

Construction Noise and Vibration Monthly Report – May 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 May 2024.

Within this period monitoring was undertaken at the following worksites:

- Noise monitoring was undertaken in the vicinity of the A422 Turweston North worksite (ref.: A422 TN) where soil engineering, stabilising works, cutting excavation, material movements, viaduct and overbridge construction and haul road maintenance were underway.
- Noise monitoring was undertaken in the vicinity of the School End (ref.: SE) and Hermitage Chetwode (ref.: HC) worksites where overbridge works, bulk excavation, stockpiling, site access and haul road operation and maintenance, sheet pile placement and movement, excavation, utility works and topsoil stripping were underway.
- Noise monitoring was undertaken in the vicinity of the Twyford worksite (ref.: TW) where stockpiling, site access and haul road operation and maintenance, excavation, bulk excavation, backfilling and compaction were underway.
- Noise monitoring was undertaken in the vicinity of the West Street Overbridge worksite (ref.: WSO), where pile cap works, reinforced concrete works, earthworks and waterproofing were underway.
- Noise monitoring was undertaken in the vicinity of the Calvert worksite (ref.: CAL) where capping beam works, earthworks platform installation, operation of concrete batching plant, material movements and earthworks were underway.
- Noise monitoring was undertaken in the vicinity of the Woodlands worksite (ref.: WDL) where installation of wingwalls, river diversion works, material movements and sheet piling were underway.
- Noise monitoring was undertaken in the vicinity of the Quanton worksite (ref.: QAR) where earthworks, utility diversion works and concrete blinding were underway.
- Noise monitoring was undertaken in the vicinity of the Meadoway and Glebe House worksite (ref: MW&GH) where earthworks, overbridge and utility diversion works were underway.
- Noise monitoring was undertaken in the vicinity of Oat Close worksite (ref: OC) where overbridge works, earthworks, excavation, stockpiling and topsoiling were underway.

- Noise monitoring was undertaken in the vicinity of Waddesdon worksite (ref.: WAD) where road works, topsoil stripping and excavation were underway.
- Noise monitoring was undertaken in the vicinity of Nash Lee Lane worksite (ref.: NLL) where excavation, utility diversion works, Orchard box installation, waterproofing, base slab pours, reinforcement bar installation and backfilling were underway.
- Noise monitoring was undertaken in the vicinity of Wendover Green Tunnel worksite (ref.: WGT) where road construction, installation of fences, vegetation clearance, stoning of bridleway and access road, utility works, utilities protection slab construction, substation works, installation of new noise monitoring station, site access and haul road maintenance and extension of site car park were underway.
- Noise monitoring was undertaken in the vicinity of Grove Farm worksite (ref.: GF) where stabilisation of haul road, material deliveries and access road construction were underway.
- Noise monitoring was undertaken in the vicinity of Small Dean Viaduct Compound worksite (ref.: SDVC) where concrete pours, installation of pier plinths, removal of scaffolding, duct and chamber installation, welding of diaphragms, installation of fins, moving of welding shelter and roofs, excavation and stockpile movements were underway.
- Noise monitoring was undertaken in the vicinity of Rocky Lane Embankment worksite (ref.: RLE) where excavation, compound maintenance and surface water management were underway.
- Noise monitoring was undertaken in the vicinity of Wendover Dean Viaduct worksite (ref.: WDV) where abutment works, launch of viaduct and Durham Farm demolition were underway.
- Noise monitoring was undertaken in the vicinity of Leather Lane worksite (ref.: LL) where earthworks and operation of site access road were underway.
- Noise monitoring was undertaken in the vicinity of South Heath Cutting worksite (ref.: SHCW) where earthworks and operation of site access road were underway.
- Noise monitoring was undertaken in the vicinity of North Portal worksite (ref.: NP) where plant operations, platform construction, piling platform reinstatement, porous portal structure works, tunnel bore machine dismantling, compound works, building works and batching plant installation and operation were underway.
- Noise monitoring was undertaken in the vicinity of Chesham Road worksite (ref.: CHSM), where general site activities, headhouse construction and internal and external building works were underway.

- Noise monitoring was underway in the vicinity of Little Missenden Vent Shaft worksite (ref.: LM) where site operation, tunnel connections, superstructure concrete and building construction were underway.
- Noise monitoring was underway in the vicinity of Amersham Vent Shaft worksite (ref.: AM), where site operation, external and internal works, tunnel connection, superstructure concrete works, pre-casting of boundary wall, steel, cladding and mechanical plant works were underway.
- Noise monitoring was underway in the vicinity of Chalfont St Giles Vent Shaft worksite (ref.: CSG) where site operation, road maintenance, tunnel connection works and internal and external building works were underway.
- Noise monitoring was underway in the vicinity of Chalfont St Peter Vent Shaft worksite (ref.: CSP), where site operation, road maintenance, tunnel connections, steel, cladding and internal and external building works were underway.
- Noise monitoring was underway in the vicinity of the Colne Valley Viaduct worksite, which is partly located in the London Borough of Hillingdon (LBH), (ref.: CVV), where jetty and haul road maintenance, operation and removal, compound operations, auto transformed feeder station works, ground investigation, pier construction, pumping water management, satellite compound welfare works, abutment works, generator farm operation, gas crossing emergency dismantling works, environmental maintenance, River Colne crossing, viaduct girder, viaduct deck, landscaping works and footbridge installation were underway.

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

- Godington where site access road construction, topsoil stripping and vegetation clearance were underway.
- Grovill embankment (Westbury) where excavation and replace was underway.
- School End North where bulk excavation, vegetation clearance, stockpiling, drainage, pond excavation and maintenance, removal of badger fencing, fencing works and vehicle movements were underway.
- Turweston A422 Structure where compound development and temporary road and bridge diversion works were underway.
- Charndon Lodge Pumping Station where technical backfill and drainage works were underway.
- Infrastructure Maintenance Depot (IMD) where technical backfill and earthworks were underway.
- MCJ where earthworks were underway.

- Bat mitigation structure where formwork reinforced concrete works and earthworks were underway.
- FCC Access Road Retaining Wall where retaining wall base construction and installation of rock blocks were underway.
- Sheephouse Wood North Culvert where waterproofing was underway.
- Greatmoor Culvert where formwork technical backfill was underway.
- GUN28 overbridge where formwork reinforced concrete works and technical backfilling were underway.
- QUA36 overbridge where formwork reinforced concrete and pile cap works were underway.
- Finemere Culvert where sheet piling, earthworks and excavation were underway.
- Hills Farm where stockpiling was underway.
- Doddershall Culvert where filling was underway.
- Edgcott Road overbridge where formwork reinforced concrete works were underway.
- Calvert Overbridges where piling and platform excavation works were underway.
- Addison Road where utility works were underway.
- Aylesbury Golf Course where cutting and culvert works, and utility diversion were underway.
- Thame Valley Viaduct Causeway where piling, installation of reinforced concrete, pile capping, and installation of formwork and beams 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.
- Bowood Lane where steel fixing, shuttering and installation of scaffolding 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 two (2) times during the reporting period.

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

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Two (2) 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 31st May 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:
 - Soil engineering.
 - Stabilising works.
 - Cutting excavation.
 - Material movements.
 - Viaduct construction.
 - Overbridge construction.
 - Haul road maintenance.
- 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 works, including steel structure lifting and assembly.

- Bulk excavation.
- Stockpiling, including maintenance and material movement.
- Site access and haul road operation and maintenance.
- Sheet pile placement and movements.
- Excavation.
- Utility works.
- Topsoil stripping,
- Twyford worksite, ref.: TW (see Plan 2 in Appendix A), where works activities included:
 - Stockpiling, including maintenance and material movements.
 - Site access and haul road operation and maintenance.
 - Excavation.
 - Bulk excavation.
 - Backfilling.
 - Compaction.
- West Street Overbridge worksite, ref.: WSO (see Plan 2 in Appendix A), where works activities included:
 - Pile cap works.
 - Reinforced concrete works.
 - Dig and replace.
 - Earthwork embankments.
 - Waterproofing.
- Calvert worksite, ref.: CAL (see Plan 3 in Appendix A) where works activities included:
 - Capping beam works.
 - Earthworks platform installation.
 - Concrete batching plant operation.
 - Material movements.
 - Earthworks, including excavation, backfilling and filling.

- Woodlands worksite, ref.: WDL (see Plan 4 in Appendix A) where works activities included:
 - Installation of wingwalls.
 - River diversion works.
 - Material movements.
 - Sheet piling.
- Quainton worksite, ref.: QAR (see Plan 4 in Appendix A) where works activities included:
 - Earthworks.
 - Utility diversion works.
 - Blinding.
- Meadoway and Glebe House worksite, ref.: MW&GH (see Plan 5 in Appendix A), where works activities included:
 - Earthworks.
 - Overbridge works, including construction of abutments, piers and formwork reinforced concrete works.
 - Utility works.
- Oat Close worksite, ref.: OC (see Plan 5 in Appendix A), where works activities included:
 - Overbridge works, including piling, formwork reinforced concrete works and beam installation.
 - Earthworks.
 - Excavation.
 - Stockpiling.
 - Topsoiling, including land restoration.
- Waddesdon worksite, ref.: WAD (see Plan in Appendix A), where works activities included:
 - Road works, including curbing.
 - Topsoil stripping.
 - Excavation.

- Nash Lee Lane worksite, ref.: NLL (see Plan 6 in Appendix A), where works activities included:
 - Excavation.
 - Utility works.
 - Orchard box installation.
 - Waterproofing.
 - Base slab pours.
 - Reinforcement bar installation.
 - Backfilling.
- Wendover Green Tunnel worksite, ref.: WGT (see Plan 6 in Appendix A), where works activities included:
 - Road construction, including installation of kerbs and white lining.
 - Installation of fences.
 - Vegetation clearance.
 - Stoning of bridleway and access road.
 - Utility works, including sheath testing, installation of water mains and connections.
 - Utilities protection slab construction.
 - Substation works.
 - Installation of new noise monitoring station.
 - Site access and haul road maintenance.
 - Extension of site car park.
- Grove Farm worksite, ref.: GF (see Plan 7 in Appendix A), where works activities included:
 - Stabilisation of haul road.
 - Material movements.
 - Access road construction.
- Small Dean Viaduct Compound worksite, ref.: SDVC (see Plan 7 in Appendix A), where works activities included:
 - Concrete pours.

- Installation of pier plinths.
- Removal of scaffolding.
- Duct and chamber installation.
- Welding of diaphragms.
- Installation of fins.
- Moving of welding shelter and roofs.
- Excavation.
- Stockpile movements.
- Rocky Lane Embankment worksite, ref.: RLE (see Plan 7 in Appendix A), where works activities included:
 - Excavation.
 - Compound maintenance.
 - Surface water management.
- Wendover Dean Viaduct worksite, ref.: WDV (see Plan 7 in Appendix A), where works activities included:
 - Abutment works, including fixing reinforcement and concrete pours.
 - Launch of viaduct.
 - Durham Farm demolition.
- Leather Lane worksite, ref.: LL (see Plan 8 in Appendix A), where works activities included:
 - Earthworks, including material movements.
 - Operation of site access road.
- South Heath Cutting worksite, ref.: SHCW (see Plan 8 in Appendix A), where works activities included:
 - Earthworks, including material movements.
 - Operation of site access road.
- North Portal worksite, ref.: NP (see Plan 8 in Appendix A), where works activities included:
 - Operation of site support plant.
 - Platform construction.

- Piling platform reinstatement.
- Porous portal structure works including reinforced concrete frame and concrete works.
- Tunnel bore machine dismantling.
- Compound works.
- Building works.
- Batching plant installation and operation.
- Chesham Road worksite, ref.: CHSM (see Plan 8 in Appendix A), where works activities included:
 - General site activities.
 - Headhouse construction works, including concrete and external works.
 - Internal and external building works, including steel and cladding works.
- 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.
 - 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 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.
- Tunnel connection works.
- Internal and external building works.
- Chalfont St Peter Vent Shaft worksite, ref.: CSP (see Plan 12 in Appendix A), where works activities included:
 - Operation of plant.
 - Road maintenance.
 - Tunnel connection works.
 - Steel and cladding works.
 - Internal and external building works.
- 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, maintenance and removal, including excavation, backfill, landscaping, cutting piles and steel works.
 - Compound operations.
 - Auto transformed feeder station works including site preparation, bulk earthworks filling, drainage works and vegetation clearance.
 - Ground investigation works.
 - Pier construction, including tower crane mobilisation and demobilisation, formwork, reinforced concrete works and post-tensioning.
 - Pumping water management.
 - Satellite compound welfare and generator farm operation.
 - Abutment works, including earthworks, piling, pile trimming and installation, early formwork reinforced concrete works and drainage.
 - Environmental maintenance.
 - River Colne crossing including emergency removal of obstruction to reinforced concrete crossing.
 - Girder and deck erection and installation, including span segmental erection, internal post-tensioning, steel structure erection and dismantling, stressing and grouting, crane assembly and dismantling.

- 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.
- Footbridge installation.

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

- Godington where site access road construction, topsoil stripping and vegetation clearance were underway.
- Grovill embankment (Westbury) where excavation and replace was underway.
- School End North where bulk excavation, vegetation clearance, stockpiling, drainage, pond excavation and maintenance, removal of badger fencing, fencing works and vehicle movements were underway.
- Turweston A422 Structure where compound development and temporary road and bridge diversion works were underway.
- Charndon Lodge Pumping Station where technical backfill and drainage works were underway.
- Infrastructure Maintenance Depot (IMD) where technical backfill and earthworks were underway.
- MCJ where earthworks were underway.
- Bat mitigation structure where formwork reinforced concrete works and earthworks were underway.
- FCC Access Road Retaining Wall where retaining wall base construction and installation of rock blocks were underway.
- Sheephouse Wood North Culvert where waterproofing was underway.
- Greatmoor Culvert where formwork technical backfill was underway.
- GUN28 overbridge where formwork reinforced concrete works and technical backfilling were underway.

- QUA36 overbridge where formwork reinforced concrete and pile cap works were underway.
- Finemere Culvert where sheet piling, earthworks and excavation were underway.
- Hills Farm where stockpiling was underway.
- Doddershall Culvert where filling was underway.
- Edgcott Road overbridge where formwork reinforced concrete works were underway.
- Calvert Overbridges where piling and platform excavation works were underway.
- Addison Road where utility works were underway.
- Aylesbury Golf Course where cutting and culvert works, and utility diversion were underway.
- Thame Valley Viaduct Causeway where piling, installation of reinforced concrete, pile cropping, and installation of formwork and beams 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.
- Bowood Lane where steel fixing, shuttering and installation of scaffolding 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 Thirty-seven (37) noise and six (6) vibration monitoring installations were active in May in the BS area. Table 2 summarises the positions of noise and vibration monitoring installations within the BS area in May 2024.

1.2.2 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
CAL	SHC-NMP1	School Hill Compound, Calvert
	BRA-Vib1	13 Brackley Lane, Calvert Village
	FCC-NMP1	Calvert South
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton
	WDL-Vib1	Station Road, Quainton
QAR	QAR-NMP2	Station Rd, Quainton
MW&GH	GH-NMP1	Glebe House, A418, Aylesbury
OC	MF-NMP1	Moat Farm, Marsh Lane
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury
WAD	WAD-NMP1	Waddesdon, 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
GF	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
	WDV-Vib1	Upper Wendover Dean Farm, A413, Wendover
LL	GD-NMP1	Grimms Ditch, The Lee, South Heath
SHCW	PR-NMP1	Potters Row, 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

Worksite Reference	Measurement Reference	Address
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath
AM	AM-NMP1	Amersham Vent Shaft Worksite, Whielden Lane, Amersham
LM	LM-NMP1	Little Missenden, A413, Amersham
	PWC-NMP1	Patricia Holmes, Little Missenden Vent Shaft Worksite, Amersham
CSG	CSG-NMP1	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane
CSP	CFC-NMP1	Cricket Field Cottages, Chesham Lane, Chalfont St. Peter
	CSP-NMP2	Chalfont St Peter Vent Shaft Worksite, Chesham Lane, Chalfont St. Peter
	CSP-NMP3	Chalfont St Peter Vent Shaft Worksite, Chesham Lane, Chalfont St. Peter
CVV*	CVV-NMP1	Northern boundary, Load Test Pile 1 Worksite, Denham Water Ski Club
	DFS-NMP1	Denham Film Studio, Uxbridge

* 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	48.7 (58.7)	52.4 (61.4)	47.8 (50.0)	44.9 (49.2)	43.8 (52.8)	46.2 (48.3)	47.9 (51.4)	47.1 (50.8)	46.5 (57.0)	42.2 (54.2)	45.5 (51.6)	42.3 (47.9)
SE	SE-NMP1	School End, Chetwode	Free-field	53.3 (59.2)	57.6 (64.9)	45.9 (53.8)	41.7 (50.1)	40.1 (47.3)	47.7 (56.6)	50.4 (55.0)	49.4 (53.5)	47.1 (55.8)	38.9 (51.0)	43.4 (49.8)	39.3 (43.5)
HC	HC-NMP1	Hermitage, Chetwode	Free-field	52.0 (58.1)	57.6 (63.8)	48.9 (55.2)	46.2 (54.8)	45.7 (52.1)	50.6 (54.4)	51.2 (55.3)	49.1 (52.6)	48.5 (56.6)	46.2 (51.7)	47.5 (52.4)	45.7 (51.1)
TW	TW-NMP1	Twyford	Free-field	48.7 (63.5)	52.1 (65.0)	46.2 (50.4)	45.9 (56.4)	44.2 (57.4)	45.5 (46.6)	51.4 (57.3)	46.8 (48.1)	46.3 (50.6)	42.8 (46.3)	46.5 (50.0)	43.0 (46.5)
WSO	WSO-NMP1	West Street, Twyford	Free-field	49.5 (59.4)	53.4 (59.5)	46.5 (54.1)	44.0 (51.9)	43.3 (53.1)	49.7 (56.6)	48.3 (49.7)	46.9 (48.7)	44.3 (48.9)	42.5 (50.5)	48.4 (63.4)	43.4 (51.3)
CAL	SHC-NMP1	School Hill Compound, Calvert	Free-field	56.0 (63.4)	61.5 (65.4)	50.4 (59.7)	44.4 (53.8)	44.9 (62.3)	46.2 (47.4)	56.4 (66.0)	53.5 (55.9)	48.0 (59.5)	40.3 (47.8)	51.7 (68.1)	43.0 (51.7)
	FCC-NMP1	Calvert South	Free-field	48.3 (55.2)	51.8 (55.9)	45.0 (49.7)	44.6 (49.2)	44.1 (51.9)	45.9 (46.3)	46.9 (49.9)	44.9 (46.8)	43.2 (48.1)	43.1 (51.1)	44.0 (48.8)	43.7 (51.4)
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton	Free-field	63.3 (67.9)	67.2 (71.5)	49.8 (60.7)	45.2 (49.9)	45.4 (53.2)	55.2 (59.1)	61.5 (64.9)	52.7 (57.2)	52.6 (58.4)	44.2 (53.9)	56.8 (71.5)	45.5 (52.1)

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	54.3 (65.8)	54.4 (68.4)	52.2 (59.0)	49.5 (60.6)	47.2 (57.5)	48.0 (51.2)	51.8 (53.6)	52.0 (54.9)	50.3 (55.2)	43.8 (47.9)	51.9 (63.2)	45.3 (52.4)
MW&GH	GH-NMP1	Glebe House, A418, Aylesbury	Free-field	54.0 (61.7)	58.9 (69.9)	53.1 (55.2)	52.0 (56.7)	49.2 (57.4)	51.8 (53.1)	51.9 (53.6)	51.1 (52.7)	51.4 (53.5)	48.4 (53.4)	50.8 (54.1)	47.9 (54.9)
OC	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury	Free-field	45.4 (54.1)	49.6 (59.1)	44.2 (52.9)	42.8 (53.7)	41.3 (50.4)	43.6 (44.2)	45.0 (47.4)	43.6 (45.3)	46.0 (56.6)	42.8 (54.5)	45.9 (55.9)	41.0 (51.5)
	MF-NMP1	Moat Farm, Marsh Lane	Free-field	49.9 (55.7)	52.2 (59.7)	45.7 (55.2)	43.1 (56.7)	42.2 (55.4)	43.8 (45.5)	47.1 (54.1)	44.8 (48.9)	44.4 (53.4)	45.0 (65.4)	45.5 (56.5)	41.9 (52.7)
WAD	WAD-NMP1	Waddesdon, Buckinghamshire	Free-field	50.6 (54.3)	51.0 (55.2)	49.4 (54.2)	48.1 (53.1)	46.2 (53.4)	47.7 (49.5)	49.9 (51.5)	50.5 (52.6)	49.0 (52.9)	44.9 (48.6)	49.4 (53.1)	44.9 (52.2)
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee	Free-field	52.8 (56.5)	54.6 (78.4)	52.0 (54.8)	50.2 (71.4)	47.5 (56.3)	49.1 (50.7)	50.6 (51.8)	50.3 (52.0)	49.9 (51.7)	46.2 (50.5)	50.7 (54.0)	46.4 (52.9)
	NLL-NMP2	Nash Lee Lane, Nash Lee	Free-field	51.6 (57.3)	55.7 (63.4)	50.2 (53.7)	48.8 (63.9)	47.1 (59.5)	48.8 (50.2)	52.3 (53.6)	50.1 (52.0)	49.3 (52.8)	46.1 (49.9)	50.2 (55.4)	46.1 (52.0)
WGT	ER-NMP1	Ellesborough Rd, Wendover	Free-field	54.7 (58.9)	55.3 (68.9)	54.0 (57.8)	51.8 (56.4)	50.5 (59.7)	51.3 (52.8)	51.8 (54.3)	51.4 (53.7)	50.8 (53.5)	48.8 (55.8)	51.4 (60.4)	48.8 (56.8)
	BL-NMP1	Bacombe Lane, Wendover	Free-field	47.3 (50.0)	56.0 (63.7)	46.7 (50.5)	45.7 (50.8)	43.7 (53.7)	45.3 (49.3)	48.4 (49.7)	47.5 (49.1)	46.4 (53.1)	43.3 (48.9)	48.3 (56.5)	42.7 (48.8)

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
	WT-NMP1	A413, Wendover	Free-field	65.6 (68.0)	66.1 (72.2)	66.2 (68.1)	63.1 (70.2)	60.3 (71.6)	62.8 (63.6)	64.4 (64.8)	65.5 (67.0)	64.0 (67.3)	57.7 (60.8)	63.6 (68.3)	58.0 (66.7)
GF	GF-NMP1	Grove Farm, Wendover	Free-field	51.4 (54.2)	54.6 (66.6)	49.0 (54.2)	48.8 (57.1)	46.2 (55.3)	52.6 (56.9)	50.0 (51.5)	49.3 (52.3)	50.1 (57.1)	46.5 (55.6)	51.2 (62.7)	44.8 (51.1)
SDVC	SDVC-NMP1	Rocky Lane, Wendover	Free-field	60.5 (66.4)	62.0 (67.3)	61.1 (66.2)	60.4 (77.8)	57.4 (71.6)	59.7 (60.1)	62.5 (65.4)	61.6 (62.7)	62.5 (72.7)	55.6 (58.9)	60.7 (65.4)	56.3 (62.9)
RLE	NCAS6-NMP1	Chesham Lane, The Lee, Wendover	Free-field	54.9 (61.1)	56.6 (61.8)	49.6 (56.8)	45.0 (52.4)	43.5 (54.9)	43.4 (44.5)	46.0 (47.4)	43.7 (47.8)	45.2 (55.5)	42.1 (49.9)	47.1 (57.8)	41.2 (46.3)
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	Free-field	56.2 (59.5)	57.5 (60.1)	55.1 (57.1)	53.0 (60.1)	50.4 (58.9)	53.5 (55.3)	55.0 (58.8)	54.0 (57.4)	53.7 (59.2)	50.0 (58.8)	54.0 (57.5)	49.0 (56.9)
WDV	WDV-NMP1	Upper Wendover Dean Farm, A413, Wendover	Free-field	52.8 (57.0)	55.4 (64.3)	49.4 (55.1)	48.0 (54.6)	47.1 (58.5)	49.9 (53.4)	50.7 (53.4)	47.4 (52.1)	47.2 (51.4)	46.5 (53.8)	48.3 (59.4)	45.1 (50.5)
LL	GD-NMP1	Grimms Ditch, The Lee, South Heath	Free-field	50.0 (65.4)	53.8 (67.6)	49.0 (60.7)	48.1 (61.3)	48.9 (67.2)	46.1 (47.3)	51.3 (53.8)	48.5 (52.1)	46.6 (51.6)	54.3 (74.6)	53.7 (62.5)	46.5 (56.5)
SHCW	PR-NMP1	Potters Row, South Heath	Free-field	47.7 (51.5)	49.4 (53.3)	47.9 (52.8)	47.6 (58.3)	45.3 (57.0)	45.2 (46.8)	50.5 (52.6)	46.2 (47.6)	46.4 (52.2)	45.4 (54.3)	49.3 (58.8)	45.0 (51.6)
NP	BFH-NMP1	Bury Farm, Great Missenden	Free-field	47.2 (50.2)	49.3 (53.9)	46.5 (51.2)	45.7 (51.0)	44.6 (55.6)	47.1 (49.4)	48.3 (50.0)	46.5 (50.5)	46.7 (52.5)	46.5 (55.7)	47.4 (54.9)	42.8 (50.2)

OFFICIAL

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
	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath	Free-field	53.2 (62.7)	54.5 (59.4)	51.9 (57.9)	52.1 (59.0)	47.6 (59.0)	50.9 (57.3)	56.0 (56.7)	52.7 (58.3)	51.3 (55.4)	48.8 (56.1)	52.6 (57.9)	49.0 (56.6)
	BLH-NMP1	Bayleys Hatch, South Heath, Great Missenden	Free-field	49.5 (54.8)	50.6 (55.5)	48.9 (56.0)	46.1 (56.4)	44.6 (53.2)	47.6 (48.3)	54.2 (56.4)	48.7 (52.0)	48.3 (52.9)	45.5 (53.1)	49.6 (60.8)	44.3 (51.8)
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath	Free-field	57.2 (61.1)	58.0 (65.9)	56.2 (60.5)	53.9 (60.8)	50.9 (59.9)	53.6 (59.1)	57.9 (61.4)	55.2 (57.9)	54.4 (58.3)	50.4 (59.0)	58.7 (76.2)	50.1 (59.6)
AM	AM-NMP1	Whielden Lane, Amersham	Free-field	60.5 (62.4)	61.5 (64.3)	59.3 (61.3)	57.2 (59.9)	53.0 (62.4)	56.8 (57.3)	59.6 (61.7)	58.8 (59.6)	57.9 (59.6)	51.7 (54.6)	58.1 (61.4)	51.2 (58.8)
LM	LM-NMP1	Little Missenden, A413, Amersham	Free-field	51.9 (55.0)	52.6 (56.4)	51.9 (55.7)	49.6 (54.6)	46.5 (65.4)	48.7 (50.1)	51.1 (52.3)	51.0 (53.2)	50.3 (53.5)	45.6 (49.8)	51.2 (58.8)	44.4 (52.9)
	PWC-NMP1	Patricia Holmes, LM Worksite, Amersham	Free-field	59.7 (61.2)	60.0 (65.8)	60.2 (68.5)	57.3 (59.7)	54.4 (65.5)	56.8 (57.5)	58.4 (58.8)	58.9 (59.4)	58.3 (60.1)	54.4 (62.9)	58.0 (66.5)	53.0 (59.7)
CSG	CSG-NMP1	CSG Worksite, Bottom House Farm Lane	Free-field	49.7 (66.9)	49.8 (53.5)	46.2 (51.3)	44.2 (50.9)	49.1 (75.6)	51.3 (61.0)	49.7 (51.2)	45.4 (47.5)	46.4 (50.5)	44.5 (54.9)	48.8 (57.9)	46.0 (63.5)
CSP	CFC-NMP1	Cricket Field Cottages, Chesham Lane, Chalfont St. Peter	Free-field	58.4 (60.3)	57.2 (58.9)	56.3 (59.2)	53.2 (58.5)	50.1 (61.6)	55.6 (57.0)	57.4 (59.3)	56.3 (57.6)	55.2 (57.6)	48.9 (60.1)	55.0 (62.2)	47.9 (54.9)
	CSP-NMP2	Chalfont St Peter Vent Shaft Worksite	Free-field	48.1 (52.1)	49.4 (51.8)	47.4 (50.7)	44.4 (50.4)	43.8 (53.4)	48.9 (52.5)	49.4 (51.5)	49.9 (53.1)	48.5 (56.8)	44.7 (53.1)	48.2 (52.0)	43.4 (51.1)

OFFICIAL

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
	CSP-NMP3	Chalfont St Peter Vent Shaft Worksite	Free-field	57.0 (64.7)	56.3 (58.9)	56.2 (58.3)	53.9 (57.3)	51.9 (64.0)	54.2 (55.4)	55.3 (56.7)	56.0 (56.6)	54.6 (57.3)	50.4 (62.1)	54.5 (57.4)	53.9 (66.5)
CVV	CVV-NMP1	Northern boundary, Load Test Pile 1 Worksite	Free-field	61.1 (63.8)	60.7 (63.7)	59.2 (63.5)	55.9 (59.7)	58.0 (63.8)	58.7 (59.9)	59.6 (60.6)	59.4 (60.0)	58.0 (61.6)	55.2 (61.2)	58.6 (62.1)	55.4 (62.9)
	DFS-NMP1	Denham Film Studio, Uxbridge	Free-field	56.2 (58.1)	54.1 (59.9)	53.0 (56.6)	53.6 (59.4)	51.8 (59.9)	57.1 (57.9)	54.2 (55.3)	51.8 (52.9)	55.4 (62.7)	54.2 (59.6)	54.1 (60.7)	52.6 (59.5)

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	1.93 (X-axis)
WDL	WDL-Vib1	Station Road, Quainton	2.04 (X-axis)
CAL	BRA-Vib1	13 Brackley Lane, Calvert Village	1.60 (X-axis)
WGT	ER-Vib 1	46, Ellesborough Rd, Wendover	2.92 (Y-axis)
WDV	WDV-Vib1	Upper Wendover Dean Farm, A413, Wendover	N/A*
GF	GF-Vib1	Grove Farm, Wendover	1.27 (Y-axis)

*Monitor was retrieved for repair due to spurious data.

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 LOELs and SOELs for construction noise.

2.2.4 Where reported construction noise levels exceed the LOEL and SOEL 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 LOEL and SOEL over the reporting period, including the number of exceedances during each time period.

Table 5: Summary of Exceedances of LOEL and SOEL

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOEL	Number of exceedances of SOEL
A422 TN	TN-NMP1	Turweston, Brackley	All days	All periods	No exceedance	No exceedance
SE	SE-NMP1	School End, Chetwode	Weekday	0800-1800	1	No exceedance
HC	HC-NMP1	Hermitage, Chetwode	Weekday	0800-1800	2	No exceedance
TW	TW-NMP1	Twyford	Weekday	0800-1800	1	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	All days	All periods	No exceedance	No exceedance
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton	Weekday	0700-0800	18	2
				0800-1800	21	
			Saturday	0700-0800	1	No exceedance
				0800-1300	2	No exceedance
1400-2200	7	No exceedance				
QAR	QAR-NMP2	Station Rd, Quainton	Weekday	0800-1800	1	No exceedance
MW&GH	GH-NMP1	Glebe House, A418, Aylesbury	Weekday	0800-1800	2	No exceedance

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
OC	MF-NMP1	Moat Farm, Marsh Lane	All days	All periods	No exceedance	No exceedance
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury	All days	All periods	No exceedance	No exceedance
WAD	WAD-NMP1	Waddesdon, Buckinghamshire	All days	All periods	No exceedance	No exceedance
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee	Weekdays	0800-1800	1	No exceedance
	NLL-NMP2	Nash Lee Lane, Nash Lee	Weekdays	0800-1800	1	No exceedance
WGT	ER-NMP1	Ellesborough Rd, Wendover	Weekdays	0800-1800	1	No exceedance
	BL-NMP1	Bacombe Lane, Wendover	Weekdays	0800-1800	2	No exceedance
	WT-NMP1	A413, Wendover	Weekday Saturday	0800-1800 0800-1300	20 1	No exceedance No exceedance
GF	GF-NMP1	Grove Farm, Wendover	Weekdays	0800-1800	1	No exceedance
SDVC	SDVC-NMP1	Rocky Lane, Wendover	All days	All periods	No exceedance	No exceedance
RLE	NCAS6-NMP1	Chesham Lane, The Lee, Wendover	All days	All periods	No exceedance	No exceedance
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	All days	All periods	No exceedance	No exceedance
WDV	WDV-NMP1	A413, Wendover	Weekdays	0800-1800	1	No exceedance
LL	GD-NMP1	Grimms Ditch, The Lee, South Heath	Weekday	0800-1800	2	No exceedance
SHCW	PR-NMP1	Potters Row, South Heath	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
NP	BFH-NMP1	Bury Farm, Great Missenden	Sunday	0700-2200	3	No exceedance
	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath	Weekday	0700-0800	1	No exceedance
			Saturday	1900-2200	10	No exceedance
			Sunday	1300-1400	1	No exceedance
BLH-NMP1	Bayleys Hatch, South Heath, Great Missinden	Weekday	1900-2200	1	No exceedance	
			Sunday	0700-2200	4	No exceedance
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath	Weekdays	0800-1800	1	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
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
	CSP-NMP3*	Chalfont St Peter Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
CVV	CVV-NMP1*	Northern boundary, Load Test Pile 1 Worksite	All days	All periods	No exceedance	No exceedance
	DFS-NMP1*	Denham Film Studio, Uxbridge	All days	All periods	No exceedance	No exceedance

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

2.2.6 Exceedances of the LOAEL were recorded at eighteen (18) monitoring locations during the month of May 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

2.2.8 Two (2) SOAEL exceedances were recorded due to HS2 construction works during May 2024. The exceedance occurred at WDL-NMP1 during weekday daytime 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
-	NLL	30/05/2024 10:00 – 13:00	De-vegetation works in close proximity to the noise monitor.	87.1 dB L _{Aeq,T} distance correction to the nearest receptor was 22dB.	Environmental health officer was notified of the trigger exceedance.

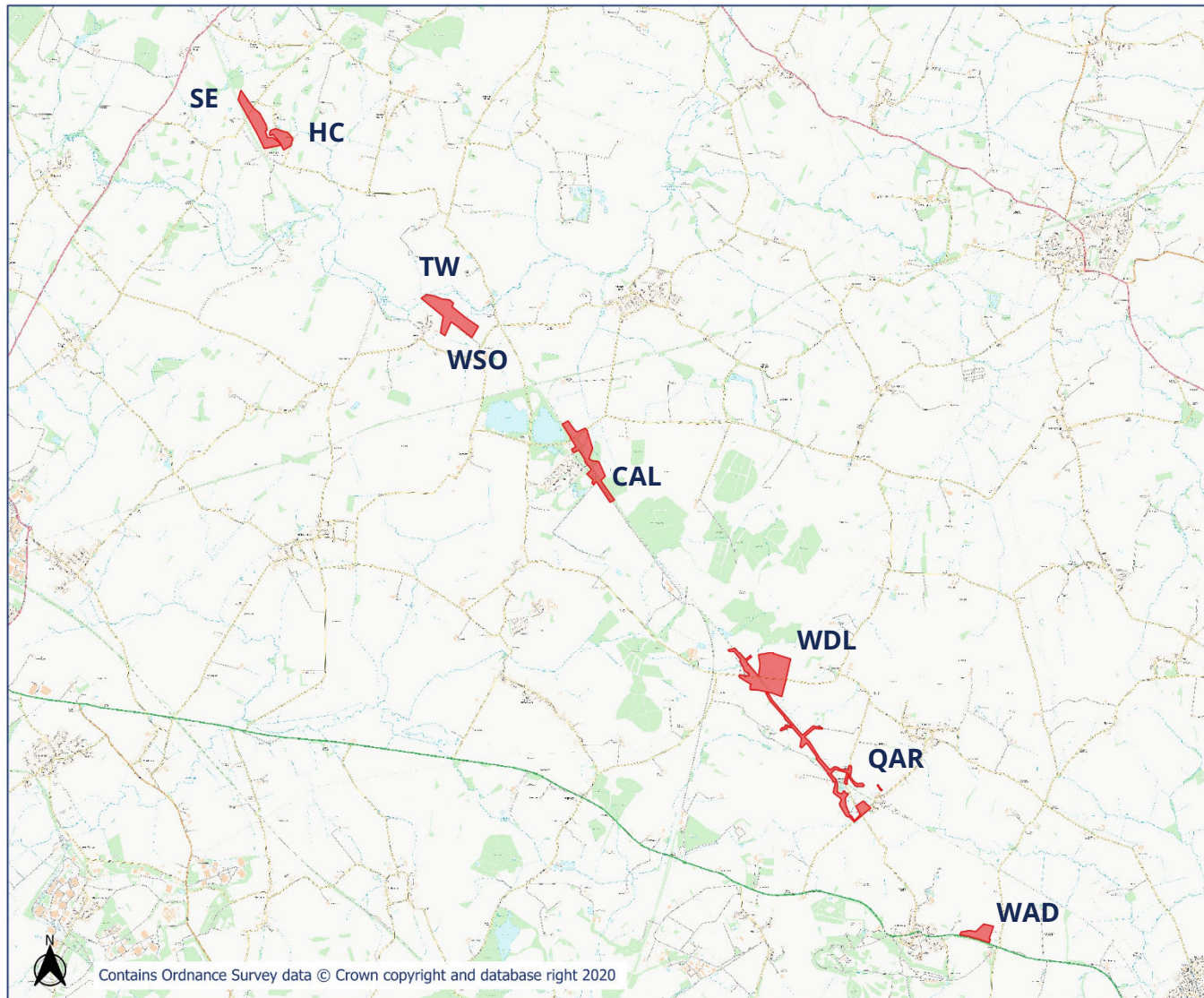
2.4 Complaints

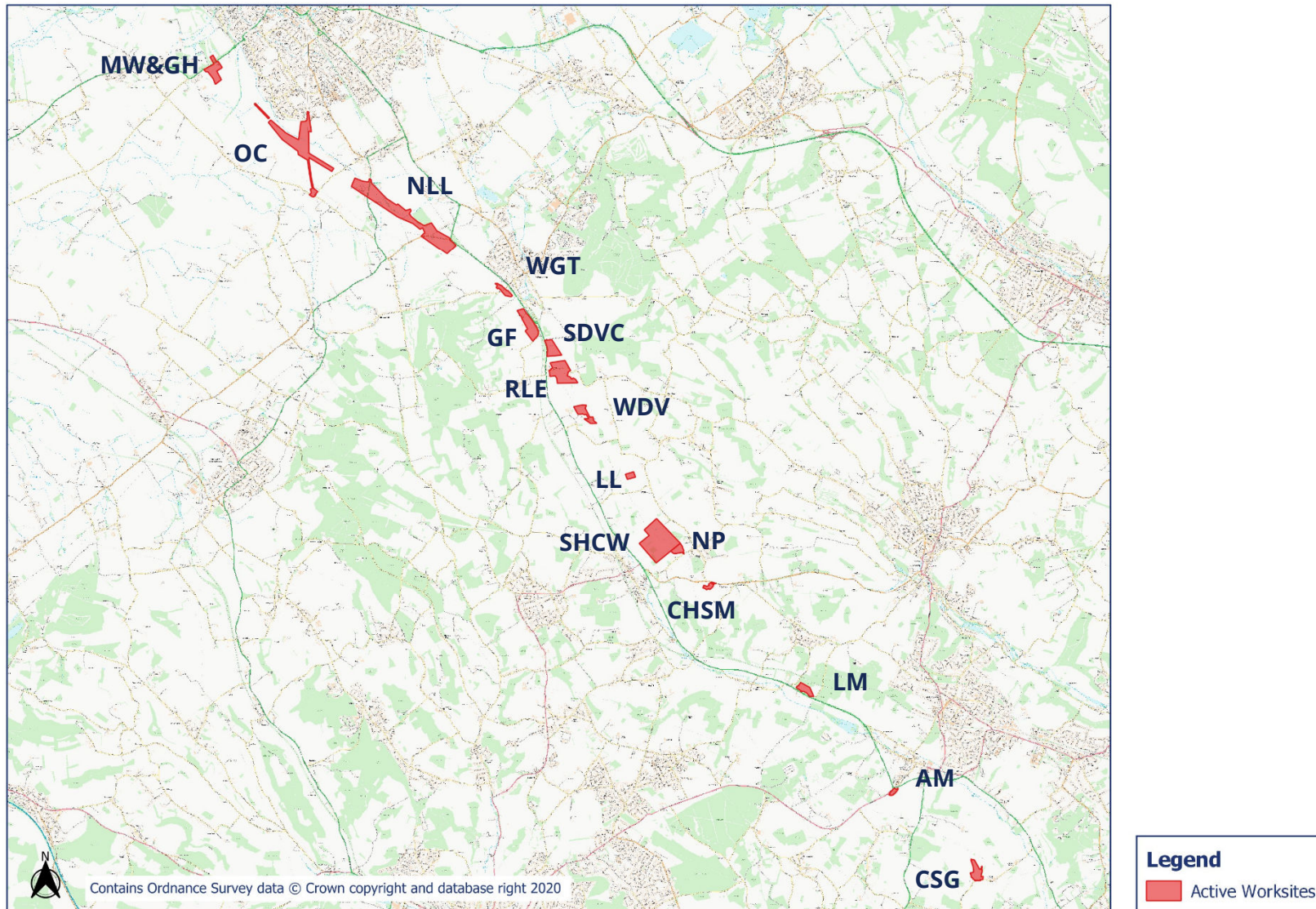
2.4.1 Table 8 provides a summary of complaint information related to noise and vibration received during the reporting period, along with the findings of any investigation.

Table 8: Summary of Complaints

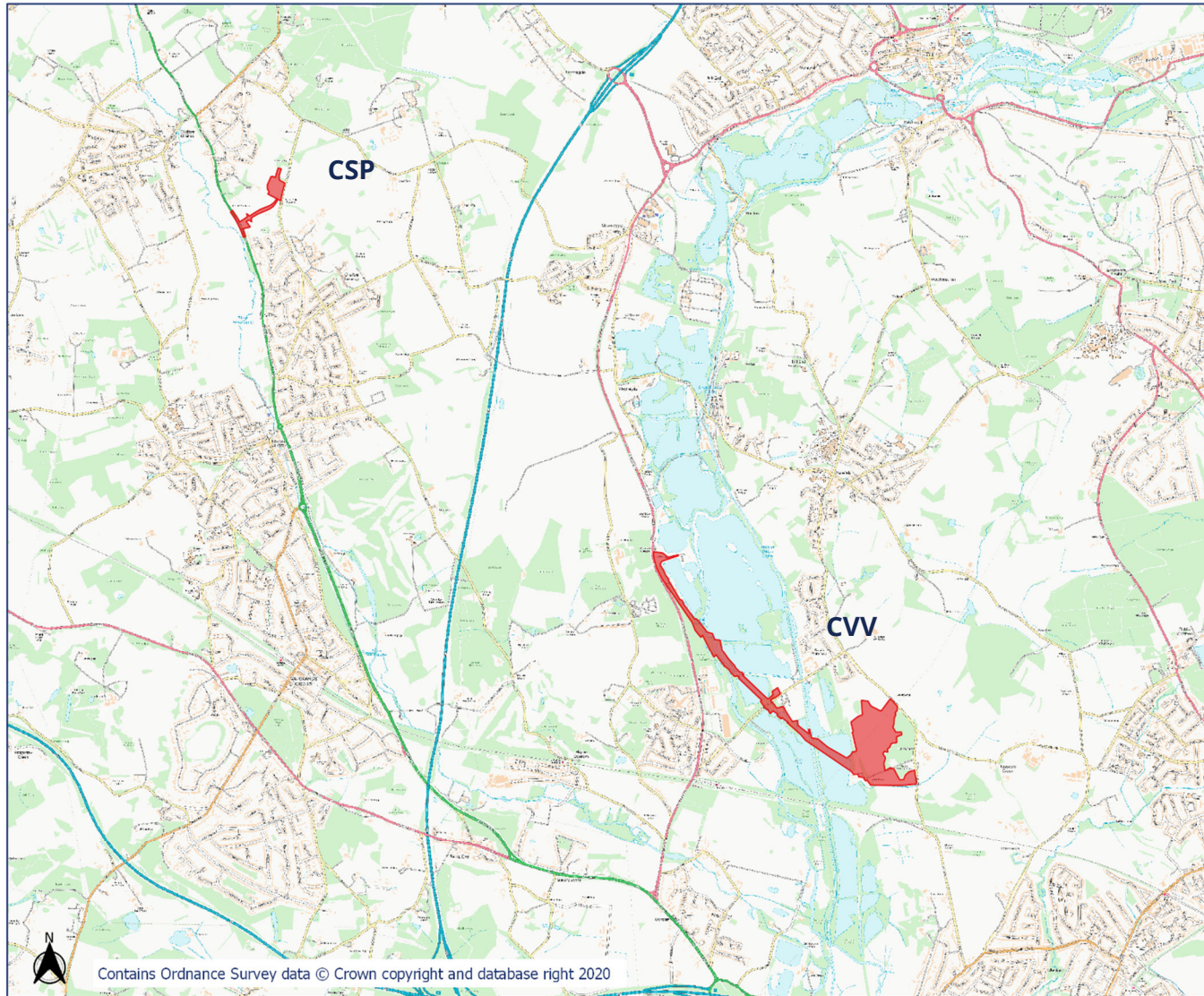
Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
HS2-24-45360-C	OC	Complaint about upcoming works.	Stakeholder wished to complain about works disruption ahead of starting.	Resident has been informed of the upcoming works. No vibration is expected, and any works will be compliant with consented levels.
HS2-24-45385-C	CVV	Disturbance due to banging noise at night.	Property is a considerable distance from HS2 works, therefore unlikely to be causing the disturbance.	Resident has been informed of the results of the investigation.

Appendix A Site Locations

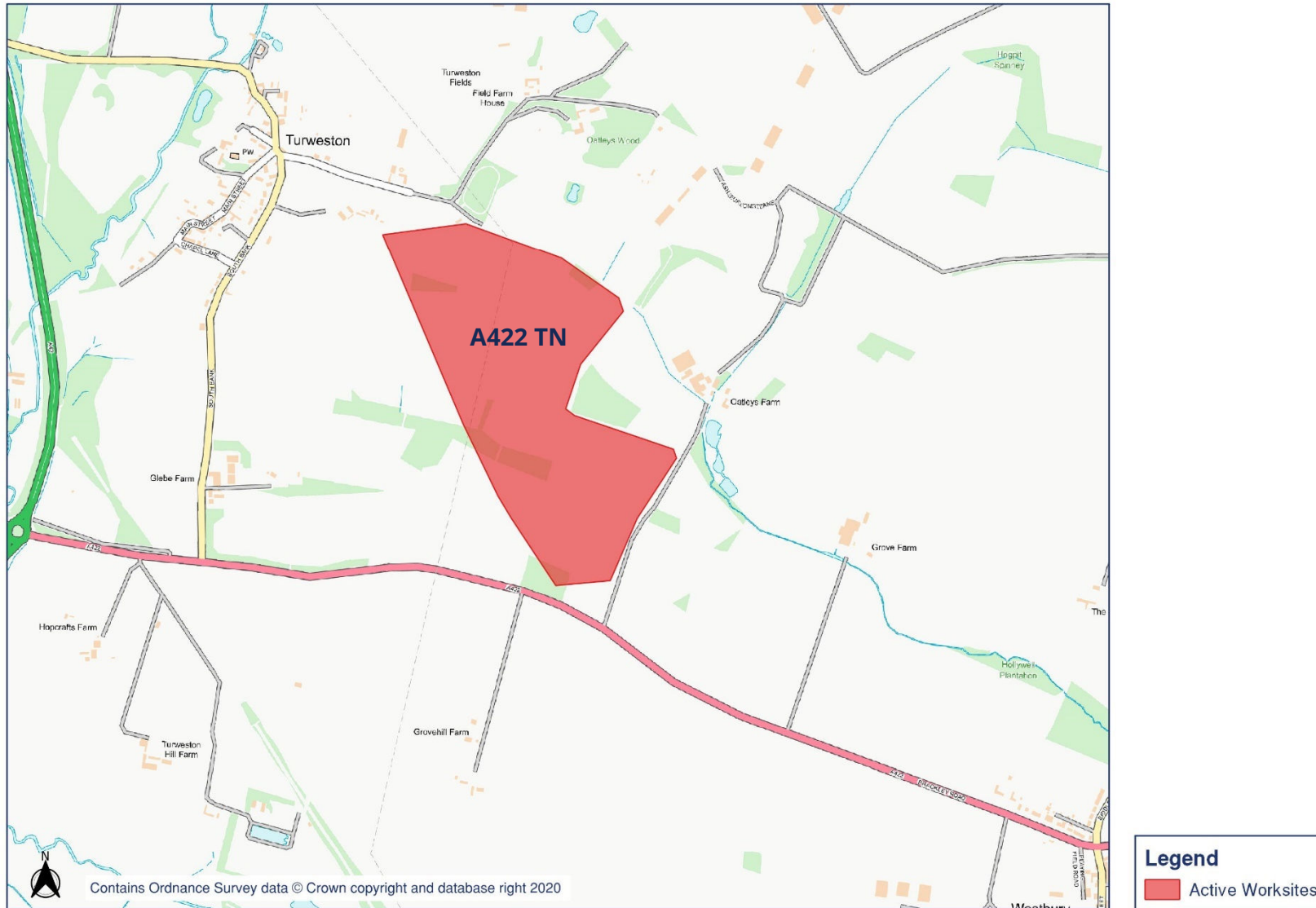


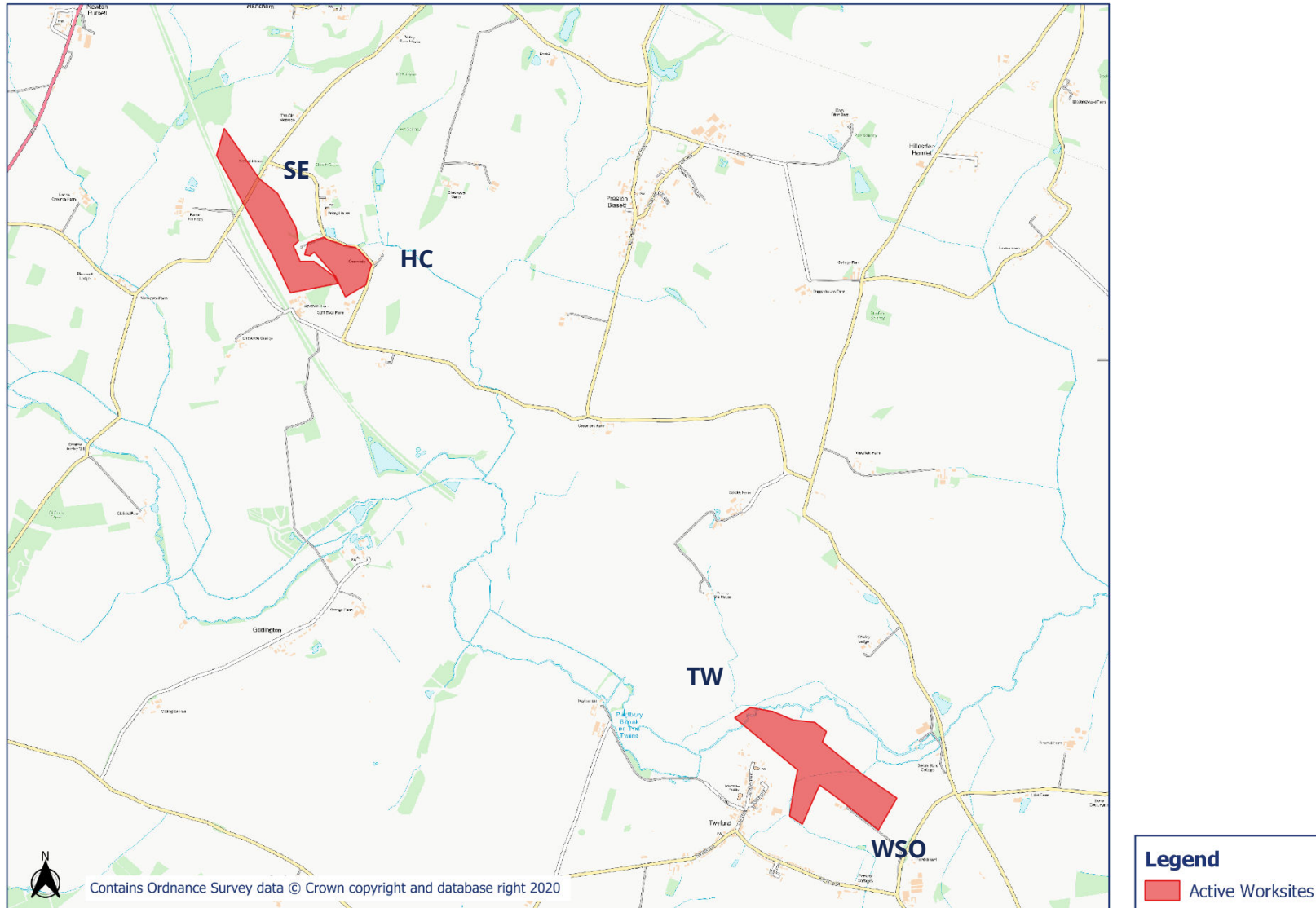


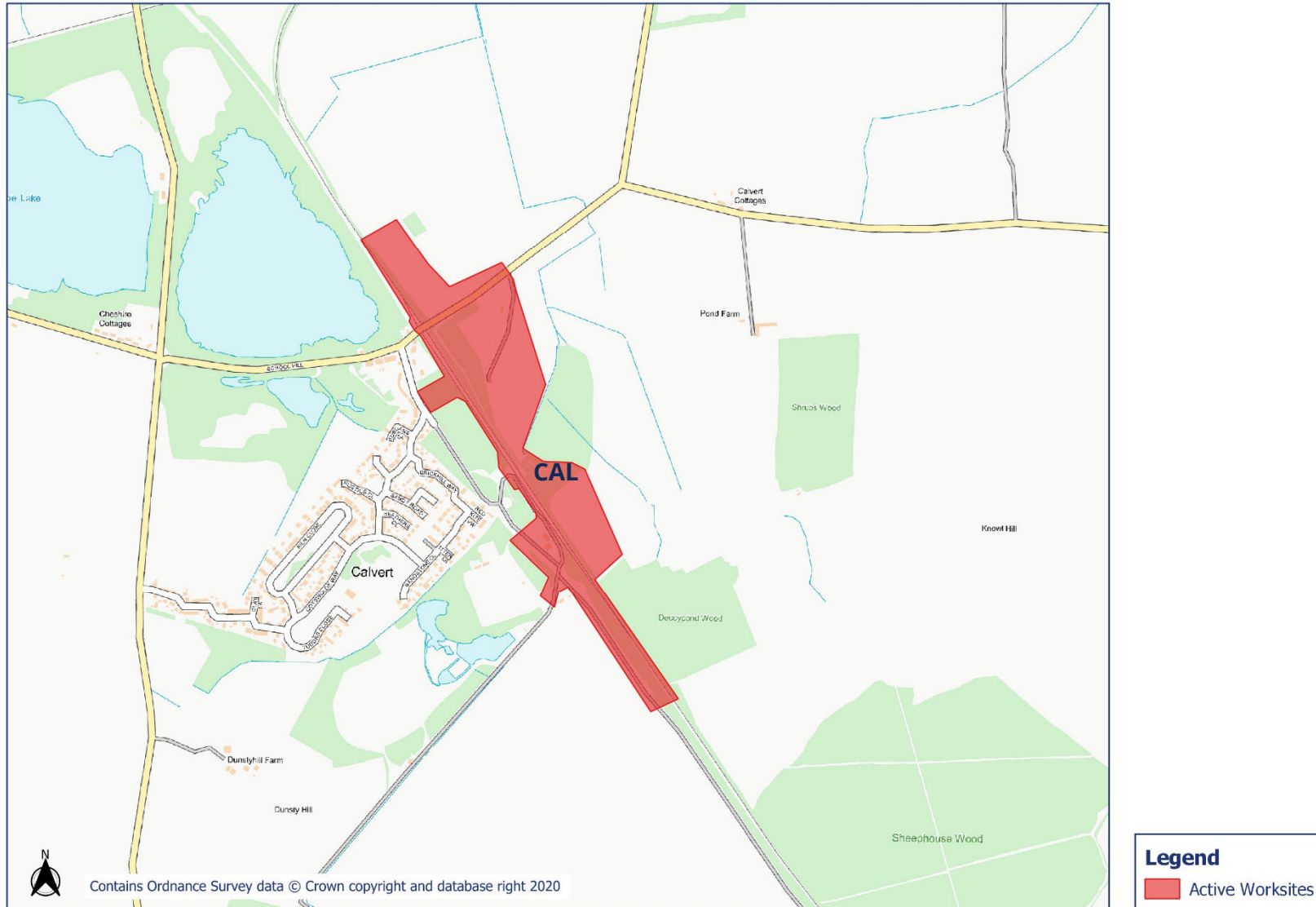
HS2 Worksite Identification Plan - Overview 3

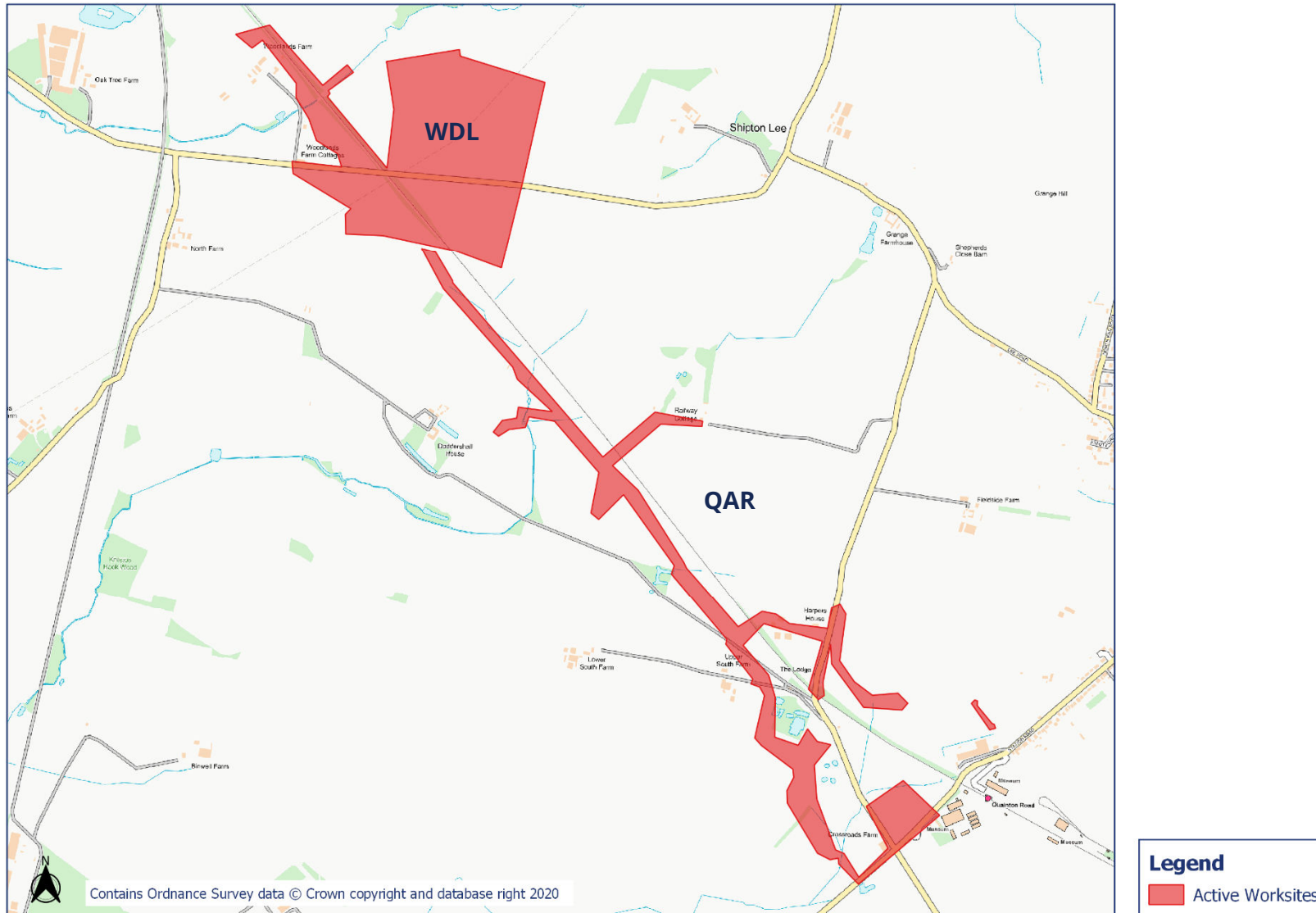


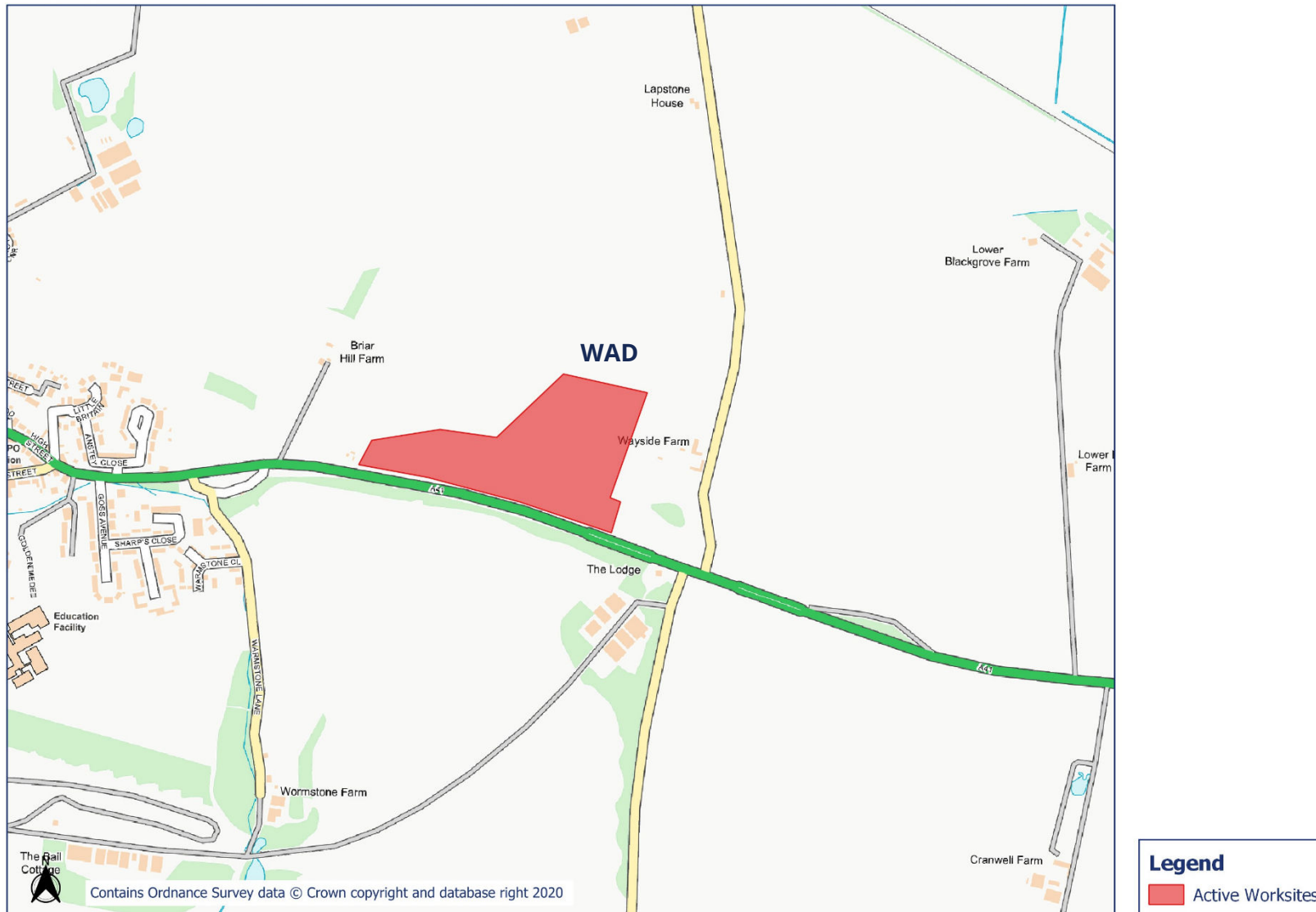
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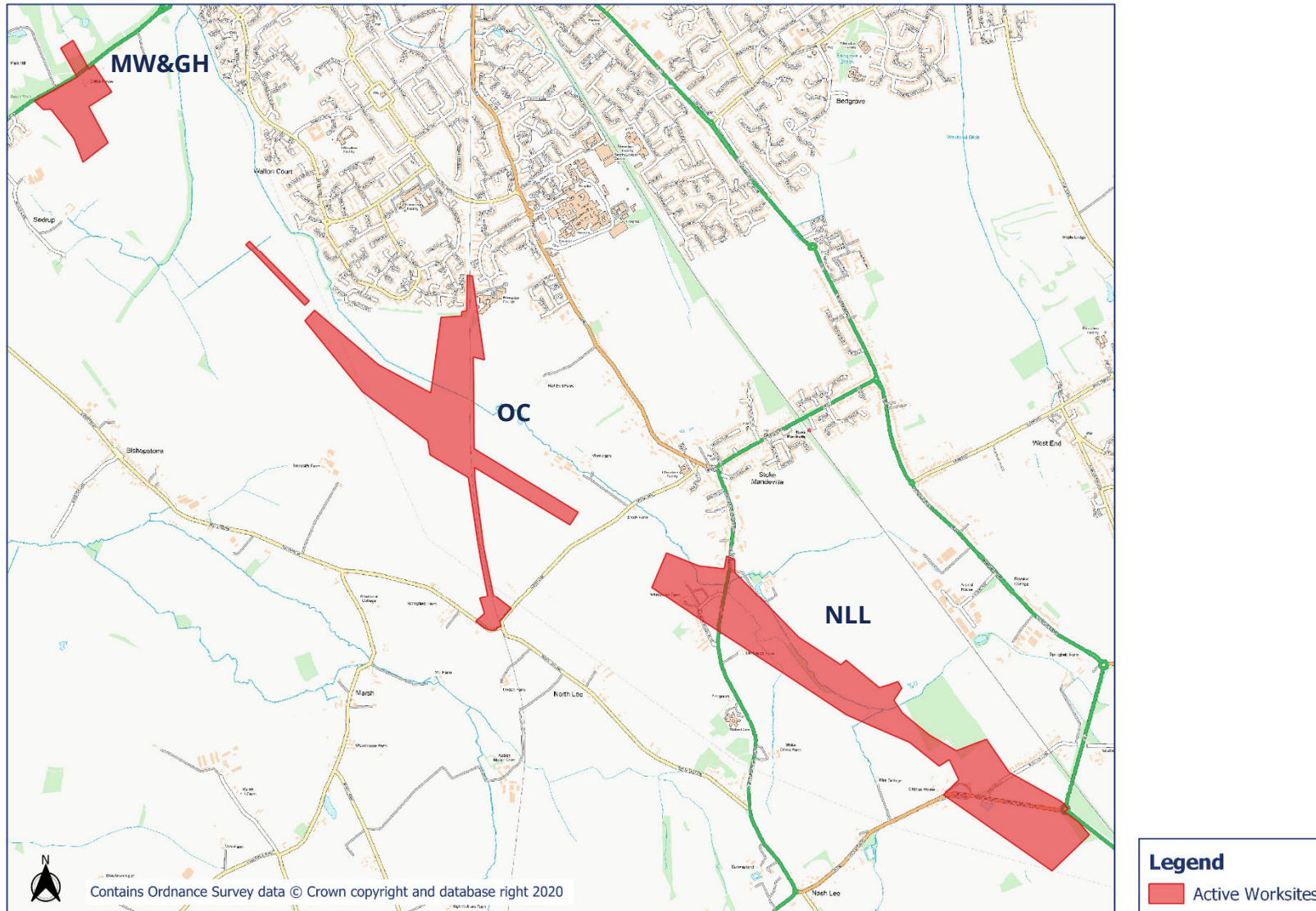


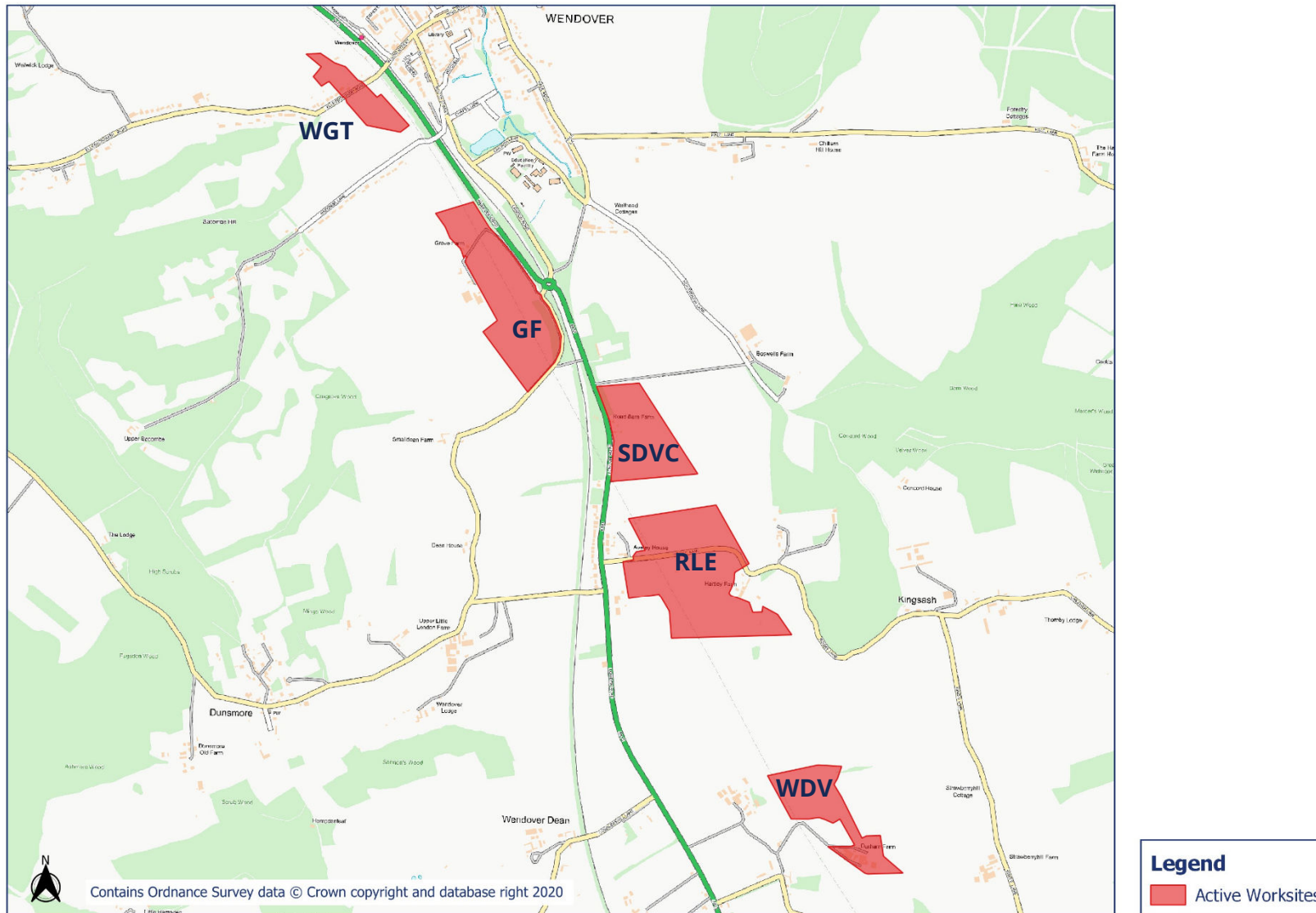


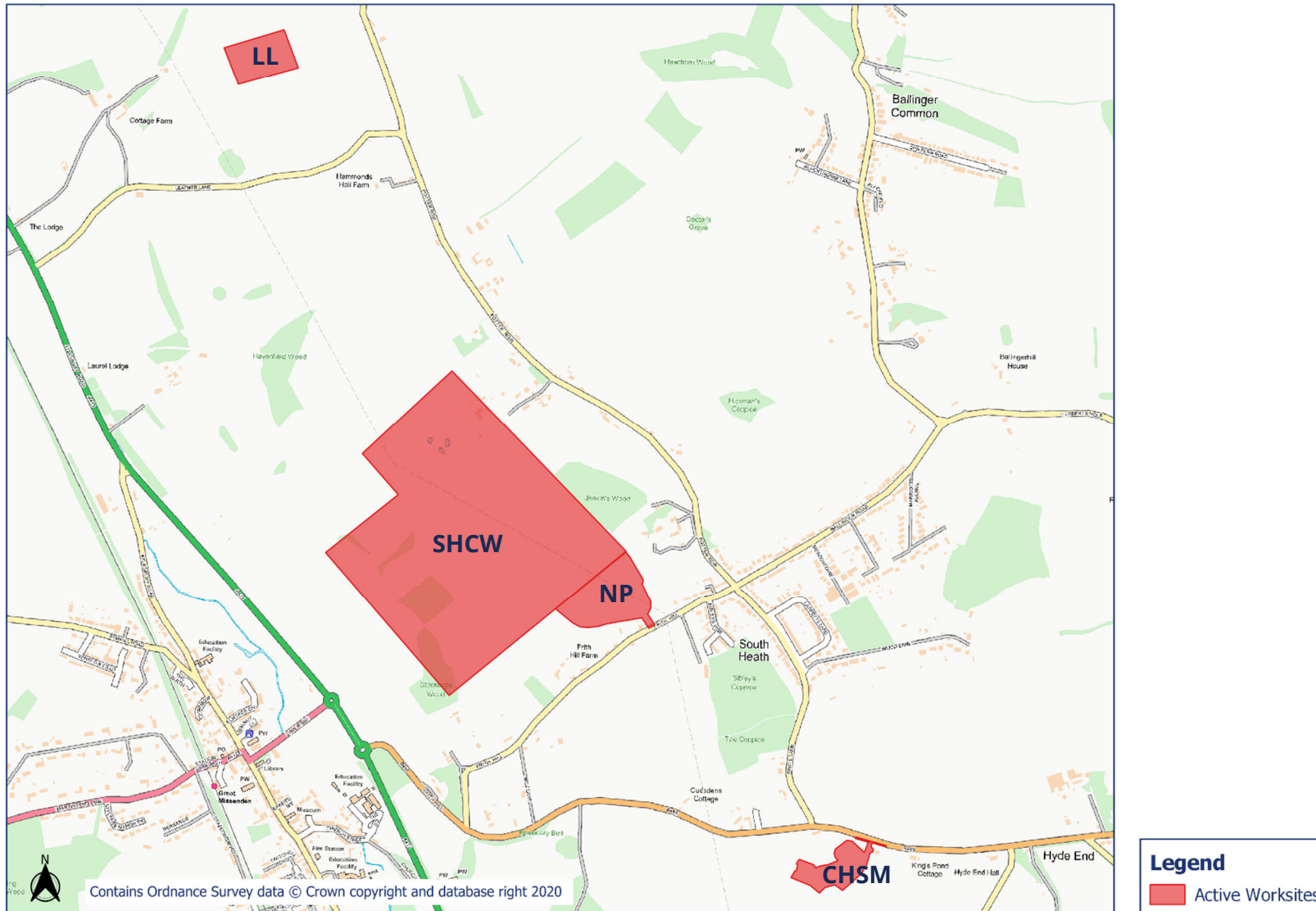




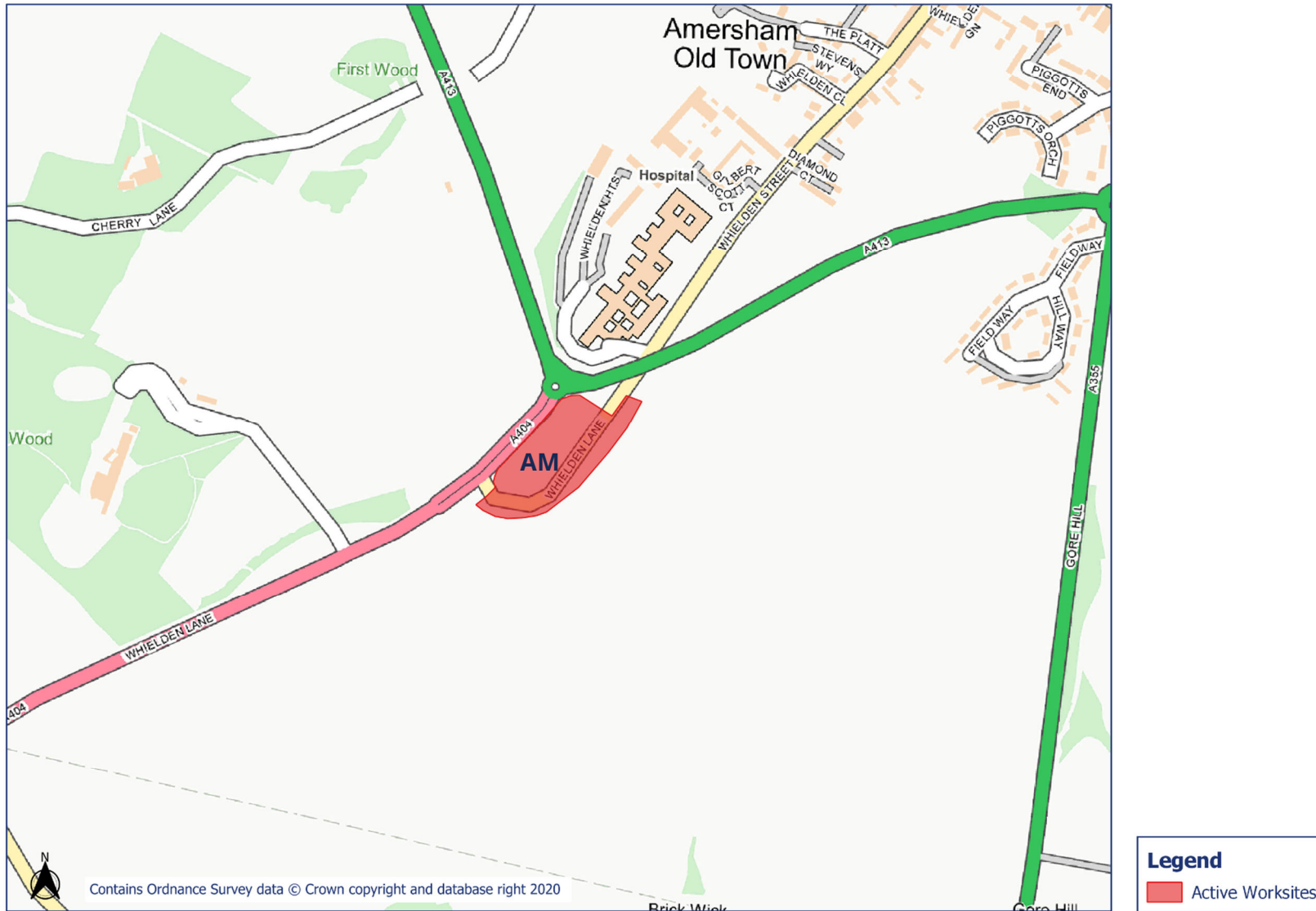


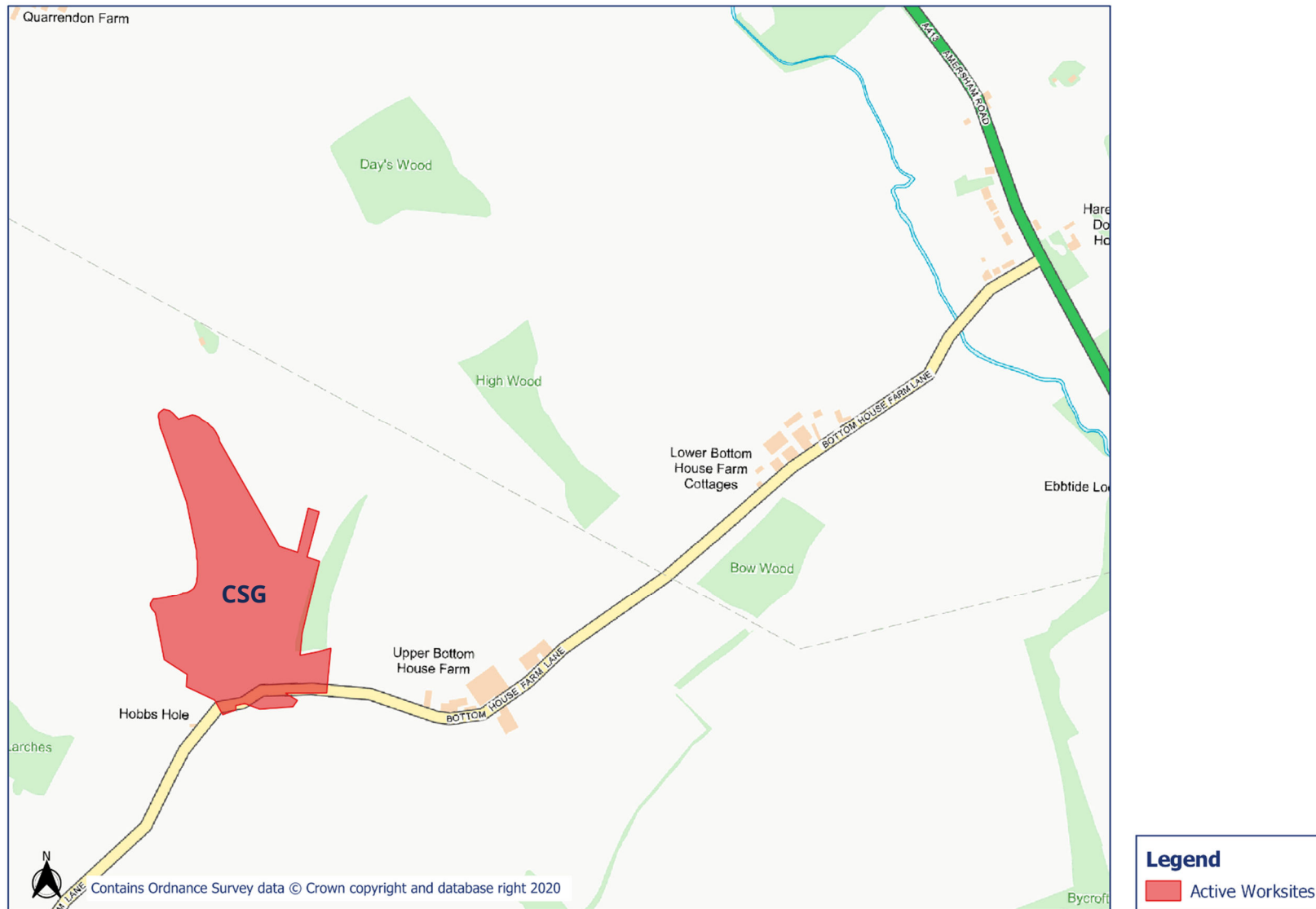


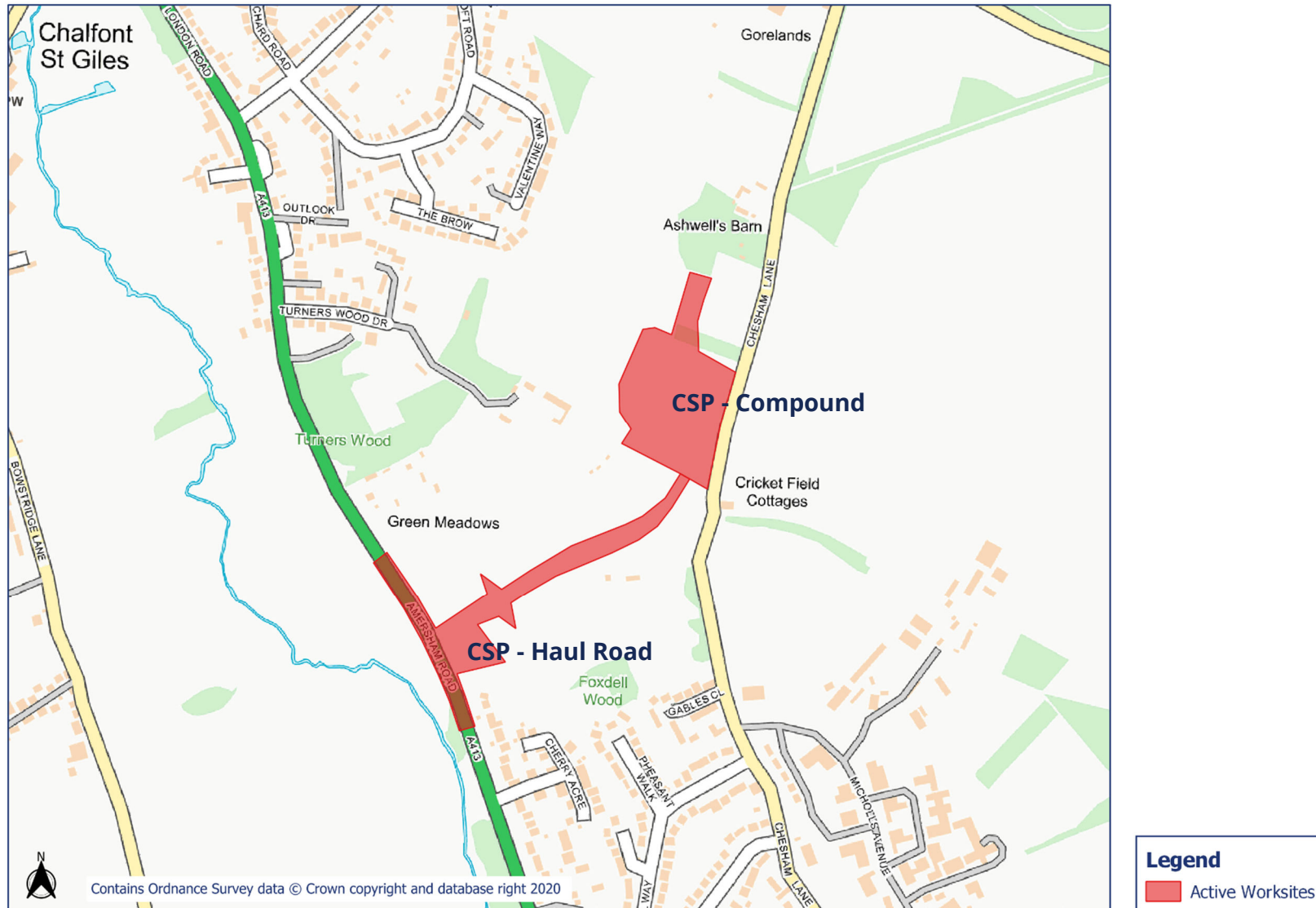


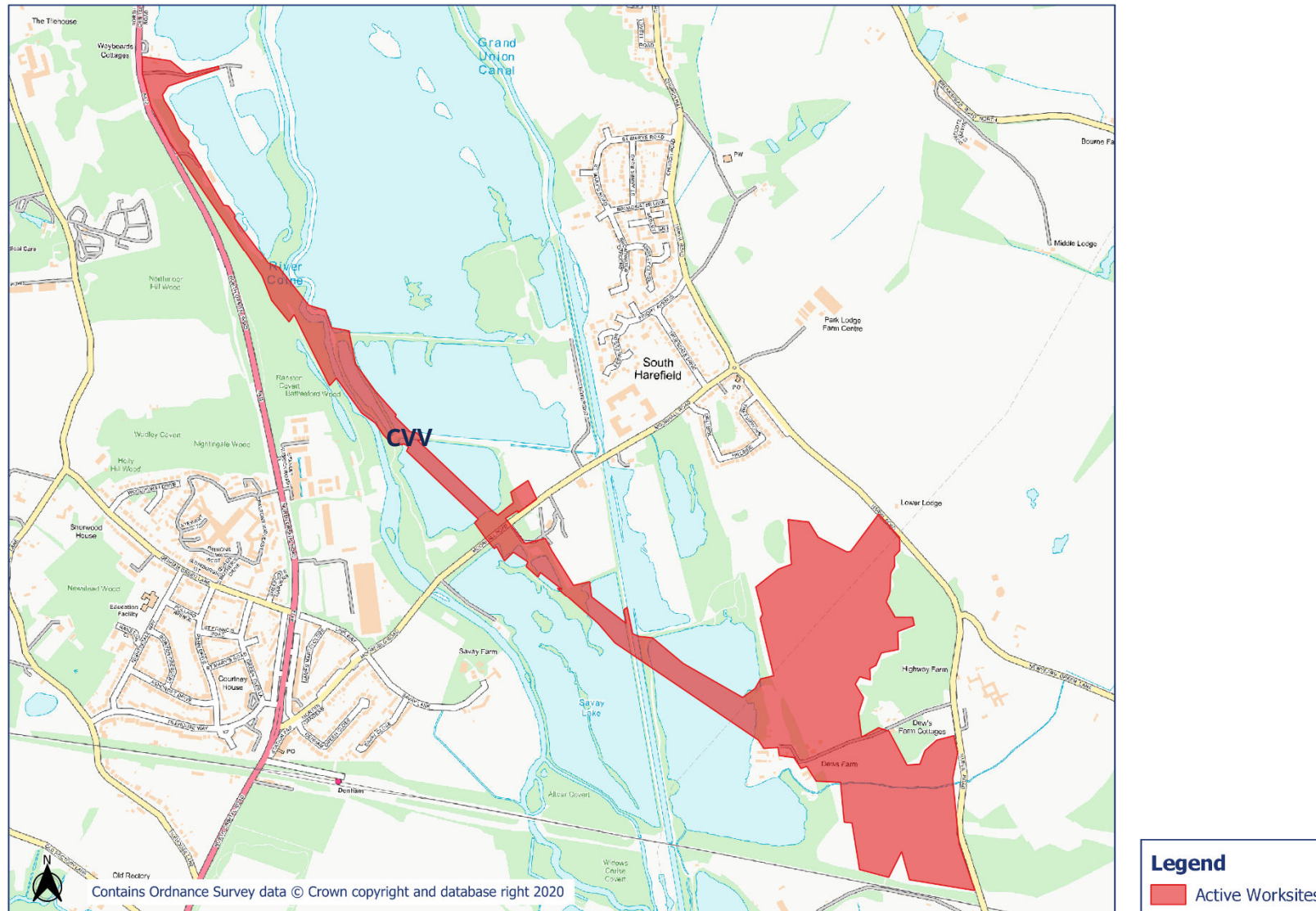




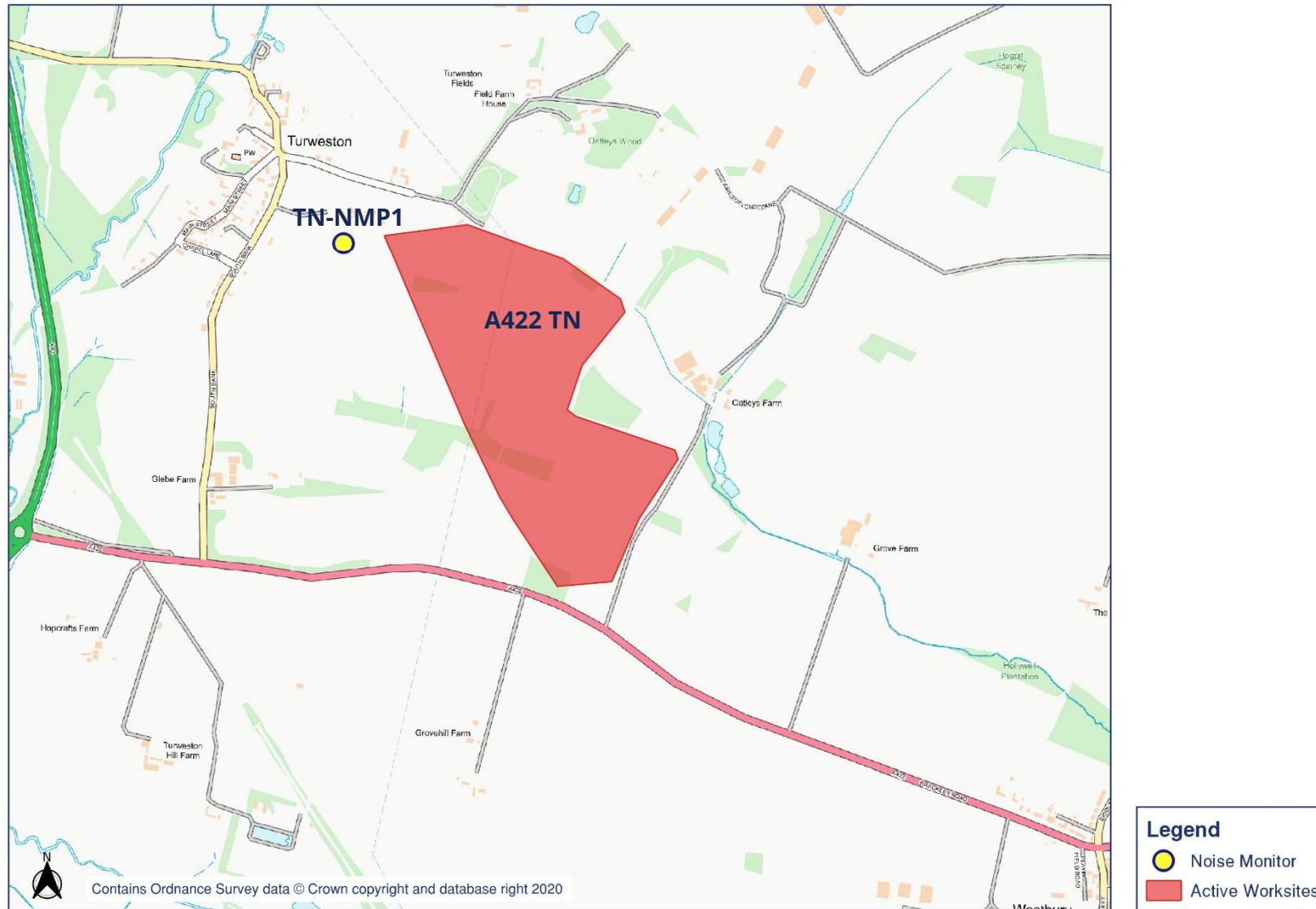


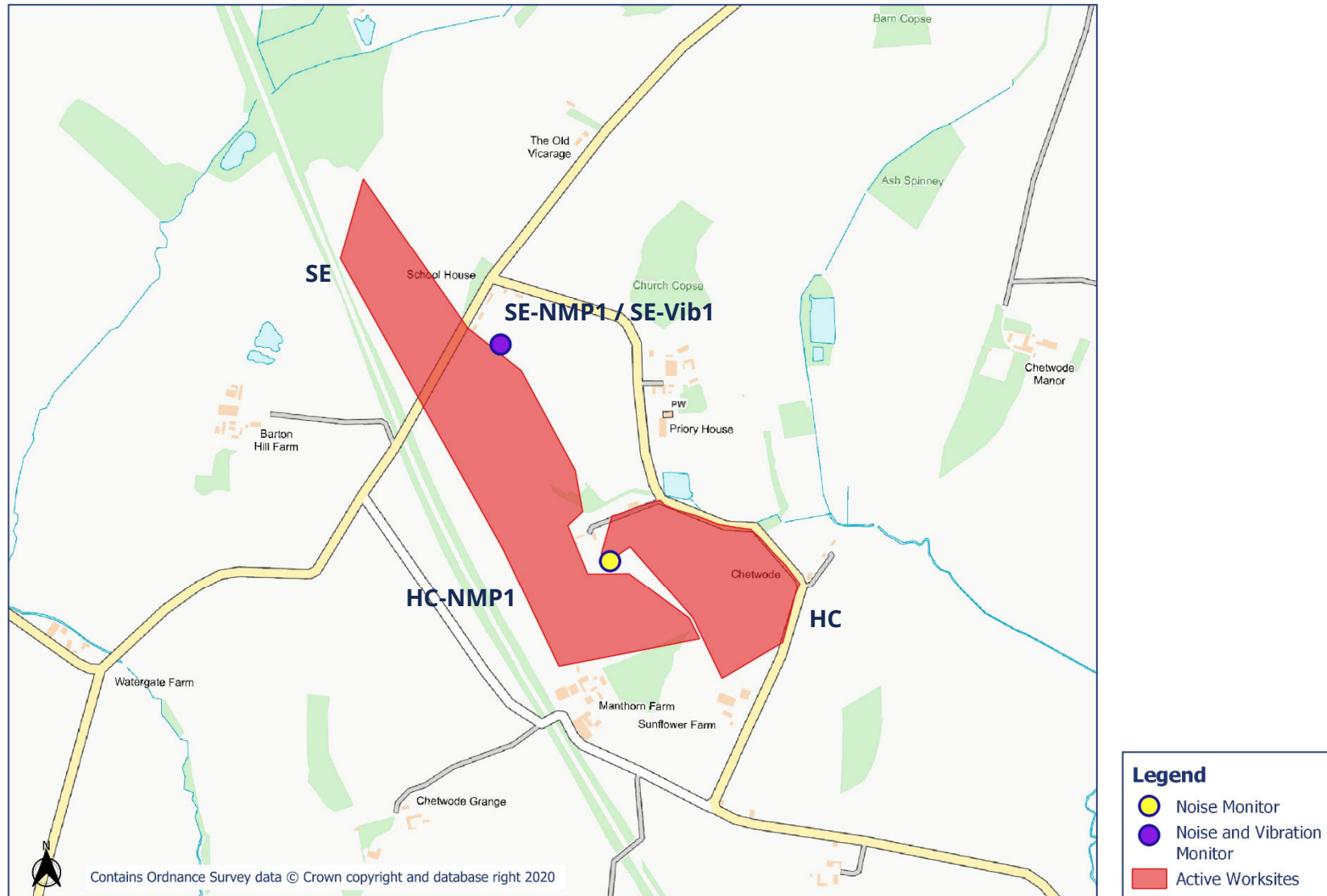


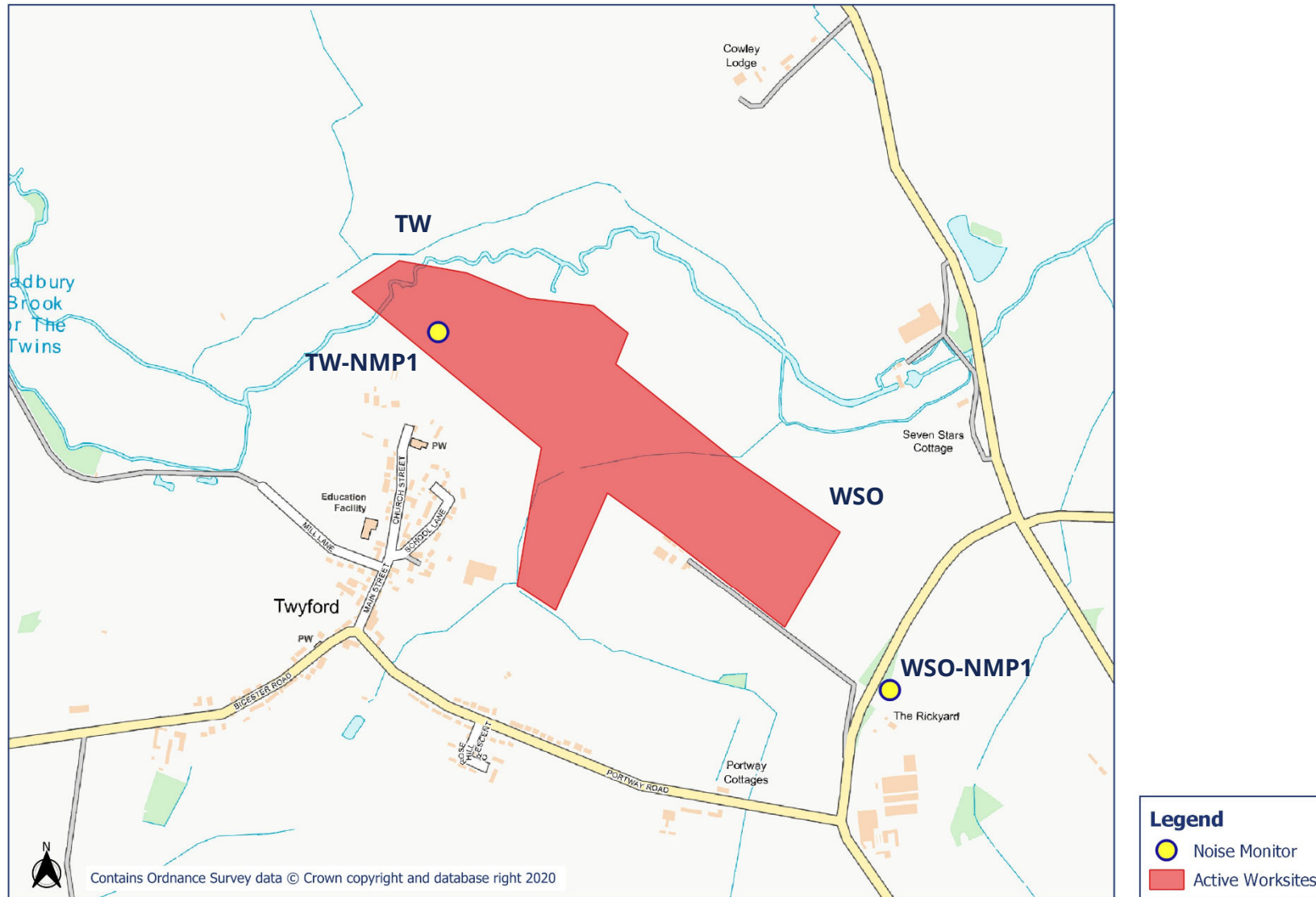


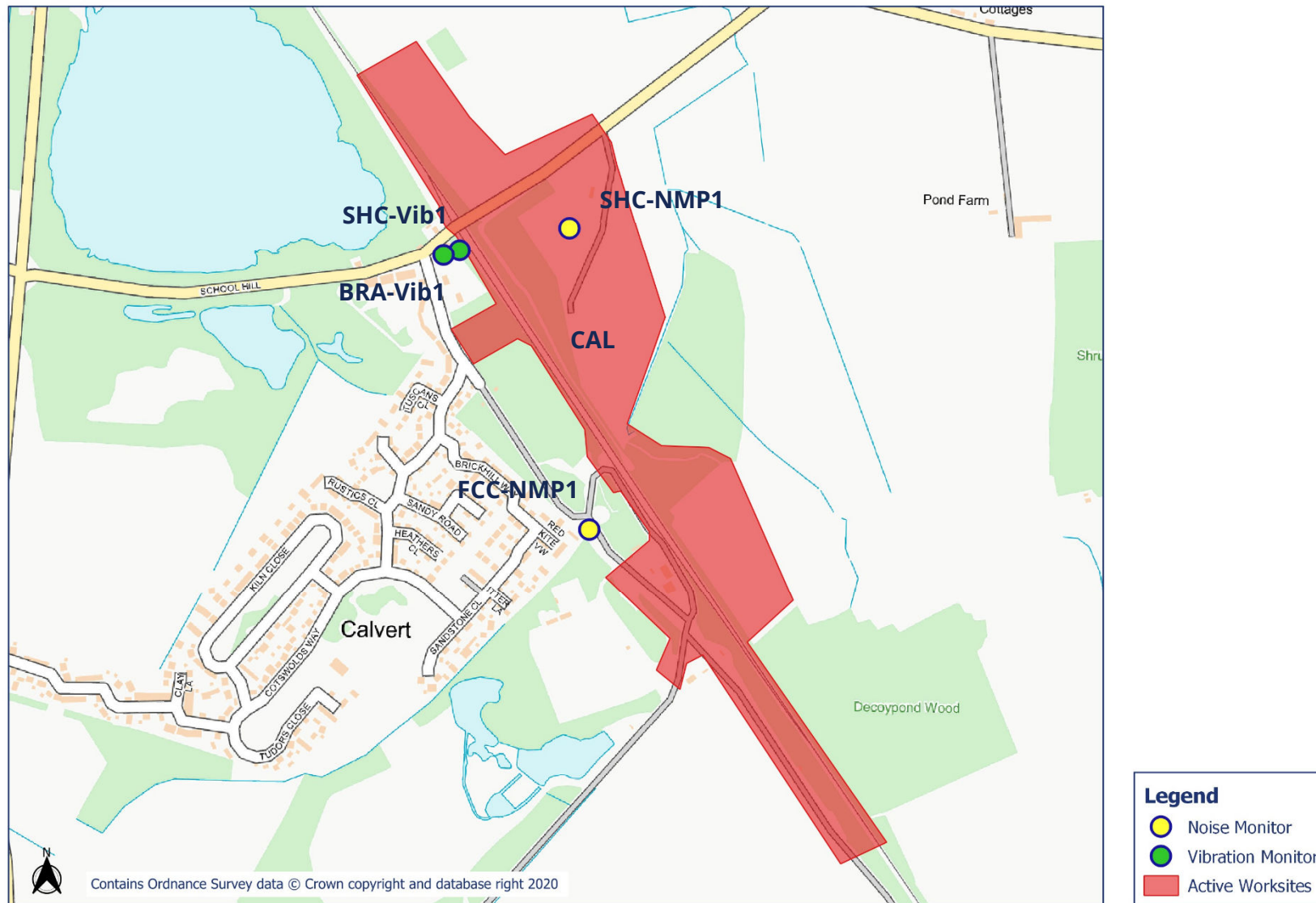


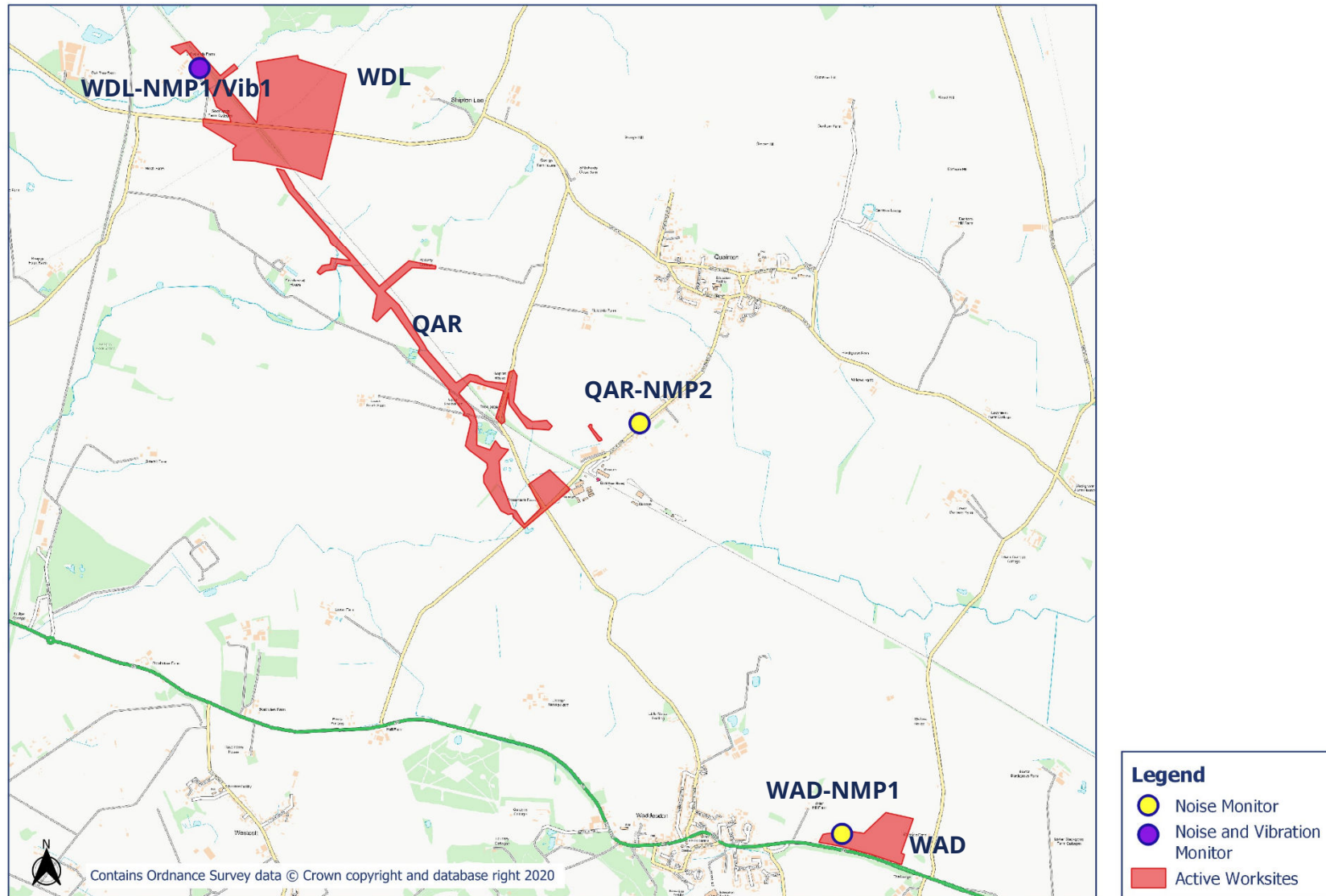
Appendix B Monitoring Locations

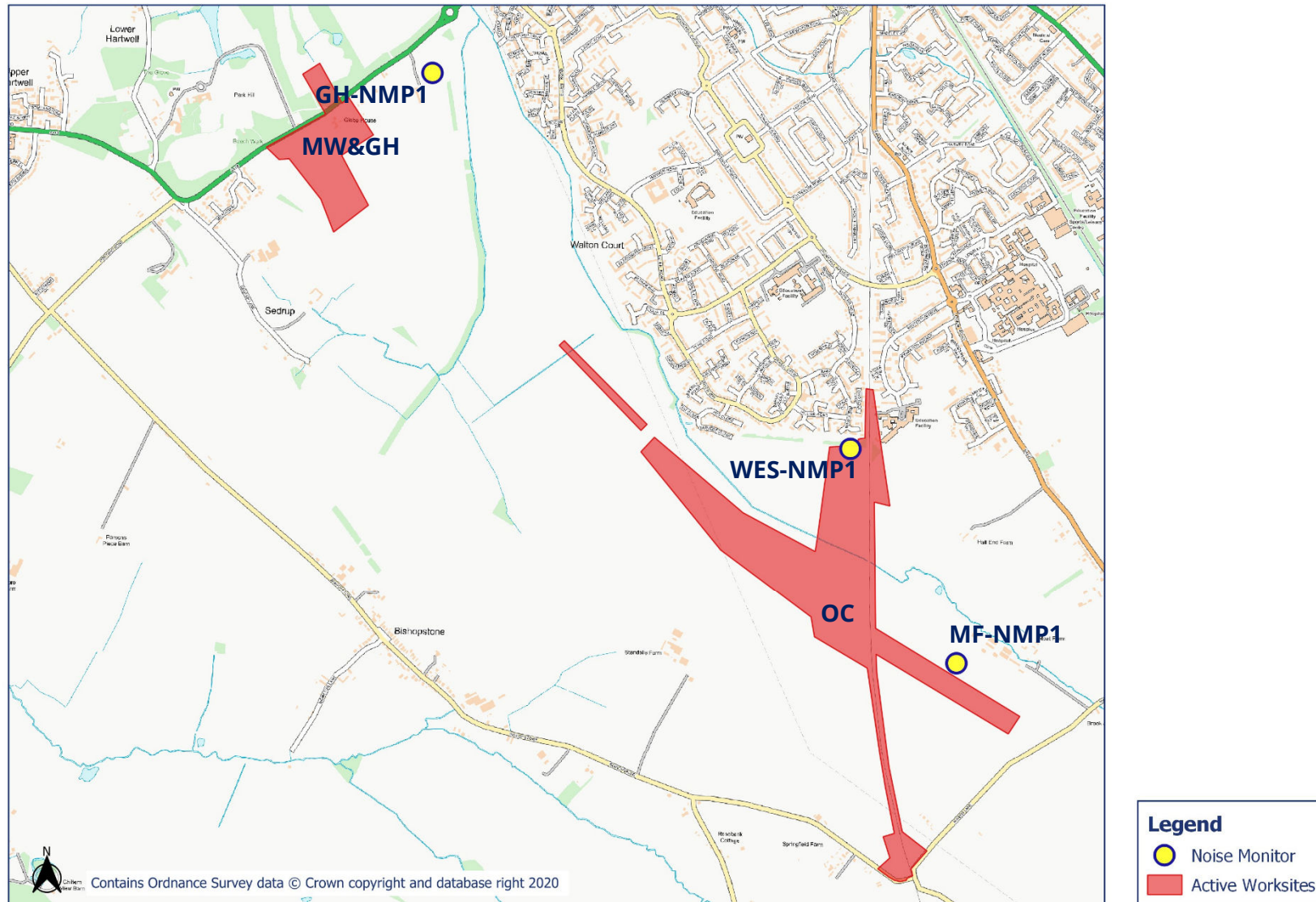


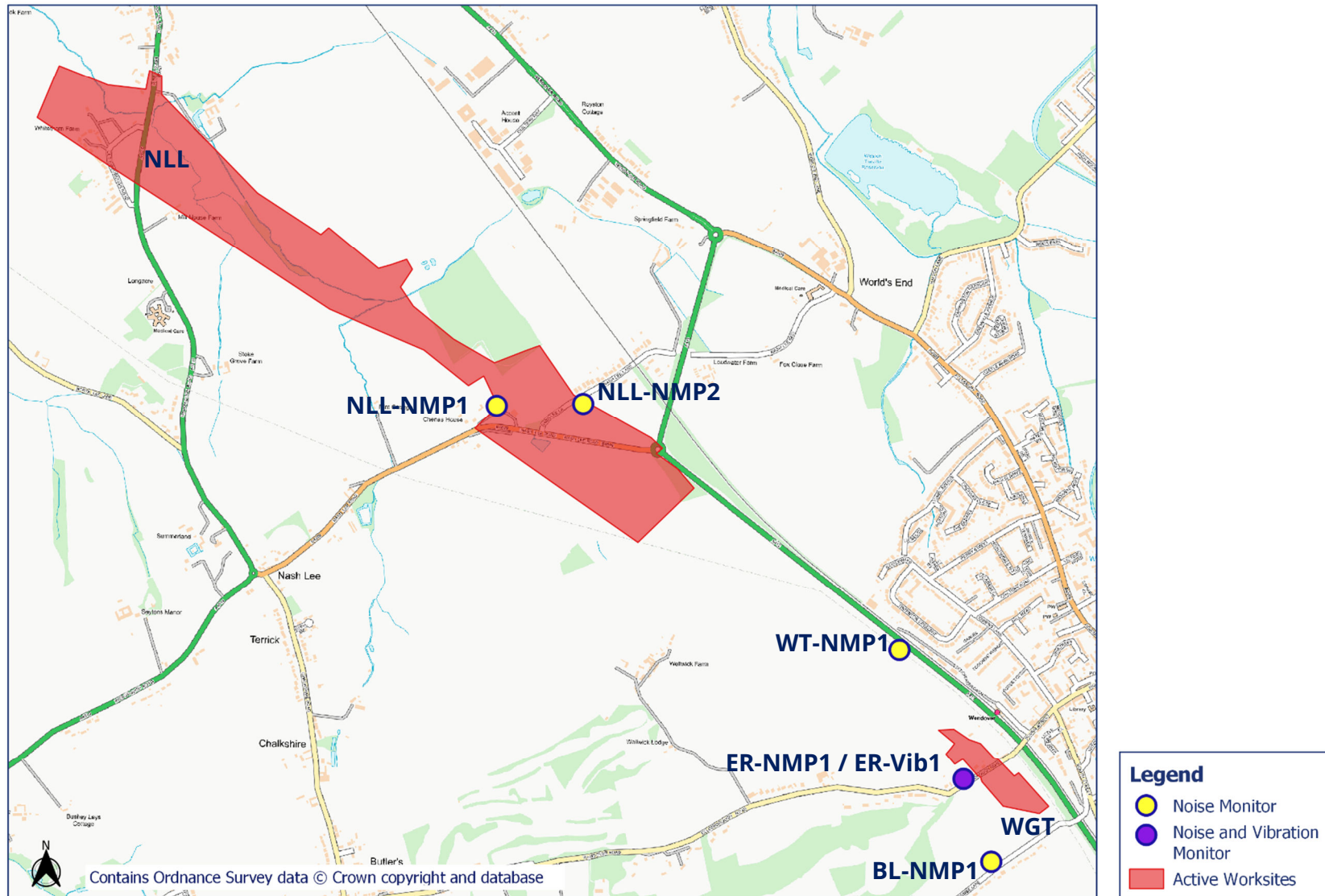


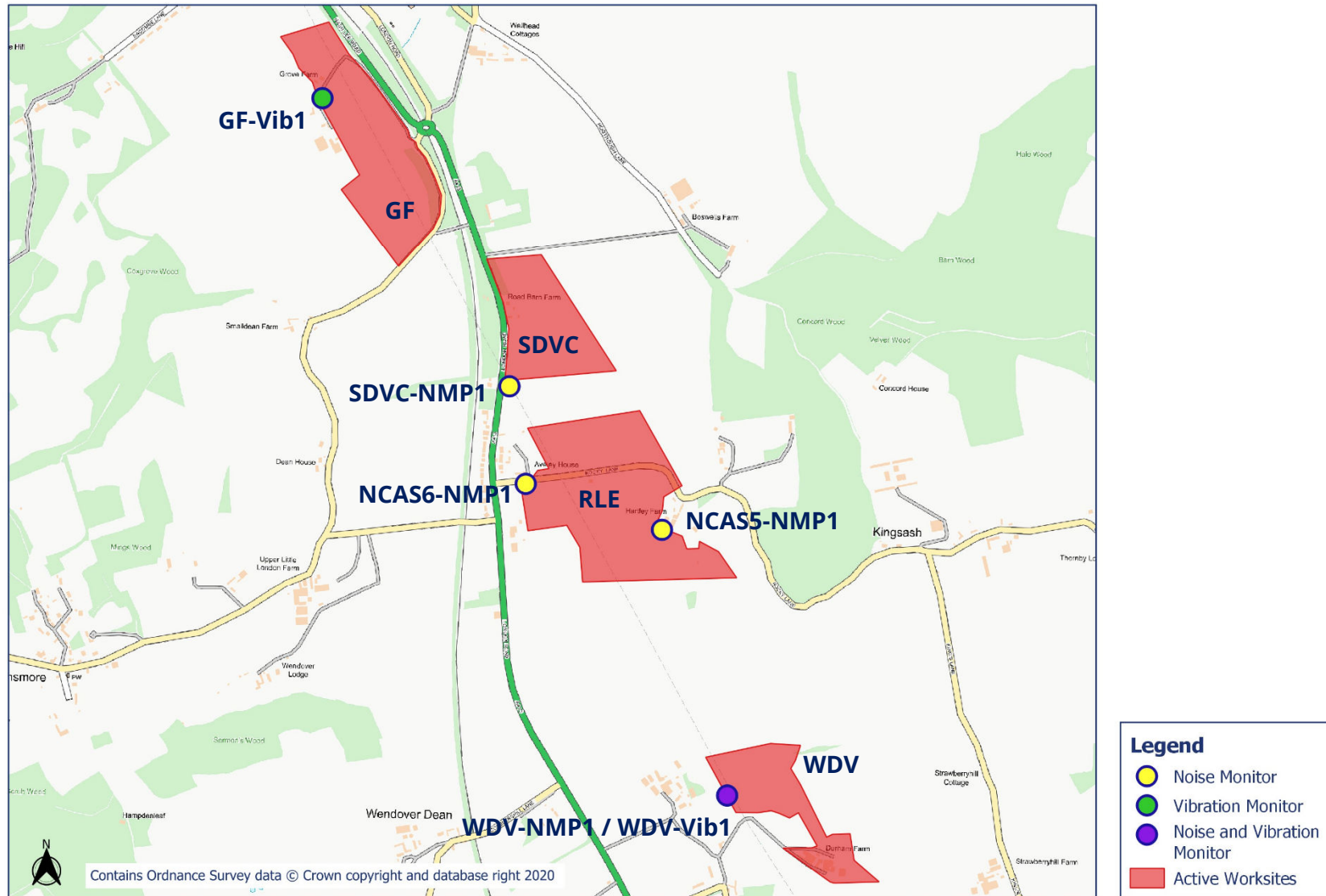


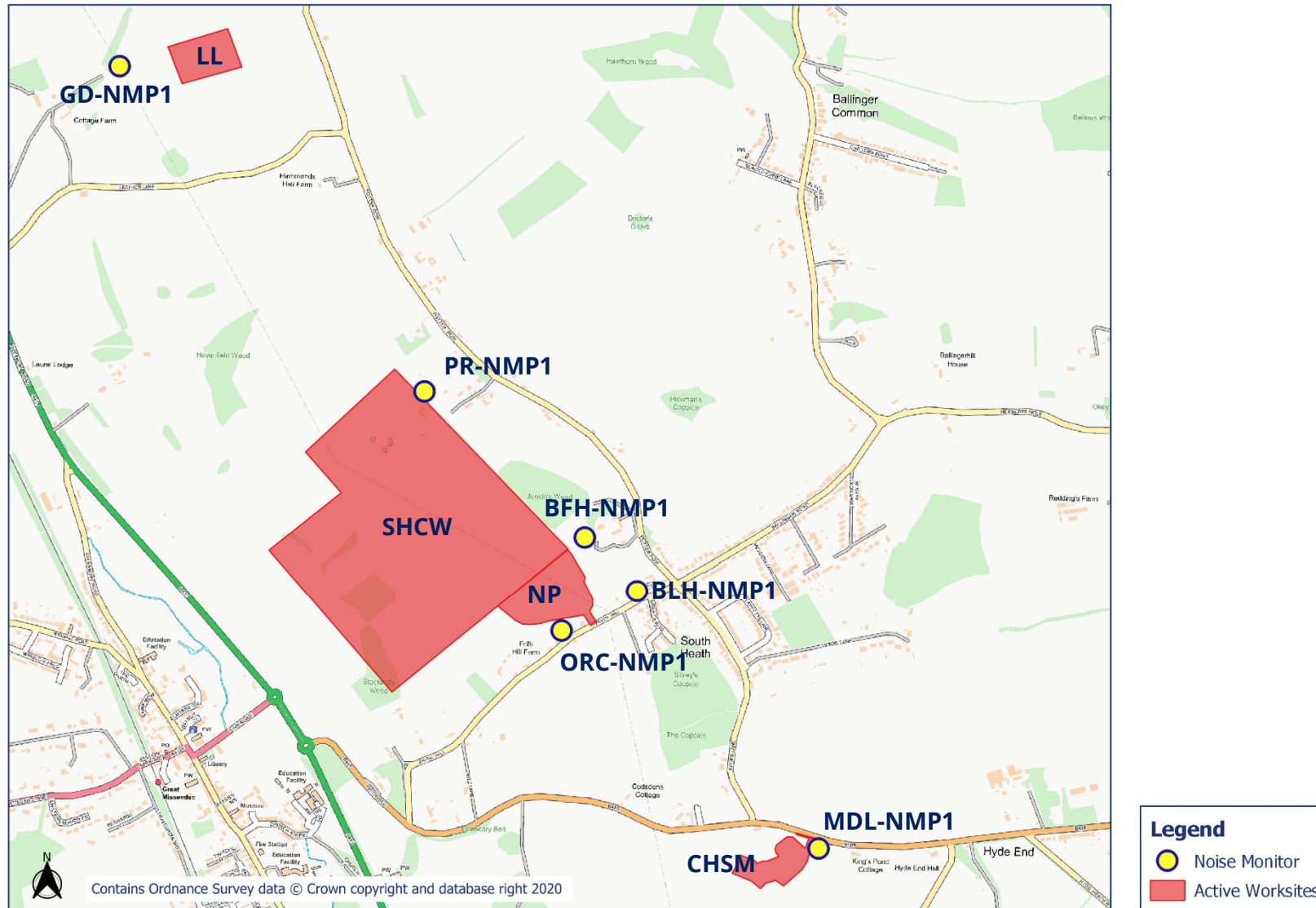






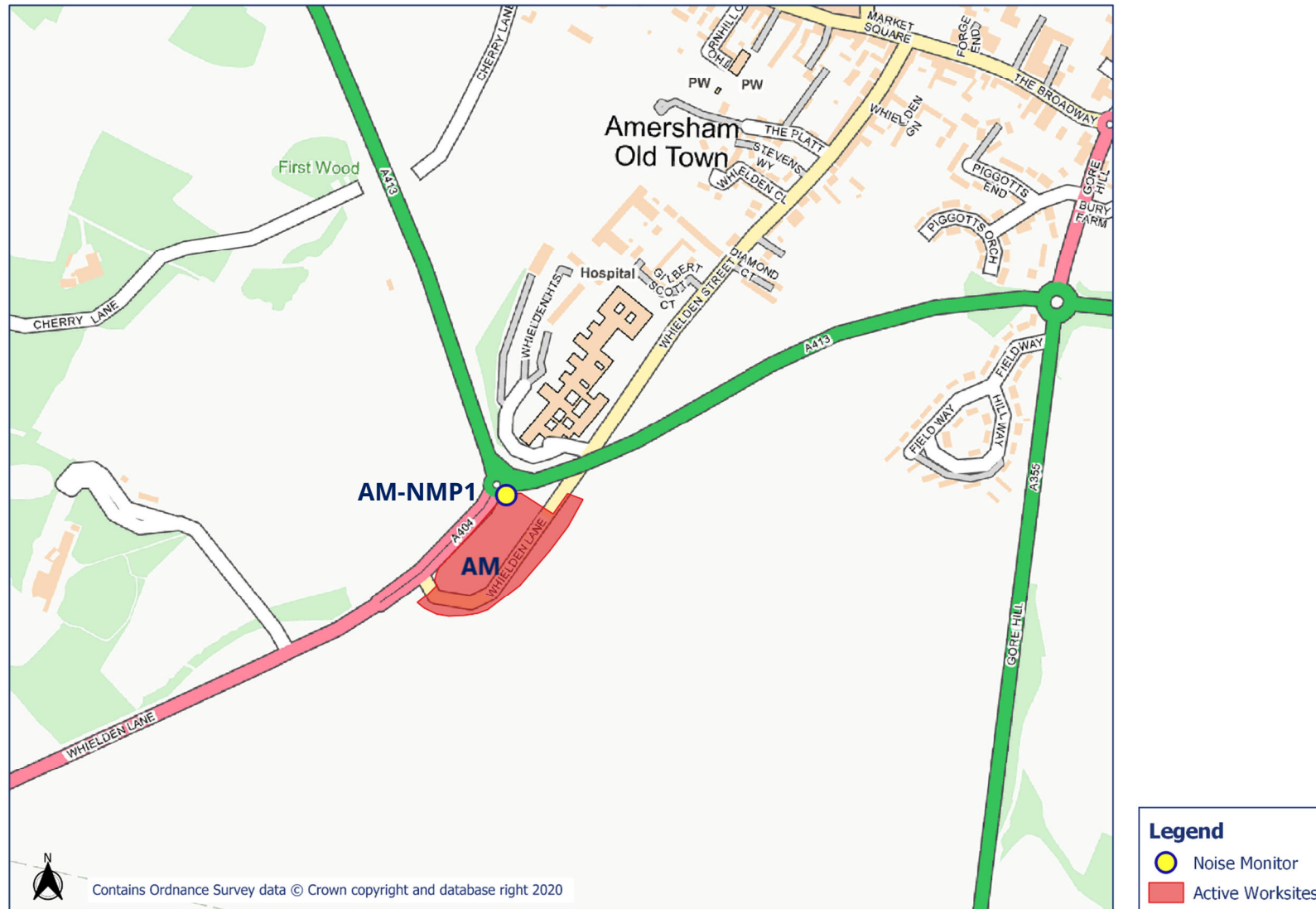






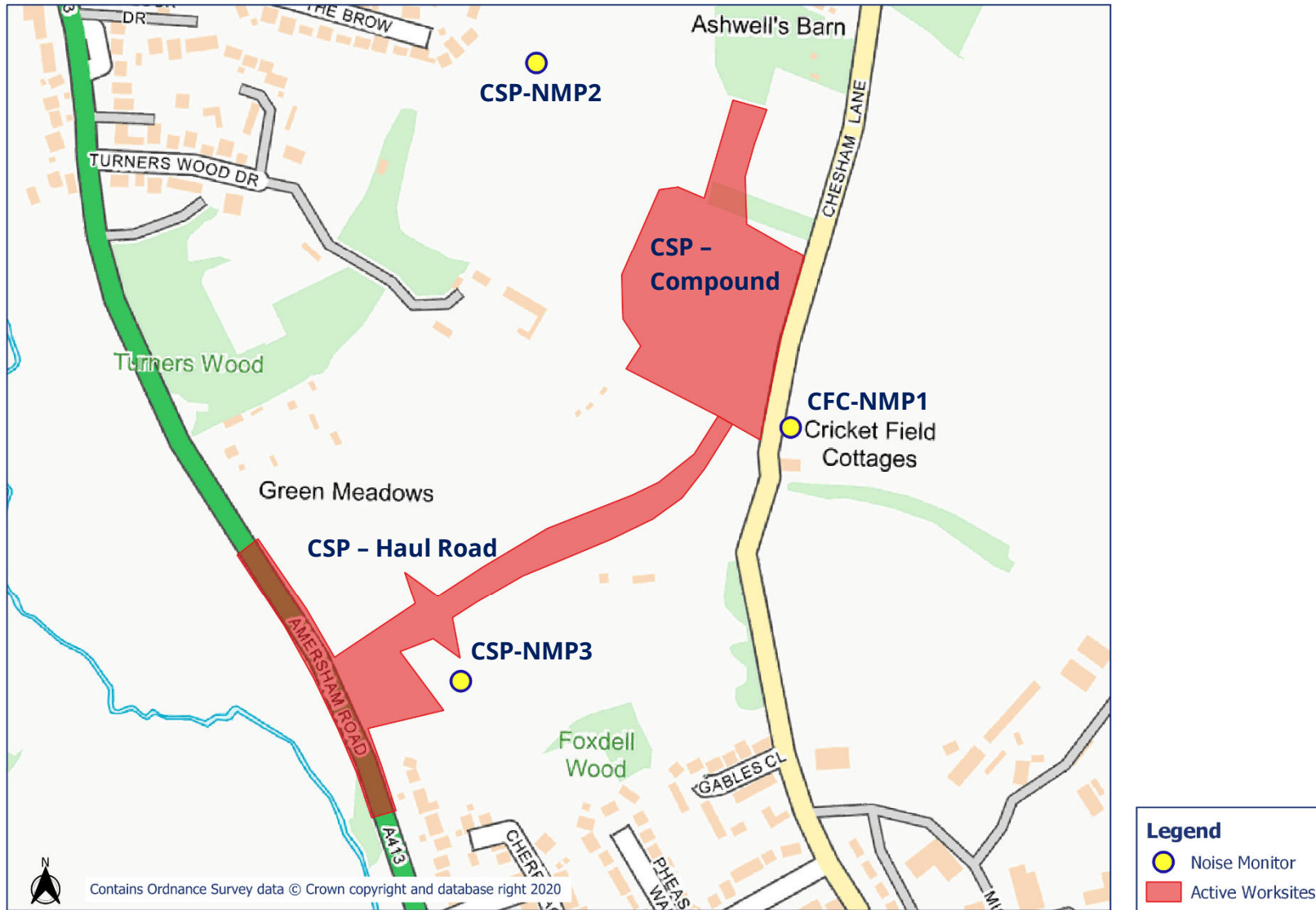


HS2 Noise and Vibration Monitoring Plan - 11

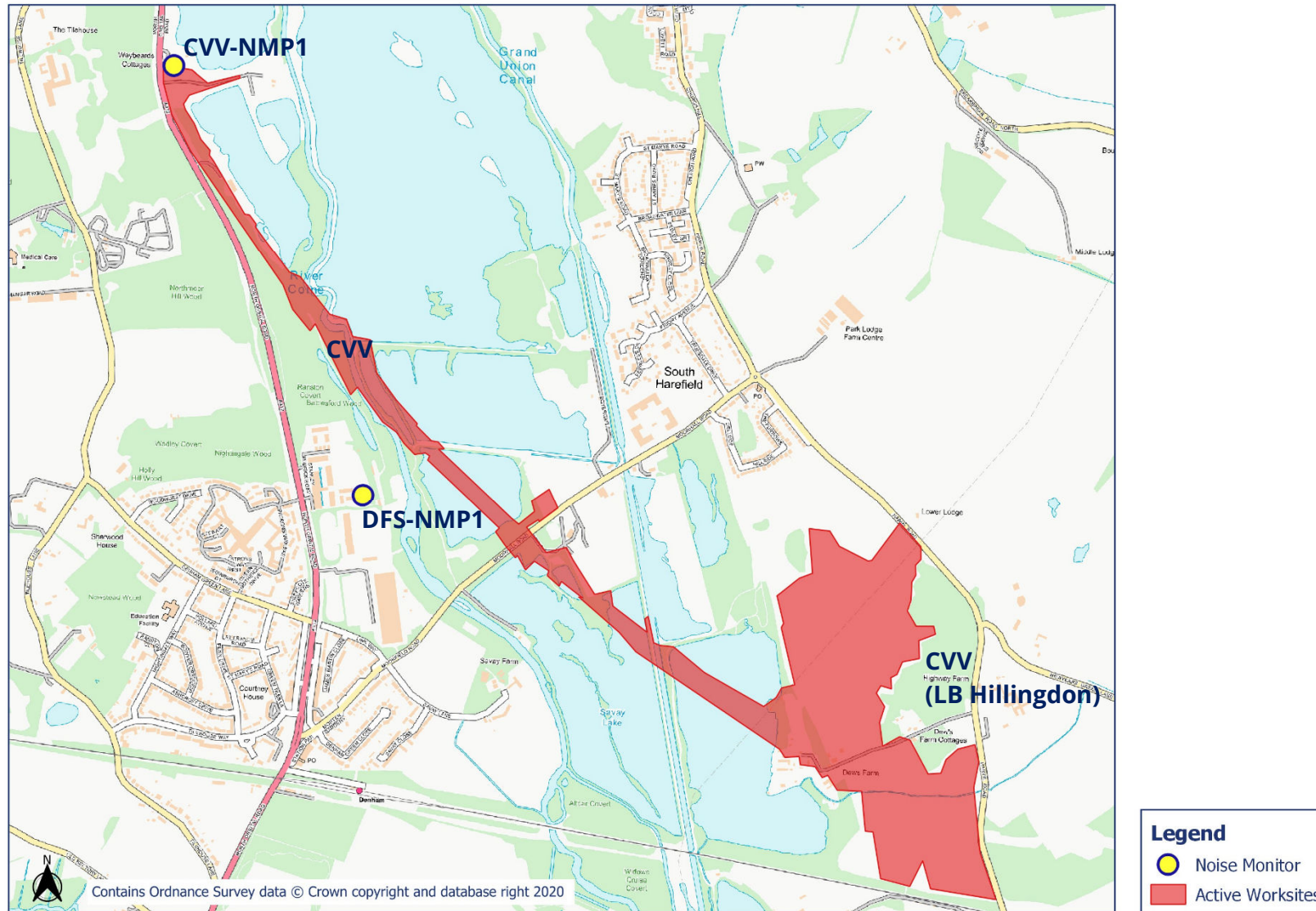




HS2 Noise and Vibration Monitoring Plan - 13



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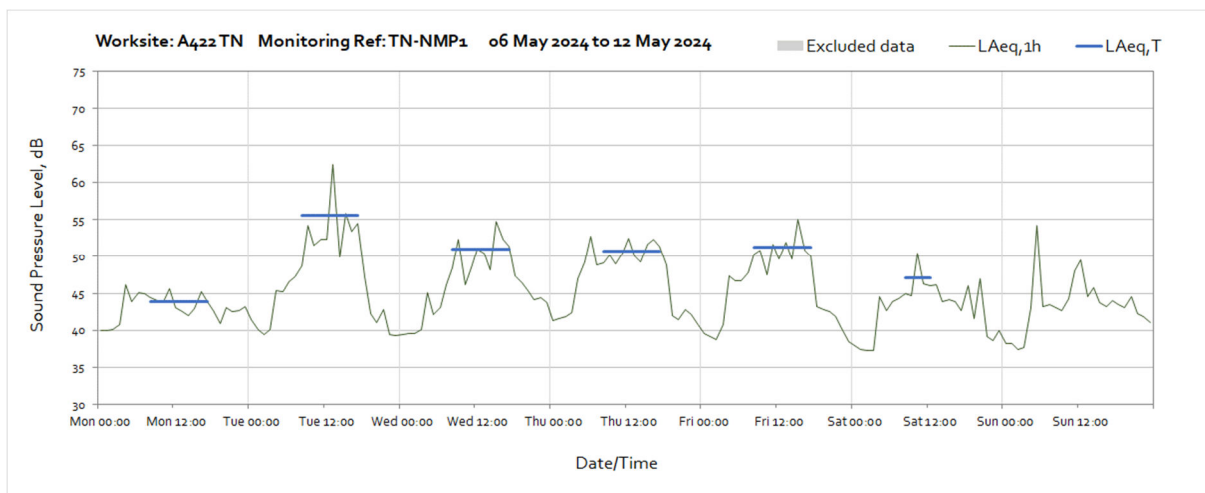
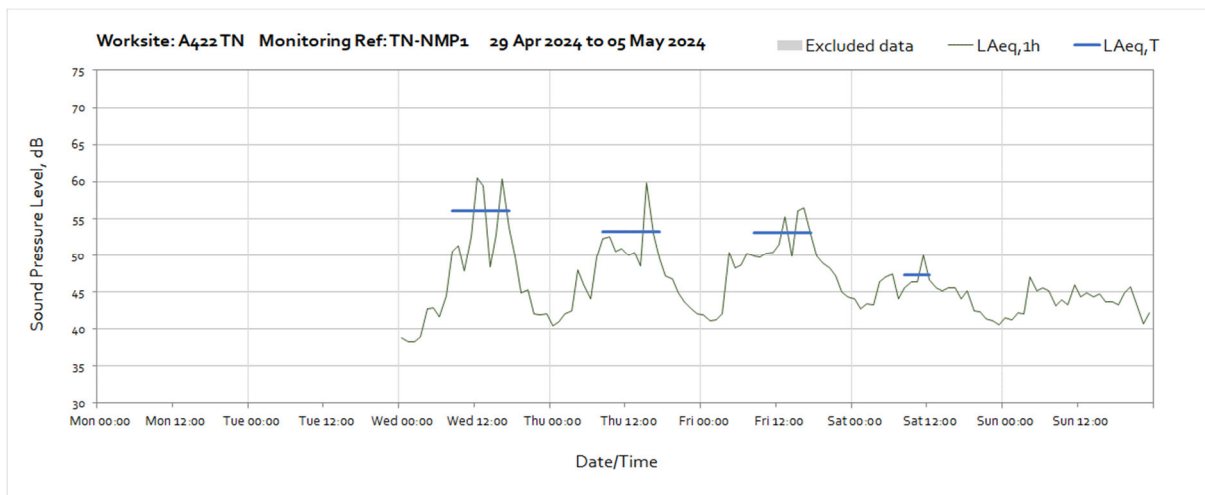


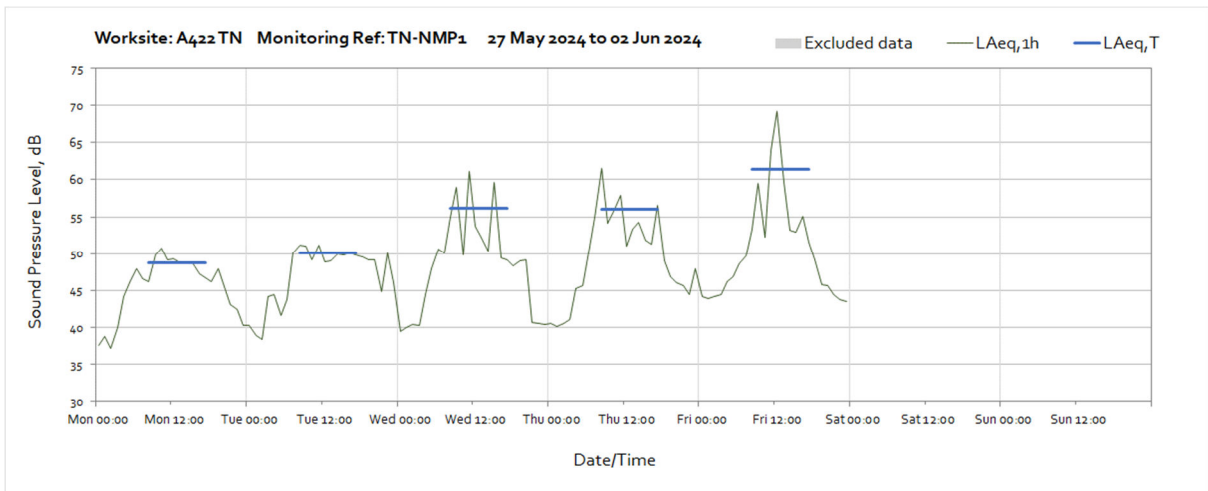
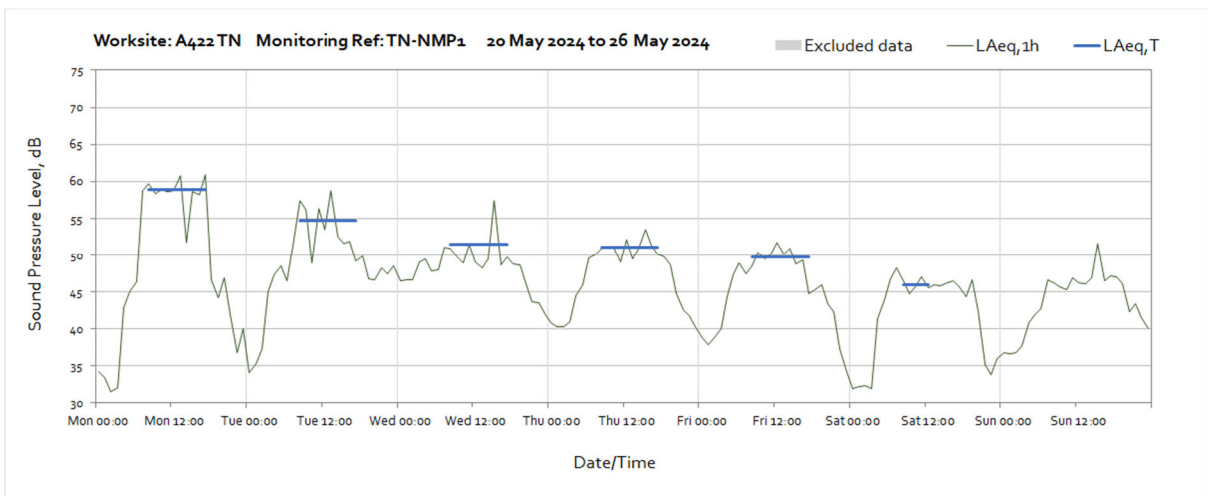
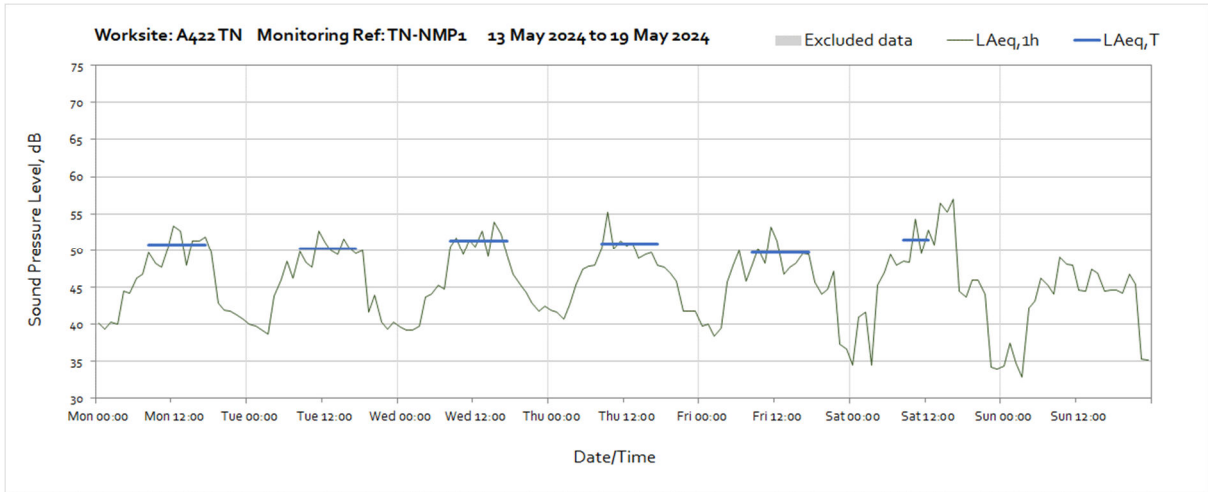
Appendix C Data

Noise

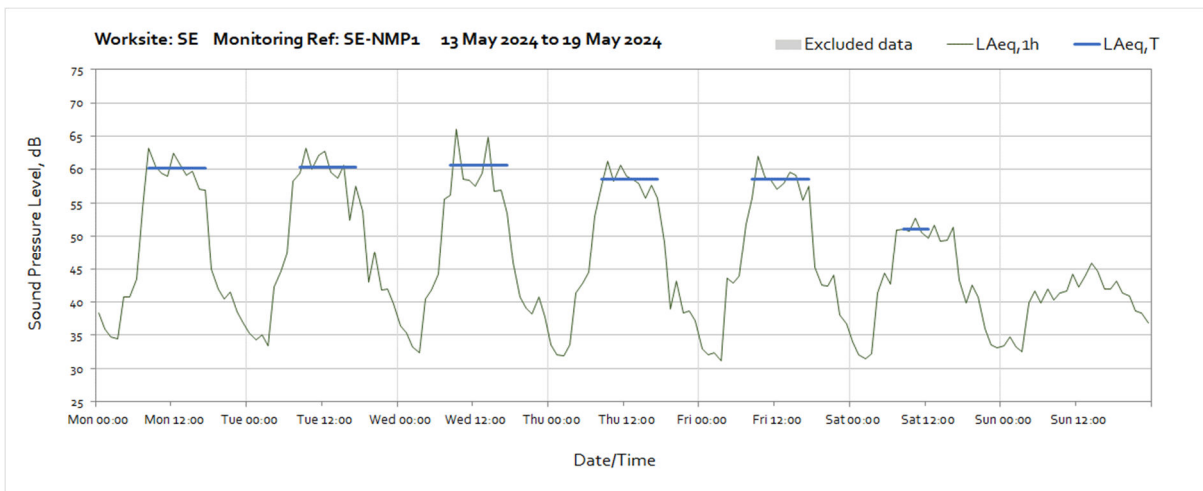
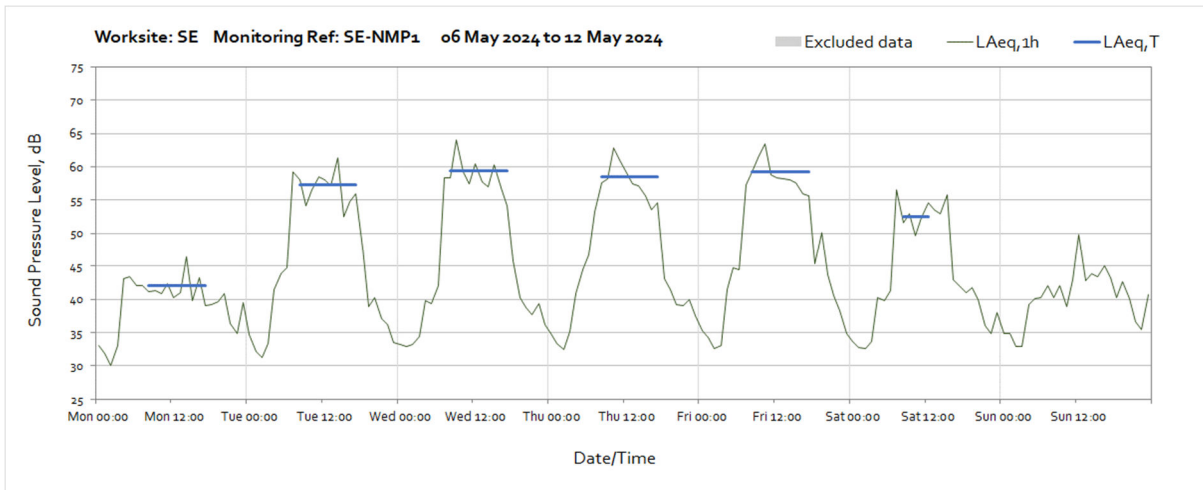
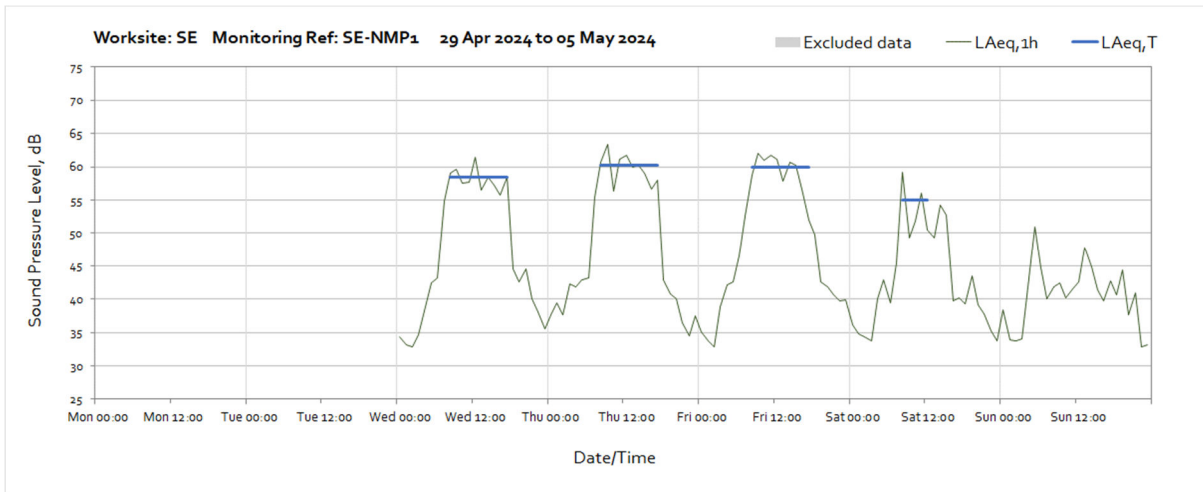
The following graphs show the hourly measured ambient noise level $L_{Aeq,1h}$ and, where relevant, the averaged noise level $L_{Aeq,T}$ values, where the time period T is as specified in Table 1 of HS2 Information Paper E23. Periods where noise levels are adversely affected by weather or only measured 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

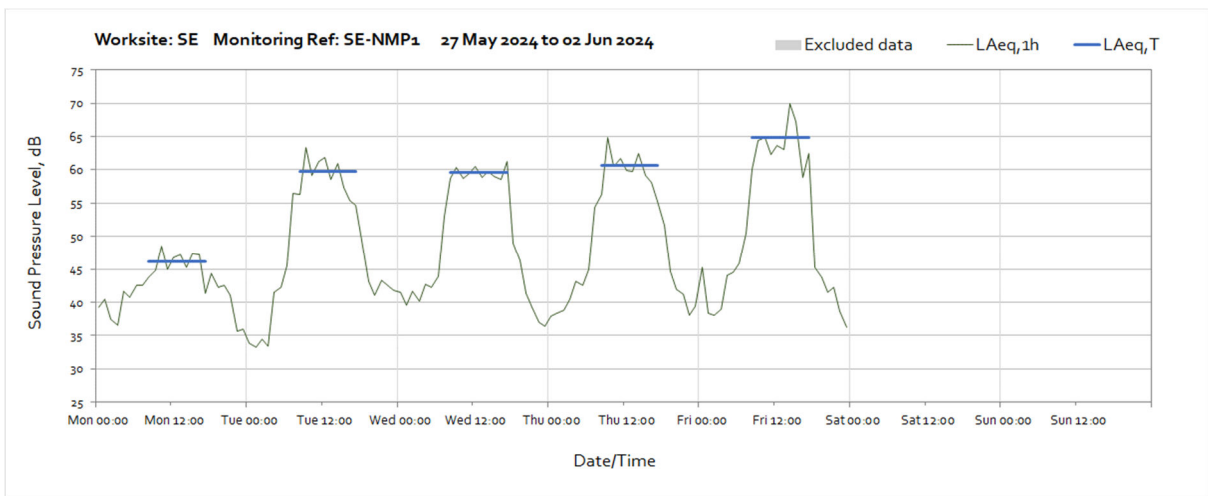
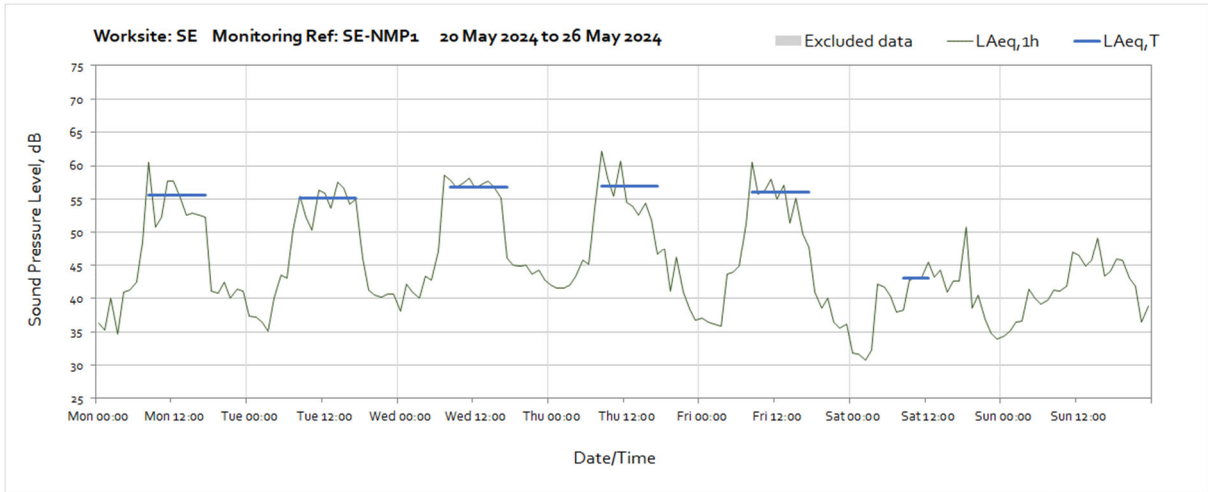




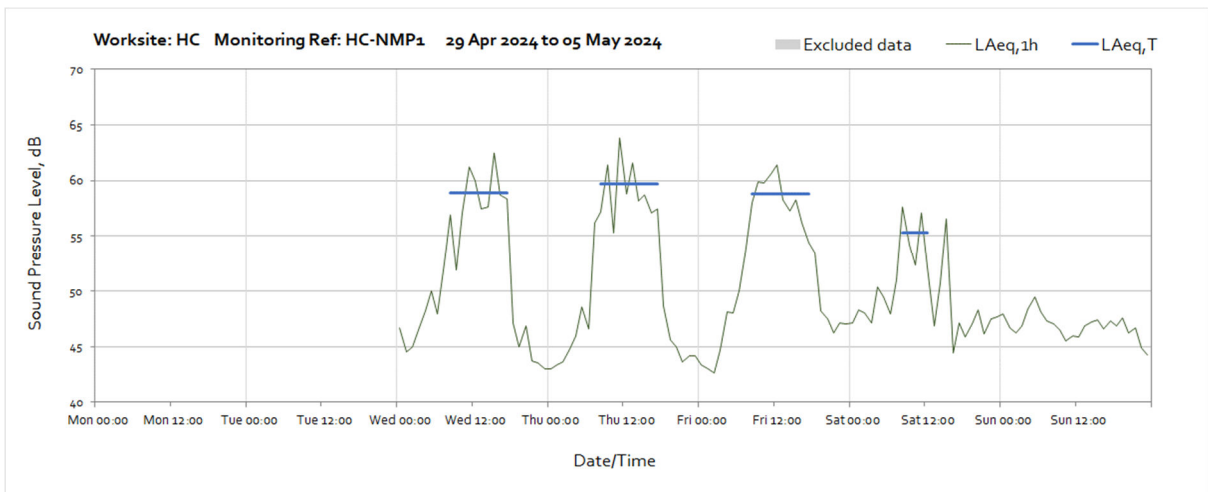
Worksite: SE – Monitoring Ref: SE-NMP1

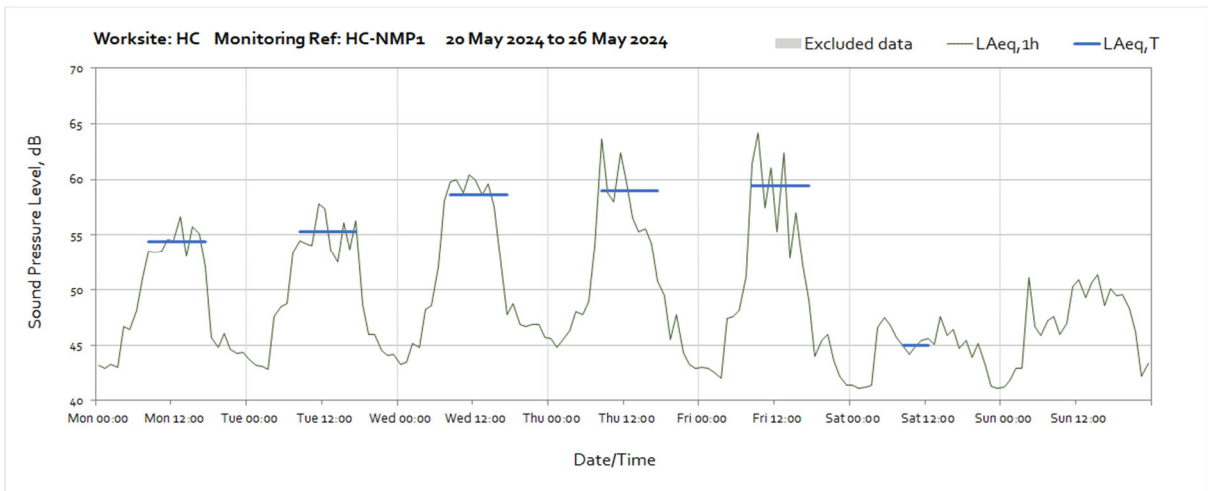
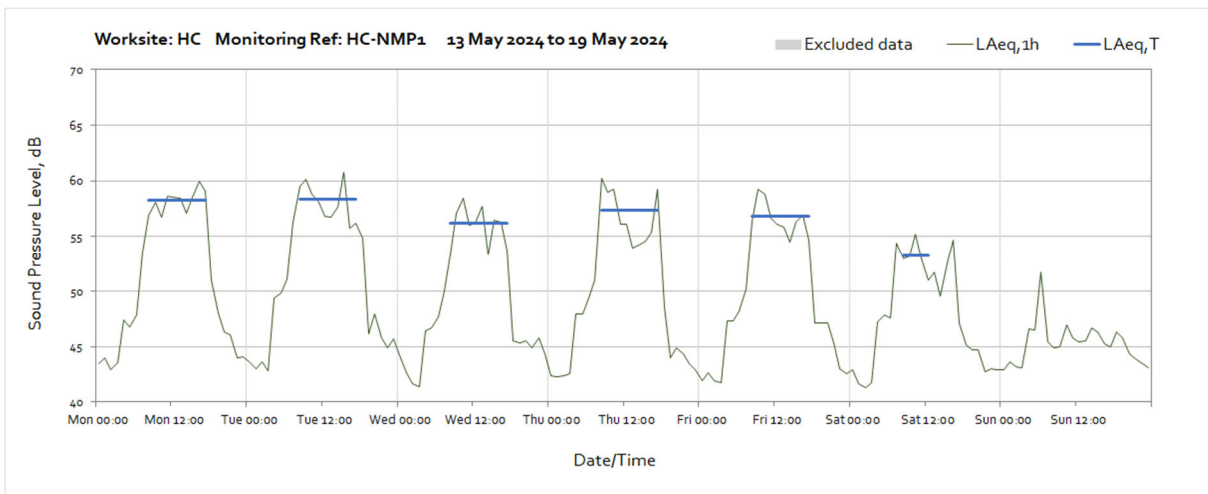
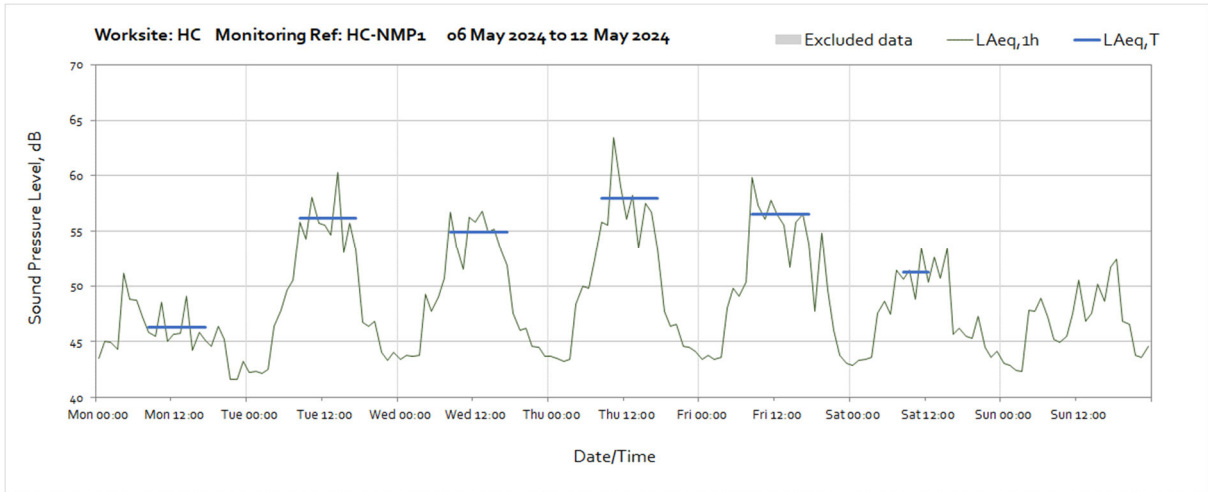


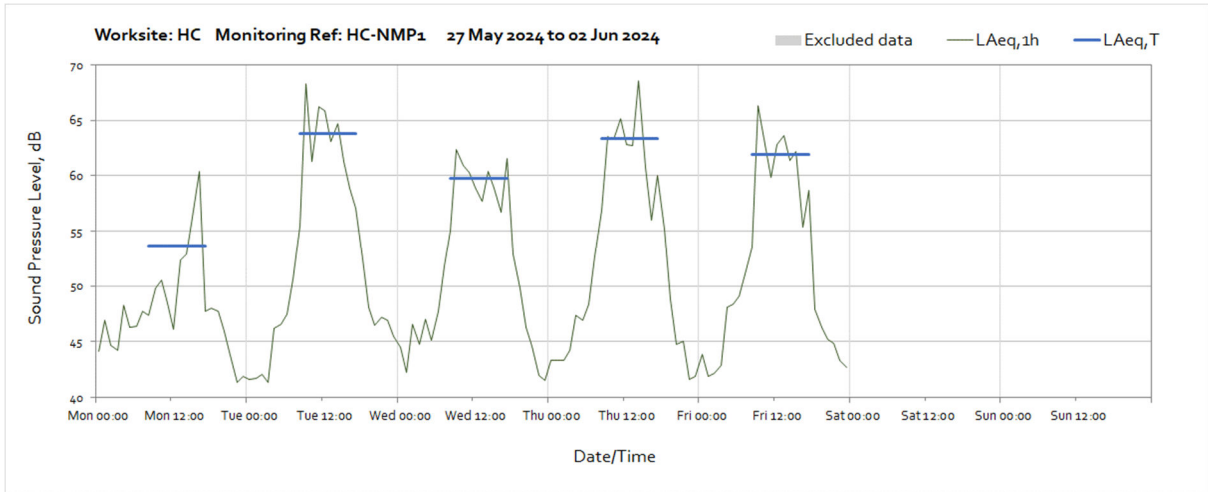
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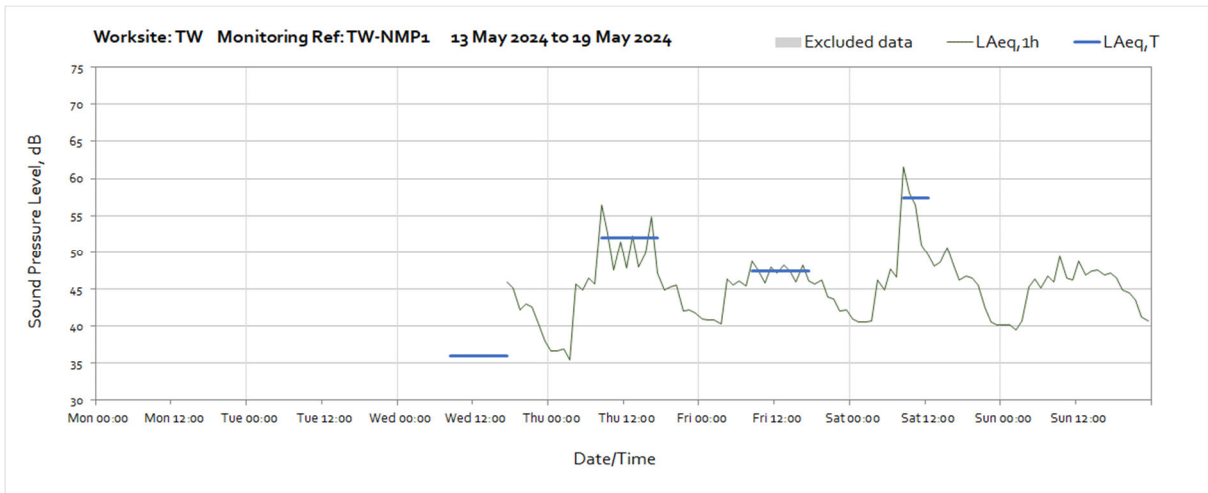
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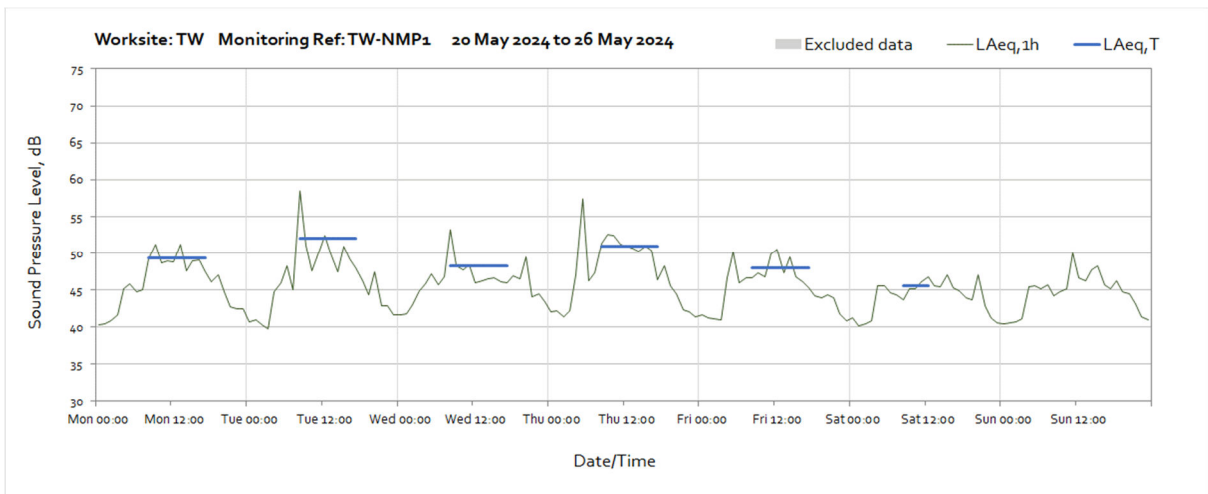


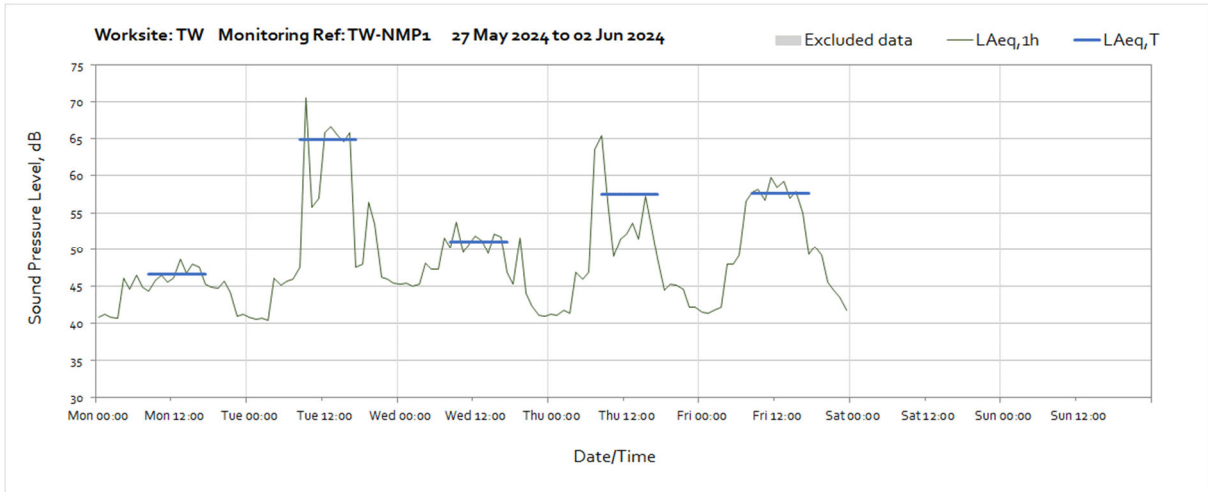


Worksite: TW – Monitoring Ref: TW-NMP1

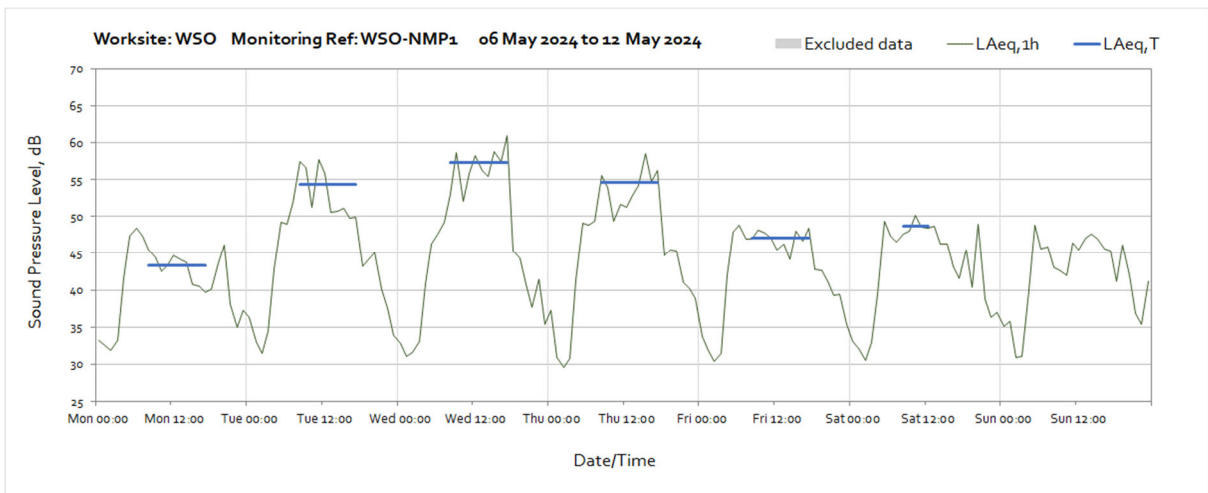
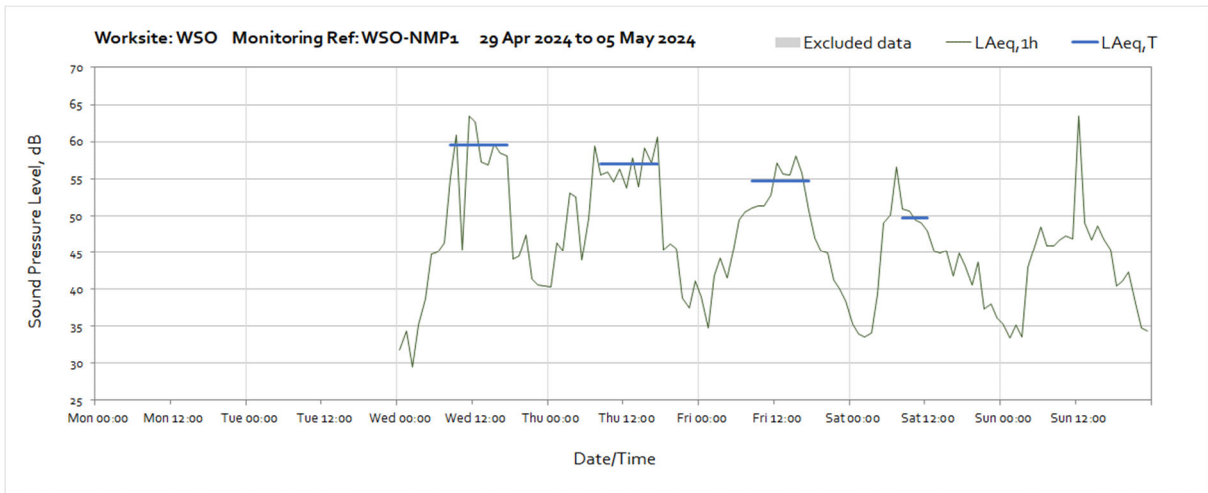


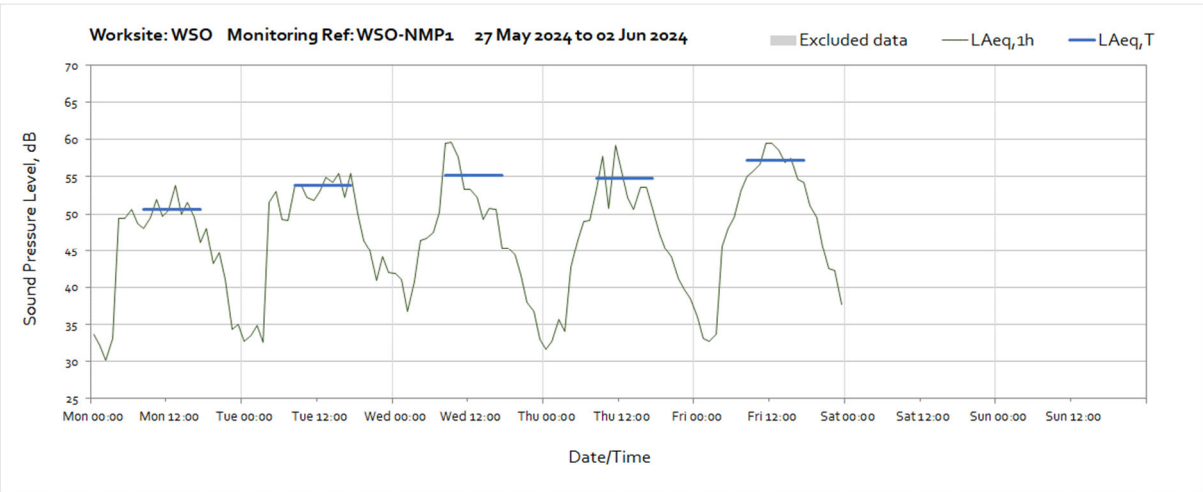
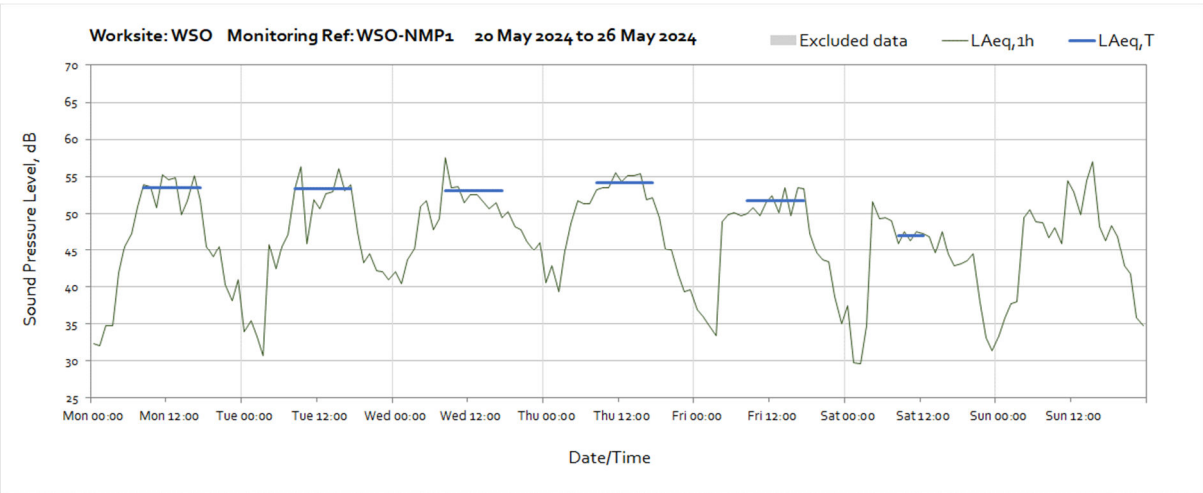
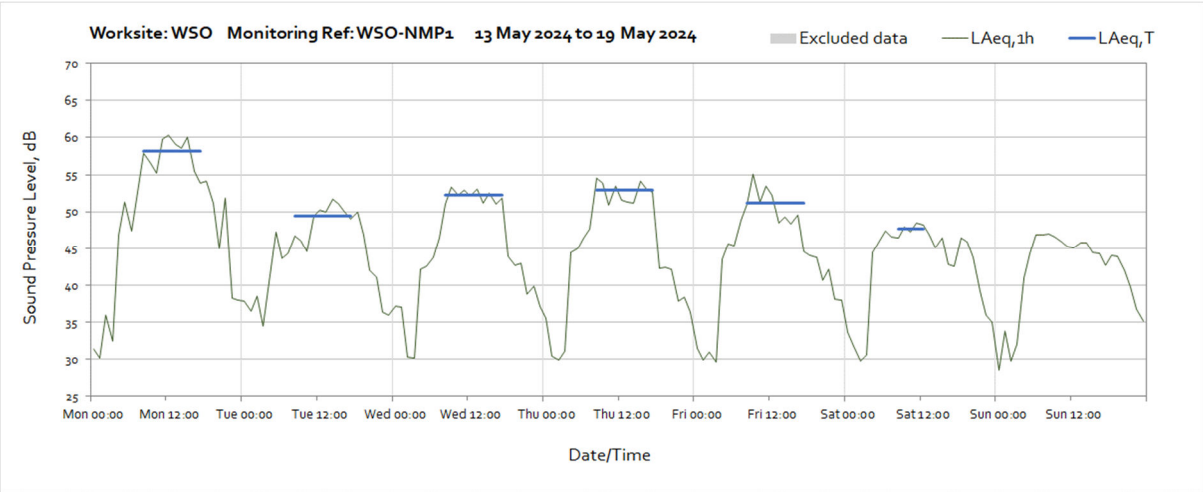
Note: Missing data from the start of the month until 17:00 on Wednesday 15th May was due to a monitor storage error.



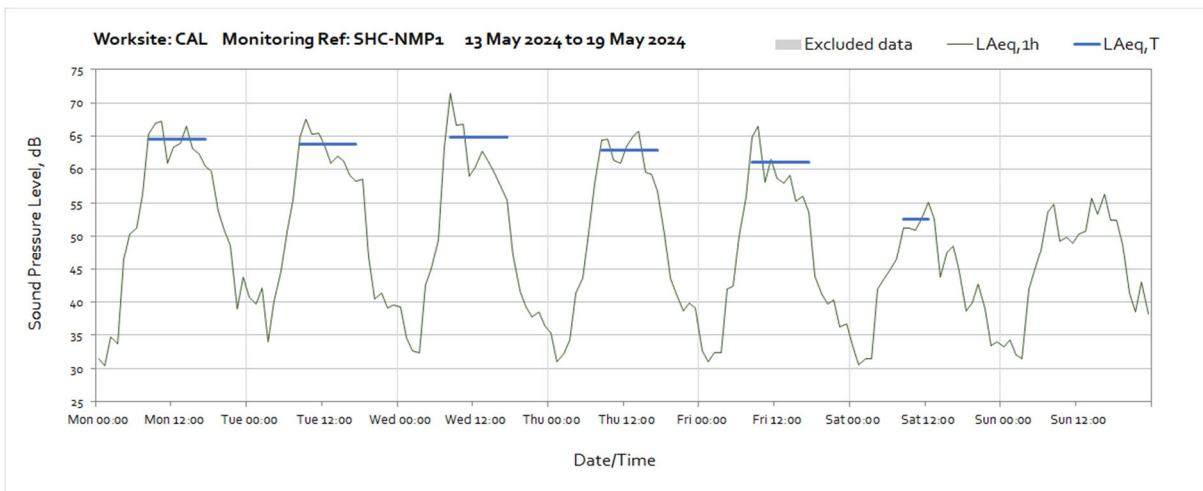
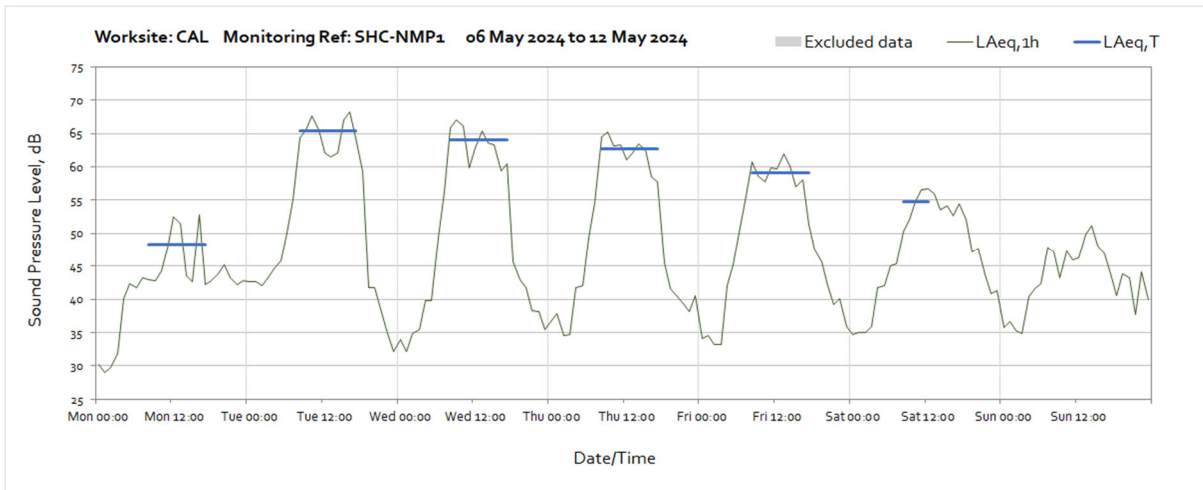
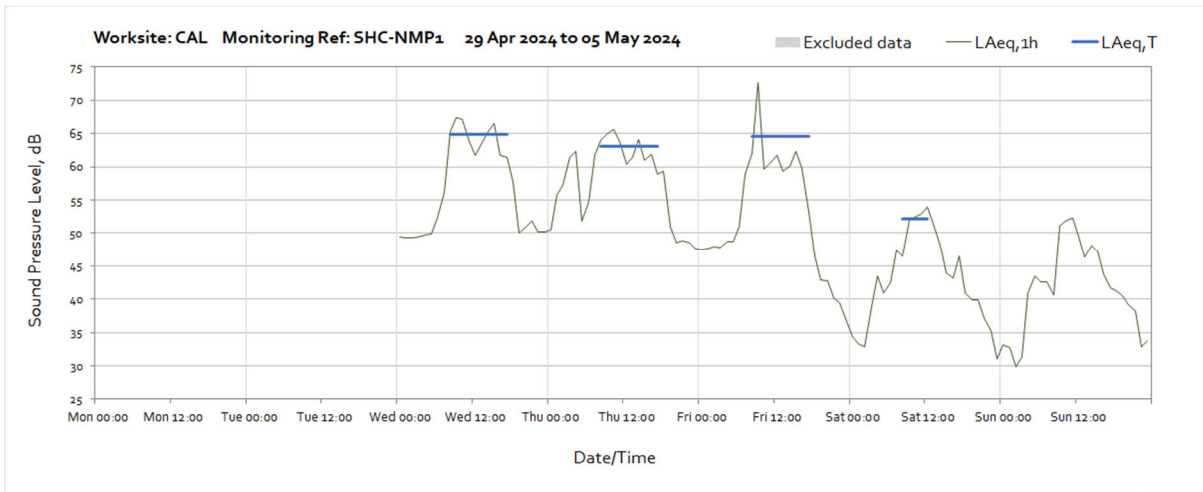


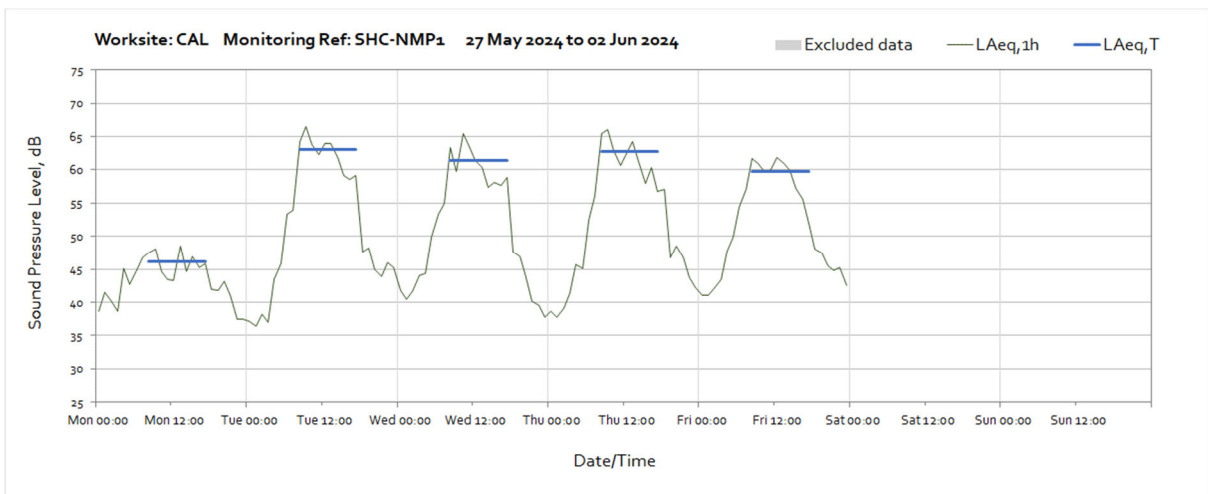
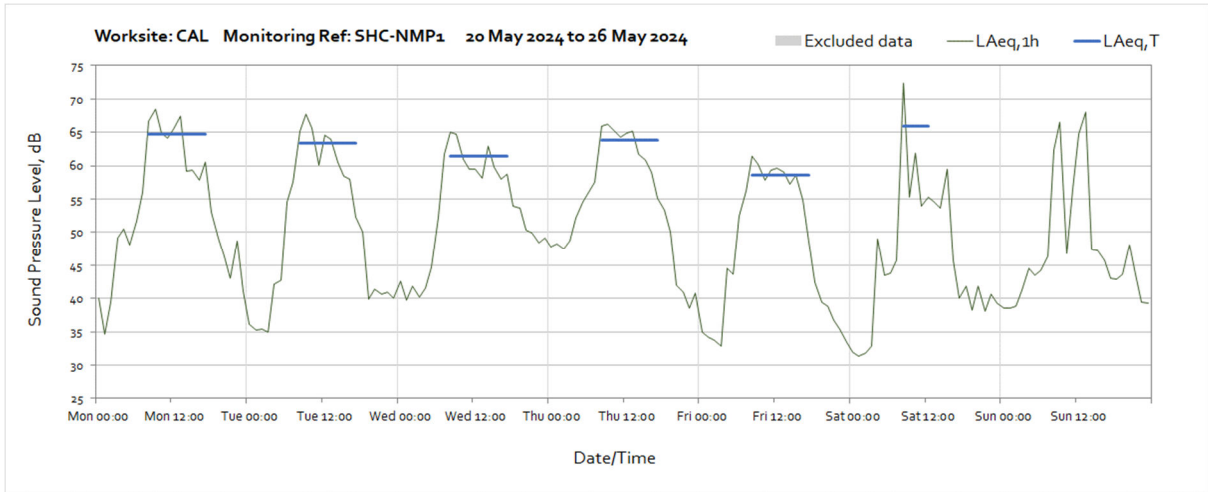
Worksite: WSO – Monitoring Ref: WSO-NMP1



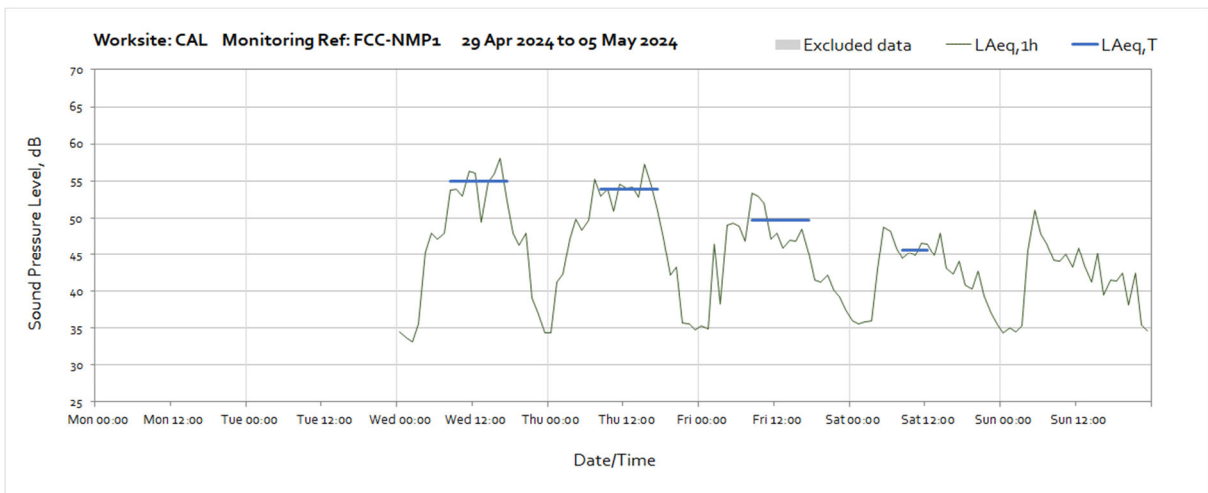


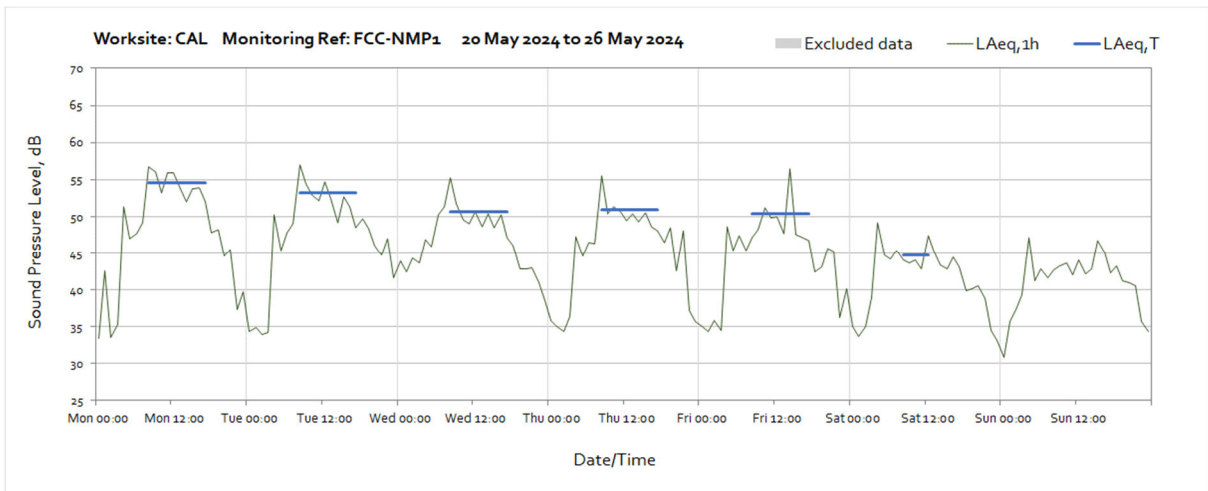
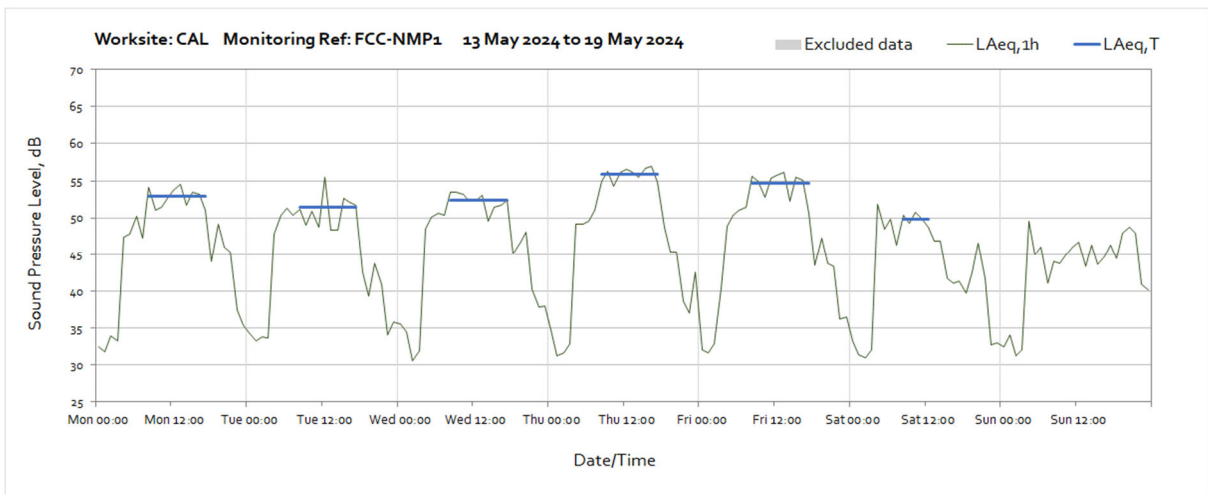
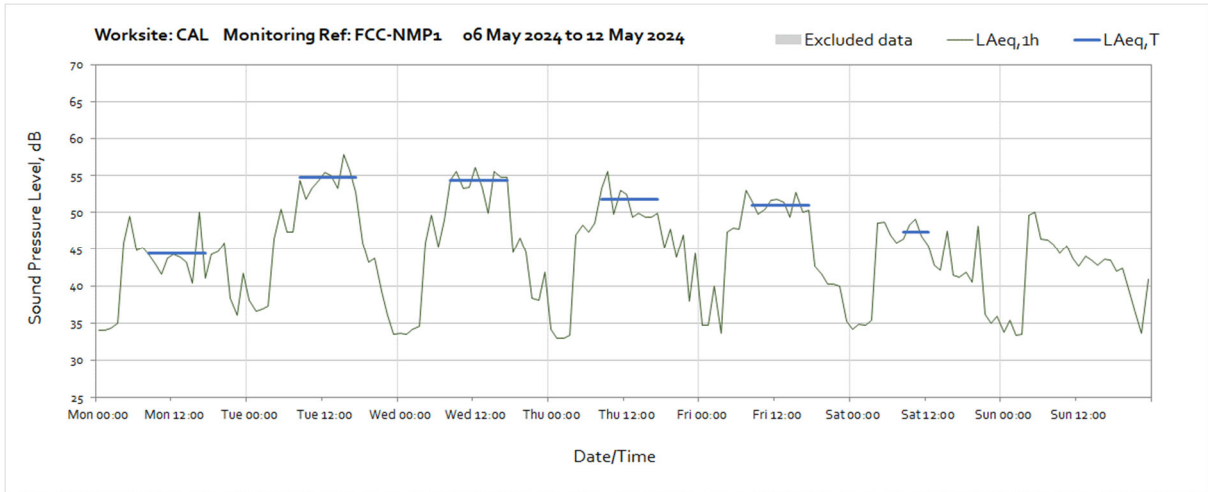
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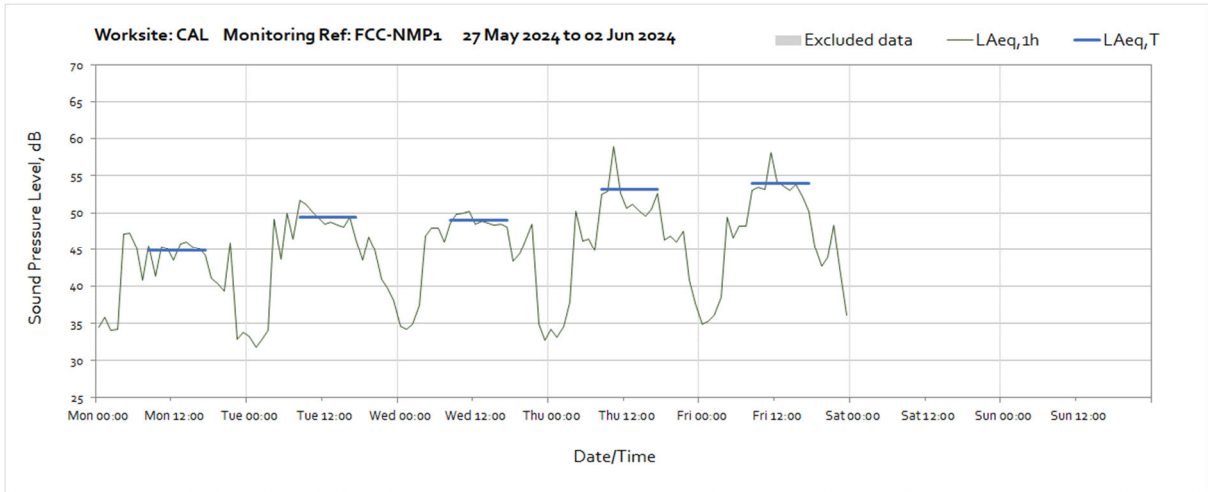




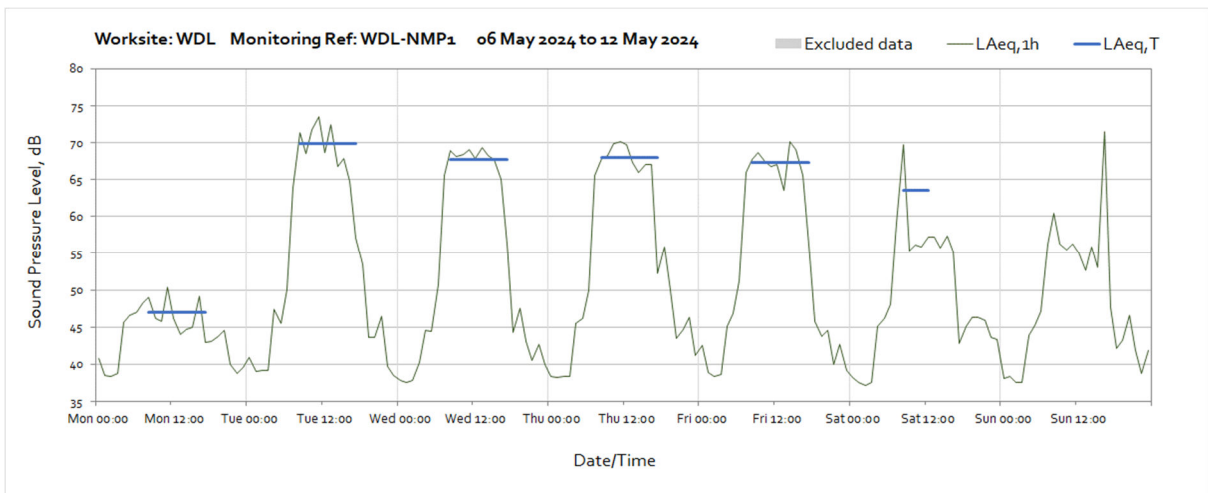
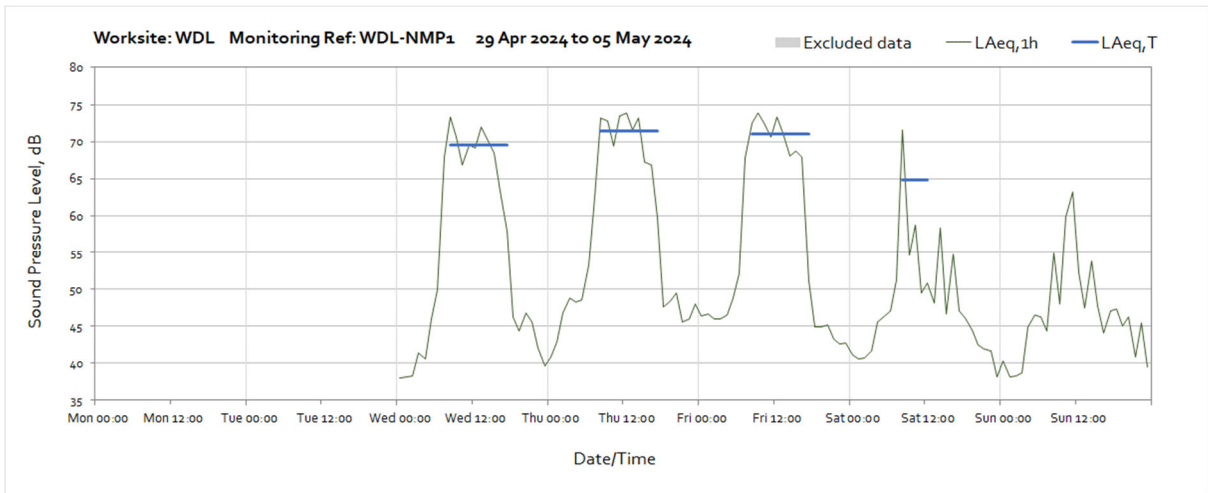
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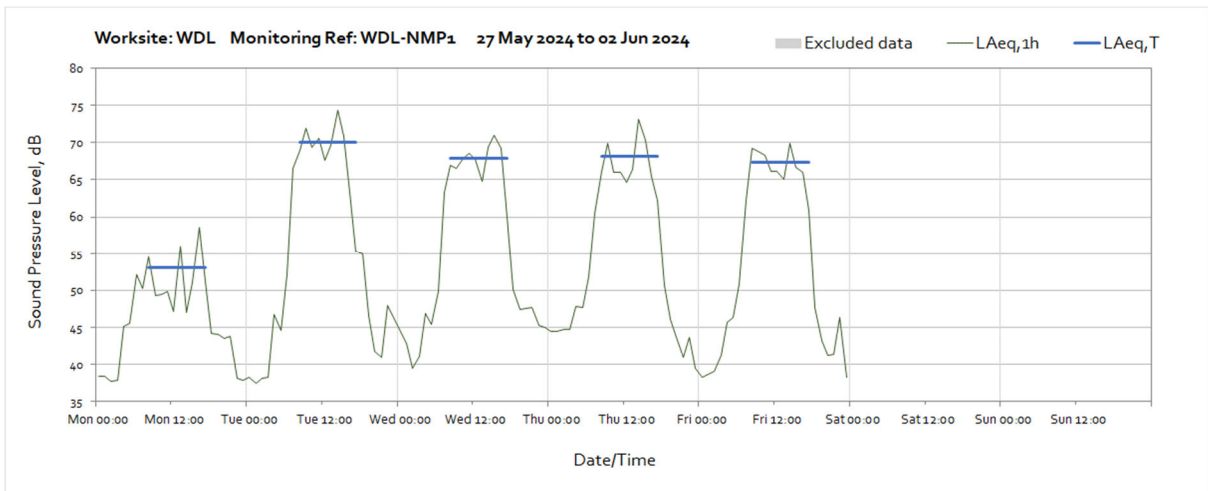
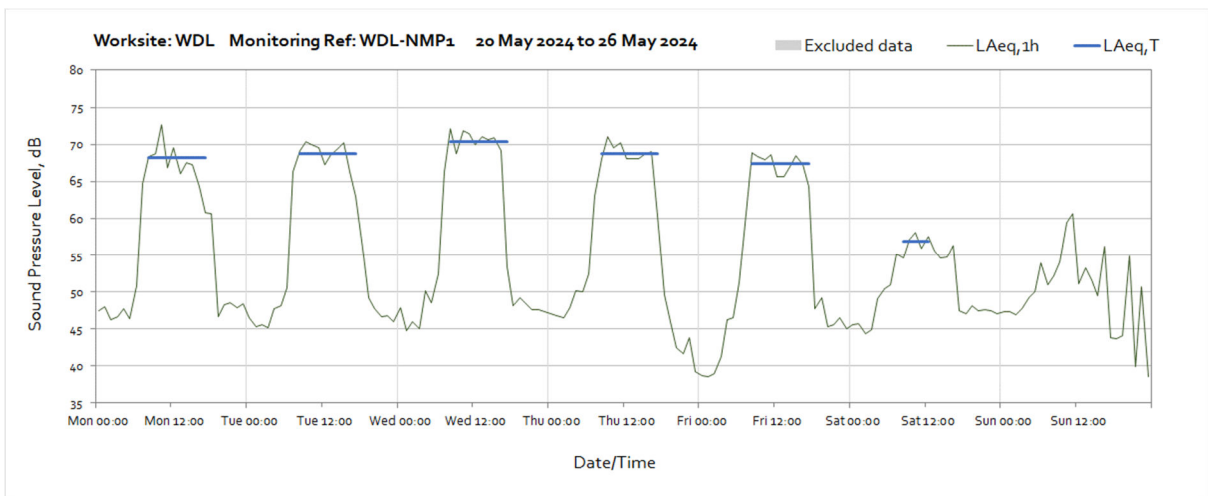
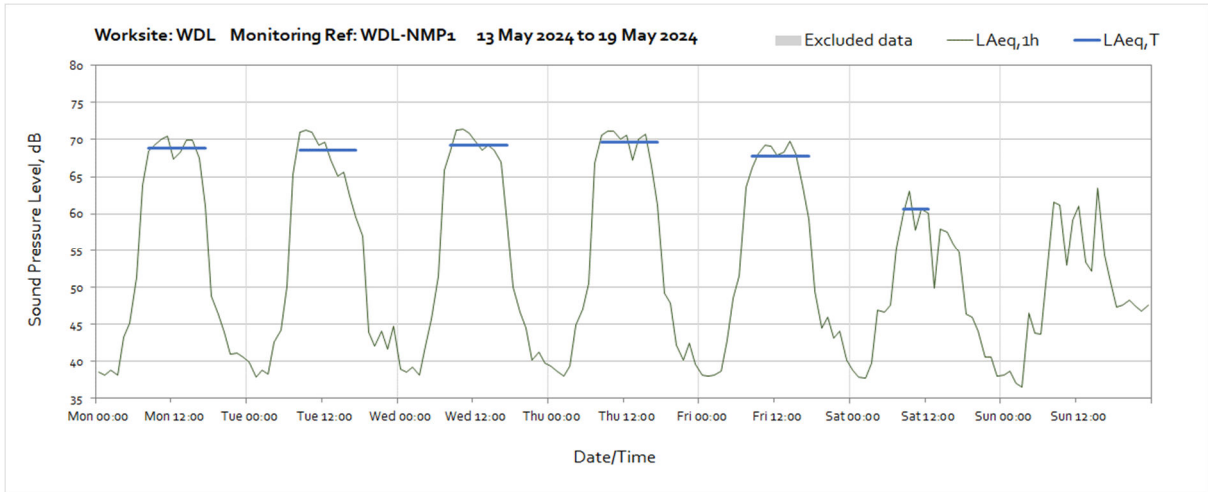




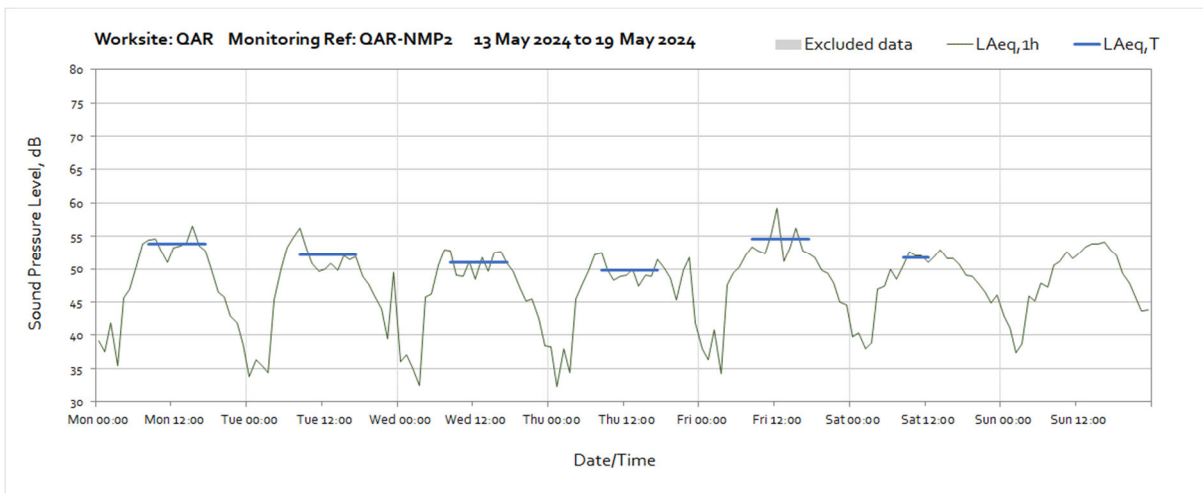
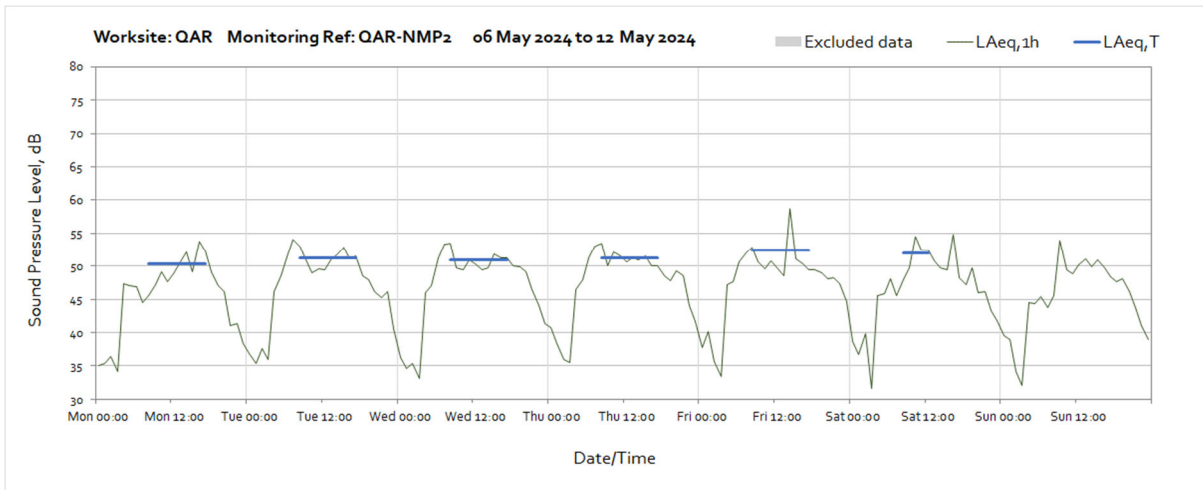
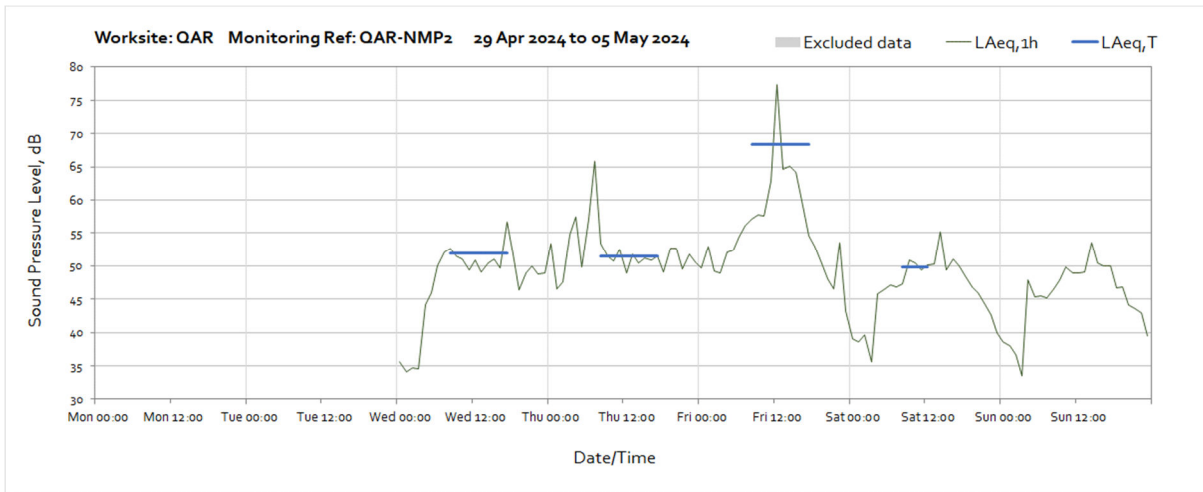


Worksite: WDL – Monitoring Ref: WDL-NMP1

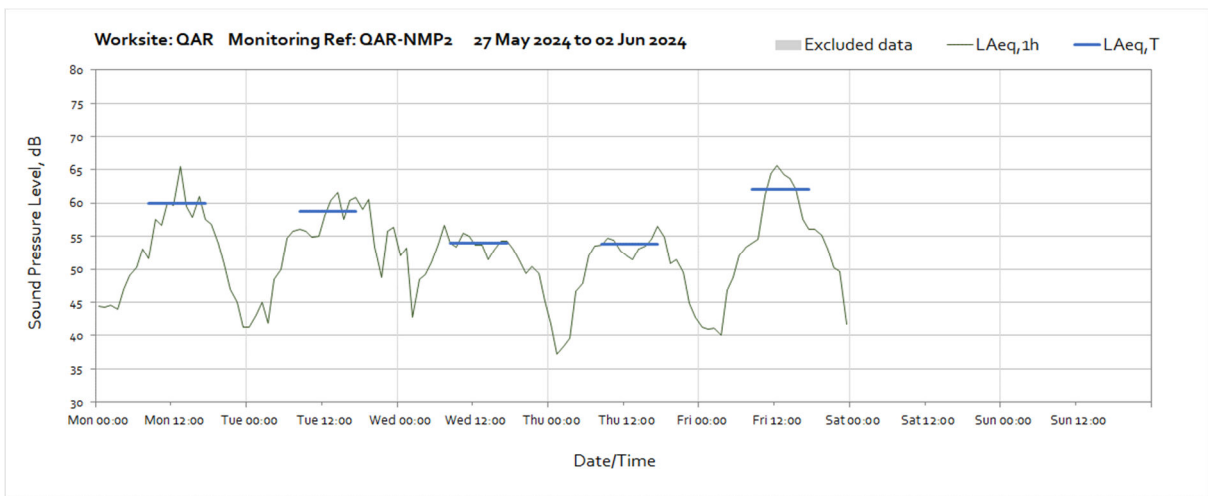
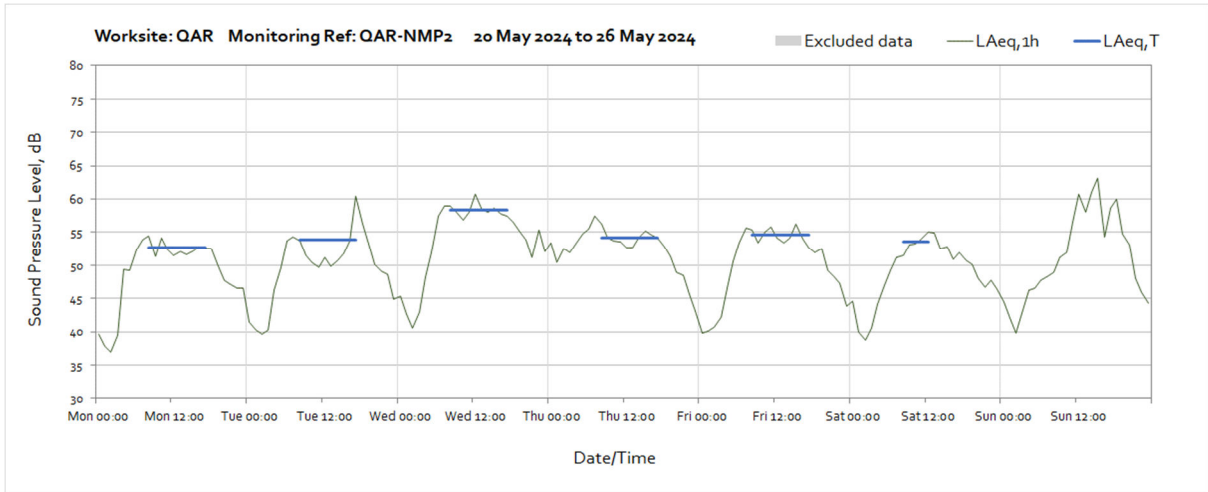




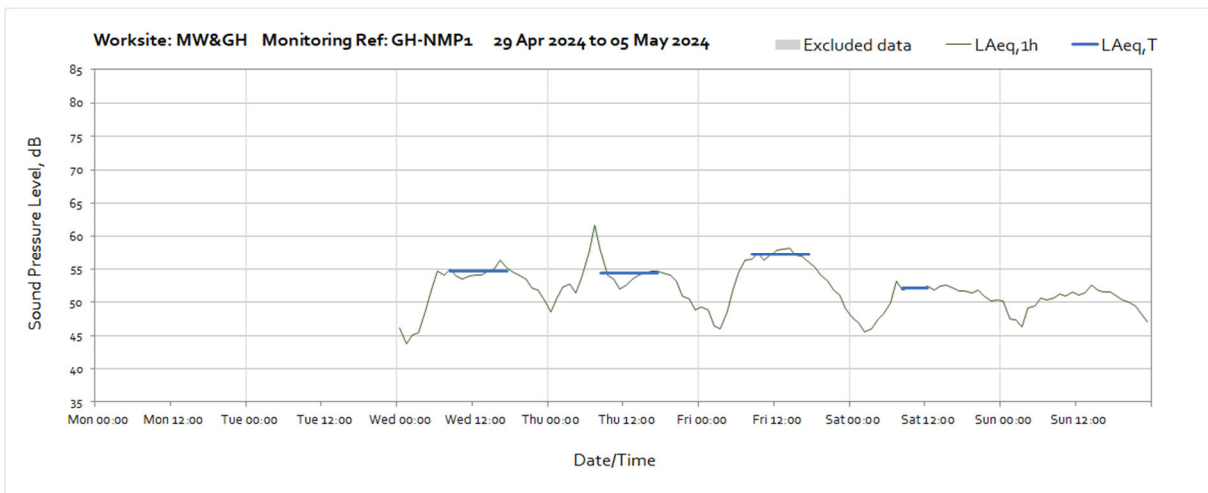
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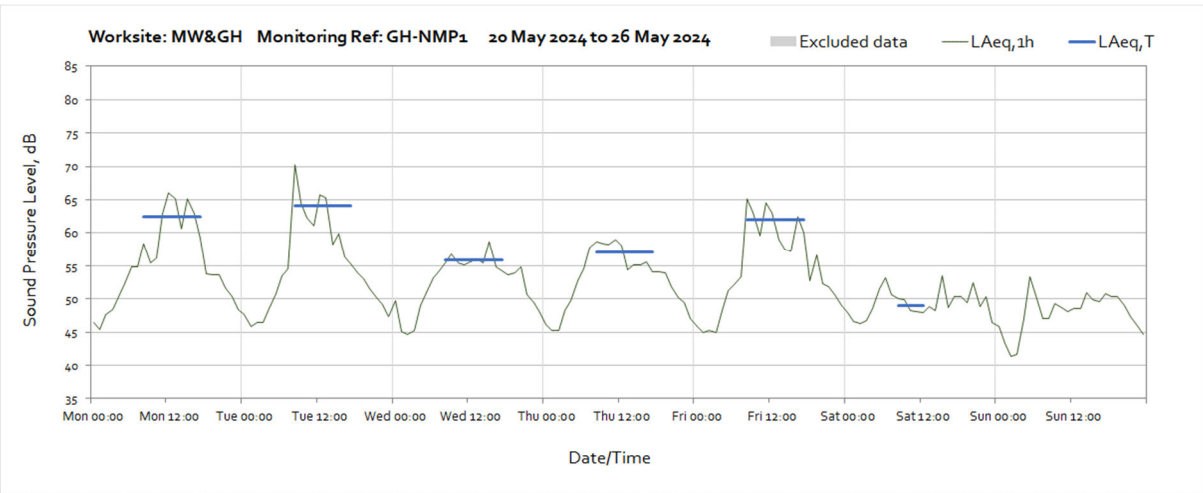
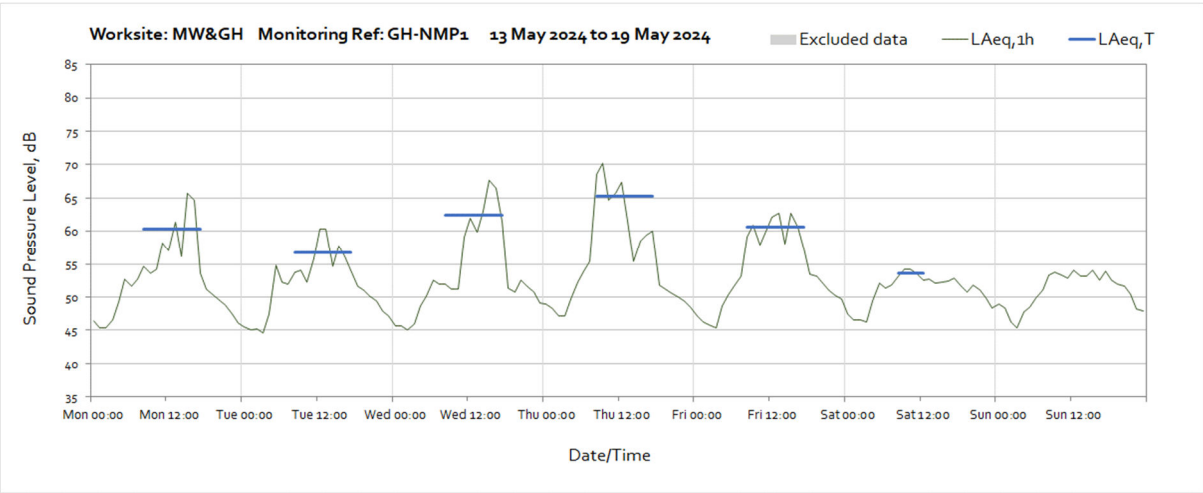
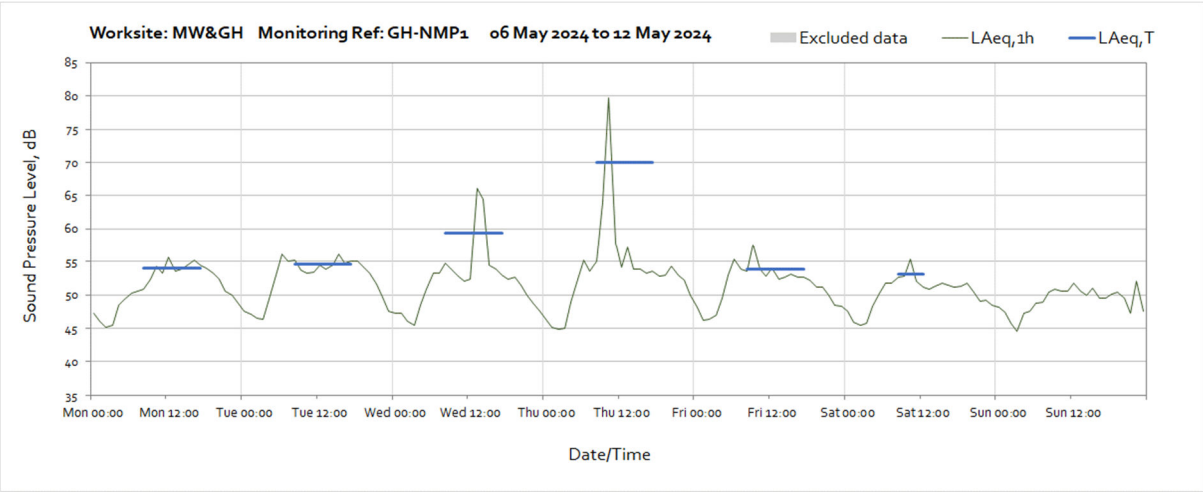


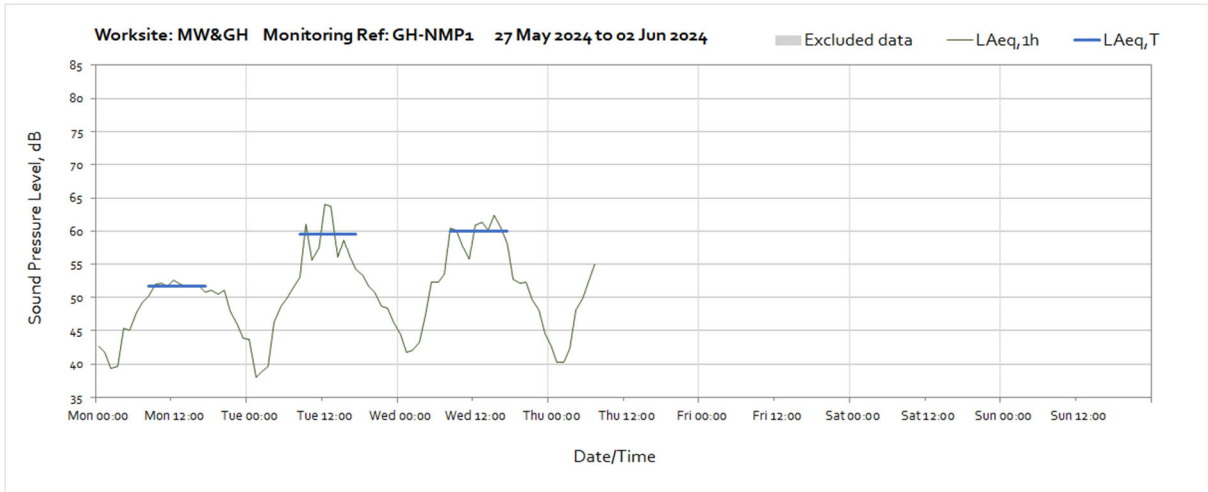
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Worksite: MW&GH - Monitoring Ref: GH-NMP1

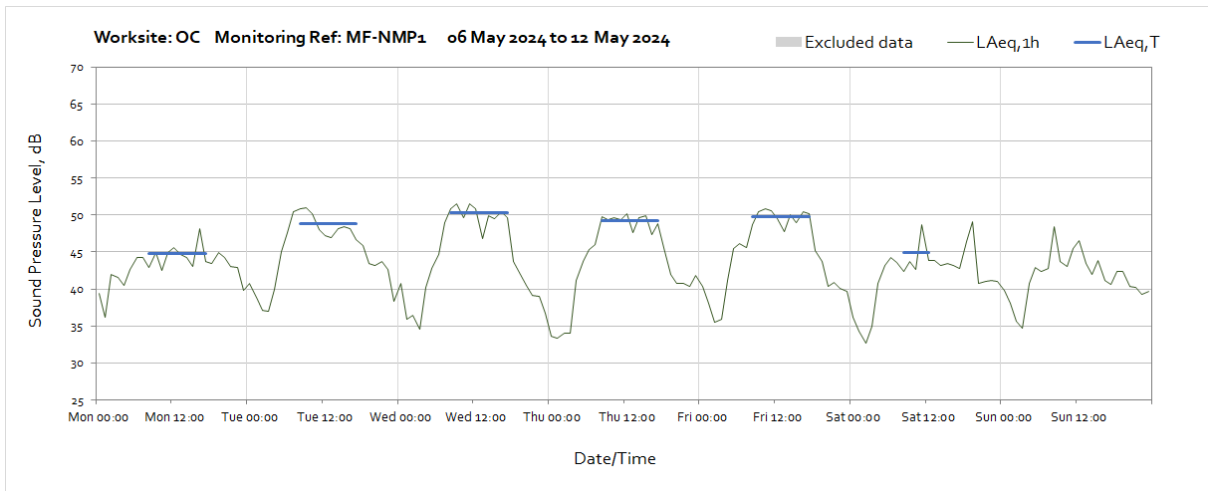
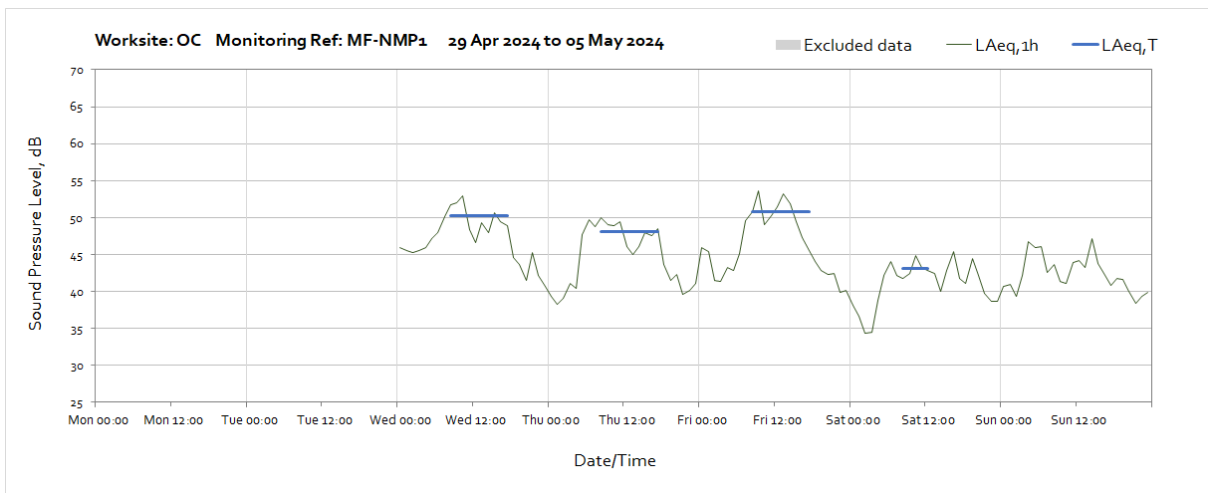


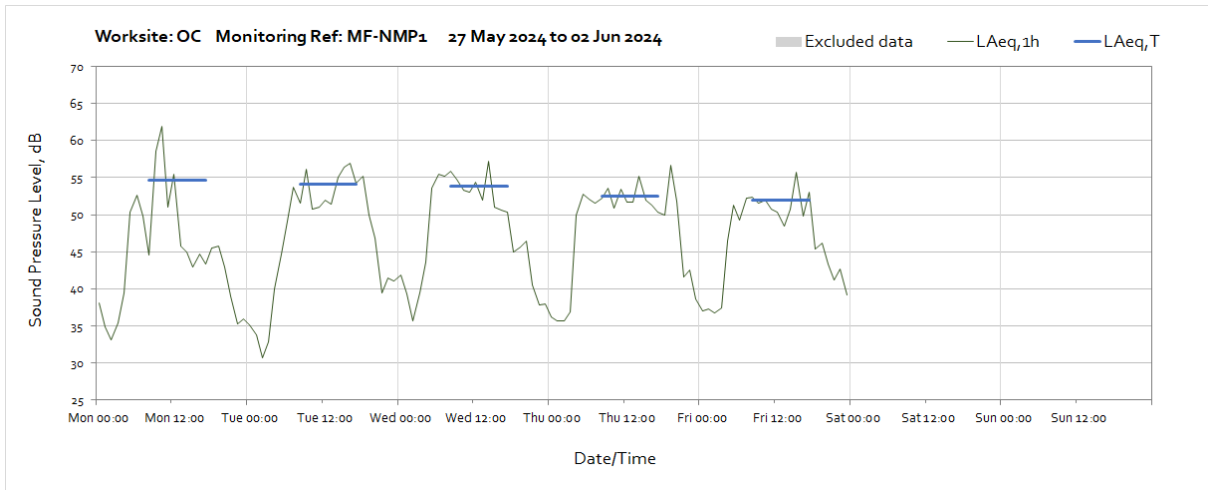
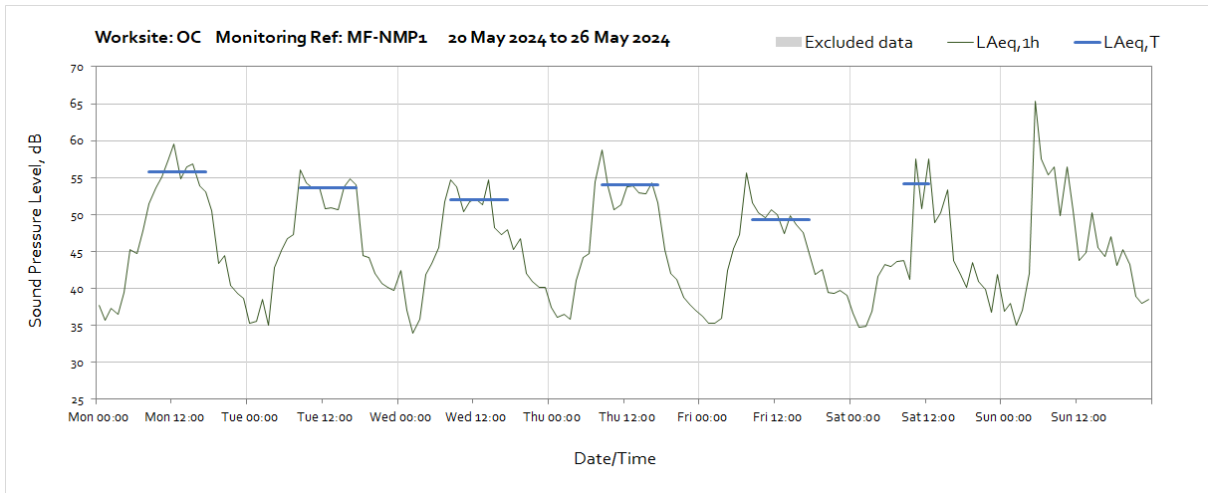
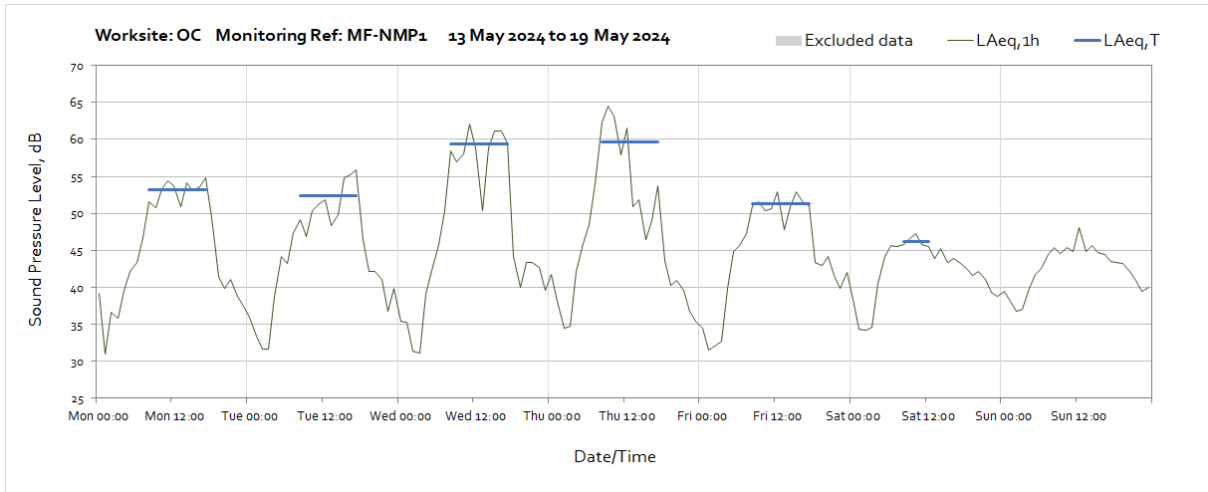




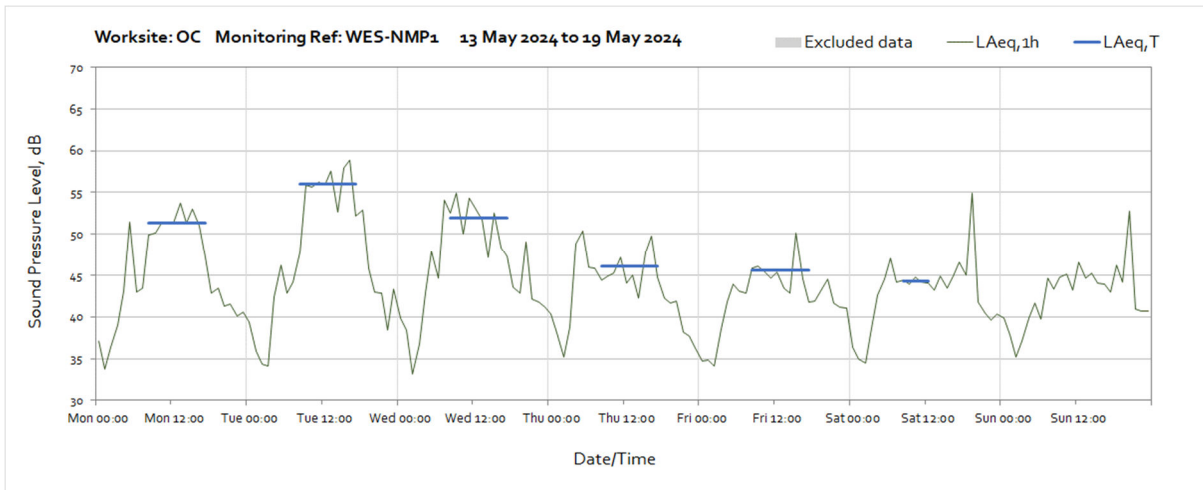
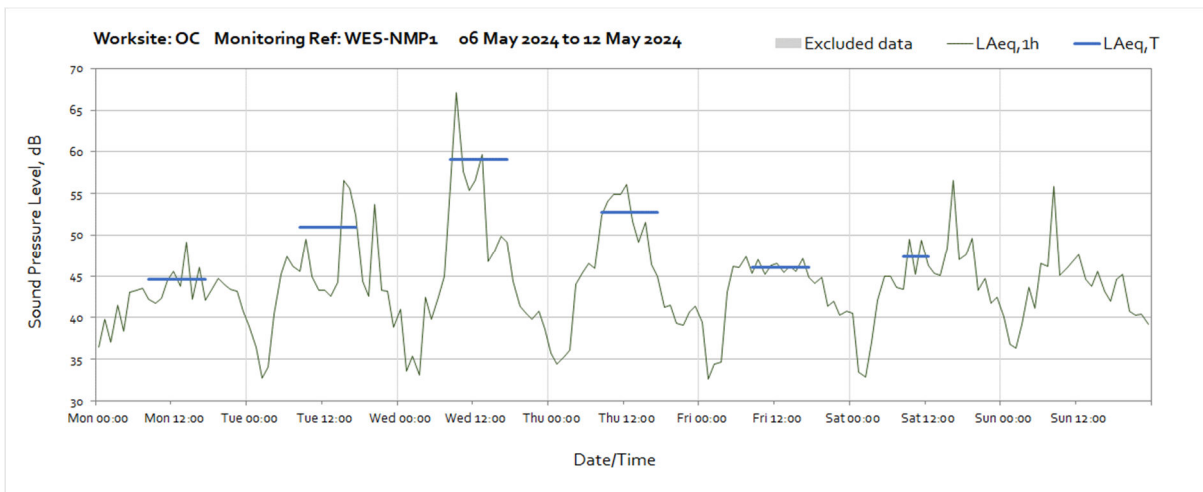
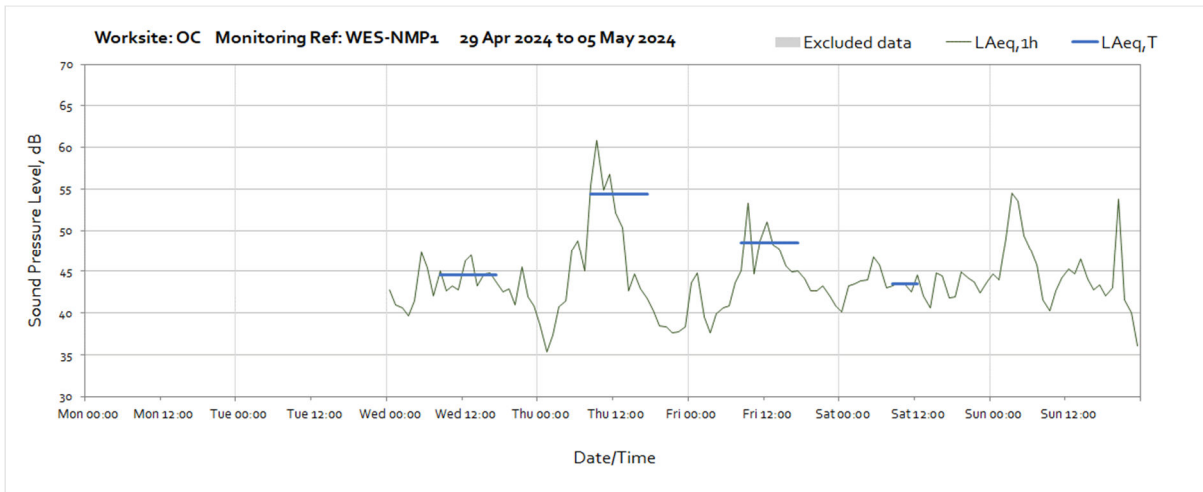
Note: Missing data from 08:00 on Thursday 30th May until month end was due to multiple aspects of the monitoring station being stolen.

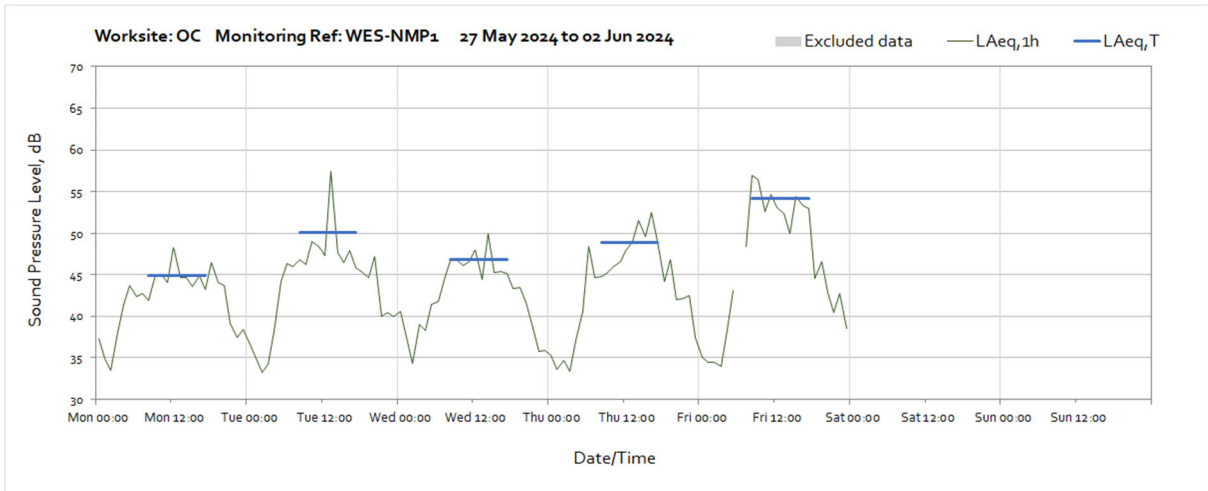
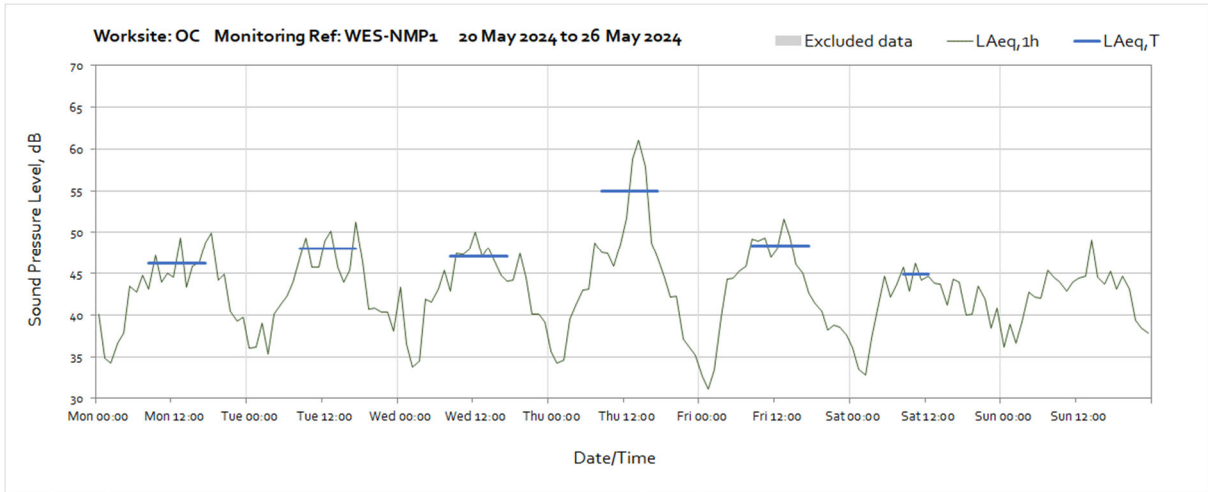
Worksite: OC – Monitoring Ref: MF-NMP1





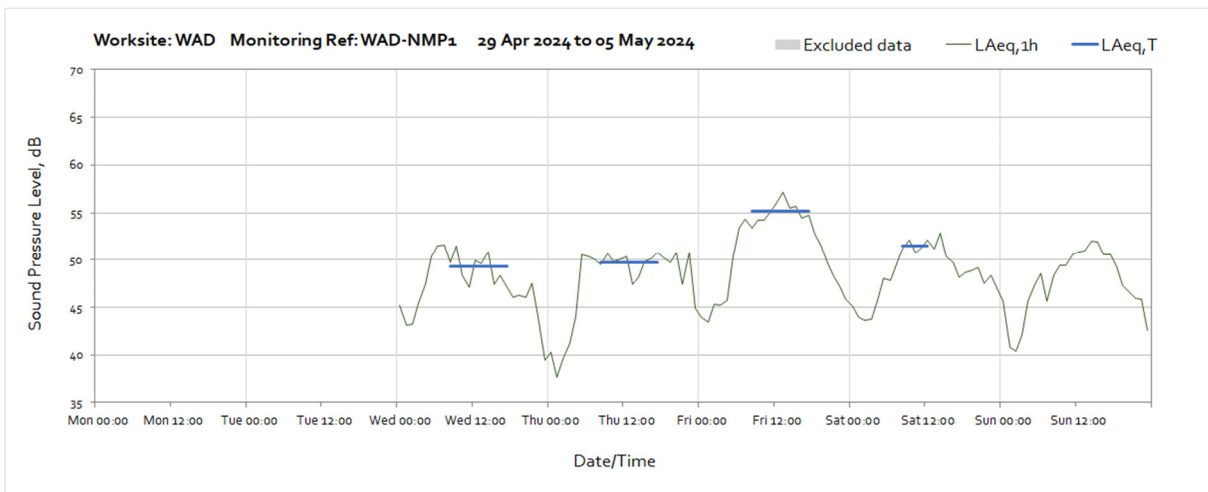
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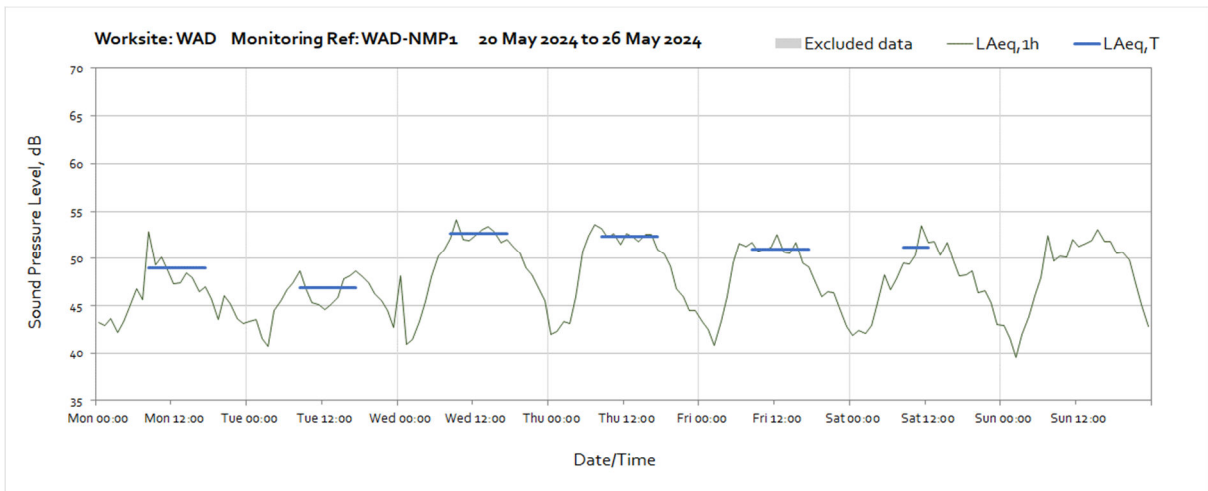
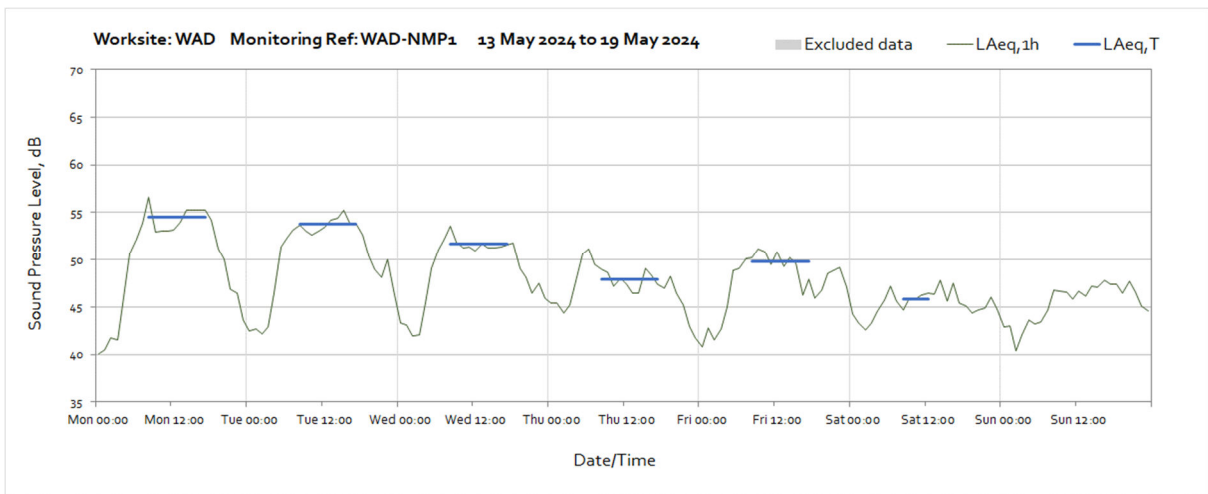
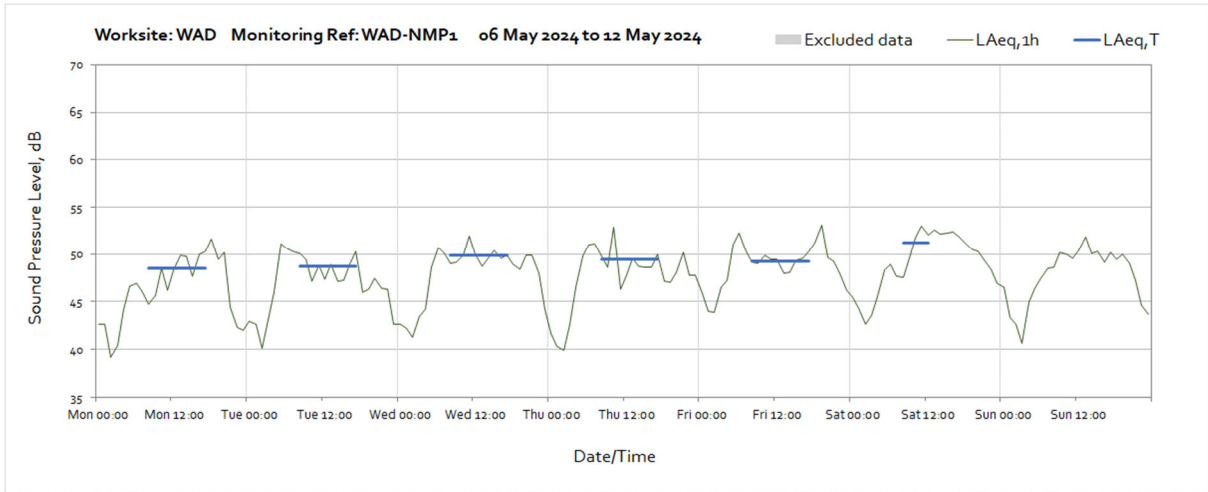


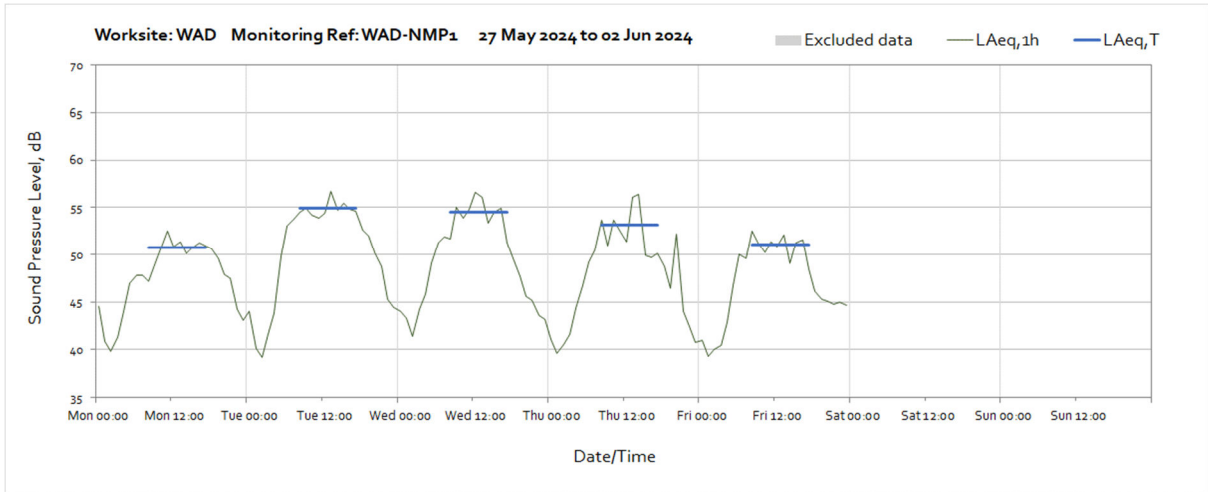


Note: Missing data between 06:00 and 07:00 on Friday 31st May was due to data storage server maintenance.

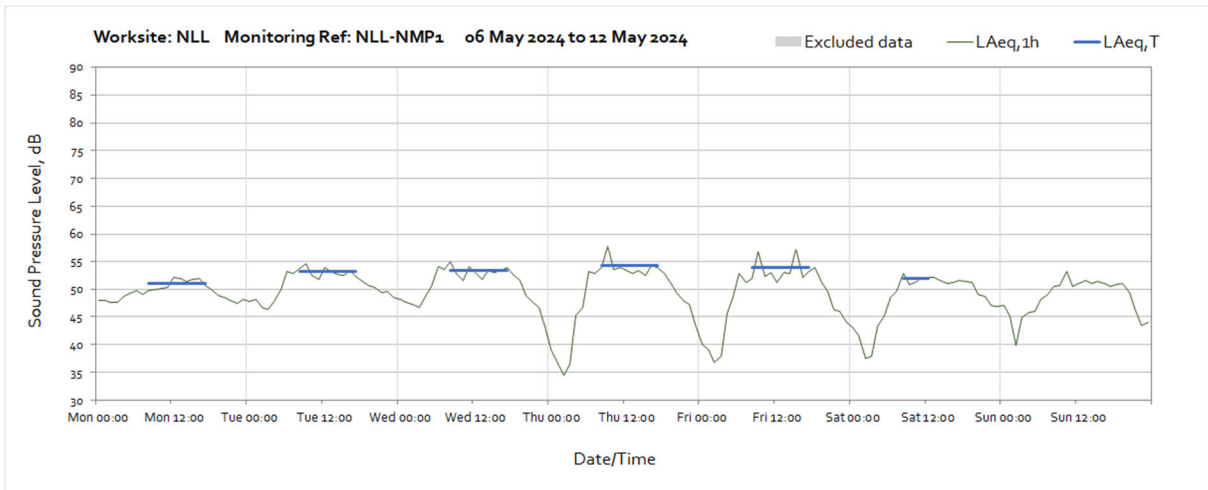
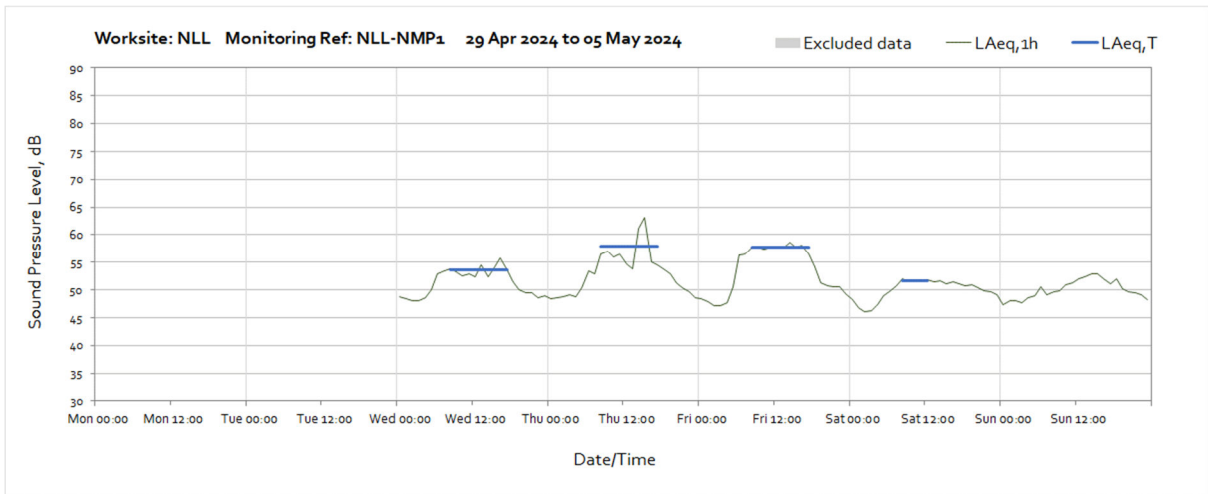
Worksite: WAD – Monitoring Ref: WAD-NMP1

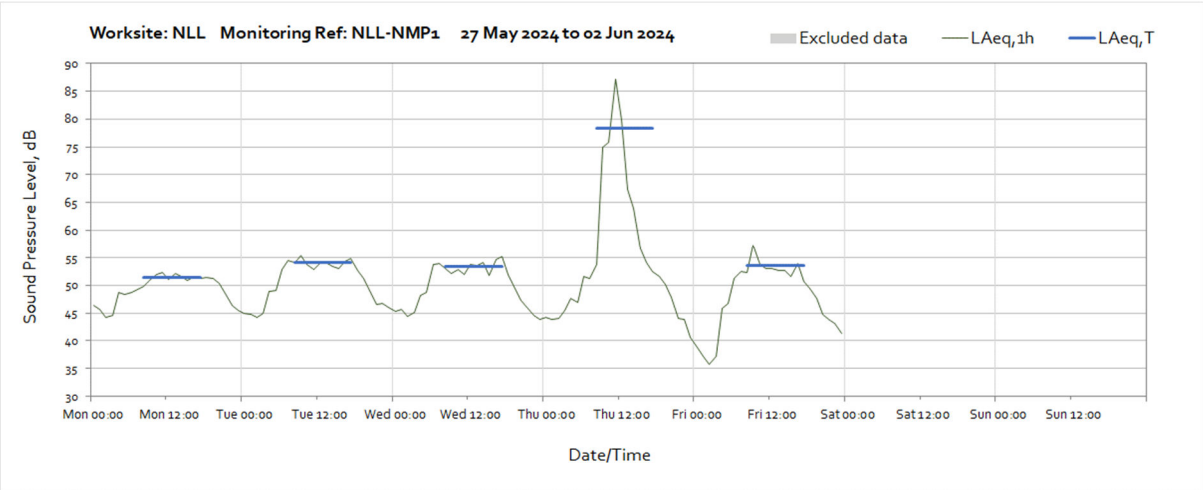
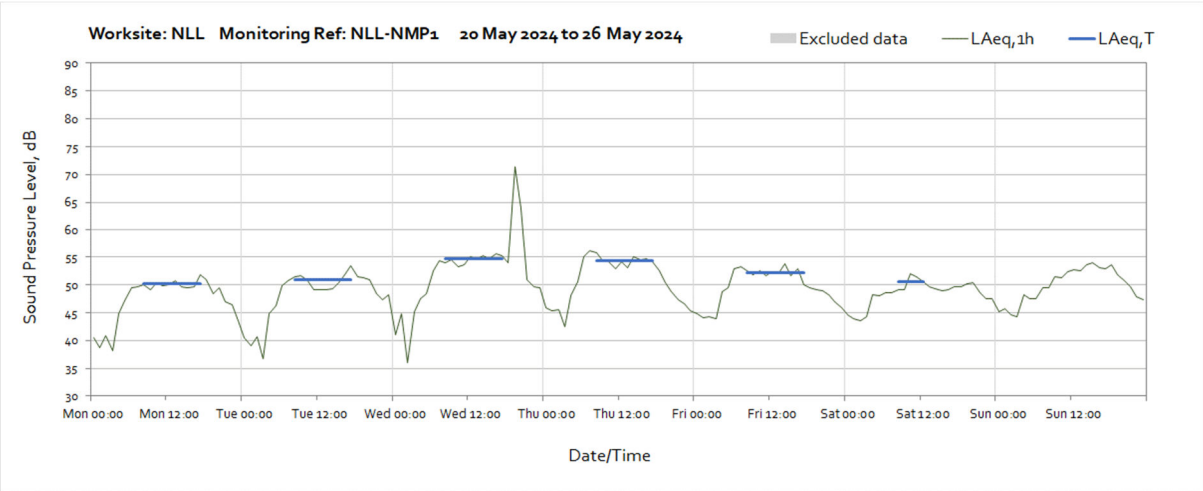
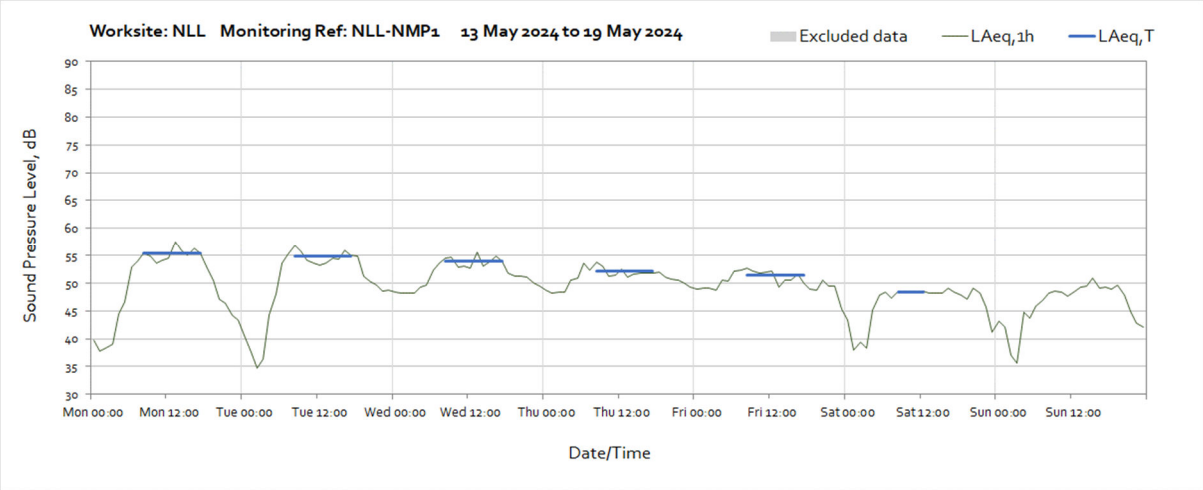




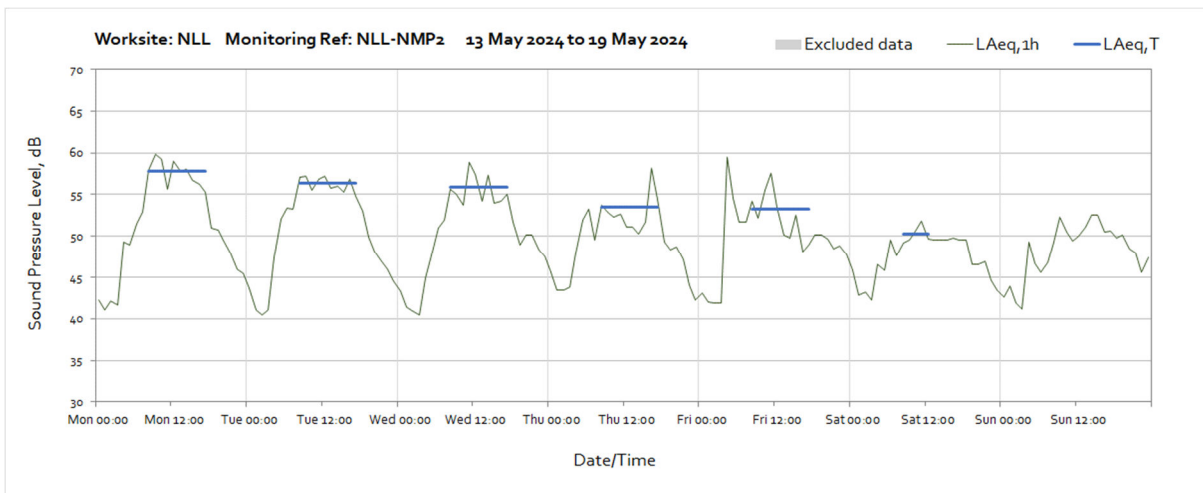
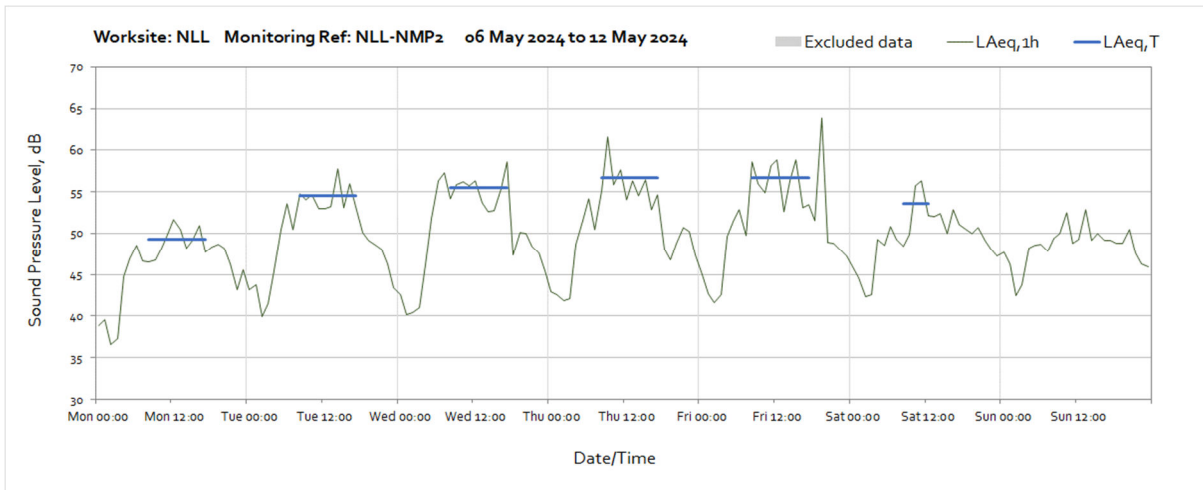
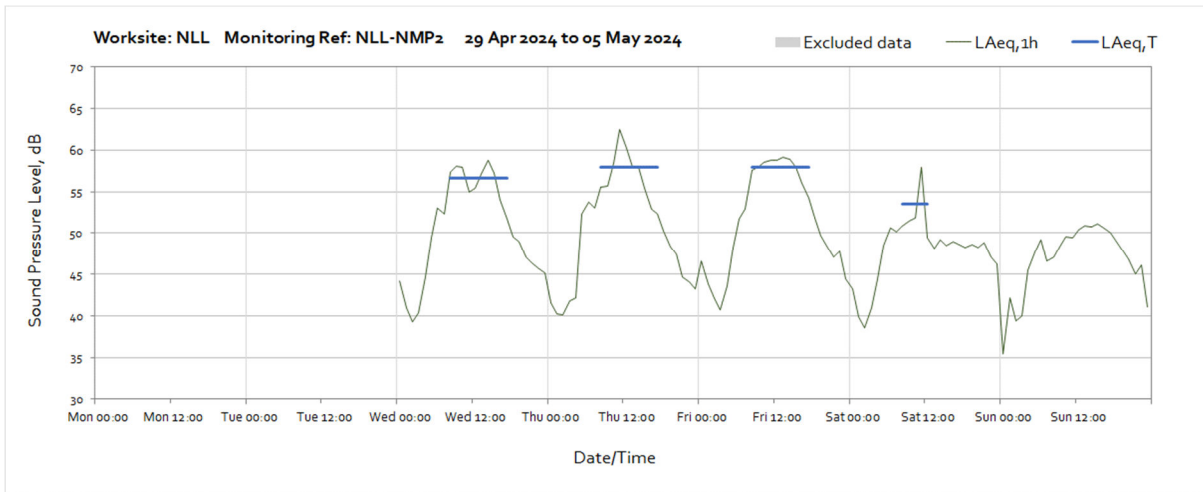


Worksite: NLL - Monitoring Ref: NLL-NMP1

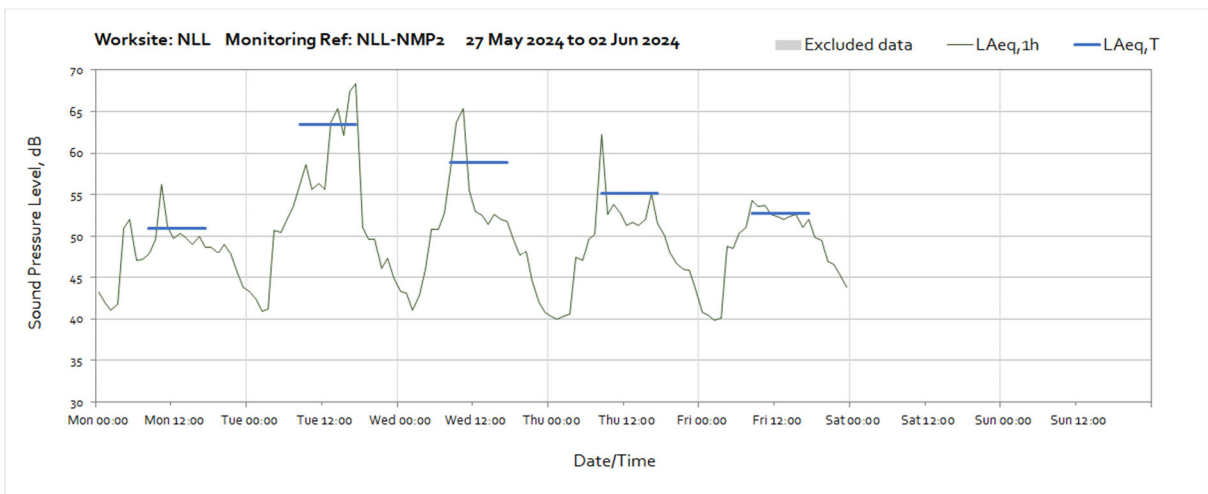
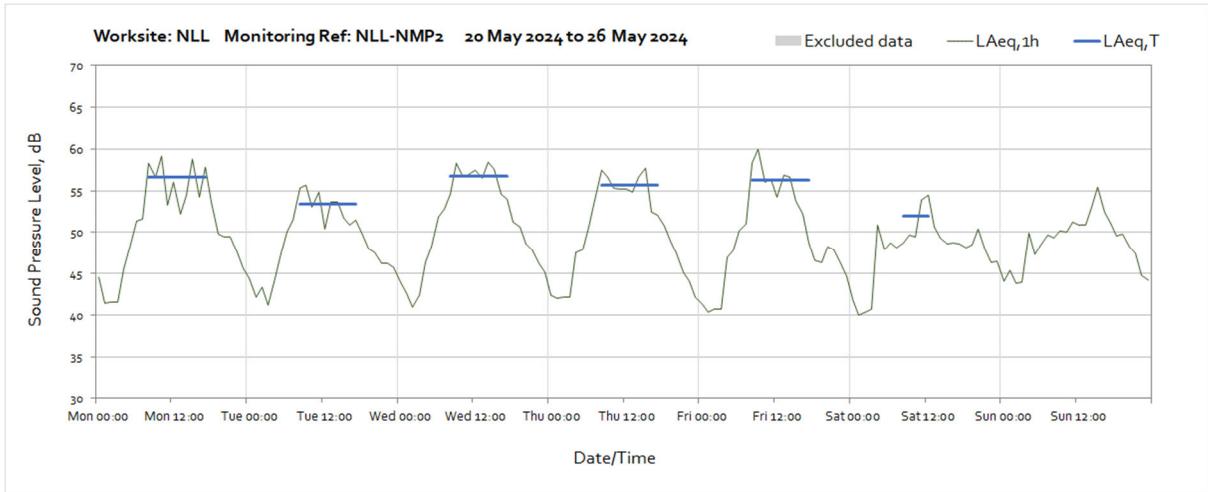




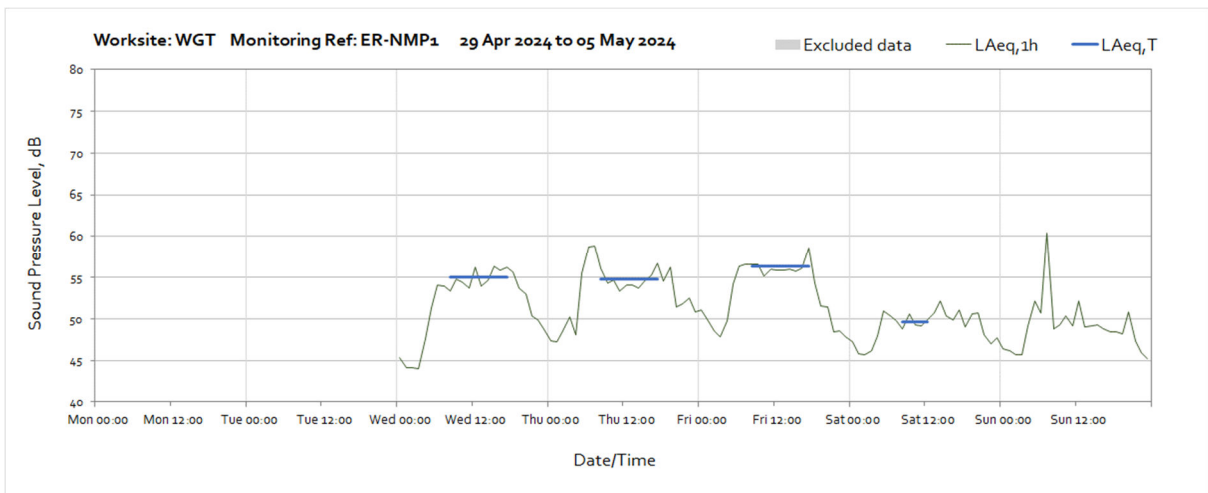
Worksite: NLL – Monitoring Ref: NLL-NMP2

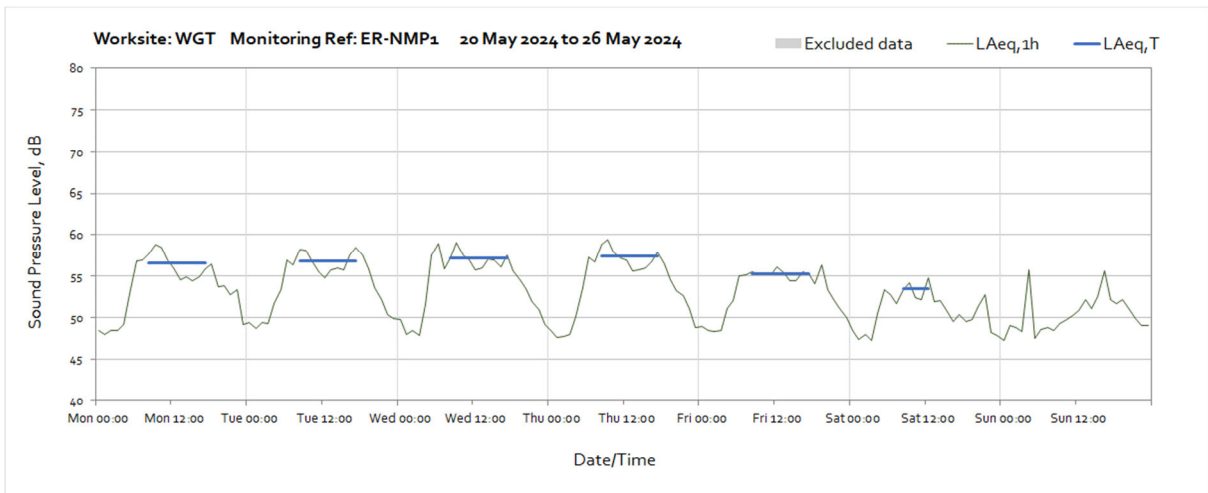
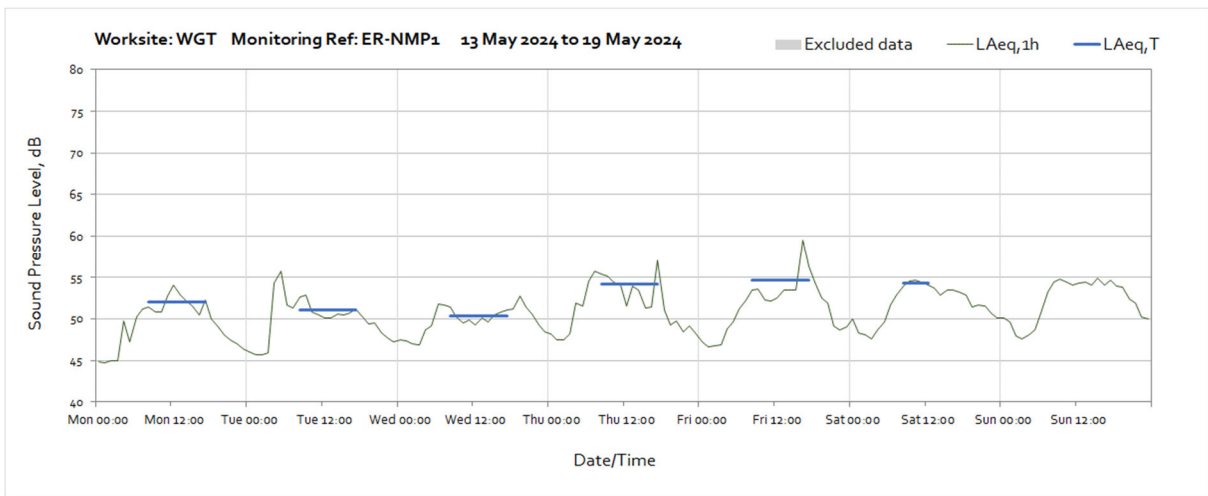
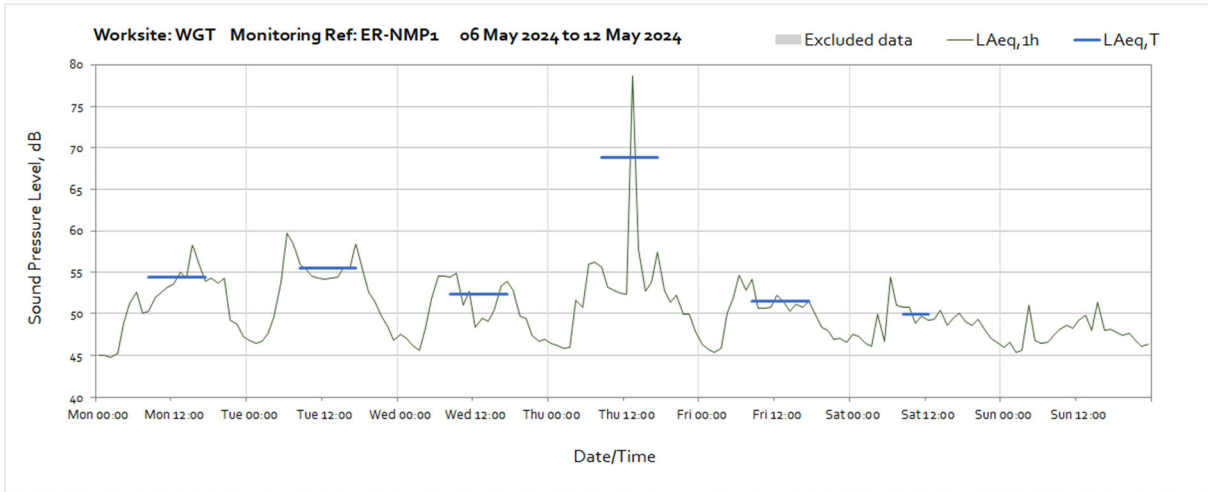


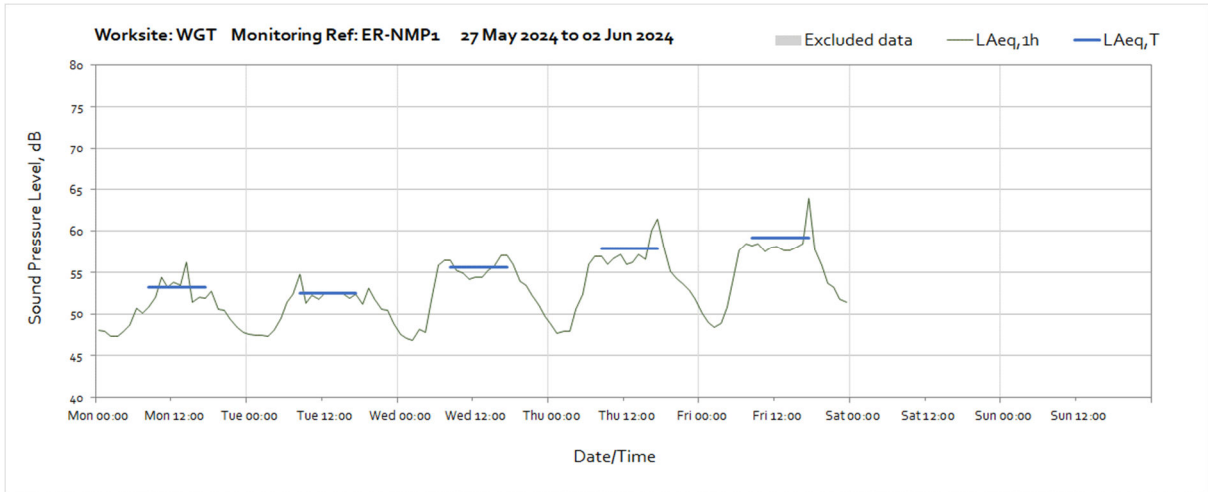
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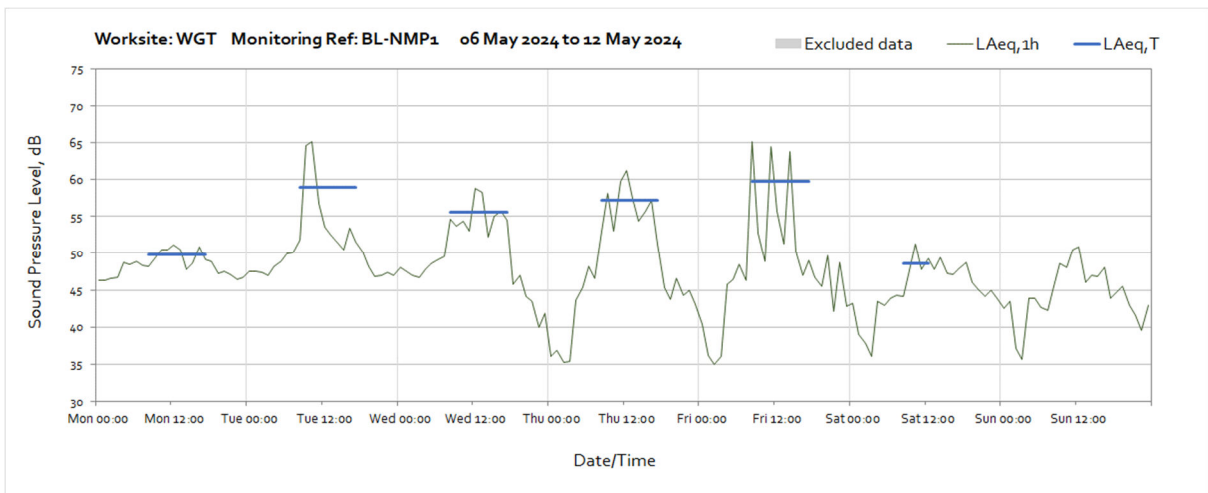
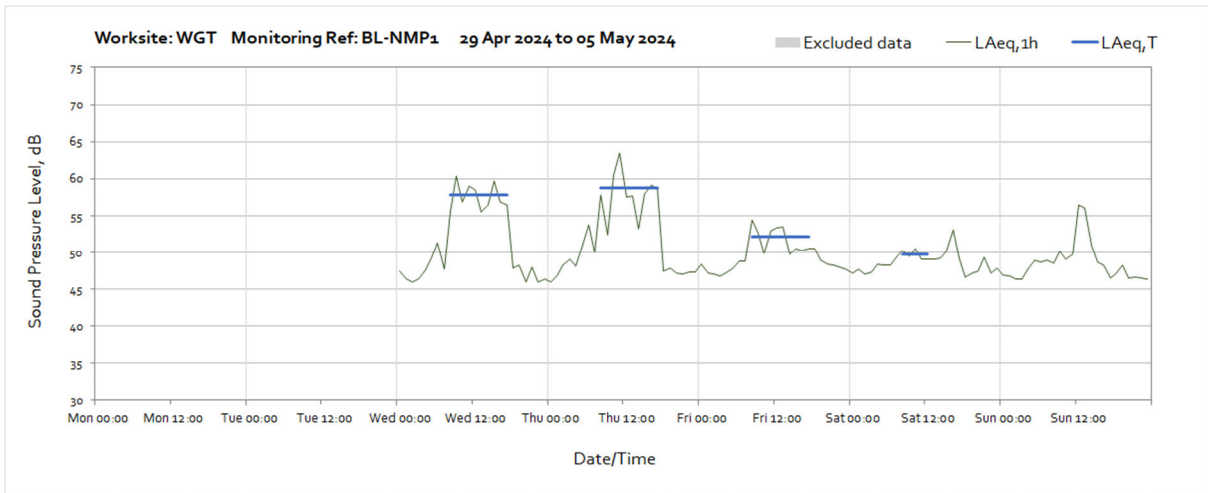
Worksite: WGT - Monitoring Ref: ER-NMP1

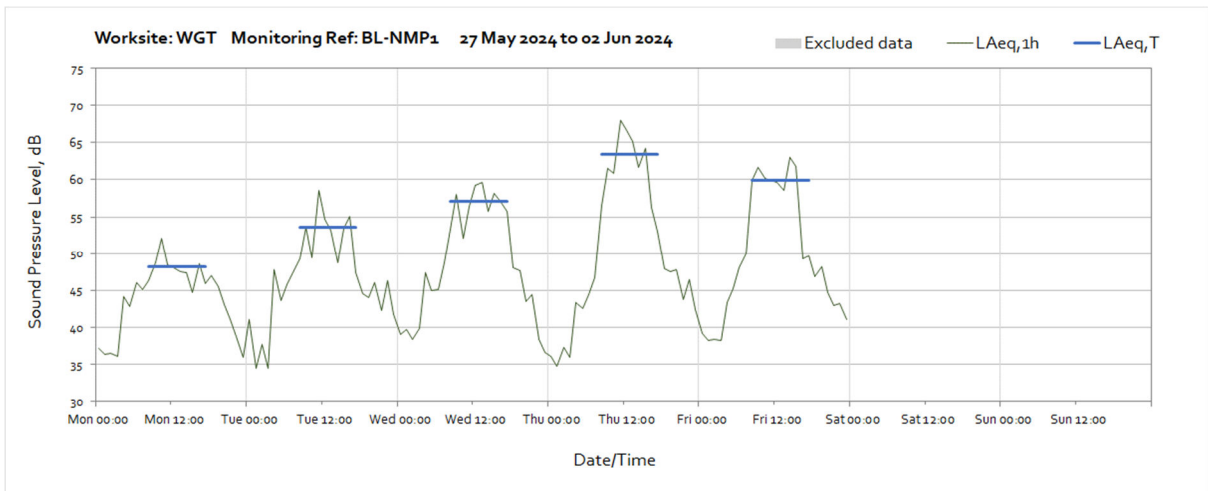
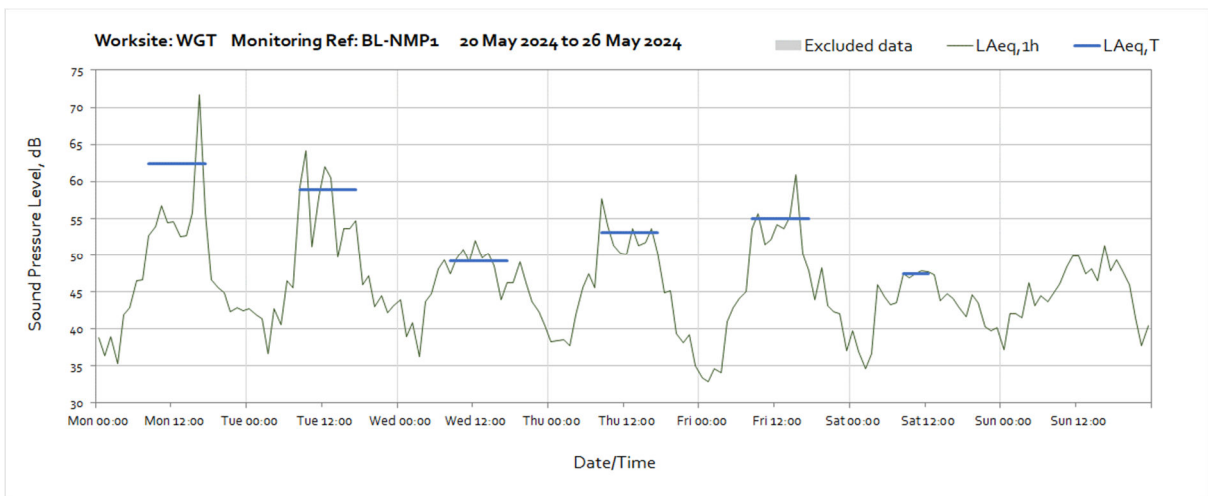
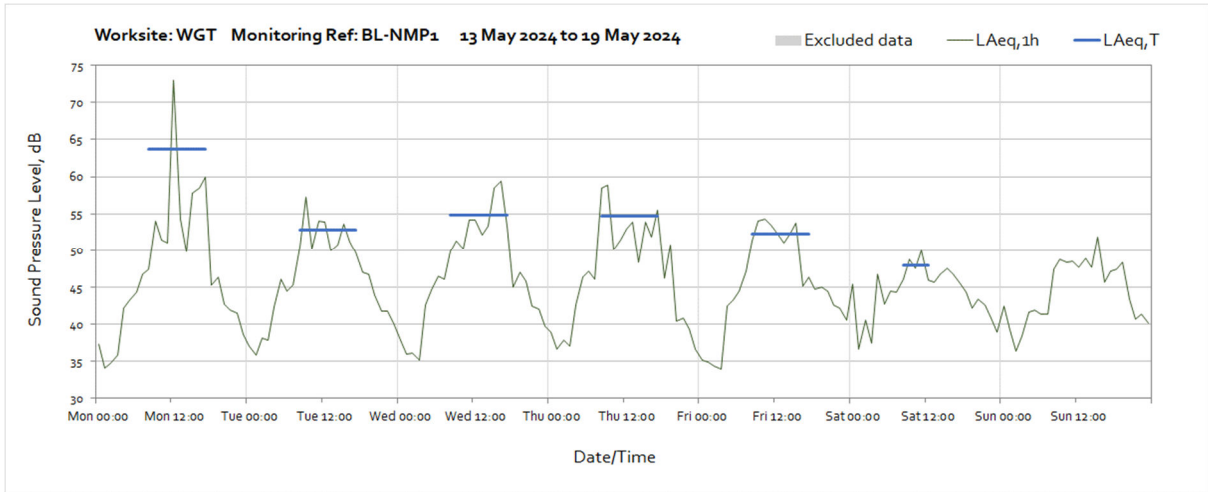




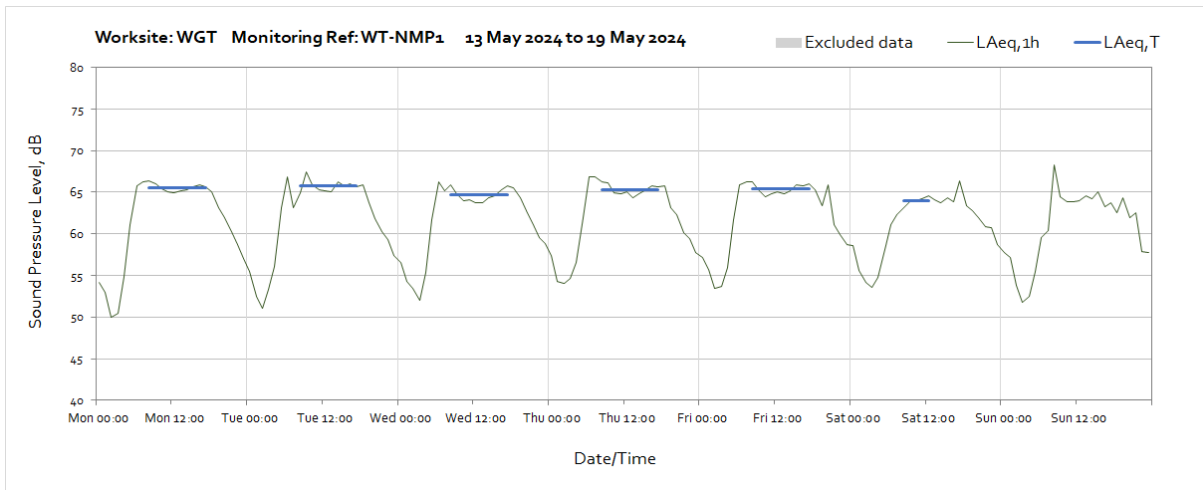
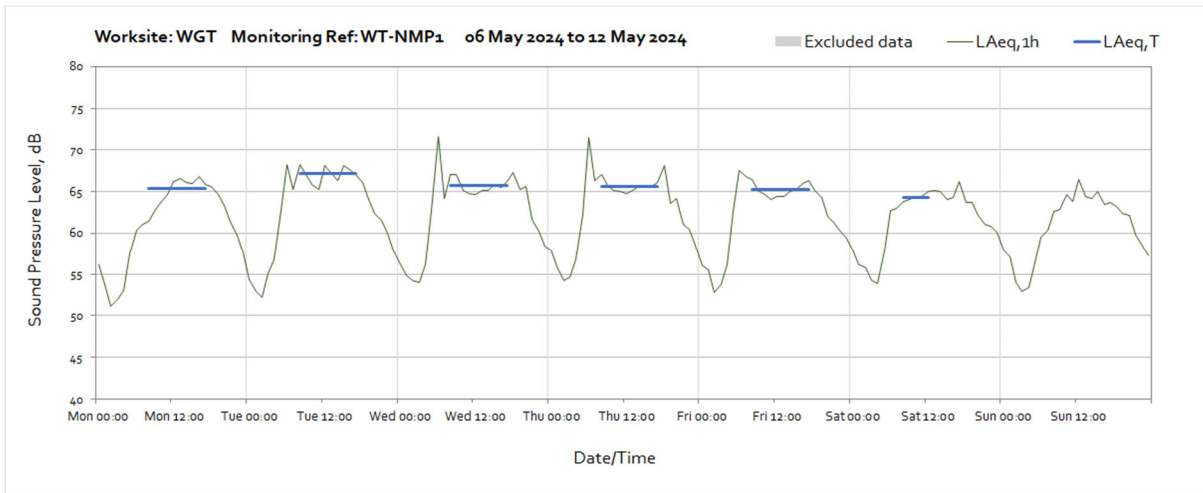
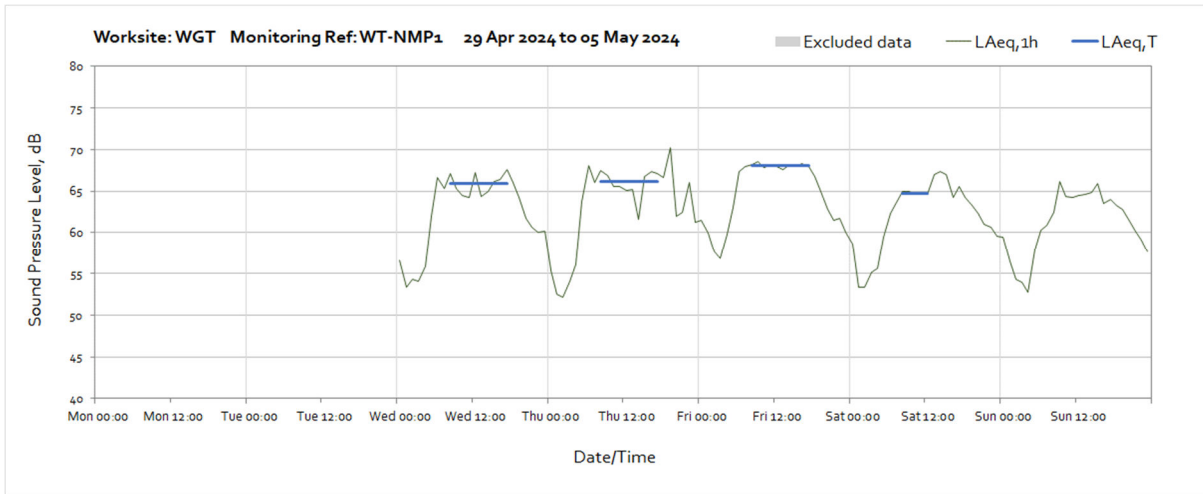


Worksite: WGT - Monitoring Ref: BL-NMP1

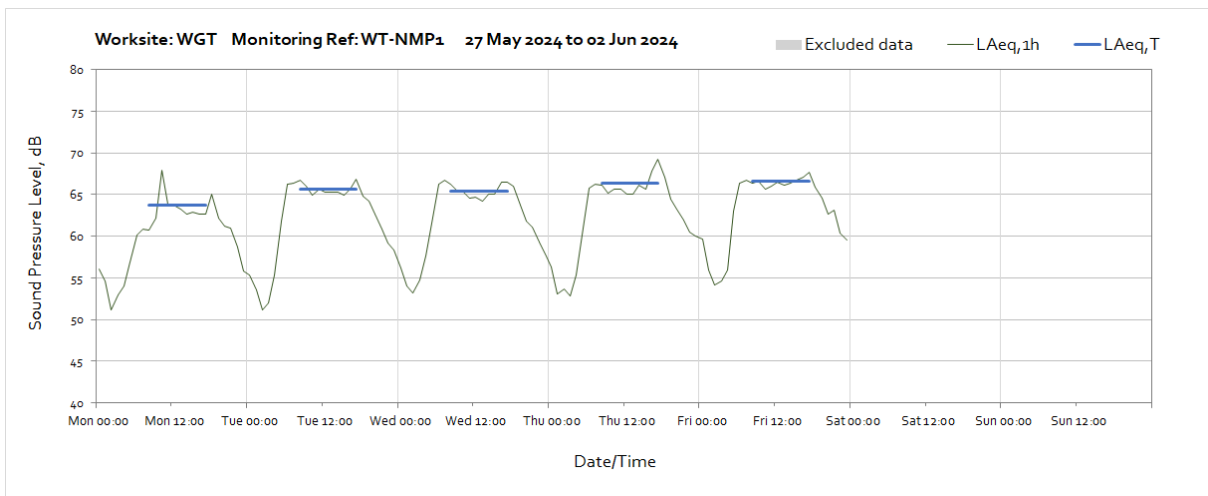
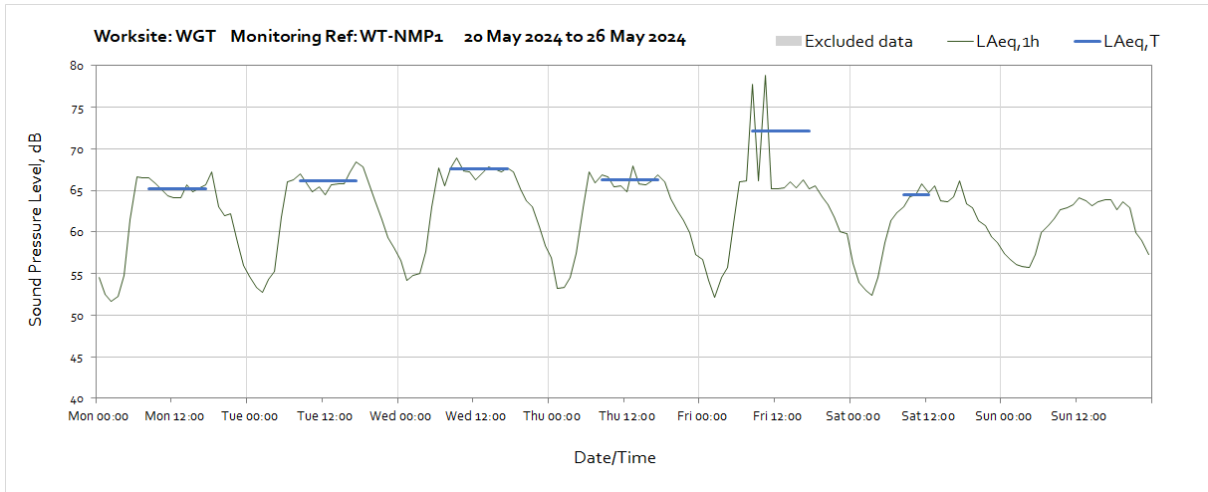




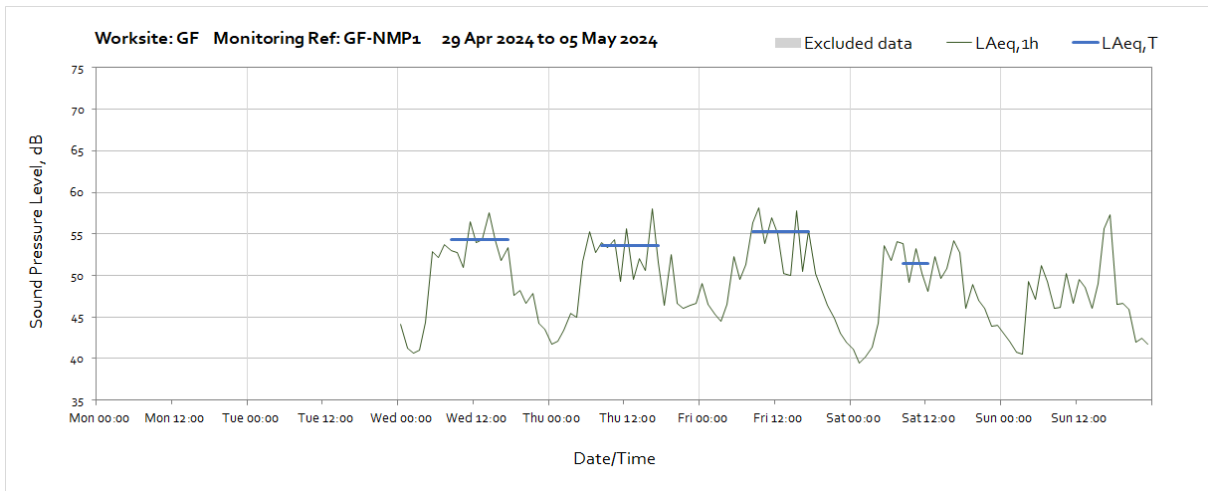
Worksite: WGT – Monitoring Ref: WT-NMP1

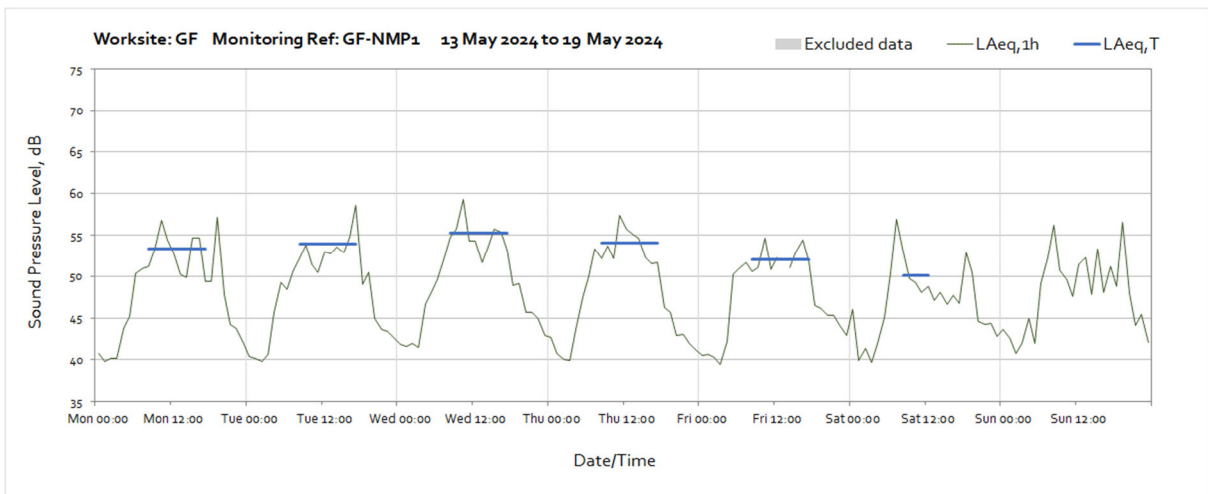
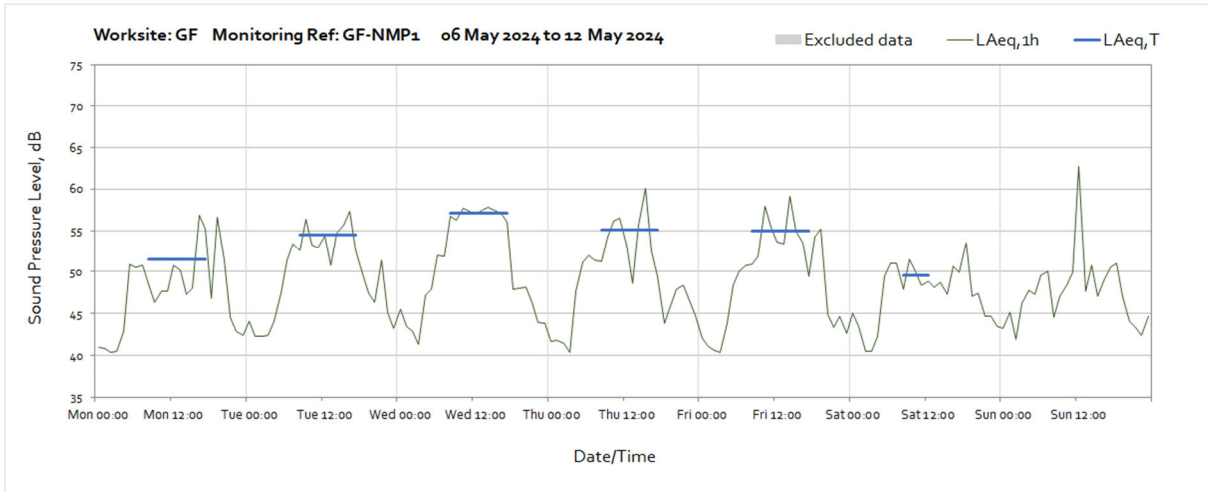


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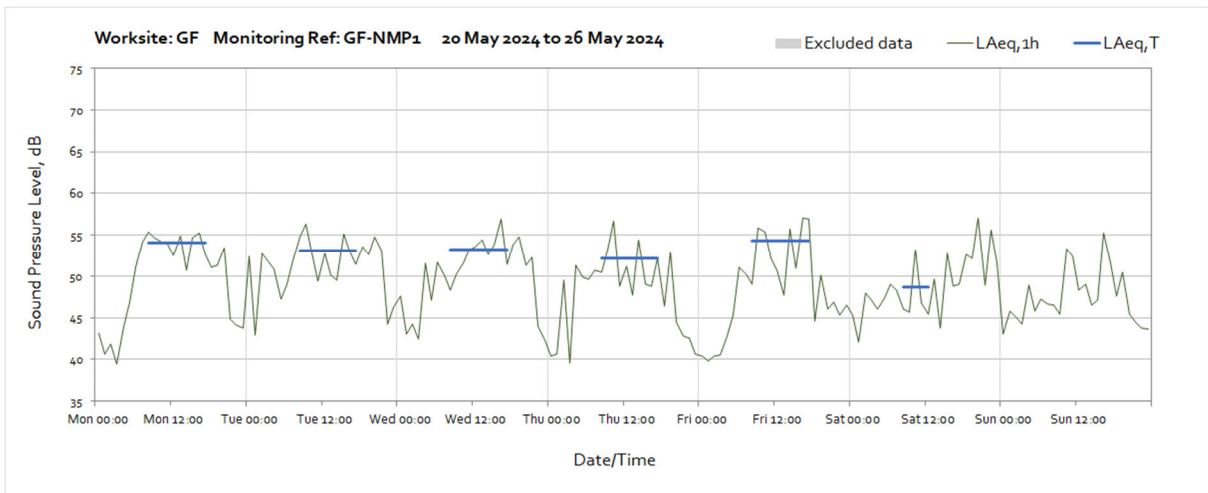


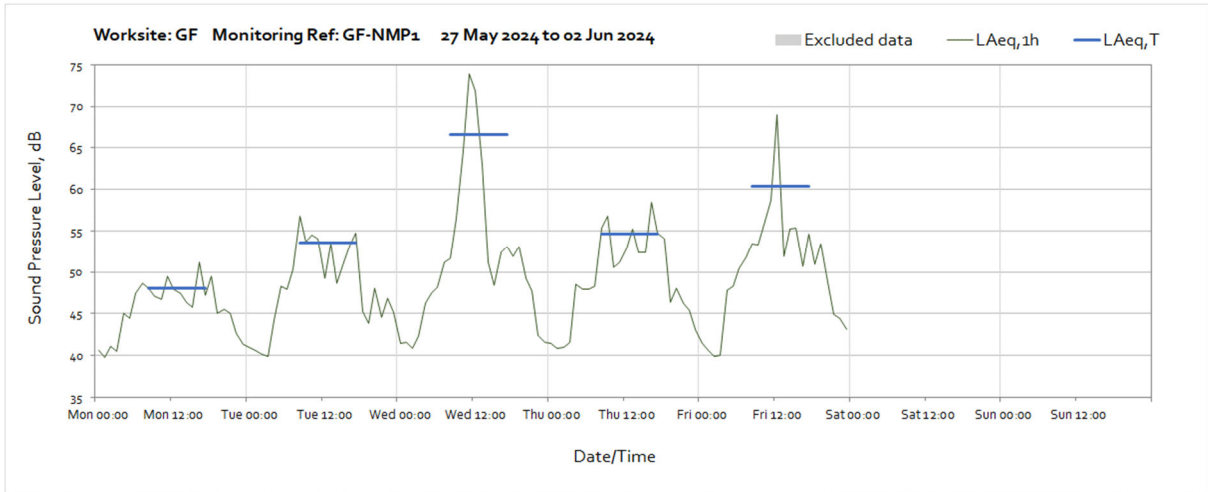
Worksite: GF – Monitoring Ref: GF-NMP1



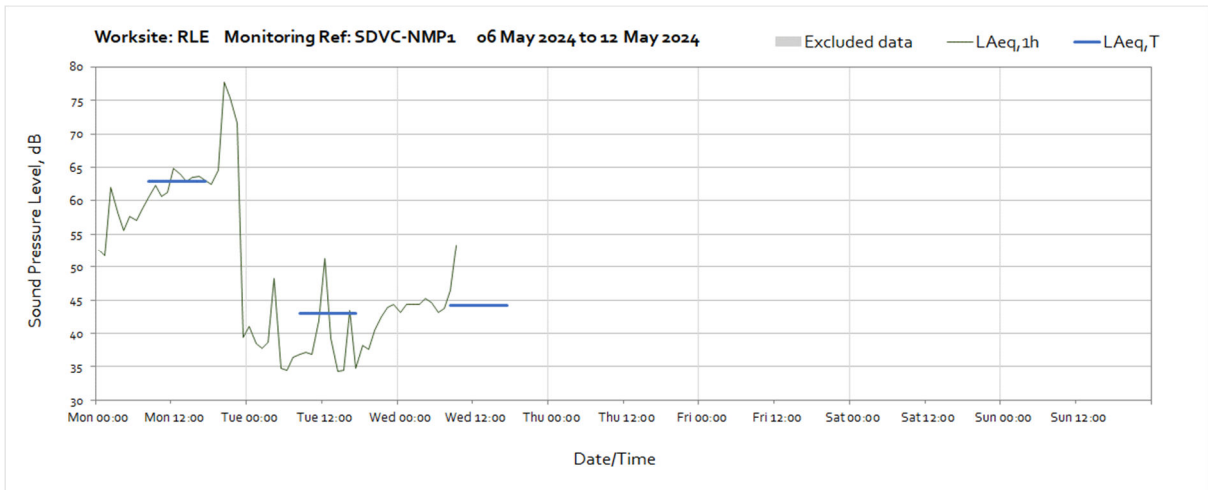
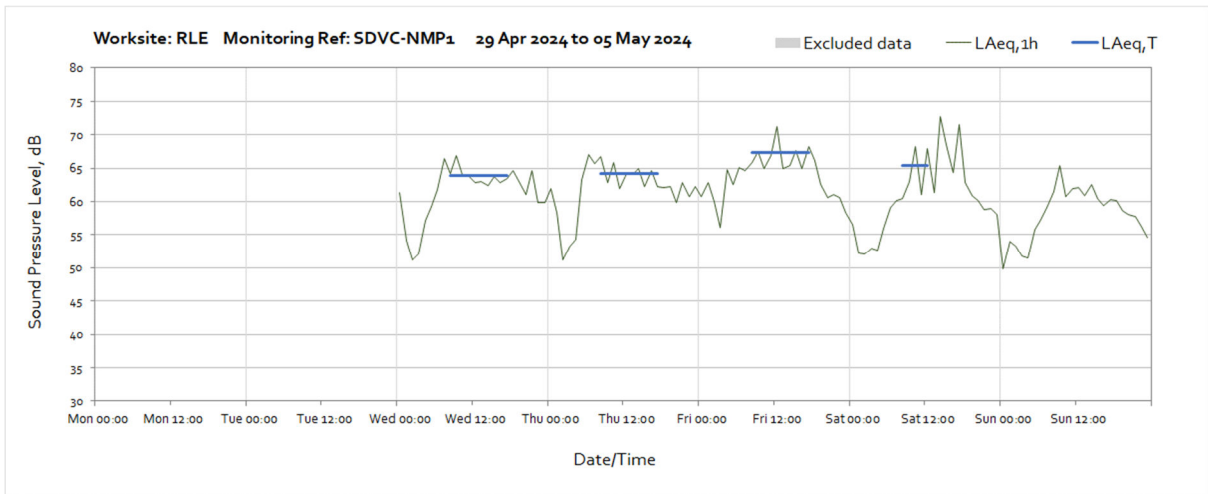


Note: Missing data between 13:00 and 14:00 on Friday 17th May was due to monitor maintenance.



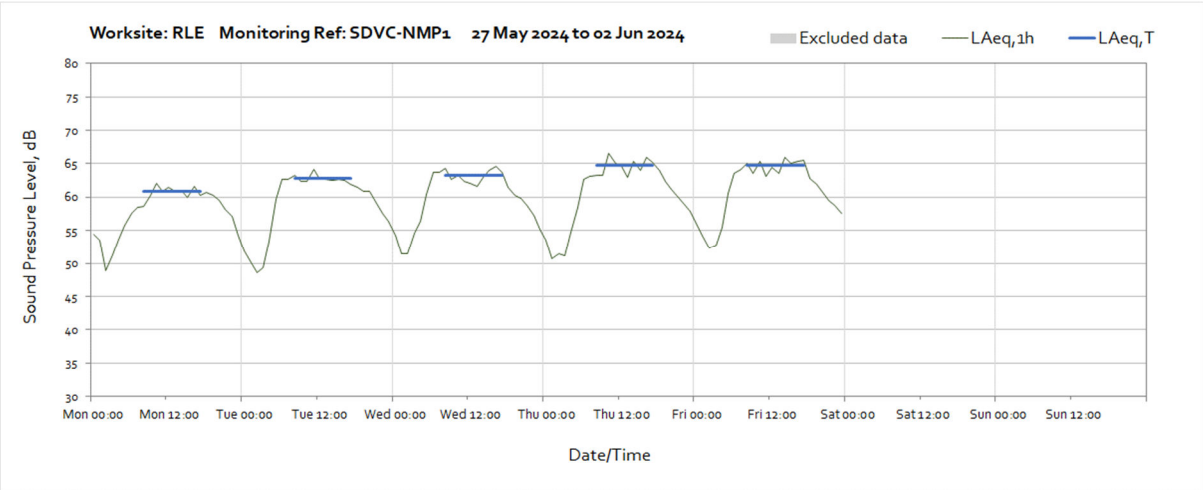
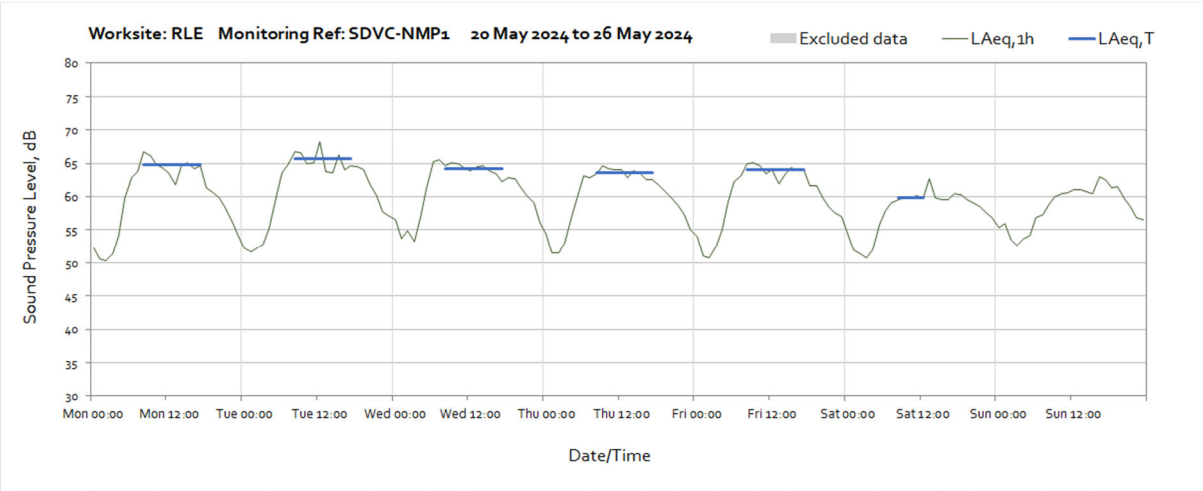
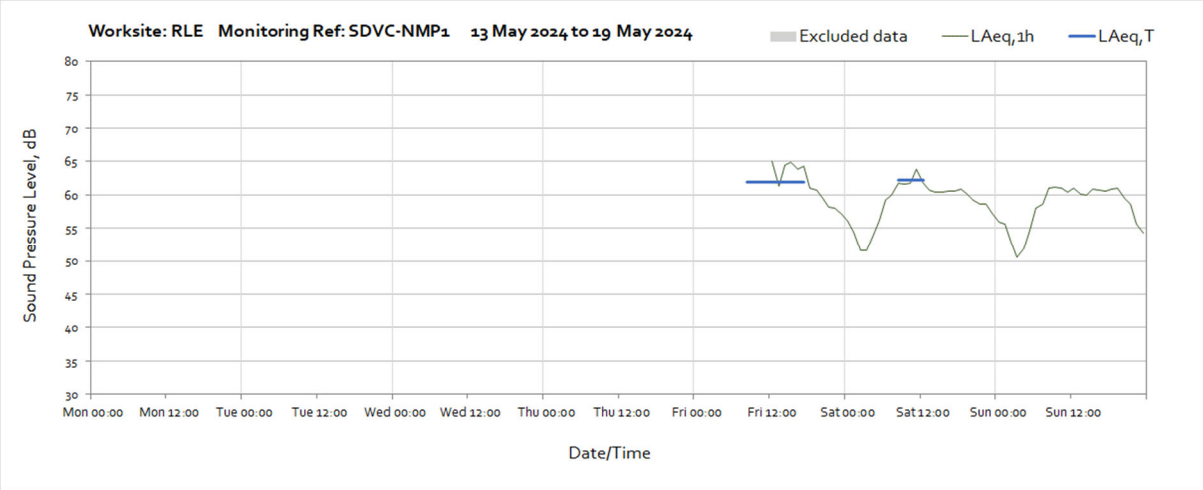


Worksite: RLE – Monitoring Ref: SDVC-NMP1

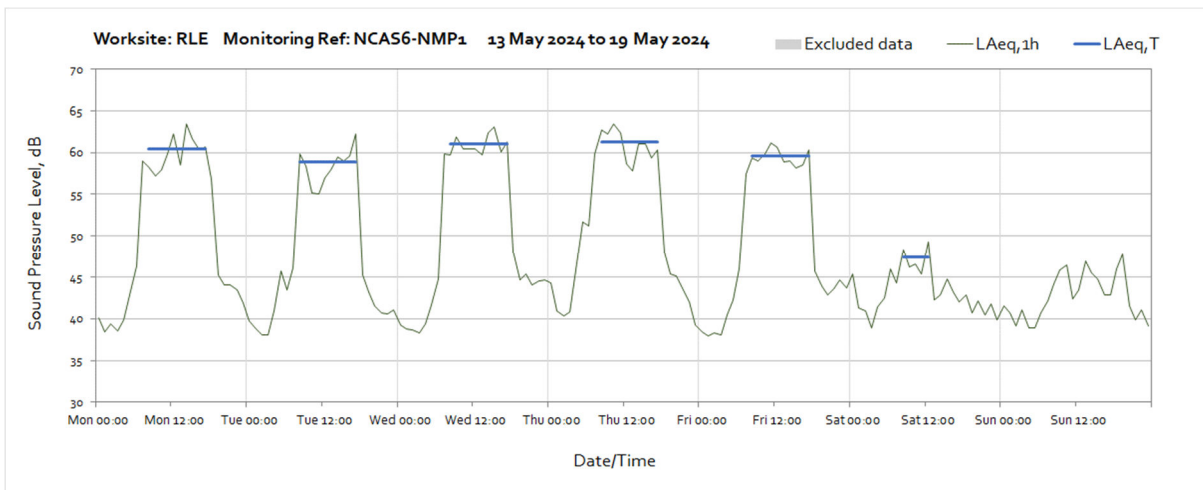
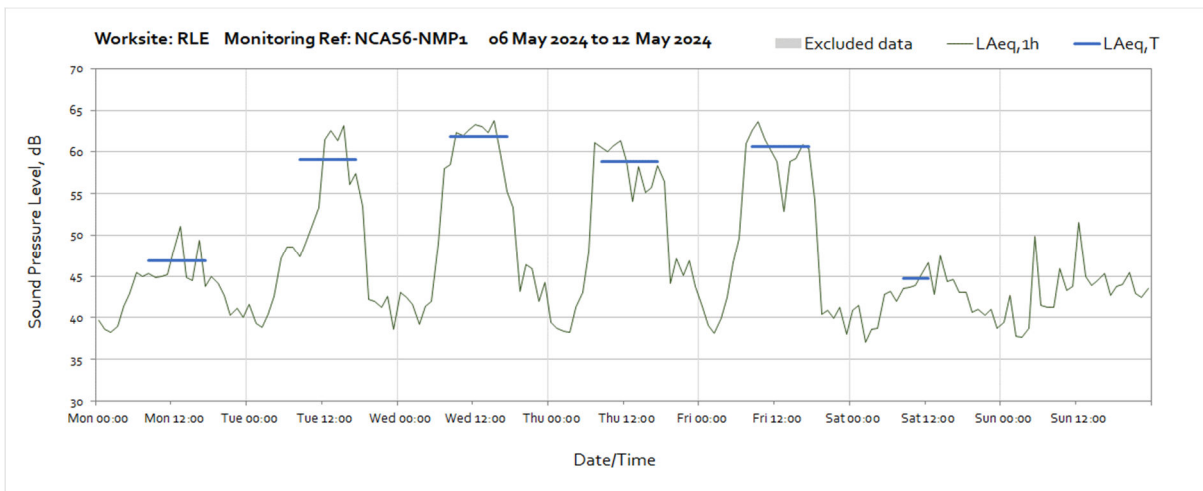
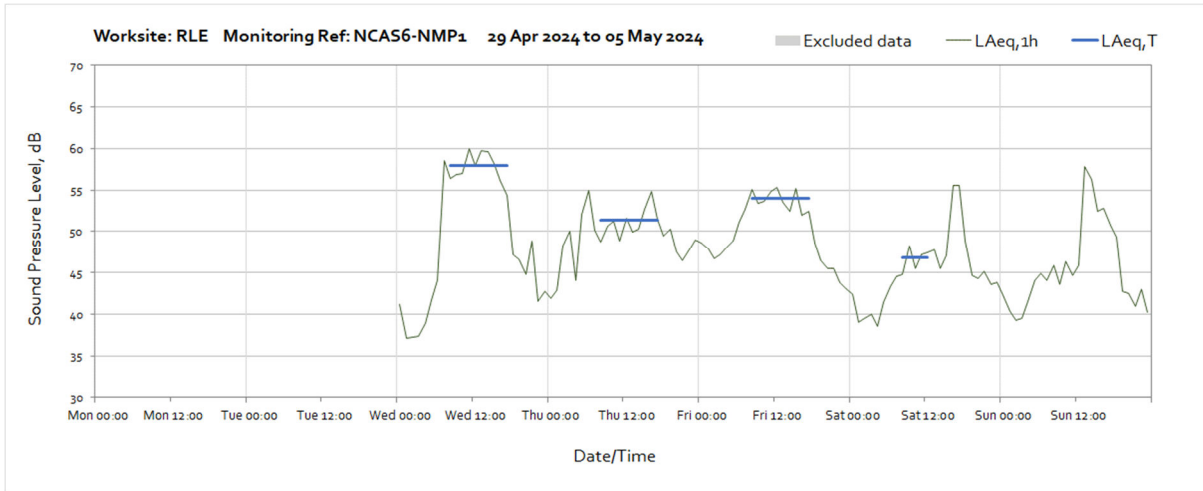


Note: Missing data from 10:00 on Wednesday 8th May until 12:00 on Friday 17th May was due to monitor retrieval for repair after a microphone fault during field calibration on Wednesday 8th May.

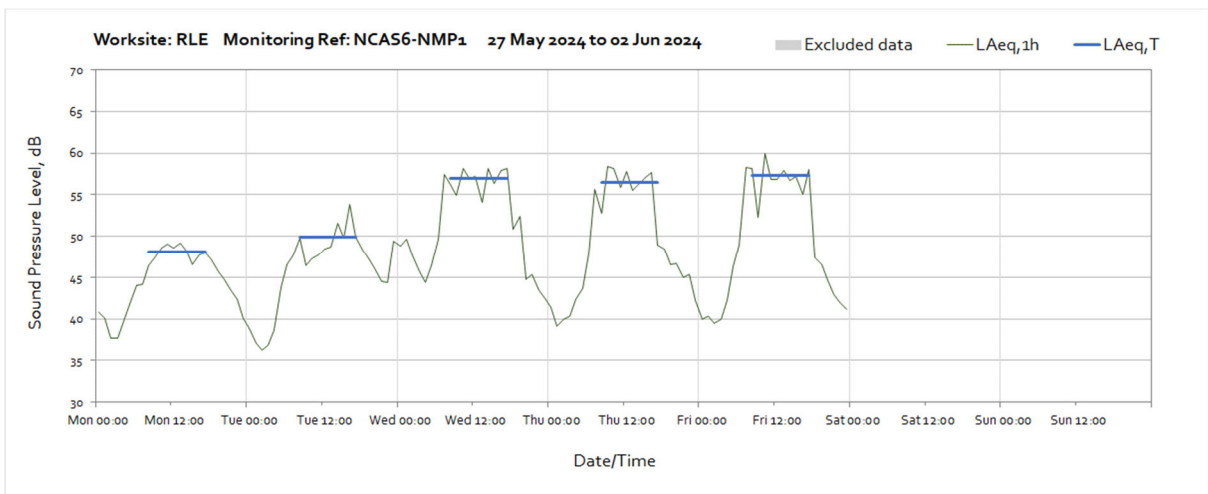
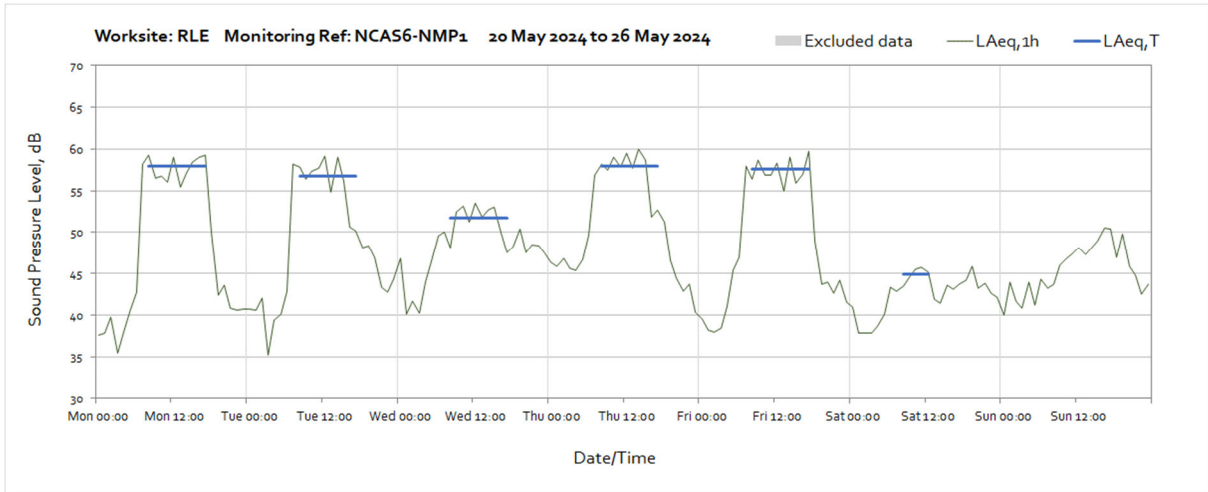
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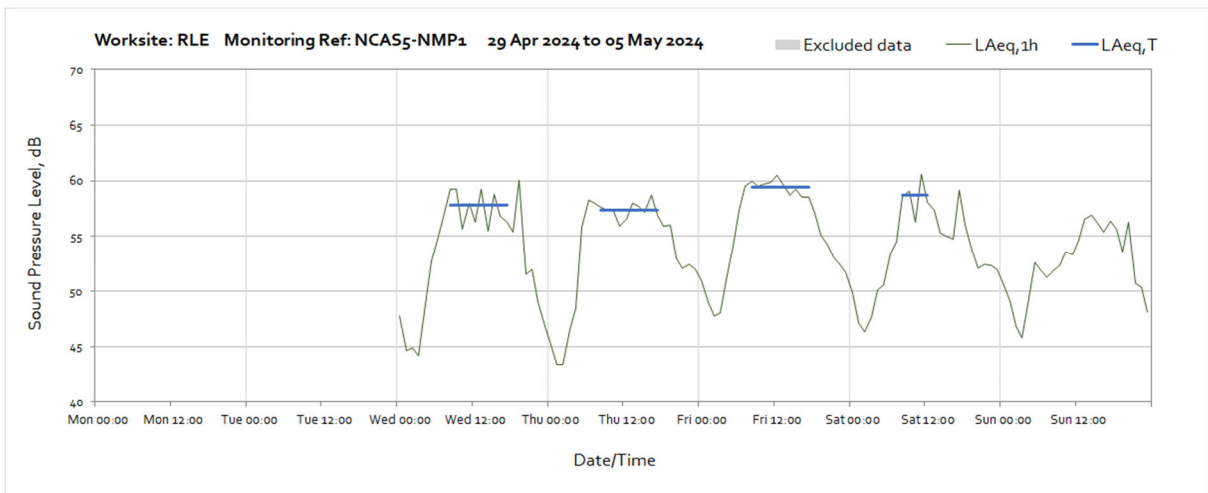
Worksite: RLE – Monitoring Ref: NCAS6-NMP1

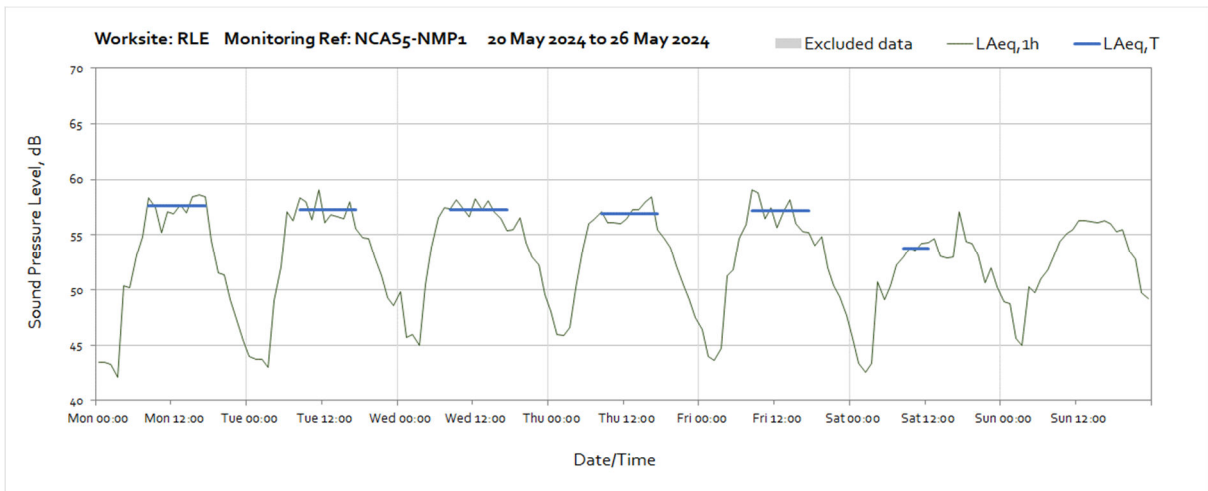
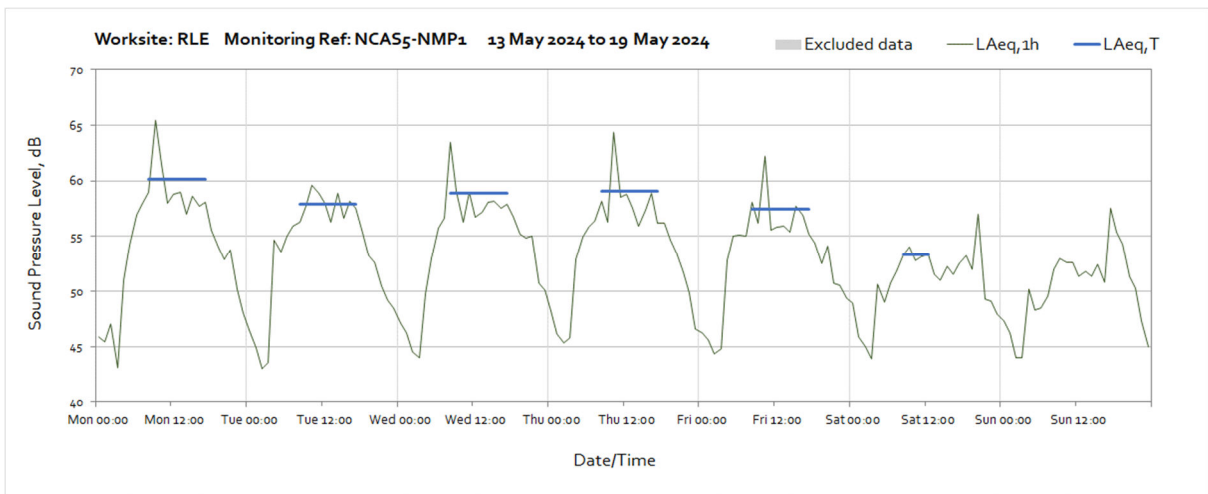
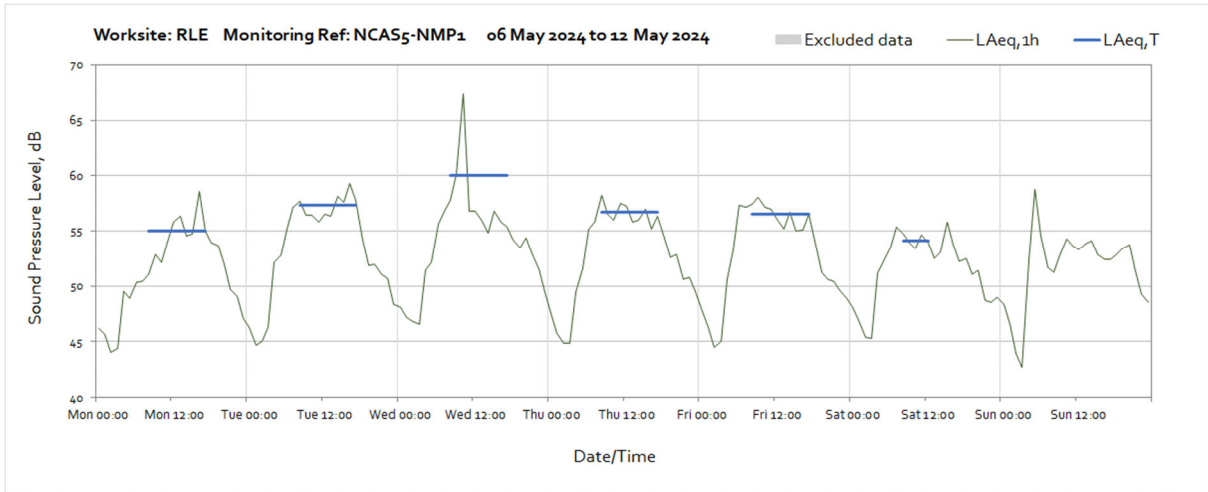


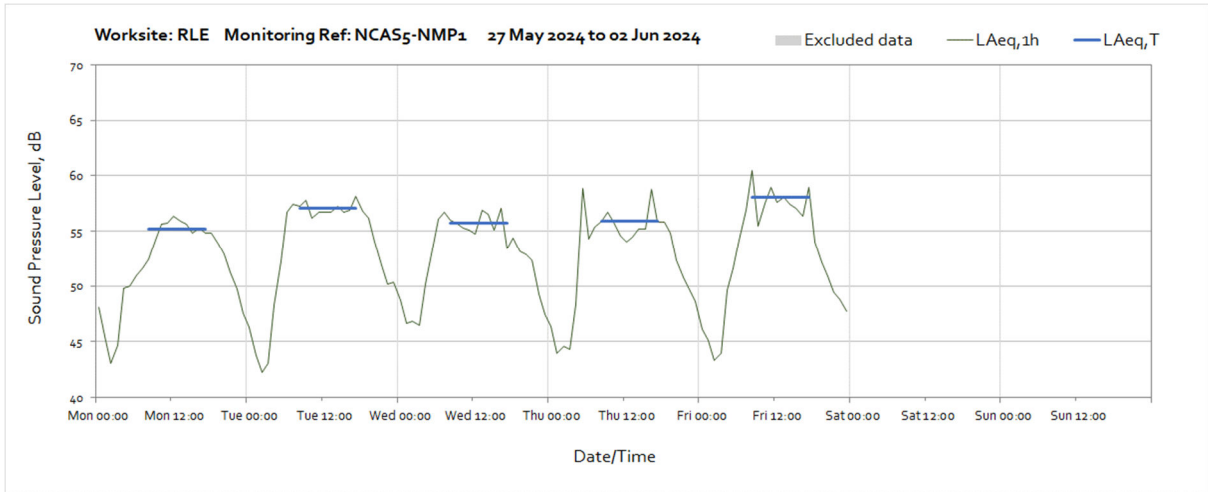
OFFICIAL



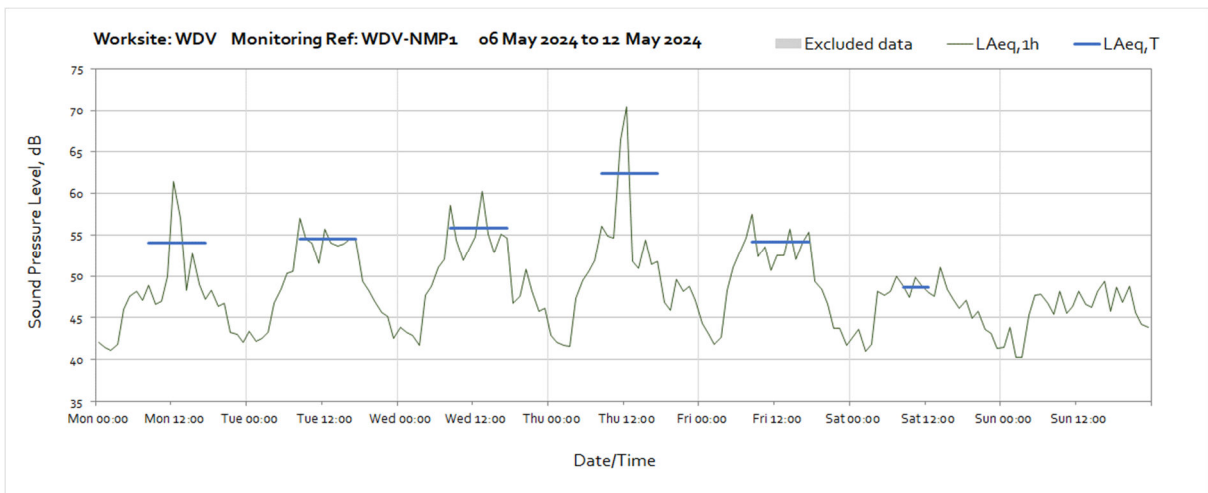
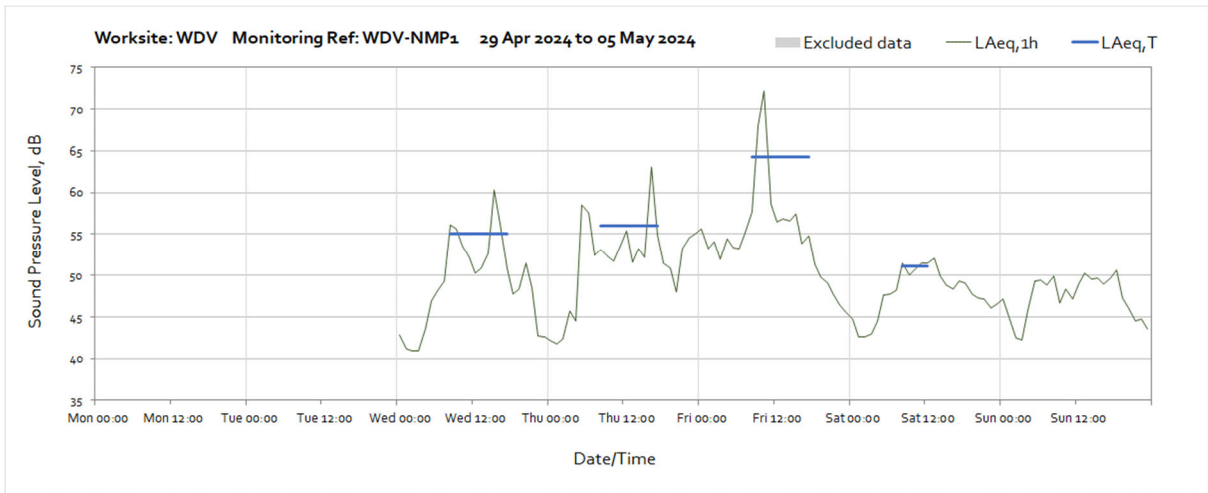
Worksite: RLE - Monitoring Ref: NCAS5-NMP1

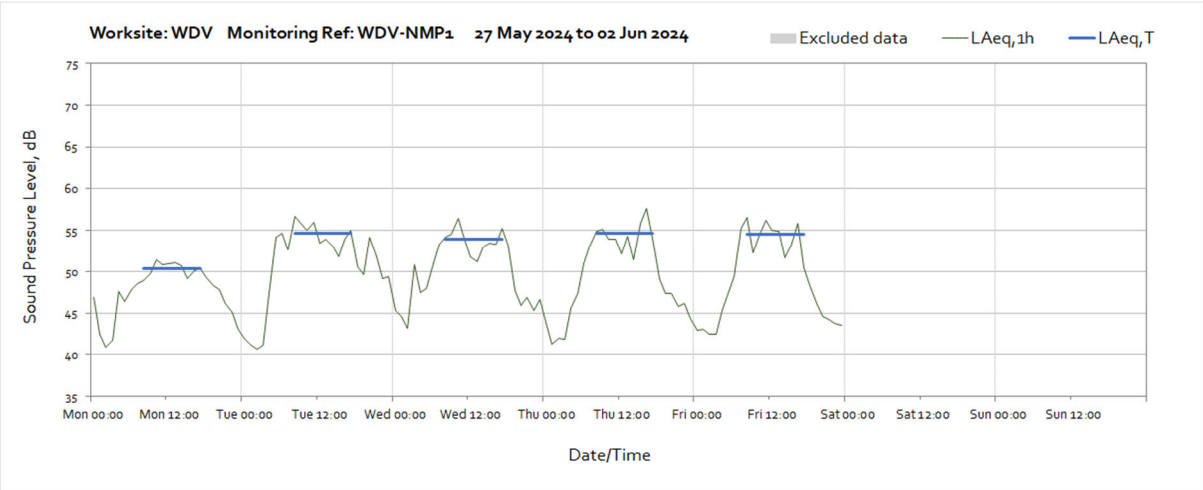
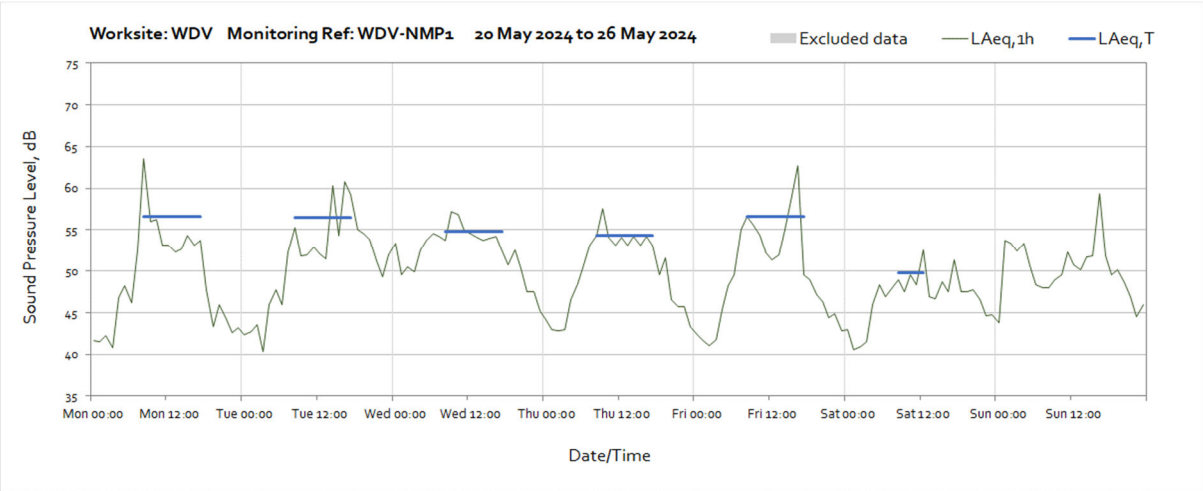
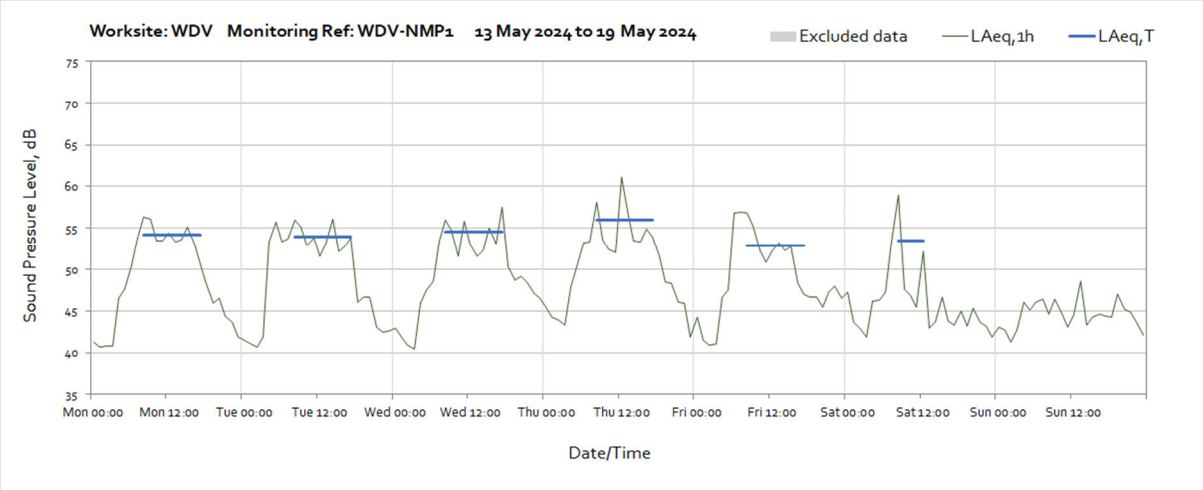




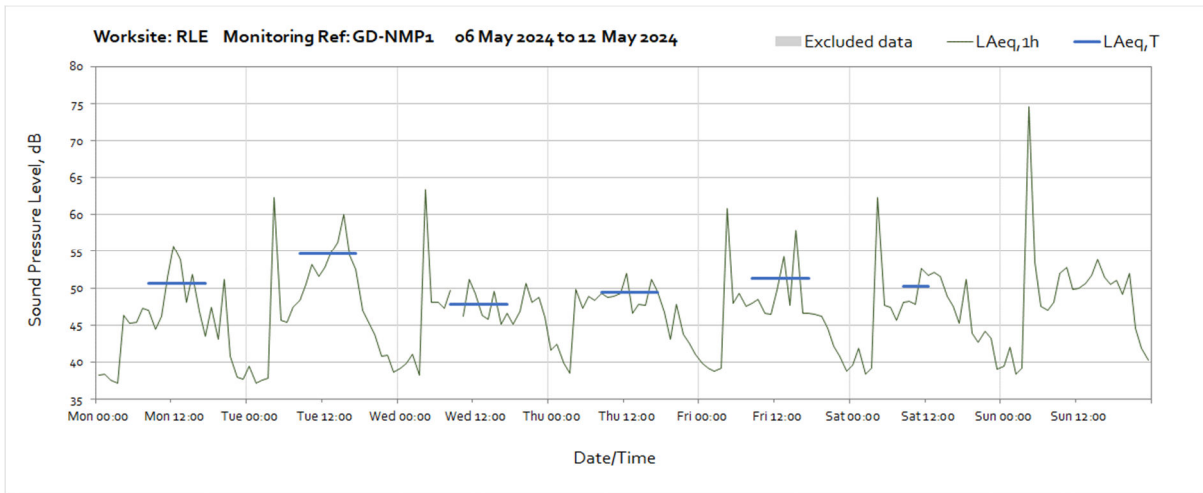
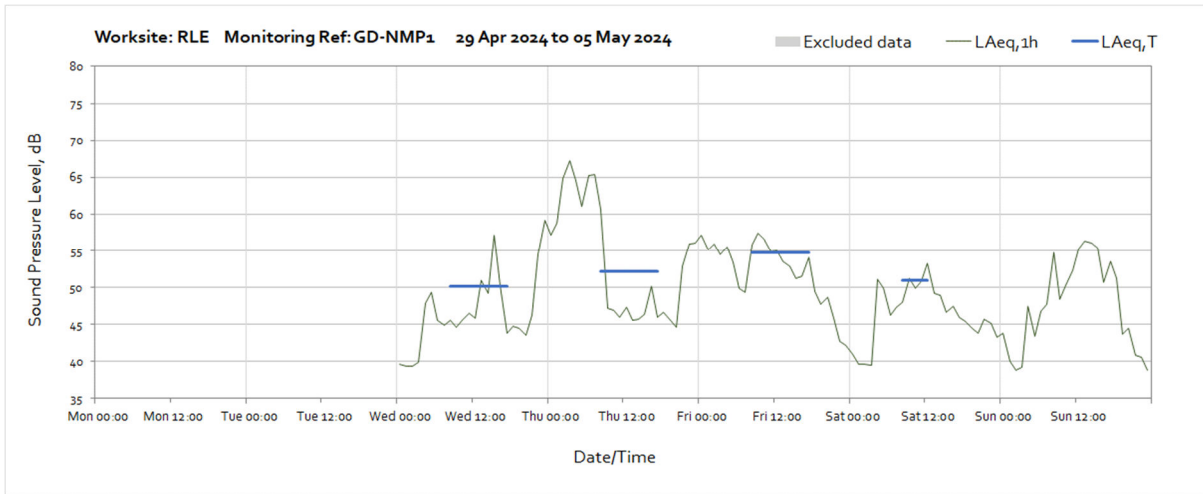


Worksite: WDV – Monitoring Ref: WDV-NMP1

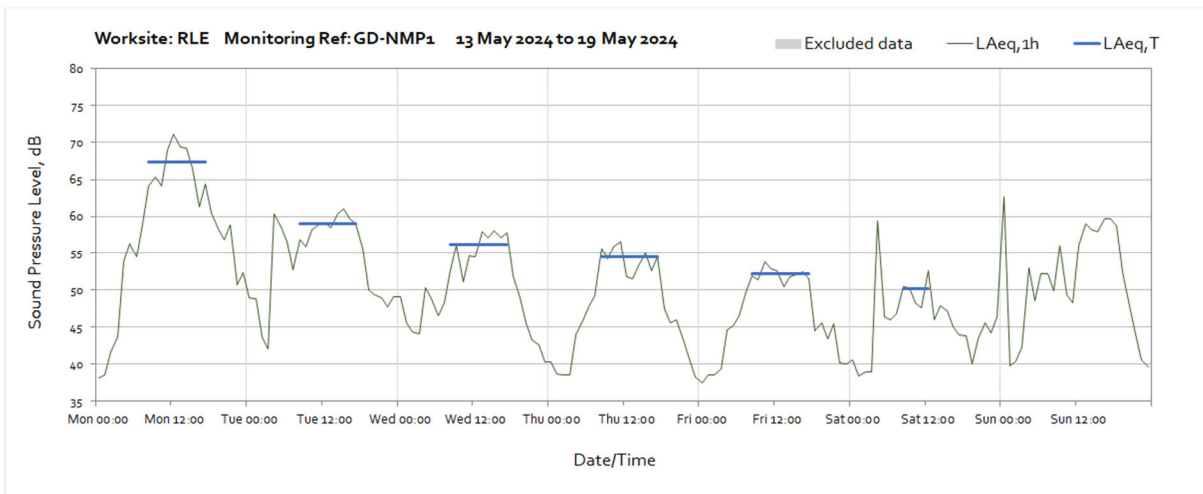




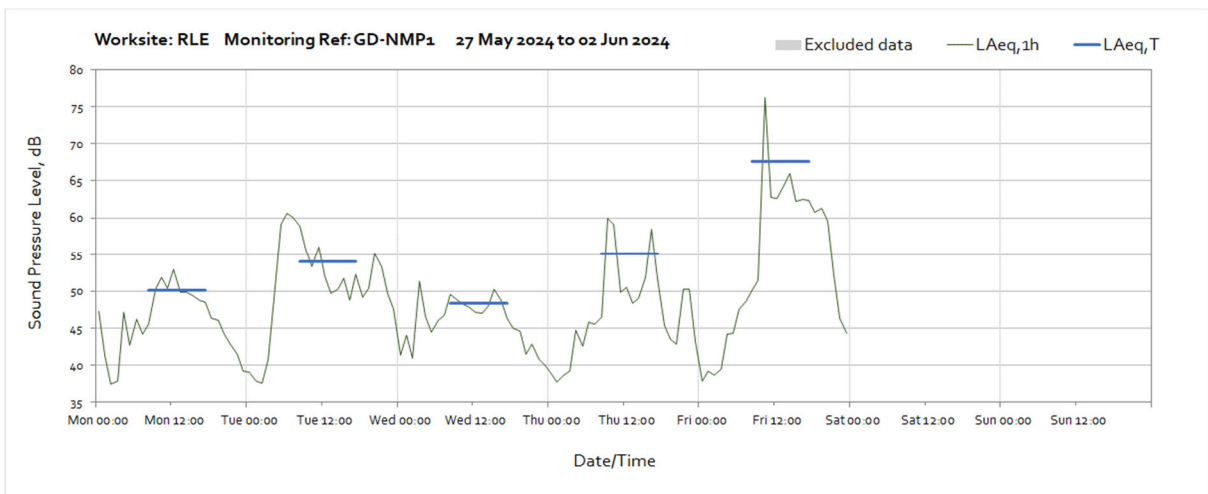
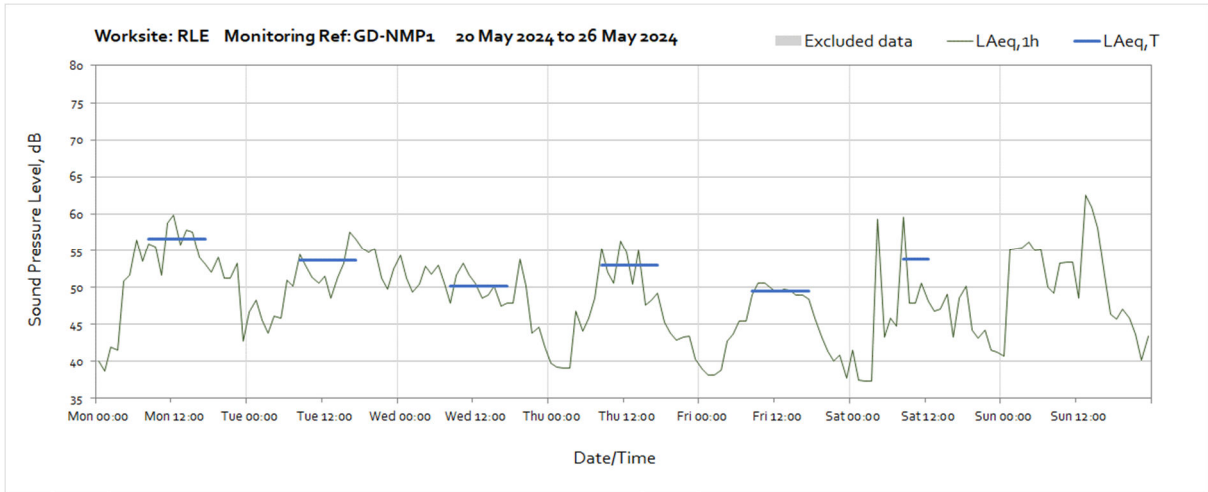
Worksite: LL – Monitoring Ref: GD-NMP1



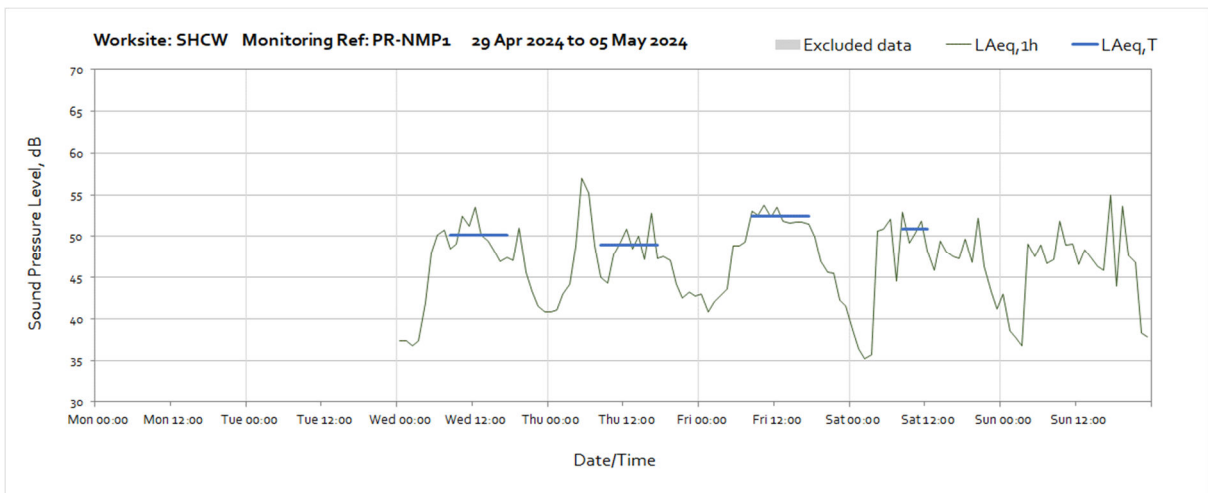
Note: Missing data between 09:00 and 10:00 on Wednesday 8th May was due to monitor maintenance.

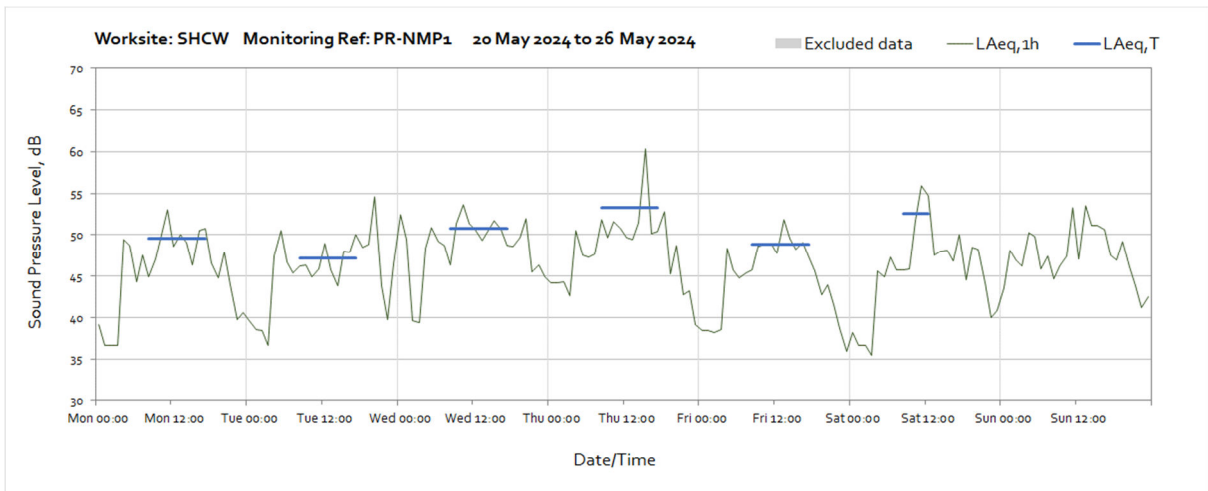
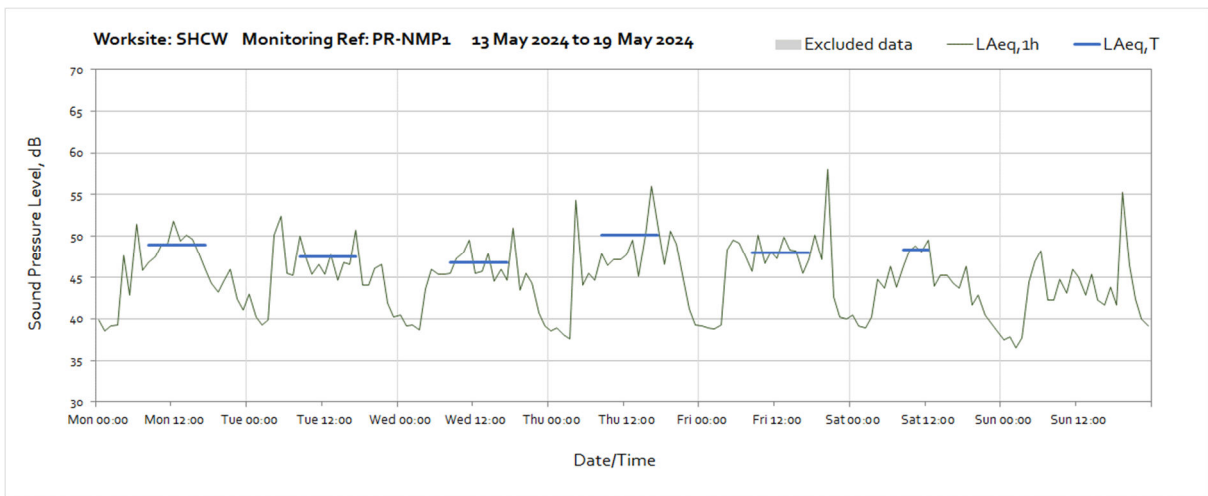
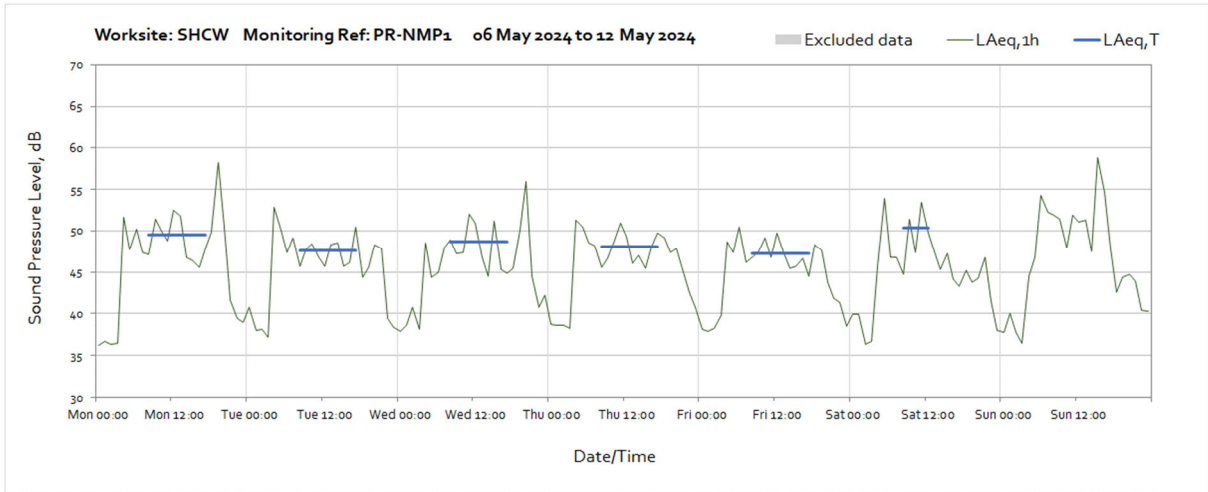


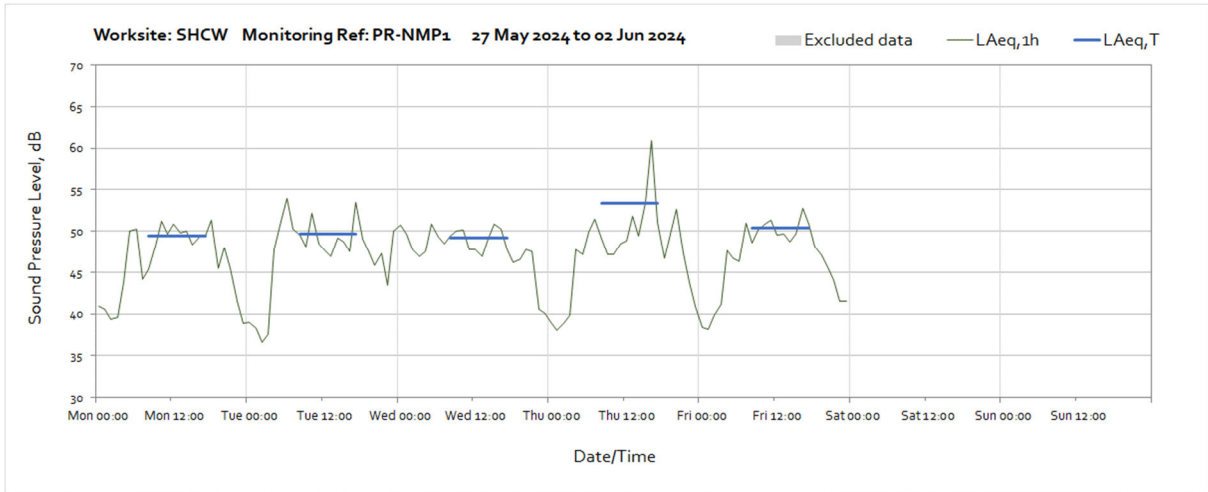
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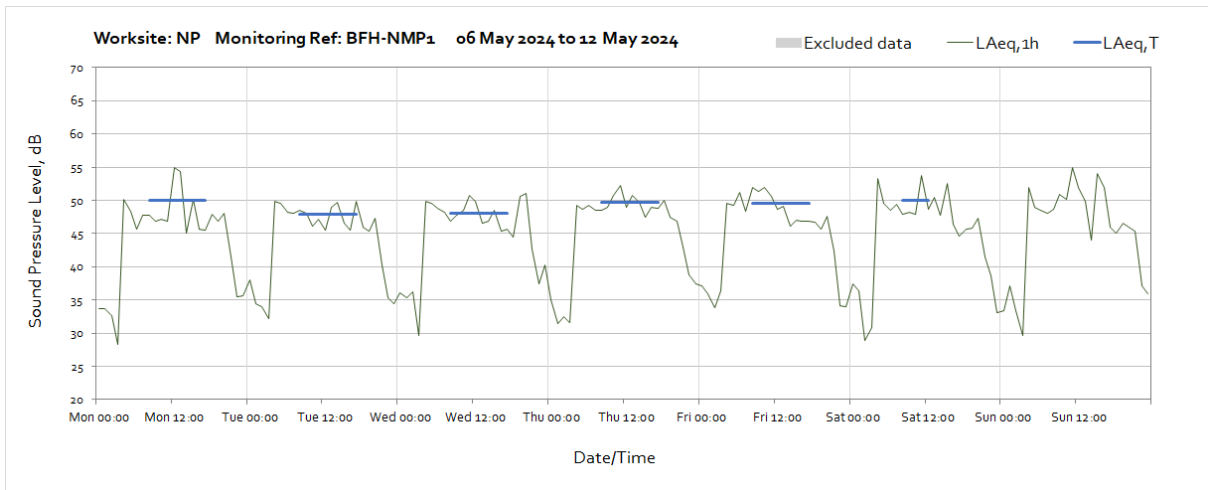
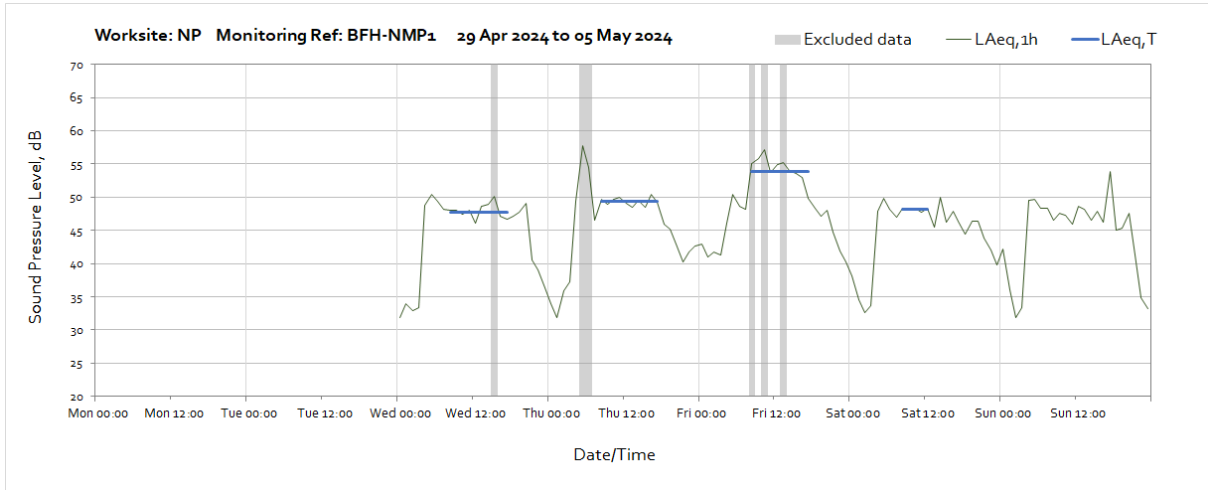
Worksite: SHCW – Monitoring Ref: PR-NMP1

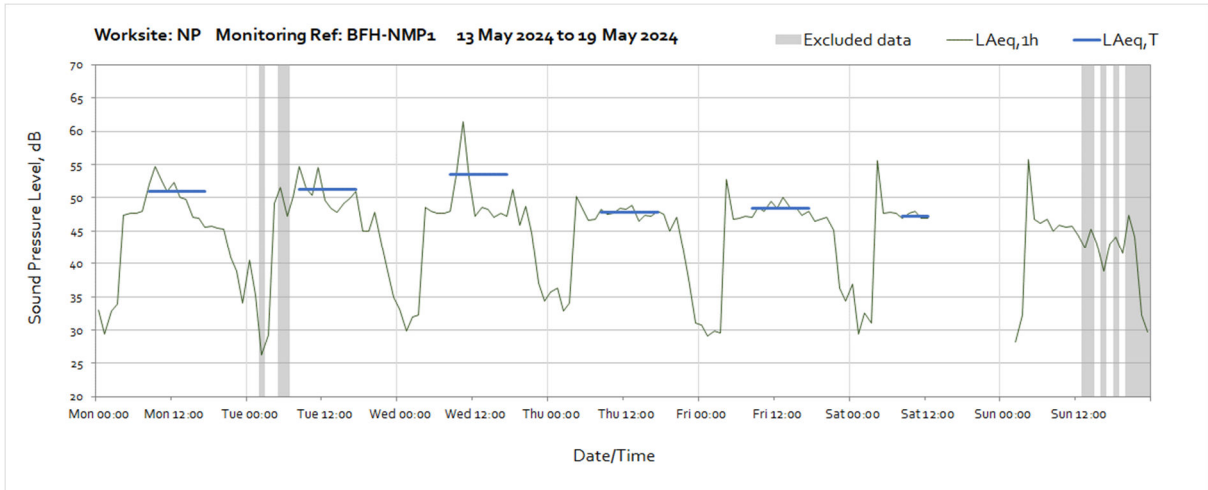




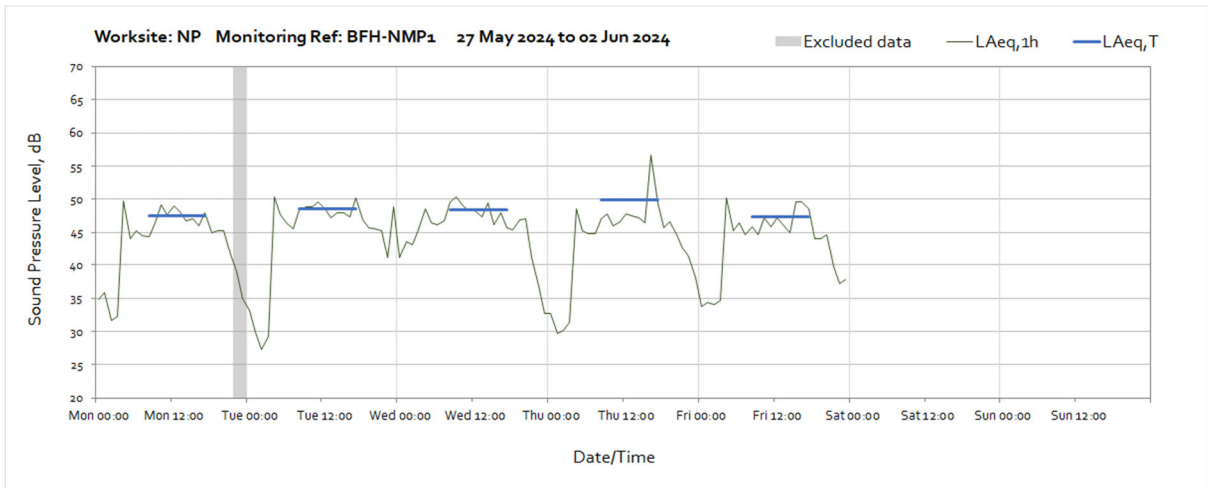
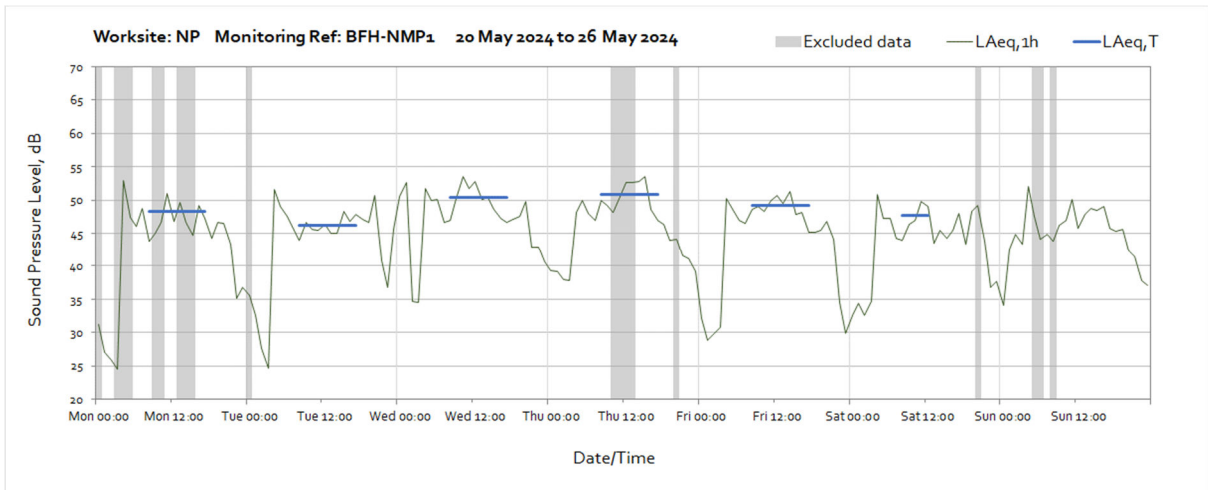


Worksite: NP - Monitoring Ref: BFH-NMP1

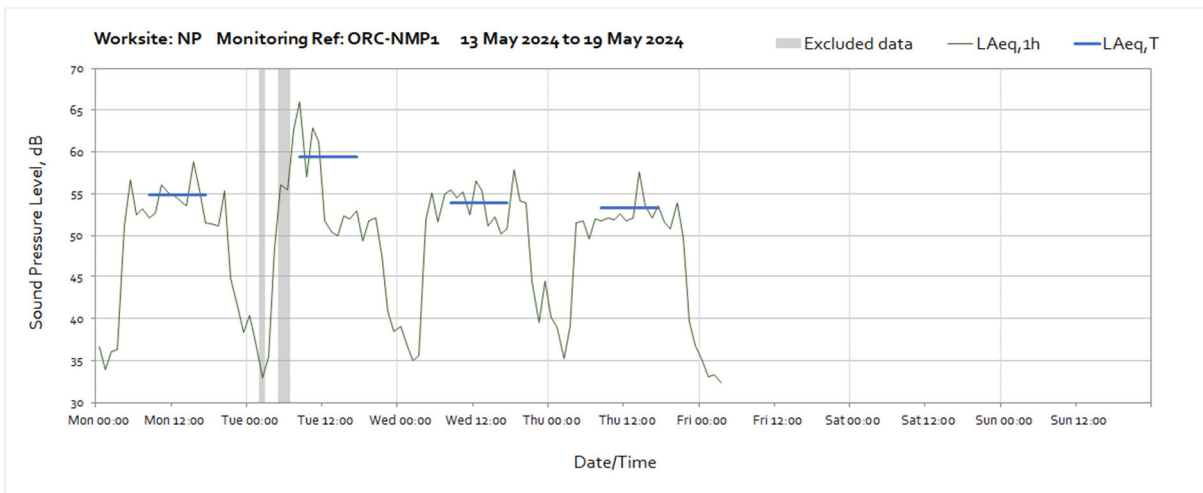
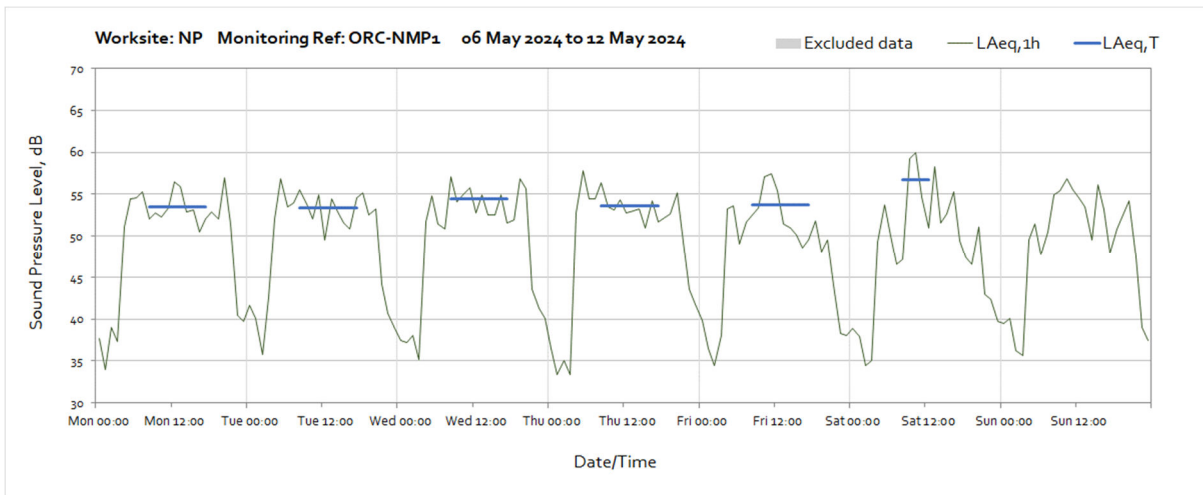
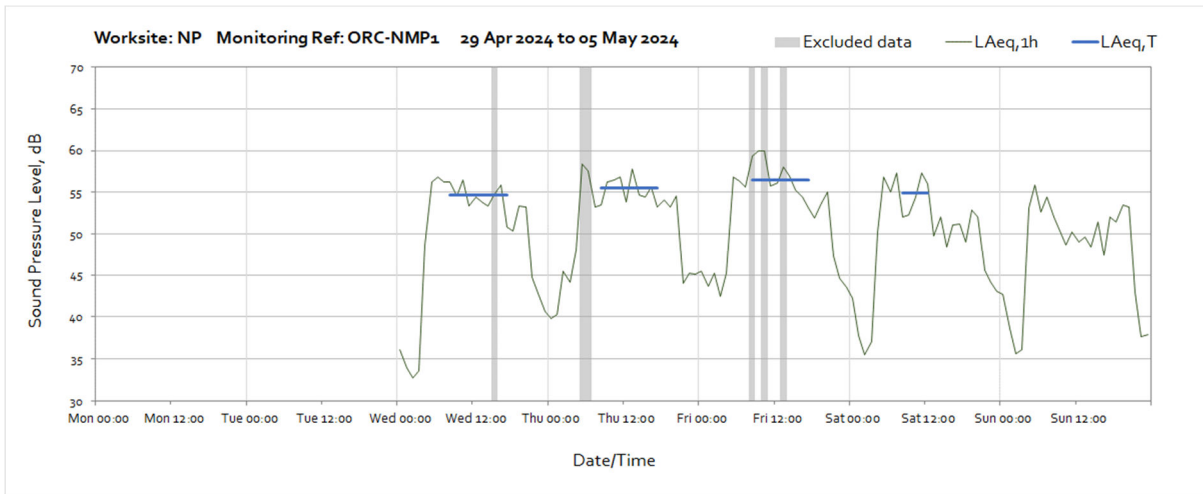




Note: Missing data between 13:00 on Saturday 18th May until 02:00 on Sunday 19th May was due to a technical error within the monitoring station.

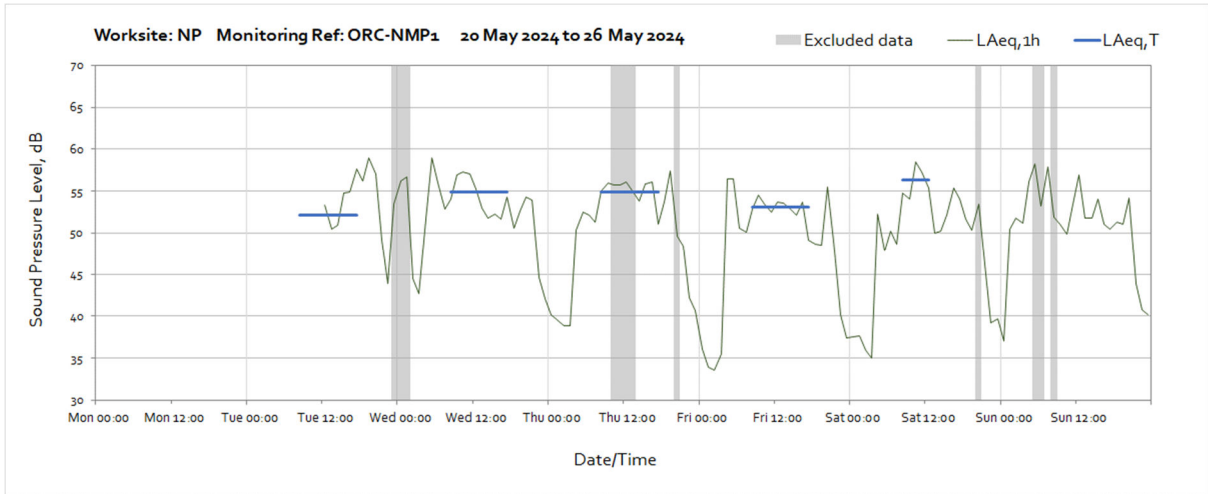


Worksite: NP – Monitoring Ref: ORC-NMP1

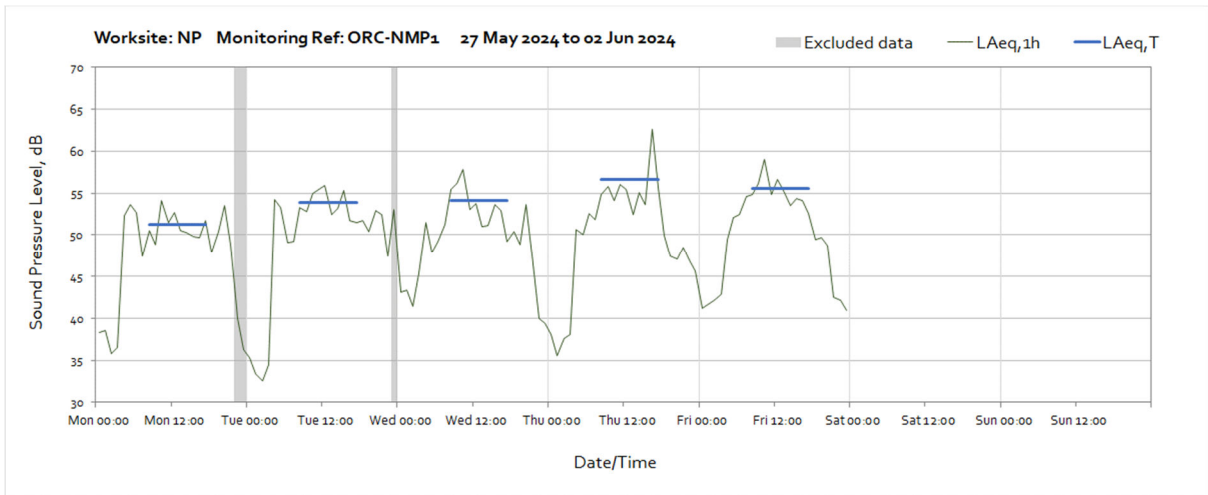


Note: Missing data between 04:00 on Friday 17th May until 12:00 on Tuesday 21st May was due to a technical error within the monitoring station.

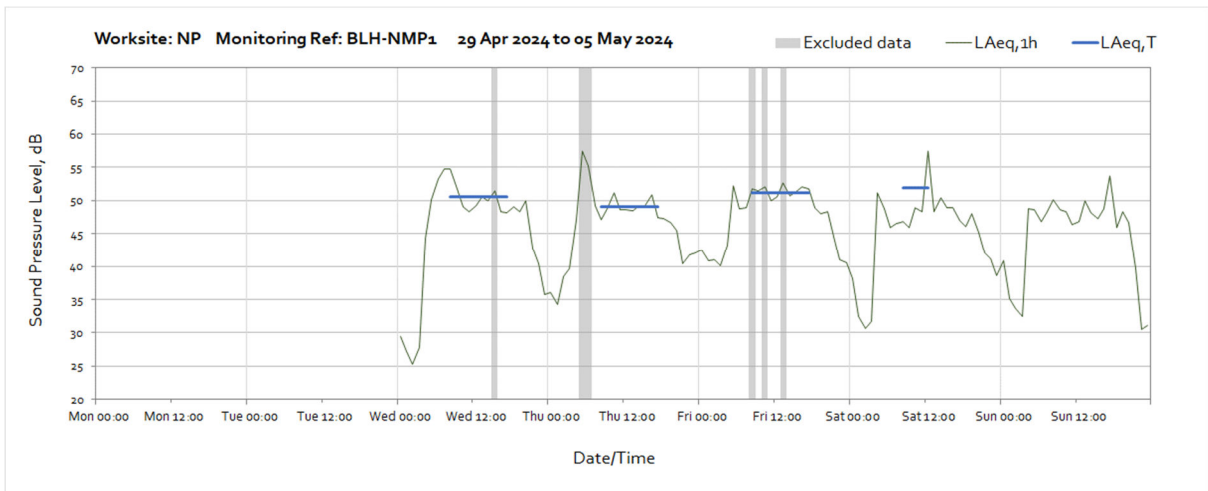
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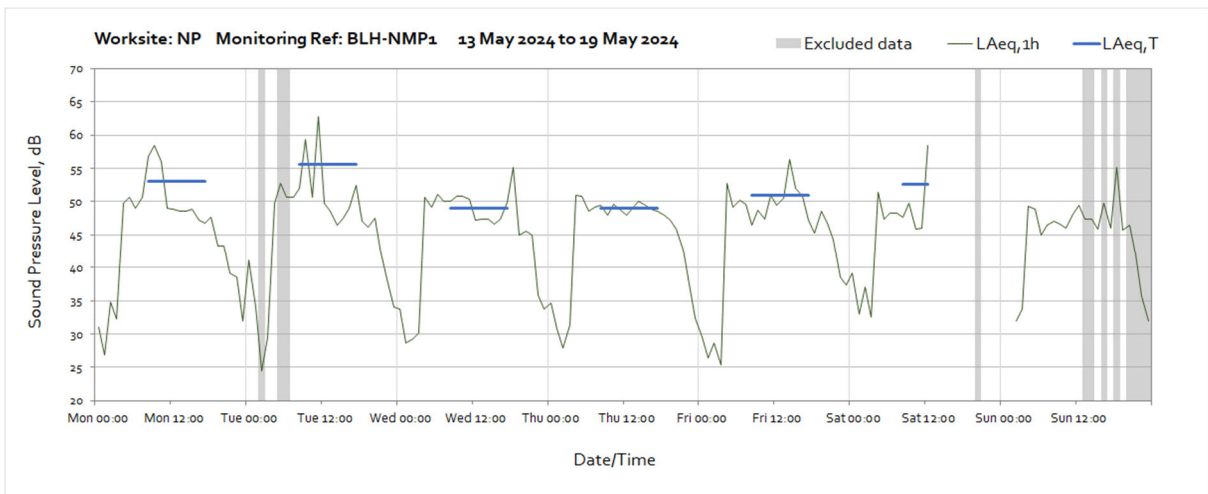
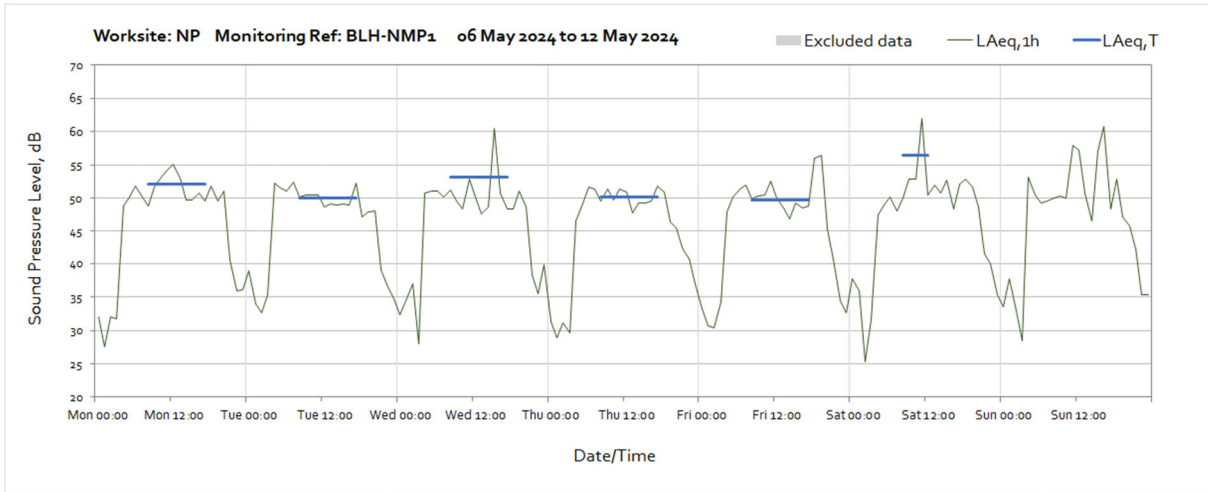


Note: Missing data between 04:00 on Friday 17th May until 12:00 on Tuesday 21st May was due to a technical error within the monitoring station.

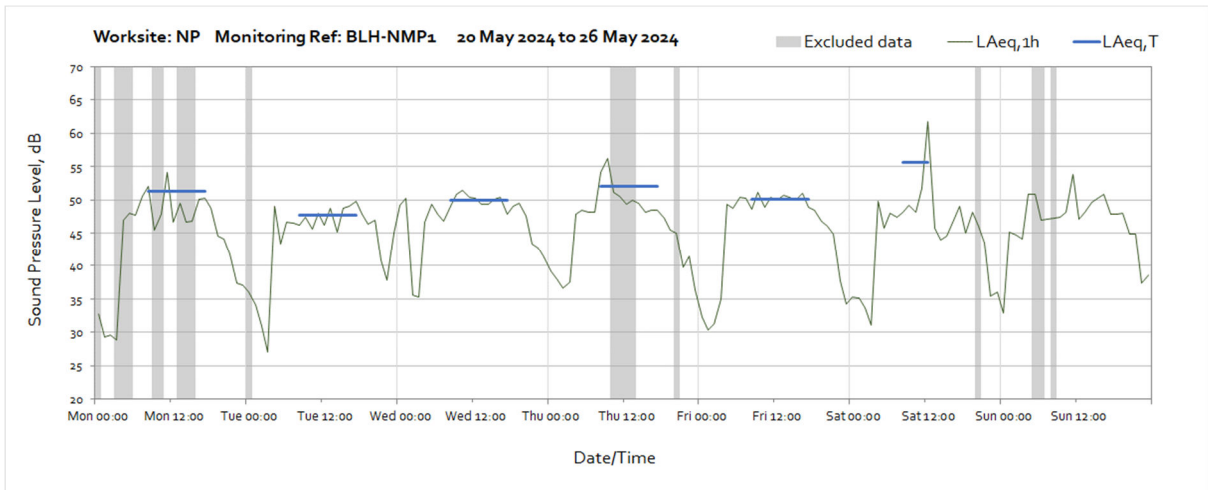


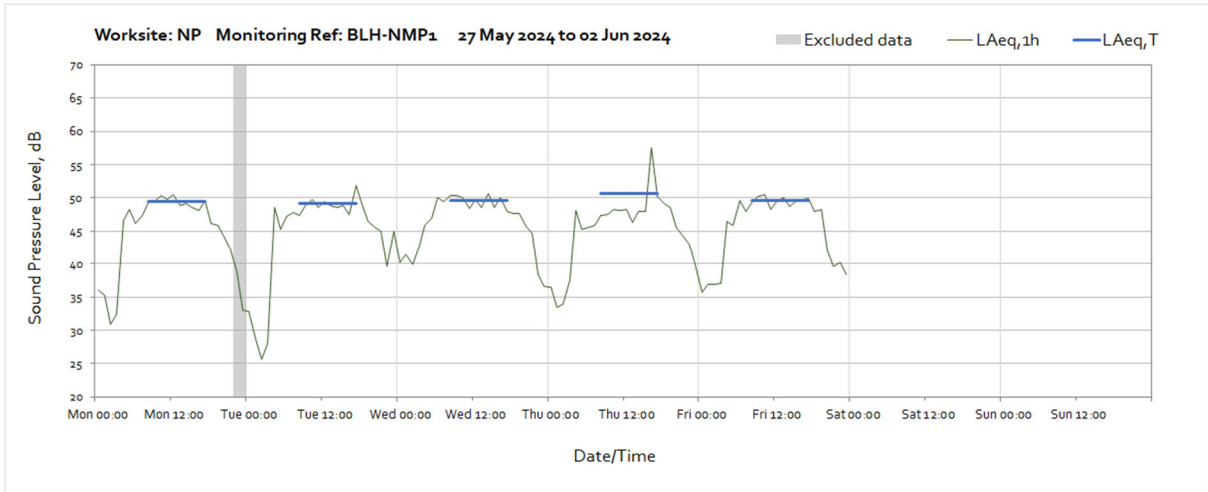
Worksite: NP – Monitoring Ref: BLH-NMP1



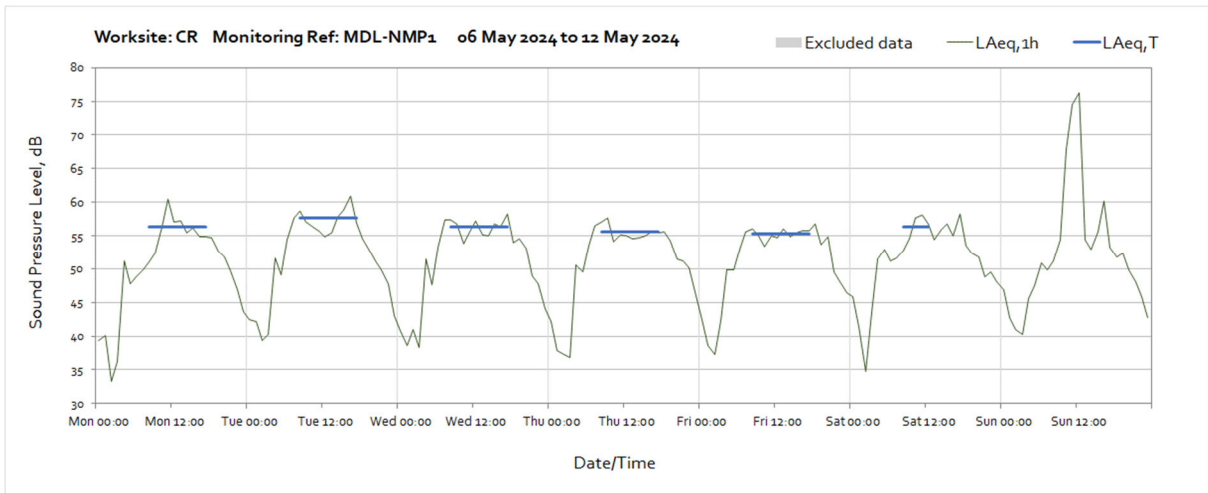
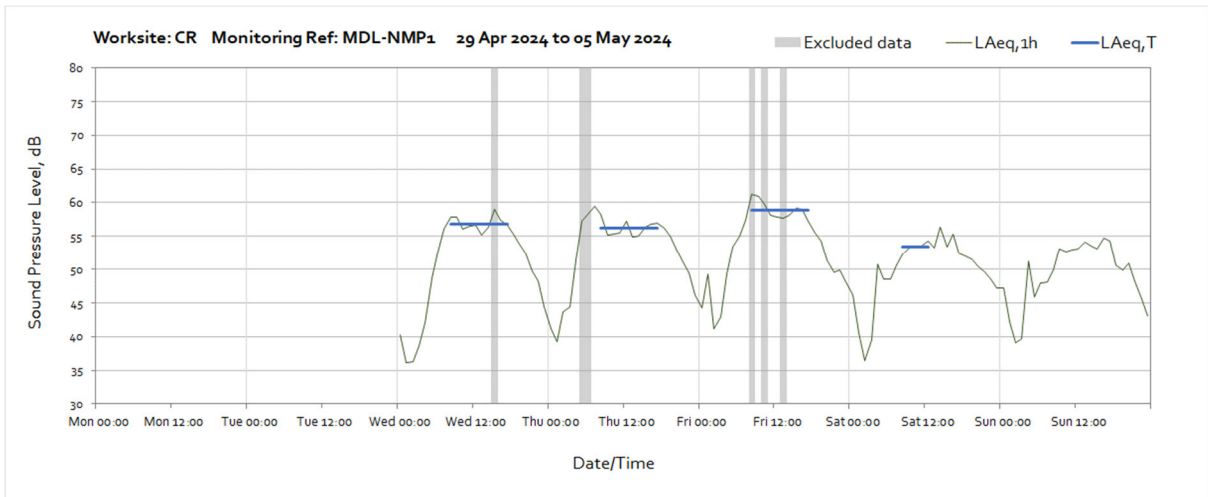


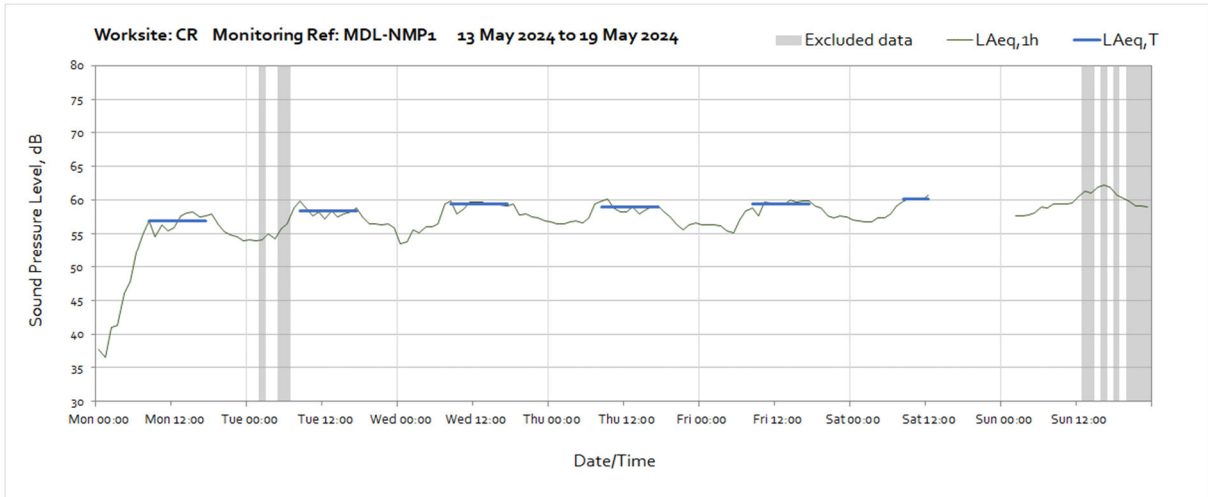
Note: Missing data between 13:00 on Saturday 18th May until 02:00 on Sunday 19th May was due to a technical error within the monitoring station.



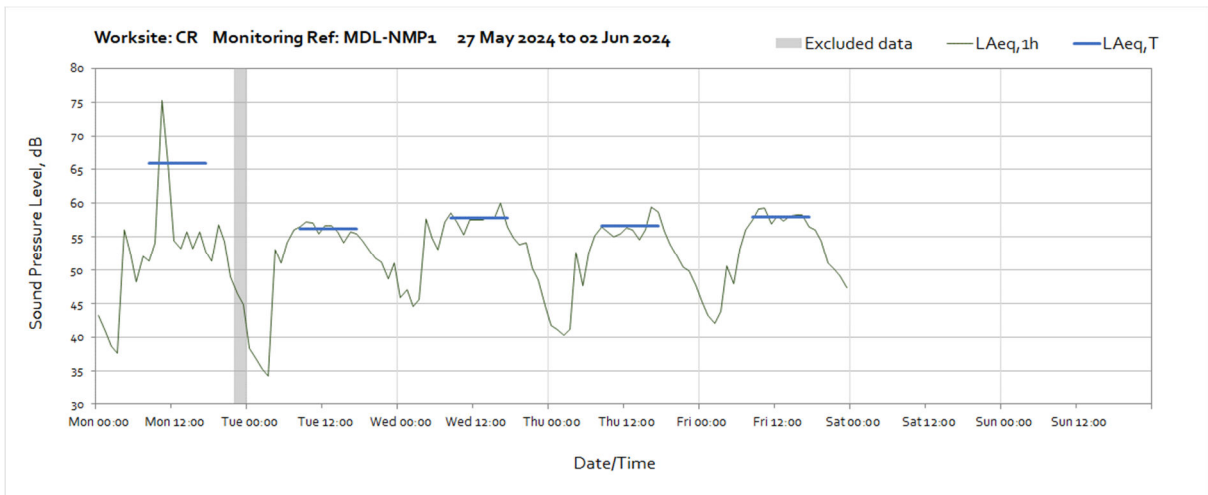
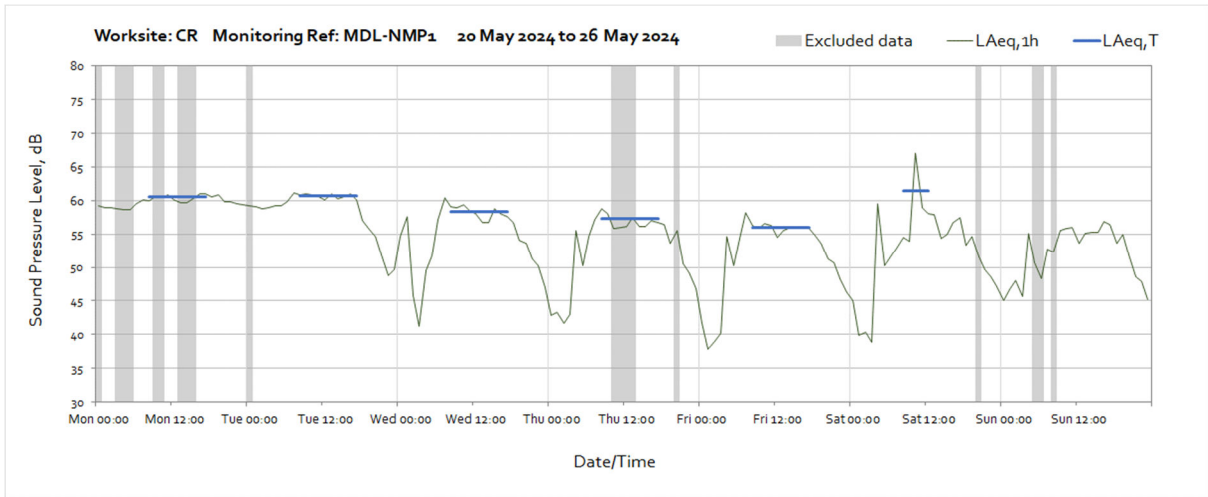


Worksite: CHSM – Monitoring Ref: MDL-NMP1

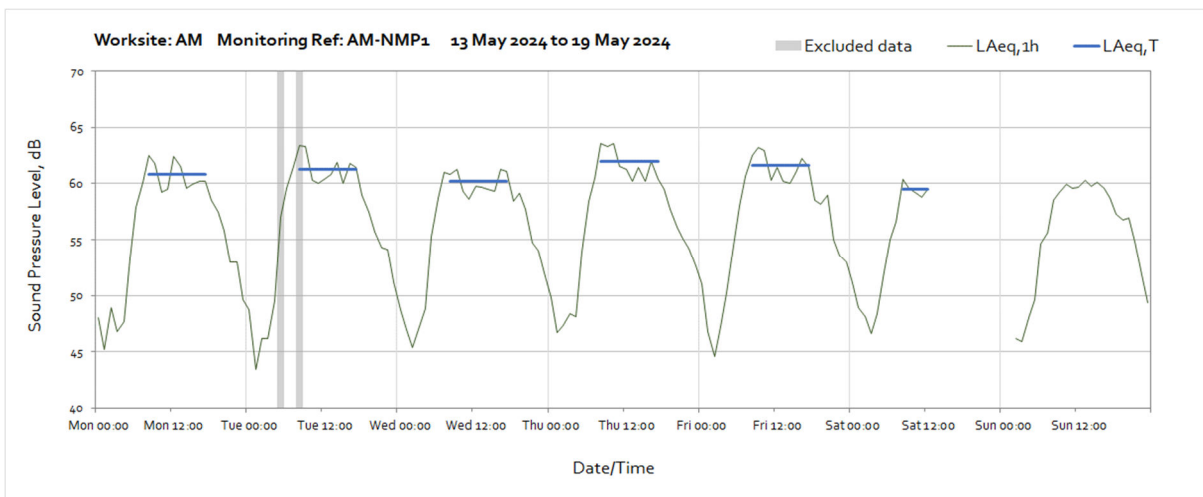
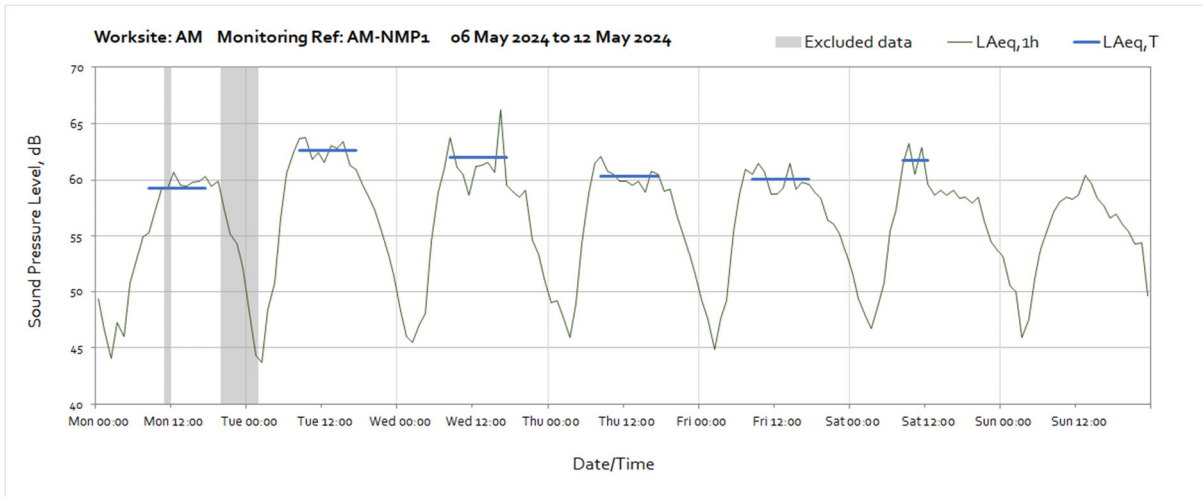
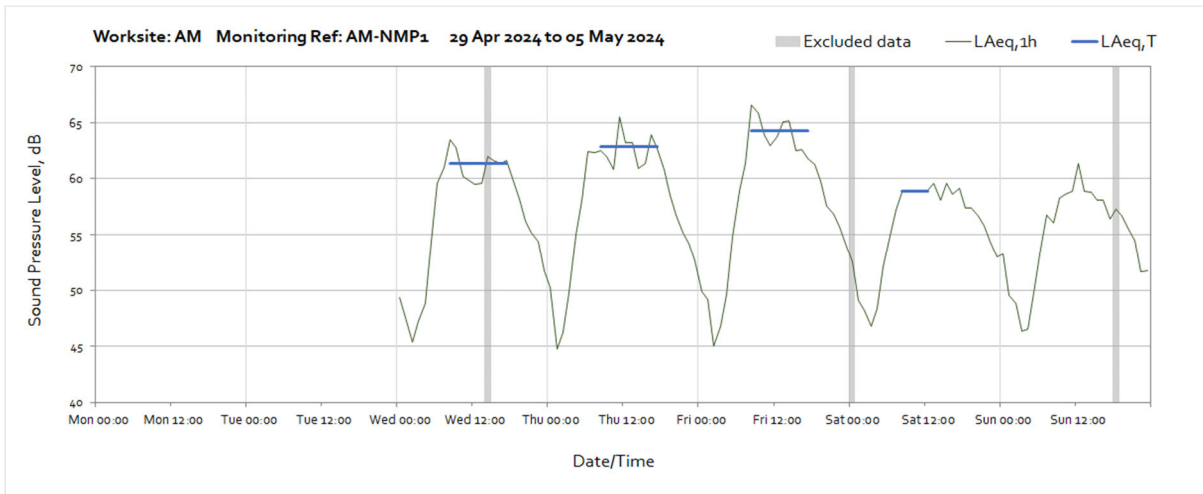




Note: Missing data between 13:00 on Saturday 18th May until 02:00 on Sunday 19th May was due to a technical error within the monitoring station.

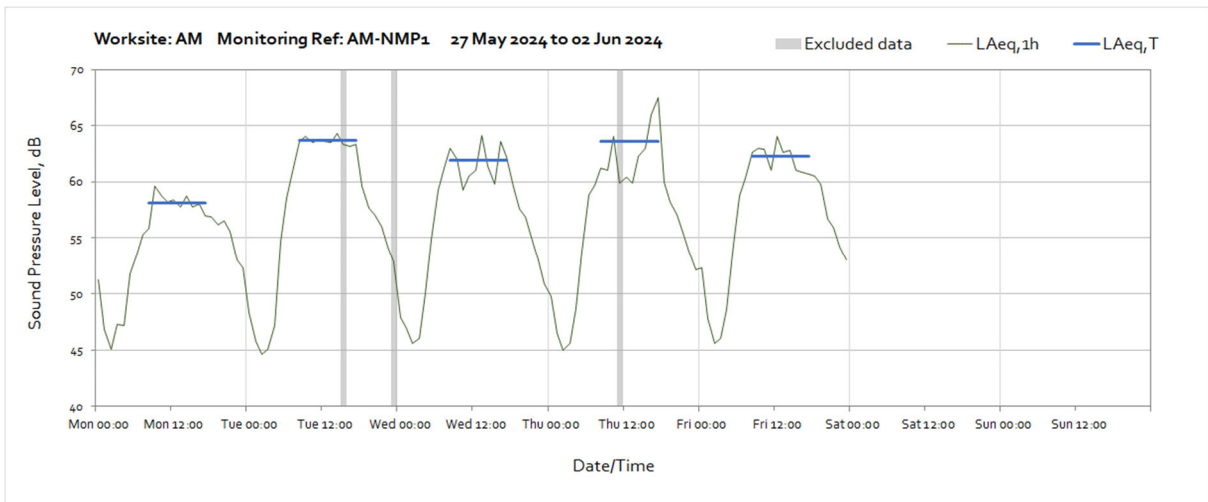
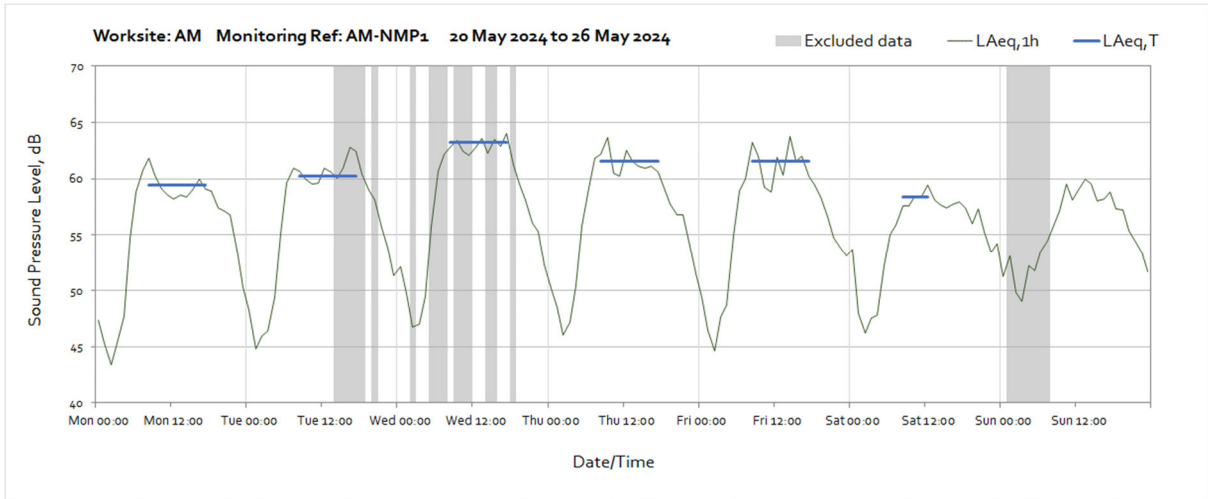


Worksite: AM – Monitoring Ref: AM-NMP1

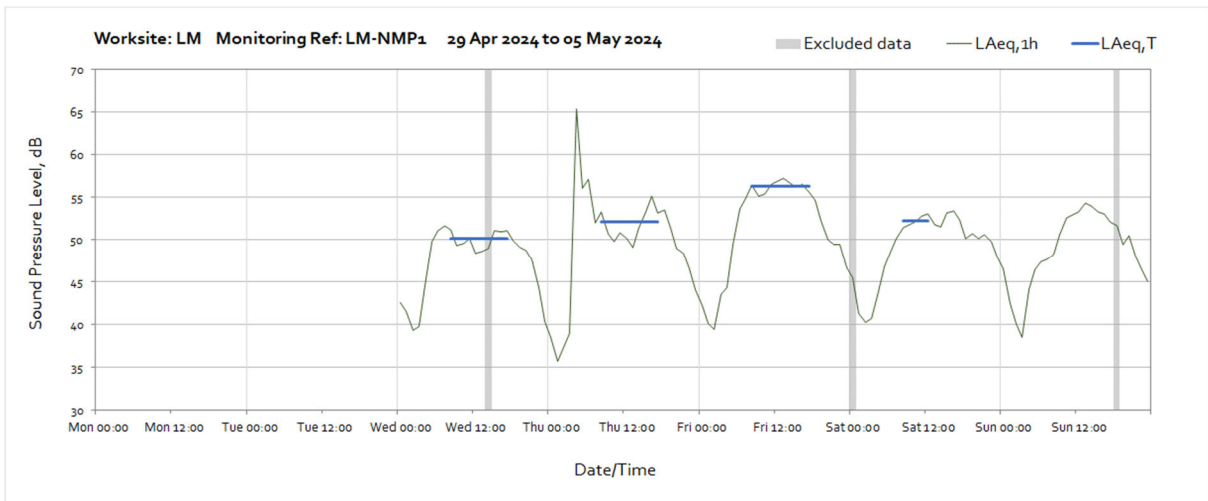


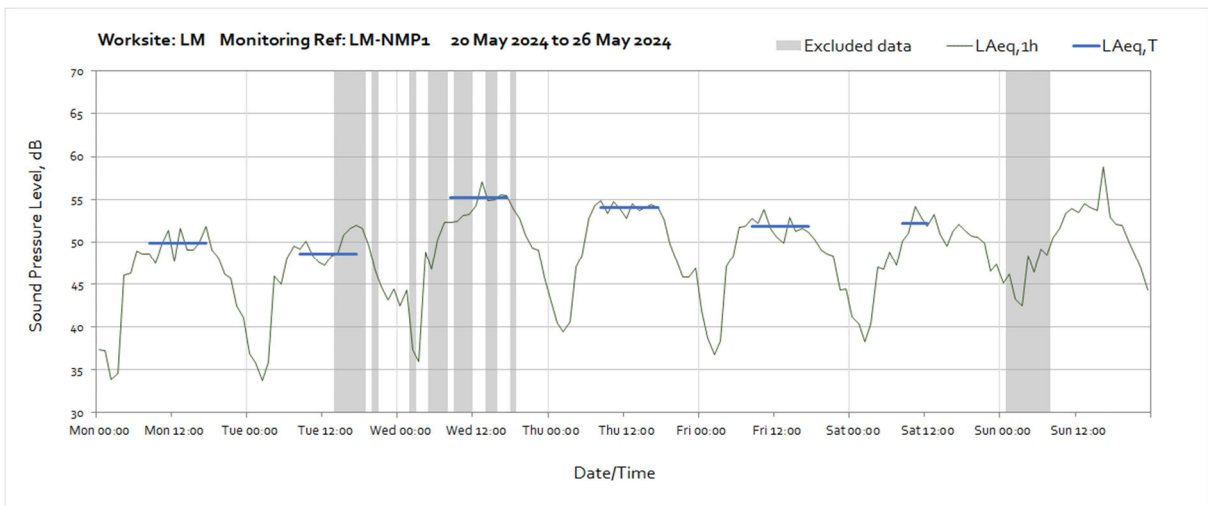
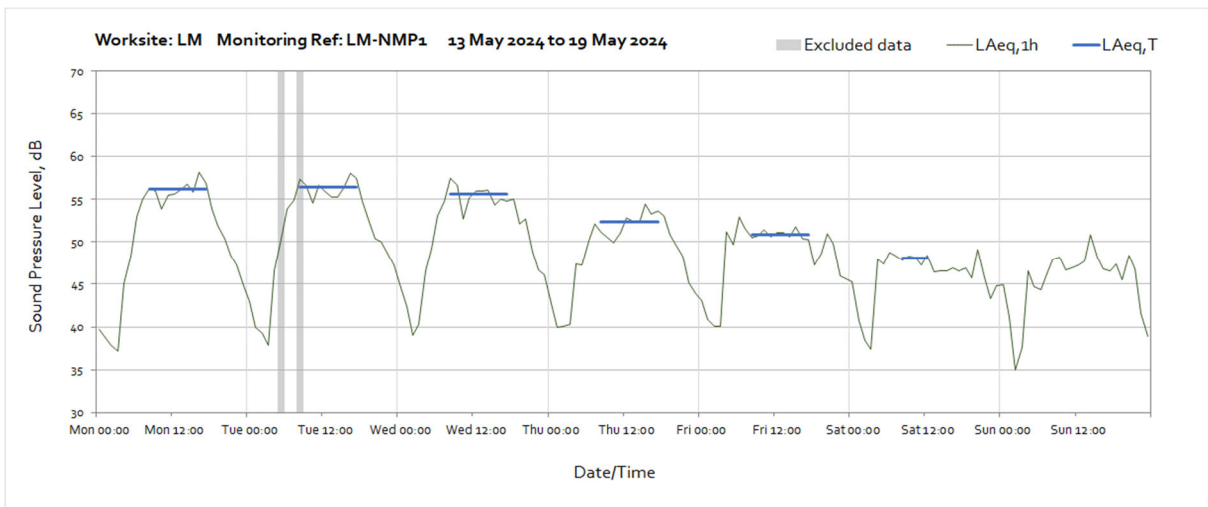
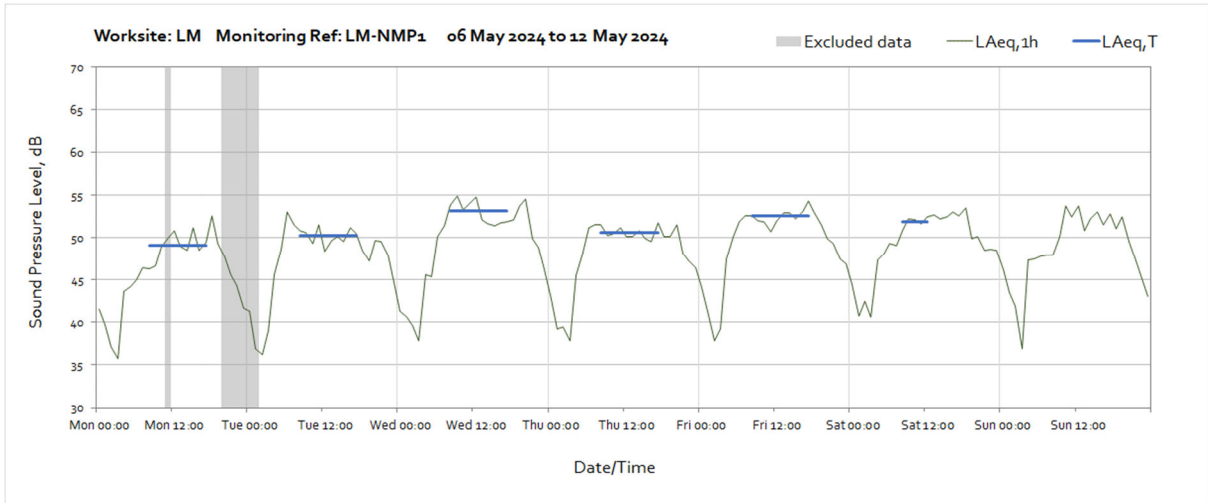
Note: Missing data between 13:00 on Saturday 18th May until 02:00 on Sunday 19th May was due to a technical error within the monitoring station.

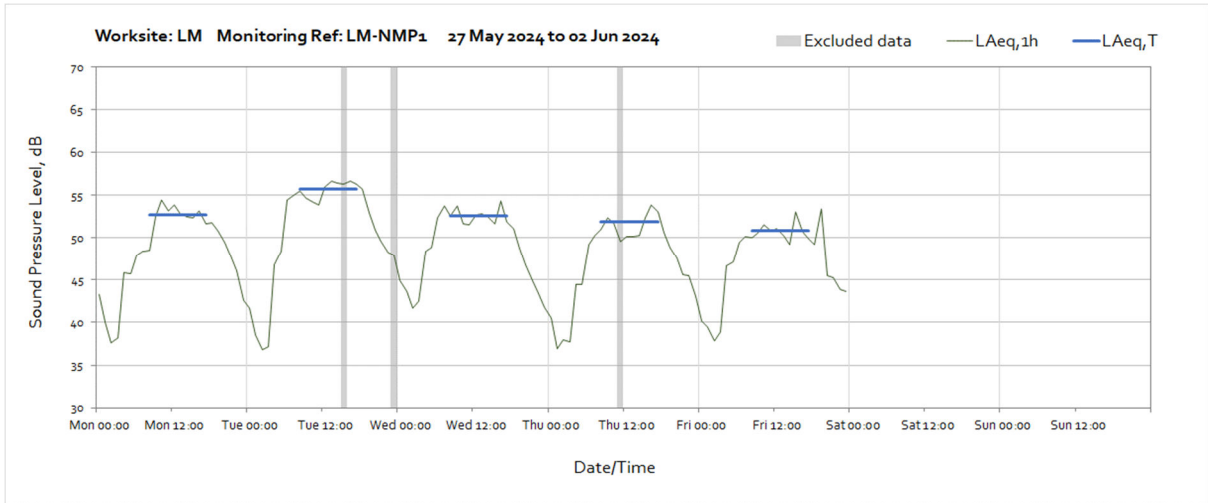
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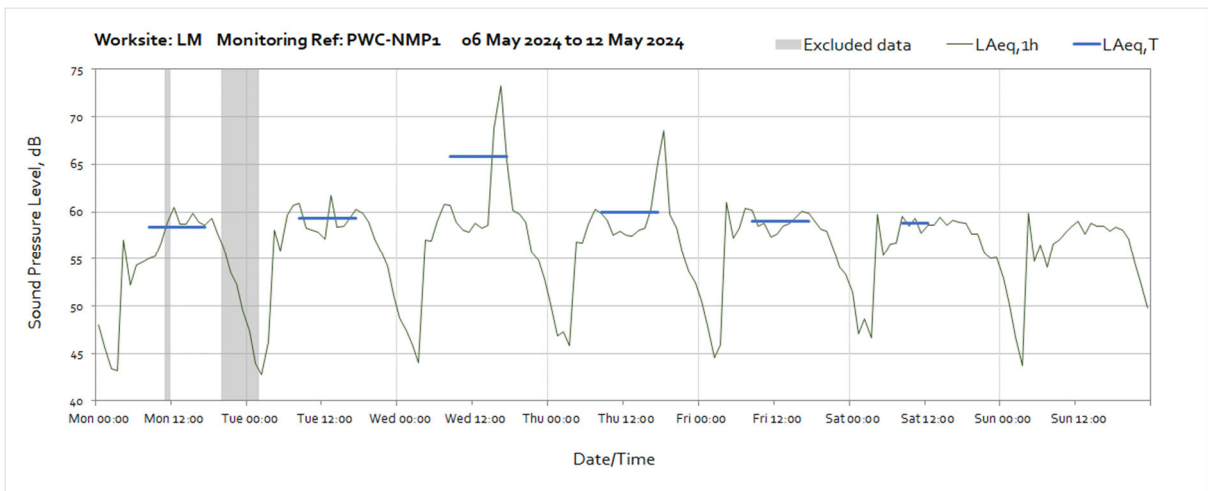
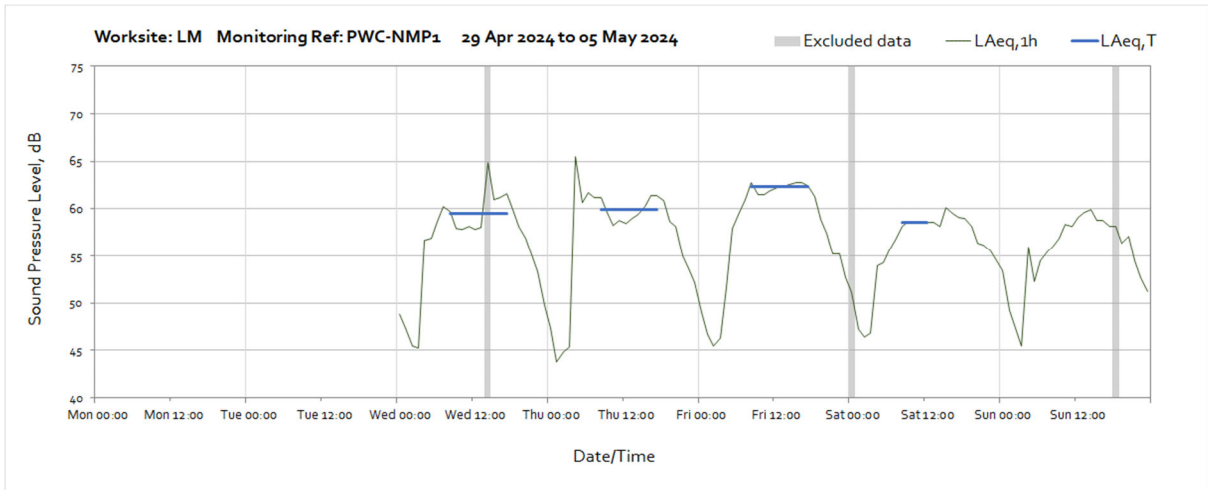
Worksite: LM - Monitoring Ref: LM-NMP1

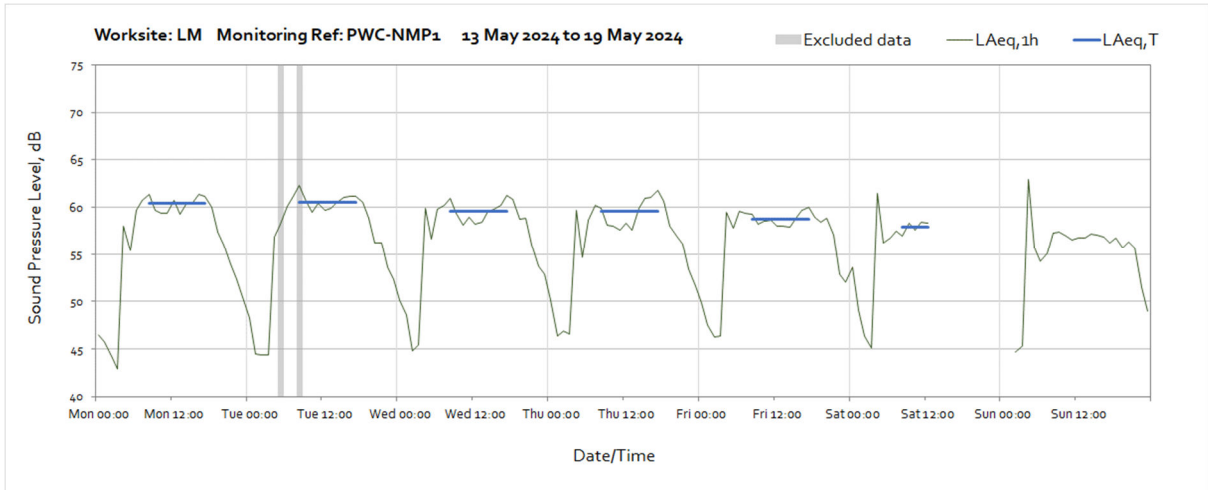




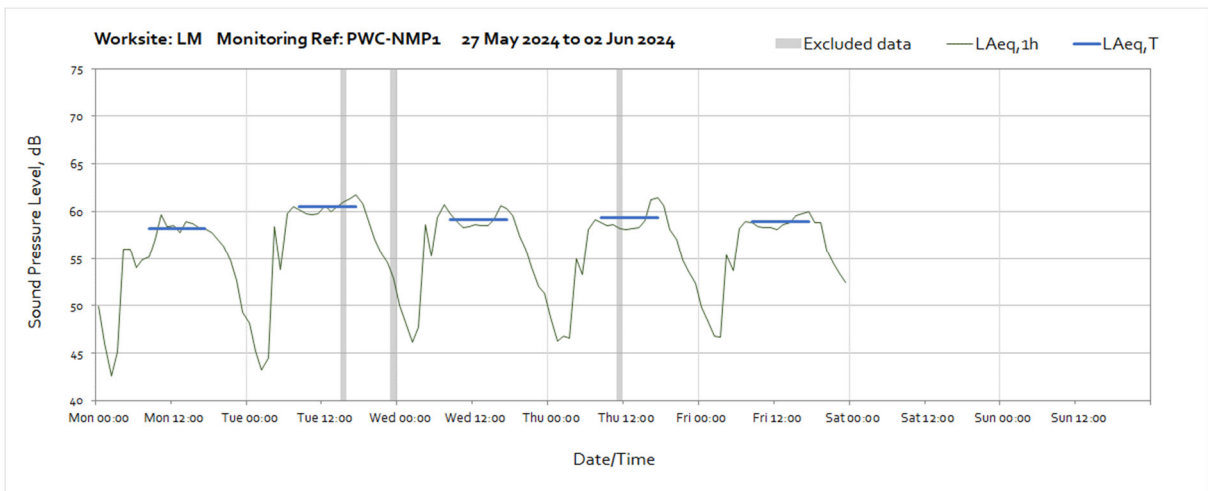
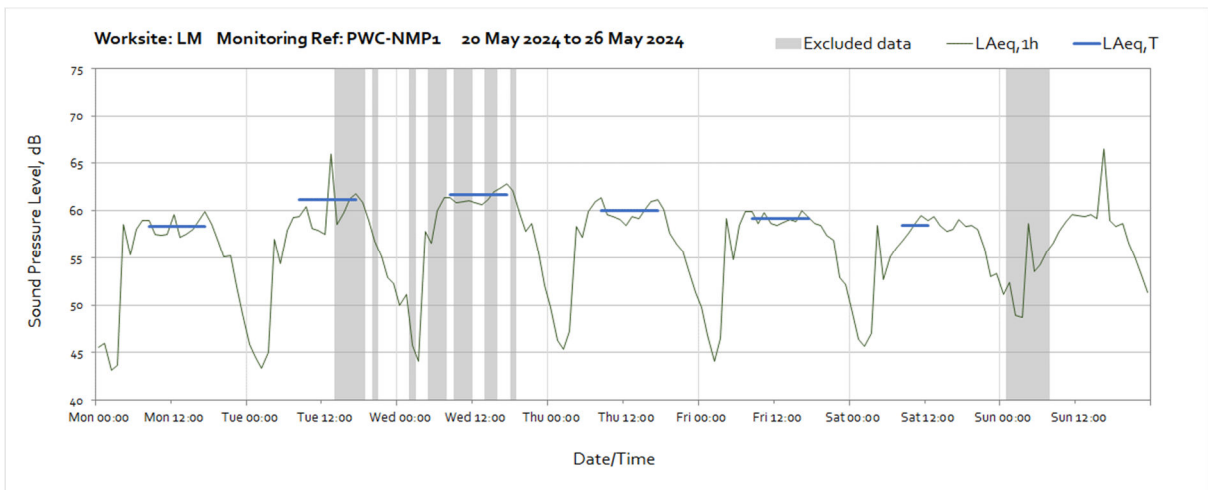


Worksite: LM – Monitoring Ref: PWC-NMP1

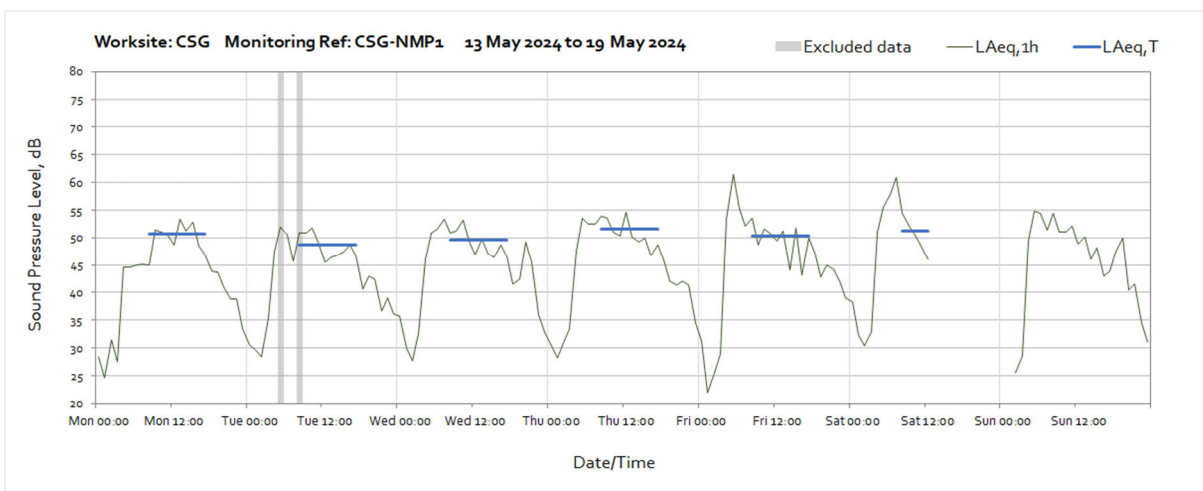
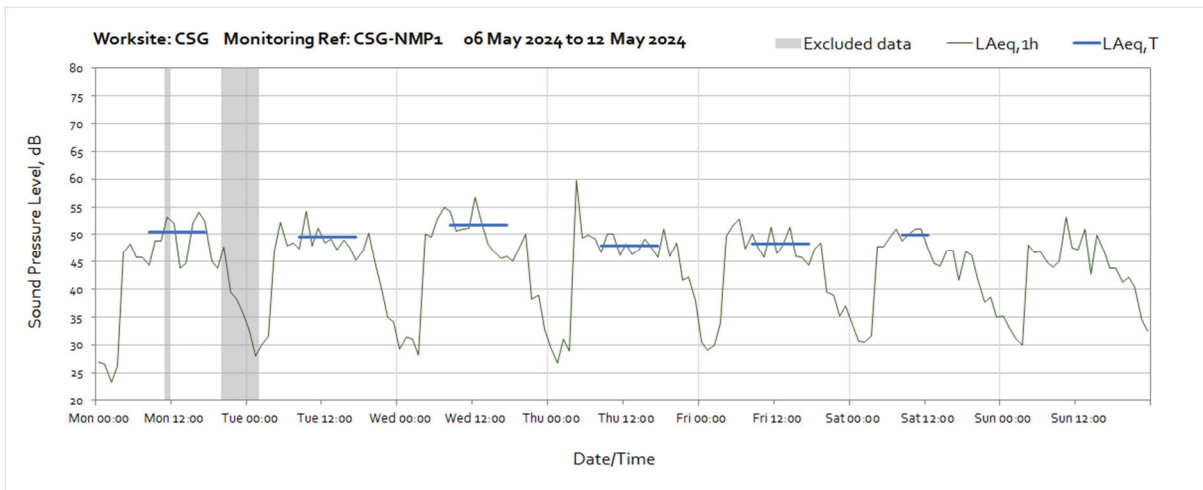
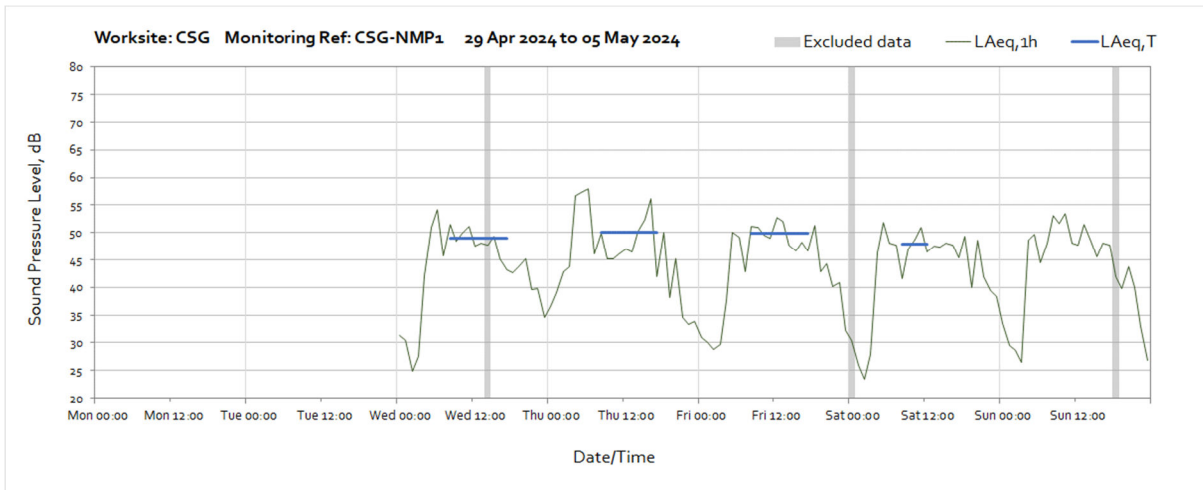




Note: Missing data between 13:00 on Saturday 18th May until 02:00 on Sunday 19th May was due to a technical error within the monitoring station.

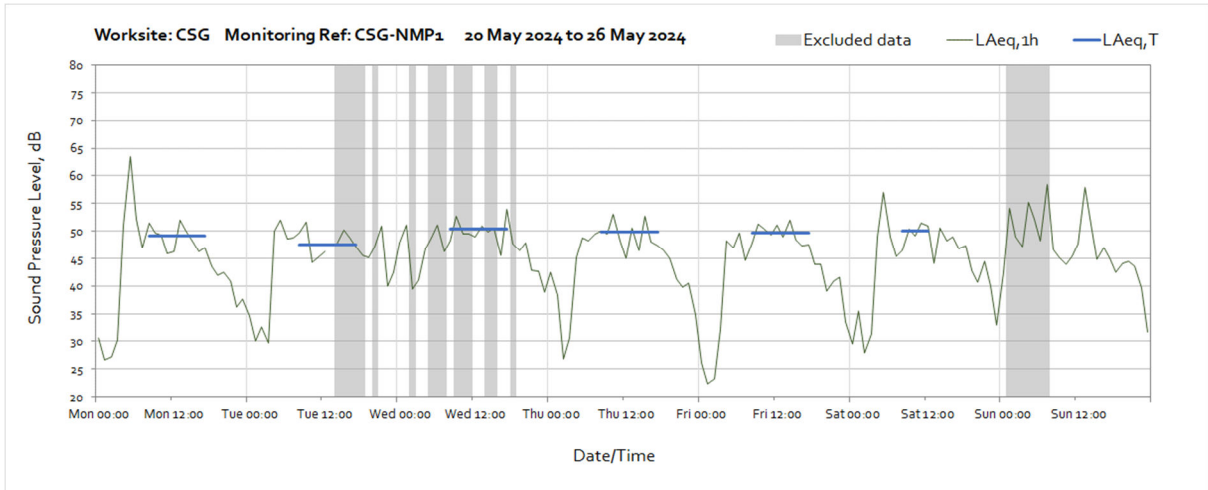


Worksite: CSG – Monitoring Ref: CSG-NMP1

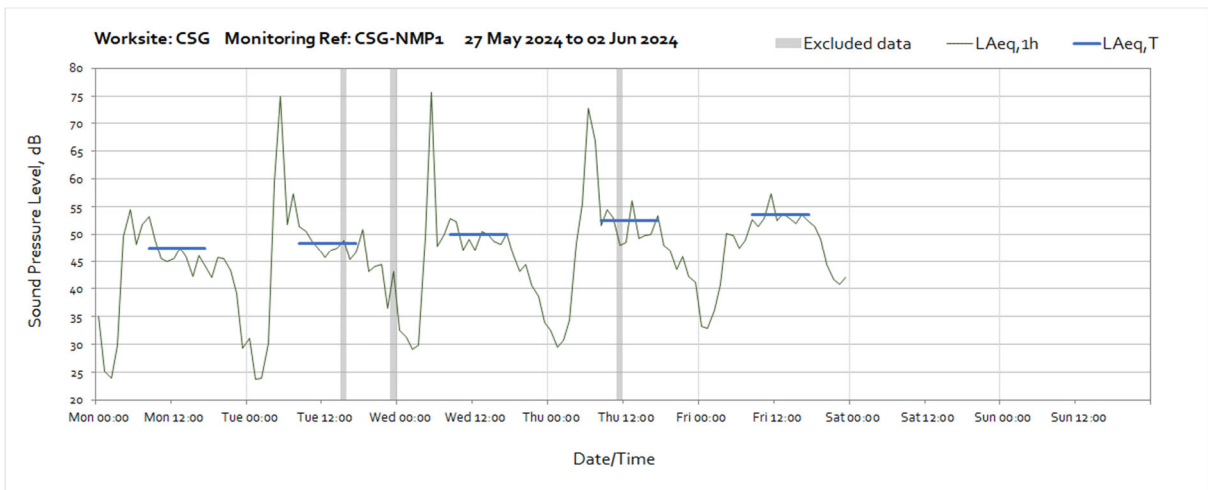


Note: Missing data between 13:00 on Saturday 18th May until 02:00 on Sunday 19th May was due to a technical error within the monitoring station.

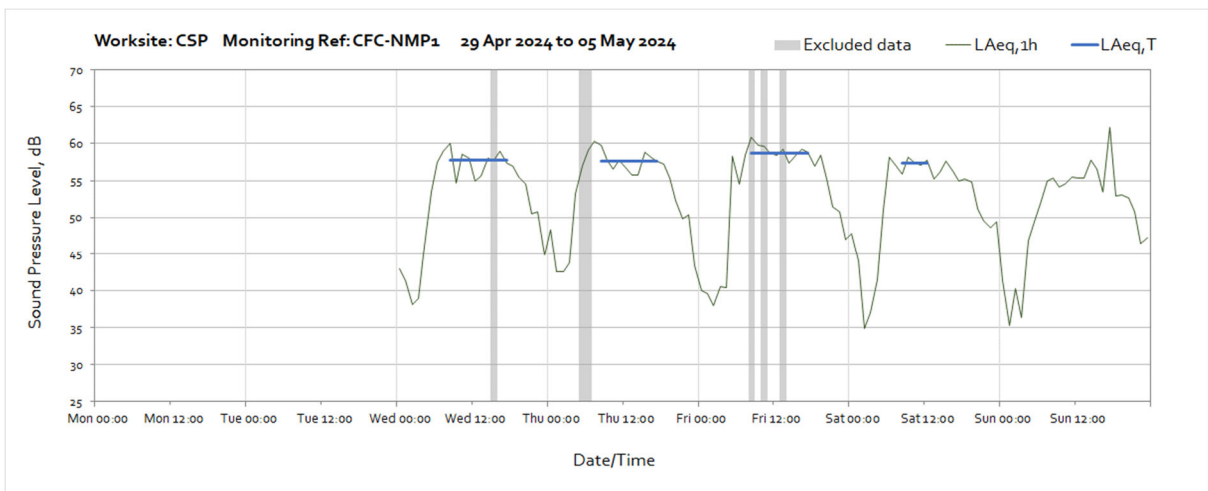
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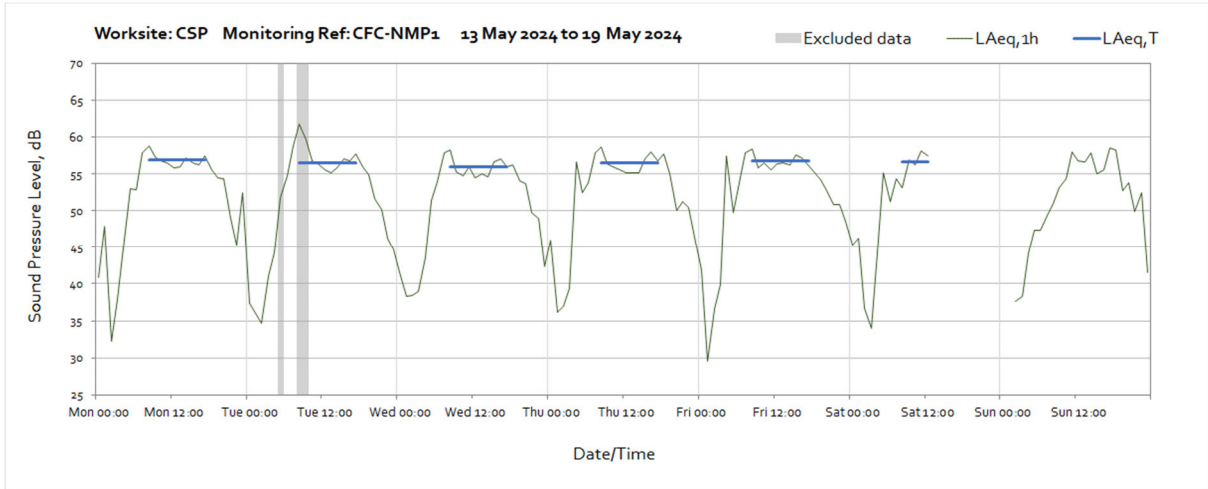
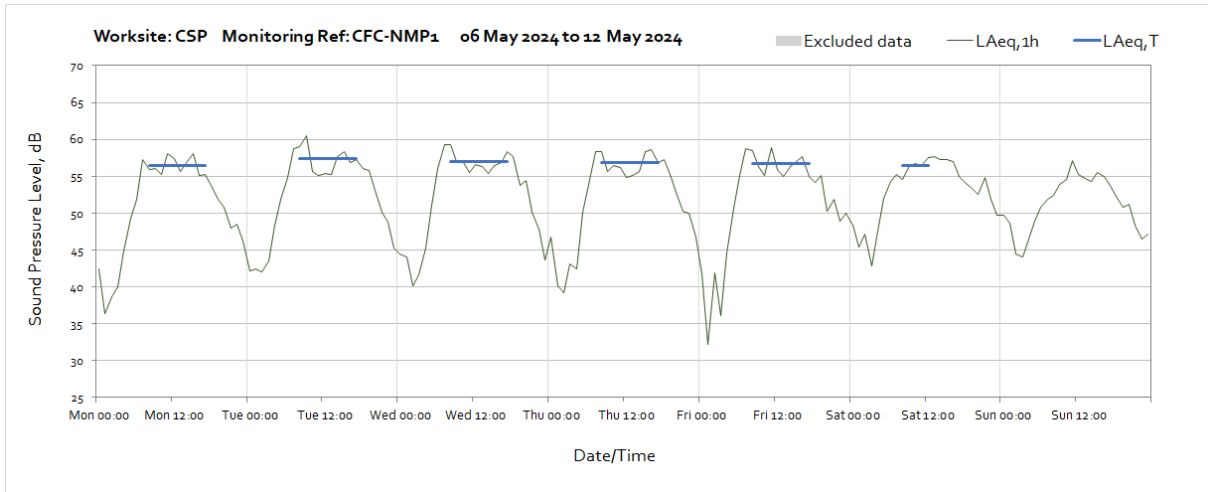


Note: Missing data between 13:00 and 14:00 on Tuesday 21st May was due to a power supply issue at the monitoring station.

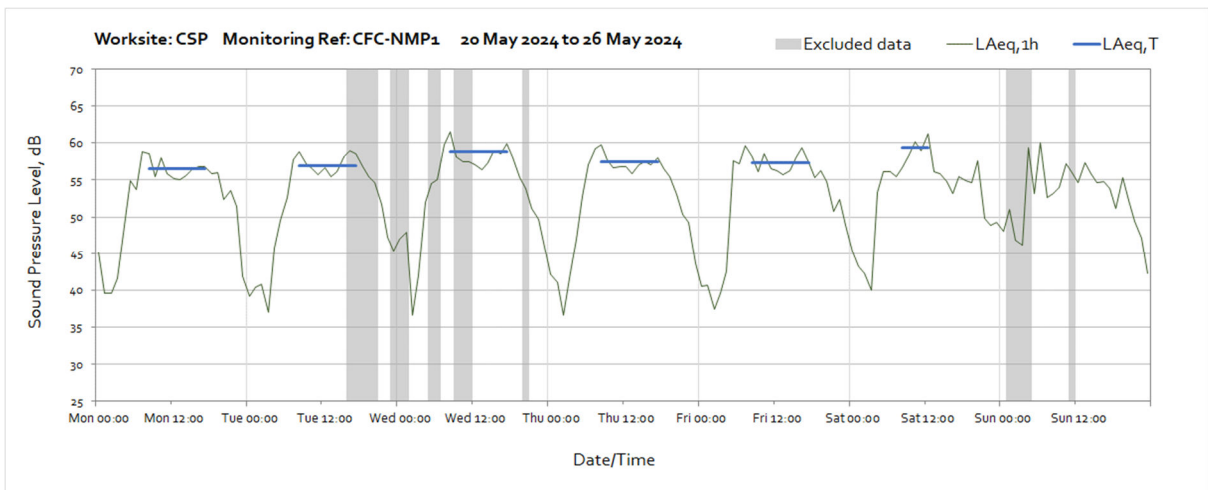


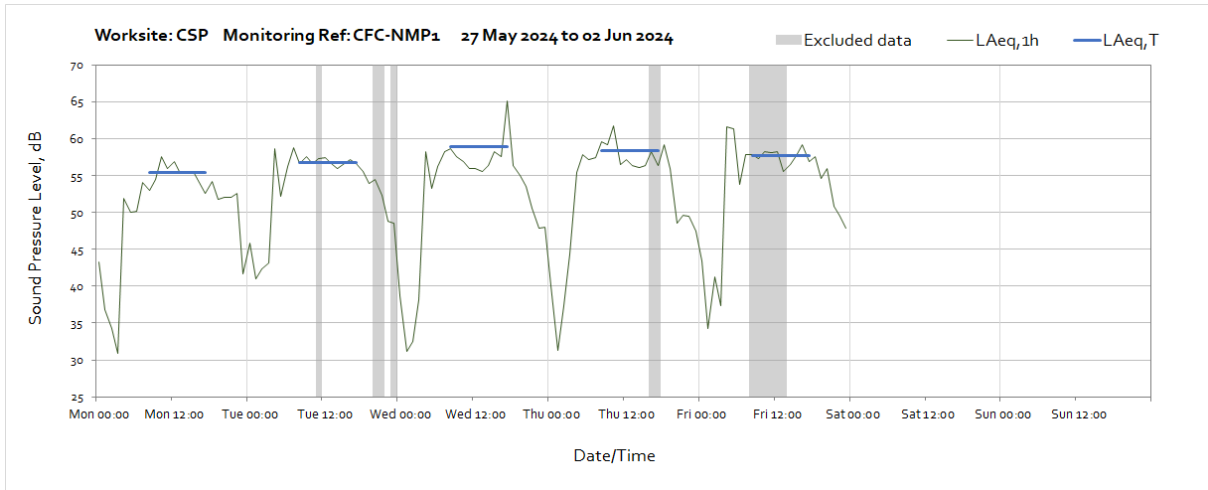
Worksite: CSP – Monitoring Ref: CFC-NMP1



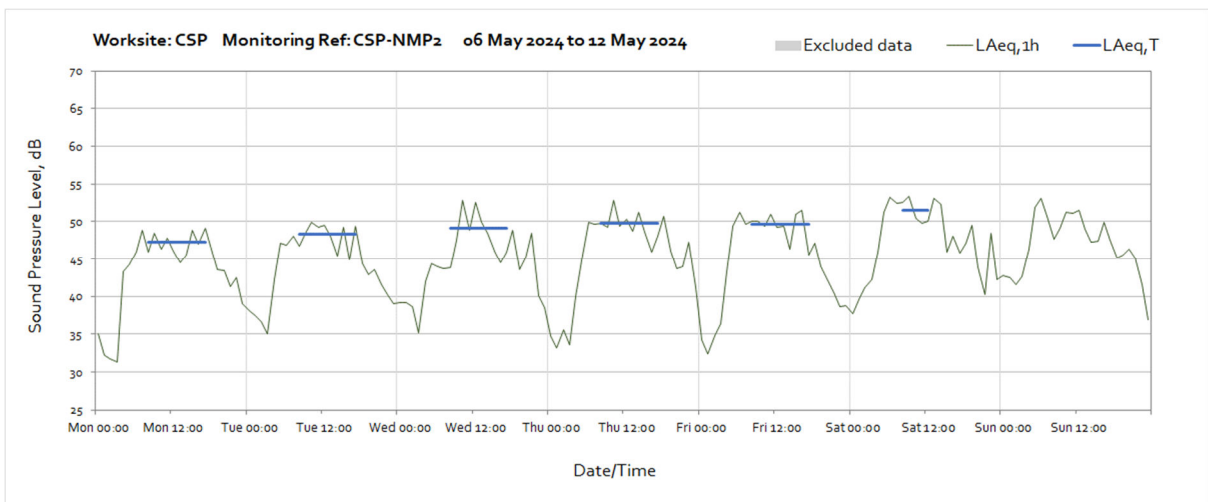
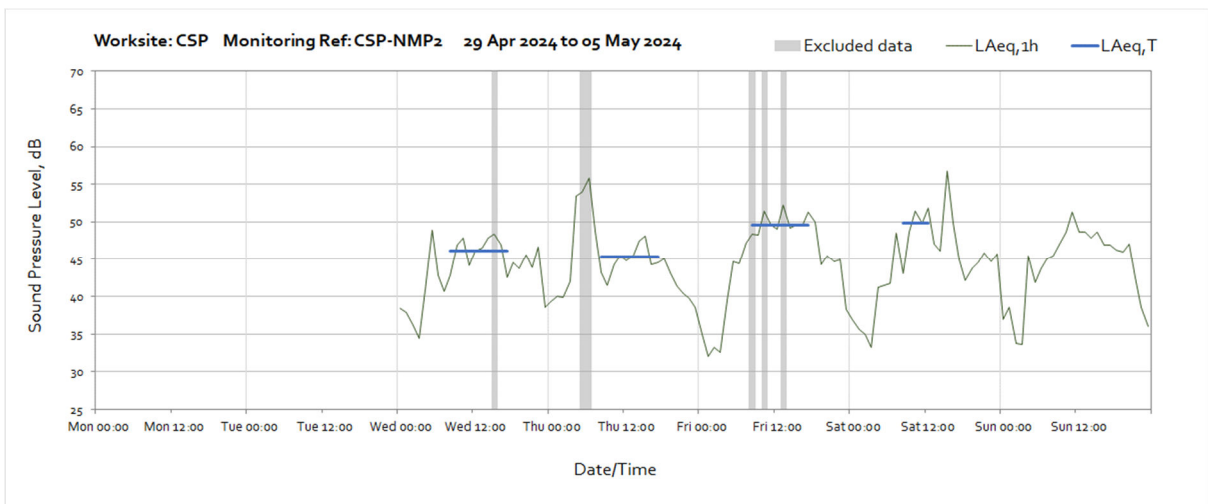


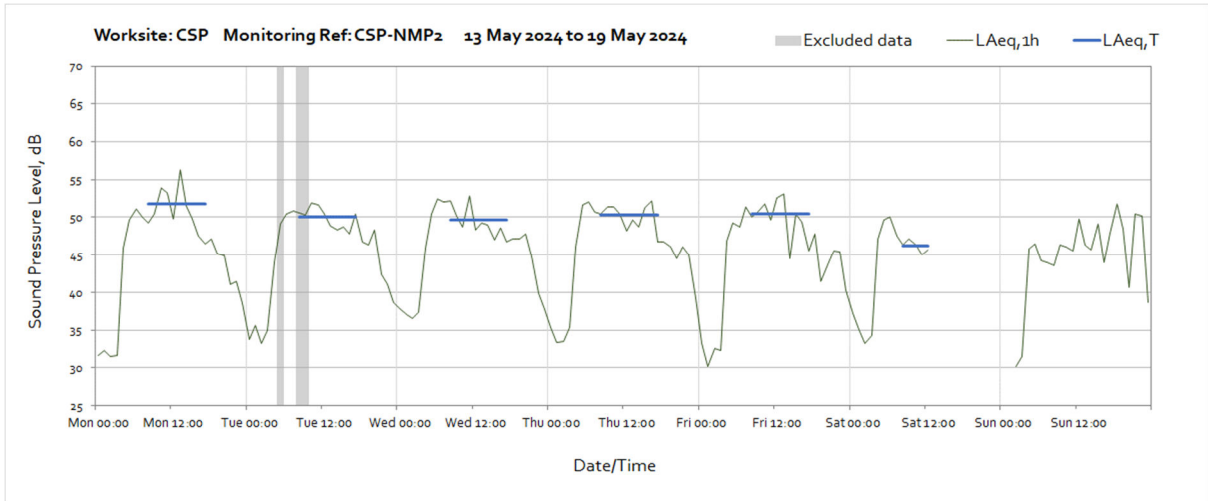
Note: Missing data between 13:00 on Saturday 18th May until 02:00 on Sunday 19th May was due to a technical error within the monitoring station.



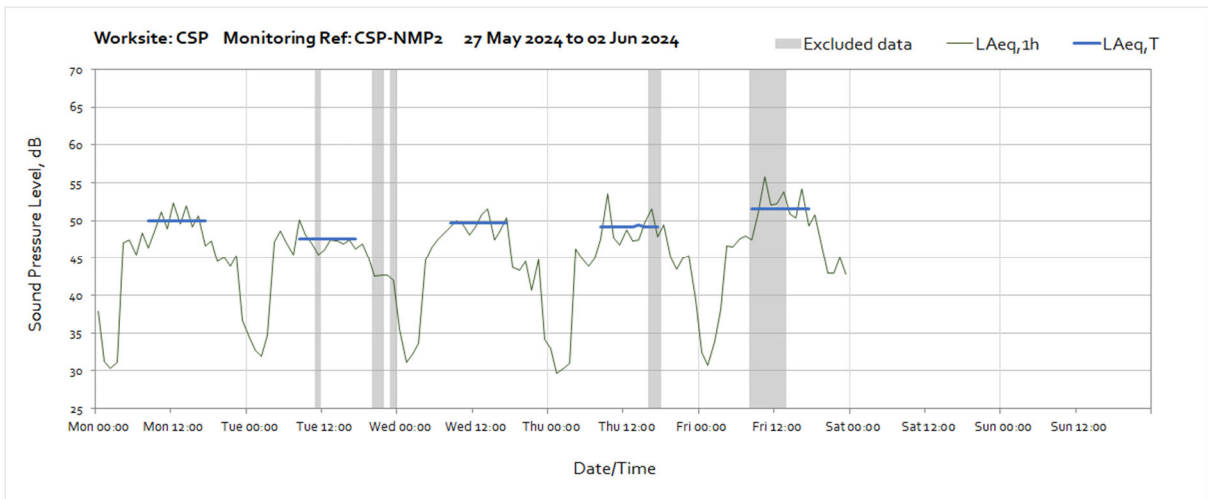
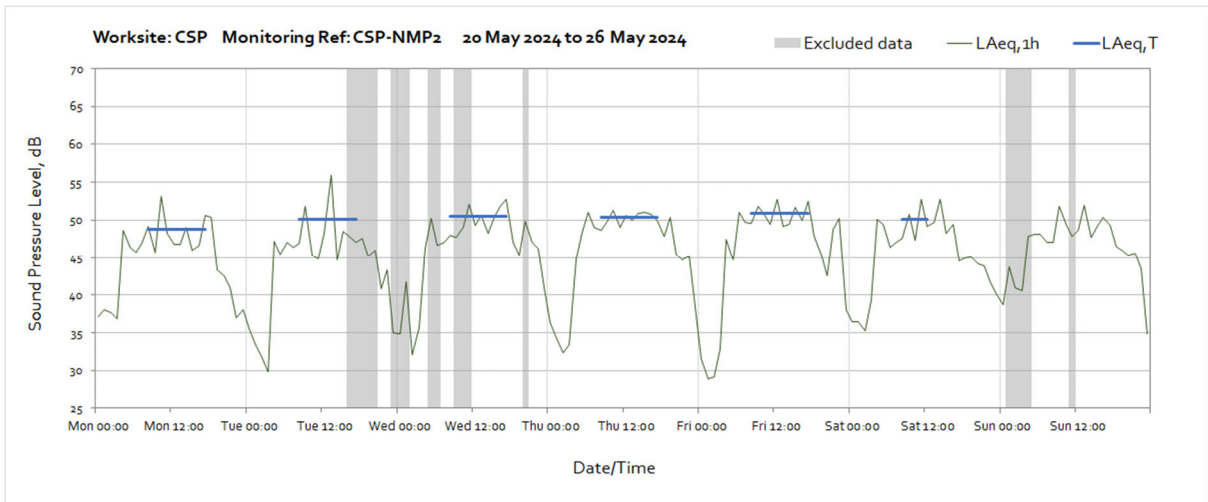


Worksite: CSP - Monitoring Ref: CSP-NMP2

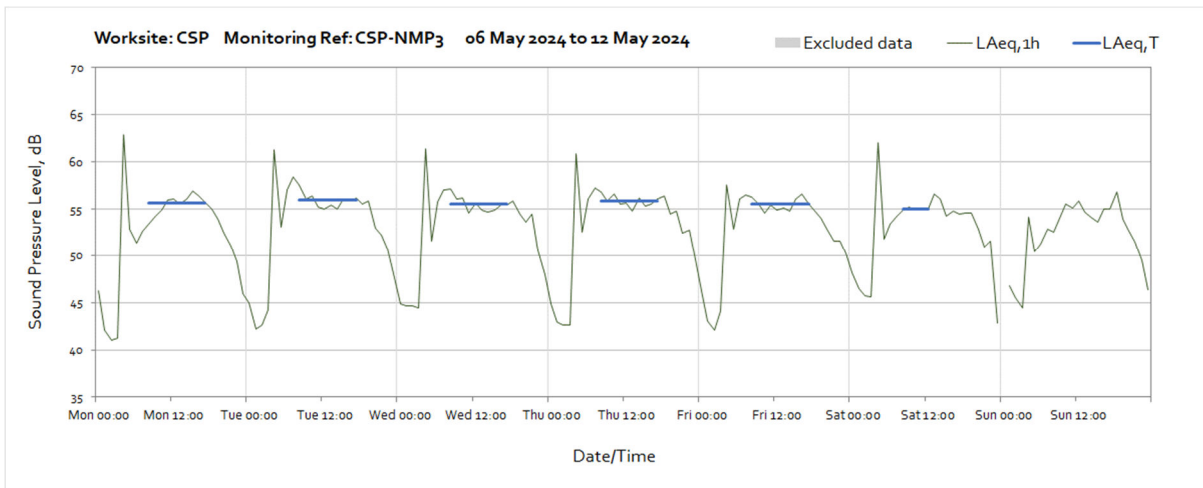
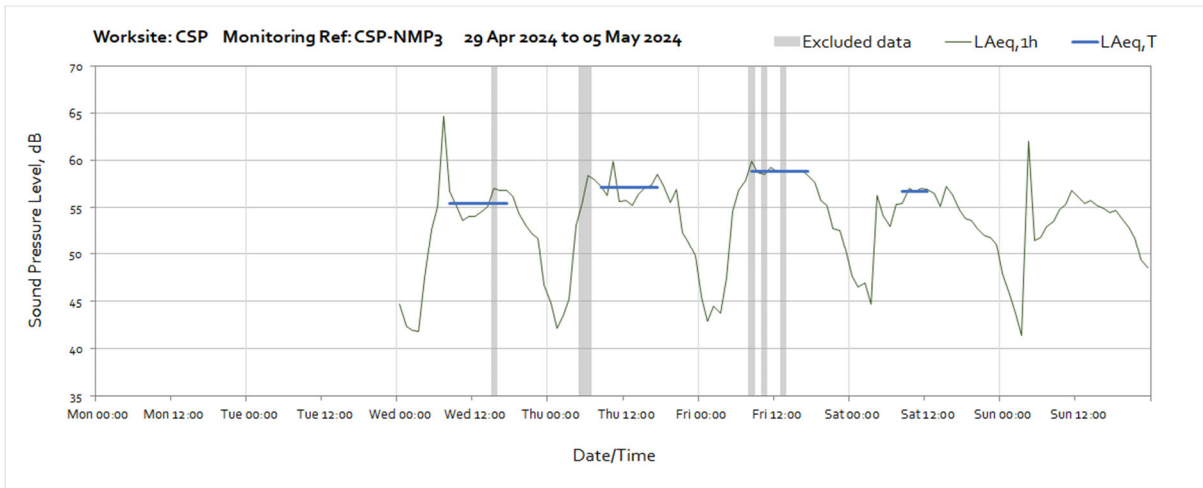




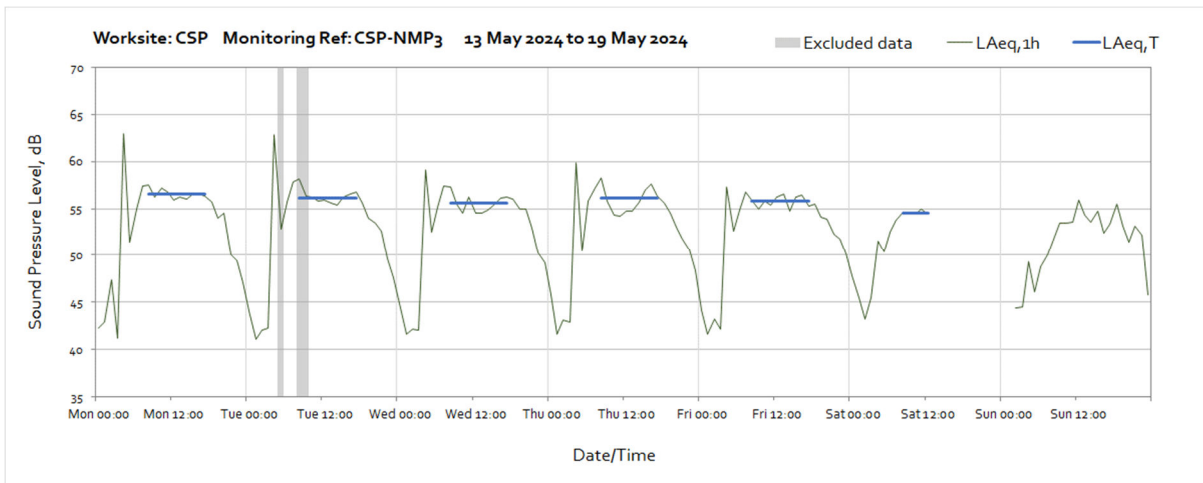
Note: Missing data between 13:00 on Saturday 18th May until 02:00 on Sunday 19th May was due to a technical error within the monitoring station.



Worksite: CSP – Monitoring Ref: CSP-NMP3

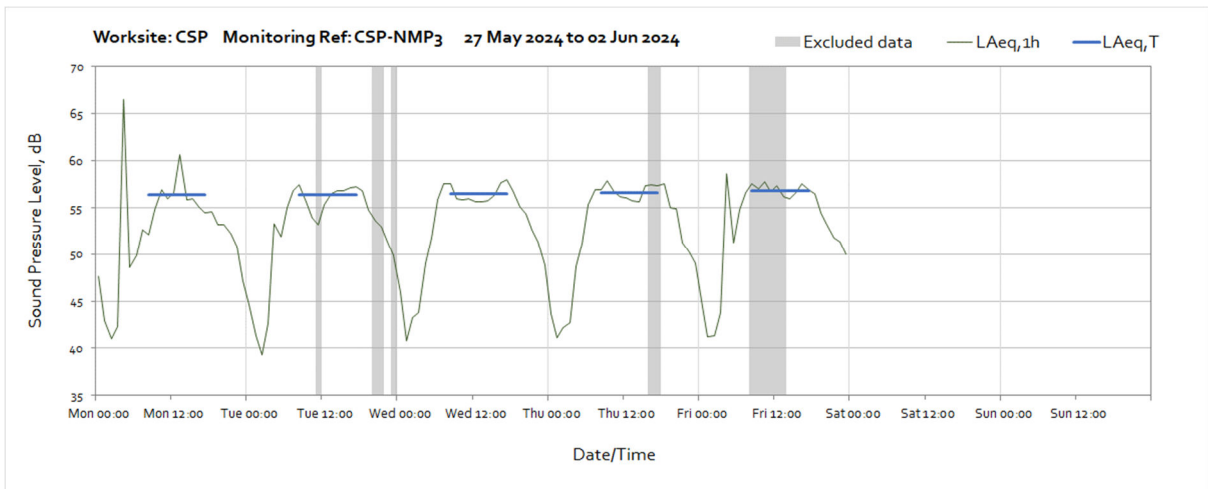
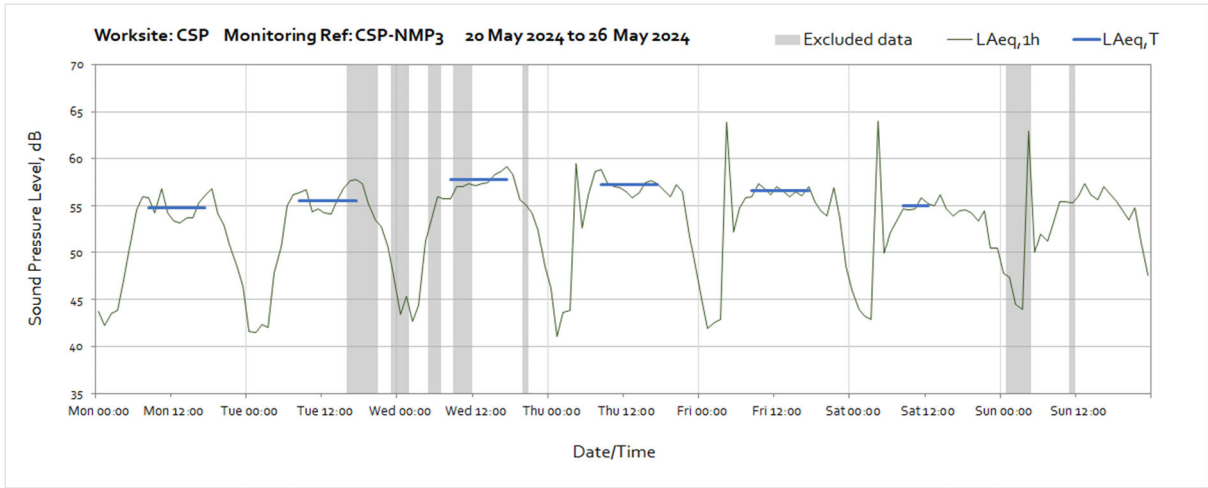


Note: Missing data between 00:00 and 01:00 on Sunday 12th May was due to an issue with data transfer.

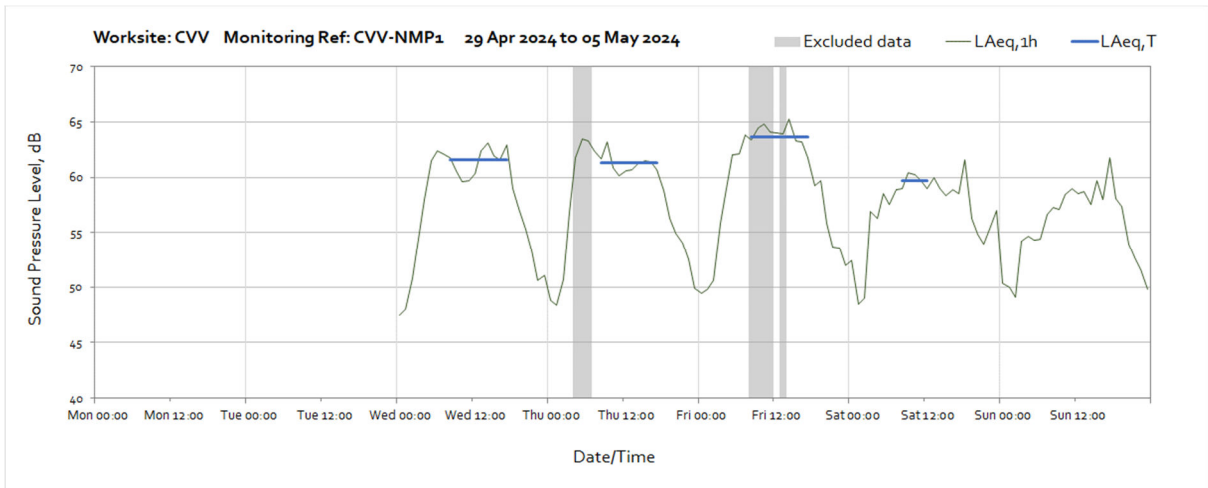


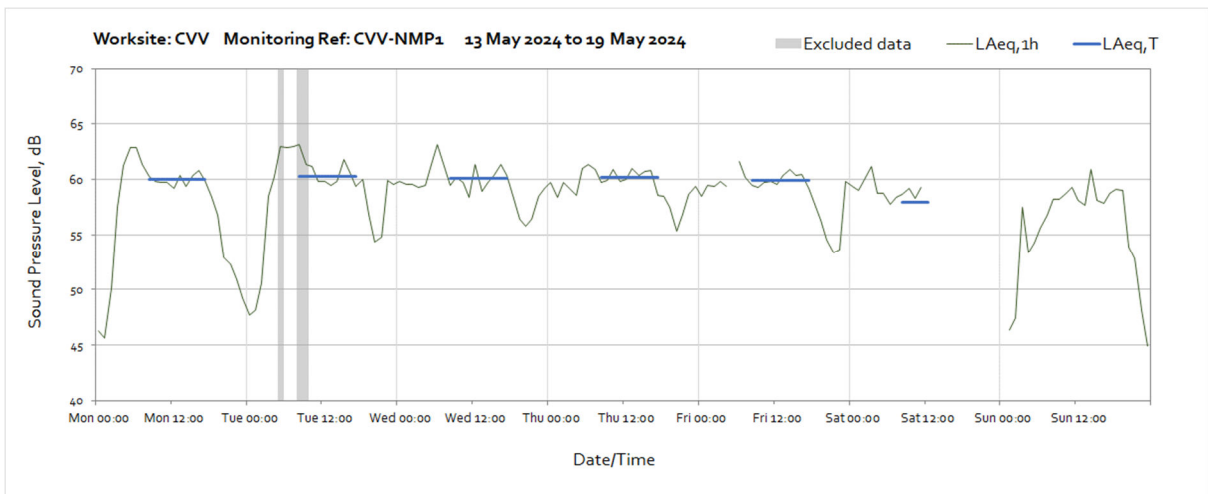
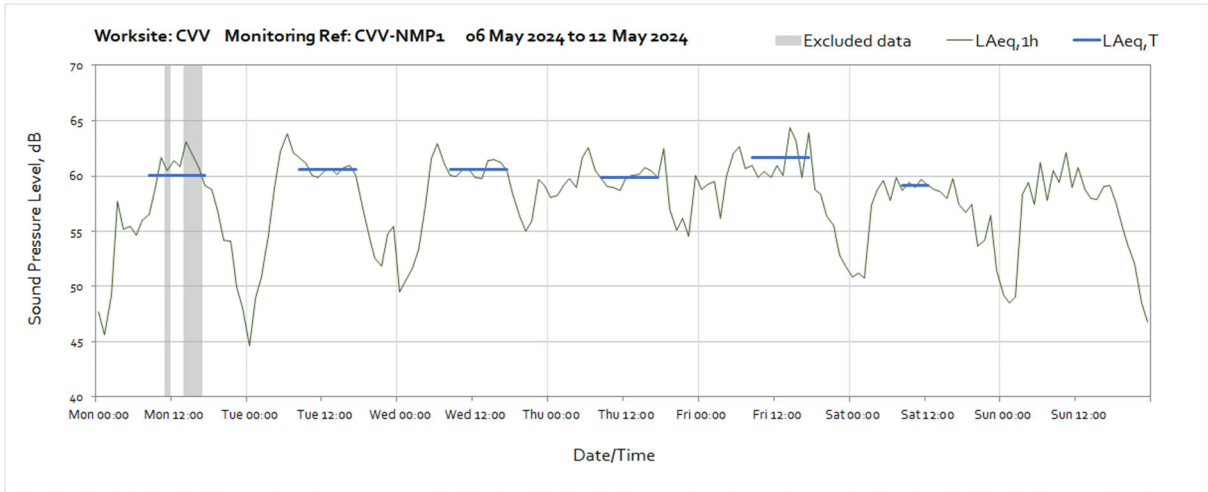
Note: Missing data between 13:00 on Saturday 18th May until 02:00 on Sunday 19th May was due to a technical error within the monitoring station.

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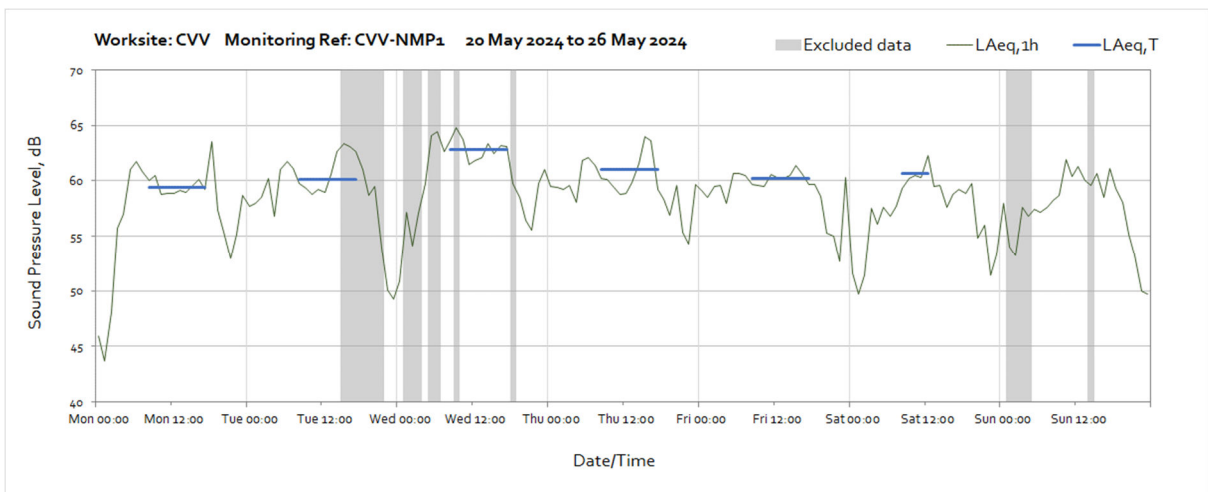


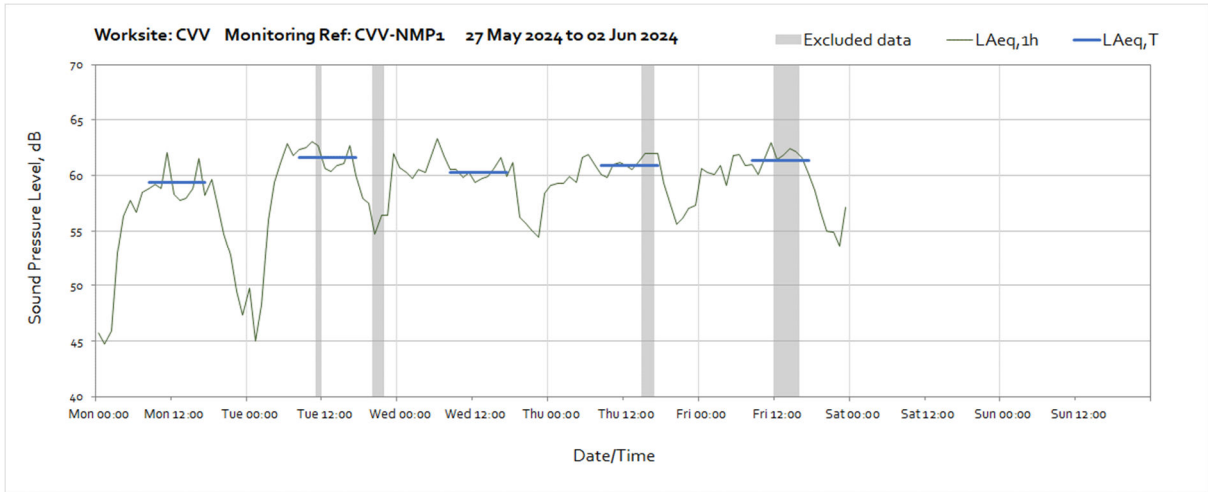
Worksite: CVV- Monitoring Ref: CVV-NMP1



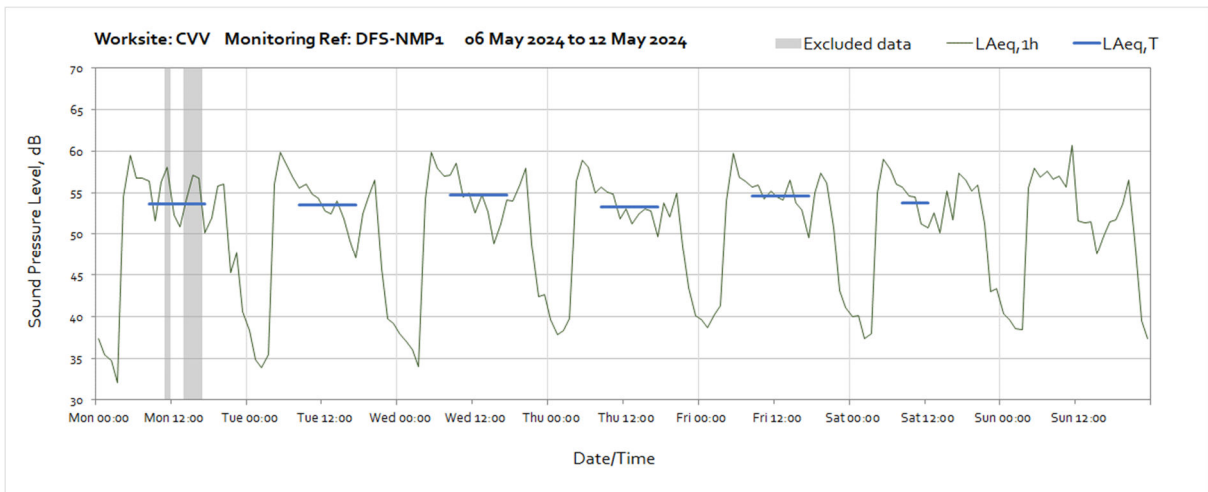
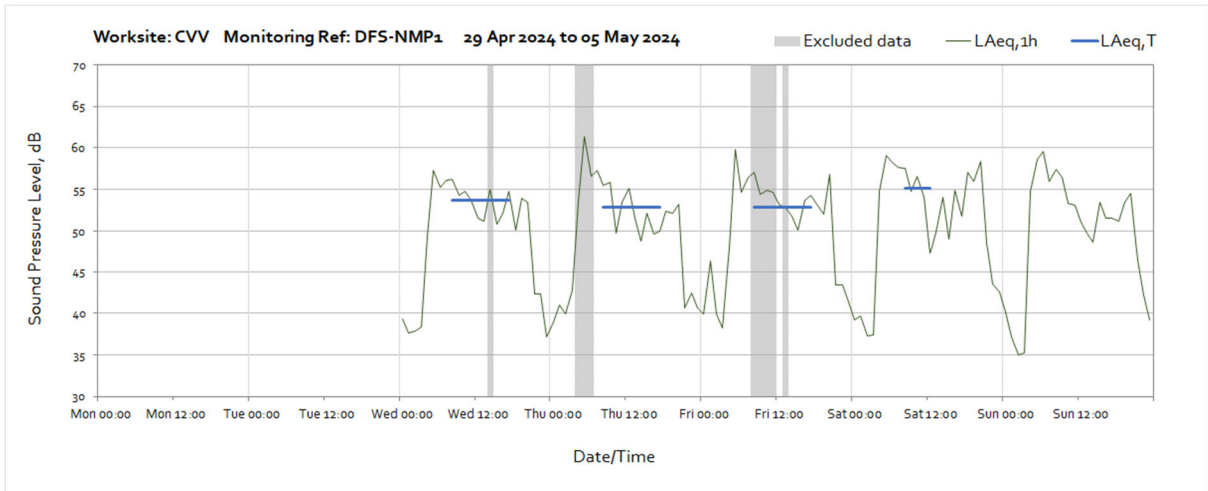


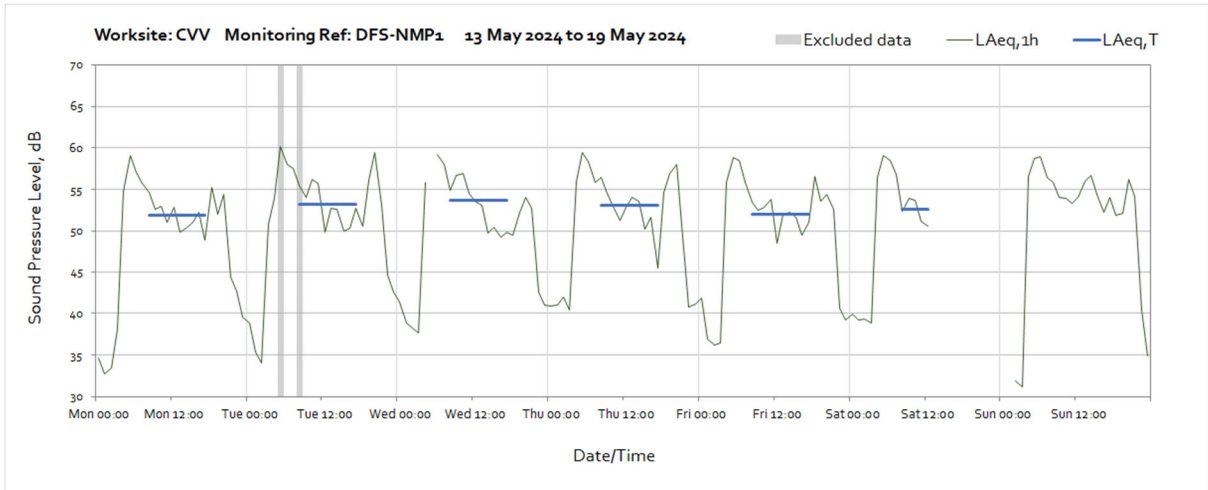
Note: Missing data between 05:00 and 06:00 on Friday 17th May was due to an issue with data transfer. Missing data between 13:00 on Saturday 18th May until 02:00 on Sunday 19th May was due to a technical error within the monitoring station.



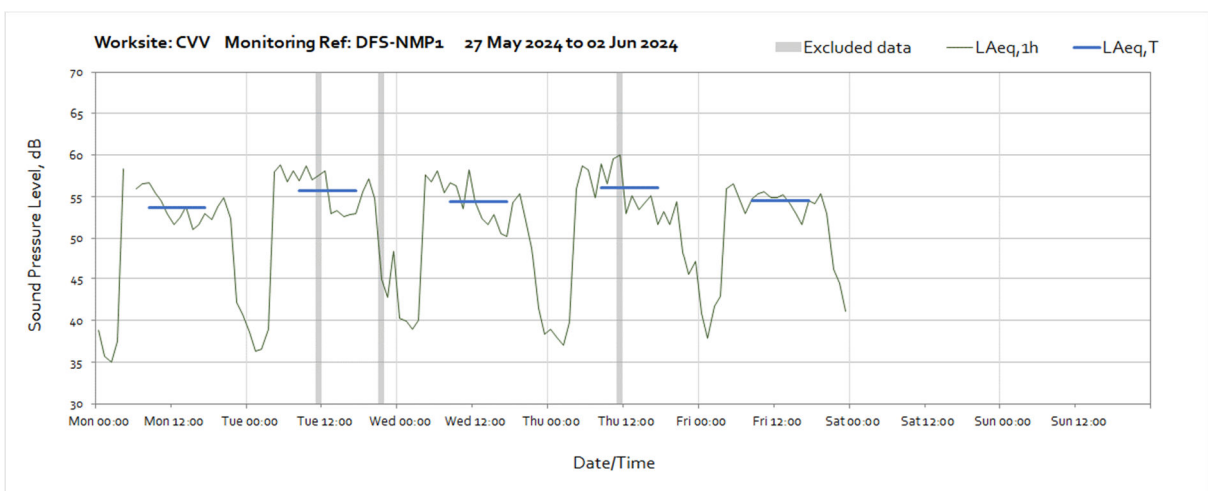
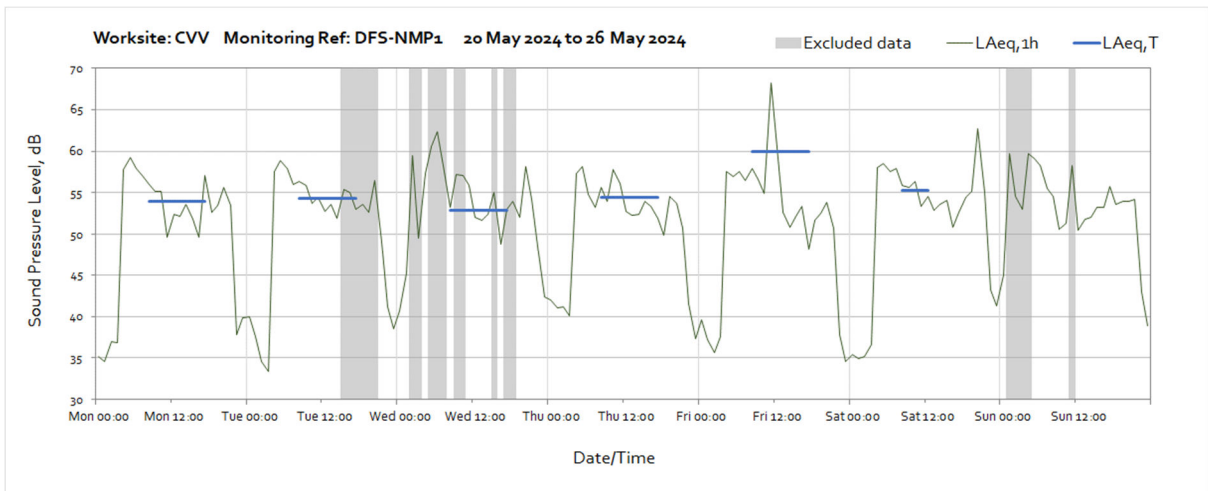


Worksite: CVV – Monitoring Ref: DFS-NMP1





Note: Missing data between 05:00 and 06:00 on Wednesday 15th May was due to a power supply issue at the monitoring station. Missing data between 13:00 on Saturday 18th May until 02:00 on Sunday 19th May was due to a technical error within the monitoring station.



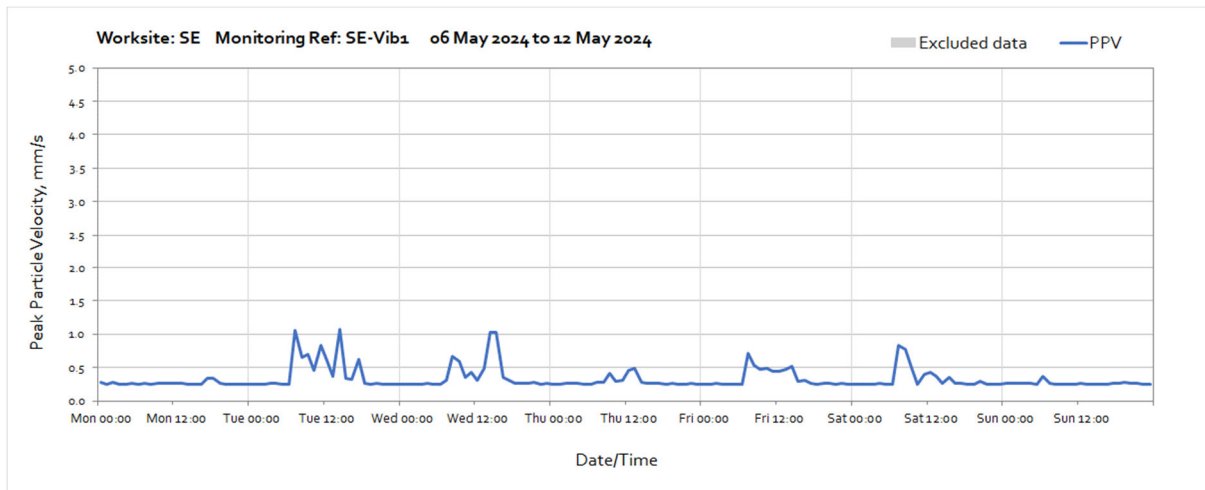
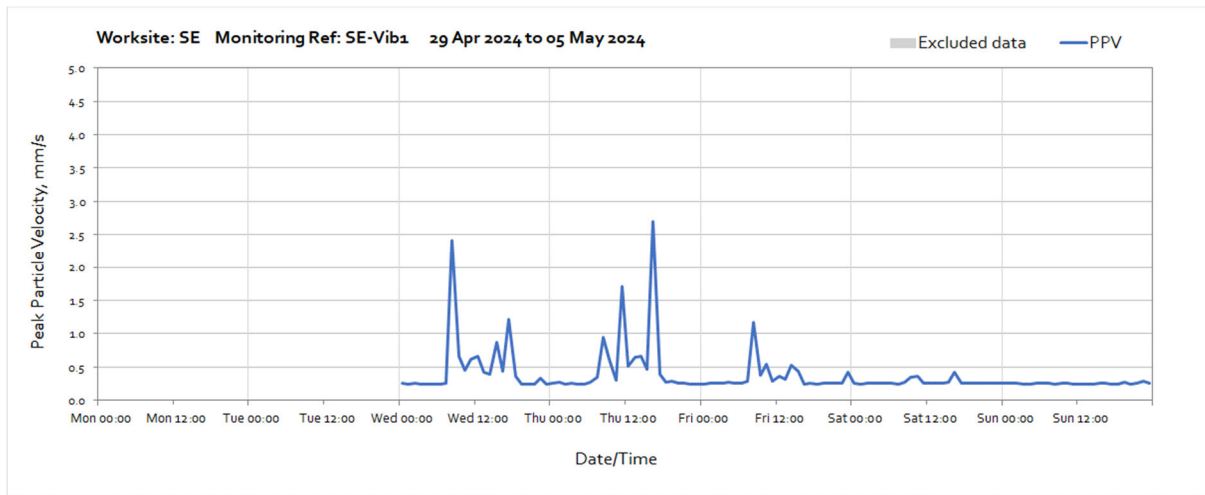
Note: Missing data between 05:00 and 06:00 on Monday 27th May was due to a power supply issue at the monitoring station.

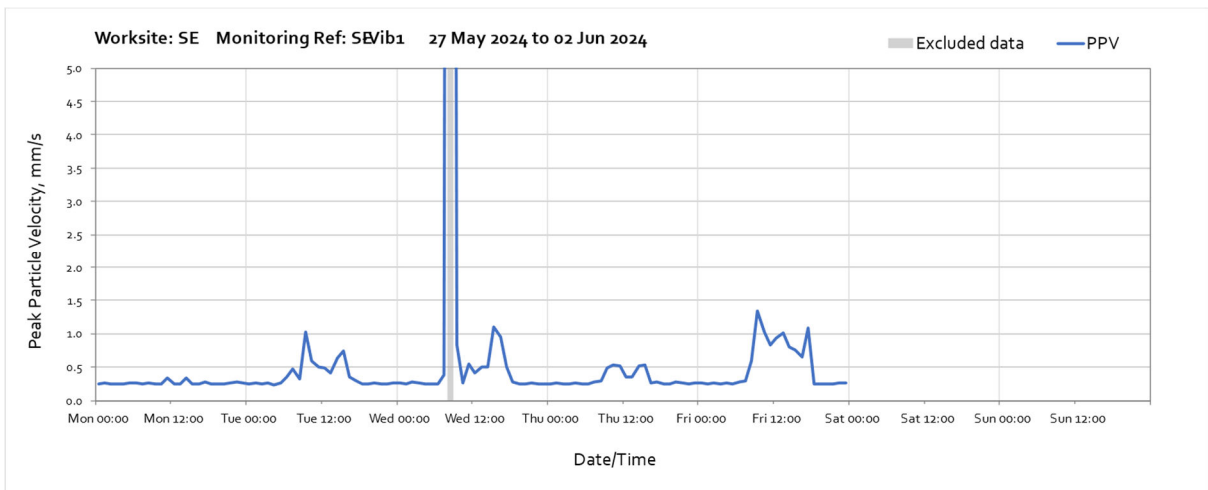
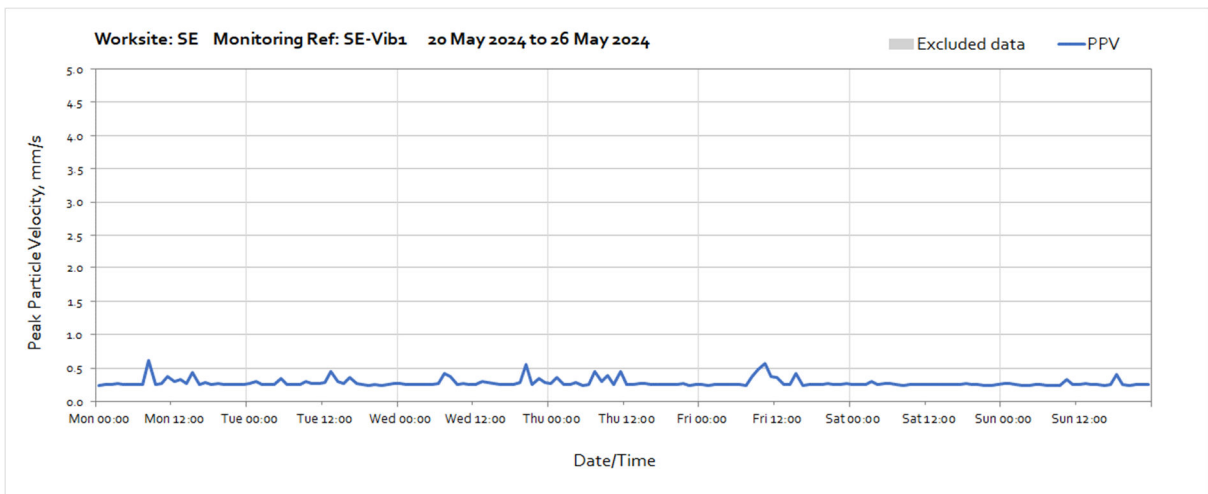
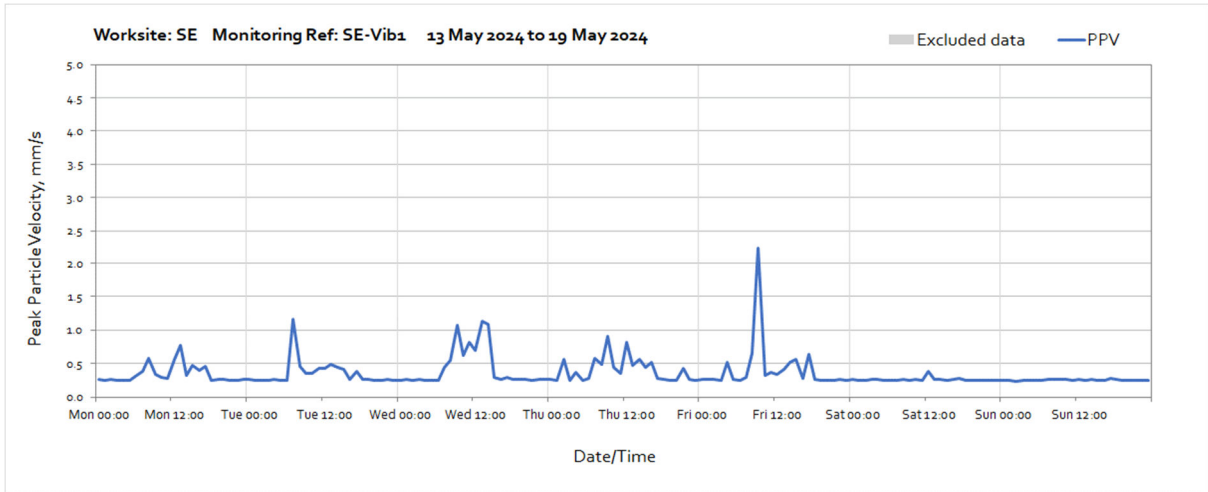
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Vibration

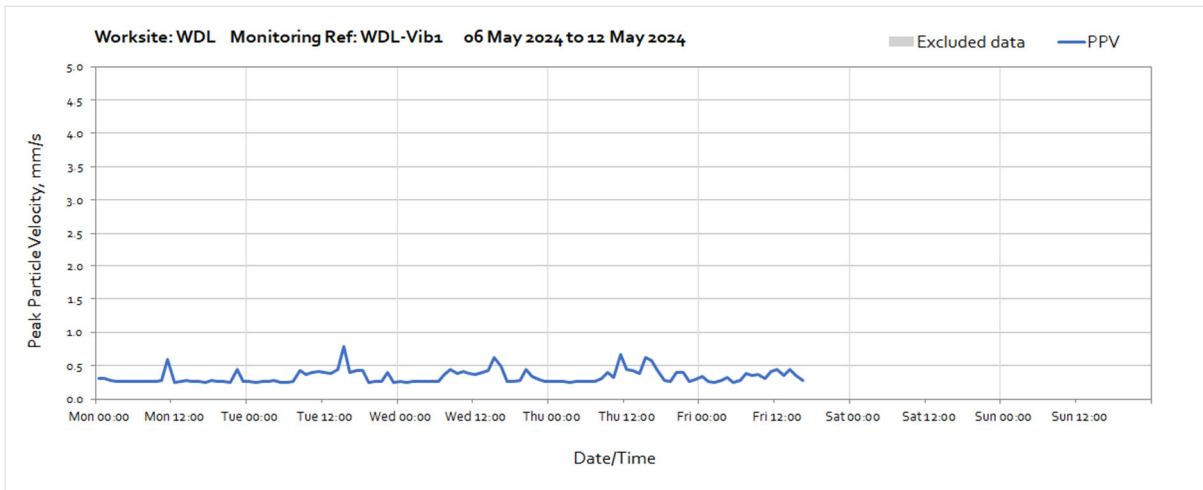
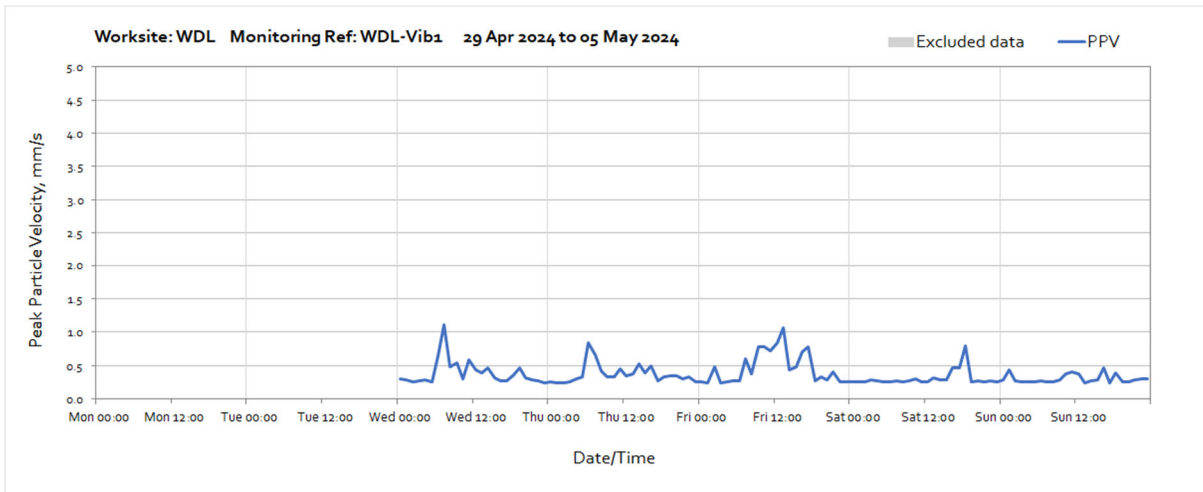
The following graphs show the hourly measured peak particle velocity PPV recorded during the monitoring period. The graphs show the highest PPV of the three orthogonal axes x, y and z. Periods where PPV values have been affected by local interference with the vibration monitor or only measured for part 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

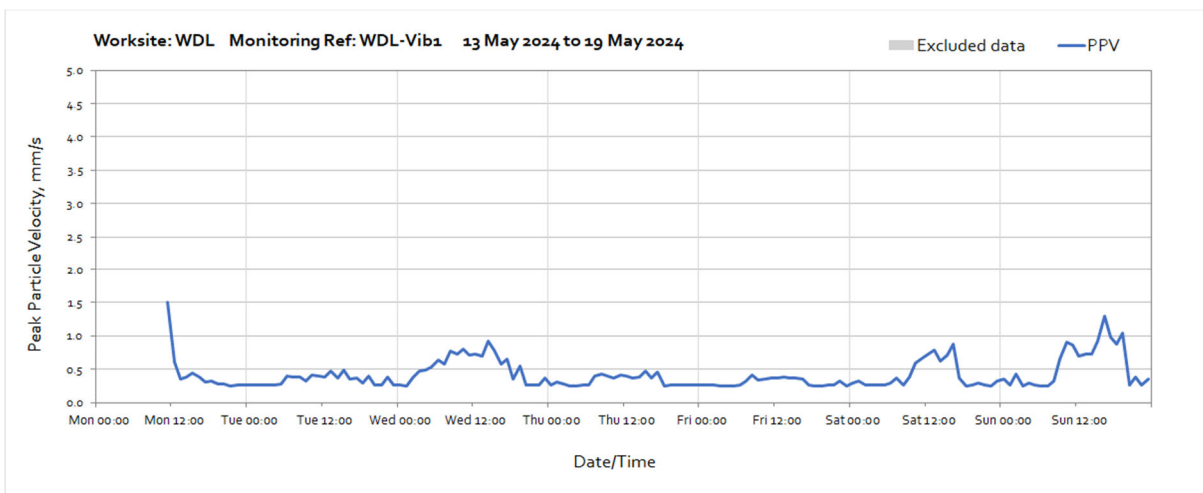


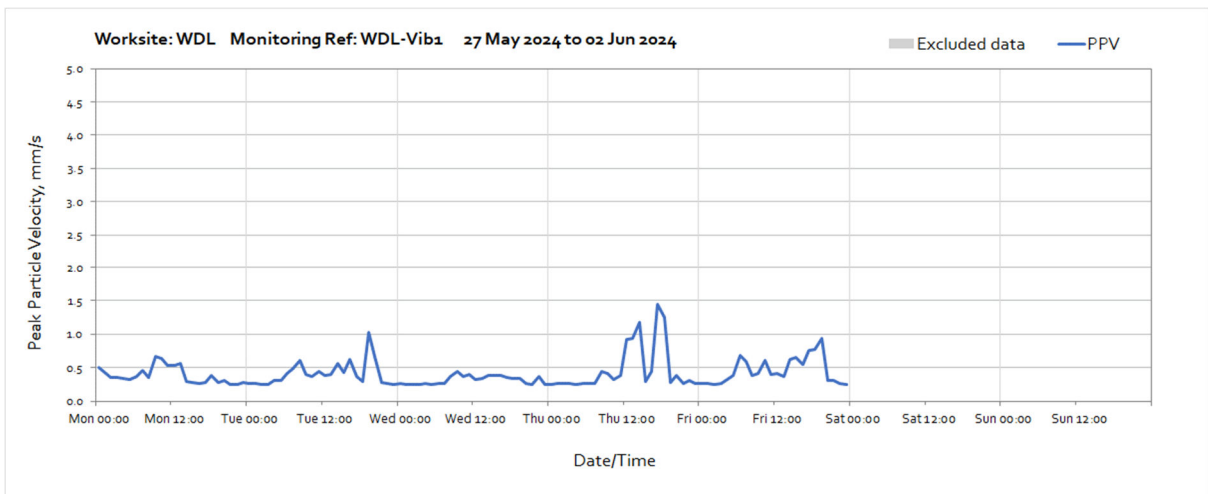
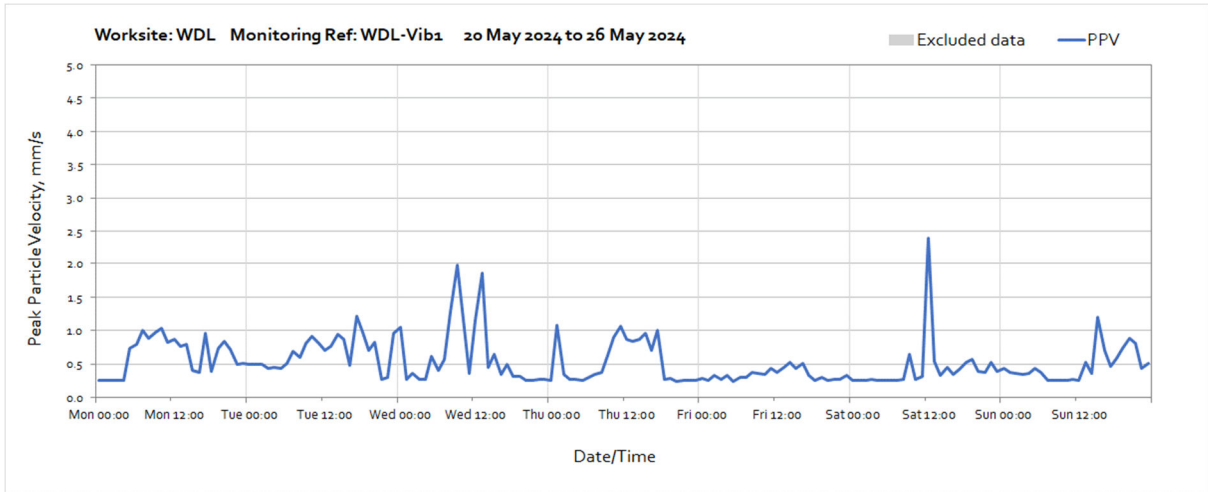


Worksite: WDL – Monitoring Ref: WDL-Vib1

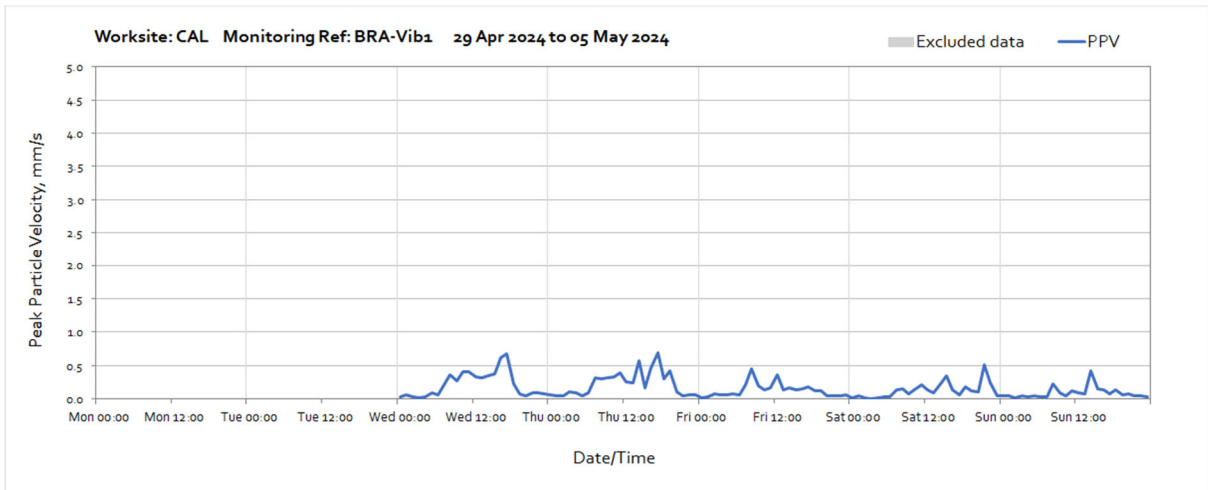


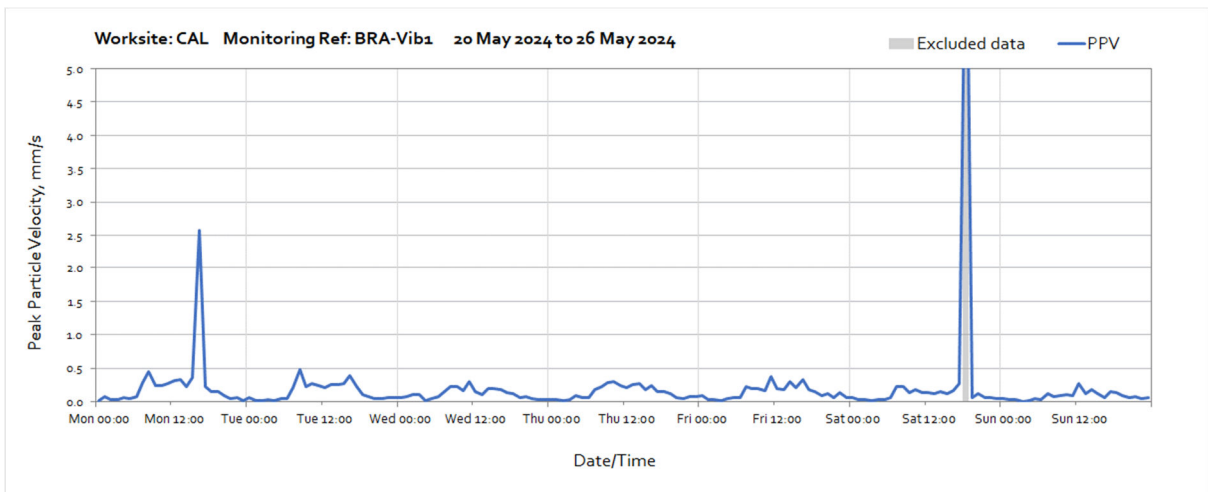
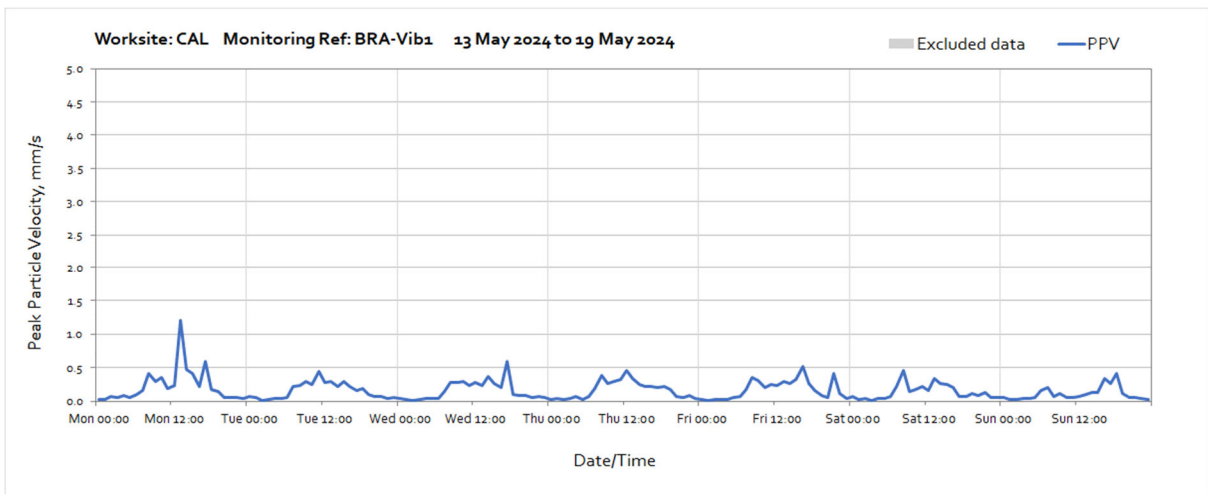
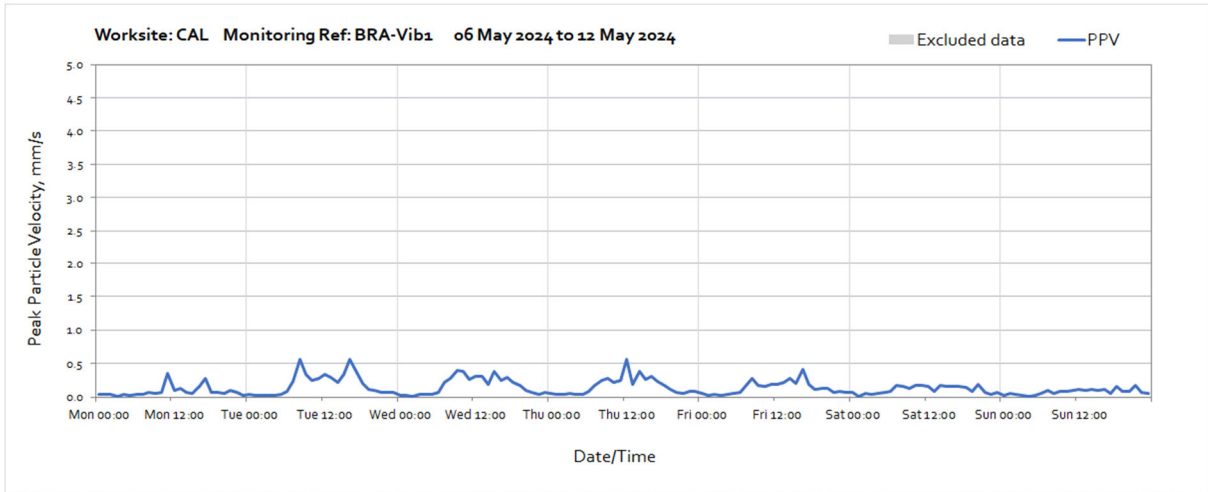
Note: Missing data between 17:00 on Friday 10th May until 11:00 on Monday 13th May was due to a depleted monitor battery.

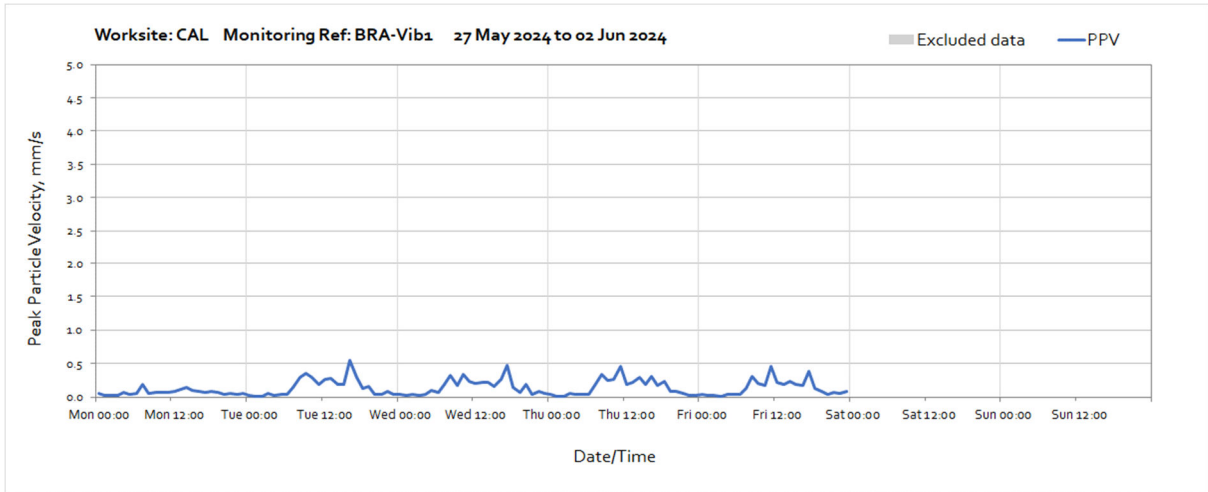




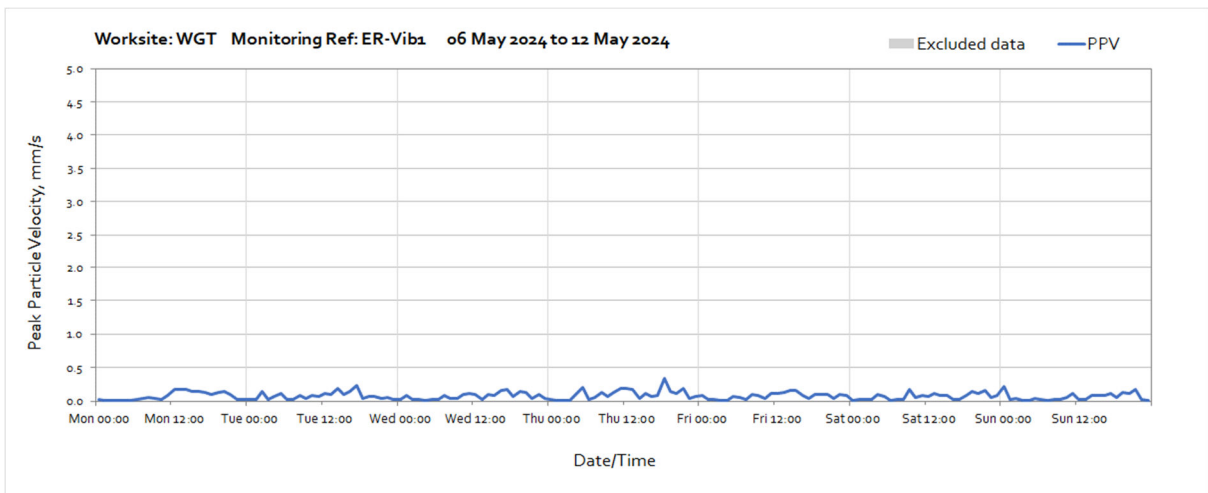
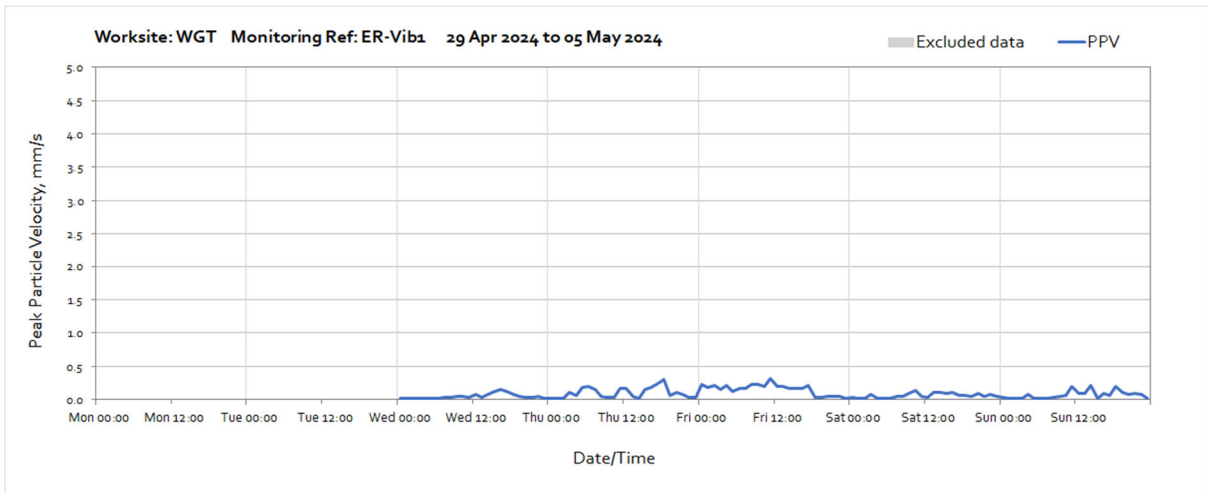
Worksite: CAL – Monitoring Ref: BRA-Vib1

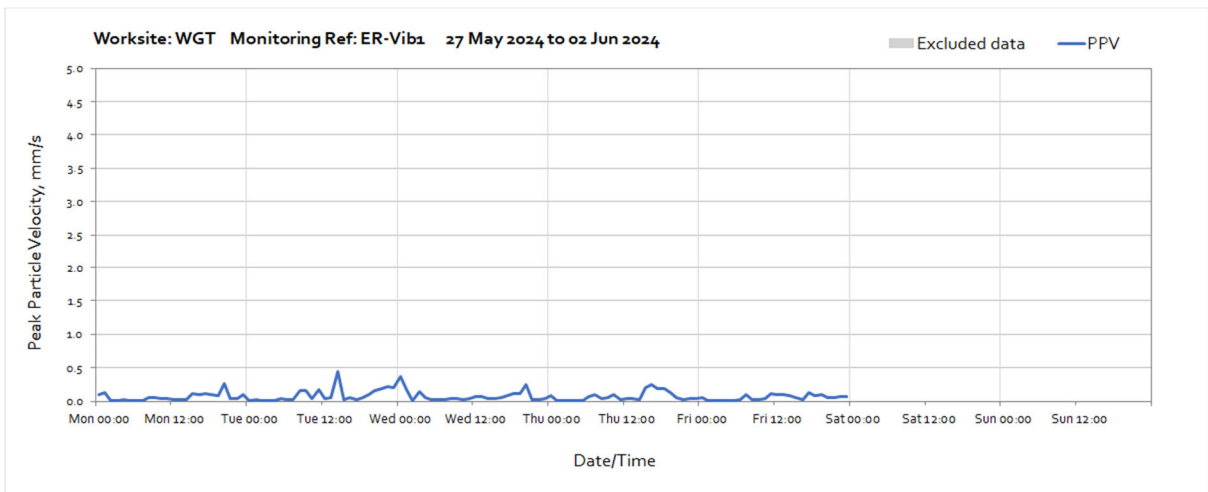
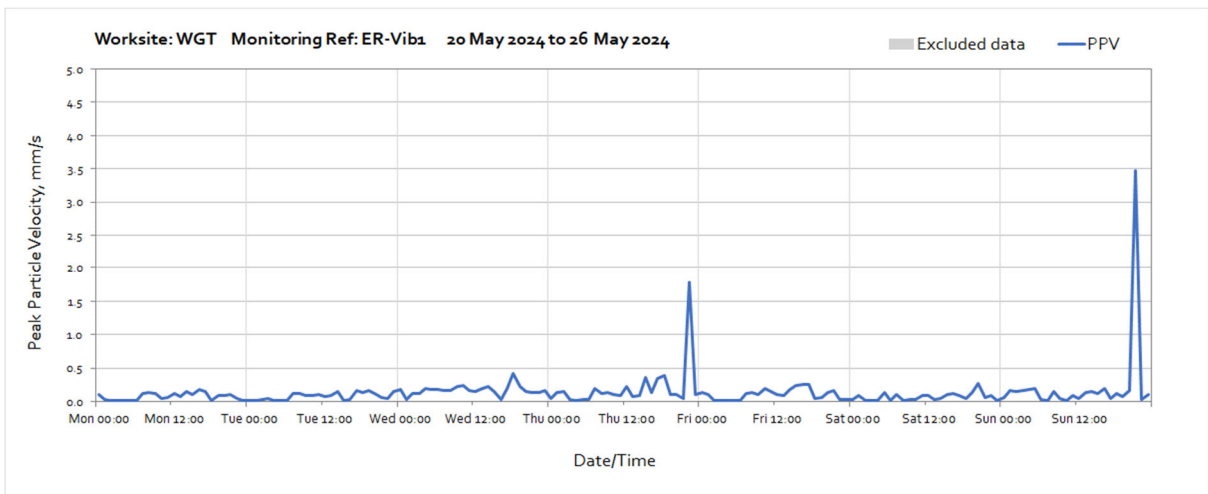
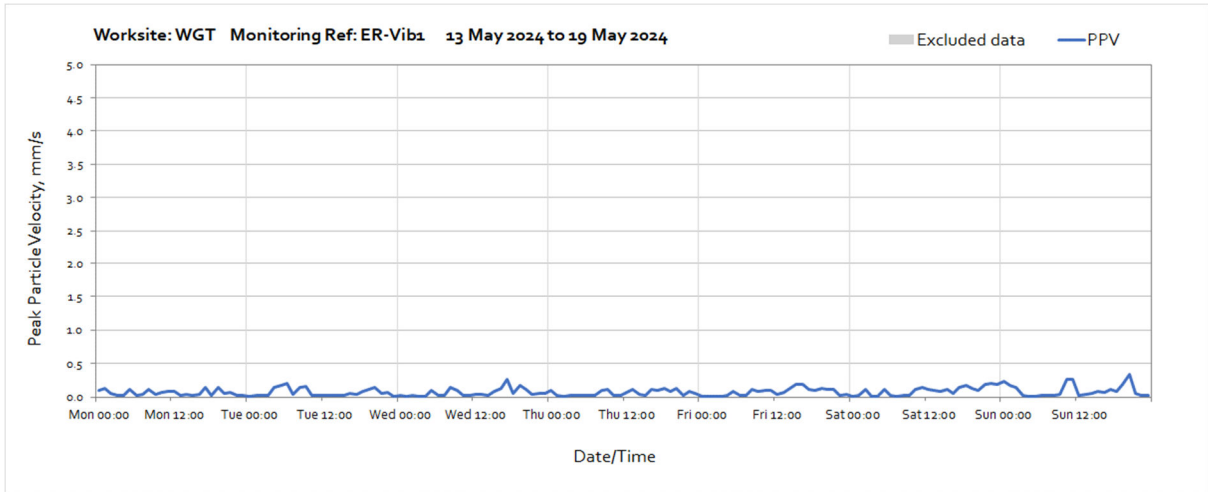




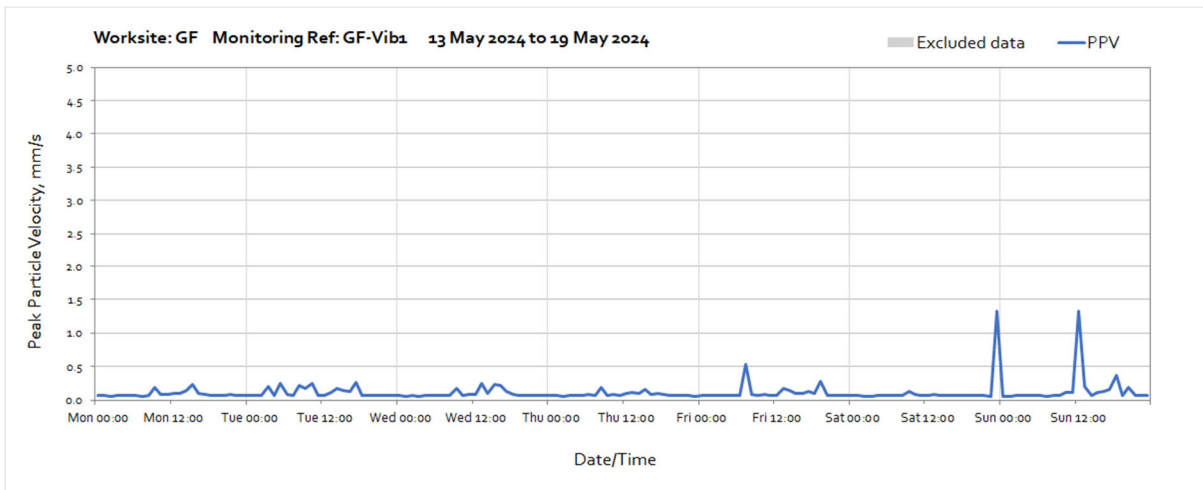
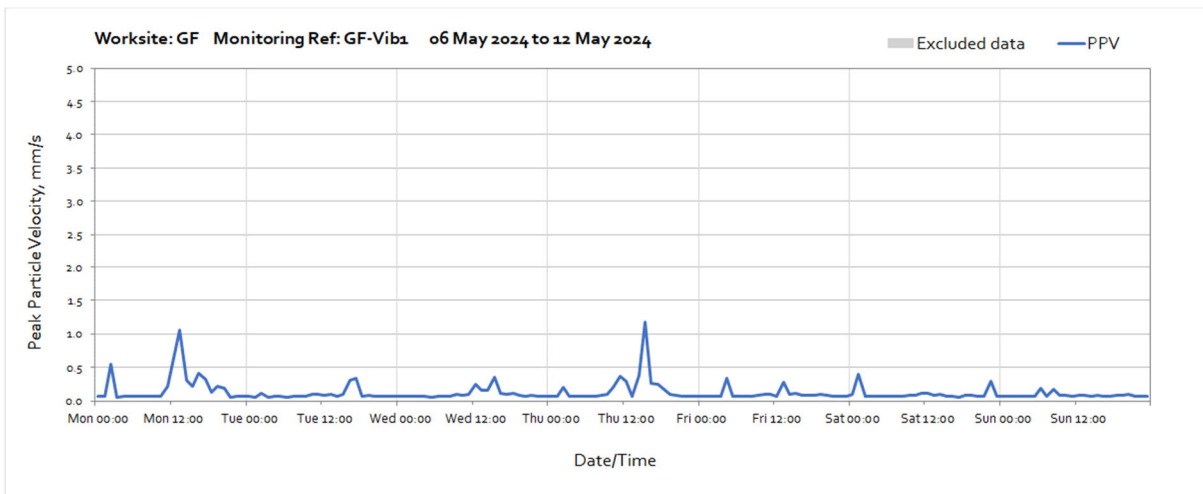
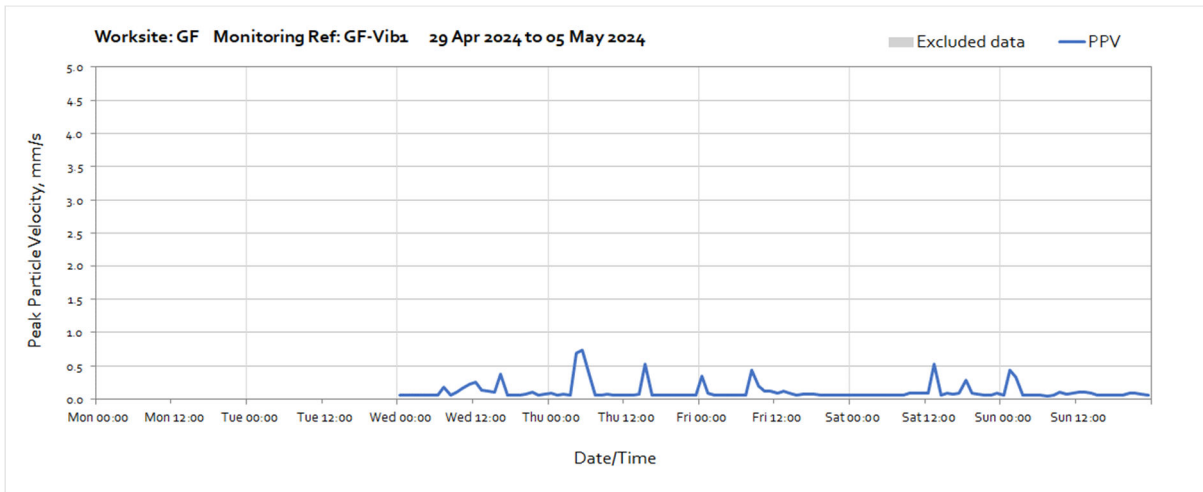


Worksite: WGT – Monitoring Ref: ER-Vib1

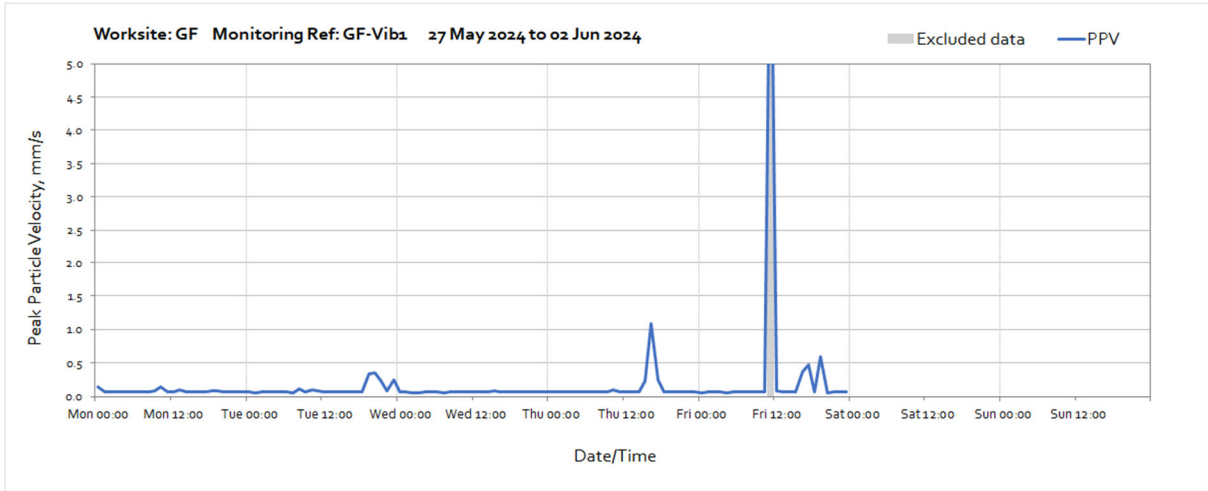
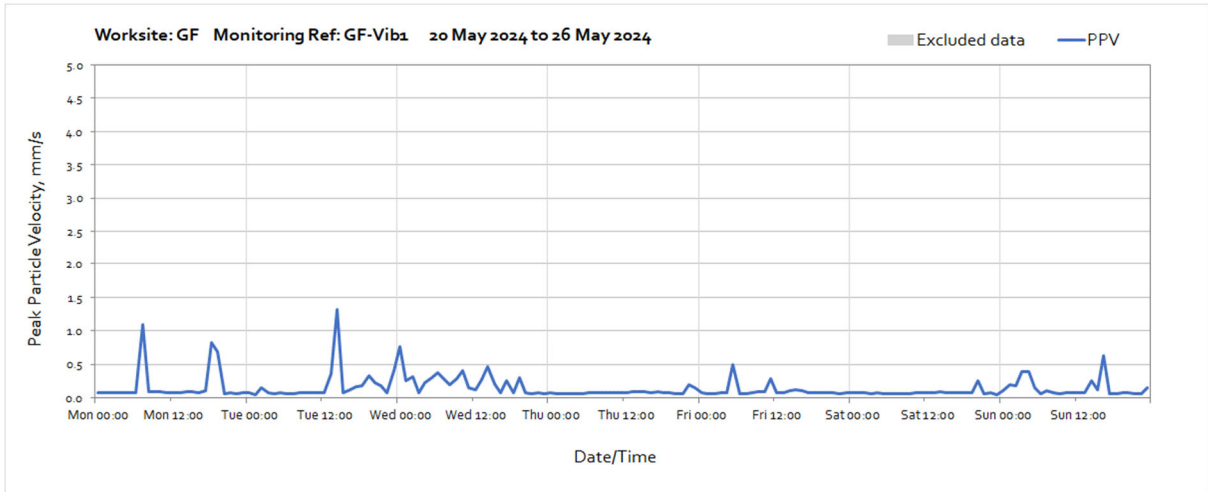




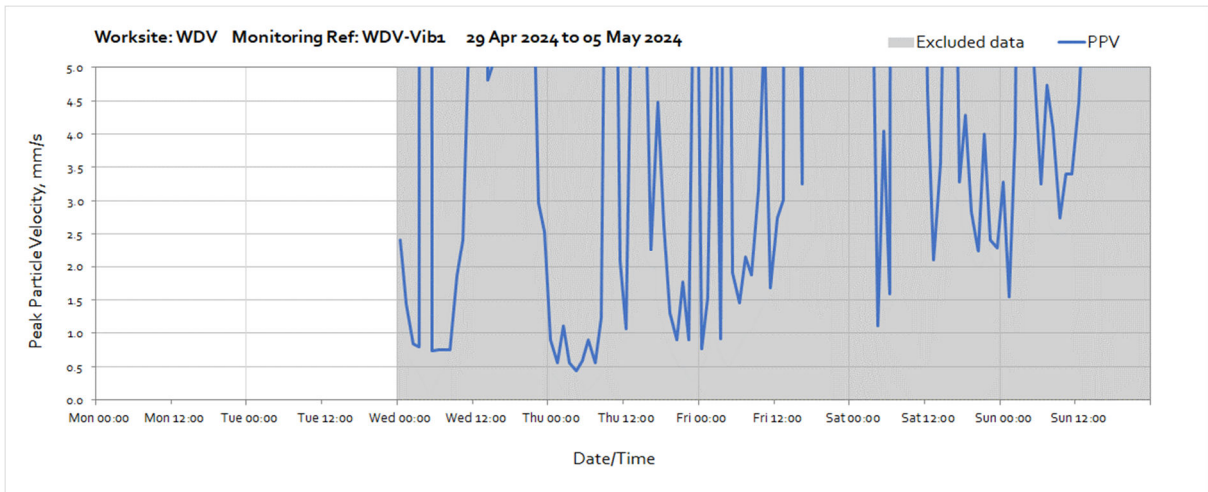
Worksite: GF – Monitoring Ref: GF-Vib1



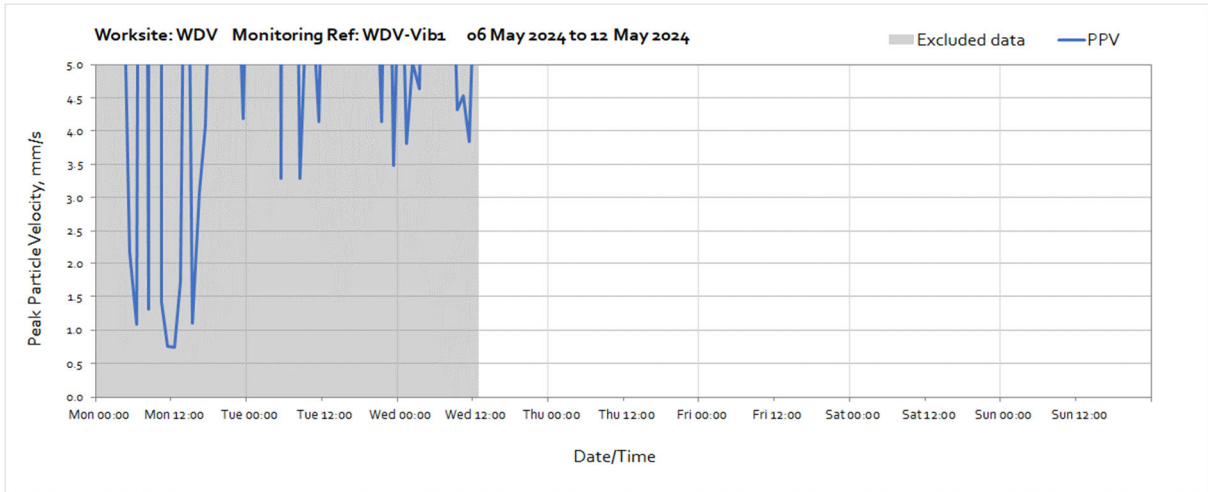
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Worksite: WDV – Monitoring Ref: WDV-Vib1



Note: Monitor data excluded due to erratic readings.



Note: Monitor data excluded due to erratic readings. Monitor retrieved for investigation at 13:00 on Wednesday 8th May due to erratic readings.