage works, including pond maintenance works.
- Fencing works, including removal of badger fencing.
- Stockpiling.
- Vehicle movements.
- Twyford worksite, reference TW (see Plan 2 in Appendix A), where works activities included:
 - Access and site haul road maintenance.
 - Vehicle movements.
 - Drainage works.
 - Topsoil stripping.
 - Stockpiling.
- West Street Overbridge worksite, reference WSO (see Plan 3 in Appendix A), where works activities included:
 - Utility works, including trenching, duct laying and construction of access chambers.
 - Concrete works, including rebar fixing, formwork installation and concrete pours.
 - Culvert works, including concrete works and waterproofing works.
- Addison Road worksite, reference AR (see Plan 3 in Appendix A), where works activities included:
 - Reinforced wall works, including lifting of concrete panels.
 - Embankment earthworks.
- School Hill Compound worksite, reference SHC (see Plan 3 in Appendix A), where works activities included:
 - Topsoil stripping.
 - Operation of concrete batching plant.
- FCC Sidings worksite, reference FCC (see Plan 3 in Appendix A) where no works activities were undertaken during the reporting period.
- Woodlands worksite, reference WDL (see Plan 4 in Appendix A) where no works activities were undertaken during the reporting period.

- Quainton worksite, reference QAR (see Plan 4 in Appendix A) where works activities included:
 - Backfilling.
 - Utility works, including cable pulling.
- Meadoway and Glebe House worksite, reference MW&GH (see Plan 5 in Appendix A), where works activities included:
 - Earthworks.
 - Piling.
 - Stockpiling.
 - Construction of piling platform.
 - Site haul road construction.
- Oat Close worksite, reference OC (see Plan 5 in Appendix A), where works activities included:
 - Stockpiling.
 - Earthworks.
 - Haul road construction.
 - Piling works.
 - Overhead utility diversion works.
 - Water treatment plant set up.
 - Night rail deliveries.
- Nash Lee Lane worksite, reference NLL (see Plan 6 in Appendix A), where works activities included:
 - Road diversion works, including drainage works, ducting and tie-in works.
 - Temporary bridge installation.
 - Installation of fuel storage area.
 - Investigation and monitoring works.
- Wendover Green Tunnel worksite, reference WGT (see Plan 6 in Appendix A), where works activities included:
 - Surface water management works.
 - Construction of crane platforms.

- Concrete works, including reinforcement installations, shutters installation, concrete pours and steel fixing.
- Backfilling.
- Investigation and monitoring works.
- Rocky Lane Embankment worksite, reference RLE (see Plan 7 in Appendix A), where works activities included:
 - Compound installation works.
 - Maintenance of the surface water management system.
 - Utilities works.
 - Ground investigation works;
 - Remedial works, including material hauling and stone road construction.
 - Earthworks
- Wendoover Dean Viaduct worksite, reference WDV (see Plan 7 in Appendix A), where works activities included:
 - Compound construction works.
 - Piling works, including pile cropping.
 - Concrete works, including shuttering, steel fixing and concrete pours.
- Leather Lane worksite, reference LL (see Plan 8 in Appendix A), where works activities included:
 - Maintenance of the surface water management system.
- South Heath Cutting worksite, reference SHCW (see Plan 8 in Appendix A), where works activities included:
 - Culvert installation, including track drainage works.
- North Portal worksite, reference NP (see Plan 8 in Appendix A), where works activities included:
 - Site access road works, including scrape formation works, installation of hardstanding and kerbing, drainage and service works, installation of signage and asphaltting.
 - Haul road dismantling works.
 - General site operation of plant and equipment.

- Piling platform works, including reinstatement and maintenance works, dismantling works, scrape formation works and installation of hardstanding.
- Building and tracks platform works, including scraping and installation of hardstanding, surfacing, services and drainage.
- Headwall capping-beam works, including excavation, reinforced concrete works and temporary propping.
- Drainage works, including excavation and backfilling.
- Reinforced concrete works, including concrete pours.
- Chesham Road worksite, reference CHSM (see Plan 8 in Appendix A), where works activities included:
 - Power utility connections works.
 - Reinforced concrete works, including works for the internal and superstructure.
- Little Missenden Vent Shaft worksite reference LM (see Plan 9 in Appendix A), where works activities included:
 - General site activities including operation of plant and equipment.
 - Collar construction.
 - Secondary lining works.
 - Small basement construction.
- Amersham Vent Shaft worksite, reference AM (see Plan 10 in Appendix A), where works activities included:
 - General site activities including operation of plant and equipment.
 - Internal structure concrete and floor works.
 - Small basement construction.
- Chalfont St Giles Vent Shaft worksite, reference CSG (see Plan 11 in Appendix A), where works activities included:
 - General site activities including operation of plant and equipment.
 - Road maintenance.
 - Reinforced concrete works for internal structure walls and floor.
 - Connection to tunnels, including demolition and reinforced concrete works.
 - Basement construction, including excavation.

- Chalfont St Peter Vent Shaft worksite, reference CSP (see Plan 12 in Appendix A), where works activities included:
 - General site activities including operation of plant and equipment.
 - Road maintenance.
 - Secondary lining works.
 - Reinforced concrete works for internal structure walls and floor.
 - Connection to tunnels, including demolition and reinforced concrete works.
 - Basement construction.
- Colne Valley Viaduct - Load Test Pile 1 worksite, which is partly located in the London Borough of Hillingdon (LBH), reference CVV (see Plan 13 in Appendix A), formerly CVV-LTP #1, where works activities included:
 - Piling works, including jetty piling, piling platform relocation, bored piling, de-sanding pile bore, pile trimming, installation of reinforcement cage and concreting pile, grout curtain construction around viaduct pile groups maintenance plant and clean up around piles.
 - Compound operations.
 - Maintenance of haul roads.
 - Ground investigation works.
 - Pier construction, including tower crane mobilisation and demobilisation.
 - Pumping water management.
 - Satellite welfare operation.
 - Generator farm operation.
 - North abutment works, including yard supporting activities.
 - Concrete drilling.
 - Gas crossing emergency dismantling works.
 - Material storage.
 - Fencing works.
 - Utility diversion.
 - Environmental maintenance.
 - Construction of a cofferdam, including excavations.

- Base slab construction.
- River Colne crossing, including emergency removal of obstruction to reinforced concrete crossing.
- Girder and deck erection and installation, including span segmental erection, grouting, steel structure erection and dismantling.
- Deck finishes, including delivery of parapets, noise barriers, troughs, pipes, steel works and other minor materials to the storage yards and deck, filling of voids and secondary concrete (within deck) and supply and installation of carrier drainpipe and access ramps required within the deck.

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

- Godington where construction of the site access road, topsoil stripping and vegetation clearance were underway.
- Grovill Embankment – Westbury where excavations were underway.
- North of School End where excavations, vegetation clearance, stockpiling and drainage works were underway.
- Turweston along the A422 where compound development works and temporary road diversion works were underway.
- Along Calvert Mass Haul Road, where aggregate haulage was underway.
- East West Rail (EWR) interfaces where drainage works and concrete repairs were underway.
- Charndon Lodge where concrete works, including rebar fixing, formworks lifting, concrete pours, concrete shaft construction and excavations were underway.
- Infrastructure Maintenance Depot (IMD) where concrete works, including rebar fixing, formworks lifting and concrete pours, were underway.
- Grendon Underwood Rail Overbridge where piling and cropping works were underway.
- Hills Farm where stockpile maintenance was underway.
- Edgcott Road Overbridge where piling works were underway.
- Diddershall Culvert where concrete works, including rebar fixing and shuttering were underway.
- Along the bat mitigation structure in Calvert area where sheet piling and construction of platforms were underway.
- Aylesbury Golf Course where construction of site haul road, stockpiling, earthworks, compound setup and pond construction were underway.

- Thame Valley Viaduct Causeway where temporary bridge construction, piling, aggregate laying, cofferdam construction and compound setup were underway.
- Fleet Marston where earthworks, stockpiling, drainage works, habitat site maintenance works and pond construction were underway.
- Along A41 where concrete batching works, geogrid installation, embankment works, stockpiling and earthworks were underway.
- Waddesdon Embankment and North Cutting where earthworks, stockpiling, compound setup, drainage works and construction of site haul road were undertaken.
- Small Dean North Embankment and Grove Farm area where trial hole construction, construction of concrete slabs and fabrication of steel for pre cast slabs were underway.

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

1.2 Measurement Locations

- 1.2.1 Forty-four (44) noise and four (4) vibration monitoring installations were active in December in the BS area. Table 2 summarises the positions of noise and vibration monitoring installations within the BS area in December 2022.
- 1.2.2 The noise monitor ref.: AR-NMP1, located in the vicinity of Addison Road worksite (ref.: AR) and the noise monitor ref.: MF-NMP1, located in the vicinity of Oat Close worksite (ref.: OC), are currently being repaired and therefore no noise data were recorded at these monitoring locations during the reporting period.
- 1.2.3 Noise monitor ref.: BFH-NMP1, within the vicinity of North Portal worksite was installed on 21st December 2023.
- 1.2.4 Maps showing the positions of noise and vibration monitoring installations are presented in Appendix B.

Table 2: Monitoring Locations

Worksite Reference	Measurement Reference	Address
A422 TN	TN-NMP1	Turweston, Brackley
SE	SE-NMP1	School End, Chetwode
	SE-Vib1	School End, Chetwode
RF	RF-NMP1	Old Stable Cottage, Rosehill Farm, Chetwode
	RF-Vib1	Old Stable Cottage, Rosehill Farm, Chetwode
HC	HC-NMP1	Hermitage, Chetwode
TW	TW-NMP1	Twyford, Buckinghamshire
WSO	WSO-NMP1	West Street, Twyford
SHC	SHC-NMP1	School Hill Compound, Calvert
FCC	FCC-NMP1	Calvert South
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton
QAR	QAR-NMP2	Station Rd, Quainton
MW&GH	GH-NMP1	Glebe House, A418, Aylesbury
	MW-NMP1	Aylesbury, Buckinghamshire
OC	OC-NMP1	Oat Close, Bishopstone, Aylesbury
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee
	NLL-NMP2	Nash Lee Lane, Nash Lee
WGT	ER-NMP1	Ellesborough Rd, Wendover
	ER-Vib1	Ellesborough Rd, Wendover
	BL-NMP1	Bacombe Lane, Wendover
	WT-NMP1	A413, Wendover
RLE	SDVC-NMP1	Rocky Lane, Wendover
	NCAS6-NMP1	Chesham Lane, The Lee, Wendover
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover
WDV	WDV-NMP1	Upper Wendover Dean Farm, A413, Wendover
	WDV-Vib1	Upper Wendover Dean Farm, A413, 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
NP	BFH-NMP1	Bury Farm, Great Missenden
	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath

Worksite Reference	Measurement Reference	Address
	BLH-NMP1	Bayleys Hatch, South Heat, Great Missenden
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath
AM	AM-NMP1	Amersham Vent Shaft Worksite, Whielden Lane, Amersham
LM	LM-NMP1	Little Missenden, A413, Amersham
	PWC-NMP1	Patricia Holmes, Little Missenden Vent Shaft Worksite, Amersham
CSG	CSG-NMP1	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane
	CSG-NMP2	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane
	PIC-NMP1	Bottom House Farm Lane, Chalfont St Giles
CSP	CSP-NMP1	Chalfont St Peter Vent Shaft Worksite, Chesham Lane, Chalfont St. Peter
	CSP-NMP2	Chalfont St Peter Vent Shaft Worksite, Chesham Lane, Chalfont St. Peter
	CSP-NMP3	Chalfont St Peter Vent Shaft Worksite, Chesham Lane, Chalfont St. Peter
CVV	CVV-NMP1	Northern boundary, Load Test Pile 1 Worksite, Denham Water Ski Club
	WYC-NMP1	Wyatt's Covert, Tilehouse Lane, Denham, Denham Garden Village
	DFS-NMP1	Denham Film Studio, Uxbridge
	SVF-NMP1	Savay Farm, Denham Garden Village, Denham, Buckinghamshire

* This worksite is within the London Borough of Hillingdon, for more details on the works taking place please refer to the London Borough of Hillingdon Noise and Vibration Report available at: <https://www.gov.uk/government/collections/monitoring-the-environmental-effects-of-hs2>

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
A422 TN	TN-NMP1	Turweston, Brackley	Free-field	47.6 (53.8)	50.5 (55.9)	46.5 (51.7)	44.4 (50.2)	41.7 (49.2)	45.6 (47.9)	48.6 (52.0)	48.8 (53.0)	46.2 (54.5)	38.1 (42.3)	43.4 (48.9)	40.5 (47.8)
SE	SE-NMP1	School End, Chetwode	Free-field	48.7 (53.0)	55.2 (65.9)	45.7 (50.7)	45.1 (51.1)	44.9 (52.9)	46.9 (50.3)	46.3 (48.9)	45.9 (47.2)	45.5 (51.6)	43.6 (46.0)	45.3 (51.0)	45.6 (50.5)
RF	RF-NMP1	Old Stable Cottage, Rosehill Farm, Chetwode	Free-field	47.9 (53.3)	51.5 (60.2)	43.3 (45.9)	43.4 (45.9)	43.0 (50.1)	43.2 (45.3)	45.6 (46.7)	43.7 (47.2)	42.2 (47.9)	40.5 (46.2)	42.9 (48.4)	44.1 (44.6)
HC	HC-NMP1	Hermitage, Chetwode	Free-field	47.3 (54.9)	55.7 (65.3)	42.4 (52.2)	42.3 (53.0)	41.2 (53.3)	39.7 (39.7)	43.4 (43.4)	41.4 (41.4)	39.9 (48.7)	33.1 (39.2)	39.9 (46.9)	35.7 (44.8)
TW	TW-NMP1	Twyford	Free-field	43.6 (46.9)	46.4 (50.2)	42.4 (46.9)	41.7 (46.1)	41.1 (49.4)	42.9 (44.9)	44.2 (46.8)	44.0 (46.2)	44.3 (50.0)	40.3 (46.3)	42.9 (50.0)	40.6 (47.1)
WSO	WSO-NMP1	West Street, Twyford	Free-field	47.6 (50.4)	49.6 (53.9)	42.3 (47.0)	40.3 (46.5)	38.5 (48.1)	46.5 (48.4)	48.1 (53.2)	47.5 (52.8)	45.6 (54.8)	36.6 (43.1)	45.0 (50.8)	39.2 (53.9)
SHC	SHC-NMP1	School Hill Compound, Calvert	Free-field	51.3 (56.5)	54.0 (63.2)	49.0 (53.2)	47.0 (52.7)	43.7 (52.1)	46.9 (51.0)	49.9 (53.9)	48.9 (54.2)	47.7 (54.2)	43.4 (48.4)	47.7 (52.4)	46.3 (51.3)

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average LAeq,T (Highest Day LAeq,T)					Saturday Average LAeq,T (Highest Day LAeq,T)					Sunday / Public Holiday Average LAeq,T (Highest Day LAeq,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
FCC	FCC-NMP1	Calvert South	Free-field	53.5 (61.2)	54.3 (60.5)	43.5 (50.9)	40.9 (49.6)	40.5 (51.9)	46.5 (50.2)	51.2 (67.1)	45.3 (49.0)	42.9 (55.5)	34.6 (41.9)	41.8 (48.9)	43.3 (52.0)
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton	Free-field	59.4 (71.9)	62.0 (70.1)	42.9 (48.4)	43.5 (47.8)	43.2 (50.6)	51.1 (57.5)	53.9 (63.8)	48.1 (49.5)	46.1 (55.3)	39.8 (46.4)	45.6 (52.8)	42.4 (49.5)
QAR	QAR-NMP2	Station Rd, Quainton	Free-field	50.5 (65.1)	55.2 (70.7)	50.1 (66.9)	48.1 (69.6)	47.0 (75.0)	51.2 (70.0)	54.1 (65.8)	52.5 (55.8)	53.8 (72.3)	47.2 (65.3)	50.8 (59.8)	51.8 (71.2)
MW&GH	GH-NMP1	Glebe House, A418, Aylesbury	Free-field	54.3 (56.8)	56.0 (58.4)	55.4 (58.1)	53.6 (57.9)	49.6 (57.0)	52.7 (54.5)	55.4 (56.7)	55.4 (57.8)	54.7 (61.6)	49.6 (56.0)	53.9 (58.7)	50.1 (57.1)
	MW-NMP1	Aylesbury, Buckinghamshire	Free-field	61.8 (63.7)	63.0 (64.0)	61.8 (63.5)	59.9 (63.4)	55.7 (61.8)	59.3 (60.4)	62.9 (63.2)	63.6 (64.2)	61.8 (68.0)	54.6 (58.9)	60.9 (63.8)	54.5 (61.7)
OC	OC-NMP1	Oat Close, Bishopstone, Aylesbury	Free-field	47.1 (59.1)	48.6 (57.5)	46.4 (55.6)	45.5 (56.1)	44.5 (58.7)	44.8 (54.0)	47.8 (51.5)	48.3 (51.2)	49.4 (59.6)	46.1 (58.9)	48.2 (58.5)	47.0 (59.4)
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury	Free-field	46.4 (52.3)	50.1 (56.6)	45.5 (53.9)	43.9 (53.7)	41.9 (55.0)	45.6 (49.5)	47.9 (53.1)	46.5 (49.2)	46.7 (58.2)	46.5 (66.9)	46.2 (55.5)	42.9 (52.9)
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee	Free-field	53.3 (55.9)	56.6 (59.0)	53.4 (56.9)	51.8 (57.7)	49.4 (53.8)	51.2 (52.5)	54.0 (55.5)	54.8 (57.2)	55.1 (58.3)	49.7 (52.5)	52.5 (56.9)	48.2 (53.1)
	NLL-NMP2	Nash Lee Lane, Nash Lee	Free-field	55.0 (58.8)	57.2 (60.9)	54.7 (59.1)	52.5 (59.4)	49.0 (56.1)	52.7 (54.4)	56.4 (58.8)	57.3 (60.2)	55.7 (60.6)	48.3 (52.2)	54.4 (60.4)	46.8 (55.7)

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
WGT	ER-NMP1	Ellesborough Rd, Wendover	Free-field	56.8 (61.0)	58.2 (60.5)	56.3 (59.0)	53.4 (57.0)	49.3 (58.9)	53.4 (56.0)	57.1 (59.0)	58.2 (60.0)	55.9 (60.2)	47.7 (53.1)	55.5 (58.9)	48.4 (58.9)
	BL-NMP1	Bacombe Lane, Wendover	Free-field	45.3 (50.8)	48.2 (54.1)	45.8 (50.1)	43.7 (49.5)	40.3 (47.7)	43.4 (46.2)	46.8 (49.1)	48.4 (50.9)	46.8 (51.8)	39.6 (46.4)	45.5 (51.3)	38.3 (45.7)
	WT-NMP1	A413, Wendover	Free-field	65.3 (67.9)	66.6 (68.2)	65.7 (67.5)	62.7 (65.8)	59.3 (67.3)	62.7 (65.0)	65.8 (67.2)	66.6 (67.4)	64.9 (67.5)	55.9 (59.6)	65.4 (69.1)	58.4 (67.7)
RLE	SDVC-NMP1	Rocky Lane, Wendover	Free-field	63.5 (65.6)	64.3 (66.8)	63.7 (65.6)	60.9 (64.7)	58.0 (65.0)	62.5 (63.1)	64.7 (66.5)	64.8 (65.3)	63.1 (65.5)	52.8 (59.2)	63.1 (66.2)	56.7 (64.7)
	NCAS6-NMP1**	Chesham Lane, The Lee, Wendover	Free-field	48.5 (49.1)	57.3 (58.1)	19.5 (19.6)	19.0 (19.6)	27.3 (53.8)	29.7 (29.7)	31.7 (31.7)	31.0 (31.0)	29.1 (31.2)	28.5 (29.3)	31.2 (32.3)	- -
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	Free-field	55.5 (59.5)	56.7 (60.3)	55.5 (58.8)	53.0 (57.2)	49.5 (56.7)	53.9 (55.5)	56.4 (57.6)	56.8 (58.3)	55.5 (59.2)	47.8 (52.9)	54.8 (59.2)	48.6 (57.7)
WDV	WDV-NMP1	Upper Wendover Dean Farm, A413, Wendover	Free-field	50.0 (57.4)	54.7 (58.9)	49.1 (55.2)	47.4 (55.0)	44.7 (56.7)	50.0 (55.0)	53.1 (55.7)	53.0 (56.6)	50.9 (57.7)	44.1 (56.1)	50.4 (57.8)	48.6 (56.6)
LL	HG-NMP1	Hunts Green, Leather Lane, The Lee	Free-field	44.8 (50.9)	48.9 (54.6)	44.9 (52.0)	43.3 (51.5)	41.4 (54.8)	44.0 (46.6)	47.2 (49.0)	47.6 (49.1)	46.2 (51.1)	40.4 (47.0)	45.5 (51.3)	41.7 (53.6)
	GD-NMP1	Grimms Ditch, The Lee, South Heath	Free-field	49.0 (74.7)	52.2 (72.6)	47.8 (68.5)	46.7 (72.5)	48.2 (74.0)	49.0 (58.6)	51.4 (59.9)	53.8 (59.8)	54.9 (68.9)	52.9 (62.5)	55.6 (74.0)	54.9 (70.3)

**Note: The noise monitor ref.: NCAS6-NMP1 was retrieved and sent for repair due to a failed field calibration on 4th December 2022.

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
SHCW	PR-NMP1	Potters Row, South Heath	Free-field	47.6 (54.3)	51.0 (58.2)	45.7 (54.2)	44.2 (54.3)	42.3 (54.2)	48.2 (51.4)	48.9 (51.2)	49.1 (52.2)	47.2 (55.3)	42.6 (52.6)	45.3 (49.5)	43.2 (52.0)
	SH-NMP1	Bury Farm, South Heath	Free-field	42.9 (45.5)	51.4 (69.0)	43.6 (55.5)	41.6 (51.3)	38.2 (47.6)	44.2 (44.6)	48.4 (48.7)	48.0 (48.5)	45.2 (49.0)	38.8 (43.1)	44.6 (50.9)	37.5 (42.9)
NP	BFH-NMP1	Bury Farm, Great Missenden	Free-field	42.9 (48.5)	50.6 (53.0)	48.2 (51.5)	45.9 (52.0)	42.4 (51.6)	43.9 (48.7)	47.8 (50.2)	50.5 (54.0)	49.8 (54.6)	44.3 (49.5)	48.6 (57.1)	44.5 (48.9)
	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath	Free-field	50.2 (59.0)	55.1 (59.5)	50.1 (55.5)	48.0 (55.9)	44.4 (55.4)	48.2 (54.4)	52.3 (55.1)	52.5 (57.1)	50.8 (57.3)	45.2 (55.6)	50.7 (56.1)	45.3 (53.5)
	BLH-NMP1	Bayleys Hatch, South Heath, Great Missenden	Free-field	47.1 (52.1)	51.4 (54.7)	46.9 (56.3)	45.2 (51.1)	40.3 (48.6)	46.5 (49.1)	51.2 (53.8)	50.8 (53.6)	47.4 (51.6)	40.6 (45.4)	47.5 (52.1)	41.2 (46.0)
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath	Free-field	54.5 (58.9)	56.2 (58.3)	54.3 (57.4)	51.5 (55.4)	46.5 (53.5)	51.4 (53.9)	55.3 (56.3)	55.7 (57.1)	53.7 (58.1)	46.5 (54.1)	53.5 (57.5)	45.4 (52.5)
AM	AM-NMP1	Whielden Lane, Amersham	Free-field	60.8 (63.6)	63.4 (67.6)	59.0 (62.3)	57.2 (62.0)	55.6 (61.5)	59.3 (60.9)	61.5 (63.1)	61.5 (63.0)	60.1 (62.9)	55.0 (60.3)	59.8 (64.3)	54.5 (62.1)
LM	LM-NMP1	Little Missenden, A413, Amersham	Free-field	60.1 (63.5)	61.3 (63.7)	60.8 (62.9)	57.8 (61.2)	53.4 (60.5)	57.4 (58.8)	59.7 (61.1)	60.9 (62.3)	59.4 (63.0)	51.3 (57.4)	59.0 (63.5)	51.8 (60.9)
	PWC-NMP1	Patricia Holmes, LM Worksite, Amersham	Free-field	59.2 (62.7)	60.1 (62.8)	59.7 (62.1)	56.7 (60.0)	52.2 (59.1)	57.0 (57.8)	59.5 (60.1)	60.4 (61.5)	59.5 (63.8)	51.4 (57.2)	58.2 (62.5)	50.4 (60.0)
CSG	CSG-NMP1	CSG Worksite, Bottom House Farm Lane	Free-field	44.5 (57.5)	49.1 (54.2)	42.6 (46.4)	40.8 (49.8)	38.2 (50.6)	45.3 (55.0)	47.9 (51.1)	48.8 (52.2)	43.4 (49.1)	38.1 (51.7)	44.6 (53.5)	38.4 (47.2)

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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
CSG	CSG-NMP2	CSG Worksite, Bottom House Farm Lane	Free-field	48.9 (52.8)	55.8 (64.5)	47.2 (51.7)	42.1 (52.0)	43.1 (52.5)	46.4 (51.9)	48.4 (50.3)	49.3 (52.1)	46.5 (51.4)	42.6 (50.9)	46.3 (51.5)	43.2 (49.4)
	PIC-NMP1	Bottom House Farm Lane, Chalfont St Giles, Buckinghamshire	Free-field	53.9 (56.9)	55.1 (58.2)	54.4 (63.5)	51.5 (54.4)	47.8 (54.5)	52.3 (53.0)	55.5 (56.5)	55.7 (56.6)	54.8 (64.5)	46.6 (51.9)	53.1 (58.2)	46.6 (53.8)
CSP	CSP-NMP1	Chalfont St Peter Vent Shaft Worksite	Free-field	55.7 (58.9)	57.9 (60.5)	54.8 (58.4)	52.2 (56.1)	48.1 (56.1)	53.2 (54.9)	56.8 (58.1)	57.0 (58.2)	55.2 (62.3)	48.3 (56.3)	54.1 (58.3)	47.7 (53.8)
	CSP-NMP2	Chalfont St Peter Vent Shaft Worksite	Free-field	45.7 (51.3)	49.2 (51.8)	46.2 (49.4)	44.9 (52.1)	41.0 (51.5)	45.2 (47.5)	49.7 (50.8)	49.4 (51.4)	47.4 (52.5)	40.8 (50.7)	45.6 (51.4)	40.6 (49.6)
	CSP-NMP3	Chalfont St Peter Vent Shaft Worksite	Free-field	56.4 (58.8)	57.8 (59.5)	57.1 (58.4)	54.9 (57.4)	50.5 (56.7)	54.4 (55.3)	57.7 (58.1)	58.1 (58.6)	56.7 (59.1)	51.3 (61.7)	55.2 (58.9)	49.3 (56.4)
CVV	CVV-NMP1	Northern boundary, Load Test Pile 1 Worksite	Free-field	62.4 (64.8)	63.3 (64.7)	62.5 (65.1)	59.1 (64.7)	56.2 (64.1)	58.9 (60.4)	62.2 (63.5)	63.6 (64.8)	61.0 (64.3)	54.5 (58.5)	60.5 (66.1)	55.7 (63.1)
	WYC-NMP1	Wyatt's Covert, Tilehouse Lane, Denham	Free-field	57.5 (60.2)	58.8 (66.9)	56.9 (59.0)	53.7 (57.8)	50.9 (58.9)	55.0 (57.3)	57.9 (59.1)	58.9 (61.2)	55.7 (60.2)	48.9 (54.0)	55.6 (60.6)	49.7 (57.3)
	DFS-NMP1	Denham Film Studio, Uxbridge	Free-field	50.1 (60.6)	49.3 (54.1)	47.9 (54.4)	45.6 (50.9)	42.8 (52.8)	48.3 (49.6)	50.9 (53.9)	50.6 (55.0)	49.4 (56.4)	43.6 (55.6)	48.3 (57.0)	42.2 (53.1)
	SVF-NMP1	Savay Farm, Denham Garden Village, Denham, Buckinghamshire	Free-field	47.7 (51.4)	48.8 (50.8)	47.3 (50.4)	46.2 (53.3)	43.1 (51.6)	48.5 (50.4)	50.7 (53.9)	49.9 (52.9)	48.6 (53.3)	43.6 (48.4)	46.7 (50.9)	41.6 (49.6)

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
SE	SE-Vib1	School End, Chetwode	5.50 (X-axis)*
RF	RF-Vib 1	Old Stable Cottage, Rosehill Farm, Chetwode	2.66 (Y-axis)
WGT	ER-Vib 1	46, Ellesborough Rd, Wendover	2.21 (X-axis)
WDV	WDV-Vib1	Upper Wendover Dean Farm, A413, Wendover	1.72 (Y-axis)

*High vibration levels at SE-Vib1 are due to proximity of noise barrier erection activities to the vibration monitor. The nearest receptor is 50 meters further away and therefore the vibration levels at the receptor are lower.

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
A422 TN	TN-NMP1	Turweston, Brackley	All days	All periods	No exceedance	No exceedance
SE	SE-NMP1	School End, Chetwode	Weekdays	0800-1800	2	No exceedance
RF	RF-NMP1	Old Stable Cottage, Rosehill Farm, Chetwode	Weekdays	0800-1800	1	No exceedance
HC	HC-NMP1	Hermitage, Chetwode	Weekdays	0800-1800	2	No exceedance
TW	TW-NMP1	Twyford	All days	All periods	No exceedance	No exceedance
WSO	WSO-NMP1	West Street, Twyford	All days	All periods	No exceedance	No exceedance
SHC	SHC-NMP1*	School Hill Compound, Calvert	All days	All periods	No exceedance	No exceedance
FCC	FCC-NMP1	Calvert South	Saturdays	0800-1300	1	No exceedance
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton	Weekdays Saturdays	0800-1800 0800-1300	12 1	No exceedance No exceedance
QAR	QAR-NMP2	Station Rd, Quainton	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
MW&GH	GH-NMP1	Glebe House, A418, Aylesbury	All days	All periods	No exceedance	No exceedance
	MW-NMP1	Aylesbury, Buckinghamshire	Weekdays	0800-1800	1	No exceedance
OC	OC-NMP1	Oat Close, Bishopstone, Aylesbury	All days	All periods	No exceedance	No exceedance
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury	Nights	2200-0700	19	No exceedance
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee	Saturdays	1400-2200	5	No exceedance
	NLL-NMP2	Nash Lee Lane, Nash Lee	Weekdays Saturdays	0800-1800 1400-2200	1 7	No exceedance No exceedance
WGT	ER-NMP1	Ellesborough Rd, Wendover	Saturdays	1400-2200	9	No exceedance
	BL-NMP1	Bacombe Lane, Wendover	All days	All periods	No exceedance	No exceedance
	WT-NMP1	A413, Wendover	Weekdays Saturdays	0700-0800 0800-1800 1800-1900 0700-0800 0800-1300 1300-1400 1400-2200	17 17 18 1 4 5 15	No exceedance No exceedance No exceedance No exceedance No exceedance No exceedance No exceedance
RLE	SDVC-NMP1	Rocky Lane, Wendover	All days	All periods	No exceedance	No exceedance
	NCAS6-NMP1	Chesham Lane, The Lee, Wendover	All days	All periods	No exceedance	No exceedance
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	All days	All periods	No exceedance	No exceedance
WDV	WDV-NMP1	A413, Wendover	Saturdays	1400-2200	3	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	Weekdays Saturdays	0700-0800 0800-1800 1800-1900 1400-2200	2 3 2 5	No exceedance No exceedance 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
SHCW	PR-NMP1	Potters Row, South Heath	All days	All periods	No exceedance	No exceedance
	SH-NMP1	Bury Farm, South Heath	Weekdays	0800-1800	1	No exceedance
NP	BFH-NMP1	Bury Farm, Great Missenden	All days	All periods	No exceedance	No exceedance
	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath	All days	All periods	No exceedance	No exceedance
	BLH-NMP1	Bayleys Hatch, South Heat, Great Missinden	All days	All periods	No exceedance	No exceedance
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath	Saturdays	1400-2200	3	No exceedance
AM	AM-NMP1*	Whielden Lane, Amersham	All days	All periods	No exceedance	No exceedance
LM	LM-NMP1*	Little Missenden Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
	PWC-NMP1**	Patricia Holmes, Little Missenden Vent Shaft Worksite, Amersham	Weekdays Saturdays	0800-1800 1800-1900 1900-2200 1300-1400 1400-2200	2 5 35 5 33	No exceedance No exceedance No exceedance No exceedance No exceedance
CSG	CSG-NMP1*	Chalfont St Giles Vent Shaft	All days	All periods	No exceedance	No exceedance
	CSG-NMP2*	Chalfont St Giles Vent Shaft	All days	All periods	No exceedance	No exceedance
	PIC-NMP1	Bottom House Farm Lane, Chalfont St Giles	Weekdays Saturdays	1800-1900 1400-2200	2 10	No exceedance No exceedance
CSP	CSP-NMP1*	Chalfont St Peter Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
	CSP-NMP2*	Chalfont St Peter Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
	CSP-NMP3*	Chalfont St Peter Vent Shaft 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	CVW-NMP1*	Northern boundary, Load Test Pile 1 Worksite	All days	All periods	No exceedance	No exceedance
	WYC-NMP1**	Wyatt's Covert, Tilehouse Lane, Denham	Weekdays	0800-1800	3	No exceedance
	DFS-NMP1**	Denham Film Studio, Uxbridge	All days	All periods	No exceedance	No exceedance
	SVF-NMP1	Savay Farm, Denham Garden Village, Denham, Buckinghamshire	Saturdays Nights	1400-2200 2200-0700	3 58	No exceedance

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

** The ambient noise level is close to the LOAEL and measured LOAEL exceedances are considered to be mostly due to ambient noise levels exceeding the LOAEL and not due to HS2 construction noise.

2.2.6 Exceedances of the LOAEL were recorded at nineteen (19) monitoring locations during the month of December 2022. LOAEL exceedances were recorded during weekdays, nights and Saturday time periods.

2.2.7 No SOAEL exceedances were recorded due to HS2 construction works during December 2022.

2.3 Exceedances of Trigger Level

2.3.1 Table 6 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 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

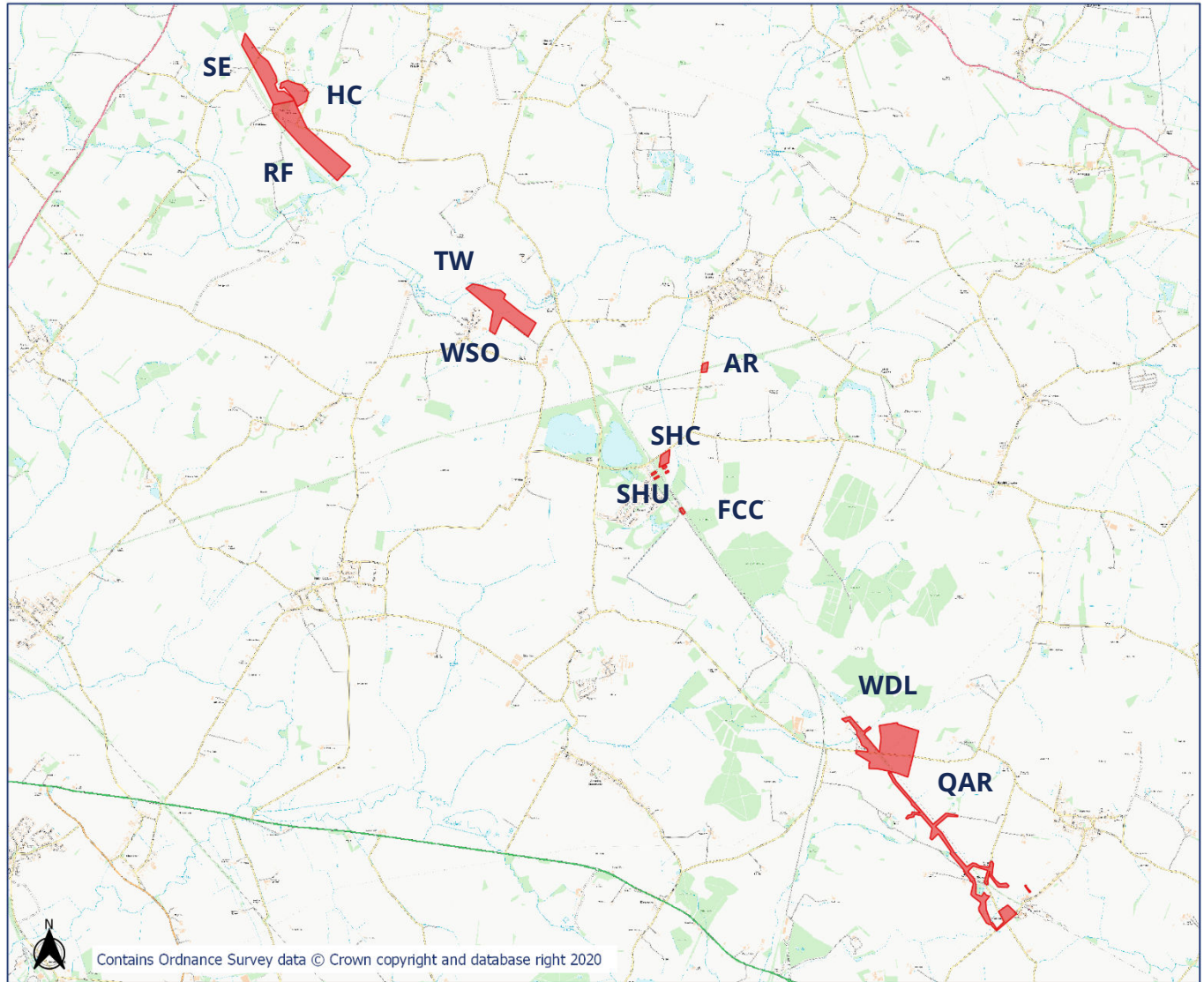
2.4.1 Table 7 provides a summary of complaint information related to noise and vibration received during the reporting period, along with the findings of any investigation.

Table 7: Summary of Complaints

Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
HS2-22-87369-E-C	OC	Disturbance caused by noise from vehicles reversing and horns during early hours of the morning.	Investigation shows that there were no HS2 works ongoing at this time.	The stakeholder has been contacted and information has been provided.

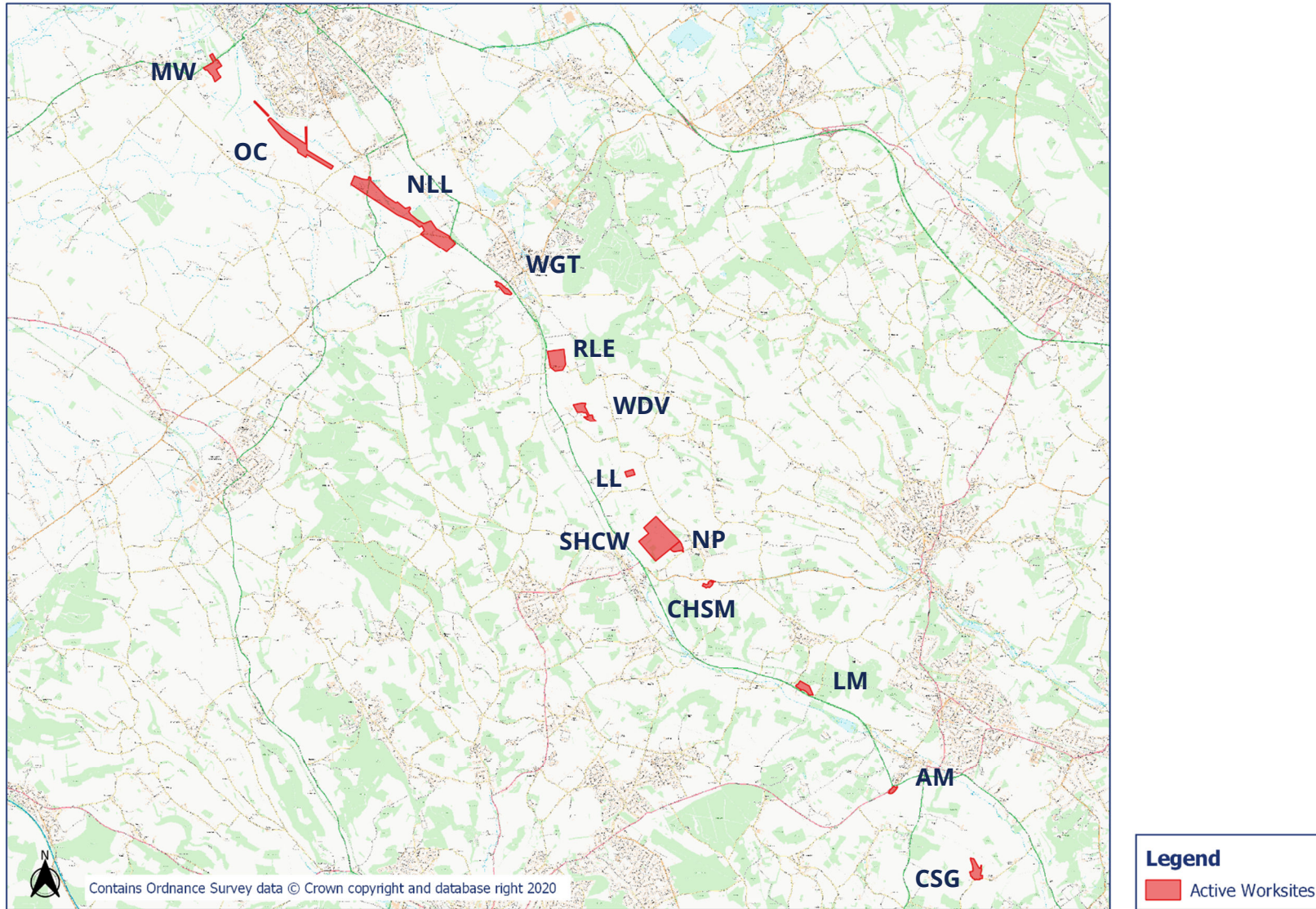
Appendix A Site Locations

HS2 Worksite Identification Plan - Overview 1



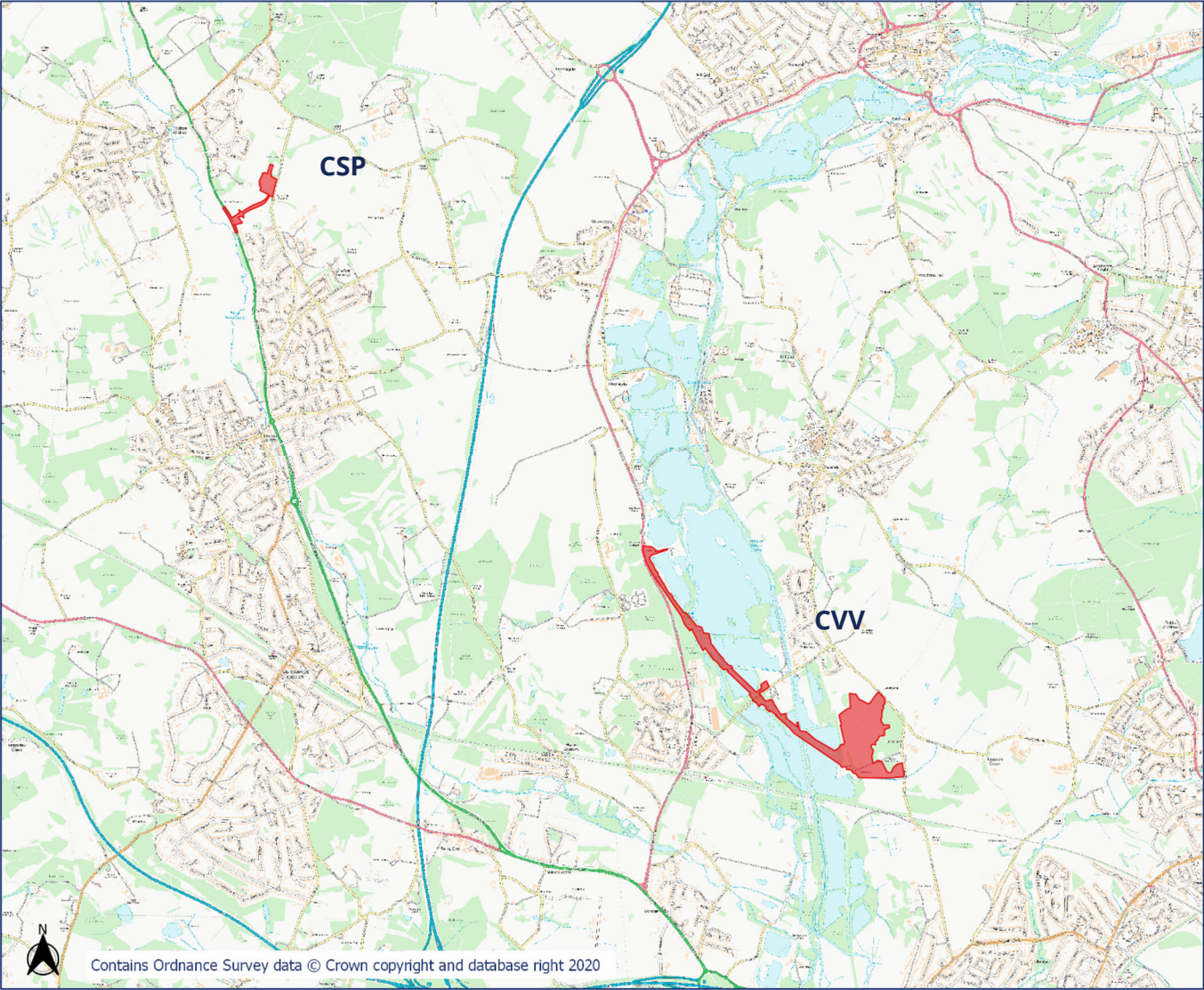
OFFICIAL

HS2 Worksite Identification Plan - Overview 2

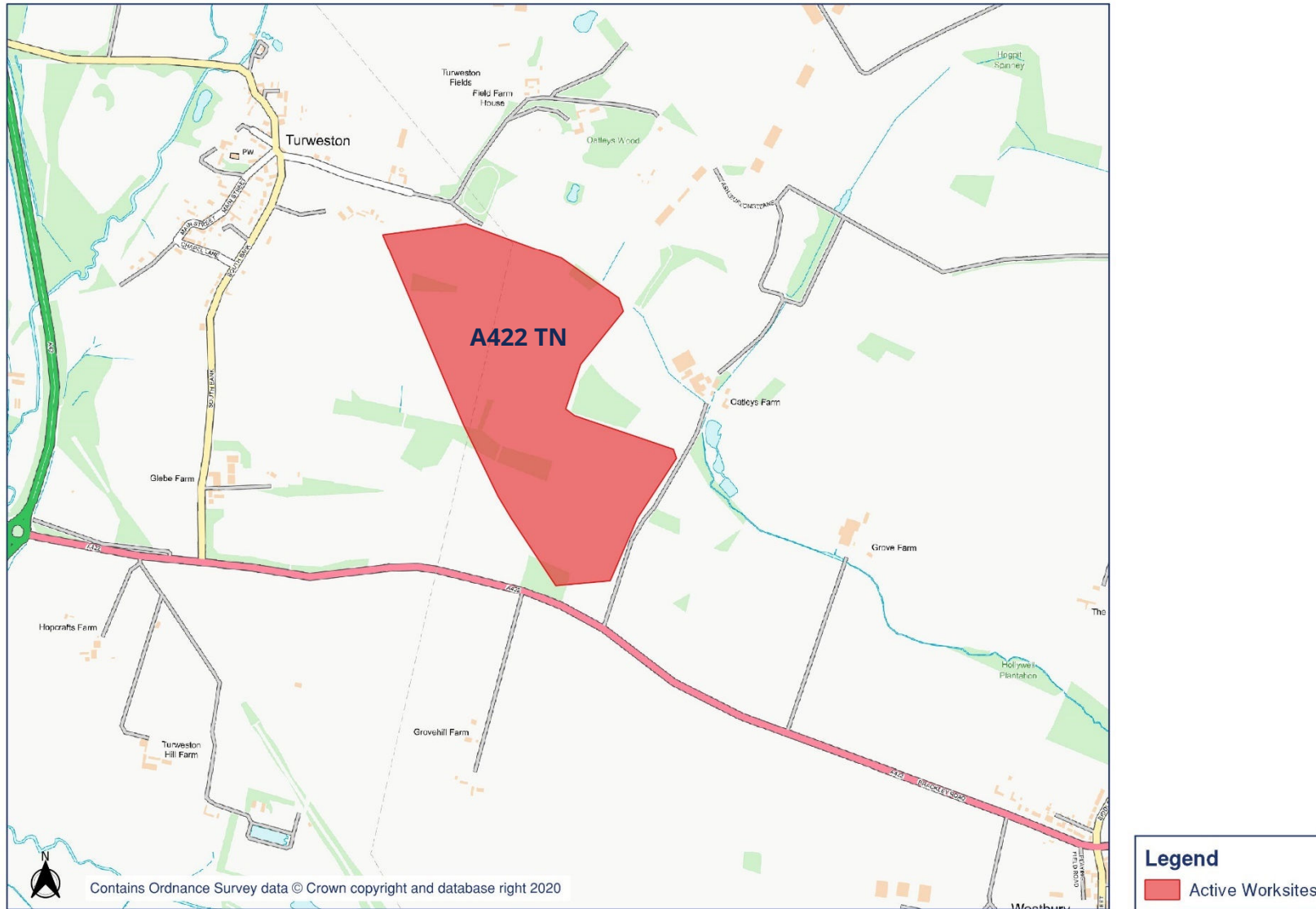


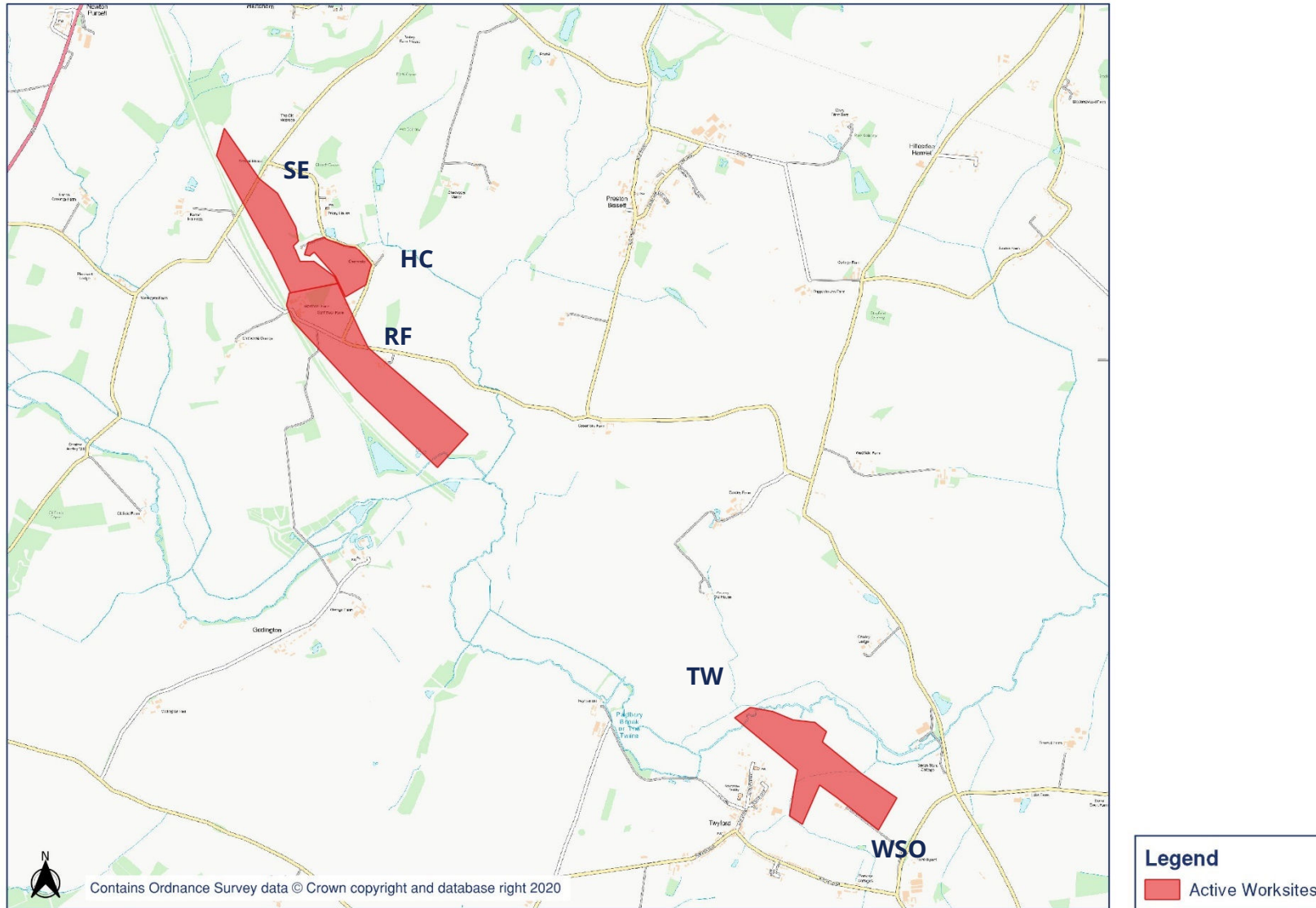
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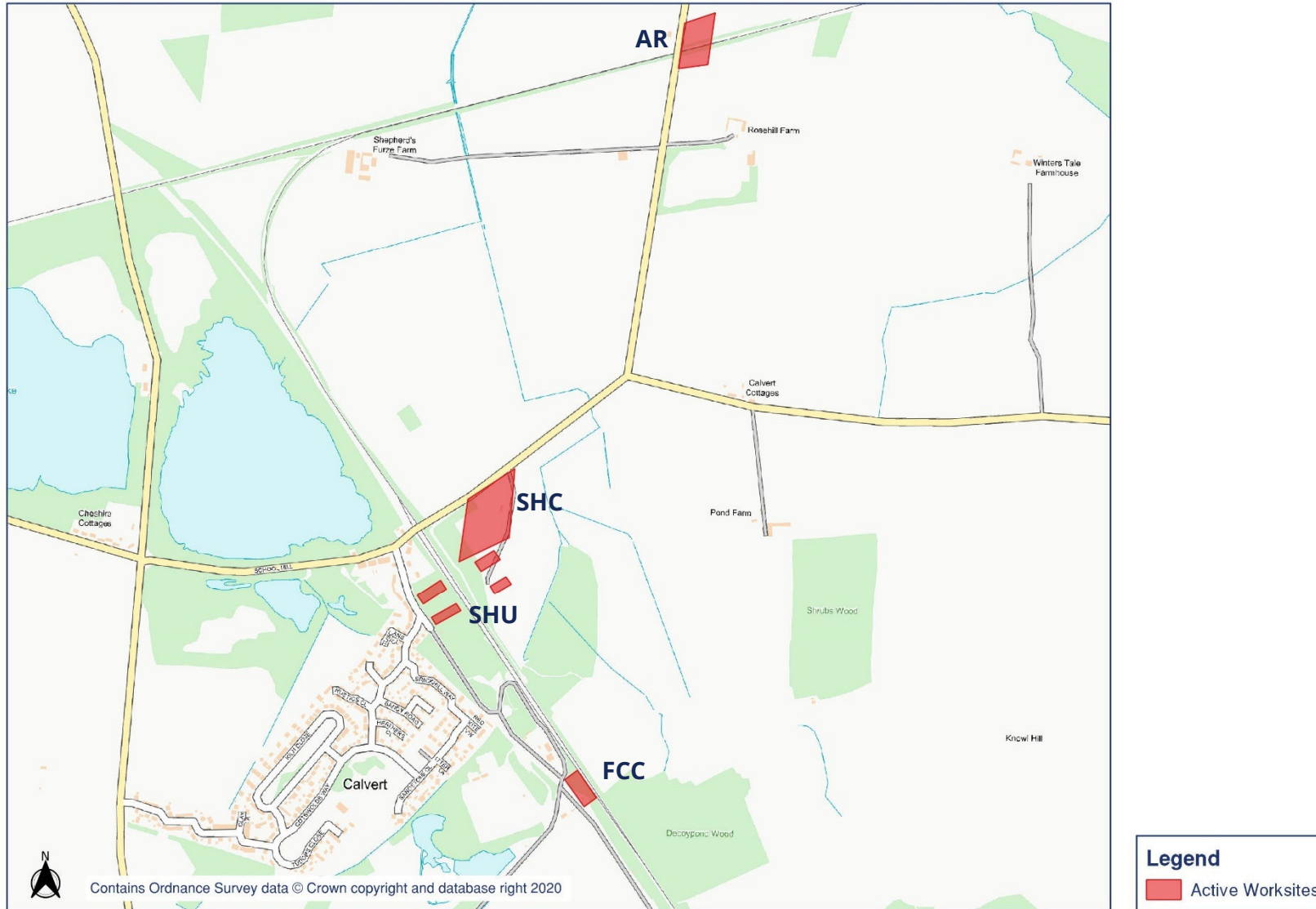
HS2 Worksite Identification Plan - Overview 3

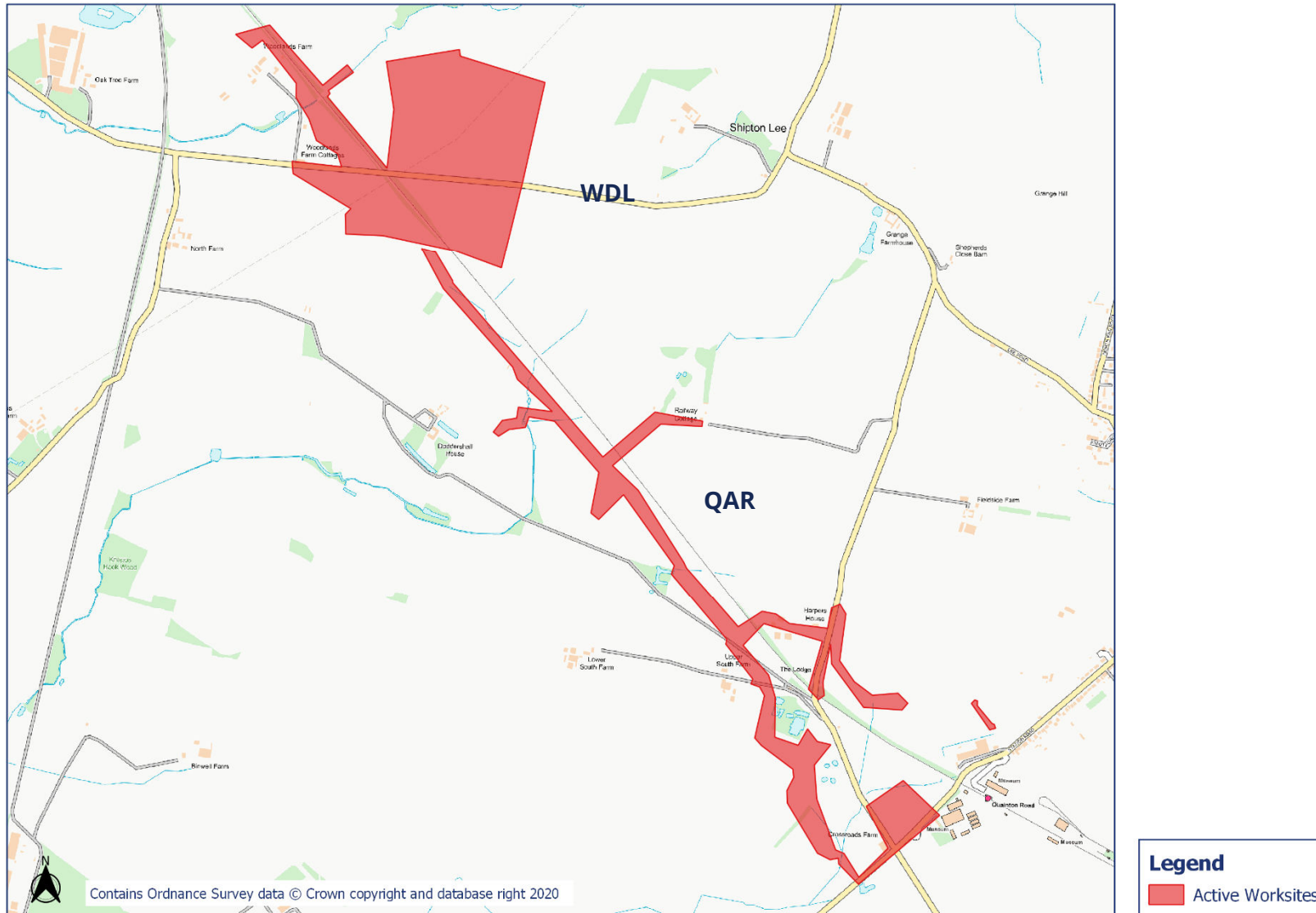


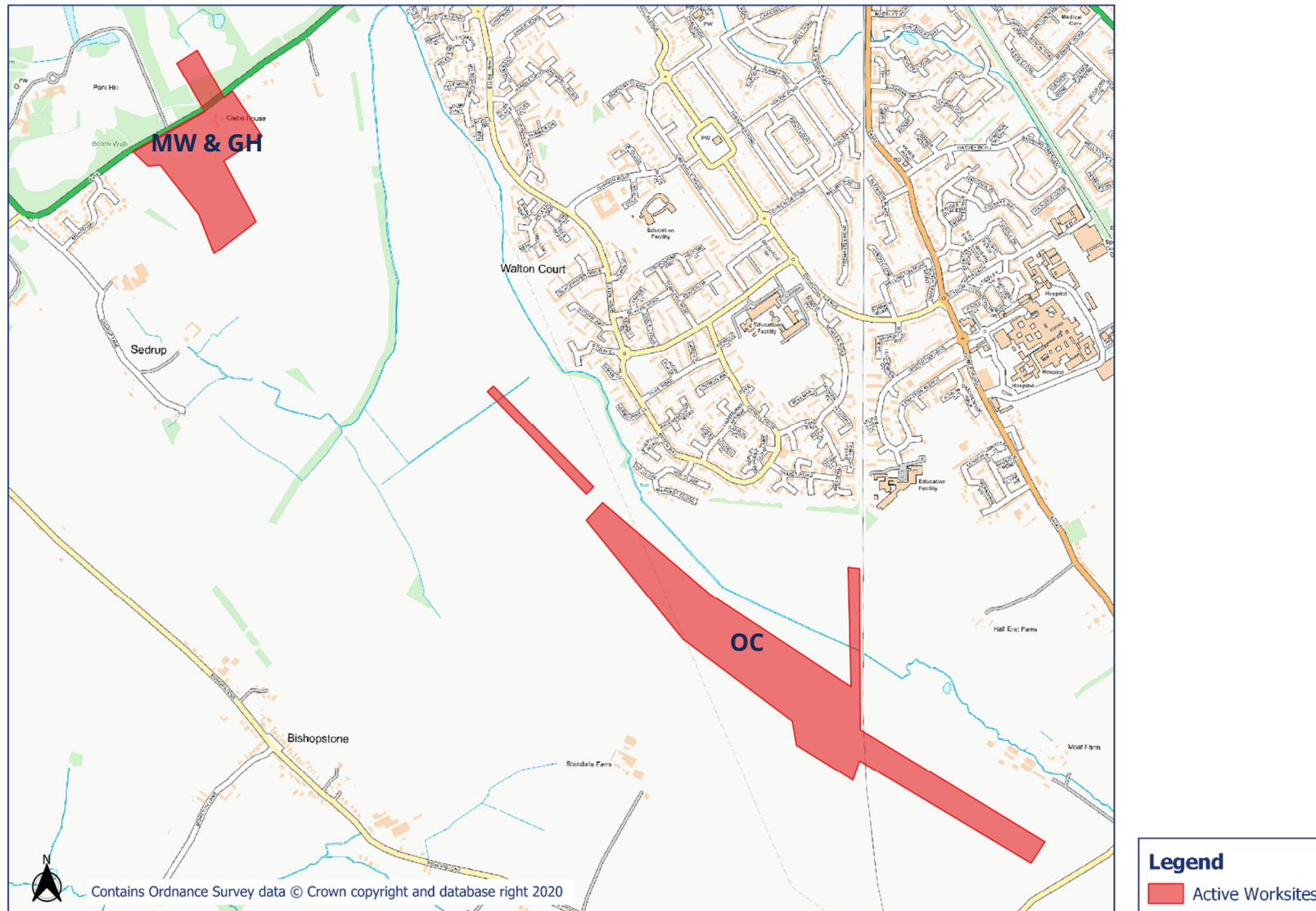
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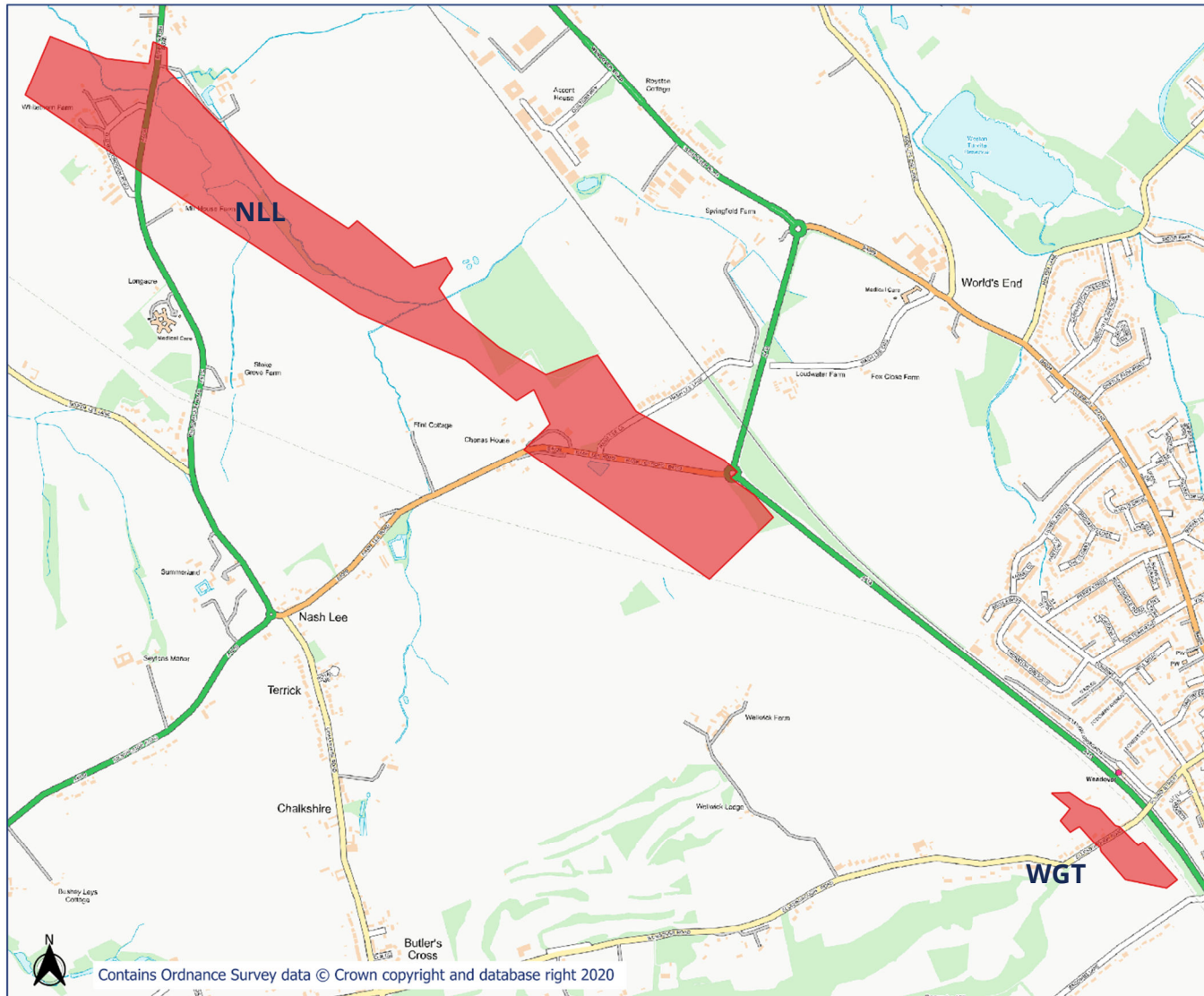


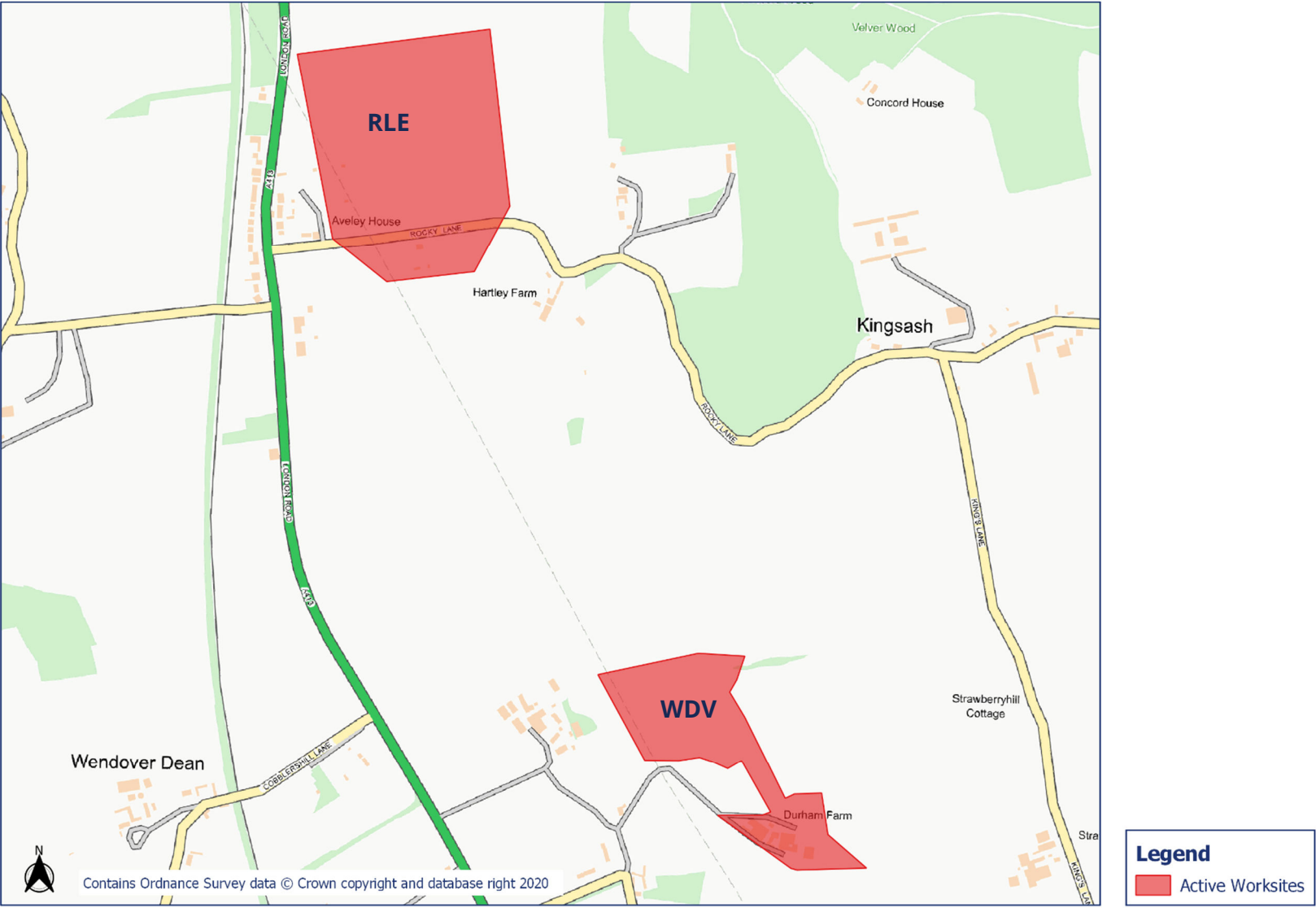


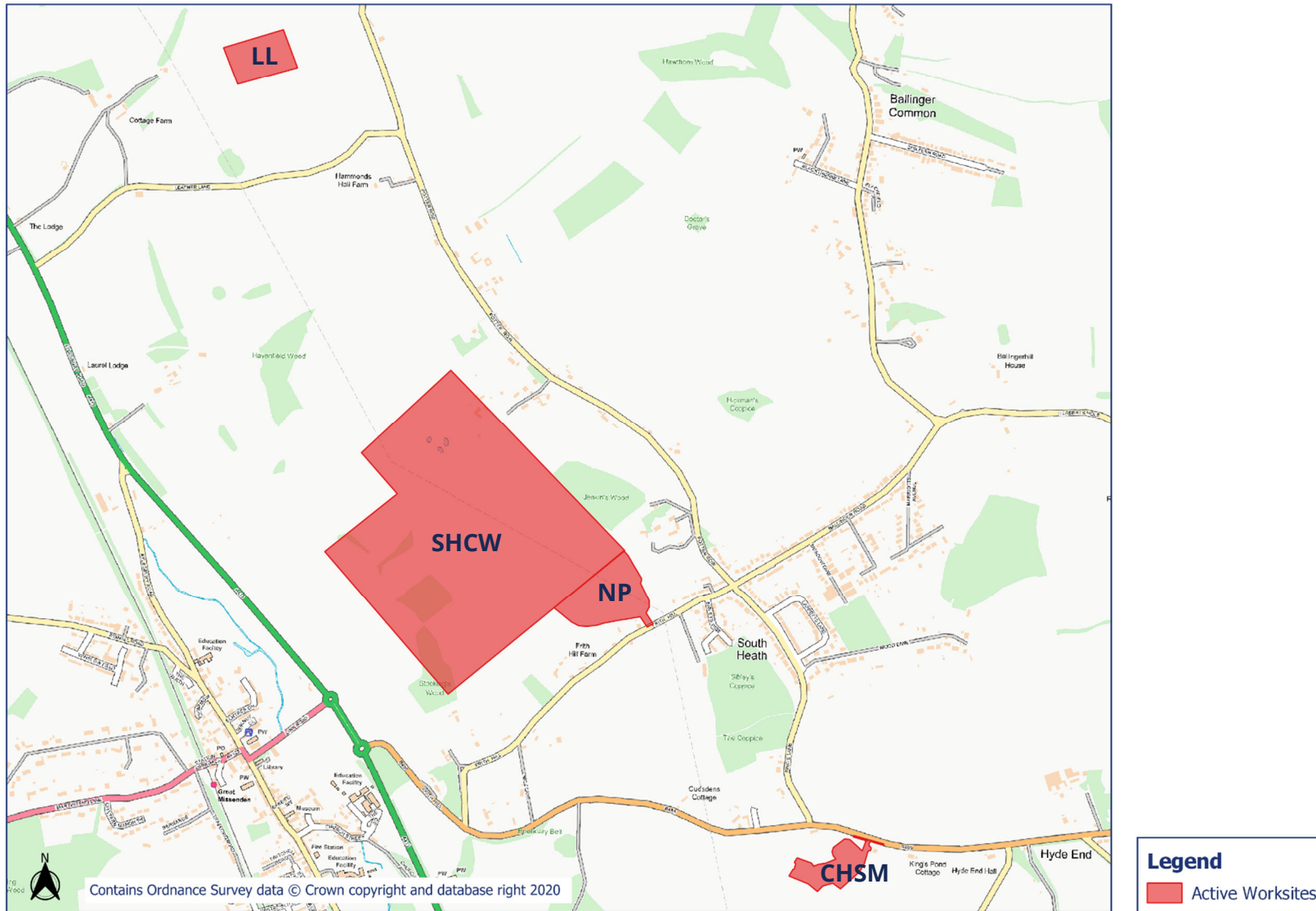




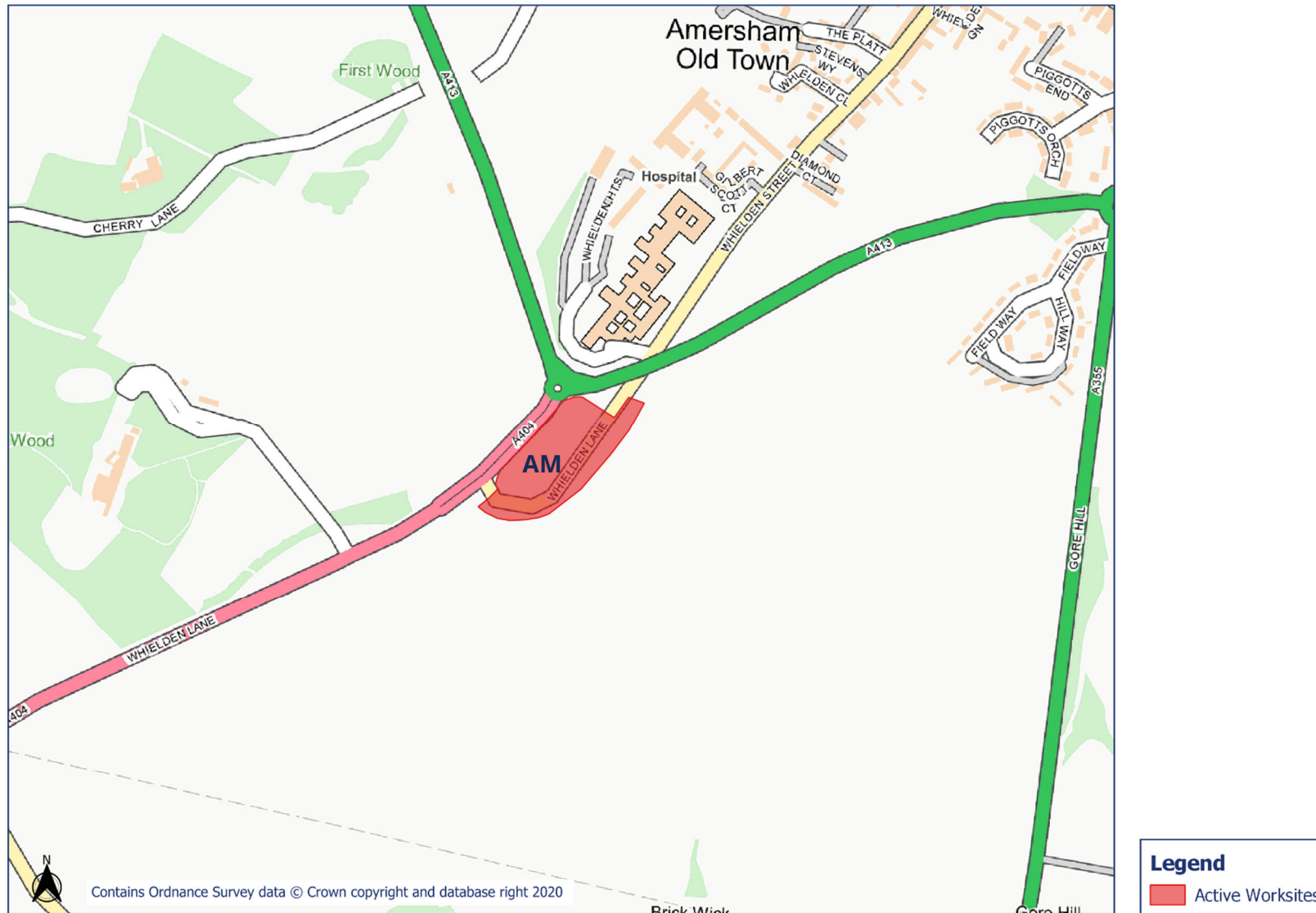


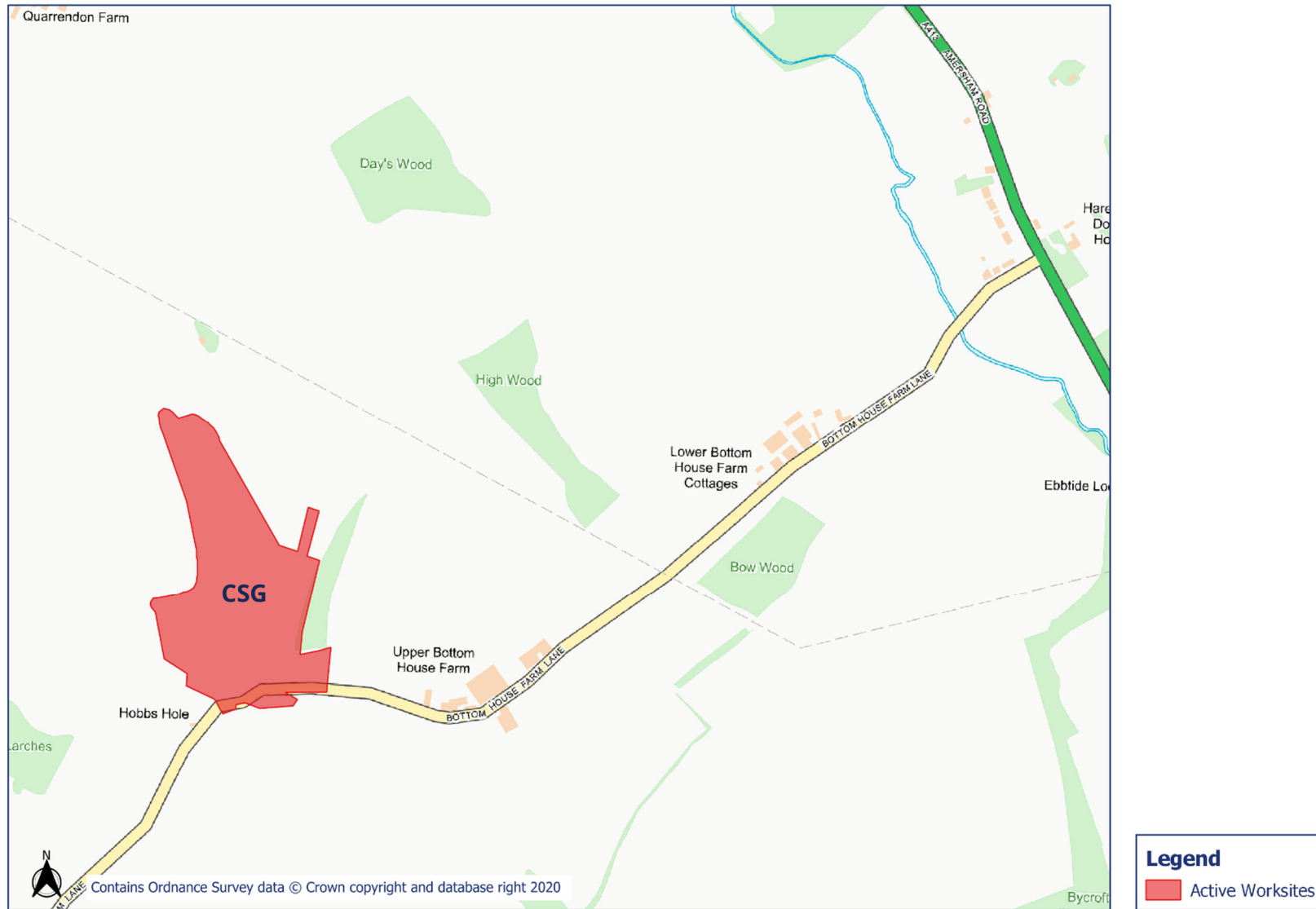




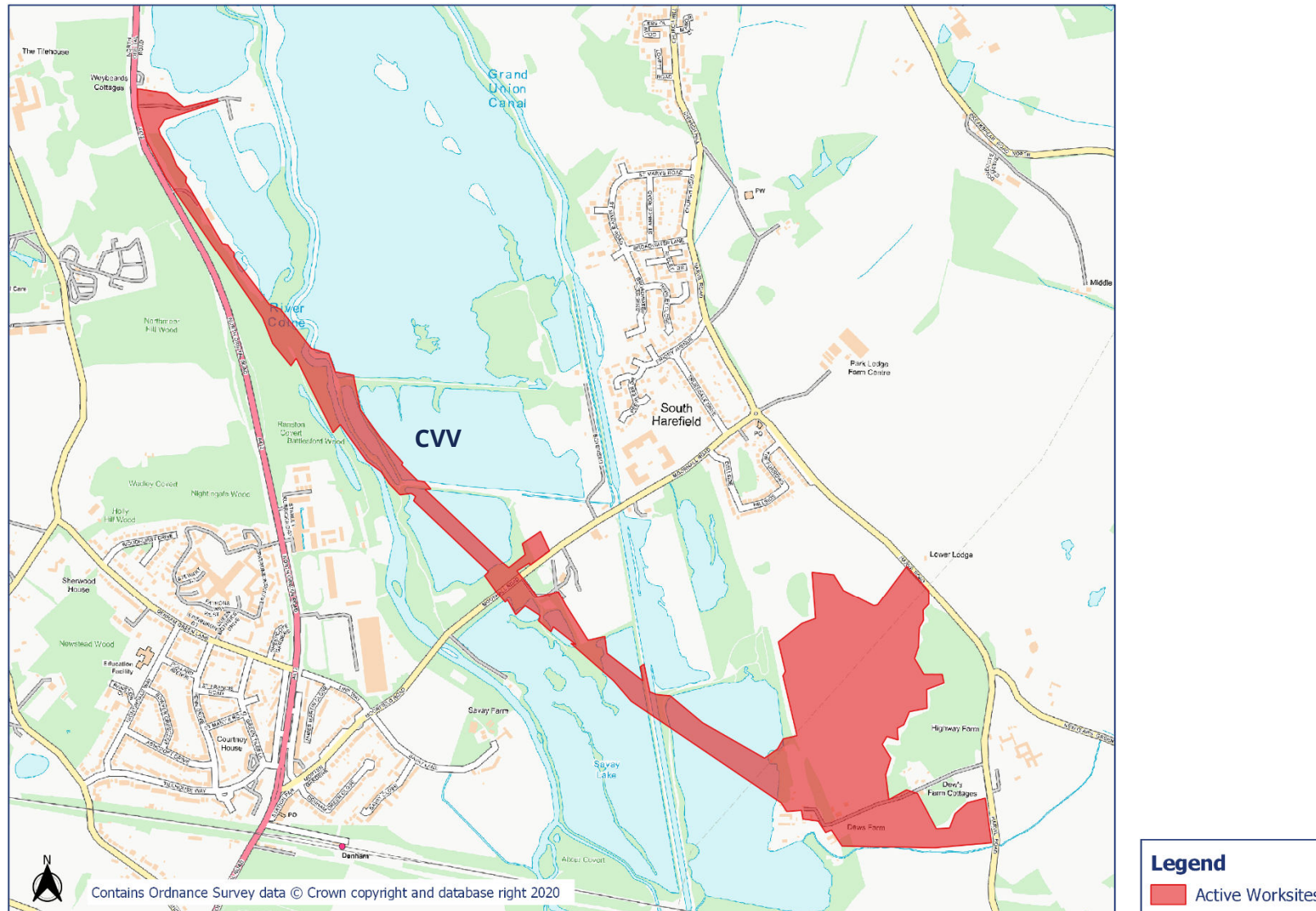




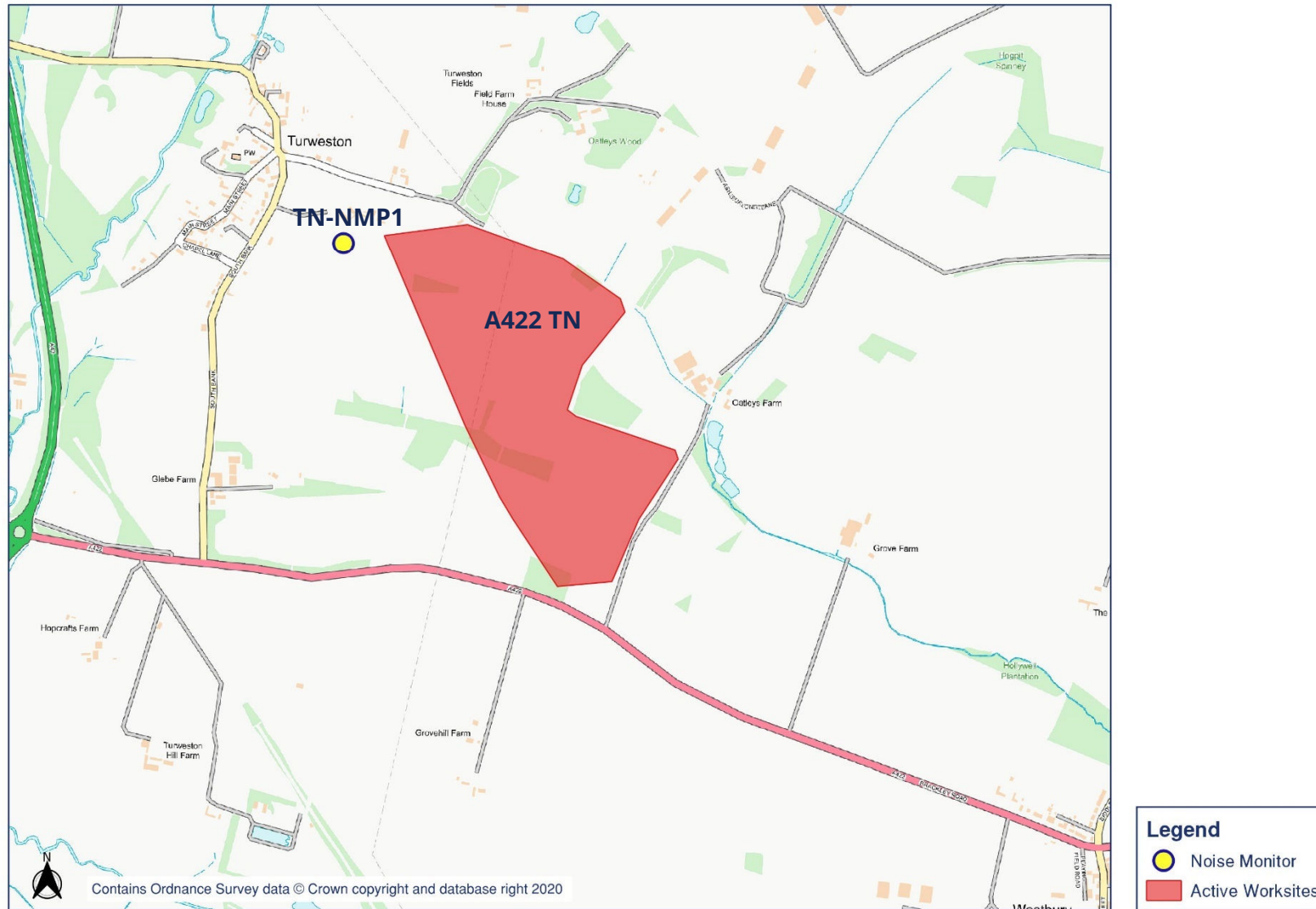






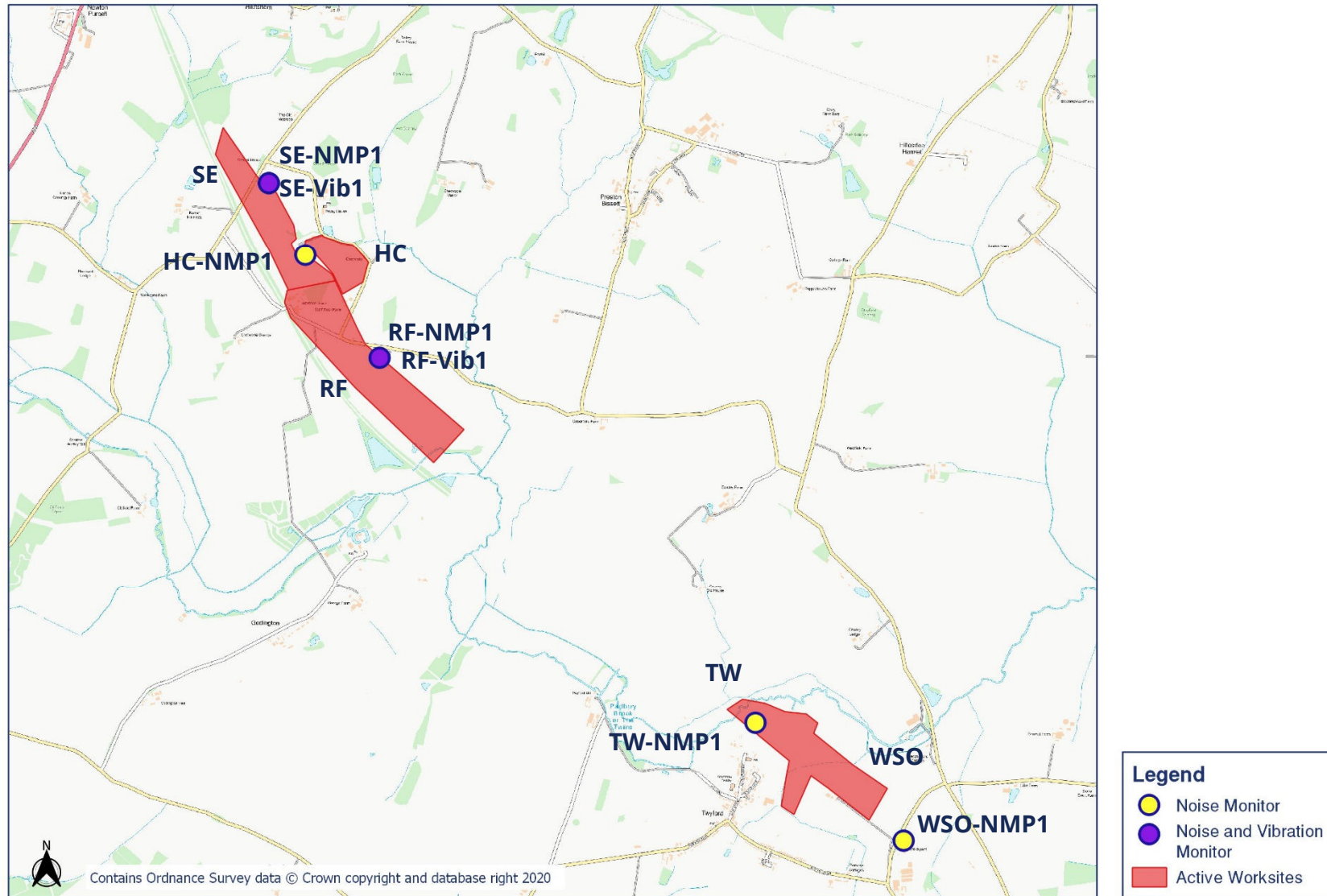


Appendix B Monitoring Locations

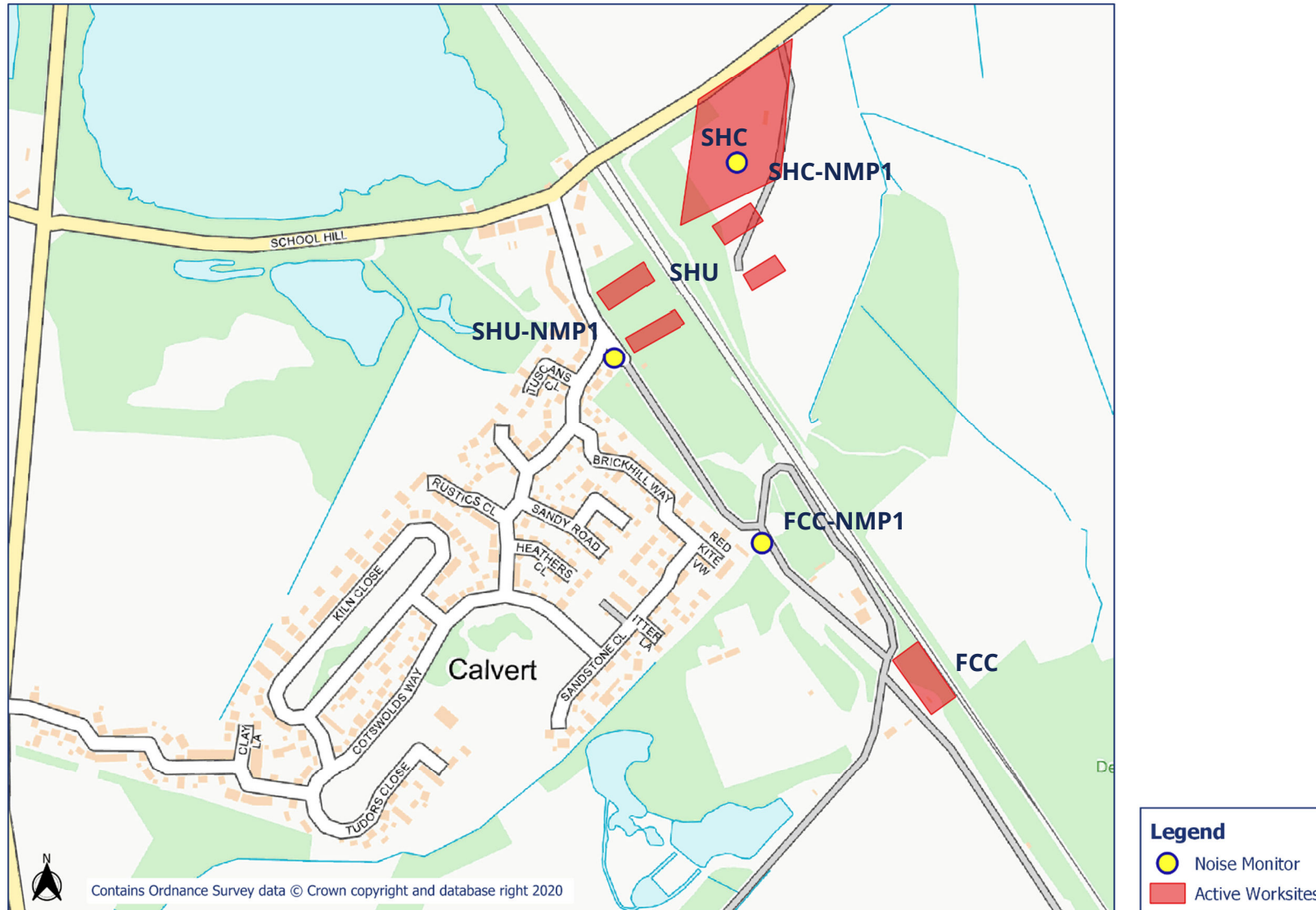


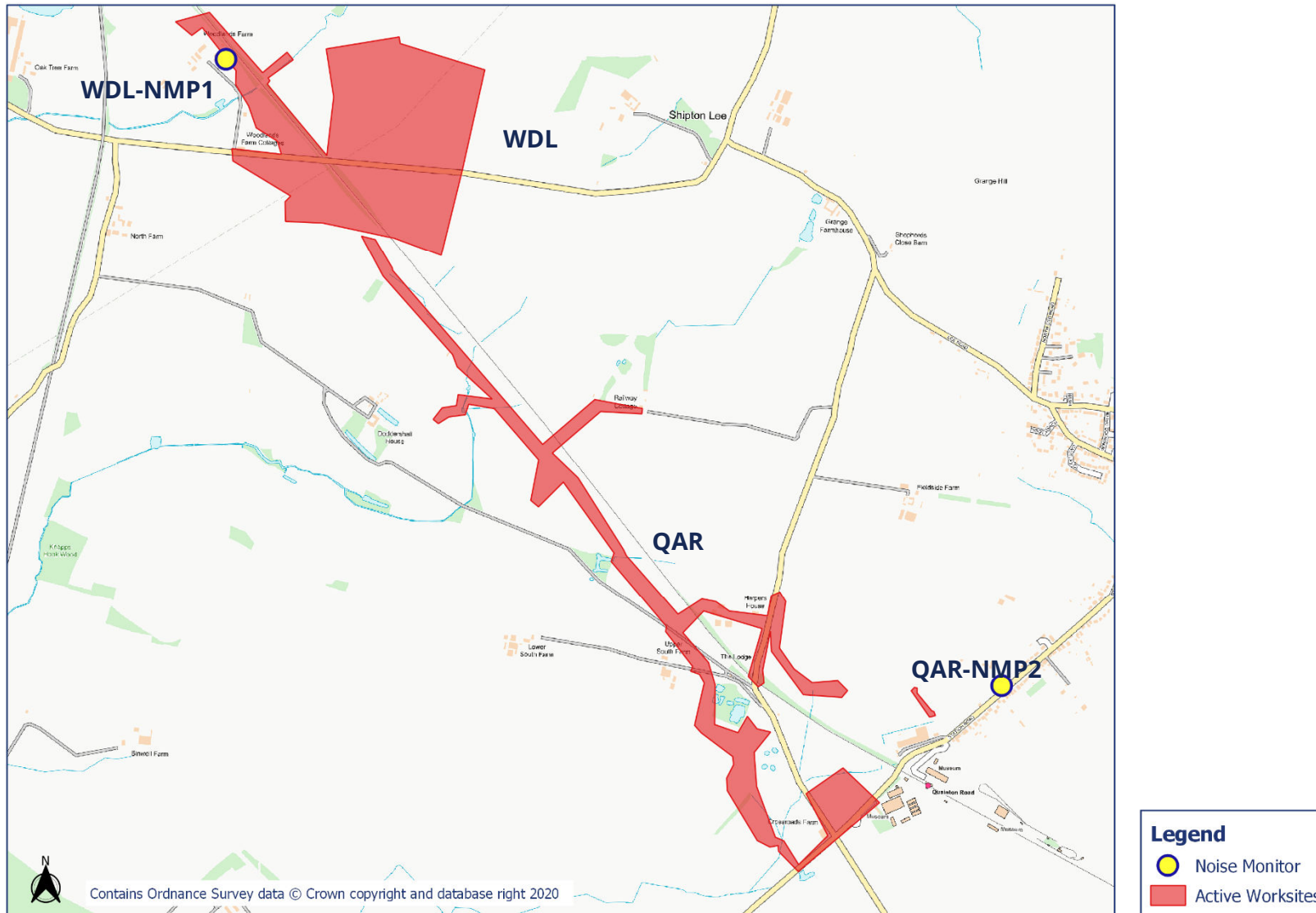
HS2

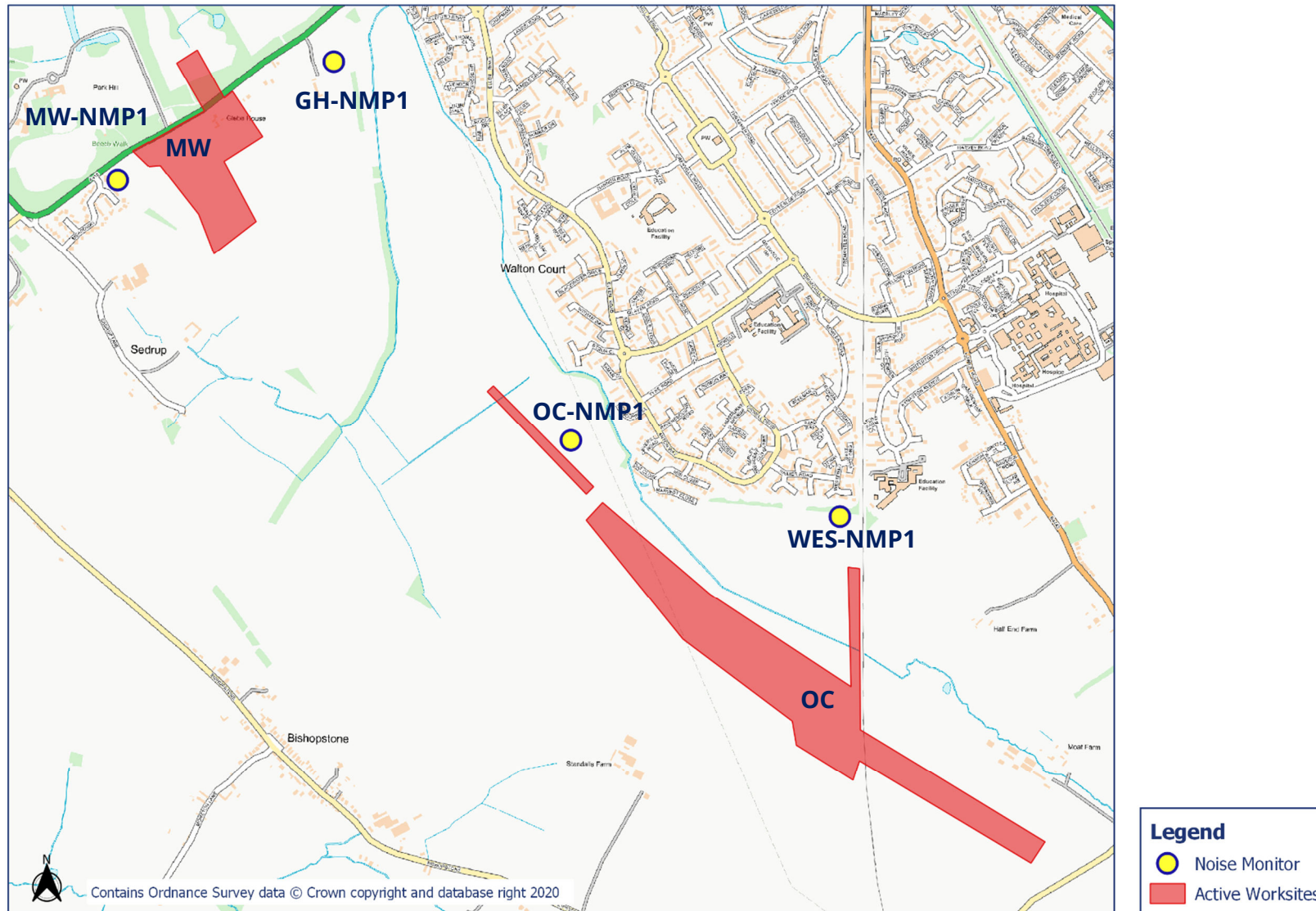
Noise and Vibration Monitoring Plan - 2

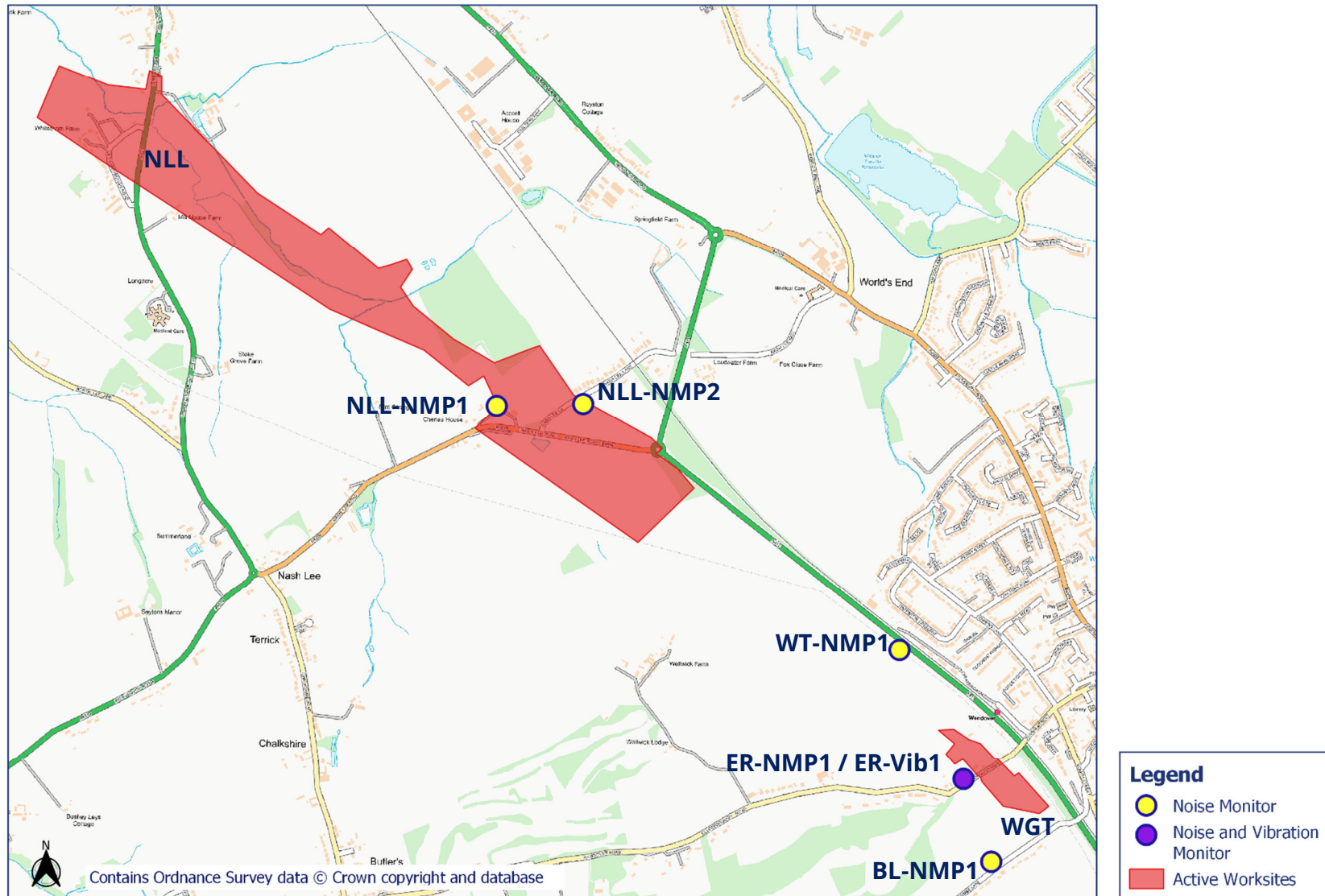


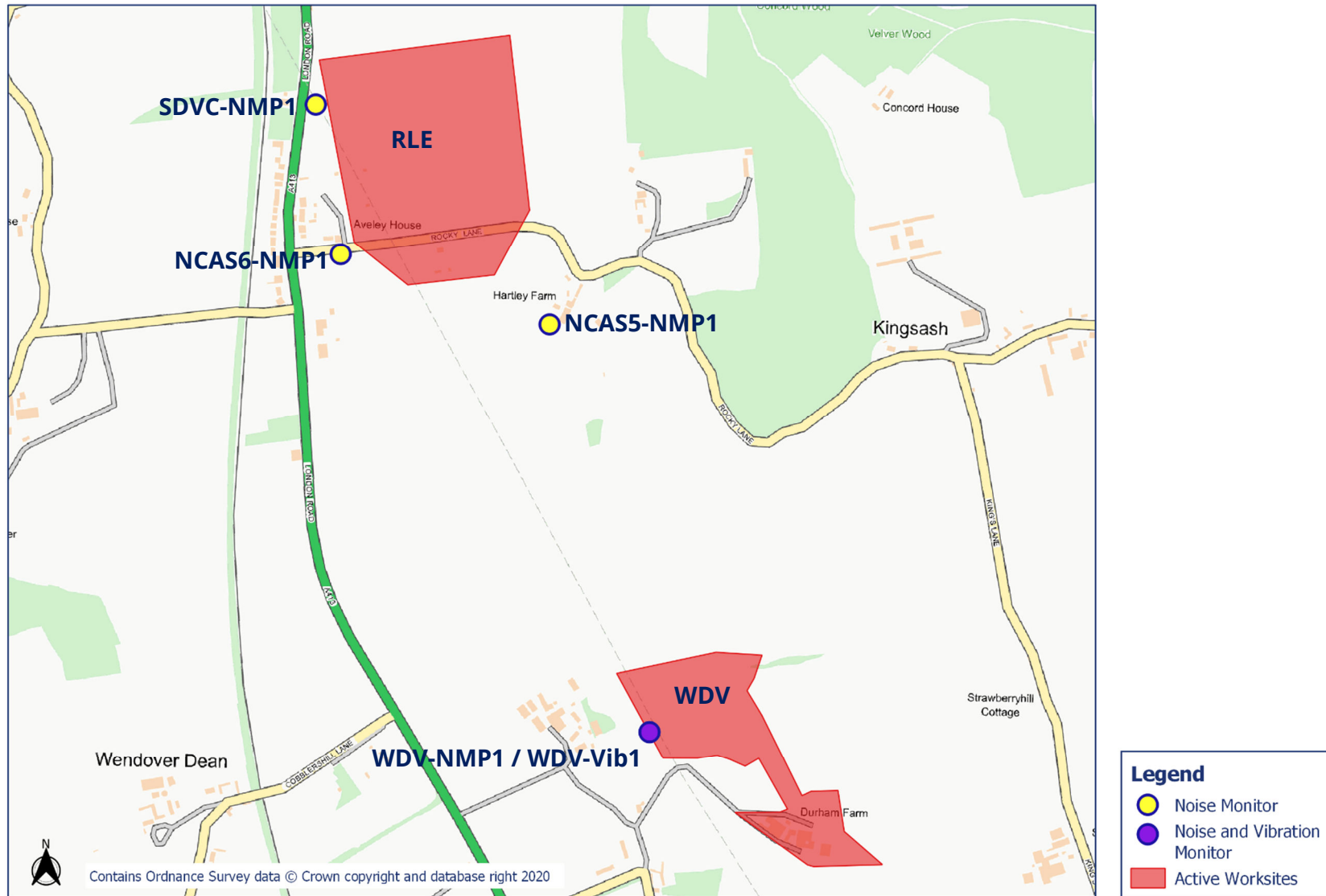


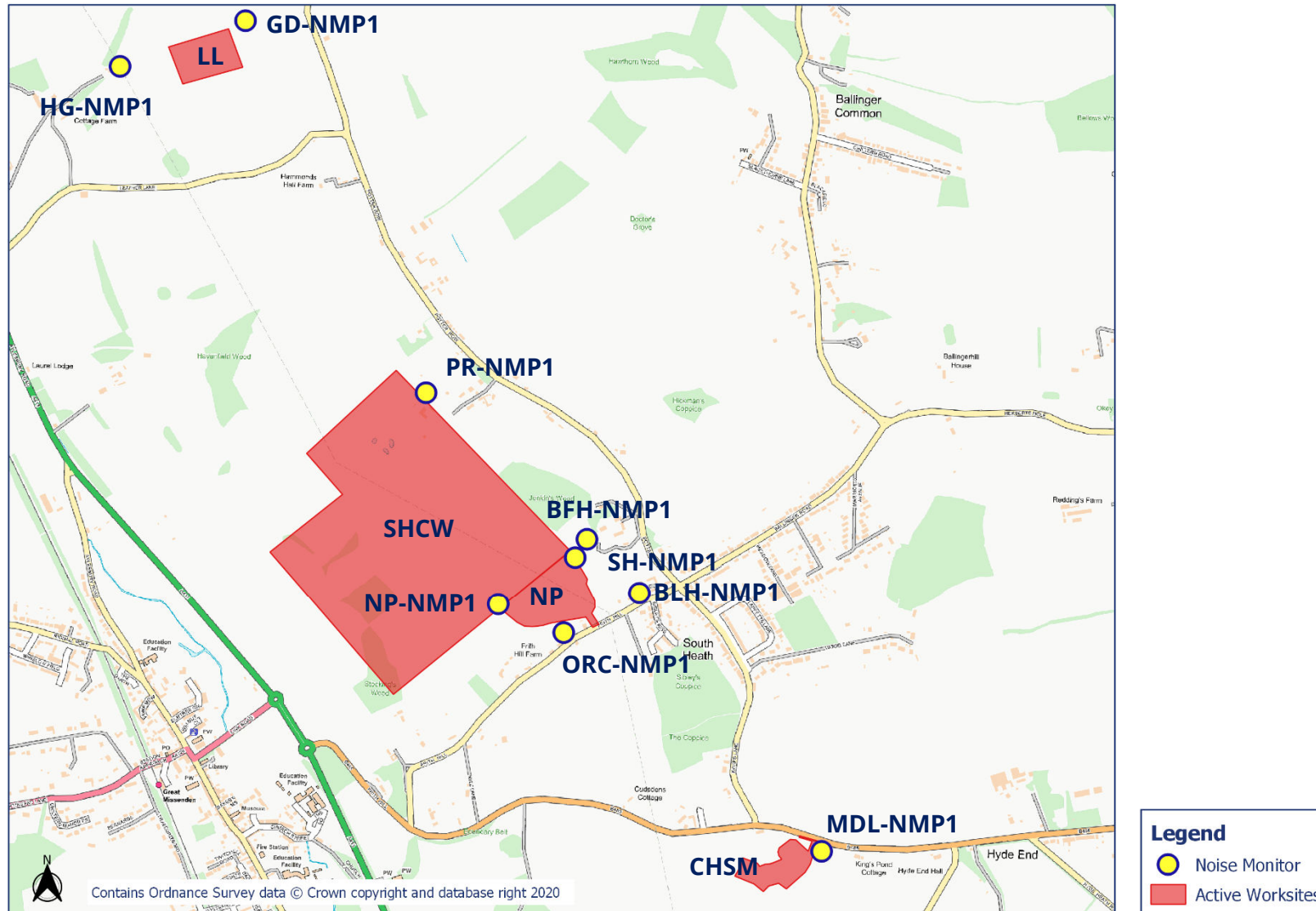






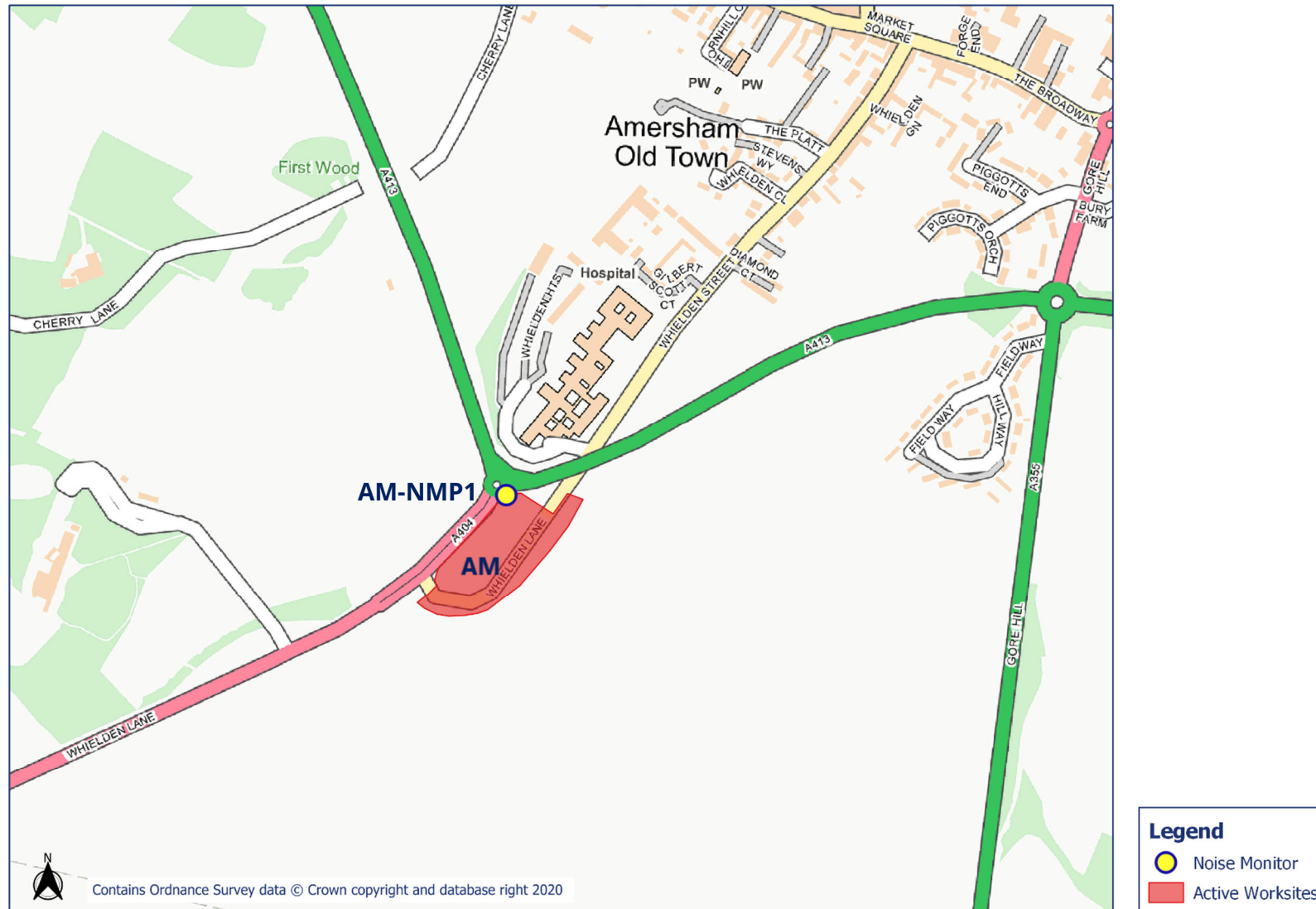


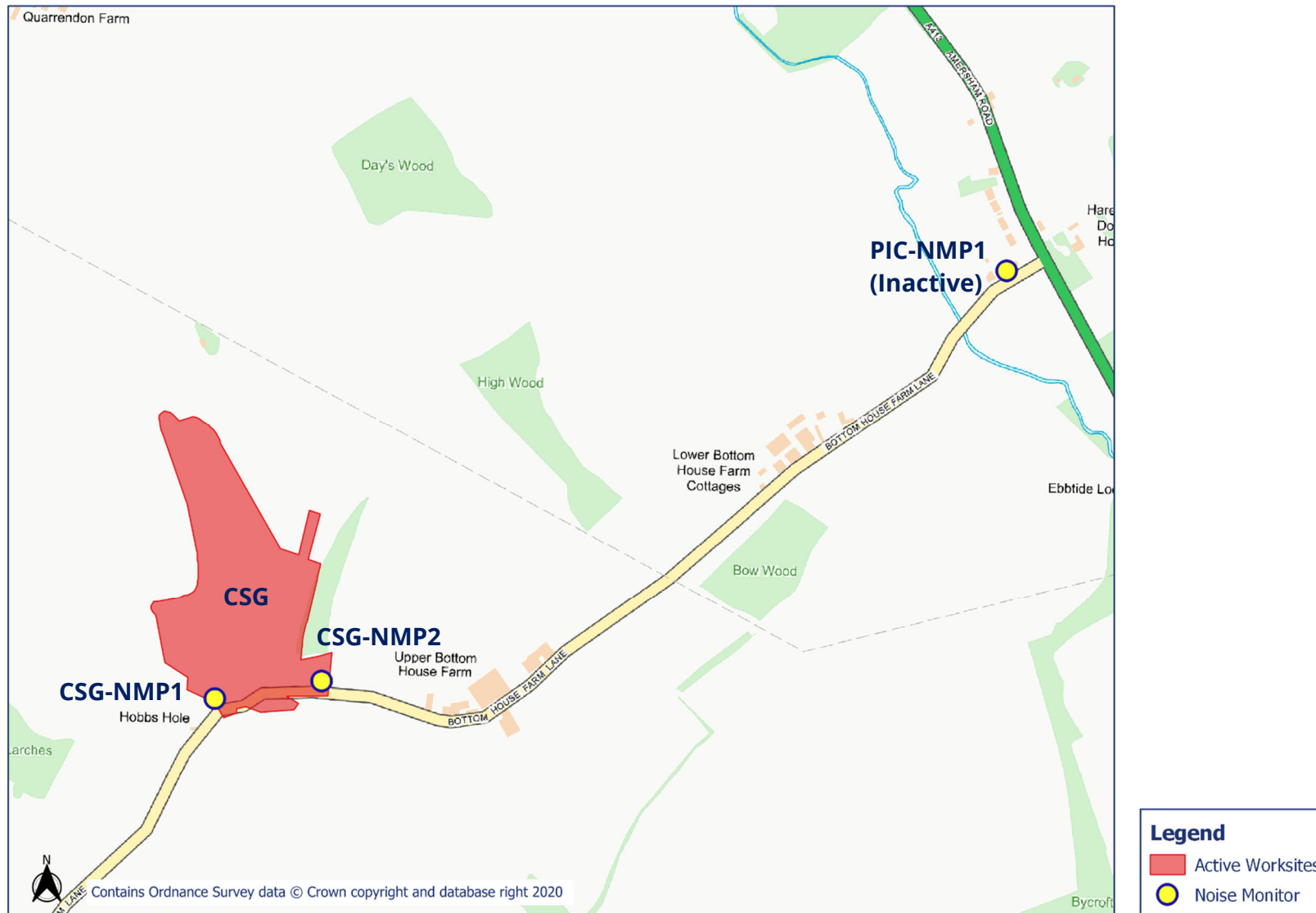




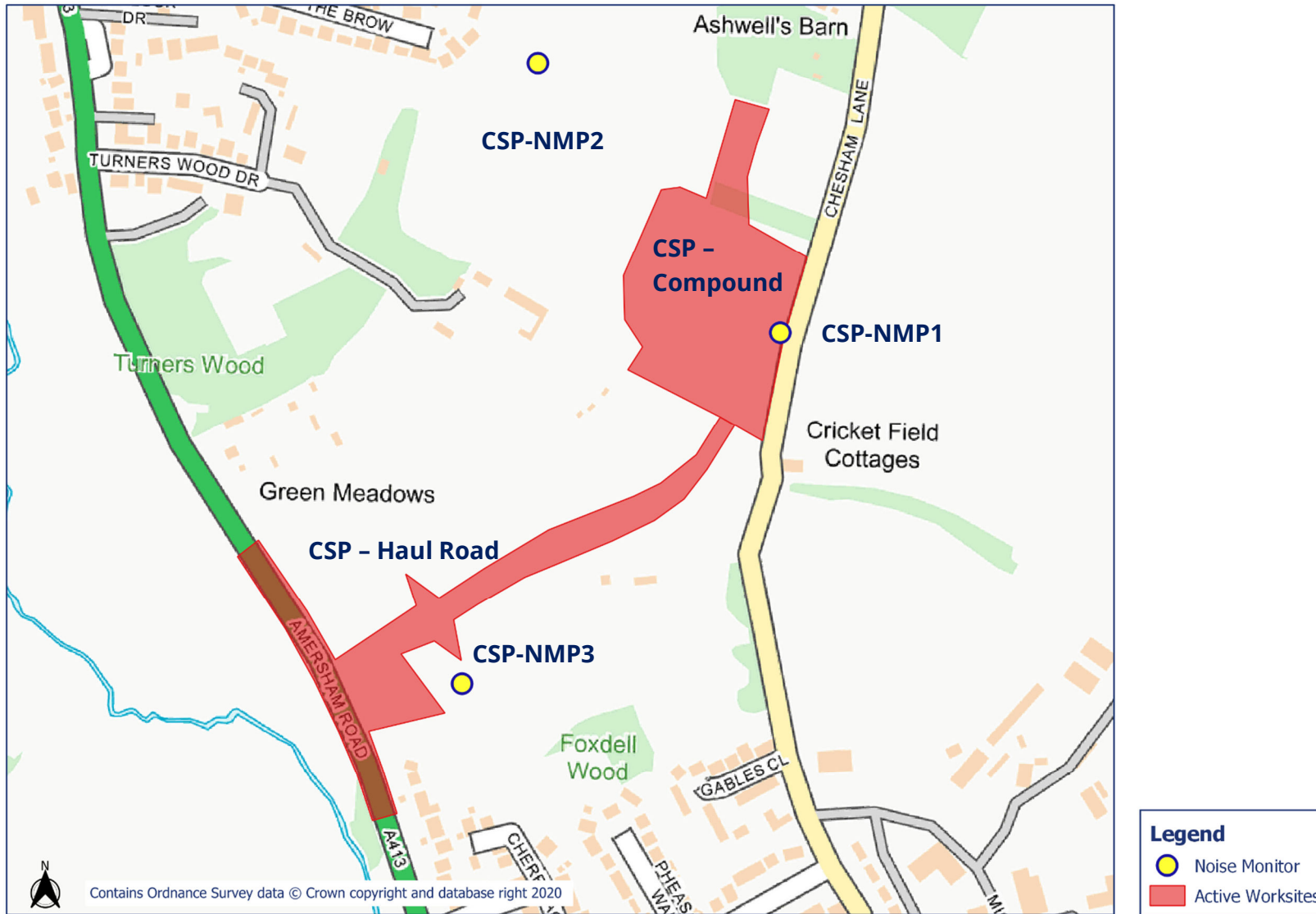


HS2 Noise and Vibration Monitoring Plan - 11

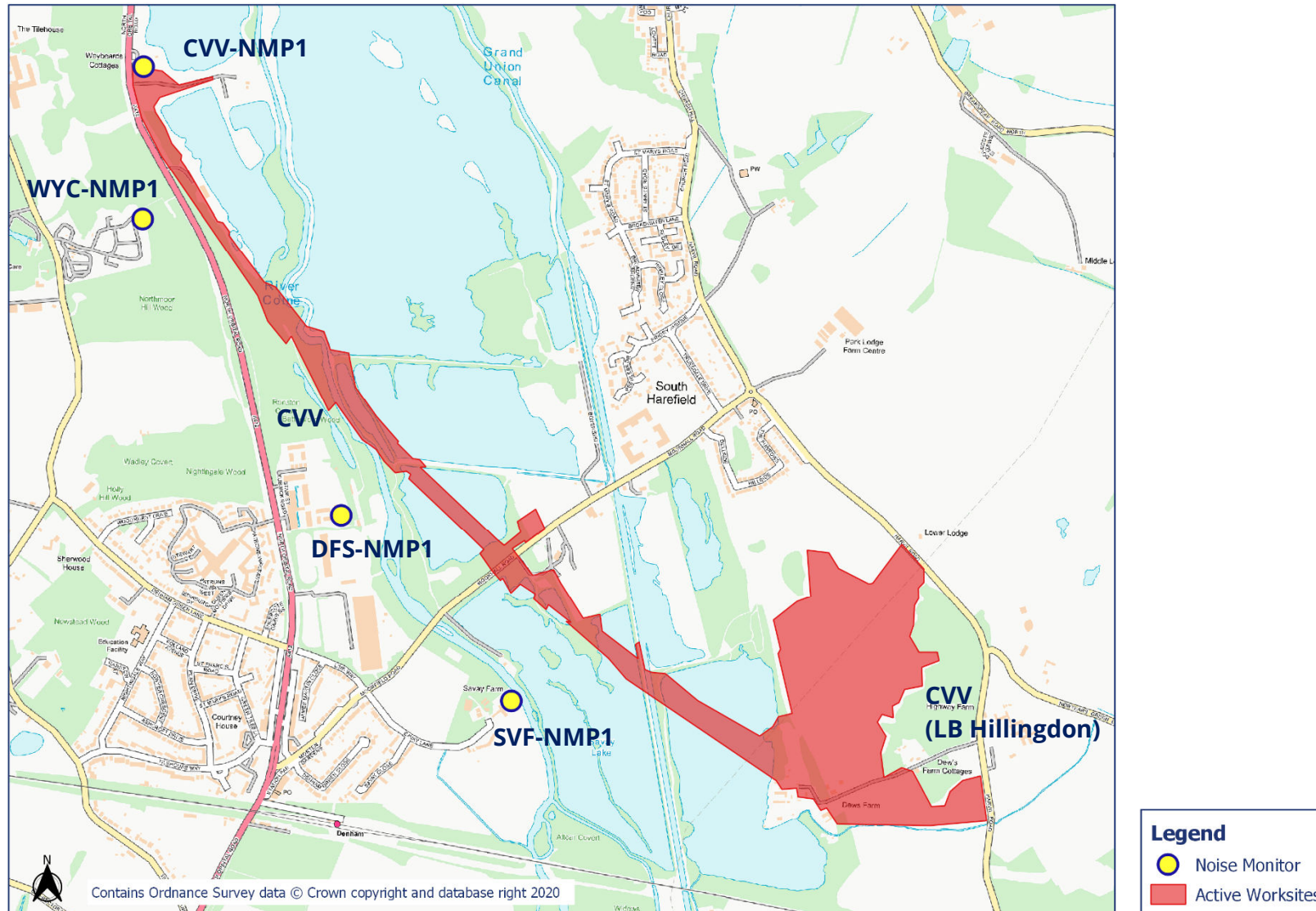




HS2 Noise and Vibration Monitoring Plan - 13



HS2 Noise and Vibration Monitoring Plan - 14

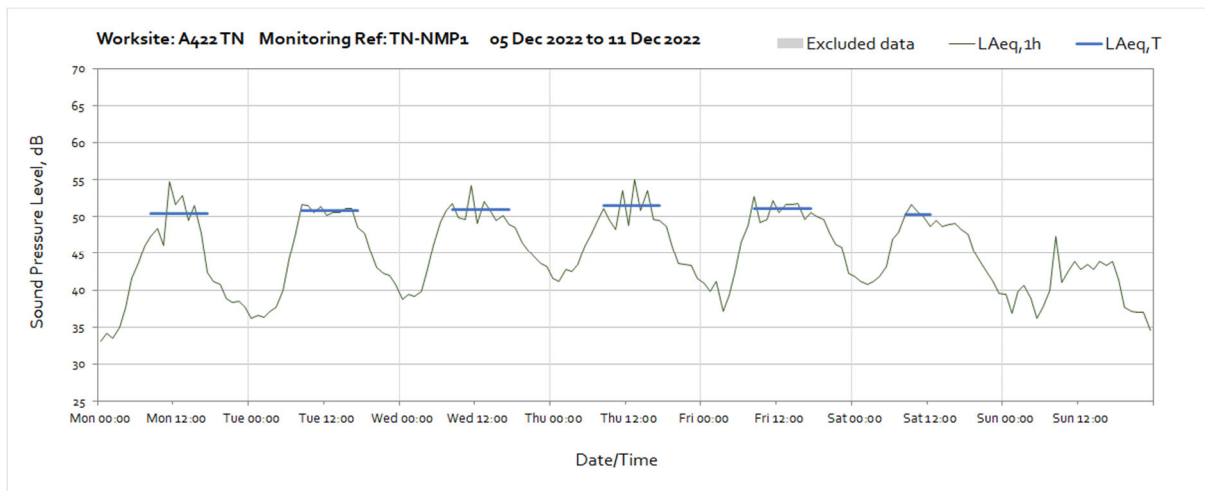
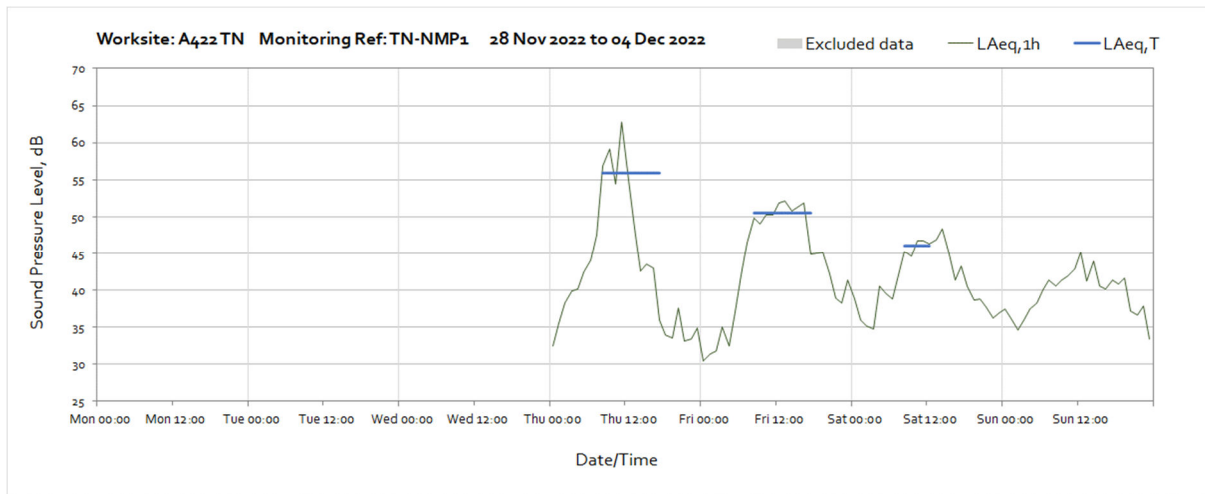


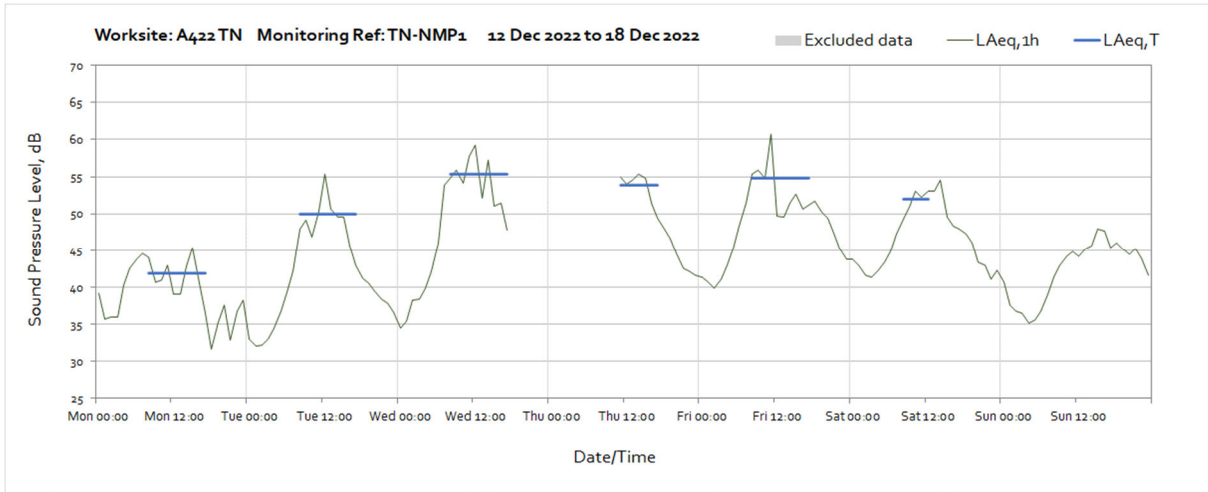
Appendix C Data

Noise

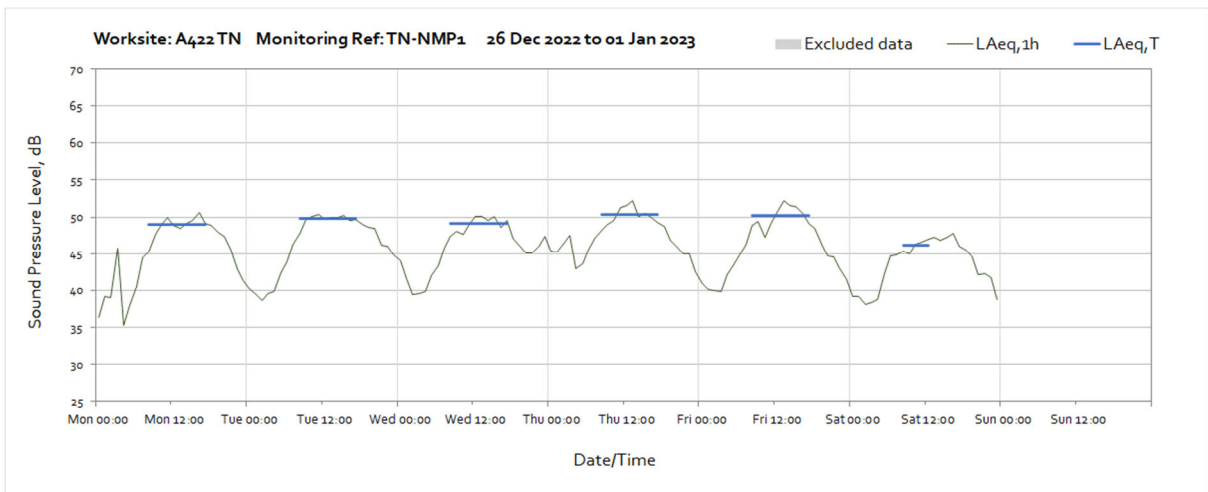
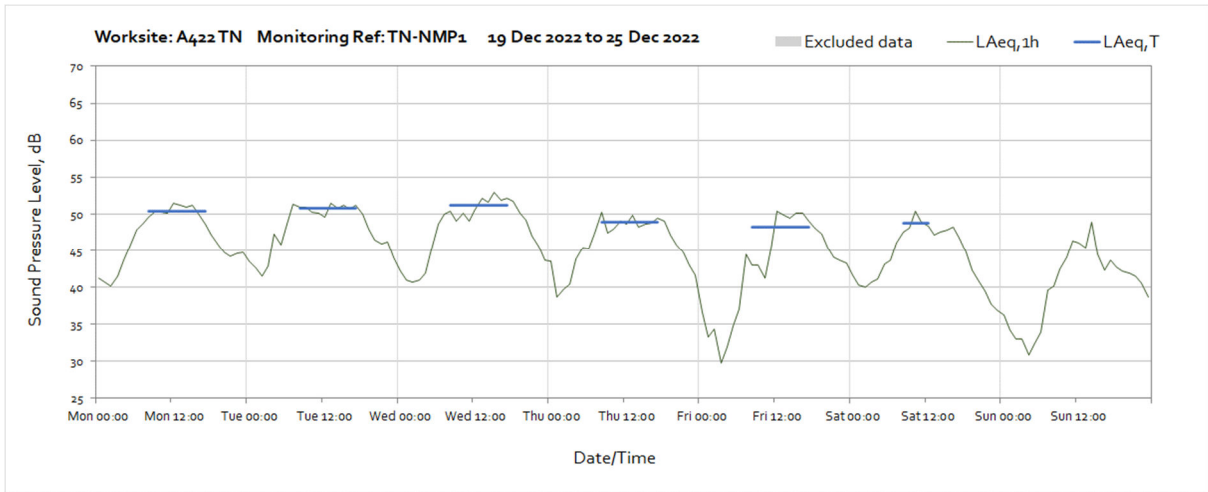
The following graphs show the hourly measured ambient noise level $L_{Aeq,1h}$ and, where relevant, the averaged noise level $L_{Aeq,T}$ values, where the time period T is as specified in Table 1 of HS2 Information Paper E23. Periods with adversely weather affected noise levels are greyed out and have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

Worksite: A422 TN - Monitoring Ref: TN-NMP1

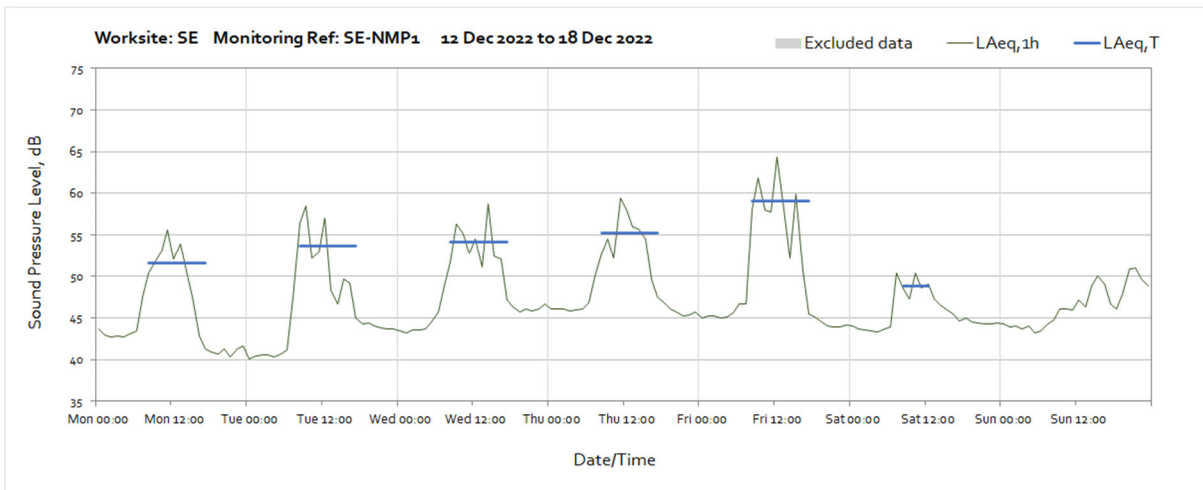
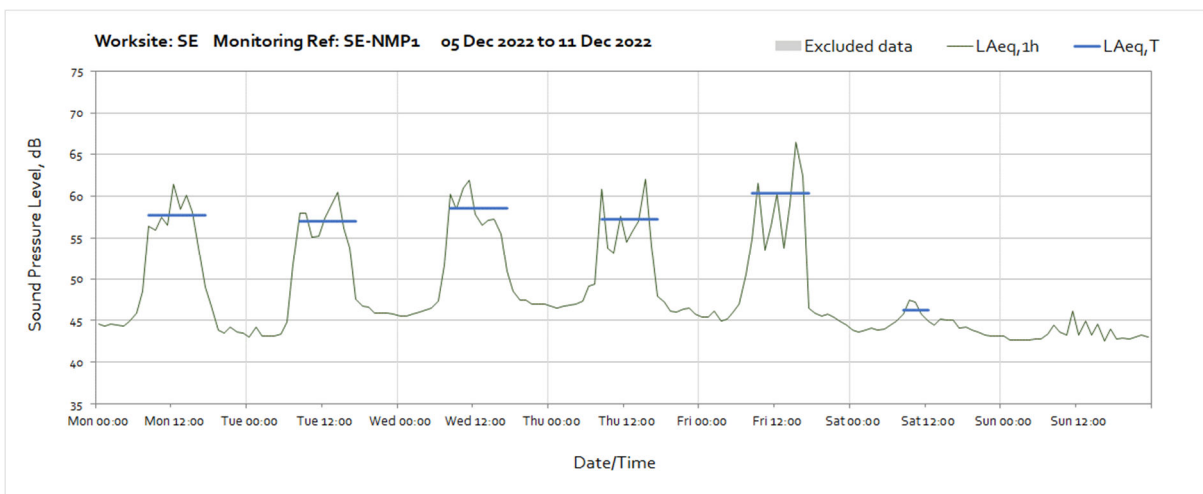
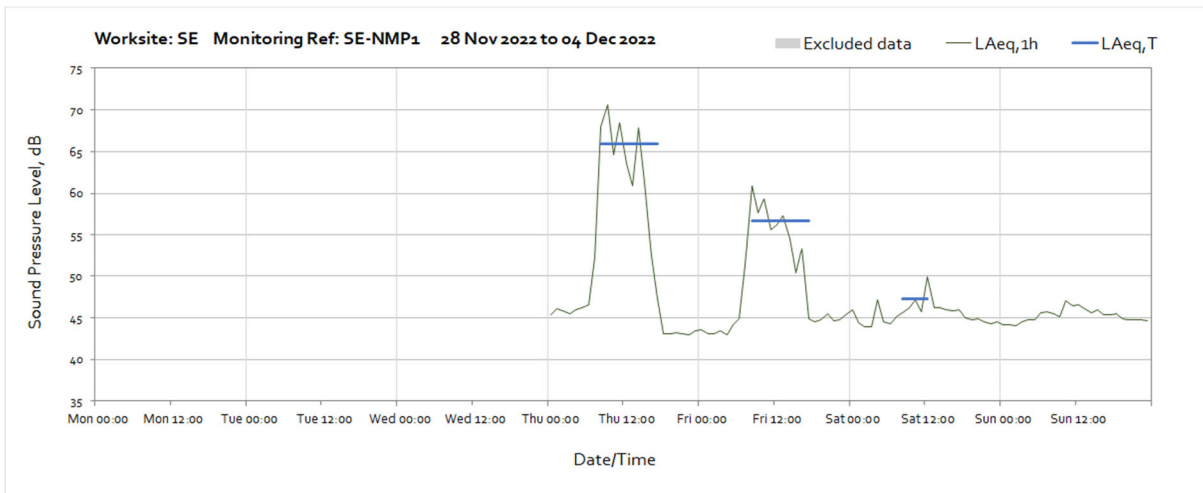


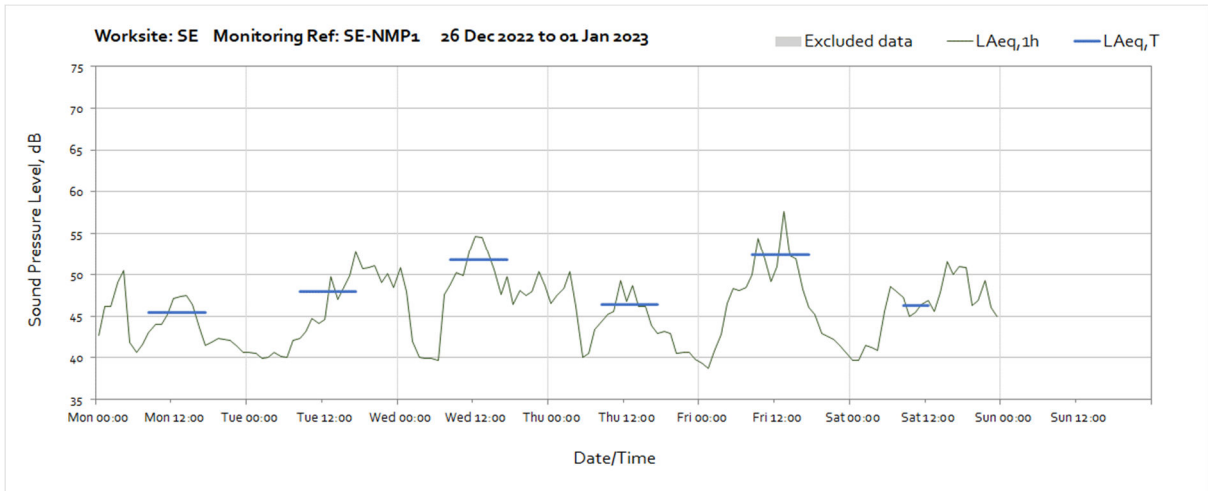
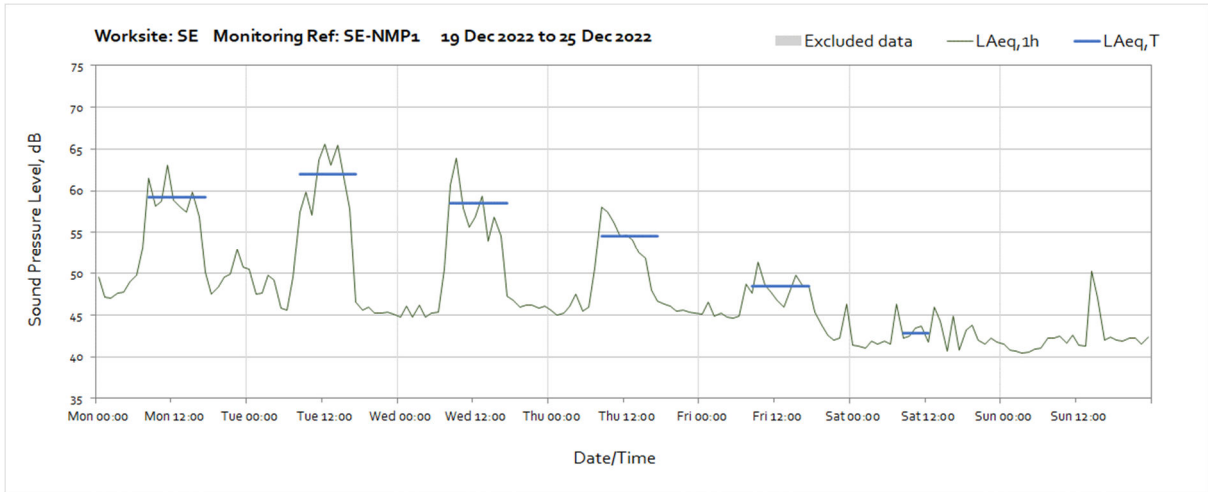


Note: Missing data between 18:00 on 14th December until 10:00 on 15th December was due to monitor depleted battery.

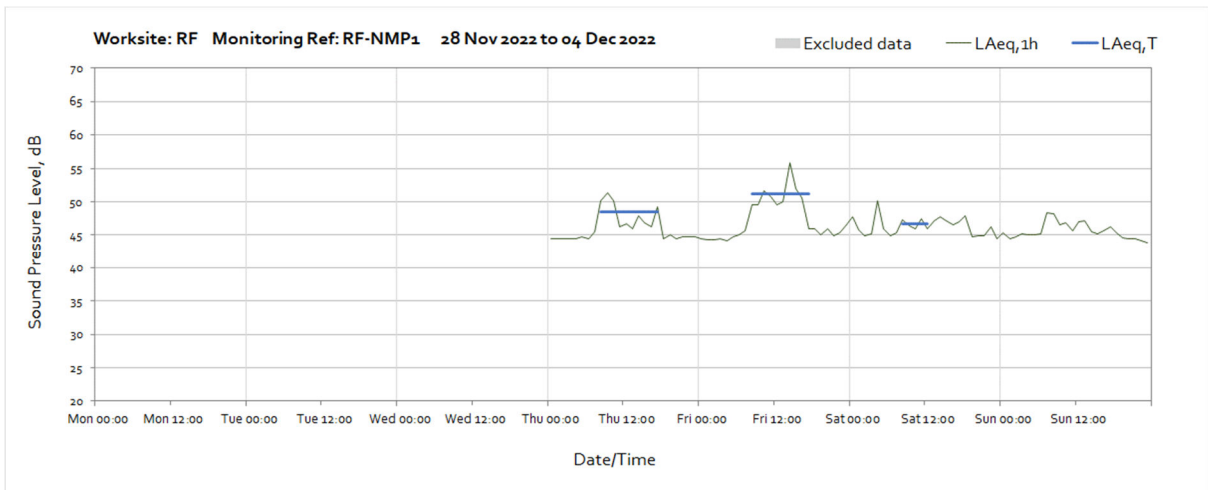


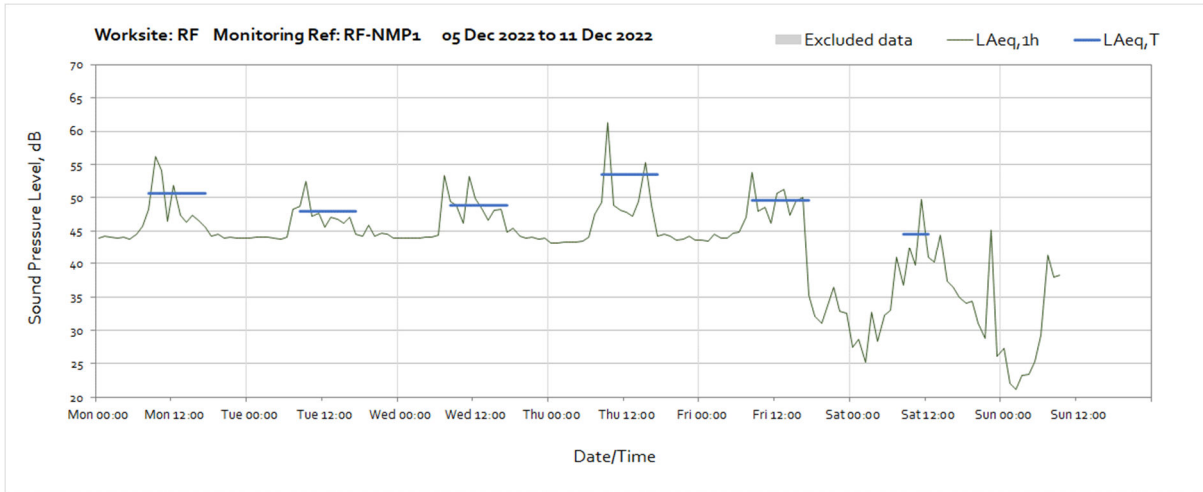
Worksite: SE – Monitoring Ref: SE-NMP1



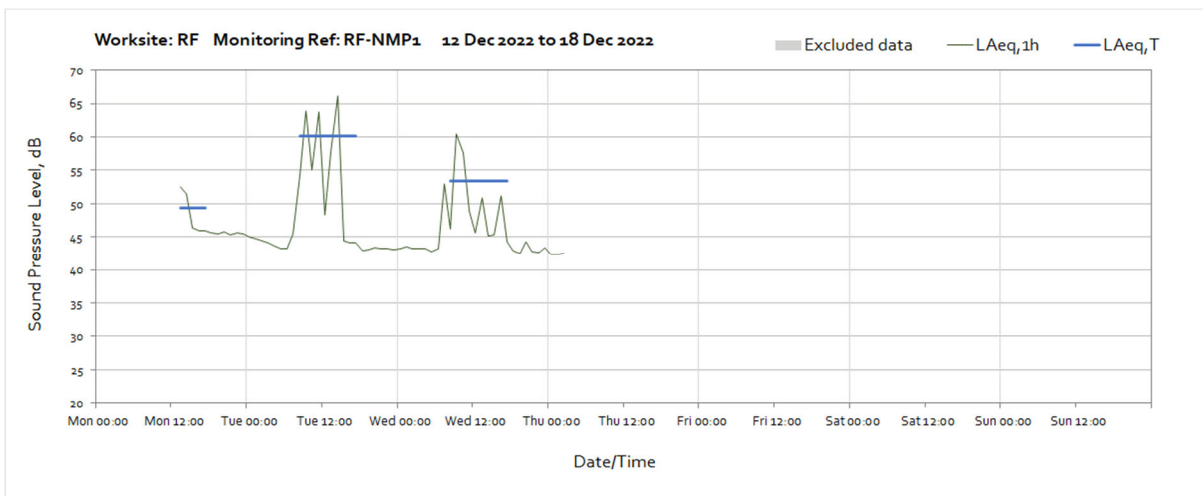


Worksite: RF – Monitoring Ref: RF-NMP1



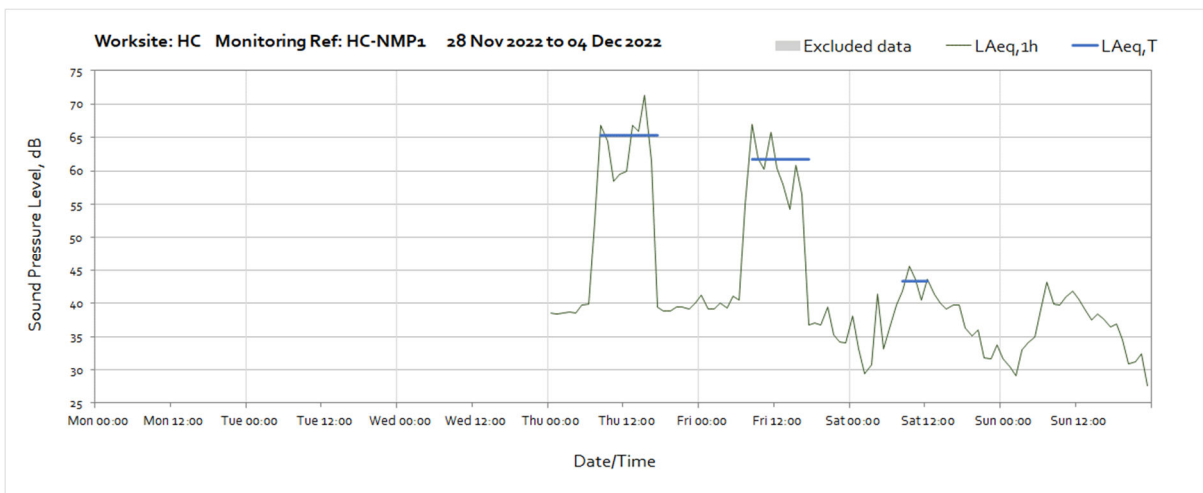


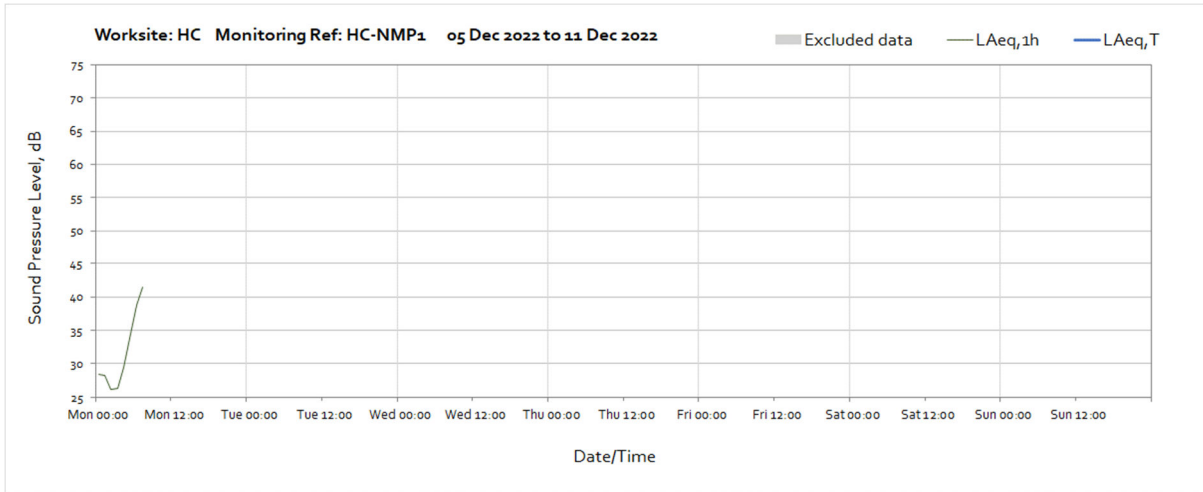
Note: Missing data from 10:00 on 11th December till 12:00 on 12th December was due to loss of power.



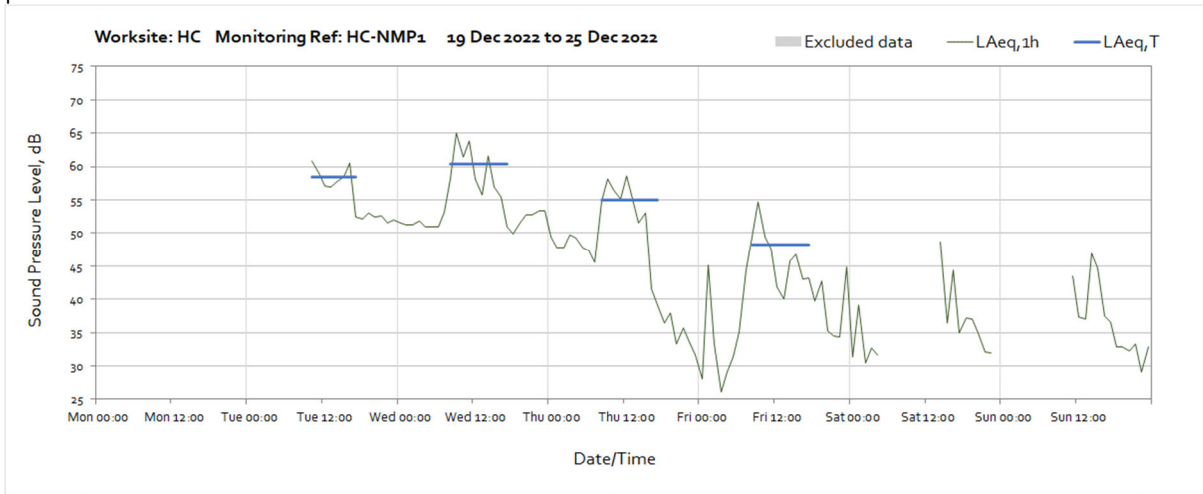
Note: Missing data from 10:00 on 11th December till 13:00 on 12th December was due to loss of power. Missing data between 03:00 on 15th December till month end was due to loss of power.

Worksite: HC - Monitoring Ref: HC-NMP1

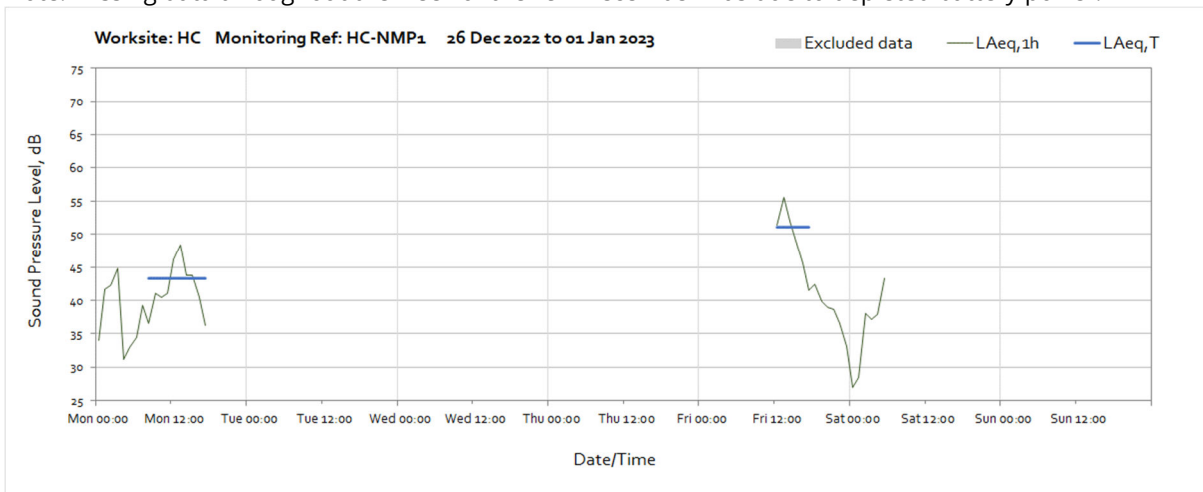




Note: Missing data from 08:00 on 5th December until 09:00 on 20th December was due to depleted battery power.

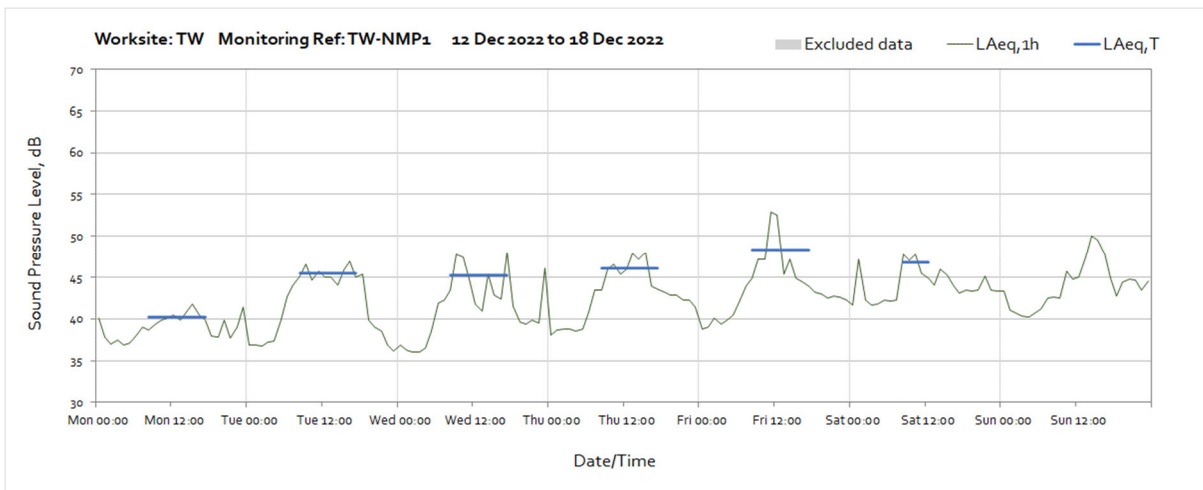
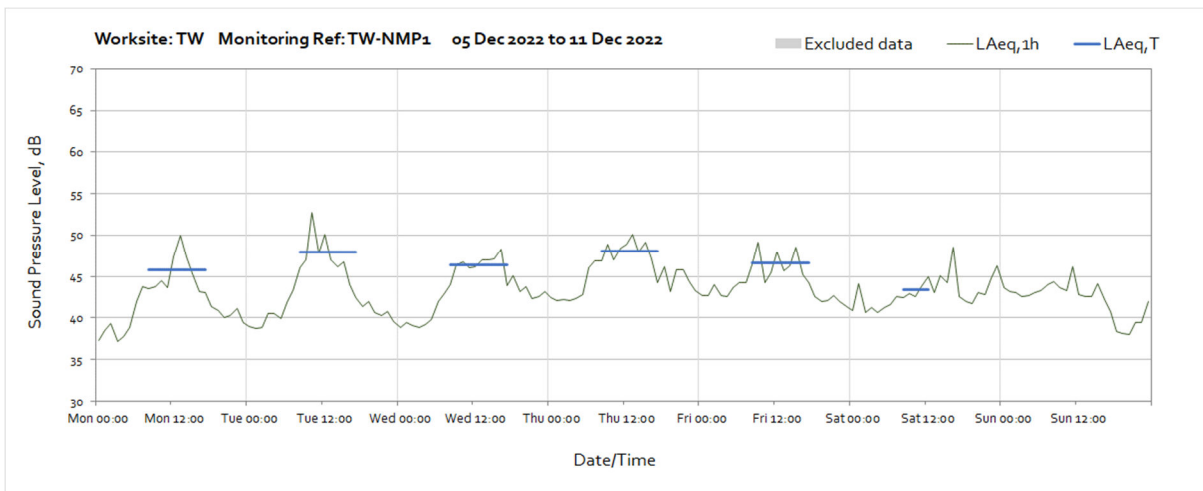
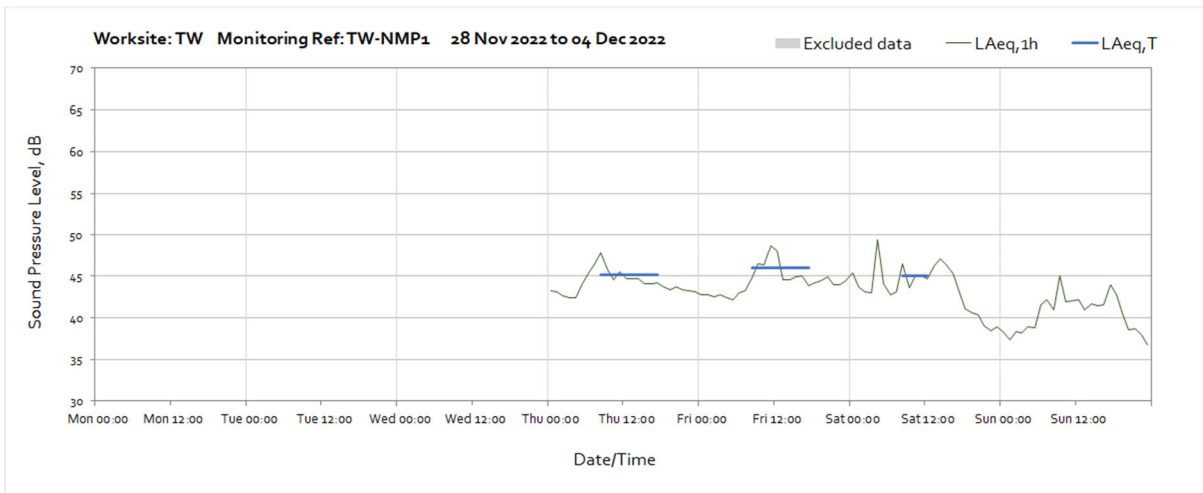


Note: Missing data throughout the week of the 19th December was due to depleted battery power.

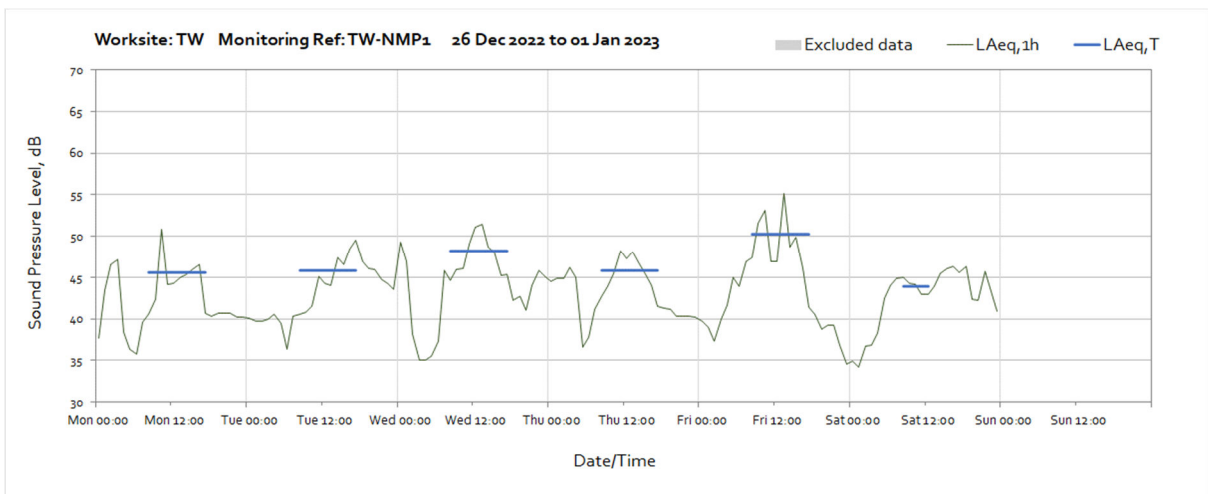
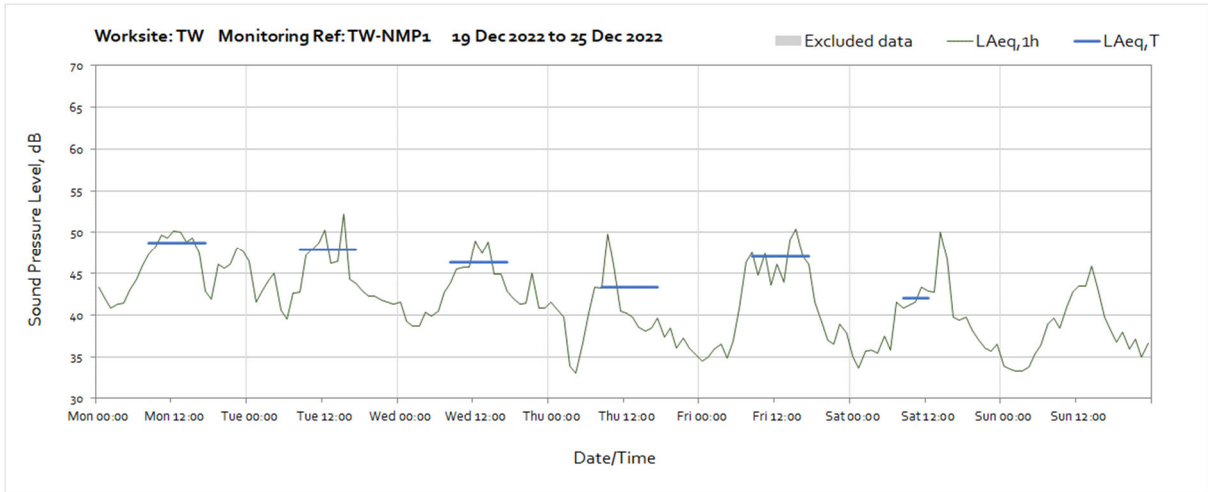


Note: Missing data throughout the week of the 26th December was due to depleted battery power.

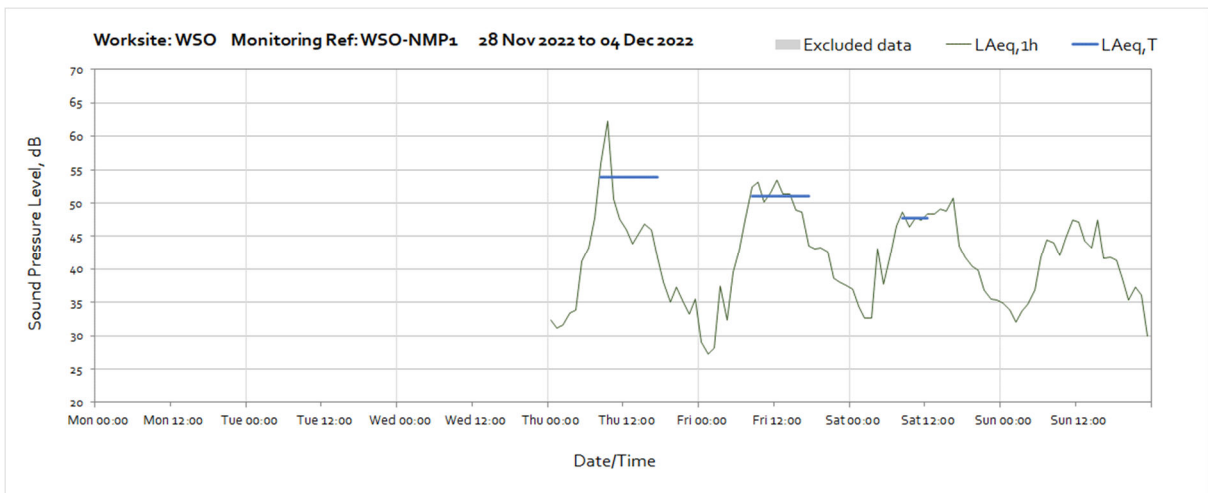
Worksite: TW – Monitoring Ref: TW-NMP1

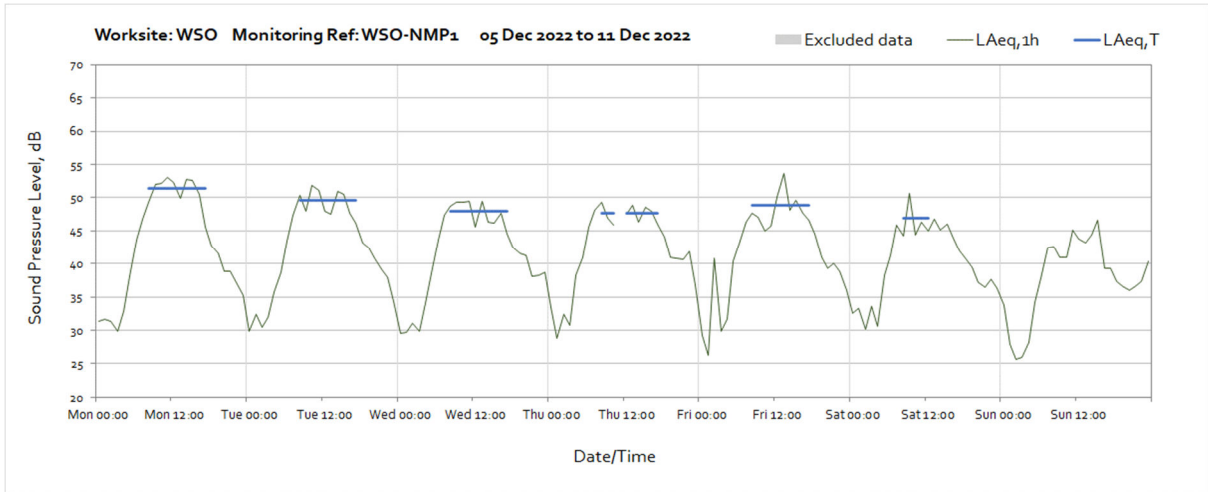


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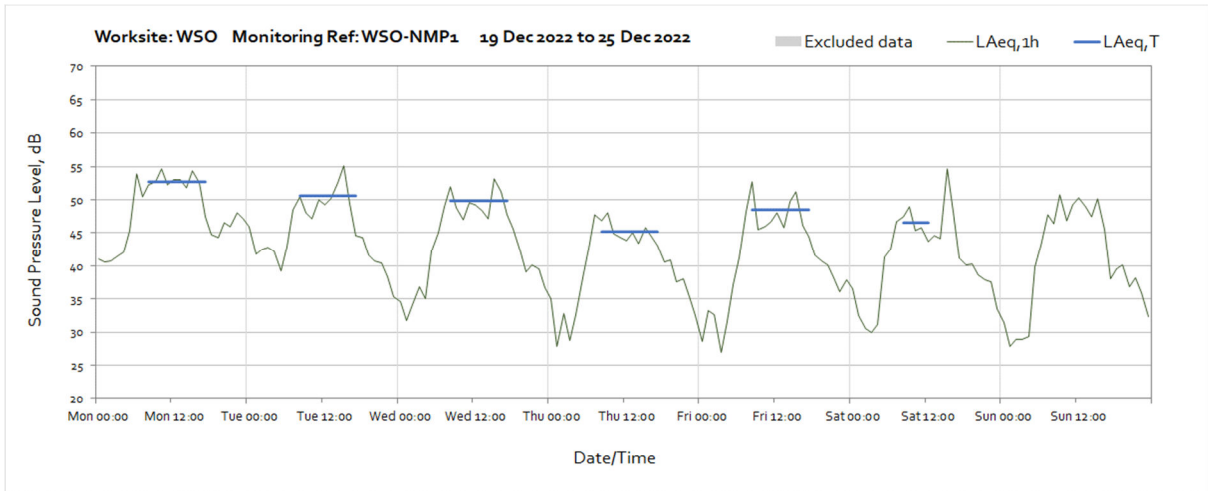
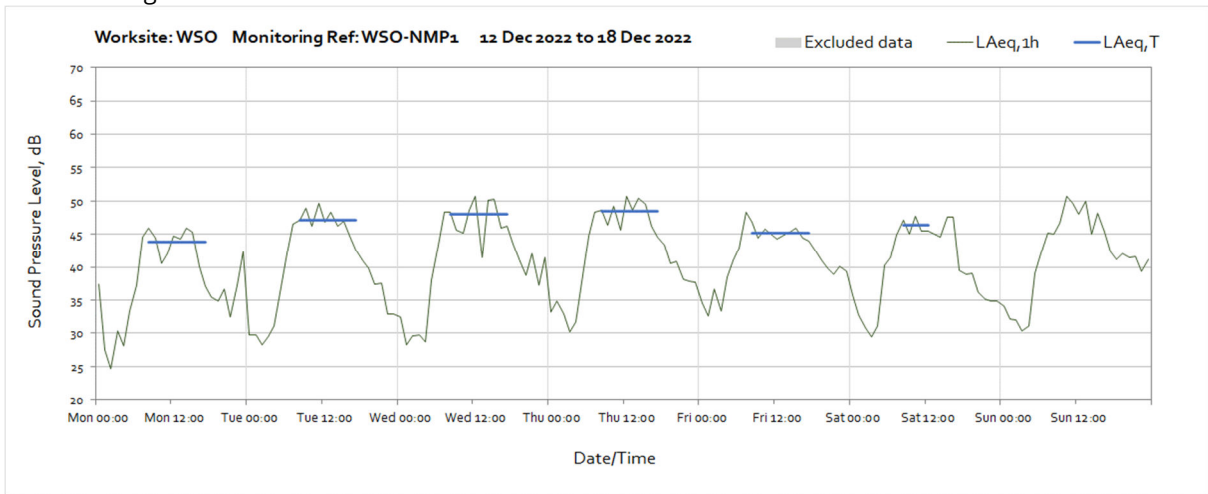


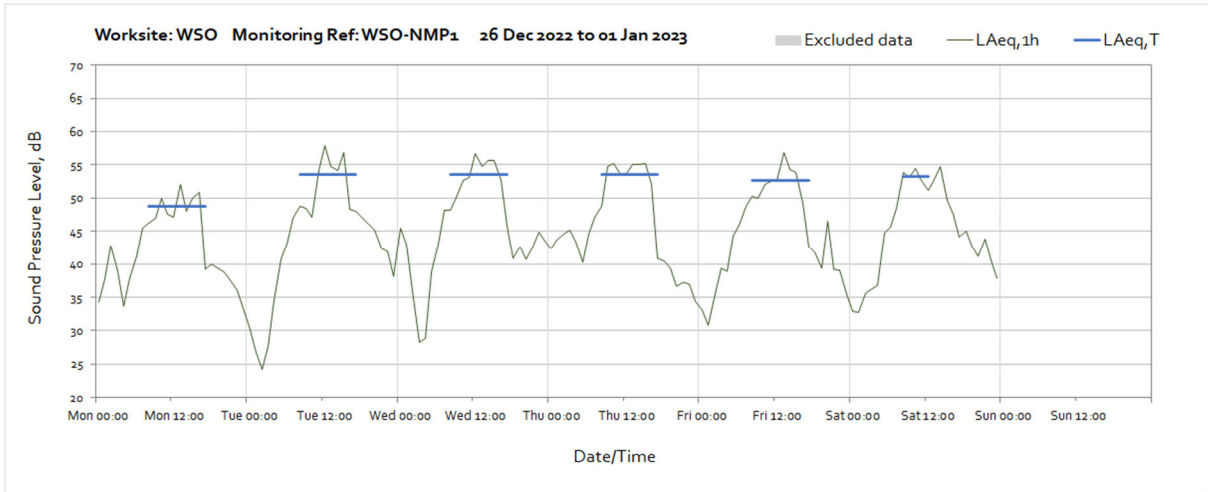
Worksite: WSO – Monitoring Ref: WSO-NMP1



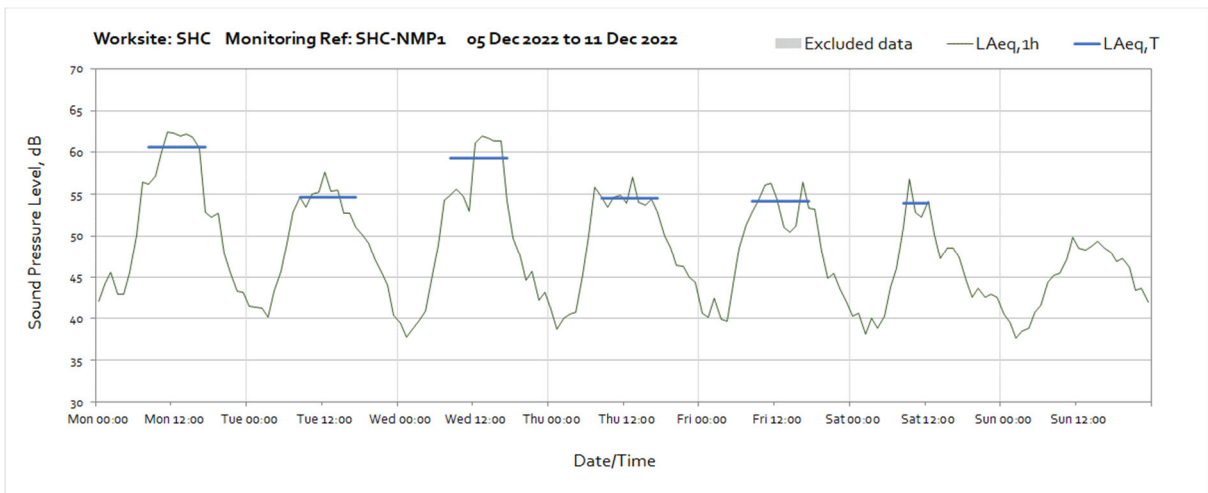
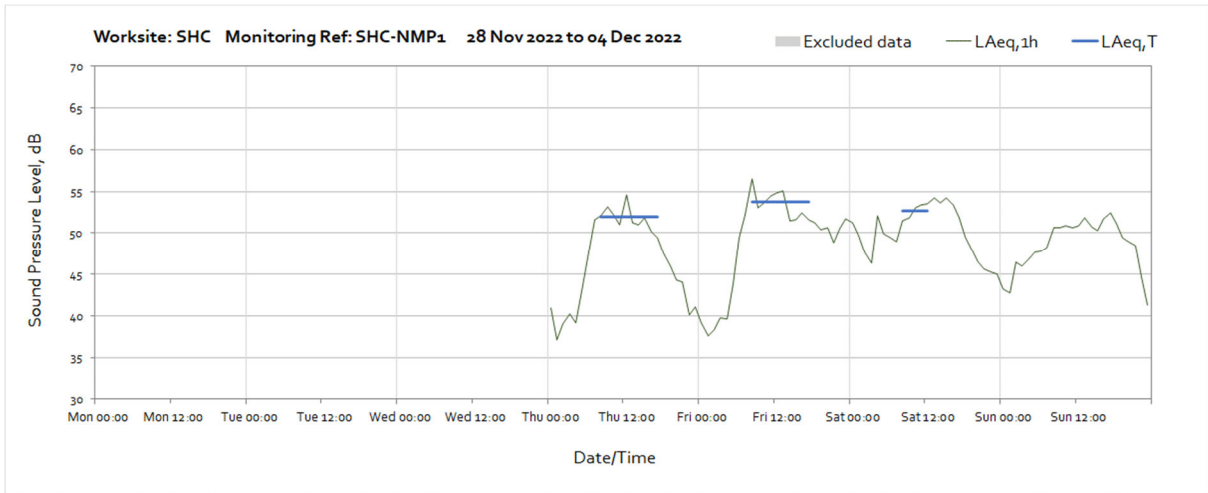


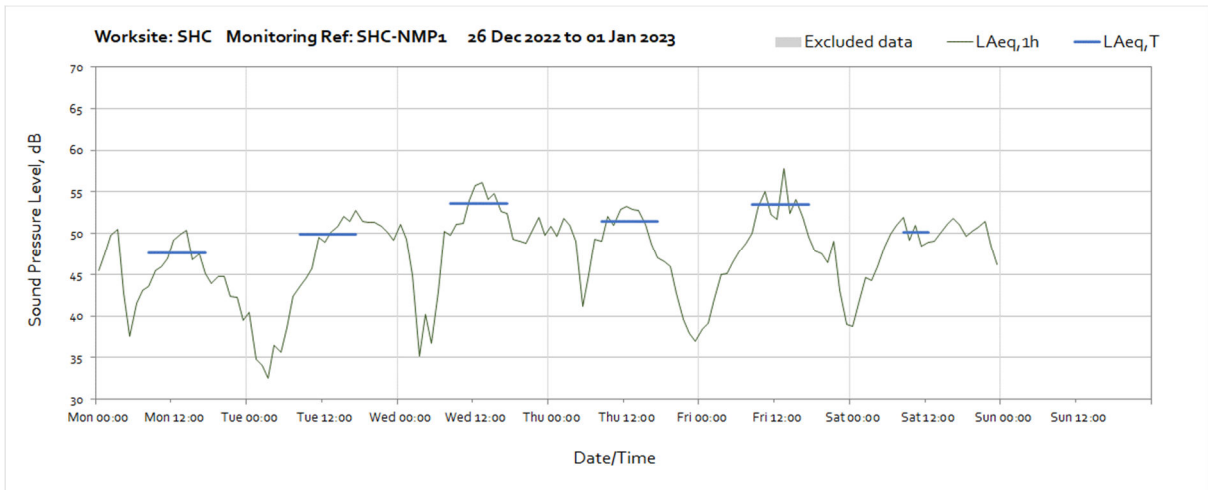
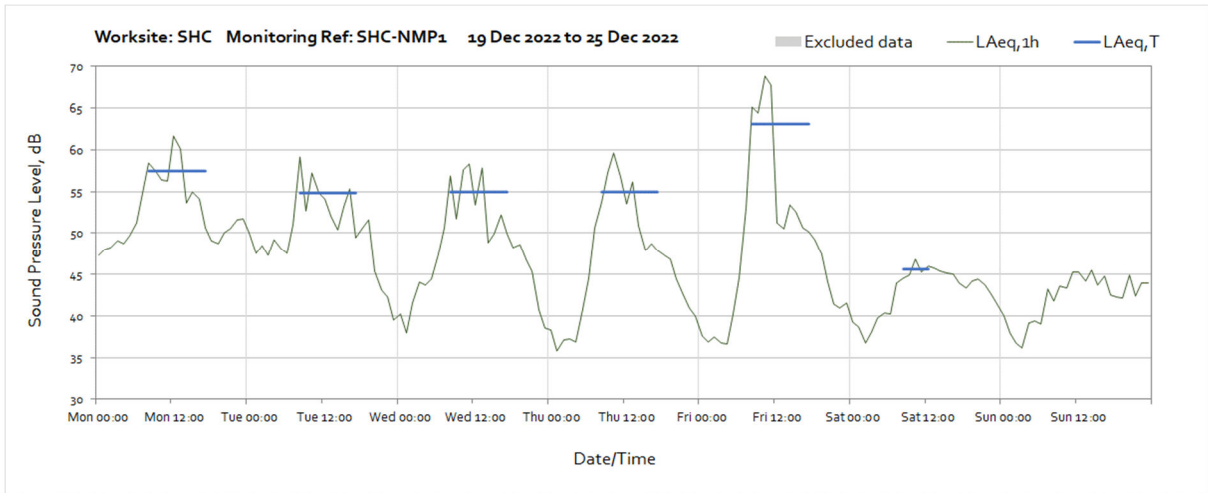
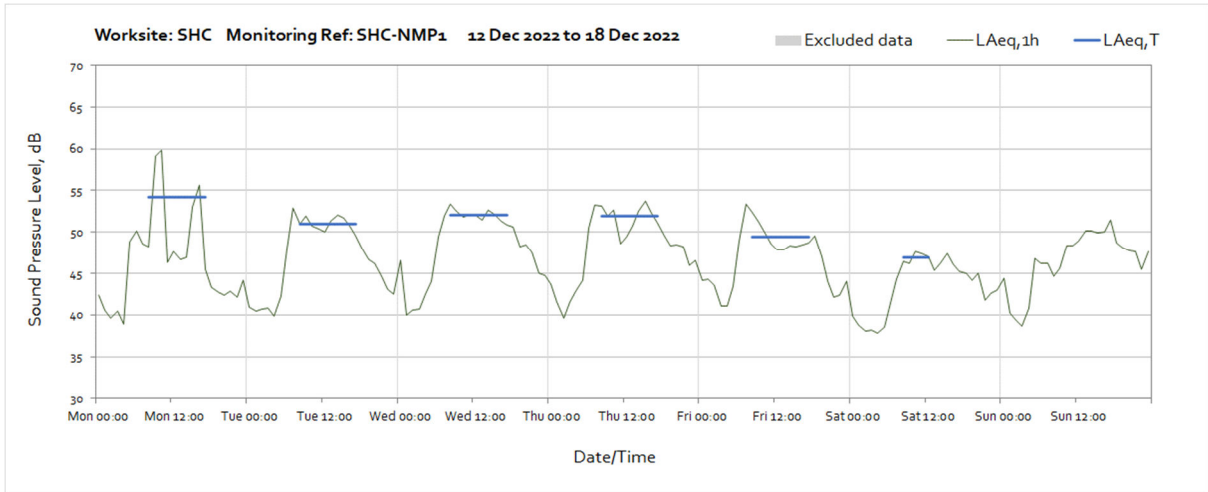
Note: Missing data between 11:00 and 12:00 on 8th December was due to monitor maintenance.



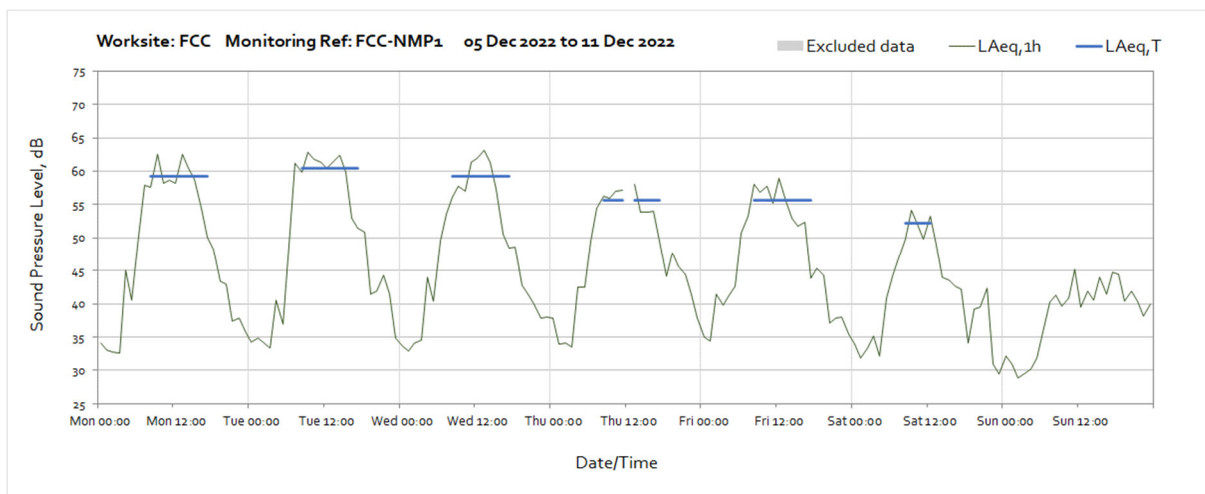
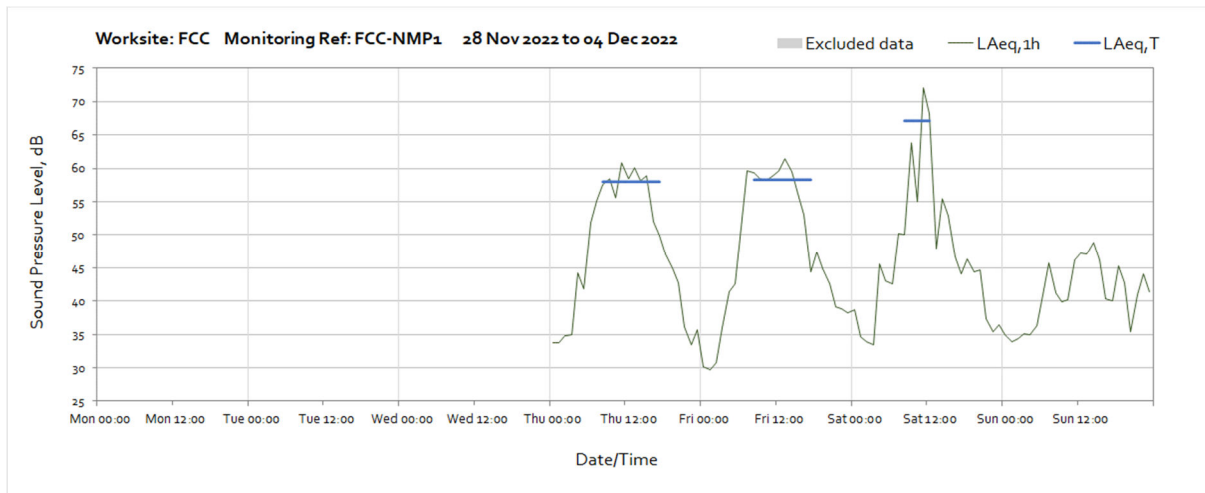


Worksite: SHC – Monitoring Ref: SHC-NMP1

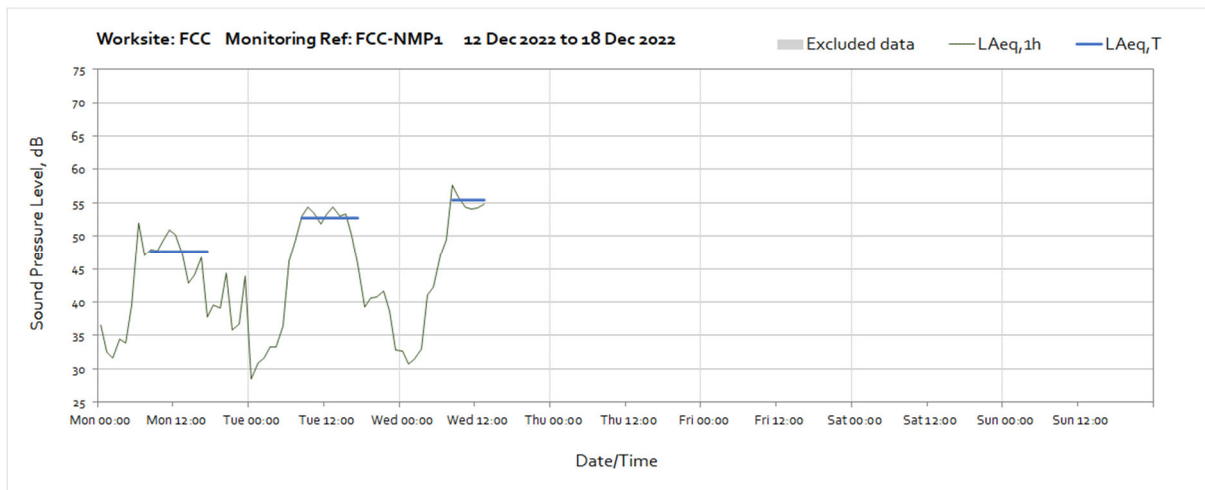




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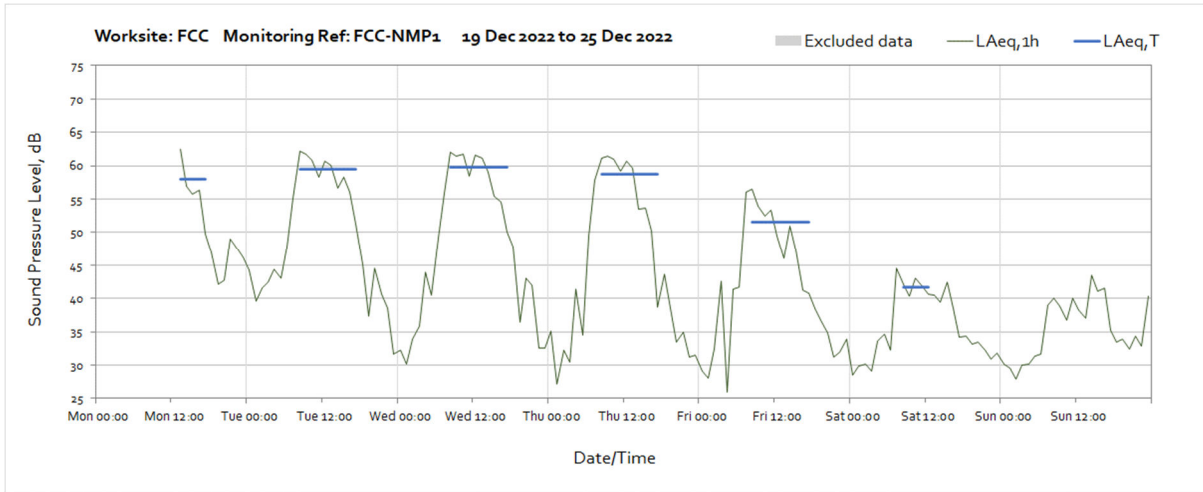


Note: Missing data between 12:00 and 13:00 on 8th December was due to monitor maintenance.

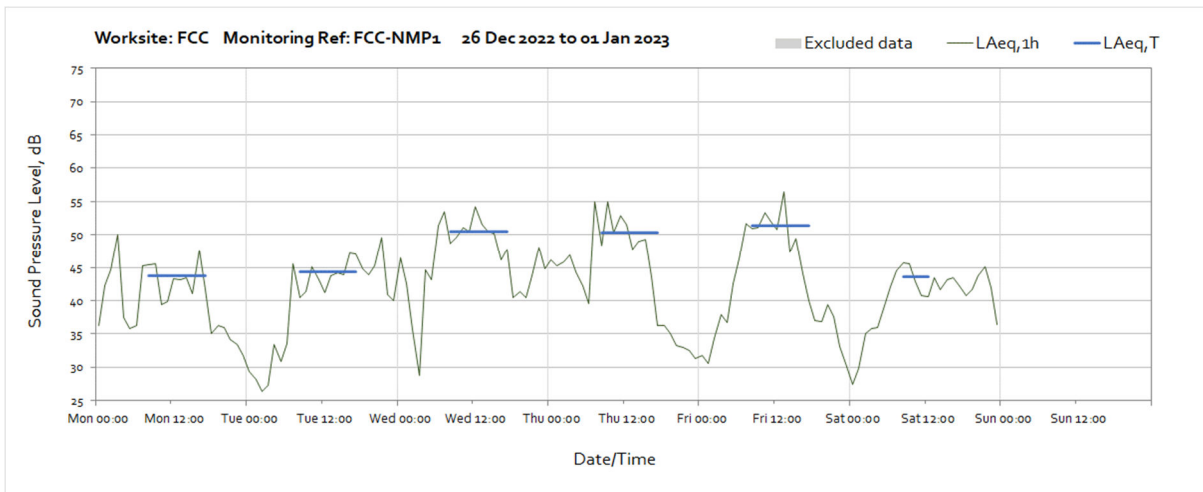


Note: Missing data from 14:00 on 14th December until 12:00 on 19th December was due to depleted monitor battery.

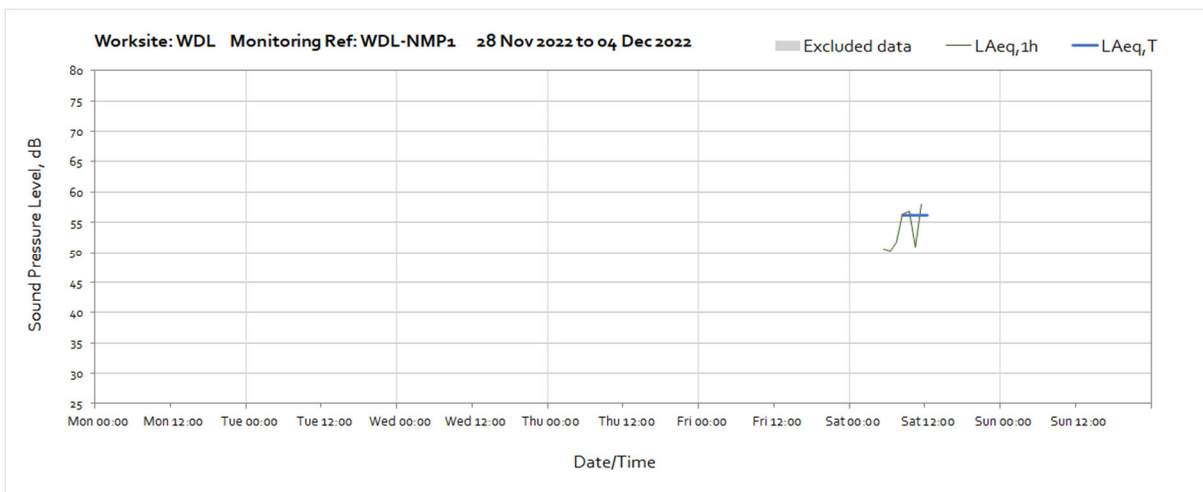
OFFICIAL



Note: Missing data from 14:00 on 14th December until 13:00 on 19th December was due to depleted monitor battery.

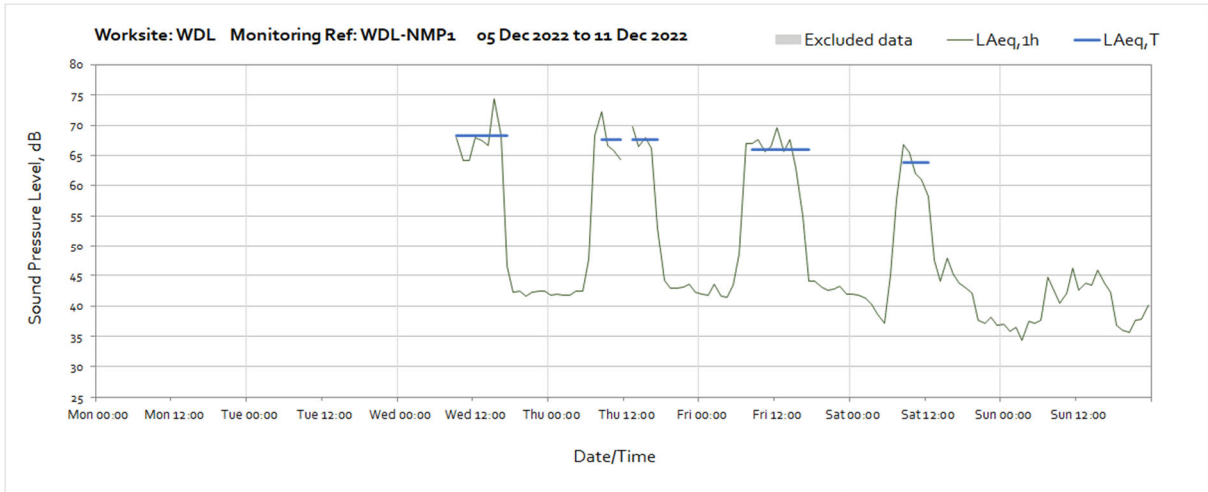


Worksite: WDL - Monitoring Ref: WDL-NMP1

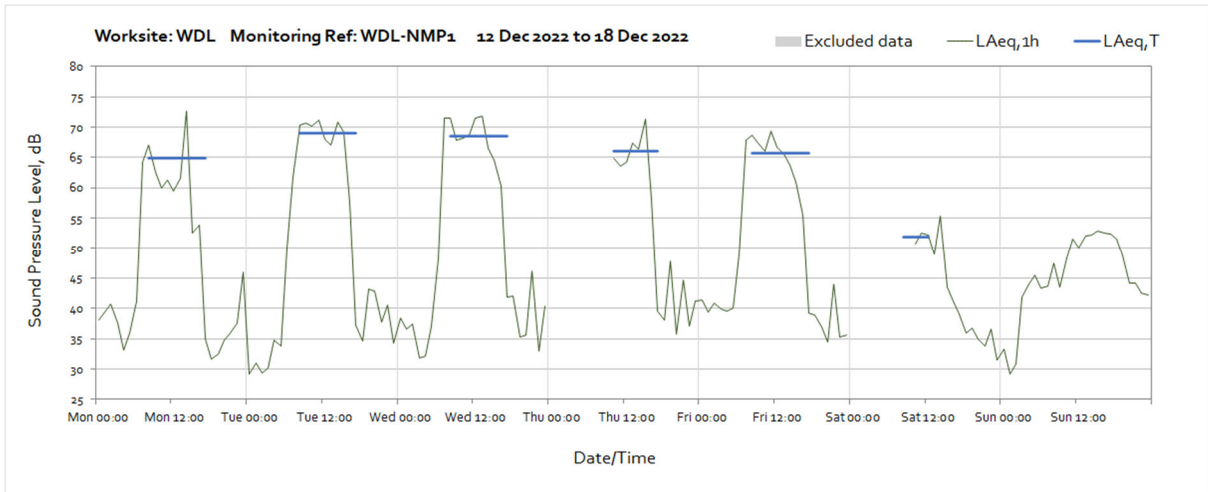


Note: Missing data throughout the week of 28th November was due to depleted monitor battery, battery cable has now been replaced.

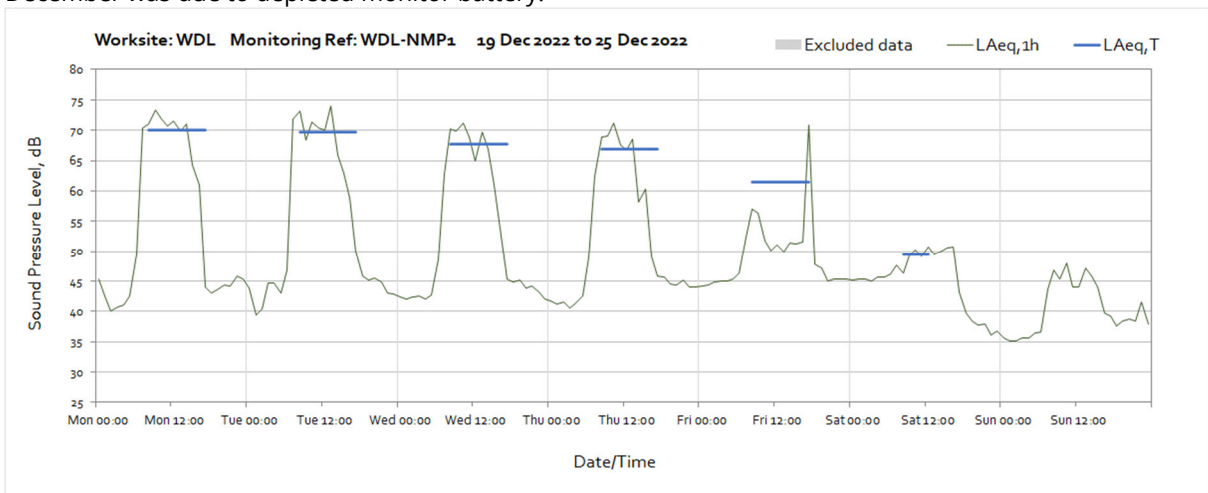
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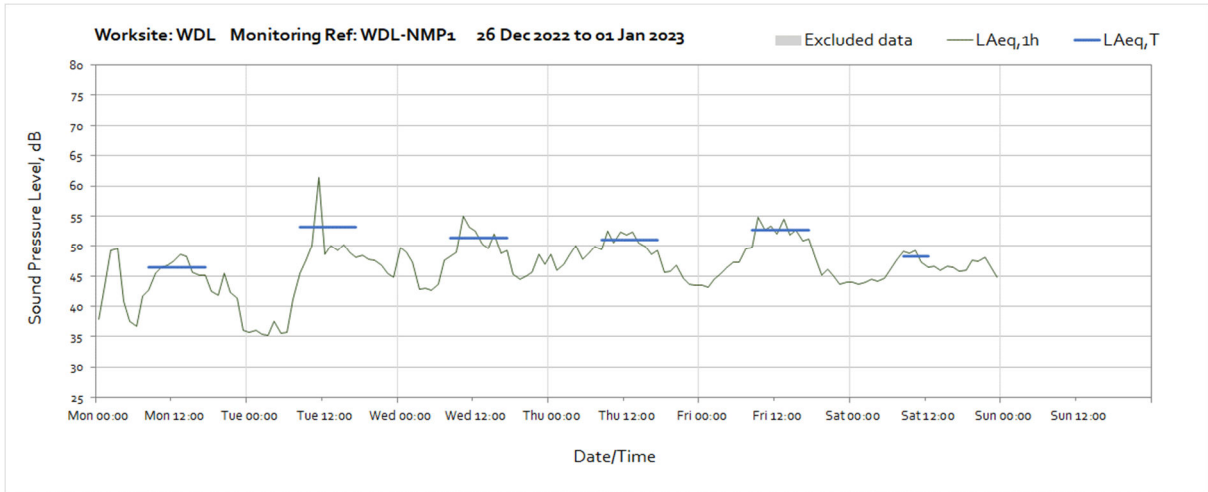


Note: Missing data from 12:00 on 3rd December until 09:00 on 7th December was due to a depleted monitor battery, battery cable has now been replaced. Missing data at 12:00 on the 8th December was due to monitor maintenance.

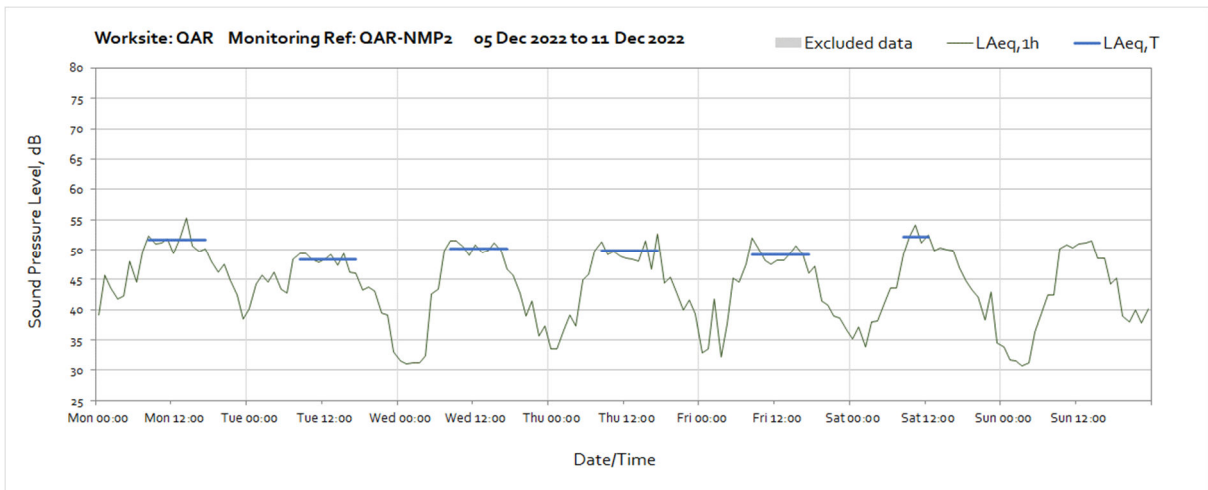
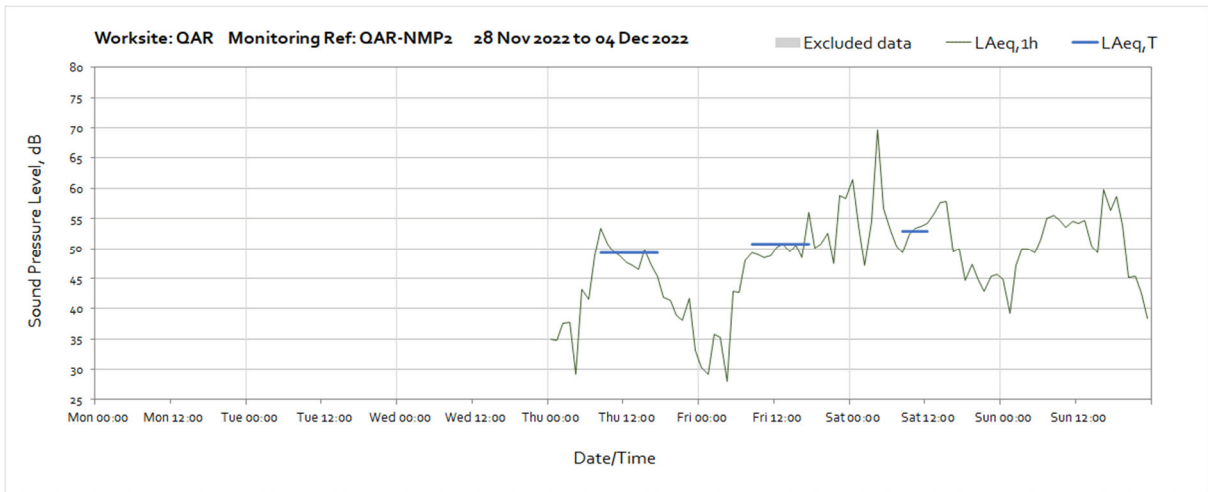


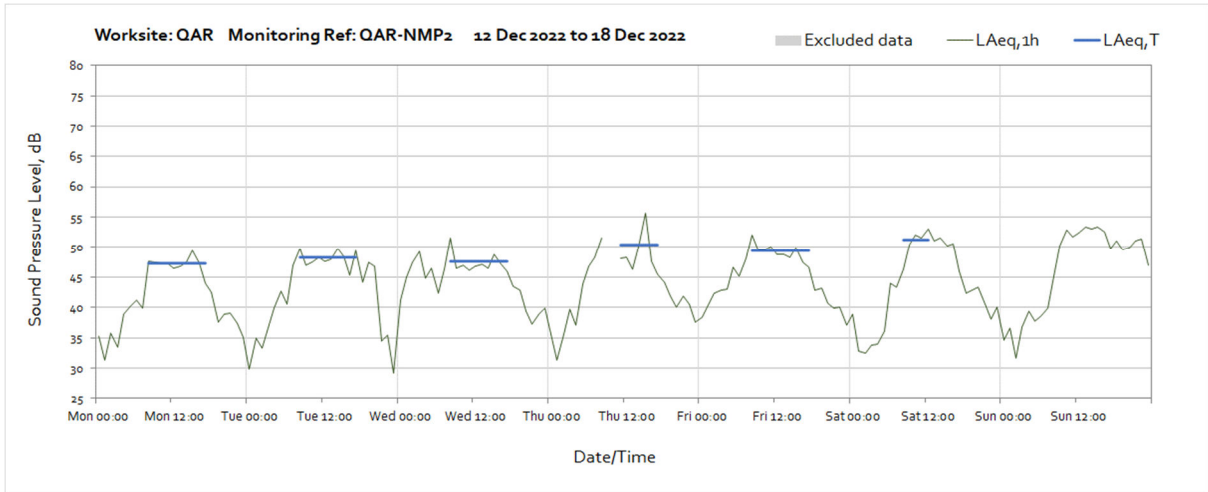
Note: Missing data between 00:00 until 10:00 on 15th December and between 00:00 and 10:00 on 17th December was due to depleted monitor battery.



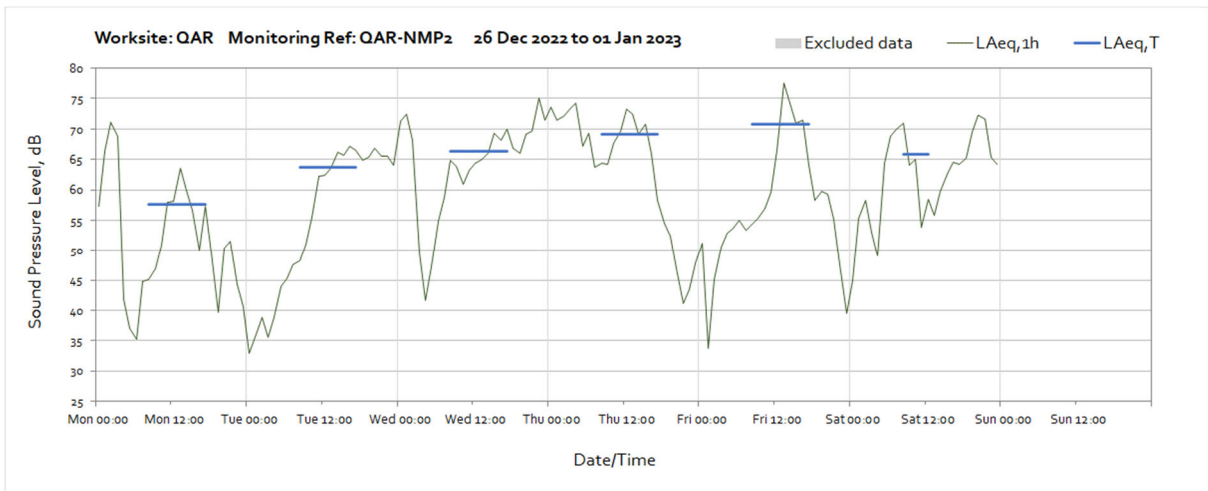
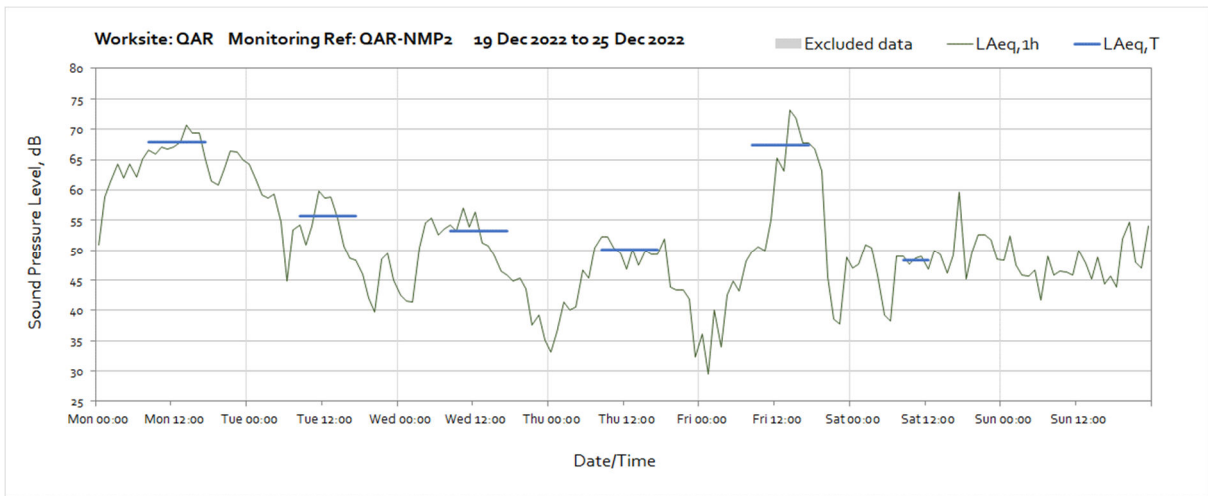


Worksite: QAR – Monitoring Ref: QAR-NMP2

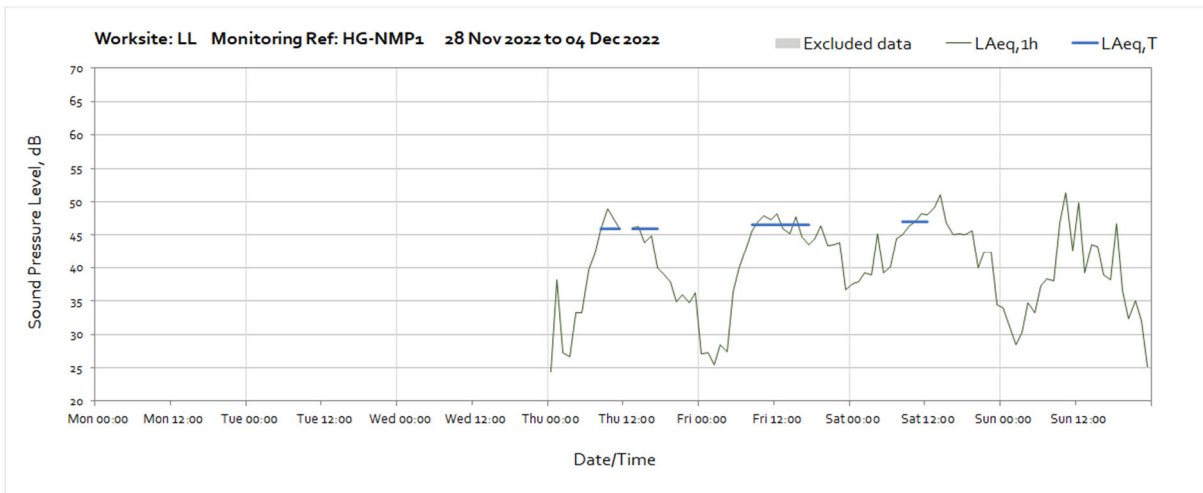




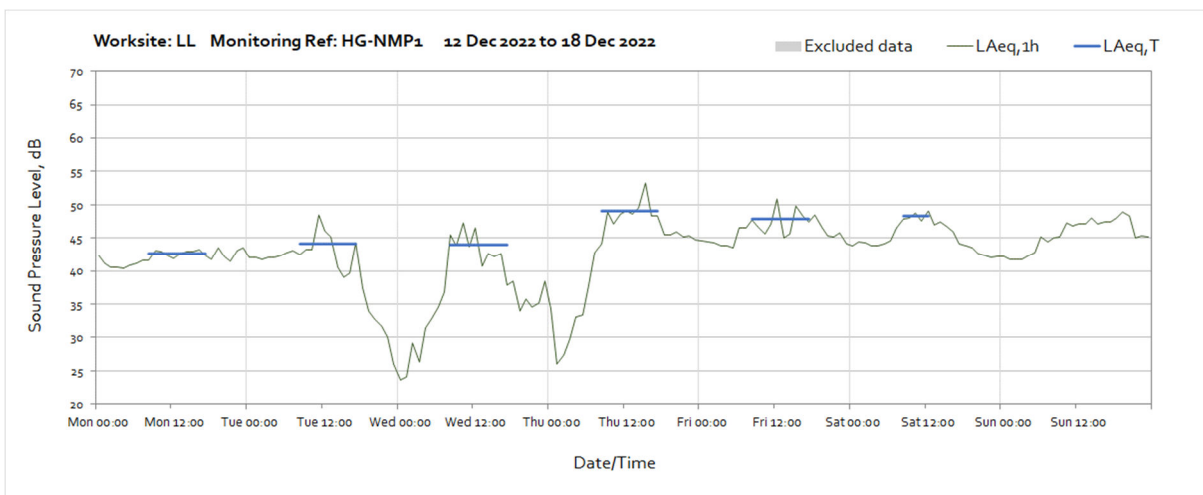
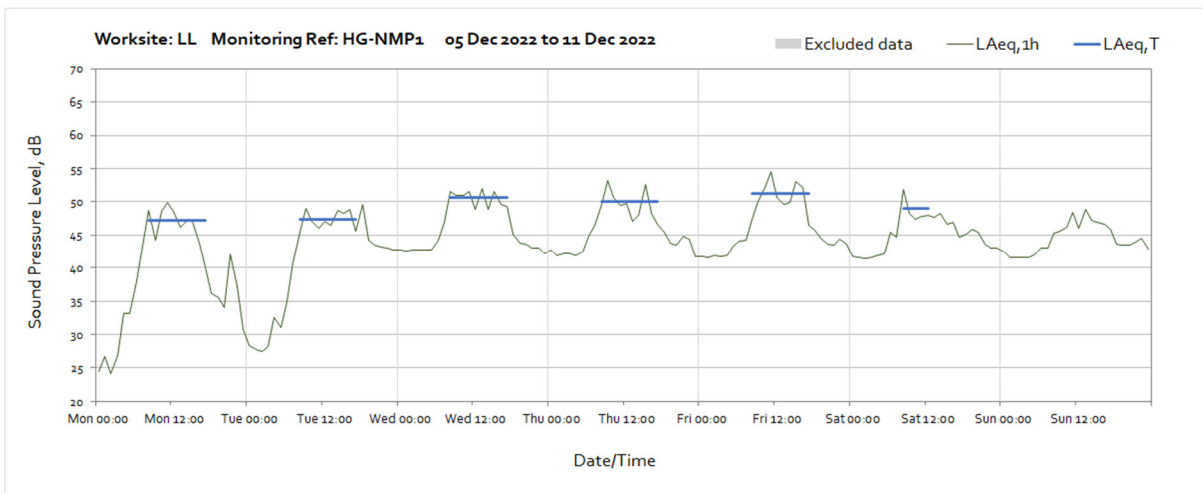
Note: Missing data between 09:00 and 11:00 on 15th December was due to monitor maintenance.

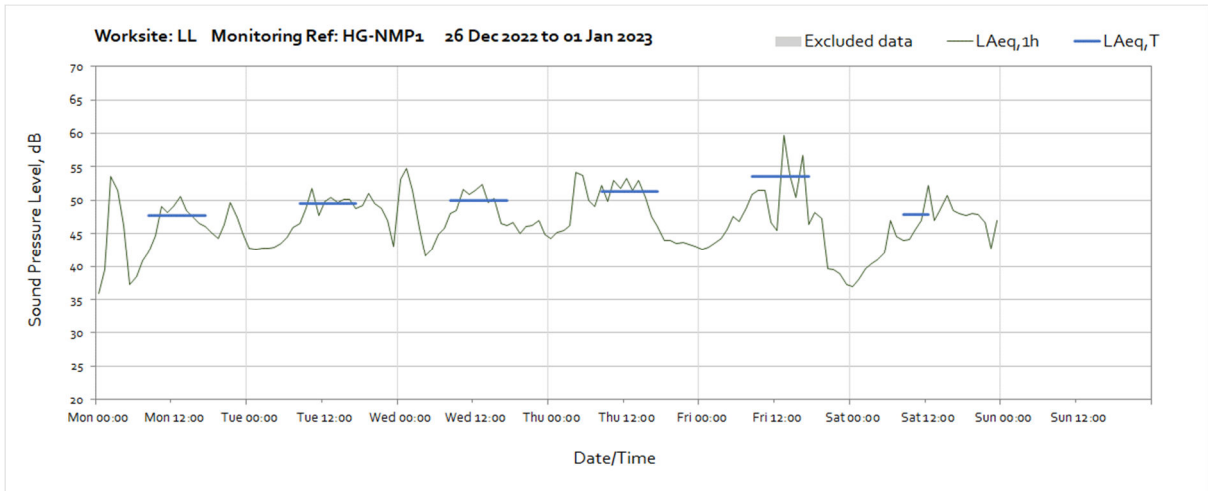
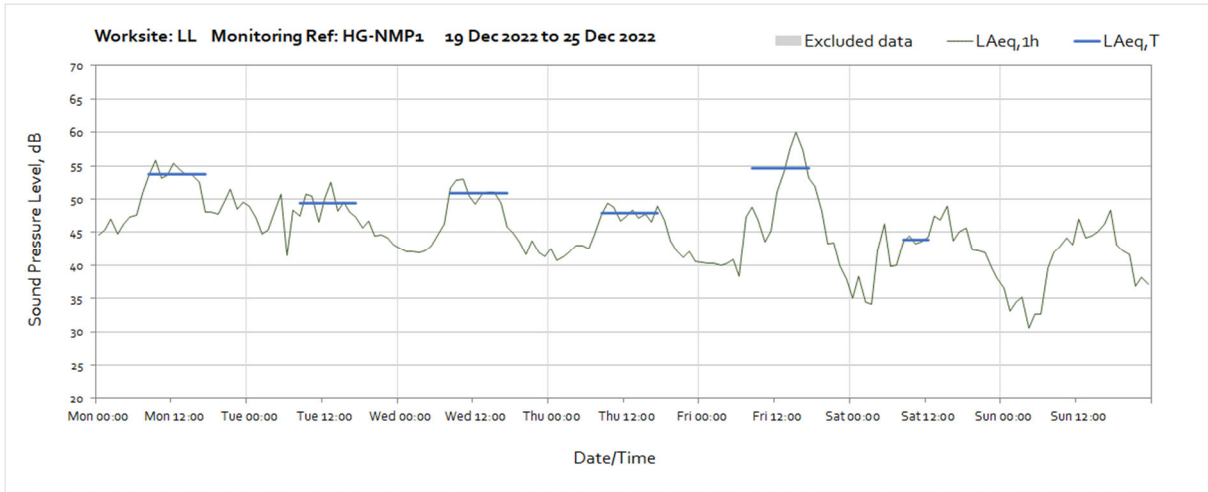


Worksite: LL - Monitoring Ref: HG-NMP1

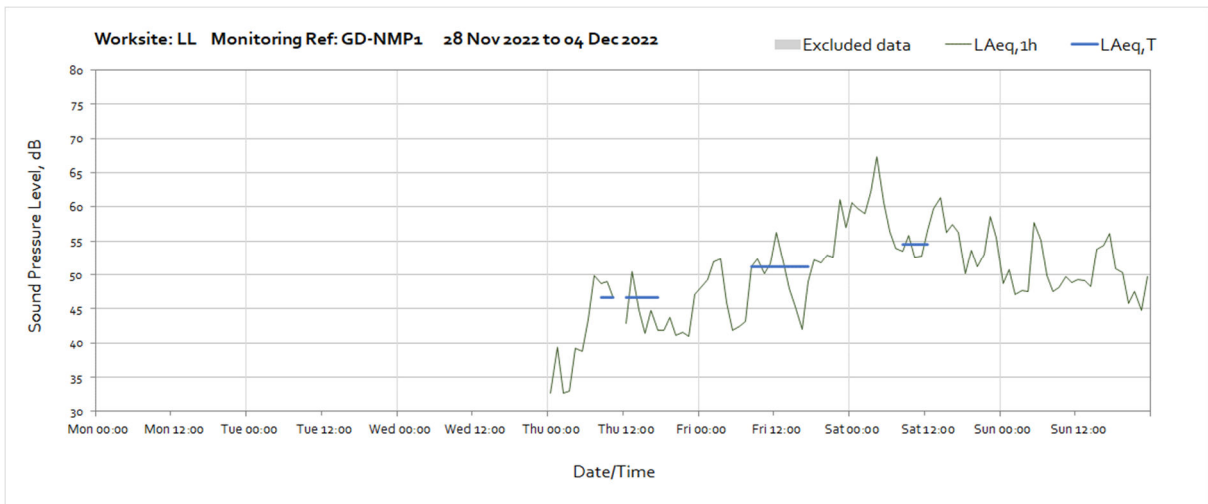


Note: Missing data at 12:00 on 1st December was due to monitor maintenance.

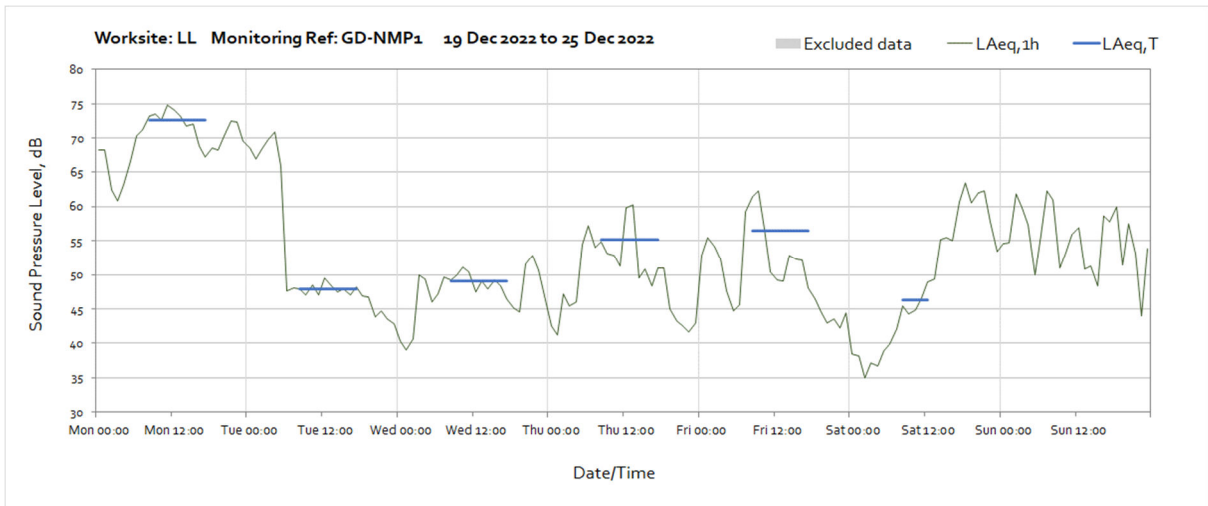
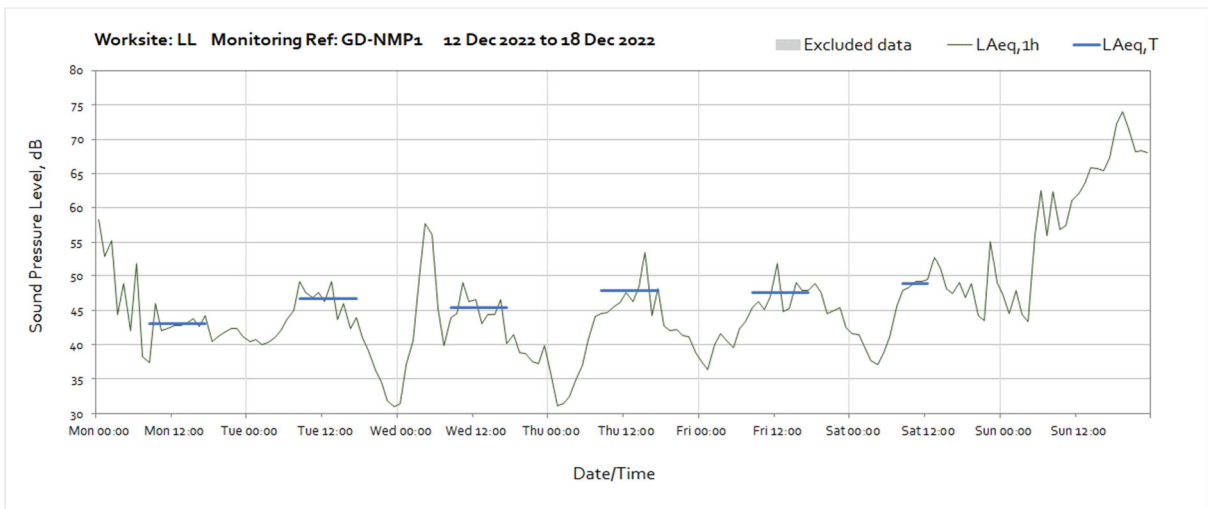
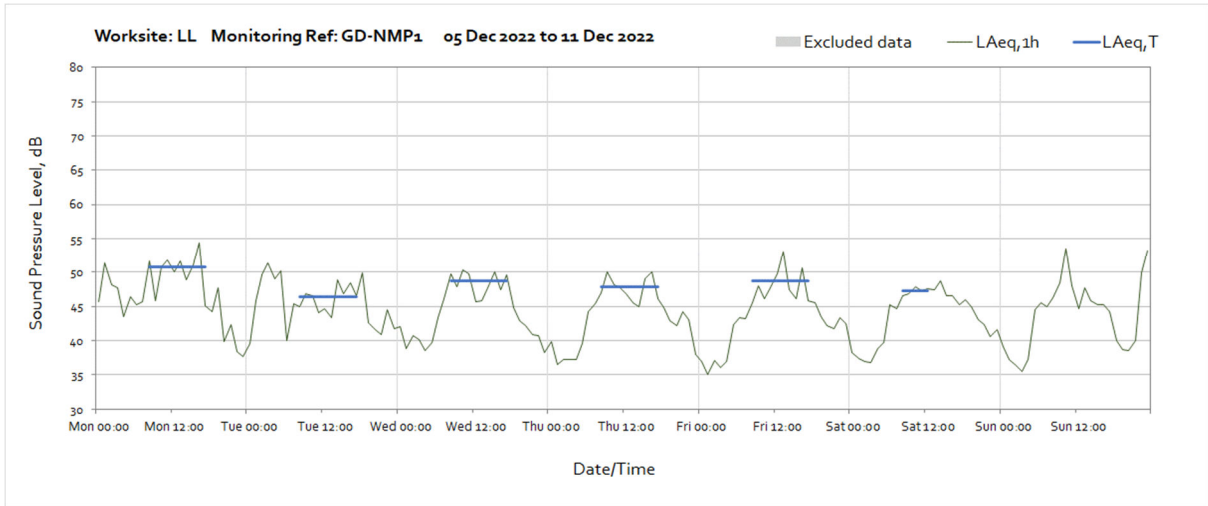


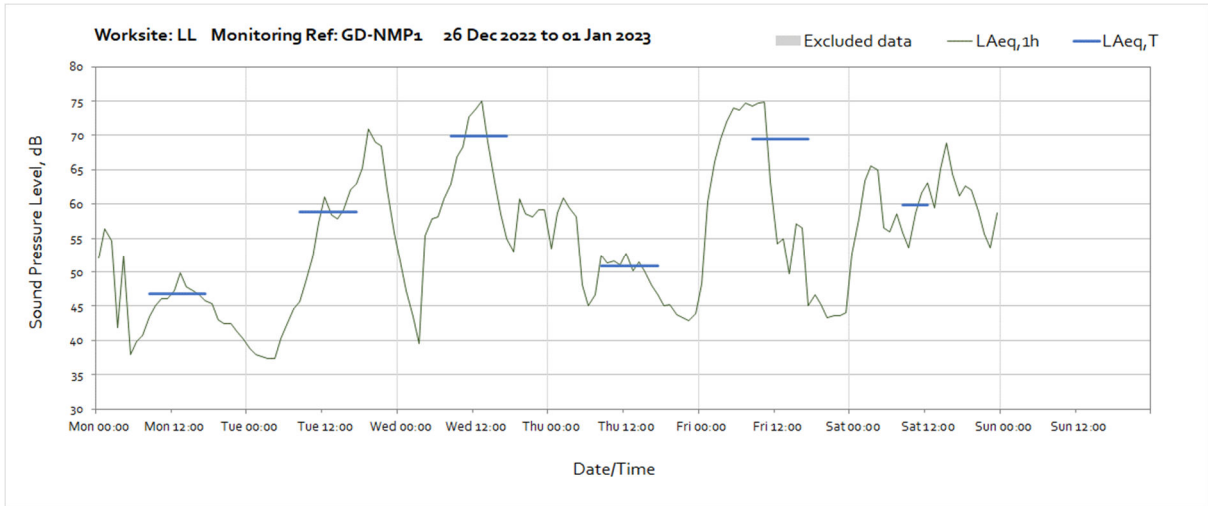


Worksite: LL - Monitoring Ref: GD-NMP1

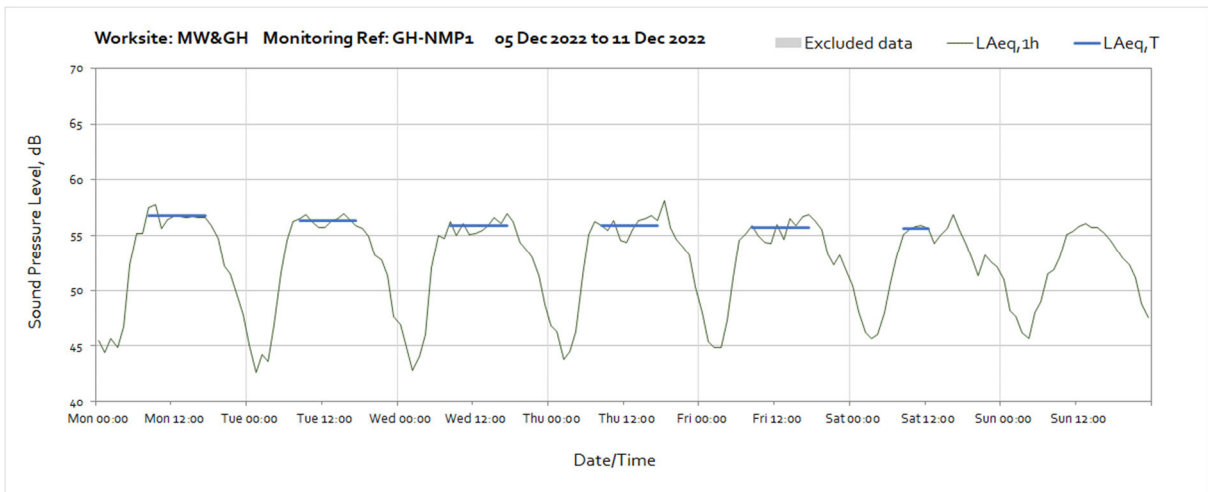
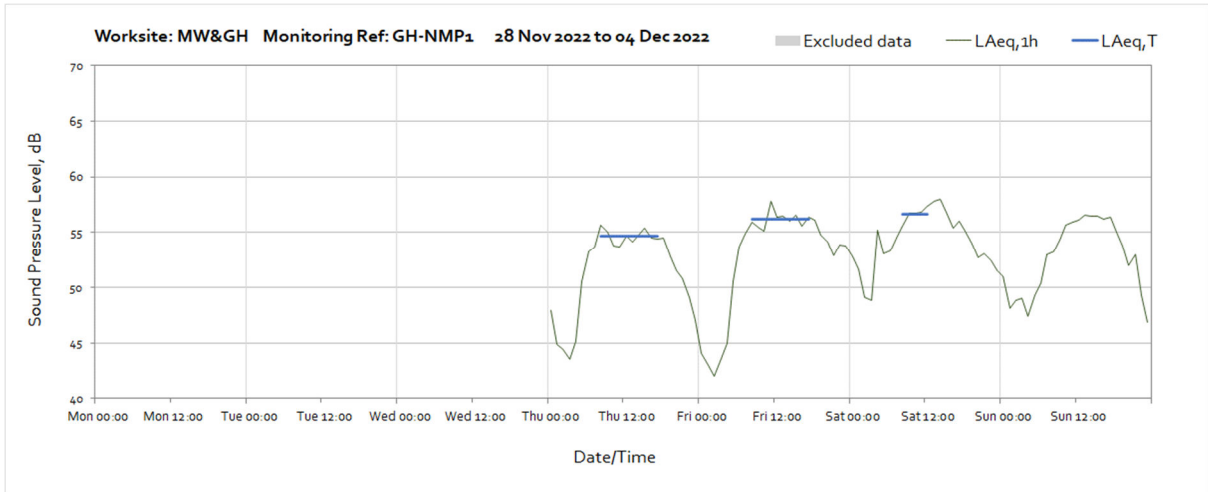


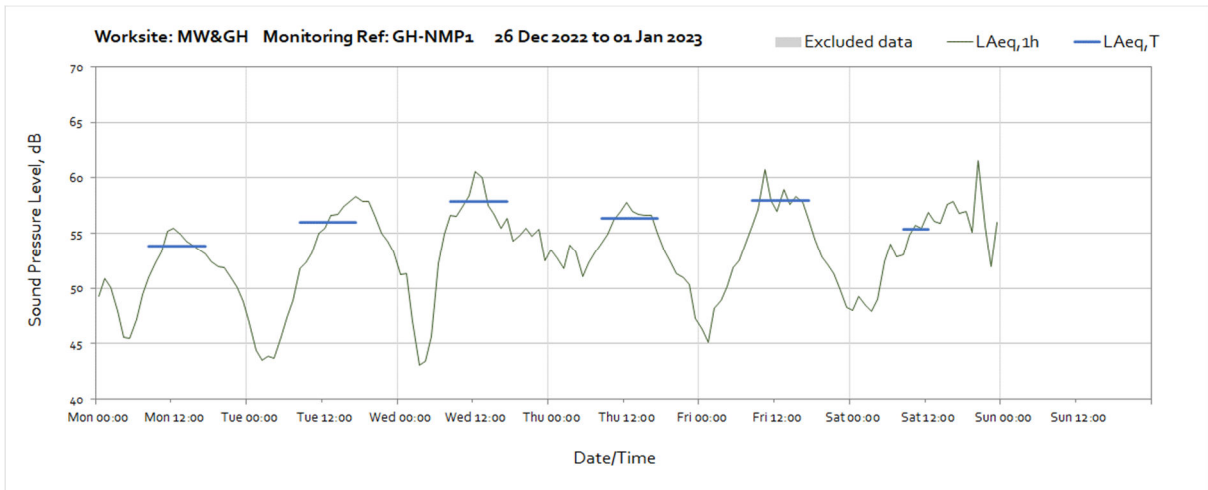
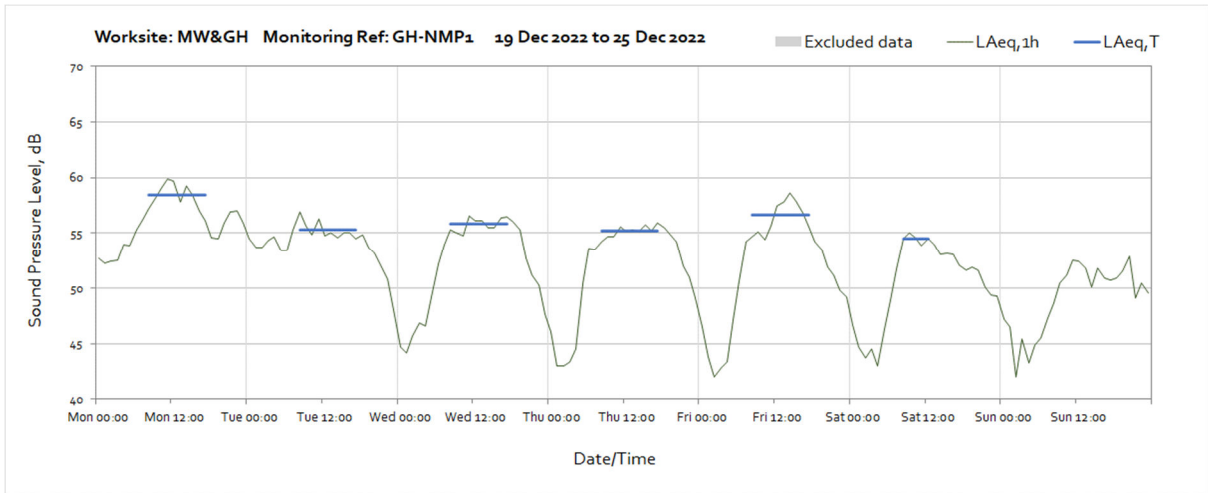
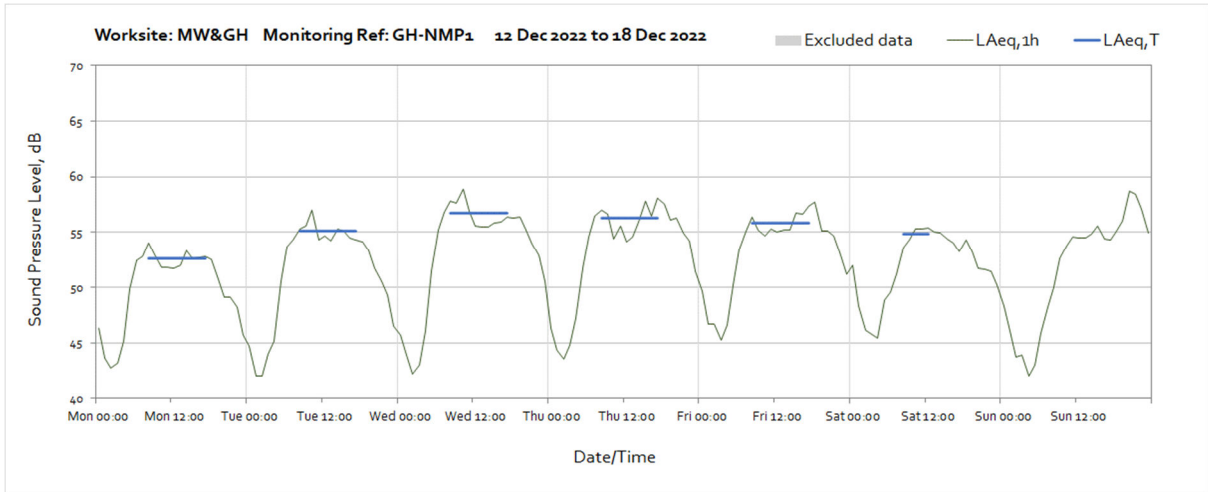
Note: Missing data at 11:00 on 1st December was due to monitor maintenance.



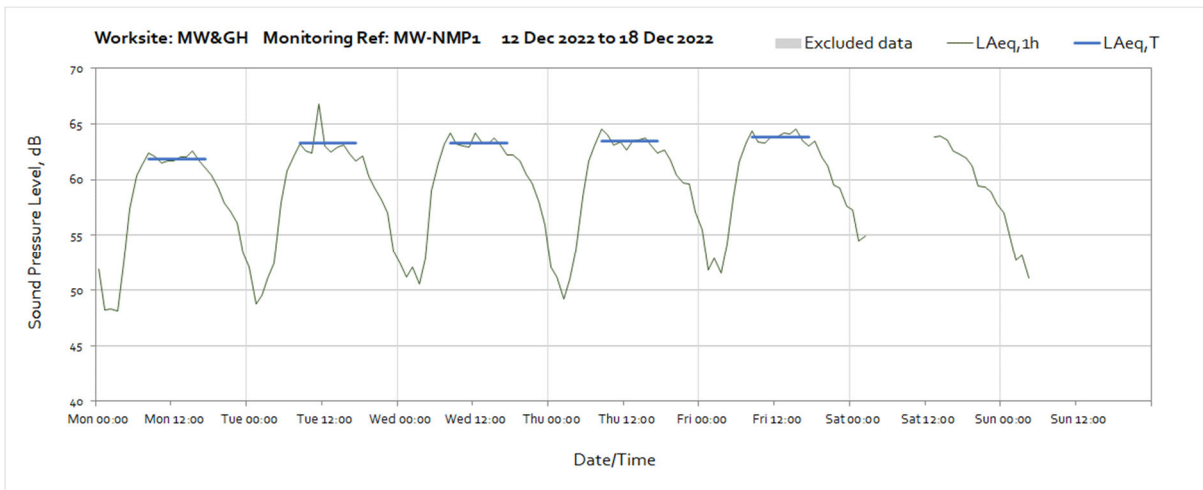
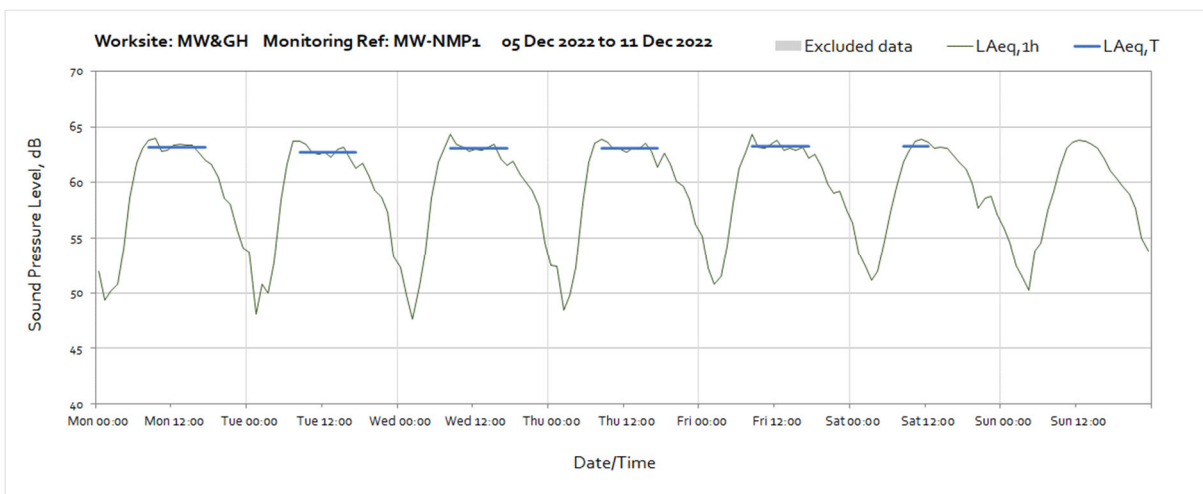
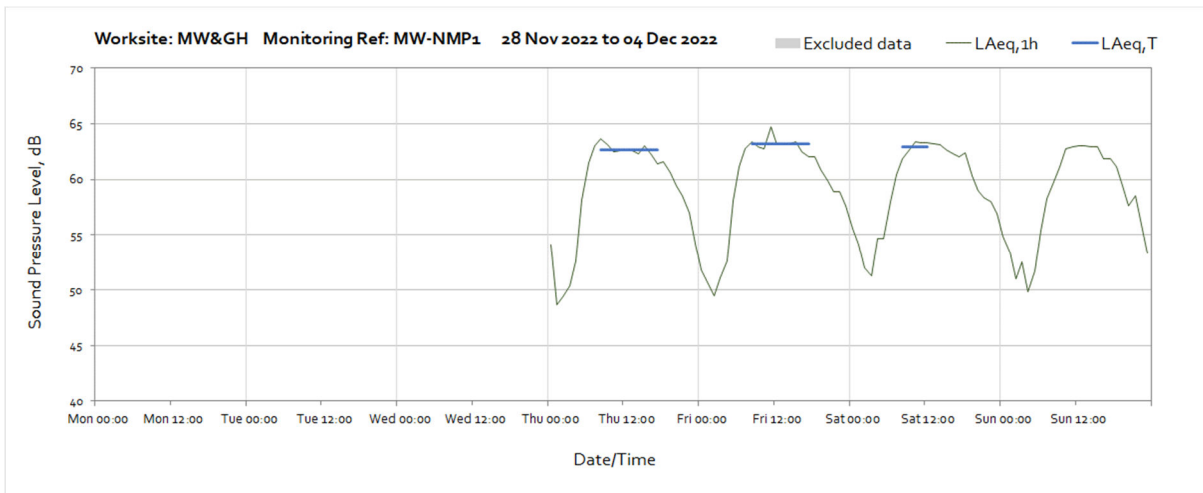


Worksite: MW&GH – Monitoring Ref: GH-NMP1



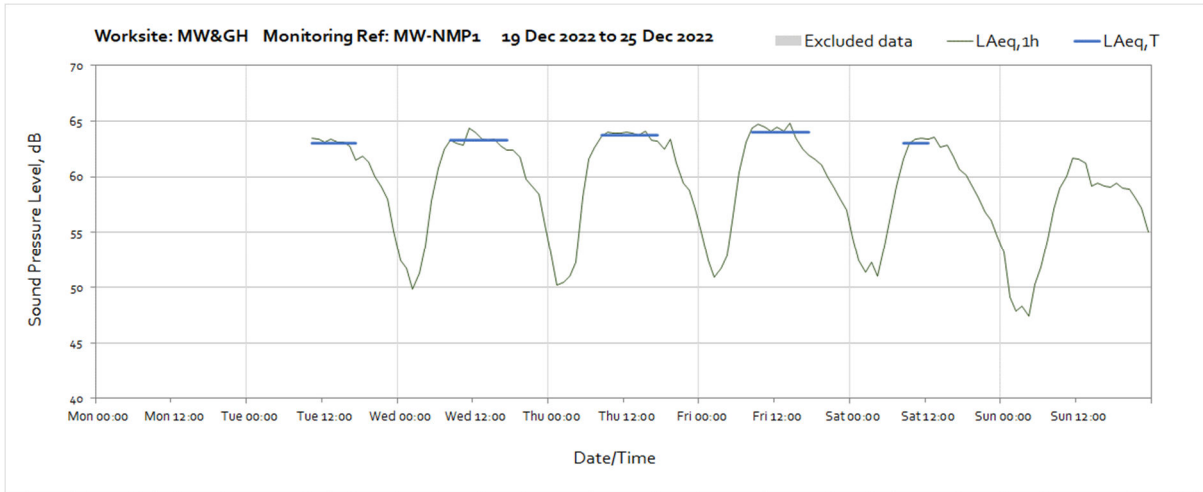


Worksite: MW&GH – Monitoring Ref: MW-NMP1

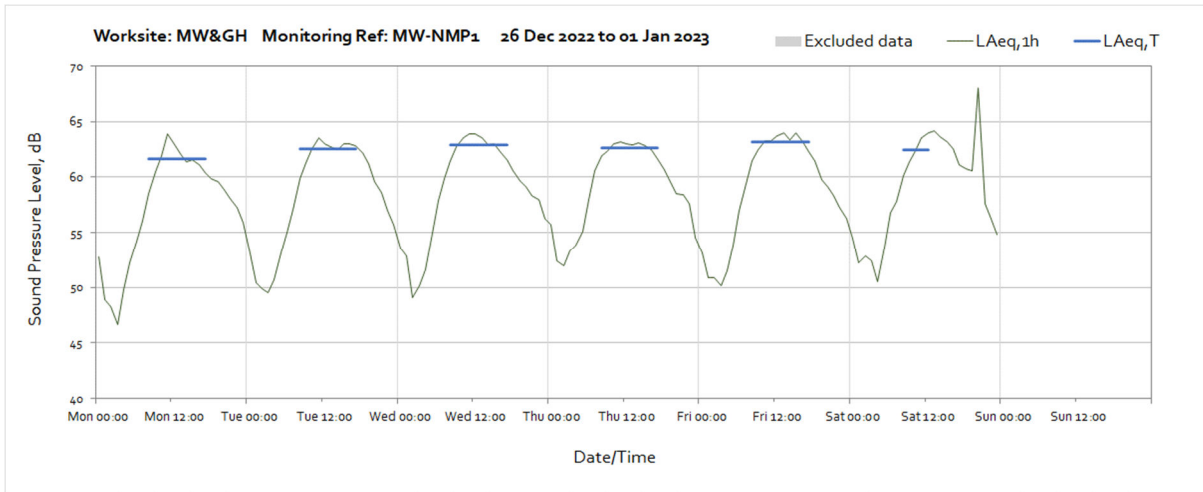


Note: Missing data during periods on the 17th and 18th December was due to depleted monitor battery.

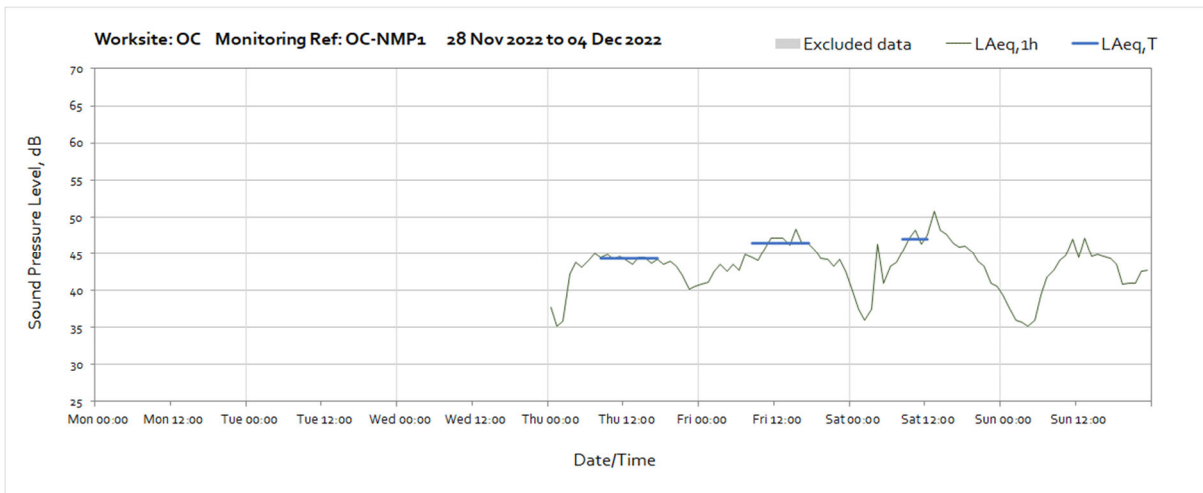
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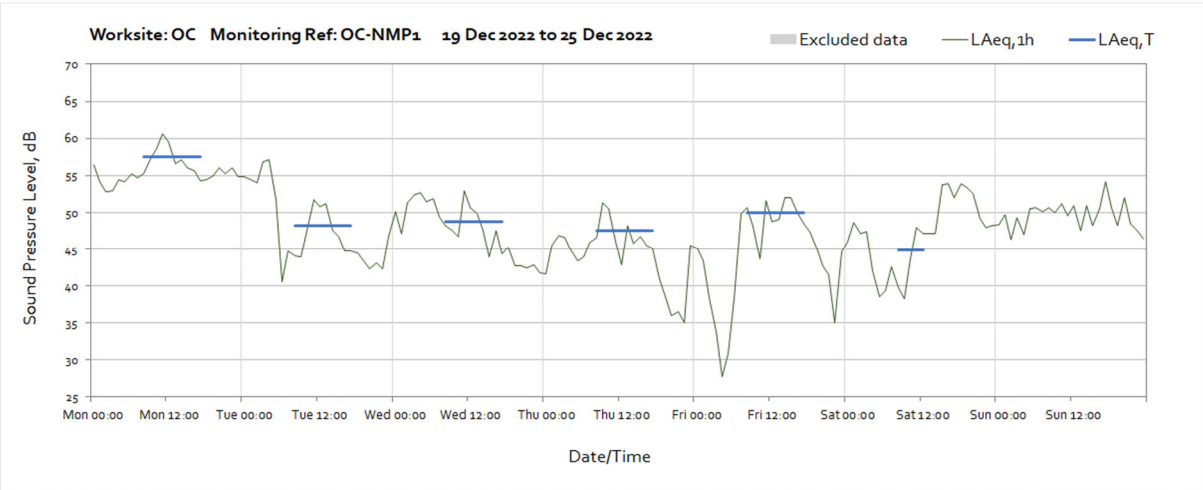
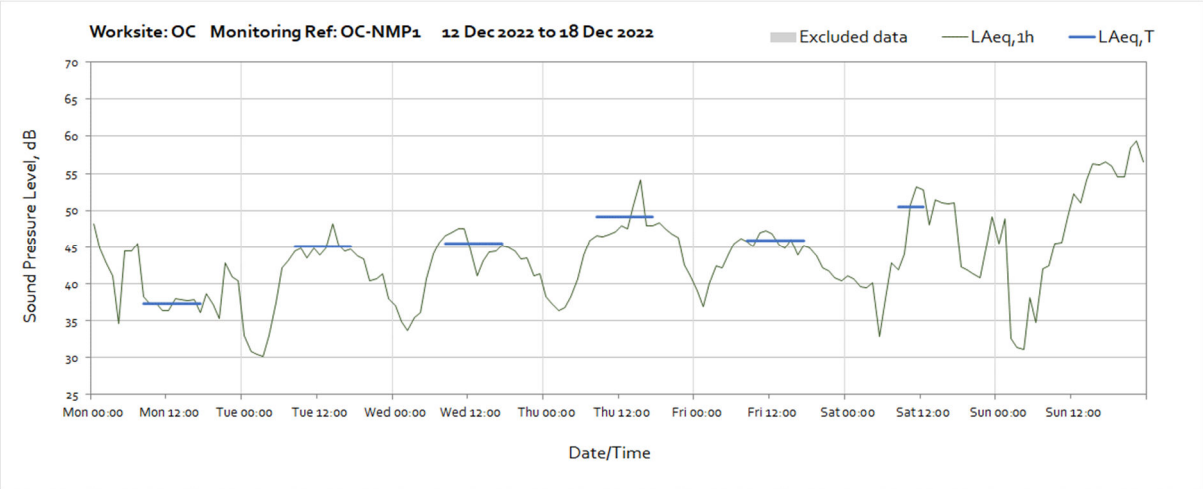
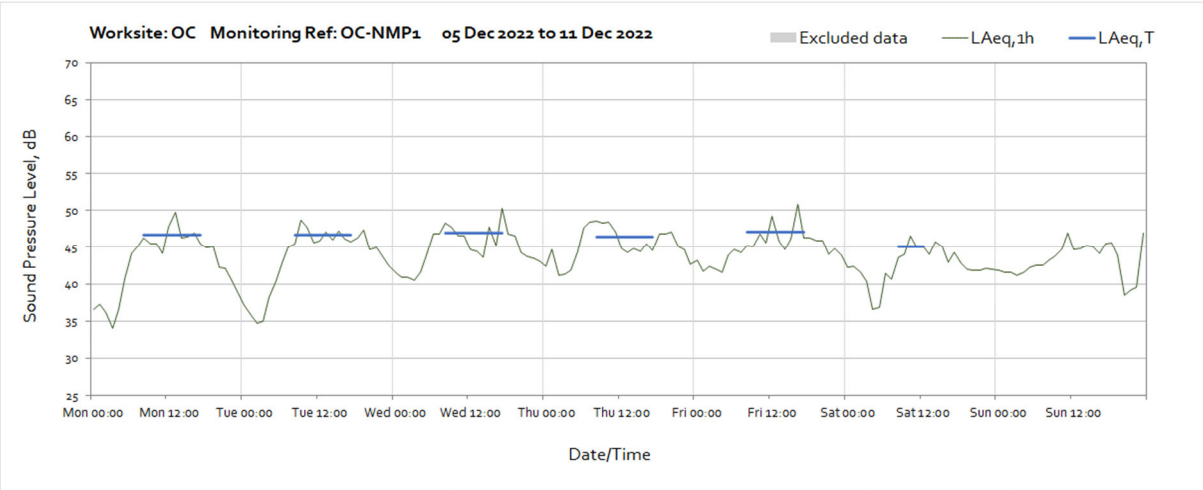


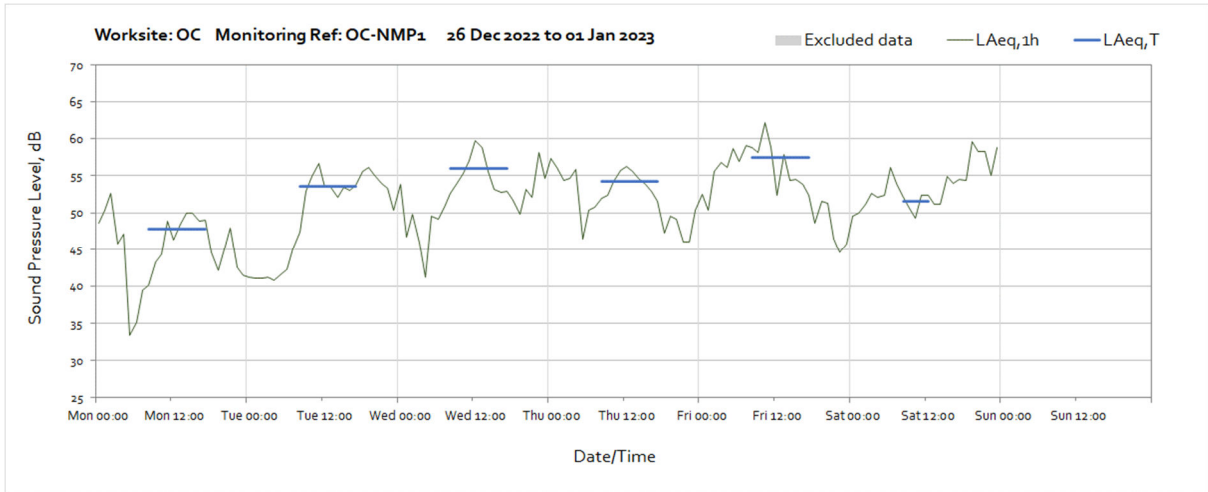
Note: Missing data from 05:00 on 18th December until 10:00 on 20th December was due to depleted monitor battery.



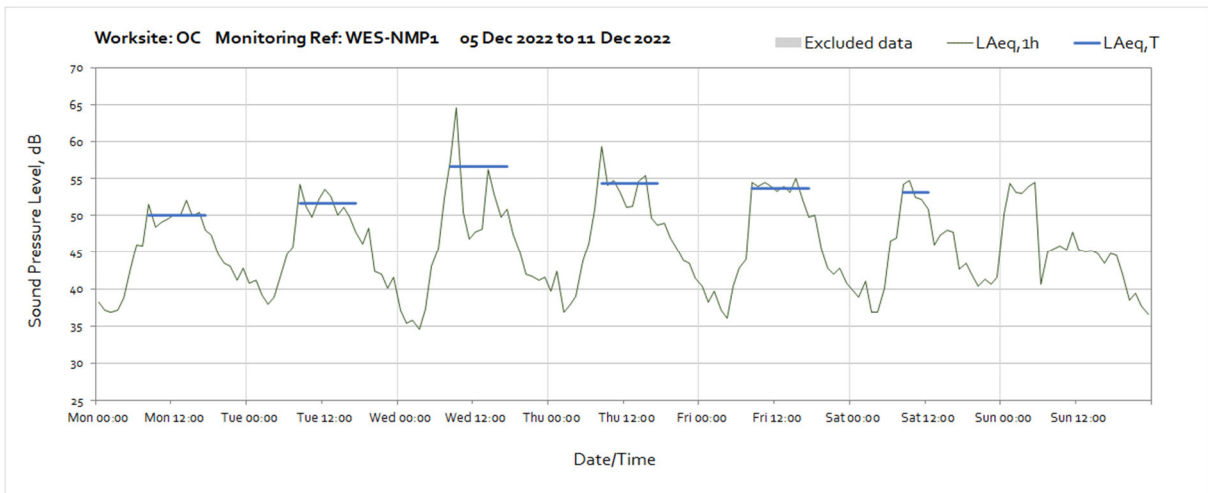
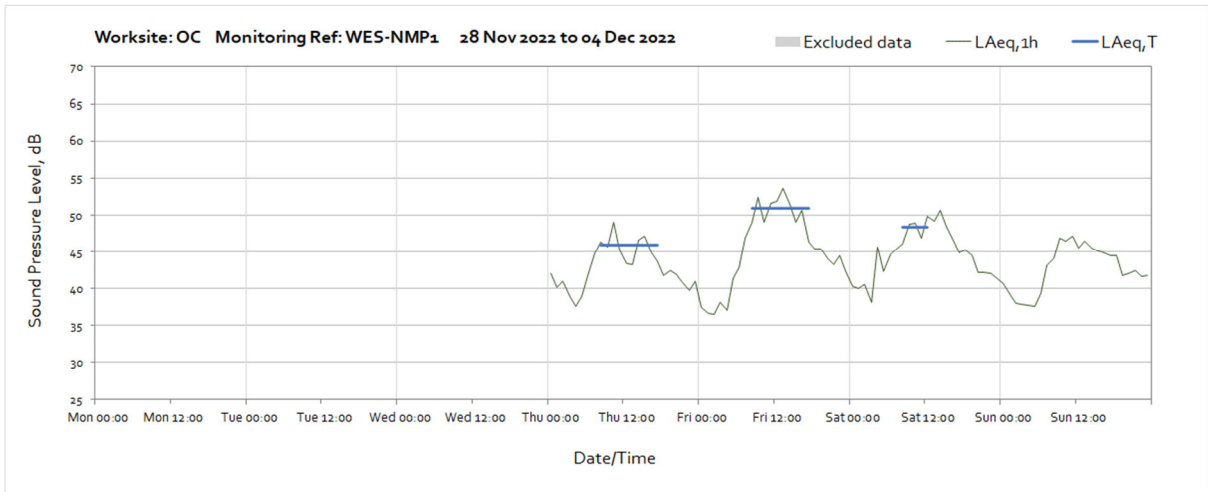
Worksite: OC – Monitoring Ref: OC-NMP1

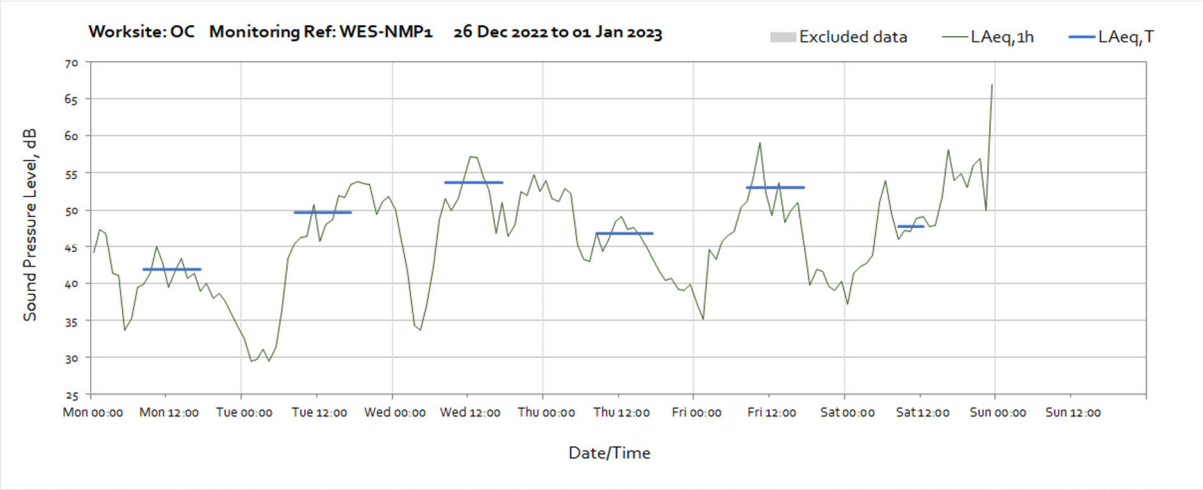
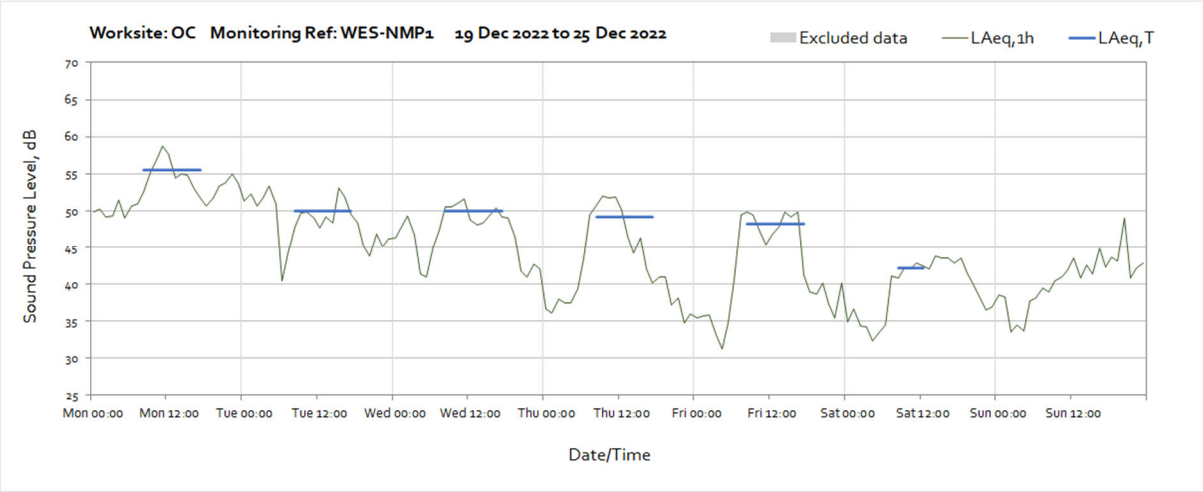
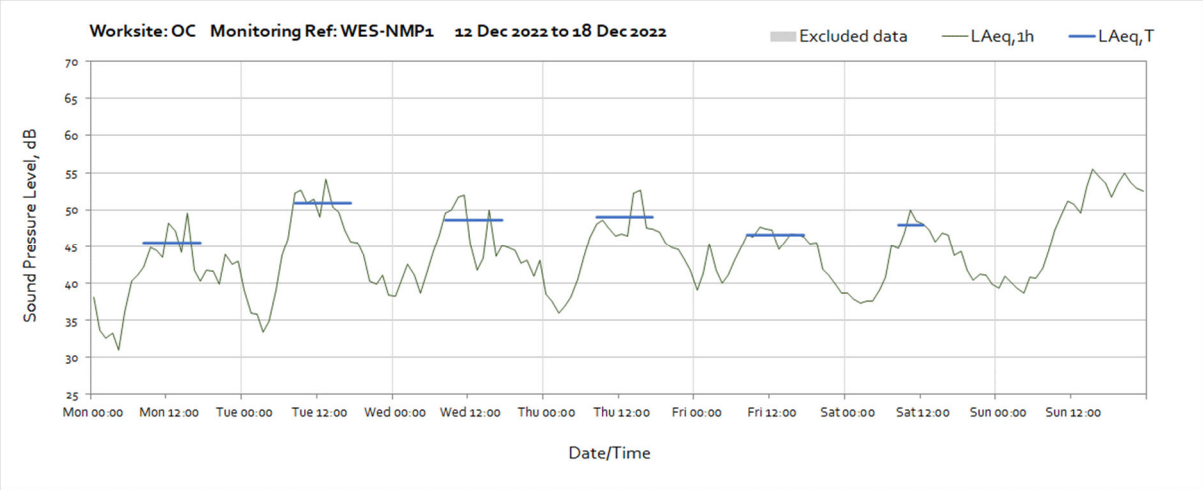




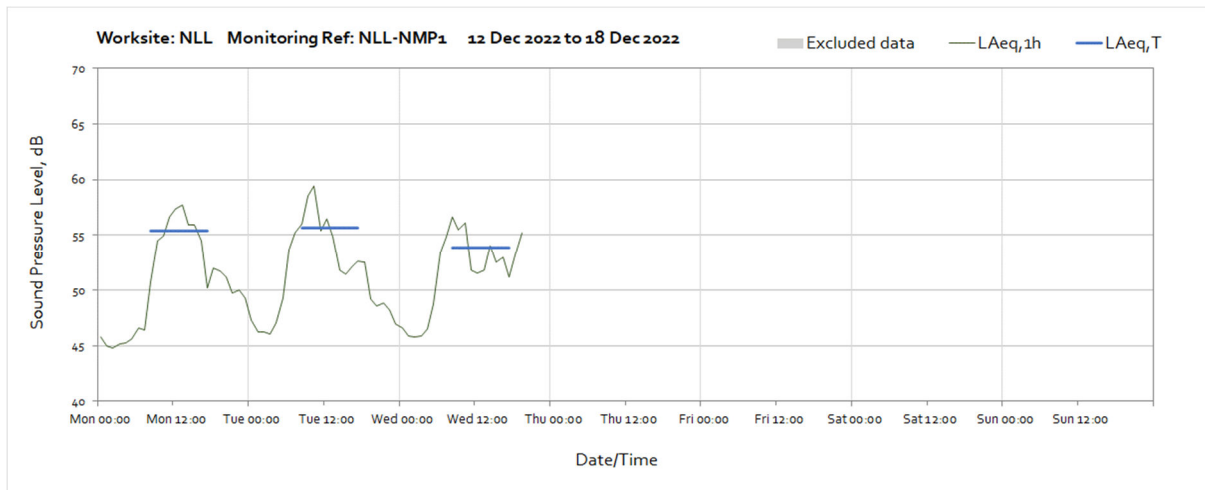
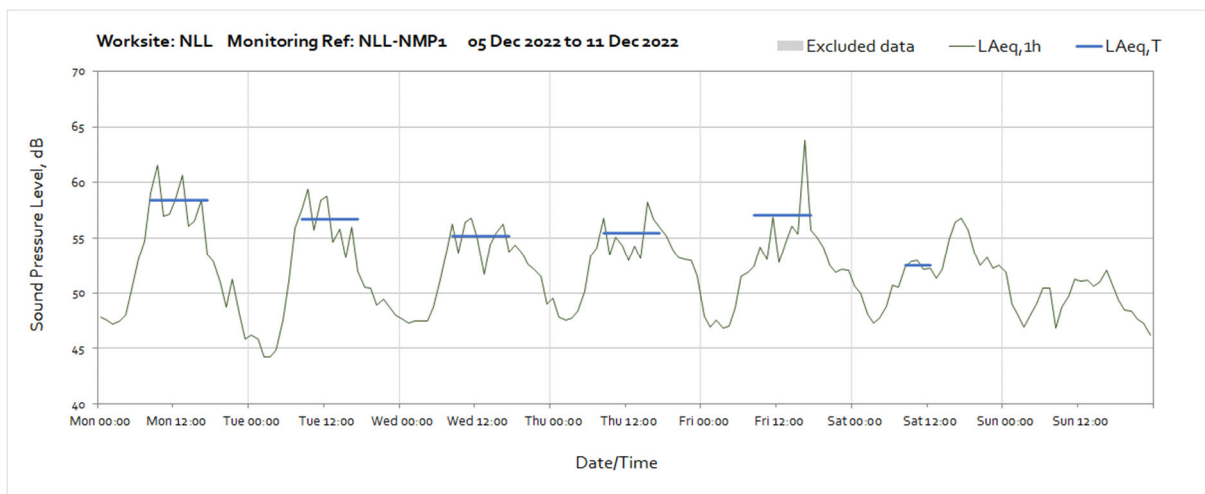
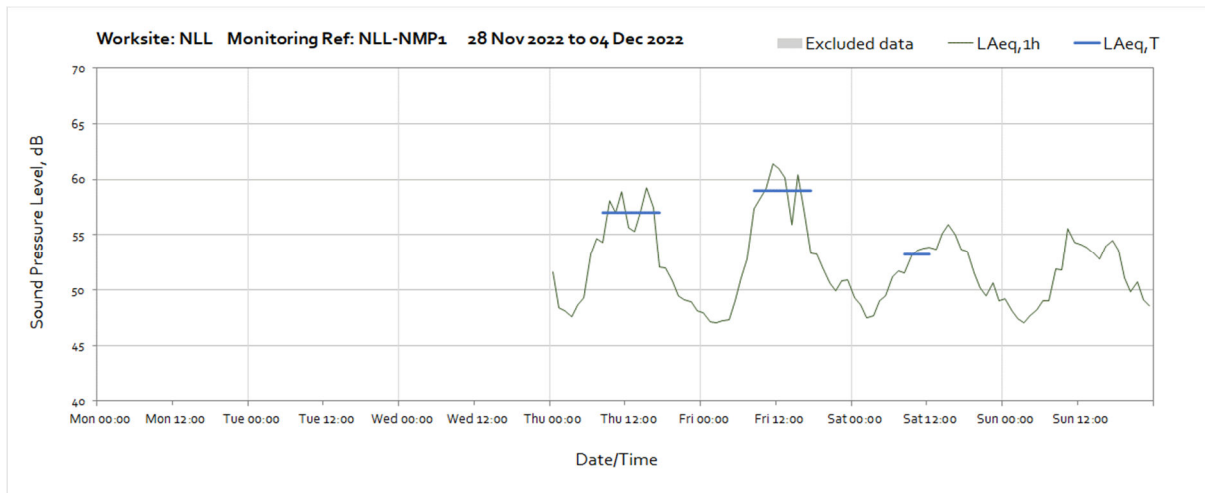


Worksite: OC – Monitoring Ref: WES-NMP1



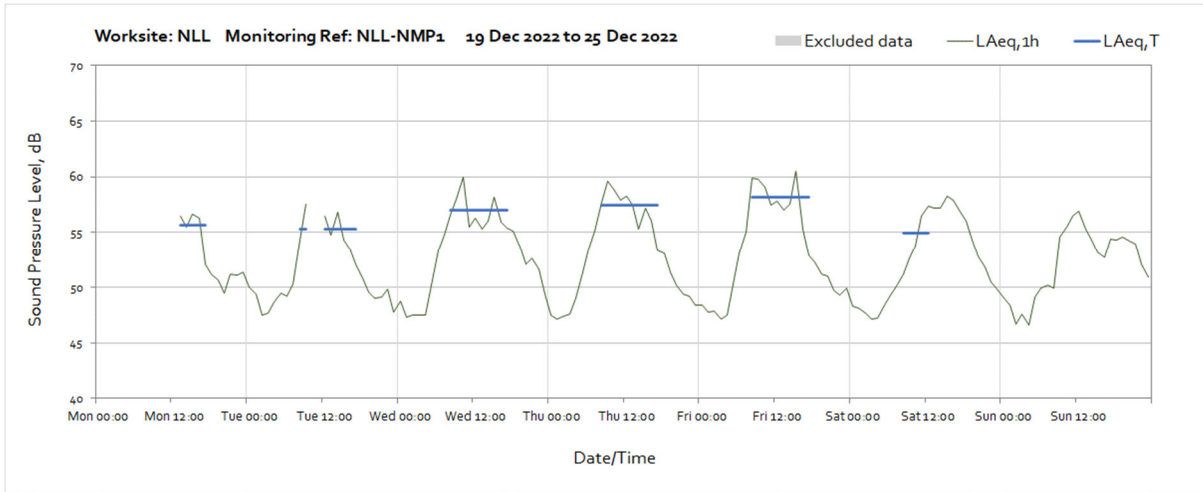


Worksite: NLL – Monitoring Ref: NLL-NMP1

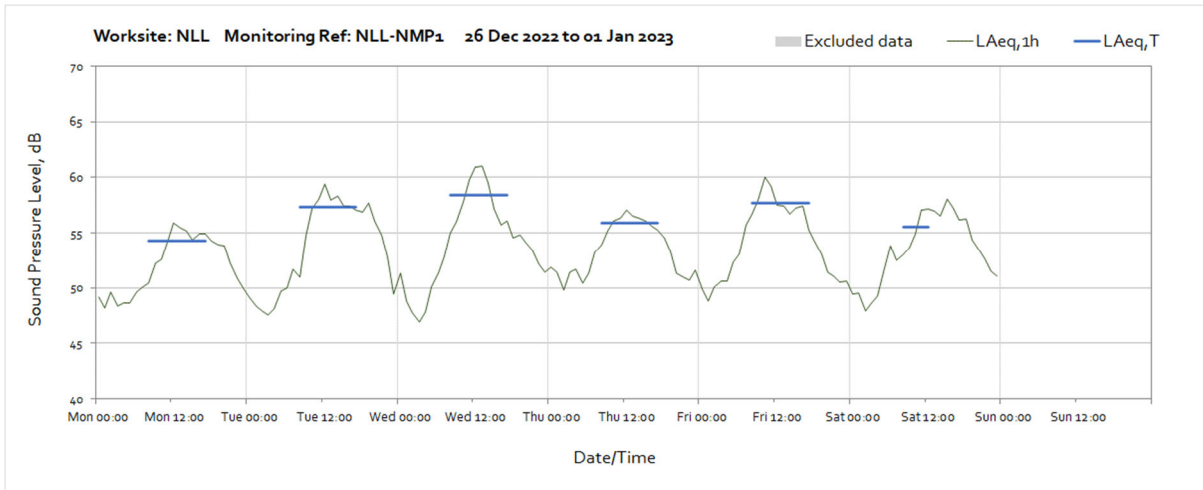


Note: Missing data from 20:00 on 14th December until 13:00 on 19th December was due to depleted monitor battery.

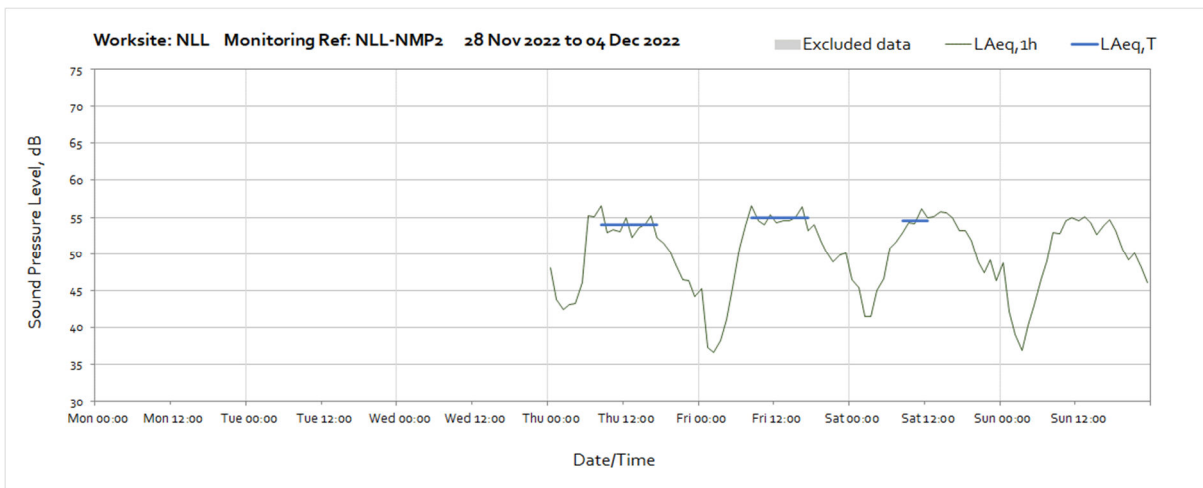
OFFICIAL

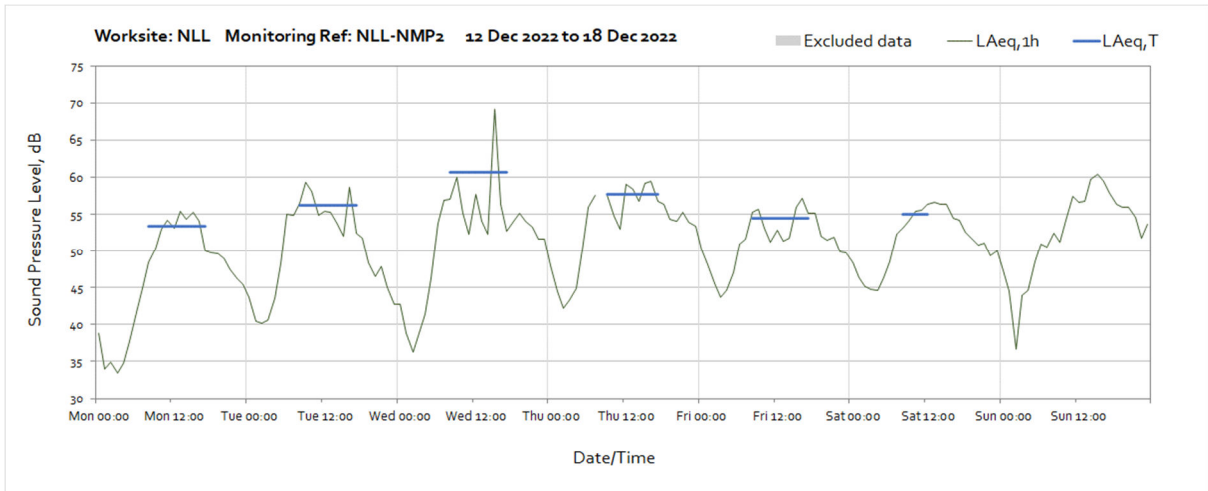
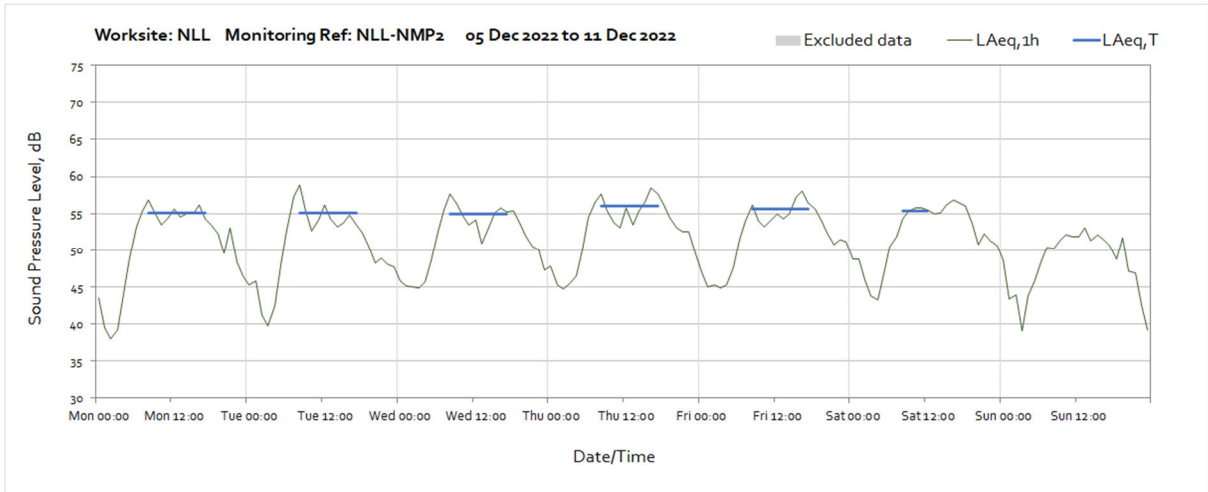


Note: Missing data from 20:00 on 14th December until 13:00 on 19th December was due to depleted monitor battery. Missing data between 10:00 and 12:00 on 20th December was due to monitor maintenance.

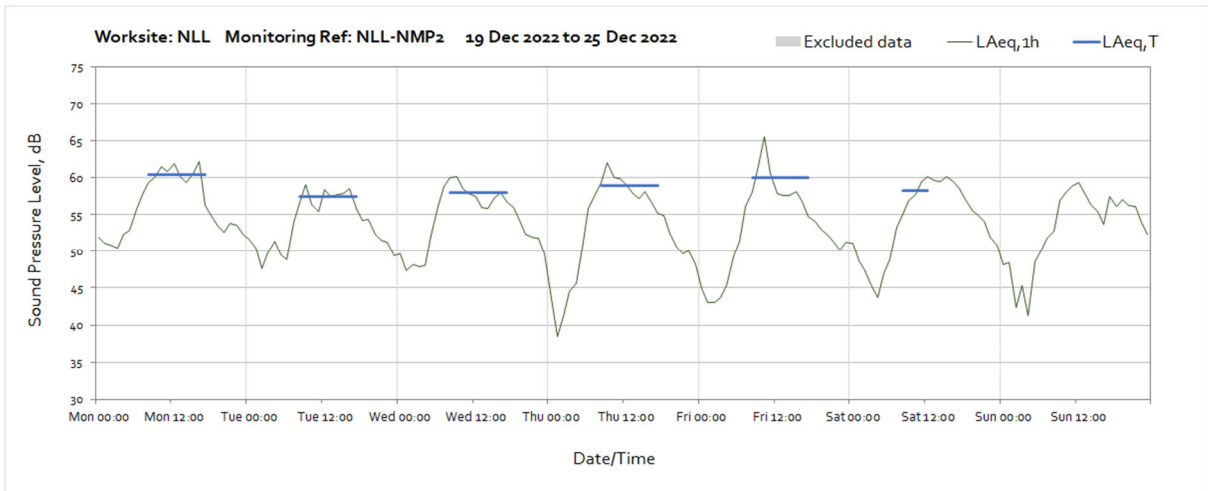


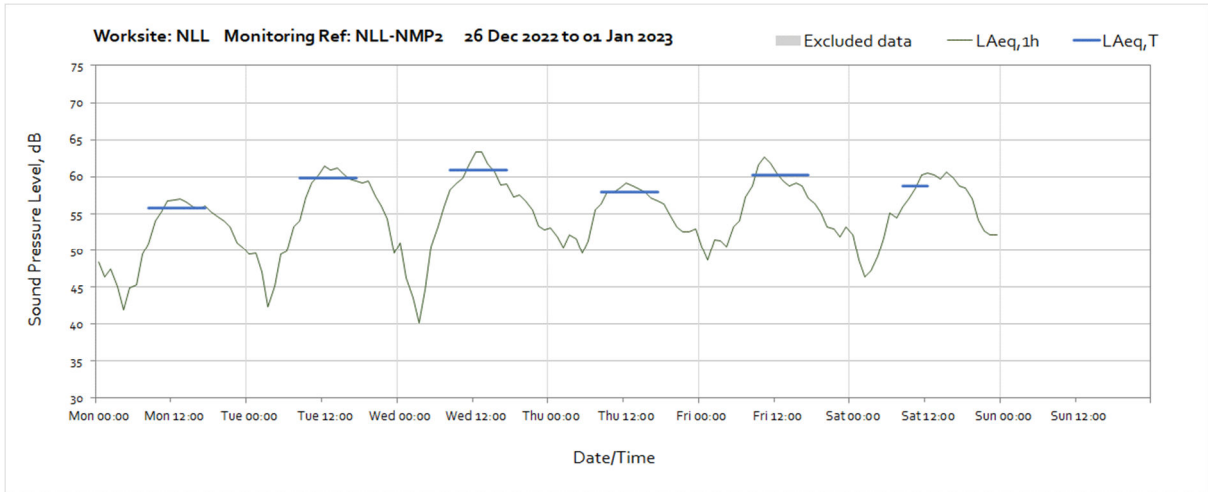
Worksite: NLL - Monitoring Ref: NLL-NMP2



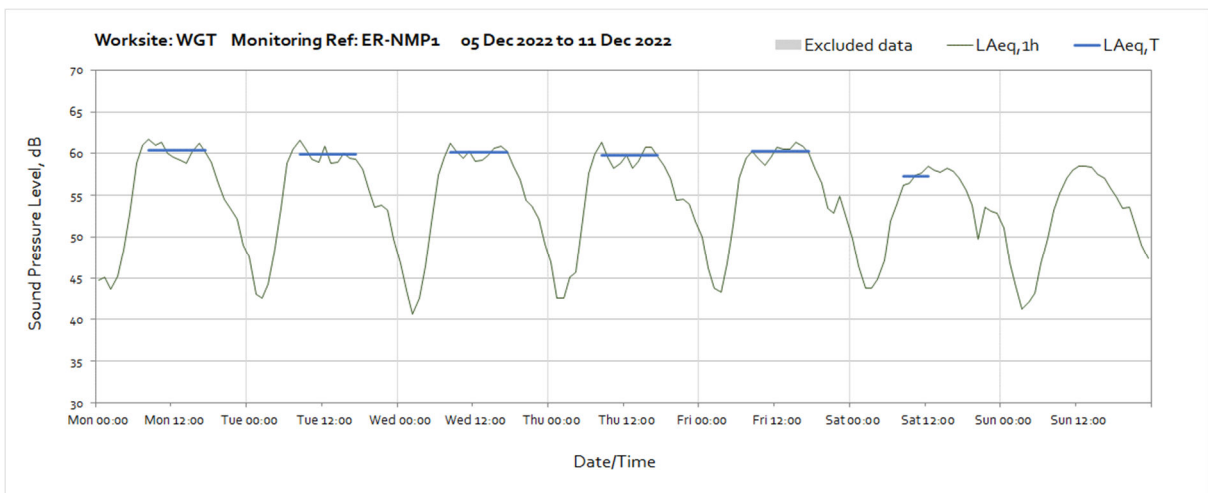
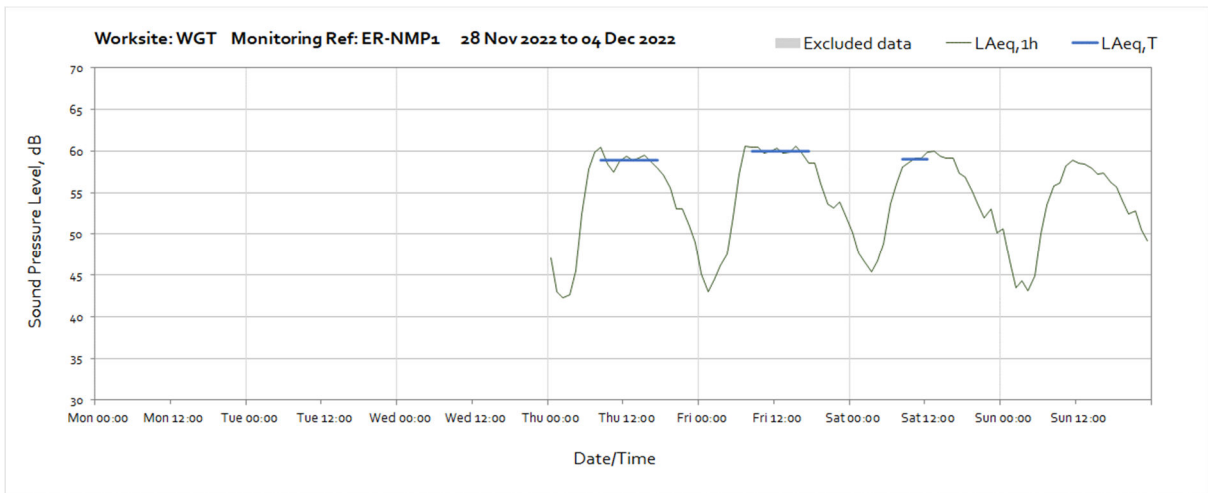


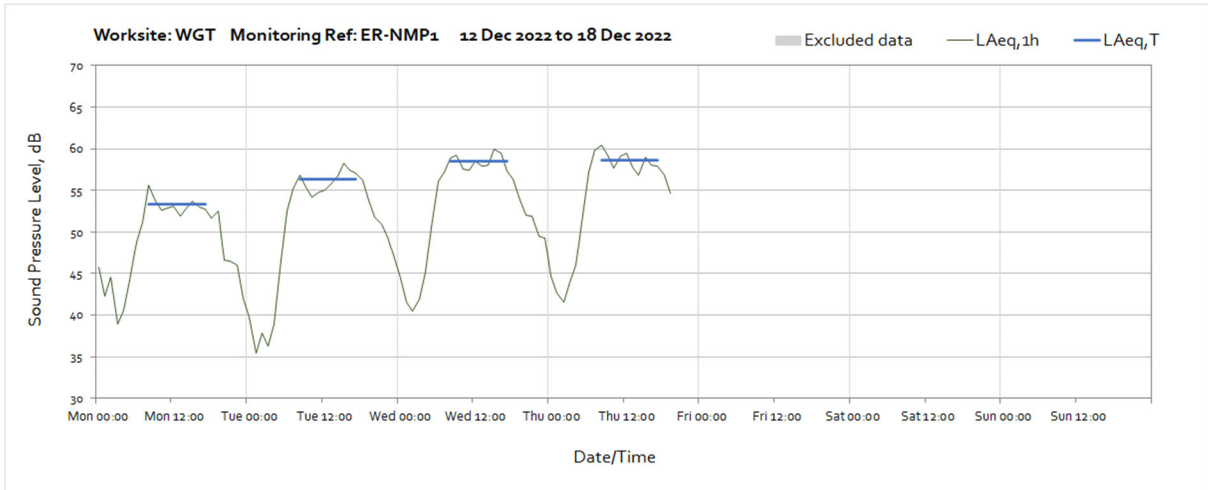
Note: Missing data at 08:00 on 15th December was due to monitor maintenance.



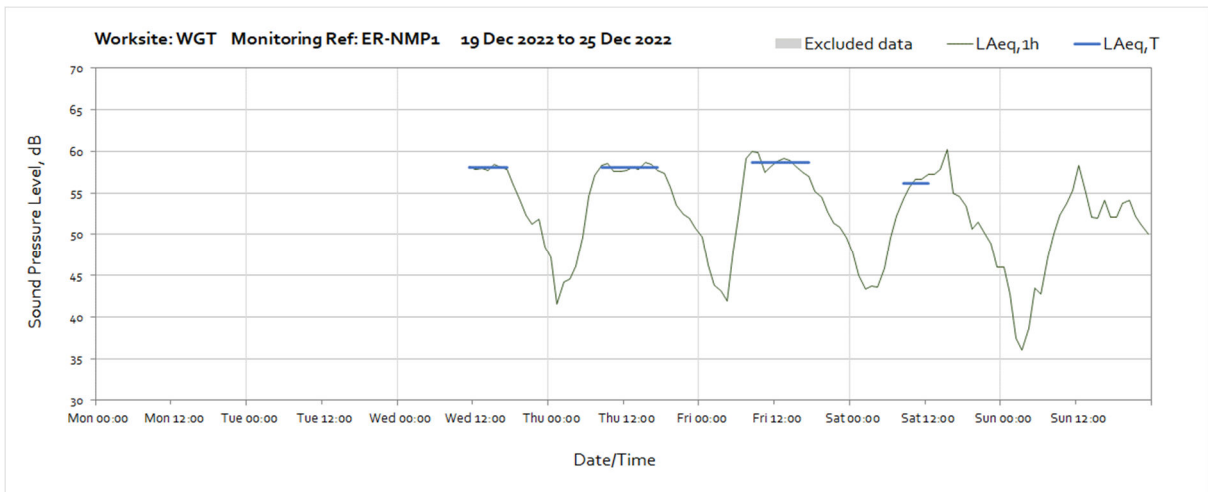


Worksite: WGT - Monitoring Ref: ER-NMP1

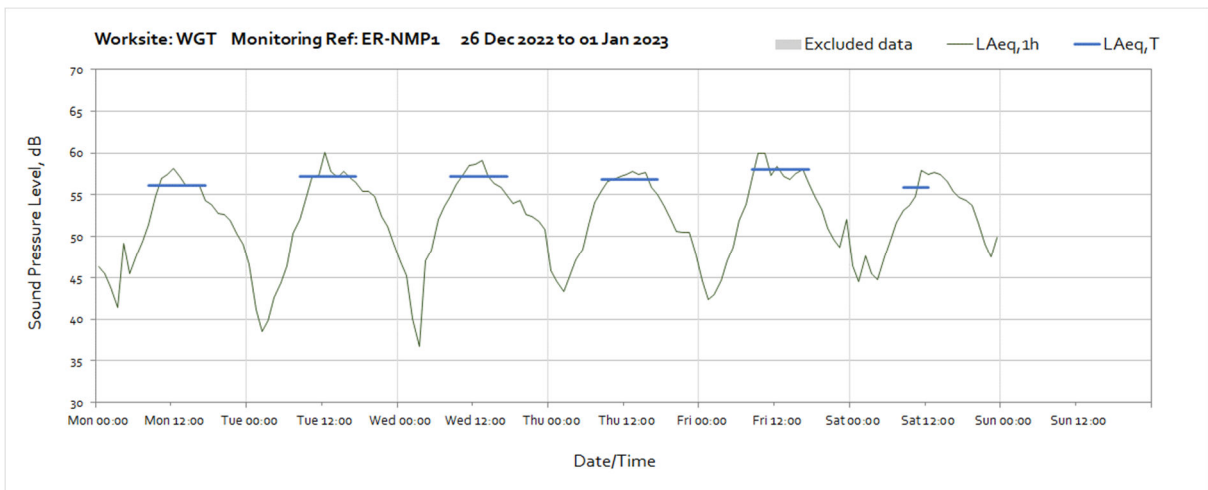




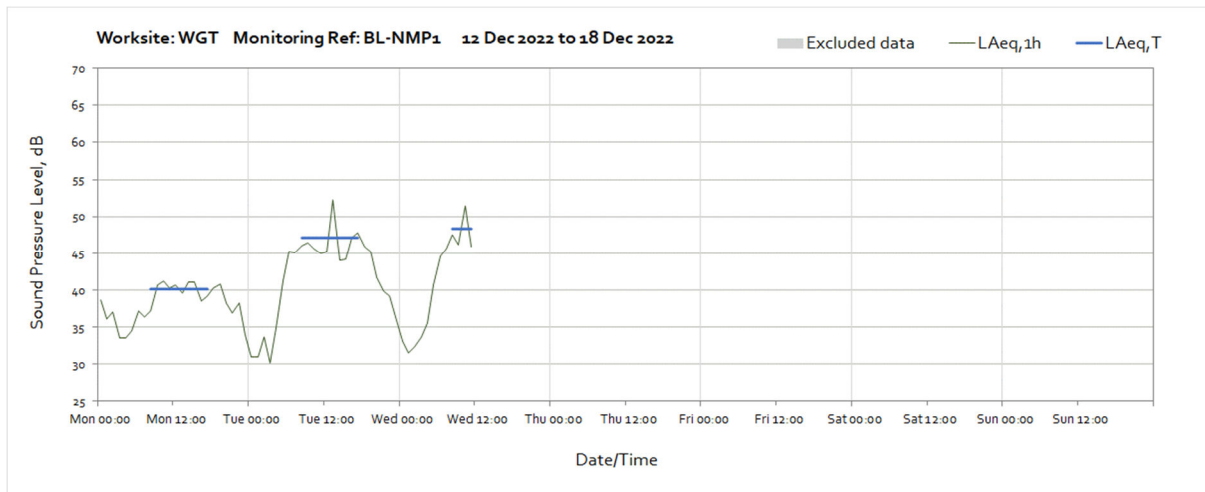
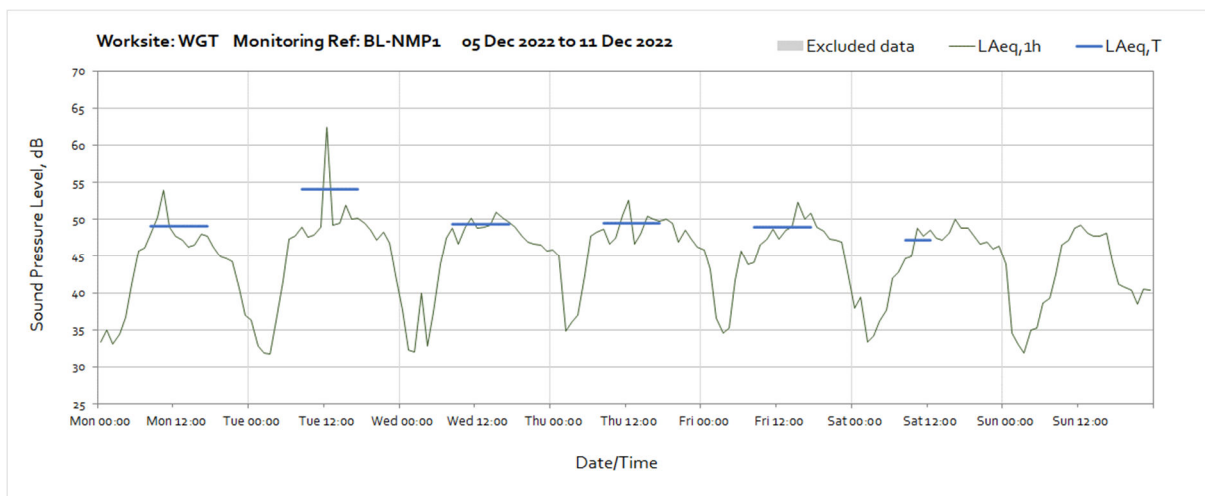
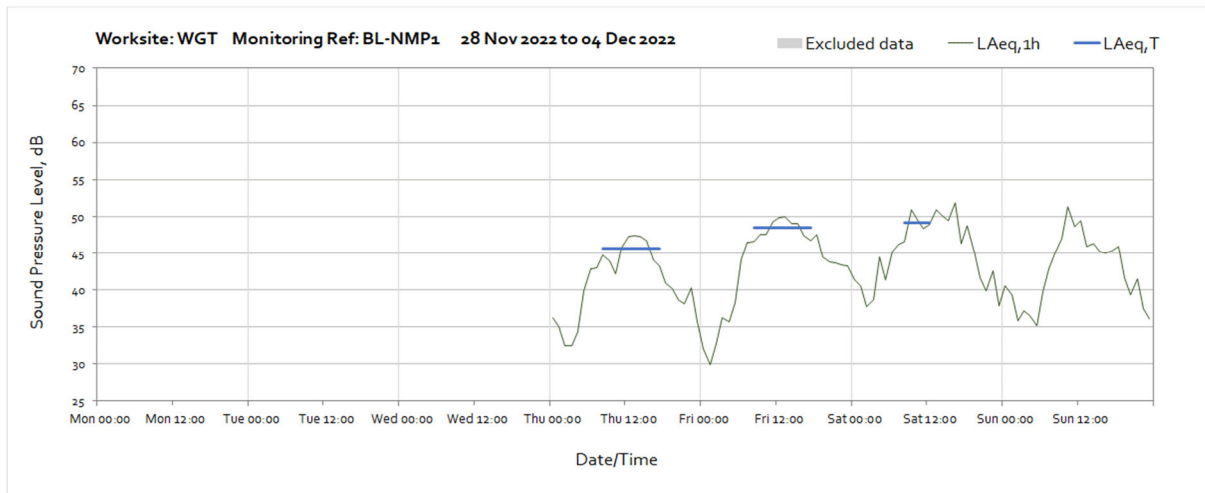
Note: Missing data from 20:00 on 15th December until 11:00 on 21st December was due to depleted monitor battery.



Note: Missing data from 20:00 on 15th December until 11:00 on 21st December was due to depleted monitor battery.

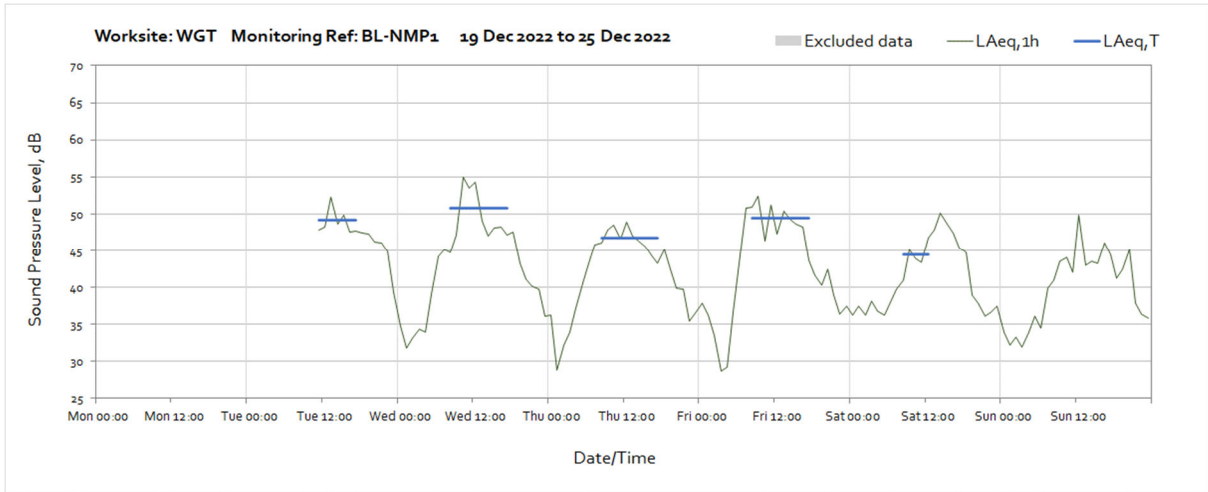


Worksite: WGT – Monitoring Ref: BL-NMP1

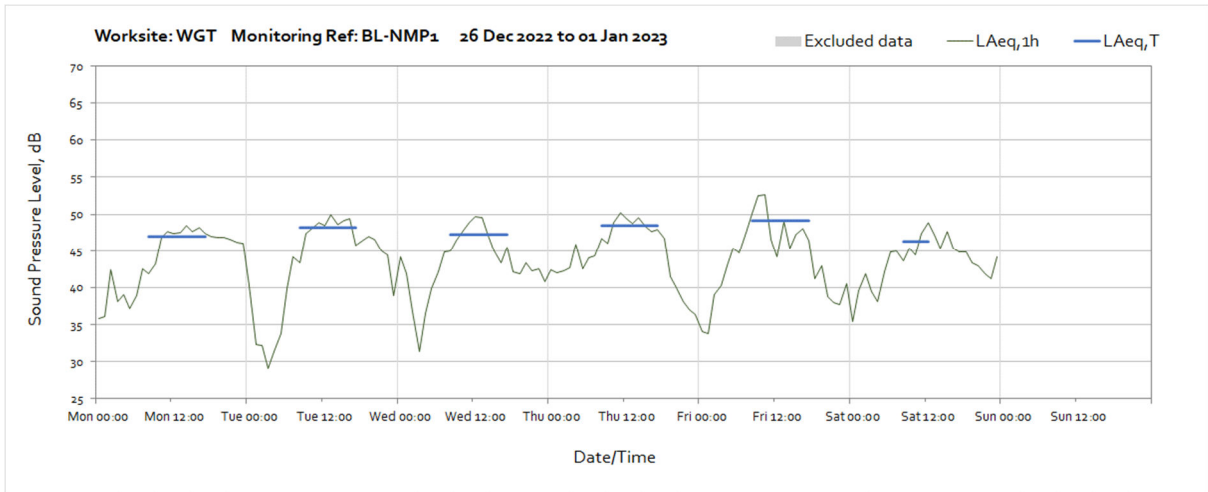


Note: Missing data from 12:00 on 14th December until 11:00 on 20th December was due to depleted monitor battery.

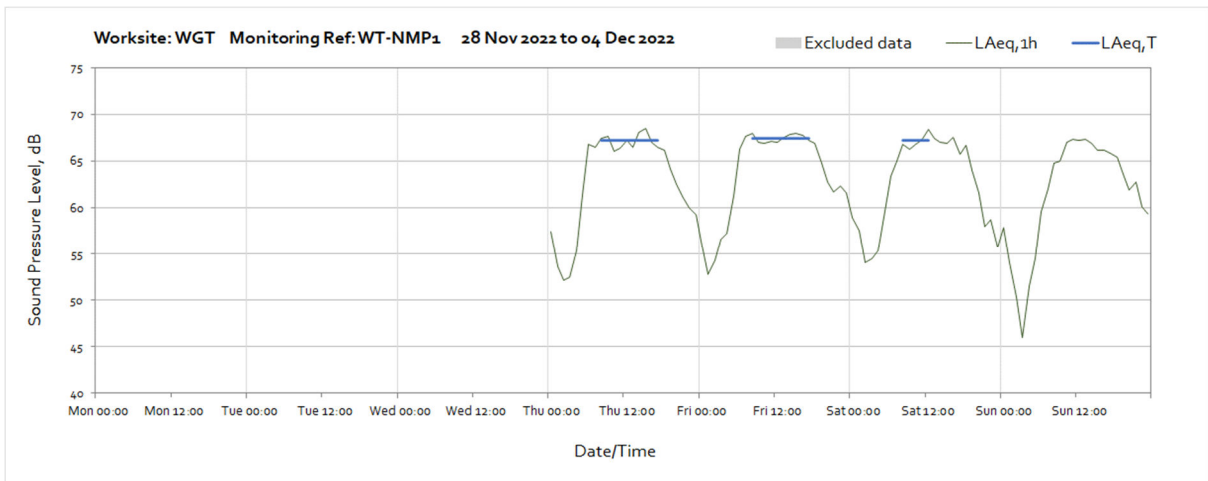
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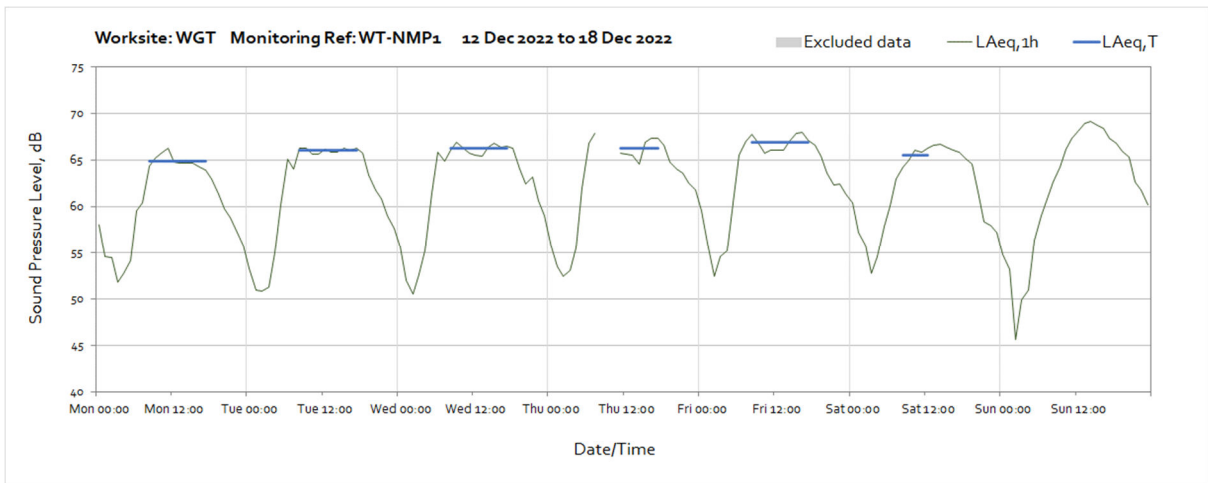
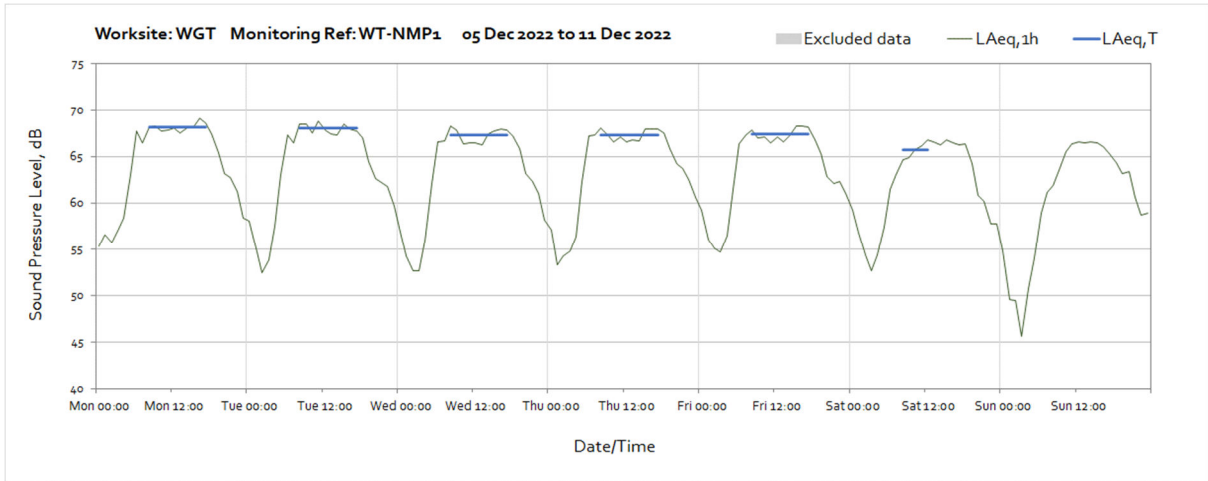


Note: Missing data from 12:00 on 14th December until 11:00 on 20th December was due to depleted monitor battery.

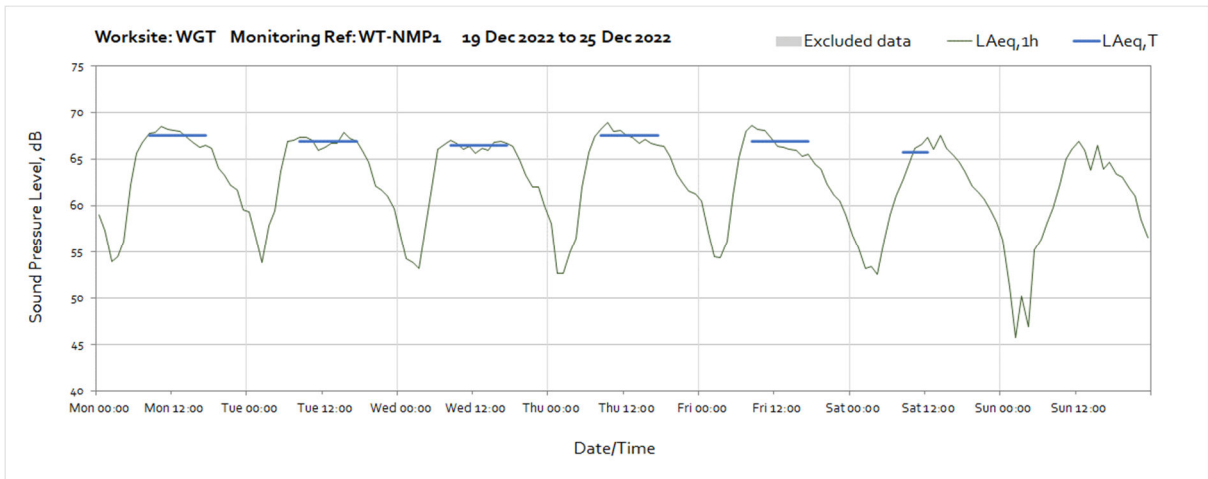


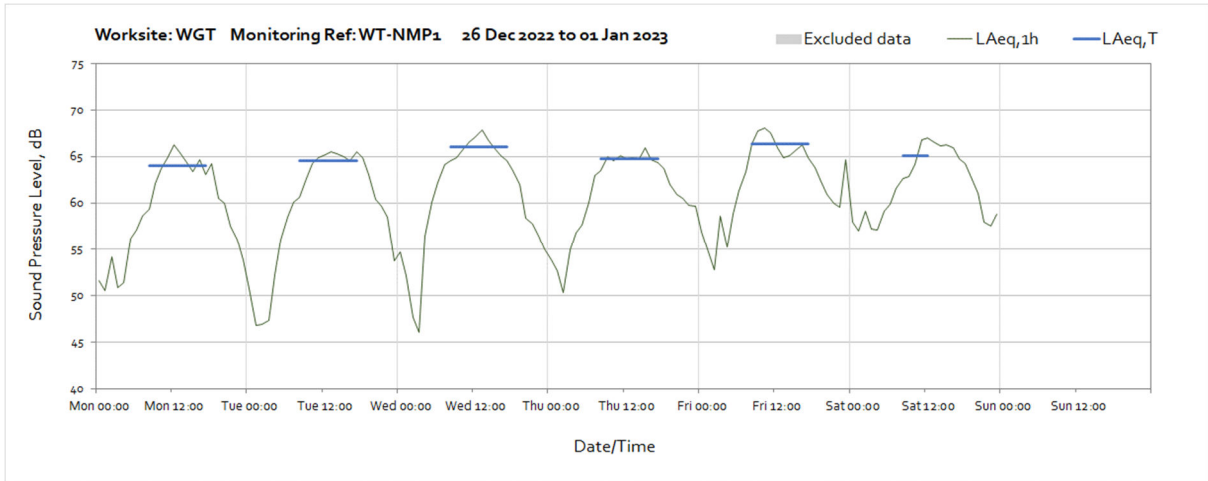
Worksite: WGT - Monitoring Ref: WT-NMP1



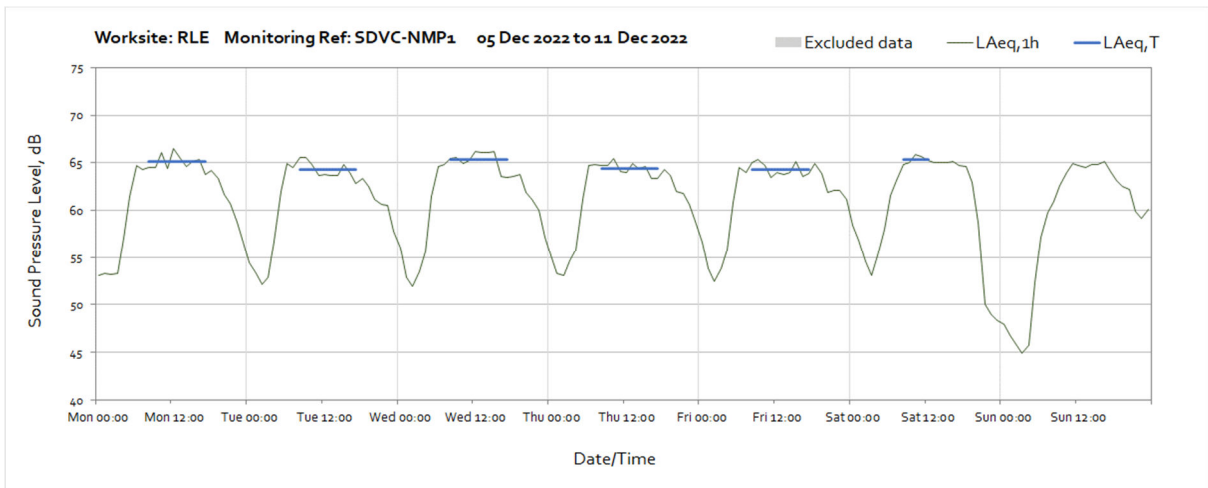
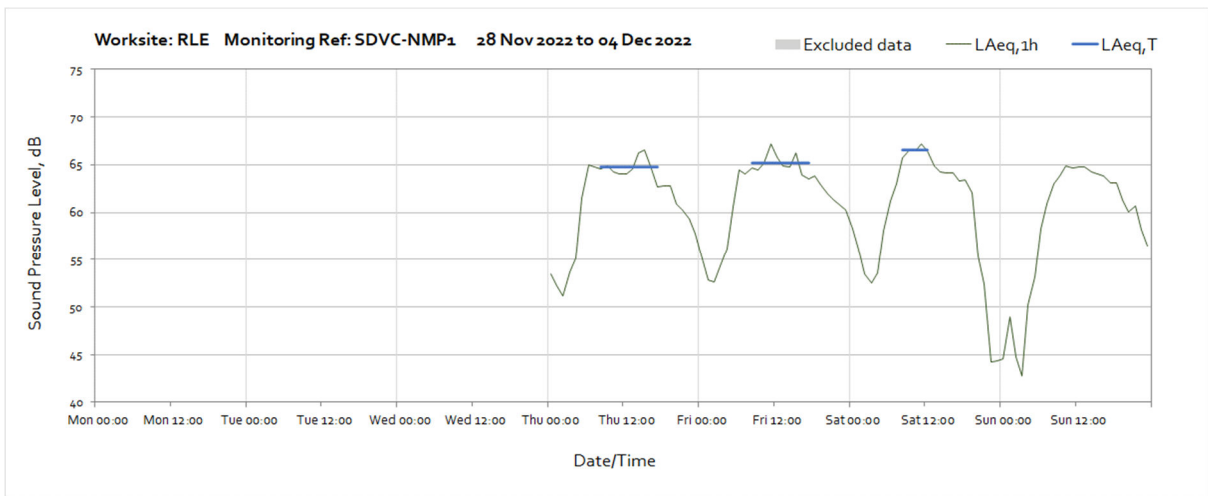


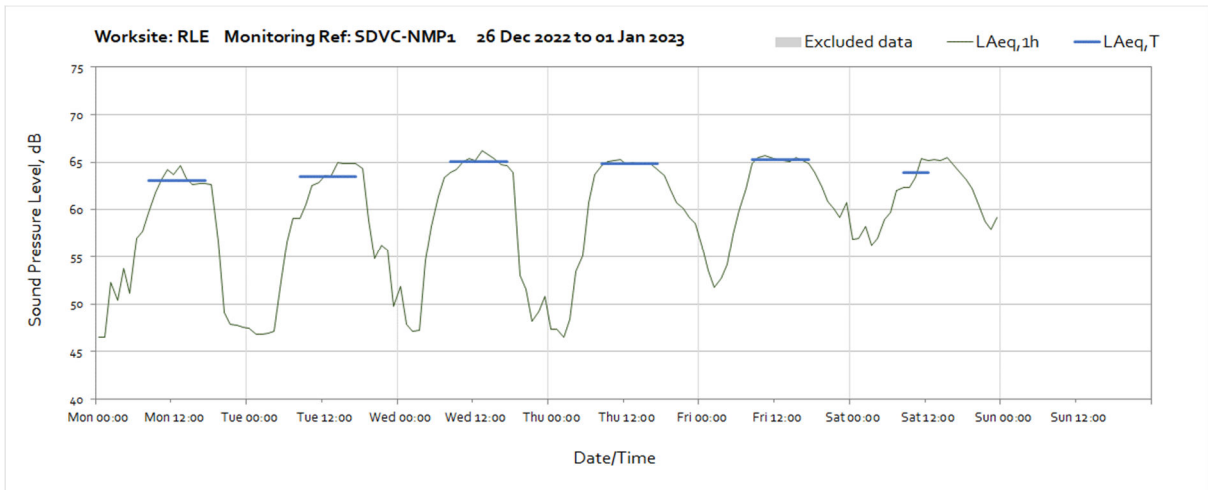
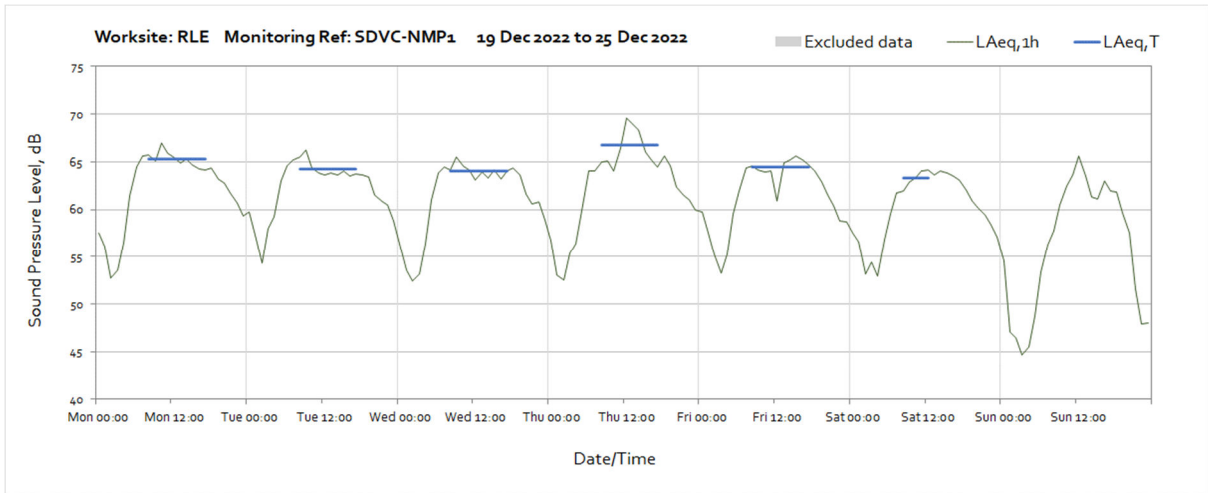
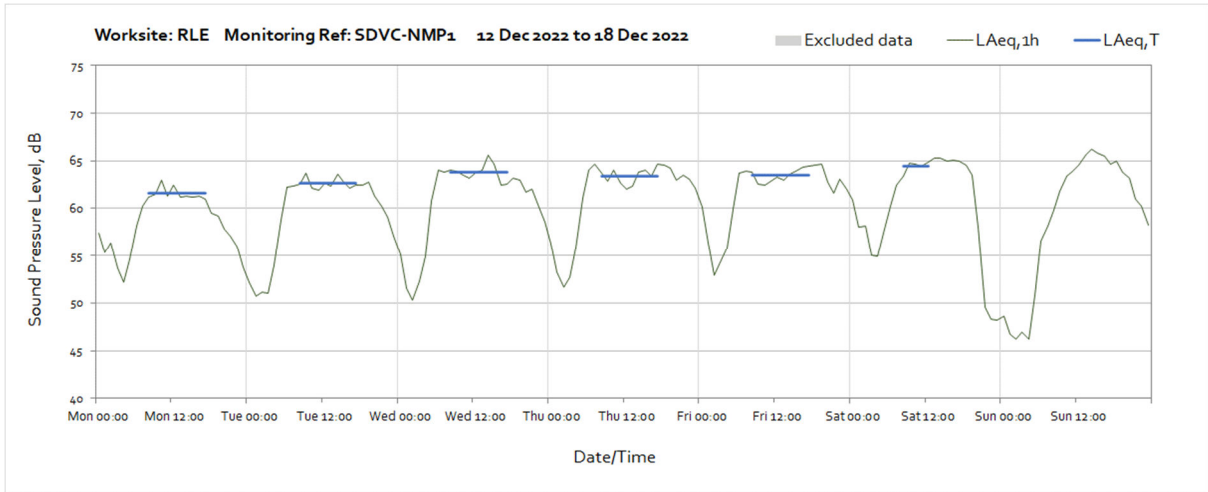
Note: Missing data between 08:00 and 11:00 on 15th December is due to monitor maintenance.



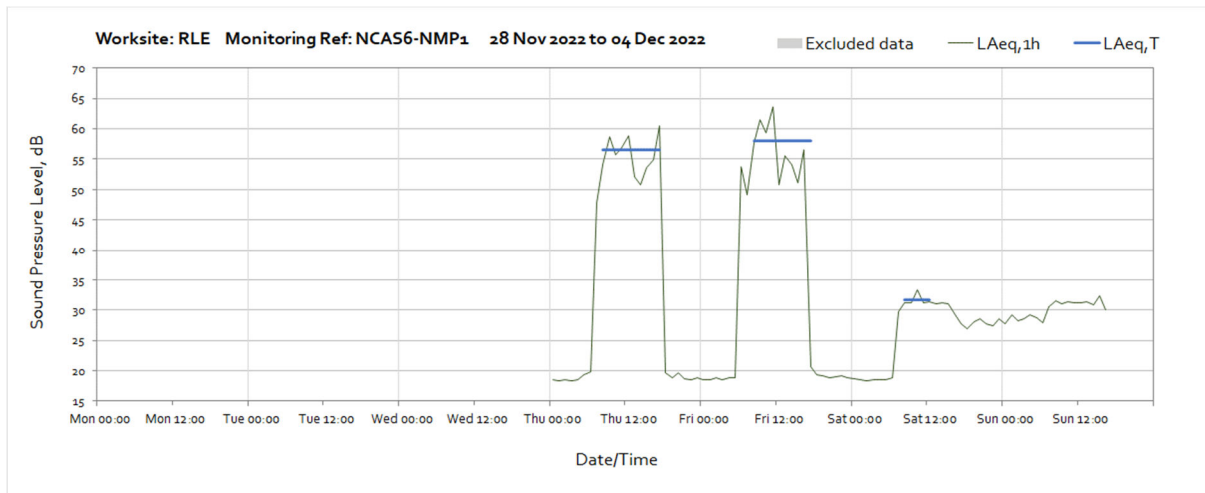


Worksite: RLE – Monitoring Ref: SDVC-NMP1



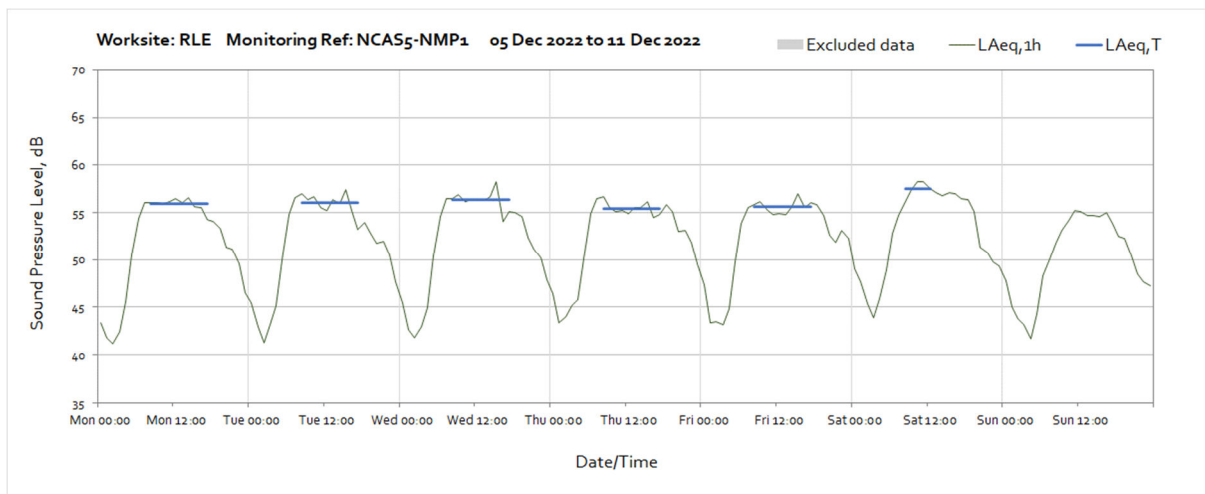
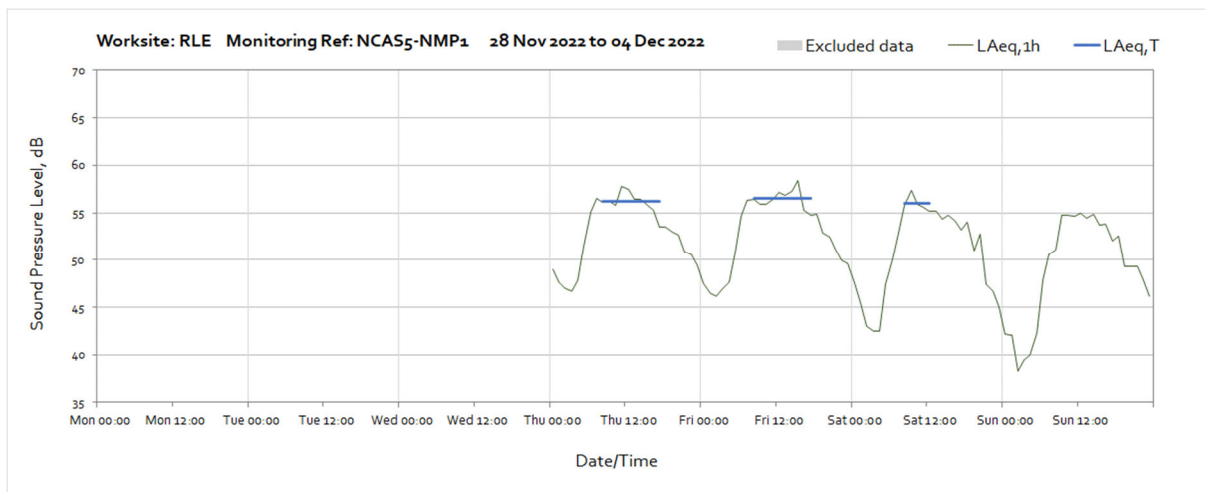


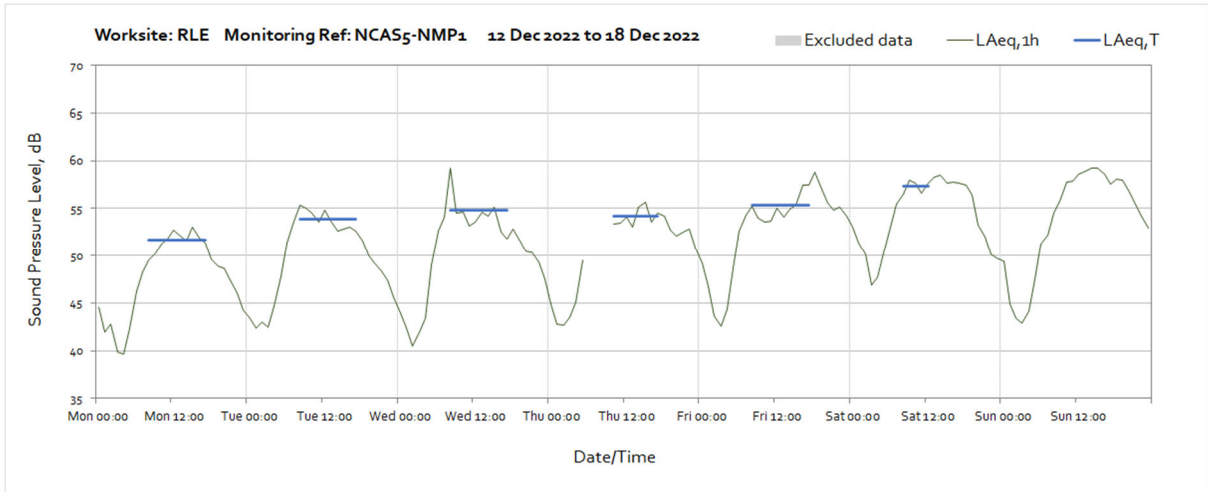
Worksite: RLE – Monitoring Ref: NCAS6-NMP1



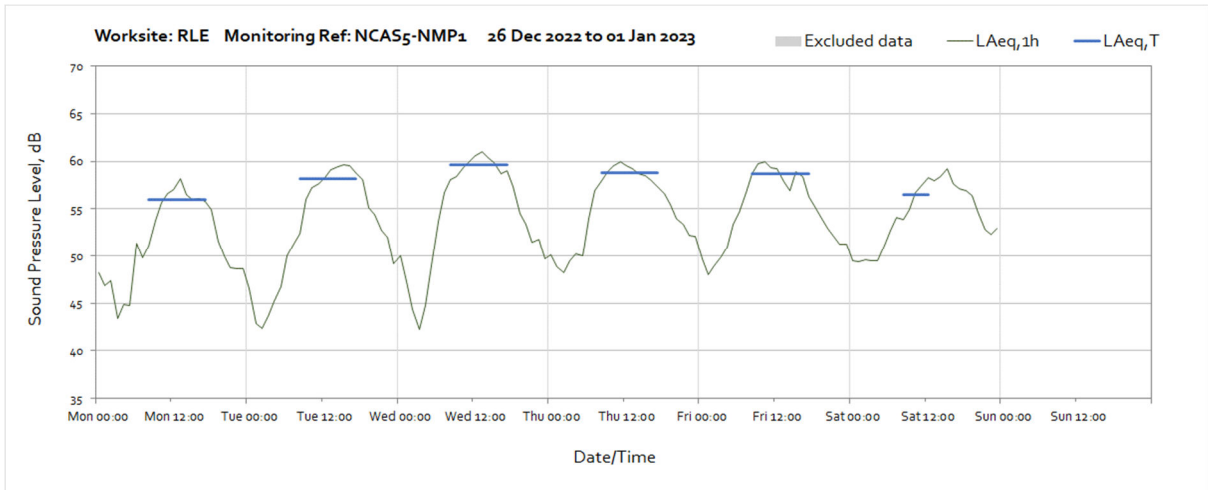
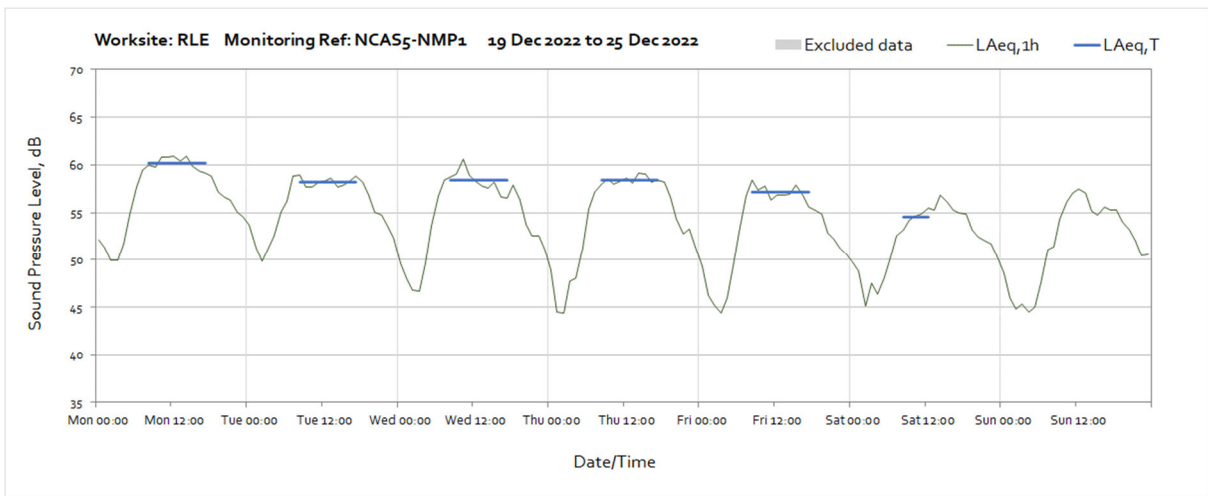
Note: Missing data from 17:00 on 4th December until month end was due to monitor retrieval for failed field calibration.

Worksite: RLE – Monitoring Ref: NCAS5-NMP1

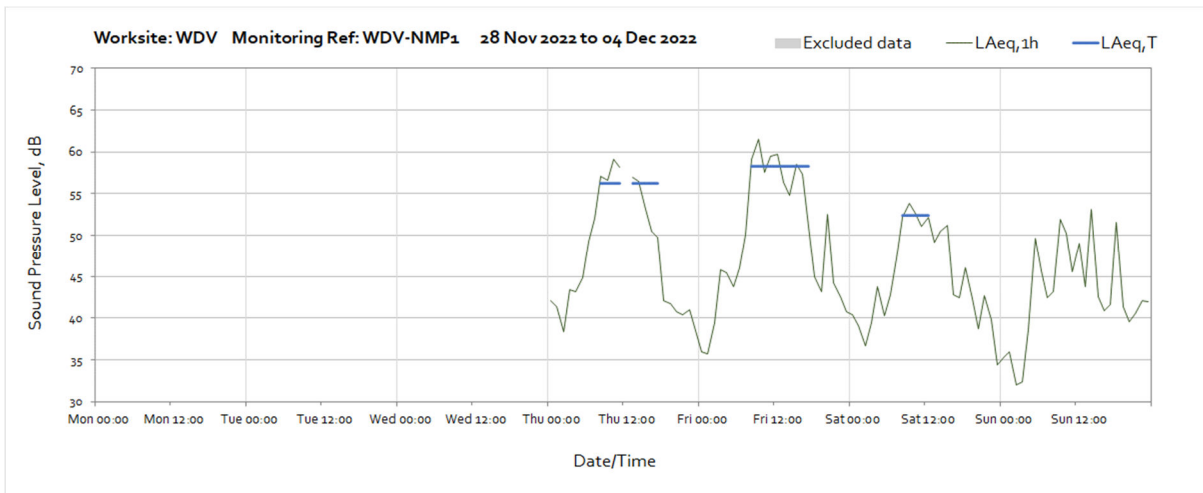




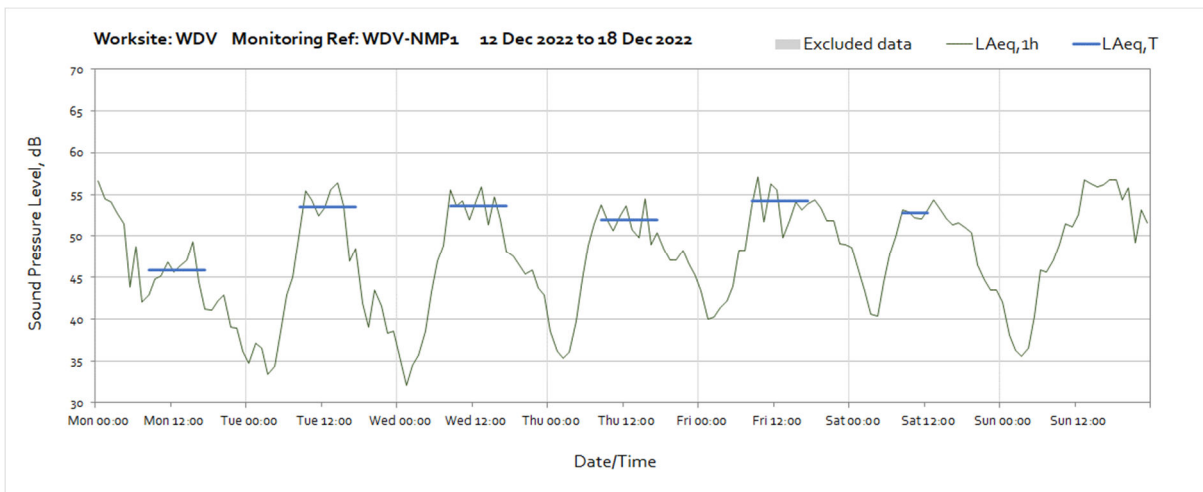
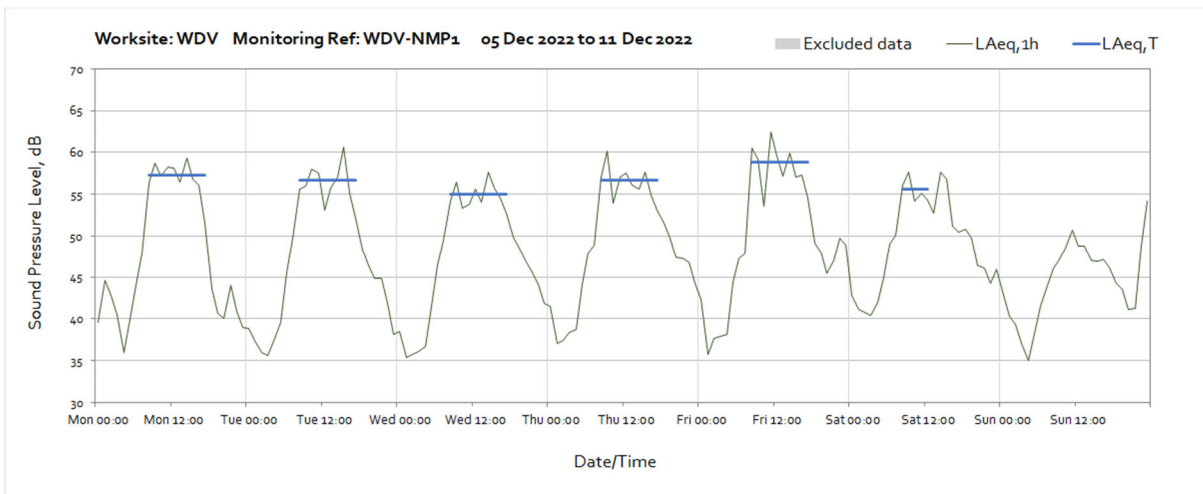
Note: Missing data from 06:00 until 10:00 on 15th December was due to depleted monitor battery.

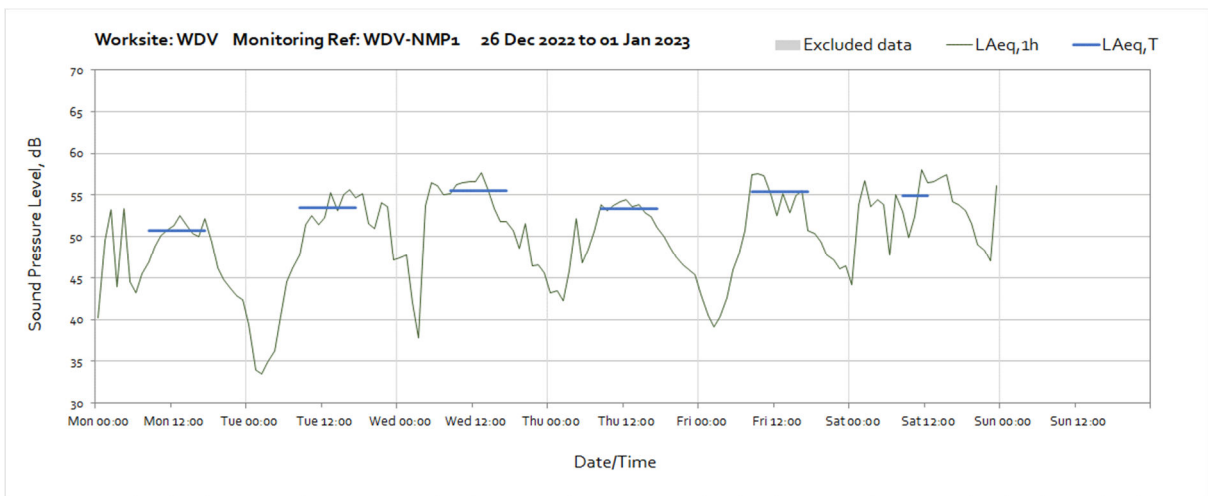
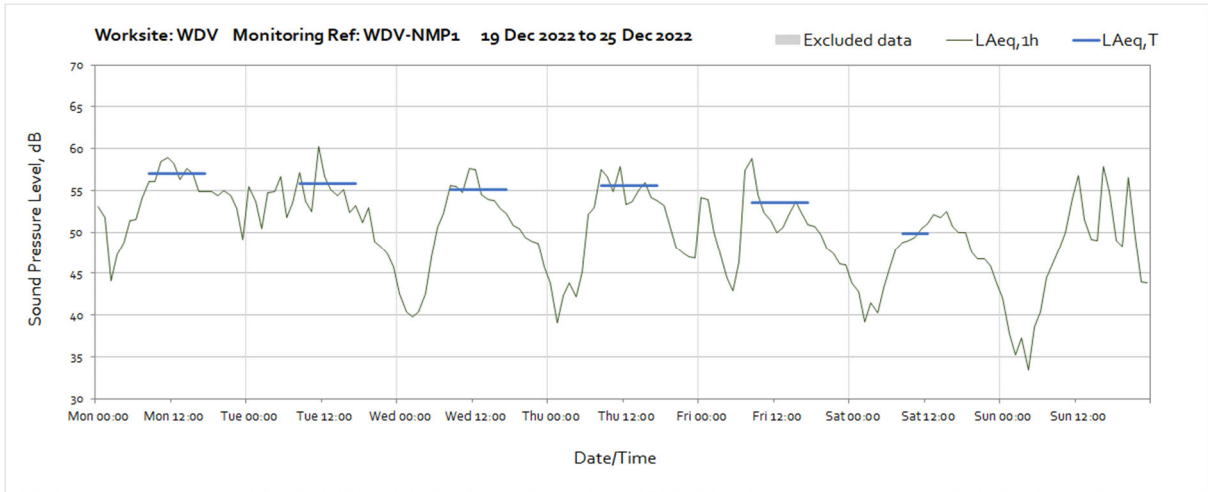


Worksite: WDV – Monitoring Ref: WDV-NMP1

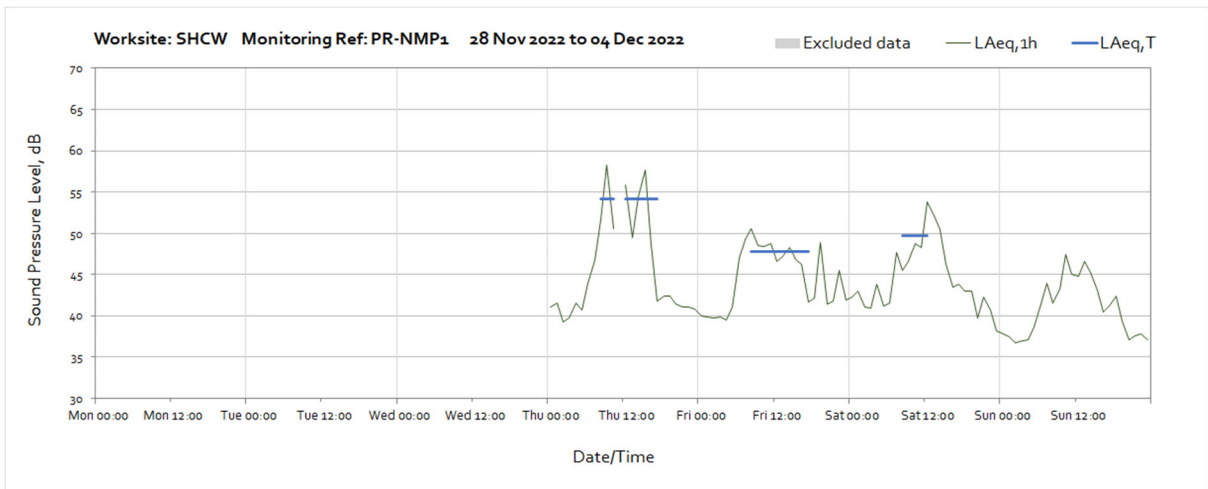


Note: Missing data at 12:00 on 1st December was due to monitor maintenance.

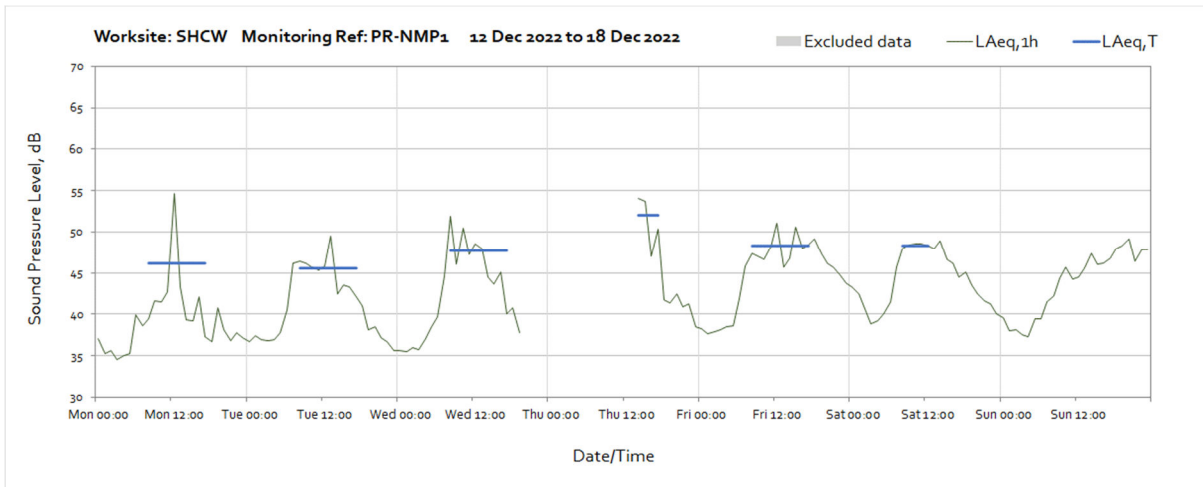
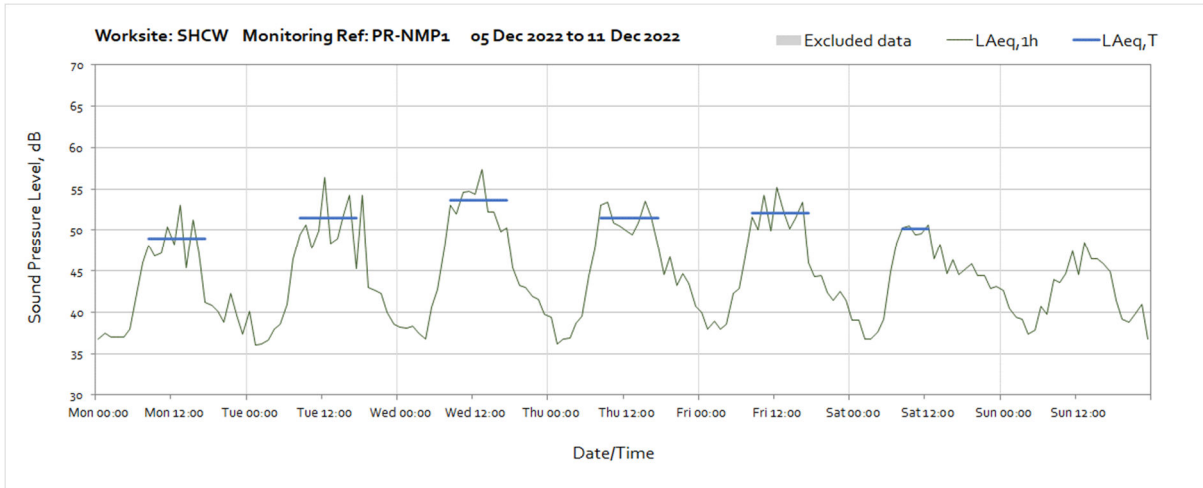




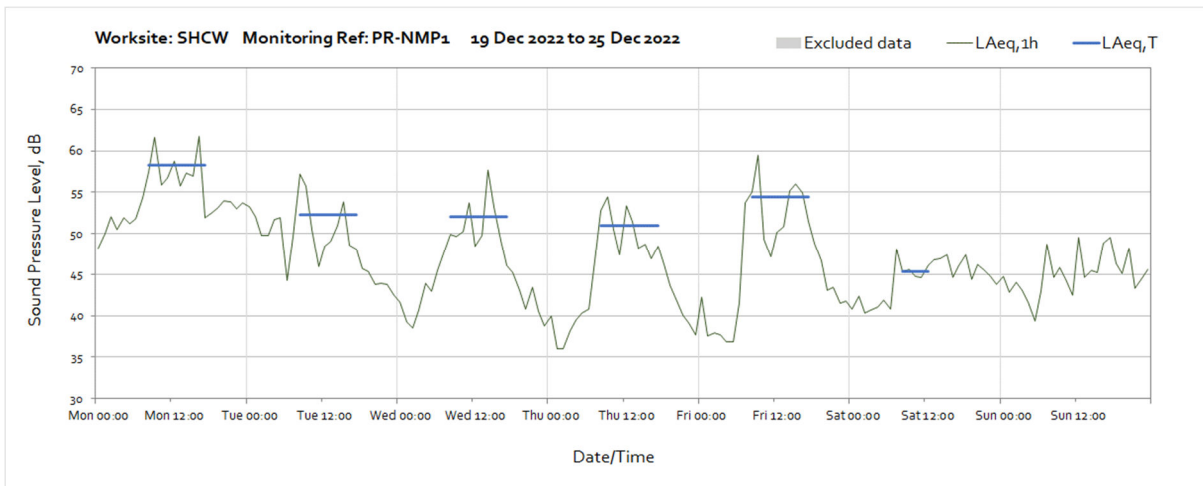
Worksite: SHCW – Monitoring Ref: PR-NMP1

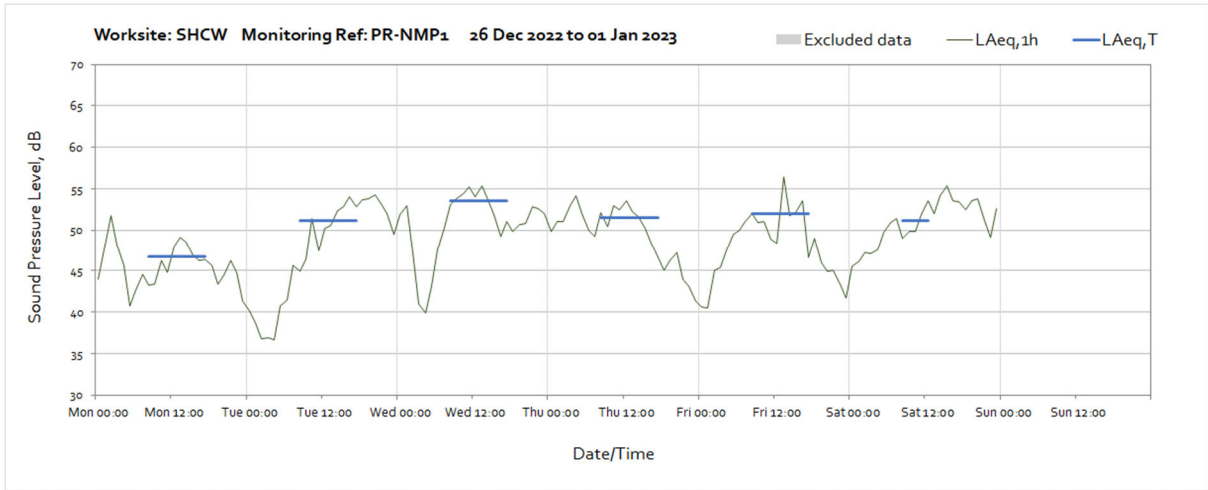


Note: Missing data at 11:00 on 1st December was due to monitor maintenance.

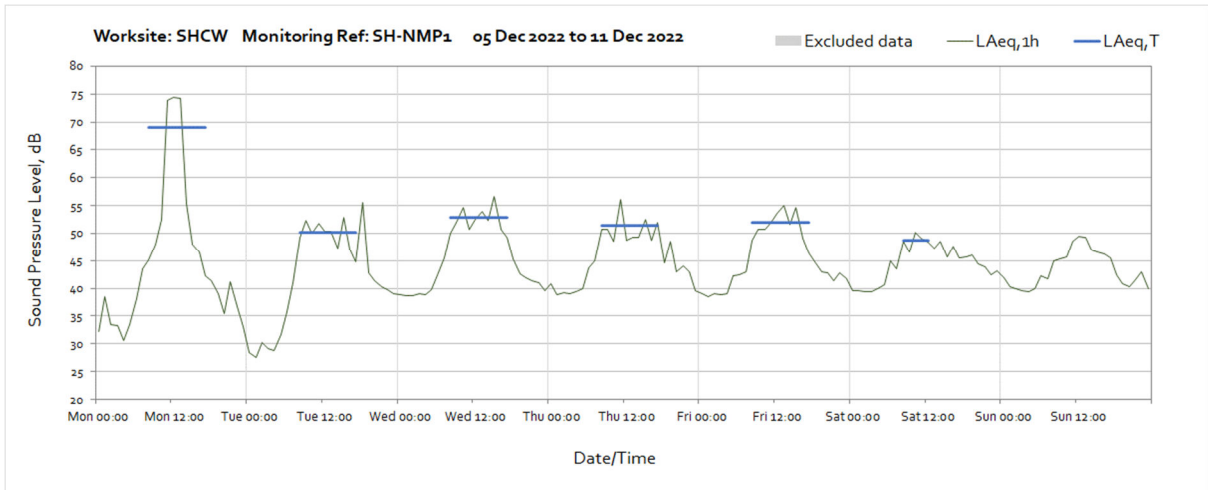
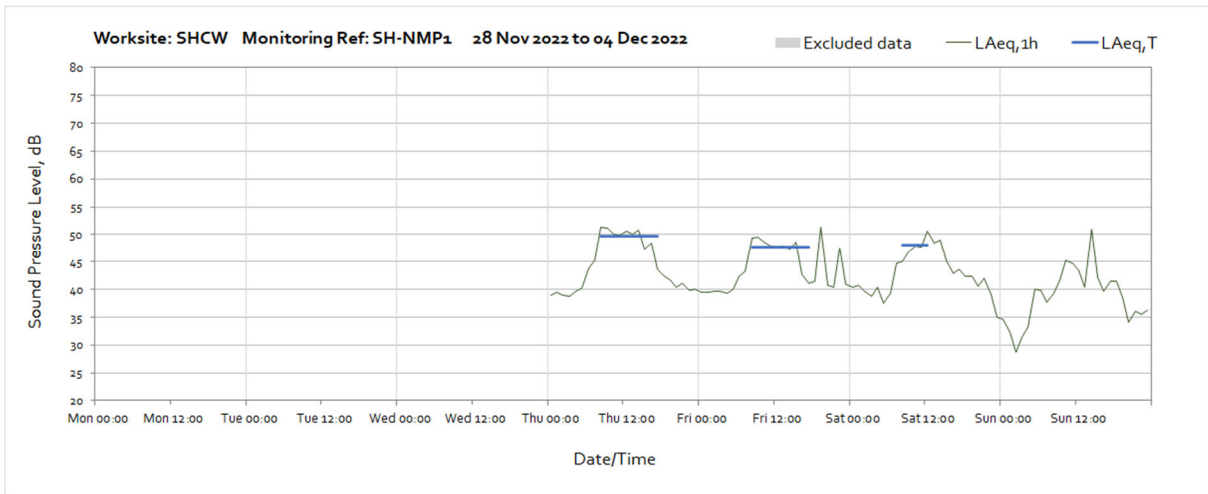


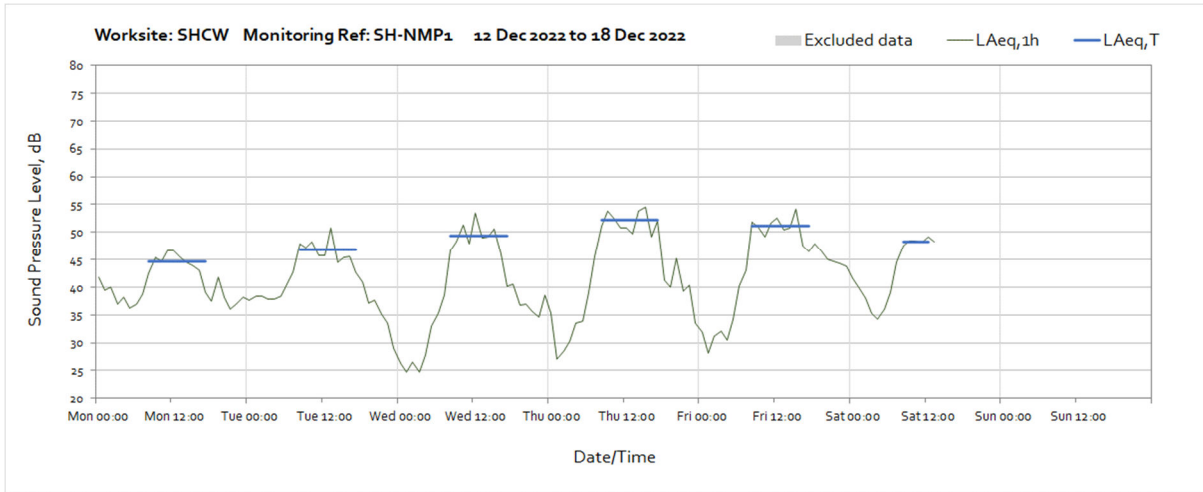
Note: Missing data between 20:00 on 14th December and 14:00 on 15th December was due to loss of power to the monitor.





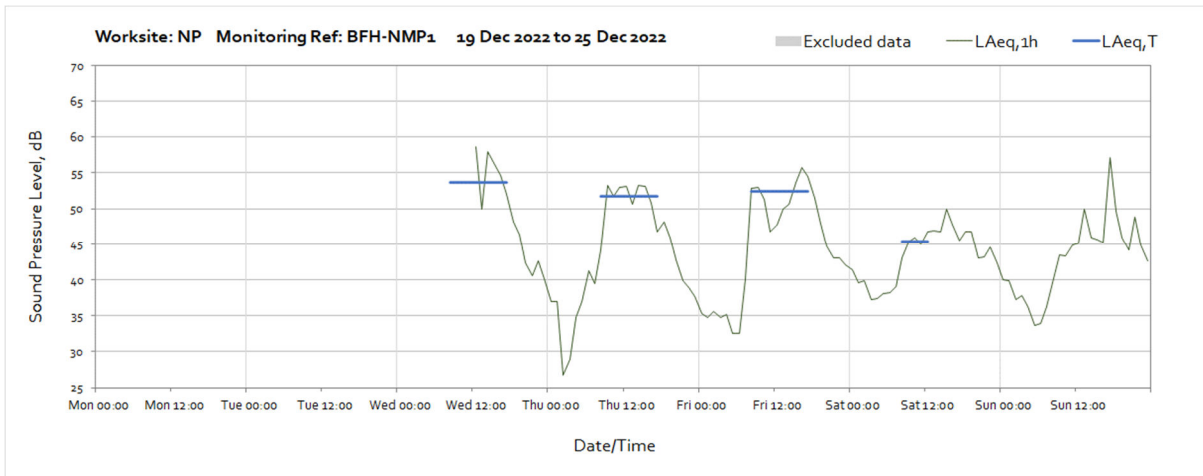
Worksite: SHCW - Monitoring Ref: SH-NMP1



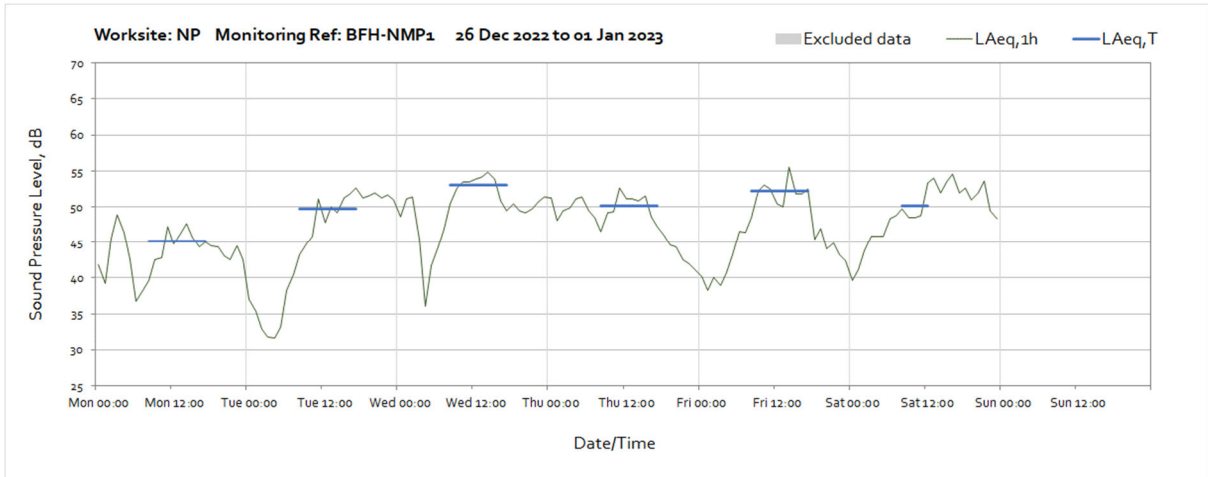


Note: Missing data from 14:00 on 17th December until month end was due to battery charging problem, solar enclosure has been retrieved for repair.

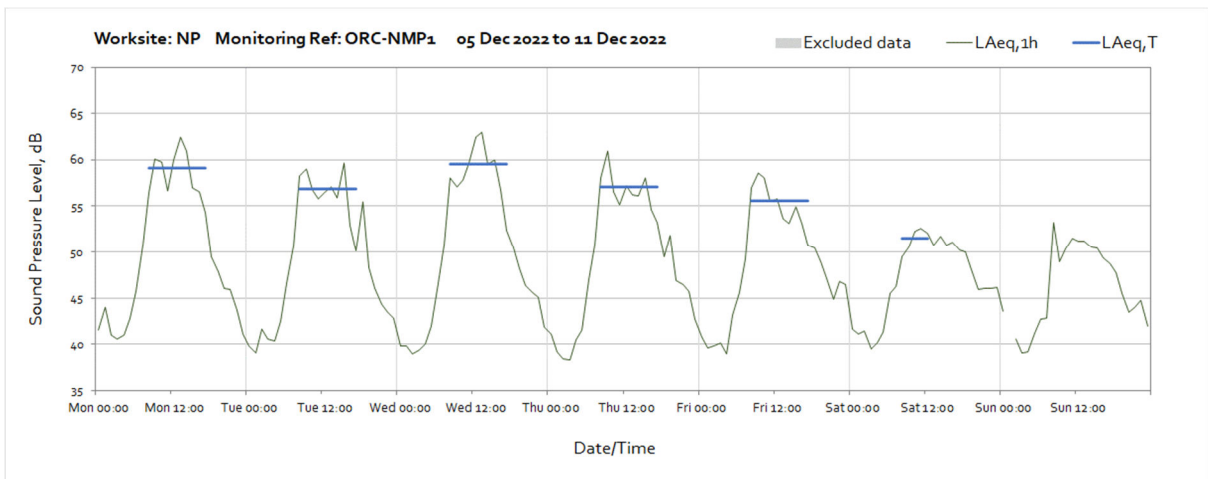
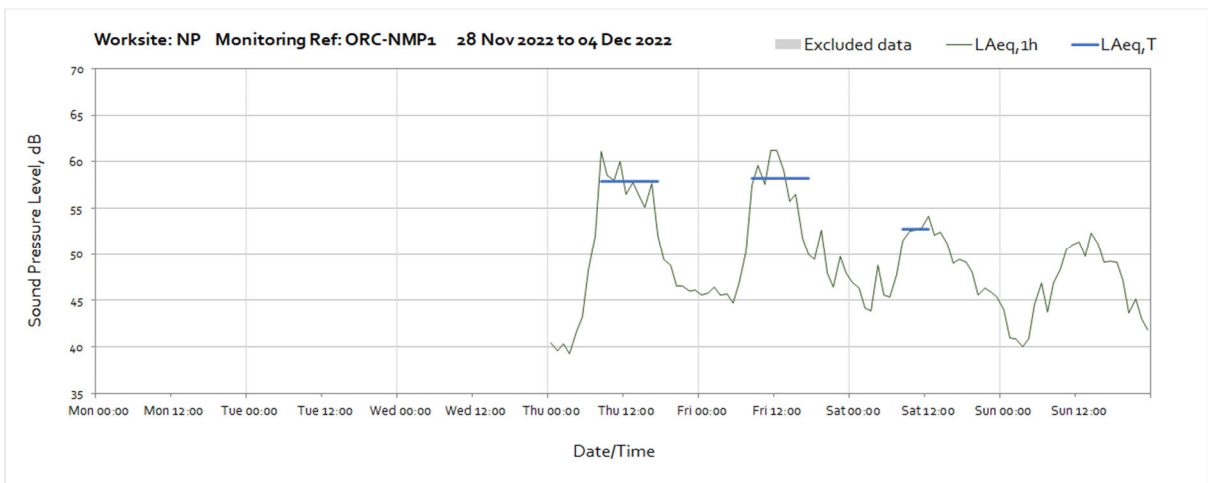
Worksite: NP – Monitoring Ref: BFH-NMP1



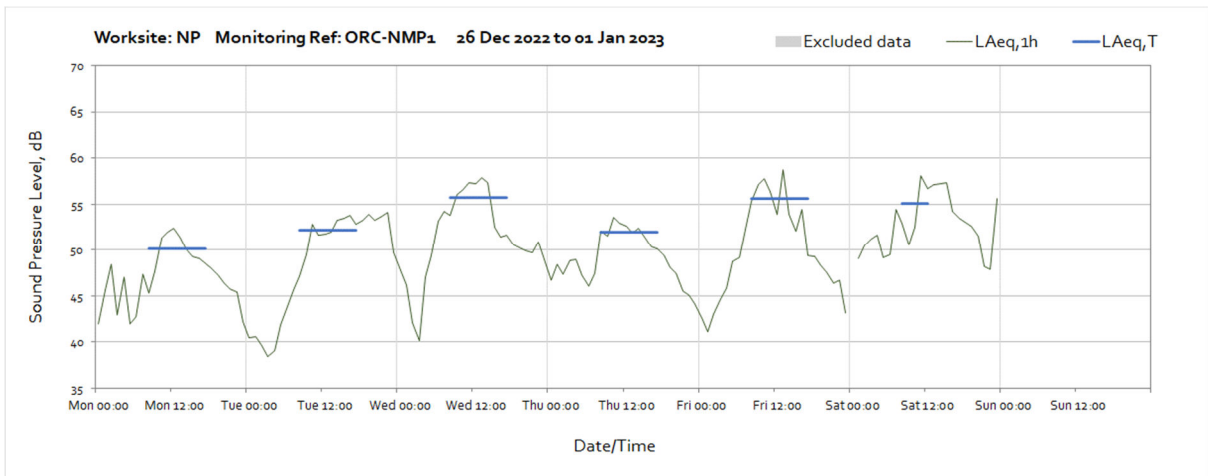
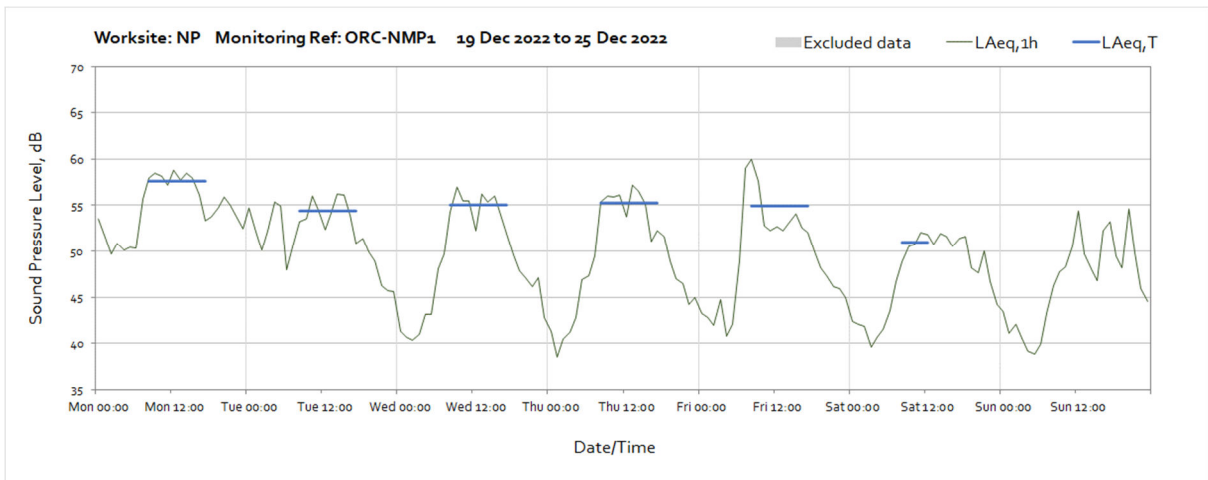
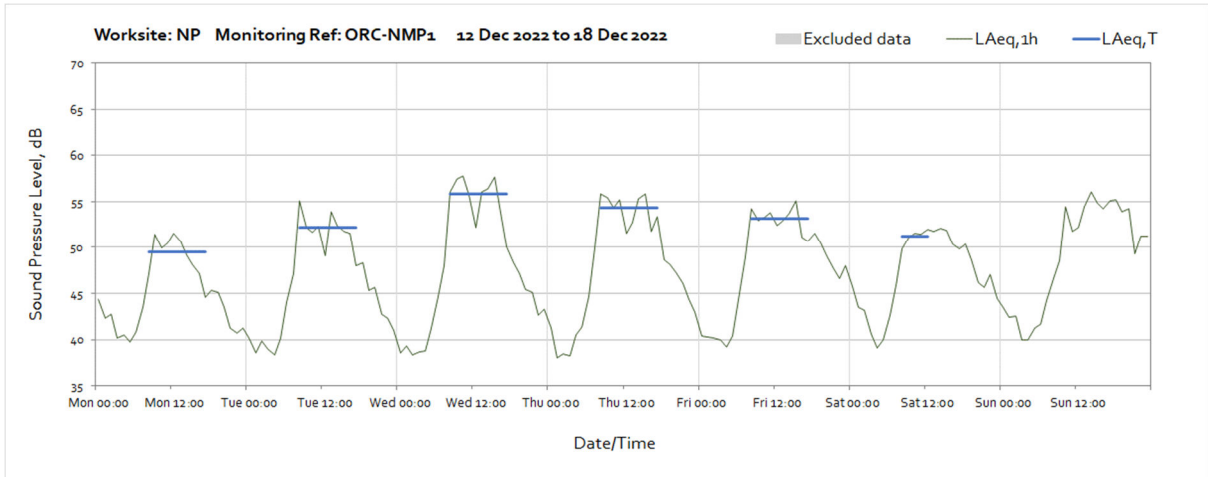
Note: Monitor was installed at 12:00 on 21st December.



Worksite: NP – Monitoring Ref: ORC-NMP1

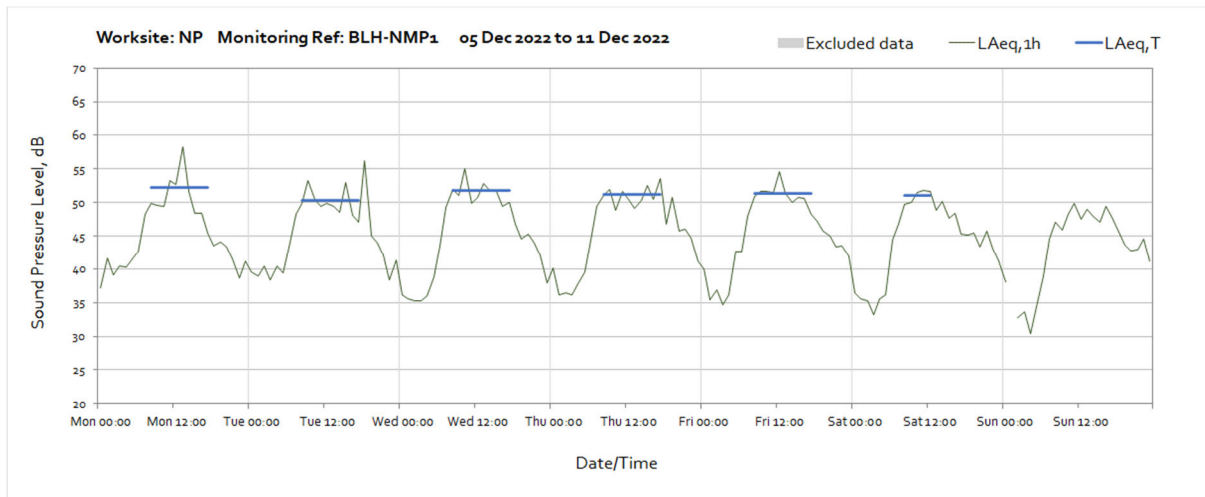
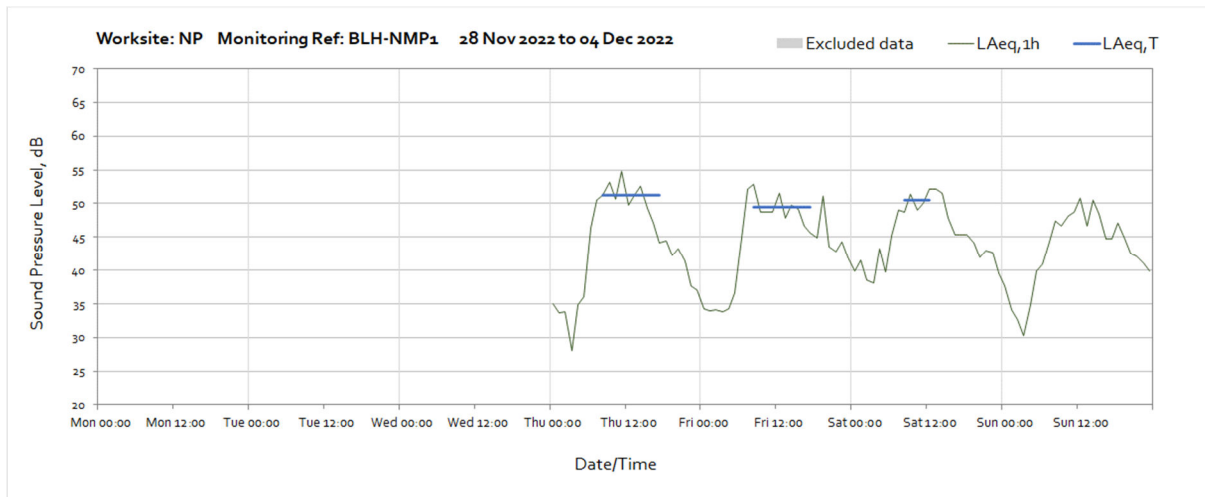


Note: Missing data between 01:00 and 02:00 on 11th December was due to a technical issue causing loss of data during data extraction.

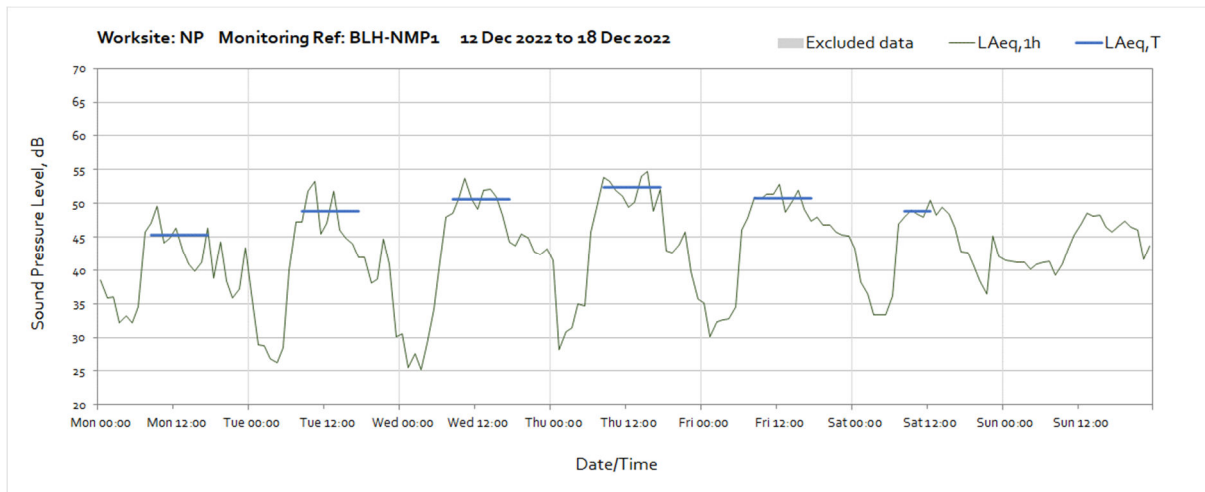


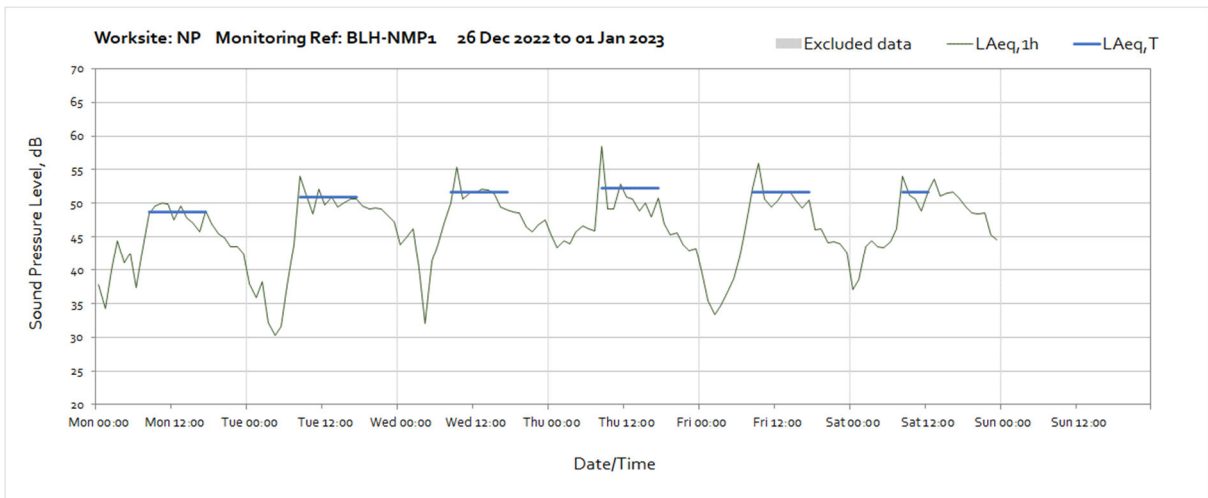
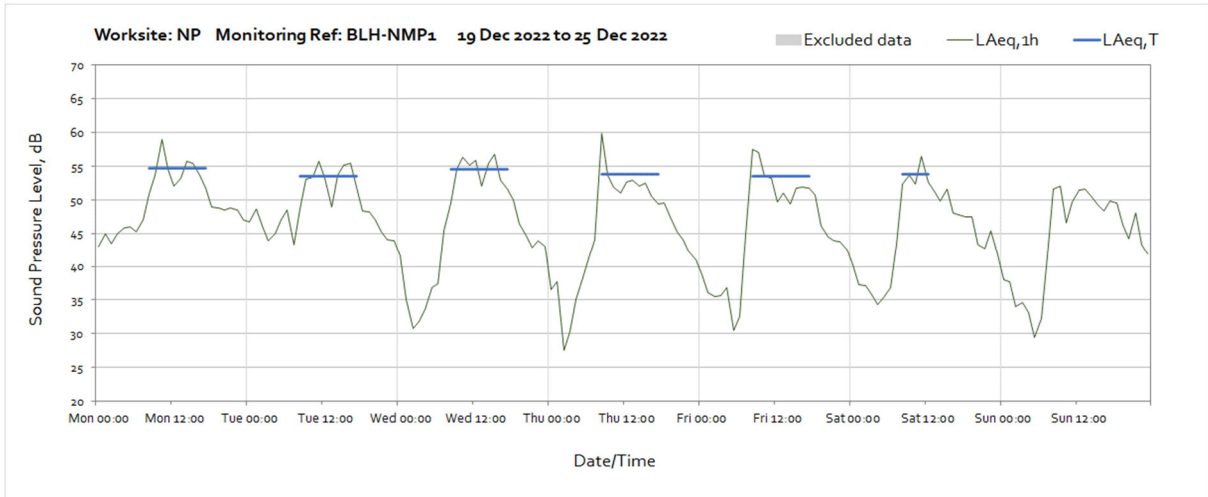
Note: Missing data between 00:00 and 01:00 on 31st December was due to a technical issue causing loss of data during data extraction.

Worksite: NP – Monitoring Ref: BLH-NMP1

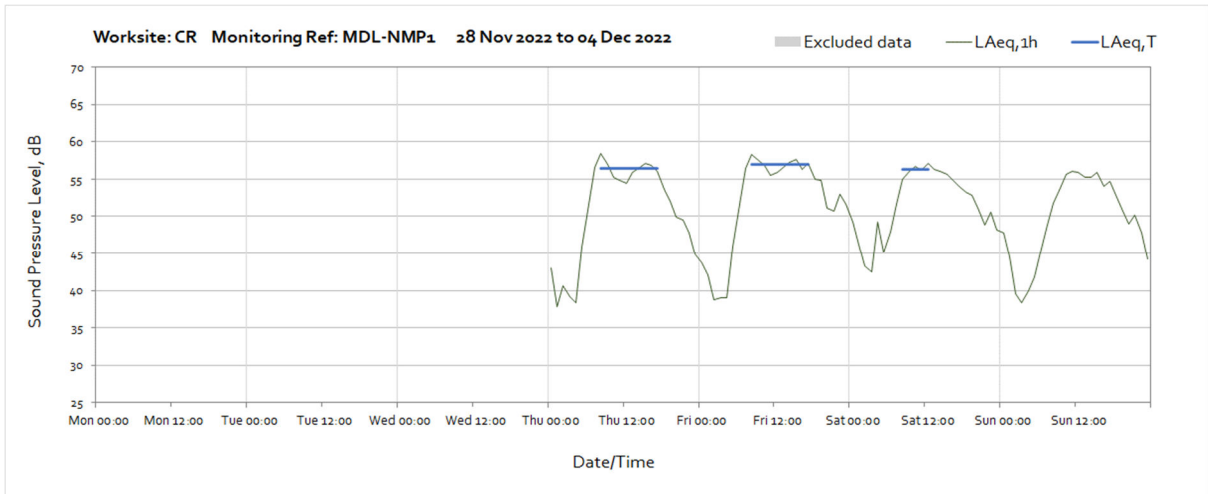


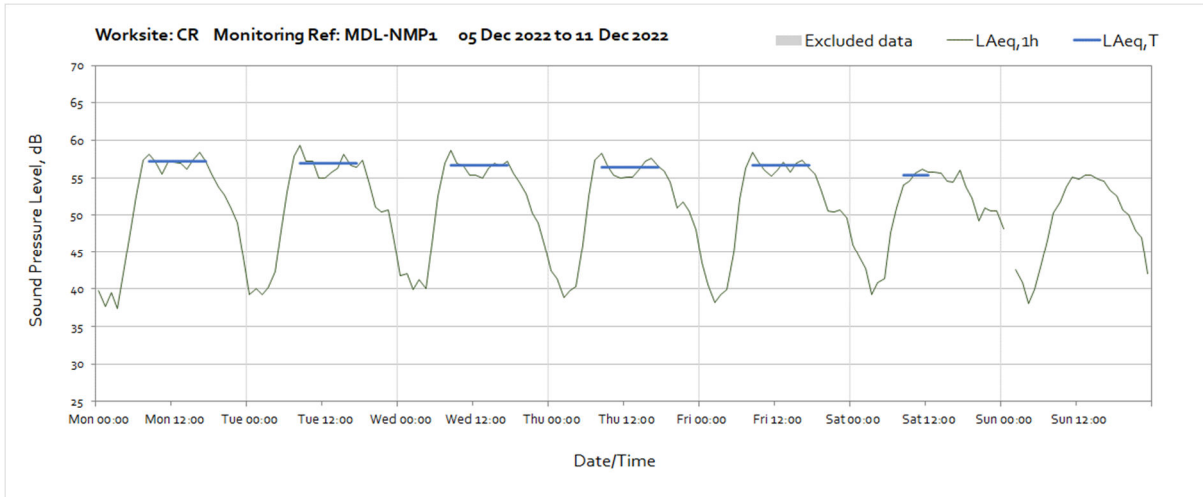
Note: Missing data between 01:00 and 02:00 on 11th December was due to a technical issue causing loss of data during data extraction.



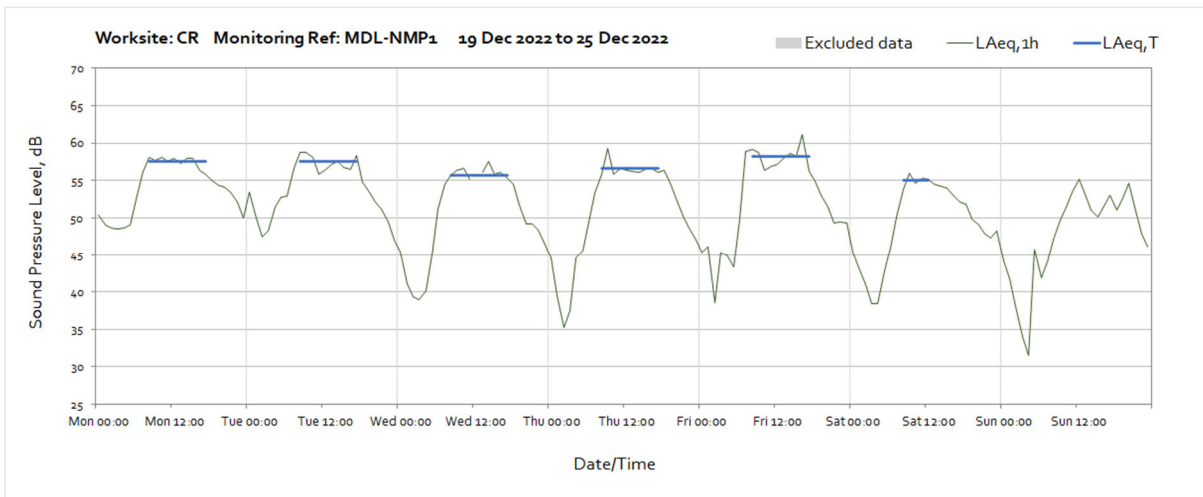
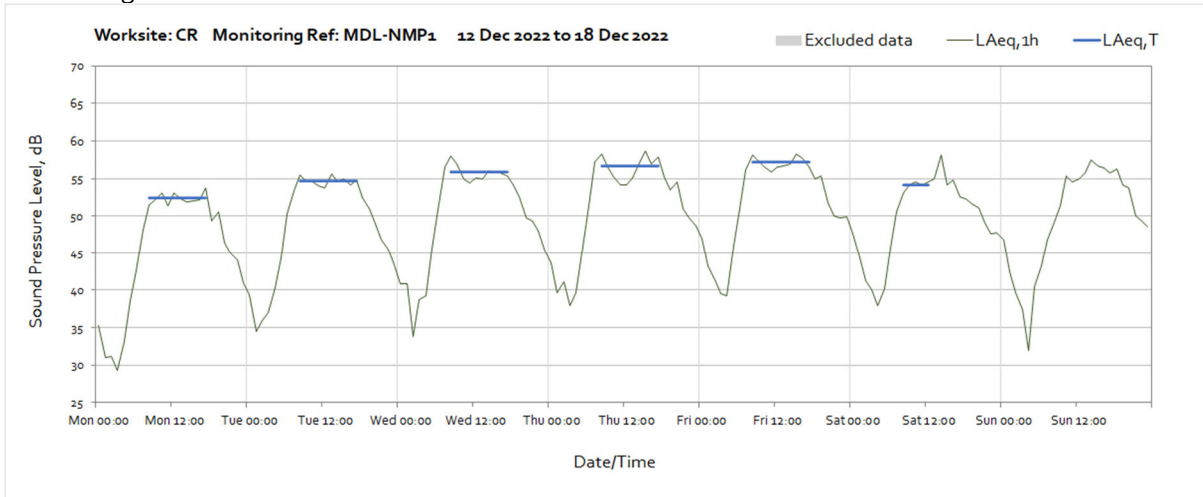


Worksite: CHSM – Monitoring Ref: MDL-NMP1

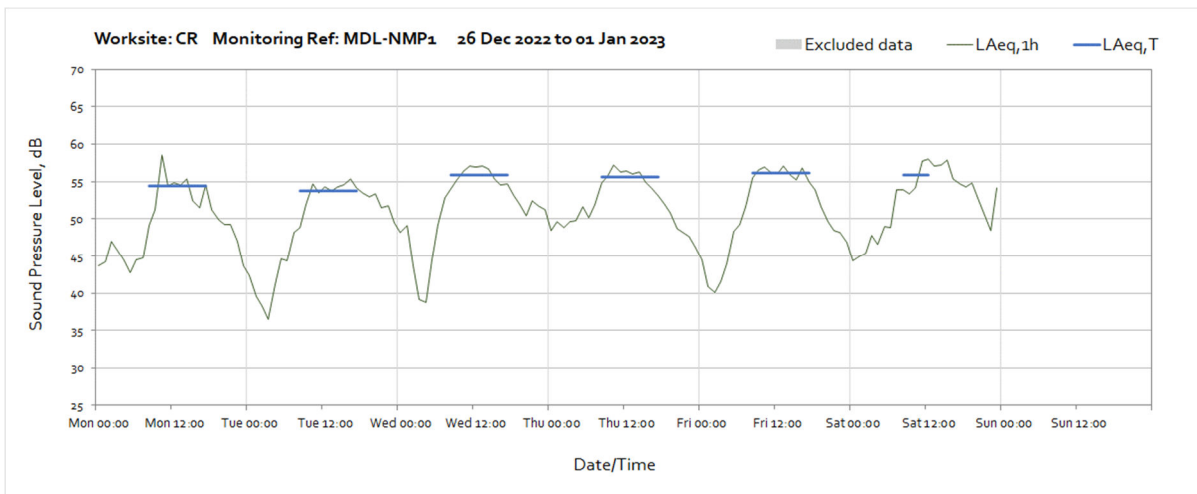




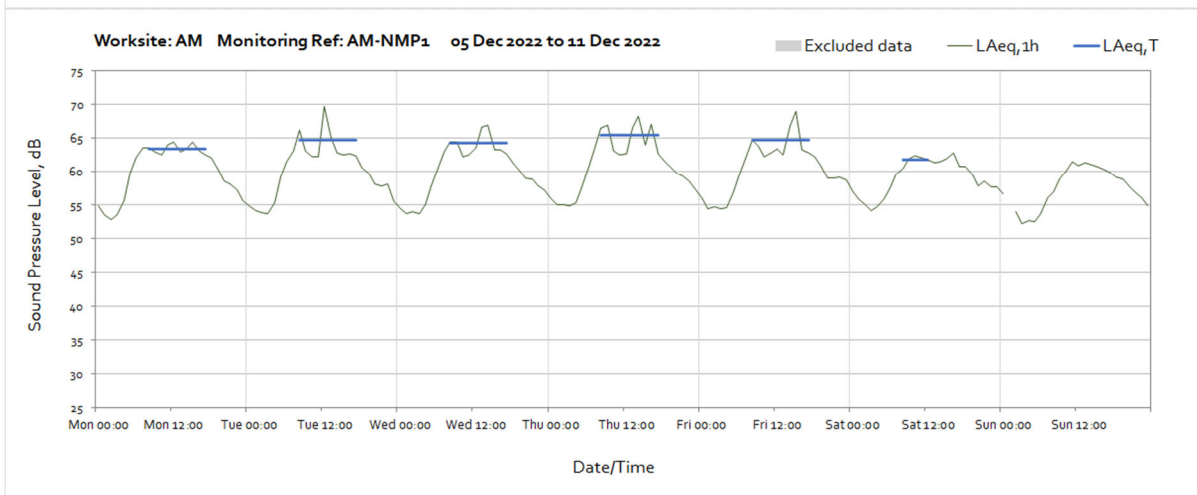
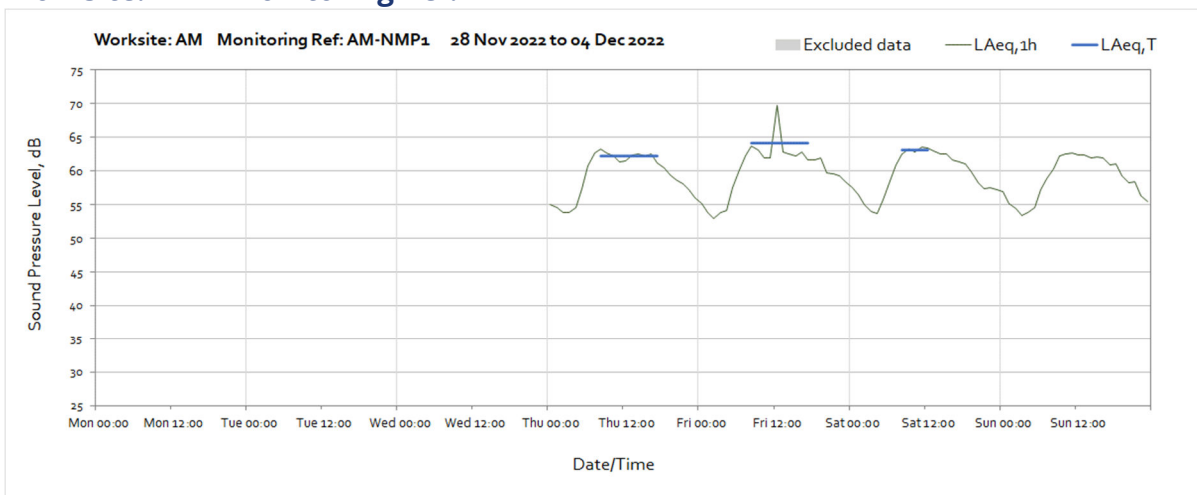
Note: Missing data between 01:00 and 02:00 on 11th December was due to a technical issue causing loss of data during data extraction.



Note: Missing data between 12:00 and 13:00 on 21st December was due to an interrupted measurement period.

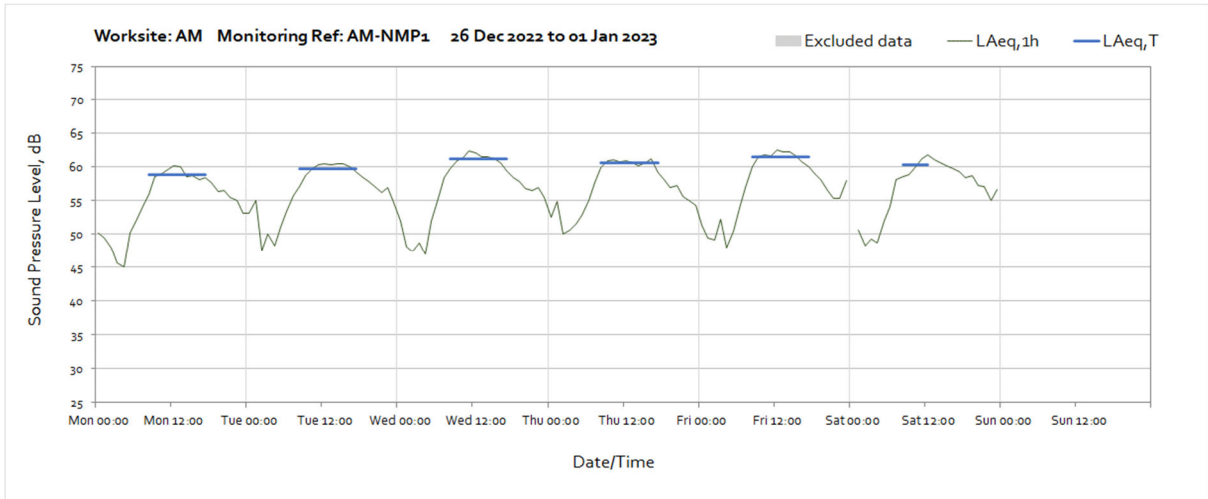
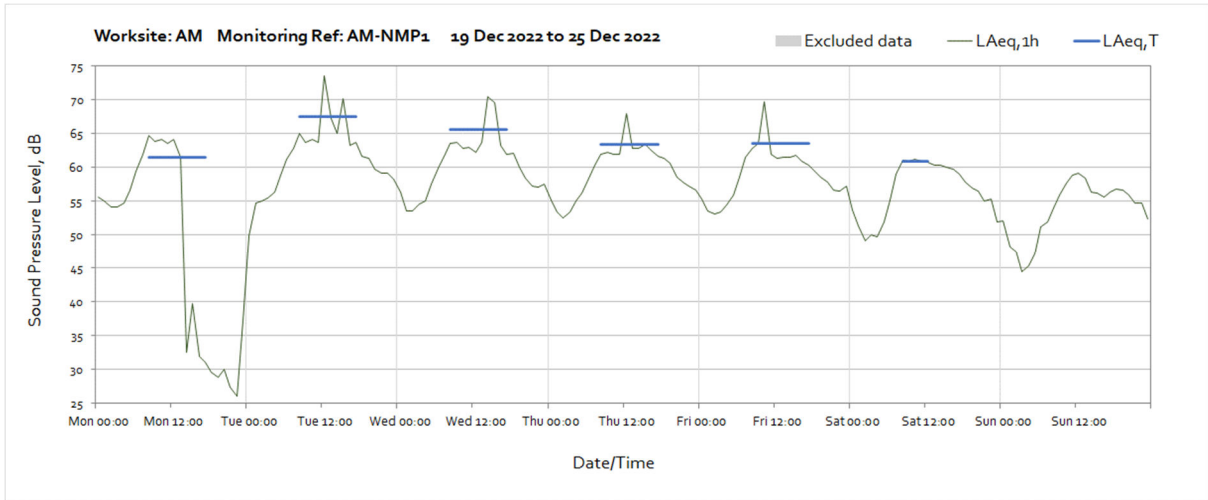
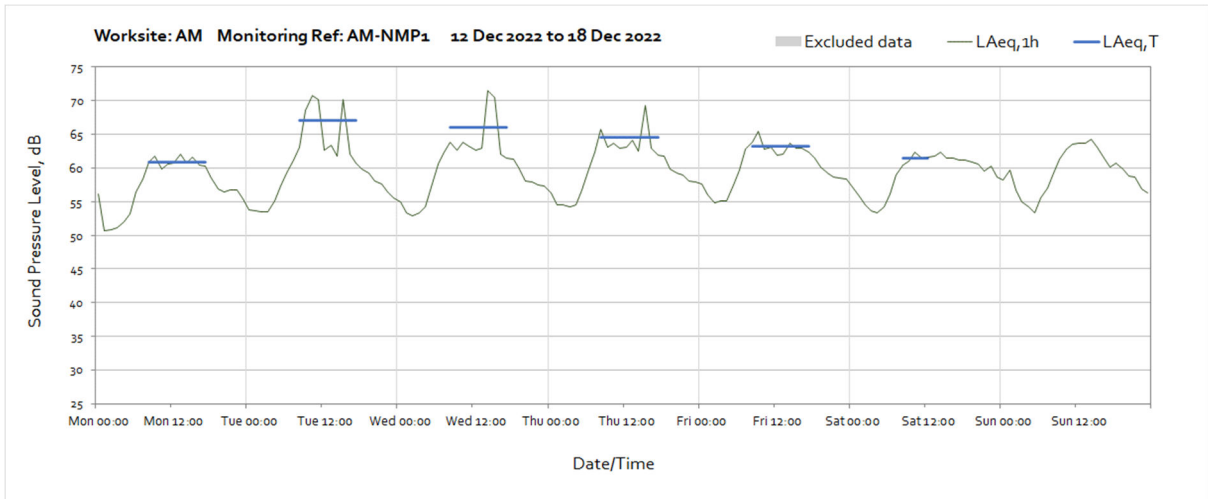


Worksite: AM – Monitoring Ref: AM-NMP1



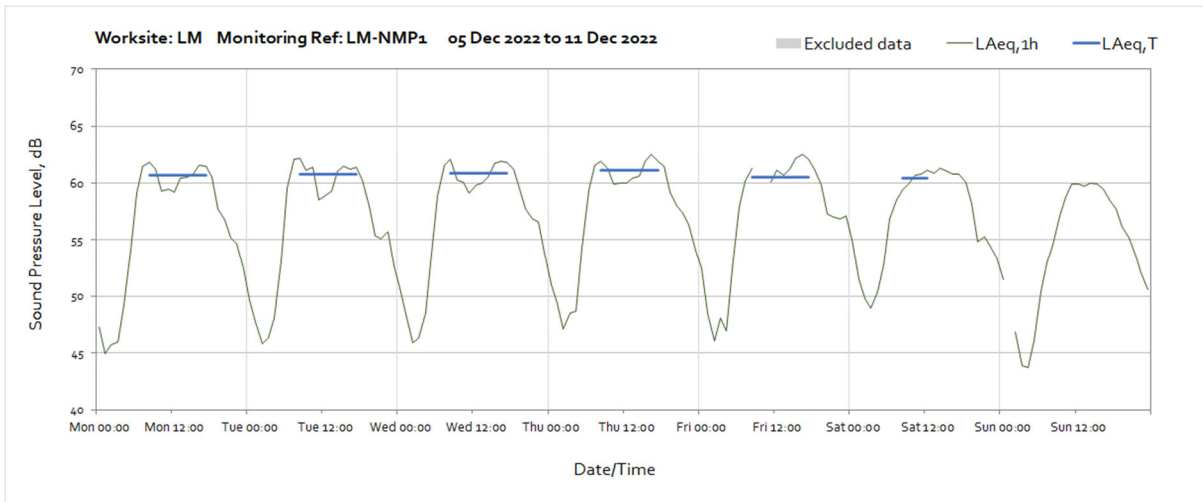
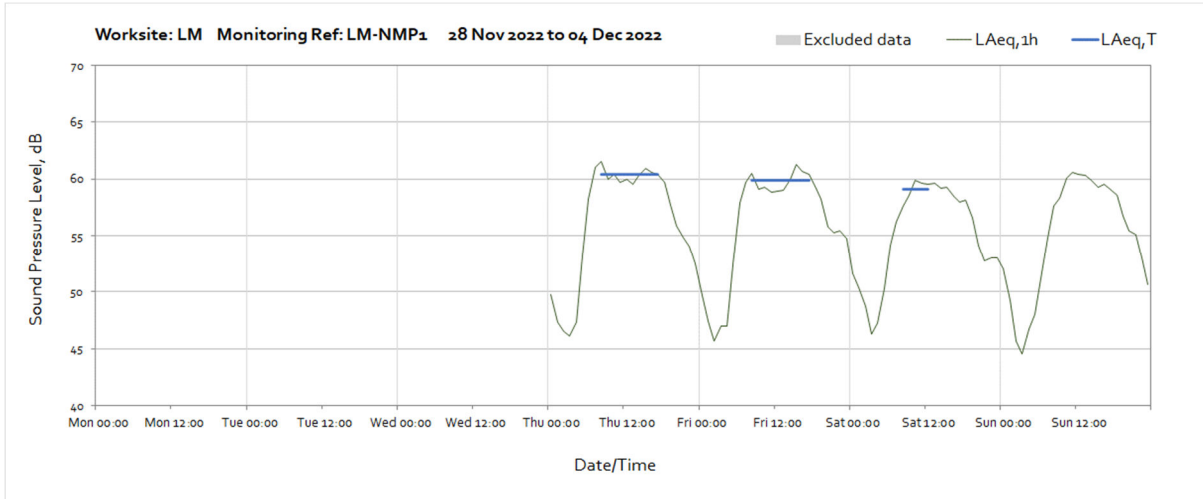
Note: Missing data between 01:00 and 02:00 on 11th December was due to a technical issue causing loss of data during data extraction.

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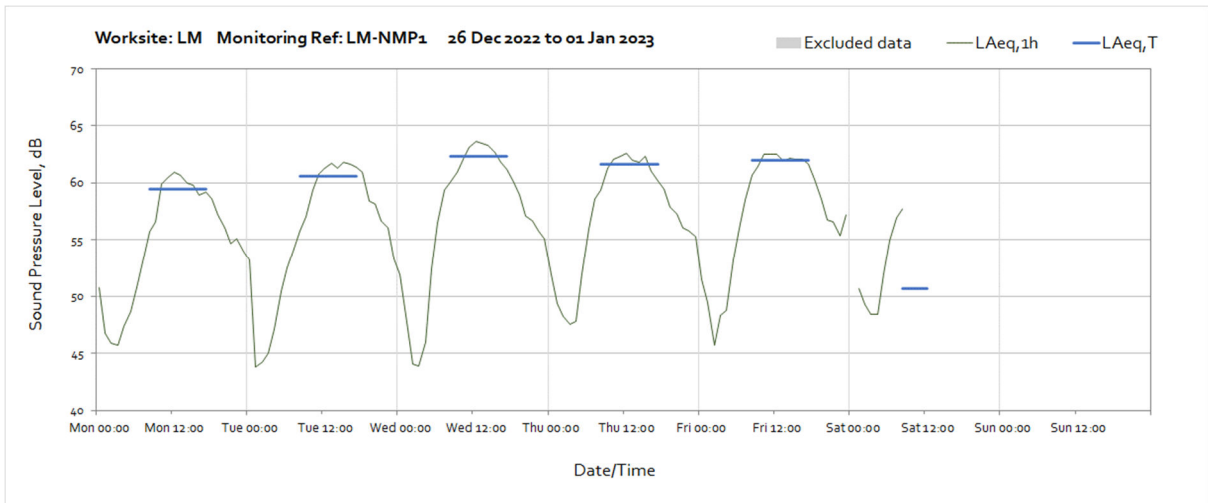
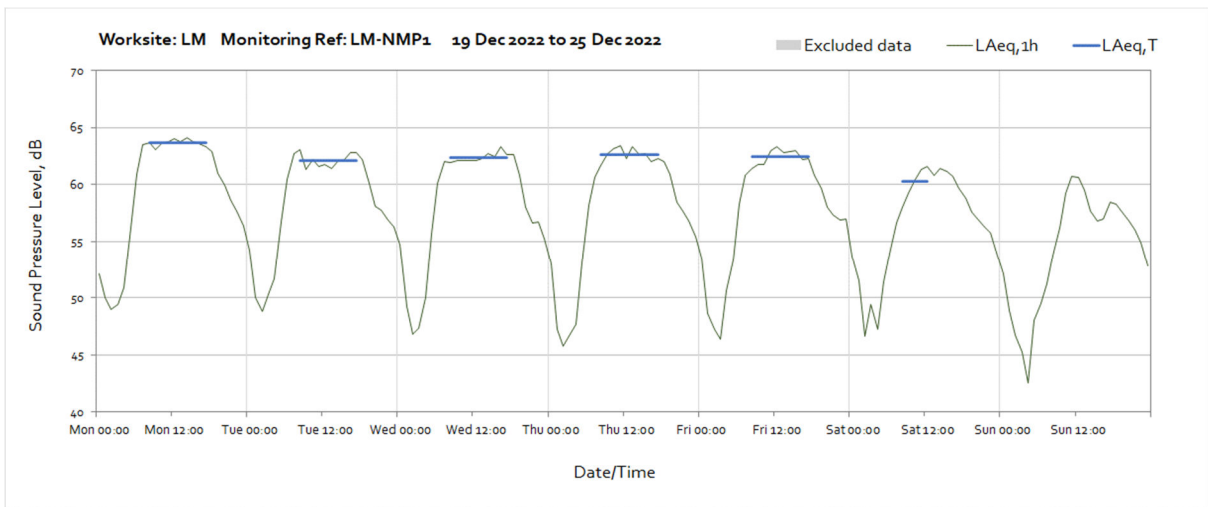
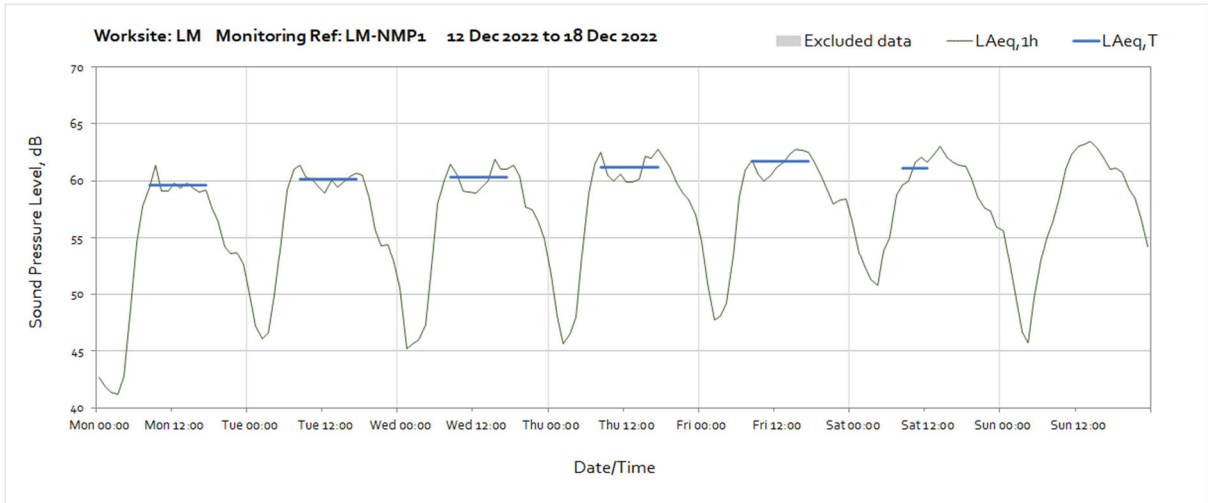


Note: Missing data between 00:00 and 01:00 on 31st December was due to an interrupted measurement period.

Worksite: LM – Monitoring Ref: LM-NMP1



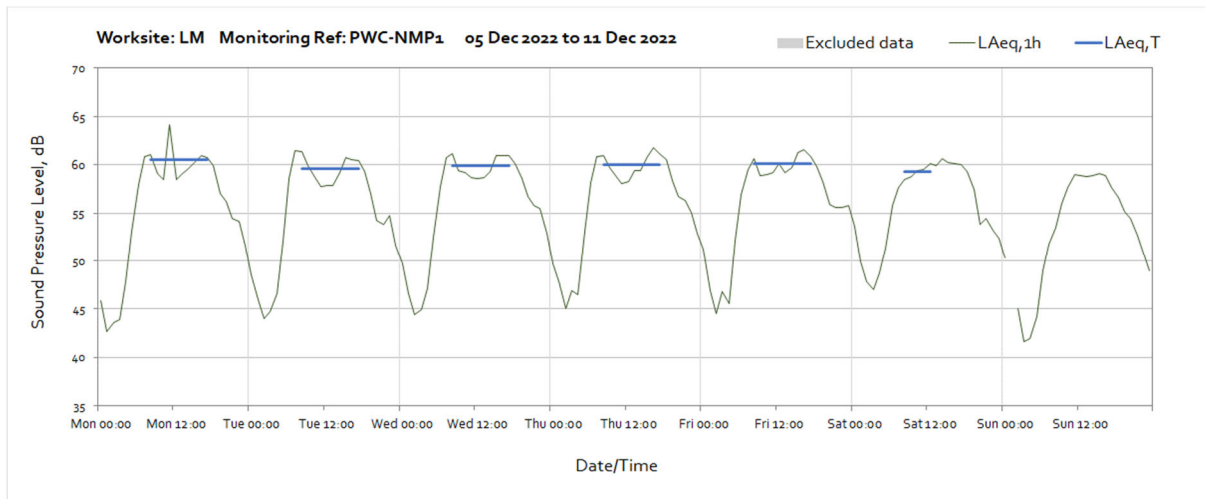
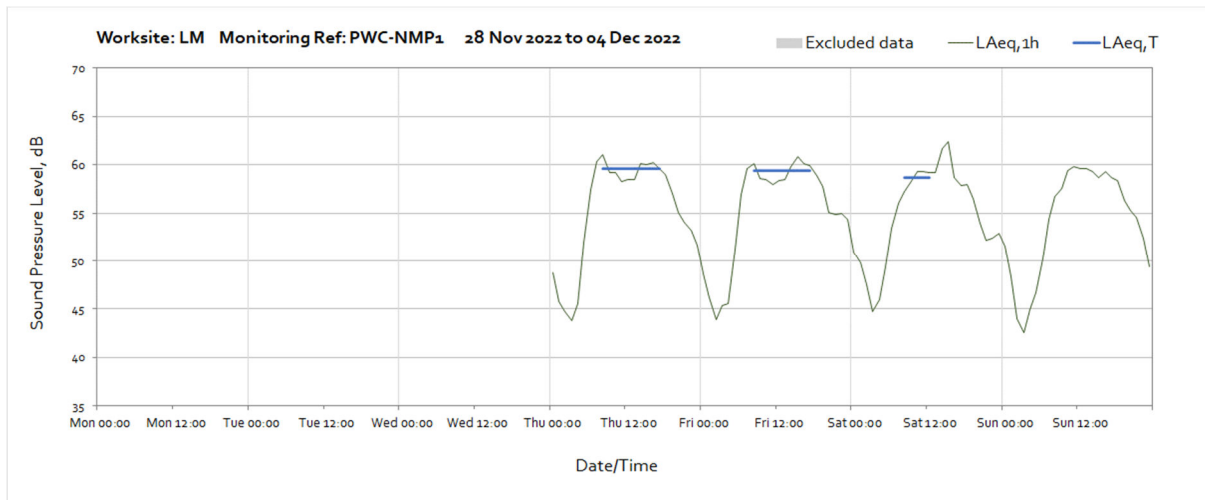
Note: Missing data between 09:00 and 11:00 on 9th December was due to a solar panel power issue. Missing data between 01:00 and 02:00 on 11th December was due to a technical issue causing loss of data during data extraction.



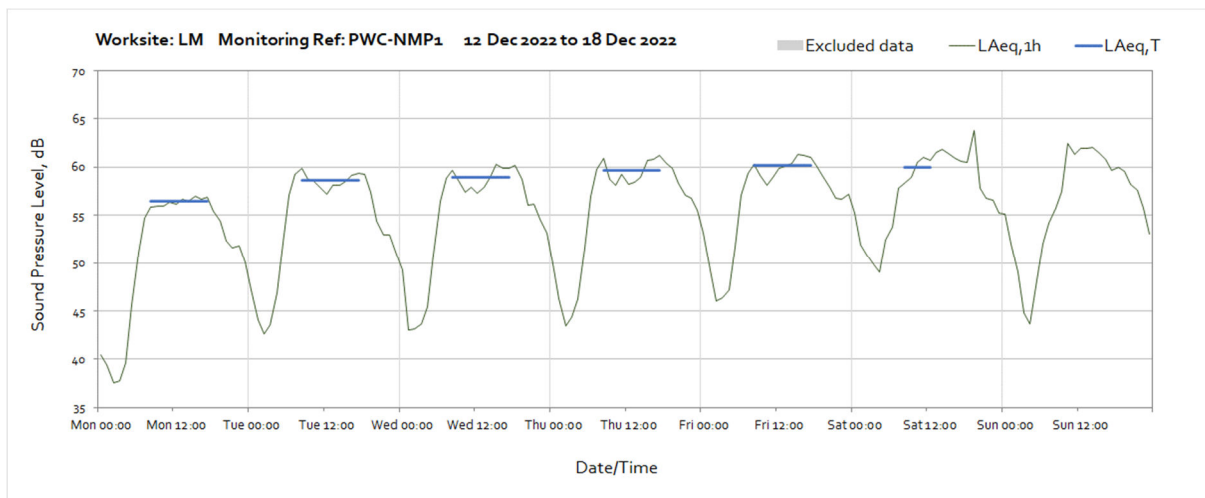
Note: Missing data between 00:00 and 01:00 was due to an interrupted measurement period. Missing data between 09:00 and 00:00 on 31st December was due to a solar panel power issue which has now been resolved.

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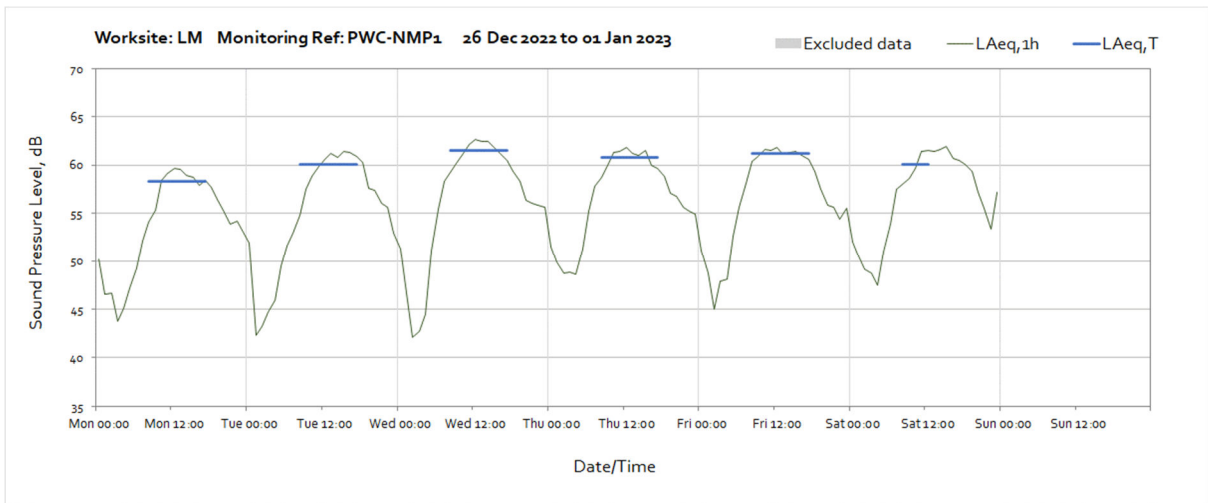
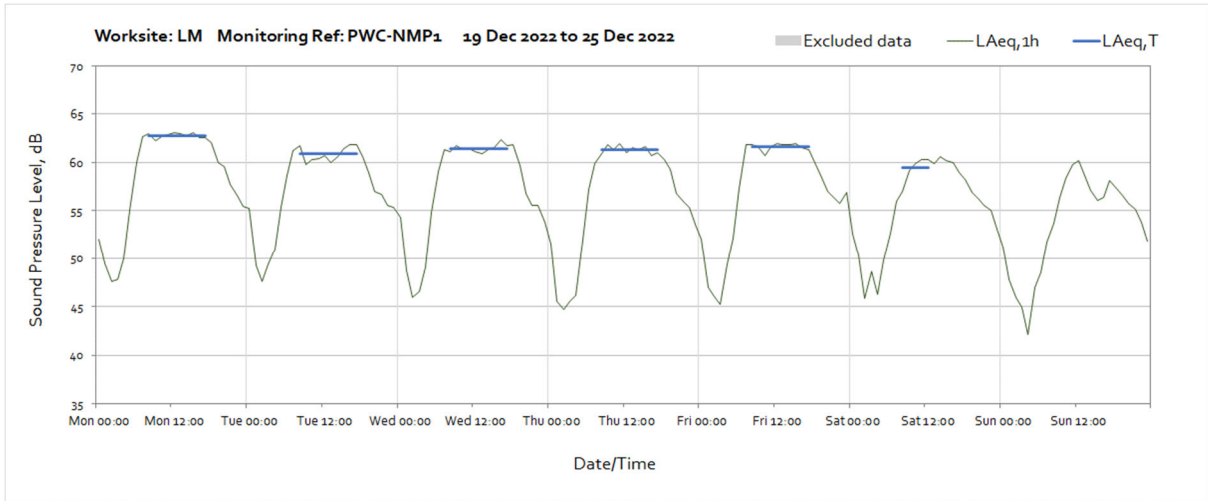
Worksite: LM – Monitoring Ref: PWC-NMP1



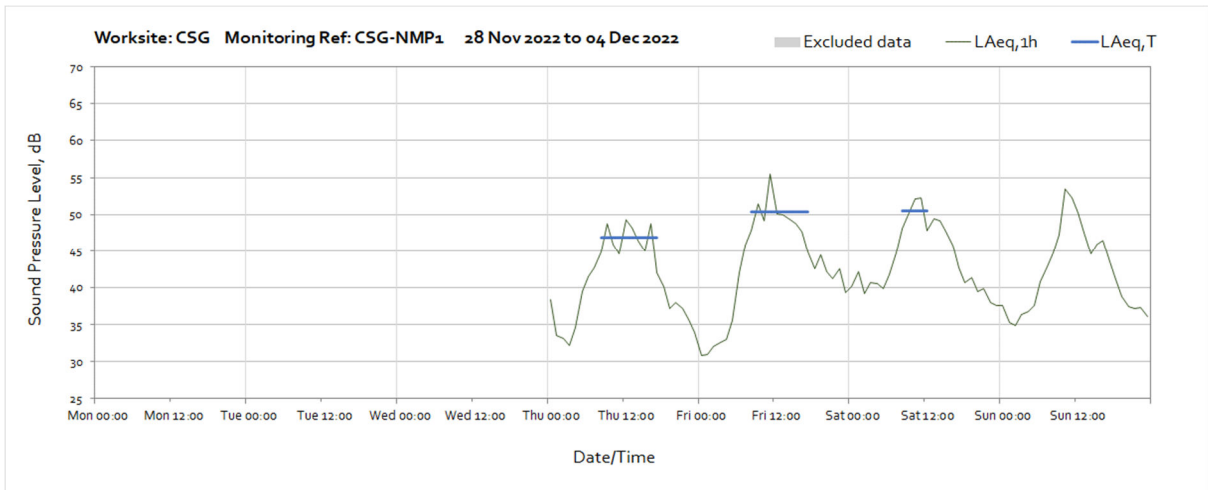
Note: Missing data between 01:00 and 02:00 on 11th December was due to a technical issue causing loss of data during data extraction.

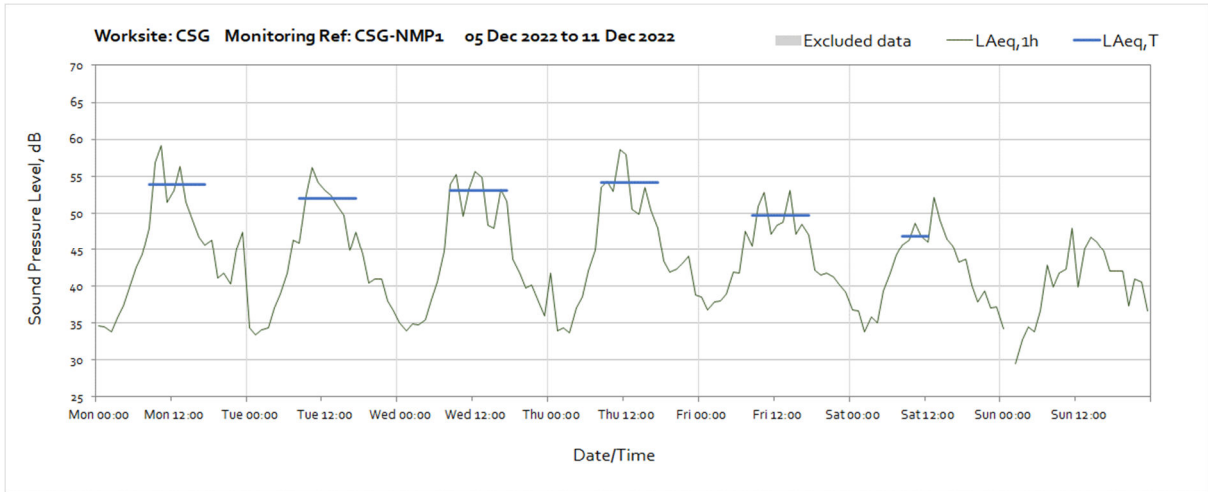


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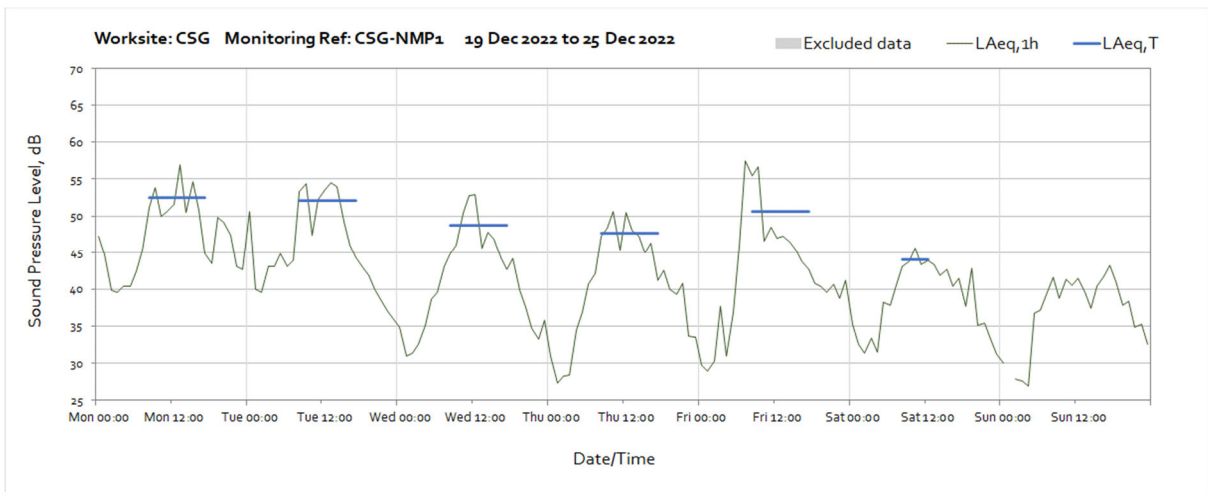
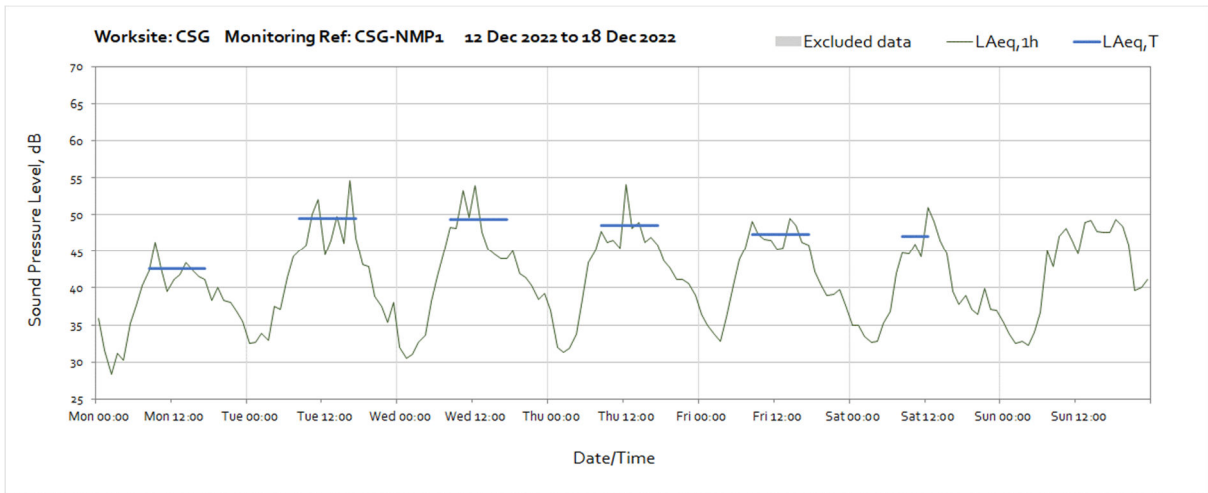


Worksite: CSG – Monitoring Ref: CSG-NMP1



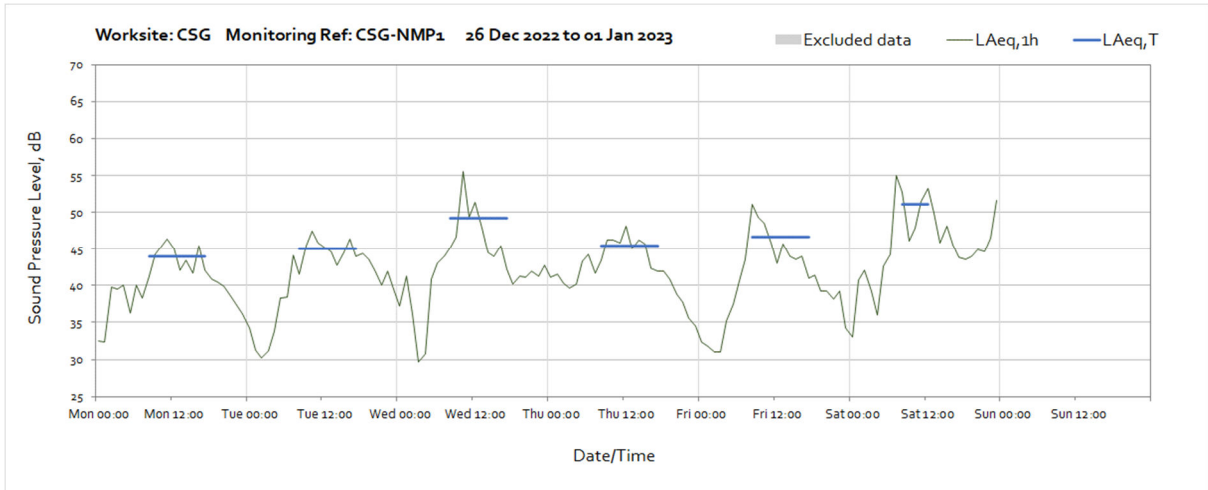


Note: Missing data between 01:00 and 02:00 on 11th December was due to a technical issue causing loss of data during data extraction.

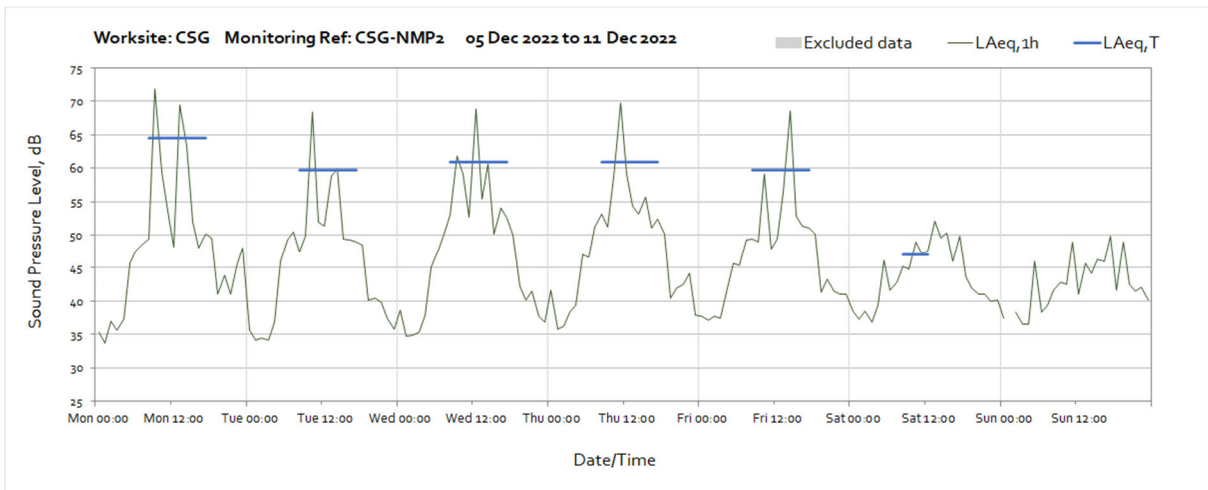
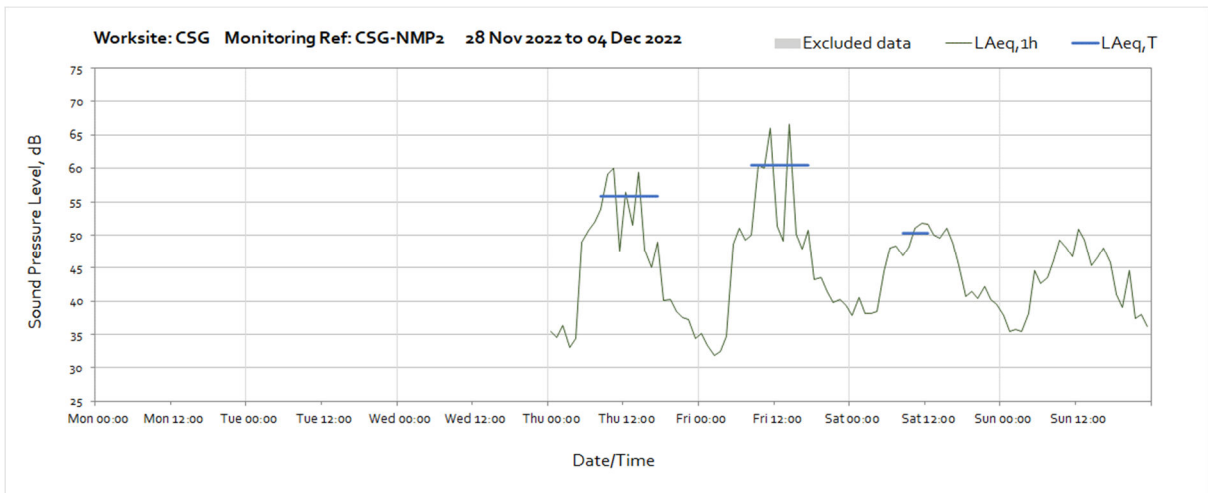


Note: Missing data between 01:00 and 02:00 on 25th December was due to an interrupted measurement period.

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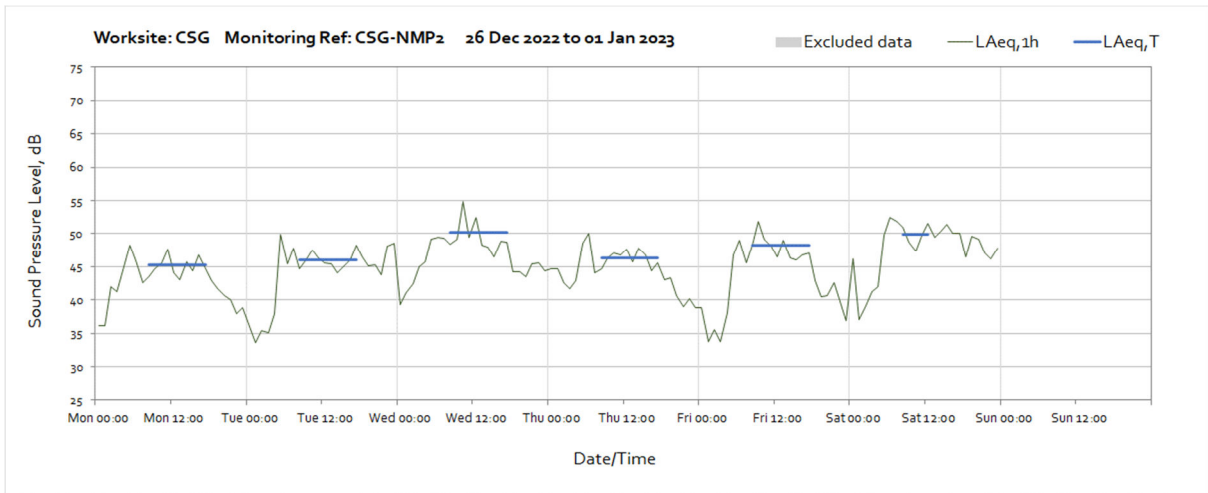
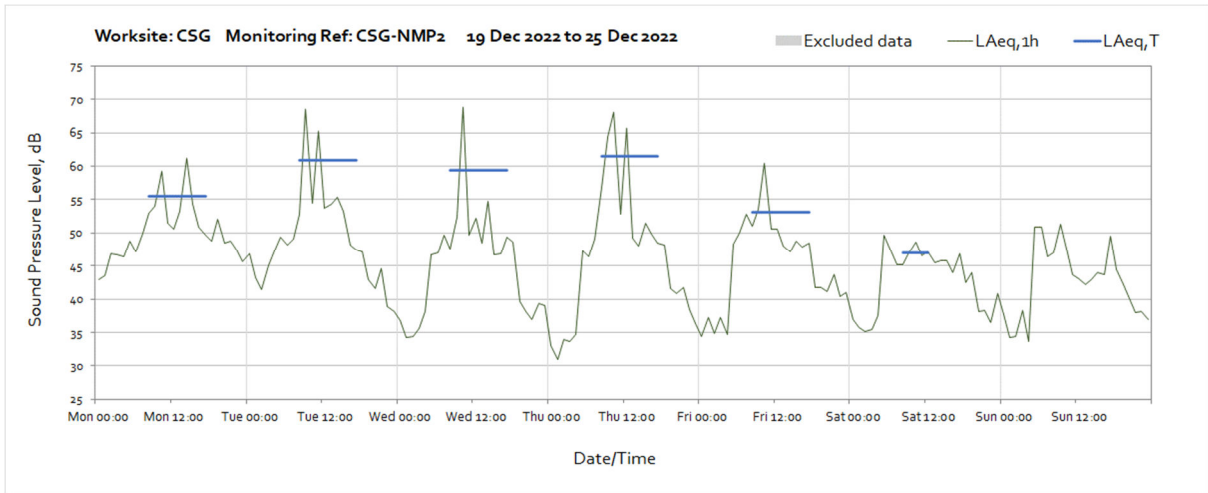
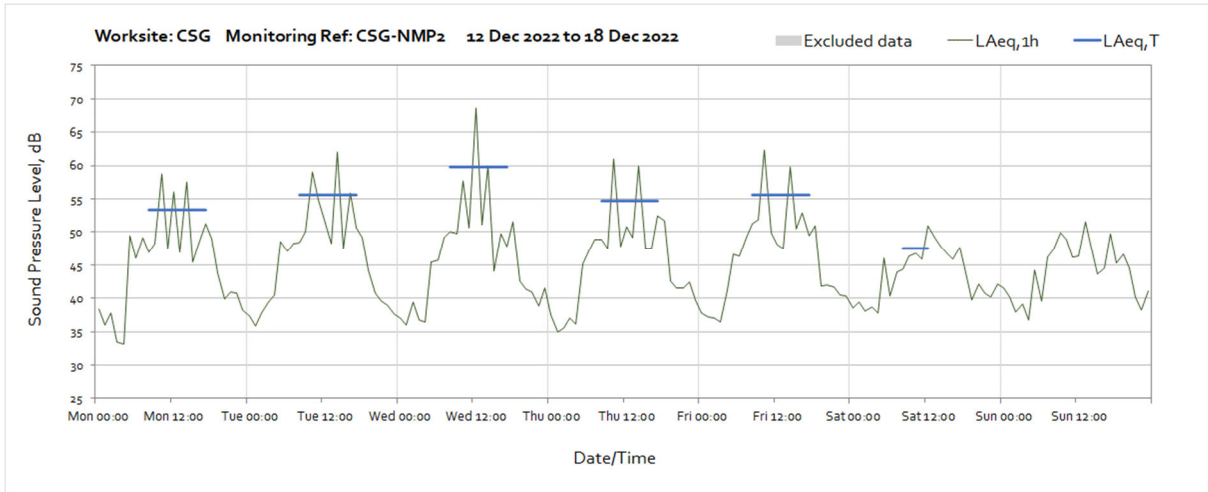


Worksite: CSG – Monitoring Ref: CSG-NMP2

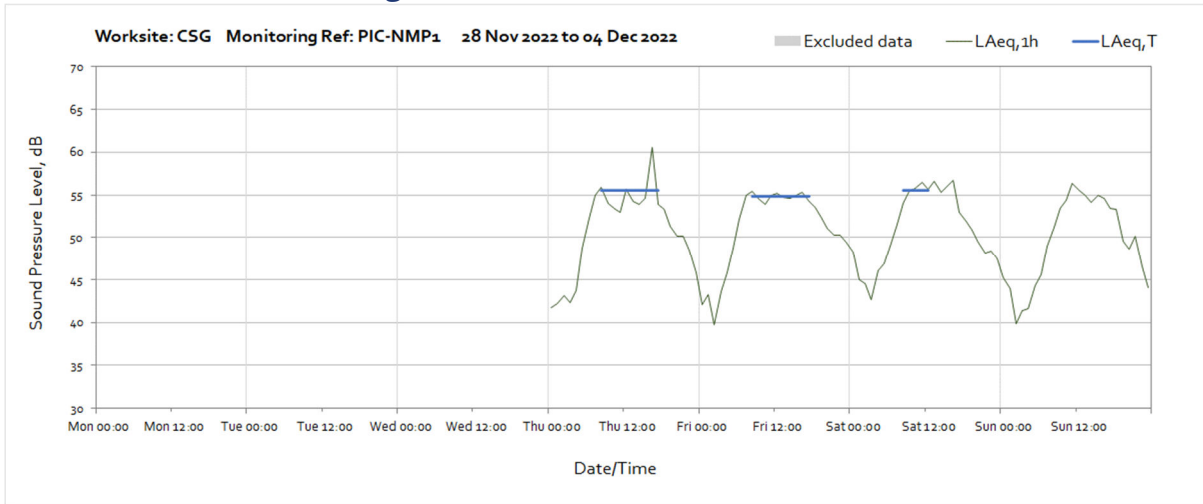


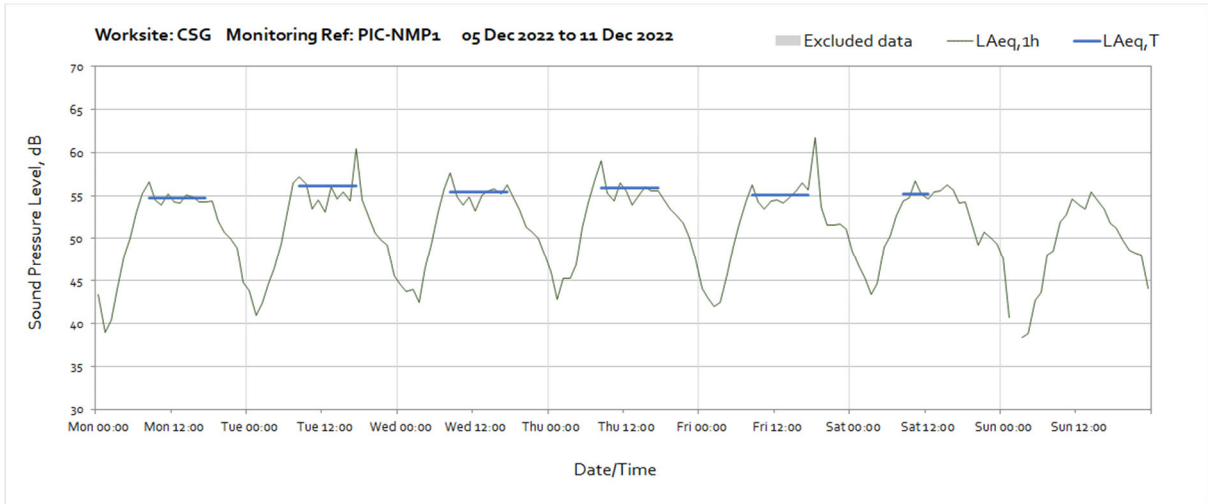
Note: Missing data between 01:00 and 02:00 on 11th December was due to a technical issue causing loss of data during data extraction.

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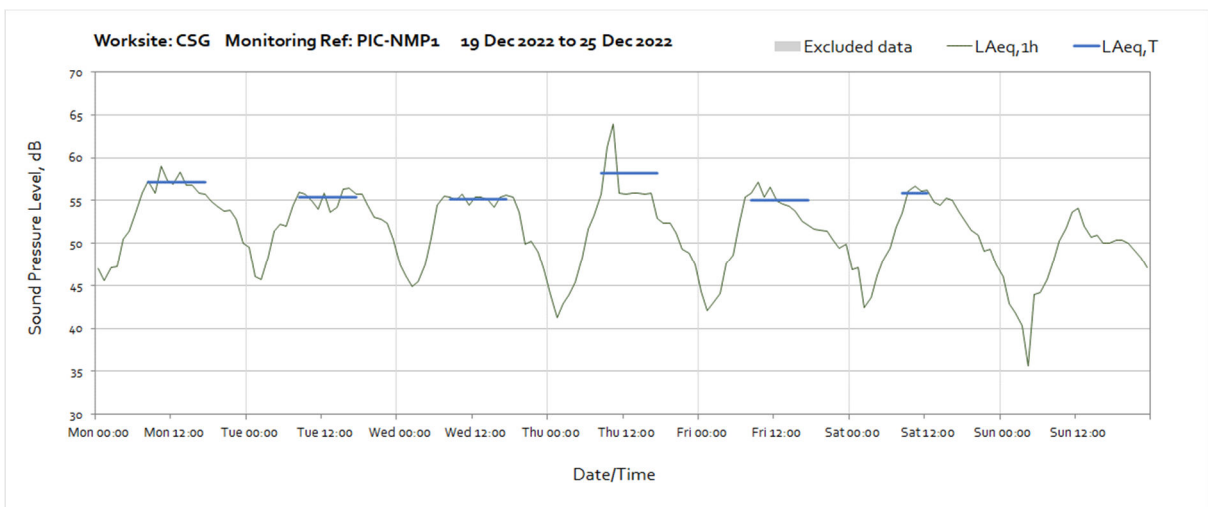
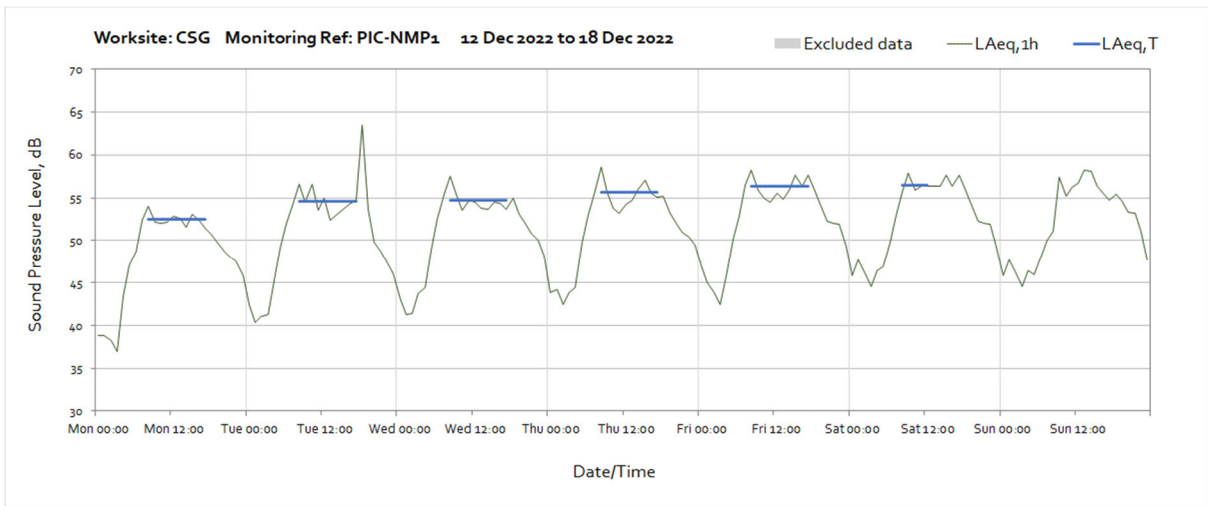


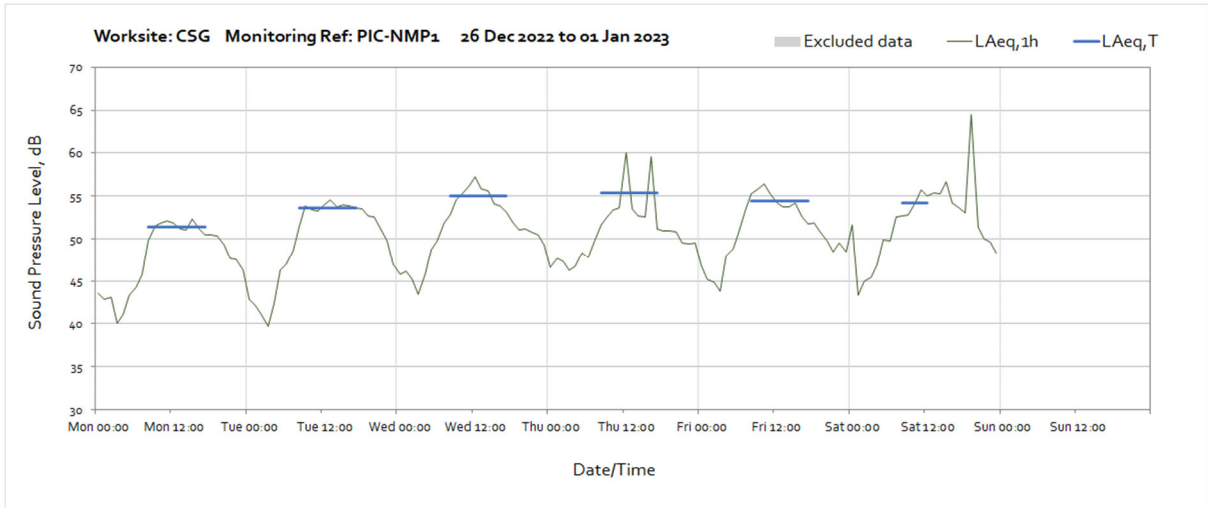
Worksite: CSG – Monitoring Ref: PIC-NMP1



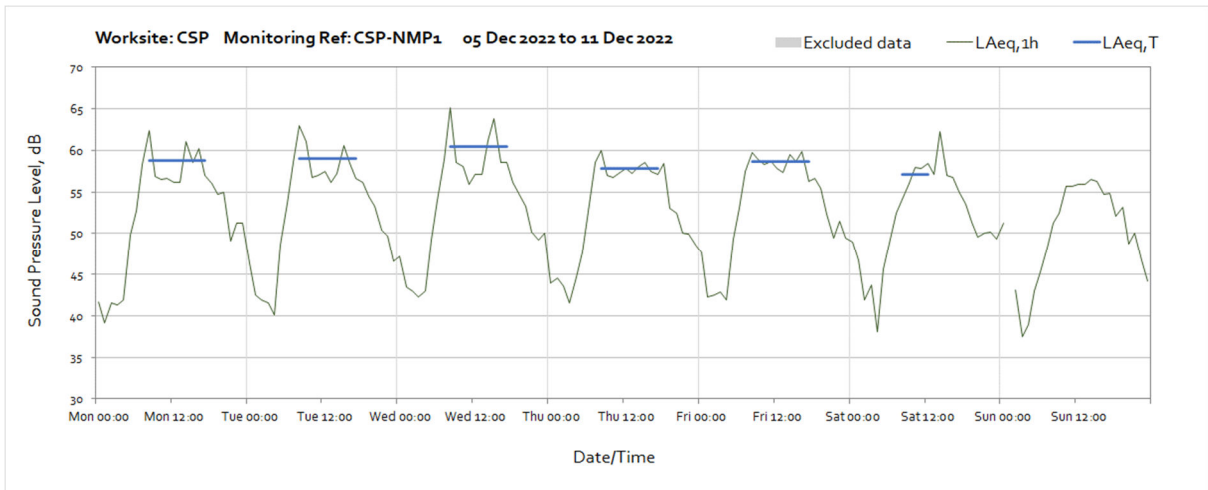
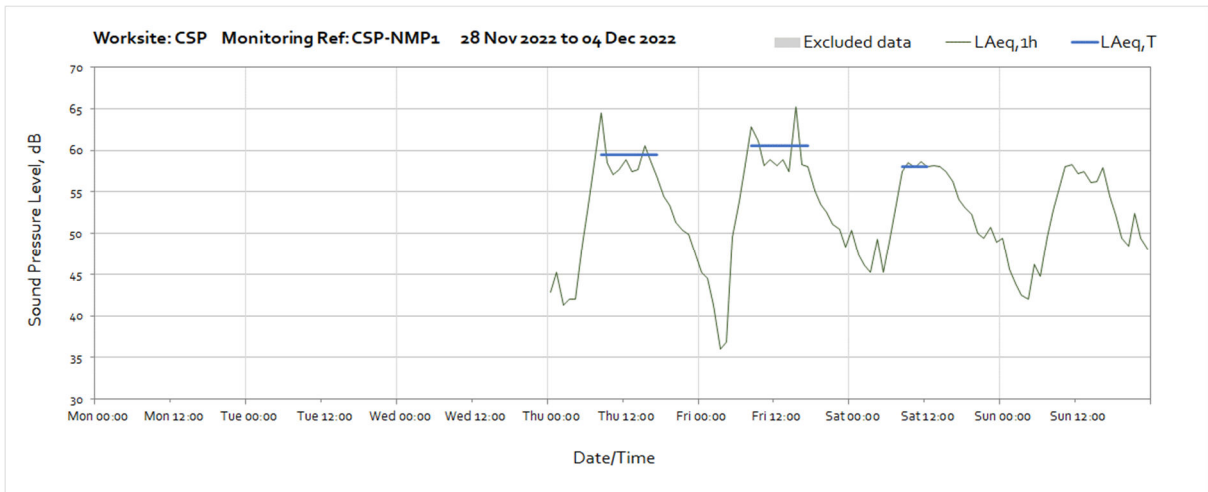


Note: Missing data between 02:00 and 03:00 on 11th December was due to a technical issue causing loss of data during data extraction.

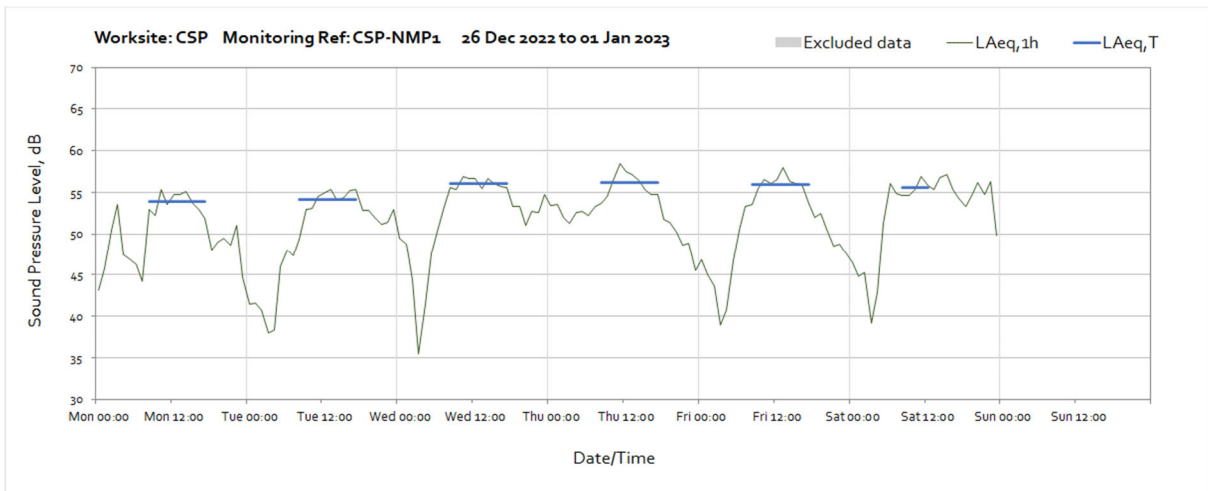
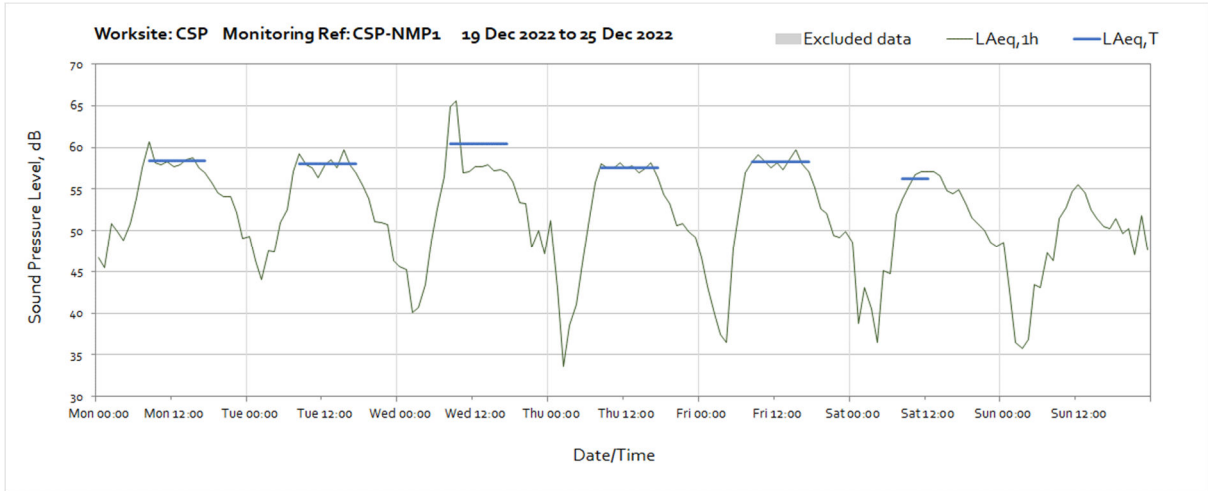
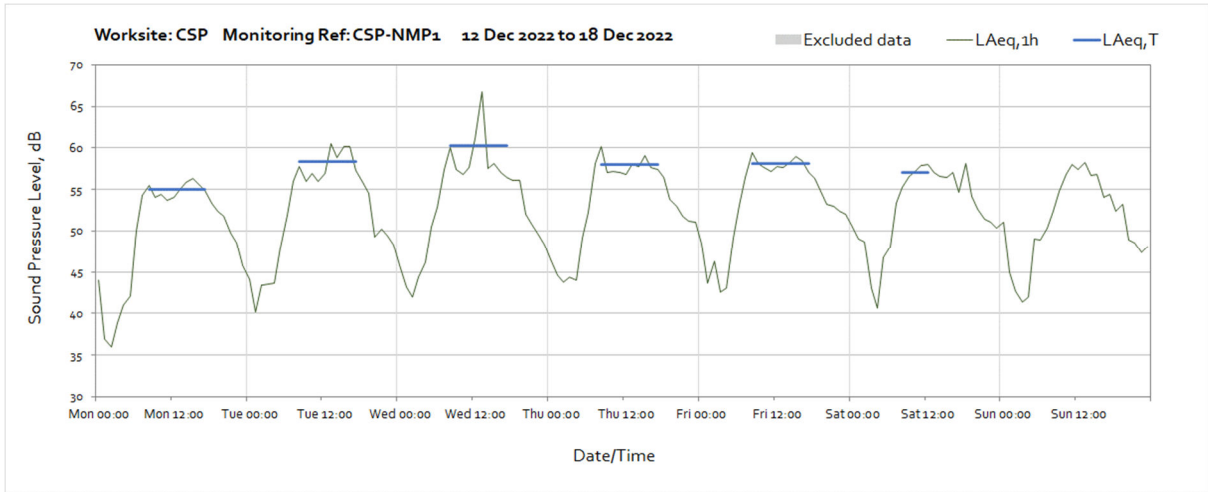




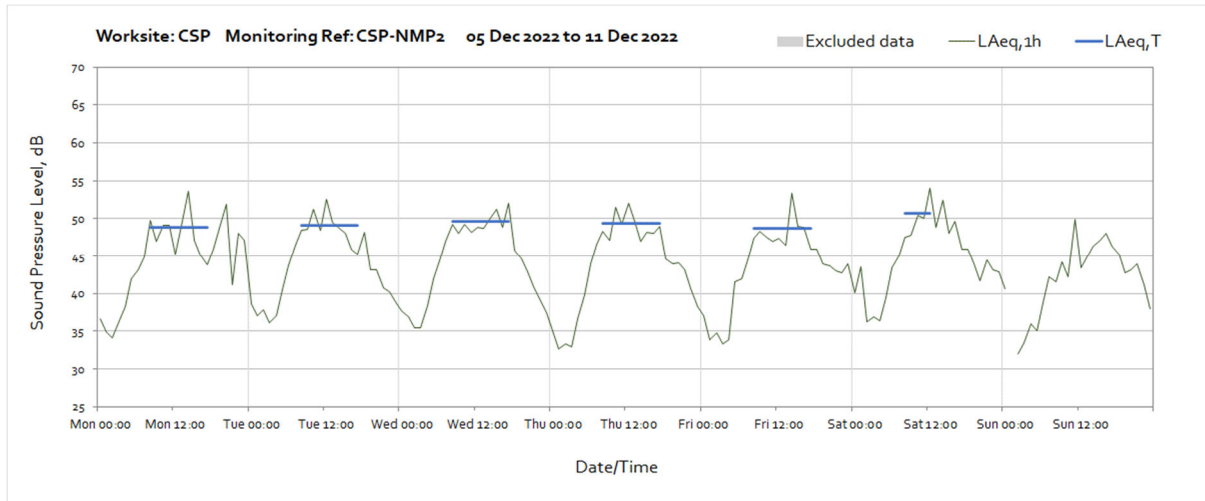
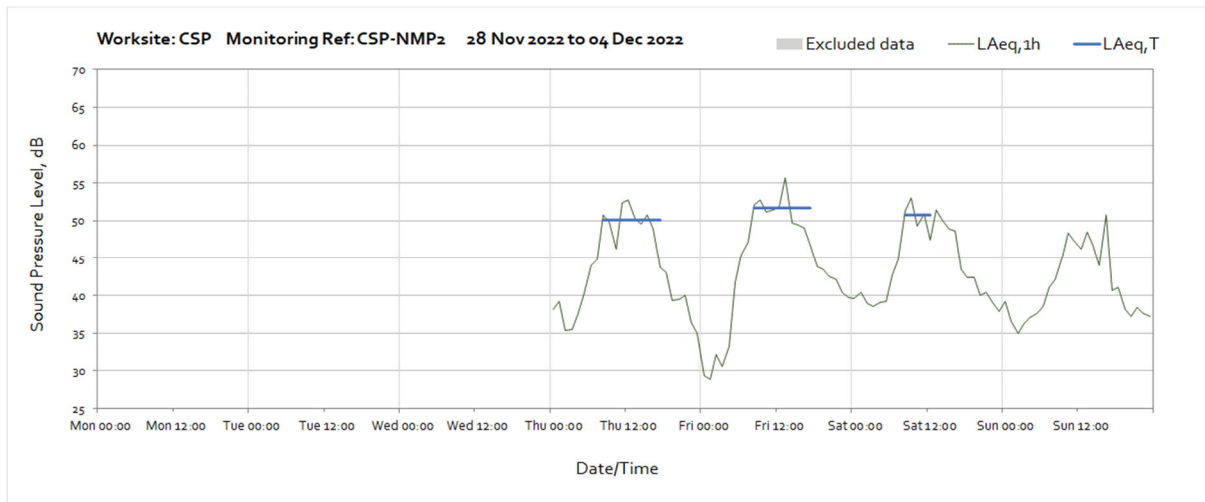
Worksite: CSP – Monitoring Ref: CSP-NMP1



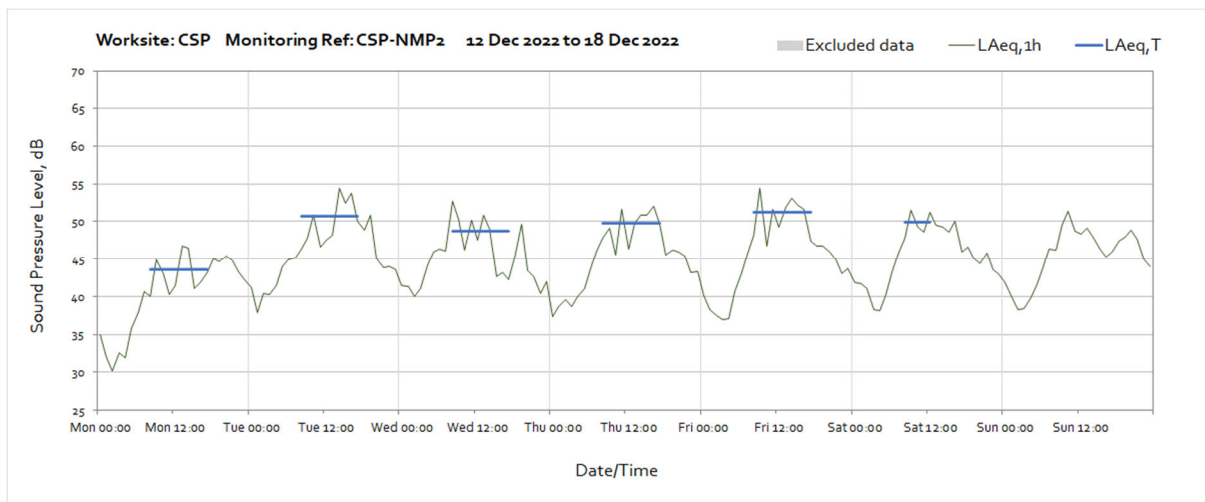
Note: Missing data between 01:00 and 02:00 on 11th December was due to a technical issue causing loss of data during data extraction.

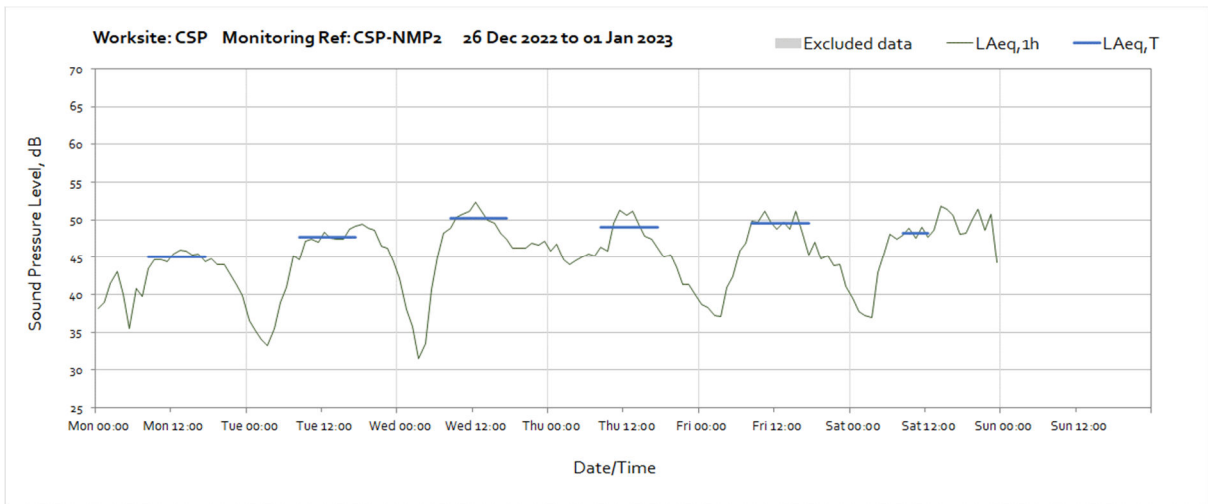
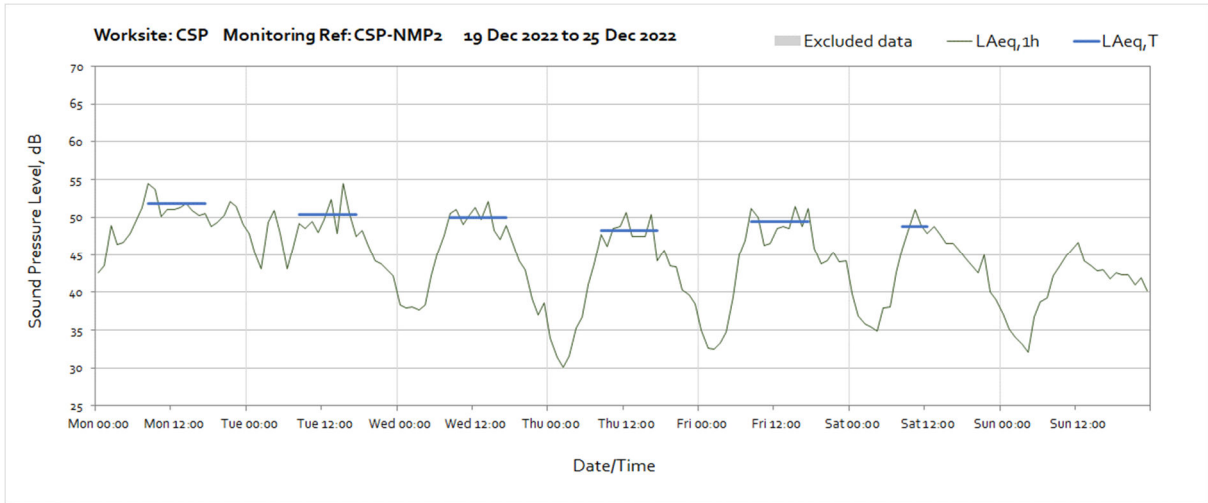


Worksite: CSP – Monitoring Ref: CSP-NMP2

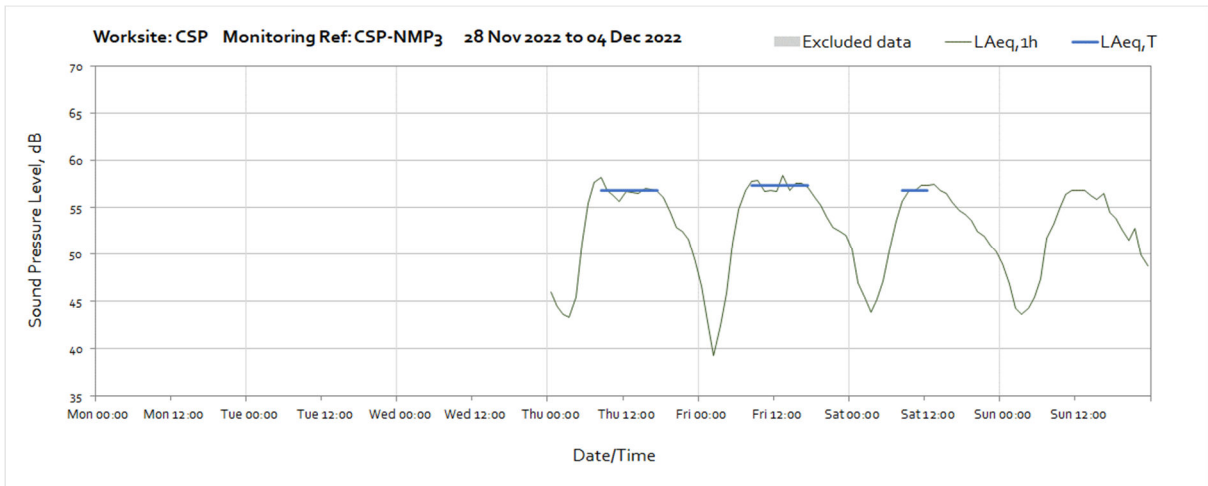


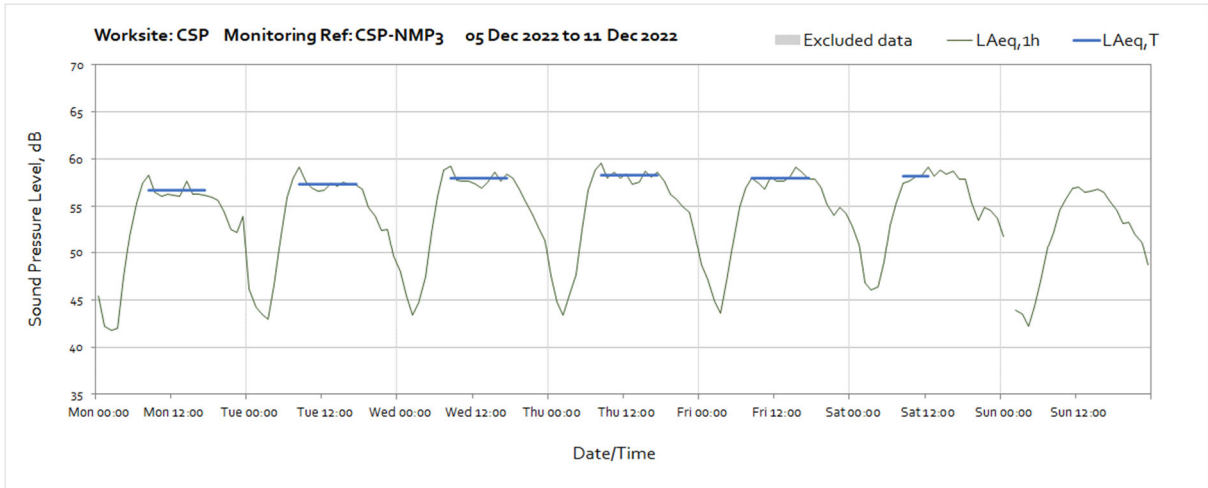
Note: Missing data between 01:00 and 02:00 on 11th December was due to a technical issue causing loss of data during data extraction.



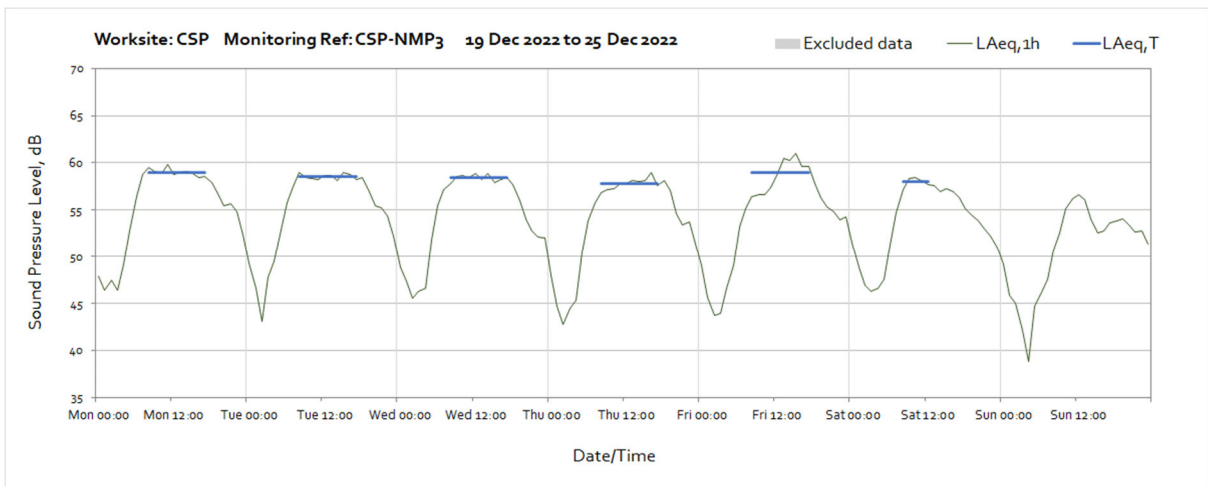
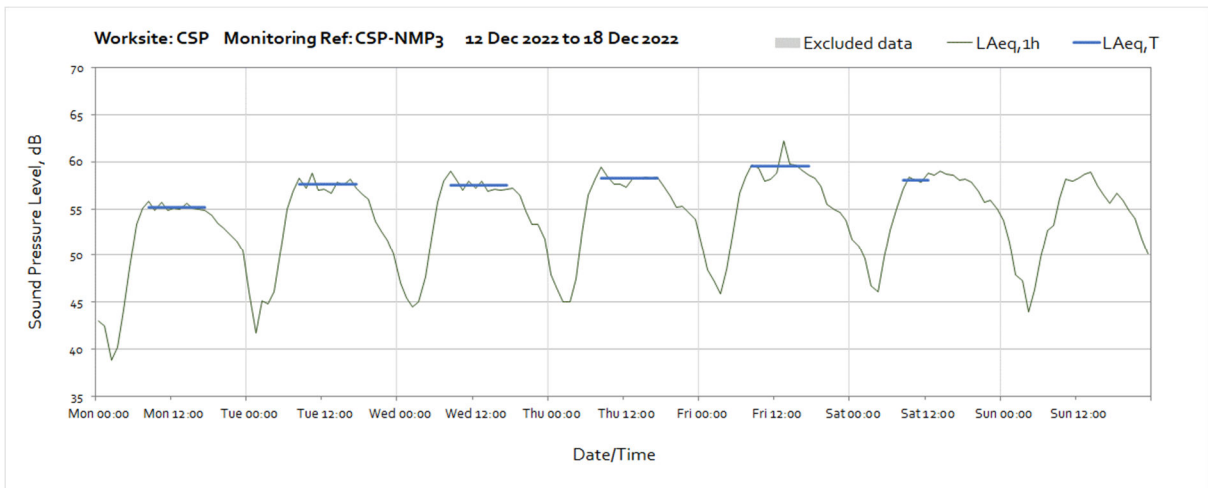


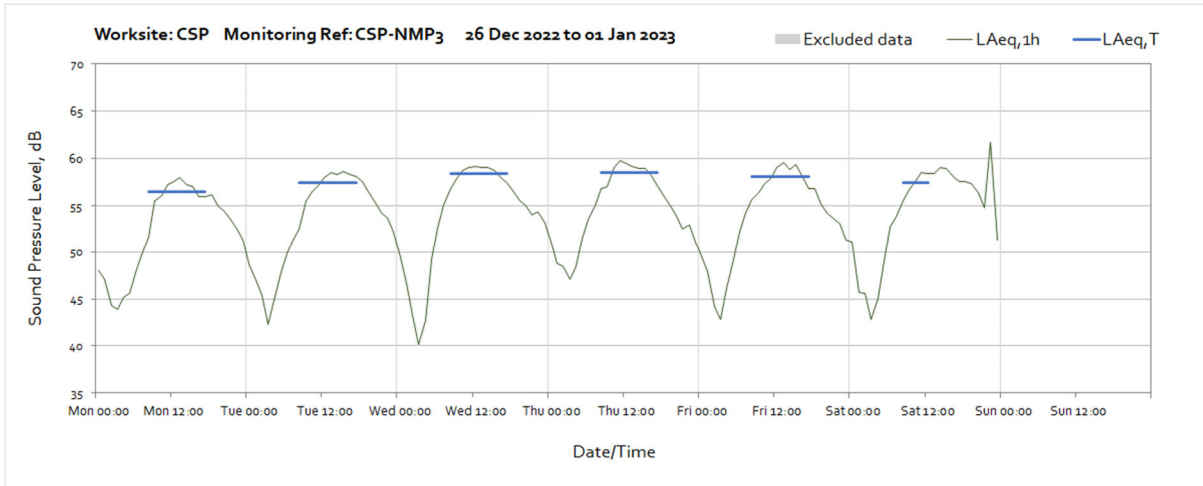
Worksite: CSP – Monitoring Ref: CSP-NMP3



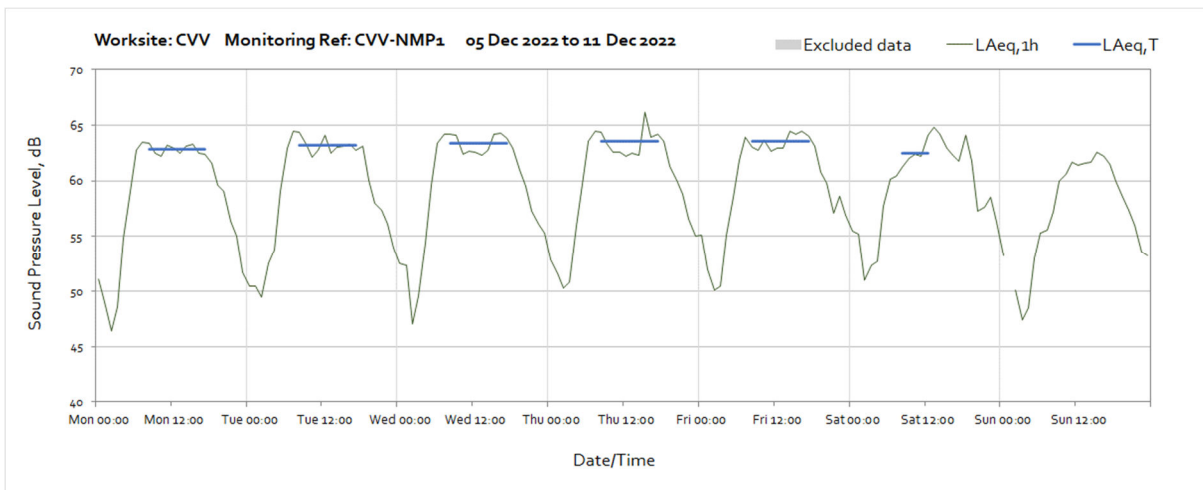
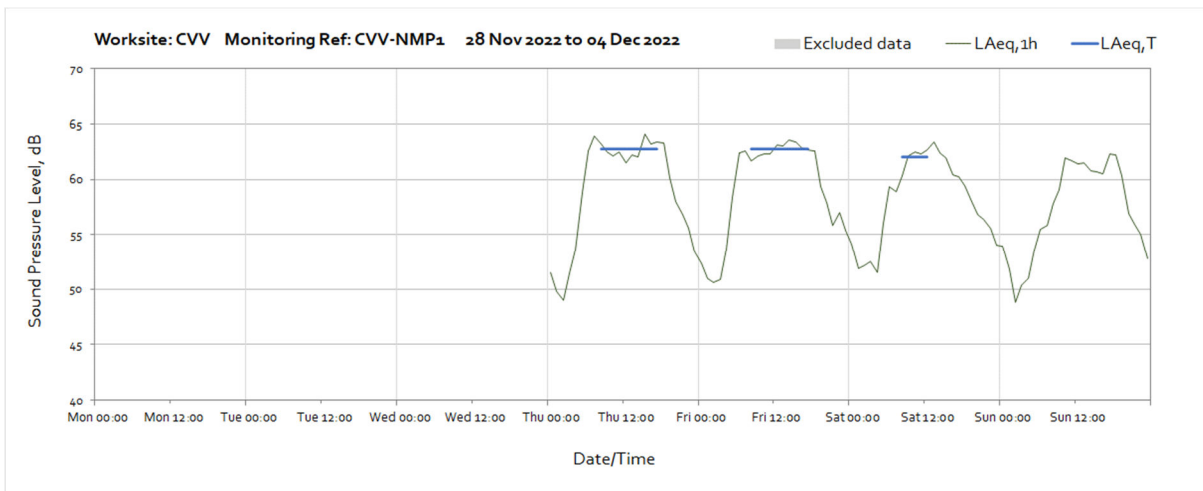


Note: Missing data between 01:00 and 02:00 on 11th December was due to a technical issue causing loss of data during data extraction.

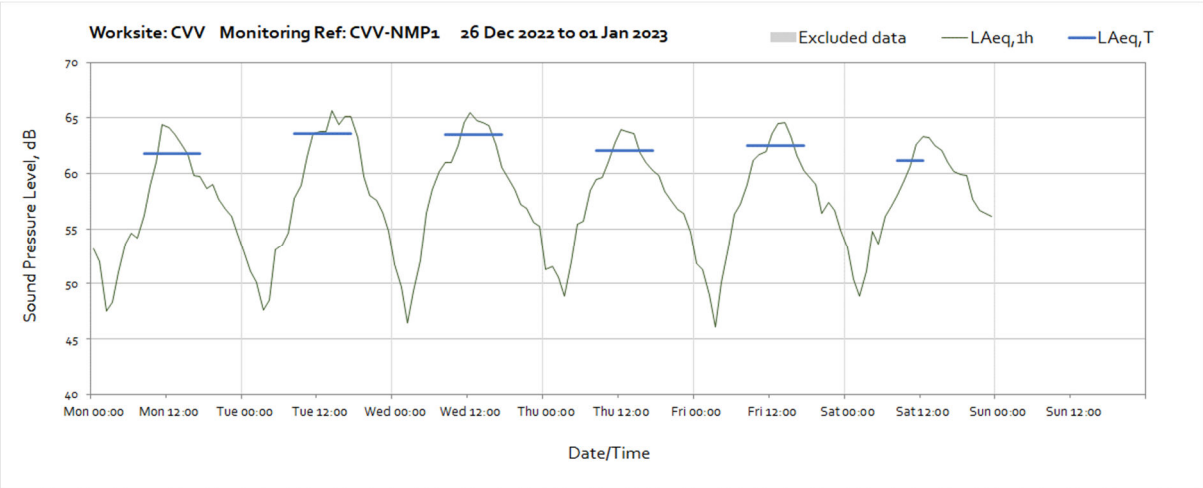
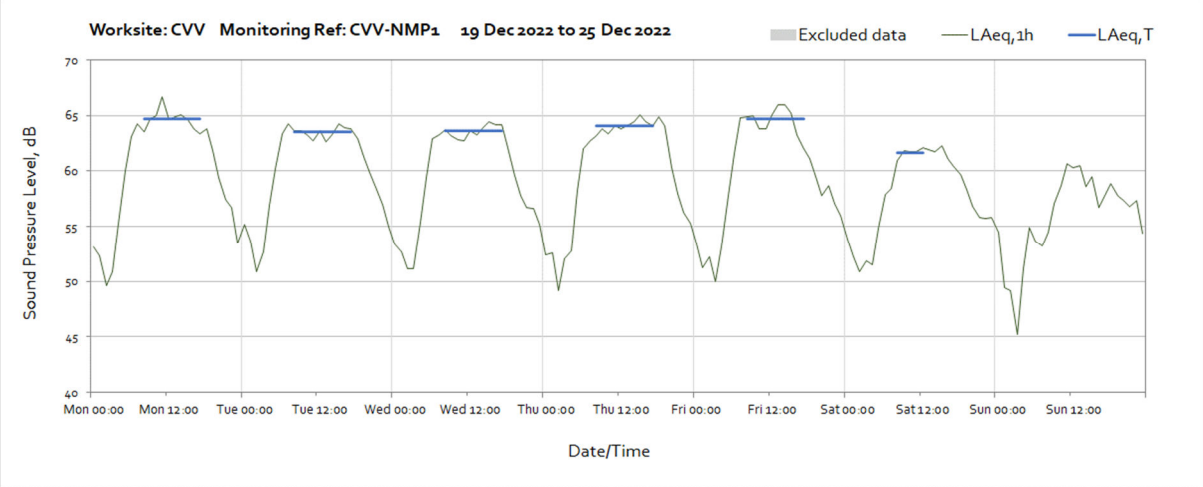
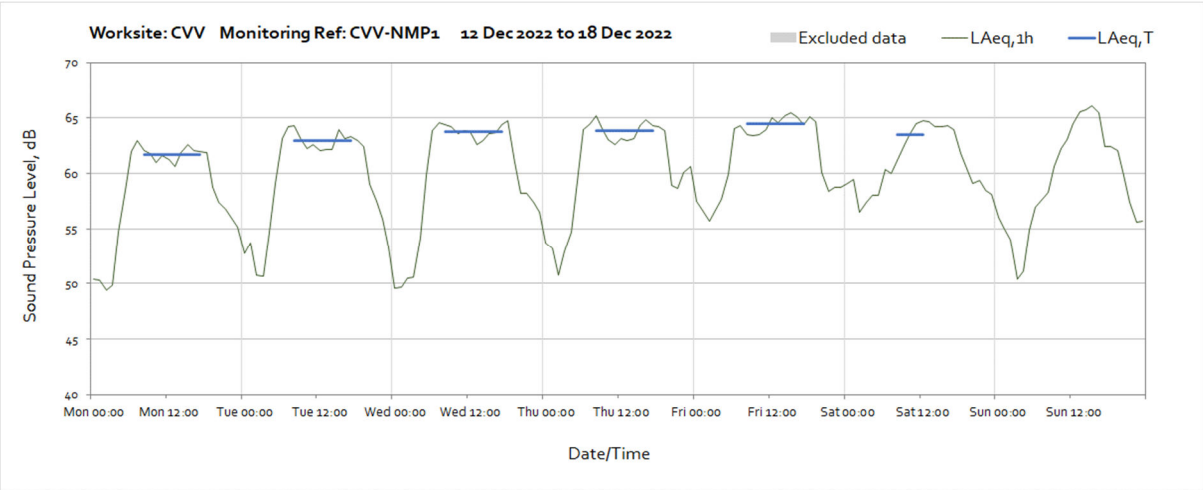




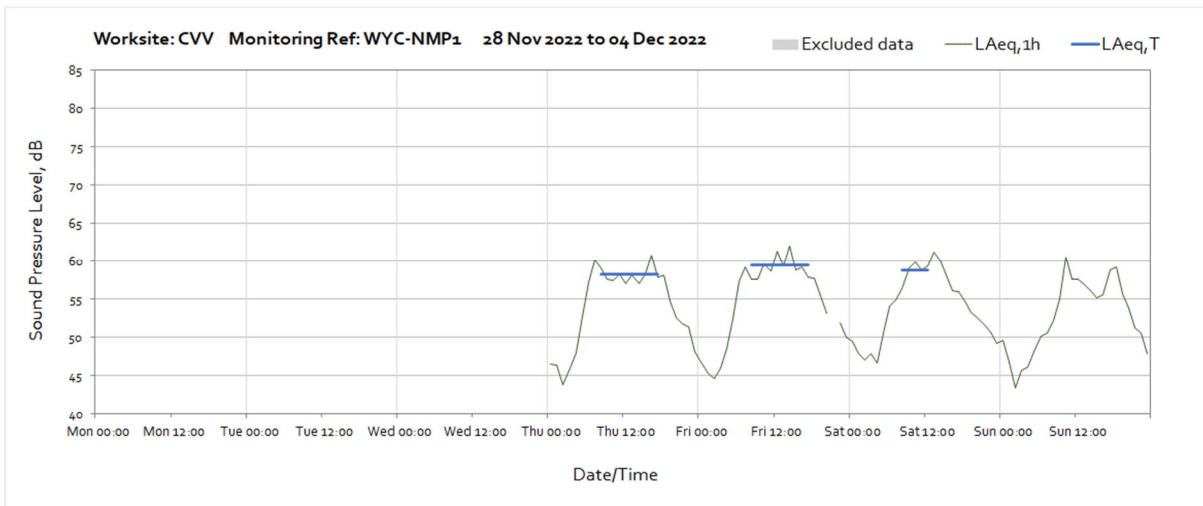
Worksite: CVV- Monitoring Ref: CVV-NMP1



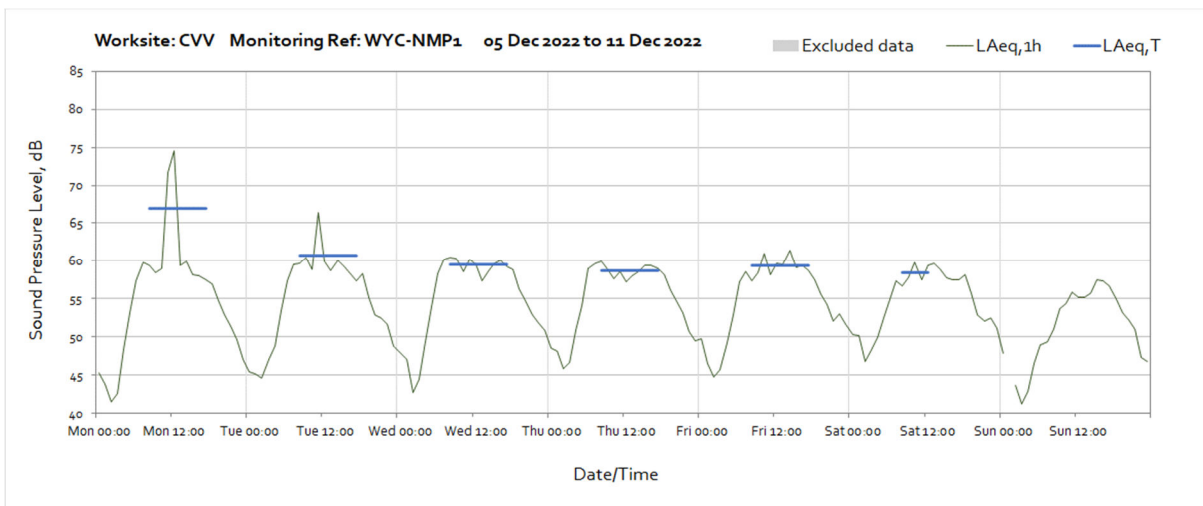
Note: Missing data between 01:00 and 02:00 on 11th December was due to a technical issue causing loss of data during data extraction.



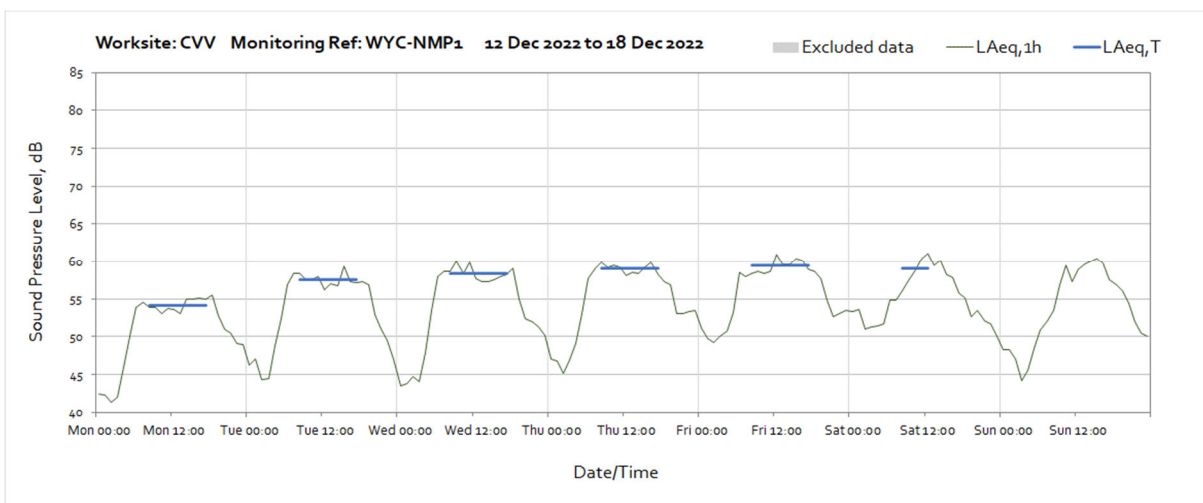
Worksite: CVV – Monitoring Ref: WYC-NMP1



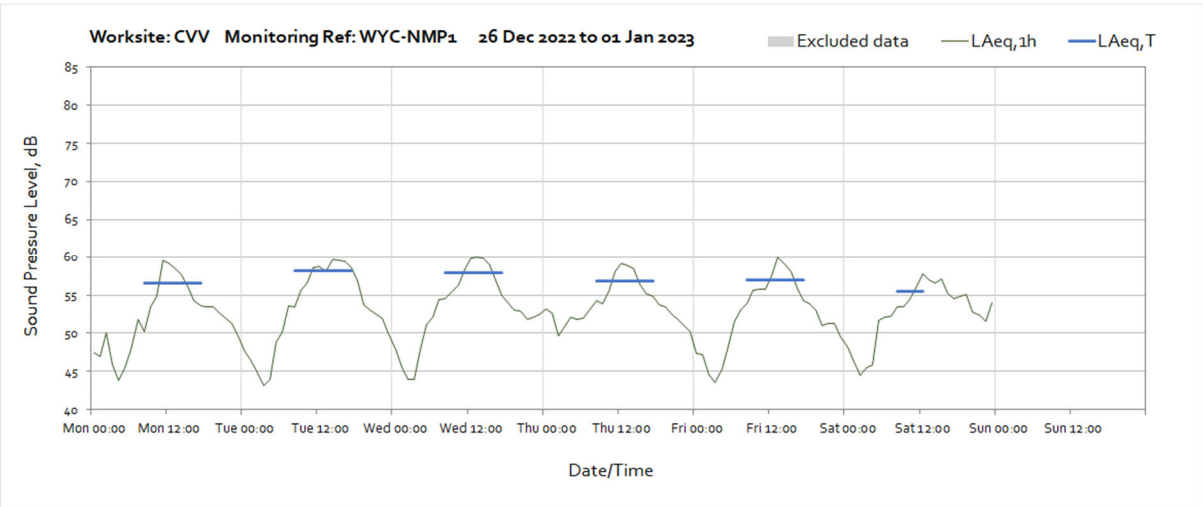
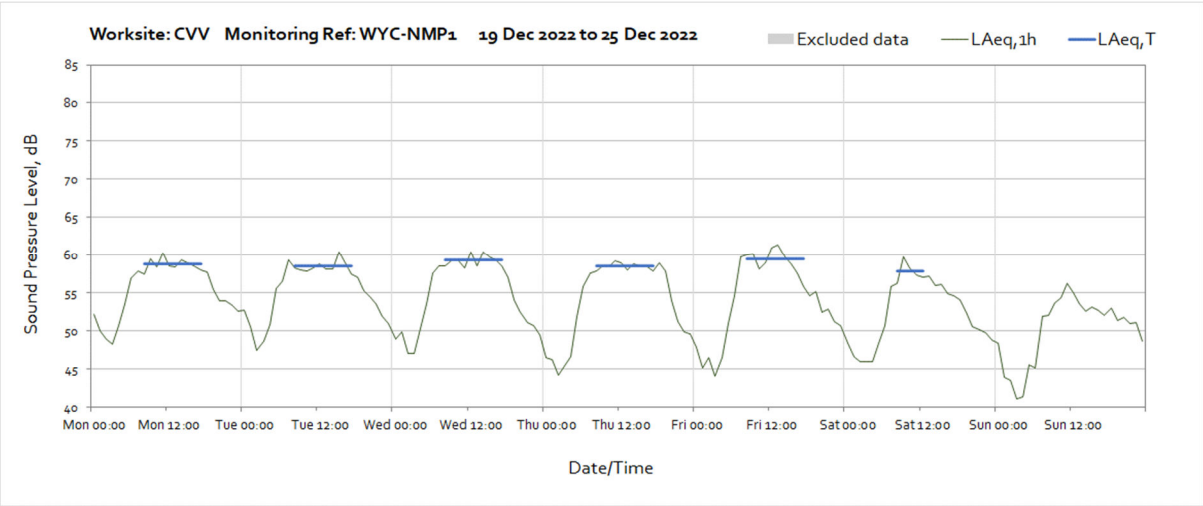
Note: Missing data between 21:00 and 22:00 on 2nd December was due to a data transfer issue.



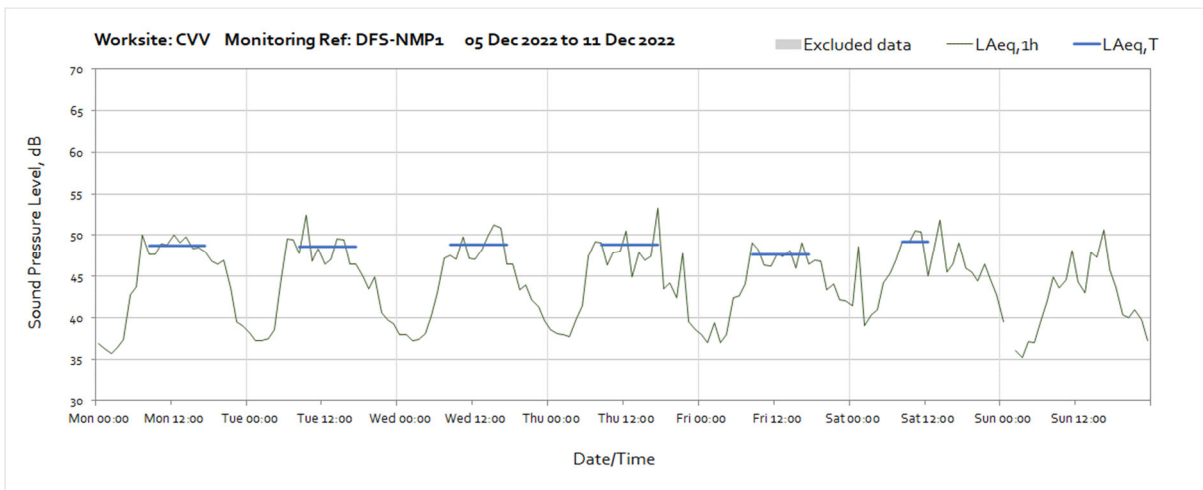
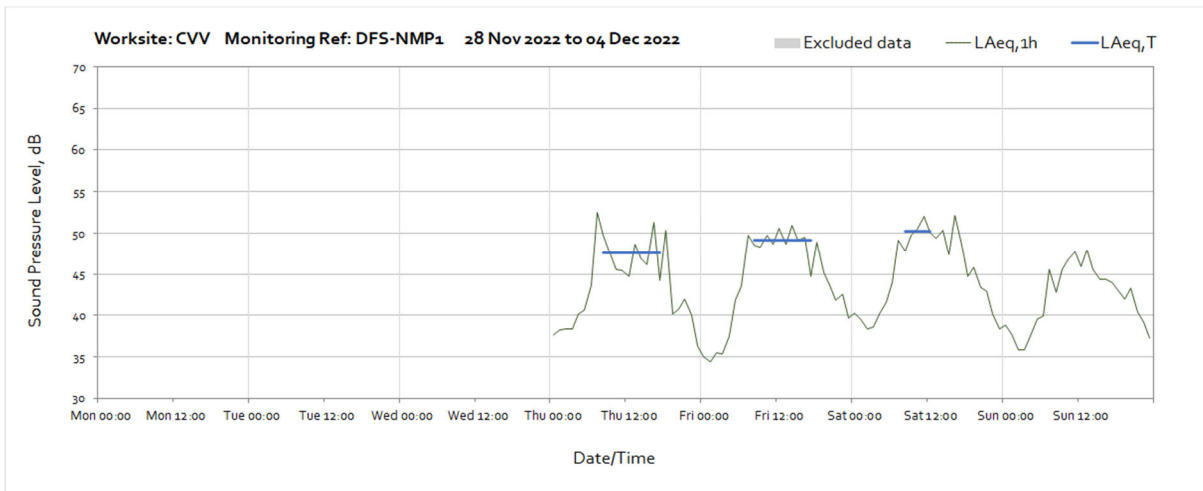
Note: Missing data between 01:00 and 02:00 on 11th December was due to a technical issue causing loss of data during data extraction.



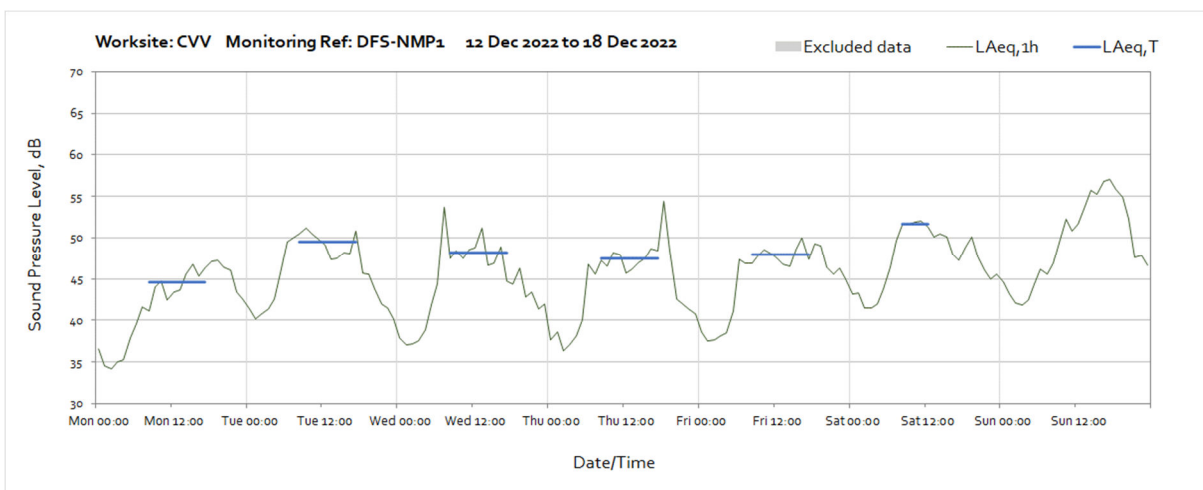
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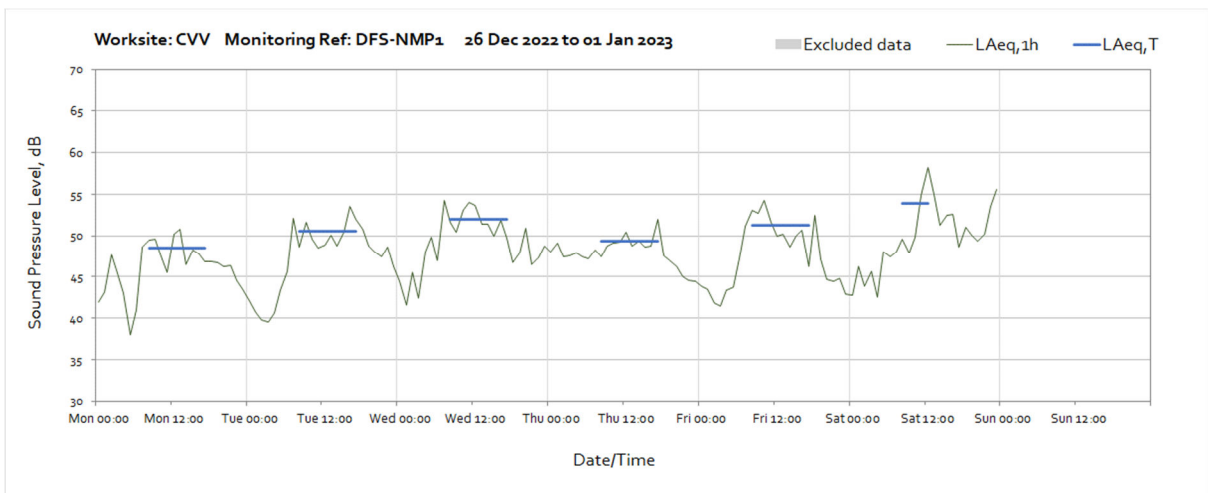
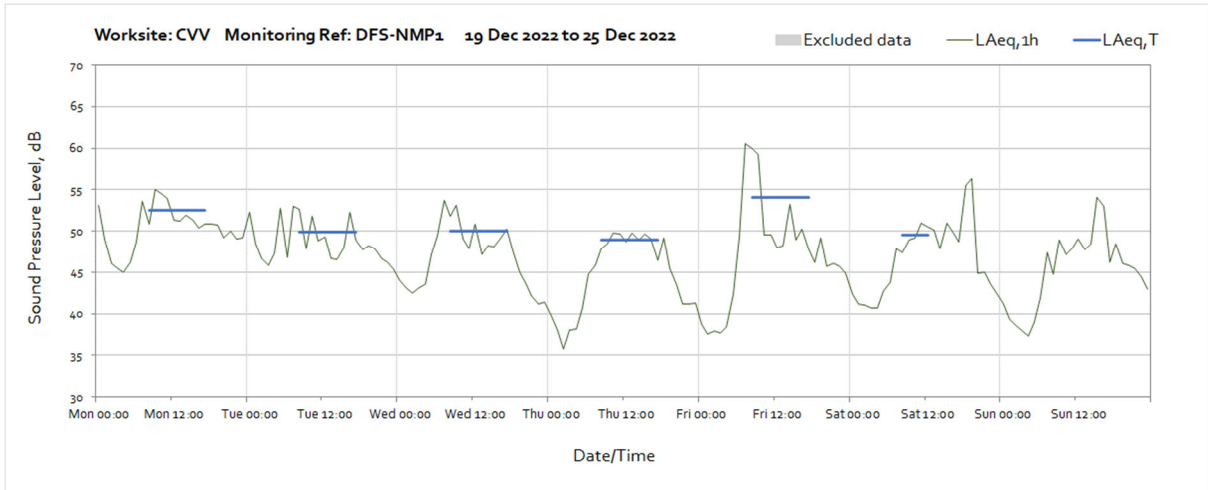


Worksite: CVV – Monitoring Ref: DFS-NMP1

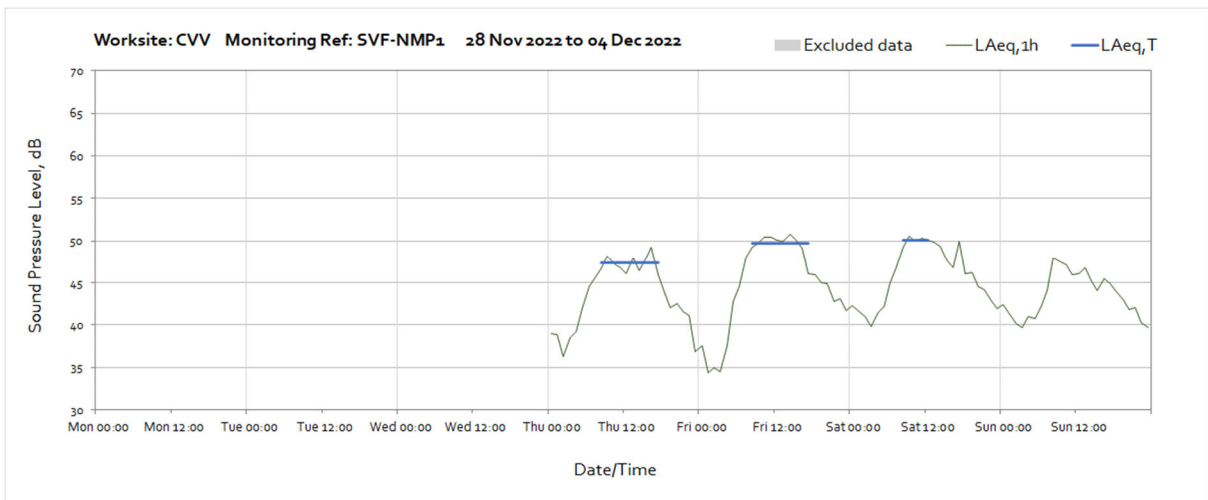


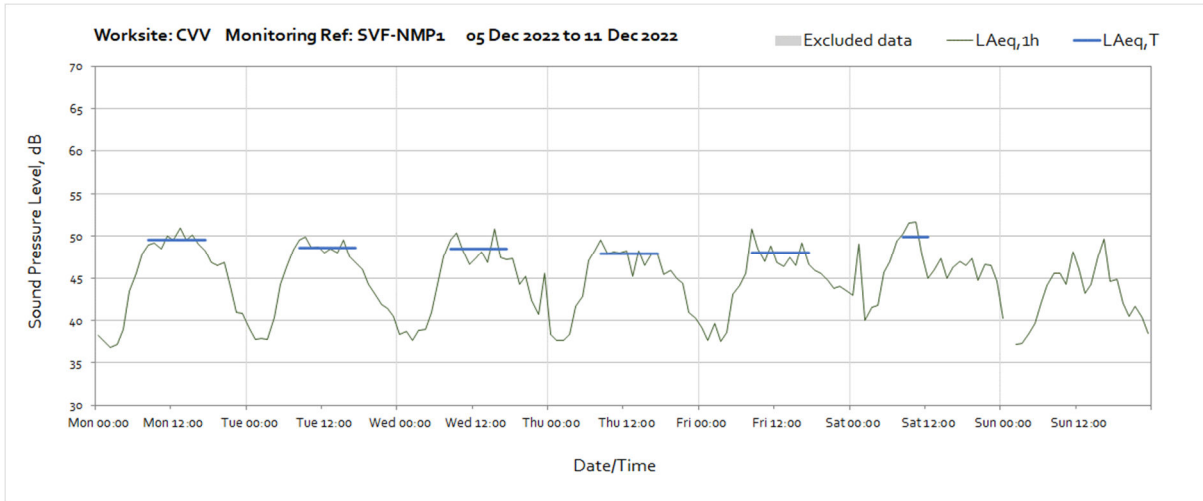
Note: Missing data between 01:00 and 02:00 on 11th December was due to a technical issue causing loss of data during data extraction.



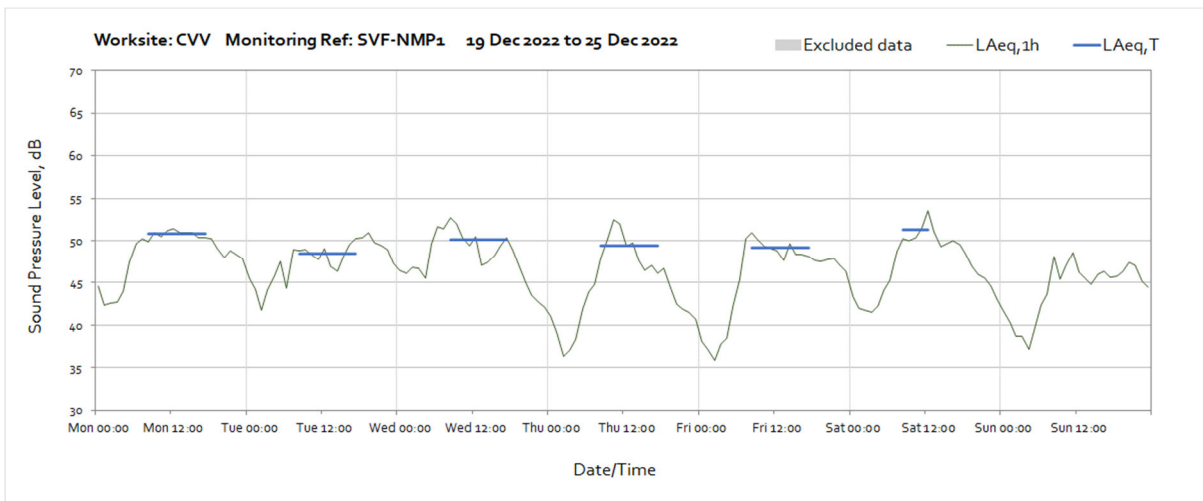
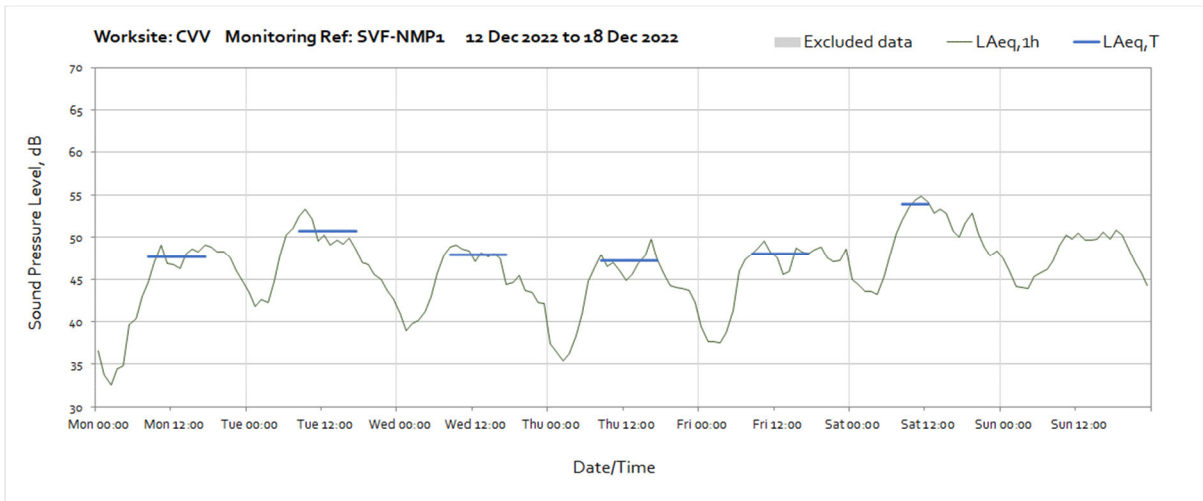


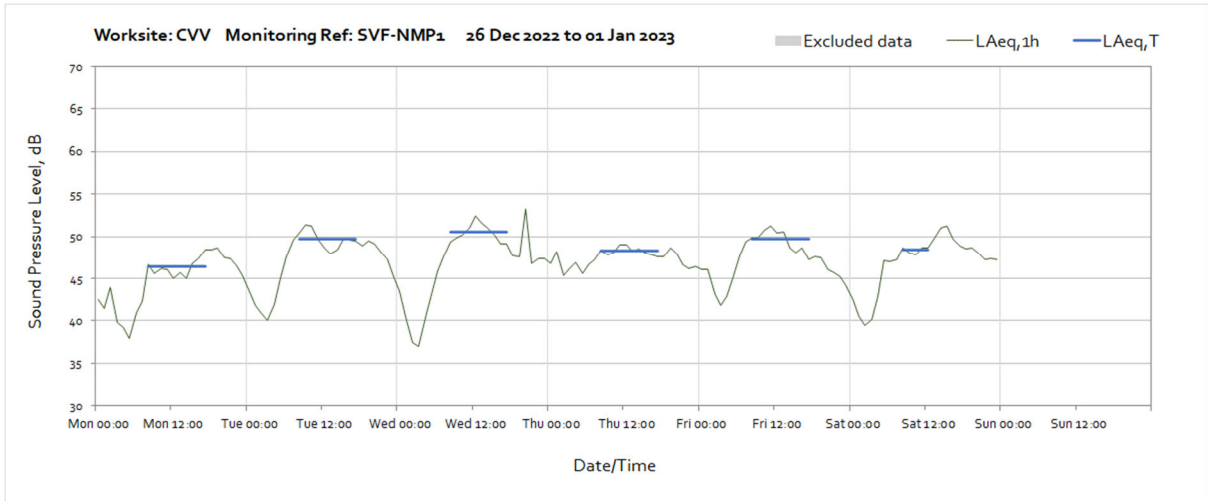
Worksite: CVV – Monitoring Ref: SVF-NMP1





Note: Missing data between 01:00 and 02:00 on 11th December was due to a technical issue causing loss of data during data extraction.

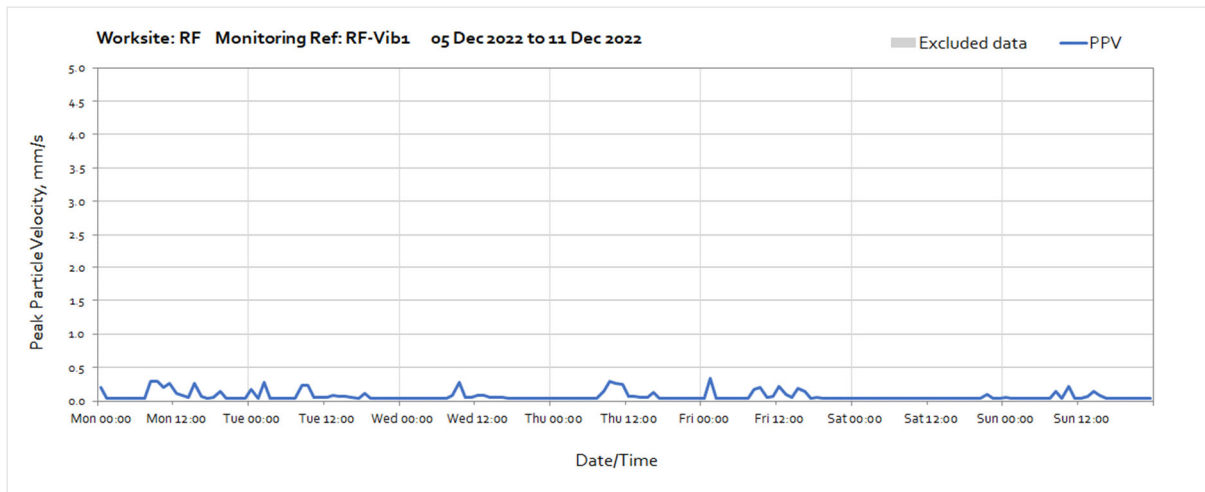
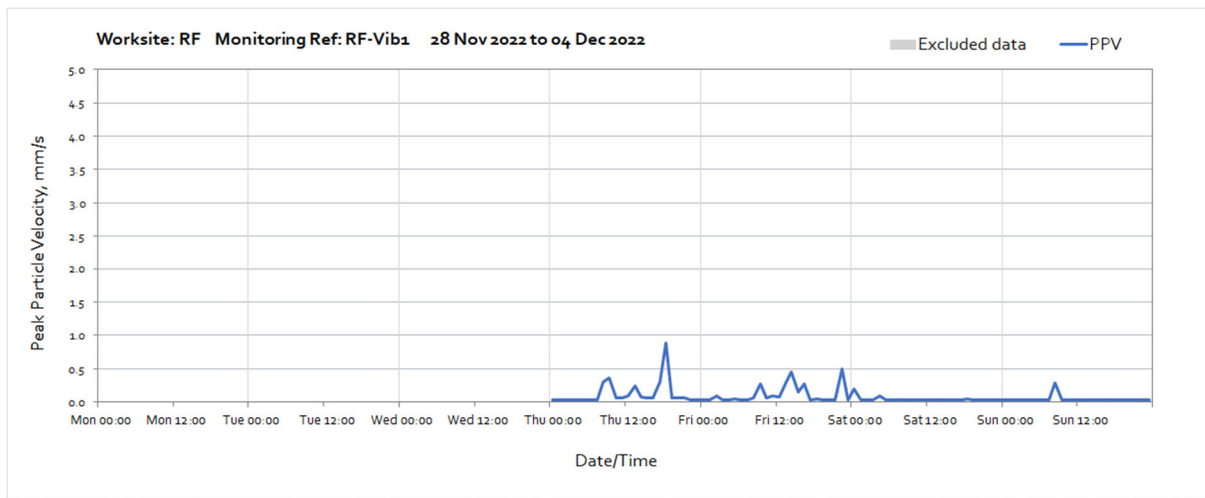


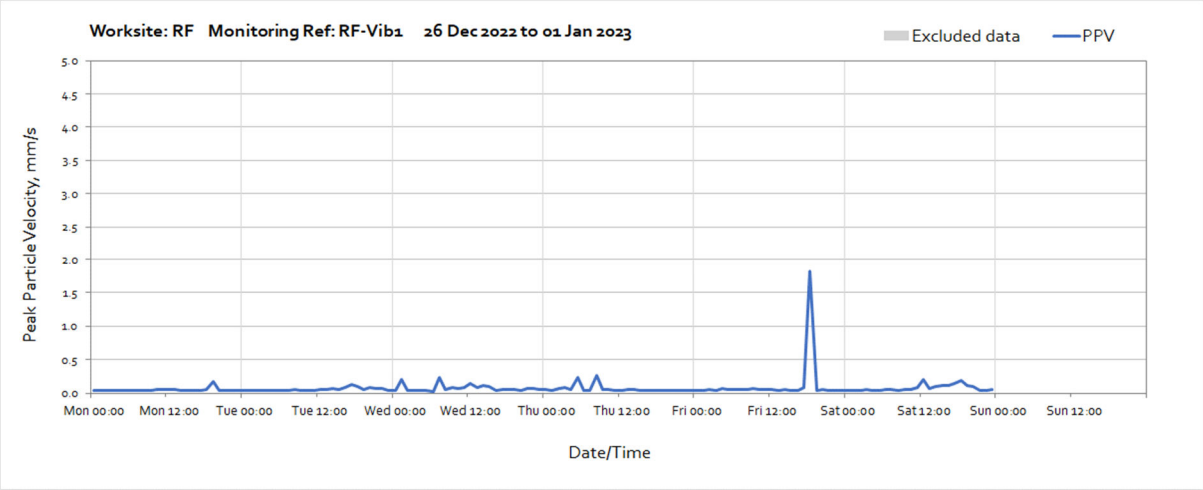
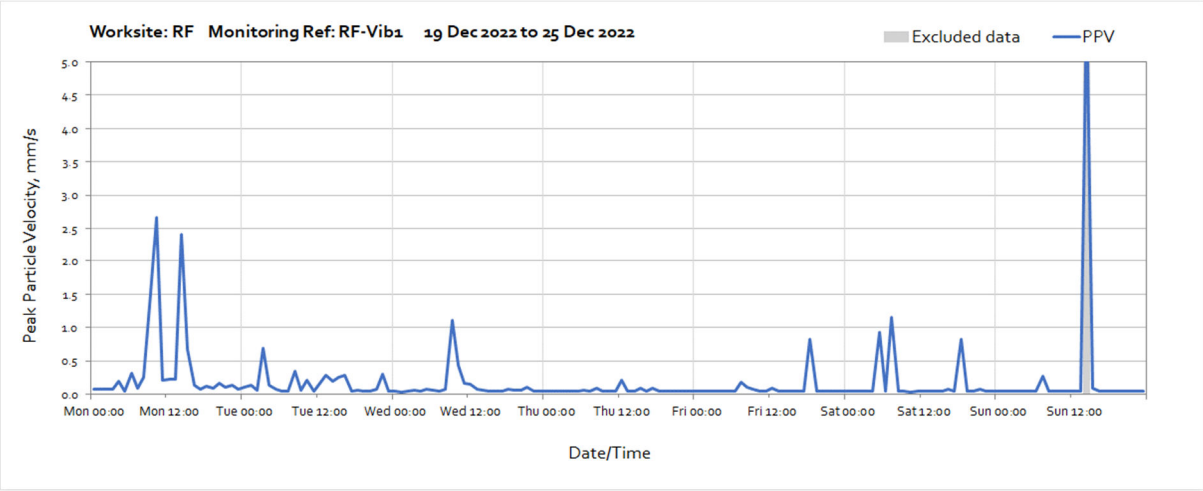
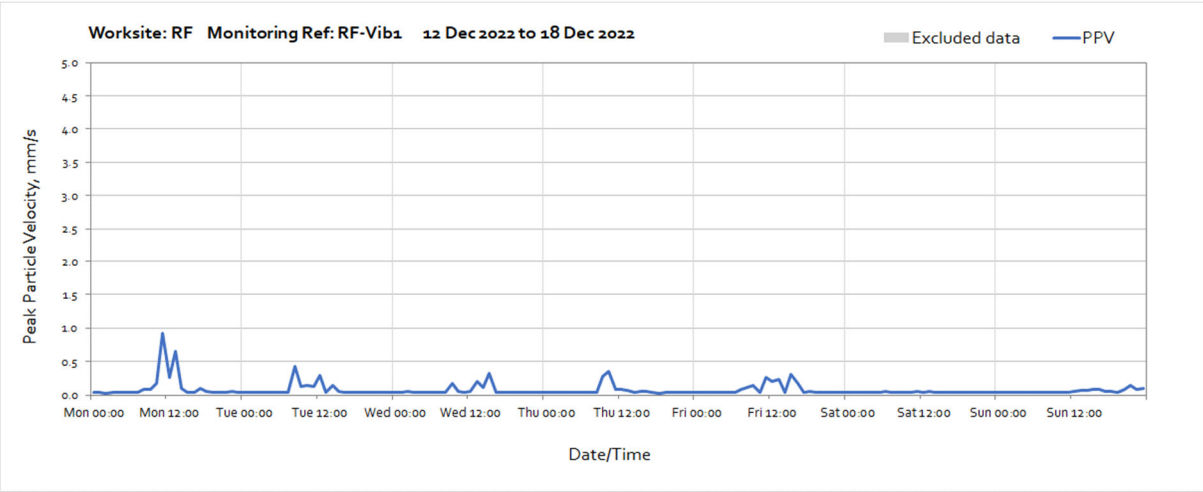


Vibration

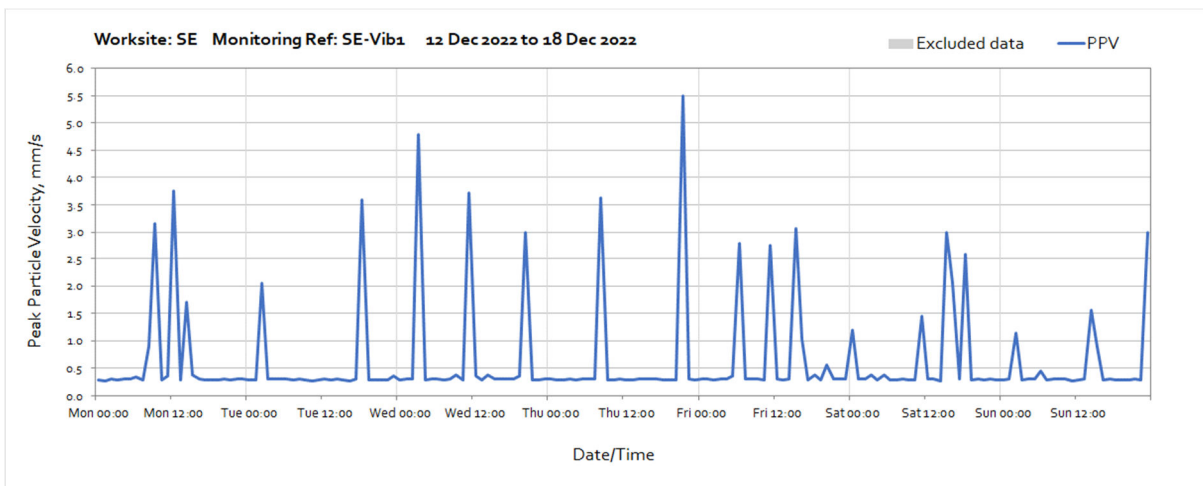
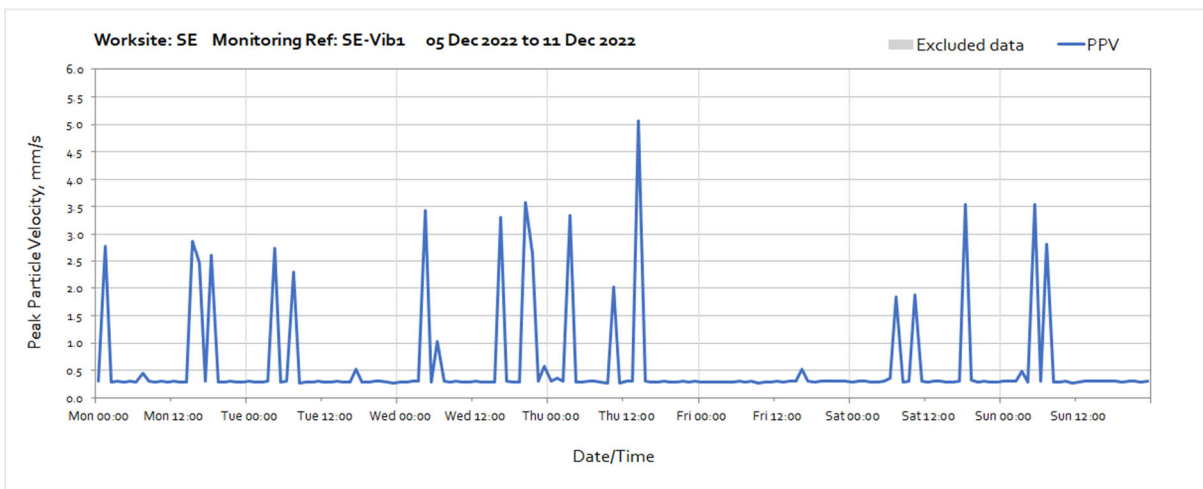
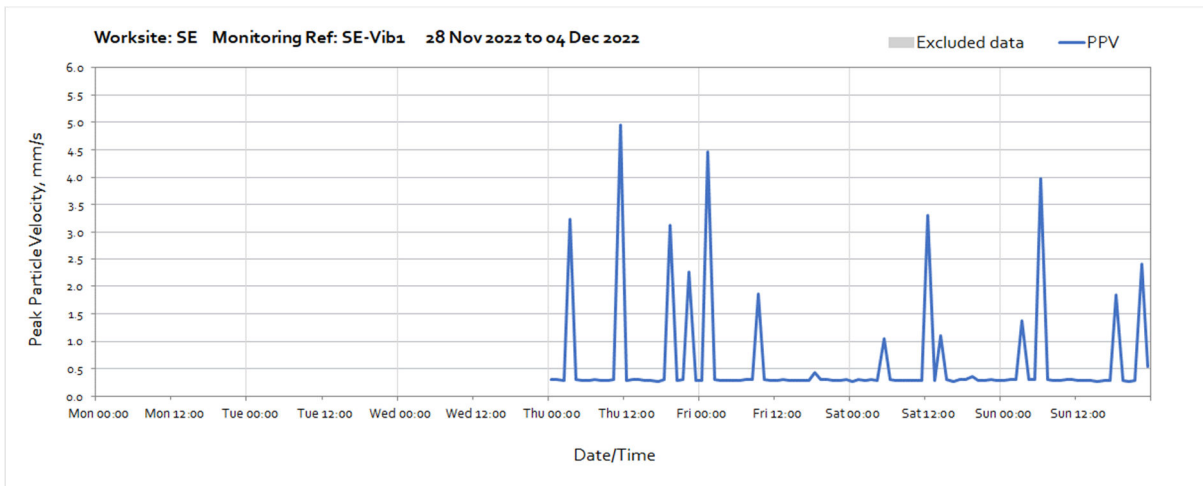
The following graphs show the hourly measured peak particle velocity PPV recorded during the monitoring period. The graphs show the highest PPV of the three orthogonal axes x, y and z. Where high values of PPV were caused by local interference with the vibration monitor, which are not representative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

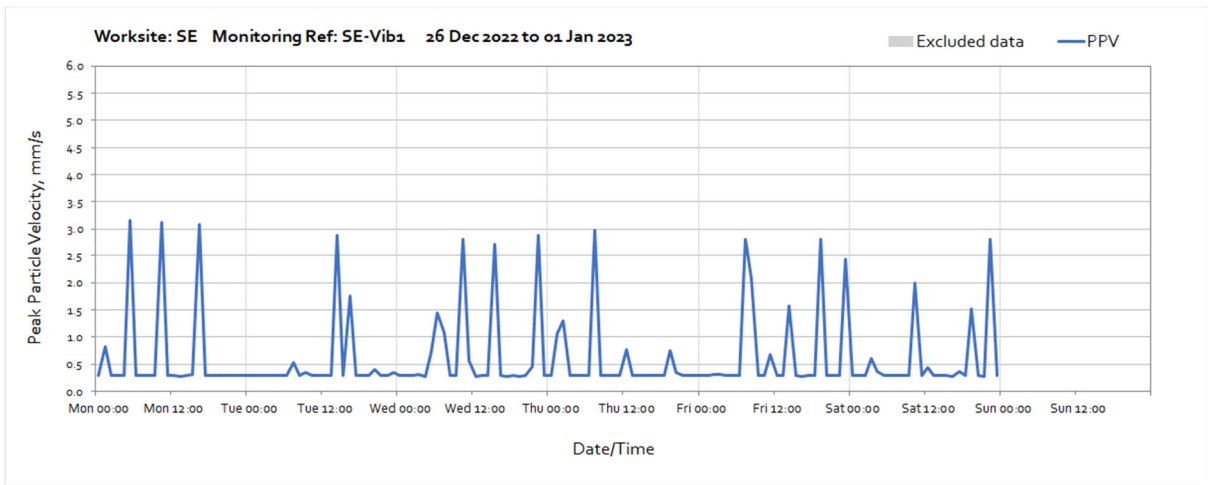
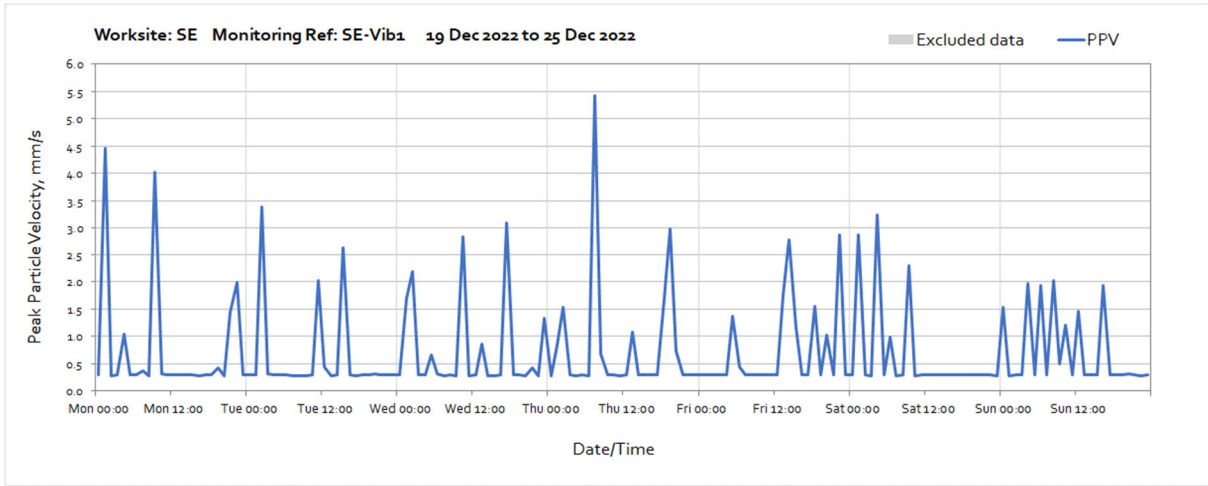




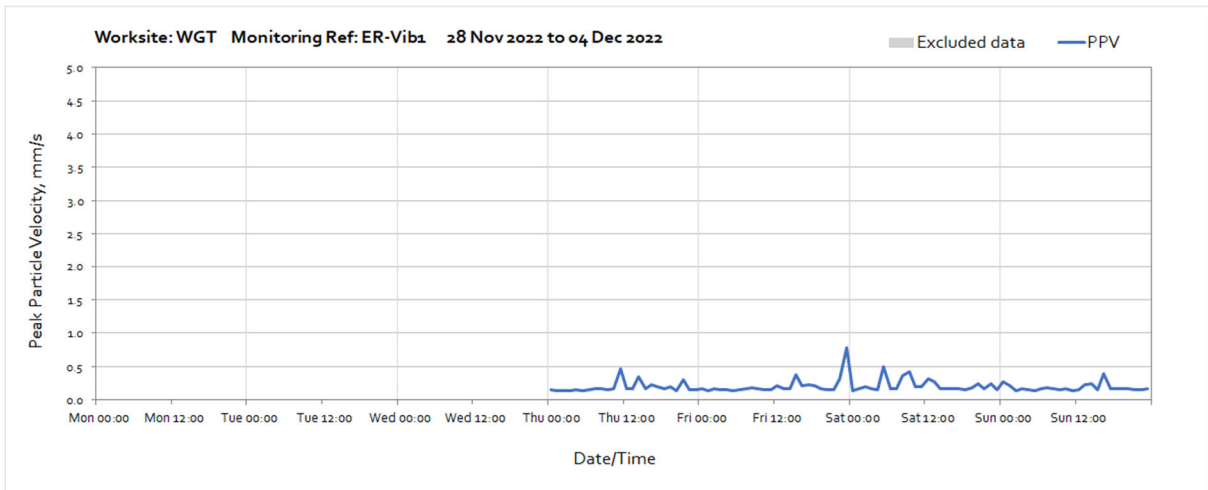
Worksite: SE – Monitoring Ref: SE-Vib 1

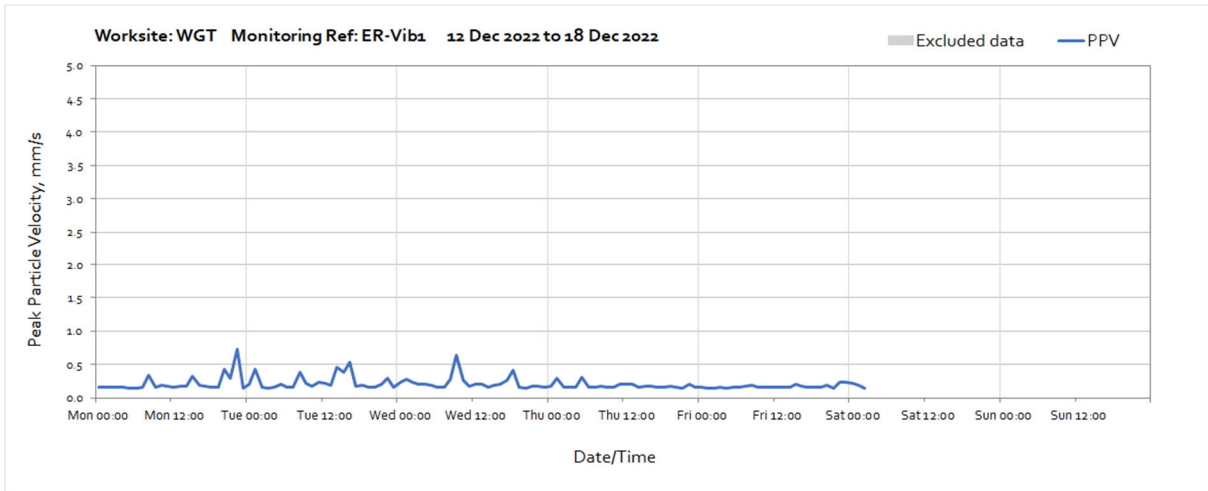
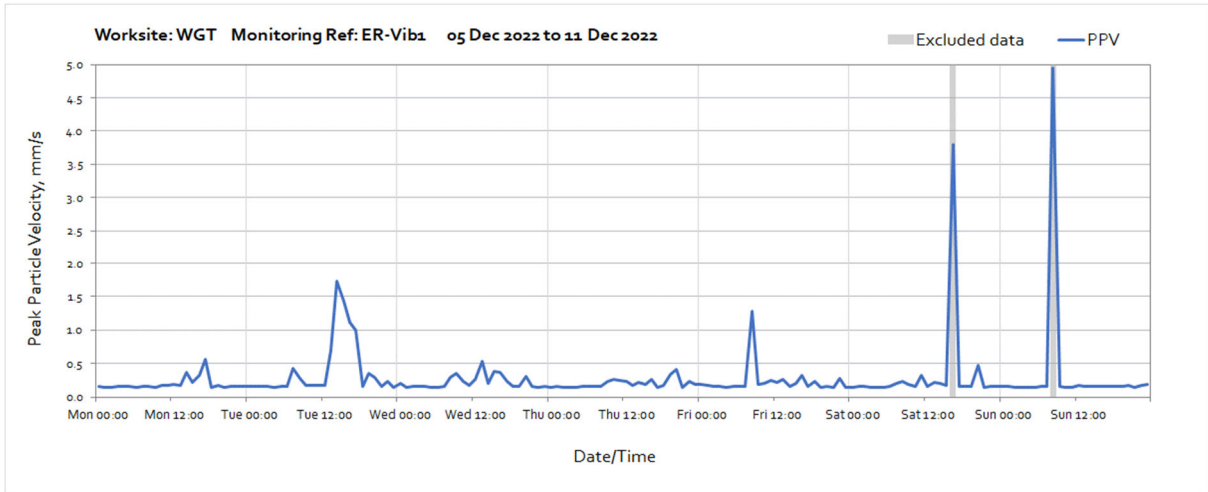


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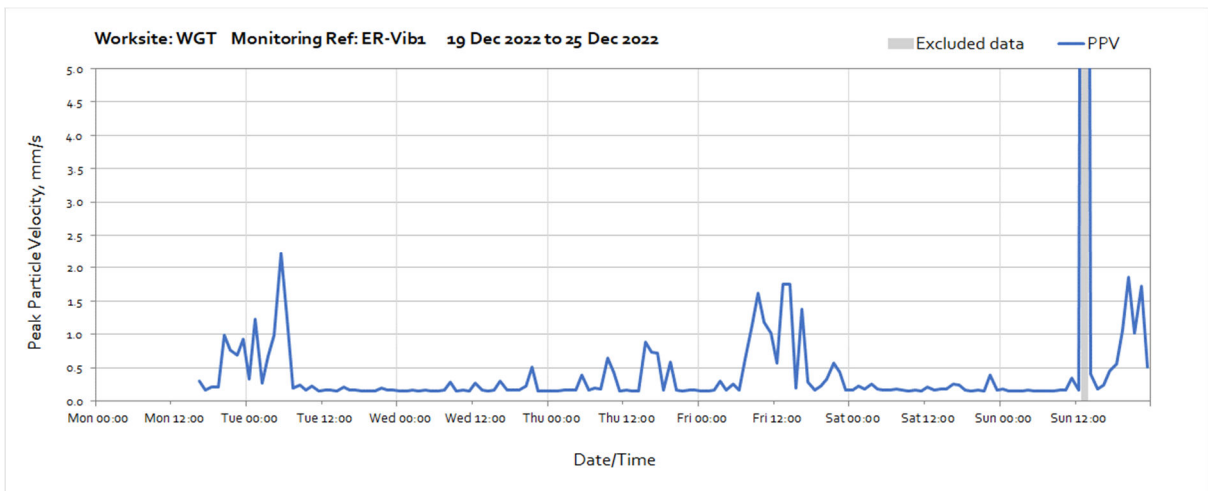


Worksite: WGT - Monitoring Ref: ER-Vib 1

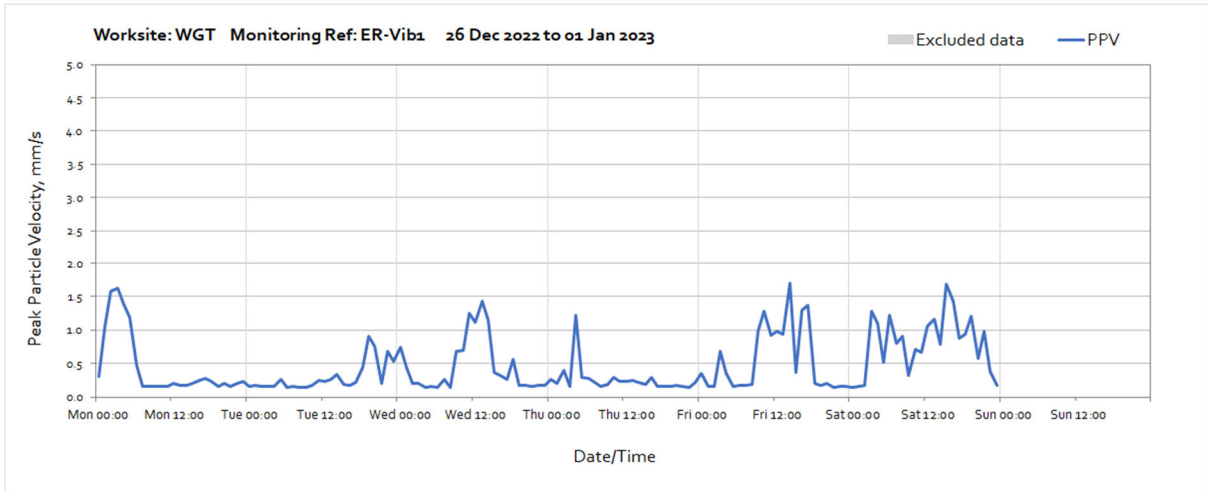




Note: Missing data from 03:00 on 17th December until 16:00 on 19th December was due to depleted monitor battery.



Note: Missing data from 03:00 on 17th December until 16:00 on 19th December was due to depleted monitor battery.



Worksite: WDV - Monitoring Ref: WDV-Vib 1

