

## Construction Noise and Vibration Monthly Report – March 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 March 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 topsoil stripping, piling platform construction works, haul road construction, road and utilities diversion works, aggregate deliveries and excavation works were underway.
- Noise monitoring was undertaken in the vicinity of the School End (ref.: SE), Rosehill Farm (ref.: RF), and Hermitage Chetwode (ref.: HC) worksites where compound development, haul road maintenance, bulk excavation works, topsoil stripping, piling platform construction, fencing works, drainage works, 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 works, vehicle movements, drainage works, vehicle movements, topsoil stripping and stockpiling were underway.
- Noise monitoring was undertaken in the vicinity of the West Street Overbridge worksite (ref.: WSO), where utility works, concrete works, steel deck assembly, waterproofing and backfilling works were underway.
- Noise monitoring was undertaken in the vicinity of the Addison Road worksite (ref.: AR) where embankment works, earthworks, drainage works and reinforced concrete works were underway.
- Noise monitoring was undertaken in the vicinity of the Calvert worksite (ref.: CAL) where piling works, piling platform works, material movement and operation of concrete batching plant was underway.
- Noise monitoring was undertaken in the vicinity of the Woodlands worksite (ref.: WDL) where installation of pre-cast units, waterproofing, piling, material movements and concrete works were underway.
- Noise monitoring was undertaken in the vicinity of the Quinton worksite (ref.: QAR) where no works were underway.
- Noise monitoring was undertaken in the vicinity of the Meadoway and Glebe House worksite (ref: MW&GH) where piling works, silt buster set up and piling platform construction were underway.

- Noise monitoring was undertaken in the vicinity of Oat Close worksite (ref: OC) where silt buster set up, piling works and utility diversion works were underway.
- Noise monitoring was undertaken in the vicinity of Nash Lee Lane worksite (ref.: NLL) where installation of utility connections and elements, platform extension works, silt fencing installation, site access road widening and stockpiling was underway.
- Noise monitoring was undertaken in the vicinity of Wendover Green Tunnel worksite (ref.: WGT) where surface water management works, construction of crane platforms, abutment works, drainage works, vacuum excavation works, topsoil stripping, earthworks, borehole installation, bridge installation, site access road extension and concrete works were underway.
- Noise monitoring was undertaken in the vicinity of Grove Farm worksite (ref: GF) where pond works, v-ditch excavation and casting of protection slabs were underway.
- Noise monitoring was undertaken in the vicinity of Rocky Lane Embankment worksite (ref: RLE) where compound works, utility diversion works, stockpiling, site hoarding, material movements, installation of gravity wall and drainage works were underway.
- Noise monitoring was undertaken in the vicinity of Wendover Dean Viaduct worksite (ref: WDV) where compound construction works, mobilisation works and concrete works were underway.
- Noise monitoring was undertaken in the vicinity of Leather Lane worksite (ref: LL) where no works activities were underway.
- Noise monitoring was undertaken in the vicinity of South Heath Cutting worksite (ref: SHCW) where drainage works, stockpiling and excavation works were underway.
- Noise monitoring was undertaken in the vicinity of North Portal worksite (ref: NP) where site access and haul road works, site and plant operations, piling platform works, platform works, headwall capping-beam works, porous portal structure works and drainage works were undertaken.
- Noise monitoring was undertaken in the vicinity of Chesham Road worksite (ref.: CHSM), where site operation, concrete works and internal structure works were undertaken.
- Noise monitoring was undertaken in the vicinity of Little Missenden Vent Shaft worksite (ref.: LM) where site operation, shaft base slab construction, internal structures construction, excavation works and basement construction works were undertaken.

- Noise monitoring was undertaken in the vicinity of Amersham Vent Shaft worksite (ref.: AM), where site operation, construction of internal structure, tunnel connection works and small basement construction works were undertaken.
- Noise monitoring was undertaken in the vicinity of Chalfont St Giles Vent Shaft worksite (ref.: CSG) where site operation, road maintenance works, reinforced concrete works, tunnel connection works 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, excavation works, road maintenance and tunnel connection works were underway.
- Noise monitoring was undertaken in the vicinity of the Colne Valley Viaduct - Load Test Pile 1 worksite, which is partly located in the London Borough of Hillingdon (LBH), (ref.: CVV, formerly CVV-LTP #1), where piling works, jetty maintenance and operation, compound operation, maintenance and operation of haul roads, ground investigation works, pier construction, pumping water management, satellite compound welfare operation, generator farm operation, north abutment works, concrete drilling, gas crossing emergency dismantling works, Grand Union canal operation and maintenance, fencing, environmental maintenance, 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 excavations, vegetation clearance, pond excavation, 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 formwork reinforced concrete works were underway.
- Charndon Lodge where backfilling, concrete works, including formwork reinforced concrete works were underway.
- Infrastructure Maintenance Depot (IMD) formwork reinforced concrete works and backfilling was underway.
- Shepherds Furze Culvert, Sheephouse North Culvert and Greatmoor Culvert where digging and replacement works were underway.

- Overbridge's where formwork reinforced concrete works were underway.
- Edgcott Road Overbridge where piling works were underway.
- Doddershall Culvert where backfilling and waterproofing works were underway.
- Calvert, along the bat mitigation structure, where sheet piling and construction of piling platform was underway.
- Infrastructure maintenance depot where earthworks were underway.
- Thame Valley Viaduct Causeway where temporary bridge construction, piling, aggregate laying and cofferdam construction were underway.
- Along A41 where concrete batching works, aggregate placement, geogrid installation, embankment works, stockpiling and earthworks were underway.
- Bowood Lane where trial hole construction was underway.
- Nash Lee Road Diversion where asphaltting of road diversion, temporary bridge construction, embankment works were underway.

There were no exceedances of the HS2 threshold levels for significant noise impacts, which are defined in Information Paper E23 (<https://www.gov.uk/government/publications/hs2-information-papers-environment>), during the reporting period.

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

One (1) complaint was received within the Buckinghamshire area during the monitoring period. A description of complaints, the results of investigations and any action taken are detailed in Table 7 of this report.

# Abbreviations and Descriptions

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

Table 1: Table of Abbreviations

Acronym/Term	Definition
$L_{Aeq,T}$	See equivalent continuous sound pressure level
Ambient sound	A description of the all-encompassing sound at a given location and time which will include sound from many sources near and far. Ambient sound can be quantified in terms of the equivalent continuous sound pressure level, $L_{pAeq,T}$
Decibel(s), or dB	Between the quietest audible sound and the loudest tolerable sound there is a million to one ratio in sound pressure (measured in Pascal (Pa)). Because of this wide range, a level scale called the decibel (dB) scale, based on a logarithmic ratio, is used in sound measurement. Audibility of sound covers a range of approximately 0-140dB.
Decibel(s) A-weighted, or dB(A)	The human ear system does not respond uniformly to sound across the detectable frequency range and consequently instrumentation used to measure sound is weighted to represent the performance of the ear. This is known as the 'A weighting' and is written as 'dB(A)'.
Equivalent continuous sound pressure level, or $L_{Aeq,T}$	An index used internationally for the assessment of environmental sound impacts. It is defined as the notional unchanging level that would, over a given period of time (T), deliver the same sound energy as the actual time-varying sound over the same period. Hence fluctuating sound levels can be described in terms of an equivalent single figure value, typically expressed as a decibel level.
Exclusion of data	Measurement of noise levels can be affected by weather conditions such as prolonged periods of rain, winds speeds higher than 5m/s and snow/ice ground cover. Noise levels measured during these periods are considered not representative of normal noise conditions at the site and, for the purposes of this report, are excluded from the assessment of exceedances and calculation of typical noise levels and are also greyed out in charts. Identifiable incongruous noise and vibration events not attributable to HS2 construction noise are also excluded.
Façade	A facade noise level is the noise level 1m in front of a large reflecting surface. The effect of reflection, is to produce a slightly higher (typically +3 dB) sound level than it would be if the reflecting surface was not there.
Free-field	A free-field noise level is the noise level measured at a location where no reflective surfaces, other than the ground, lies within 3.5 metres of the microphone position.
LOAEL	Lowest Observed Adverse Effect Level - the level above which adverse effects on health and quality of life can be detected.
Peak particle velocity, or PPV	Instantaneous maximum velocity reached by a vibrating element as it oscillates about its rest position. The PPV is a simple indicator of perceptibility and risk of damage to structures due to vibration. It is usually measured in mm/s.
SOAEL	Significant Observed Adverse Effect Level - the level above which significant adverse effects on health and quality of life occur.
Sound pressure level	The parameter by which sound levels are measured in air. It is measured in decibels. The threshold of hearing has been set at 0dB, while the threshold of pain is approximately 120dB. Normal speech is approximately 60dB at a distance of 1 metre and a change of 3dB in a time varying sound signal is commonly regarded as being just detectable. A change of 10dB is subjectively twice, or half, as loud.
Vibration dose value, or VDV	An index used to evaluate human exposure to vibration in buildings. While the PPV provides information regarding the magnitude of single vibration events, the VDV provides a measure of the total vibration experienced over a specified period of time (typically 16h daytime and 8h night-time). It takes into account the magnitude, the number and the duration of vibration events and can be used to quantify exposure to continuous, impulsive, occasional and intermittent vibration. The vibration dose value is measured in $m/s^{1.75}$ .

# 1 Introduction

1.1.1 HS2 is required to undertake noise (and vibration) monitoring as necessary to comply with the requirements of the High Speed Rail (London-West Midlands) Environmental Minimum Requirements, including specifically Annex 1: Code of Construction Practice, in addition to any monitoring requirements arising from conditions imposed through consents under Section 61 of the Control of Pollution Act, 1974 or through Undertakings & Assurances given to third parties. Such monitoring may be undertaken for the following purposes:

- monitoring the impact of construction works;
- to investigate complaints, incidents and exceedance of trigger levels; or
- monitoring the effectiveness of noise and vibration control measures.

1.1.2 Monitoring data and interpretive reports are to be provided to each relevant local authority on a monthly basis and shall include a summary of the construction activities occurring, the data recorded over the monitoring period, any complaints received, any periods in exceedance of agreed trigger levels, the results of any investigations and any actions taken or mitigation measures implemented. This report provides noise data, and interpretation thereof, for monitoring carried out by HS2 within the Buckinghamshire (BS) Local Authority area for the period 1<sup>st</sup> to 31<sup>st</sup> March 2023.

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

- A422 Turweston North worksite, reference A422 TN (see Plan 1 in Appendix A), where works activities included:
  - Topsoil stripping.
  - Piling platform construction.
  - Haul road construction.
  - Road and utilities diversion.
  - Aggregate deliveries.
  - Excavation works.
- School End worksite, reference SE (see Plan 2 in Appendix A), Rosehill Farm worksite reference RF (see Plan 2 in Appendix A), and Hermitage Chetwode Worksite reference HC (see plan 2 in Appendix A), where works activities included:



- Compound development.
- Haul road maintenance.
- Bulk excavation works.
- Topsoil stripping.
- Removal of badger fencing.
- Drainage works, including pond maintenance.
- Fencing works.
- Stockpiling.
- Piling platform construction.
- Vehicle movements.
- Twyford worksite, reference TW (see Plan 2 in Appendix A), where works activities included:
  - Access and haul road maintenance.
  - Vehicle movements.
  - Drainage works, including culvert installation.
  - Topsoil stripping.
  - Stockpiling.
  - Vehicle movements.
- West Street Overbridge worksite, reference WSO (see Plan 3 in Appendix A), where works activities included:
  - Utility works including cable pulling, utility connection works and pipeline installation.
  - Concrete works including formwork reinforced concrete, concrete chambers and laying of concrete slabs.
  - Steel deck assembly.
  - Waterproofing.
  - Backfilling, including earthworks and technical backfilling.
- Addison Road worksite, reference AR (see Plan 3 in Appendix A), where works activities included:
  - Embankment works.

- Drainage works.
- Formwork reinforce concrete works.
- Earthworks, including backfilling.
- Calvert worksite, reference CAL (see Plan 3 in Appendix A) where works activities included:
  - Piling works.
  - Piling platform works.
  - Material movement.
  - Operation of concrete batching plant.
- Woodlands worksite, reference WDL (see Plan 4 in Appendix A) where works activities included:
  - Installation of pre-cast units.
  - Waterproofing.
  - Concrete works, including rebar fixing for headwalls.
  - Material movements.
  - Piling works.
- Quanton worksite, reference QAR (see Plan 4 in Appendix A) where no works activities were underway.
- Meadoway and Glebe House worksite, reference MW&GH (see Plan 5 in Appendix A), where works activities included:
  - Overbridge piling works.
  - Piling platform works.
- Oat Close worksite, reference OC (see Plan 5 in Appendix A), where works activities included:
  - Silt buster set up.
  - Piling works including overbridge piling.
  - Utility diversion works.
- Nash Lee Lane worksite, reference NLL (see Plan 6 in Appendix A), where works activities included:
  - Installation of utility connections and elements.

- Platform extension works.
- Silt fencing installation.
- Site access road widening.
- Stockpiling.
- Wendover Green Tunnel worksite, reference WGT (see Plan 6 in Appendix A), where works activities included:
  - Surface water management works.
  - Construction of crane platforms.
  - Abutment works, including backfilling and strike shutters installation.
  - Drainage works.
  - Vacuum excavation works.
  - Topsoil stripping.
  - Earthworks.
  - Borehole installation.
  - Bridge installation.
  - Site access road extension.
  - Concrete works including v-ditch construction and concrete pours.
- Grove Farm worksite, reference GF (see Plan 7 in Appendix A), where works activities included:
  - Pond works, including installation and lining works.
  - V-ditch excavation.
  - Casting of protection slabs.
- Rocky Lane Embankment worksite, reference RLE (see Plan 7 in Appendix A), where works activities included:
  - Compound works.
  - Utility diversion works.
  - Stockpiling.
  - Site hoarding.
  - Material movements.

- Installation of gravity wall, including excavation, concrete pours and backfilling.
- Drainage works and maintenance.
- Wendover Dean Viaduct worksite, reference WDV (see Plan 7 in Appendix A), where works activities included:
  - Compound construction works.
  - Concrete works including steel fixing, casting of launch platform pads and concrete pours.
  - Mobilisation works.
- Leather Lane worksite, reference LL (see Plan 8 in Appendix A), where no works activities were underway during March.
- South Heath Cutting worksite, reference SHCW (see Plan 8 in Appendix A), where works activities included:
  - Drainage works, including pond installation.
  - Stockpiling.
  - Excavation works.
- North Portal worksite, reference NP (see Plan 8 in Appendix A), where works activities included:
  - Site access road works including scrape formation works, installation of hardstanding and kerbing, drainage and service works, installation of signage and asphaltting.
  - Haul road dismantling works.
  - General site operation of plant and equipment.
  - Piling platform works including dismantling works and traffic management.
  - 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, reference 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 reference LM (see Plan 9 in Appendix A), where works activities included:
  - General site activities including operation of plant and equipment.
  - Shaft base slab construction, including concrete pours.
  - Internal structures construction works.
  - Excavation works.
  - Basement construction.
- Amersham Vent Shaft worksite, reference AM (see Plan 10 in Appendix A), where works activities included:
  - General site activities including operation of plant and equipment.
  - Internal structure including concrete and floor works.
  - Tunnel connection works.
  - Small basement construction including excavation and demolition works.
- Chalfont St Giles Vent Shaft worksite, reference CSG (see Plan 11 in Appendix A), where works activities included:
  - General site activities including operation of plant and equipment.
  - Road maintenance.
  - Reinforced concrete works for internal structure walls.
  - Tunnel connection works, including pouring of concrete floors.
  - Basement construction including excavation and concrete works.
- Chalfont St Peter Vent Shaft worksite, reference CSP (see Plan 12 in Appendix A), where works activities included:
  - General site activities including operation of plant and equipment.
  - Road maintenance.
  - Tunnel connection works, including pouring of concrete floors.

- Excavation works 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), reference CVV (see Plan 13 in Appendix A), formerly CVV-LTP #1, where works activities included:
  - Piling works including pile trimming.
  - Jetty maintenance and operation works.
  - Compound operations.
  - Maintenance and operation of haul roads.
  - Ground investigation works.
  - Pier construction, including tower crane mobilisation and demobilisation.
  - Pumping water management.
  - Satellite compound welfare operation.
  - Generator farm operation.
  - North abutment works, including yard supporting activities and fibre reinforced concrete works.
  - Concrete drilling.
  - Gas crossing emergency dismantling works.
  - Grand Union canal operation and maintenance.
  - Fencing works.
  - Environmental maintenance.
  - 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, delivery 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, construction of robust kerbs, construction of concrete stitch, filling of voids and top openings, verge waterproofing, diaphragm walls and concrete works (within deck) and drainage 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 excavations, vegetation clearance, pond excavation, 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 formwork reinforced concrete works were underway.
- Charndon Lodge where backfilling, concrete works, including formwork reinforced concrete works were underway.
- Infrastructure Maintenance Depot (IMD) formwork reinforced concrete works and backfilling was underway.
- Sheperds Furze Culvert, Sheephouse North Culvert and Greatmoor Culvert where digging and replacement works were underway.
- Overbridge's where formwork reinforced concrete works were underway.
- Edgcott Road Overbridge where piling works were underway.
- Doddershall Culvert where backfilling and waterproofing works were underway.
- Calvert, along the bat mitigation structure, where sheet piling and construction of piling platform was underway.
- Infrastructure maintenance depot where earthworks were underway.
- Thame Valley Viaduct Causeway where temporary bridge construction, piling, aggregate laying and cofferdam construction were underway.
- Along A41 where concrete batching works, aggregate placement, geogrid installation, embankment works, stockpiling and earthworks were underway.
- Bowood Lane where trial hole construction was underway.
- Nash Lee Road Diversion where asphaltting of road diversion, temporary bridge construction, embankment works 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

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<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-six (46) noise and seven (7) vibration monitoring installations were active in March in the BS area. Table 2 summarises the positions of noise and vibration monitoring installations within the BS area in March 2023.
- 1.2.2 Noise monitor ref.: SH-NMP1, within the vicinity of South Heath Cutting worksite (ref.: SHC) was removed as it has been retrieved for repair.
- 1.2.3 Noise monitor ref.: NCAS7-NMP1, within the vicinity of Rocky Lee Lane worksite (ref.: RLE) has been removed.
- 1.2.4 Vibration monitor ref.: NCAS6-Vib1, within the vicinity of Rocky Lee Lane worksite (ref.: RLE) has been removed.
- 1.2.5 Vibration monitor ref.: NCAS7-Vib1, within the vicinity of Rocky Lee Lane worksite (ref.: RLE) has been removed.
- 1.2.6 Maps showing the positions of noise and vibration monitoring installations are presented in Appendix B.

Table 2: Monitoring Locations

Worksite Reference	Measurement Reference	Address
A422 TN	TN-NMP1	Turweston, Brackley
SE	SE-NMP1	School End, Chetwode
	SE-Vib1	School End, Chetwode
RF	RF-NMP1	Old Stable Cottage, Rosehill Farm, Chetwode
	RF-Vib1	Old Stable Cottage, Rosehill Farm, Chetwode
HC	HC-NMP1	Hermitage, Chetwode
TW	TW-NMP1	Twyford, Buckinghamshire
WSO	WSO-NMP1	West Street, Twyford
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, Quainton



Worksite Reference	Measurement Reference	Address
QAR	QAR-NMP2	Station Rd, Quanton
MW&GH	GH-NMP1	Glebe House, A418, Aylesbury
	MW-NMP1	Aylesbury, Buckinghamshire
OC	OC-NMP1	Oat Close, Bishopstone, Aylesbury
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury
	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
	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
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	CSP-NMP1	Chalfont St Peter Vent Shaft Worksite, Chesham Lane, Chalfont St. Peter

Worksite Reference	Measurement Reference	Address
	CSP-NMP2	Chalfont St Peter Vent Shaft Worksite, Chesham Lane, Chalfont St. Peter
	CSP-NMP3	Chalfont St Peter Vent Shaft Worksite, Chesham Lane, Chalfont St. Peter
CVV*	CVV-NMP1	Northern boundary, Load Test Pile 1 Worksite, Denham Water Ski Club
	WYC-NMP1	Wyatt's Covert, Tilehouse Lane, Denham, Denham Garden Village
	DFS-NMP1	Denham Film Studio, Uxbridge
	SVF-NMP1	Savay Farm, Denham Garden Village, Denham, Buckinghamshire

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

## 2 Summary of Results

### 2.1 Summary of Measured Noise Levels

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

Table 3: Summary of Measured dB L<sub>Aeq</sub> Data over the Monitoring Period

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> )					Saturday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> )					Sunday / Public Holiday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> )	
				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	51.0 (57.5)	51.6 (55.2)	48.6 (51.2)	46.9 (51.2)	46.5 (53.6)	48.3 (49.4)	49.4 (52.1)	49.9 (51.2)	48.2 (52.5)	44.9 (48.7)	48.2 (52.5)	47.5 (53.0)
SE	SE-NMP1	School End, Chetwode	Free-field	52.0 (57.7)	62.3 (65.2)	46.2 (49.9)	45.1 (49.6)	45.3 (53.9)	46.5 (49.0)	47.3 (51.9)	46.0 (49.4)	45.7 (51.5)	44.5 (48.6)	46.1 (51.8)	46.8 (54.9)
RF	RF-NMP1	Old Stable Cottage, Rosehill Farm, Chetwode	Free-field	48.1 (50.8)	50.9 (55.3)	47.6 (52.1)	45.9 (49.5)	45.7 (53.6)	47.0 (47.9)	49.4 (51.7)	46.9 (48.5)	47.5 (54.7)	46.4 (52.8)	45.8 (48.6)	44.9 (50.9)
HC	HC-NMP1	Hermitage, Chetwode	Free-field	54.1 (66.8)	63.4 (68.5)	45.5 (51.4)	42.9 (49.9)	44.4 (53.3)	48.4 (48.4)	51.7 (51.7)	47.3 (47.3)	44.1 (47.3)	44.1 (48.5)	46.5 (53.8)	49.3 (56.7)
TW	TW-NMP1	Twyford	Free-field	49.0 (64.0)	59.5 (65.0)	45.4 (50.6)	44.0 (51.0)	44.5 (58.0)	46.4 (50.2)	48.1 (52.5)	46.5 (48.2)	45.5 (52.2)	42.9 (47.8)	45.9 (54.8)	44.9 (55.9)
WSO	WSO-NMP1	West Street, Twyford	Free-field	50.3 (55.8)	50.1 (56.4)	48.0 (51.1)	42.8 (52.2)	43.7 (55.4)	47.8 (49.1)	48.8 (50.0)	47.1 (47.4)	45.8 (51.5)	42.5 (51.3)	46.5 (51.6)	43.7 (55.0)
AR	AR-NMP1	Addison Road, Rosehill Farm	Free-field	48.5 (56.3)	57.3 (71.6)	44.2 (50.5)	40.1 (50.2)	41.2 (51.0)	48.4 (52.8)	48.7 (51.6)	48.5 (53.2)	43.4 (48.6)	41.5 (49.4)	44.8 (50.7)	43.1 (54.9)

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> )					Saturday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> )					Sunday / Public Holiday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> )	
				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	56.1 (71.5)	59.0 (69.4)	51.7 (65.2)	49.6 (63.9)	48.8 (66.4)	47.5 (52.8)	50.9 (59.2)	50.0 (53.8)	47.7 (56.1)	42.9 (54.8)	53.5 (67.4)	49.7 (69.9)
	FCC-NMP1	Calvert South	Free-field	58.9 (62.5)	58.7 (61.4)	49.5 (55.9)	44.8 (52.2)	45.4 (61.0)	47.4 (51.4)	50.3 (56.2)	50.3 (59.0)	45.8 (52.3)	41.8 (53.2)	46.8 (53.0)	47.7 (59.9)
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton	Free-field	67.0 (70.5)	68.7 (69.8)	46.2 (63.8)	44.1 (62.4)	44.4 (53.0)	47.1 (53.5)	57.6 (60.8)	52.3 (59.1)	50.0 (64.5)	41.6 (48.1)	49.2 (62.2)	43.4 (52.5)
QAR	QAR-NMP2	Station Rd, Quainton	Free-field	55.5 (77.8)	59.9 (77.4)	54.2 (72.9)	51.0 (68.6)	51.9 (75.1)	56.0 (72.8)	55.6 (70.4)	53.3 (66.6)	51.7 (70.5)	46.1 (56.2)	55.1 (71.5)	52.4 (76.1)
MW&GH	GH-NMP1	Glebe House, A418, Aylesbury	Free-field	55.9 (61.3)	56.3 (59.9)	55.9 (58.7)	53.7 (57.4)	51.1 (59.1)	54.4 (58.3)	55.1 (57.1)	55.1 (56.3)	53.7 (56.6)	48.5 (52.3)	54.9 (60.3)	51.6 (60.2)
	MW-NMP1	Aylesbury, Buckinghamshire	Free-field	65.3 (68.0)	64.4 (67.2)	63.8 (66.6)	61.4 (64.9)	58.5 (66.3)	62.3 (63.2)	64.0 (64.2)	64.3 (65.7)	62.9 (64.8)	57.0 (60.8)	63.1 (66.8)	58.3 (65.8)
OC	OC-NMP1	Oat Close, Bishopstone, Aylesbury	Free-field	49.1 (61.5)	50.1 (61.7)	47.5 (53.5)	47.0 (54.2)	47.1 (58.4)	48.0 (53.0)	48.3 (50.7)	49.8 (57.3)	45.7 (49.8)	46.0 (52.5)	46.8 (53.8)	48.0 (60.7)
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury	Free-field	47.7 (63.5)	51.8 (62.5)	45.8 (55.5)	45.3 (57.4)	43.2 (57.6)	41.8 (53.9)	44.9 (61.9)	51.0 (58.6)	46.5 (58.9)	38.0 (45.6)	45.1 (54.3)	44.4 (62.0)
	MF-NMP1	Moat Farm, Marsh Lane, Stoke Mandeville	Free-field	47.6 (59.2)	49.9 (59.3)	44.8 (51.7)	44.3 (53.9)	42.6 (58.5)	43.9 (49.4)	45.9 (49.9)	45.2 (48.3)	42.7 (48.7)	39.7 (46.5)	44.4 (53.7)	43.6 (58.9)

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
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee	Free-field	58.1 (61.5)	57.8 (61.8)	58.1 (69.6)	55.6 (58.4)	54.1 (60.4)	54.5 (57.2)	55.6 (57.4)	55.3 (57.4)	55.1 (57.7)	53.1 (55.3)	54.2 (58.5)	54.3 (59.8)
	NLL-NMP2	Nash Lee Lane, Nash Lee	Free-field	59.3 (63.8)	58.7 (62.9)	57.9 (61.8)	54.7 (60.5)	51.2 (62.5)	53.8 (56.1)	56.2 (57.6)	55.4 (57.5)	55.0 (58.6)	49.2 (54.5)	54.5 (59.4)	52.2 (62.2)
WGT	ER-NMP1	Ellesborough Rd, Wendover	Free-field	53.9 (57.0)	58.8 (67.7)	52.0 (54.8)	49.5 (58.1)	48.1 (58.5)	51.1 (52.8)	52.0 (52.9)	52.0 (53.9)	51.2 (53.5)	46.9 (52.9)	51.7 (56.6)	47.7 (55.6)
	BL-NMP1	Bacombe Lane, Wendover	Free-field	48.9 (52.0)	49.6 (52.8)	48.2 (51.6)	47.0 (54.7)	46.0 (62.4)	47.2 (49.1)	49.0 (49.8)	48.6 (51.2)	47.7 (50.4)	45.9 (48.0)	47.9 (52.6)	46.4 (51.0)
	WT-NMP1	A413, Wendover	Free-field	67.9 (69.9)	67.2 (69.5)	66.2 (68.3)	63.1 (67.5)	60.6 (68.9)	64.5 (64.8)	65.8 (67.1)	66.0 (68.2)	65.0 (67.3)	58.7 (63.7)	65.0 (70.2)	60.2 (67.6)
GF	GF-NMP1	Grove Farm, Wendover	Free-field	51.8 (55.6)	52.9 (55.9)	50.0 (55.6)	49.0 (57.7)	46.9 (56.3)	48.3 (49.5)	49.4 (50.9)	49.0 (52.2)	48.1 (52.6)	44.8 (48.9)	47.7 (53.4)	45.7 (52.8)
RLE	SDVC-NMP1	Rocky Lane, Wendover	Free-field	65.8 (69.0)	64.9 (66.3)	63.8 (65.9)	61.2 (64.5)	59.2 (66.8)	62.9 (64.3)	64.1 (65.3)	64.0 (66.0)	63.2 (66.0)	58.0 (62.3)	63.3 (66.5)	59.2 (65.7)
	NCAS6-NMP1	Chesham Lane, The Lee, Wendover	Free-field	49.8 (63.2)	50.9 (60.7)	48.7 (56.0)	47.2 (54.0)	45.8 (56.3)	48.0 (55.7)	48.7 (52.6)	48.9 (52.4)	47.3 (52.0)	44.6 (49.2)	48.0 (53.4)	47.1 (59.9)
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	Free-field	58.4 (61.7)	58.2 (62.5)	56.9 (59.3)	54.1 (64.2)	50.7 (59.5)	55.0 (58.1)	56.5 (58.5)	56.7 (58.9)	55.5 (59.0)	49.0 (52.5)	55.2 (60.9)	51.4 (60.5)

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> )					Saturday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> )					Sunday / Public Holiday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> )	
				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	53.4	56.2	51.1	48.7	47.4	49.5	53.5	51.7	49.5	48.2	49.7	45.9
				(57.4)	(58.3)	(56.6)	(56.4)	(61.2)	(52.9)	(56.7)	(55.6)	(55.4)	(56.9)	(55.4)	(54.9)
LL	HG-NMP1	Hunts Green, Leather Lane, The Lee	Free-field	52.5	59.4	53.2	53.8	55.7	53.4	58.0	56.4	54.9	54.5	56.2	51.2
				(71.0)	(72.9)	(65.4)	(70.0)	(84.2)	(79.9)	(77.9)	(74.6)	(75.7)	(71.3)	(68.7)	(67.1)
	GD-NMP1	Grimms Ditch, The Lee, South Heath	Free-field	54.9	59.0	55.4	54.5	53.5	47.7	54.0	54.1	50.6	50.2	55.5	49.3
				(68.0)	(70.3)	(71.0)	(70.5)	(72.8)	(53.8)	(57.3)	(60.0)	(63.0)	(60.1)	(72.3)	(64.5)
SHCW	PR-NMP1	Potters Row, South Heath	Free-field	50.8	55.6	49.8	48.1	47.2	50.9	52.0	50.6	47.1	43.9	48.7	47.7
				(68.8)	(68.6)	(61.5)	(61.6)	(65.3)	(65.3)	(62.0)	(59.2)	(58.7)	(50.1)	(57.6)	(65.4)
NP	BFH-NMP1	Bury Farm, Great Missenden	Free-field	46.2	50.8	46.9	43.7	40.5	43.2	45.9	46.3	43.8	39.2	45.5	39.7
				(50.4)	(59.6)	(53.4)	(53.1)	(54.0)	(46.4)	(47.8)	(47.5)	(48.9)	(52.2)	(50.7)	(48.3)
	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath	Free-field	51.3	54.7	52.4	48.6	45.3	48.4	50.4	50.5	47.3	45.4	48.5	44.7
				(57.1)	(58.7)	(65.6)	(65.6)	(52.8)	(51.8)	(50.5)	(52.4)	(53.5)	(55.4)	(53.3)	(54.4)
	BLH-NMP1	Bayleys Hatch, South Heath, Great Missenden	Free-field	51.4	51.9	48.3	44.7	43.9	49.7	50.5	50.3	47.0	44.9	49.5	43.5
				(56.4)	(55.0)	(53.3)	(52.4)	(56.3)	(51.2)	(51.3)	(52.2)	(50.7)	(53.2)	(54.2)	(54.4)
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath	Free-field	57.0	56.4	55.2	51.8	48.6	52.7	56.7	54.9	53.5	48.0	53.4	47.4
				(59.9)	(58.7)	(59.2)	(56.3)	(56.1)	(54.2)	(61.9)	(57.1)	(60.4)	(53.5)	(57.2)	(54.1)
AM	AM-NMP1	Whielden Lane, Amersham	Free-field	62.9	65.4	60.9	58.1	54.5	58.1	61.3	60.6	58.8	52.9	59.5	53.9
				(64.6)	(69.6)	(62.9)	(61.2)	(62.7)	(58.3)	(62.4)	(61.6)	(61.2)	(56.2)	(63.6)	(60.2)

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
LM	LM-NMP1	Little Missenden, A413, Amersham	Free-field	62.2 (63.9)	61.8 (64.7)	61.4 (63.5)	57.9 (61.7)	53.9 (62.6)	56.6 (57.9)	59.7 (61.9)	60.5 (62.8)	58.9 (62.1)	52.2 (56.2)	58.3 (61.0)	52.9 (60.1)
	PWC-NMP1	Patricia Holmes, LM Worksite, Amersham	Free-field	61.8 (63.6)	61.4 (64.4)	61.2 (63.2)	57.5 (61.6)	54.5 (79.3)	56.7 (57.5)	59.4 (60.9)	59.7 (61.1)	58.5 (61.2)	52.4 (58.5)	57.9 (60.8)	53.6 (64.2)
CSG	CSG-NMP1	CSG Worksite, Bottom House Farm Lane	Free-field	46.9 (49.4)	50.8 (54.4)	46.8 (52.2)	43.0 (54.9)	41.5 (52.5)	43.6 (45.7)	49.3 (51.2)	48.1 (48.9)	44.0 (49.1)	40.1 (51.1)	47.4 (56.8)	41.3 (54.0)
	CSG-NMP2	CSG Worksite, Bottom House Farm Lane	Free-field	51.3 (54.7)	59.3 (65.3)	51.9 (56.0)	44.2 (52.6)	46.4 (57.5)	49.4 (50.6)	50.6 (51.9)	49.3 (52.8)	46.4 (52.4)	44.7 (52.1)	48.0 (53.6)	44.6 (52.2)
	PIC-NMP1	Bottom House Farm Lane, Chalfont St Giles, Buckinghamshire	Free-field	56.5 (57.7)	55.8 (58.2)	55.1 (58.6)	52.3 (59.6)	49.6 (62.5)	52.2 (53.7)	55.8 (57.0)	56.8 (61.2)	53.0 (56.6)	47.1 (56.8)	53.2 (62.7)	48.5 (57.9)
CSP	CSP-NMP1	Chalfont St Peter Vent Shaft Worksite	Free-field	59.9 (61.9)	60.0 (63.3)	58.2 (67.0)	53.3 (58.7)	49.4 (57.8)	53.3 (54.0)	57.8 (59.8)	58.1 (60.4)	54.7 (59.1)	47.3 (52.9)	55.5 (61.4)	48.6 (54.6)
	CSP-NMP2	Chalfont St Peter Vent Shaft Worksite	Free-field	47.8 (53.9)	51.1 (56.4)	47.5 (52.8)	45.0 (50.9)	42.1 (50.7)	45.5 (46.7)	48.1 (49.8)	47.0 (48.8)	45.1 (49.3)	39.3 (46.9)	47.6 (52.5)	40.1 (45.5)
	CSP-NMP3	Chalfont St Peter Vent Shaft Worksite	Free-field	58.3 (61.6)	57.9 (60.4)	57.3 (60.0)	54.9 (58.4)	50.8 (57.7)	53.9 (54.2)	56.5 (56.9)	56.6 (57.0)	55.5 (57.8)	49.1 (52.9)	56.1 (59.3)	49.9 (55.9)



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	64.9 (67.3)	63.6 (65.2)	63.1 (65.0)	59.3 (64.8)	57.6 (65.6)	60.3 (61.2)	62.1 (63.2)	63.3 (65.5)	60.8 (65.6)	55.1 (60.4)	60.4 (62.6)	57.3 (64.3)
	WYC-NMP1	Wyatt's Covert, Tilehouse Lane, Denham	Free-field	60.5 (64.6)	59.7 (60.5)	58.6 (61.0)	54.6 (59.5)	52.5 (59.9)	57.1 (58.6)	59.3 (60.5)	59.3 (60.4)	56.6 (60.0)	50.3 (56.4)	56.7 (60.6)	52.6 (59.8)
	DFS-NMP1	Denham Film Studio, Uxbridge	Free-field	50.8 (55.0)	53.6 (60.8)	52.9 (61.0)	48.4 (59.4)	47.3 (56.6)	50.9 (57.1)	50.0 (52.1)	47.6 (50.8)	50.2 (58.1)	47.6 (60.7)	50.2 (61.7)	46.7 (55.4)
	SVF-NMP1	Savay Farm, Denham Garden Village, Denham, Buckinghamshire	Free-field	54.1 (65.8)	52.9 (61.1)	49.7 (53.7)	46.4 (50.9)	46.8 (67.5)	54.1 (56.9)	52.2 (52.9)	48.4 (49.3)	47.5 (51.3)	45.3 (55.1)	51.8 (62.2)	46.2 (53.5)

2.1.2 Table 4 presents a summary of the measured vibration levels at the monitoring location over the reporting period. The highest PPV measured during the monitoring along any axis is presented in the table.

Table 4: Summary of Measured PPV Data over the Monitoring Period

Worksite Reference	Measurement Reference	Monitor Address	Highest PPV measured in any axis, mm/s
SE	SE-Vib1	School End, Chetwode	4.73 (X-axis)*
RF	RF-Vib 1	Old Stable Cottage, Rosehill Farm, Chetwode	1.31 (Z-axis)
WGT	ER-Vib 1	46, Ellesborough Rd, Wendover	2.66 (X-axis)
WDV	WDV-Vib1	Upper Wendover Dean Farm, A413, Wendover	3.24 (Y-axis)
	WDV-Vib2	Upper Wendover Dean Farm, A413, Wendover	0.41 (Z-axis)
GF	GF-Vib1	Grove Farm, Wendover	3.89 (X-axis)
SHC	SHC-Vib1	School Hill Compound, Calvert	1.40 (X-axis)

\*High vibration levels at SE-Vib1 are due to plant movements in the proximity of the vibration monitor and non-HS2 interference at the monitoring position, the cause of which is under investigation. The nearest receptor is 50 meters further away and would experience lower vibration levels than measured at the monitor.

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

## 2.2 Exceedances of the LOAEL and SOAEL

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

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

Table 5: Summary of Exceedances of LOAEL and SOAEL

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
A422 TN	TN-NMP1	Turweston, Brackley	All days	All periods	No exceedance	No exceedance
SE	SE-NMP1	School End, Chetwode	Weekdays	0800-1800	9	No exceedance
RF	RF-NMP1	Old Stable Cottage, Rosehill Farm, Chetwode	All days	All periods	No exceedance	No exceedance
HC	HC-NMP1	Hermitage, Chetwode	Weekdays	0800-1800	7	No exceedance
TW	TW-NMP1	Twyford	Weekdays	0800-1800	4	No exceedance
WSO	WSO-NMP1	West Street, Twyford	All days	All periods	No exceedance	No exceedance
AR	AR-NMP1	Addison Road, Rosehill Farm	Weekdays	0800-1800	7	No exceedance

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
CAL	SHC-NMP1	School Hill Compound, Calvert	Weekdays	0700-0800 0800-1800 1800-1900	4 5 3	No exceedance No exceedance No exceedance
			Saturdays	1400-2200	3	No exceedance
	FCC-NMP1	Calvert South	Weekdays Saturdays	0700-0800 1300-1400	10 1	No exceedance No exceedance
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton	Weekdays	0700-0800 0800-1800 1800-1900	19 23 2	No exceedance No exceedance No exceedance
			Saturdays	1300-1400 1400-2200	1 4	No exceedance No exceedance
QAR	QAR-NMP2	Station Rd, Quainton	All days	All periods	No exceedance	No exceedance
MW&GH	GH-NMP1	Glebe House, A418, Aylesbury	All days	All periods	No exceedance	No exceedance
	MW-NMP1	Aylesbury, Buckinghamshire	Weekdays	0800-1800	8	No exceedance
OC	OC-NMP1	Oat Close, Bishopstone, Aylesbury	All days	All periods	No exceedance	No exceedance
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury	All days	All periods	No exceedance	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	Weekdays	0700-0800 1800-1900	5 2	No exceedance No exceedance
			Saturdays	1400-2200	6	No exceedance
	NLL-NMP2	Nash Lee Lane, Nash Lee	Weekdays Saturdays	0700-0800 0800-1800 1800-1900 1400-2200	12 1 12 9	No exceedance No exceedance No exceedance No exceedance

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
WGT	ER-NMP1	Ellesborough Rd, Wendover	Weekdays	0800-1800	2	No exceedance
	BL-NMP1	Bacombe Lane, Wendover	All days	All periods	No exceedance	No exceedance
	WT-NMP1	A413, Wendover	Weekdays Saturdays	0700-0800 0800-1800 1800-1900 0700-0800 0800-1300 1300-1400 1400-2200	19 23 23 4 4 4 9	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
RLE	SDVC-NMP1	Rocky Lane, Wendover	All days	All periods	No exceedance	No exceedance
	NCAS7-NMP1	Chesham Lane, The Lee, Wendover	All days	All periods	Not applicable	Not applicable
	NCAS6-NMP1	Chesham Lane, The Lee, Wendover	All days	All periods	No exceedance	No exceedance
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	Saturdays	1400-2200	9	No exceedance
WDV	WDV-NMP1	A413, Wendover	All days	All periods	No exceedance	No exceedance
LL	HG-NMP1	Hunts Green, Leather Lane, The Lee, South Heath	Weekdays Saturdays	0800-1800 0800-1300	5 1	No exceedance No exceedance
	GD-NMP1	Grimms Ditch, The Lee, South Heath	Weekdays Saturdays	0800-1800 0800-1300	23 4	No exceedance
SHCW	PR-NMP1	Potters Row, South Heath	Weekdays	0800-1800	2	No exceedance

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
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	2 2	No exceedance
	BLH-NMP1	Bayleys Hatch, South Heat, Great Missinden	All days	All periods	No exceedance	No exceedance
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath	Weekdays Saturdays	1900-2200 1400-2200	1 3	No exceedance
AM	AM-NMP1*	Whielden Lane, Amersham	All days	All periods	No exceedance	No exceedance
LM	LM-NMP1*	Little Missenden Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
	PWC-NMP1**	Patricia Holmes, Little Missenden Vent Shaft Worksite, Amersham	Weekdays  Saturdays	0700-0800 0800-1800 1800-1900 1900-2200 1300-1400 1400-2200	15 1 15 41 2 23	No exceedance No exceedance No exceedance No exceedance No exceedance No exceedance
CSG	CSG-NMP1*	Chalfont St Giles Vent Shaft	All days	All periods	No exceedance	No exceedance
	CSG-NMP2*	Chalfont St Giles Vent Shaft	All days	All periods	No exceedance	No exceedance
	PIC-NMP1	Bottom House Farm Lane, Chalfont St Giles	All days	All periods	No exceedance	No exceedance
CSP	CSP-NMP1*	Chalfont St Peter Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
	CSP-NMP2*	Chalfont St Peter Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
	CSP-NMP3*	Chalfont St Peter Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
CVW	CVW-NMP1*	Northern boundary, Load Test Pile 1 Worksite	Weekdays Saturdays	0700-0800 1400-2200	1 1	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.

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

2.2.6 Exceedances of the LOAEL were recorded at twenty (20) monitoring locations during the month of March 2023. LOAEL exceedances were recorded during weekdays and Saturday time periods.

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

## 2.3 Exceedances of Trigger Level

2.3.1 Table 6 provides a summary of exceedances of the S61 trigger noise levels determined to be due to HS2 related construction noise measured during the reporting period, along with the findings of any investigation.

Table 6: Summary of Exceedances of Trigger Levels

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

## 2.4 Complaints

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

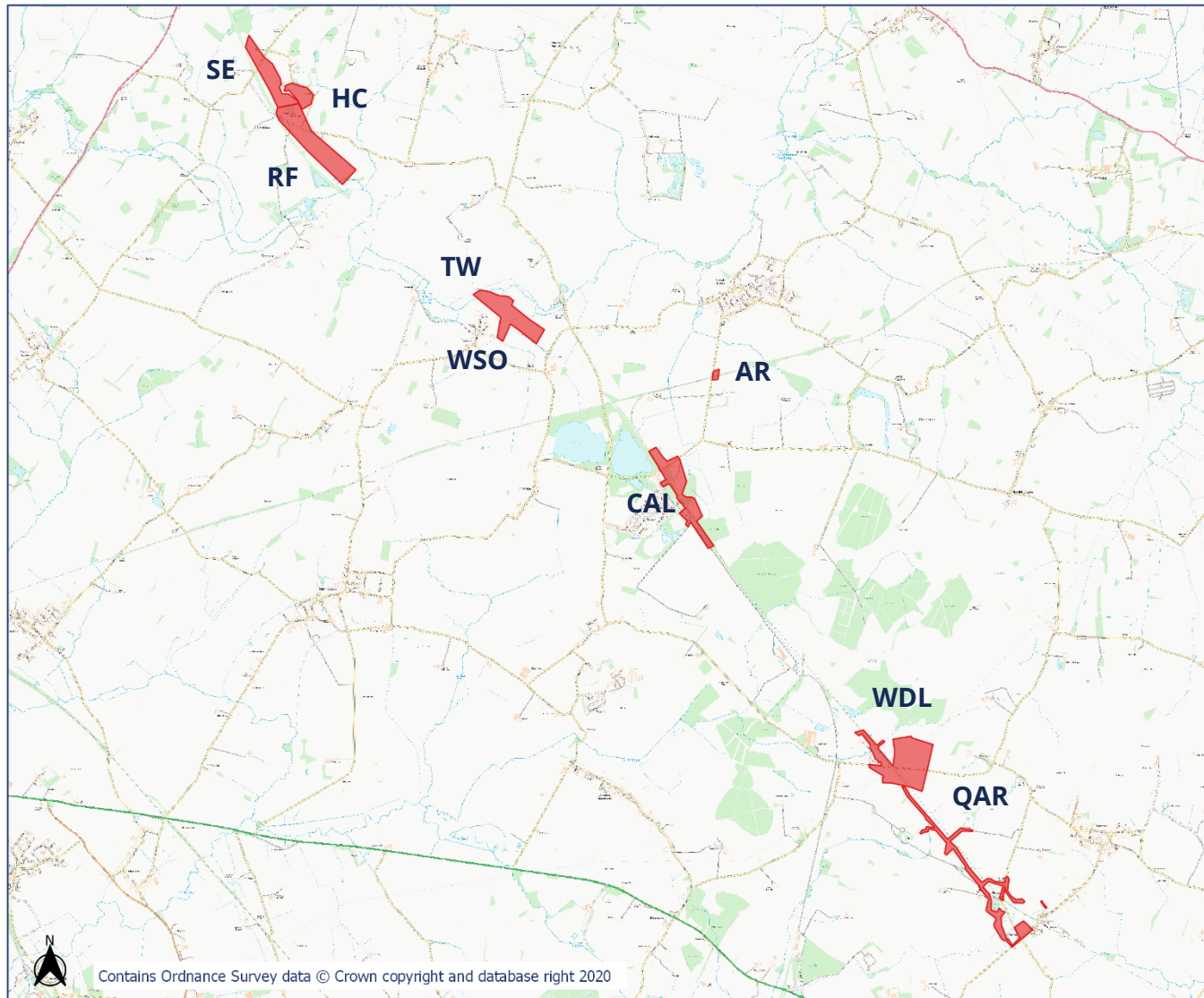
Table 7: Summary of Complaints

Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
HS2-23-91939-E-C	OC	Disturbance due to loud construction works during night-time.	Night time works occurred at time of complaint. Works were in line with S61 Consent.	Stakeholder has been informed of the results of the investigation.



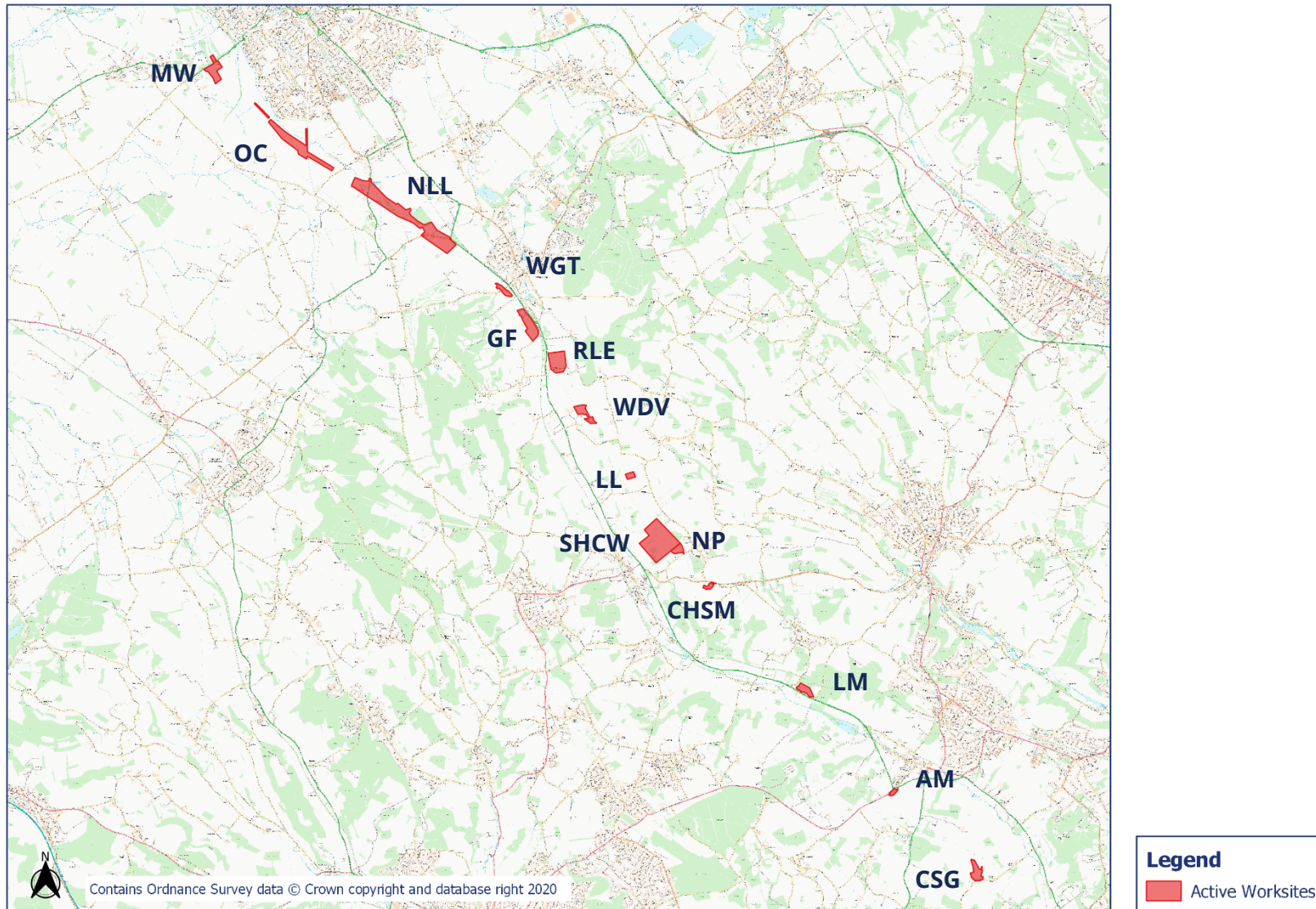
# Appendix A Site Locations

# HS2 Worksite Identification Plan - Overview 1



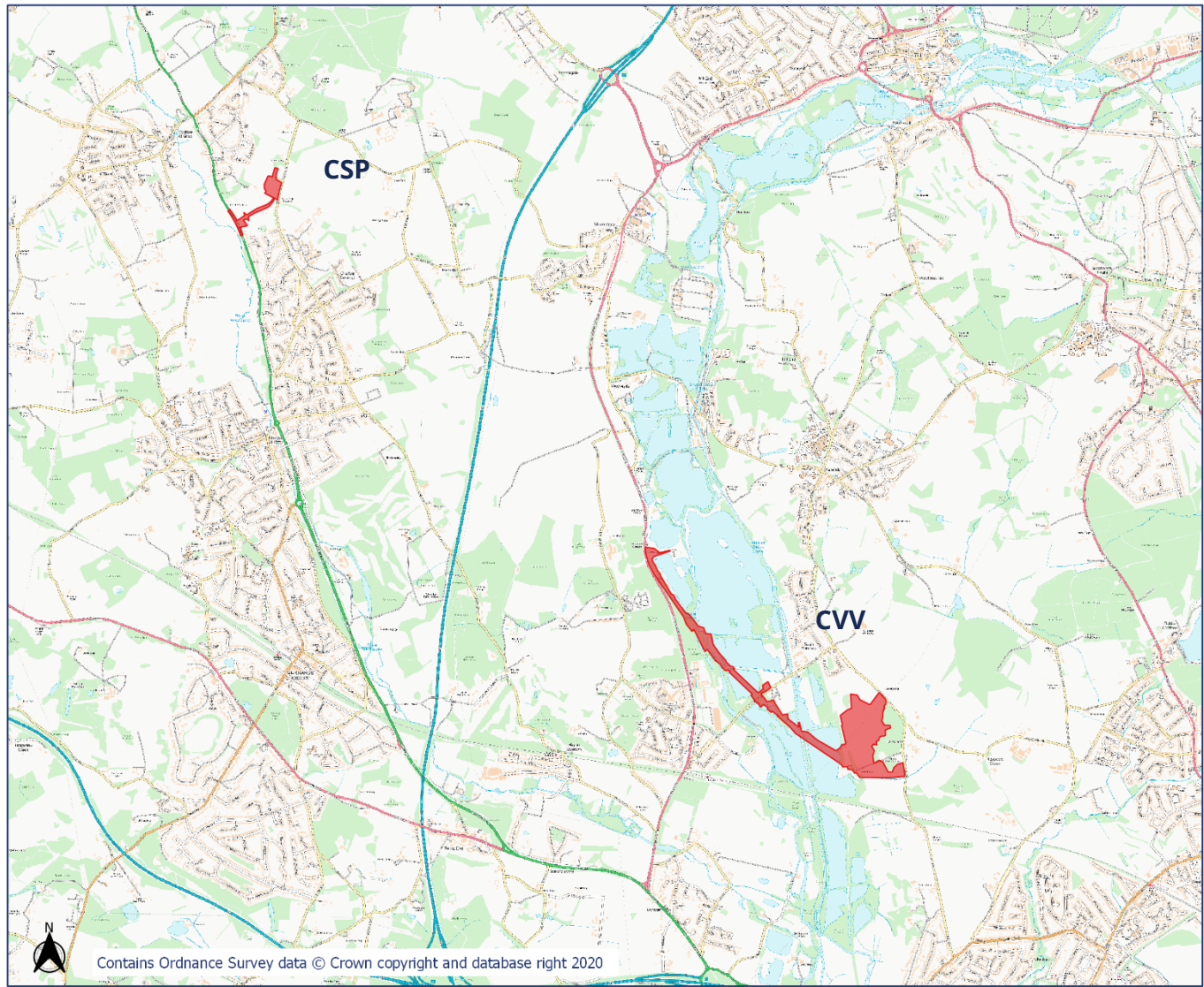
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# HS2 Worksite Identification Plan - Overview 2

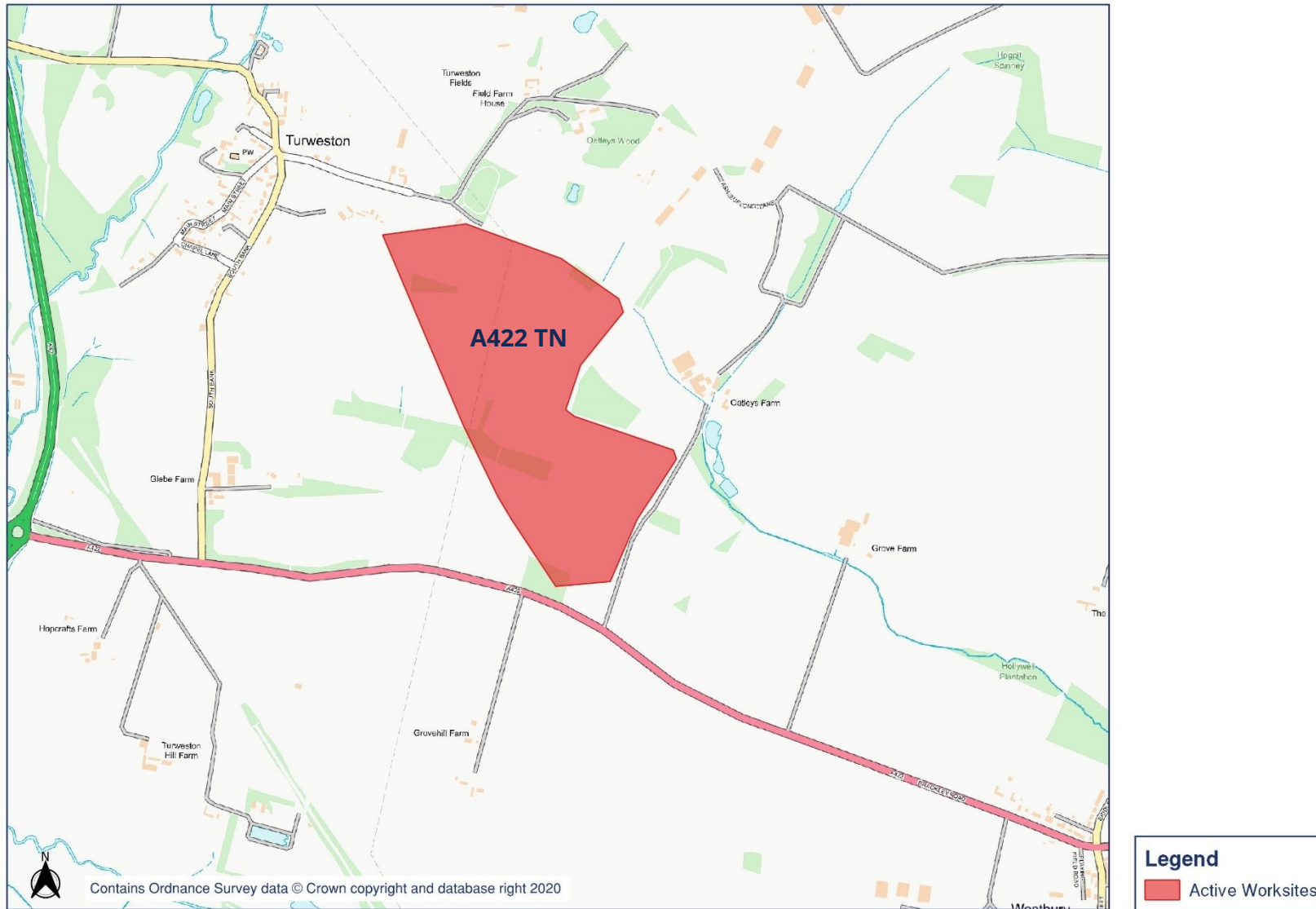


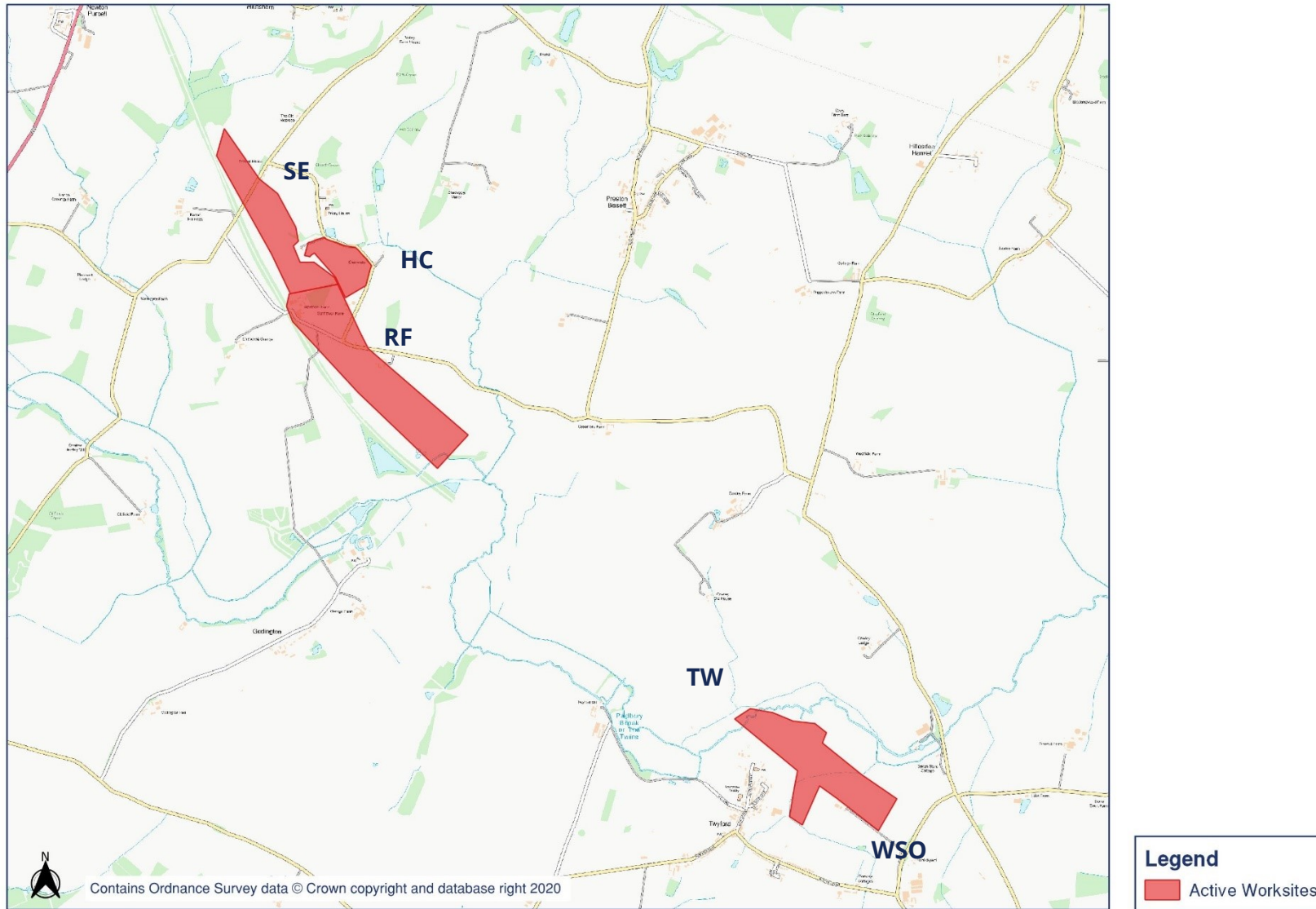
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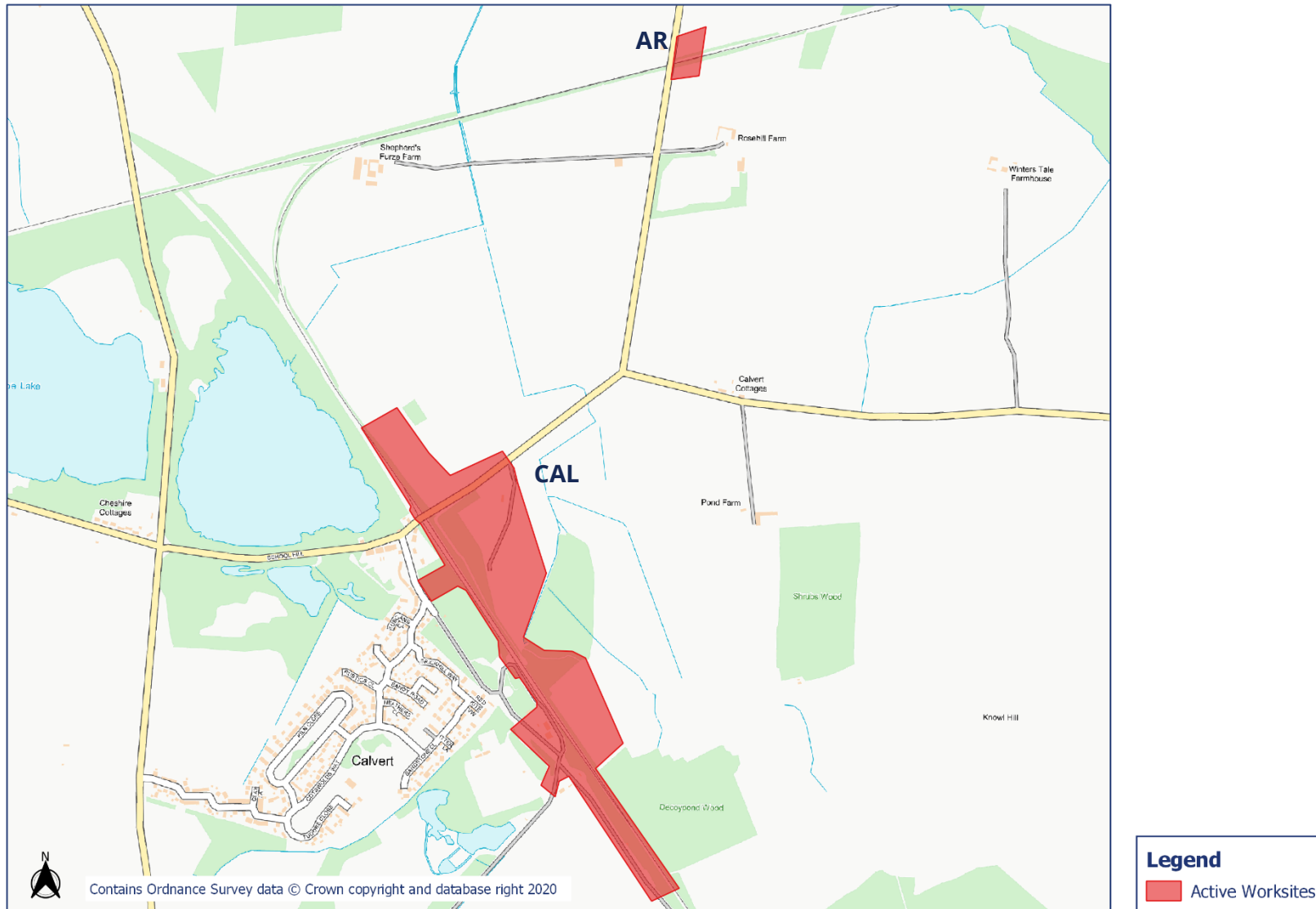
# HS2 Worksite Identification Plan - Overview 3

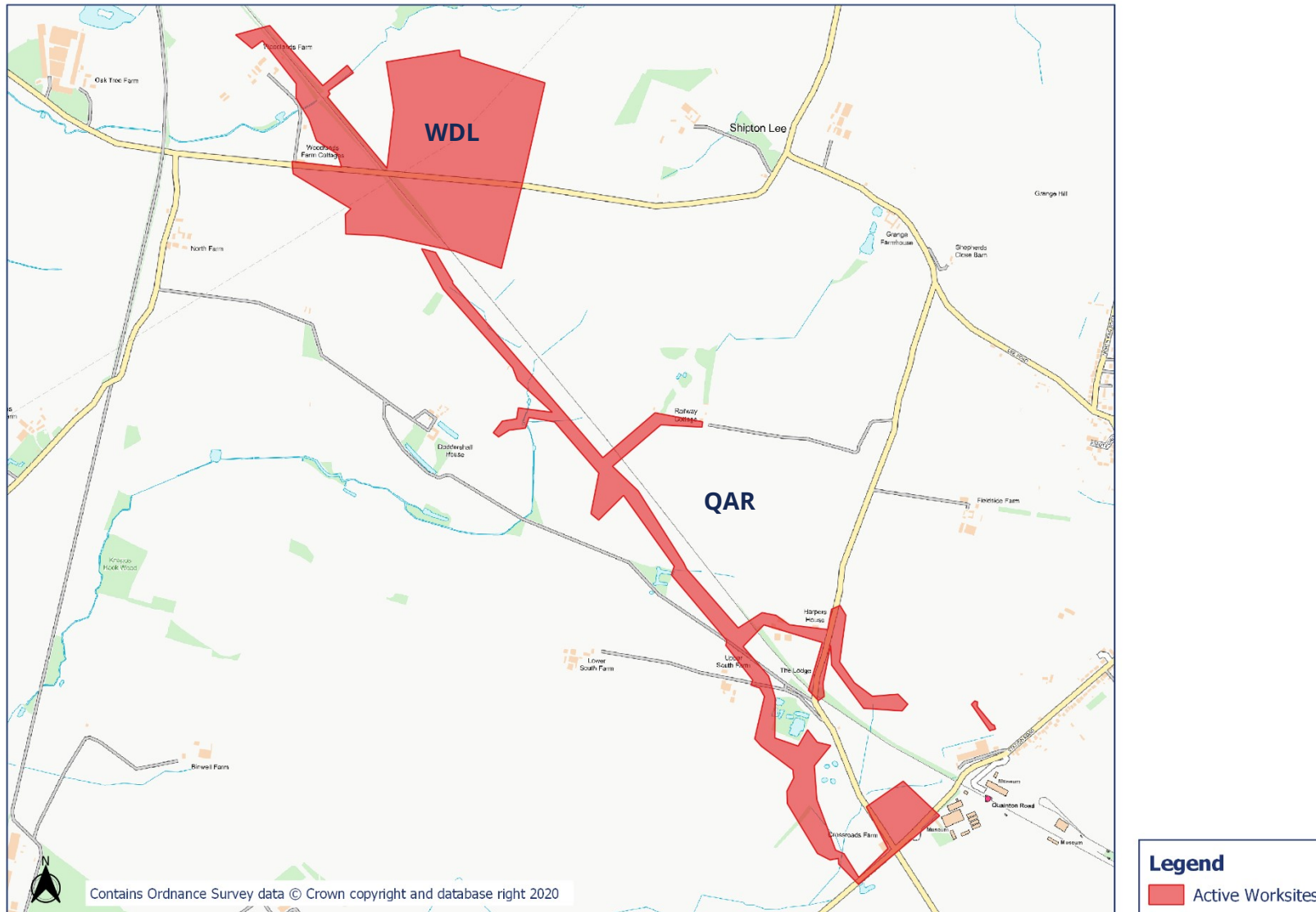


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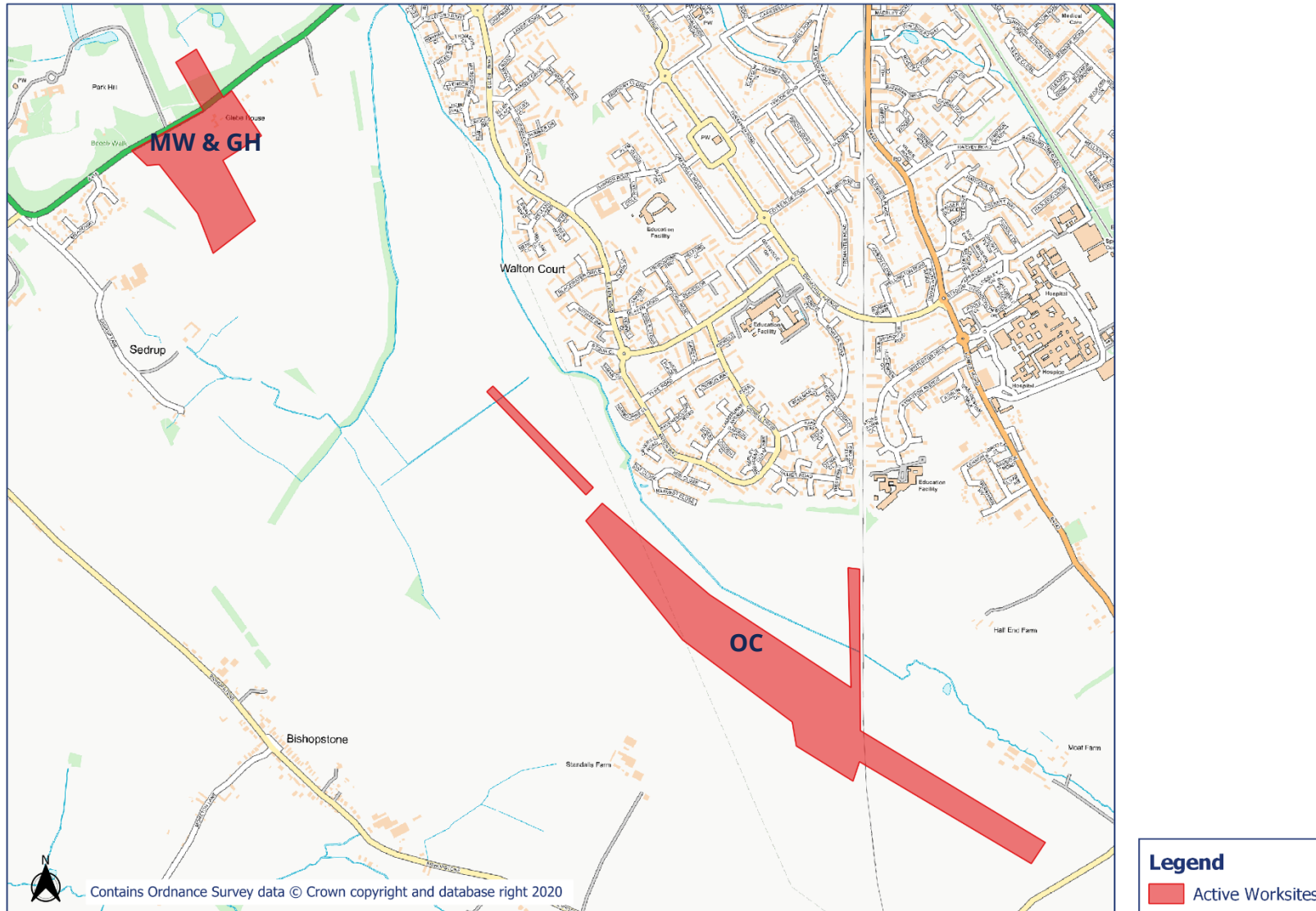


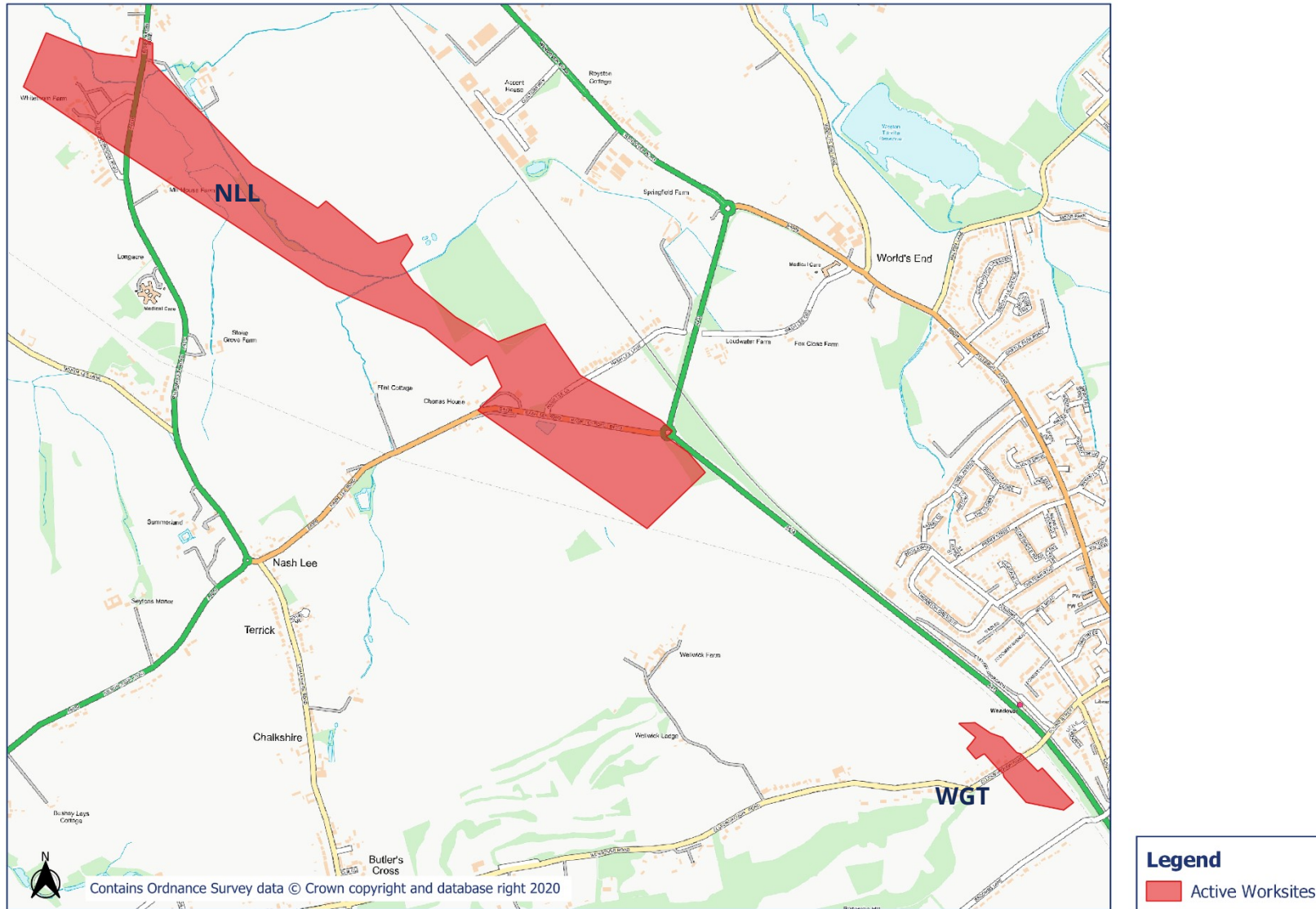


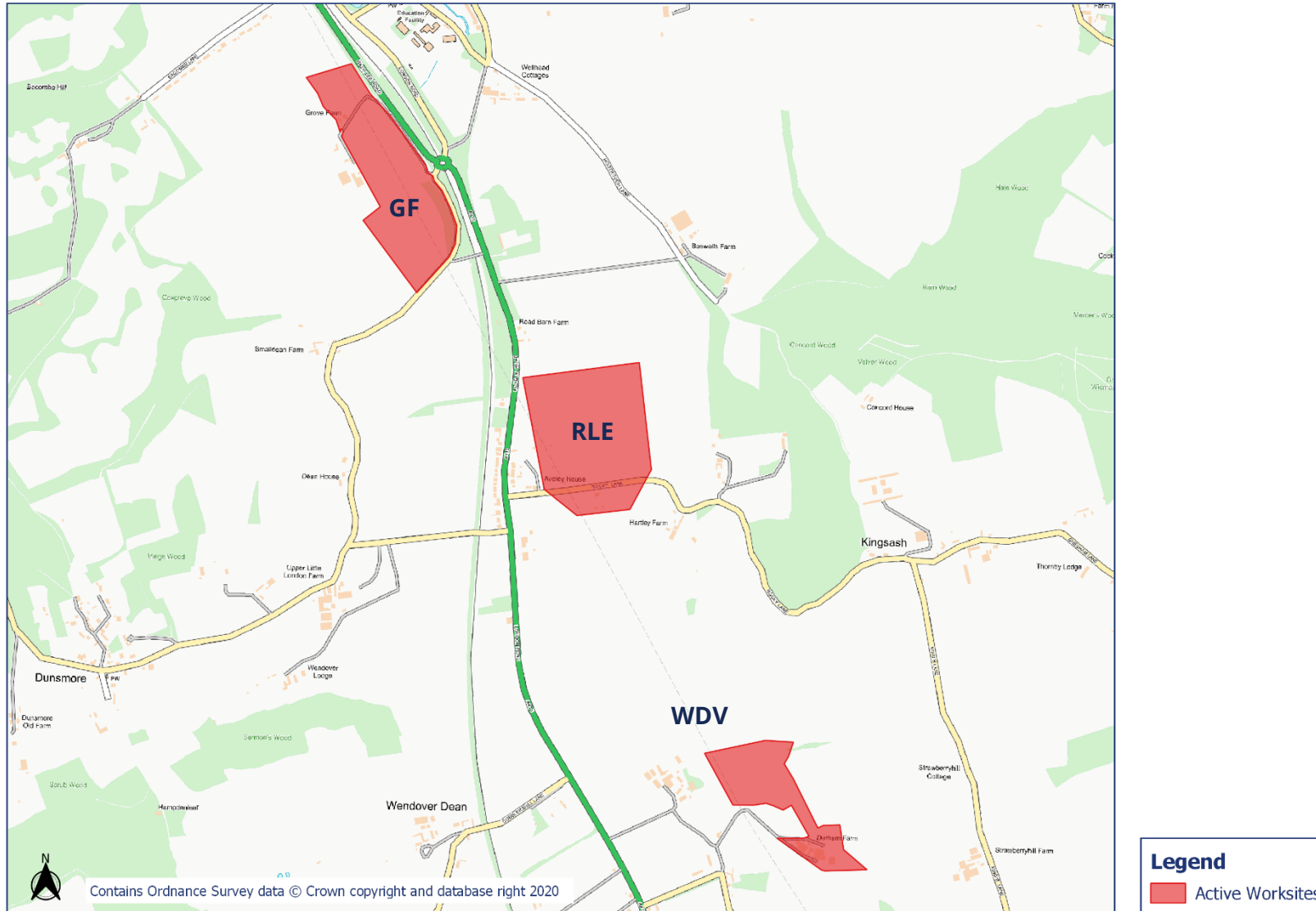


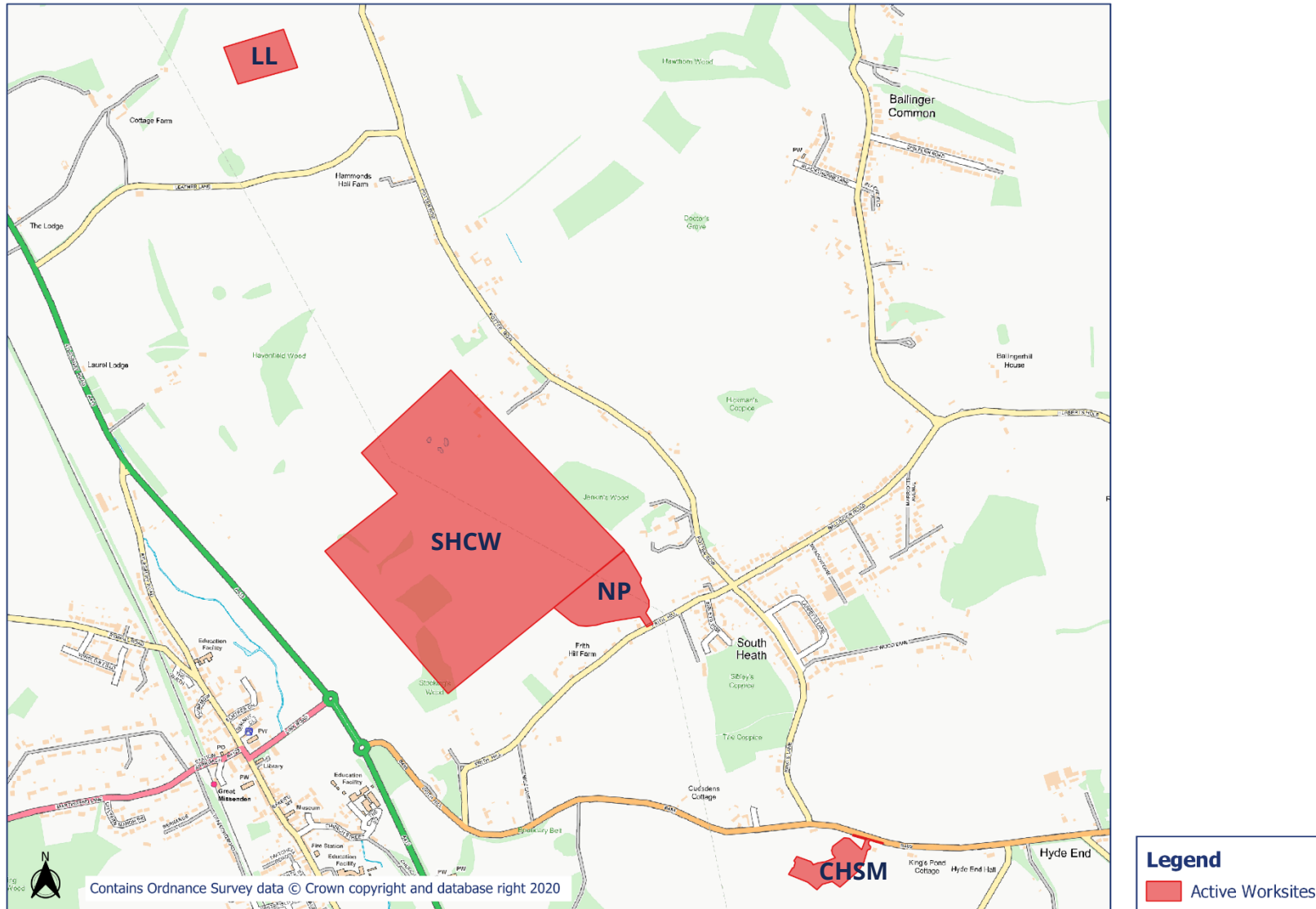




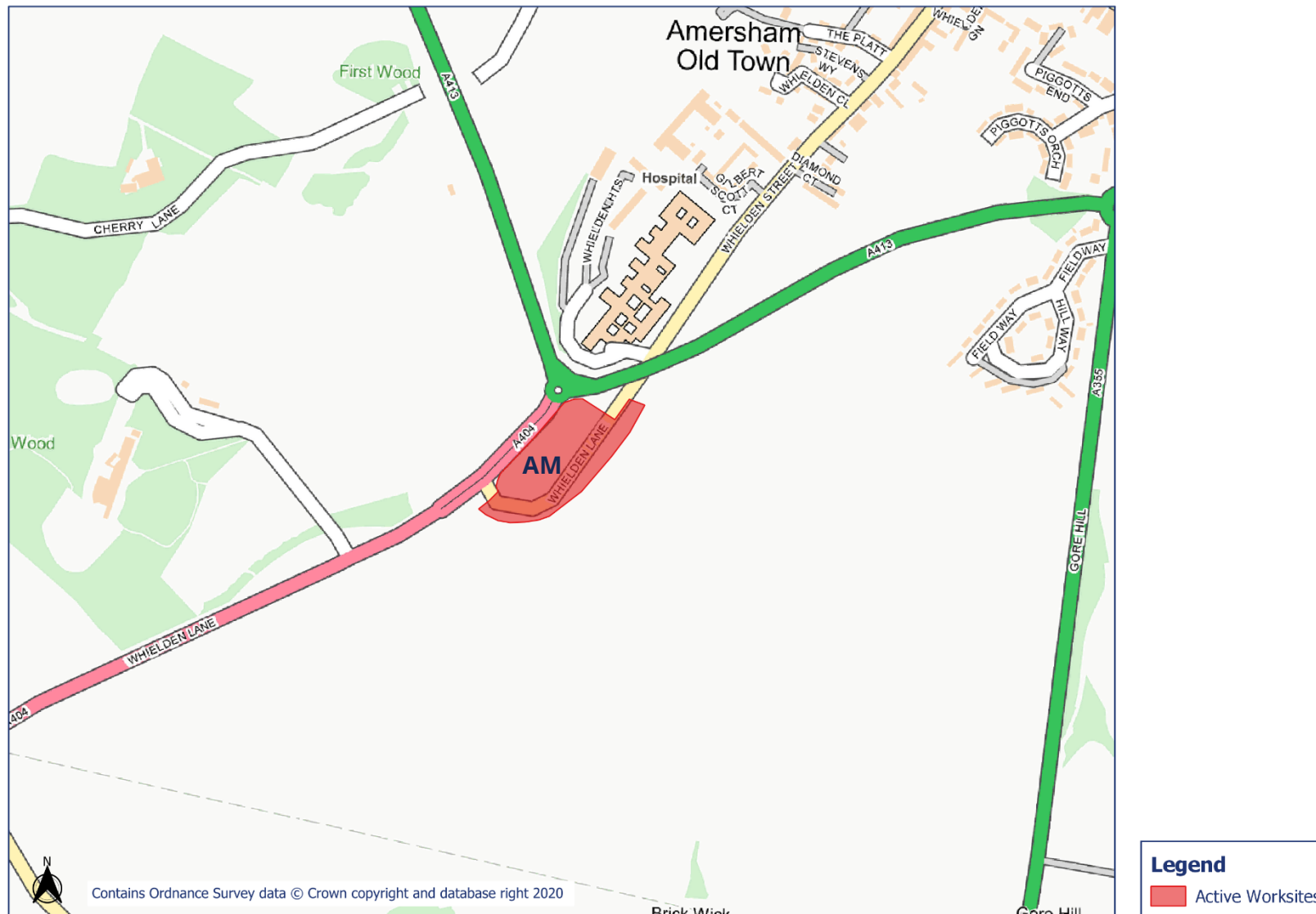


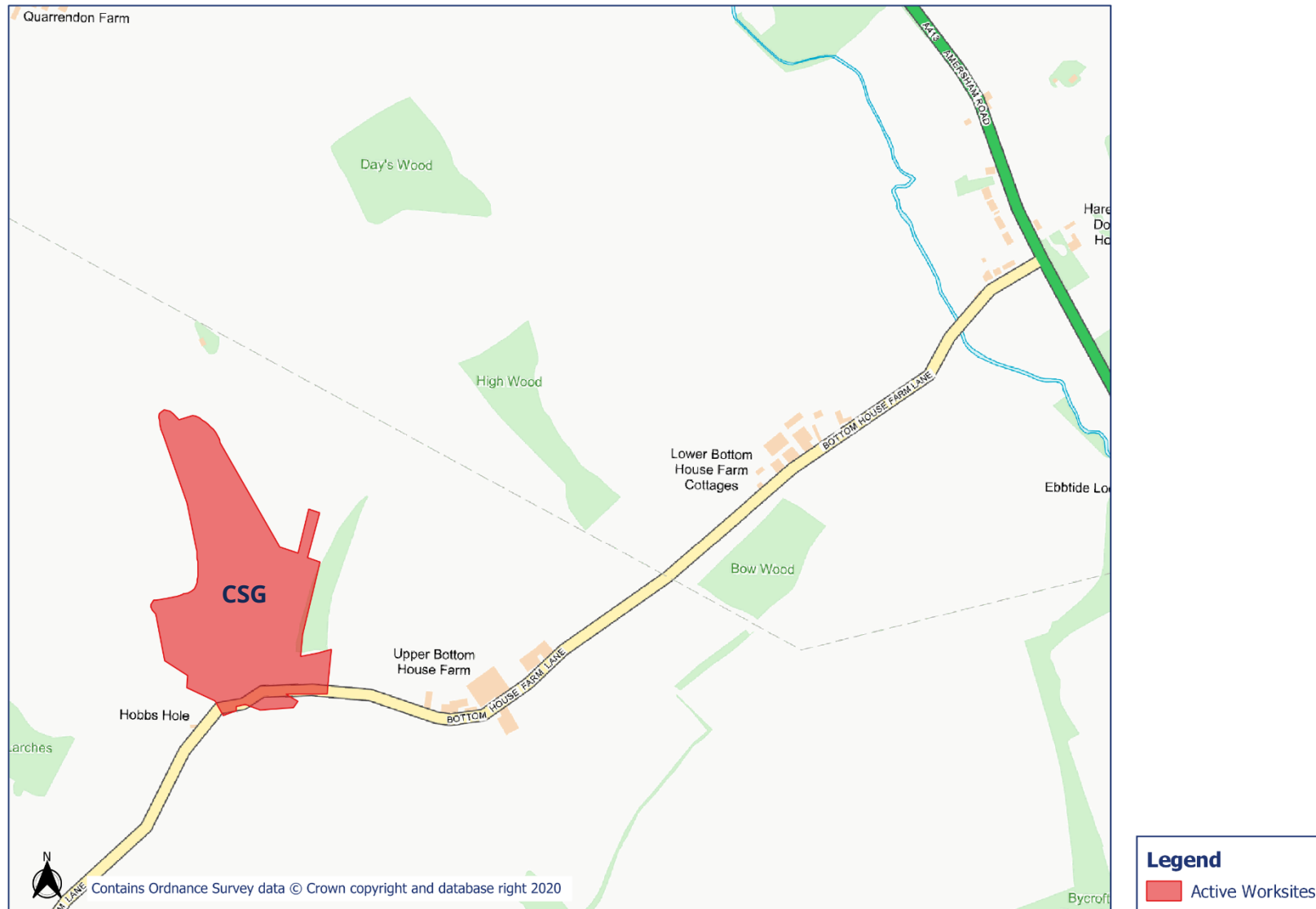






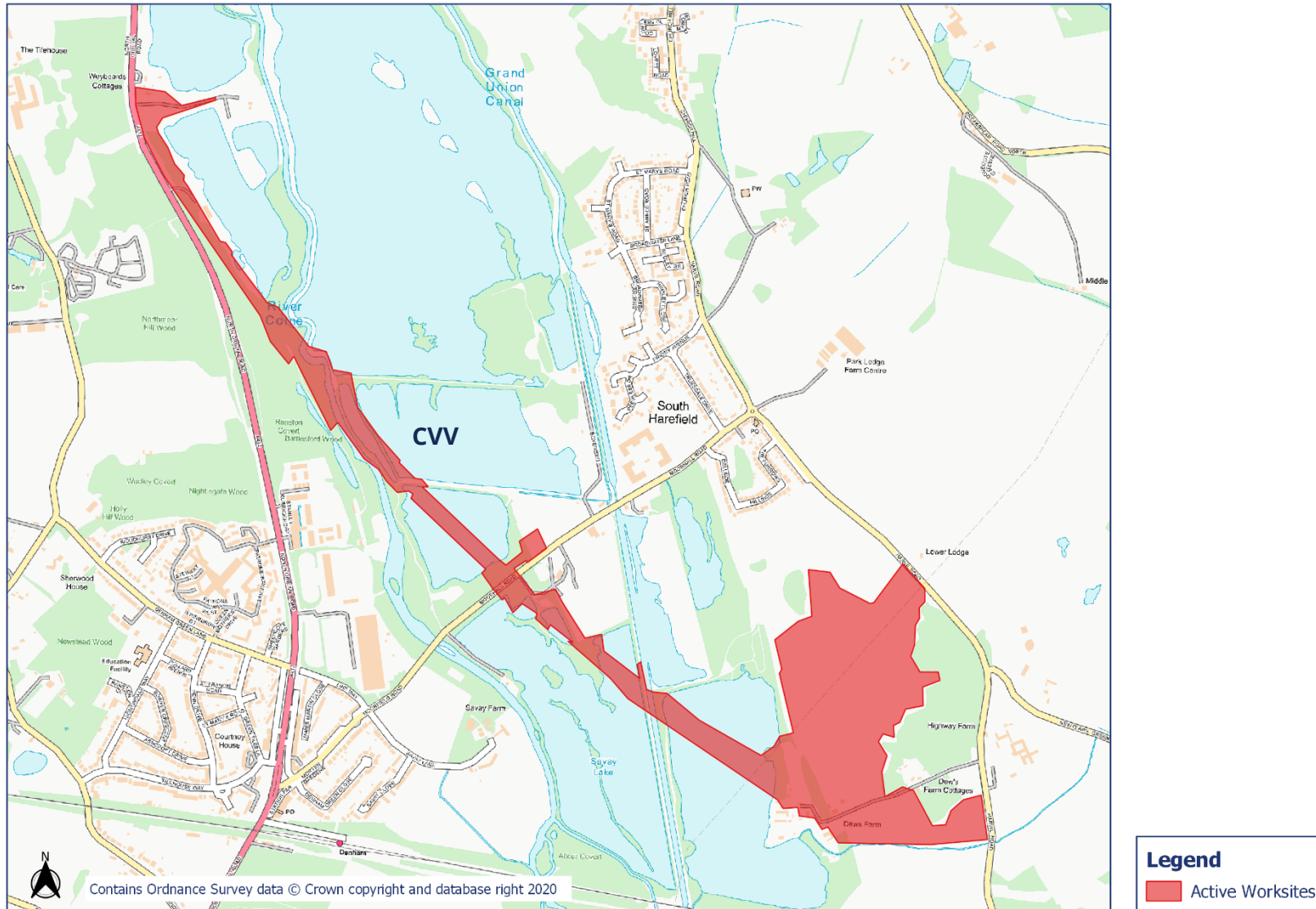




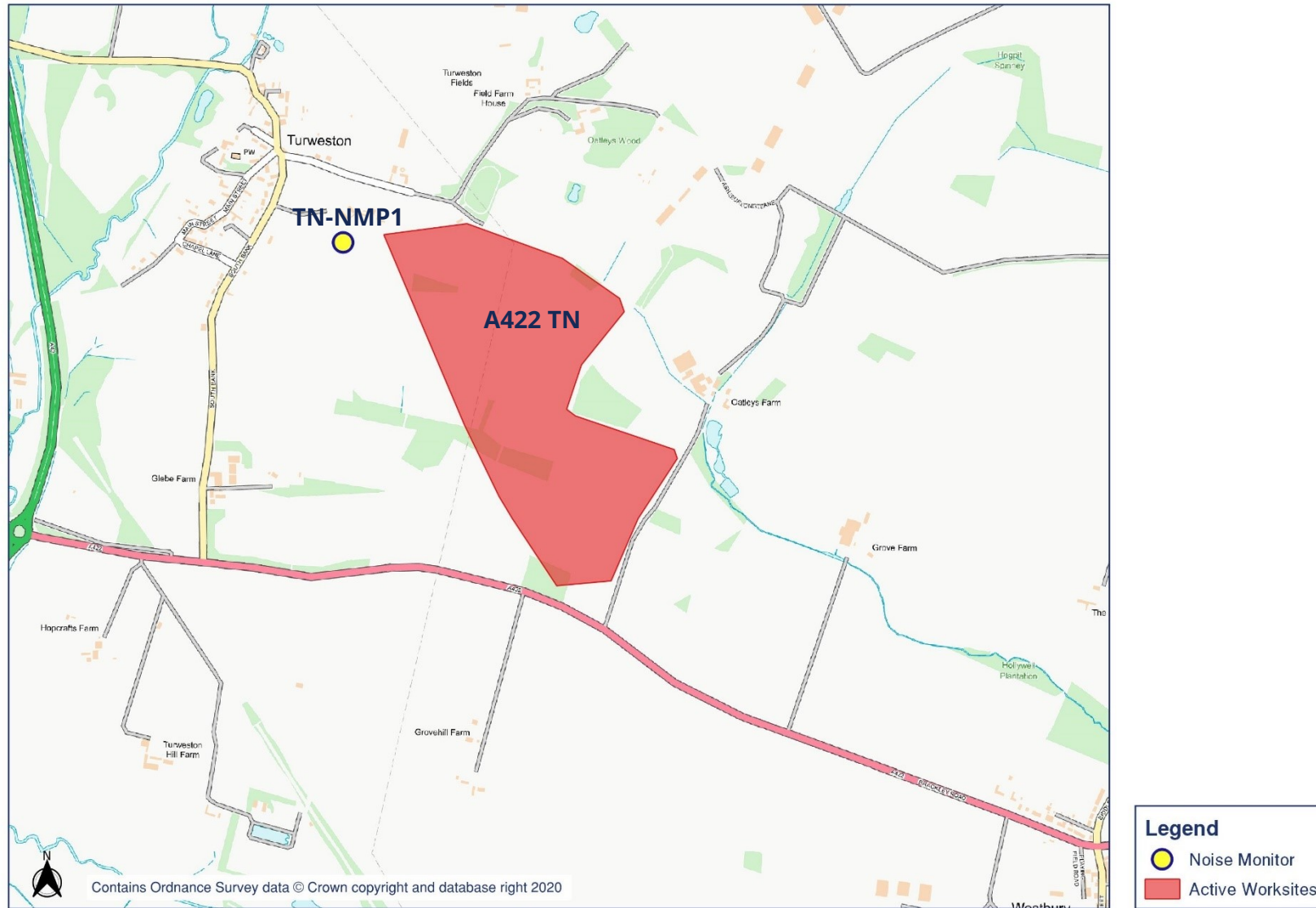


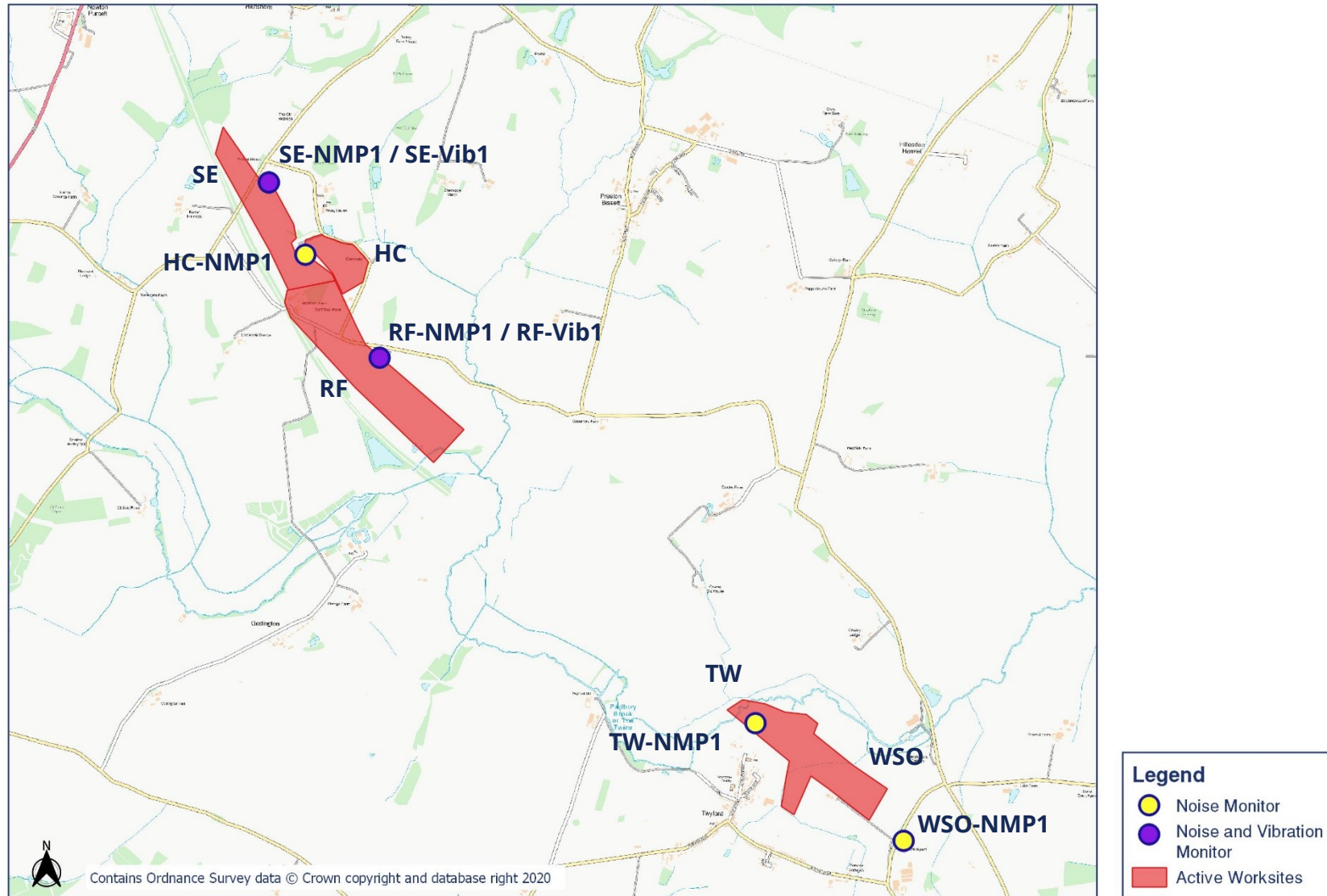


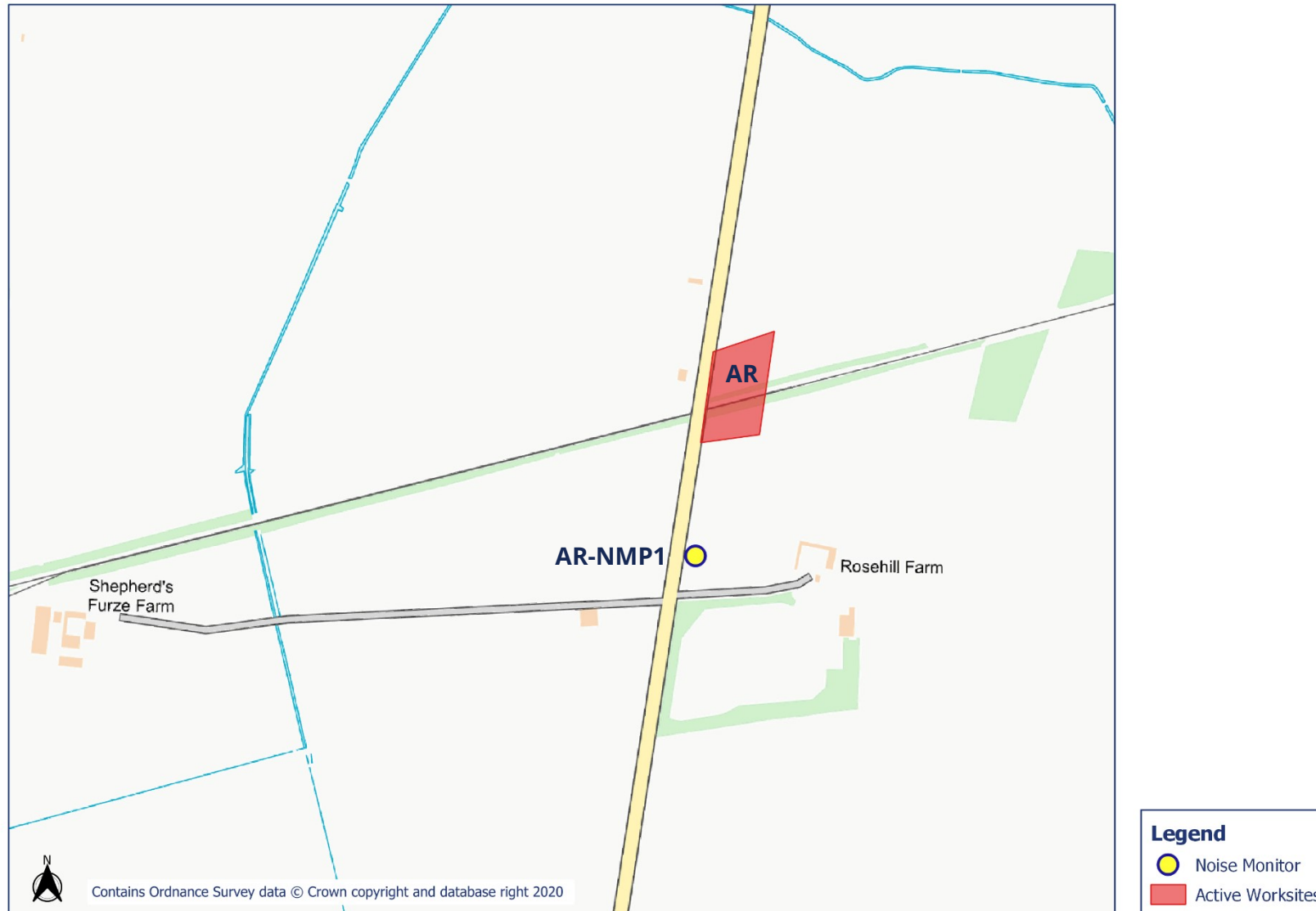


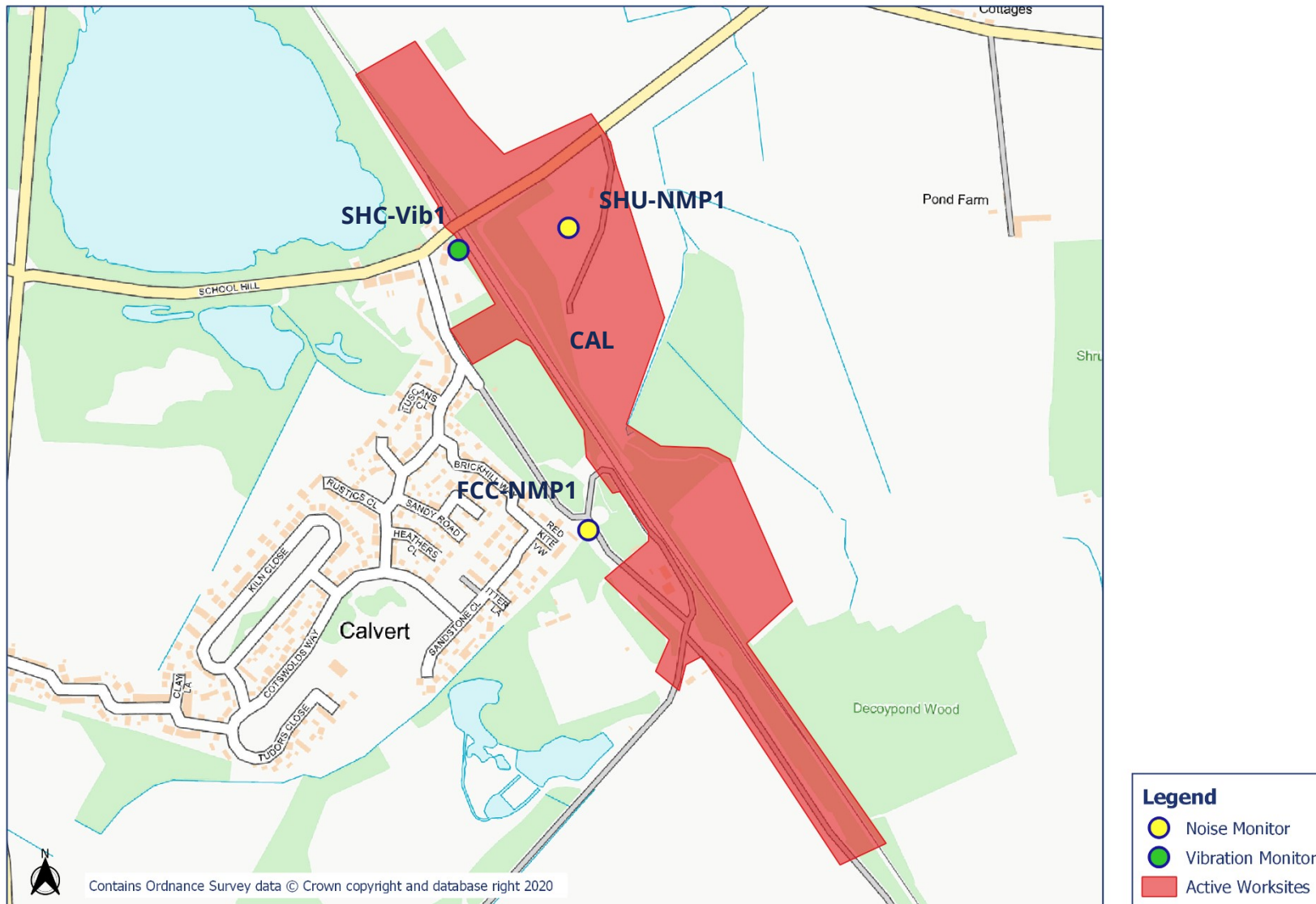


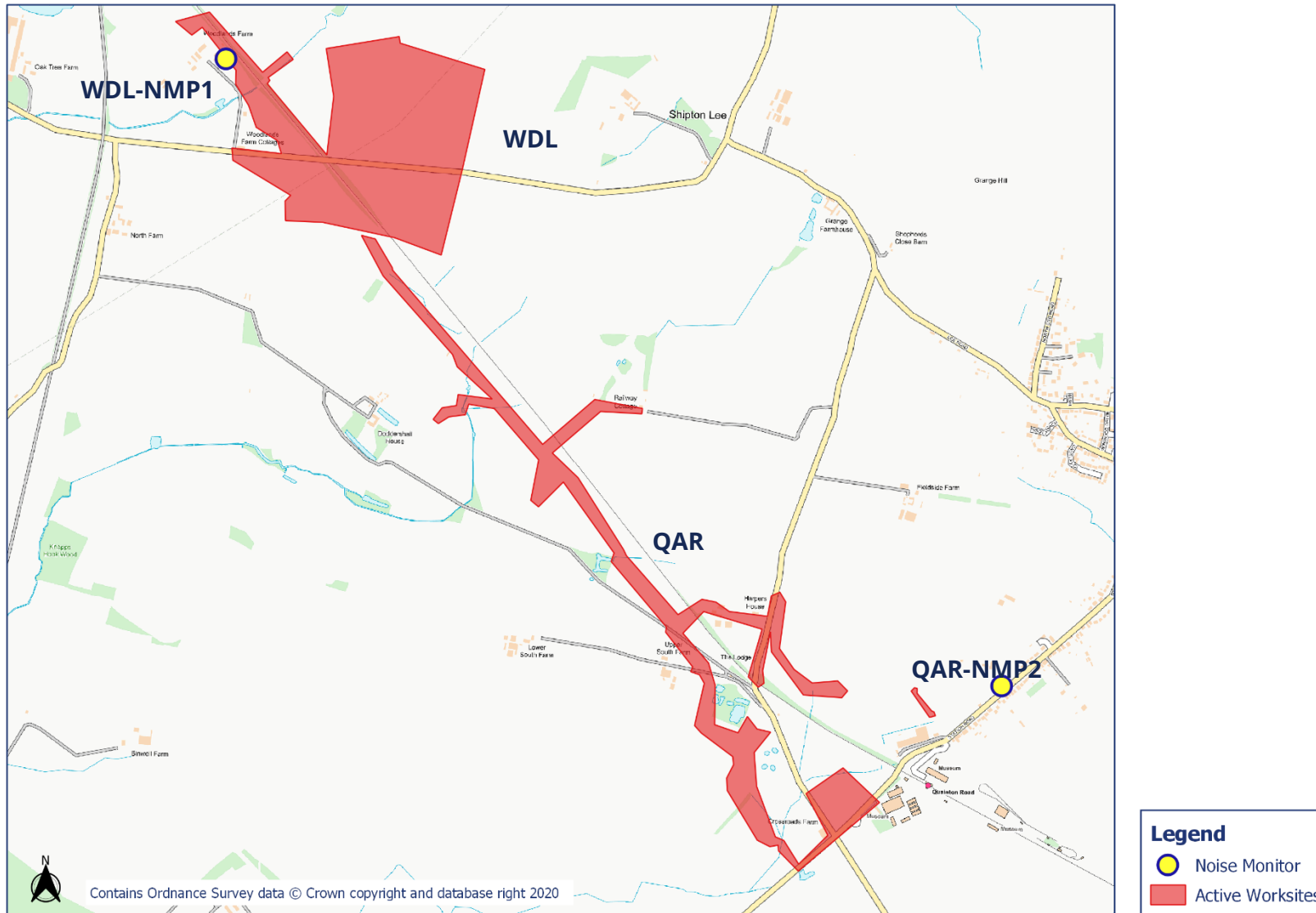
# Appendix B Monitoring Locations

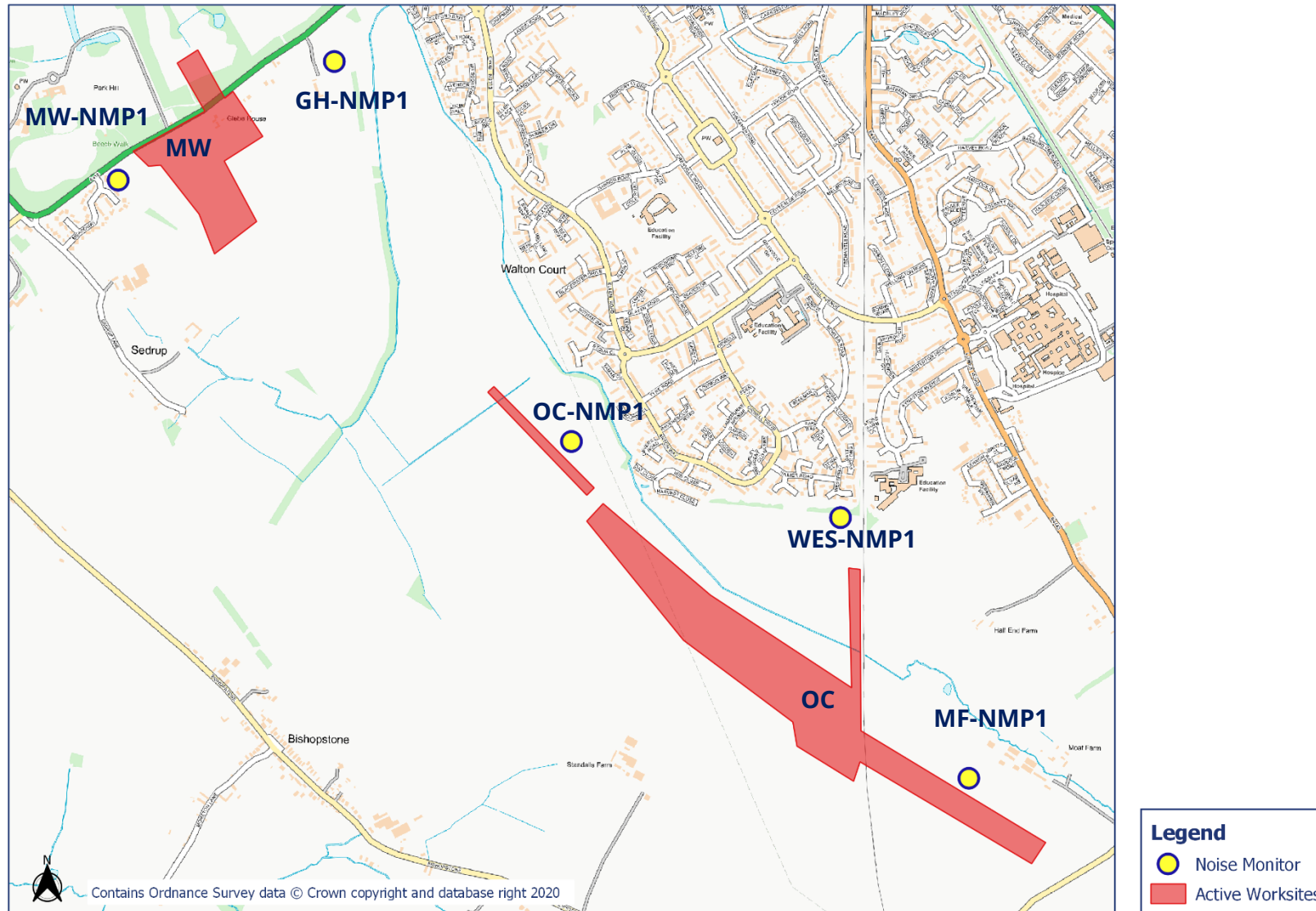




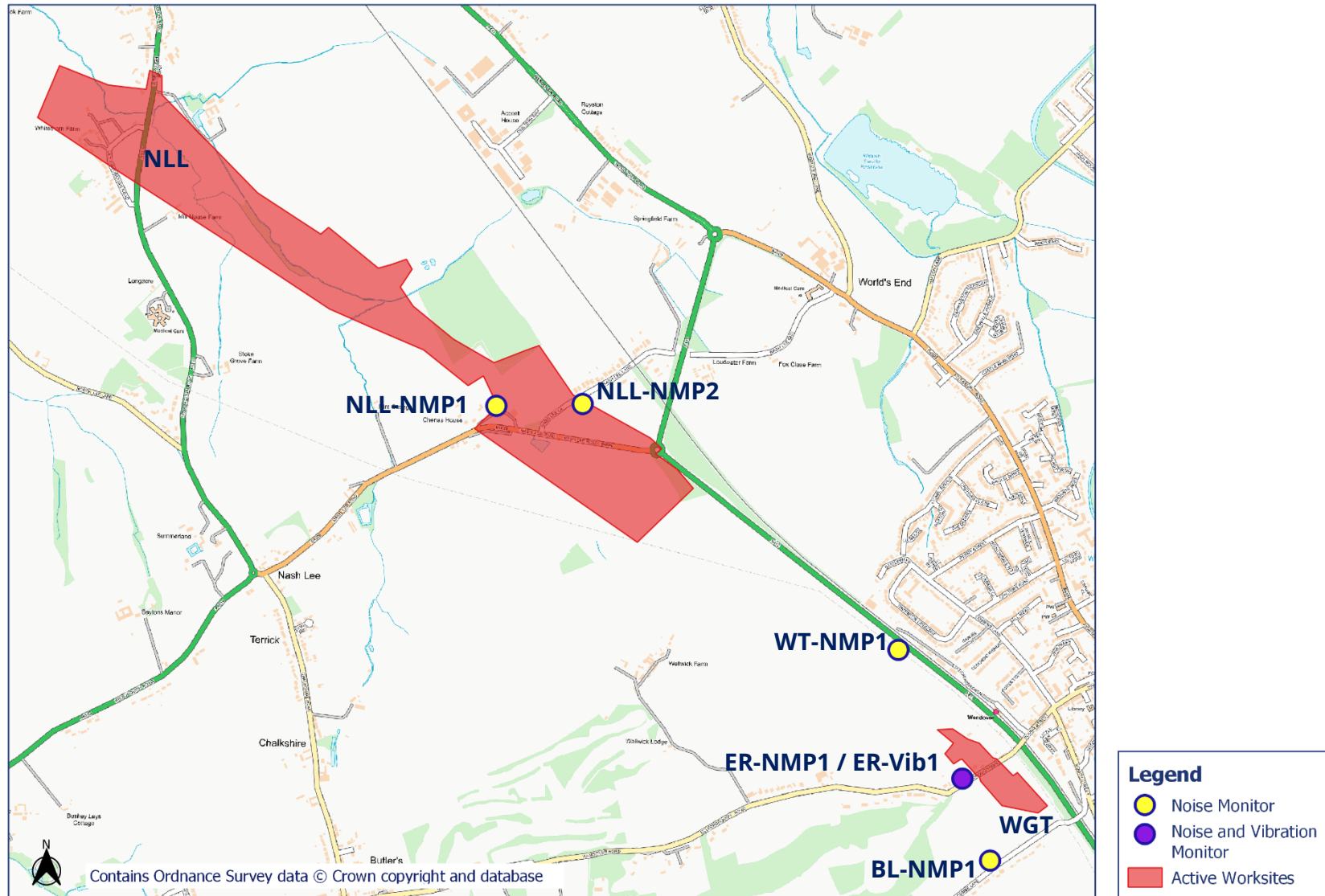


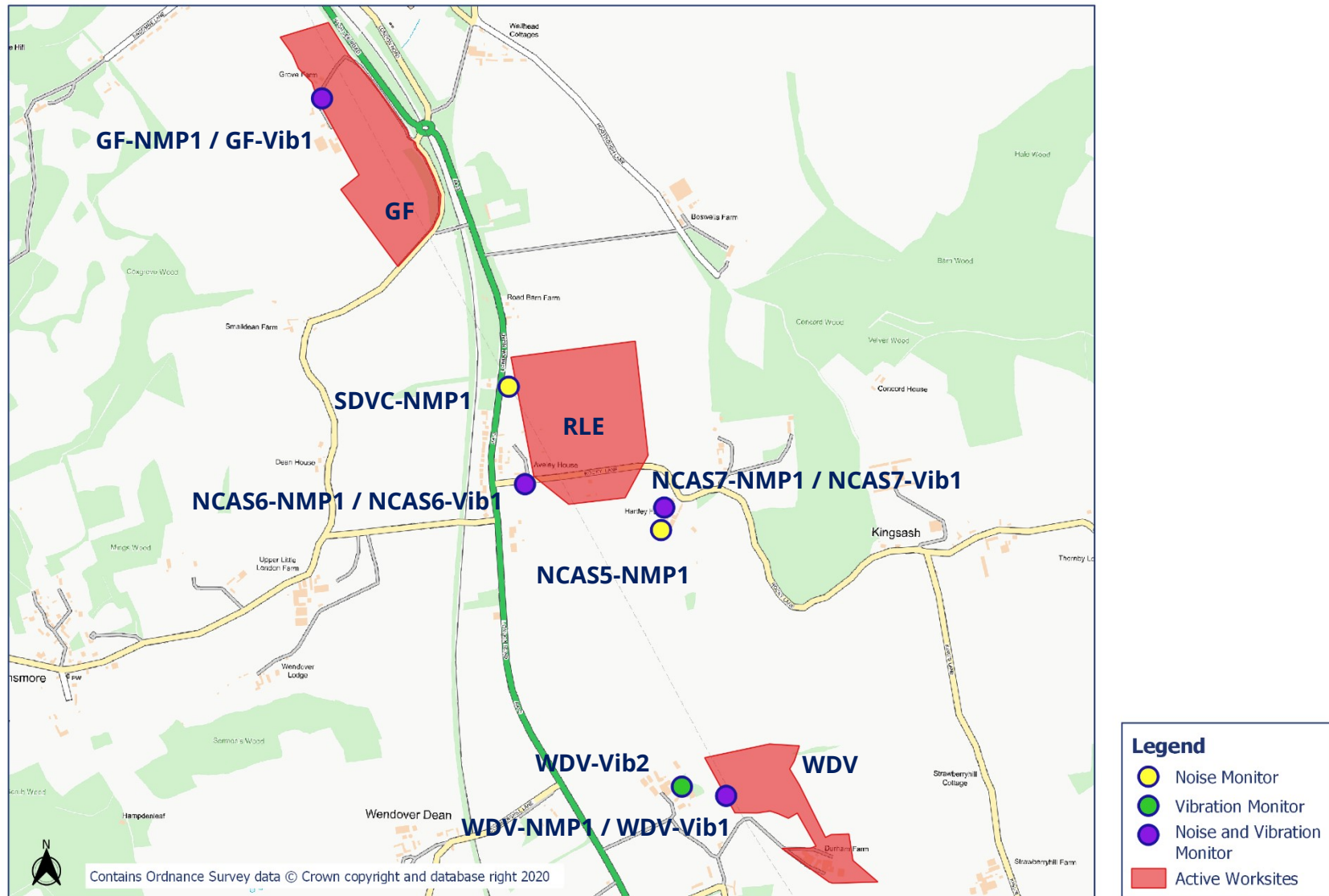


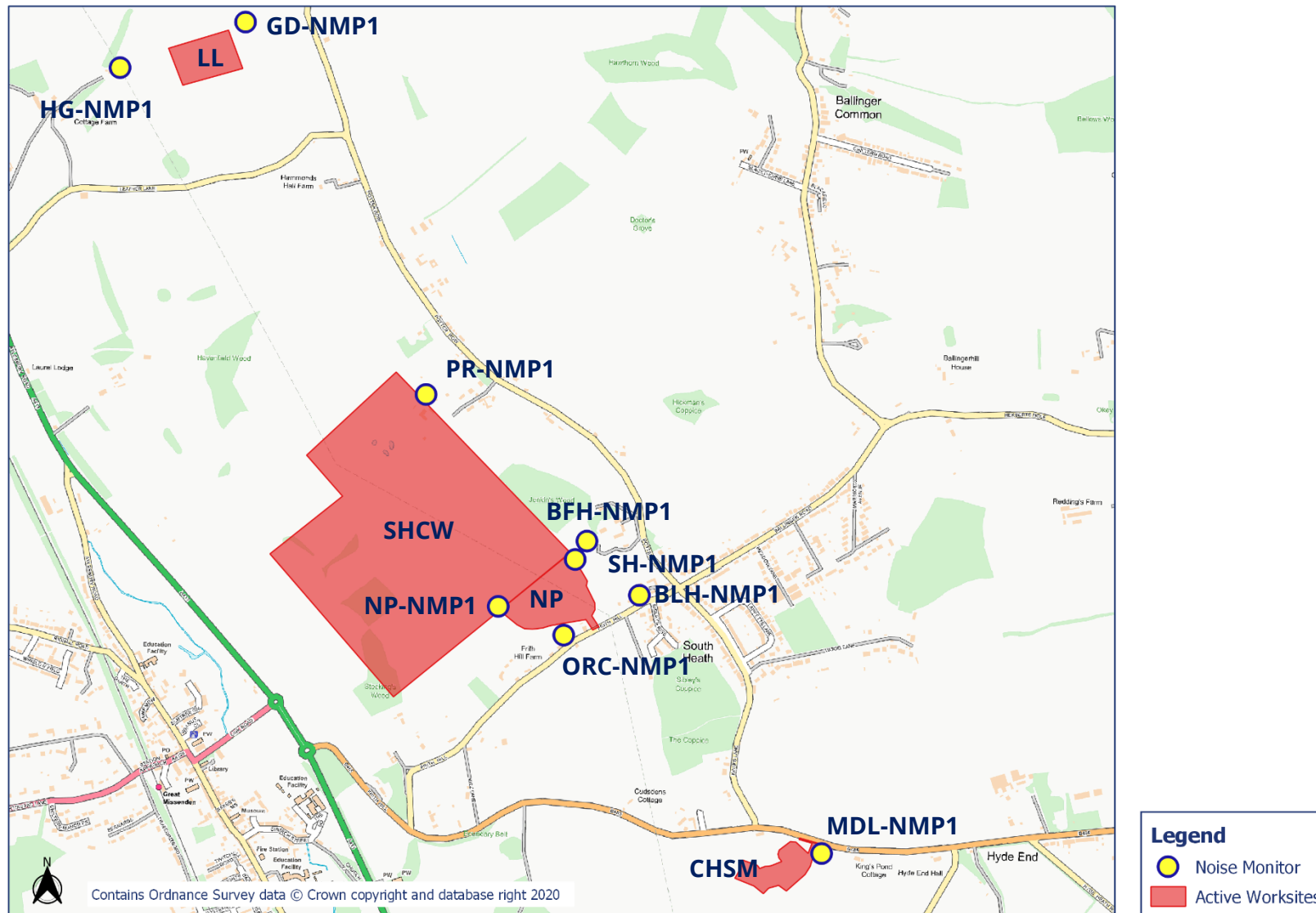




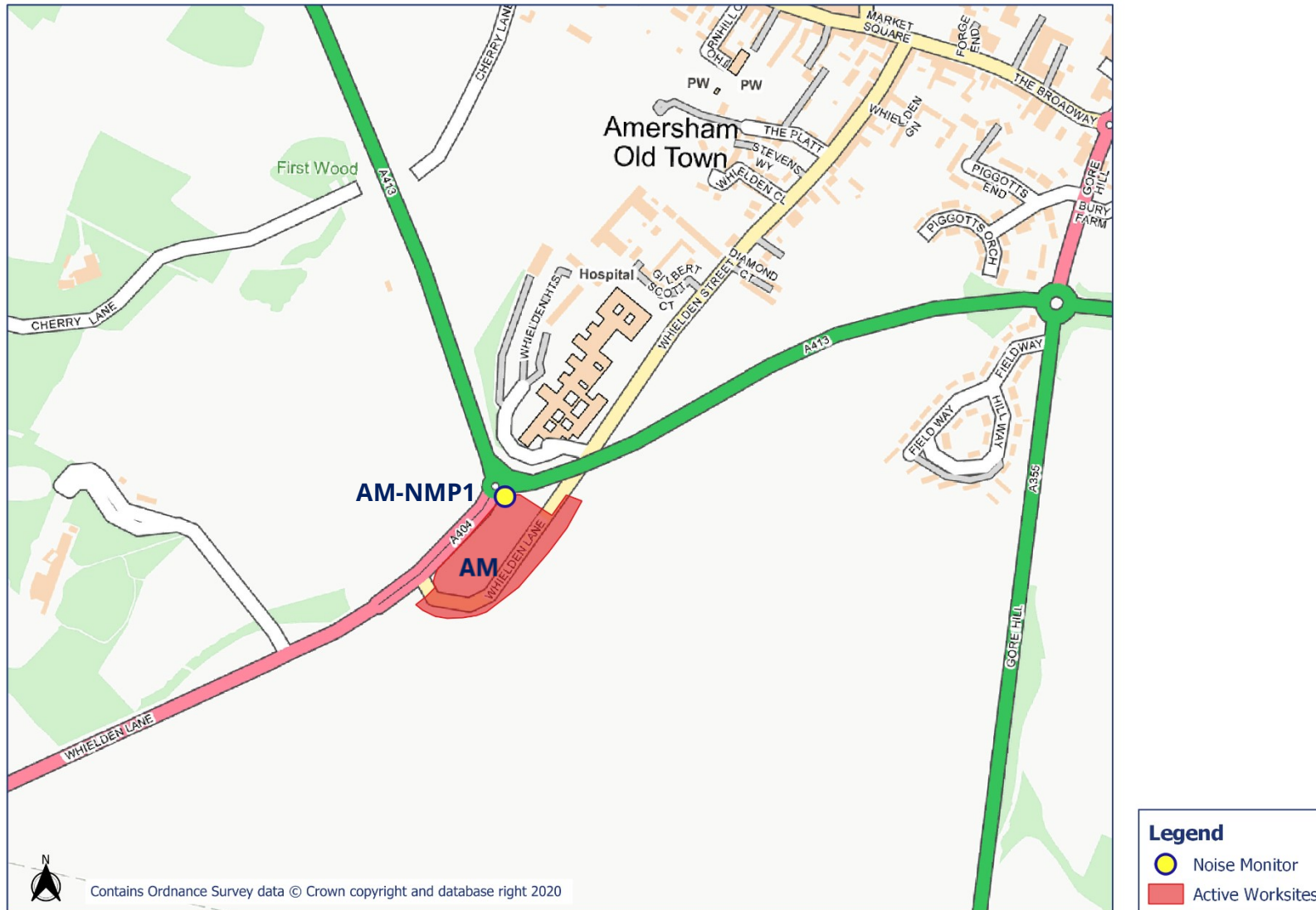


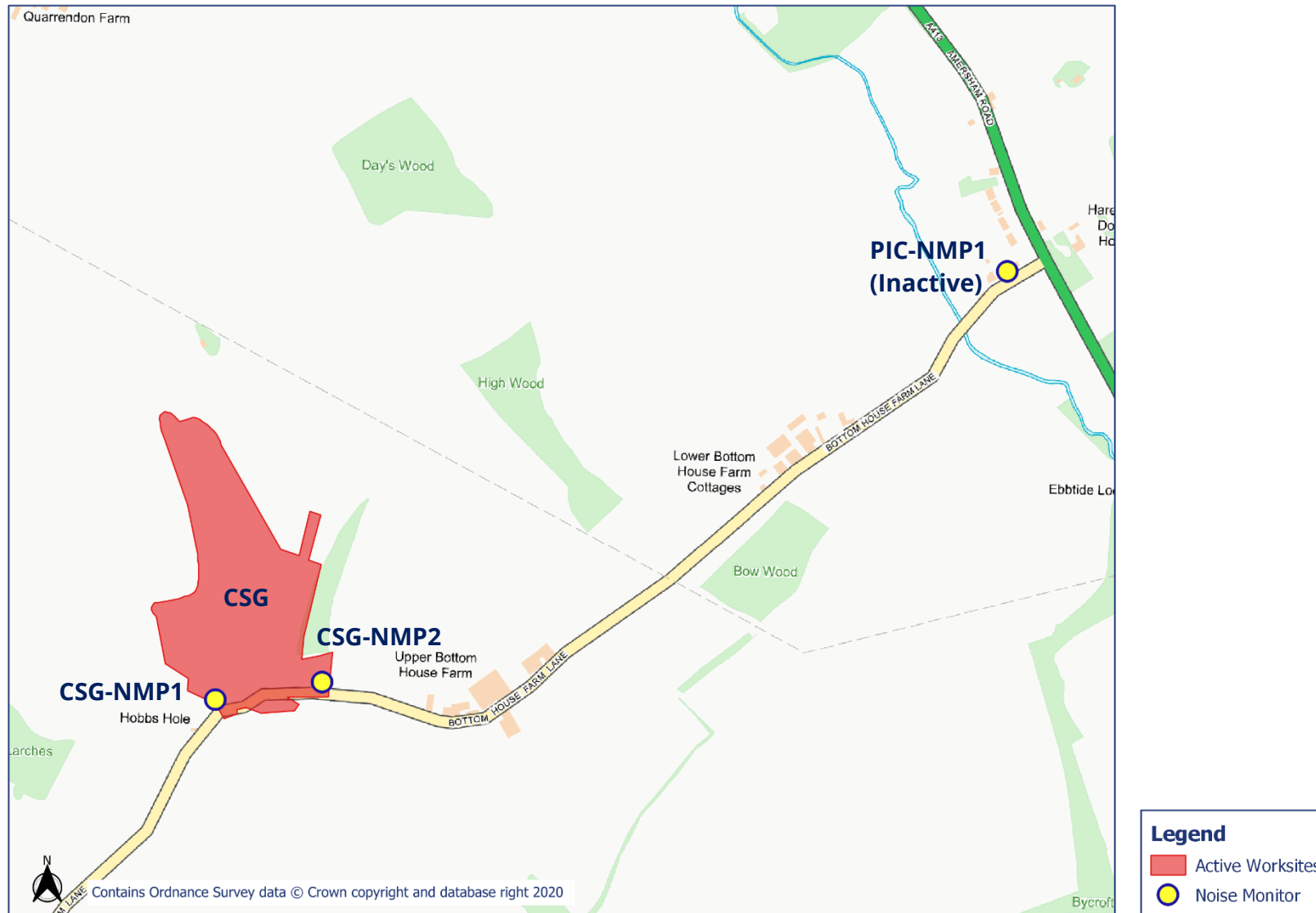


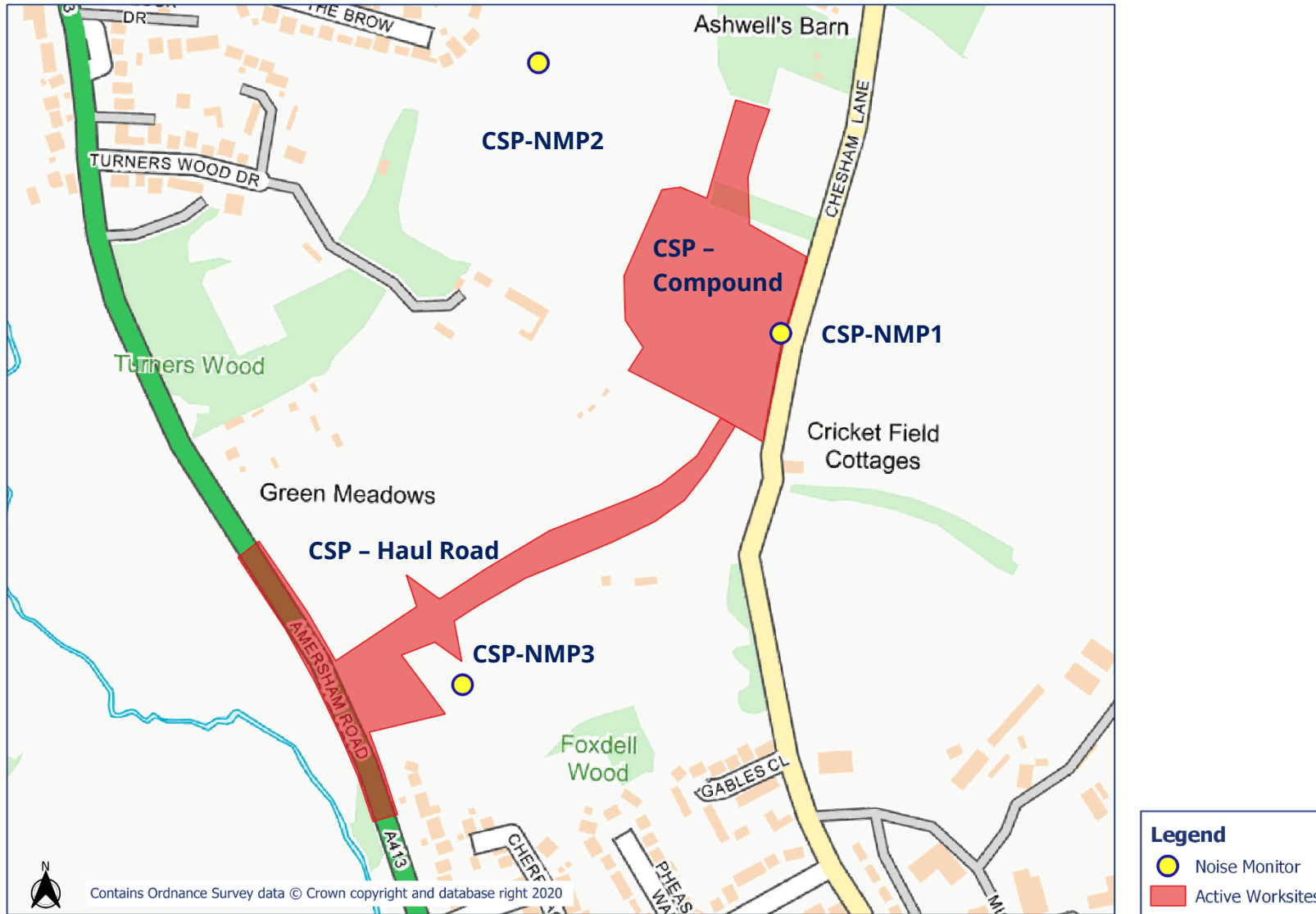




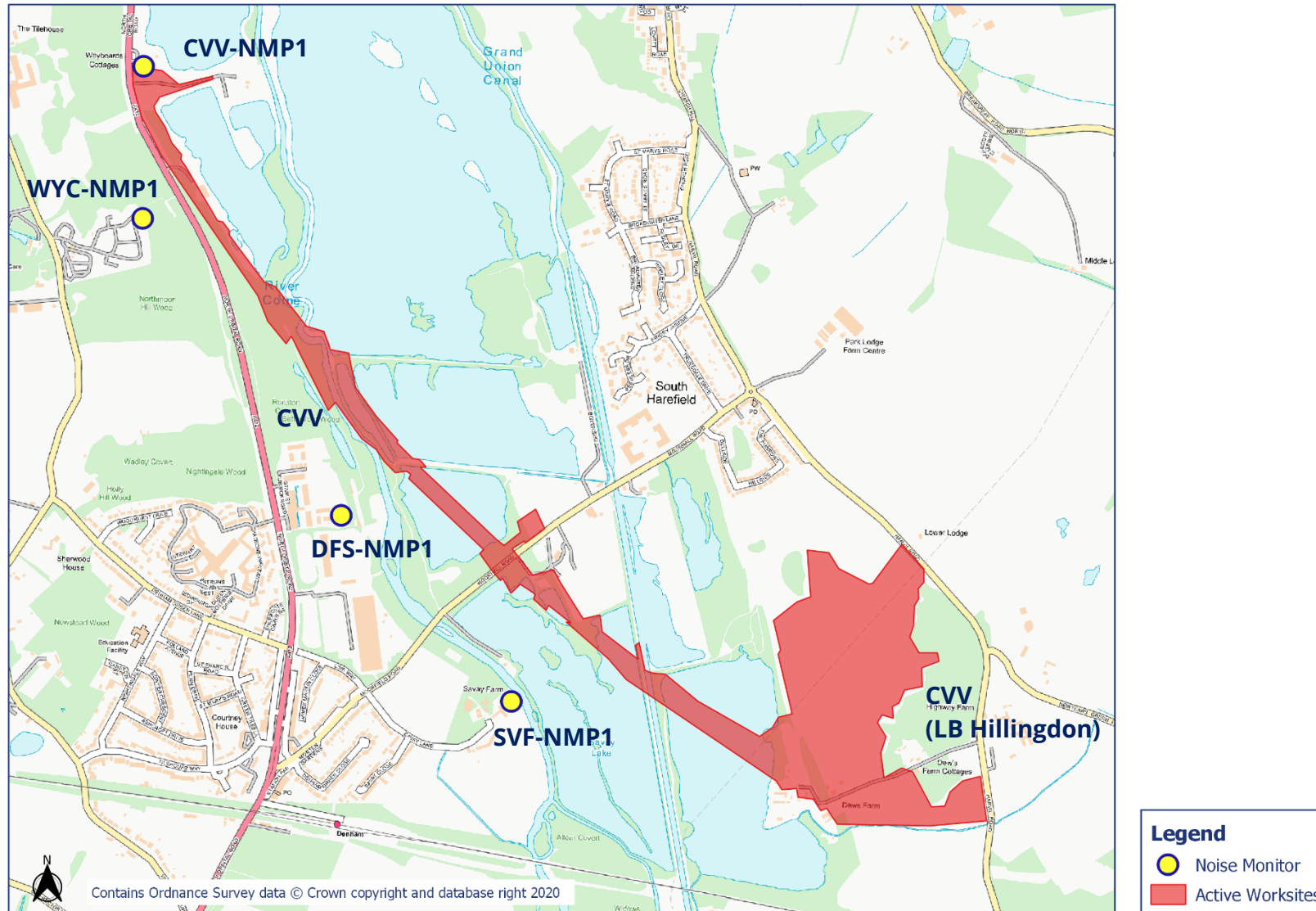








# HS2 Noise and Vibration Monitoring Plan - 14



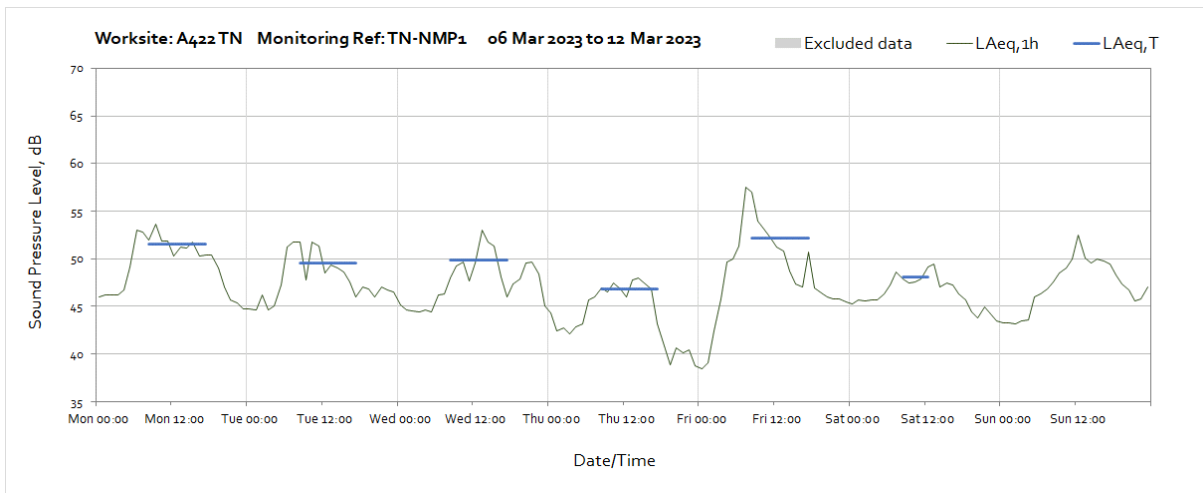
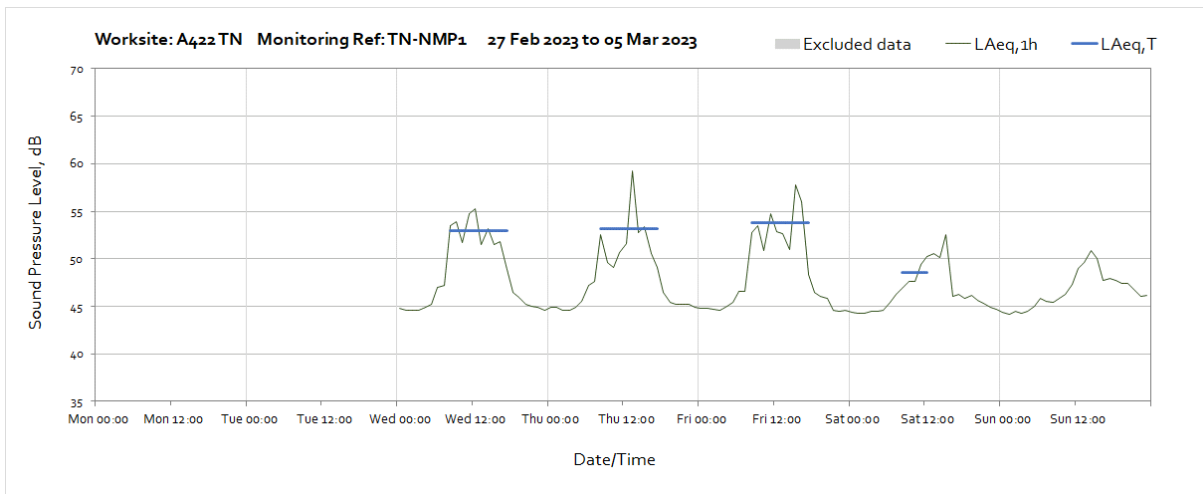


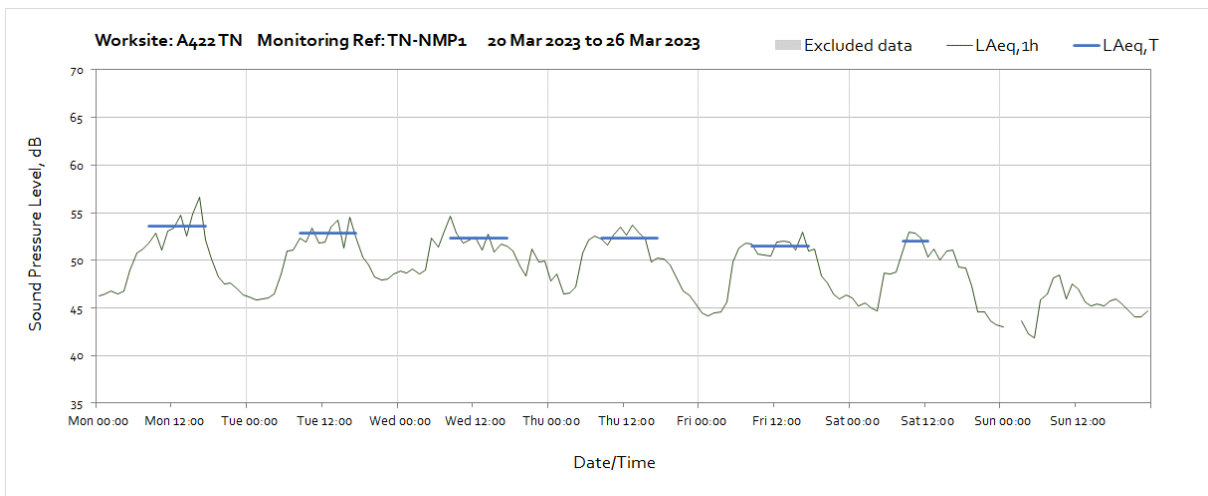
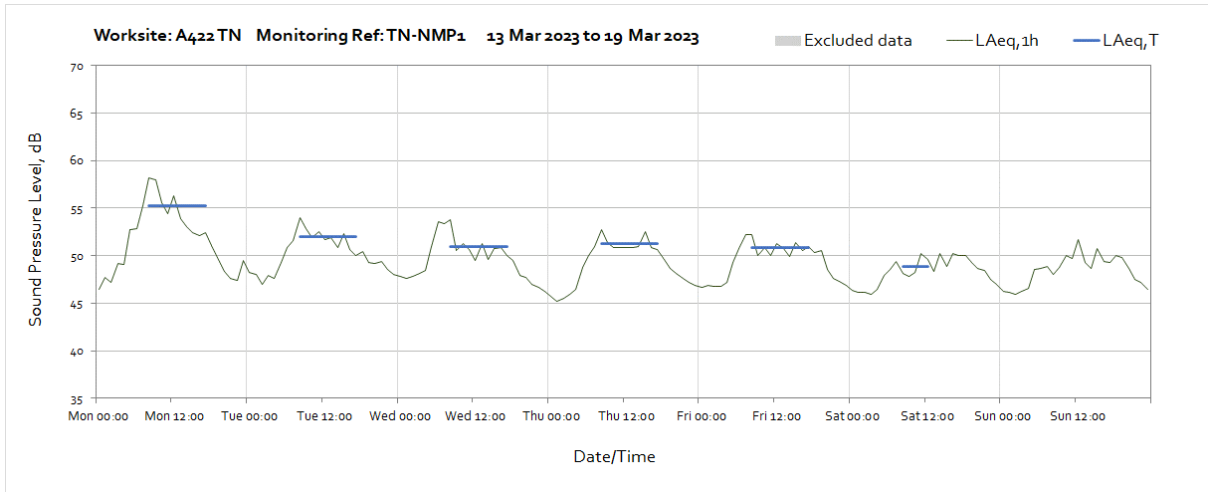
# Appendix C Data

## Noise

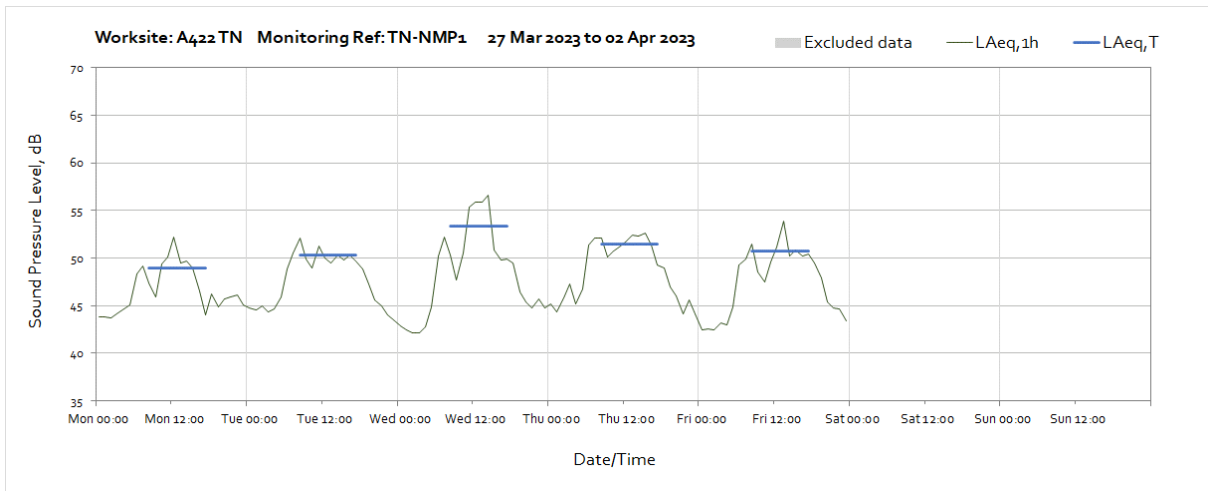
The following graphs show the hourly measured ambient noise level  $L_{Aeq,1h}$  and, where relevant, the averaged noise level  $L_{Aeq,T}$  values, where the time period T is as specified in Table 1 of HS2 Information Paper E23. Periods with adversely weather affected noise levels are greyed out and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

### Worksite: A422 TN – Monitoring Ref: TN-NMP1

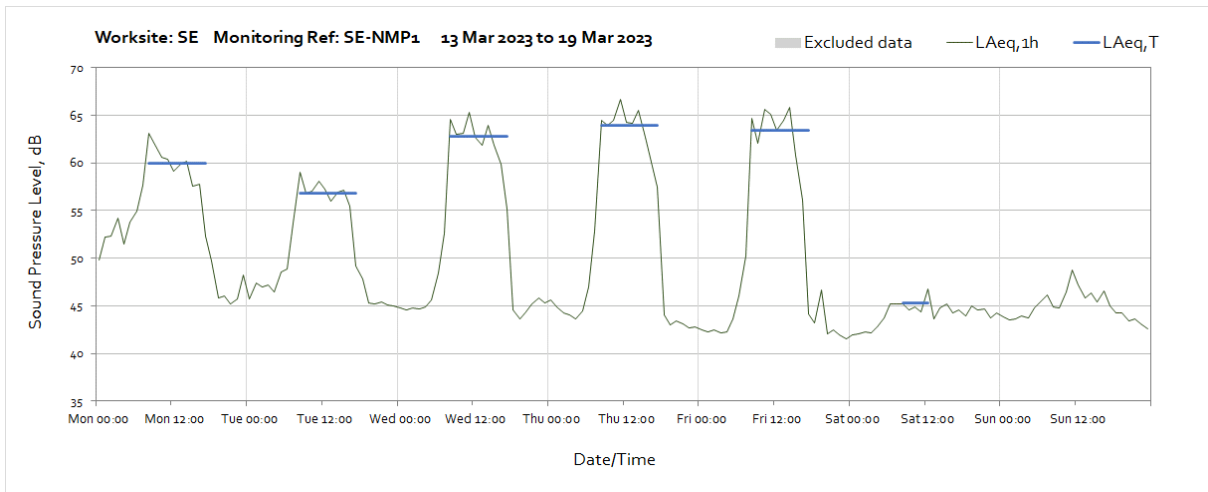
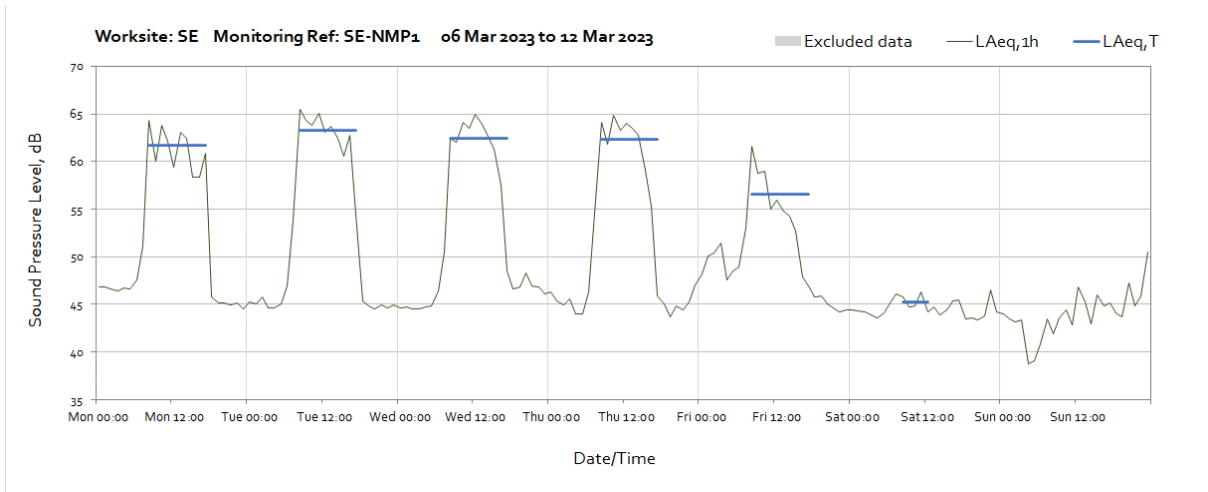
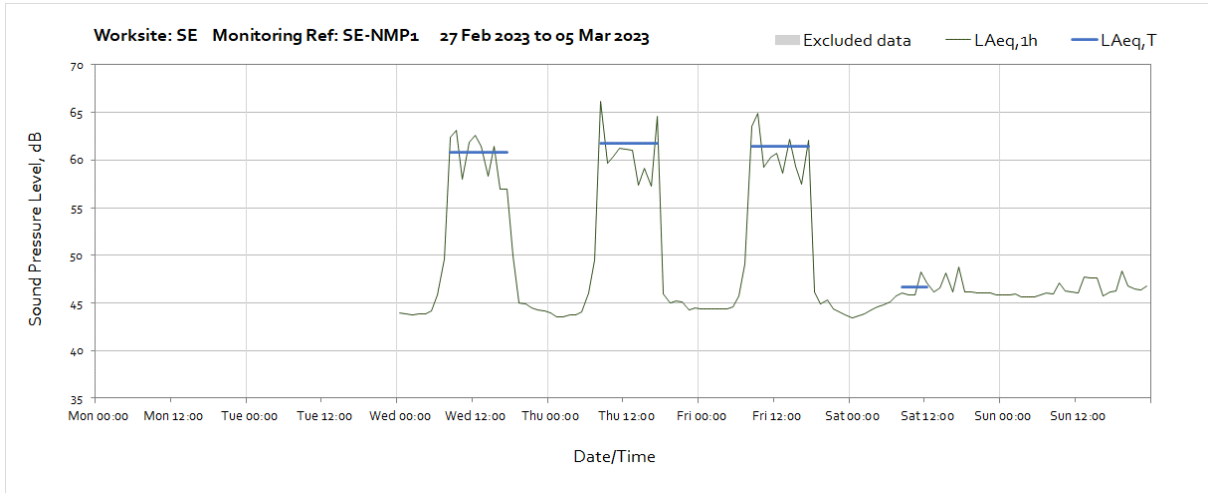


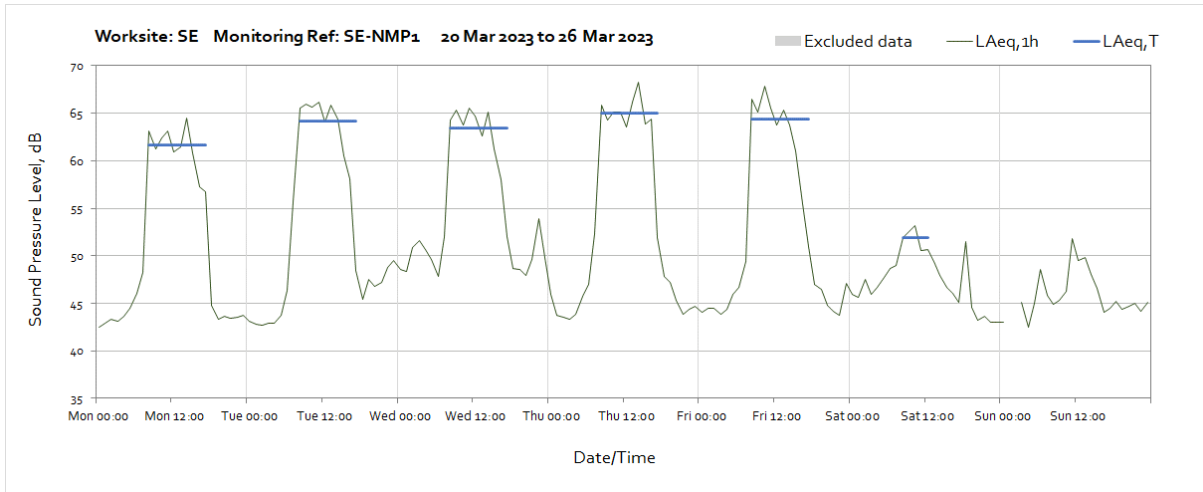


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

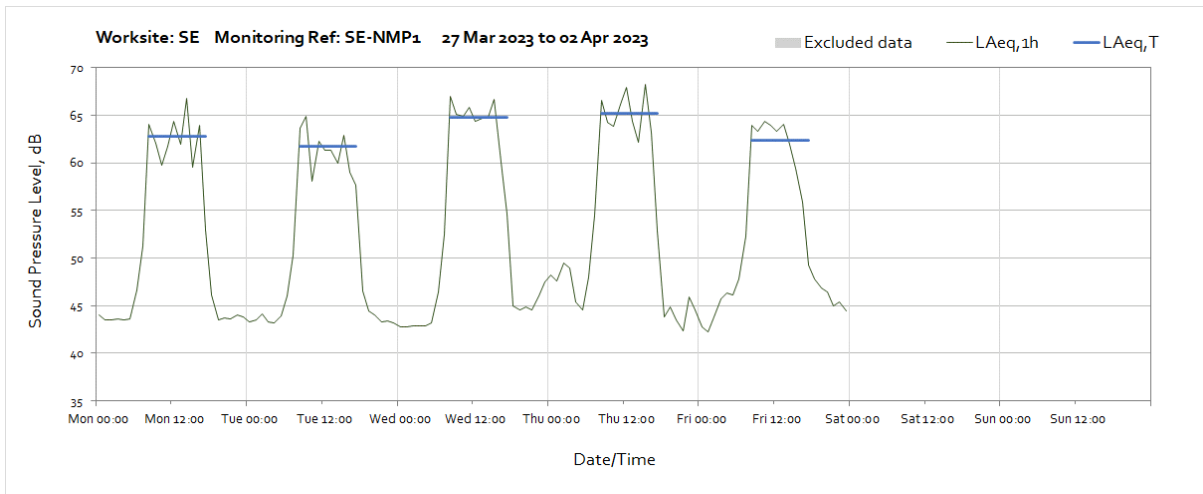


## Worksite: SE – Monitoring Ref: SE-NMP1

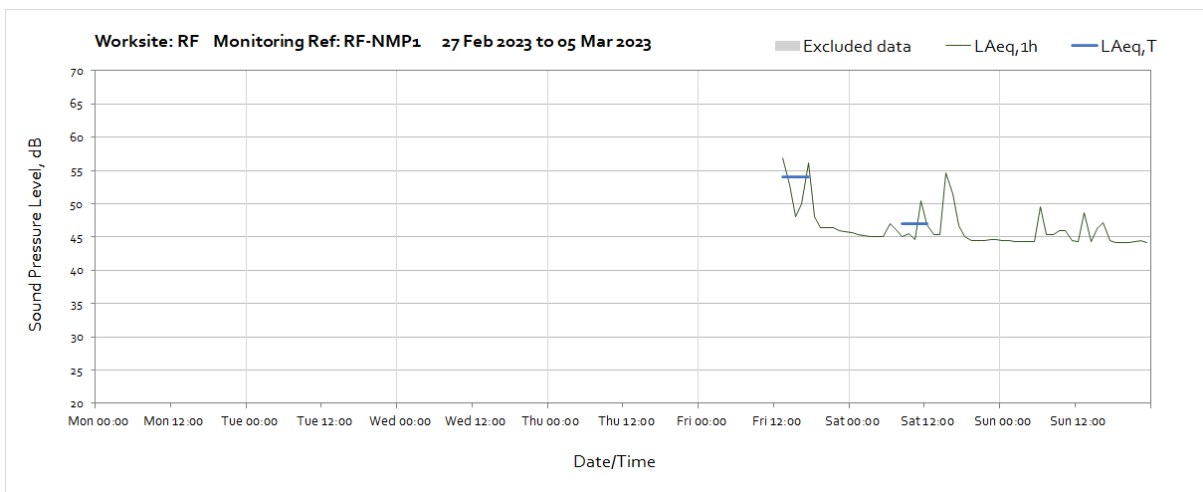




Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

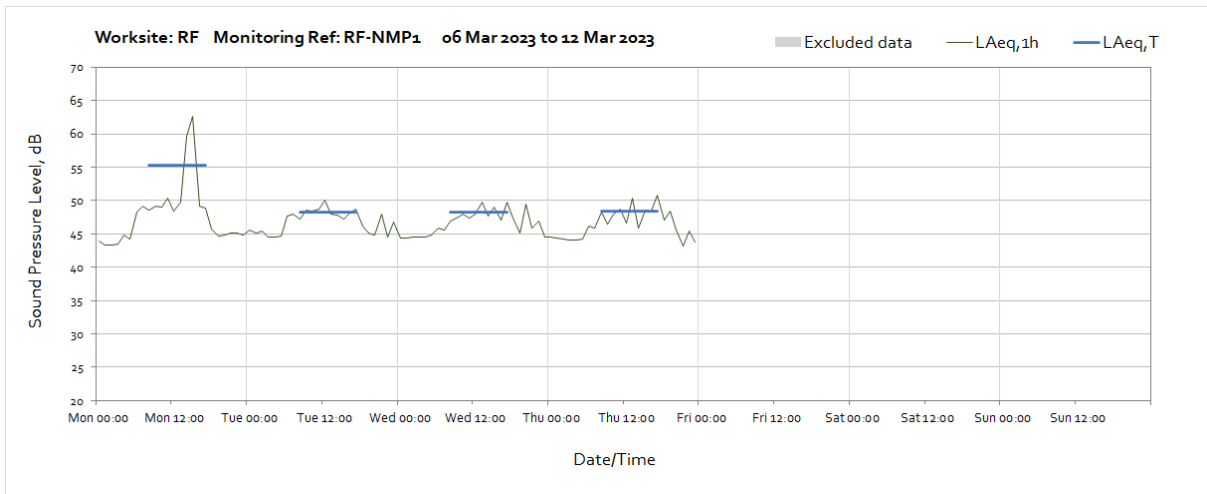


## Worksite: RF – Monitoring Ref: RF-NMP1

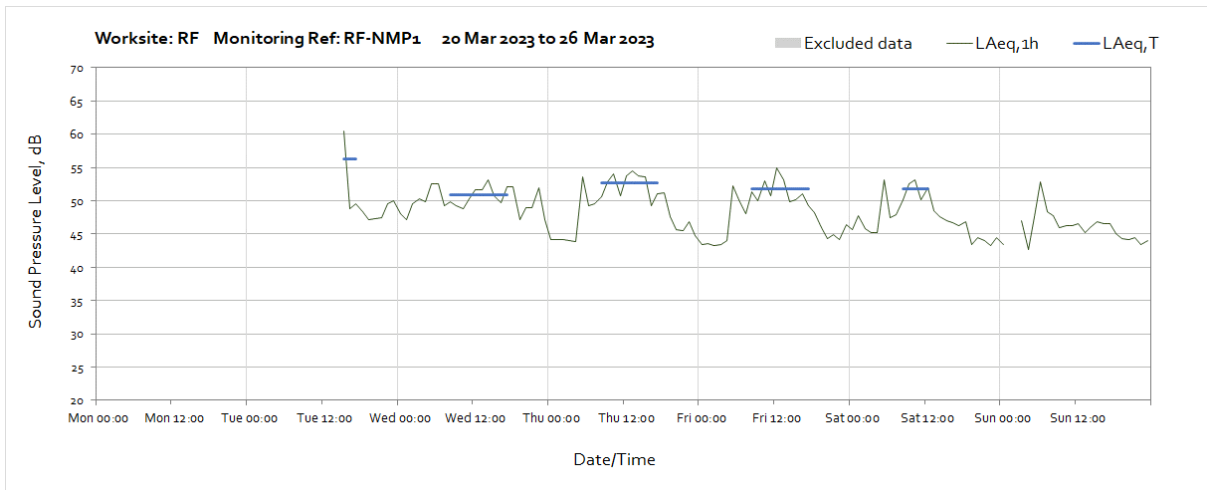


Note: Missing data from the start of the month until 13:00 on Friday 3<sup>rd</sup> March was due to depleted monitor battery.

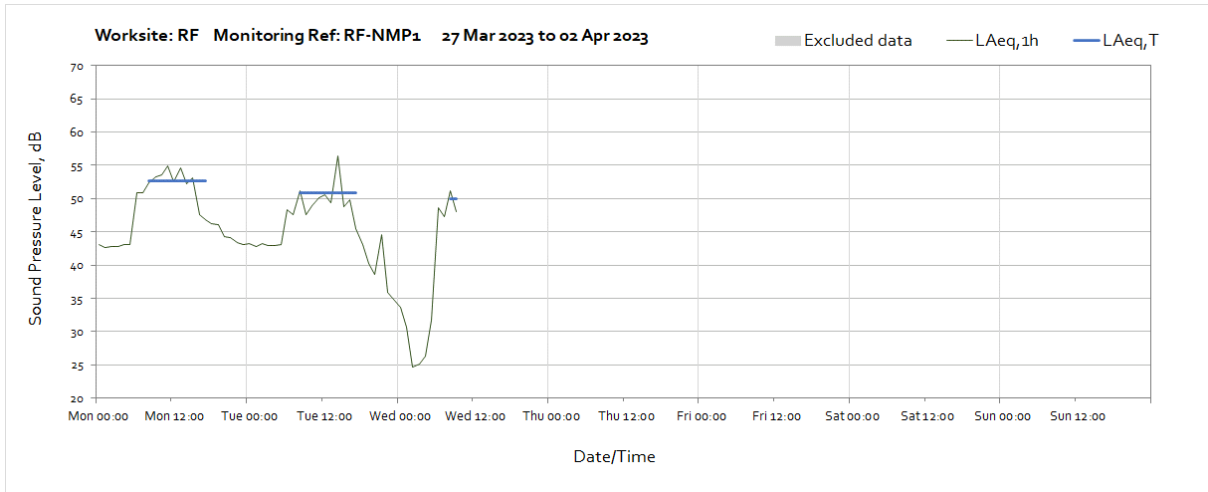
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Note: Missing data between 00:00 on Friday 10<sup>th</sup> March and 15:00 on Tuesday 21<sup>st</sup> March was due to depleted monitor battery.

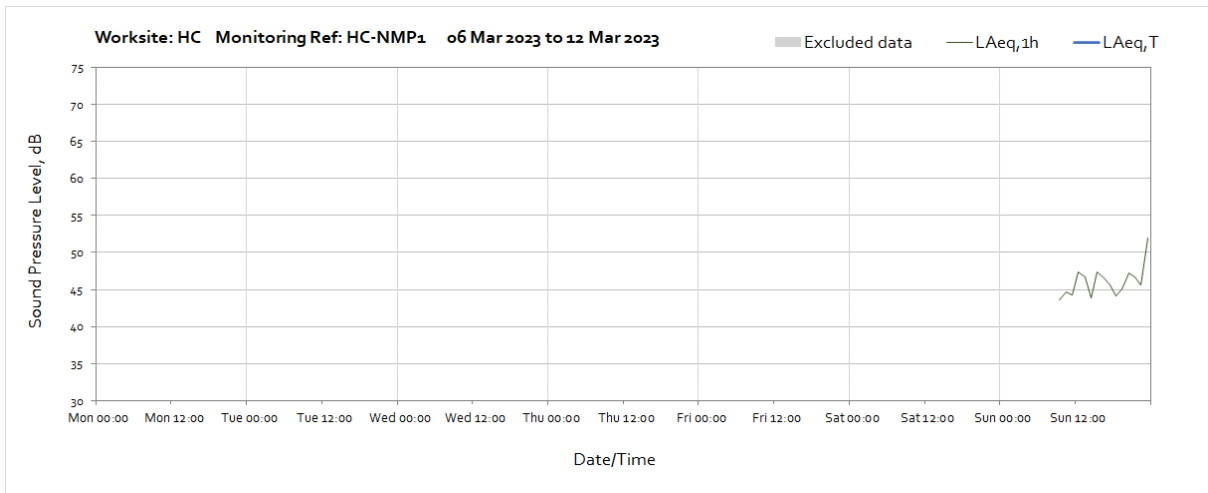


Note: Missing data between 00:00 on Friday 10<sup>th</sup> March and 15:00 on Tuesday 21<sup>st</sup> March was due to depleted monitor battery. Missing data between 01:00 and 03:00 on Sunday 26<sup>th</sup> March was due to a monitor time adjustment at the start of British Summertime.

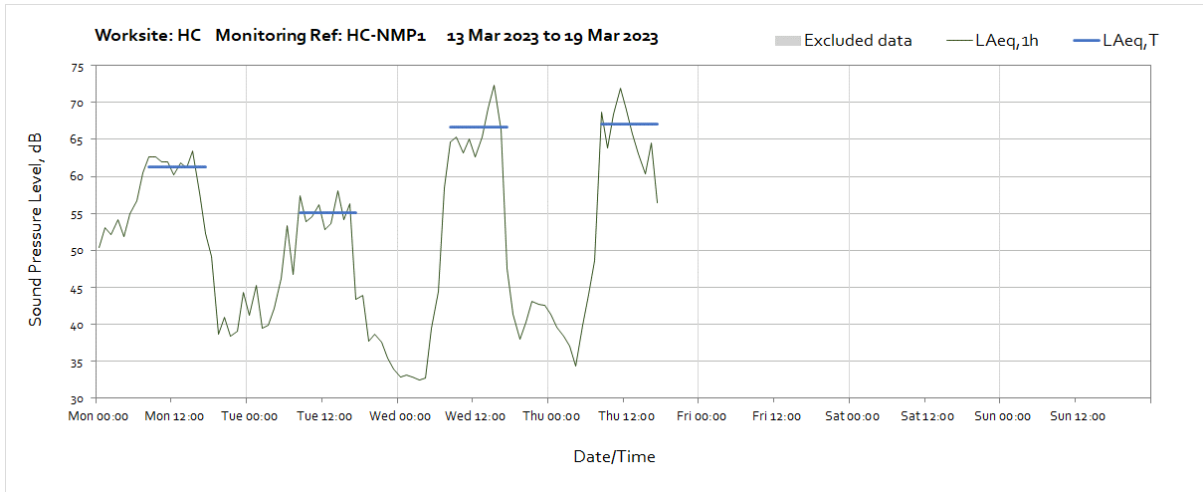


Note: Missing data between 11:00 on Wednesday 29<sup>th</sup> March and the end of the month was due to depleted monitor battery.

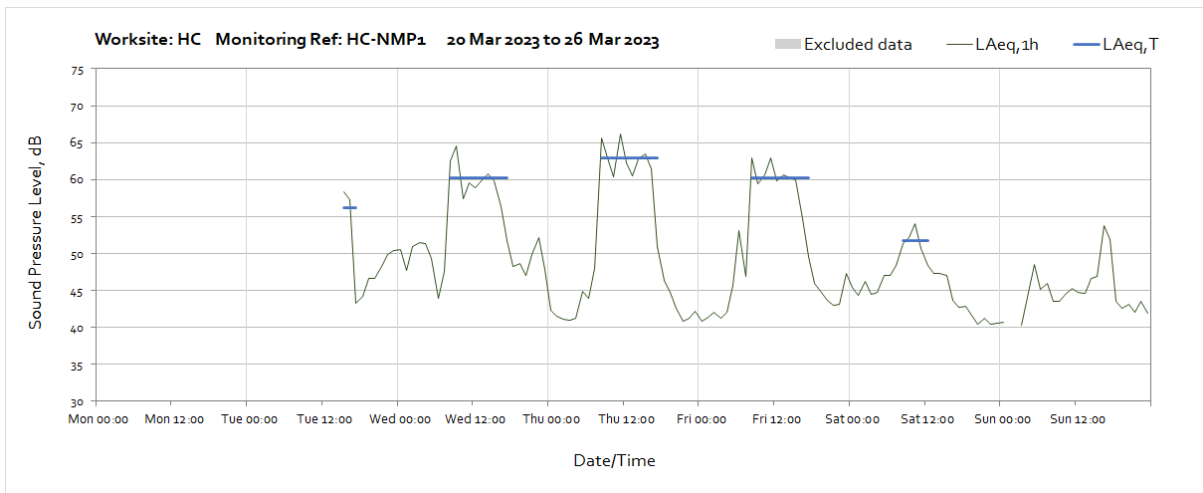
**Worksite: HC - Monitoring Ref: HC-NMP1**



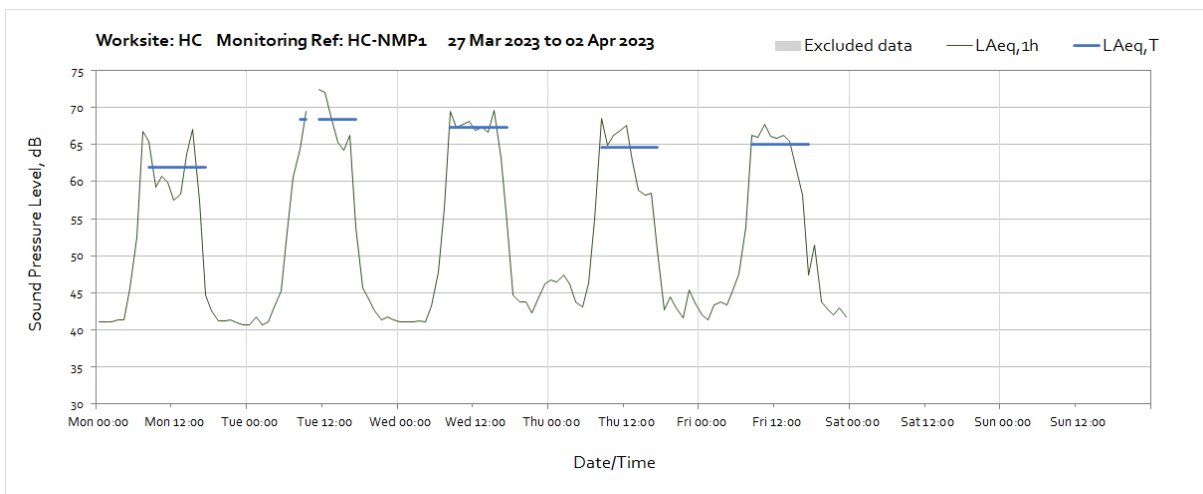
Note: Missing data from the start of the month until 09:00 on Sunday 12<sup>th</sup> March was due to depleted monitor battery.



Note: Missing data between 18:00 on Thursday 12<sup>th</sup> March and 15:00 on Tuesday 21<sup>st</sup> March was due to depleted monitor battery.

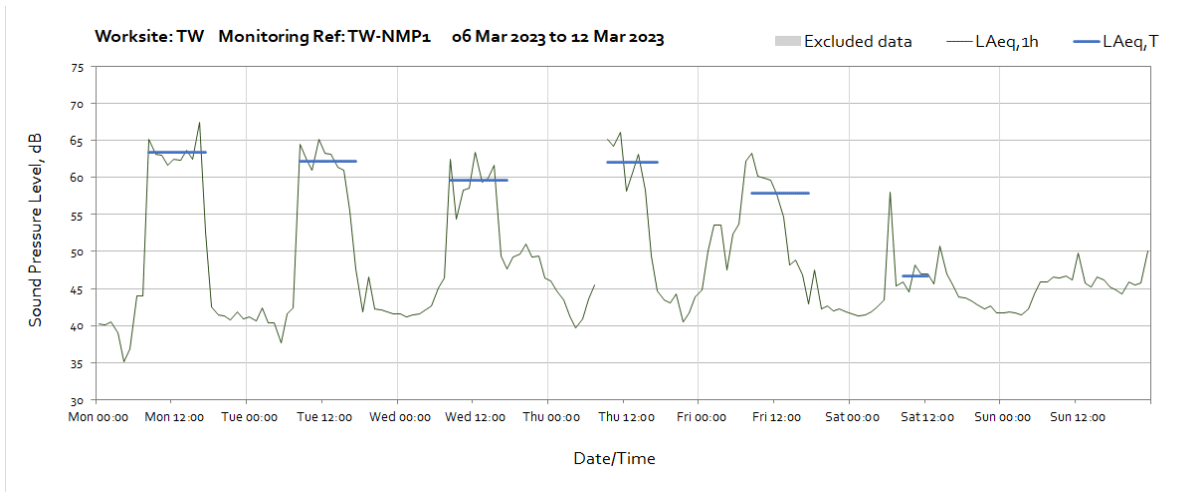
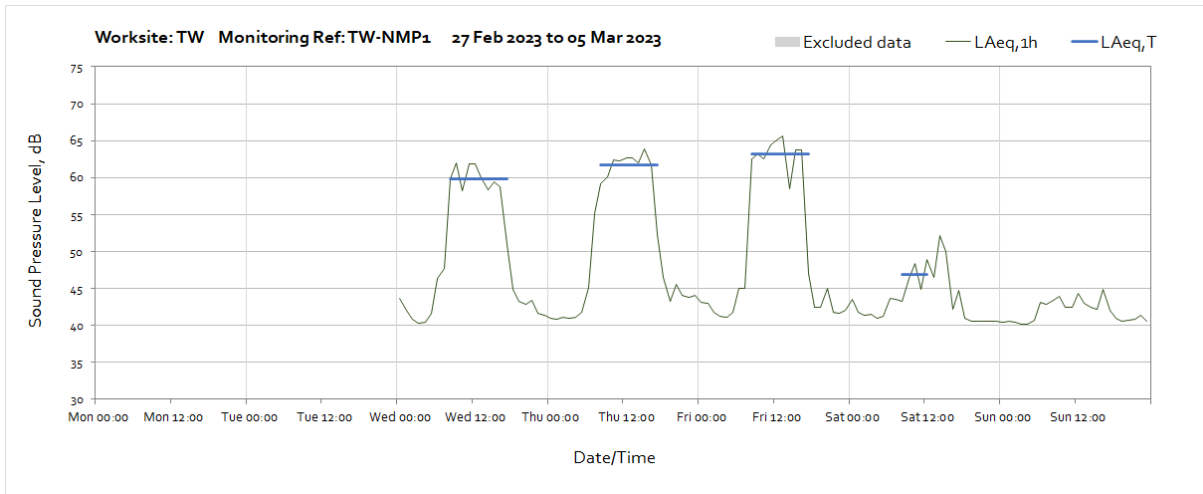


Note: Missing data between 01:00 and 03:00 on Sunday 26<sup>th</sup> March was due to a monitor time adjustment at the start of British Summertime. Missing data between 10:00 and 11:00 on Tuesday 28<sup>th</sup> March was due to monitor maintenance.

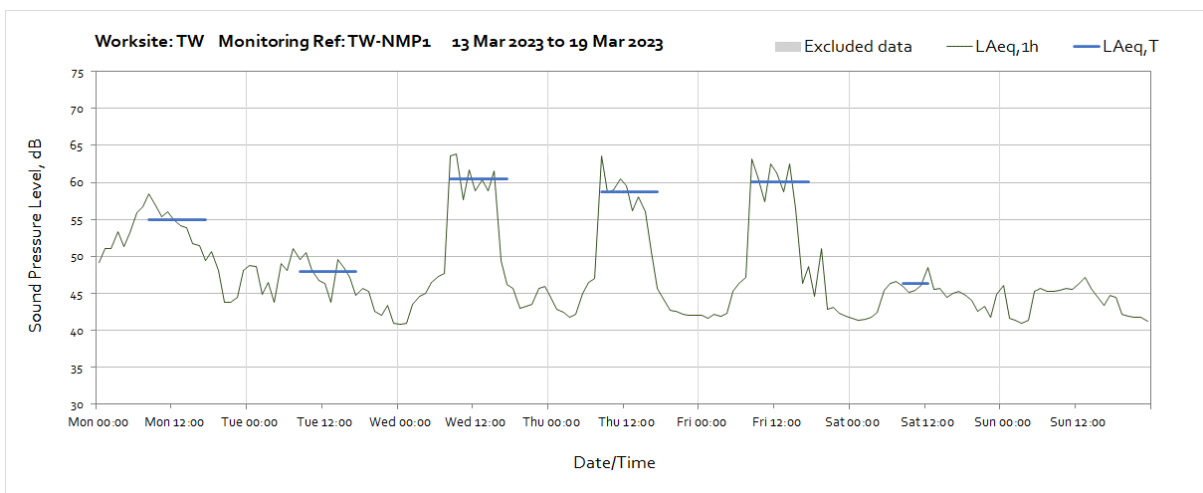


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## Worksite: TW – Monitoring Ref: TW-NMP1

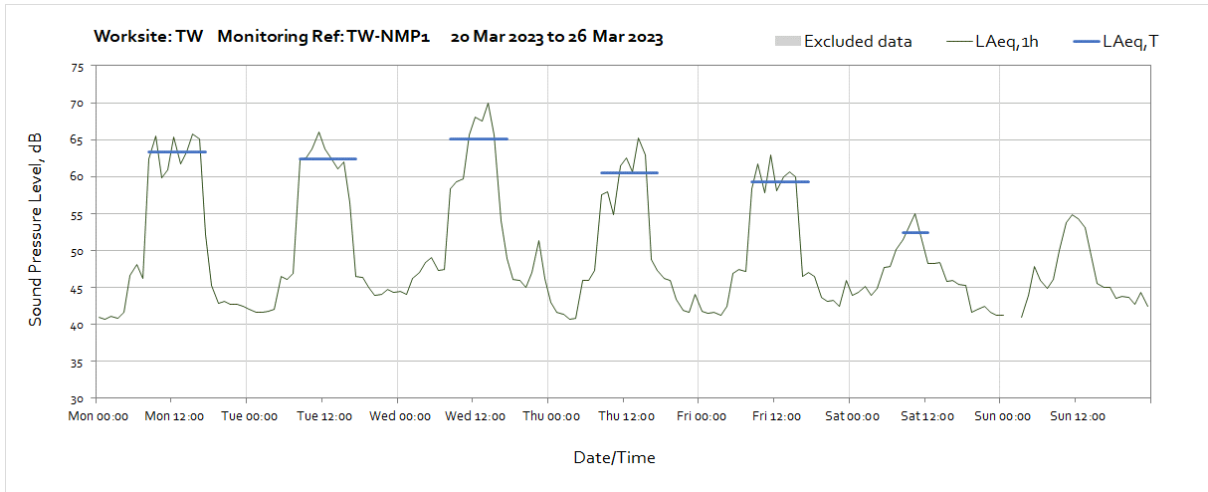


Note: Missing data between 08:00 and 09:00 on Thursday 9<sup>th</sup> March was due to monitor maintenance.

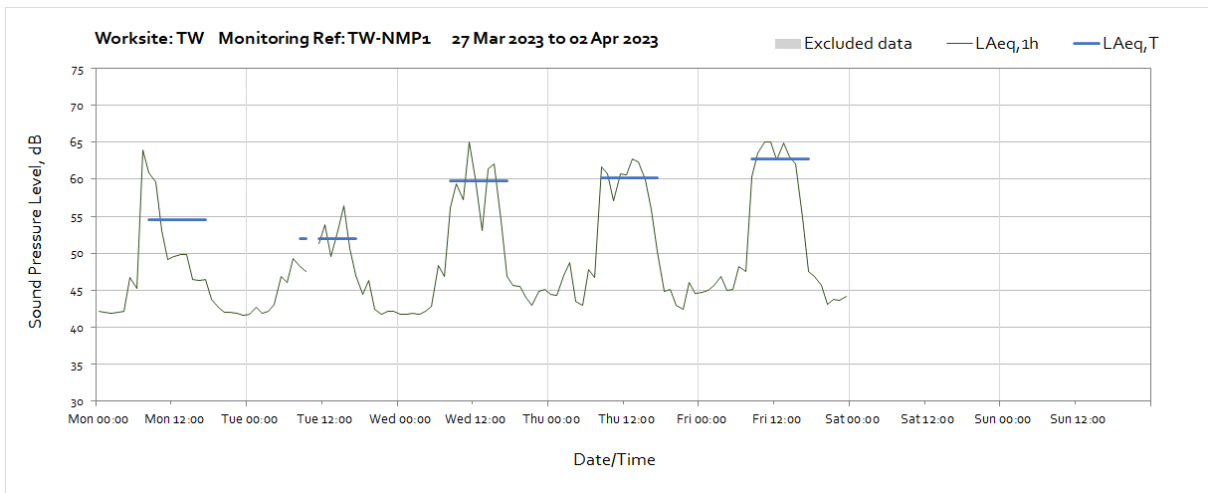


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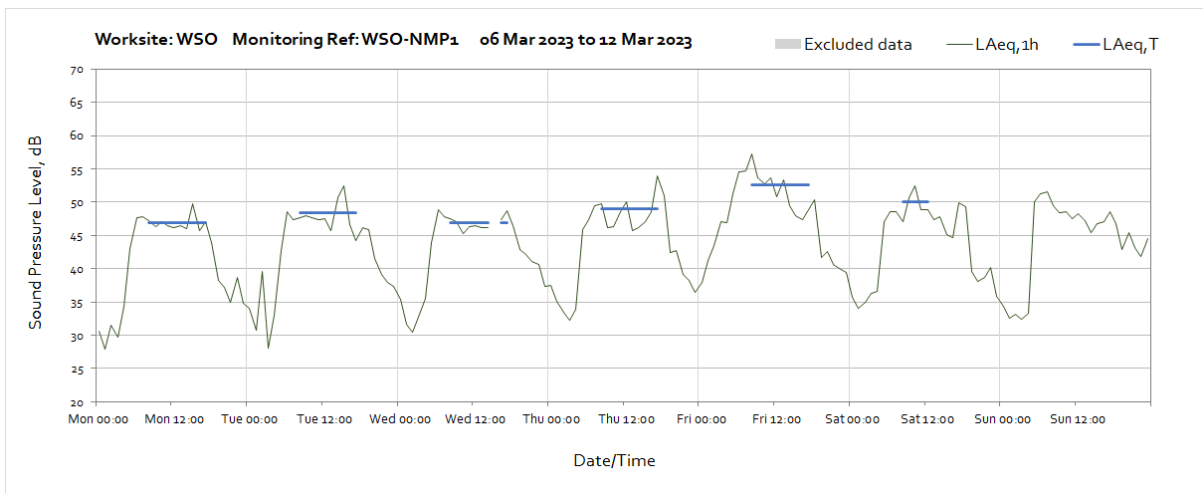
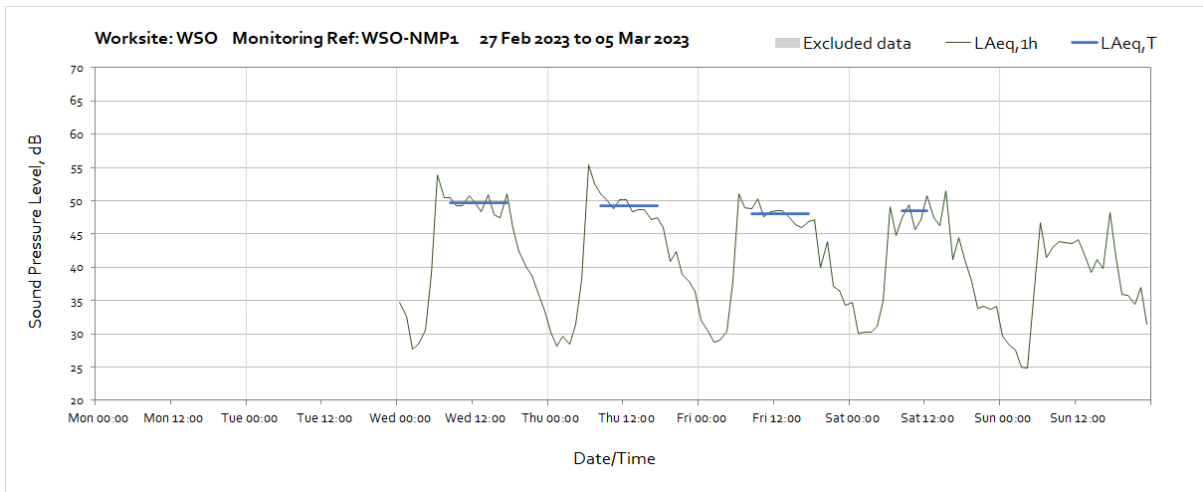


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

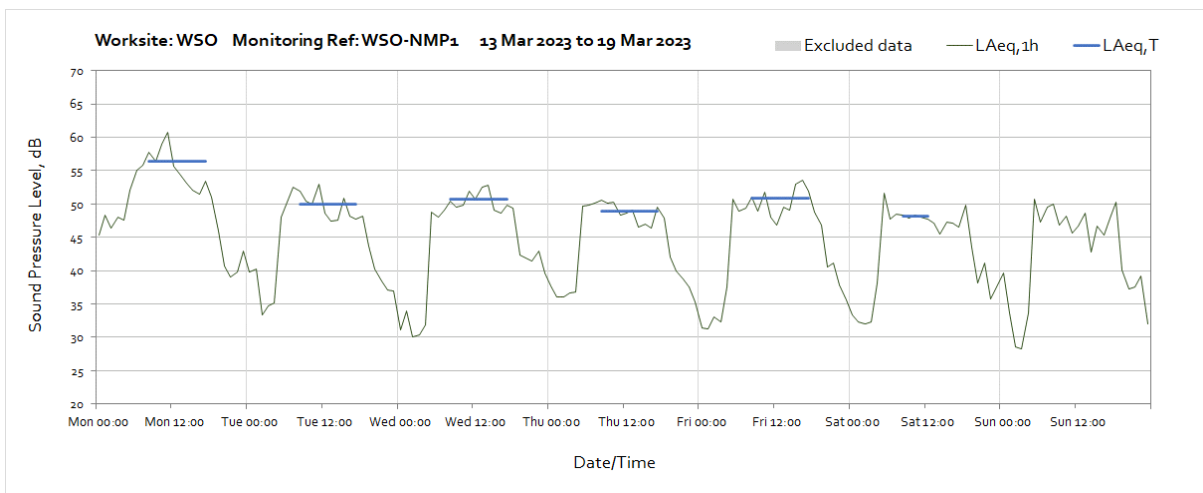


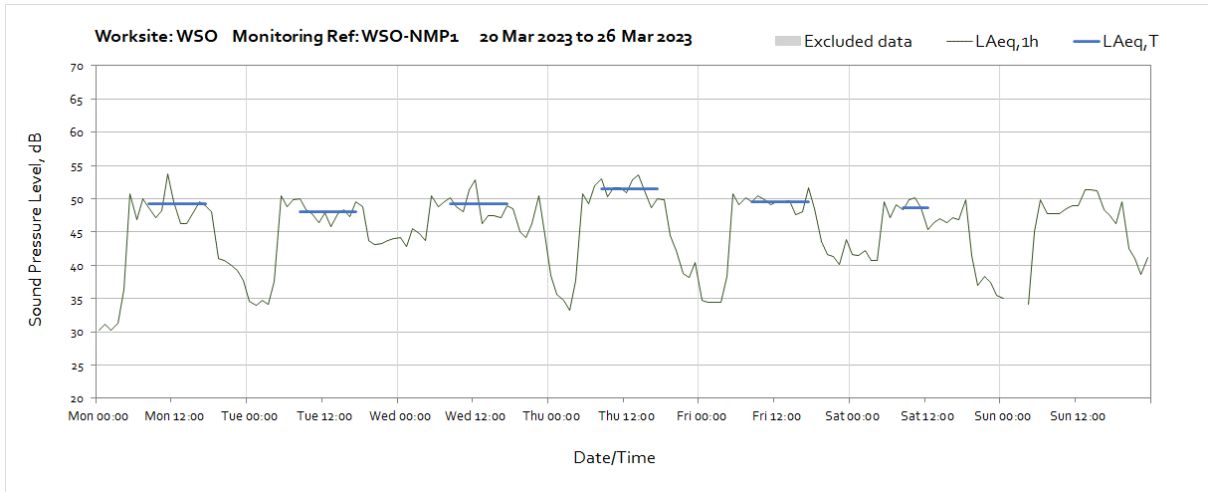
Note: Missing data between 10:00 and 11:00 on Tuesday 28<sup>th</sup> March was due to monitor maintenance.

## Worksite: WSO – Monitoring Ref: WSO-NMP1

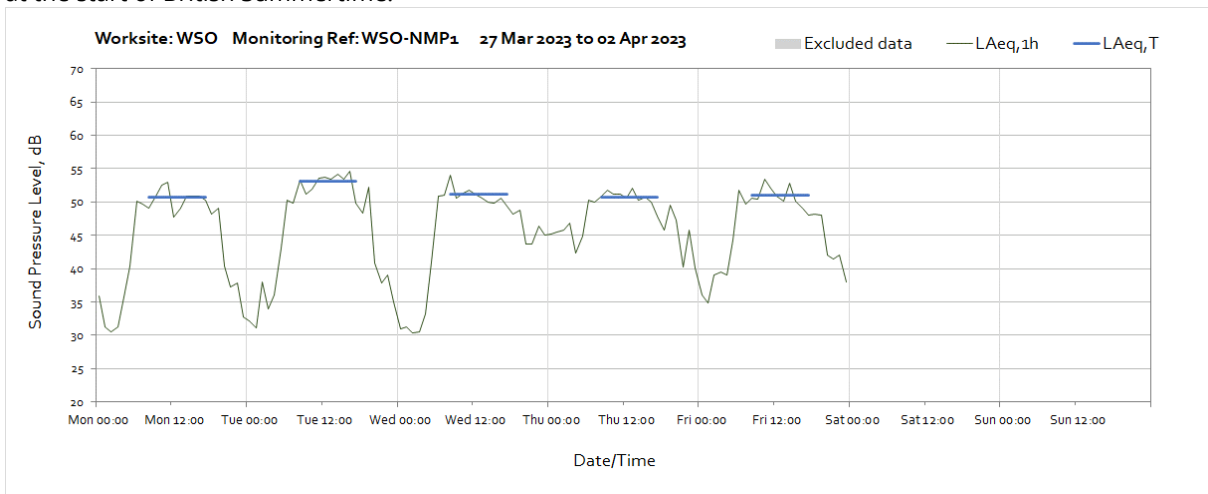


Note: Missing data between 15:00 and 16:00 on Wednesday 8<sup>th</sup> March was due to monitor maintenance.

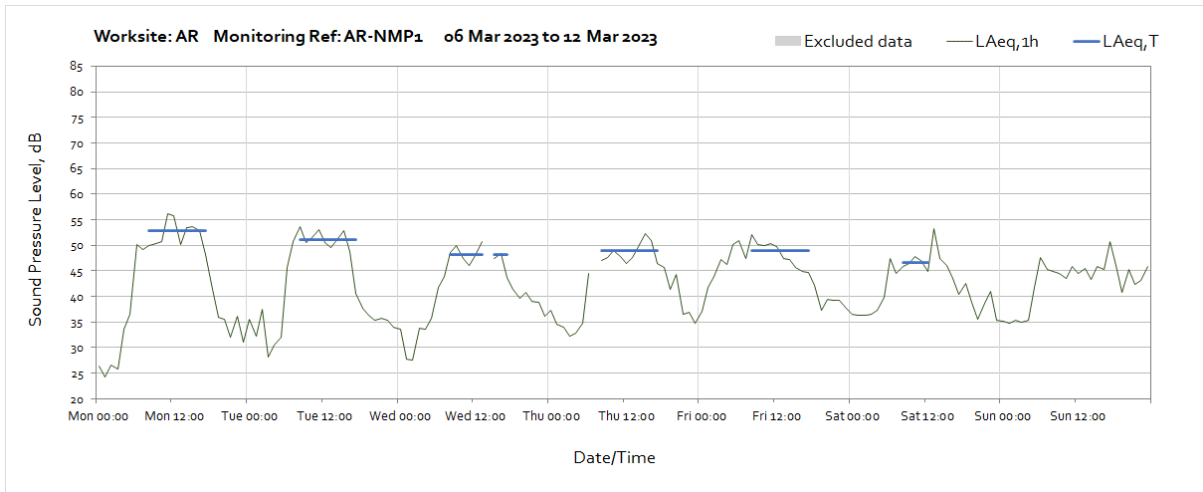
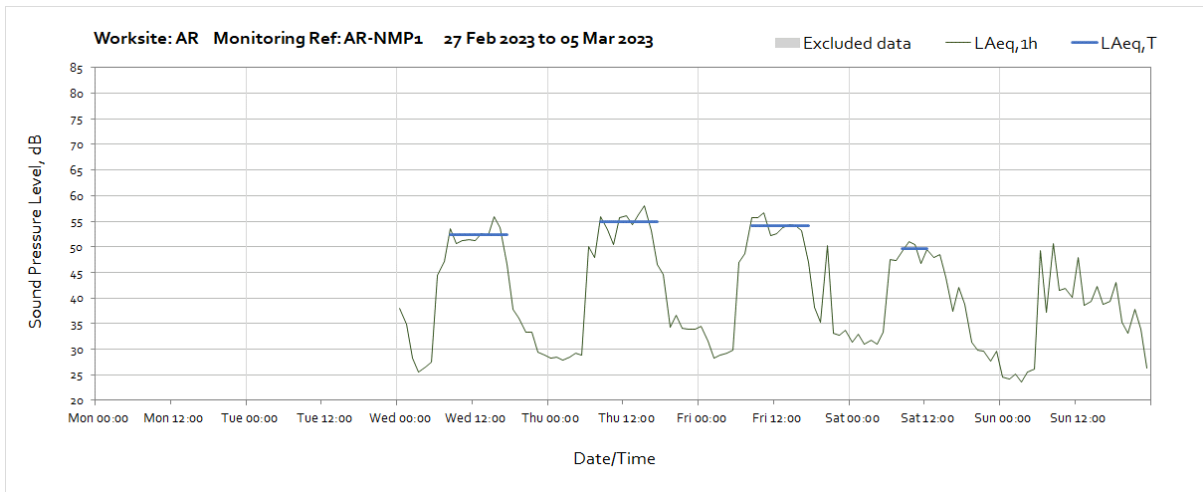




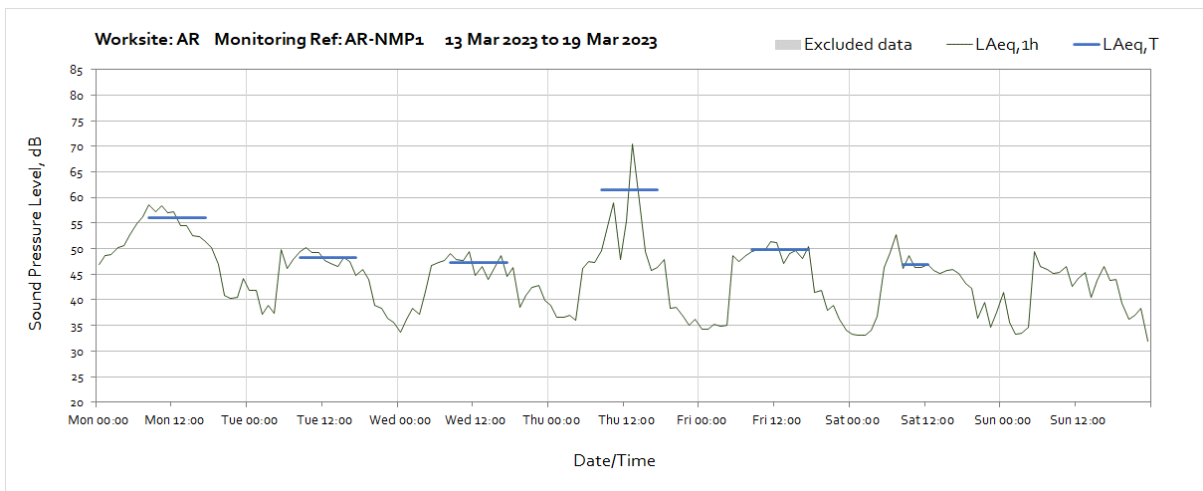
Note: Missing data between 01:00 and 04:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

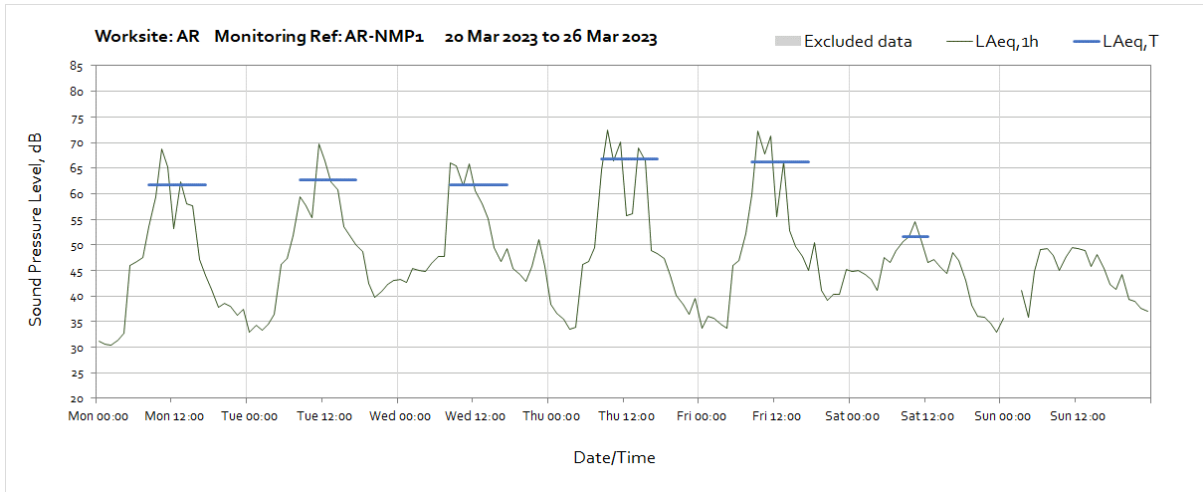


## Worksite: AR – Monitoring Ref: AR-NMP1

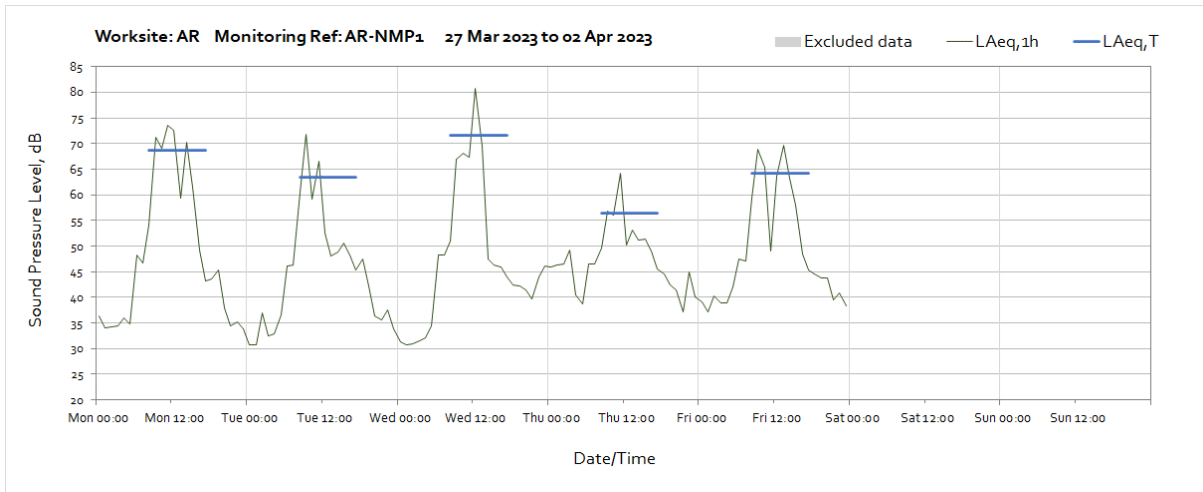


Note: Missing data between 14:00 and 15:00 on Wednesday 8<sup>th</sup> Marh and 07:00 and 08:00 on Thursday 9<sup>th</sup> March was due to monitor maintenance.

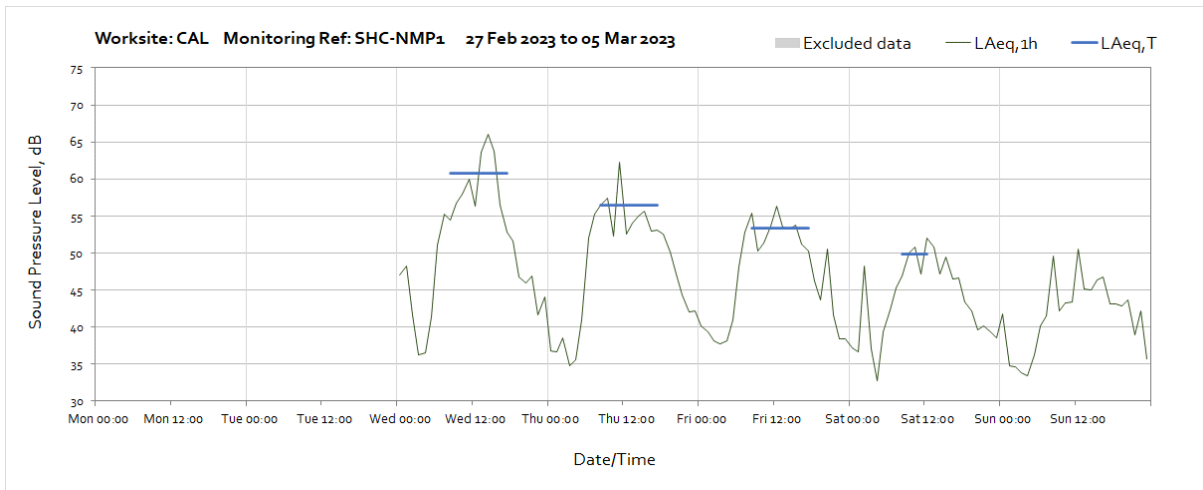


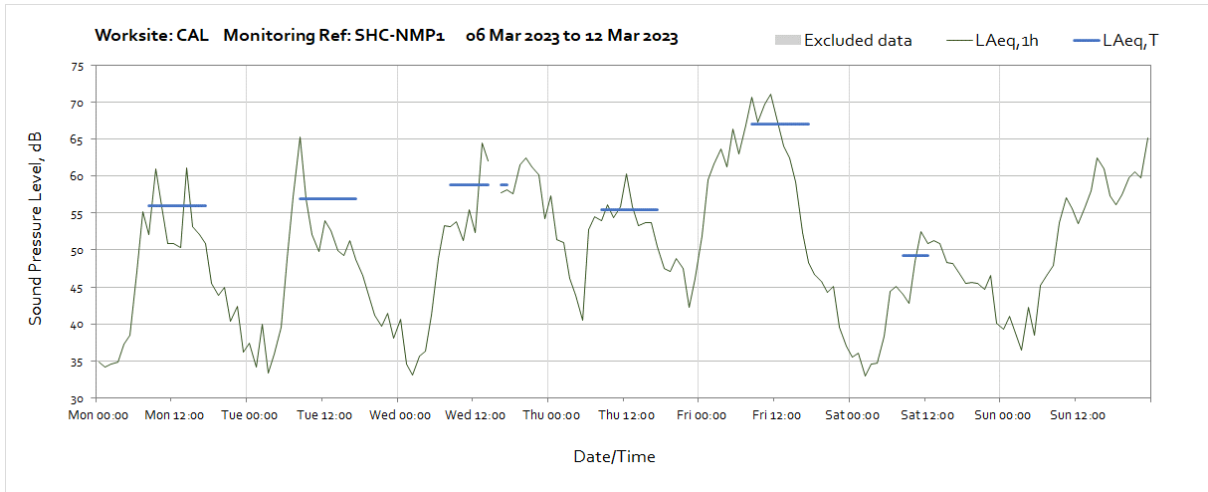


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

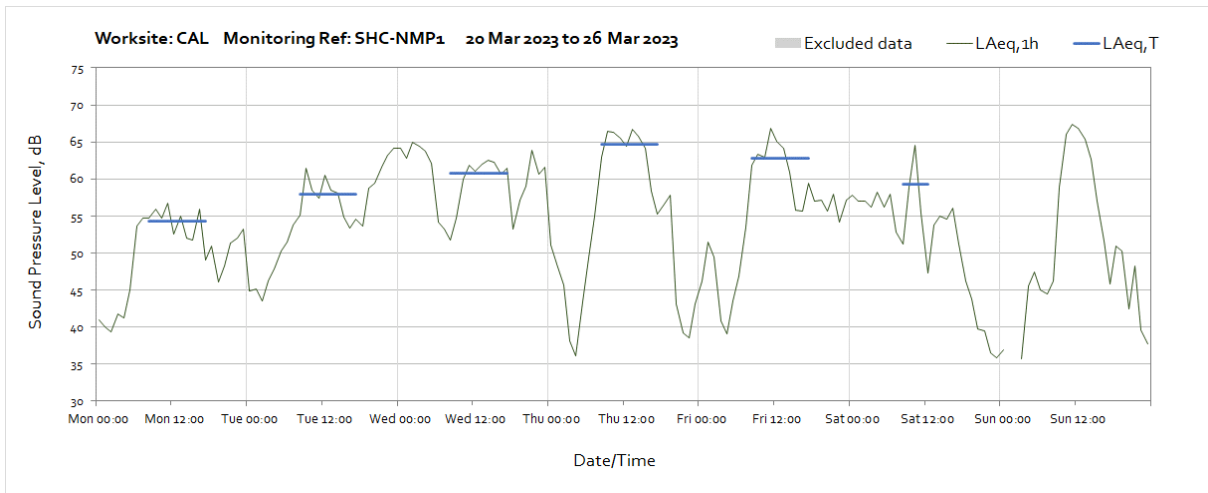
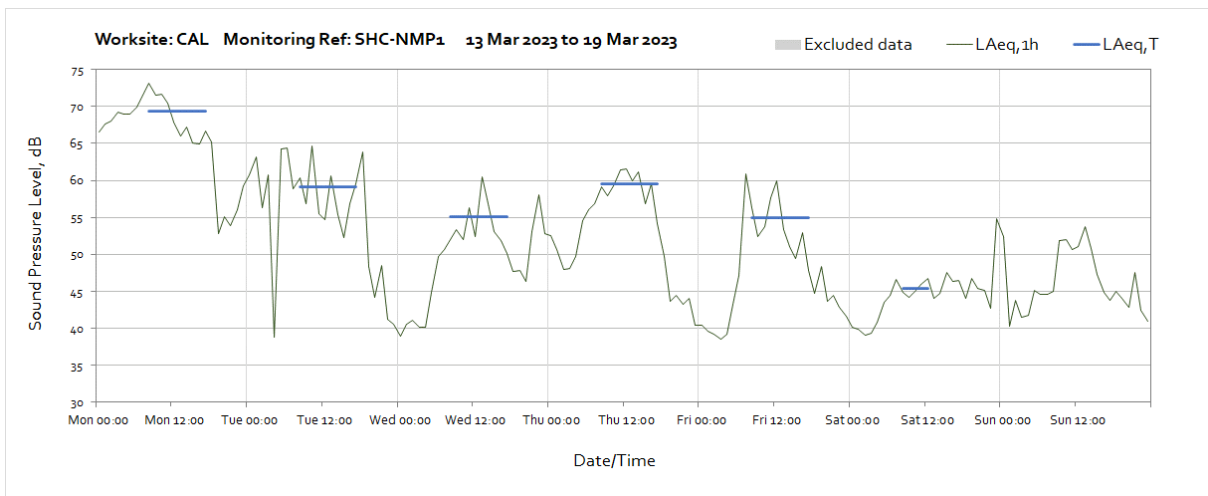


### Worksite: CAL – Monitoring Ref: SHC-NMP1

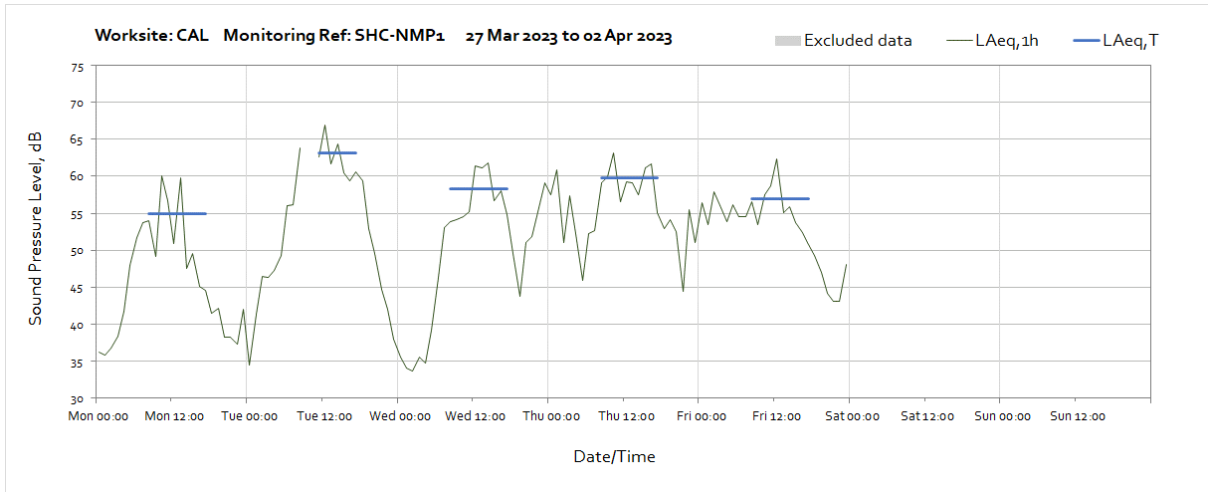




Note: Missing data between 15:00 and 16:00 on Wednesday 8<sup>th</sup> March was due to monitor maintenance.

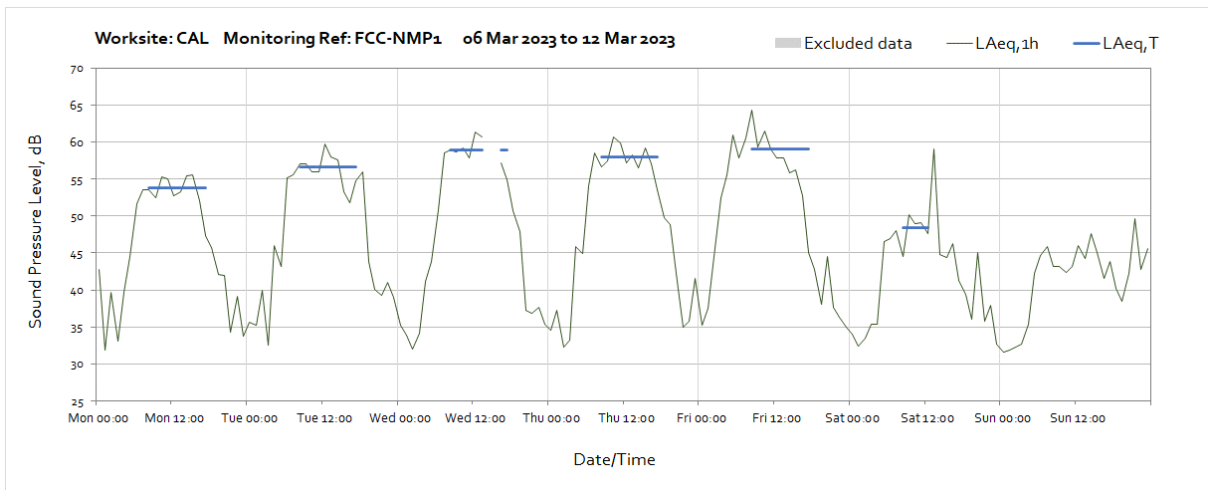
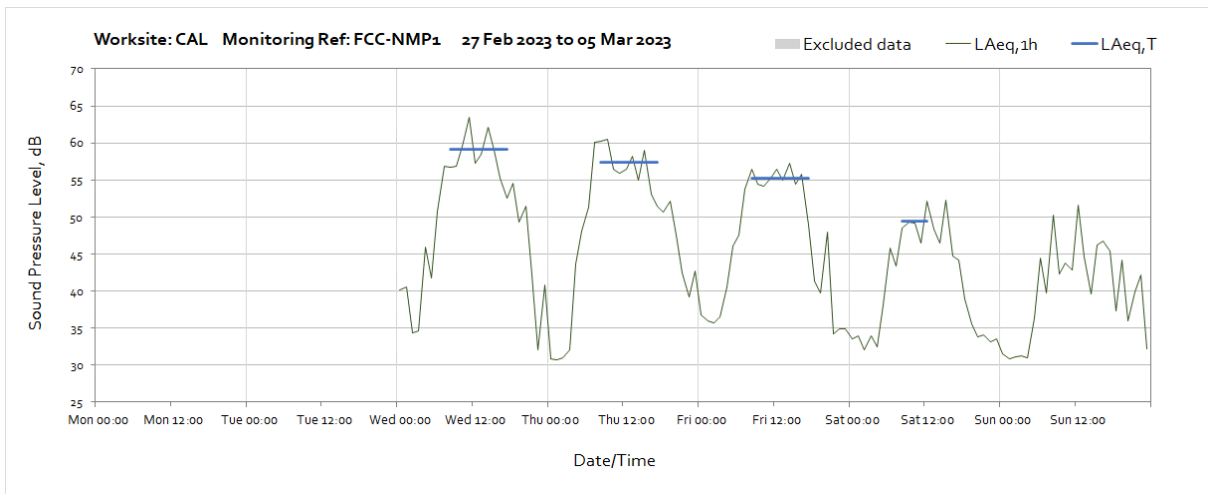


Note: Missing data between 01:00 and 03:00 on Sunday 26<sup>th</sup> March was due to a monitor time adjustment at the start of British Summertime.

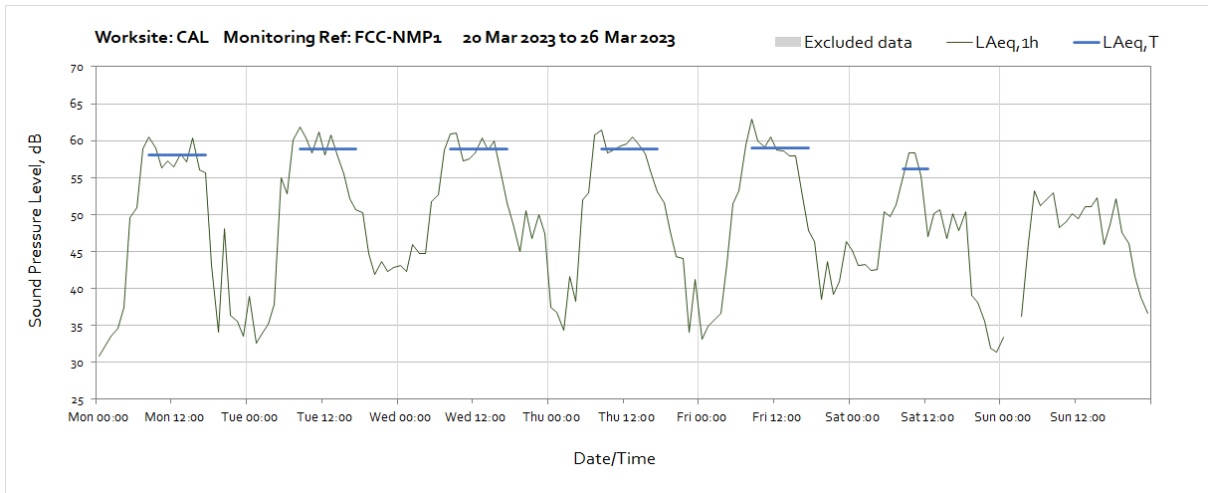
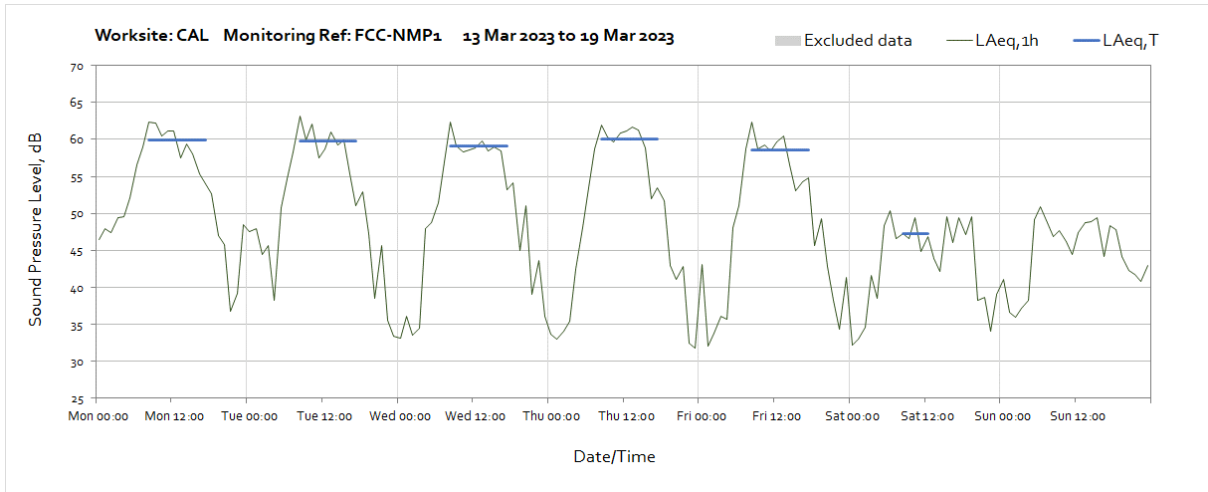


Note: Missing data between 09:00 and 11:00 on Tuesday 28<sup>th</sup> March was due to monitor maintenance.

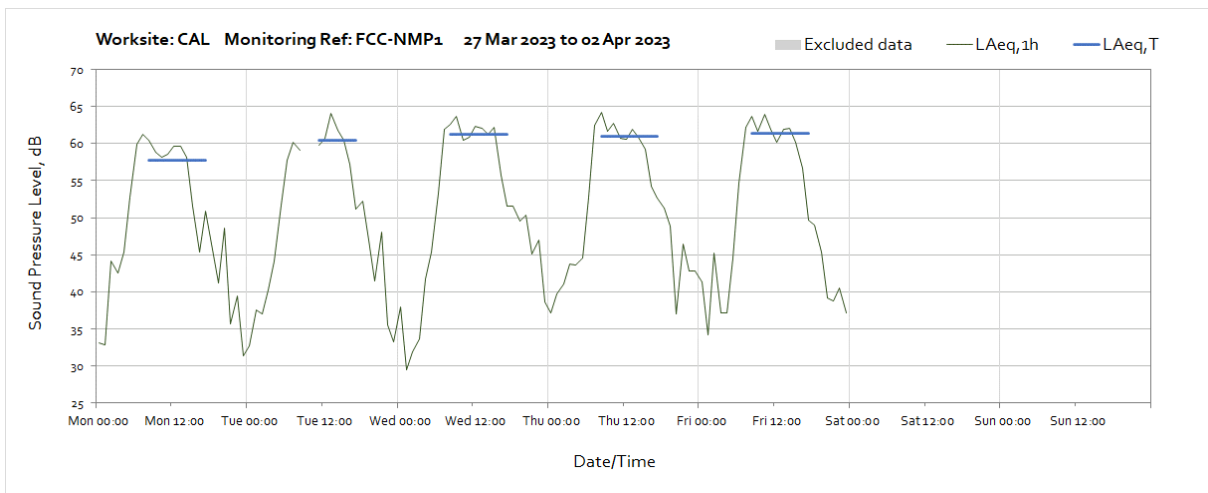
### Worksite: CAL – Monitoring Ref: FCC-NMP1



Note: Missing data between 14:00 and 16:00 on Wednesday 8<sup>th</sup> March was due to monitor maintenance.



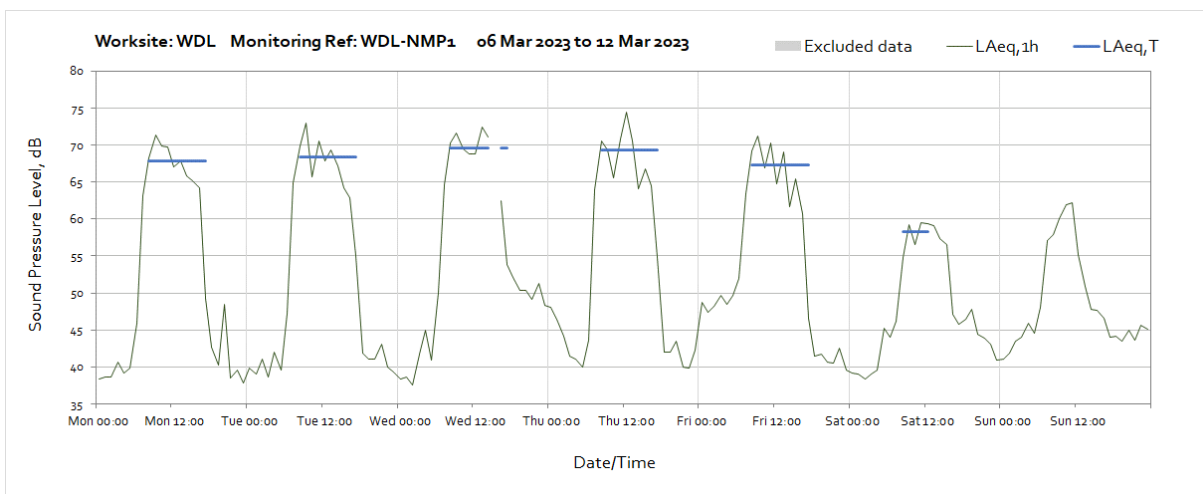
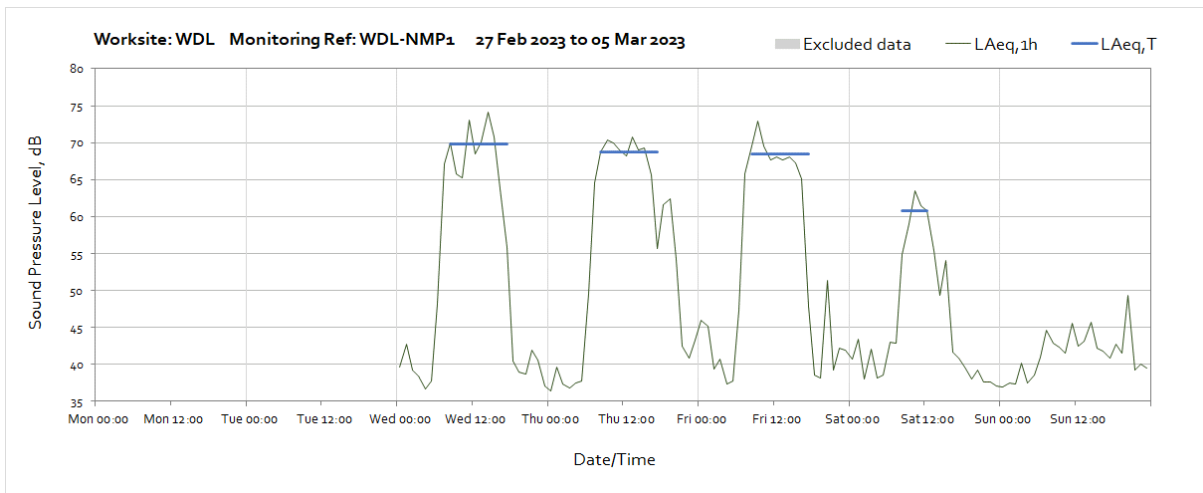
Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.



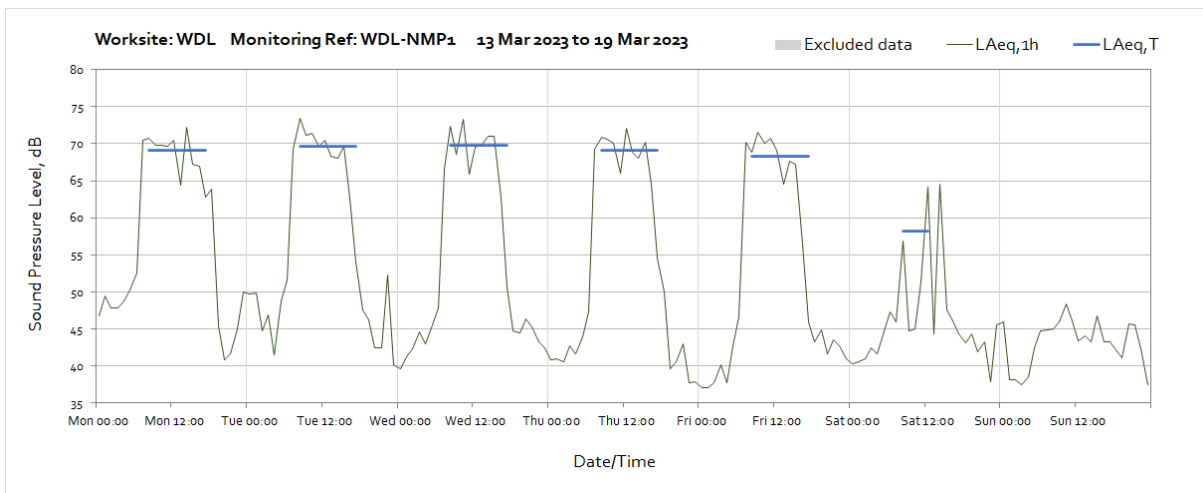
Note: Missing data between 09:00 and 11:00 on Tuesday 28<sup>th</sup> March was due to monitor maintenance.

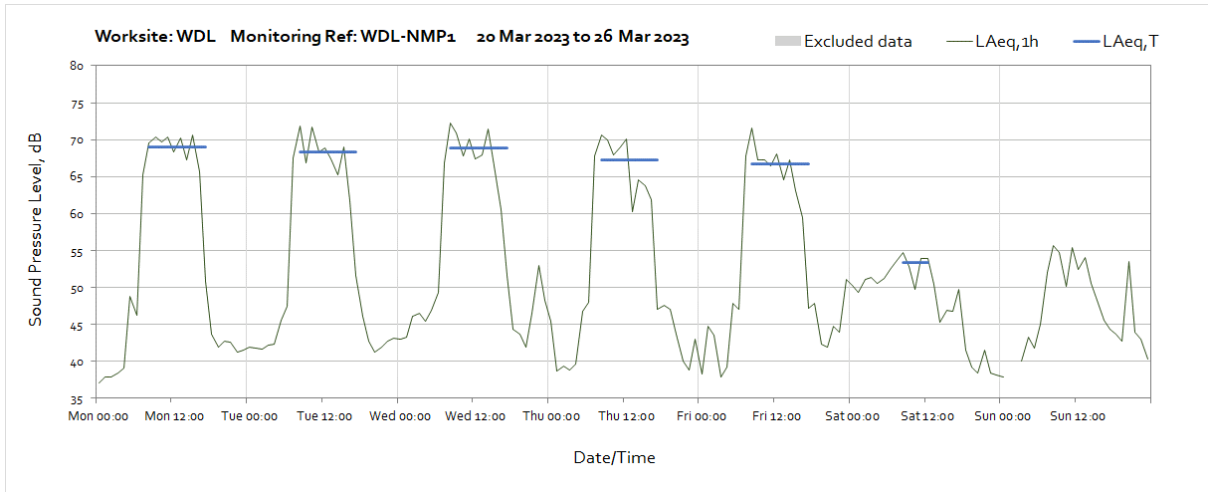


## Worksite: WDL – Monitoring Ref: WDL-NMP1

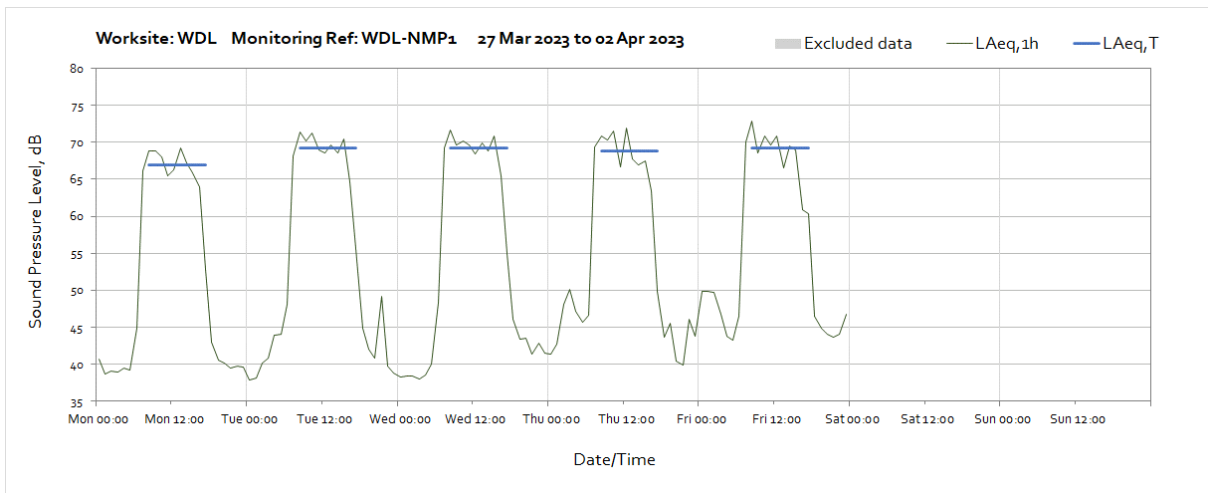


Note: Missing data between 15:00 and 16:00 on Wednesday 8<sup>th</sup> March was due to monitor maintenance.

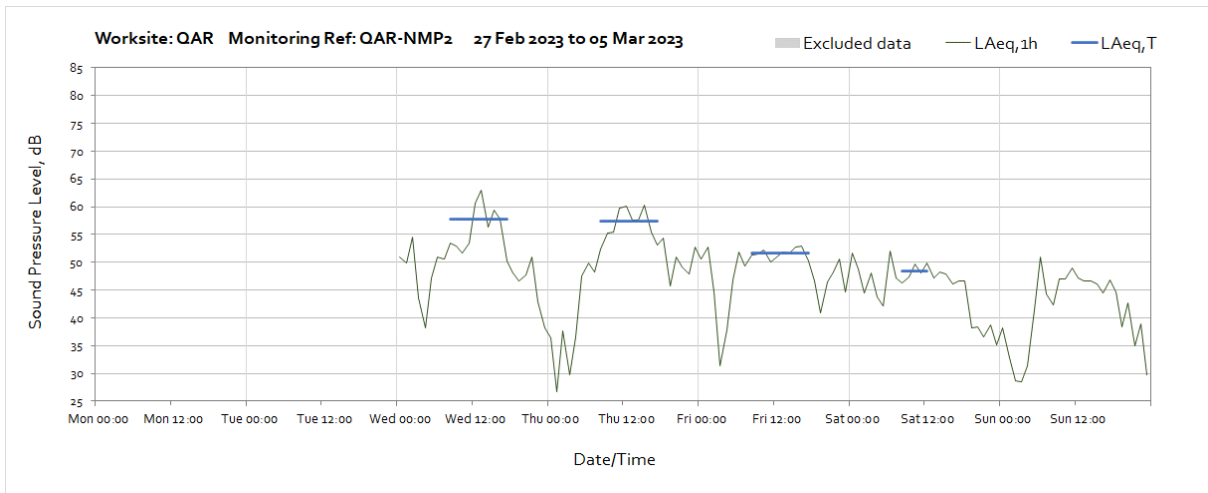


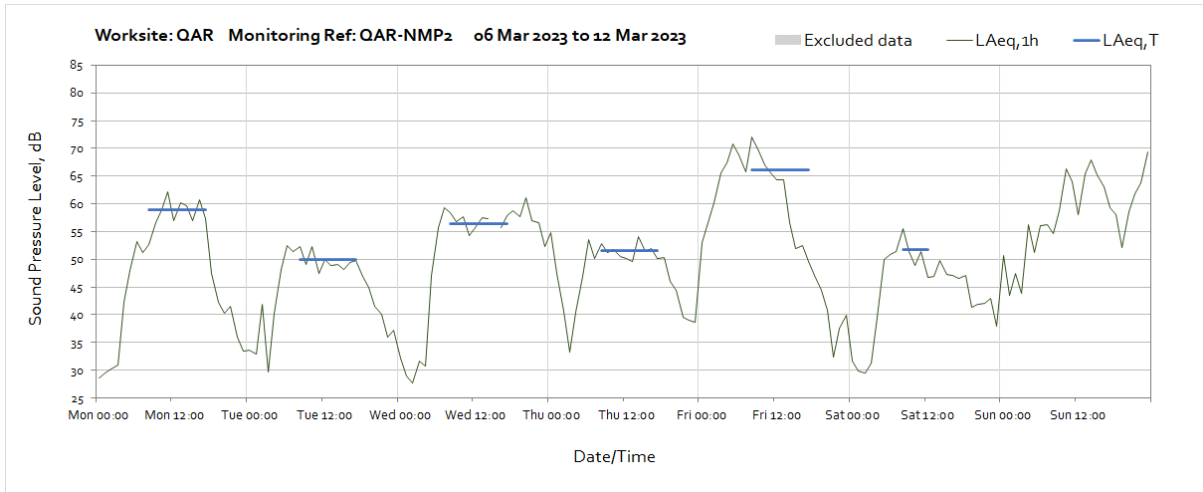


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

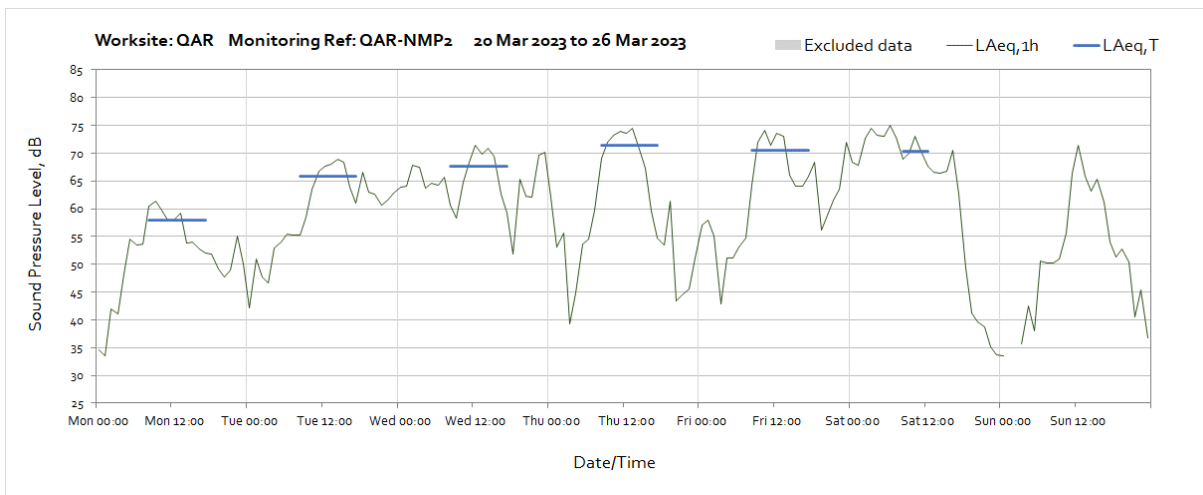
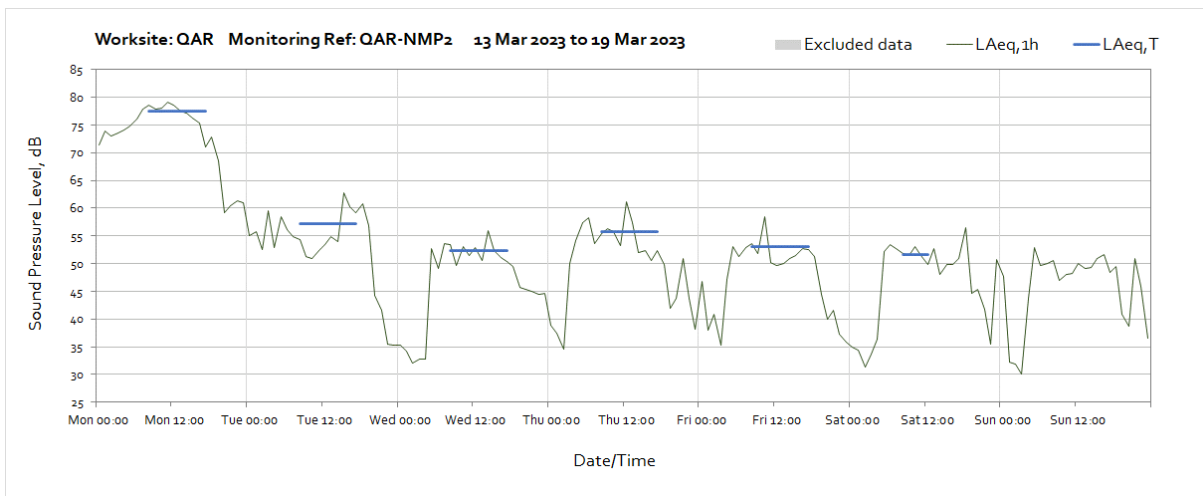


## Worksite: QAR - Monitoring Ref: QAR-NMP2

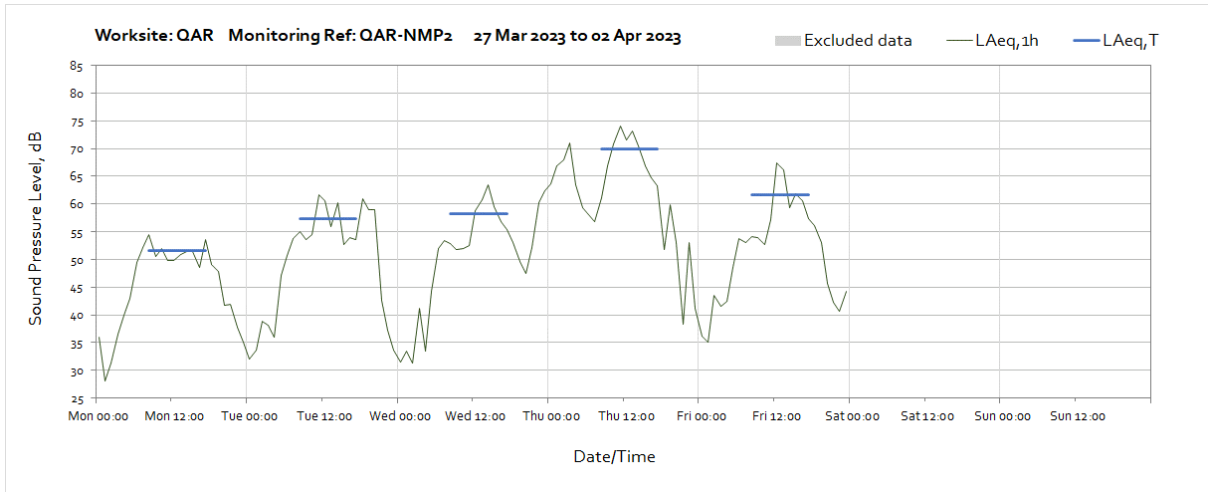




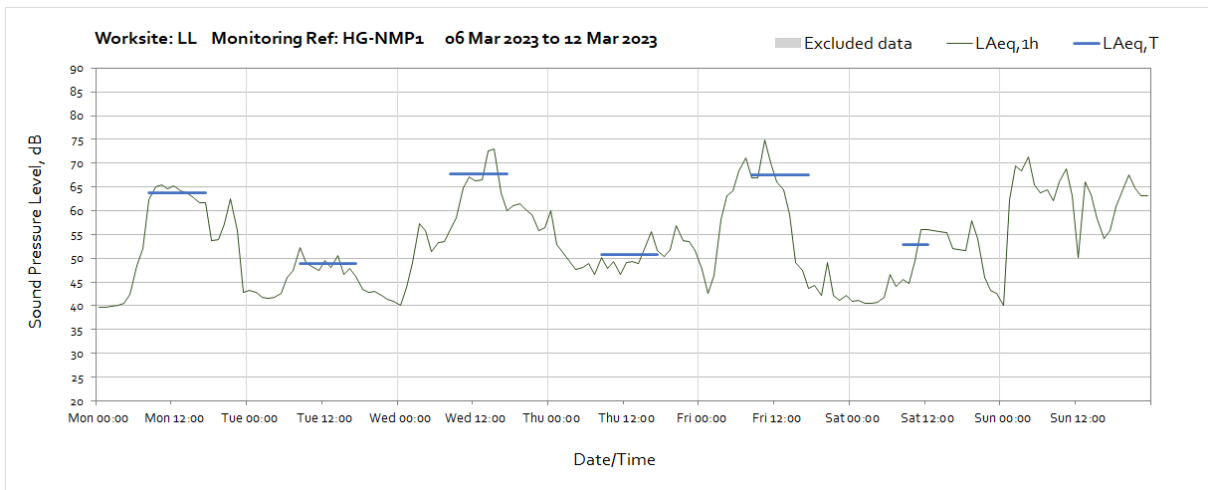
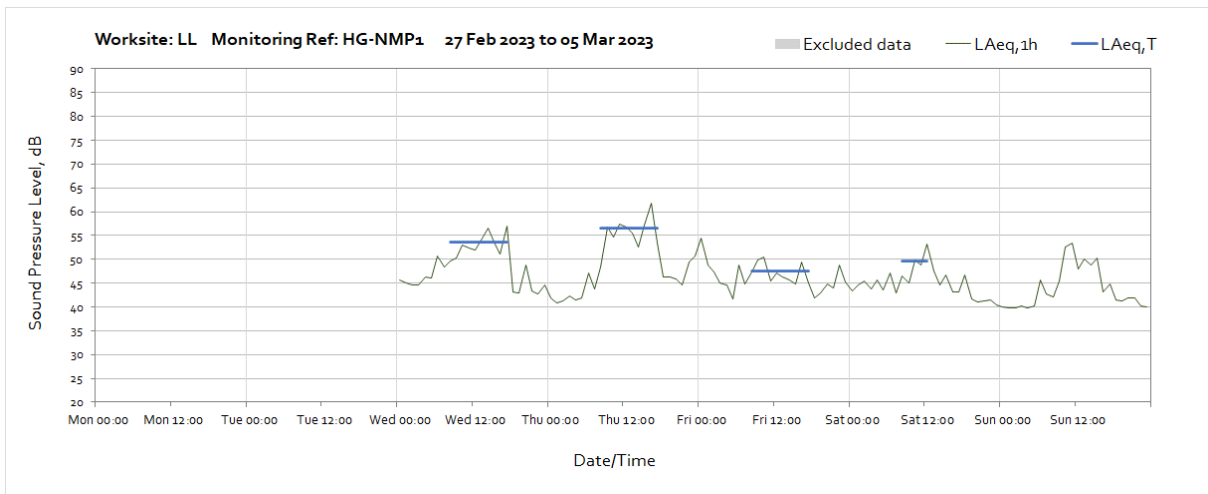
Note: Missing data between 15:00 and 16:00 on Wednesday 8<sup>th</sup> March was due to monitor maintenance.

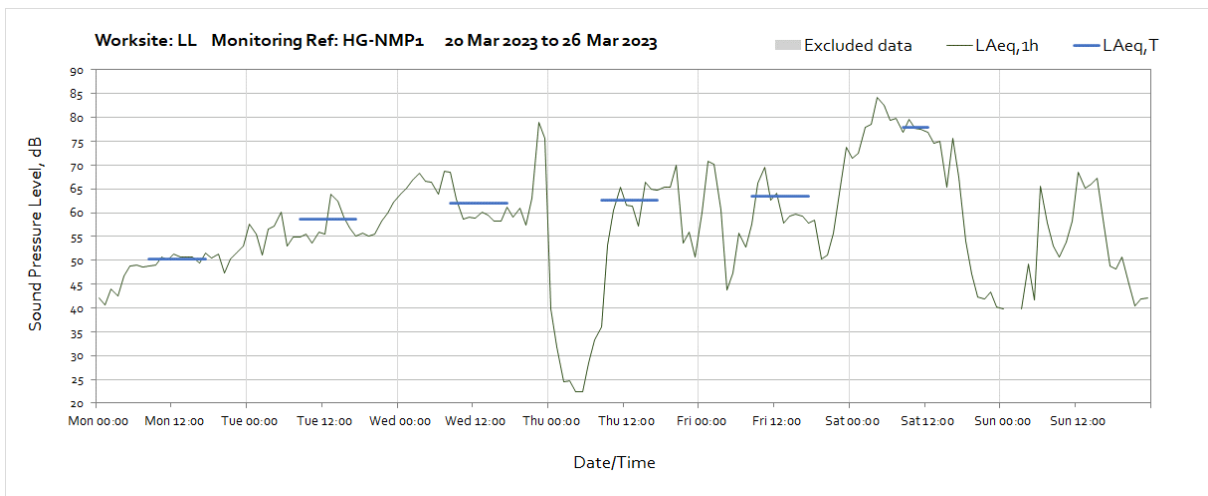
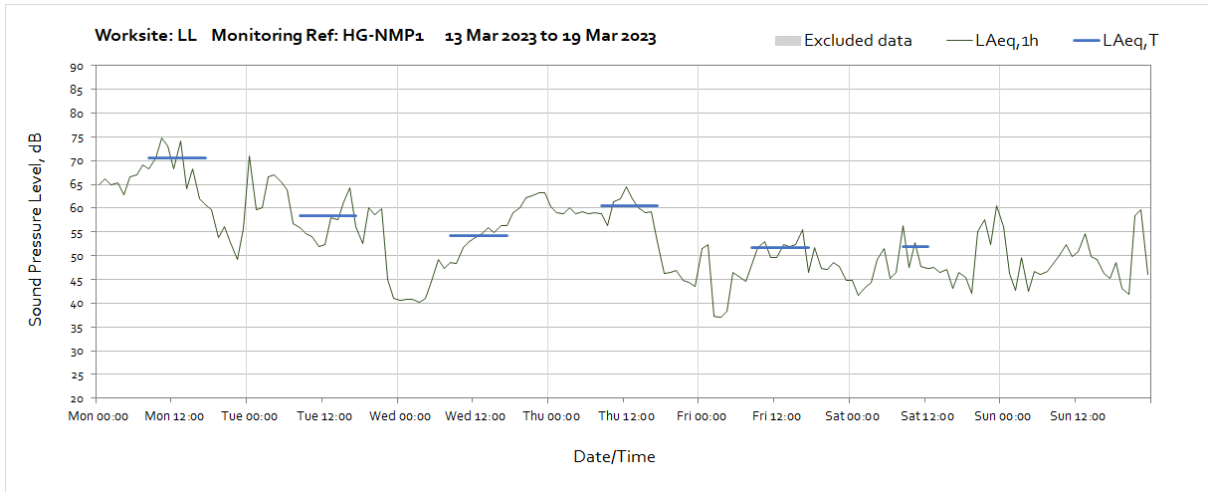


Note: Missing data between 01:00 and 03:00 on Sunday 26<sup>th</sup> March was due to a monitor time adjustment at the start of British Summertime.

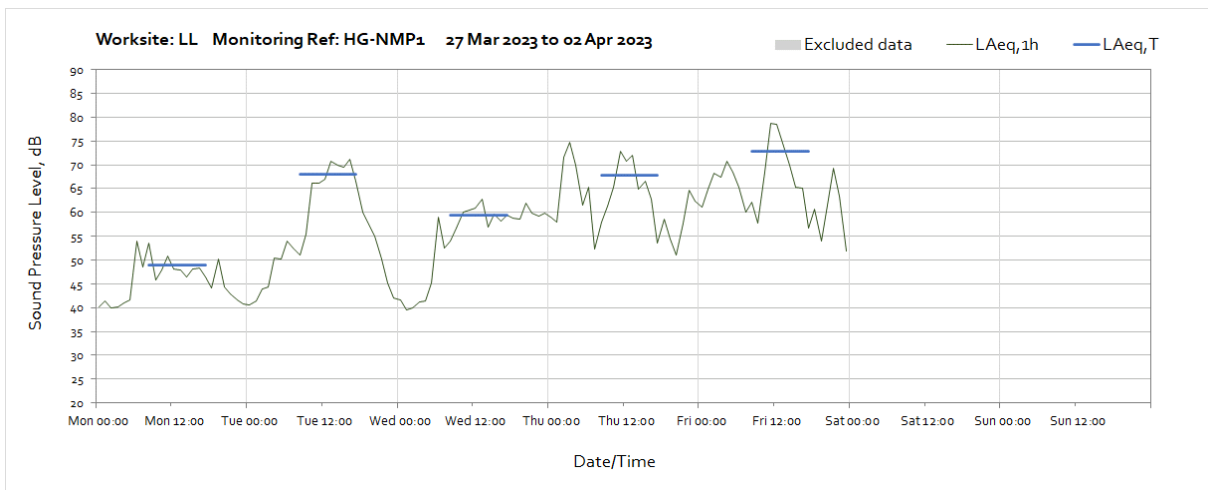


**Worksite: LL - Monitoring Ref: HG-NMP1**

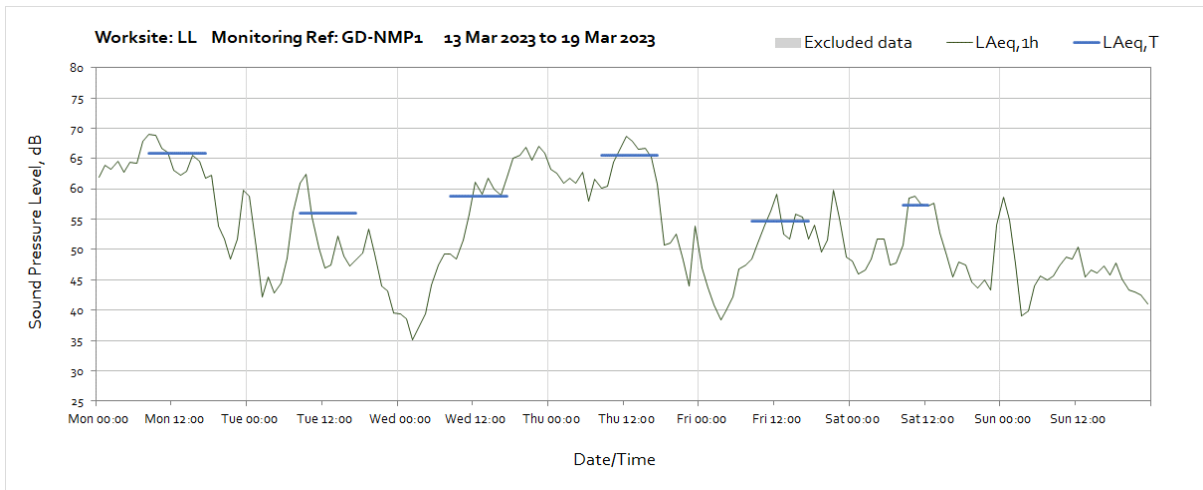
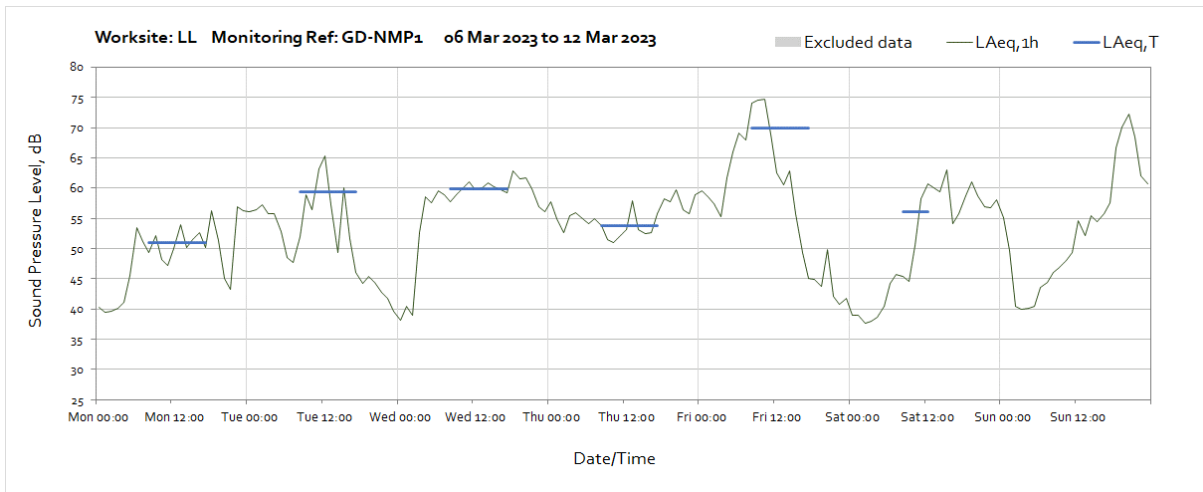
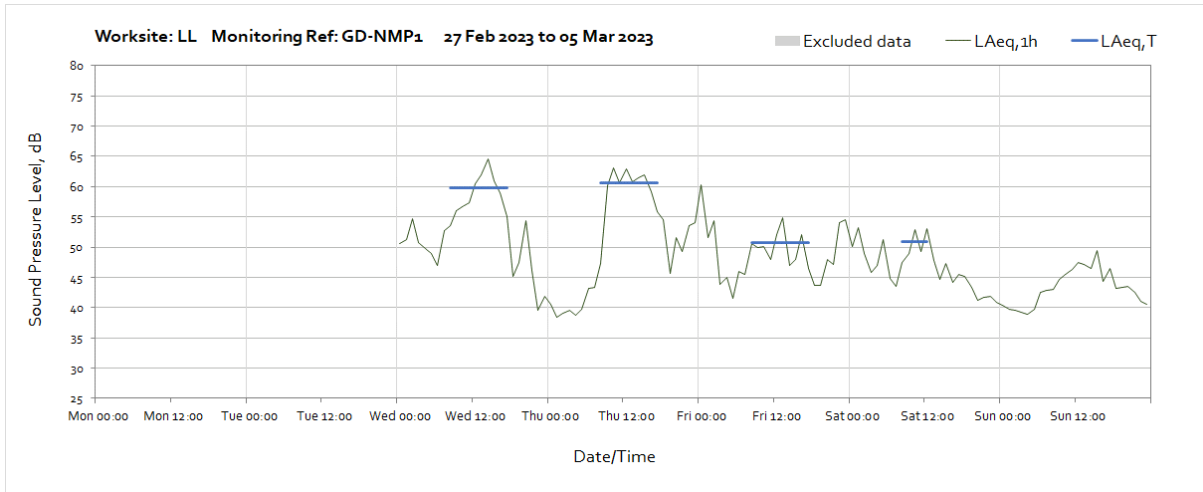


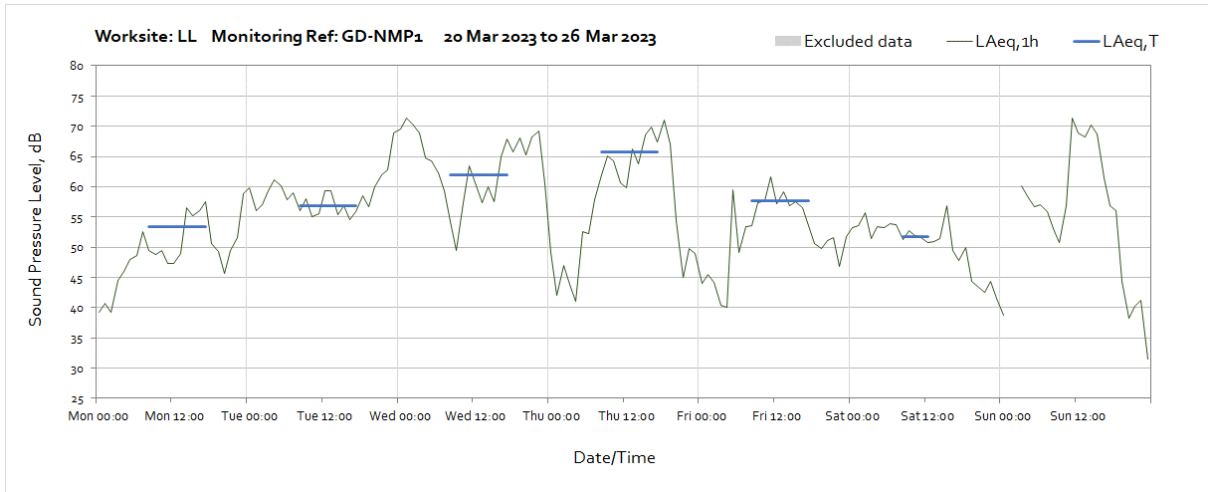


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

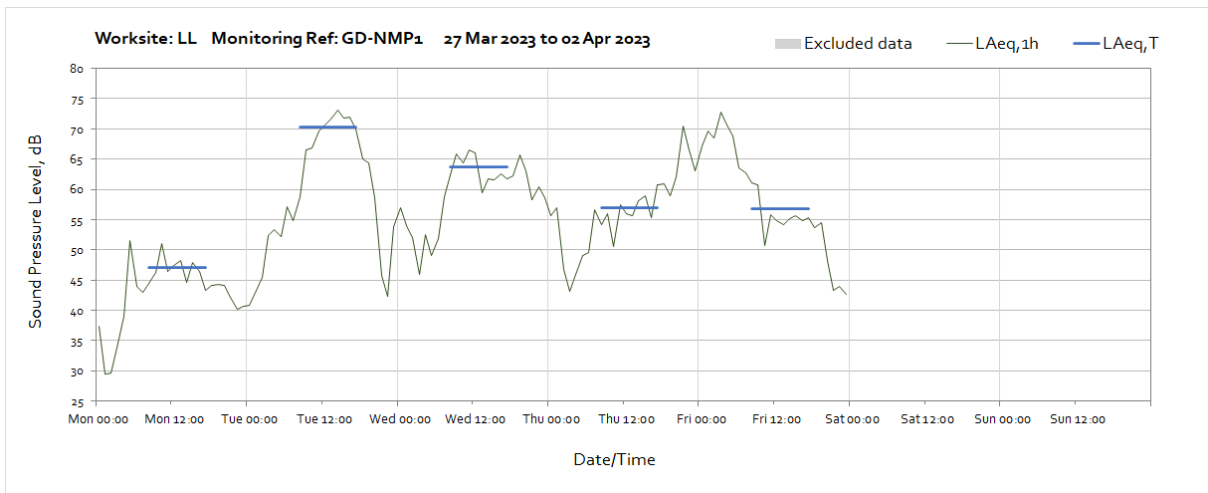


## Worksite: LL - Monitoring Ref: GD-NMP1

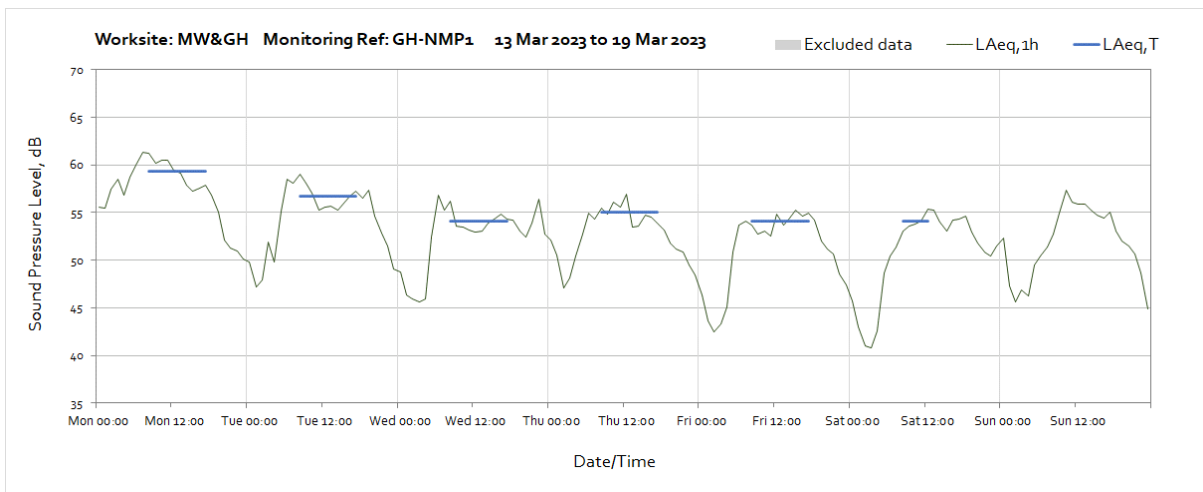
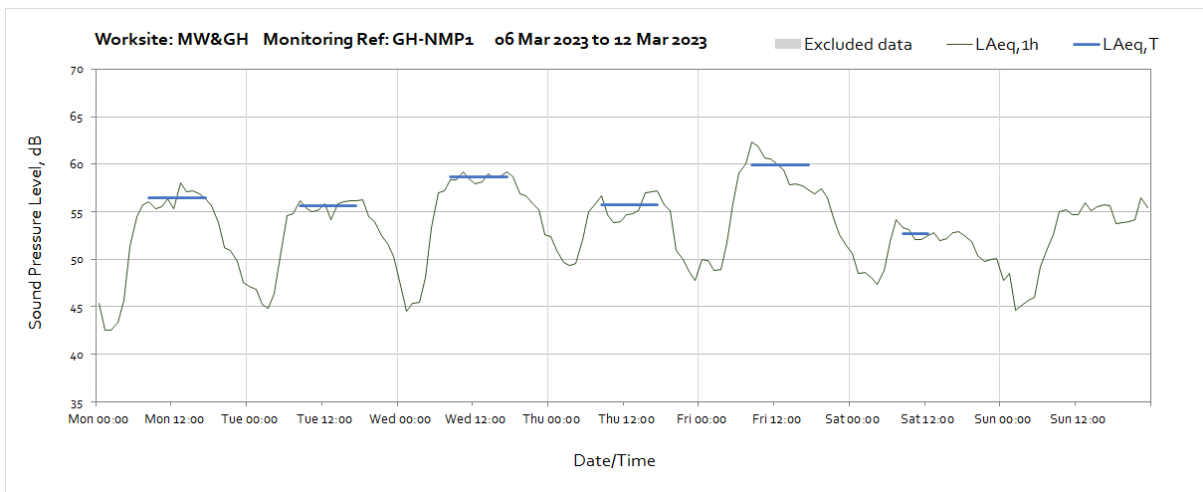
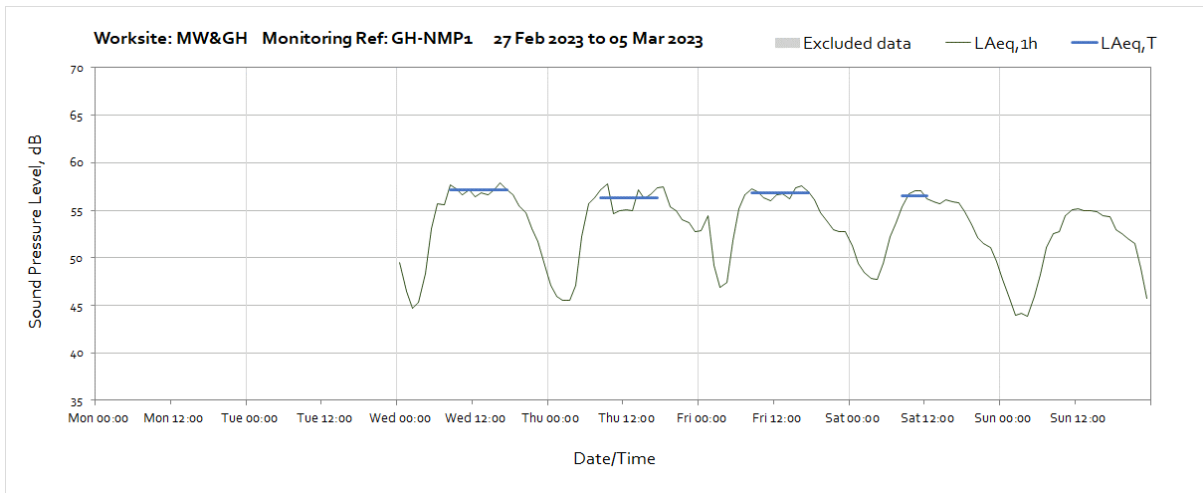




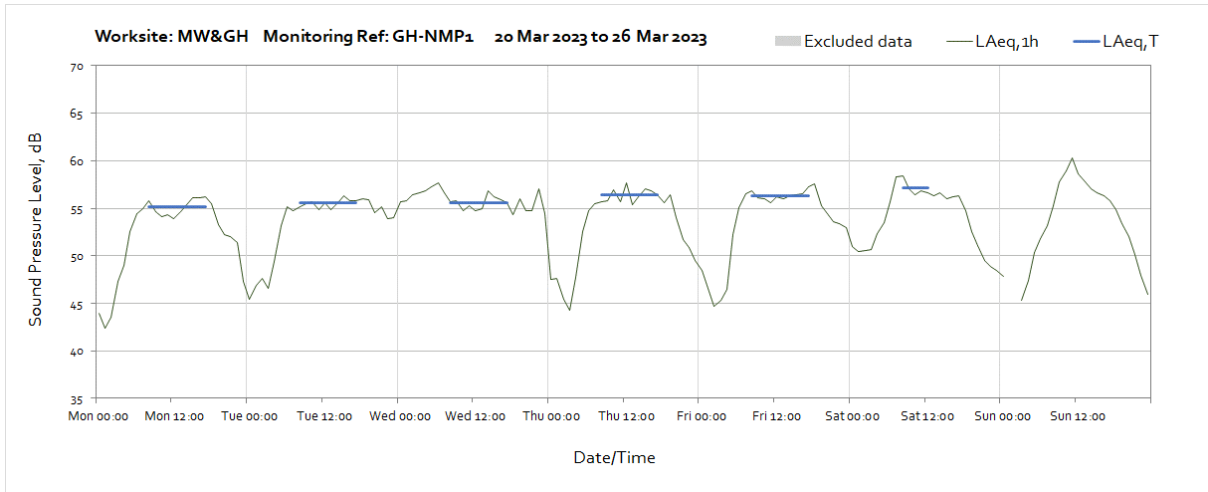
Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.



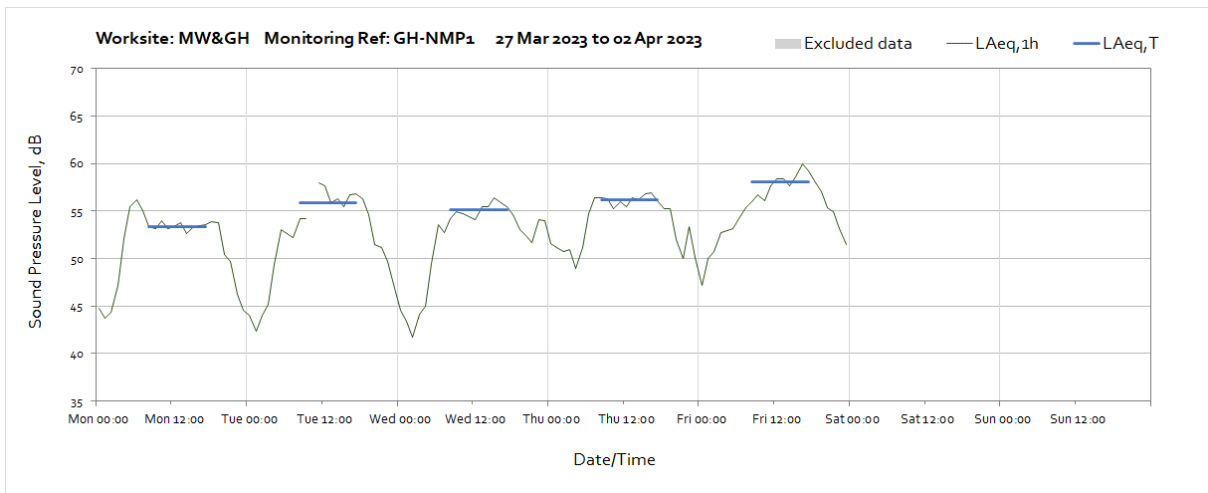
# Worksite: MW&GH – Monitoring Ref: GH-NMP1





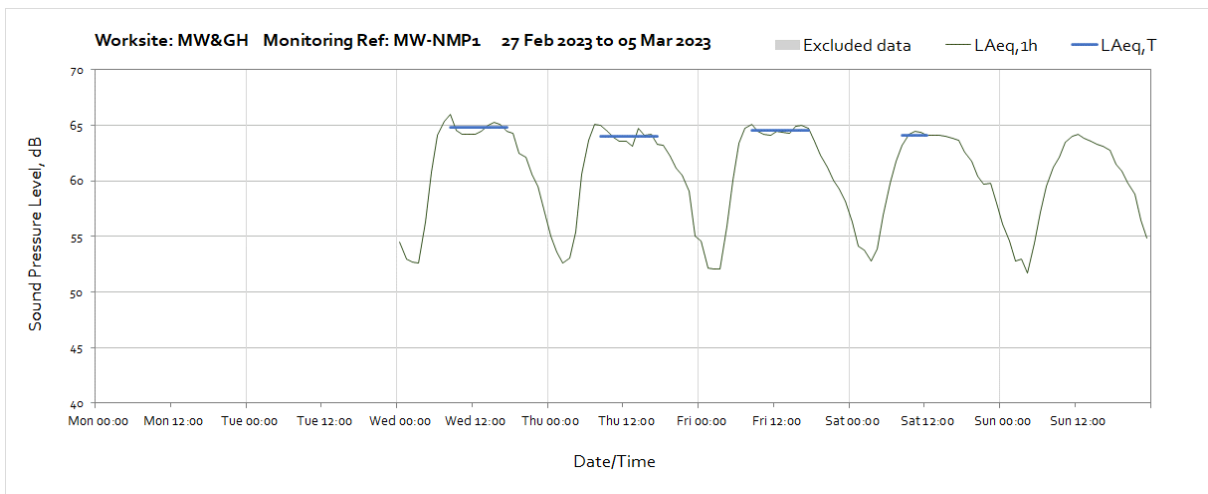


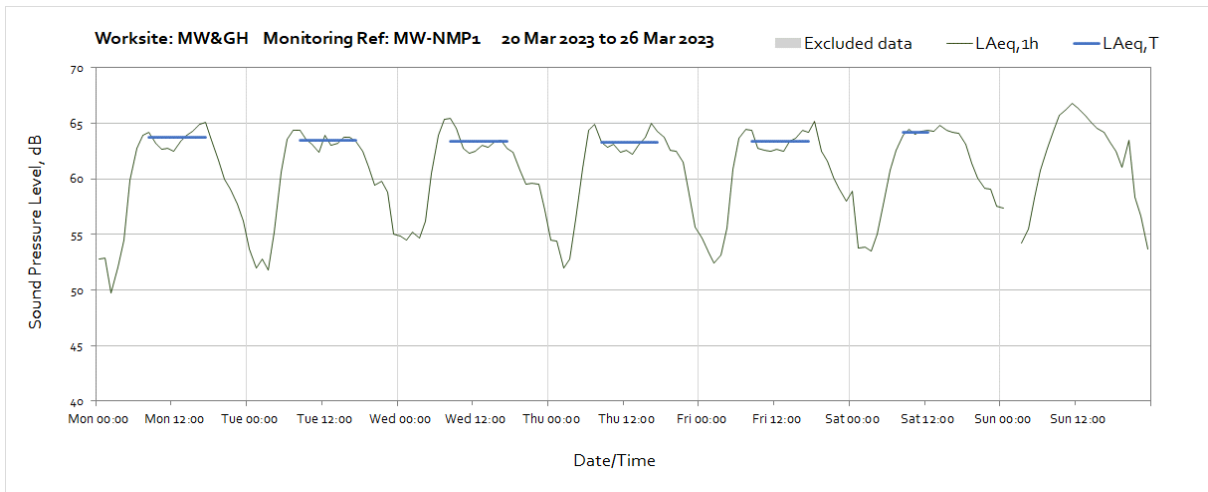
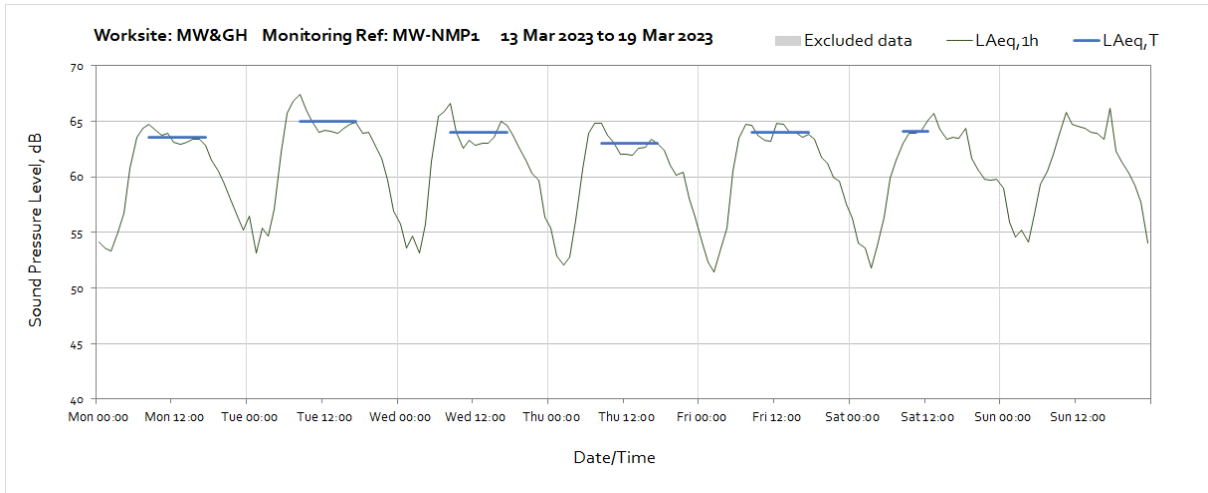
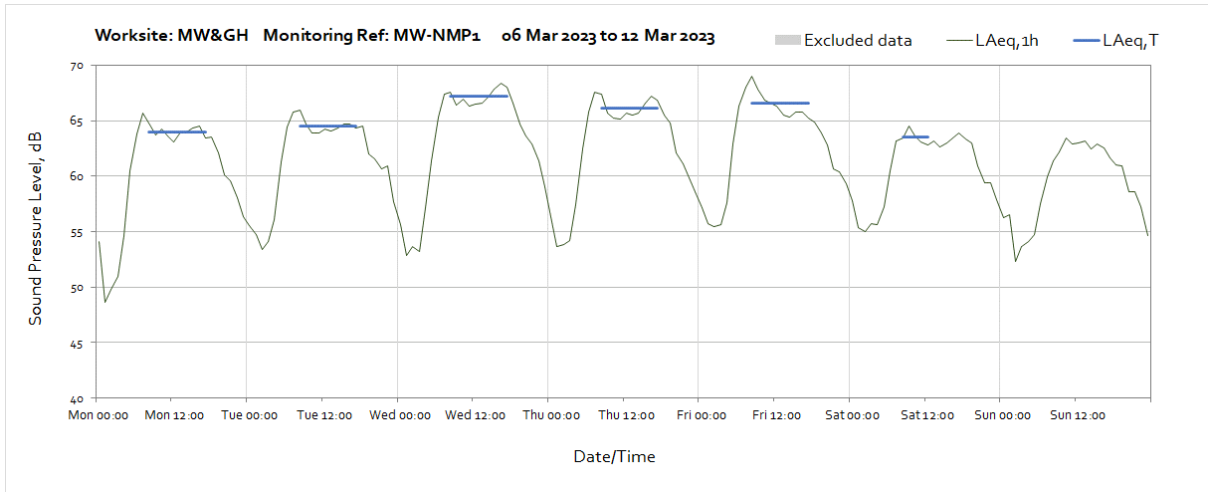
Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.



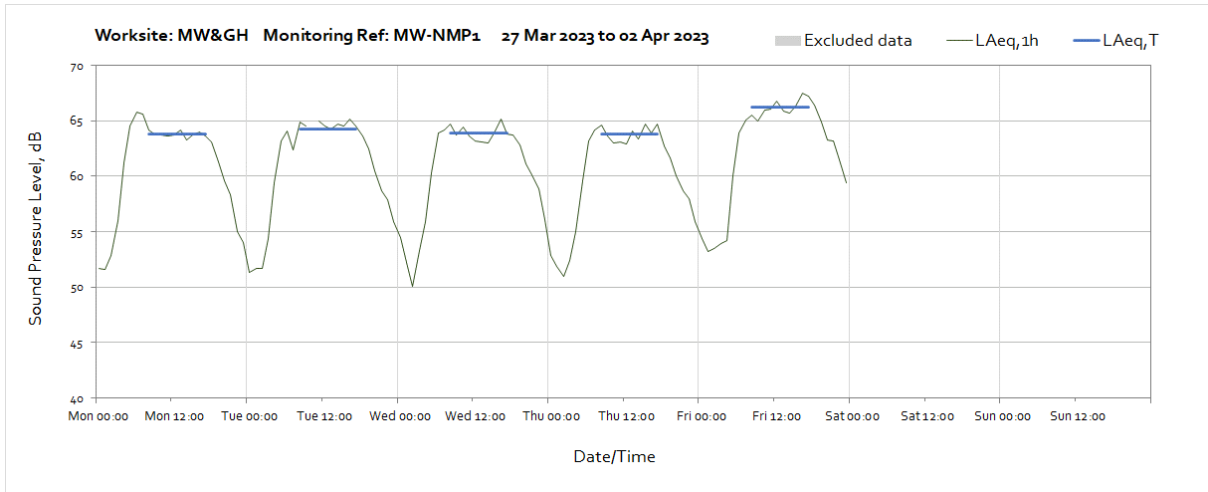
Note: Missing data between 10:00 and 11:00 on Tuesday 28<sup>th</sup> March was due to monitor maintenance.

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



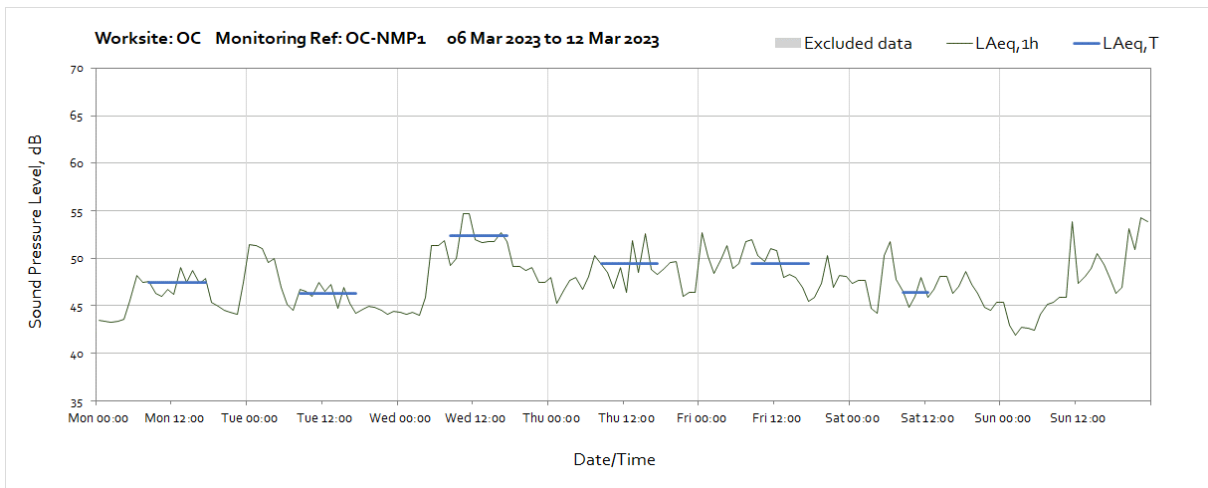
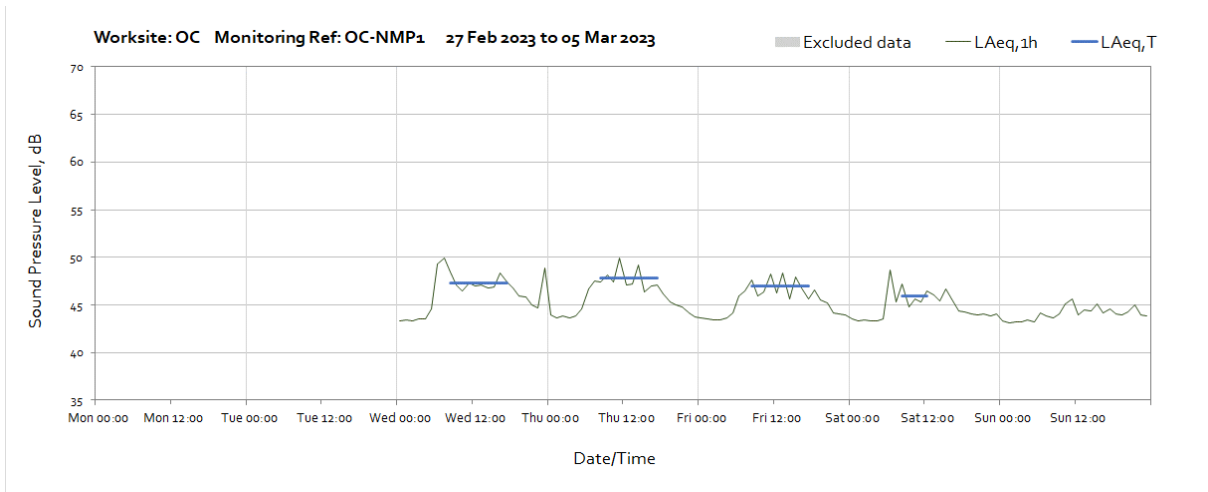


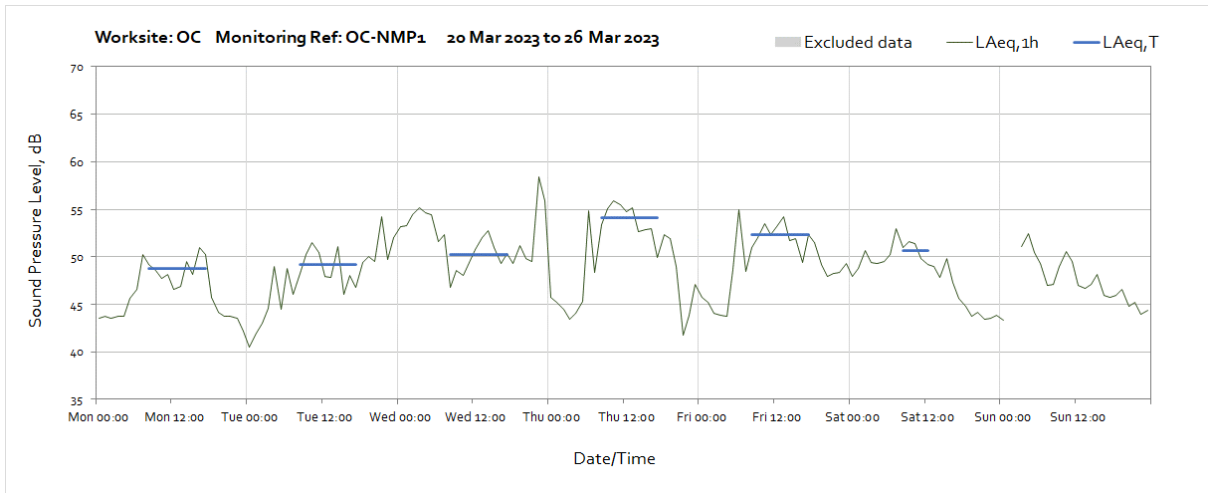
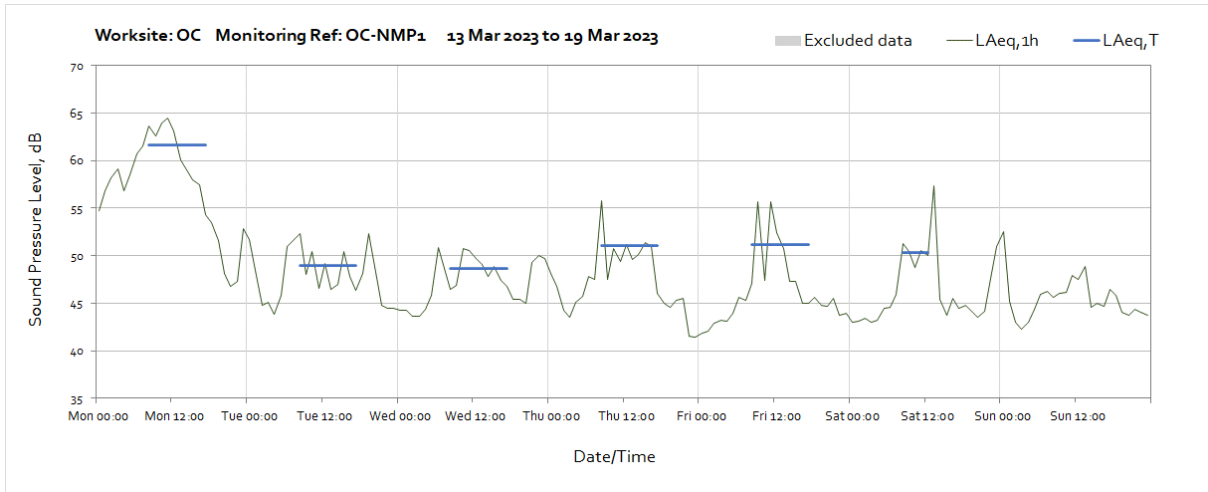
Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.



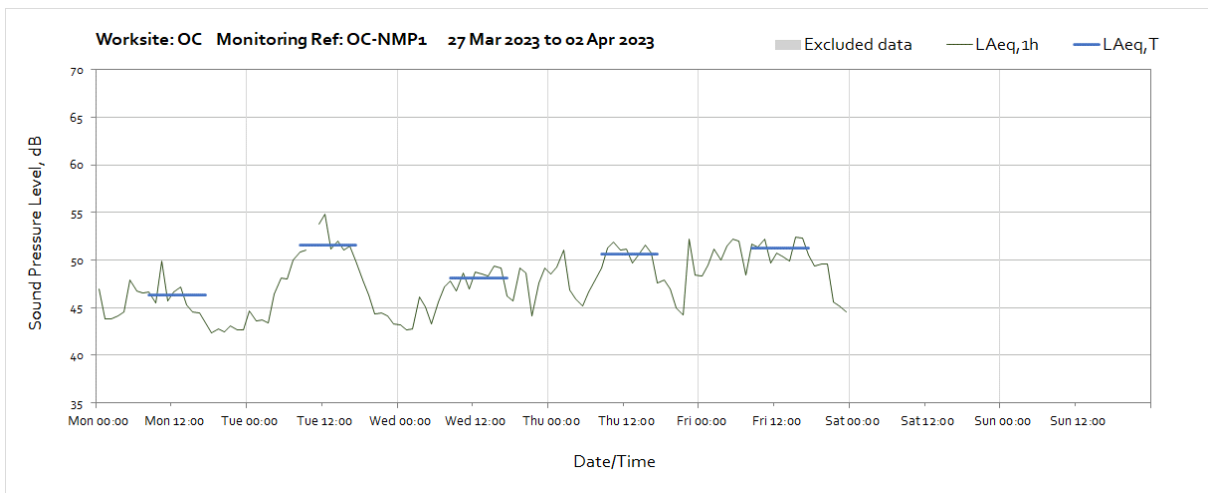
Note: Missing data between 10:00 and 11:00 on Tuesday 28<sup>th</sup> March was due to monitor maintenance.

### Worksite: OC – Monitoring Ref: OC-NMP1



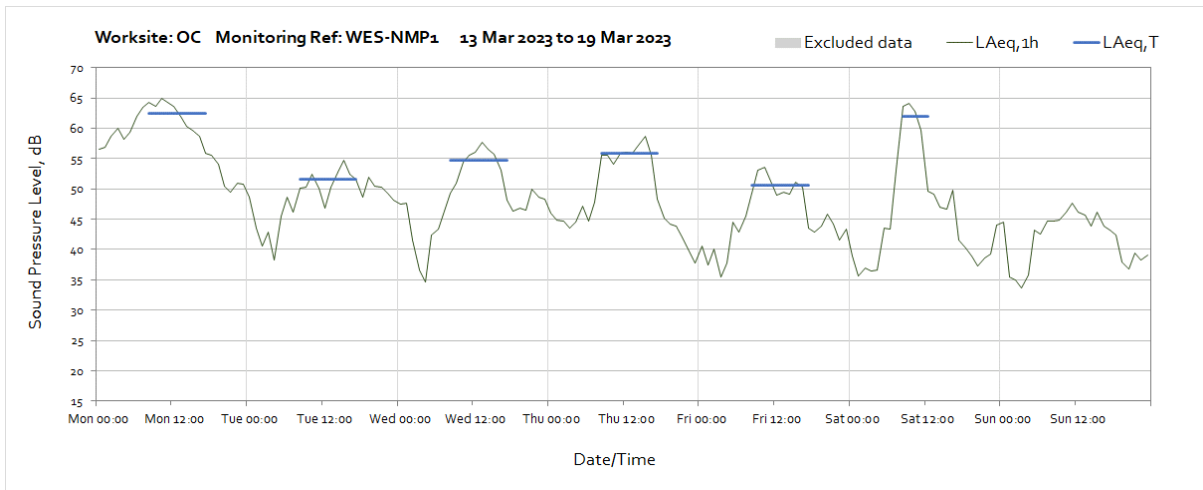
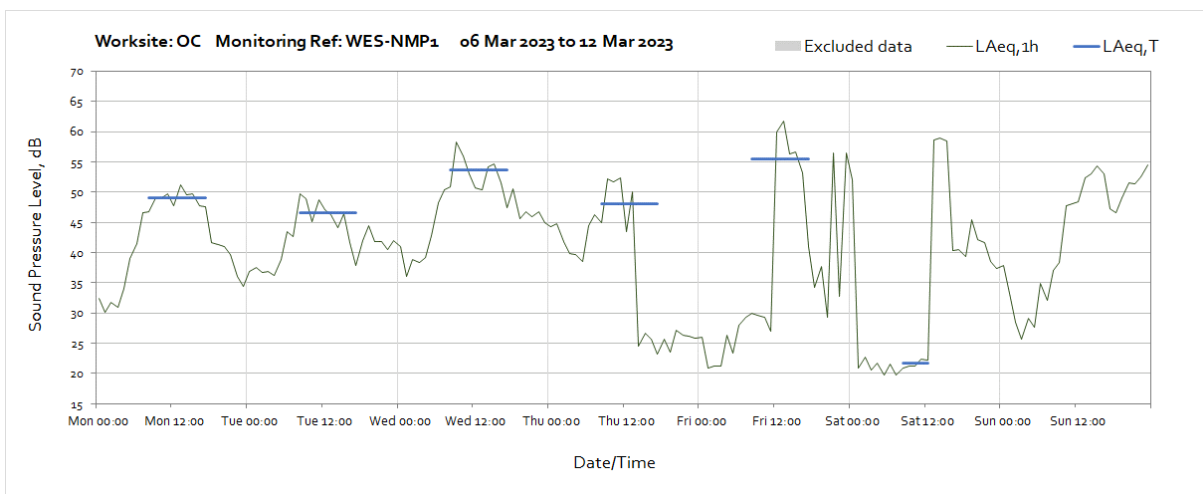
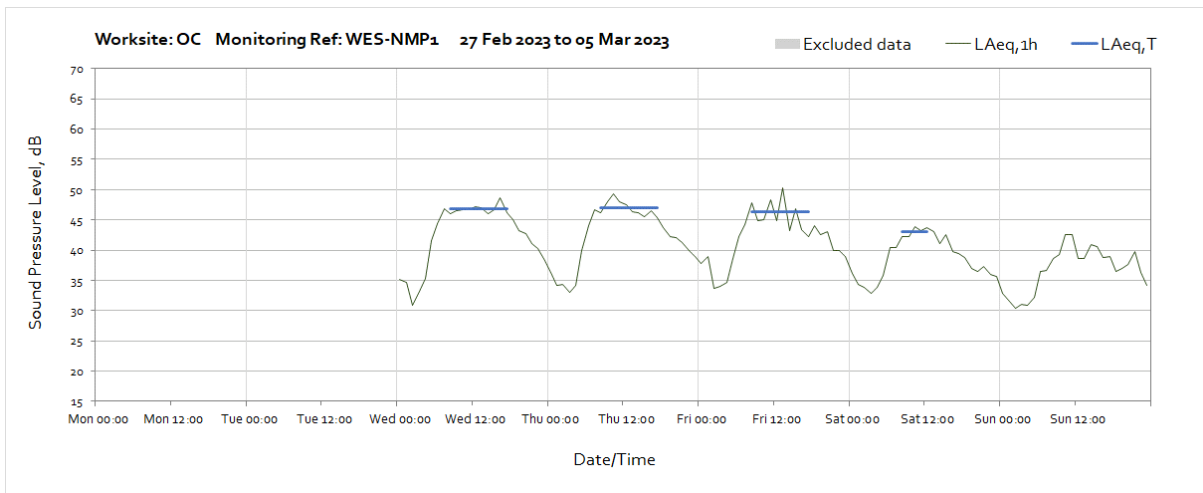


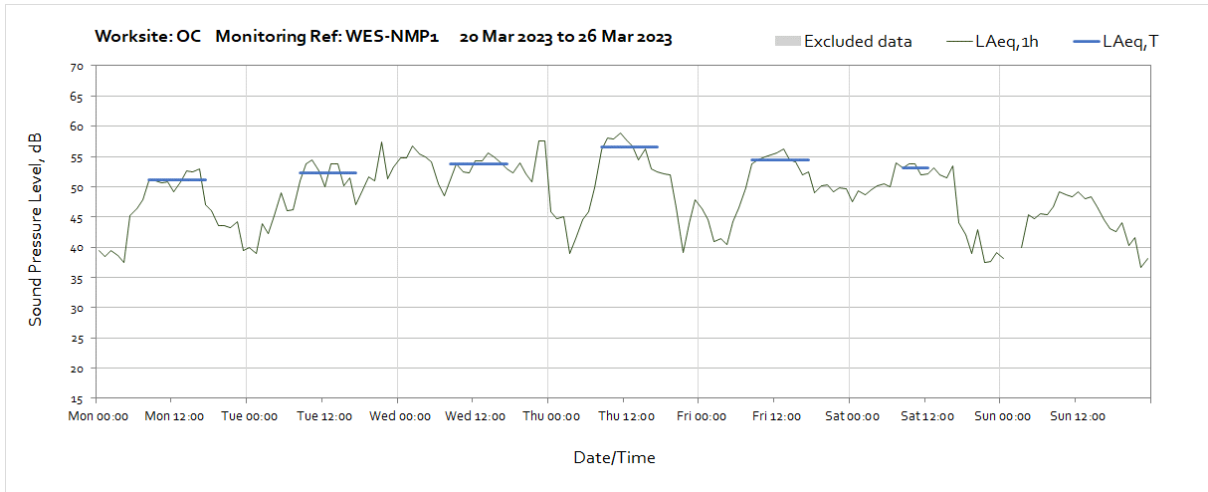
Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.



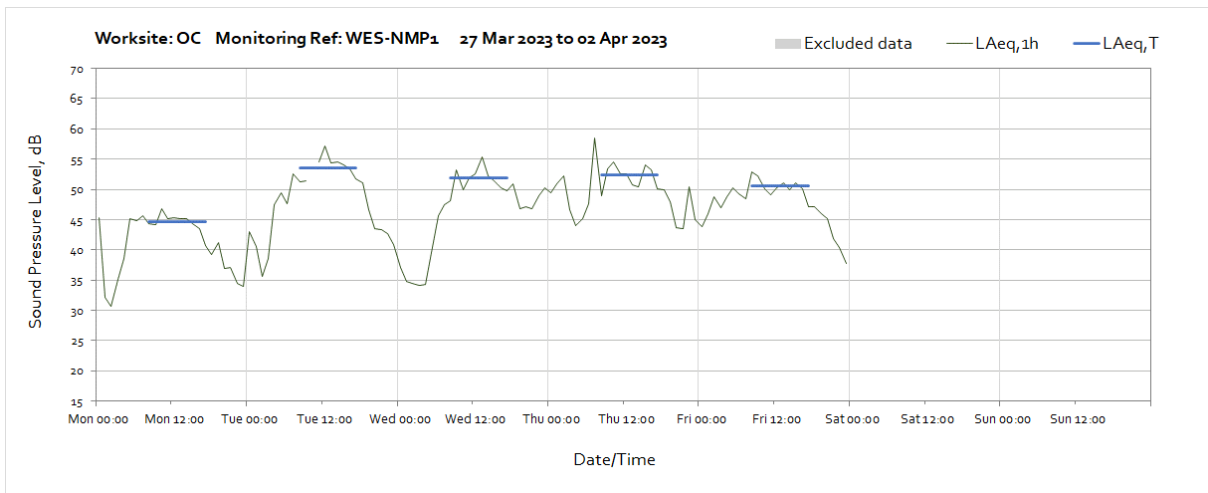
Note: Missing data between 10:00 and 11:00 on Tuesday 28th March was due to monitor maintenance.

## Worksite: OC – Monitoring Ref: WES-NMP1



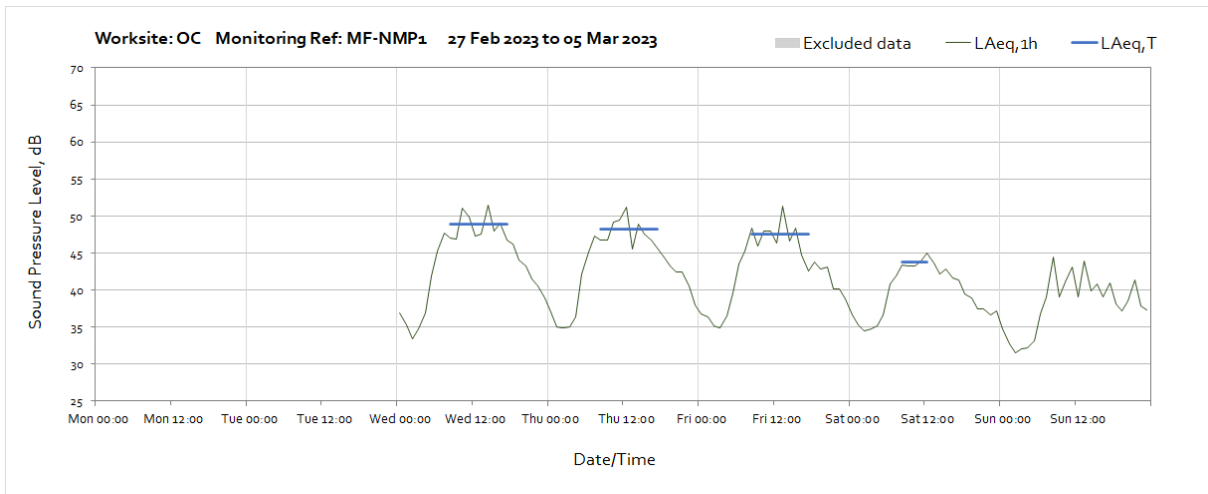


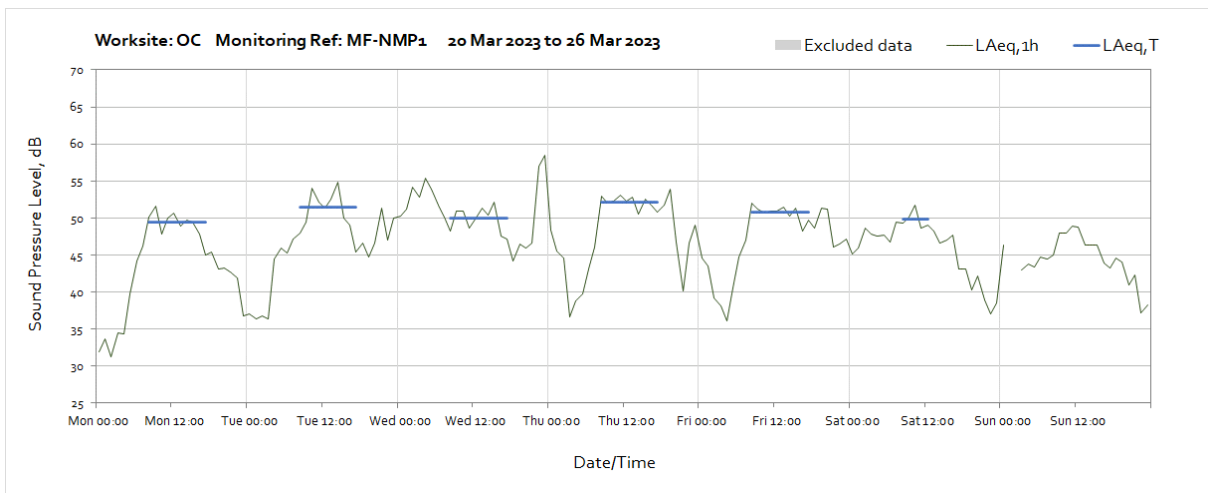
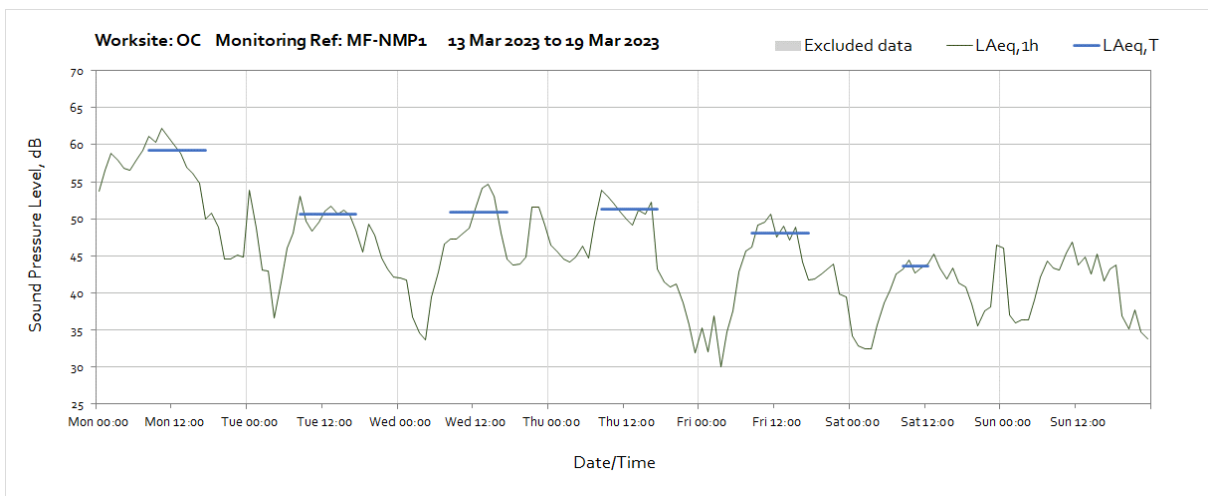
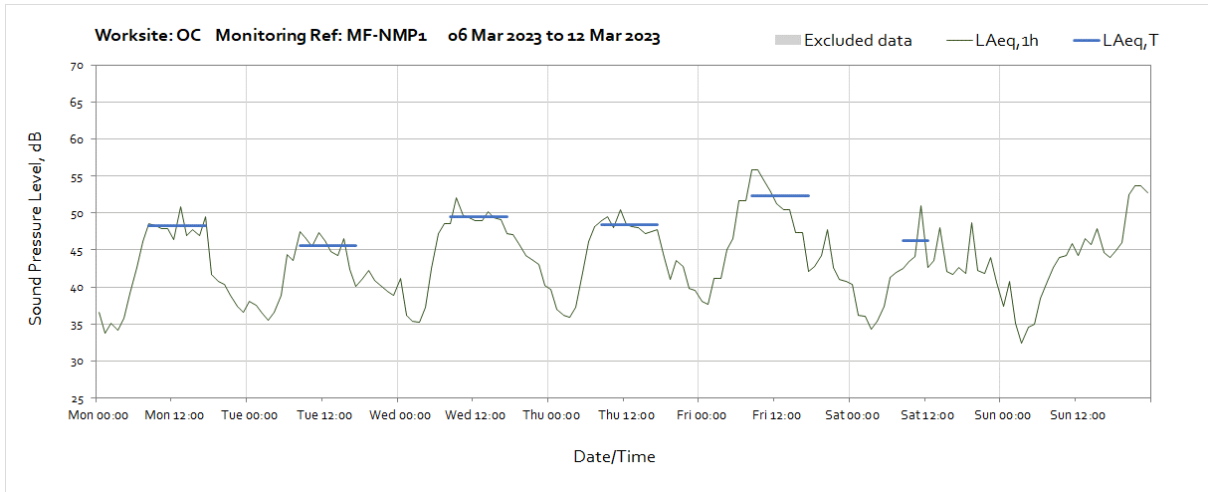
Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.



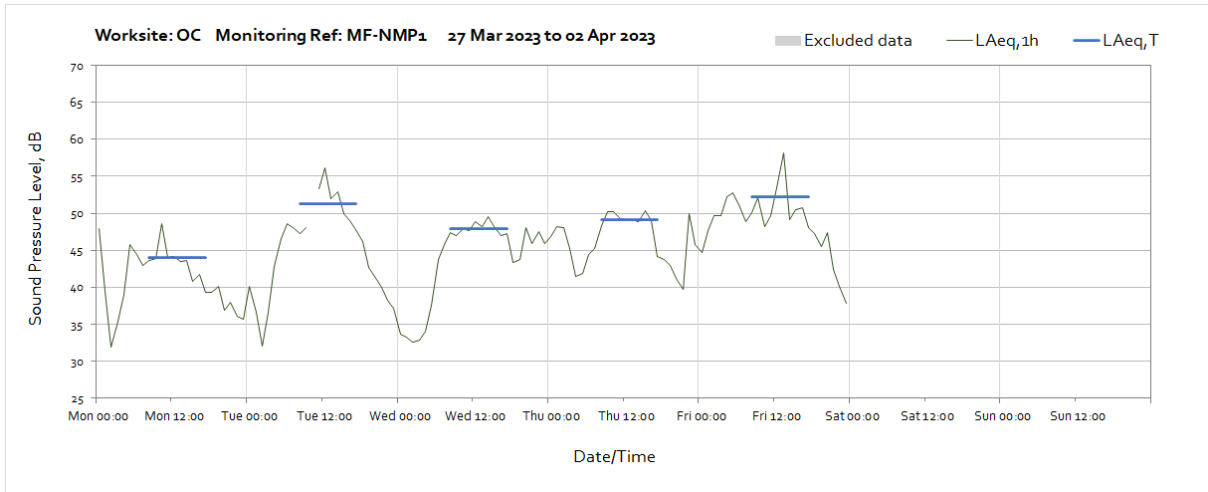
Note: Missing data between 10:00 and 11:00 on Tuesday 28<sup>th</sup> March was due to monitor maintenance.

### Worksite: OC - Monitoring Ref: MF-NMP1



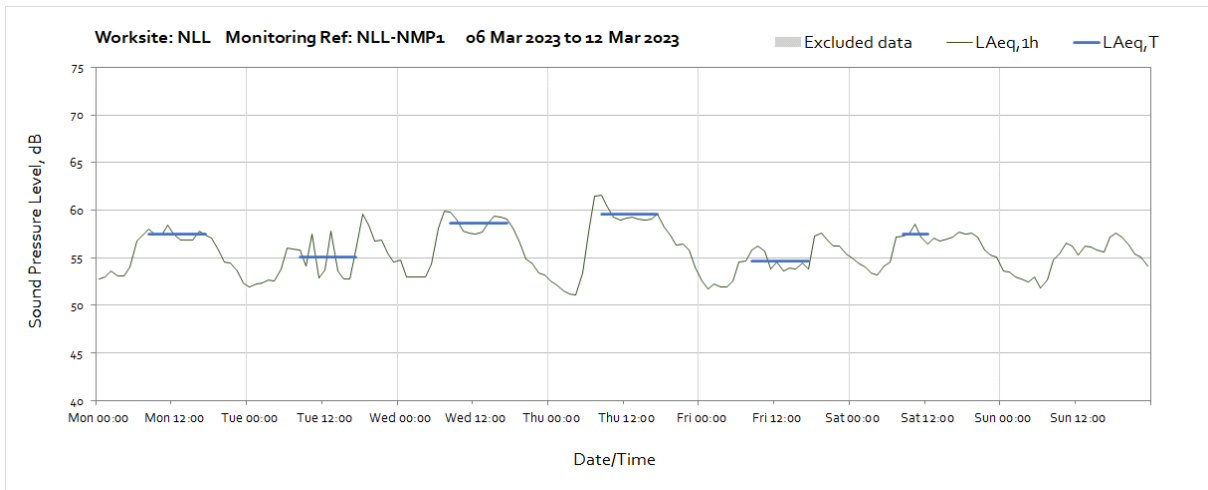
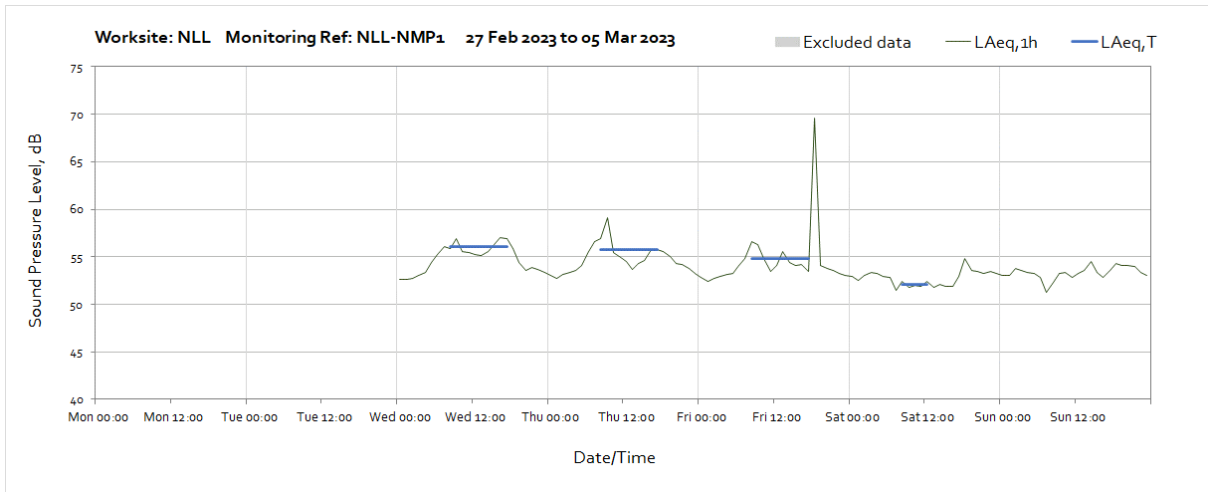


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

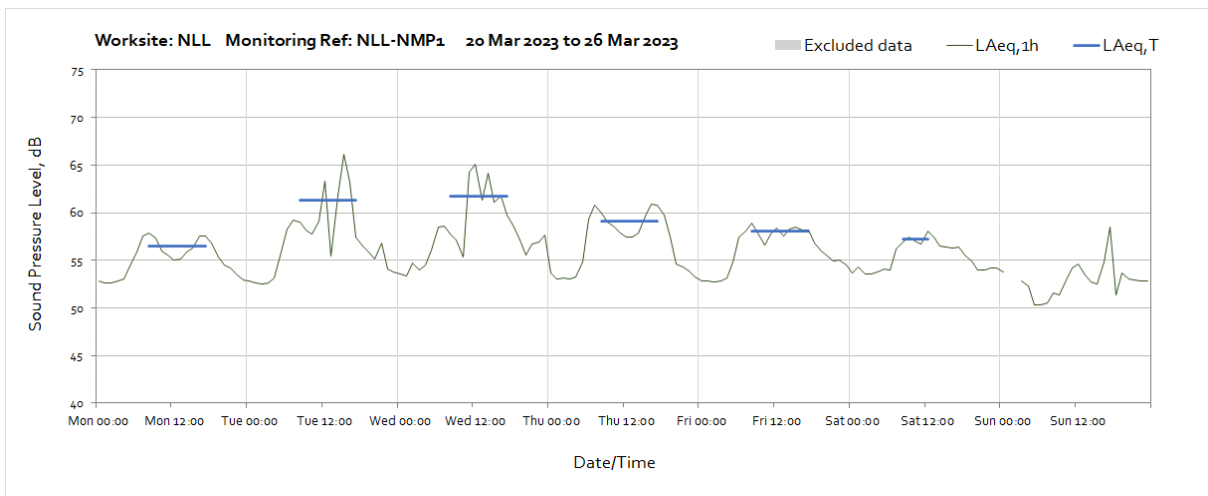
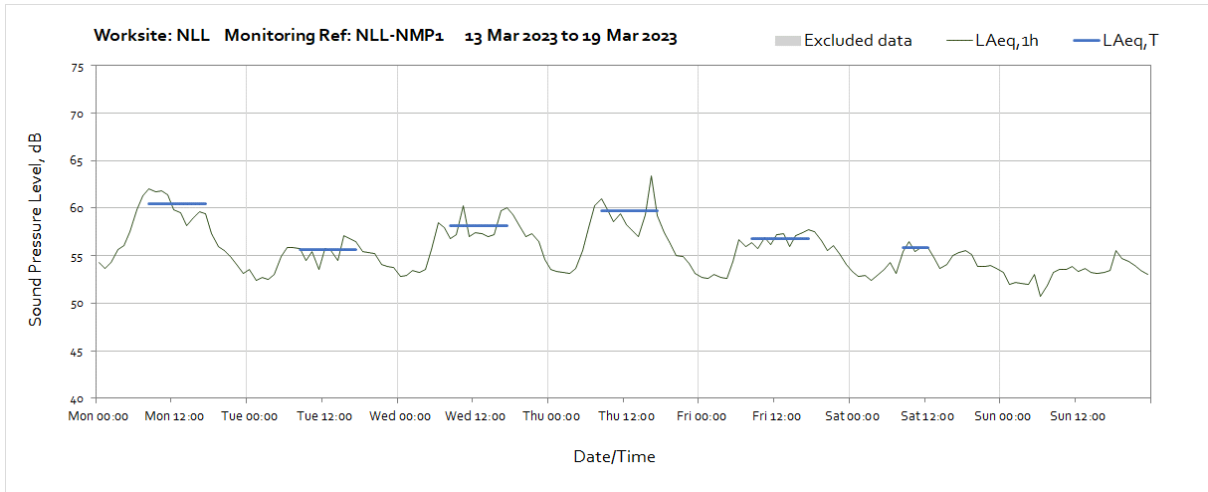


Note: Missing data between 10:00 and 11:00 on Tuesday 28<sup>th</sup> March was due to monitor maintenance.

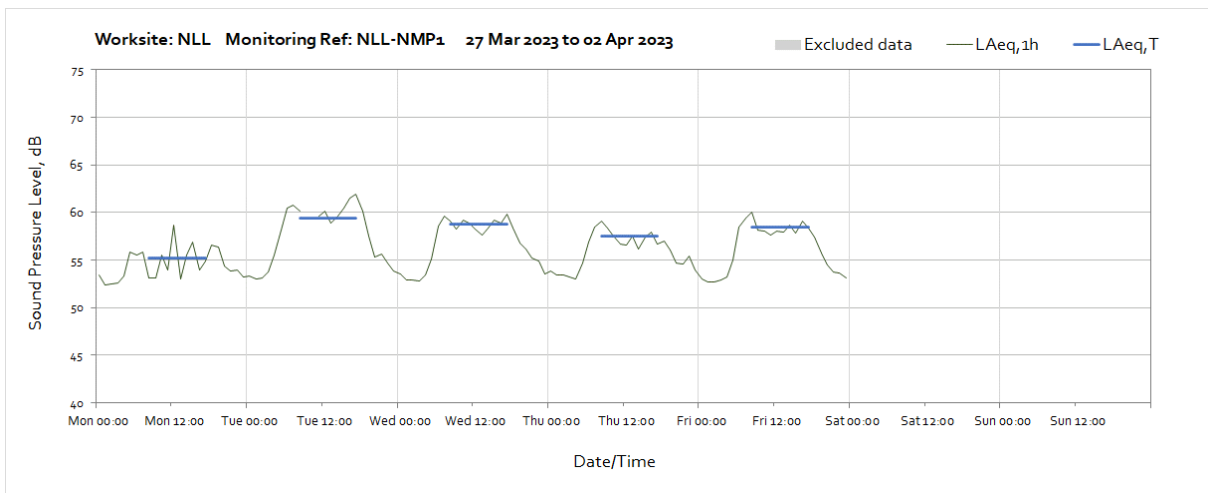
### Worksite: NLL - Monitoring Ref: NLL-NMP1





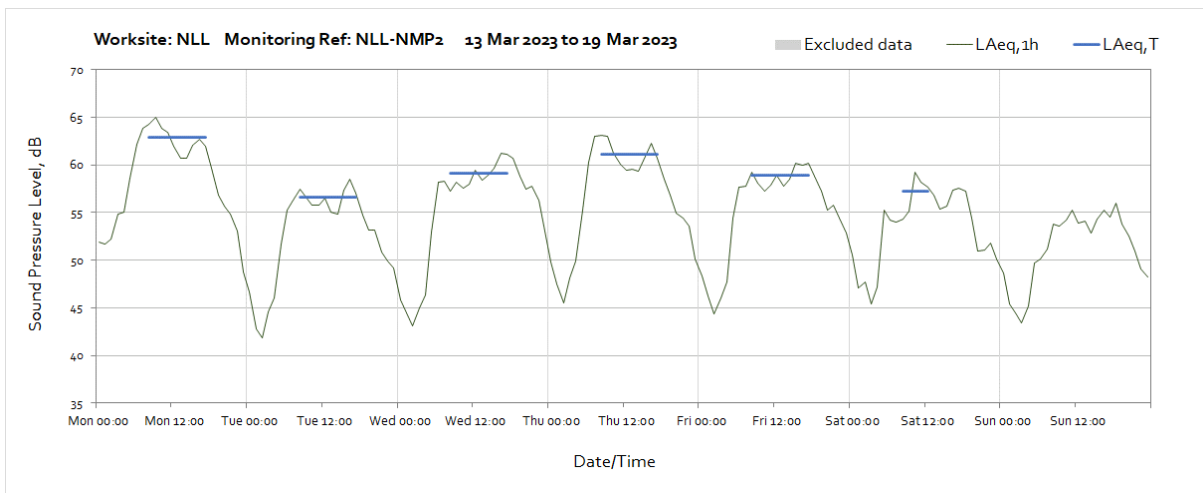
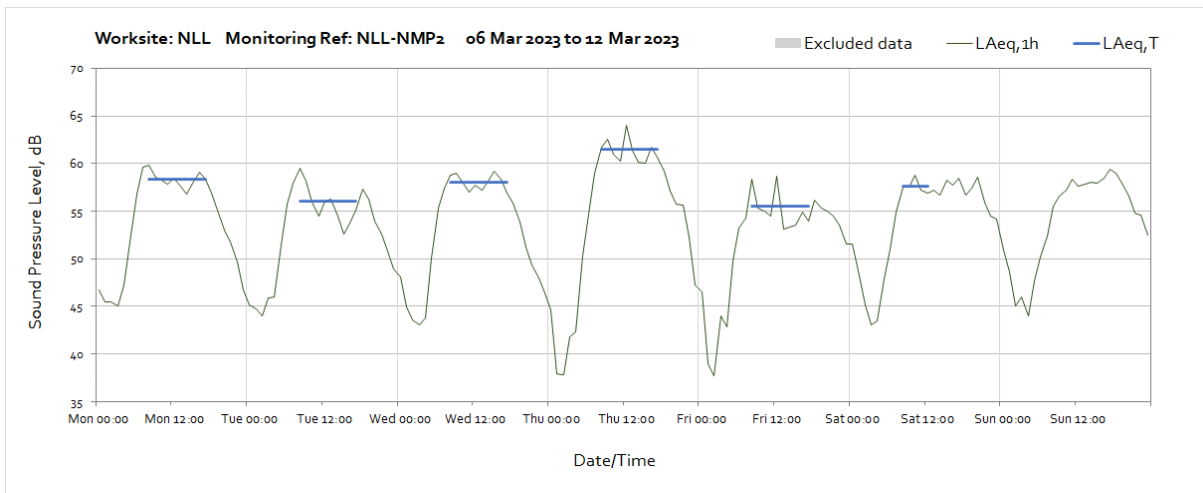
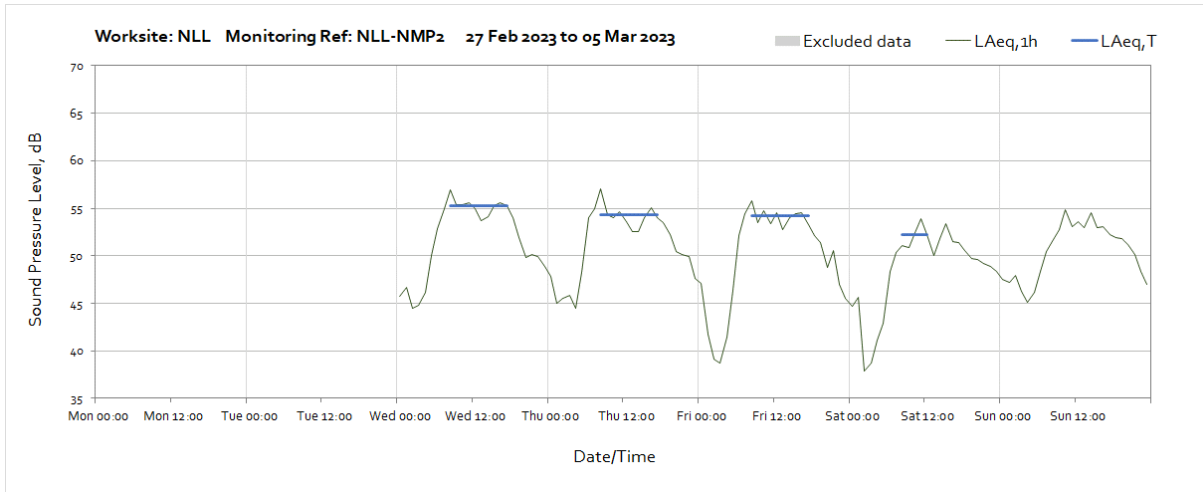


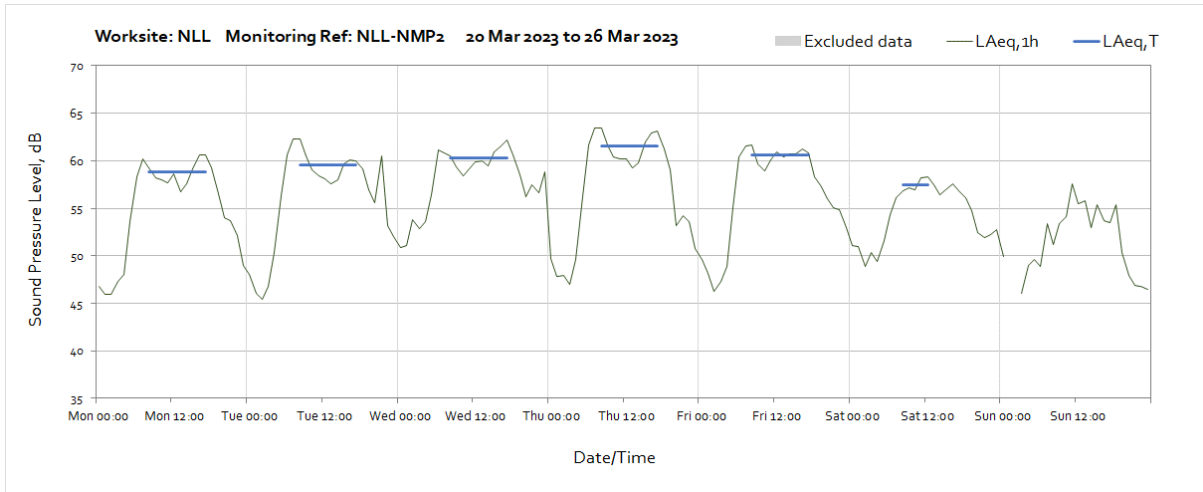
Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.



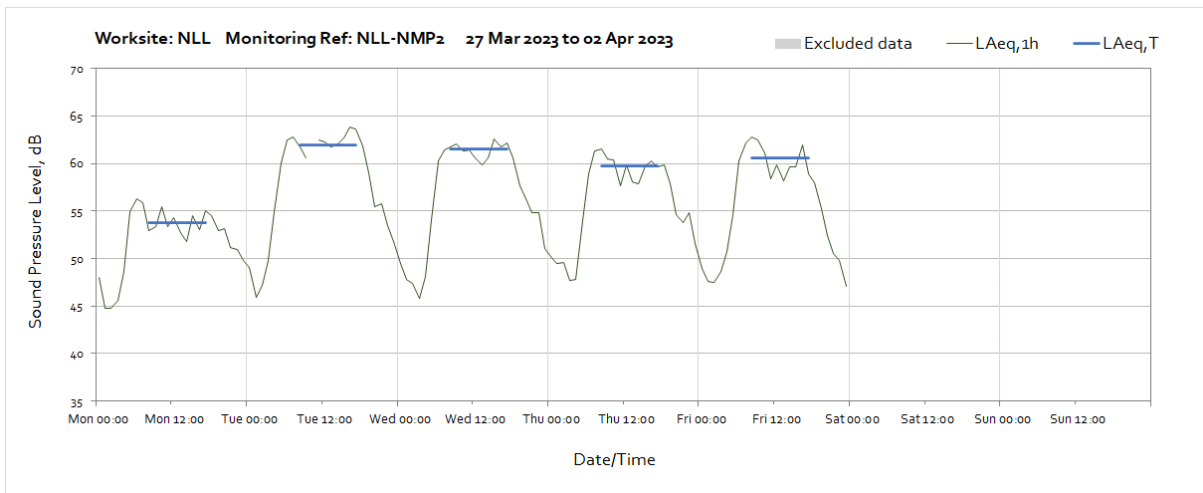
Note: Missing data between 09:00 and 11:00 on Tuesday 28<sup>th</sup> March was due to monitor maintenance.

## Worksite: NLL – Monitoring Ref: NLL-NMP2



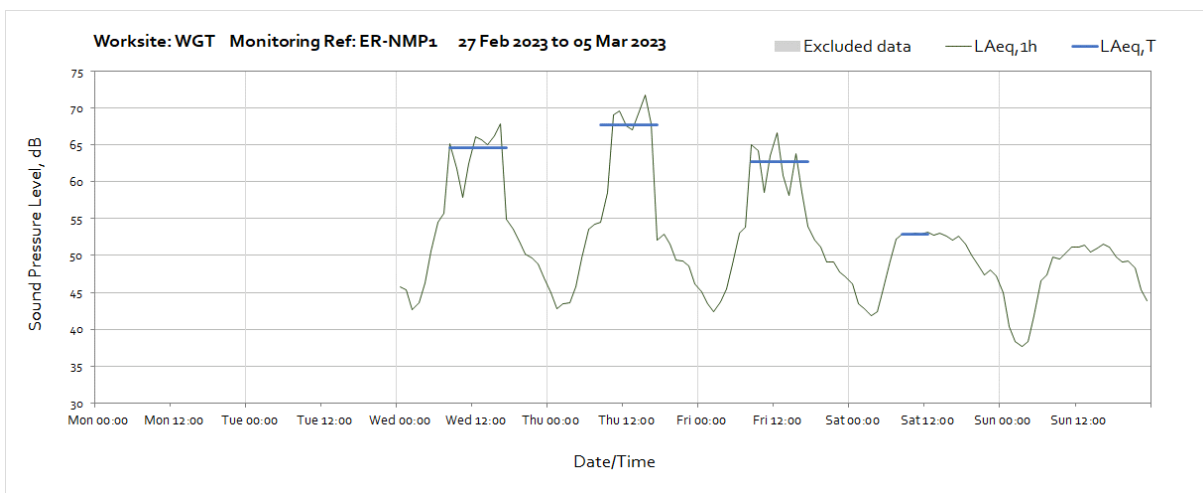


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

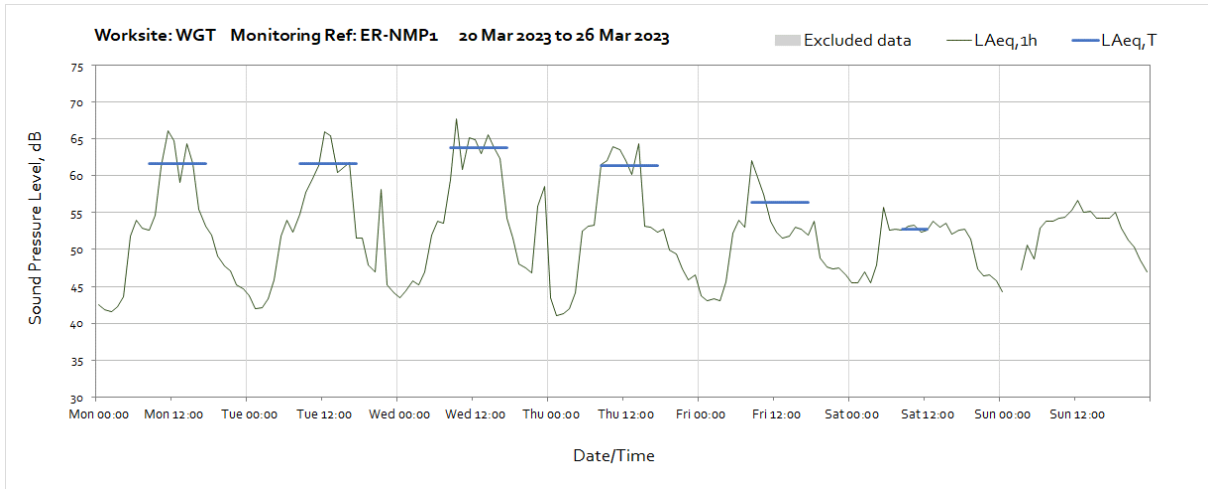
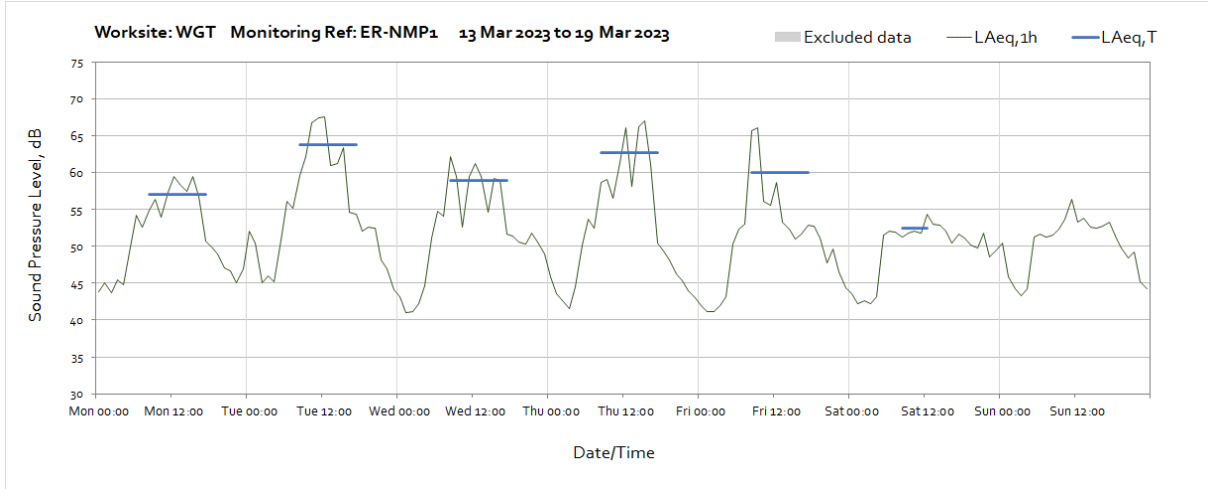
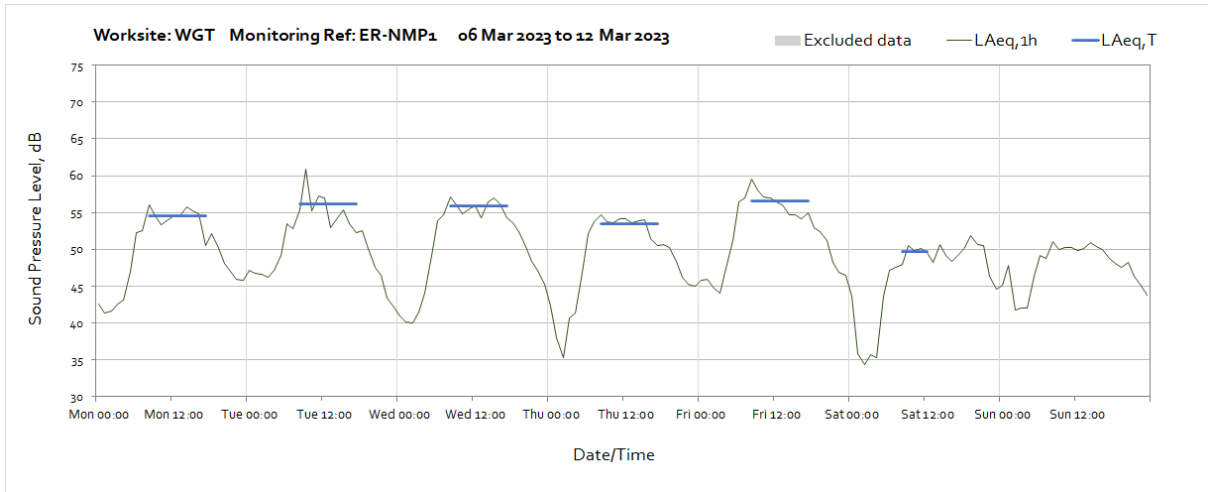


Note: Missing data between 10:00 and 11:00 on Tuesday 28th March was due to monitor maintenance.

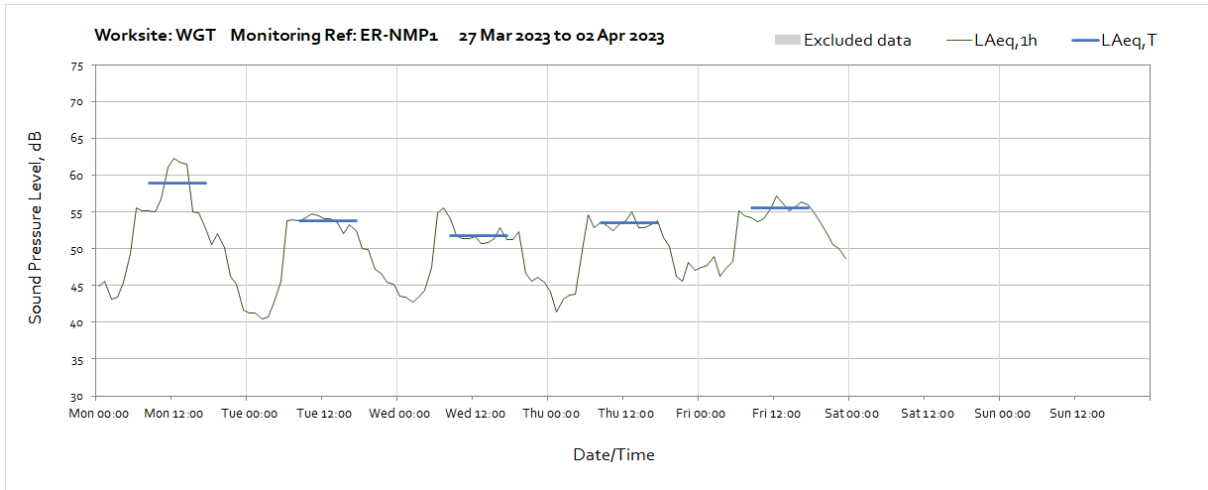
## Worksite: WGT – Monitoring Ref: ER-NMP1



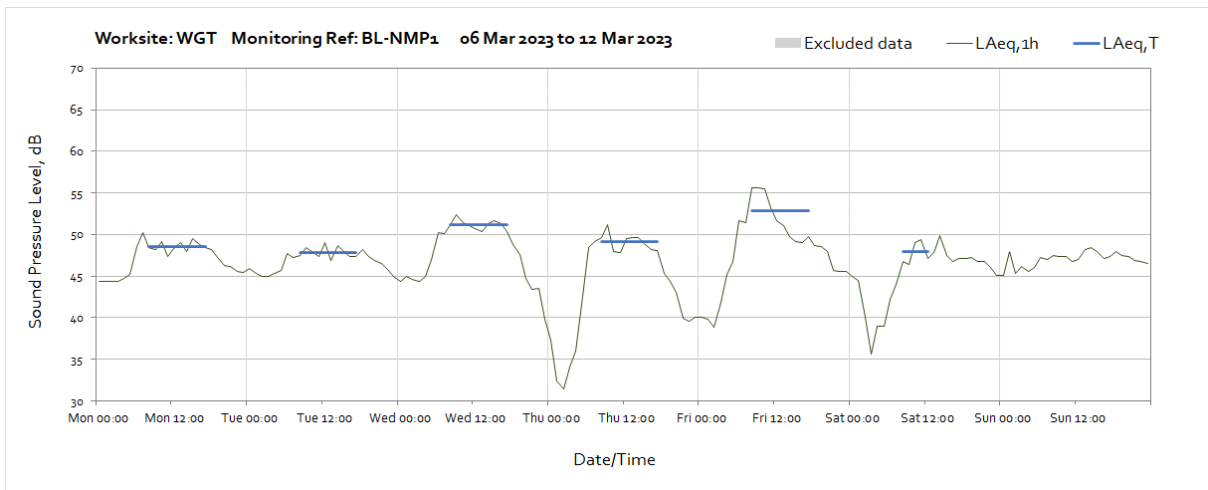
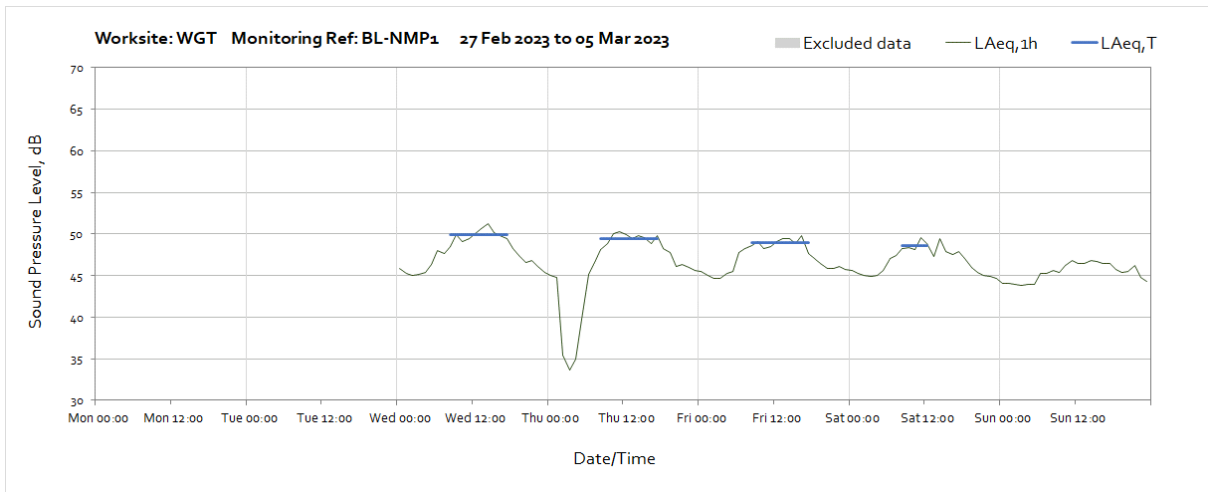
OFFICIAL

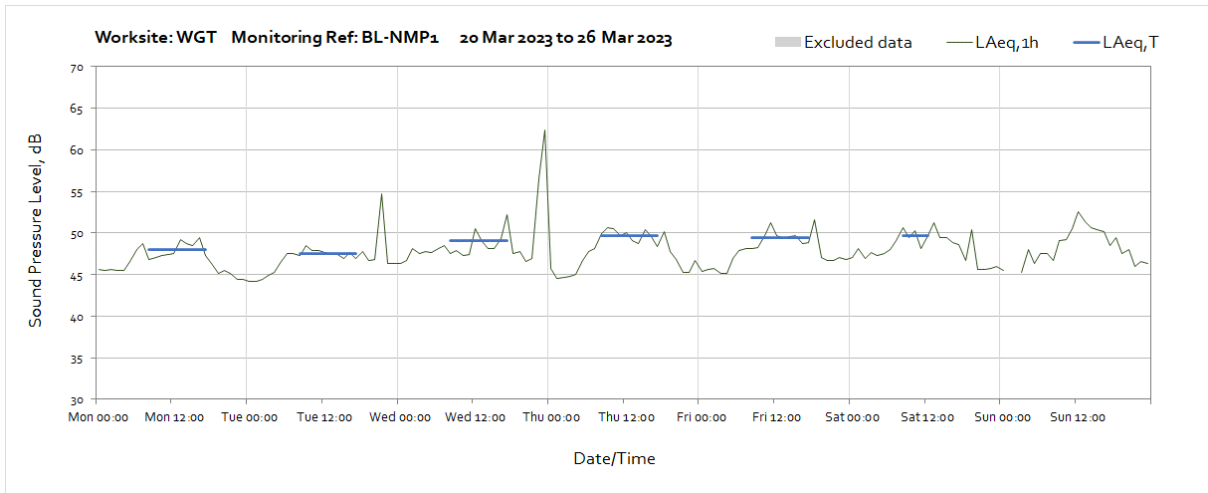
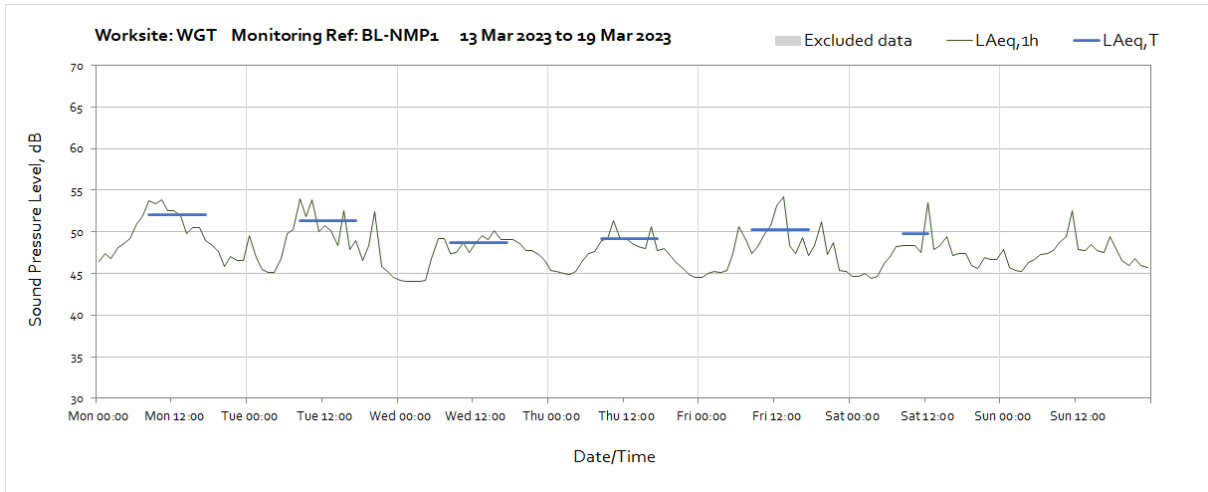


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

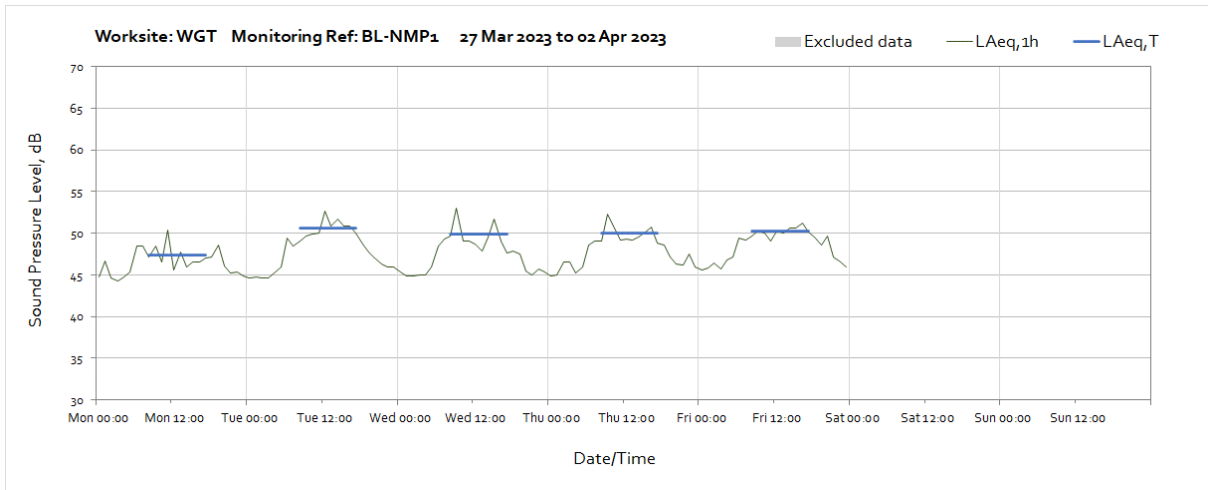


### Worksite: WGT - Monitoring Ref: BL-NMP1

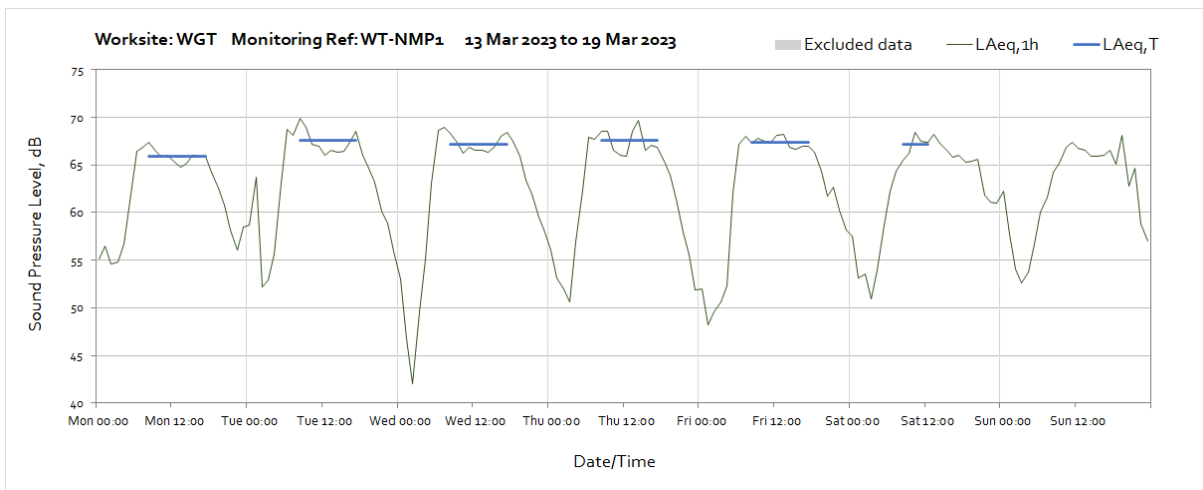
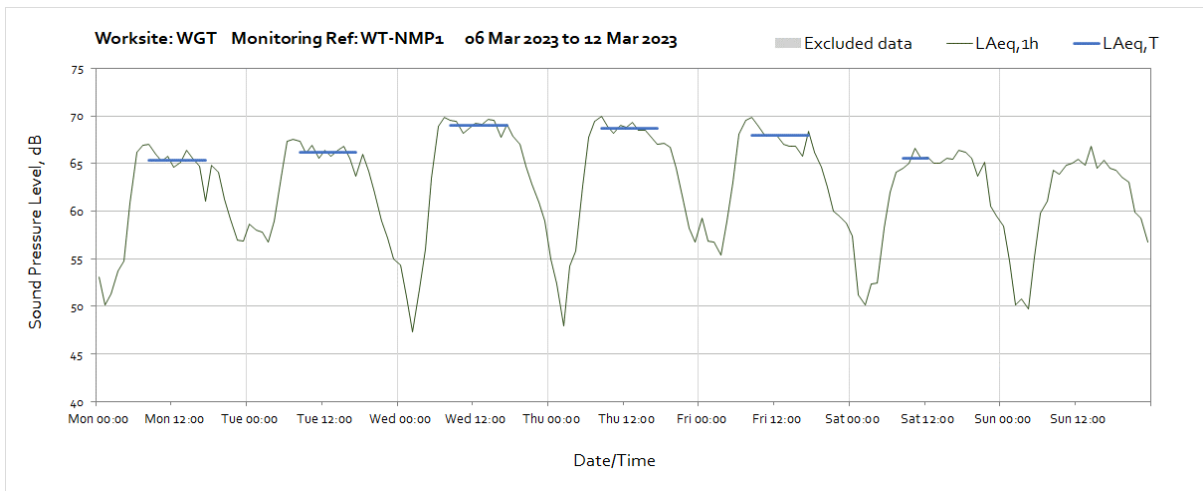
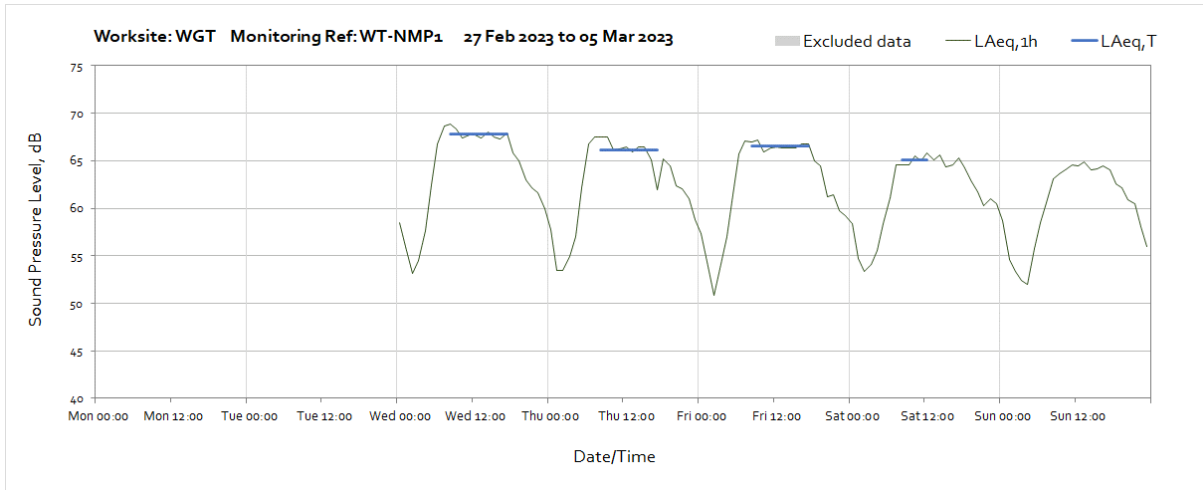


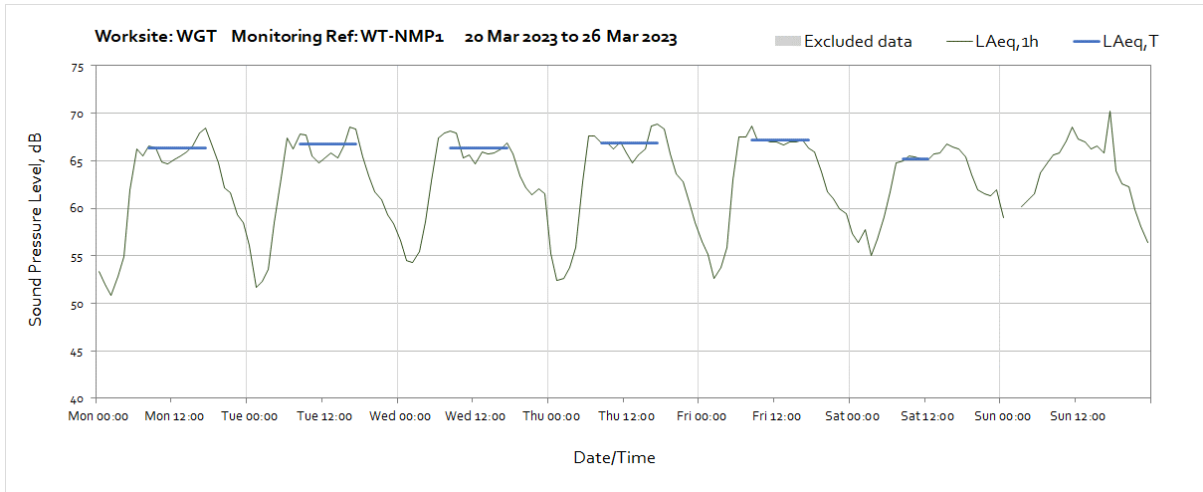


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

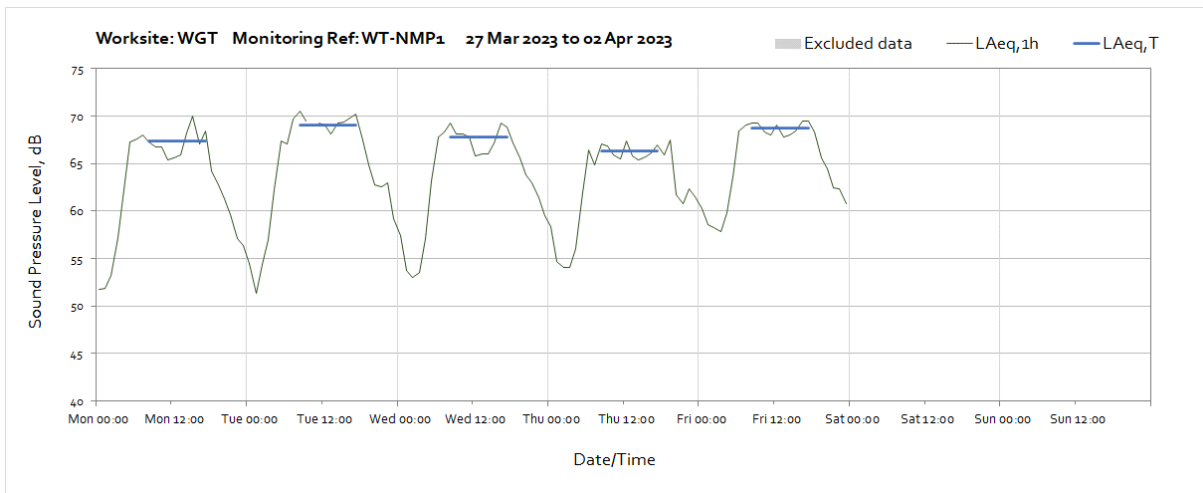


## Worksite: WGT – Monitoring Ref: WT-NMP1



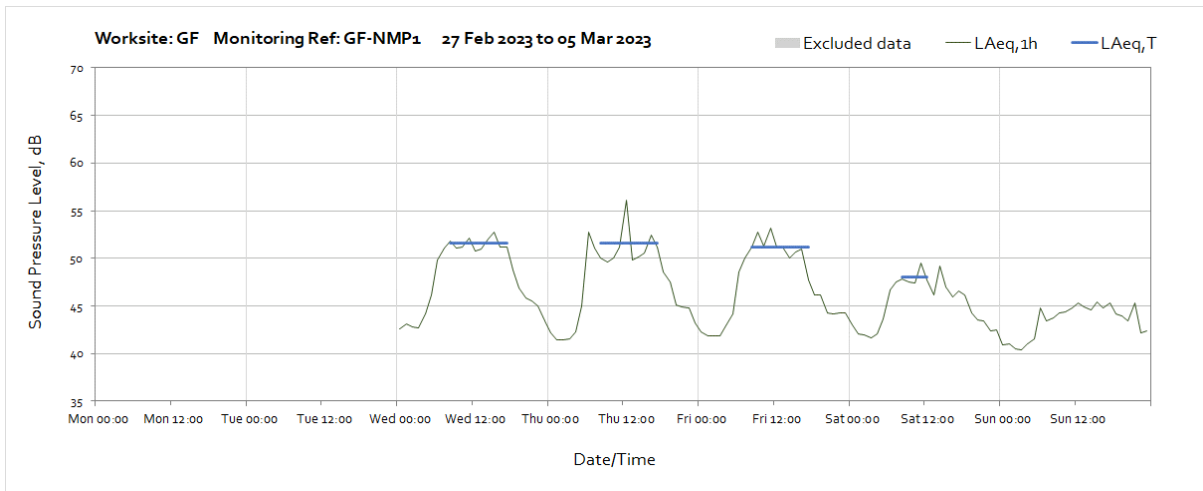


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

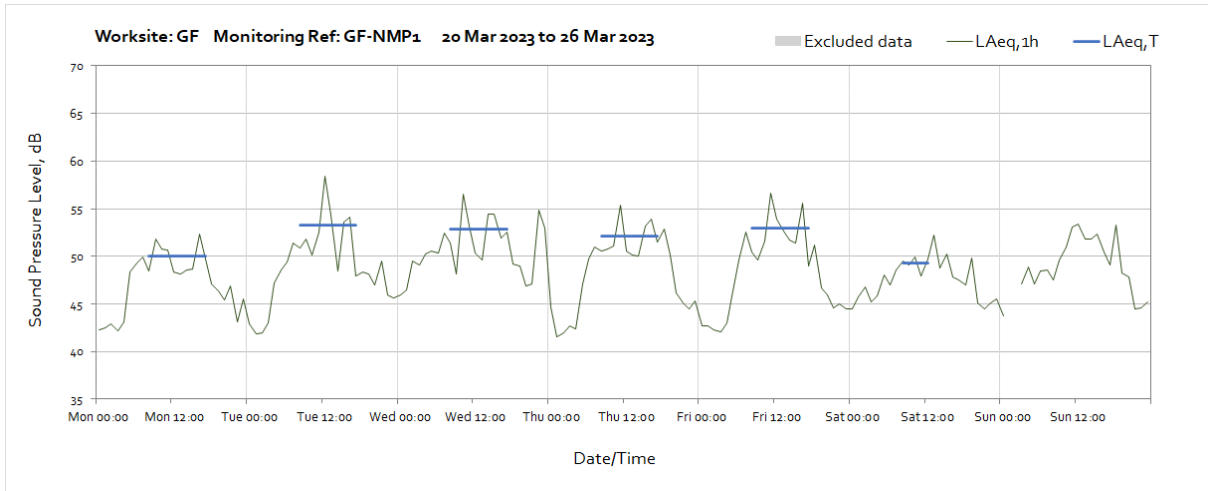
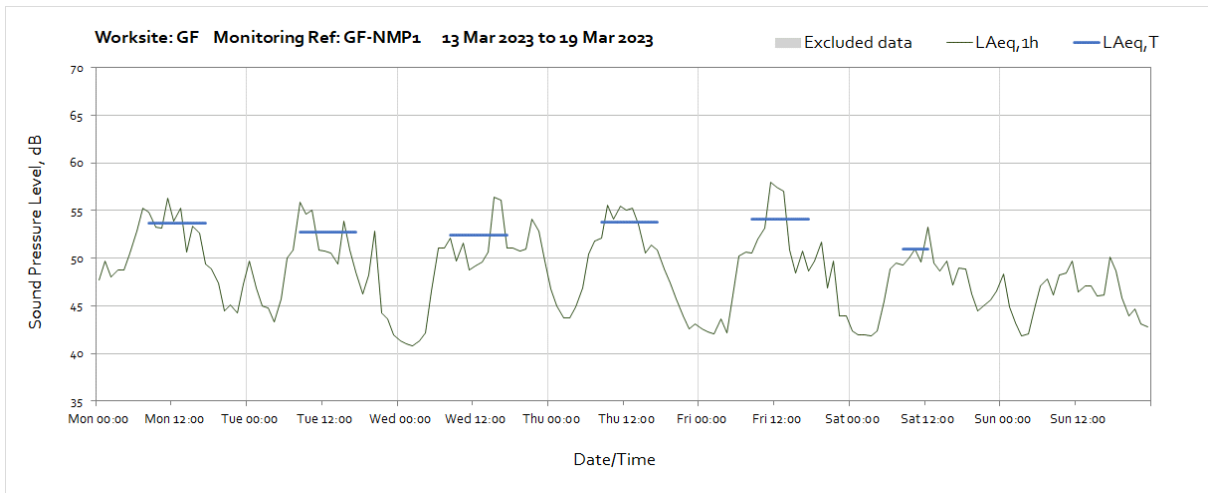
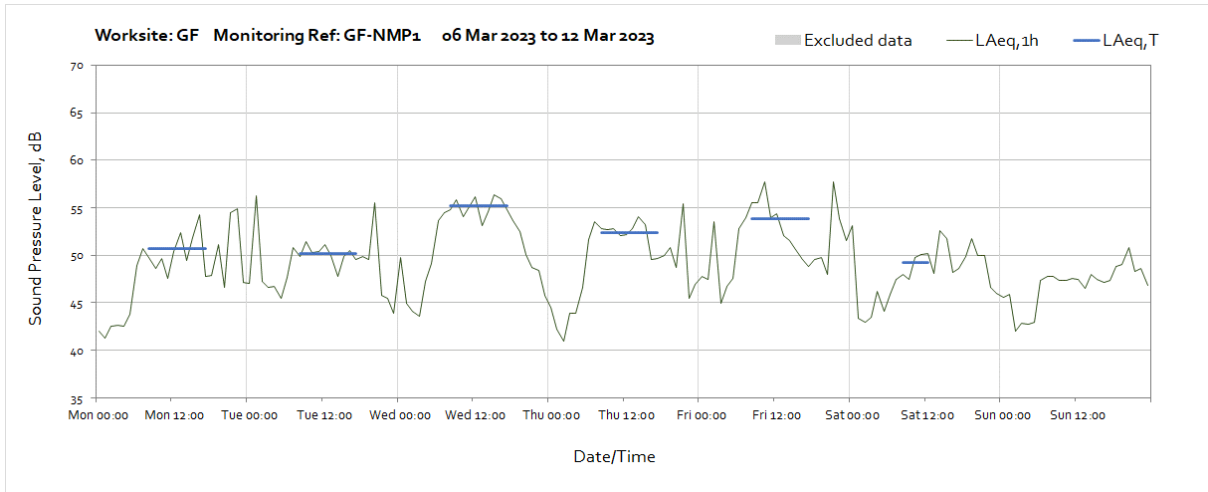


Note: Missing data between 10:00 and 11:00 on Tuesday 28<sup>th</sup> March was due to monitor maintenance.

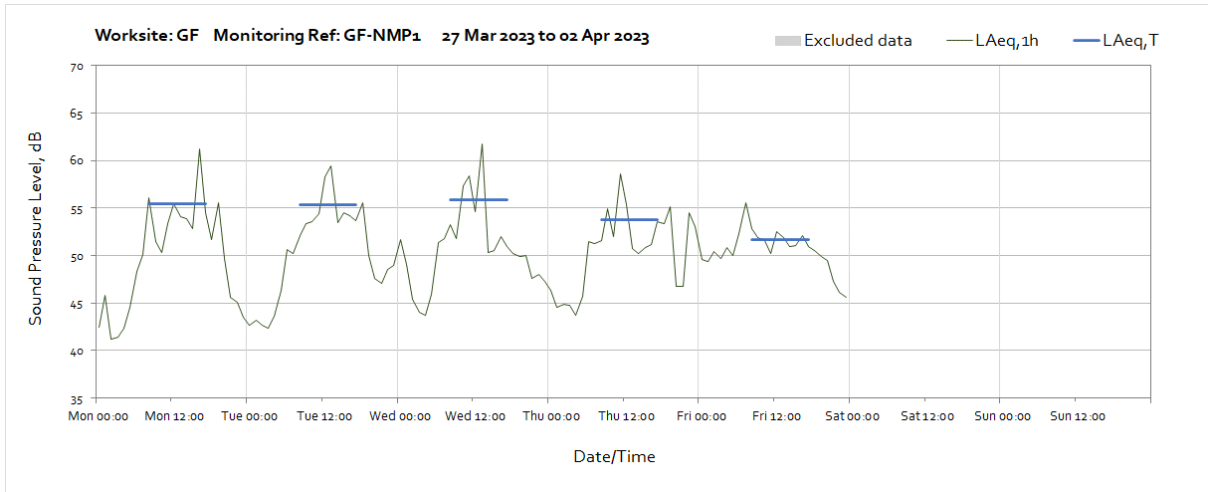
### Worksite: GF – Monitoring Ref: GF-NMP1



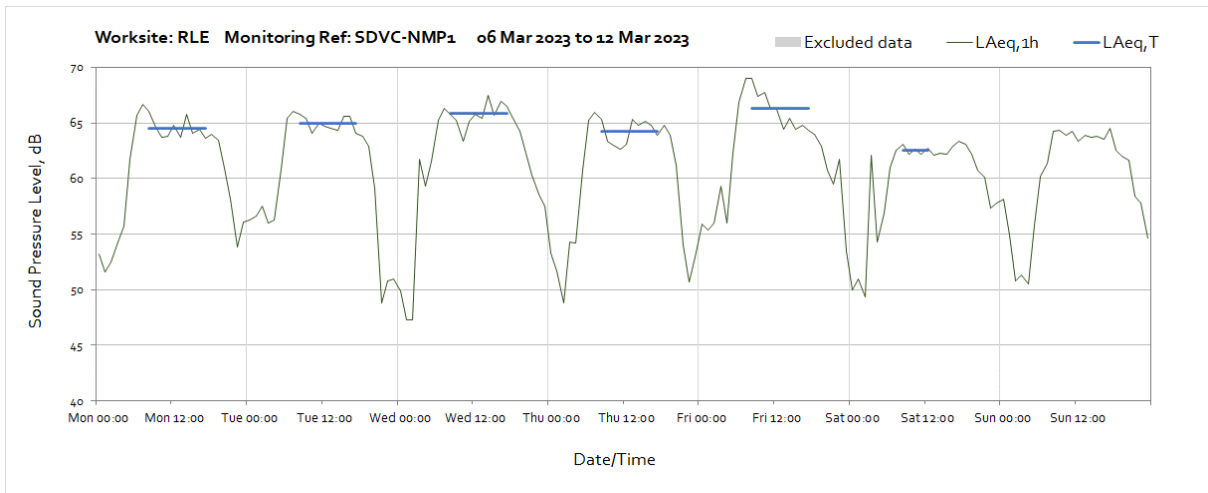
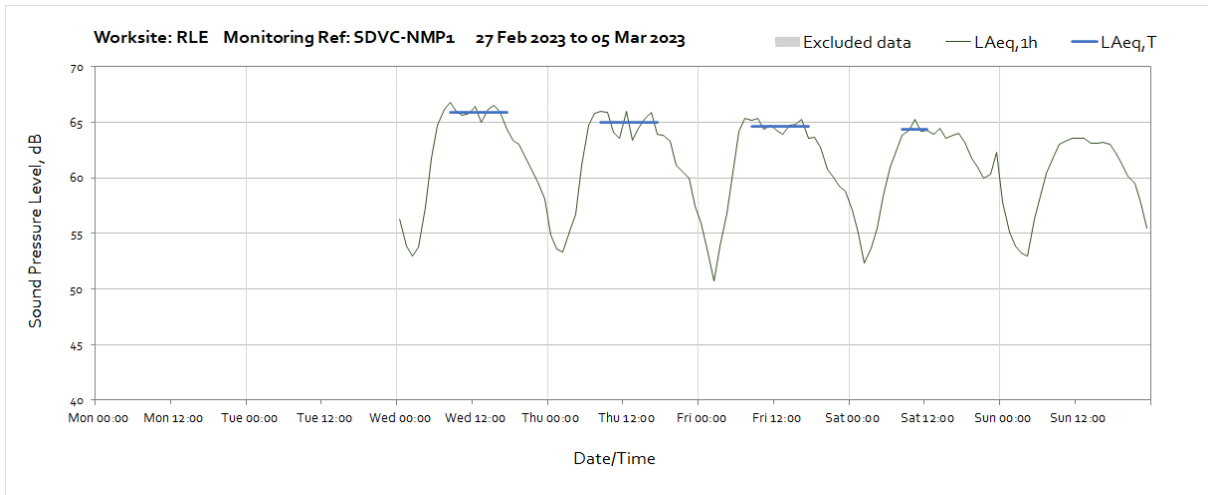


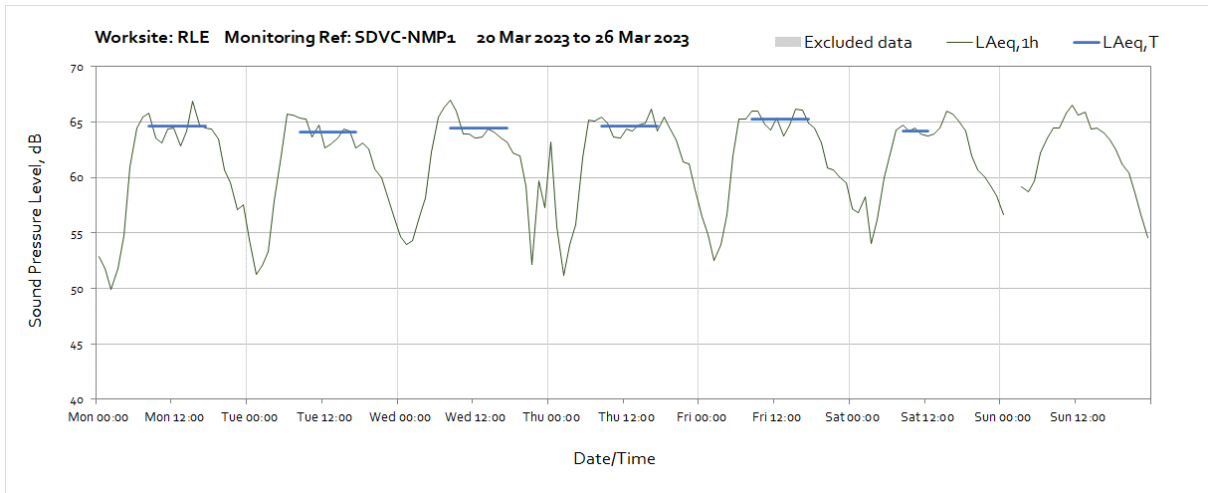
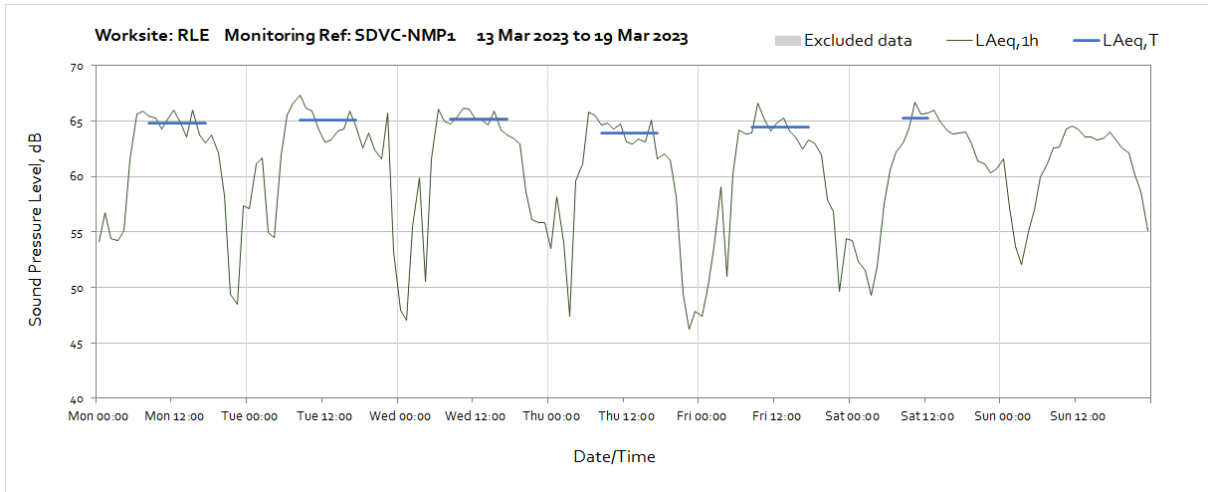


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

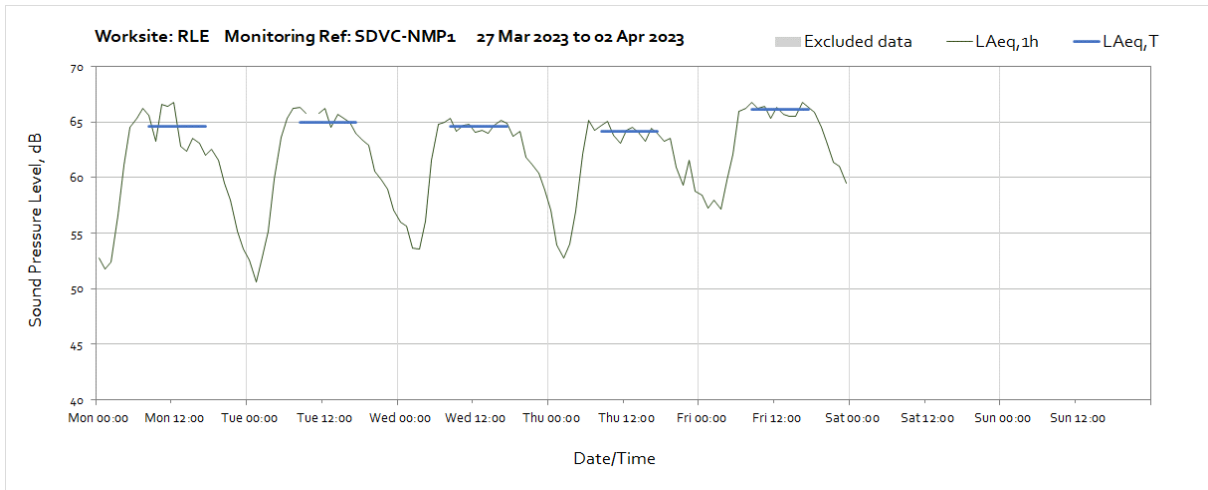


**Worksite: RLE - Monitoring Ref: SDVC-NMP1**



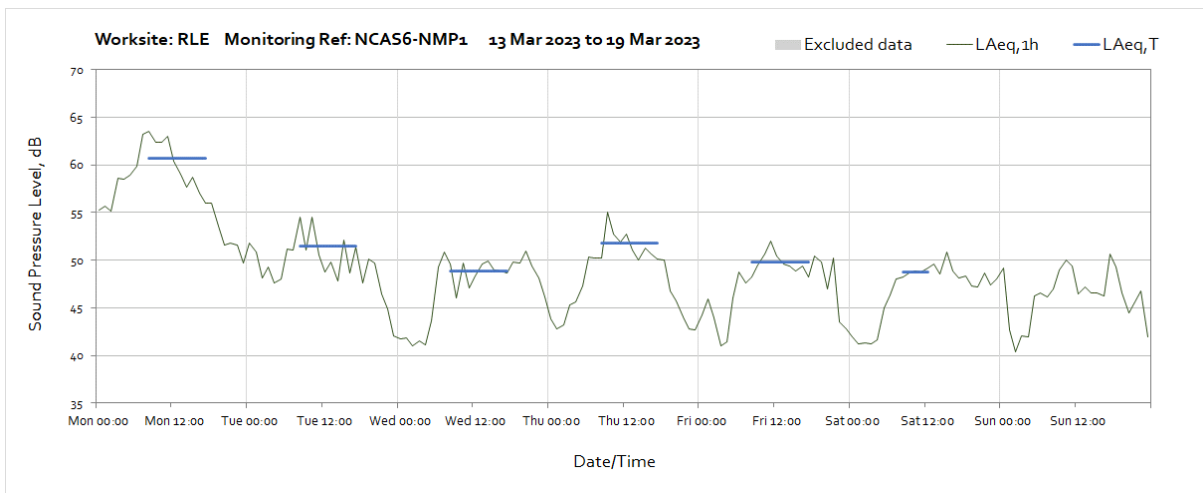
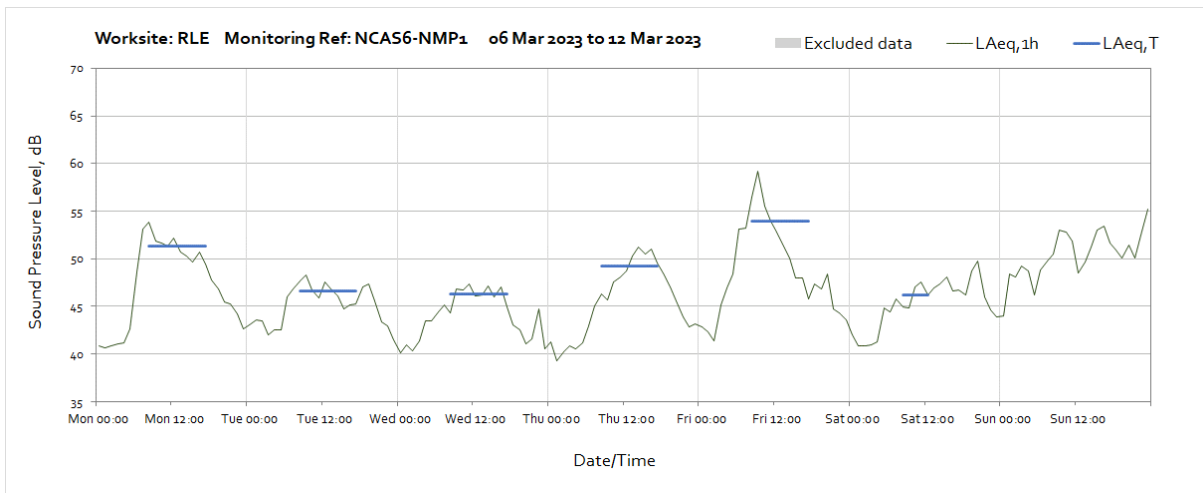
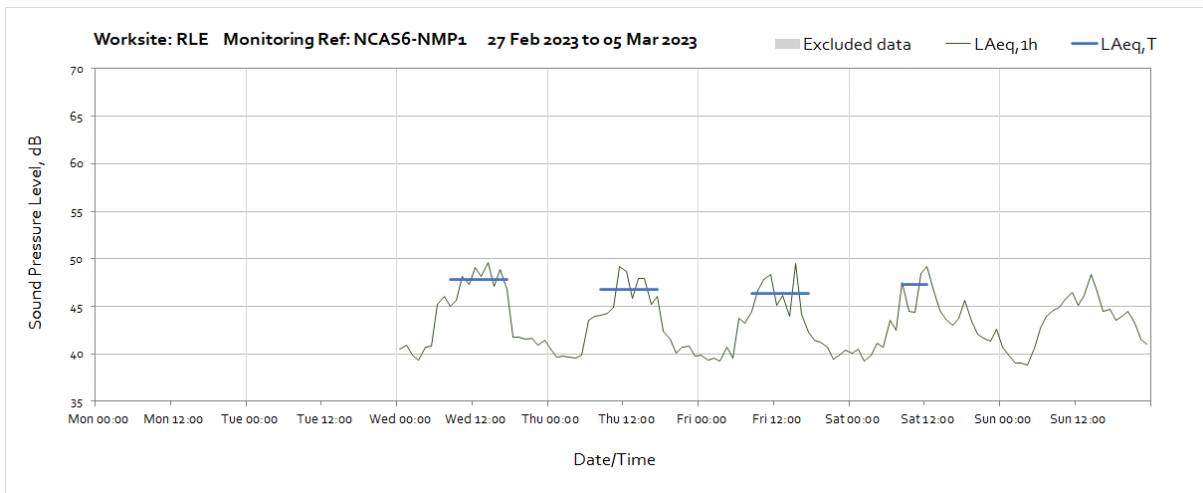


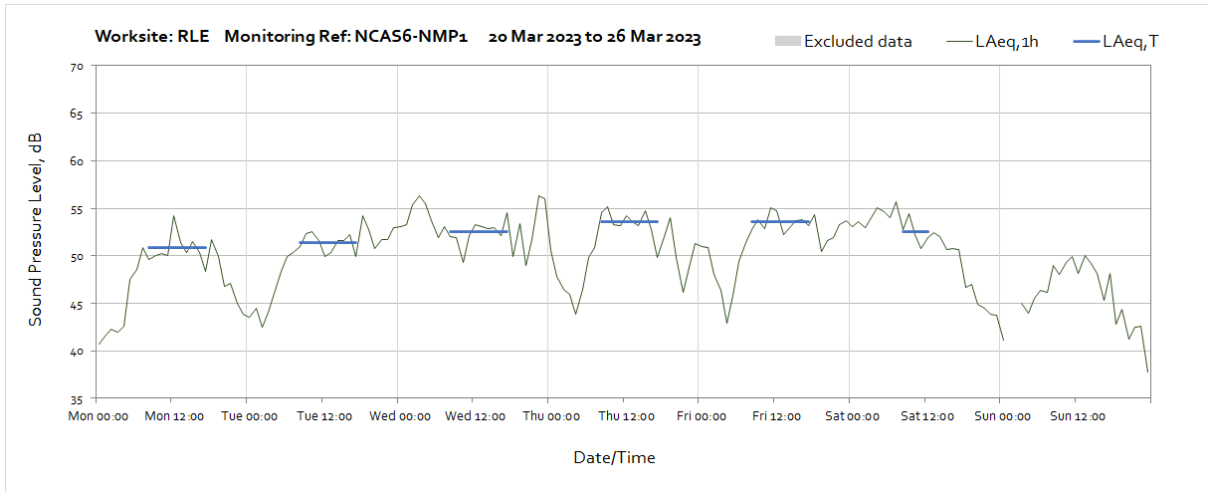
Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.



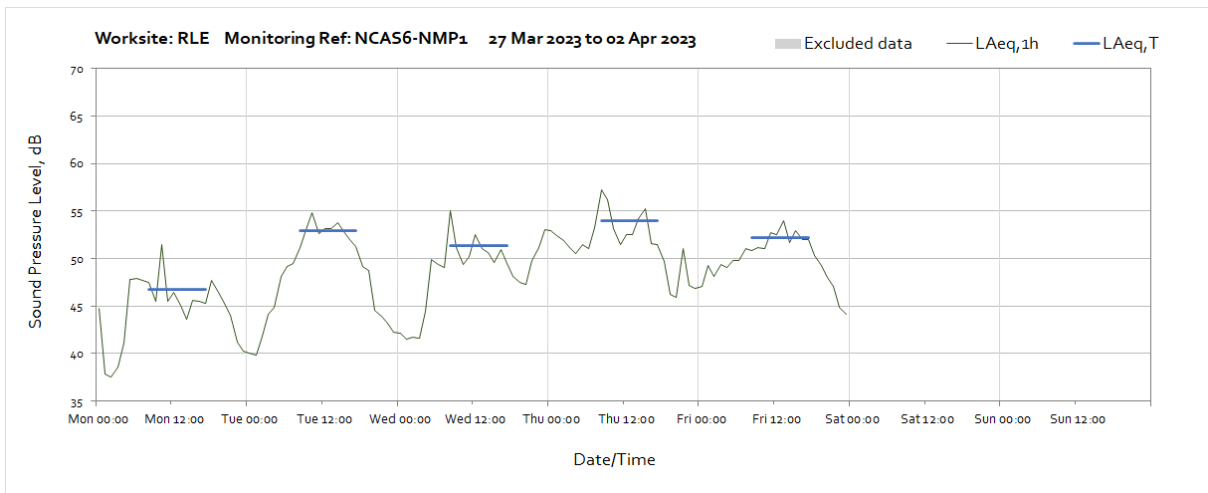
Note: Missing data between 10:00 and 11:00 on Tuesday 28th March was due to monitor maintenance.

## Worksite: RLE – Monitoring Ref: NCAS6-NMP1

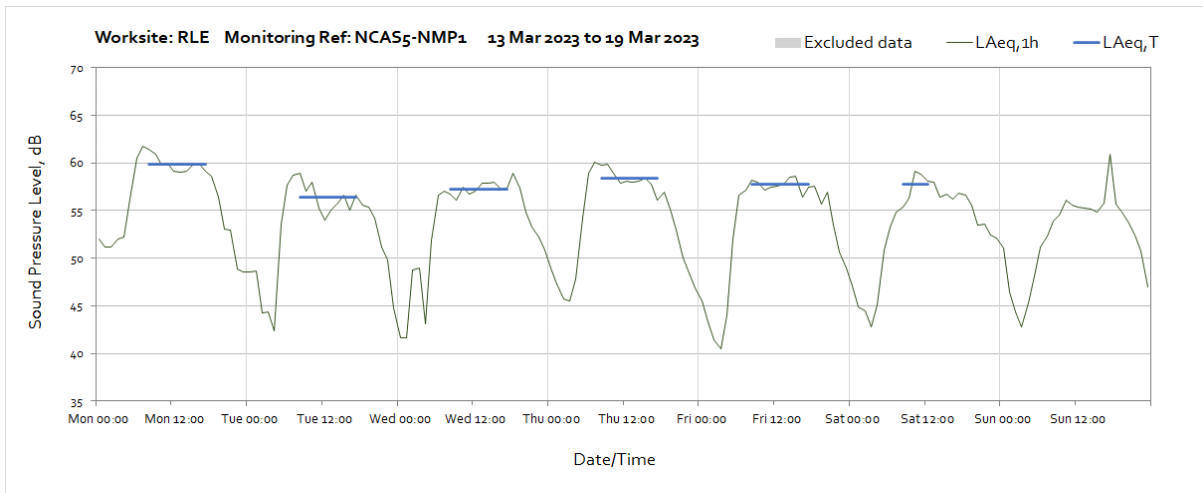
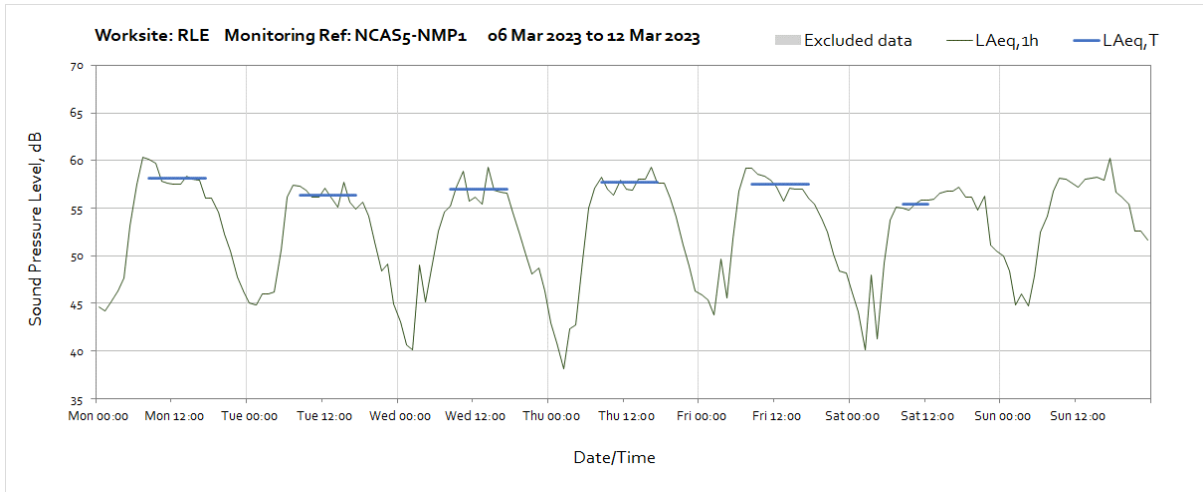
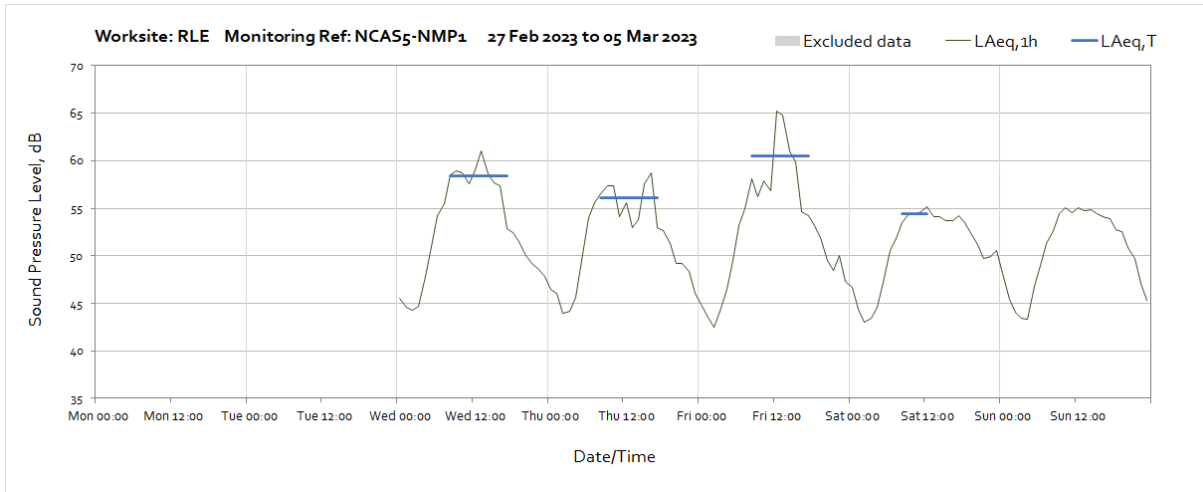


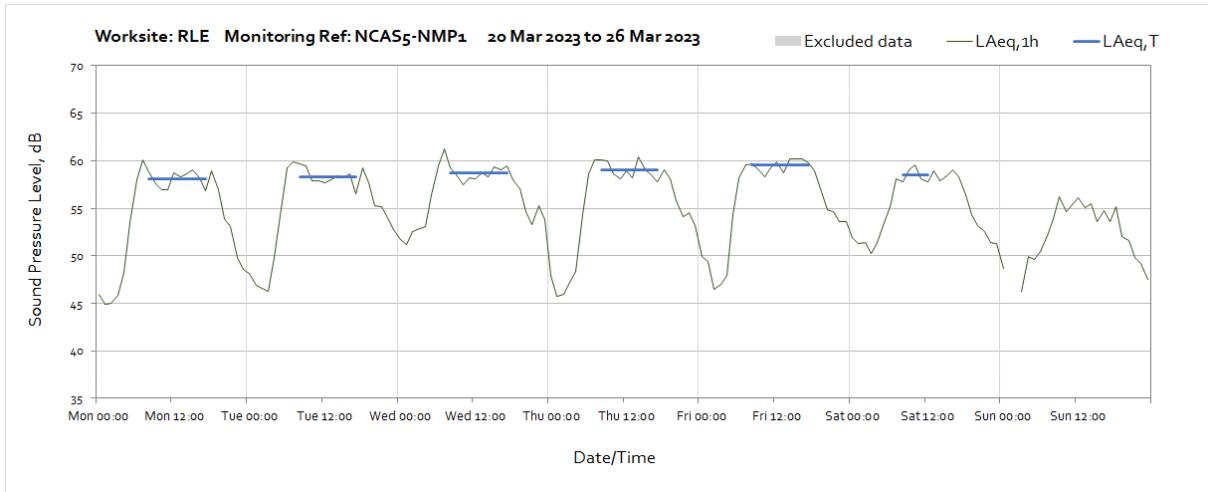


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

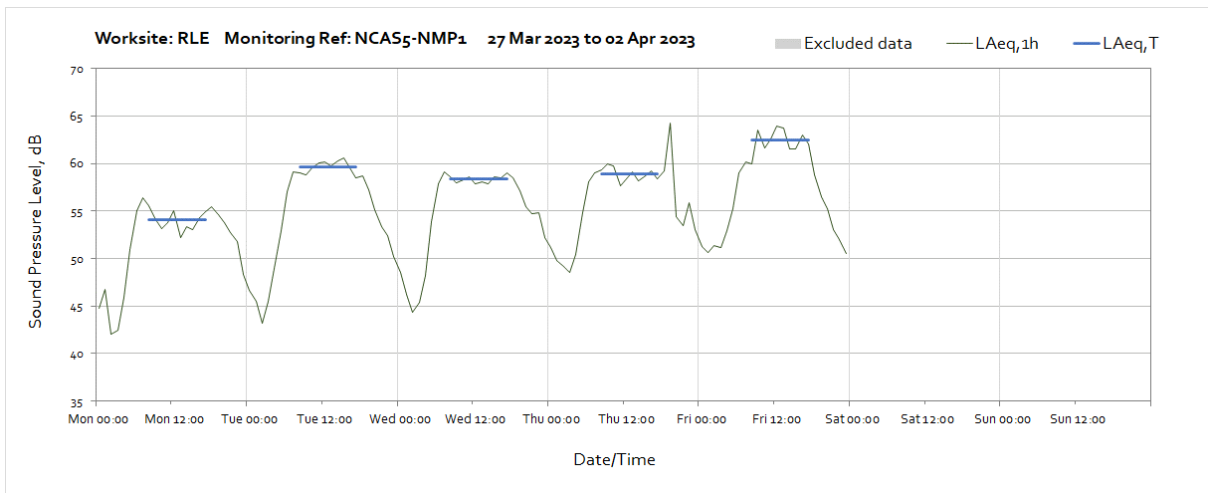


## Worksite: RLE – Monitoring Ref: NCAS5-NMP1

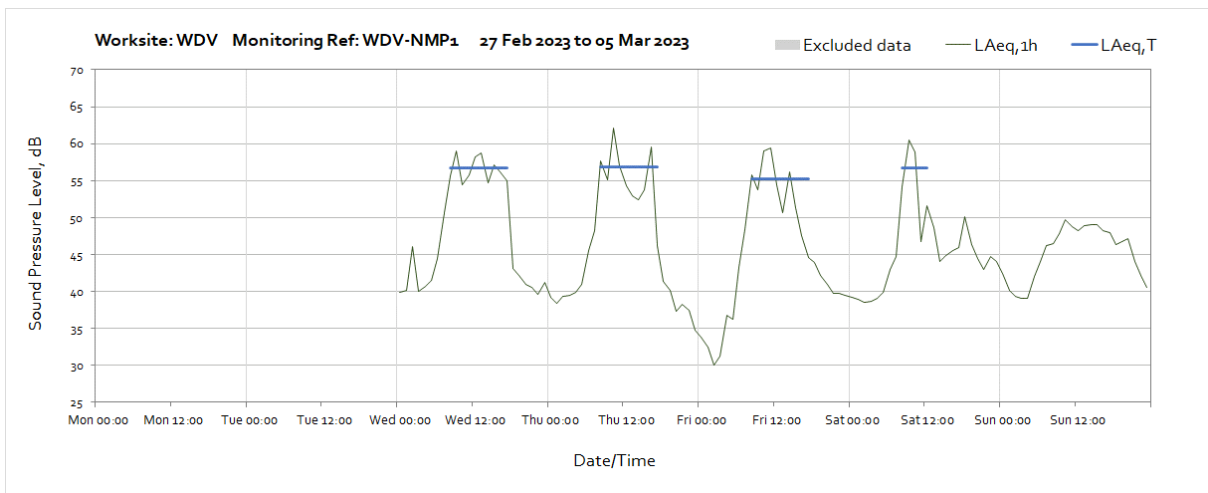


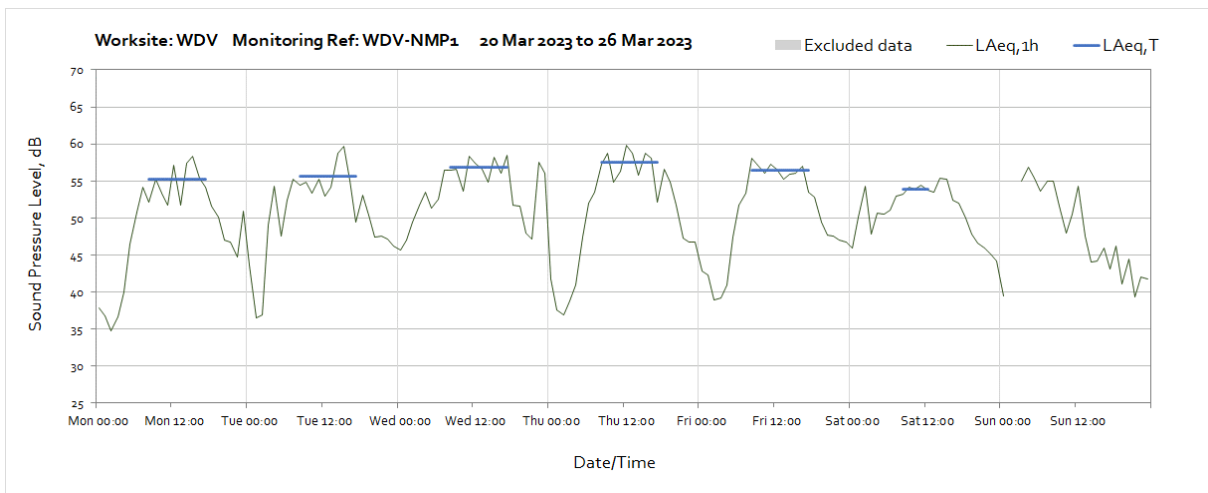
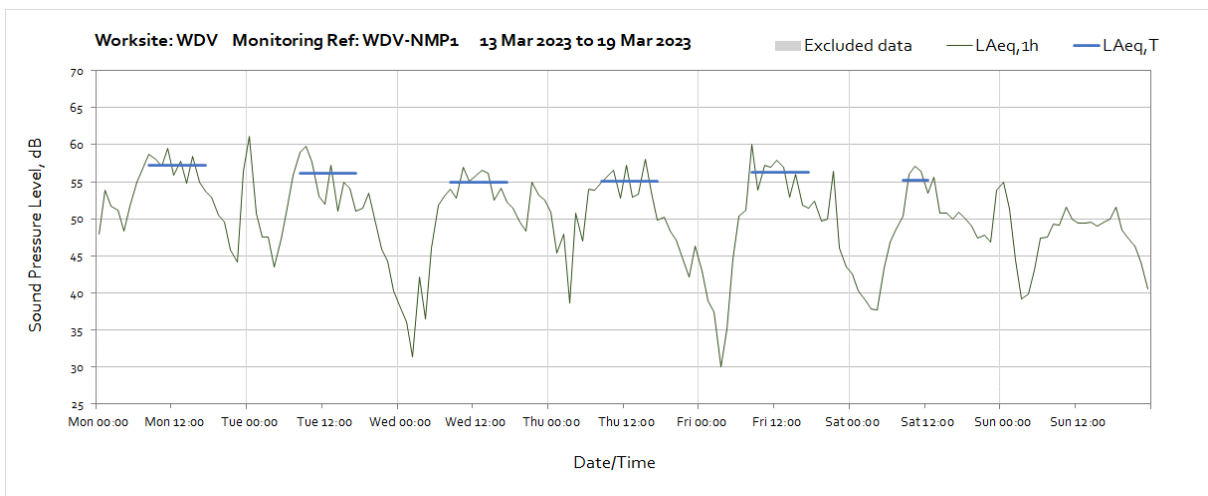
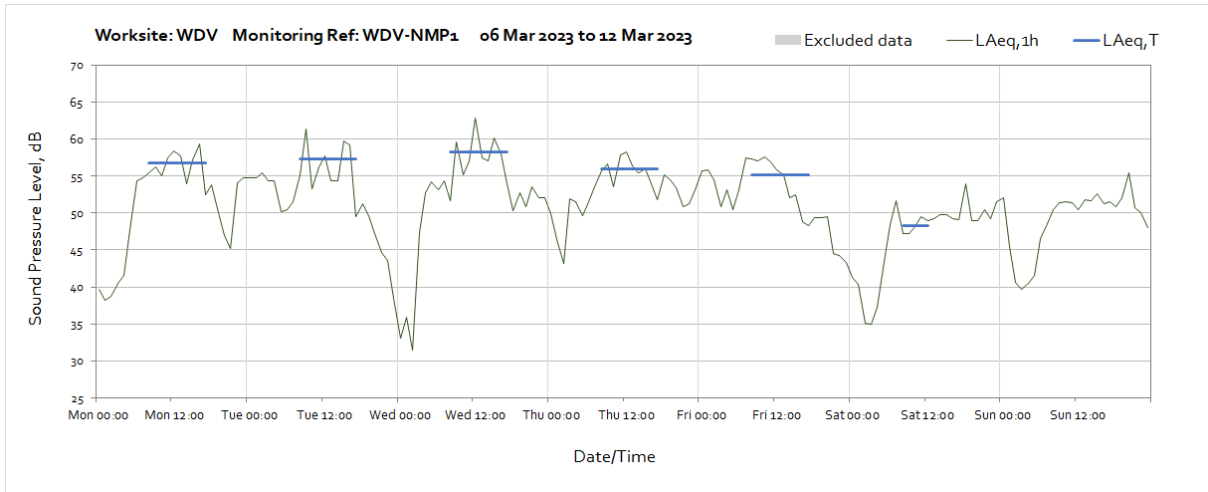


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.



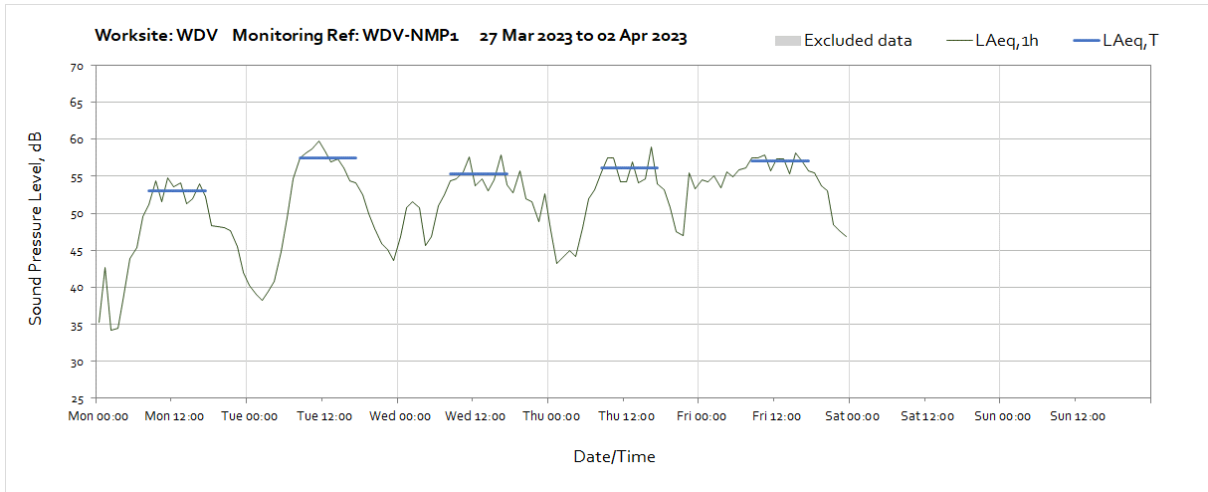
### Worksite: WDV - Monitoring Ref: WDV-NMP1



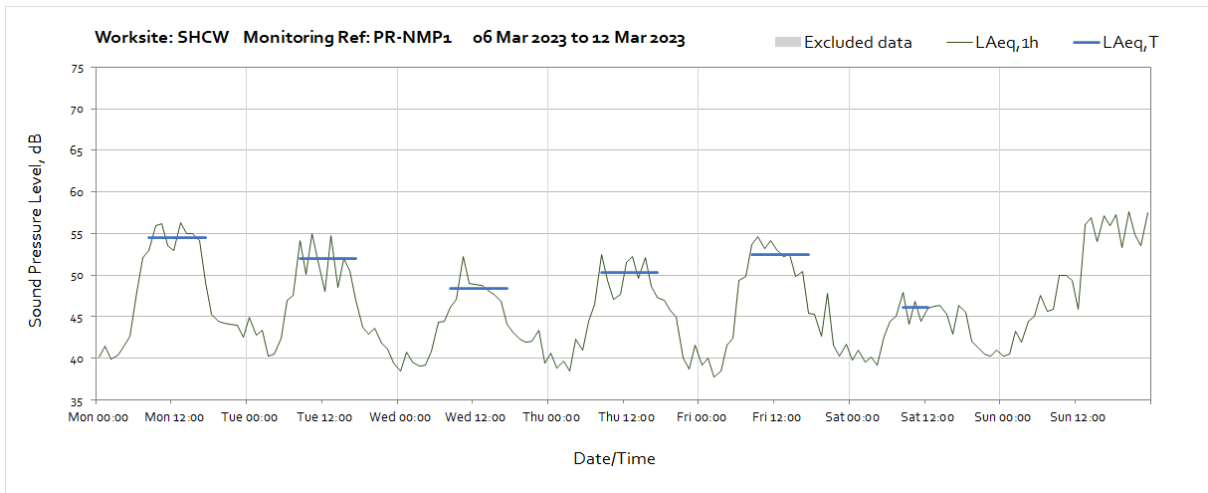
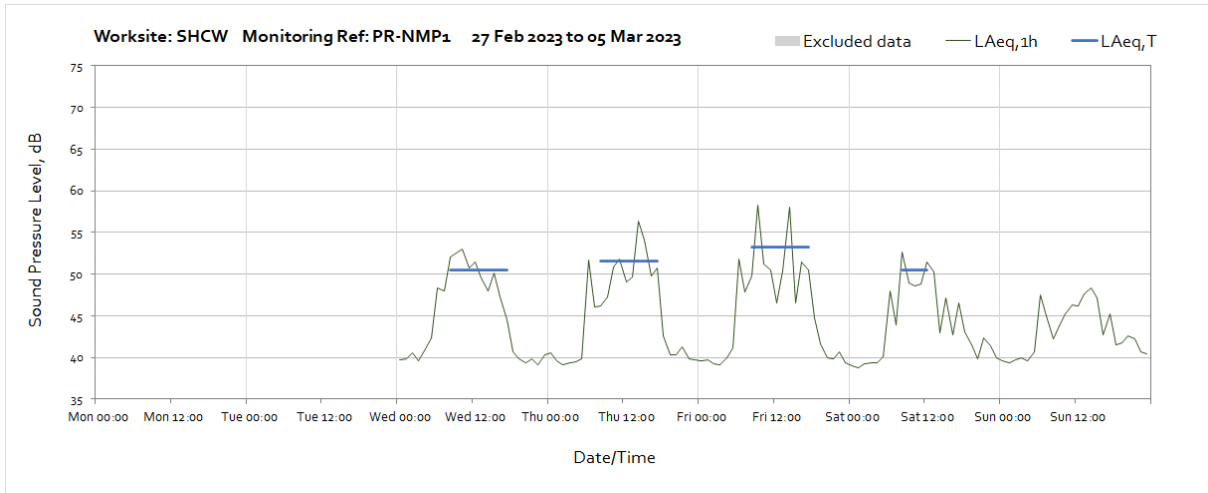


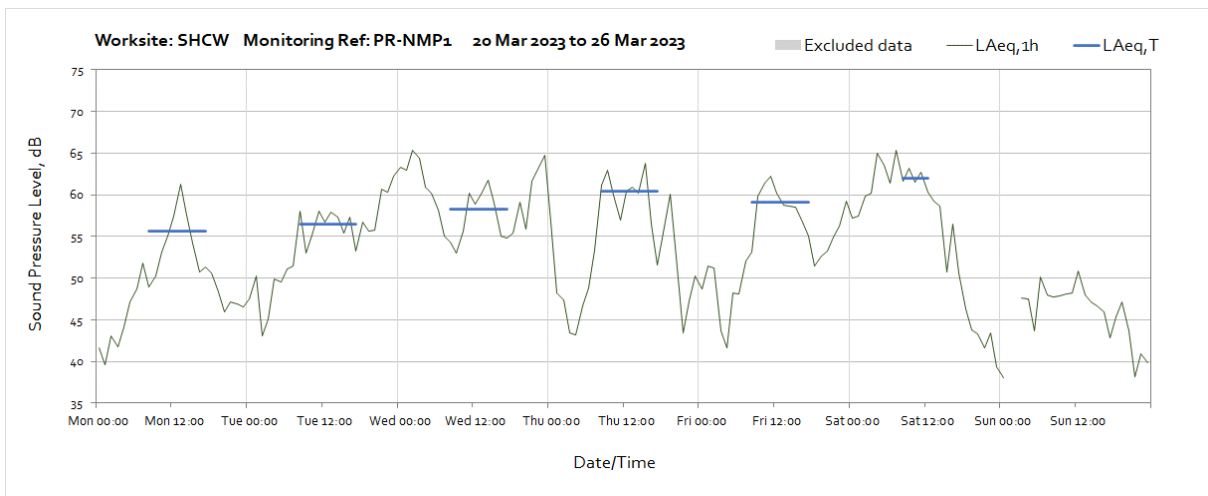
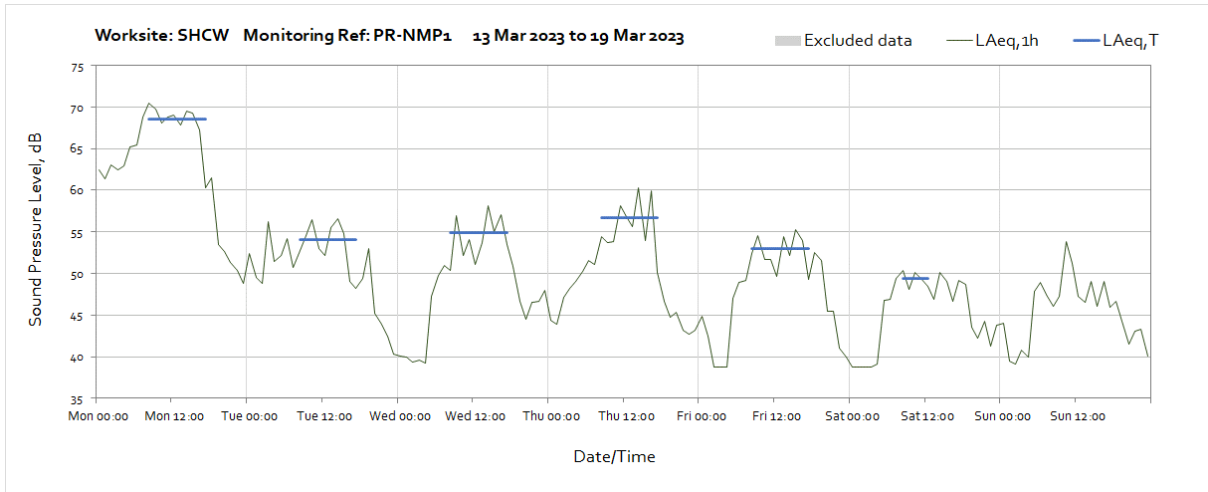
Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.



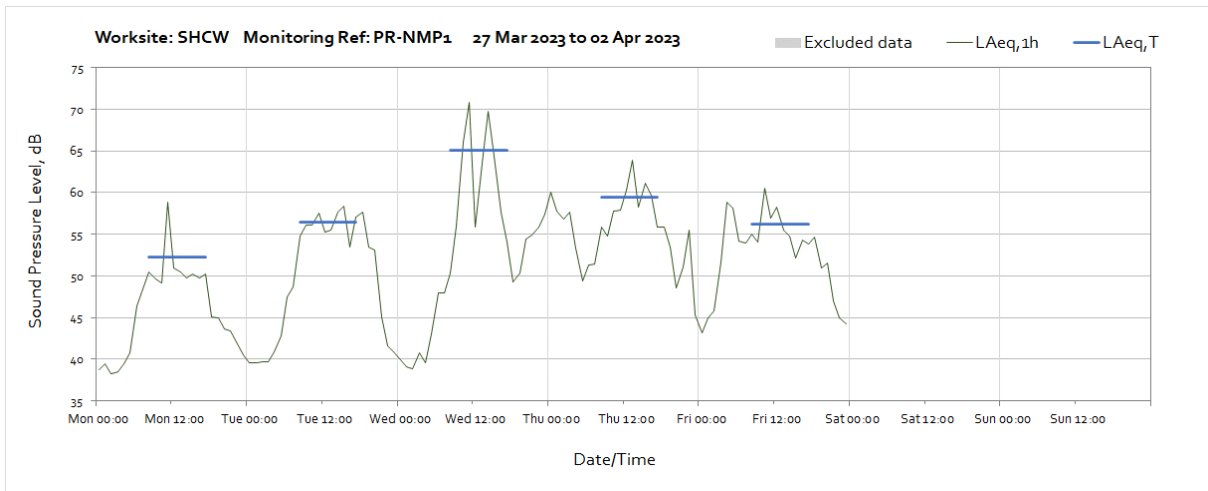


**Worksite: SHCW – Monitoring Ref: PR-NMP1**

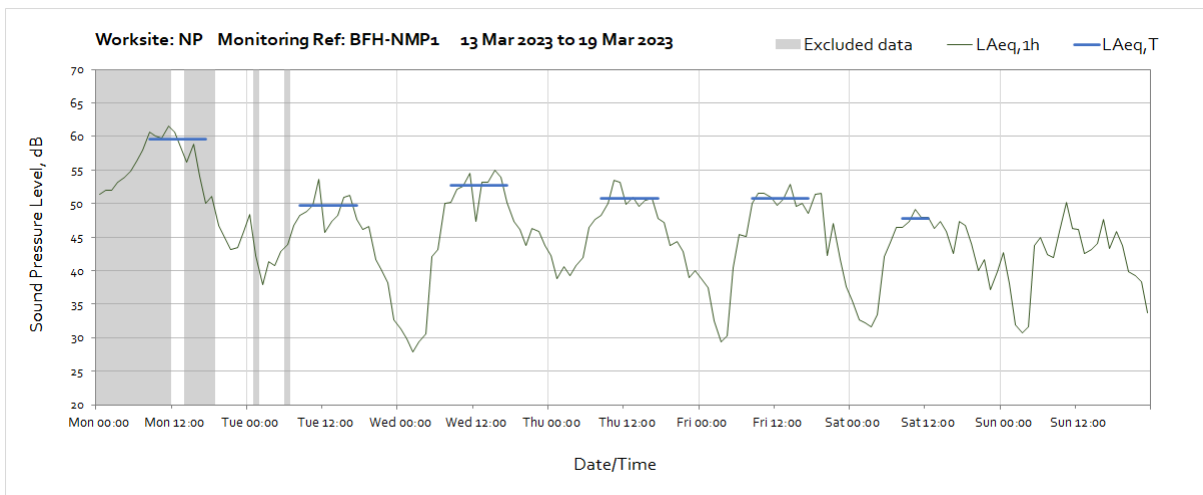
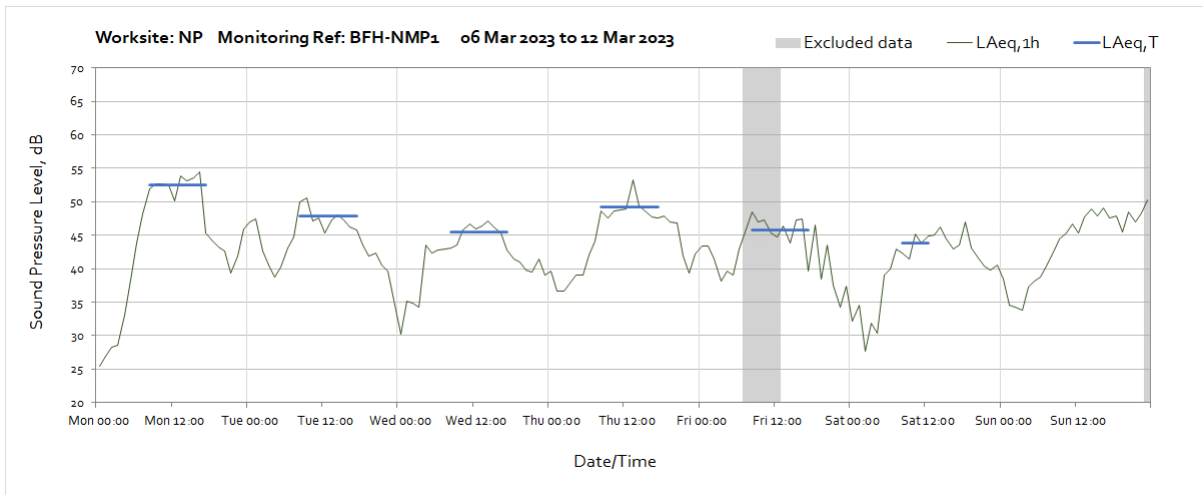
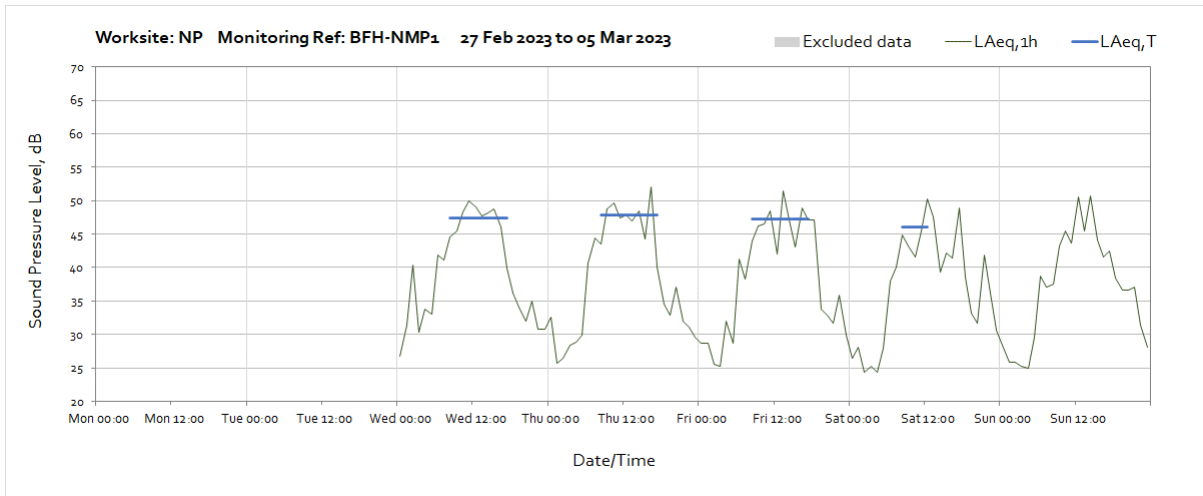


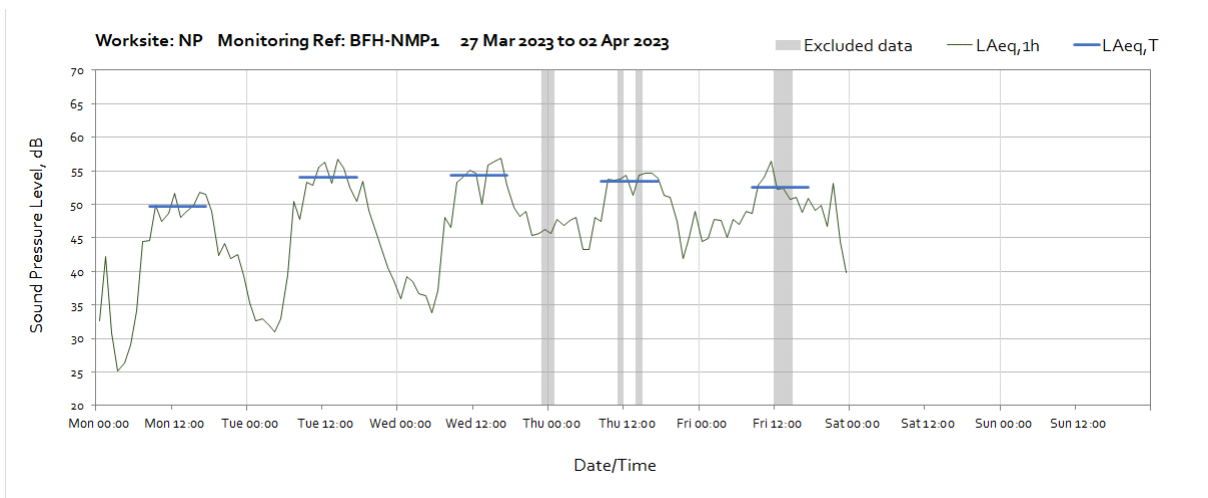
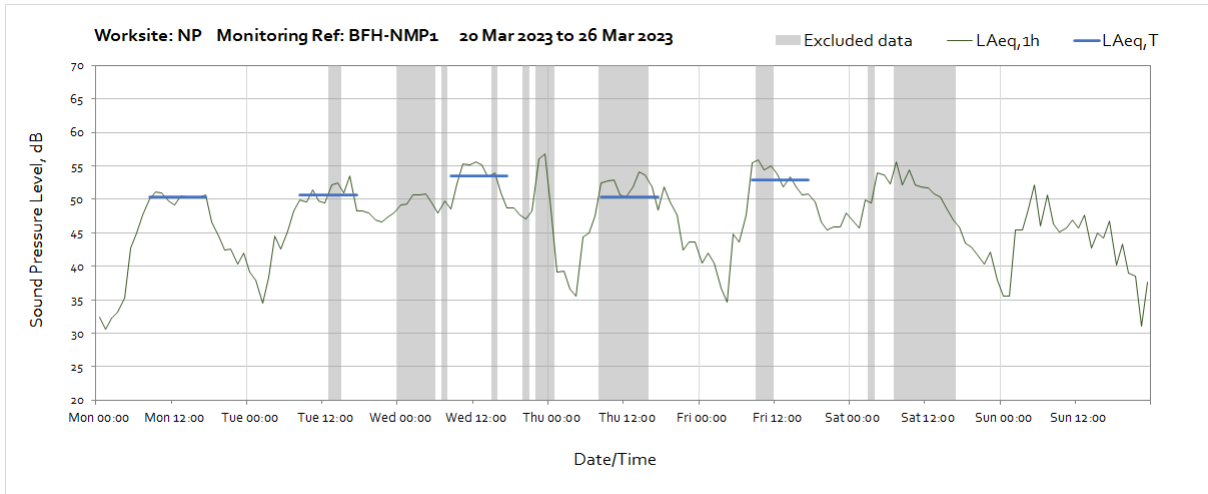


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

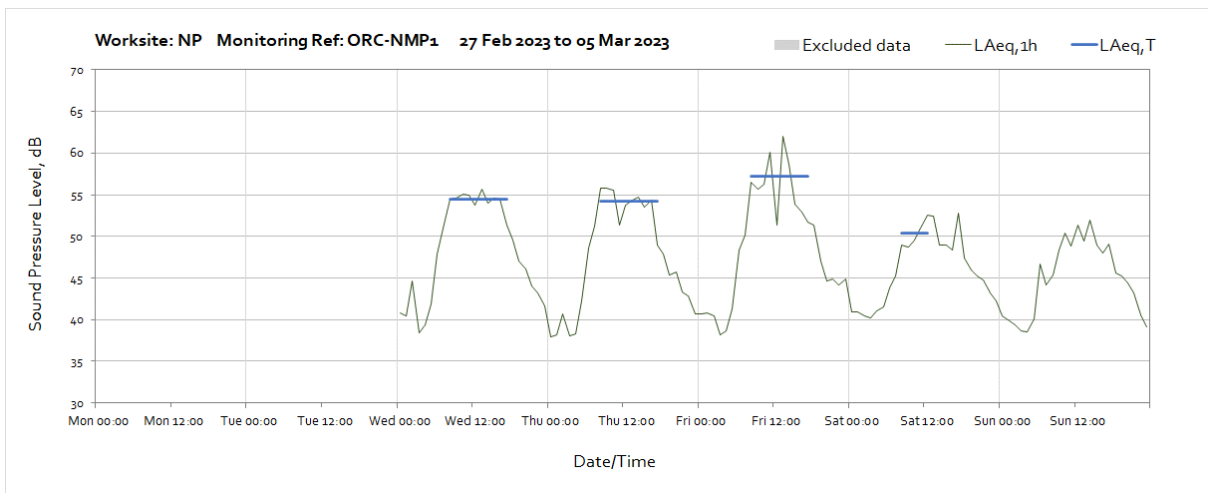


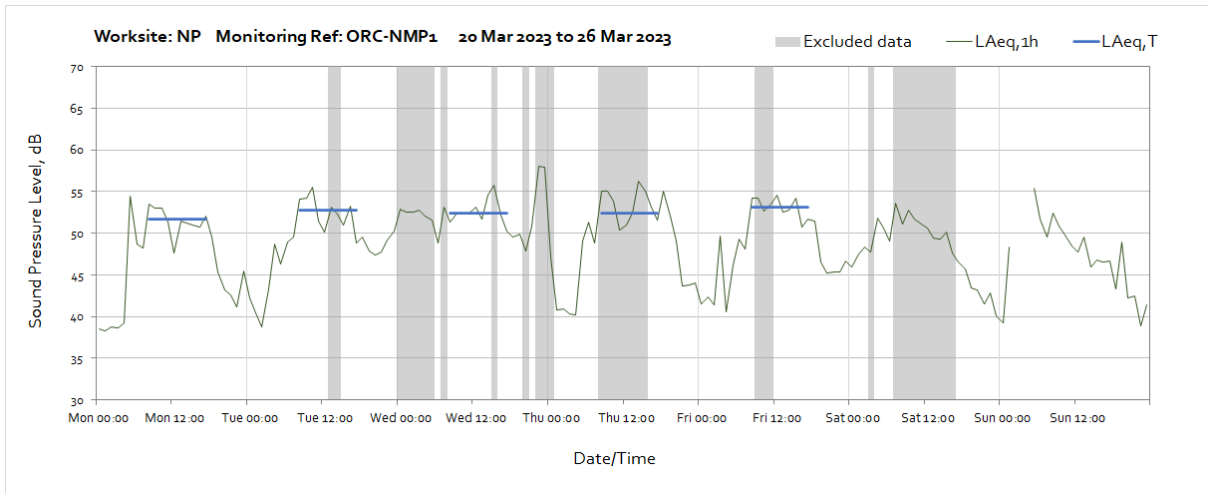
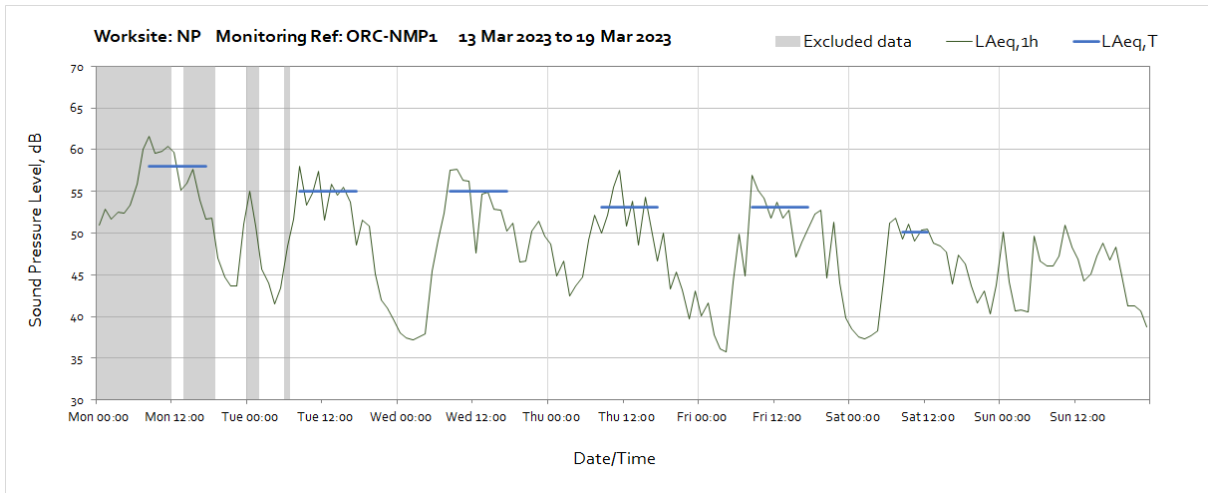
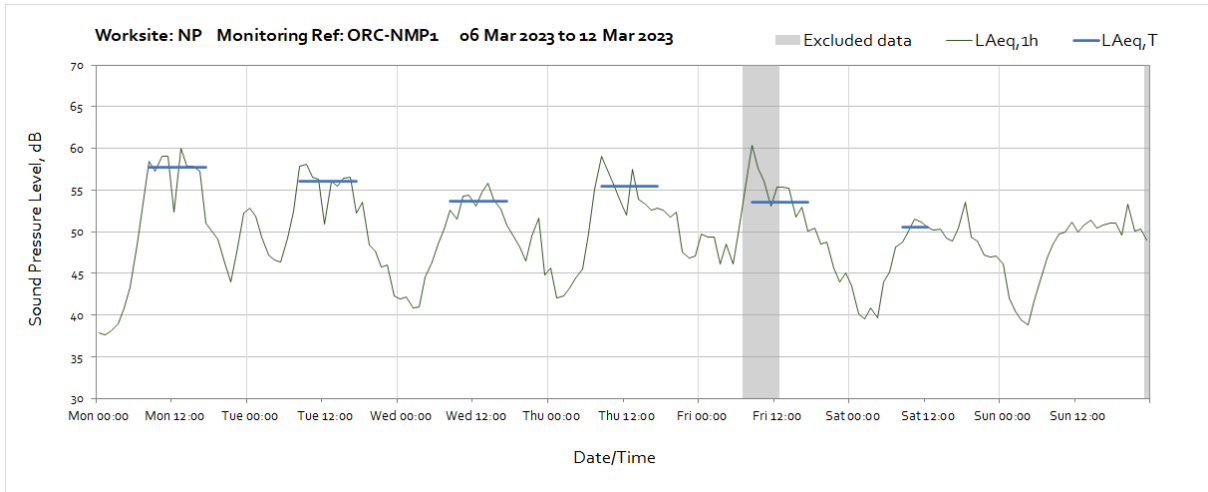
## Worksite: NP – Monitoring Ref: BFH-NMP1



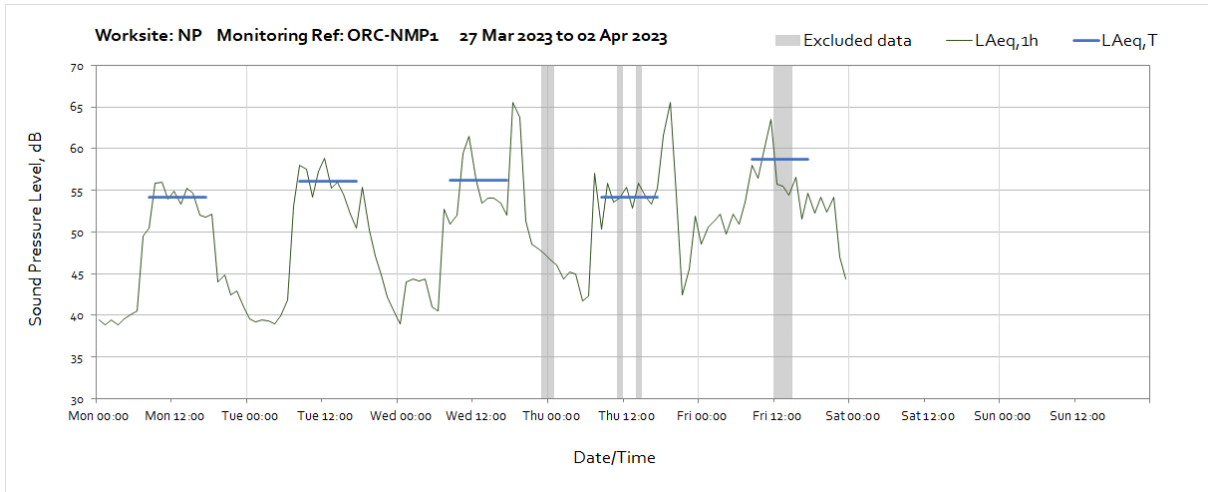


**Worksite: NP – Monitoring Ref: ORC-NMP1**

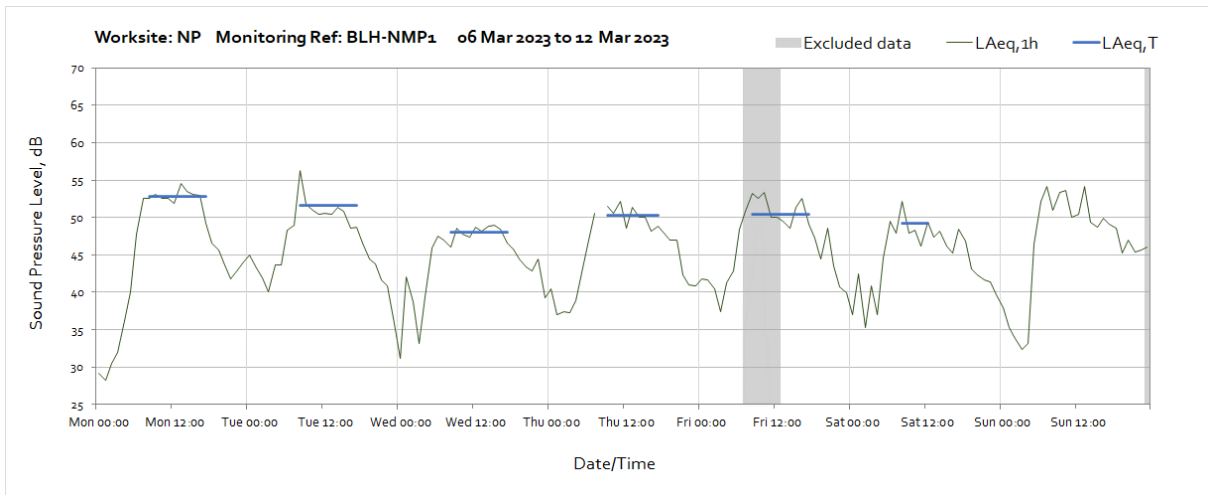
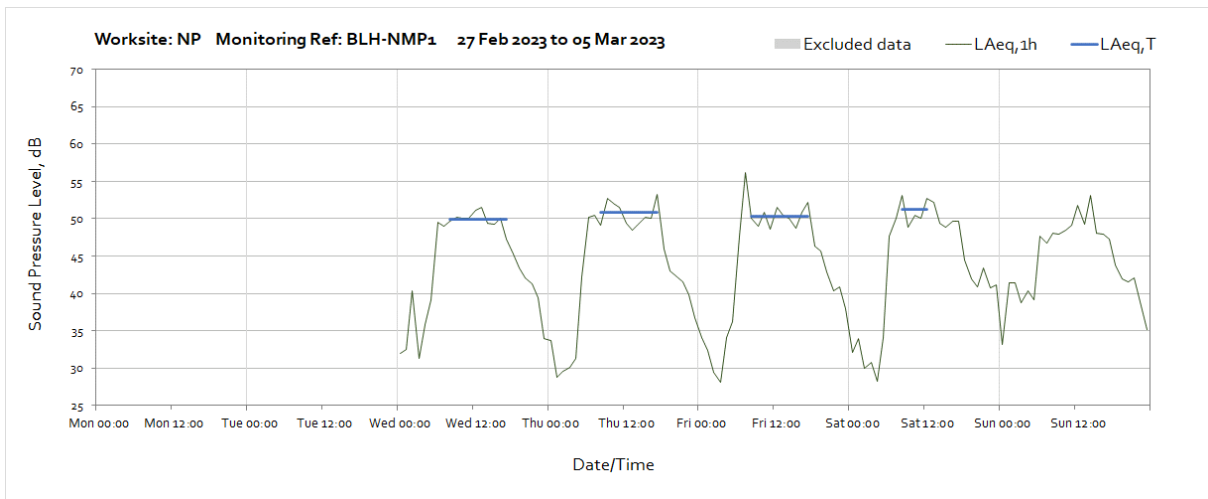




Note: Missing data between 02:00 and 05:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

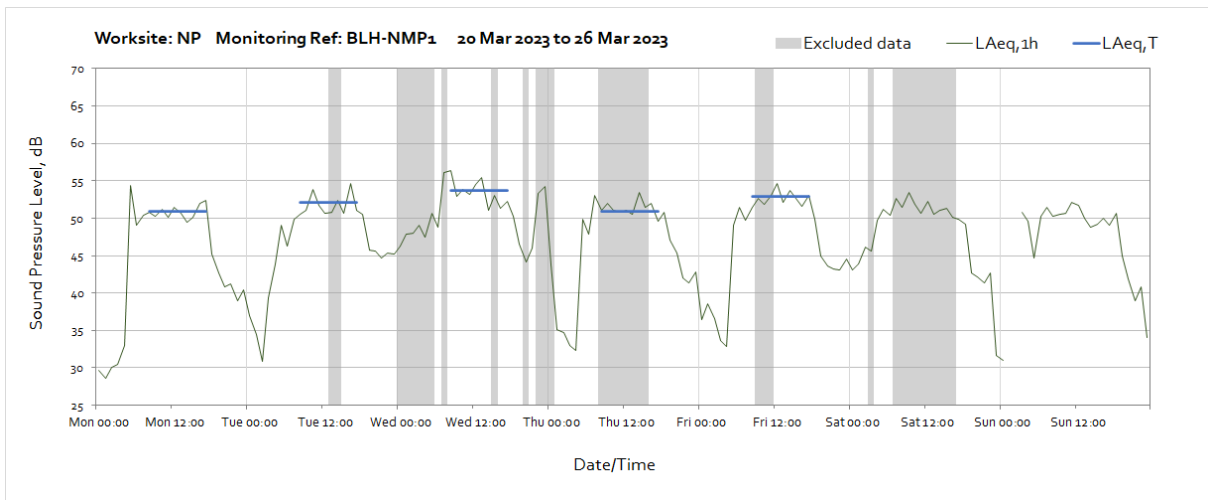
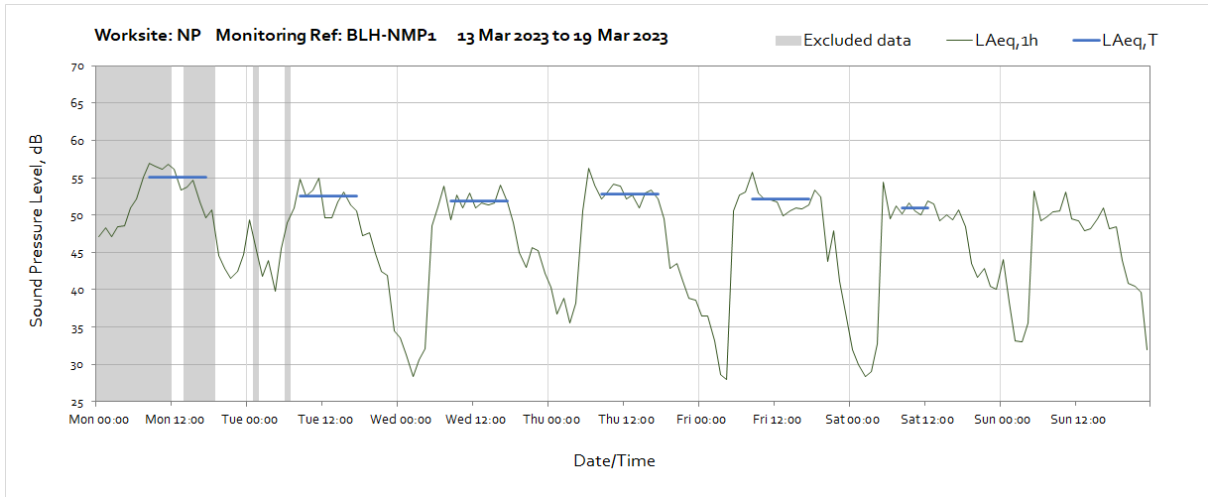


### Worksite: NP – Monitoring Ref: BLH-NMP1

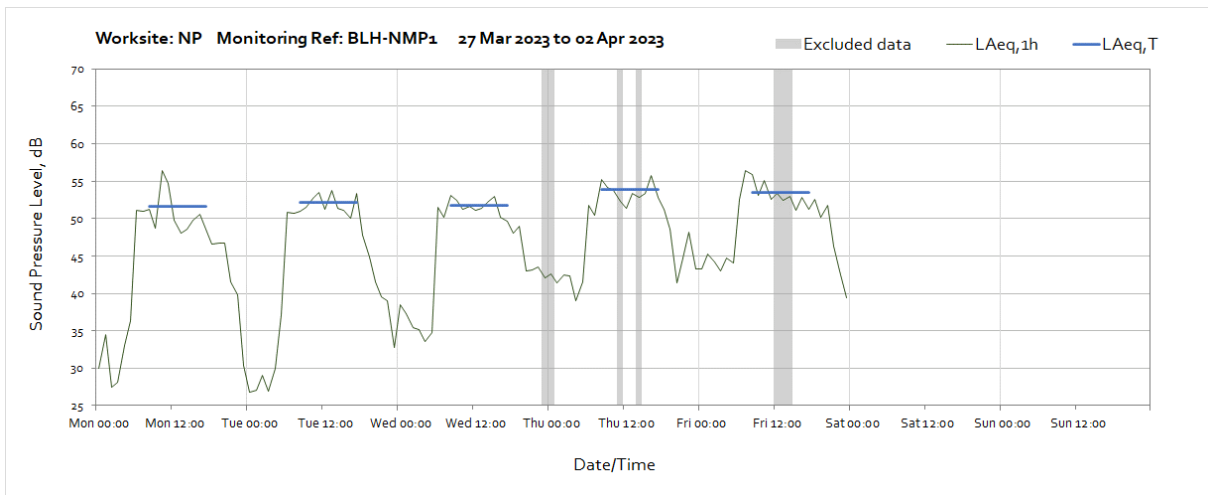


Note: Missing data between 08:00 and 09:00 on Thursday 9<sup>th</sup> March was due to a remote connection issue.

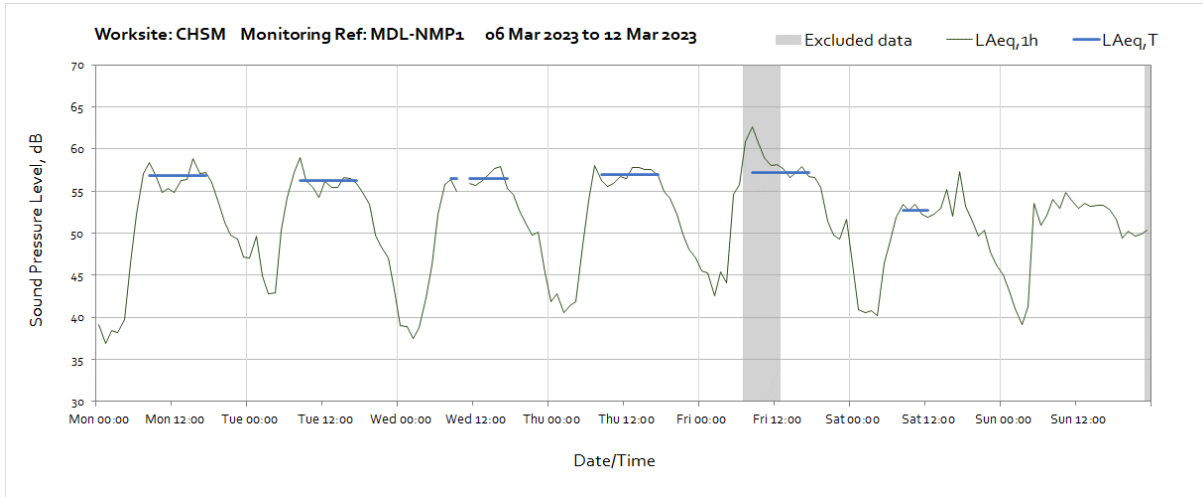
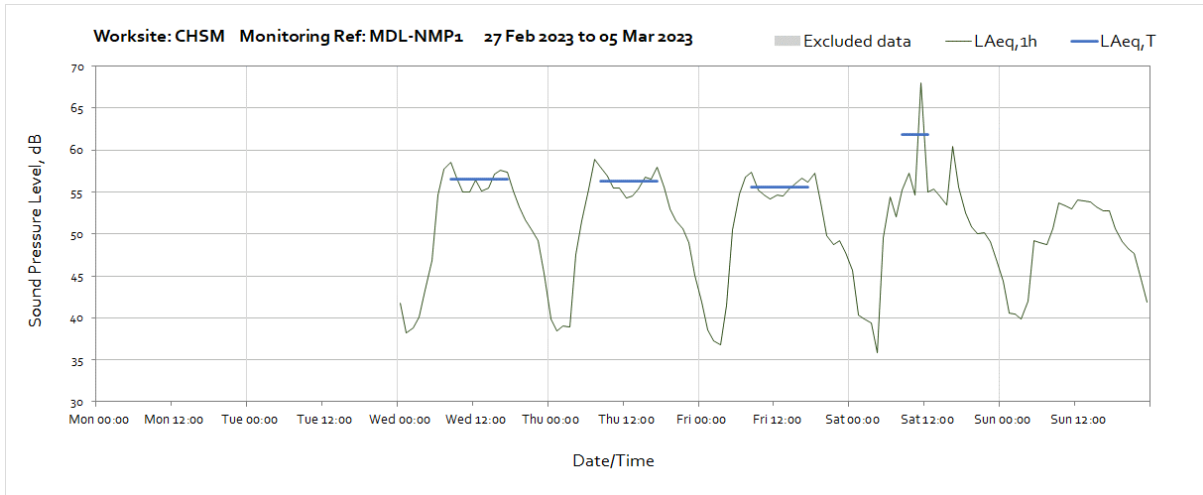
OFFICIAL



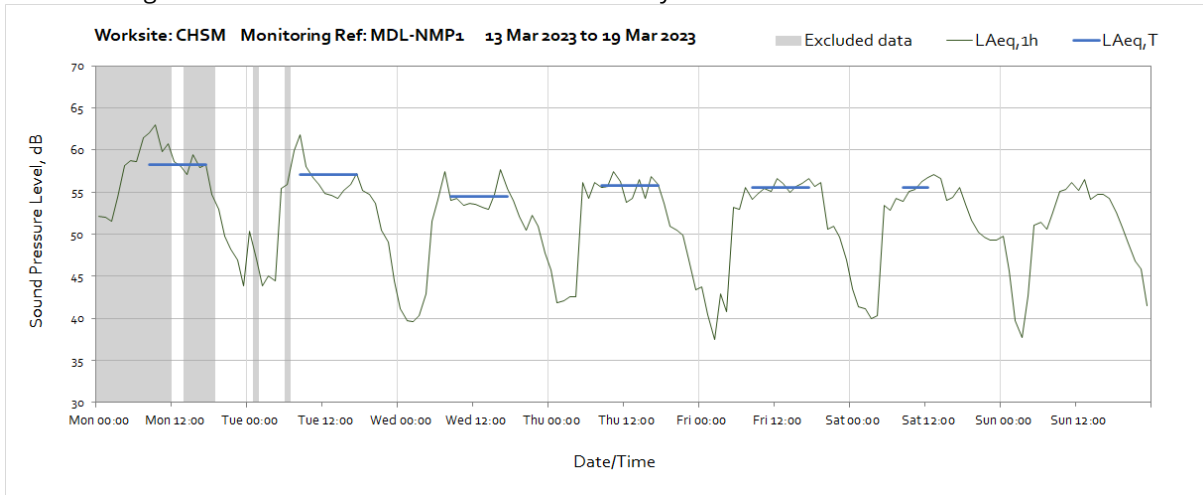
Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.



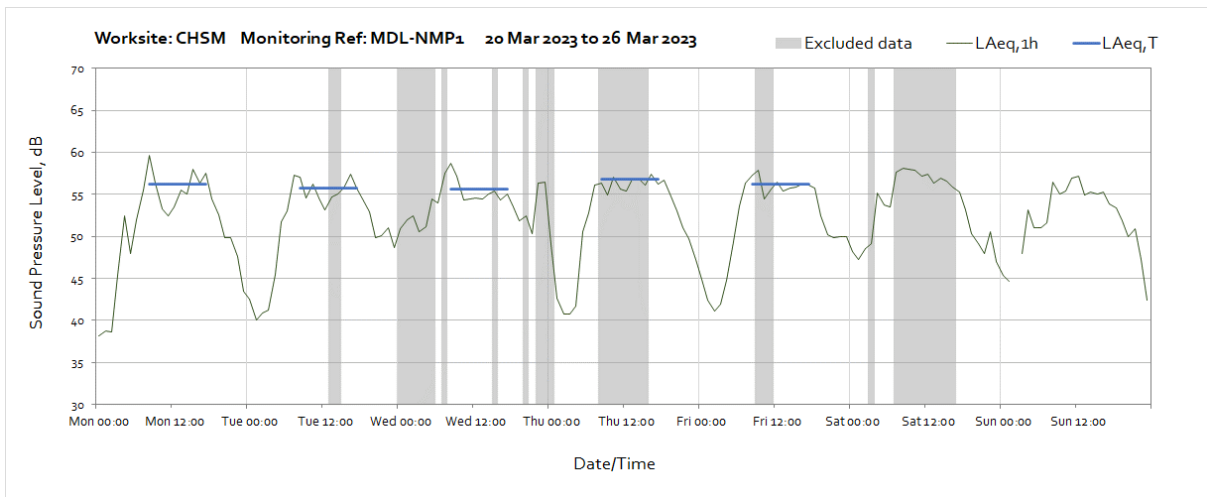
## Worksite: CHSM – Monitoring Ref: MDL-NMP1



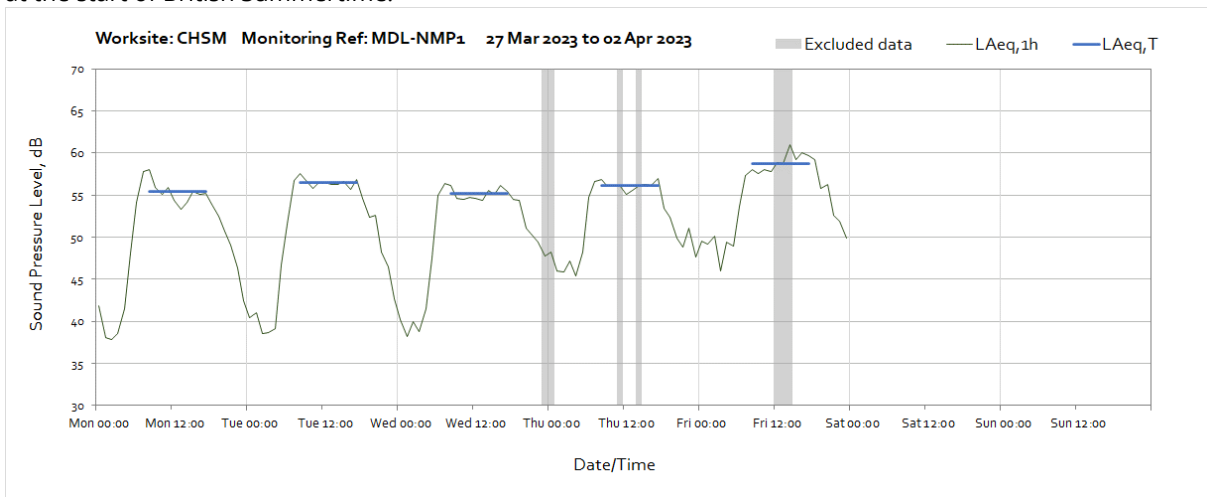
Note: Missing data between 10:00 and 11:00 on Wednesday 8<sup>th</sup> March was due to monitor maintenance.



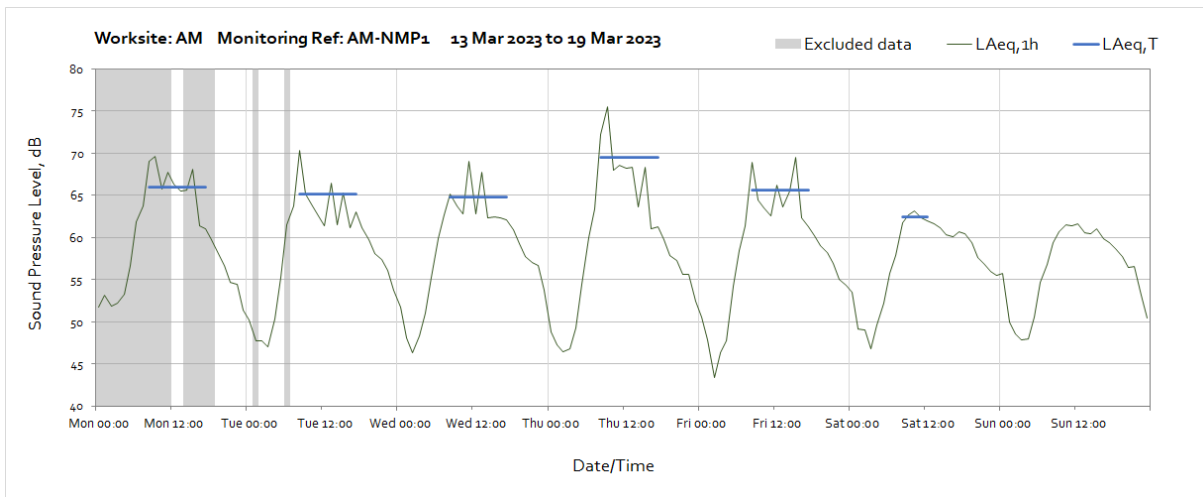
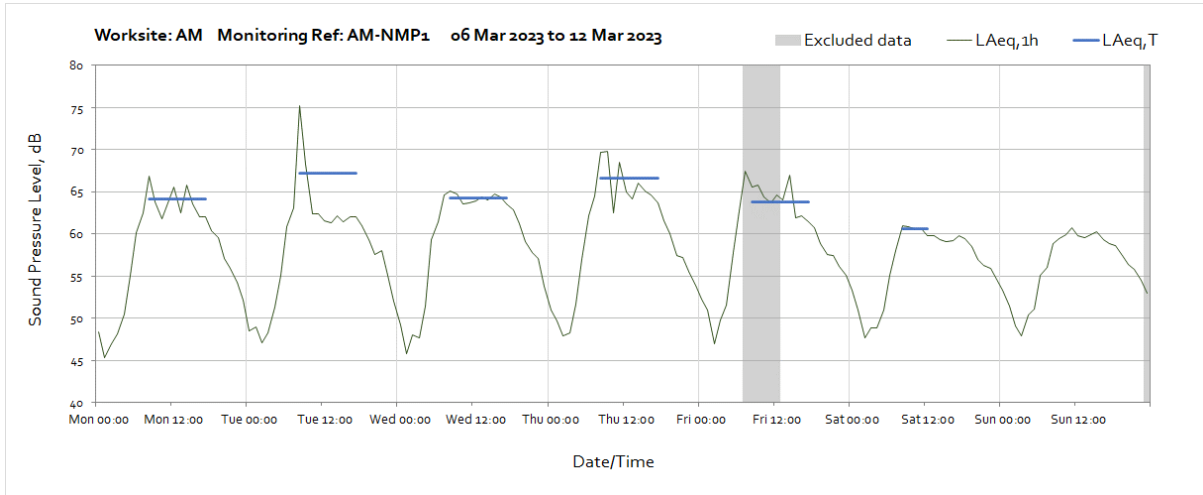
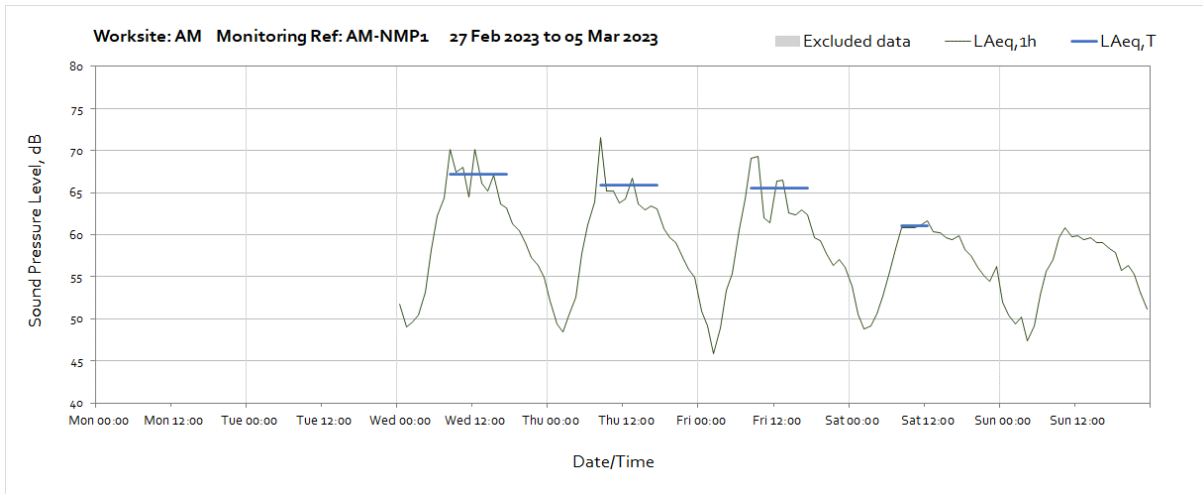


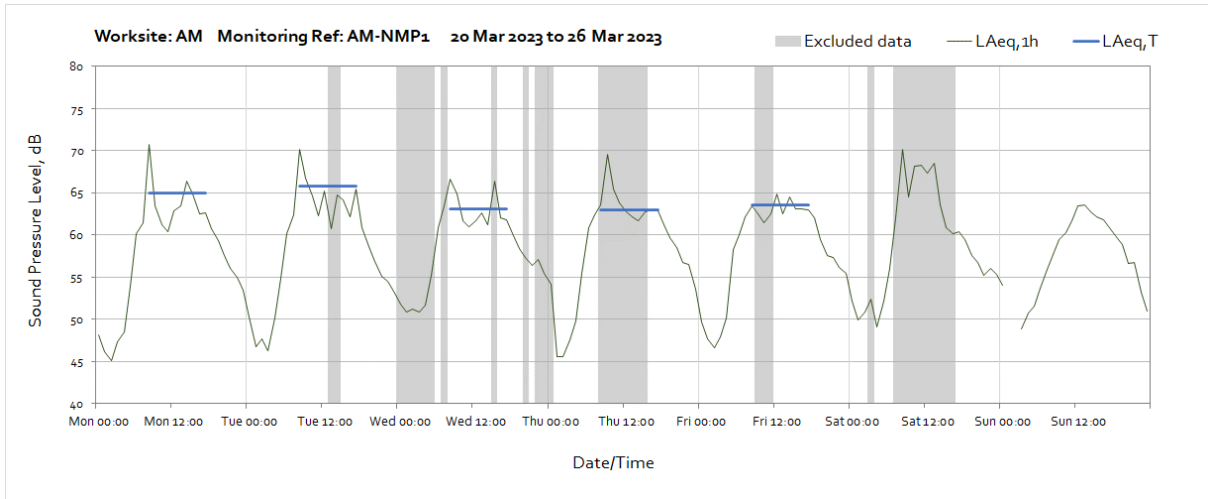


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

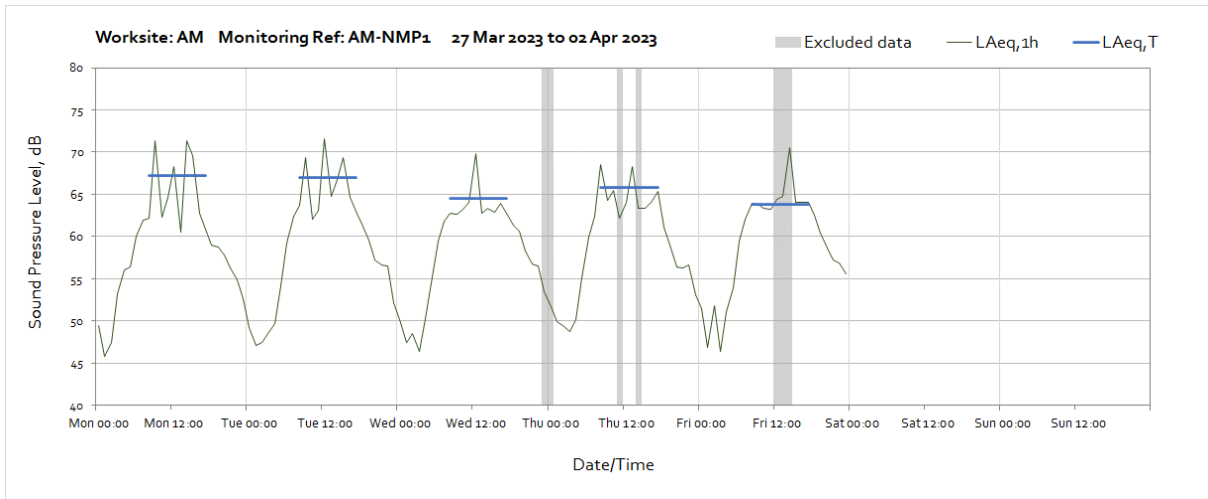


## Worksite: AM - Monitoring Ref: AM-NMP1

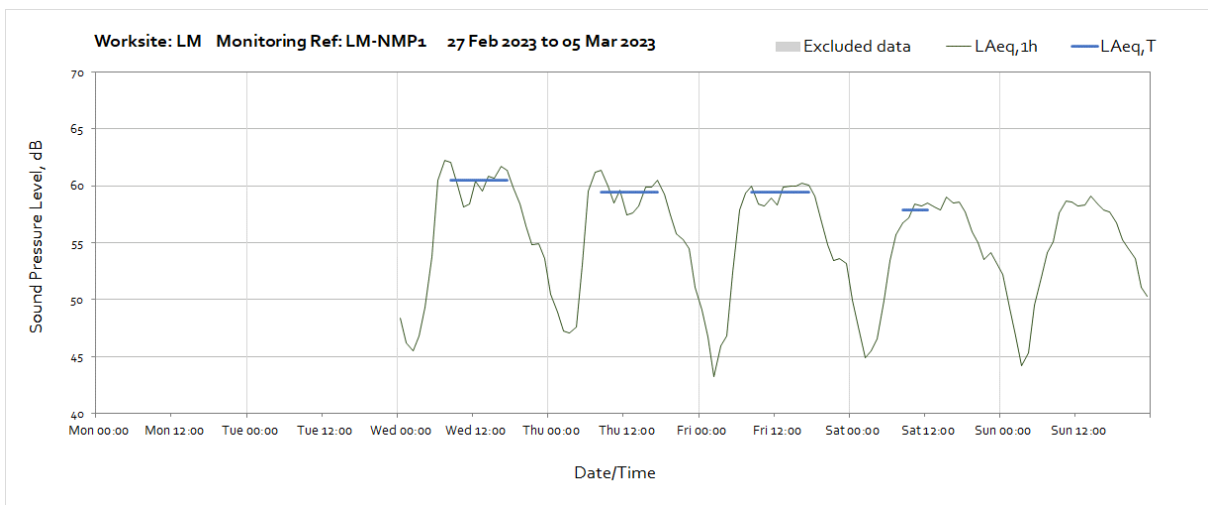


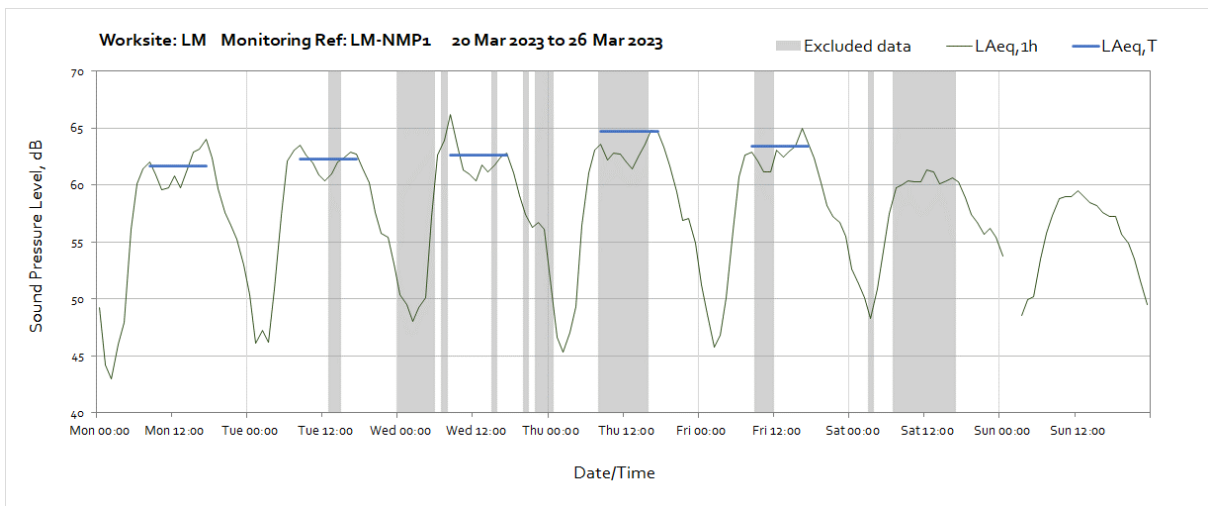
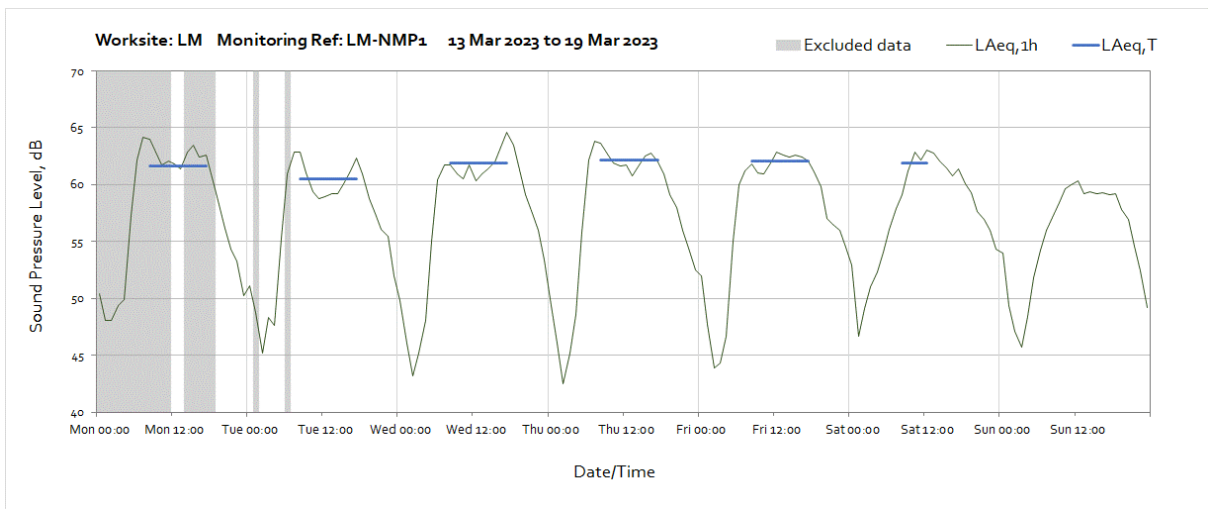
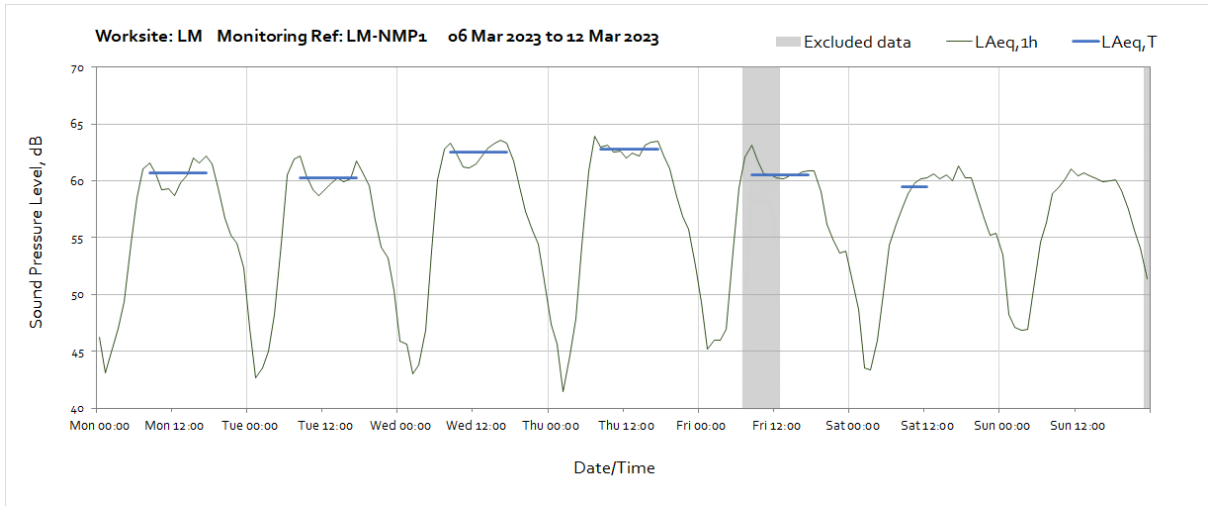


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

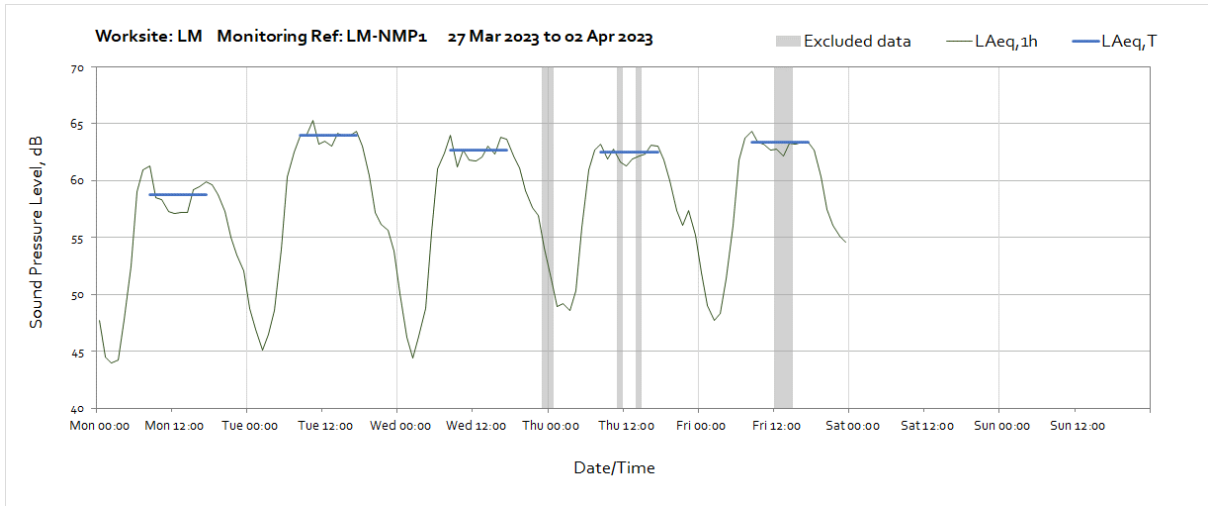


### Worksite: LM – Monitoring Ref: LM-NMP1

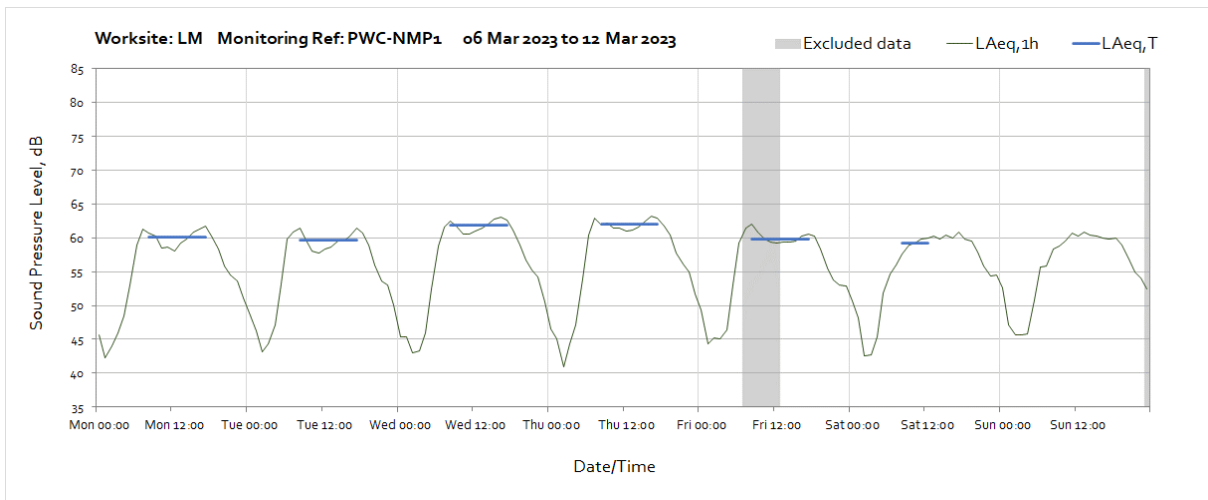
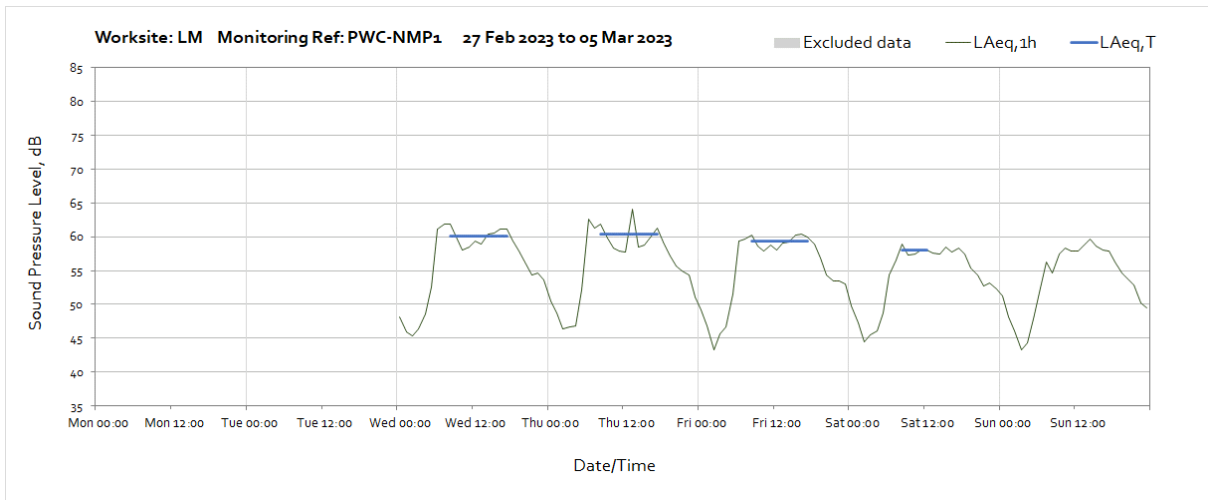


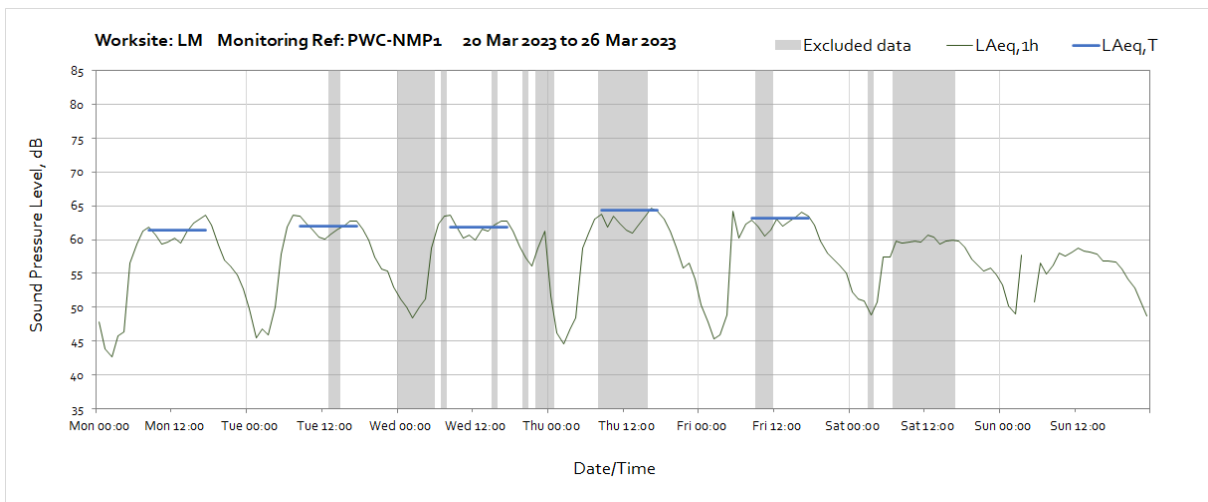
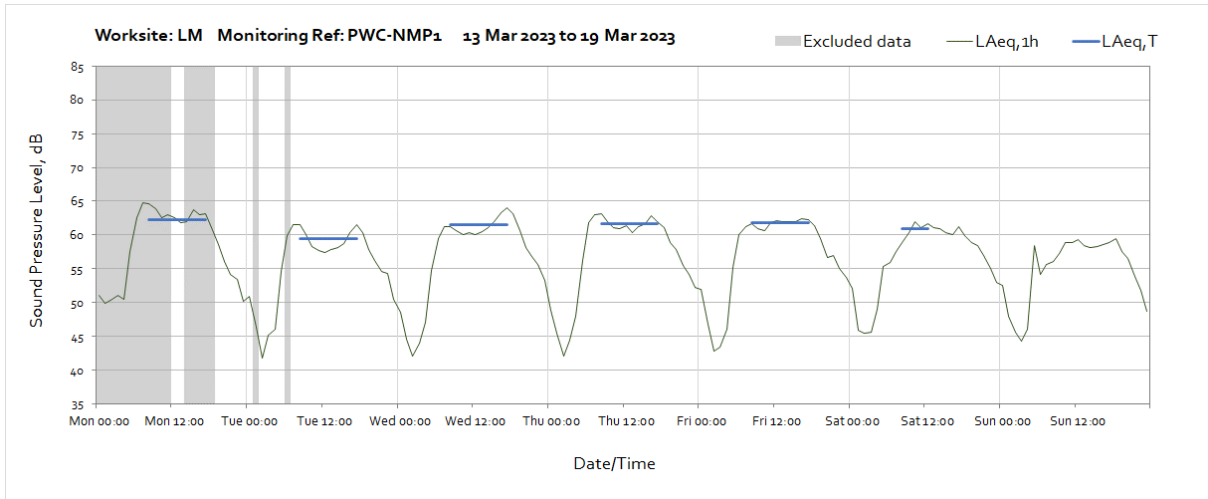


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

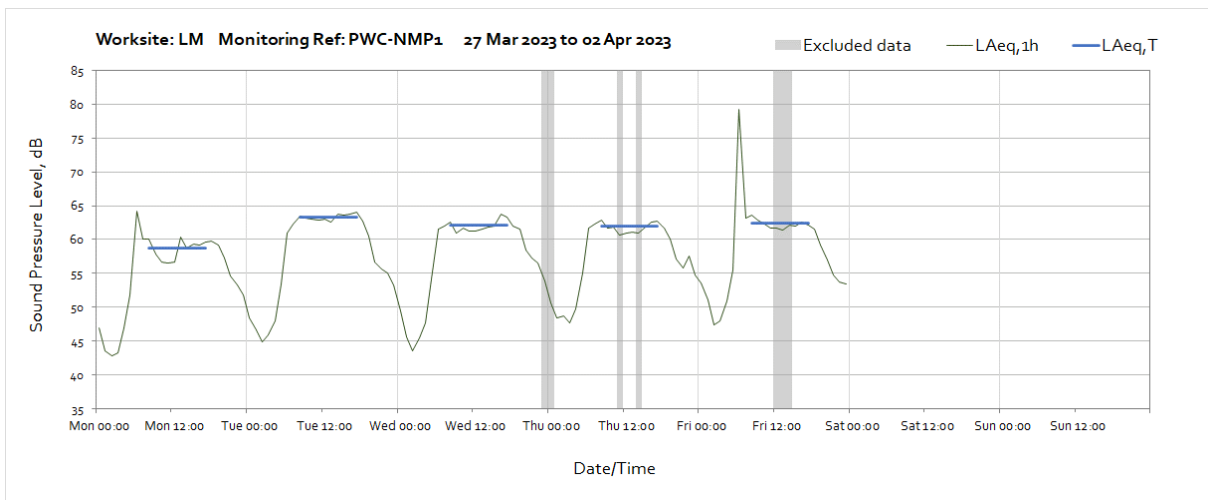


**Worksite: LM – Monitoring Ref: PWC-NMP1**

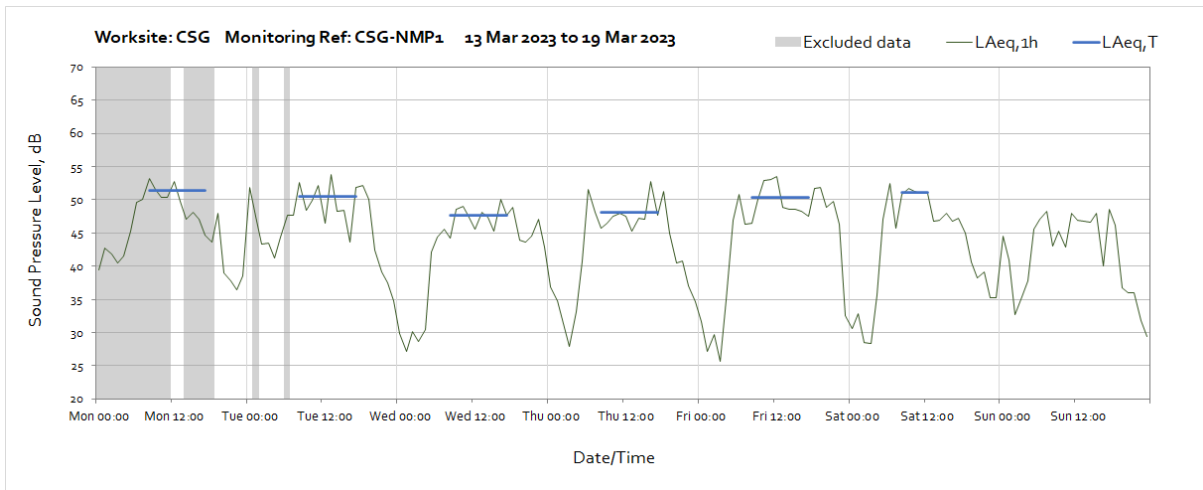
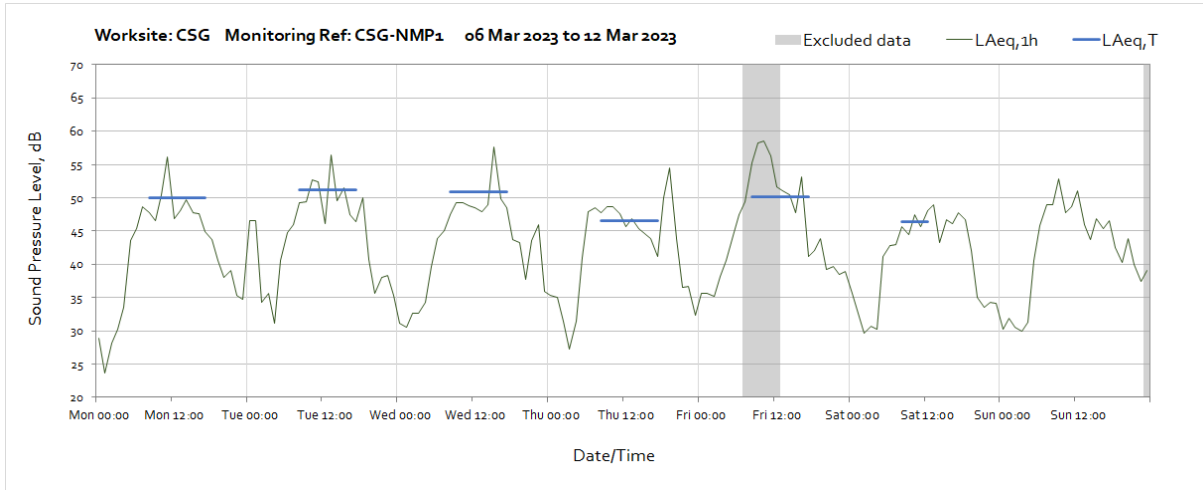
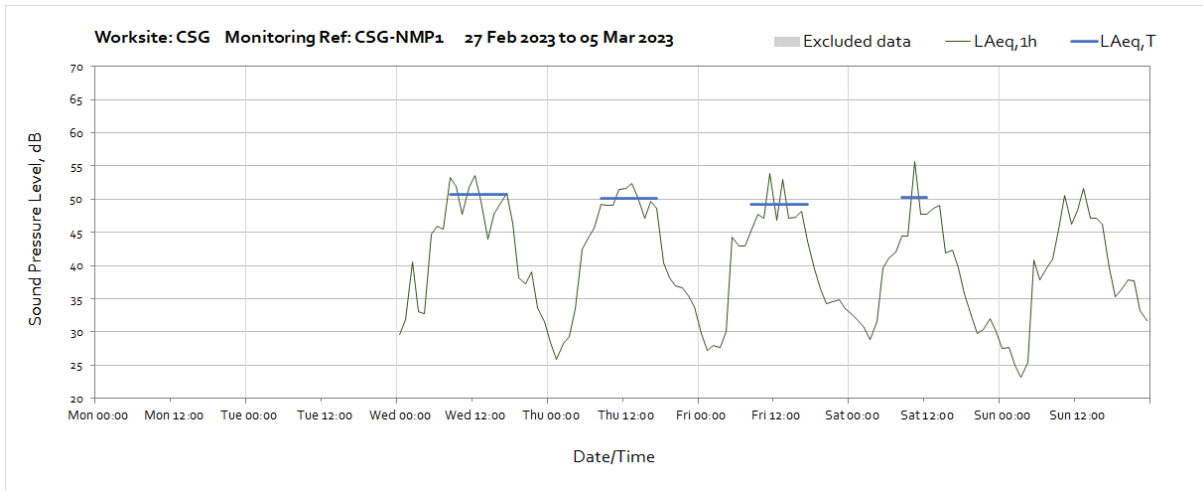


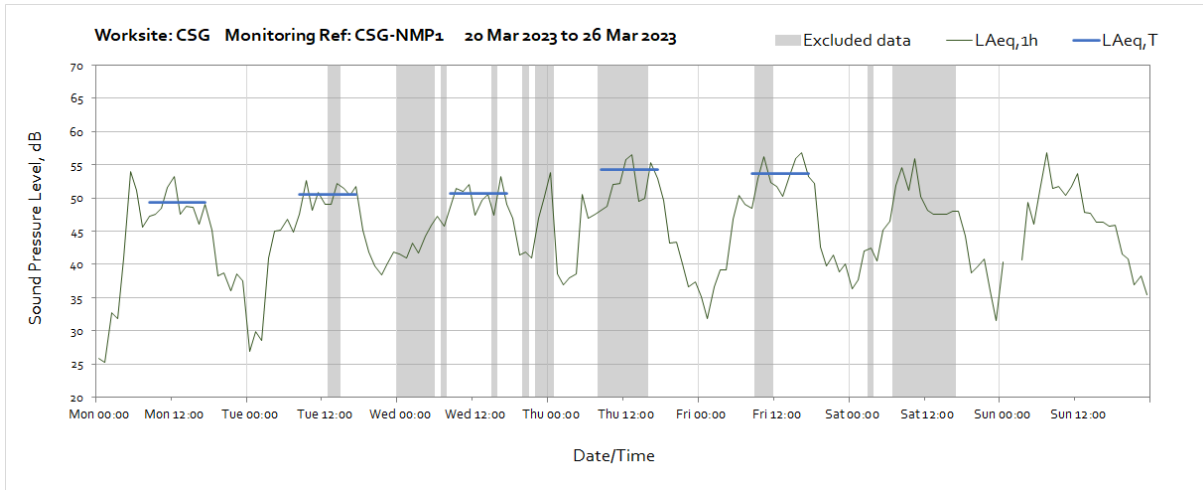


Note: Missing data between 04:00 and 05:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

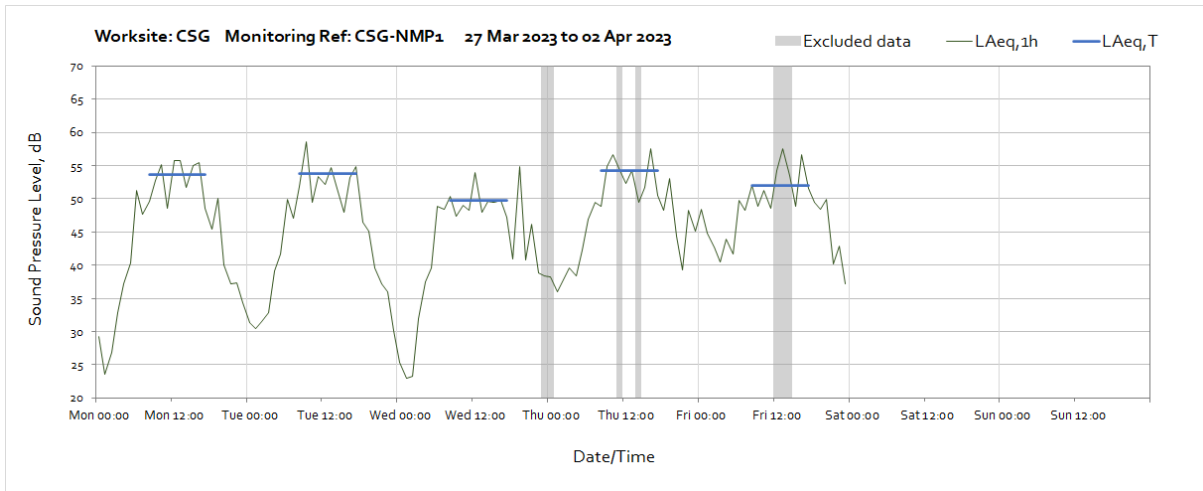


## Worksite: CSG – Monitoring Ref: CSG-NMP1

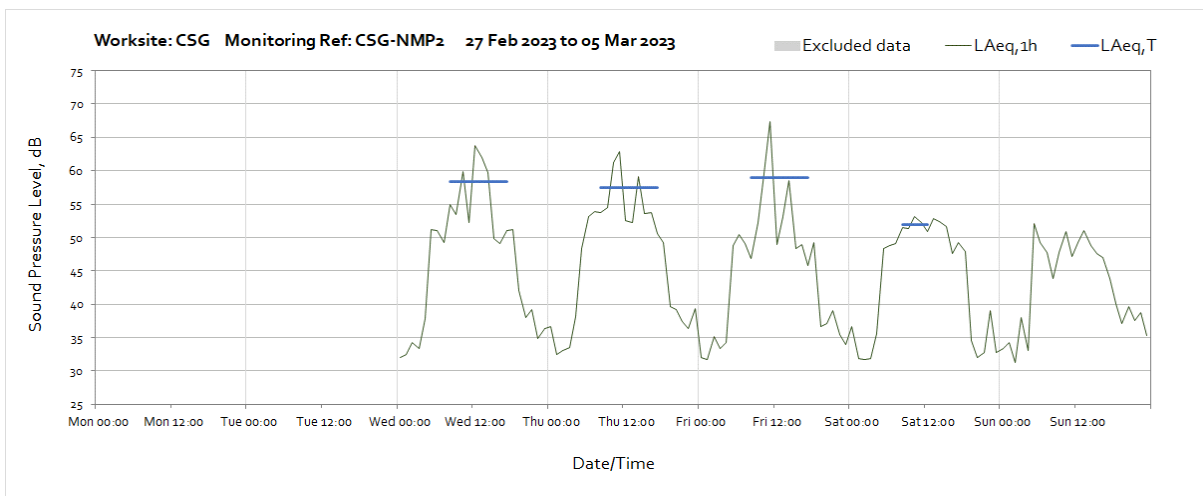




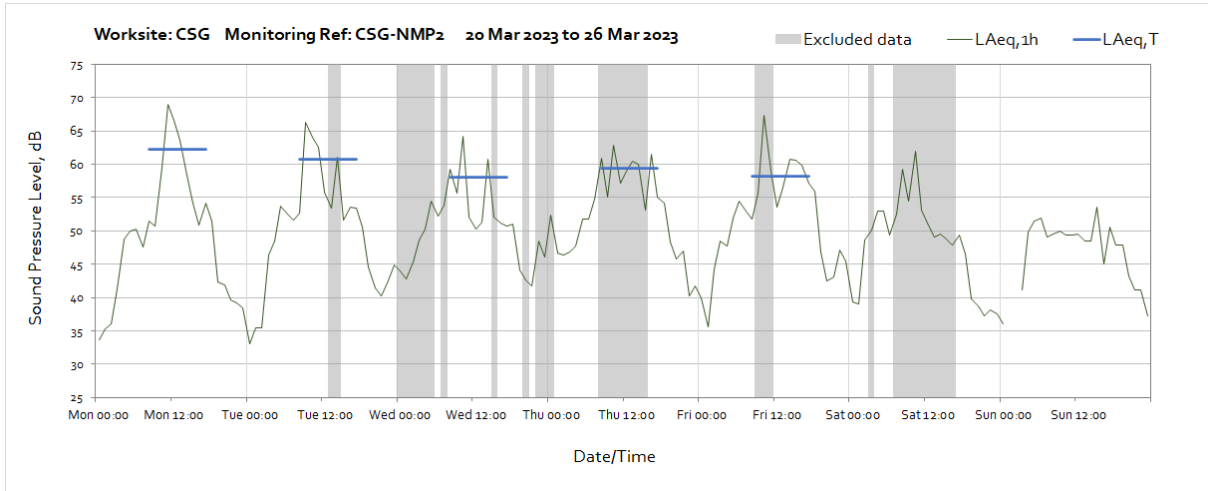
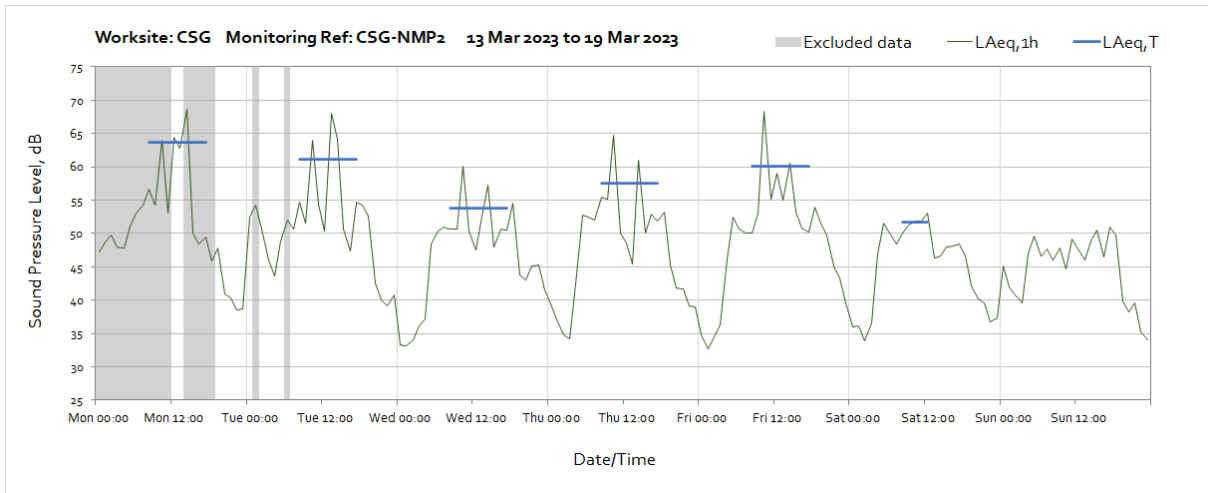
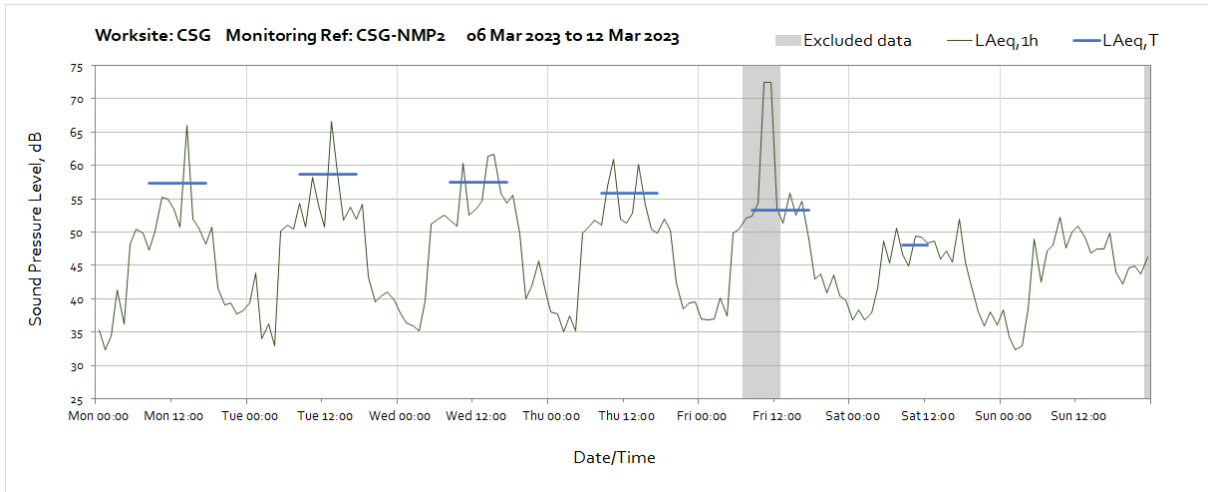
Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.



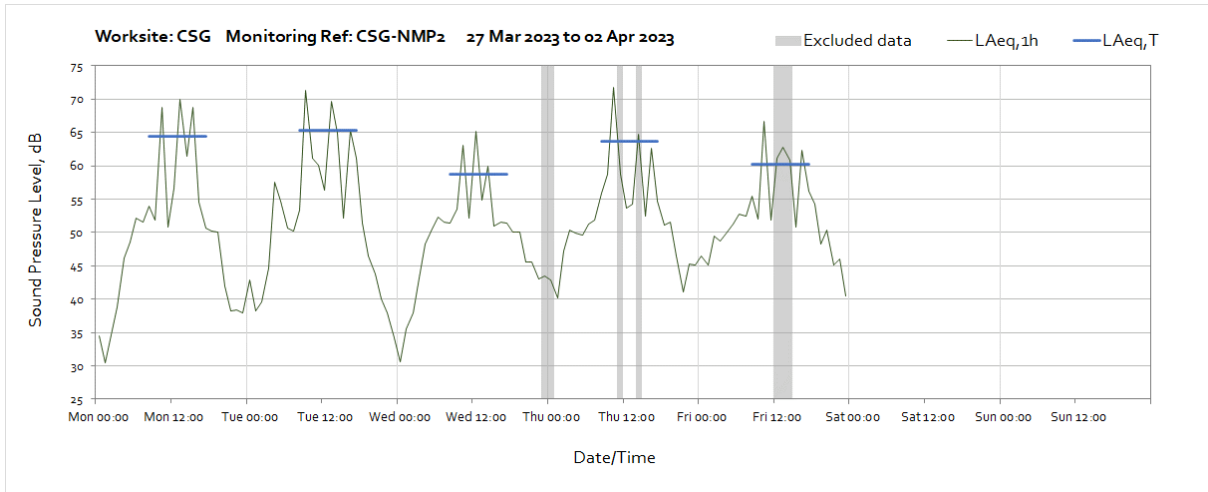
### Worksite: CSG - Monitoring Ref: CSG-NMP2



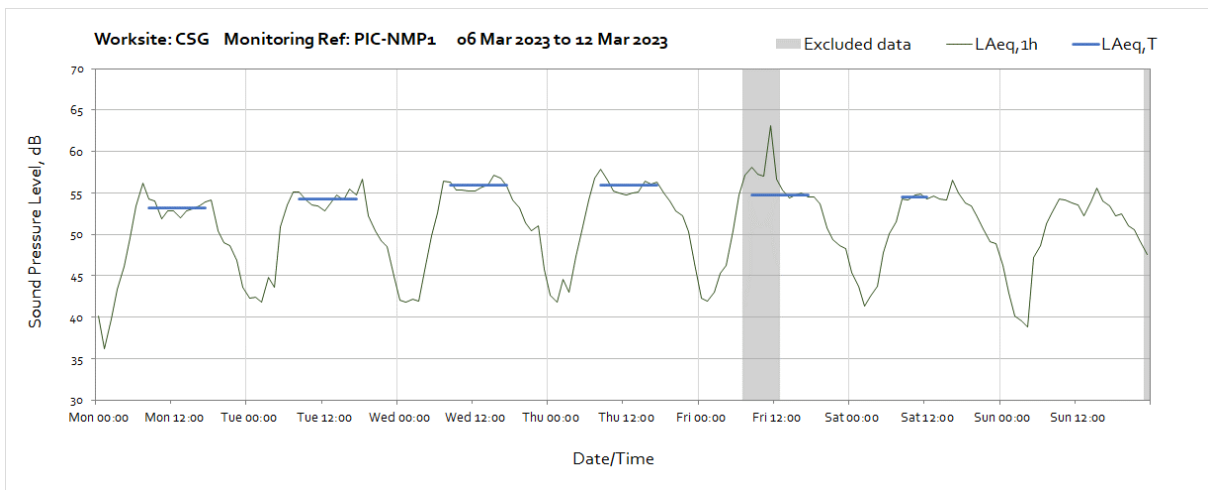
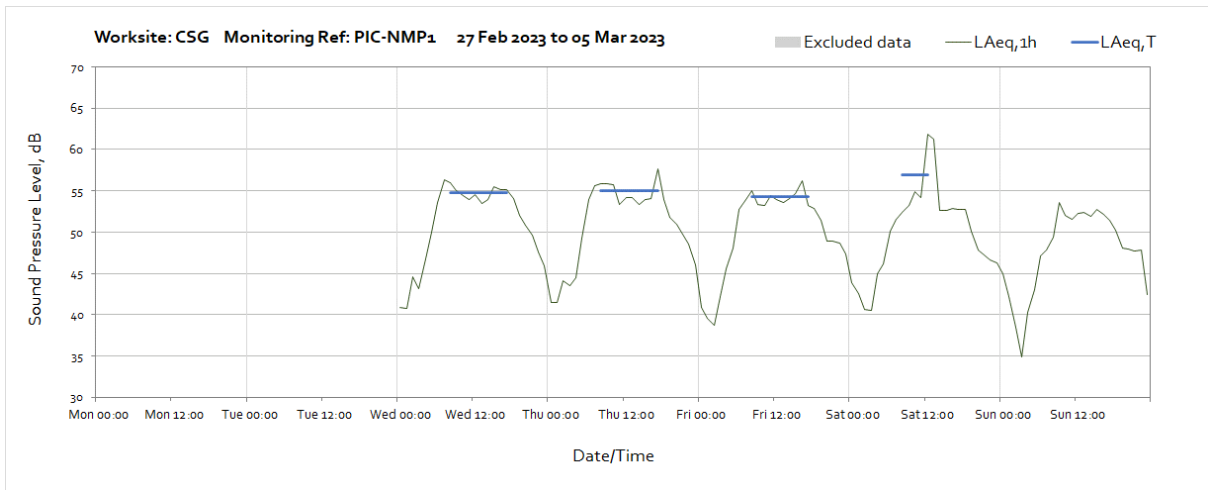


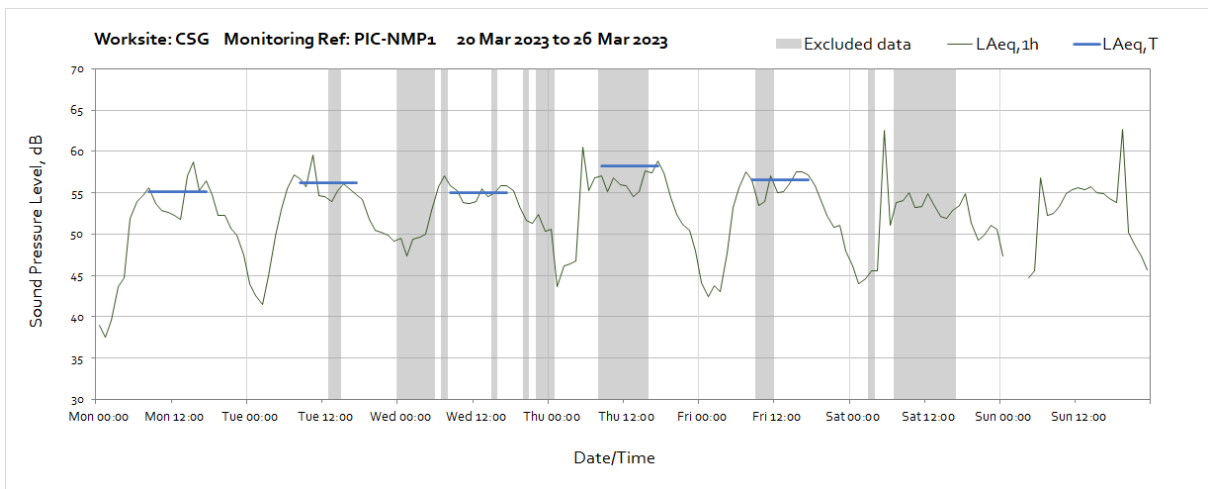
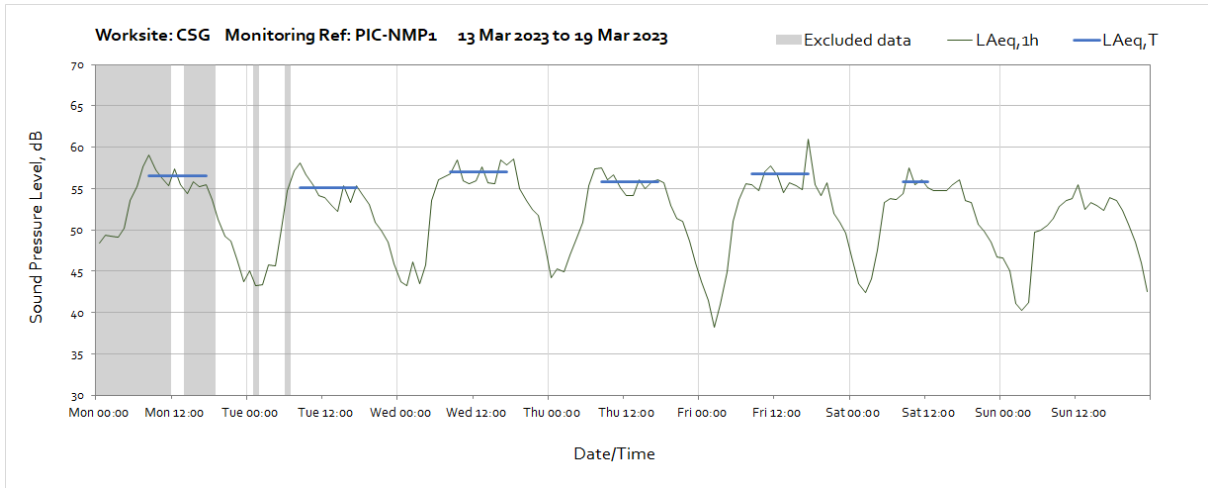


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

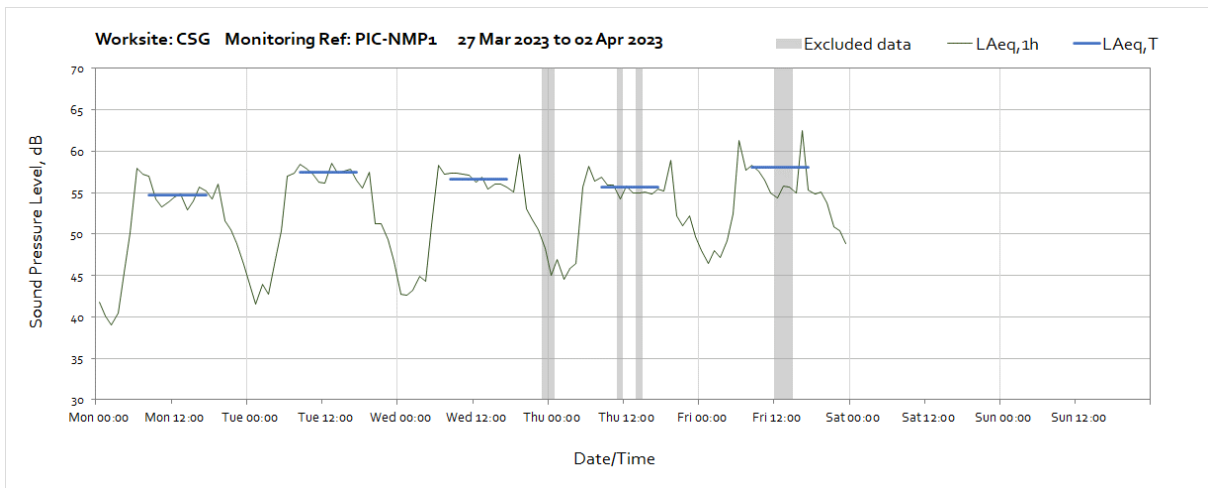


**Worksite: CSG – Monitoring Ref: PIC-NMP1**

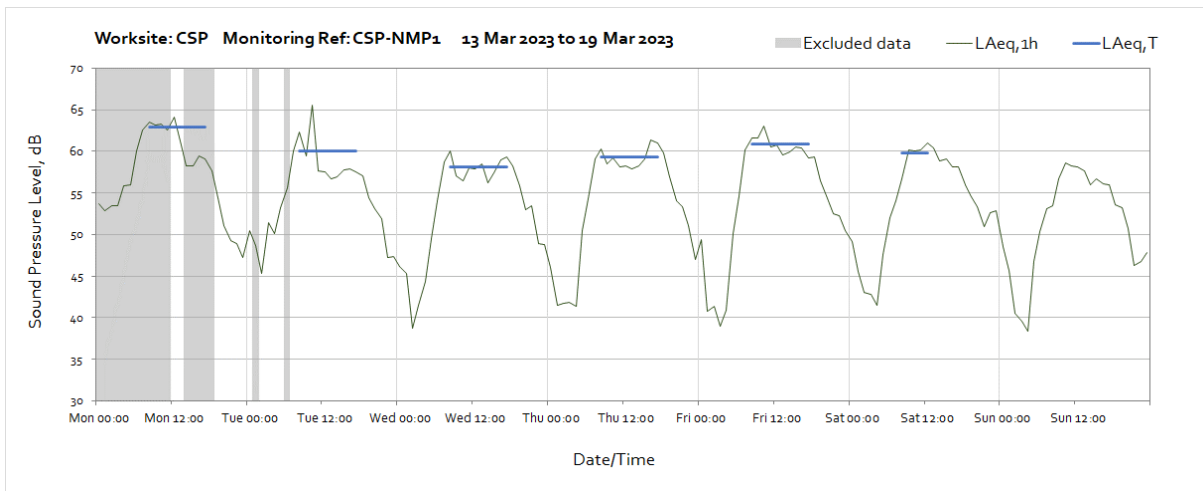
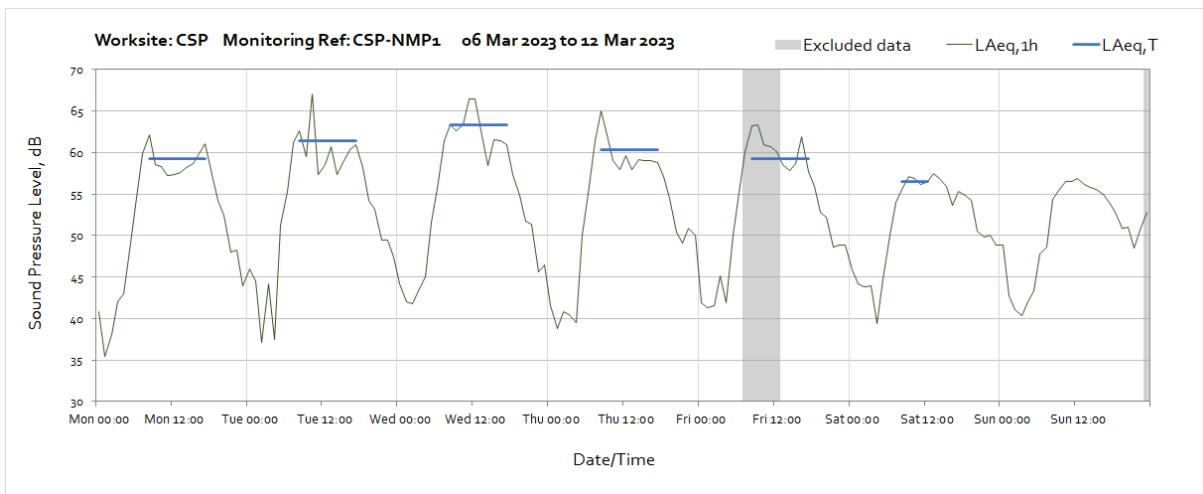
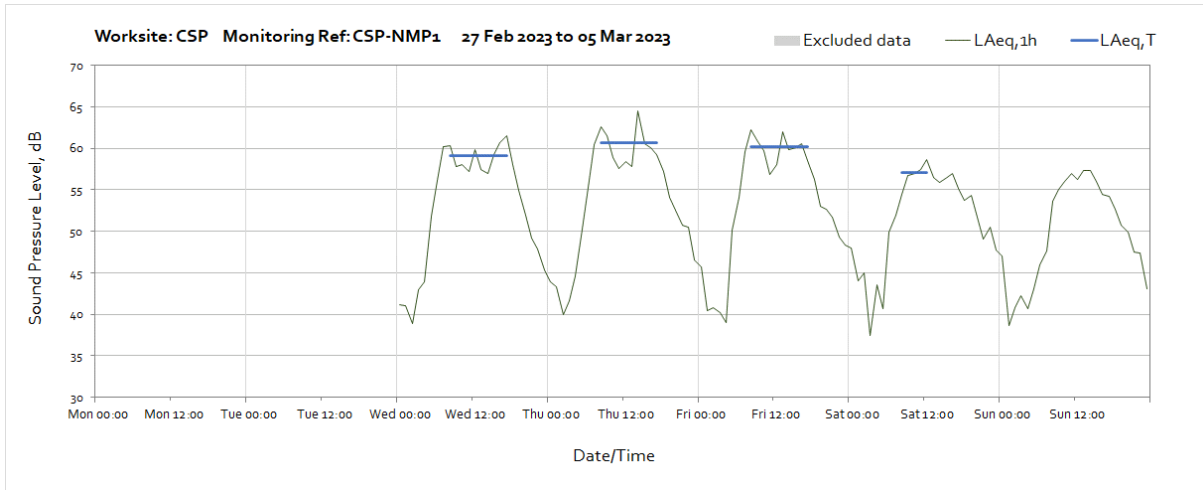




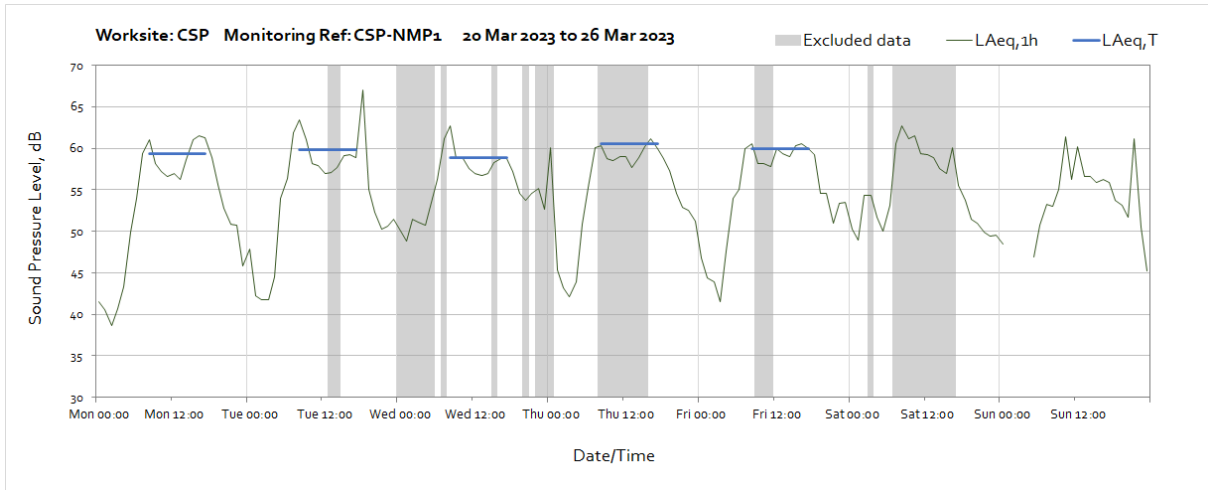
Note: Missing data between 01:00 and 04:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.



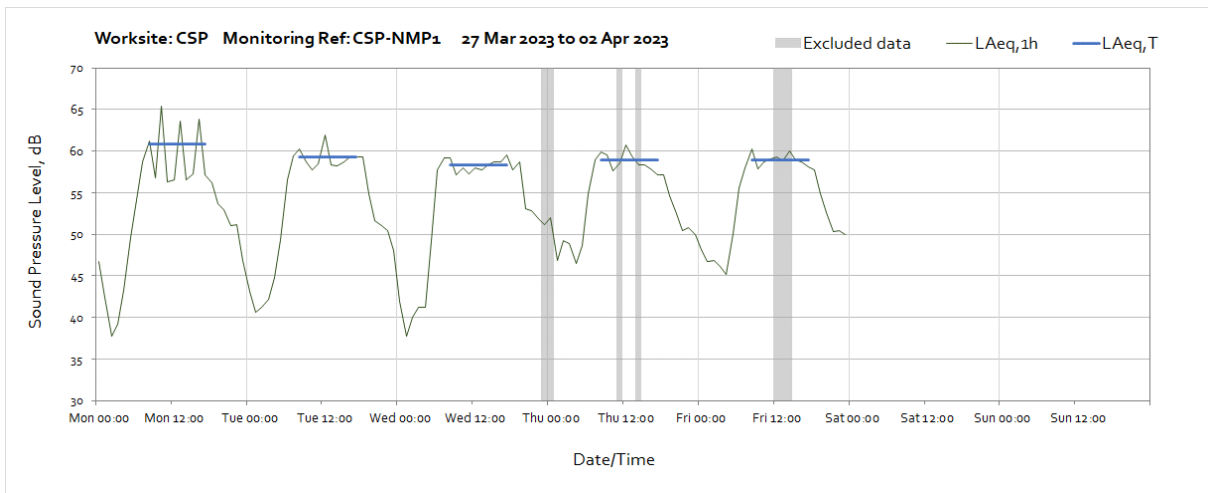
## Worksite: CSP – Monitoring Ref: CSP-NMP1



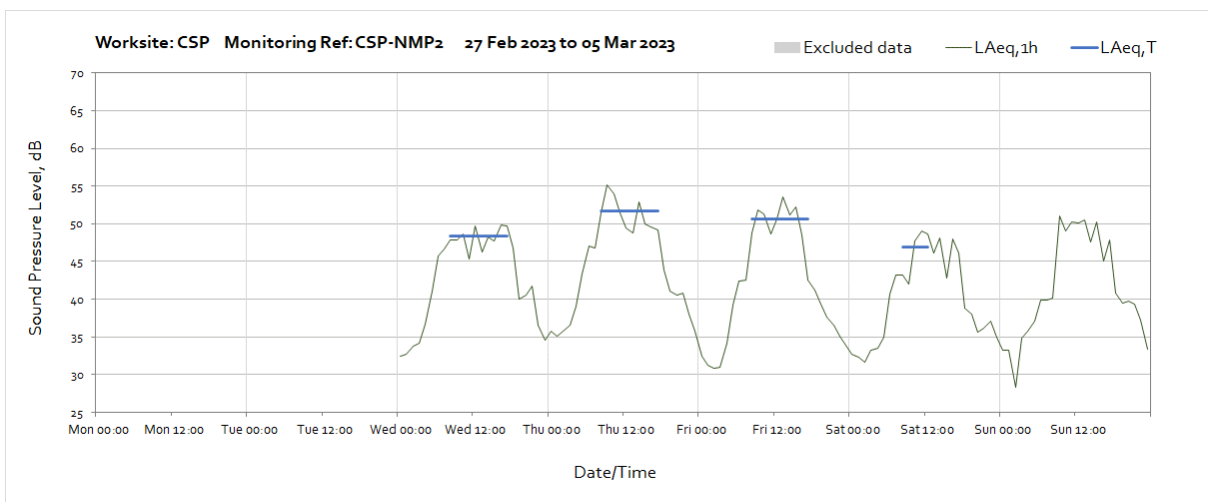
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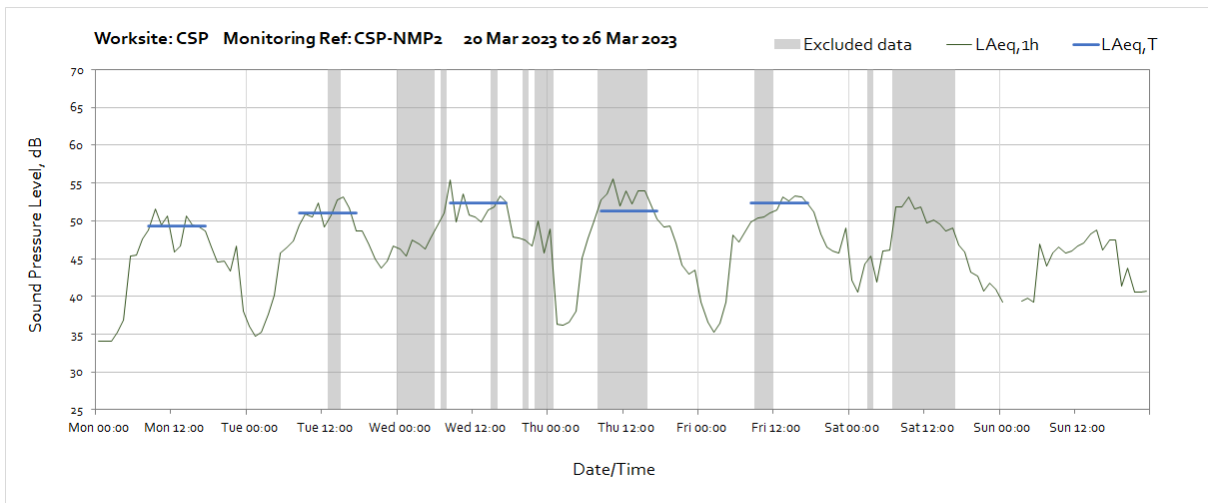
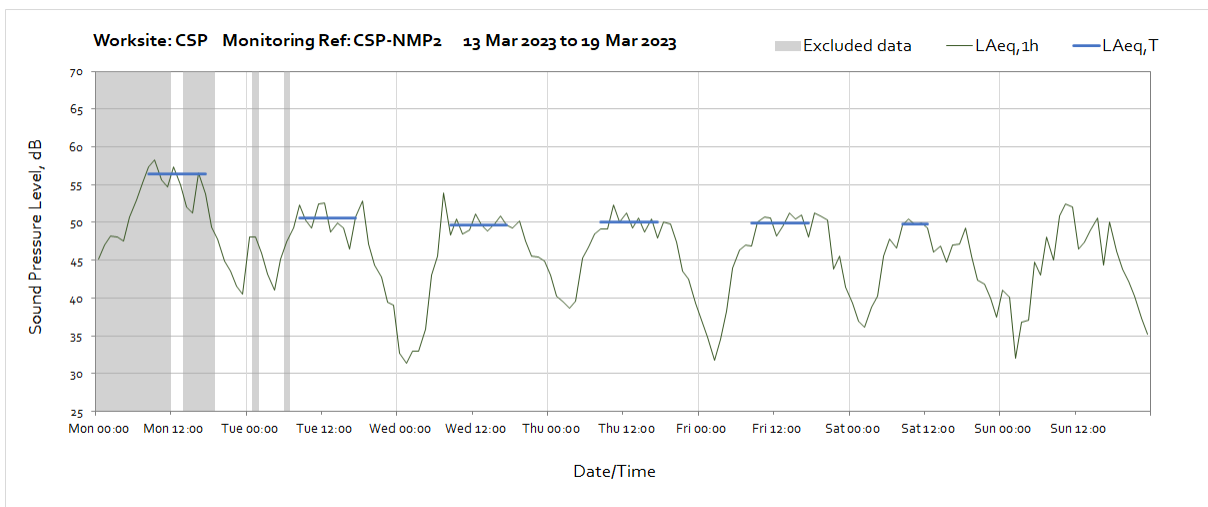
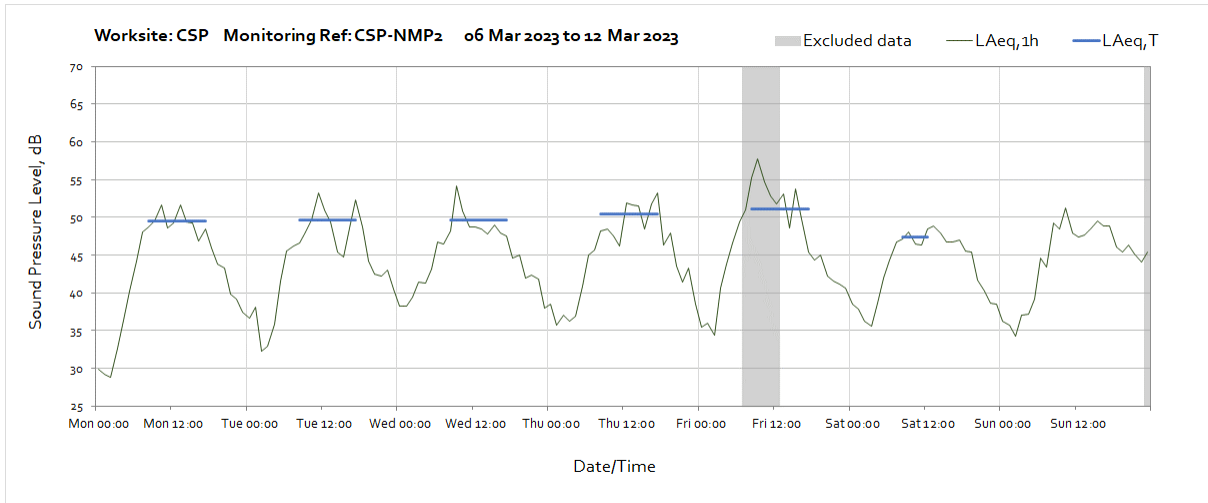


Note: Missing data between 01:00 and 05:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

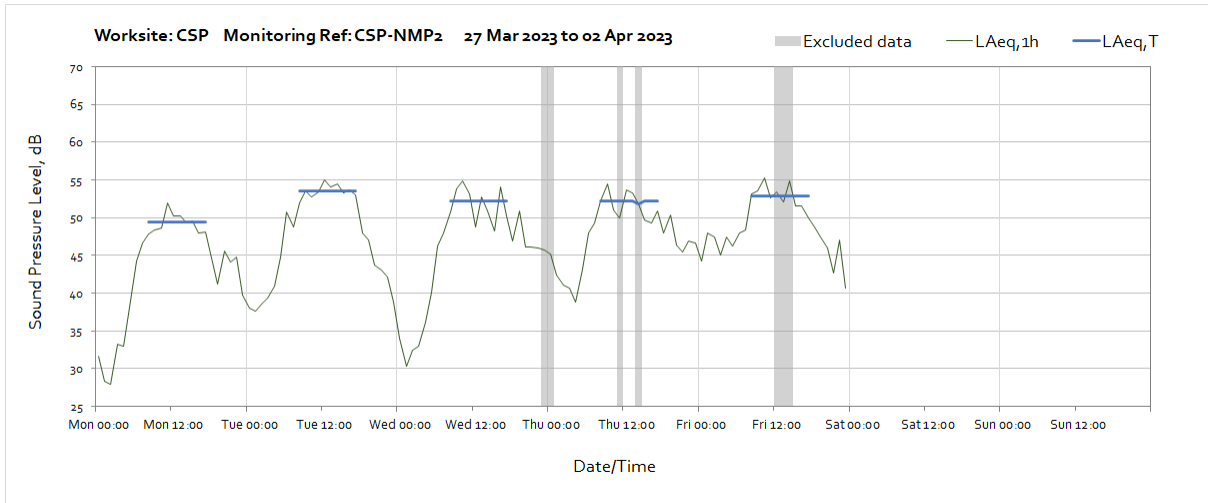


## Worksite: CSP – Monitoring Ref: CSP-NMP2

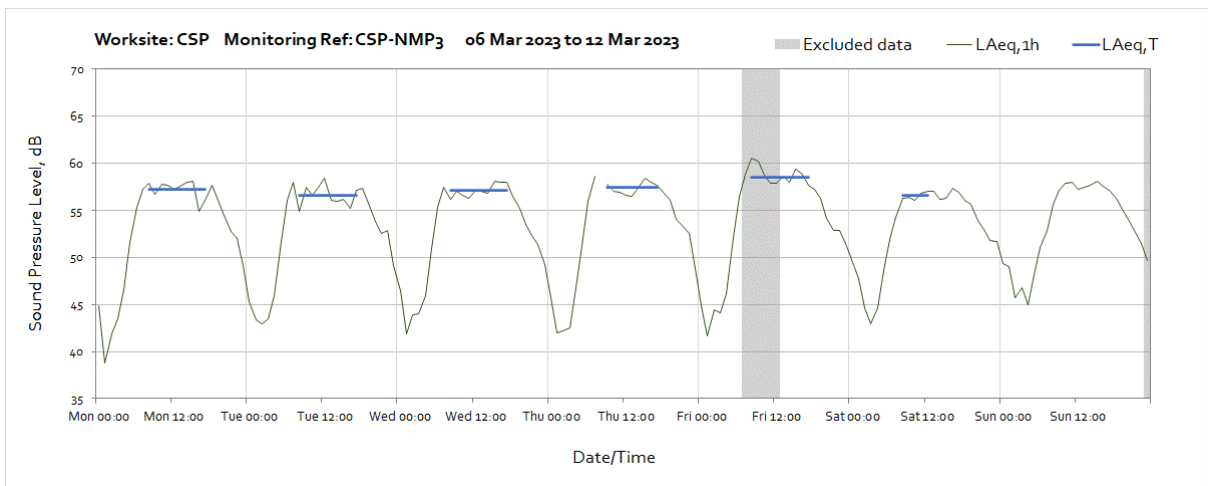
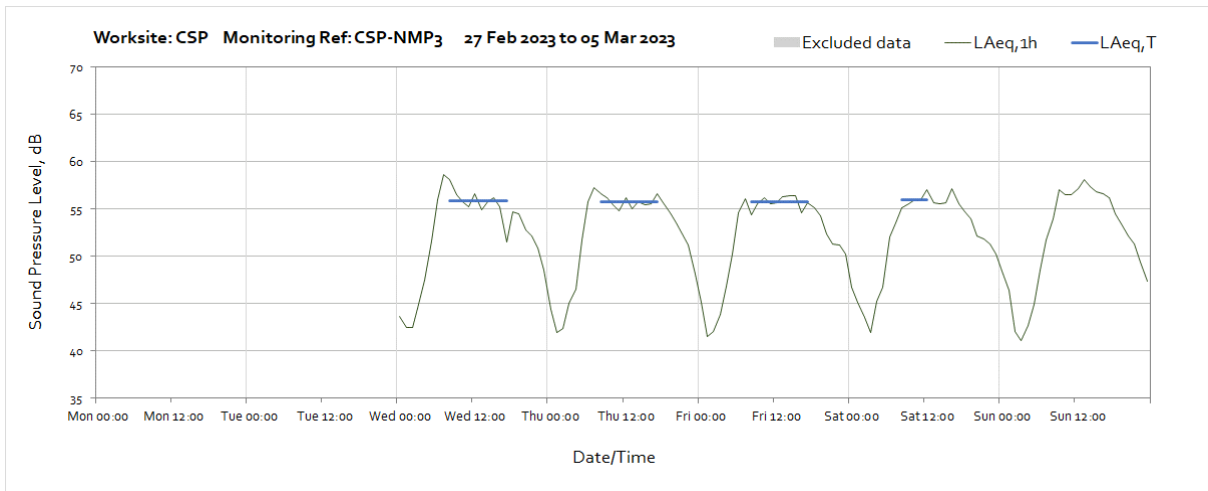




Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

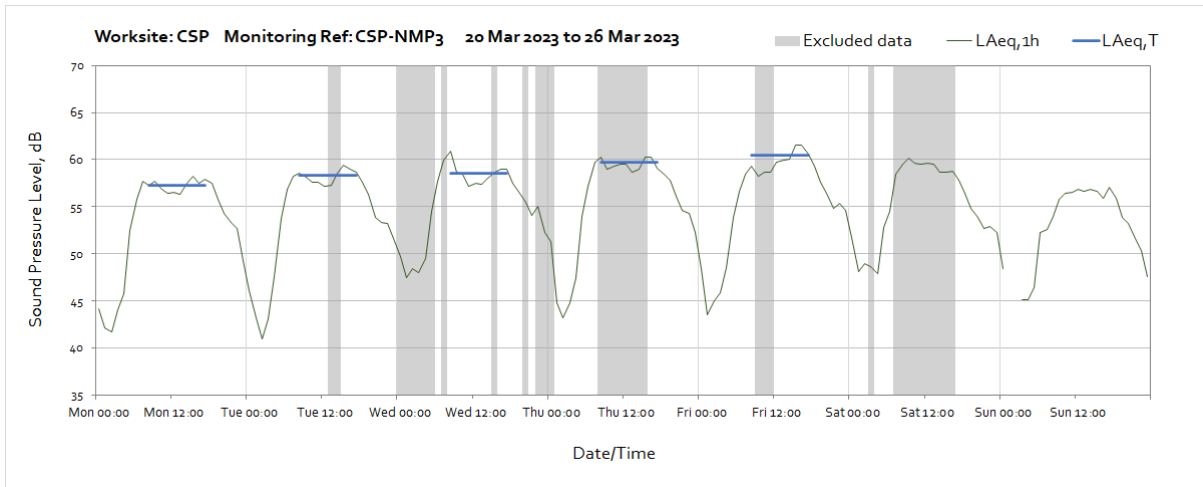
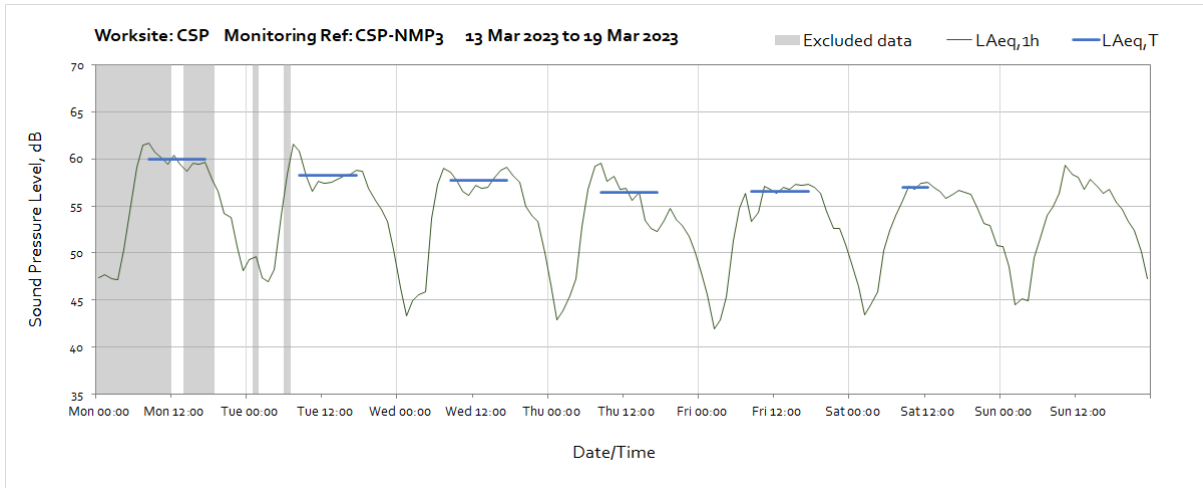


### Worksite: CSP – Monitoring Ref: CSP-NMP3

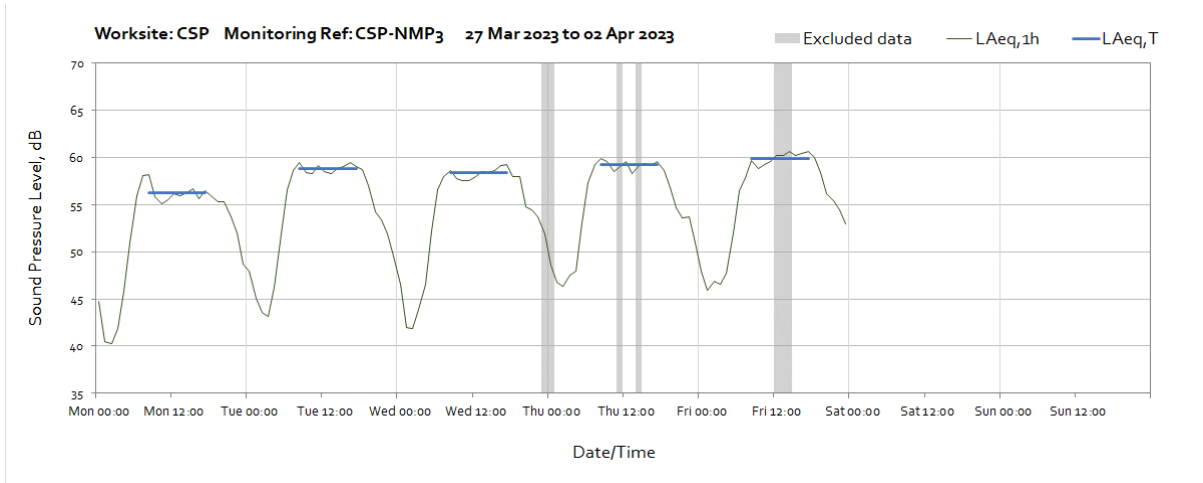


Note: Missing data between 08:00 and 09:00 on Thursday 8<sup>th</sup> March was due to monitor maintenance.

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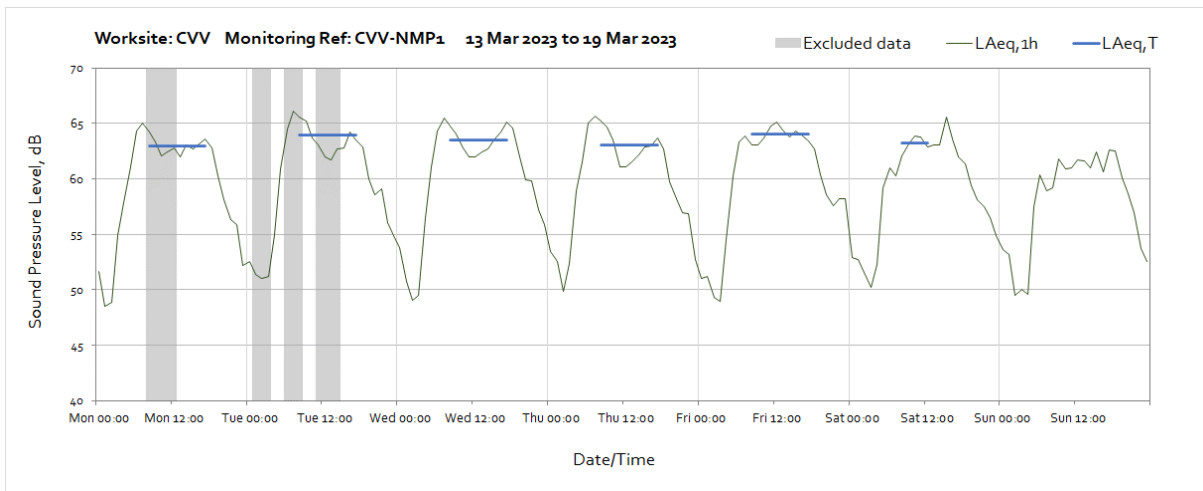
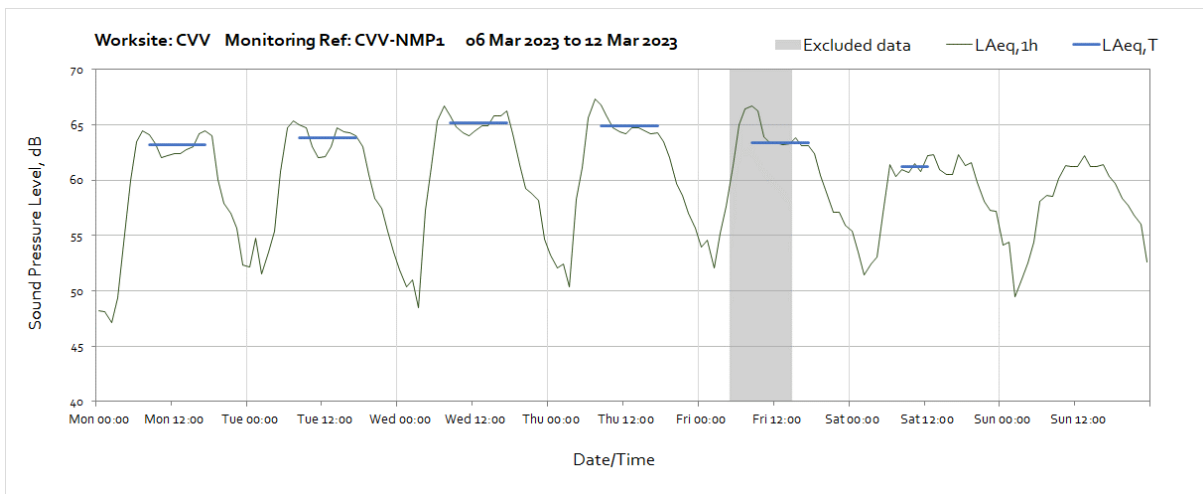
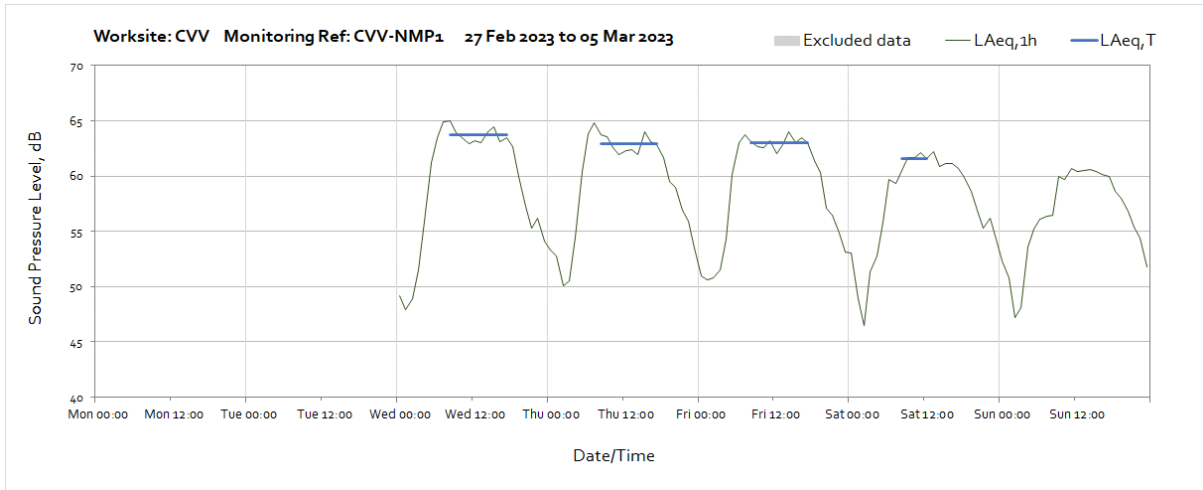


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

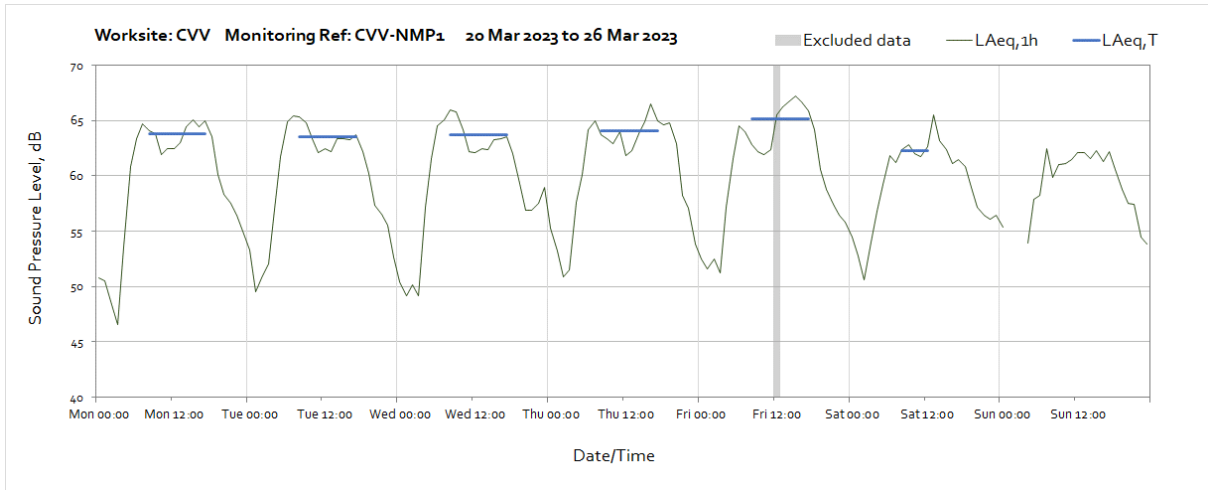




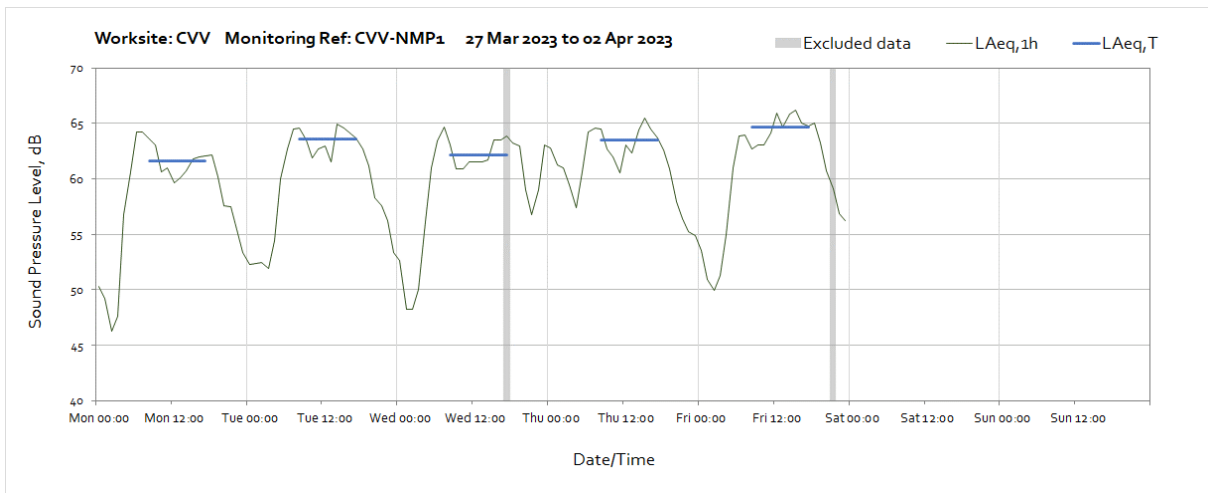
## Worksite: CVV- Monitoring Ref: CVV-NMP1



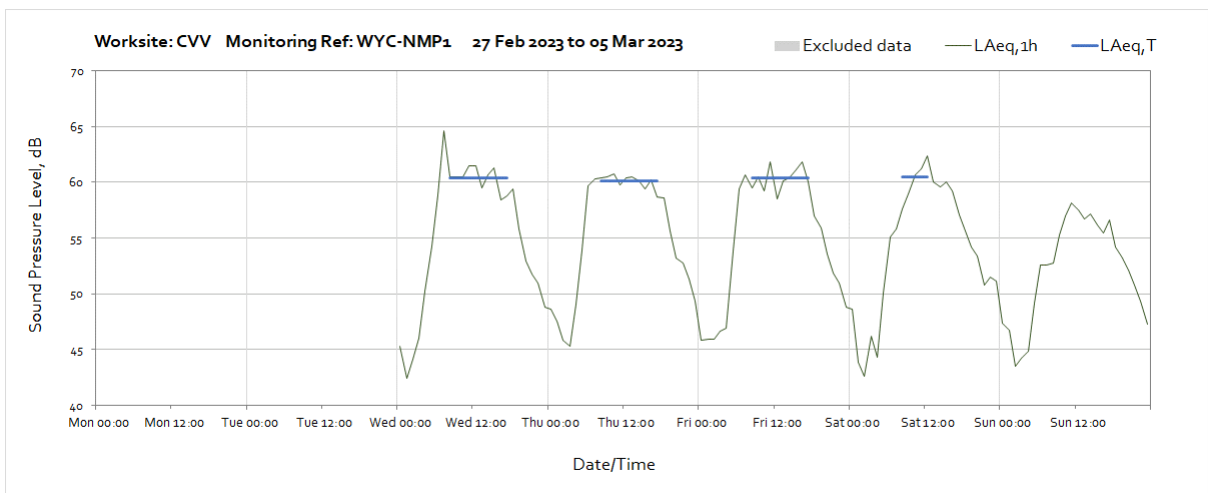
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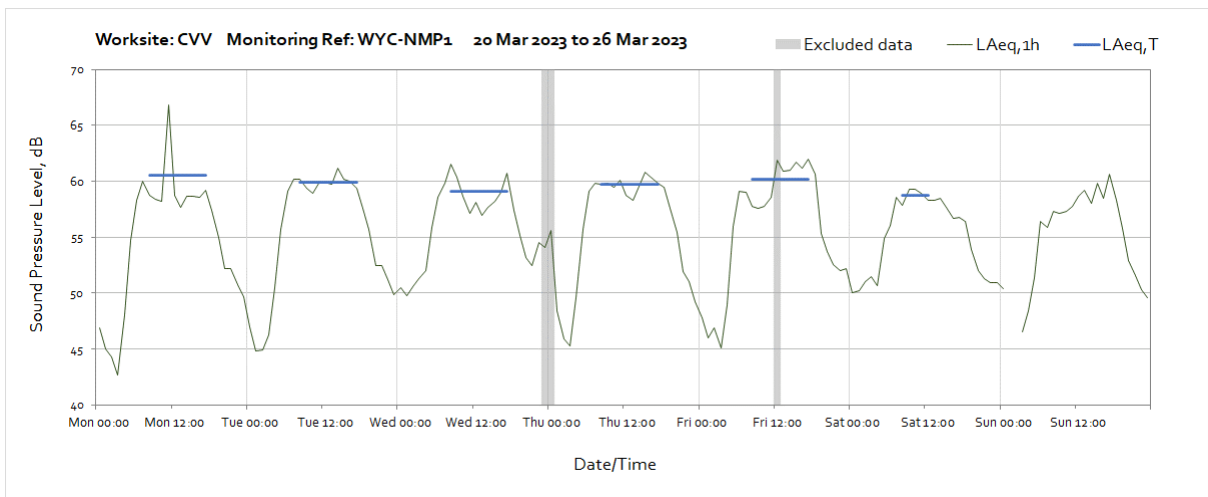
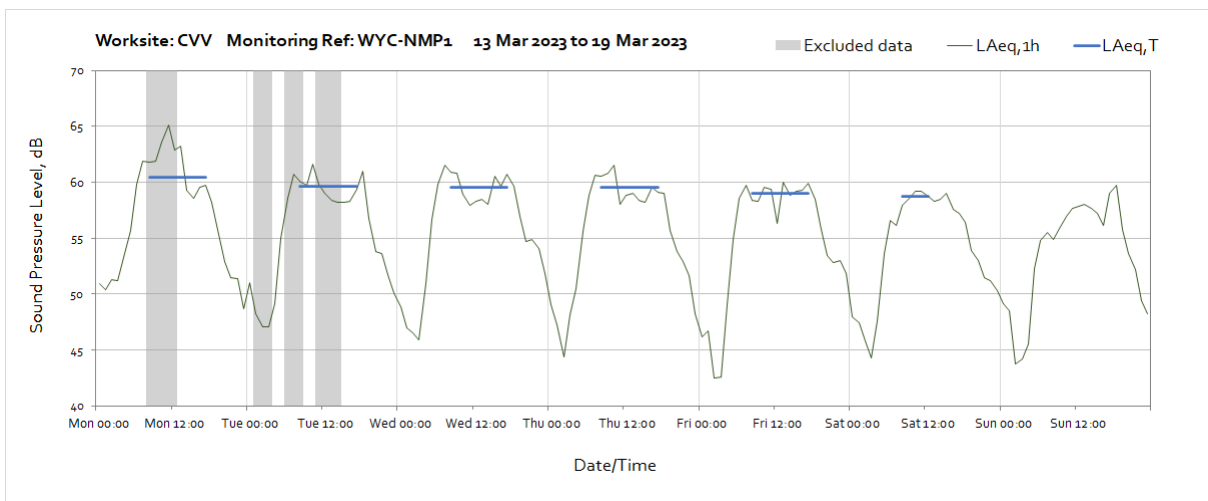
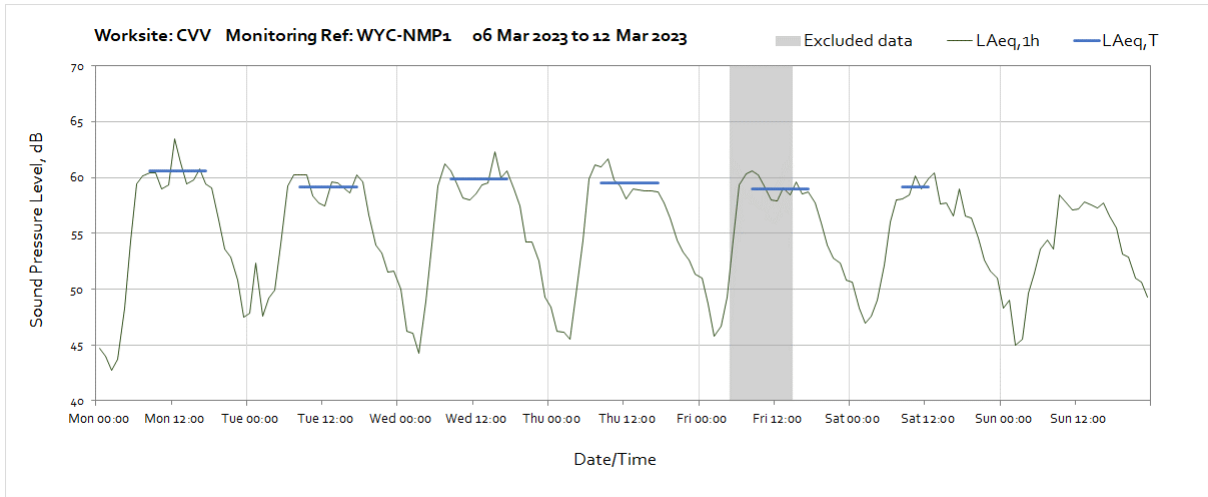


Note: Missing data between 01:00 and 04:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

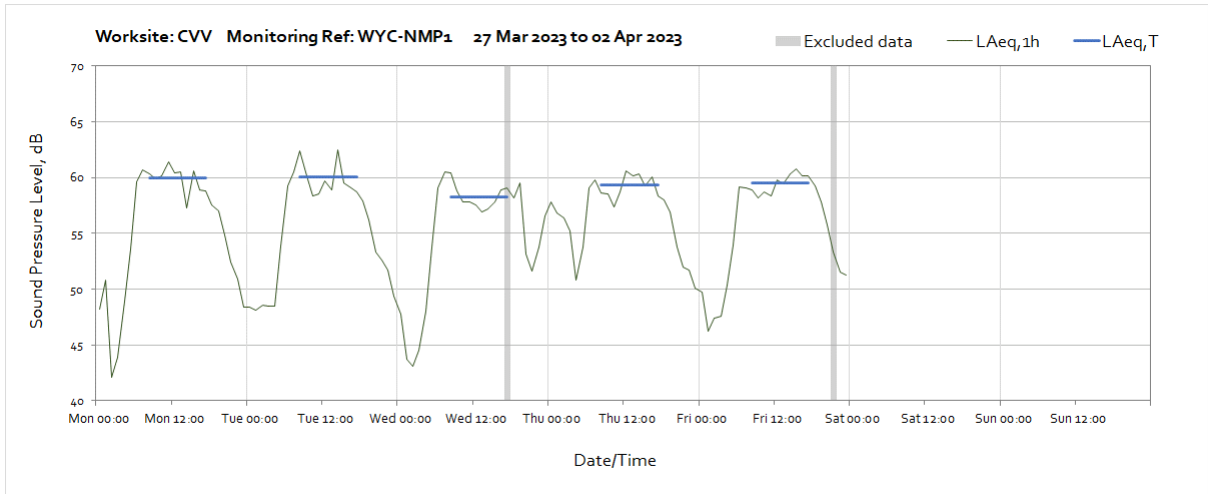


### Worksite: CVV – Monitoring Ref: WYC-NMP1

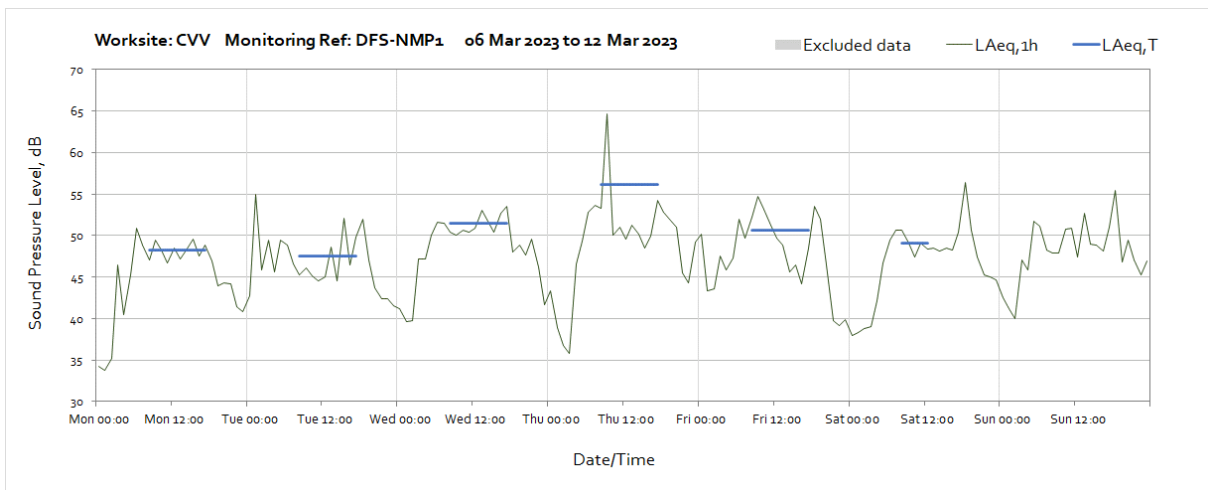
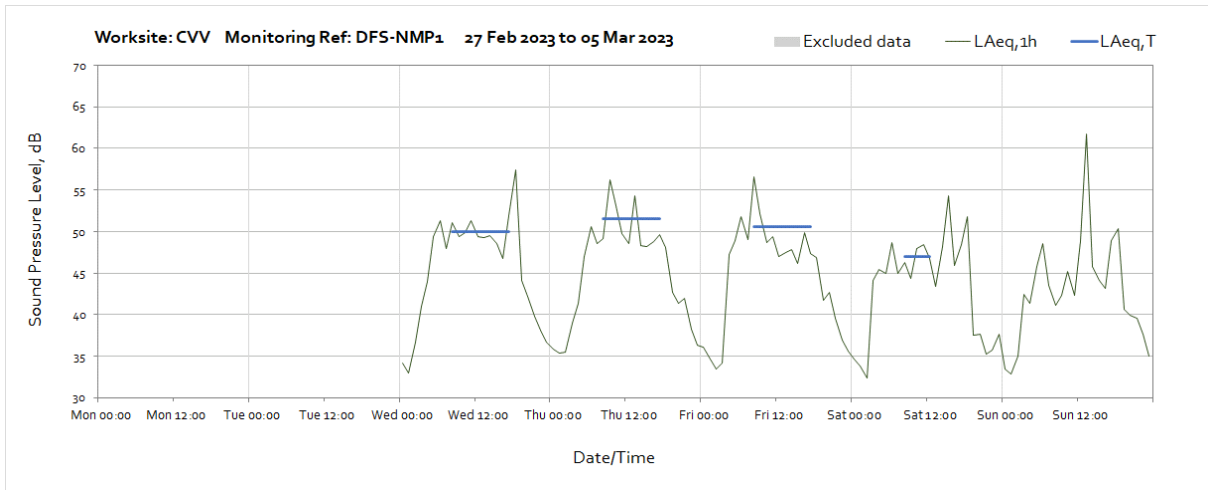


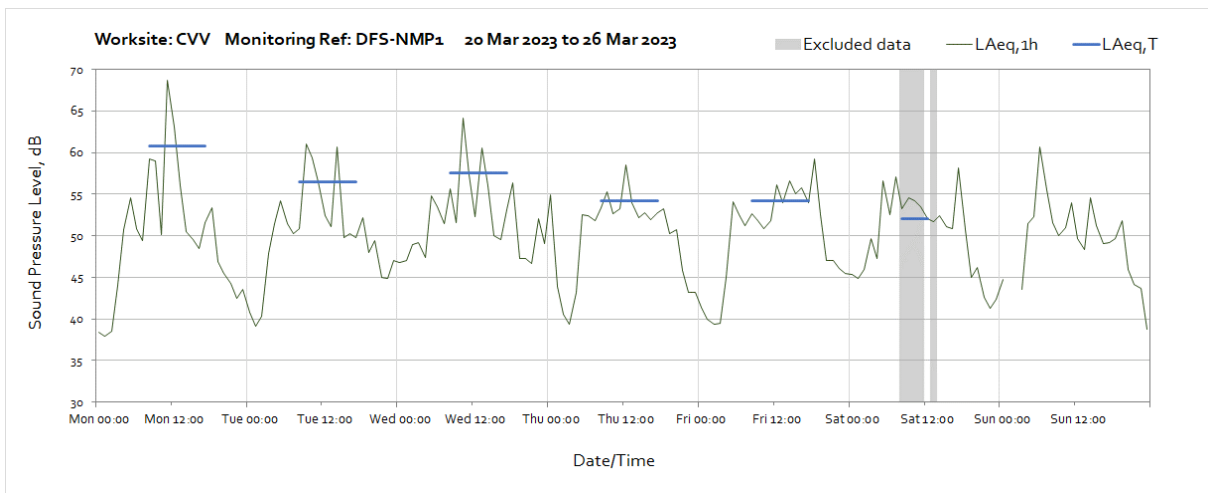
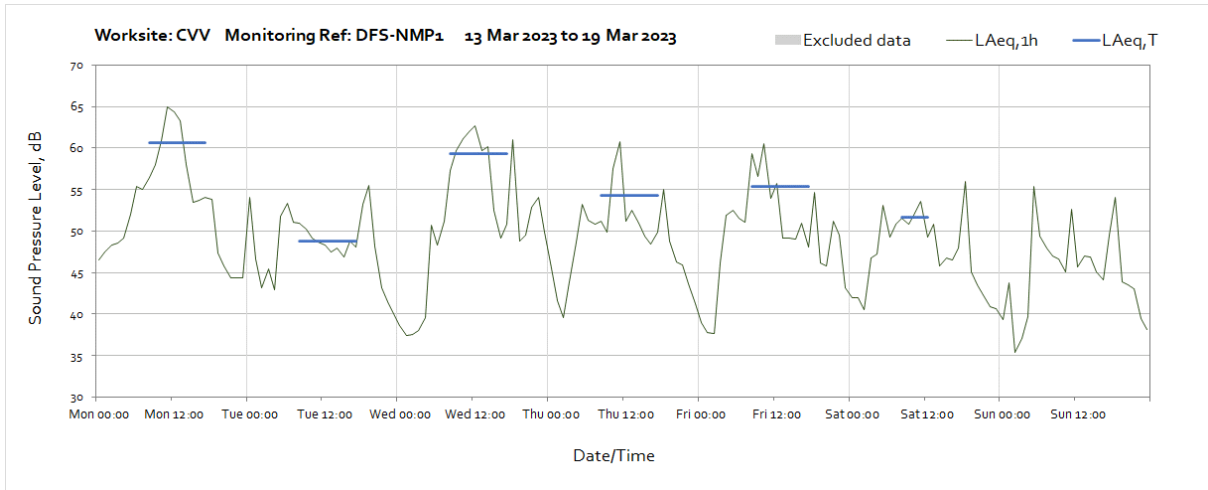


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

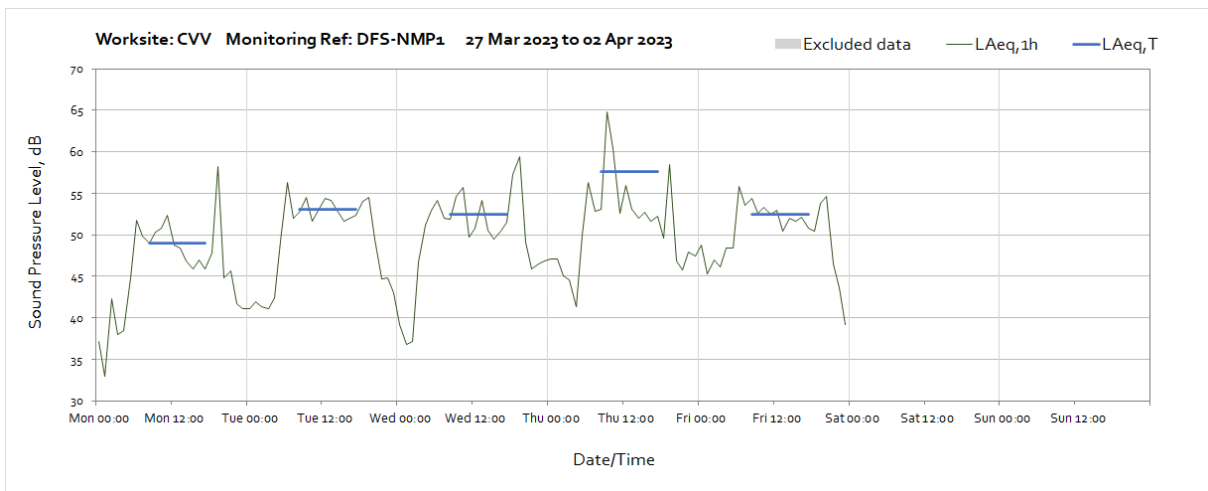


### Worksite: CVV – Monitoring Ref: DFS-NMP1

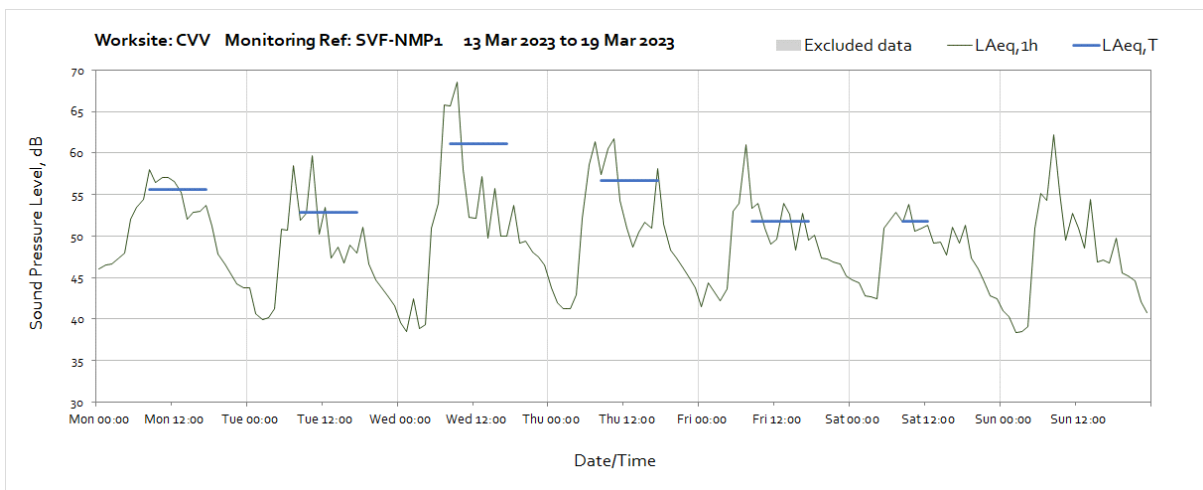
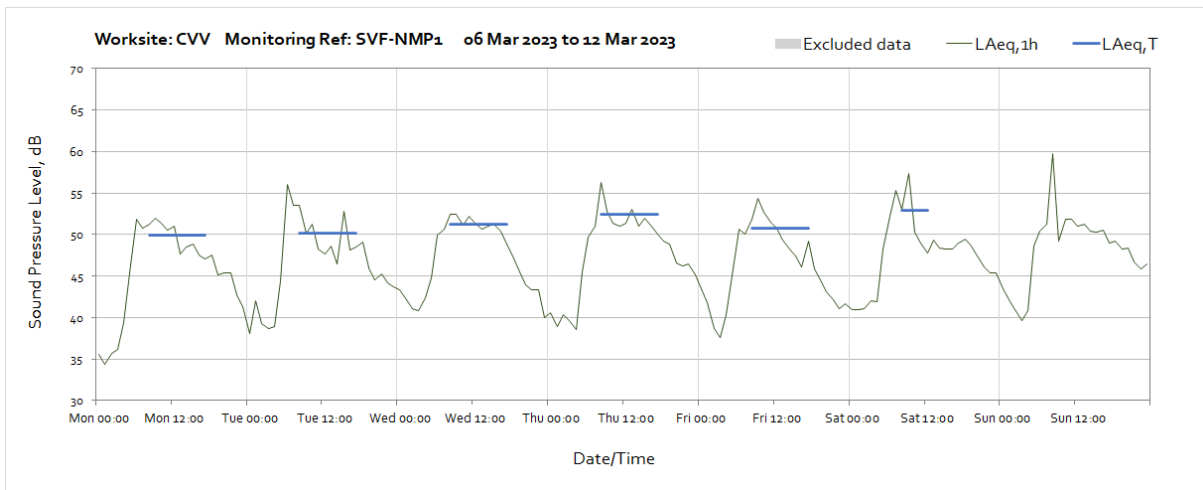
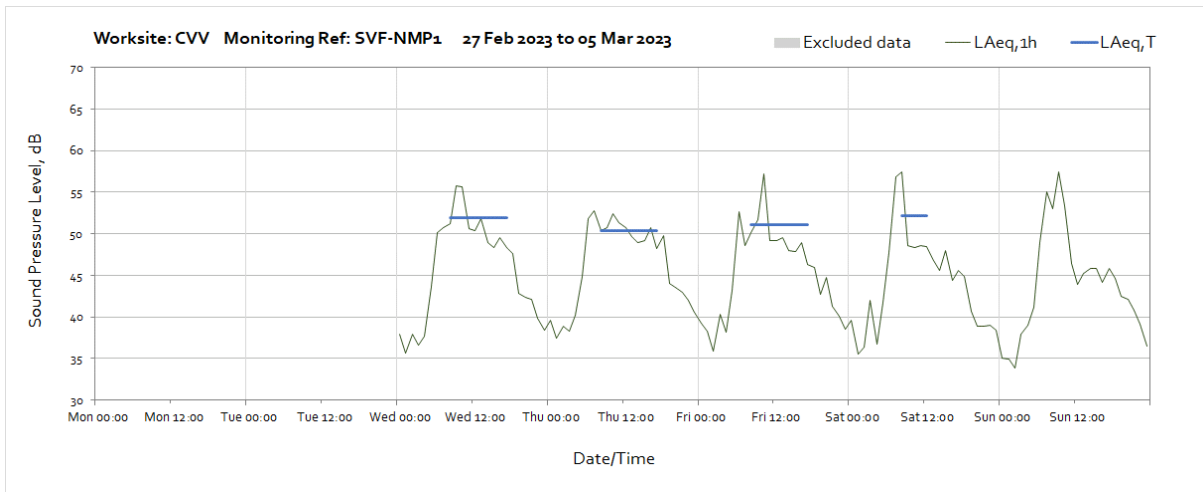


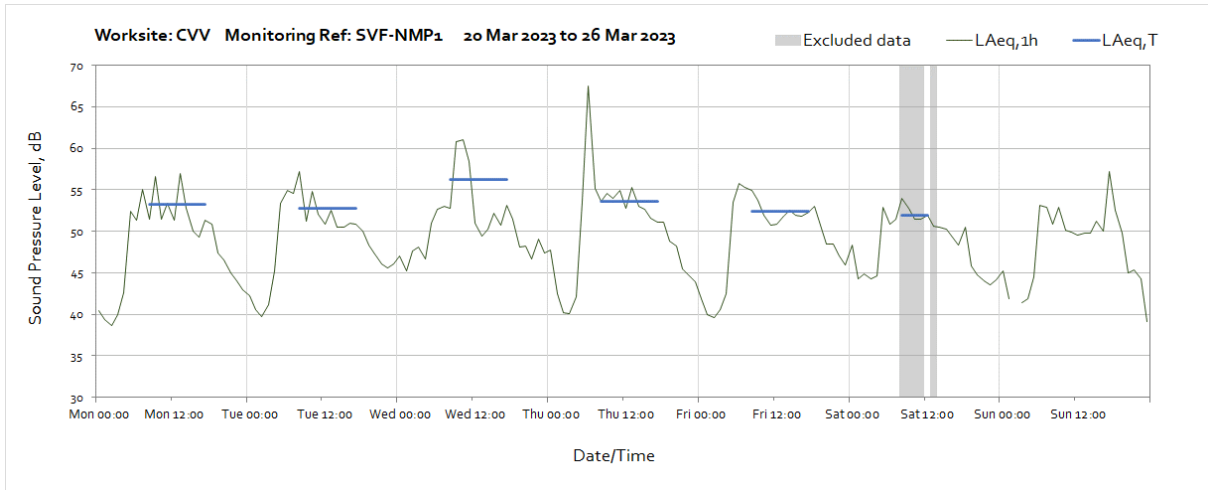


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

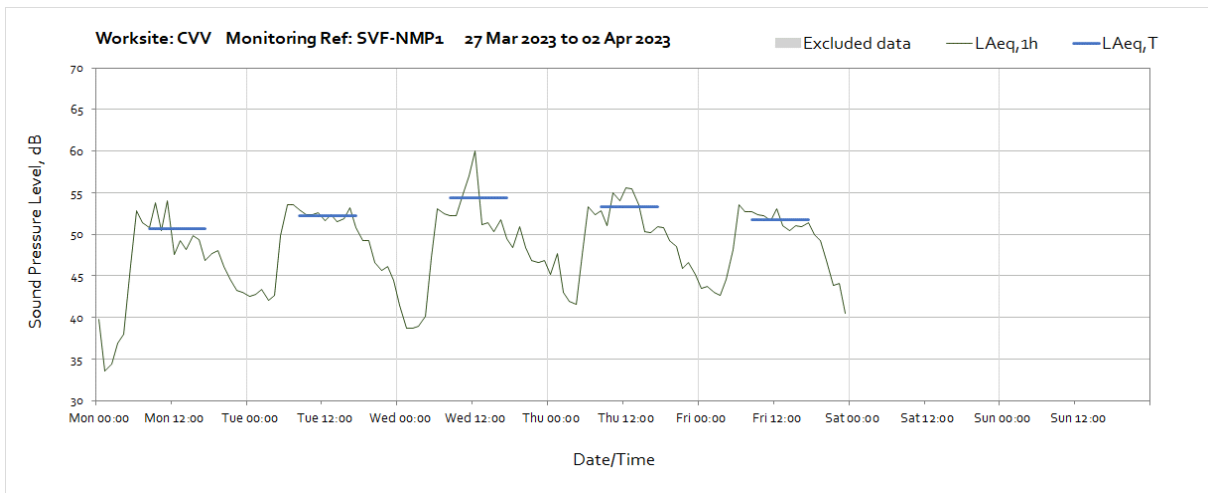


## Worksite: CVV – Monitoring Ref: SVF-NMP1





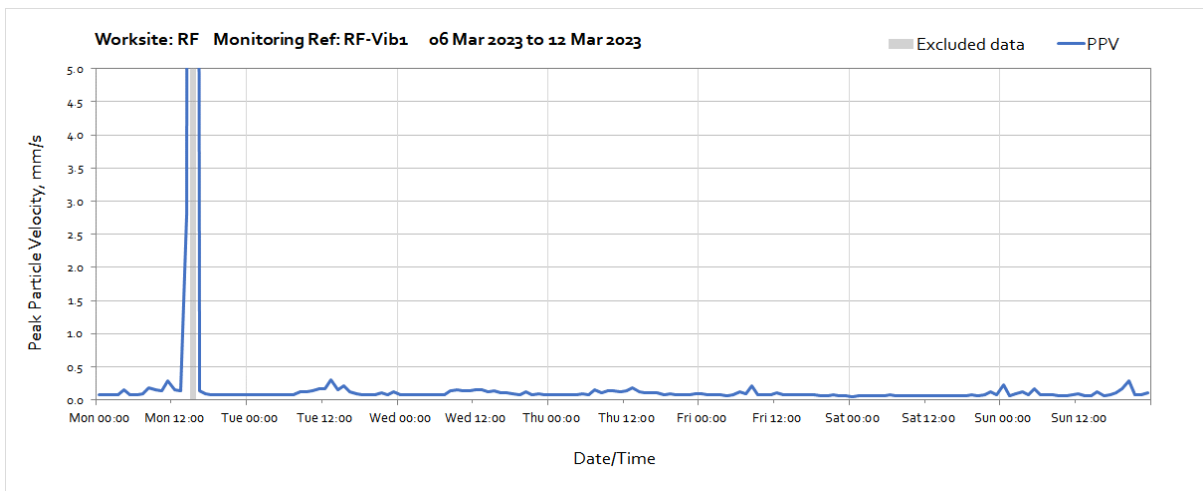
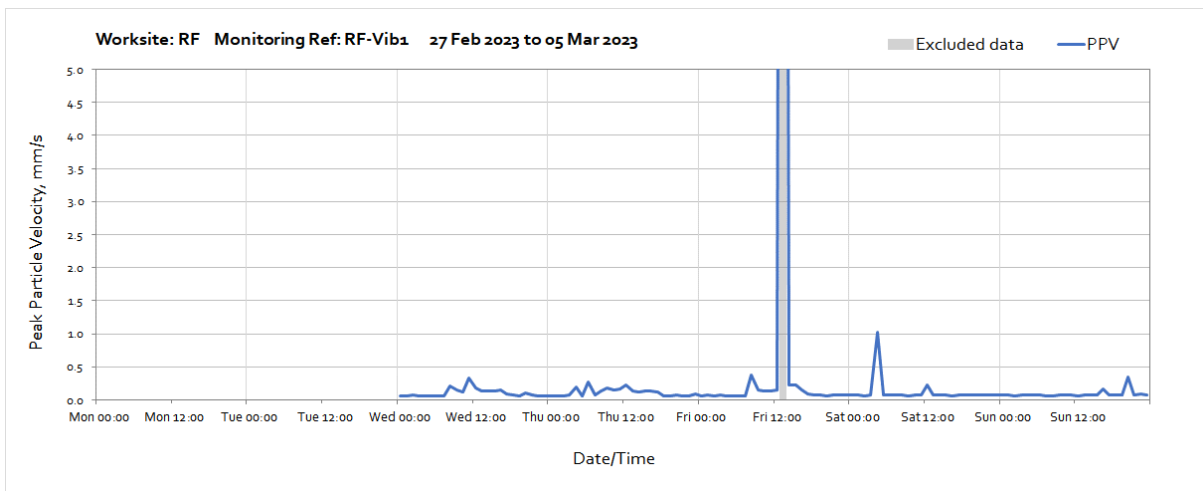
Note: Missing data between 02:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.



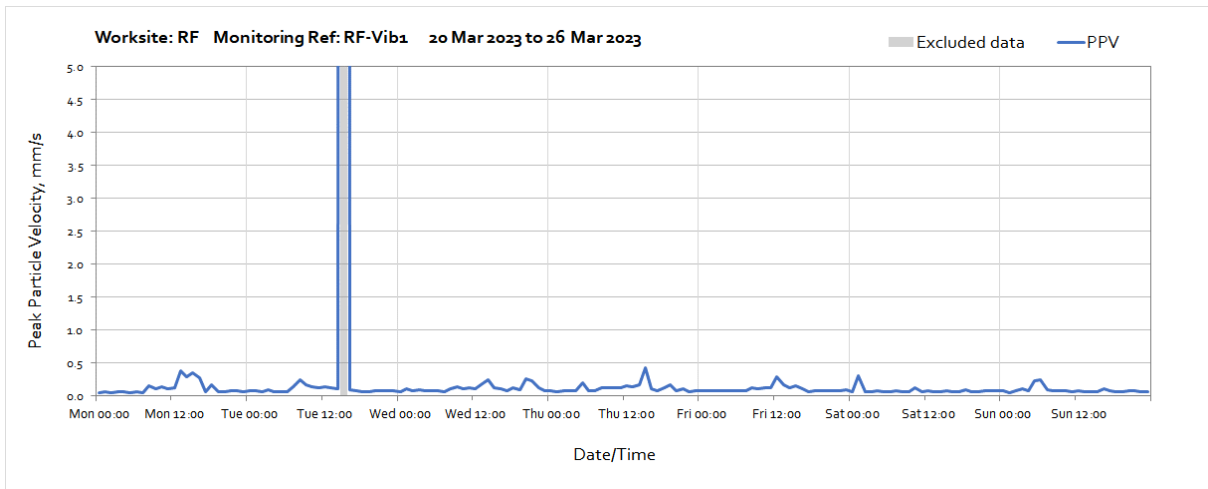
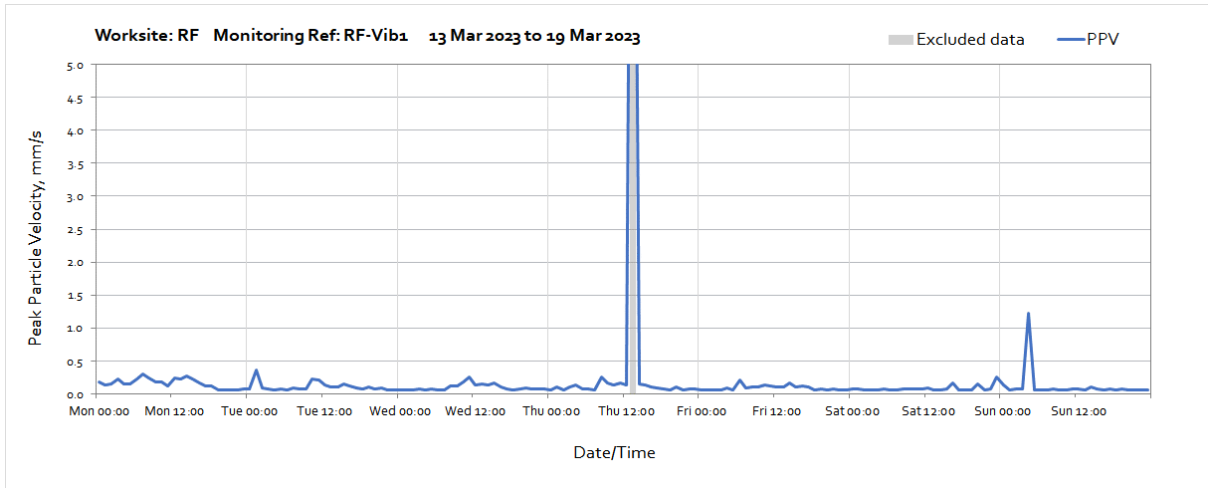
# Vibration

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

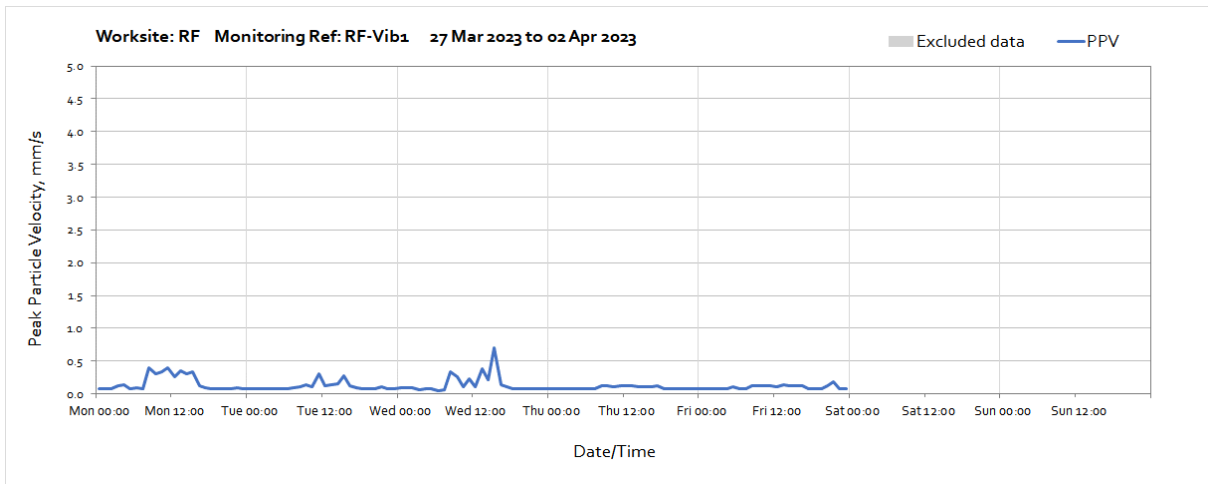
## Worksite: RF – Monitoring Ref: RF-Vib 1



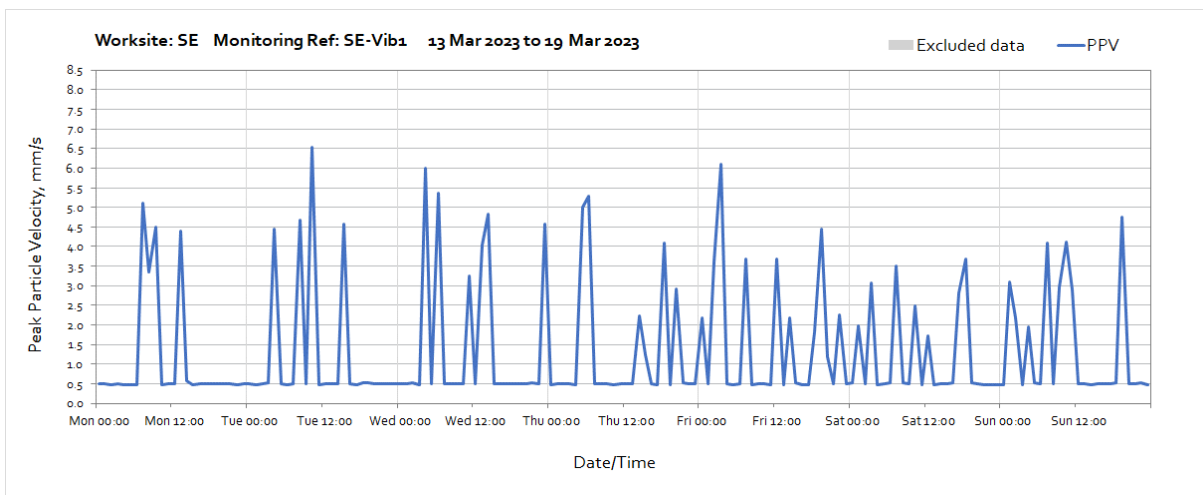
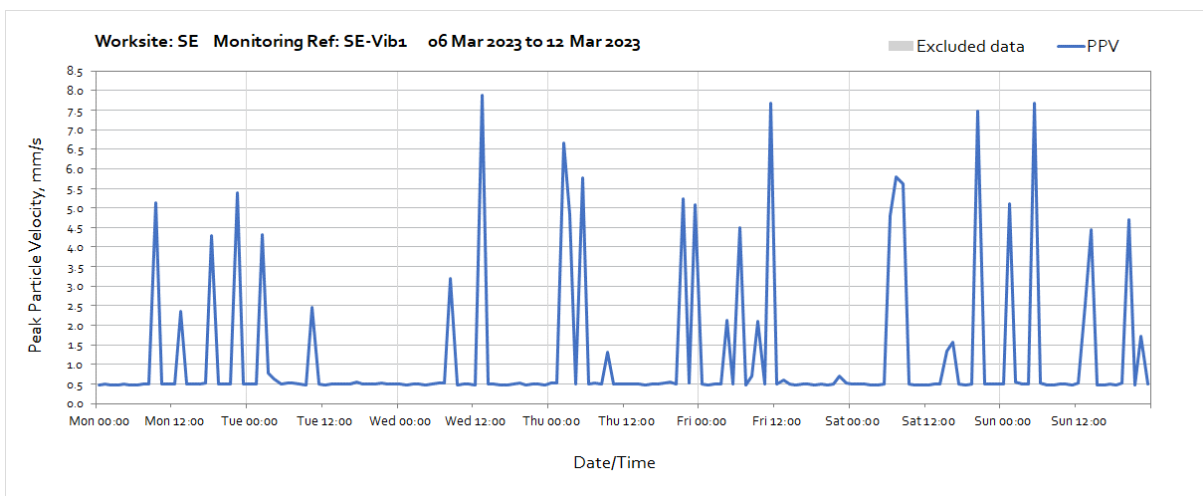
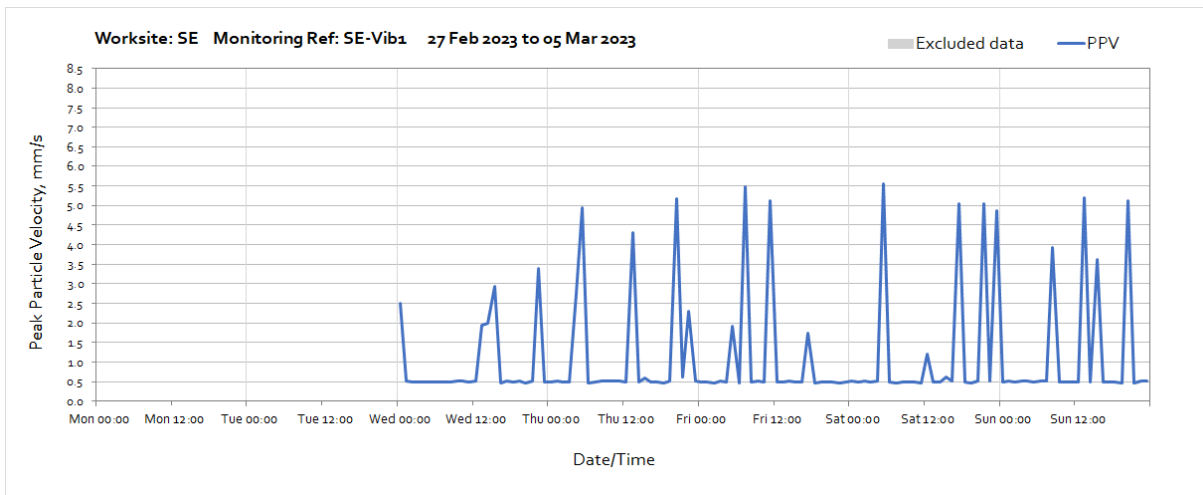




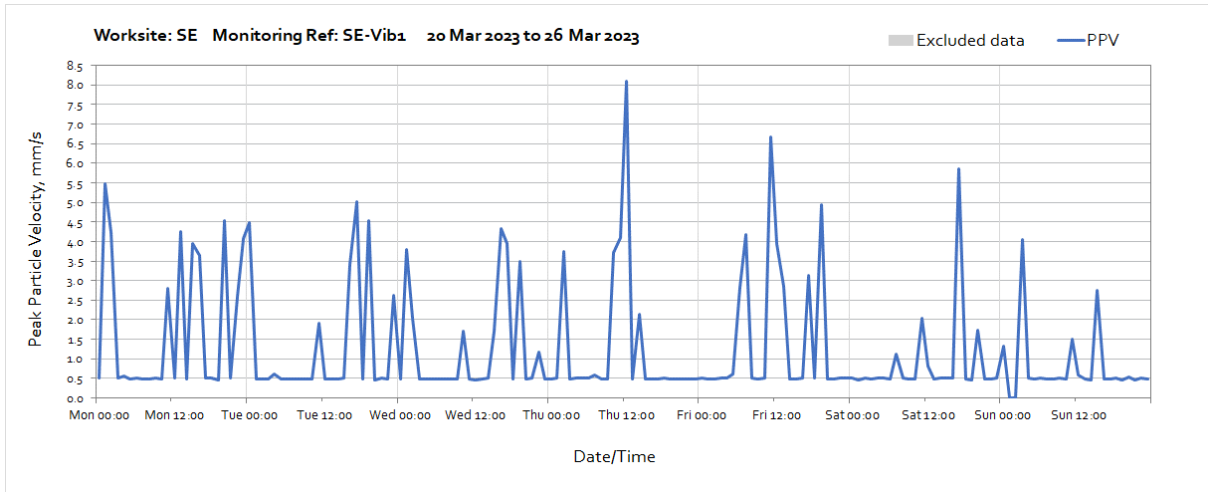
Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.



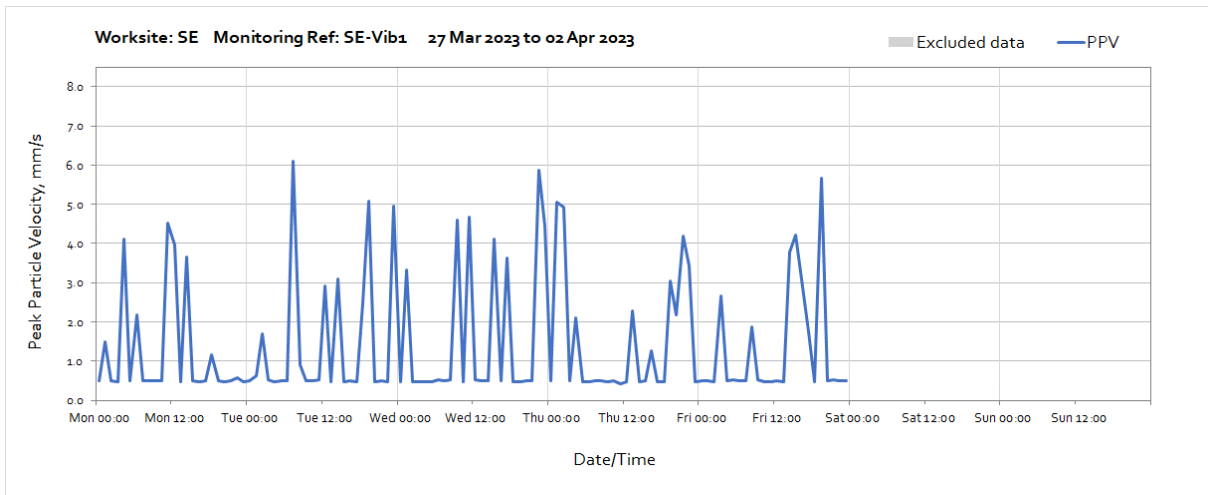
# Worksite: SE – Monitoring Ref: SE-Vib 1



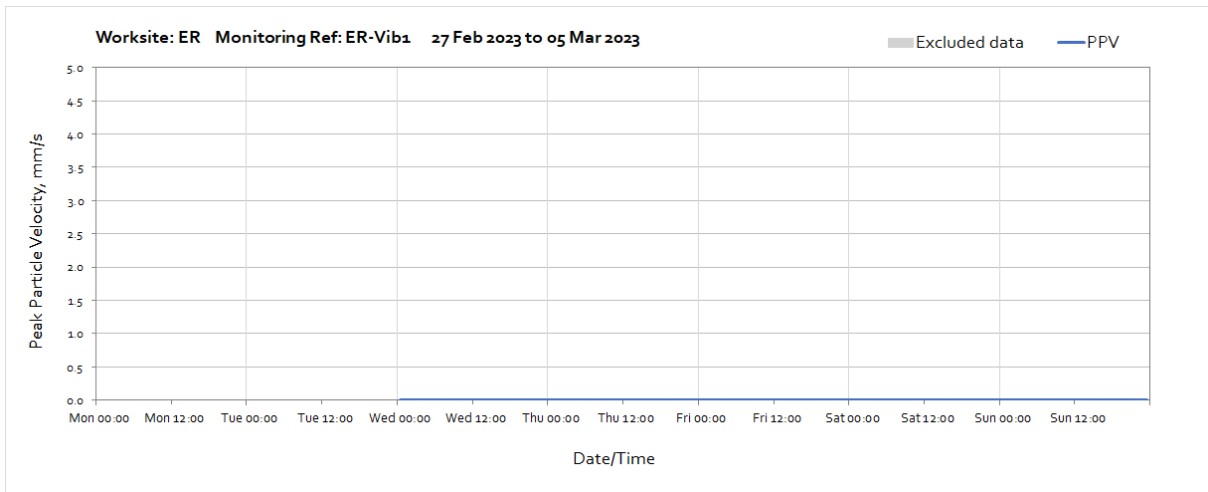
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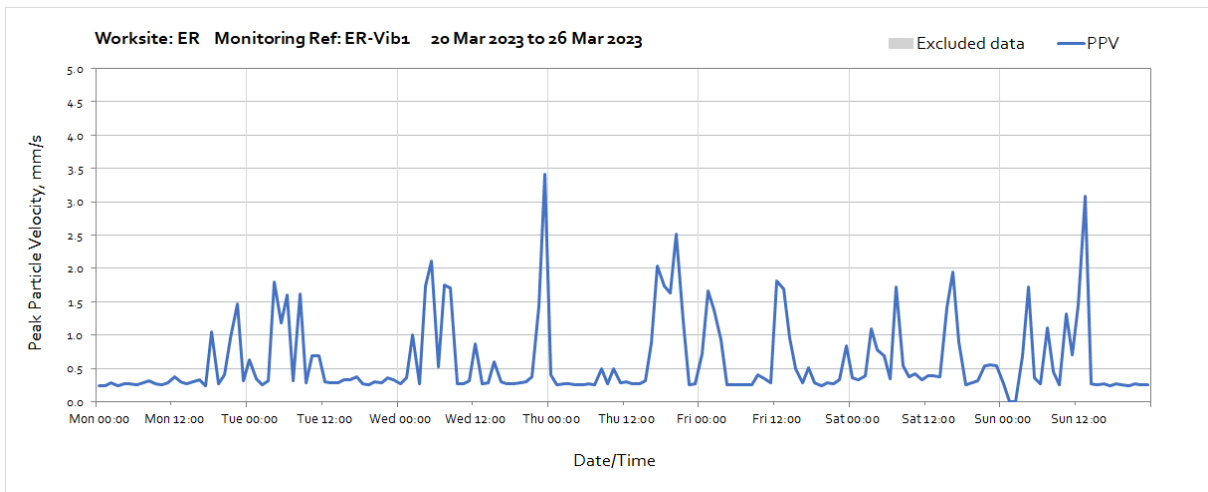
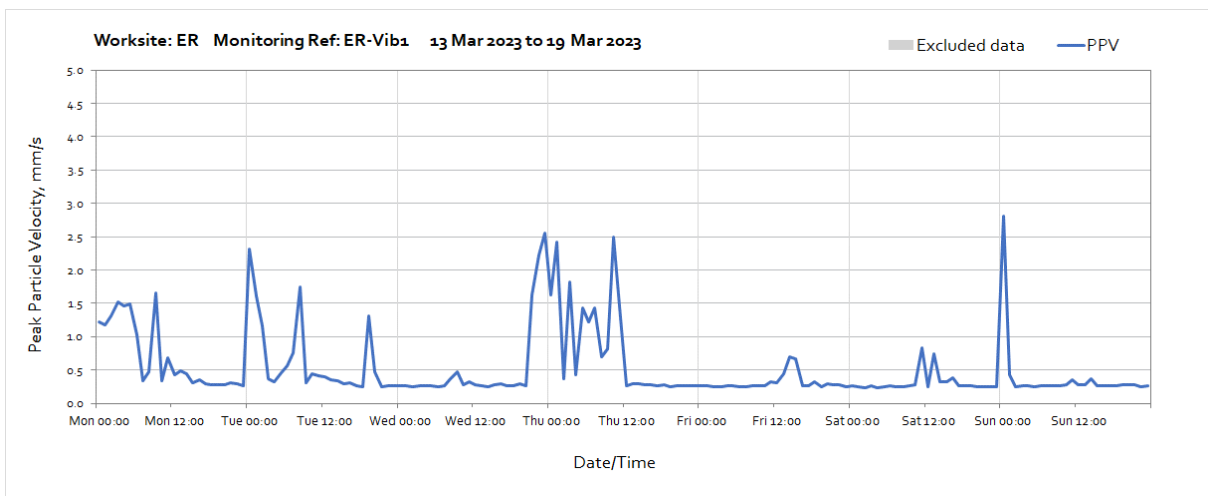
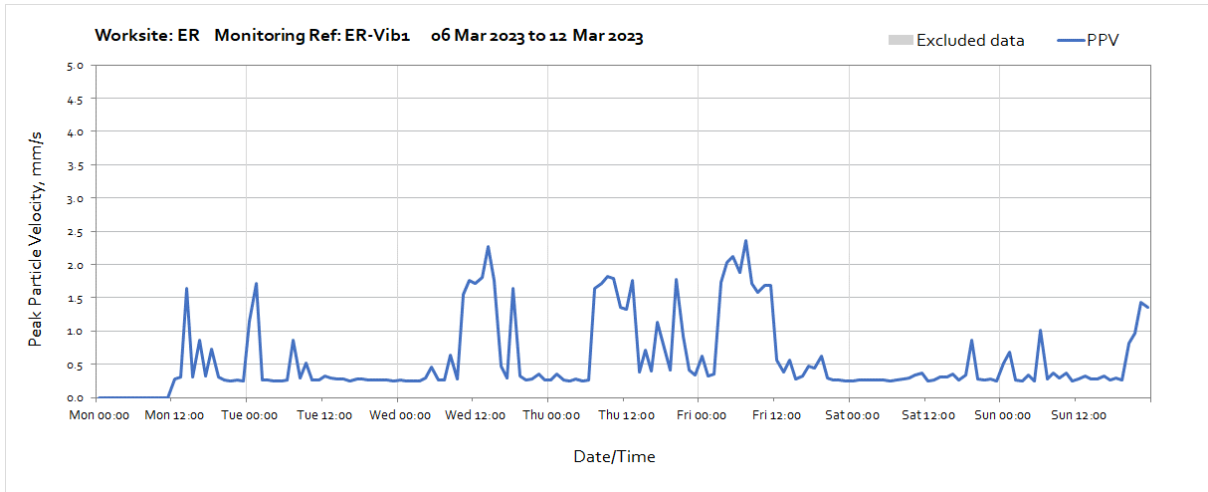


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

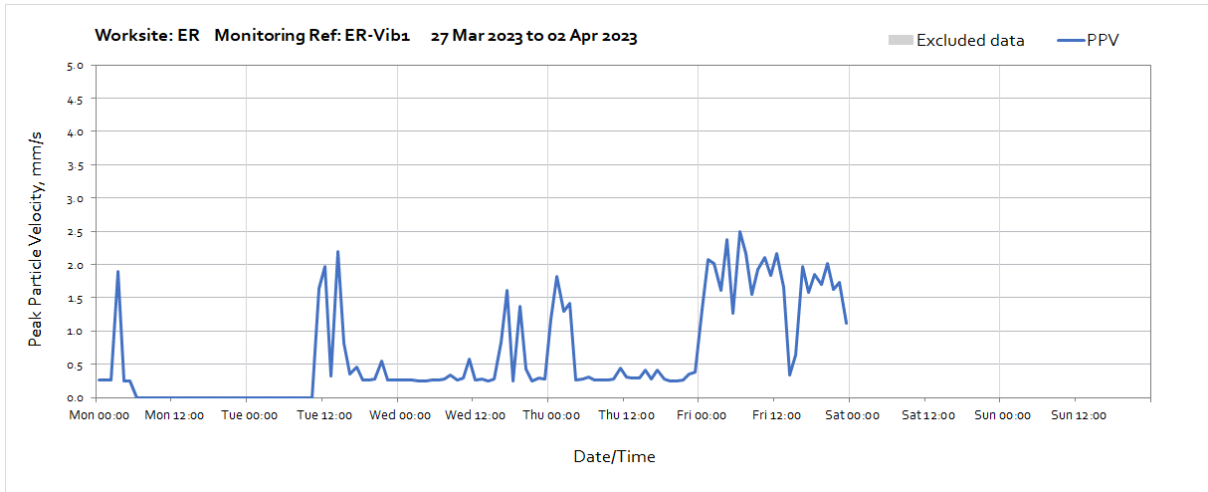


**Worksite: WGT – Monitoring Ref: ER-Vib 1**

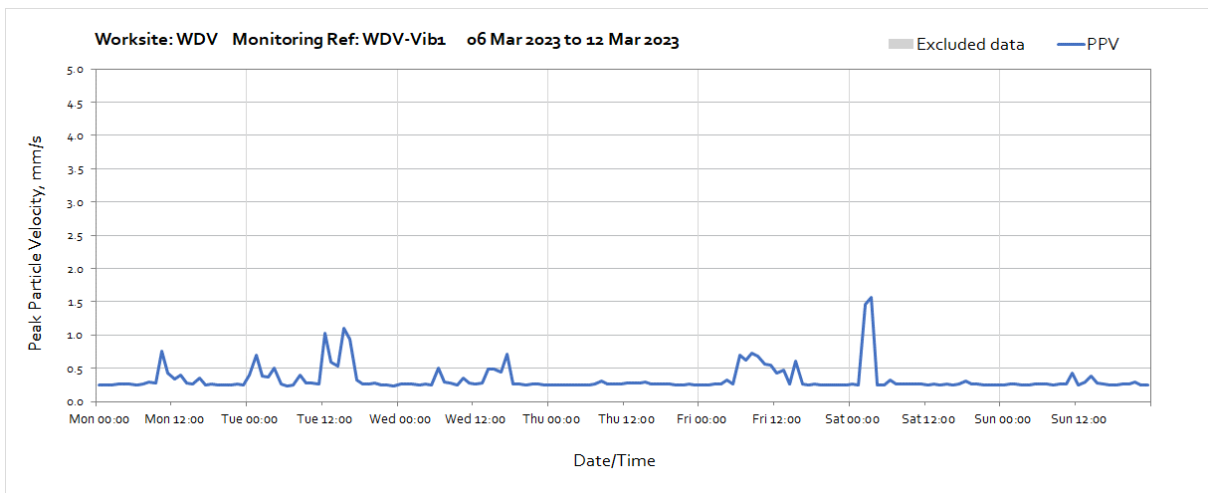
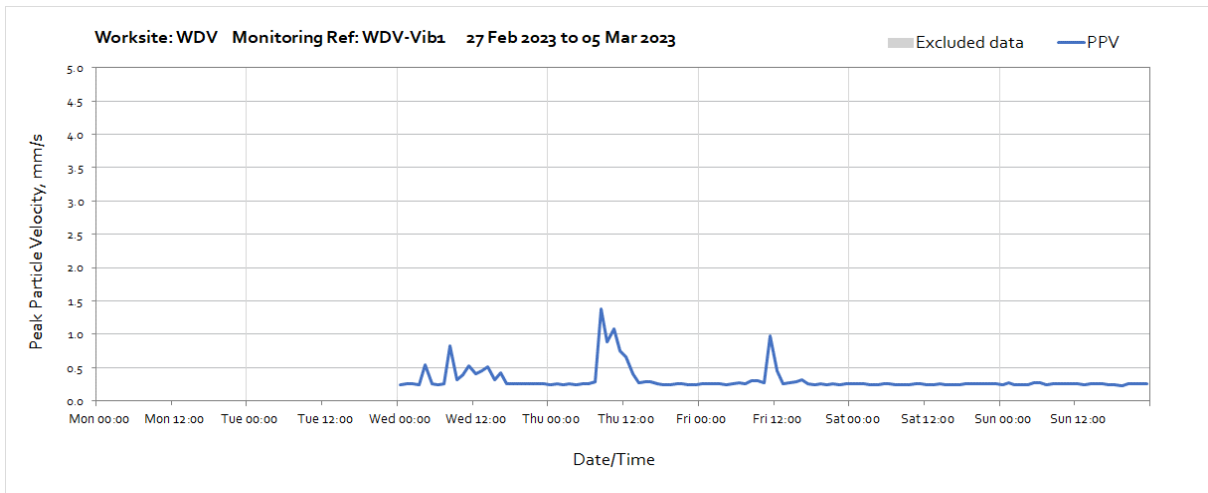


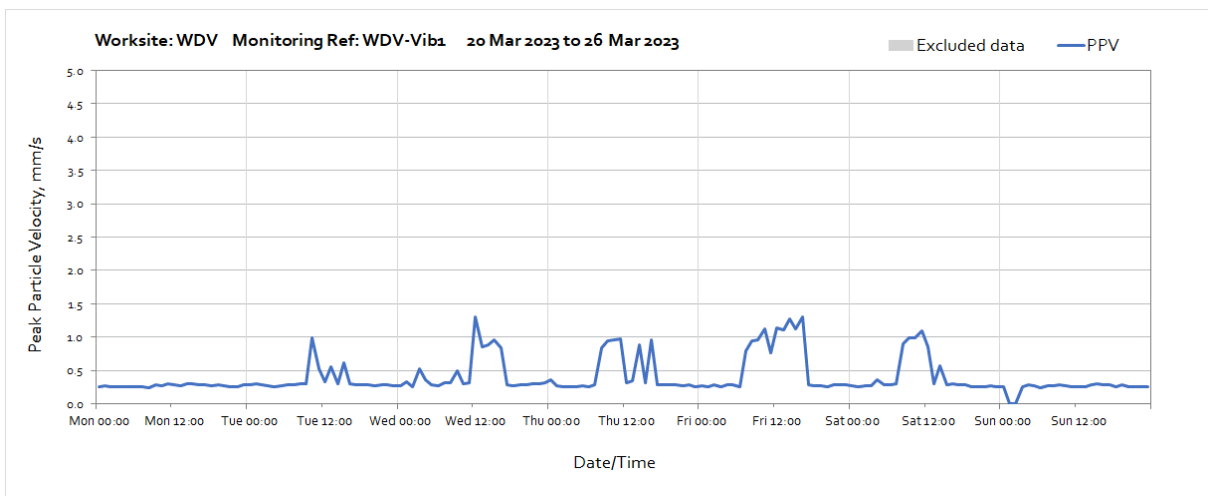
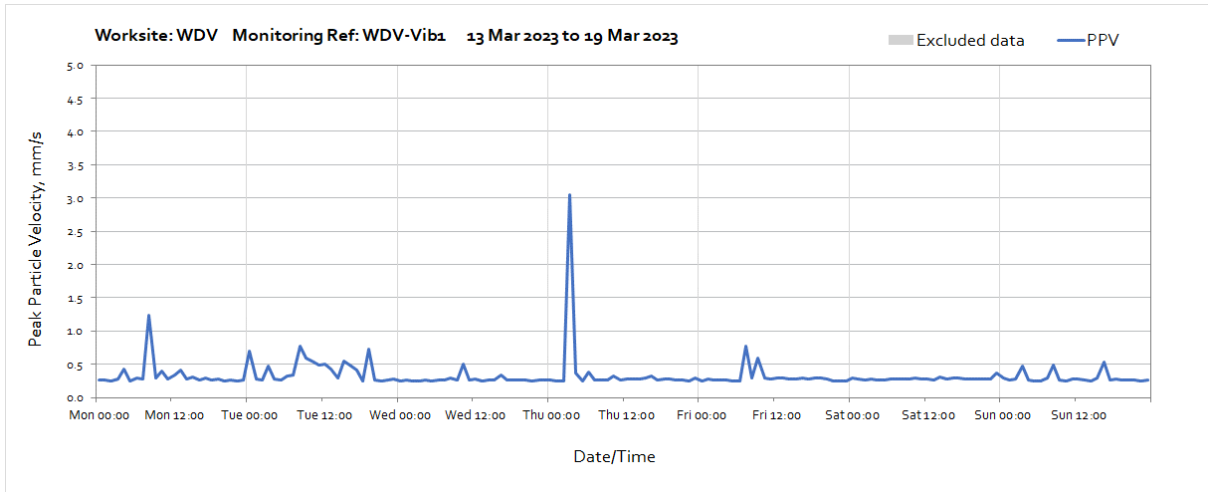


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

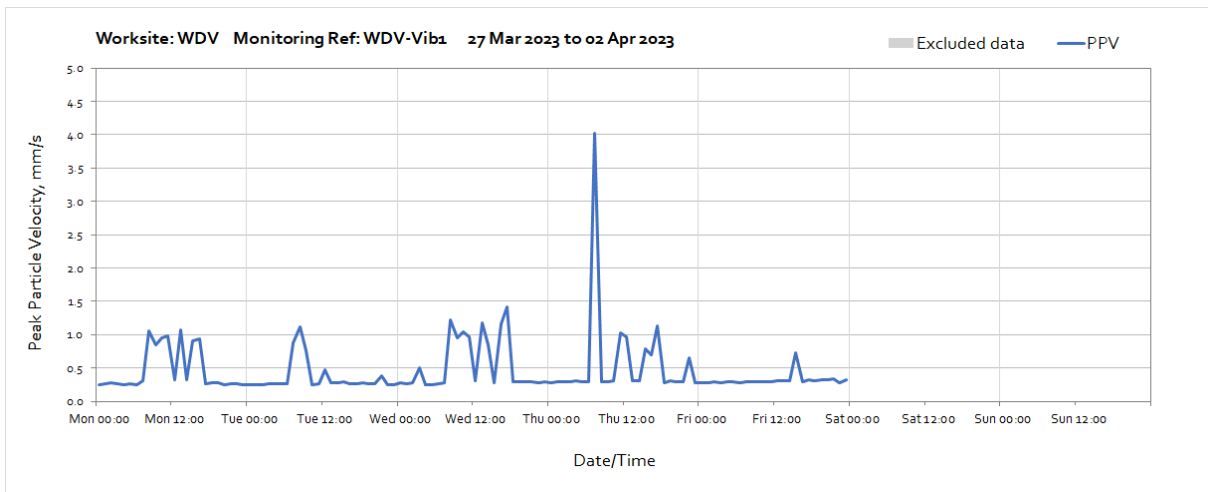


### Worksite: WDV – Monitoring Ref: WDV-Vib 1

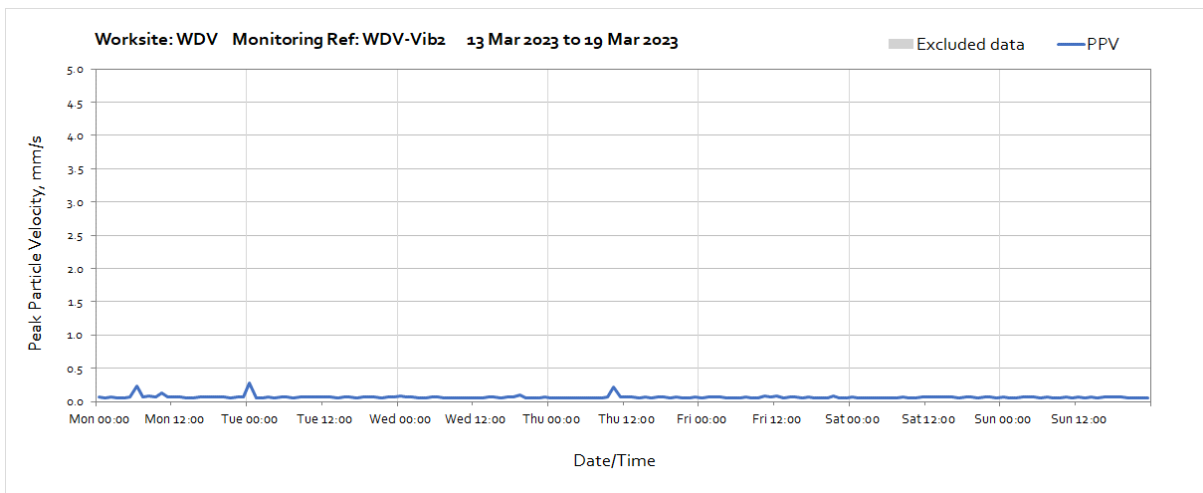
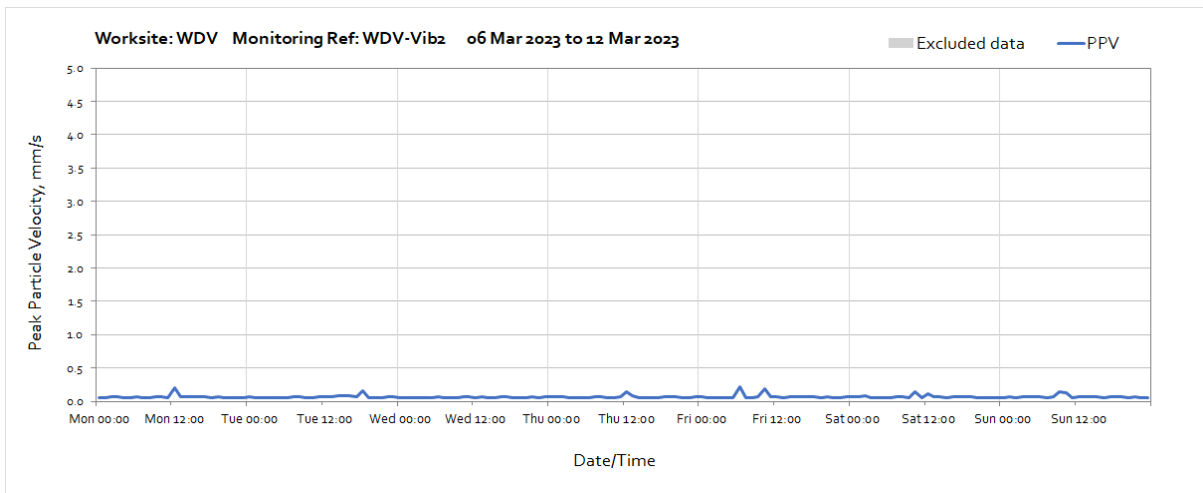
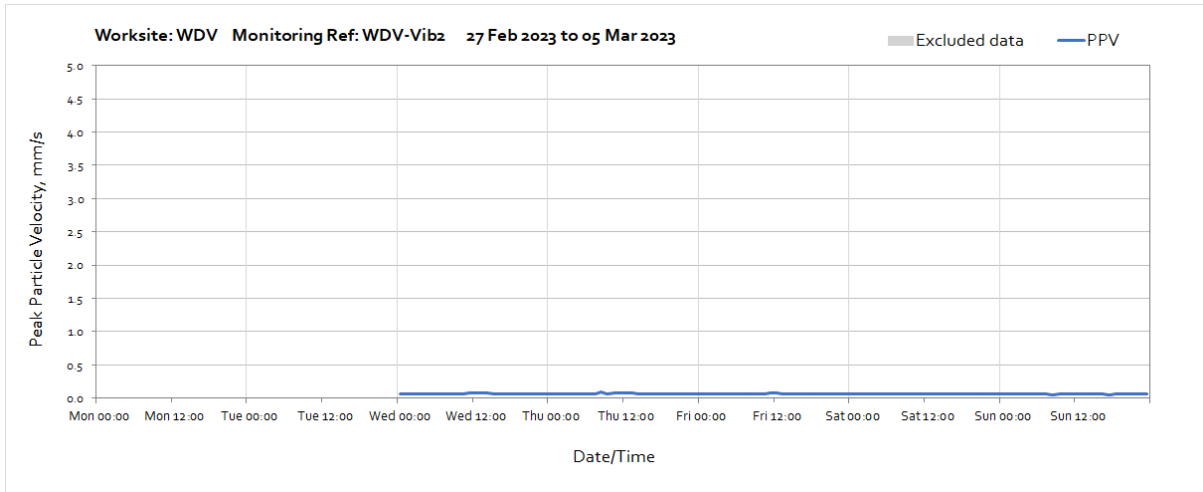


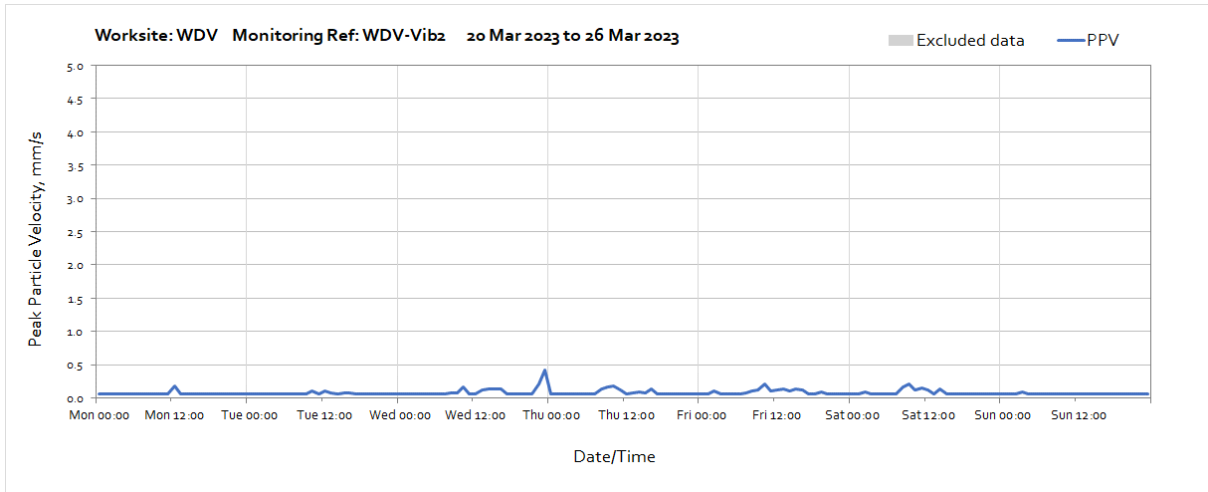


Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

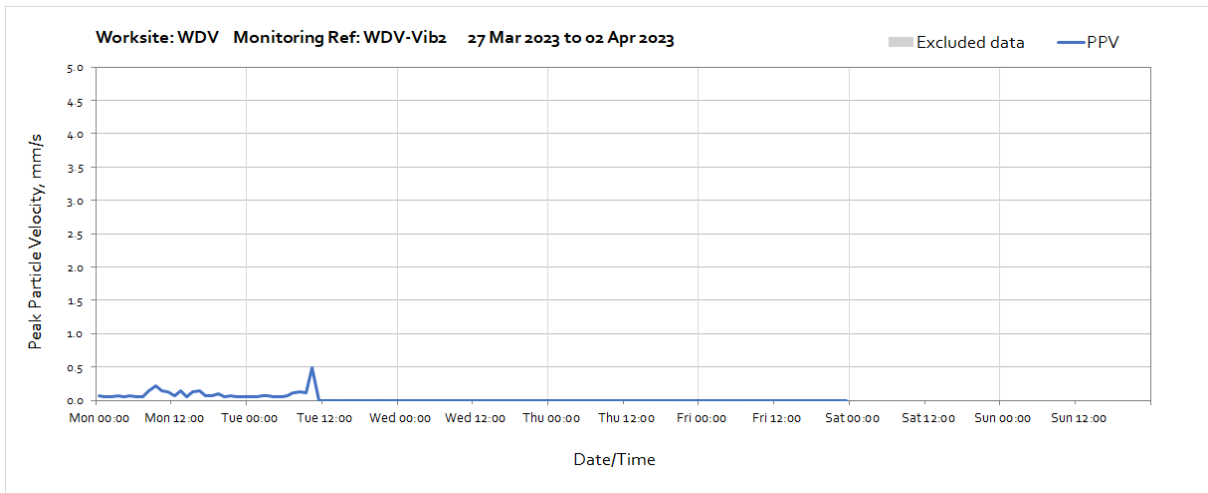


## Worksite: WDV – Monitoring Ref: WDV-Vib 2



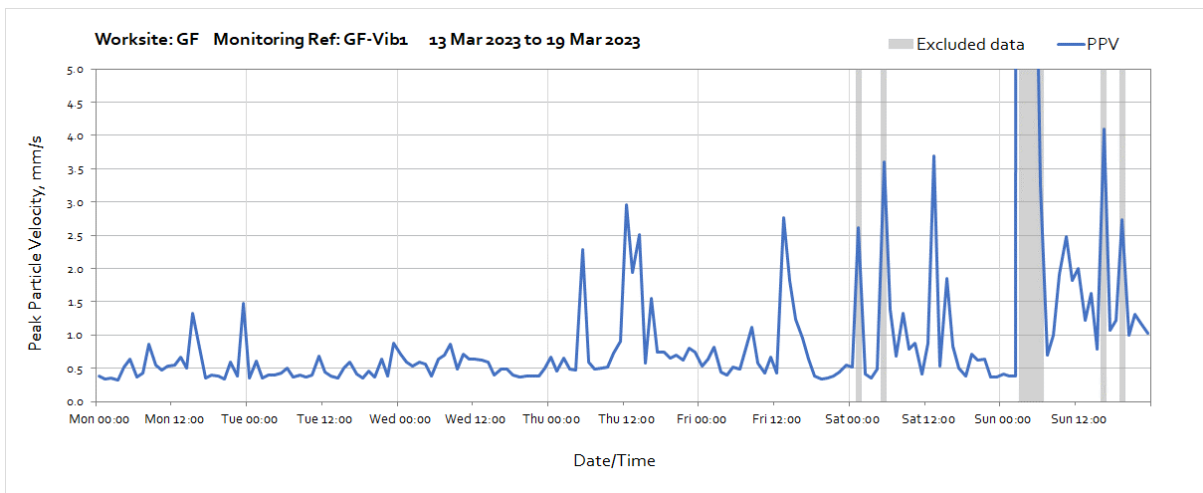
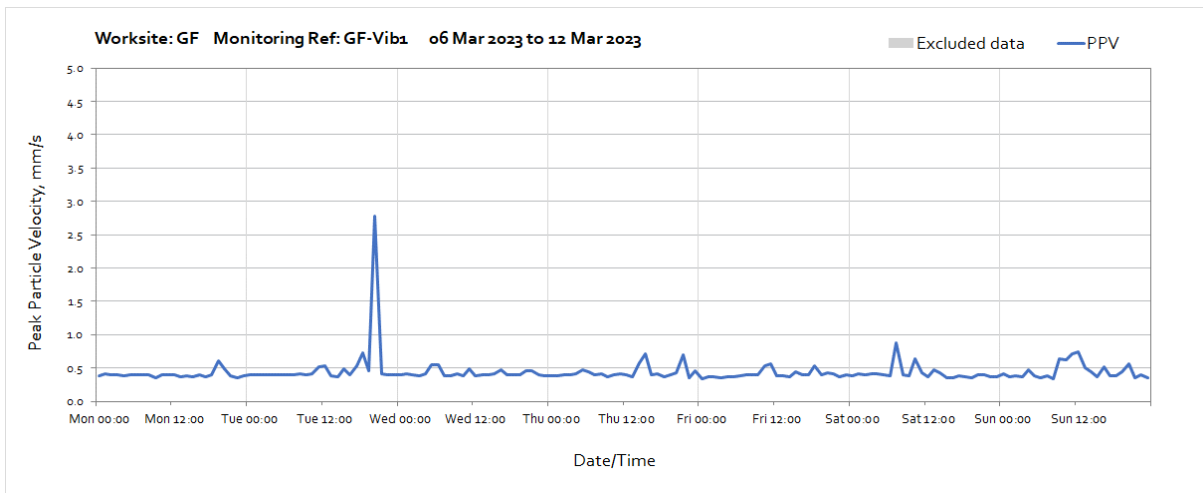
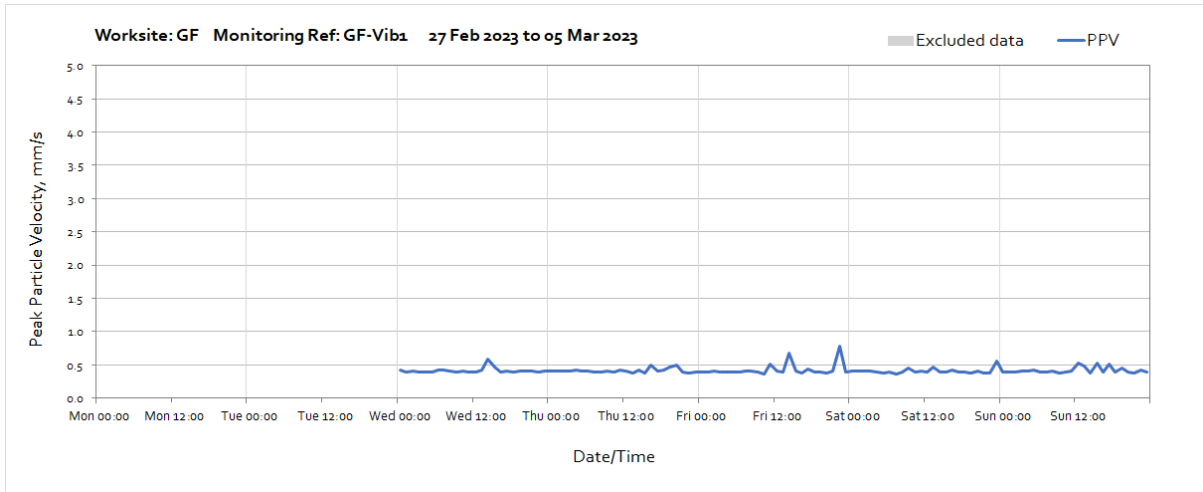


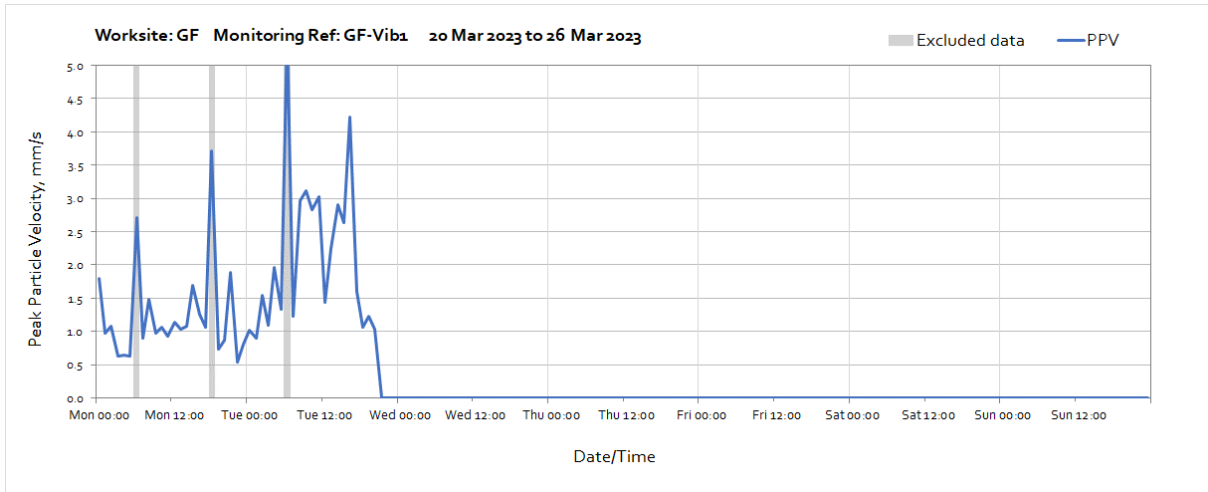
Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.



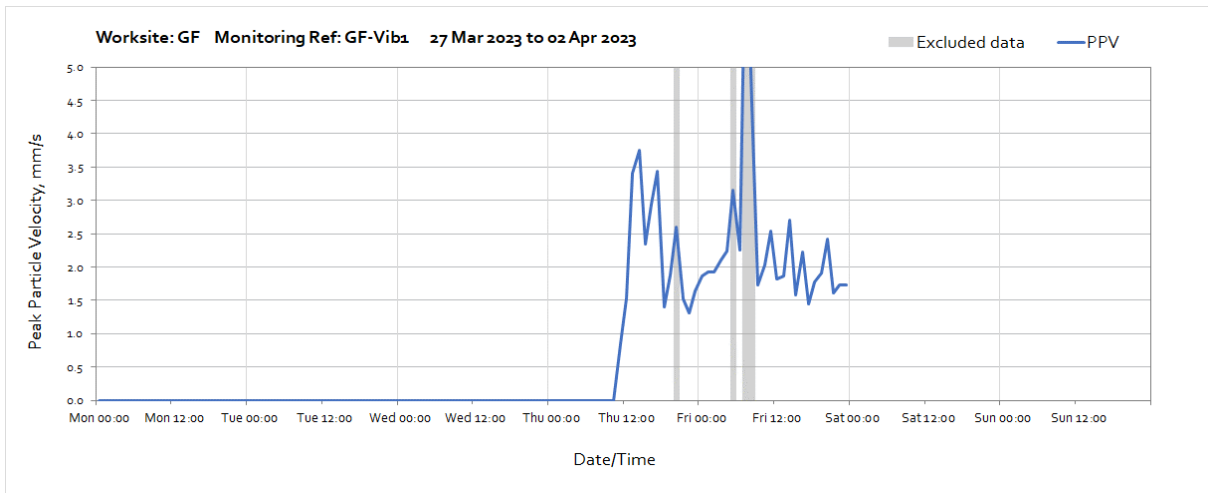


## Worksite: GF – Monitoring Ref: GF-Vib1



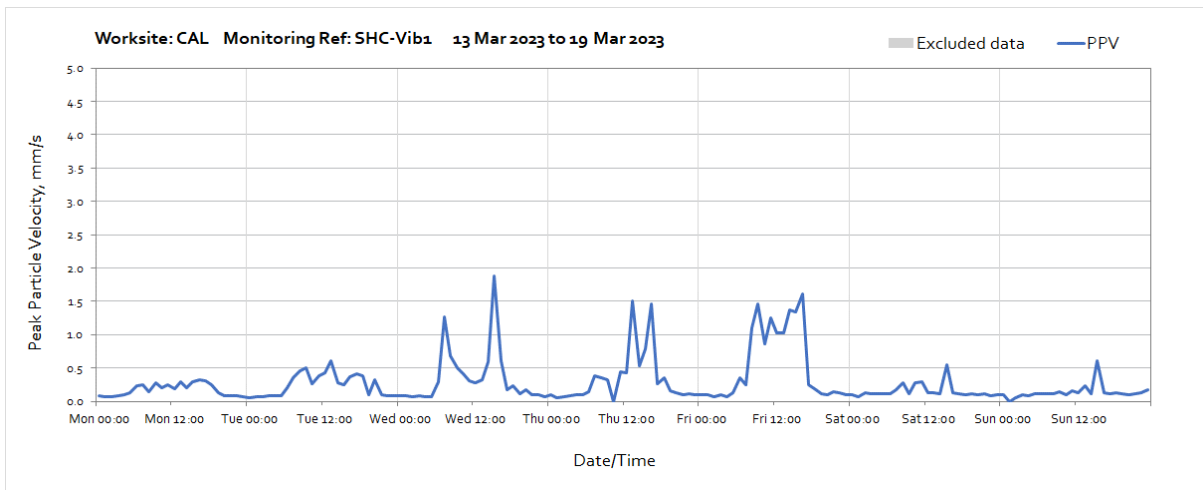
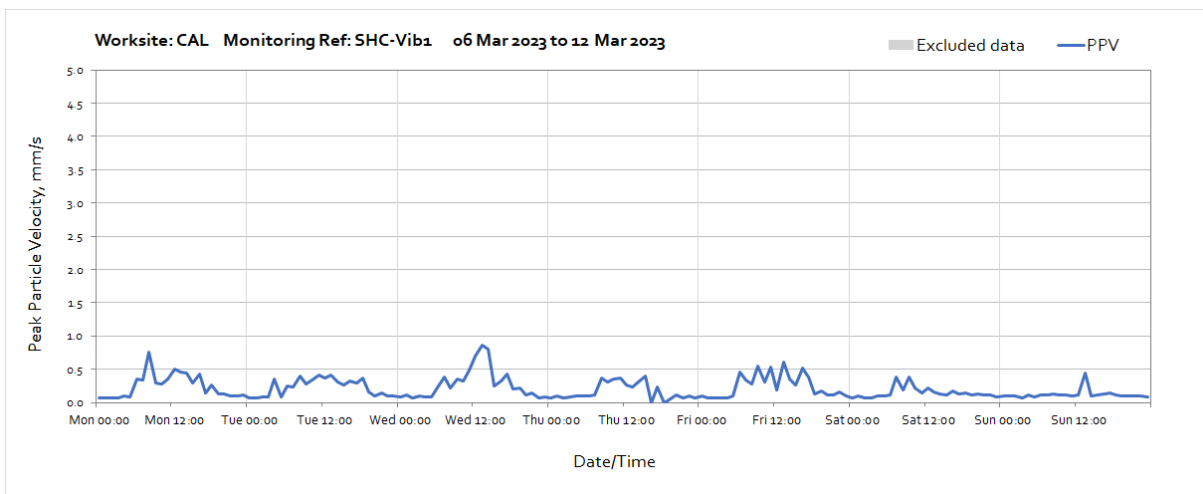
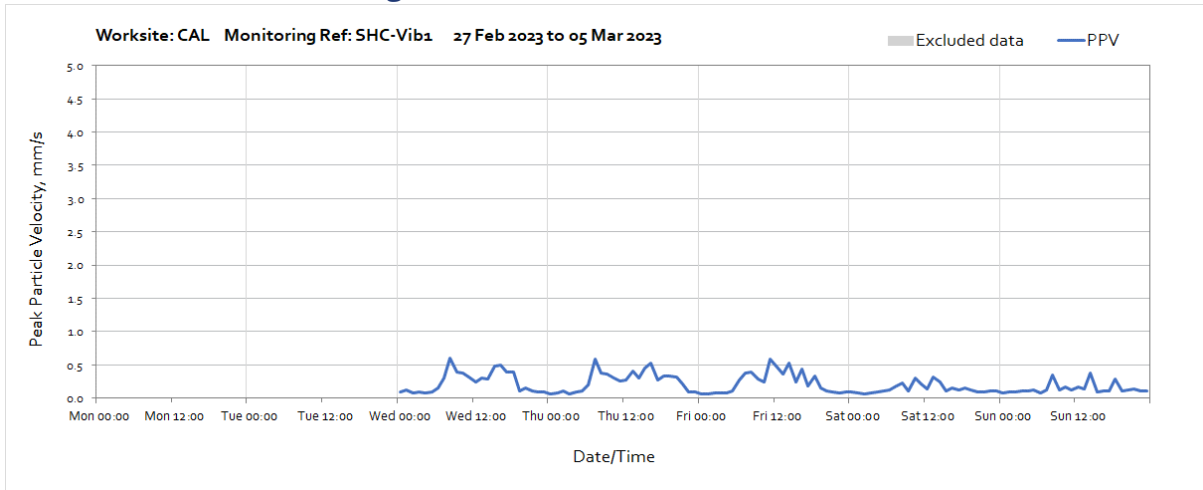


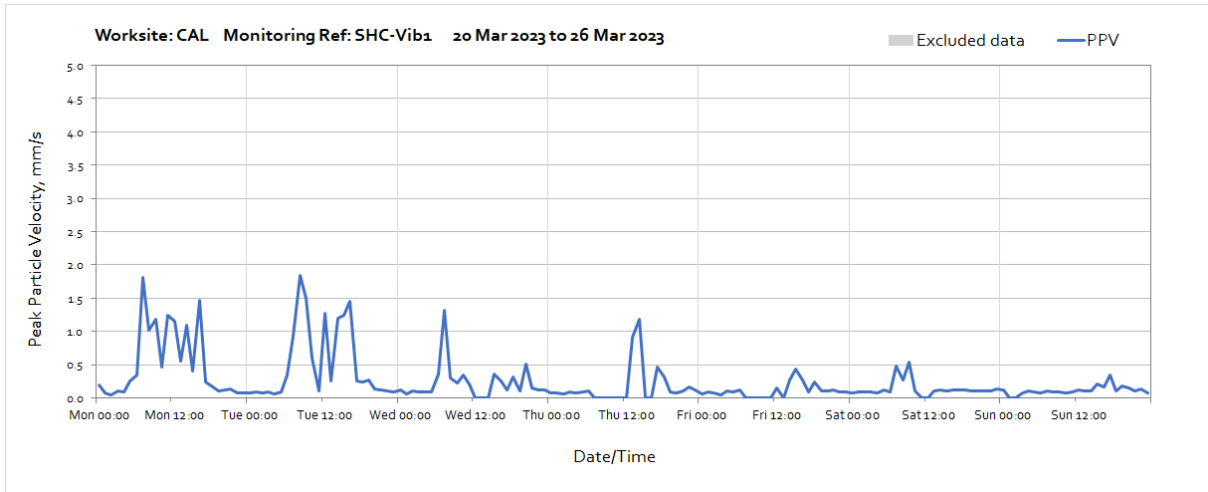
Note: Missing data between 21:00 on Tuesday 21<sup>st</sup> March and 11:00 on Thursday 20<sup>th</sup> March was due to a monitor memory fault.



Note: Missing data between 21:00 on Tuesday 21<sup>st</sup> March and 11:00 on Thursday 20<sup>th</sup> March was due to a monitor memory fault.

## Worksite: SHC – Monitoring Ref: SHC-Vib1





Note: Missing data between 01:00 and 03:00 on Sunday 26th March was due to a monitor time adjustment at the start of British Summertime.

