

Construction Noise and Vibration Monthly Report – November 2024

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 November 2024.

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

- A422 Turweston North worksite (ref.: A422 TN) where material movements, excavation, landscape bund construction, drainage works, overbridge and viaduct construction were underway.
- School End (ref.: SE) and Hermitage Chetwode (ref.: HC) worksites where overbridge and highway realignment, water management and haul and site access road maintenance were underway.
- Twyford worksite (ref.: TW) where topsoil placement, installation of vegetation wall system, viaduct works, water management, haul road and site access road maintenance were underway.
- West Street Overbridge worksite (ref.: WSO), where grouting, wingwall reinforced bar fixing, blinding, pile cap preparation, installation of permanent formworks, utility works, construction of embankment and culvert and earthworks were underway.
- Calvert worksite (ref.: CAL) where backfilling, reinforced concrete works, production of concrete, material movements, earthworks, drainage, utility diversion and de-vegetation were underway.
- Woodlands worksite (ref.: WDL) where concrete repairs and material movements were underway.
- Quainton worksite (ref.: QAR) where ditch crossing construction, utility works, site access road construction were underway.
- Oat Close worksite (ref: OC) where overbridge works, earthworks, excavation and stockpiling underway.
- Waddesdon worksite (ref.: WAD) where culvert construction, utility diversion, earthworks were underway.
- Meadoway worksite (ref.: MW) where road realignment was underway.
- Thames Valley Viaduct worksite (ref.: TVV) where formwork installation and lifting of beams were underway.

- Risborough Road worksite (ref.: RR) where road construction and utility diversion were underway.
- Aylesbury Golf Course worksite (ref.: GC) where cutting, culvert construction and utility diversions were underway.
- Nash Lee Lane worksite (ref.: NLL) where backfilling, concrete pours, headwall and wingwall installation, installation of inlet base slab, abutment works, utility diversion works and temporary surface water management were underway.
- Wendover Green Tunnel worksite (ref.: WGT) where installation of link road and shaft, installation and grouting of rings, utility diversions, excavation, joining works, structure construction, material deliveries, pre-treatment works, platform and walkway maintenance, platform modifications, protection slab construction, site access diversion, instrumentation and monitoring maintenance, construction of new pre-treatment plant platform, excavation, reinstatement works, guide0wall installation, slurry plant slab construction, plant lifting and installation were underway.
- Grove Farm worksite (ref.: GF) where piling was underway.
- Small Dean Viaduct Compound worksite (ref.: SDVC) where installation of precast, neoprene, sealant and backer rod, reinforced bar installation and prefabrication, bearing works, lifting and fixing works, concrete pours, scaffold building and backfilling were underway.
- Rocky Lane Embankment worksite (ref.: RLE) where ground investigation works, underbridge works and temporary surface water management were underway.
- Wendover Dean Viaduct worksite (ref.: WDV) where formwork installation, soffit trial panel fixing and pouring and material deliveries were underway.
- Leather Lane worksite (ref.: LL) where sheet piling was underway.
- South Heath worksite (ref.: SH) where earthworks, utility works, general site activities, culvert works, overbridge construction, ground investigation works, site access and haul road construction and operation were underway.
- North Portal worksite (ref.: NP) where earthworks, utility works, general site activities, culvert works, overbridge construction, ground investigation works and site access and haul road construction and operation were underway.
- Chesham Road worksite (ref.: CHSM), where general site activities, internal and external building works, demobilisation and landscaping were underway.
- Little Missenden Vent Shaft worksite (ref.: LM) where site operation, tunnel connections, headhouse superstructure works and building construction were underway.

- Amersham Vent Shaft worksite (ref.: AM), where site operation, external and internal building works, tunnel connection, superstructure concrete works, pre-casting of boundary wall, , steel, cladding and mechanical plant works were underway.
- Chalfont St Giles Vent Shaft worksite (ref.: CSG) where site operation, road maintenance, demobilisation and internal and external building works were underway.
- Chalfont St Peter Vent Shaft worksite (ref.: CSP), where site operation, road maintenance, demobilisation and internal and external building works were underway.
- Colne Valley Viaduct worksite, which is partly located in the London Borough of Hillingdon (LBH), (ref.: CVV), where jetty and haul road maintenance, jetty removal, compound operations, ground investigation, pumping water management, satellite compound welfare works, generator farm operation, environmental maintenance, viaduct deck and landscaping works were underway.

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

- Grovill Embankment (Westbury) where excavation and replace was underway.
- School End North where bulk excavation, vegetation clearance, stockpiling, drainage, pond maintenance and excavation, removal of badger fencing, fencing works and vehicle movements were underway.
- Godington where site access road construction, topsoil stripping and vegetation clearance were underway.
- Tuweston A422 Structure where permanent bridge construction and road diversion were underway.
- Charndon Lodge Pumping Station where excavation and utility works were underway.
- East West Rail Culvert where de-vegetation was underway.
- Infrastructure Maintenance Depot (IMD) where watercourse diversion, bulk earthworks and drainage installation were underway.
- Shepherds Furze Culvert where watercourse construction, bulk earthworks and temporary culvert installation were underway.
- MCJ where de-vegetation, drainage works, culver installation, earthworks, stabilisation works and dig and replace were underway.
- Bat Mitigation Structure where reinforced concrete works and technical backfill were underway.

- Sheephouse Wood North Culvert where backfilling was underway.
- SLC13 where reinforced concrete works and piling were underway.
- GUN28 overbridge where deck and diaphragm works were underway.
- QUA36 overbridge where pile cap backfilling was underway.
- Edgcott Road overbridge where backfilling, drainage and snagging were underway.
- Doddershall Culverts where culvert unit installation, reinforced concrete works, technical backfill, stabilisation and fencing works were underway.
- QUA28 Overbridge where reinforced concrete works, pile cap installation, waterproofing and backfilling were underway.
- Station Road overbridge where pile cap construction, excavation, pile cropping and wall construction were underway.
- Hills Farm where stockpiling was underway.
- Culvert No.12 where waterproofing and backfilling were underway.
- Fleet Marston where earthworks, culvert and overbridge works were underway.
- Along A41 where concrete batching plant operation, earthworks, vehicle restraint system installation, highway construction, kerbing, pavement construction, signage installation and drainage works were underway.
- Meadoway where utility installation and road resurfacing were underway.
- Bowood Lane where installation of parapets, reinforced bars and shutters, concreting and wingwall parapet stitching were underway.
- Nash Lee Road Diversion where earthworks were underway.

The HS2 threshold levels for significant noise impacts, which are defined in Information Paper E23 (<https://www.gov.uk/government/publications/hs2-information-papers-environment>), were exceeded three (3) times during the reporting period.

One (1) exceedance of trigger levels as defined in Section 61 consents occurred during the reporting period.

No complaints were received within the Buckinghamshire area during the monitoring period. A description of the complaints, the results of investigations and any actions taken are detailed in Table 8 of this report.

Abbreviations and Descriptions

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

Table 1: Table of Abbreviations

Acronym/Term	Definition
$L_{Aeq,T}$	See equivalent continuous sound pressure level
Ambient sound	A description of the all-encompassing sound at a given location and time which will include sound from many sources near and far. Ambient sound can be quantified in terms of the equivalent continuous sound pressure level, $L_{pAeq,T}$
Decibel(s), or dB	Between the quietest audible sound and the loudest tolerable sound there is a million to one ratio in sound pressure (measured in Pascal (Pa)). Because of this wide range, a level scale called the decibel (dB) scale, based on a logarithmic ratio, is used in sound measurement. Audibility of sound covers a range of approximately 0-140dB.
Decibel(s) A-weighted, or dB(A)	The human ear system does not respond uniformly to sound across the detectable frequency range and consequently instrumentation used to measure sound is weighted to represent the performance of the ear. This is known as the 'A weighting' and is written as 'dB(A)'.
Equivalent continuous sound pressure level, or $L_{Aeq,T}$	An index used internationally for the assessment of environmental sound impacts. It is defined as the notional unchanging level that would, over a given period of time (T), deliver the same sound energy as the actual time-varying sound over the same period. Hence fluctuating sound levels can be described in terms of an equivalent single figure value, typically expressed as a decibel level.
Exclusion of data	Measurement of noise levels can be affected by weather conditions such as prolonged periods of rain, winds speeds higher than 5m/s and snow/ice ground cover. Noise levels measured during these periods are considered not representative of normal noise conditions at the site and, for the purposes of this report, are excluded from the assessment of exceedances and calculation of typical noise levels and are also greyed out in charts. Identifiable incongruous noise and vibration events not attributable to HS2 construction noise are also excluded.
Façade	A facade noise level is the noise level 1m in front of a large reflecting surface. The effect of reflection, is to produce a slightly higher (typically +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 30th November 2024.

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

- A422 Turweston North worksite, ref.: A422 TN (see Plan 1 in Appendix A), where works activities included:
 - Material movements.
 - Excavation.
 - Landscape bund construction.
 - Drainage works.
 - Overbridge construction, including beam welding and installation, drainage, permanent formwork installation, deck steel prefabrication, platform maintenance, steel fixing and deck steel installation.
 - Viaduct construction, including installation of launching equipment, concrete works and installation of aggregate.
- School End worksite, ref.: SE (see Plan 2 in Appendix A) and Hermitage Chetwode Worksite ref.: HC (see plan 2 in Appendix A), where works activities included:

- Overbridge construction, including wingwall formwork concreting, paratop installation and lifting, deck works, steel fixing, formwork and check walls works.
- Highway realignment, including excavation and replacement, subbase placement and utility works.
- Water management.
- Haul and site access road maintenance.
- Twyford worksite, ref.: TW (see Plan 2 in Appendix A), where works activities included:
 - Topsoil placement.
 - Installation of vegetation wall system.
 - Viaduct works, including construction of piling platforms, preparation for sheet piling works.
 - Water management.
 - Haul and site access road maintenance.
- West Street Overbridge worksite, ref.: WSO (see Plan 2 in Appendix A), where works activities included:
 - Grouting.
 - Wingwall reinforced bar fixing.
 - Blinding.
 - Pile cap preparation.
 - Installation of permanent formworks.
 - Utility works, including drainage and pipeline connections.
 - Embankment construction.
 - Culvert construction.
 - Earthworks.
- Calvert worksite, ref.: CAL (see Plan 3 in Appendix A) where works activities included:
 - Backfilling.
 - Reinforced concrete works.

- Production of concrete.
- Material movements.
- Earthworks.
- Drainage works.
- Utility diversion.
- De-vegetation.
- Woodlands worksite, ref.: WDL (see Plan 4 in Appendix A) where works activities included:
 - Concrete repairs.
 - Material movements.
- Quainton worksite, ref.: QAR (see Plan 4 in Appendix A) where works activities included:
 - Ditch crossing construction.
 - Utility works.
 - Site access road construction.
- Oat Close worksite, ref.: OC (see Plan 6 in Appendix A), where works activities included:
 - Overbridge works, including piling, reinforced concrete works and beam installation.
 - Earthworks.
 - Excavation.
 - Stockpiling.
- Waddesdon worksite, ref.: WAD (see Plan 5 in Appendix A), where works activities included:
 - Culvert construction.
 - Utility diversion.
 - Earthworks.
- Meadoway worksite, ref.: MW (see Plan 6 in Appendix A), where works activities included:
 - Road realignment.

- Thames Valley Viaduct worksite, ref.: TVV (see Plan 5 in Appendix A), where works activities included:
 - Formwork installation.
 - Lifting of beams.
- Risborough Road worksite, ref.: RR (see Plan 6 in Appendix A), where works activities included:
 - Road construction.
 - Utility diversion.
- Aylesbury Gold Course worksite, ref.: GC (see Plan 6 in Appendix A), where works activities included:
 - Cutting.
 - Culvert construction.
 - Utility diversions.
- Nash Lee Lane worksite, ref.: NLL (see Plan 6 in Appendix A), where works activities included:
 - Backfilling.
 - Concrete pours.
 - Headwall and wingwall installation.
 - Installation of inlet base slab.
 - Abutment works, including installation of steel and shutters, starter bars and cage for base.
 - Utility diversion works.
 - Temporary surface water management.
- Wendover Green Tunnel worksite, ref.: WGT (see Plan 7 in Appendix A), where works activities included:
 - Installation of link road, including drainage, road surfacing and bridleway construction.
 - Installation of shaft.
 - Installation and grouting of rings.
 - Utility diversions, including installation of utilities bridge.

- Excavation.
- Joining works.
- Structure construction.
- Material deliveries.
- Pre-treatment works.
- Platform and walkway maintenance.
- Platform modifications.
- Protection slab construction.
- Site access diversion.
- Instrumentation and monitoring maintenance.
- Construction of new pre-treatment plant platform.
- Excavation.
- Reinstatement works.
- Guide-wall installation.
- Slurry plant slab construction.
- Plant lifting and installation.
- Grove Farm worksite, ref.: GF (see Plan 7 in Appendix A), where works activities included:
 - Piling.
- Small Dean Viaduct Compound worksite, ref.: SDVC (see Plan 7 in Appendix A), where works activities included:
 - Precast installation.
 - Installation of neoprene, sealant and backer rod.
 - Reinforced bar installation and prefabrication.
 - Bearing works, including plinth pour and plate grouting.
 - Lifting and fixing works.
 - Concrete pours.
 - Scaffold building.
 - Backfilling.

- Rocky Lane Embankment worksite, ref.: RLE (see Plan 7 in Appendix A), where works activities included:
 - Ground investigation works, including drilling.
 - Underbridge works, including reinforced bar fixing, formwork installation, concrete pours, drainage and manhole installation.
 - Temporary surface water management.
- Wendover Dean Viaduct worksite, ref.: WDV (see Plan 7 in Appendix A), where works activities included:
 - Formwork installation.
 - Soffit trial panel fixing and pouring.
 - Material deliveries.
- Leather Lane worksite, ref.: LL (see Plan 8 in Appendix A), where works activities included:
 - Sheet piling.
- South Heath worksite, ref.: SH (see Plan 8 in Appendix A), where works activities included:
 - Earthworks.
 - Utility works, including drainage.
 - General site activities.
 - Culvert works.
 - Overbridge construction.
 - Ground investigation works.
 - Site access and haul road construction and operation.
- North Portal worksite, ref.: NP (see Plan 8 in Appendix A), where works activities included:
 - Operation of site plant.
 - Platform construction.
 - Piling platform reinstatement.
 - Porous portal structure works.
 - Building construction.

- Batching plant operation and distribution of material.
- Tunnel walkway slip forming.
- Utilities works, including drainage.
- Chesham Road worksite, ref.: CHSM (see Plan 8 in Appendix A), where works activities included:
 - General site activities.
 - Internal and external building works, including cladding works.
 - Demobilisation.
 - Landscaping.
- Little Missenden Vent Shaft worksite ref.: LM (see Plan 9 in Appendix A), where works activities included:
 - General site activities including operation of plant.
 - Tunnel connection works.
 - Headhouse superstructure concrete works.
 - Building construction internal and external works.
- Amersham Vent Shaft worksite, ref.: AM (see Plan 10 in Appendix A), where works activities included:
 - General site activities including operation of plant.
 - External and internal building works.
 - Tunnel connection works.
 - Superstructure concrete works.
 - Pre-casting of boundary wall.
 - Steel and cladding works.
 - Mechanical plant works.
- Chalfont St Giles Vent Shaft worksite, ref.: CSG (see Plan 11 in Appendix A), where works activities included:
 - General site activities including operation of plant.
 - Road maintenance.
 - Internal and external building works.
 - Demobilisation.

- Chalfont St Peter Vent Shaft worksite, ref.: CSP (see Plan 12 in Appendix A), where works activities included:
 - Operation of plant.
 - Road maintenance.
 - Internal and external building works.
 - Demobilisation.
- Colne Valley Viaduct – Load Test Pile 1 worksite, which is partly located in the London Borough of Hillingdon (LBH), ref.: CVV (see Plan 13 in Appendix A), where works activities included:
 - Jetty and haul road operation and maintenance
 - Jetty removal, including excavation, backfill, landscaping, cutting piles and steel works.
 - Compound operations.
 - Ground investigation works.
 - Pumping water management.
 - Satellite compound welfare and generator farm operation.
 - Environmental maintenance.
 - Deck finishes including preparation and operation of storage yards, installation of below deck access provision, traffic management on deck surface, installation of parapets, installation of noise barriers, troughs, pipes, steel works and other minor materials to the storage yards and deck, installation of stairs, operation of support plant, construction of kerbs, construction of concrete stitch, filling of voids and top openings, waterproofing, diaphragm walls construction, abutment works, concrete works (within deck), drainage and steel works.
 - Landscaping works including removal of cofferdams, earthworks, profiling and cutting, manhole chamber construction, drainage, soil placement and vegetation clearance.

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

- Grovill Embankment (Westbury) where excavation and replace was underway.
- School End North where bulk excavation, vegetation clearance, stockpiling, drainage, pond maintenance and excavation, removal of badger fencing, fencing works and vehicle movements were underway.

- Godington where site access road construction, topsoil stripping and vegetation clearance were underway.
- Tuweston A422 Structure where permanent bridge construction and road diversion were underway.
- Charndon Lodge Pumping Station where excavation and utility works were underway.
- East West Rail Culvert where de-vegetation was underway.
- Infrastructure Maintenance Depot (IMD) where watercourse diversion, bulk earthworks and drainage installation were underway.
- Shepherds Furze Culvert where watercourse construction, bulk earthworks and temporary culvert installation were underway.
- MCJ where de-vegetation, drainage works, culver installation, earthworks, stabilisation works and dig and replace were underway.
- Bat Mitigation Structure where reinforced concrete works and technical backfill were underway.
- Sheephouse Wood North Culvert where backfilling was underway.
- SLC13 where reinforced concrete works and piling were underway.
- GUN28 overbridge where deck and diaphragm works were underway.
- QUA36 overbridge where pile cap backfilling was underway.
- Edgcott Road overbridge where backfilling, drainage and snagging were underway.
- Diddershall Culverts where culvert unit installation, reinforced concrete works, technical backfill, stabilisation and fencing works were underway.
- QUA28 Overbridge where reinforced concrete works, pile cap installation, waterproofing and backfilling were underway.
- Station Road overbridge where pile cap construction, excavation, pile cropping and wall construction were underway.
- Hills Farm where stockpiling was underway.
- Culvert No.12 where waterproofing and backfilling were underway.
- Fleet Marston where earthworks, culvert and overbridge works were underway.
- Along A41 where concrete batching plant operation, earthworks, vehicle restraint system installation, highway construction, kerbing, pavement construction, signage installation and drainage works were underway.

- Meadoway where utility installation and road resurfacing were underway.
- Bowood Lane where installation of parapets, reinforced bars and shutters, concreting and wingwall parapet stitching were underway.
- Nash Lee Road Diversion where earthworks 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-one (41) noise and eight (8) vibration monitoring installations were active in November in the BS area. Table 2 summarises the location of noise and vibration monitoring installations within the BS area in November 2024.

1.2.2 Noise monitor MW-NMP1, within the vicinity of Meadoway worksite, ref.: MW was relocated and renamed to GC-NMP1, within the vicinity of Golf Course worksite, ref.: GC on 19th November.

1.2.3 Vibration monitor A418-Vib1, within the vicinity of Meadoway worksite, ref.: MW was decommissioned on 13th November.

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
HC	HC-NMP1	Hermitage, Chetwode
TW	TW-NMP1	Twyford, Buckinghamshire
WSO	WSO-NMP1	West Street, Twyford
	PF-Vib1	Twyford, Buckinghamshire
CAL	SHC-NMP1	School Hill Compound, Calvert
	BRA-Vib1	13 Brackley Lane, Calvert Village

Worksite Reference	Measurement Reference	Address
	FCC-NMP1	Calvert South
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton
	WDL-Vib1	Station Road, Quainton
QAR	QAR-NMP2	Station Rd, Quainton
	LSF-NMP1	Upper South Farm
OC	MF-NMP1	Moat Farm, Marsh Lane
MW	MW-NMP1	Hartwell, Buckinghamshire
	A418-Vib1	Hartwell, Buckinghamshire
WAD	WAD-NMP2	Waddesdon, Buckinghamshire
TVV	TVV-NMP1	Aylesbury, Buckinghamshire
RR	RR-NMP1	Stoke Mandeville, Aylesbury
GC	GC-NMP1	Aylesbury, Buckinghamshire
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
	WGT-NMP1	Wendover, Aylesbury
GF	GF-NMP1	Grove Farm, Wendover
	GF-Vib1	Grove Farm, Wendover
SDVC	SDVC-NMP1	Rocky Lane, Wendover
RLE	NCAS6-NMP1	Chesham Lane, The Lee, Wendover
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover
WDV	WDV-NMP1	Upper Wendover Dean Farm, A413, Wendover
LL	GD-NMP1	Grimms Ditch, The Lee, South Heath
	GD-Vib1	Grimms Ditch, The Lee
SH	HGF-NMP1	Hunts Green Farm, Kings Lane, South Heath
	PKF-NMP1	Park Farm, South Heath
NP	BFH-NMP1	Bury Farm, Great Missenden
	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath
	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

Worksite Reference	Measurement Reference	Address
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
CSP	CFC-NMP1	Cricket Field Cottages, Chesham Lane, Chalfont St. Peter
	CSP-NMP2	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

* 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 LAeq Data over the Monitoring Period

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
A422 TN	TN-NMP1	Turweston, Brackley	Free-field	46.5 (56.1)	50.3 (52.6)	43.4 (48.6)	41.6 (53.1)	38.8 (50.2)	41.8 (46.1)	45.2 (48.2)	47.4 (49.3)	44.5 (54.3)	37.3 (42.3)	44.9 (51.2)	39.1 (47.8)
SE	SE-NMP1	School End, Chetwode	Free-field	51.7 (54.5)	56.8 (59.0)	41.3 (48.3)	39.2 (48.8)	37.2 (55.6)	47.5 (53.6)	50.6 (58.4)	52.1 (55.9)	50.7 (72.3)	38.7 (58.4)	45.5 (61.7)	36.8 (45.8)
HC	HC-NMP1	Hermitage, Chetwode	Free-field	53.7 (58.1)	58.2 (62.6)	43.9 (51.8)	42.8 (51.9)	41.5 (47.2)	49.7 (54.0)	51.9 (57.2)	51.8 (55.1)	47.4 (53.8)	42.5 (58.5)	46.8 (60.9)	39.1 (47.6)
TW	TW-NMP1	Twyford	Free-field	44.7 (51.3)	51.5 (59.2)	43.8 (50.8)	43.0 (51.0)	42.2 (52.7)	44.1 (47.7)	47.8 (54.2)	47.3 (51.9)	45.5 (50.1)	44.1 (54.1)	44.8 (56.9)	37.5 (43.6)
WSO	WSO-NMP1	West Street, Twyford	Free-field	48.0 (53.5)	49.2 (52.4)	45.7 (55.6)	42.6 (54.3)	38.6 (54.1)	44.1 (46.6)	46.6 (53.5)	46.2 (52.9)	44.6 (51.8)	39.3 (54.8)	46.0 (57.9)	41.4 (56.0)
CAL	SHC-NMP1	School Hill Compound, Calvert	Free-field	56.3 (60.1)	59.1 (62.9)	51.7 (54.3)	50.9 (53.6)	51.8 (65.6)	53.8 (60.7)	57.8 (71.3)	56.4 (71.5)	56.9 (70.3)	55.6 (73.3)	57.0 (74.3)	52.3 (58.1)
	FCC-NMP1	Calvert South	Free-field	48.6 (60.8)	52.0 (63.9)	41.2 (50.3)	39.5 (47.9)	39.6 (49.9)	42.5 (45.5)	46.1 (52.4)	45.7 (53.3)	44.7 (57.7)	39.9 (55.9)	45.8 (58.2)	39.5 (46.9)
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton	Free-field	63.3 (67.0)	69.8 (71.5)	43.6 (59.4)	41.3 (56.5)	43.7 (56.8)	51.9 (60.8)	63.9 (68.4)	62.1 (72.0)	57.4 (68.1)	41.7 (54.8)	56.5 (70.8)	43.5 (55.0)

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
QAR	QAR-NMP2	Station Rd, Quainton	Free-field	50.8 (65.4)	55.2 (61.1)	45.8 (49.3)	42.8 (45.4)	43.3 (65.7)	47.7 (48.1)	57.3 (61.5)	55.9 (59.8)	49.9 (53.7)	49.2 (59.2)	56.0 (60.7)	44.4 (47.7)
	LSF-NMP1	Upper South Farm	Free-field	53.8 (59.9)	59.6 (63.1)	39.2 (48.6)	37.8 (45.7)	37.8 (58.9)	46.0 (52.9)	56.2 (58.8)	57.0 (59.0)	51.1 (62.8)	38.3 (56.4)	51.2 (60.7)	38.8 (54.6)
OC	MF-NMP1	Moat Farm, Marsh Lane	Free-field	47.8 (57.9)	52.5 (60.8)	45.0 (52.1)	44.3 (52.1)	40.9 (54.0)	44.6 (54.3)	49.5 (60.3)	45.8 (61.5)	46.4 (59.6)	42.6 (64.1)	47.7 (64.3)	39.8 (50.8)
WAD	WAD-NMP2	Waddesdon, Buckinghamshire	Free-field	50.8 (55.4)	50.5 (54.9)	39.9 (44.2)	38.2 (43.1)	36.1 (48.9)	40.9 (43.8)	50.2 (55.6)	46.2 (48.7)	45.8 (52.4)	35.7 (41.5)	43.9 (54.0)	36.7 (41.9)
MW	MW-NMP1	Hartwell, Buckinghamshire	Free-field	55.7 (59.5)	56.4 (60.4)	53.6 (58.3)	52.5 (58.4)	52.0 (61.8)	54.8 (55.8)	55.6 (57.8)	55.1 (57.2)	54.2 (64.3)	53.8 (61.4)	55.1 (63.5)	50.8 (58.9)
TVV	TVV-NMP1	Aylesbury, Buckinghamshire	Free-field	47.4 (51.7)	51.5 (56.8)	45.3 (49.5)	43.5 (53.6)	40.5 (51.8)	45.1 (49.1)	49.4 (53.7)	50.2 (54.9)	49.4 (57.3)	41.8 (62.0)	47.0 (61.8)	41.2 (49.2)
RR	RR-NMP1	Stoke Mandeville, Aylesbury	Free-field	50.6 (54.7)	54.0 (57.9)	49.5 (53.2)	48.3 (58.9)	44.4 (55.1)	48.1 (51.3)	53.4 (56.7)	49.1 (56.3)	50.5 (59.0)	46.0 (59.7)	50.7 (59.8)	43.3 (50.9)
GC	GC-NMP1	Aylesbury, Buckinghamshire	Free-field	48.4 (51.0)	50.2 (54.1)	48.0 (50.2)	47.2 (50.0)	45.6 (52.6)	46.6 (46.7)	48.1 (49.9)	47.7 (49.7)	48.4 (57.1)	48.1 (56.6)	52.8 (56.3)	40.8 (45.6)
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee	Free-field	54.5 (58.3)	57.4 (61.0)	52.3 (56.2)	50.6 (54.4)	48.7 (55.9)	51.3 (54.9)	55.6 (59.4)	54.5 (60.2)	53.3 (61.6)	49.8 (60.1)	54.6 (61.5)	48.3 (54.0)

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
	NLL-NMP2	Nash Lee Lane, Nash Lee	Free-field	54.5 (57.4)	57.1 (62.8)	50.9 (55.2)	48.3 (53.4)	45.9 (56.4)	49.9 (53.2)	58.2 (62.4)	53.0 (60.8)	51.4 (60.5)	47.8 (62.7)	53.4 (62.6)	45.0 (52.0)
WGT	ER-NMP1	Ellesborough Rd, Wendover	Free-field	54.9 (58.9)	56.5 (59.5)	53.0 (62.8)	50.0 (59.9)	46.8 (58.0)	50.3 (52.9)	53.5 (55.1)	57.5 (78.1)	51.8 (59.5)	46.6 (57.5)	53.0 (59.9)	48.5 (56.8)
	BL-NMP1	Bacombe Lane, Wendover	Free-field	48.4 (51.4)	56.6 (63.1)	48.1 (60.3)	45.7 (57.8)	42.6 (50.4)	47.1 (47.6)	54.8 (60.8)	50.1 (51.6)	48.0 (55.7)	44.4 (52.6)	49.6 (55.5)	44.7 (49.1)
	WT-NMP1	A413, Wendover	Free-field	67.9 (68.8)	67.2 (68.2)	66.6 (68.6)	63.3 (68.7)	60.2 (69.6)	63.7 (65.4)	66.2 (67.9)	66.4 (68.5)	64.7 (68.1)	59.1 (63.1)	64.8 (67.1)	60.6 (67.7)
	WGT-NMP1	Wendover, Aylesbury	Free-field	52.9 (59.9)	52.7 (60.4)	52.3 (59.2)	50.7 (65.6)	46.2 (59.1)	50.6 (53.9)	53.2 (62.1)	54.1 (68.5)	53.5 (67.3)	45.6 (58.0)	52.7 (60.4)	47.2 (58.2)
GF	GF-NMP1	Grove Farm, Wendover	Free-field	52.6 (60.6)	56.5 (64.1)	50.0 (56.5)	46.5 (59.3)	44.1 (56.8)	49.4 (53.4)	52.3 (56.2)	51.3 (55.2)	51.2 (58.3)	45.6 (58.8)	52.9 (60.1)	43.9 (49.3)
SDVC	SDVC-NMP1	Rocky Lane, Wendover	Free-field	63.1 (65.0)	63.7 (66.9)	61.8 (64.0)	59.0 (62.2)	56.1 (65.0)	60.4 (61.1)	63.6 (64.6)	63.0 (65.1)	61.3 (64.3)	57.2 (64.7)	64.0 (81.8)	56.9 (63.9)
RLE	NCAS6-NMP1	Chesham Lane, The Lee, Wendover	Free-field	55.3 (61.0)	55.8 (63.2)	46.0 (50.8)	44.1 (56.4)	41.1 (51.2)	50.4 (55.7)	57.8 (60.5)	53.4 (55.6)	48.9 (55.7)	44.5 (63.5)	55.2 (69.1)	40.3 (48.2)
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	Free-field	56.7 (59.9)	56.7 (59.7)	54.9 (57.1)	52.2 (56.8)	48.7 (57.3)	53.6 (56.4)	57.4 (60.5)	57.7 (60.7)	56.1 (63.8)	50.3 (62.0)	58.7 (78.4)	48.6 (57.6)

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
WDV	WDV-NMP1	Upper Wendover Dean Farm, A413, Wendover	Free-field	54.7 (62.6)	57.4 (64.2)	49.3 (56.6)	46.5 (55.1)	46.3 (58.3)	49.9 (52.8)	54.4 (56.8)	53.9 (57.0)	52.1 (64.4)	46.4 (61.1)	54.5 (68.8)	47.2 (56.1)
LL	GD-NMP1	Grimms Ditch, The Lee, South Heath	Free-field	48.8 (57.0)	56.7 (73.1)	46.1 (57.3)	44.9 (57.0)	45.6 (60.0)	47.9 (55.1)	50.4 (60.1)	50.5 (60.0)	51.3 (62.9)	47.0 (65.3)	50.8 (64.1)	44.3 (58.0)
SH	HGF-NMP1	Hunts Green Farm, Kings Lane, South Heath	Free-field	45.2 (49.5)	48.3 (53.6)	41.4 (48.9)	39.0 (47.3)	38.7 (64.7)	41.9 (45.3)	47.9 (54.6)	46.0 (48.9)	47.0 (63.8)	39.1 (53.3)	47.7 (60.3)	37.1 (46.6)
	PKF-NMP1	Park Farm, South Heath	Free-field	53.1 (61.6)	55.5 (59.8)	43.5 (54.1)	42.1 (50.8)	41.3 (54.0)	44.0 (47.0)	49.1 (59.0)	48.5 (49.6)	48.1 (58.9)	38.3 (47.8)	49.5 (61.4)	40.3 (53.3)
NP	BFH-NMP1	Bury Farm, Great Missenden	Free-field	43.1 (53.4)	46.2 (51.8)	43.5 (59.9)	39.6 (49.9)	38.0 (52.2)	40.1 (42.6)	46.0 (53.8)	45.5 (47.5)	46.5 (55.3)	38.2 (51.2)	47.3 (60.0)	37.3 (50.9)
	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath	Free-field	50.1 (55.3)	50.1 (53.1)	46.7 (52.2)	44.3 (55.3)	42.8 (56.2)	49.6 (52.7)	50.2 (55.8)	47.7 (49.3)	49.1 (59.7)	42.4 (58.2)	50.0 (62.5)	42.9 (53.0)
	BLH-NMP1	Bayleys Hatch, South Heath, Great Missenden	Free-field	47.6 (55.5)	47.7 (51.1)	44.6 (60.3)	41.5 (51.6)	40.1 (54.7)	43.6 (47.9)	48.1 (52.6)	46.7 (48.3)	49.4 (61.6)	39.0 (51.8)	48.0 (56.4)	40.4 (48.5)
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath	Free-field	58.3 (61.2)	57.6 (60.2)	55.9 (57.9)	52.7 (57.1)	48.1 (57.8)	52.1 (52.5)	56.5 (59.5)	55.7 (56.0)	57.2 (76.2)	47.9 (54.1)	55.5 (61.3)	47.6 (54.3)
AM	AM-NMP1	Whielden Lane, Amersham	Free-field	61.9 (64.3)	64.1 (67.1)	59.9 (61.4)	57.9 (61.2)	54.0 (61.5)	57.9 (58.8)	62.2 (68.2)	60.0 (61.4)	59.0 (61.5)	52.9 (55.9)	58.8 (61.4)	53.4 (60.0)

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
LM	LM-NMP1	Little Missenden, A413, Amersham	Free-field	52.9 (58.4)	52.6 (57.1)	53.2 (58.2)	48.0 (53.8)	45.1 (56.5)	49.0 (54.2)	52.7 (58.4)	54.2 (59.5)	52.3 (57.3)	44.7 (51.3)	52.4 (57.8)	44.9 (53.9)
	PWC-NMP1	Patricia Holmes, LM Worksite, Amersham	Free-field	60.3 (62.4)	59.8 (61.7)	60.0 (62.3)	55.0 (59.6)	52.2 (60.6)	56.3 (58.6)	60.0 (62.6)	60.5 (63.4)	59.0 (62.4)	52.0 (56.9)	58.3 (61.9)	51.1 (59.8)
CSG	CSG-NMP1	CSG Worksite, Bottom House Farm Lane	Free-field	45.3 (54.5)	48.7 (53.5)	40.0 (43.5)	37.2 (45.4)	37.4 (51.3)	42.8 (46.5)	46.9 (48.4)	50.5 (54.2)	44.2 (50.4)	42.5 (53.8)	45.4 (50.5)	39.4 (49.8)
CSP	CFC-NMP1	Cricket Field Cottages, Chesham Lane, Chalfont St. Peter	Free-field	59.2 (64.0)	58.6 (62.5)	56.7 (61.5)	53.3 (66.6)	48.7 (57.1)	53.3 (53.9)	57.4 (60.9)	58.7 (65.6)	55.2 (64.9)	45.0 (48.1)	54.5 (58.4)	47.7 (54.8)
	CSP-NMP2	Chalfont St Peter Vent Shaft Worksite	Free-field	46.7 (50.7)	49.0 (54.0)	47.7 (57.8)	46.2 (71.0)	40.8 (52.8)	43.4 (44.8)	48.7 (51.8)	48.7 (50.9)	47.1 (53.4)	39.5 (43.5)	49.5 (55.5)	42.6 (56.1)
CVV	CVV-NMP1	Northern boundary, Load Test Pile 1 Worksite	Free-field	62.3 (64.9)	61.2 (62.9)	60.4 (62.6)	57.0 (60.5)	55.6 (64.0)	57.7 (58.8)	59.8 (60.5)	60.1 (61.1)	59.0 (66.9)	53.2 (56.8)	58.5 (61.8)	55.0 (62.1)

*Noise monitor TVV-NMP1 was installed on 30th November.

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	1.70 (X-axis)
WDL	WDL-Vib1	Station Road, Quainton	0.70 (Y-axis)
CAL	BRA-Vib1	13 Brackley Lane, Calvert Village	1.84 (Y-axis)
WSO	PF-Vib1	Twyford, Buckinghamshire	1.79 (Y-axis)
MW	A418-Vib1	Hartwell, Buckinghamshire	0.93 (Y-axis)
WGT	ER-Vib1	46, Ellesborough Rd, Wendover	0.43 (X-axis)
GF	GF-Vib1	Grove Farm, Wendover	1.80 (Z-axis)
RLE	GD-Vib1	Grimms Dtich	1.51 (Z-axis)

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

<https://data.gov.uk/dataset/24542ae7-dd44-444f-b259-871c4cc43b5e/environmental-monitoring-data>.

2.2 Exceedances of the LOAEL and SOAEL

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

2.2.2 The significant observed adverse effect level (SOAEL) is defined in the ‘Planning Practice Guidance – Noise’ as the level above which “noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of

intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.

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

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

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

Table 5: Summary of Exceedances of LOAEL and SOAEL

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
A422 TN	TN-NMP1	Turweston, Brackley	All days	All periods	No exceedance	No exceedance
SE	SE-NMP1	School End, Chetwode	All days	All periods	No exceedance	No exceedance
HC	HC-NMP1	Hermitage, Chetwode	Weekday	0800-1800	1	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
CAL	SHC-NMP1	School Hill Compound, Calvert	All days	All periods	Not Applicable*	Not Applicable*
	FCC-NMP1	Calvert South	Weekday	0700-0800	1	No exceedance
			Weekday	0800-1800	1	No exceedance
Saturday	1400-2200	1	No exceedance			
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton	Weekday	0700-0800	19	No exceedance
			Weekday	0800-1800	21	No exceedance
			Weekday	1800-1900	1	No exceedance
			Saturday	0700-0800	1	No exceedance
			Saturday	0800-1300	3	No exceedance
			Saturday	1300-1400	3	No exceedance
			Saturday	1400-2200	10	3

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
QAR	QAR-NMP2	Station Rd, Quainton	All days	All periods	No exceedance	No exceedance
	LSF-NMP1	Upper South Farm	Weekday	0800-1800	1	No exceedance
OC	MF-NMP1	Moat Farm, Marsh Lane	All days	All periods	No exceedance	No exceedance
WAD	WAD-NMP2	Waddesdon, Buckinghamshire	All days	All periods	No exceedance	No exceedance
MW	MW-NMP1	Hartwell, Buckinghamshire	Saturday	1400-2200	2	No exceedance
			Sunday	0700-2200	5	No exceedance
TVV	TVV-NMP1	Aylesbury, Buckinghamshire	All days	All periods	No exceedance	No exceedance
RR	RR-NMP1	Stoke Mandeville, Aylesbury	All days	All periods	No exceedance	No exceedance
GC	GC-NMP1	Aylesbury, Buckinghamshire	All days	All periods	No exceedance	No exceedance
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee	Saturday	1300-1400 1400-2200	1 4	No exceedance No exceedance
	NLL-NMP2	Nash Lee Lane, Nash Lee	Weekday Saturday	0800-1800 1300-1400 1400-2200	1 1 4	No exceedance No exceedance No exceedance
WGT	ER-NMP1	Ellesborough Rd, Wendover	All days	All periods	No exceedance	No exceedance
	BL-NMP1	Bacombe Lane, Wendover	Weekday	0800-1800	1	No exceedance
	WT-NMP1	A413, Wendover	Weekday	0800-1800	21	No exceedance
			Saturday	0800-1300	5	No exceedance
WGT-NMP1	Wendove, Aylesbury	Weekday	0700-0800	2	No exceedance	
GF	GF-NMP1	Grove Farm, Wendover	Weekday	0800-1800	1	No exceedance
SDVC	SDVC-NMP1	Rocky Lane, Wendover	All days	All periods	No exceedance	No exceedance

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
RLE	NCAS6-NMP1	Chesham Lane, The Lee, Wendover	Weekday	0800-1800	1	No exceedance
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	All days	All periods	No exceedance	No exceedance
WDV	WDV-NMP1	A413, Wendover	Weekday	0800-1800	2	No exceedance
LL	GD-NMP1	Grimms Ditch, The Lee, South Heath	Weekday	0800-1800	5	1
SH	HGF-NMP1	Hunts Green Farm, Kings Lane, South Heath	All days	All periods	No exceedance	No exceedance
	PKF-NMP1	Park Farm, South Heath	Weekday	0700-0800	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 Heath, Great Missenden	All days	All periods	No exceedance	No exceedance
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath	All days	All periods	No exceedance	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	All days	All periods	Not applicable***	Not applicable***

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
CSG	CSG-NMP1**	Chalfont St Giles Vent Shaft	All days	All periods	No exceedance	No exceedance
CSP	CFC-NMP1	Cricket Field Cottages, Chesham Lane	All days	All periods	No exceedance	No exceedance
	CSP-NMP2**	Chalfont St Peter Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
CVV	CVV-NMP1**	Denham Water Ski Club, North Orbital Road	All days	All periods	Not applicable*	No exceedance

* The LOAEL or SOAEL has not been assessed due to high baseline levels.

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

*** The LOAEL and SOAEL have not been assessed due to distance between monitoring station and nearest receptor.

2.2.6 Exceedances of the LOAEL were recorded at fifteen (15) monitoring locations during the month of November 2024. LOAEL exceedances were recorded during weekday, Saturday and Sunday daytime and evening working periods.

2.2.7 For the purpose of reporting the number of days where the SOAEL is exceeded, multiple exceedances of the SOAEL in a 24-hour period would be counted as a single exceedance during that day. Over the reporting period, the overall number of SOAEL exceedances at each measurement location is shown in Table 6 and may be lower than the total sum of individual exceedances reported in Table 5 for each location.

Table 6: Summary of Total Exceedances of SOAEL

Worksite Reference	Measurement Reference	Monitor Address	Total of SOAEL exceedances in the month
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton	2
LL	GD-NMP1	Grimms Ditch, The Lee, South Heath	1

2.2.8 Three (3) SOAEL exceedances were recorded due to HS2 construction works during November 2024. The exceedances occurred at GD-NMP1 and WDV_NMP1 during weekday daytime and Saturday evening periods.

2.3 Exceedances of Trigger Level

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

Table 7: Summary of Exceedances of Trigger Levels

Complaint Reference Number (if applicable)	Worksite Reference	Date and Time Period	Identified Source	Results of Investigation (including noise monitoring results)	Actions Taken
-	GD	14/11/2024 13:00	Scheduled de-vegetation works.		Site team were briefed to work quickly/intermittently around the receptor. No further exceedances occurred after.

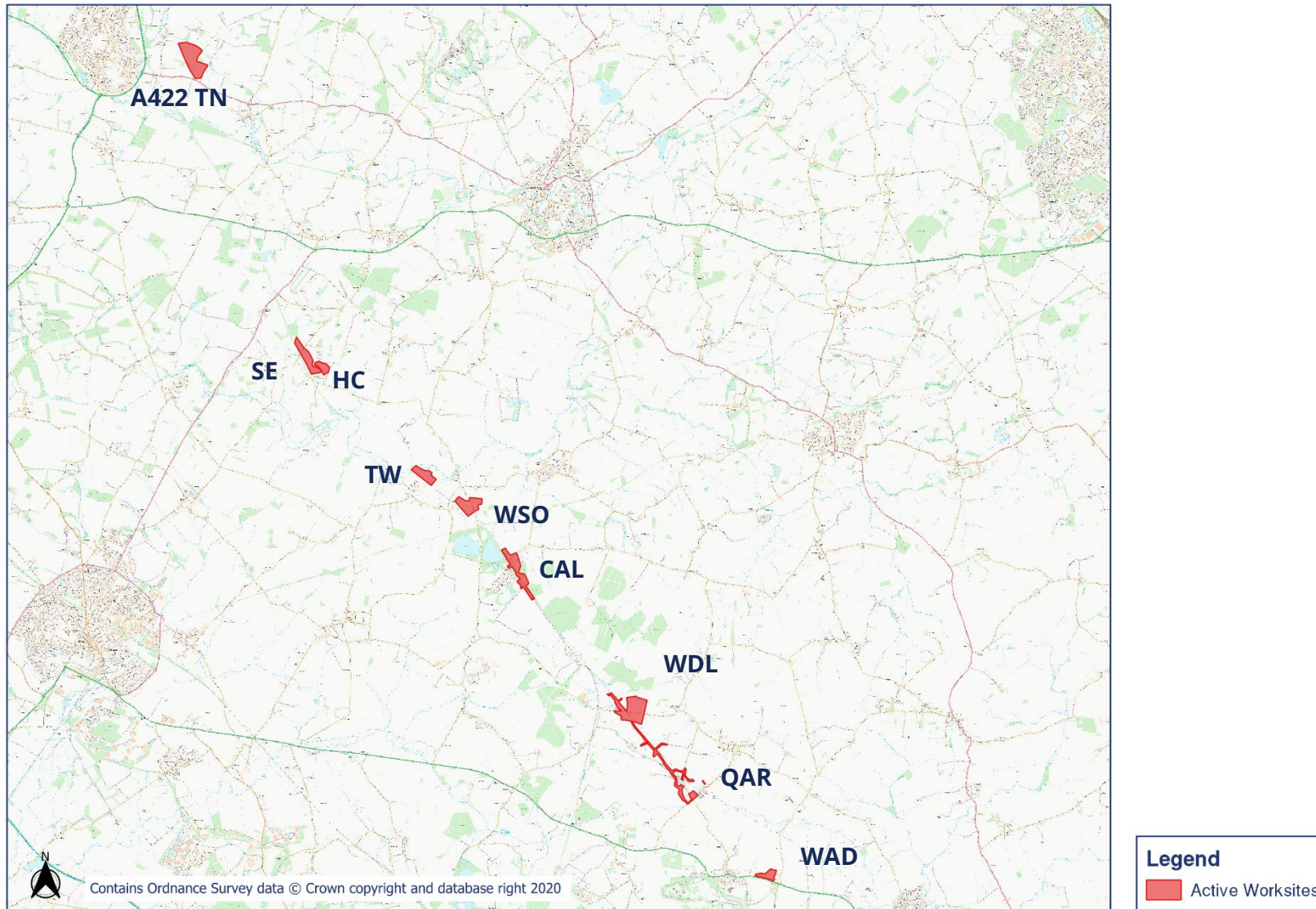
2.4 Complaints

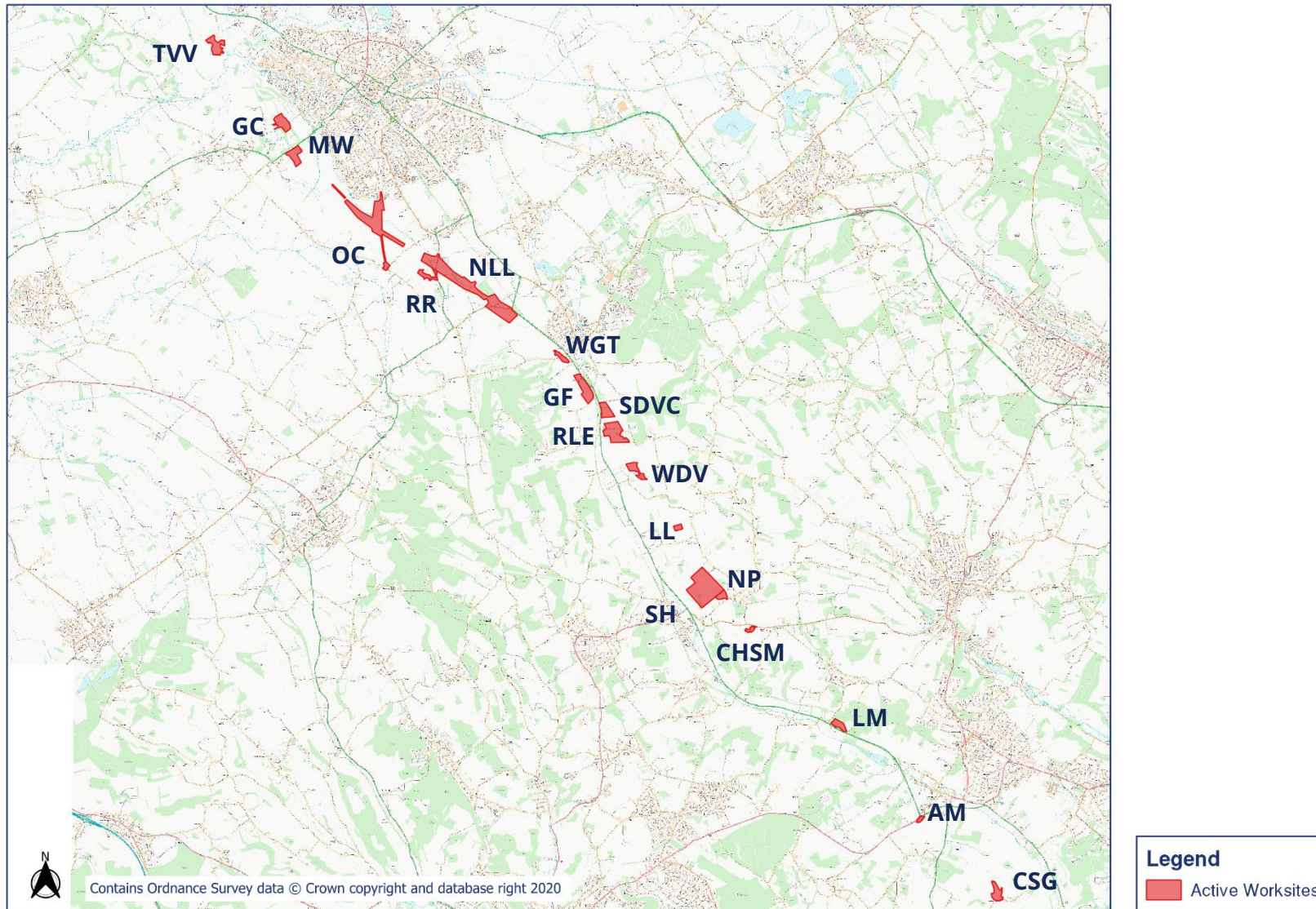
2.4.1 Table 8 provides a summary of complaint information related to noise and vibration received during the reporting period, along with the findings of any investigation.

Table 8: Summary of Complaints

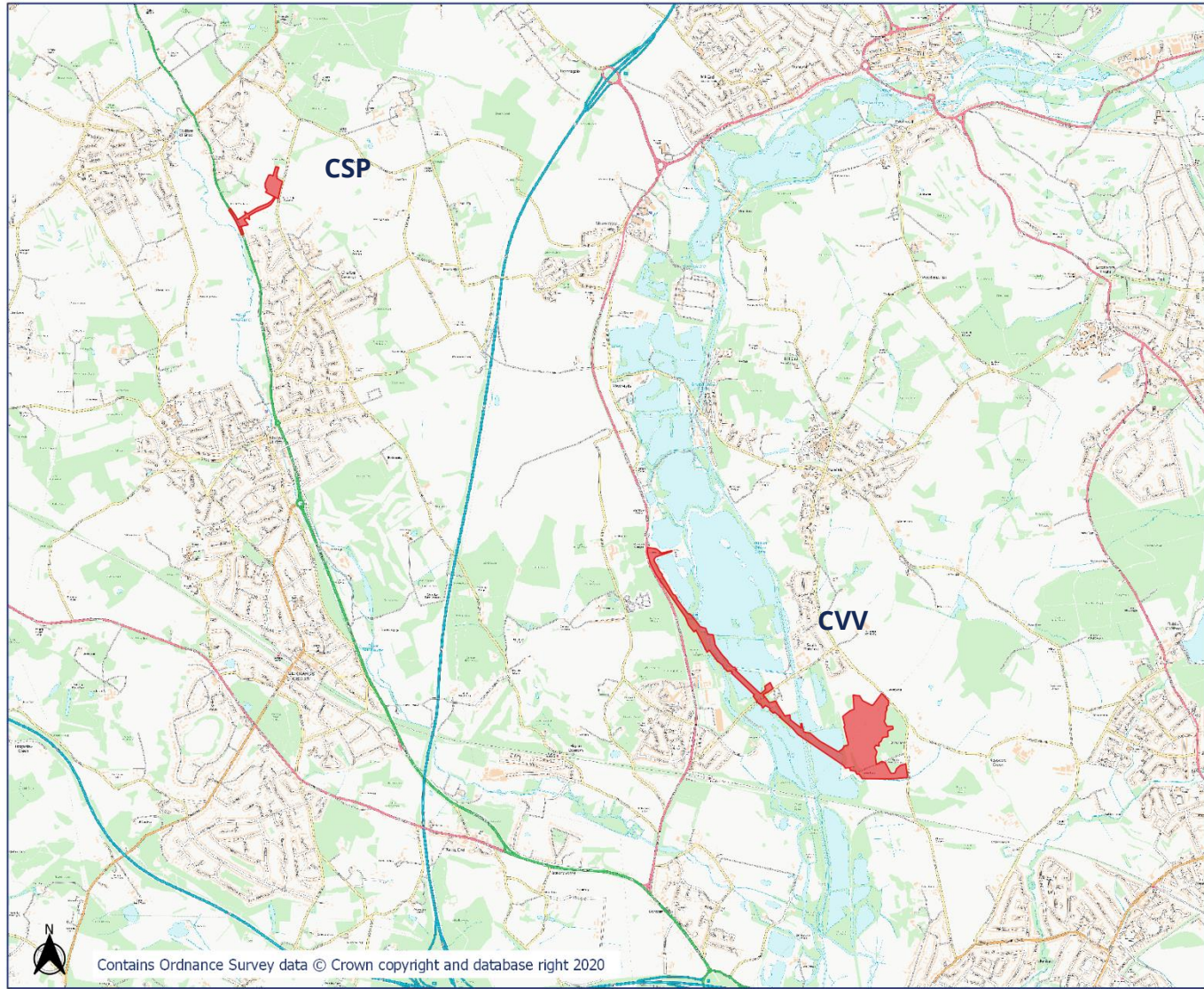
Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
-	-	-	-	-

Appendix A Site Locations

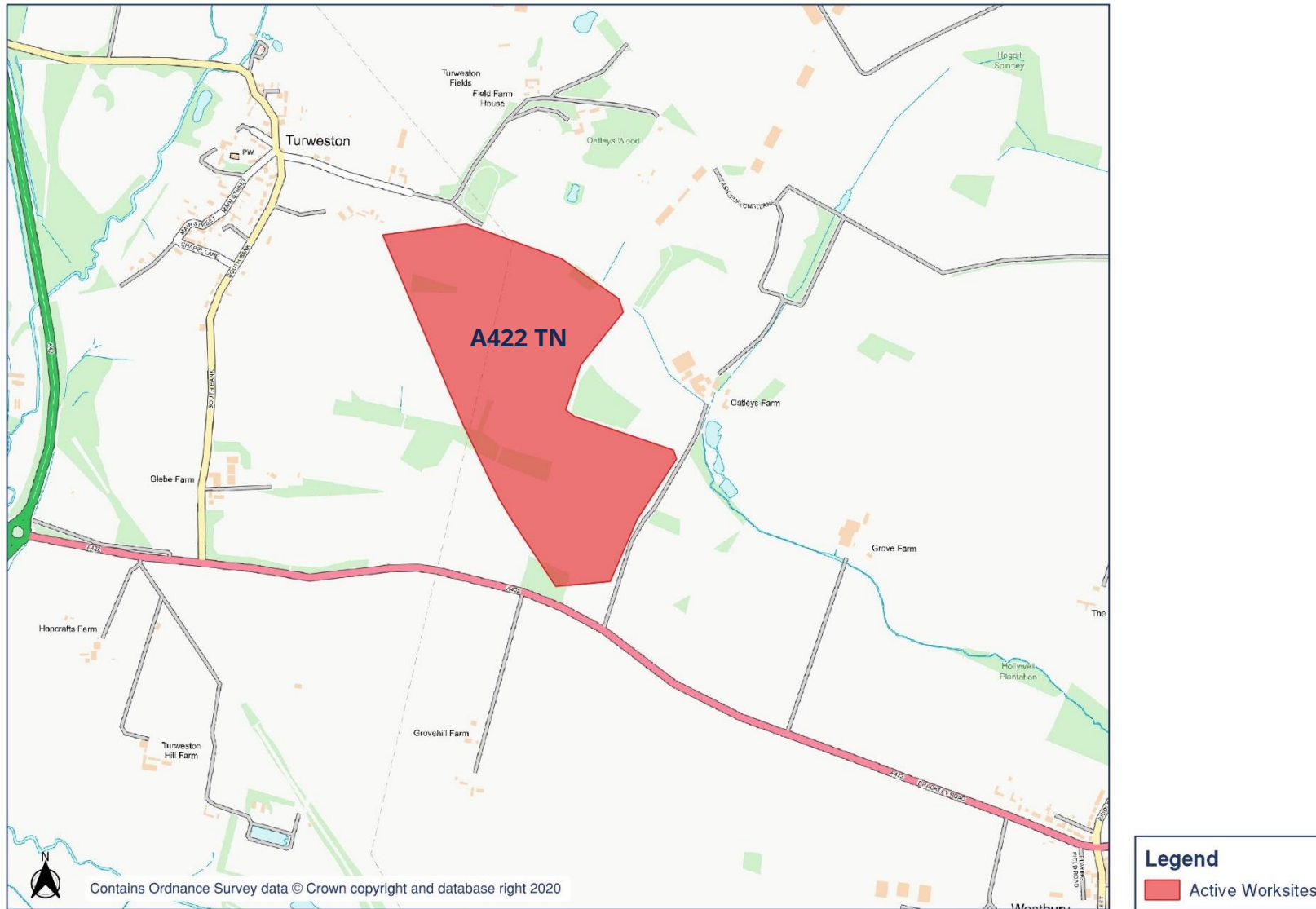


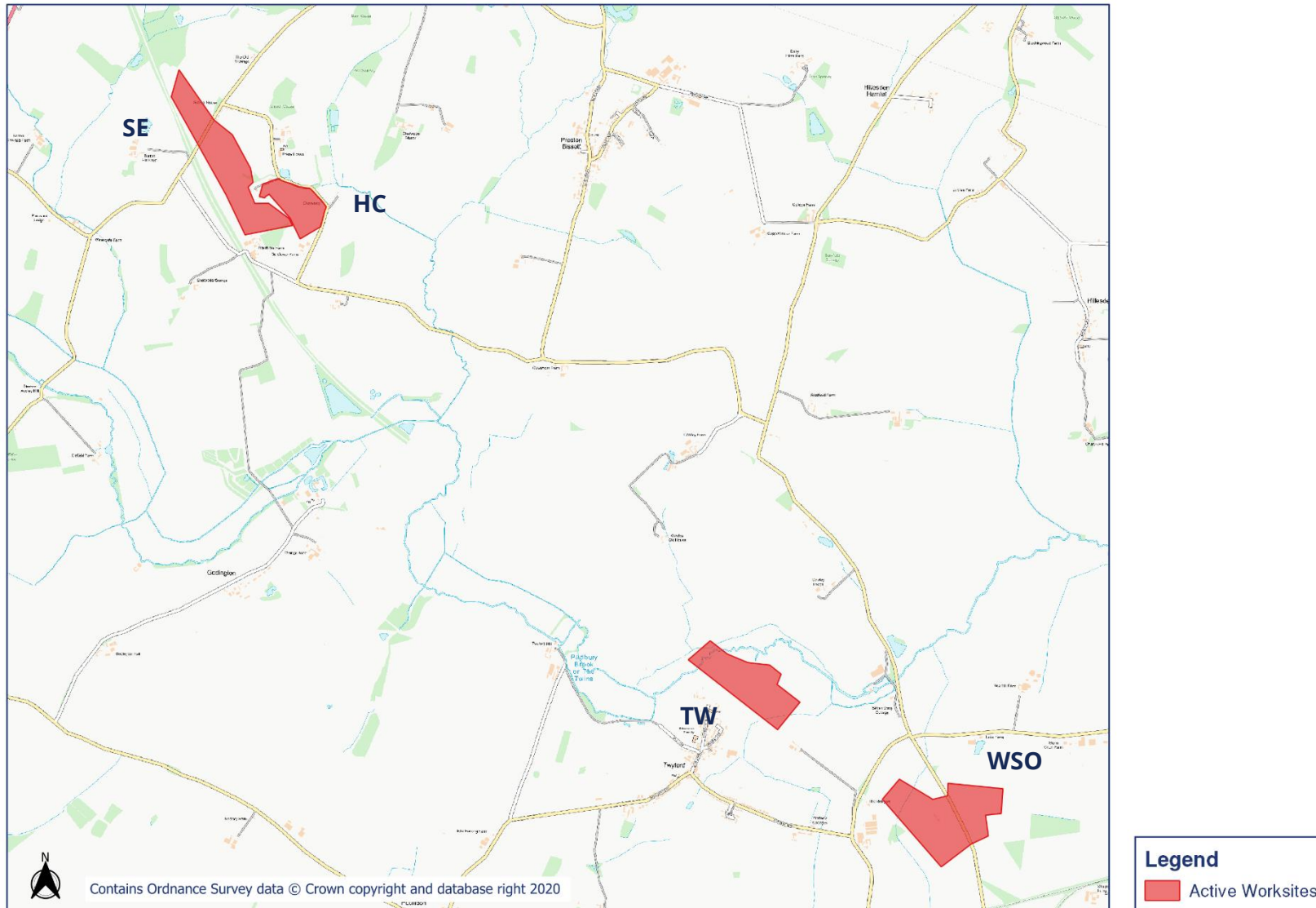


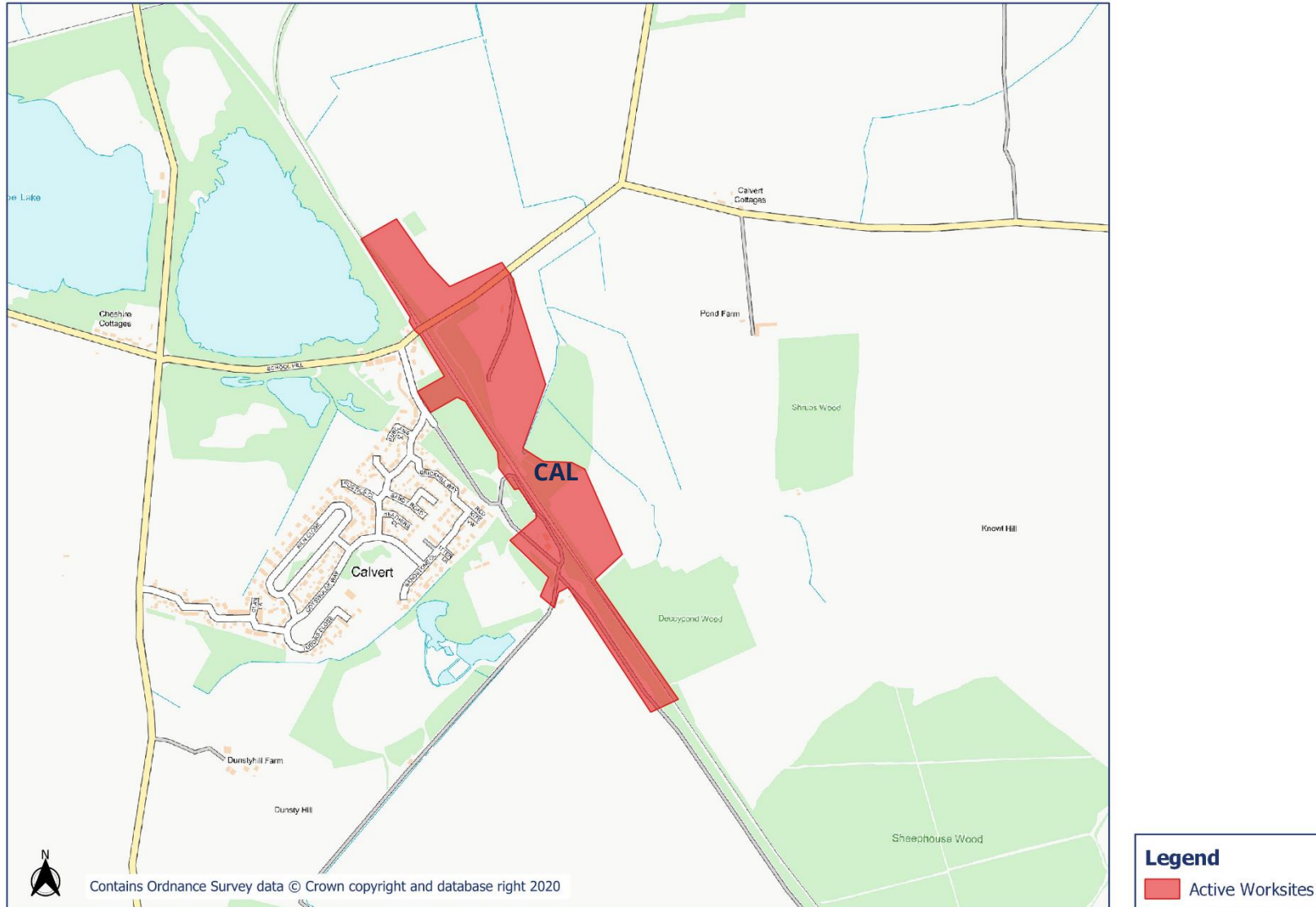
HS2 Worksite Identification Plan - Overview 3

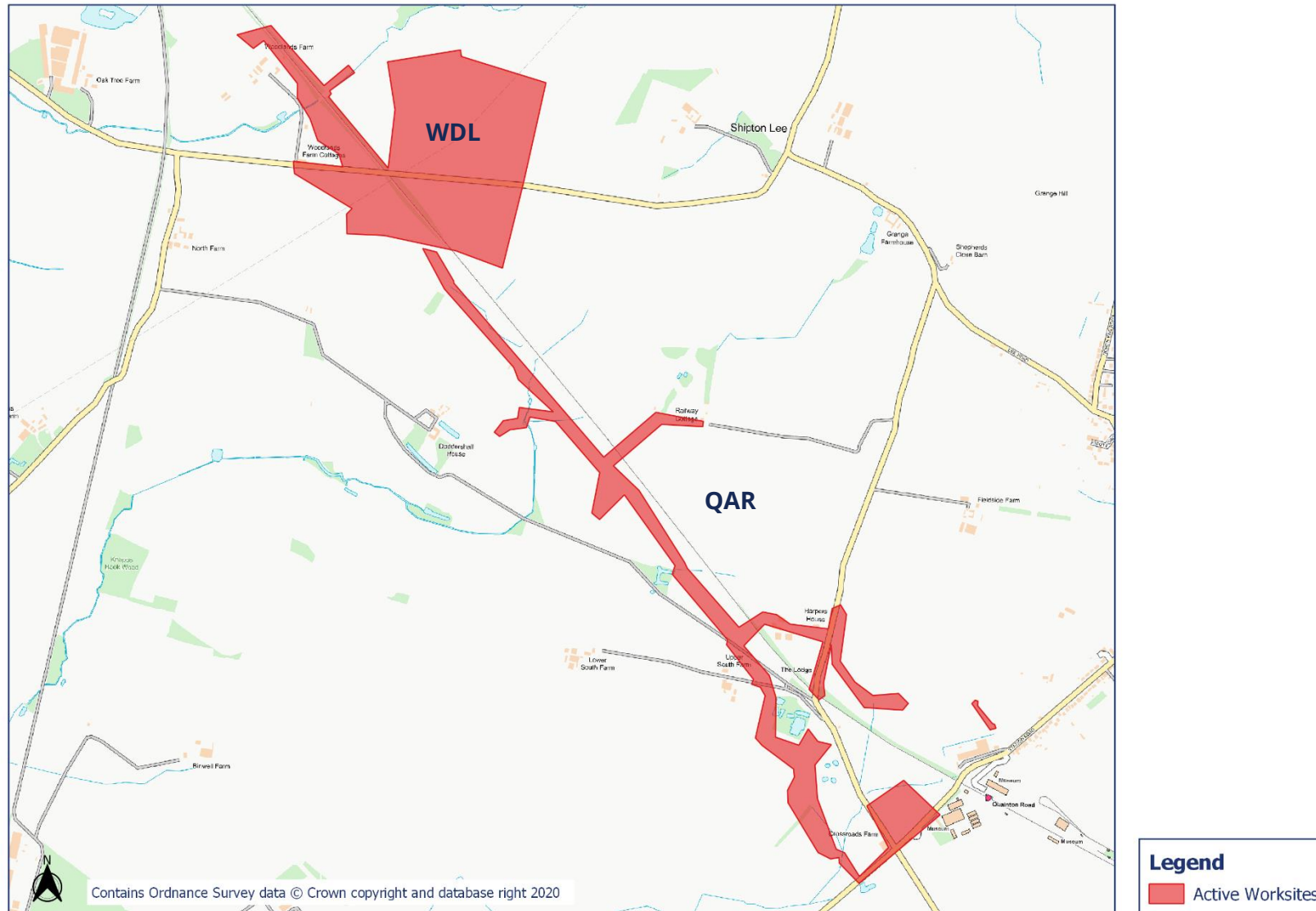


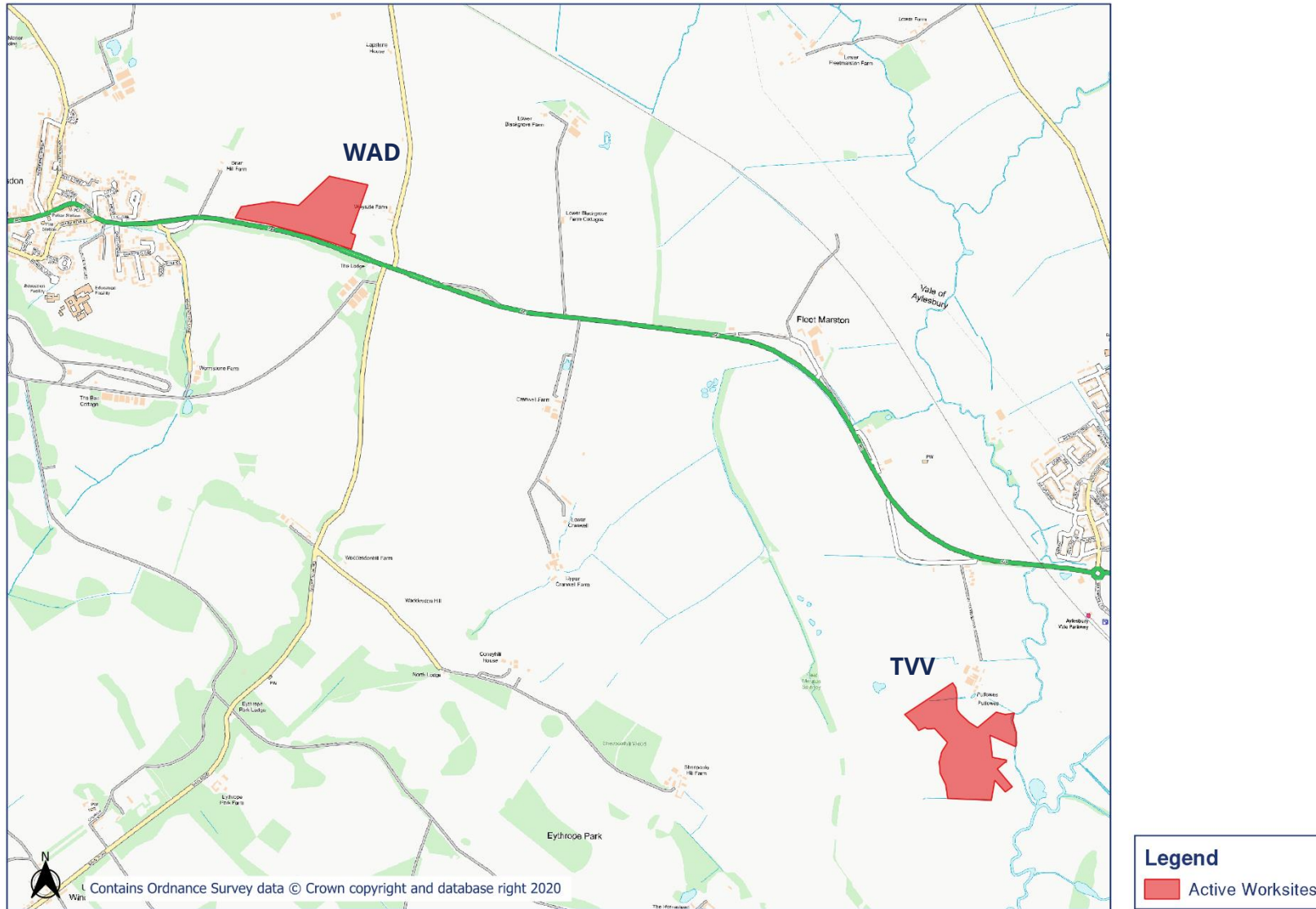
OFFICIAL

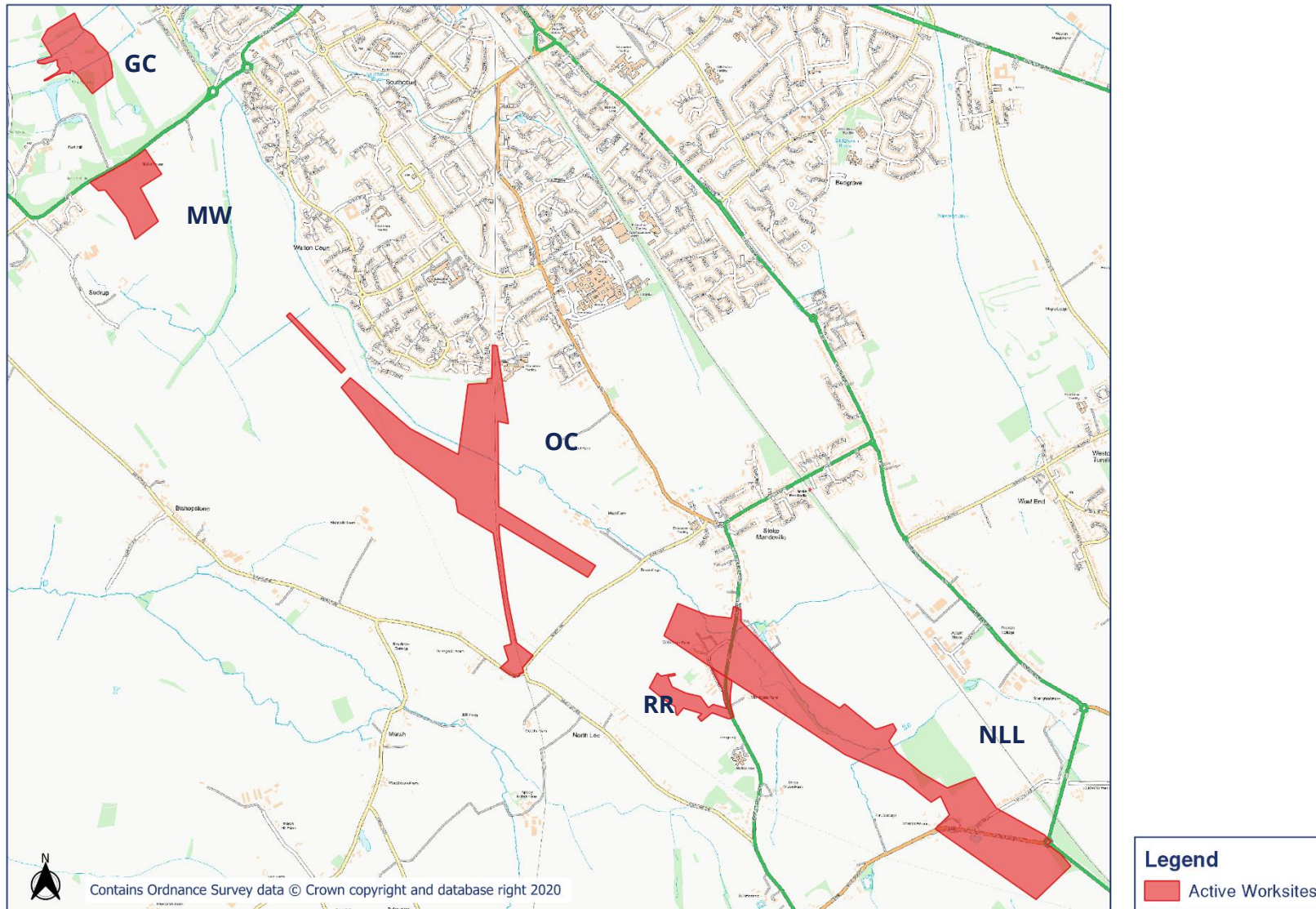


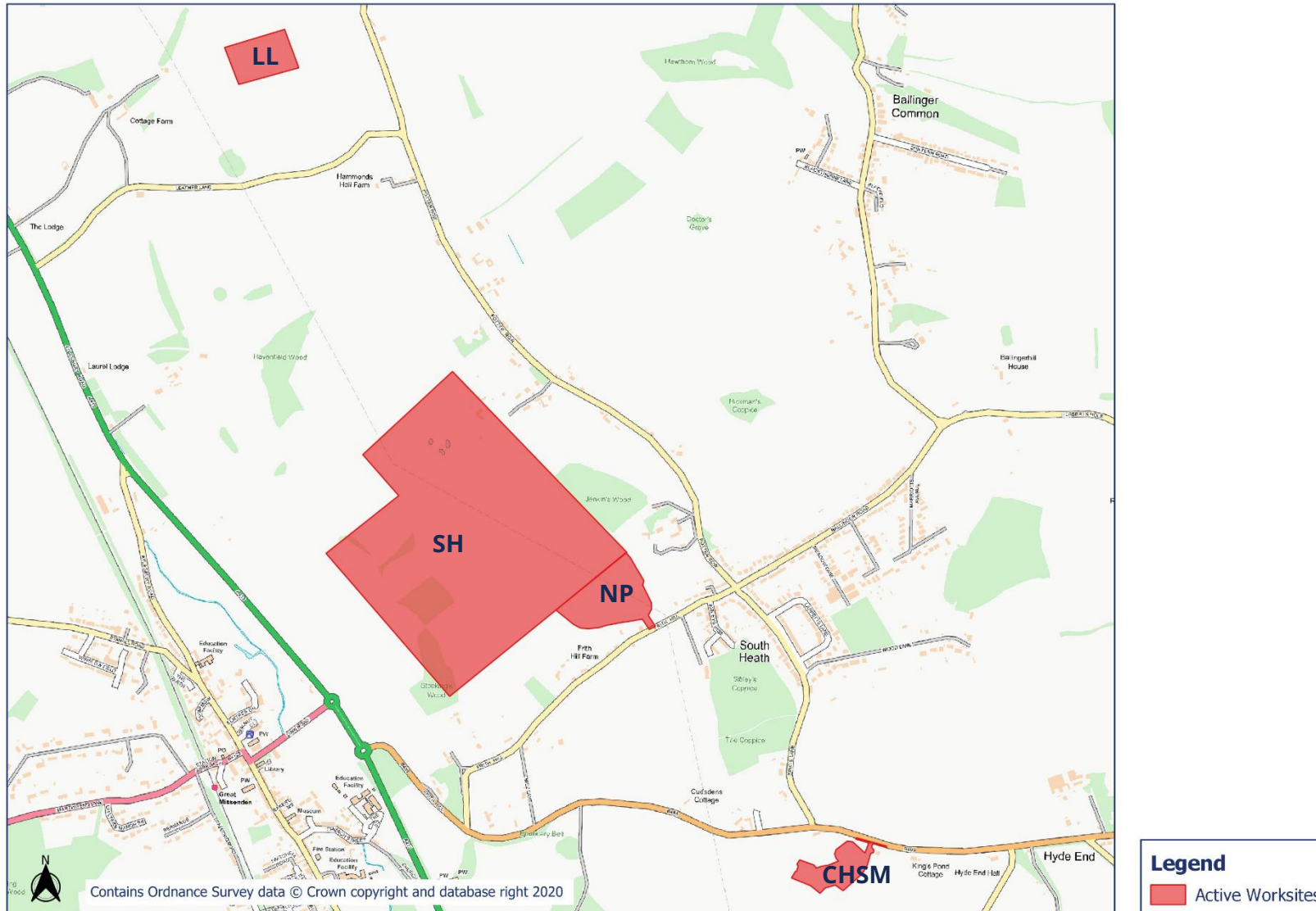






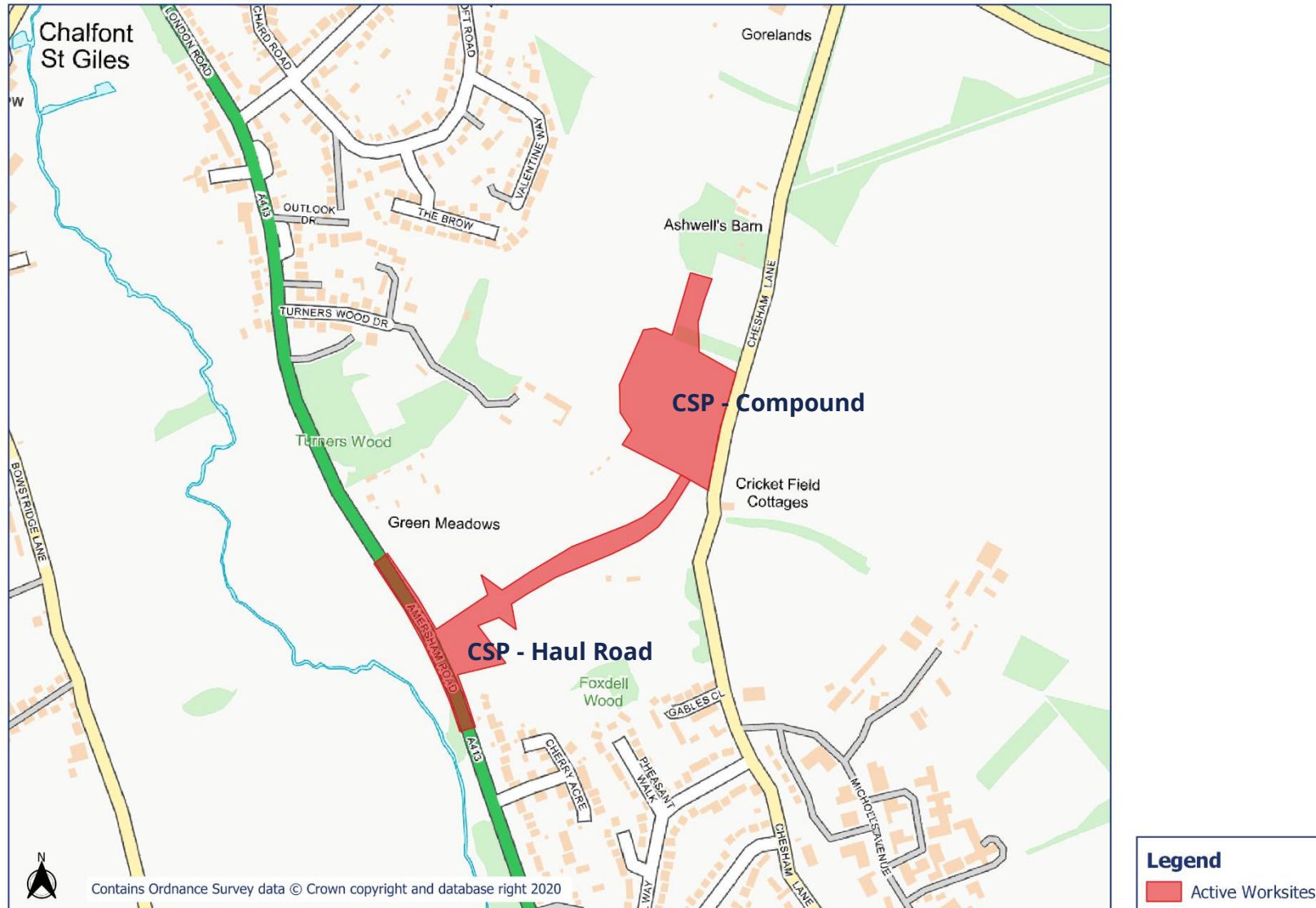


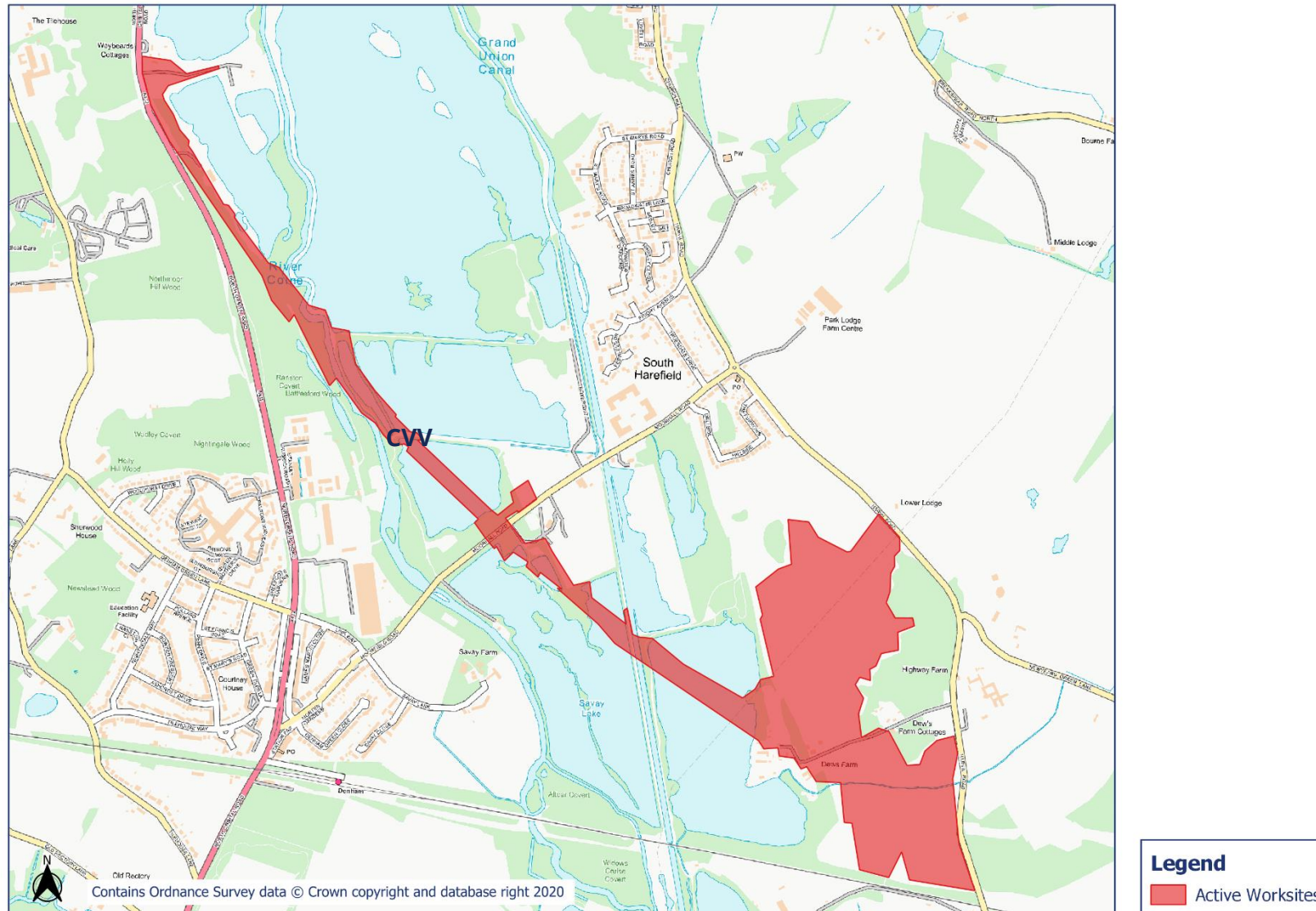




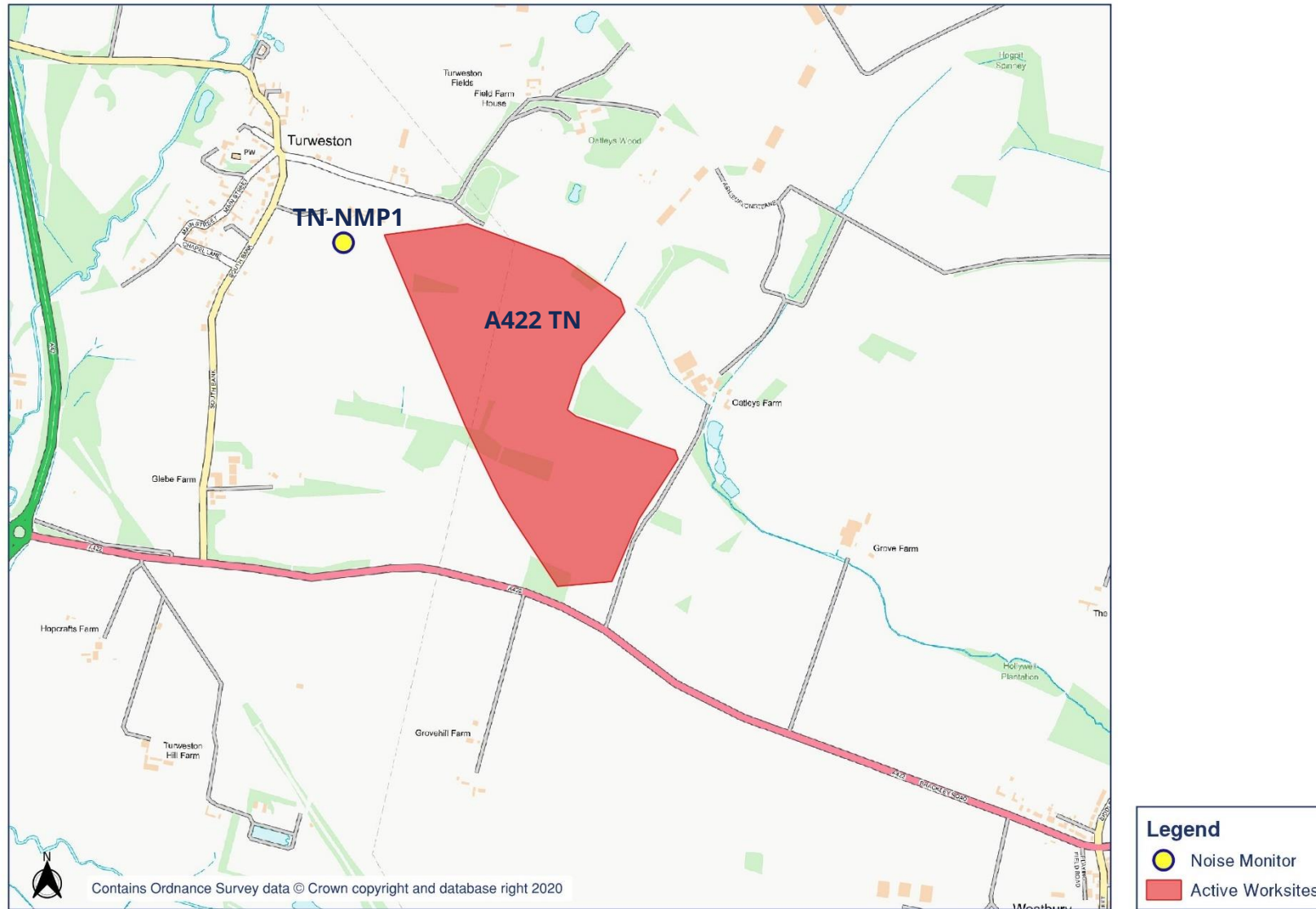


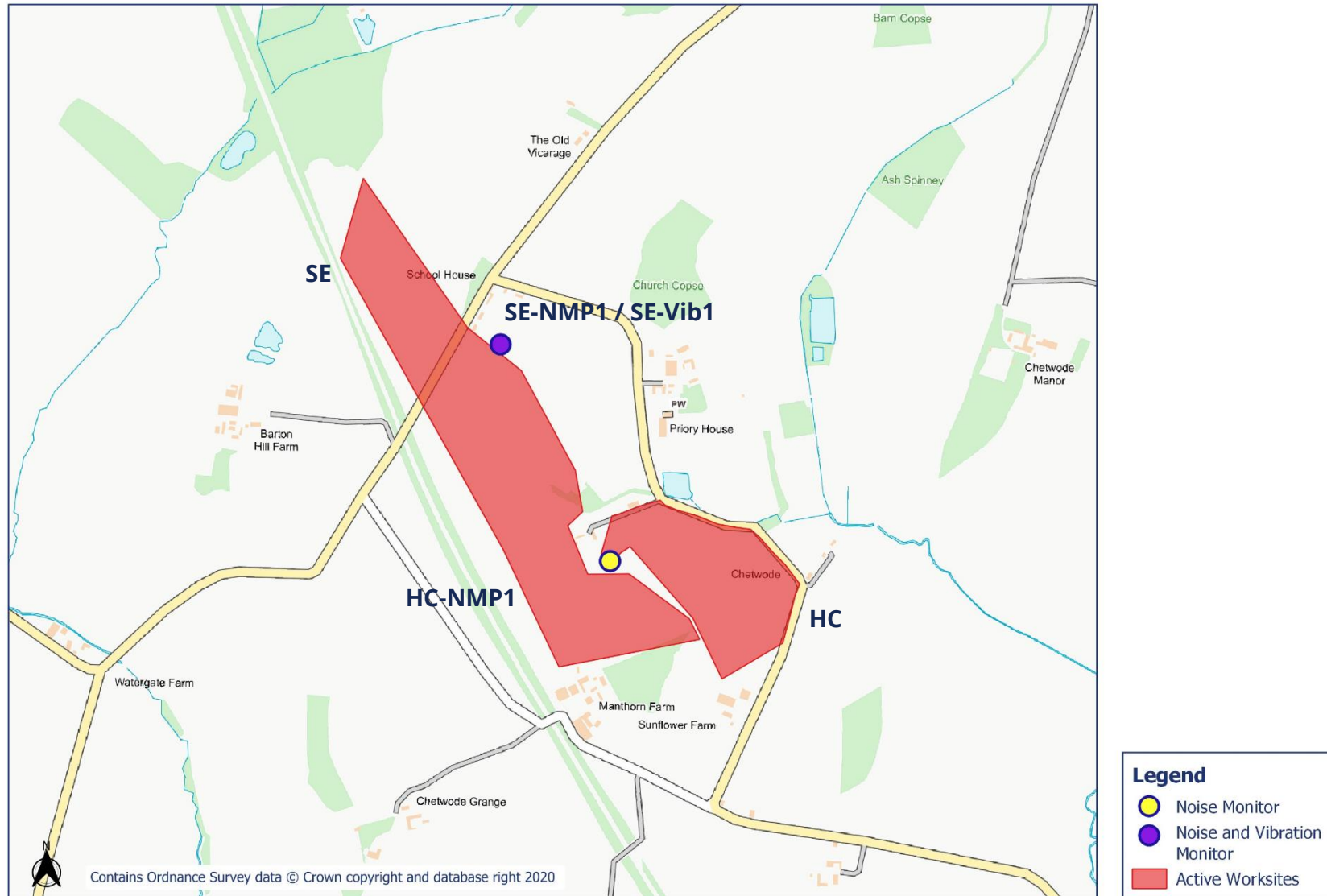


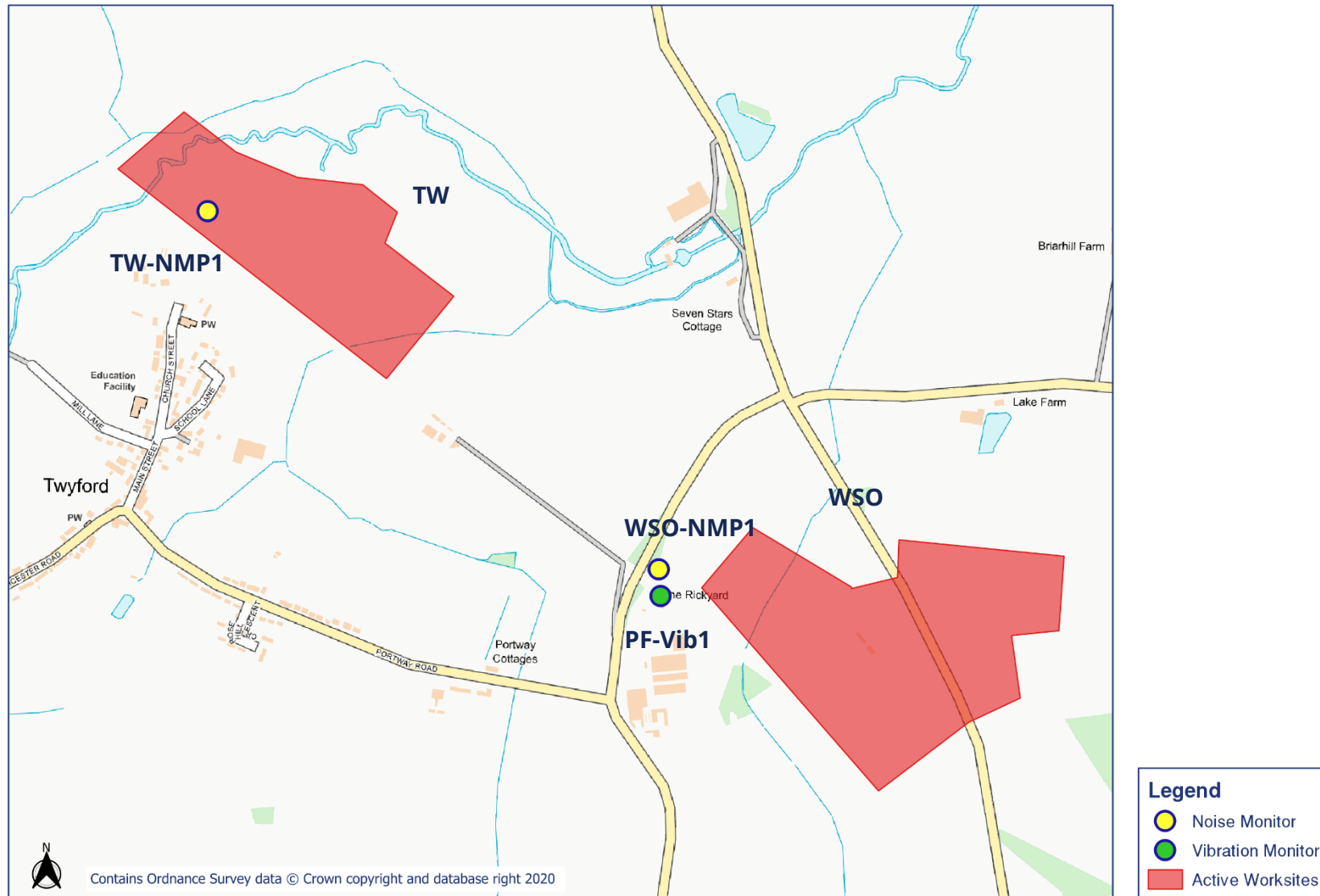


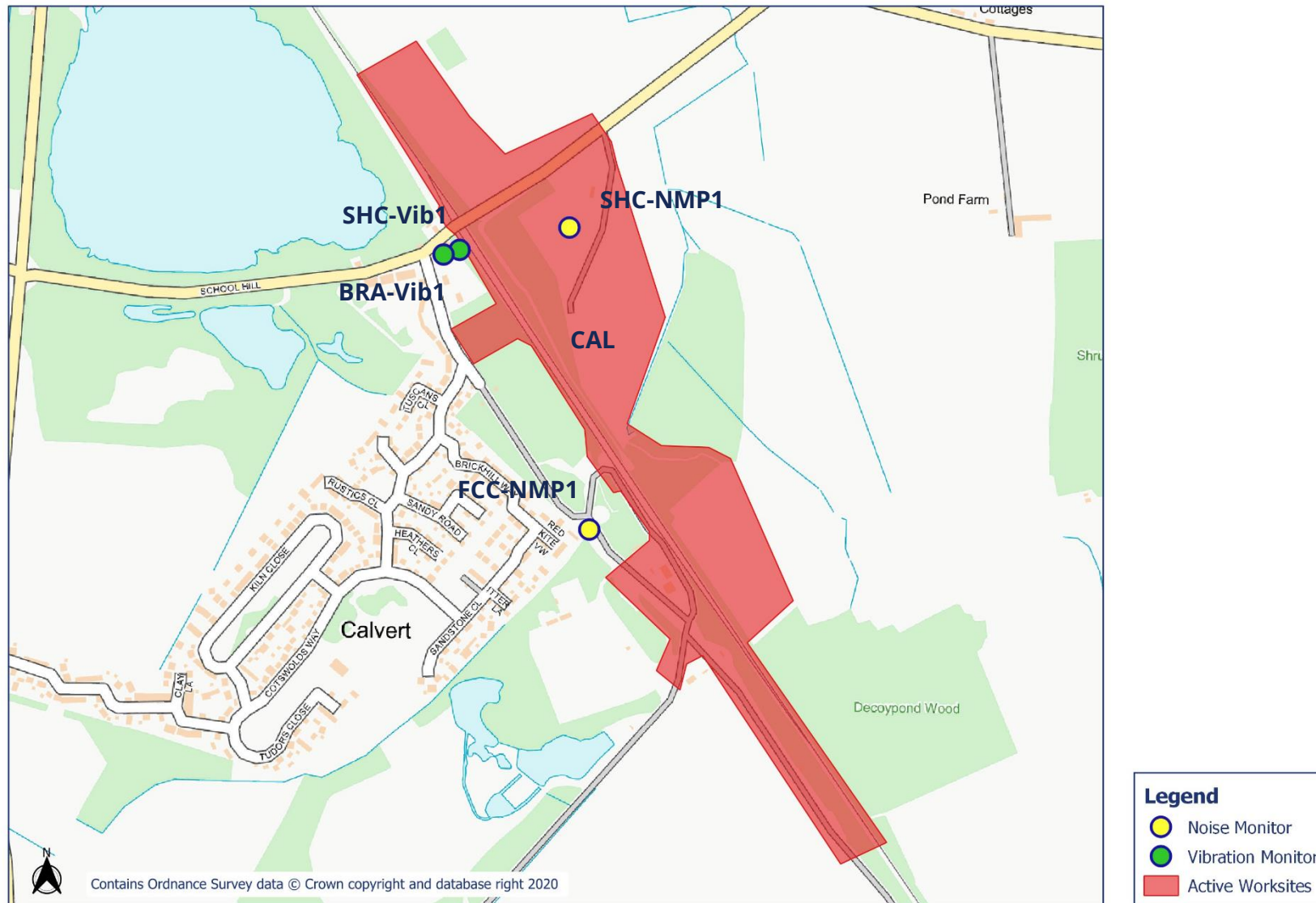


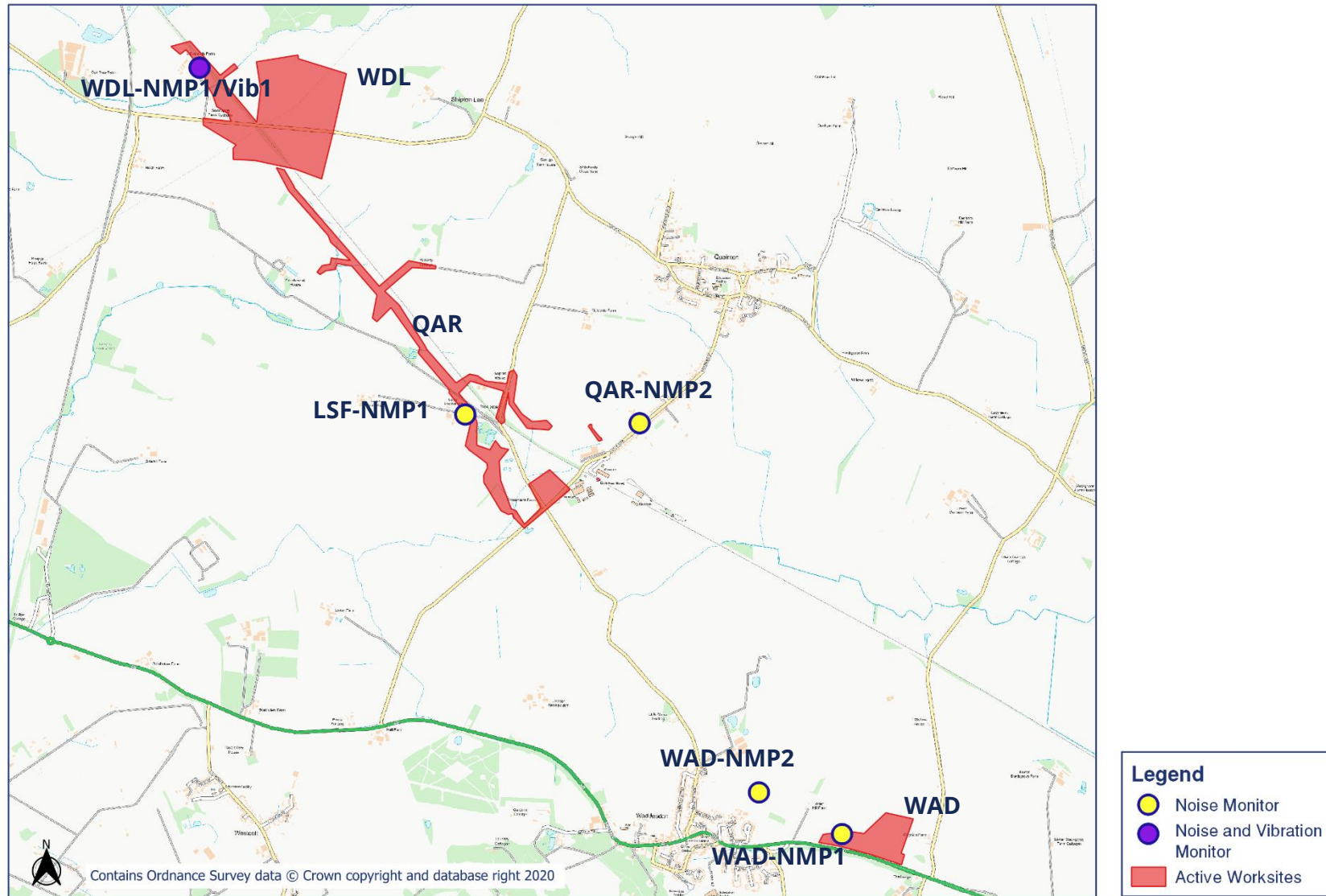
Appendix B Monitoring Locations

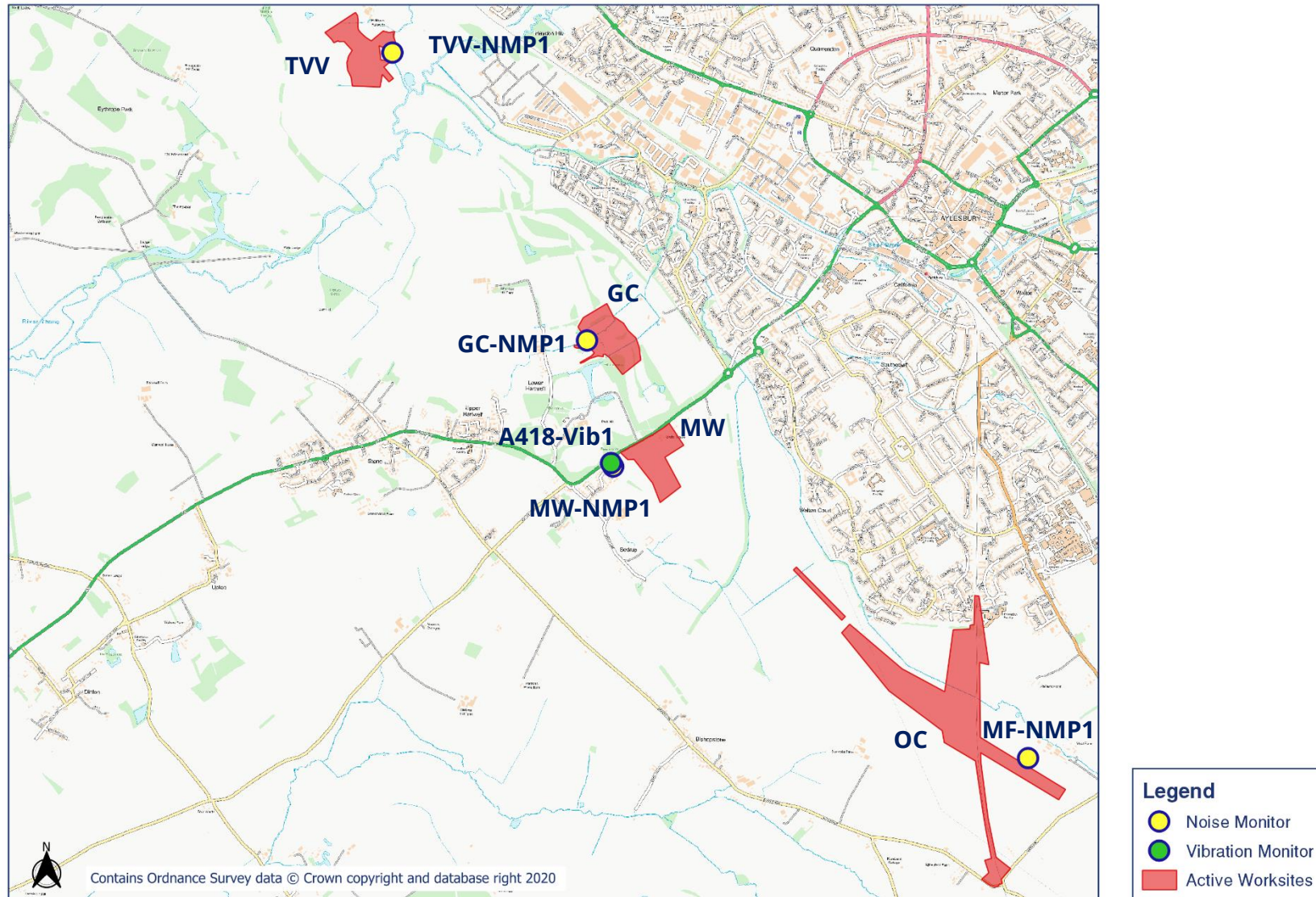


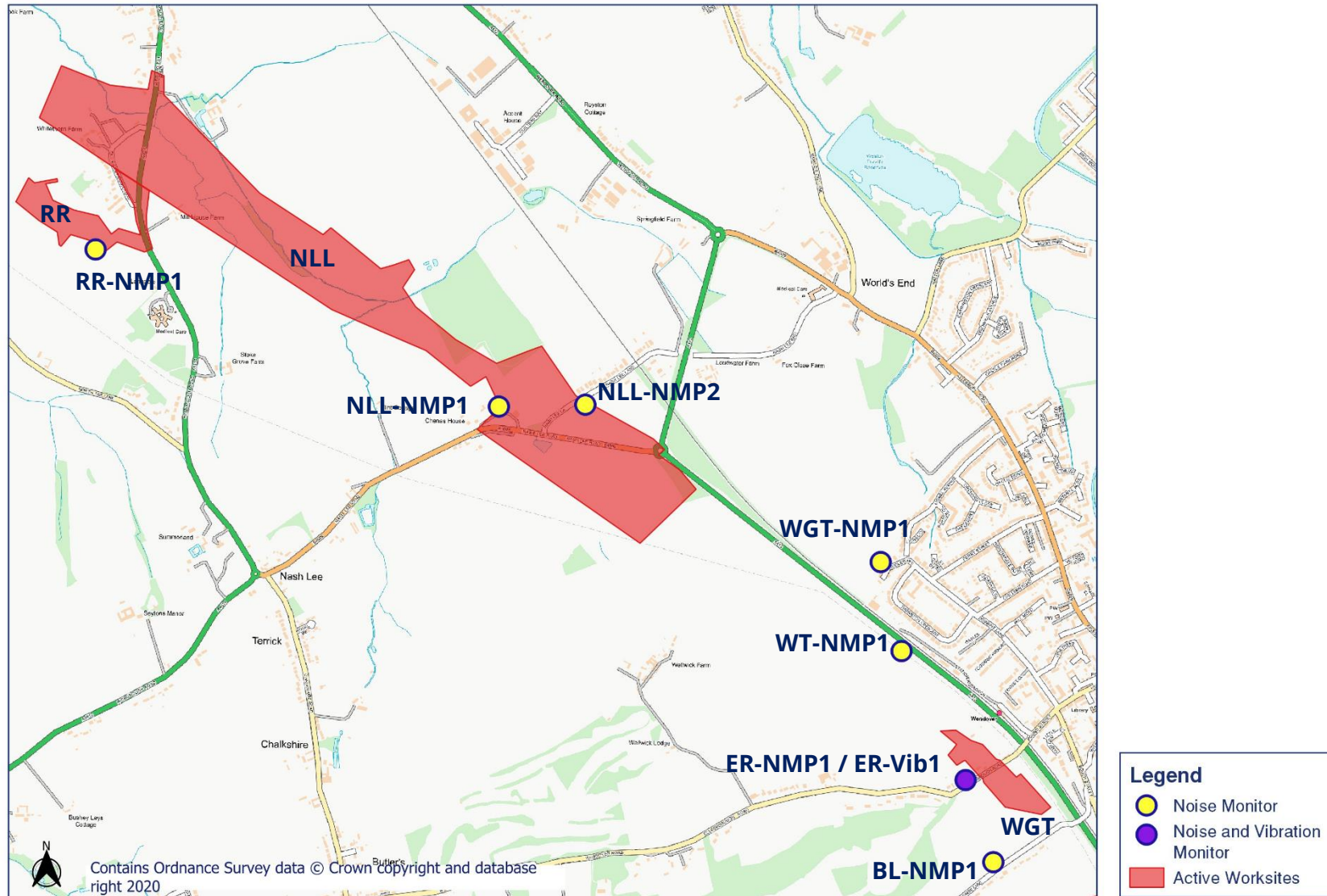


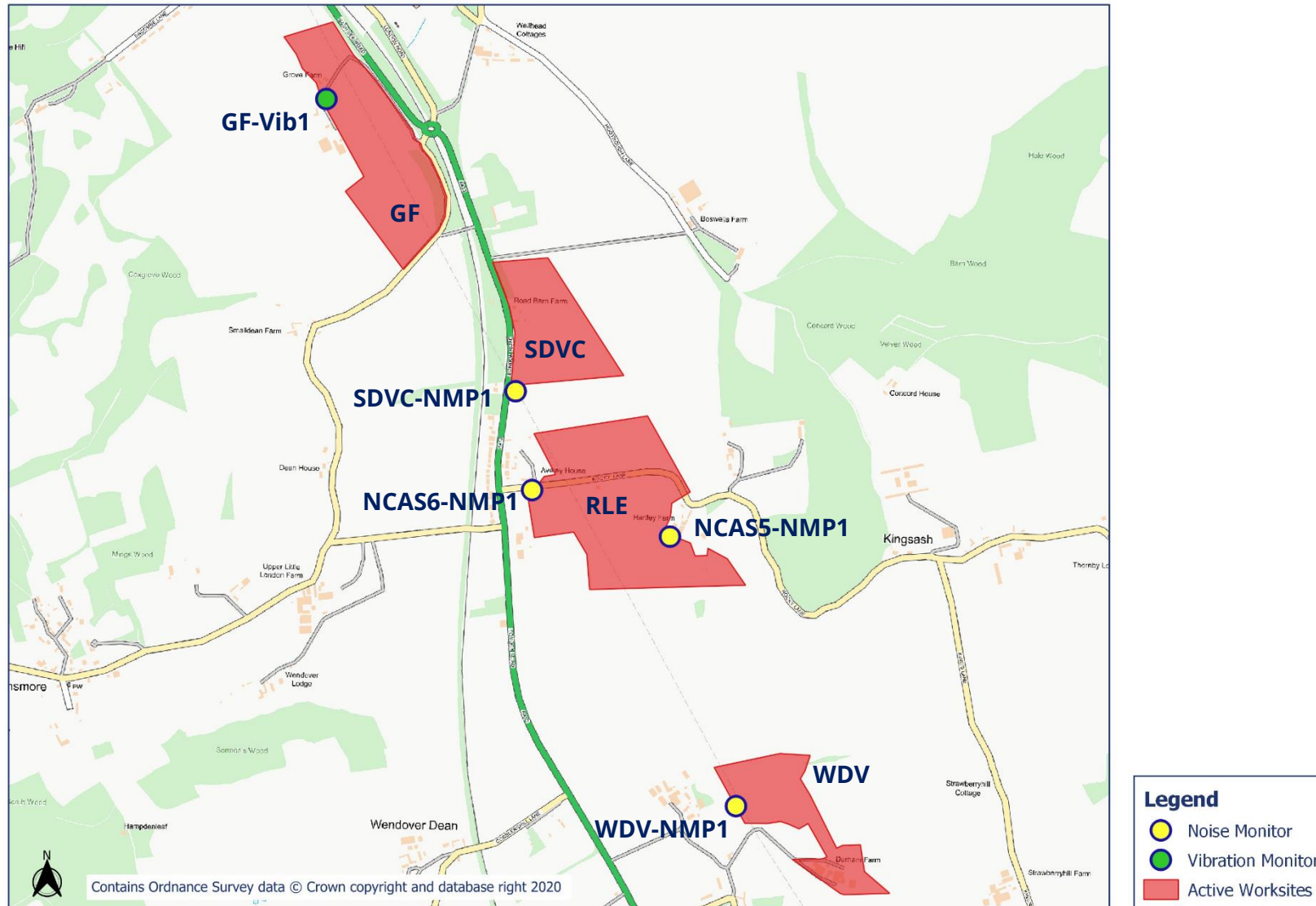


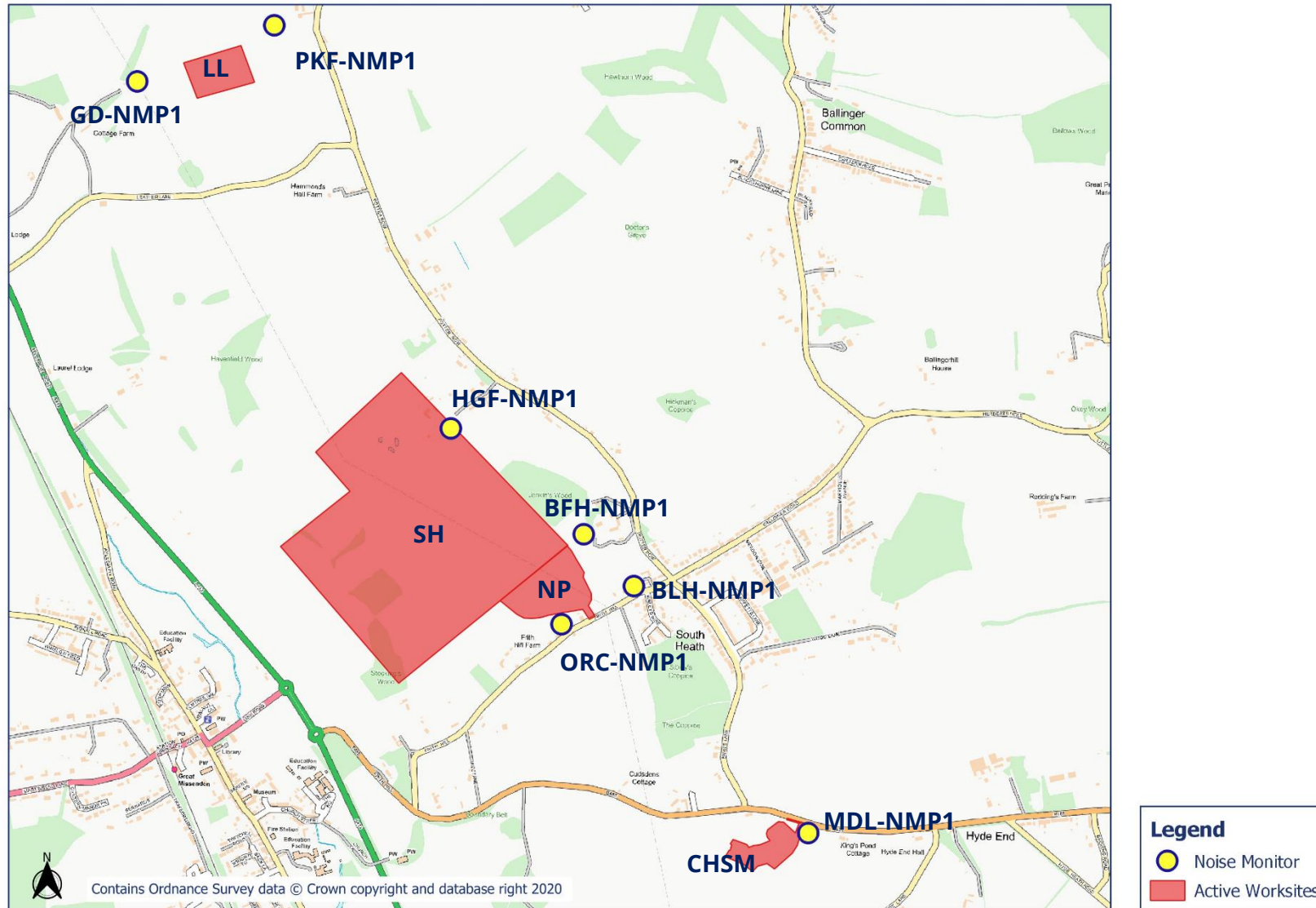




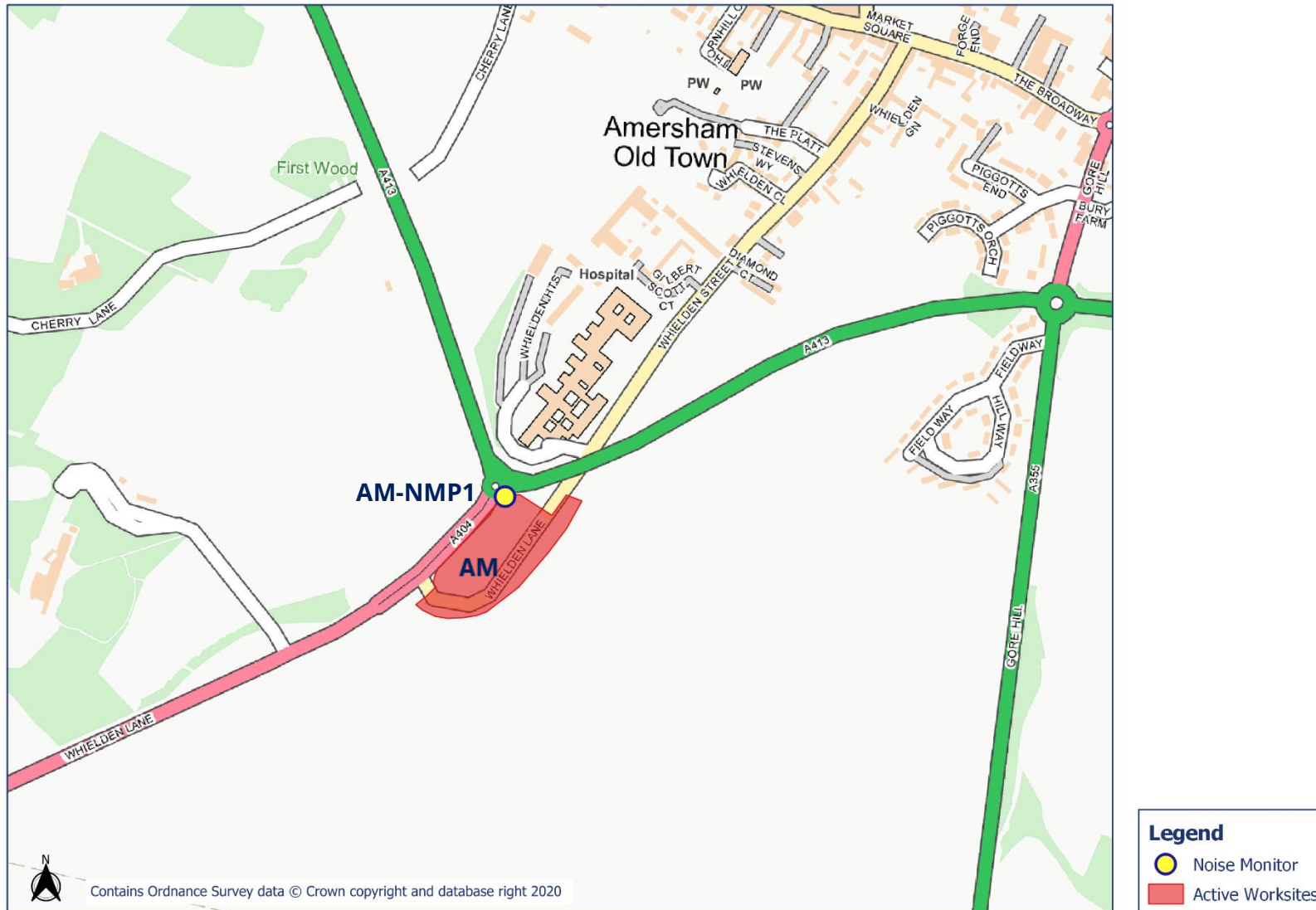






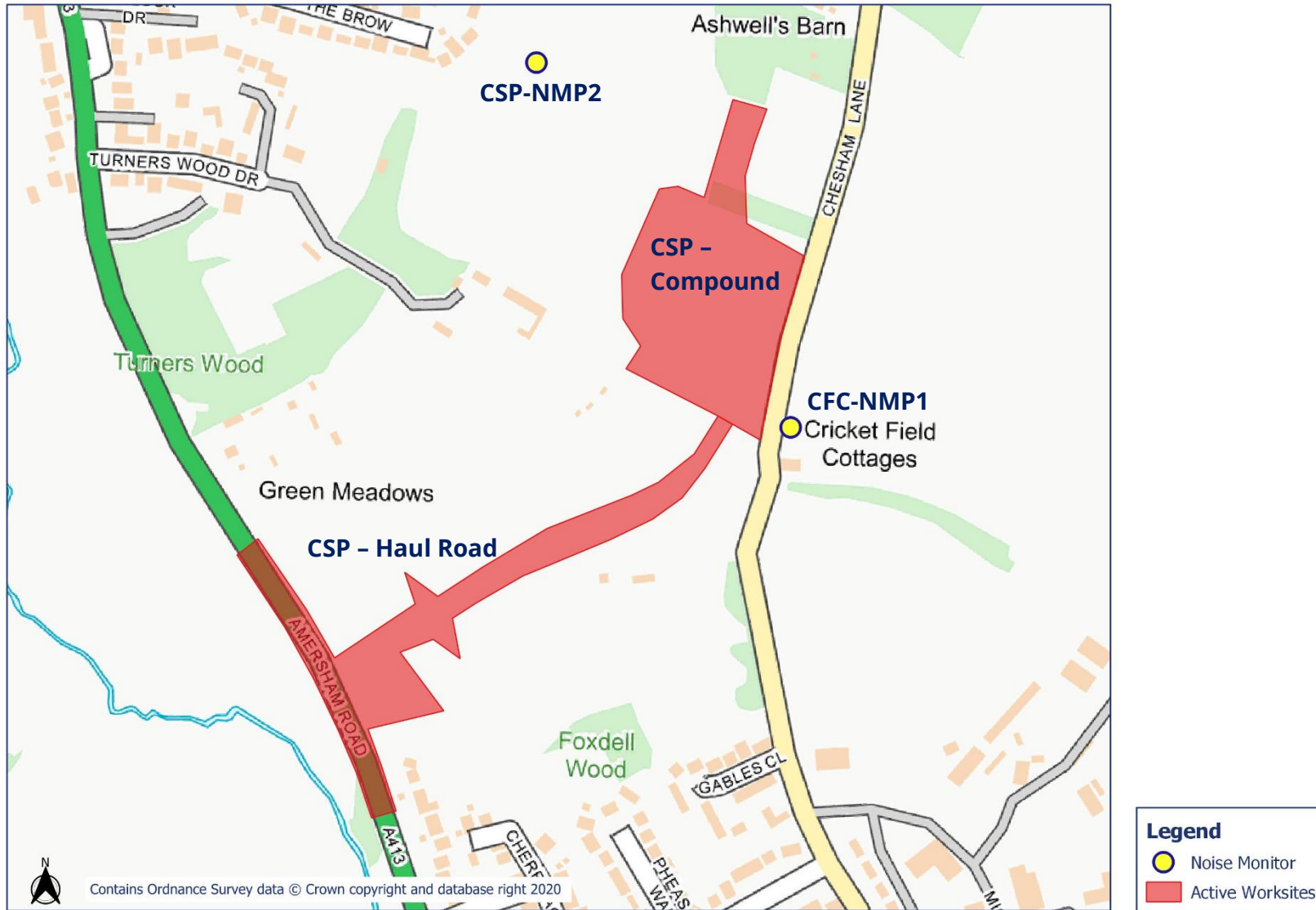


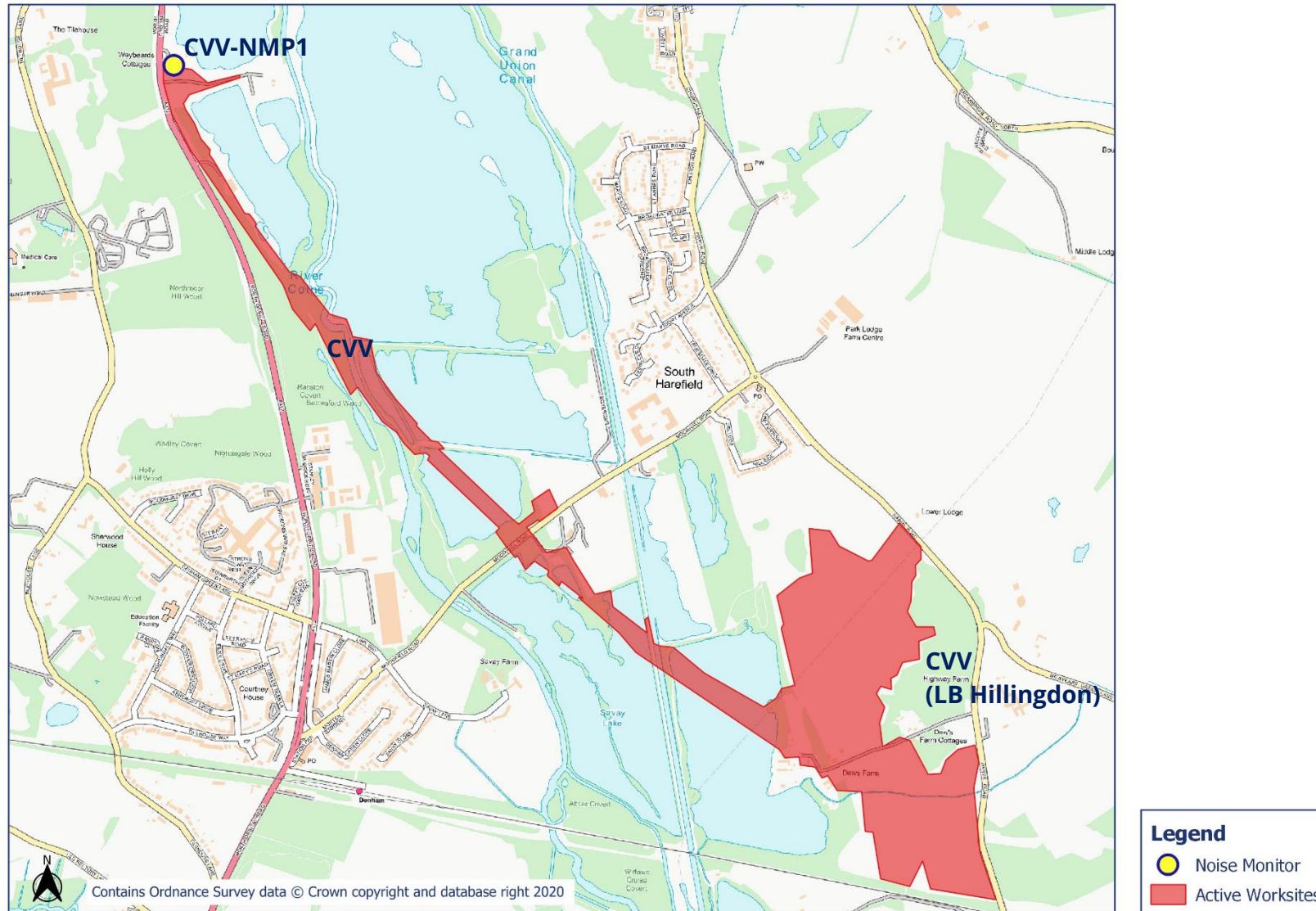






HS2 Noise and Vibration Monitoring Plan - 13



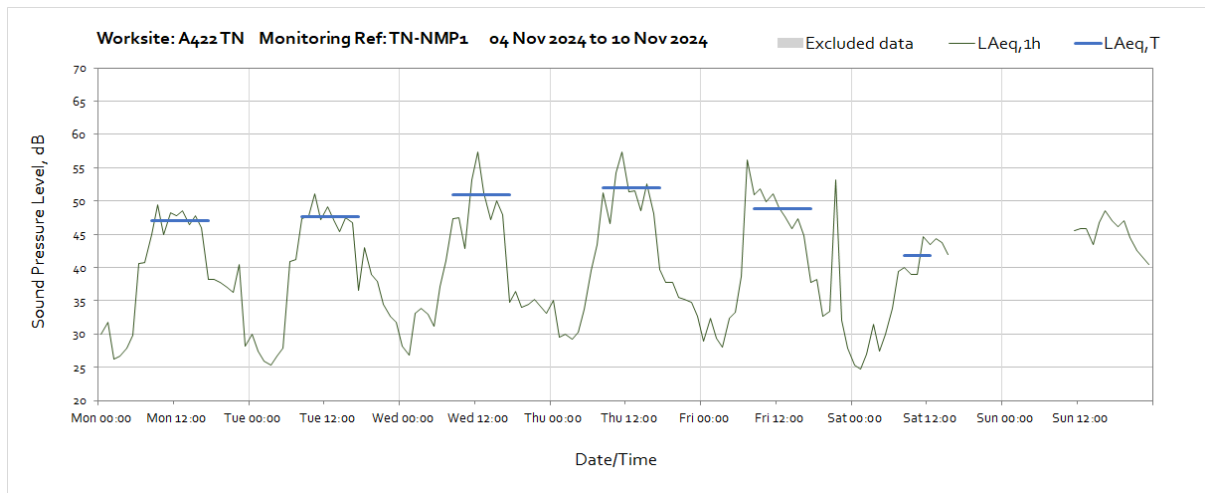
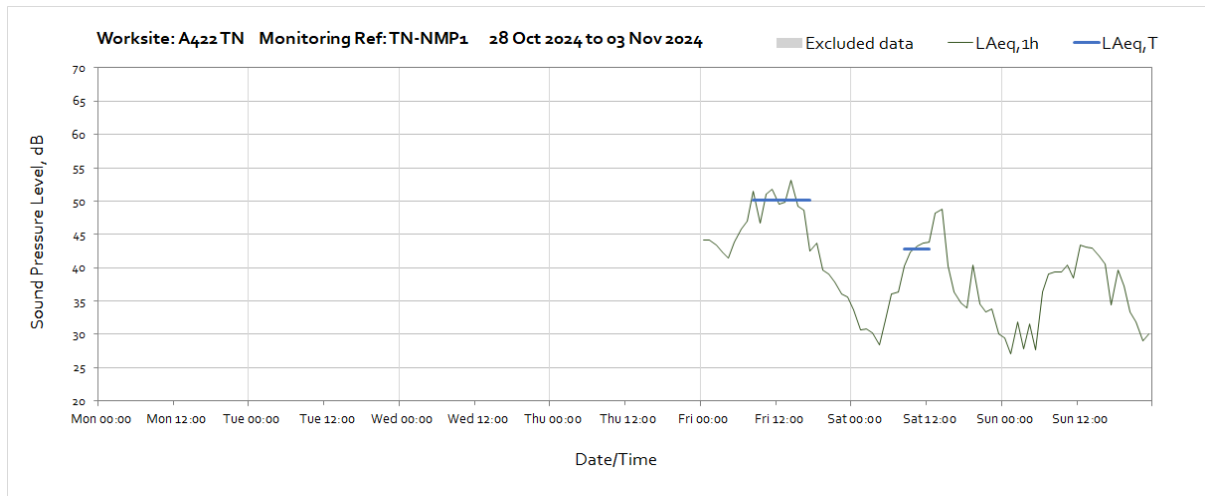


Appendix C Data

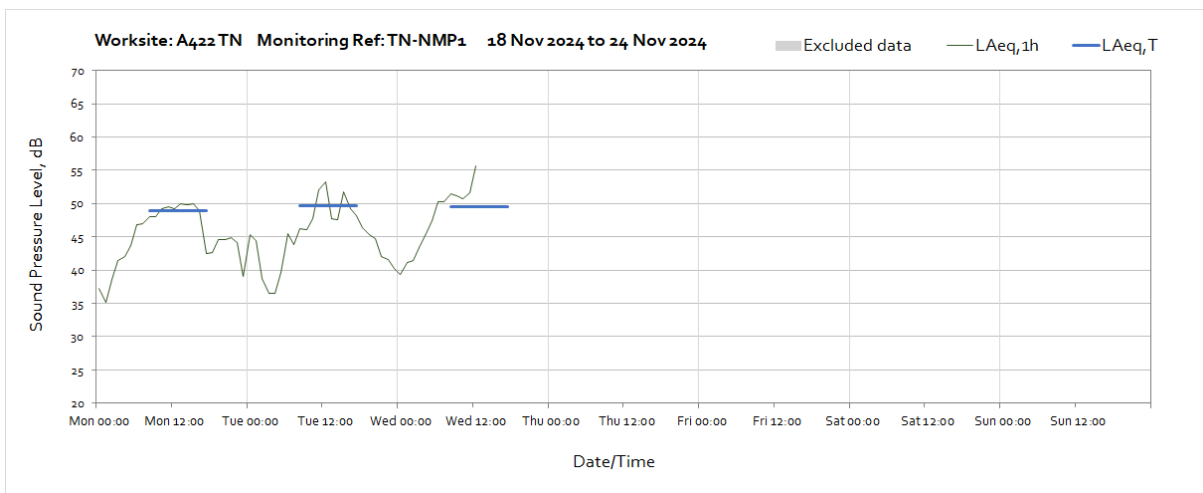
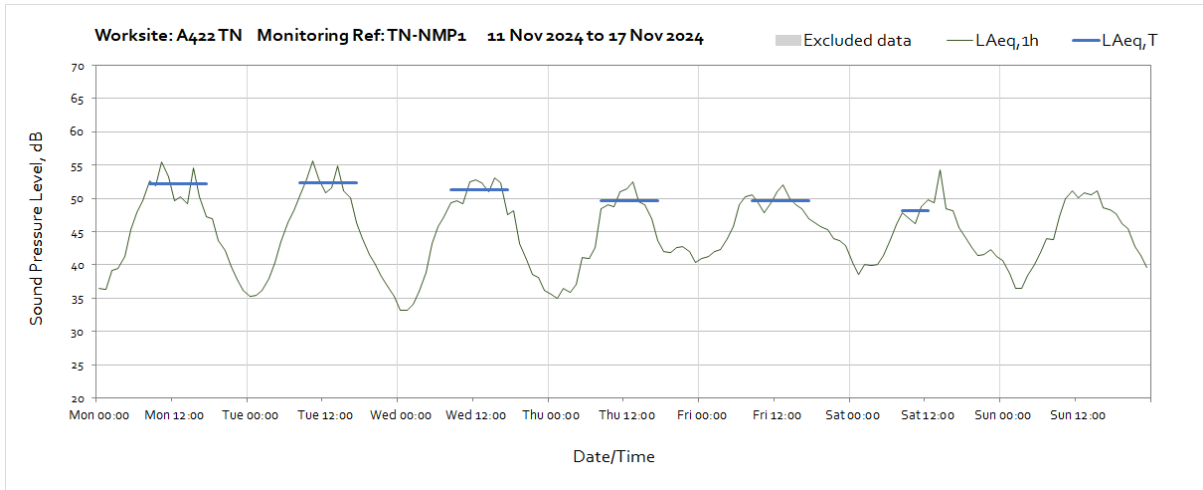
Noise

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

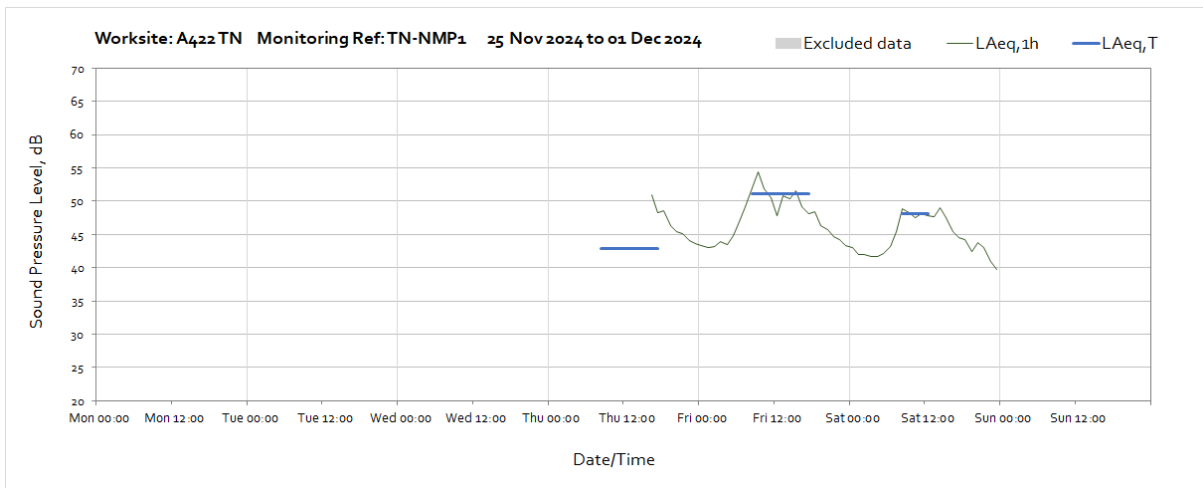
Worksite: A422 TN – Monitoring Ref: TN-NMP1



Note: Missing data between 16:00 on Saturday 9th November until 11:00 on Sunday 10th November was due to a depleted monitor battery.



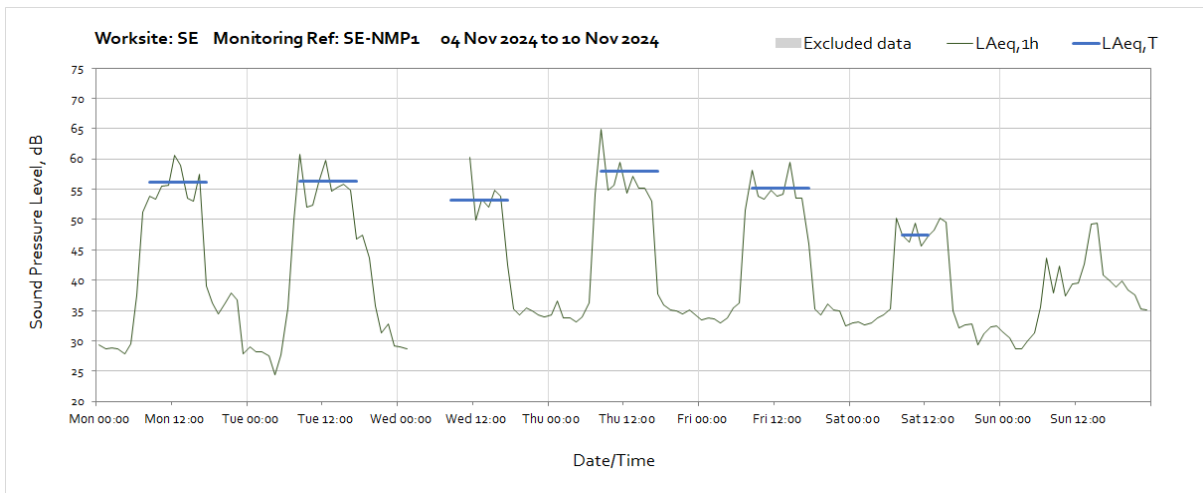
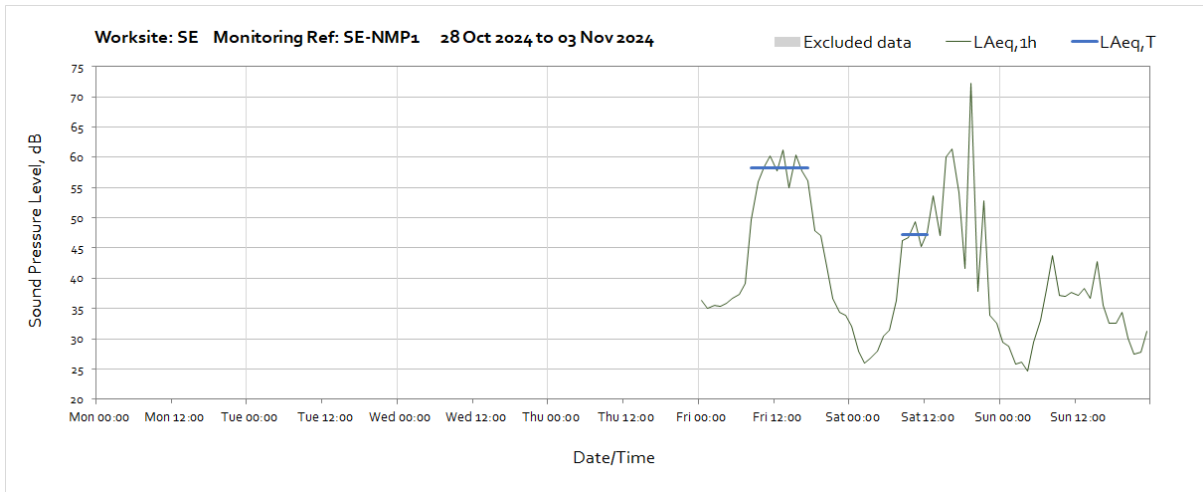
Note: Missing data between 13:00 on Wednesday 20th November until 16:00 on Thursday 28th November was due to monitor failing field calibration, the monitor was retrieved and replaced on Thursday 28th November.



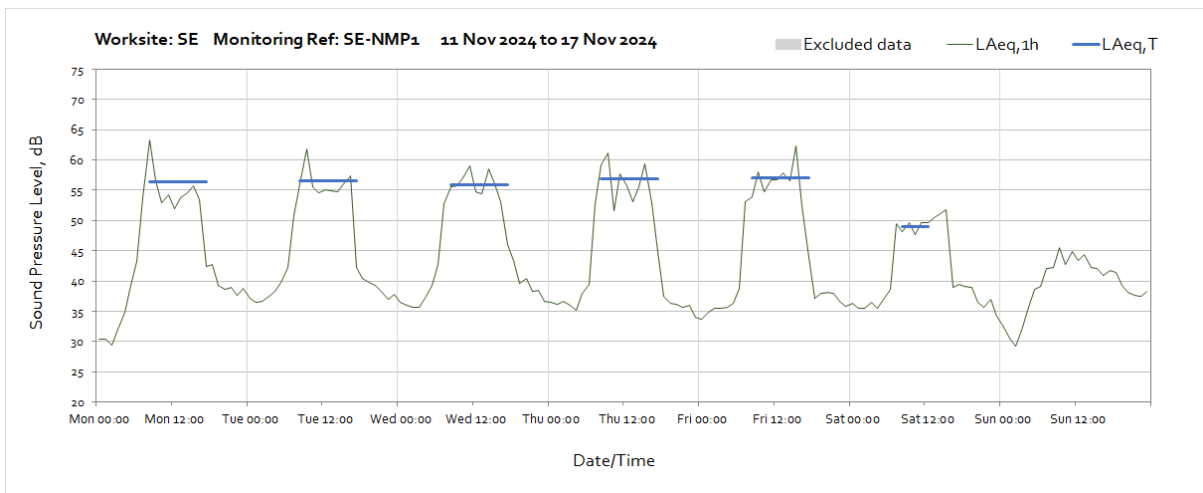
Note: Missing data between 13:00 on Wednesday 20th November until 16:00 on Thursday 28th November was due to monitor failing field calibration, the monitor was retrieved and replaced on Thursday 28th November.

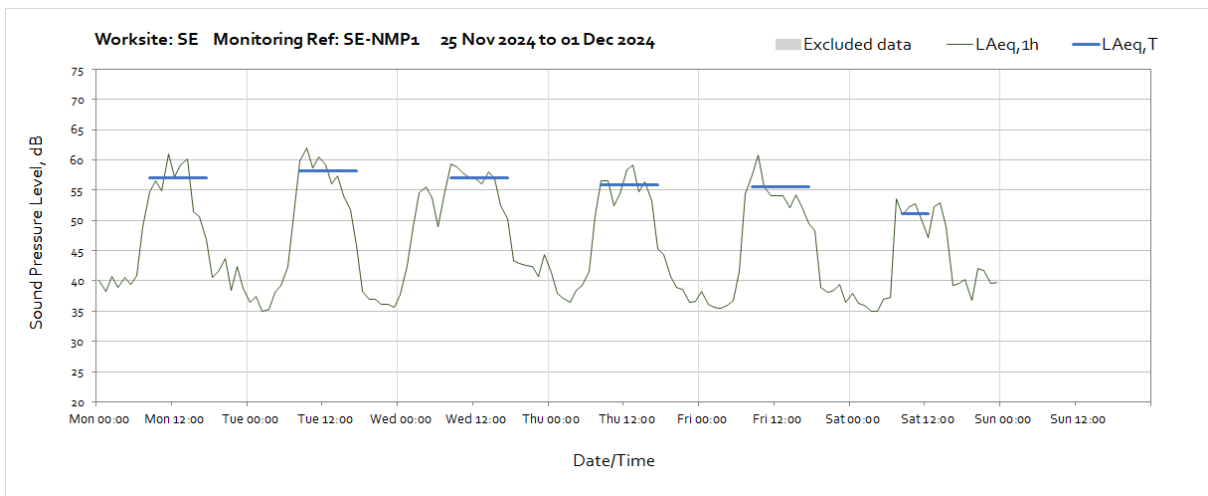
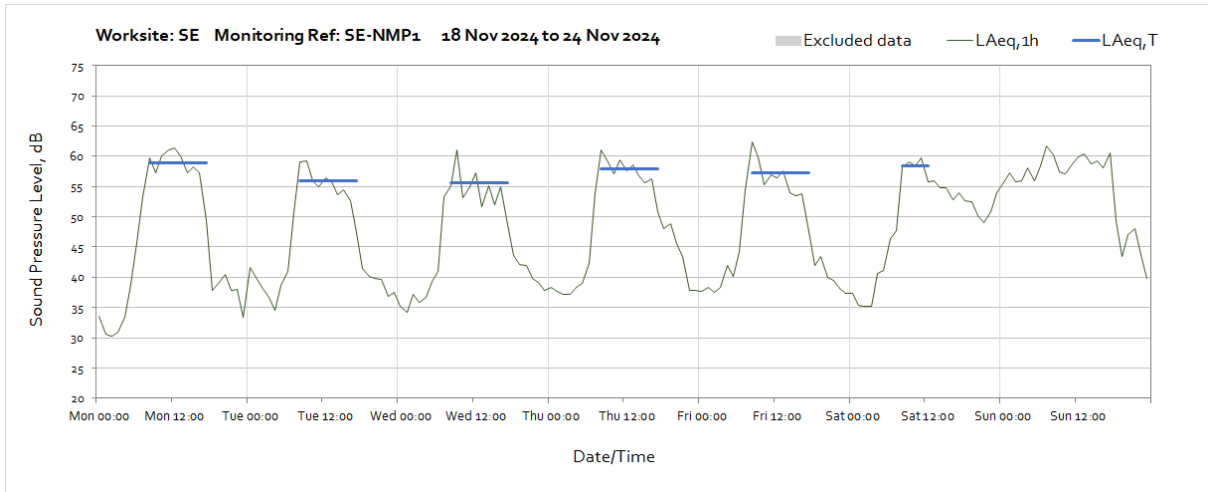
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Worksite: SE – Monitoring Ref: SE-NMP1

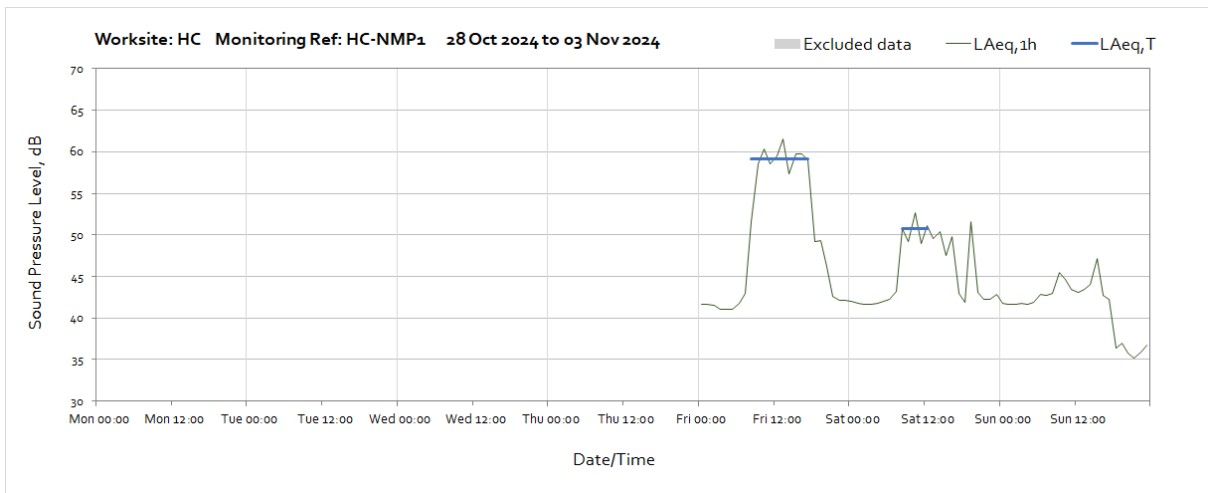


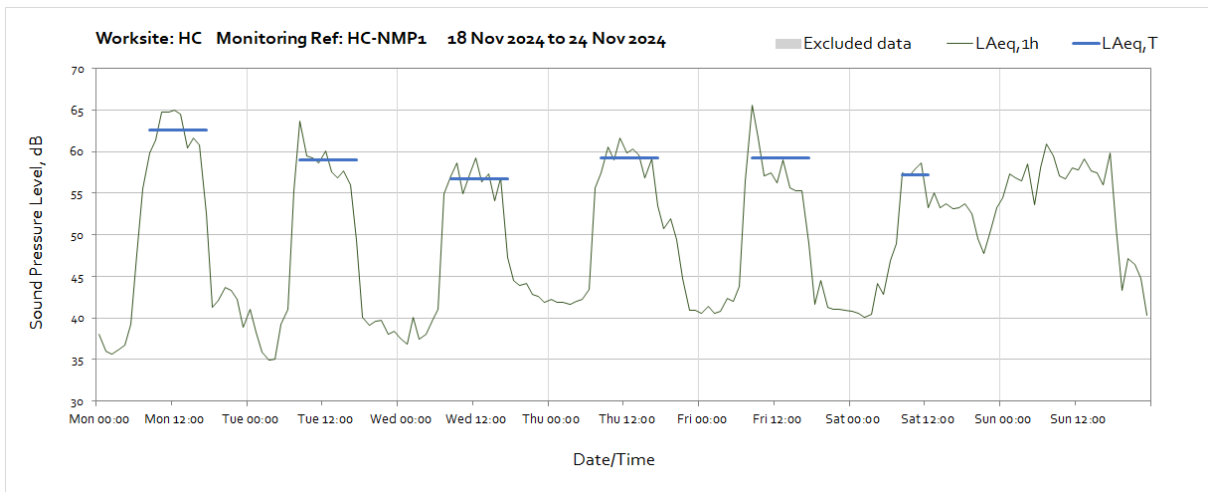
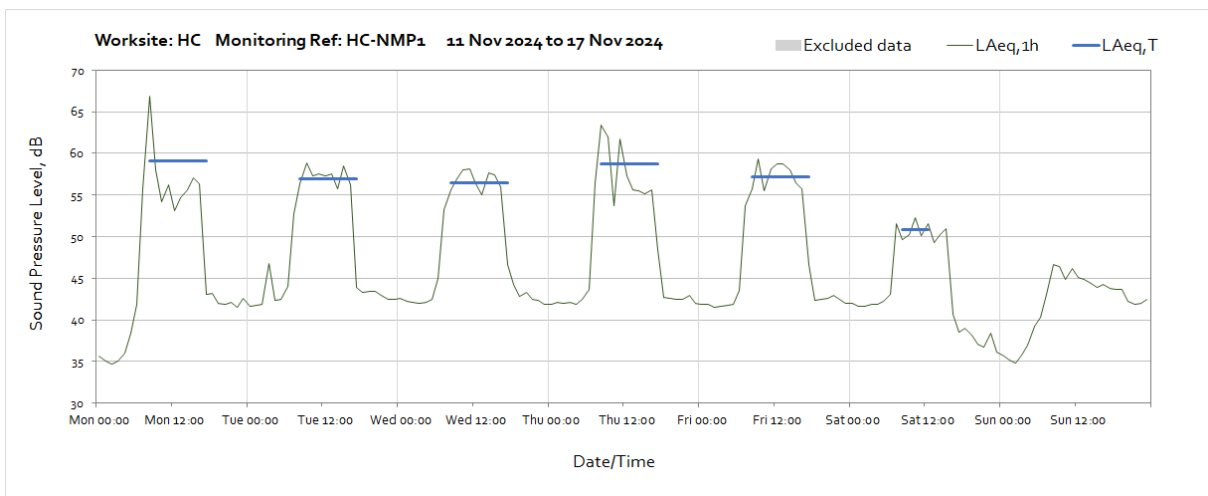
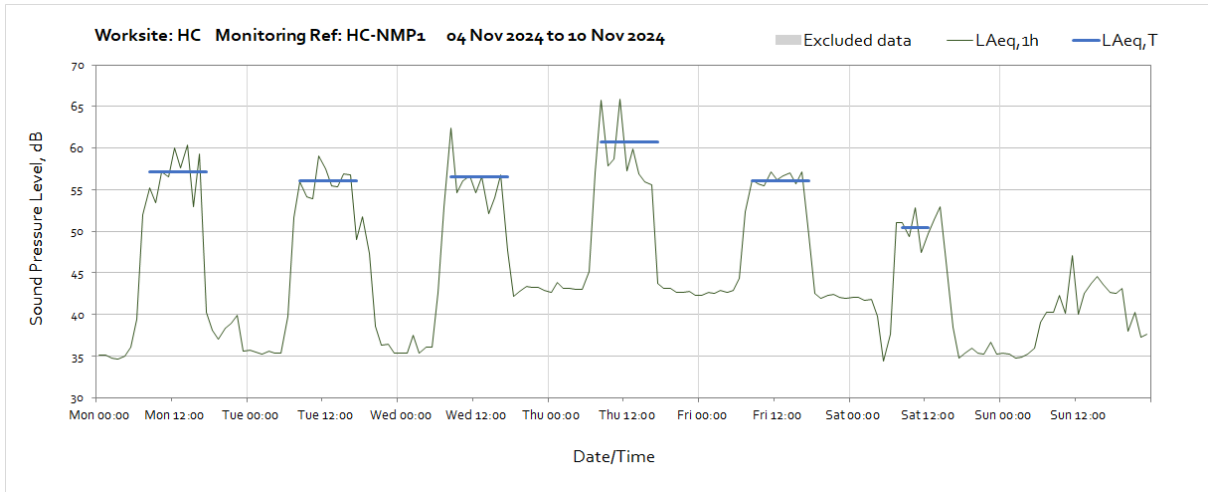
Note: Missing data between 03:00 and 11:00 on Wednesday 6th November was due to a depleted monitor battery.

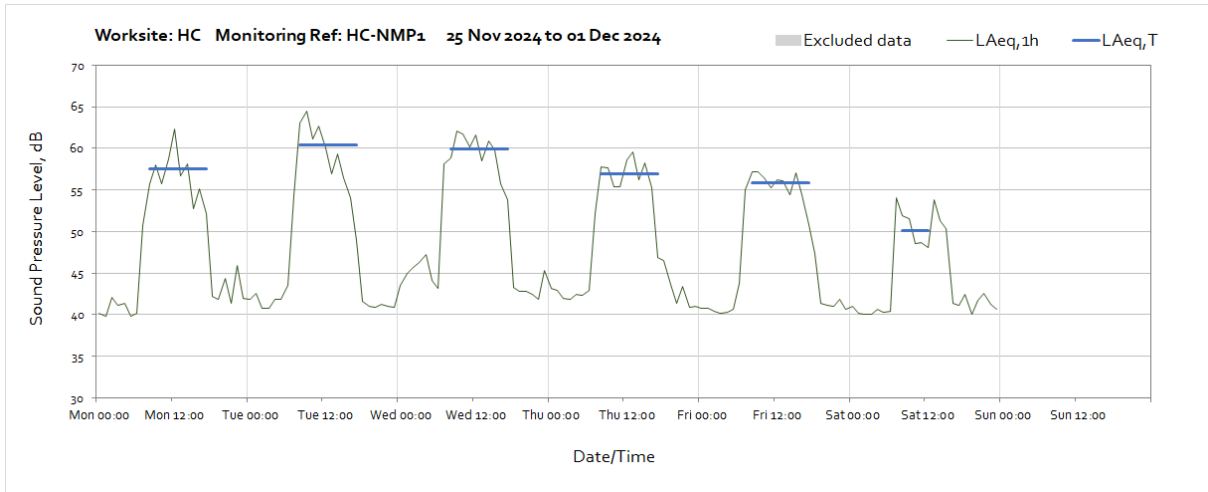




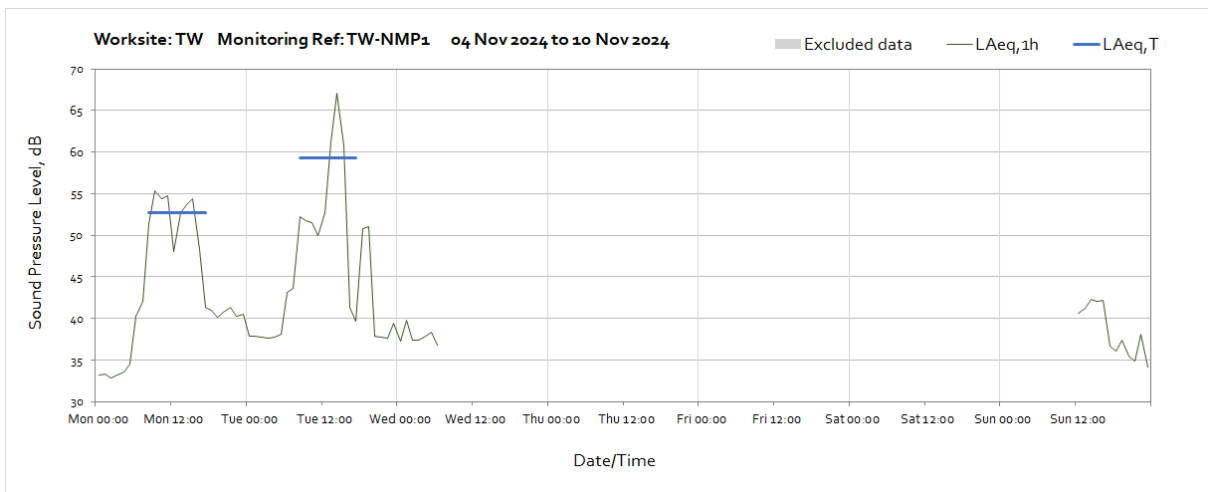
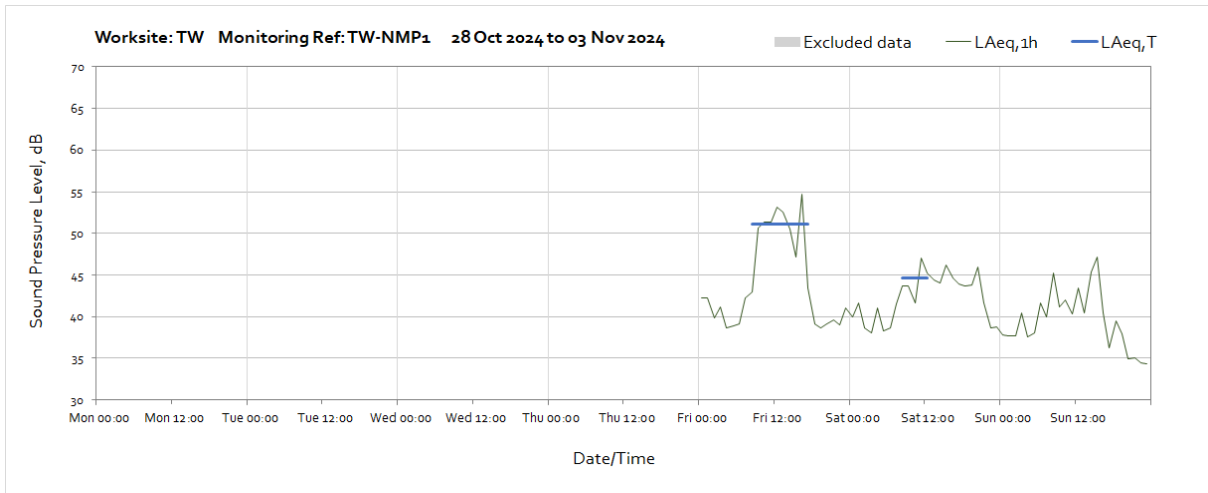
Worksite: HC - Monitoring Ref: HC-NMP1





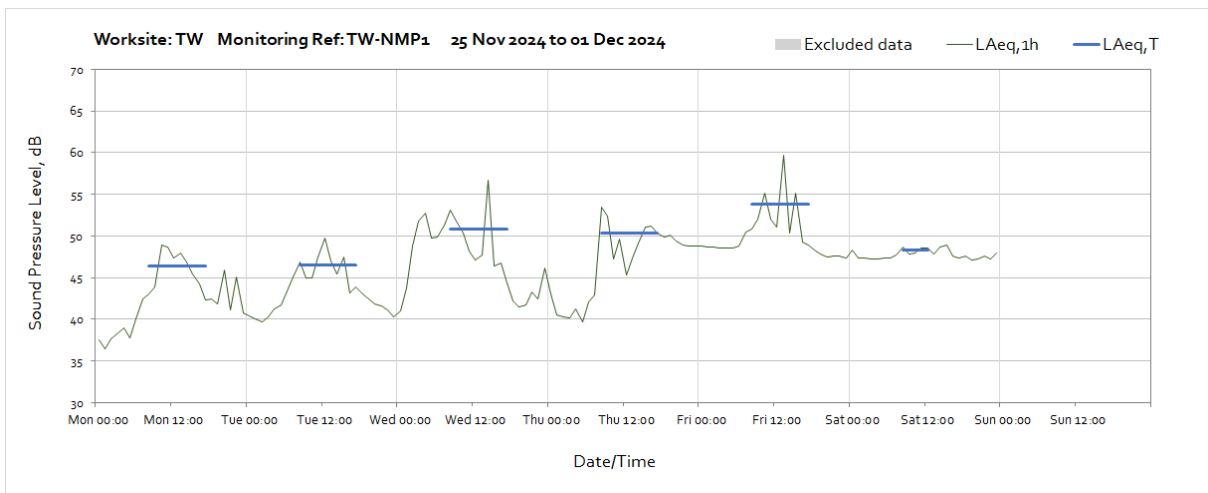
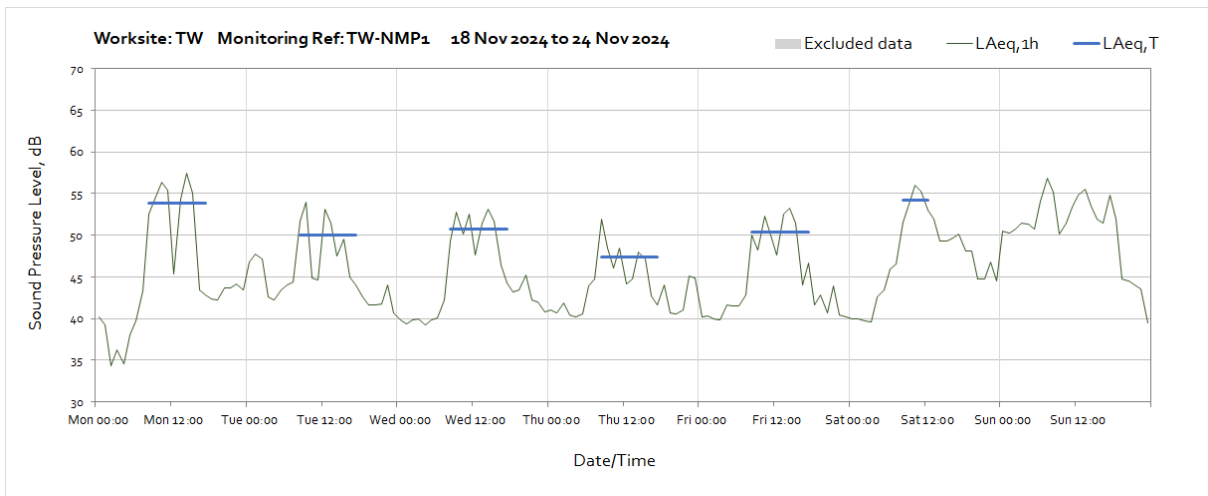
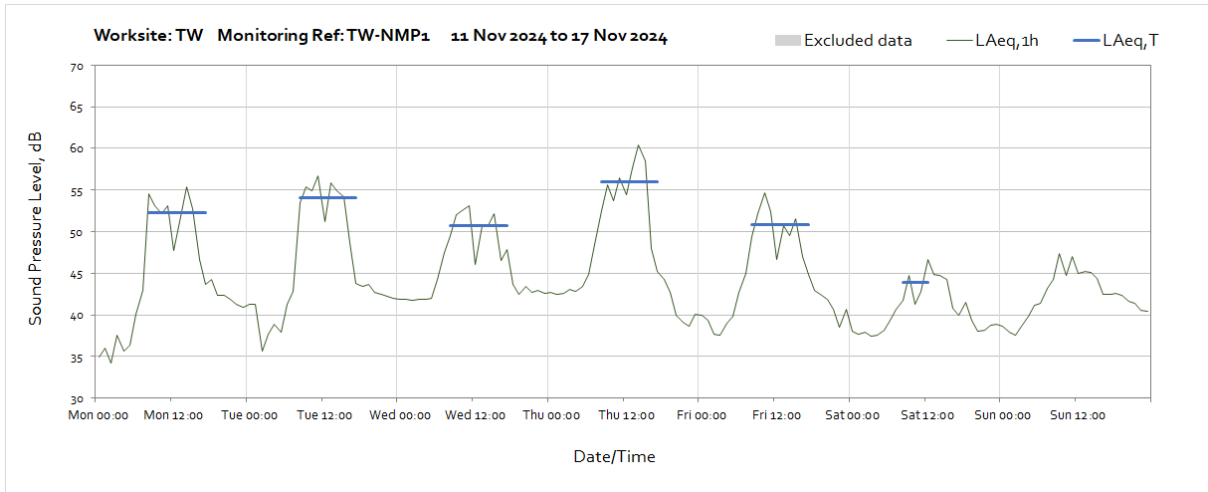


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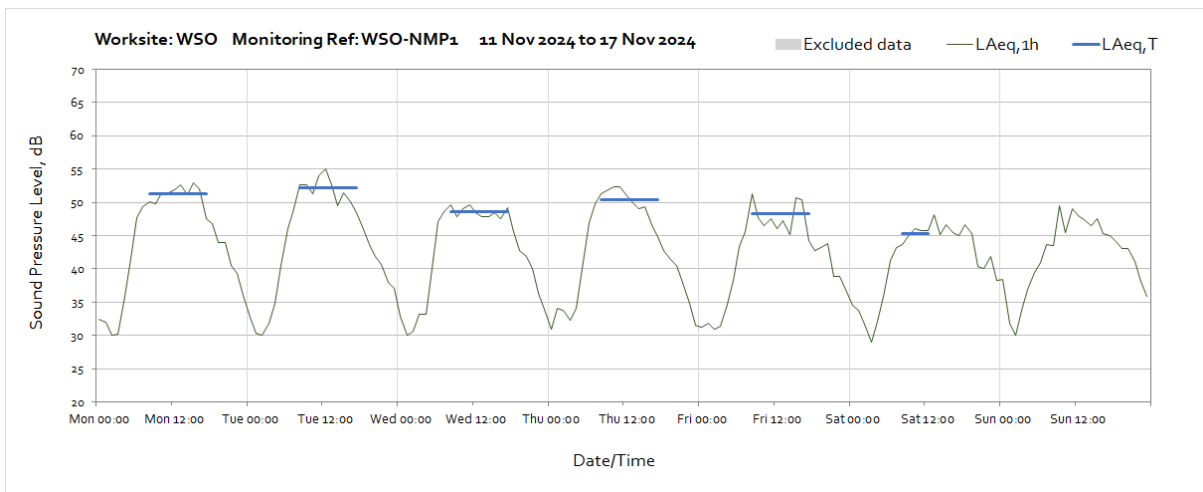
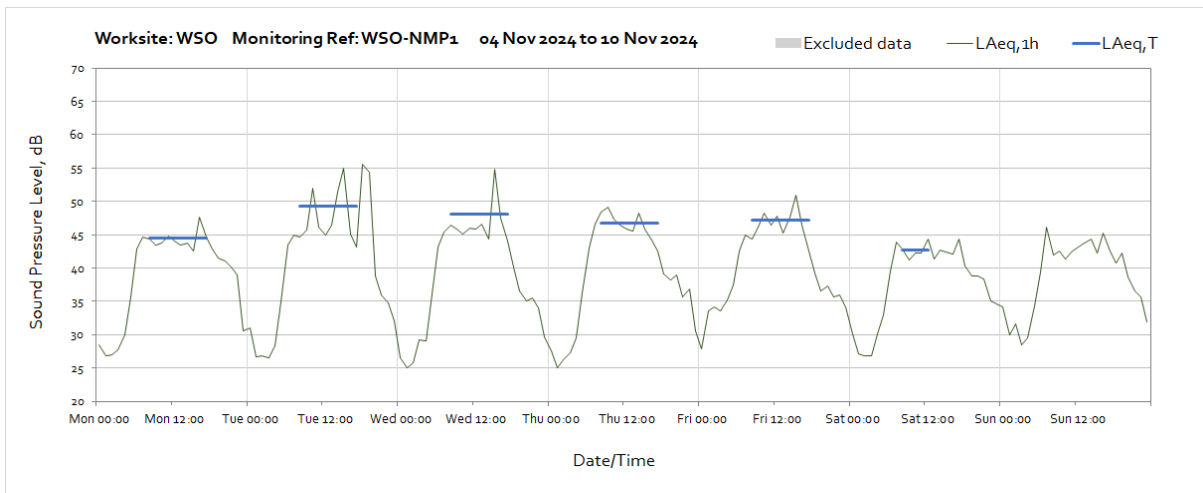
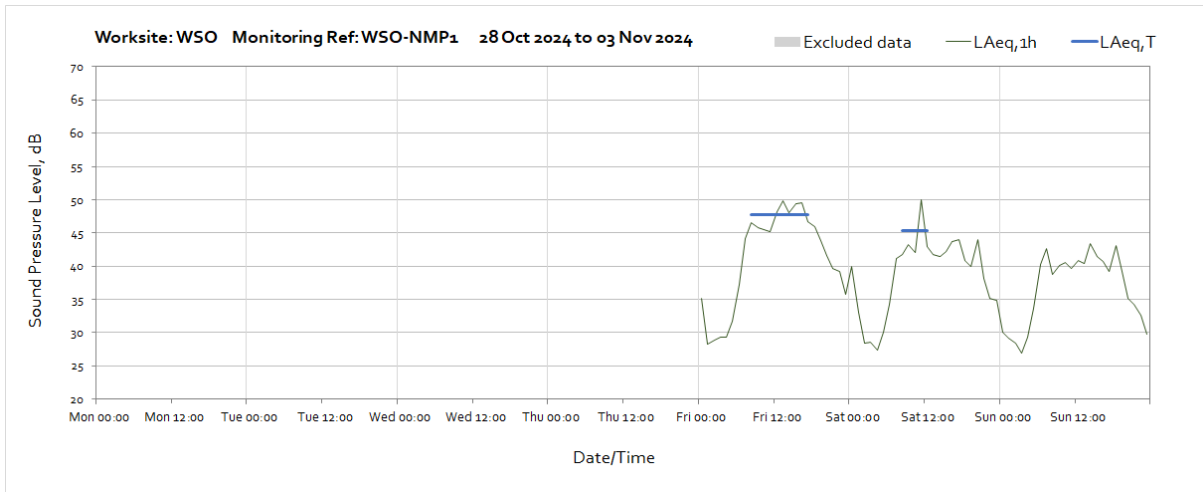


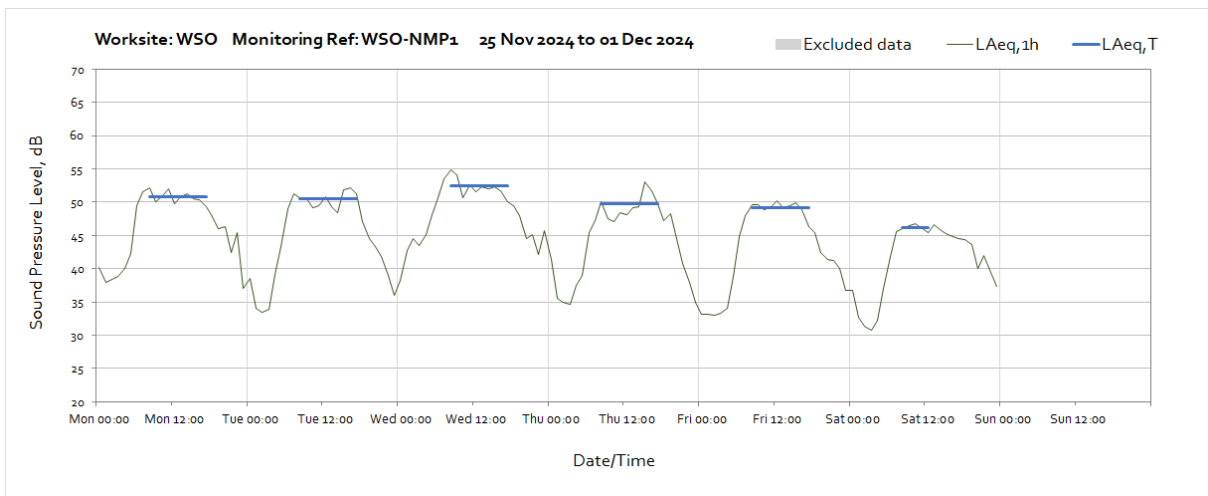
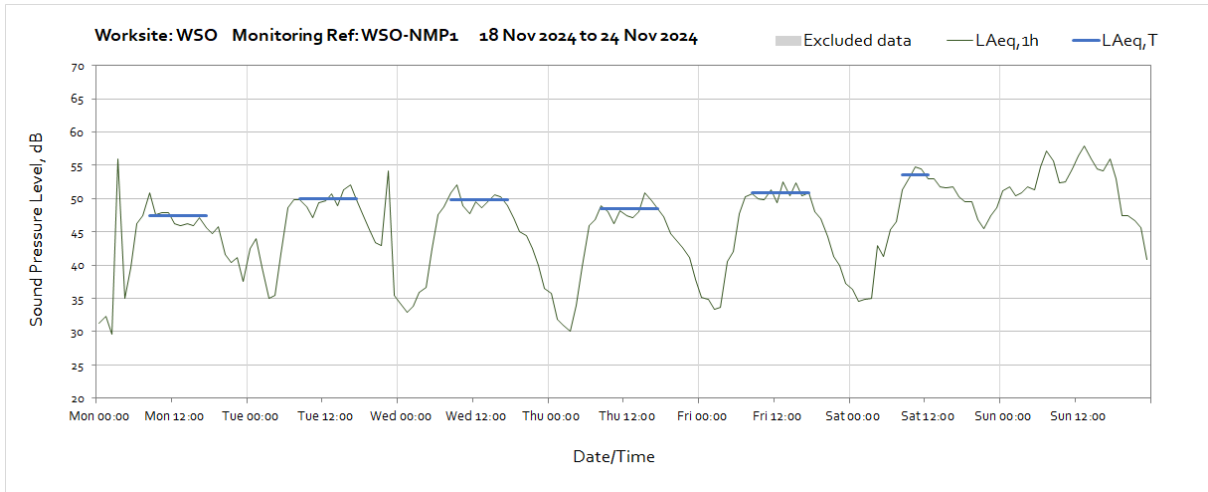
Note: Missing data between 07:00 on Wednesday 6th November until 12:00 on Sunday 10th November was due to a depleted monitor battery.

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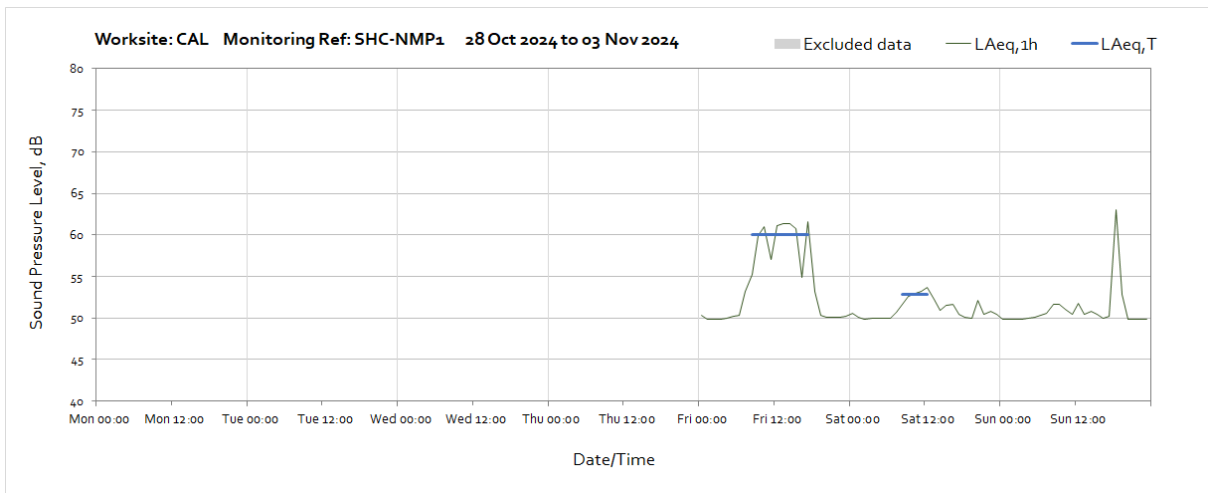


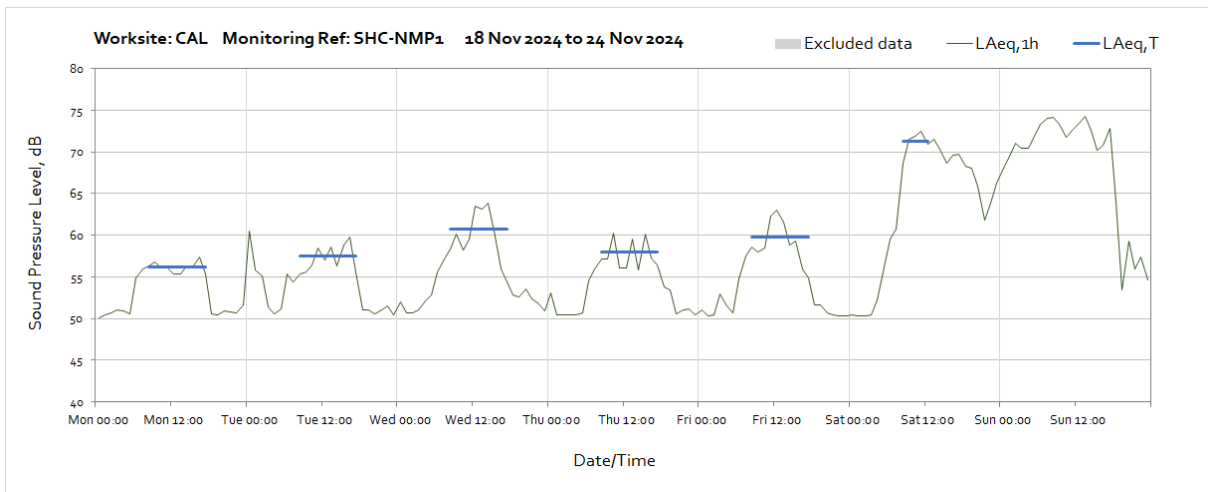
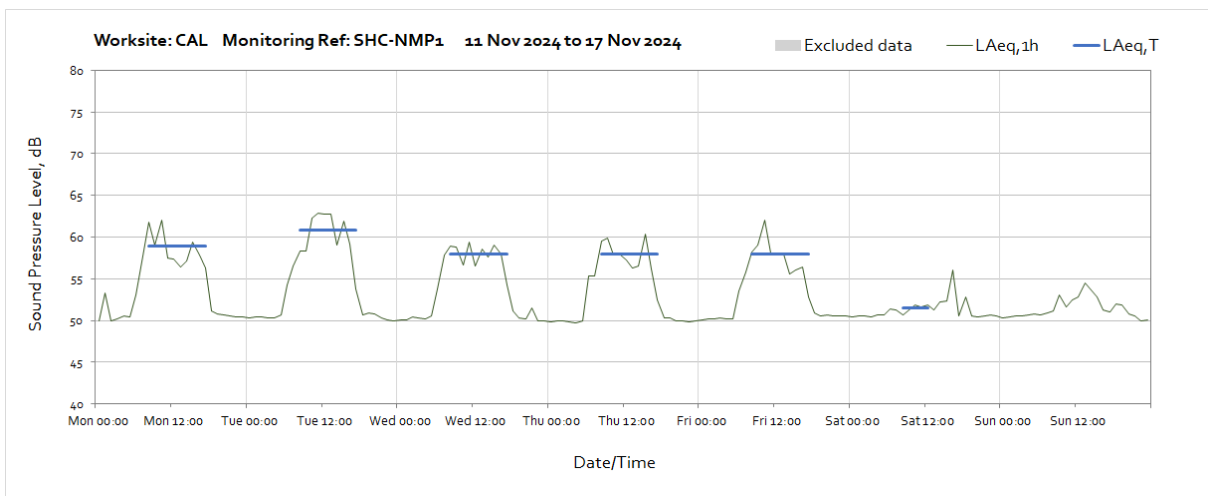
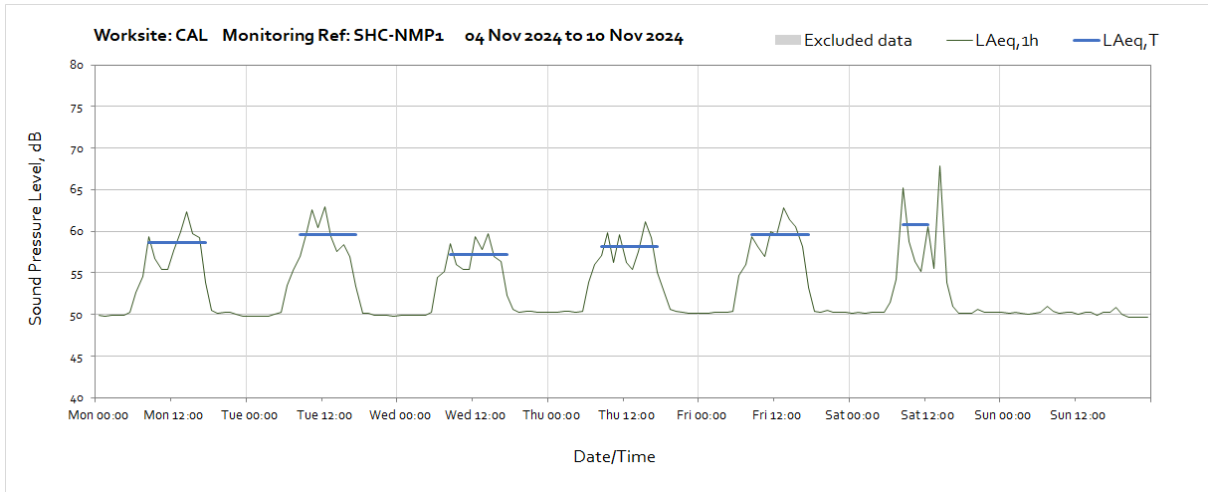
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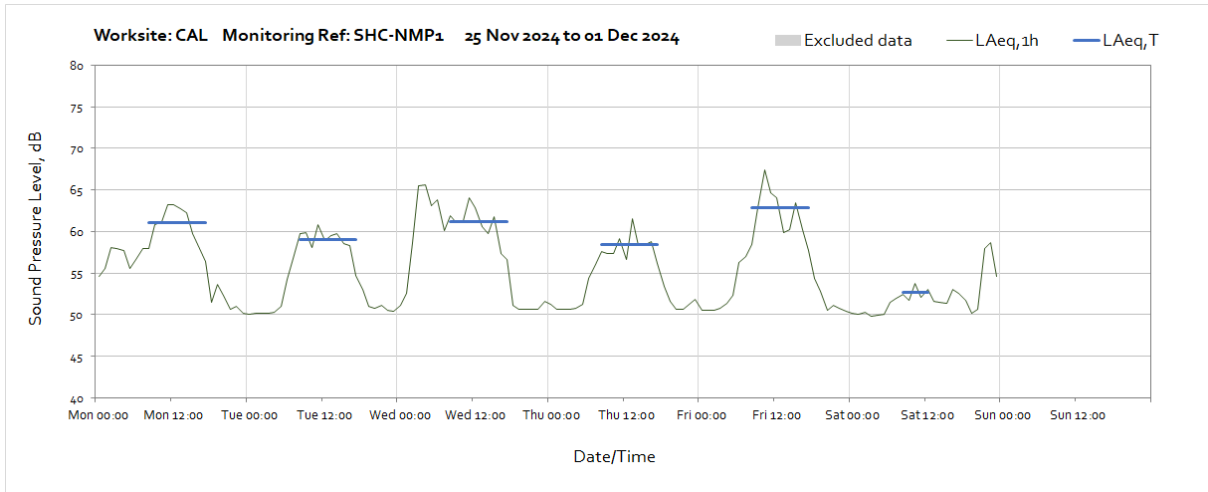




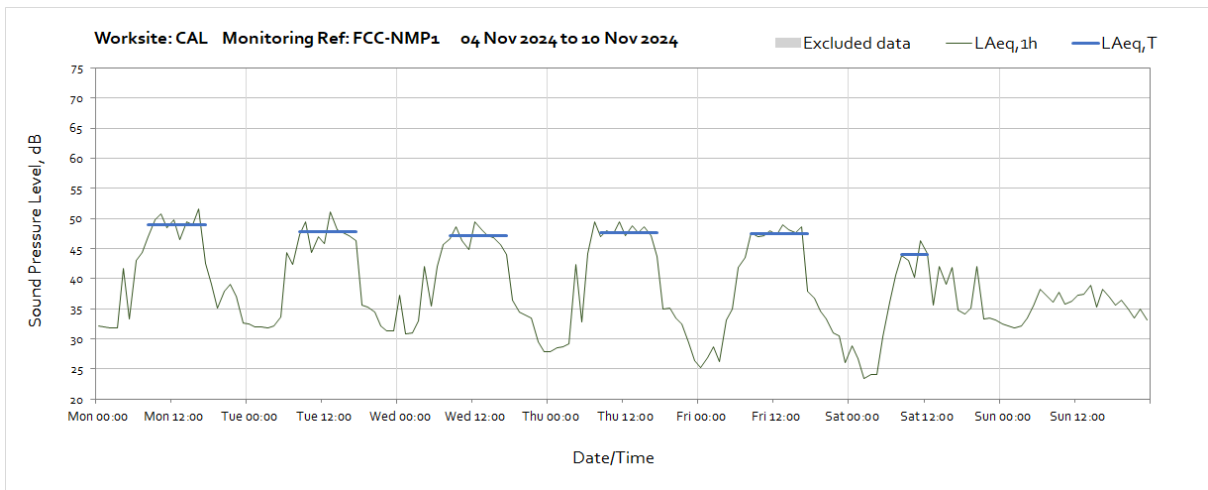
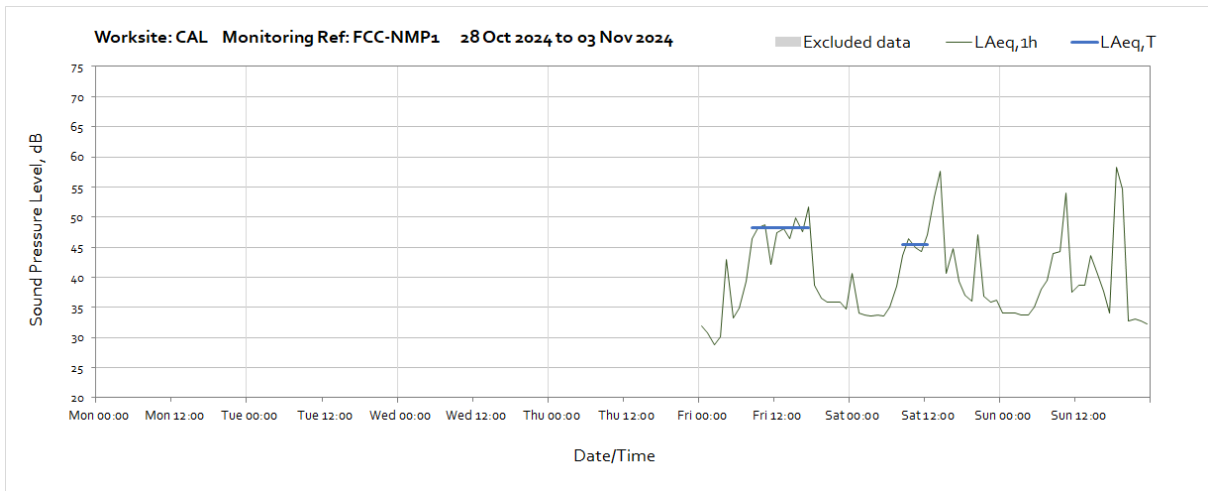
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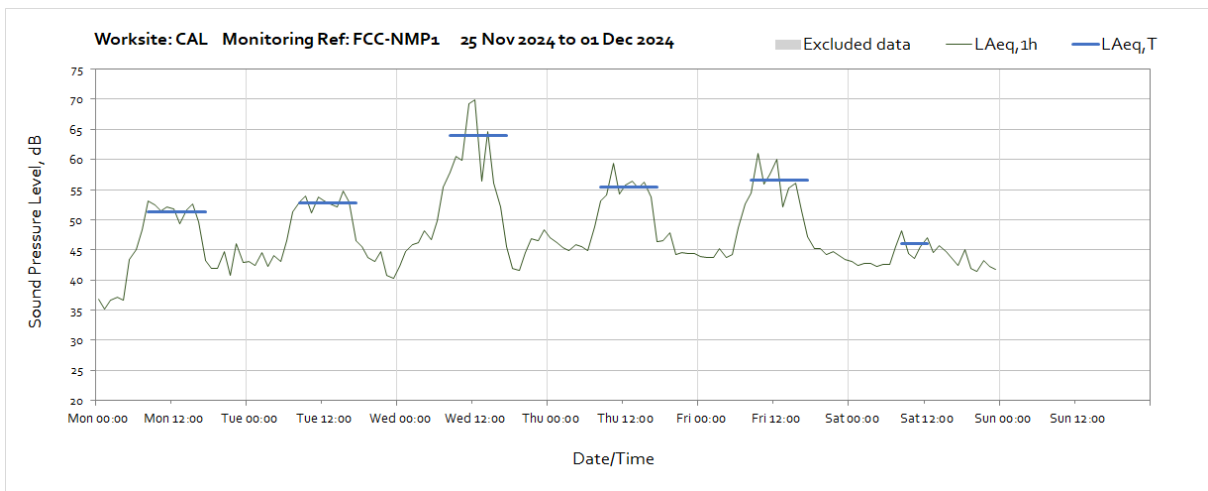
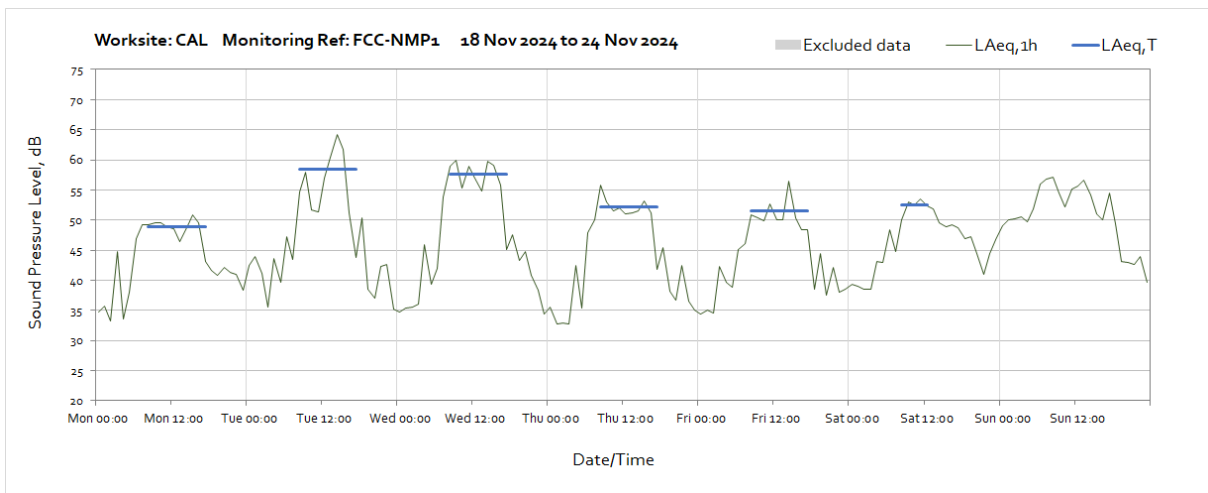
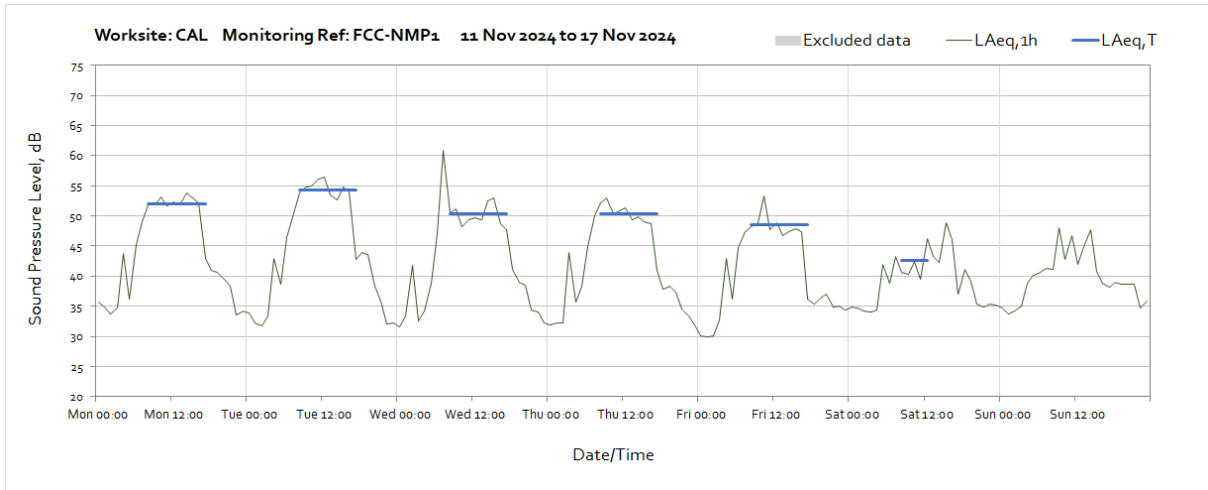




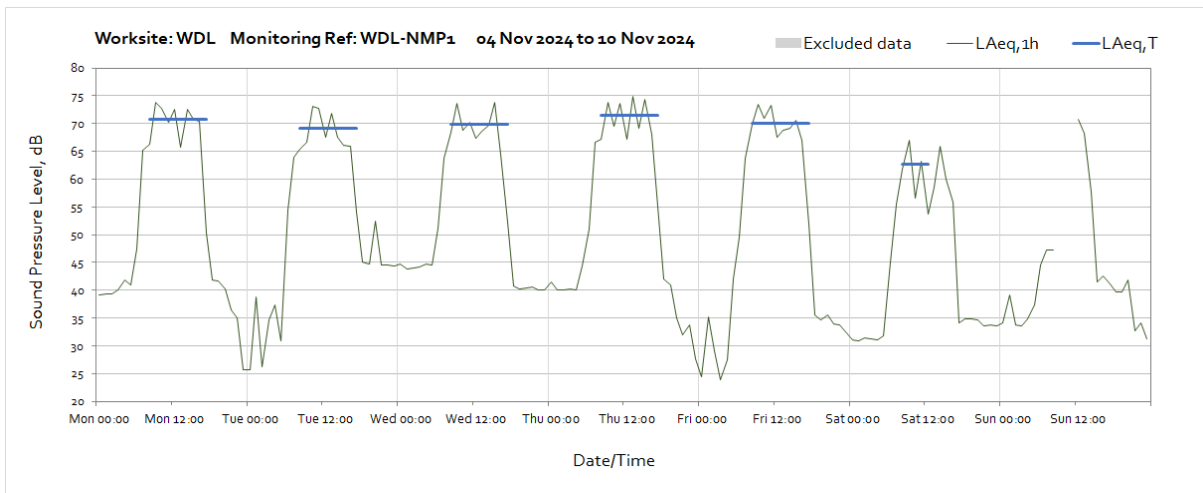


Worksite: CAL – Monitoring Re: FCC-NMP1

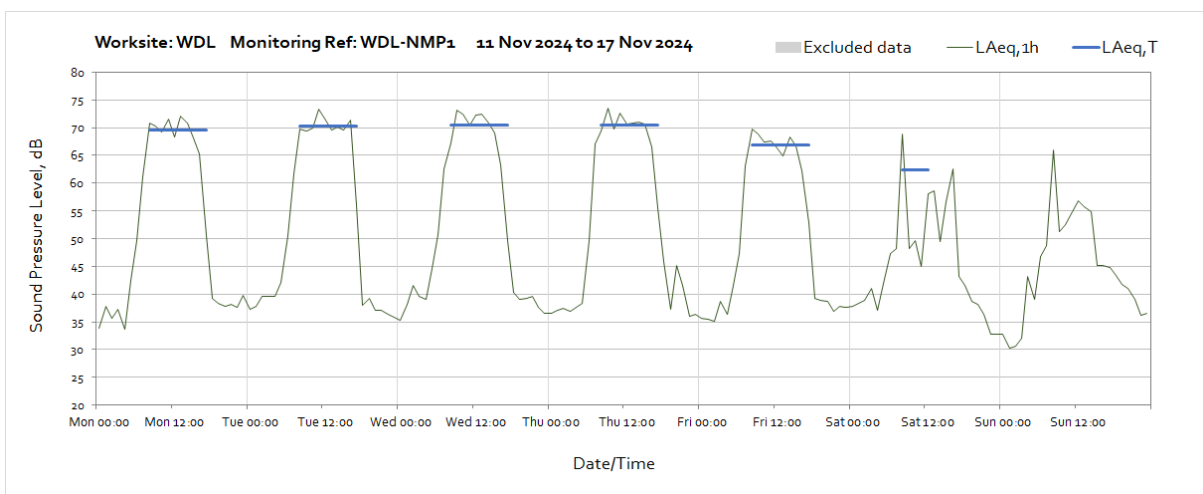


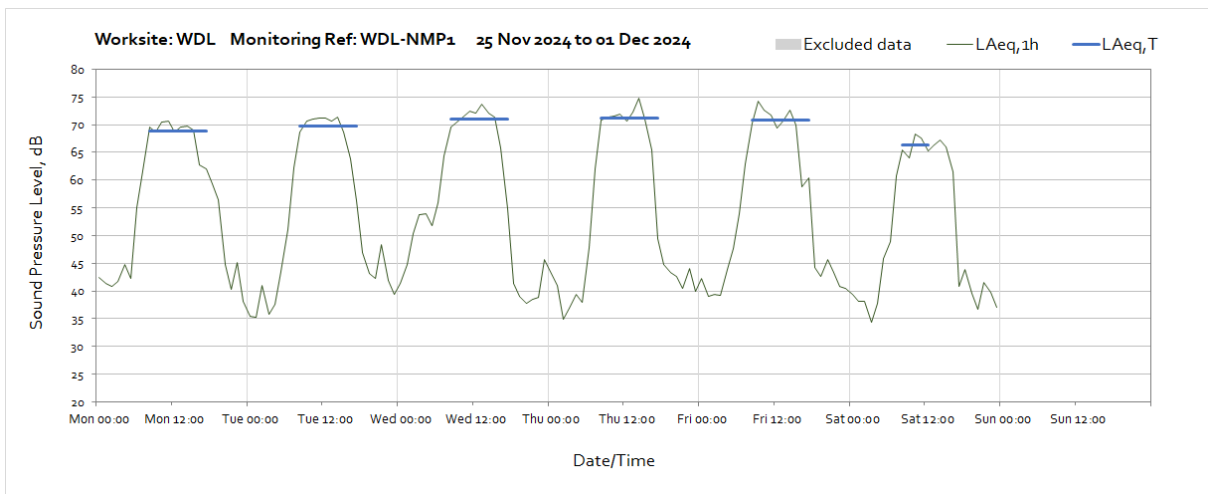
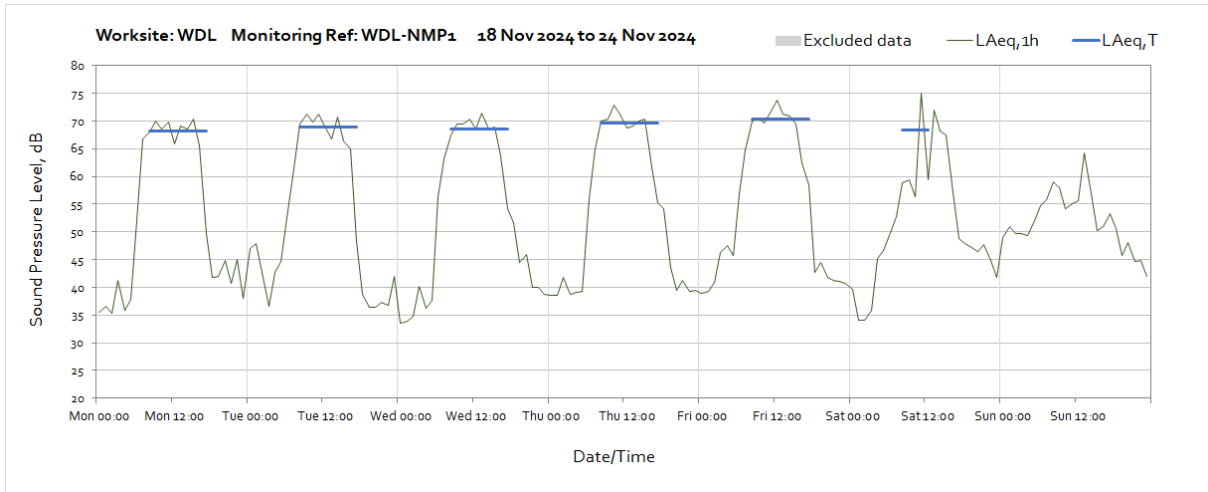


Worksite: WDL – Monitoring Ref: WDL-NMP1

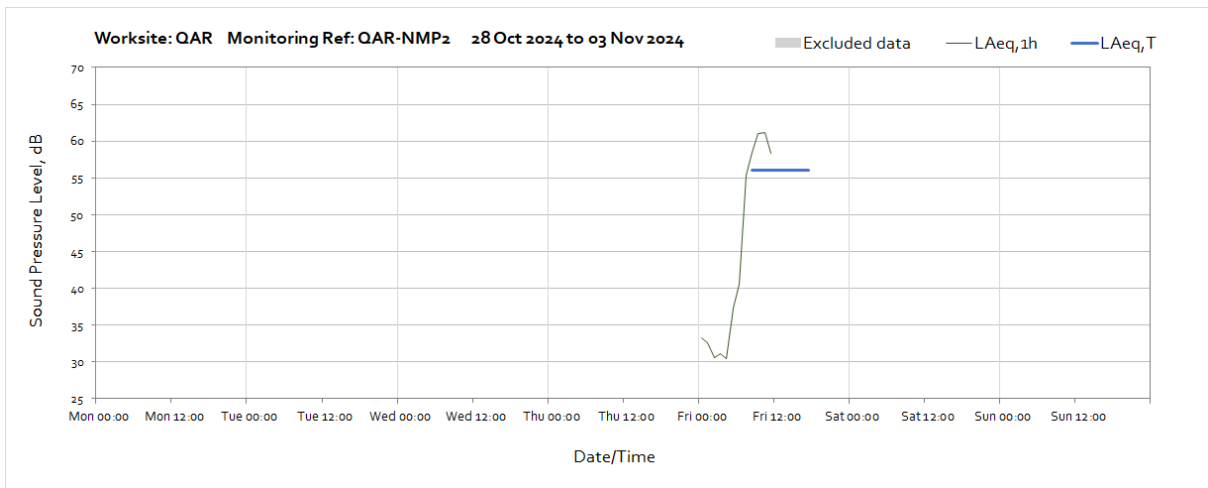


Note: Missing data between 09:00 on 12:00 on Sunday 10th November was due to a depleted monitor battery.



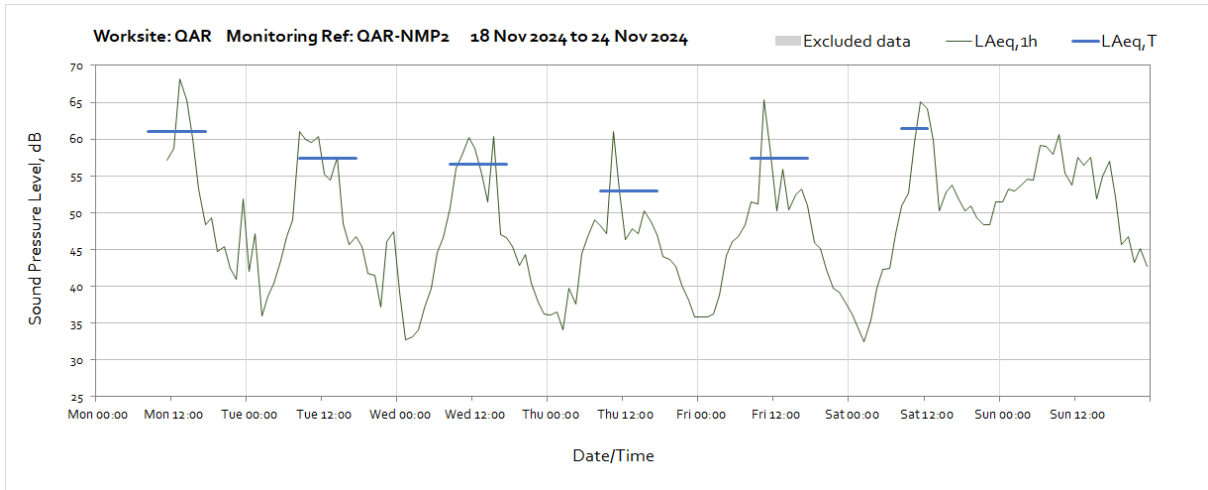


Worksite: QAR – Monitoring Ref: QAR-NMP2

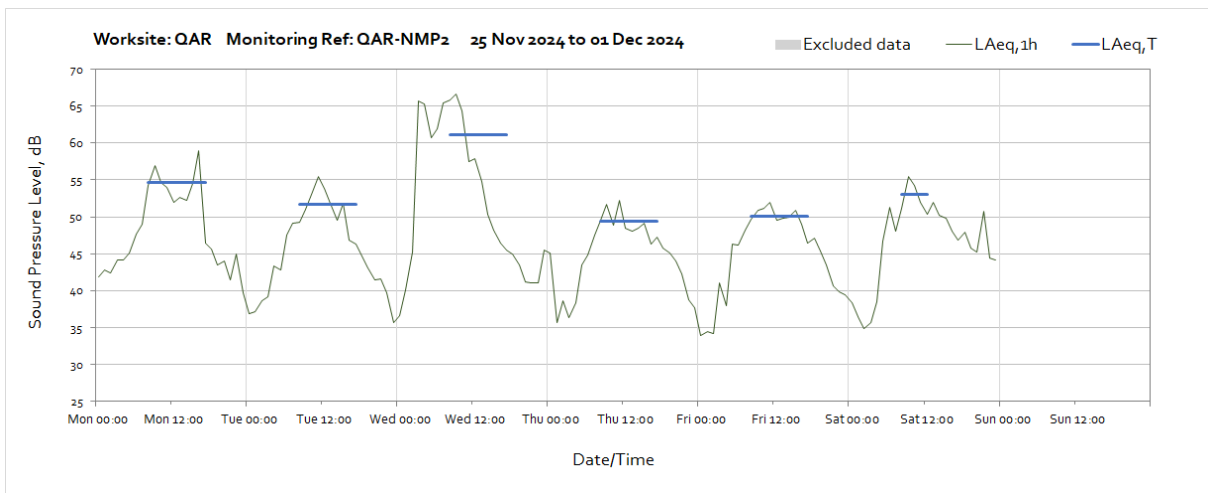


Note: Monitor was retrieved for repair at 12:00 on Friday 1st November.

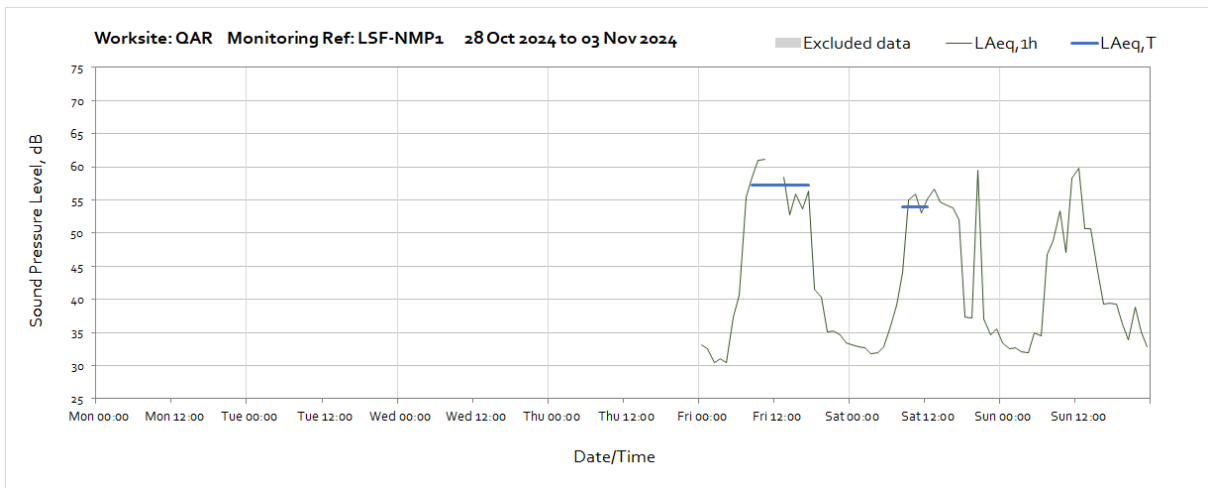
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Note: Monitor was reinstalled at 11:00 on Monday 18th November.

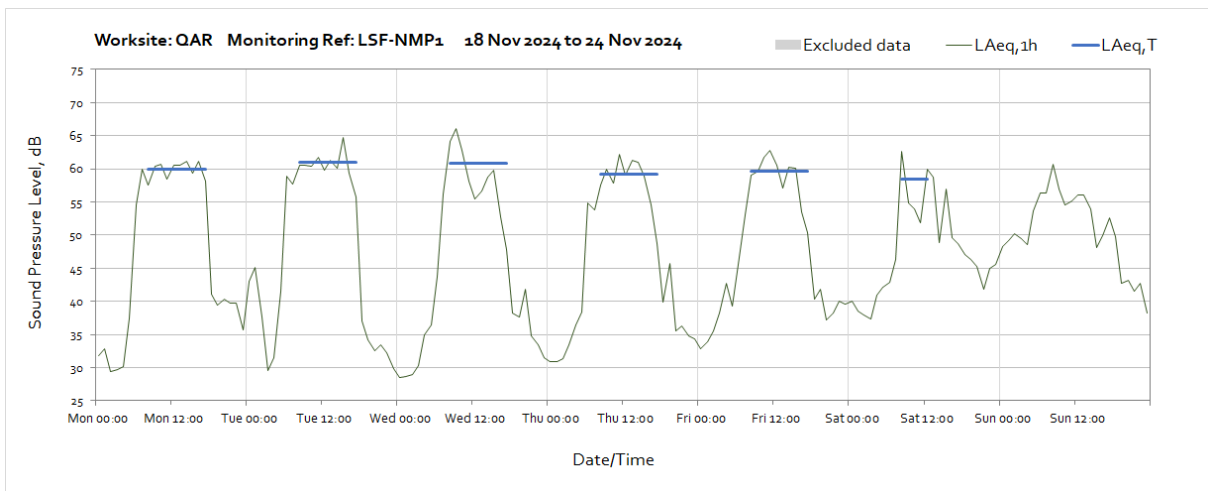
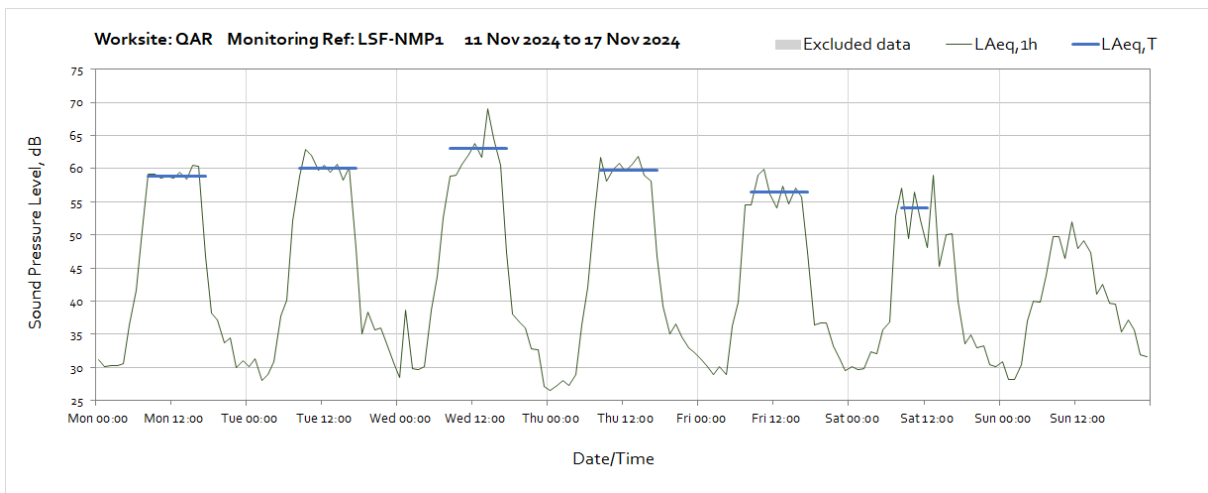
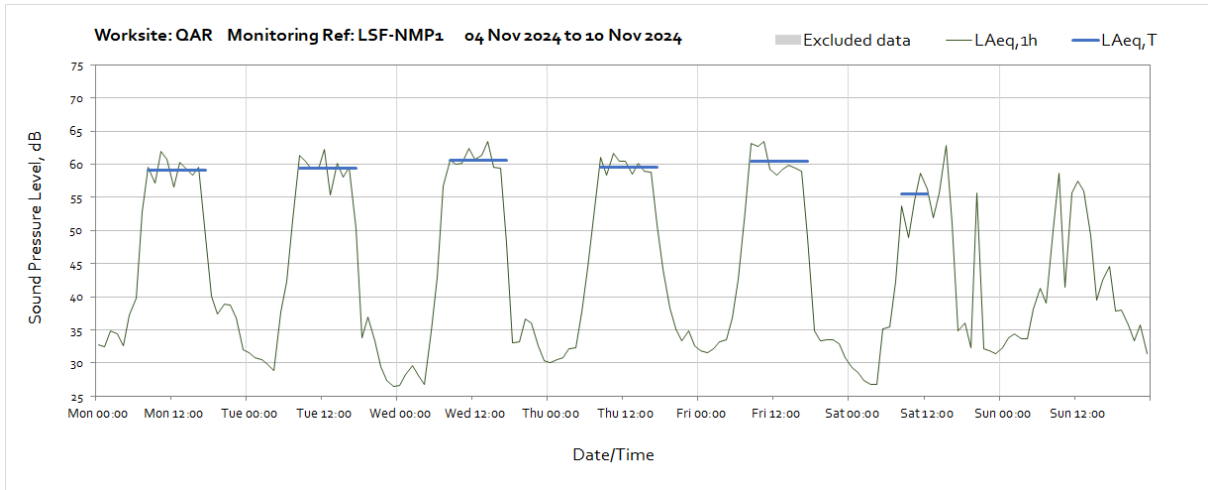


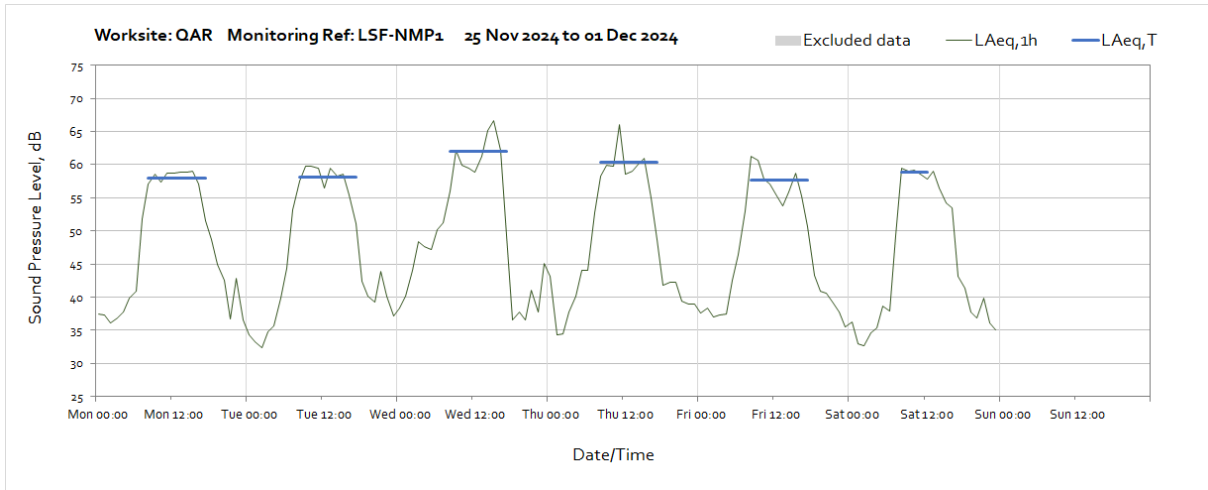
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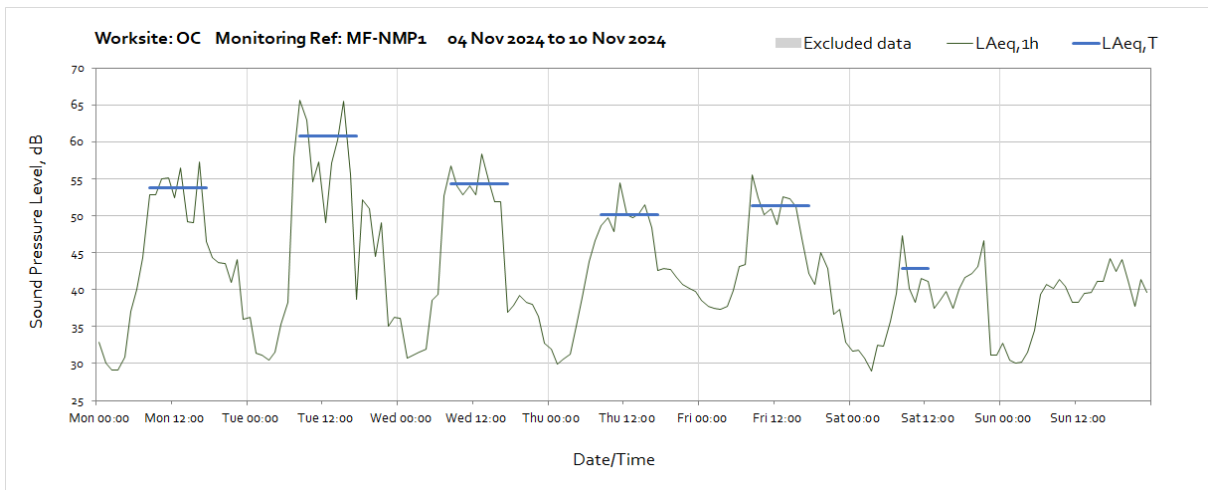
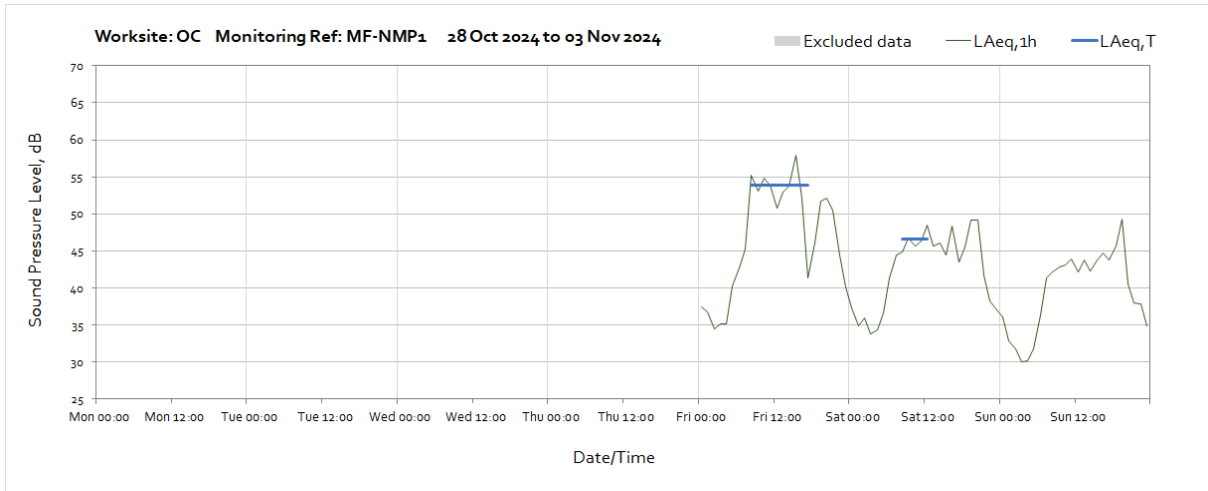
Note: Missing data between 11:00 and 13:00 on Friday 1st November was due to monitor maintenance.

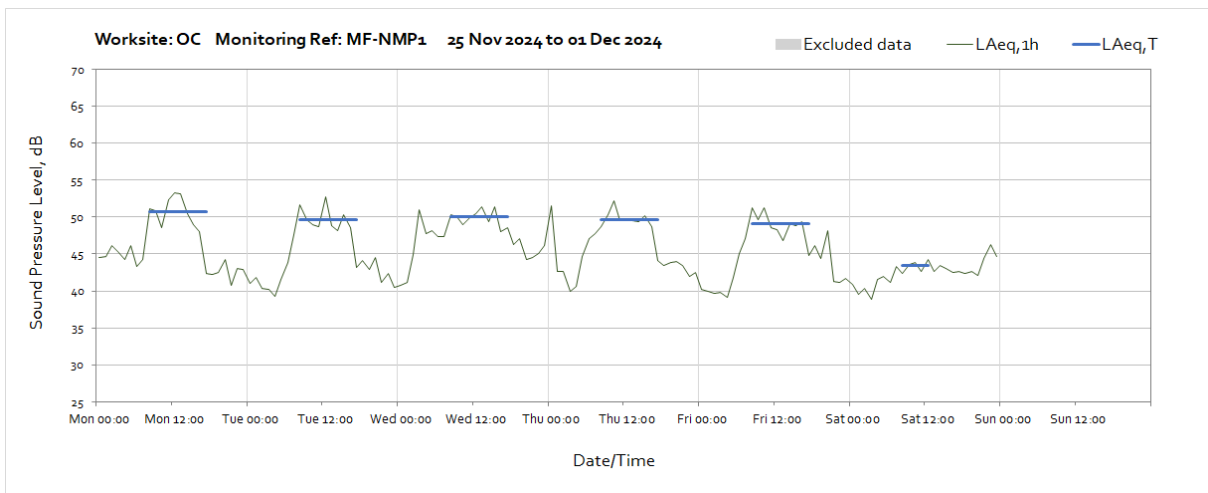
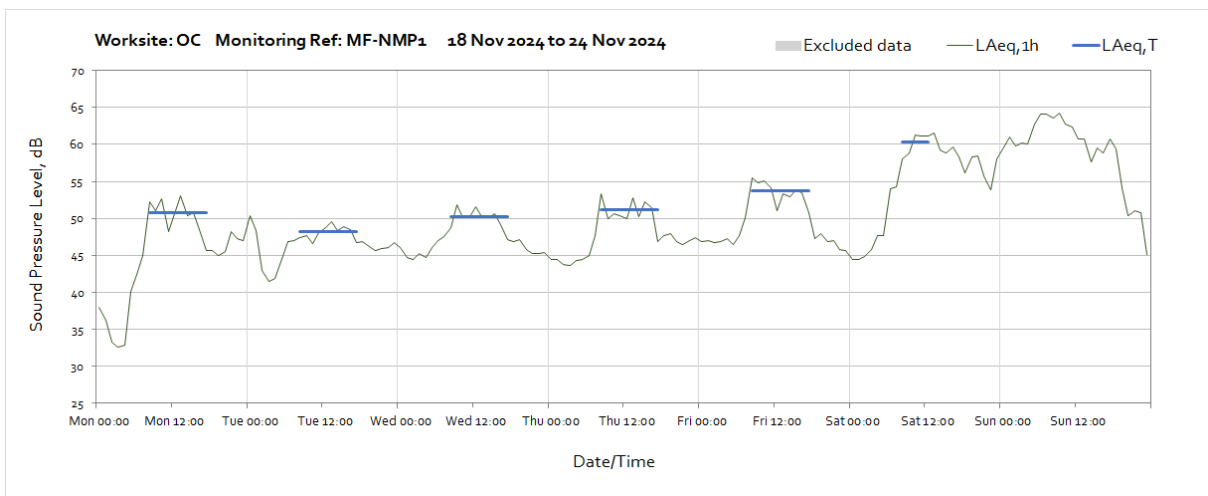
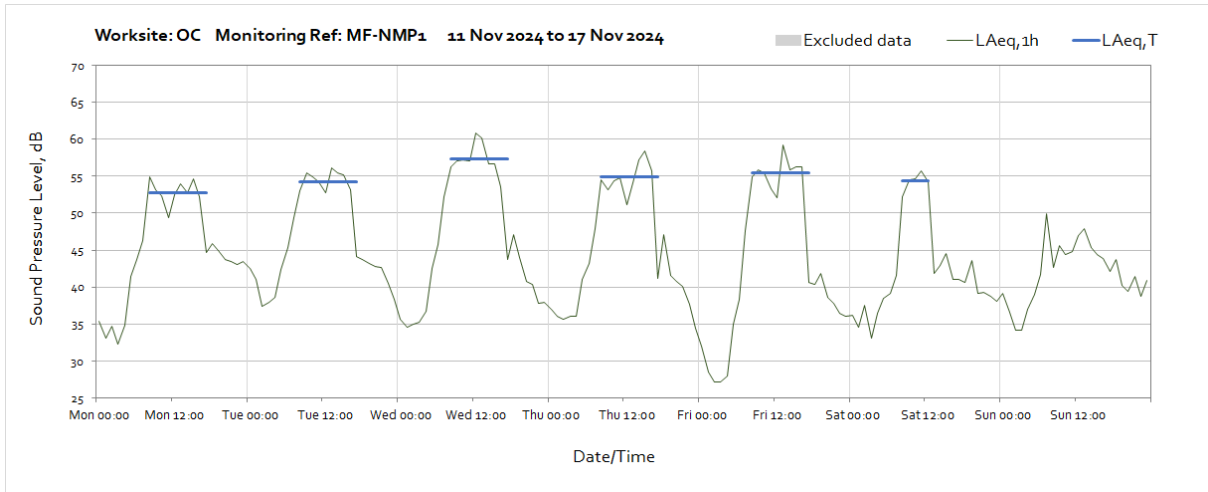
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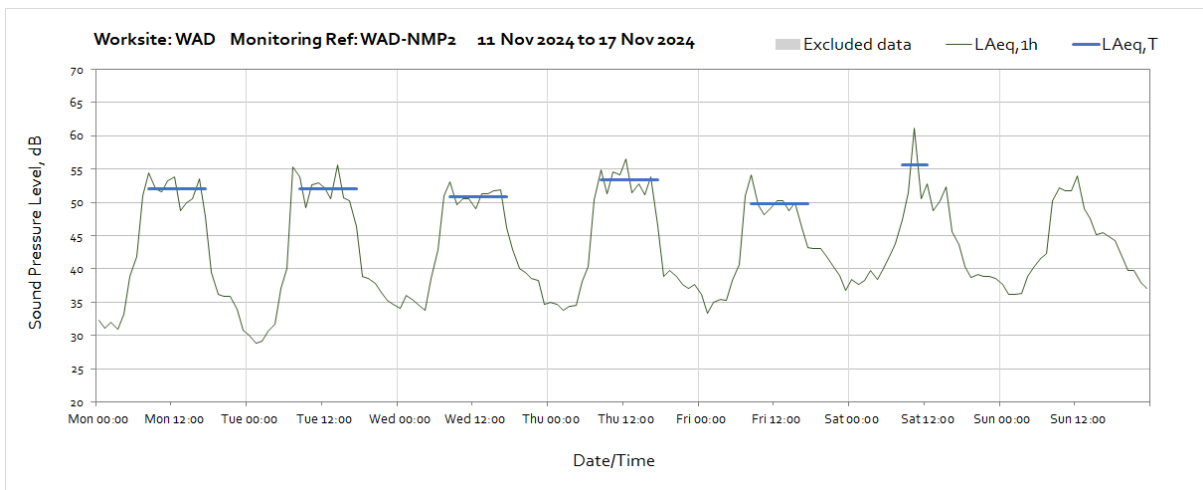
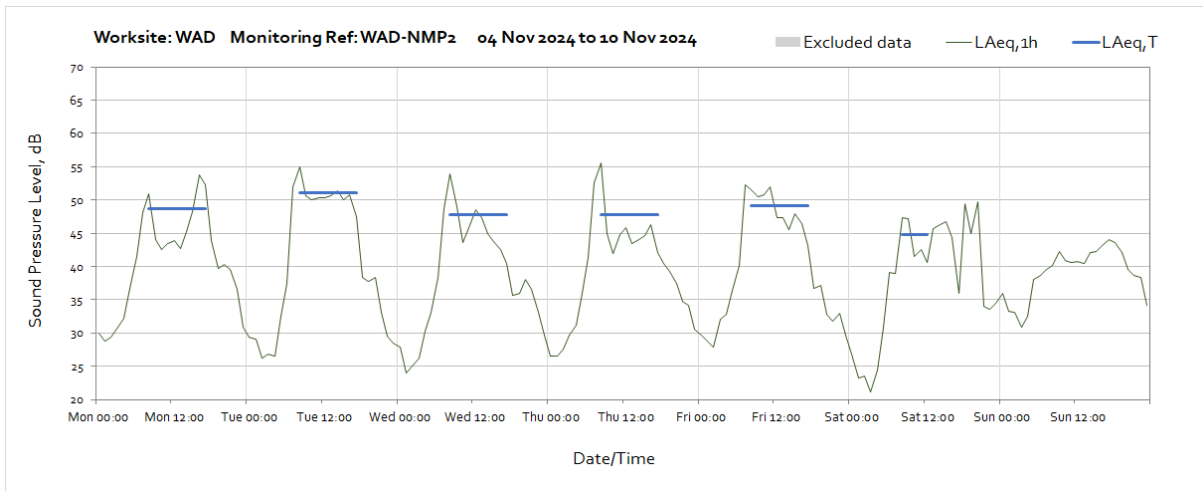
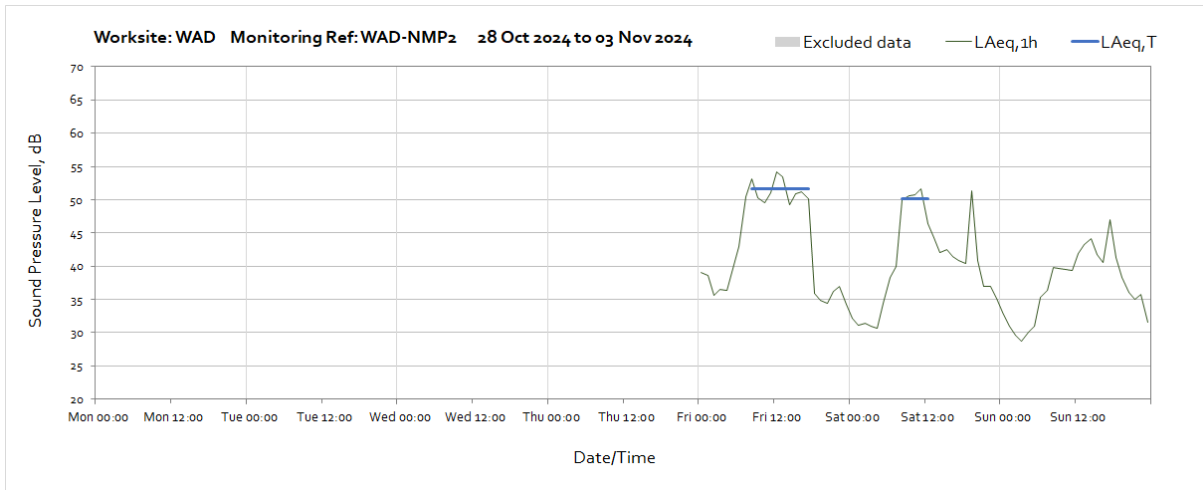


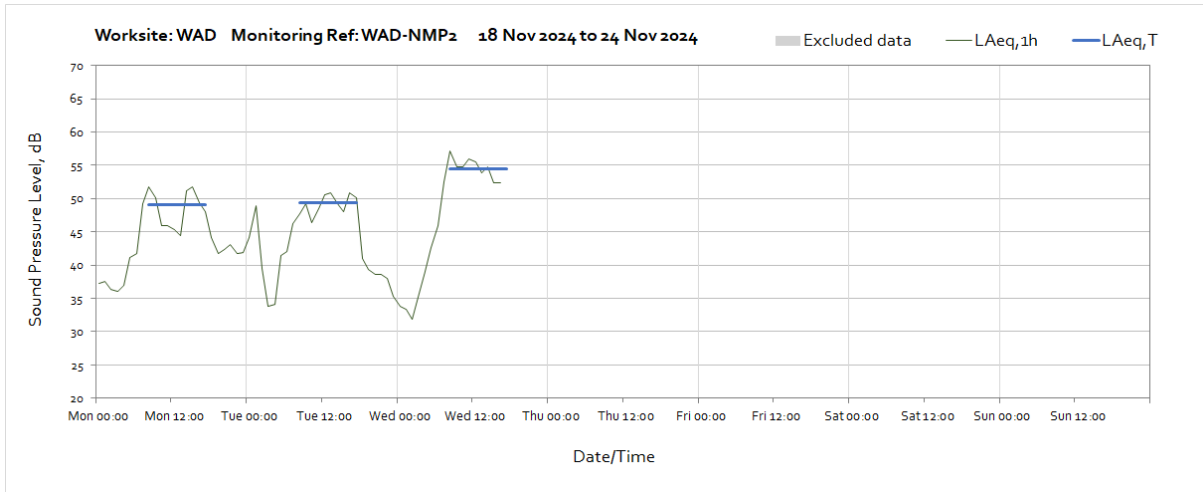
Worksite: OC – Monitoring Ref: MF-NMP1





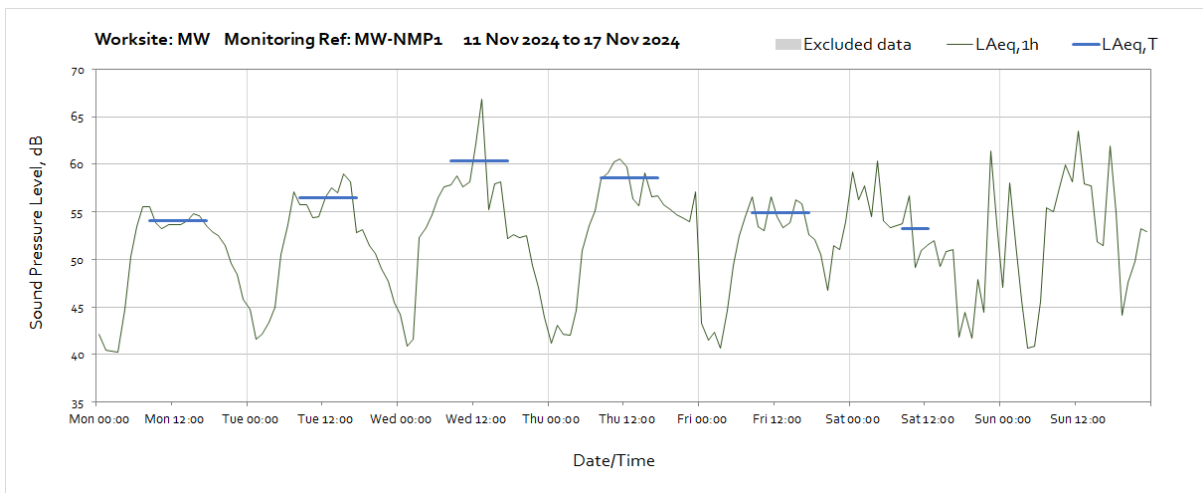
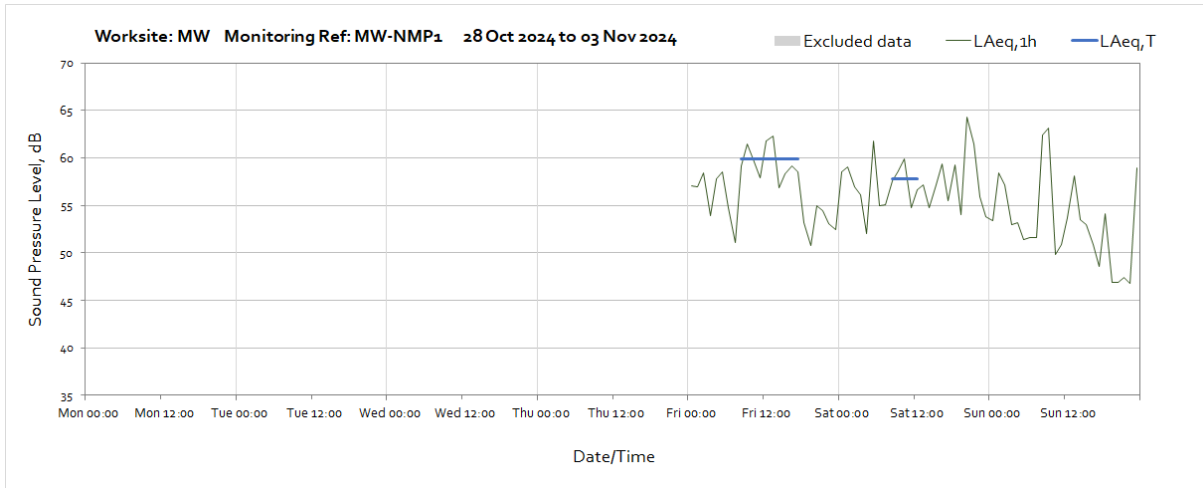
Worksite: WAD – Monitoring Ref: WAD-NMP2

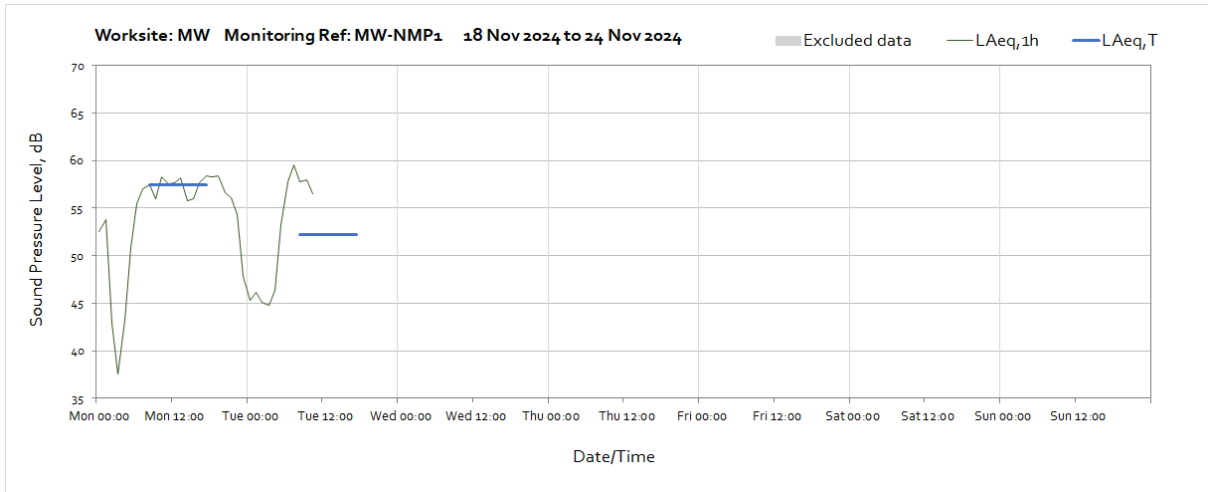




Note: Missing data from 17:00 on Wednesday 20th November until the end of the month was due to loss of connection to the monitoring station, the issue is currently undergoing diagnostics and a replacement monitor is due to be installed shortly.

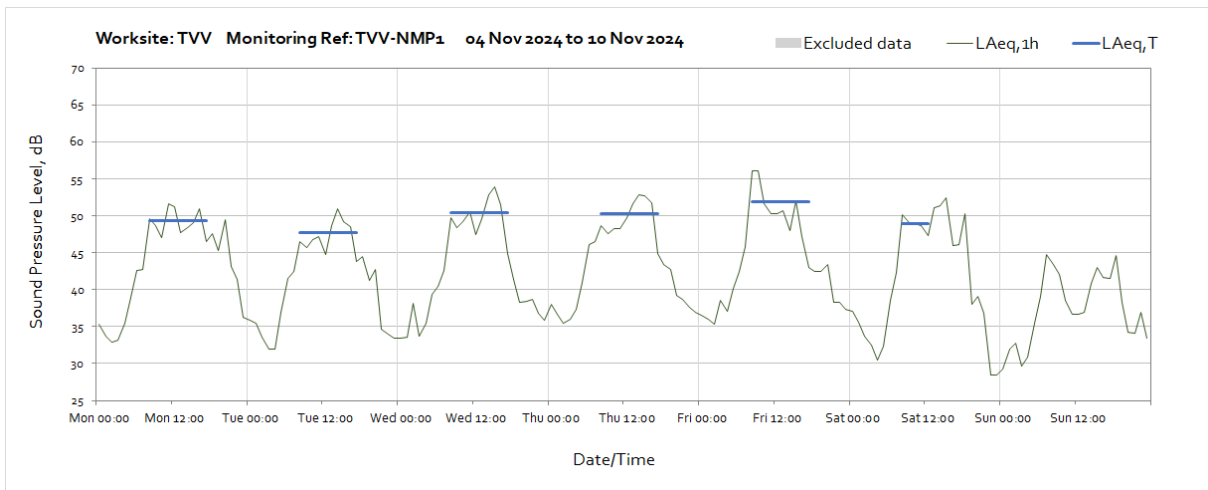
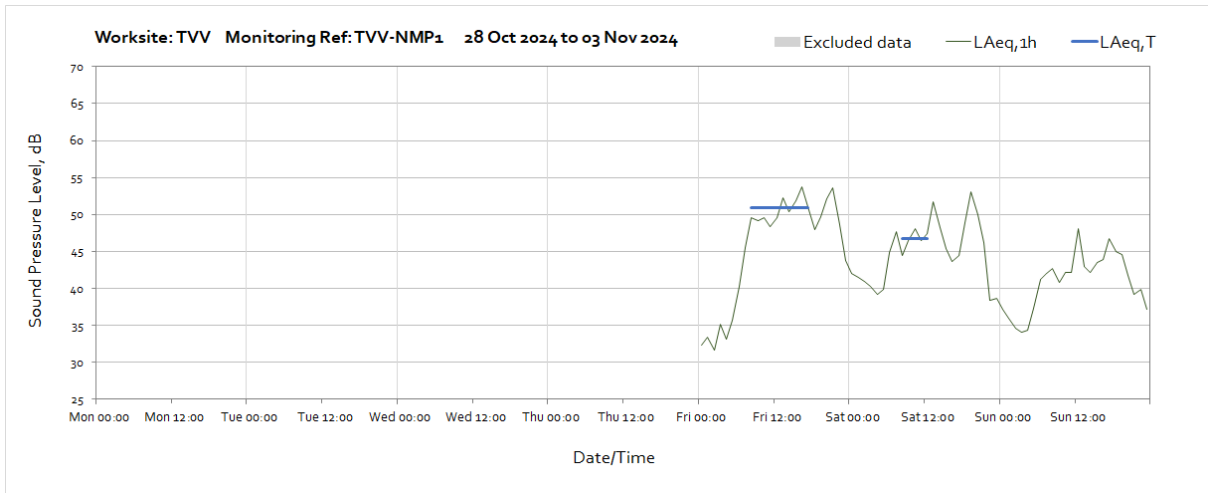
Worksite: MW - Monitoring Ref: MW-NMP1

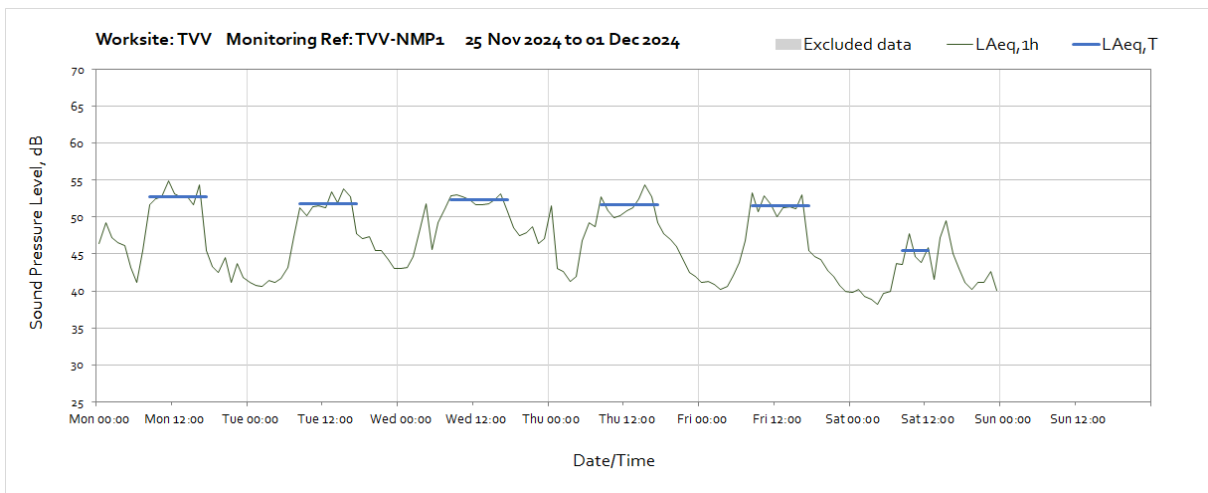
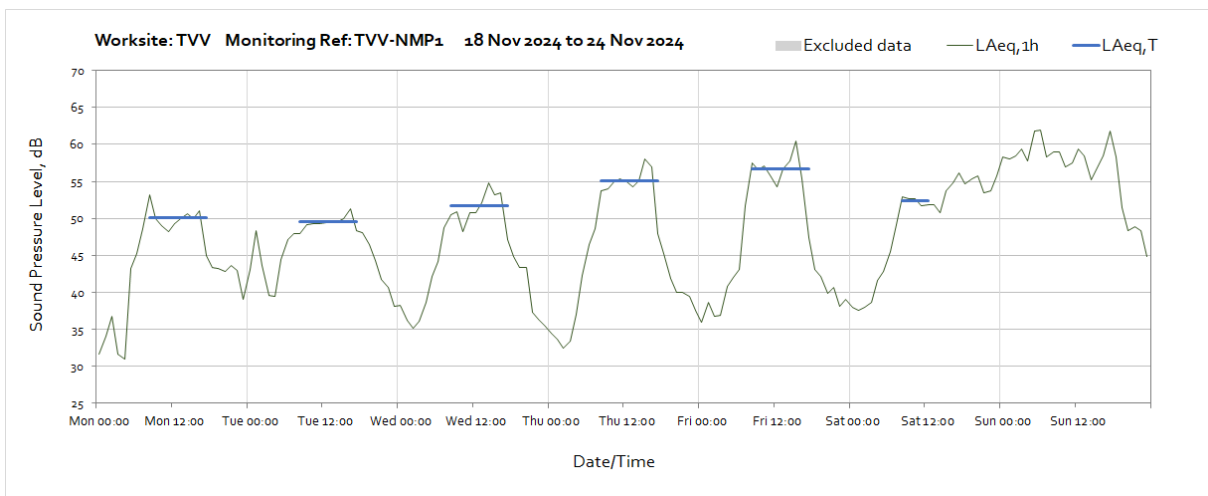
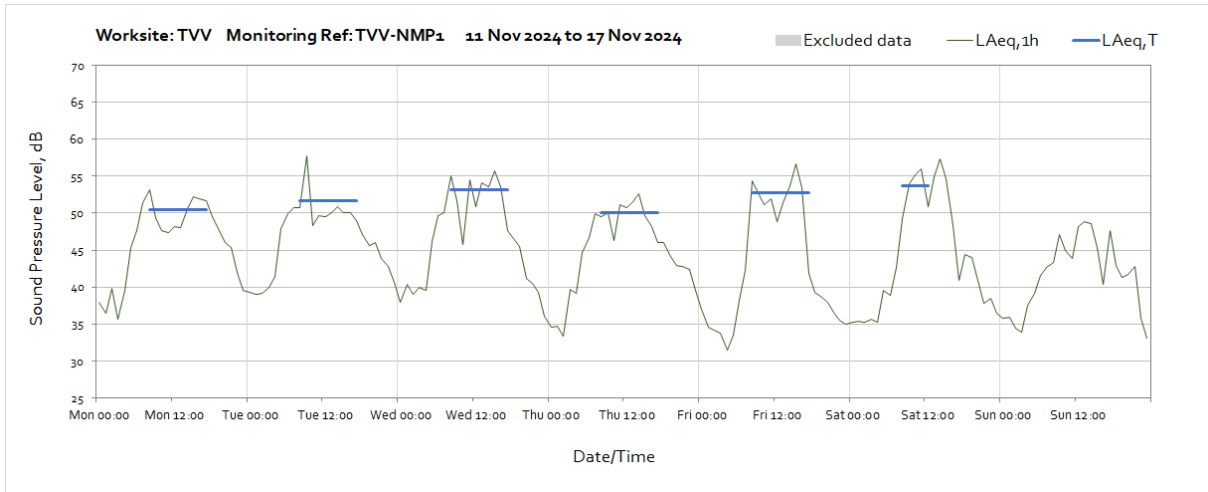




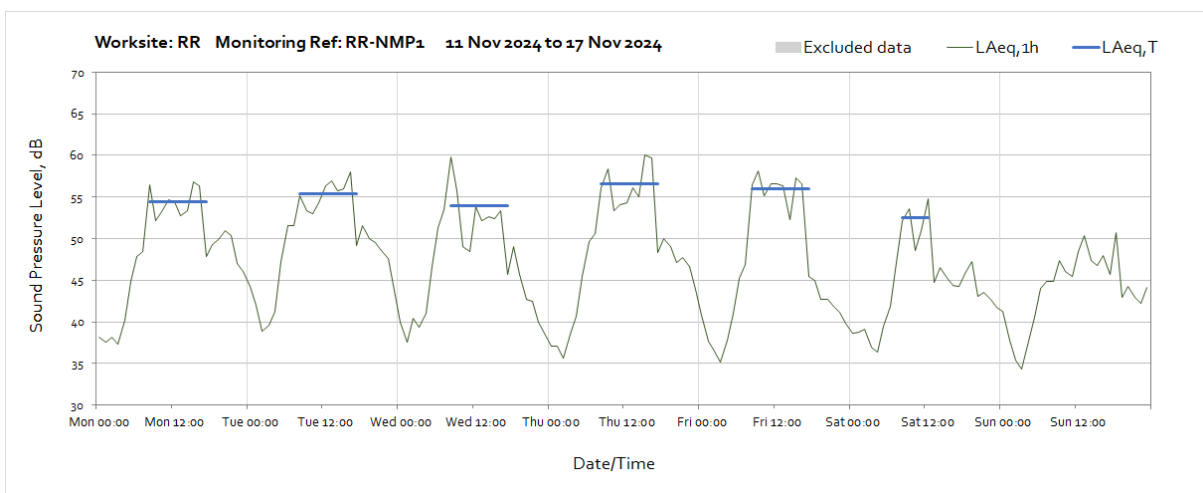
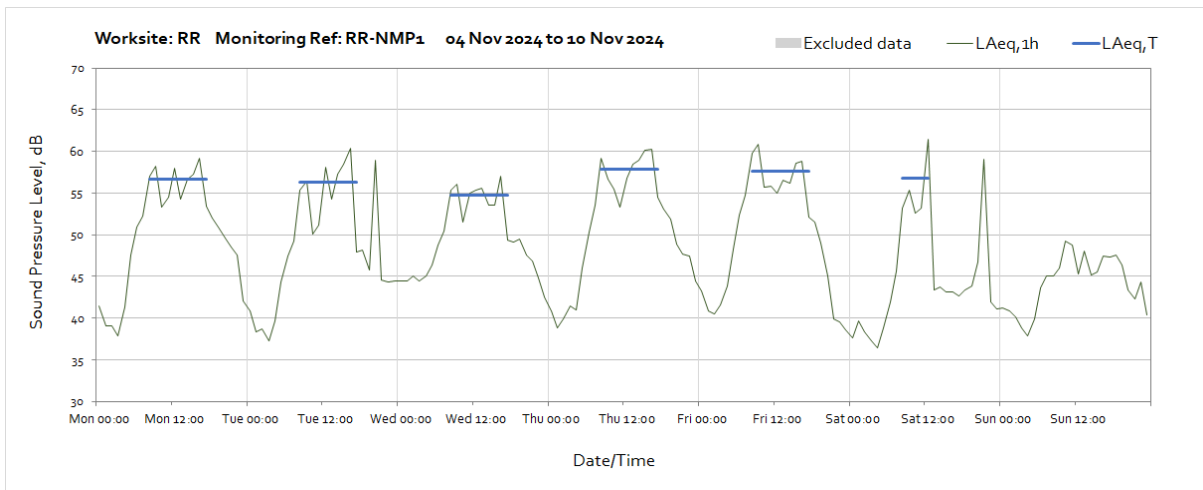
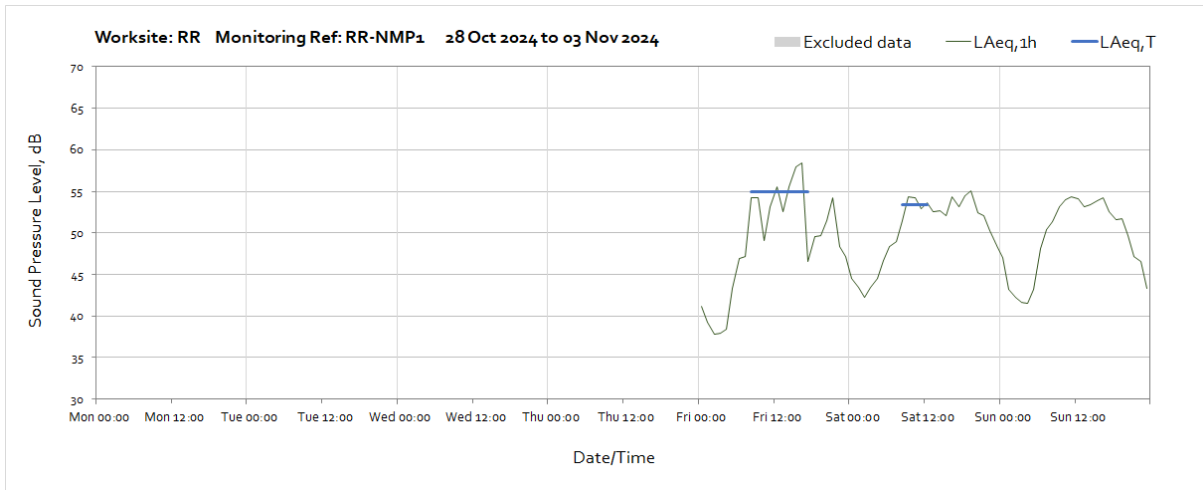
Note: Monitor was decommissioned at 11:00 on Tuesday 19th November.

Worksite: TVV – Monitoring Ref: TVV-NMP1

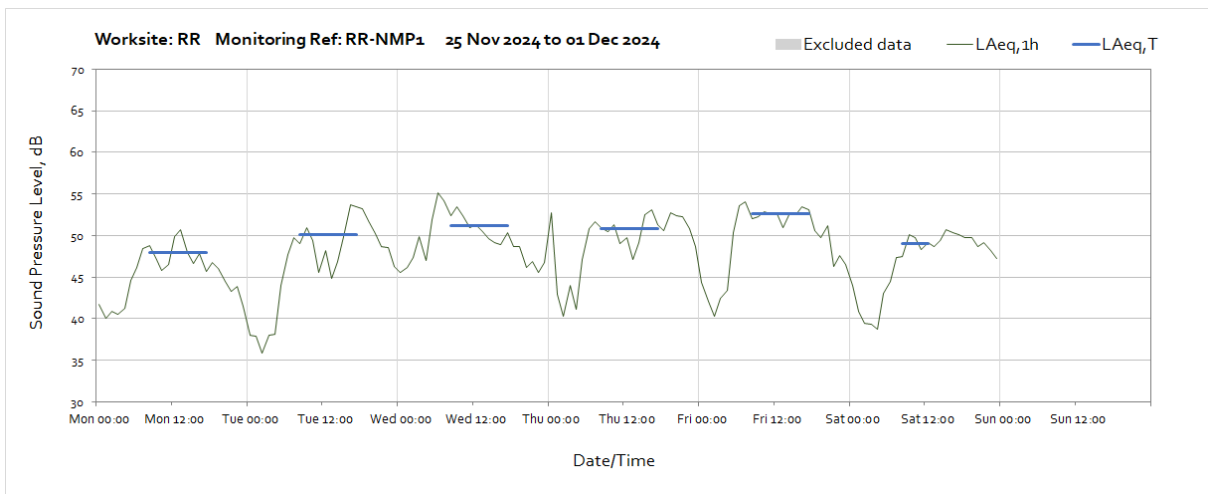
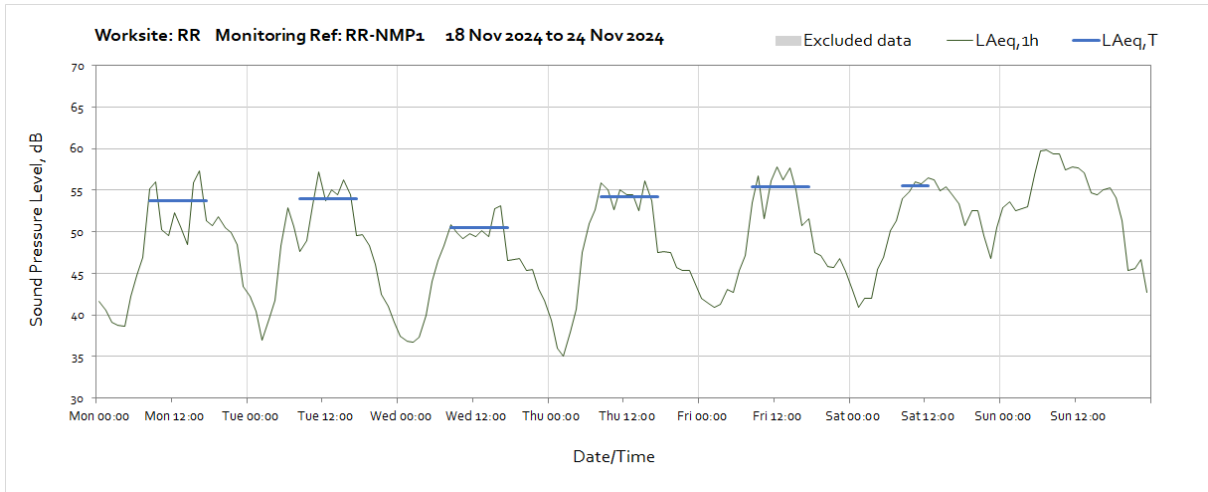




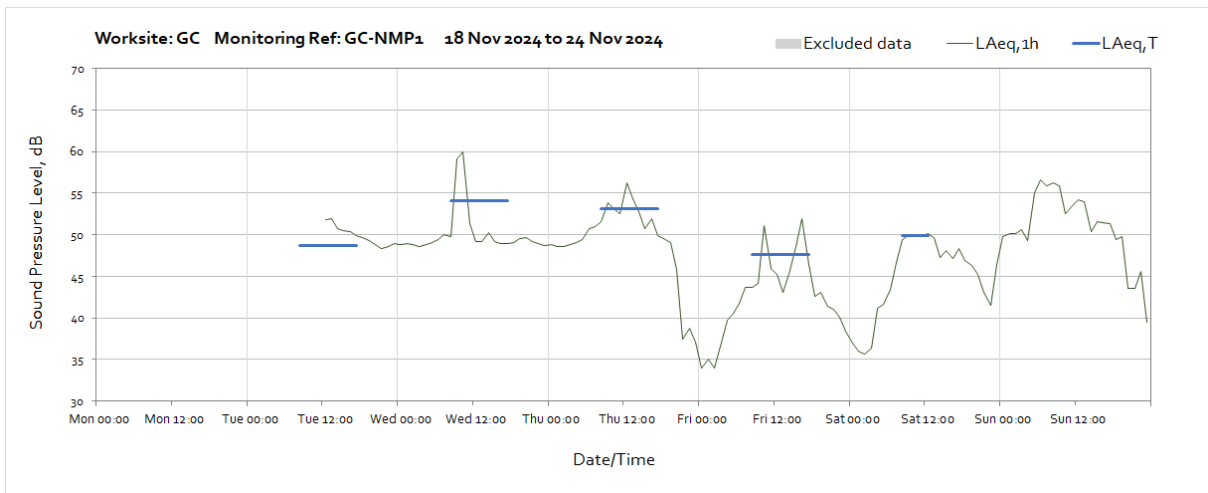
Worksite: RR – Monitoring Ref: RR-NMP1



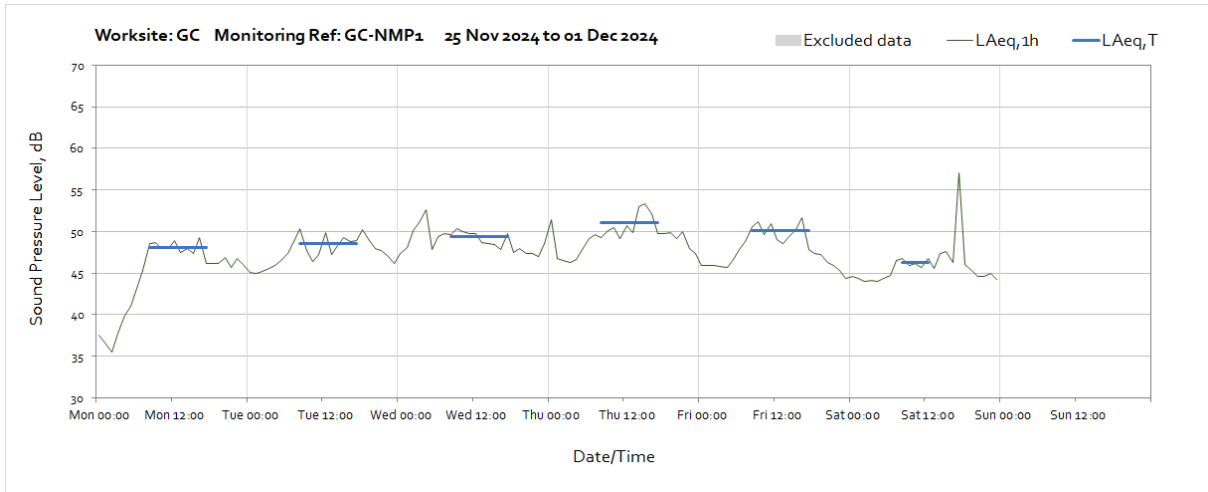
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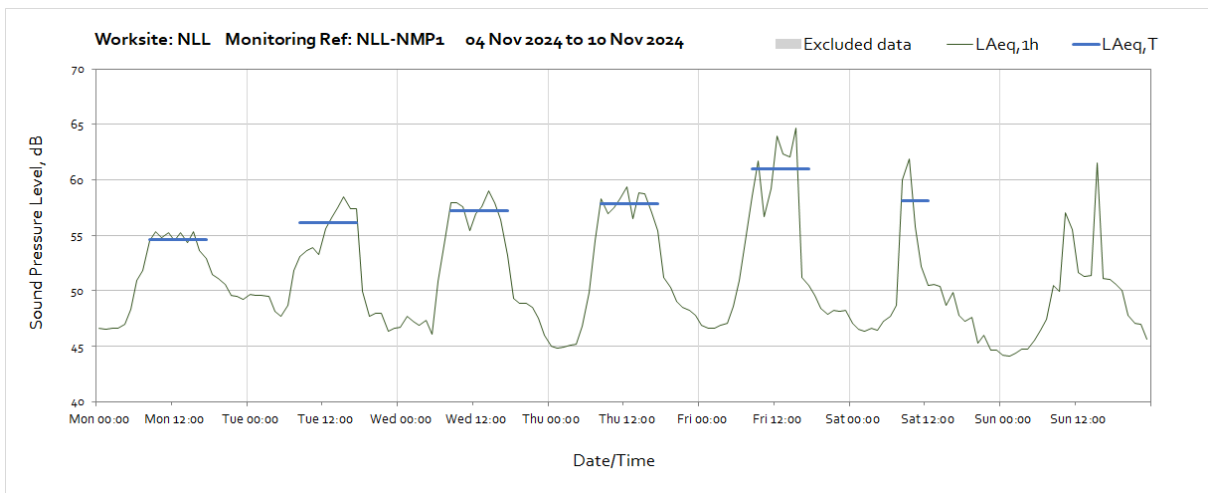
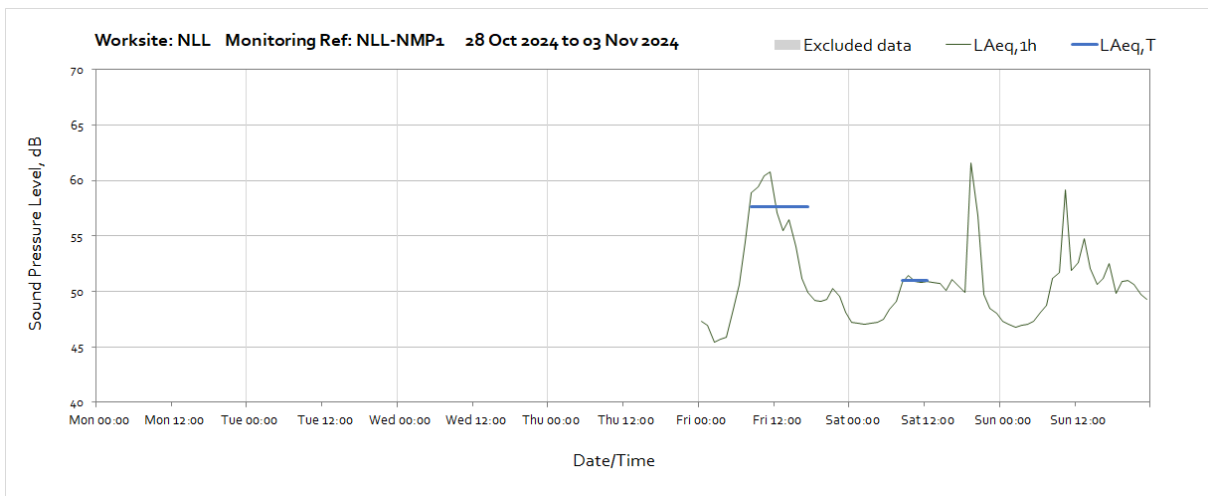
Worksite: GC - Monitoring Ref: GC-NMP1

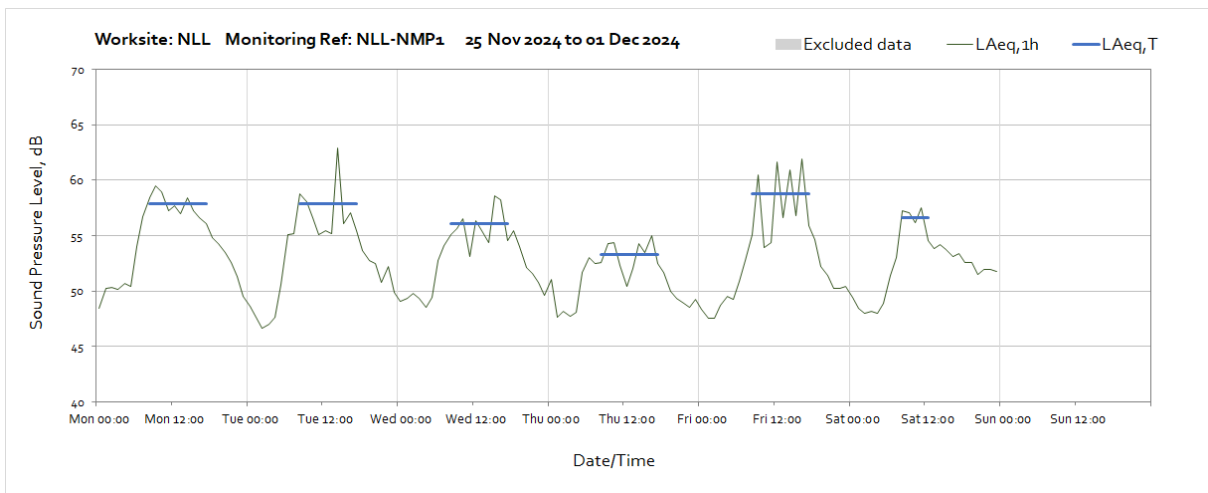
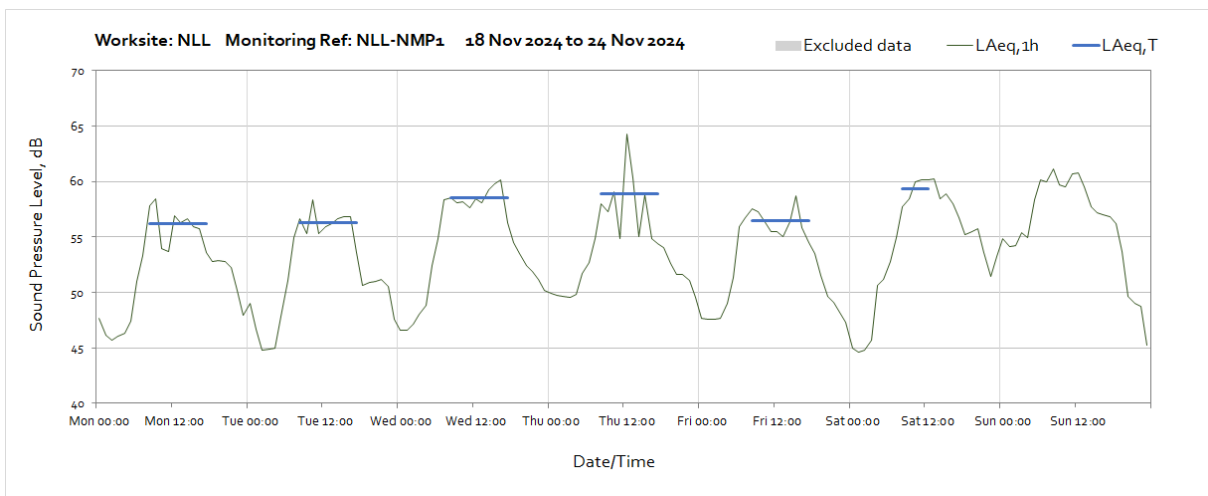
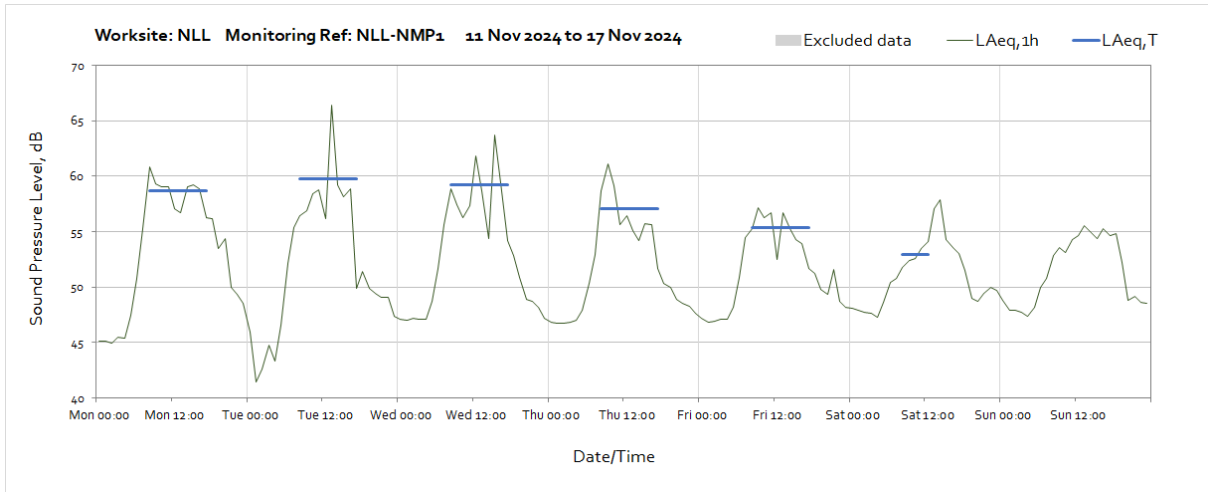


Note: Monitored was installed at 12:00 on Tuesday 19th November.

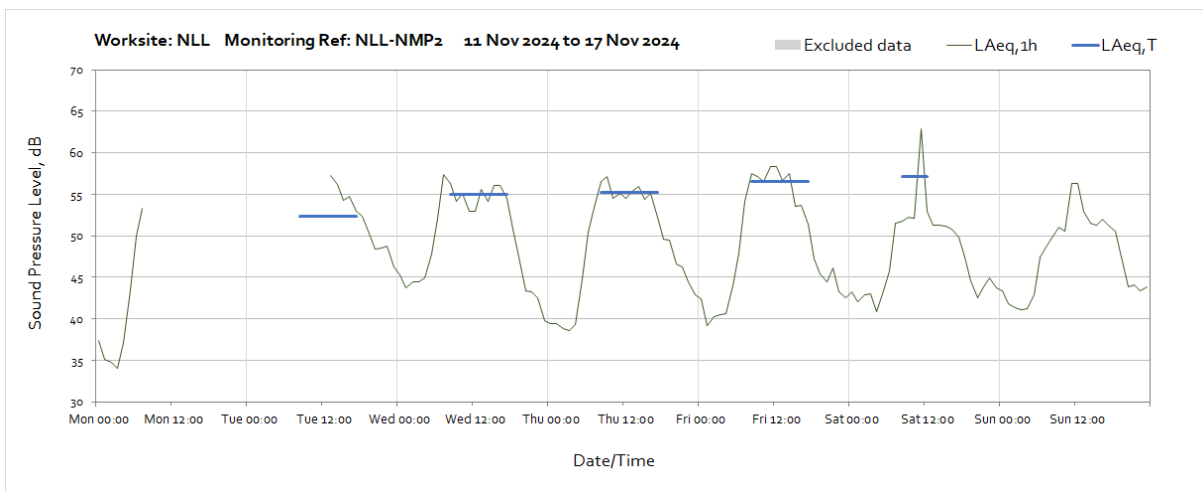
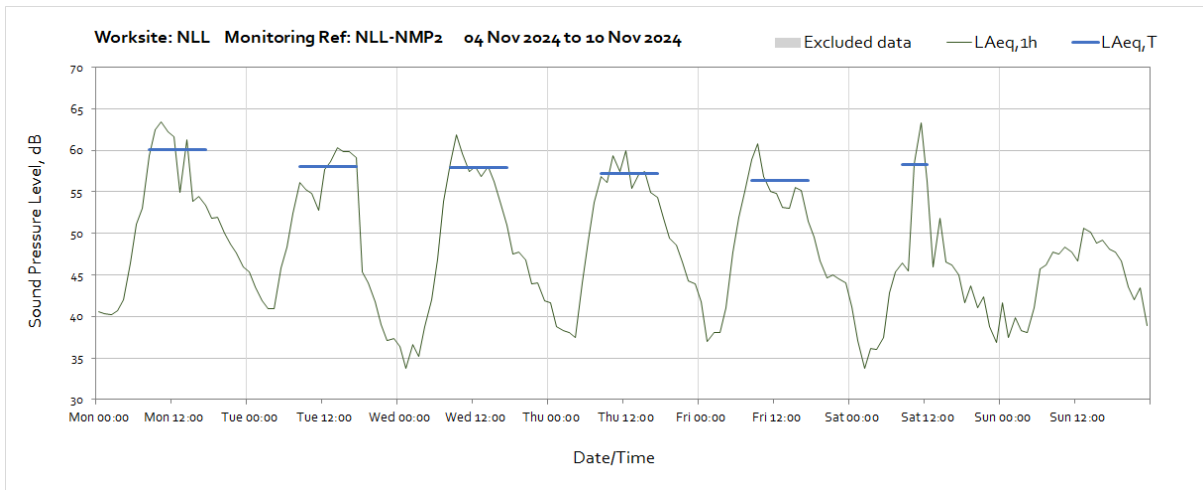
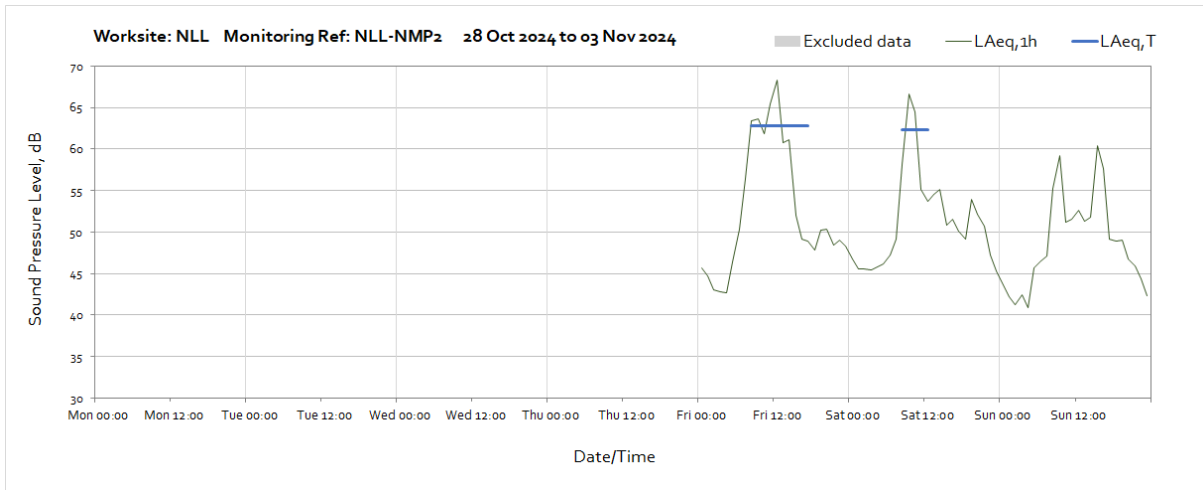


Worksite: NLL - Monitoring Ref: NLL-NMP1



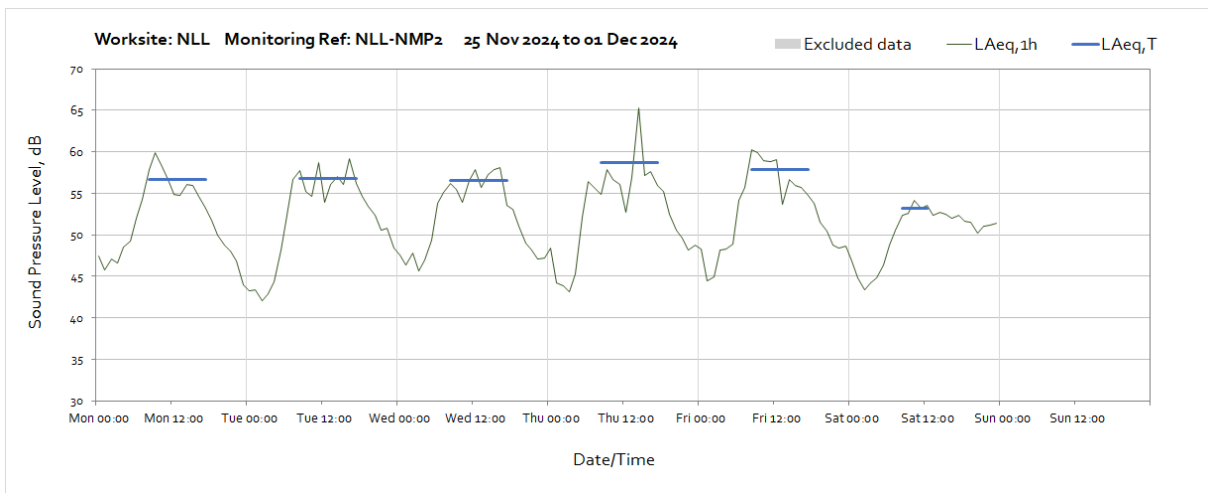
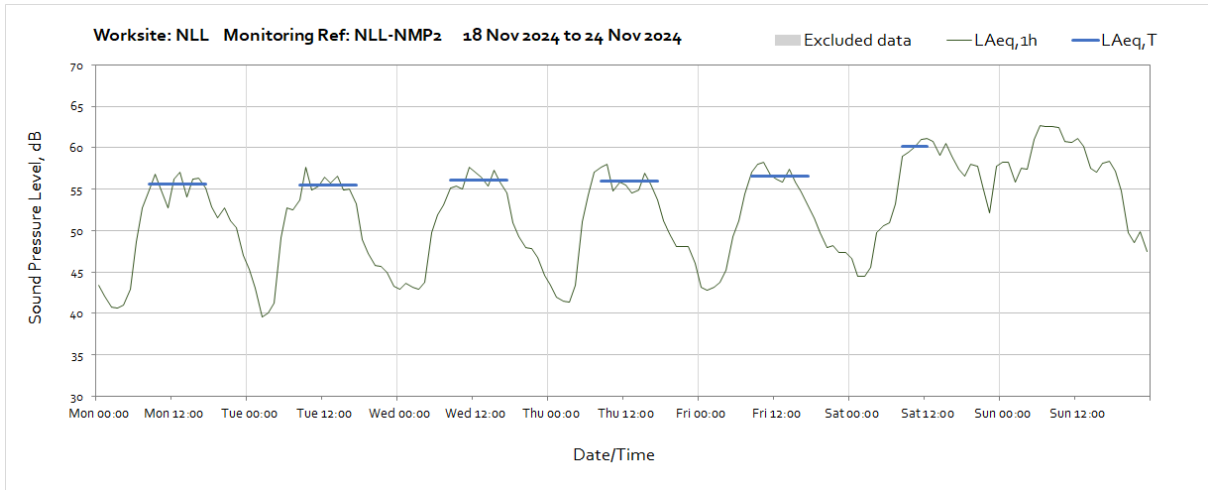


Worksite: NLL – Monitoring Ref: NLL-NMP2

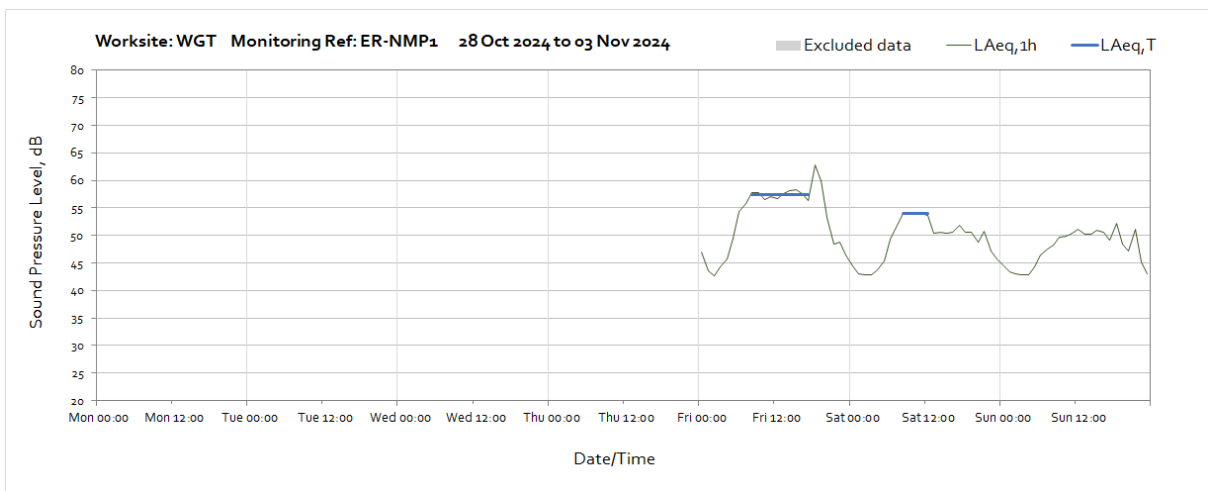


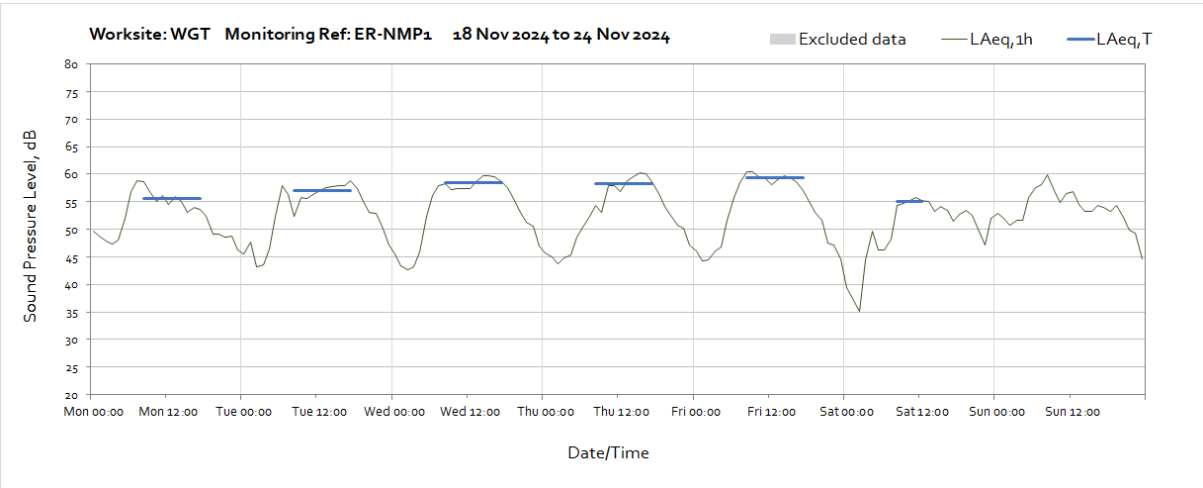
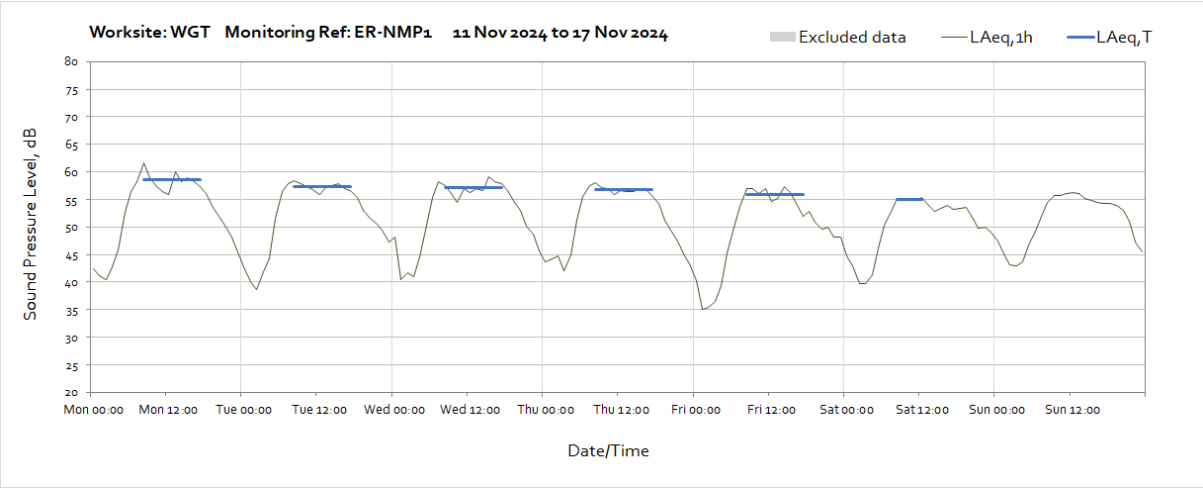
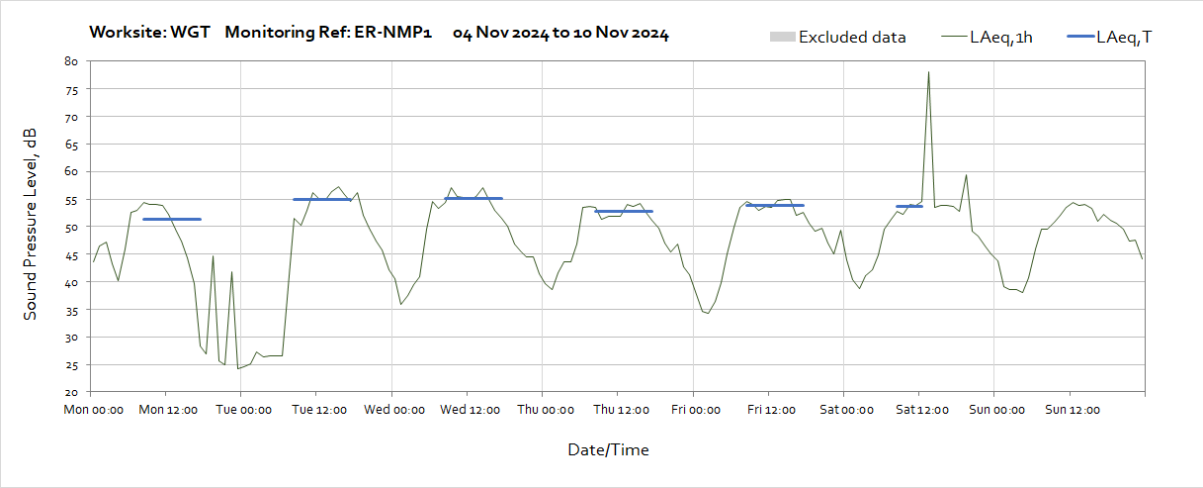
Note: Missing data between 08:00 on Monday 11th November until 13:00 on Tuesday 12th November was due to a depleted monitor battery.

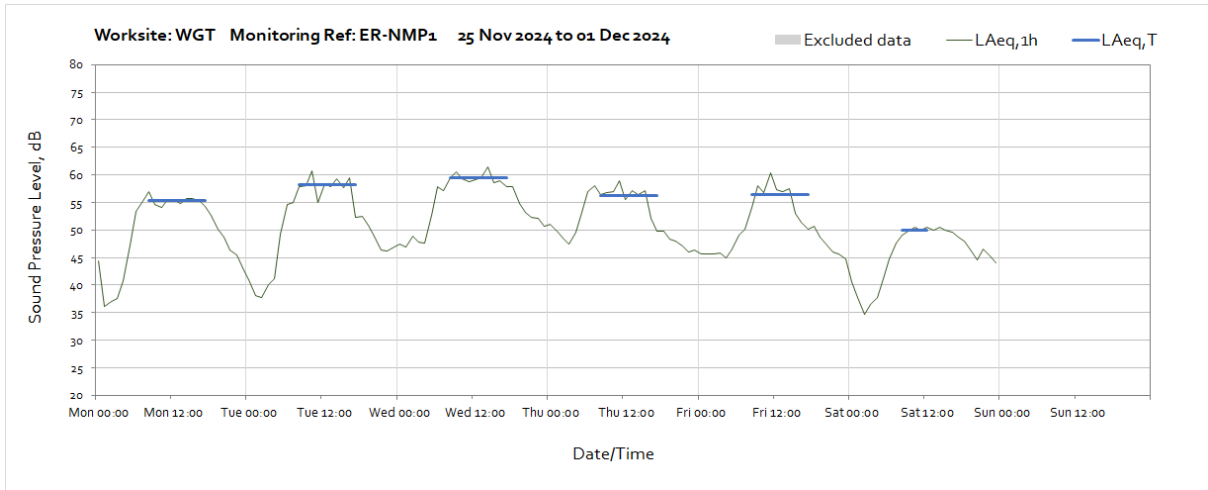
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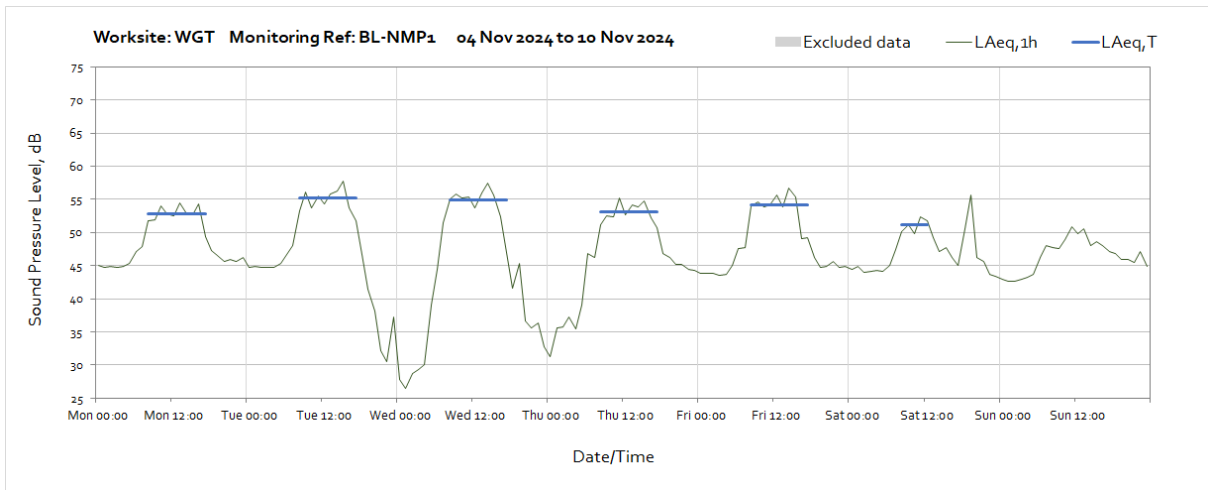
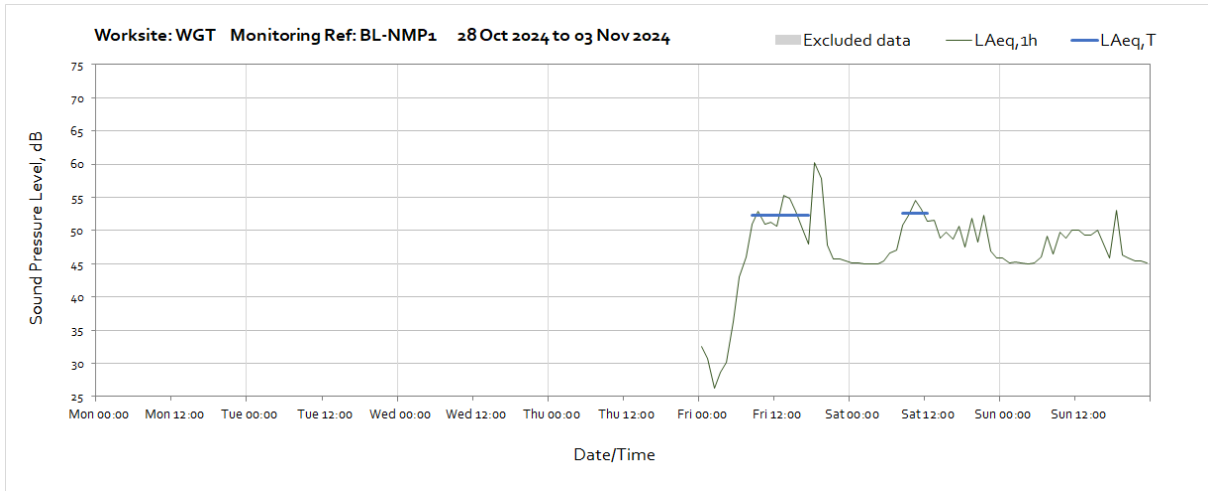
Worksite: WGT – Monitoring Ref: ER-NMP1

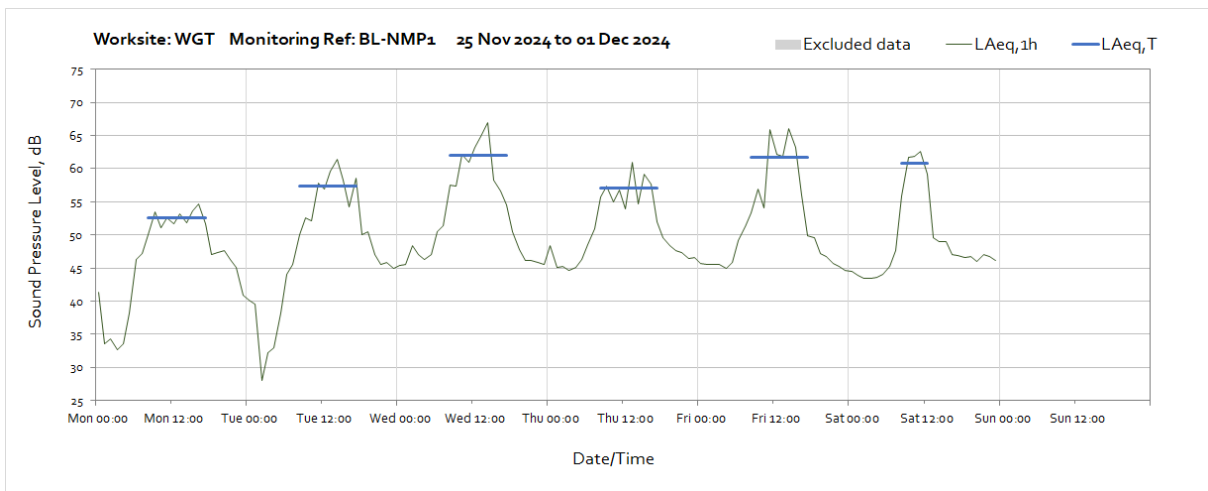
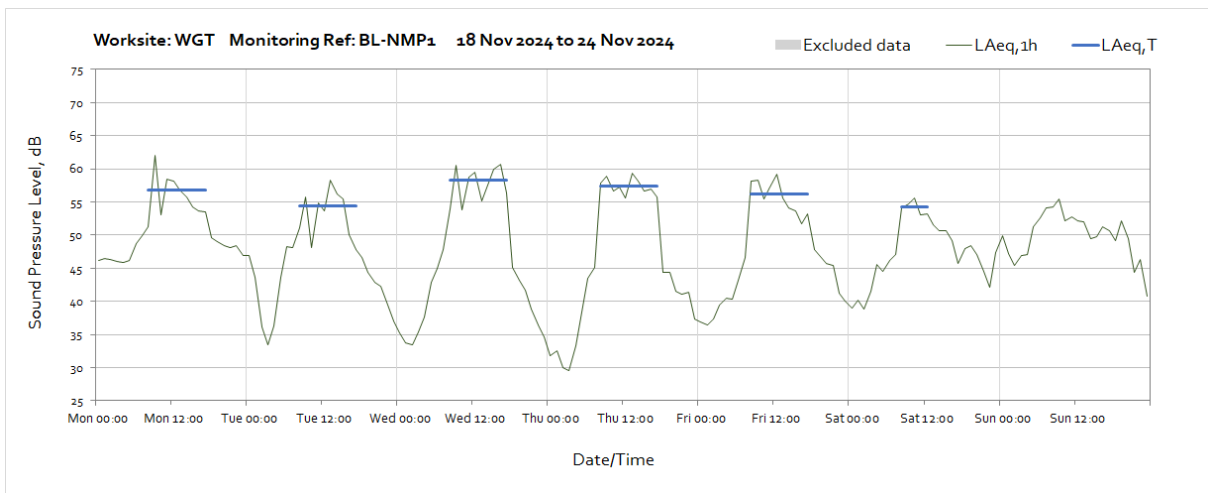
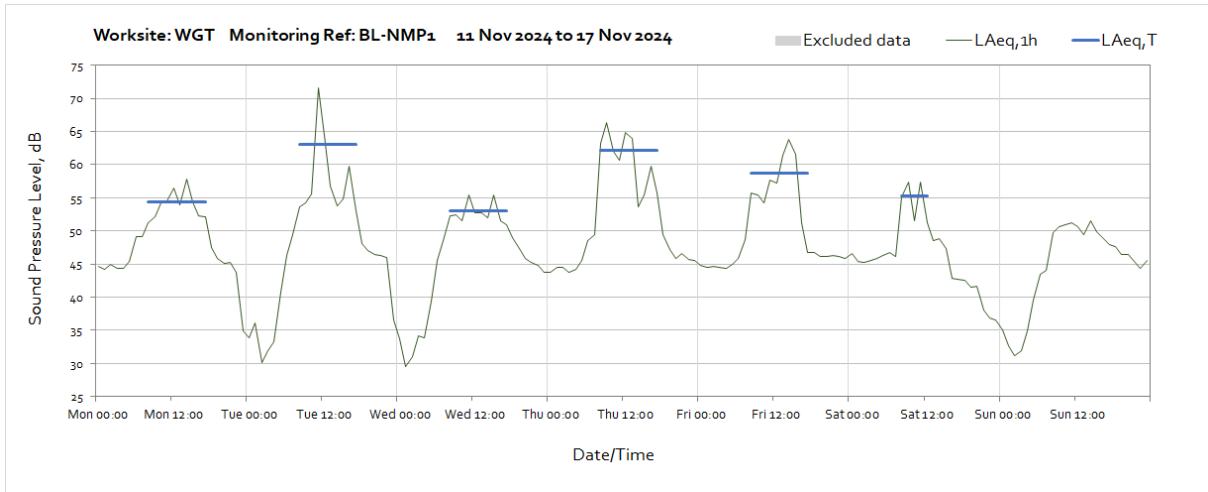




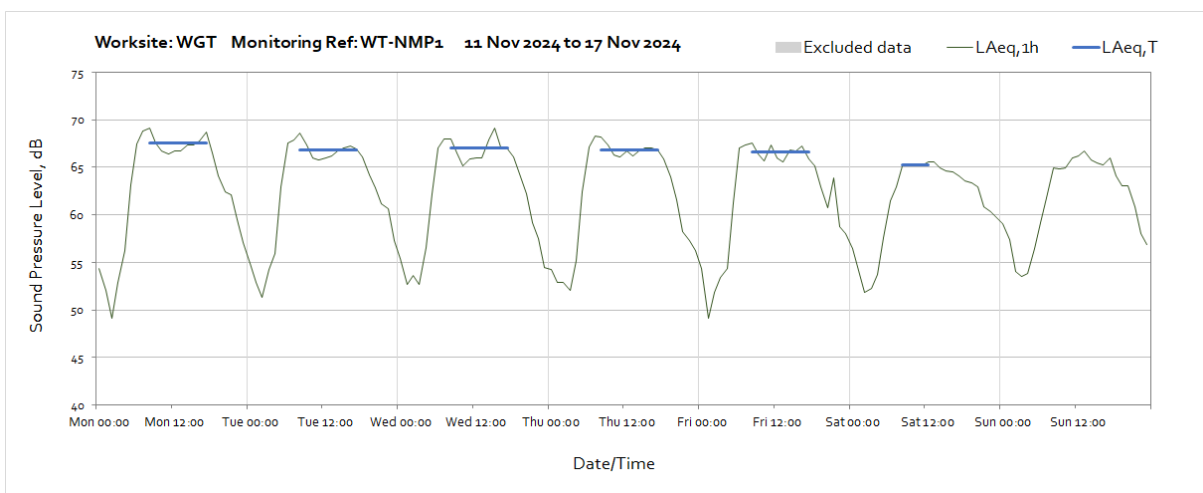
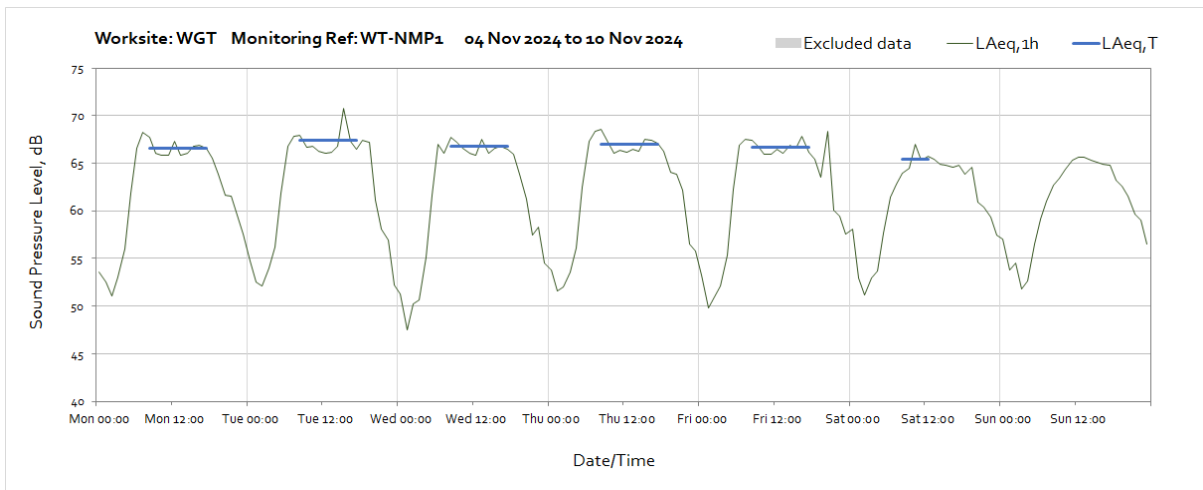
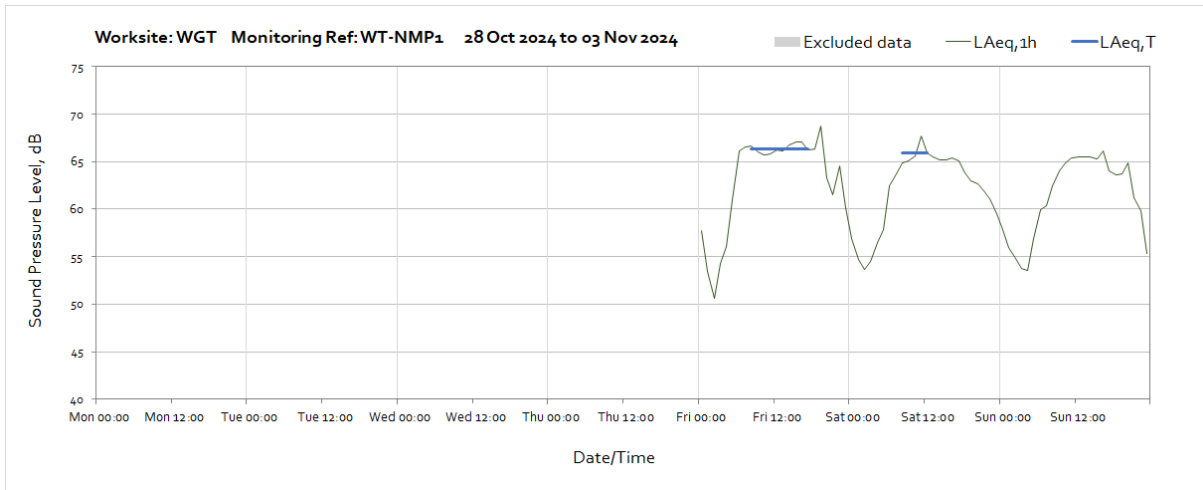


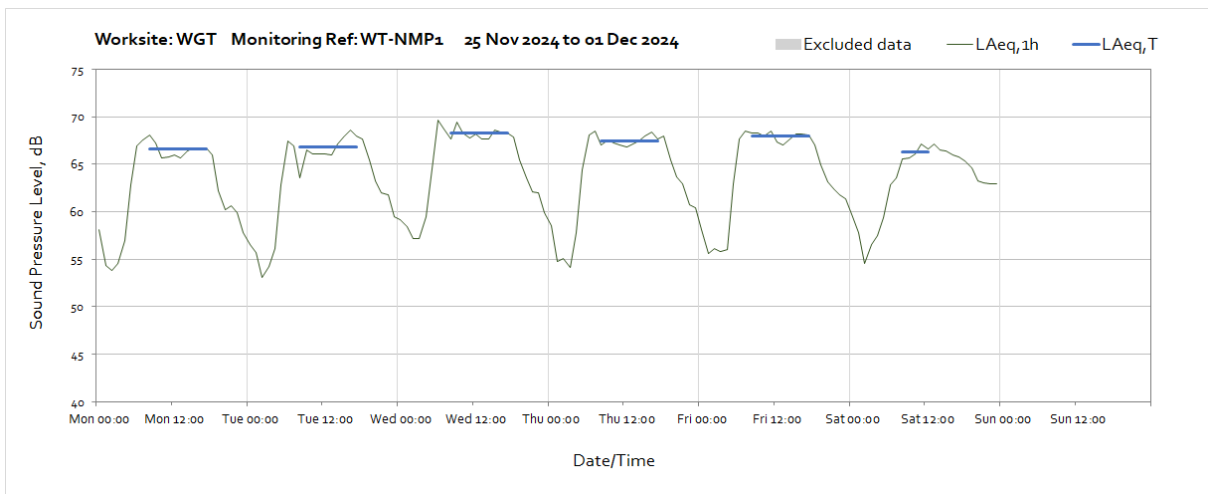
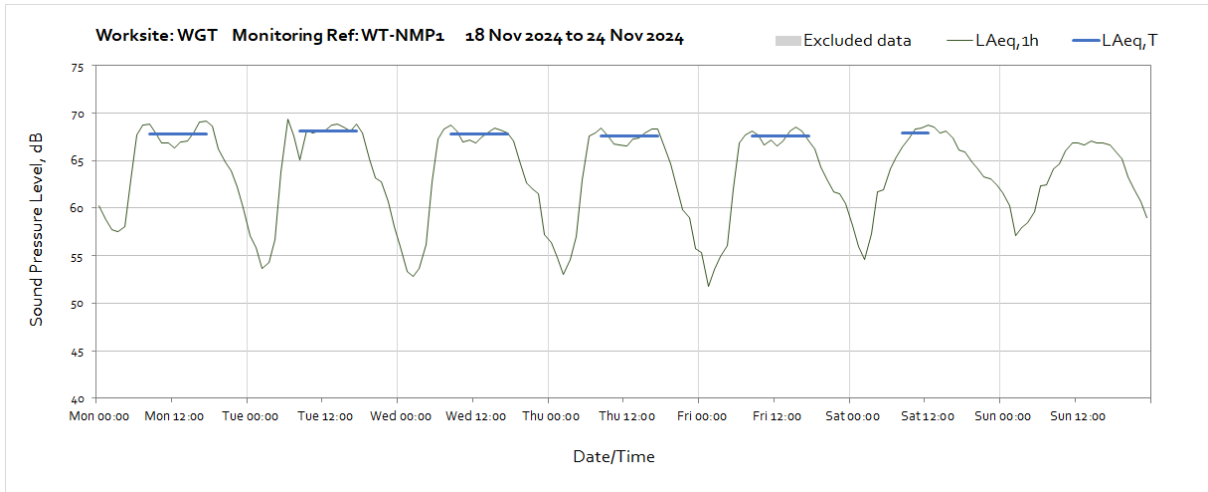
Worksite: WGT - Monitoring Ref: BL-NMP1



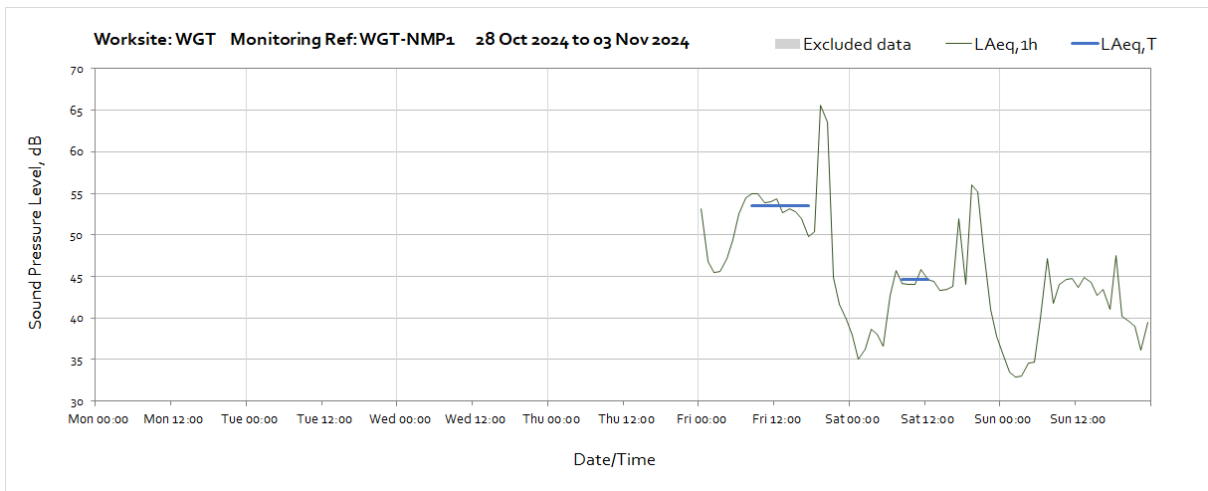


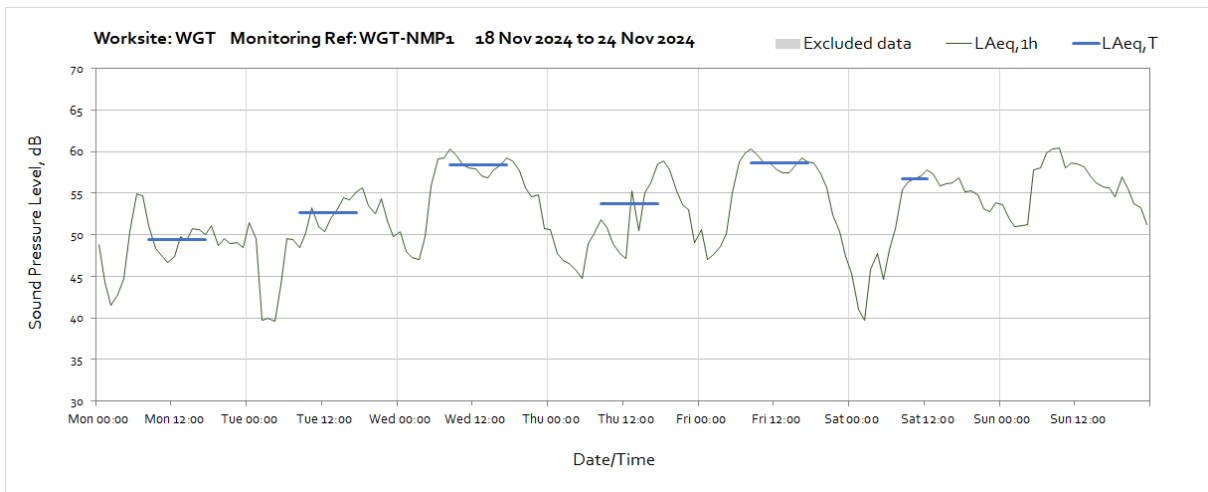
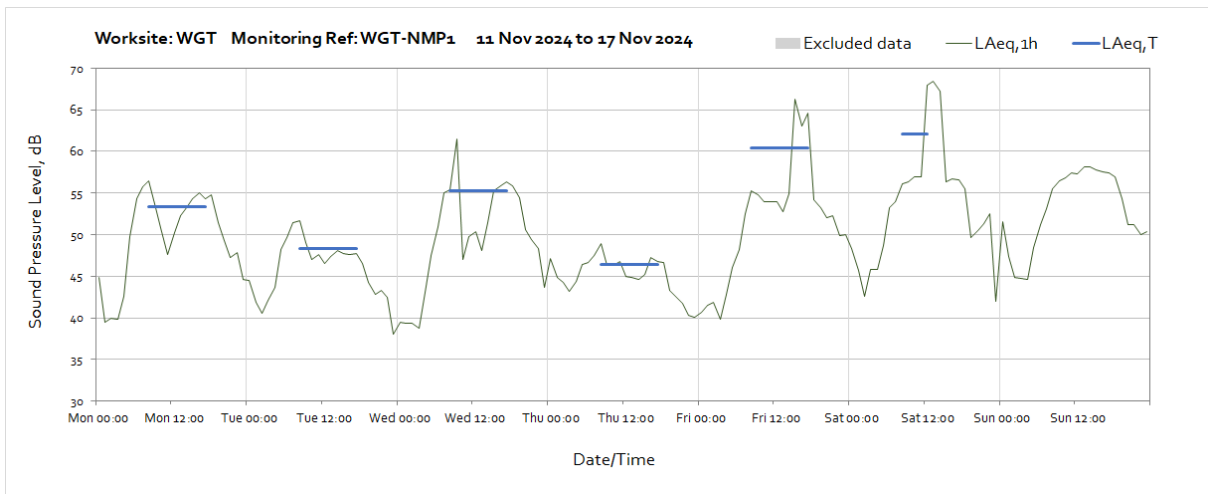
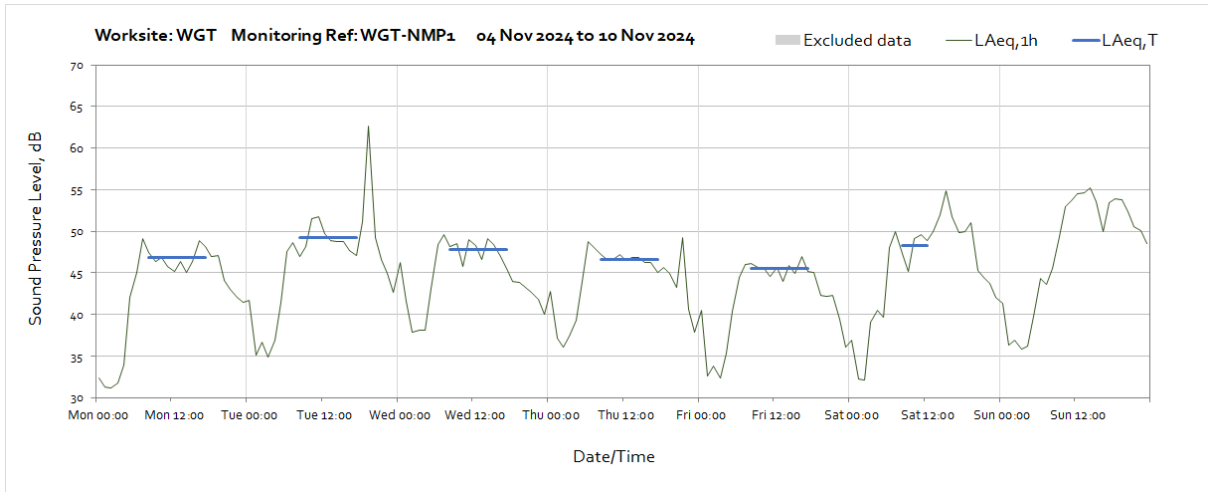
Worksite: WGT – Monitoring Ref: WT-NMP1

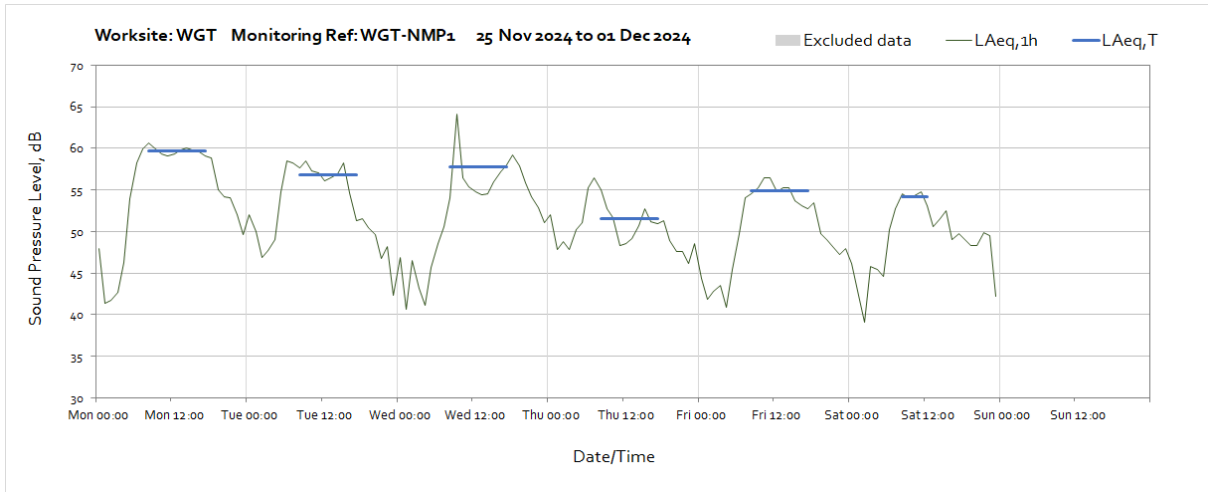




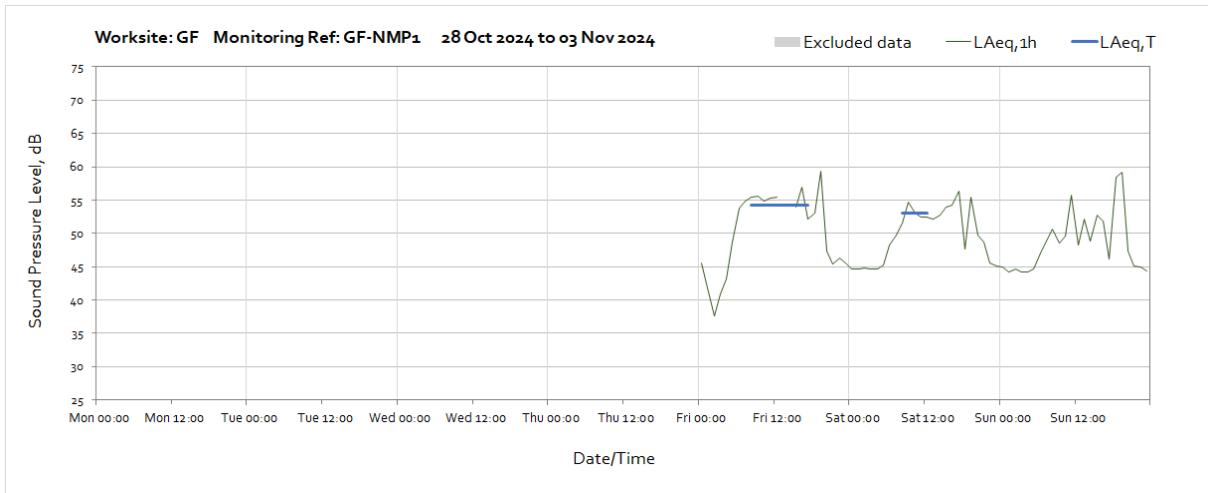
Worksite: WGT - Monitoring Ref: WGT-NMP1



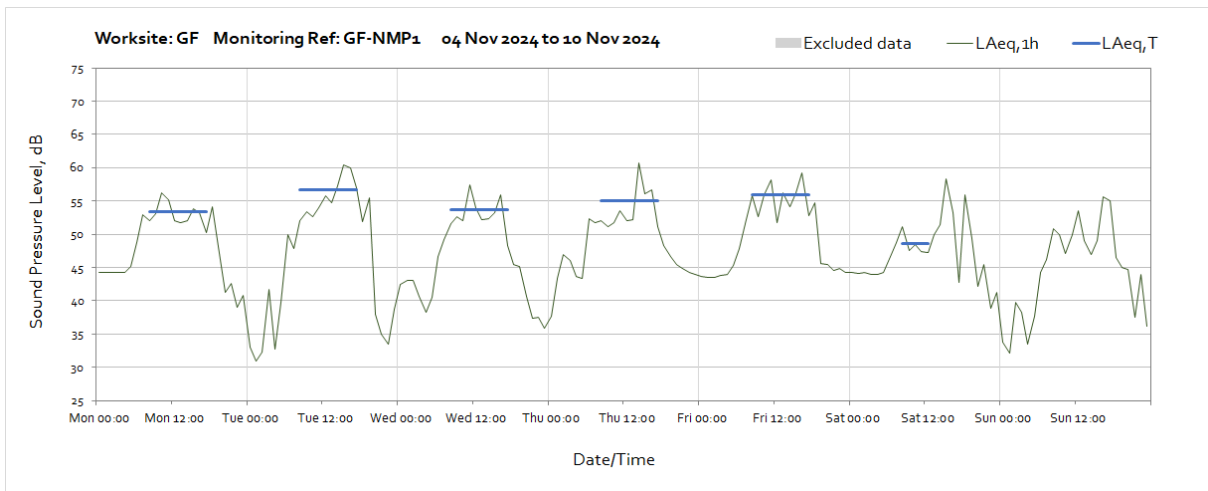


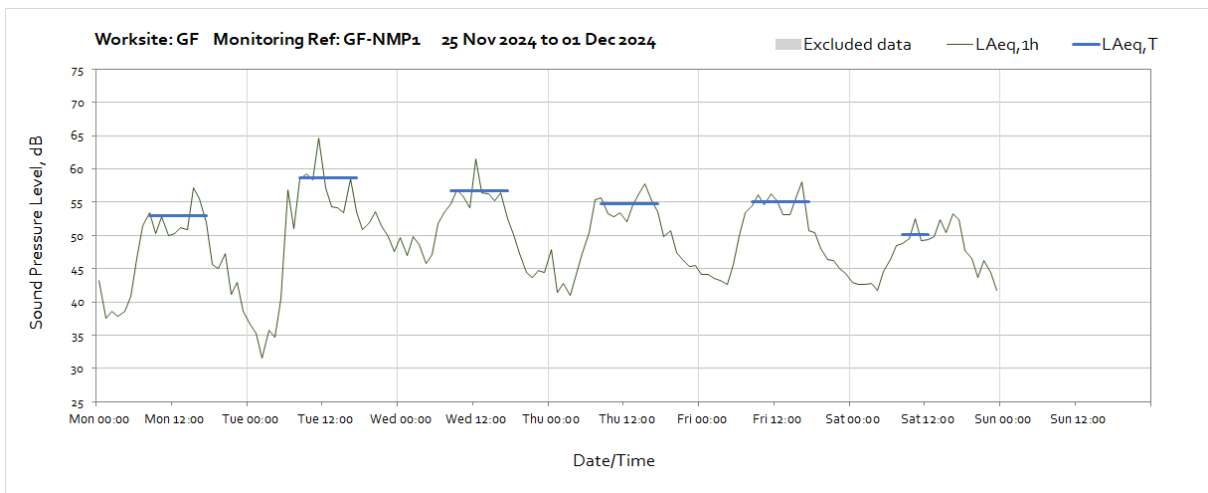
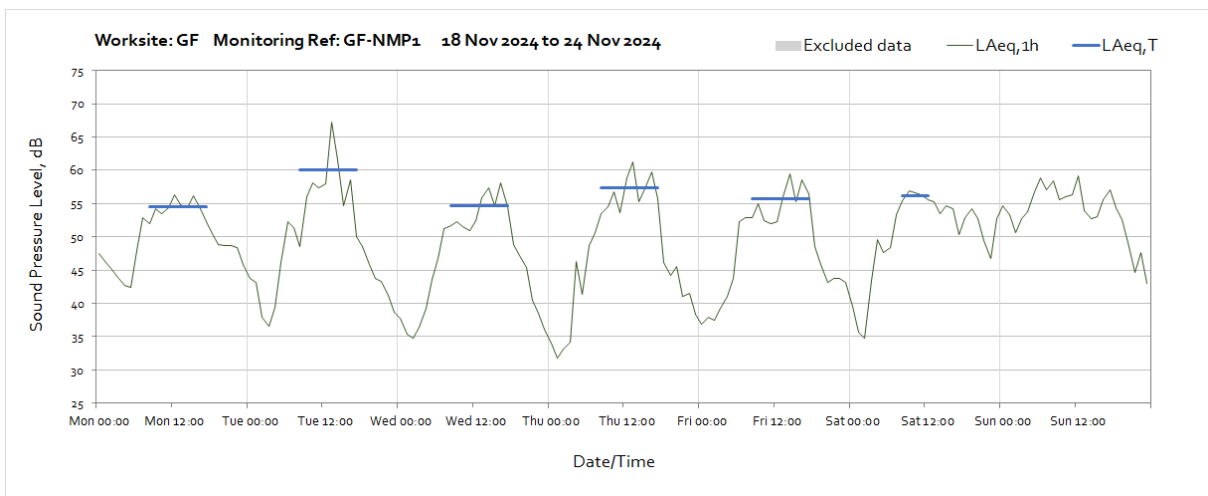
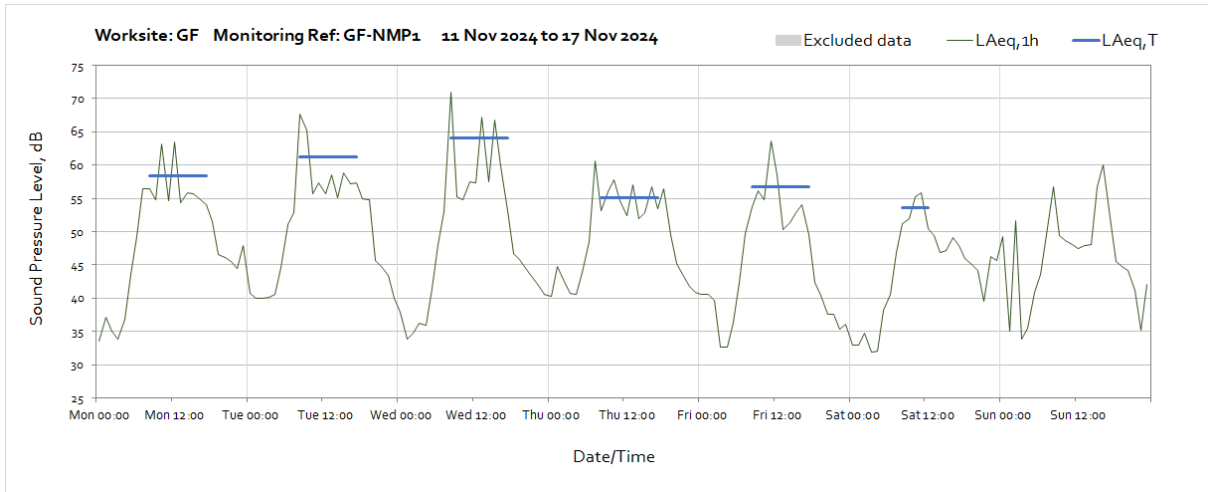


Worksite: GF – Monitoring Ref: GF-NMP1

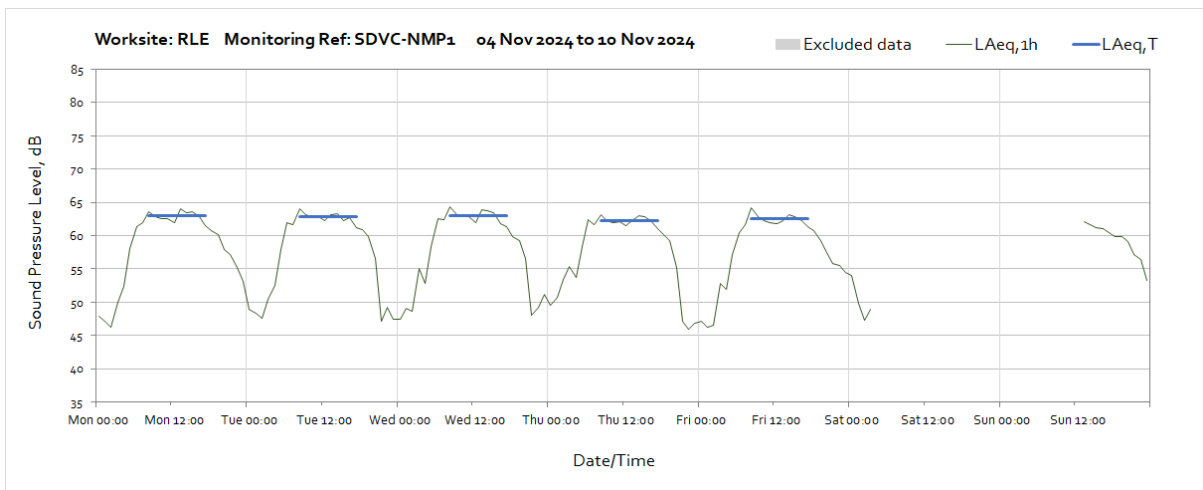
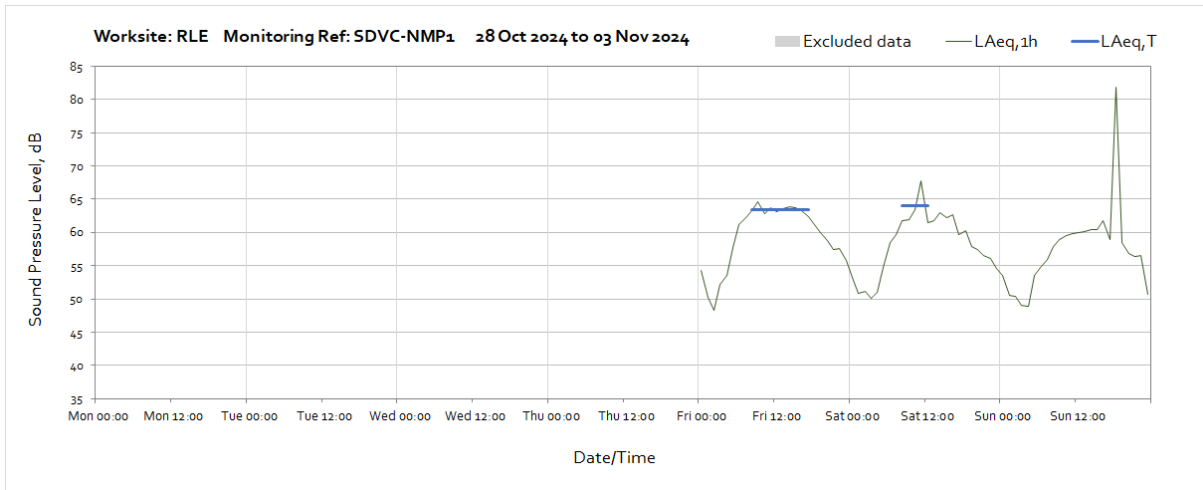


Note: Missing data between 13:00 and 15:00 on Friday 1st November was due to monitor maintenance.

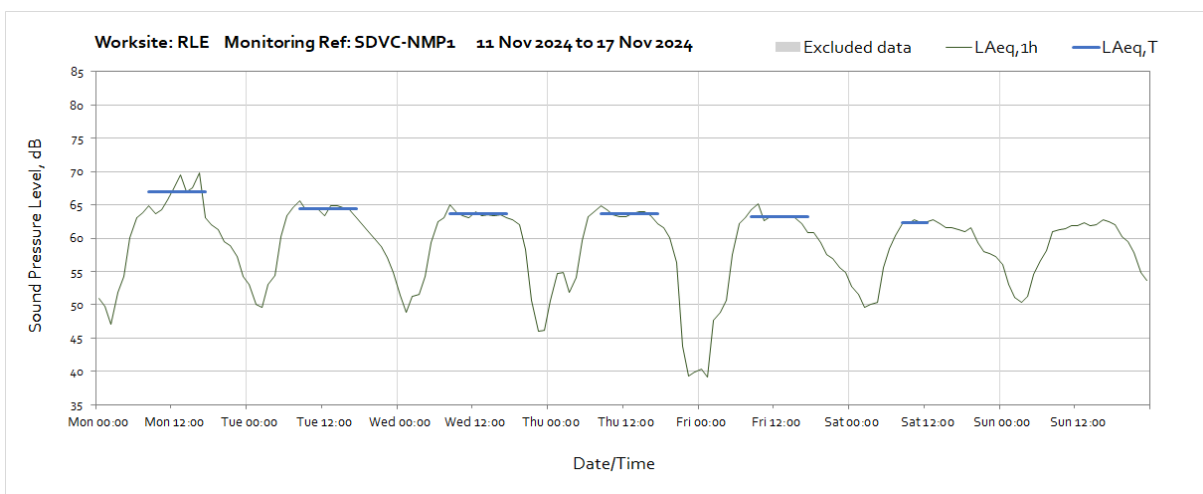


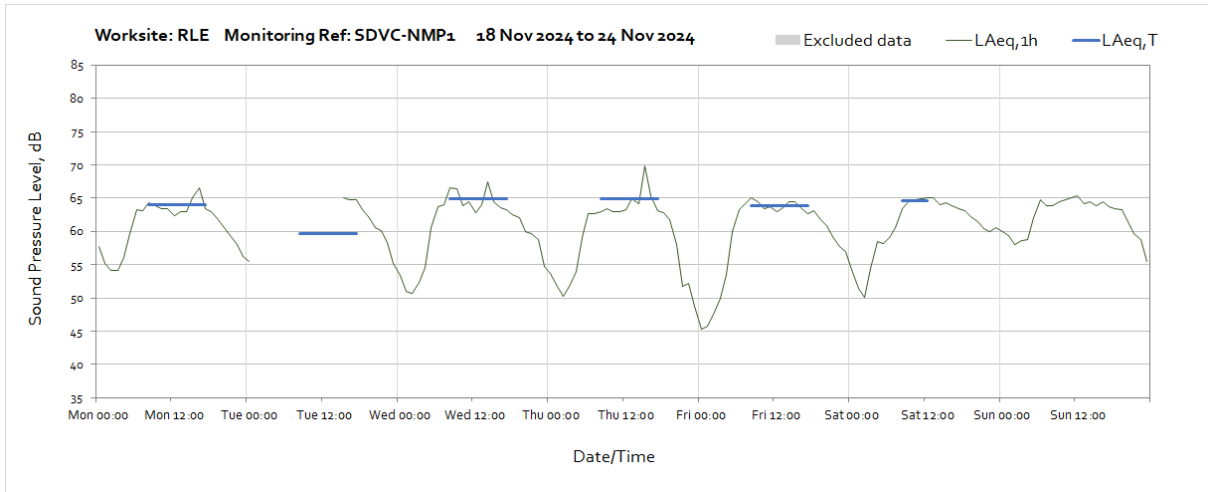


Worksite: RLE – Monitoring Ref: SDVC-NMP1

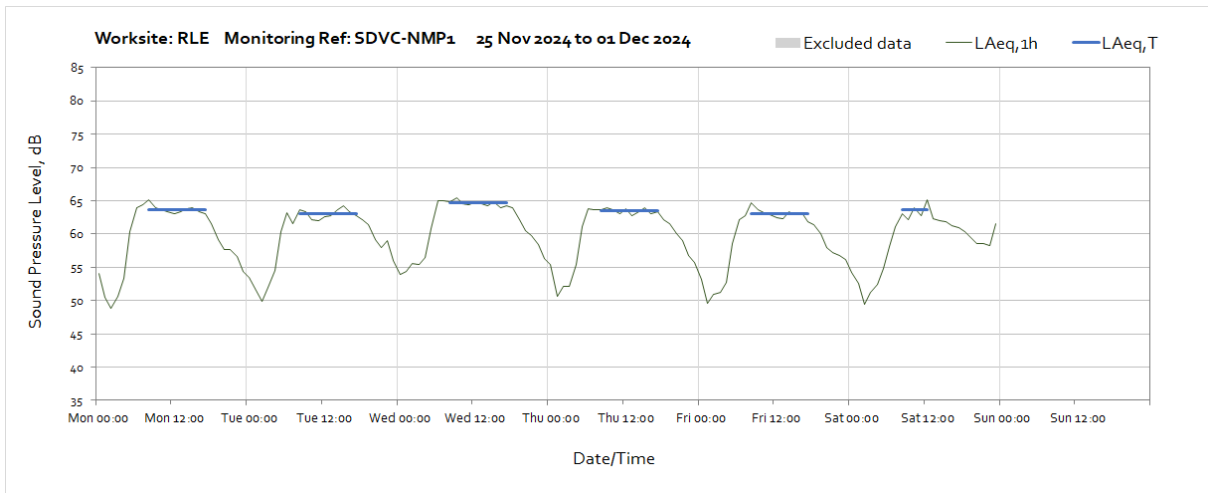


Note: Missing data between 04:00 on Saturday 9th November until 13:00 on Sunday 10th November was due to a depleted monitor battery.

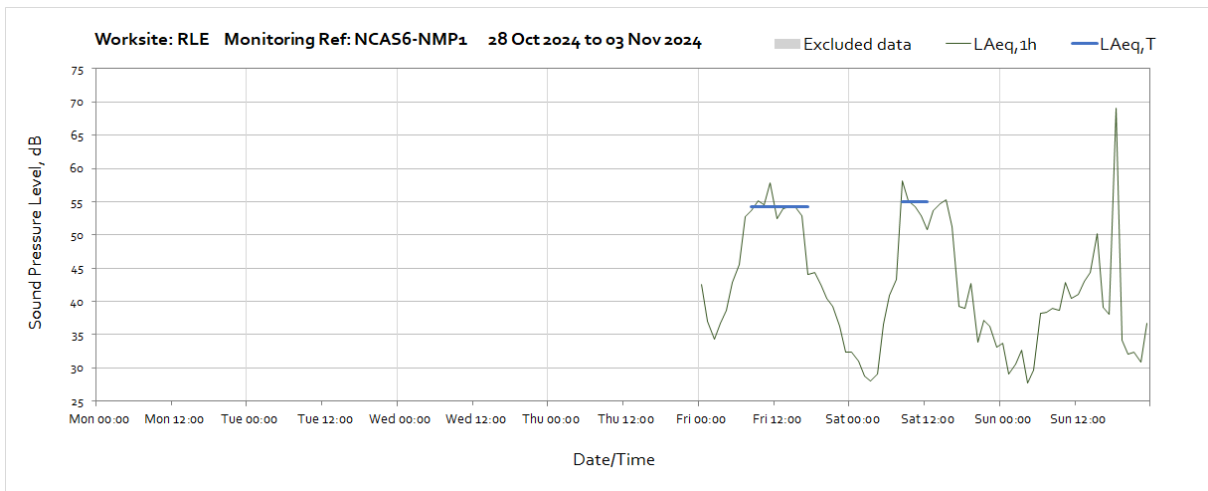


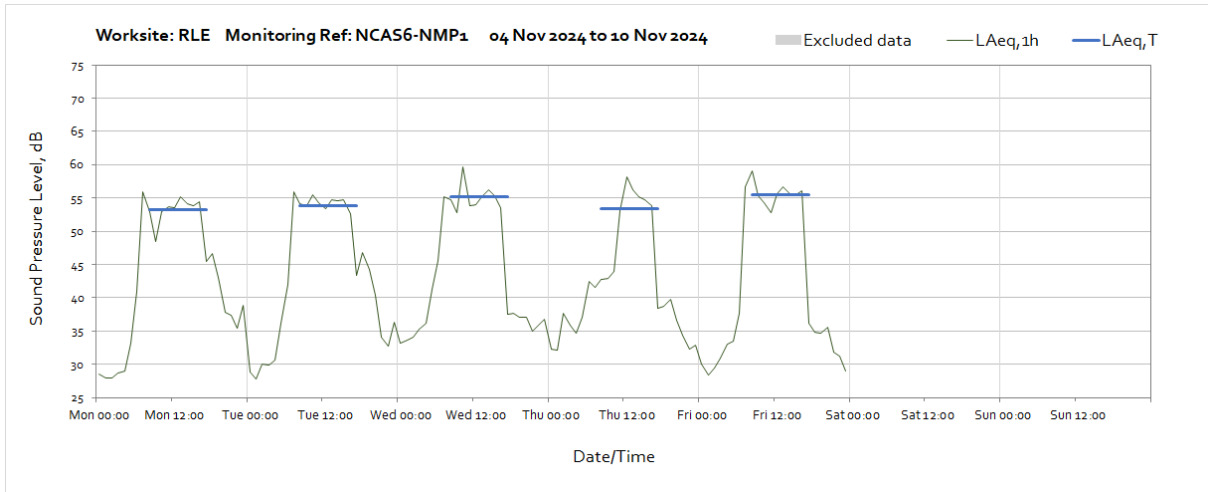


Note: Missing data between 01:00 and 15:00 on Tuesday 19th November was due to a microphone error at the monitoring station and a depleted monitor battery.

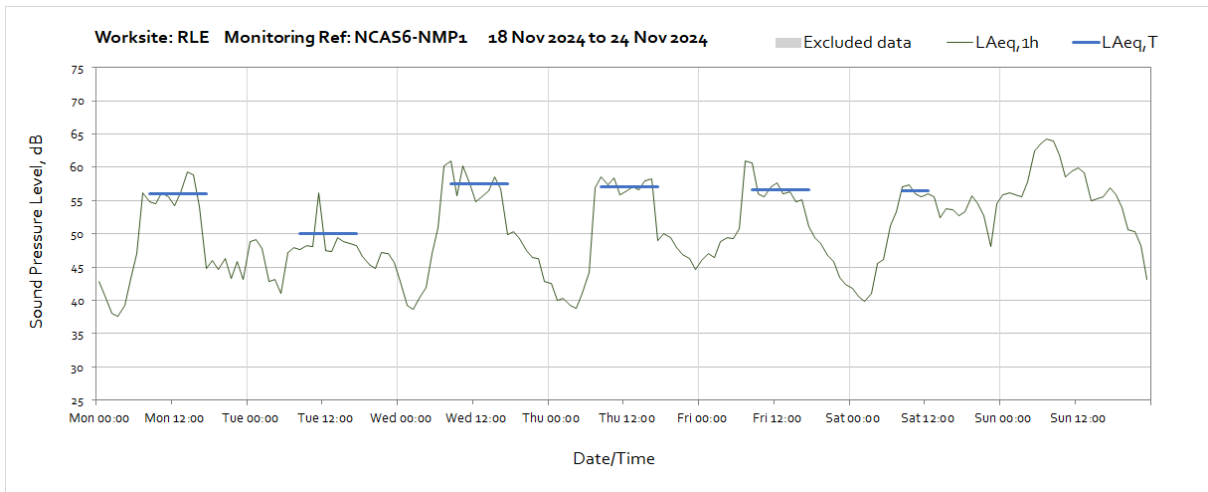
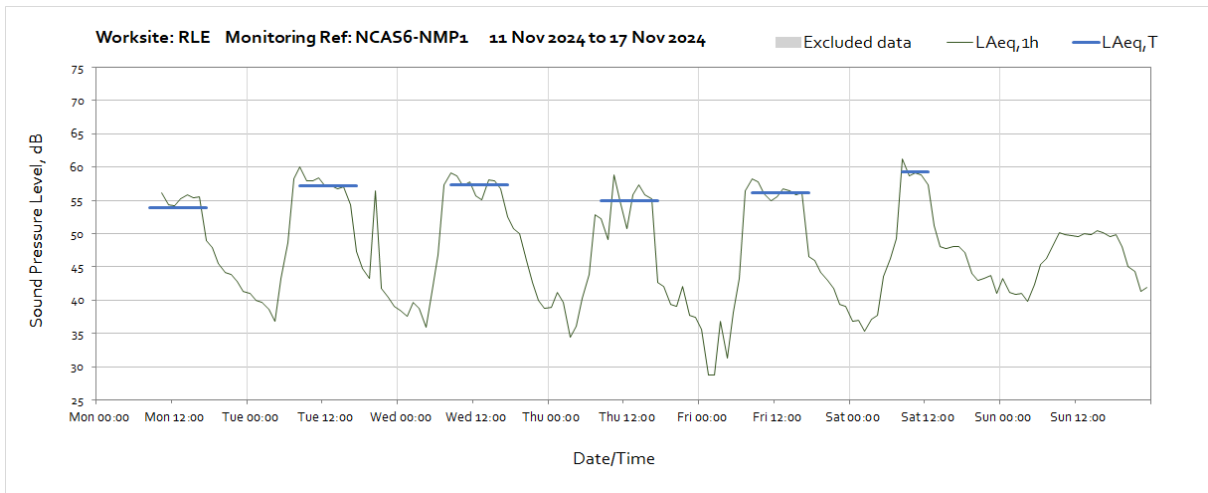


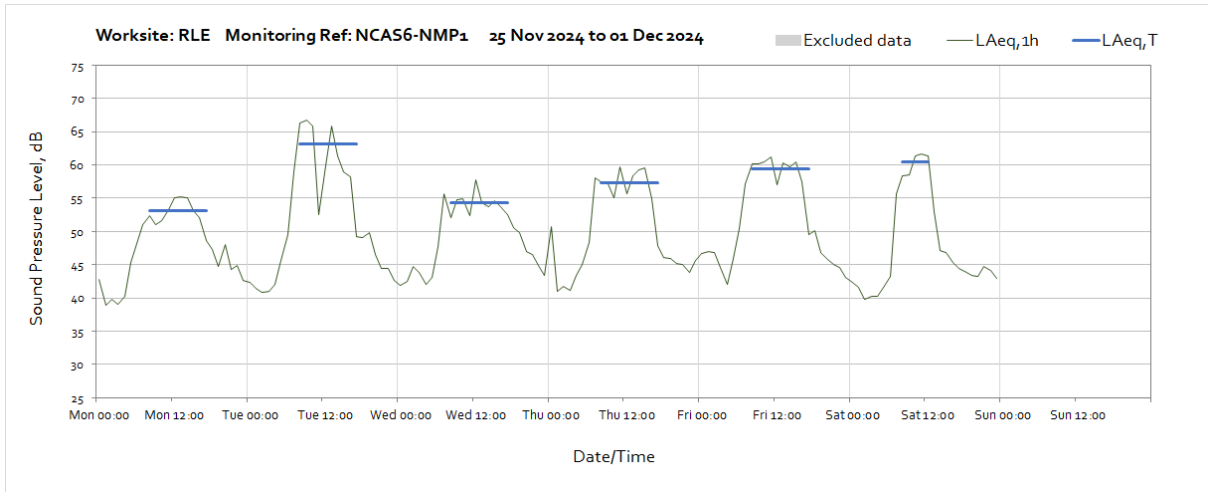
Worksite: RLE - Monitoring Ref: NCAS6-NMP1



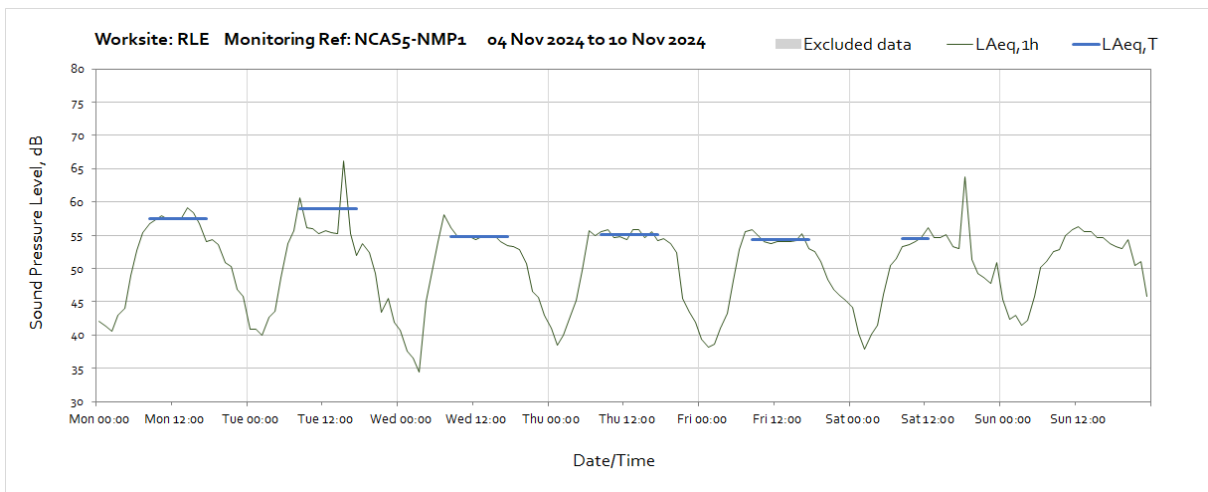
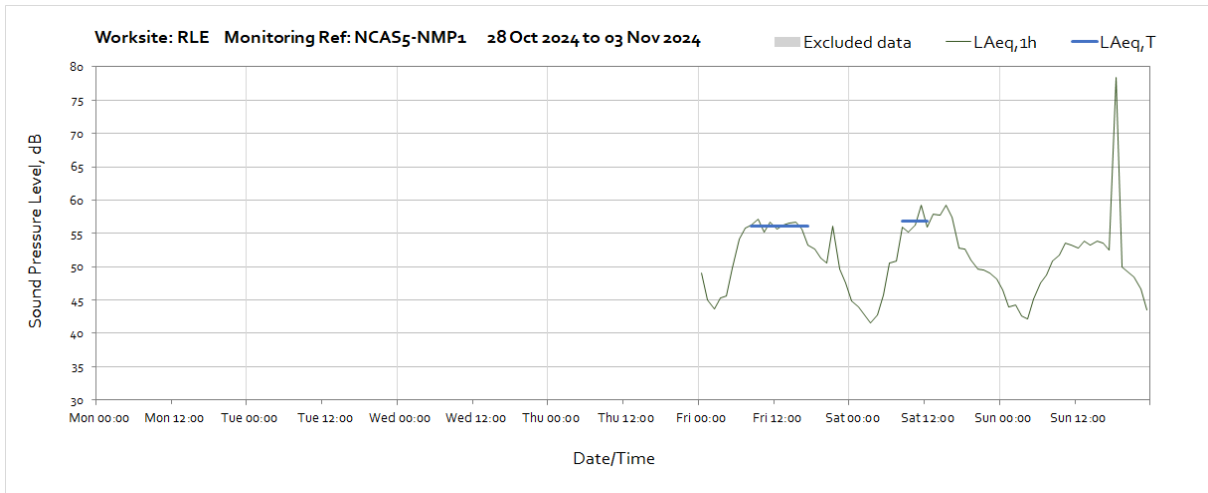


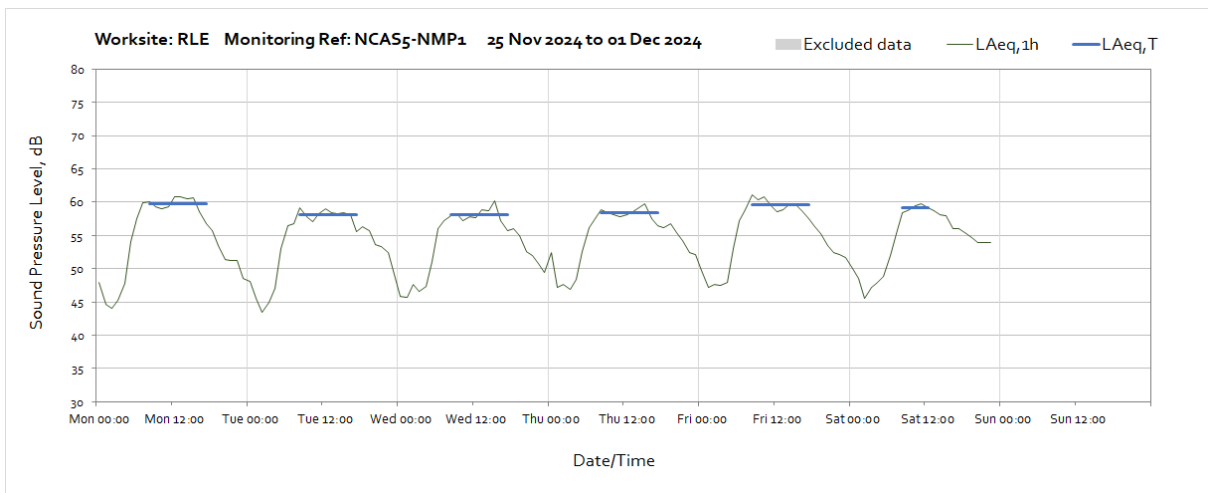
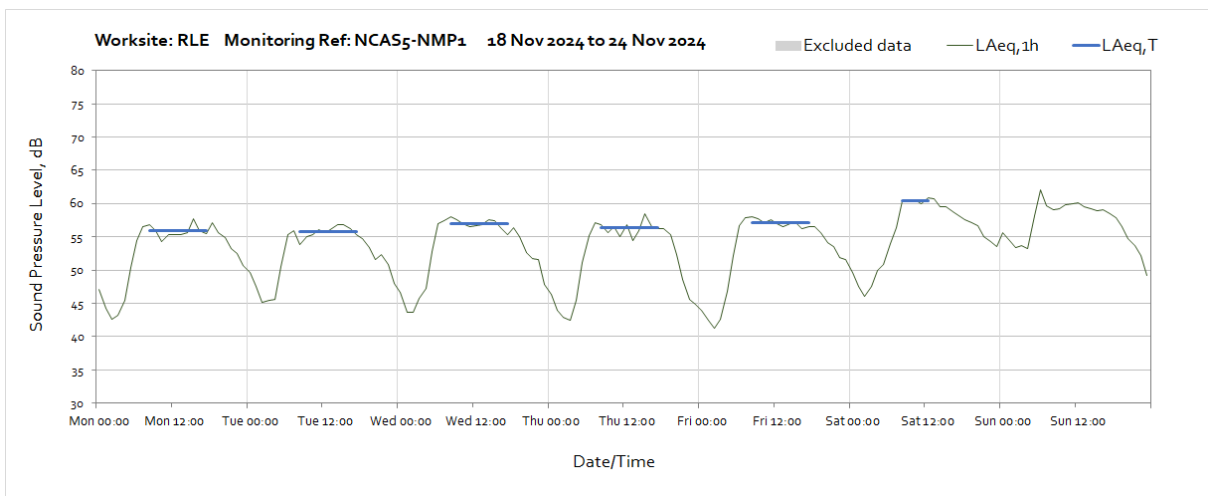
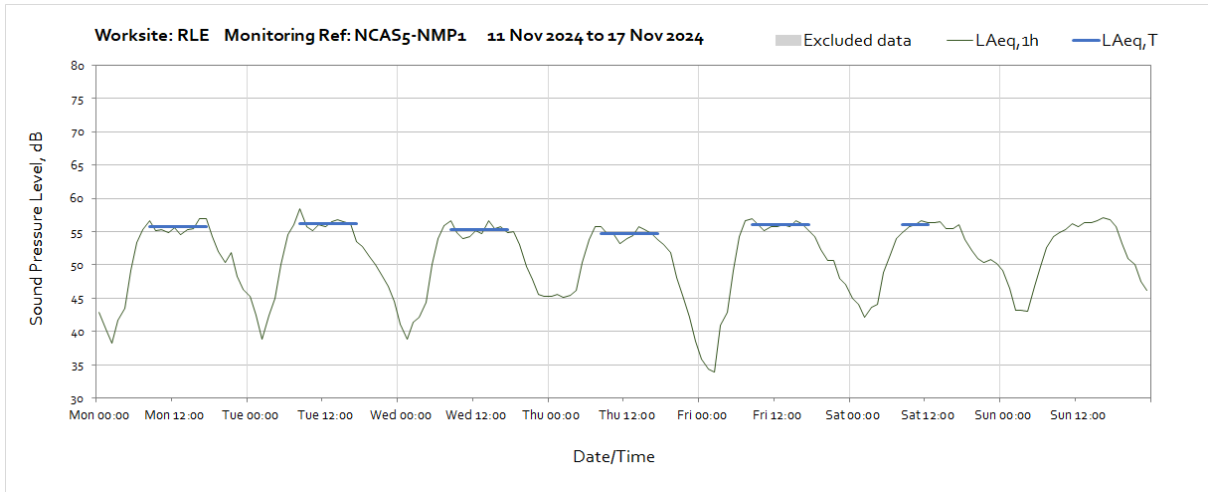
Note: Missing data between 00:00 on Saturday 9th November until 10:00 on Monday 11th November was due to a depleted monitor battery.



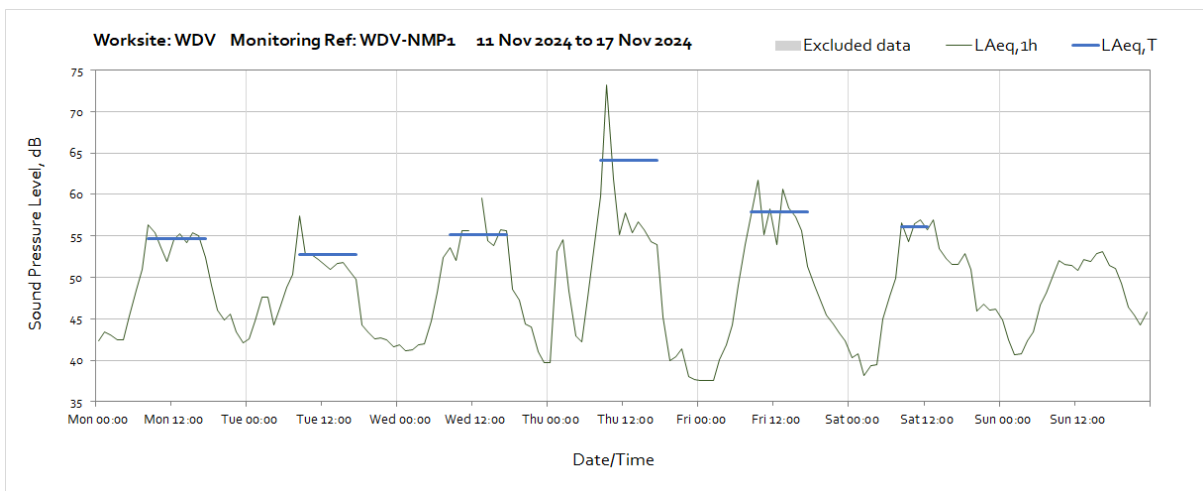
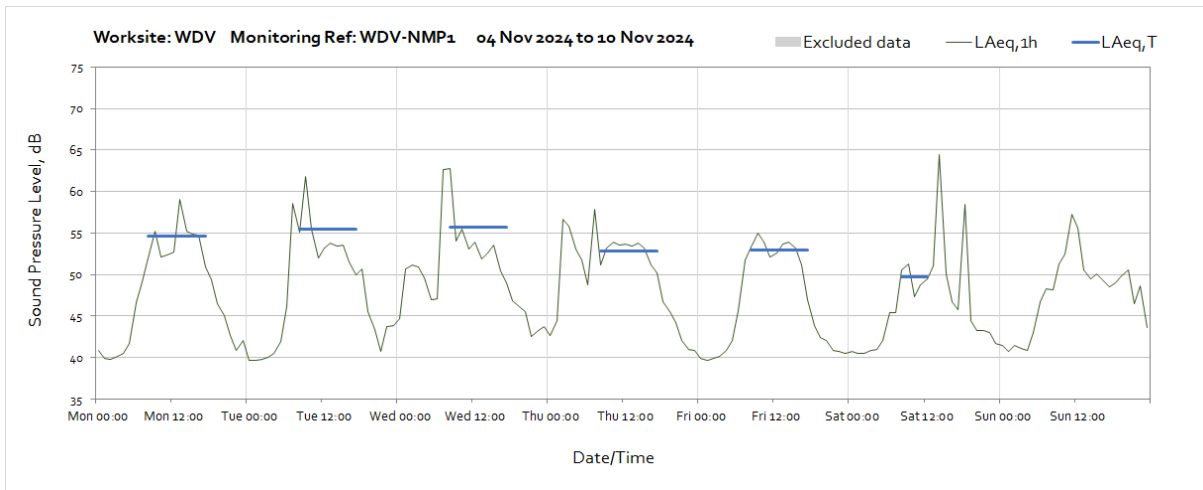
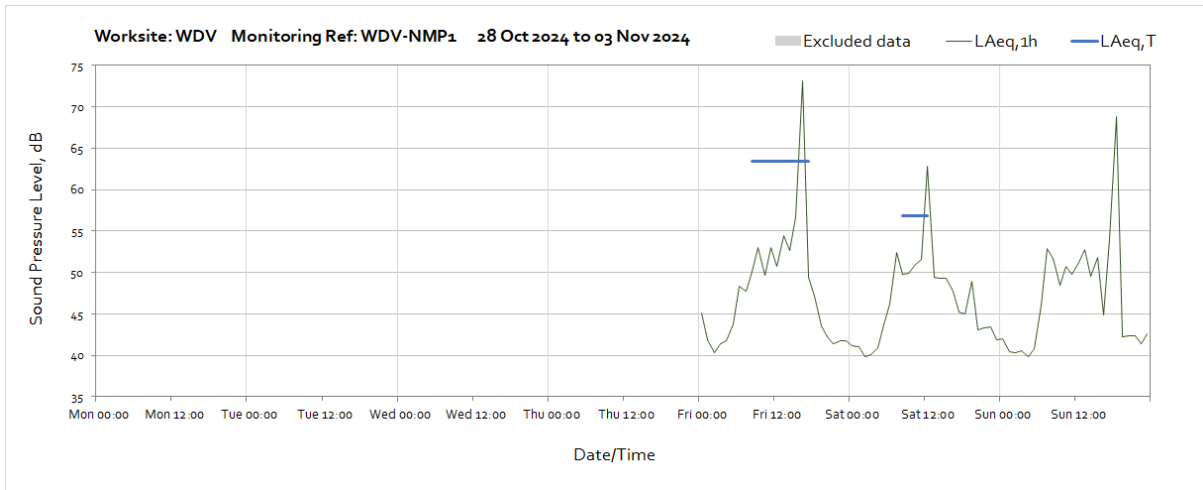


Worksite: RLE – Monitoring Ref: NCAS5-NMP1



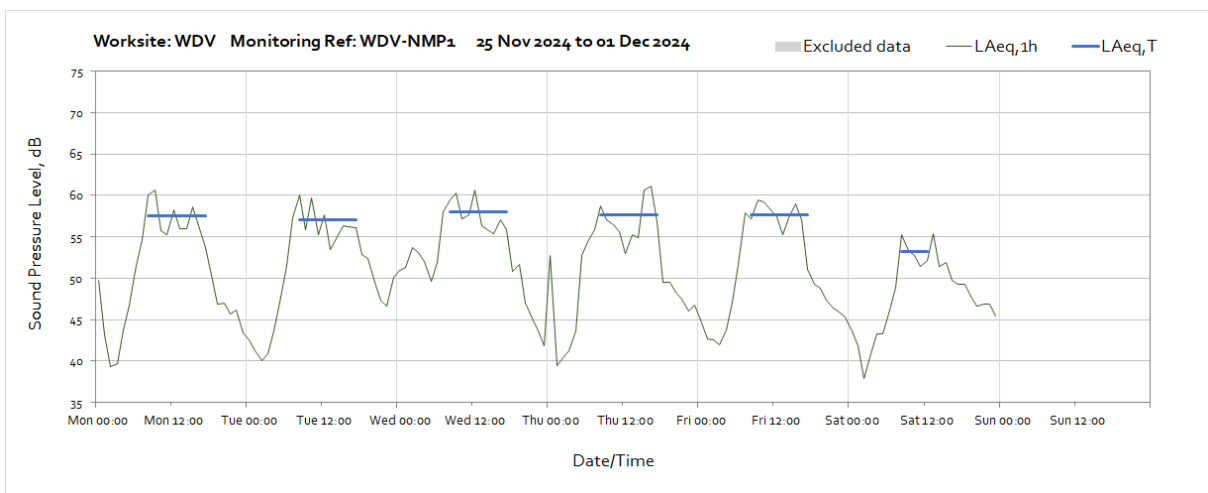
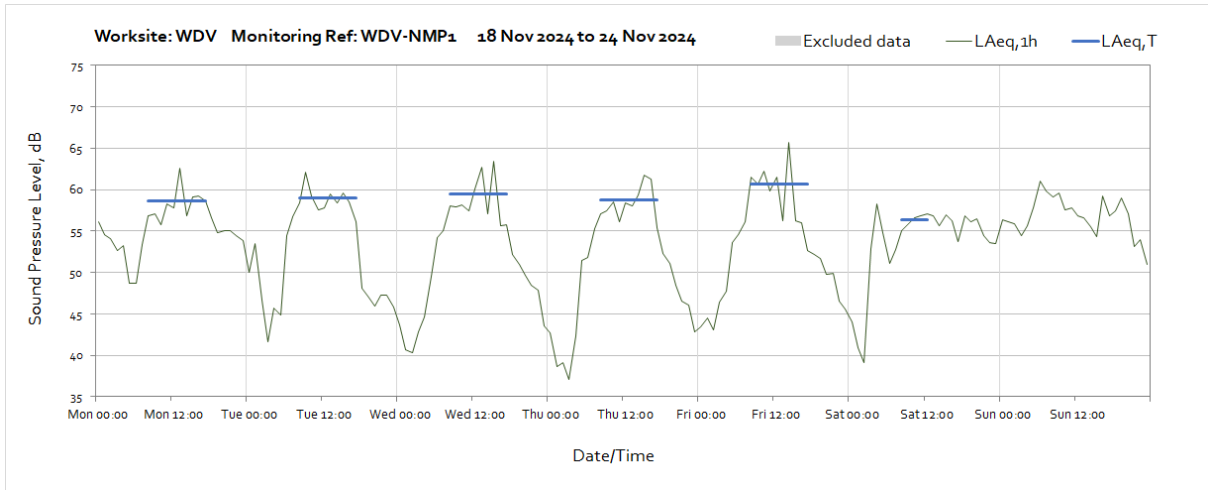


Worksite: WDV – Monitoring Ref: WDV-NMP1

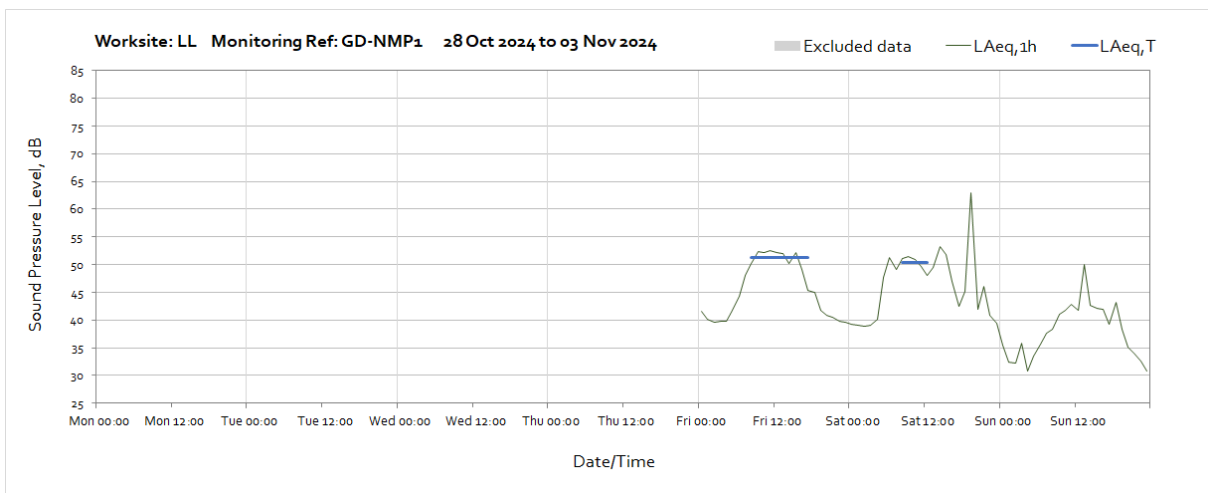


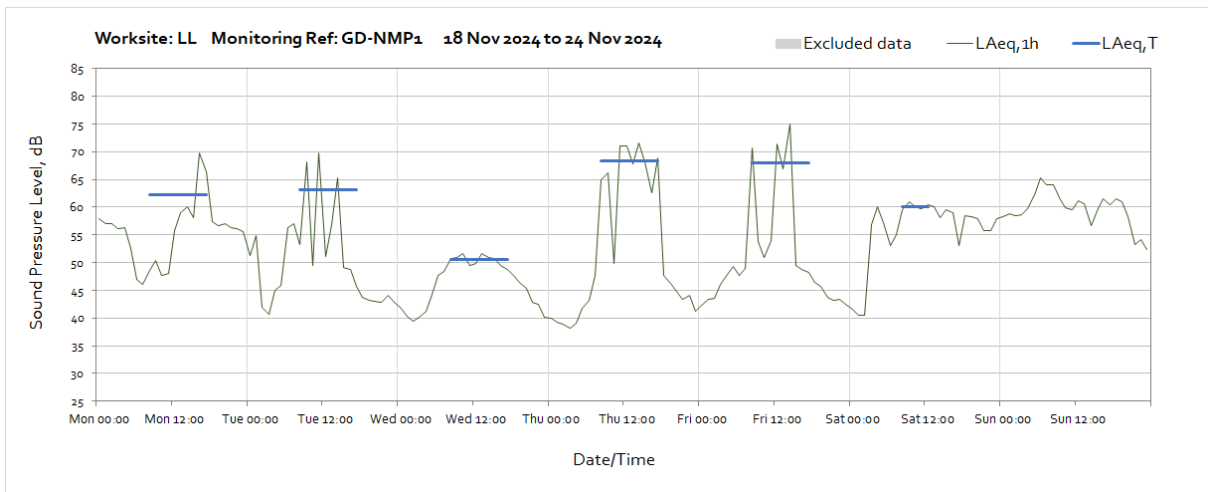
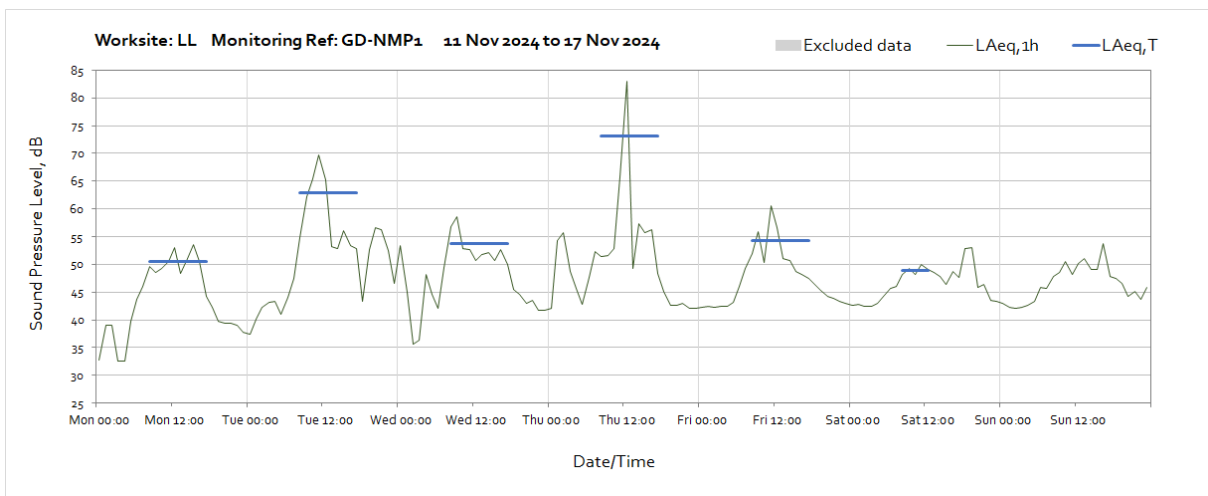
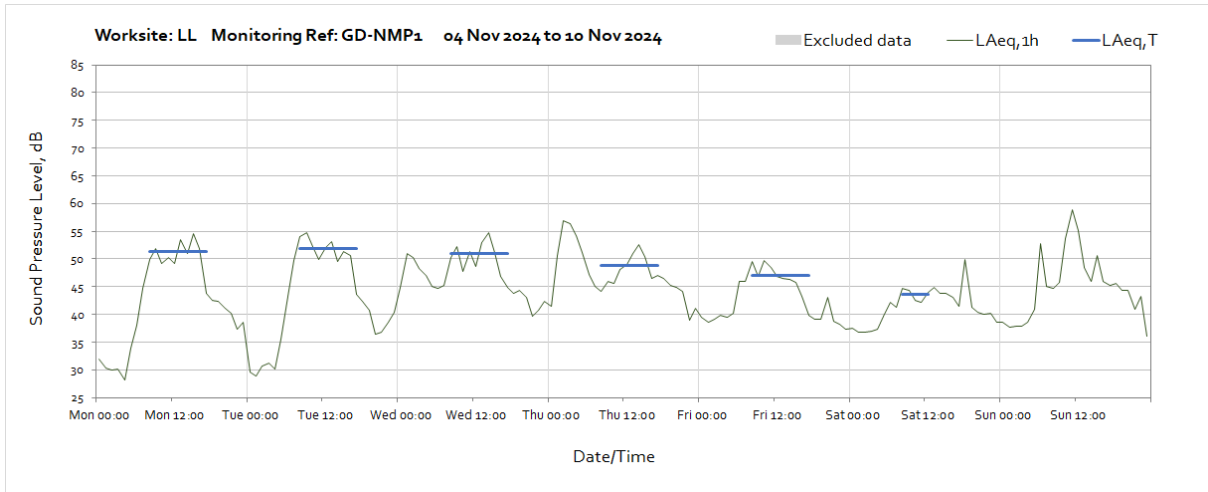
Note: Missing data between 12:00 and 13:00 on Wednesday 13th November was due to monitor maintenance.

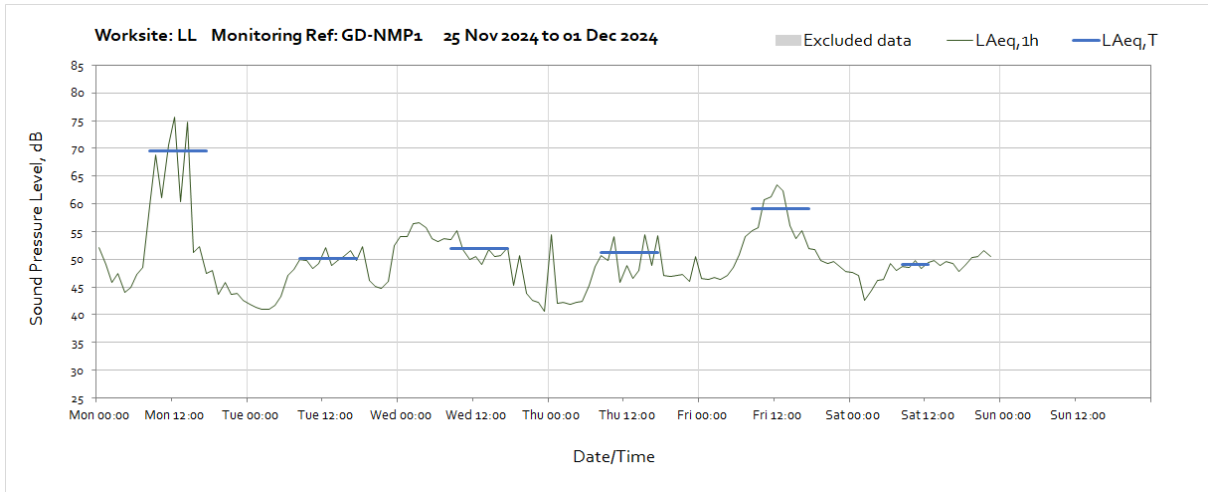
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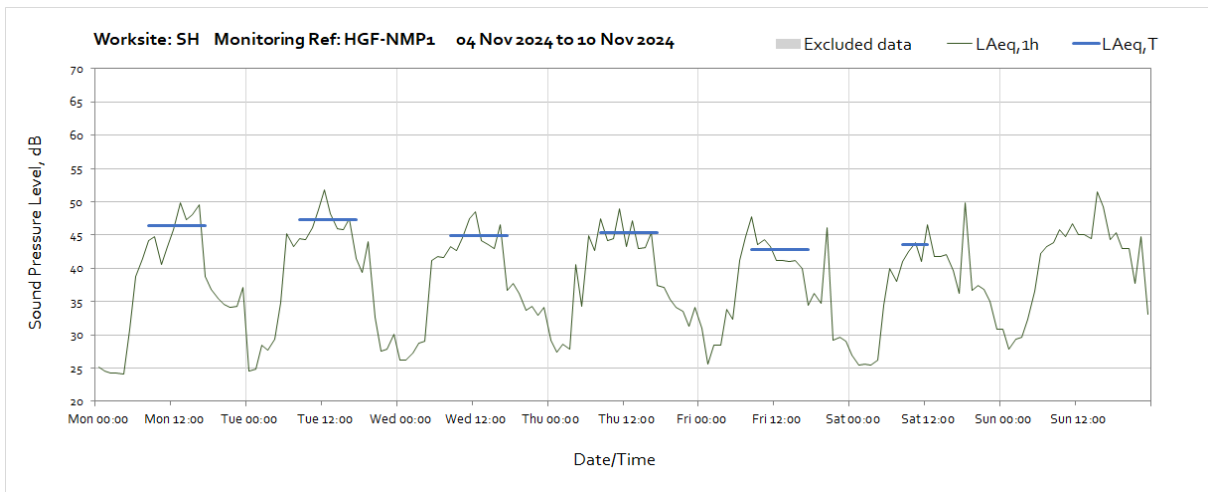
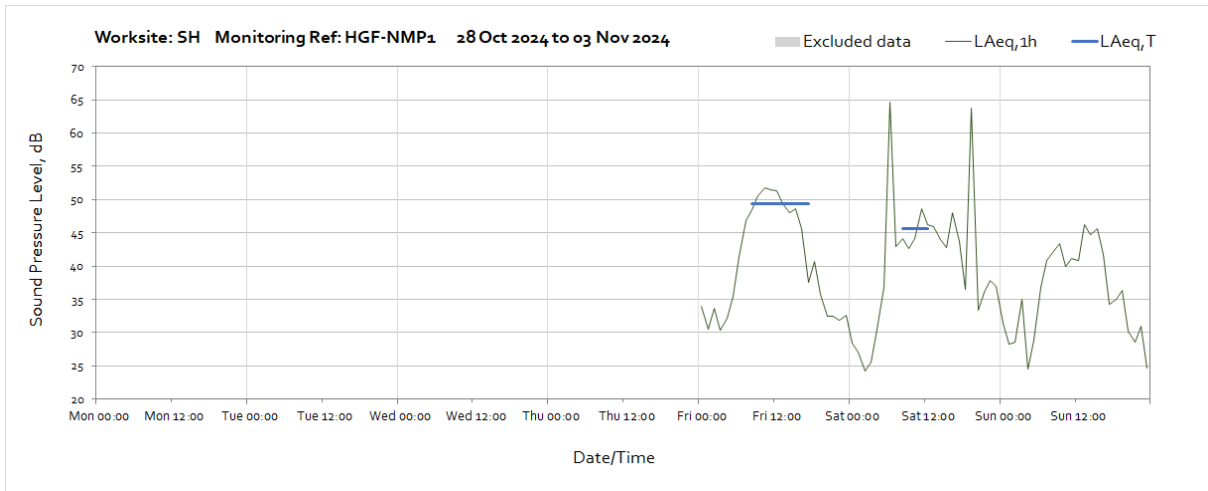
Worksite: LL - Monitoring Ref: GD-NMP1

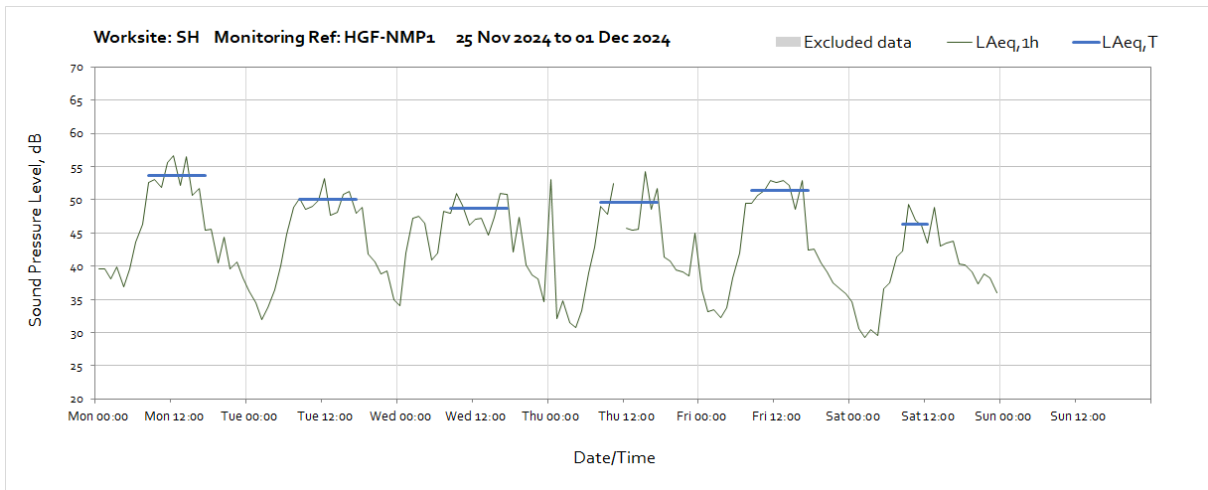
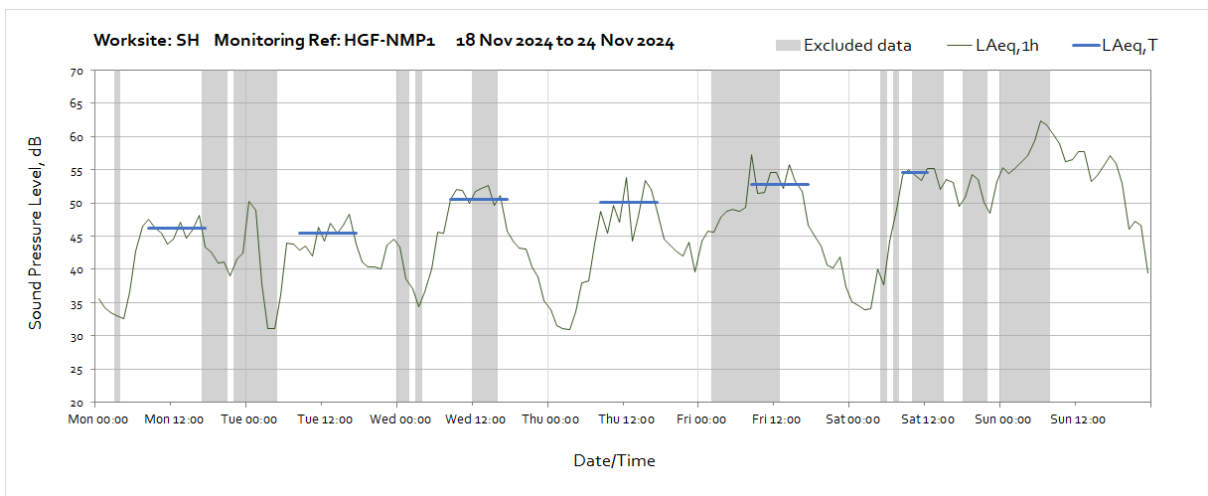
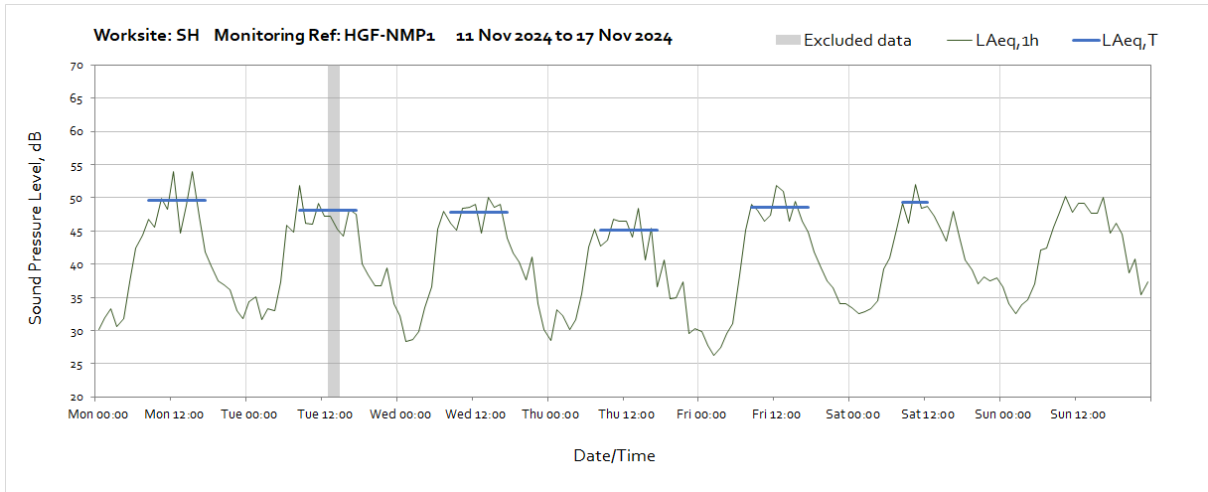






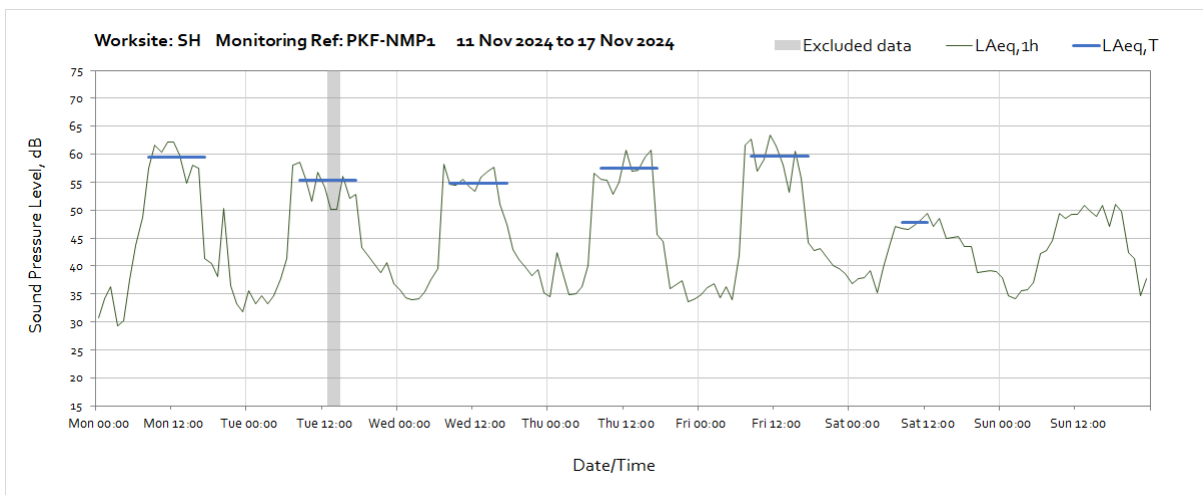
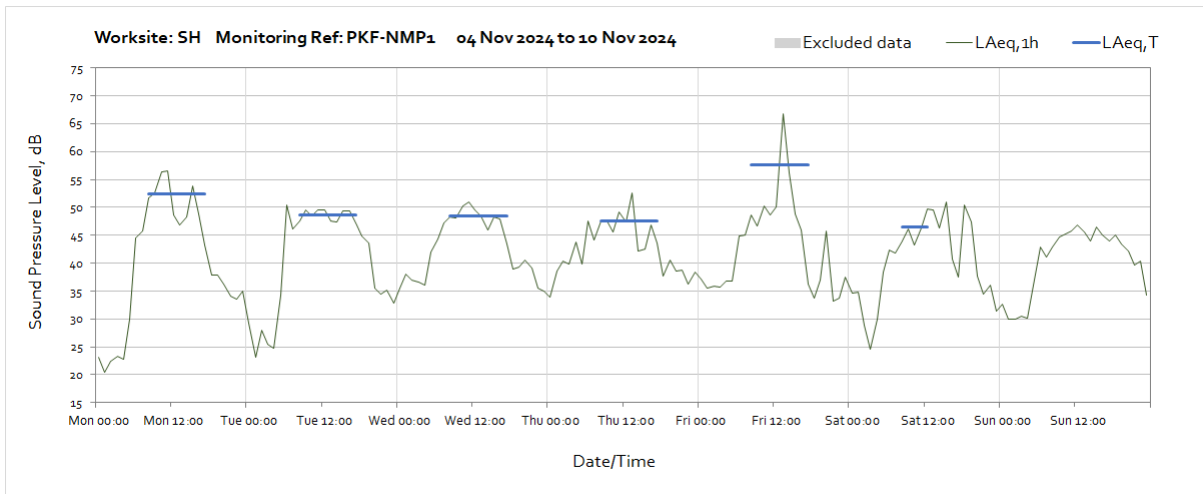
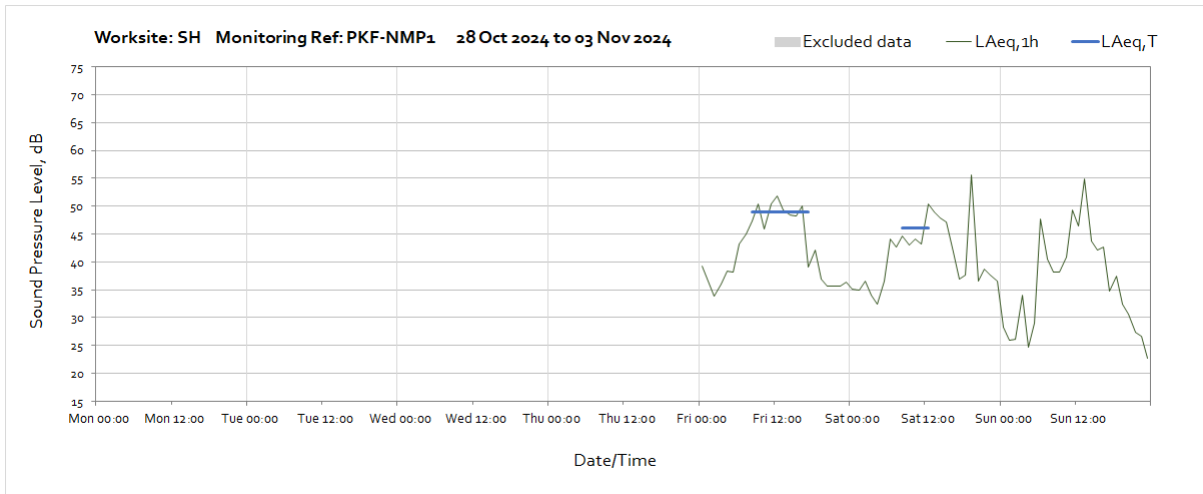
Worksite: SH – Monitoring Ref: HGF-NMP1



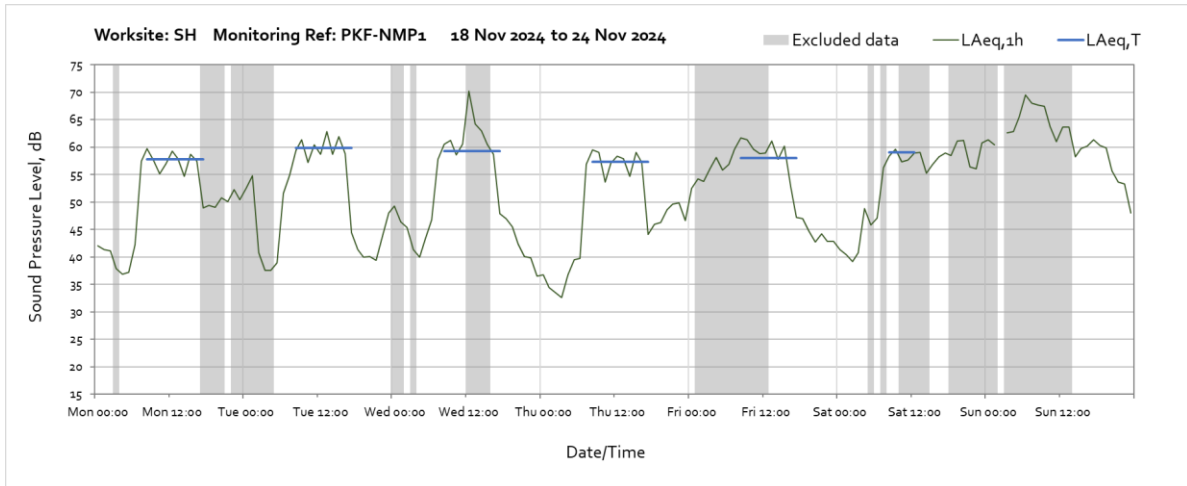


Note: Missing data between 11:00 and 12:00 on Thursday 28th November was due to monitor maintenance.

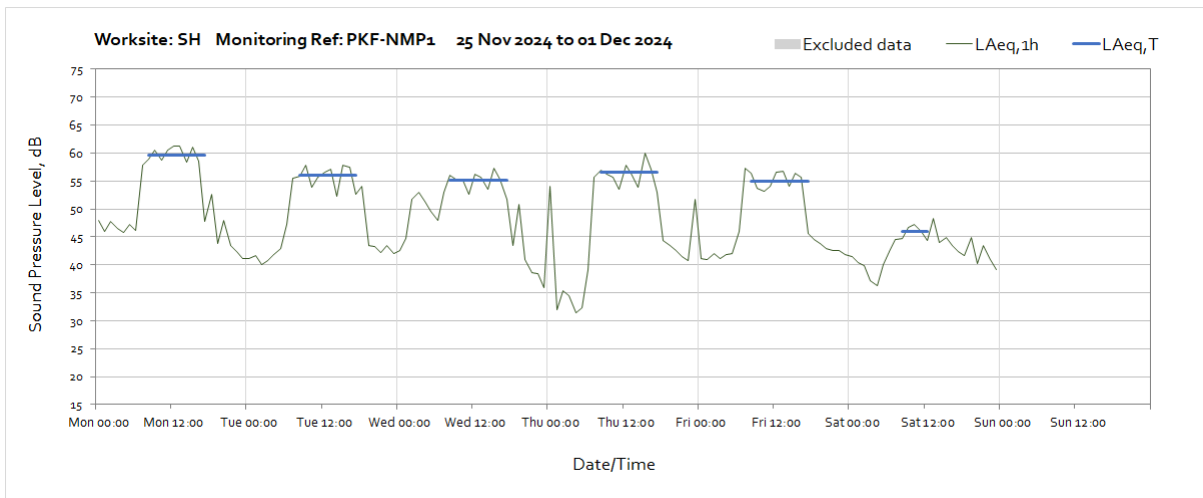
Worksite: SH – Monitoring Ref: PKF-NMP1



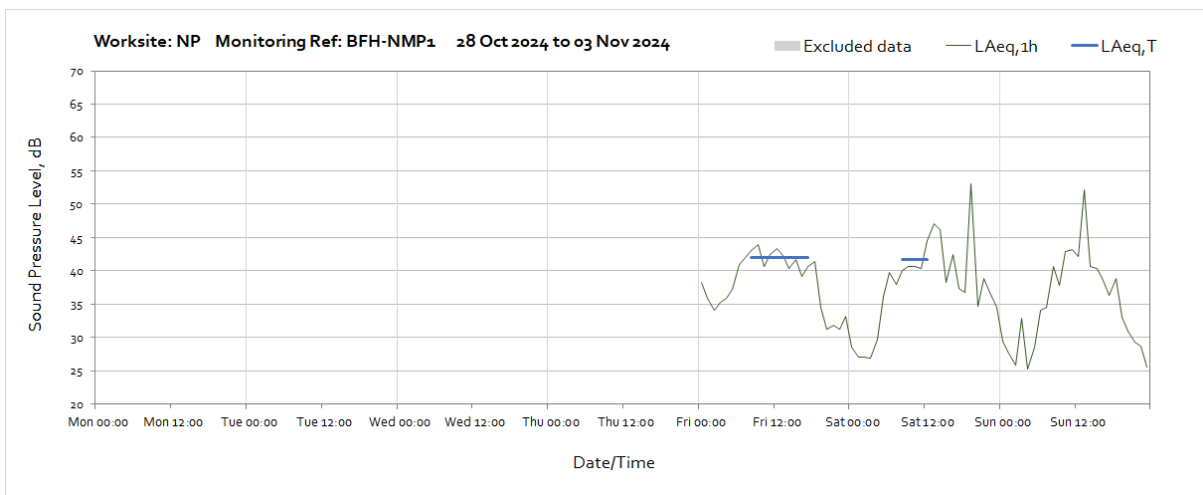
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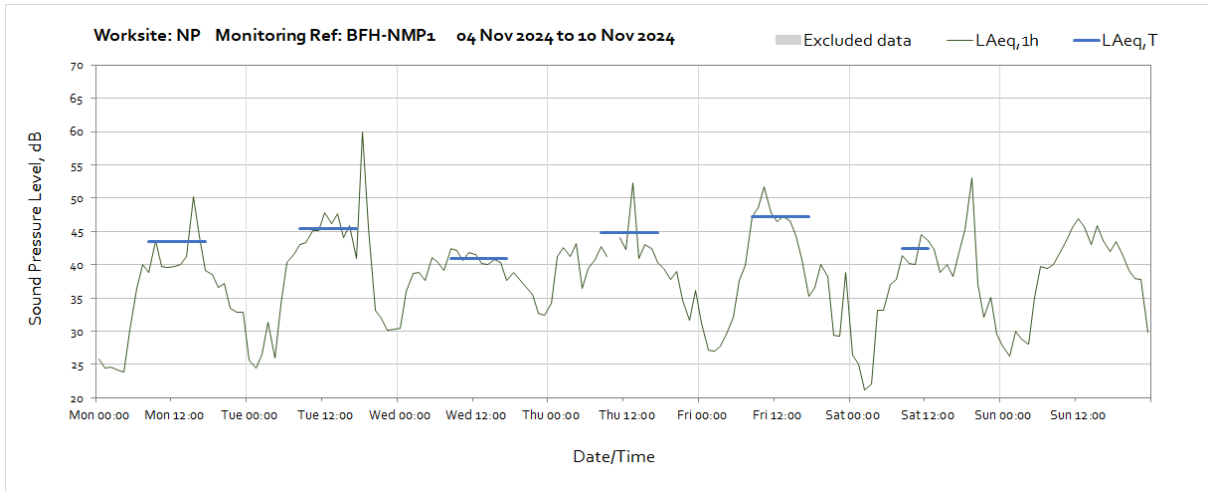


Note: Missing data between 02:00 and 03:00 on Sunday 24th November was due to a communication error between the monitoring station and server.

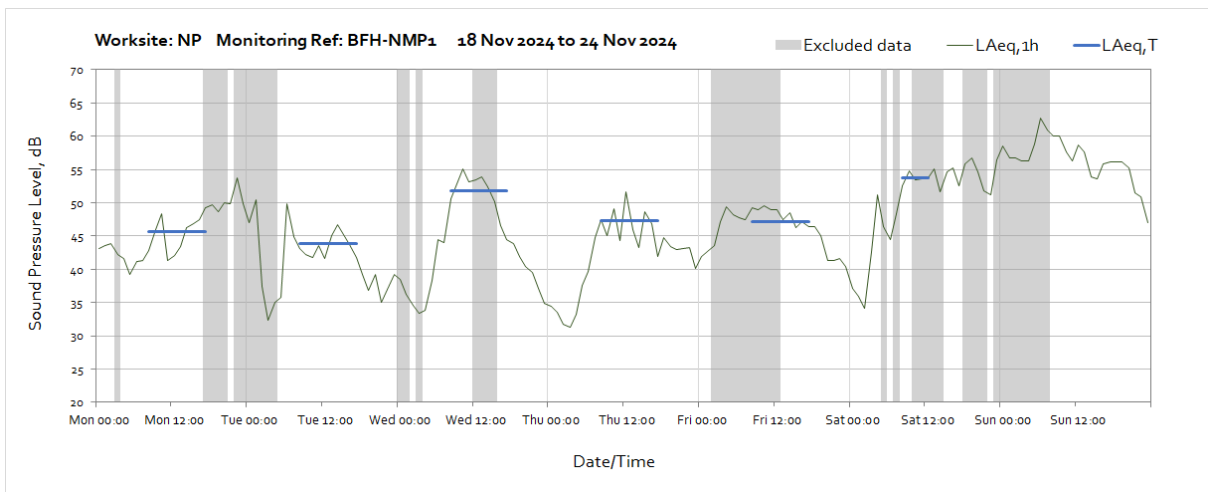
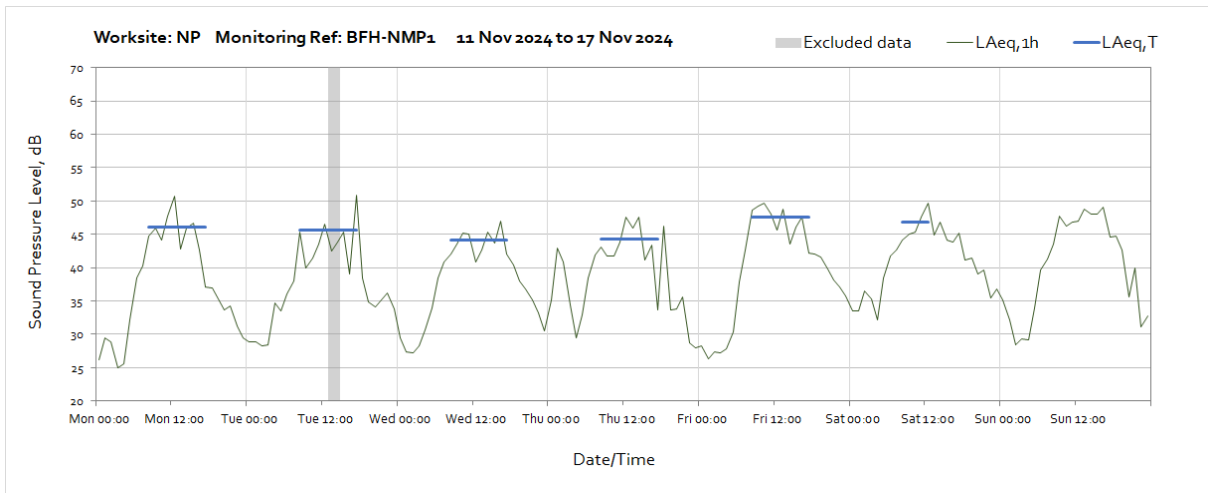


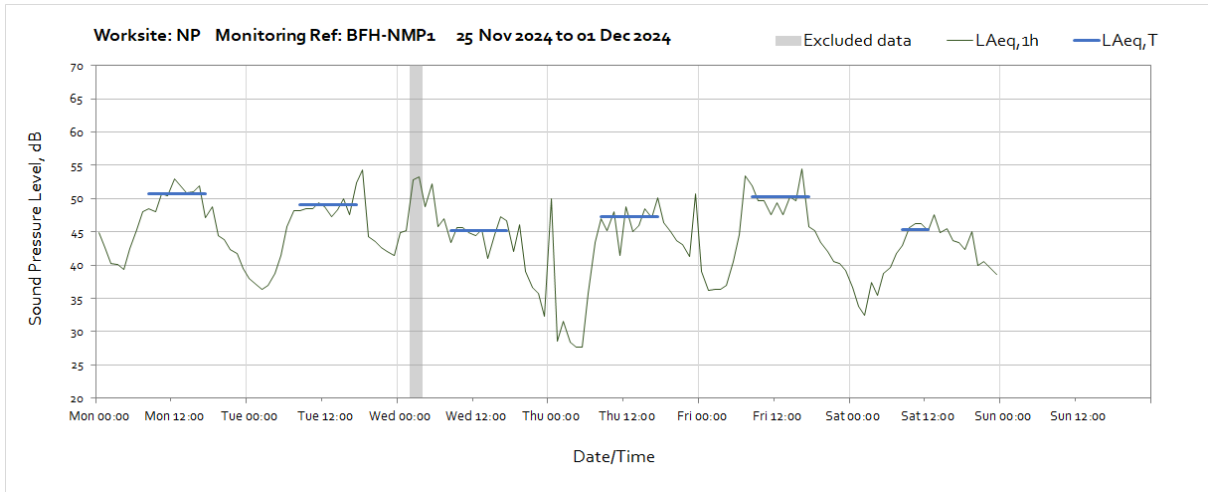
Worksite: NP - Monitoring Ref: BFH-NMP1



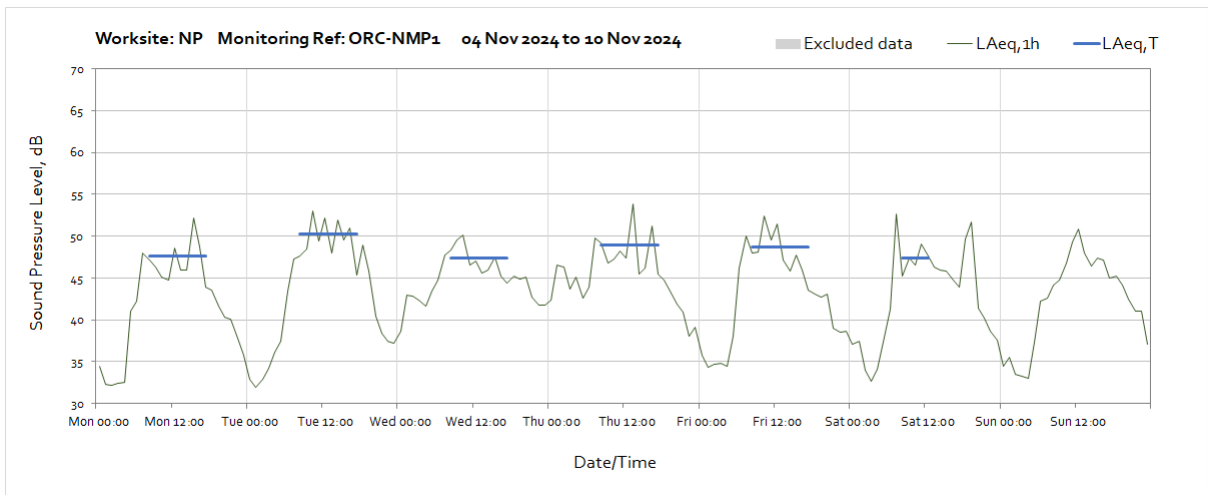
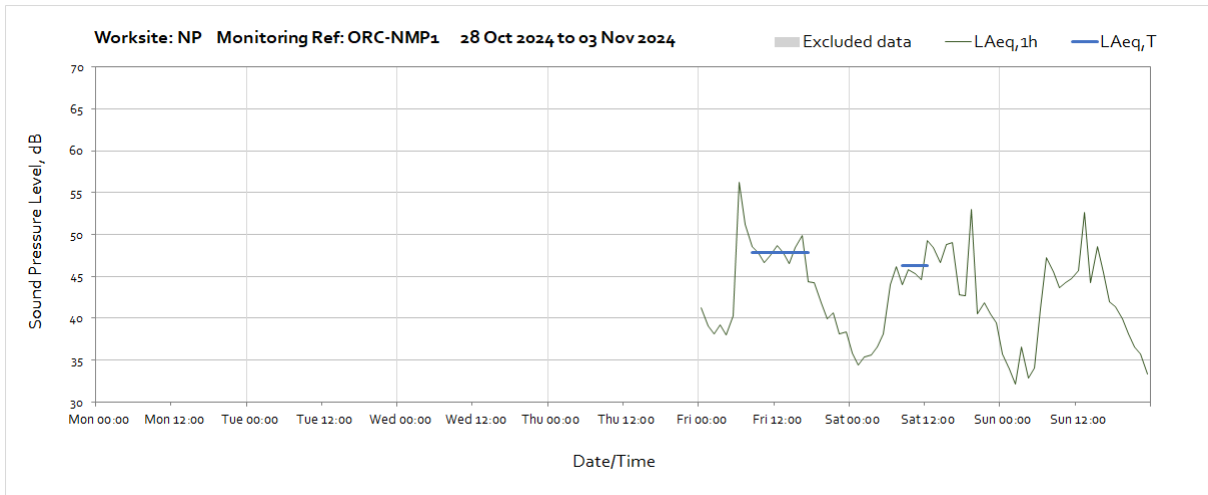


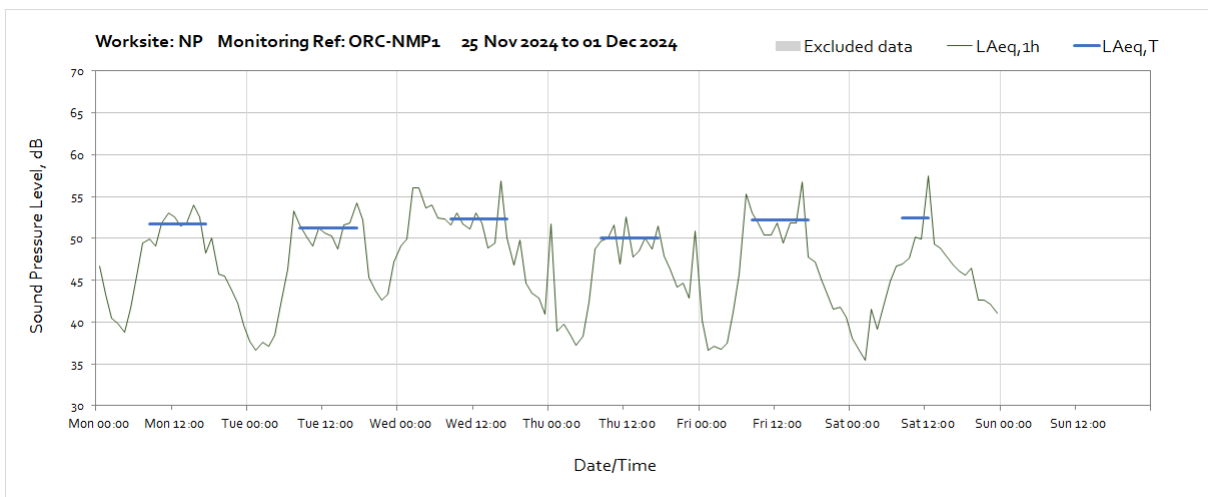
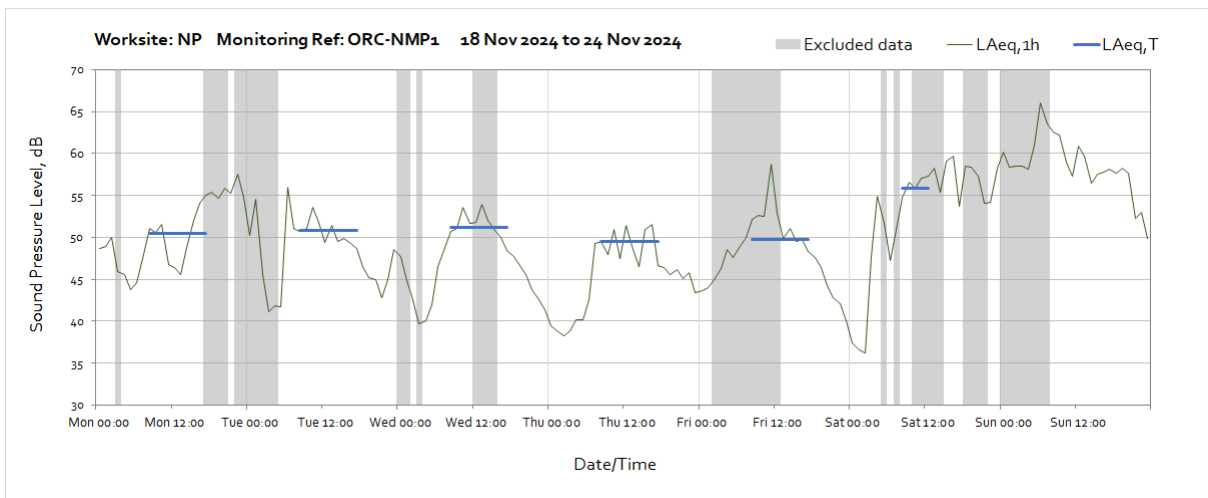
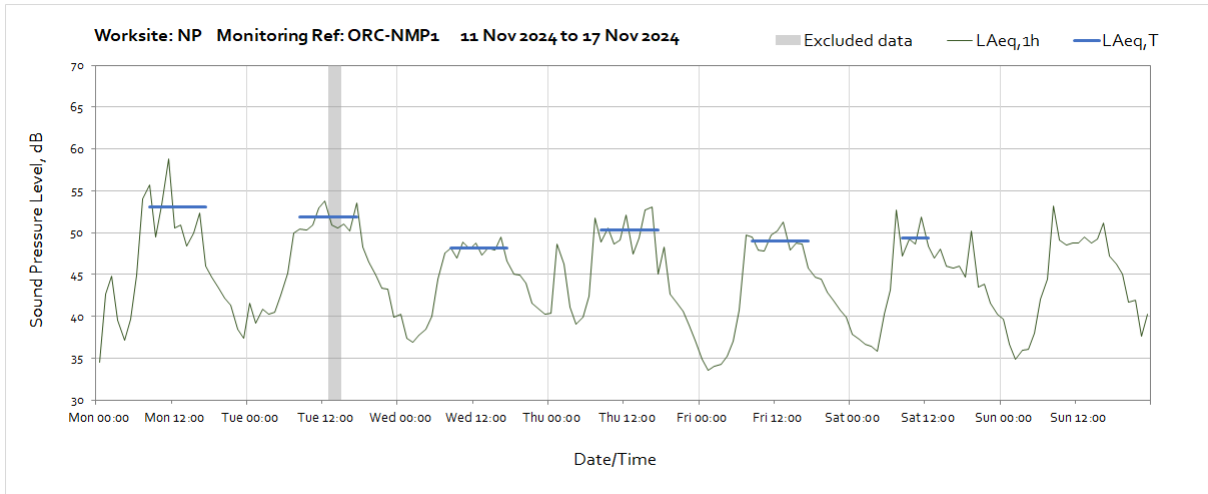
Note: Missing data between 10:00 and 11:00 on Thursday 7th November was due to monitor field calibration.



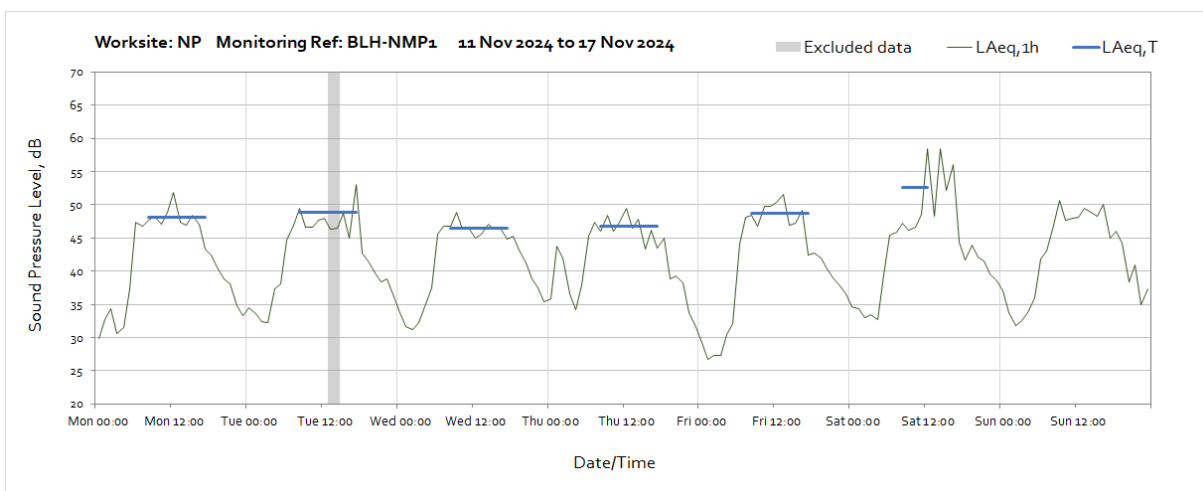
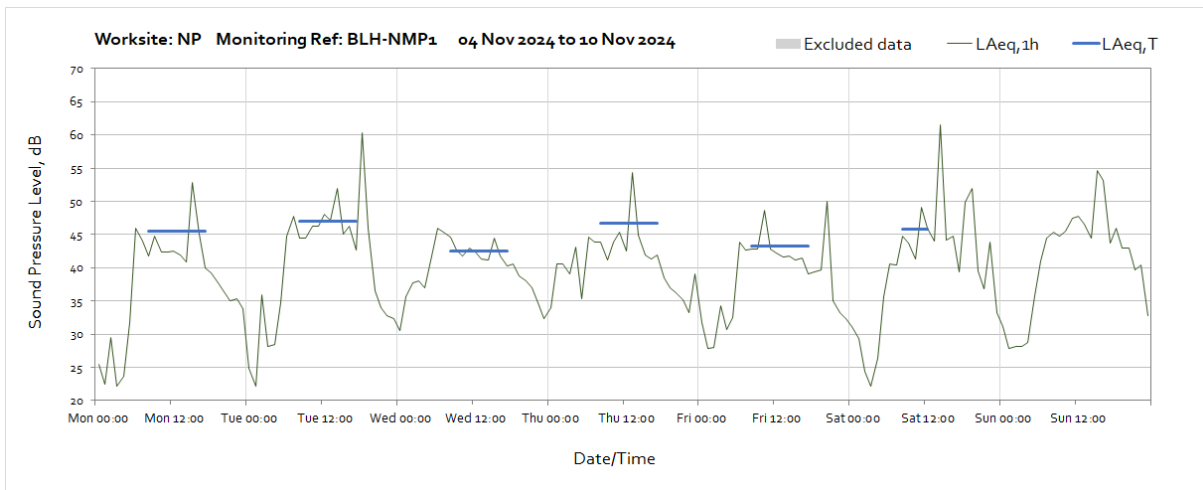
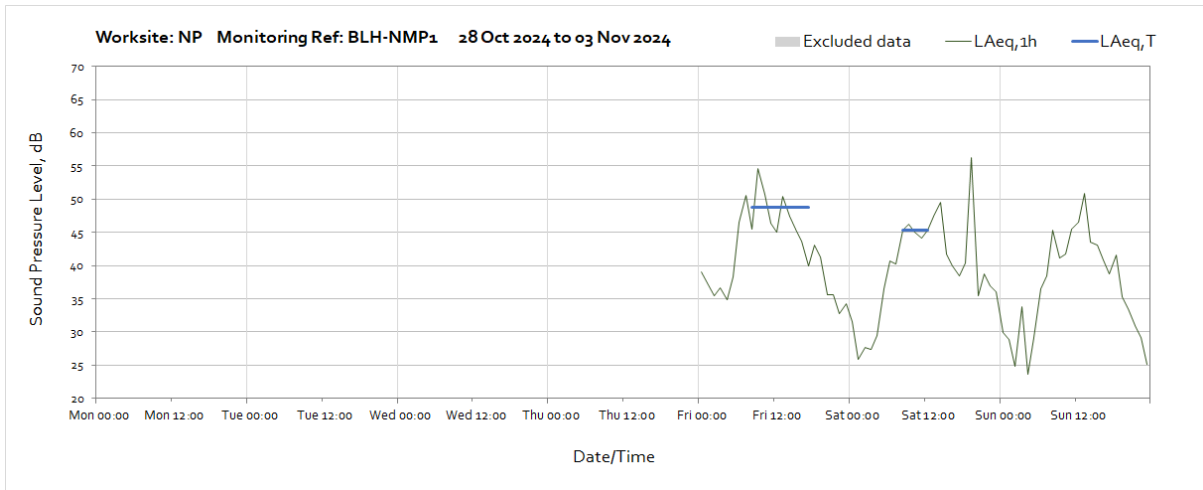


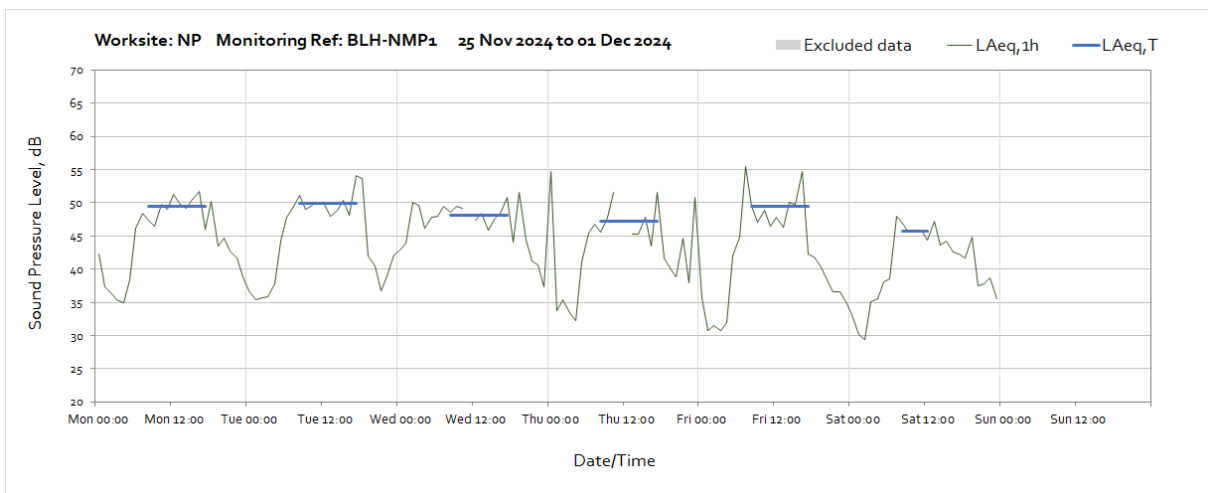
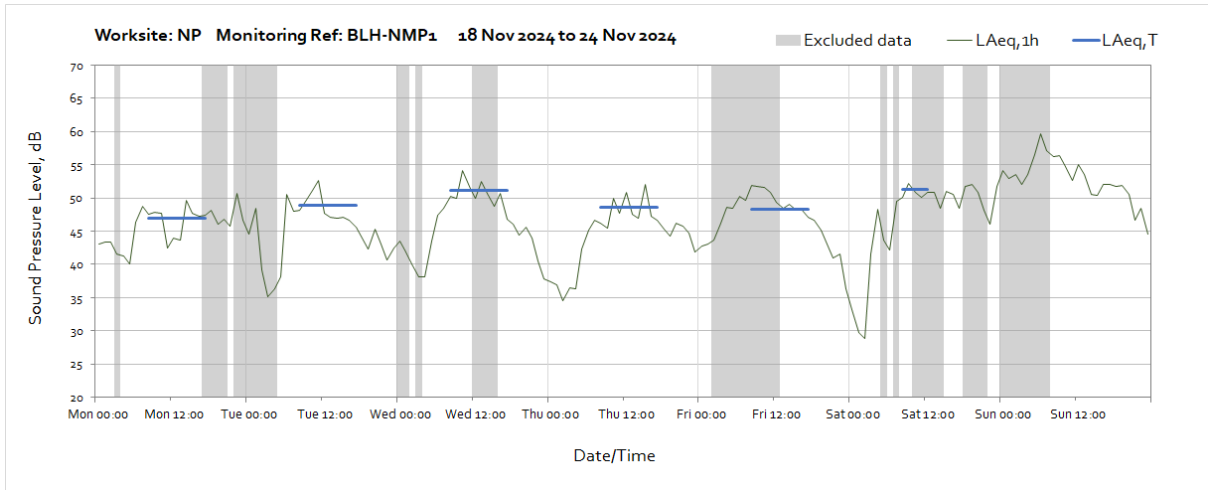
Worksite: NP - Monitoring Ref: ORC-NMP1





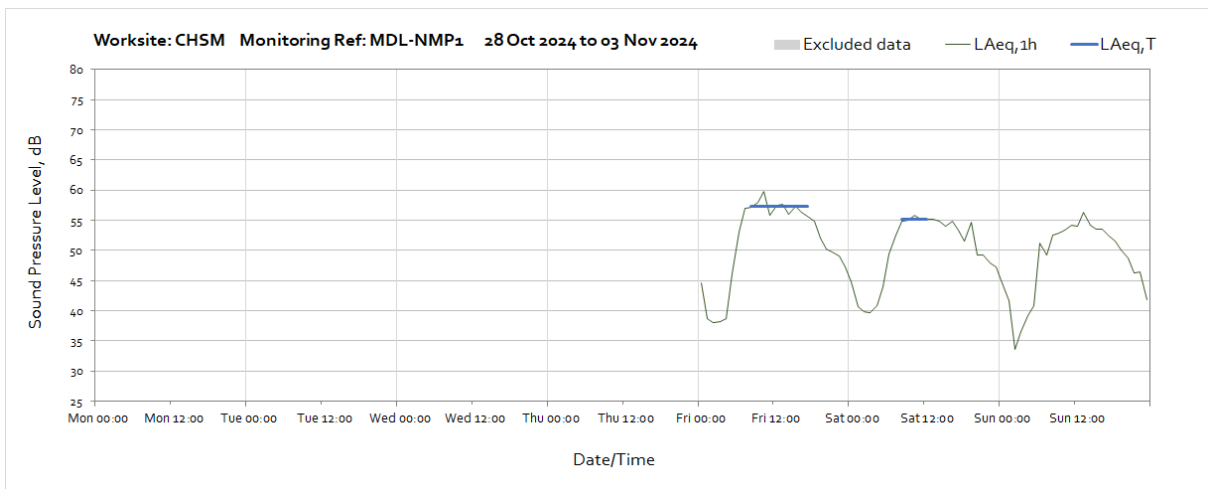
Worksite: NP – Monitoring Ref: BLH-NMP1

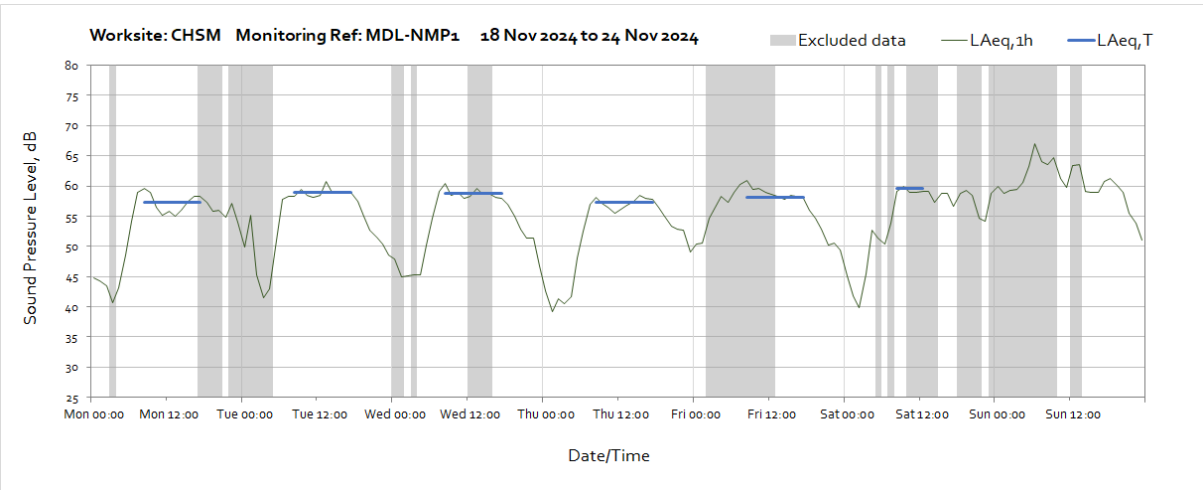
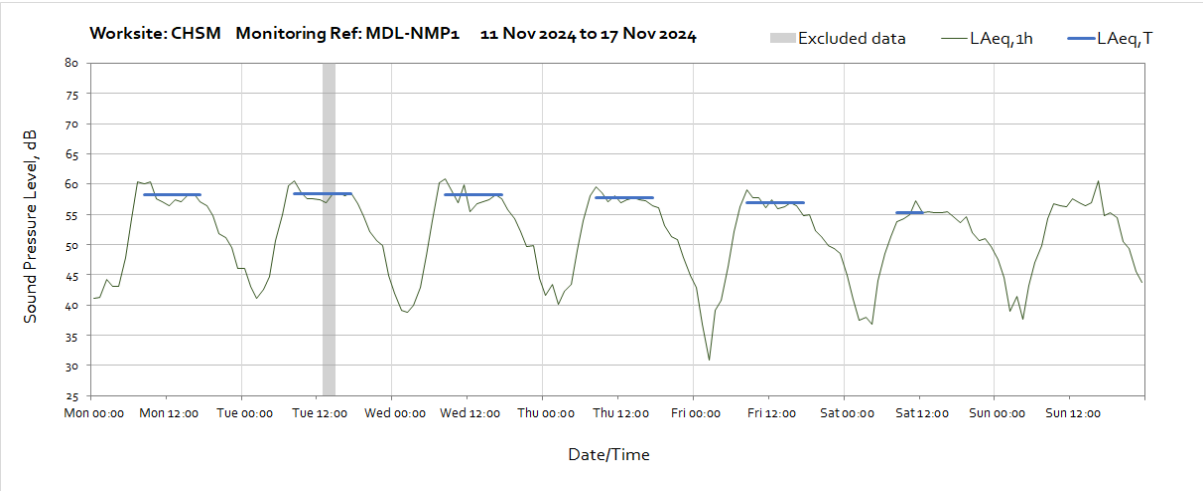
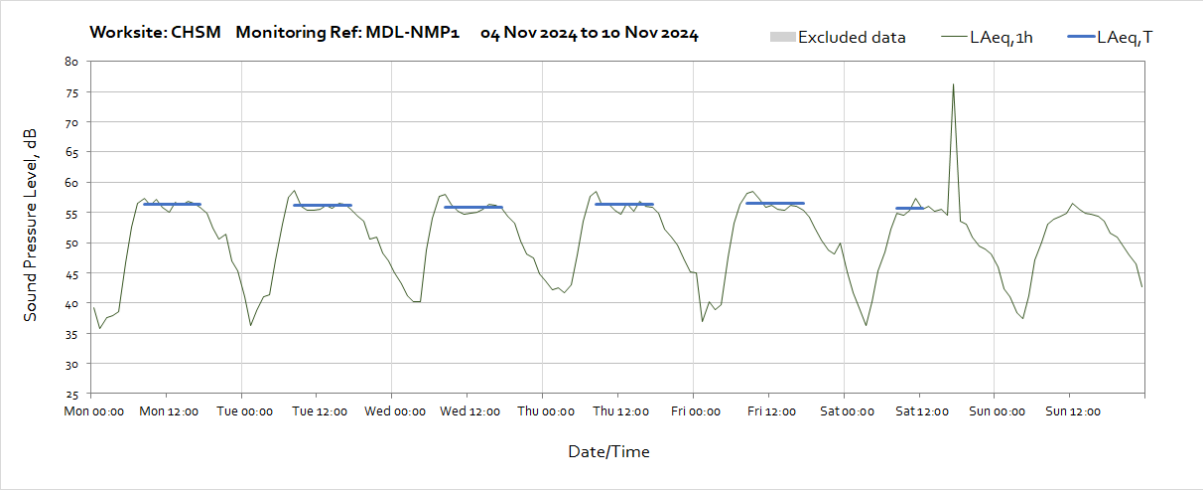


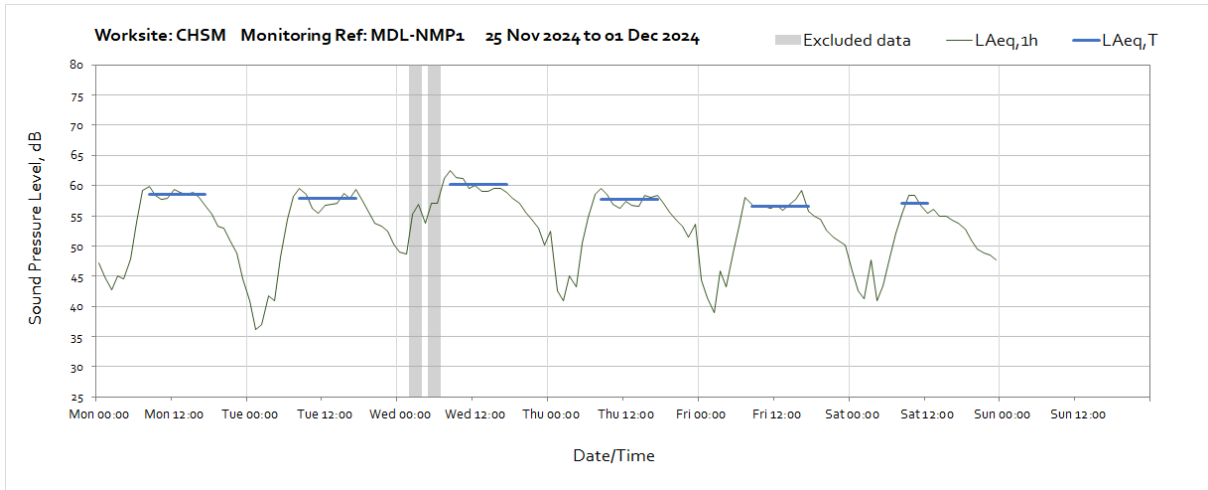


Note: Missing data between 11:00 and 12:00 on Tuesday 26th November was due to monitor maintenance. Missing data between 11:00 and 12:00 on Wednesday 27th November was due to a communication error between the monitoring station and server. Missing data between 11:00 and 13:00 on Thursday 28th November was due to monitor maintenance.

Worksite: CHSM – Monitoring Ref: MDL-NMP1

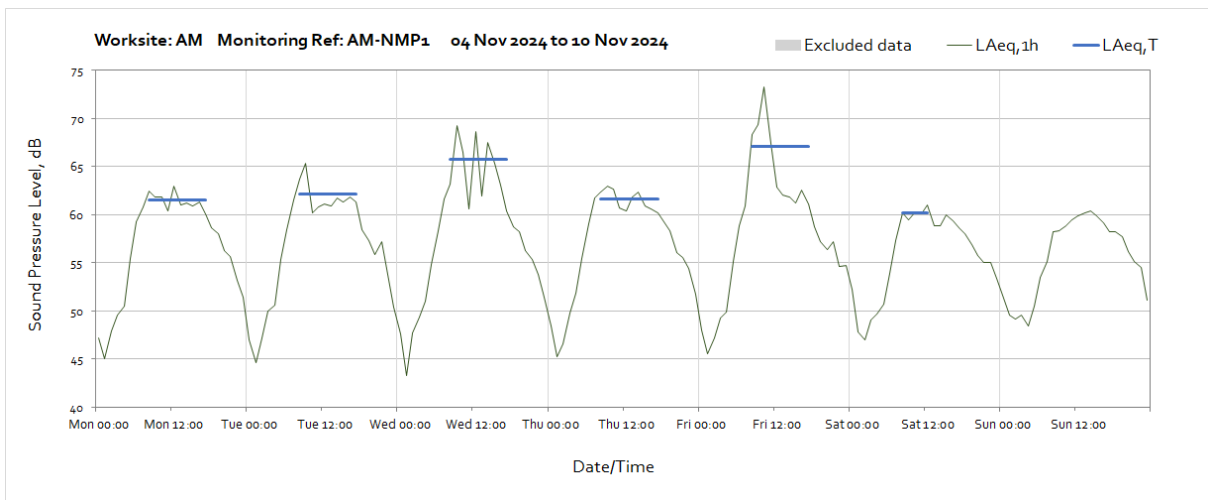
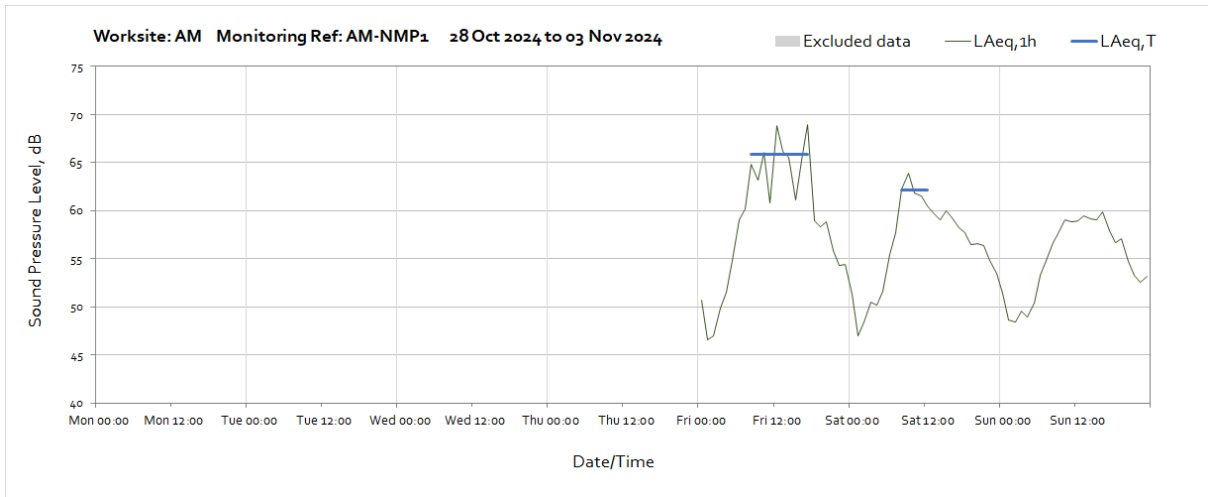


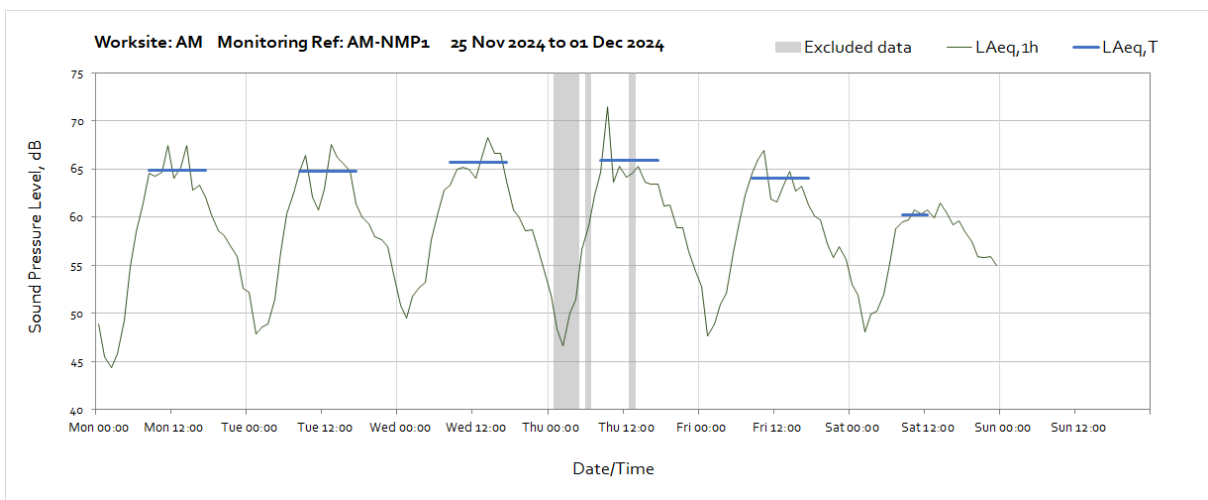
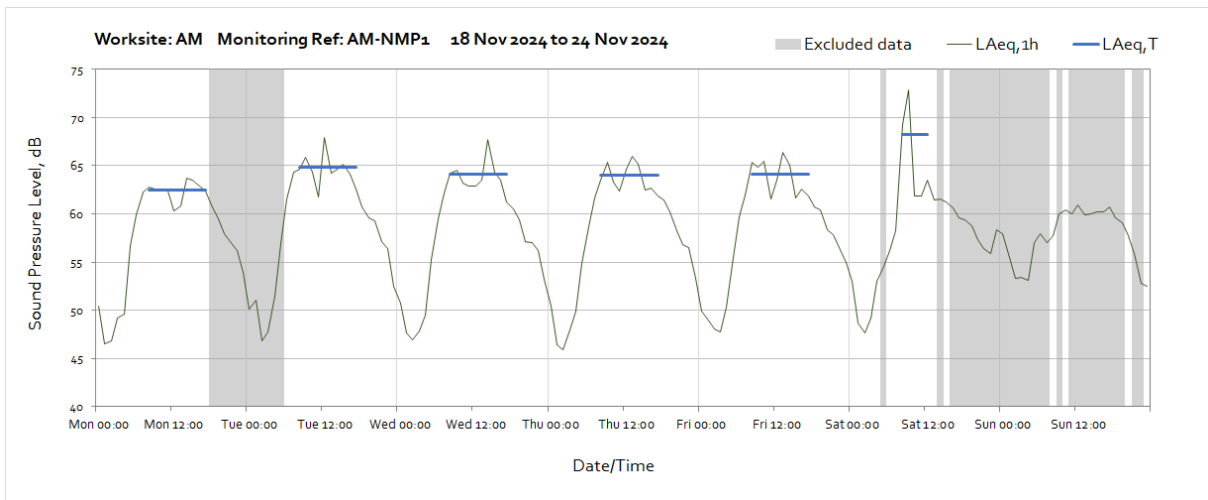
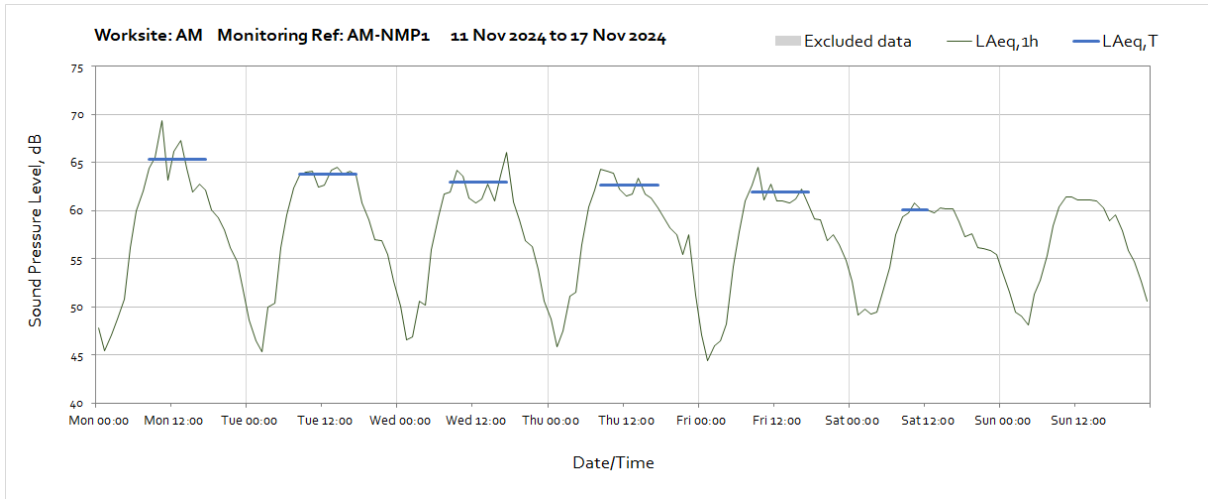




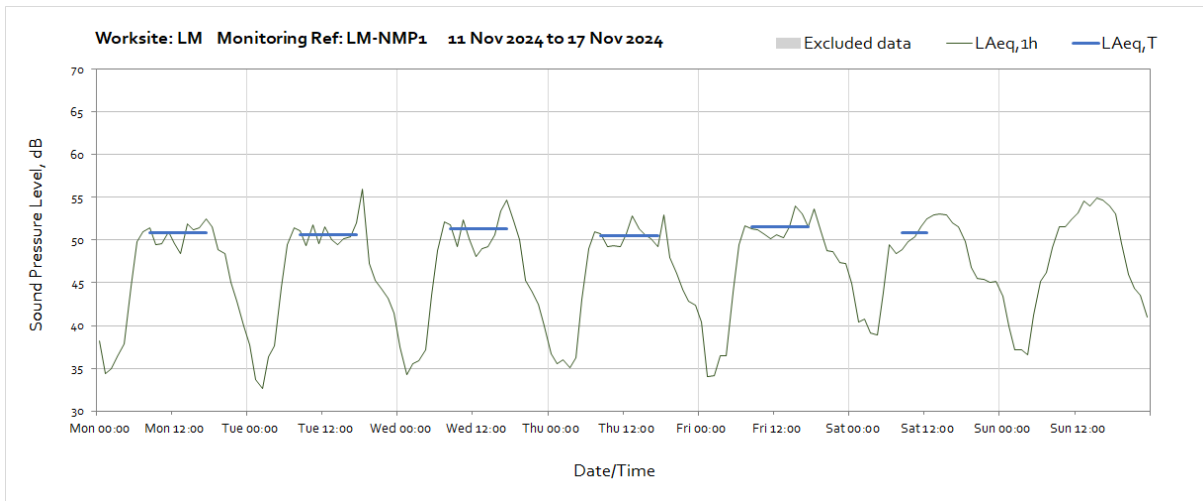
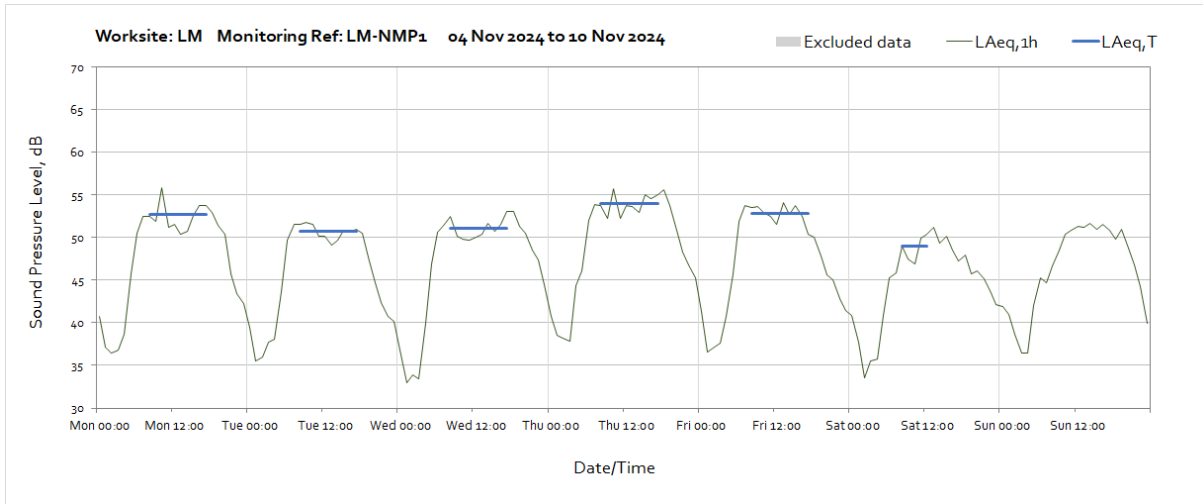
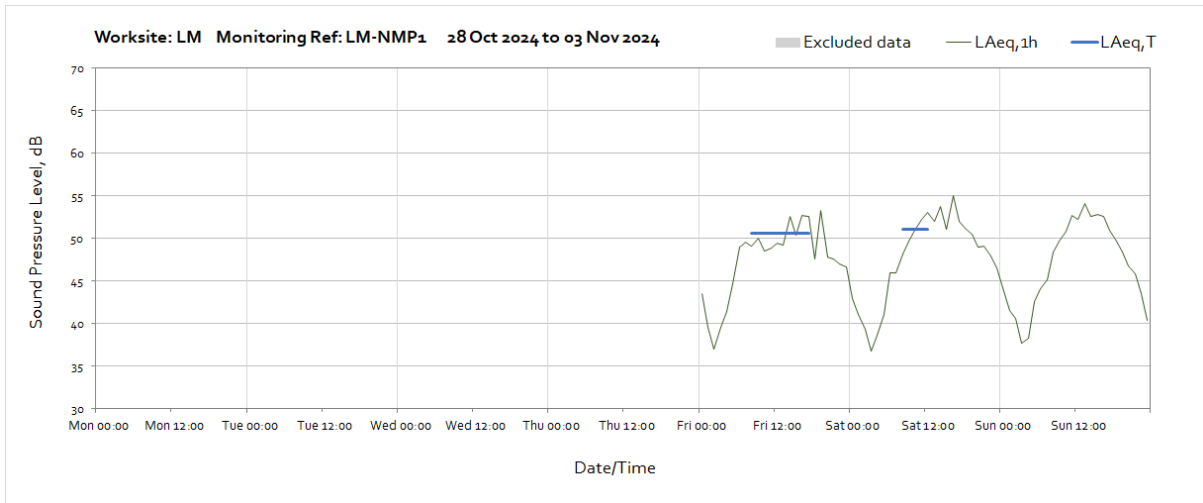
Note: Missing data between 09:00 and 10:00 on Friday 29th November was due to a communication error between the monitoring station and server.

Worksite: AM - Monitoring Ref: AM-NMP1

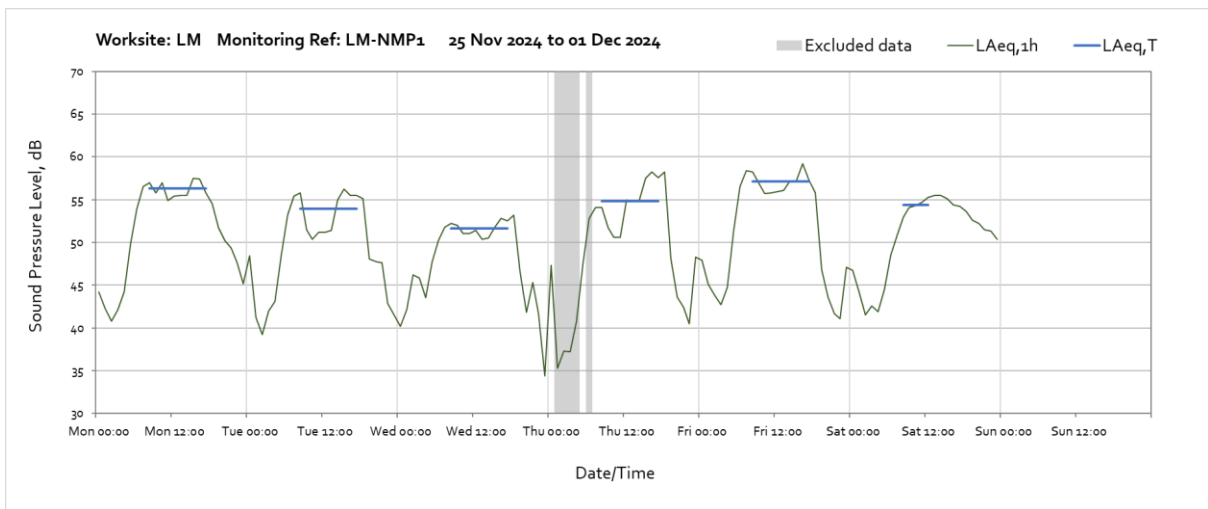
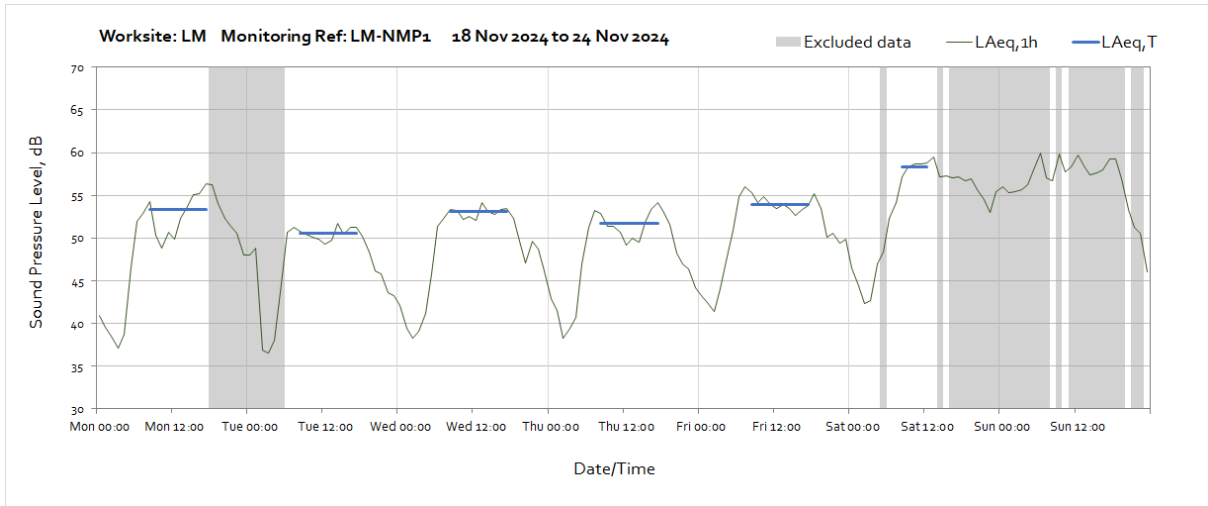




Worksite: LM – Monitoring Ref: LM-NMP1

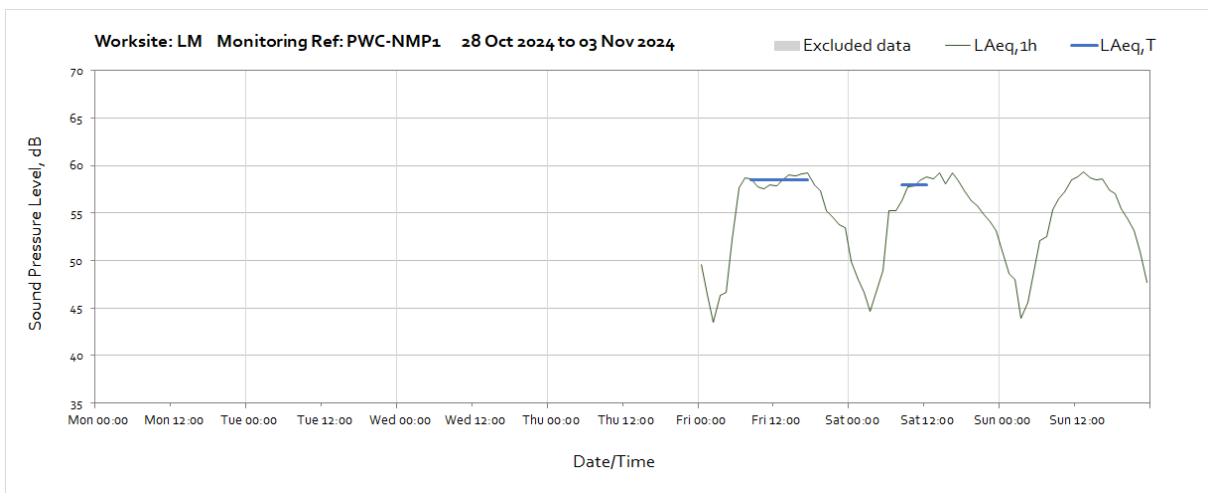


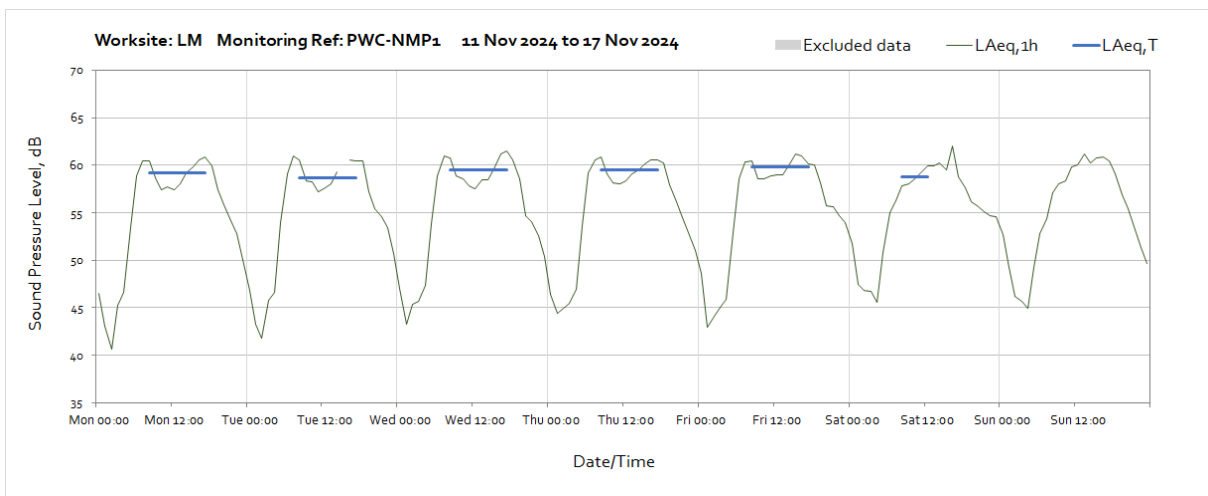
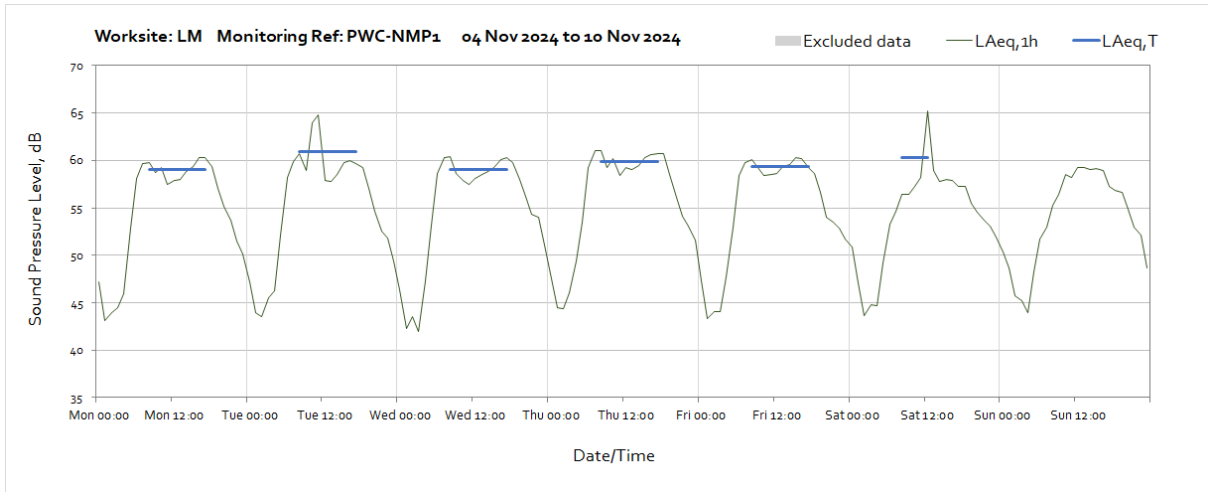
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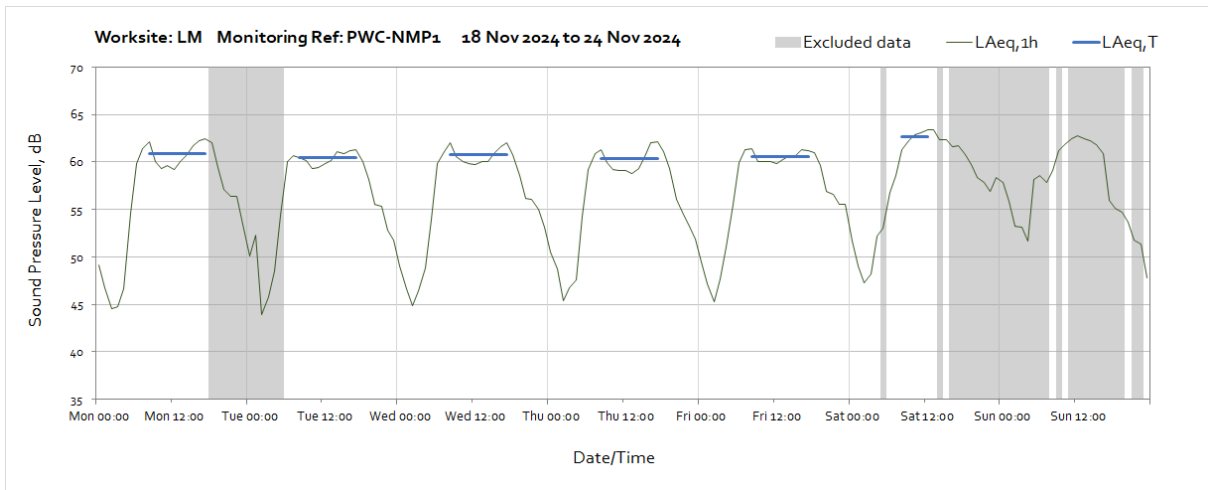
Note: Missing data between 12:00 and 14:00 on Thursday 28th November was due to monitor field calibration.

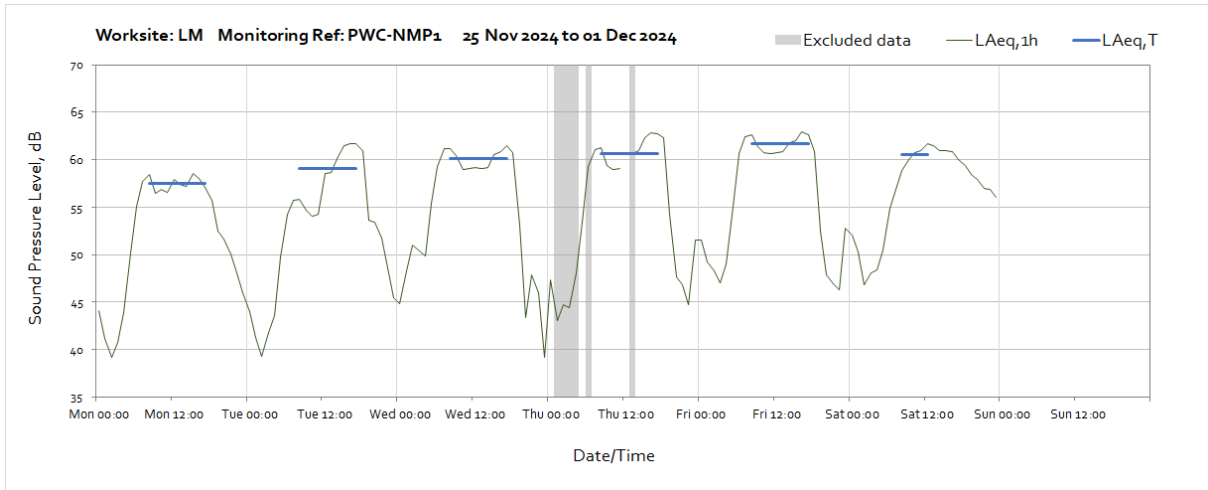
Worksite: LM – Monitoring Ref: PWC-NMP1





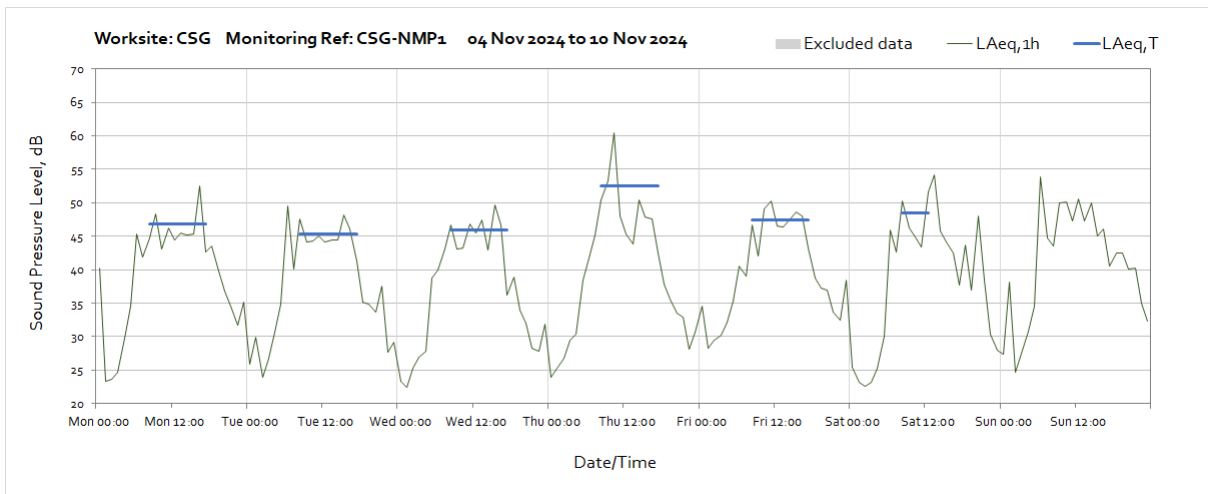
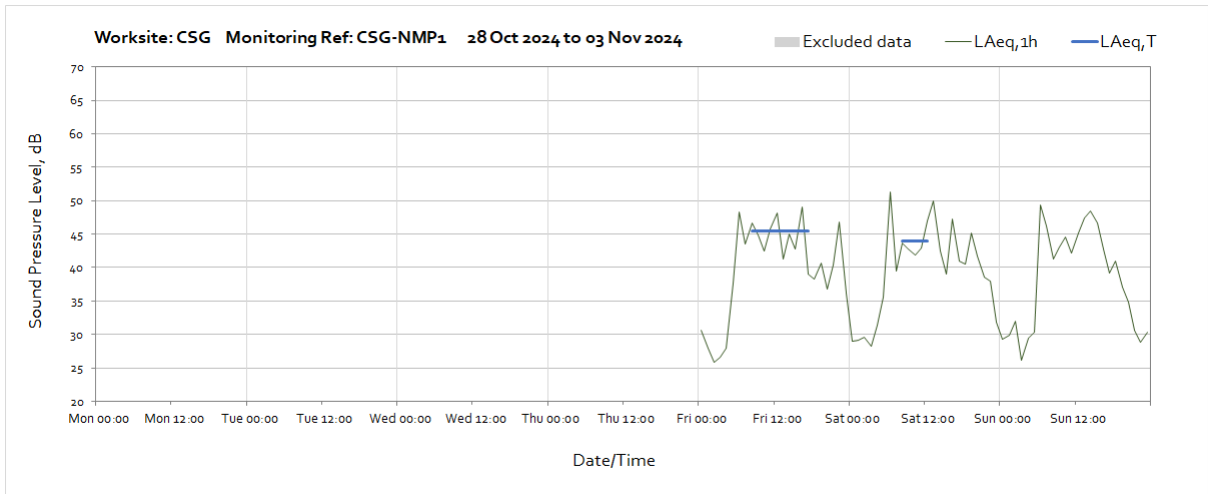
Note: Missing data between 15:00 and 16:00 on Tuesday 12th November was due to monitor field calibration.

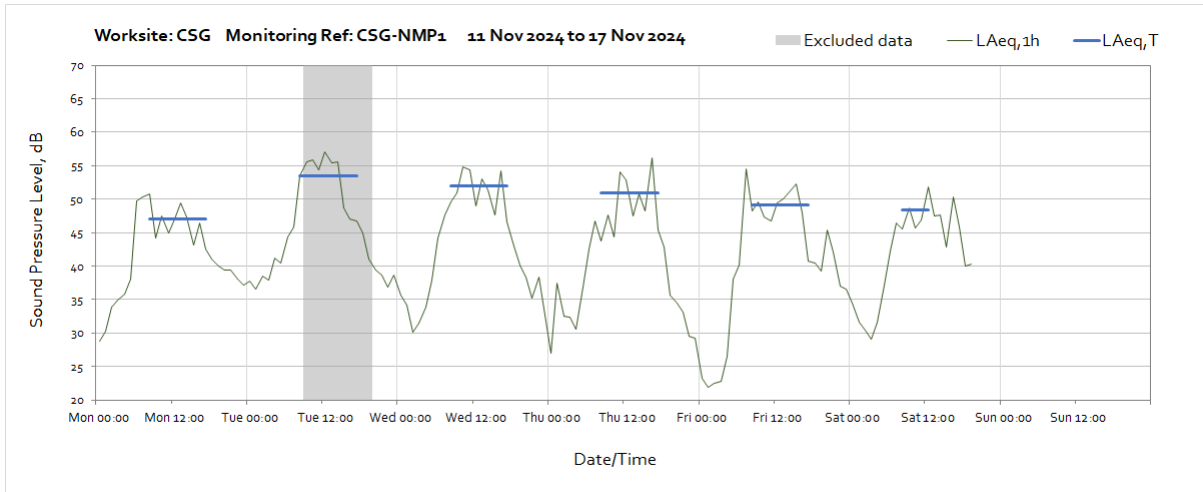




Note: Missing data between 14:00 and 15:00 on Thursday 28th November was due to monitor maintenance.

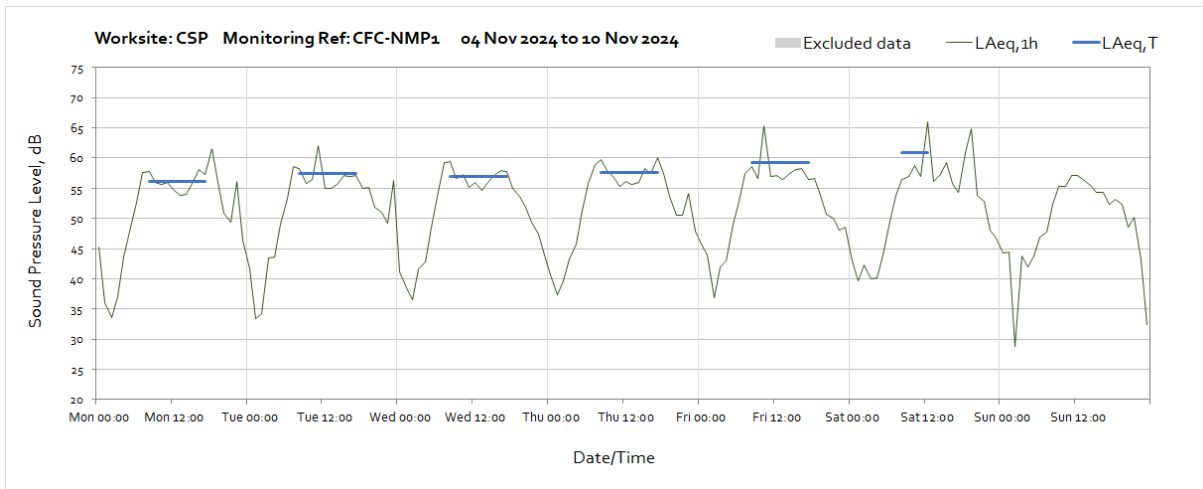
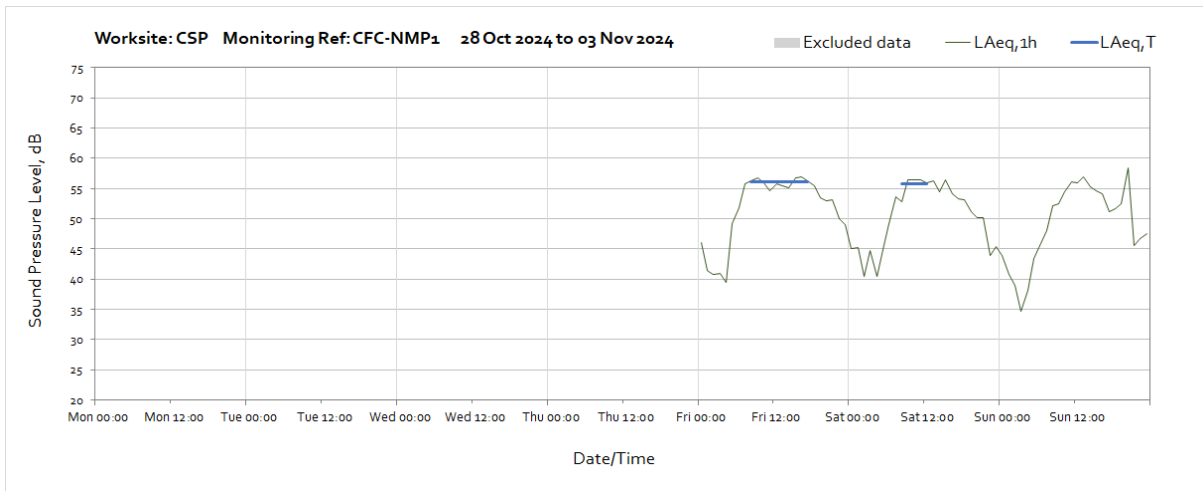
Worksite: CSG – Monitoring Ref: CSG-NMP1

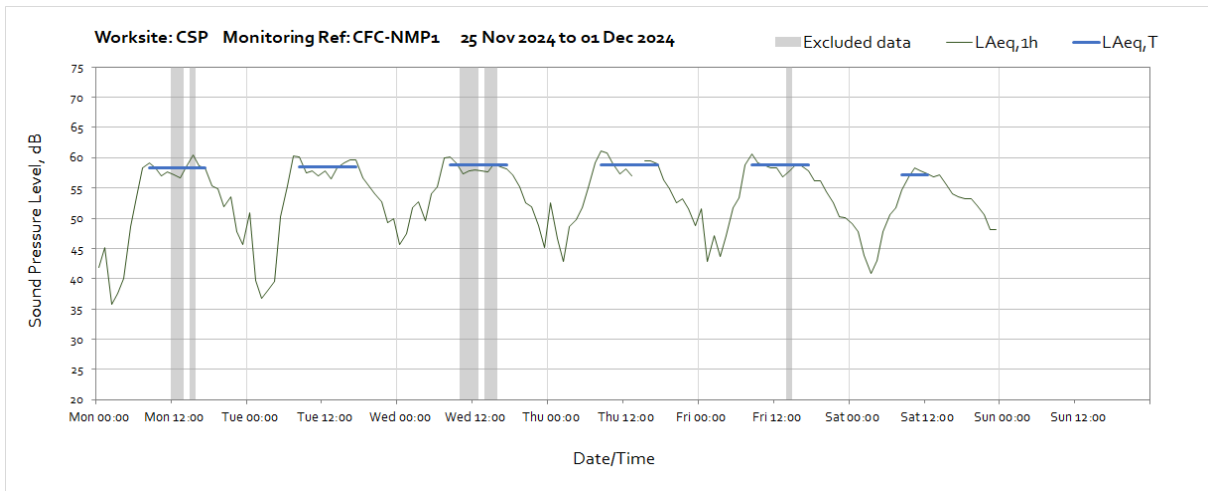
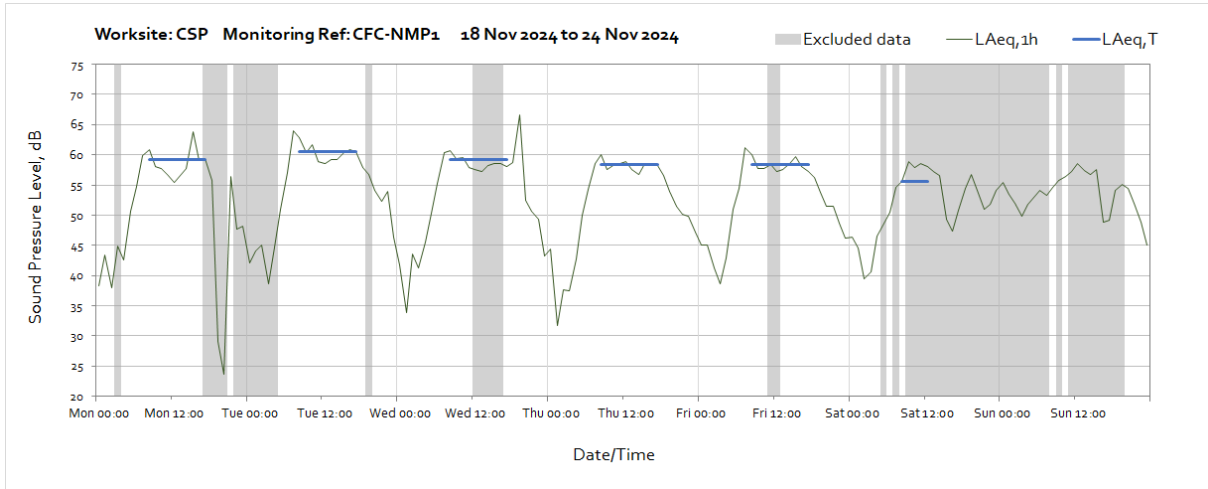
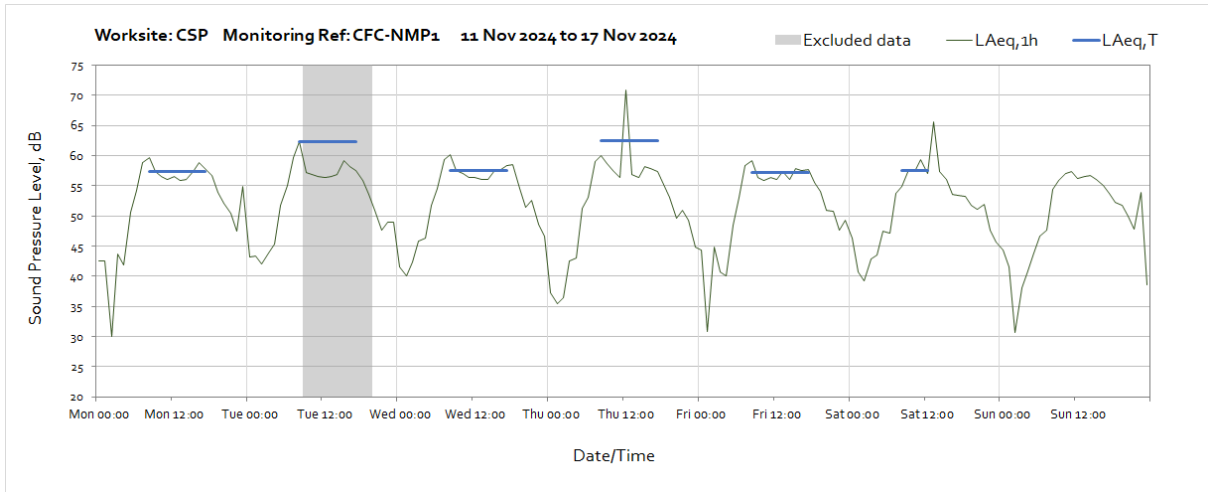




Note: Missing data from 20:00 on Saturday 16th November until the end of the month was due to removal of power from site for ongoing utilities works.

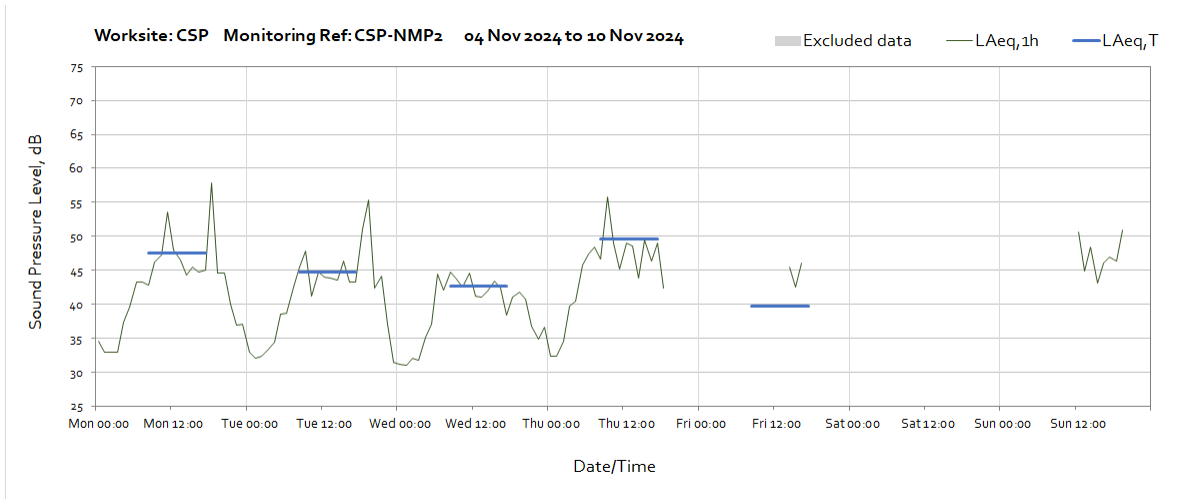
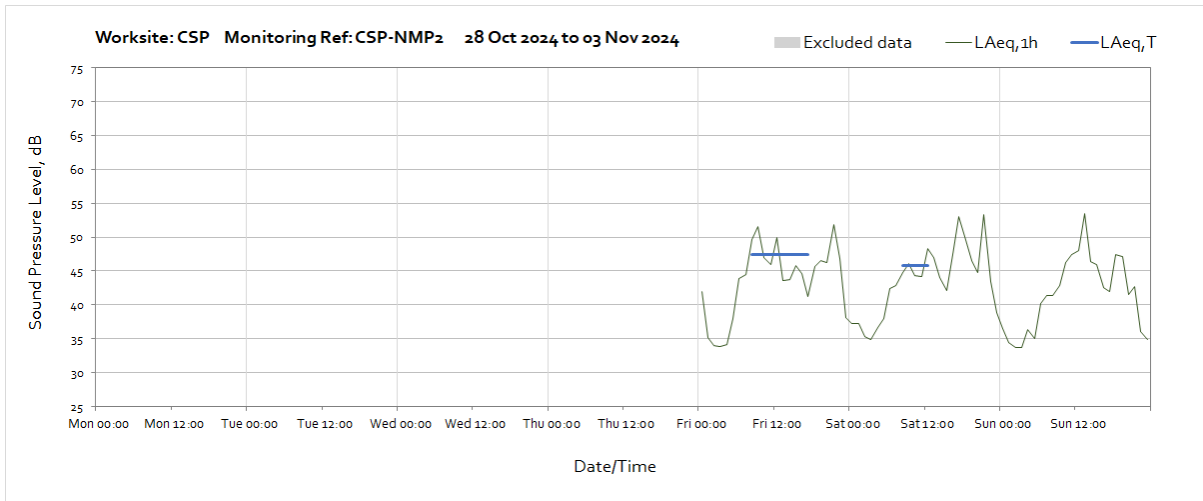
Worksite: CSP – Monitoring Ref: CFC-NMP1



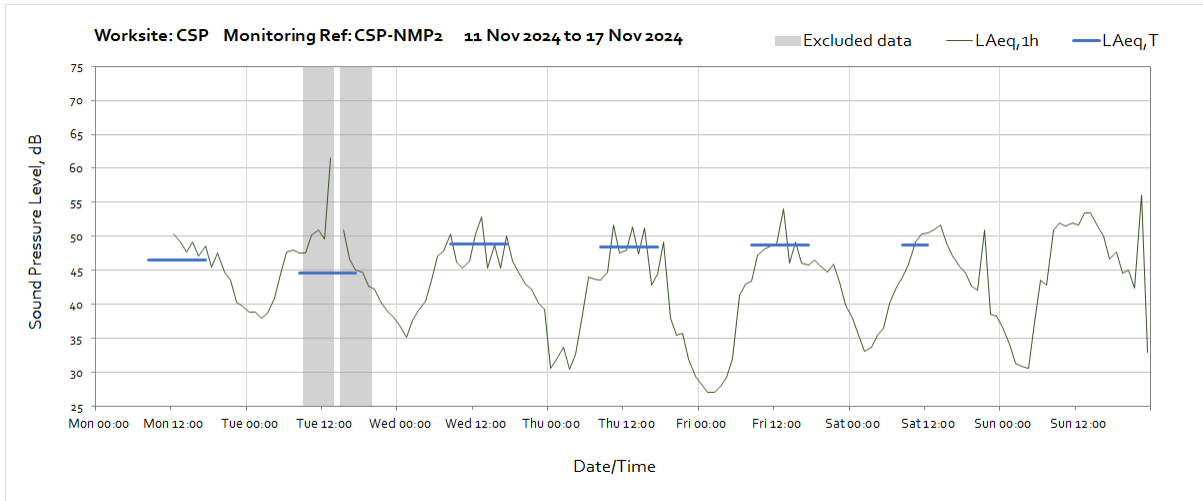


Note: Missing data between 14:00 and 15:00 on Thursday 28th November was due to monitor maintenance.

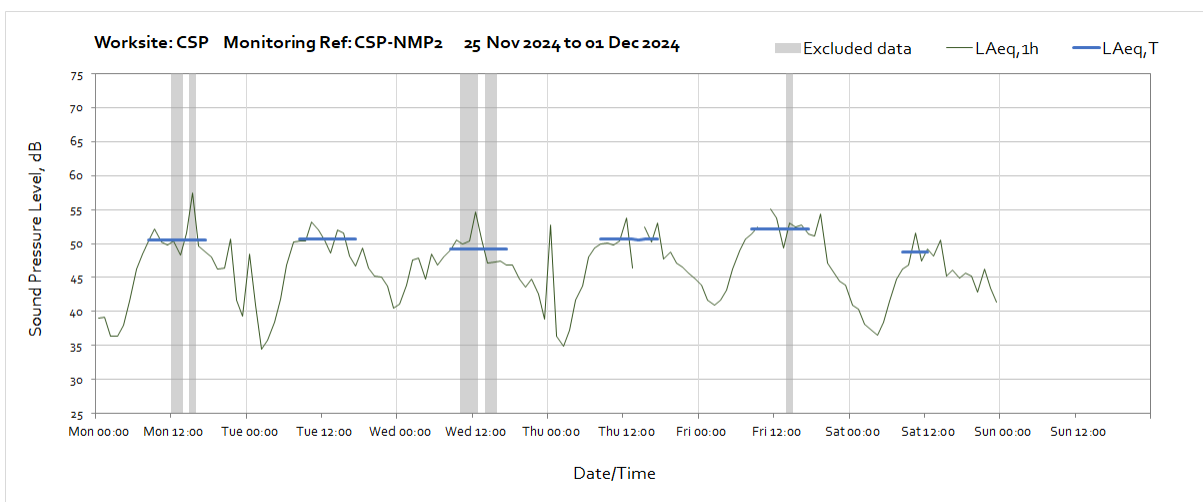
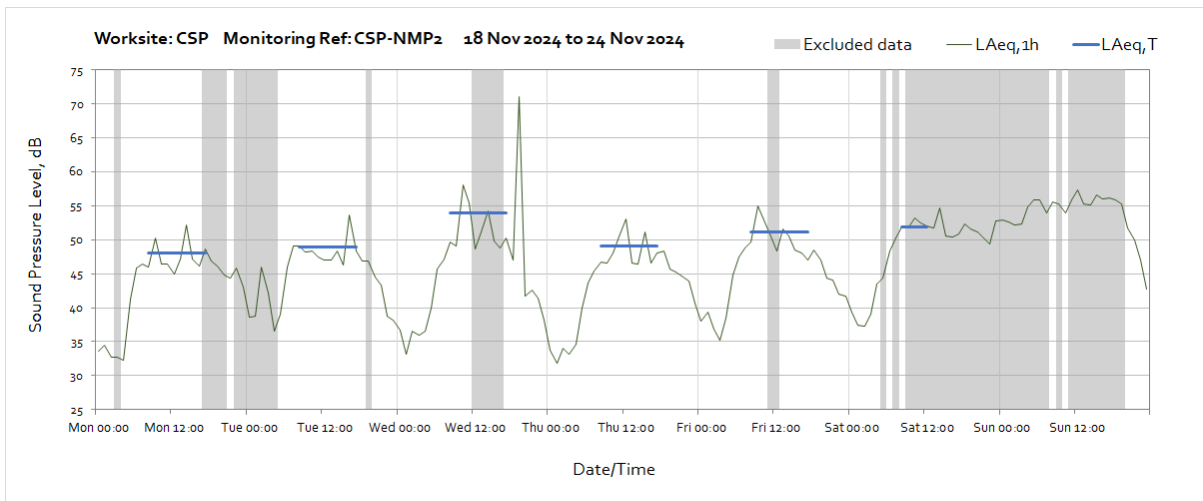
Worksite: CSP – Monitoring Ref: CSP-NMP2



Note: Missing data throughout the week was due to loss of power to the monitoring station due to an error with the solar power.



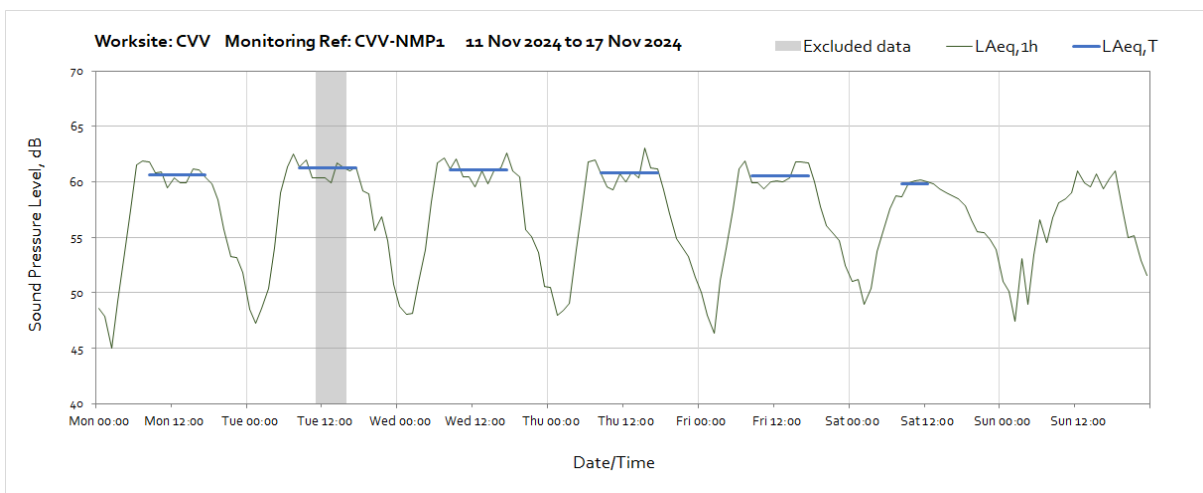
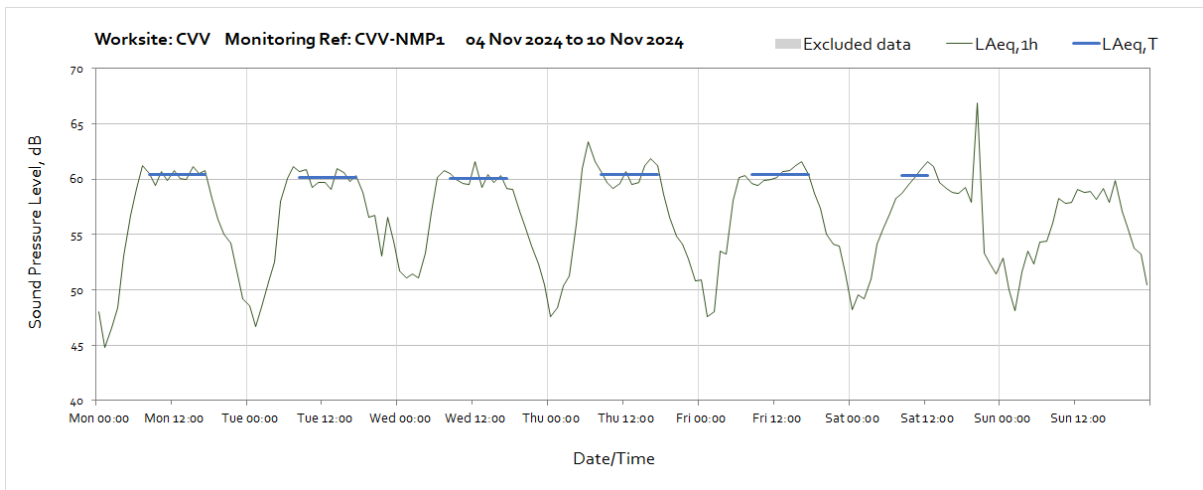
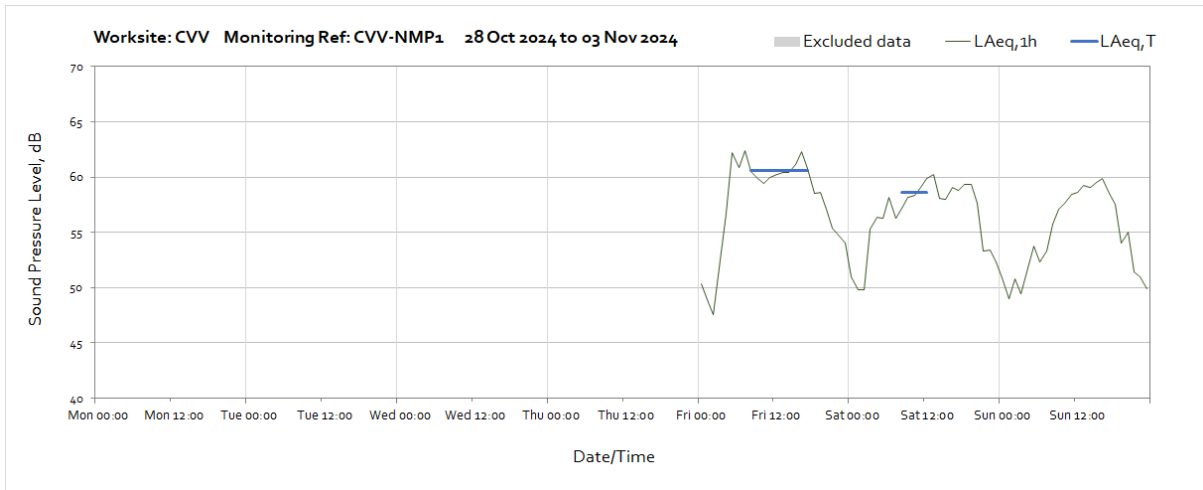
Note: Note: Missing data until 12:00 on Monday 11th November was due to loss of power to the monitoring station due to a error with the solar power. Missing data between 14:00 and 15:00 on Tuesday 12th November was due to monitor field calibration.

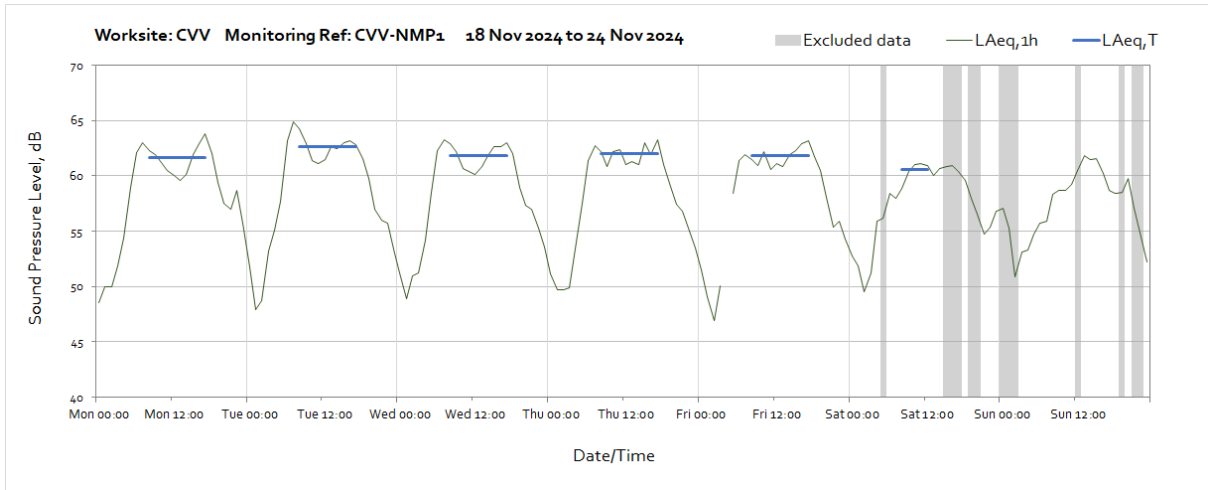


Note: Missing data between 14:00 and 15:00 on Thursday 28th November was due to monitor maintenance. Missing data between 10:00 and 11:00 on Friday 29th November was due to a communication error between the monitoring station and server.

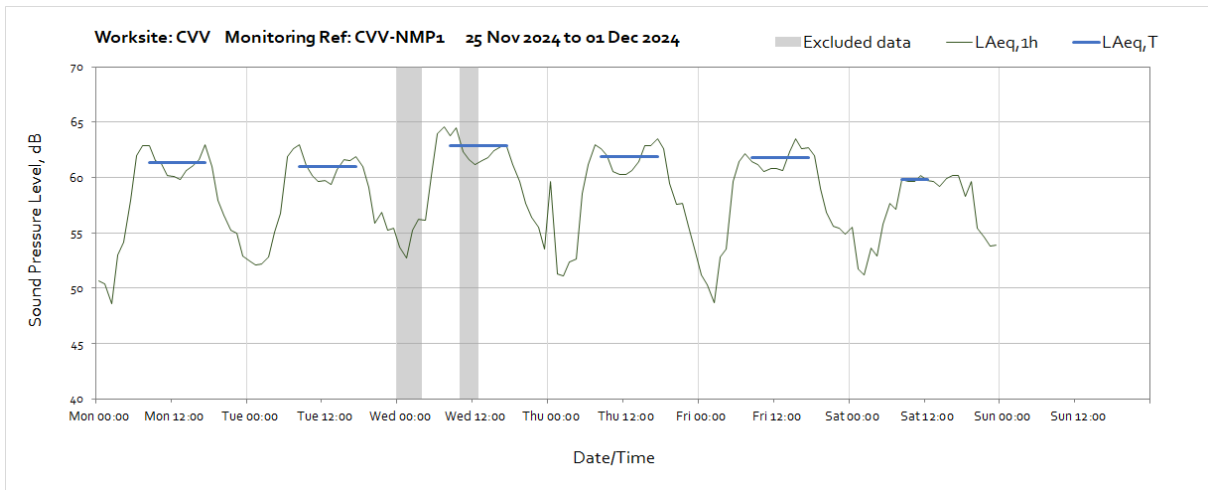
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Worksite: CVV- Monitoring Ref: CVV-NMP1





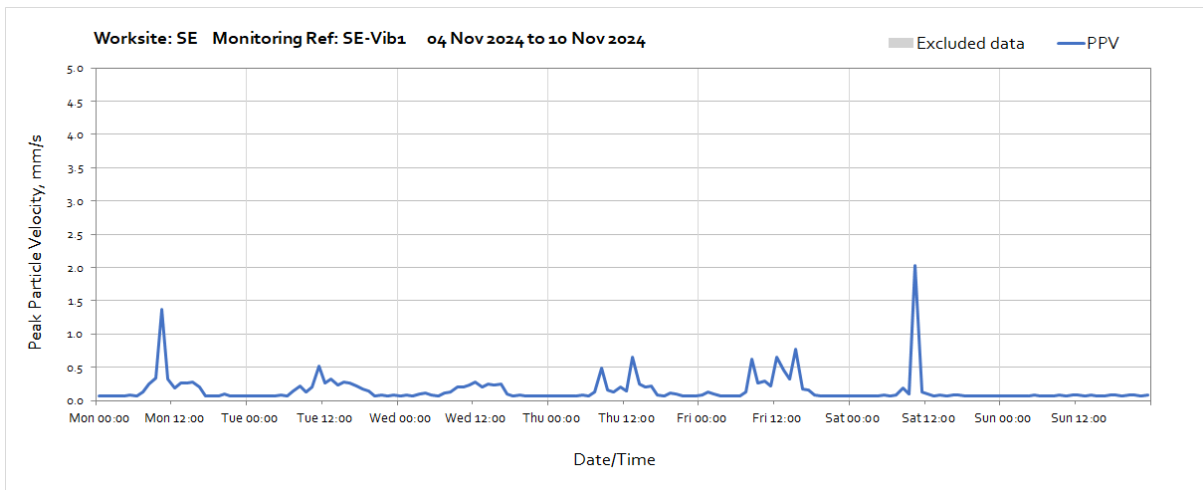
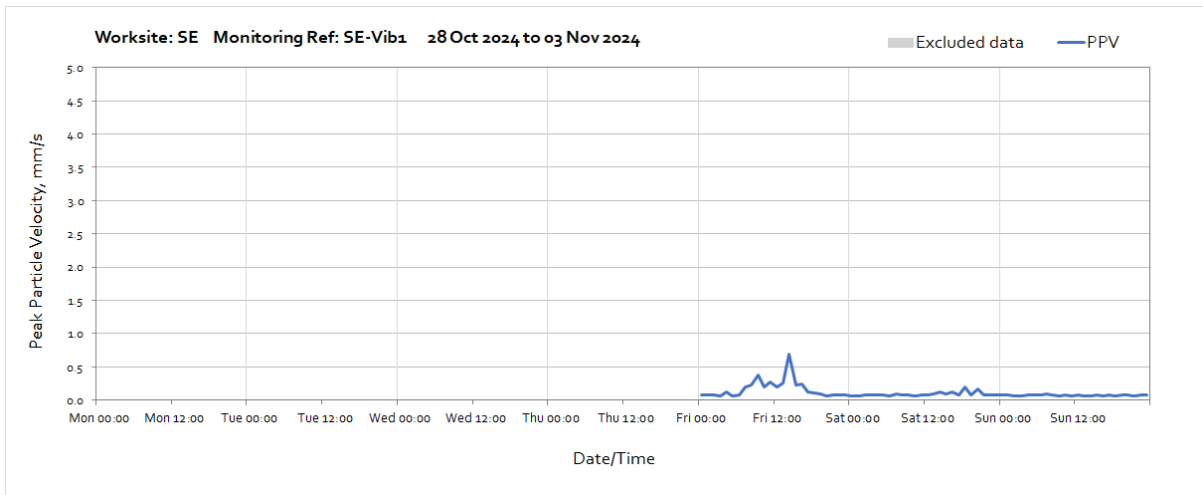
Note: Missing data between 04:00 and 05:00 on Friday 22nd November was due to a communication error between the monitoring station and server.

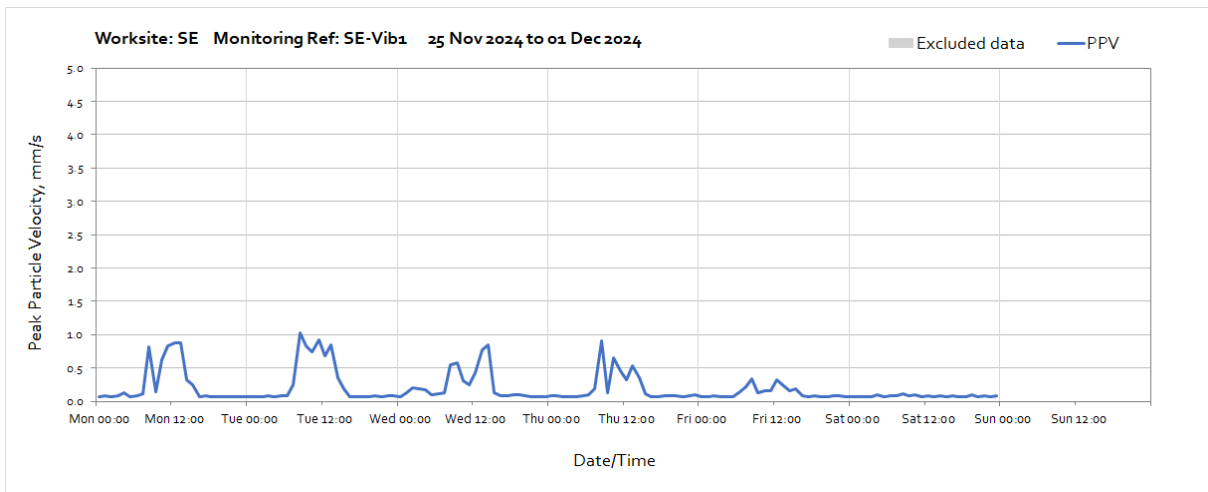
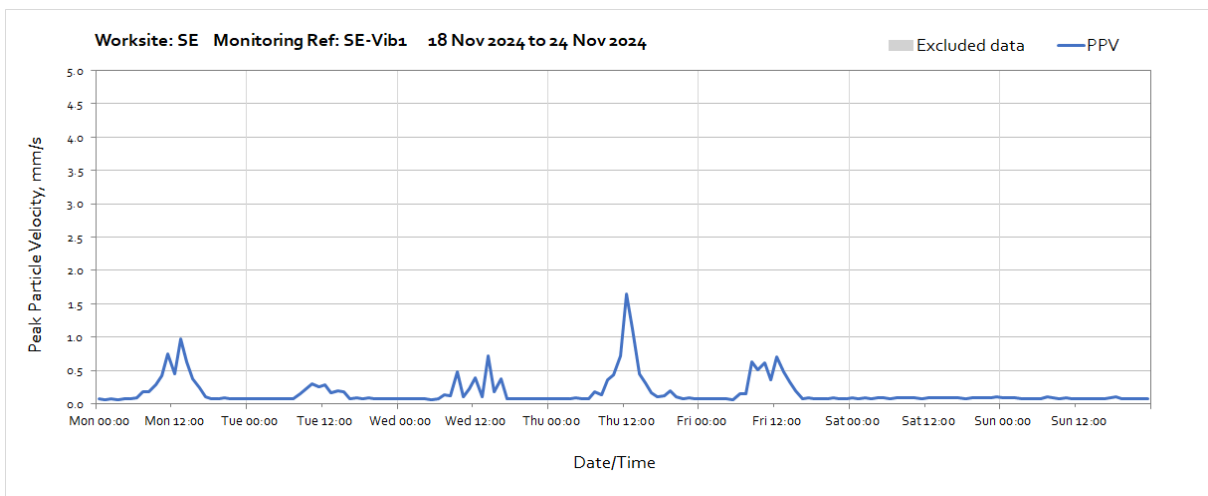
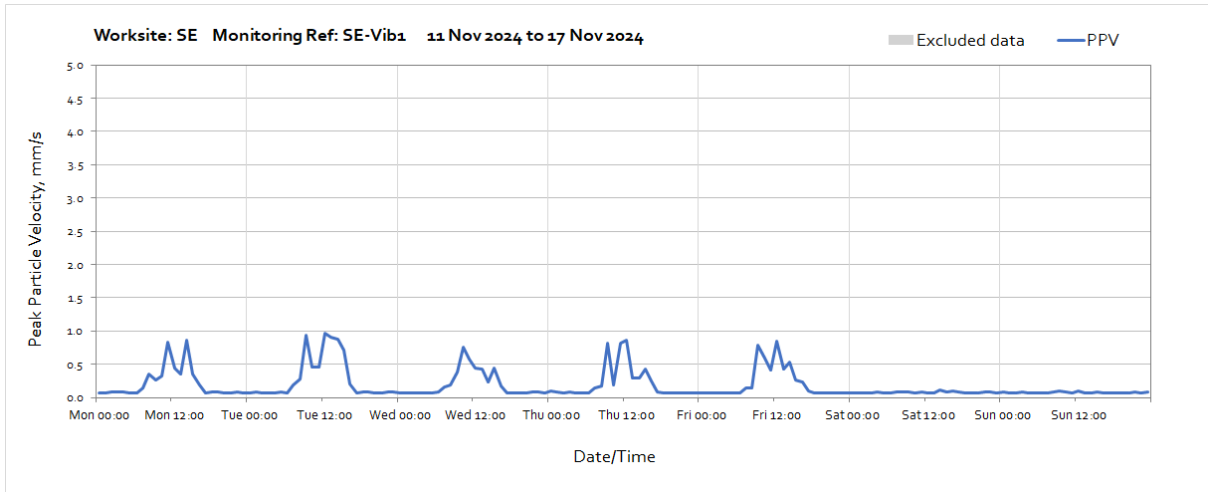


Vibration

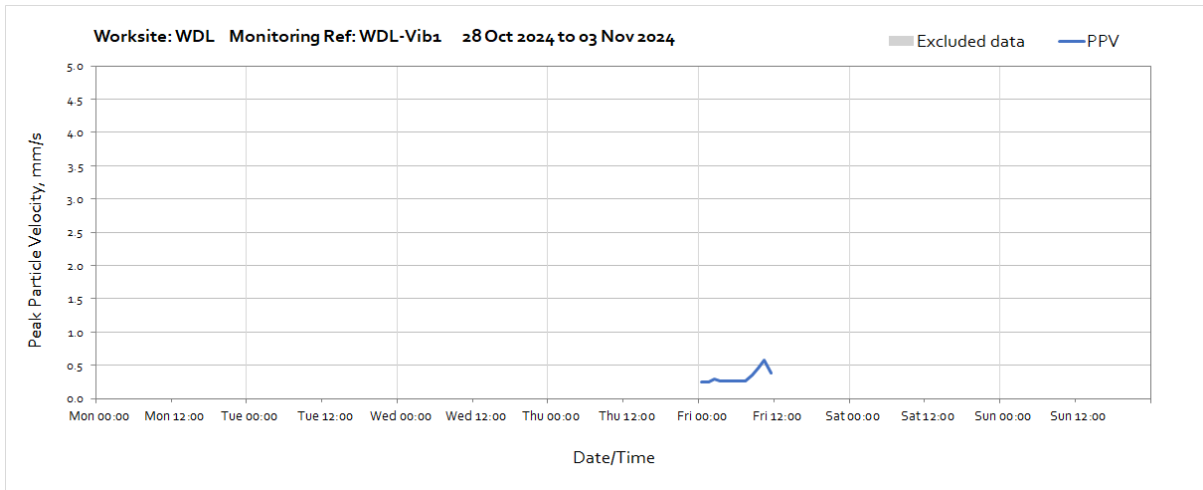
The following graphs show the hourly measured peak particle velocity PPV recorded during the monitoring period. The graphs show the highest PPV of the three orthogonal axes x, y and z. Periods where PPV values have been affected by local interference with the vibration monitor or only measured for part of the period, which are not representative of HS2 construction works, have been greyed out and excluded when calculating values in Table 4 of the main report.

Worksite: SE – Monitoring Ref: SE-Vib1

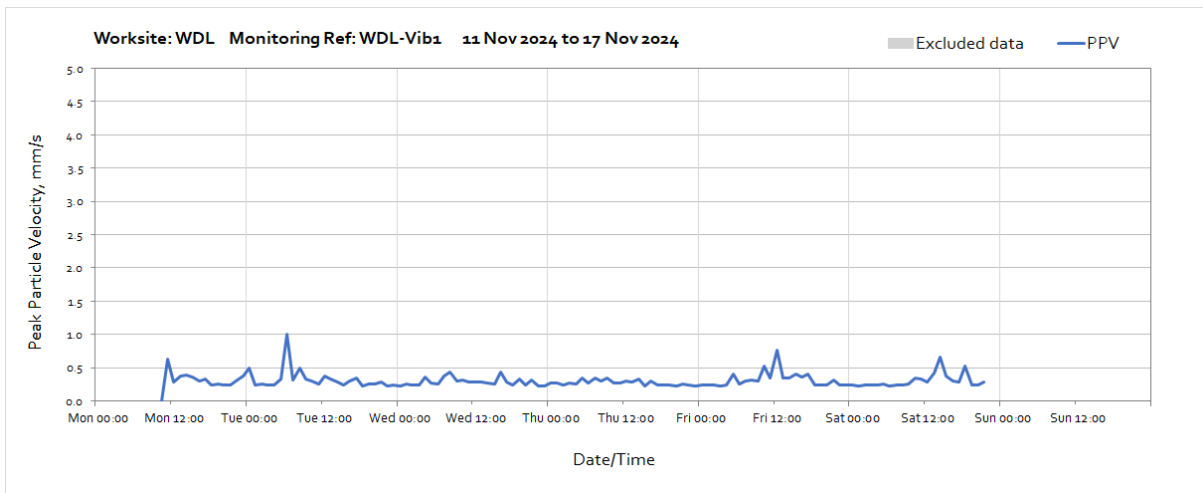




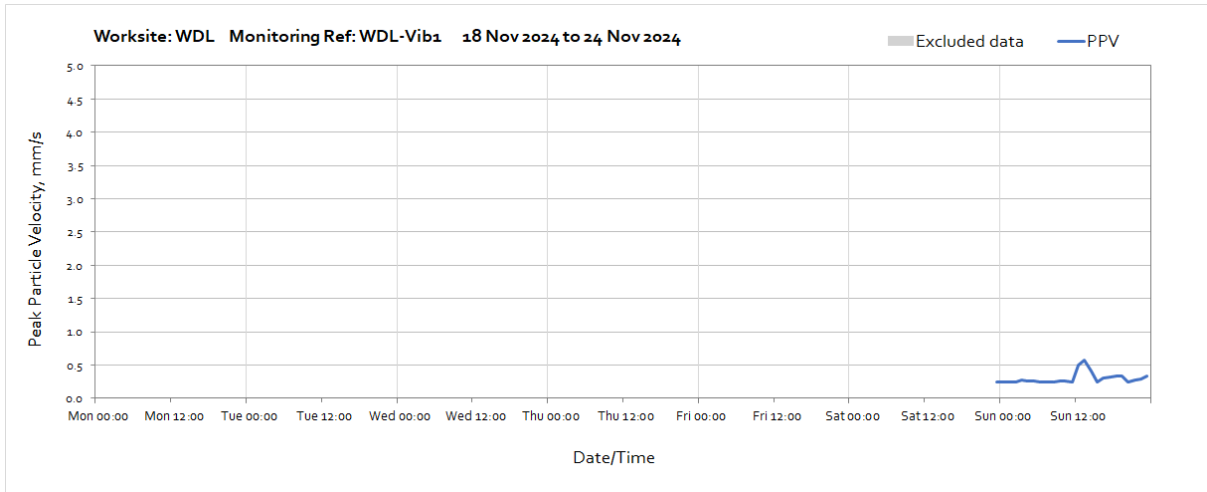
Worksite: WDL – Monitoring Ref: WDL-Vib1



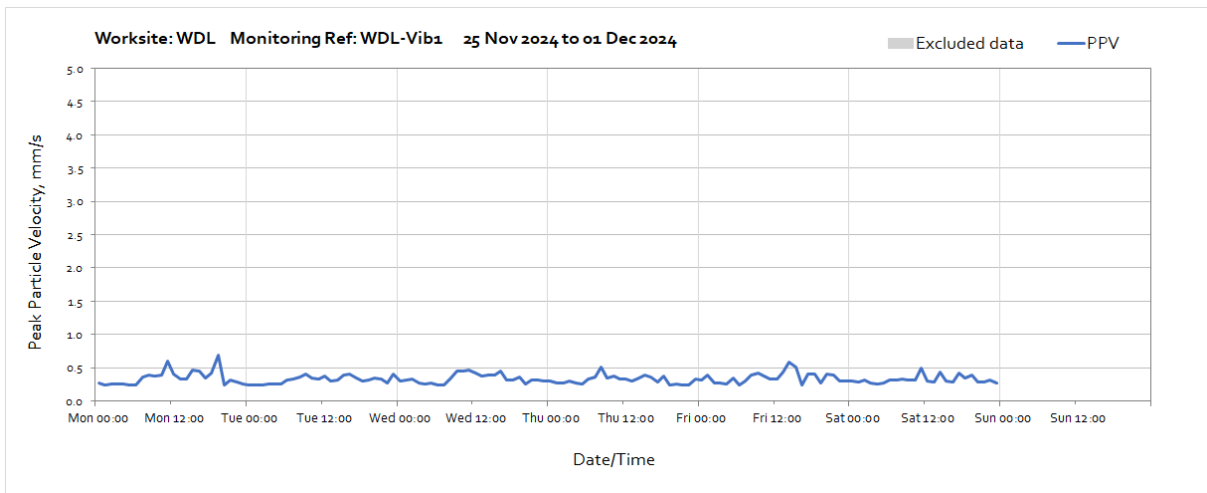
Note: Missing data from 12:00 on Friday 1st November until 10:00 on Monday 11th November is currently under investigation.



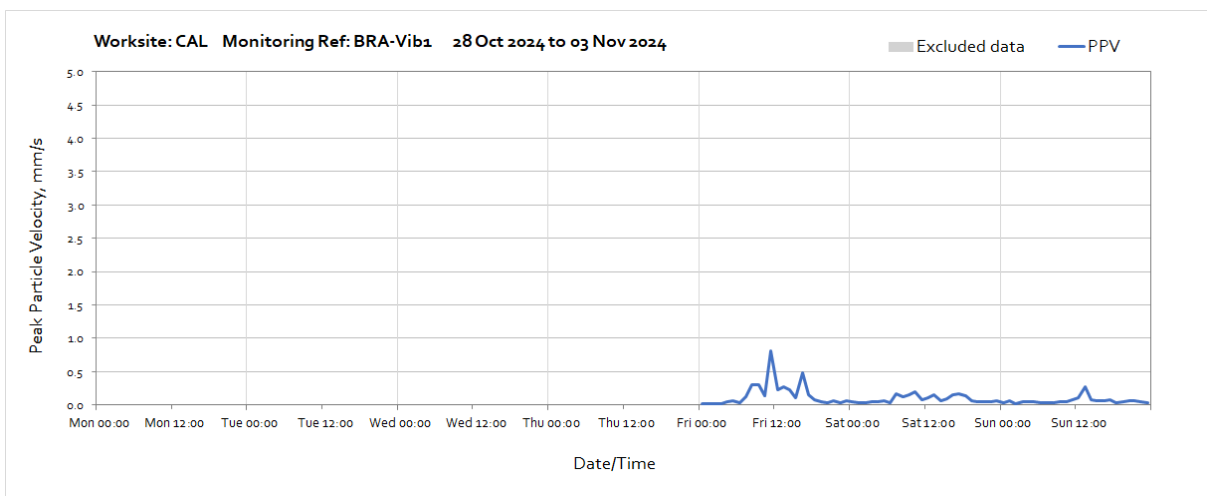
Note: Missing data from 12:00 on Friday 1st November until 10:00 on Monday 11th November is currently under investigation. Missing data from 22:00 on Saturday 16th November until 23:00 on Saturday 23rd November was due to a depleted monitor battery.

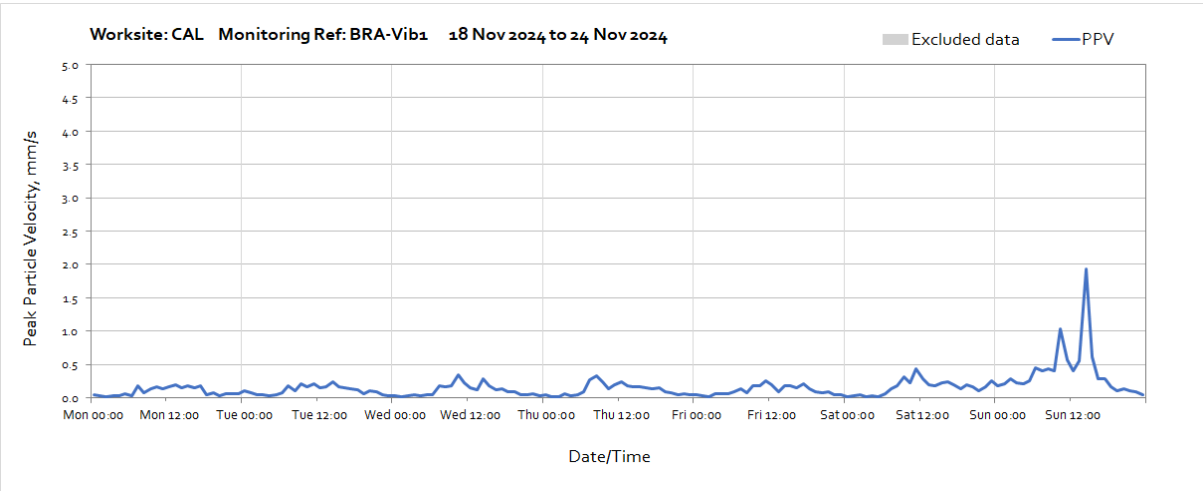
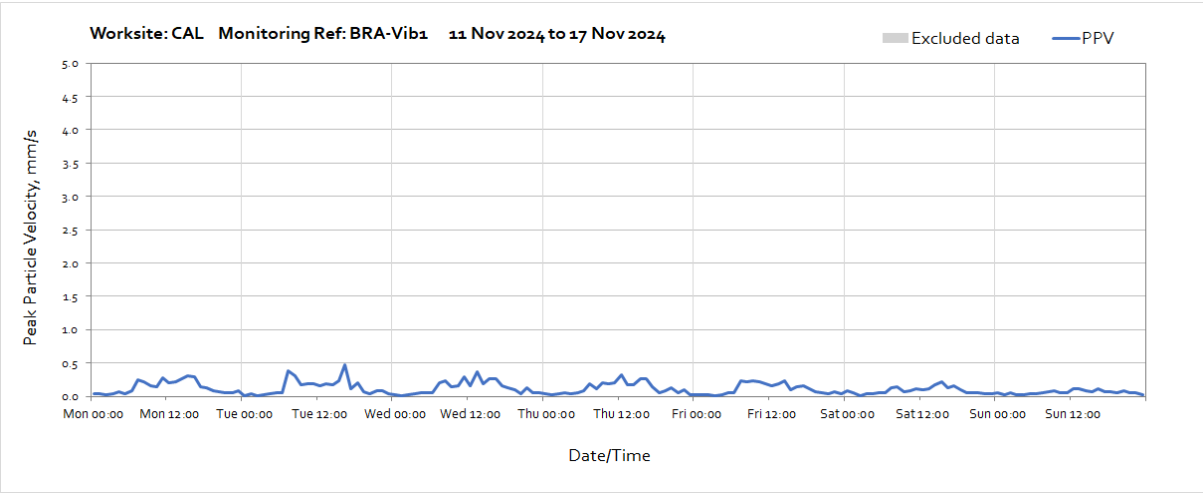
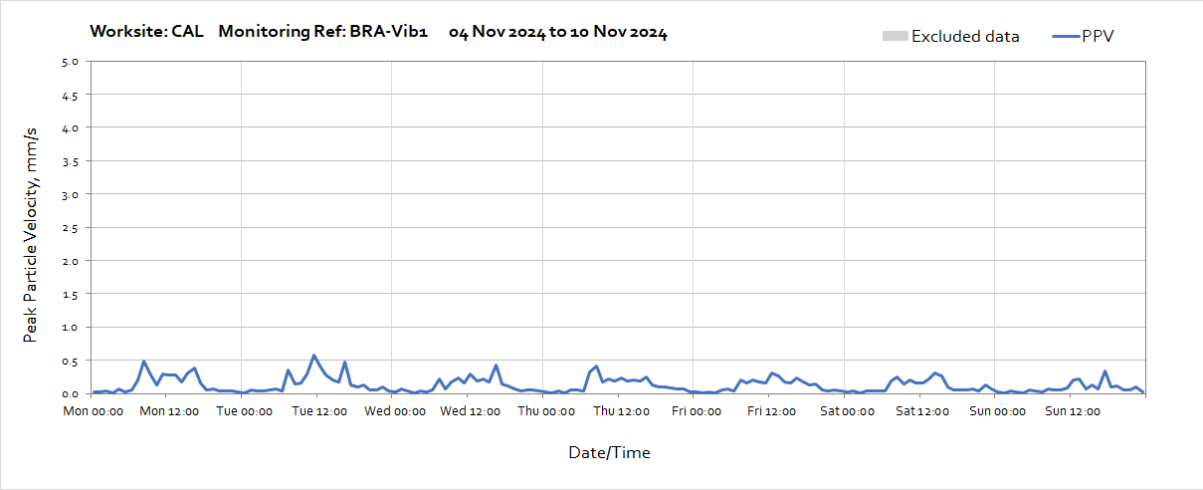


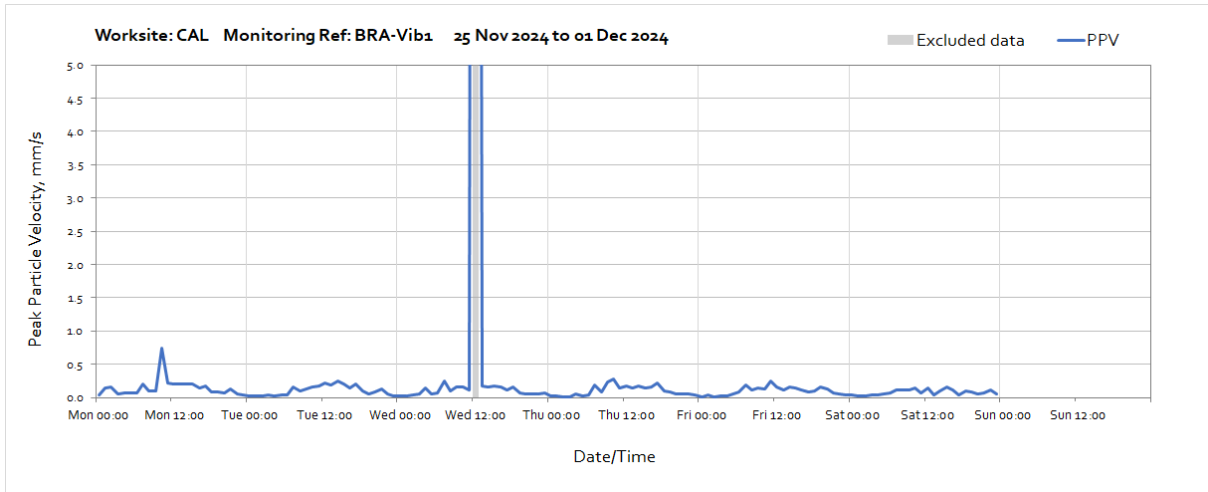
Note: Missing data from 22:00 on Saturday 16th November until 23:00 on Saturday 23rd November was due to a depleted monitor battery.



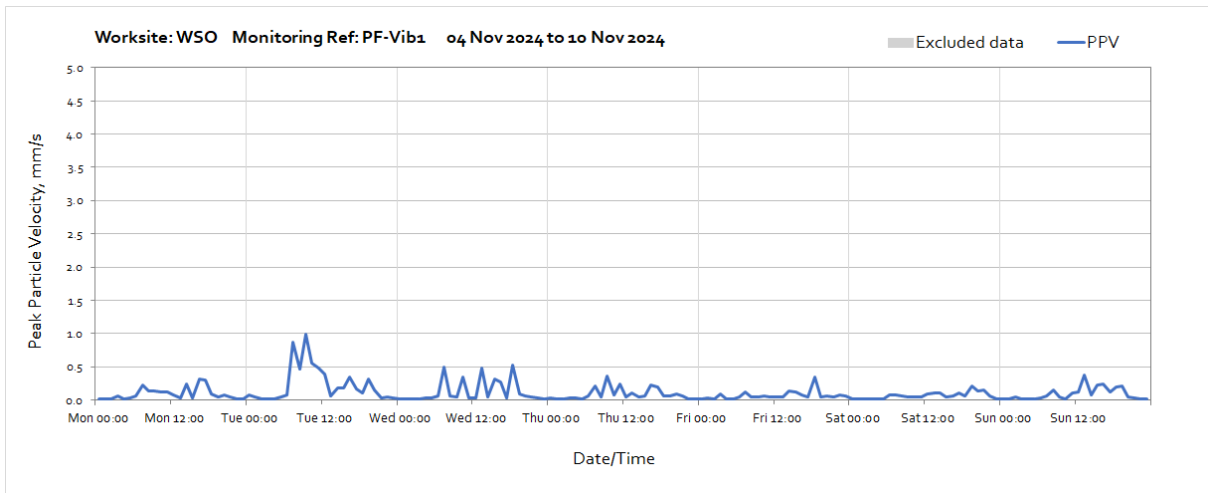
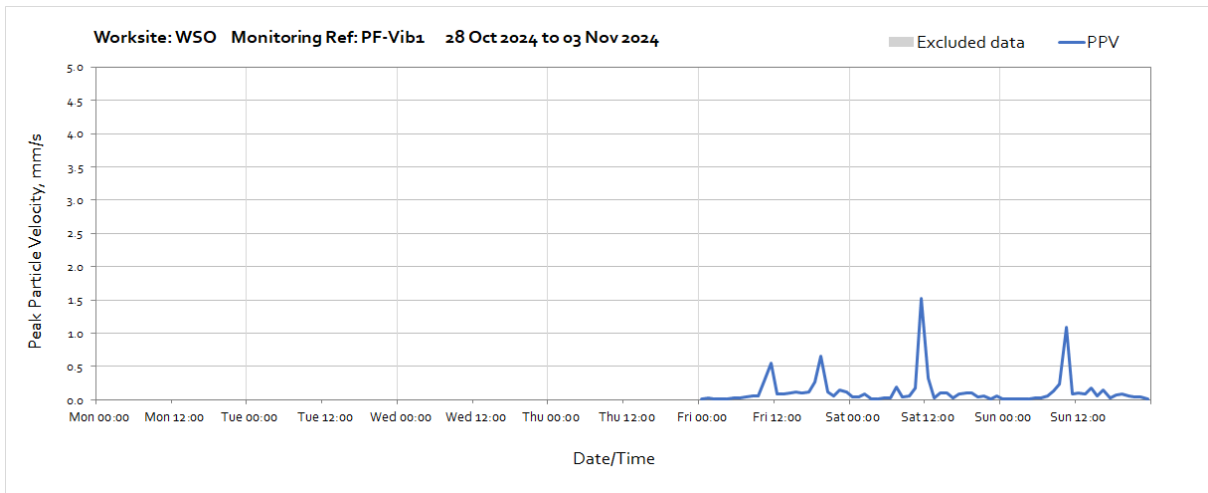
Worksite: CAL – Monitoring Ref: BRA-Vib1

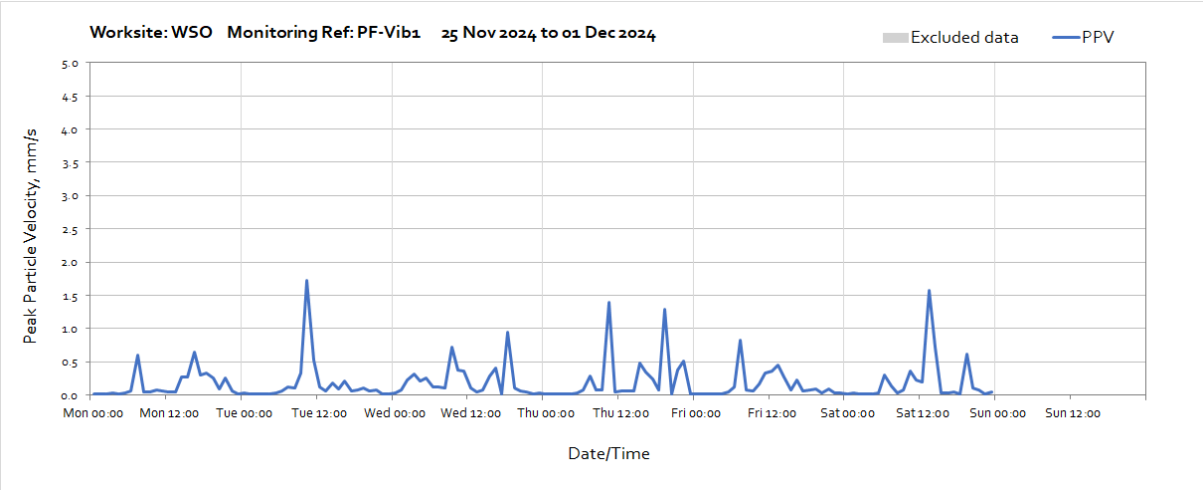
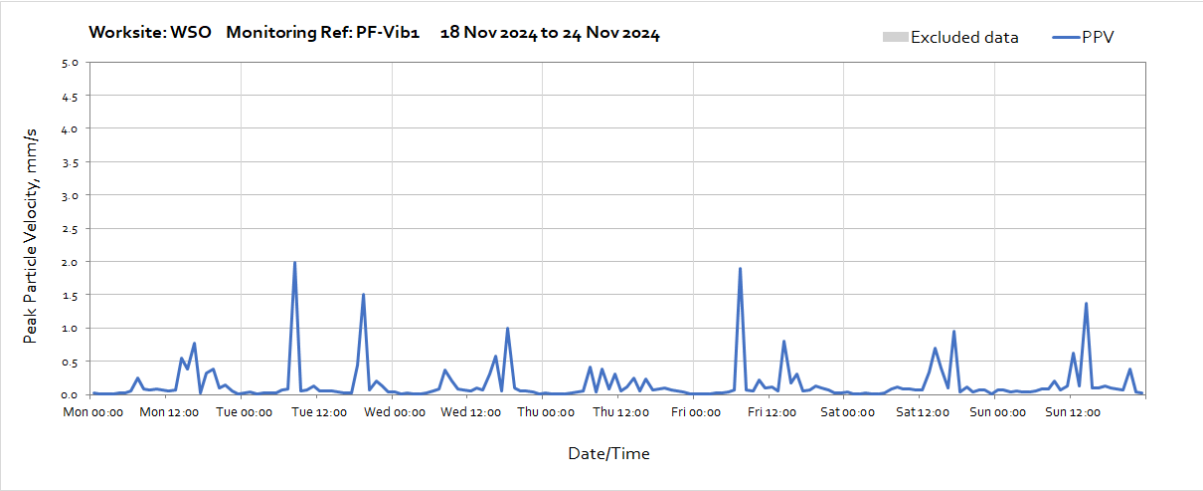
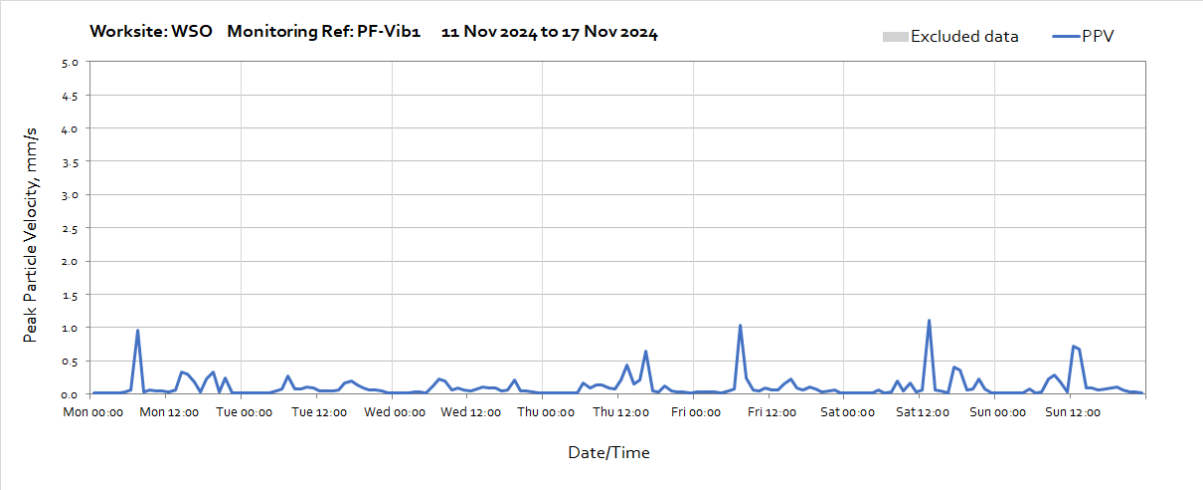




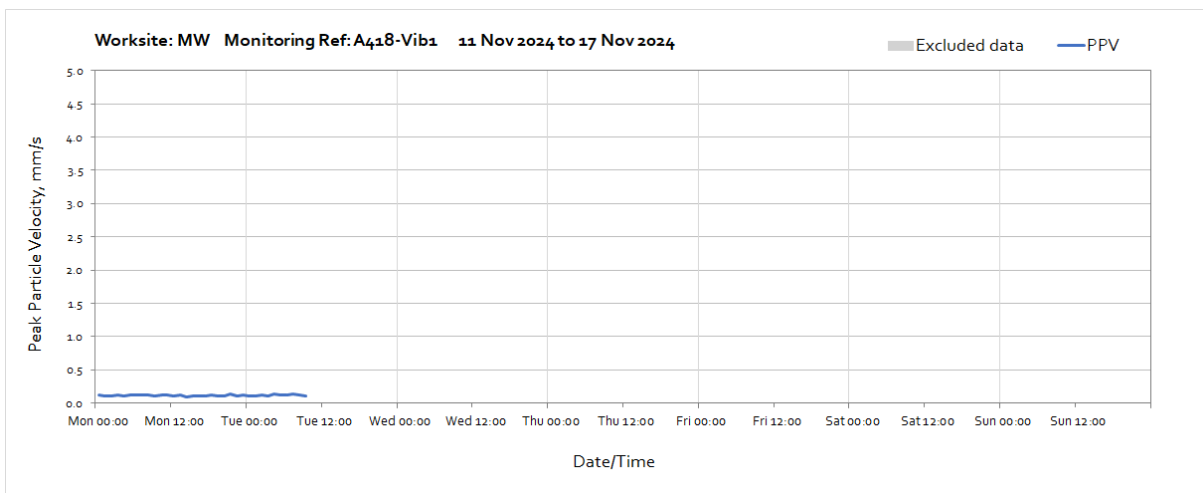
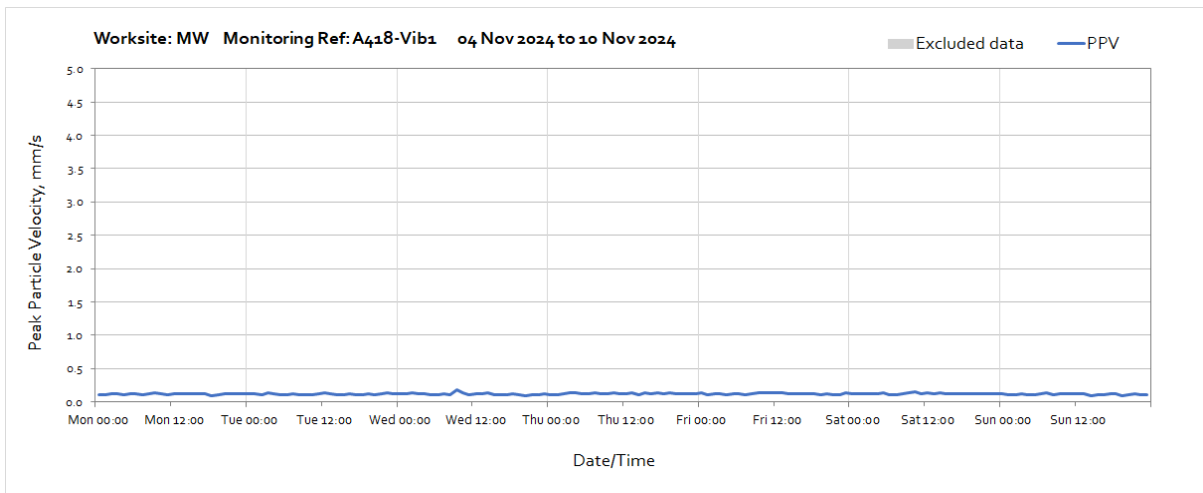
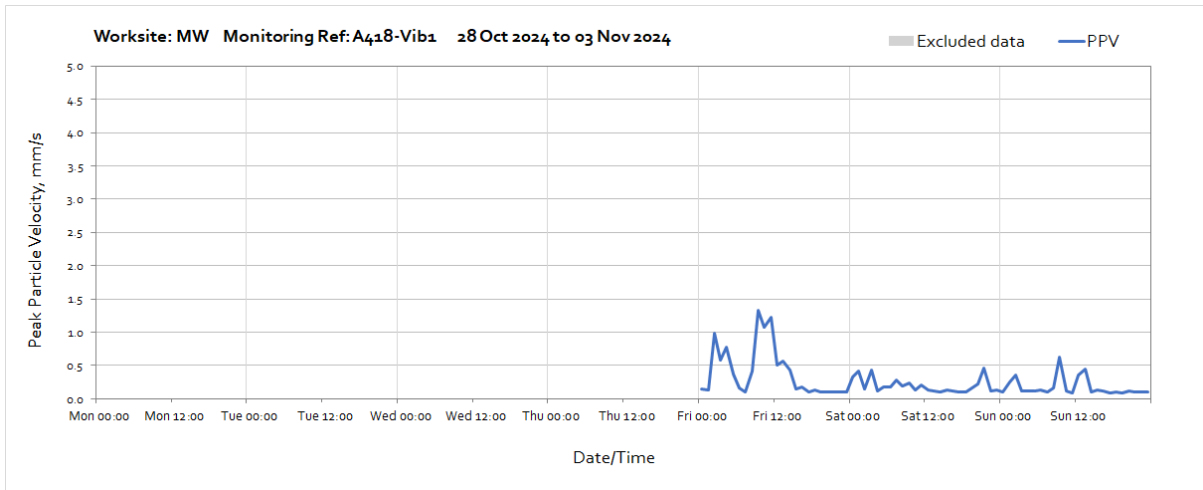


Worksite: WSO – Monitoring Ref: PF-Vib1





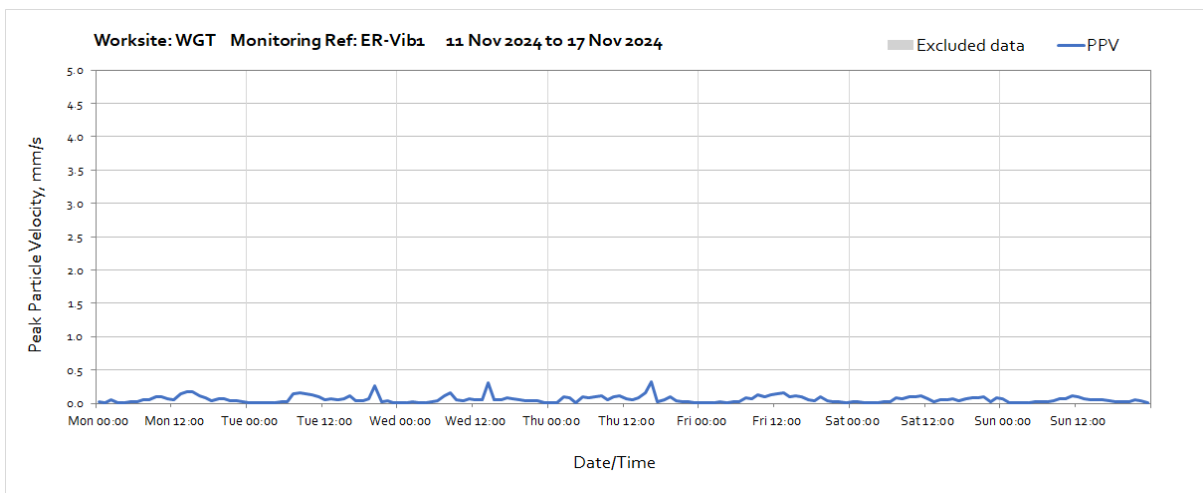
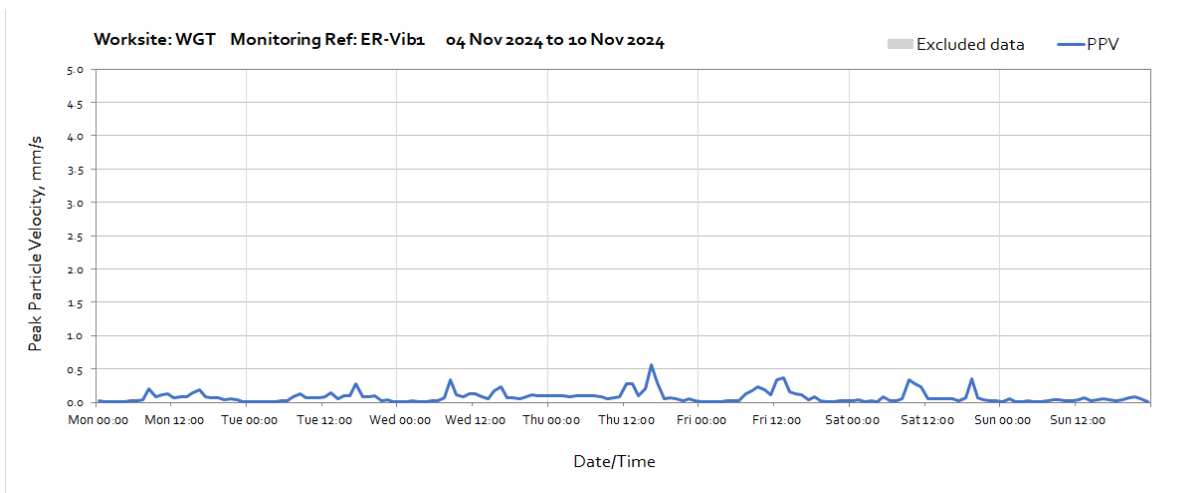
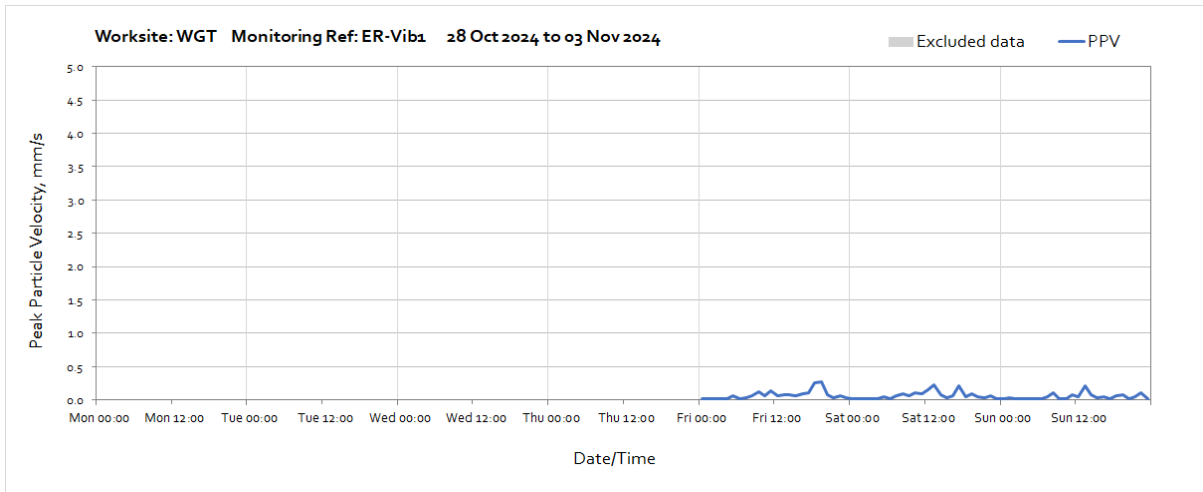
Worksite: MW – Monitoring Ref: A418-Vib1

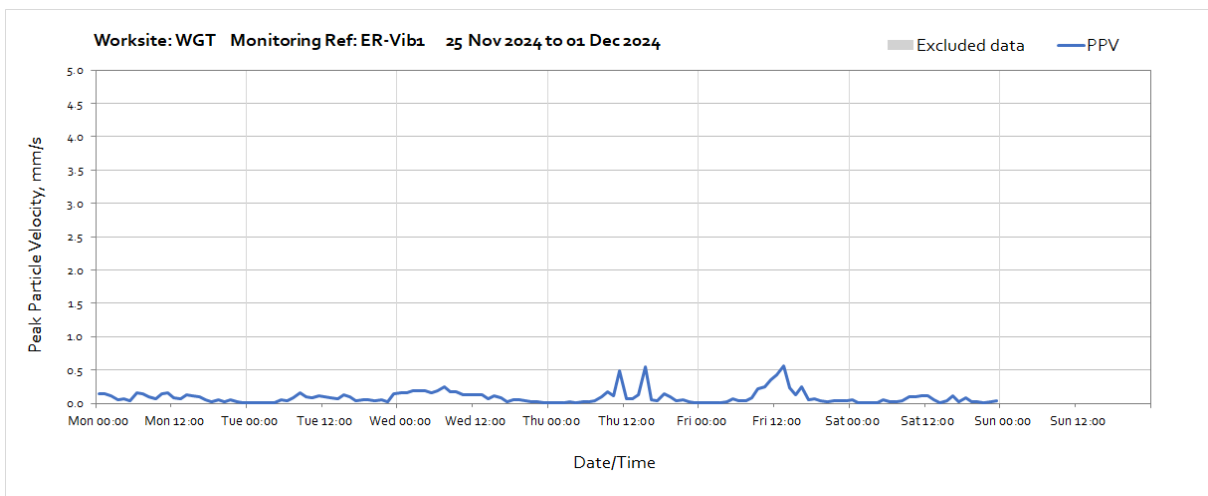
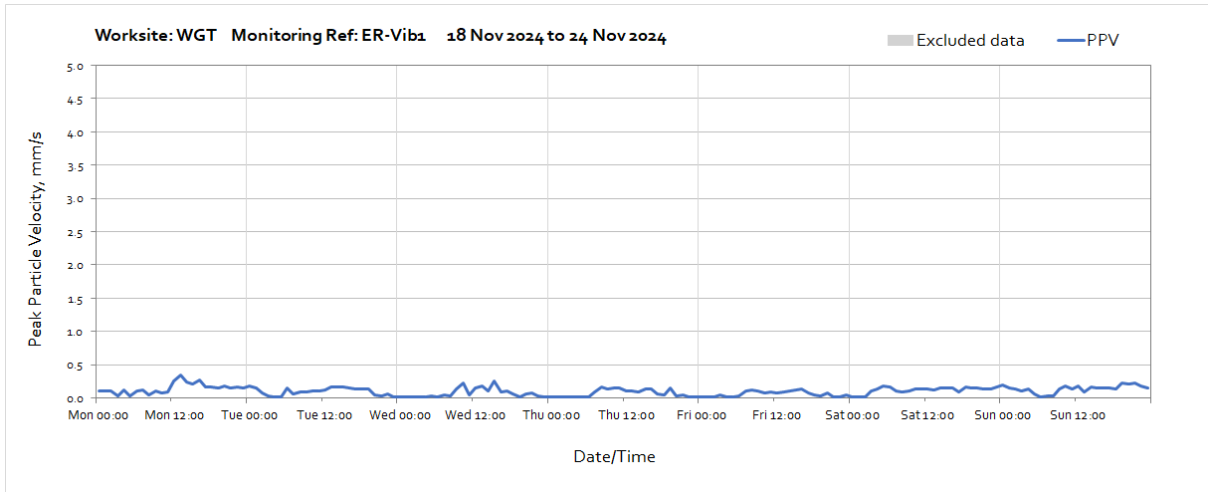


Note: Monitor was decommissioned at 10:00 on Tuesday 12th November.

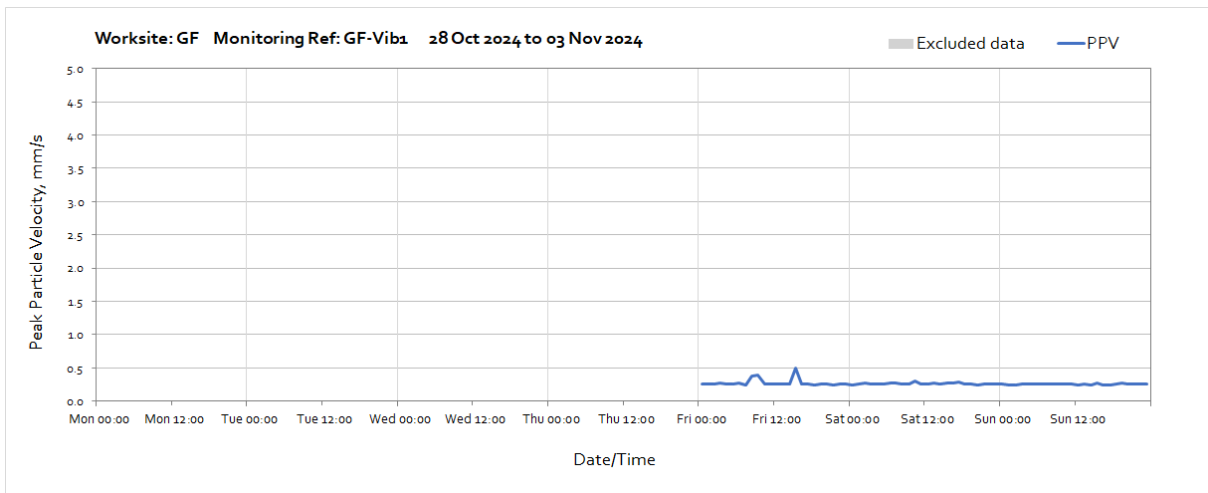
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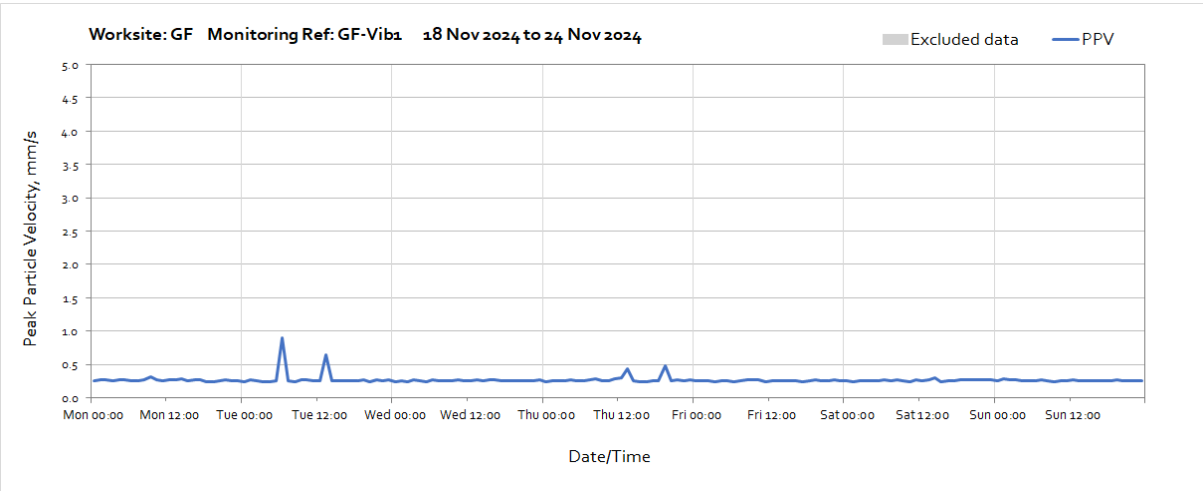
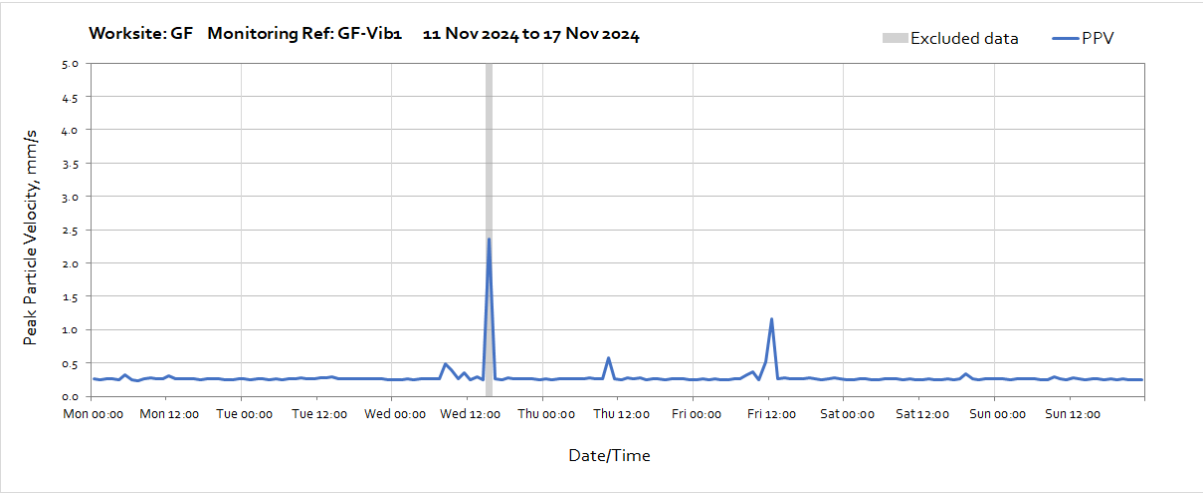
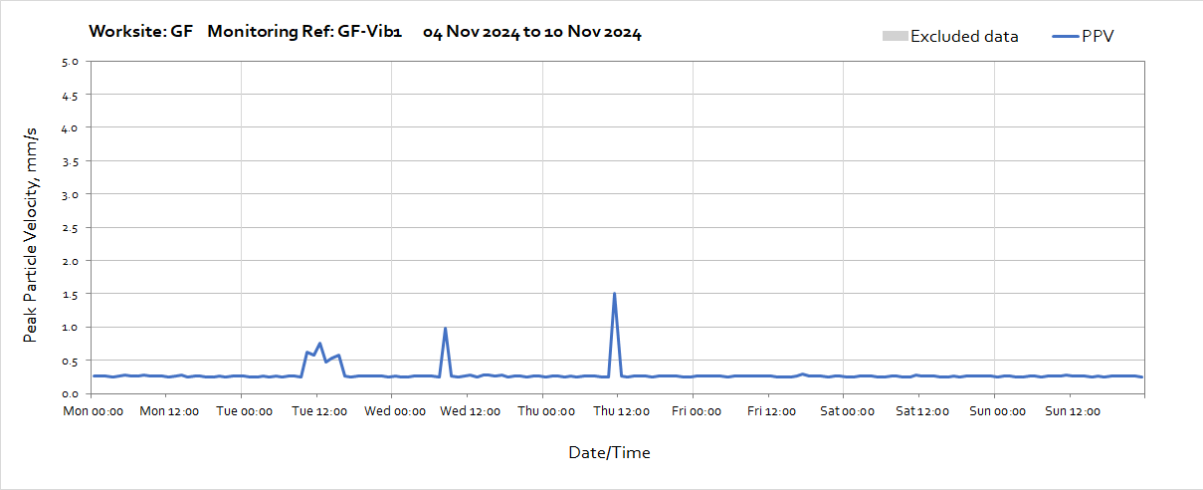
Worksite: WGT – Monitoring Ref: ER-Vib1

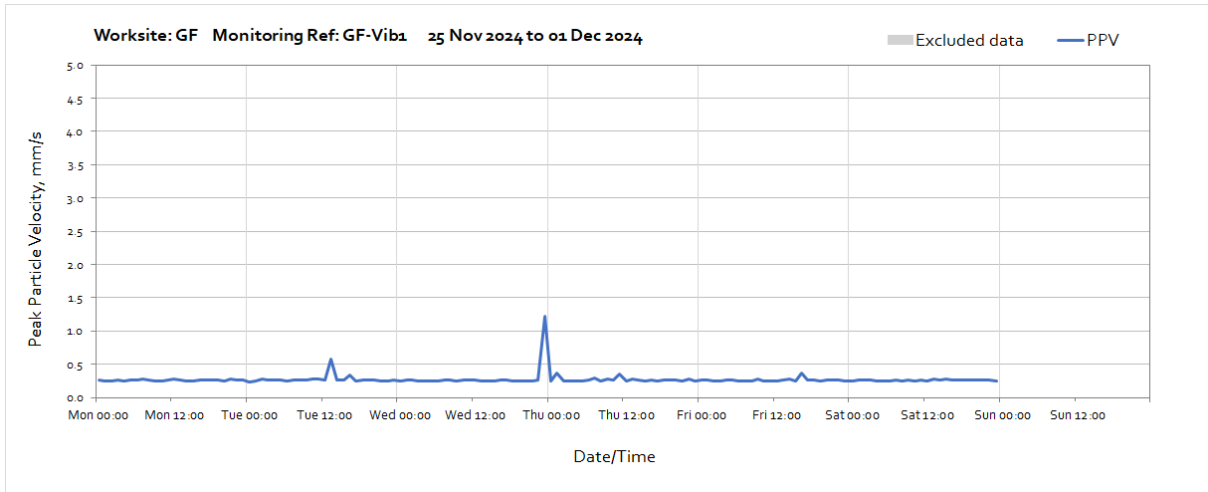




Worksite: GF – Monitoring Ref: GF-Vib1







Worksite: LL - Monitoring Ref: GD-Vib1

