

## Construction Noise and Vibration Monthly Report – March 2024

### Buckinghamshire

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# Non-Technical Summary

This Noise and Vibration Monitoring Report fulfils HS2 Limited's commitment detailed in the Environmental Minimum Requirements (EMRs), Annex 1, Code of Construction Practice, to present the results of noise monitoring carried out within Buckinghamshire (BS) during the month of March 2024.

Within this period monitoring was undertaken at the following worksites:

- Noise monitoring was undertaken in the vicinity of the A422 Turweston North worksite (ref.: A422 TN) where piling, drilling, material movements, overbridge construction, concrete works, steel fixing, drainage, cutting stabilisation, filling, trial pit construction, crushing and screening were underway.
- Noise monitoring was undertaken in the vicinity of the School End (ref.: SE) and Hermitage Chetwode (ref.: HC) worksites where overbridge works, stockpiling, utility works, vehicle movements, site access and haul road operation and maintenance, access and egress to plant laydown area were underway.
- Noise monitoring was undertaken in the vicinity of the Twyford worksite (ref.: TW) where excavation and replacement, landscape bund placement, site access and haul road operation and maintenance, stockpile maintenance, material deliveries and culvert works were underway.
- Noise monitoring was undertaken in the vicinity of the West Street Overbridge worksite (ref.: WSO), where pile cropping, excavation, waterproofing, technical backfill, formwork reinforced concrete works and delivery and installation of parapets were underway.
- Noise monitoring was undertaken in the vicinity of the Calvert worksite (ref.: CAL) where operation of concrete batching plant, piling, production of bentonite, material movements, earthworks and maintenance were underway.
- Noise monitoring was undertaken in the vicinity of the Woodlands worksite (ref.: WDL) where installation of wingwalls, diversion works and material movements were underway.
- Noise monitoring was undertaken in the vicinity of the Quainton worksite (ref.: QAR) where earthworks were underway.
- Noise monitoring was undertaken in the vicinity of the Meadoway and Glebe House worksite (ref: MW&GH) where parapet installation, earthworks, diversion works and topsoil stripping were underway.
- Noise monitoring was undertaken in the vicinity of Oat Close worksite (ref: OC) where overbridge works, installation of deck, backfilling, drainage., parapet

installation, excavation, stockpiling, pond lining works and badger netting installation were underway.

- Noise monitoring was undertaken in the vicinity of Nash Lee Lane worksite (ref.: NLL) where stockpile maintenance, earthworks, culvert and new laydown area construction, surface water management, site access road maintenance, utility diversion, road sign installation and construction of Stoke Brook diversion were underway.
- Noise monitoring was undertaken in the vicinity of Wendover Green Tunnel worksite (ref.: WGT) where drainage works, installation of edgings, substations, road lines and utility, platform construction, surface water management and drilling were underway.
- Noise monitoring was undertaken in the vicinity of Grove Farm worksite (ref.: GF) where removal of concrete, material movements, haul road maintenance and access chamber installation were underway.
- Noise monitoring was undertaken in the vicinity of Small Dean Viaduct Compound worksite (ref.: SDVC) where loading and lifting of diaphragms and girders, scaffolding works, installation of working platform and pier stems, bored piling welding, earthworks and launch platform works underway.
- Noise monitoring was undertaken in the vicinity of Rocky Lane Embankment worksite (ref.: RLE) where earthworks, construction of plant laydown area and drainage works were underway.
- Noise monitoring was undertaken in the vicinity of Wendover Dean Viaduct worksite (ref.: WDV) where welding, grouting, barn demolition, hammerhead works, lower bearing plates levelling and adjusting and earthworks were underway.
- Noise monitoring was undertaken in the vicinity of Leather Lane worksite (ref.: LL) where earthworks were underway.
- Noise monitoring was undertaken in the vicinity of South Heath Cutting worksite (ref.: SHCW) where operation of site access road was underway.
- Noise monitoring was undertaken in the vicinity of North Portal worksite (ref.: NP) where plant operations, piling platform reinstatement, porous portal structure works, tunnel bore machine dismantling, compound works and batching plant installation were underway.
- Noise monitoring was undertaken in the vicinity of Chesham Road worksite (ref.: CHSM), where general site activities, headhouse construction and internal and external building works were underway.

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

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

- Infrastructure Maintenance Depot (IMD) where earthworks were underway.
- MCJ where maintenance of earthworks and bulk excavation were underway.
- Bat mitigation structure where concrete pours, formwork reinforced concrete works and earthworks were underway.
- FCC Access Road Retaining Wall where retaining wall base construction and installation of rock blocks were underway.
- Greatmoor Culvert where earthworks were underway.
- GUN28 overbridge where formwork reinforced concrete works, deck and diaphragm construction and technical backfilling were underway.
- QUA36 overbridge where pile cutting and formwork reinforced concrete pile cap works were underway.
- Finemere Culvert where sheet piling, earthworks and excavation were underway.
- Hills Farm where stockpiling was underway.

- Edgcott Road overbridge where formwork reinforced concrete works were underway.
- Aylesbury Golf Course where cutting and culvert works, and utility diversion were underway.
- Thame Valley Viaduct Causeway where, installation of reinforced concrete, installation formwork and beams and overbridge construction were underway.
- Fleet Marston where earthworks, culvert and overbridge works were underway.
- Along A41 where concrete batching plant operation, earthworks, vehicle restraint system installation, highway construction and drainage works were underway.
- Bowood Lane where lifting and installation of pier diaphragm shutters, installation of scaffold and panels were underway.
- Nash Lee Road Diversion where movement of materials was underway.

The HS2 threshold levels for significant noise impacts, which are defined in Information Paper E23 (<https://www.gov.uk/government/publications/hs2-information-papers-environment>), were exceeded fifteen (15) times during the reporting period.

Five (5) exceedances of trigger levels as defined in Section 61 consents occurred during the reporting period.

Three (3) complaints were received within the Buckinghamshire area during the monitoring period. A description of the complaints, the results of investigations and any actions taken are detailed in Table 8 of this report.

# Abbreviations and Descriptions

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

Table 1: Table of Abbreviations

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

# 1 Introduction

1.1.1 HS2 is required to undertake noise (and vibration) monitoring as necessary to comply with the requirements of the High Speed Rail (London-West Midlands) Environmental Minimum Requirements, including specifically Annex 1: Code of Construction Practice, in addition to any monitoring requirements arising from conditions imposed through consents under Section 61 of the Control of Pollution Act, 1974 or through Undertakings & Assurances given to third parties. Such monitoring March 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 2024.

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

- A422 Turweston North worksite, ref.: A422 TN (see Plan 1 in Appendix A), where works activities included:
  - Piling.
  - Drilling, including borehole drilling.
  - Material movements.
  - Overbridge construction.
  - Concrete works.
  - Steel fixing.
  - Drainage works.
  - Cutting stabilisation.
  - Filling.



- Trial pit construction.
- Crushing and screening.
- School End worksite, ref.: SE (see Plan 2 in Appendix A) and Hermitage Chetwode Worksite ref.: HC (see plan 2 in Appendix A), where works activities included:
  - Overbridge works, including reinforced concrete works, steel fixing, shuttering, concrete binding, access and egress to works area.
  - Stockpiling, including maintenance and deliveries.
  - Utility works, including drainage, pond and diversion maintenance.
  - Vehicle movements.
  - Site access and haul road operation and maintenance.
  - Access and egress to plant laydown area.
- Twyford worksite, ref.: TW (see Plan 2 in Appendix A), where works activities included:
  - Excavation and replacement.
  - Landscape bund placements.
  - Site access and haul road operation and maintenance.
  - Material deliveries.
  - Stockpile maintenance.
  - Culvert works, including backfilling.
- West Street Overbridge worksite, ref.: WSO (see Plan 2 in Appendix A), where works activities included:
  - Pile cropping.
  - Excavation.
  - Waterproofing.
  - Technical backfill.
  - Formwork reinforced concrete works.
  - Delivery and installation of parapets.
- Calvert worksite, ref.: CAL (see Plan 3 in Appendix A) where works activities included:
  - Operation of concrete batching plant.

- Piling.
- Production of bentonite.
- Material movements.
- Earthworks and maintenance.
- Woodlands worksite, ref.: WDL (see Plan 4 in Appendix A) where works activities included:
  - Installation of wingwalls.
  - Diversion works.
  - Material movements.
- Quainton worksite, ref.: QAR (see Plan 4 in Appendix A) where works activities included:
  - Earthworks.
- Meadoway and Glebe House worksite, ref.: MW&GH (see Plan 5 in Appendix A), where works activities included:
  - Parapet installation.
  - Earthworks.
  - Diversion works.
  - Topsoil stripping.
- Oat Close worksite, ref.: OC (see Plan 5 in Appendix A), where works activities included:
  - Overbridge works.
  - Installation of deck.
  - Backfilling.
  - Drainage.
  - Parapet installation.
  - Excavation.
  - Stockpiling.
  - Pond lining works.
  - Badger netting installation.

- Nash Lee Lane worksite, ref.: NLL (see Plan 6 in Appendix A), where works activities included:
  - Stockpile maintenance.
  - Earthworks, including excavation and replace.
  - Culvert construction.
  - Construction of new laydown area.
  - Surface water management.
  - Site access road maintenance.
  - Utility diversion, including hydro-drilling.
  - Road sign installation.
  - Construction of Stoke Brook diversion.
- Wendover Green Tunnel worksite, ref.: WGT (see Plan 6 in Appendix A), where works activities included:
  - Drainage works.
  - Installation of edgings.
  - Installation of substations.
  - Road line installation.
  - Utility installation.
  - Platform construction.
  - Surface water management.
  - Drilling, including trial pit and boreholes.
- Grove Farm worksite, ref.: GF (see Plan 7 in Appendix A), where works activities included:
  - Removal of concrete.
  - Material movements.
  - Access chamber installation.
  - Haul road maintenance.
- Small Dean Viaduct Compound worksite, ref.: SDVC (see Plan 7 in Appendix A), where works activities included:

- Loading and lifting of diaphragms and girders.
- Scaffolding works.
- Installation of working platform.
- Installation of pier stems.
- Bored piling.
- Welding.
- Earthworks.
- Launch platform works.
- Rocky Lane Embankment worksite, ref.: RLE (see Plan 7 in Appendix A), where works activities included:
  - Earthworks, including movement of materials and excavation.
  - Construction of plant laydown area.
  - Drainage works, including pond maintenance and surface water management.
- Wendover Dean Viaduct worksite, ref.: WDV (see Plan 7 in Appendix A), where works activities included:
  - Welding.
  - Grouting.
  - Barn demolition.
  - Hammerhead works, including concrete pours.
  - Lower bearing plates levelling and adjusting.
  - Earthworks, including movement of materials.
- Leather Lane worksite, ref.: LL (see Plan 8 in Appendix A), where works activities included:
  - Earthworks, including material movements.
- South Heath Cutting worksite, ref.: SHCW (see Plan 8 in Appendix A), where works activities included:
  - Operation of site access road.
- North Portal worksite, ref.: NP (see Plan 8 in Appendix A), where works activities included:

- Site support.
- Piling platform works including scraping, installation of hardstanding, earthworks and dismantling works.
- Porous portal structure works including reinforced concrete frame and concrete works.
- Tunnel bore machine dismantling.
- Compound works.
- Batching plant installation.
- Chesham Road worksite, ref.: CHSM (see Plan 8 in Appendix A), where works activities included:
  - General site activities.
  - Headhouse construction works, including concrete and external works.
  - Internal and external building works, including steel and cladding works.
- Little Missenden Vent Shaft worksite ref.: LM (see Plan 9 in Appendix A), where works activities included:
  - General site activities including operation of plant.
  - Tunnel connection works.
  - Superstructure concrete works.
  - Building construction internal and external works.
- Amersham Vent Shaft worksite, ref.: AM (see Plan 10 in Appendix A), where works activities included:
  - General site activities including operation of plant.
  - External works.
  - Tunnel connection works.
  - Superstructure concrete works.
- Chalfont St Giles Vent Shaft worksite, ref.: CSG (see Plan 11 in Appendix A), where works activities included:
  - General site activities including operation of plant.
  - Road maintenance.
  - Tunnel connection works.

- Internal and external building works.
- Chalfont St Peter Vent Shaft worksite, ref.: CSP (see Plan 12 in Appendix A), where works activities included:
  - Operation of plant.
  - Road maintenance.
  - Tunnel connection works.
  - Steel and zinc cladding works.
  - Internal and external building works.
- Colne Valley Viaduct - Load Test Pile 1 worksite, which is partly located in the London Borough of Hillingdon (LBH), ref.: CVV (see Plan 13 in Appendix A), where works activities included:
  - Jetty and haul road operation and maintenance.
  - Compound operations.
  - Auto transformed feeder station works including site preparation, bulk earthworks filling, drainage works and vegetation clearance.
  - Ground investigation works.
  - Pier construction, including tower crane mobilisation and demobilisation, formwork reinforced concrete works and post-tensioning.
  - Pumping water management.
  - Satellite compound welfare and generator farm operation.
  - Abutment works, including yard support activities and formwork reinforced concrete works.
  - Gas crossing emergency dismantling works.
  - 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, internal post-tensioning, steel structure erection and dismantling, stressing and grouting, crane assembly and dismantling.
  - Deck finishes including preparation and operation of storage yards, installation of below deck access provision, traffic management on deck

surface, installation of parapets, noise barriers, troughs, pipes, steel works and other minor materials to the storage yards and deck, installation of stairs, operation of support plant, construction of kerbs, construction of concrete stitch, filling of voids and top openings, waterproofing, diaphragm walls construction, abutment works, concrete works (within deck), drainage and steel works.

- Removal of Grand Union canal scaffold bridge.
- Landscaping works including removal of cofferdams, earthworks, profiling and cutting, manhole chamber construction, drainage, soil placement and vegetation clearance.

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

- Infrastructure Maintenance Depot (IMD) where earthworks were underway.
- MCJ where maintenance of earthworks and bulk excavation were underway.
- Bat mitigation structure where concrete pours, formwork reinforced concrete works and earthworks were underway.
- FCC Access Road Retaining Wall where retaining wall base construction and installation of rock blocks were underway.
- Greatmoor Culvert where earthworks were underway.
- GUN28 overbridge where formwork reinforced concrete works, deck and diaphragm construction and technical backfilling were underway.
- QUA36 overbridge where pile cutting and formwork reinforced concrete pile cap works were underway.
- Finemere Culvert where sheet piling, earthworks and excavation were underway.
- Hills Farm where stockpiling was underway.
- Edgcott Road overbridge where formwork reinforced concrete works were underway.
- Aylesbury Golf Course where cutting and culvert works, and utility diversion were underway.
- Thame Valley Viaduct Causeway where, installation of reinforced concrete, installation formwork and beams and overbridge construction were underway.
- Fleet Marston where earthworks, culvert and overbridge works were underway.
- Along A41 where concrete batching plant operation, earthworks, vehicle restraint system installation, highway construction and drainage works were underway.

- Bowood Lane where lifting and installation of pier diaphragm shutters, installation of scaffold and panels were underway.
- Nash Lee Road Diversion where movement of materials was underway.

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

## 1.2 Measurement Locations

1.2.1 Thirty-six (36) noise and six (6) 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 2024.

1.2.2 Maps showing the positions of noise and vibration monitoring installations are presented in Appendix B.

Table 2: Monitoring Locations

Worksite Reference	Measurement Reference	Address
A422 TN	TN-NMP1	Turweston, Brackley
SE	SE-NMP1	School End, Chetwode
	SE-Vib1	School End, Chetwode
HC	HC-NMP1	Hermitage, Chetwode
TW	TW-NMP1	Twyford, Buckinghamshire
WSO	WSO-NMP1	West Street, Twyford
CAL	SHC-NMP1	School Hill Compound, Calvert
	BRA-Vib1	13 Brackley Lane, Calvert Village
	FCC-NMP1	Calvert South
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton
	WDL-Vib1	Station Road, Quainton
QAR	QAR-NMP2	Station Rd, Quainton
MW&GH	GH-NMP1	Glebe House, A418, Aylesbury
OC	MF-NMP1	Moat Farm, Marsh Lane
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee
	NLL-NMP2	Nash Lee Lane, Nash Lee



Worksite Reference	Measurement Reference	Address
WGT	ER-NMP1	Ellesborough Rd, Wendover
	ER-Vib1	Ellesborough Rd, Wendover
	BL-NMP1	Bacombe Lane, Wendover
	WT-NMP1	A413, Wendover
GF	GF-Vib1	Grove Farm, Wendover
SDVC	SDVC-NMP1	Rocky Lane, Wendover
RLE	NCAS6-NMP1	Chesham Lane, The Lee, Wendover
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover
WDV	WDV-NMP1	Upper Wendover Dean Farm, A413, Wendover
	WDV-Vib1	Upper Wendover Dean Farm, A413, Wendover
LL	GD-NMP1	Grimms Ditch, The Lee, South Heath
SHCW	PR-NMP1	Potters Row, South Heath
NP	BFH-NMP1	Bury Farm, Great Missenden
	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath
	BLH-NMP1	Bayleys Hatch, South Heat, Great Missenden
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath
AM	AM-NMP1	Amersham Vent Shaft Worksite, Whielden Lane, Amersham
LM	LM-NMP1	Little Missenden, A413, Amersham
	PWC-NMP1	Patricia Holmes, Little Missenden Vent Shaft Worksite, Amersham
CSG	CSG-NMP1	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane
CSP	CFC-NMP1	Cricket Field Cottages, Chesham Lane, Chalfont St. Peter
	CSP-NMP2	Chalfont St Peter Vent Shaft Worksite, Chesham Lane, Chalfont St. Peter
	CSP-NMP3	Chalfont St Peter Vent Shaft Worksite, Chesham Lane, Chalfont St. Peter
CVV*	CVV-NMP1	Northern boundary, Load Test Pile 1 Worksite, Denham Water Ski Club
	DFS-NMP1	Denham Film Studio, Uxbridge

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

## 2 Summary of Results

### 2.1 Summary of Measured Noise Levels

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

Table 3: Summary of Measured dB LAeq Data over the Monitoring Period

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average LAeq,T (Highest Day LAeq,T)					Saturday Average LAeq,T (Highest Day LAeq,T)					Sunday / Public Holiday Average LAeq,T (Highest Day LAeq,T)	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
A422 TN	TN-NMP1	Turweston, Brackley	Free-field	48.6 (54.6)	52.3 (66.7)	47.2 (52.5)	44.1 (53.0)	42.4 (51.7)	46.2 (49.1)	48.5 (52.2)	47.8 (51.2)	46.3 (54.7)	41.2 (46.2)	46.0 (54.3)	43.0 (52.0)
SE	SE-NMP1	School End, Chetwode	Free-field	50.8 (58.3)	60.3 (64.1)	47.9 (58.2)	40.6 (56.9)	40.0 (53.9)	49.8 (59.4)	54.3 (62.4)	50.3 (60.1)	46.6 (59.6)	38.2 (43.2)	42.1 (48.0)	37.5 (43.9)
HC	HC-NMP1	Hermitage, Chetwode	Free-field	52.9 (58.4)	62.1 (69.4)	50.1 (59.6)	46.2 (59.5)	46.6 (62.1)	50.4 (52.2)	55.1 (63.8)	52.4 (59.9)	49.9 (64.2)	45.4 (49.3)	46.3 (50.6)	44.7 (52.9)
TW	TW-NMP1	Twyford	Free-field	45.8 (58.7)	51.4 (56.9)	44.2 (52.1)	41.5 (53.3)	41.1 (56.1)	45.7 (49.1)	48.6 (57.8)	48.8 (57.4)	45.7 (57.9)	39.6 (50.2)	42.6 (49.5)	37.5 (45.2)
WSO	WSO-NMP1	West Street, Twyford	Free-field	_* _*	_* _*	_* _*	_* _*	_* _*	_* _*	_* _*	_* _*	_* _*	_* _*	_* _*	_* _*
CAL	SHC-NMP1	School Hill Compound, Calvert	Free-field	58.2 (70.9)	65.1 (71.8)	54.1 (71.6)	53.1 (72.6)	51.4 (69.4)	55.1 (59.4)	60.8 (68.4)	60.0 (72.7)	55.7 (71.2)	46.5 (62.3)	52.7 (70.5)	43.8 (53.9)
	FCC-NMP1	Calvert South	Free-field	50.2 (53.4)	51.2 (56.2)	45.1 (51.3)	40.6 (52.1)	44.4 (53.8)	49.3 (52.7)	47.9 (51.8)	46.1 (49.7)	44.8 (51.9)	44.1 (52.1)	45.5 (52.3)	43.8 (52.4)
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton	Free-field	67.2 (70.9)	69.3 (73.1)	46.3 (52.6)	44.8 (52.9)	45.8 (57.7)	55.5 (59.9)	60.4 (67.0)	60.6 (72.0)	55.5 (69.5)	42.4 (47.9)	57.5 (73.3)	46.0 (61.2)

OFFICIAL

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average LAeq,T (Highest Day LAeq,T)					Saturday Average LAeq,T (Highest Day LAeq,T)					Sunday / Public Holiday Average LAeq,T (Highest Day LAeq,T)	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
QAR	QAR-NMP2	Station Rd, Quainton	Free-field	56.8 (63.6)	57.5 (67.7)	54.3 (69.3)	53.2 (72.5)	49.8 (67.3)	51.2 (62.3)	55.6 (63.9)	55.6 (58.3)	52.0 (59.0)	44.6 (55.9)	51.6 (59.1)	44.2 (53.0)
MW&GH	GH-NMP1	Glebe House, A418, Aylesbury	Free-field	55.2 (58.5)	55.6 (59.4)	55.2 (64.2)	53.3 (61.7)	50.2 (56.6)	52.6 (55.1)	54.4 (57.8)	54.3 (58.2)	53.8 (59.0)	48.5 (54.7)	54.2 (56.9)	49.7 (57.0)
OC	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury	Free-field	47.1 (57.6)	49.9 (54.7)	45.2 (60.2)	43.7 (59.1)	42.4 (59.0)	44.2 (49.5)	46.4 (49.2)	47.6 (50.6)	43.9 (49.2)	40.0 (46.8)	44.5 (49.5)	40.0 (47.6)
	MF-NMP1	Moat Farm, Marsh Lane	Free-field	48.1 (50.1)	53.1 (59.2)	45.6 (51.3)	44.4 (50.9)	43.3 (49.8)	41.9 (44.2)	45.0 (46.0)	43.9 (47.5)	43.8 (47.0)	38.5 (42.0)	43.7 (47.5)	39.7 (44.0)
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee	Free-field	55.7 (59.7)	58.0 (62.3)	54.2 (61.6)	50.5 (58.8)	48.1 (57.2)	51.2 (53.0)	53.7 (56.9)	54.6 (57.7)	52.7 (58.1)	46.7 (50.6)	52.6 (57.6)	47.9 (58.6)
	NLL-NMP2	Nash Lee Lane, Nash Lee	Free-field	55.3 (59.8)	58.0 (61.2)	52.4 (63.1)	49.3 (60.9)	47.1 (56.2)	50.8 (53.9)	51.9 (53.5)	52.3 (55.1)	52.5 (68.0)	46.1 (52.0)	52.1 (64.1)	45.7 (54.7)
WGT	ER-NMP1	Ellesborough Rd, Wendover	Free-field	52.3 (57.2)	54.1 (61.7)	52.4 (60.5)	48.4 (54.4)	46.7 (57.3)	51.3 (52.6)	51.0 (55.8)	51.0 (56.3)	50.4 (57.0)	47.7 (55.3)	52.8 (57.1)	47.7 (57.7)
	BL-NMP1	Bacombe Lane, Wendover	Free-field	50.5 (55.2)	55.5 (58.7)	50.1 (56.0)	48.0 (51.0)	47.7 (52.8)	49.7 (51.8)	50.6 (51.4)	49.5 (51.8)	49.9 (55.7)	47.9 (49.8)	49.8 (53.0)	47.8 (51.5)

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average LAeq,T (Highest Day LAeq,T)					Saturday Average LAeq,T (Highest Day LAeq,T)					Sunday / Public Holiday Average LAeq,T (Highest Day LAeq,T)	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
	WT-NMP1	A413, Wendover	Free-field	67.4 (73.7)	67.0 (69.6)	66.2 (68.7)	62.6 (66.6)	59.8 (69.5)	64.1 (68.1)	65.4 (66.7)	66.5 (68.8)	64.8 (68.0)	58.5 (63.0)	65.0 (68.5)	58.8 (67.6)
GF	GF-NMP1	Grove Farm, Wendover	Free-field	52.1 (59.5)	54.6 (57.7)	51.3 (61.0)	47.3 (59.7)	45.8 (57.6)	51.3 (55.6)	56.7 (75.9)	56.6 (76.4)	56.3 (80.9)	45.1 (52.5)	51.4 (58.8)	44.6 (51.6)
SDVC	SDVC-NMP1	Rocky Lane, Wendover	Free-field	63.5 (71.5)	62.4 (66.4)	60.9 (64.3)	58.3 (63.2)	56.0 (64.7)	60.9 (64.5)	61.4 (63.2)	62.4 (64.6)	61.2 (63.5)	56.3 (59.7)	61.8 (66.5)	55.6 (65.2)
RLE	NCAS6-NMP1	Chesham Lane, The Lee, Wendover	Free-field	53.2 (59.8)	57.1 (64.2)	49.0 (64.4)	46.1 (60.3)	44.4 (57.7)	49.6 (53.8)	48.7 (52.5)	48.4 (51.9)	47.9 (54.4)	43.9 (48.6)	46.6 (52.8)	43.3 (51.0)
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	Free-field	58.5 (61.9)	59.6 (62.2)	56.8 (63.2)	53.4 (60.1)	50.6 (59.1)	55.4 (61.5)	58.1 (61.6)	57.4 (61.0)	55.5 (61.9)	50.2 (54.0)	54.4 (58.1)	50.1 (58.1)
WDV	WDV-NMP1	Upper Wendover Dean Farm, A413, Wendover	Free-field	53.4 (59.2)	54.7 (58.1)	50.8 (60.3)	47.7 (57.6)	46.6 (58.1)	50.9 (55.4)	50.5 (53.7)	51.7 (53.8)	49.1 (54.0)	48.5 (57.2)	49.8 (53.8)	46.5 (55.0)
LL	GD-NMP1	Grimms Ditch, The Lee, South Heath	Free-field	54.5 (76.0)	55.8 (68.9)	54.6 (69.6)	51.7 (74.6)	52.0 (69.9)	53.3 (68.3)	55.9 (61.7)	60.6 (68.4)	56.0 (63.8)	50.3 (61.1)	51.9 (63.3)	46.0 (51.1)
SHCW	PR-NMP1	Potters Row, South Heath	Free-field	50.2 (54.4)	51.2 (56.0)	49.9 (65.2)	43.8 (60.9)	45.8 (56.7)	52.7 (54.3)	50.7 (54.4)	49.0 (50.8)	48.0 (52.9)	45.8 (56.5)	49.1 (55.4)	45.1 (54.4)

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average LAeq,T (Highest Day LAeq,T)					Saturday Average LAeq,T (Highest Day LAeq,T)					Sunday / Public Holiday Average LAeq,T (Highest Day LAeq,T)	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
NP	BFH-NMP1	Bury Farm, Great Missenden	Free-field	48.6 (51.0)	49.9 (55.2)	47.4 (60.7)	42.7 (58.1)	43.3 (52.8)	47.5 (48.9)	48.3 (49.5)	48.2 (49.2)	44.8 (49.7)	44.7 (52.2)	45.9 (51.4)	42.1 (53.0)
	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath	Free-field	51.5 (53.6)	54.1 (59.9)	51.9 (64.3)	46.7 (60.3)	44.1 (54.2)	49.0 (51.7)	50.4 (51.1)	50.4 (51.7)	48.2 (52.3)	45.1 (53.0)	48.6 (53.5)	42.6 (51.2)
	BLH-NMP1	Bayleys Hatch, South Heath, Great Missenden	Free-field	51.0 (55.1)	51.2 (62.5)	47.6 (57.0)	42.8 (54.2)	42.3 (52.0)	48.7 (49.3)	49.5 (51.0)	49.9 (50.5)	45.9 (51.8)	42.8 (51.8)	48.1 (54.3)	41.2 (52.2)
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath	Free-field	57.0 (59.9)	57.9 (61.1)	55.9 (66.6)	52.7 (62.7)	48.0 (57.9)	52.0 (53.0)	55.5 (56.9)	54.6 (55.8)	53.6 (58.5)	48.4 (59.6)	53.7 (56.3)	47.2 (56.5)
AM	AM-NMP1	Whielden Lane, Amersham	Free-field	62.0 (63.8)	63.1 (64.9)	60.2 (62.8)	57.8 (61.3)	53.8 (61.2)	58.9 (60.7)	61.9 (63.8)	60.4 (61.7)	59.2 (63.1)	52.8 (57.6)	59.4 (63.4)	53.5 (61.4)
LM	LM-NMP1	Little Missenden, A413, Amersham	Free-field	54.8 (57.7)	55.1 (58.8)	54.8 (62.9)	51.3 (60.4)	46.7 (56.0)	50.1 (52.4)	53.8 (55.8)	53.7 (55.7)	52.5 (55.3)	46.2 (51.0)	50.7 (56.0)	44.7 (54.4)
	PWC-NMP1	Patricia Holmes, LM Worksite, Amersham	Free-field	61.4 (63.4)	61.0 (63.3)	60.9 (64.7)	57.3 (62.5)	53.0 (61.4)	56.3 (56.9)	59.1 (61.3)	59.5 (61.3)	58.7 (61.4)	52.3 (56.6)	57.7 (60.9)	51.9 (59.7)

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average LAeq,T (Highest Day LAeq,T)					Saturday Average LAeq,T (Highest Day LAeq,T)					Sunday / Public Holiday Average LAeq,T (Highest Day LAeq,T)	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
CSG	CSG-NMP1	CSG Worksite, Bottom House Farm Lane	Free-field	49.4 (52.6)	51.7 (53.7)	49.8 (54.8)	42.3 (53.3)	43.3 (55.2)	48.7 (52.2)	51.9 (52.5)	48.8 (50.8)	47.0 (54.7)	43.5 (54.1)	48.5 (58.2)	41.0 (53.7)
CSP	CFC-NMP1	Cricket Field Cottages, Chesham Lane, Chalfont St. Peter	Free-field	60.8 (63.0)	63.4 (70.0)	57.8 (60.5)	53.4 (58.0)	54.6 (70.0)	56.2 (57.5)	57.3 (58.0)	57.4 (58.3)	55.8 (63.7)	54.1 (66.0)	55.4 (59.3)	53.6 (68.1)
	CSP-NMP2	Chalfont St Peter Vent Shaft Worksite	Free-field	47.9 (50.4)	50.2 (53.4)	49.1 (59.0)	46.4 (55.9)	42.3 (51.2)	45.9 (47.2)	48.4 (49.1)	49.5 (54.3)	47.5 (53.5)	42.0 (49.4)	47.1 (53.7)	40.1 (48.5)
	CSP-NMP3	Chalfont St Peter Vent Shaft Worksite	Free-field	57.4 (59.6)	57.3 (59.0)	56.9 (61.0)	54.2 (59.5)	49.8 (57.6)	54.4 (56.1)	56.5 (57.5)	56.9 (57.6)	55.9 (58.8)	49.4 (53.7)	55.1 (57.8)	49.2 (56.0)
CVV	CVV-NMP1	Northern boundary, Load Test Pile 1 Worksite	Free-field	63.2 (72.2)	62.1 (74.1)	60.6 (62.3)	57.4 (61.4)	56.4 (63.7)	58.7 (61.1)	60.3 (61.8)	60.3 (61.6)	58.5 (60.7)	54.8 (60.4)	59.2 (63.9)	55.8 (64.8)
	DFS-NMP1	Denham Film Studio, Uxbridge	Free-field	54.3 (58.6)	53.2 (65.9)	56.0 (58.4)	47.6 (57.0)	51.1 (60.5)	55.5 (58.5)	53.8 (55.9)	50.8 (53.0)	51.9 (58.8)	50.1 (60.7)	52.2 (64.7)	47.0 (57.6)

\* Monitor WSO-NMP1 was offline for the month of March due to water ingress to the monitoring station.

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

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

Worksite Reference	Measurement Reference	Monitor Address	Highest PPV measured in any axis, mm/s
SE	SE-Vib1	School End, Chetwode	2.19 (Y-axis)
WDL	WDL-Vib1	Station Road, Quainton	1.19 (X-axis)
SHC	BRA-Vib1	13 Brackley Lane, Calvert Village	1.25 (Y-axis)
WGT	ER-Vib 1	46, Ellesborough Rd, Wendover	1.05 (Y-axis)
WDV	WDV-Vib1	Upper Wendover Dean Farm, A413, Wendover	4.27 (Z-axis)
GF	GF-Vib1	Grove Farm, Wendover	0.90 (Y-axis)

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

## 2.2 Exceedances of the LOAEL and SOAEL

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

2.2.2 The significant observed adverse effect level (SOAEL) is defined in the 'Planning Practice Guidance – Noise' as the level above which "noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in



difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.

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

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

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

Table 5: Summary of Exceedances of LOAEL and SOAEL

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL	
A422 TN	TN-NMP1	Turweston, Brackley	Weekday	0800-1800	1	No exceedance	
SE	SE-NMP1	School End, Chetwode	Weekday	0800-1800	3	No exceedance	
HC	HC-NMP1	Hermitage, Chetwode	Weekday Saturday	0800-1800 0800-1300	9 1	No exceedance	
TW	TW-NMP1	Twyford	All days	All periods	No exceedance	No exceedance	
WSO	WSO-NMP1	West Street, Twyford	All days	All periods	Not Applicable**	Not Applicable**	
CAL	SHC-NMP1	School Hill Compound, Calvert	All days	All periods	Not Applicable	Not Applicable	
	FCC-NMP1	Calvert South	All days	All periods	No exceedance	No exceedance	
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton	Weekday	0700-0800 0800-1800	20 20	14 2	
			Saturday	0700-0800 0800-1300 1300-1400	2 2 3	No exceedance No exceedance 1	
QAR	QAR-NMP2	Station Rd, Quainton	Weekday Saturday	0800-1800 0800-1300	4 1	No exceedance No exceedance	
MW&GH	GH-NMP1	Glebe House, A418, Aylesbury	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
OC	MF-NMP1*	Moat Farm, Marsh Lane	All days	All periods	No exceedance	No exceedance
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury	All days	All periods	No exceedance	No exceedance
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee	All days	All periods	No exceedance	No exceedance
	NLL-NMP2	Nash Lee Lane, Nash Lee	All days	All periods	No exceedance	No exceedance
WGT	ER-NMP1	Ellesborough Rd, Wendover	All days	All periods	No exceedance	No exceedance
	BL-NMP1	Bacombe Lane, Wendover	All days	All periods	No exceedance	No exceedance
	WT-NMP1	A413, Wendover	Weekday Saturday	0800-1800 0800-1300	20 3	No exceedance No exceedance
GF	GF-NMP1	Grove Farm, Wendover	Saturday	0800-1300	1	No exceedance
SDVC	SDVC-NMP1	Rocky Lane, Wendover	All days	All periods	No exceedance	No exceedance
RLE	NCAS6-NMP1	Chesham Lane, The Lee, Wendover	Weekday	0800-1800	1	No exceedance
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	All days	All periods	No exceedance	No exceedance
WDV	WDV-NMP1	A413, Wendover	All days	All periods	No exceedance	No exceedance
LL	GD-NMP1	Grimms Ditch, The Lee, South Heath	Weekday	0800-1800	3	No exceedance
SHCW	PR-NMP1	Potters Row, South Heath	All days	All periods	No exceedance	No exceedance

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
NP	BFH-NMP1	Bury Farm, Great Missenden	Weekday	1800-1900 1900-2200	1 3	No exceedance
	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath	Weekday	1800-1900 1900-2200	1 2	No exceedance
	BLH-NMP1	Bayleys Hatch, South Heath, Great Missenden	Weekday	1900-2200	1	No exceedance
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath	All days	All periods	No exceedance	No exceedance
AM	AM-NMP1*	Whielden Lane, Amersham	All days	All periods	No exceedance	No exceedance
LM	LM-NMP1*	Little Missenden Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
	PWC-NMP1	Patricia Holmes, Little Missenden Vent Shaft Worksite, Amersham	All days	All periods	Not Applicable	Not Applicable
CSG	CSG-NMP1*	Chalfont St Giles Vent Shaft	All days	All periods	No exceedance	No exceedance
CSP	CFC-NMP1	Cricket Field Cottages, Chesham Lane	All days	All periods	No exceedance	No exceedance
	CSP-NMP2*	Chalfont St Peter Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
	CSP-NMP3*	Chalfont St Peter Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
CVV	CVV-NMP1*	Northern boundary, Load Test Pile 1 Worksite	Weekday	0800-1800	1	No exceedance
	DFS-NMP1*	Denham Film Studio, Uxbridge	All days	All periods	No exceedance	No exceedance

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

\*\* Monitor WSO-NMP1 was offline for the month of March due to water ingress to monitoring station.

- 2.2.6 Exceedances of the LOAEL were recorded at thirteen (13) monitoring locations during the month of March 2024. LOAEL exceedances were recorded during weekday and Saturday daytime and evening working periods.
- 2.2.7 For the purpose of reporting the number of days where the SOAEL is exceeded, multiple exceedances of the SOAEL in a 24-hour period would be counted as a single exceedance during that day. Over the reporting period, the overall number of SOAEL exceedances at each measurement location is shown in Table 6 and may be lower than the total sum of individual exceedances reported in Table 5 for each location.

Table 6: Summary of Total Exceedances of SOAEL

Worksite Reference	Measurement Reference	Monitor Address	Total of SOAEL exceedances in the month
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton	15

- 2.2.8 Fifteen (15) SOAEL exceedances were recorded due to HS2 construction works during March 2024. The exceedance occurred at WDL-NMP1 during weekday and Saturday daytime periods.

## 2.3 Exceedances of Trigger Level

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

Table 7: Summary of Exceedances of Trigger Levels

Complaint Reference Number (if applicable)	Worksite Reference	Date and Time Period	Identified Source	Results of Investigation (including noise monitoring results)	Actions Taken
-	WDL	01/03/2024 07:00 – 1700	Vehicle movements, cutting and sawing, excavation, white noise broadband alarms and engine noises.	73.0 dB L <sub>Aeq,T</sub>	EHO was notified of the trigger exceedance. Incident has since been resolved.

Complaint Reference Number (if applicable)	Worksite Reference	Date and Time Period	Identified Source	Results of Investigation (including noise monitoring results)	Actions Taken
-	CAL	09/03/2024 14:00 – 17:00	Tracked machinery, white noise broadband reversing alarms and wind.	71.2 dB L <sub>Aeq,T</sub>	EHO was notified of the trigger exceedance. Incident is under investigation.
-	WDL	12/03/2024 08:00 – 17:00	Road sweepers, banging, site operatives shouting, vehicle movements, wind and birds.	73.1 dB L <sub>Aeq,T</sub>	EHO was notified of the trigger exceedance.
-	WDL	13/03/2024 08:00 – 17:00	Road traffic adjacent to monitor, birds, rain, wind and aircraft overhead.	64.6 dB L <sub>Aeq,T</sub>	EHO was notified of the trigger exceedance.
-	CAL	23/03/2024 14:00 – 18:00	Engine operation, loading and unloading of materials, strong winds, vehicle movements and birds.	70.3 dB L <sub>Aeq,T</sub>	EHO was notified of the trigger exceedance.

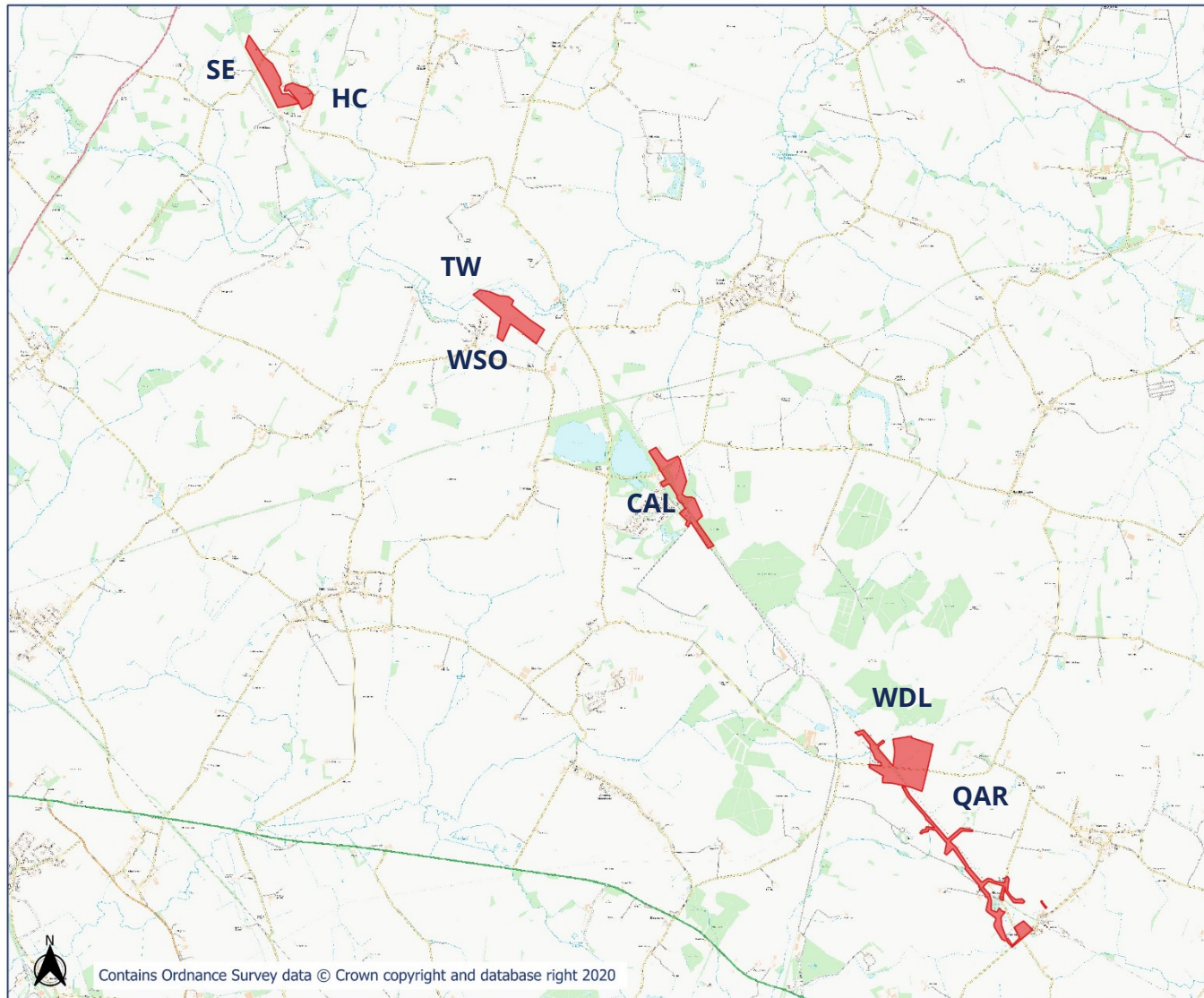
## 2.4 Complaints

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

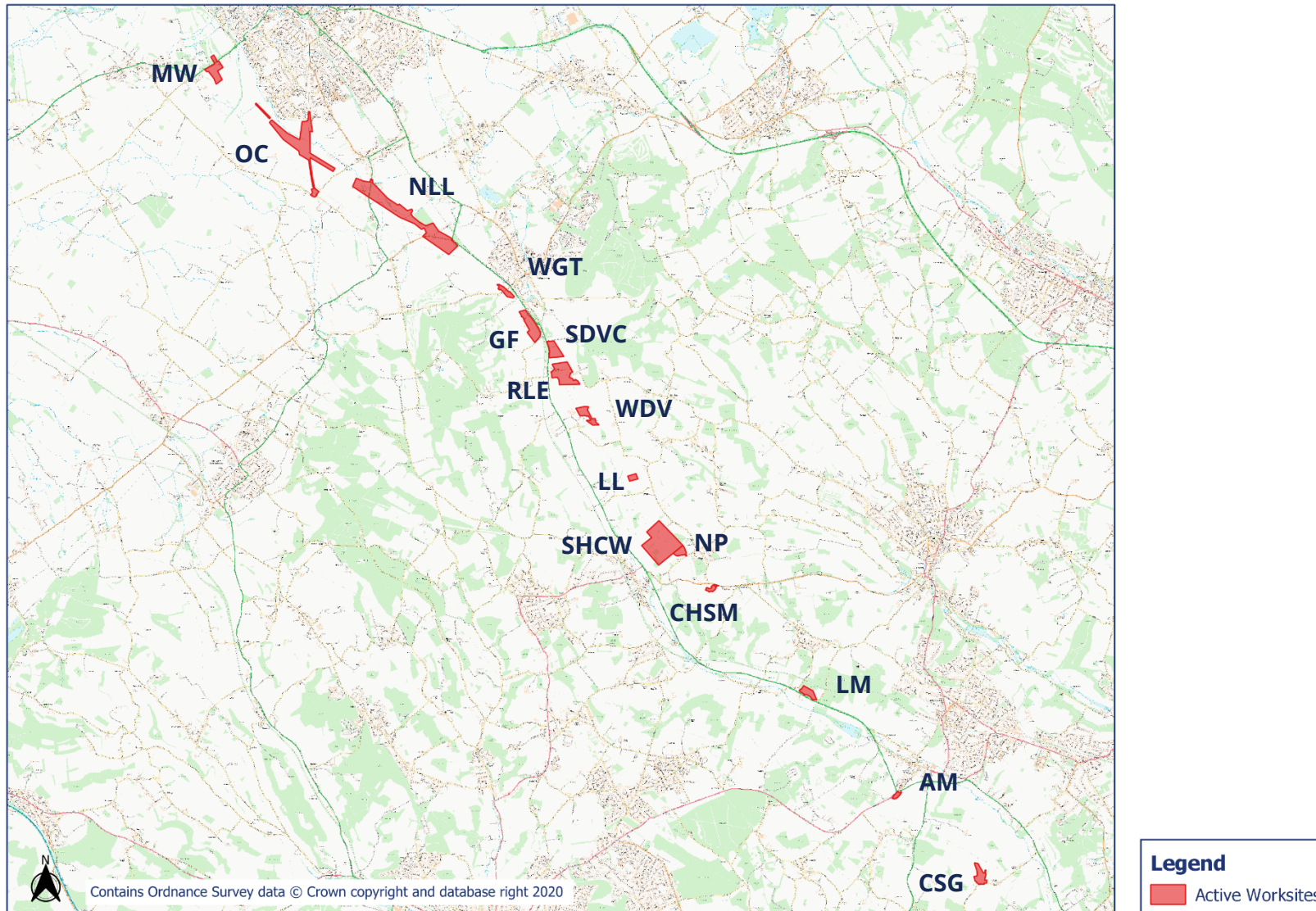
Table 8: Summary of Complaints

Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
HS2-24-106886-E-C HS2-24-45239-C	CSP	Disturbance due to humming noise heard at night.	Noise identified as a temporary tunnel ventilation fan.	Mitigation has now been introduced to the design of the fans. The results of the investigation and further information were provided to resident.
HS2-24-107163-E-C	NLL	Complaint due to generator and rumbling noise at night.	A pump unit on a generator malfunctioned, it was located 350m away from resident's address and was unlikely to have caused disturbance.	Stakeholder was provided with the results of the investigation.
HS2-24-107431-E-C	RLE	Noise disturbance from porta cabins at night.	Disturbance was due to operation of porta cabins.	Resident has been offered respite during works while a resolution to noise disturbance can be resolved.

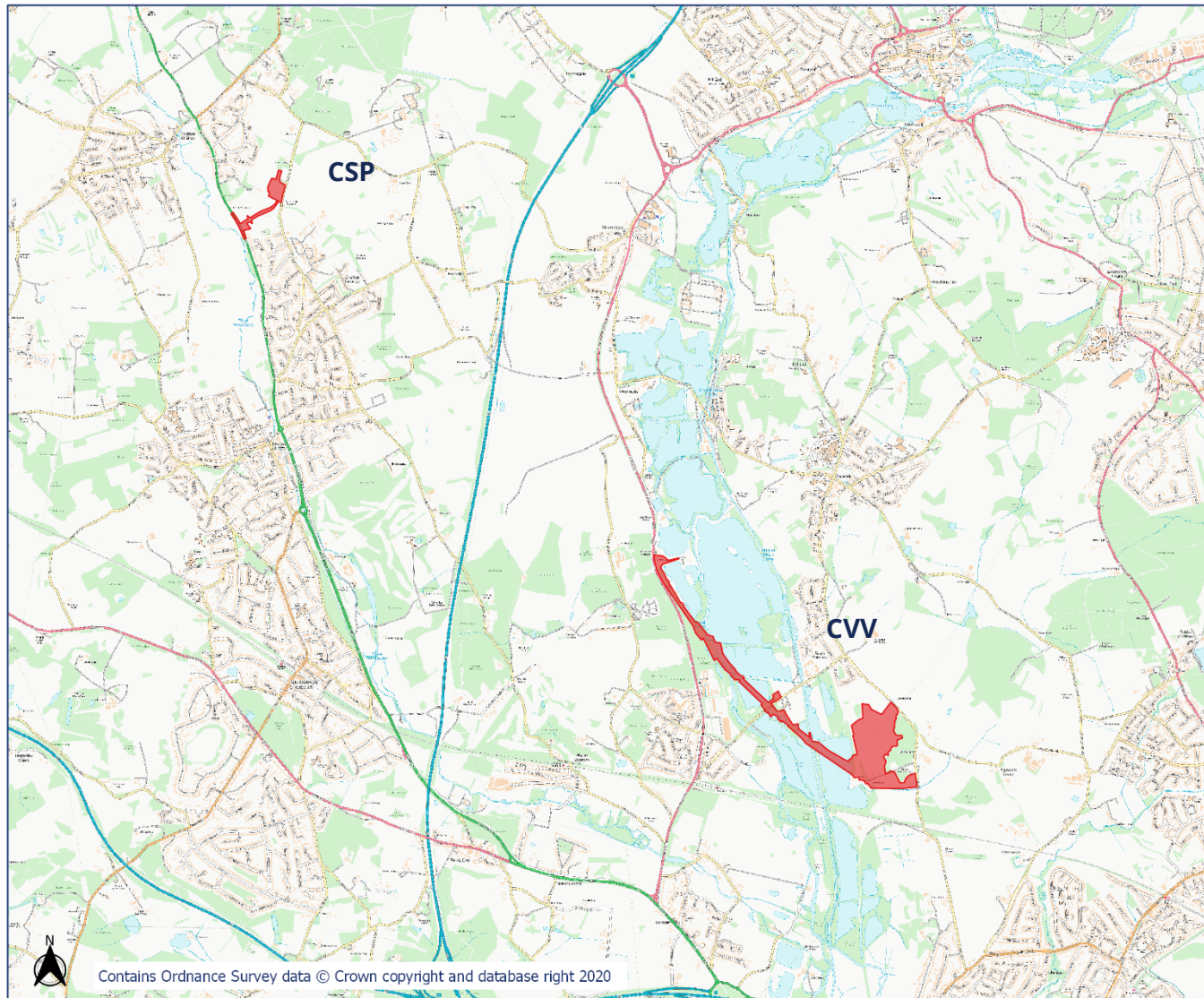
# Appendix A Site Locations



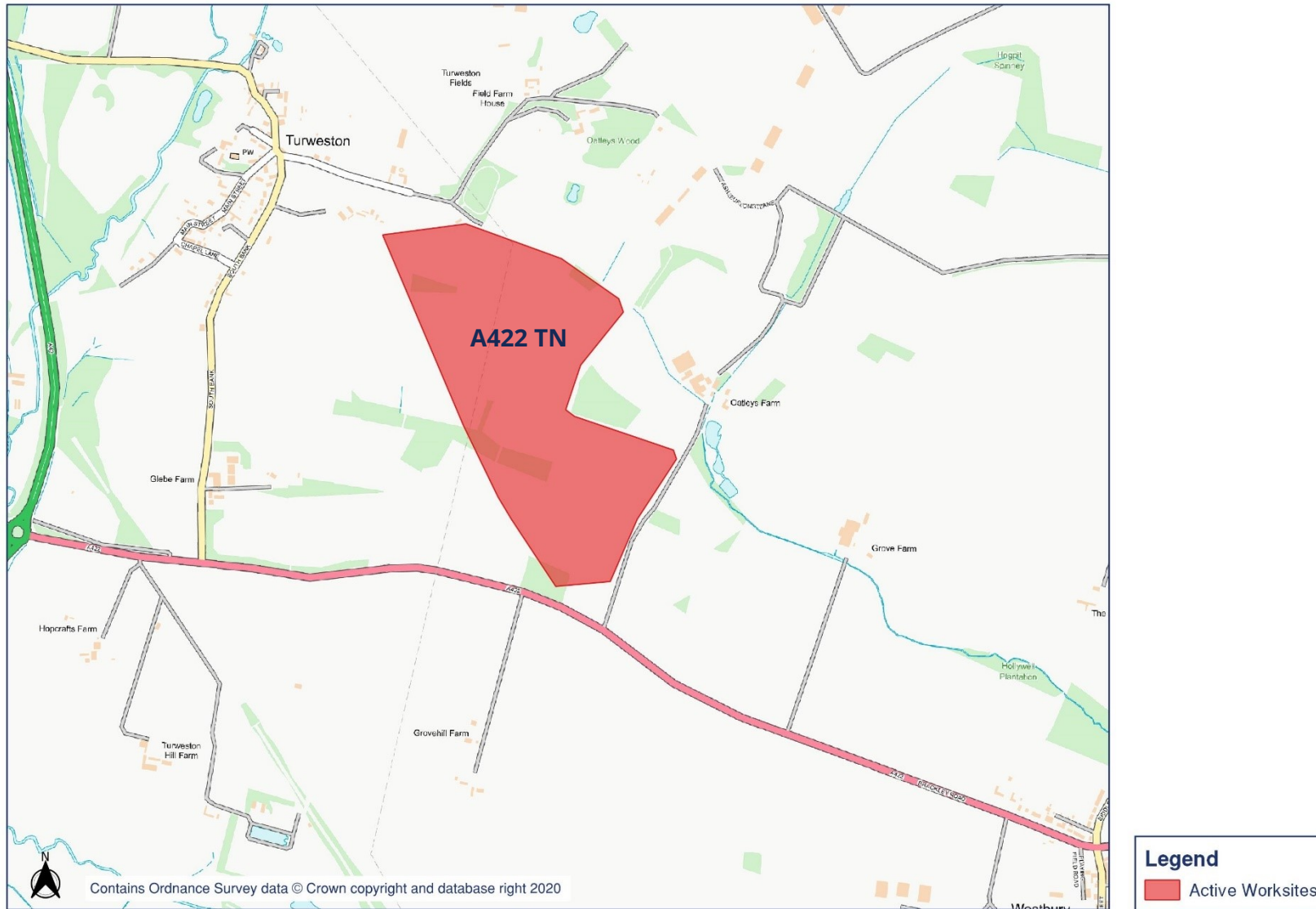


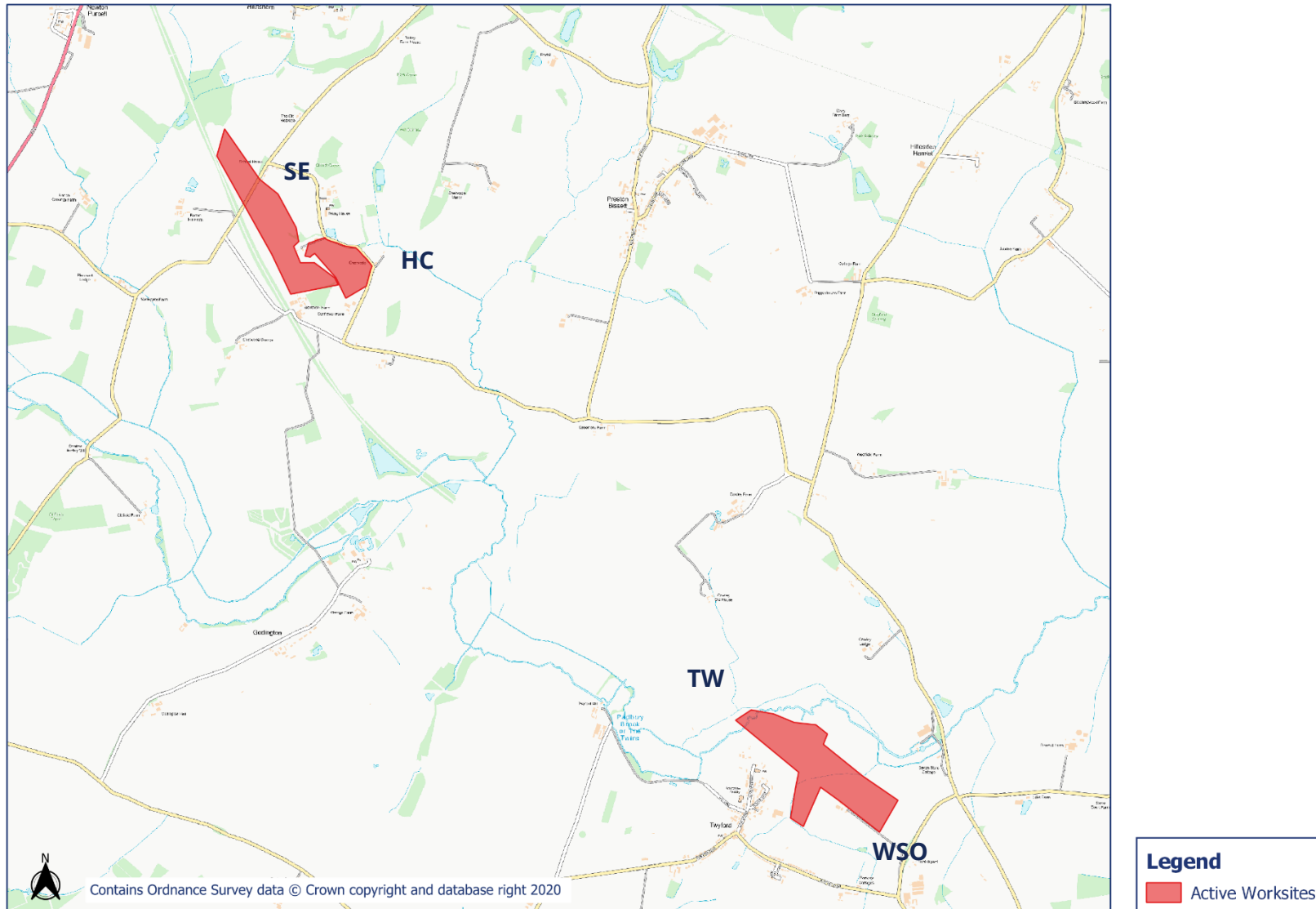


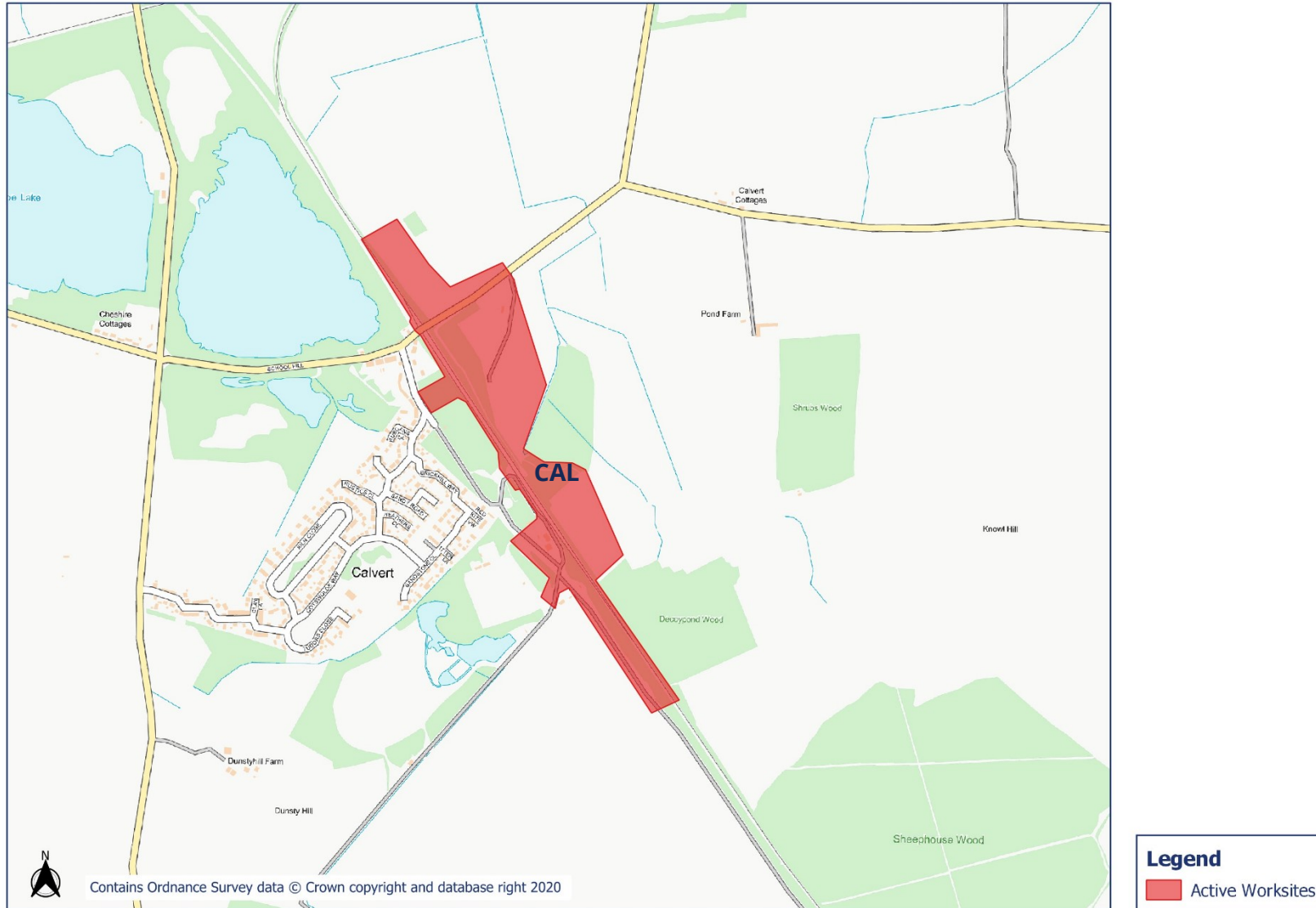
# HS2 Worksite Identification Plan - Overview 3

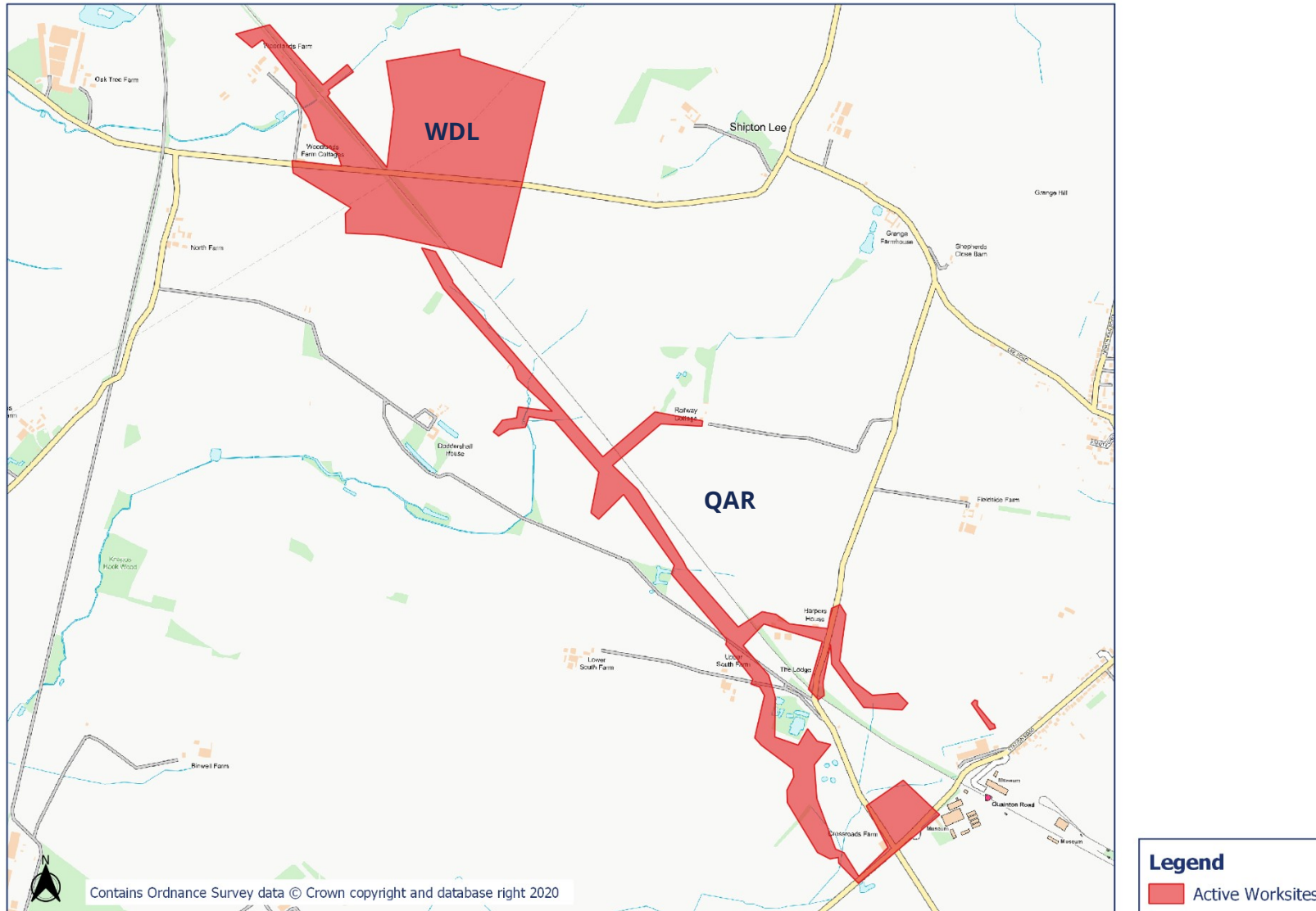


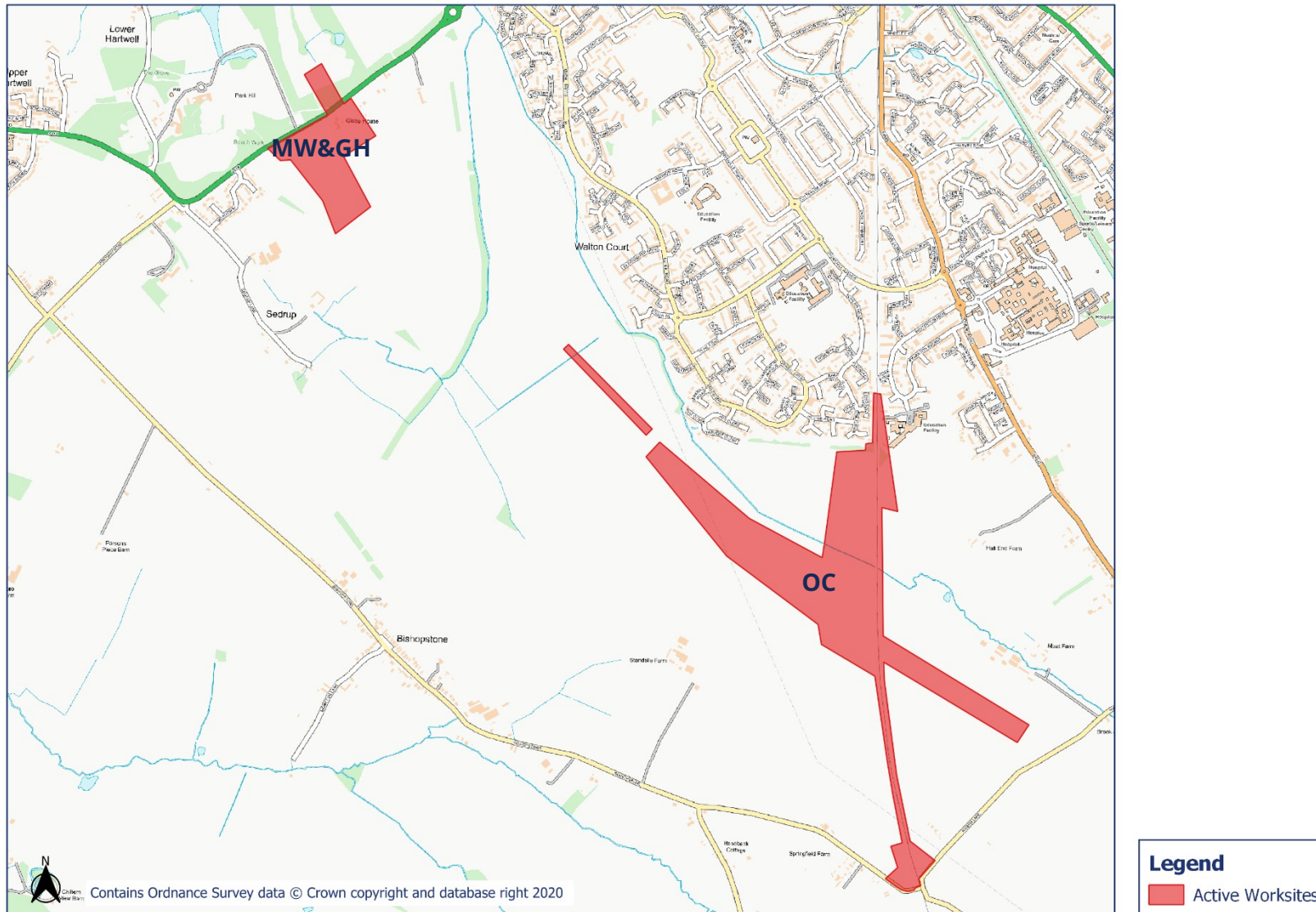
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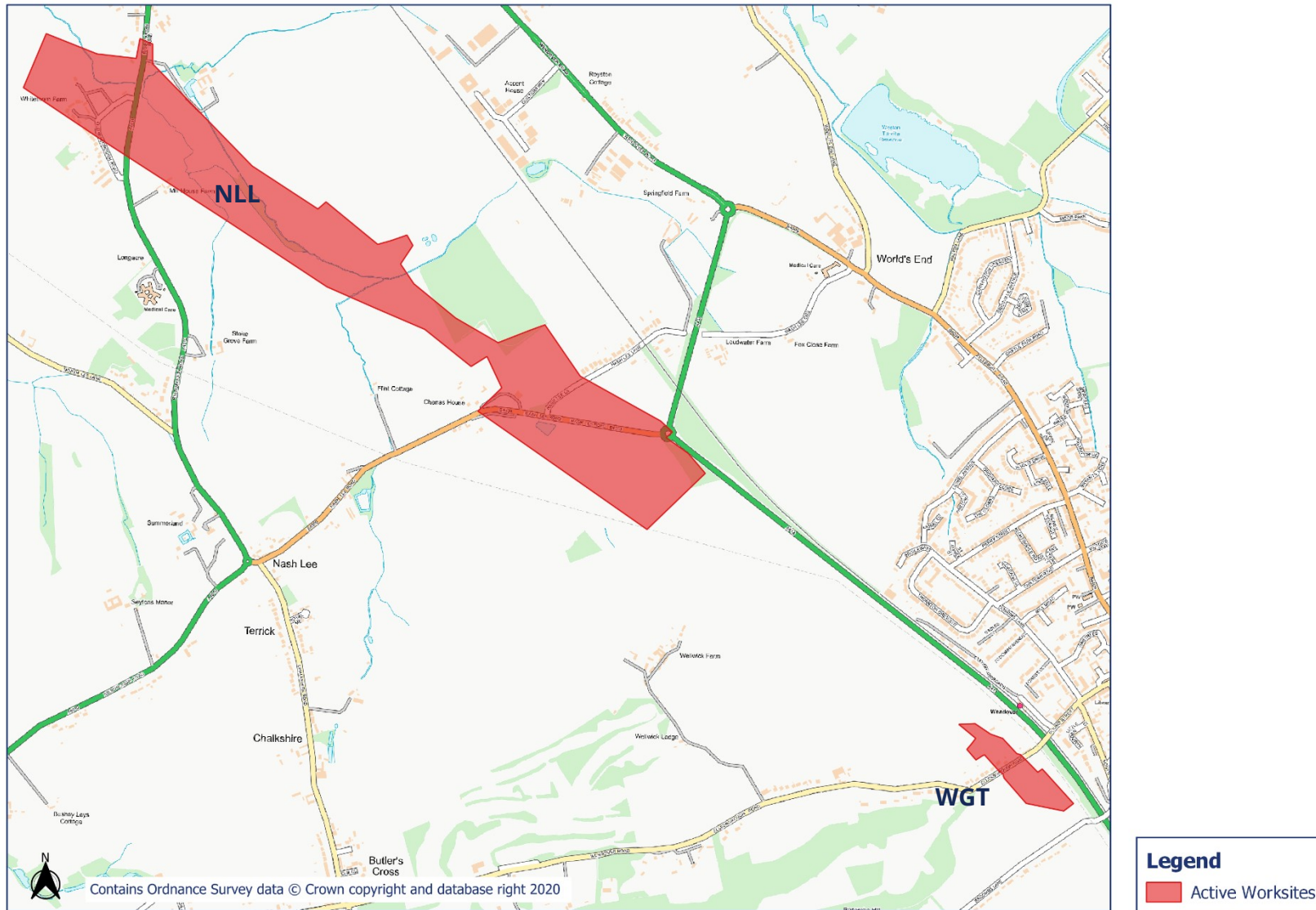




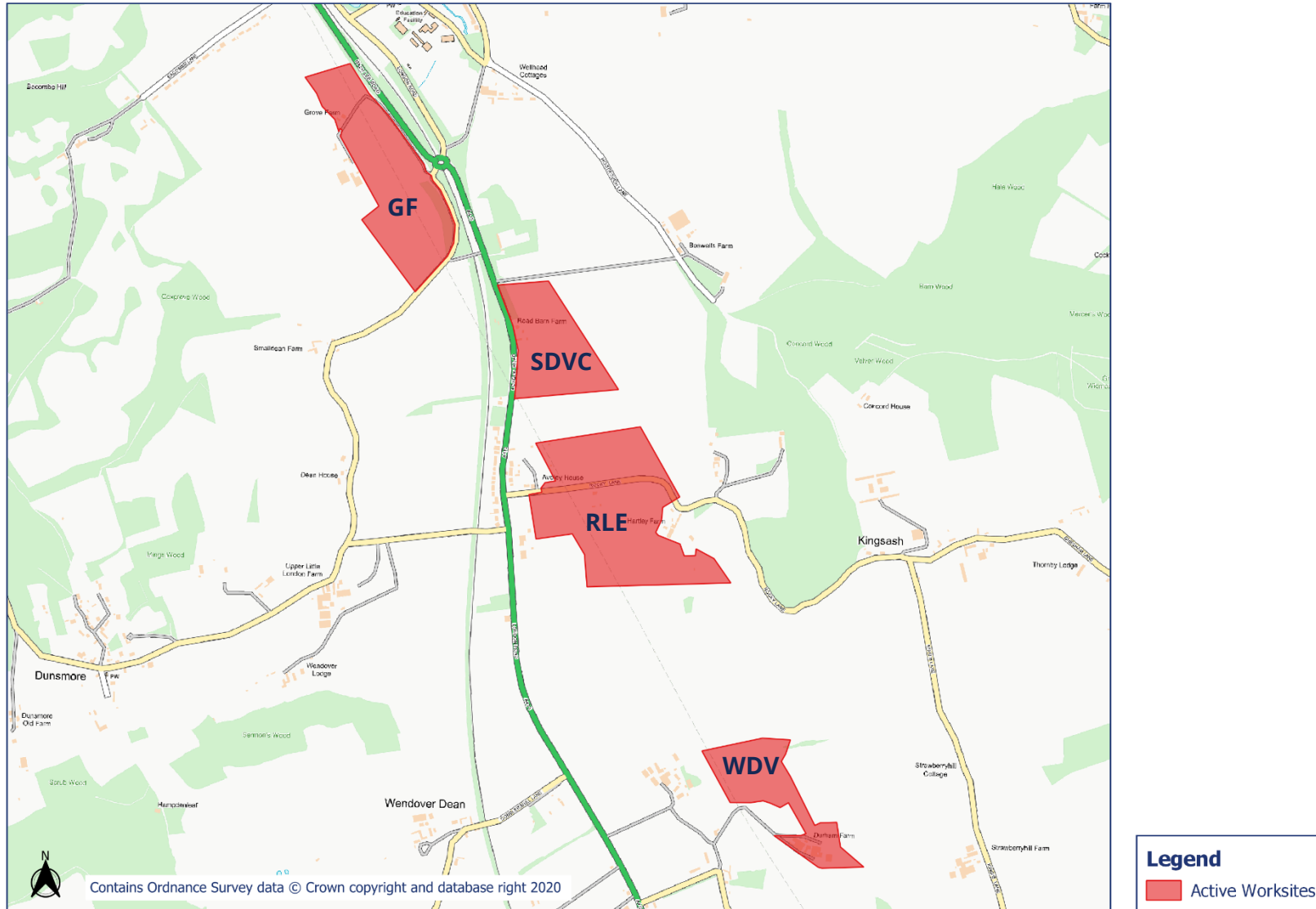


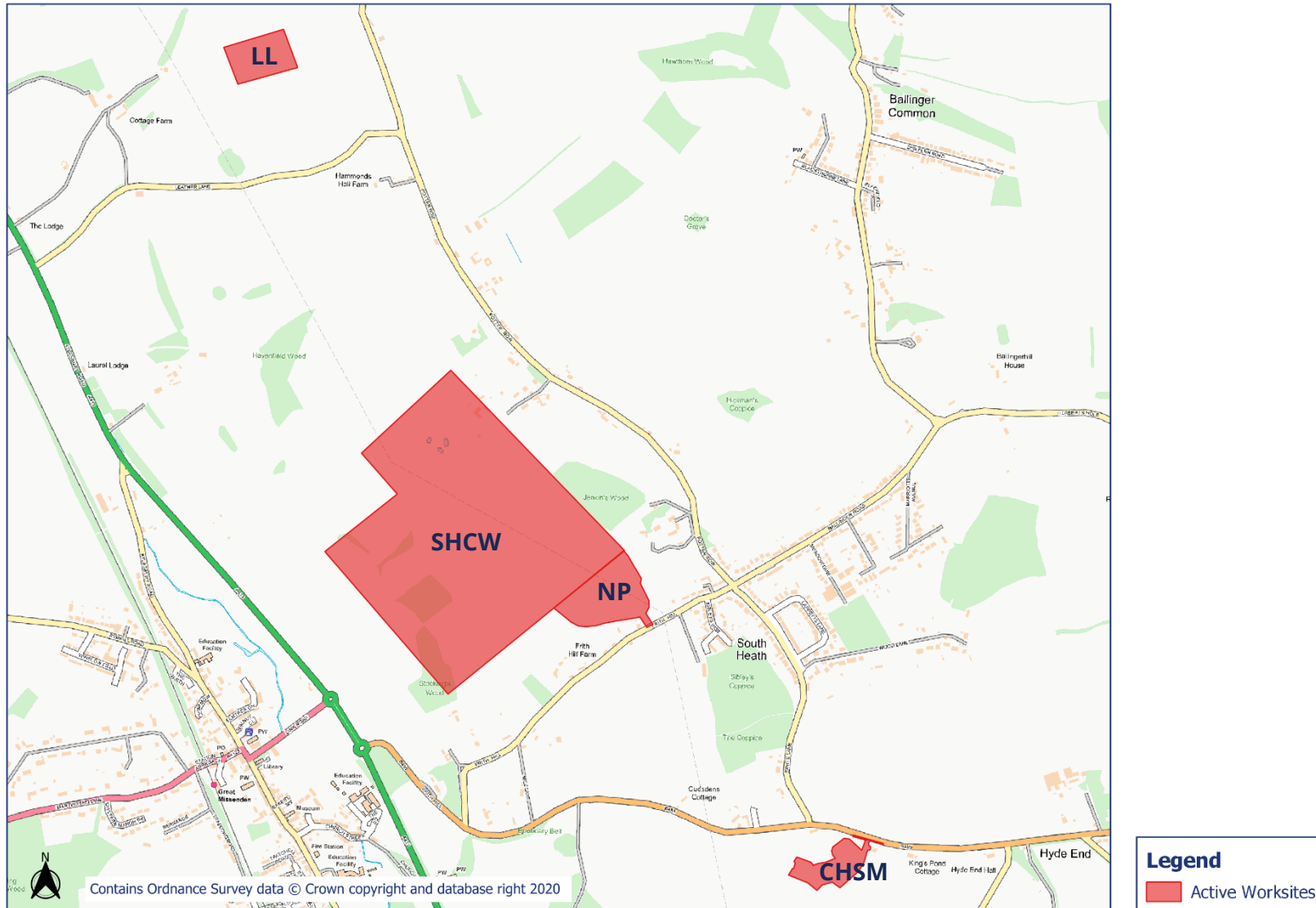








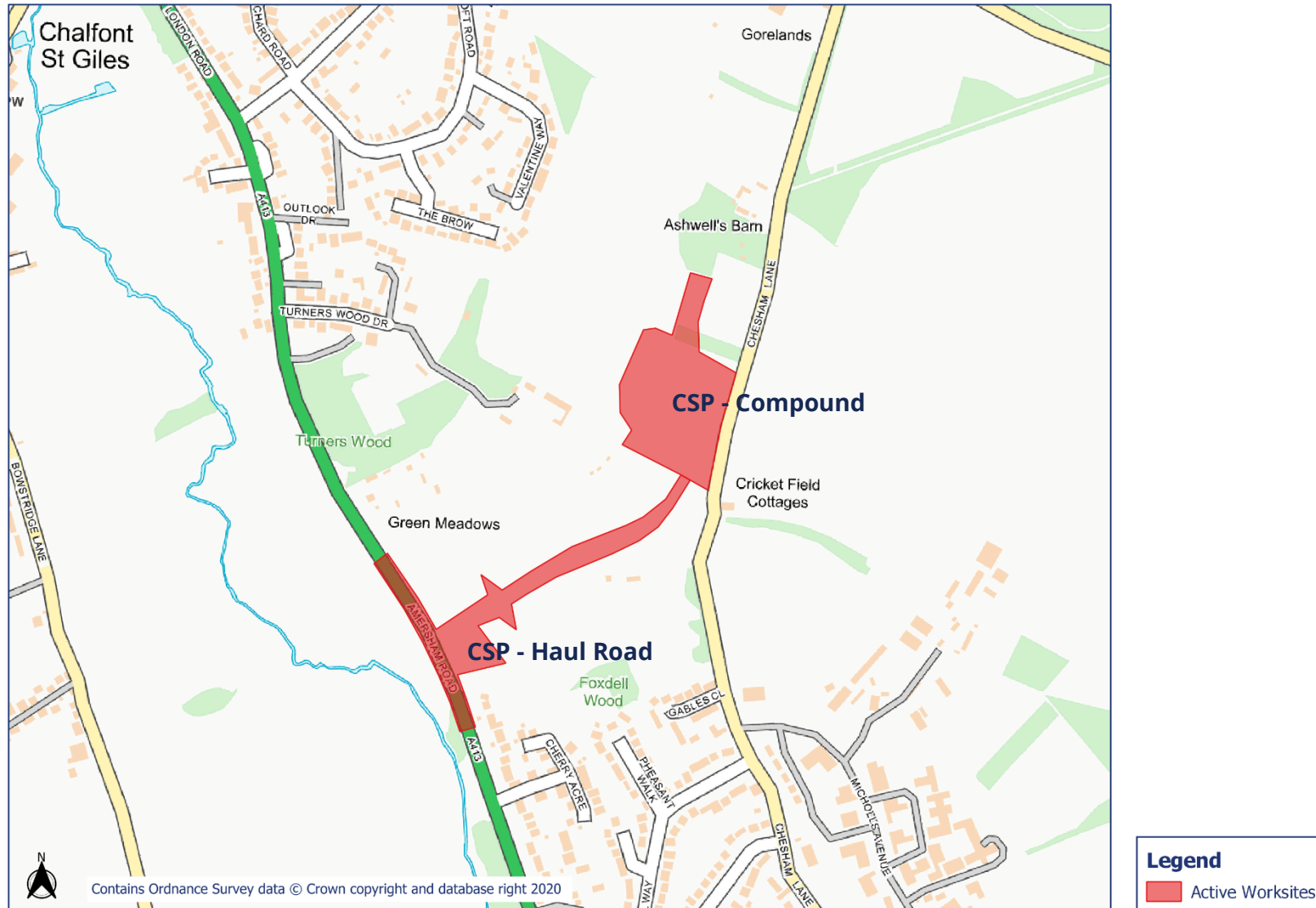


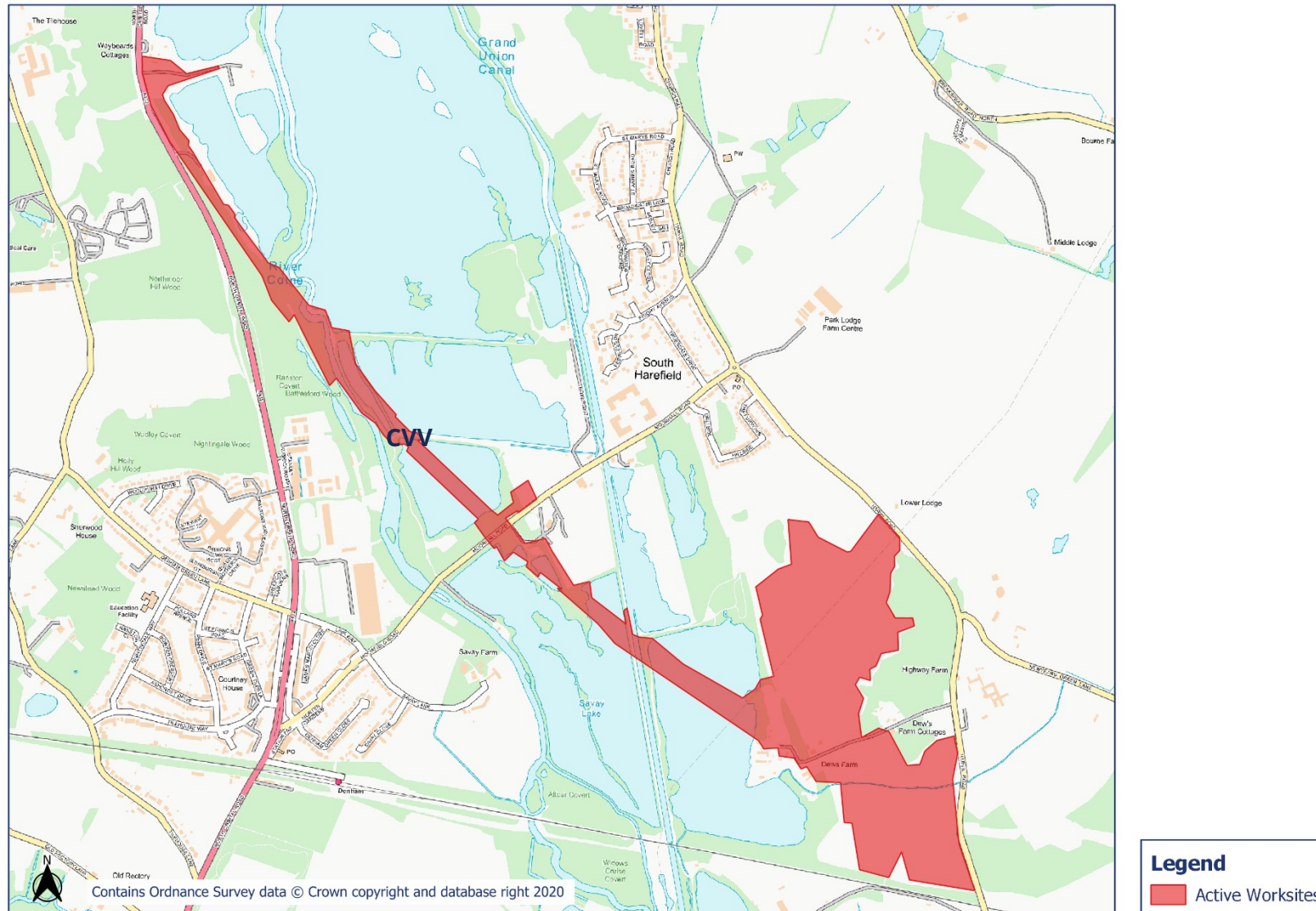






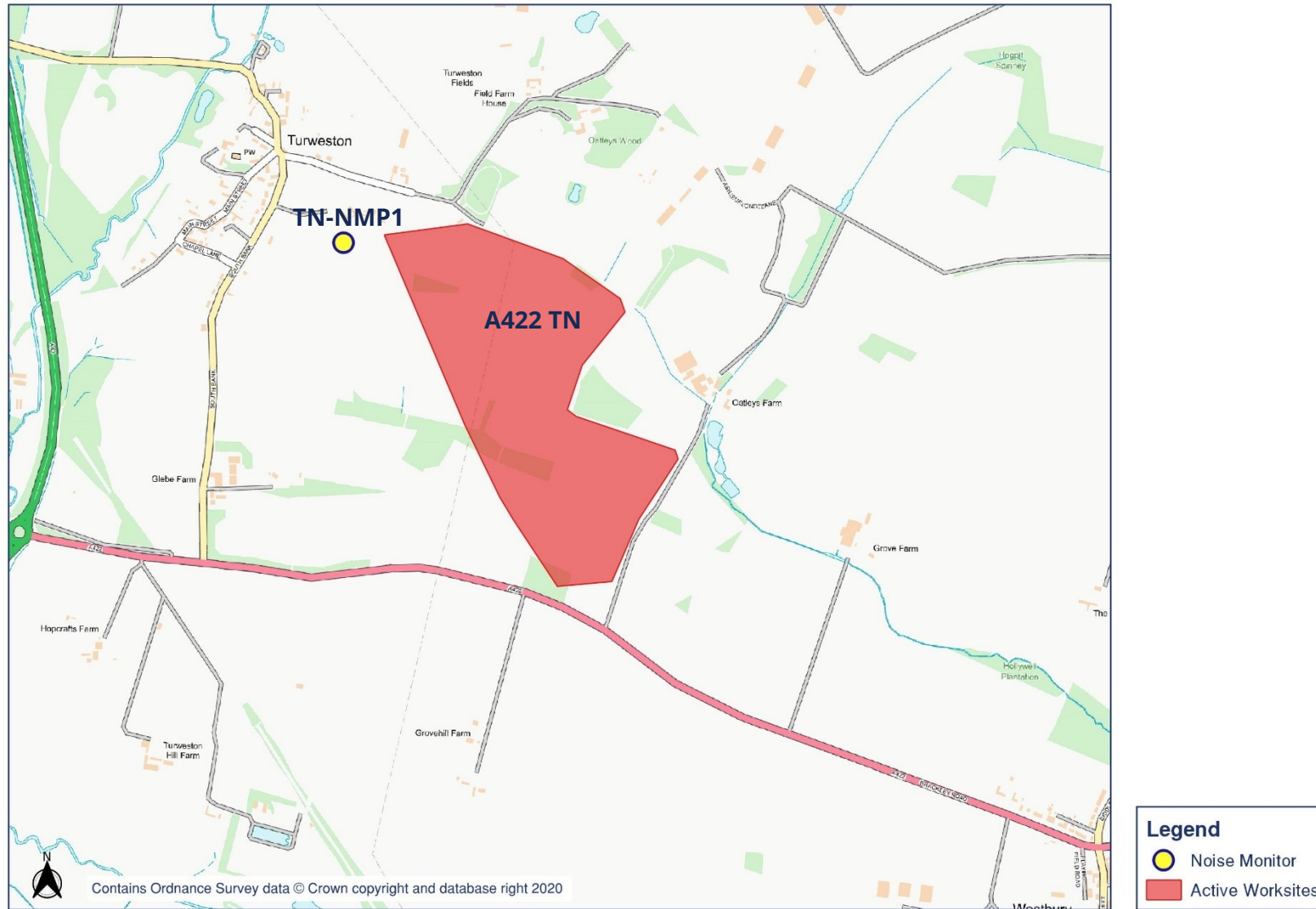


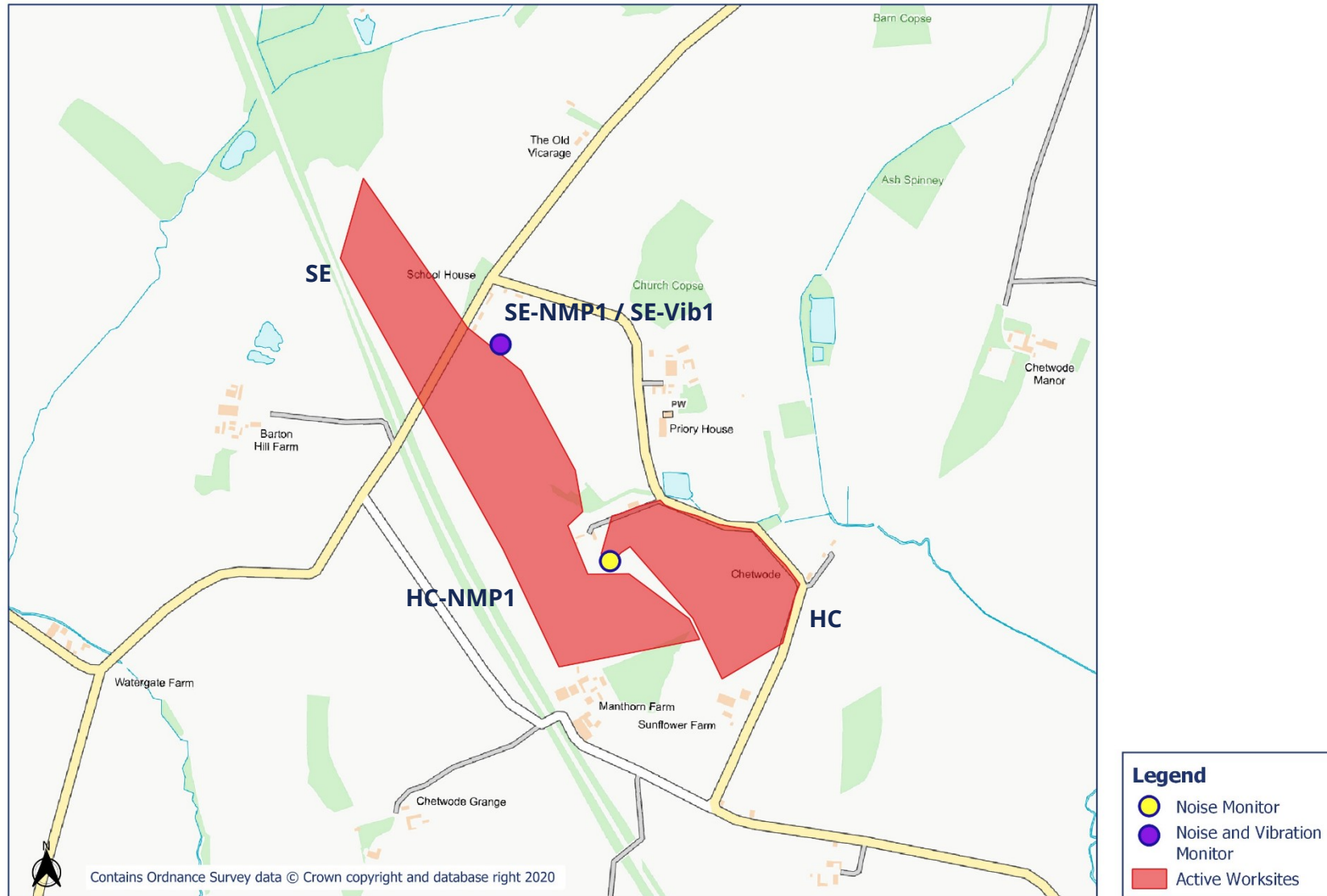


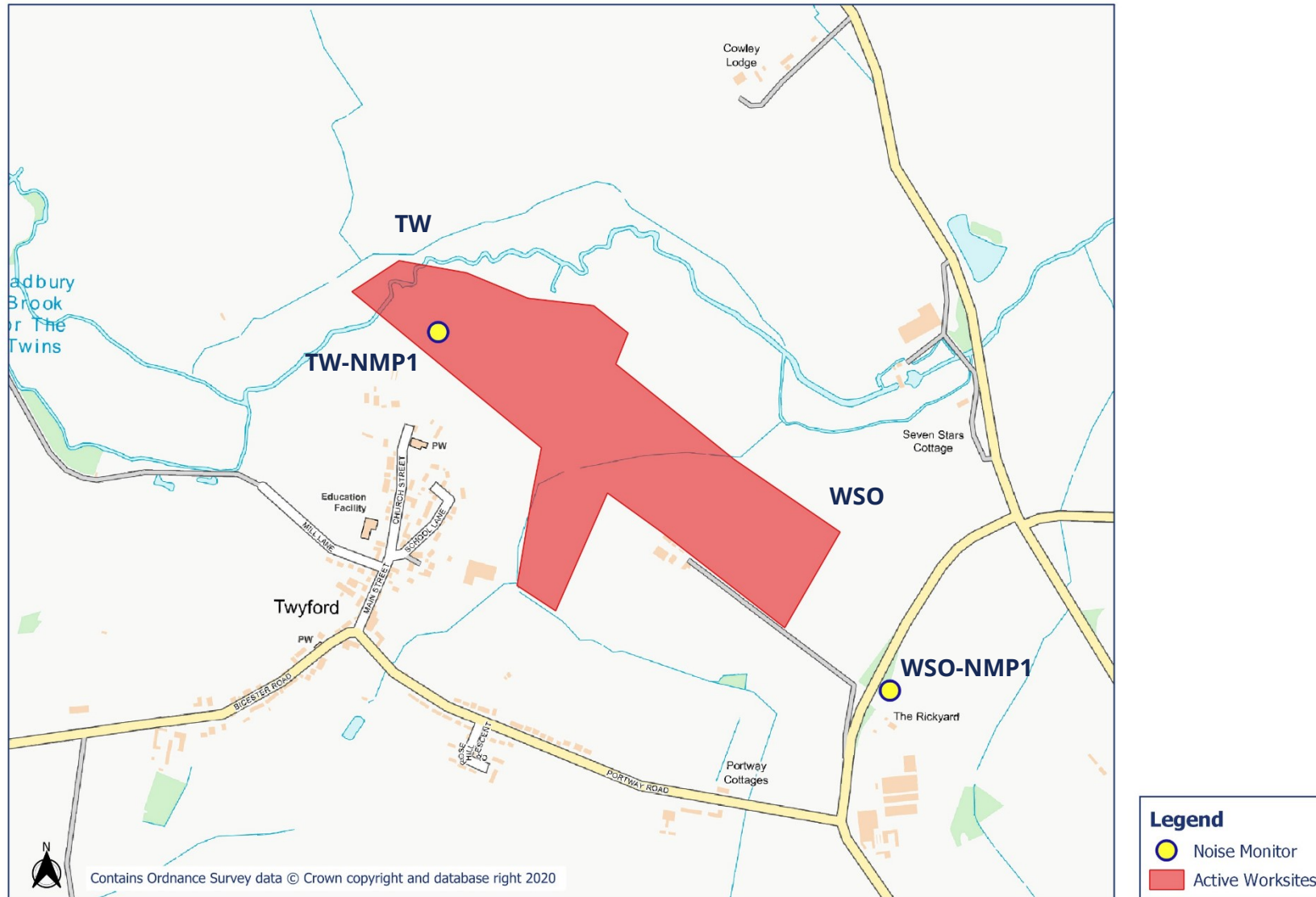


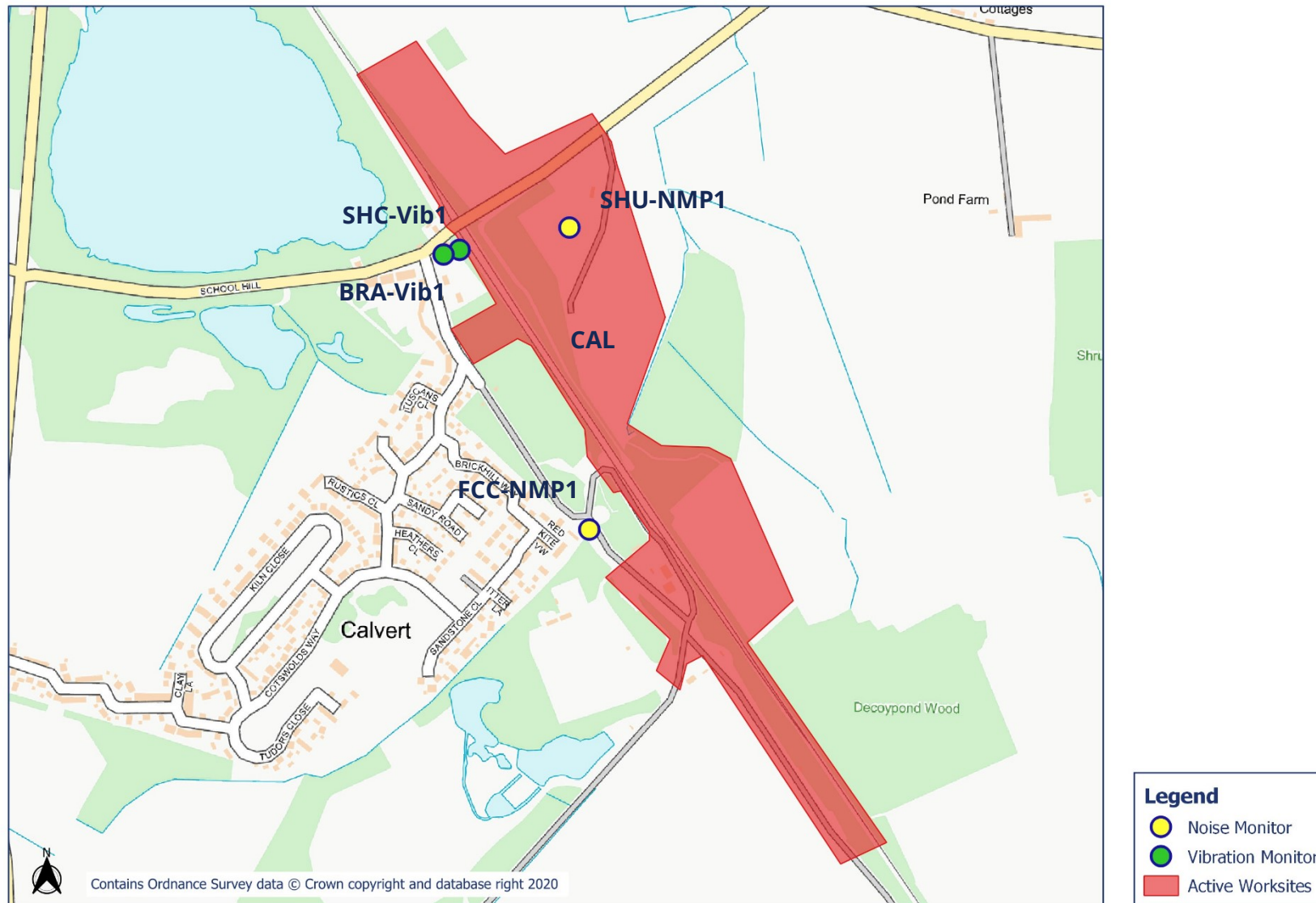
# Appendix B Monitoring Locations

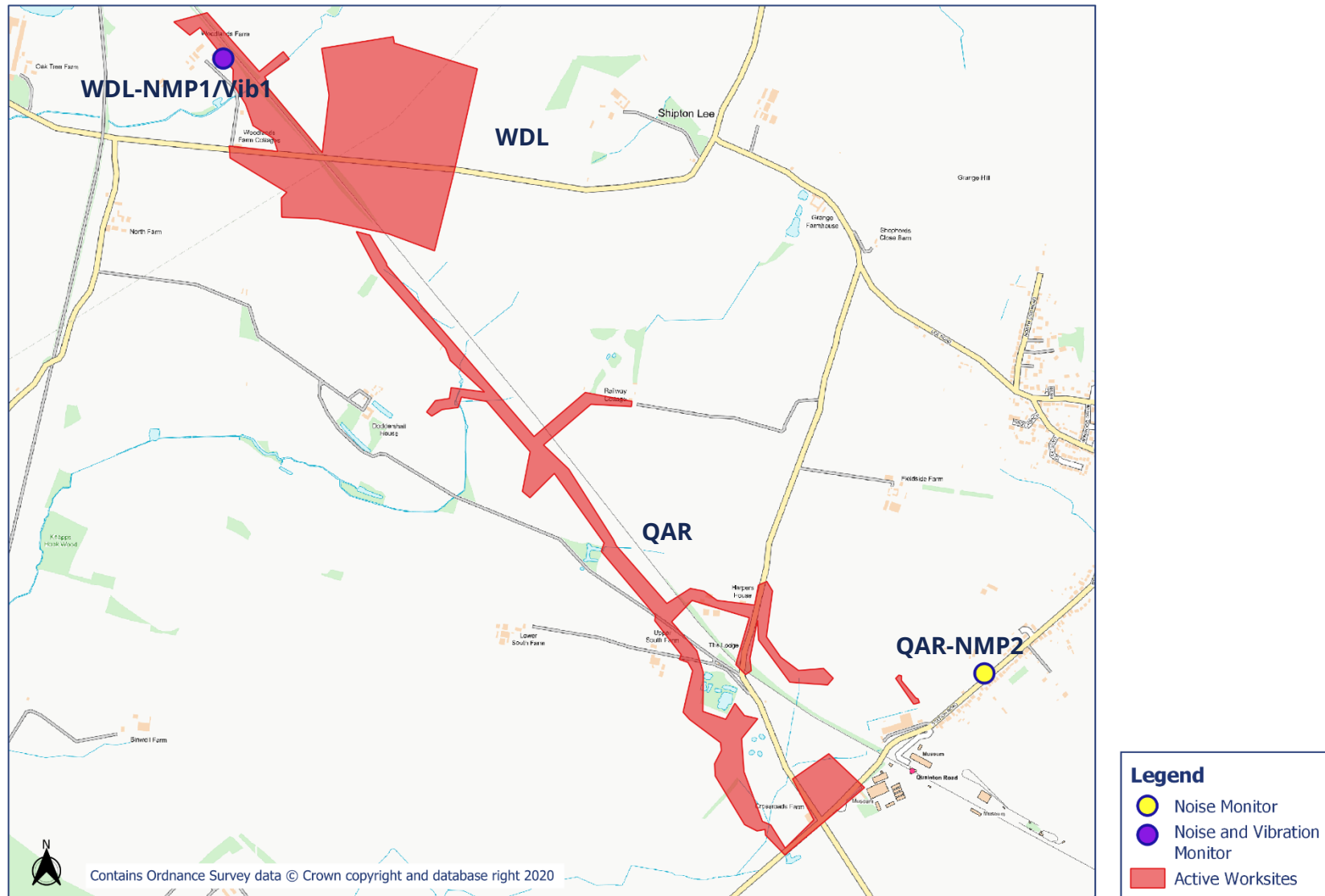


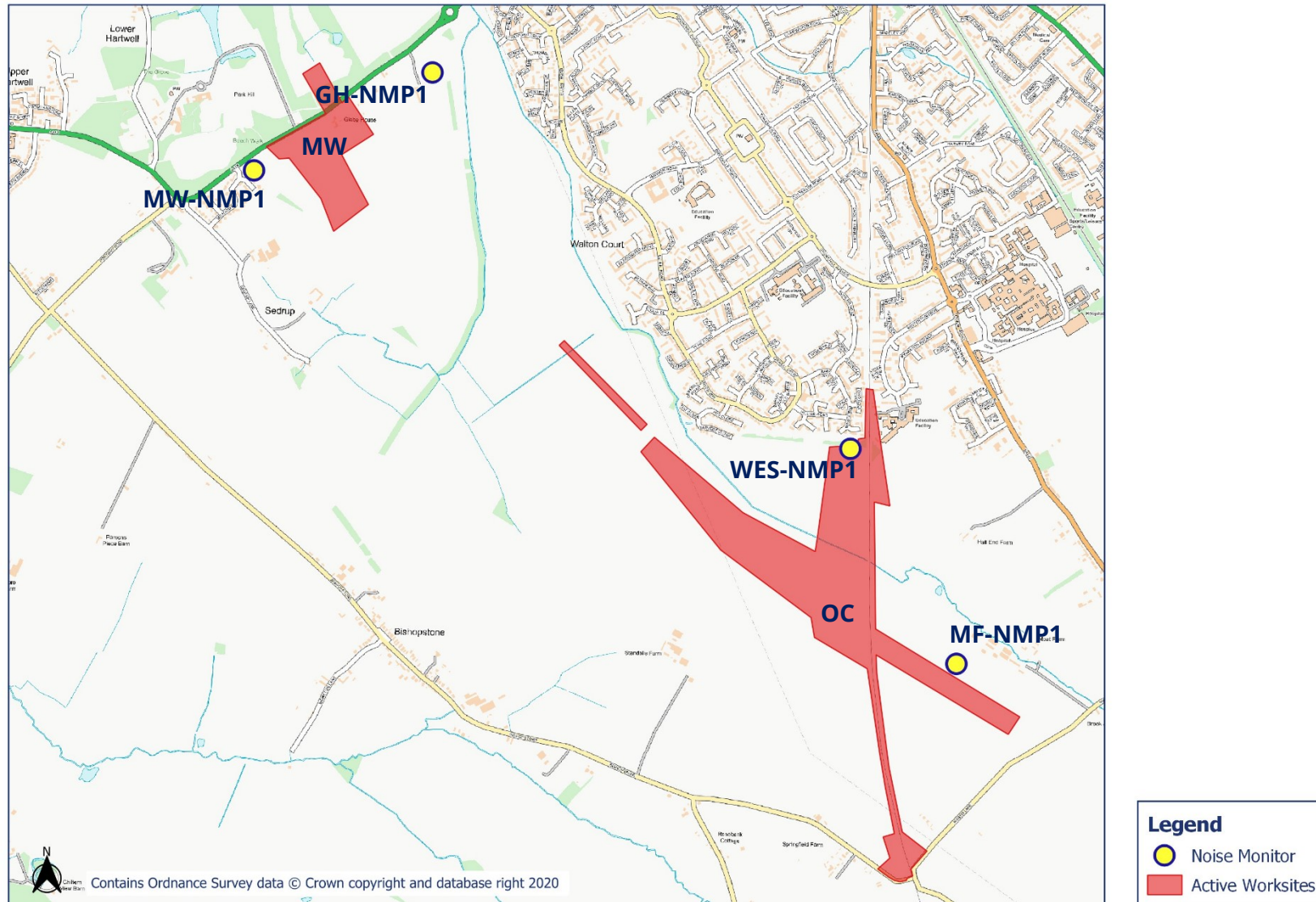


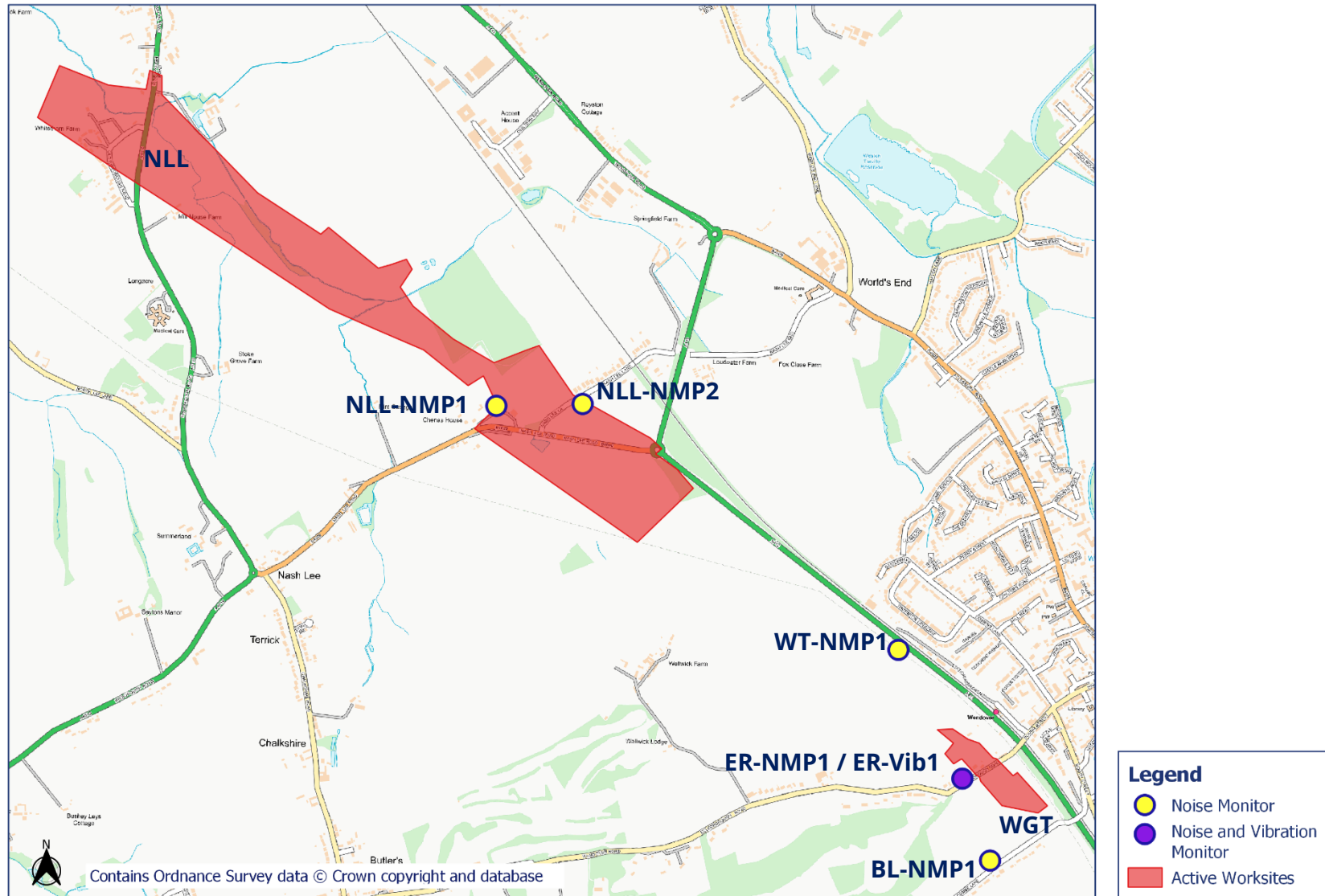


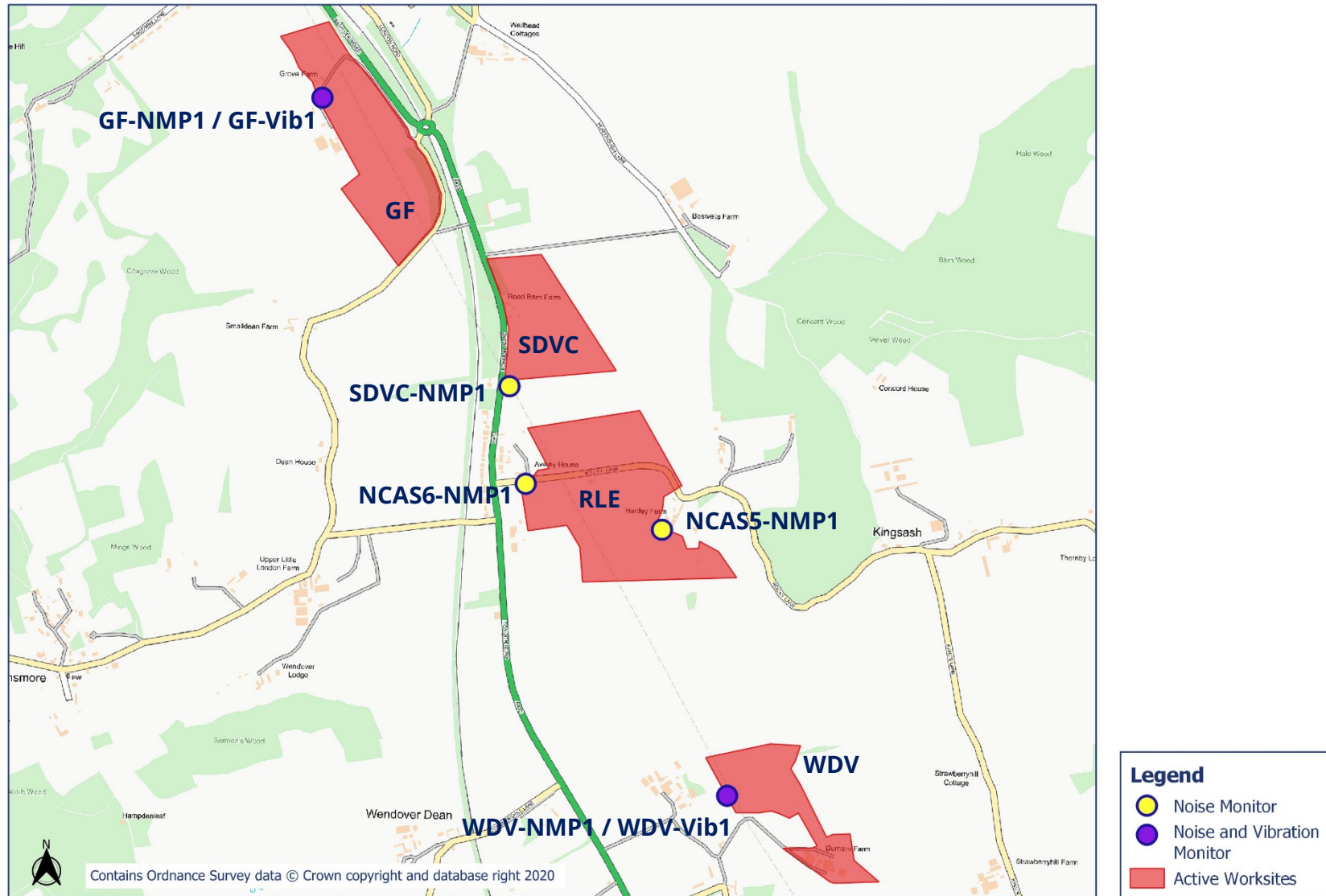




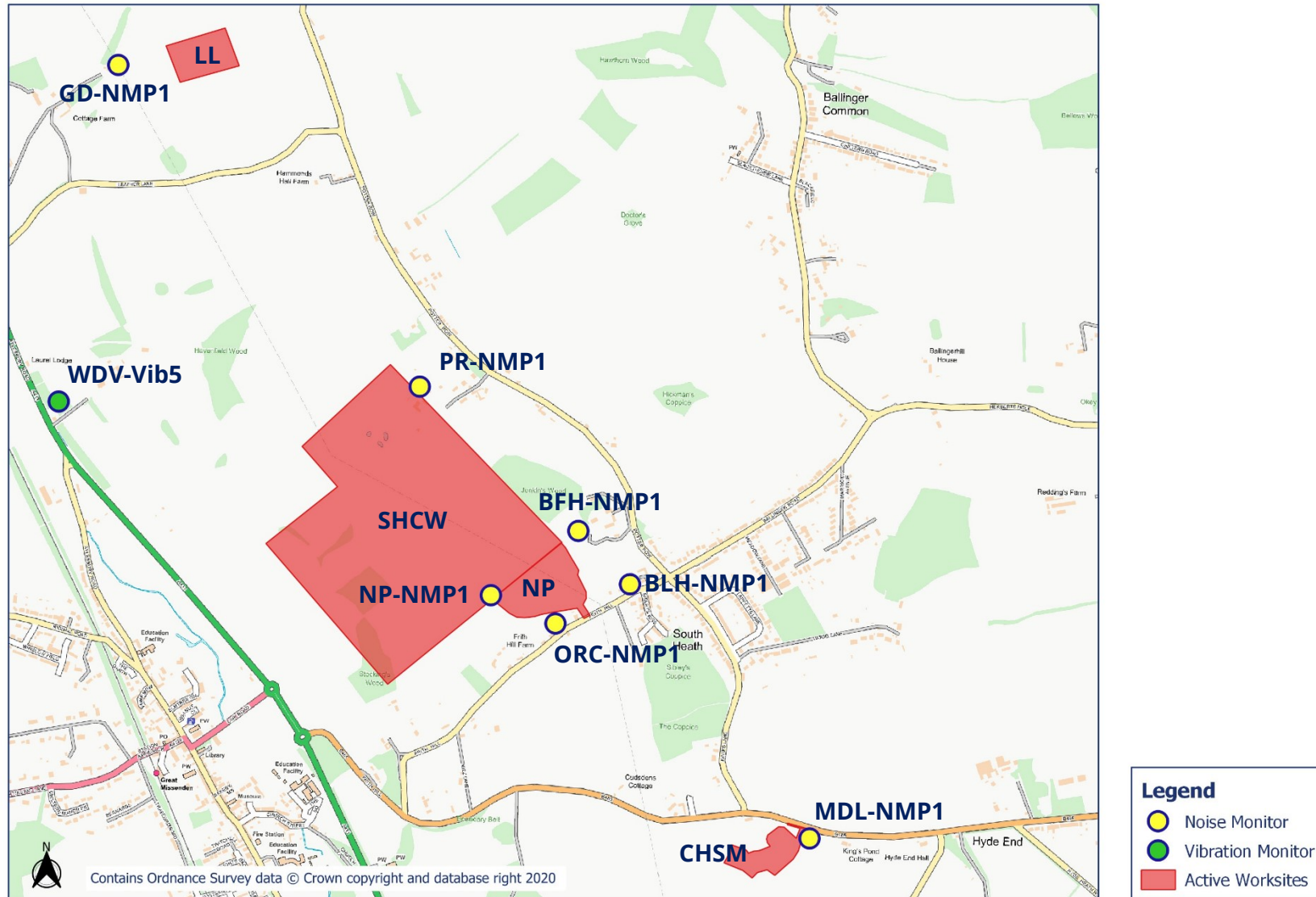




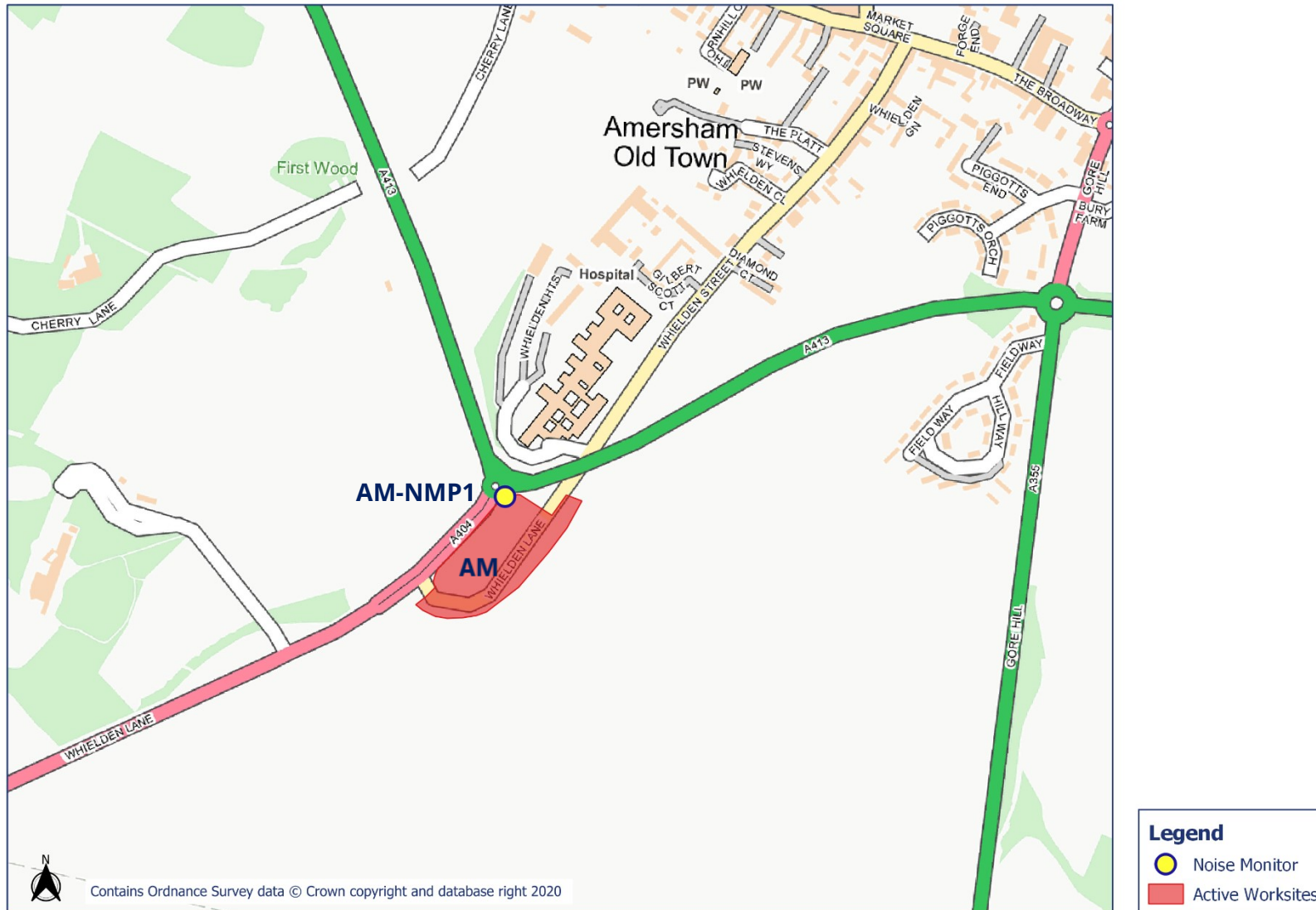






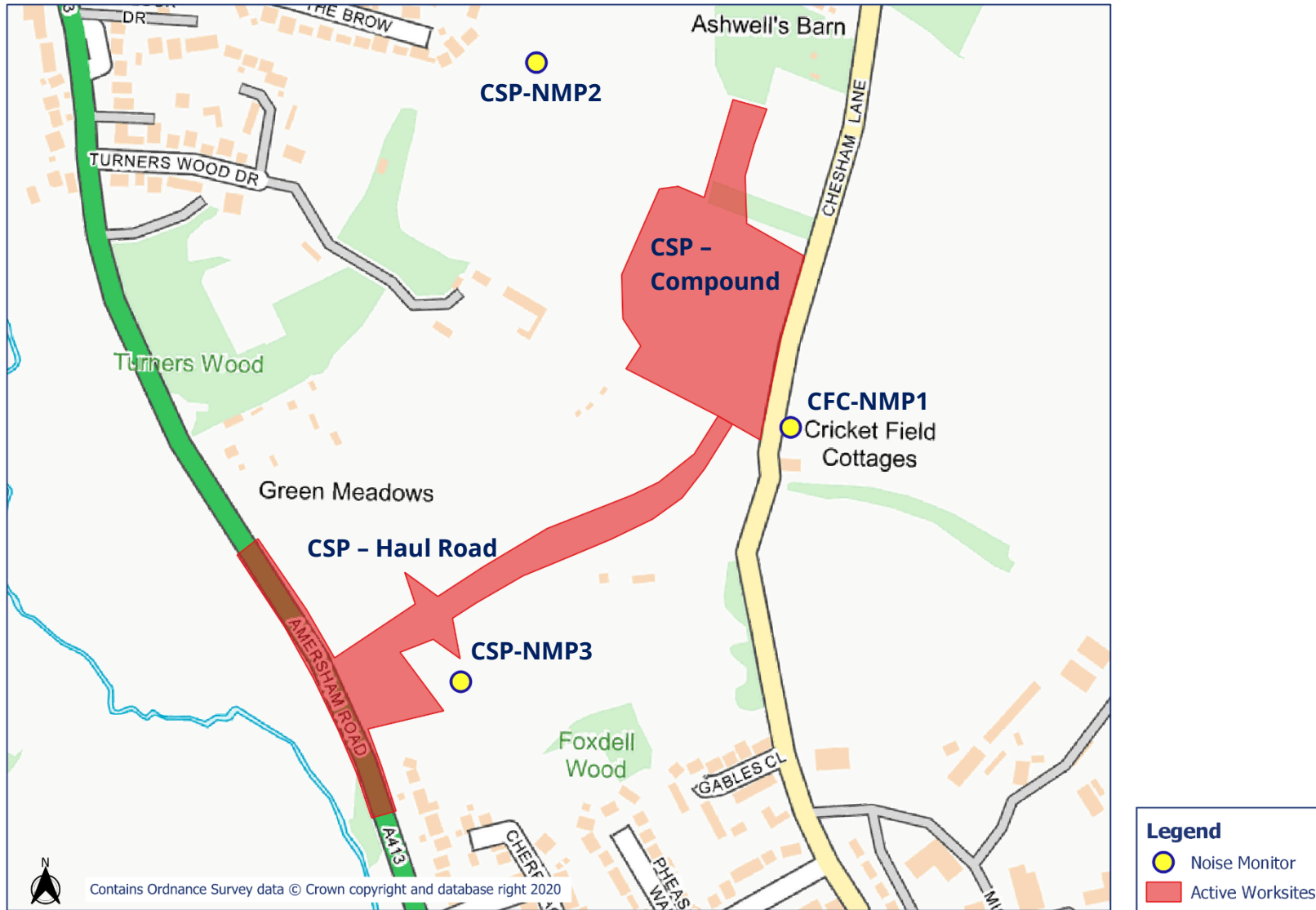


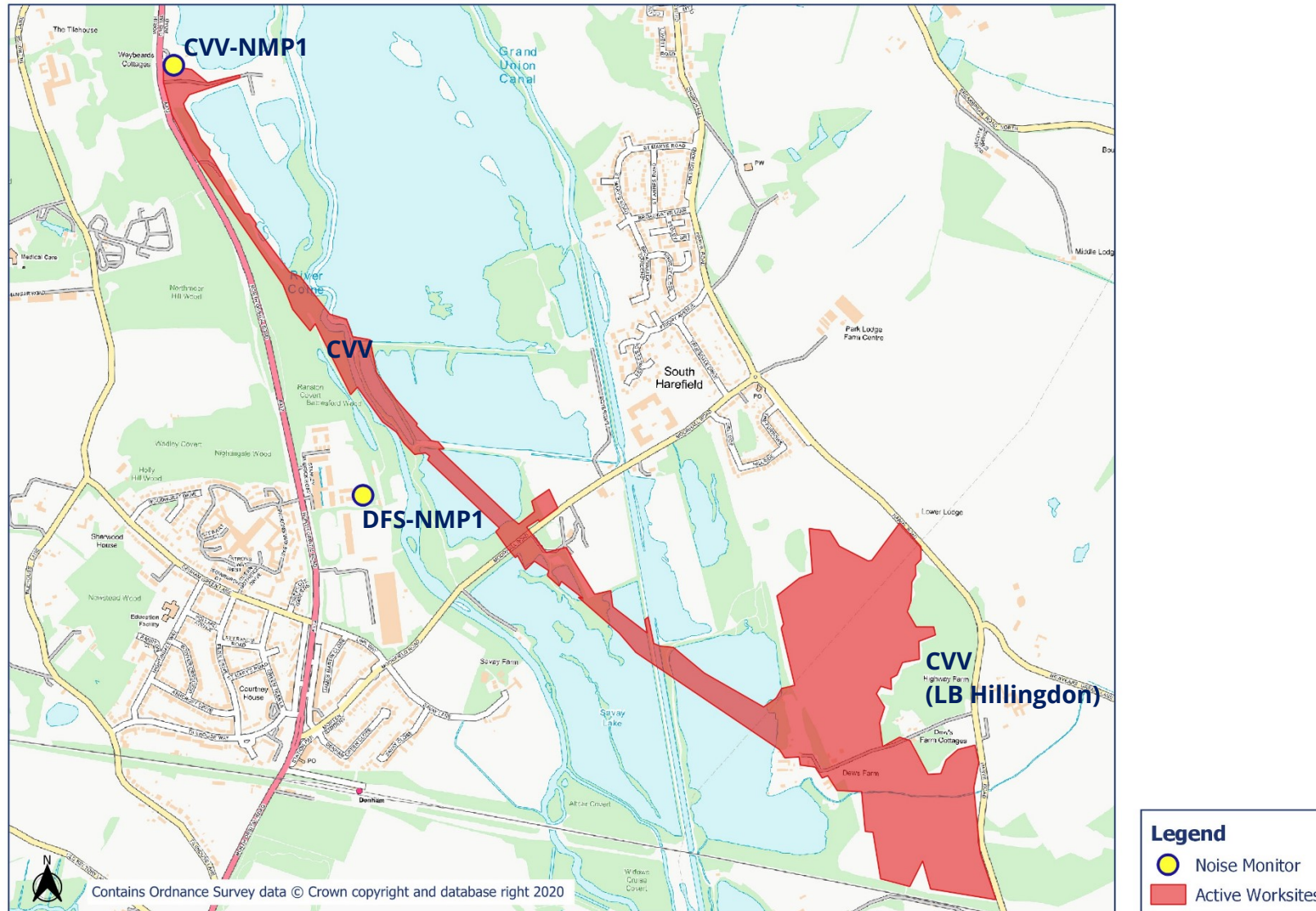






# HS2 Noise and Vibration Monitoring Plan - 13



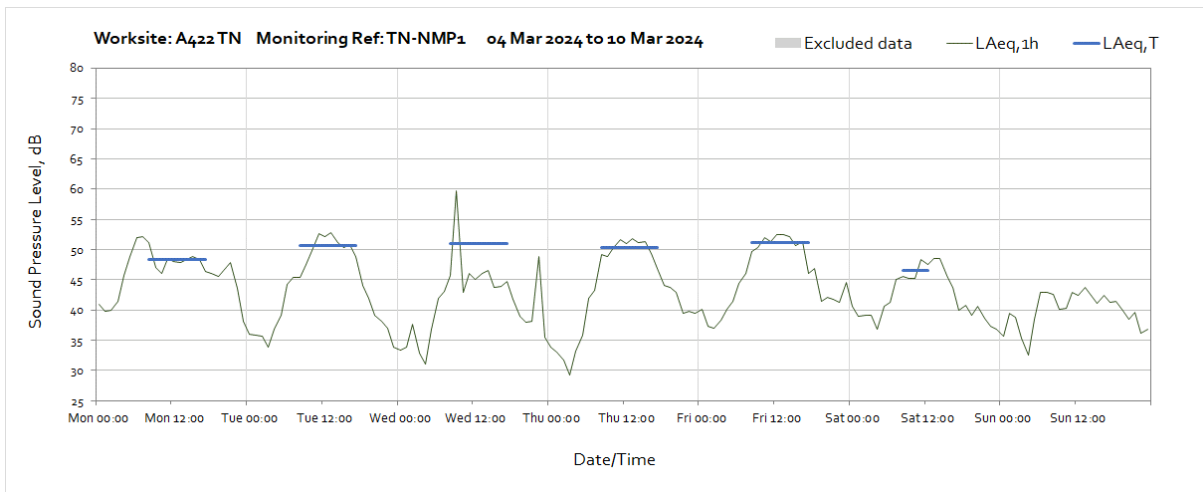
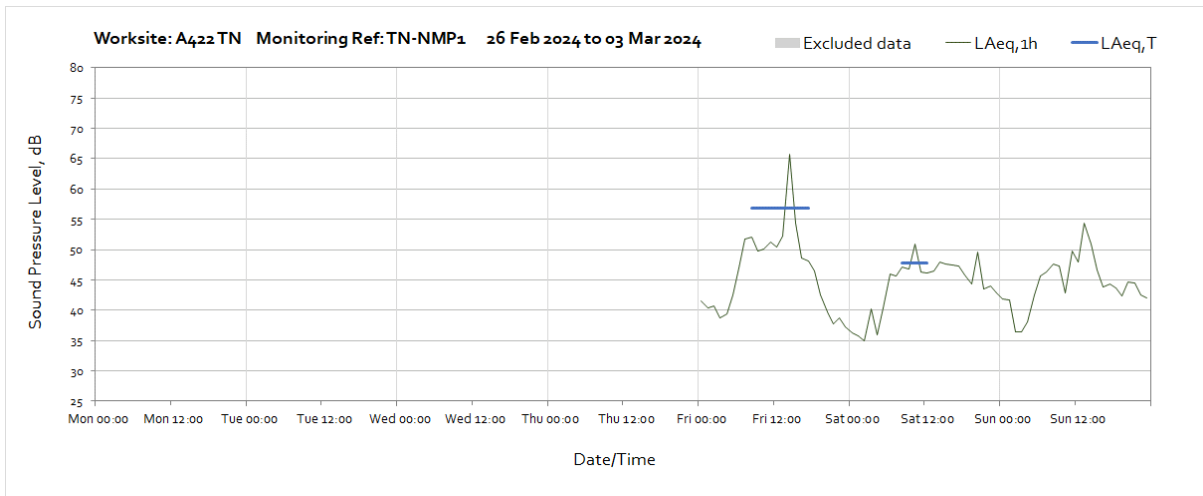


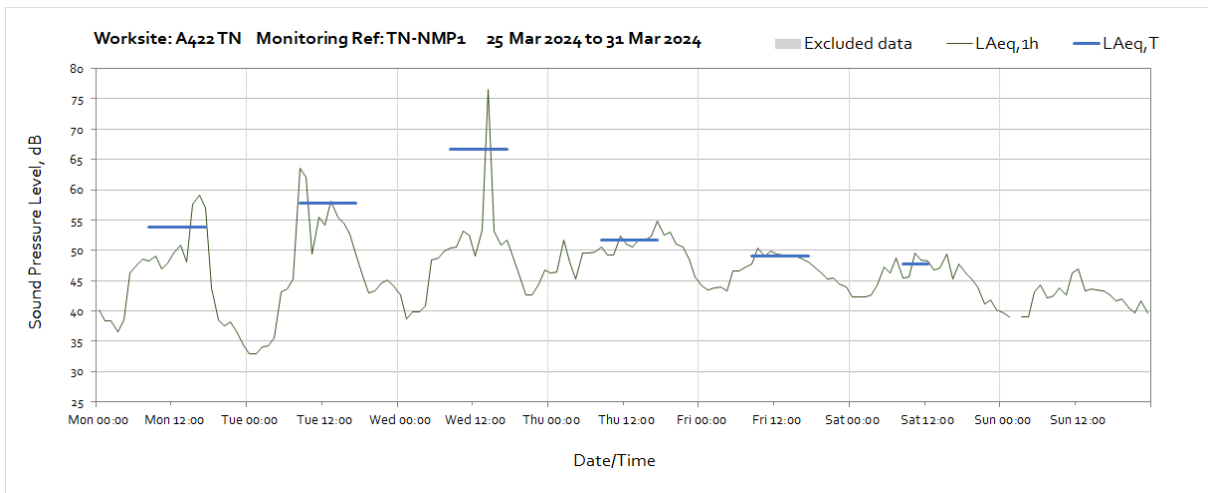
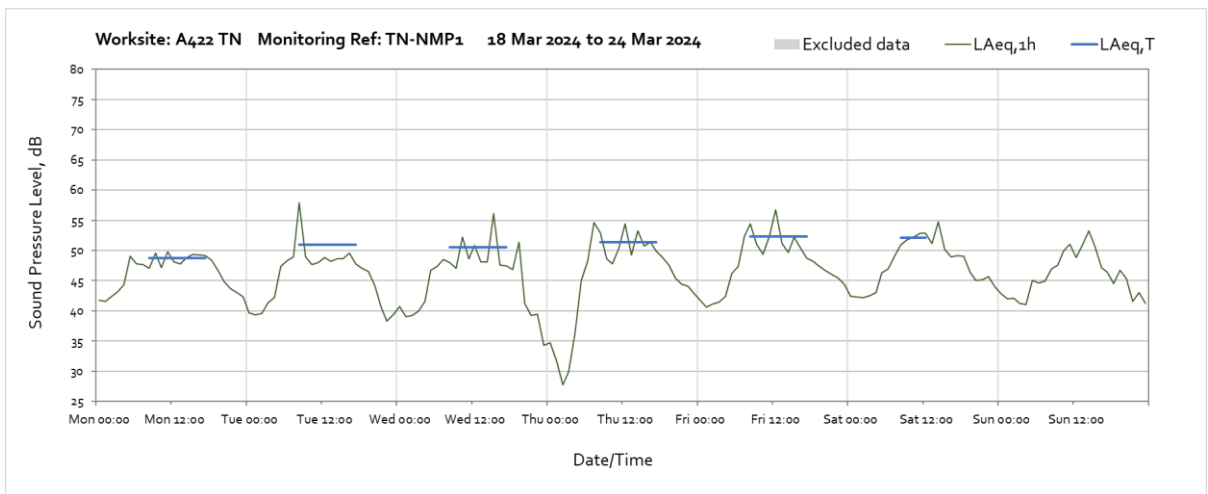
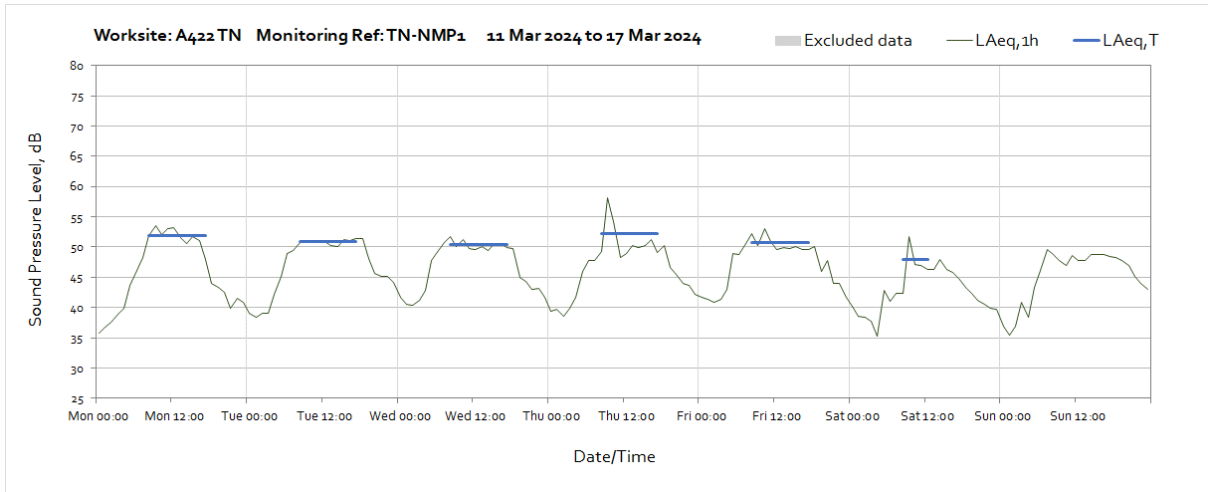
# Appendix C Data

## Noise

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

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

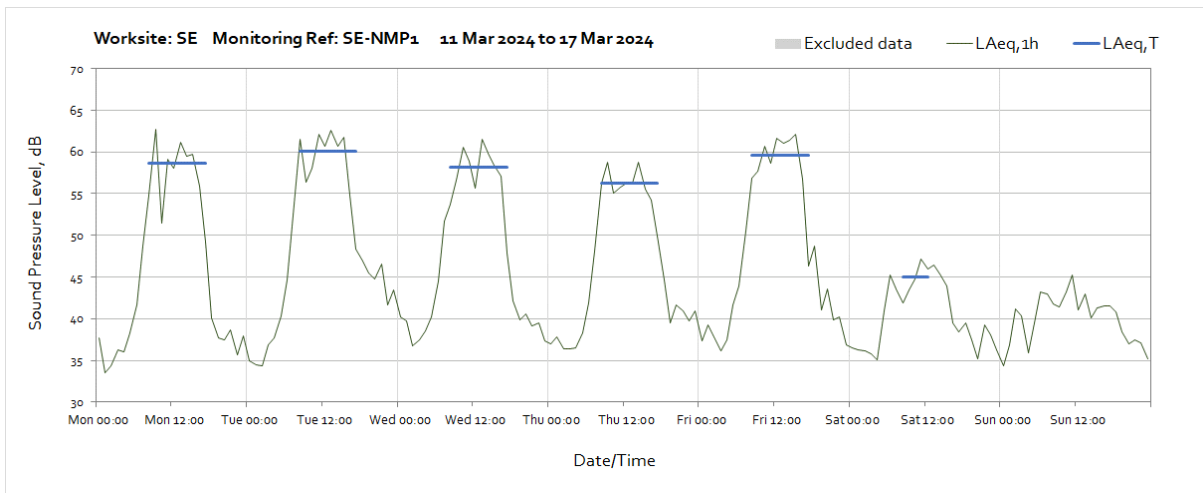
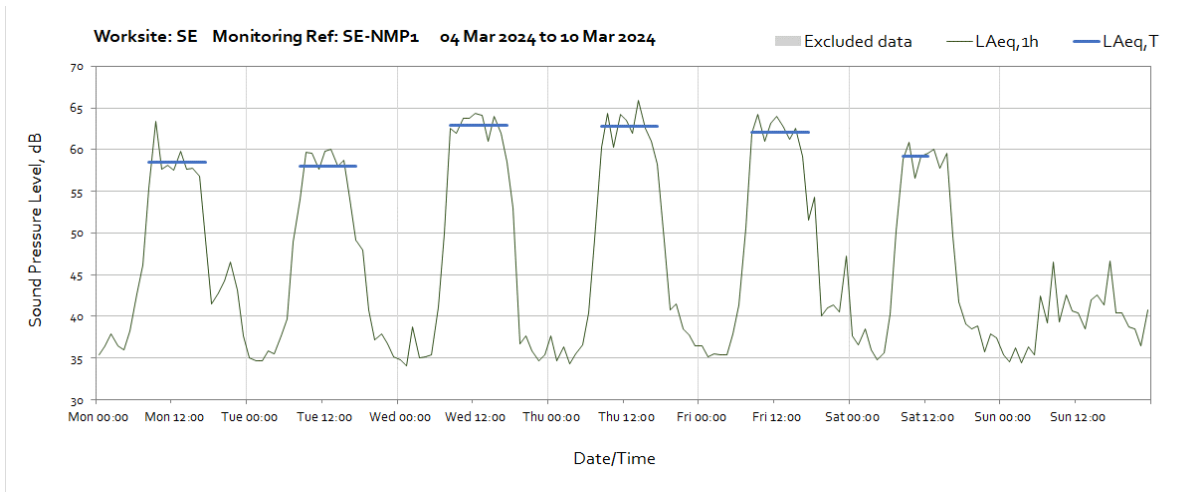
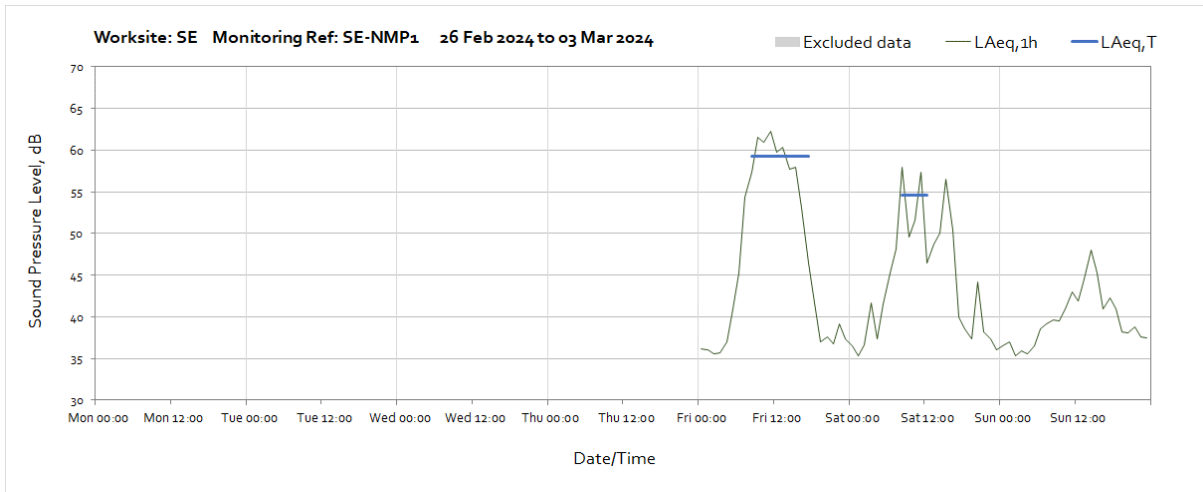




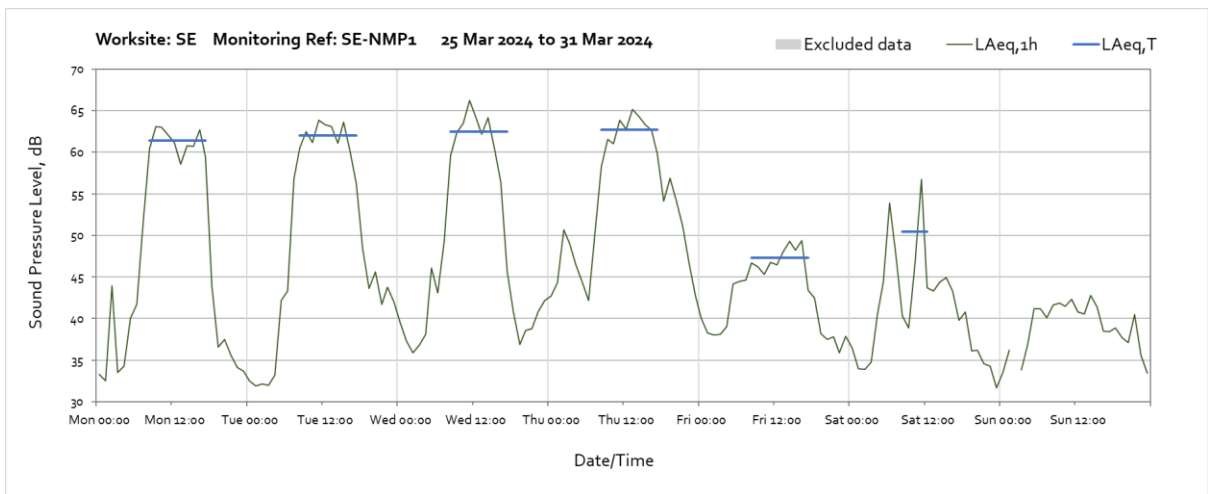
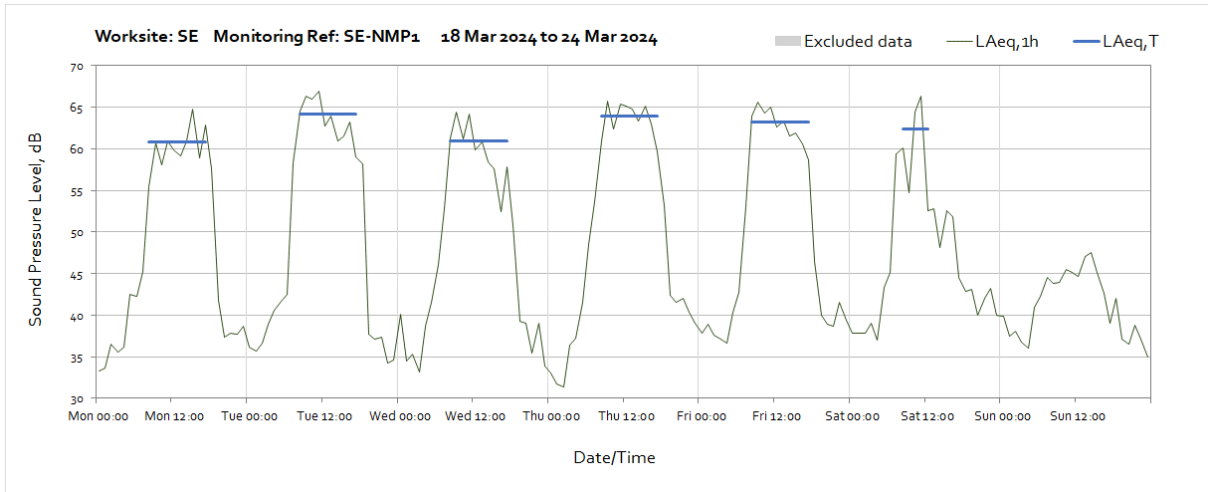
Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.



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

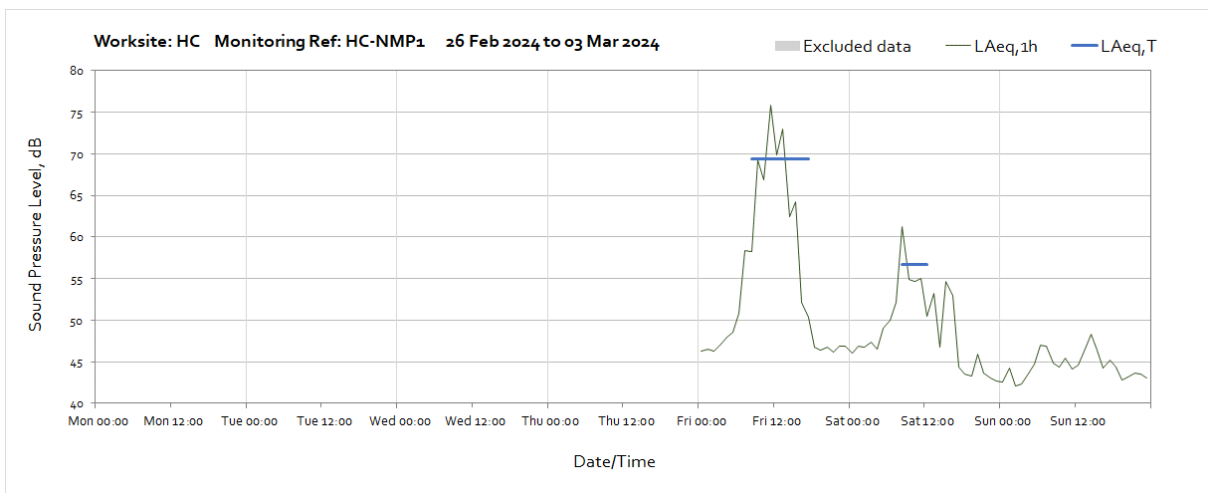


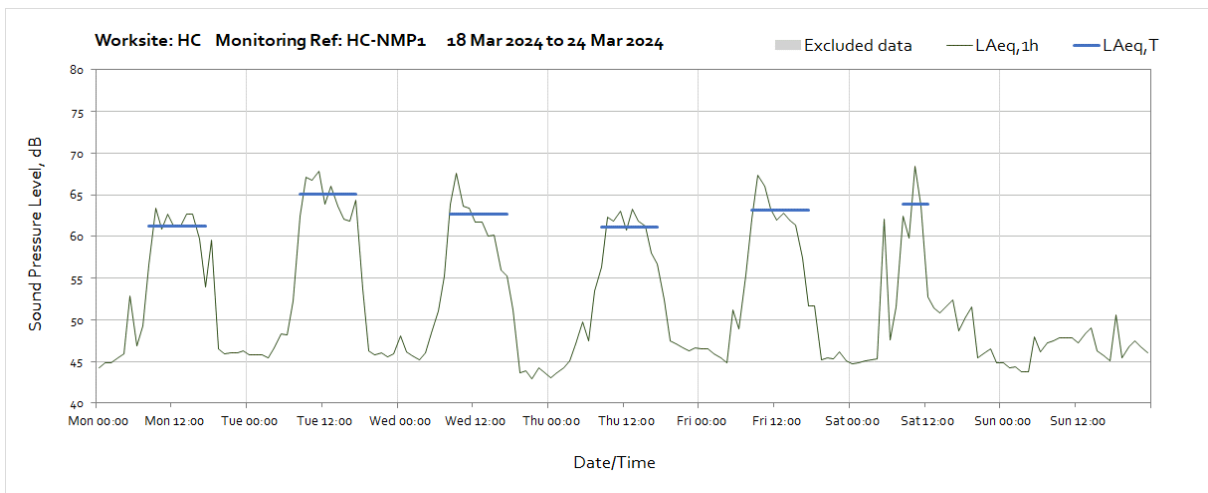
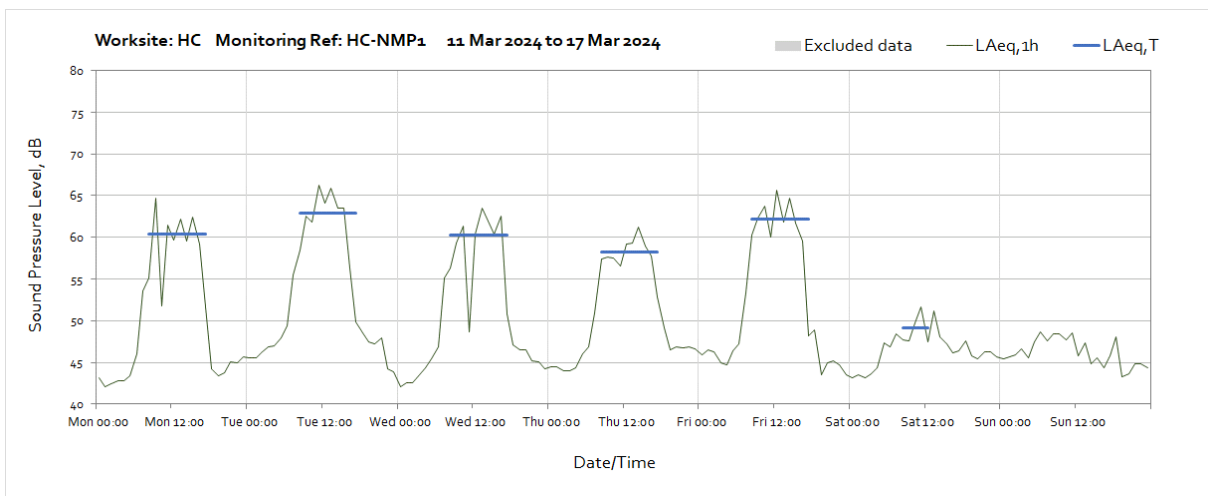
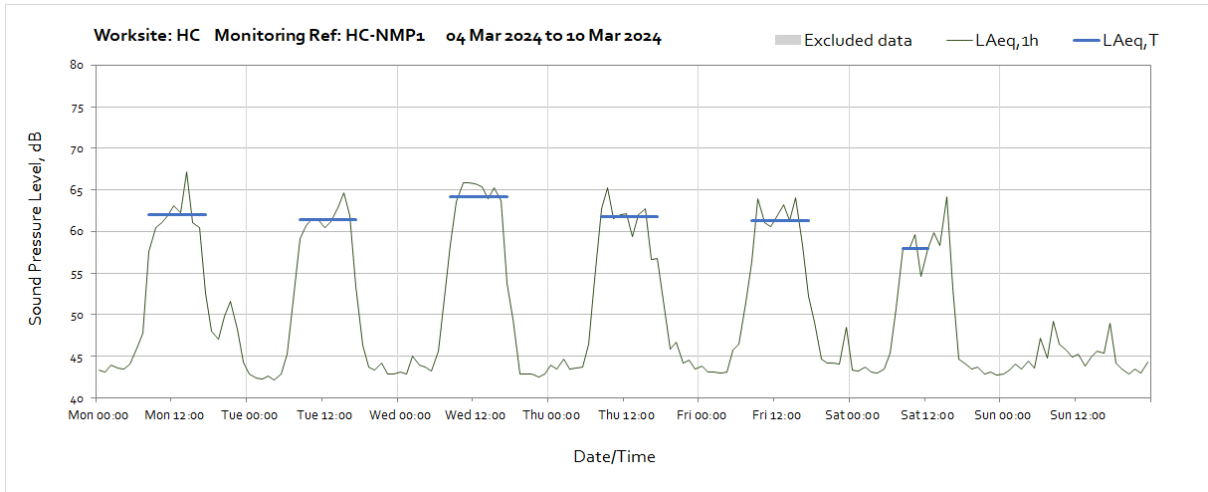
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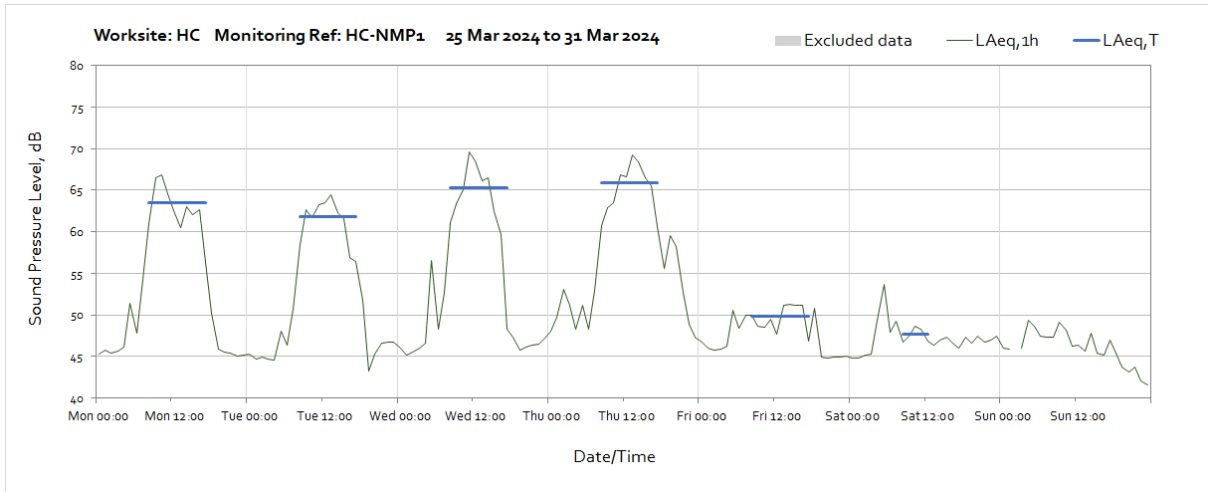


Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

### Worksite: HC - Monitoring Ref: HC-NMP1

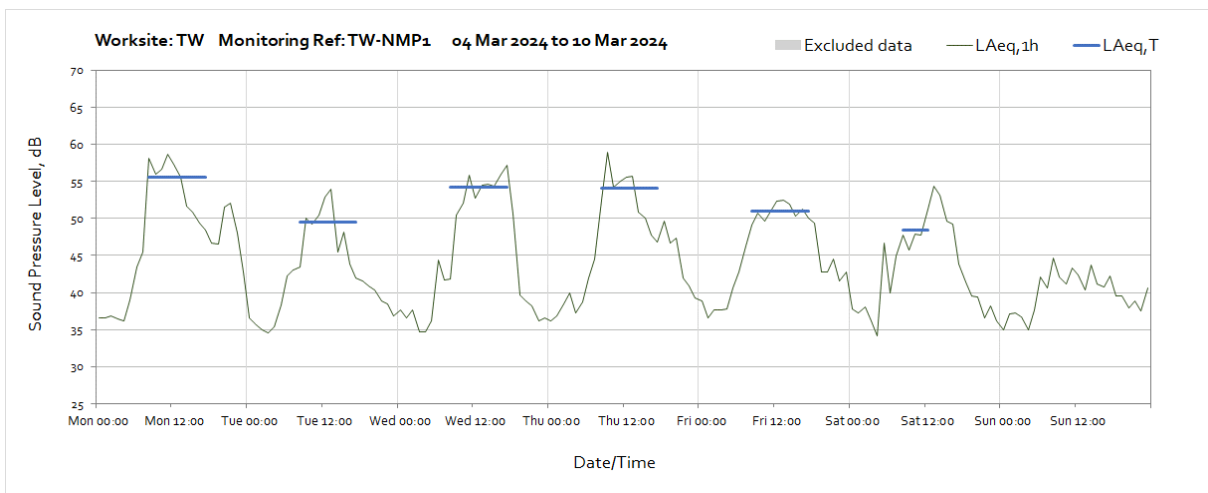
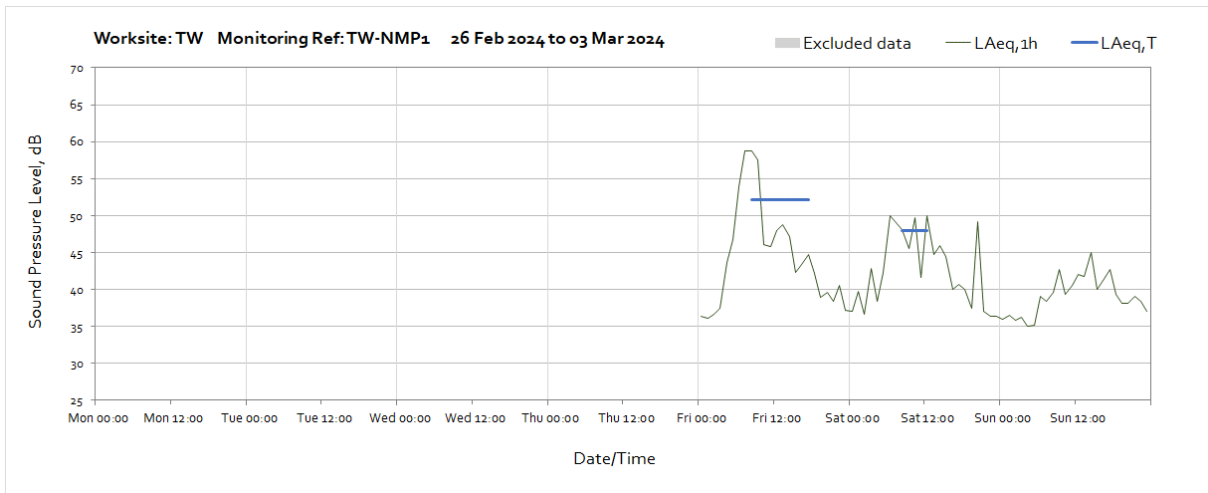


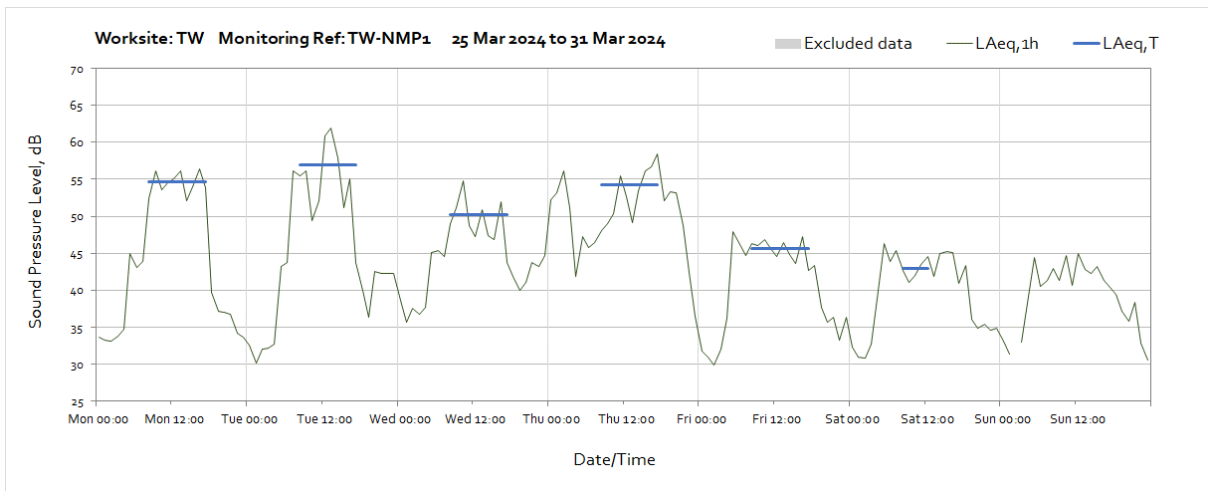
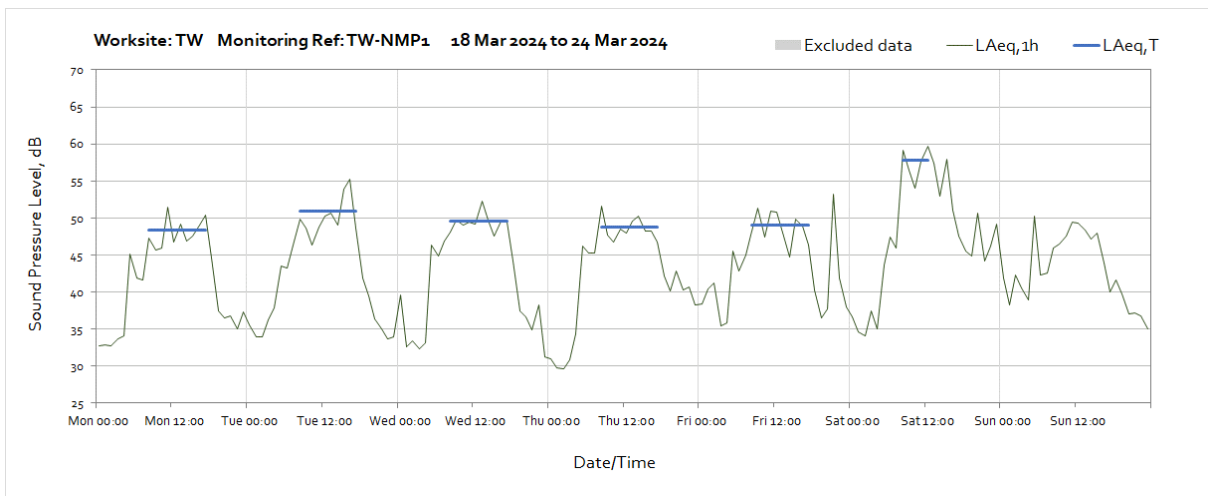
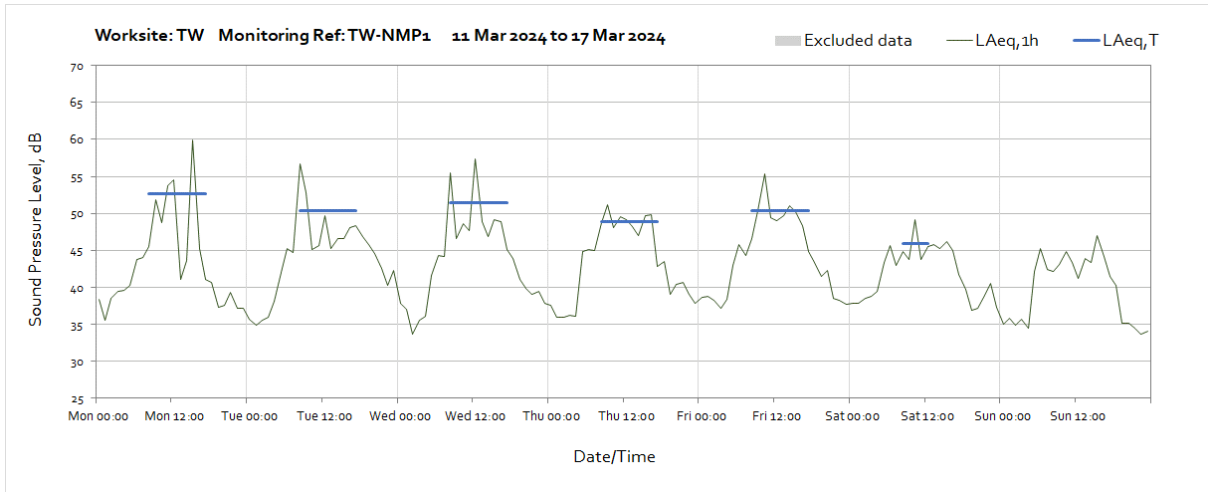




Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

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



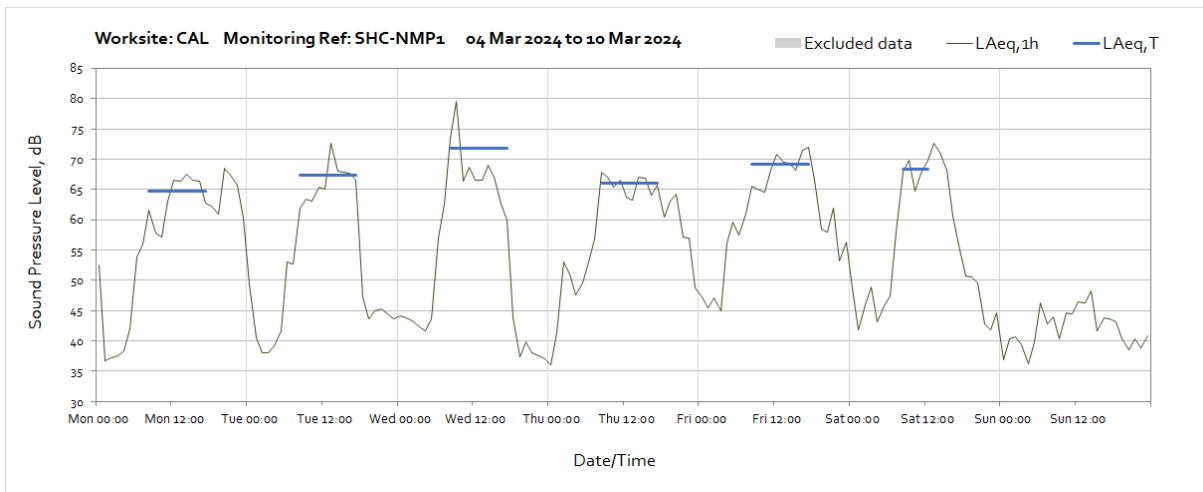
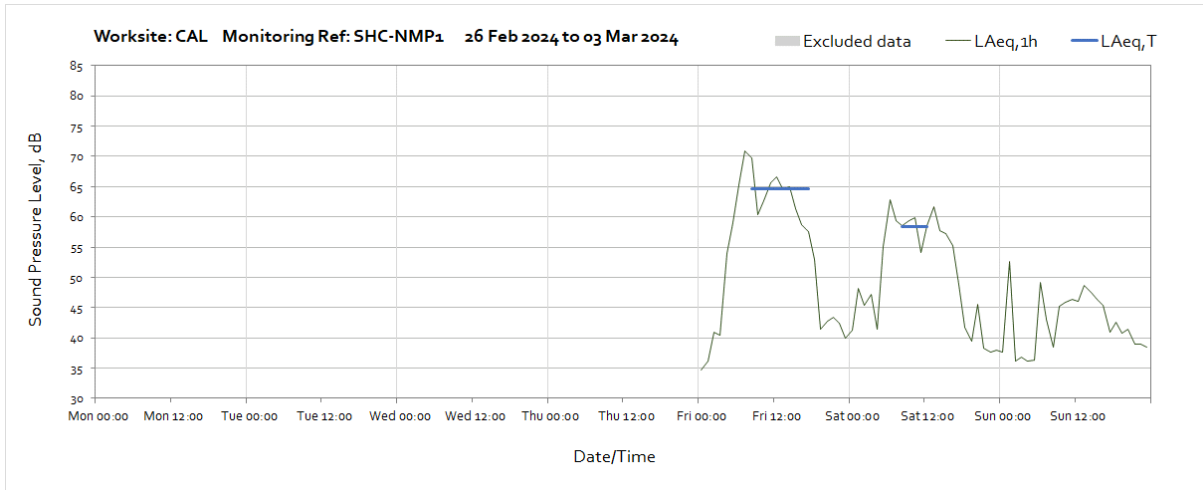


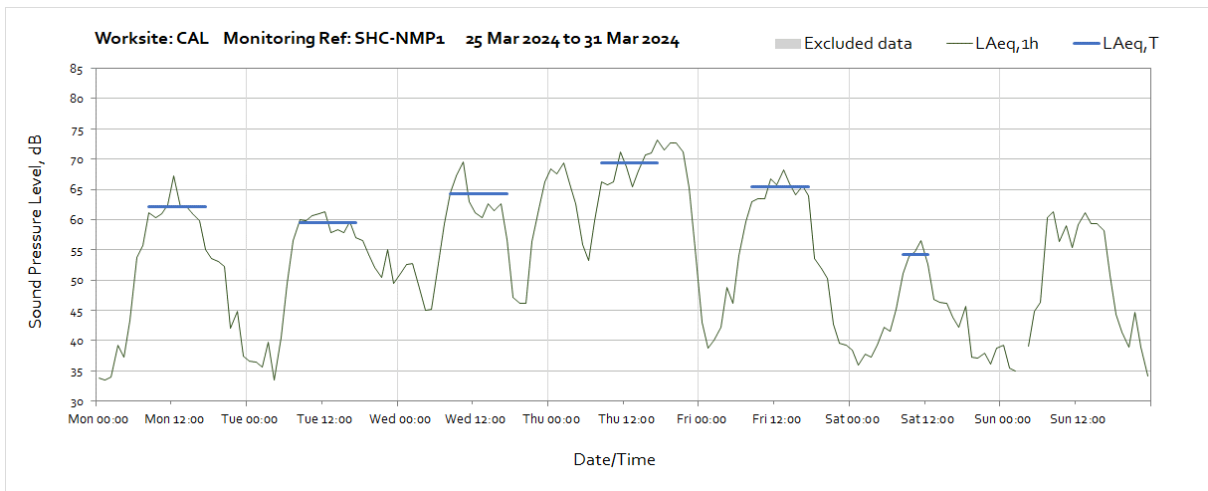
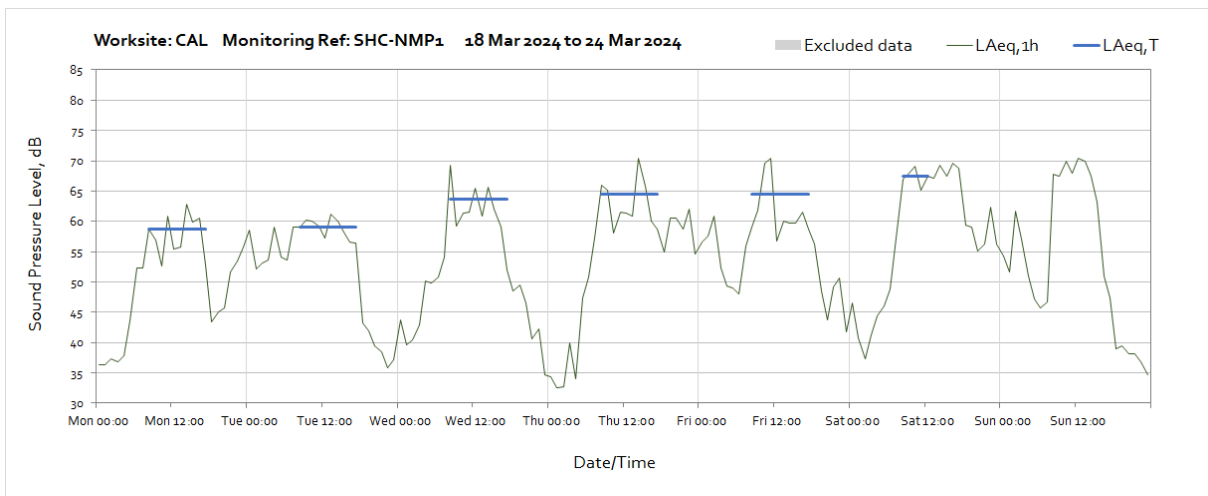
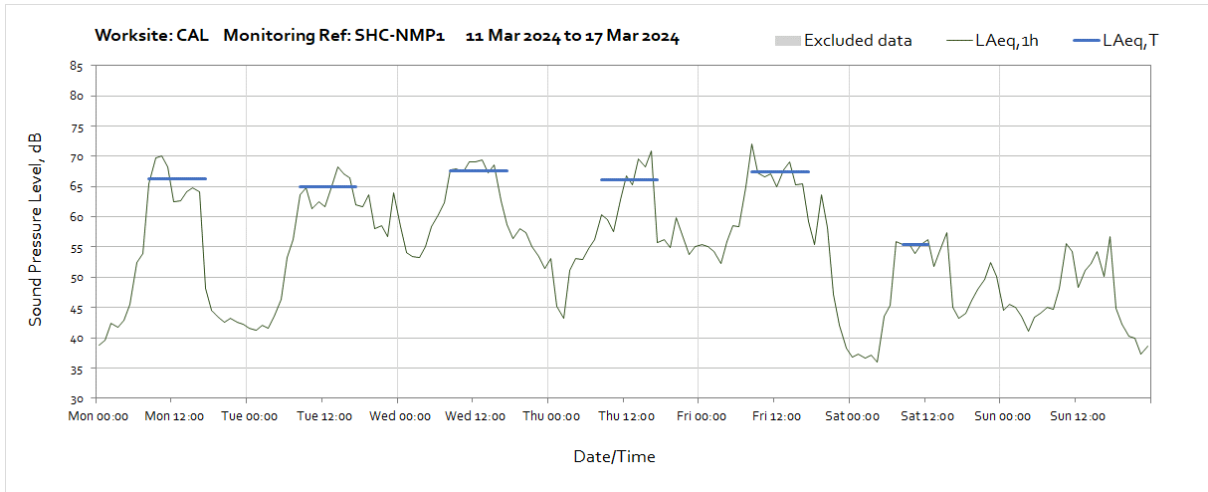
Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

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

Note: Monitor was offline for the month of March due to water ingress to monitoring station.

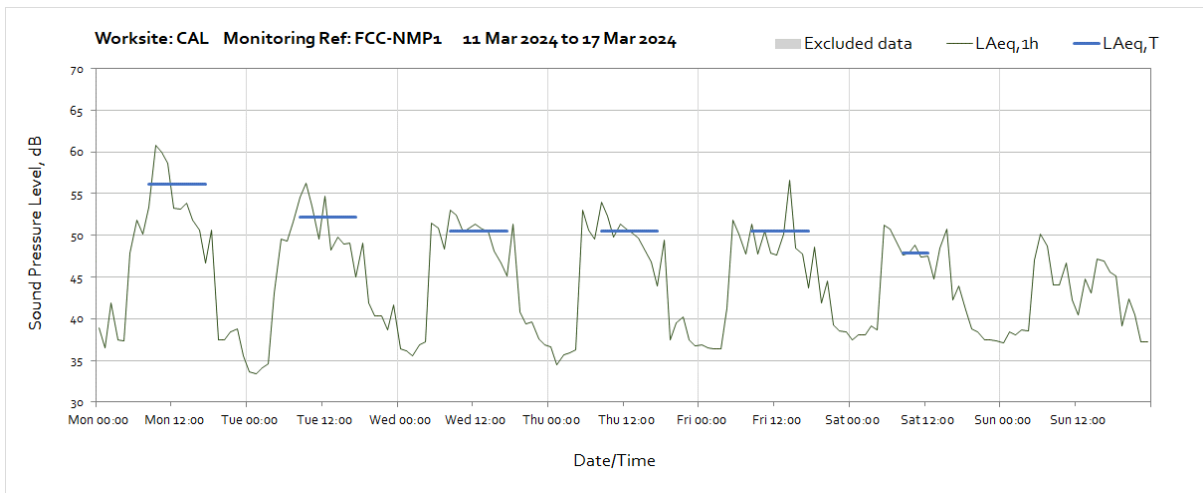
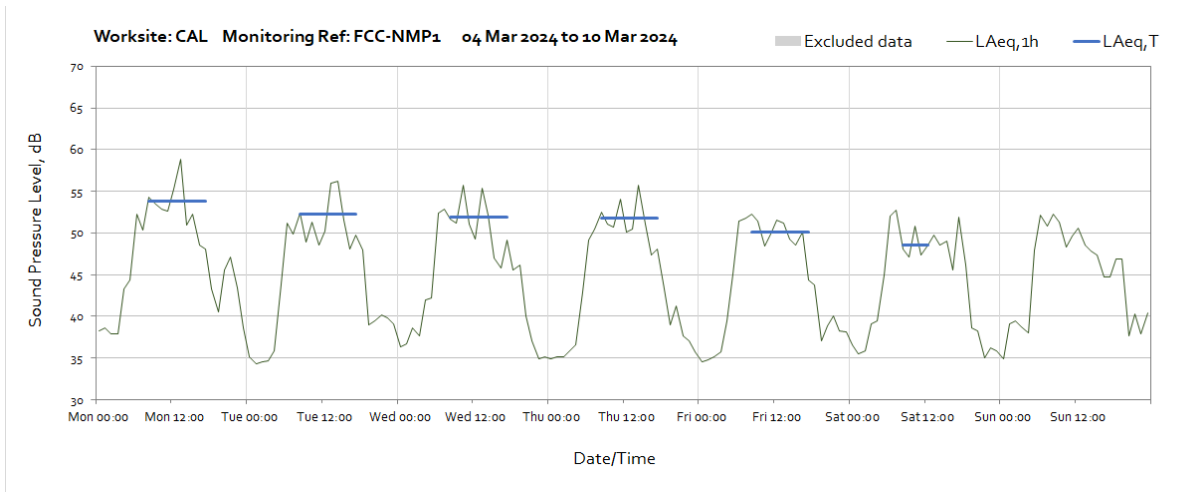
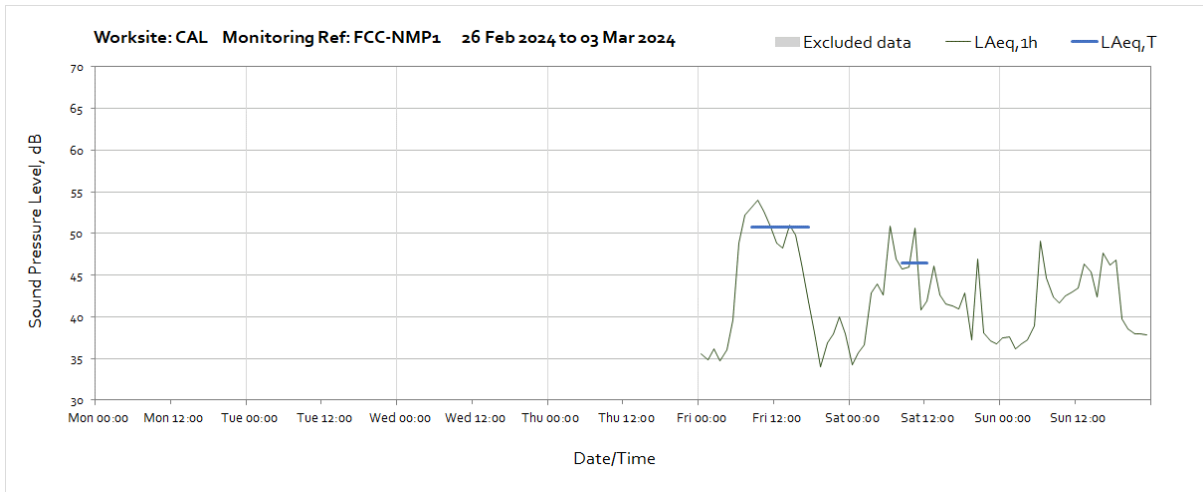
## Worksite: CAL – Monitoring Ref: SHC-NMP1





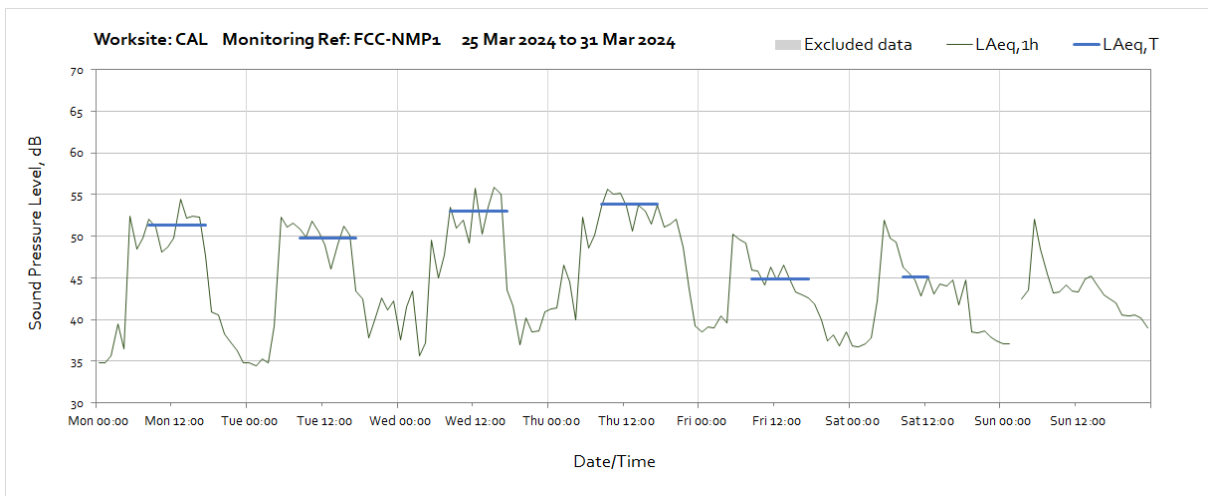
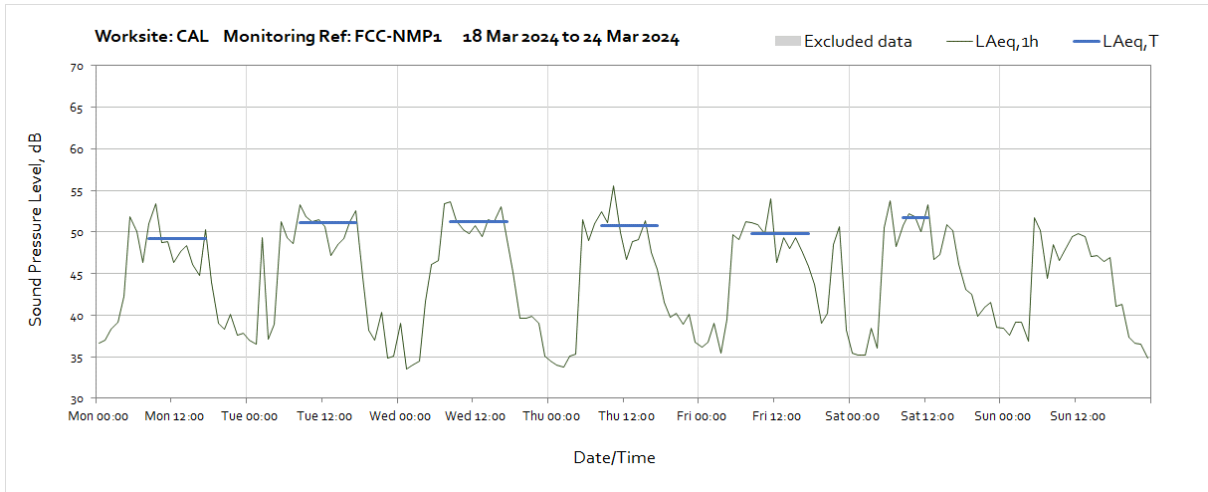
Note: Missing data between 03:00 and 04:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

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



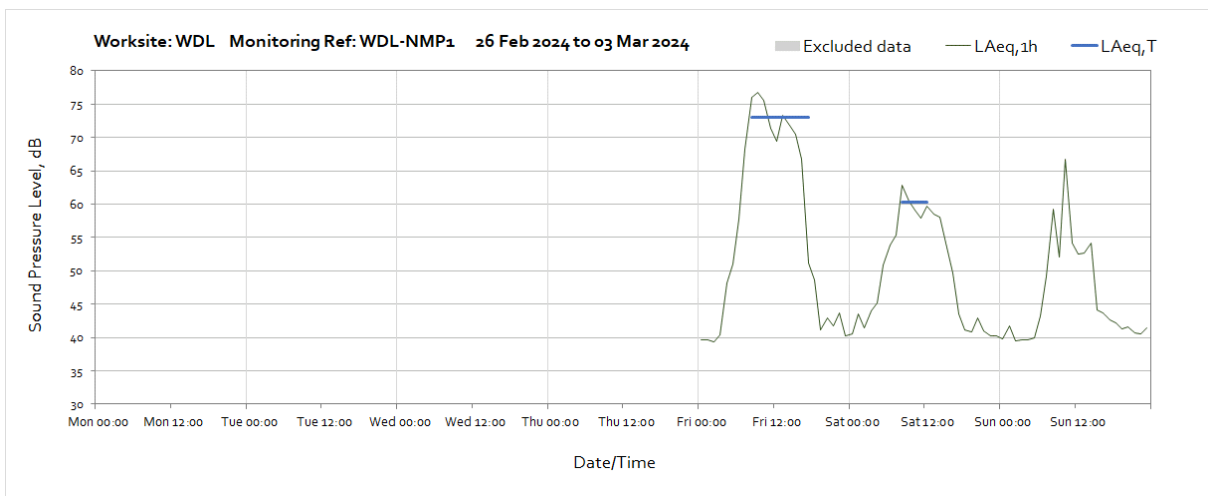
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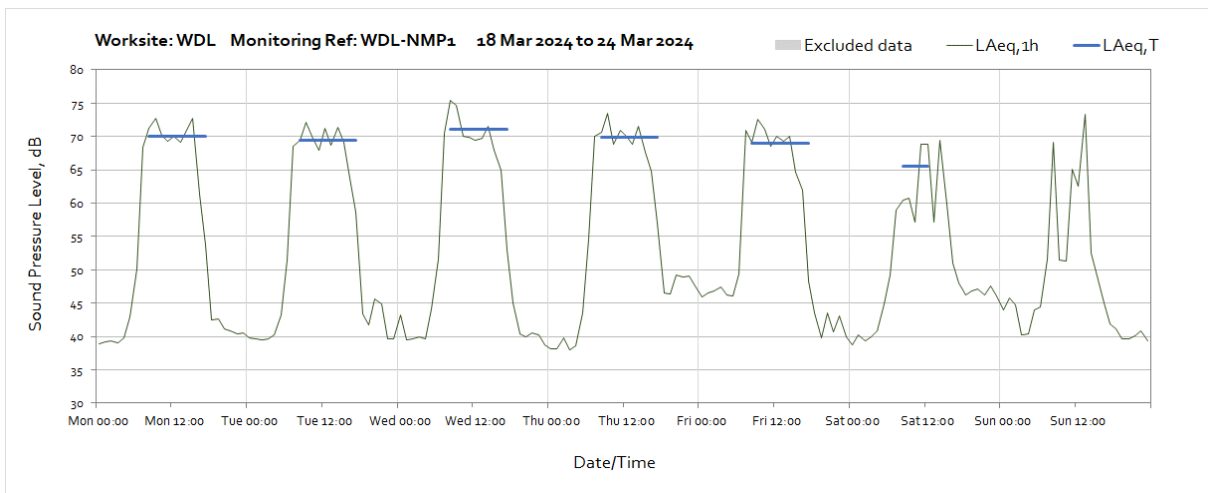
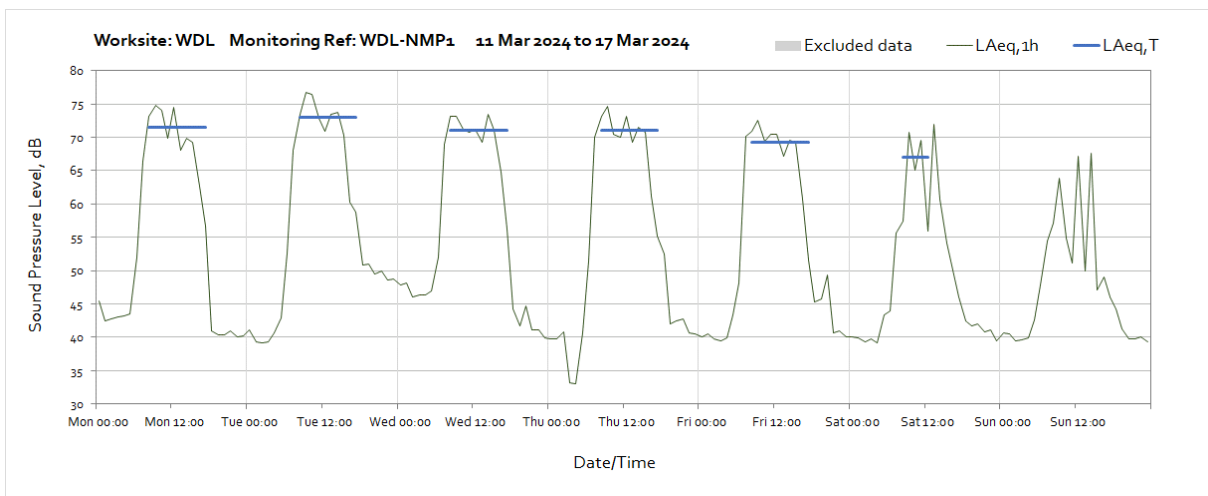
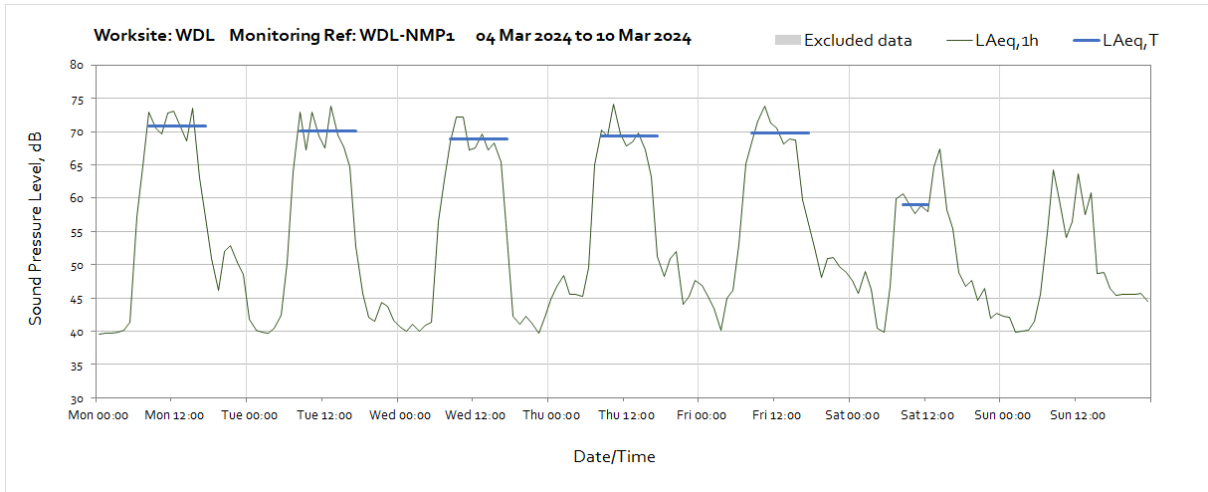


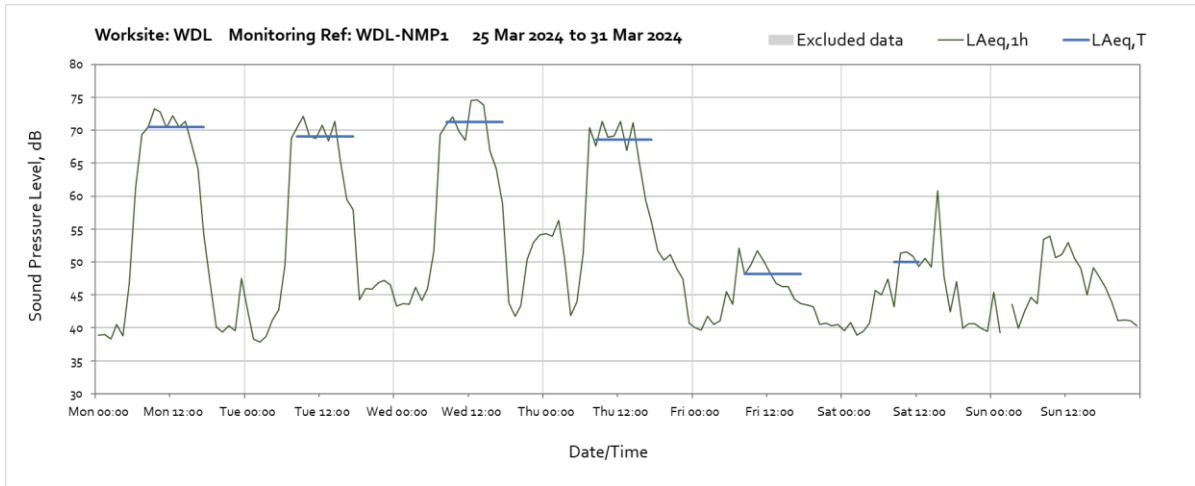


Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

**Worksite: WDL - Monitoring Ref: WDL-NMP1**

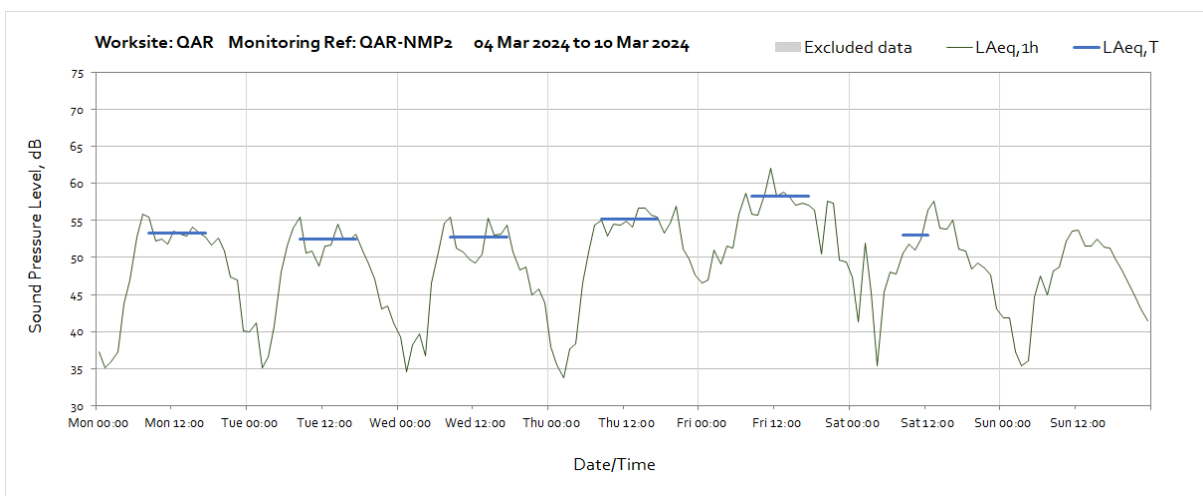
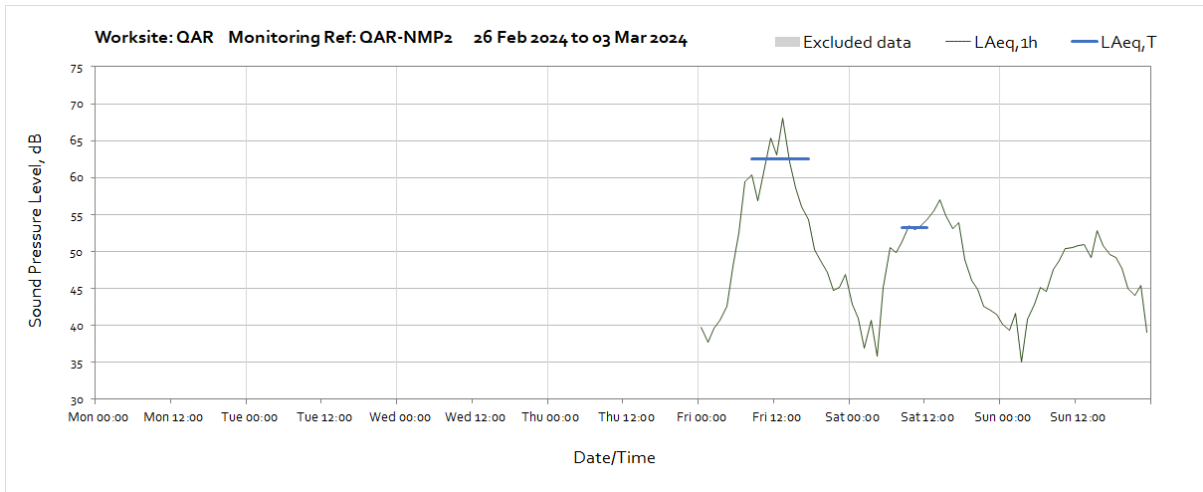


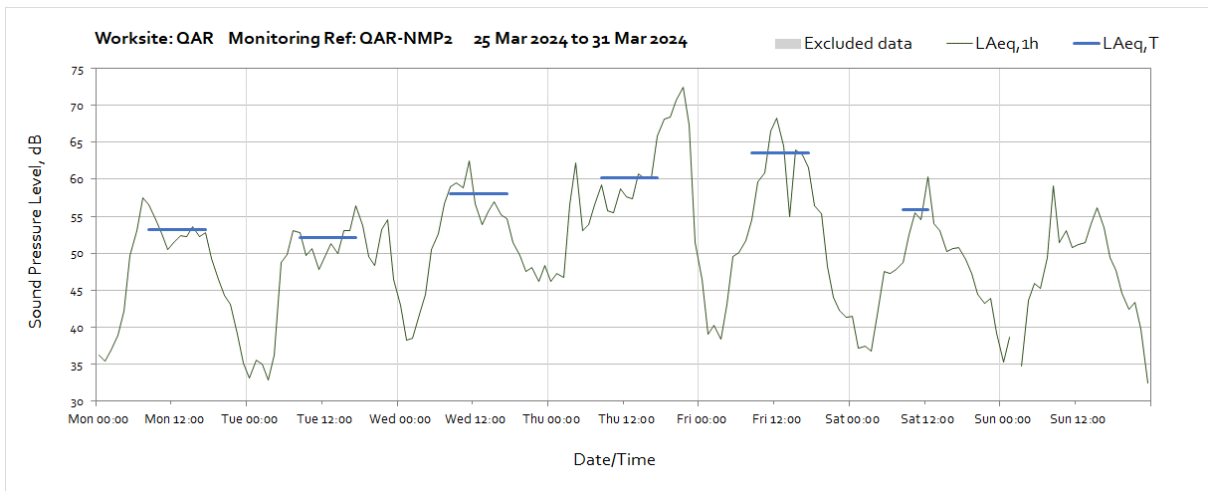
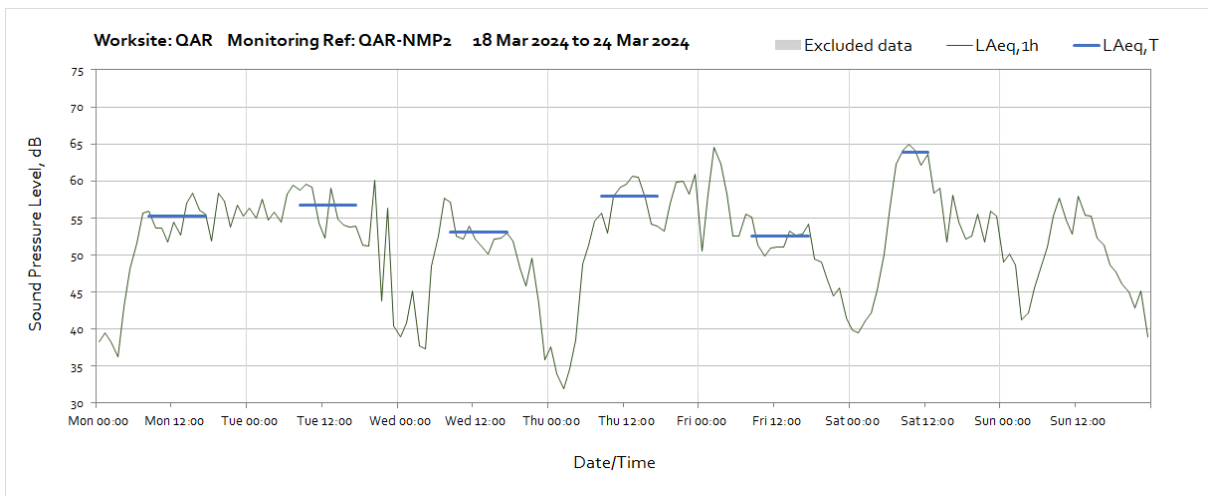
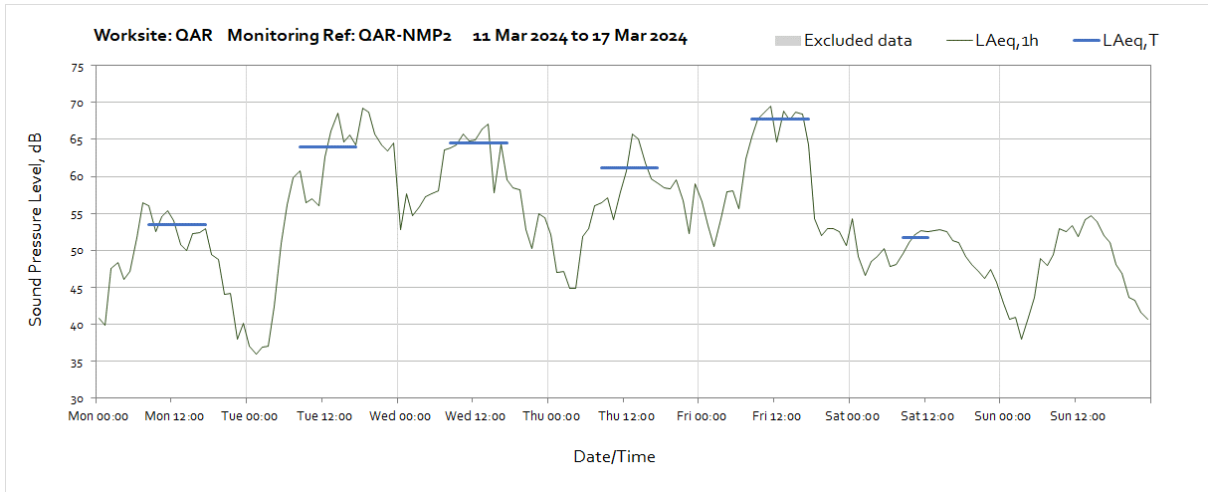




Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

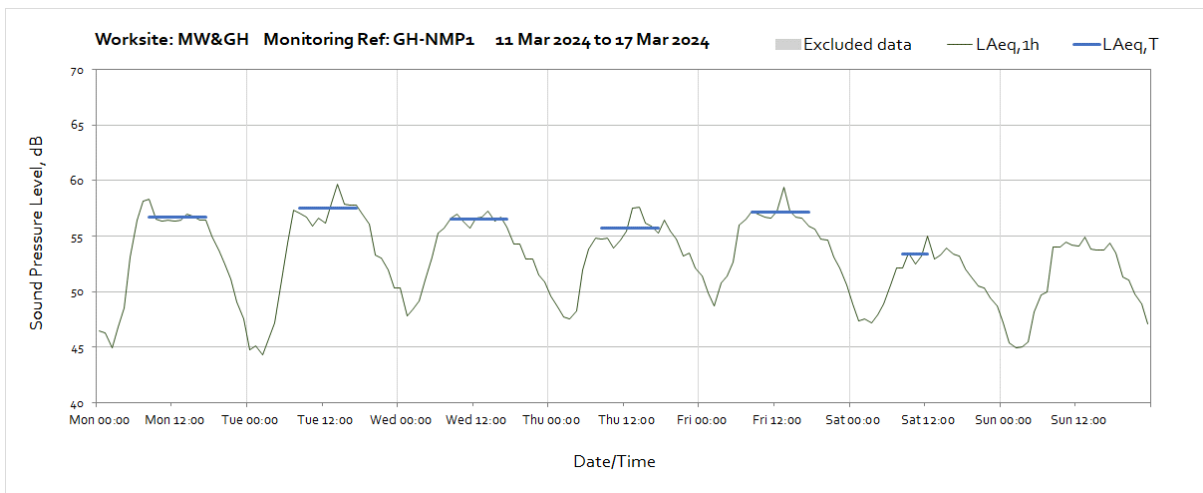
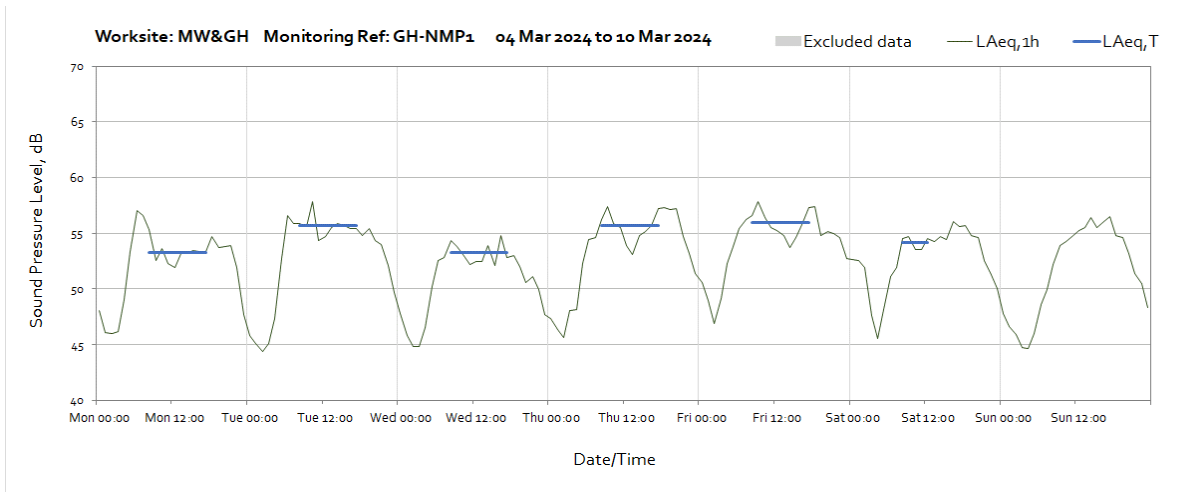
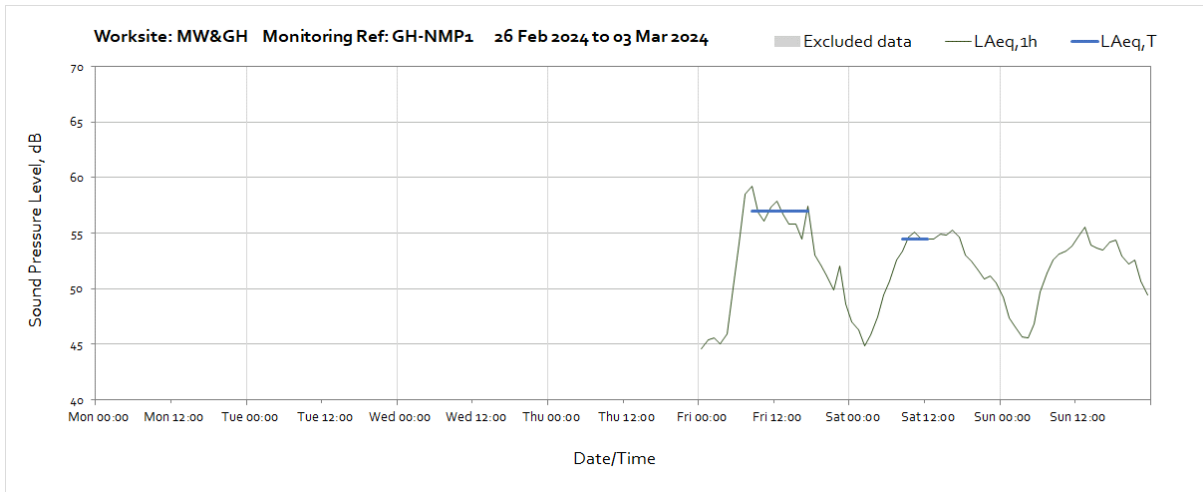
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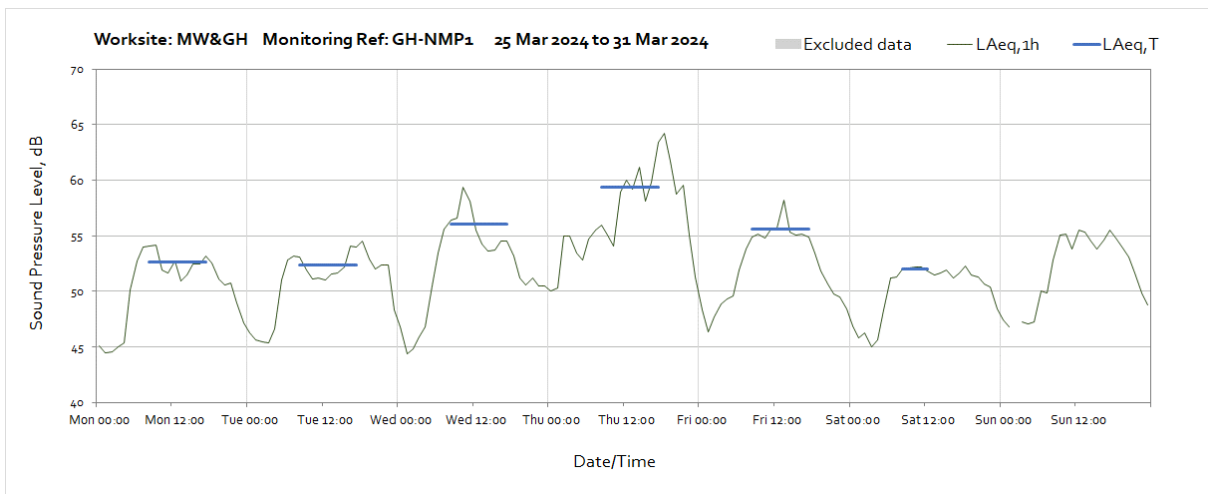
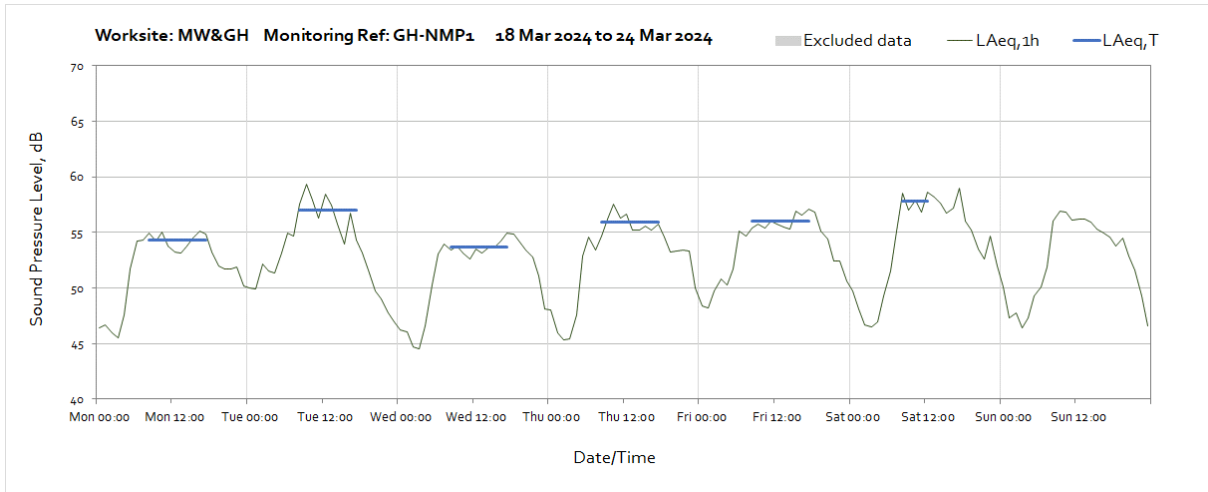




Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

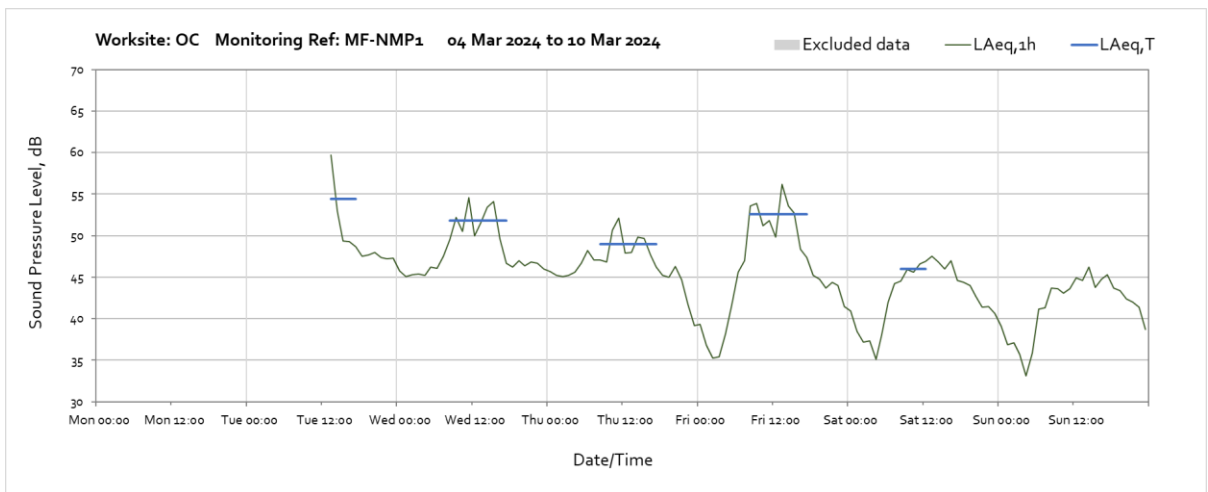
## Worksite: MW&GH – Monitoring Ref: GH-NMP1





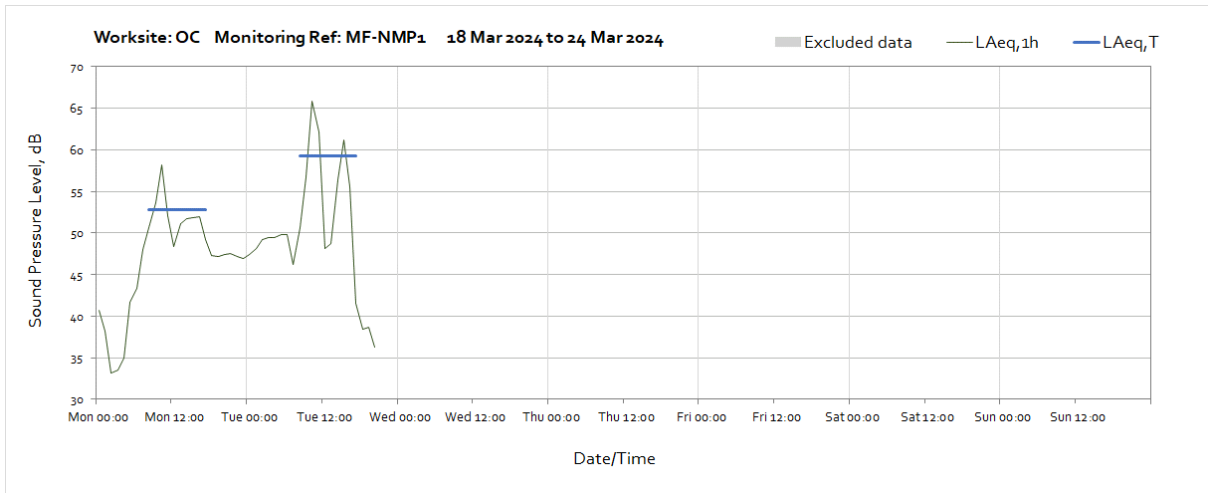
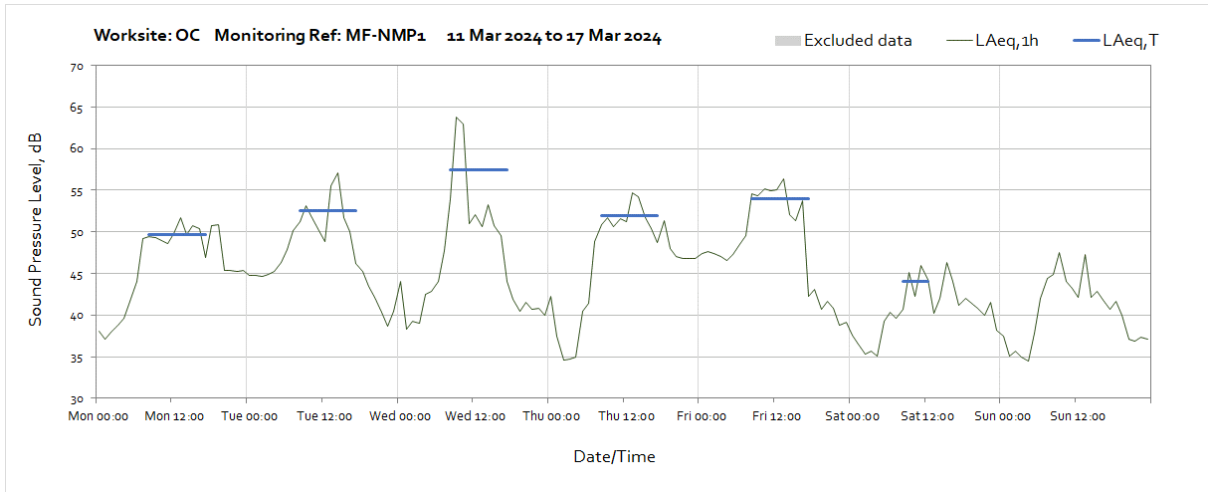
Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

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



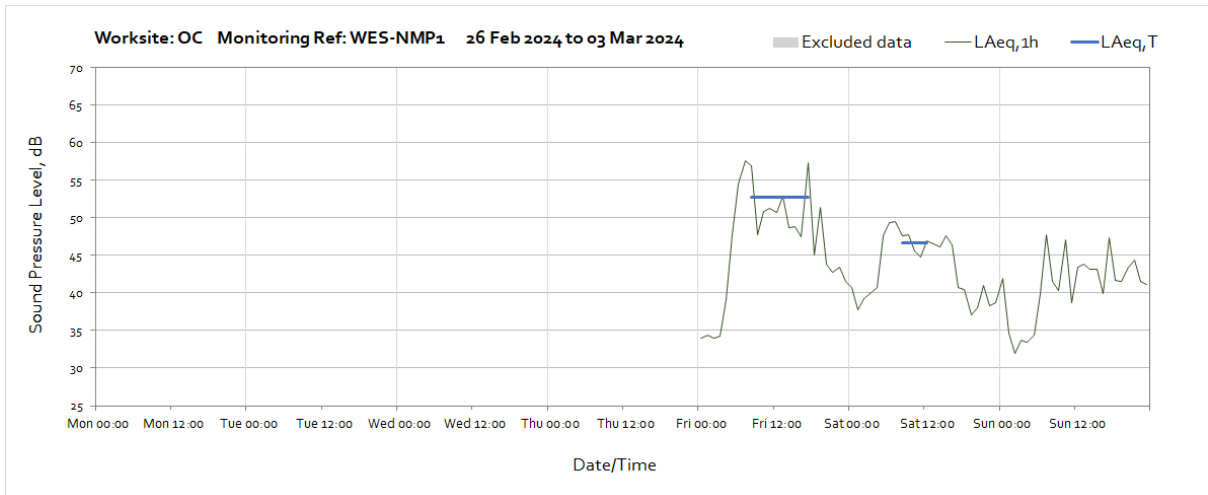
Note: Missing data from the start of the month until 13:00 on Tuesday 5<sup>th</sup> March was due to a faulty solar controller within the monitoring station.

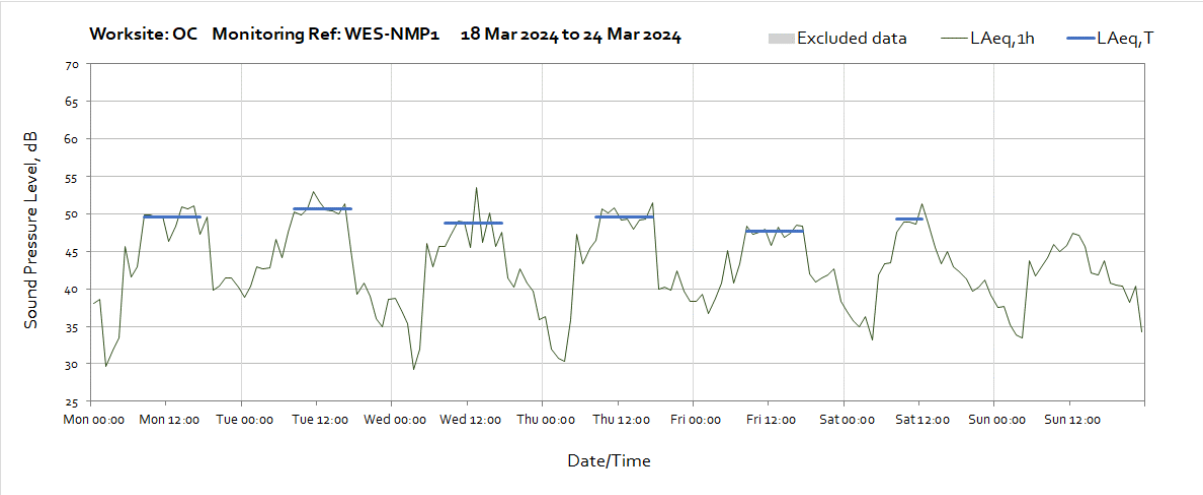
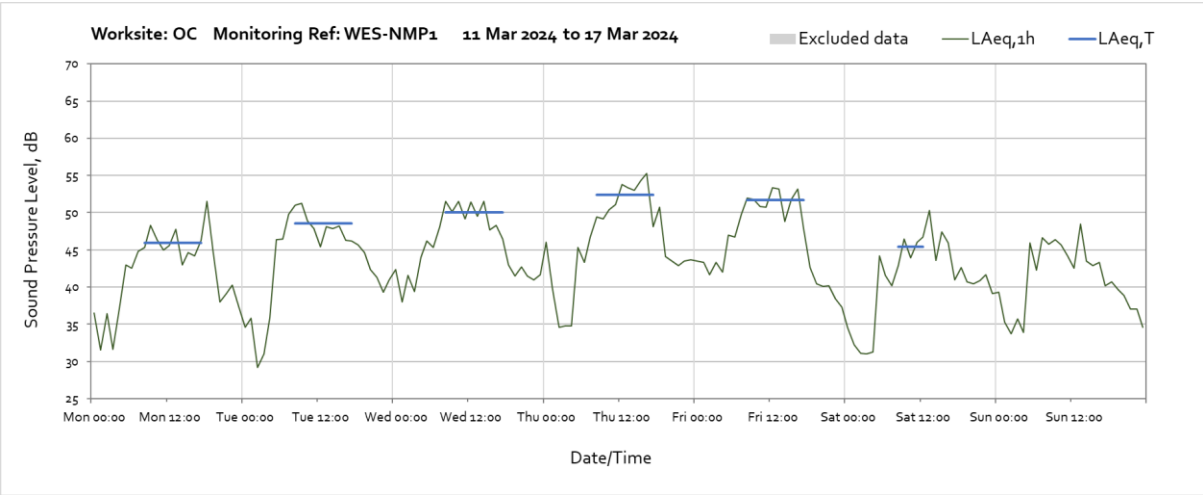
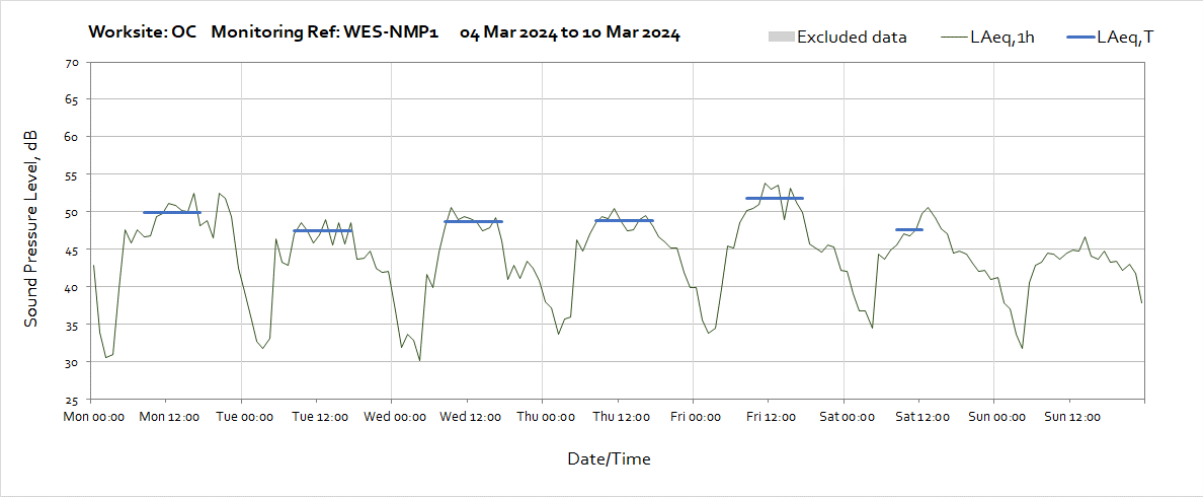
OFFICIAL



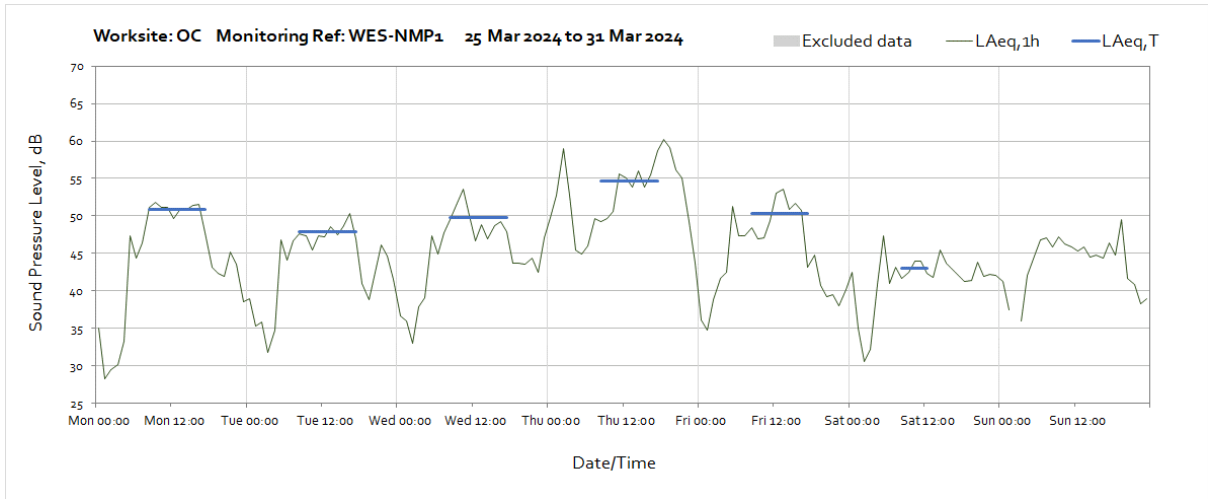
Note: Missing data from 21:00 on Tuesday 19<sup>th</sup> March until month end was due to loss of power at the monitoring station caused by poor weather conditions preventing sufficient light reaching the solar panel.

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



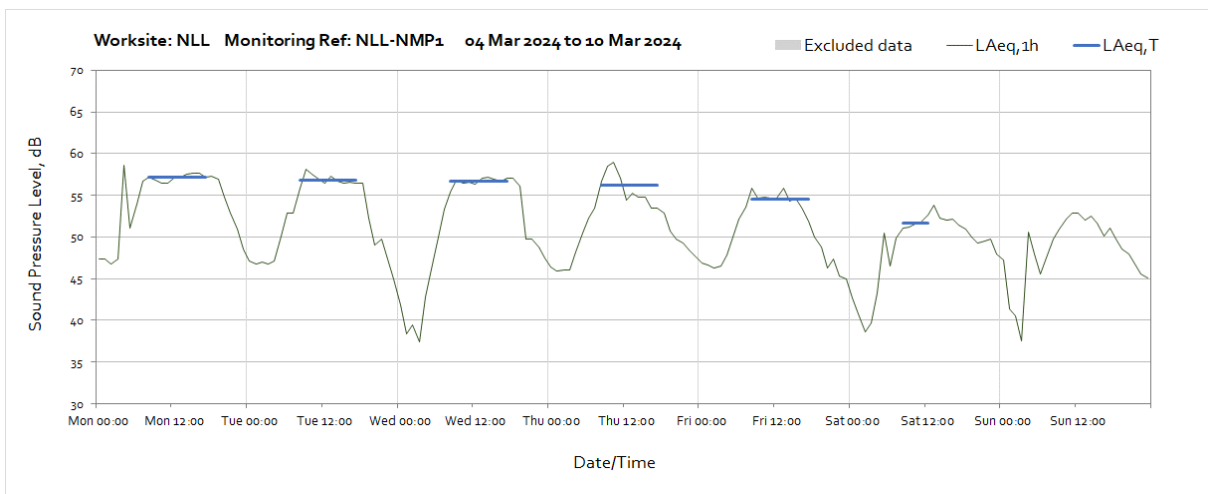
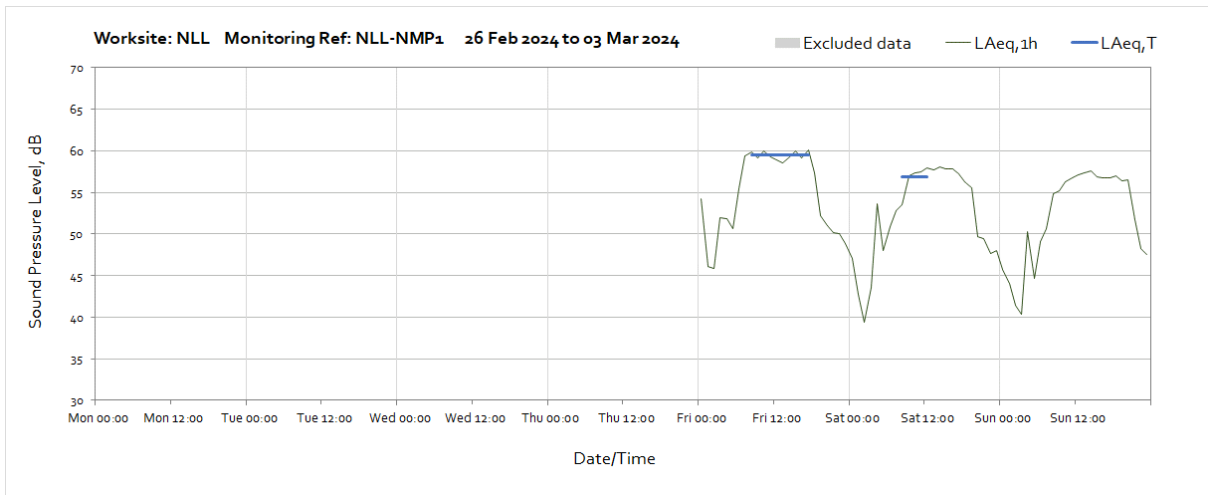


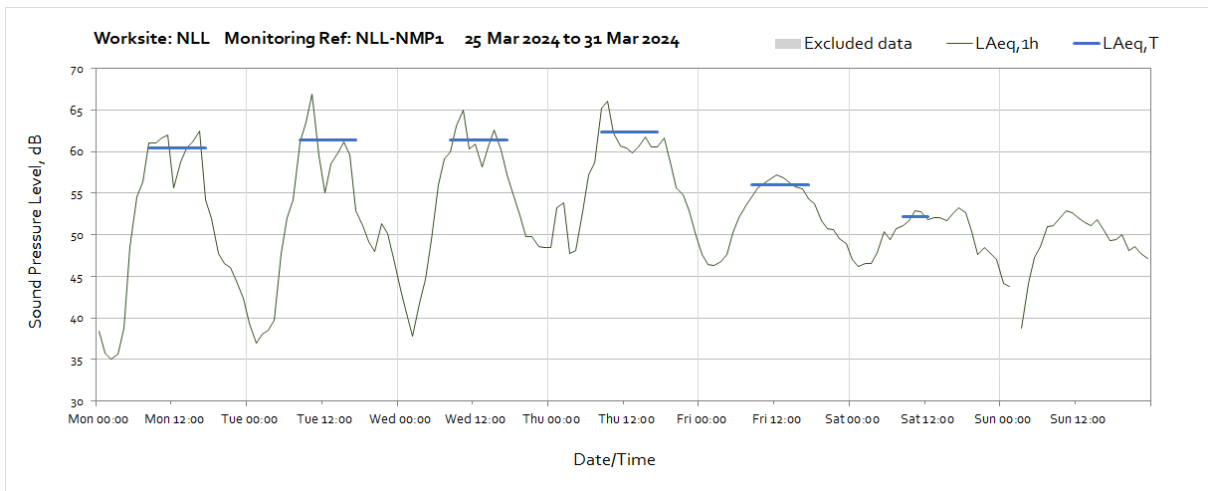
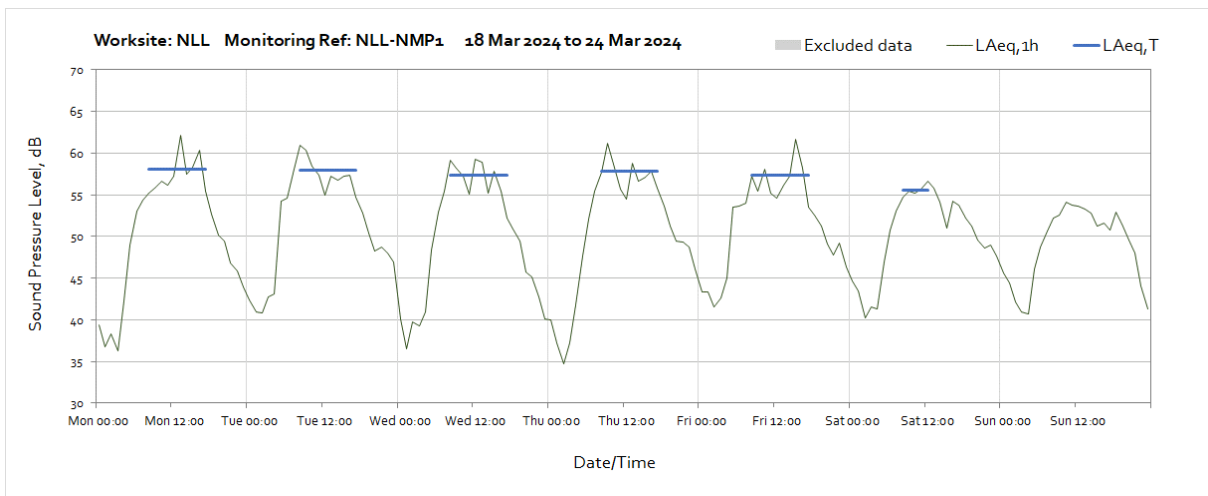
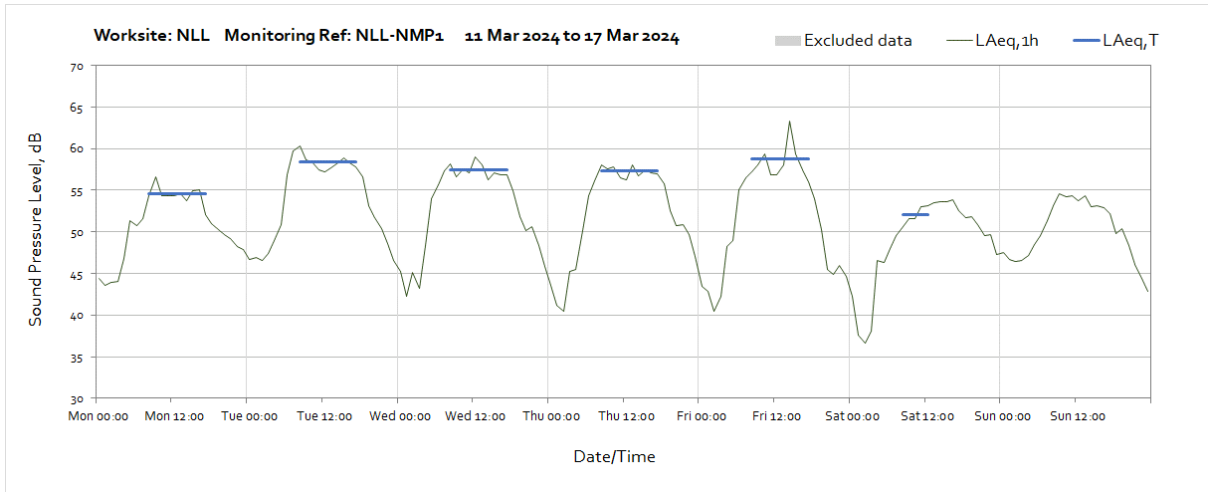




Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

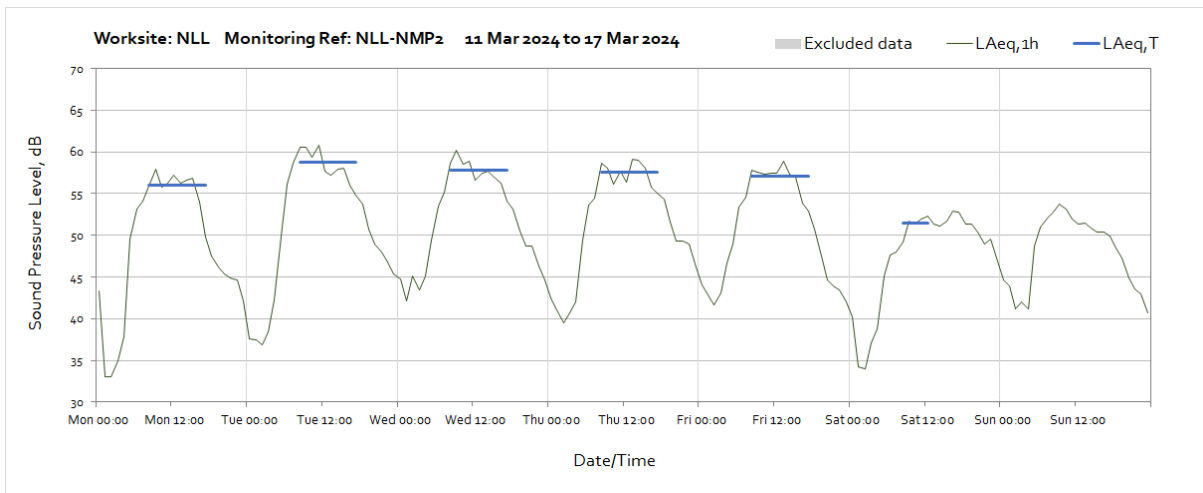
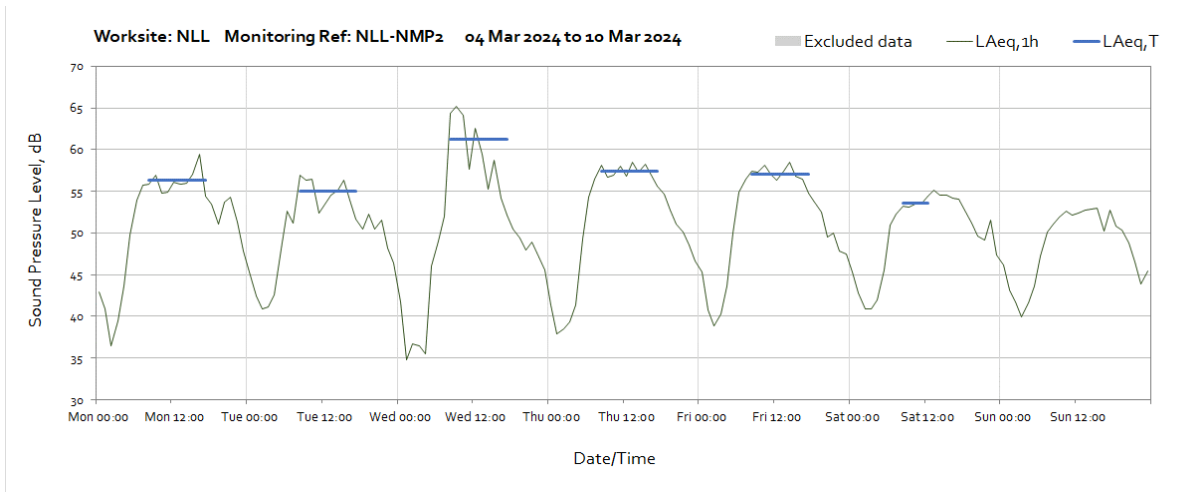
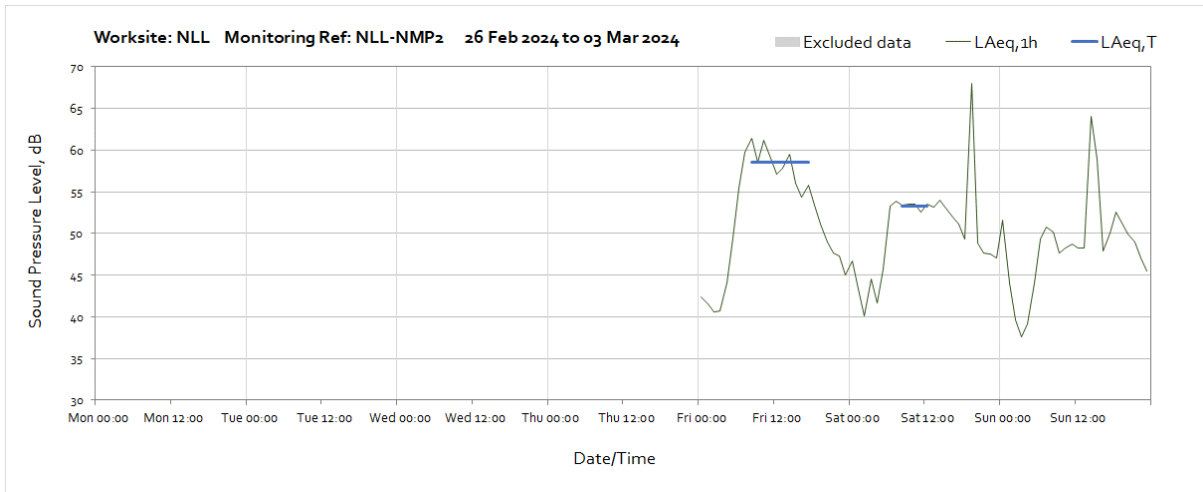
### Worksite: NLL – Monitoring Ref: NLL-NMP1



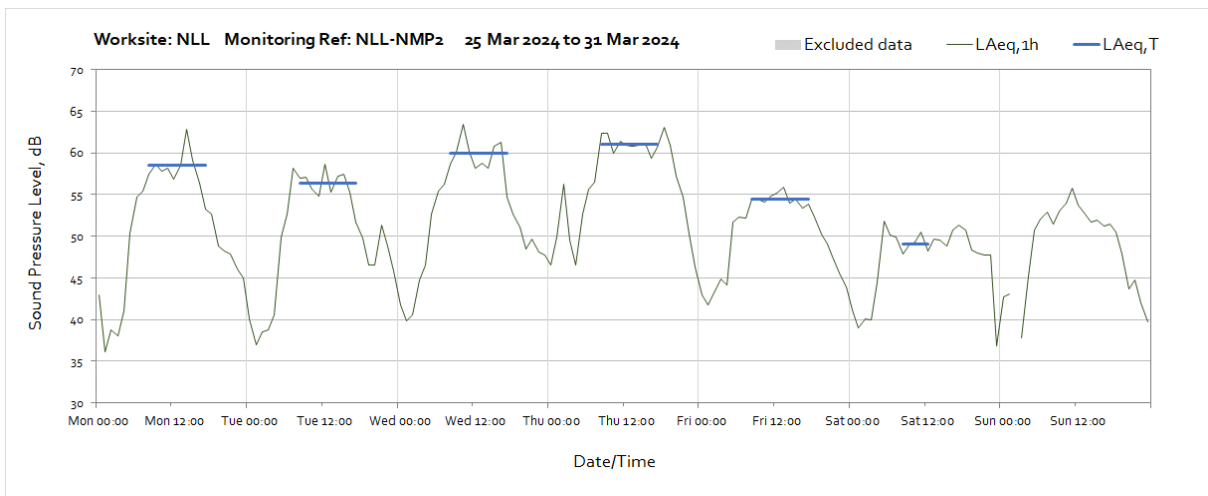
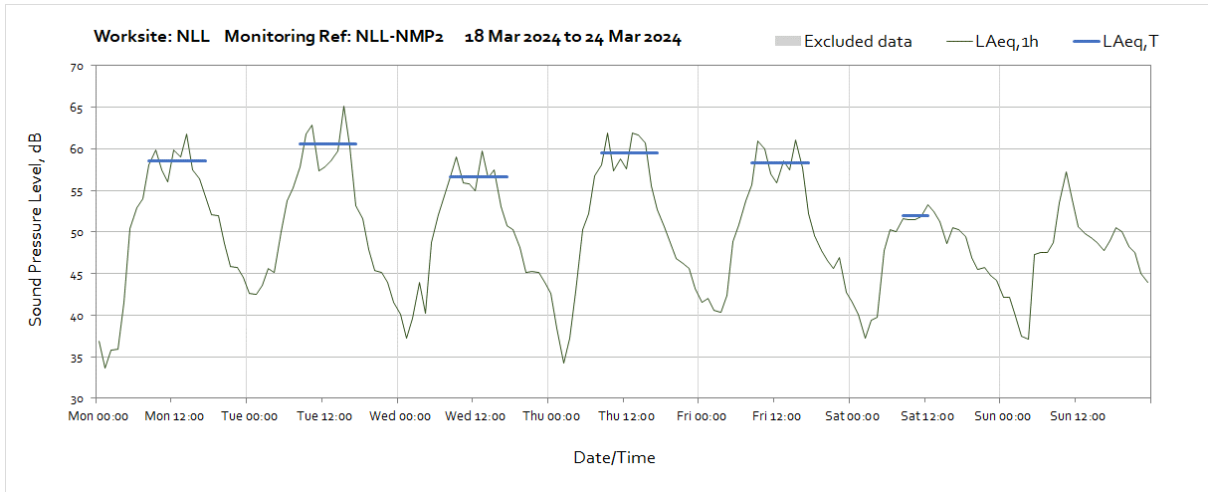


Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

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

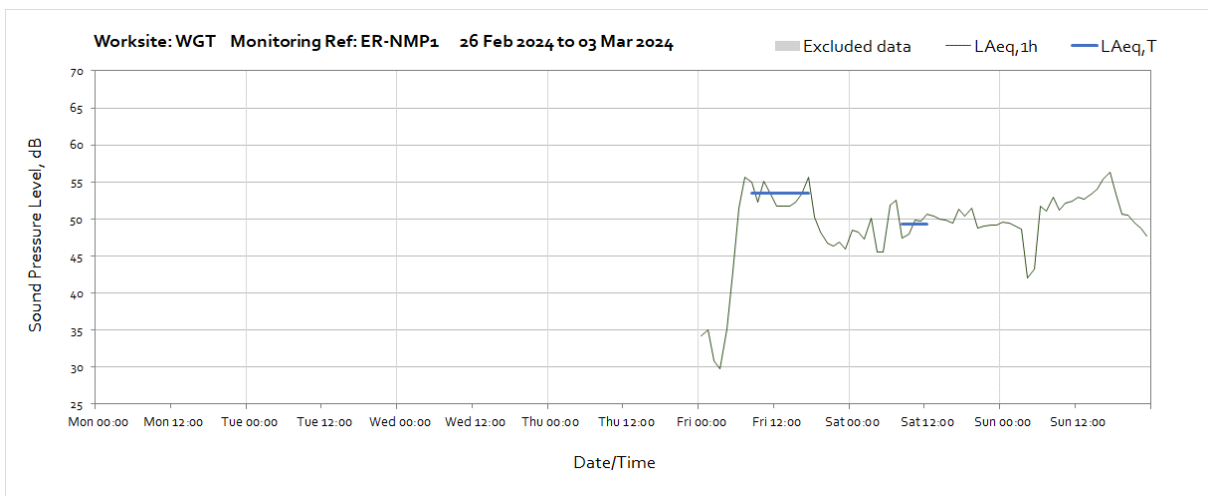


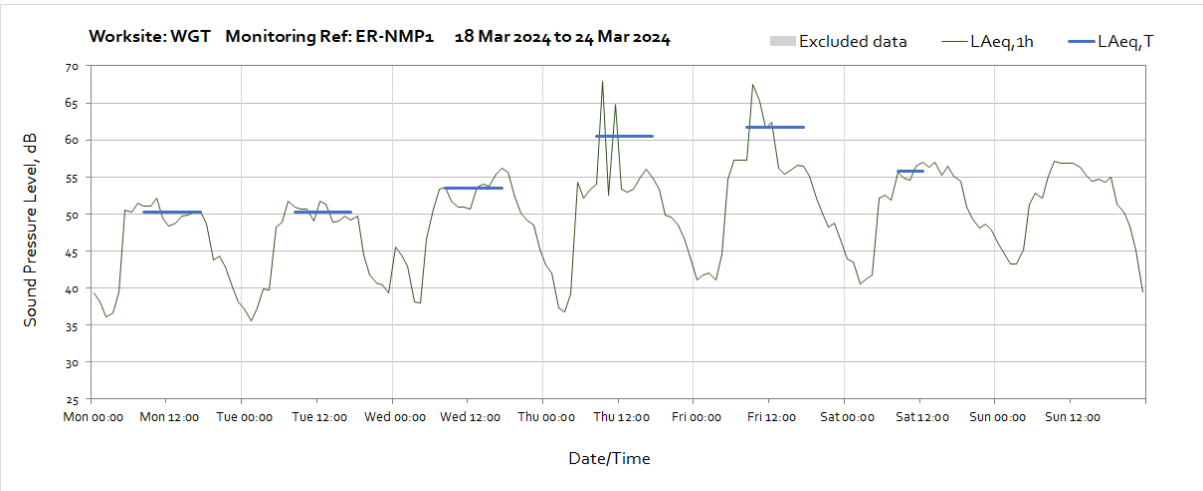
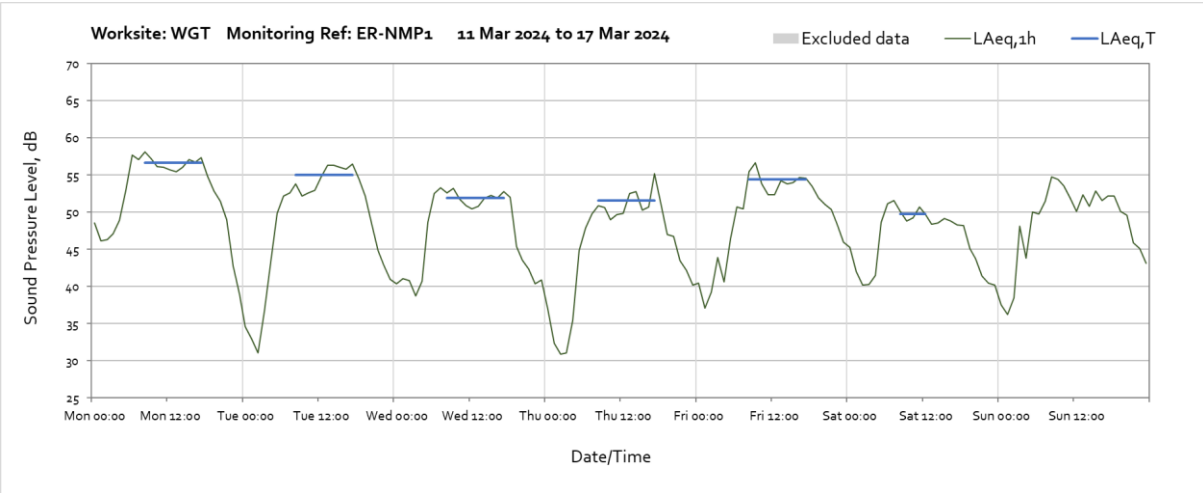
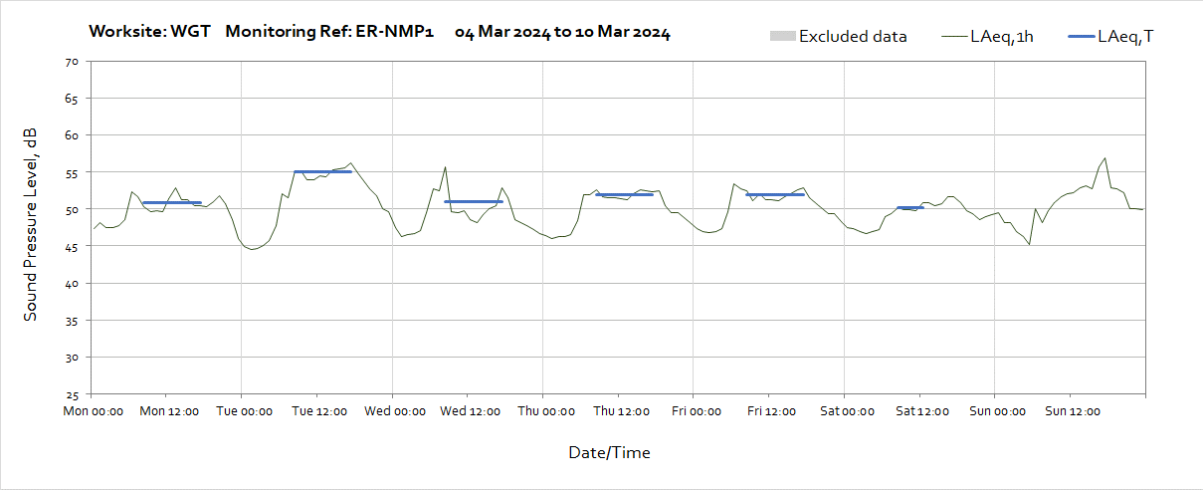
OFFICIAL

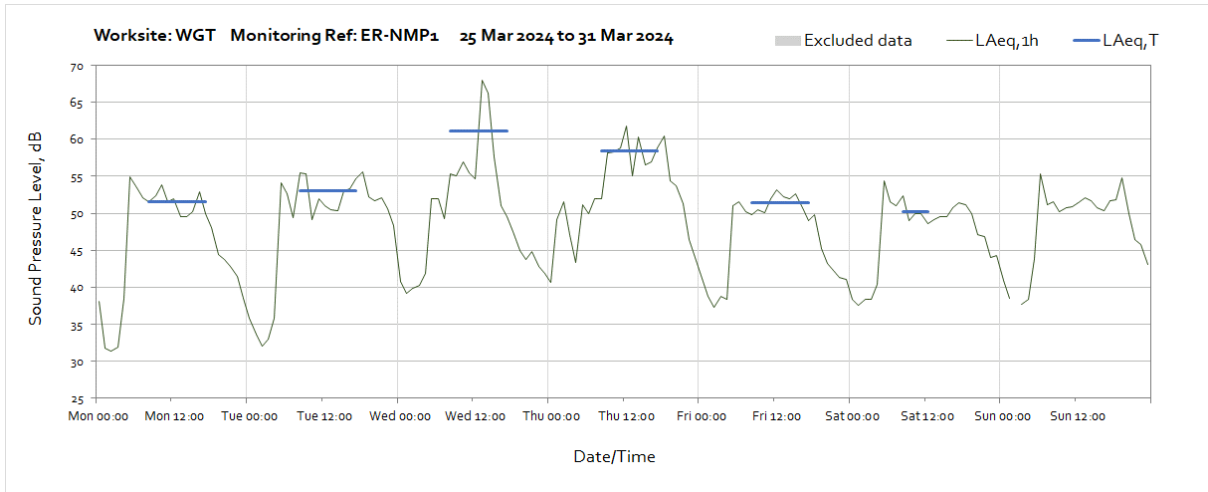


Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

**Worksite: WGT - Monitoring Ref: ER-NMP1**

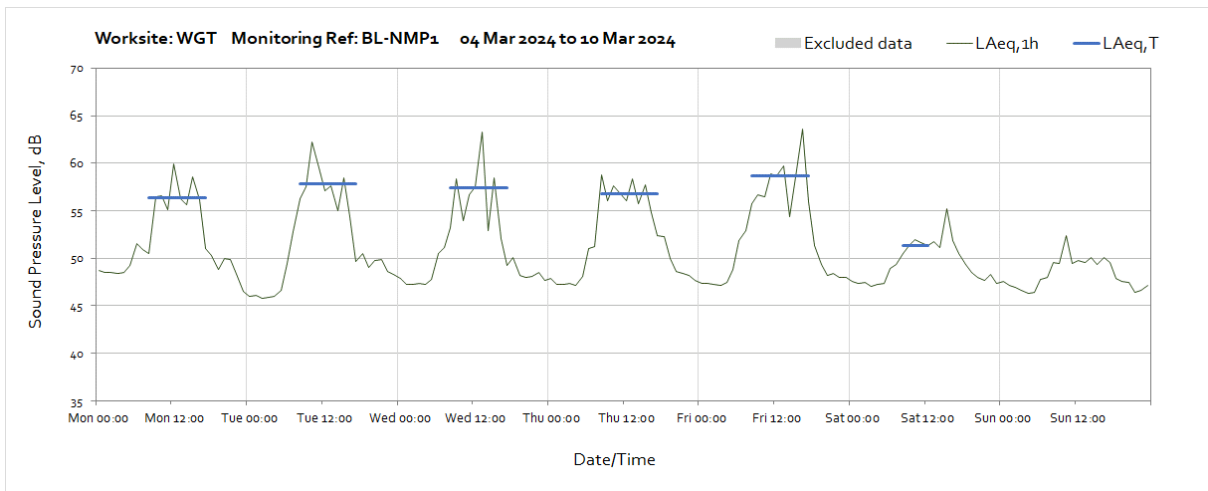
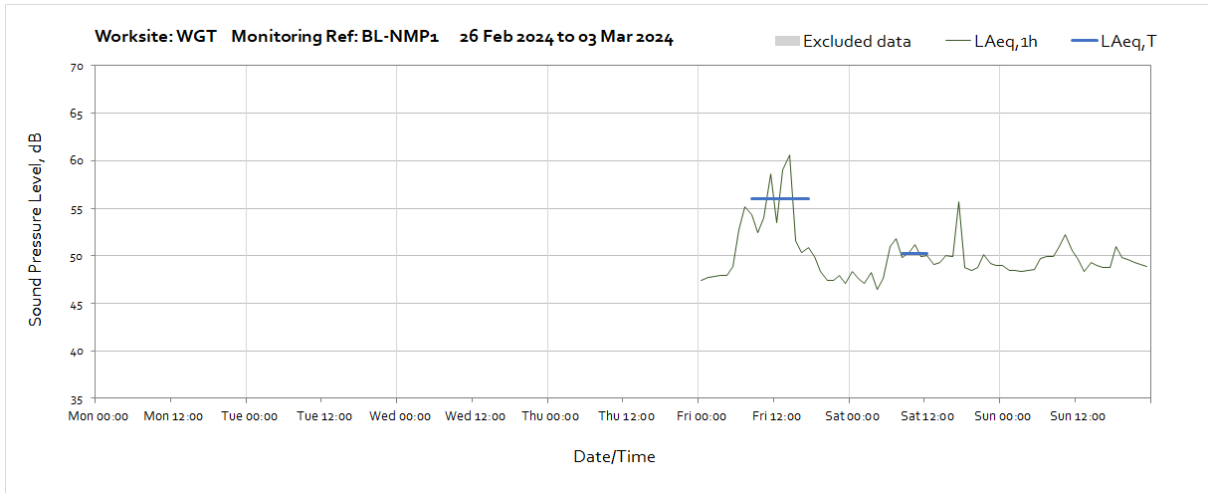


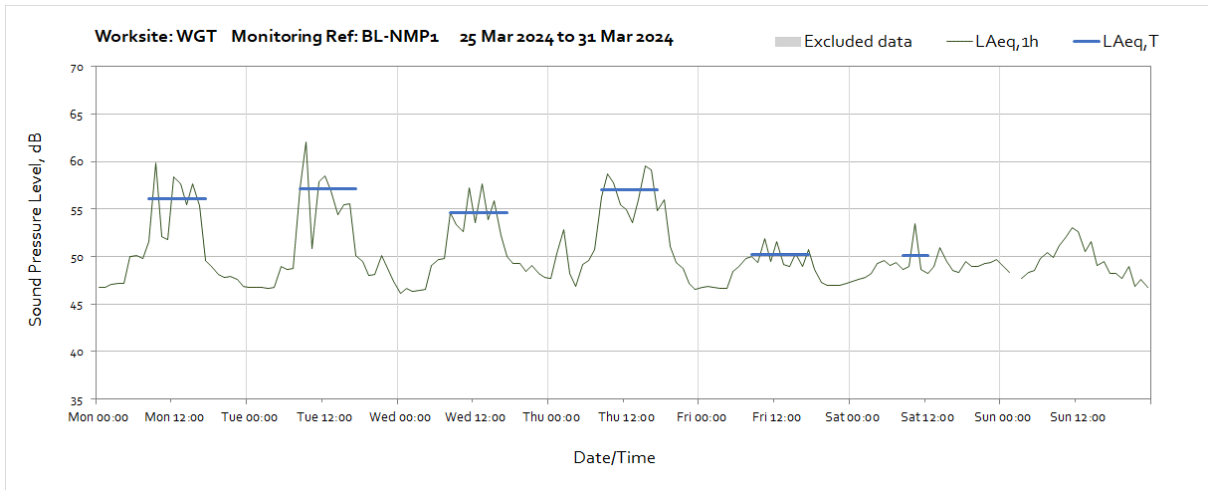
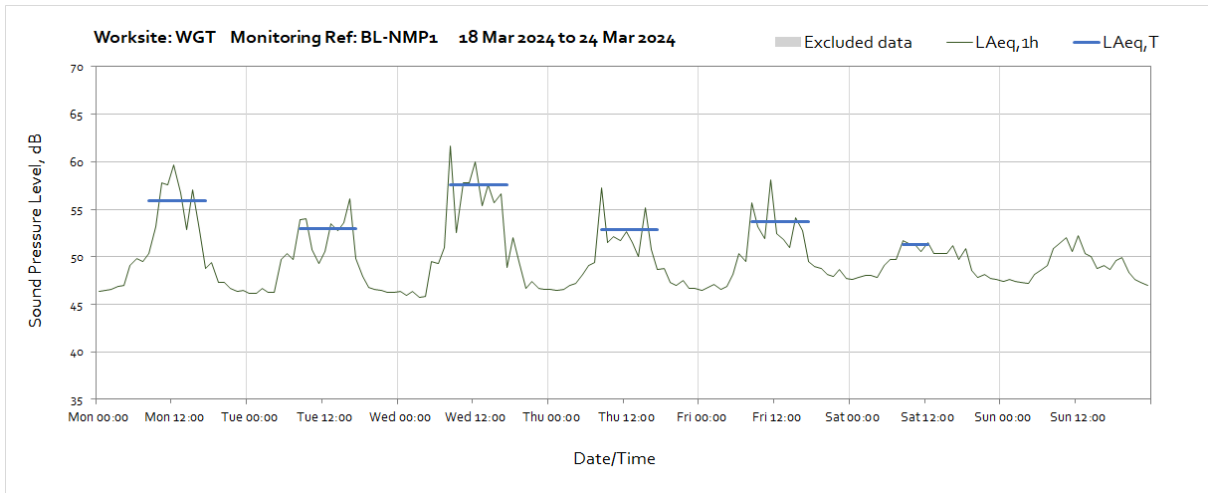
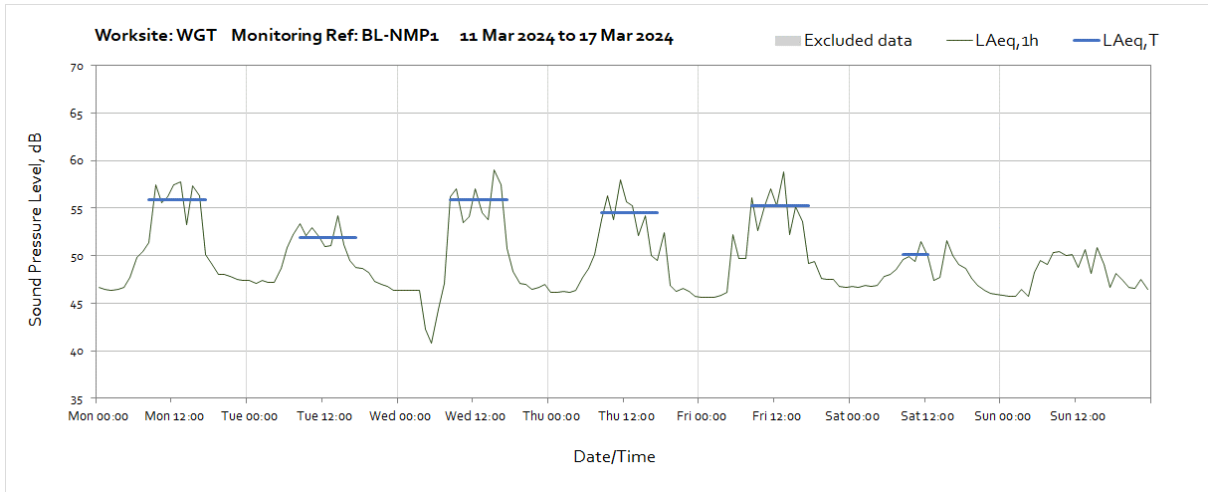




Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

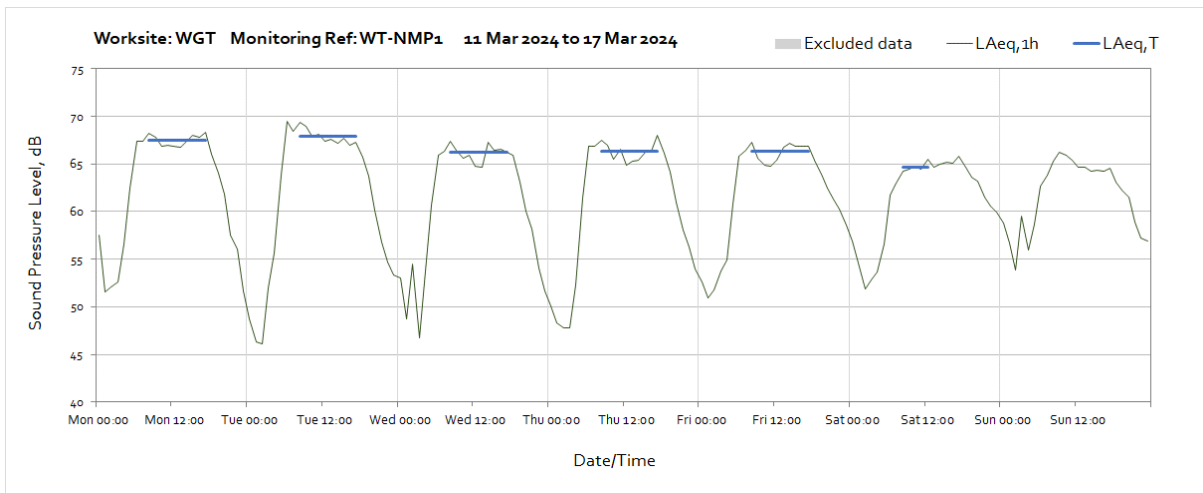
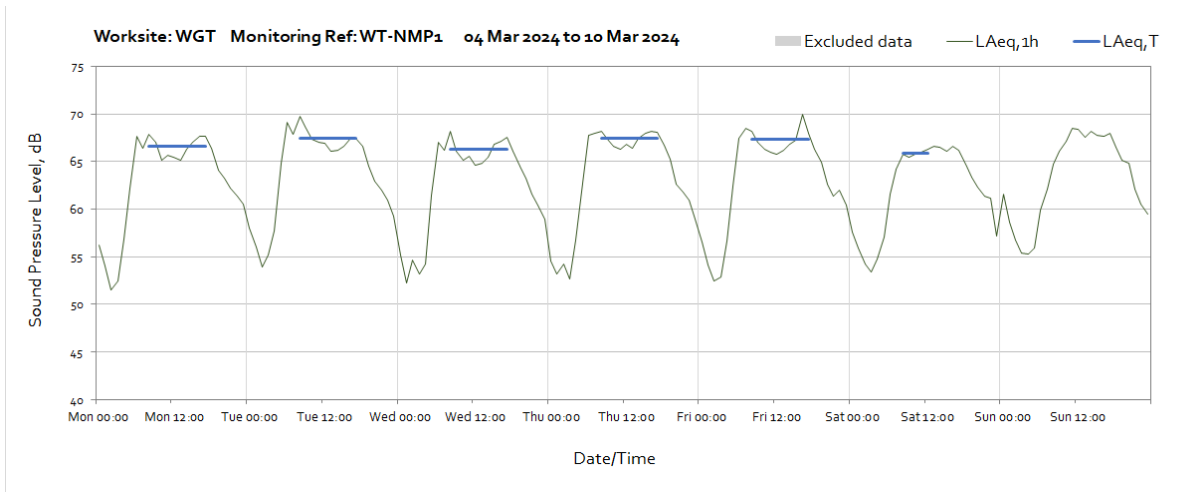
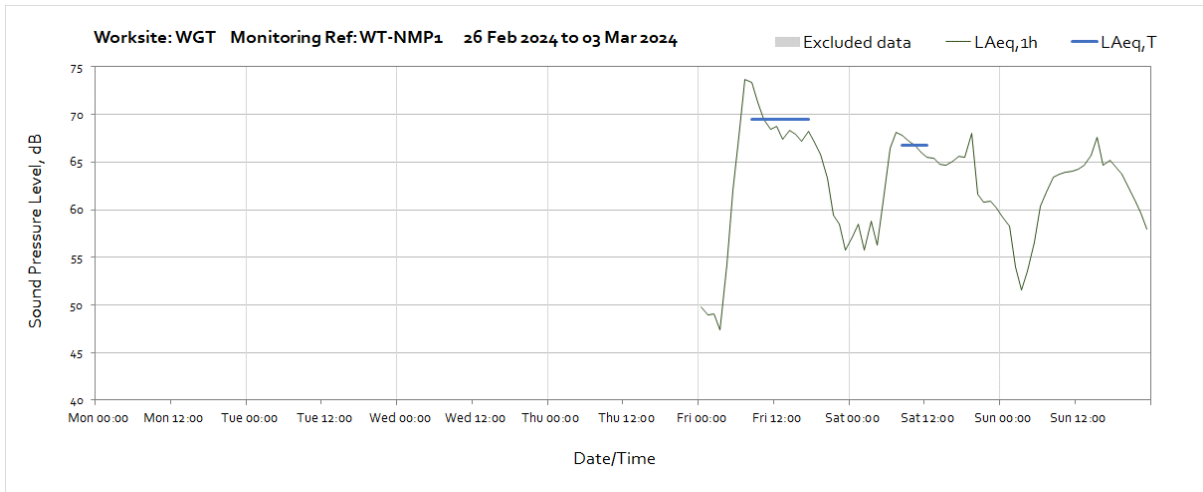
### Worksite: WGT – Monitoring Ref: BL-NMP1





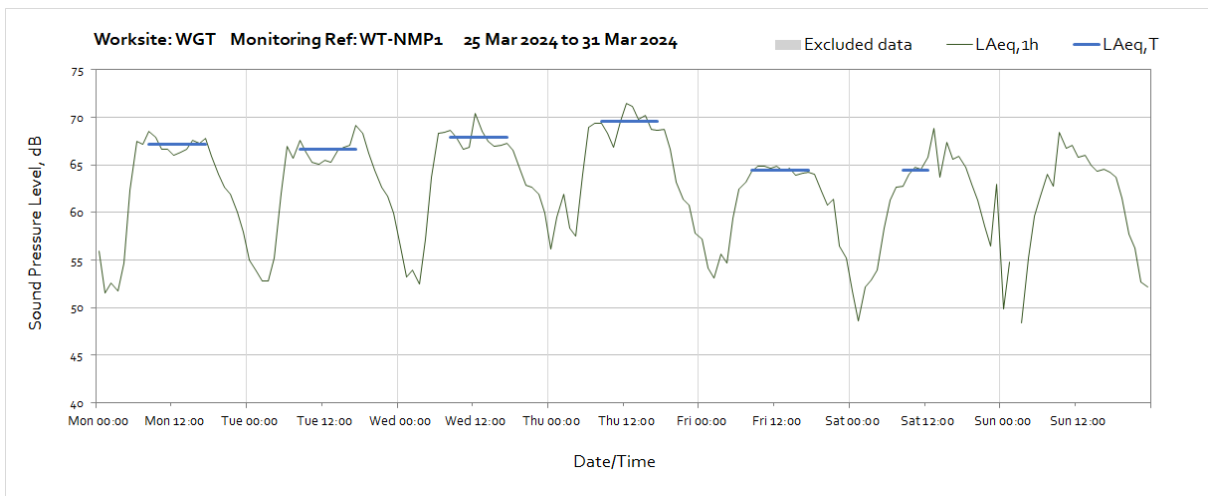
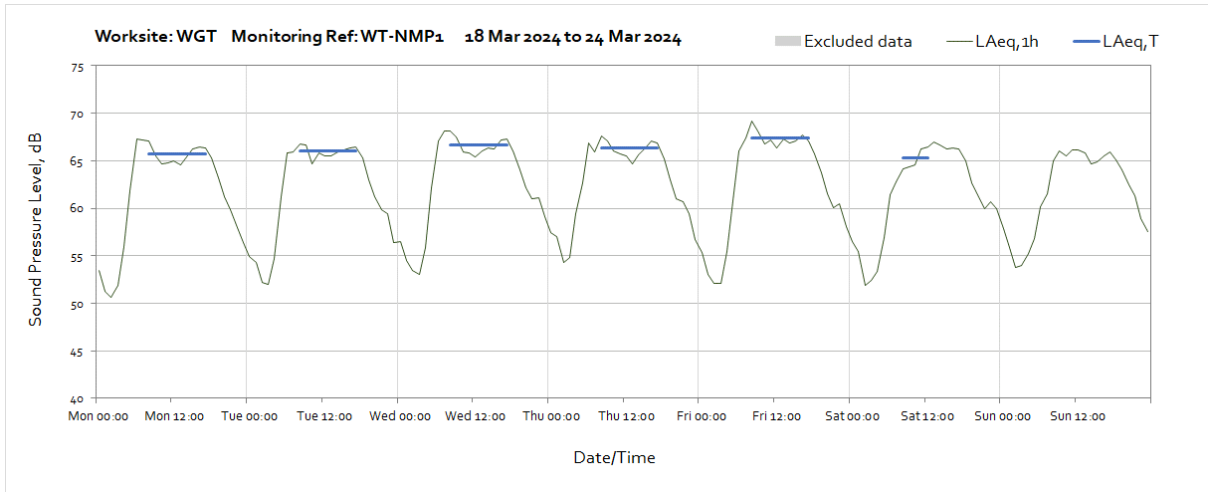
Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

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



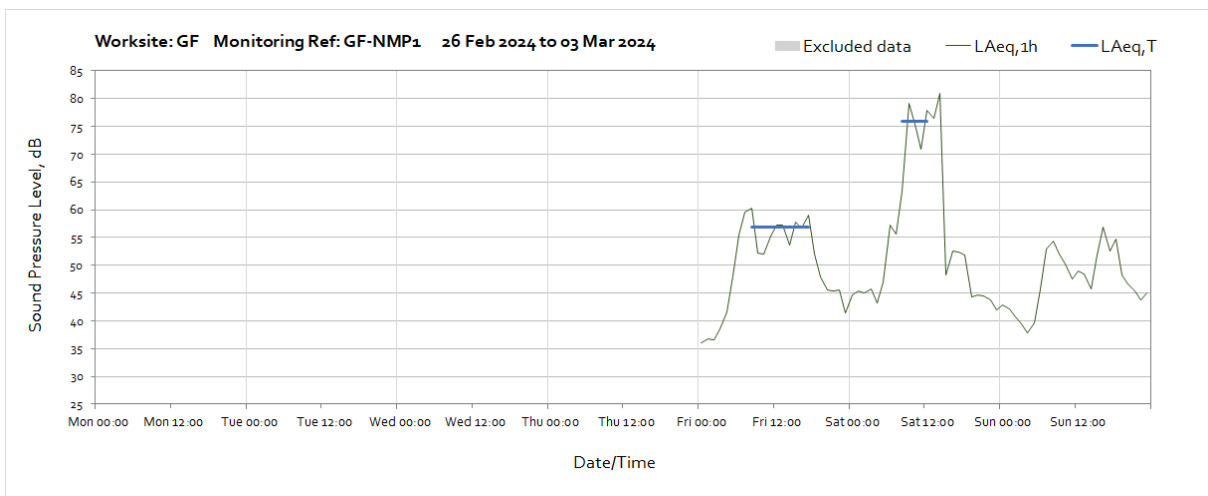
OFFICIAL

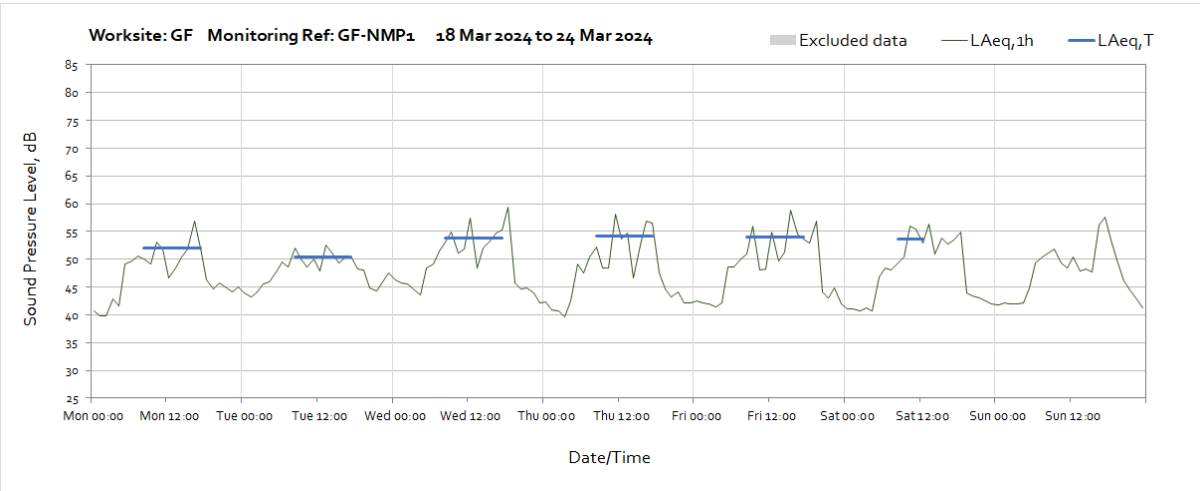
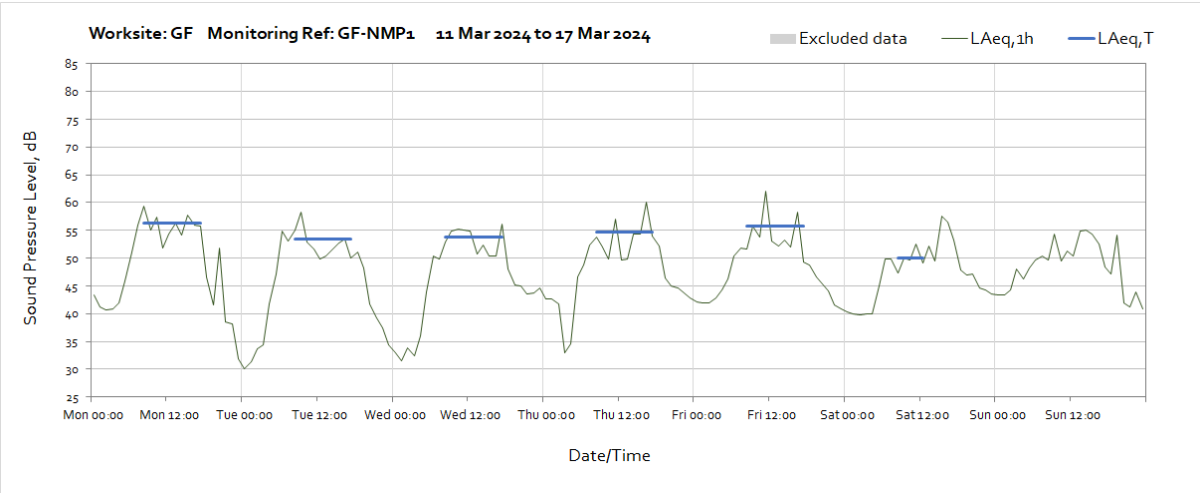
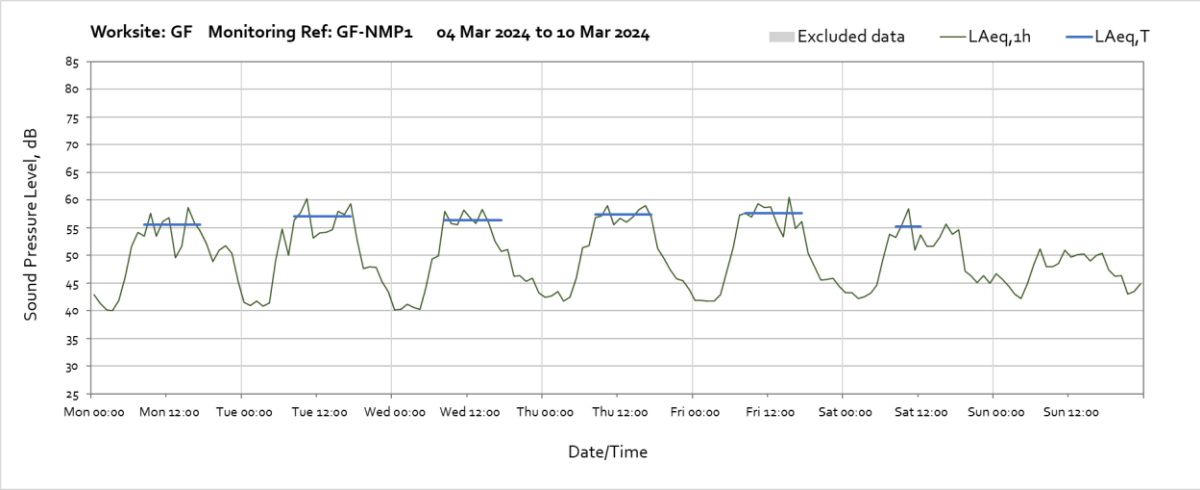


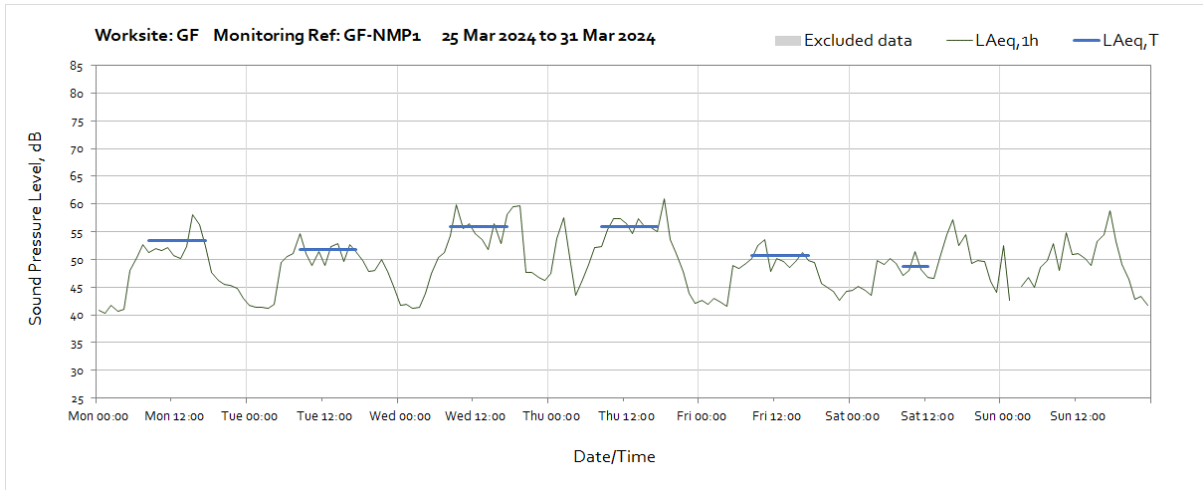


Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

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

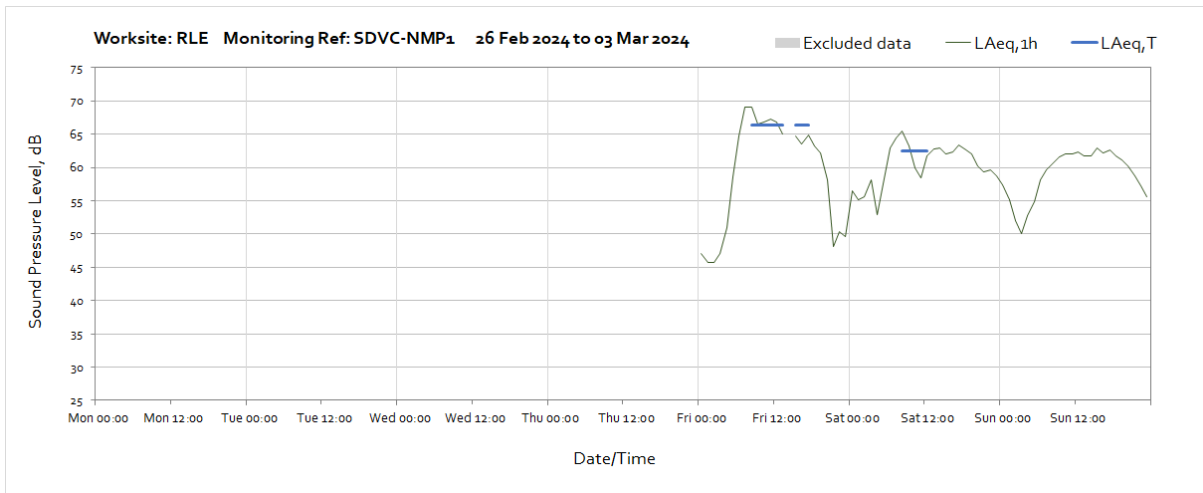




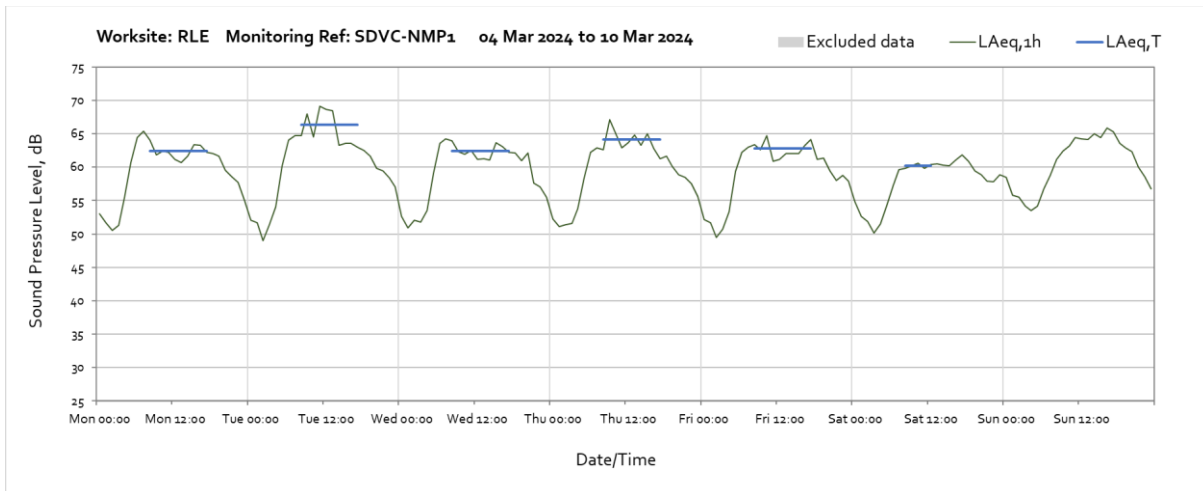


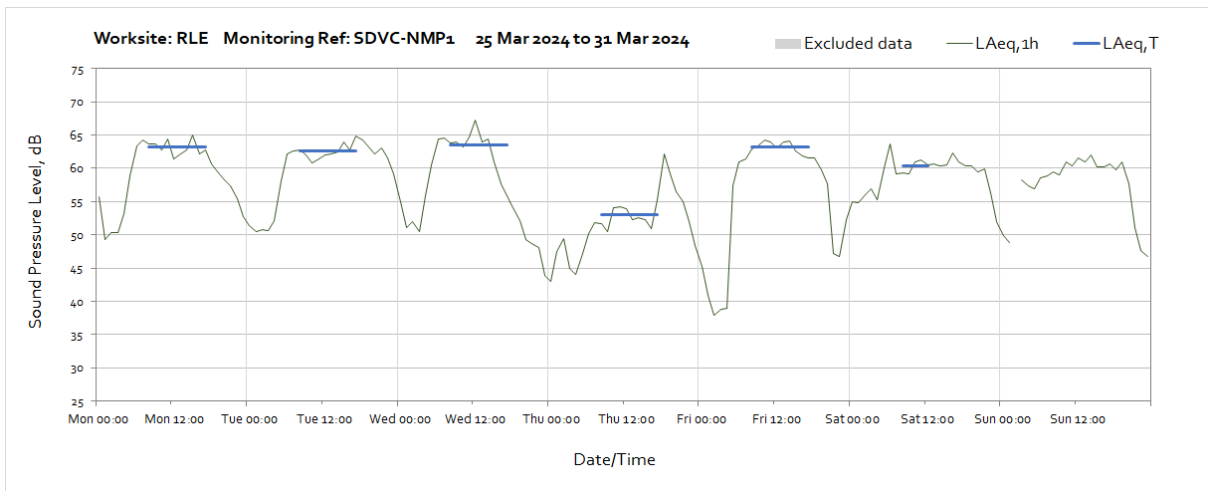
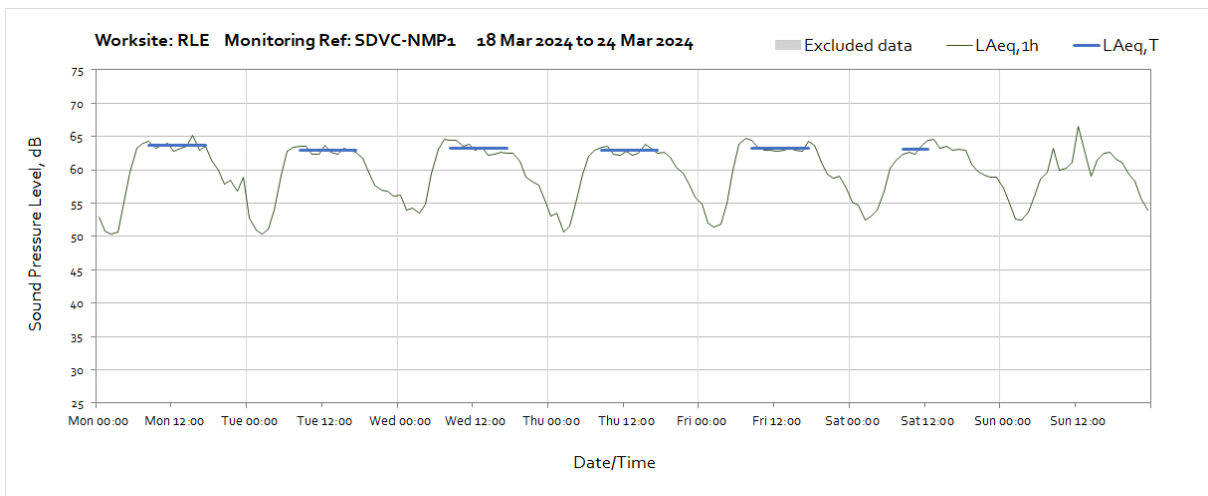
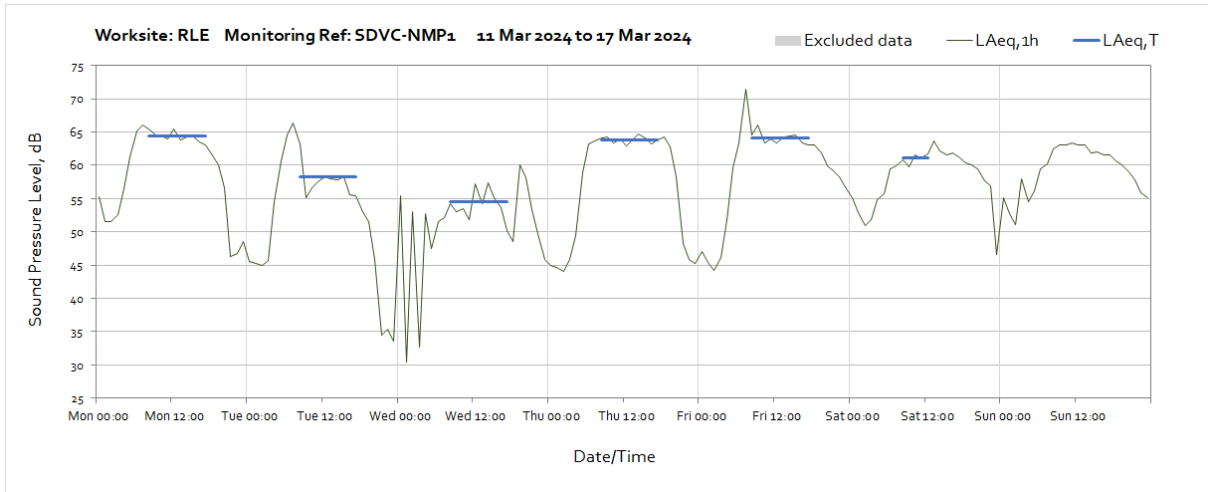
Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

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



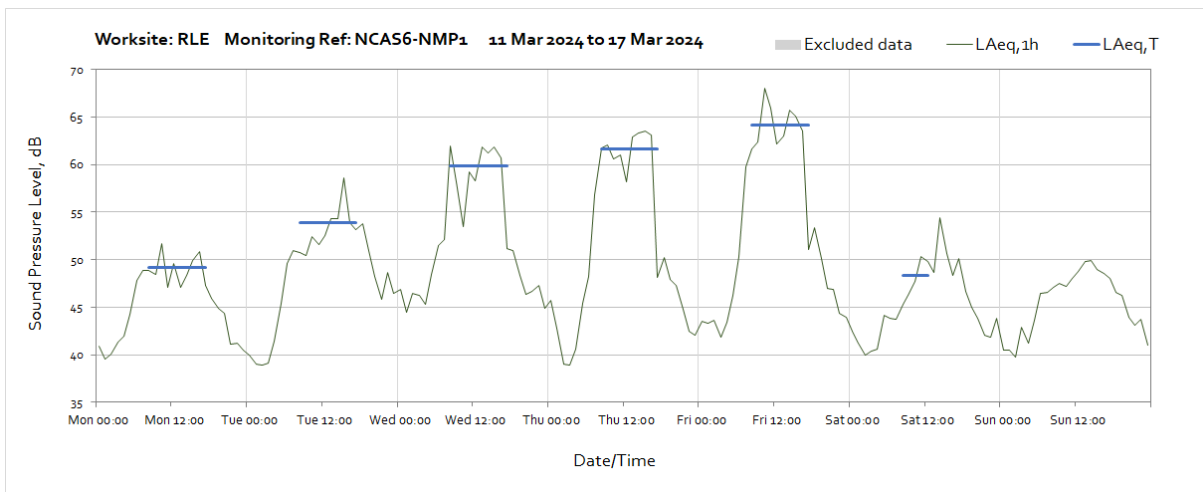
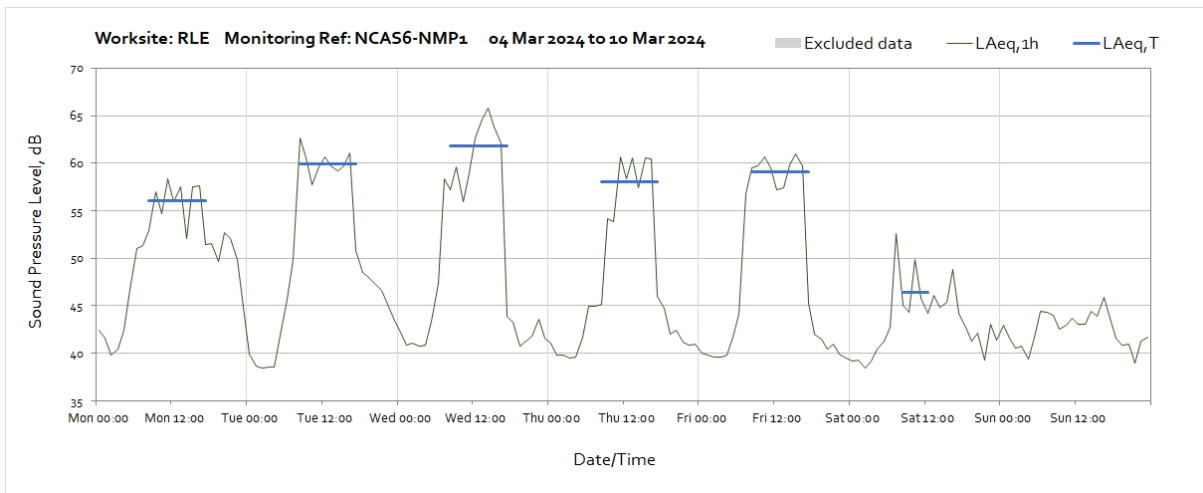
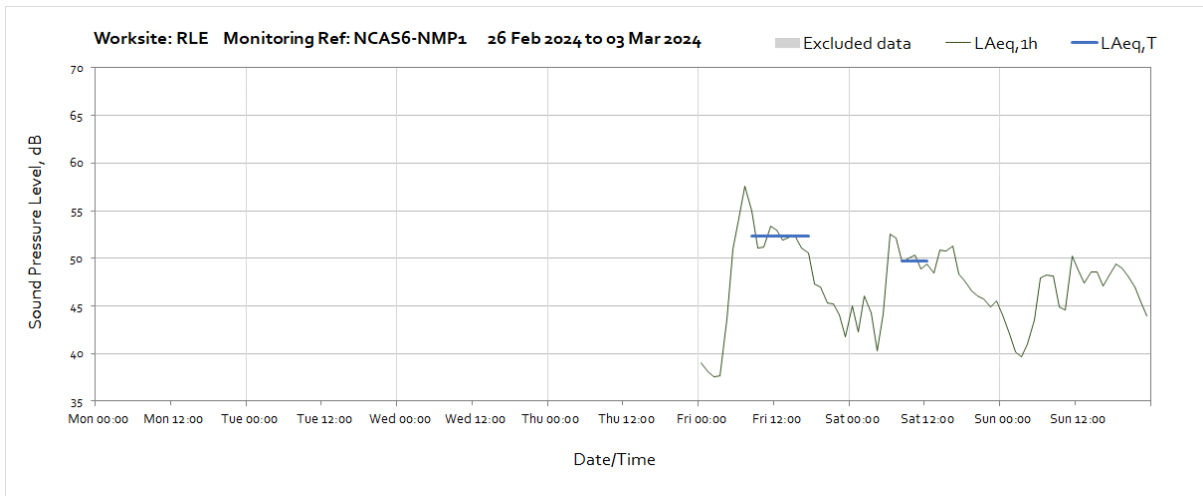
Note: Missing data between 14:00 and 15:00 on Friday 1<sup>st</sup> March was due to monitor maintenance.



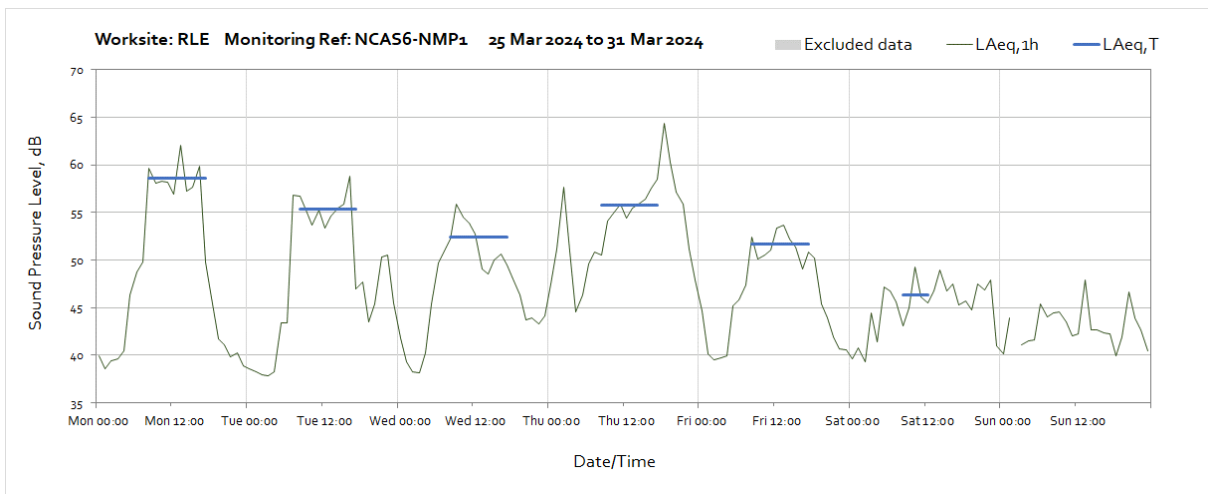
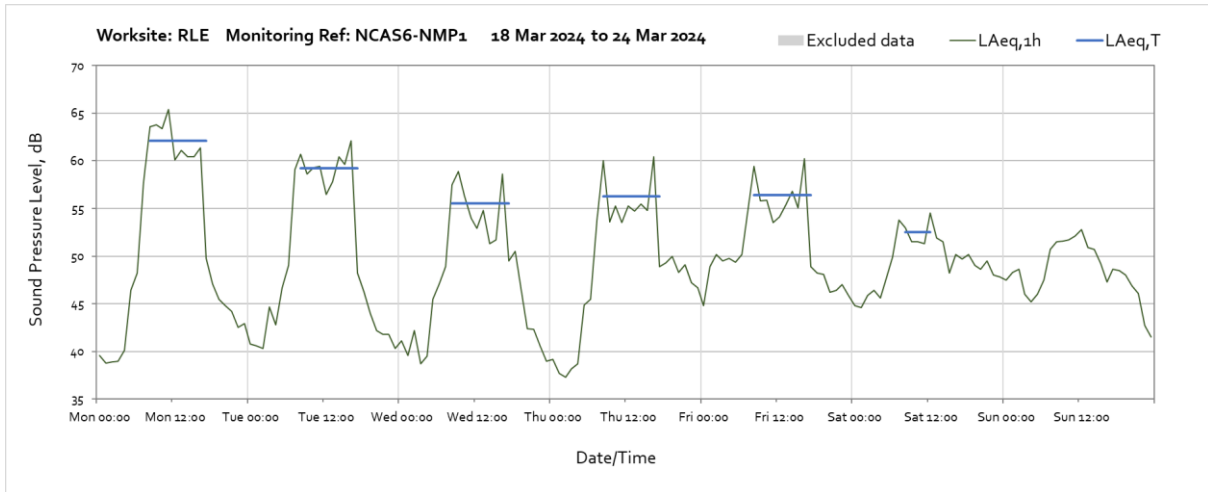


Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

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

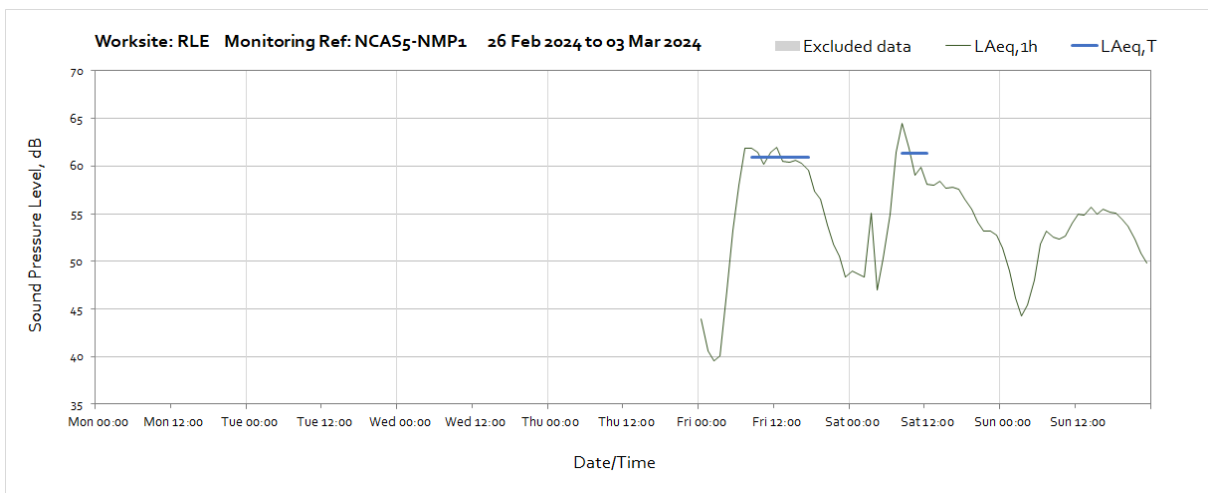


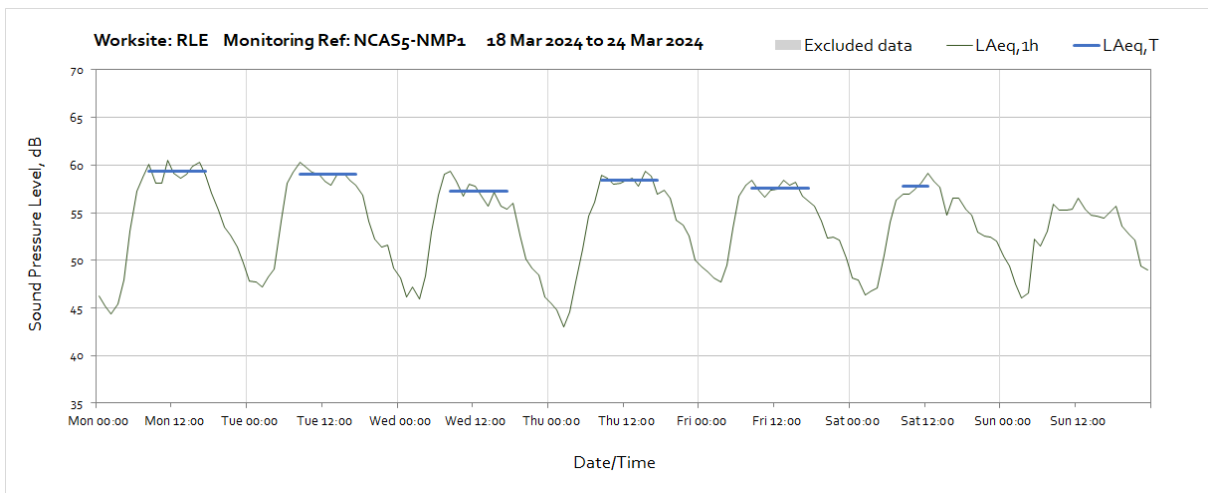
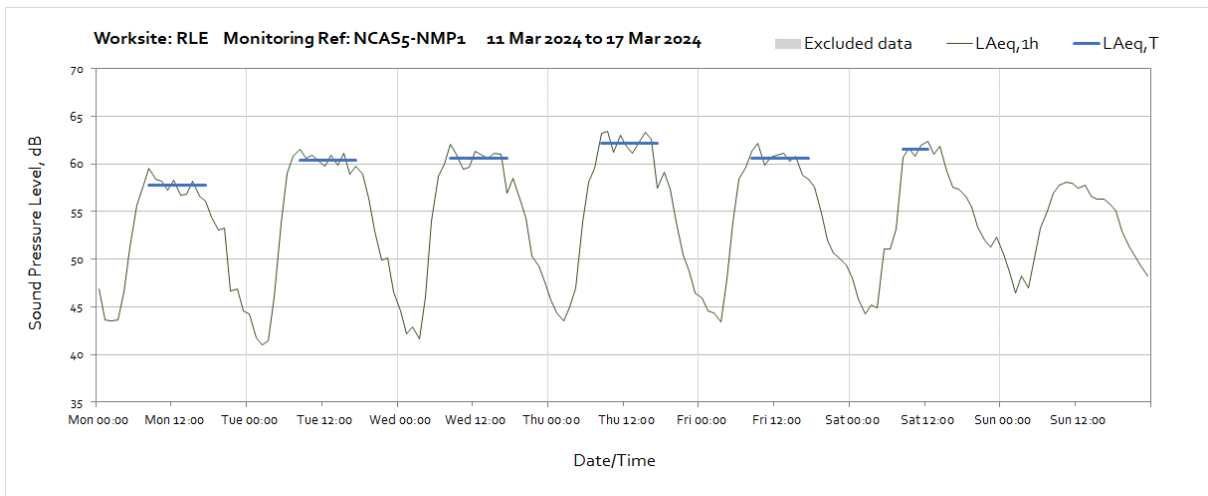
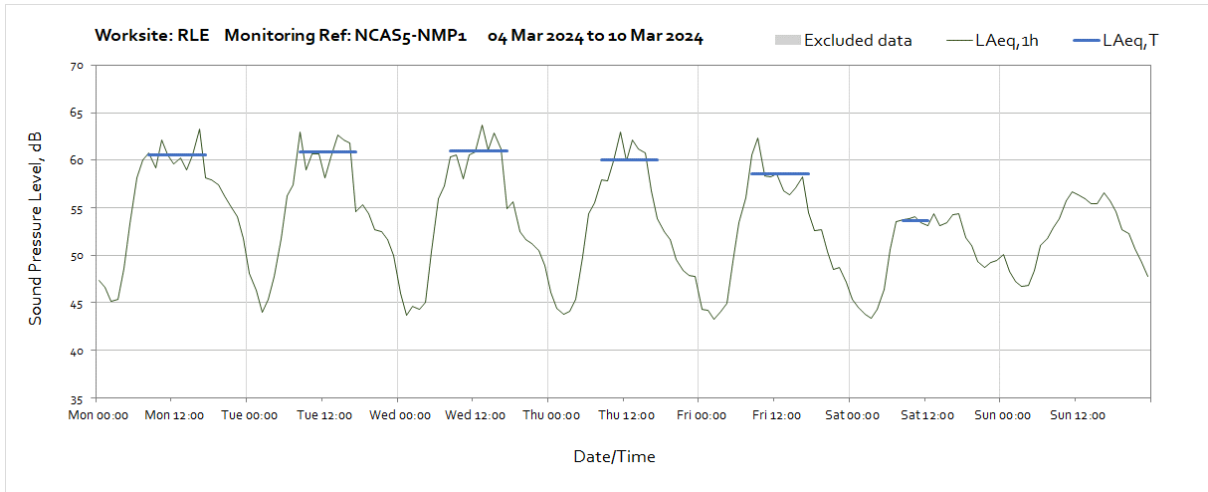
OFFICIAL

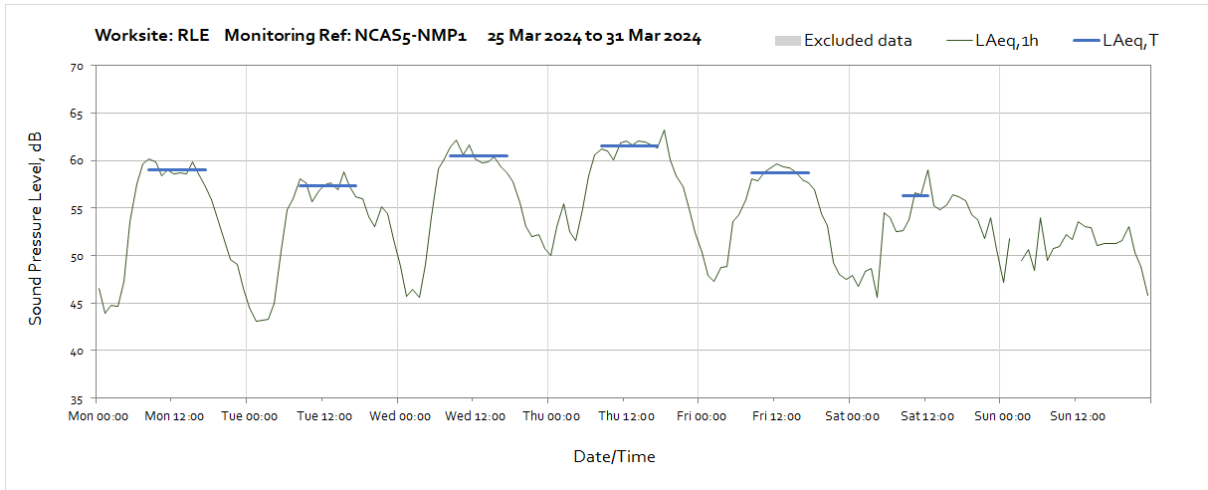


Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

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

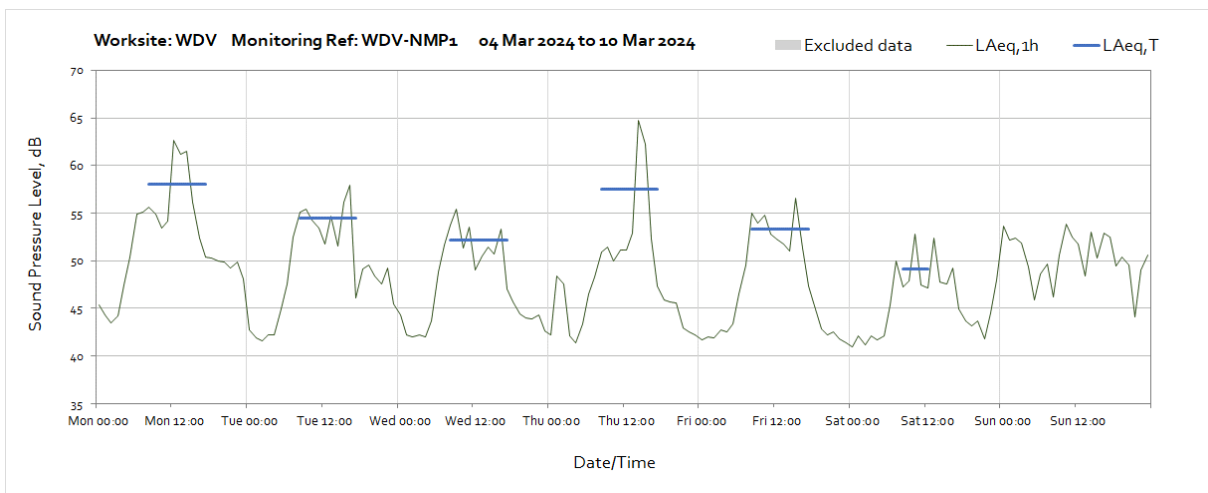
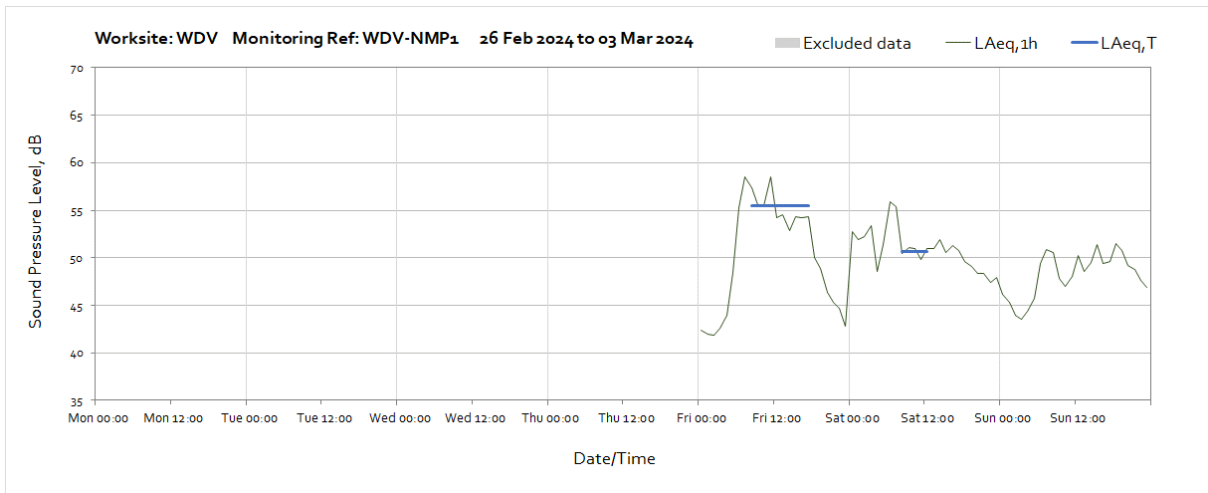




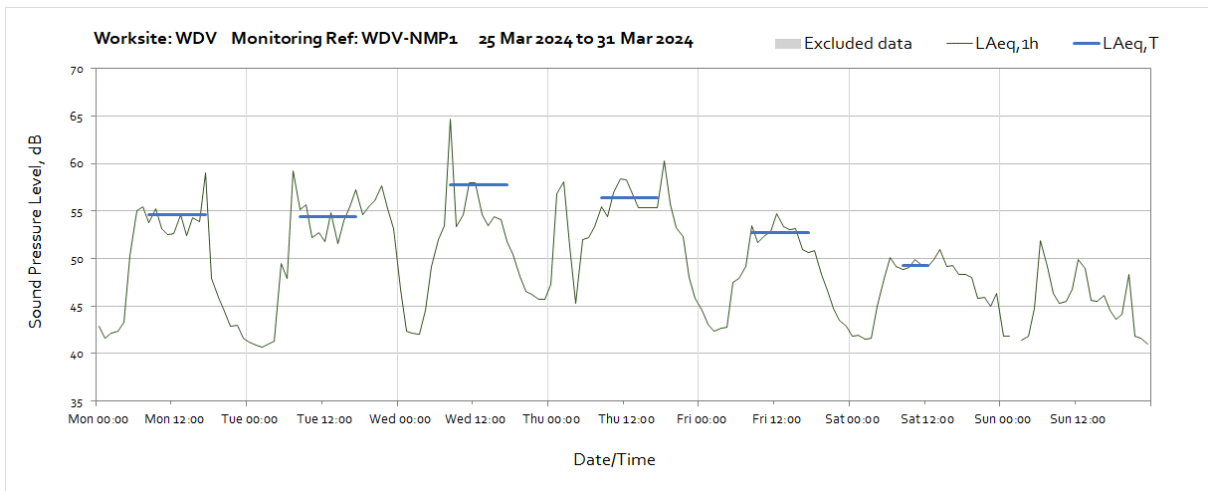
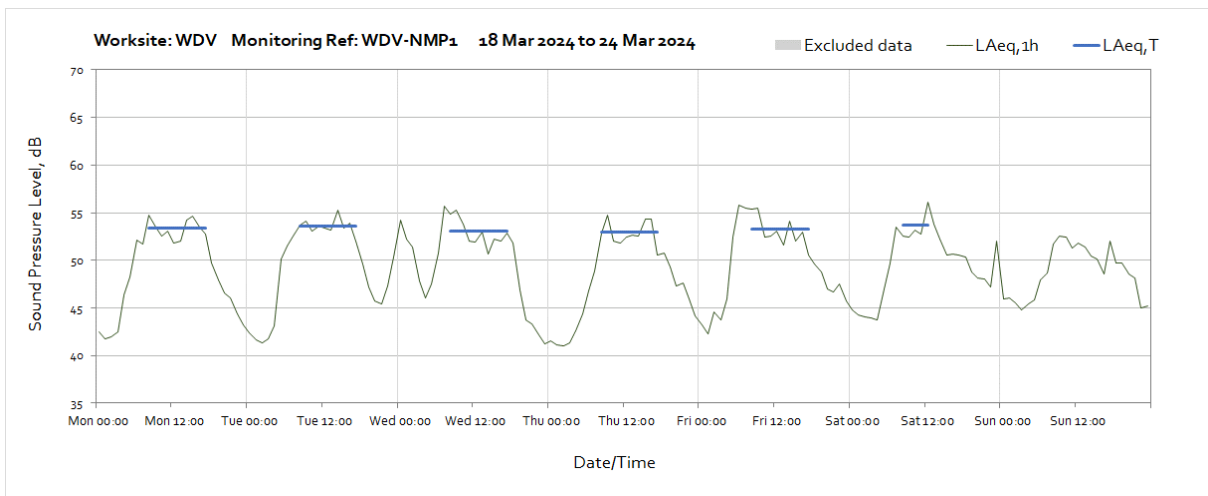
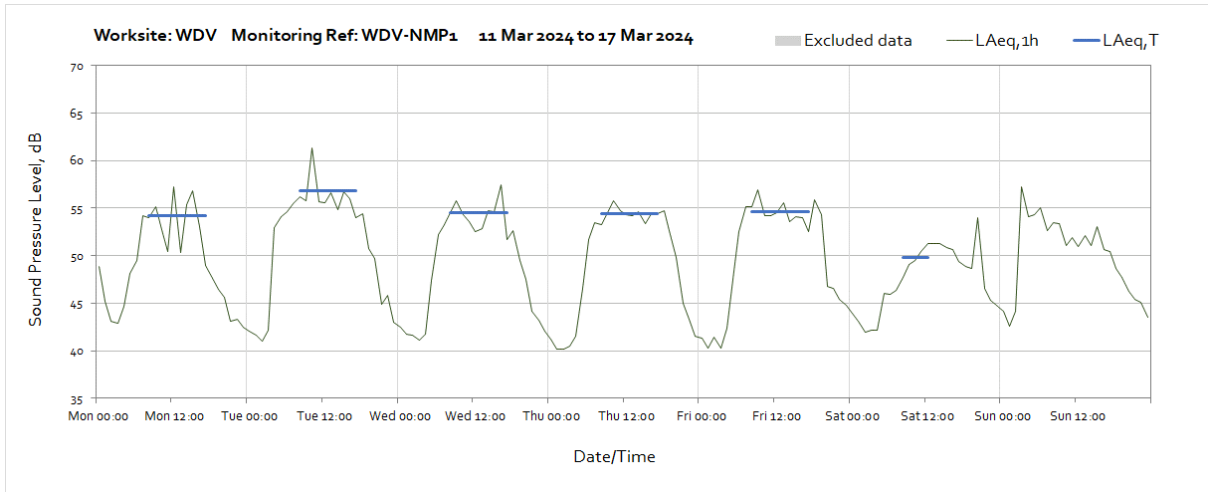


Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

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

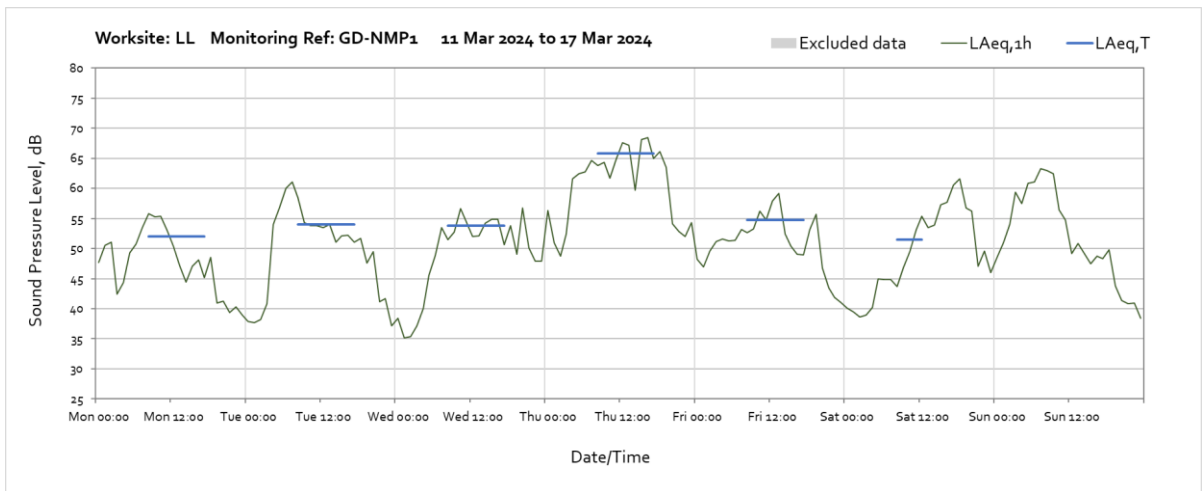
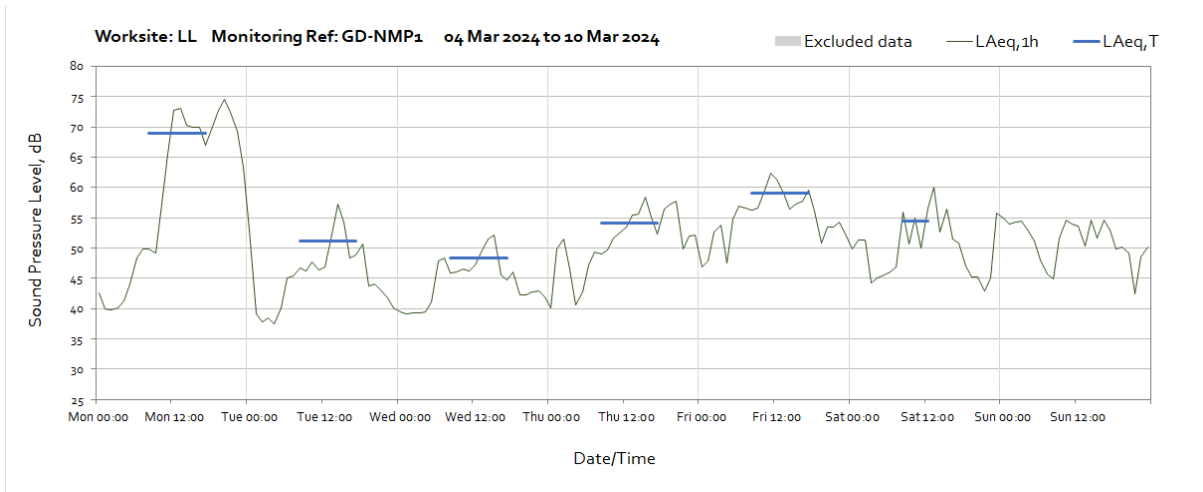
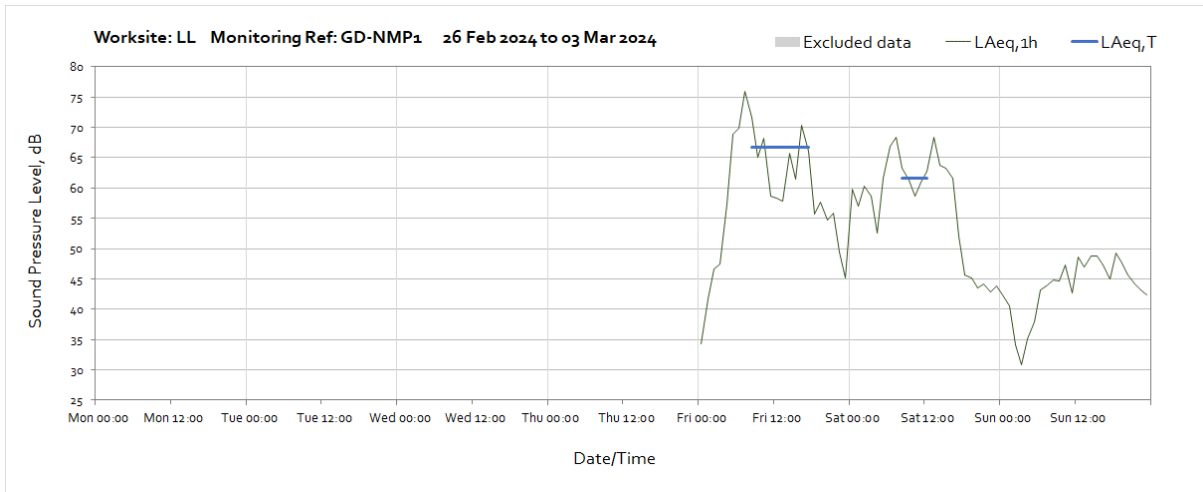


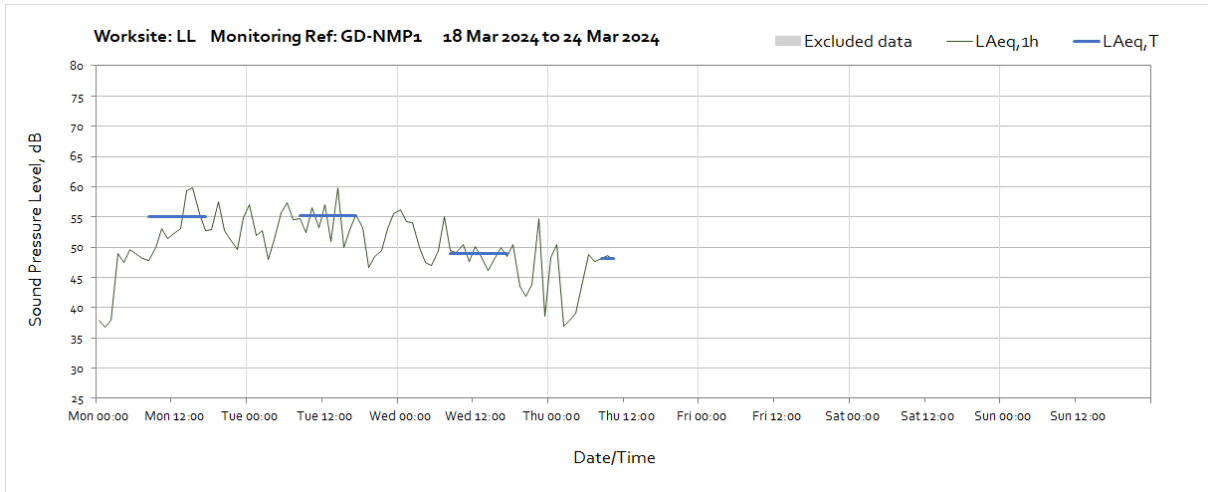




Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

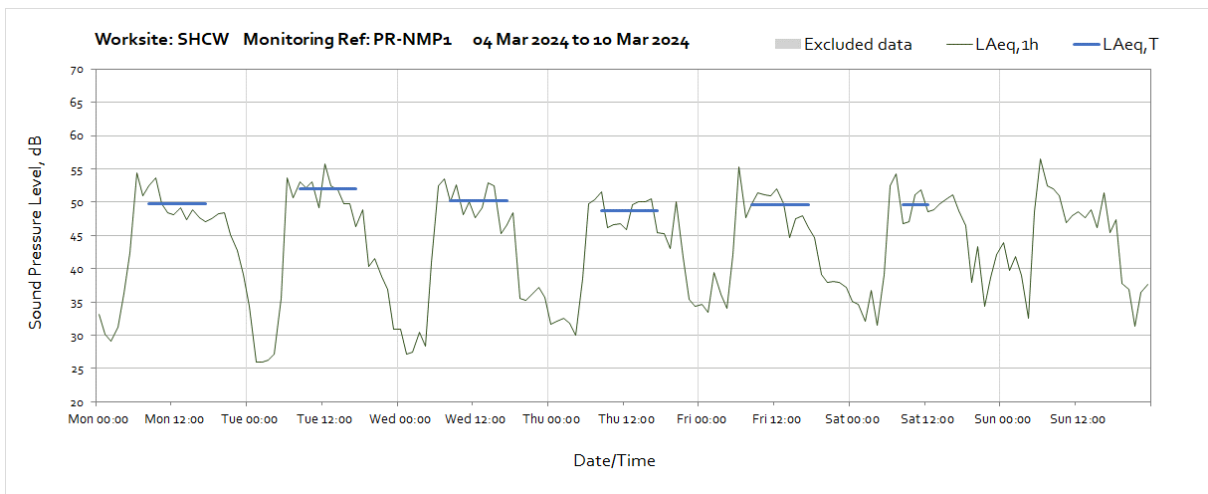
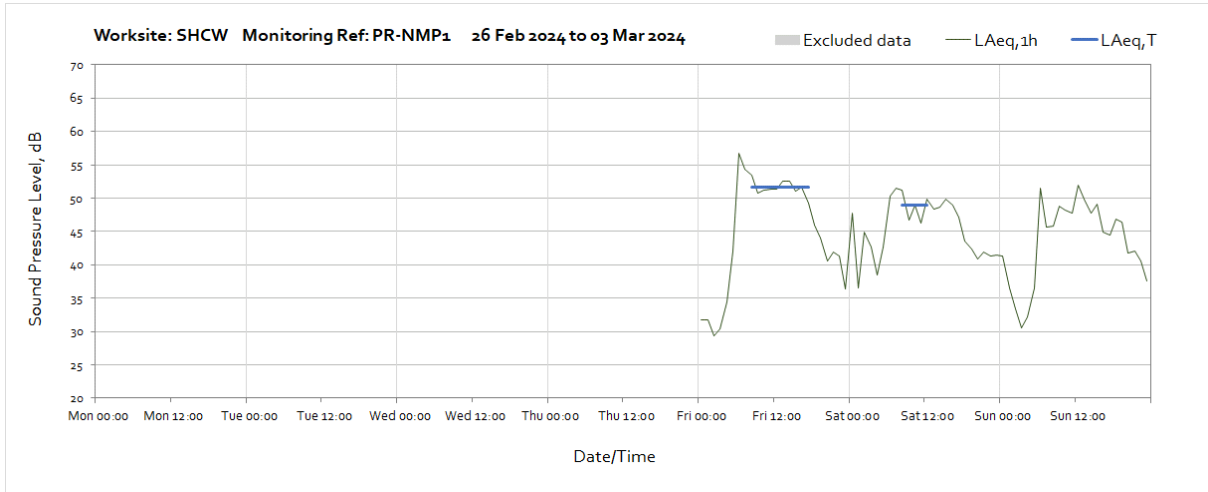
## Worksite: LL – Monitoring Ref: GD-NMP1

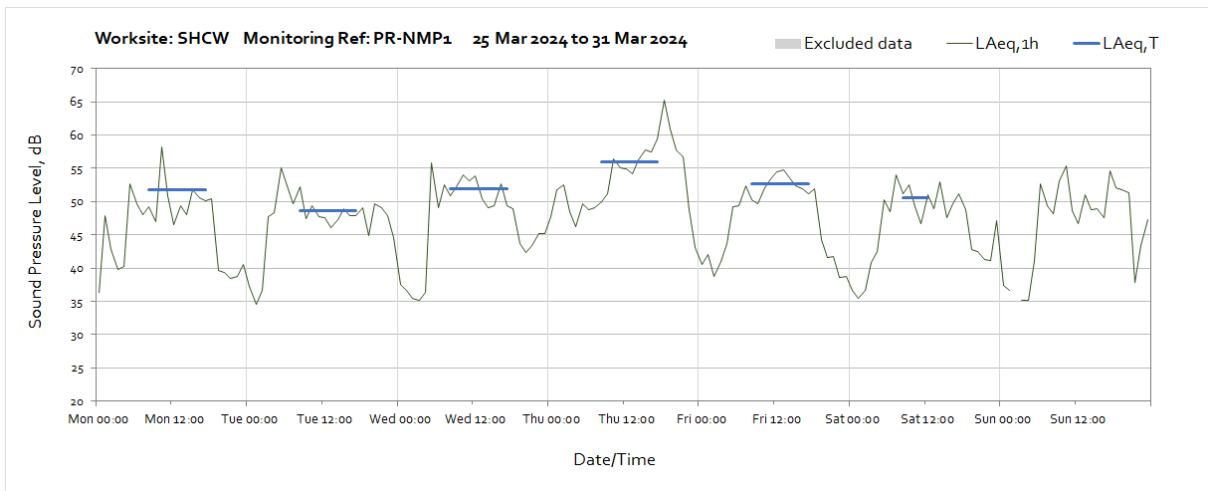
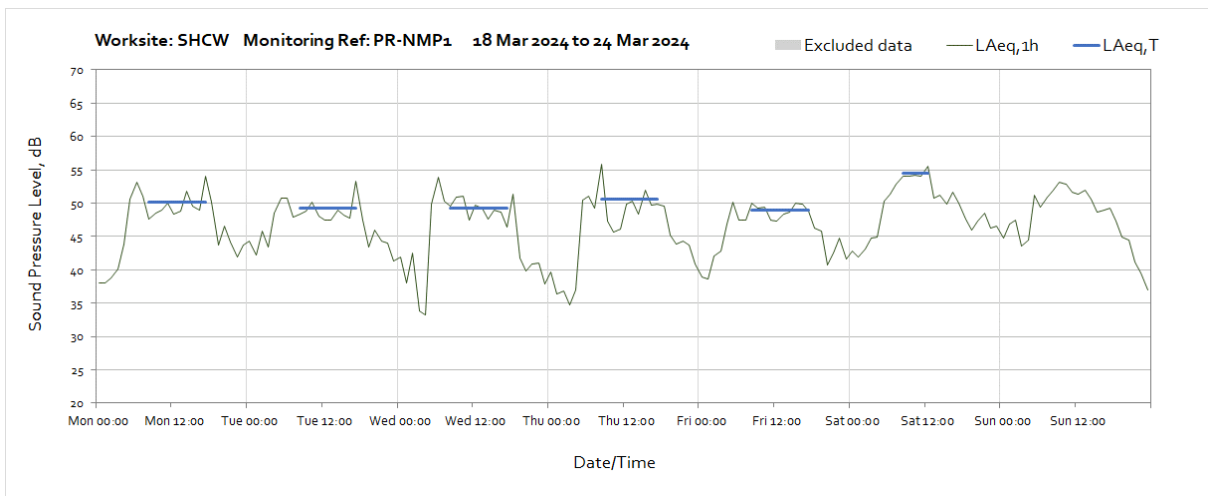
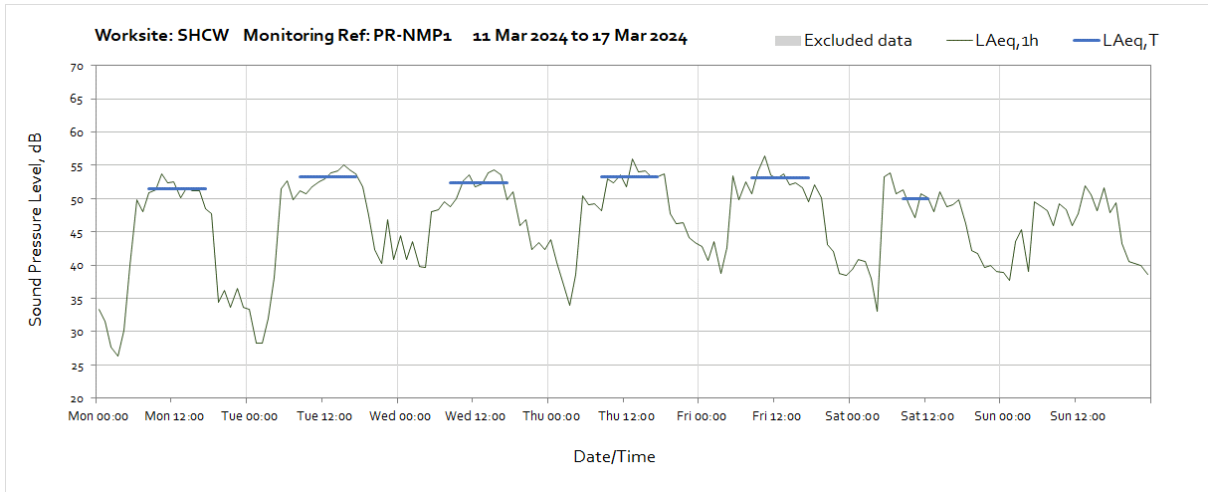




Note: Missing data from 11:00 on Thursday 21<sup>st</sup> March until month end was due to a communication error between the monitoring station and server.

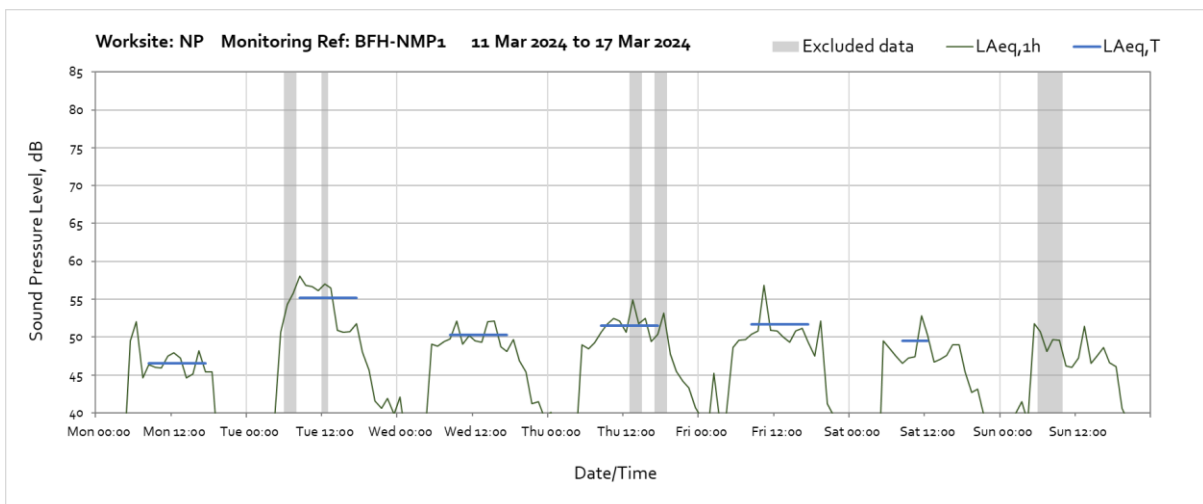
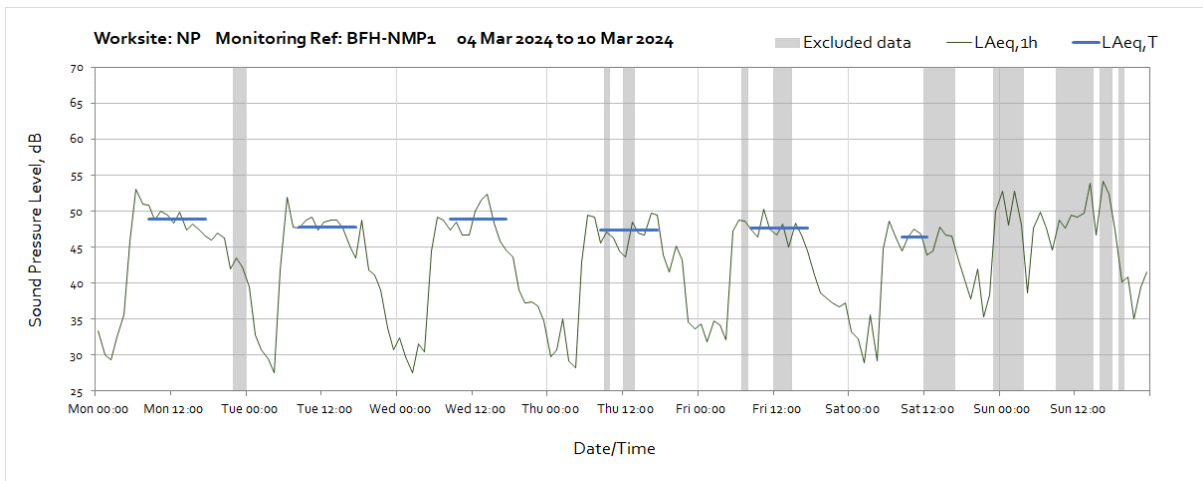
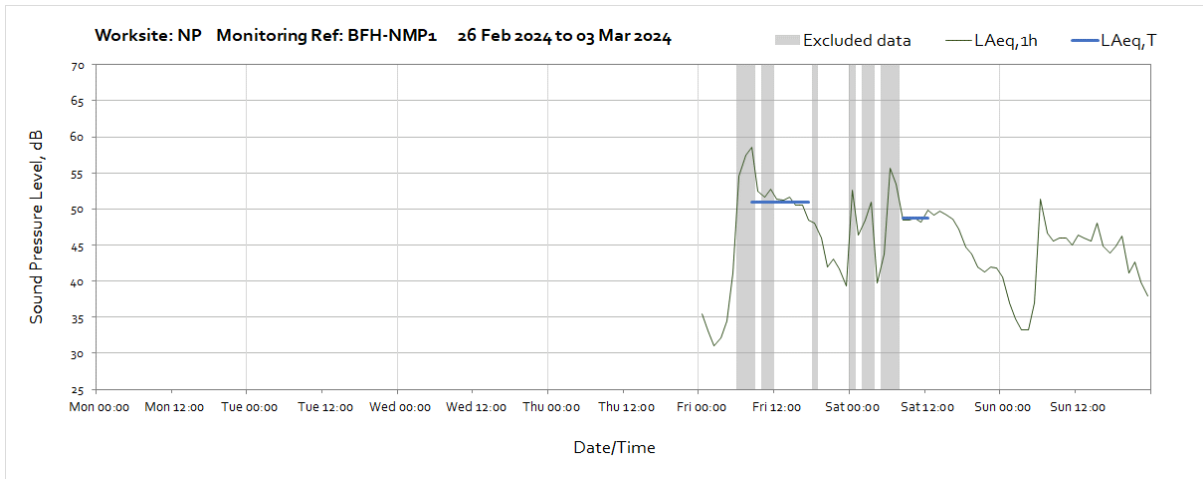
**Worksite: SHCW – Monitoring Ref: PR-NMP1**

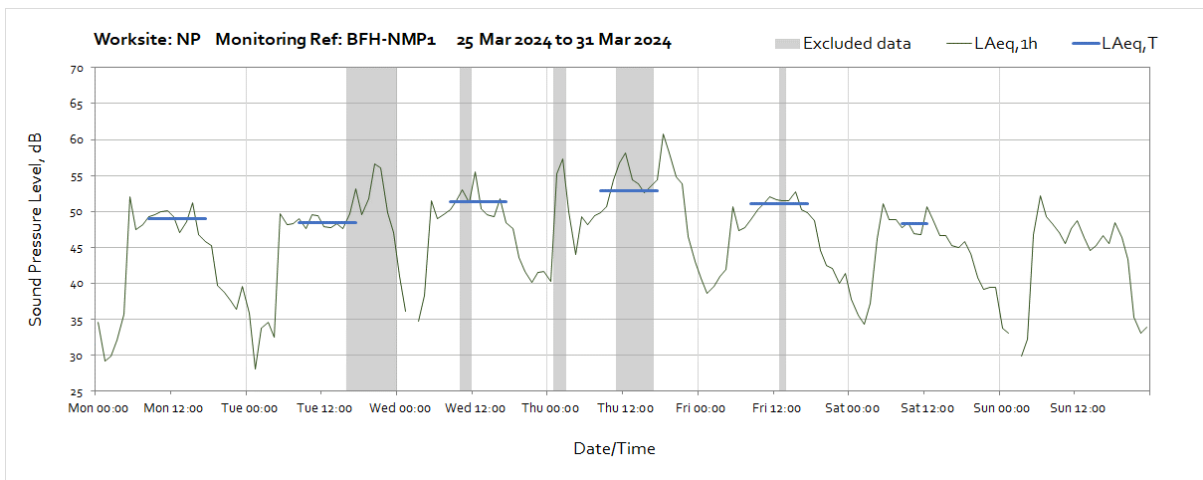
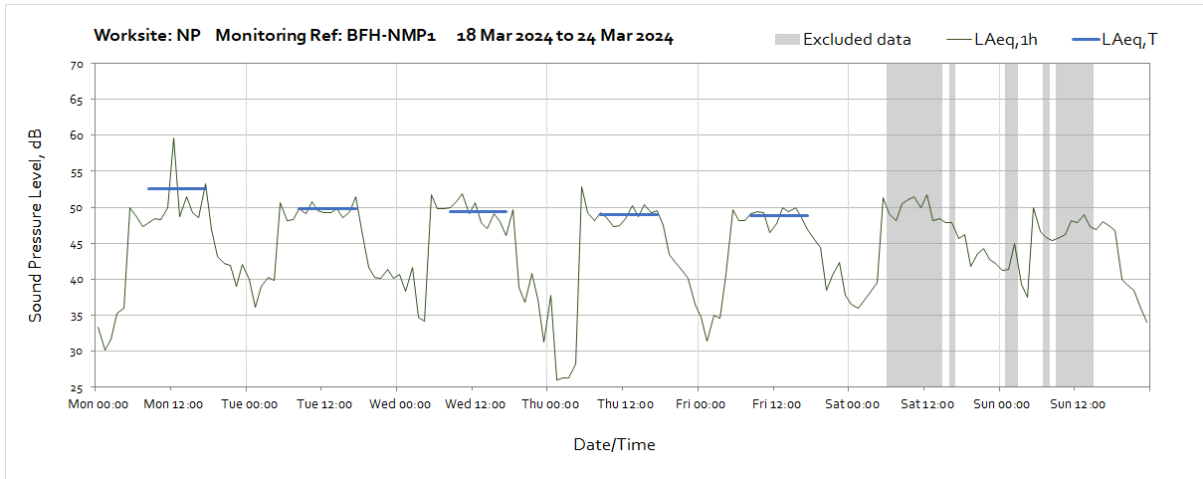




Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

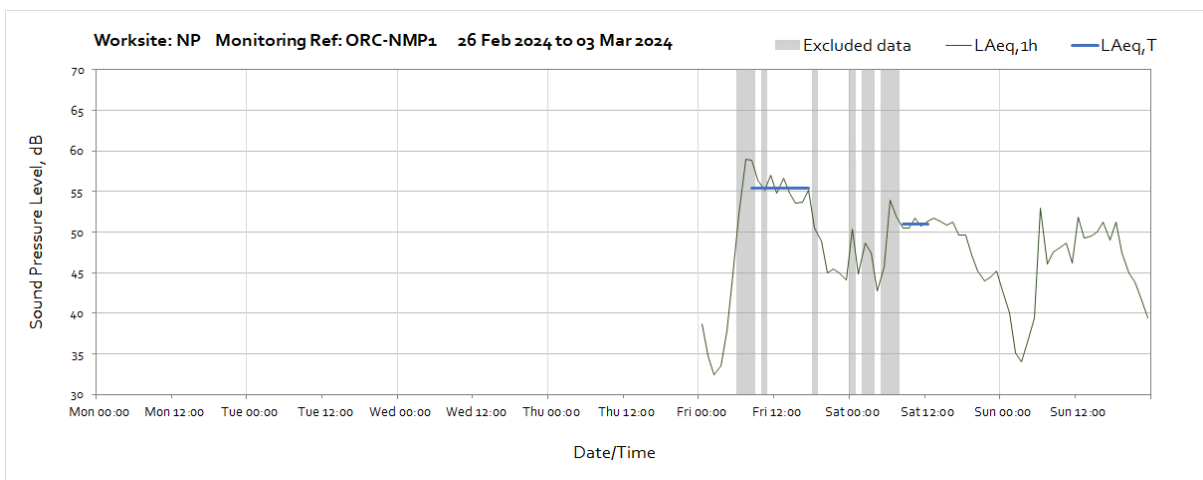
## Worksite: NP – Monitoring Ref: BFH-NMP1

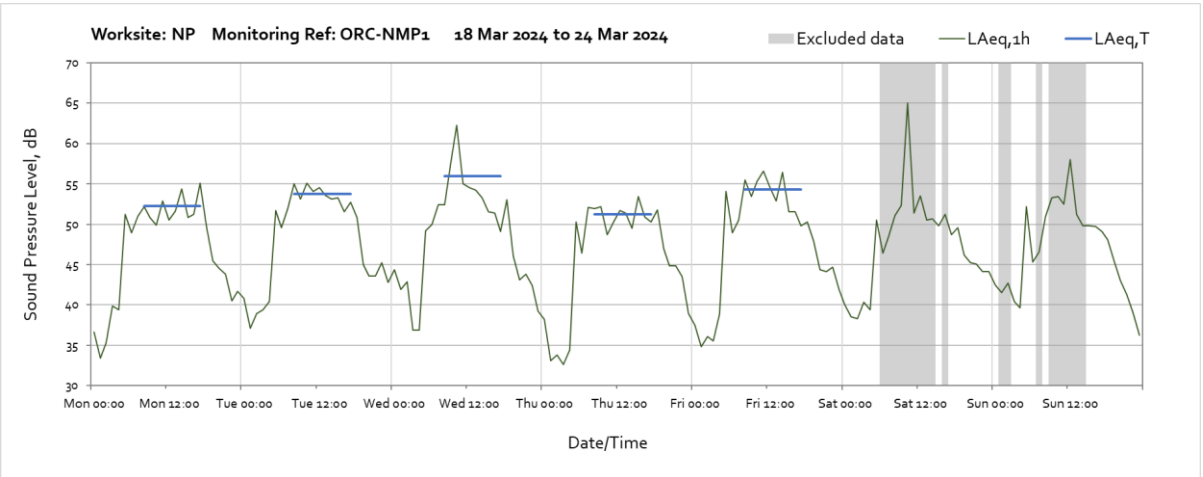
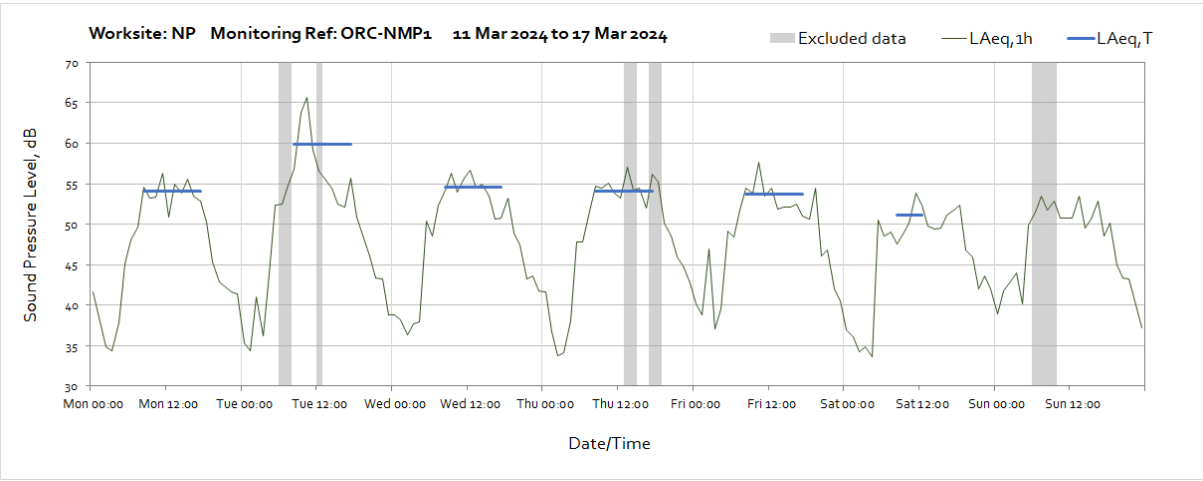
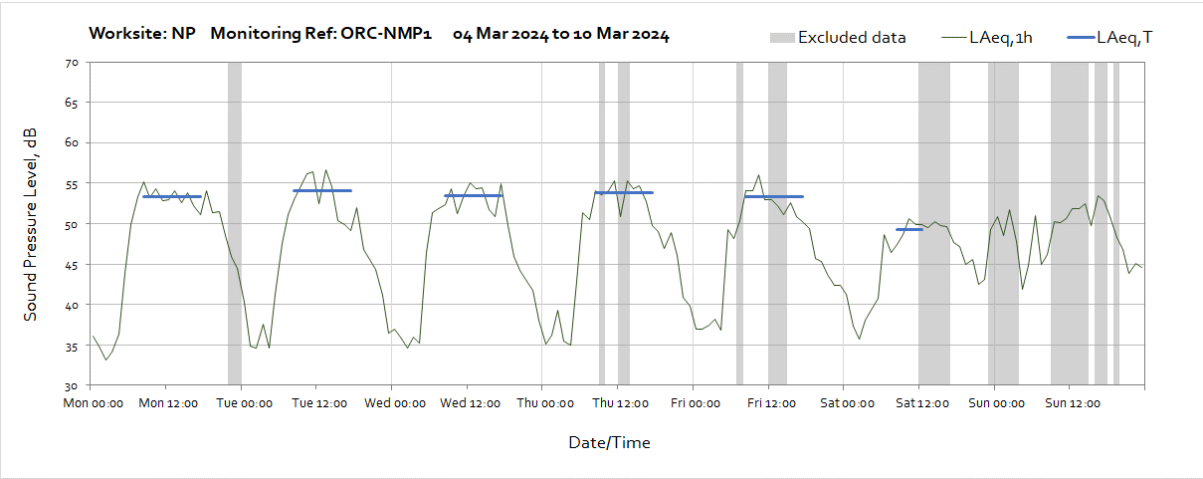


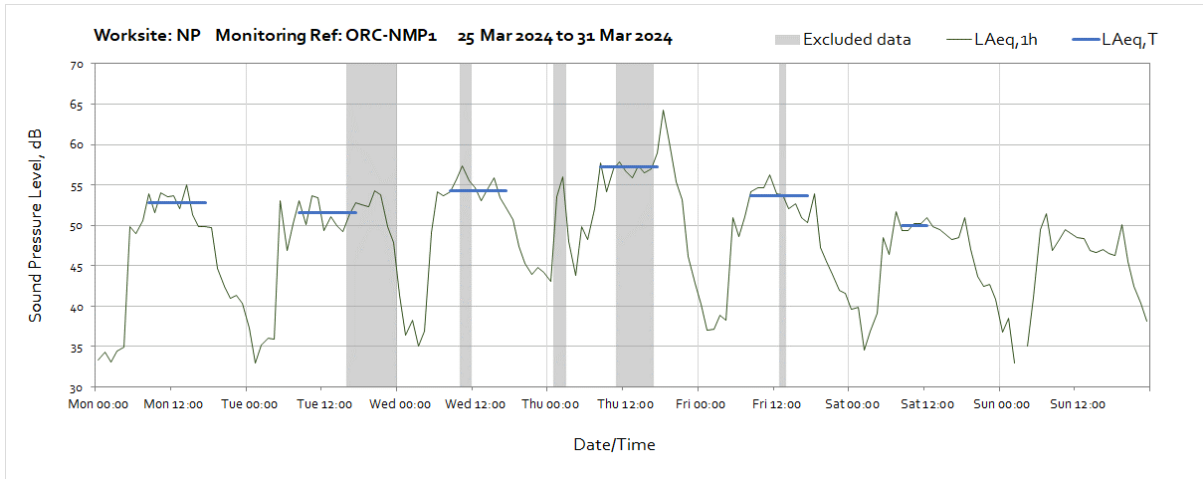


Note: Missing data between 02:00 and 03:00 on Wednesday 27<sup>th</sup> March was due to a communication error between the monitoring station and server. Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

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

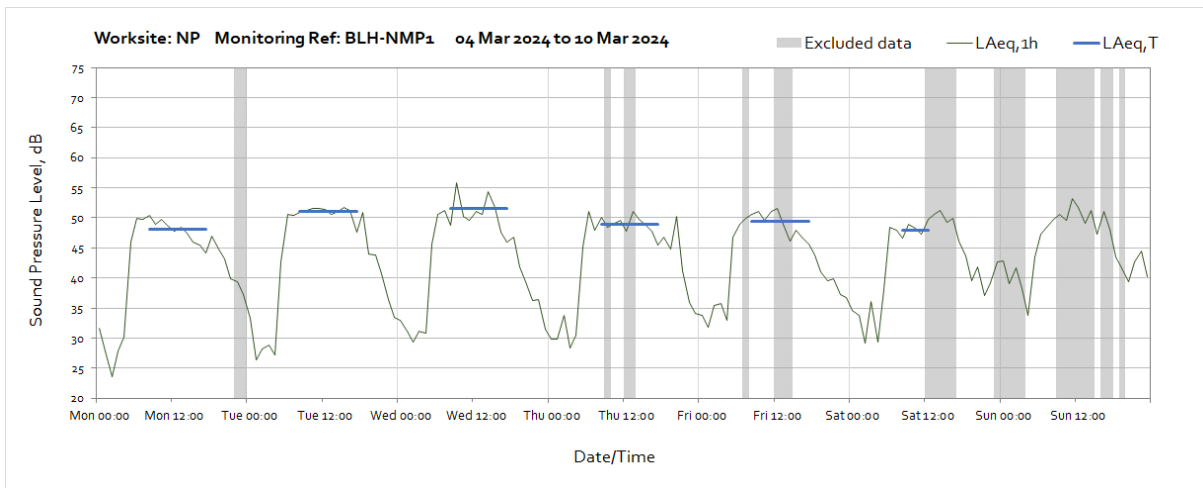
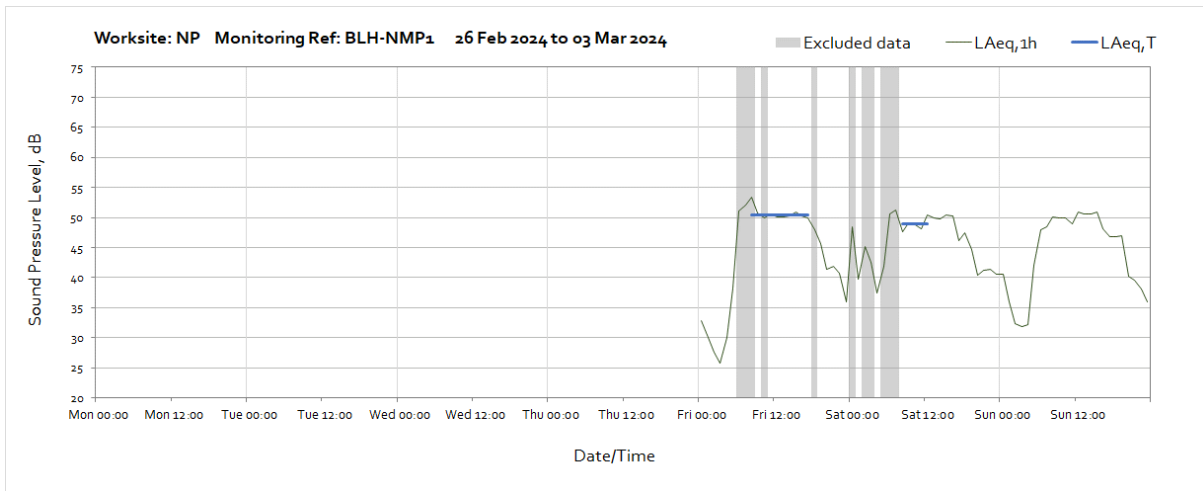




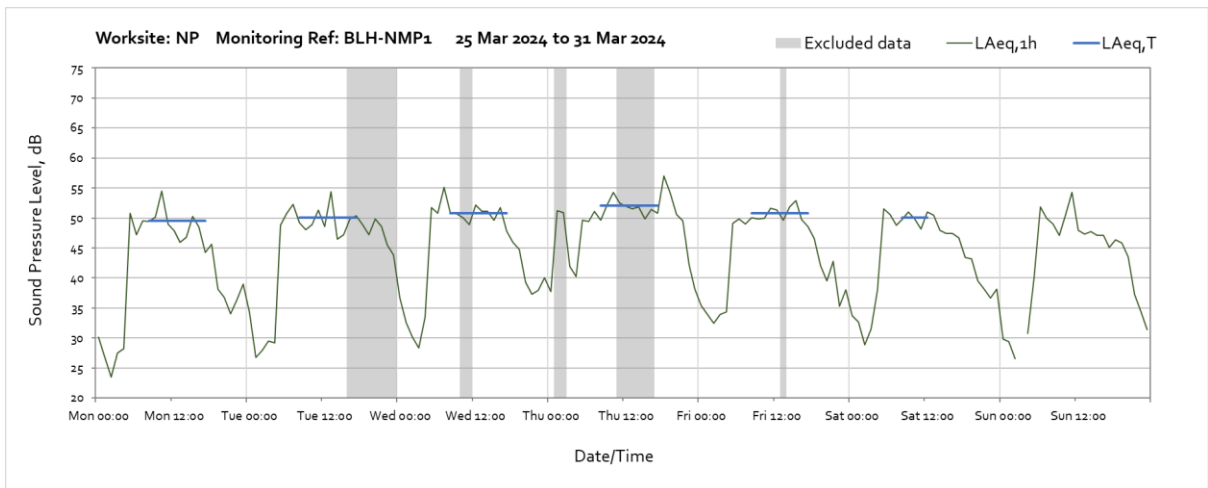
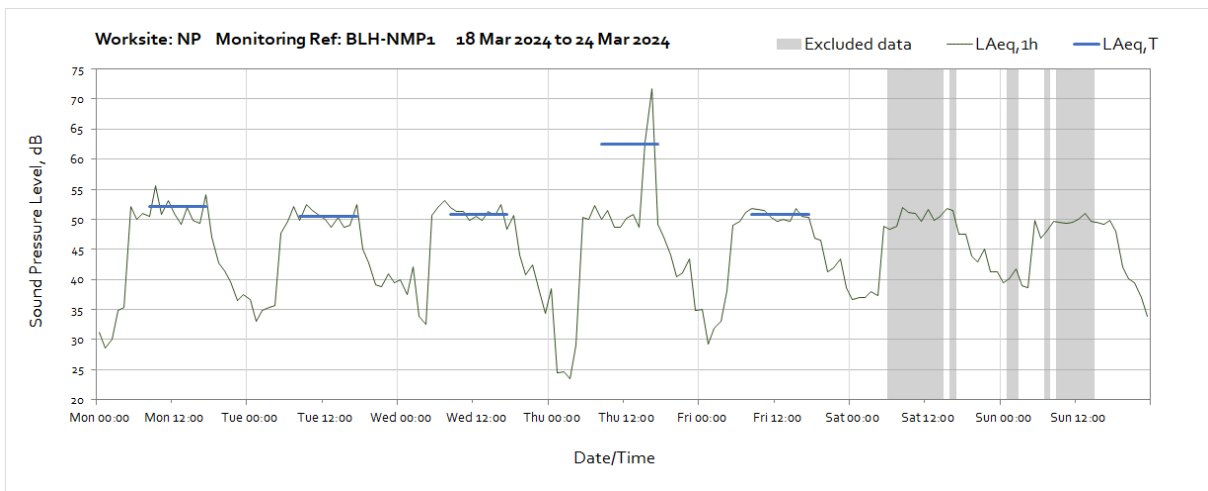
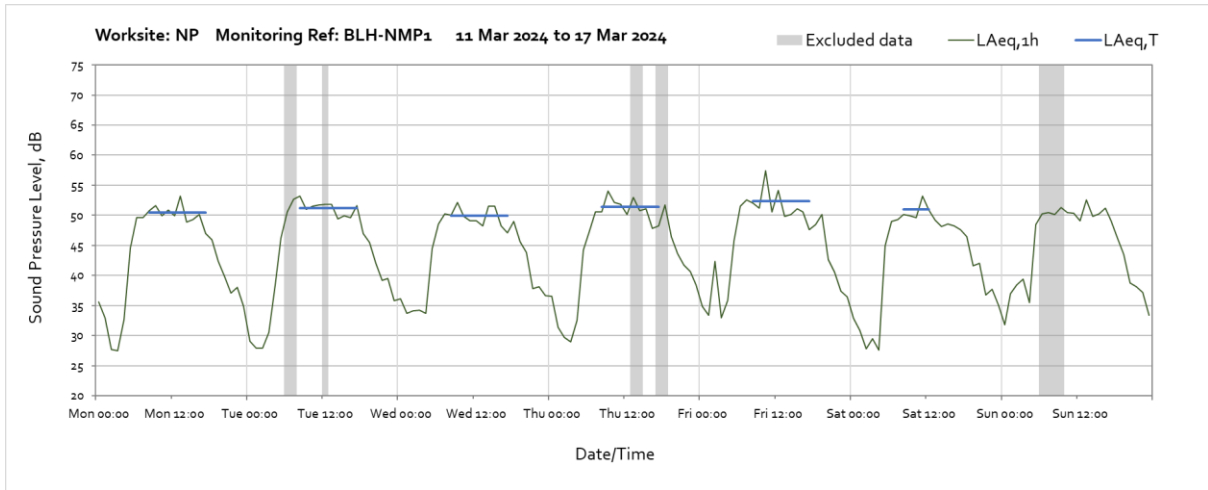


Note: Missing data between 03:00 and 04:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

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

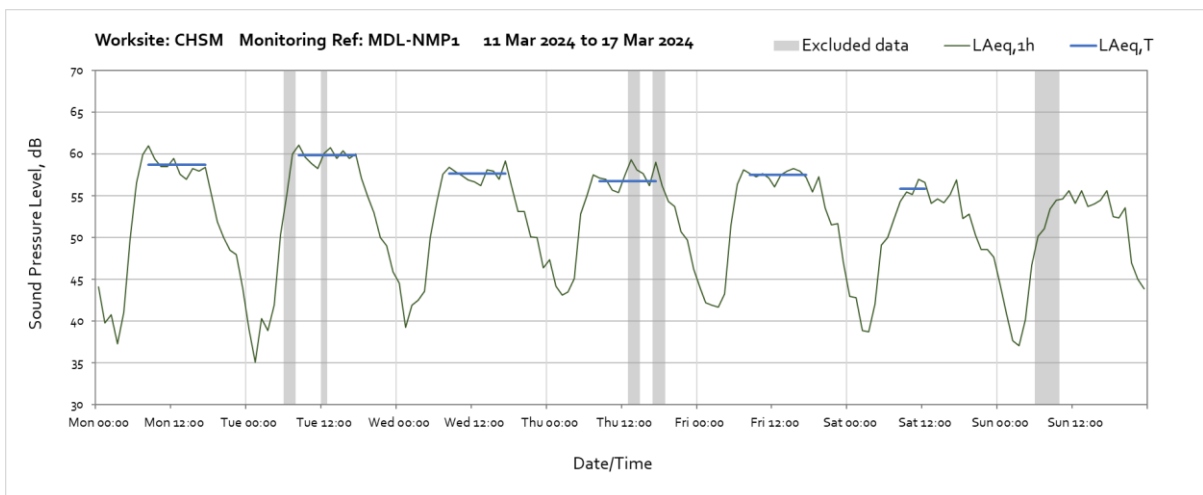
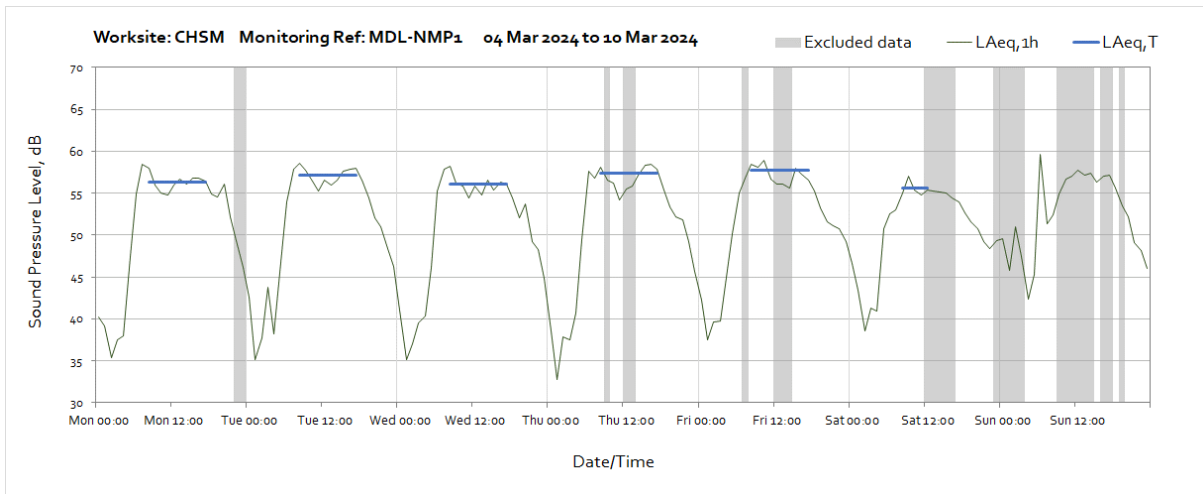
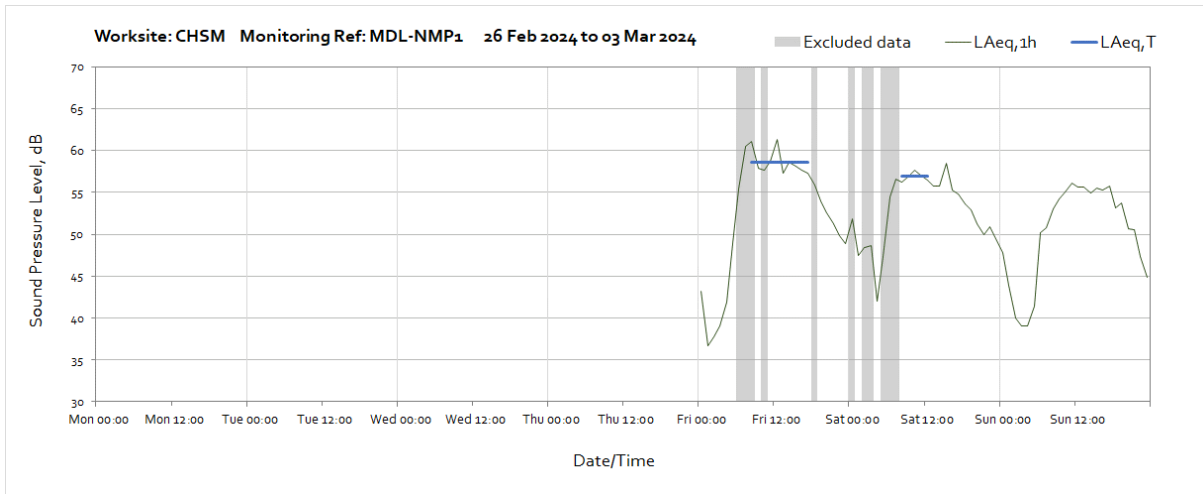




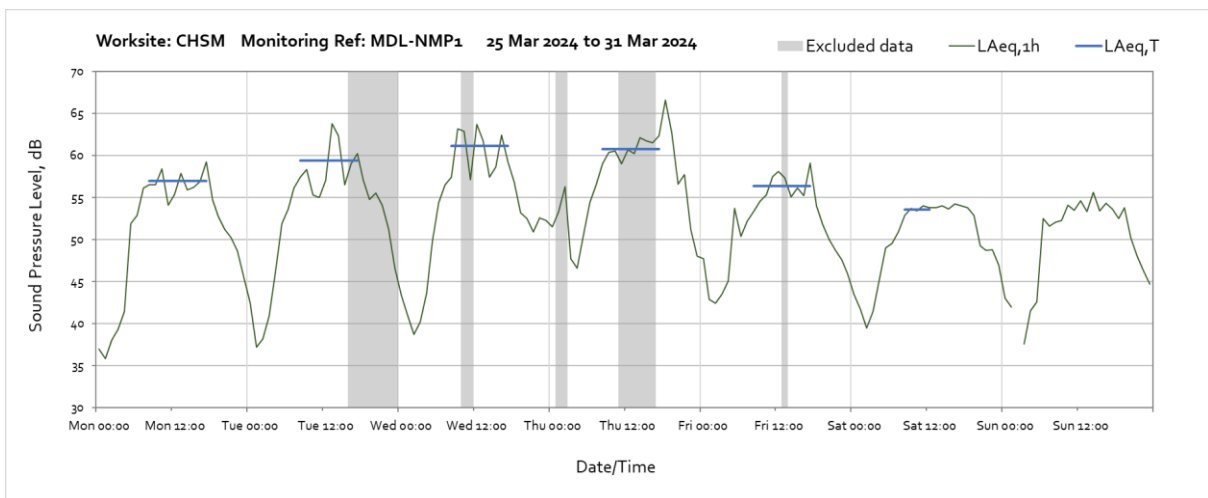
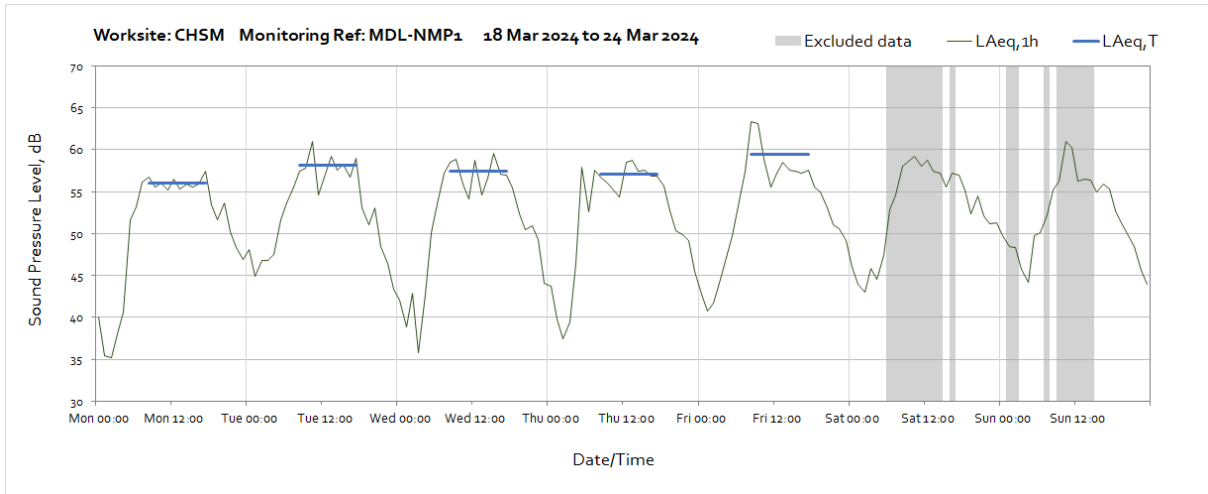


Note: Missing data between 03:00 and 04:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

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

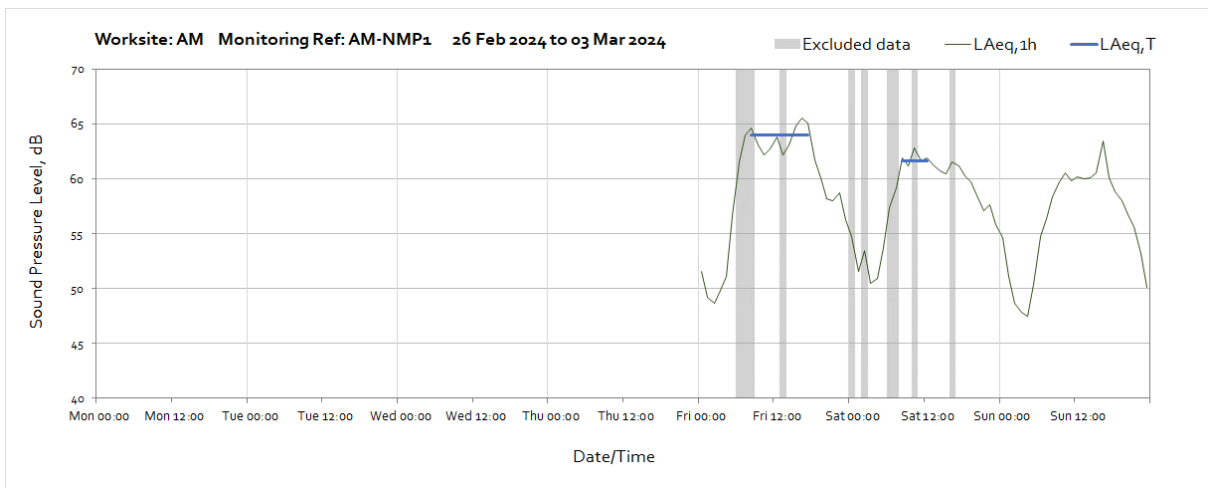


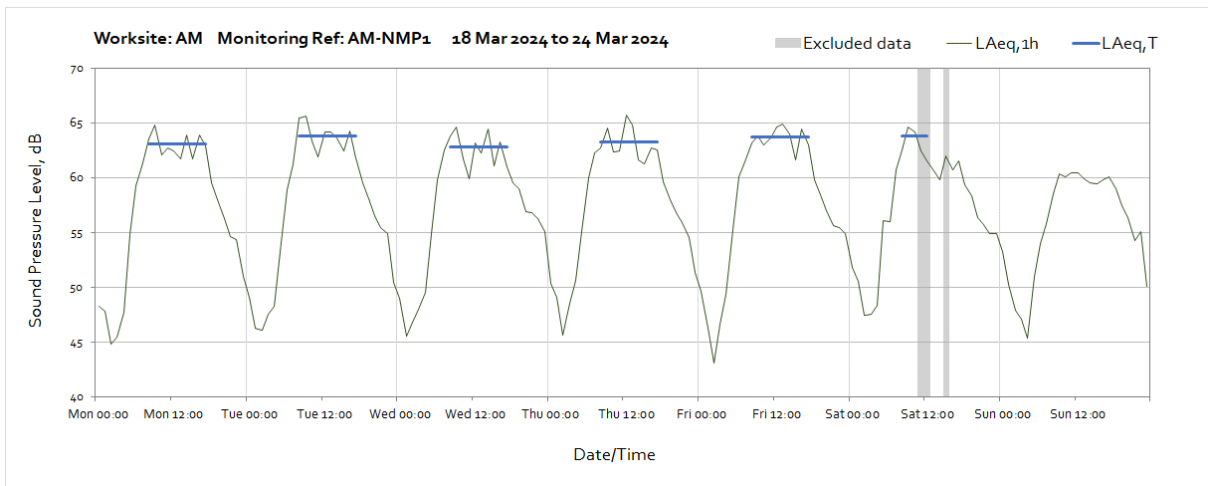
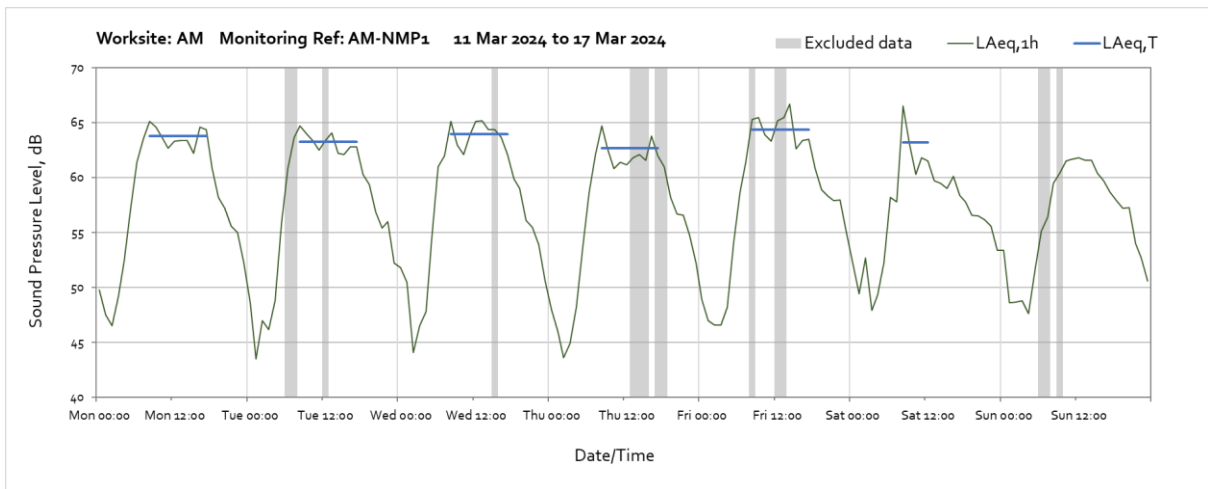
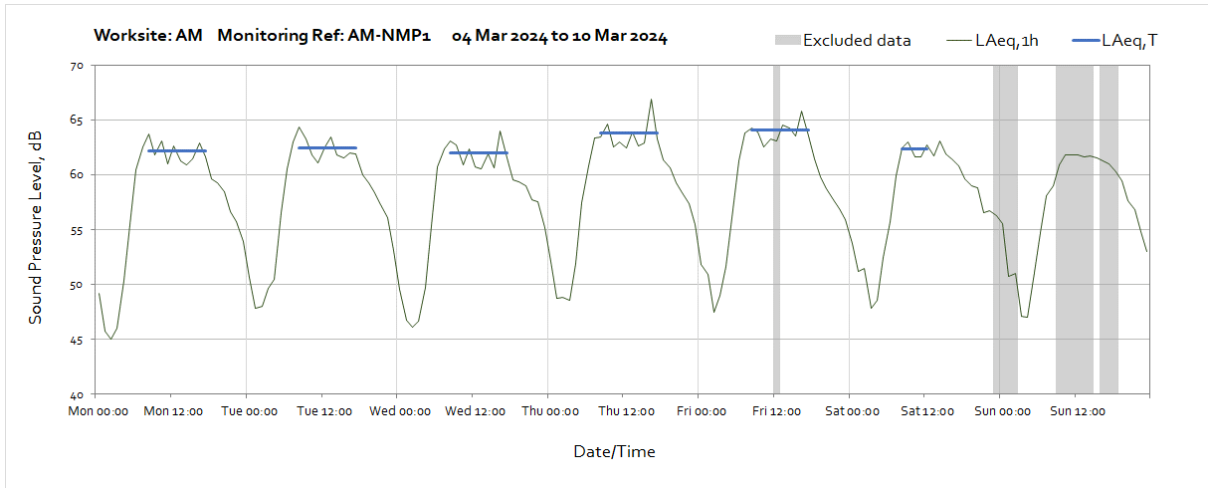
OFFICIAL

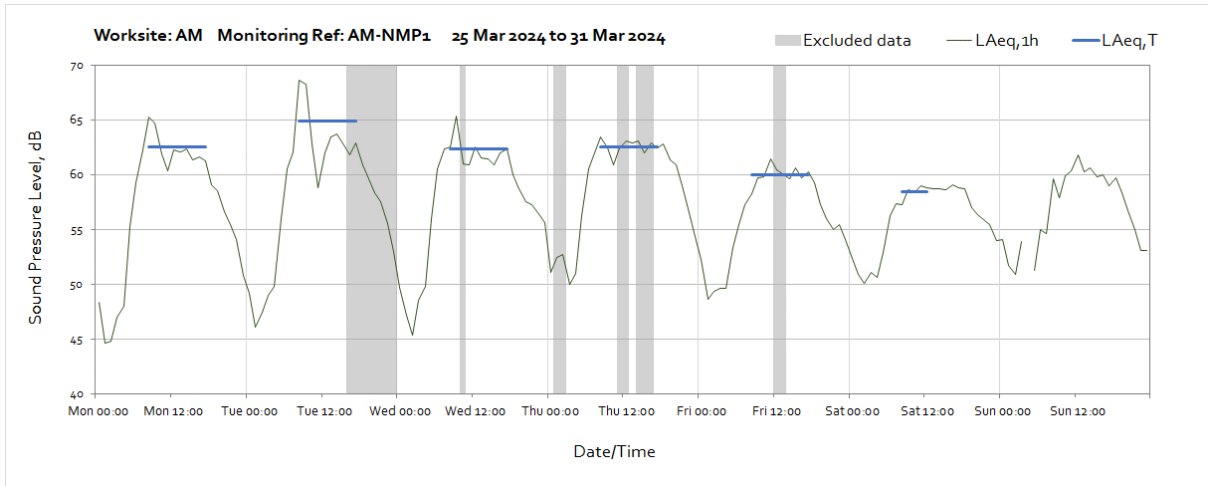


Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

**Worksite: AM - Monitoring Ref: AM-NMP1**

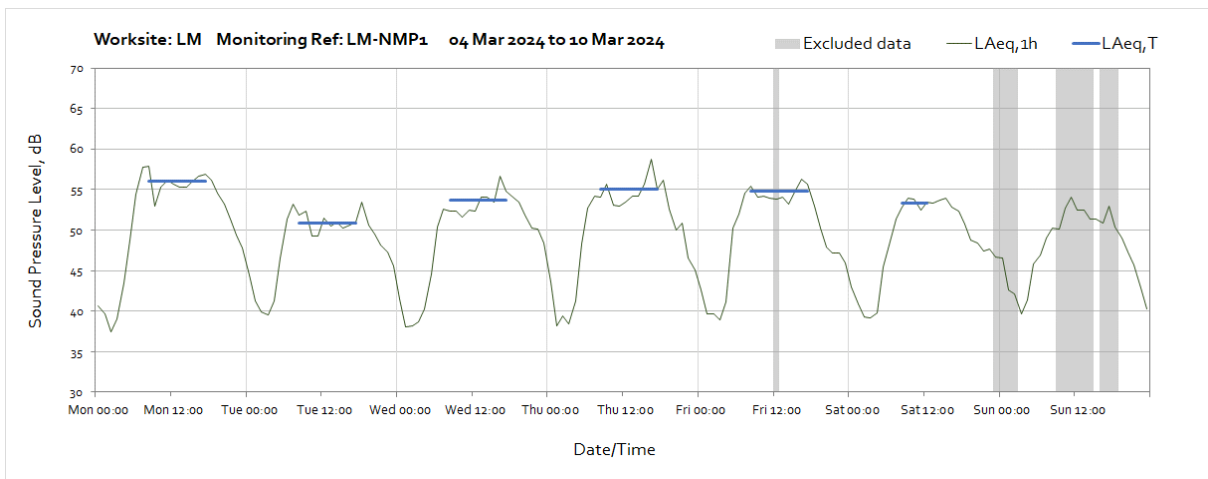
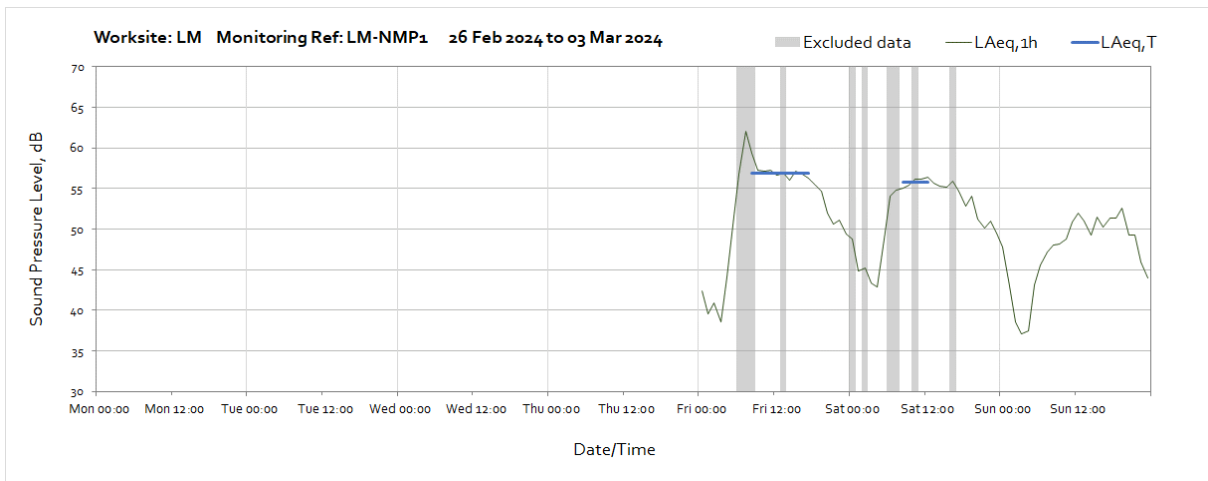


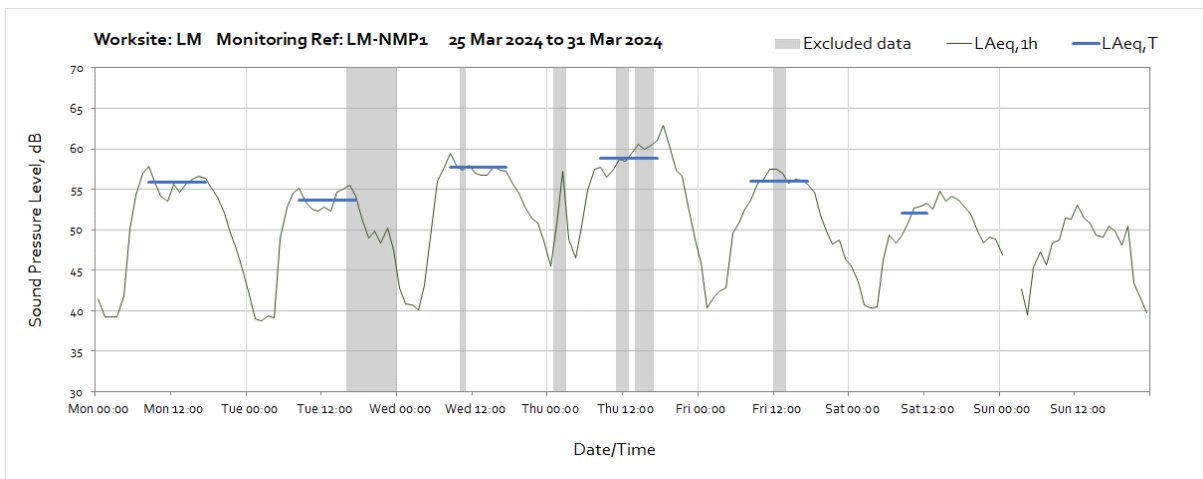
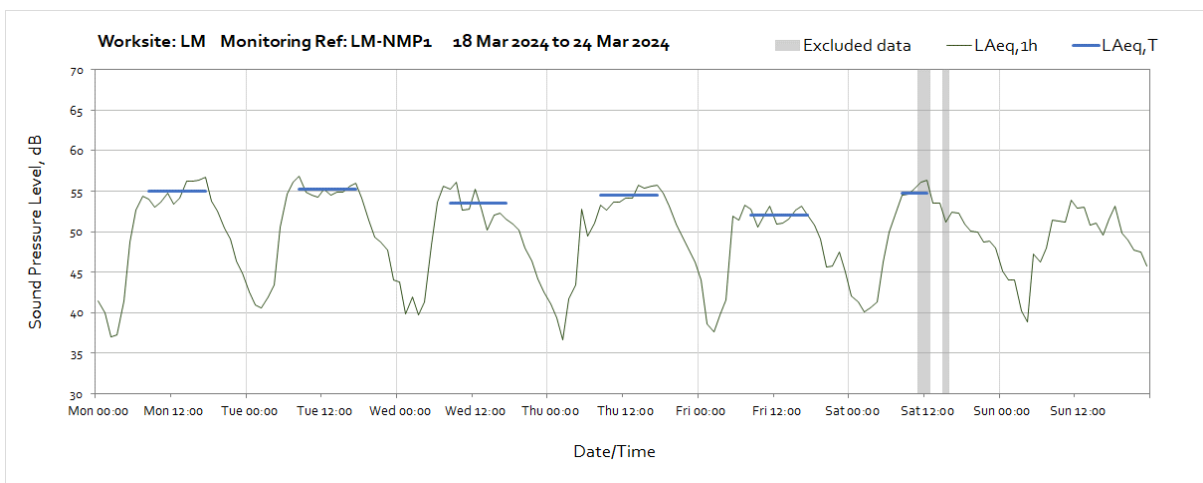
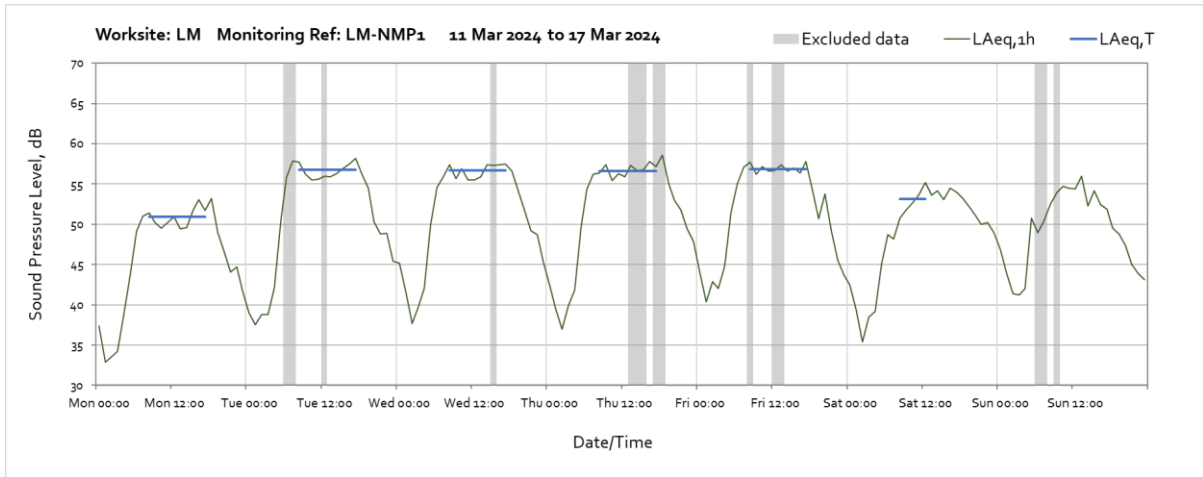




Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

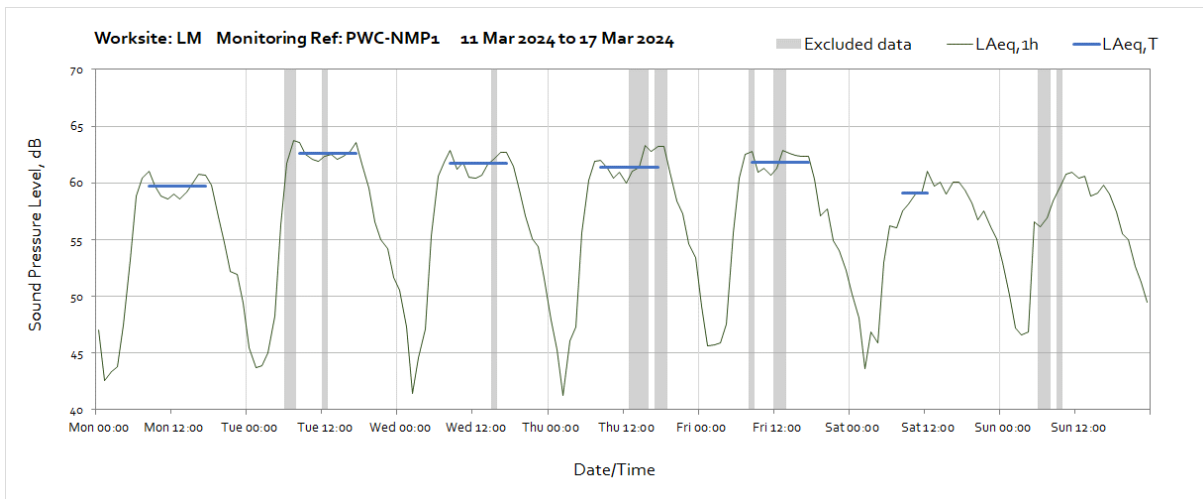
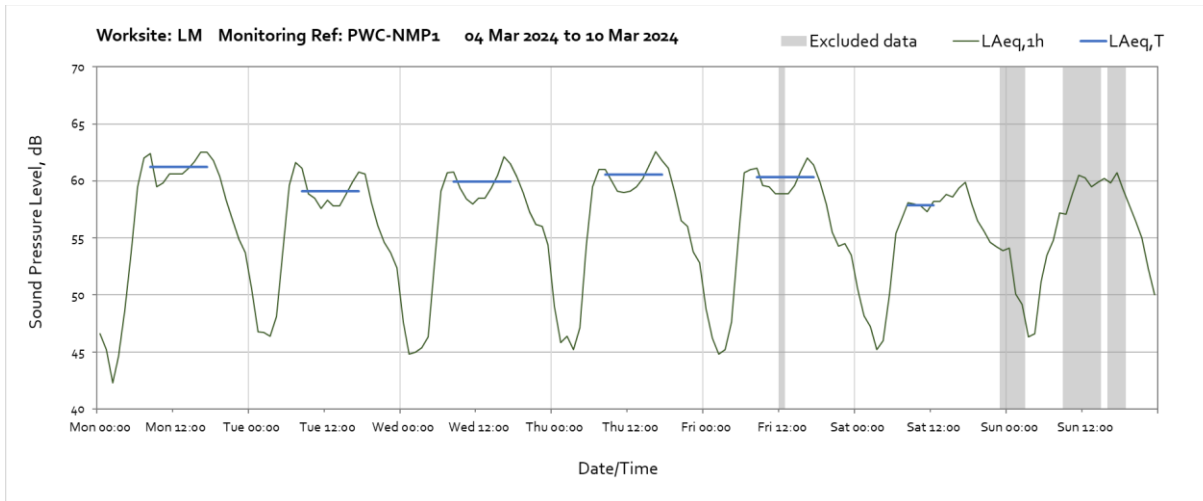
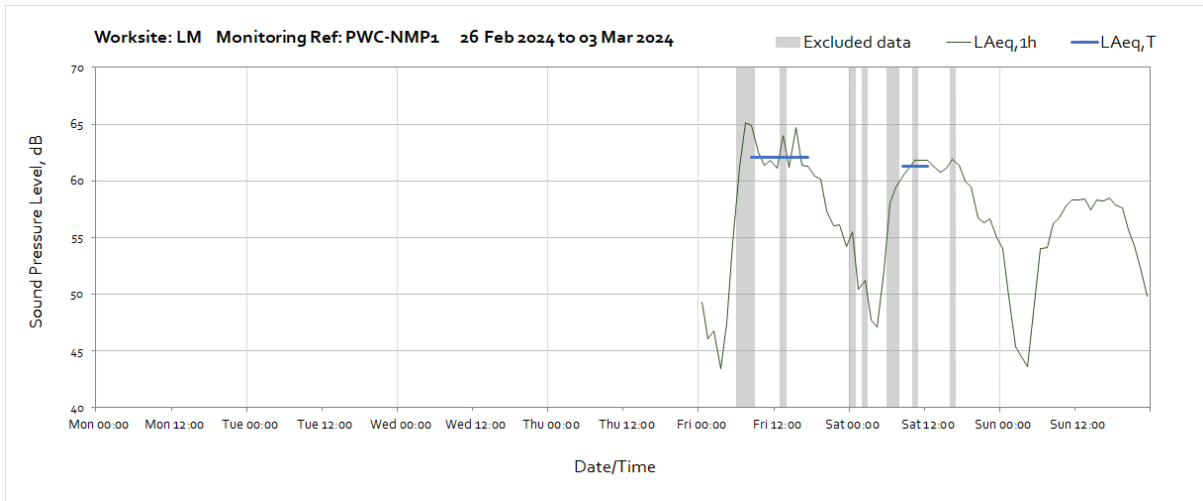
### Worksite: LM – Monitoring Ref: LM-NMP1



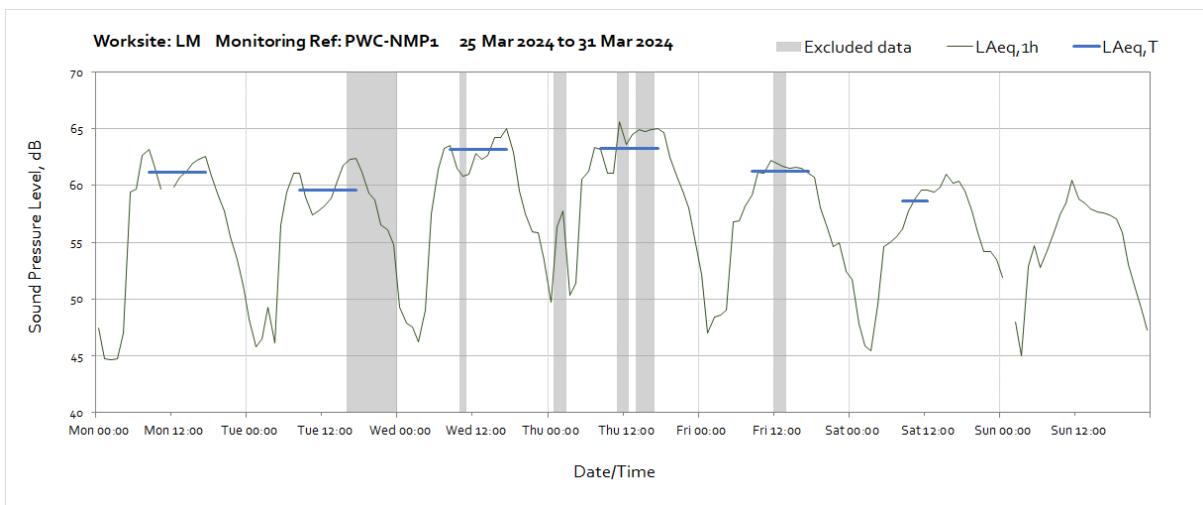
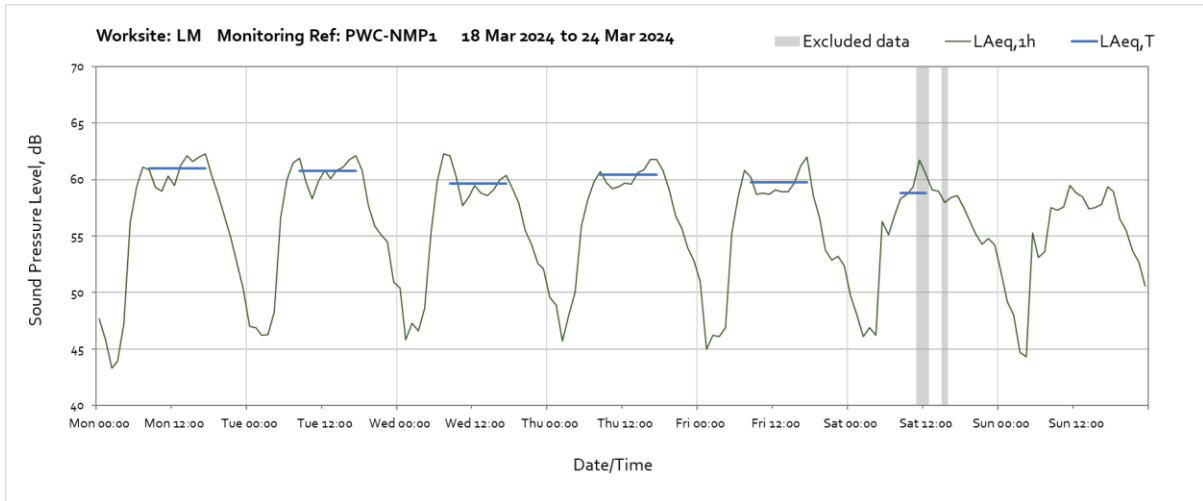


Note: Missing data between 01:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

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

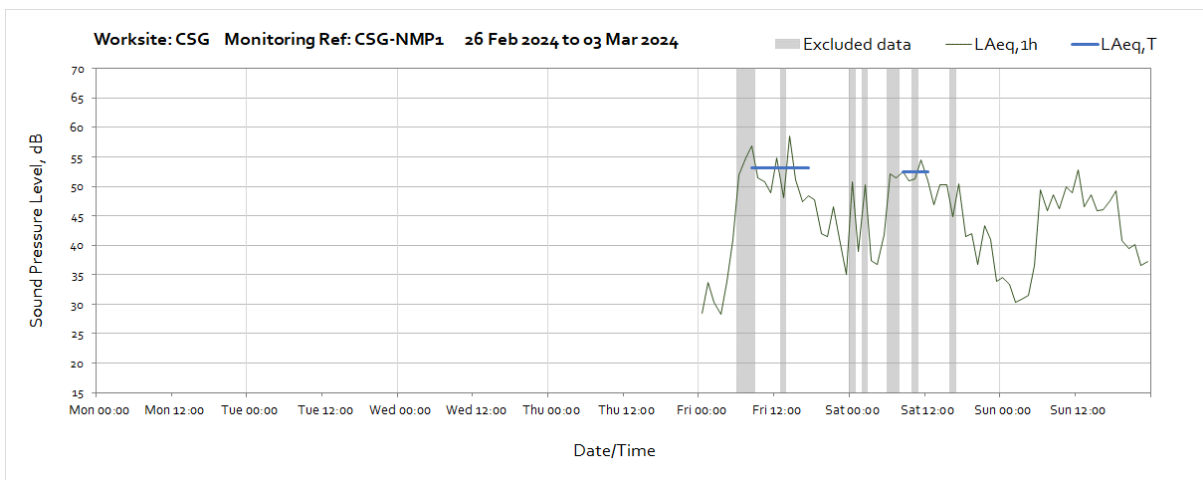


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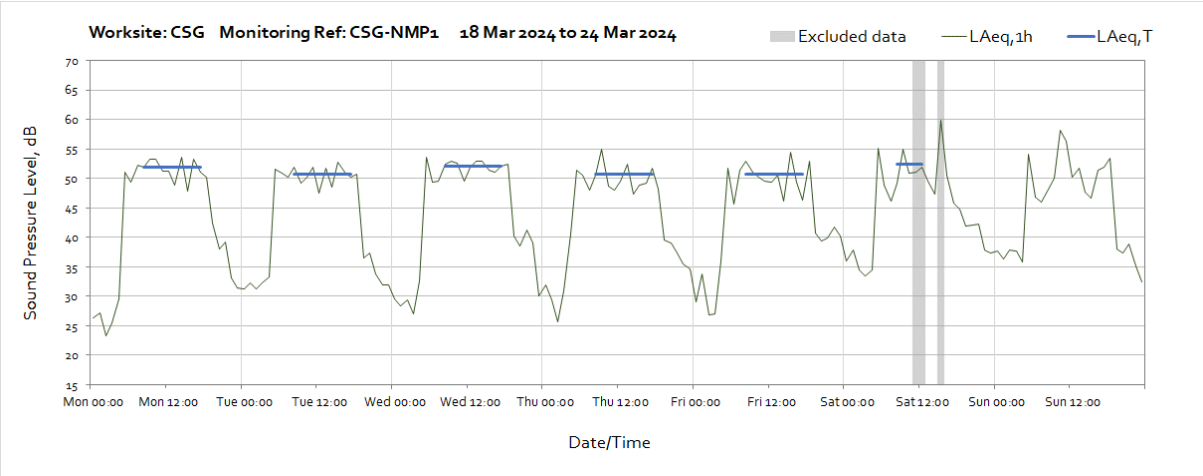
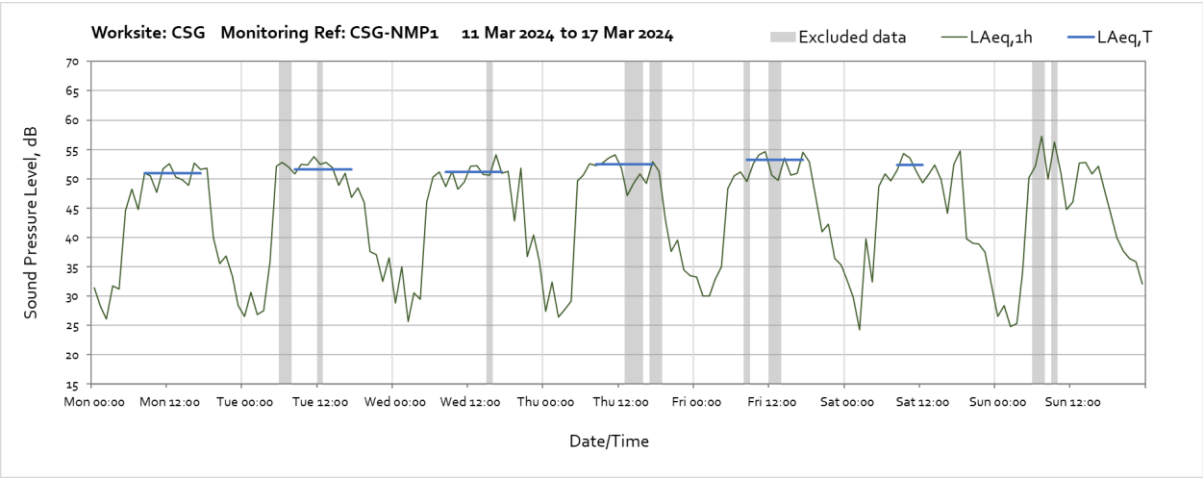
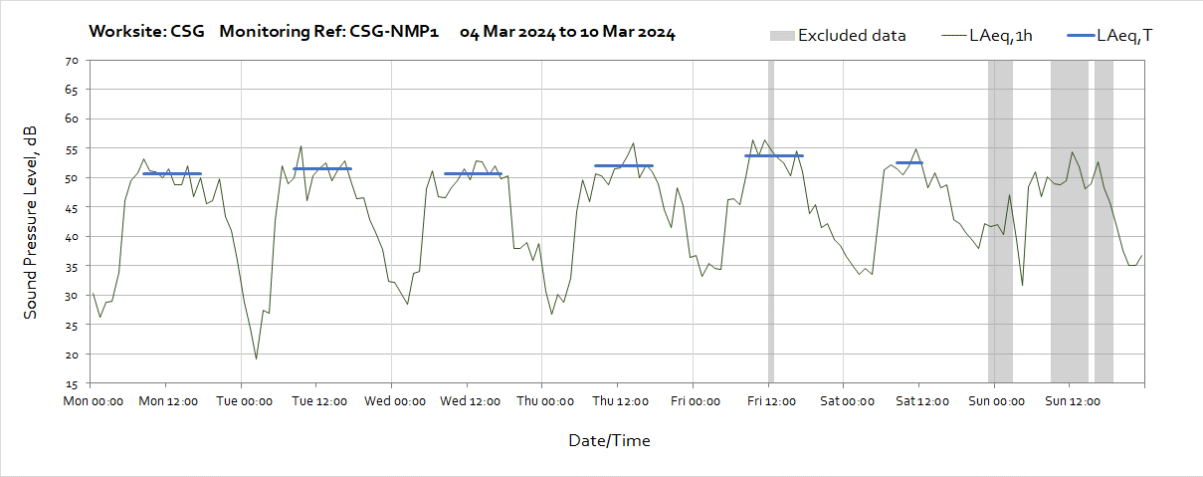


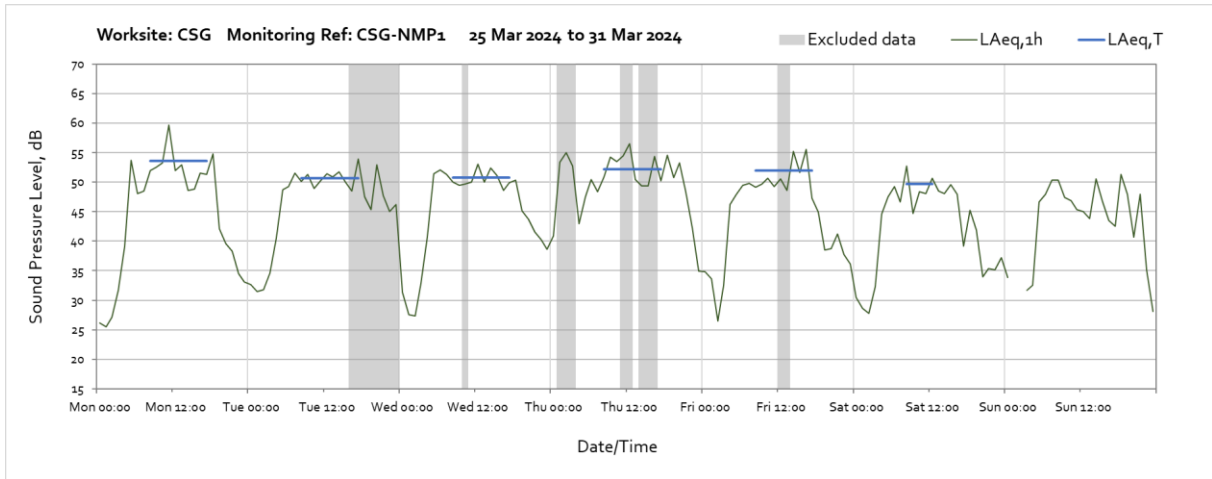
Note: Missing data between 01:00 and 02:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

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



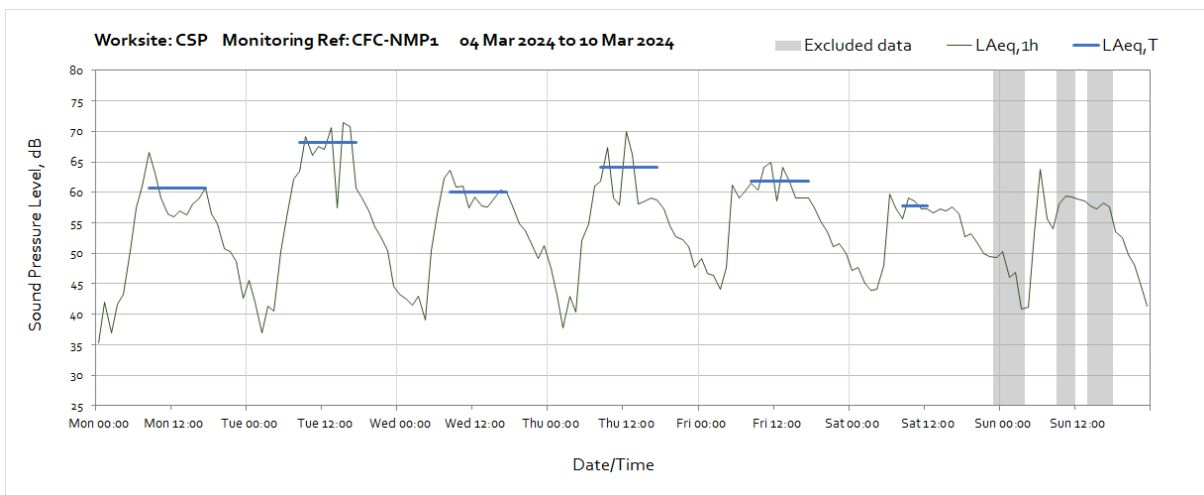
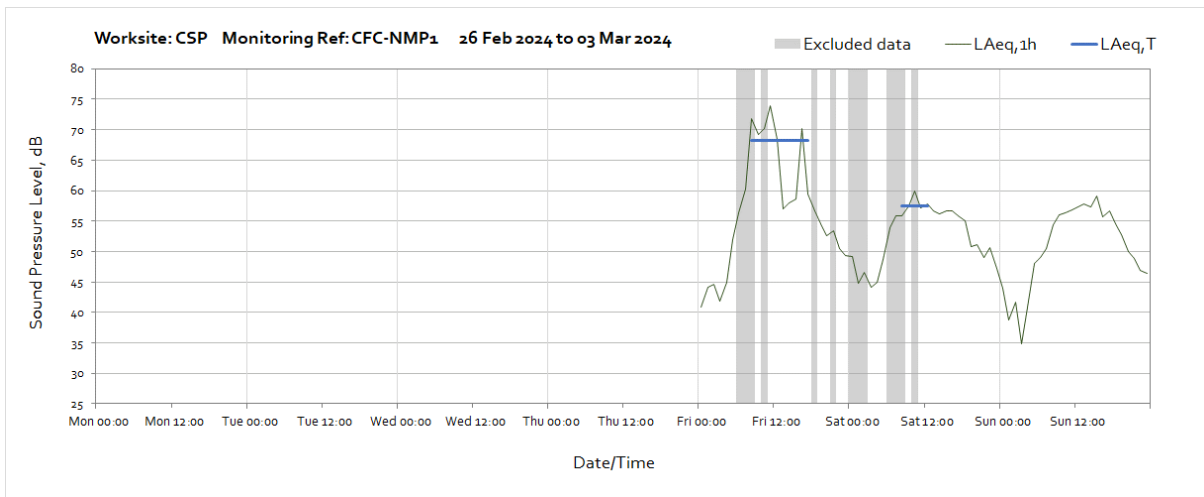


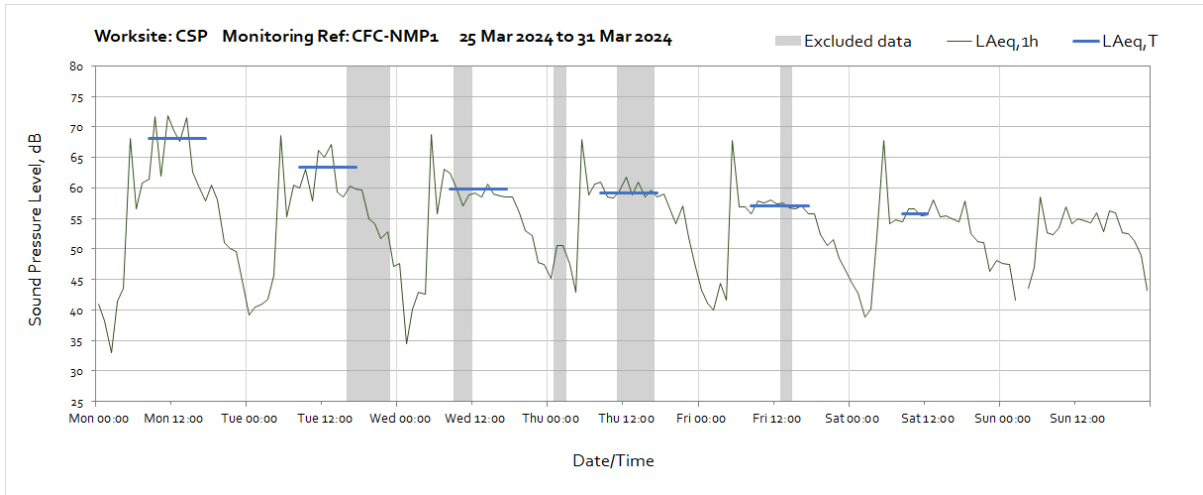
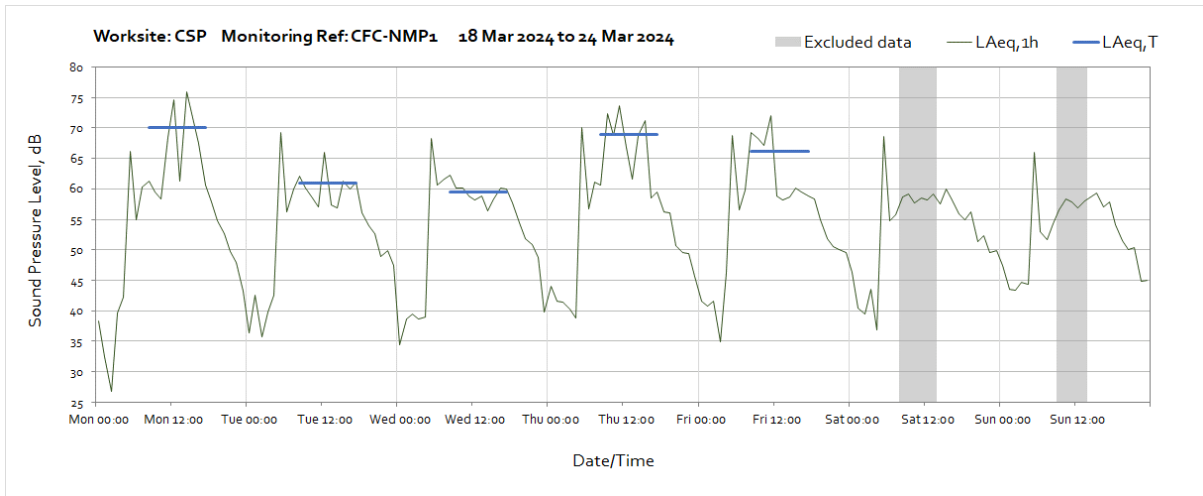
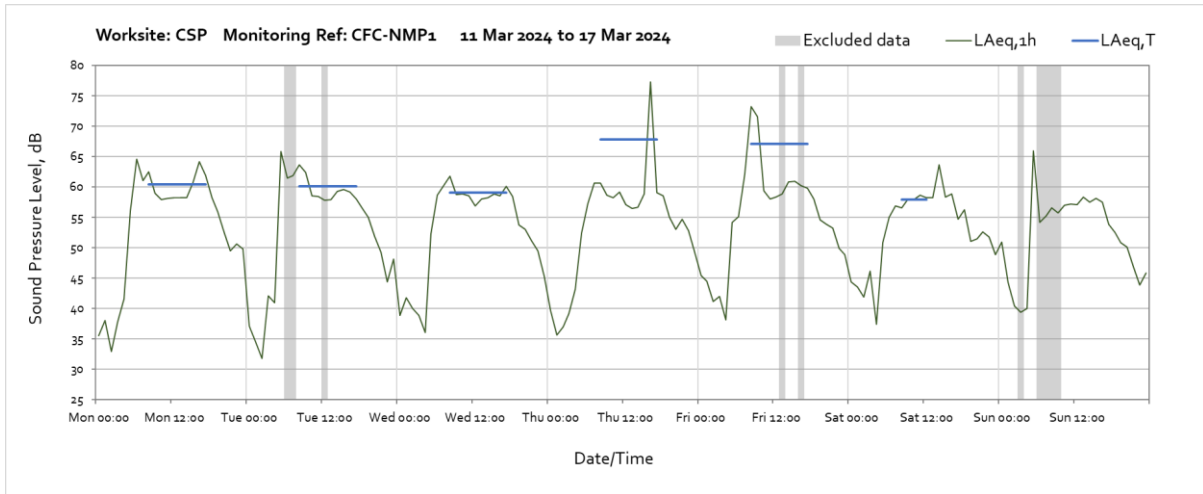




Note: Missing data between 01:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

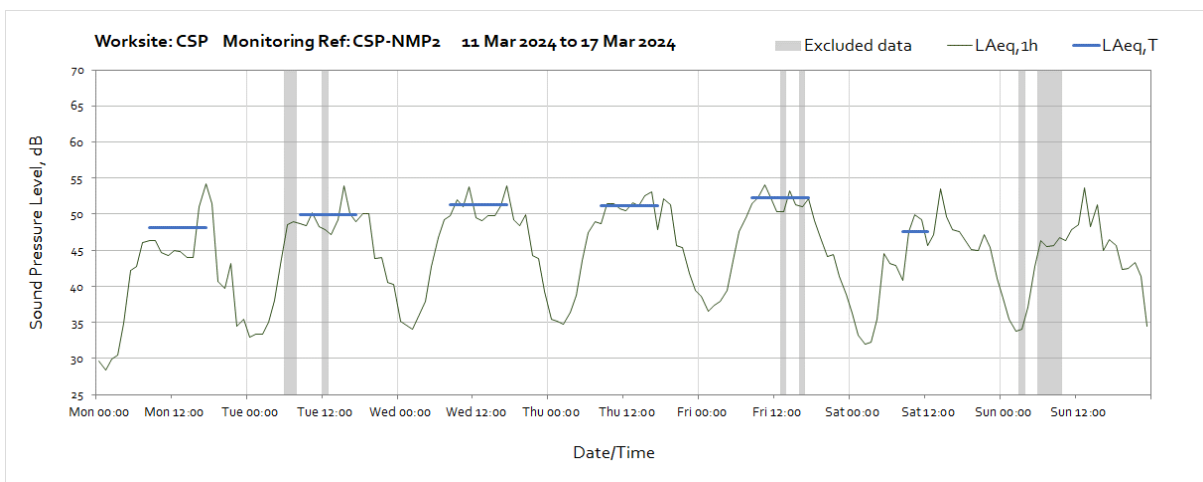
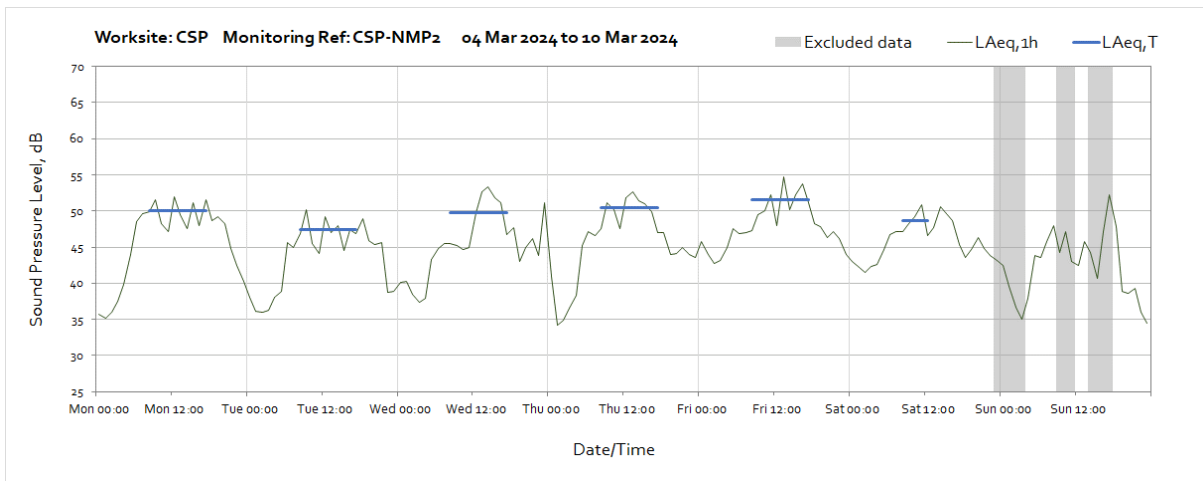
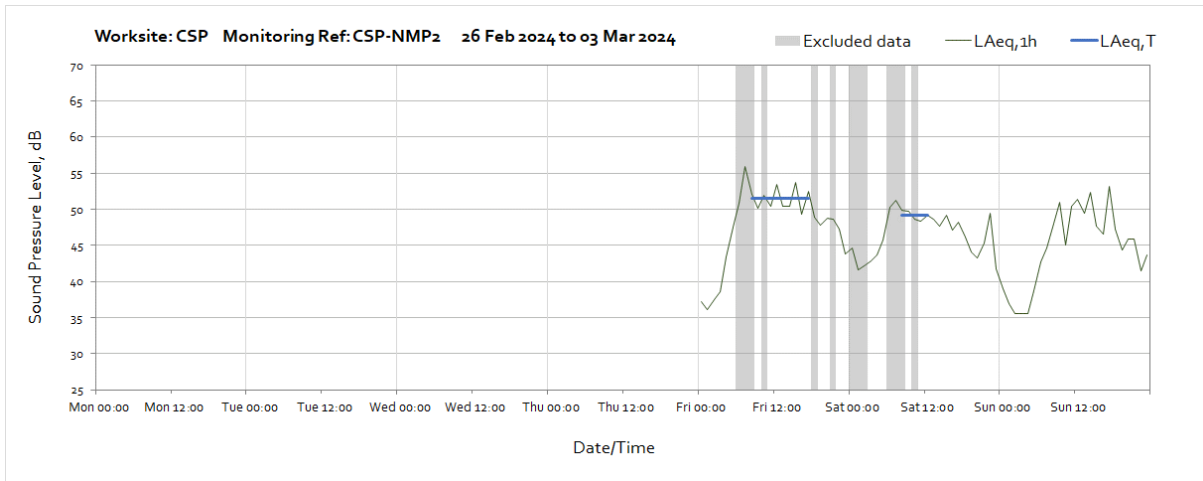
### Worksite: CSP – Monitoring Ref: CFC-NMP1

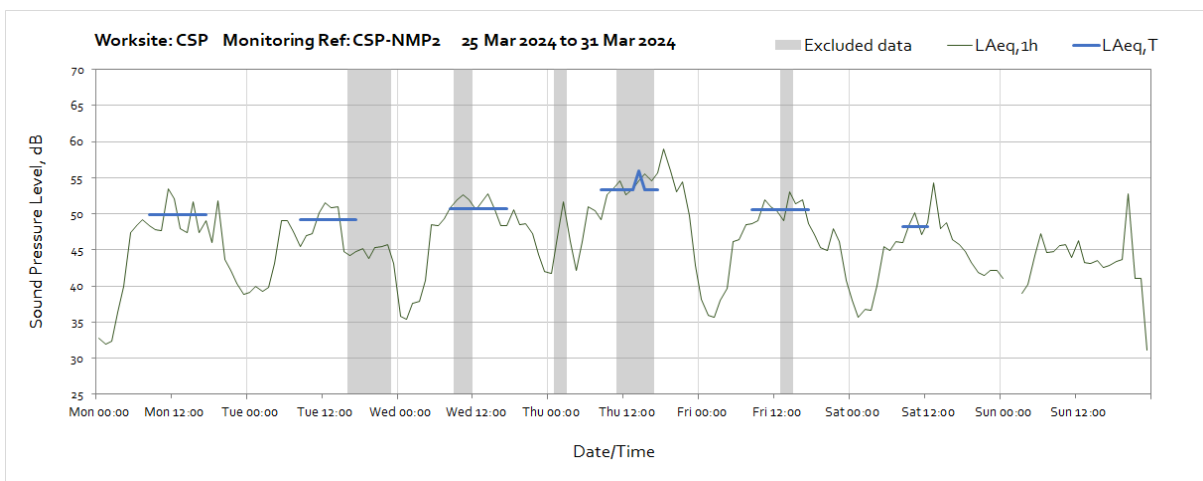
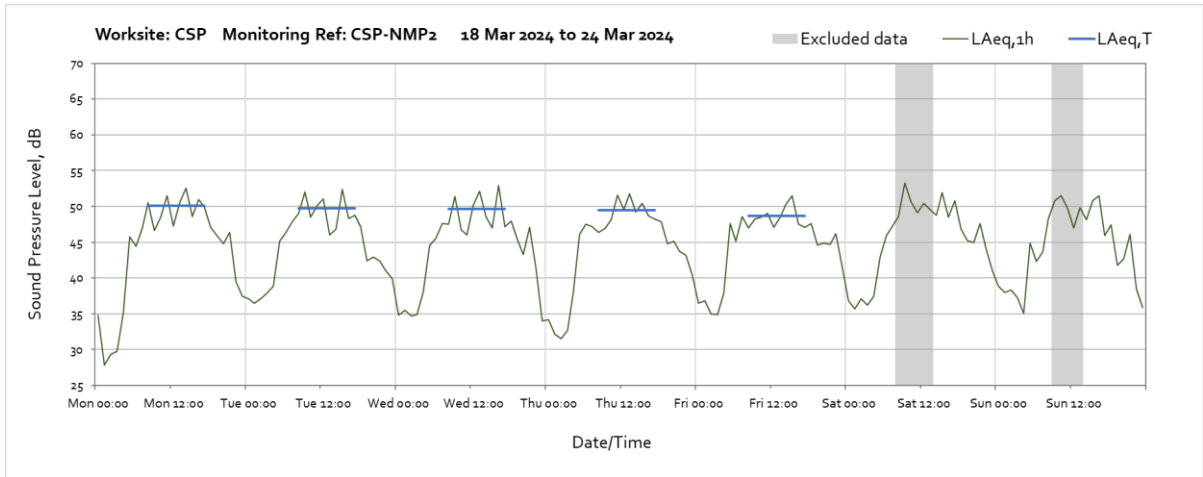




Note: Missing data between 03:00 and 04:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

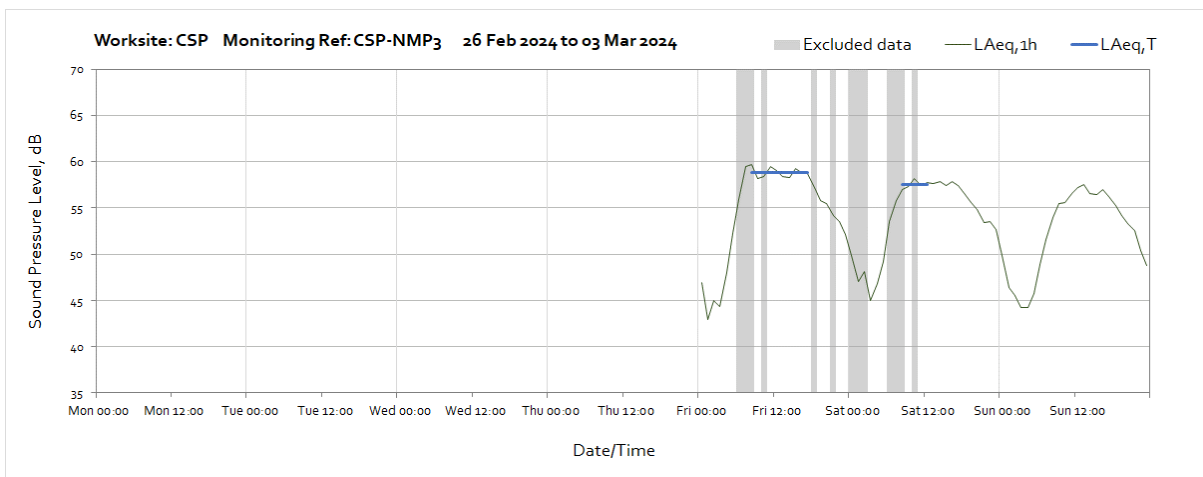
## Worksite: CSP – Monitoring Ref: CSP-NMP2

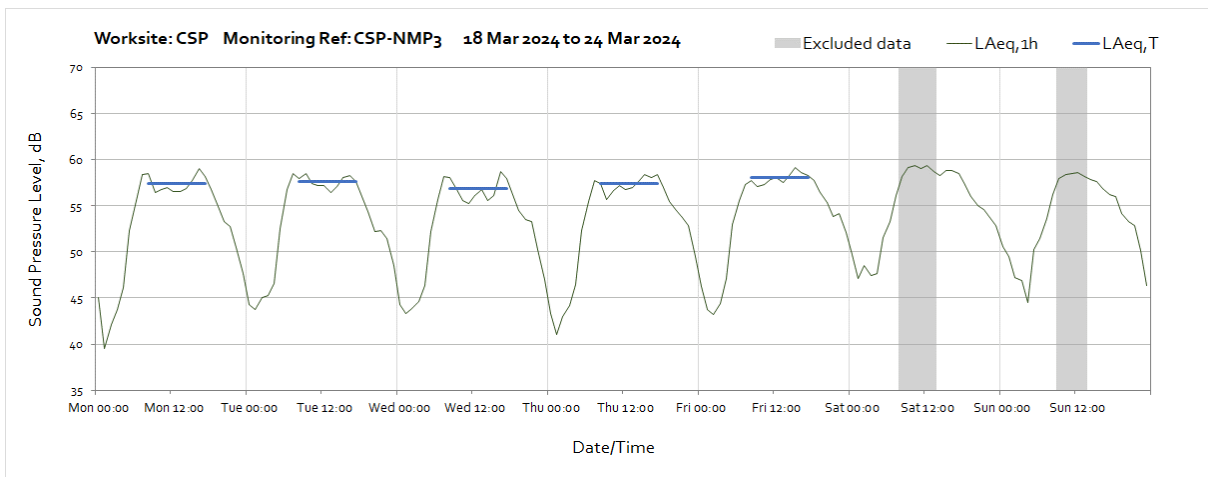
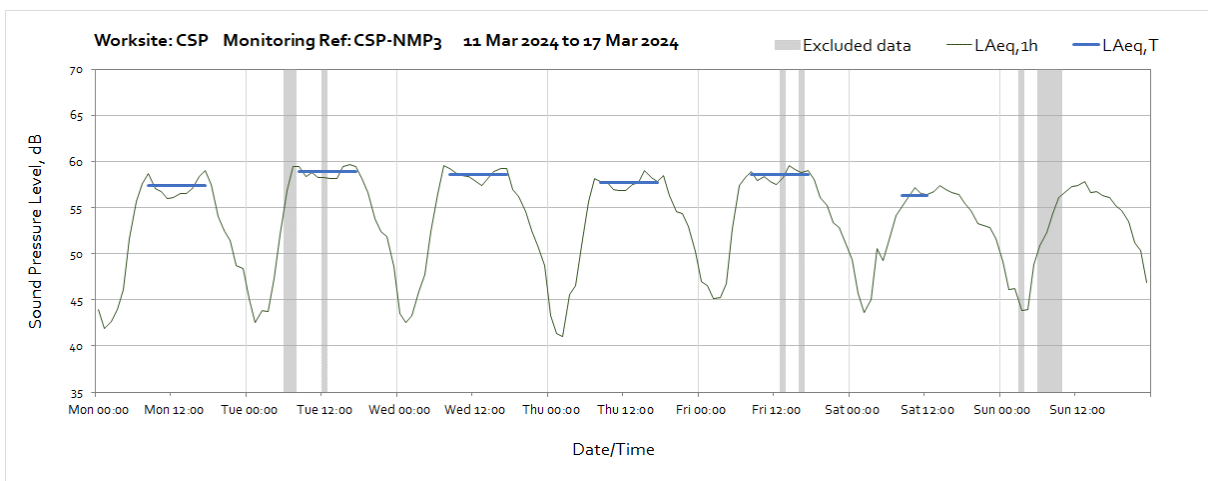
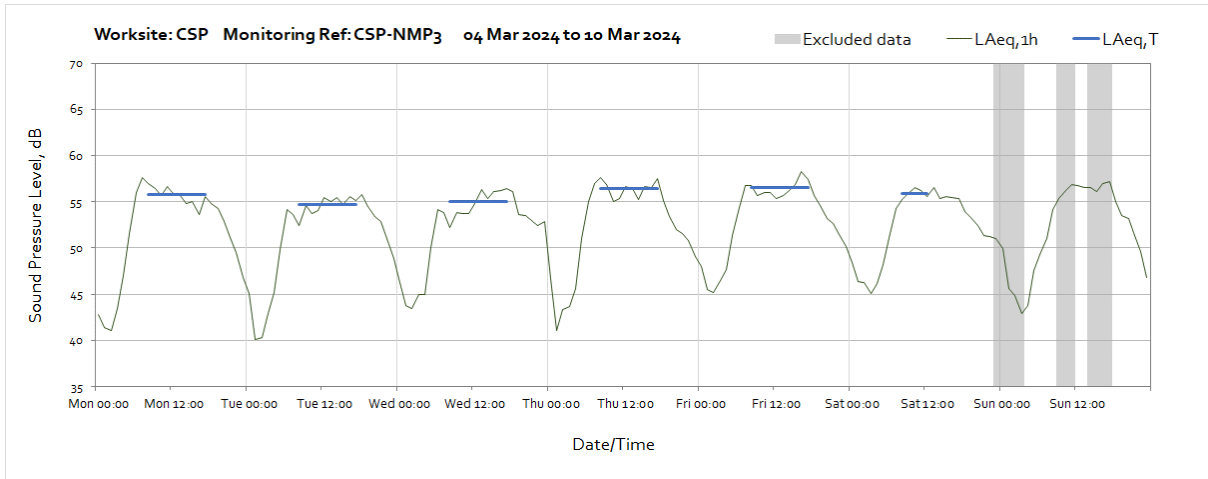


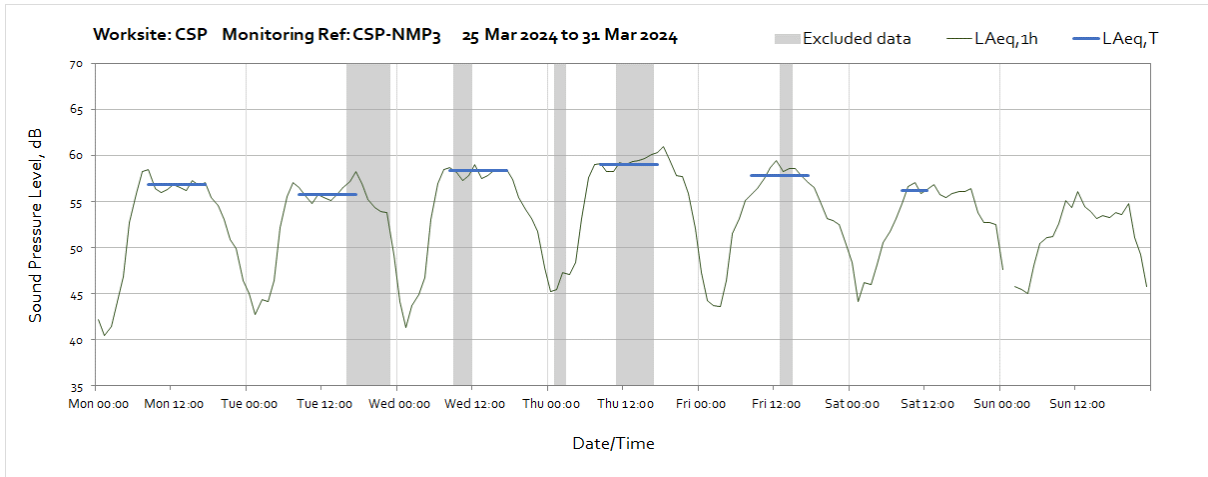


Note: Missing data between 01:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

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

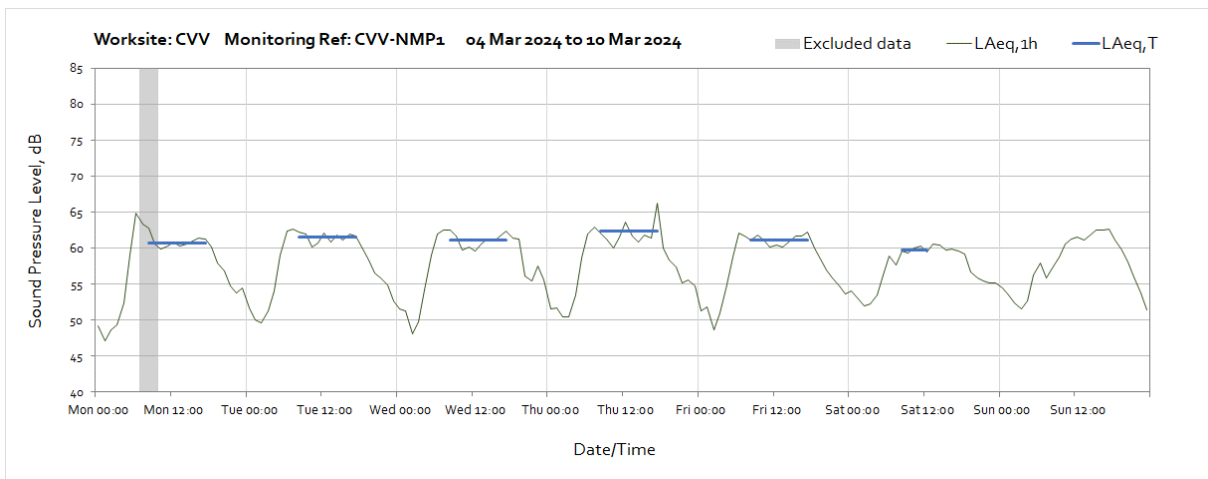
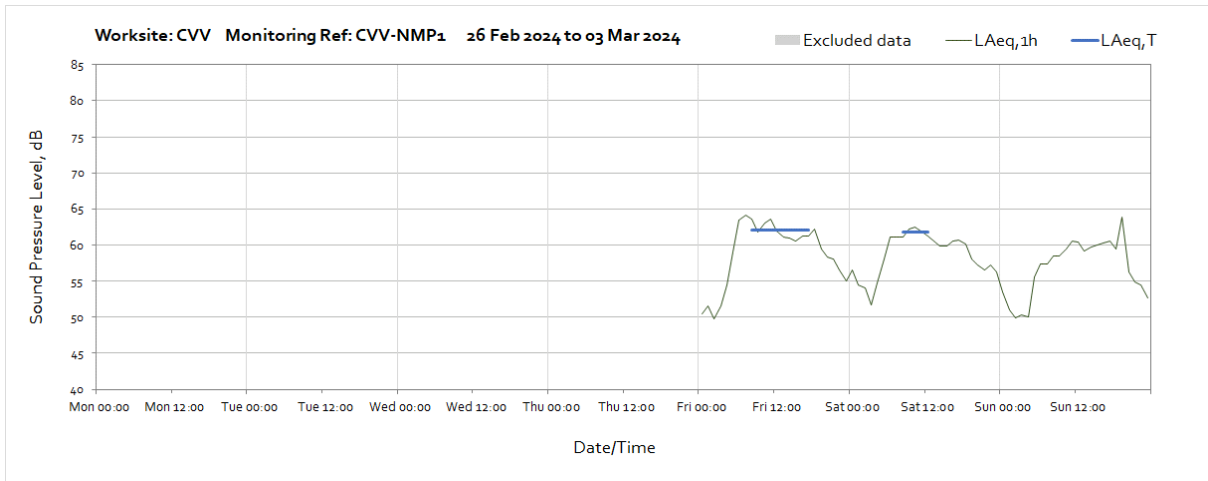


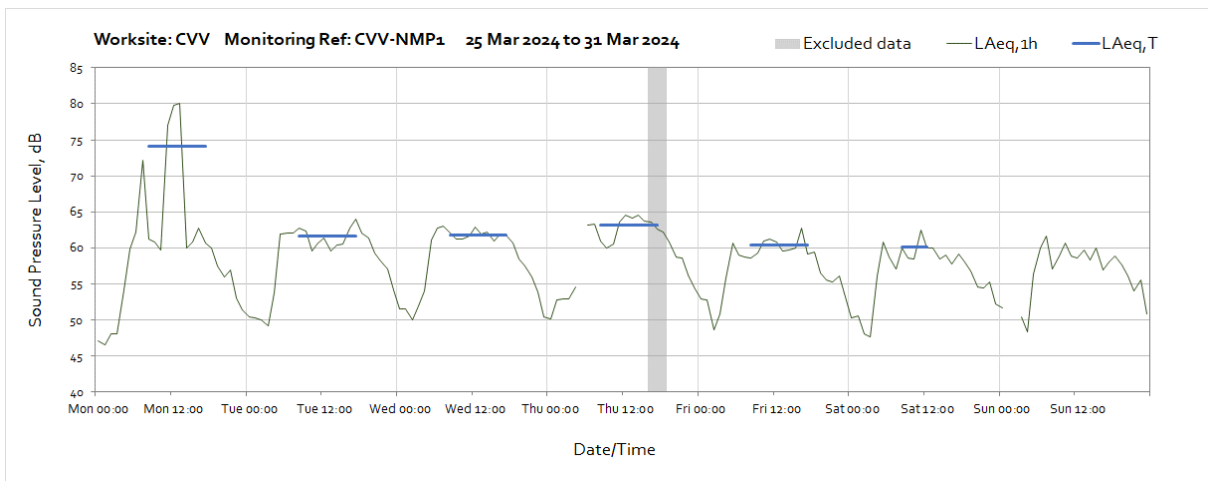
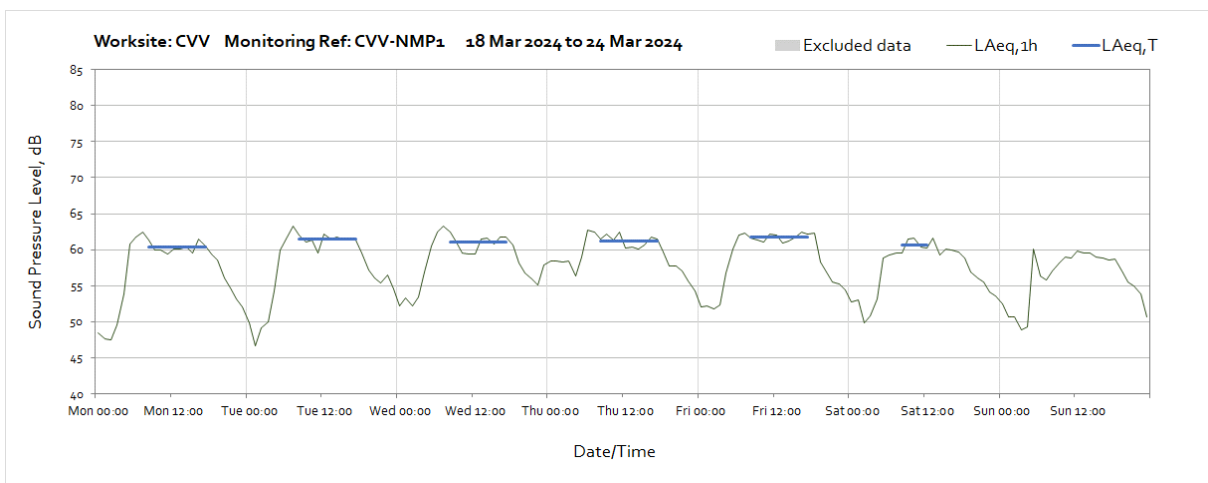
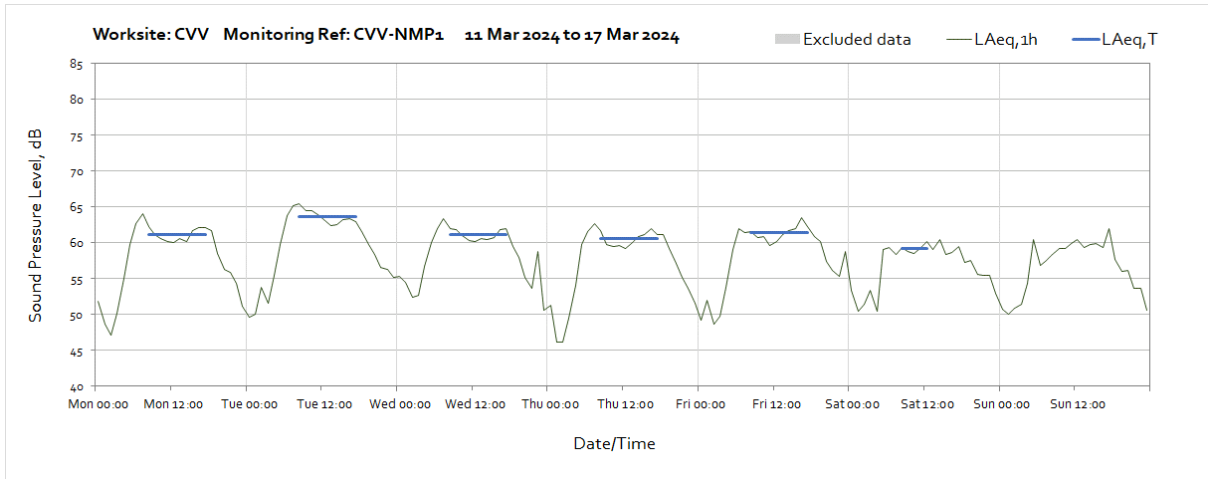




Note: Missing data between 01:00 and 02:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

**Worksite: CVV- Monitoring Ref: CVV-NMP1**



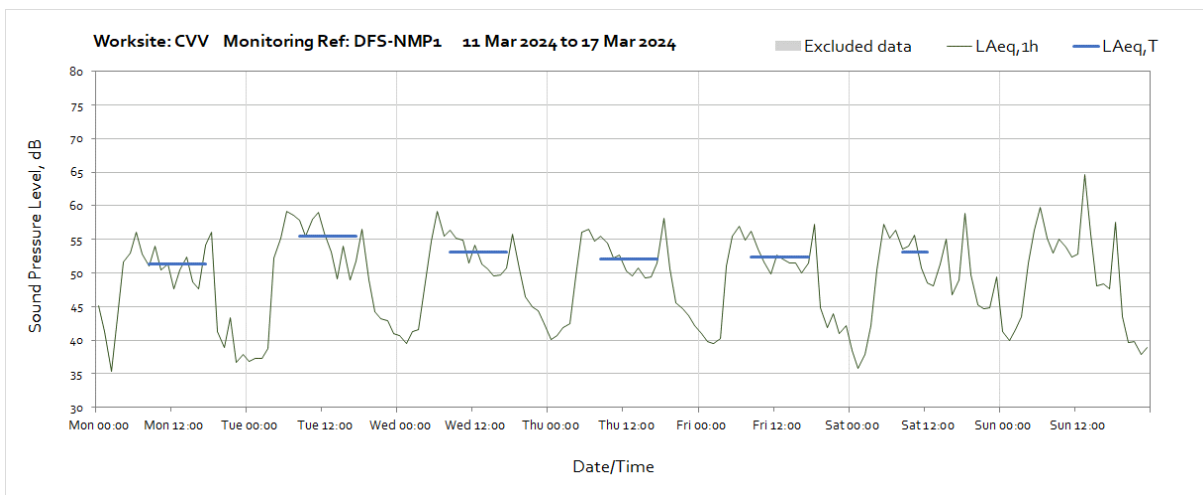
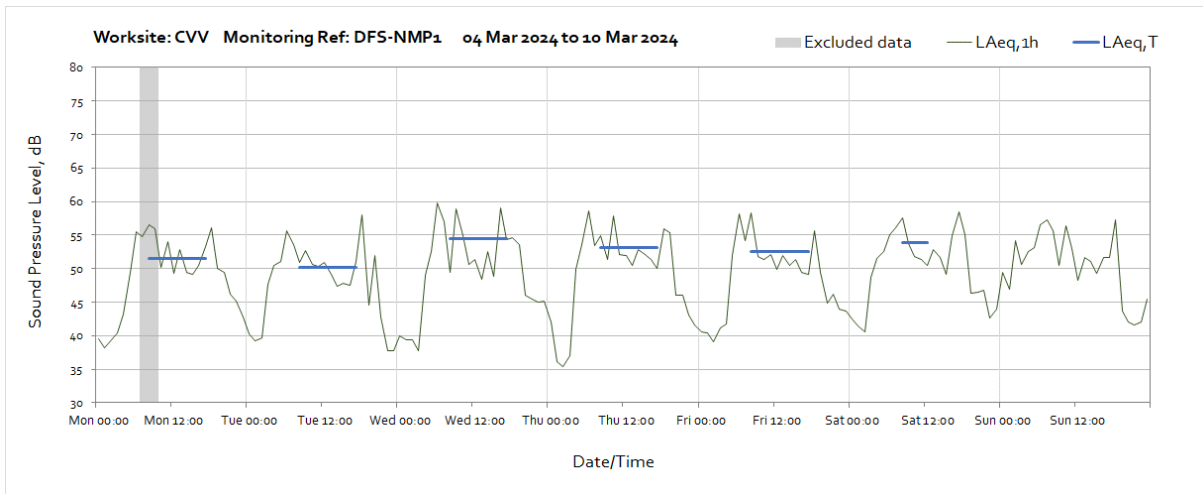
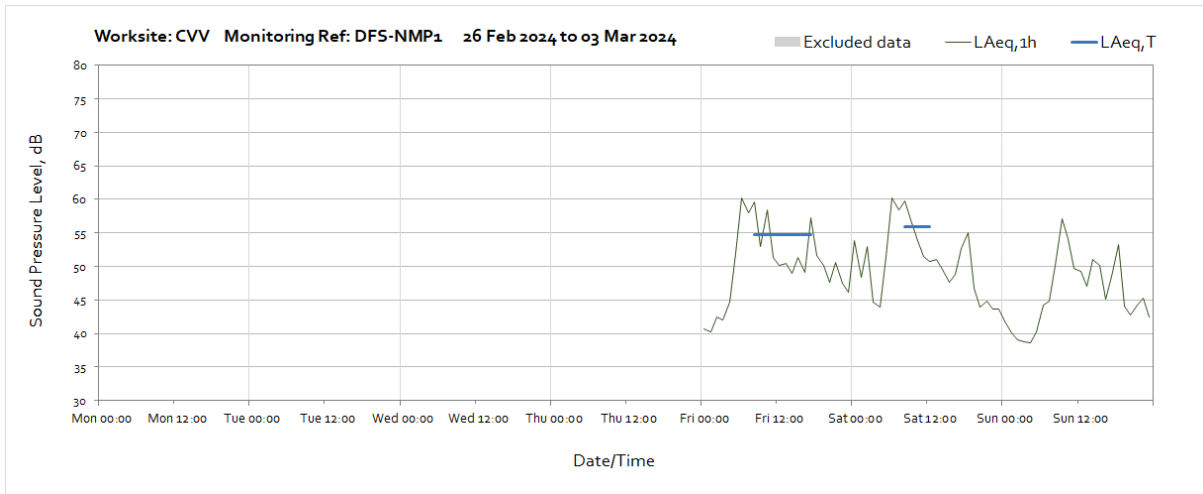


Note: Missing data between 05:00 and 06:00 was due to a communication error between the monitoring station and server. Missing data between 01:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

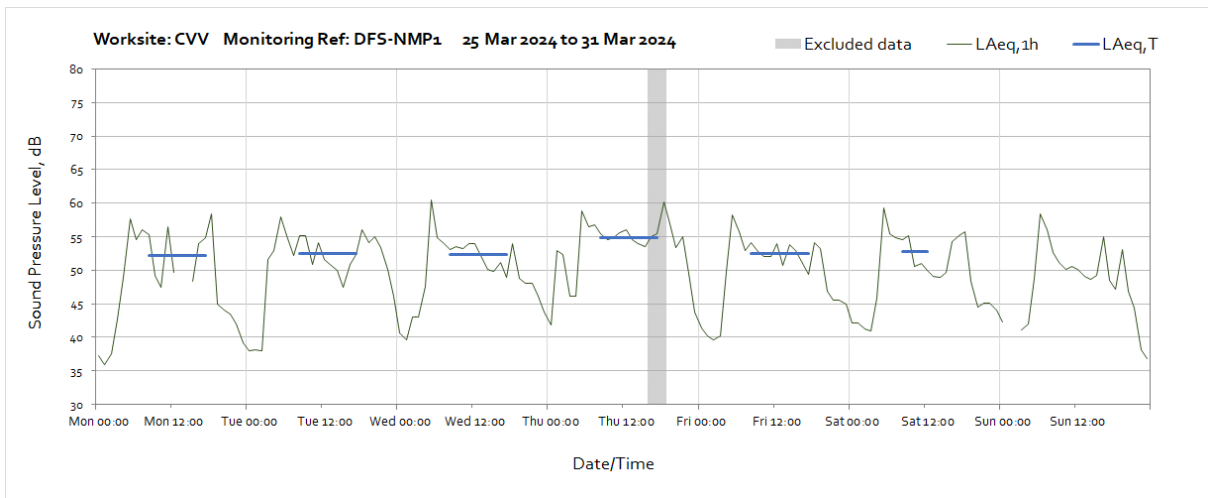
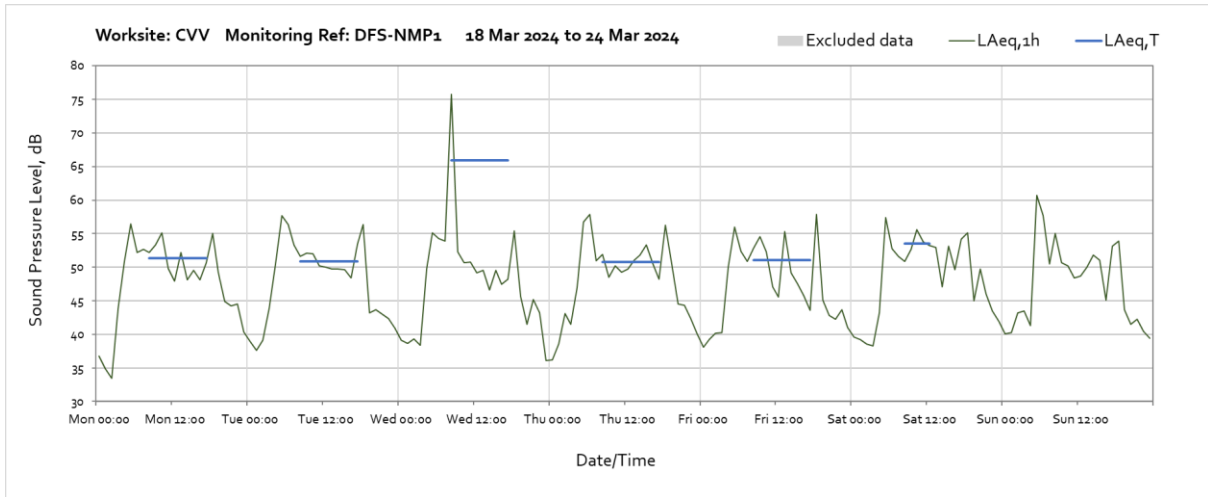
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## Worksite: CVV – Monitoring Ref: DFS-NMP1



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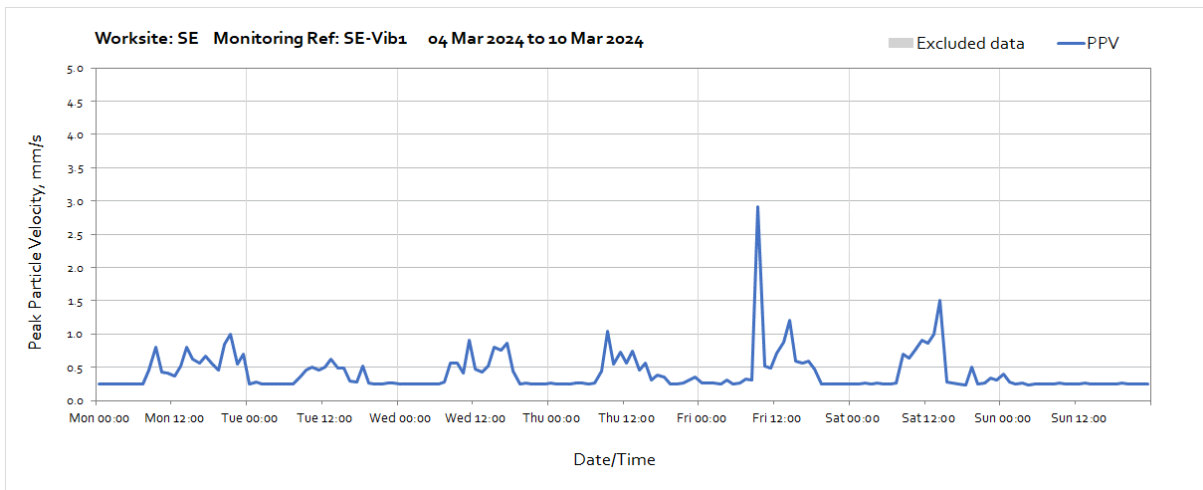
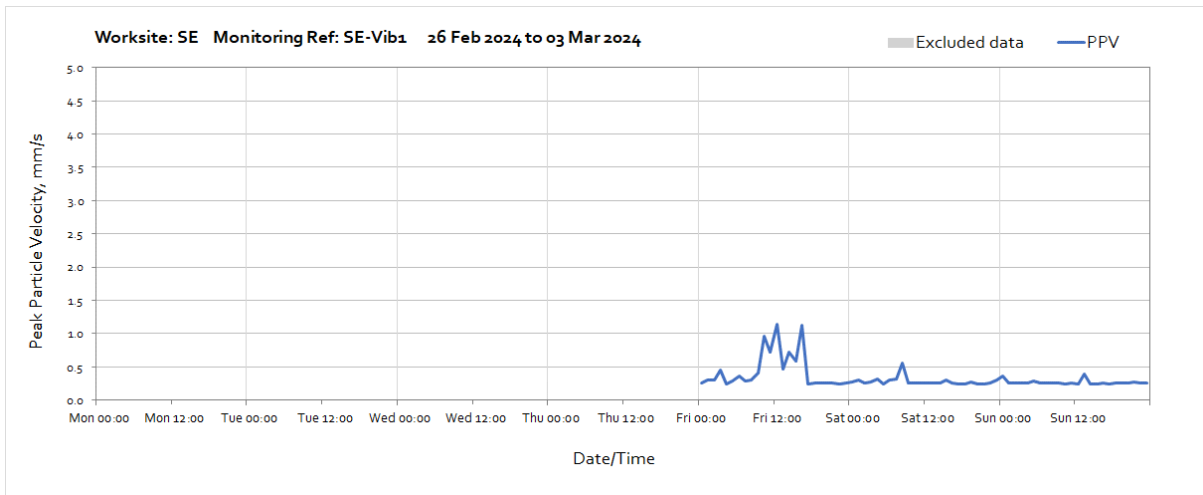


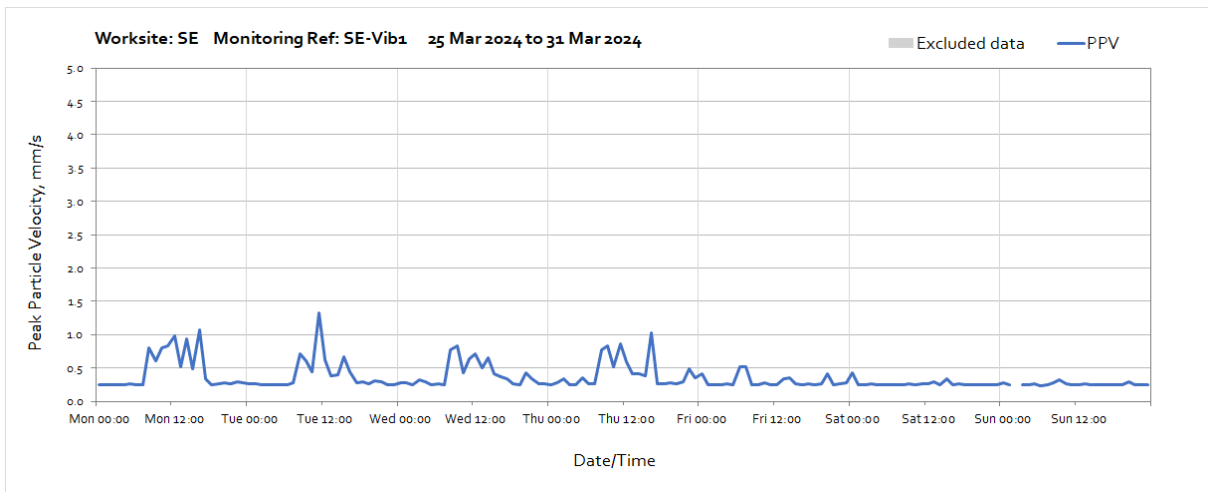
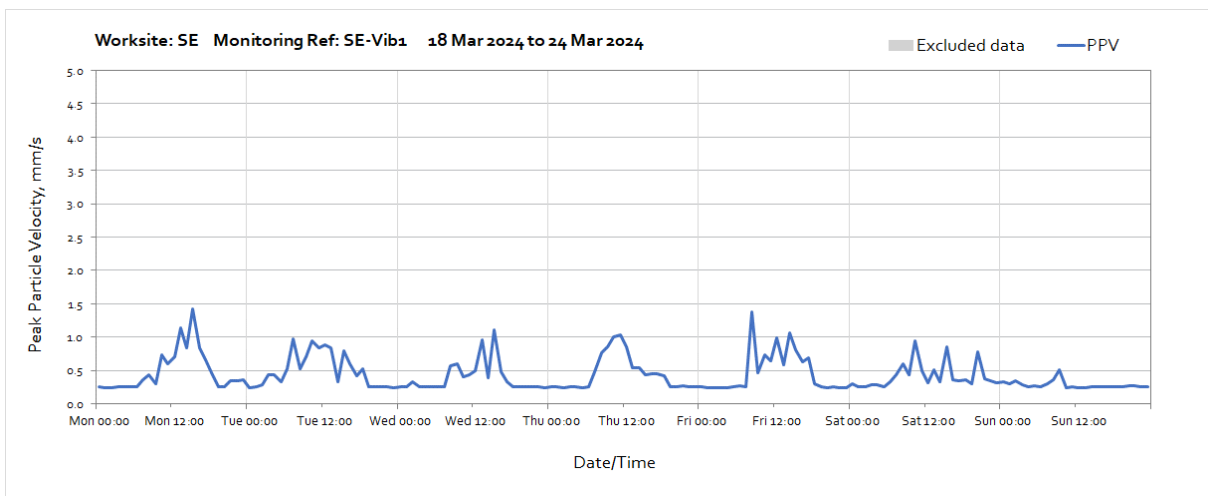
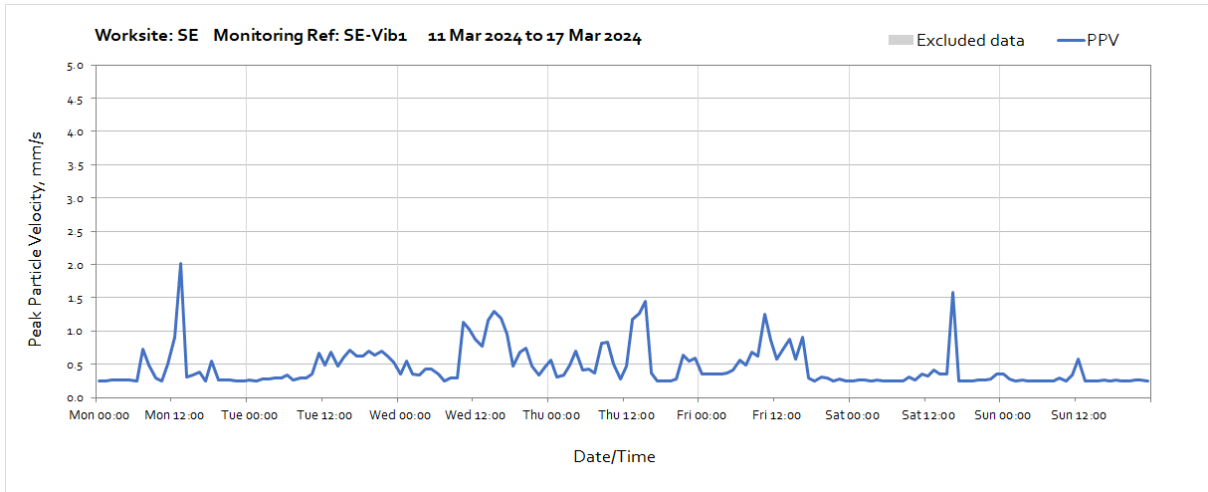
Note: Missing data between 01:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

## Vibration

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

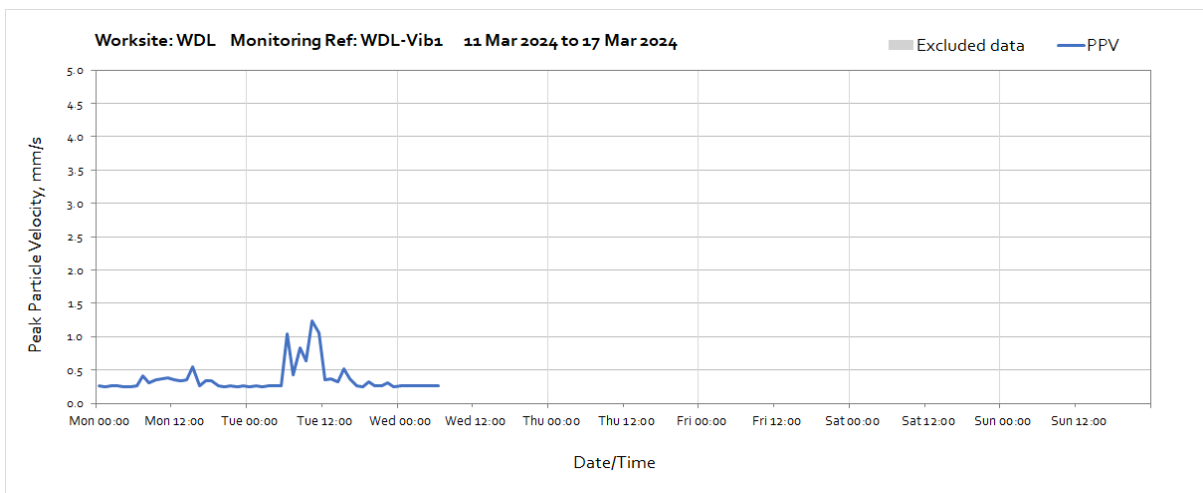
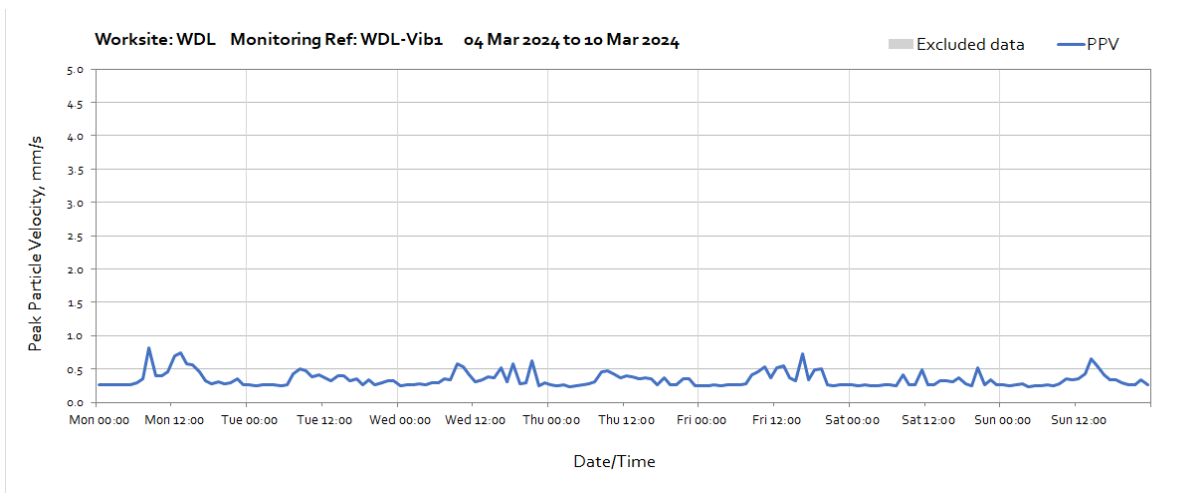
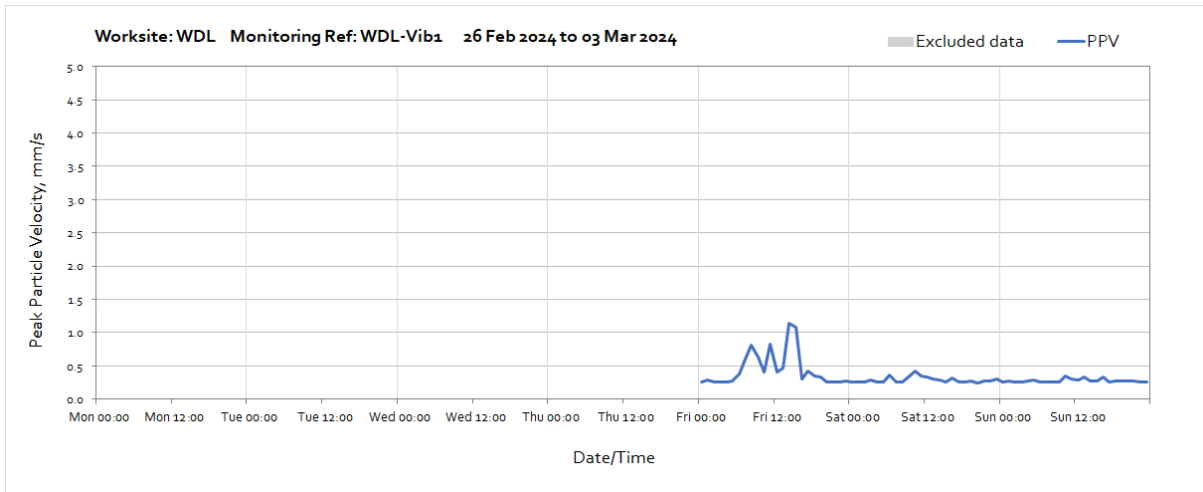
### Worksite: SE – Monitoring Ref: SE-Vib1





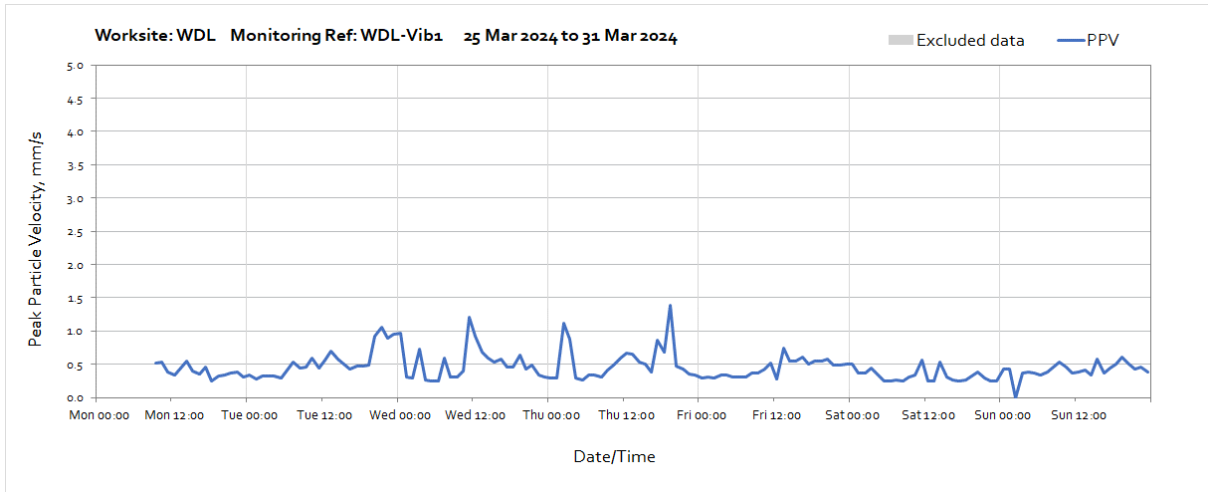
Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

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



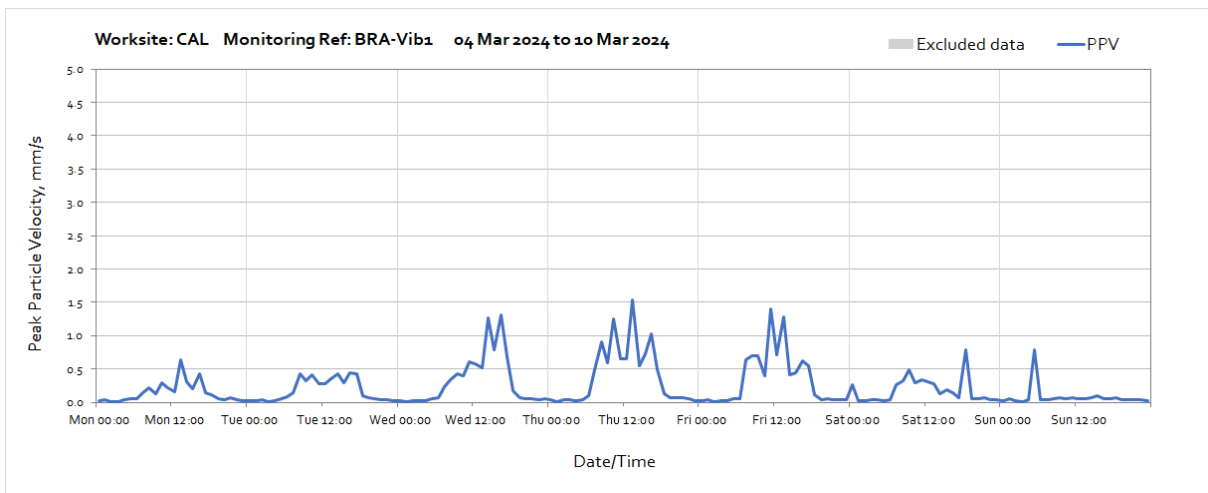
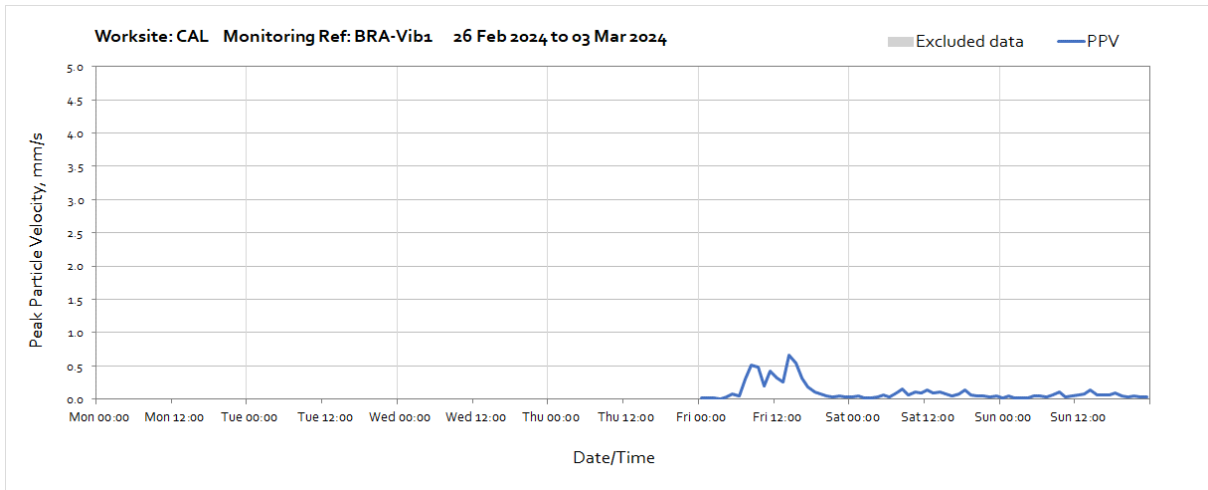
Note: Missing data between 07:00 on Wednesday 13<sup>th</sup> March until 09:00 on Monday 25<sup>th</sup> March was due to depleted monitor battery, the battery has now been replaced.

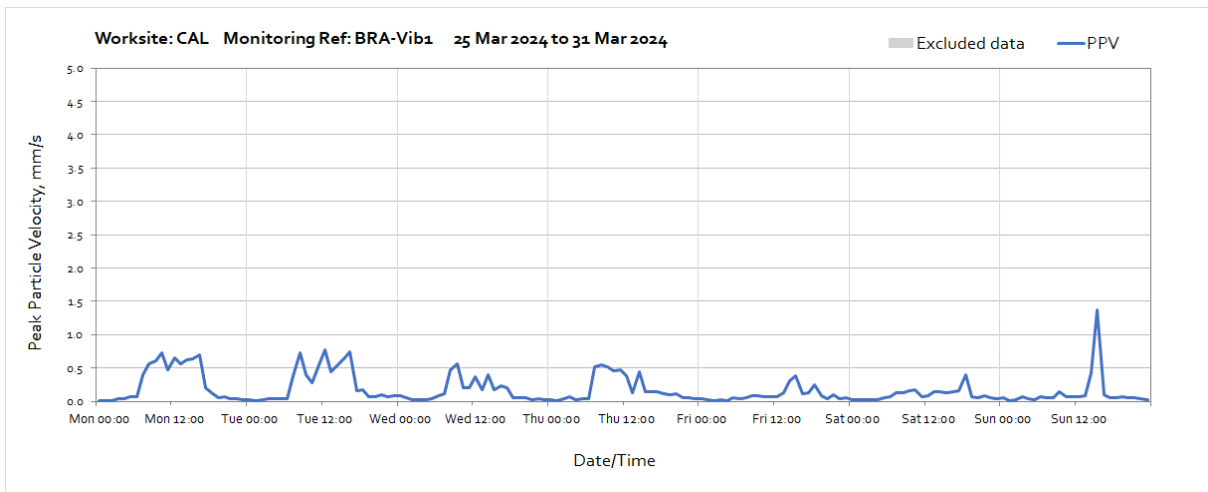
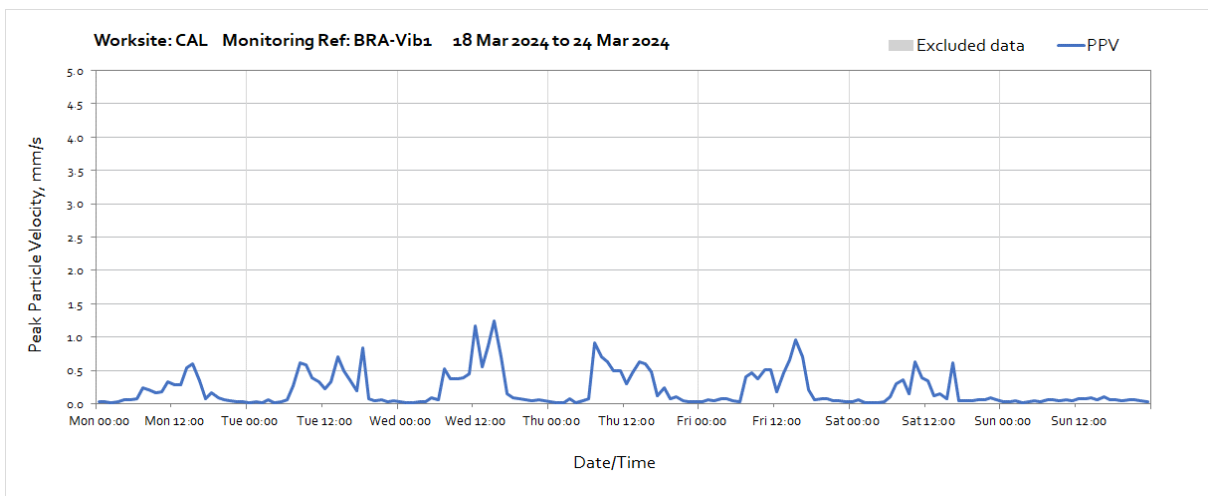
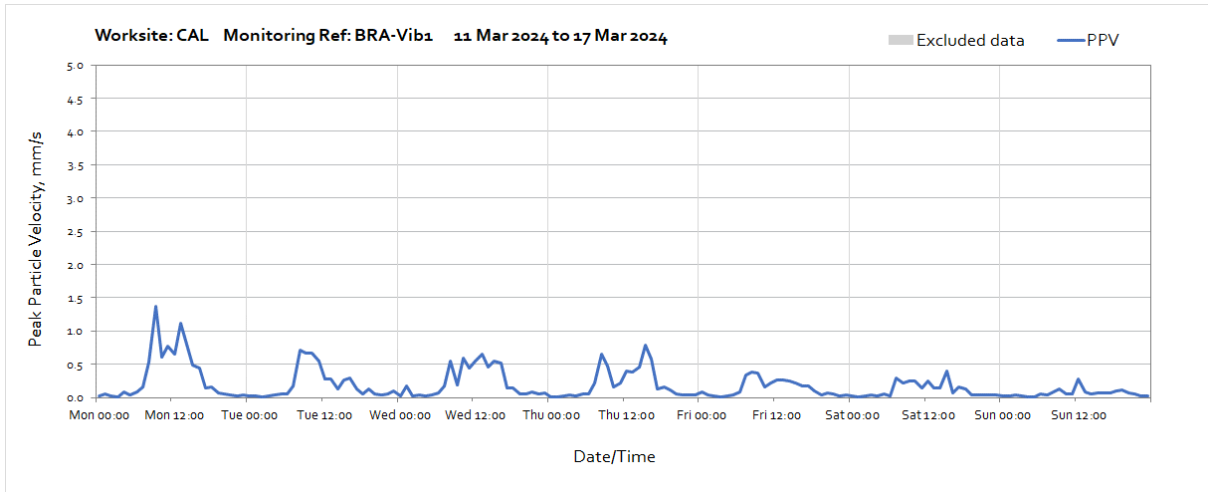
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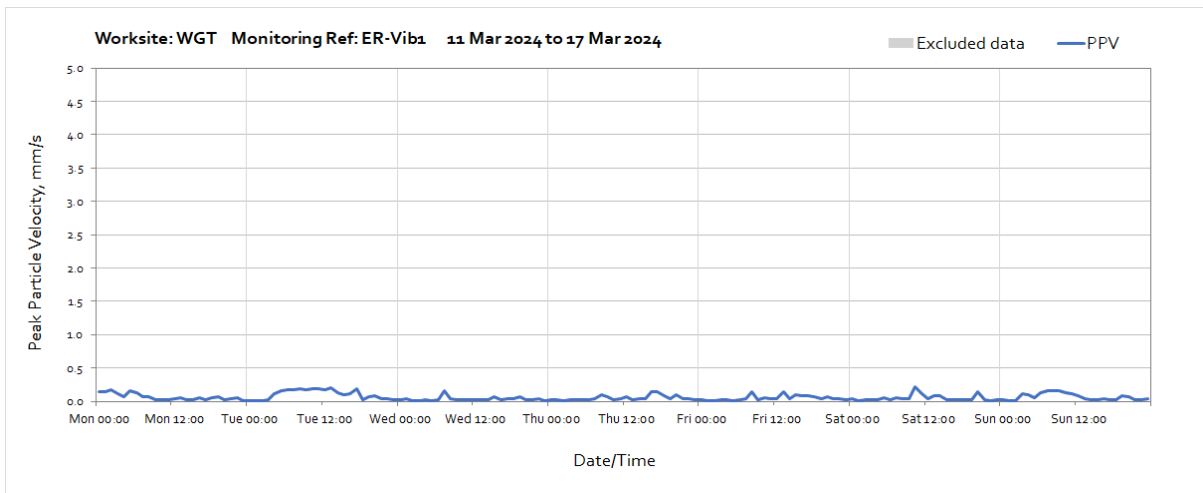
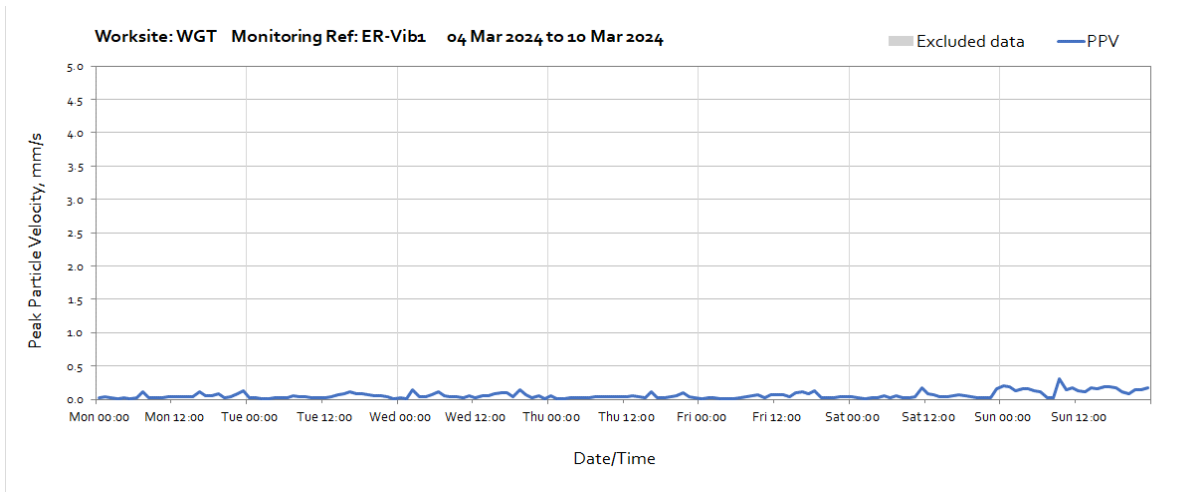
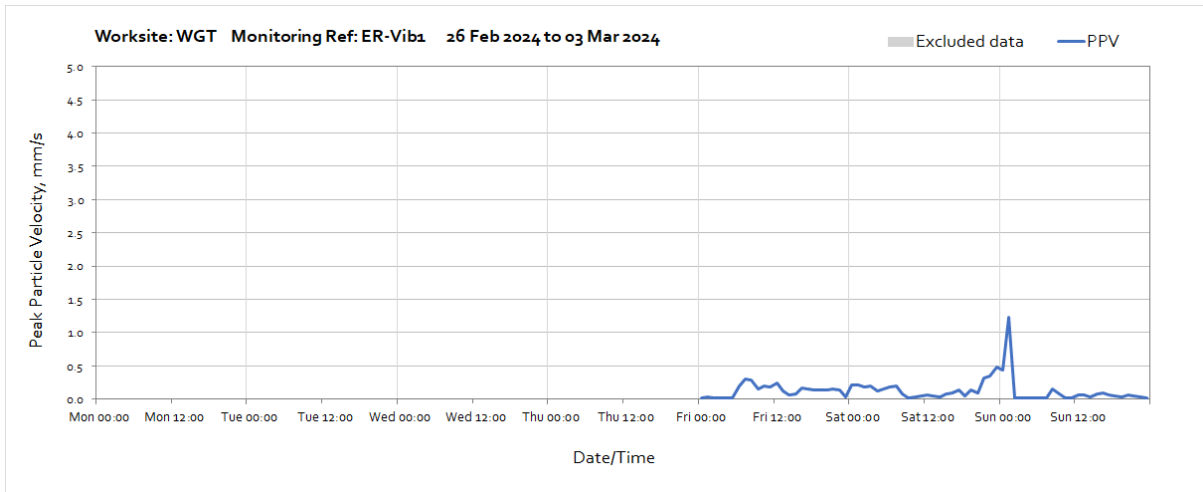
Note: Missing data between 07:00 on Wednesday 13<sup>th</sup> March until 09:00 on Monday 25<sup>th</sup> March was due to depleted monitor battery, the battery has now been replaced.

### Worksite: CAL – Monitoring Ref: BRA-Vib1



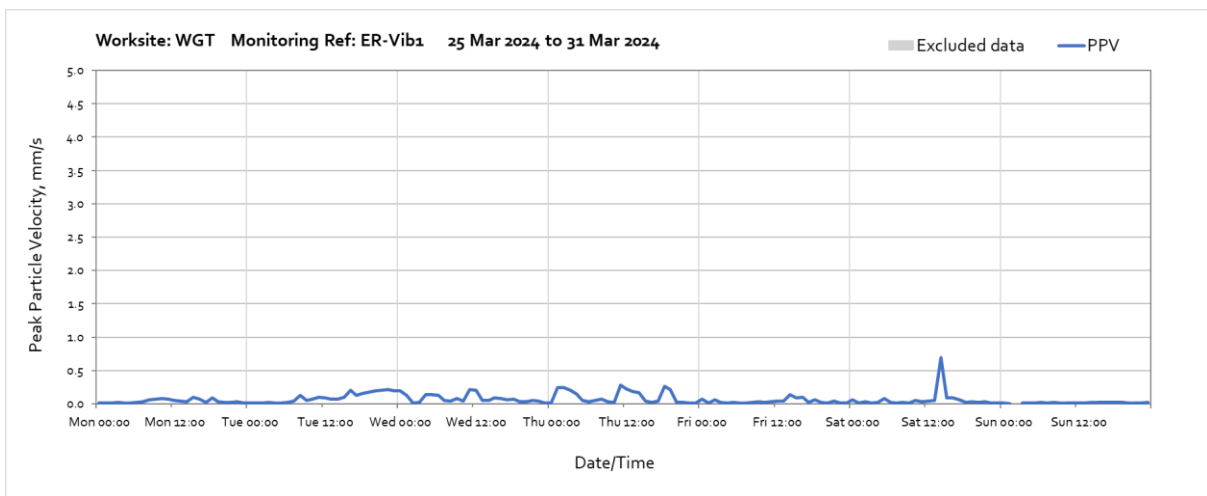
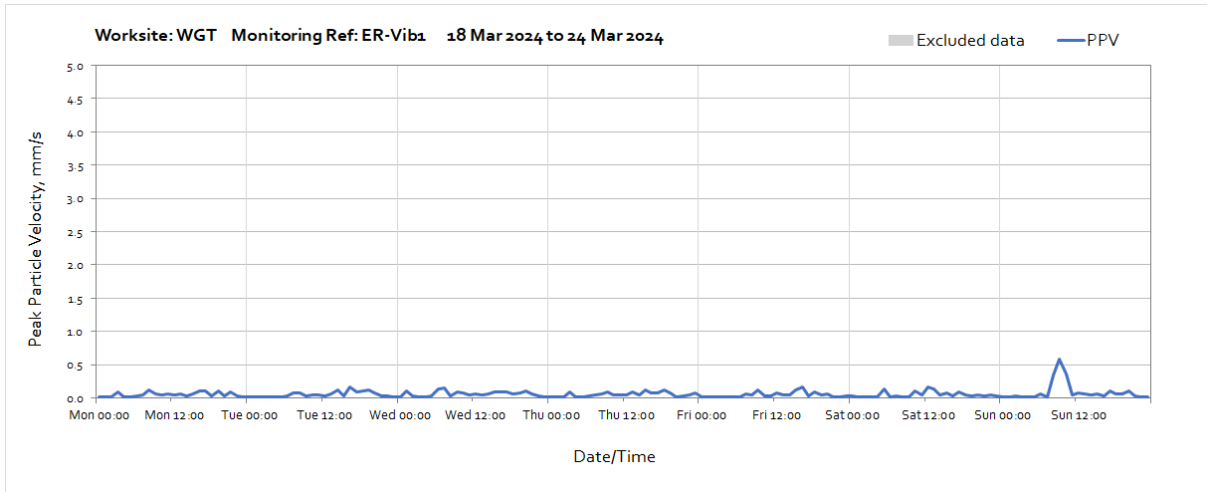


## Worksite: WGT – Monitoring Ref: ER-Vib1



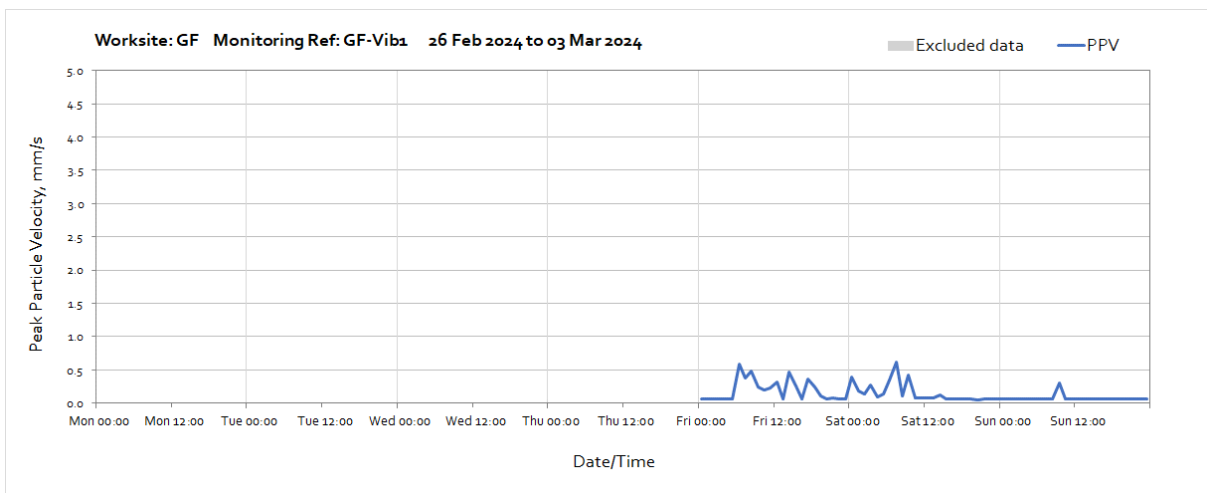
OFFICIAL

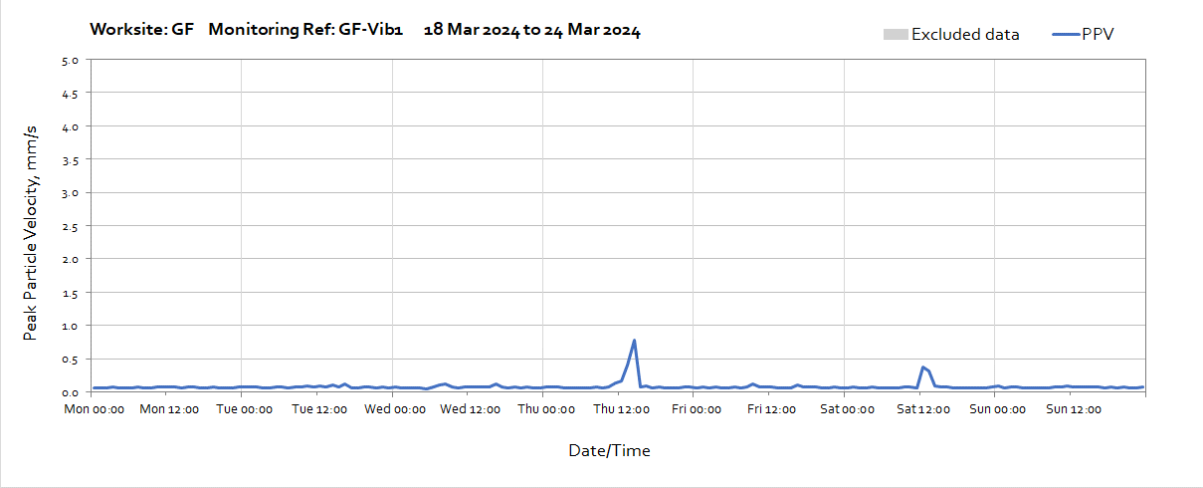
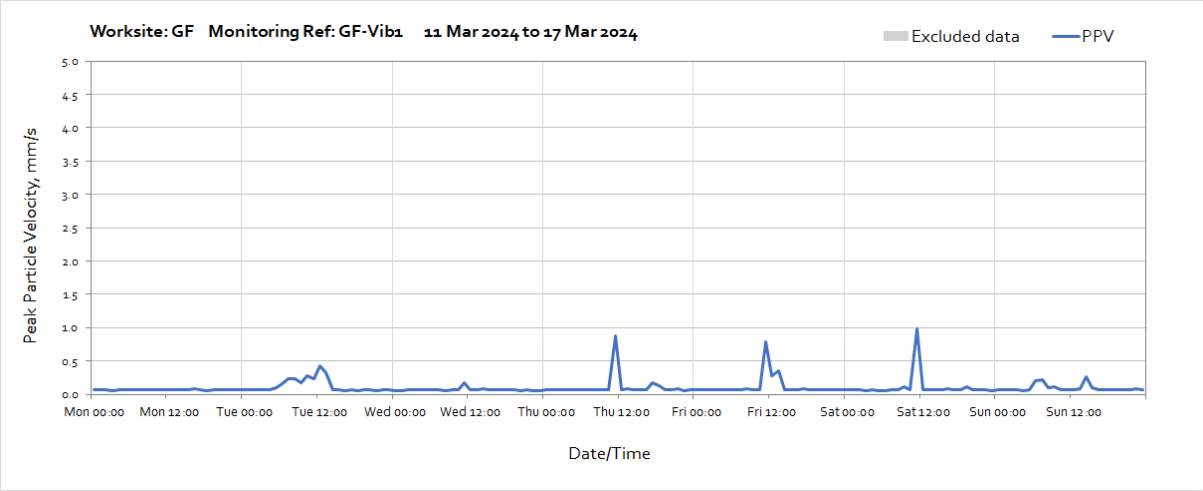
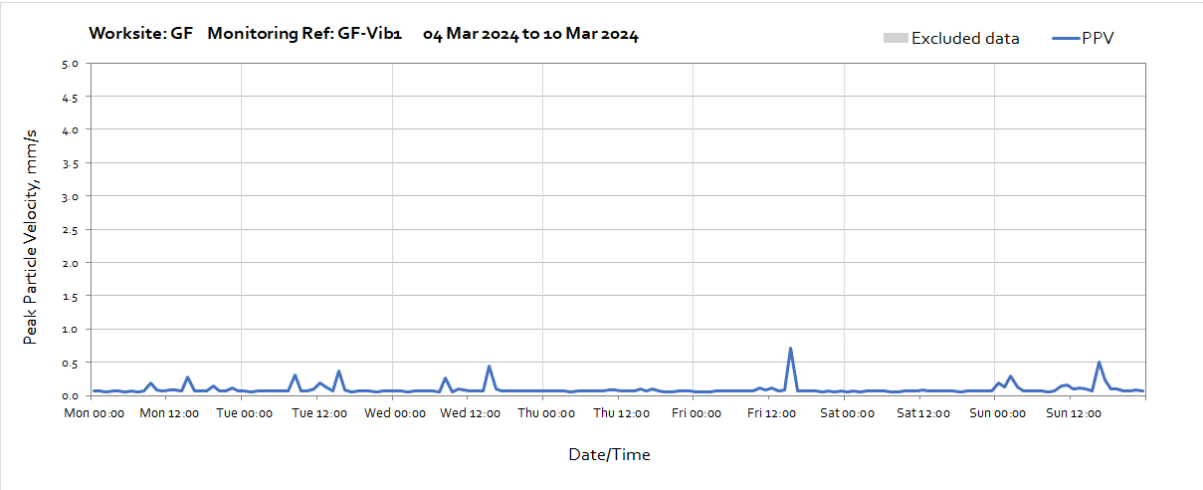


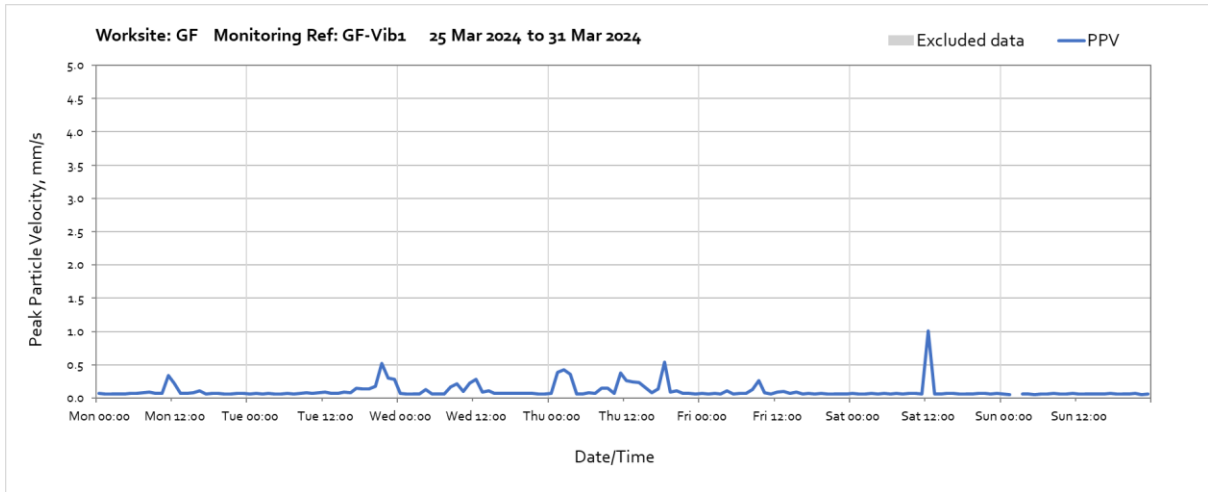


Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

**Worksite: GF - Monitoring Ref: GF-Vib1**

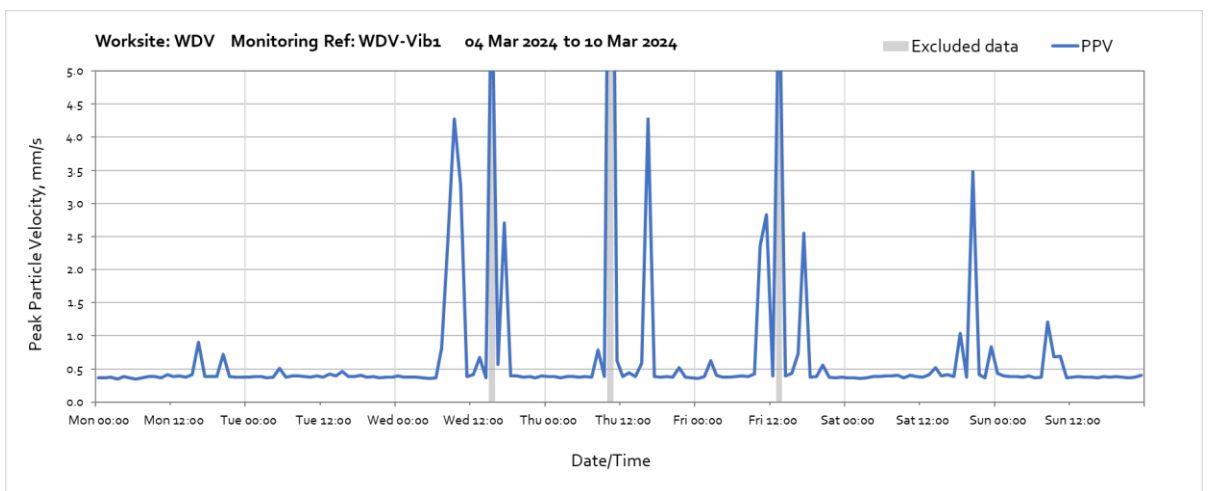
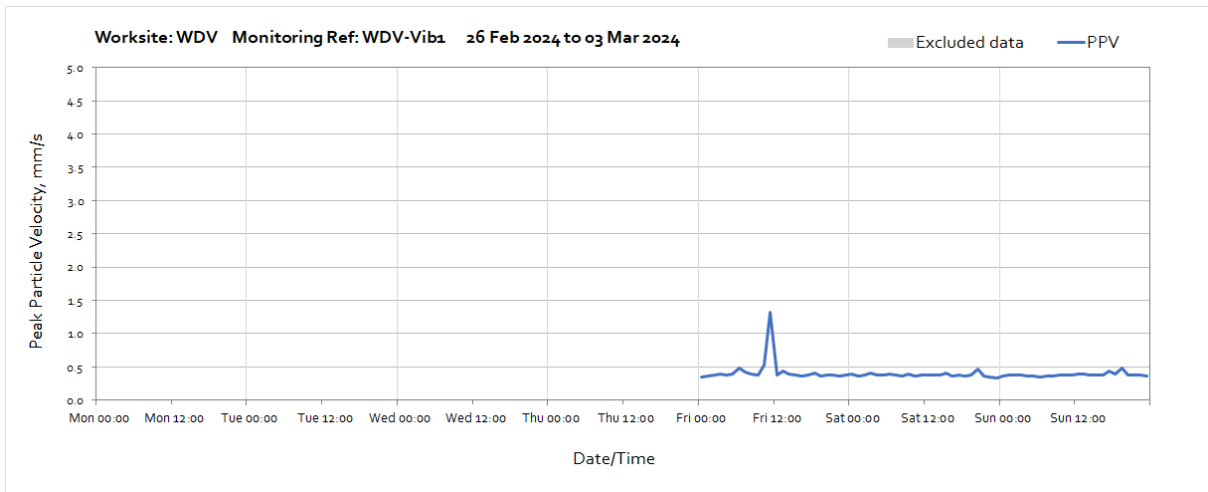


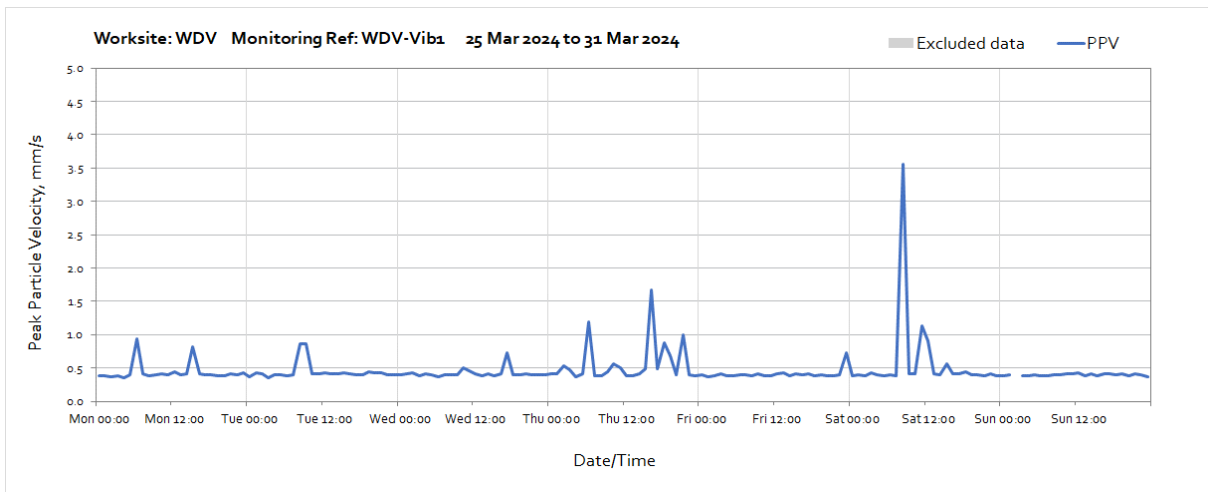
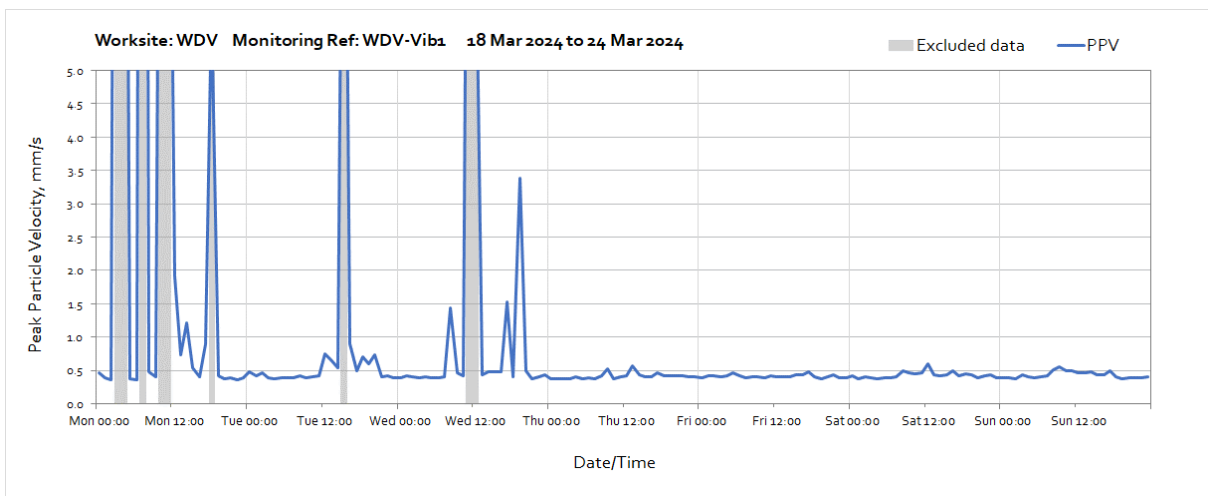
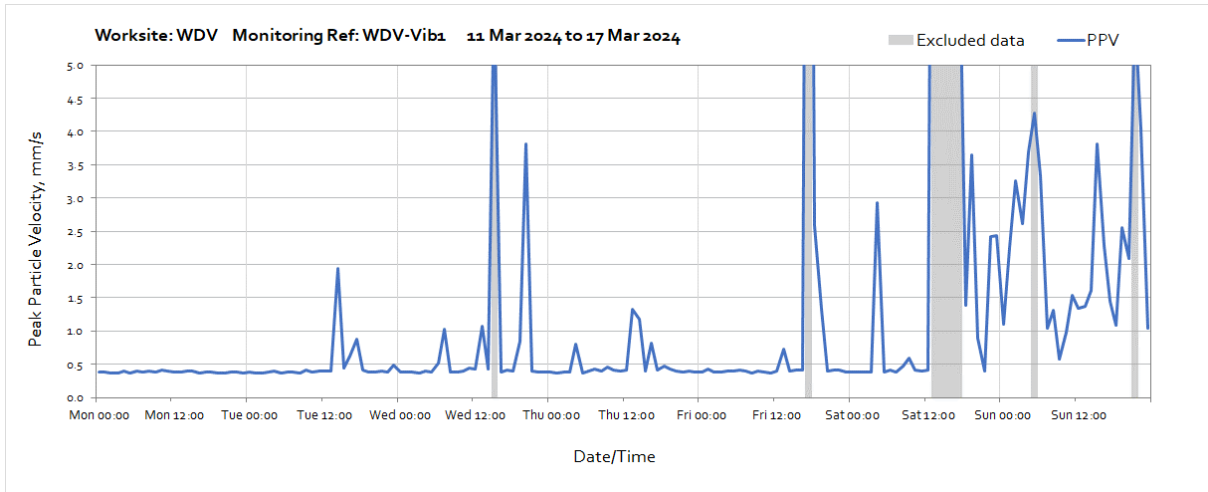




Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.

### Worksite: WDV - Monitoring Ref: WDV-Vib1





Note: Missing data between 02:00 and 03:00 on Sunday 31<sup>st</sup> March is due to a monitor time adjustment at the start of British Summer Time.