

Construction Noise and Vibration Monthly Report – May 2023

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 2023.

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 deliveries, haul road maintenance, road diversion, steel fixing and slab preparation works were underway.
- Noise monitoring was undertaken in the vicinity of the School End (ref.: SE) and Hermitage Chetwode (ref.: HC) worksites where compound development, haul road maintenance, bulk excavation, topsoil stripping, fencing, drainage, stockpiling and vehicle movements were underway.
- Noise monitoring was undertaken in the vicinity of the Twyford worksite (ref.: TW) where access and haul road maintenance, vehicle movements, drainage, topsoil stripping and stockpiling were underway.
- Noise monitoring was undertaken in the vicinity of the West Street Overbridge worksite (ref.: WSO), where field trenching, installation of connection chambers, utility connections, concrete works, material deliveries, material movements and technical backfill were underway.
- Noise monitoring was undertaken in the vicinity of the Addison Road worksite (ref.: AR) where embankment works, material movements and assembly of steel deck were underway.
- Noise monitoring was undertaken in the vicinity of the Calvert worksite (ref.: CAL) where operation of concrete batching plant and material movements were underway.
- Noise monitoring was undertaken in the vicinity of the Woodlands worksite (ref.: WDL) where excavation, stone backfilling, material movements and installation of temporary flume pipe were underway.
- Noise monitoring was undertaken in the vicinity of the Quainton worksite (ref.: QAR) where utility connection, material movements and backfilling works were underway.
- Noise monitoring was undertaken in the vicinity of the Meadoway and Glebe House worksite (ref: MW&GH) where piling, piling platform construction, earthworks, stockpiling and haul road construction were underway.

- Noise monitoring was undertaken in the vicinity of Oat Close worksite (ref: OC) where piling, utility diversion, earthworks, stockpiling and haul road construction were underway.
- Noise monitoring was undertaken in the vicinity of Nash Lee Lane worksite (ref.: NLL) where silt fencing installation, utility works, fuel station and lockers construction, access road widening, platform extension and stockpiling were underway.
- Noise monitoring was undertaken in the vicinity of Wendover Green Tunnel worksite (ref.: WGT) where surface water management, construction of crane platforms, abutment works, concrete pours, drainage, excavation, soil stripping, v-ditch and compound construction, bridge installation, site access road extension and installation of instrumentation and monitoring works were underway.
- Noise monitoring was undertaken in the vicinity of Grove Farm worksite (ref: GF) where installation of strip foundation, installation of protection slabs and trial hole construction were underway.
- Noise monitoring was undertaken in the vicinity of Rocky Lane Embankment worksite (ref: RLE) where compound installation works, surface water management system maintenance and utility works were underway.
- Noise monitoring was undertaken in the vicinity of Wendover Dean Viaduct worksite (ref: WDV) where compound construction, pile cropping, concrete and pre-grouting works were underway.
- Noise monitoring was undertaken in the vicinity of Leather Lane worksite (ref: LL) where surface water management system maintenance and archaeological works were underway.
- Noise monitoring was undertaken in the vicinity of South Heath Cutting worksite (ref: SHCW) where stockpiling and compound construction works were underway.
- Noise monitoring was undertaken in the vicinity of North Portal worksite (ref: NP) where site access road, site and plant operations, piling platform, headwall capping-beam, porous portal structure and drainage works were undertaken.
- Noise monitoring was undertaken in the vicinity of Chesham Road worksite (ref.: CHSM), where site operation, concrete and internal structure works were undertaken.
- Noise monitoring was undertaken in the vicinity of Little Missenden Vent Shaft worksite (ref.: LM) where site operation, internal structures construction and basement construction works were undertaken.
- Noise monitoring was undertaken in the vicinity of Amersham Vent Shaft worksite (ref.: AM), where site operation, internal structure construction, tunnel connection and basement construction works were undertaken.

- Noise monitoring was undertaken in the vicinity of Chalfont St Giles Vent Shaft worksite (ref.: CSG) where site operation, road maintenance, tunnel connection and basement construction works were undertaken.
- Noise monitoring was undertaken in the vicinity of Chalfont St Peter Vent Shaft worksite (ref.: CSP), where site operation, basement construction, road maintenance and tunnel connection works were underway.
- Noise monitoring was undertaken in the vicinity of the Colne Valley Viaduct worksite, which is partly located in the London Borough of Hillingdon (LBH), (ref.: CVV), where piling, pile trimming, jetty and haul road maintenance and operation, compound operation, auto transformed feeder station works, ground investigation, pier construction, pumping water management, satellite compound welfare, generator farm operation, concrete drilling, gas crossing emergency dismantling works, Grand Union canal operation and maintenance, fencing, environmental maintenance, cofferdam excavation, River Colne crossing, girder, deck and landscaping works were underway.

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

- Godington where construction of the site access road, topsoil stripping and vegetation clearance were underway.
- Grovill Embankment – Westbury where excavations were underway.
- North of School End where bulk excavations, vegetation clearance, pond excavation and maintenance, fencing, vehicle movements, stockpiling and drainage works were underway.
- Turweston along the A422 where compound development works and temporary bridge and road diversion works were underway.
- East West Rail (EWR) interfaces where technical backfill was underway.
- Charndon Lodge where steel reinforcement bars fixing, formwork lifting, formwork reinforced concrete works and concrete pours were underway.
- Infrastructure Maintenance Depot (IMD) where steel reinforcement fixing, formwork lifting and concrete pours were underway.
- Doddershall Culvert where concreting of headwall and access chambers and waterproofing were underway.
- Calvert, along the bat mitigation structure, where sheet piling was underway.
- Thame Valley Viaduct Causeway where temporary bridge construction, piling, aggregate laying, compound set up and cofferdam construction were underway.

- Along A41 where concrete batching works, aggregate placement, geogrid installation, embankment works, stockpiling and earthworks were underway.
- Hills Farm Earthworks where stockpiling and maintenance was underway.
- Bowood Lane where excavation, concrete works, cropping piles, shuttering and steel fixing were underway.
- Nash Lee Road Diversion where asphaltting of road diversion and temporary bridge construction works were underway.
- Aylesbury Gold Course where haul road construction, stockpiling, compound setup and pond construction were underway.
- Waddesdon (or North Waddesdon) where earthworks, stockpiling, compound setup, drainage and haul road construction were underway.

There was one (1) exceedance of the HS2 threshold levels for significant noise impacts, which are defined in Information Paper E23 (<https://www.gov.uk/government/publications/hs2-information-papers-environment>), during the reporting period.

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

Six (6) complaints were received within the Buckinghamshire area during the monitoring period.

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 2023.

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:
 - Deliveries.
 - Haul road maintenance.
 - Road diversion works.
 - Steel fixing.
 - Slab preparation work.
- 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:
 - Compound development.
 - Haul road maintenance.
 - Bulk excavation works.

- Topsoil stripping.
- Removal of badger fencing.
- Drainage, including pond maintenance.
- Fencing.
- Stockpiling.
- Vehicle movements.
- Twyford worksite, ref.: TW (see Plan 2 in Appendix A), where works activities included:
 - Access and haul road maintenance.
 - Vehicle movements.
 - Drainage, including culvert installation.
 - Topsoil stripping.
 - Stockpiling.
- West Street Overbridge worksite, ref.: WSO (see Plan 3 in Appendix A), where works activities included:
 - Field trenching for duct laying.
 - Installation of connection chambers.
 - Utility connections.
 - Concrete works, including steel reinforcement bar fixing, formwork lifting and concrete pours.
 - Material deliveries.
 - Technical backfill.
 - Material movements.
- Addison Road worksite, ref.: AR (see Plan 3 in Appendix A), where works activities included:
 - Embankment works.
 - Assembly of steel deck.
 - Material movements.
- Calvert worksite, ref.: CAL (see Plan 3 in Appendix A) where works activities included:

- Operation of concrete batching plant.
- Material movements.
- Woodlands worksite, ref.: WDL (see Plan 4 in Appendix A) where works activities included:
 - Excavation.
 - Stone backfilling.
 - Installation of temporary flume pipe.
 - Material movements.
- Quainton worksite, ref.: QAR (see Plan 4 in Appendix A) where works activities included:
 - Utility connections, including cable pulling.
 - Backfilling.
 - Material movements.
- Meadoway and Glebe House worksite, ref.: MW&GH (see Plan 5 in Appendix A), where works activities included:
 - Piling platform works.
 - Piling .
 - Earthworks.
 - Stockpiling.
 - Haul road construction.
- Oat Close worksite, ref.: OC (see Plan 5 in Appendix A), where works activities included:
 - Piling.
 - Utility diversion.
 - Earthworks.
 - Stockpiling.
 - Haul road construction.
- Nash Lee Lane worksite, ref.: NLL (see Plan 6 in Appendix A), where works activities included:
 - Silt fencing installation.

- Utility works, including pipe connections.
- Fuel station and lockers construction.
- Access road widening.
- Platform extension.
- Stockpiling.
- Wendover Green Tunnel worksite, ref.: WGT (see Plan 6 in Appendix A), where works activities included:
 - Surface water management works.
 - Construction of crane platforms.
 - Abutment works, including strike shutters and backfilling.
 - Concrete pours.
 - Drainage.
 - Excavation.
 - Soil stripping.
 - V-ditch and compound construction.
 - Bridge installation.
 - Site access road extension.
 - Installation of instrumentation and monitoring.
- Grove Farm worksite, ref.: GF (see Plan 7 in Appendix A), where works activities included:
 - Installation of strip foundation.
 - Installation of protection slabs.
 - Trial hole construction.
- Rocky Lane Embankment worksite, ref.: RLE (see Plan 7 in Appendix A), where works activities included:
 - Compound installation.
 - Surface water management system maintenance.
 - Utility works, including trial hole construction.

- Wendover Dean Viaduct worksite, ref.: WDV (see Plan 7 in Appendix A), where works activities included:
 - Compound construction.
 - Pile cropping.
 - Concrete works including steel fixing, shuttering and concrete pours.
 - Pre-grouting works.
- Leather Lane worksite, ref.: LL (see Plan 8 in Appendix A), where works activities included:
 - Surface water management system maintenance.
 - Archaeological works.
- South Heath Cutting worksite, ref.: SHCW (see Plan 8 in Appendix A), where works activities included:
 - Stockpiling.
 - Compound construction.
- North Portal worksite, ref.: NP (see Plan 8 in Appendix A), where works activities included:
 - Site access road works including scrape formation, installation of hardstanding and kerbing, drainage and service works, installation of signage and asphaltting.
 - General site operation of plant.
 - Piling platform works including temporary access, traffic management and dismantling works.
 - Building and tracks platform works including scraping and installation of hardstanding, surfacing, services and drainage.
 - Headwall capping-beam works including excavation, reinforced concrete works and temporary propping.
 - Drainage works including excavation, drainage installation and backfilling.
 - Porous portal structure works including reinforced concrete works and concrete pours.
- Chesham Road worksite, ref.: CHSM (see Plan 8 in Appendix A), where works activities included:
 - General site activities.

- Internal structure works including installation of walls, slabs and staircases.
- Concrete 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.
 - Internal structures construction works, including installation of wall and slabs.
 - Basement construction.
- Amersham Vent Shaft worksite, ref.: AM (see Plan 10 in Appendix A), where works activities included:
 - General site activities including operation of plant.
 - Internal structure construction including concrete walls and floors.
 - Tunnel connection works.
 - Basement construction including excavation and demolition 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, including pouring of concrete floors.
 - Basement construction including excavation and concrete works.
- Chalfont St Peter Vent Shaft worksite, ref.: CSP (see Plan 12 in Appendix A), where works activities included:
 - General site activities including operation of plant.
 - Road maintenance.
 - Tunnel connection works, including pouring of concrete floors.
 - Basement construction, including excavation to formation of basement internal and headhouse construction.
- 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), formerly CVV-LTP #1, where works activities included:
 - Piling including pile trimming.

- Jetty and haul road operation and maintenance.
- Compound operations.
- Auto transformed feeder station works, including site preparation, bulk earthworks filling and drainage works.
- Ground investigation works.
- Pier construction, including tower crane mobilisation and demobilisation, fibre-reinforced concrete works and post-tensioning.
- Pumping water management.
- Satellite compound welfare and generator farm operation.
- Concrete drilling.
- Gas crossing emergency dismantling works.
- Grand Union canal works, including pontoon operation and maintenance.
- Fencing works.
- Environmental maintenance.
- Cofferdam excavation, including excavation, dewatering and installation of waling beams and concrete plugs.
- River Colne crossing including emergency removal of obstruction to reinforced concrete crossing.
- Girder and deck erection and installation including span segmental erection, grouting, internal post-tensioning and steel structure erection 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, noise barriers, troughs, pipes, steel works and other minor materials to the storage yards and deck, installation of access to top of deck, foundation works, deck finishes, construction of robust kerbs, construction of concrete stitch, filling of voids and top openings, diaphragm walls and concrete works (within deck) and drainage and steel works.
- Landscaping works including removal of cofferdams, earthworks, profiling and cutting, manhole chamber construction and soil placement.

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

- Godington where construction of the site access road, topsoil stripping and vegetation clearance were underway.
- Grovill Embankment – Westbury where excavations were underway.
- North of School End where bulk excavations, vegetation clearance, pond excavation and maintenance, fencing, vehicle movements, stockpiling and drainage works were underway.
- Turweston along the A422 where compound development works and temporary bridge and road diversion works were underway.
- East West Rail (EWR) interfaces where technical backfill was underway.
- Charndon Lodge where steel reinforcement bars fixing, formwork lifting, formwork reinforced concrete works and concrete pours were underway.
- Infrastructure Maintenance Depot (IMD) where steel reinforcement fixing, formwork lifting and concrete pours were underway.
- Doddershall Culvert where concreting of headwall and access chambers and waterproofing were underway.
- Calvert, along the bat mitigation structure, where sheet piling was underway.
- Thame Valley Viaduct Causeway where temporary bridge construction, piling, aggregate laying, compound set up and cofferdam construction were underway.
- Along A41 where concrete batching works, aggregate placement, geogrid installation, embankment works, stockpiling and earthworks were underway.
- Hills Farm Earthworks where stockpiling and maintenance was underway.
- Bowood Lane where excavation, concrete works, cropping piles, shuttering and steel fixing were underway.
- Nash Lee Road Diversion where asphaltting of road diversion and temporary bridge construction works were underway.
- Aylesbury Gold Course where haul road construction, stockpiling, compound setup and pond construction were underway.
- Waddesdon (or North Waddesdon) where earthworks, stockpiling, compound setup, drainage and haul road construction were underway.

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

1.2 Measurement Locations

- 1.2.1 Forty-five (45) noise and nine (9) 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 2023.
- 1.2.2 Vibration monitors SHF-Vib1, SH-Vib1 and SC-Vib1 within the vicinity of Wendover Dean Viaduct worksite, ref.: WDV were installed in the month of May.
- 1.2.3 Noise monitor GH-NMP1, within the vicinity of Meadoway and Glebe House, ref.: MW&GH was retrieved at the start of May.
- 1.2.4 Maps showing the positions of noise and vibration monitoring installations are presented in Appendix B.

Table 2: Monitoring Locations

Worksite Reference	Measurement Reference	Address
A422 TN	TN-NMP1	Turweston, Brackley
SE	SE-NMP1	School End, Chetwode
	SE-Vib1	School End, Chetwode
HC	HC-NMP1	Hermitage, Chetwode
TW	TW-NMP1	Twyford, Buckinghamshire
WSO	WSO-NMP1	West Street, Twyford
AR	AR-NMP1	Addison Road, Rosehill Farm
CAL	SHC-NMP1	School Hill Compound, Calvert
	SHC-Vib1	School Hill Compound, Calvert
	FCC-NMP1	Calvert South
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quanton
QAR	QAR-NMP2	Station Rd, Quanton
MW&GH	MW-NMP1	Aylesbury, Buckinghamshire
OC	OC-NMP1	Oat Close, Bishopstone, Aylesbury
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury
	MF-NMP1	Moat Farm, Marsh Lane, Stoke Mandeville
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

Worksite Reference	Measurement Reference	Address
	WT-NMP1	A413, Wendover
GF	GF-NMP1	Grove Farm, Wendover
	GF-Vib1	Grove Farm, Wendover
RLE	SDVC-NMP1	Rocky Lane, Wendover
	NCAS6-NMP1	Chesham Lane, The Lee, Wendover
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover
WDV	WDV-NMP1	Upper Wendover Dean Farm, A413, Wendover
	WDV-Vib1	Upper Wendover Dean Farm, A413, Wendover
	WVD-Vib2	Upper Wendover Dean Farm, A413, Wendover
	SHF-Vib1	Strawberry Hill Farmhouse, Wendover Dean
	SH-Vib1	Strawberry Hill Cottage, Wendover Dean
	SC-Vib1	Sainfoin Cottage, Wendover Dean
LL	HG-NMP1	Hunts Green, Leather Lane, The Lee, South Heath
	GD-NMP1	Grimms Ditch, The Lee, South Heath
SHCW	PR-NMP1	Potters Row, South Heath
NP	BFH-NMP1	Bury Farm, Great Missenden
	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath
	BLH-NMP1	Bayleys Hatch, South Heat, Great Missenden
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath
AM	AM-NMP1	Amersham Vent Shaft Worksite, Whielden Lane, Amersham
LM	LM-NMP1	Little Missenden, A413, Amersham
	PWC-NMP1	Patricia Holmes, Little Missenden Vent Shaft Worksite, Amersham
CSG	CSG-NMP1	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane
	CSG-NMP2	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane
	PIC-NMP1	Bottom House Farm Lane, Chalfont St Giles
CSP	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

Worksite Reference	Measurement Reference	Address
CVV*	CVV-NMP1	Northern boundary, Load Test Pile 1 Worksite, Denham Water Ski Club
	WYC-NMP1	Wyatt's Covert, Tilehouse Lane, Denham, Denham Garden Village
	DFS-NMP1	Denham Film Studio, Uxbridge
	SVF-NMP1	Savay Farm, Denham Garden Village, Denham, Buckinghamshire

* This worksite is within the London Borough of Hillingdon, for more details on the works taking place please refer to the London Borough of Hillingdon Noise and Vibration Report available at:

<https://www.gov.uk/government/collections/monitoring-the-environmental-effects-of-hs2>

2 Summary of Results

2.1 Summary of Measured Noise Levels

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

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

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average L _{Aeq,T} (Highest Day L _{Aeq,T})					Saturday Average L _{Aeq,T} (Highest Day L _{Aeq,T})					Sunday / Public Holiday Average L _{Aeq,T} (Highest Day L _{Aeq,T})	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
A422 TN	TN-NMP1	Turweston, Brackley	Free-field	49.3 (54.6)	49.4 (52.7)	47.8 (51.0)	47.0 (50.3)	48.1 (62.6)	48.4 (51.4)	48.0 (49.1)	46.1 (48.0)	46.9 (52.2)	47.8 (58.3)	47.9 (54.1)	48.6 (61.2)
SE	SE-NMP1	School End, Chetwode	Free-field	45.3 (53.8)	53.9 (61.2)	43.6 (48.2)	42.5 (48.3)	41.4 (46.2)	43.7 (44.5)	49.6 (56.2)	49.6 (59.4)	44.5 (52.0)	40.4 (45.2)	44.7 (51.2)	41.0 (44.3)
HC	HC-NMP1	Hermitage, Chetwode	Free-field	47.1 (55.6)	55.7 (60.3)	43.6 (47.5)	42.3 (53.6)	41.4 (51.7)	44.0 (48.5)	49.0 (58.8)	48.3 (58.6)	43.6 (51.2)	41.6 (56.6)	45.7 (51.9)	41.4 (48.1)
TW	TW-NMP1	Twyford	Free-field	47.2 (59.1)	57.3 (65.9)	45.7 (49.9)	47.0 (66.4)	44.2 (54.6)	45.9 (46.8)	48.6 (51.4)	45.8 (46.6)	48.7 (66.3)	43.7 (48.3)	46.8 (53.3)	44.3 (50.6)
WSO	WSO-NMP1	West Street, Twyford	Free-field	48.9 (61.8)	51.4 (62.1)	48.0 (61.3)	46.7 (61.7)	43.2 (57.6)	45.7 (46.7)	47.9 (49.2)	47.8 (52.1)	47.1 (54.2)	42.5 (50.0)	49.8 (65.3)	42.9 (53.9)
AR	AR-NMP1	Addison Road, Rosehill Farm	Free-field	48.4 (54.8)	53.7 (64.3)	47.6 (56.7)	42.4 (50.9)	41.2 (56.2)	46.5 (48.3)	49.6 (55.1)	49.6 (52.5)	46.9 (62.3)	38.7 (44.4)	44.9 (51.3)	38.3 (47.1)

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$)					Saturday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$)					Sunday / Public Holiday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$)	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
CAL	SHC-NMP1	School Hill Compound, Calvert	Free-field	54.5 (75.8)	62.3 (82.1)	50.9 (78.7)	47.5 (75.1)	43.2 (64.4)	47.0 (55.5)	58.1 (65.5)	48.1 (63.0)	56.6 (81.0)	41.9 (55.8)	54.0 (68.0)	43.7 (69.0)
	FCC-NMP1	Calvert South	Free-field	55.6 (60.6)	55.7 (60.5)	50.7 (54.5)	48.6 (62.5)	47.5 (54.7)	49.2 (50.7)	51.0 (54.6)	51.1 (53.7)	48.4 (55.4)	46.1 (53.3)	47.9 (54.0)	47.0 (55.7)
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton	Free-field	64.0 (69.3)	65.8 (69.4)	47.5 (58.2)	45.2 (57.5)	43.3 (56.3)	51.9 (62.3)	57.4 (61.7)	54.6 (60.8)	49.1 (61.1)	42.0 (49.8)	45.5 (50.1)	43.3 (49.8)
QAR	QAR-NMP2	Station Rd, Quainton	Free-field	51.6 (62.4)	56.8 (66.0)	51.6 (62.5)	50.2 (62.9)	47.3 (58.7)	49.8 (53.2)	55.5 (59.2)	56.7 (58.9)	52.9 (60.7)	47.2 (54.2)	58.7 (65.4)	51.0 (59.6)
MW&GH	MW-NMP1	Aylesbury, Buckinghamshire	Free-field	62.9 (64.2)	64.6 (74.7)	62.7 (63.3)	60.7 (62.5)	57.1 (63.1)	60.5 (60.5)	62.0 (62.0)	61.6 (61.6)	60.7 (61.4)	54.6 (57.5)	60.8 (62.1)	54.6 (57.7)
OC	OC-NMP1	Oat Close, Bishopstone, Aylesbury	Free-field	47.7 (52.8)	48.0 (50.5)	47.4 (54.3)	48.1 (55.5)	46.5 (52.5)	48.0 (48.3)	49.7 (50.3)	51.3 (54.4)	48.3 (55.3)	46.4 (51.2)	46.7 (51.8)	45.7 (47.5)
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury	Free-field	46.4 (53.7)	49.1 (75.4)	45.4 (50.2)	44.7 (52.2)	43.7 (57.5)	46.8 (56.1)	49.1 (54.9)	47.4 (53.1)	47.0 (56.3)	42.5 (50.2)	45.1 (50.3)	45.5 (57.9)
	MF-NMP1	Moat Farm, Marsh Lane, Stoke Mandeville	Free-field	45.0 (53.8)	48.9 (58.0)	44.0 (53.0)	42.7 (54.7)	40.8 (52.7)	43.6 (44.3)	46.8 (49.2)	45.2 (47.0)	44.3 (51.3)	37.8 (48.4)	43.7 (51.1)	39.2 (48.2)

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$)					Saturday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$)					Sunday / Public Holiday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$)	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee	Free-field	54.2 (58.3)	58.1 (62.9)	53.3 (57.5)	52.2 (55.1)	50.1 (56.5)	52.3 (53.4)	53.0 (56.4)	53.2 (57.4)	52.2 (57.5)	48.2 (51.3)	51.9 (56.8)	49.0 (52.3)
	NLL-NMP2	Nash Lee Lane, Nash Lee	Free-field	54.3 (57.2)	56.2 (70.6)	53.6 (57.6)	52.4 (57.0)	49.5 (58.3)	52.7 (54.7)	54.6 (56.2)	54.4 (56.9)	53.2 (58.2)	48.6 (52.4)	52.0 (54.2)	48.5 (52.8)
WGT	ER-NMP1	Ellesborough Rd, Wendover	Free-field	54.1 (56.7)	58.5 (63.0)	54.3 (56.4)	52.7 (63.8)	49.1 (56.5)	53.1 (54.2)	53.8 (55.2)	54.4 (55.3)	53.3 (55.5)	47.6 (51.6)	53.1 (55.5)	49.0 (56.7)
	BL-NMP1	Bacombe Lane, Wendover	Free-field	48.5 (50.9)	50.6 (72.7)	48.5 (51.8)	47.4 (52.0)	46.6 (51.1)	48.6 (49.6)	49.3 (52.1)	48.7 (50.3)	47.3 (51.2)	45.6 (47.2)	47.4 (51.1)	46.1 (50.9)
	WT-NMP1	A413, Wendover	Free-field	65.3 (68.4)	65.9 (67.4)	65.5 (67.2)	62.5 (65.0)	59.7 (69.4)	63.5 (64.0)	64.4 (65.7)	65.9 (66.5)	63.9 (66.3)	56.8 (59.8)	64.0 (69.0)	57.3 (66.4)
GF	GF-NMP1	Grove Farm, Wendover	Free-field	55.4 (60.6)	53.7 (58.1)	52.2 (57.3)	53.9 (60.3)	47.8 (59.4)	49.1 (50.5)	53.2 (53.6)	54.1 (57.0)	52.0 (57.4)	45.4 (51.0)	53.4 (59.8)	46.1 (50.1)
RLE	SDVC-NMP1	Rocky Lane, Wendover	Free-field	63.1 (65.1)	63.7 (71.0)	62.3 (64.8)	60.6 (63.8)	57.8 (65.1)	60.7 (62.0)	62.5 (64.0)	63.0 (65.5)	61.6 (63.9)	55.9 (58.5)	61.2 (63.4)	56.6 (64.6)
	NCAS6-NMP1	Chesham Lane, The Lee, Wendover	Free-field	47.1 (60.5)	56.0 (63.0)	45.9 (53.2)	44.5 (53.4)	42.5 (49.0)	44.0 (45.4)	47.4 (50.3)	44.8 (47.8)	45.2 (52.5)	41.9 (48.7)	46.7 (58.1)	43.4 (51.9)
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	Free-field	55.0 (57.8)	56.3 (58.8)	54.0 (57.1)	52.4 (58.1)	49.8 (57.5)	52.0 (53.0)	54.7 (56.2)	55.2 (57.3)	53.6 (57.9)	49.1 (54.3)	53.1 (56.3)	49.1 (55.7)

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average L _{Aeq,T} (Highest Day L _{Aeq,T})					Saturday Average L _{Aeq,T} (Highest Day L _{Aeq,T})					Sunday / Public Holiday Average L _{Aeq,T} (Highest Day L _{Aeq,T})	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
WDV	WDV-NMP1	Upper Wendover Dean Farm, A413, Wendover	Free-field	49.1	53.4	47.7	46.7	44.2	46.4	48.7	47.5	46.3	43.6	47.2	44.0
				(52.2)	(58.5)	(60.1)	(60.0)	(55.1)	(48.5)	(54.6)	(55.7)	(54.6)	(46.8)	(54.3)	(49.2)
LL	HG-NMP1	Hunts Green, Leather Lane, The Lee	Free-field	_*	_*	_*	_*	_*	_*	_*	_*	_*	_*	_*	_*
	GD-NMP1	Grimms Ditch, The Lee, South Heath	Free-field	50.2	55.8	52.3	50.0	49.7	52.9	56.6	58.3	53.1	47.4	53.9	48.2
SHCW	PR-NMP1	Potters Row, South Heath	Free-field	47.1	51.2	46.1	44.6	42.8	44.0	45.9	45.5	44.5	41.7	47.5	43.6
				(50.5)	(55.0)	(54.3)	(52.5)	(54.7)	(45.2)	(48.0)	(48.2)	(51.4)	(50.1)	(59.3)	(58.2)
NP	BFH-NMP1	Bury Farm, Great Missenden	Free-field	44.0	48.8	44.8	43.6	40.7	41.4	43.8	42.7	45.5	40.7	44.3	40.1
	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath	Free-field	51.0	53.6	50.8	48.9	45.9	51.7	52.3	50.1	53.2	45.2	49.9	46.3
	BLH-NMP1	Bayleys Hatch, South Heath, Great Missenden	Free-field	50.0	50.5	48.7	45.2	42.8	46.0	48.1	48.2	47.4	42.9	48.8	42.4
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath	Free-field	56.3	56.1	55.1	52.5	48.7	54.2	55.2	58.5	56.6	48.3	55.4	49.6
				(58.4)	(69.7)	(58.6)	(58.2)	(58.4)	(55.8)	(57.0)	(65.5)	(65.0)	(57.0)	(74.3)	(57.8)
AM	AM-NMP1	Whielden Lane, Amersham	Free-field	60.9	62.3	60.7	59.0	53.9	58.2	61.5	60.0	58.5	51.7	58.4	52.6
				(63.0)	(68.0)	(63.0)	(63.1)	(61.2)	(59.0)	(62.9)	(60.8)	(60.3)	(56.1)	(61.3)	(59.9)

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average L _{Aeq,T} (Highest Day L _{Aeq,T})					Saturday Average L _{Aeq,T} (Highest Day L _{Aeq,T})					Sunday / Public Holiday Average L _{Aeq,T} (Highest Day L _{Aeq,T})	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
LM	LM-NMP1	Little Missenden, A413, Amersham	Free-field	58.5 (61.8)	58.5 (61.3)	58.6 (61.0)	55.9 (59.6)	51.6 (59.7)	54.4 (54.8)	57.2 (59.0)	58.2 (60.4)	56.7 (60.1)	49.8 (53.8)	56.2 (59.0)	50.0 (58.8)
	PWC-NMP1	Patricia Holmes, LM Worksite, Amersham	Free-field	58.7 (60.7)	58.9 (63.4)	59.8 (64.8)	56.9 (63.0)	53.5 (60.7)	55.2 (56.5)	57.3 (58.7)	57.8 (59.2)	56.9 (60.3)	51.8 (56.5)	56.7 (65.3)	52.1 (58.6)
CSG	CSG-NMP1	CSG Worksite, Bottom House Farm Lane	Free-field	48.0 (57.3)	50.1 (54.4)	48.3 (55.1)	48.8 (64.2)	48.7 (79.6)	45.2 (46.9)	48.9 (49.5)	47.5 (48.8)	48.4 (61.8)	45.5 (54.8)	48.8 (55.5)	52.4 (82.1)
	CSG-NMP2	CSG Worksite, Bottom House Farm Lane	Free-field	49.0 (56.1)	55.3 (60.7)	48.8 (54.1)	44.9 (52.6)	45.7 (66.7)	51.1 (66.0)	53.6 (63.7)	47.9 (48.7)	50.9 (71.6)	49.2 (61.2)	52.4 (72.9)	46.6 (59.7)
	PIC-NMP1	Bottom House Farm Lane, Chalfont St Giles, Buckinghamshire	Free-field	55.4 (65.5)	55.9 (65.6)	54.2 (56.3)	53.0 (59.8)	50.3 (60.5)	52.5 (52.9)	55.5 (56.8)	56.4 (57.5)	54.2 (62.1)	49.3 (55.5)	54.0 (63.4)	51.0 (61.8)
CSP	CFC-NMP1	Cricket Field Cottages, Chesham Lane, Chalfont St. Peter	Free-field	59.3 (66.7)	57.9 (61.0)	57.1 (59.7)	54.4 (67.1)	52.6 (66.7)	55.4 (58.4)	58.1 (61.5)	57.2 (57.6)	55.6 (60.8)	53.9 (66.5)	56.6 (66.5)	55.1 (66.2)
	CSP-NMP2	Chalfont St Peter Vent Shaft Worksite	Free-field	47.0 (50.9)	49.2 (51.0)	46.8 (51.6)	45.0 (49.8)	44.0 (62.0)	45.0 (48.1)	48.0 (49.5)	47.8 (50.7)	46.3 (52.3)	43.8 (56.6)	48.4 (55.3)	43.6 (53.6)
	CSP-NMP3	Chalfont St Peter Vent Shaft Worksite	Free-field	56.5 (58.6)	56.0 (58.0)	55.8 (58.5)	53.8 (57.0)	50.4 (61.7)	53.3 (53.6)	55.5 (56.4)	55.2 (56.4)	54.4 (57.3)	49.3 (55.7)	54.4 (58.3)	50.5 (61.9)

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average L _{Aeq,T} (Highest Day L _{Aeq,T})					Saturday Average L _{Aeq,T} (Highest Day L _{Aeq,T})					Sunday / Public Holiday Average L _{Aeq,T} (Highest Day L _{Aeq,T})	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
CVV	CVV-NMP1	Northern boundary, Load Test Pile 1 Worksite	Free-field	62.0 (64.8)	61.3 (63.0)	61.1 (65.0)	58.1 (62.2)	57.8 (66.7)	59.2 (60.2)	62.5 (65.5)	61.2 (62.4)	59.7 (65.0)	55.6 (67.7)	59.1 (64.4)	55.6 (62.5)
	WYC-NMP1	Wyatt's Covert, Tilehouse Lane, Denham	Free-field	57.8 (60.1)	58.7 (62.7)	57.2 (61.4)	54.0 (57.7)	53.1 (59.1)	55.6 (61.4)	57.7 (57.8)	58.2 (59.6)	54.9 (58.2)	48.9 (54.1)	55.6 (60.0)	50.3 (57.5)
	DFS-NMP1	Denham Film Studio, Uxbridge	Free-field	48.8 (53.9)	50.6 (65.1)	51.0 (58.3)	47.5 (55.1)	45.9 (62.5)	45.6 (46.0)	49.1 (52.3)	48.0 (52.6)	48.8 (55.8)	47.4 (63.0)	47.5 (55.5)	45.3 (56.3)
	SVF-NMP1	Savay Farm, Denham Garden Village, Denham, Buckinghamshire	Free-field	51.4 (61.8)	51.9 (59.1)	48.8 (52.0)	48.3 (55.8)	48.0 (70.5)	49.7 (52.6)	49.8 (51.9)	47.9 (50.5)	47.9 (51.1)	47.1 (54.7)	49.1 (58.0)	48.0 (55.6)

* Monitor HG-NMP1 has been retrieved for repair for the month of May.

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	2.14 (Y-axis)
WGT	ER-Vib 1	46, Ellesborough Rd, Wendover	2.75 (X-axis)
WDV	WDV-Vib1	Upper Wendover Dean Farm, A413, Wendover	0.73 (X-axis)
	WDV-Vib2	Upper Wendover Dean Farm, A413, Wendover	1.24 (X-axis)
	SHF-Vib1	Strawberry Hill Farmhouse, Wendover Dean	2.20 (X-axis)
	SH-Vib1	Strawberry Hill Cottage, Wendover Dean	2.12 (X-axis)
	SC-Vib1	Sainfoin Cottage, Wendover Dean	2.88 (Y-axis)
GF	GF-Vib1	Grove Farm, Wendover	0.97 (X-axis)
SHC	SHC-Vib1	School Hill Compound, Calvert	1.88 (X-axis)

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

2.2 Exceedances of the LOAEL and SOAEL

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

- 2.2.2 The significant observed adverse effect level (SOAEL) is defined in the 'Planning Practice Guidance – Noise' as the level above which "noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area."
- 2.2.3 HS2 Phase One Information Paper E23: Control of Construction Noise and Vibration sets out the LOAELs and SOAELs for construction noise.
- 2.2.4 Where reported construction noise levels exceed the LOAEL and SOAEL at nearby receptors, relevant periods will be identified. Summary statistics to evaluate ongoing qualification for noise insulation and temporary rehousing are also presented where relevant.
- 2.2.5 Table 5 presents a summary of recorded exceedances of the LOAEL and SOAEL over the reporting period, including the number of exceedances during each time period.

Table 5: Summary of Exceedances of LOAEL and SOAEL

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
A422 TN	TN-NMP1	Turweston, Brackley	All days	All periods	No exceedance	No exceedance
SE	SE-NMP1	School End, Chetwode	All days	All periods	No exceedance	No exceedance
HC	HC-NMP1	Hermitage, Chetwode	All days	All periods	No exceedance	No exceedance
TW	TW-NMP1	Twyford	Weekdays	0800-1800	4	No exceedance
WSO	WSO-NMP1	West Street, Twyford	Weekdays	1800-1900	3	No exceedance
				1900-2200	3	No exceedance
			Nights	2200-0700	22	No exceedance
AR	AR-NMP1	Addison Road, Rosehill Farm	Weekdays	0800-1800	1	No exceedance
CAL	SHC-NMP1	School Hill Compound, Calvert	Weekdays	0700-0800	7	No exceedance
				0800-1800	6	No exceedance
				1800-1900	7	No exceedance
			Saturdays	0800-1300	1	No exceedance
	FCC-NMP1	Calvert South	Weekdays	0700-0800	3	No exceedance
				1900-2200	1	No exceedance

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton	Weekdays	0800-1800	20	No exceedance
QAR	QAR-NMP2	Station Rd, Quainton	Weekdays	0800-1800	2	No exceedance
MW&GH	MW-NMP1	Aylesbury, Buckinghamshire	Weekdays	0800-1800	1	No exceedance
OC	OC-NMP1	Oat Close, Bishopstone, Aylesbury	All days	All periods	No exceedance	No exceedance
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury	Weekdays	0800-1800	1	No exceedance
	MF-NMP1	Moat Farm, Marsh lane, Stoke Mandeville	All days	All periods	No exceedance	No exceedance
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee	Saturdays	1400-2200	3	No exceedance
	NLL-NMP2	Nash Lee Lane, Nash Lee	Weekdays Saturdays	0800-1800 1400-2200	1 4	No exceedance No exceedance
WGT	ER-NMP1	Ellesborough Rd, Wendover	Saturdays	1400-2200	1	No exceedance
	BL-NMP1	Bacombe Lane, Wendover	Weekdays	0800-1800	1	1
	WT-NMP1	A413, Wendover	Weekdays Saturdays	0700-0800 0800-1800 1800-1900 0700-0800 0800-1300 1300-1400 1400-2200	11 16 15 3 1 3 4	No exceedance No exceedance No exceedance No exceedance No exceedance No exceedance No exceedance
GF	GF-NMP1	Grove Farm, Wendover	All days	All periods	No exceedance	No exceedance

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
RLE	SDVC-NMP1	Rocky Lane, Wendover	All days	All periods	No exceedance	No exceedance
	NCAS6-NMP1	Chesham Lane, The Lee, Wendover	Weekdays	0800-1800	1	No exceedance
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	Saturdays	1400-2200	3	No exceedance
WDV	WDV-NMP1	A413, Wendover	Weekdays	1800-1900	1	No exceedance
LL	HG-NMP1**	Hunts Green, Leather Lane, The Lee, South Heath	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	GD-NMP1	Grimms Ditch, The Lee, South Heath	Weekdays Saturdays	0700-0800 0800-1800 1800-1900 0700-0800 1300-1400 1400-2200	3 3 6 2 2 6	No exceedance No exceedance No exceedance No exceedance No exceedance No exceedance
SHCW	PR-NMP1	Potters Row, South Heath	Weekdays	0800-1800 1800-1900	2 1	No exceedance No exceedance
NP	BFH-NMP1	Bury Farm, Great Missenden	All days	All periods	No exceedance	No exceedance
	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath	Weekdays	1800-1900 1900-2200	1 2	No exceedance No exceedance
			Saturdays	1400-2200	5	No exceedance
BLH-NMP1	Bayleys Hatch, South Heath, Great Missenden	Weekdays	0700-0800	1	No exceedance	
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath	Weekdays	0800-1800 1900-2200	1 1	No exceedance No exceedance
			Saturdays	1300-1400 1400-2200	1 9	No exceedance No exceedance
AM	AM-NMP1*	Whielden Lane, Amersham	All days	All periods	No exceedance	No exceedance
LM	LM-NMP1*	Little Missenden Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
	PWC-NMP1	Patricia Holmes, Little Missenden Vent Shaft Worksite, Amersham	Not Applicable	Not Applicable	Not Applicable	Not Applicable
CSG	CSG-NMP1*	Chalfont St Giles Vent Shaft	All days	All periods	No exceedance	No exceedance
	CSG-NMP2*	Chalfont St Giles Vent Shaft	All days	All periods	No exceedance	No exceedance
	PIC-NMP1	Bottom House Farm Lane, Chalfont St Giles	Weekdays	0800-1800	2	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
	WYC-NMP1*	Wyatt's Covert, Tilehouse Lane, Denham	All days	All periods	No exceedance	No exceedance
	DFS-NMP1*	Denham Film Studio, Uxbridge	All days	All periods	No exceedance	No exceedance
	SVF-NMP1	Savay Farm, Denham Garden Village, Denham, Buckinghamshire	All days	All periods	No exceedance	No exceedance

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

** Monitors GH-NMP1 and HG-NMP1 were retrieved for the month of May.

2.2.6 Exceedances of the LOAEL were recorded at twenty-three (23) monitoring locations during the month of May 2023. LOAEL exceedances were recorded during weekdays, evenings, nights and Saturday time periods.

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

Table 6: Summary of Total Exceedances of SOAEL

Worksite Reference	Measurement Reference	Monitor Address	Total of SOAEL exceedances in the month
WGT	BL-NMP1	Bacombe Lane, Wendover	1

2.2.8 One (1) SOAEL exceedance was recorded due to HS2 construction works during May 2023. The exceedance occurred at BL-NMP1 during weekday core hours.

2.3 Exceedances of Trigger Level

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

Table 7: Summary of Exceedances of Trigger Levels

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

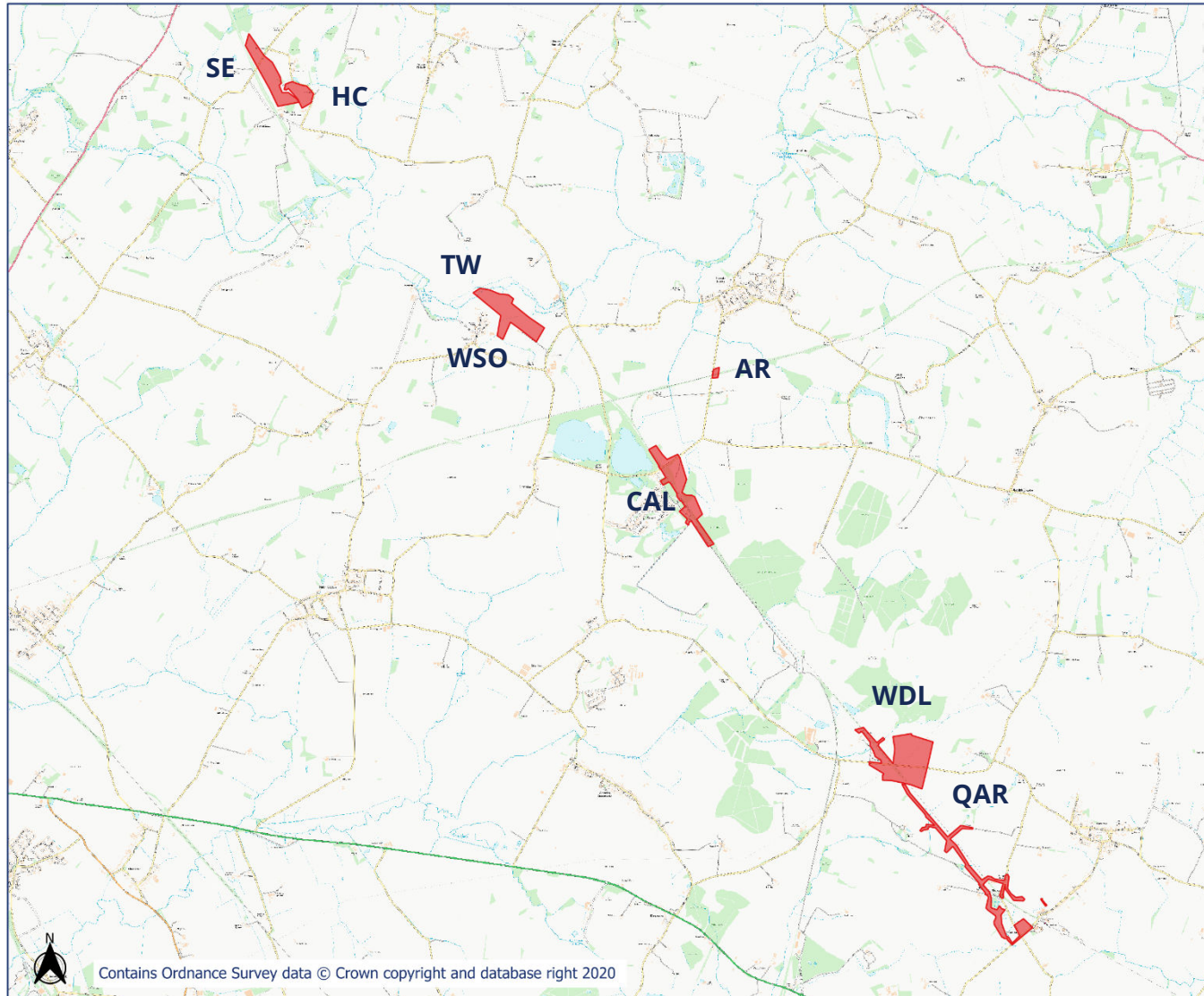
2.4 Complaints

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

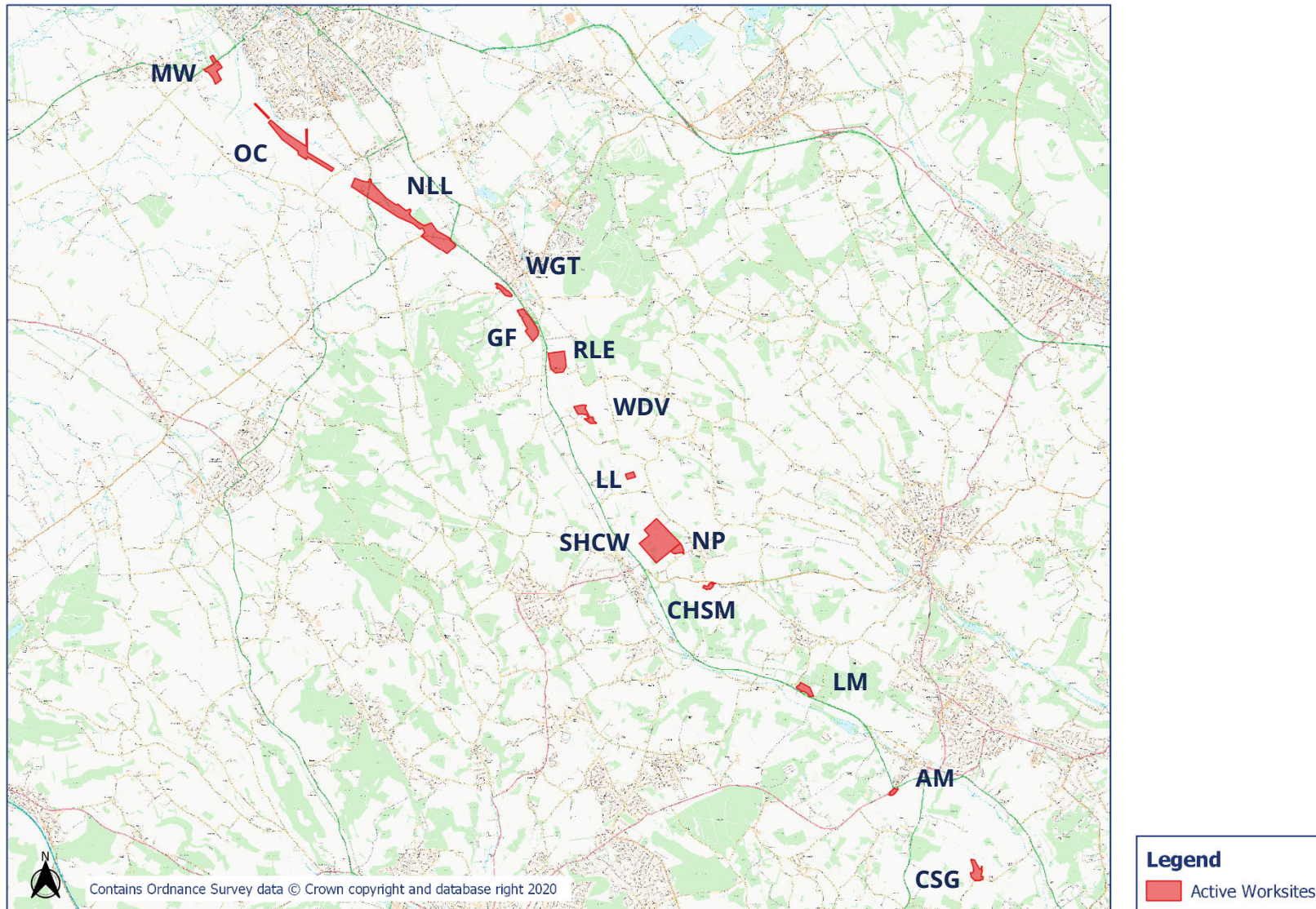
Table 8: Summary of Complaints

Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
HS2-23-93964-E-C	NLL	Complaint due to generator noise from site.	Investigation showed noise from the generator had ceased.	Contractor enquired with the stakeholder who confirmed the disturbance has ceased.
HS2-23-94085-E-C	LM	Complaint due to ongoing low frequency noise disturbance.	Noise monitors nearby were checked and were operating within prescribed limits at time of complaint.	Mitigation measures are in place where possible. Stakeholder has been informed of the results of the investigation and advised to contact if disturbance continues.
HS2-23-44607-C	N/A	Disturbance at night from vibration. Resident believes the disturbance is due to tunnelling.	Stakeholder lives 6km away from the nearest tunnelling site, disturbance is not due to HS2 works.	Stakeholder has been informed of the results of the investigation.
HS2-23-44632-C	CVV	Complaint due to ongoing low frequency noise disturbance from site.	Low frequency noise disturbance due to concrete batching factory during vibration of viaduct segment. Permitted noise levels have not been exceeded.	An acoustic enclosure surrounds the concrete batching factory. Stakeholder has been informed of the results of the investigation.
HS2-23-44675-C	CVV	Disturbance due to noise from the use of a vibratory roller.	A vibratory roller was in use at time of complaint. Works were within consented working hours.	Stakeholder has been informed of the results of the investigation.
HS2-23-44681-C	CAL	Complaint due to noise from site.	Disturbance caused by construction work to nearby car park. Works ceased at 12:45pm and were undertaken in core working hours thereafter.	Stakeholder has been informed of the results of the investigation.

Appendix A Site Locations

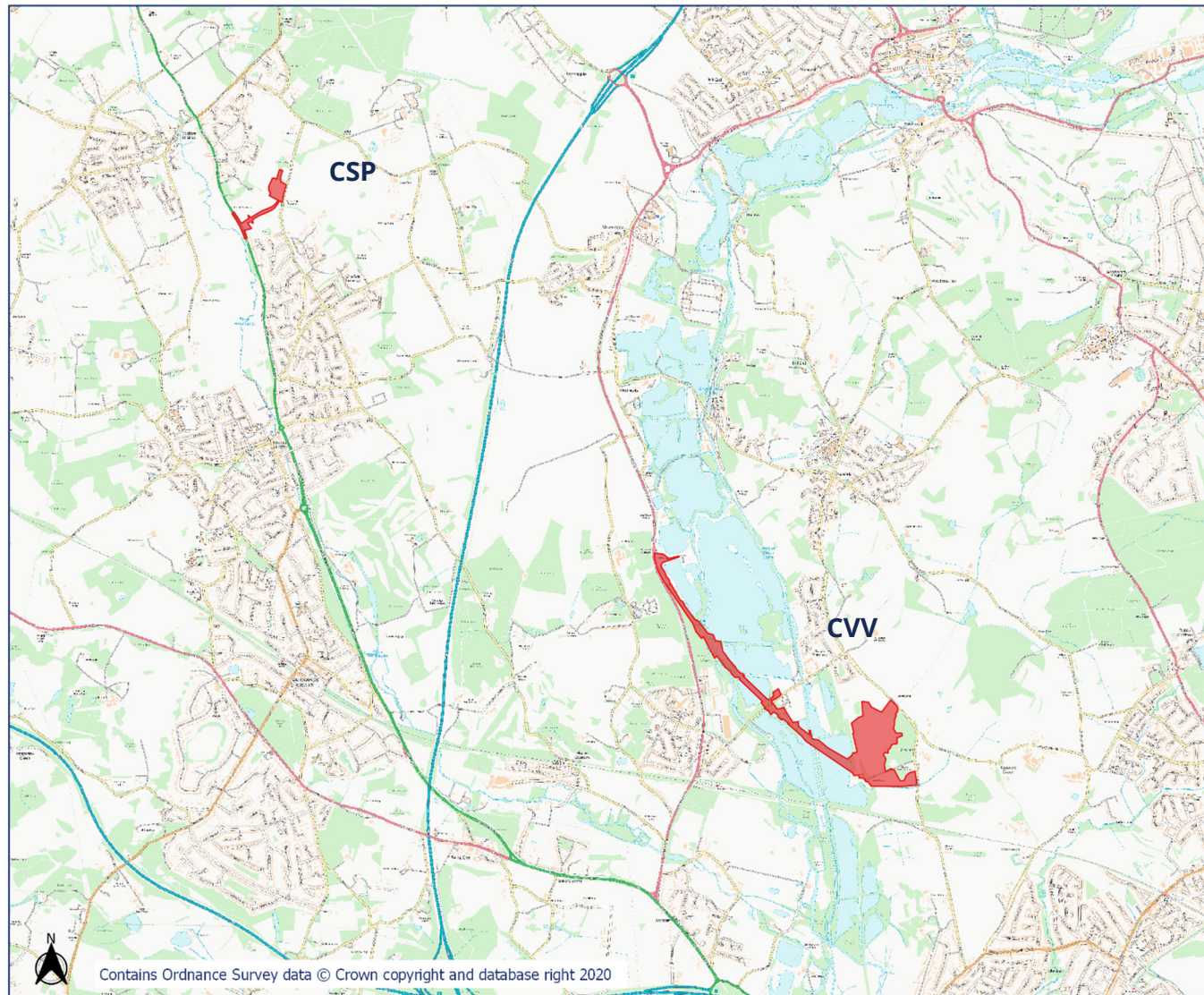


HS2 Worksite Identification Plan - Overview 2

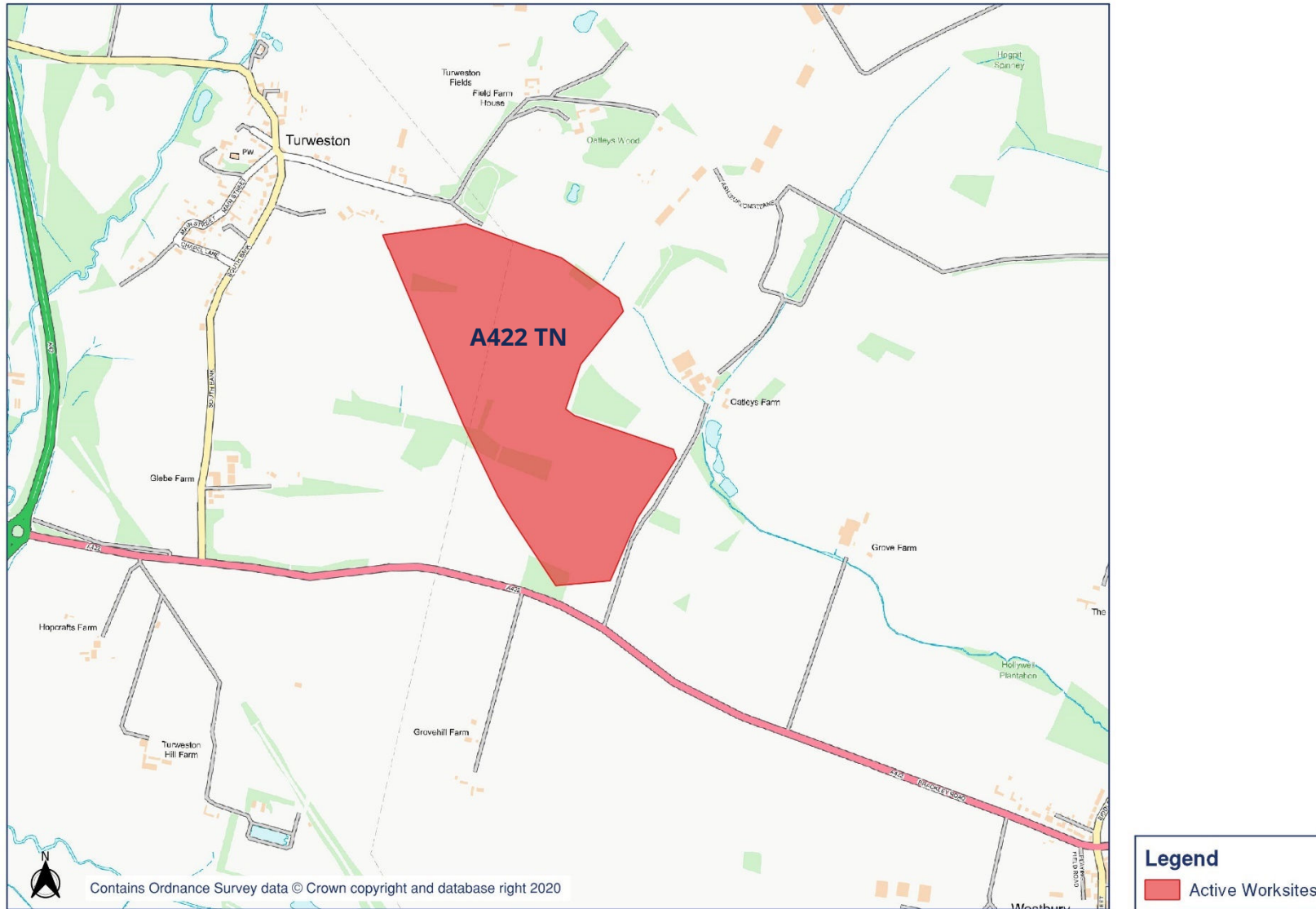


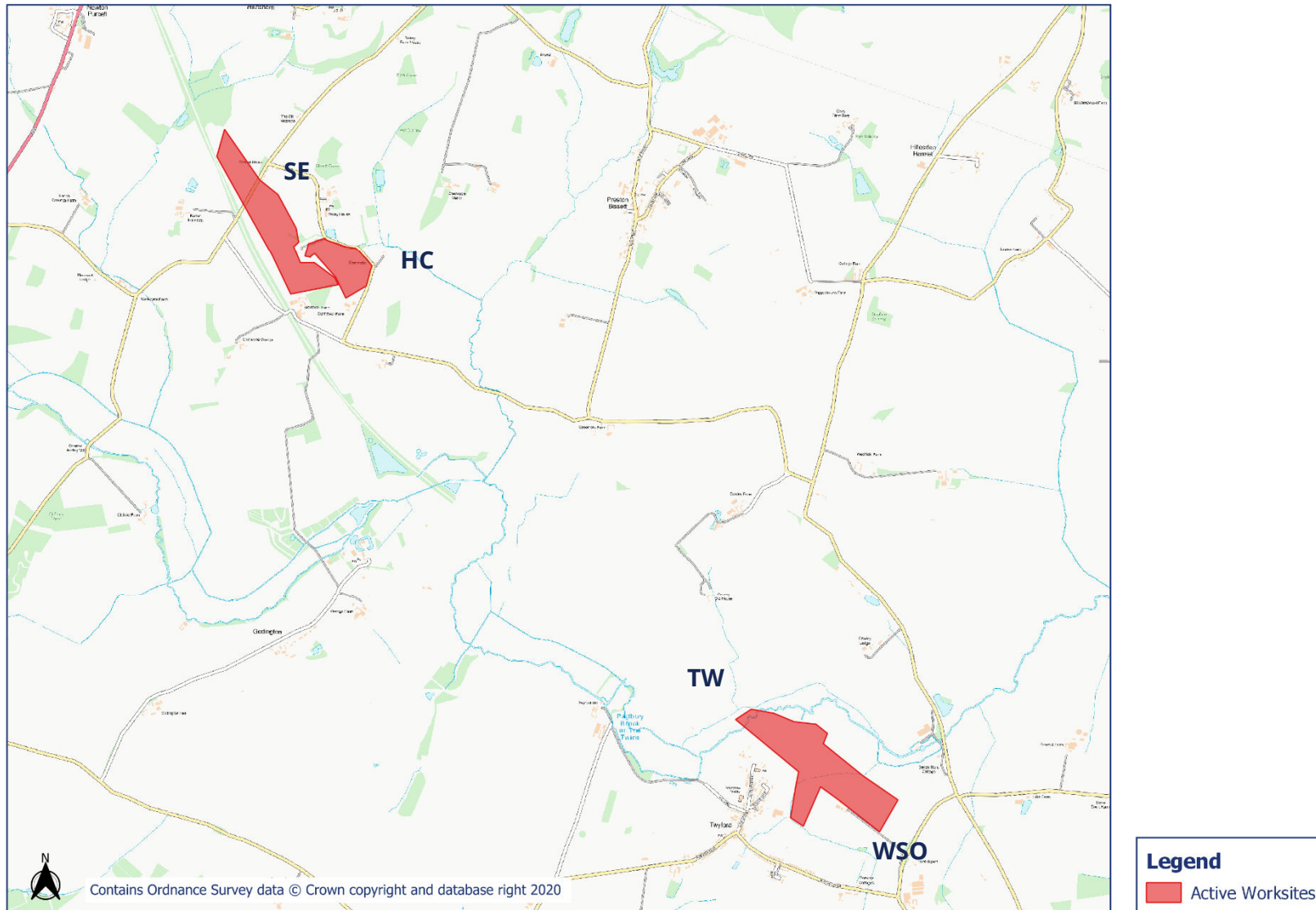
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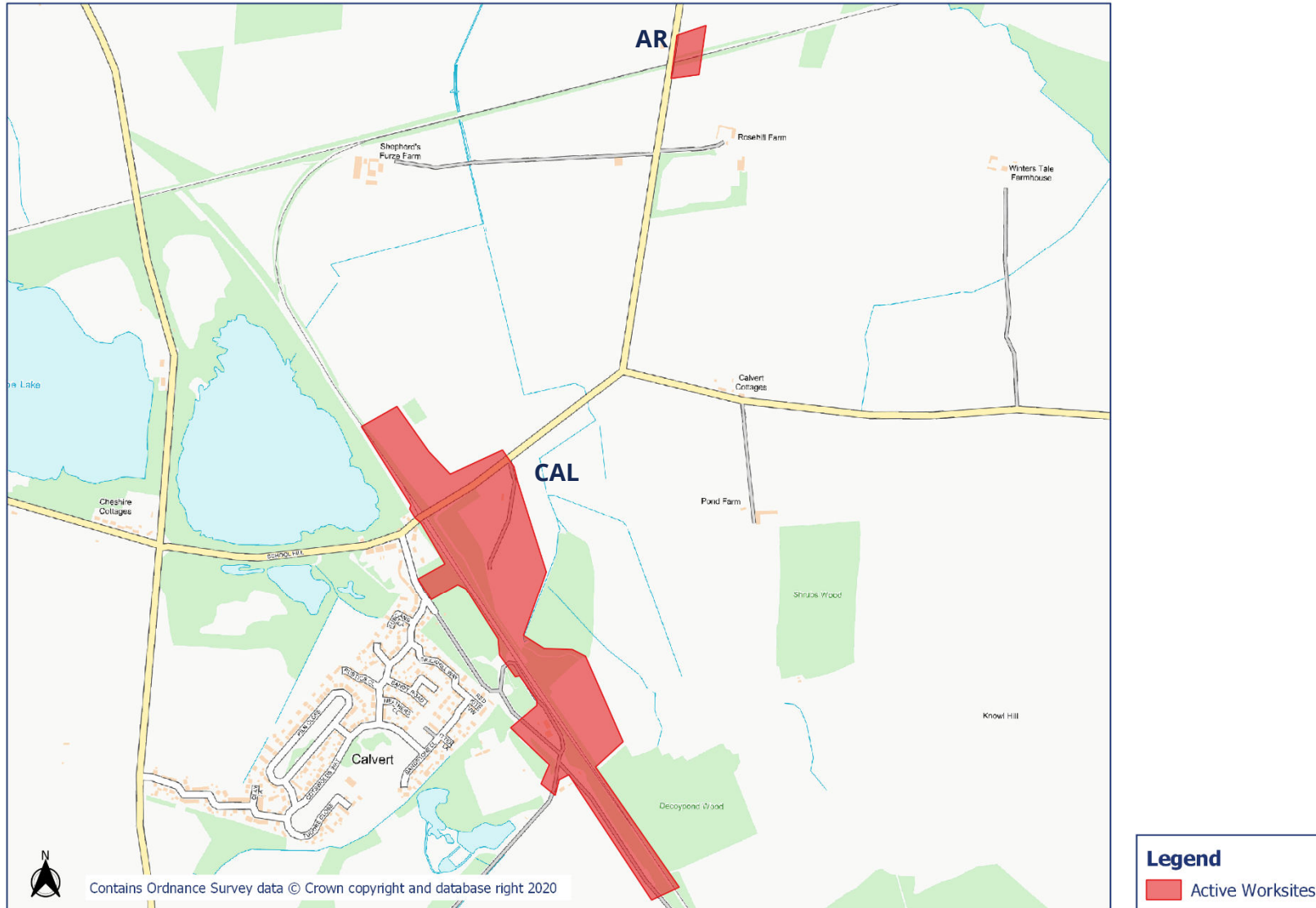
HS2 Worksite Identification Plan - Overview 3

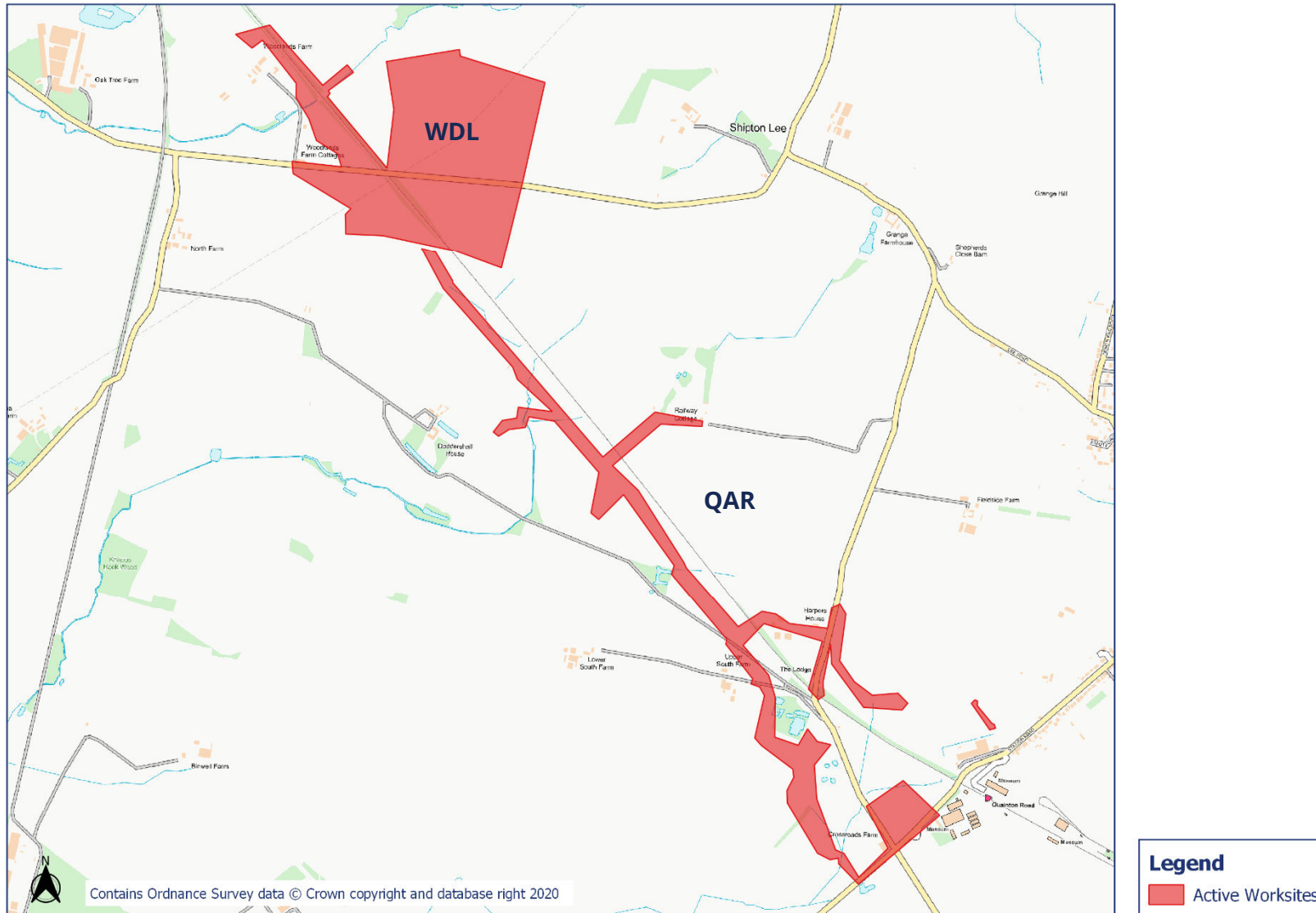


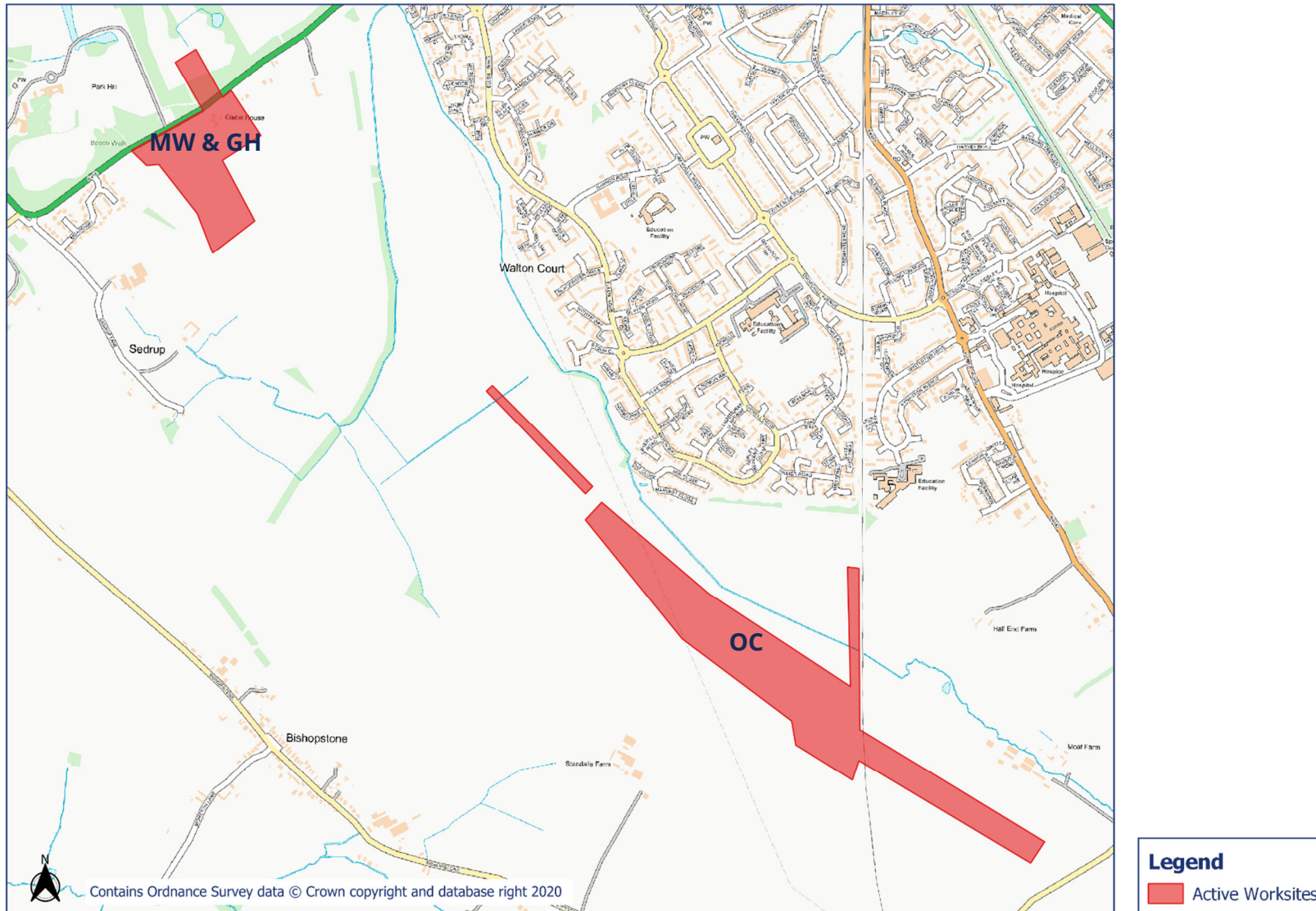
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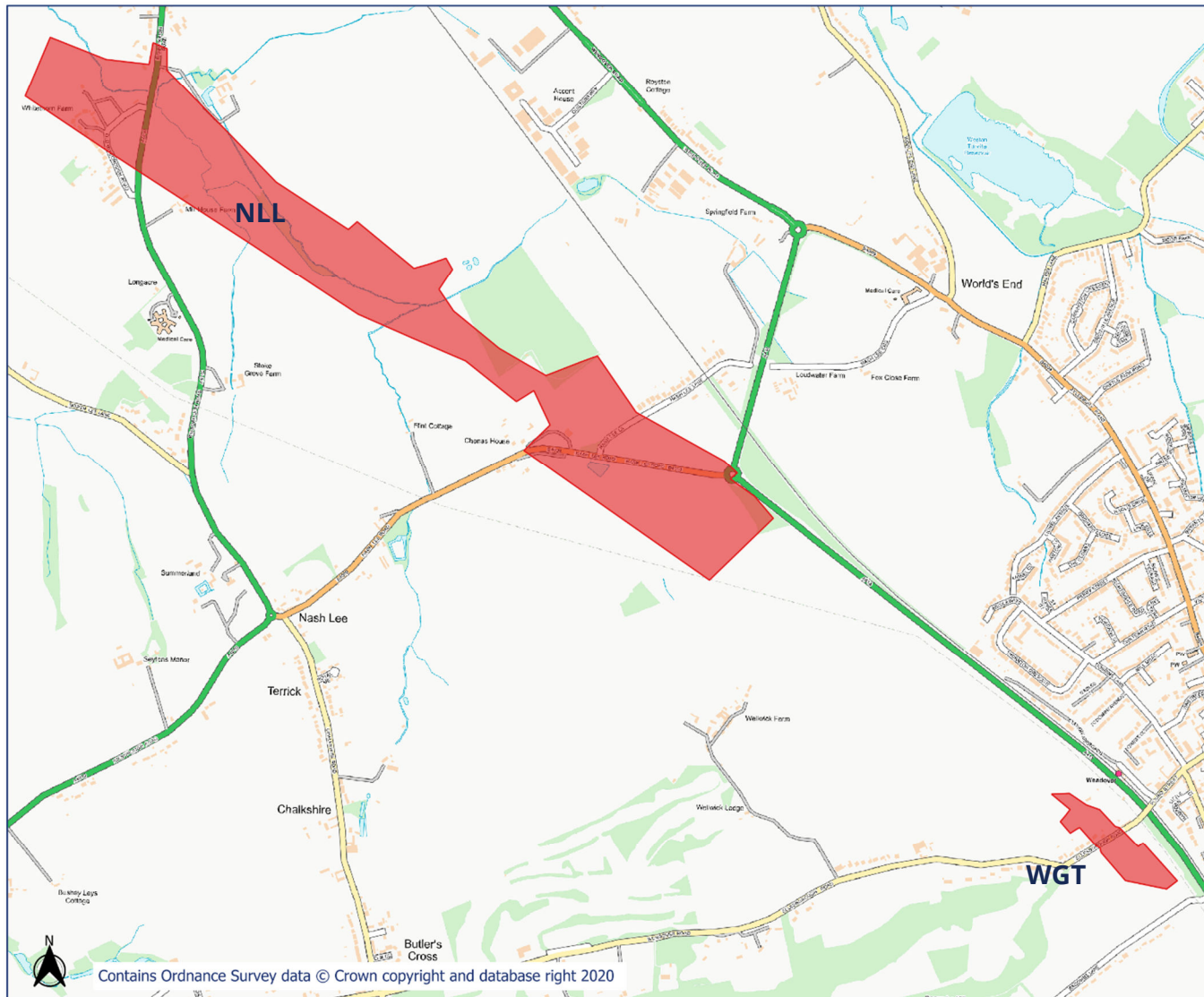






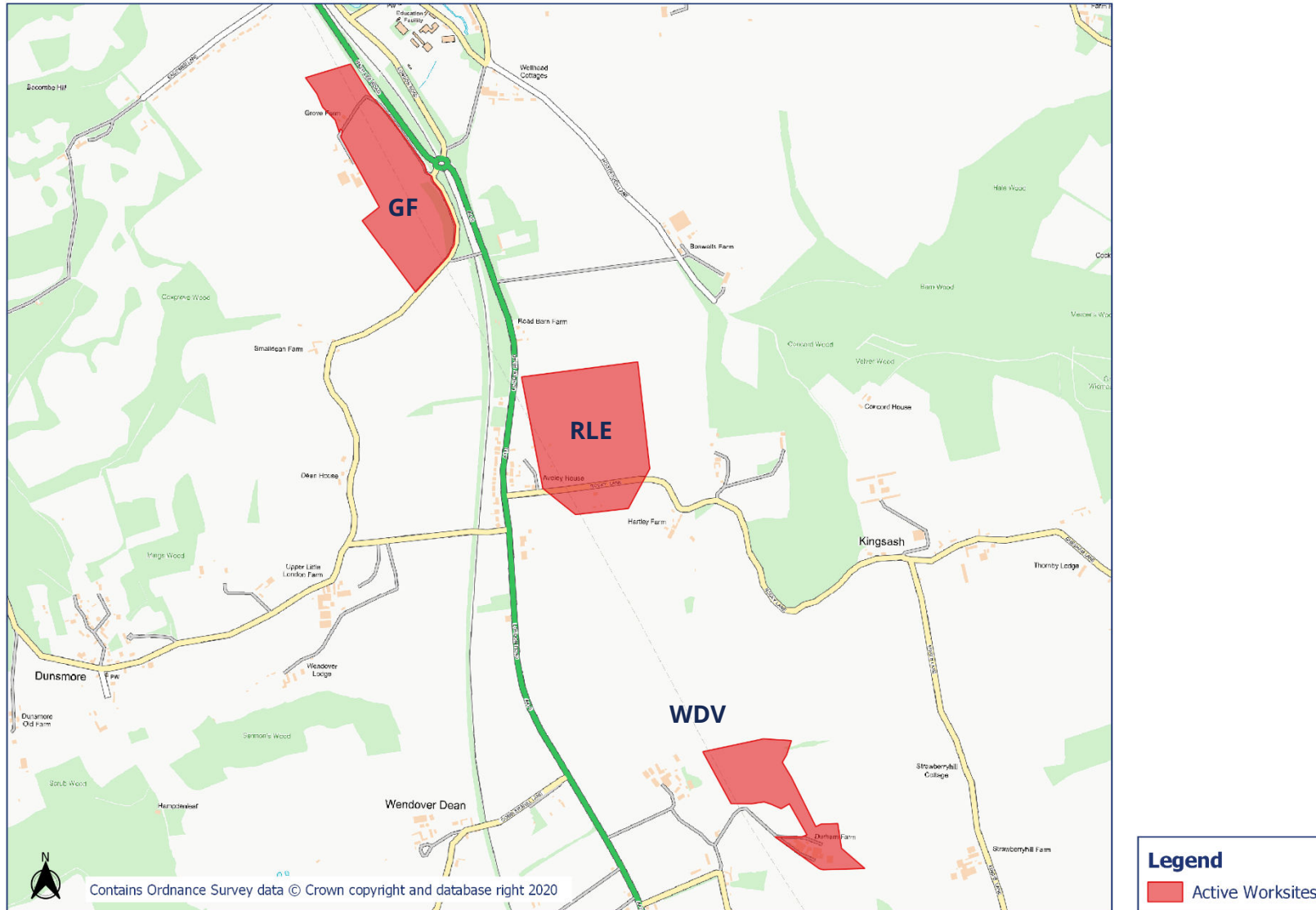




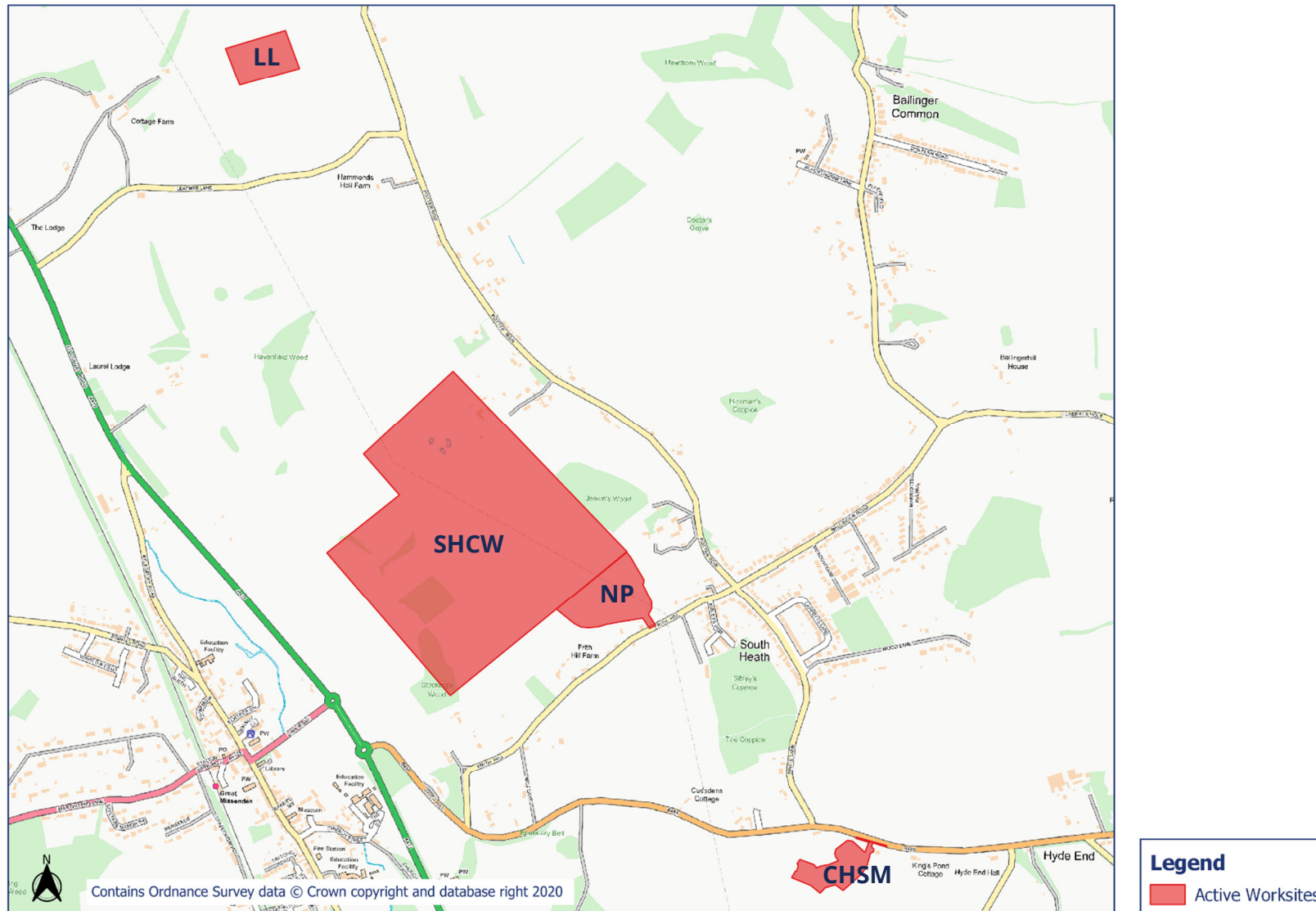


HS2

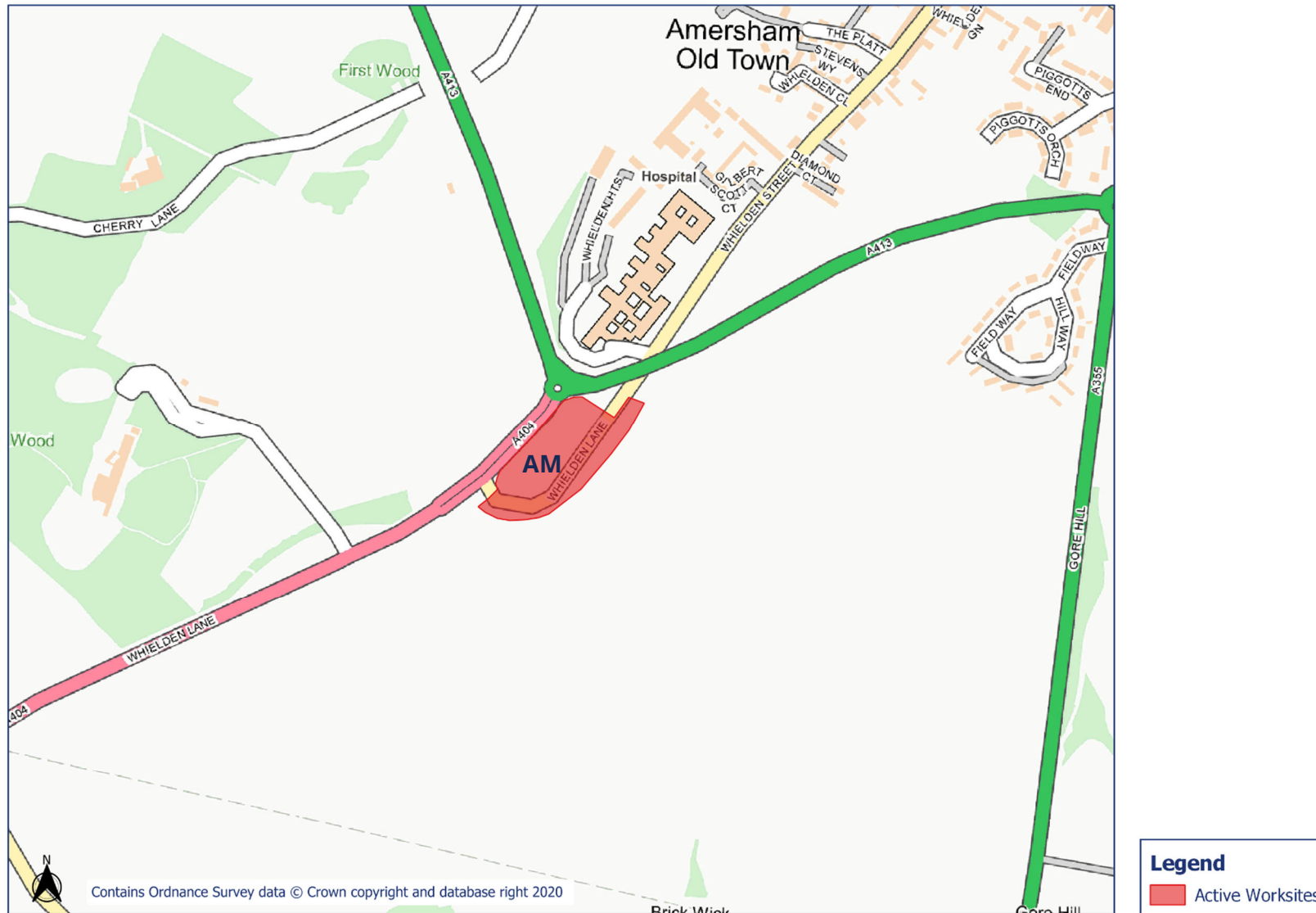
Worksite Identification Plan - 7

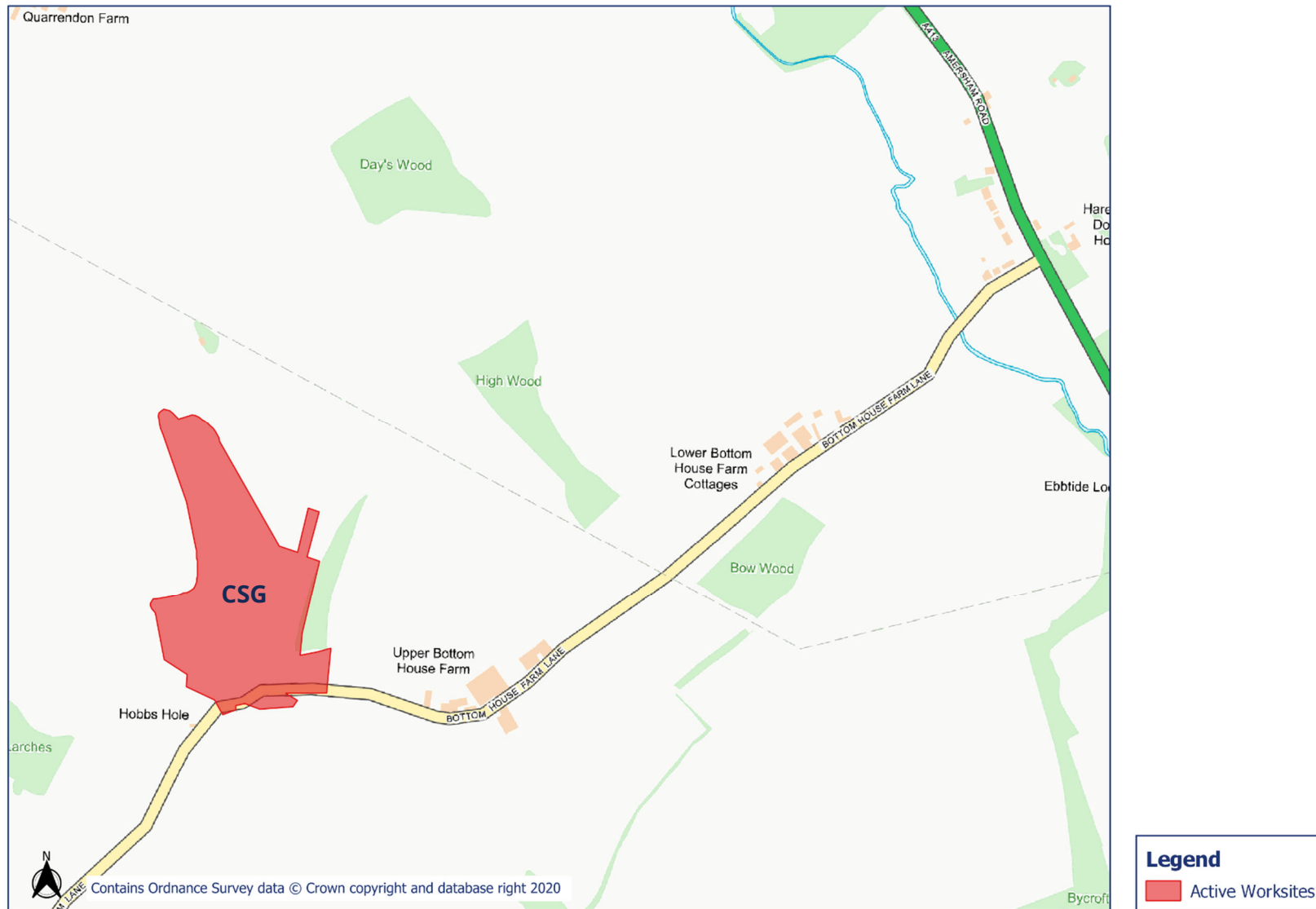


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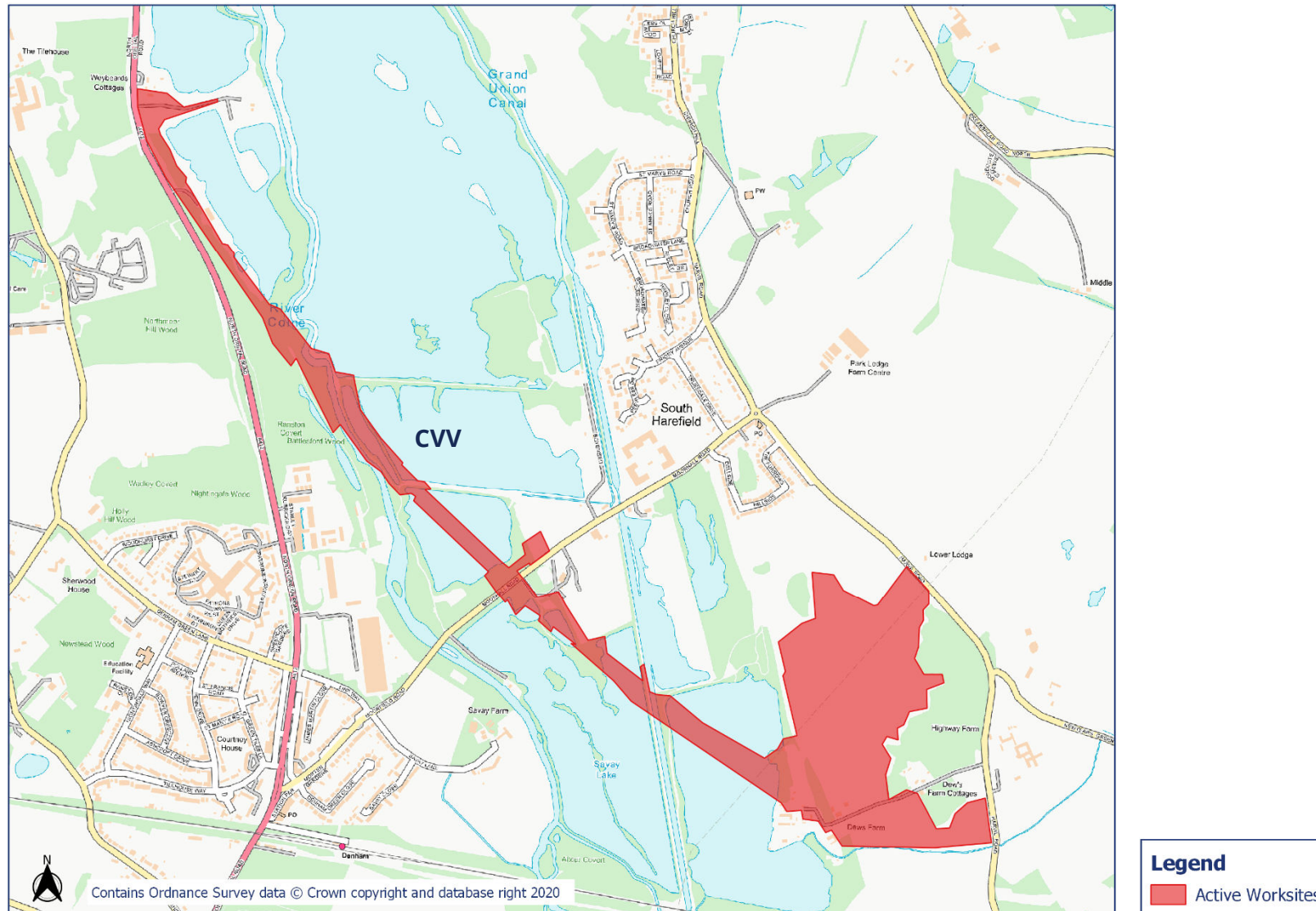




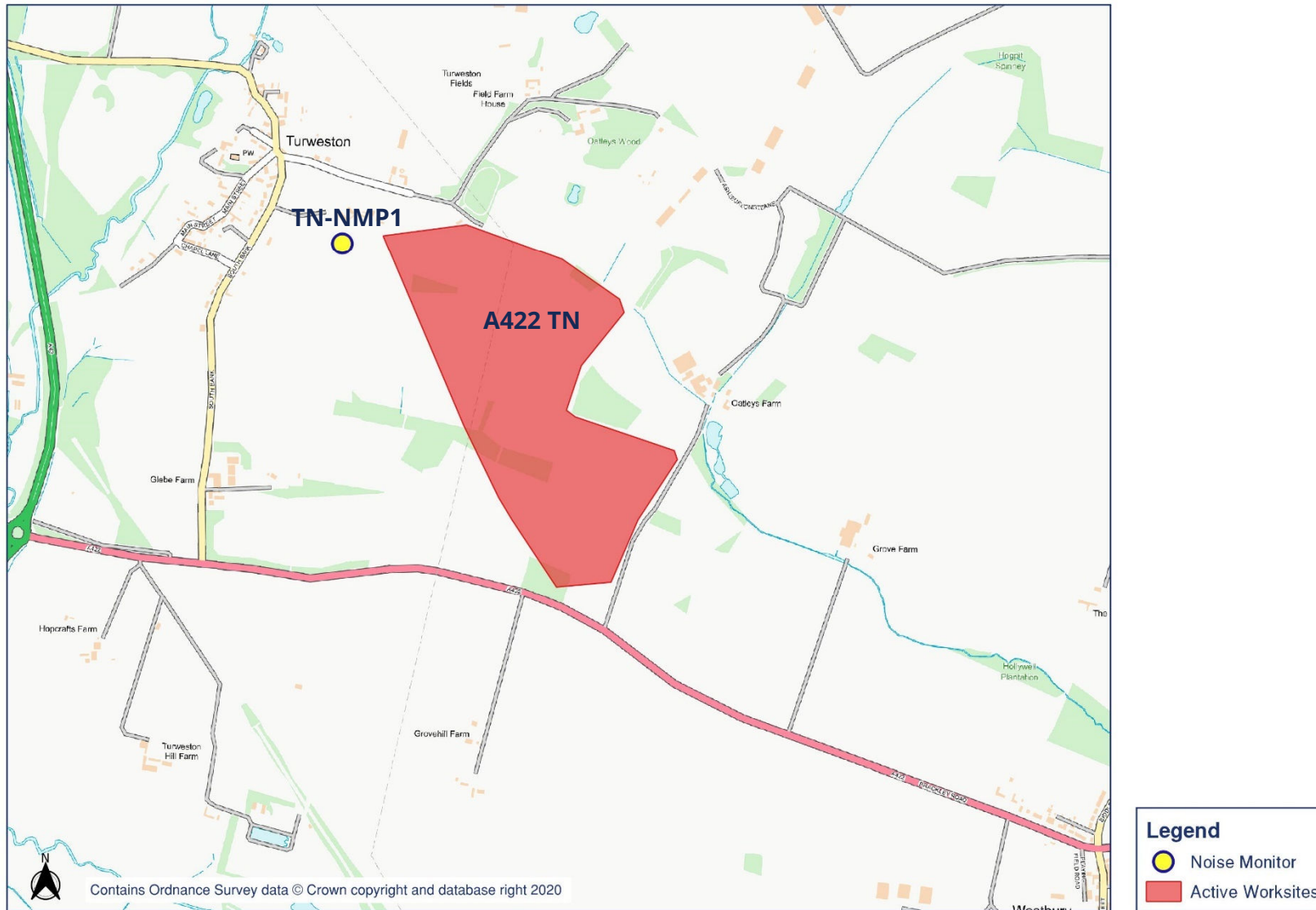






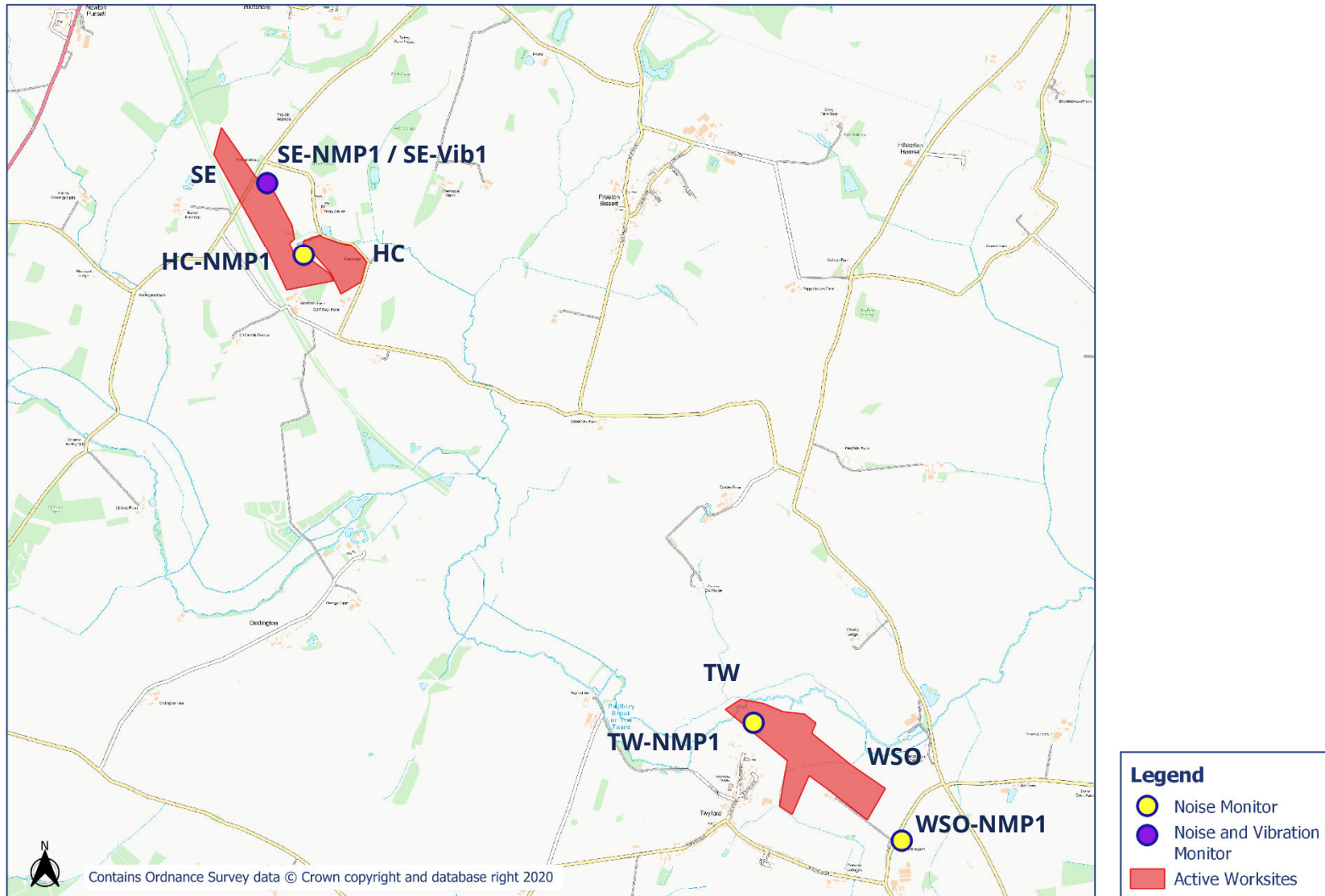


Appendix B Monitoring Locations

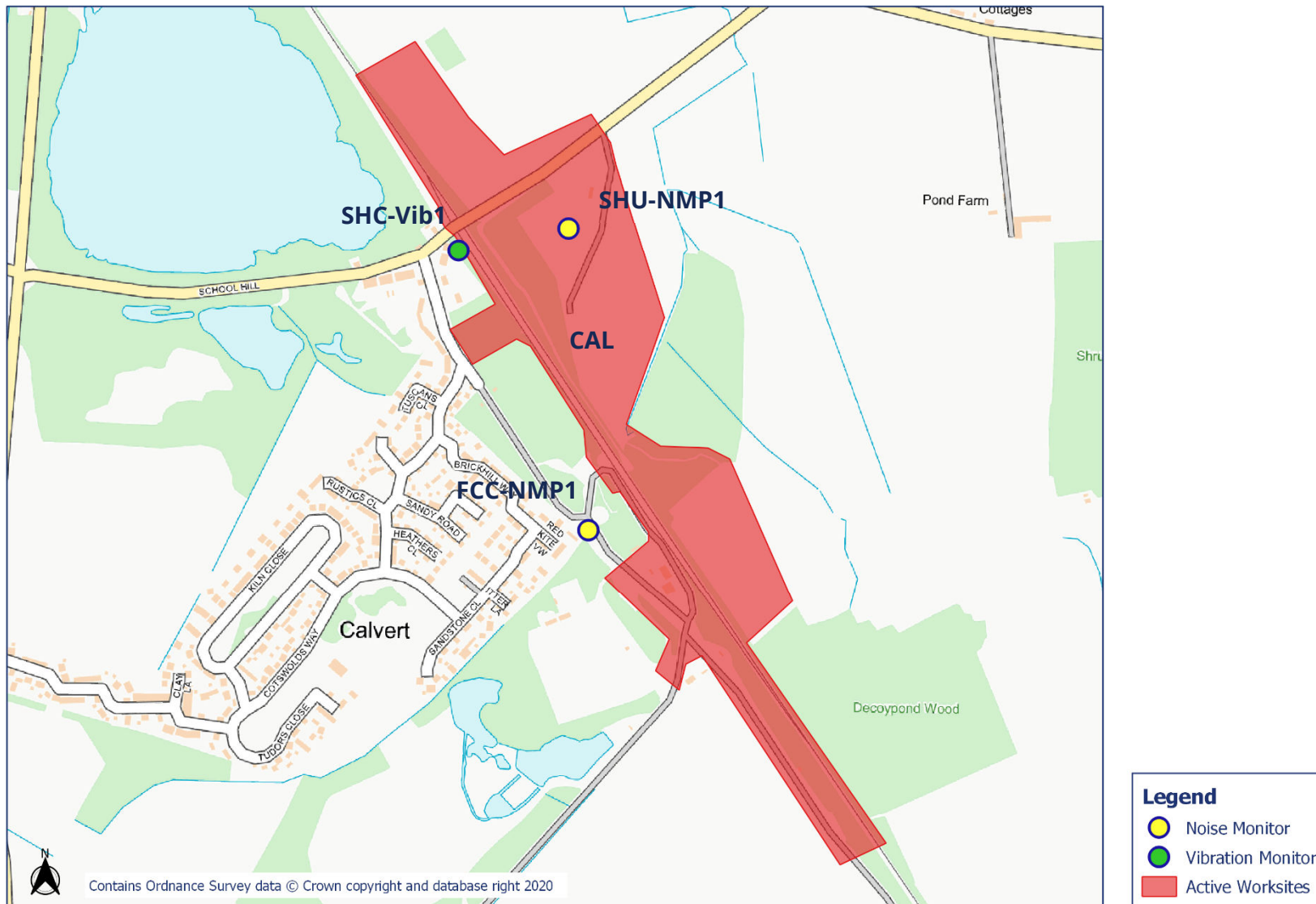


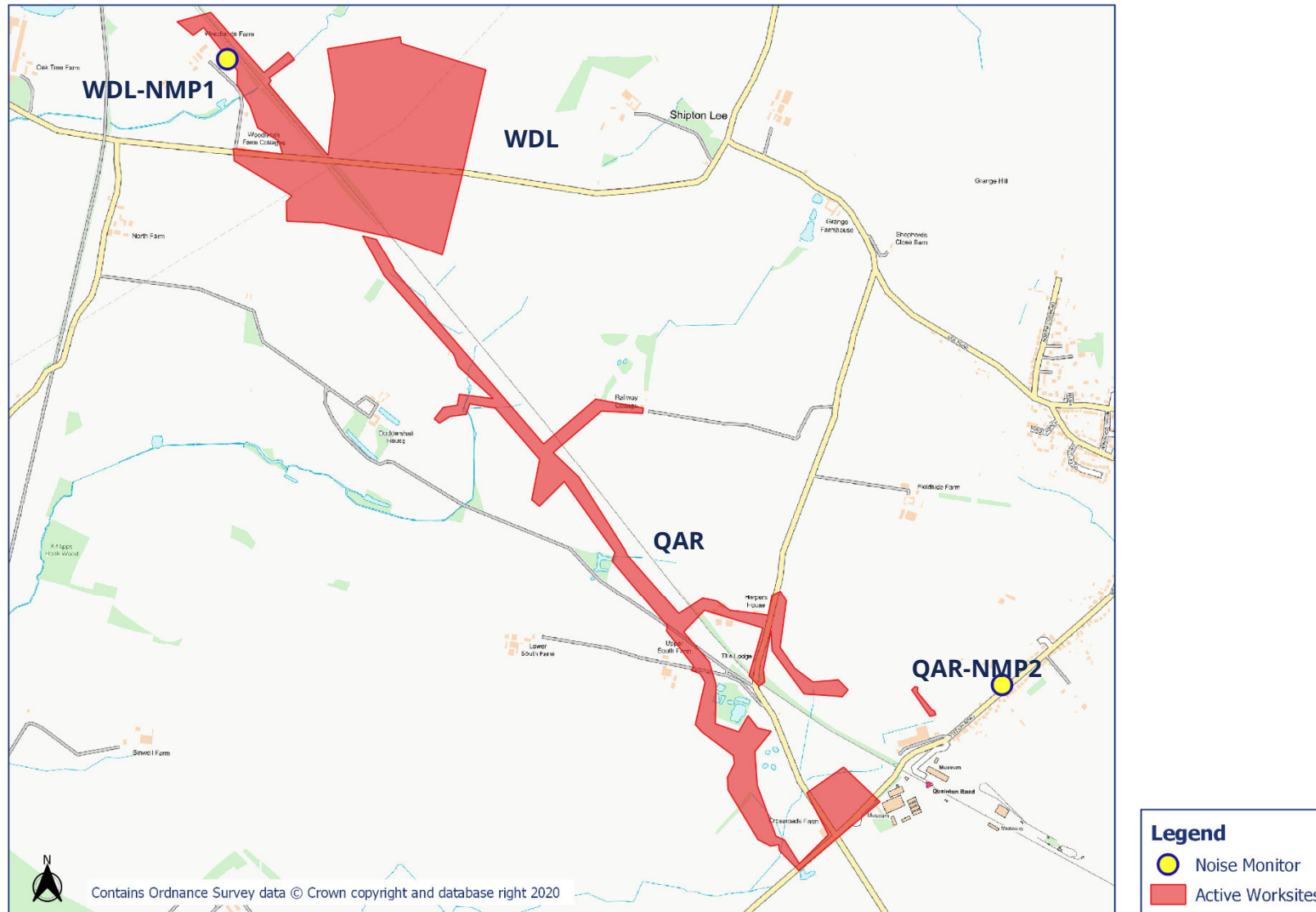
HS2

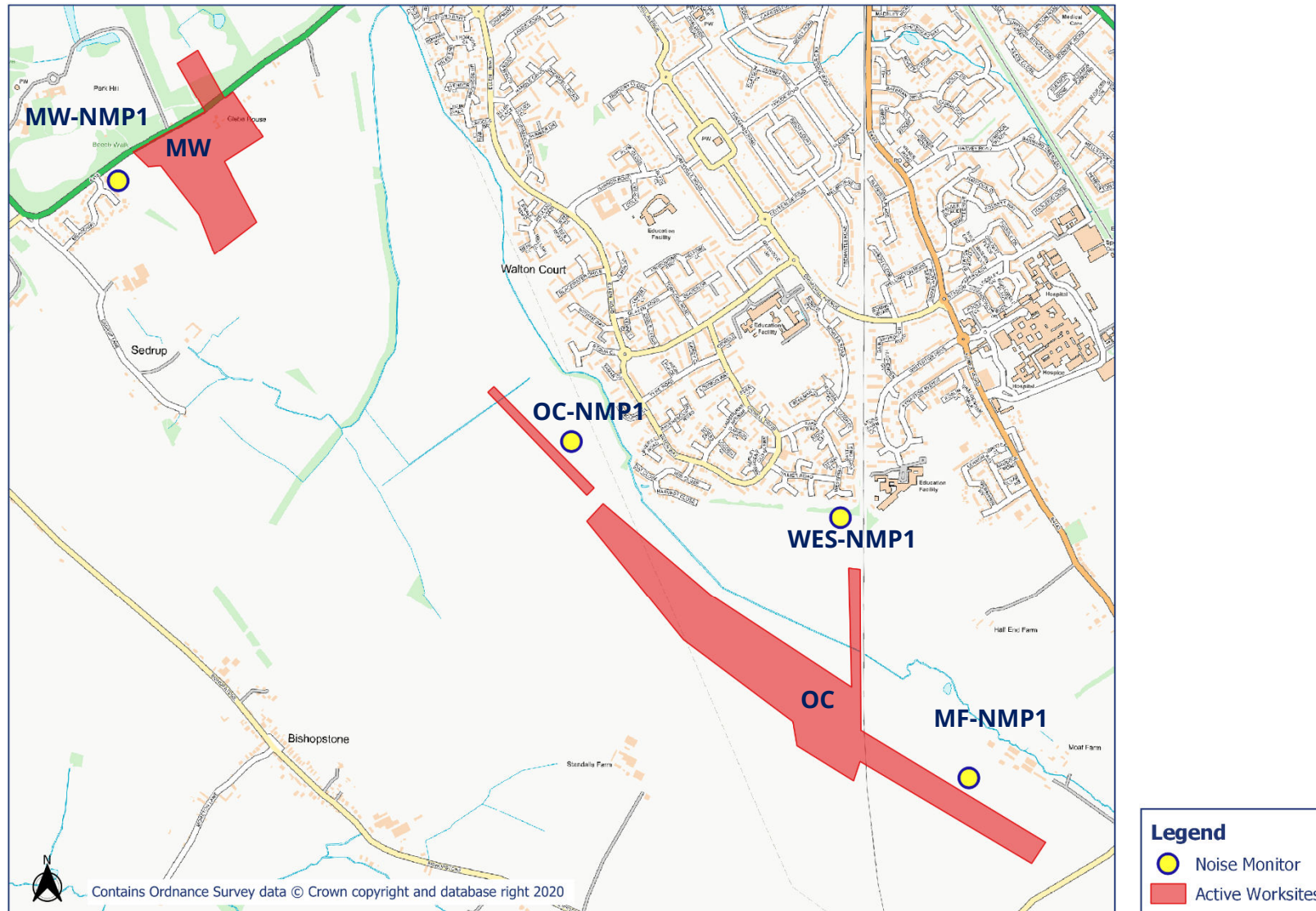
Noise and Vibration Monitoring Plan - 2

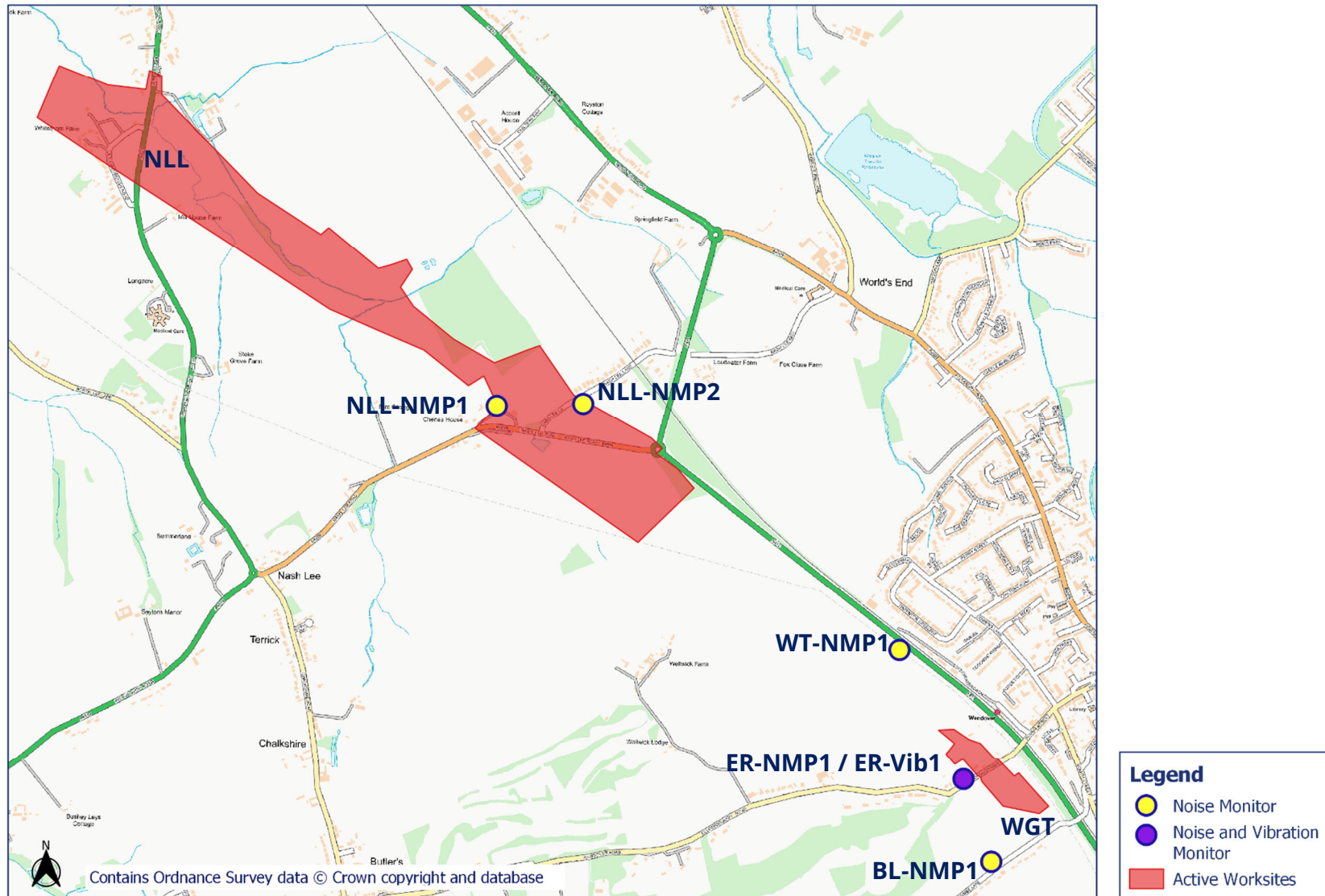


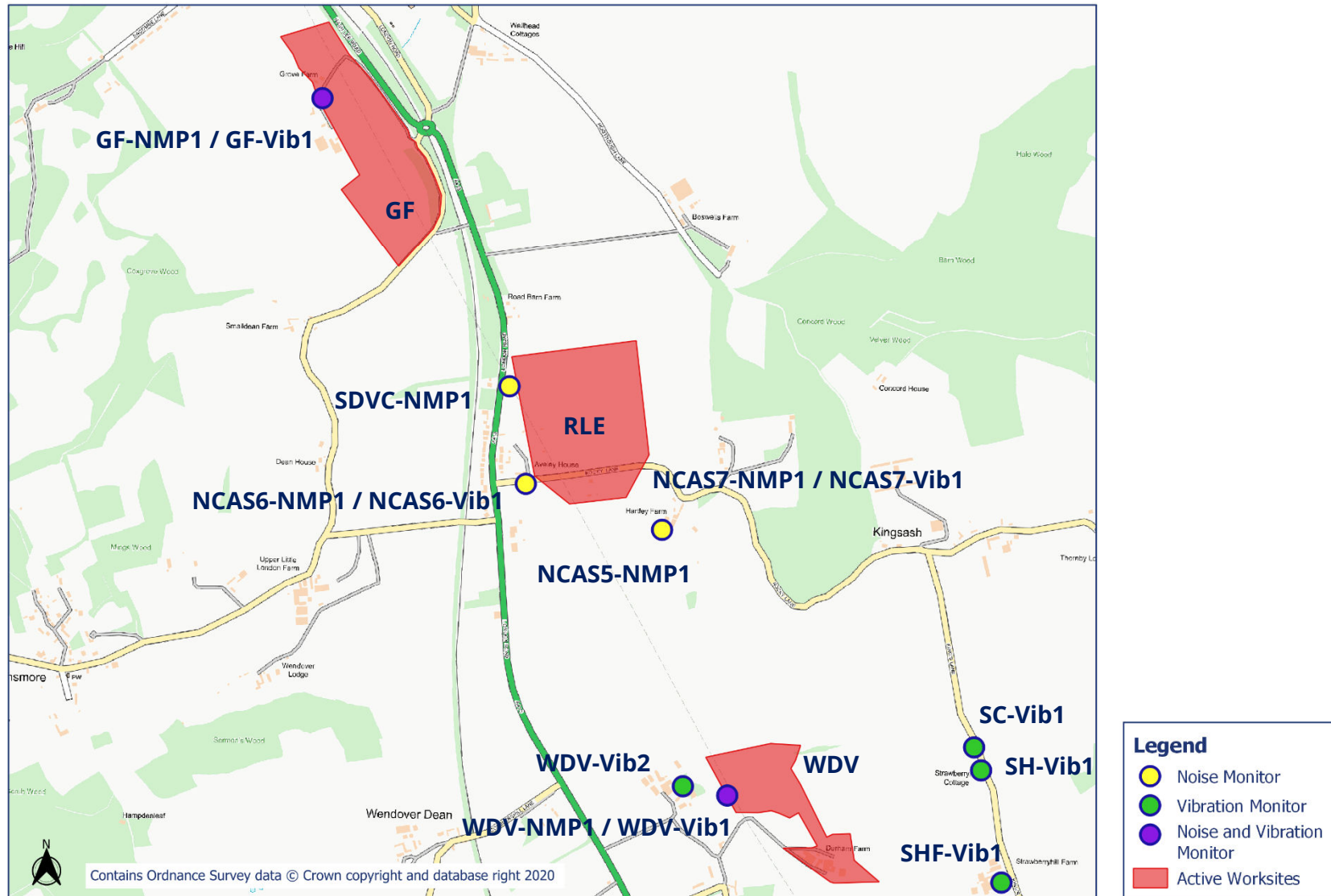


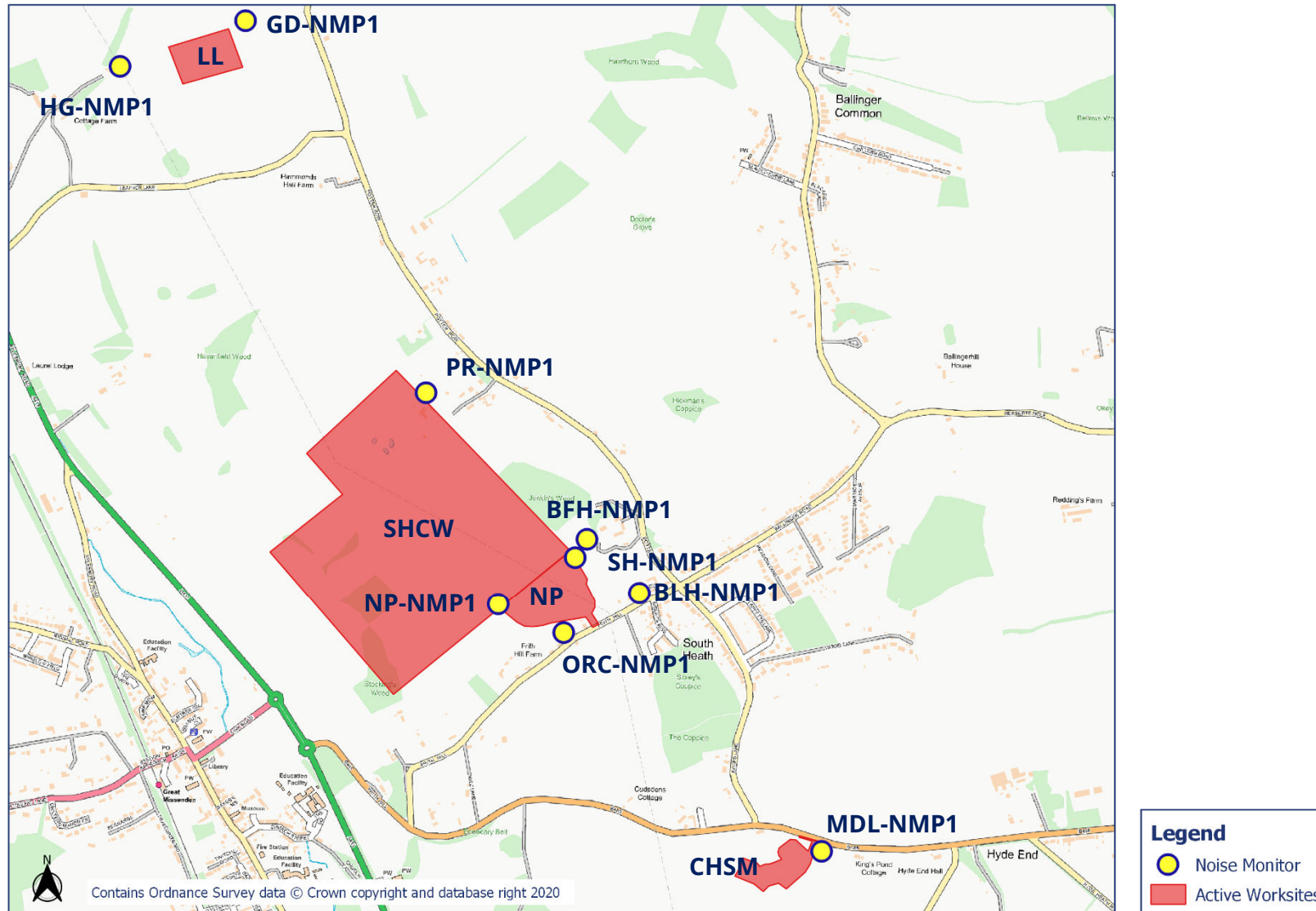






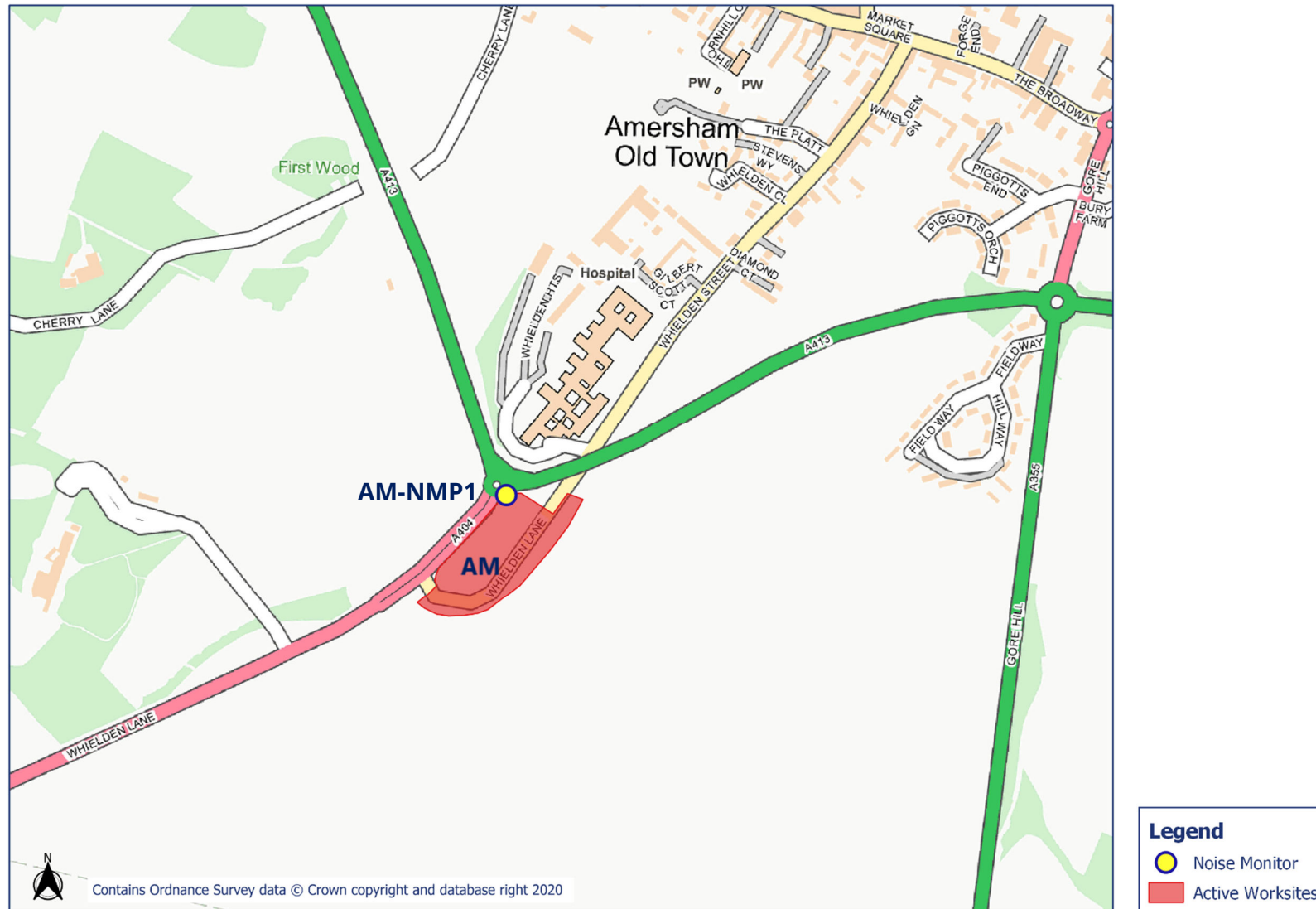


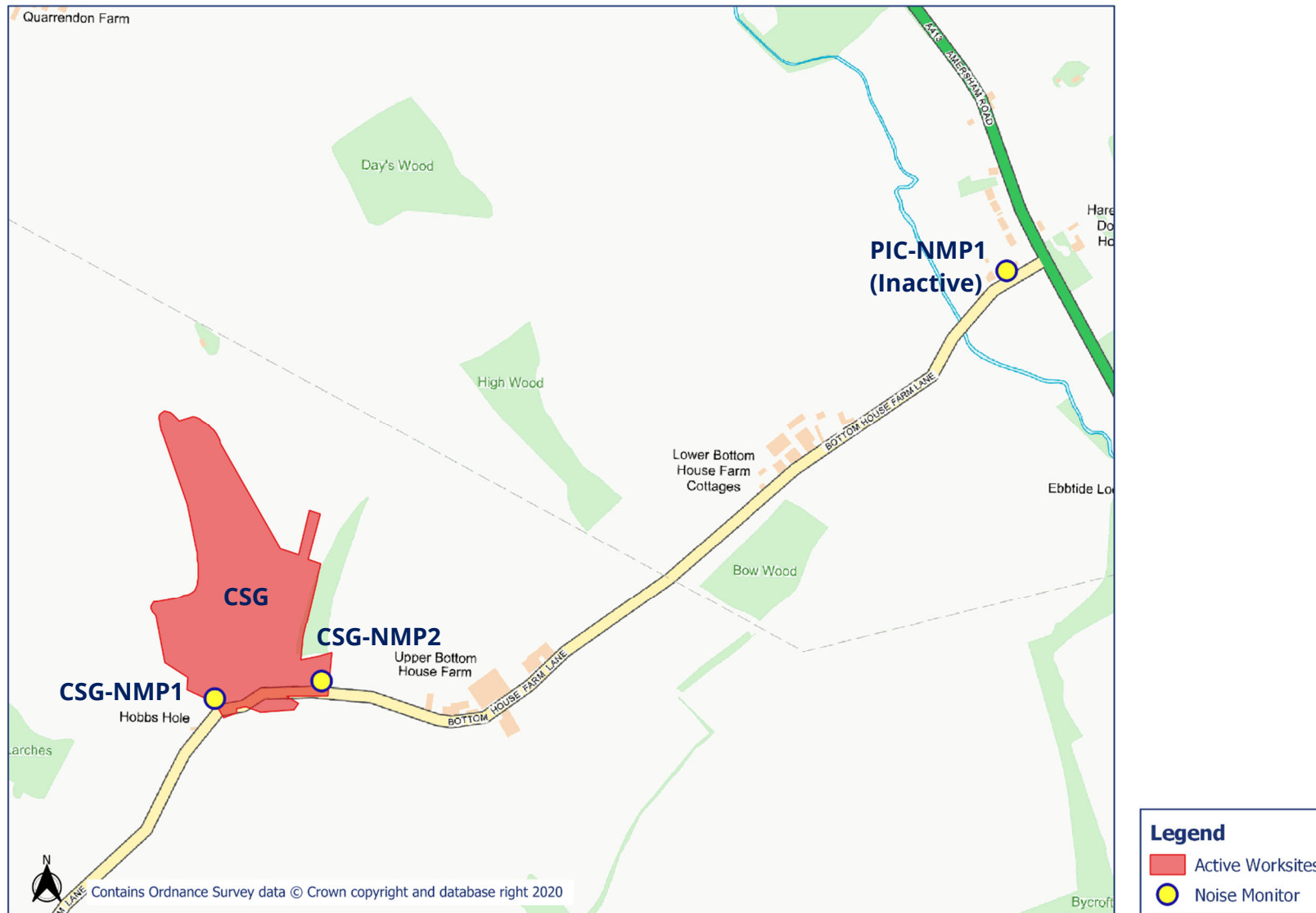




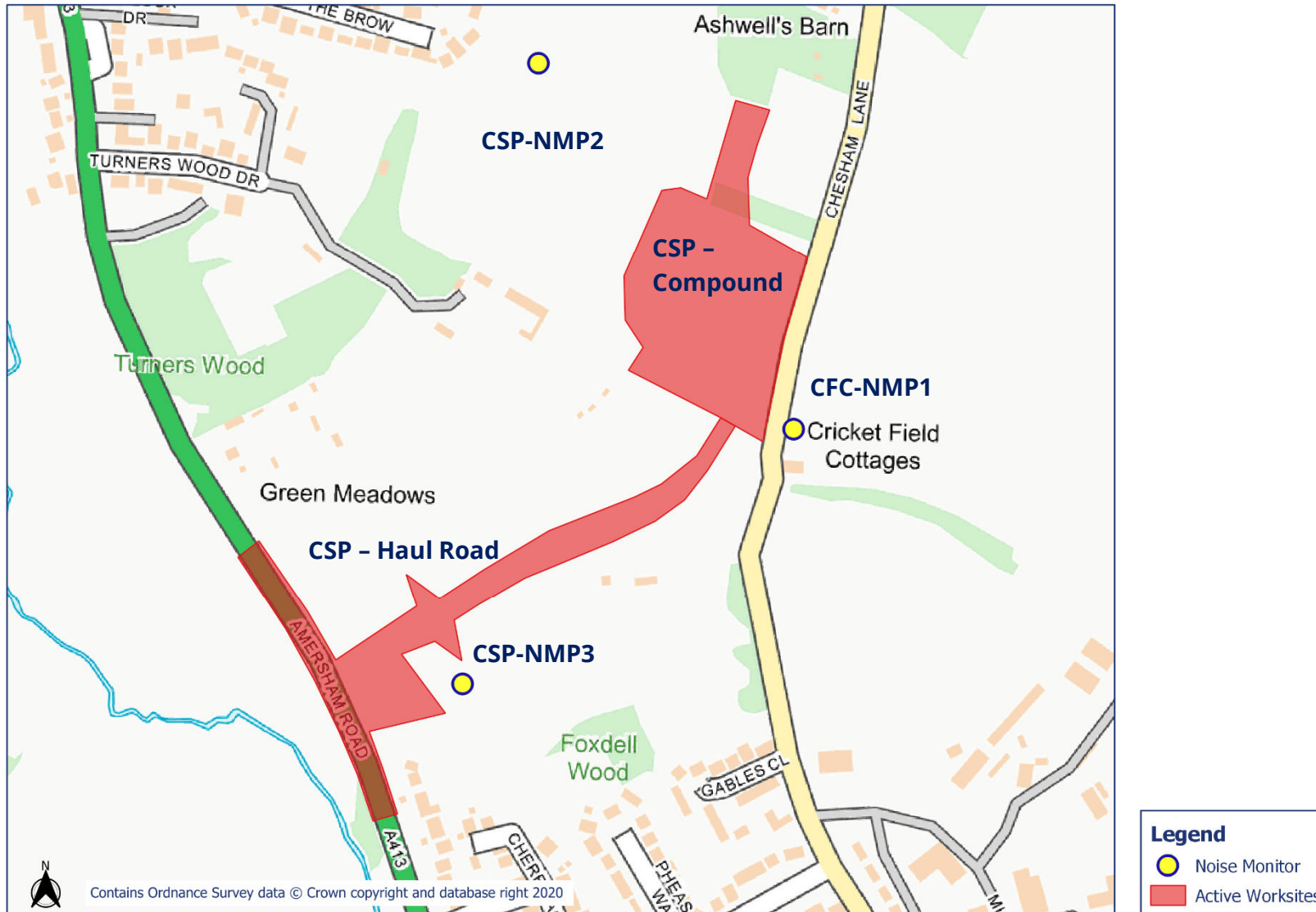


HS2 Noise and Vibration Monitoring Plan - 11

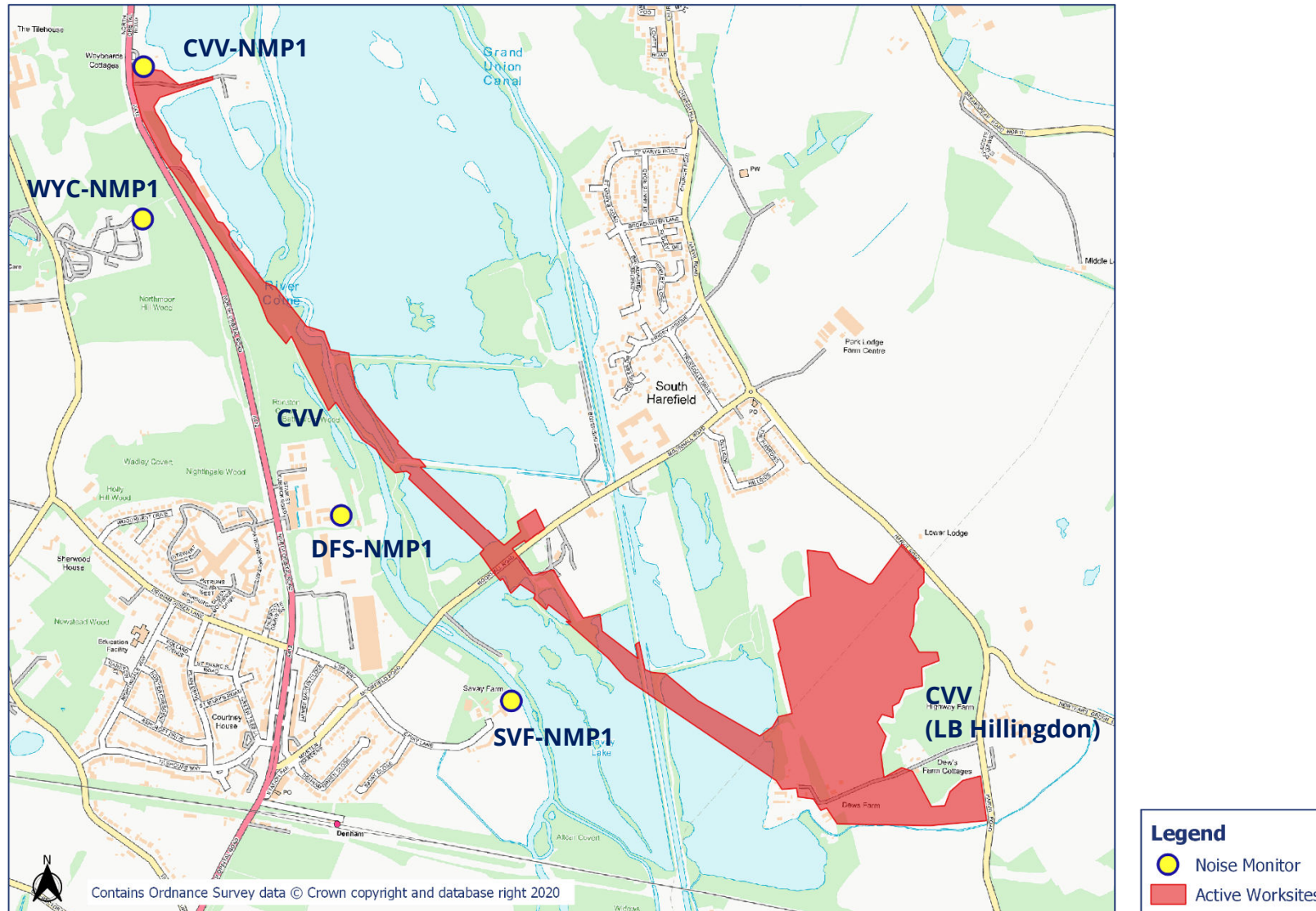




HS2 Noise and Vibration Monitoring Plan - 13



HS2 Noise and Vibration Monitoring Plan - 14

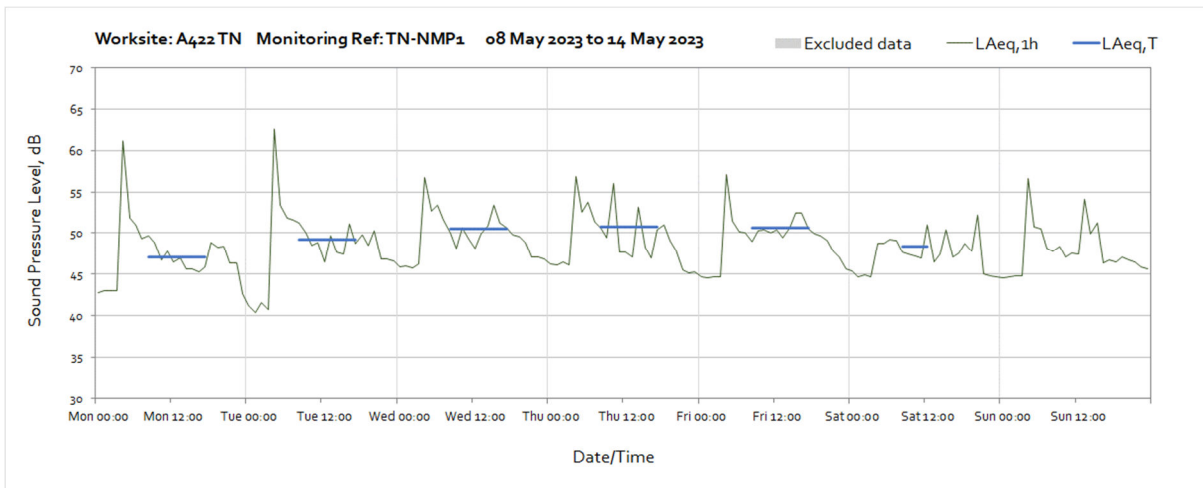
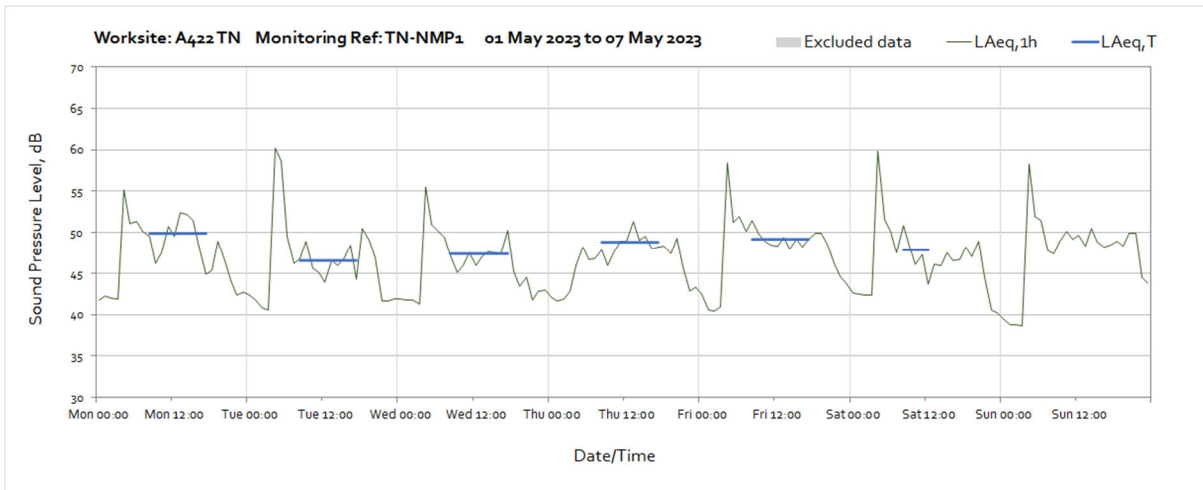


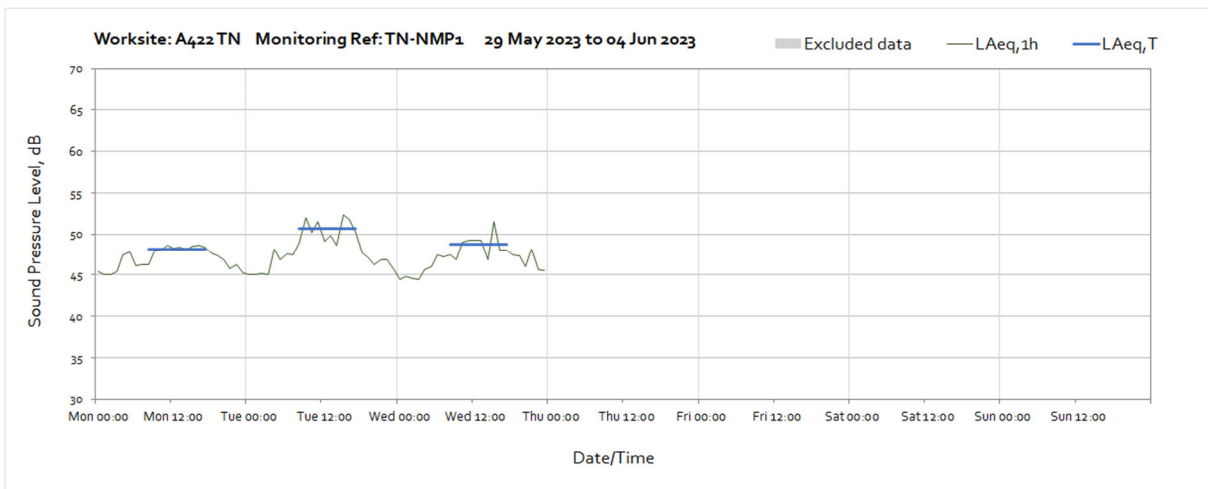
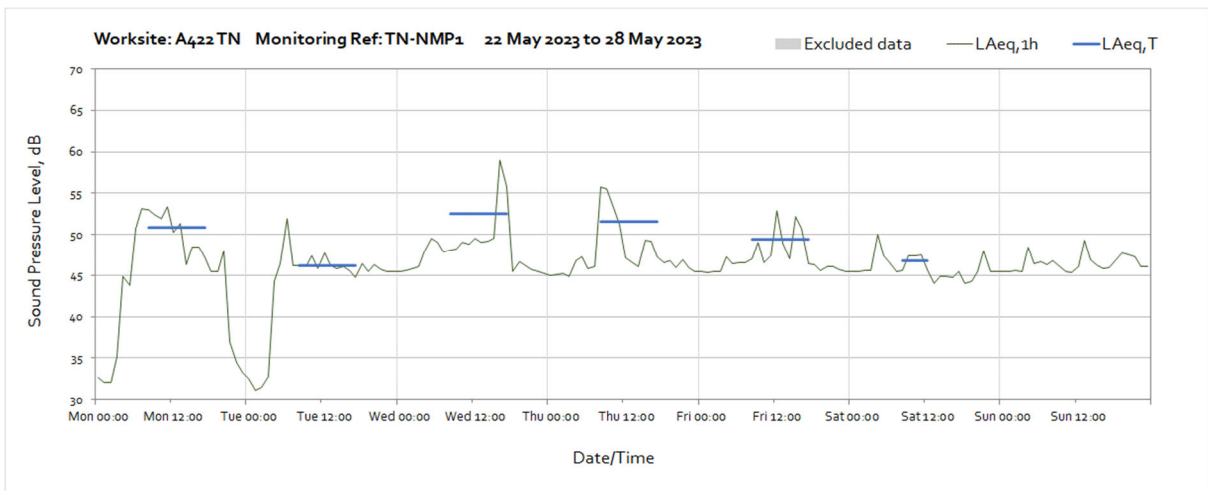
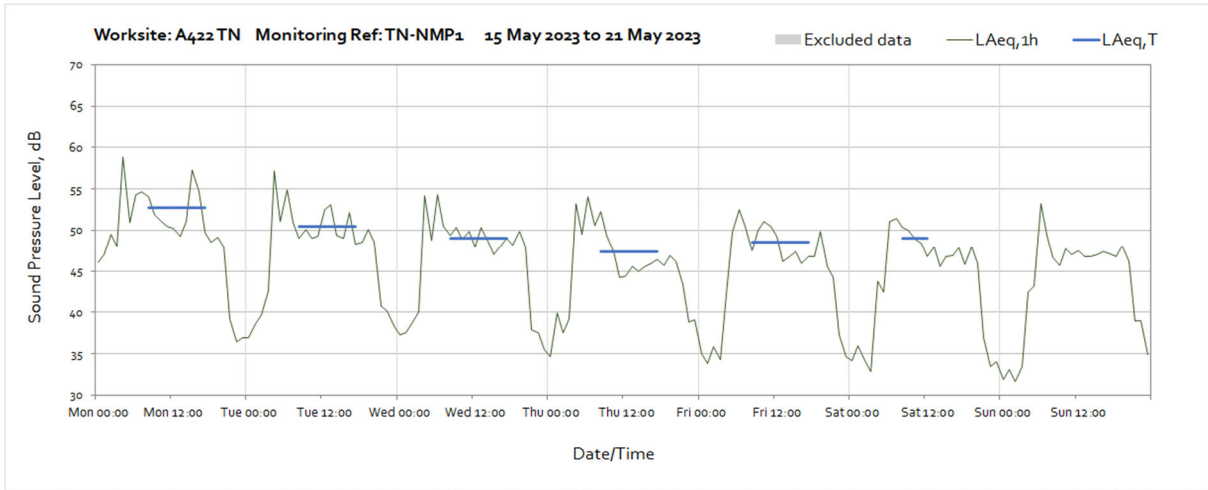
Appendix C Data

Noise

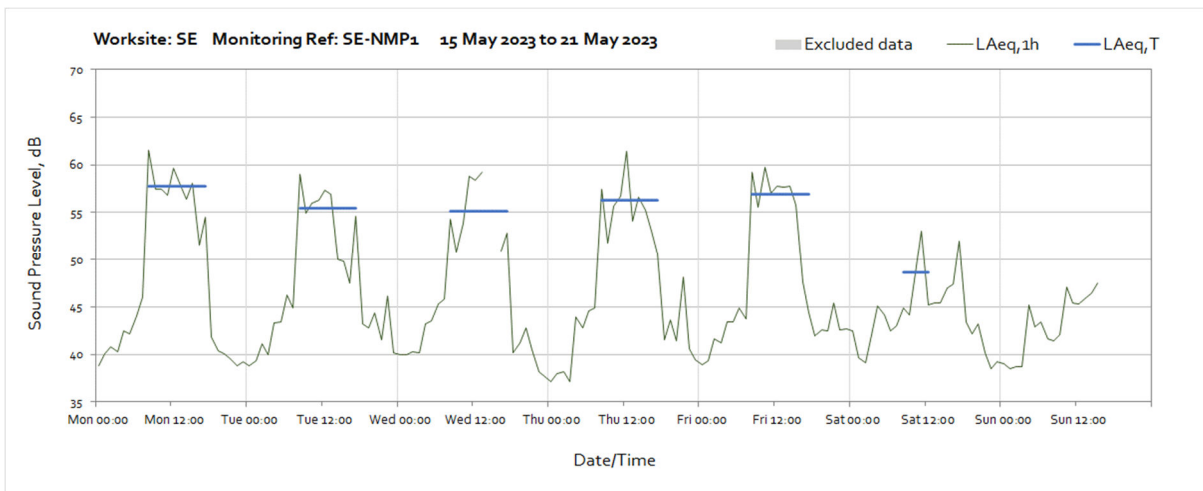
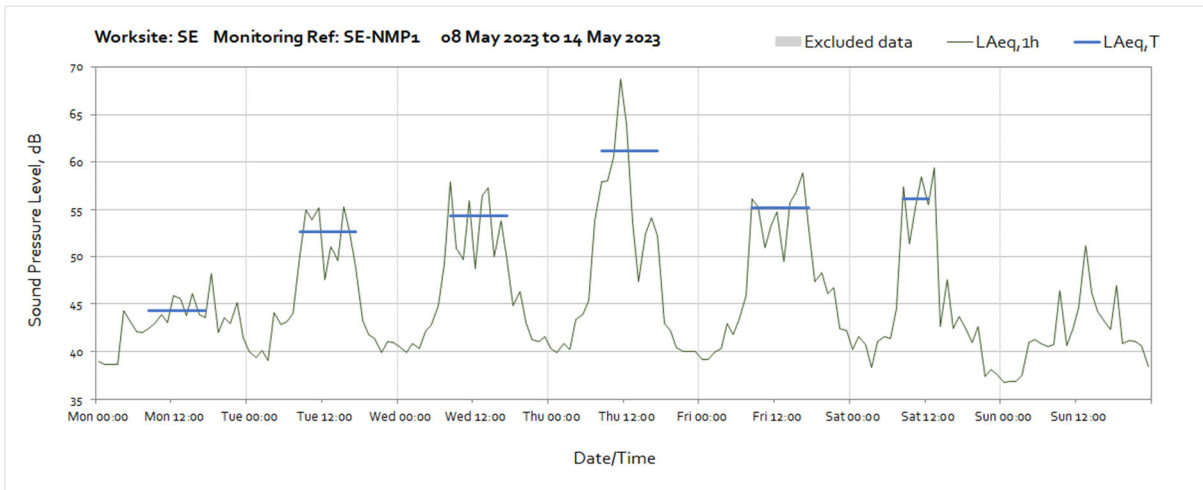
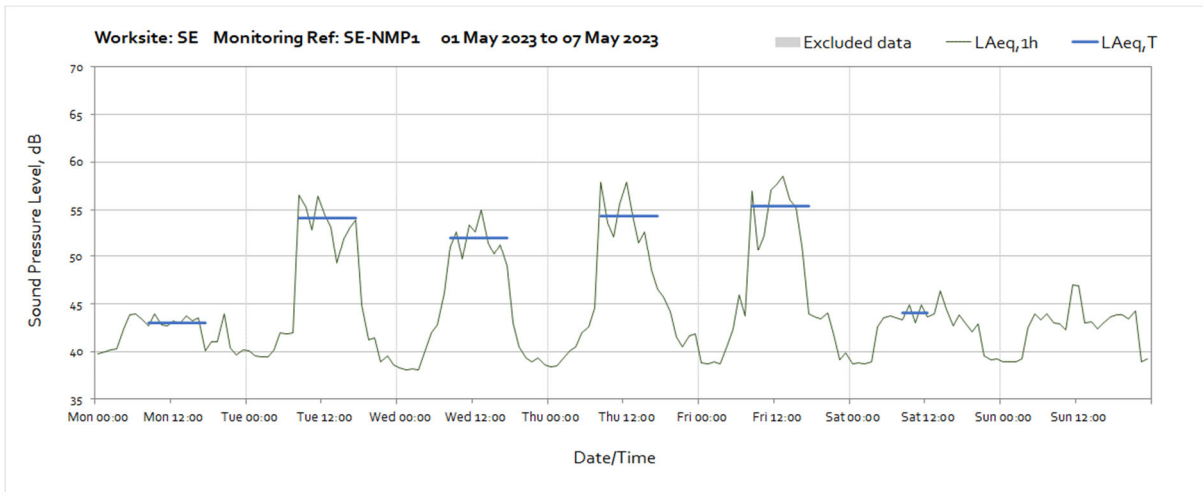
The following graphs show the hourly measured ambient noise level $L_{Aeq,1h}$ and, where relevant, the averaged noise level $L_{Aeq,T}$ values, where the time period T is as specified in Table 1 of HS2 Information Paper E23. Periods with adversely weather affected noise levels are greyed out and have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

Worksite: A422 TN – Monitoring Ref: TN-NMP1





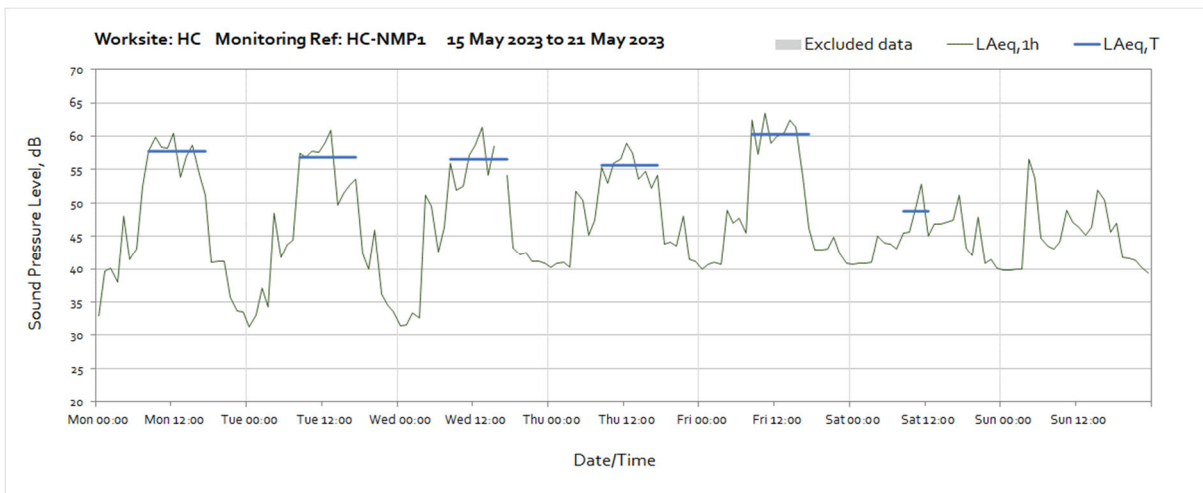
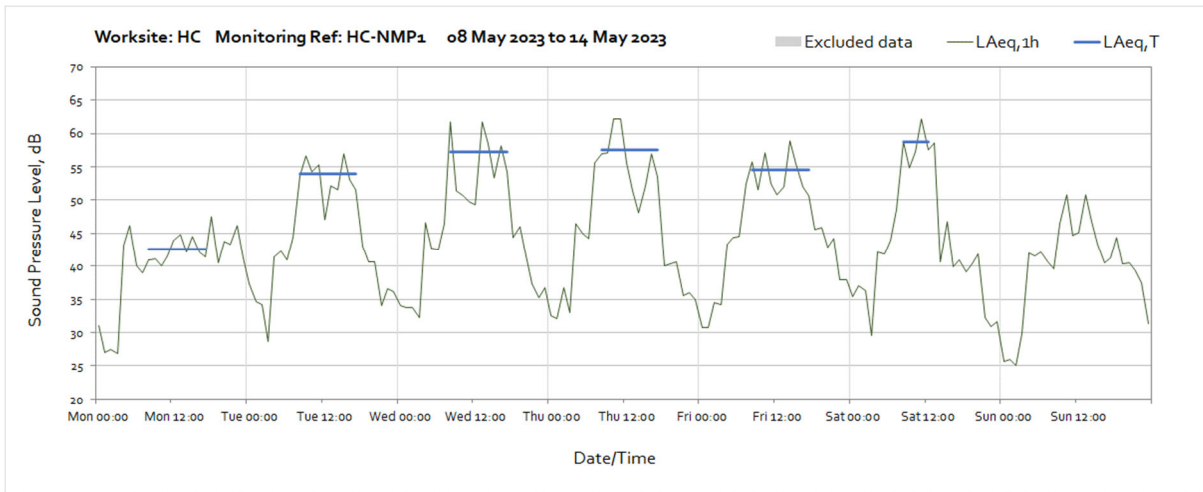
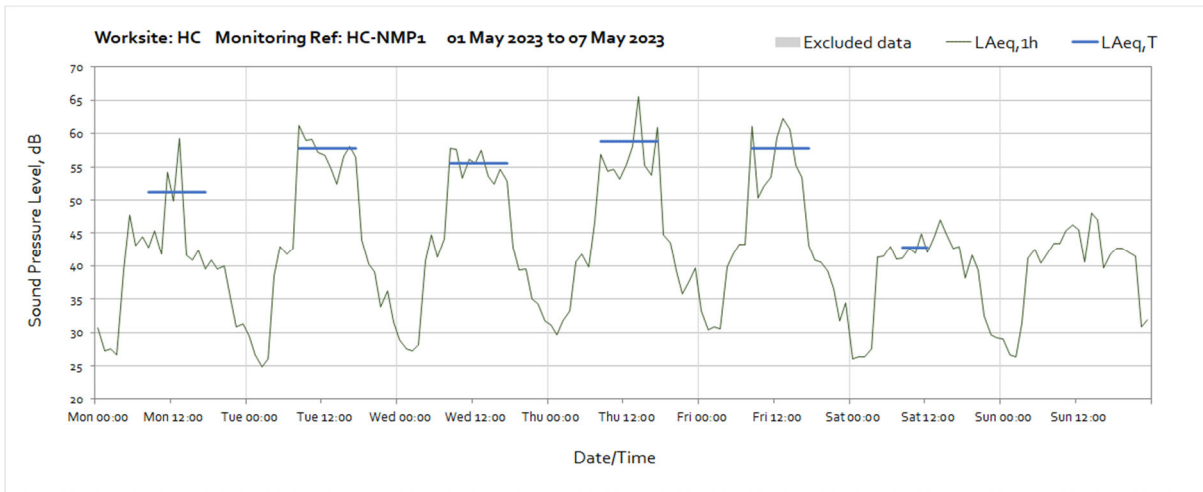
Worksite: SE – Monitoring Ref: SE-NMP1



Note: Missing data between 14:00 and 16:00 on Wednesday 17th May was due to monitor maintenance. Missing data from 16:00 on Sunday 21st May until the end of the month is due to a monitor power cable fault.

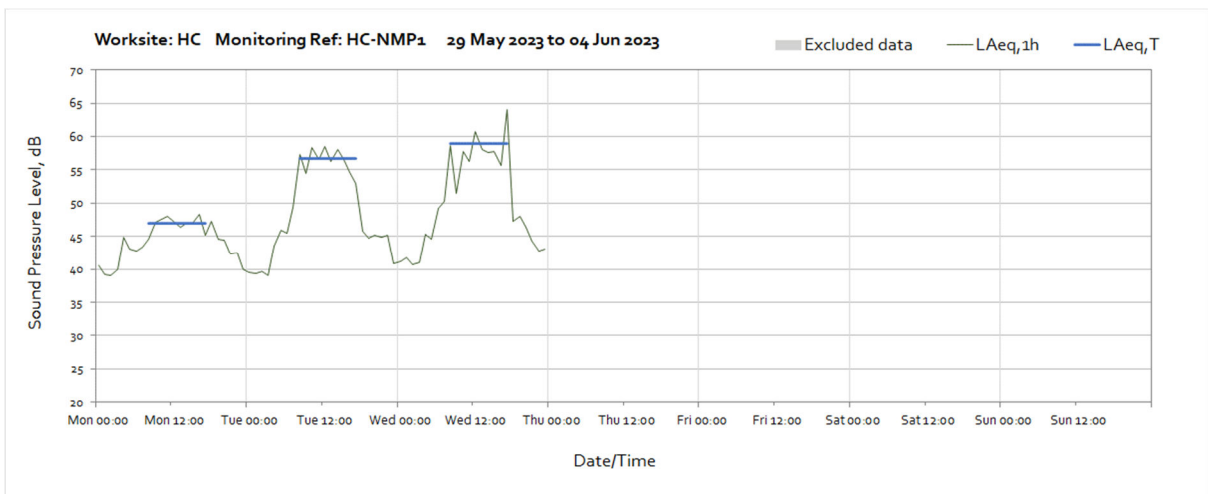
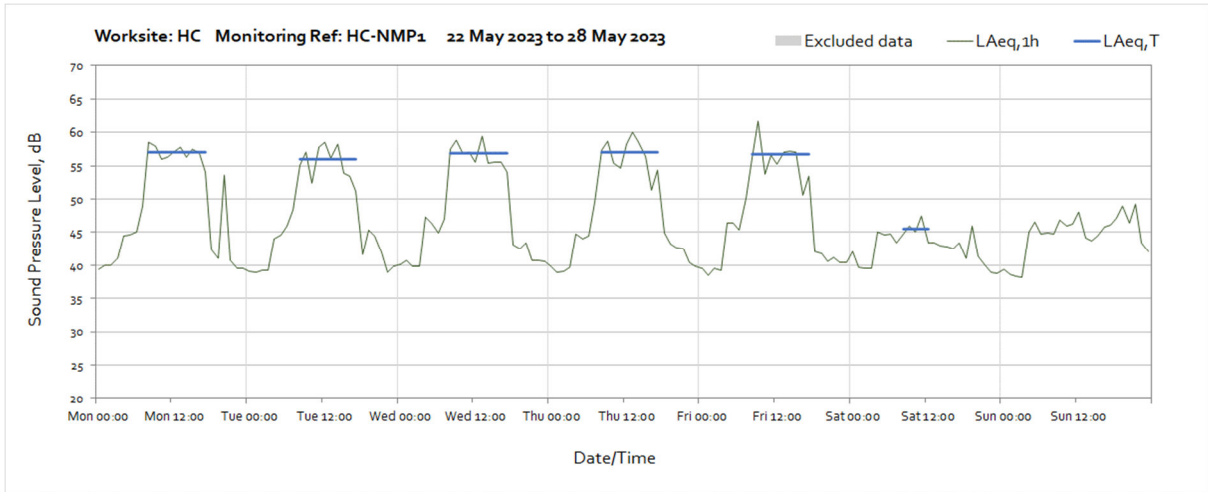
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Worksite: HC – Monitoring Ref: HC-NMP1

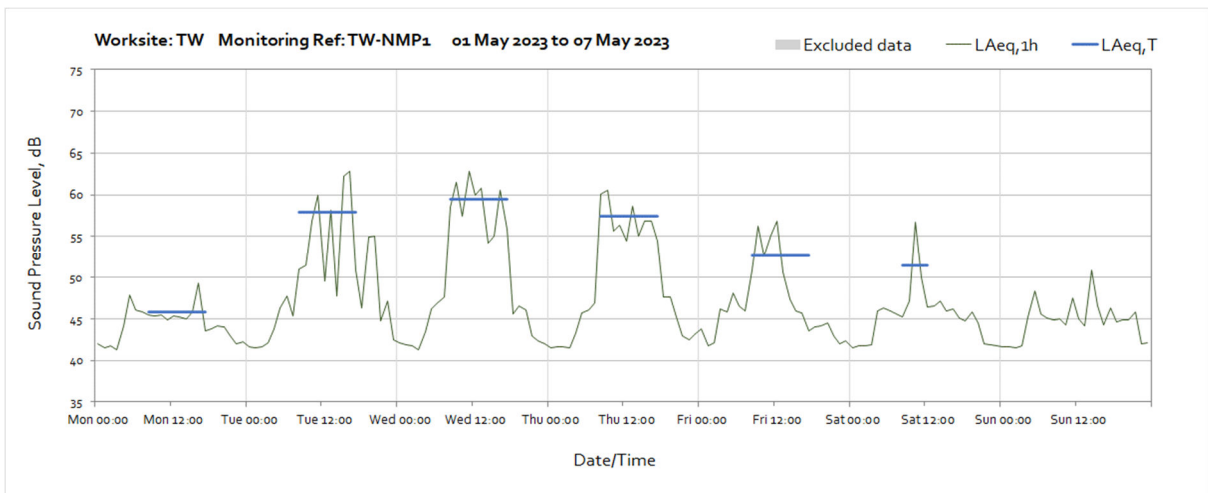


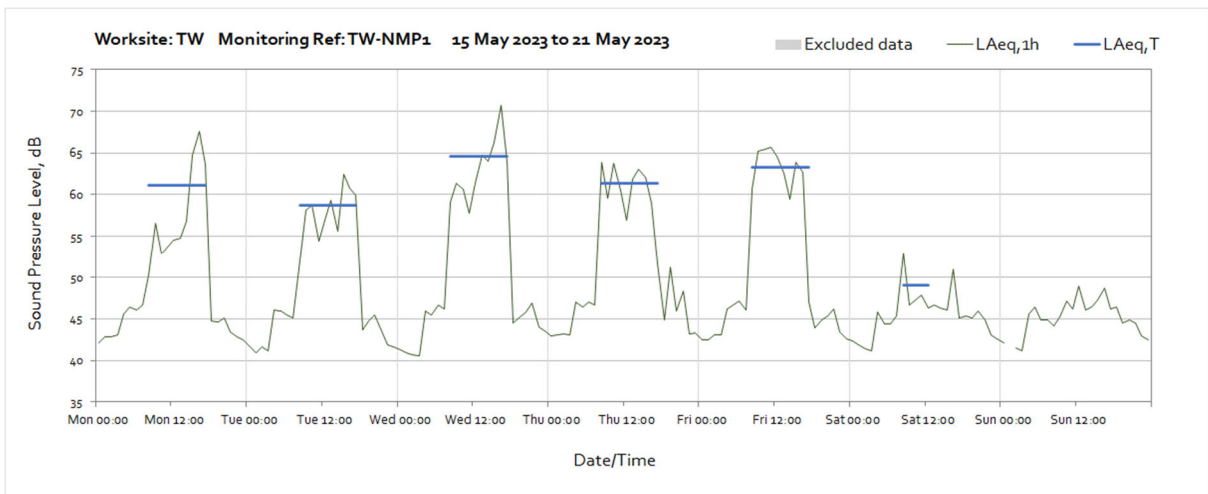
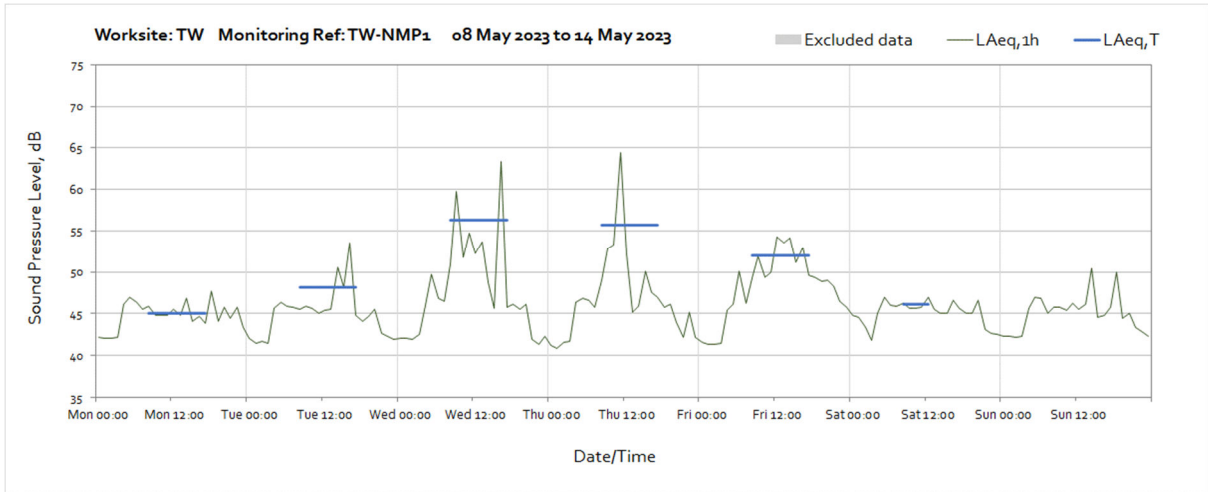
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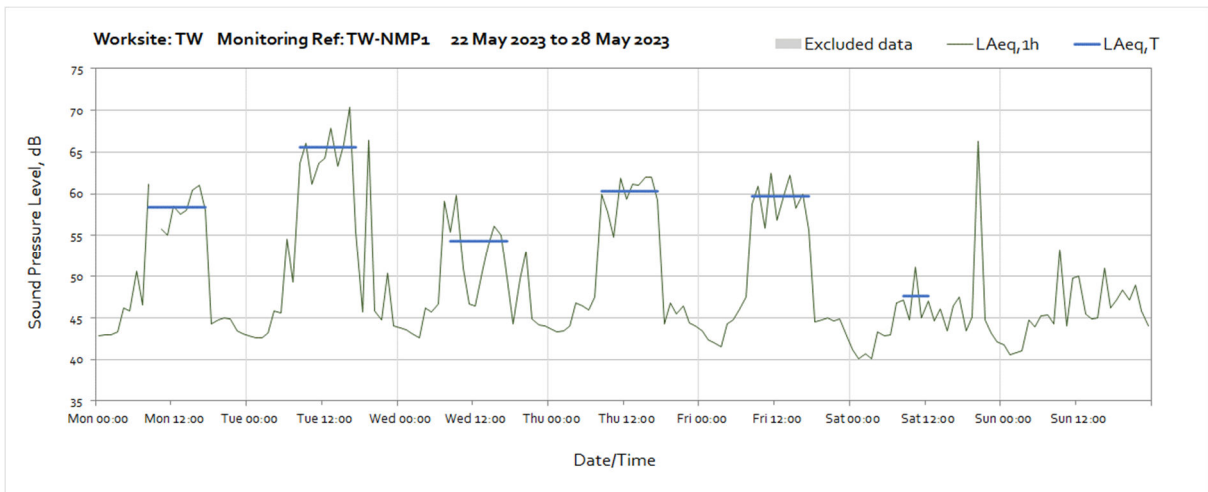


Worksite: TW - Monitoring Ref: TW-NMP1

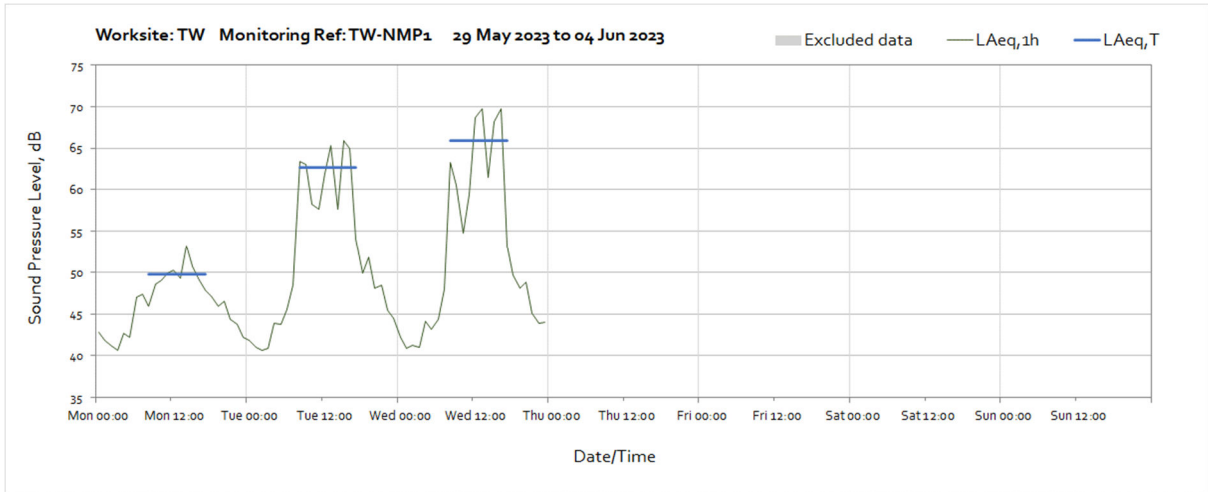




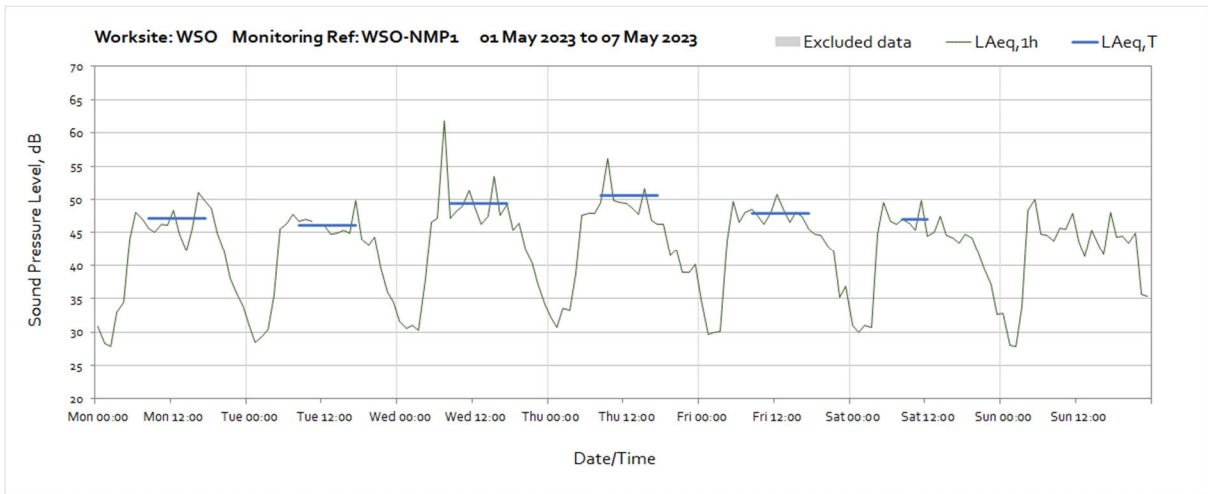
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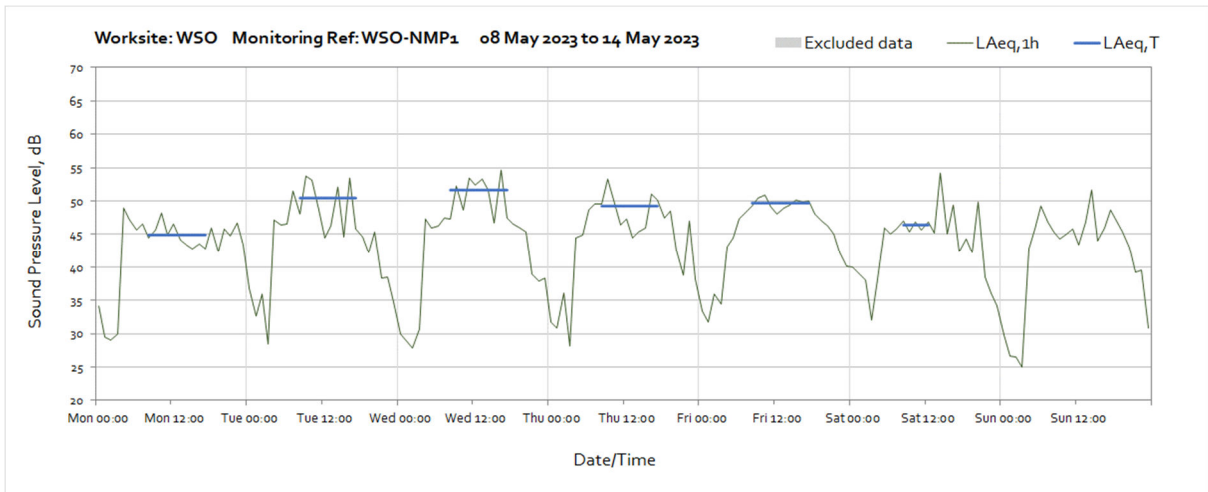
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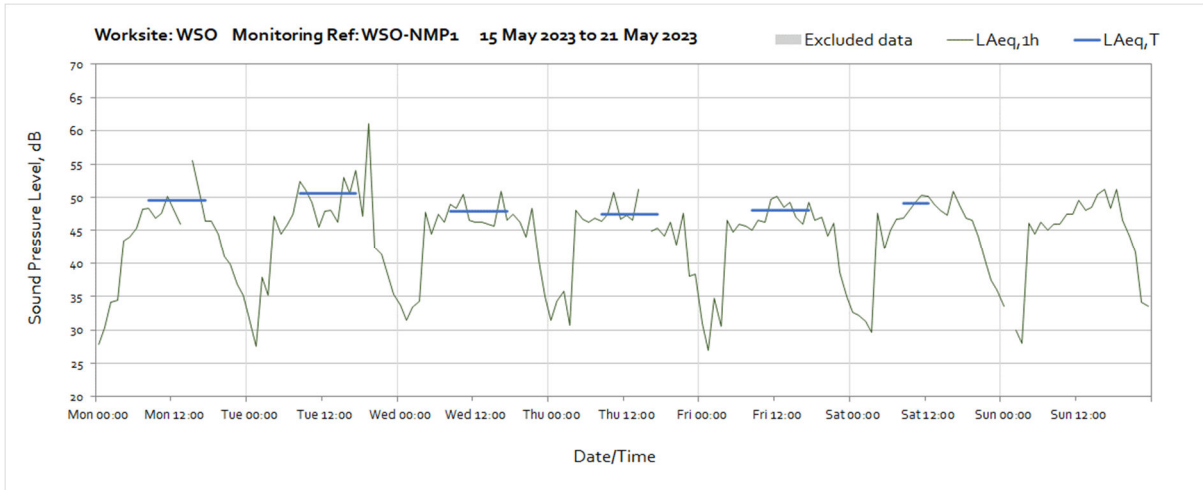


Worksite: WSO – Monitoring Ref: WSO-NMP1

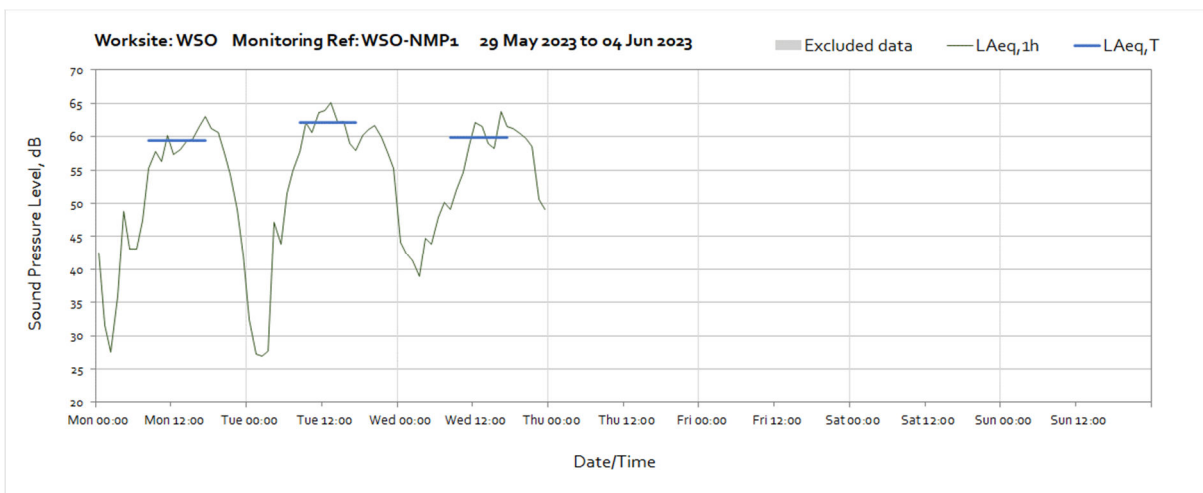
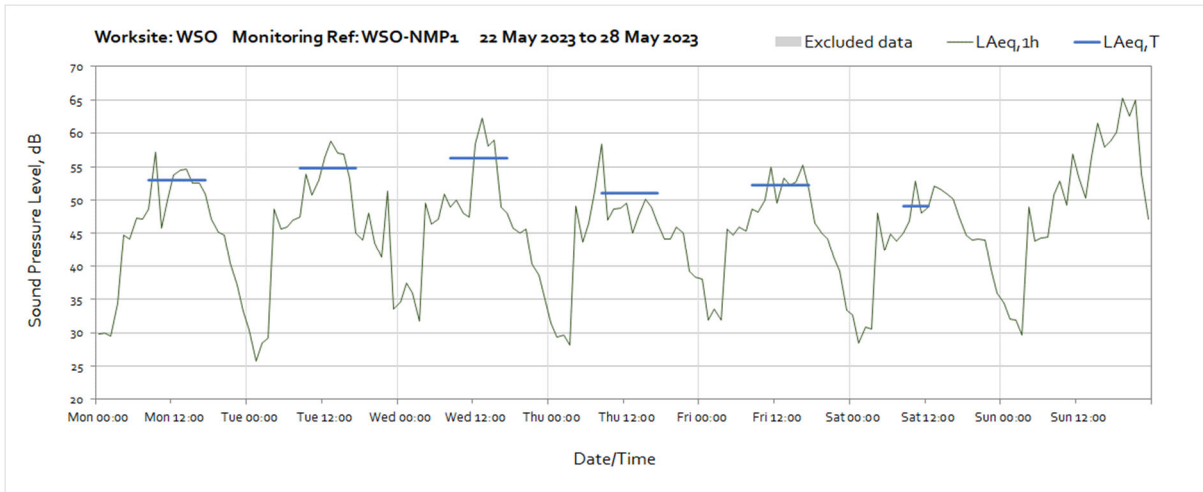


Note: Missing data between 11:00 and 12:00 on Tuesday 2nd May was due to monitor maintenance.

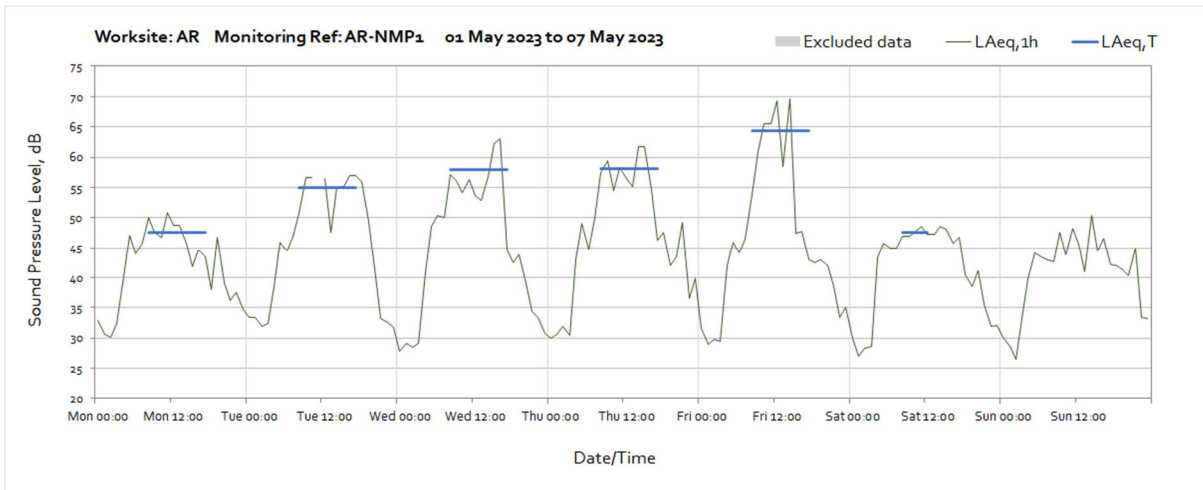




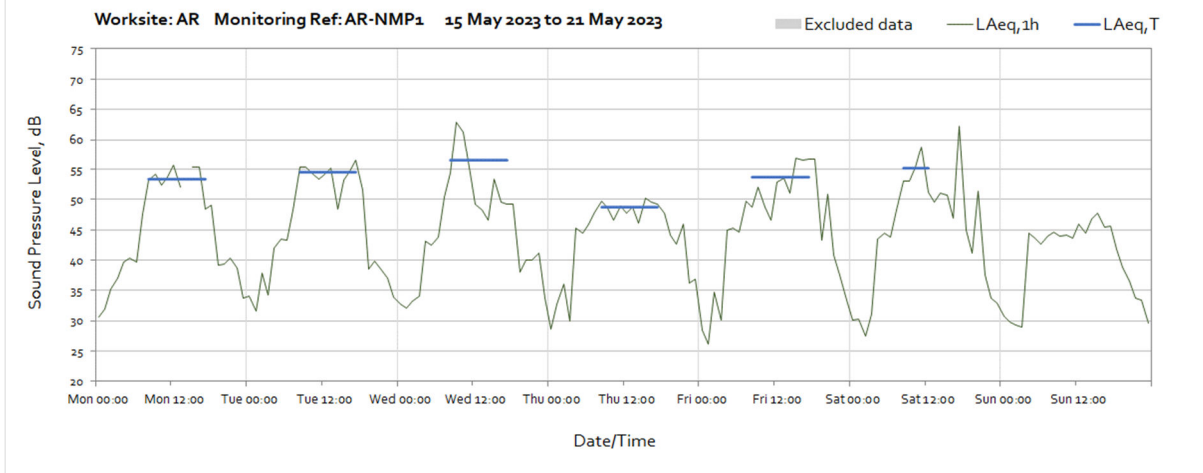
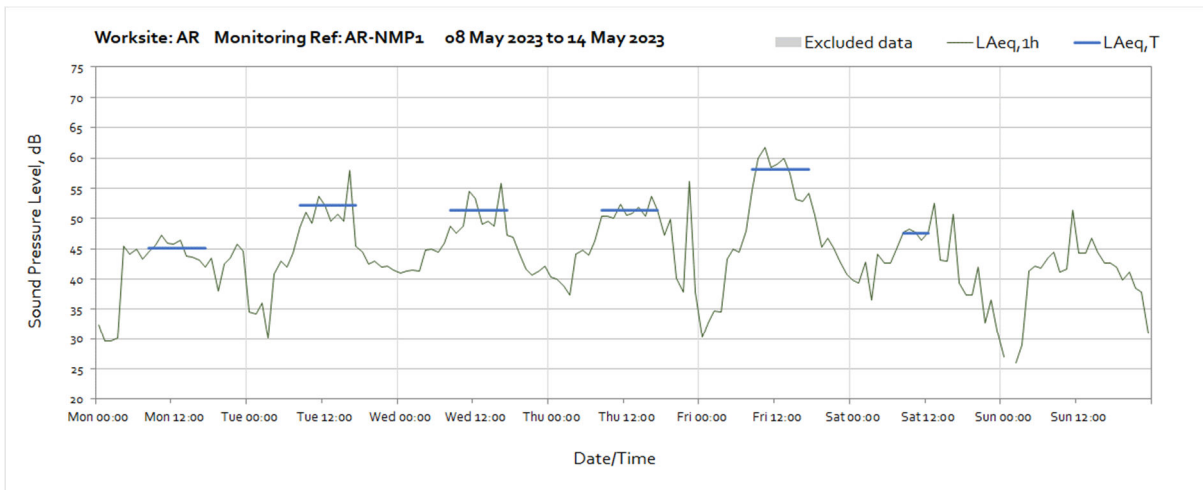
Note: Missing data between 14:00 and 15:00 on Monday 15th May and between 15:00 and 16:00 on Thursday 18th May was due to monitor maintenance. Missing data between 01:00 and 02:00 on Sunday 21st May was due to an automatic system check.



Worksite: AR – Monitoring Ref: AR-NMP1

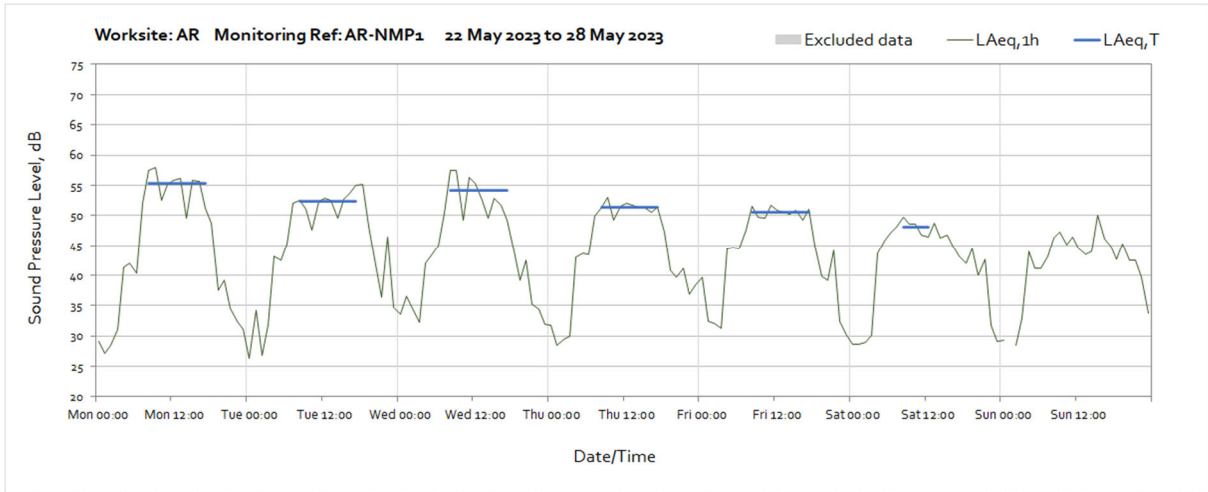


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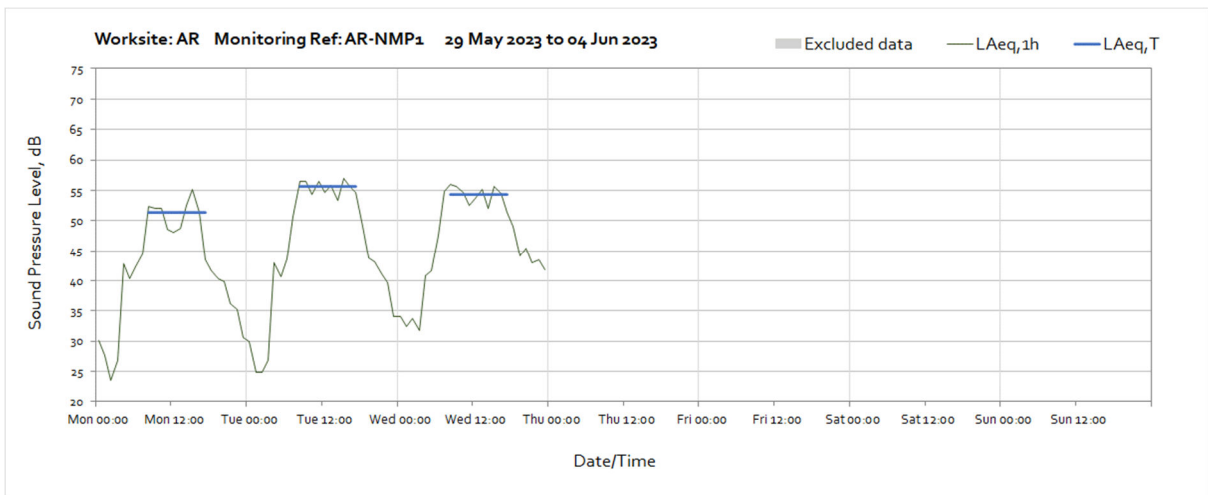


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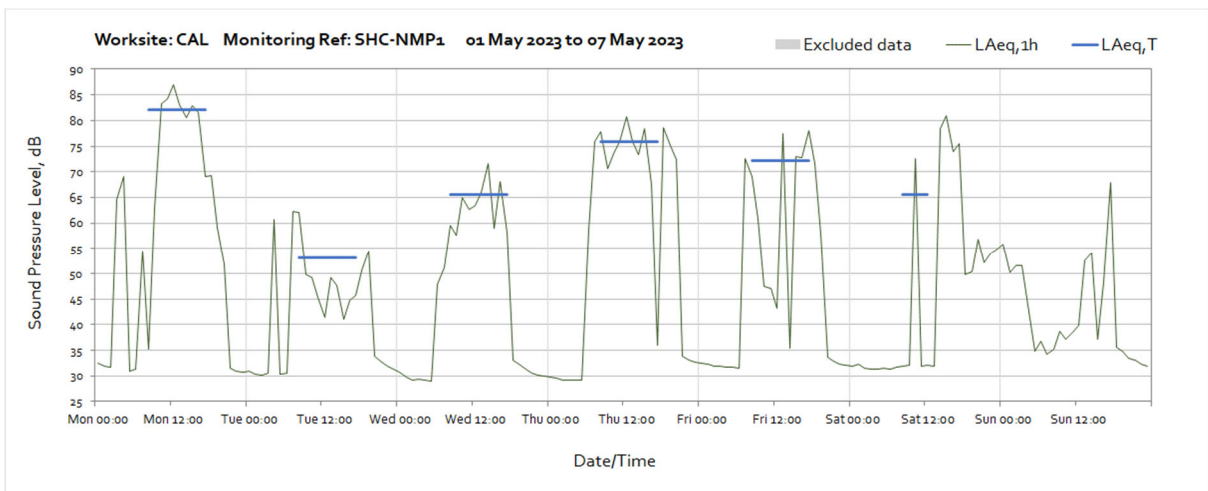
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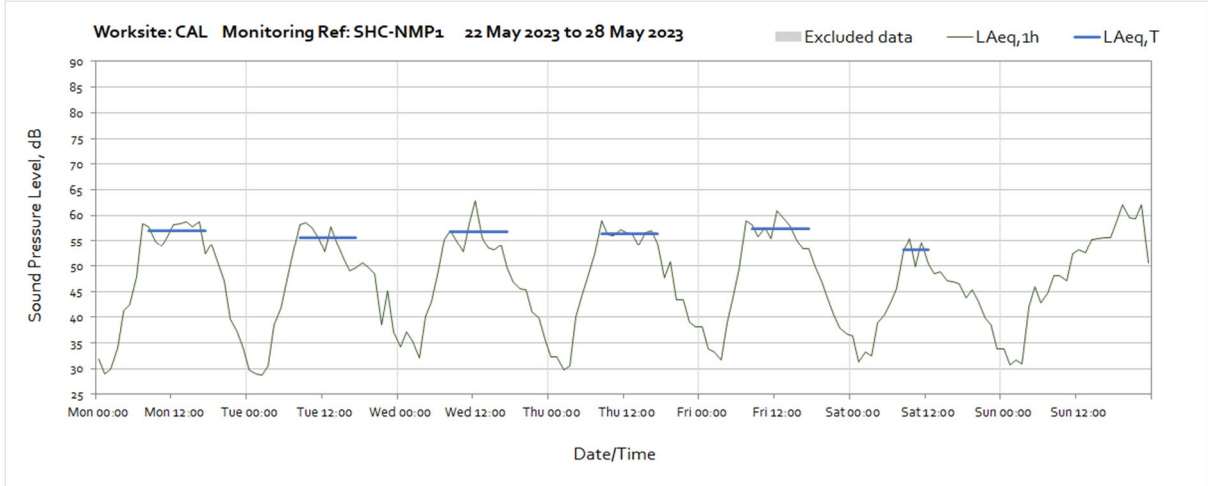
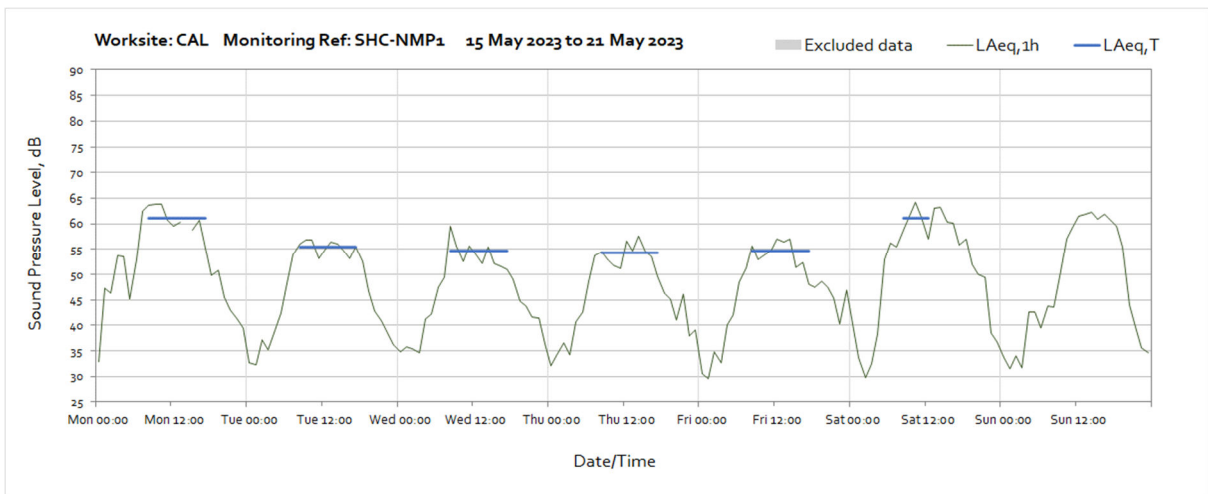
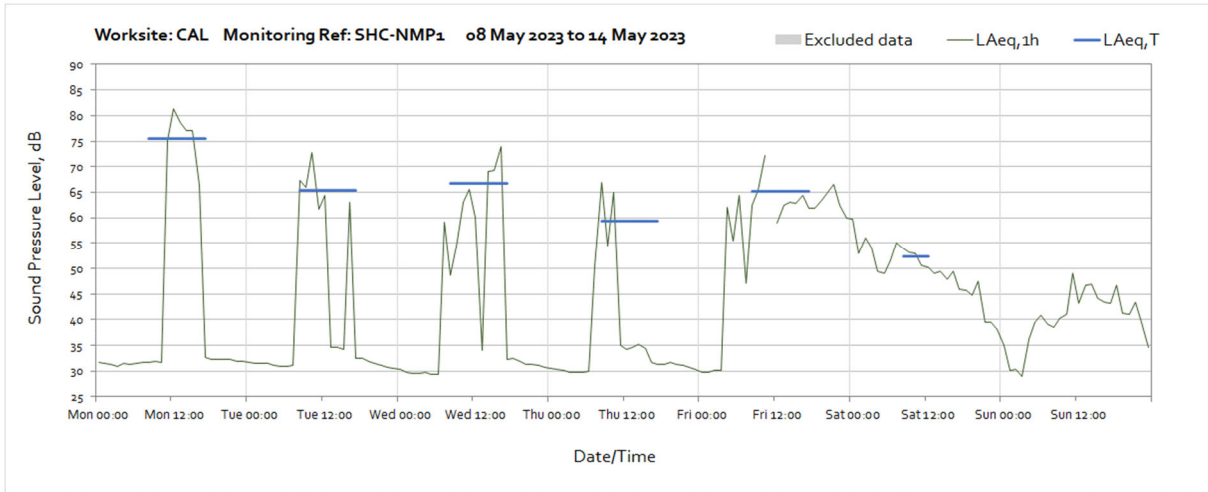


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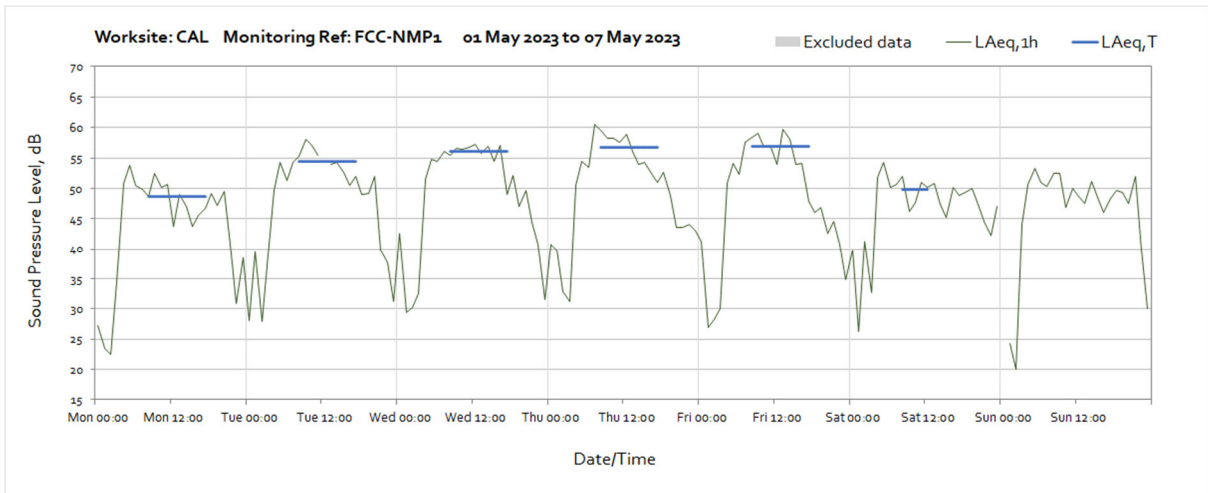




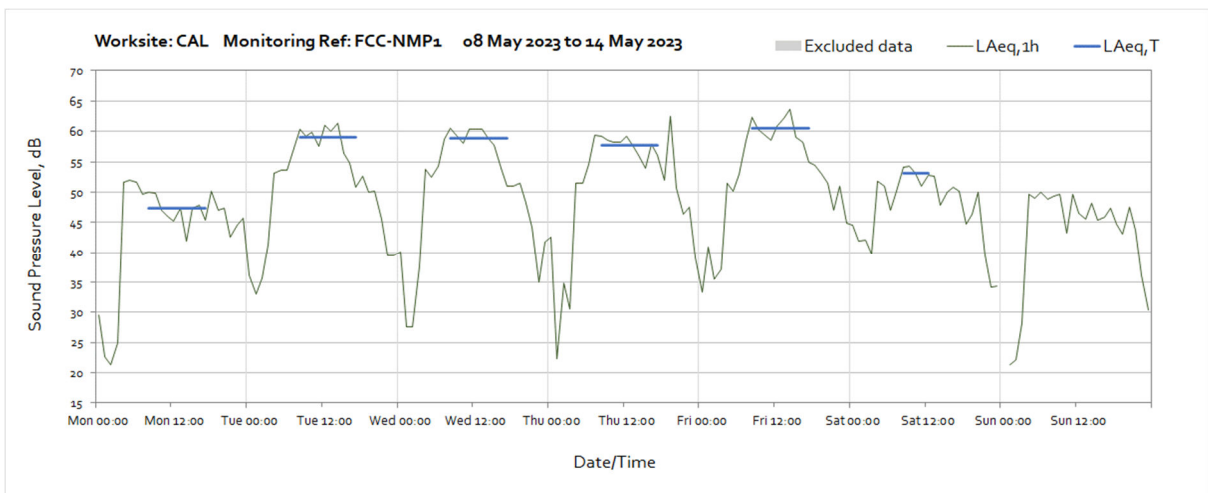
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Worksite: CAL – Monitoring Re: FCC-NMP1

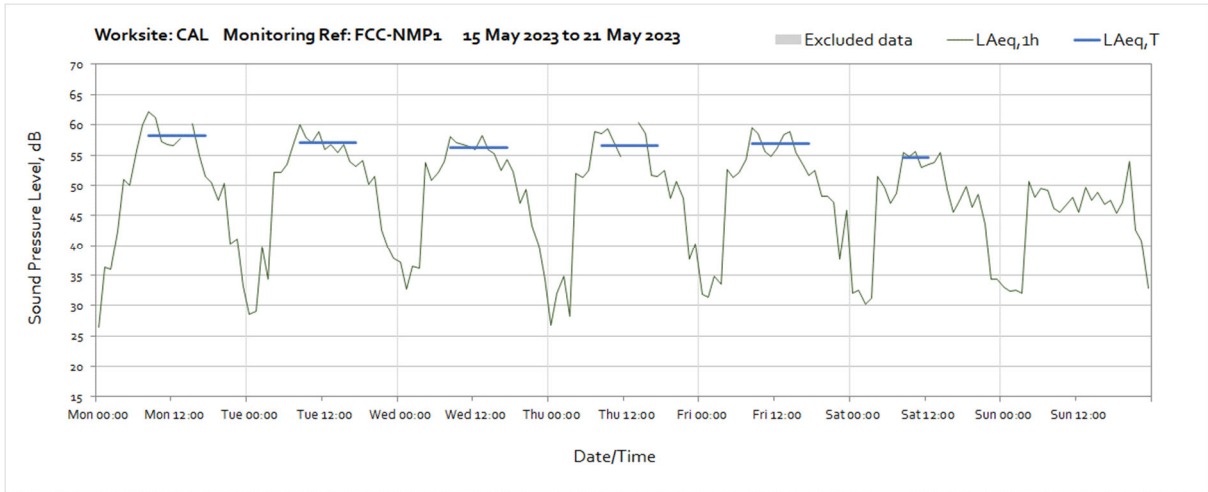


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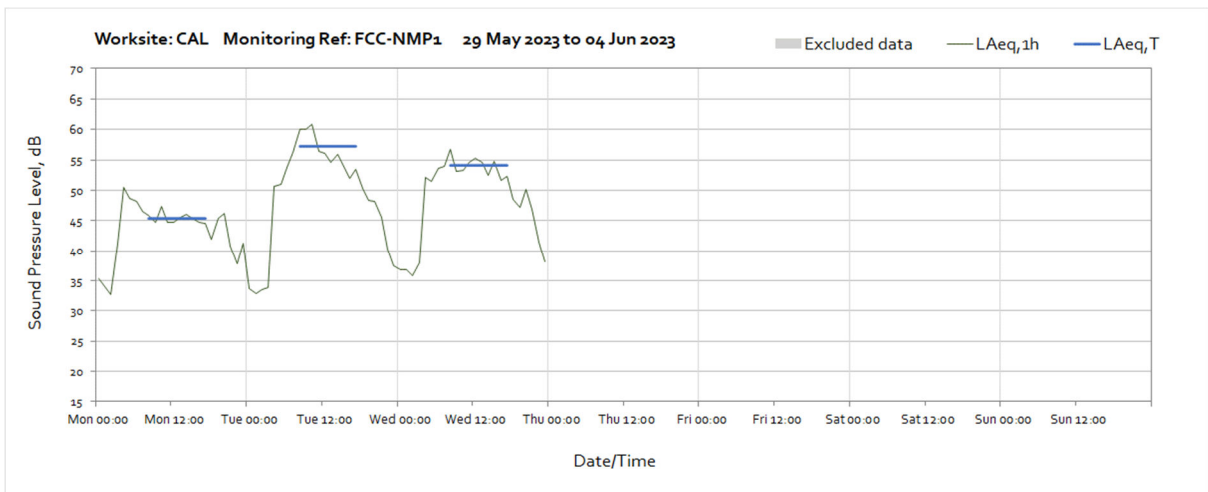
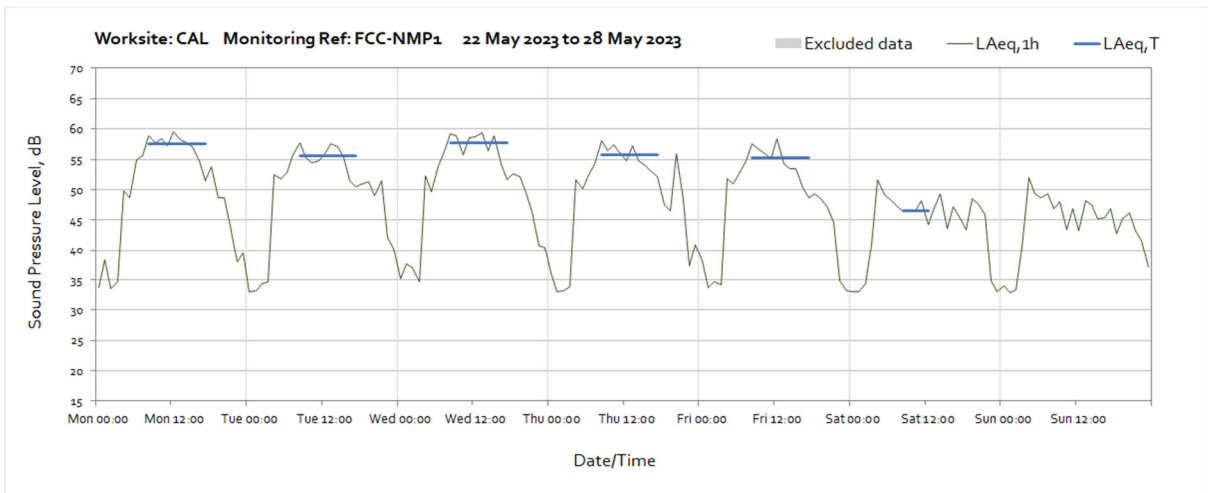


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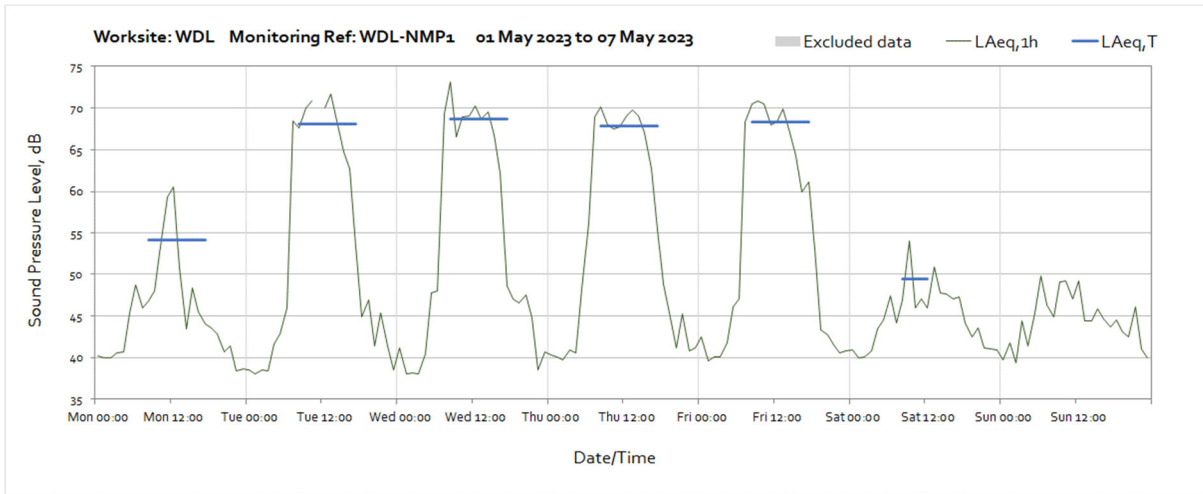
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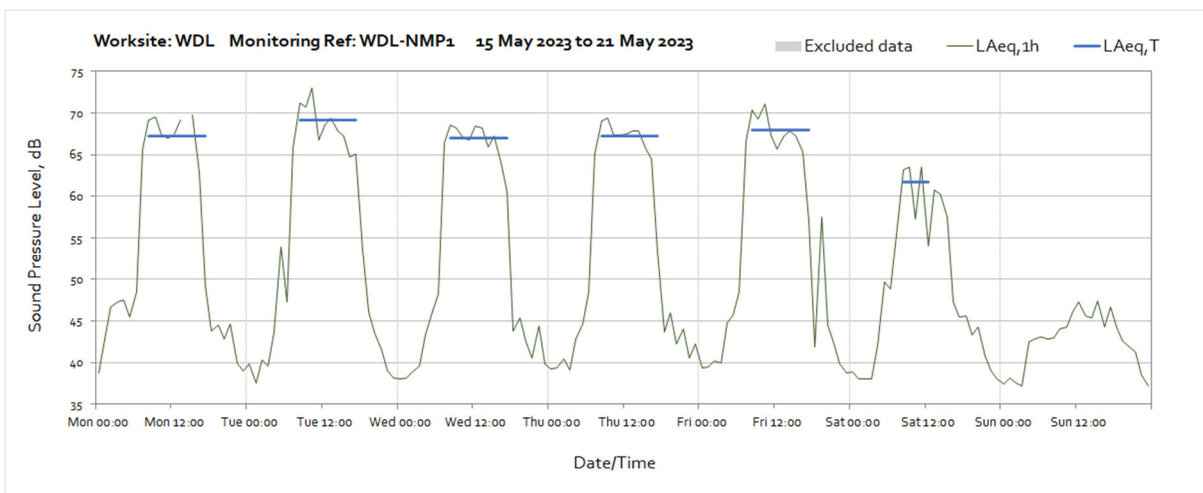
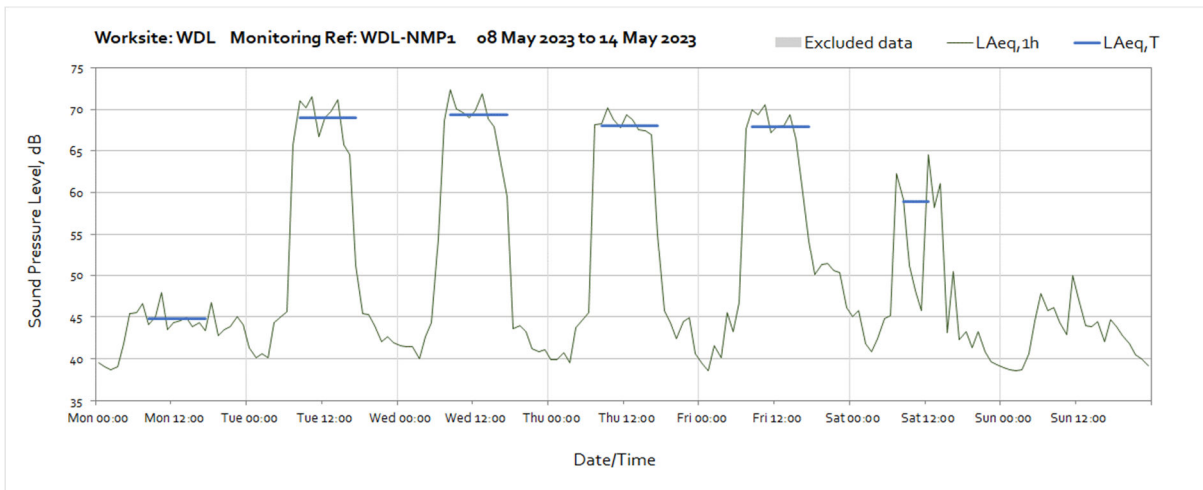
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Worksite: WDL - Monitoring Ref: WDL-NMP1

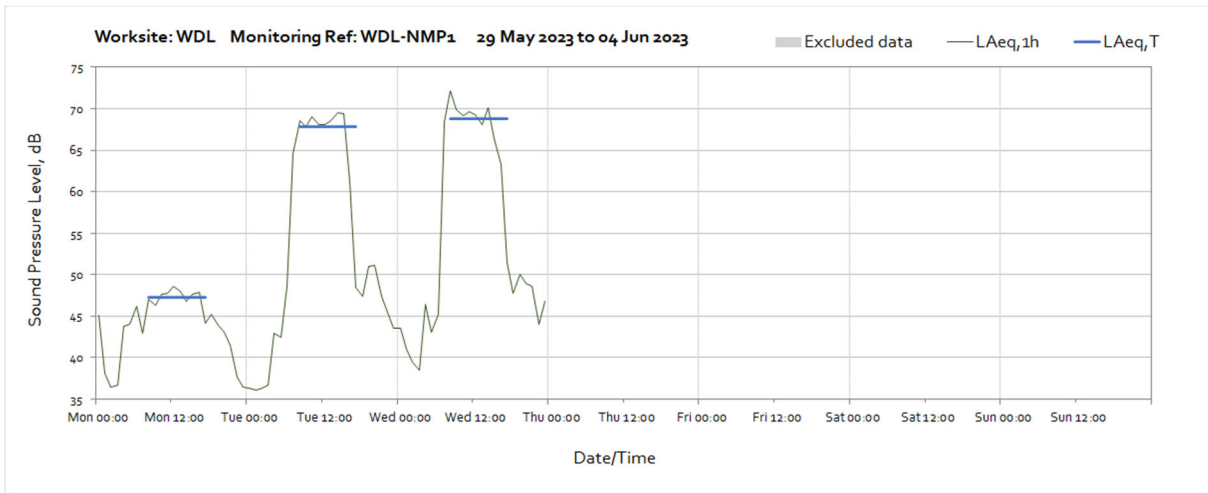
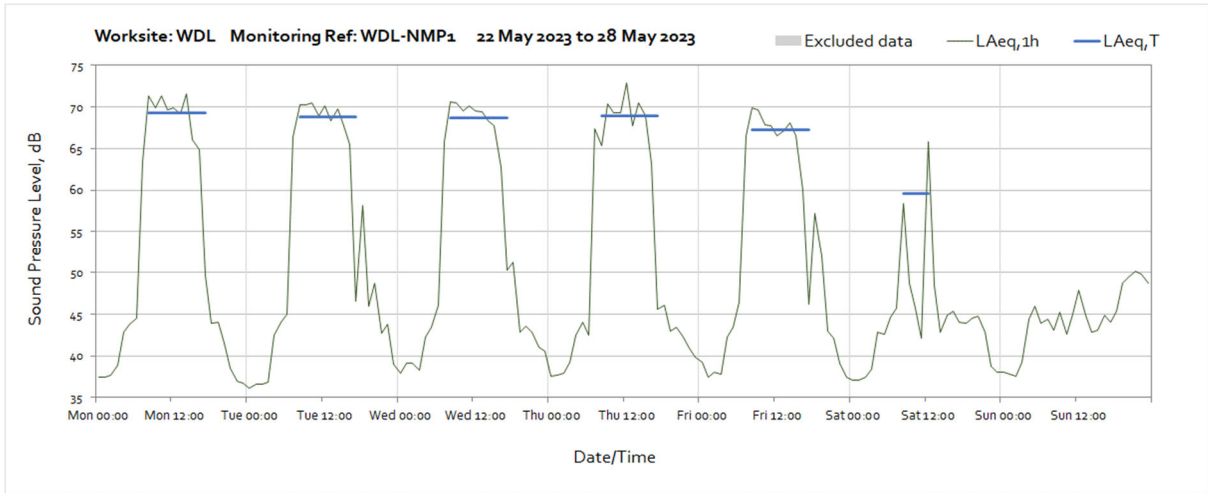


Note: Missing data between 11:00 and 12:00 on Tuesday 2nd May was due to monitor maintenance.

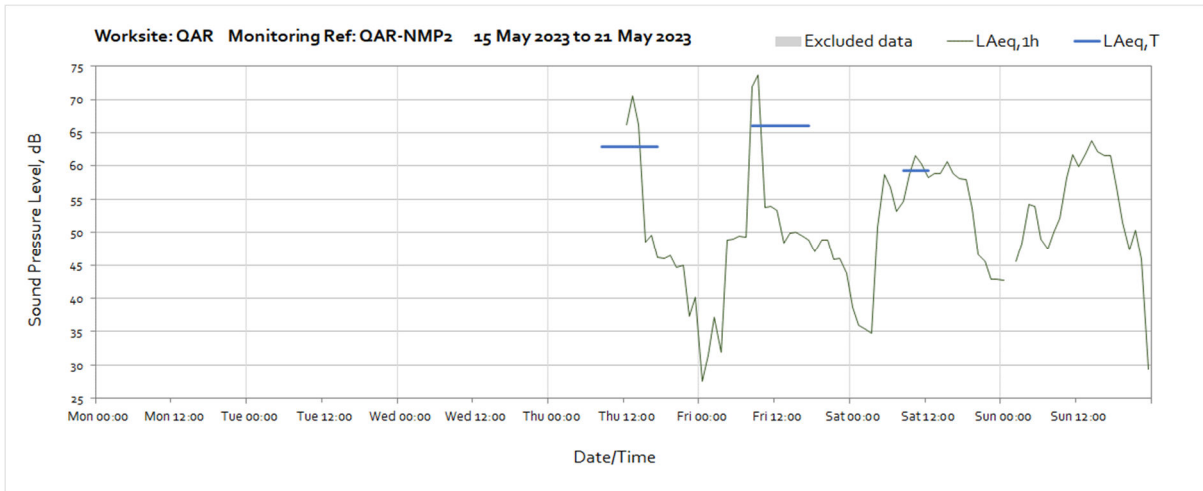


Note: Missing data between 14:00 and 15:00 on Monday 15th May was due to monitor maintenance.

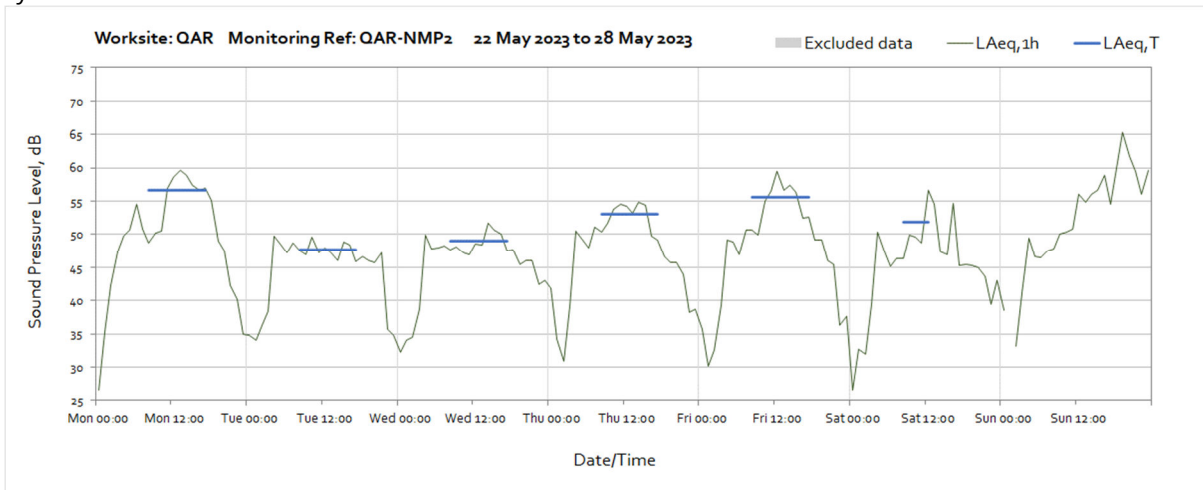
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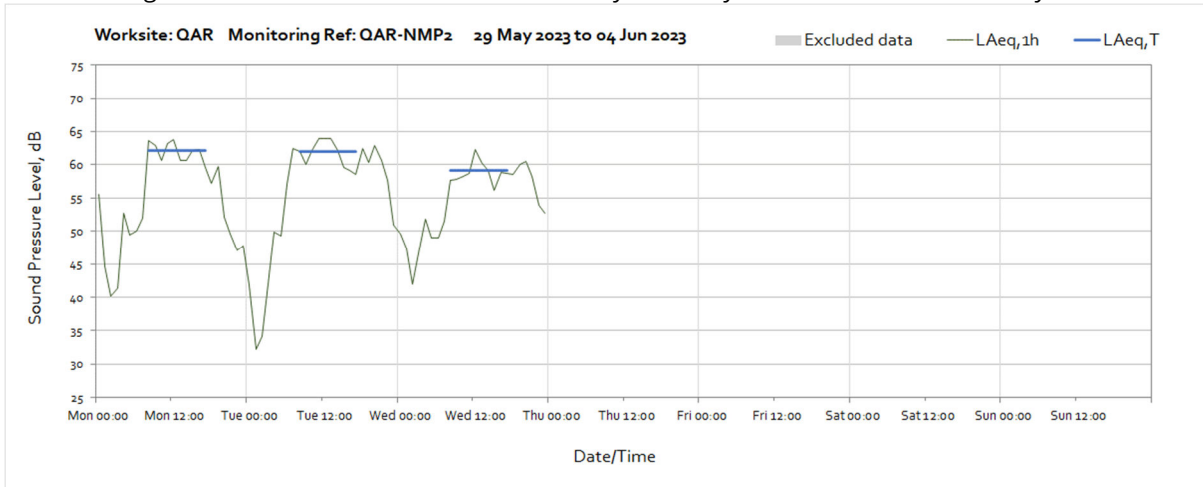
Worksite: QAR – Monitoring Ref: QAR-NMP2



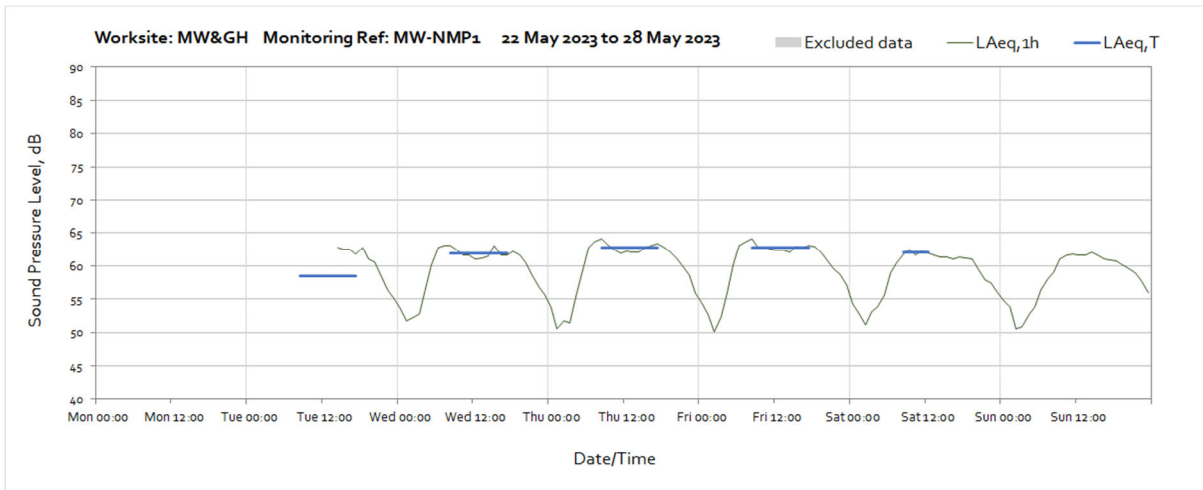
Note: Missing data from the start of the month until 12:00 on Thursday 18th May was due to temporary monitor retrieval. Missing data between 01:00 and 02:00 on Sunday 21st May was due to an automatic system check.



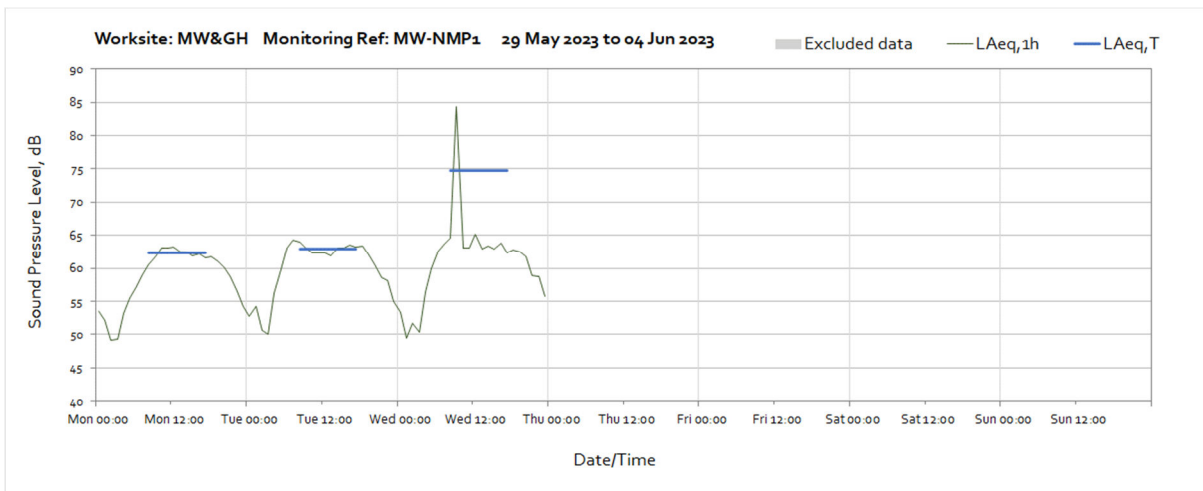
Note: Missing data between 01:00 and 02:00 on Sunday 28th May was due to an automatic system check.



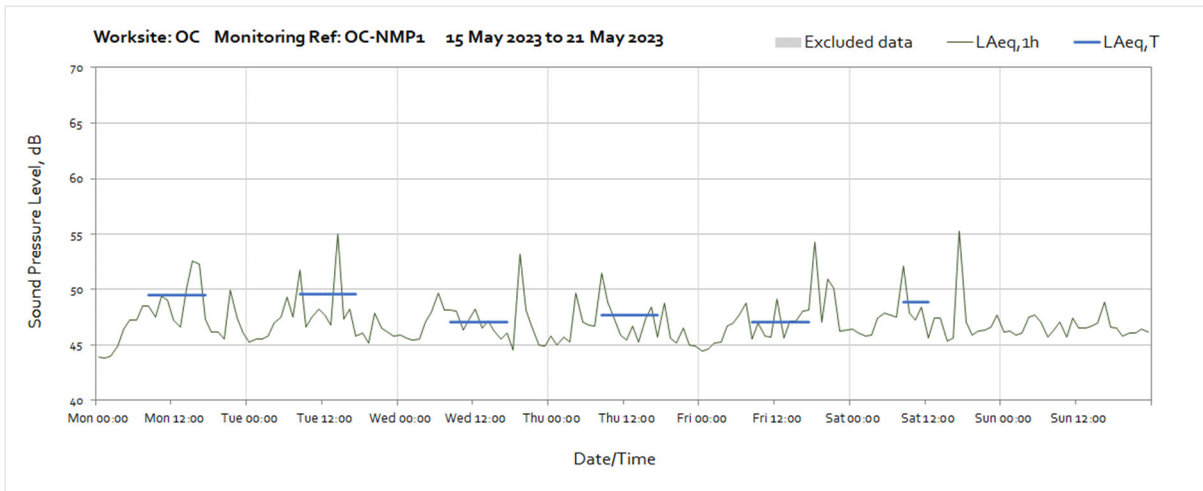
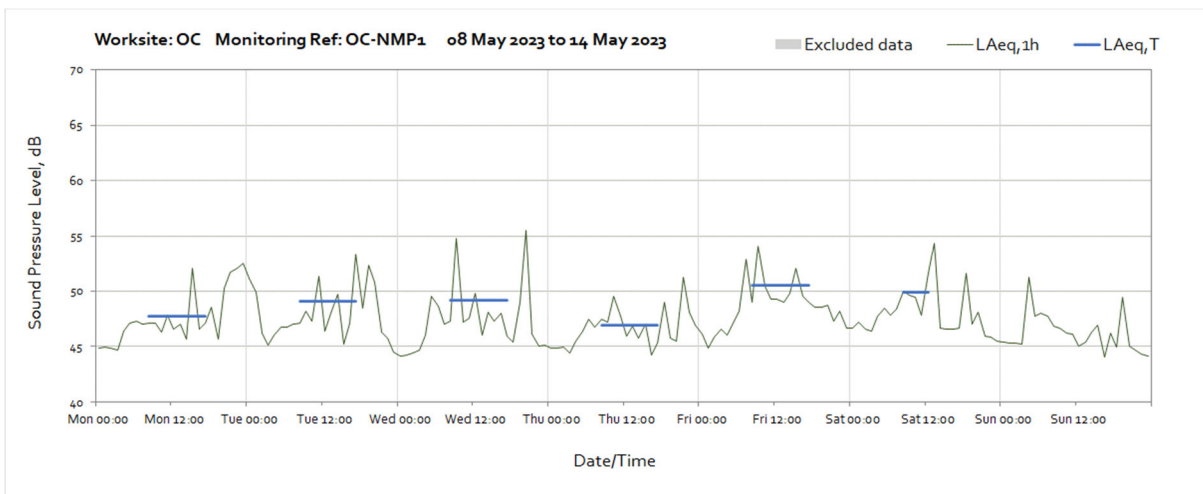
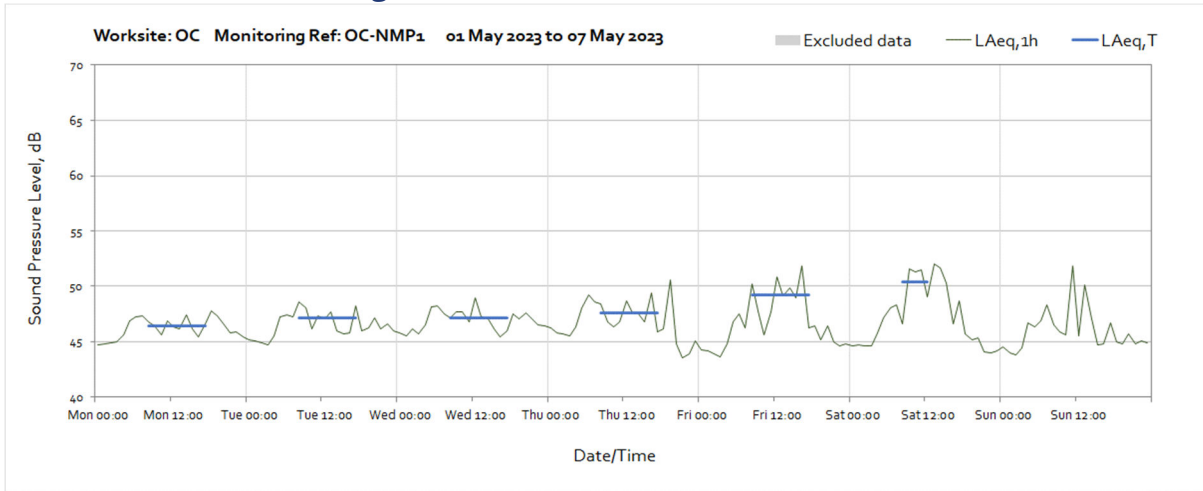
Worksite: MW&GH – Monitoring Ref: MW-NMP1

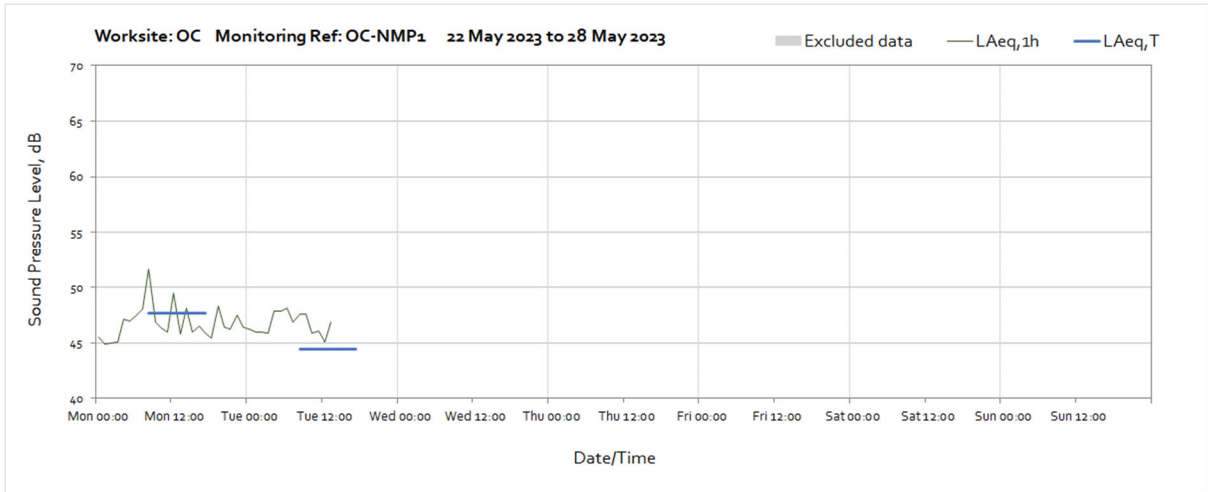


Note: Monitor was reinstalled at 14:00 on Tuesday 23rd May.



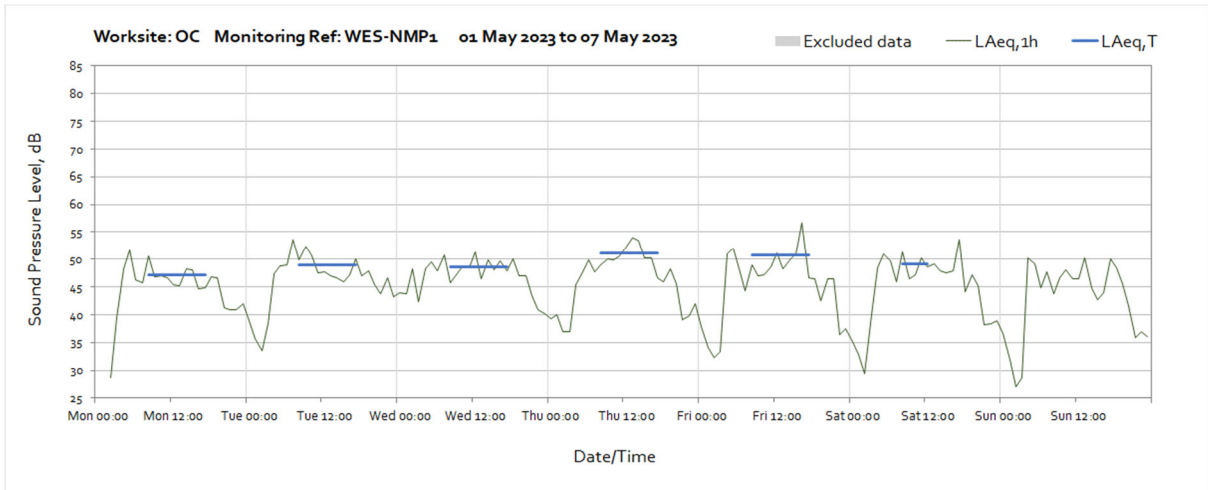
Worksite: OC - Monitoring Ref: OC-NMP1



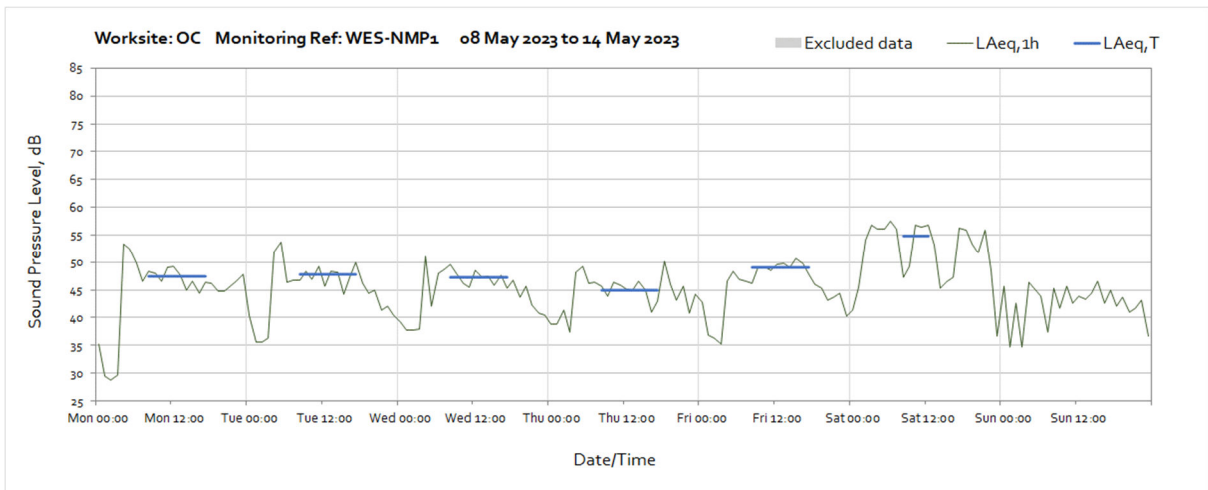


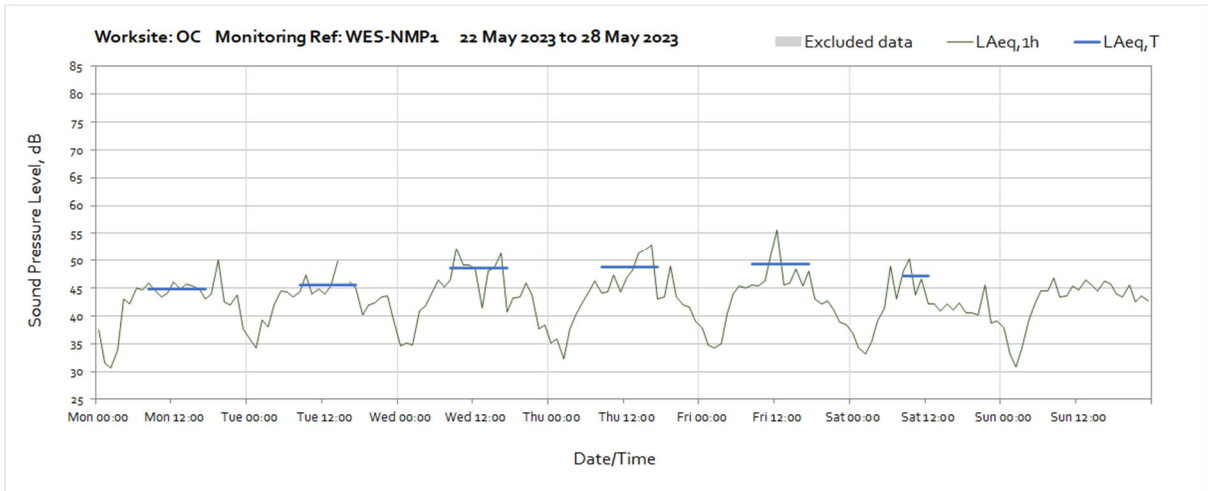
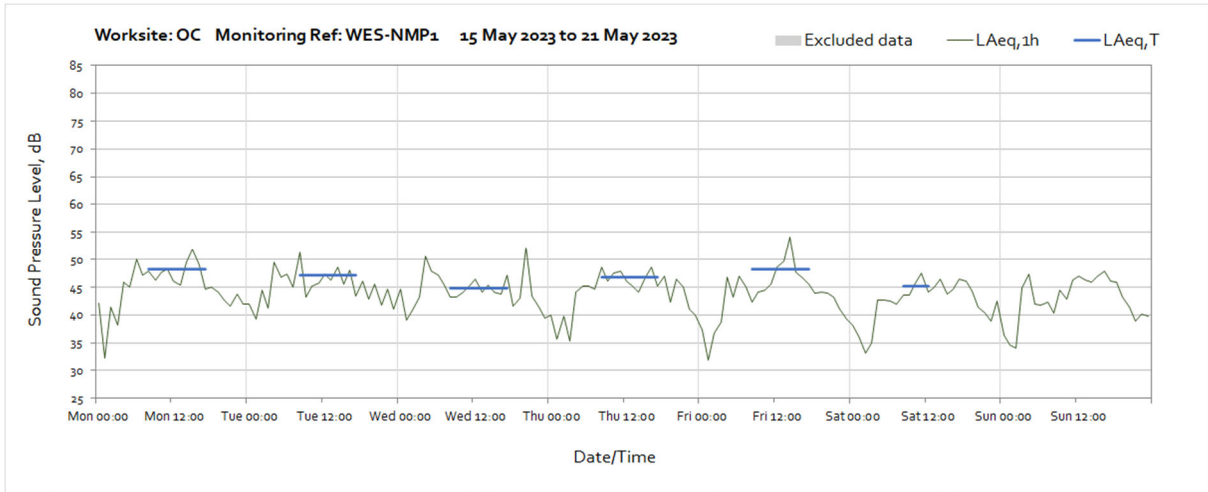
Note: Monitor was temporarily retrieved at 14:00 on Tuesday 23rd May.

Worksite: OC – Monitoring Ref: WES-NMP1

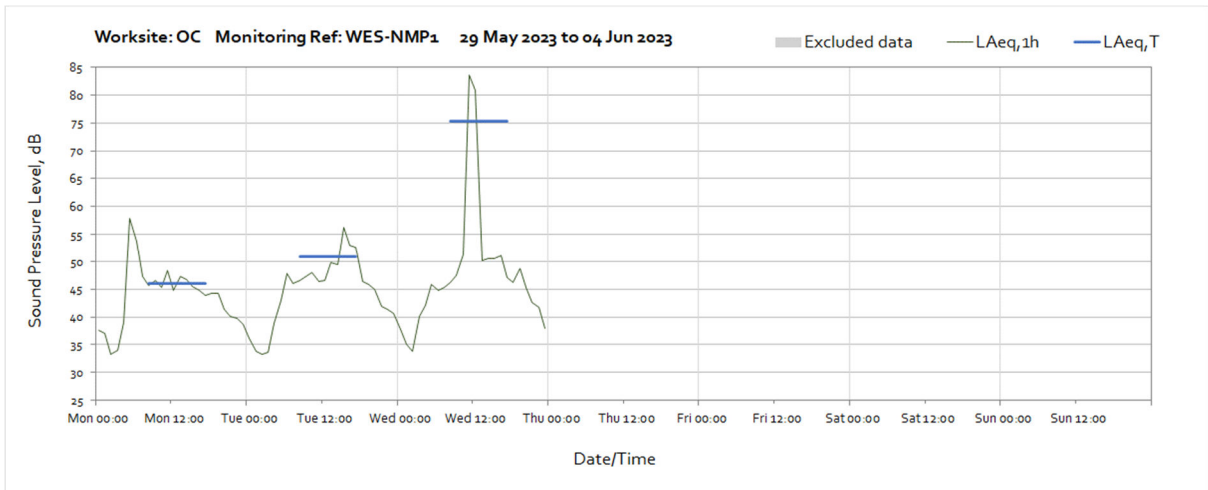


Note: Missing data between 00:00 and 02:00 on Monday 1st May was due to an automatic system check.

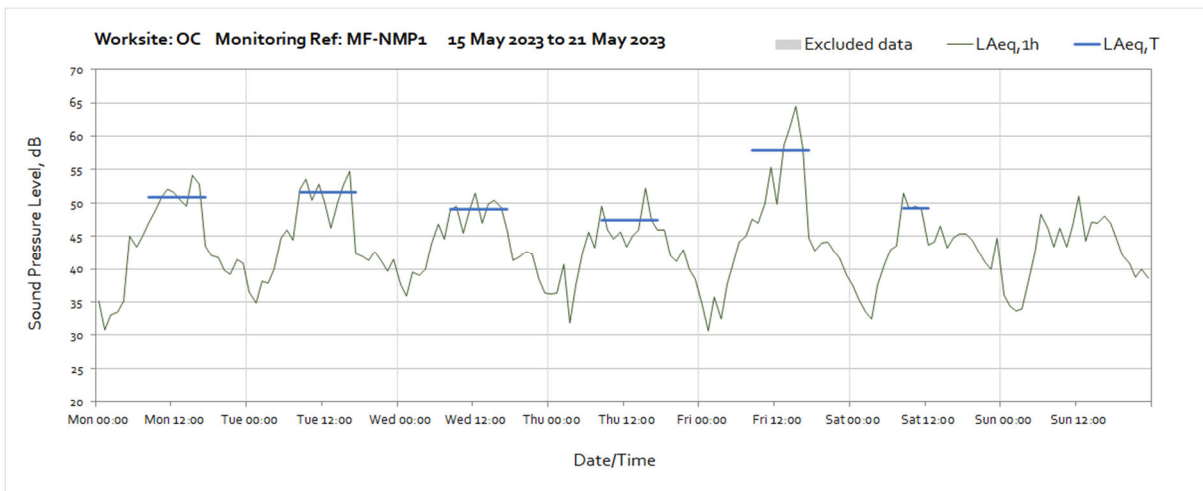
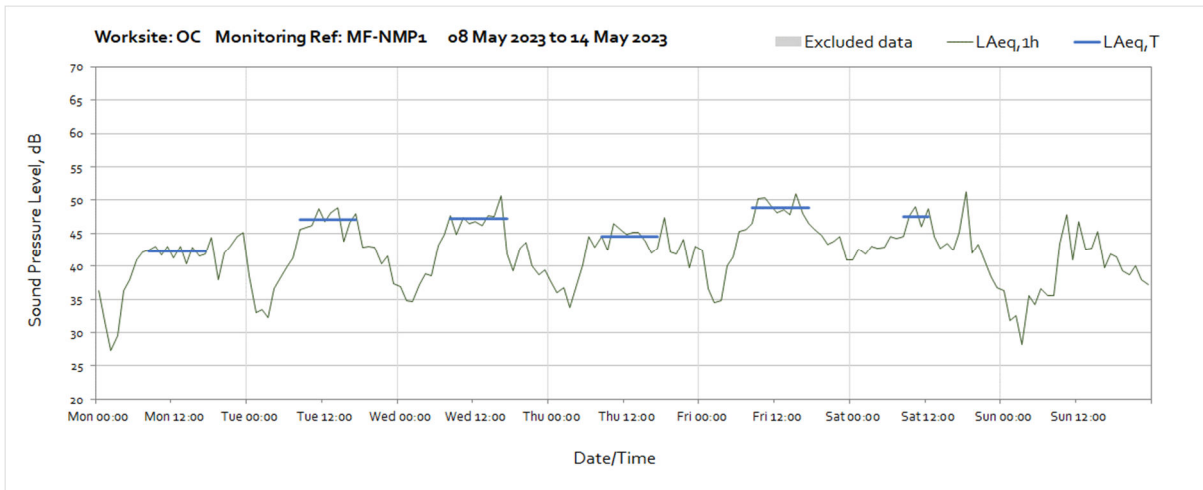
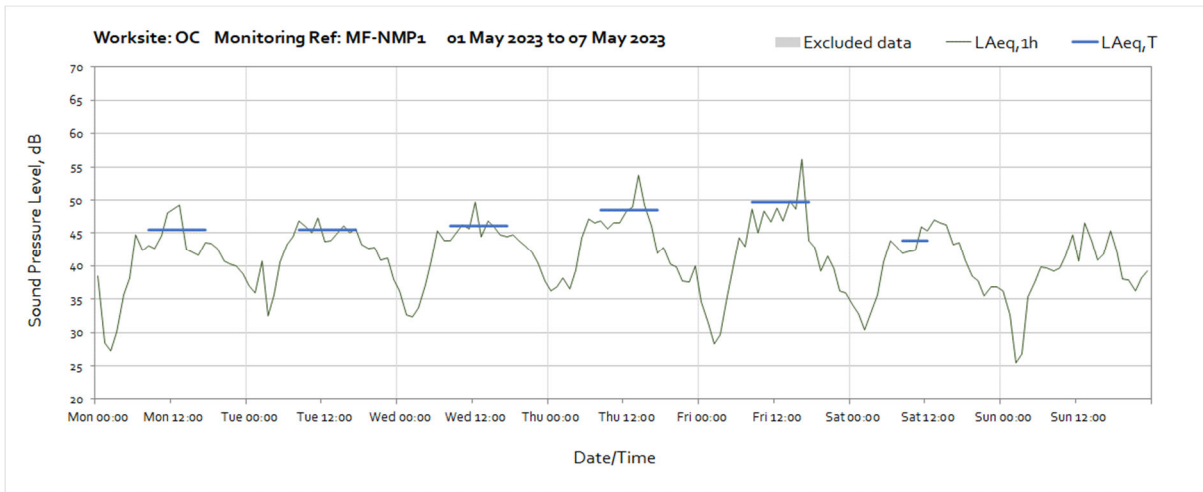


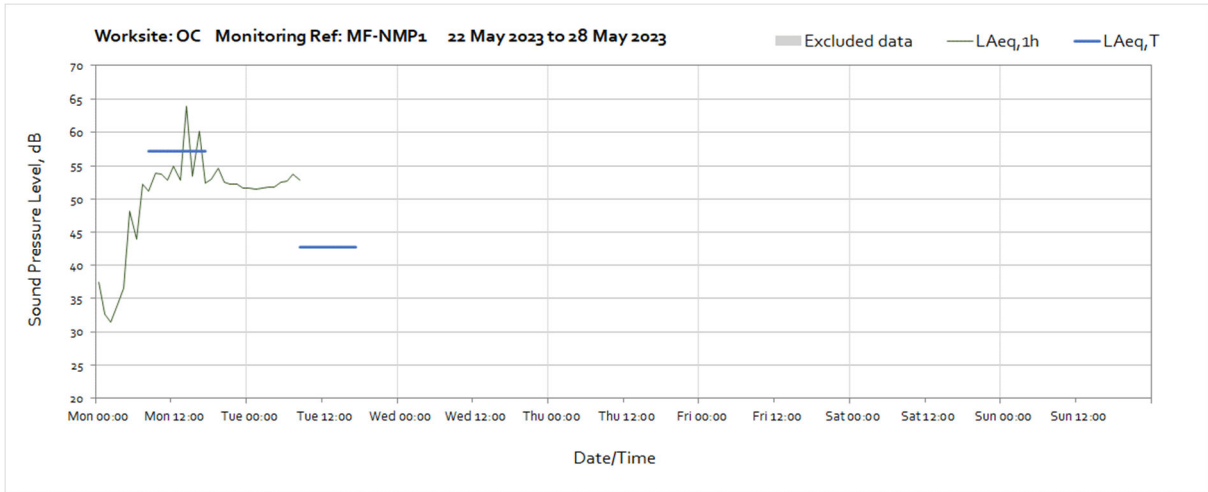


Note: Missing data between 15:00 and 16:00 on Tuesday 23rd May was due to monitor maintenance.



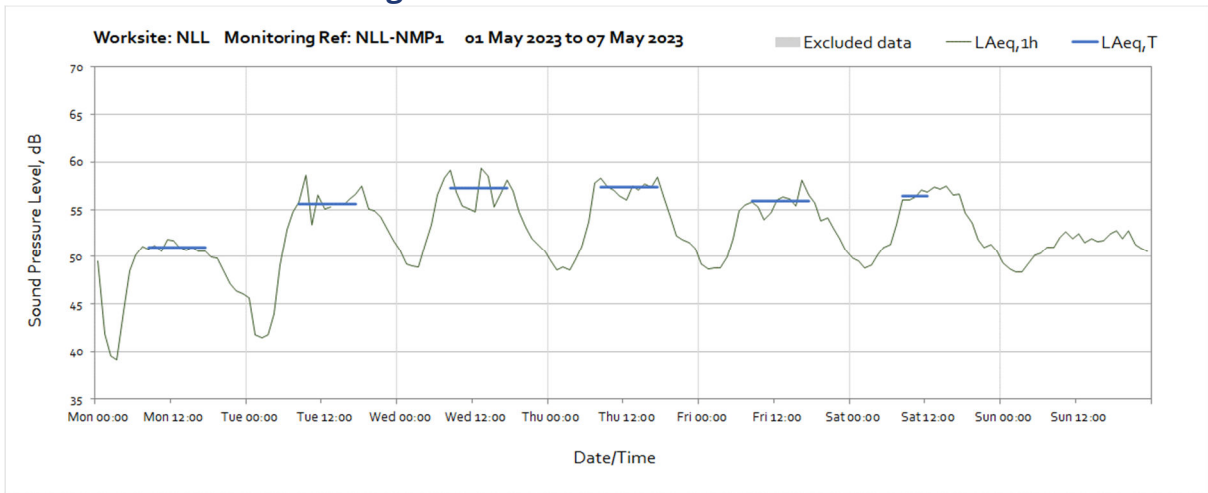
Worksite: OC – Monitoring Ref: MF-NMP1



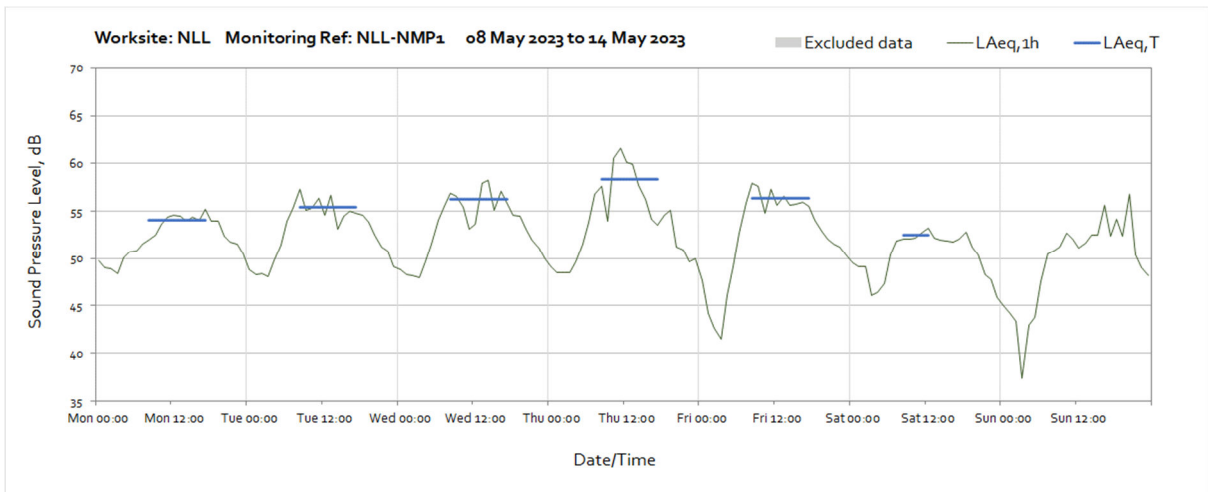


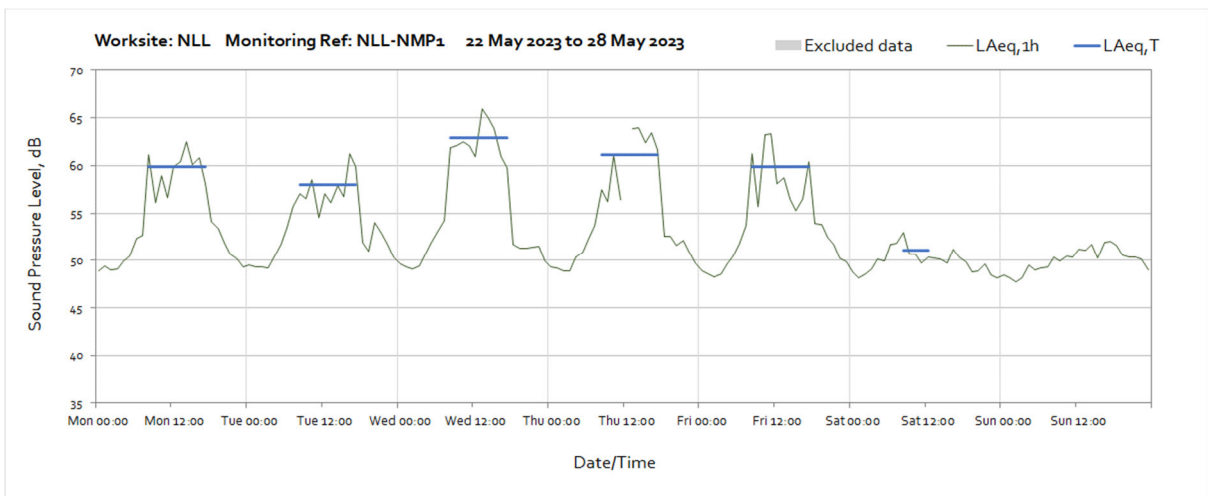
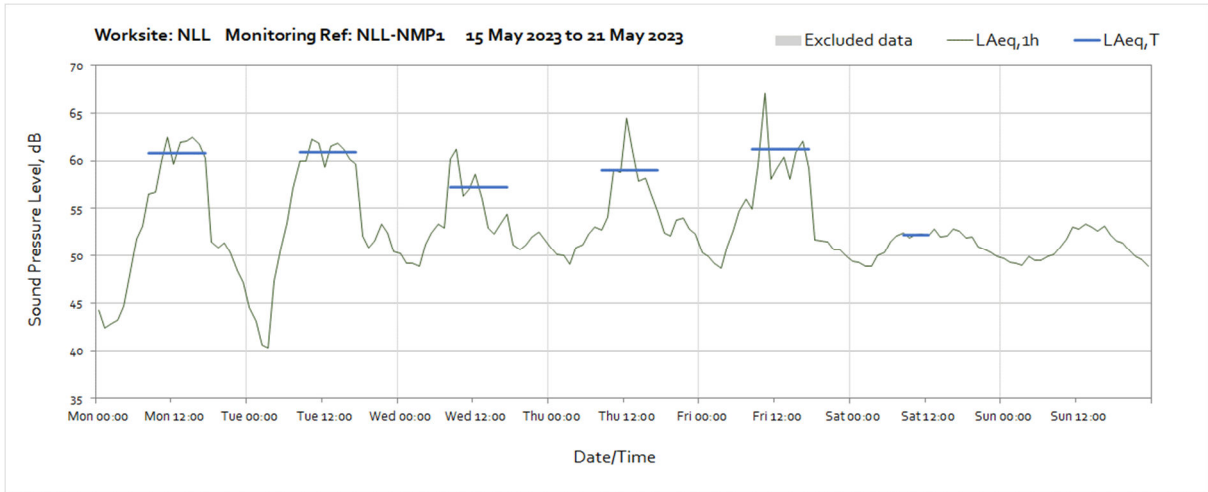
Note: Monitor was temporarily retrieved at 09:00 on Tuesday 23rd May.

Worksite: NLL - Monitoring Ref: NLL-NMP1

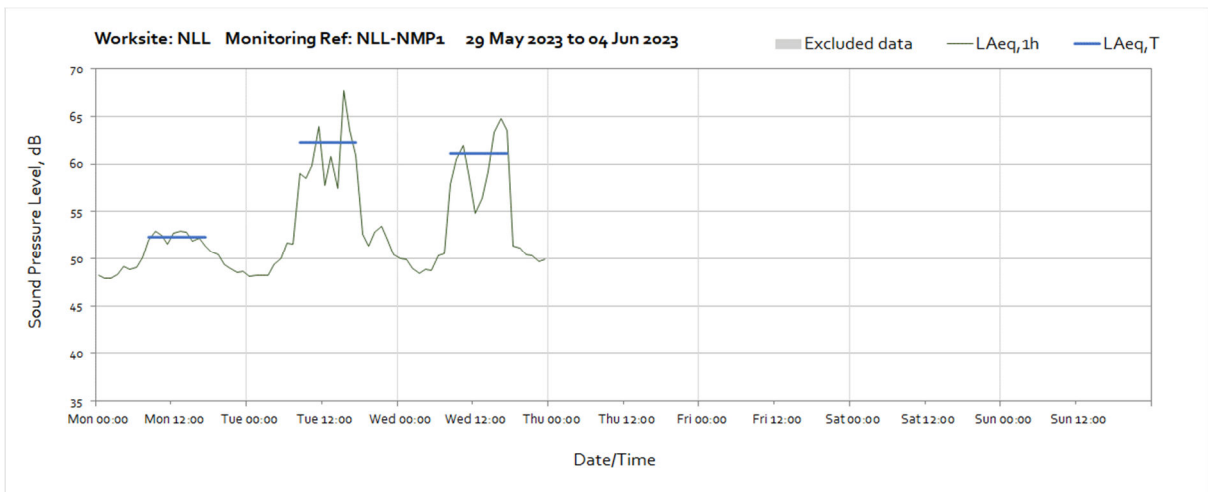


Note: Missing data between 14:00 and 15:00 on Tuesday 2nd May was due to monitor maintenance.

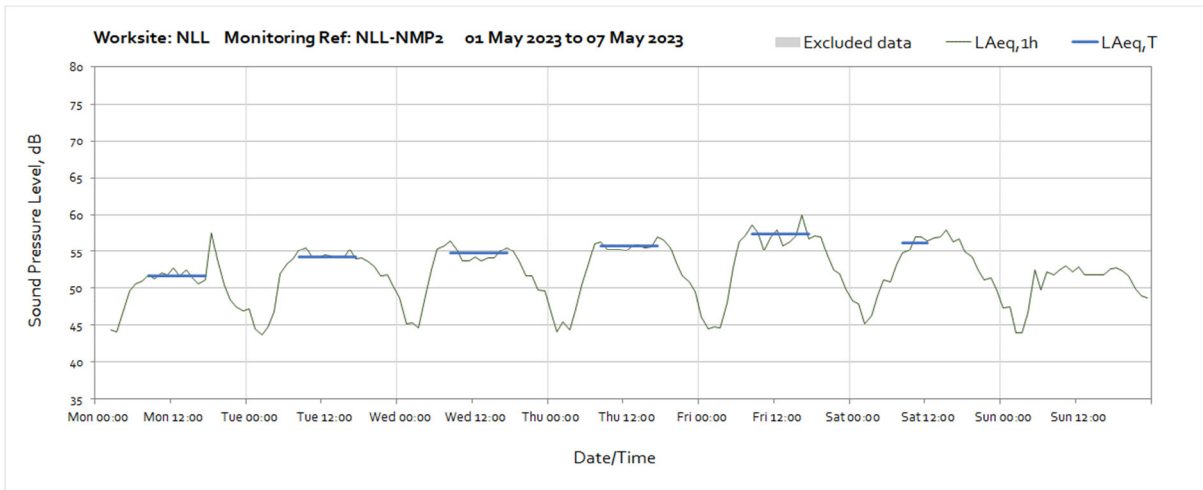




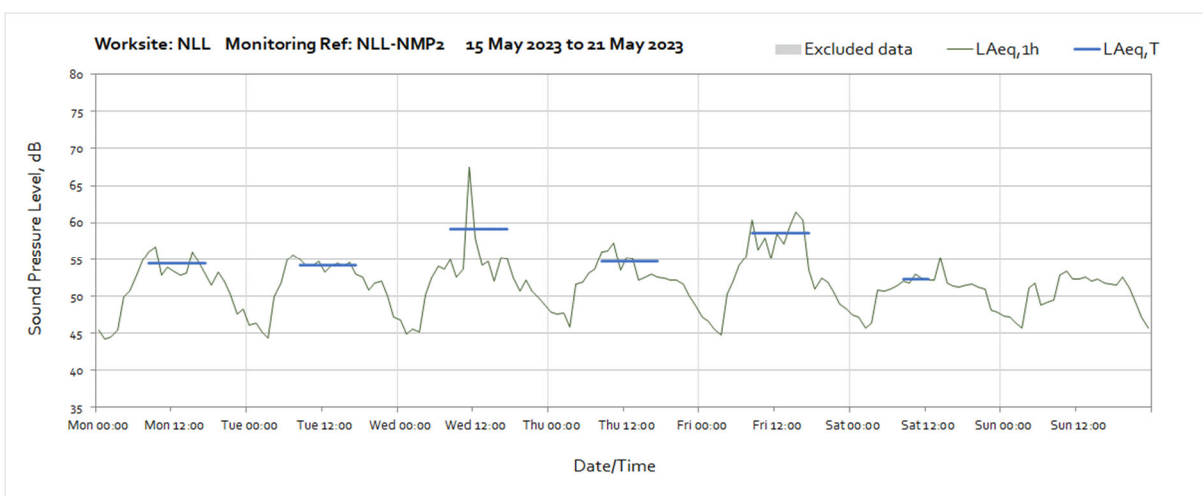
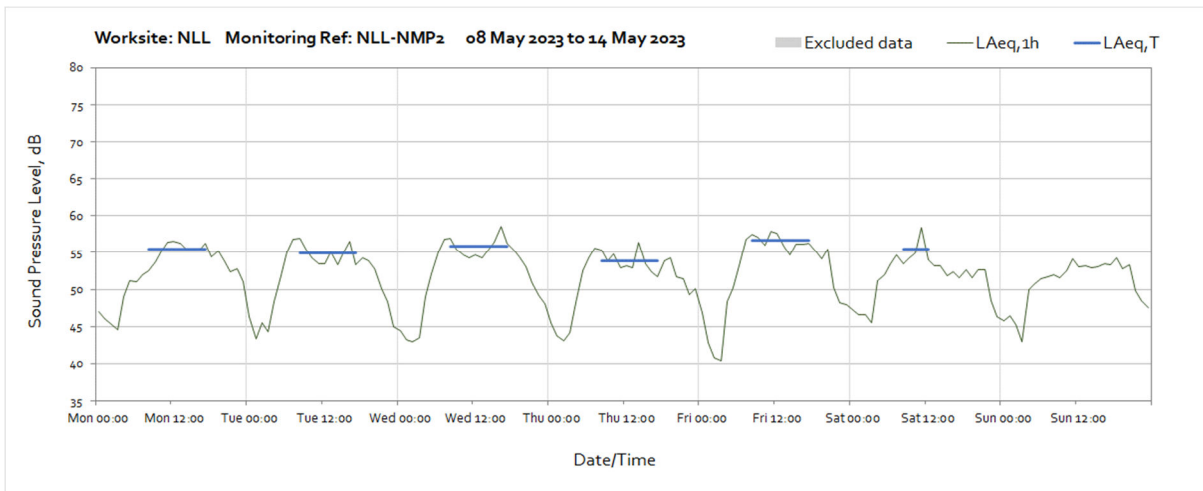
Note: Missing data between 12:00 and 13:00 on Thursday 25th May was due to monitor maintenance.

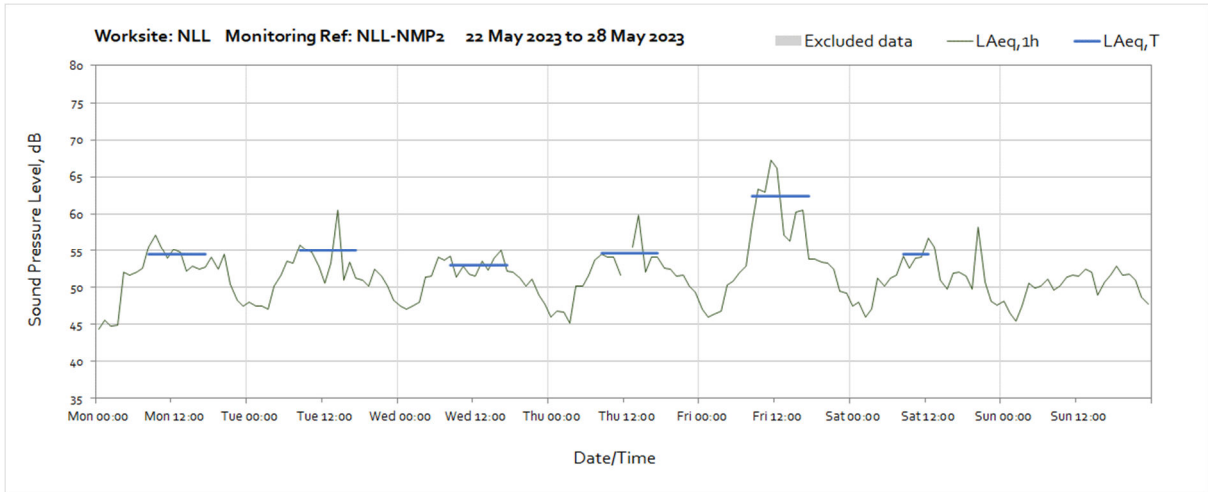


Worksite: NLL – Monitoring Ref: NLL-NMP2

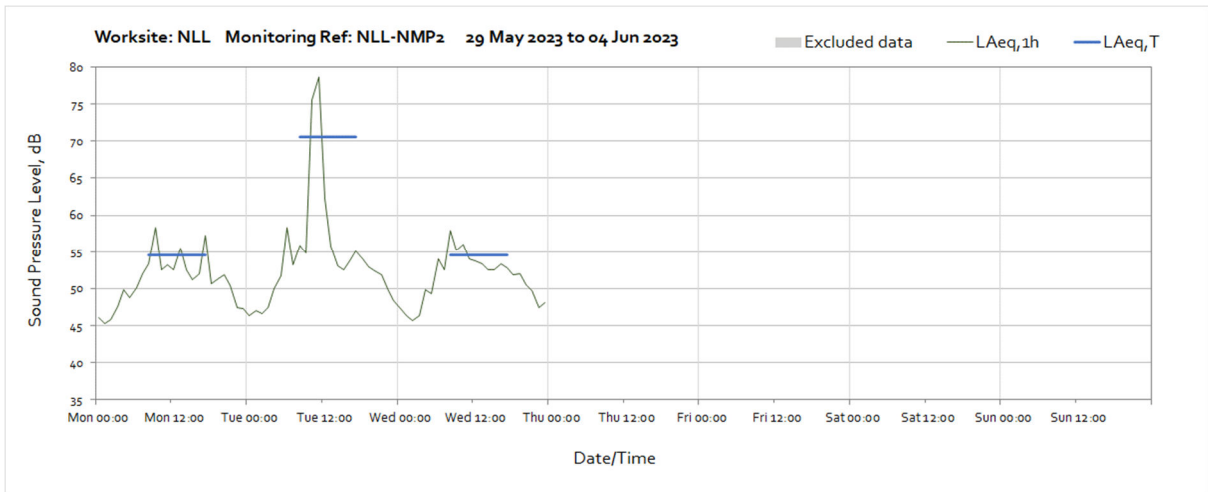


Note: Missing data between 01:00 and 02:00 on Monday 1st May was due to an automatic system check. Missing data between 14:00 and 15:00 on Tuesday 2nd May was due to monitor maintenance.

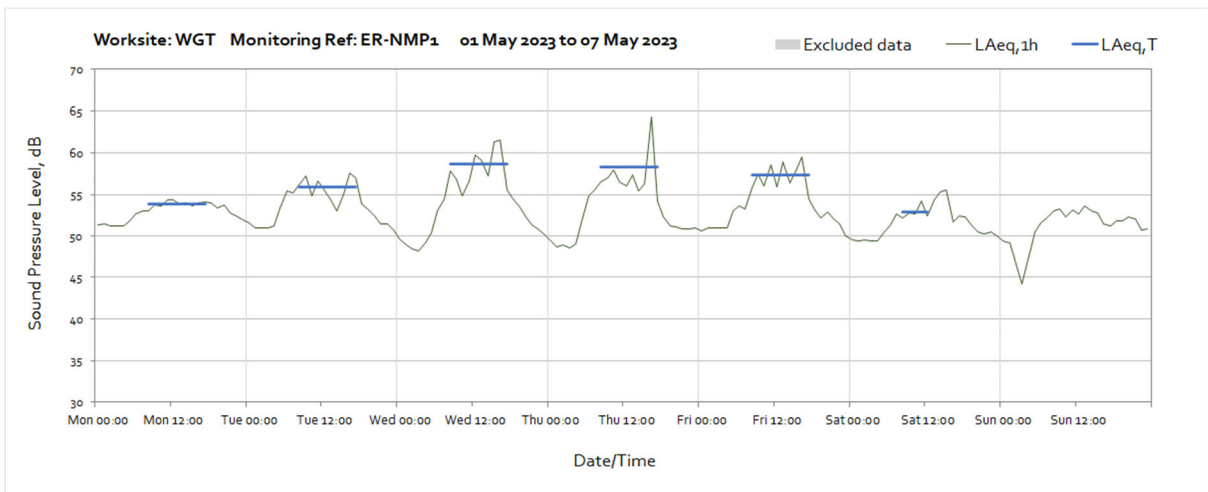


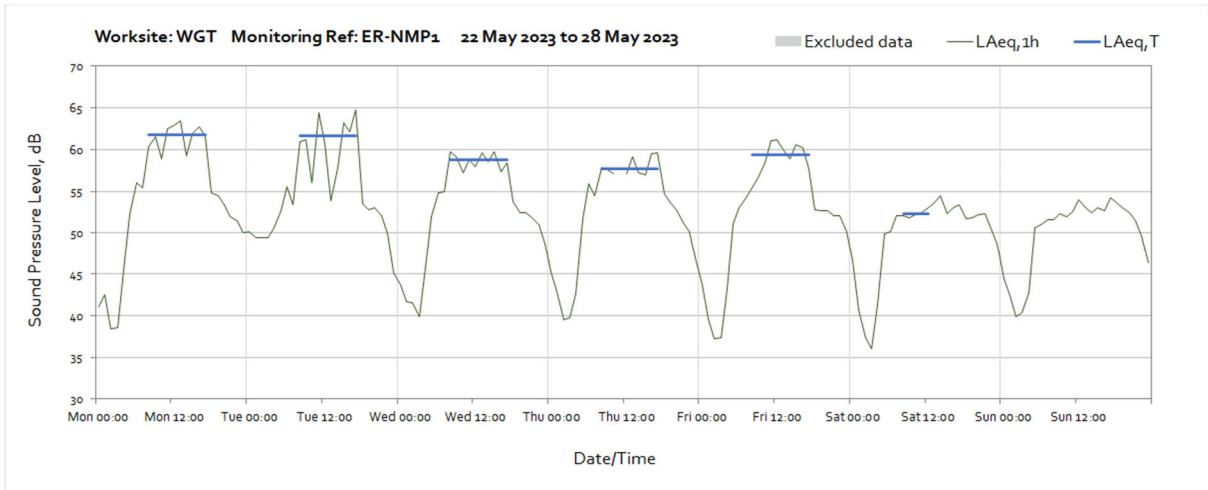
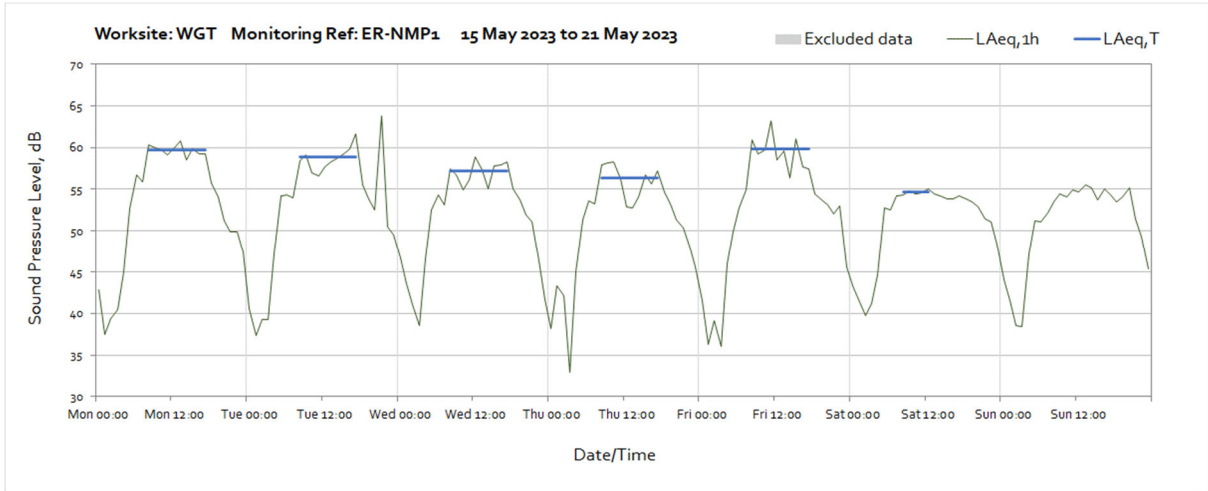
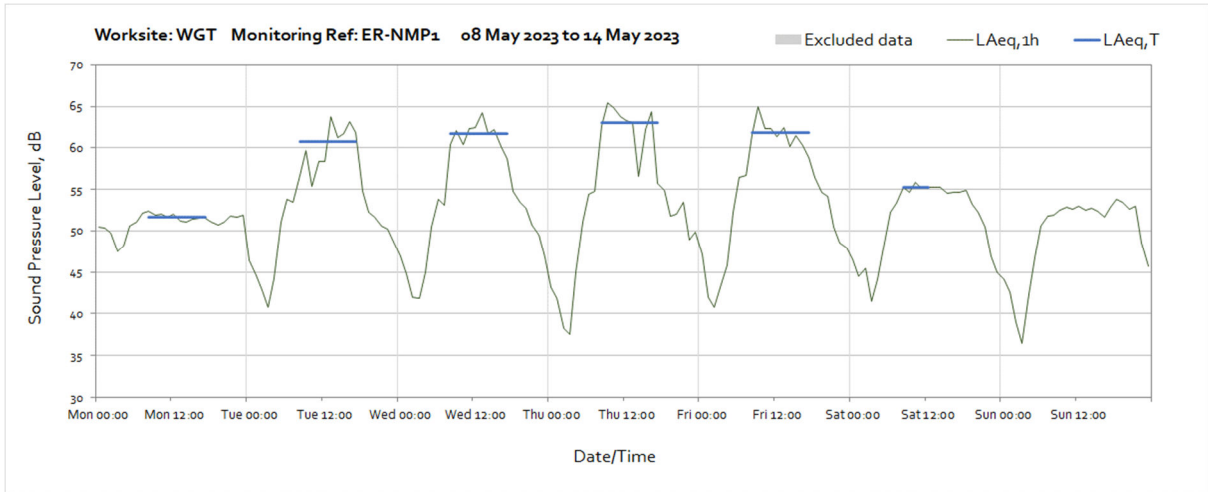


Note: Missing data between 12:00 and 13:00 on Thursday 25th May was due to monitor maintenance.

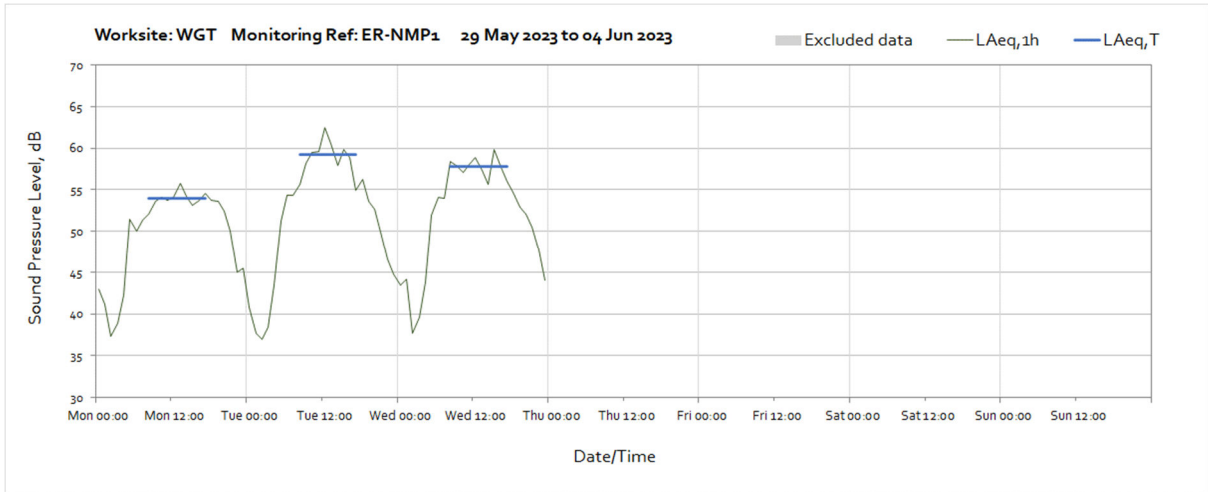


Worksite: WGT – Monitoring Ref: ER-NMP1

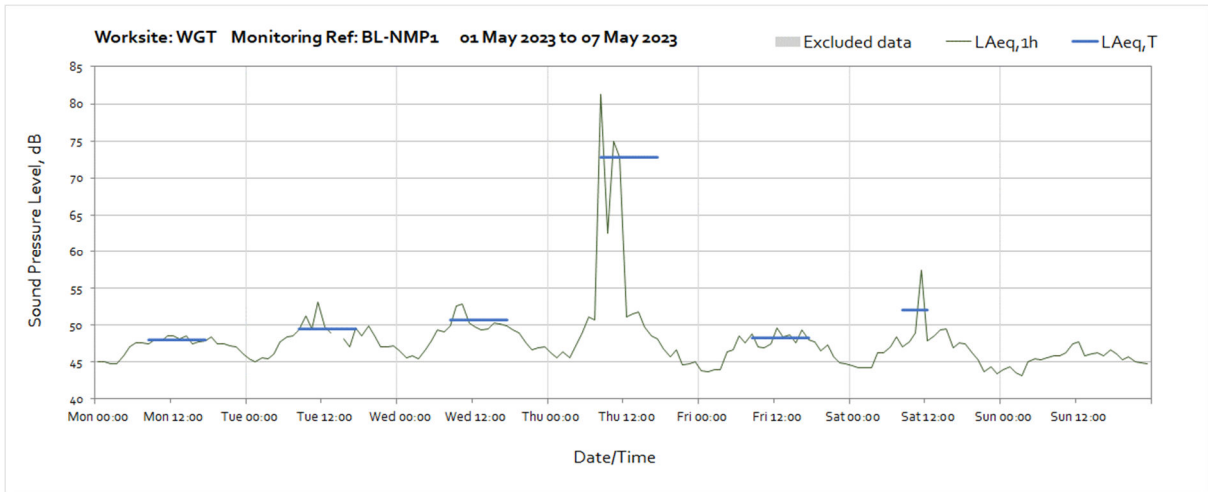




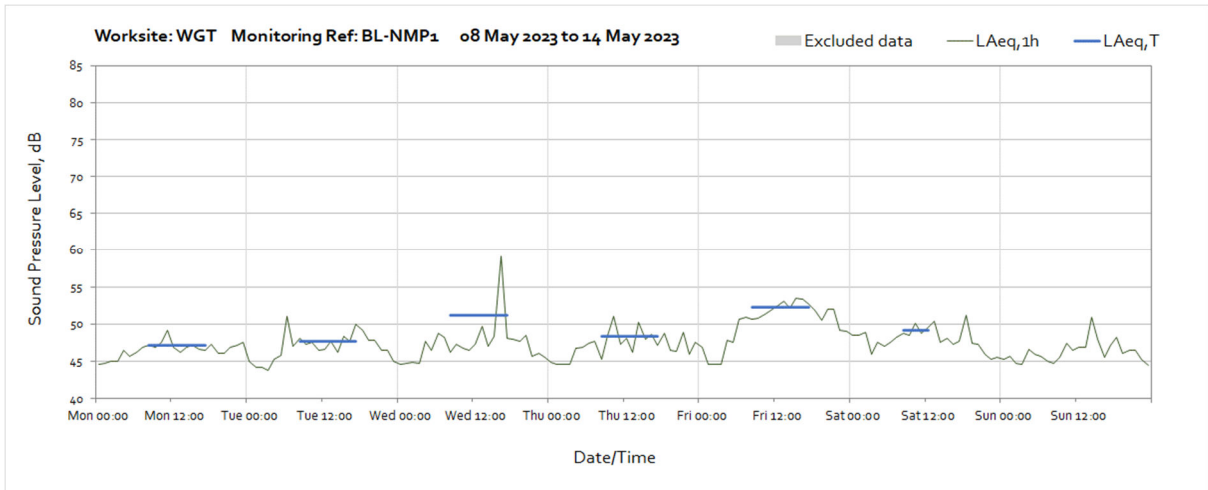
Note: Missing data between 11:00 and 12:00 on Thursday 25th May was due to monitor maintenance.

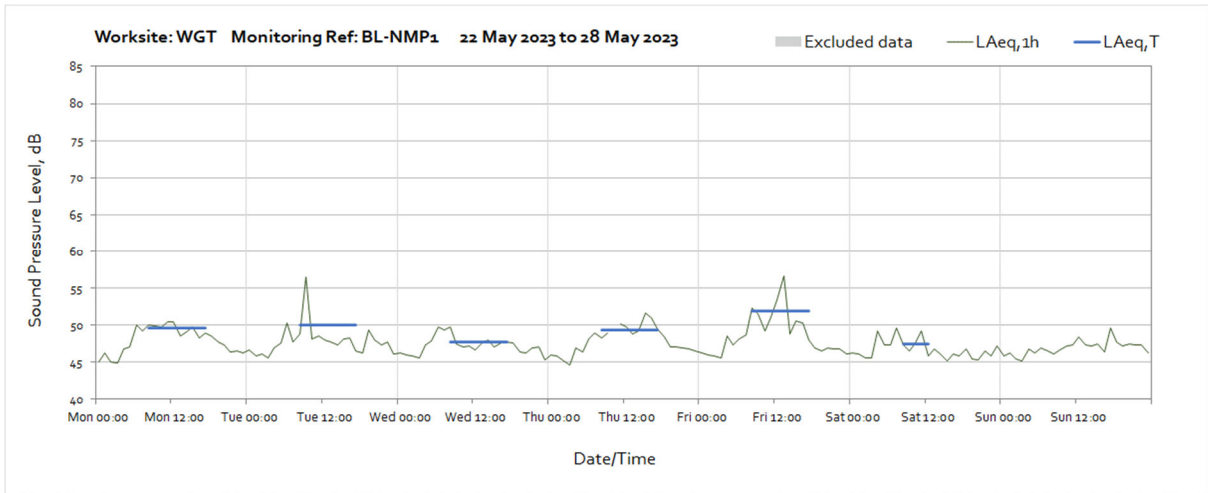
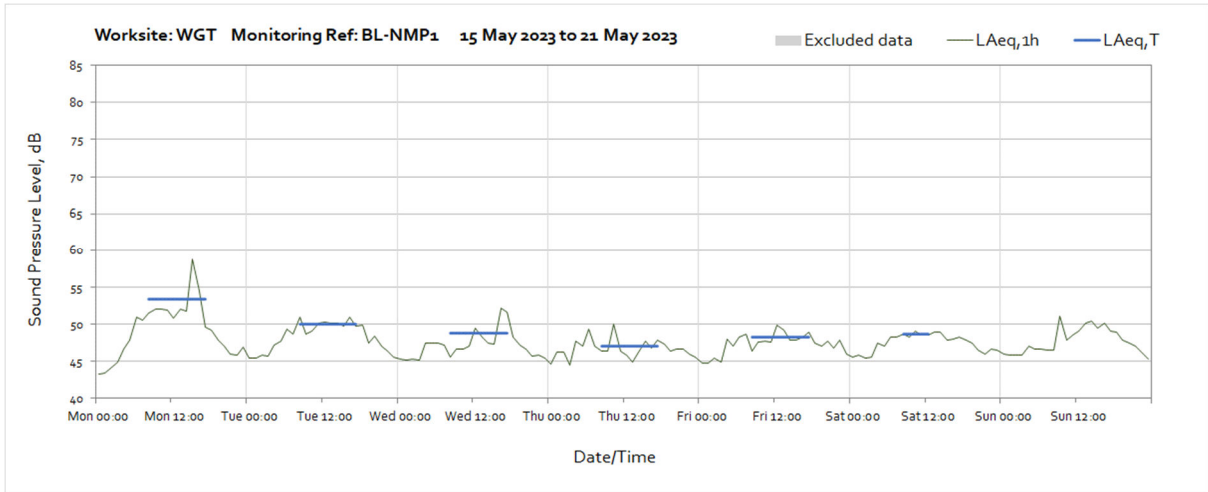


Worksite: WGT - Monitoring Ref: BL-NMP1

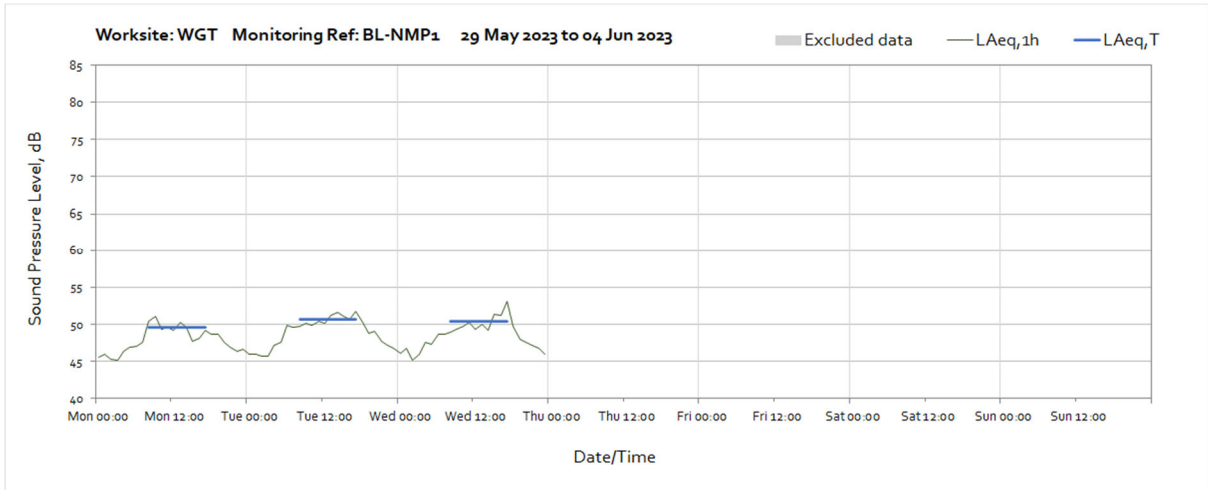


Note: Missing data between 14:00 and 15:00 on Tuesday 2nd May was due to monitor maintenance.

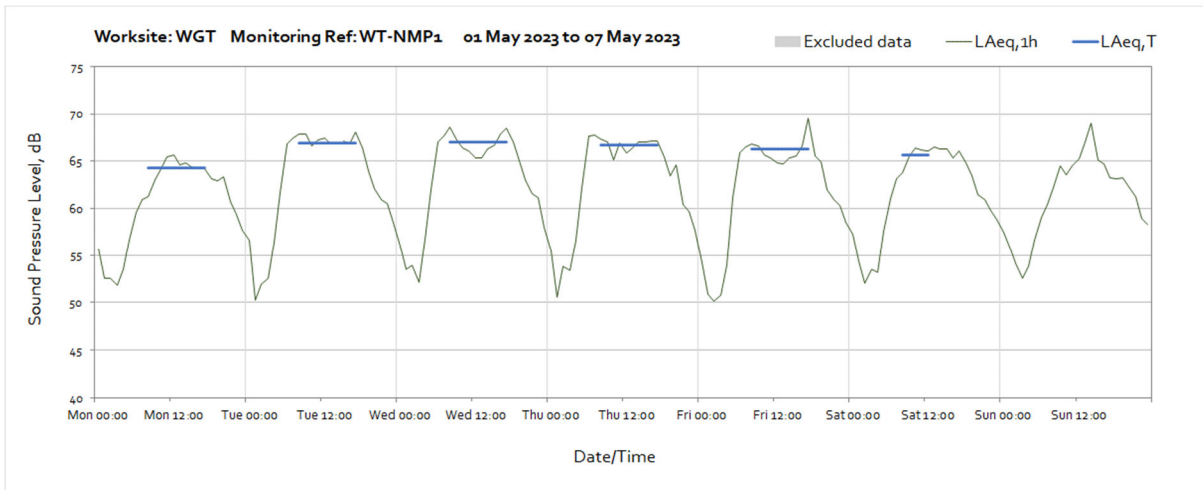




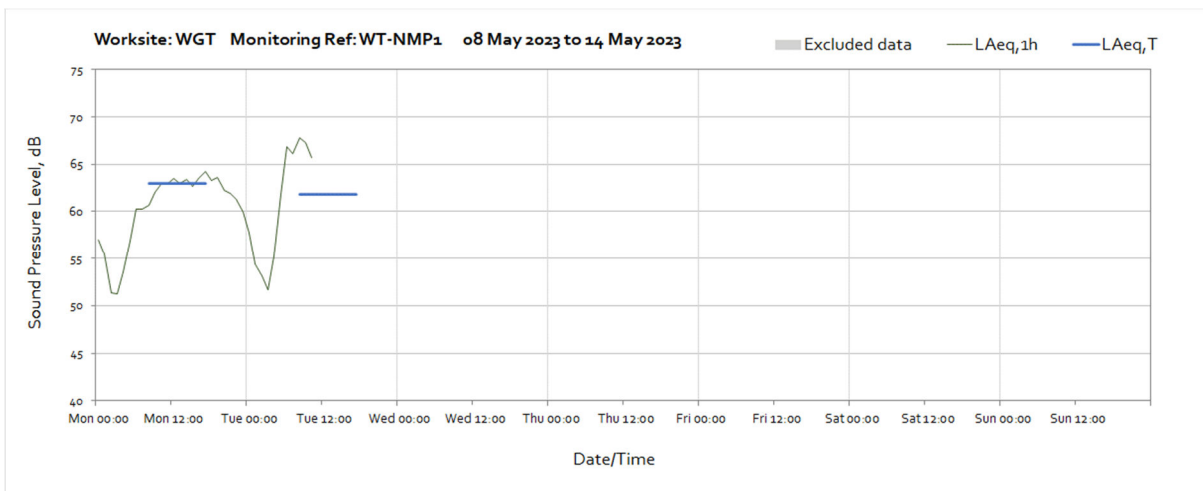
Note: Missing data between 10:00 and 11:00 on Thursday 25th May was due to monitor maintenance.



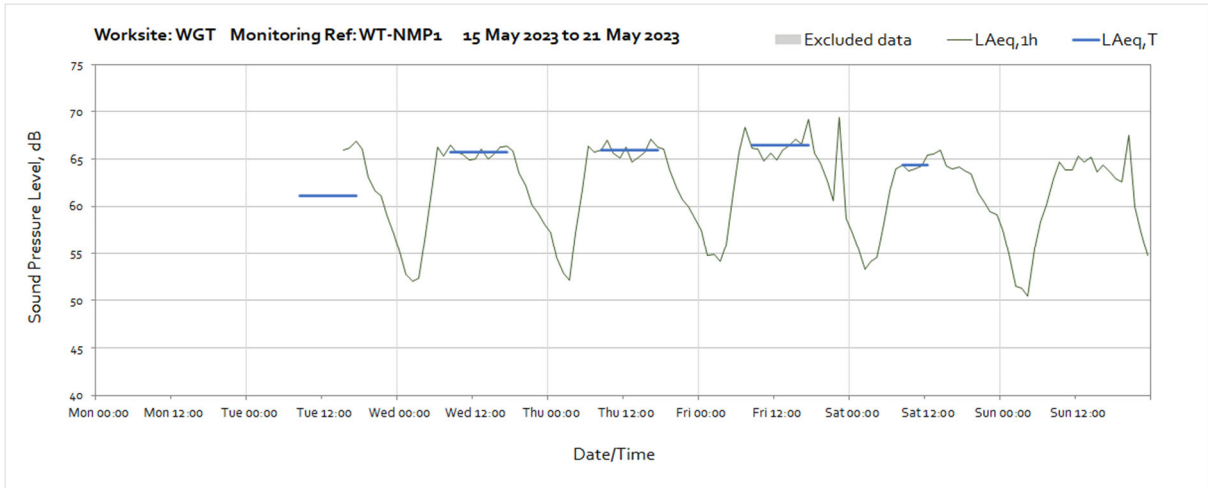
Worksite: WGT – Monitoring Ref: WT-NMP1



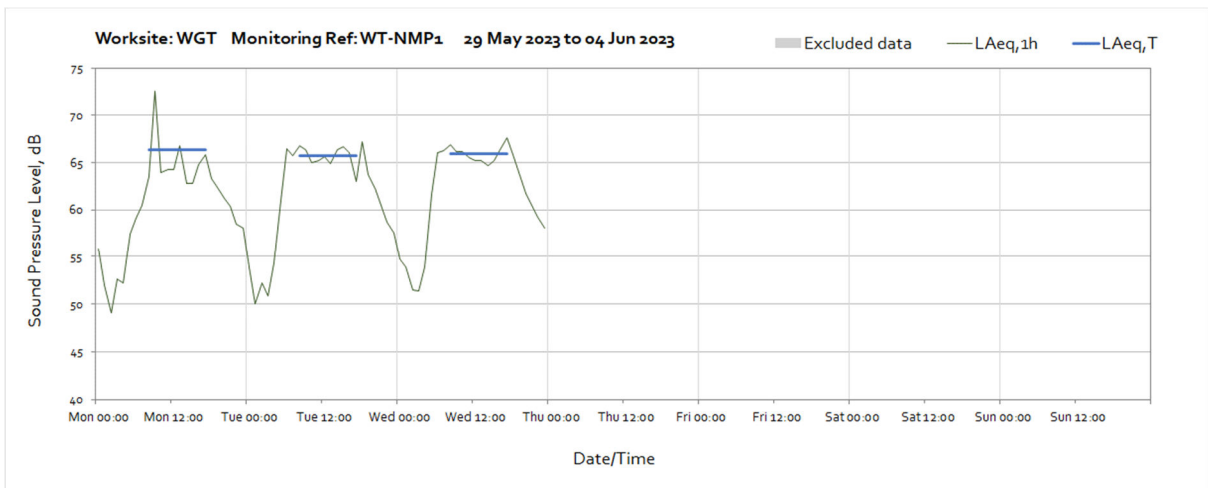
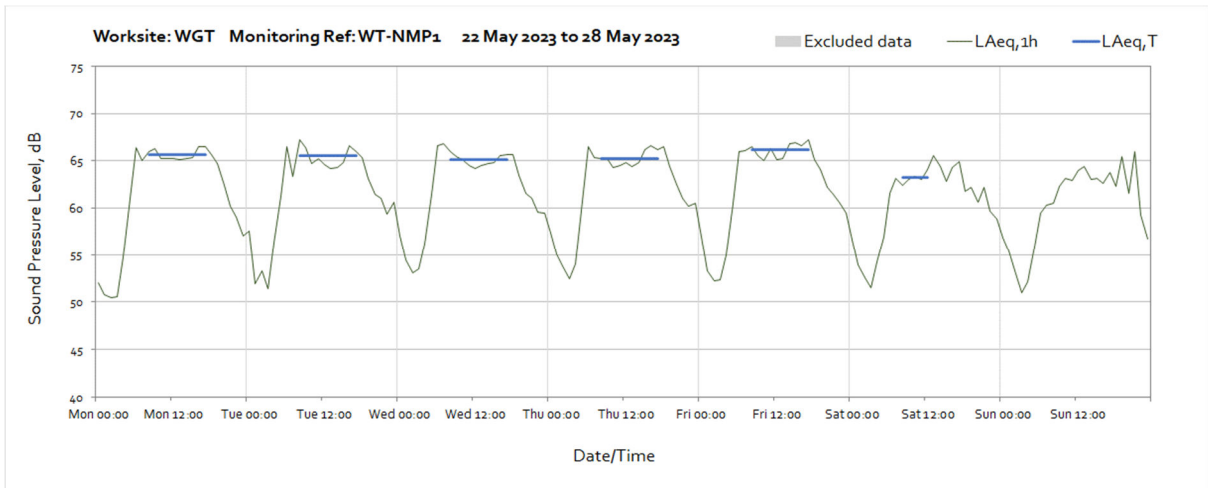
Note: Missing data between 14:00 and 15:00 on Tuesday 2nd May was due to monitor maintenance.



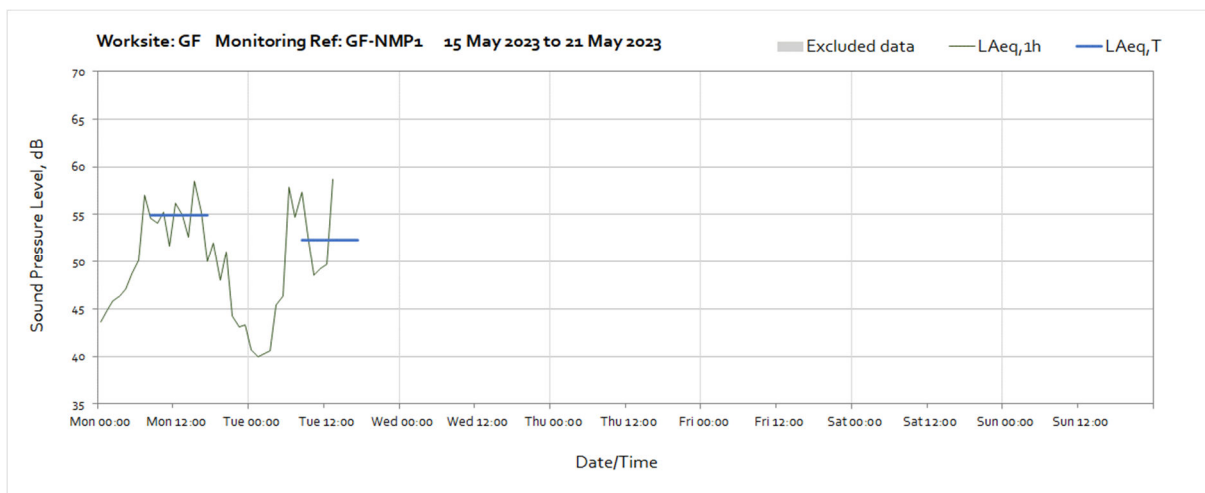
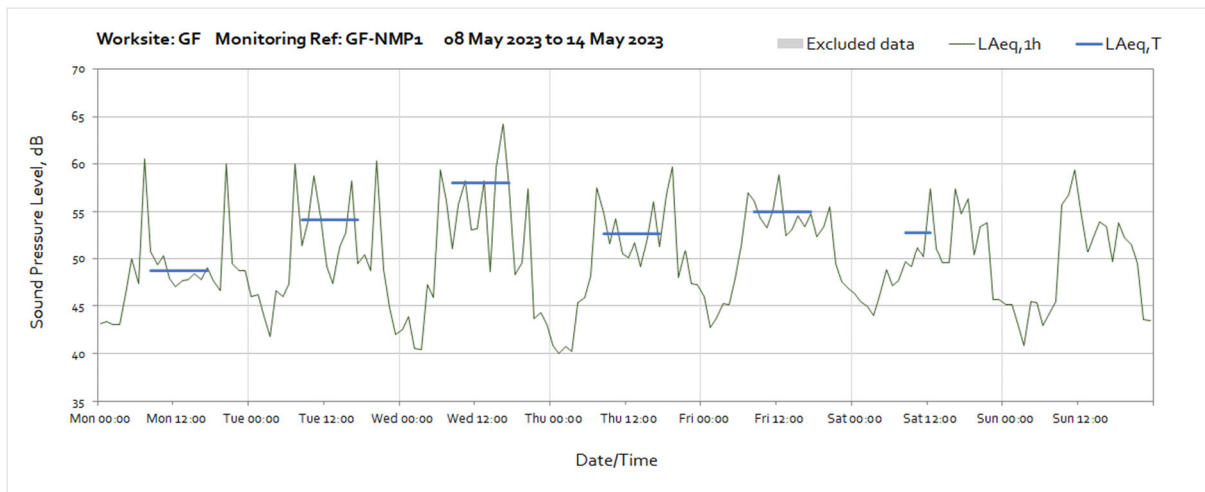
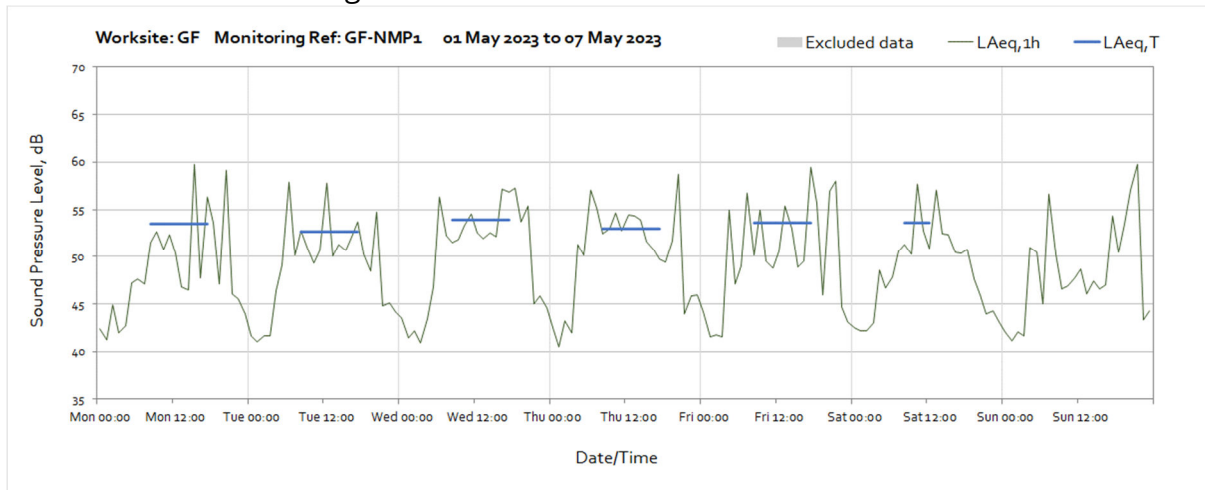
Note: Missing data between 11:00 on Tuesday 9th May and 15:00 on Tuesday 16th May was due to depleted monitor battery.



Note: Missing data between 11:00 on Tuesday 9th May and 15:00 on Tuesday 16th May was due to depleted monitor battery.



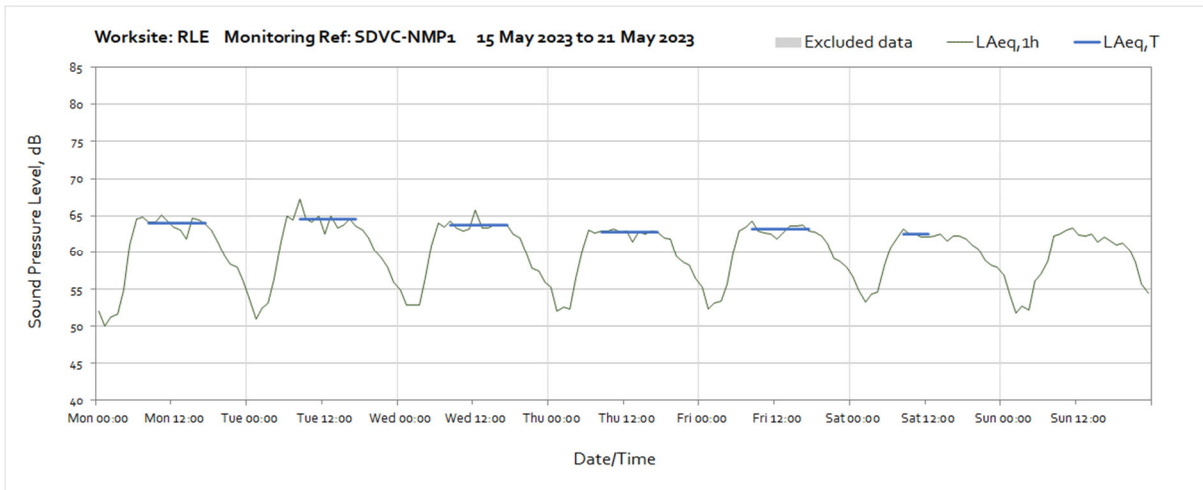
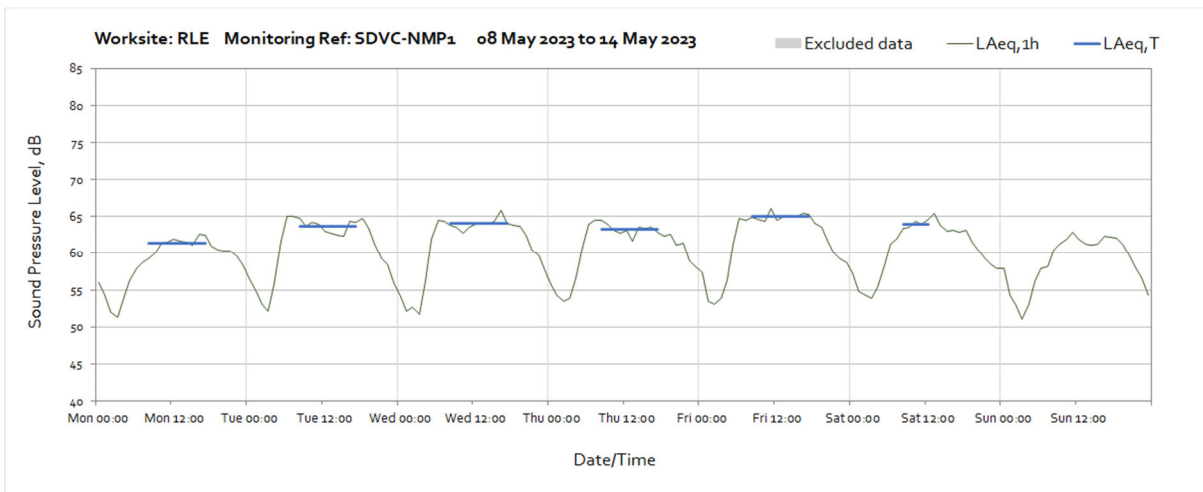
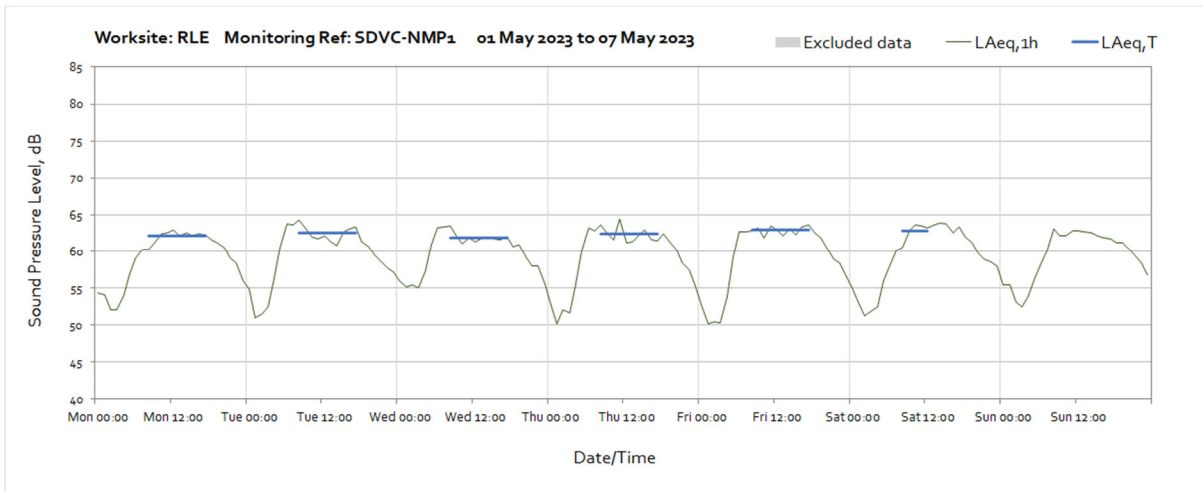
Worksite: GF – Monitoring Ref: GF-NMP1

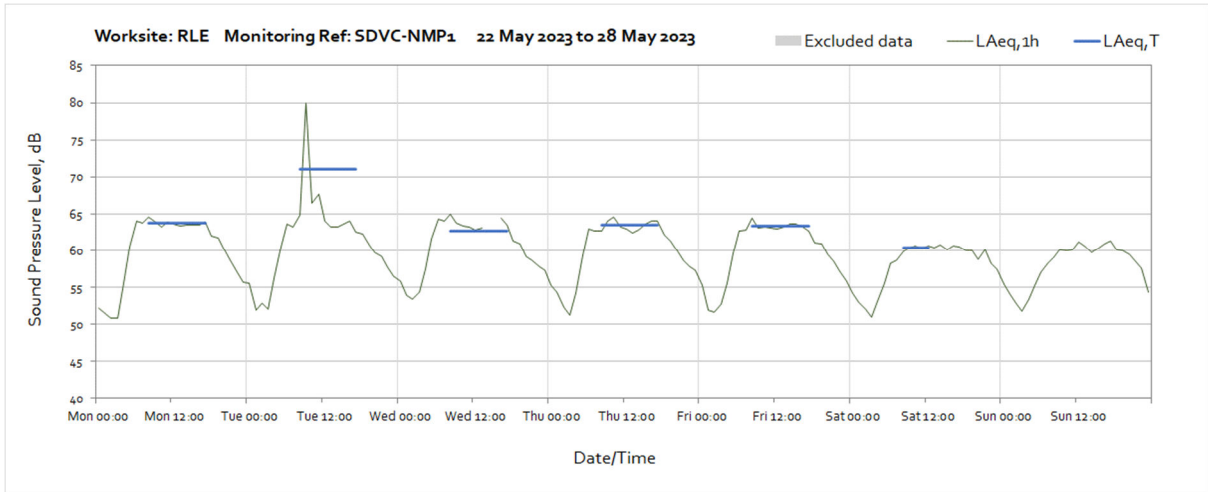


Note: Missing data from 14:00 on Tuesday 16th May until the end of the month was due to a monitor fault.

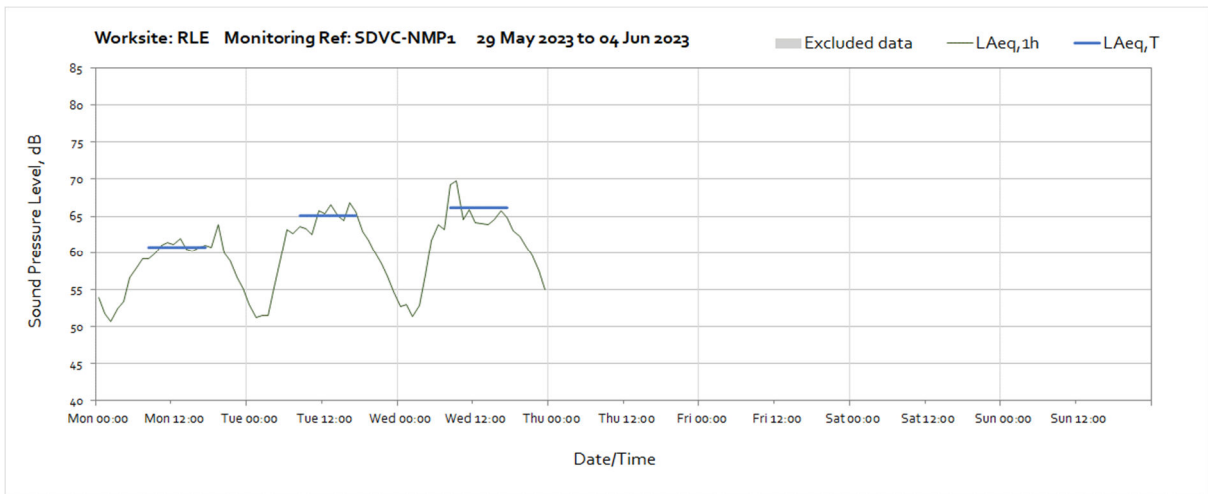
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Worksite: RLE - Monitoring Ref: SDVC-NMP1

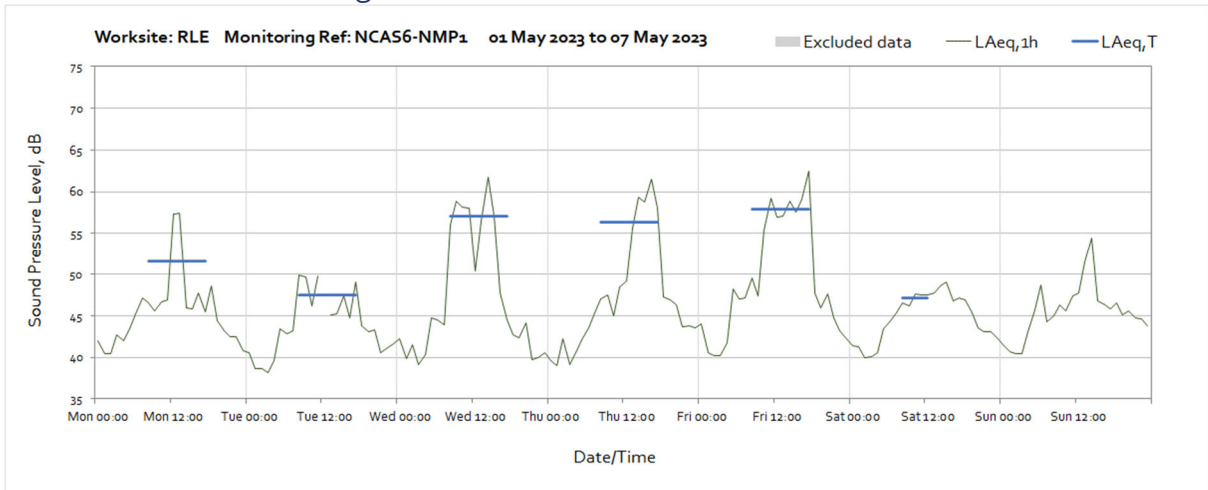




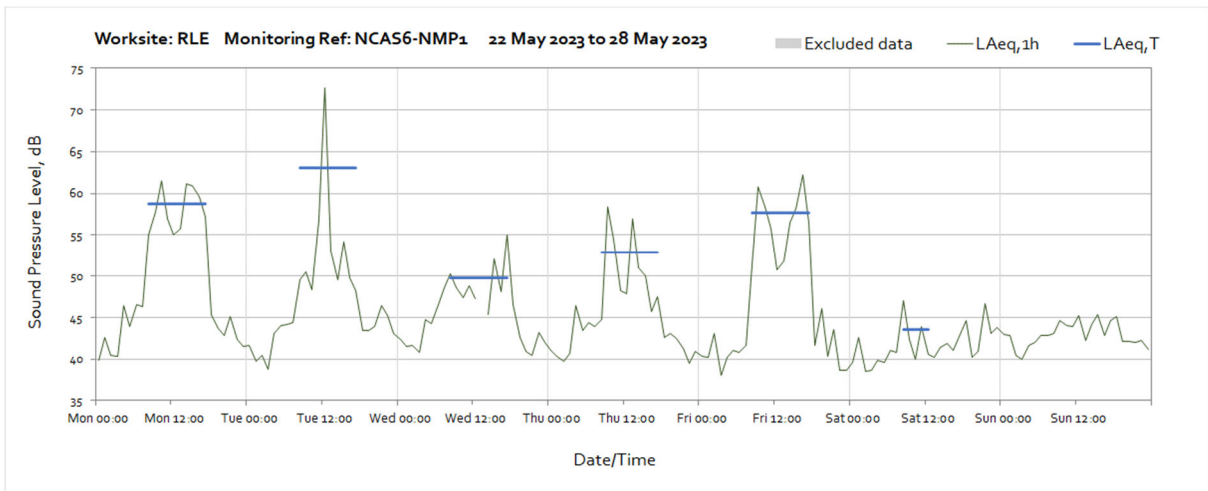
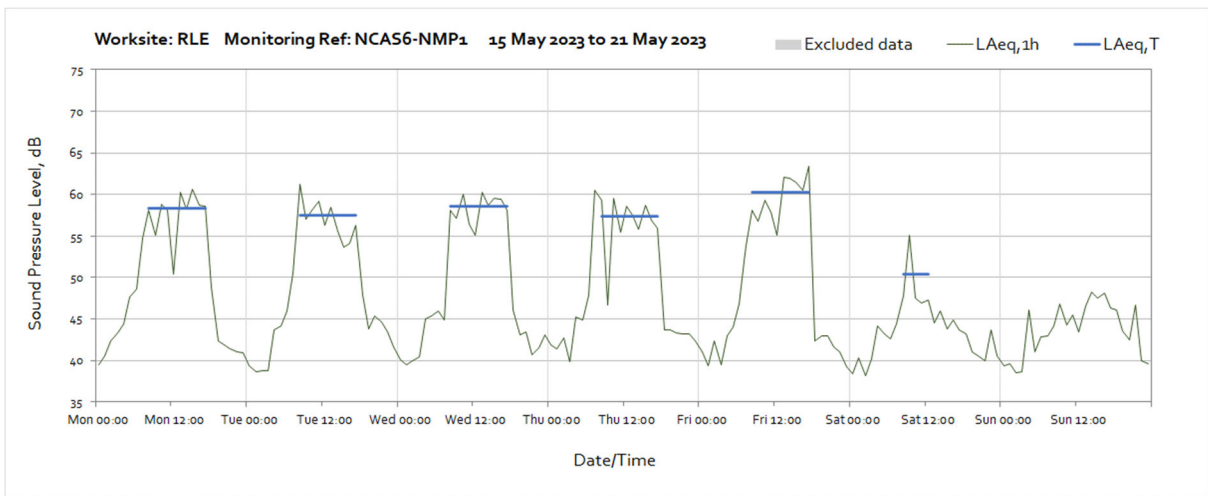
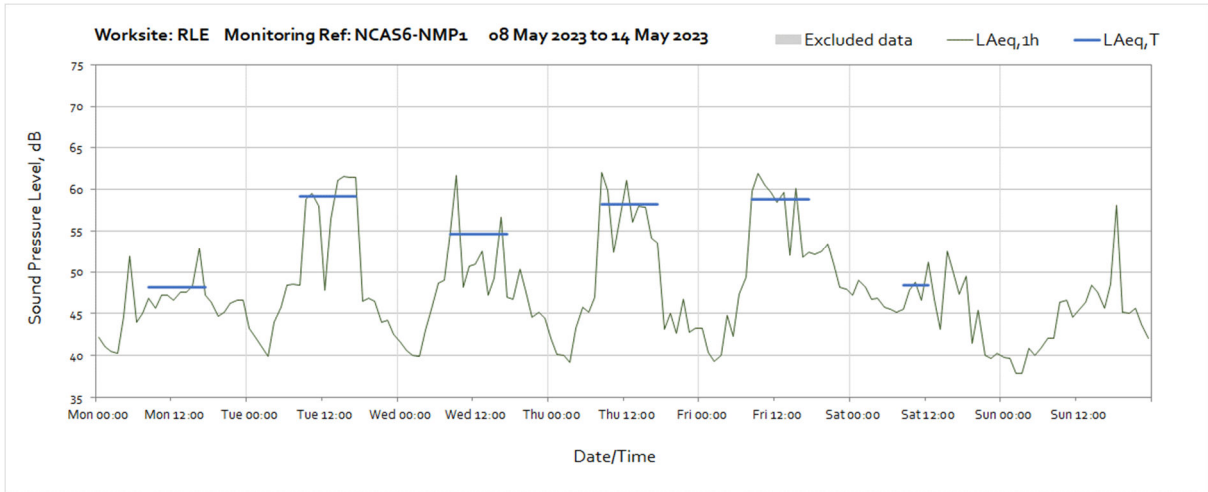
Note: Missing data between 14:00 and 16:00 on Wednesday 24th May was due to monitor maintenance.



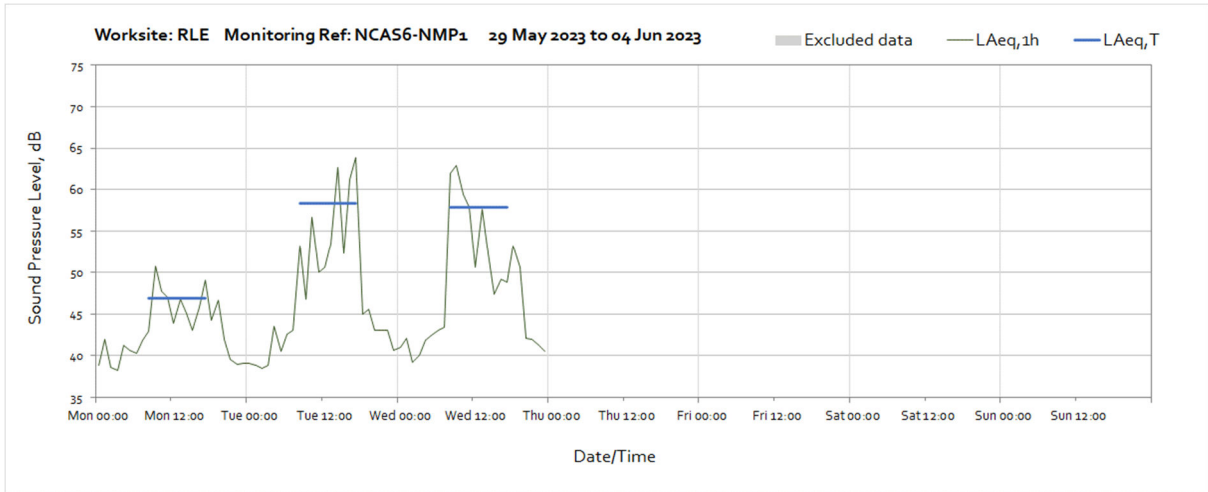
Worksite: RLE – Monitoring Ref: NCAS6-NMP1



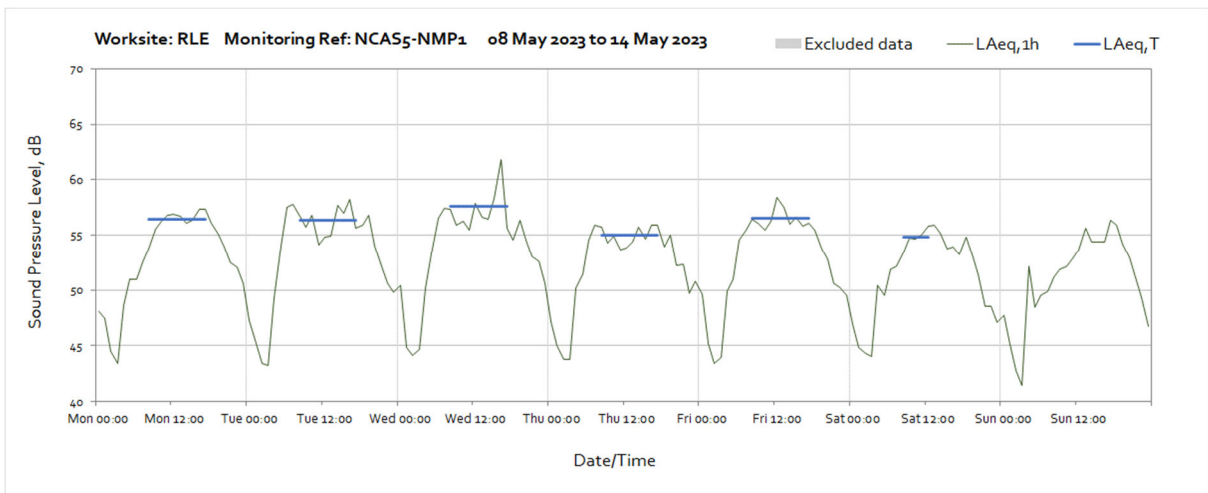
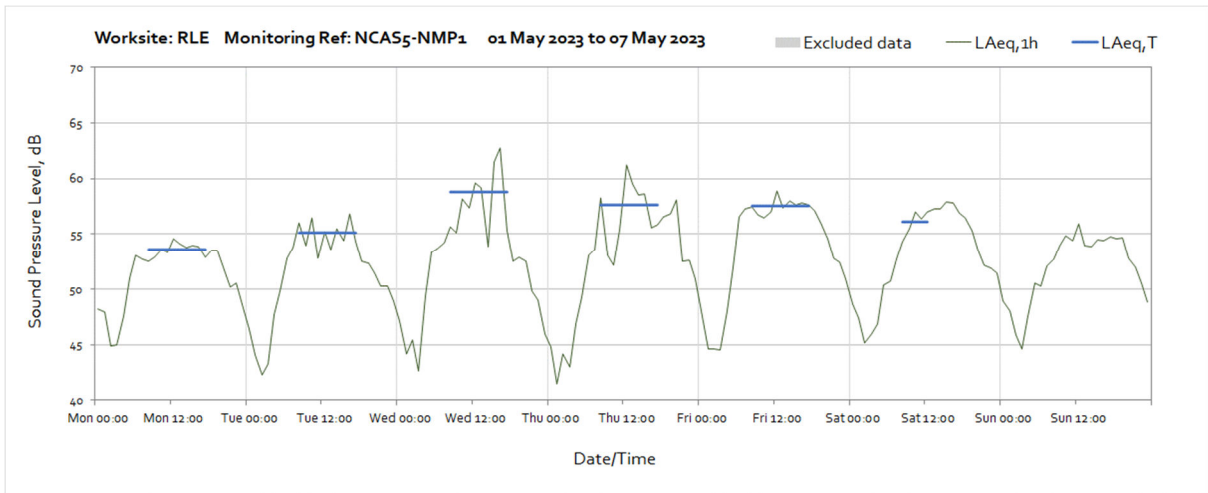
Note: Missing data between 12:00 and 13:00 on Tuesday 2nd May was due to monitor maintenance.

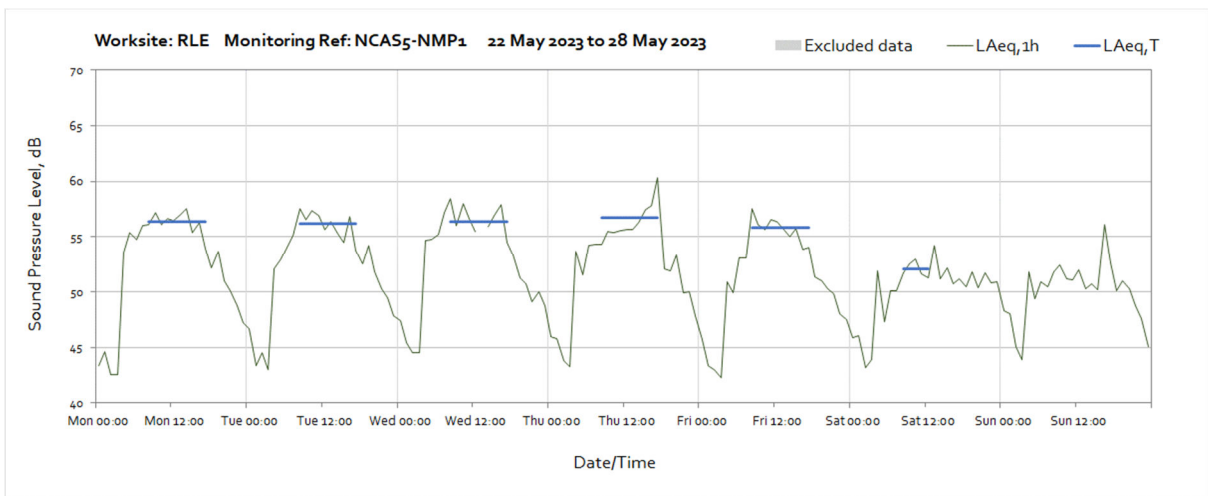
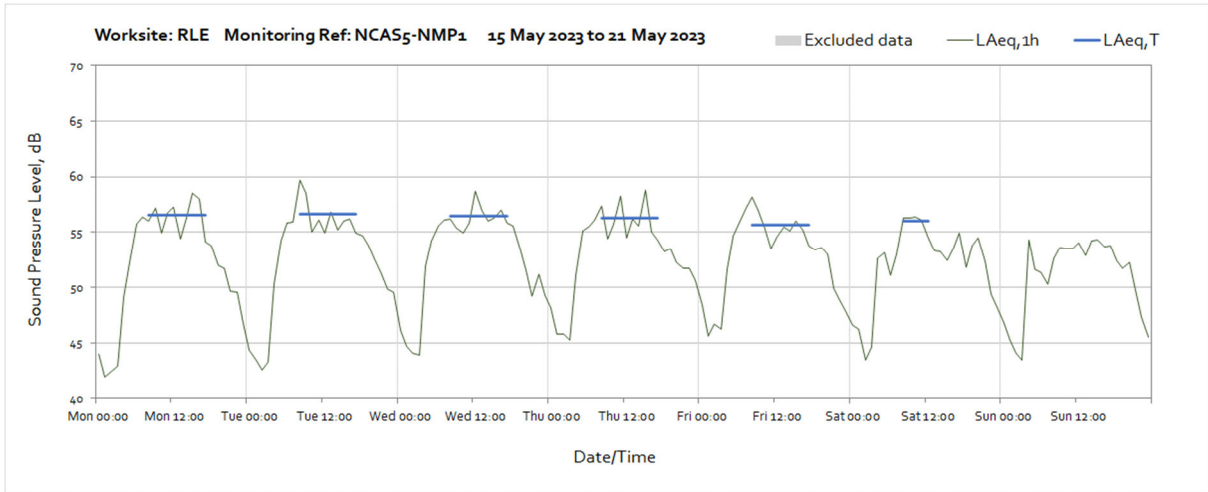


Note: Missing data between 13:00 and 14:00 on Wednesday 24th May was due to monitor maintenance.

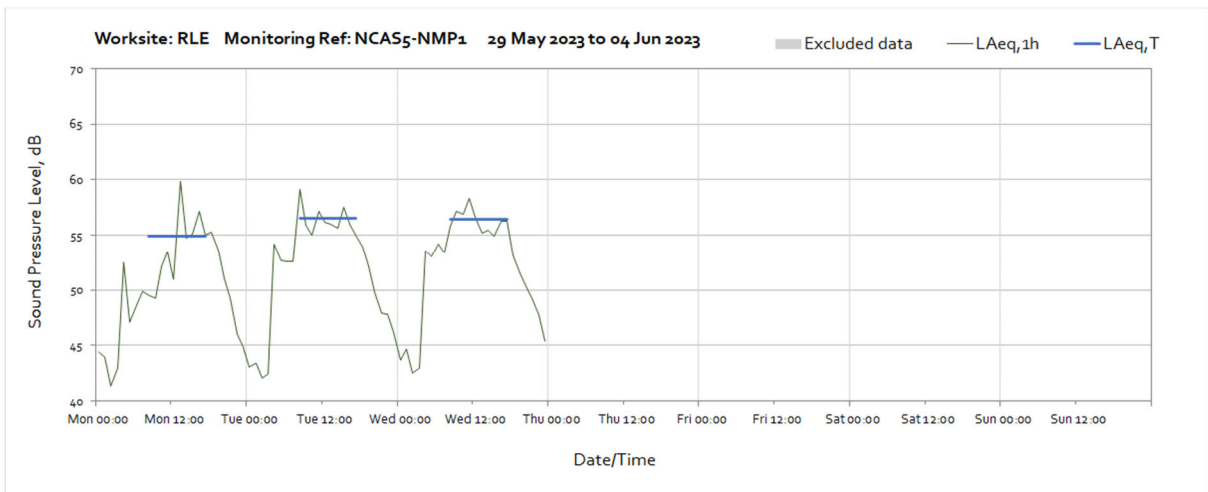


Worksite: RLE - Monitoring Ref: NCAS5-NMP1

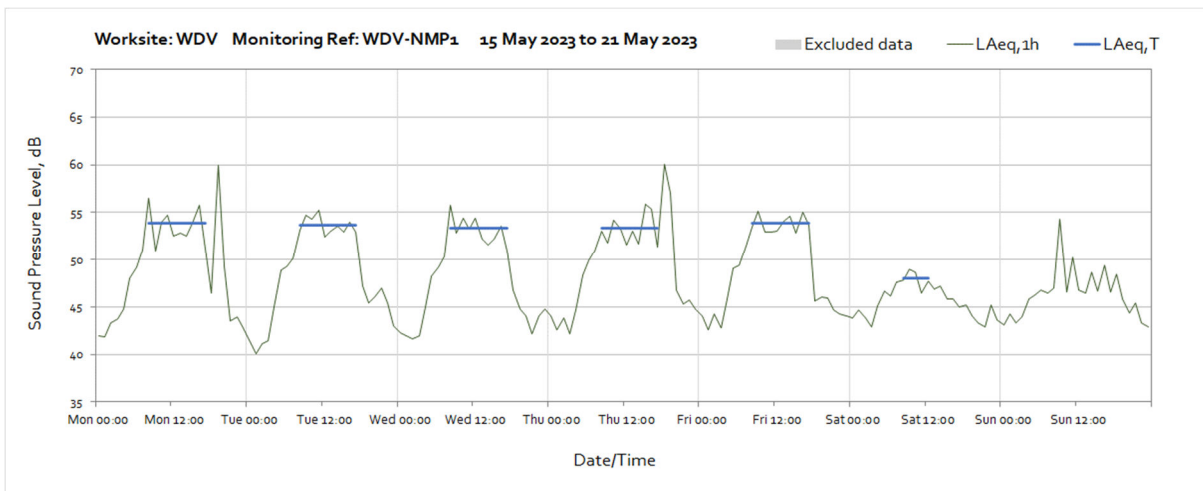
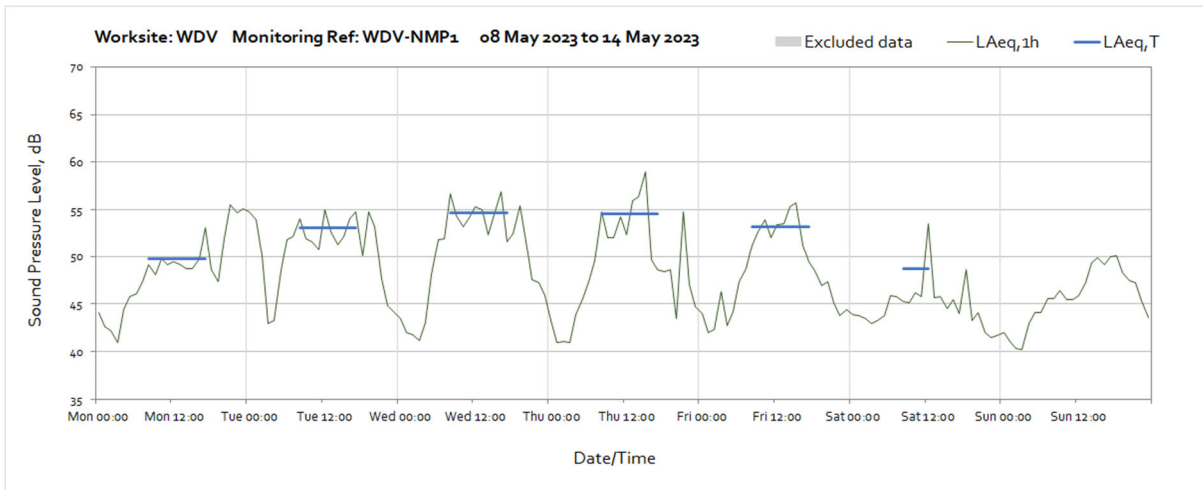
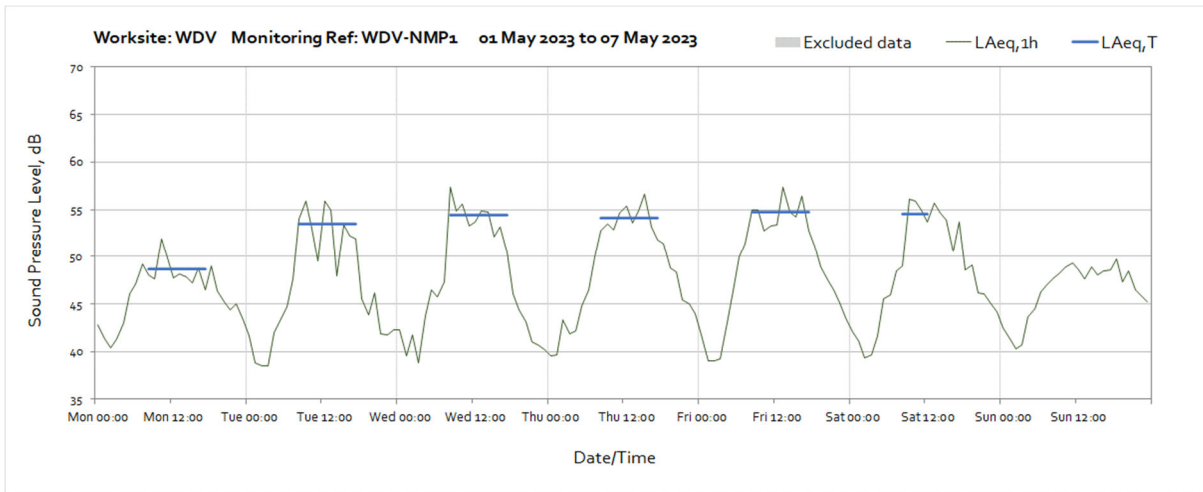


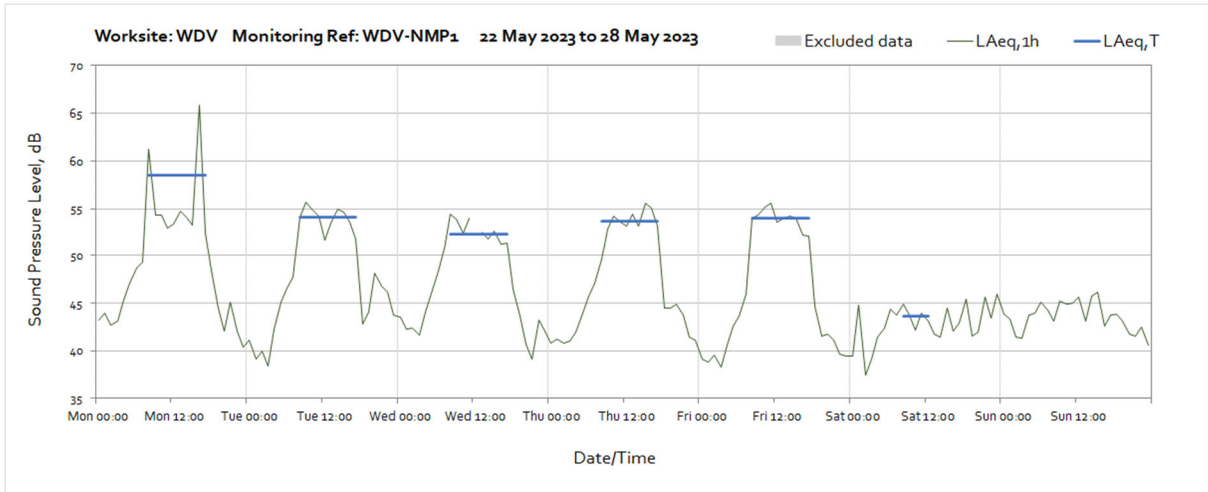


Note: Missing data between 13:00 and 14:00 on Wednesday 24th May was due to monitor maintenance.

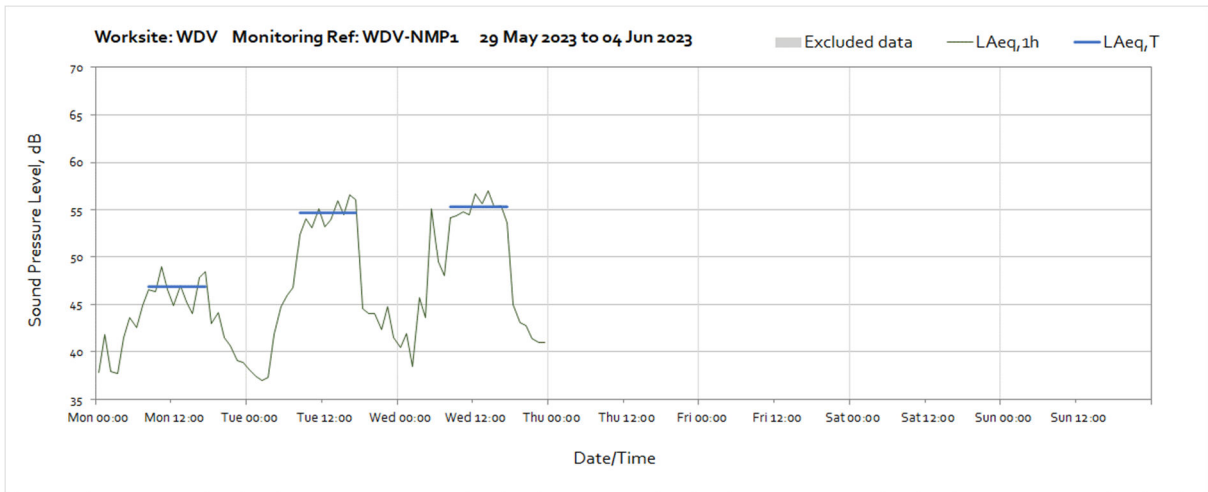


Worksite: WDV – Monitoring Ref: WDV-NMP1

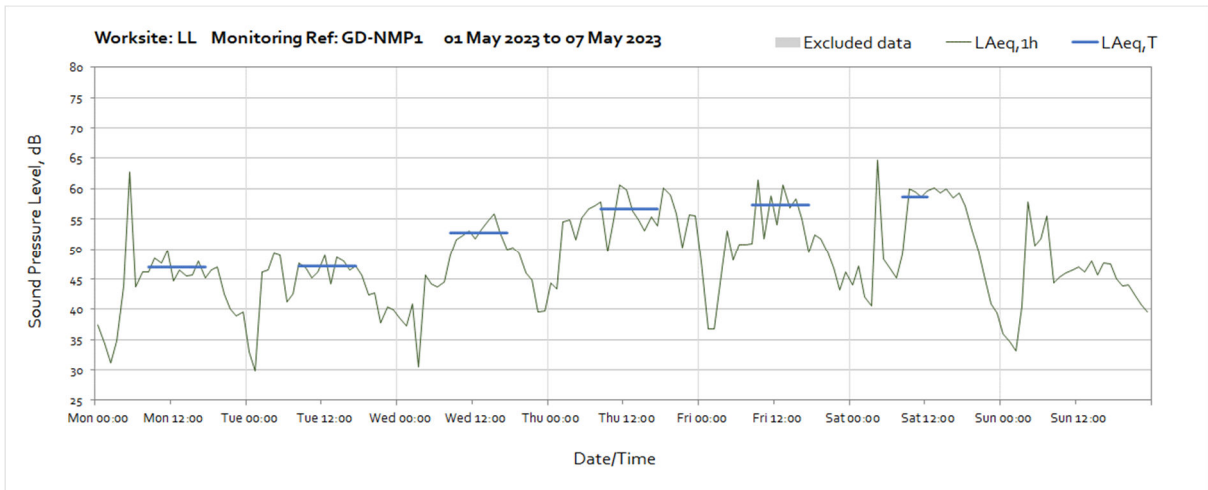


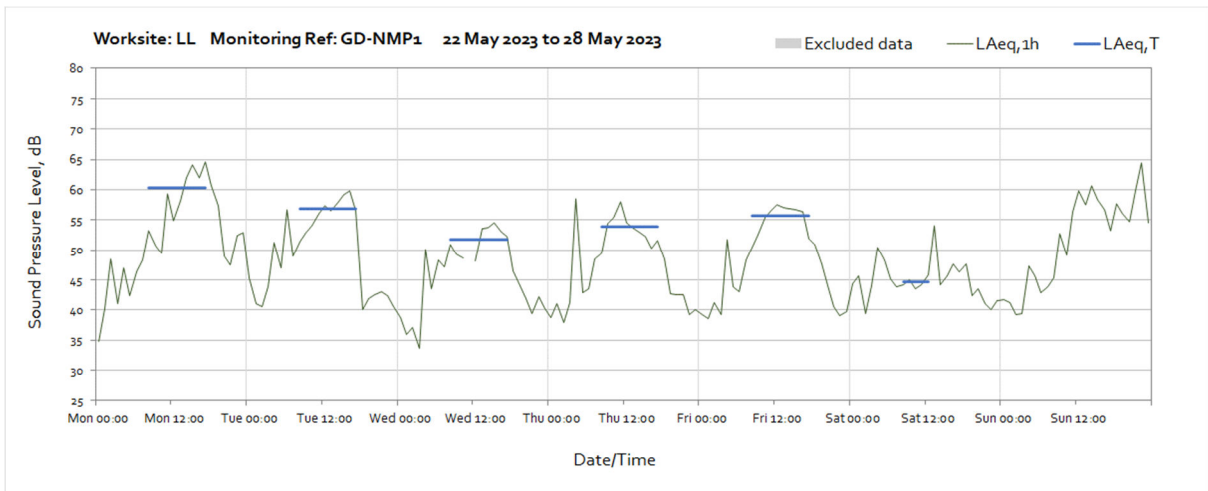
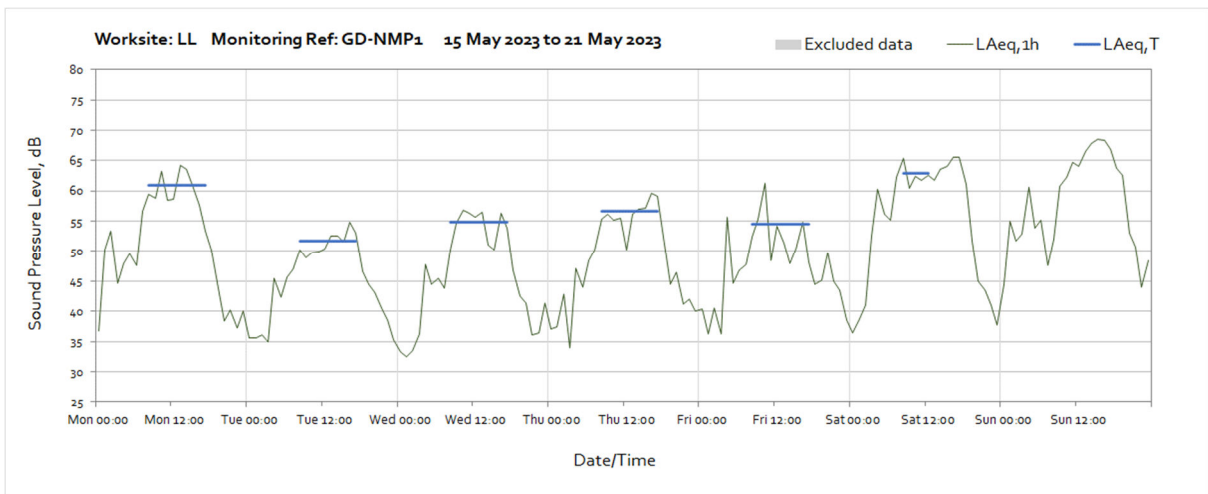
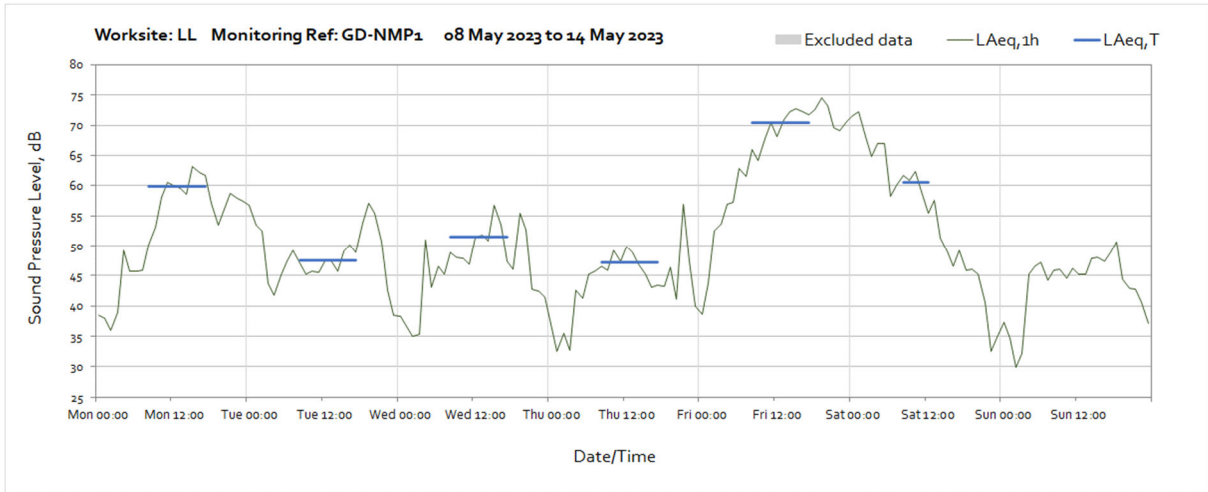


Note: Missing data between 12:00 and 13:00 on Wednesday 24th May was due to monitor maintenance.

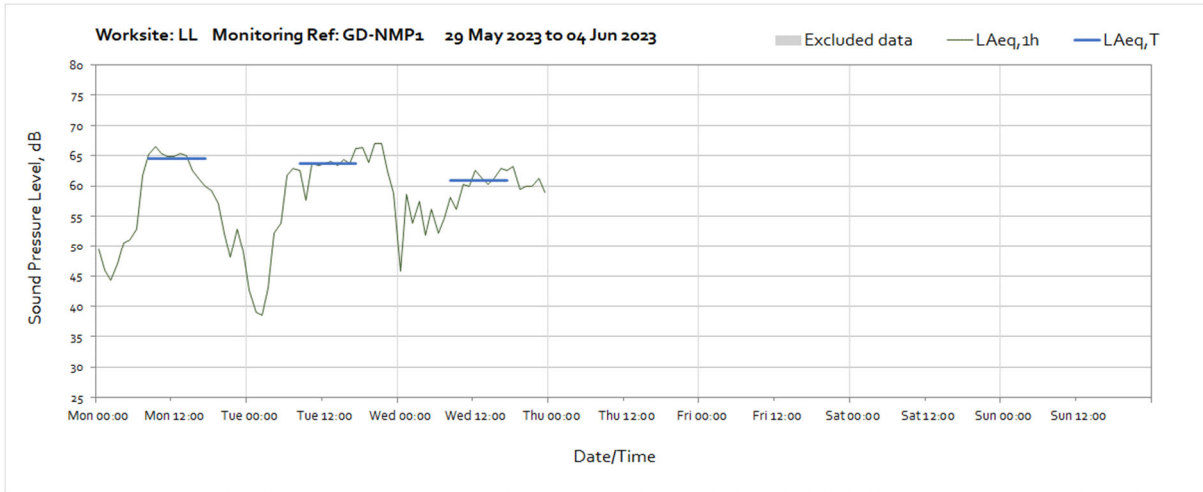


Worksite: LL - Monitoring Ref: GD-NMP1

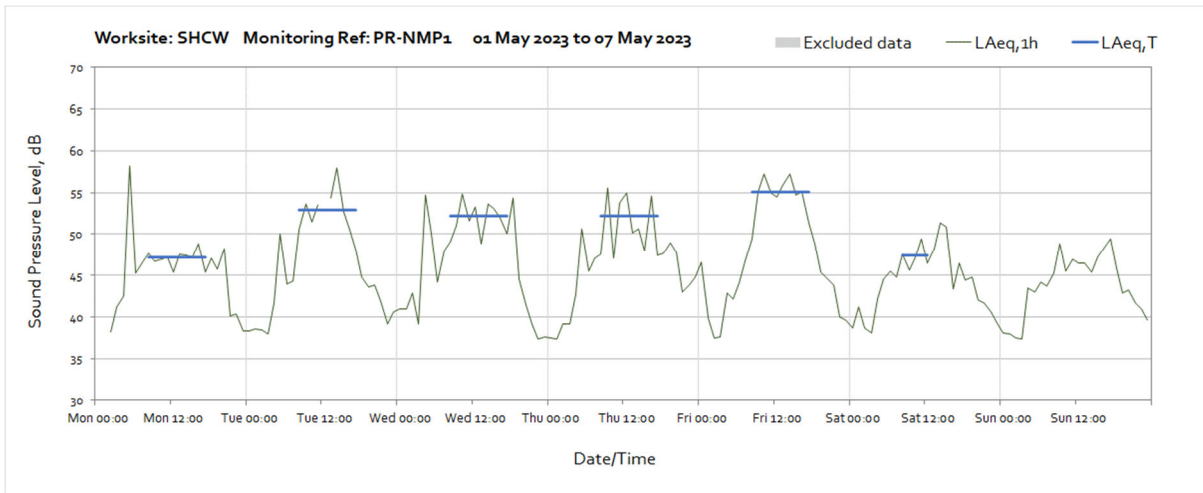




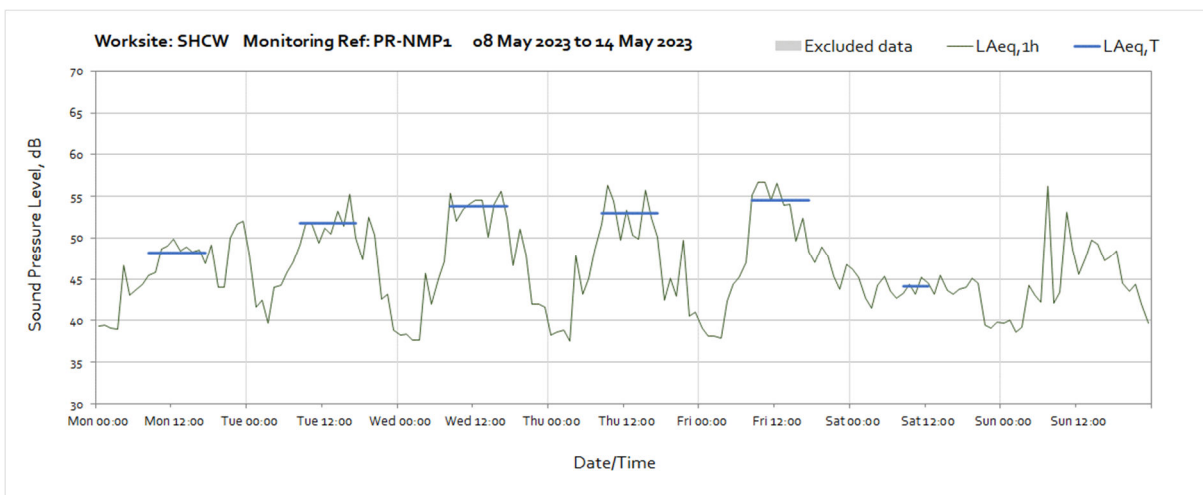
Note: Missing data between 11:00 and 12:00 on Wednesday 24th May was due to monitor maintenance.

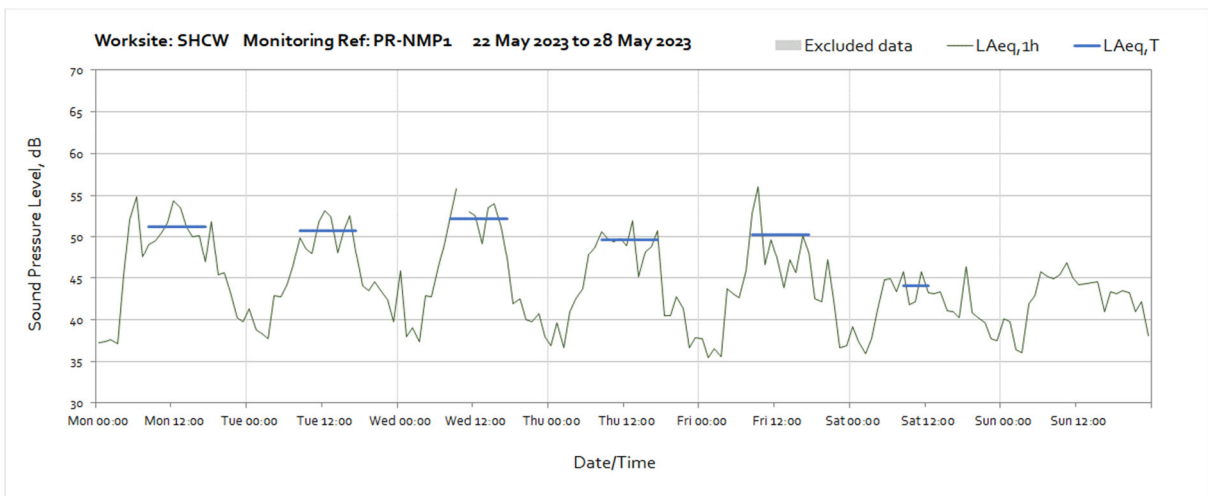
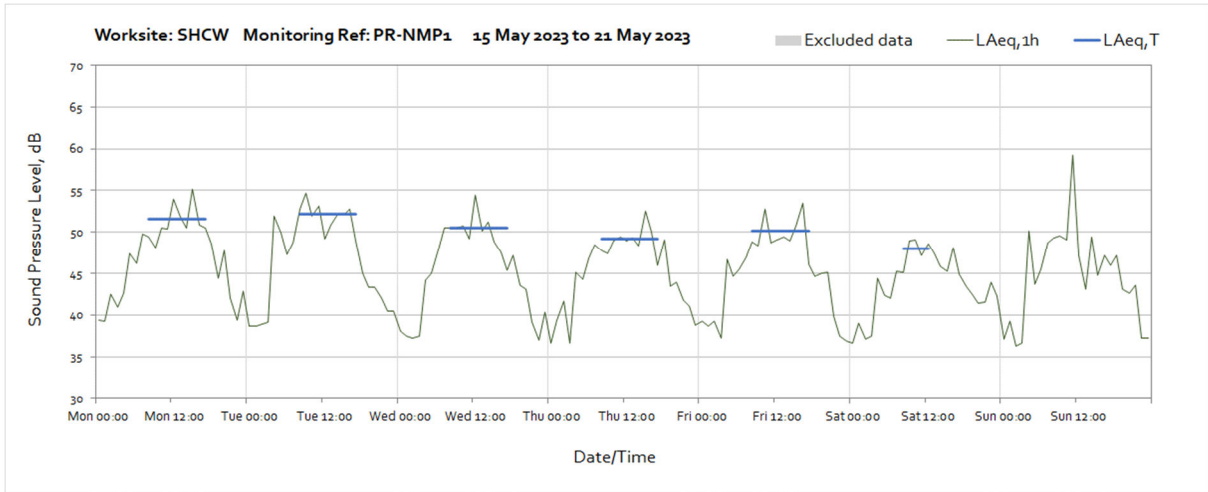


Worksite: SHCW – Monitoring Ref: PR-NMP1

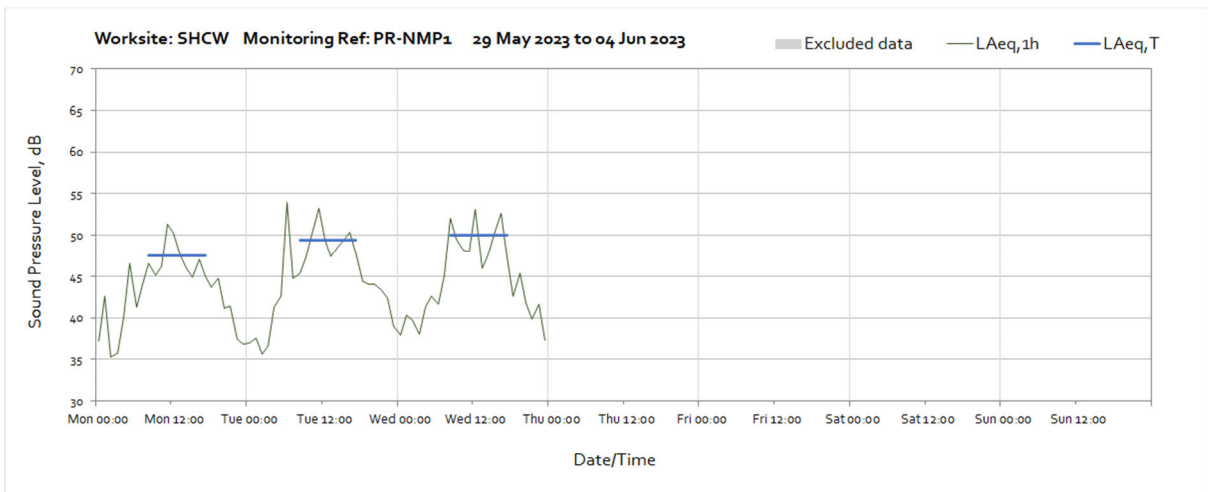


Note: Missing data between 01:00 and 02:00 on Monday 1st May was due to an automatic system check. Missing data between 12:00 and 13:00 on Tuesday 2nd May was due to monitor maintenance.

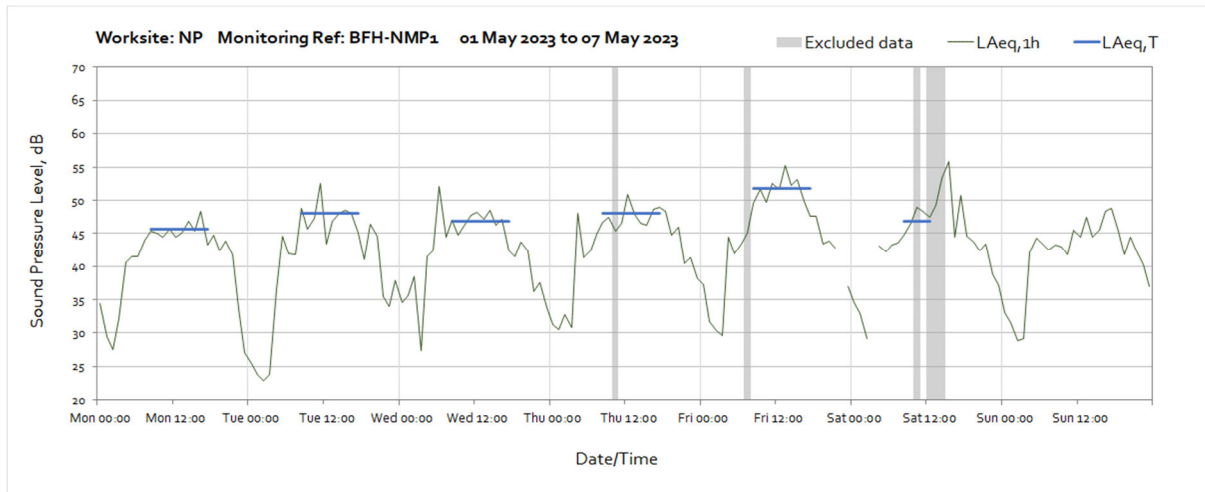




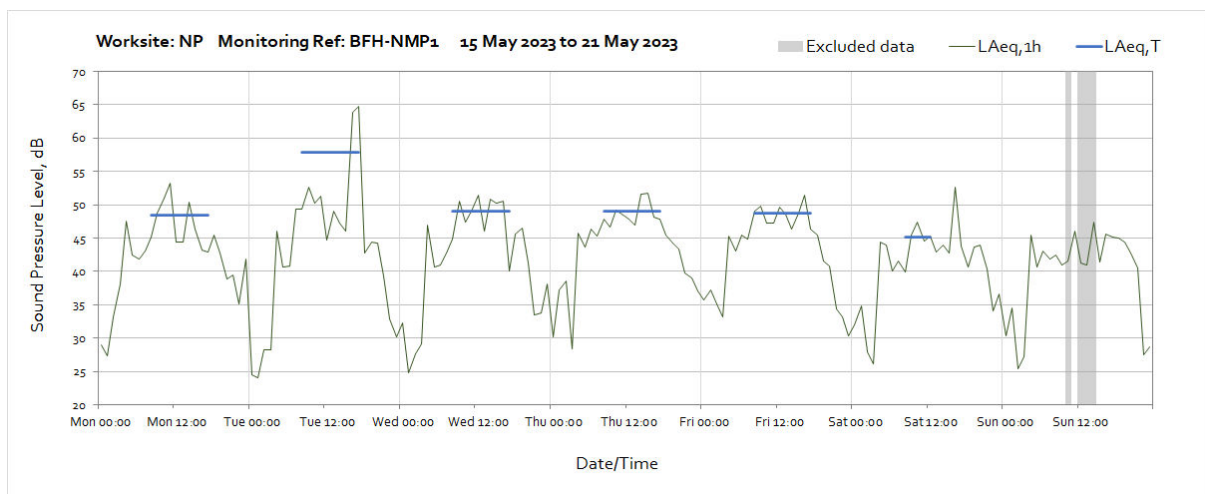
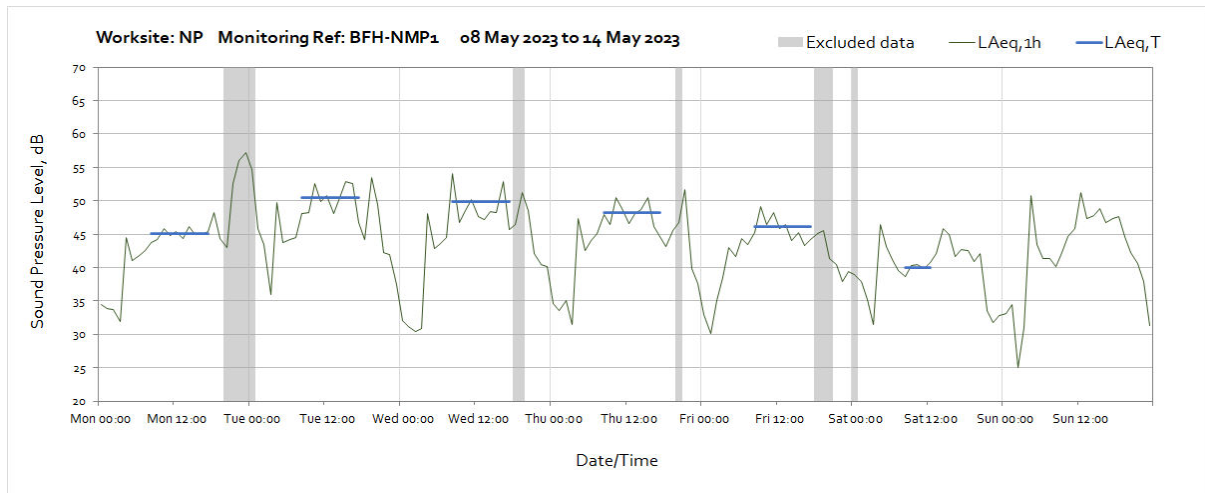
Note: Missing data between 10:00 and 11:00 on Wednesday 24th May was due to monitor maintenance.

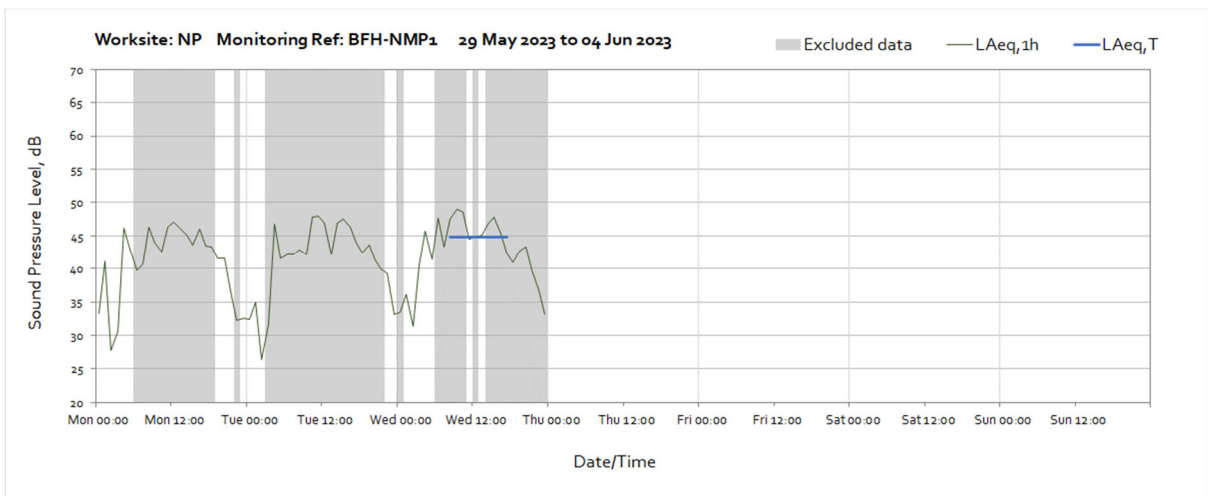
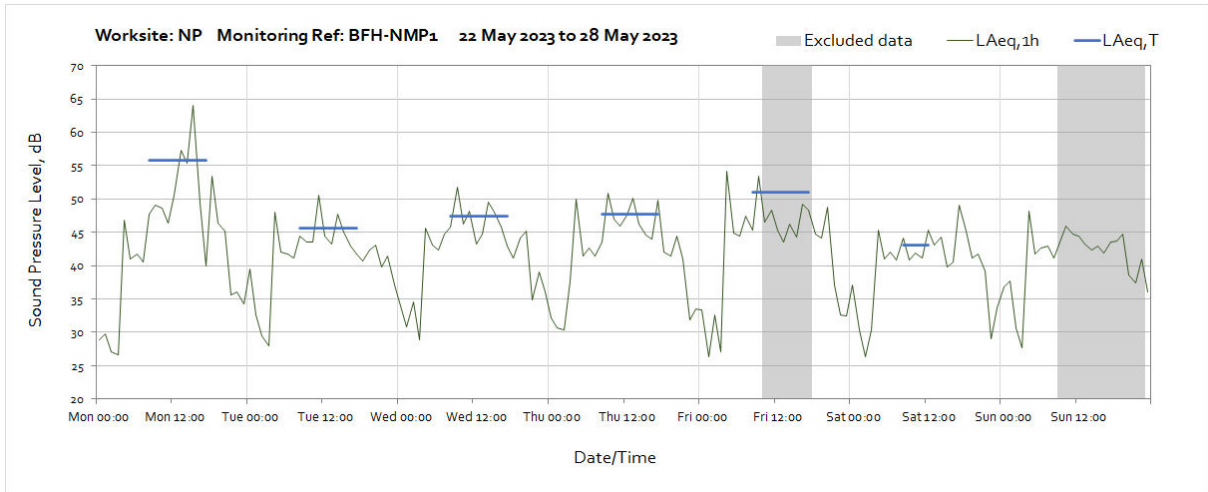


Worksite: NP – Monitoring Ref: BFH-NMP1

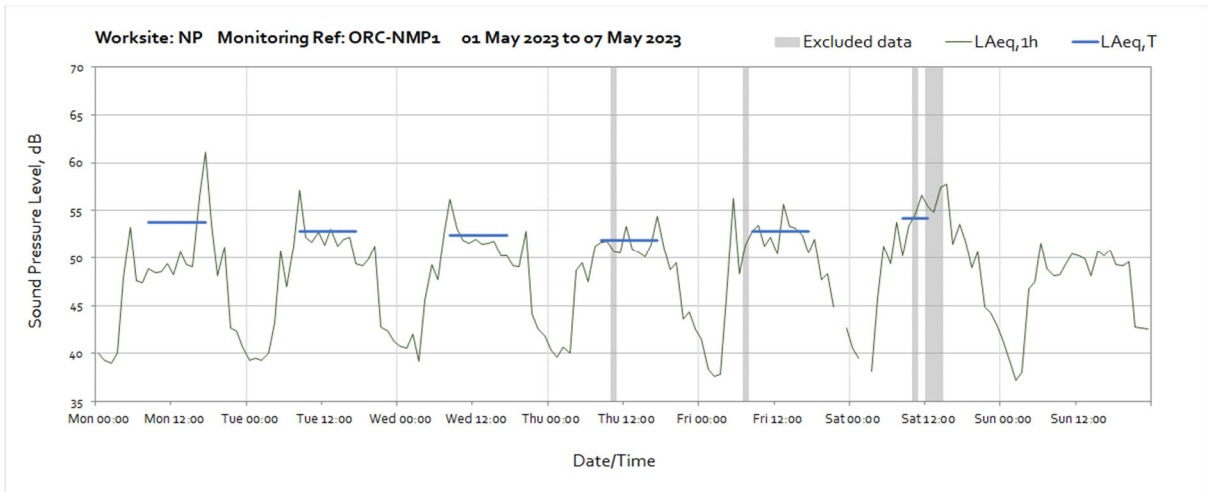


Note: Missing data between 22:00 and 23:00 on Friday 5th of May and between 03:00 and 04:00 on Saturday 6th May was due to a communication error between the server and the monitoring system.

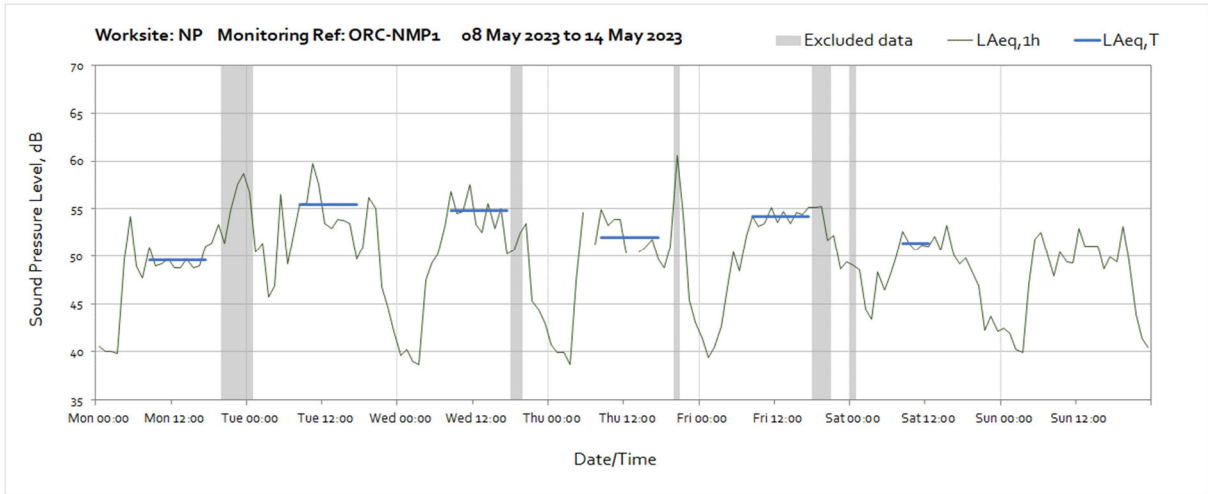




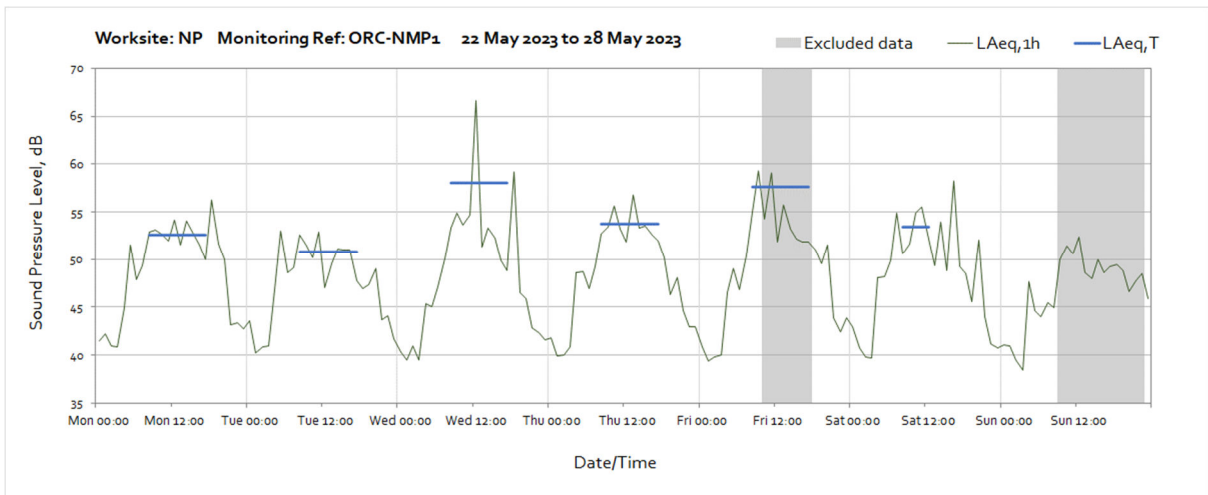
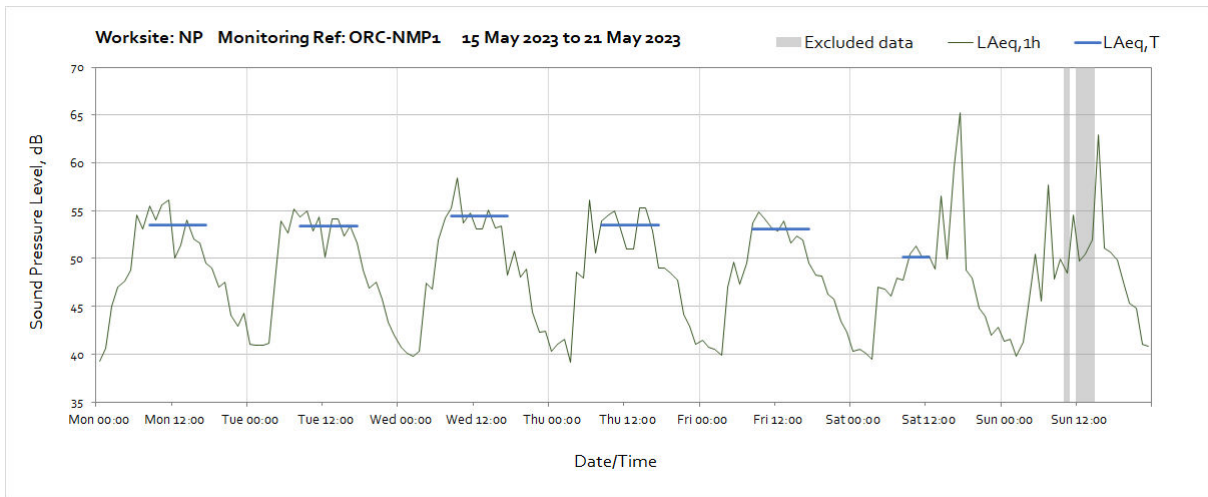
Worksite: NP – Monitoring Ref: ORC-NMP1

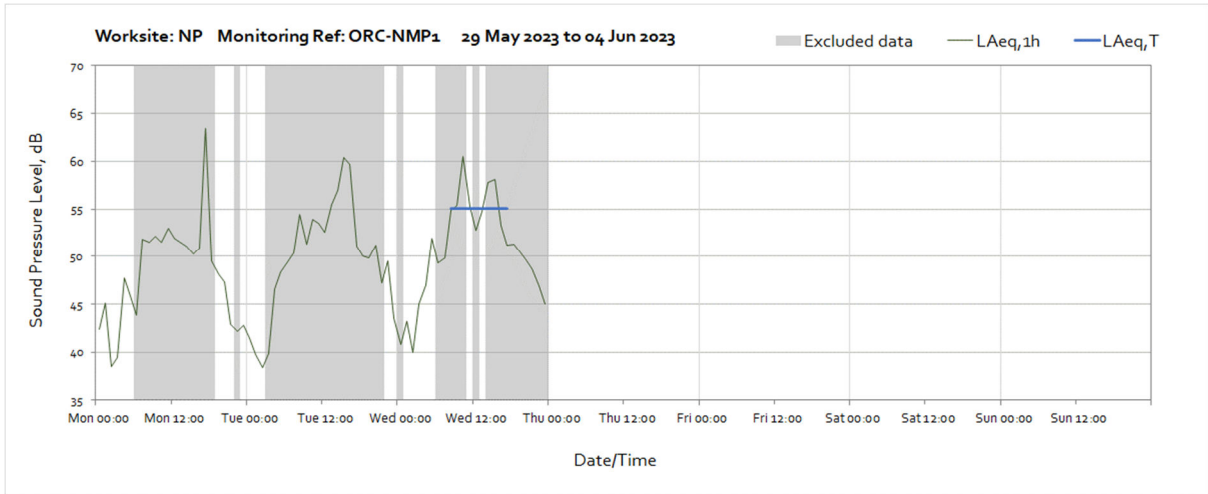


Note: Missing data between 22:00 and 23:00 on Friday 5th May and between 02:00 and 03:00 on Saturday 6th May was due to a communication error between the server and the monitoring system.

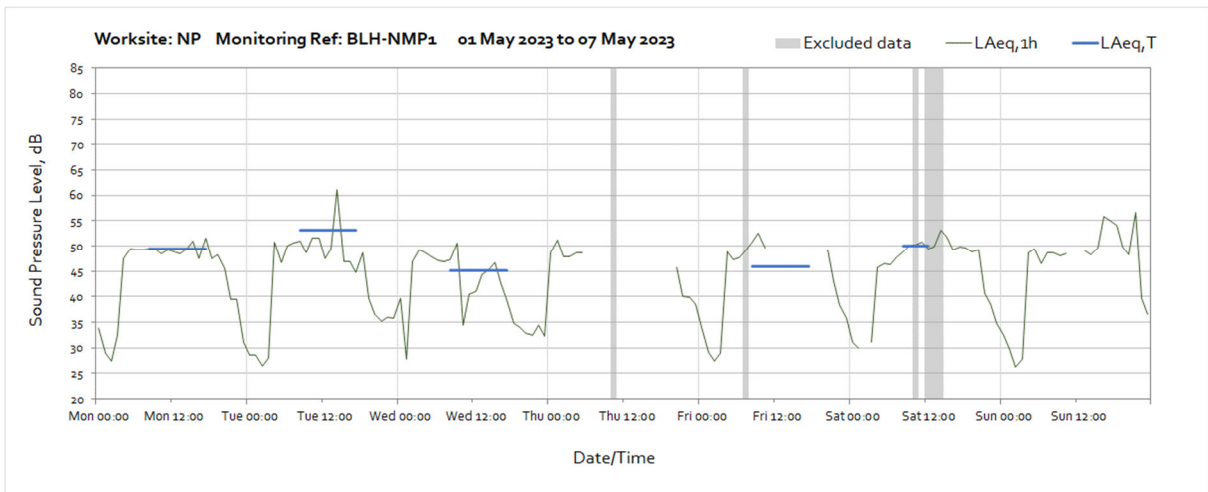


Note: Missing data between 06:00 and 07:00 and 13:00 and 14:00 on Thursday 11th May was due to a communication error between the server and the monitoring system.

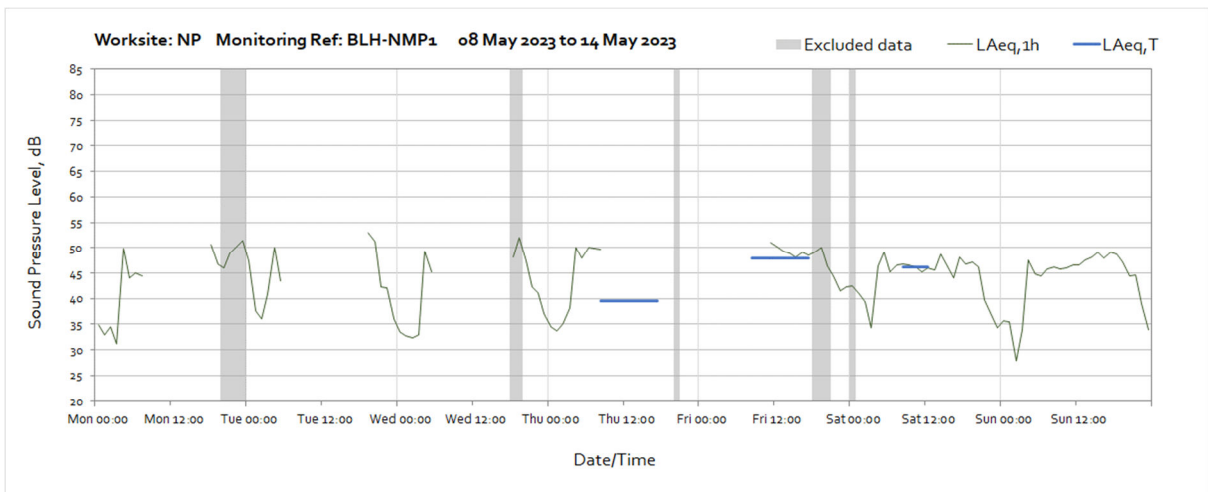




Worksite: NP – Monitoring Ref: BLH-NMP1

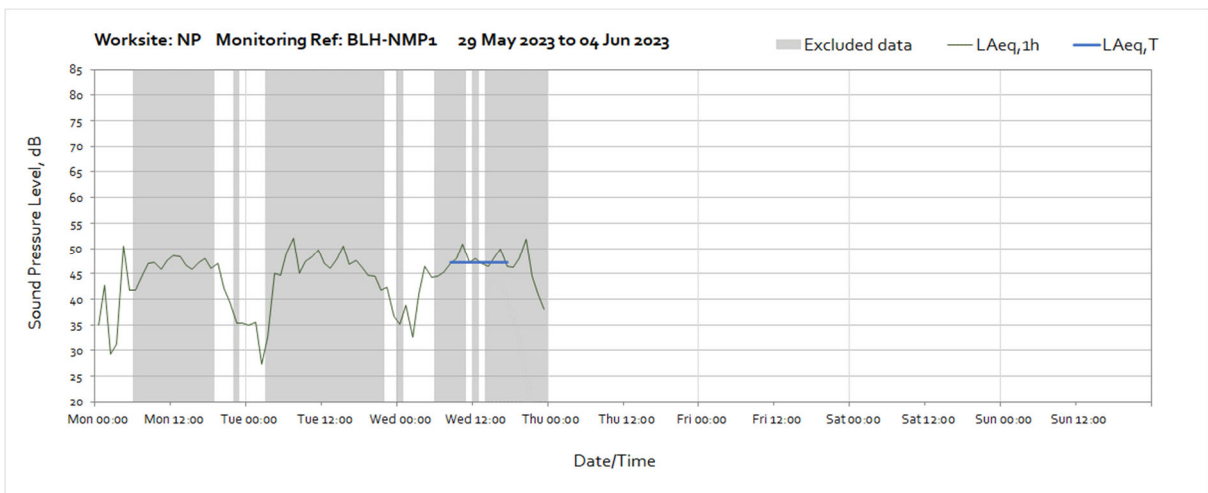
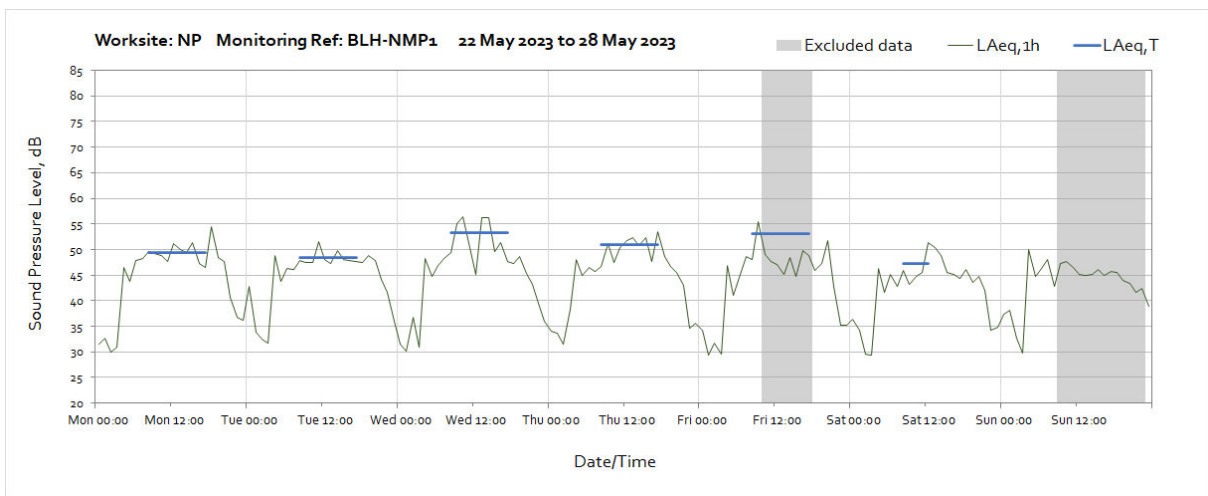
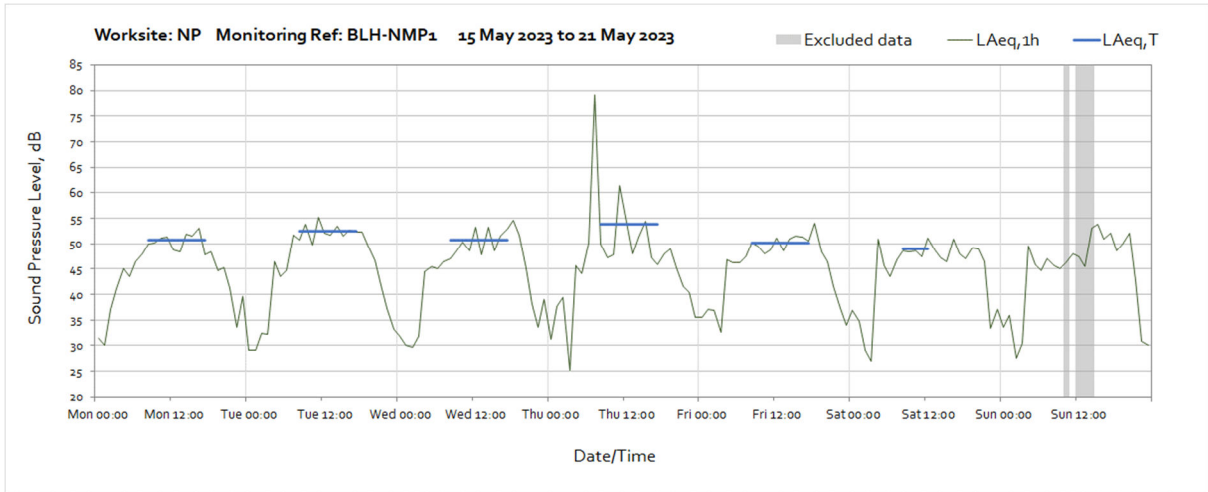


Note: Missing data throughout the week was due to monitor malfunctioning.

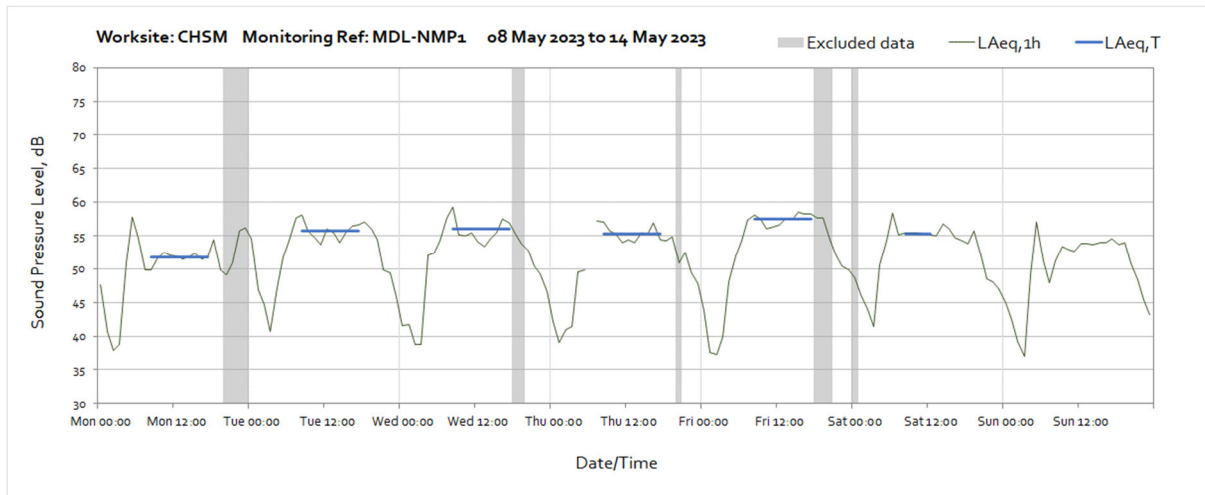
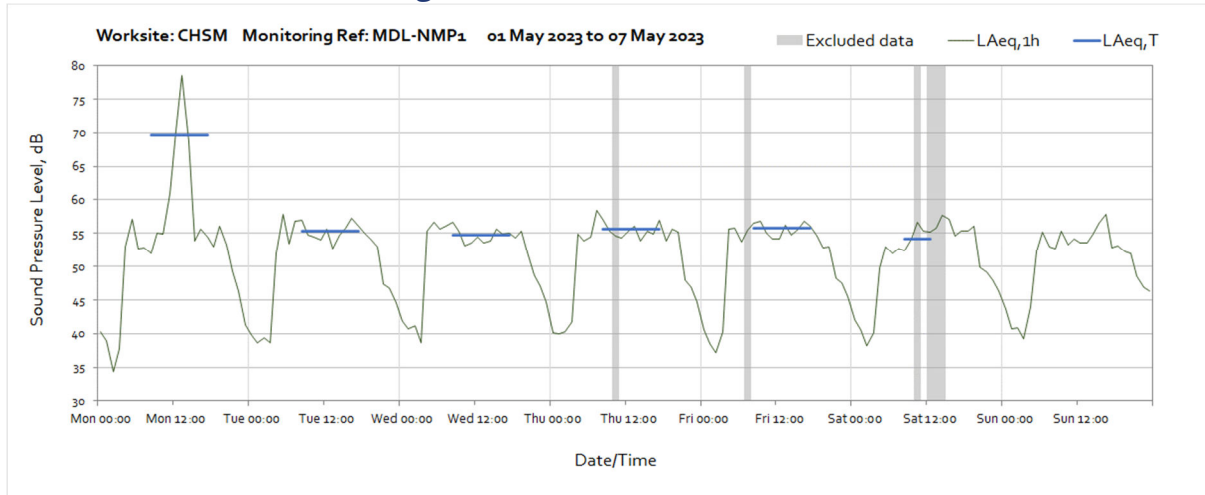


Note: Missing data throughout the week was due to monitor malfunctioning.

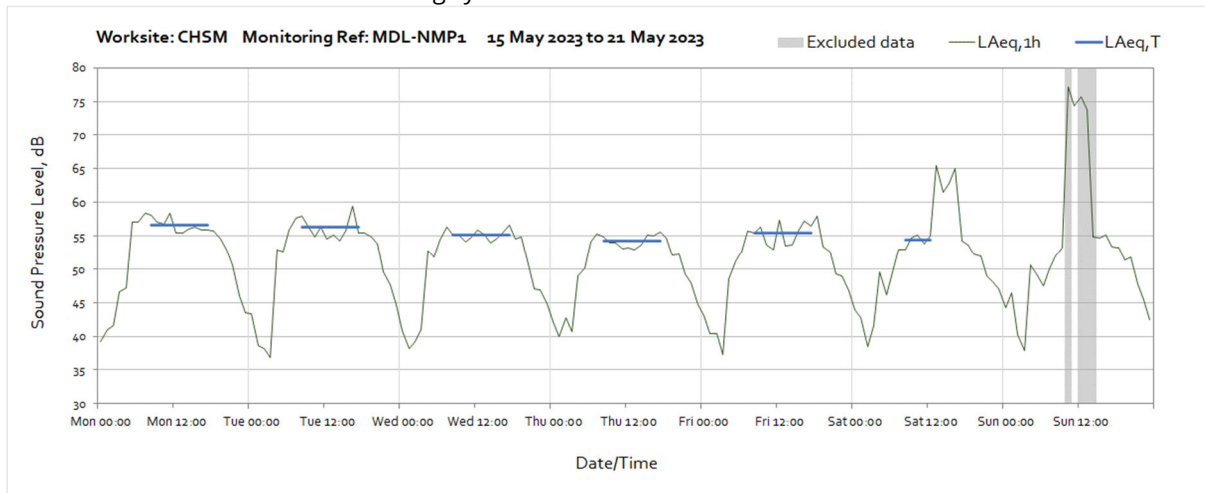
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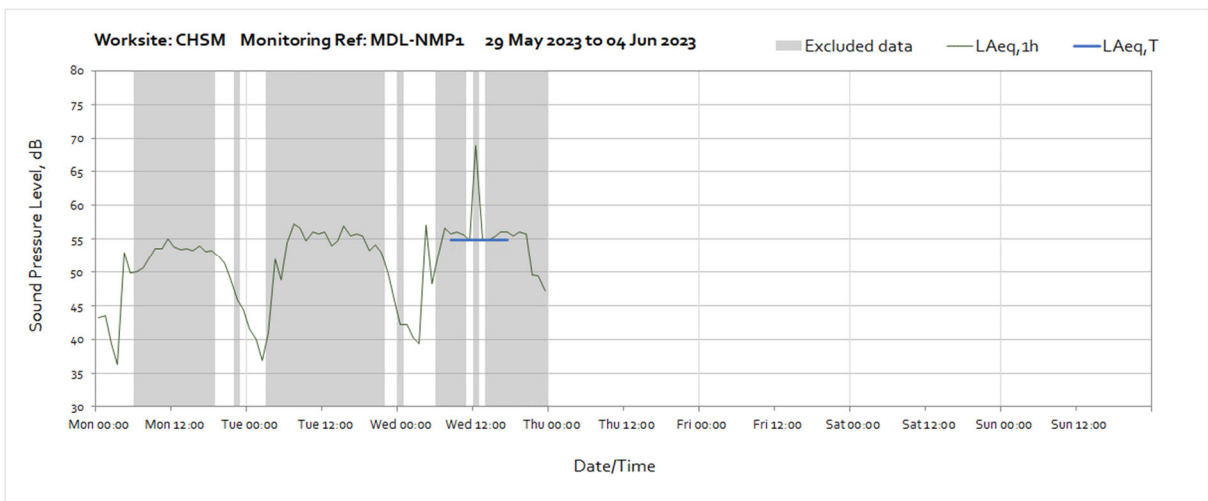
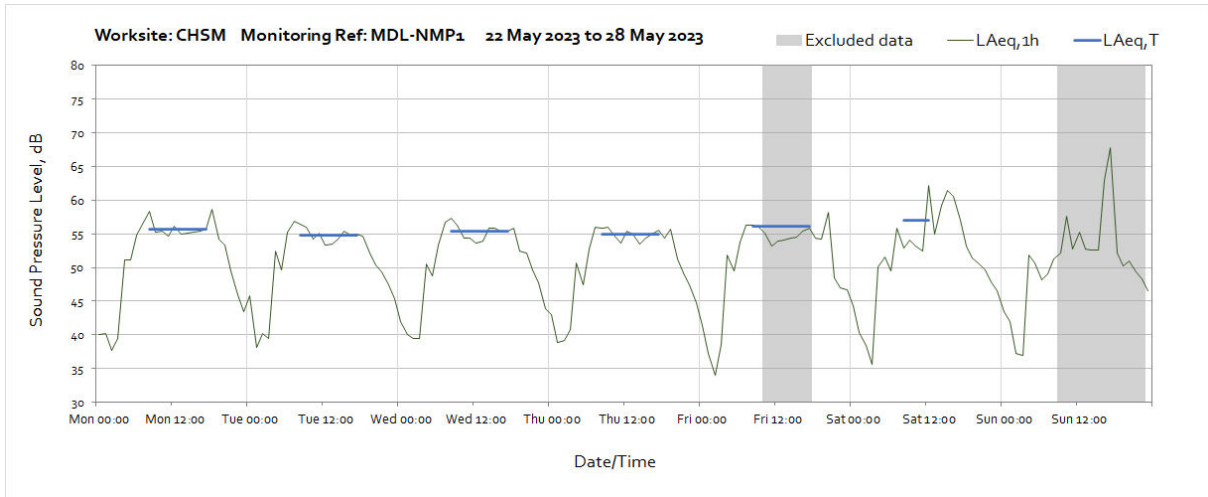


Worksite: CHSM - Monitoring Ref: MDL-NMP1

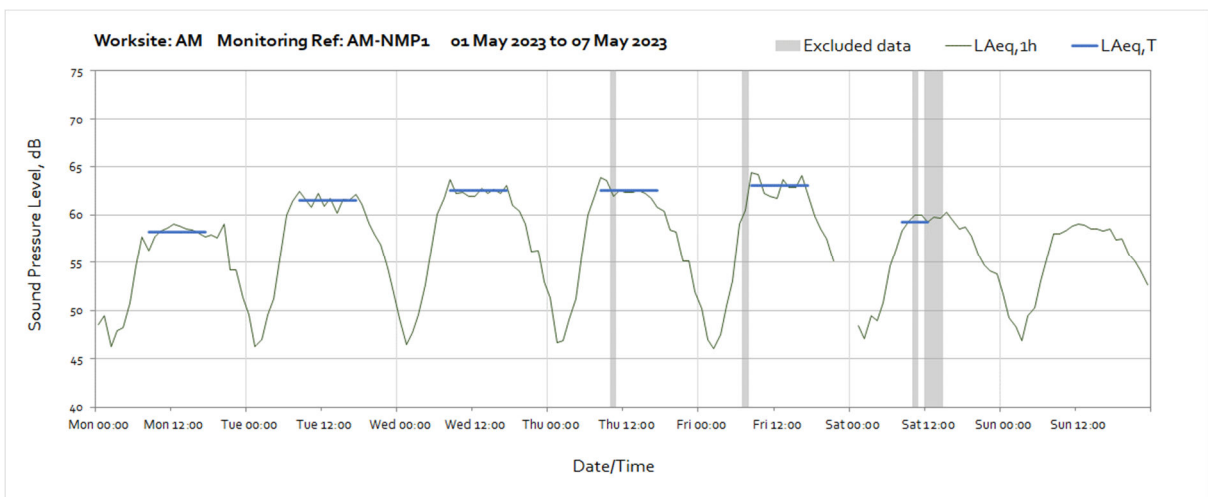


Note: Missing data between 06:00 and 07:00 on Thursday 11th May was due to a communication error between the server and the monitoring system.

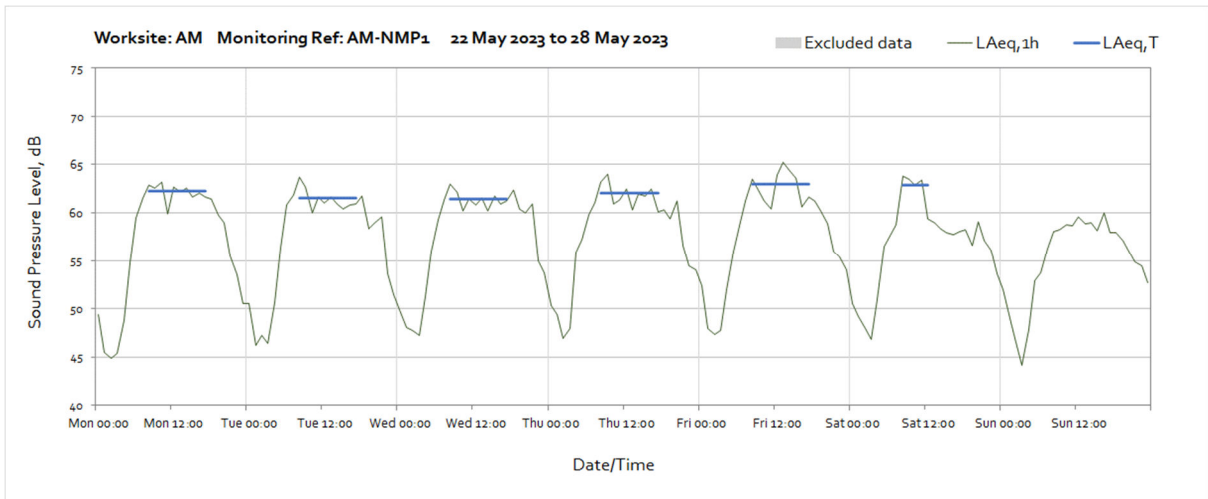
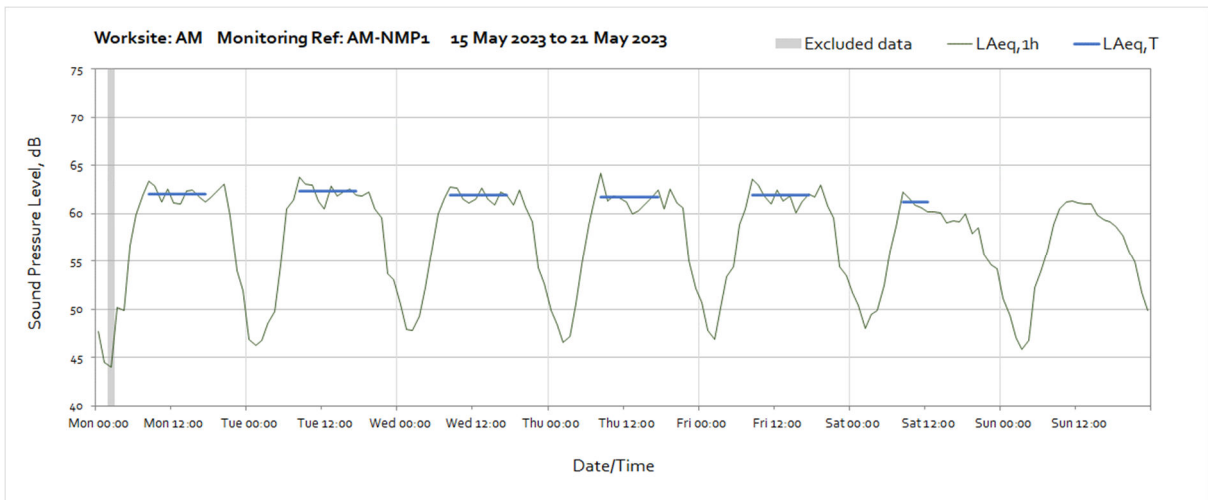
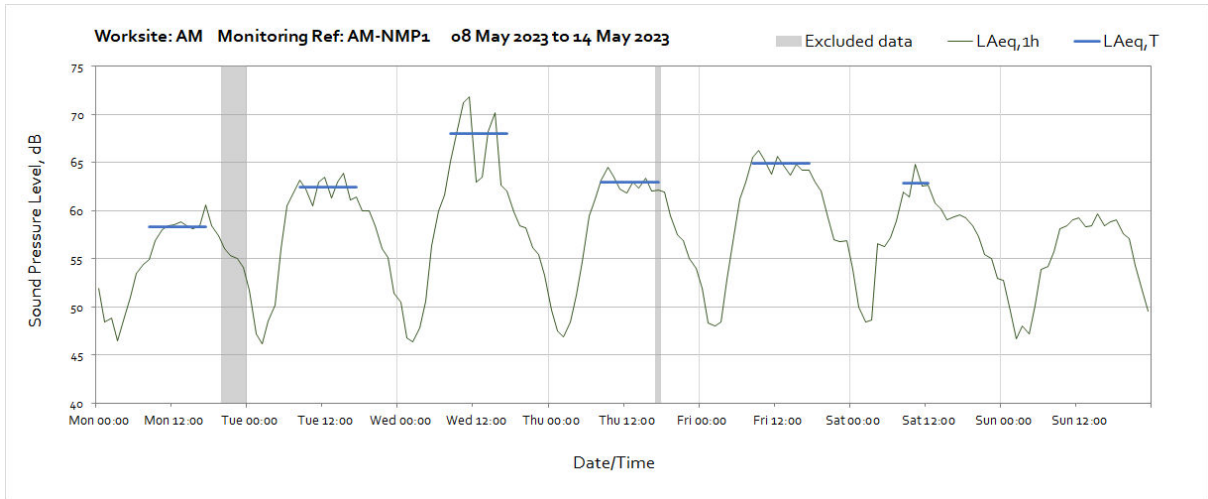


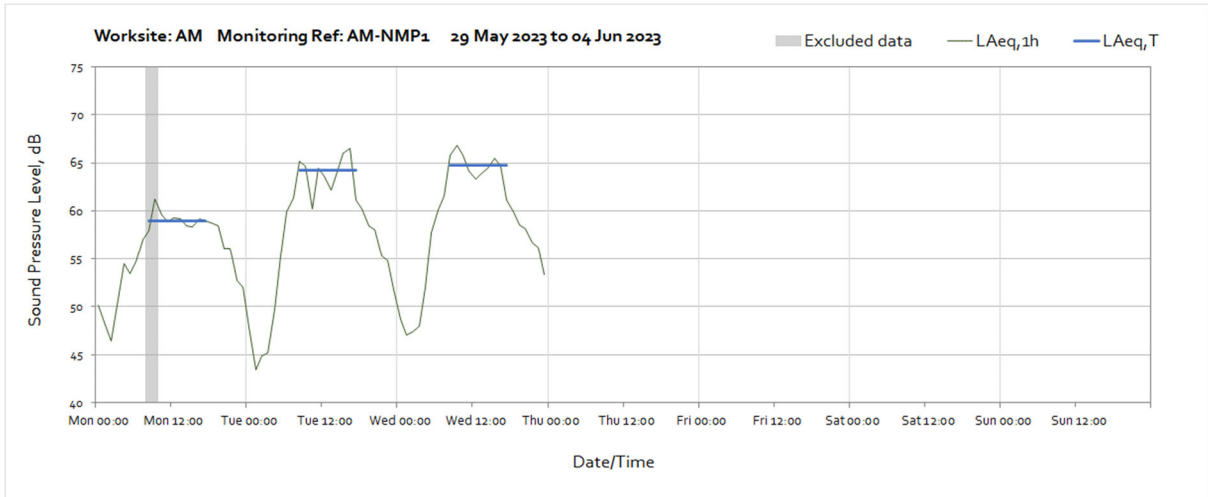


Worksite: AM - Monitoring Ref: AM-NMP1

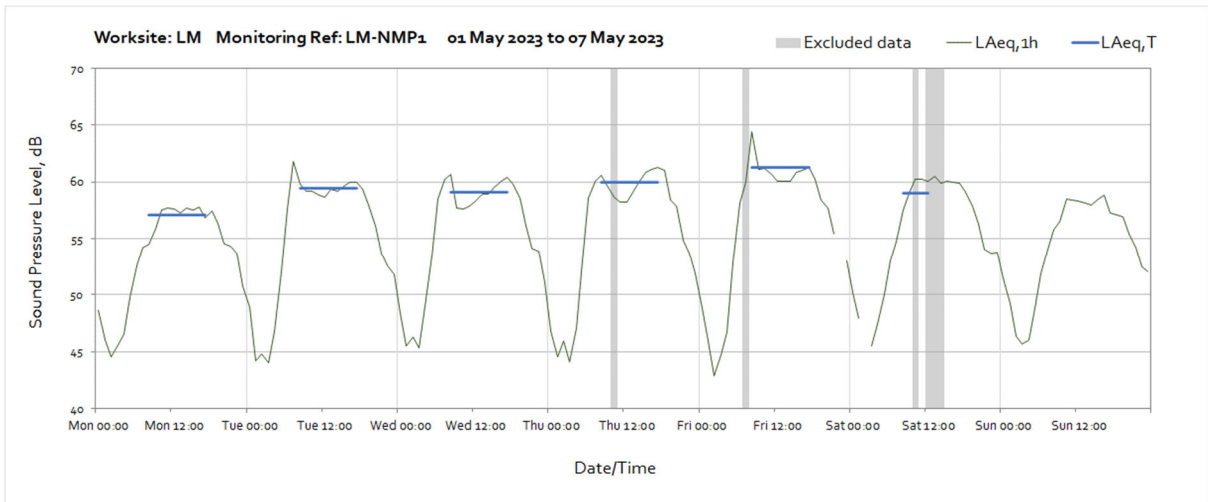


Note: Missing data between 22:00 on Friday 5th May until 01:00 on Saturday 6th May was due to a communication error between the server and the monitoring system.

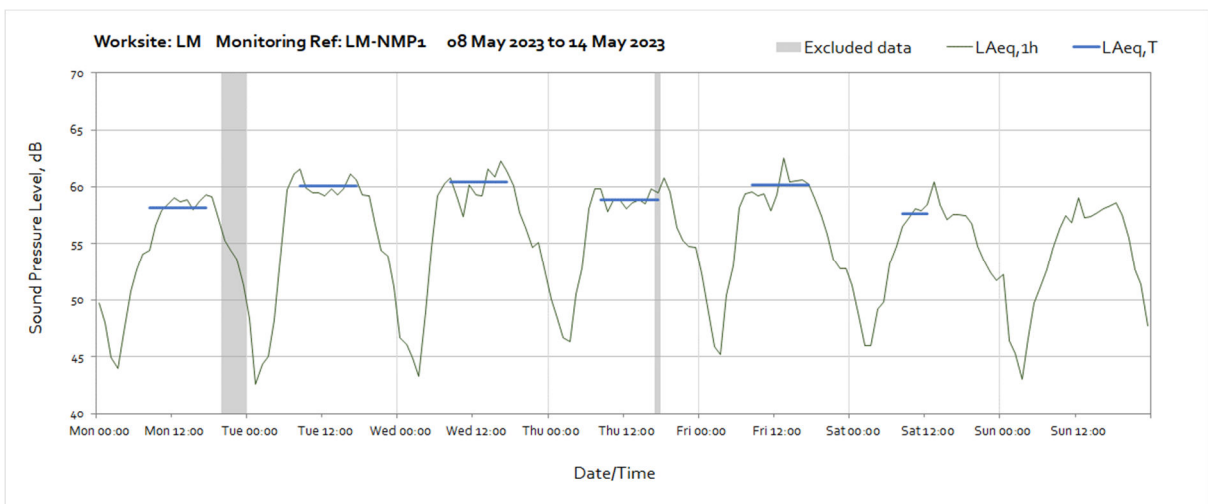


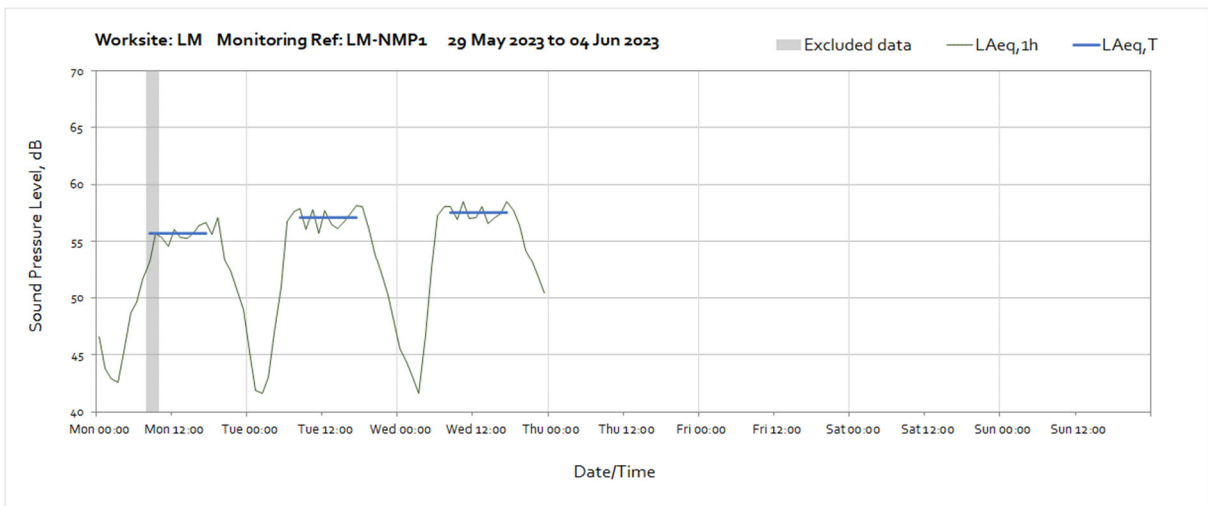
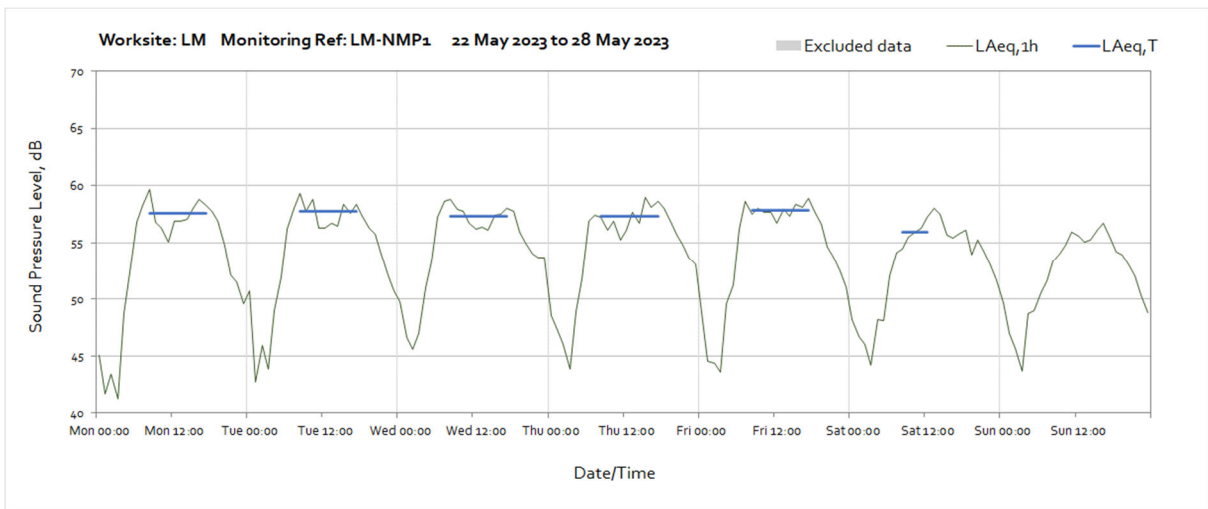
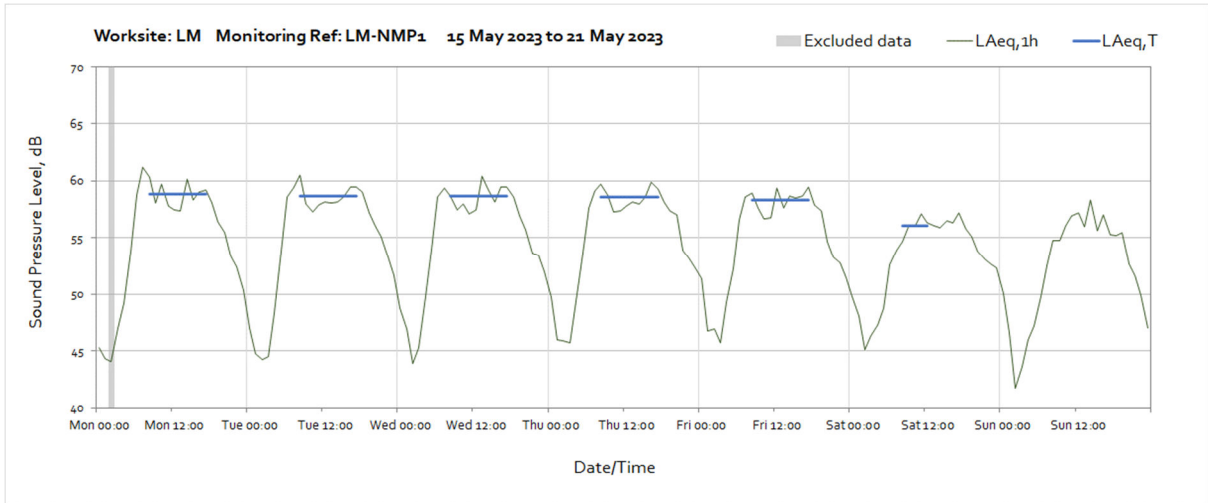


Worksite: LM – Monitoring Ref: LM-NMP1

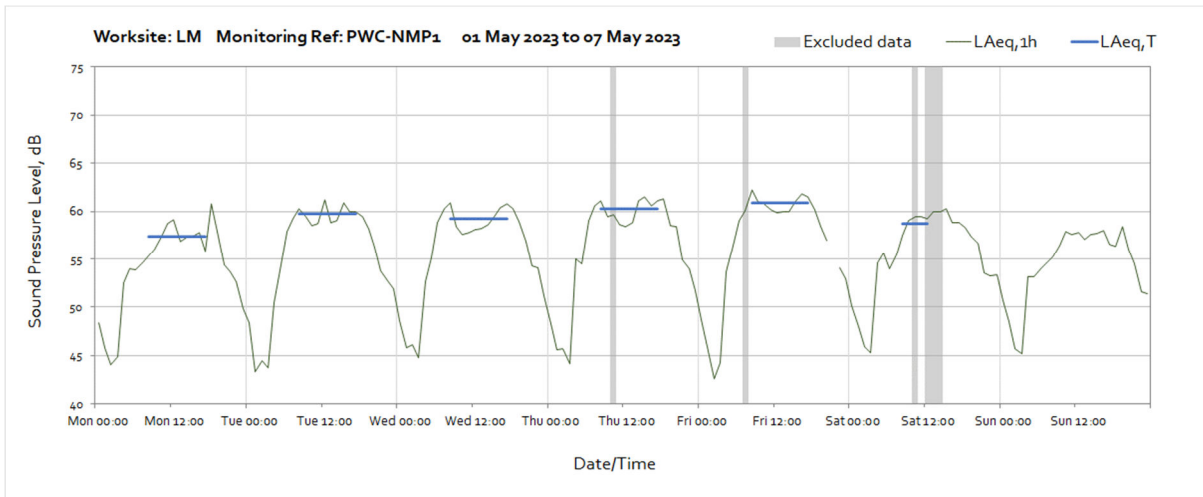


Note: Missing data between 22:00 and 23:00 on Friday 5th May and between 02:00 and 03:00 on Saturday 6th May was due to a communication error between the server and the monitoring system.

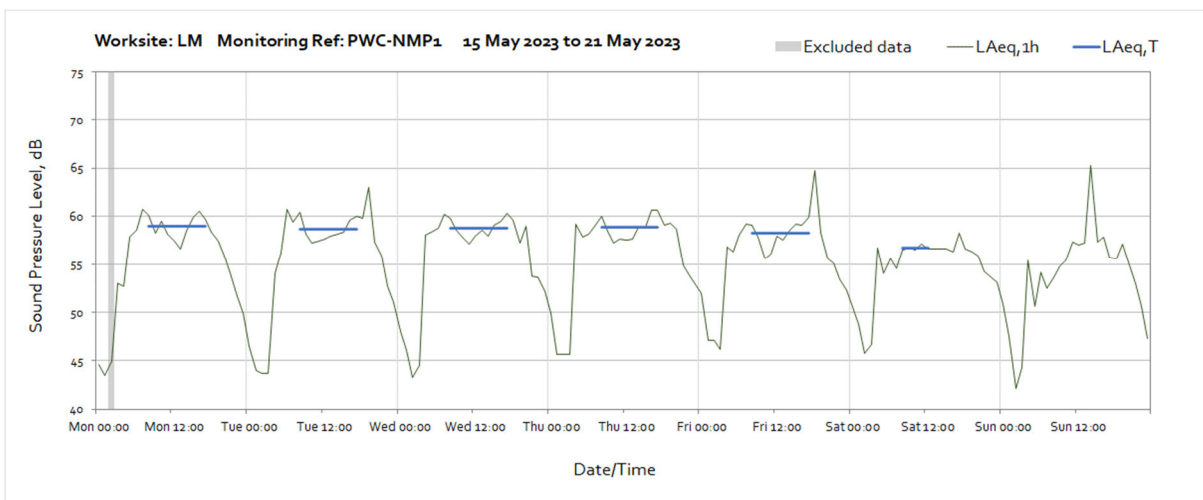
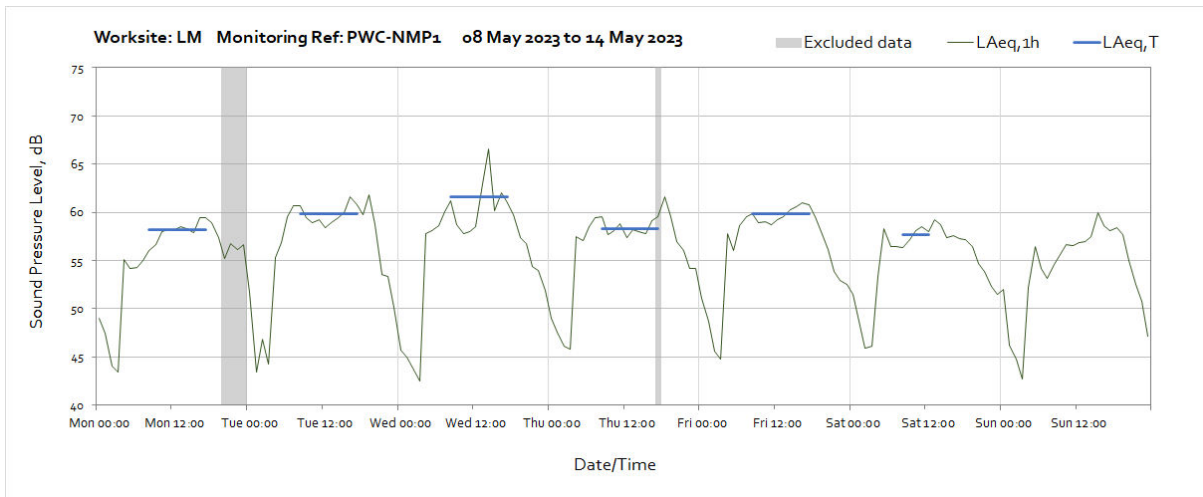




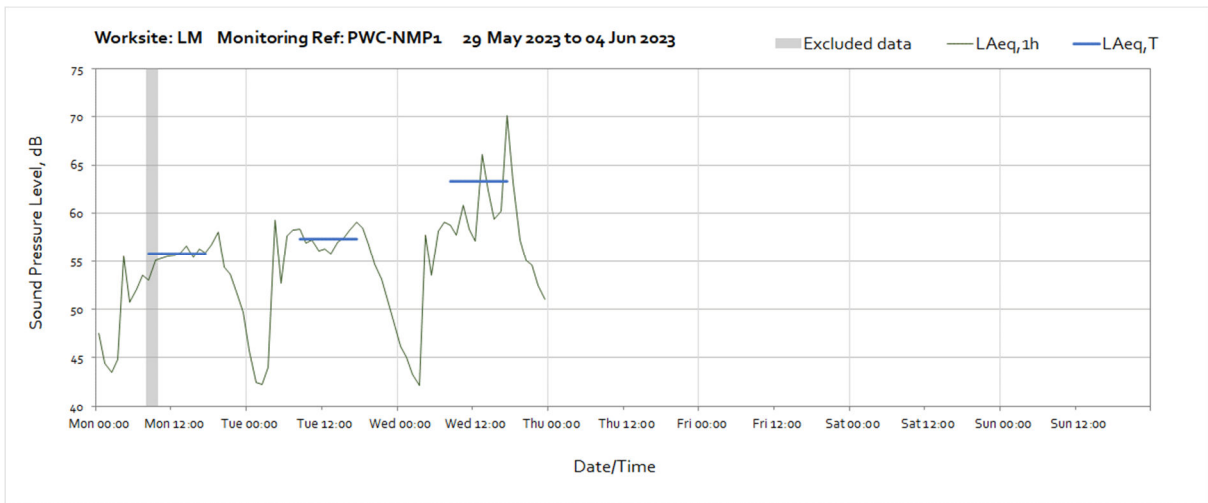
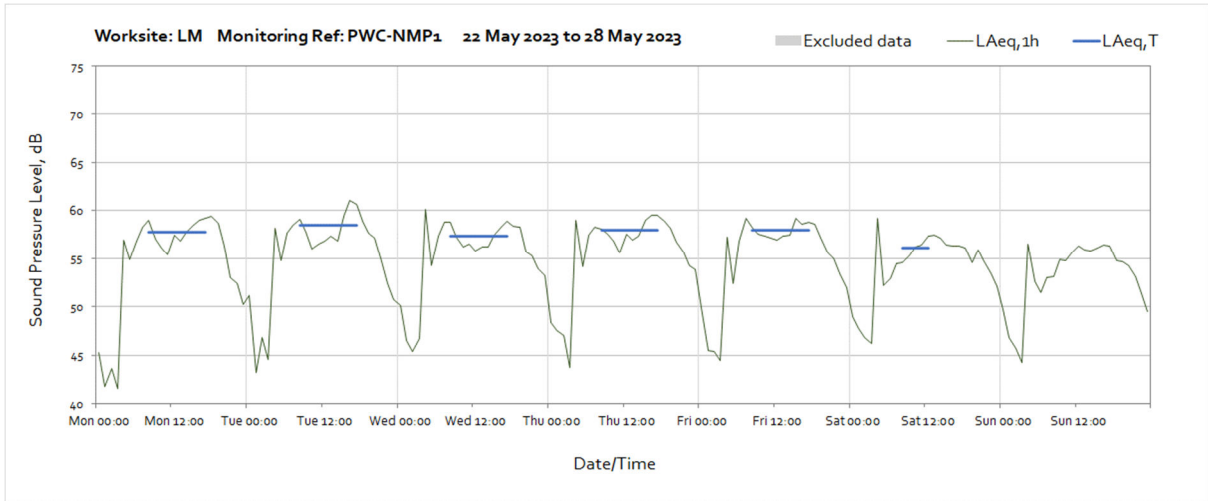
Worksite: LM – Monitoring Ref: PWC-NMP1



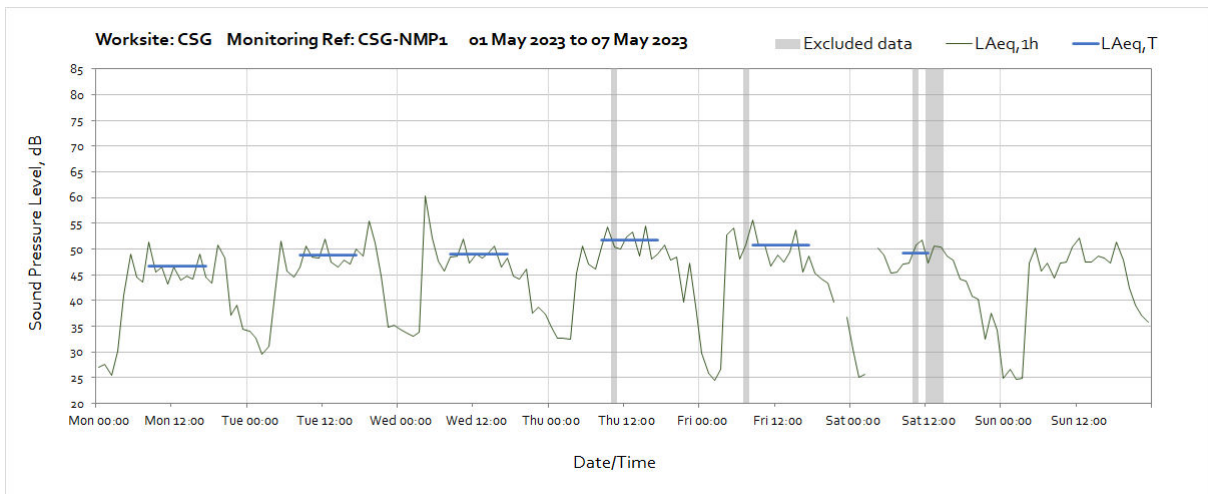
Note: Missing data between 21:00 and 22:00 on Friday 5th May was due to a communication error between the server and the monitoring system.



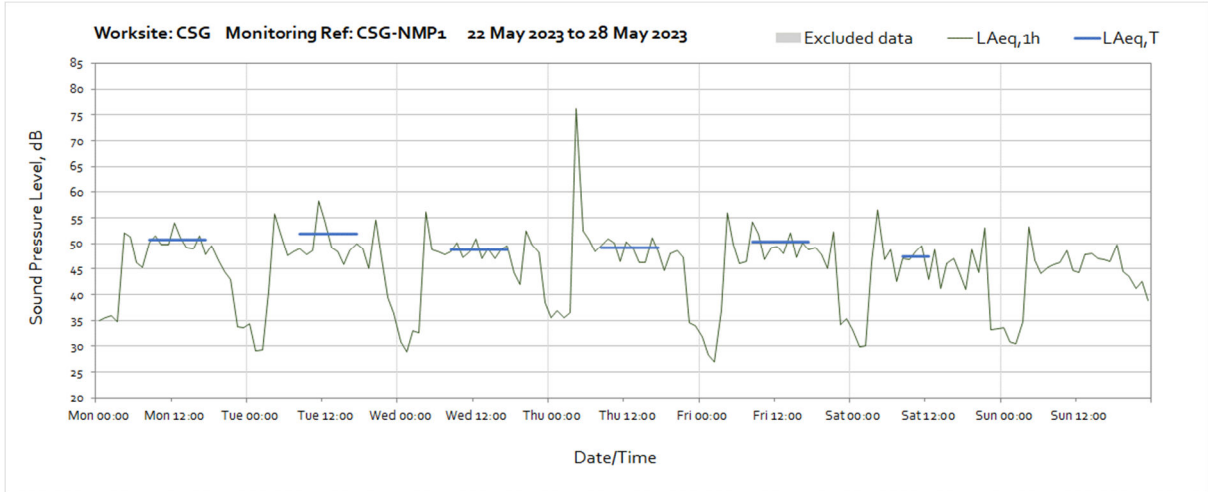
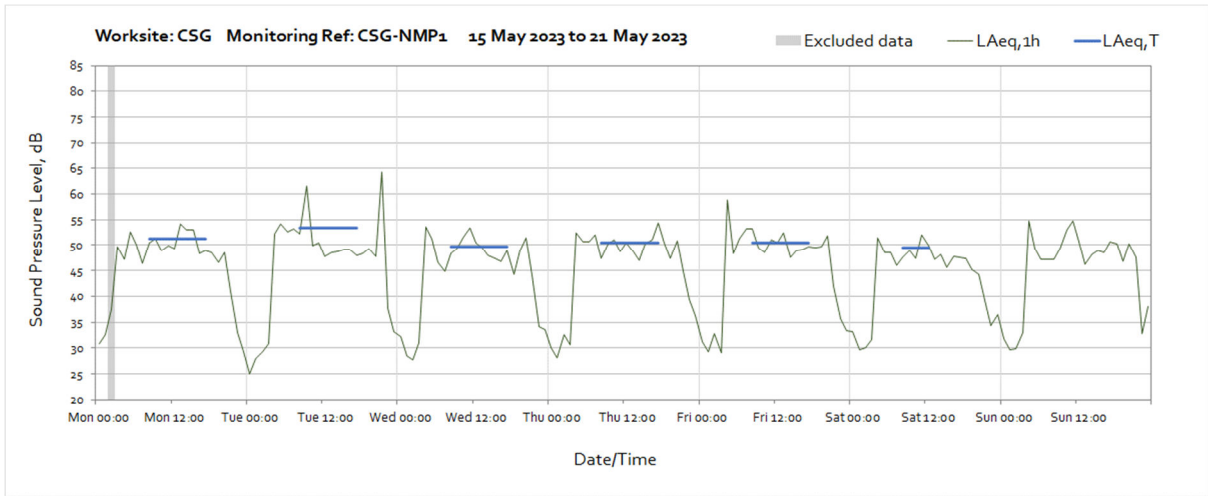
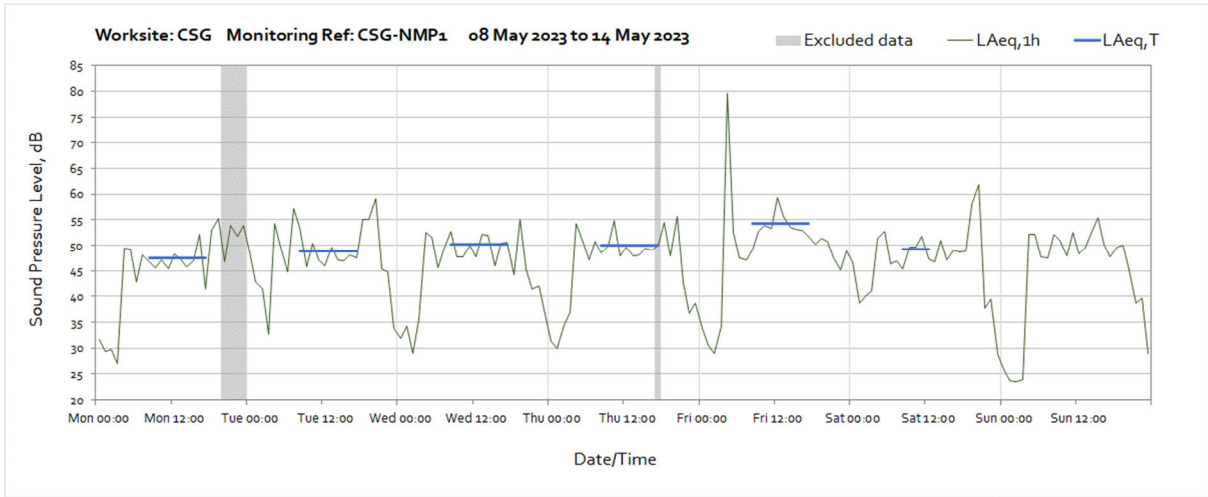
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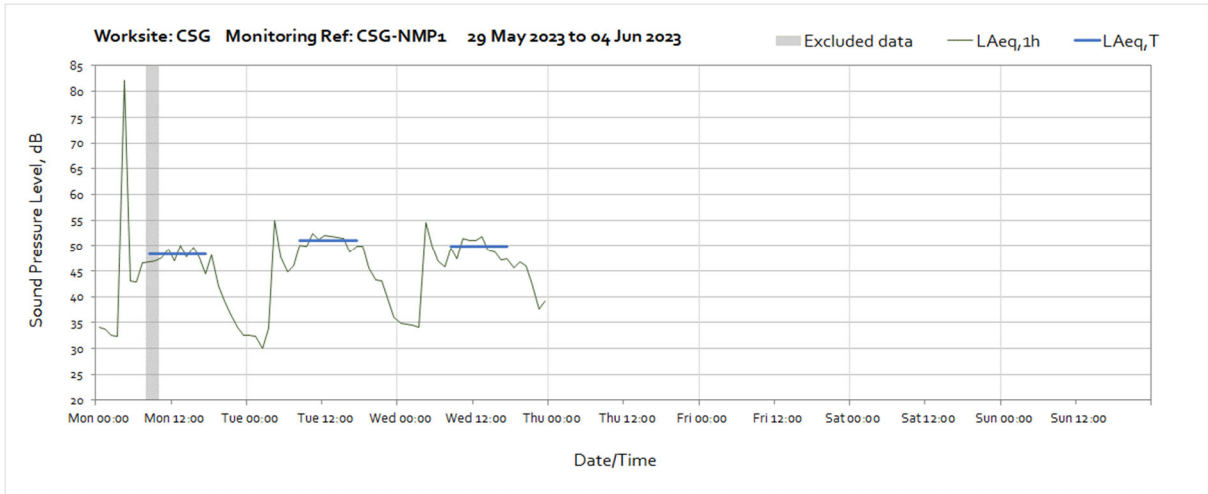


Worksite: CSG – Monitoring Ref: CSG-NMP1

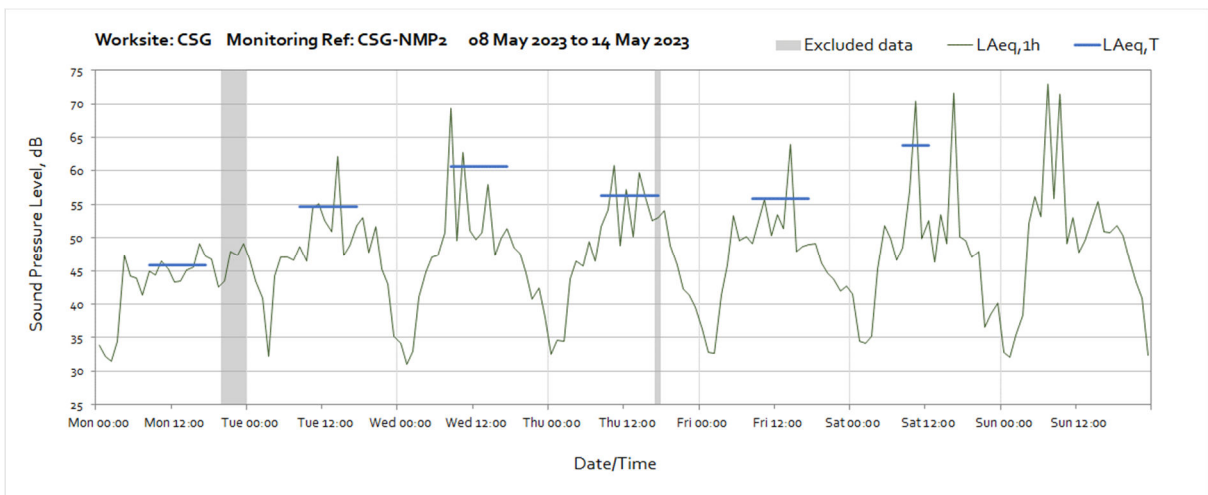
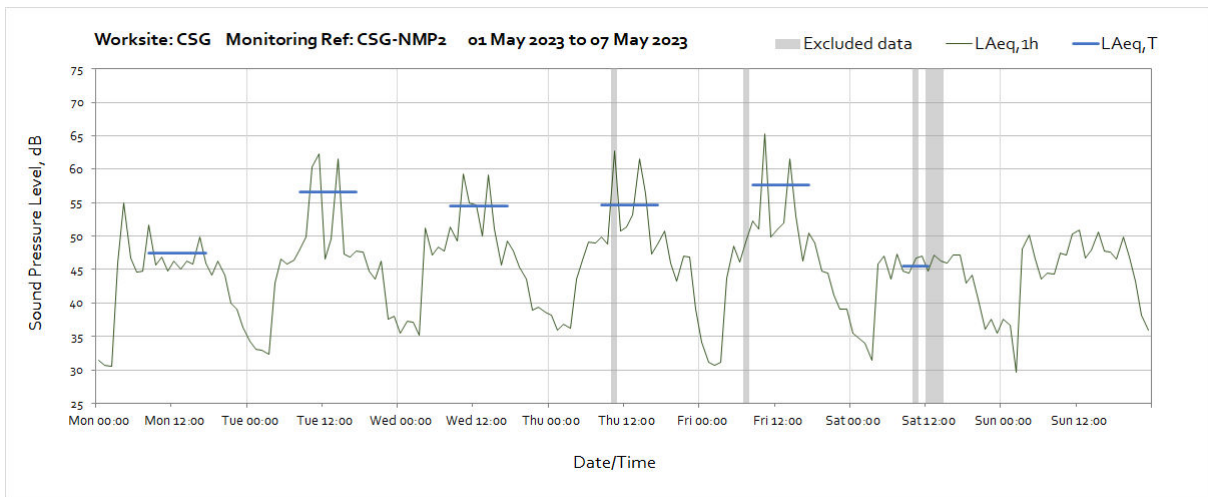


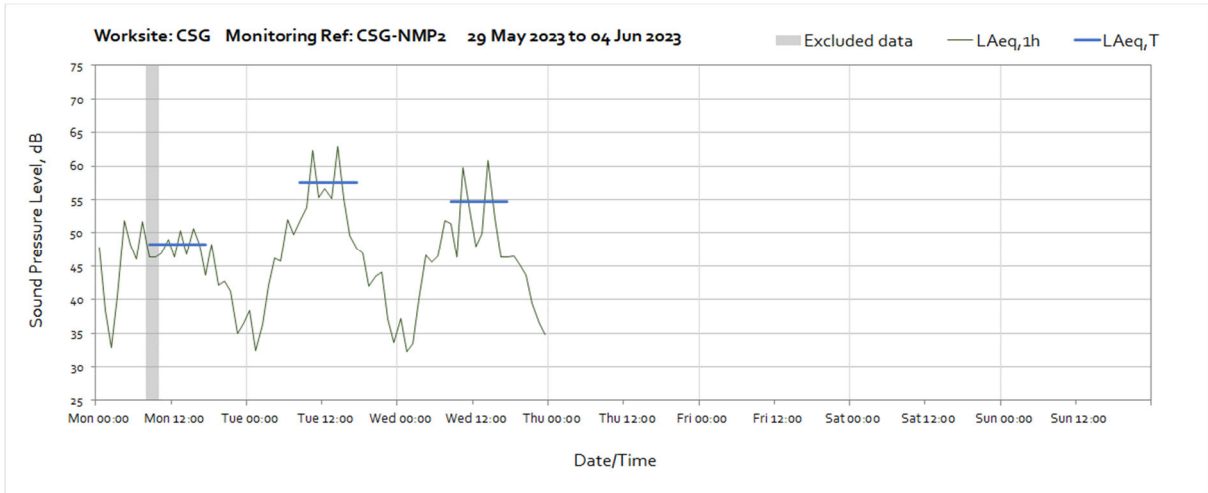
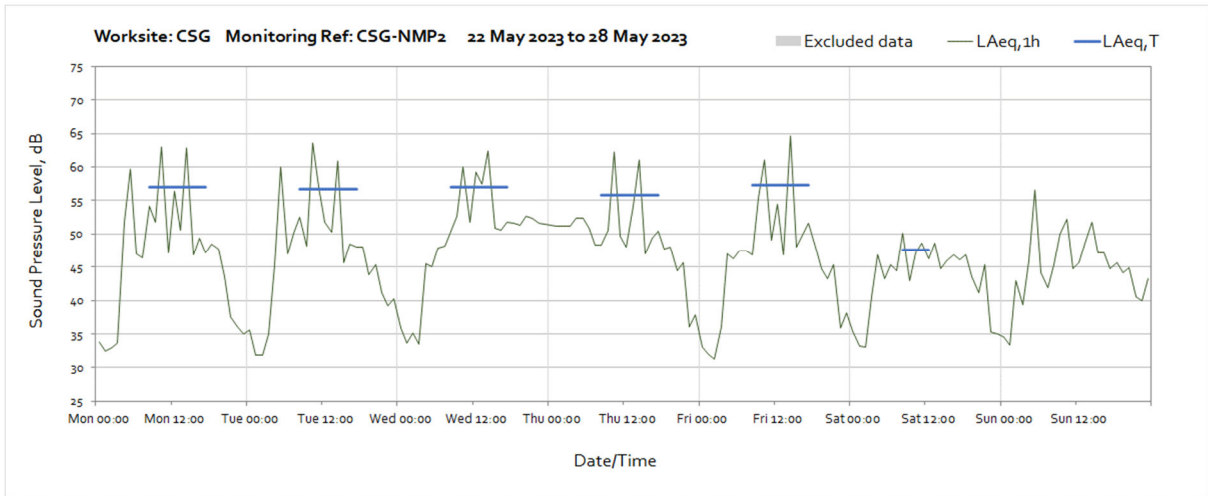
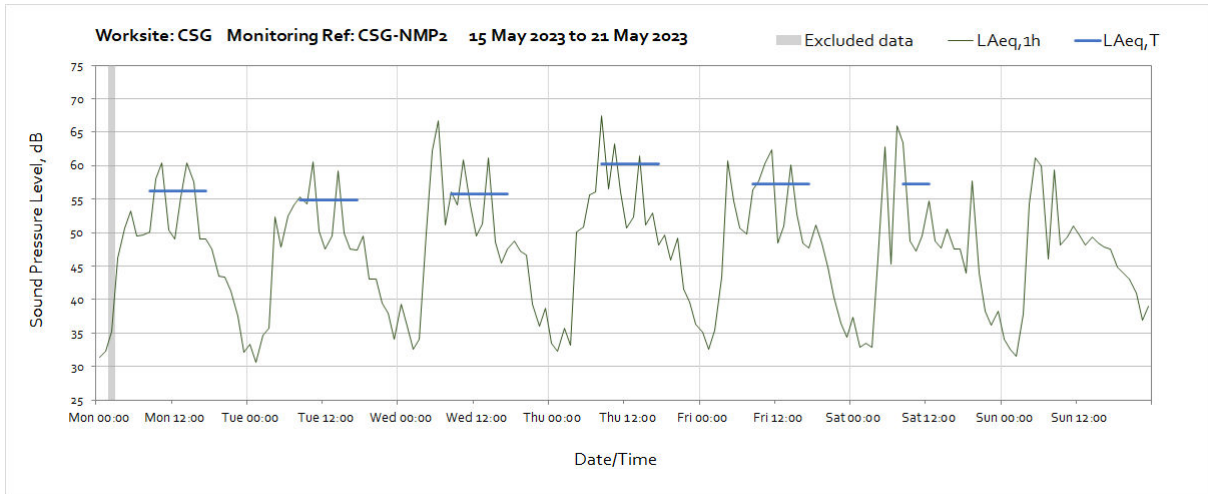
Note: Missing data between 22:00 and 23:00 on Friday 5th May and between 03:00 and 04:00 on Saturday 6th May was due to a communication error between the server and the monitoring system.



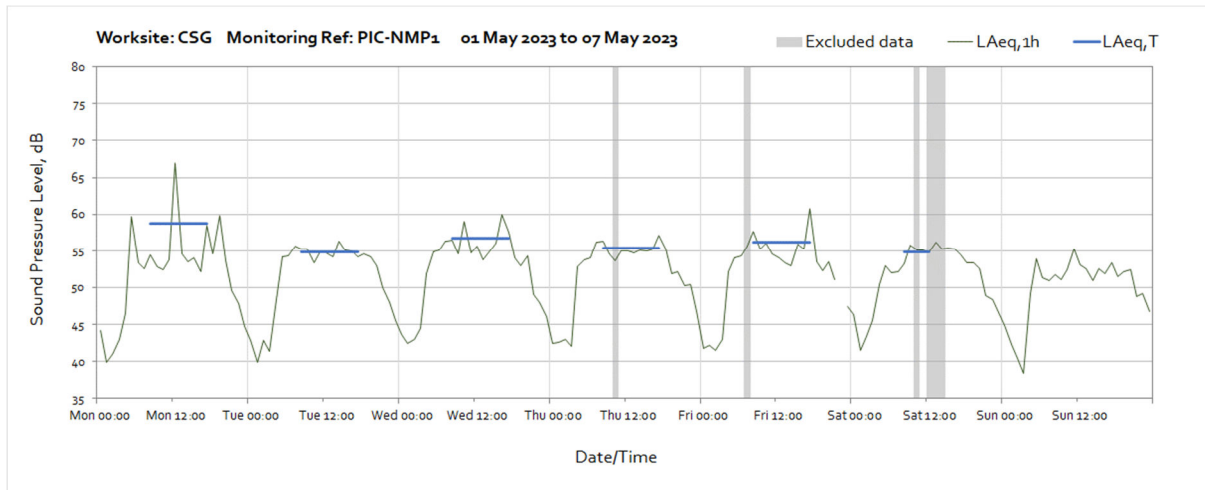


Worksite: CSG – Monitoring Ref: CSG-NMP2

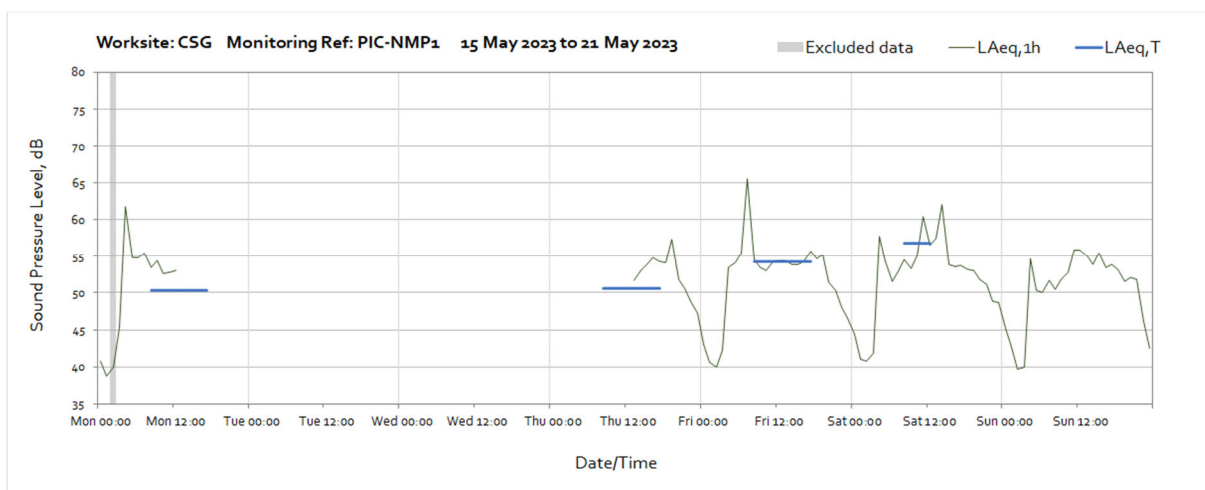
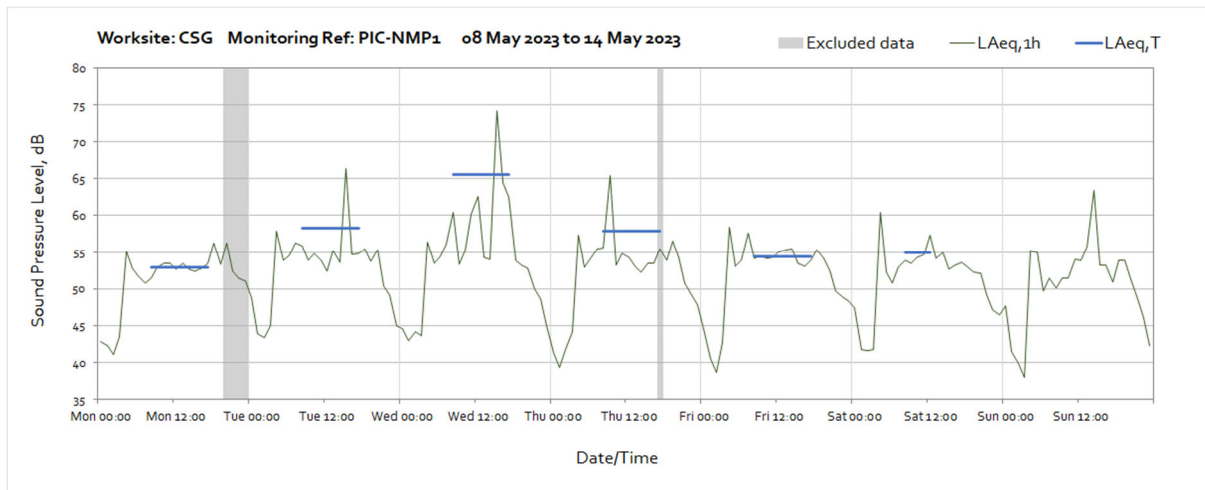




Worksite: CSG – Monitoring Ref: PIC-NMP1

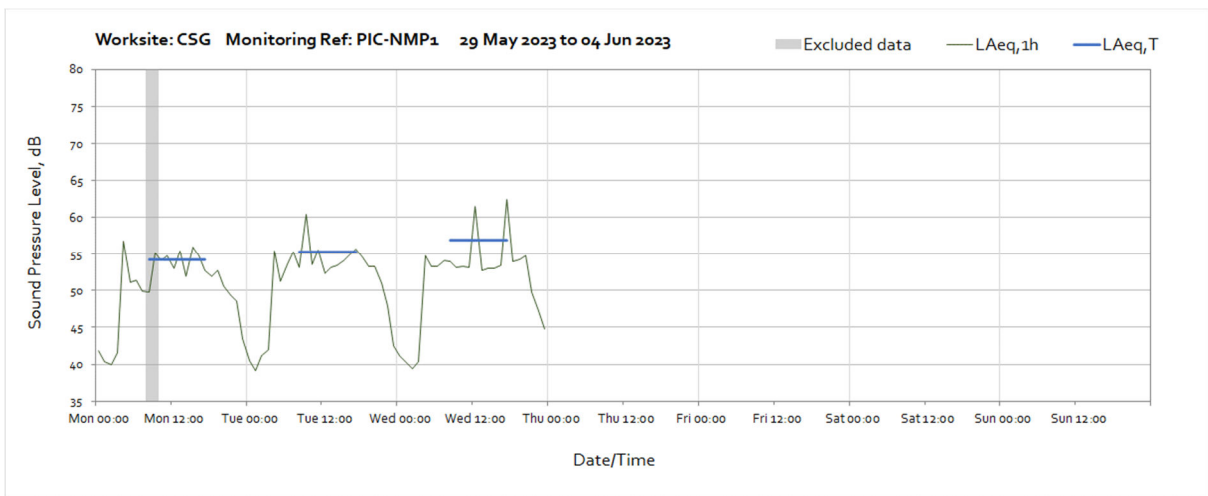
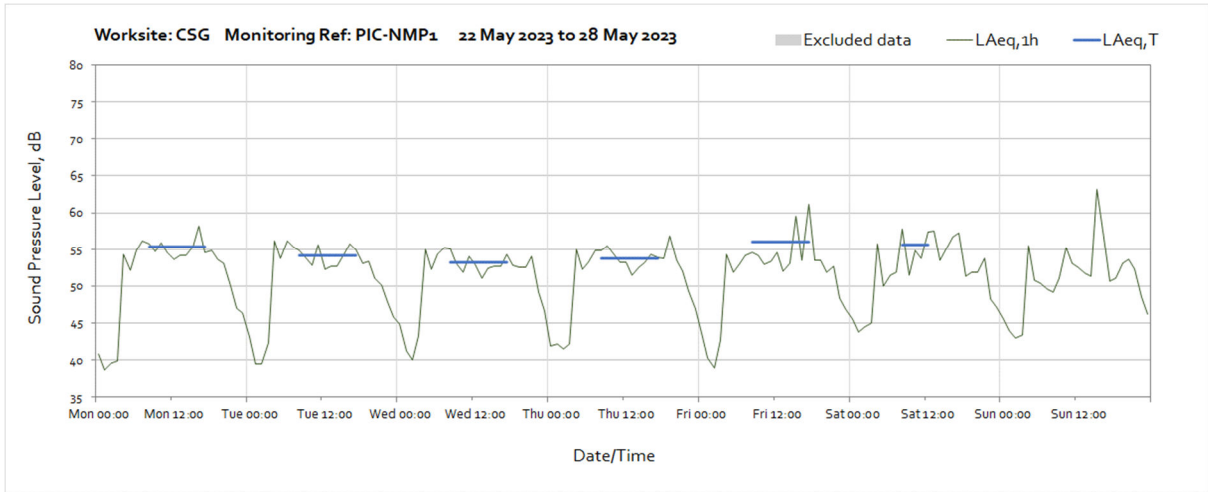


Note: Missing data between 22:00 and 23:00 on Friday 5th May was due to a communication error between the server and the monitoring system.

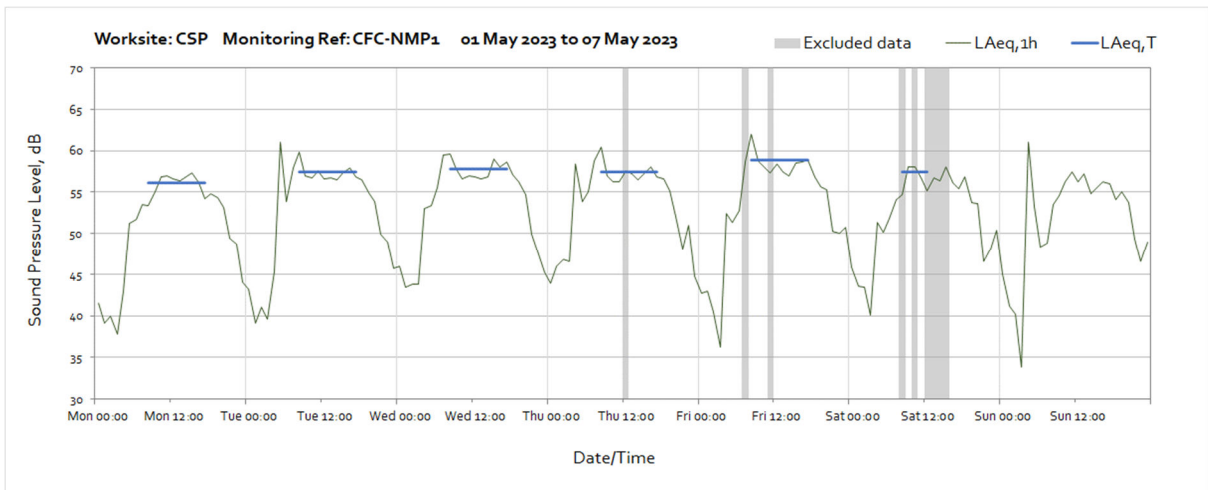


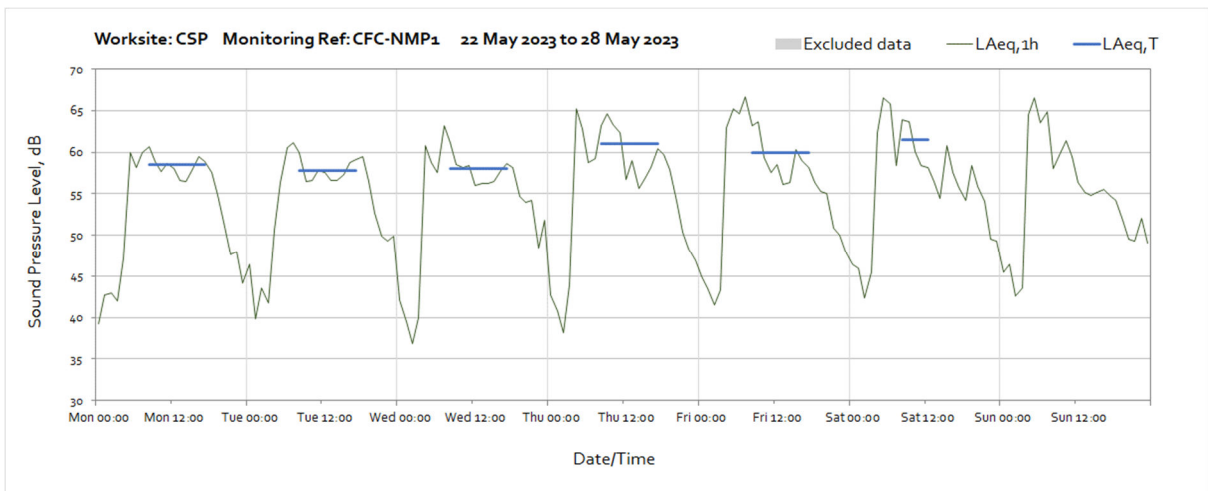
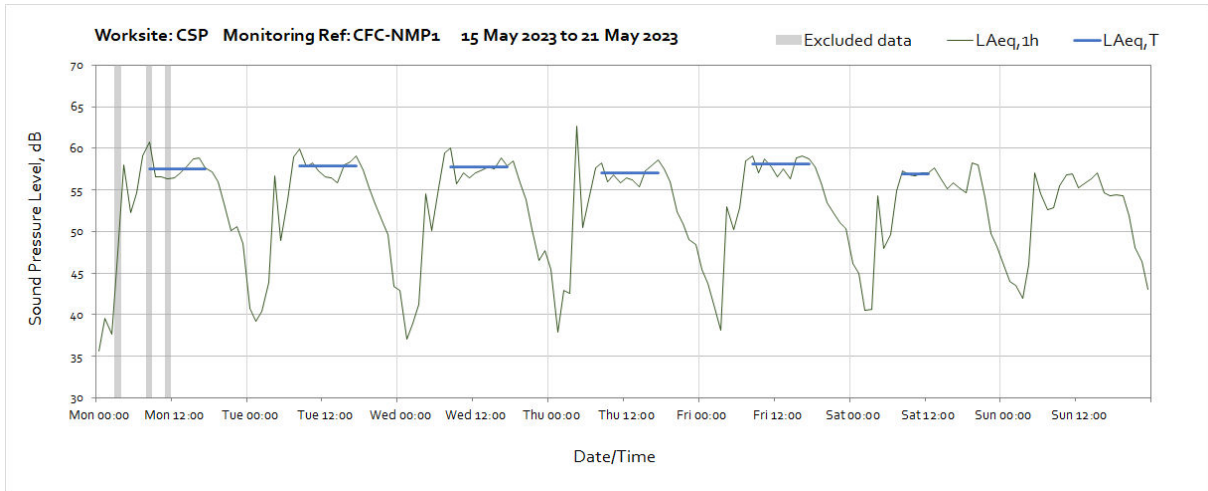
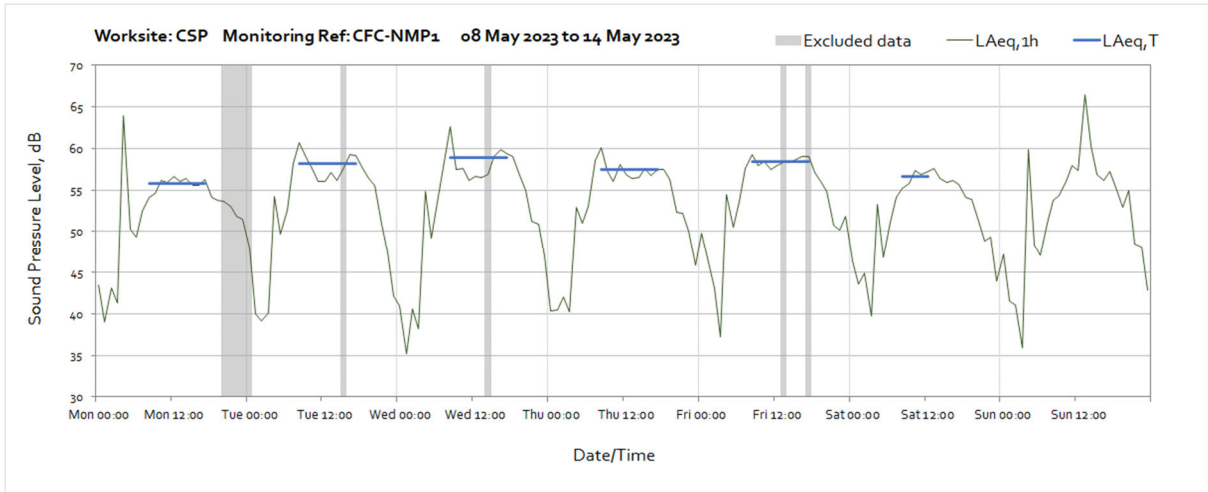
Note: Missing data between 13:00 on Monday 15th May until 13:00 on Thursday 18th May was due to depleted monitor battery which has now been replaced.

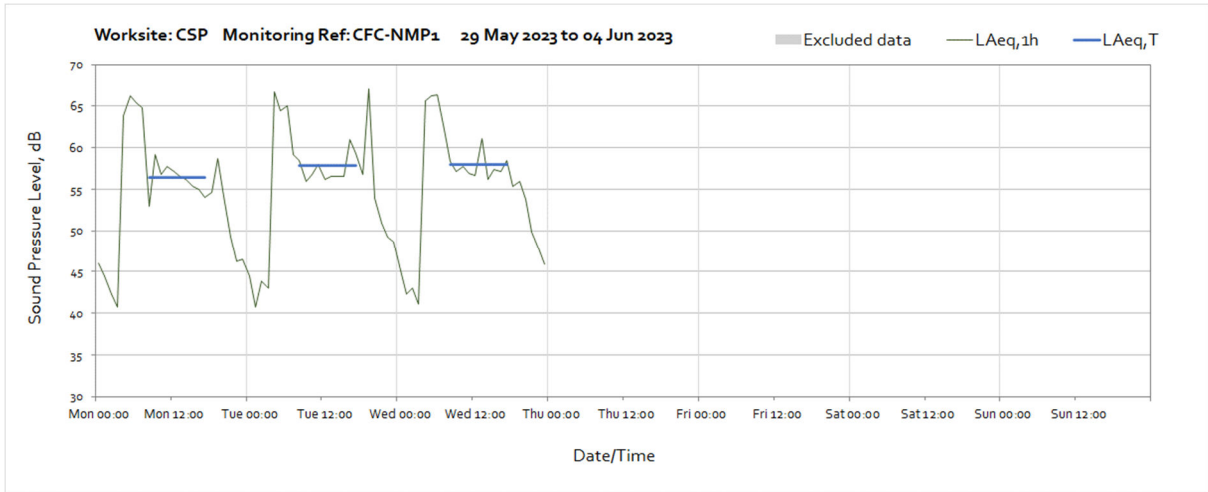
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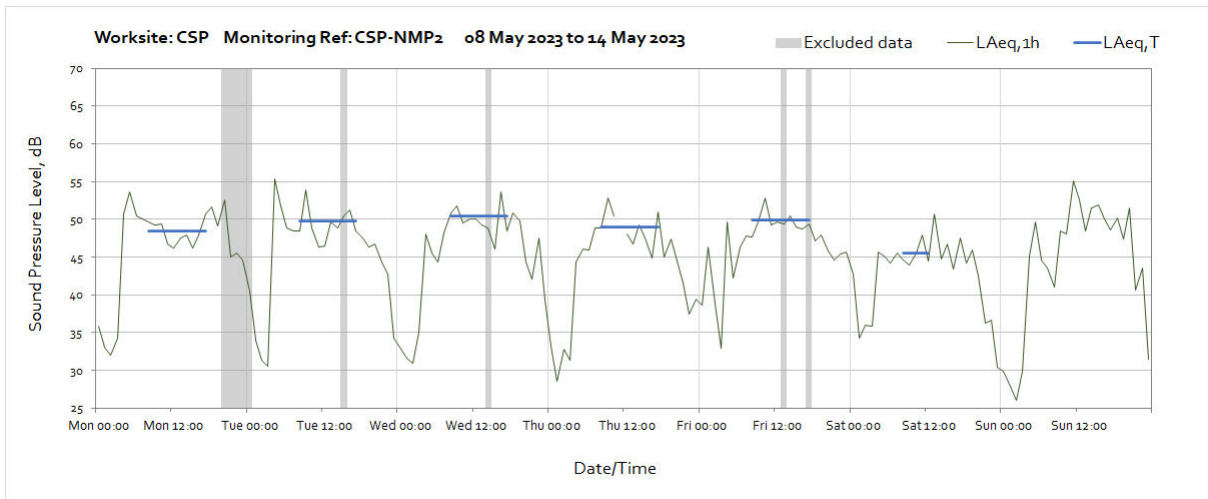
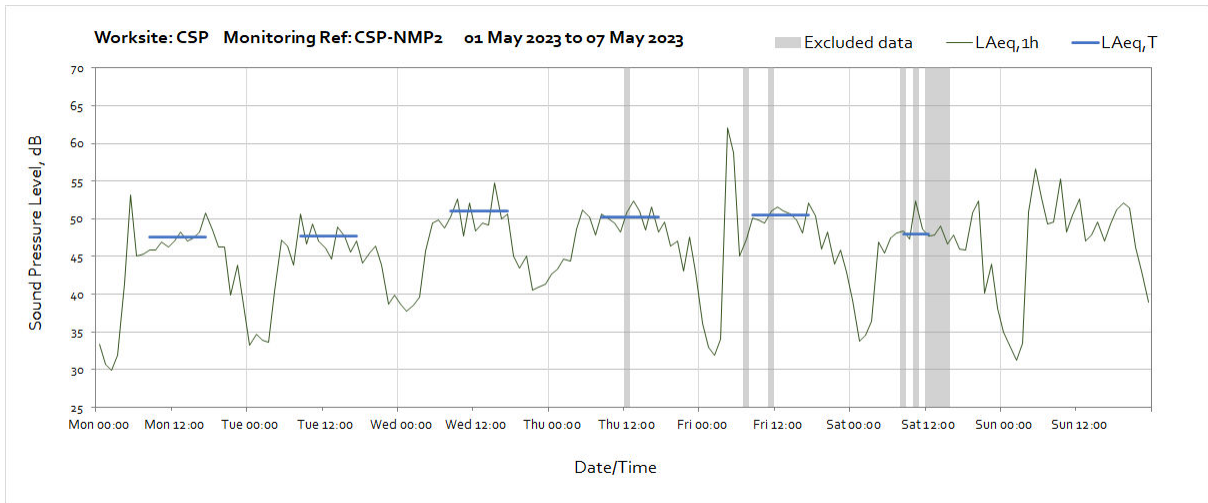
Worksite: CSP – Monitoring Ref: CFC-NMP1





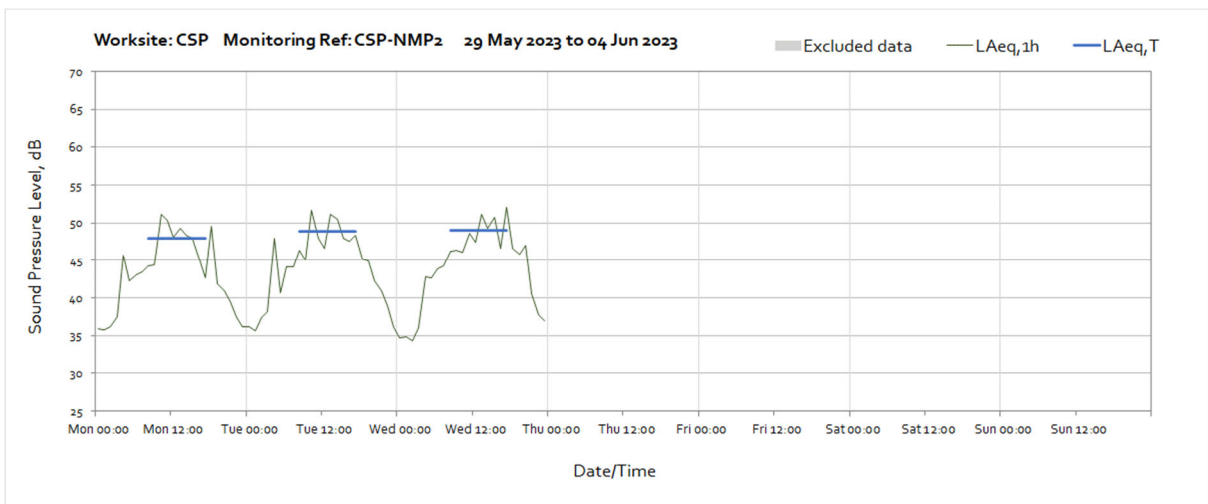
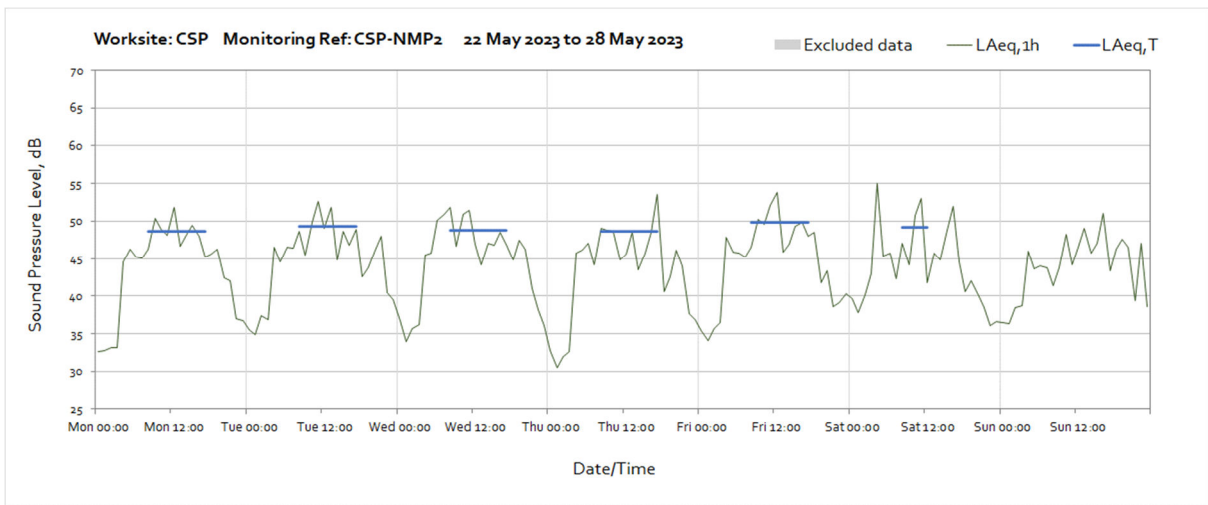
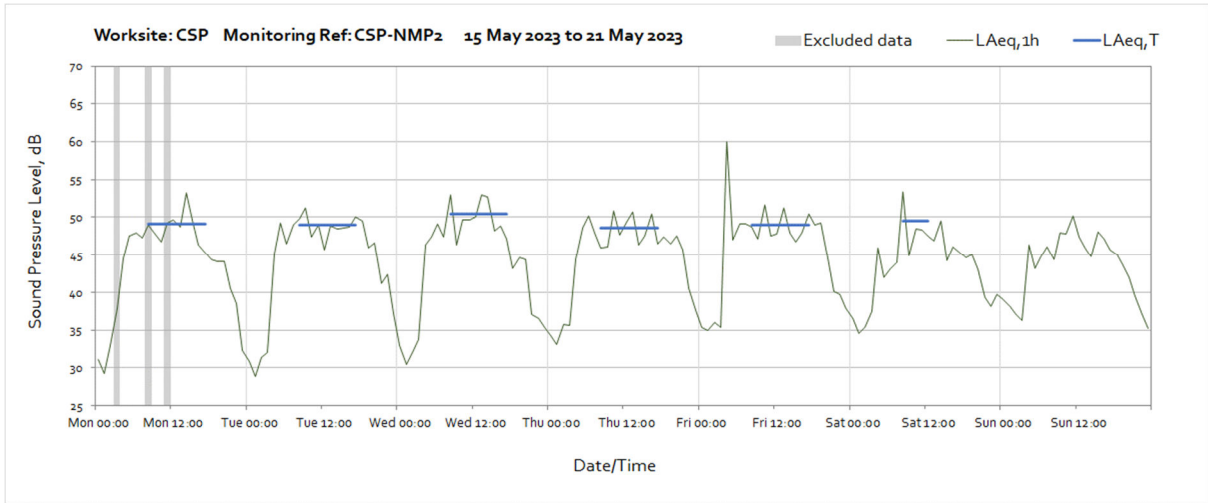


Worksite: CSP - Monitoring Ref: CSP-NMP2

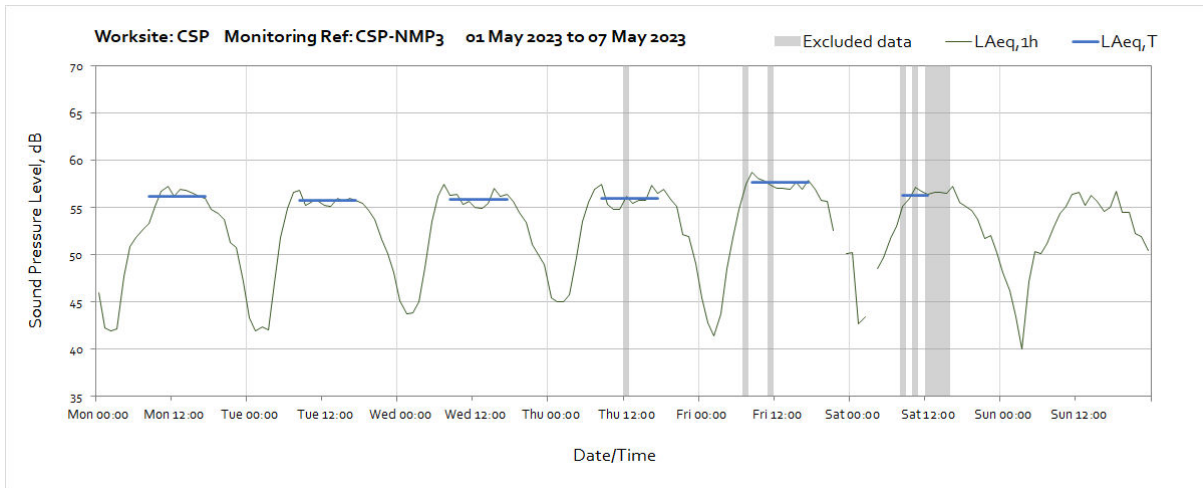


Note: Missing data between 11:00 and 12:00 on Thursday 11th May was due to field calibration.

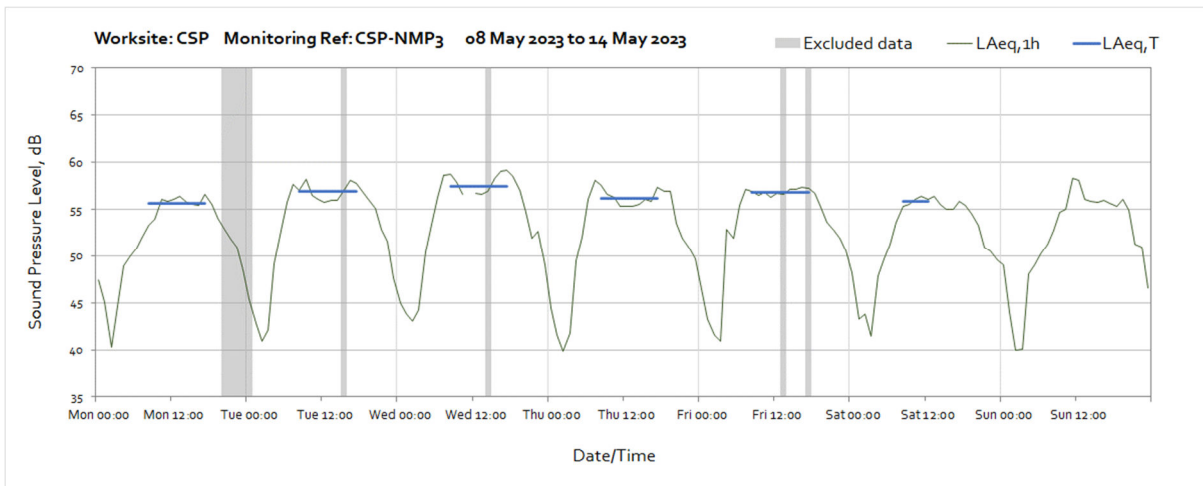
OFFICIAL



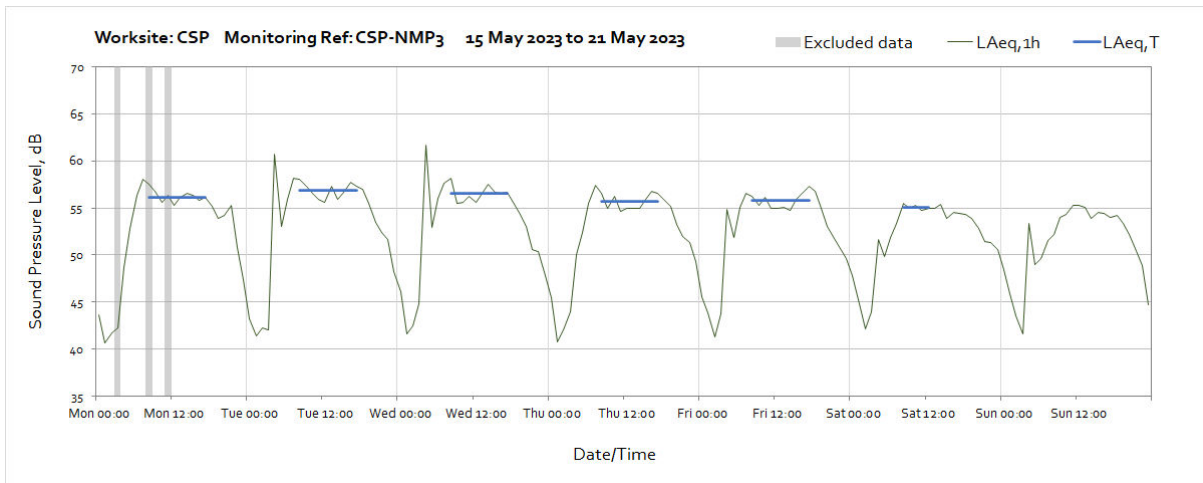
Worksite: CSP – Monitoring Ref: CSP-NMP3

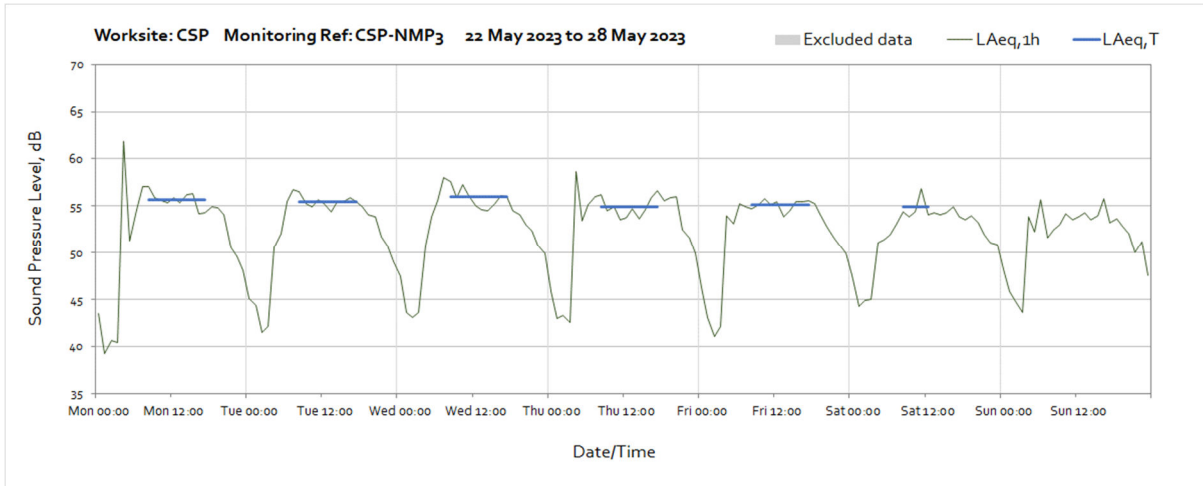


Note: Missing data between 22:00 and 23:00 on Friday 5th May and between 03:00 and 04:00 on Saturday 6th May was due to a communication error between the server and the monitoring system.

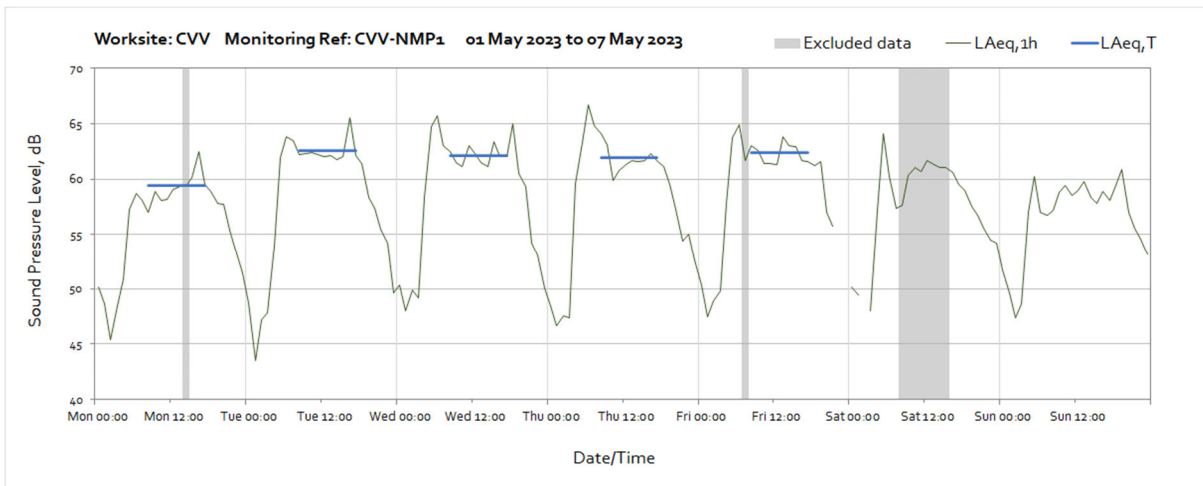


Note: Missing data between 11:00 and 12:00 on Wednesday 10th May was due to field calibration.

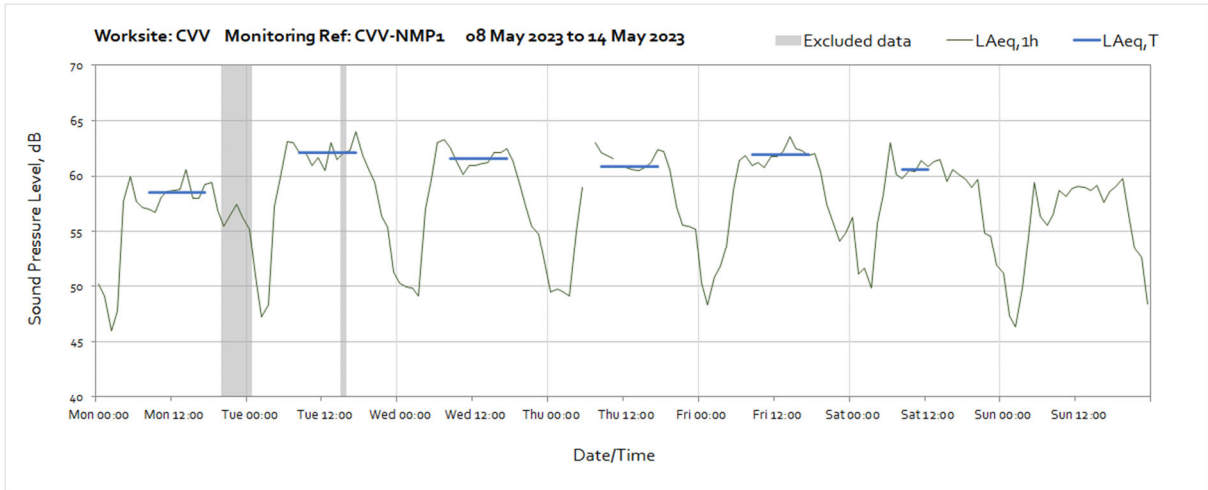




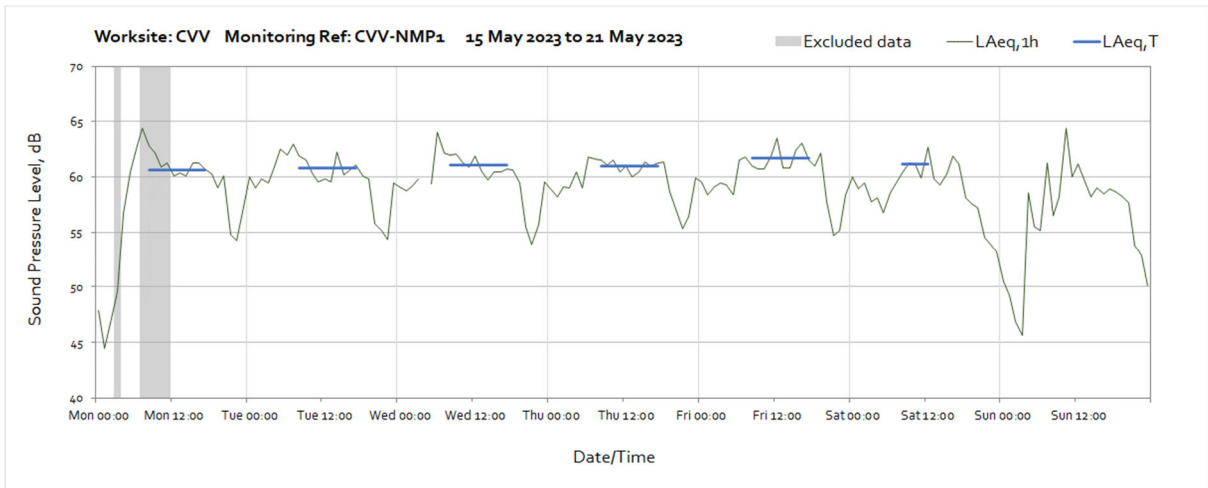
Worksite: CVV- Monitoring Ref: CVV-NMP1



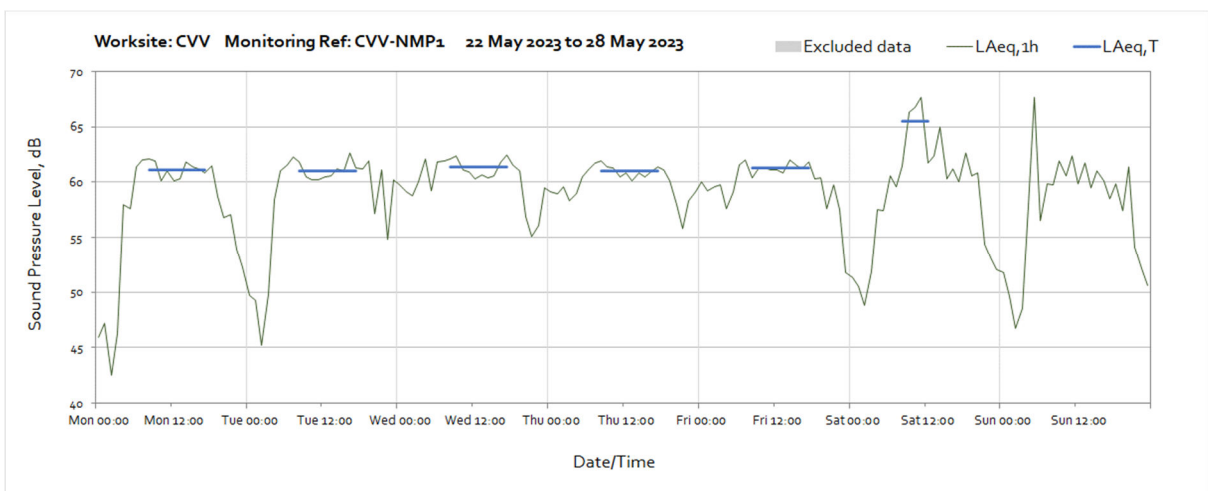
Note: Missing data between 22:00 and 00:00 on Friday 5th May and between 02:00 and 03:00 on Saturday 6th May was due to a communication error between the server and the monitoring system.

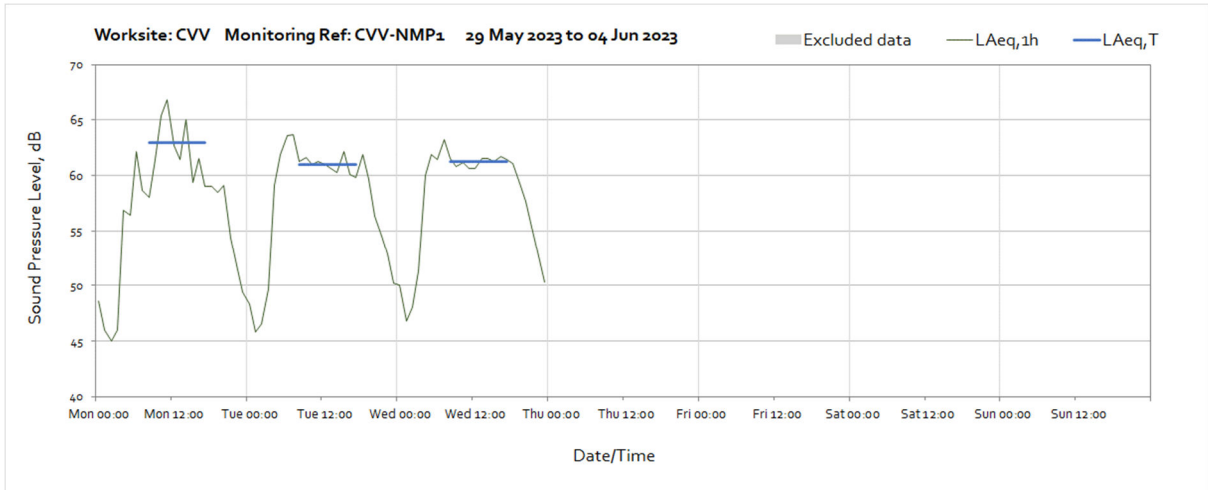


Note: Missing data between 06:00 and 07:00 on Thursday 11th May was due to a communication error between the server and the monitoring system. Missing data between 11:00 and 12:00 on Thursday 11th May was due to field calibration.

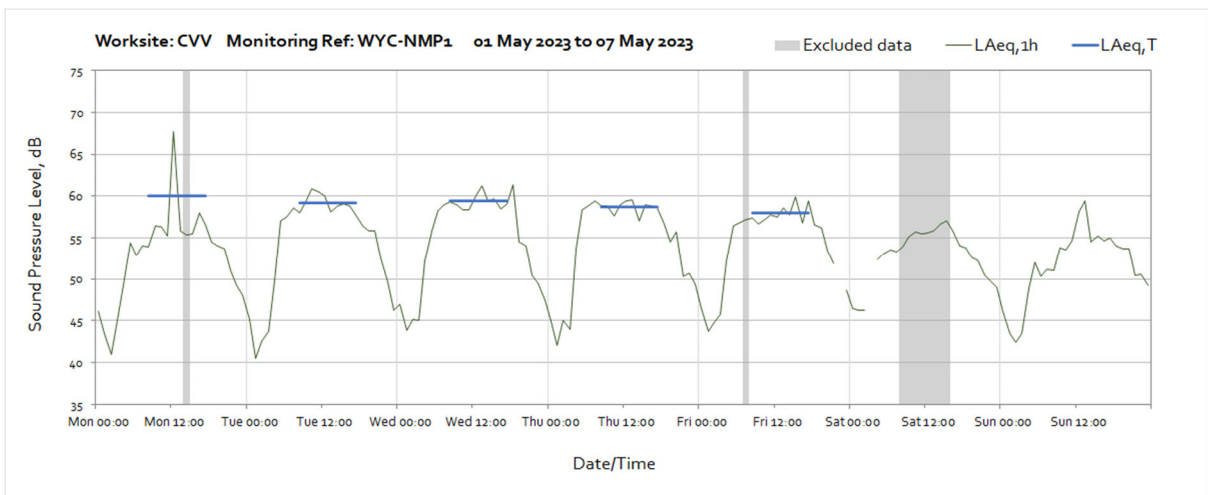


Note: Missing data between 04:00 and 05:00 on Wednesday 17th May was due to a communication error between the server and the monitoring system.

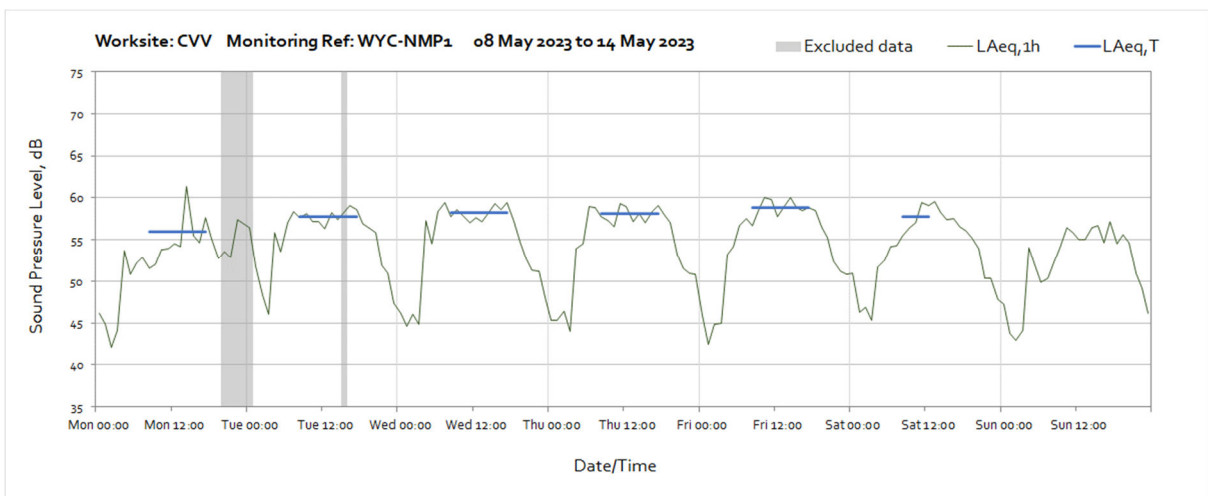


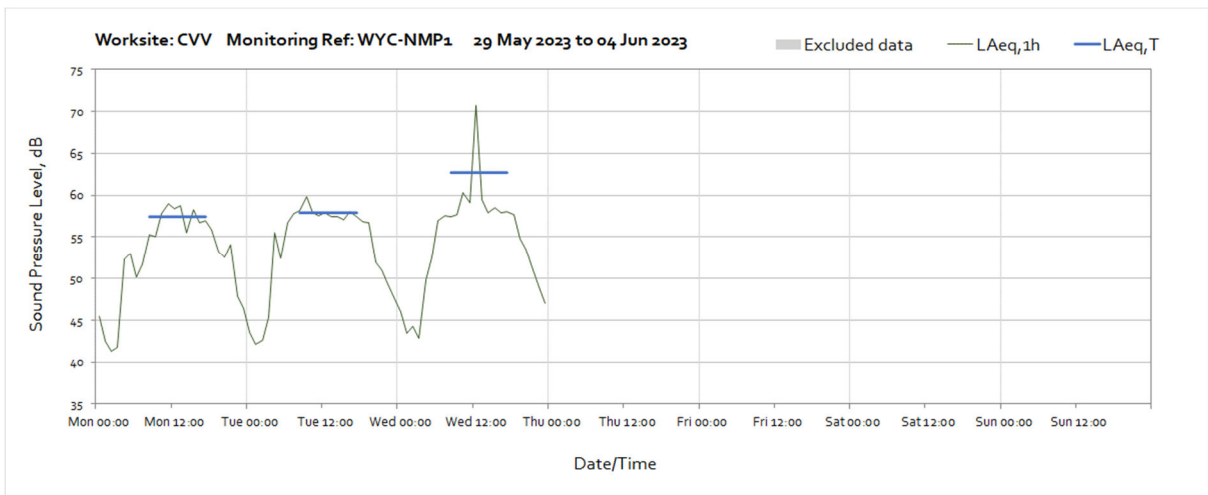
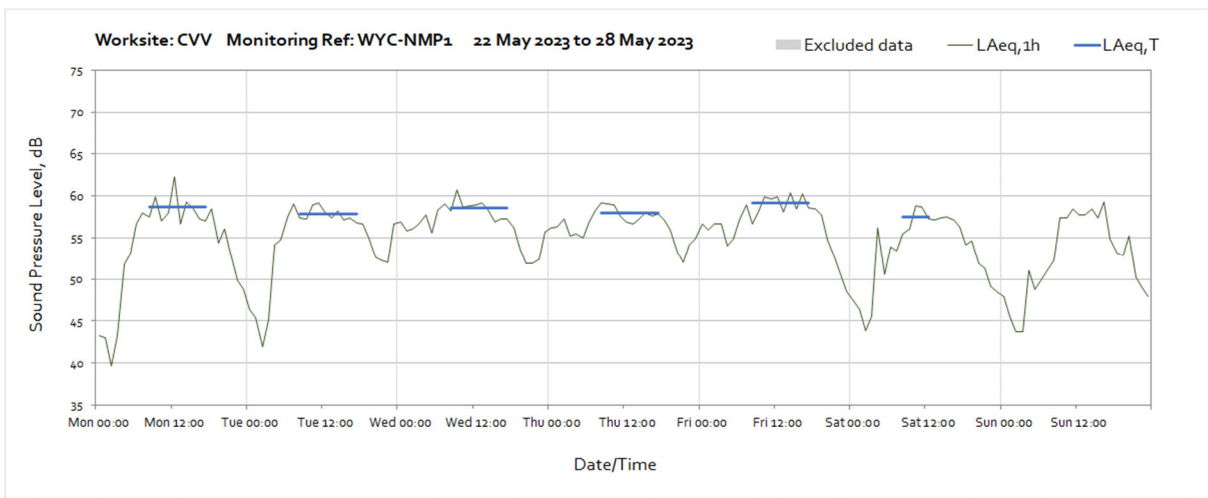
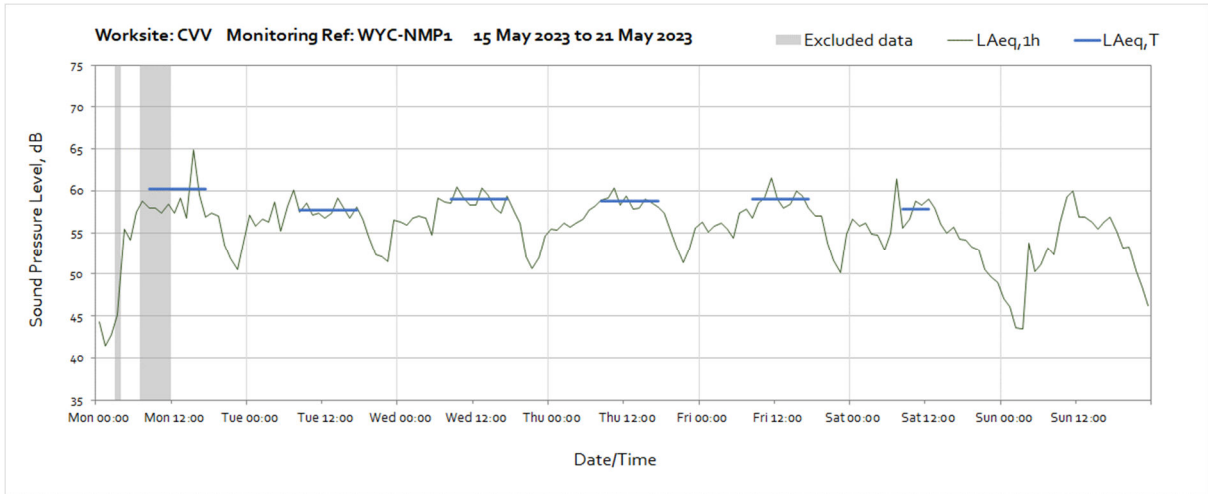


Worksite: CVV – Monitoring Ref: WYC-NMP1

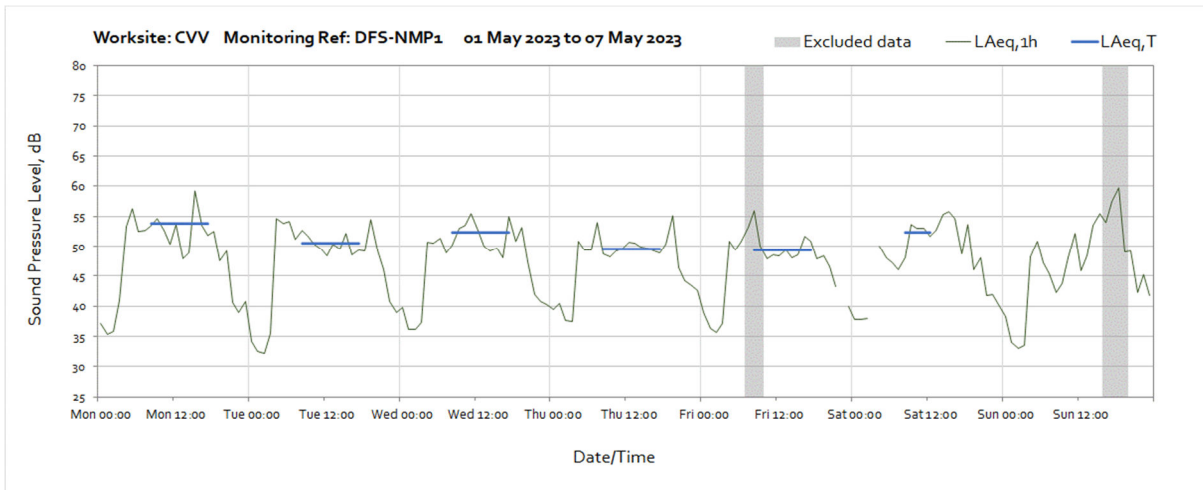


Note: Missing data between 22:00 and 23:00 on Friday 5th May and between 03:00 and 04:00 on Saturday 6th May was due to a communication error between the server and the monitoring system.

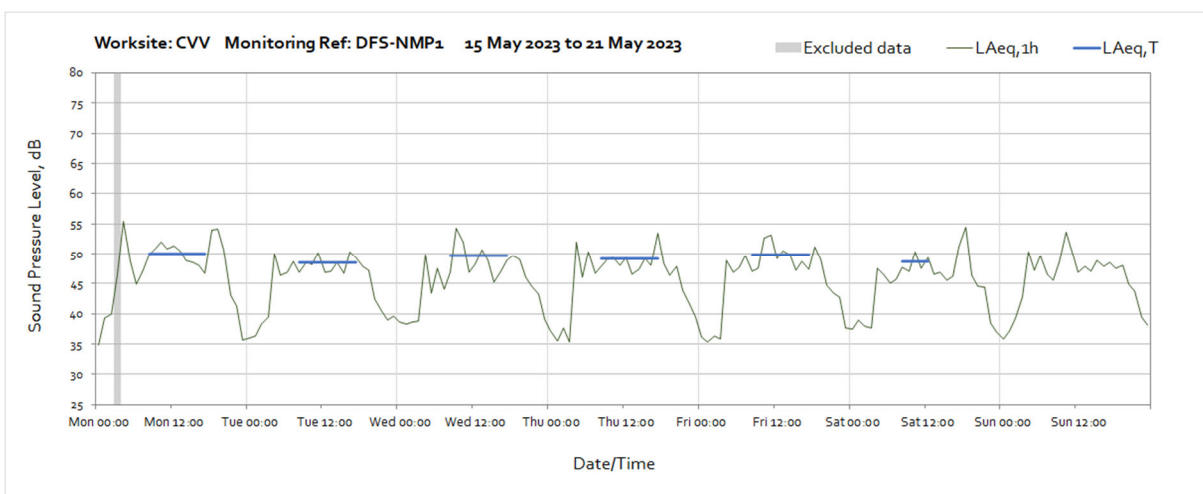
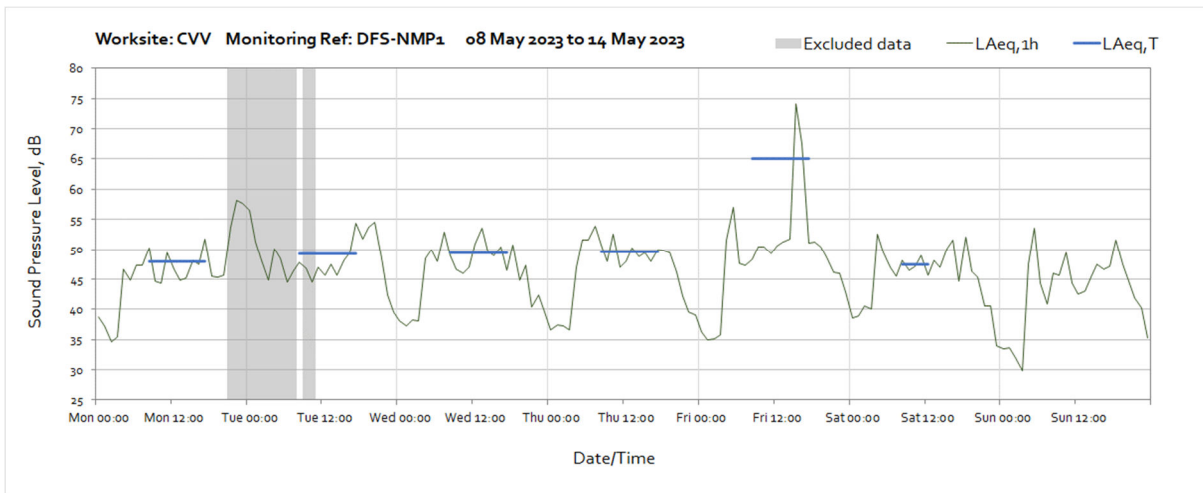


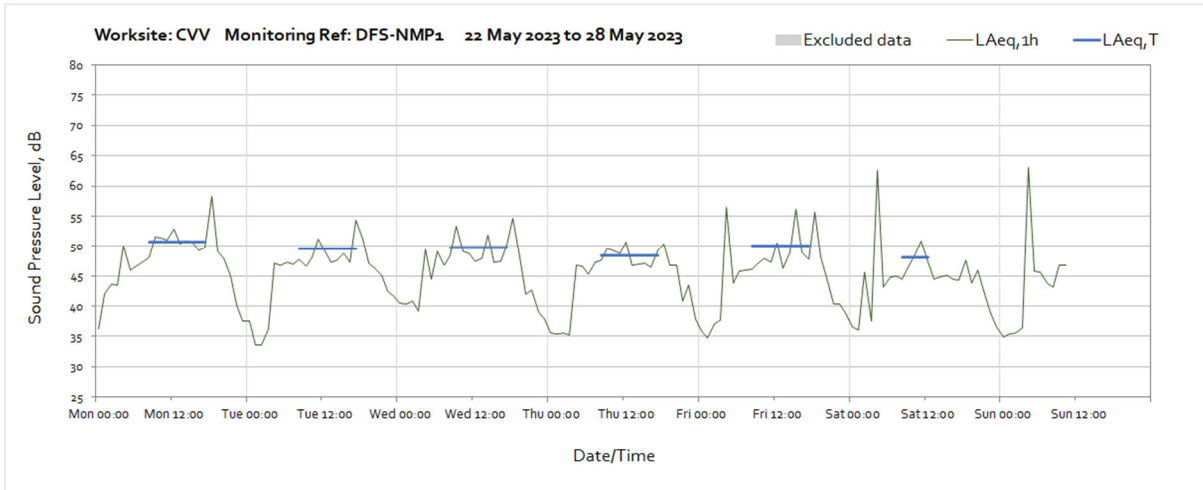


Worksite: CVV – Monitoring Ref: DFS-NMP1



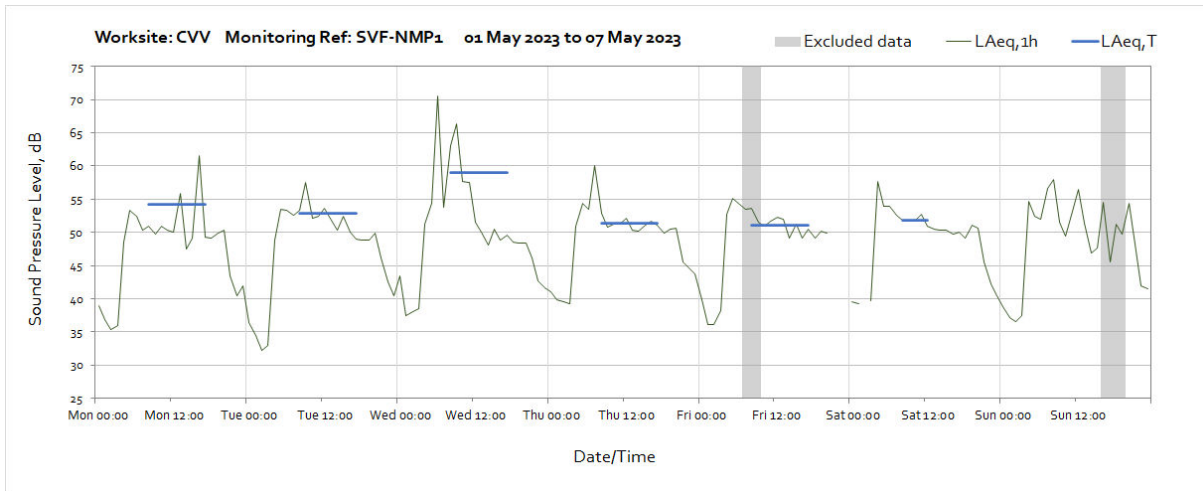
Note: Missing data between 22:00 and 23:00 on Friday 5th May and between 03:00 and 04:00 on Saturday 6th May was due to a communication error between the server and the monitoring system.



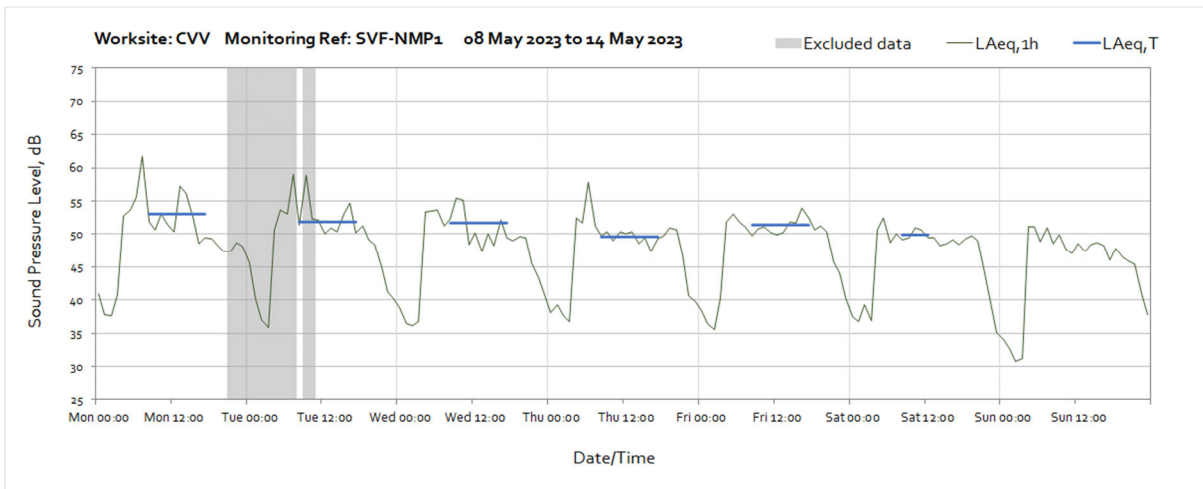


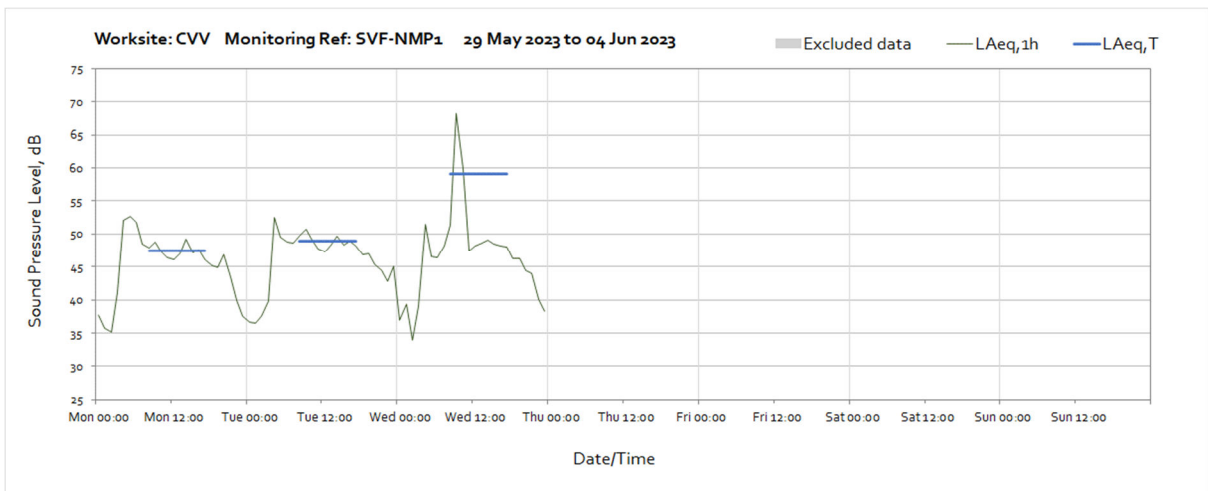
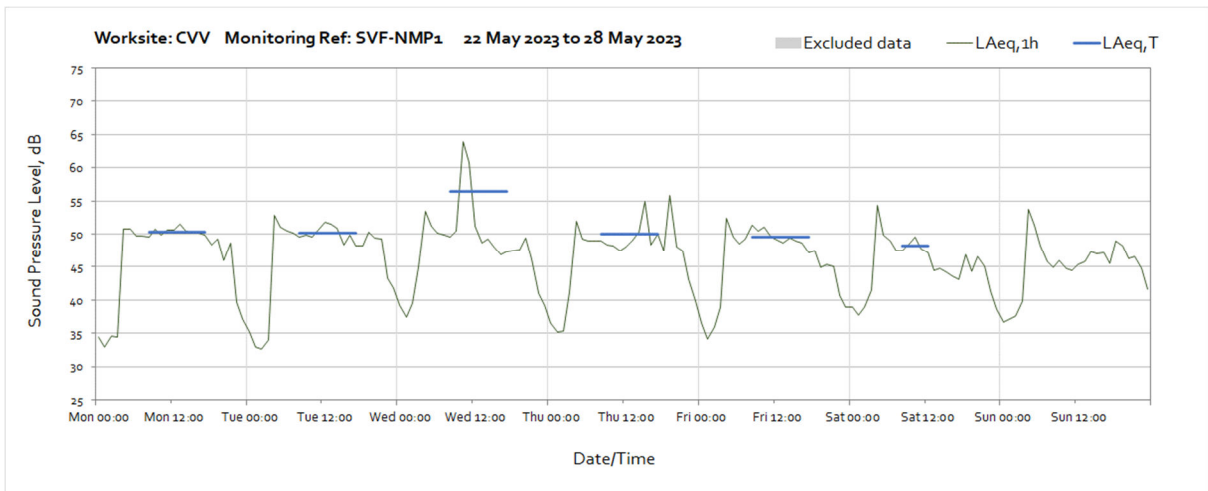
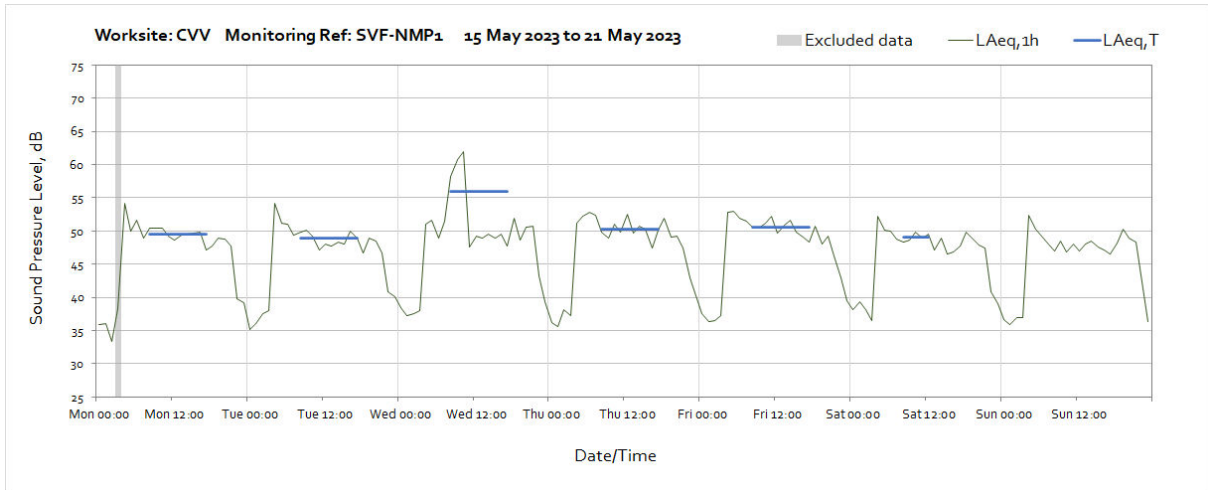
Note: Missing data from 11:00 on Sunday 28th May until the end of the month was due to depleted monitor battery which has now been replaced.

Worksite: CVV – Monitoring Ref: SVF-NMP1



Note: Missing data between 21:00 and 00:00 on Friday 5th May and between 02:00 and 03:00 on Saturday 6th May was due to a communication error between the server and the monitoring system.

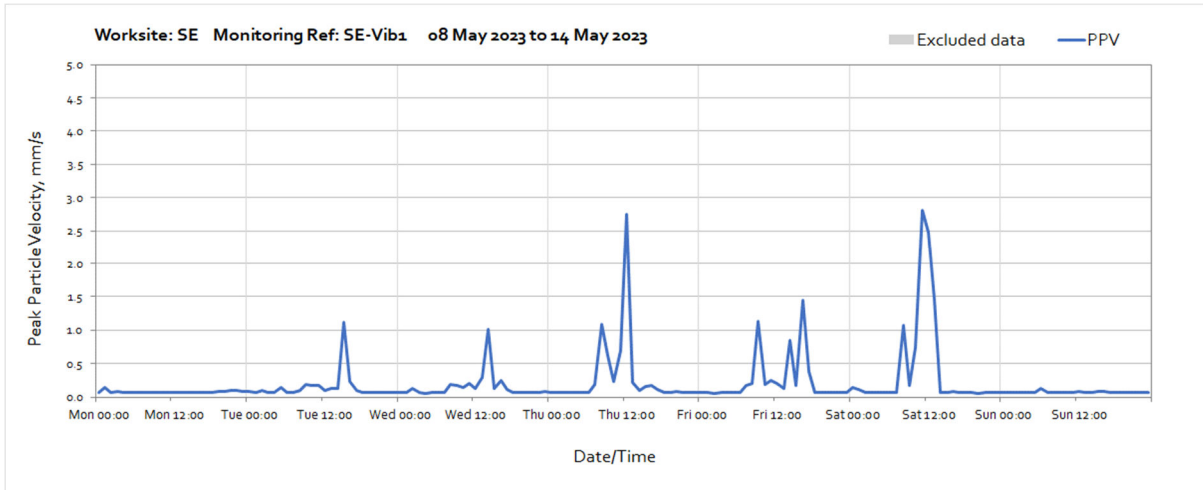
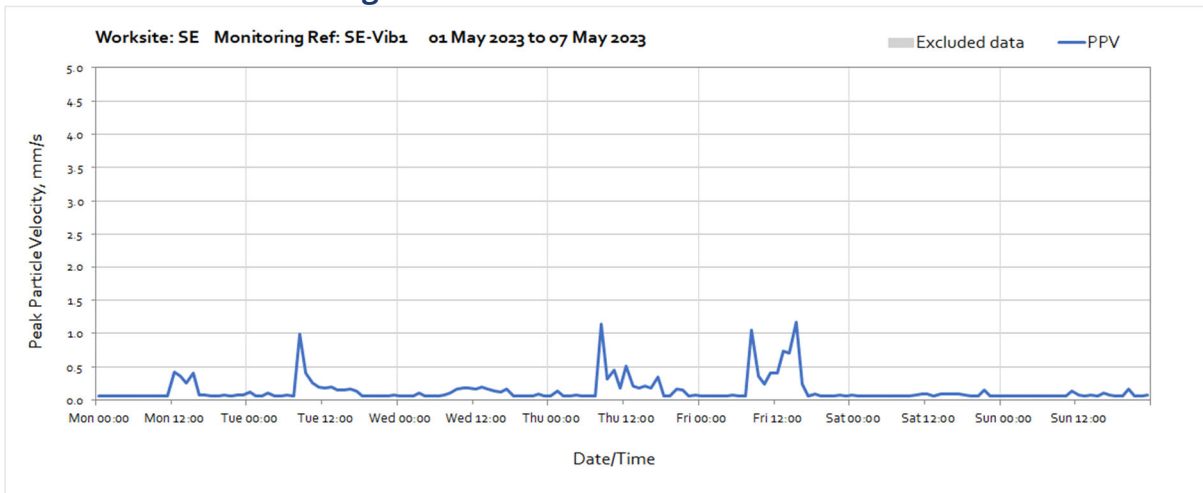


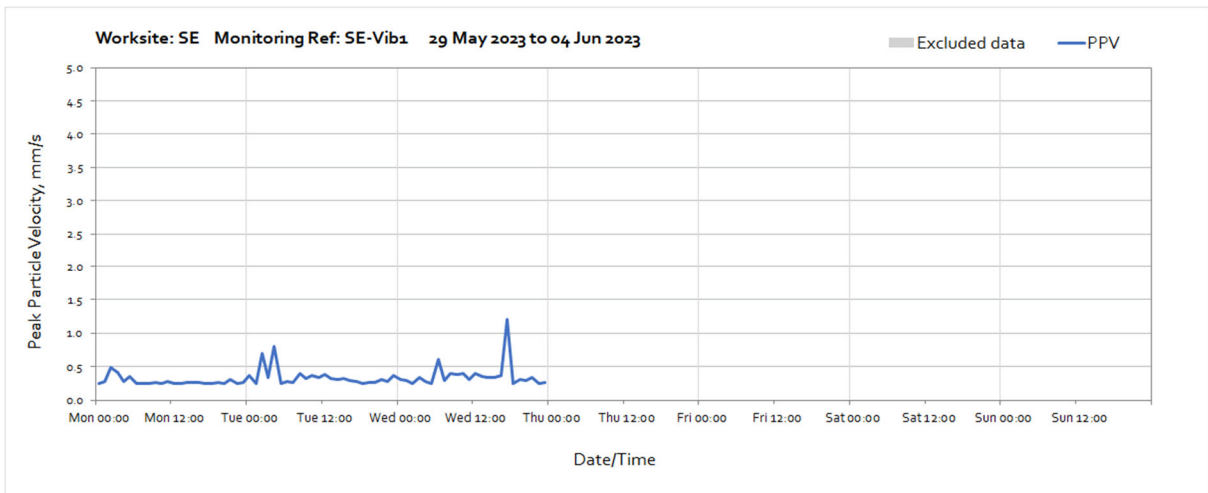
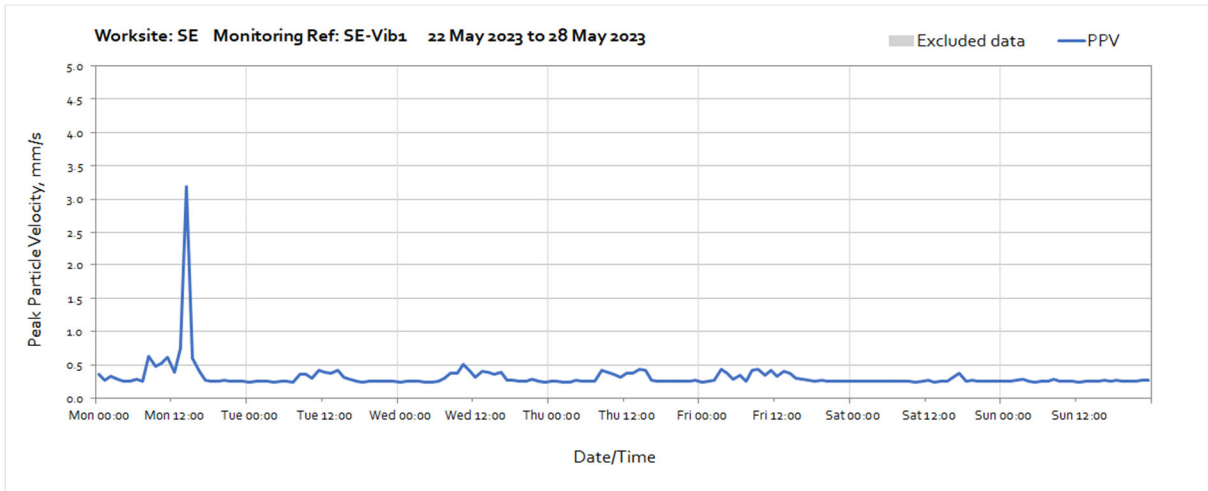
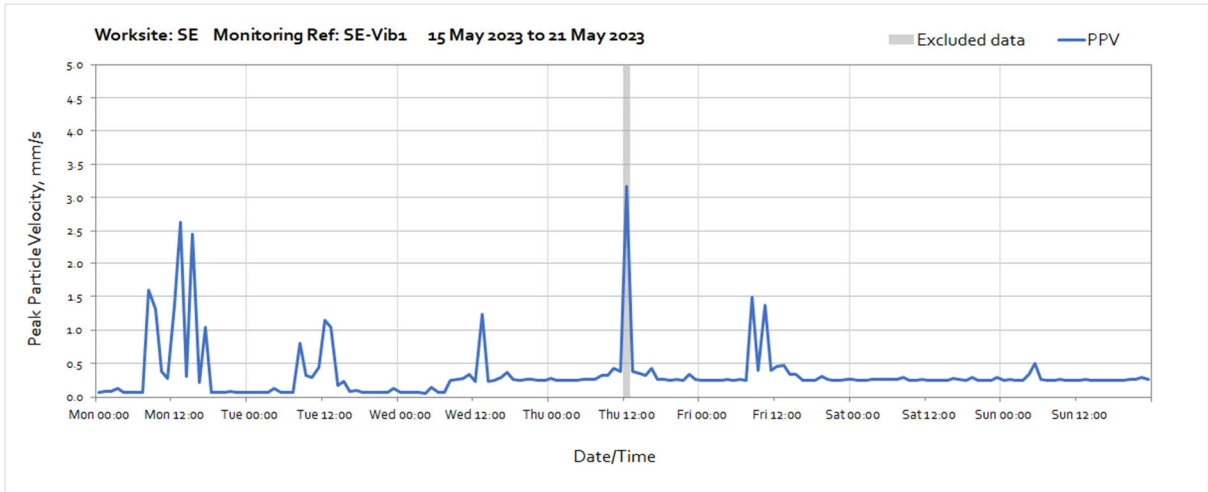


Vibration

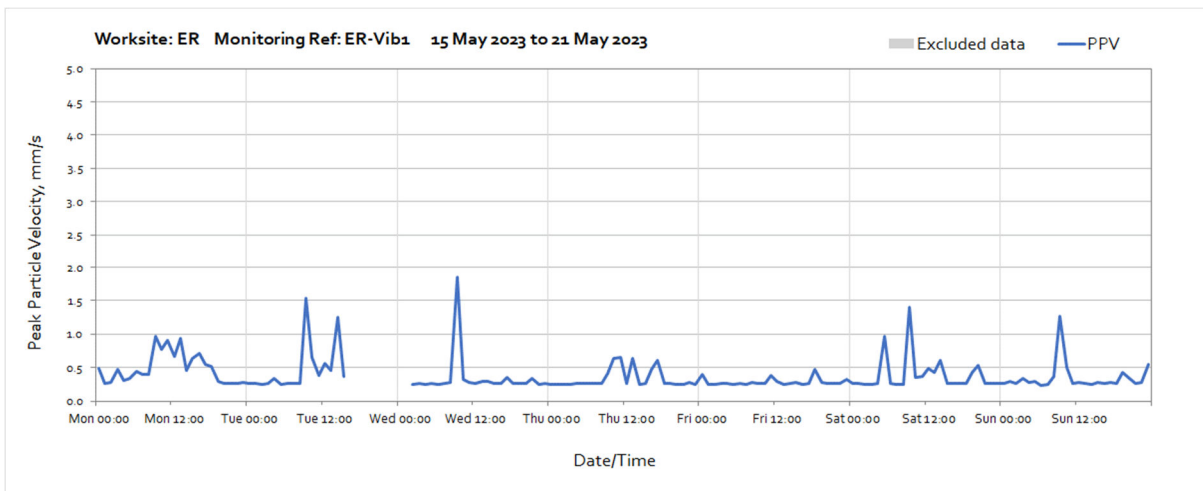
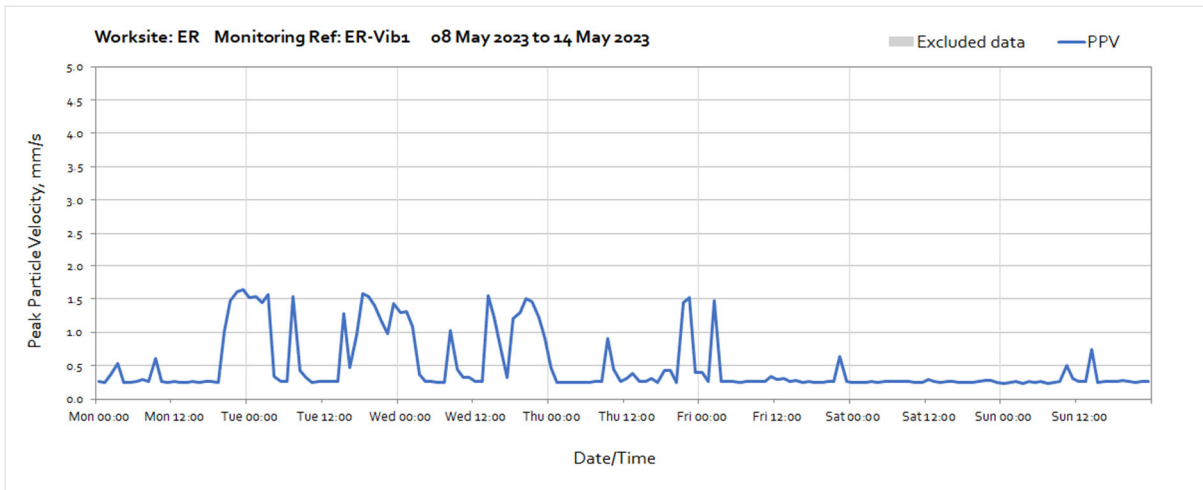
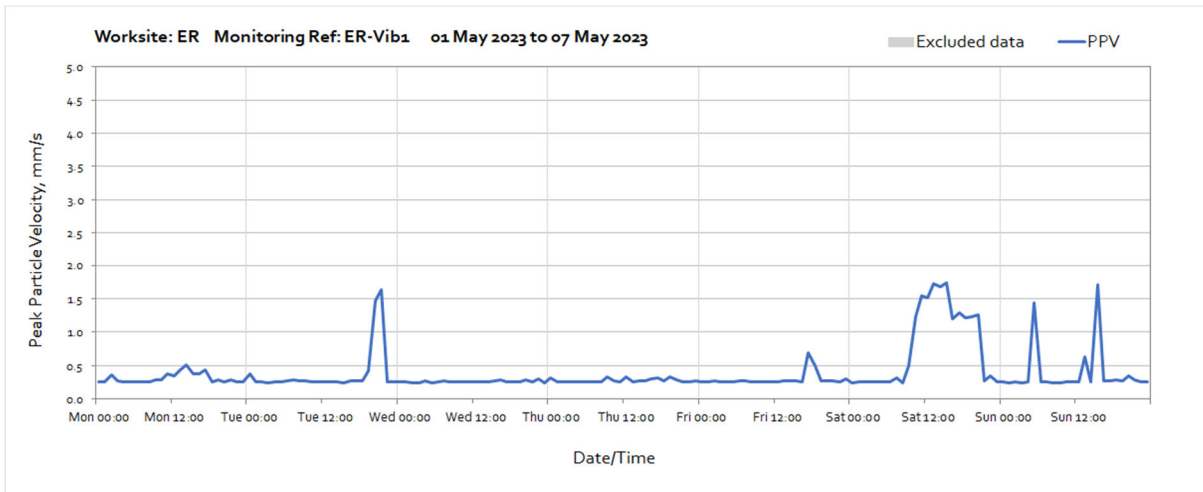
The following graphs show the hourly measured peak particle velocity PPV recorded during the monitoring period. The graphs show the highest PPV of the three orthogonal axes x, y and z. Where high values of PPV were caused by local interference with the vibration monitor, which are not representative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

Worksite: SE – Monitoring Ref: SE-Vib 1



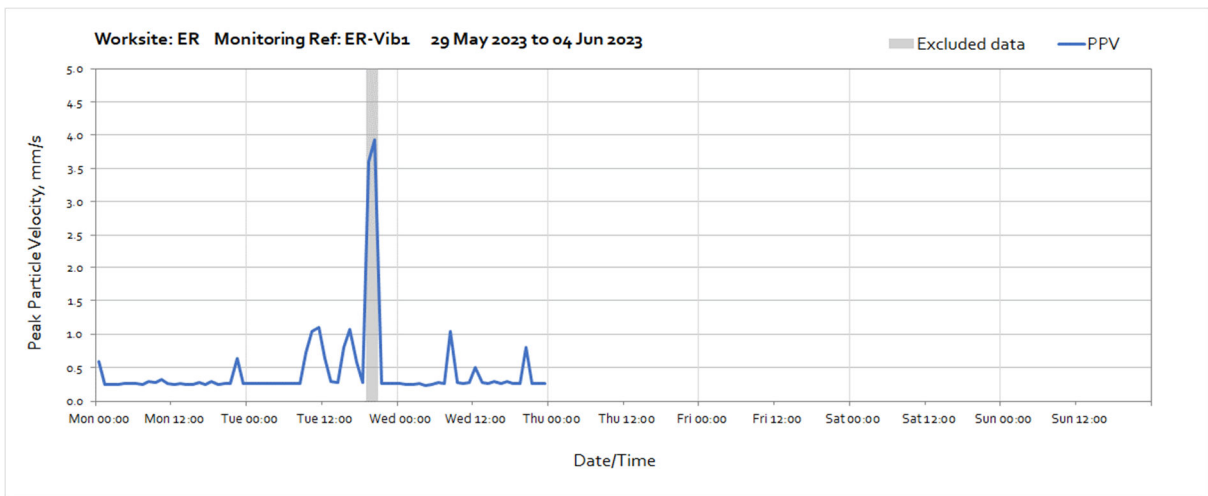
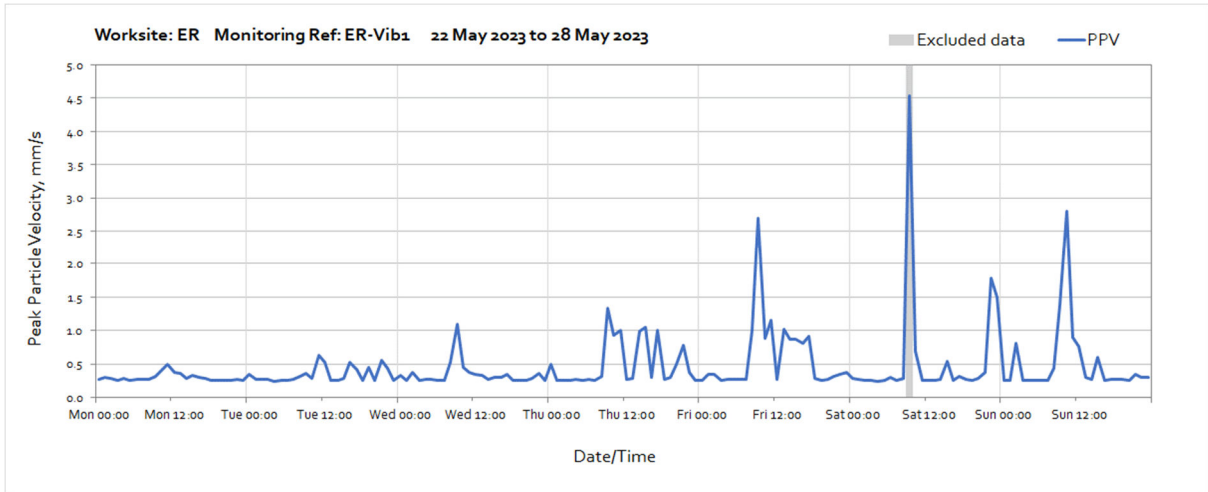


Worksite: WGT – Monitoring Ref: ER-Vib 1

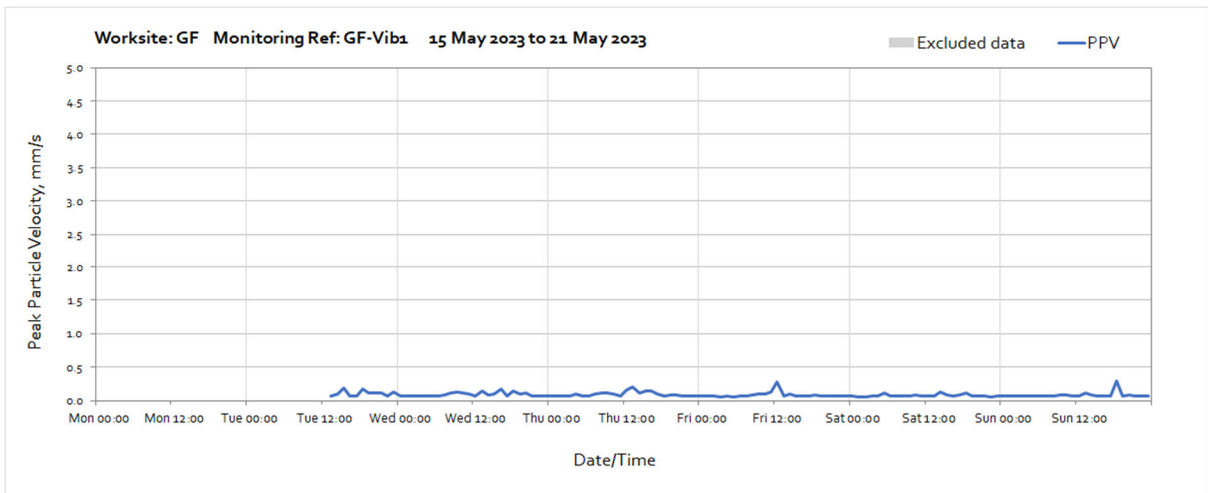


Note: Missing data between 16:00 on Tuesday 16th May and 02:00 on Wednesday 17th May was due to a monitor technical issue.

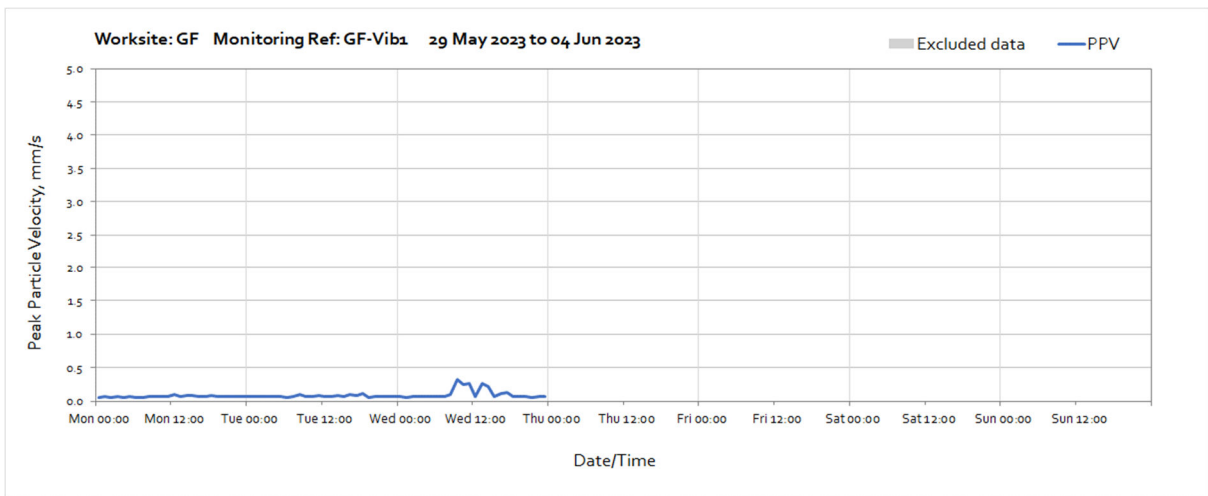
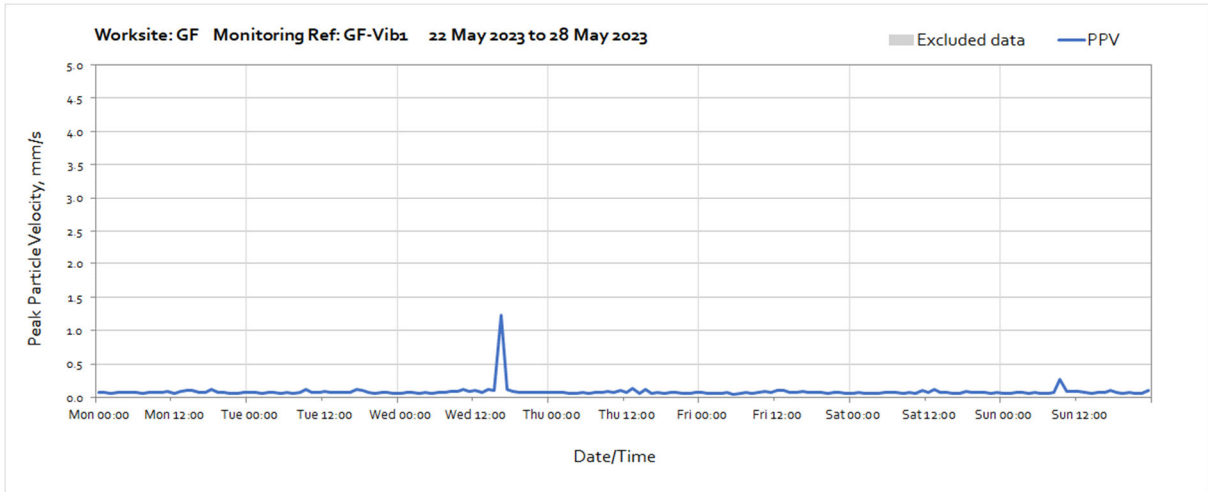
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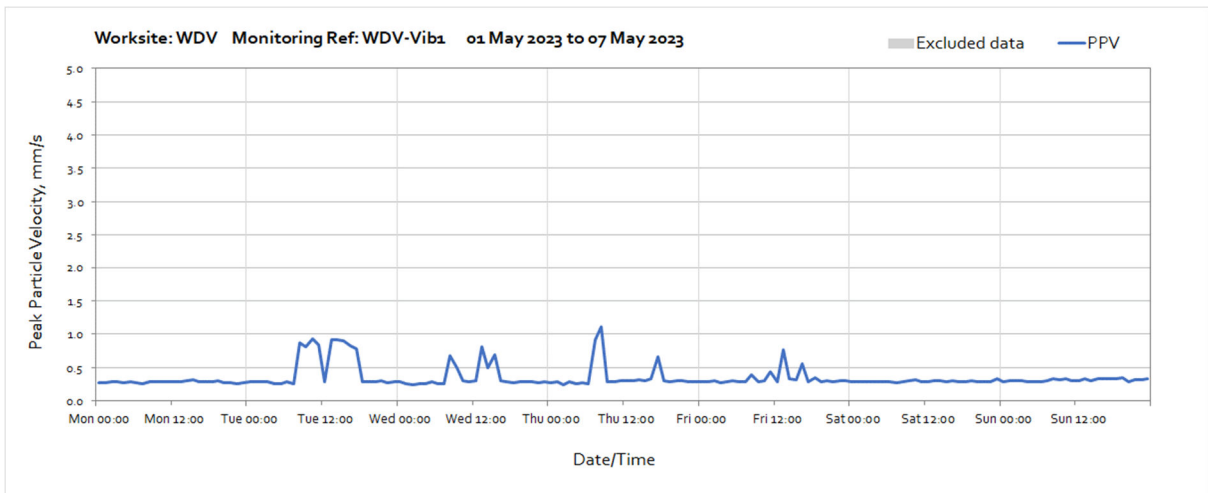
Worksite: GF – Monitoring Ref: GF-Vib1

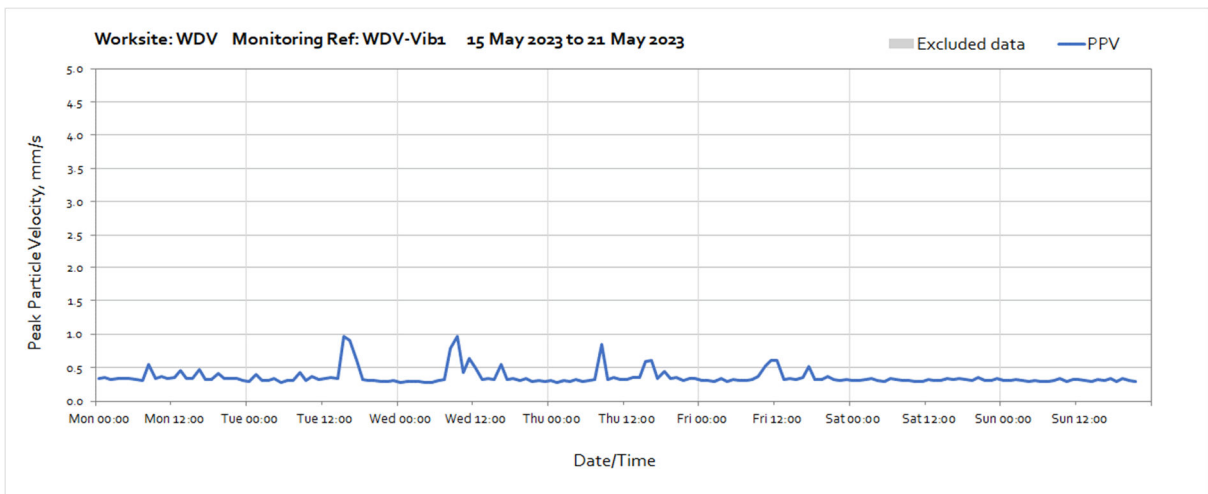
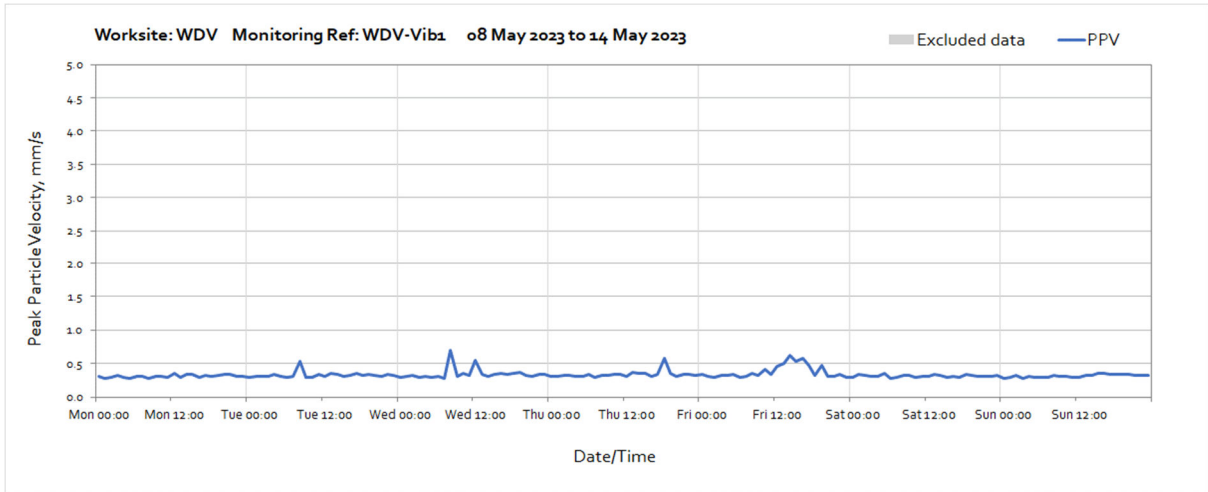


Note: Monitor was reinstalled at 13:00 on Tuesday 16th May.

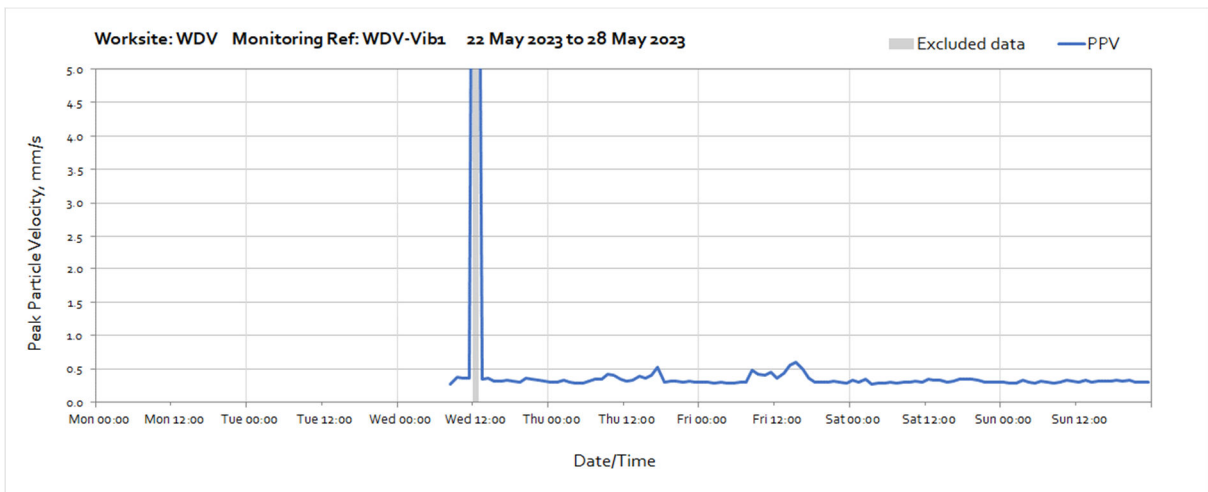


Worksite: WDV – Monitoring Ref: WDV-Vib 1



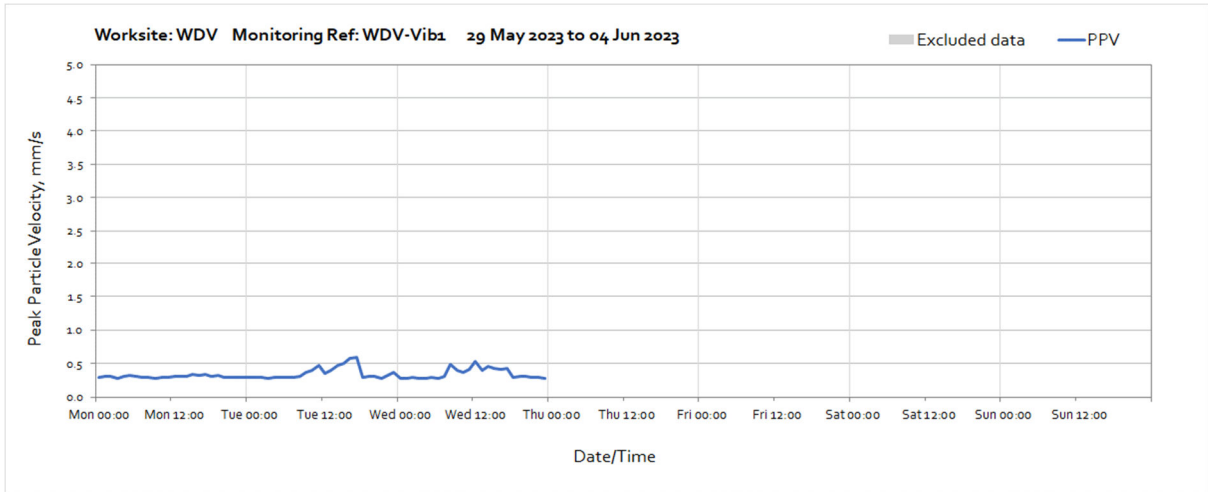


Note: Missing data from 22:00 on Sunday 21st May until 08:00 on Wednesday 24th May was due to depleted monitor battery.

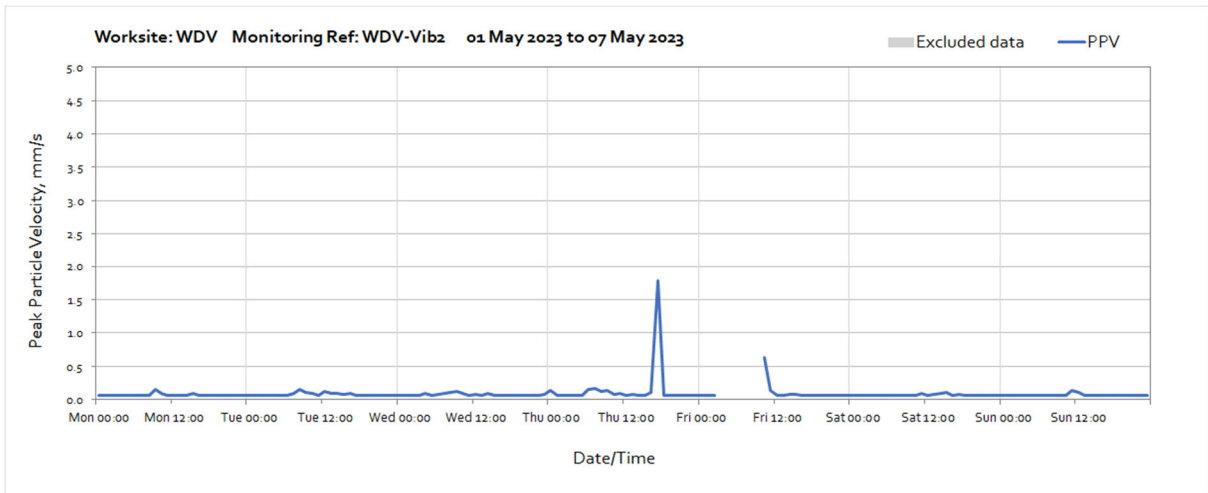


Note: Missing data from 22:00 on Sunday 21st May until 08:00 on Wednesday 24th May was due to depleted monitor battery.

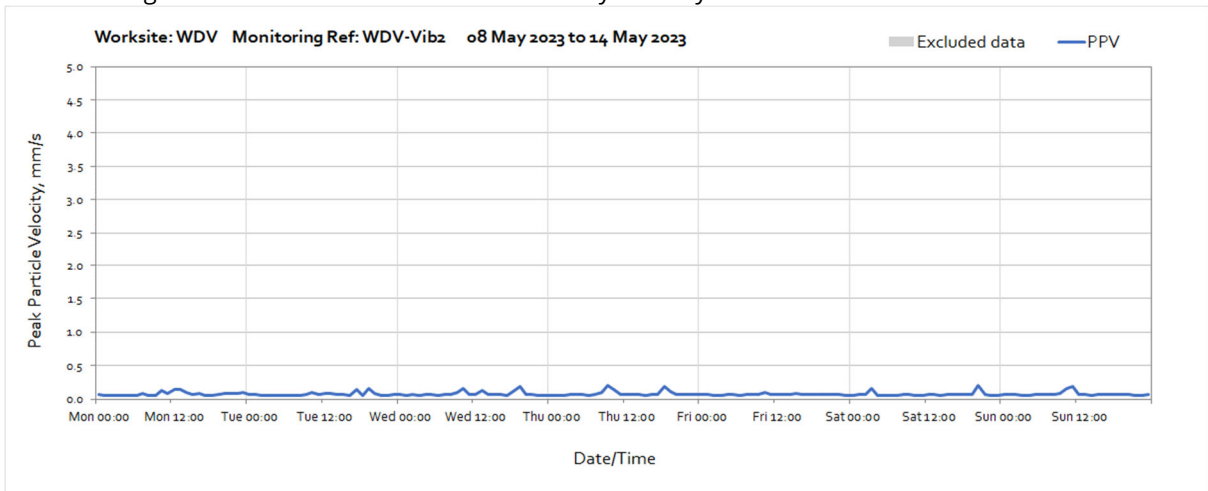
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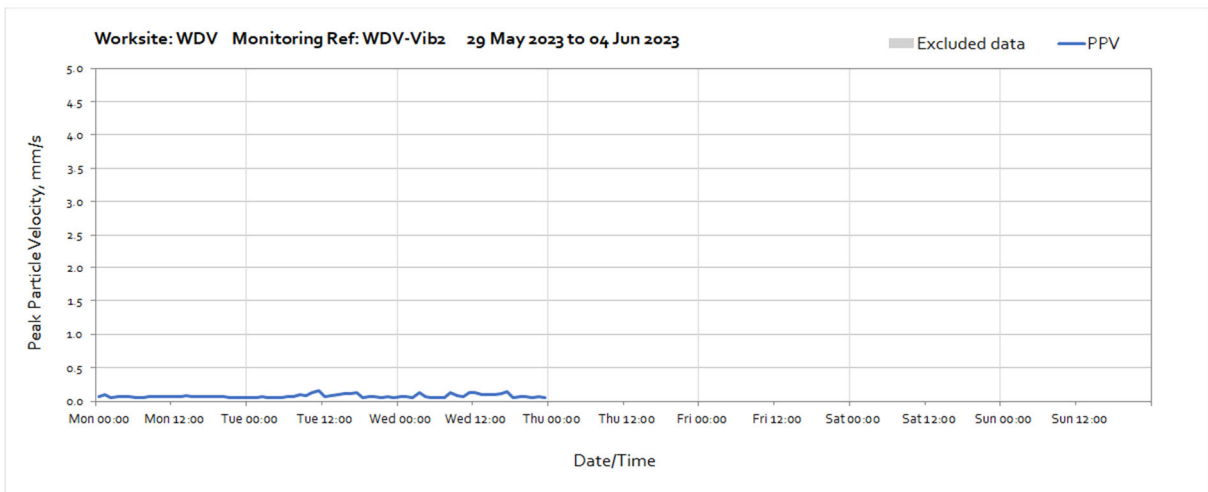
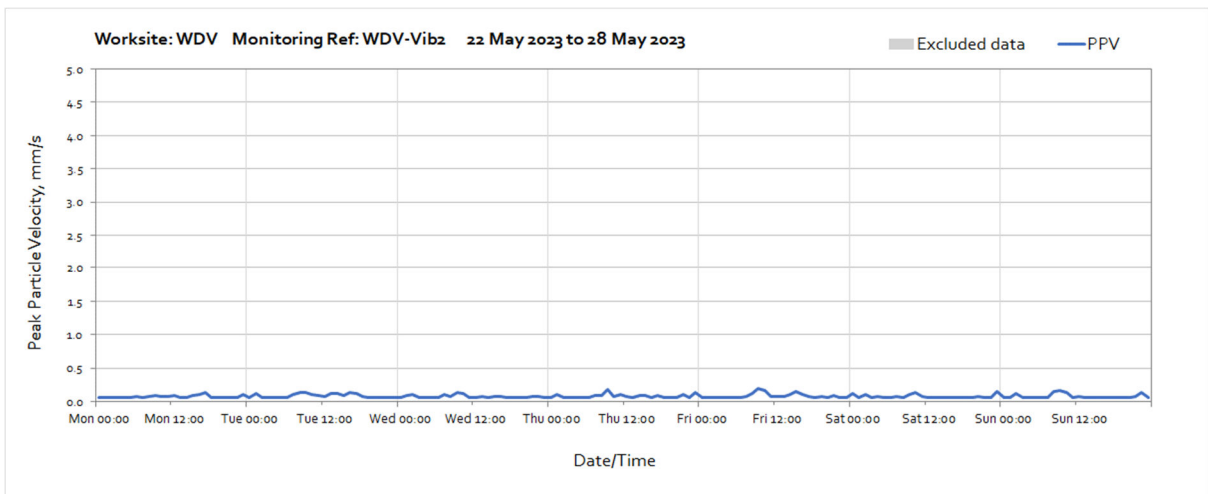
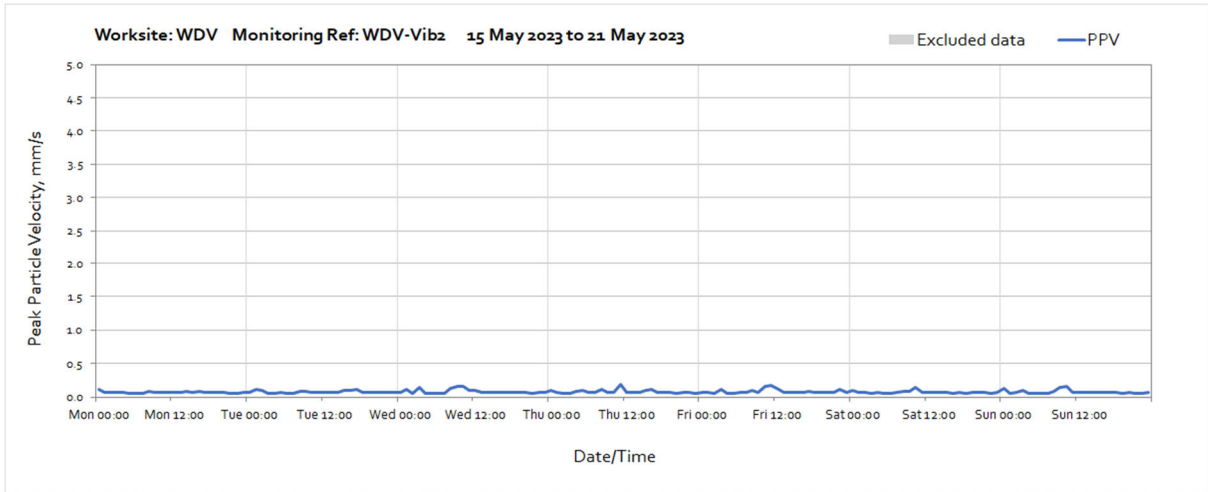


Worksite: WDV – Monitoring Ref: WDV-Vib 2

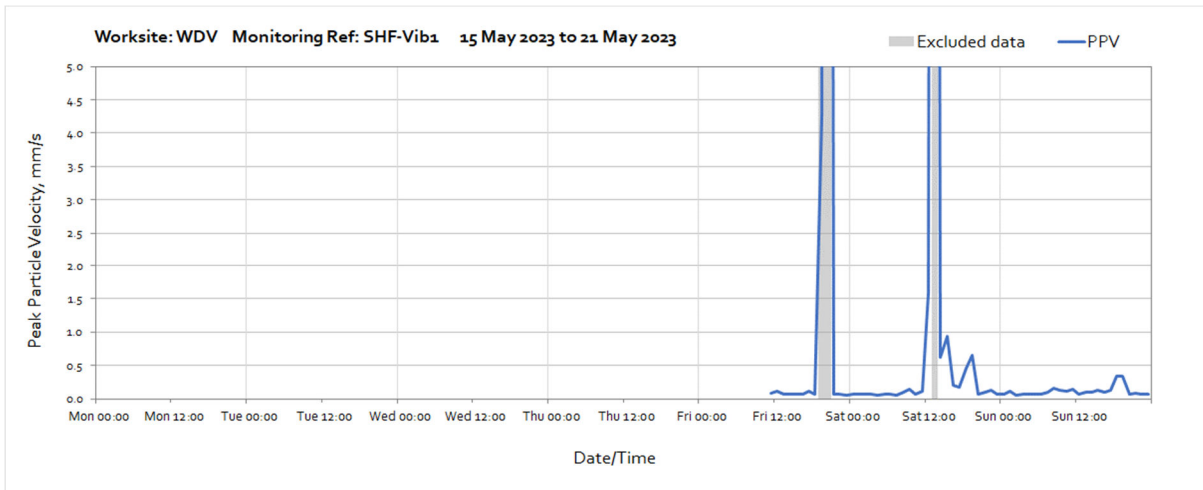


Note: Missing data between 03:00 and 10:00 on Friday 5th May was due to a monitor technical issue.

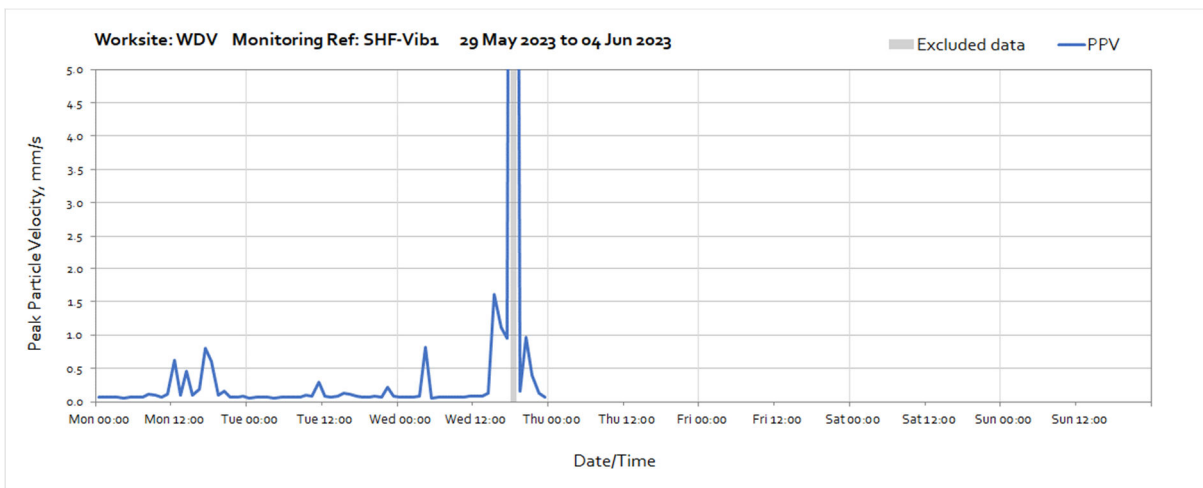
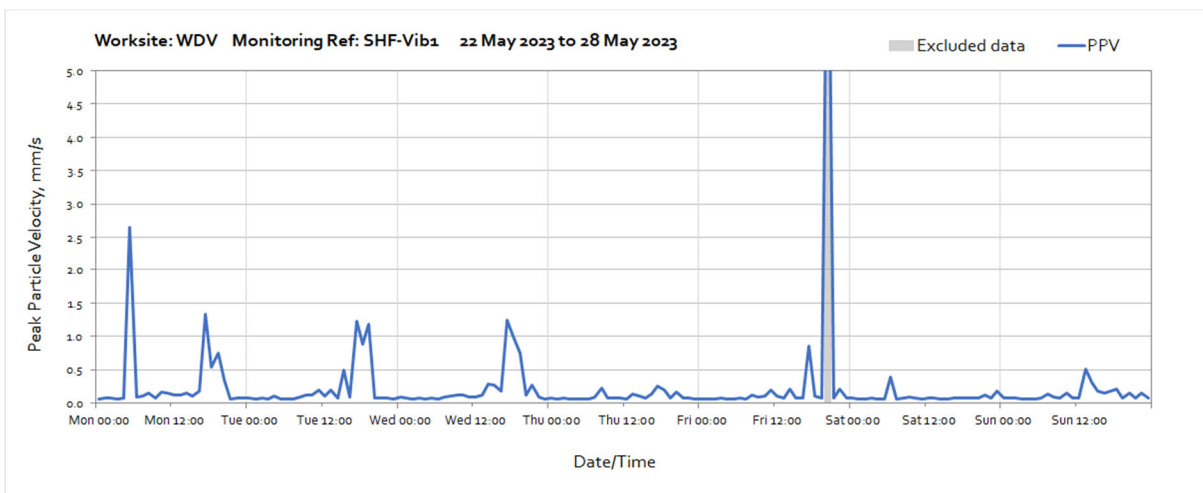




Worksite: WDV – Monitoring Ref: SHF-Vib1

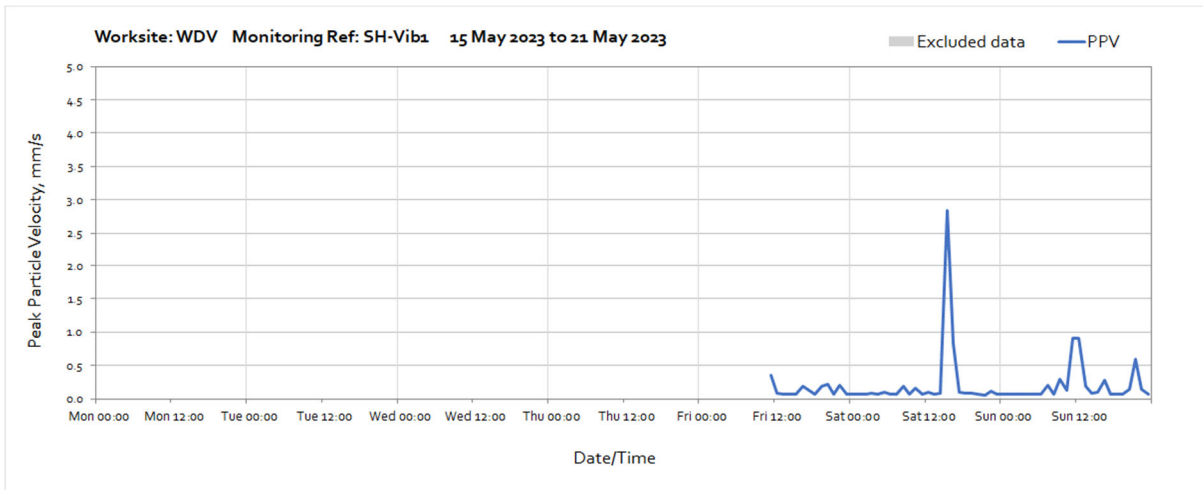


Note: Monitor was installed at 11:00 on Friday 19th May.

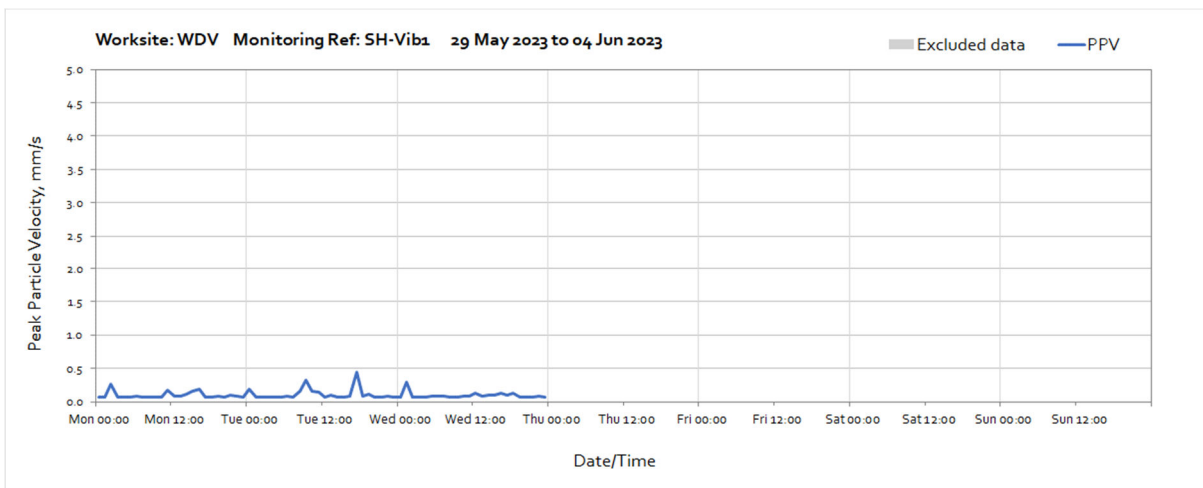
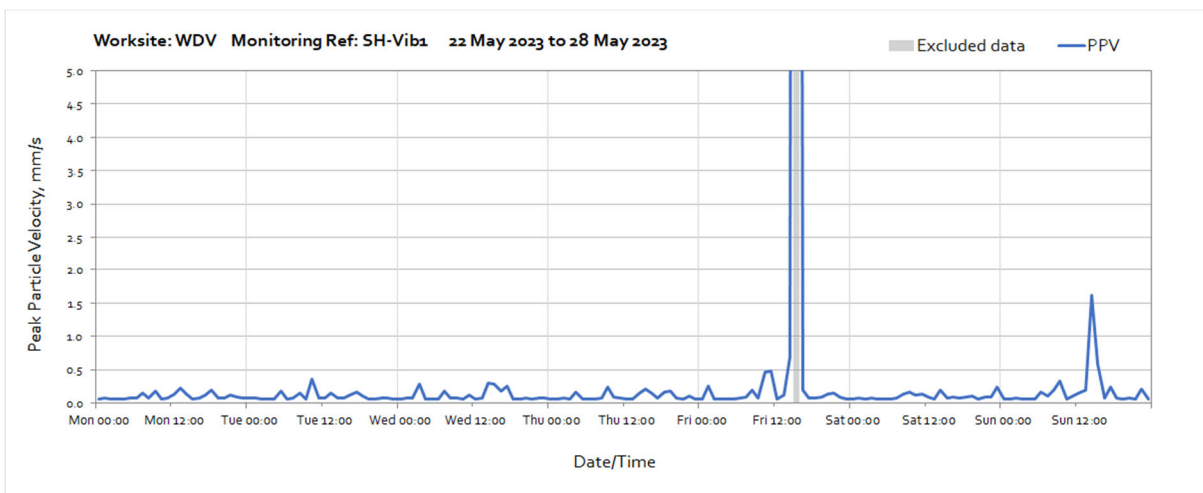


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Worksite: WDV – Monitoring Ref: SH-Vib1

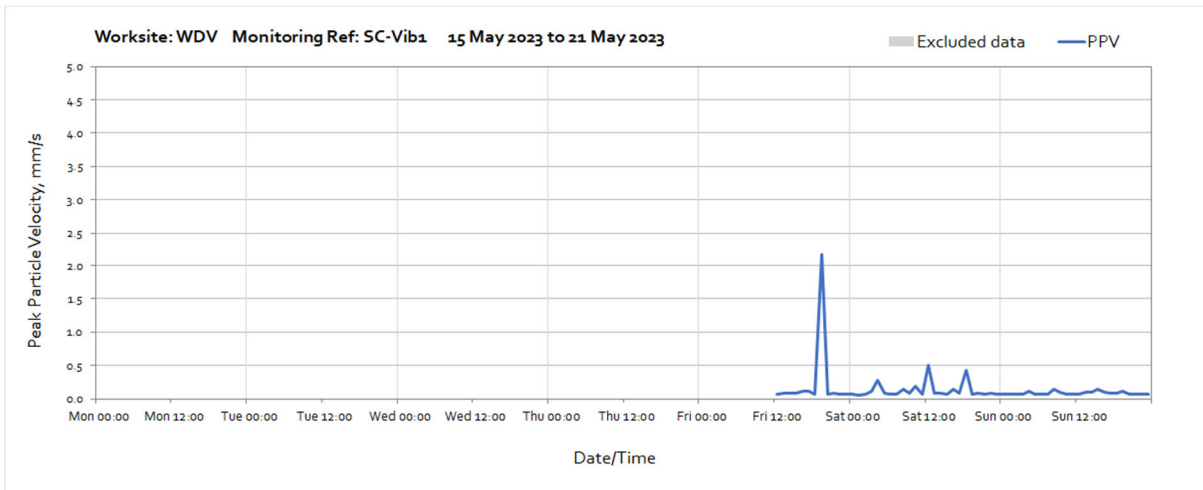


Note: Monitor was installed at 11:00 on Friday 19th May.

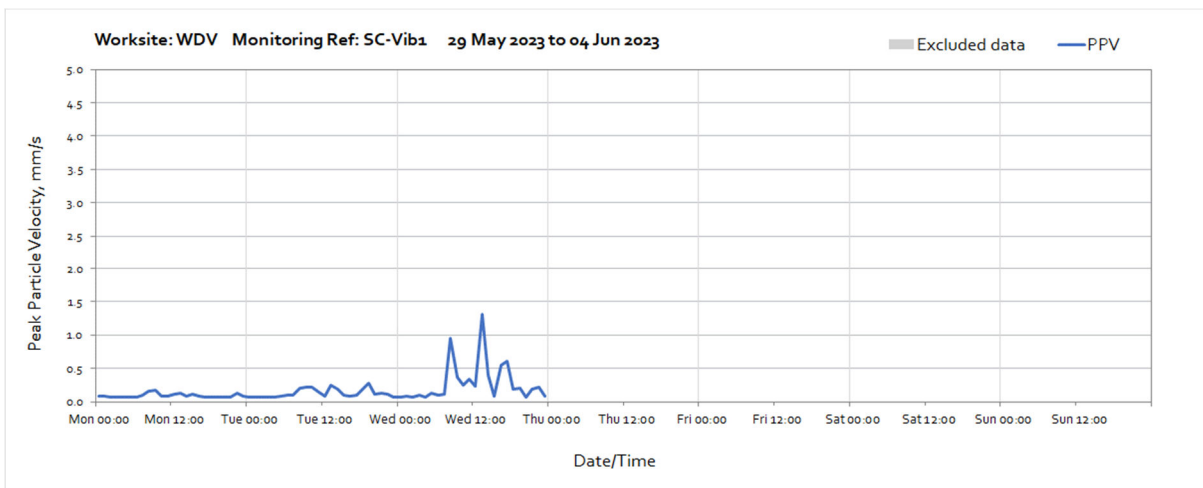
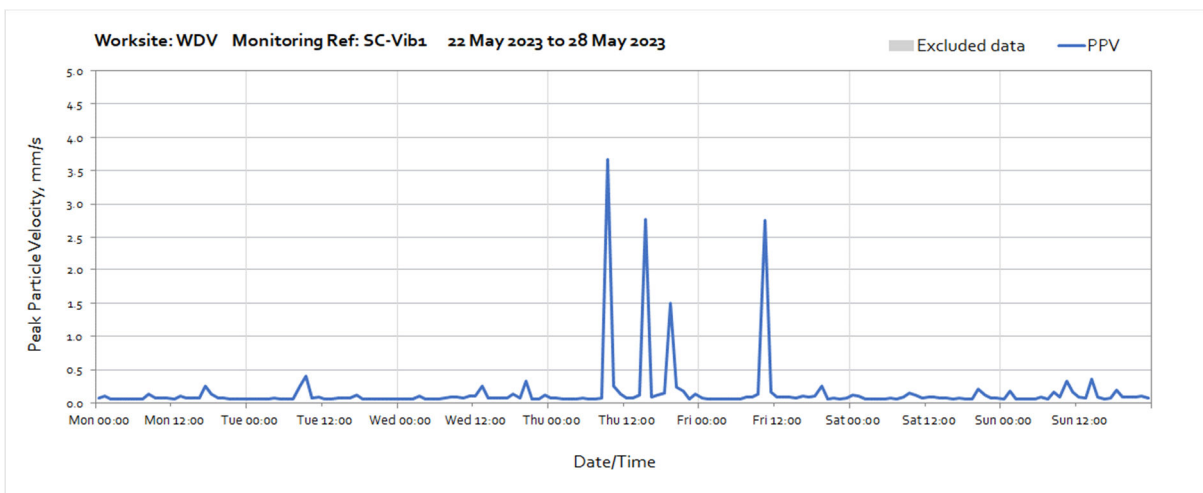


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Worksite: WDV – Monitoring Ref: SC-Vib1

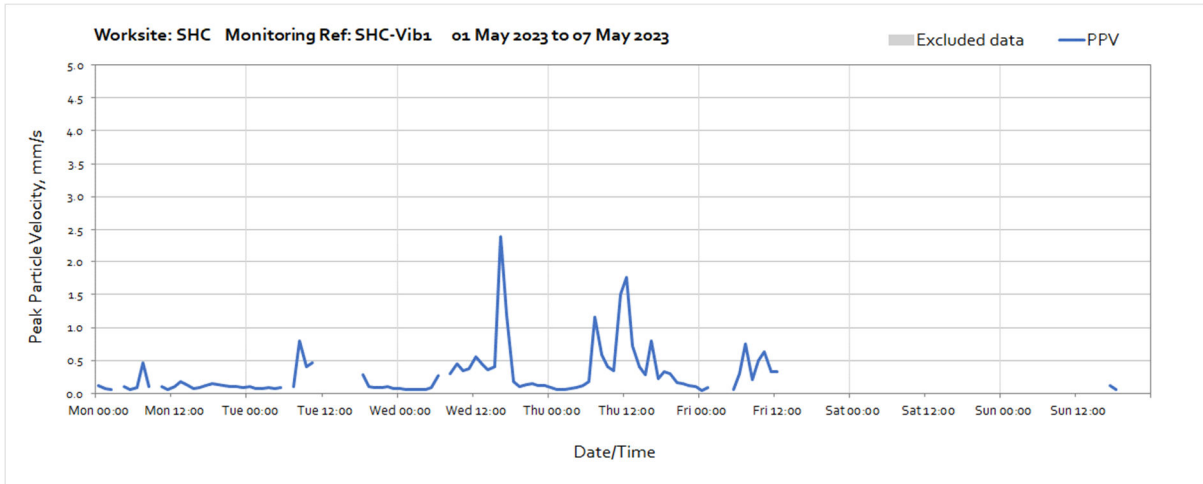


Note: Monitor was installed at 12:00 on Friday 19th May.

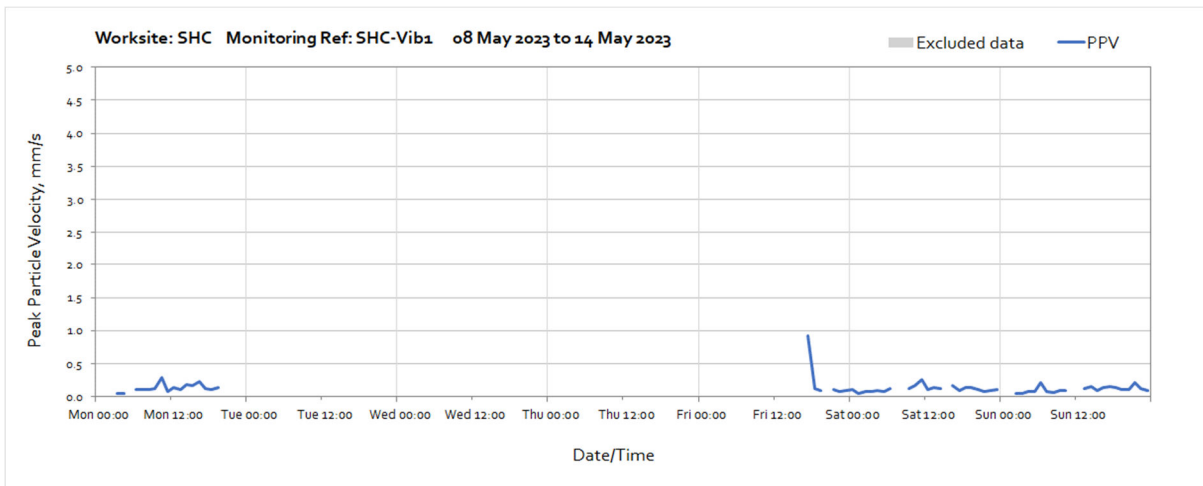


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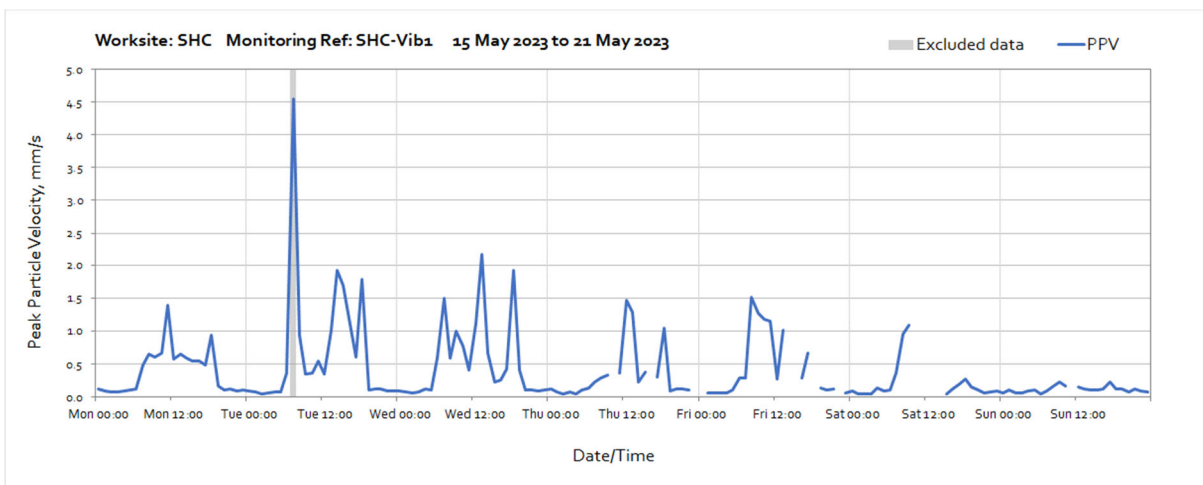
Worksite: SHC – Monitoring Ref: SHC-Vib1



Note: Missing data throughout the week was due to a monitor communication error.

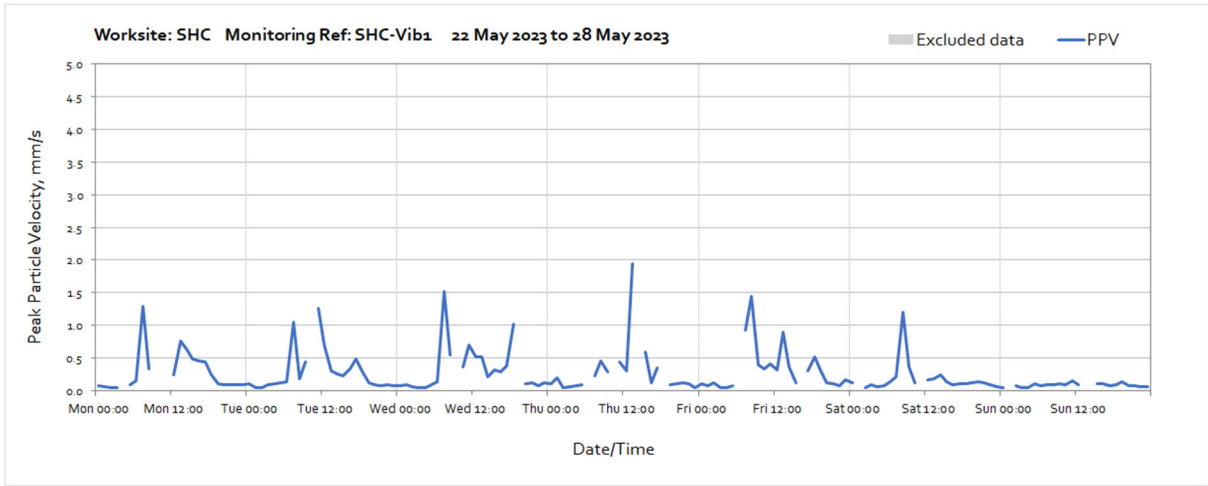


Note: Missing data throughout the week was due to a monitor communication error.

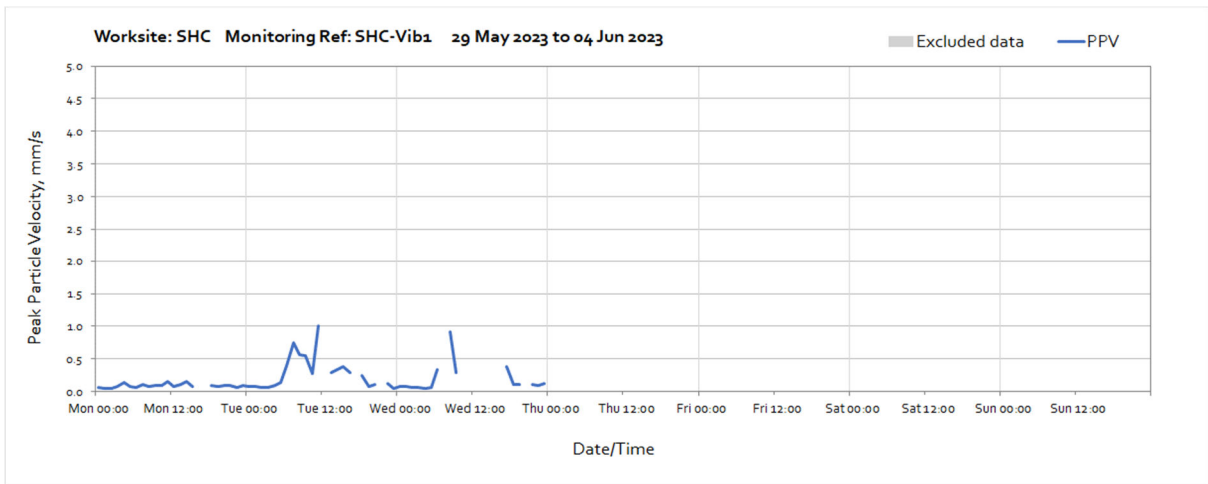


Note: Missing data throughout the week was due to a monitor communication error.

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