

Construction Noise and Vibration Monthly Report – July 2024

Buckinghamshire

Non-Technical Summary	1
Abbreviations and Descriptions	6
1 Introduction	7
1.2 Measurement Locations	16
2 Summary of Results	19
2.1 Summary of Measured Noise Levels	19
2.2 Exceedances of the LOAEL and SOAEL	25
2.3 Exceedances of Trigger Level	30
2.4 Complaints	30
Appendix A Site Locations	31
Appendix B Monitoring Locations	48
Appendix C Data	63

List of tables

Table 1: Table of Abbreviations	6
Table 2: Monitoring Locations	16
Table 3: Summary of Measured dB L _{Aeq} Data over the Monitoring Period	20
Table 4: Summary of Measured PPV Data over the Monitoring Period	25
Table 5: Summary of Exceedances of LOAEL and SOAEL	26
Table 6: Summary of Total Exceedances of SOAEL	29
Table 7: Summary of Exceedances of Trigger Levels	30
Table 8: Summary of Complaints	30

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 July 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 overbridge construction, excavation and replacement, material movements, crushing and cutting, landscape preparation and slab crossing construction were underway.
- Noise monitoring was undertaken in the vicinity of the School End (ref.: SE) and Hermitage Chetwode (ref.: HC) worksites where superstructure works, site access and mass haul road operation, dig and replacement, overbridge works and preparation for highway realignment were underway.
- Noise monitoring was undertaken in the vicinity of the Twyford worksite (ref.: TW) where placement of vegetated wall bags, placement and compaction of material, de-vegetation, excavation and replace, piling, piling platform maintenance, site access and mass haul road operation were underway.
- Noise monitoring was undertaken in the vicinity of the West Street Overbridge worksite (ref.: WSO), where abutment, steel, instrumentation and monitoring works, backfilling, formwork reinforced concrete works and embankment earthworks were underway.
- Noise monitoring was undertaken in the vicinity of the Calvert worksite (ref.: CAL) where earthworks, formwork reinforced concrete, excavation, technical backfill, production of concrete and material movements were underway.
- Noise monitoring was undertaken in the vicinity of the Woodlands worksite (ref.: WDL) where concrete pours and material movements were underway.
- Noise monitoring was undertaken in the vicinity of the Quainton worksite (ref.: QAR) where no works were underway.
- Noise monitoring was undertaken in the vicinity of Oat Close worksite (ref: OC) where overbridge works, cutting excavation, stockpiling, pond excavation, culvert construction and earthworks underway.
- Noise monitoring was undertaken in the vicinity of Waddesdon worksite (ref.: WAD) where road tie-in works, curbing, topsoil stripping and excavation were underway.

- Noise monitoring was undertaken in the vicinity of Meadoway worksite (ref.: MW) where road tie-in works, excavation and backfilling were underway.
- Noise monitoring was undertaken in the vicinity of Blackgrove worksite (ref.: BG) where road tie-in works, topsoil stripping and excavation were underway.
- Noise monitoring was undertaken in the vicinity of Risborough Road worksite (ref.: RR) where road construction, earthworks, topsoil stripping and excavation were underway.
- Noise monitoring was undertaken in the vicinity of Nash Lee Lane worksite (ref.: NLL) where piling, de-vegetation, concrete pours, installation of bypass connections, backfilling and abutment pile construction were underway.
- Noise monitoring was undertaken in the vicinity of Wendover Green Tunnel worksite (ref.: WGT) where utility works, manhole installation, link road installations, backfilling, vegetation maintenance, pre-grouting works, low permeability wall construction, culvert and walkways installation, folly bridge embankment removal, site access road realignment works, site services demarcation works, batching plant maintenance, dome installation, decommissioning of boreholes and backfilling and water deliveries were underway.
- Noise monitoring was undertaken in the vicinity of Grove Farm worksite (ref.: GF) where stockpile and material movements, utility demarcation and site access road construction underway.
- Noise monitoring was undertaken in the vicinity of Small Dean Viaduct Compound worksite (ref.: SDVC) where concrete pours, installation of viaduct fins, welding, construction of plinths and stockpile movements were underway.
- Noise monitoring was undertaken in the vicinity of Rocky Lane Embankment worksite (ref.: RLE) where earthworks, surface water management and hydroseeding of stockpiles were underway.
- Noise monitoring was undertaken in the vicinity of Wendover Dean Viaduct worksite (ref.: WDV) where abutment works, precast plank installation, grouting, steel fixing, welding and assembly of steel work and pre-launch activities were underway.
- Noise monitoring was undertaken in the vicinity of Leather Lane worksite (ref.: LL) where stockpile movements were underway.
- Noise monitoring was undertaken in the vicinity of North Portal worksite (ref.: NP) where plant operations, platform construction, piling platform reinstatement, porous portal structure works, tunnel bore machine dismantling, compound works, building construction and batching plant installation and operation were underway.

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

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

- Godington where site access road construction, topsoil stripping and vegetation maintenance was underway.
- Grovill Embankment (Westbury) where excavation and replace was underway.
- School End North where bulk excavation, vegetation clearance, stockpiling, drainage, pond excavation, removal of badger fencing, drainage, pond maintenance, fencing works and vehicle movements.
- Turweston A422 Structure where compound development and temporary bridge and road diversion were underway.
- Charndon Lodge Pumping Station where access road construction and installation of connection pipe were underway.

- Infrastructure Maintenance Depot (IMD) where watercourse diversion and earthworks were underway.
- Shepherds Furze Culvert where backfilling was underway.
- MCJ where piling was underway.
- Bat Mitigation Structure where formwork reinforced concrete works and technical backfill were underway.
- SLC13 where formwork reinforced concrete works were underway.
- Greatmoor Culvert where technical backfill was underway.
- GUN28 overbridge where deck and diaphragm works were underway.
- QUA36 overbridge where pile cap works were underway.
- QUA28 overbridge where piling was underway.
- Station Road overbridge where earthworks were underway.
- Hills Farm where stockpiling was underway.
- Doddershall Culvert where instrumentation and monitoring was underway.
- Addison Road where earthworks, drainage, parapet installation, concreting and vehicle restraint barrier installation were underway.
- Aylesbury Golf Course where cutting and culvert works, and utility diversion were underway.
- Thame Valley Viaduct Causeway where piling, drainage works, installation of reinforced concrete, pile cropping, and installation of formwork and beams were underway.
- Fleet Marston where earthworks, culvert and overbridge works were underway.
- Along A41 where concrete batching plant operation, earthworks, vehicle restraint system installation, highway construction, kerbing, pavement construction, signage installation and drainage works were underway.
- Bowood Lane where steel fixing, shuttering, waterproofing, earthworks, concrete pours, earthworks and stockpile hydroseeding were underway.
- Nash Lee Road Diversion where earthworks were underway.

The HS2 threshold levels for significant noise impacts, which are defined in Information Paper E23 (<https://www.gov.uk/government/publications/hs2-information-papers-environment>), were exceeded eight (8) times during the reporting period.

No exceedances of trigger levels as defined in Section 61 consents occurred during the reporting period.

One (1) complaint was received within the Buckinghamshire area during the monitoring period. A description of the complaints, the results of investigations and any actions taken are detailed in Table 8 of this report.

Abbreviations and Descriptions

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

Table 1: Table of Abbreviations

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

1 Introduction

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

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

1.1.2 Monitoring data and interpretive reports are to be provided to each relevant local authority on a monthly basis and shall include a summary of the construction activities occurring, the data recorded over the monitoring period, any complaints received, any periods in exceedance of agreed trigger levels, the results of any investigations and any actions taken or mitigation measures implemented. This report provides noise data, and interpretation thereof, for monitoring carried out by HS2 within the Buckinghamshire (BS) Local Authority area for the period 1st to 31st July 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:
 - Overbridge construction.
 - Excavation and replacement.
 - Material movements, including hauling and filling.
 - Crushing and cutting.
 - Landscape preparation.
 - Slab crossing construction.
- 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:
 - Superstructure works, including formwork, steel fixing and concrete pours.

- Site access road operation, including material movements, deliveries, road sweeper operation and dust suppression movements.
- Mass haul road operation, including vehicle movements and haulage of materials.
- Dig and replacement.
- Overbridge works, including steel fixing, formwork and concrete pours.
- Preparation for highway realignment.
- Twyford worksite, ref.: TW (see Plan 2 in Appendix A), where works activities included:
 - Placement of vegetated wall bags.
 - Placement and compaction of material.
 - De-vegetation.
 - Excavation and replace.
 - Piling works.
 - Piling platform maintenance.
 - Site access road operation, including material movements, deliveries, road sweeper operation and dust suppression movements.
 - Mass haul road operation, including vehicle movements and haulage of materials.
- West Street Overbridge worksite, ref.: WSO (see Plan 2 in Appendix A), where works activities included:
 - Abutment works.
 - Steel works.
 - Instrumentation and monitoring works.
 - Backfilling.
 - Formwork reinforced concrete works.
 - Embankment earthworks.
- Calvert worksite, ref.: CAL (see Plan 3 in Appendix A) where works activities included:
 - Earthworks, including pile breakdown, milling, excavation and filling.

- Formwork reinforced concrete works.
- Excavation.
- Technical backfill.
- Production of concrete.
- Material movements.
- Woodlands worksite, ref.: WDL (see Plan 4 in Appendix A) where works activities included:
 - Concrete pours.
 - Material movements.
- Quainton worksite, ref.: QAR (see Plan 4 in Appendix A) where no works activities were underway.
- Oat Close worksite, ref.: OC (see Plan 5 in Appendix A), where works activities included:
 - Overbridge works, including piling, formwork reinforced concrete works and beam installation.
 - Cutting excavation and stockpiling.
 - Pond excavation.
 - Culvert construction and earthworks.
- Waddesdon worksite, ref.: WAD (see Plan in Appendix A), where works activities included:
 - Road tie-in works.
 - Curbing.
 - Topsoil stripping.
 - Excavation.
- Meadoway worksite, ref.: MW (see Plan in Appendix A), where works activities included:
 - Road tie-in works, including cutting, road breaking and removal.
 - Excavation.
 - Backfilling.

- Blackgrove worksite, ref.: BG (see Plan in Appendix A), where works activities included:
 - Road tie-in works.
 - Topsoil stripping.
 - Excavation.
- Risborough Road worksite, ref.: RR (see Plan in Appendix A), where works activities included:
 - Road construction.
 - Topsoil stripping.
 - Excavation.
 - Earthworks.
- Nash Lee Lane worksite, ref.: NLL (see Plan 6 in Appendix A), where works activities included:
 - Piling.
 - De-vegetation.
 - Concrete pours.
 - Installation of bypass connections.
 - Backfilling.
 - Abutment pile construction, including excavation, steelwork erection, blinding, formwork and heat protection installation.
- Wendover Green Tunnel worksite, ref.: WGT (see Plan 6 in Appendix A), where works activities included:
 - Utility works, including cable pulling, overhead and underground cable removal.
 - Manhole installation.
 - Link road installations.
 - Backfilling.
 - Vegetation maintenance.
 - Pre-grouting works.
 - Low permeability wall construction.

- Culvert installation.
- Walkways installation.
- Folly bridge embankment removal.
- Site access road realignment works.
- Site services demarcation works.
- Batching plant maintenance.
- Dome installation.
- Decommissioning of boreholes and backfilling.
- Water deliveries.
- Grove Farm worksite, ref.: GF (see Plan 7 in Appendix A), where works activities included:
 - Stockpile and material movements.
 - Utility demarcation.
 - Site access road construction.
- Small Dean Viaduct Compound worksite, ref.: SDVC (see Plan 7 in Appendix A), where works activities included:
 - Installation of viaduct fins.
 - Welding.
 - Construction of plinths.
 - Concrete pours.
 - Stockpile movements.
- Rocky Lane Embankment worksite, ref.: RLE (see Plan 7 in Appendix A), where works activities included:
 - Earthworks.
 - Surface water management.
 - Hydroseeding of stockpiles.
- Wendover Dean Viaduct worksite, ref.: WDV (see Plan 7 in Appendix A), where works activities included:
 - Abutment works, including fixing reinforcement and concrete pours.

- Precast plank installation.
- Grouting.
- Steel fixing.
- Welding and assembly of steel work.
- Pre-launch activities.
- Leather Lane worksite, ref.: LL (see Plan 8 in Appendix A), where works activities included:
 - Stockpile movements.
- North Portal worksite, ref.: NP (see Plan 8 in Appendix A), where works activities included:
 - Operation of site plant.
 - Platform construction.
 - Piling platform reinstatement.
 - Porous portal structure works, including reinforced concrete frame and concrete works.
 - Tunnel bore machine dismantling.
 - Compound works.
 - Building construction.
 - Batching plant installation and operation.
- Chesham Road worksite, ref.: CHSM (see Plan 8 in Appendix A), where works activities included:
 - General site activities.
 - Headhouse construction works, including concrete and external works.
 - Internal and external building works, including steel and cladding works.
- Little Missenden Vent Shaft worksite ref.: LM (see Plan 9 in Appendix A), where works activities included:
 - General site activities including operation of plant.
 - Tunnel connection works.
 - Headhouse superstructure concrete works.
 - Building construction internal and external works.

- Amersham Vent Shaft worksite, ref.: AM (see Plan 10 in Appendix A), where works activities included:
 - General site activities including operation of plant.
 - External and internal works.
 - Tunnel connection works.
 - Superstructure concrete works.
 - Pre-casting of boundary wall.
 - Internal building works.
 - Steel and cladding works.
 - Mechanical plant works.
- Chalfont St Giles Vent Shaft worksite, ref.: CSG (see Plan 11 in Appendix A), where works activities included:
 - General site activities including operation of plant.
 - Road maintenance.
 - Tunnel connection works.
 - Internal and external building works.
- Chalfont St Peter Vent Shaft worksite, ref.: CSP (see Plan 12 in Appendix A), where works activities included:
 - Operation of plant.
 - Road maintenance.
 - Tunnel connection works.
 - Steel and cladding works.
 - Internal and external building works.
- Colne Valley Viaduct - Load Test Pile 1 worksite, which is partly located in the London Borough of Hillingdon (LBH), ref.: CVV (see Plan 13 in Appendix A), where works activities included:
 - Jetty and haul road operation, maintenance and removal, including excavation, backfill, landscaping, cutting piles and steel works.
 - Compound operations.
 - Auto transformed feeder station works including site preparation, bulk earthworks filling, drainage works and vegetation clearance.

- Ground investigation works.
- Pier construction, including tower crane mobilisation and demobilisation, formwork, reinforced concrete works and post-tensioning.
- Pumping water management.
- Satellite compound welfare and generator farm operation.
- Abutment works, including earthworks, piling, pile trimming and installation, early formwork reinforced concrete works and drainage.
- Environmental maintenance.
- River Colne crossing including emergency removal of obstruction to reinforced concrete crossing.
- Girder and deck erection and installation, including span segmental erection, internal post-tensioning, steel structure erection and dismantling, stressing and grouting, crane assembly and dismantling.
- Deck finishes including preparation and operation of storage yards, installation of below deck access provision, traffic management on deck surface, installation of parapets, installation of noise barriers, troughs, pipes, steel works and other minor materials to the storage yards and deck, installation of stairs, operation of support plant, construction of kerbs, construction of concrete stitch, filling of voids and top openings, waterproofing, diaphragm walls construction, abutment works, concrete works (within deck), drainage and steel works.
- Landscaping works including removal of cofferdams, earthworks, profiling and cutting, manhole chamber construction, drainage, soil placement and vegetation clearance.
- Footbridge installation.

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

- Godington where site access road construction, topsoil stripping and vegetation maintenance was underway.
- Grovill Embankment (Westbury) where excavation and replace was underway.
- School End North where bulk excavation, vegetation clearance, stockpiling, drainage, pond excavation, removal of badger fencing, drainage, pond maintenance, fencing works and vehicle movements.
- Turweston A422 Structure where compound development and temporary bridge and road diversion were underway.

- Charndon Lodge Pumping Station where access road construction and installation of connection pipe were underway.
- Infrastructure Maintenance Depot (IMD) where watercourse diversion and earthworks were underway.
- Shepherds Furze Culvert where backfilling was underway.
- MCJ where piling was underway.
- Bat Mitigation Structure where formwork reinforced concrete works and technical backfill were underway.
- SLC13 where formwork reinforced concrete works were underway.
- Greatmoor Culvert where technical backfill was underway.
- GUN28 overbridge where deck and diaphragm works were underway.
- QUA36 overbridge where pile cap works were underway.
- QUA28 overbridge where piling was underway.
- Station Road overbridge where earthworks were underway.
- Hills Farm where stockpiling was underway.
- Doddershall Culvert where instrumentation and monitoring was underway.
- Addison Road where earthworks, drainage, parapet installation, concreting and vehicle restraint barrier installation were underway.
- Aylesbury Golf Course where cutting and culvert works, and utility diversion were underway.
- Thame Valley Viaduct Causeway where piling, drainage works, installation of reinforced concrete, pile cropping, and installation of formwork and beams were underway.
- Fleet Marston where earthworks, culvert and overbridge works were underway.
- Along A41 where concrete batching plant operation, earthworks, vehicle restraint system installation, highway construction, kerbing, pavement construction, signage installation and drainage works were underway.
- Bowood Lane where steel fixing, shuttering, waterproofing, earthworks, concrete pours, earthworks and stockpile hydroseeding were underway.
- Nash Lee Road Diversion where earthworks were underway.

1.1.5 The applicable standards, guidance, and monitoring methodology are outlined in the construction noise and vibration monitoring methodology report which can be

found at the following location

<https://www.gov.uk/government/collections/monitoring-the-environmental-effects-of-hs2>. Noise and vibration monitoring reports for previous months can also be found at this location.

1.2 Measurement Locations

- 1.2.1 Thirty-seven (37) noise and five (5) vibration monitoring installations were active in July in the BS area. Table 2 summarises the positions of noise and vibration monitoring installations within the BS area in July 2024.
- 1.2.2 Vibration monitor PF-Vib, within the vicinity of West Street Overbridge worksite, ref.: WSO, was installed on 24th July 2024.
- 1.2.3 Noise monitor MW-NMP1, within the vicinity of Meadoway worksite, ref.: MW, was installed on 11th July 2024.
- 1.2.4 Noise monitor BG-NMP1, within the vicinity of Blackgrove worksite, ref.: BG, was installed on 31st July 2024.
- 1.2.5 Noise monitor WES-NMP1, within the vicinity of Oat Close worksite, ref.: OC, was relocated and renamed to RR-NMP1, within the vicinity of Risborough Road worksite, ref.: RR, on 31st July 2024.
- 1.2.6 Noise monitor WAD-NMP1, within the vicinity of Waddesdon worksite, ref.: WAD, was decommissioned on 31st July 2024.
- 1.2.7 Noise monitor CSP-NMP3, within the vicinity of Chalfont St Peter Vent Shaft worksite, ref.: CSP, was decommissioned on 3rd July 2024.
- 1.2.8 Noise monitor DFS-NMP1, within the vicinity of Colne Valley Viaduct worksite, ref.: CVV, was decommissioned on 18th July 2024.
- 1.2.9 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

Worksite Reference	Measurement Reference	Address
HC	HC-NMP1	Hermitage, Chetwode
TW	TW-NMP1	Twyford, Buckinghamshire
WSO	WSO-NMP1	West Street, Twyford
	PF-Vib1	Twyford, Buckinghamshire
CAL	SHC-NMP1	School Hill Compound, Calvert
	BRA-Vib1	13 Brackley Lane, Calvert Village
	FCC-NMP1	Calvert South
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton
	WDL-Vib1	Station Road, Quainton
QAR	QAR-NMP2	Station Rd, Quainton
OC	MF-NMP1	Moat Farm, Marsh Lane
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury
MW	MW-NMP1	Hartwell, Buckinghamshire
WAD	WAD-NMP1	Waddesdon, Buckinghamshire
BG	BG-NMP1	Waddesdon, Buckinghamshire
RR	RR-NMP1	Stoke Mandeville, Aylesbury
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee
	NLL-NMP2	Nash Lee Lane, Nash Lee
WGT	ER-NMP1	Ellesborough Rd, Wendover
	ER-Vib1	Ellesborough Rd, Wendover
	BL-NMP1	Bacombe Lane, Wendover
	WT-NMP1	A413, Wendover
	WGT-NMP1	Wendover, Aylesbury
GF	GF-Vib1	Grove Farm, Wendover
SDVC	SDVC-NMP1	Rocky Lane, Wendover
RLE	NCAS6-NMP1	Chesham Lane, The Lee, Wendover
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover
WDV	WDV-NMP1	Upper Wendover Dean Farm, A413, Wendover
LL	GD-NMP1	Grimms Ditch, The Lee, South Heath
NP	BFH-NMP1	Bury Farm, Great Missenden
	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath
	BLH-NMP1	Bayleys Hatch, South Heat, Great Missenden
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath
AM	AM-NMP1	Amersham Vent Shaft Worksite, Whielden Lane, Amersham

Worksite Reference	Measurement Reference	Address
LM	LM-NMP1	Little Missenden, A413, Amersham
	PWC-NMP1	Patricia Holmes, Little Missenden Vent Shaft Worksite, Amersham
CSG	CSG-NMP1	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane
CSP	CFC-NMP1	Cricket Field Cottages, Chesham Lane, Chalfont St. Peter
	CSP-NMP2	Chalfont St Peter Vent Shaft Worksite, Chesham Lane, Chalfont St. Peter
	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	49.9 (54.1)	53.3 (59.0)	49.1 (55.9)	43.1 (50.6)	42.8 (55.3)	45.6 (48.2)	53.3 (55.6)	51.1 (55.2)	47.8 (55.9)	41.0 (46.5)	49.4 (58.7)	43.3 (53.2)
SE	SE-NMP1	School End, Chetwode	Free-field	54.4 (59.6)	62.5 (65.1)	49.3 (65.8)	40.1 (49.3)	38.2 (56.1)	45.0 (46.9)	48.8 (52.2)	46.6 (49.9)	43.3 (51.4)	36.0 (40.4)	43.7 (56.2)	36.6 (43.9)
HC	HC-NMP1	Hermitage, Chetwode	Free-field	53.0 (57.4)	59.5 (63.1)	48.7 (56.3)	45.2 (51.5)	44.5 (61.9)	46.4 (49.1)	49.8 (53.5)	48.8 (51.4)	46.5 (52.4)	44.4 (56.4)	46.9 (56.9)	43.5 (47.2)
TW	TW-NMP1	Twyford	Free-field	52.0 (68.4)	55.2 (65.8)	50.0 (82.3)	47.9 (66.3)	47.8 (70.6)	45.6 (47.4)	51.4 (51.6)	49.5 (51.6)	47.4 (54.5)	42.4 (43.9)	48.6 (54.8)	46.1 (58.7)
WSO	WSO-NMP1	West Street, Twyford	Free-field	48.2 (56.5)	52.9 (64.1)	49.5 (64.7)	46.8 (61.9)	43.2 (72.1)	40.5 (43.5)	44.8 (51.8)	44.7 (50.5)	50.0 (62.7)	39.7 (53.2)	48.2 (58.0)	38.4 (47.5)
CAL	SHC-NMP1	School Hill Compound, Calvert	Free-field	52.3 (56.0)	59.1 (62.6)	46.3 (54.4)	43.6 (50.7)	43.7 (59.8)	48.5 (51.1)	55.8 (62.9)	50.1 (54.1)	44.7 (52.5)	38.7 (46.1)	43.8 (54.4)	40.3 (51.2)
	FCC-NMP1	Calvert South	Free-field	49.1 (56.6)	51.3 (54.7)	46.1 (53.8)	44.4 (57.0)	42.1 (54.4)	43.3 (47.6)	47.3 (49.6)	48.2 (51.8)	50.5 (72.7)	40.4 (48.4)	47.1 (54.4)	42.3 (50.9)
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton	Free-field	63.2 (71.4)	68.4 (72.7)	48.3 (57.0)	43.4 (59.3)	43.7 (57.2)	54.8 (57.3)	56.5 (58.3)	56.1 (63.3)	51.2 (59.2)	38.7 (48.0)	52.2 (68.1)	43.2 (53.1)

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average LAeq,T (Highest Day LAeq,T)					Saturday Average LAeq,T (Highest Day LAeq,T)					Sunday / Public Holiday Average LAeq,T (Highest Day LAeq,T)	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
QAR	QAR-NMP2	Station Rd, Quainton	Free-field	52.7 (55.0)	52.4 (59.0)	50.5 (54.2)	47.6 (60.0)	45.2 (53.9)	50.2 (53.7)	52.1 (54.8)	51.5 (54.3)	51.4 (62.1)	42.6 (47.2)	52.0 (64.6)	45.1 (52.5)
OC	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury	Free-field	45.2 (61.4)	48.7 (60.2)	42.7 (48.7)	42.8 (53.7)	40.4 (56.5)	41.0 (42.4)	45.9 (48.8)	43.4 (48.2)	43.8 (53.2)	37.9 (43.6)	44.8 (55.1)	40.4 (46.7)
	MF-NMP1	Moat Farm, Marsh Lane	Free-field	47.5 (53.9)	54.5 (71.3)	43.5 (49.2)	40.8 (47.1)	38.8 (47.5)	42.4 (45.3)	55.8 (62.7)	50.6 (53.9)	50.2 (59.0)	38.1 (46.0)	43.4 (54.5)	38.6 (44.5)
WAD	WAD-NMP1	Waddesdon, Buckinghamshire	Free-field	50.0 (55.1)	52.0 (57.6)	48.2 (56.3)	46.4 (59.0)	44.0 (54.8)	46.3 (47.9)	49.8 (51.7)	50.1 (52.1)	48.0 (57.0)	41.9 (46.8)	47.5 (54.4)	45.3 (50.3)
MW	MW-NMP1	Hartwell, Buckinghamshire	Free-field	60.8 (62.0)	59.8 (64.4)	59.4 (61.1)	58.4 (65.5)	56.4 (73.4)	51.9 (59.0)	63.3 (67.8)	64.5 (72.5)	62.1 (75.4)	57.4 (66.7)	59.0 (71.4)	54.0 (59.6)
BG	BG-NMP1	Waddesdon, Buckinghamshire	Free-field	-* -*	-* -*	46.0 (46.0)	45.5 (46.5)	47.3 (49.7)	-* -*	-* -*	-* -*	-* -*	-* -*	-* -*	-* -*
RR	RR-NMP1	Stoke Mandeville, Aylesbury	Free-field	-* -*	-* -*	53.1 (53.1)	51.5 (52.3)	49.4 (50.5)	-* -*	-* -*	-* -*	-* -*	-* -*	-* -*	-* -*
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee	Free-field	52.5 (55.5)	56.8 (63.0)	51.9 (57.5)	49.5 (57.7)	47.5 (57.7)	50.3 (52.4)	53.2 (56.2)	53.0 (55.7)	51.0 (56.2)	46.7 (49.5)	50.0 (53.8)	47.4 (52.7)
	NLL-NMP2	Nash Lee Lane, Nash Lee	Free-field	52.3 (58.1)	58.5 (61.5)	50.6 (55.0)	48.7 (58.7)	45.9 (56.5)	47.9 (48.7)	54.2 (59.3)	54.0 (59.5)	51.3 (57.3)	45.0 (50.4)	49.6 (58.2)	46.4 (52.6)

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
WGT	ER-NMP1	Ellesborough Rd, Wendover	Free-field	54.6 (58.3)	54.8 (63.5)	53.9 (57.6)	51.9 (55.0)	50.4 (58.8)	53.6 (55.9)	56.2 (59.4)	54.6 (56.4)	53.6 (58.7)	49.8 (54.6)	52.6 (56.0)	49.7 (56.2)
	BL-NMP1	Bacombe Lane, Wendover	Free-field	45.8 (48.1)	53.1 (62.7)	47.0 (59.4)	44.9 (52.3)	40.9 (51.3)	44.4 (46.4)	50.7 (52.3)	47.4 (48.8)	46.4 (49.5)	40.4 (45.4)	48.0 (55.3)	40.4 (45.5)
	WT-NMP1	A413, Wendover	Free-field	66.4 (67.5)	65.6 (68.7)	65.5 (66.7)	62.3 (65.3)	59.0 (67.0)	62.9 (63.5)	64.9 (66.4)	64.3 (65.3)	63.6 (65.9)	57.5 (61.5)	63.8 (69.1)	59.5 (68.7)
	WGT-NMP1	Wendover, Aylesbury	Free-field	50.3 (55.7)	51.1 (56.8)	50.9 (56.8)	48.5 (54.1)	45.2 (54.7)	48.8 (50.9)	51.4 (55.7)	52.0 (56.9)	50.5 (55.7)	44.9 (50.6)	49.5 (55.1)	45.1 (52.2)
GF	GF-NMP1	Grove Farm, Wendover	Free-field	52.2 (56.6)	54.5 (65.4)	49.5 (65.1)	46.8 (59.0)	44.7 (52.9)	49.3 (51.3)	51.6 (53.7)	47.9 (51.8)	49.8 (56.4)	44.3 (49.9)	51.8 (74.6)	43.8 (51.2)
SDVC	SDVC-NMP1	Rocky Lane, Wendover	Free-field	62.4 (63.4)	62.7 (69.3)	61.4 (67.5)	58.7 (62.5)	55.7 (63.4)	59.9 (61.0)	61.8 (64.5)	61.2 (62.9)	60.7 (63.1)	56.0 (59.3)	60.1 (63.7)	56.3 (62.4)
RLE	NCAS6-NMP1	Chesham Lane, The Lee, Wendover	Free-field	52.4 (58.7)	56.5 (75.2)	48.0 (60.2)	45.2 (49.7)	43.0 (50.8)	48.4 (53.8)	51.1 (54.4)	49.5 (51.8)	47.8 (52.4)	42.6 (48.1)	47.5 (56.7)	42.7 (47.7)
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	Free-field	56.0 (59.0)	57.6 (67.1)	54.8 (62.9)	51.8 (58.0)	48.6 (57.5)	52.5 (54.9)	56.3 (59.0)	55.6 (57.8)	53.5 (56.6)	49.2 (59.9)	54.1 (62.3)	49.8 (56.0)
WDV	WDV-NMP1	Upper Wendover Dean Farm, A413, Wendover	Free-field	51.9 (59.6)	54.5 (66.9)	51.5 (59.7)	48.0 (57.5)	47.4 (59.4)	48.2 (51.4)	52.6 (58.7)	50.9 (52.9)	51.6 (58.0)	46.4 (57.4)	50.5 (58.7)	45.9 (54.5)

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
LL	GD-NMP1	Grimms Ditch, The Lee, South Heath	Free-field	49.9 (58.1)	54.7 (70.9)	49.3 (59.1)	46.8 (58.6)	46.1 (60.7)	47.6 (52.8)	50.9 (57.1)	49.0 (53.7)	48.9 (55.8)	43.3 (55.9)	48.5 (59.4)	42.3 (53.5)
NP	BFH-NMP1	Bury Farm, Great Missenden	Free-field	44.1 (48.3)	48.7 (50.7)	45.9 (53.0)	43.1 (56.1)	40.3 (52.4)	43.1 (44.4)	52.2 (56.8)	50.4 (57.8)	48.6 (62.7)	39.1 (44.4)	47.6 (57.4)	39.0 (47.9)
	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath	Free-field	47.5 (54.6)	50.1 (53.3)	48.2 (58.4)	46.2 (59.8)	42.3 (54.5)	45.8 (51.2)	52.5 (59.5)	47.2 (52.5)	47.9 (53.4)	41.2 (49.7)	48.1 (60.6)	39.6 (51.9)
	BLH-NMP1	Bayleys Hatch, South Heath, Great Missenden	Free-field	45.0 (47.4)	48.5 (53.1)	46.8 (53.1)	44.5 (55.4)	39.6 (47.4)	43.8 (47.6)	50.8 (54.8)	49.2 (55.0)	49.5 (58.2)	38.8 (45.5)	51.4 (59.6)	39.5 (51.8)
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath	Free-field	55.5 (57.0)	55.4 (57.0)	54.7 (58.8)	51.8 (58.5)	46.9 (55.8)	51.6 (53.9)	56.5 (60.0)	54.7 (58.1)	53.3 (57.9)	44.8 (49.7)	54.0 (62.4)	46.1 (52.6)
AM	AM-NMP1	Whielden Lane, Amersham	Free-field	60.4 (61.5)	62.0 (69.6)	59.1 (62.1)	56.8 (61.1)	52.6 (59.5)	56.9 (57.9)	60.2 (61.9)	58.8 (60.5)	57.5 (60.1)	51.2 (55.9)	57.7 (61.4)	52.1 (58.6)
LM	LM-NMP1	Little Missenden, A413, Amersham	Free-field	51.6 (55.8)	52.4 (55.1)	51.7 (55.4)	49.0 (52.3)	44.5 (54.1)	46.4 (48.5)	51.9 (55.4)	52.4 (55.0)	50.4 (56.6)	42.8 (48.9)	50.4 (55.4)	45.1 (51.5)
	PWC-NMP1	Patricia Holmes, LM Worksite, Amersham	Free-field	58.9 (60.3)	58.4 (59.4)	58.8 (60.7)	55.7 (58.7)	51.6 (59.1)	55.2 (56.8)	57.9 (61.0)	58.5 (60.2)	57.0 (60.3)	50.3 (54.4)	56.0 (58.1)	51.4 (57.6)

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average LAeq,T (Highest Day LAeq,T)					Saturday Average LAeq,T (Highest Day LAeq,T)					Sunday / Public Holiday Average LAeq,T (Highest Day LAeq,T)	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
CSG	CSG-NMP1	CSG Worksite, Bottom House Farm Lane	Free-field	47.5 (80.6)	49.3 (64.6)	43.9 (53.1)	42.5 (53.8)	45.5 (68.3)	46.7 (58.6)	49.3 (51.0)	48.5 (50.0)	46.2 (53.4)	46.4 (74.5)	47.9 (56.8)	43.6 (59.4)
CSP	CFC-NMP1	Cricket Field Cottages, Chesham Lane, Chalfont St. Peter	Free-field	58.7 (60.8)	57.0 (58.7)	56.0 (58.6)	53.4 (58.1)	49.4 (59.4)	55.2 (58.8)	57.0 (58.2)	57.5 (59.1)	54.3 (57.1)	49.1 (58.0)	54.3 (59.2)	49.8 (60.2)
	CSP-NMP2	Chalfont St Peter Vent Shaft Worksite	Free-field	48.3 (52.0)	51.2 (64.9)	46.4 (53.3)	45.1 (51.5)	41.5 (51.4)	46.9 (52.6)	51.1 (53.9)	51.9 (54.3)	48.3 (52.3)	41.8 (48.2)	50.1 (55.2)	41.9 (47.5)
	CSP-NMP3	Chalfont St Peter Vent Shaft Worksite	Free-field	52.2 (57.3)	53.0 (56.6)	53.1 (55.9)	49.9 (59.5)	46.9 (60.1)	_ ^{**} _ ^{**}	_ ^{**} _ ^{**}	_ ^{**} _ ^{**}	_ ^{**} _ ^{**}	_ ^{**} _ ^{**}	_ ^{**} _ ^{**}	_ ^{**} (60.5)
CVV	CVV-NMP1	Northern boundary, Load Test Pile 1 Worksite	Free-field	61.0 (62.0)	59.4 (60.3)	58.9 (62.2)	56.0 (59.4)	54.9 (61.8)	56.6 (57.4)	57.9 (58.2)	59.0 (60.8)	57.5 (61.4)	51.0 (55.6)	56.8 (60.5)	54.0 (61.0)
	DFS-NMP1	Denham Film Studio, Uxbridge	Free-field	45.8 (47.8)	48.8 (53.6)	49.3 (60.8)	47.5 (61.8)	42.3 (49.9)	45.9 (47.8)	52.1 (57.0)	49.9 (52.1)	47.7 (54.5)	40.4 (44.4)	49.7 (65.6)	44.9 (52.1)

*Noise monitors BG-NMP1 and RR-NMP1 were installed on 31st July 2024. ** Noise monitor CSP-NMP3 was decommissioned on 3rd July 2024.

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	2.09 (X-axis)
WDL	WDL-Vib1	Station Road, Quainton	2.63 (X-axis)
CAL	BRA-Vib1	13 Brackley Lane, Calvert Village	6.14 (Z-axis)
WSO	PF-Vib1	Twyford, Buckinghamshire	0.98 (Y-axis)
WGT	ER-Vib1	46, Ellesborough Rd, Wendover	3.48 (Y-axis)
GF	GF-Vib1	Grove Farm, Wendover	5.62 (Z-axis)

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

2.2 Exceedances of the LOAEL and SOAEL

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

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

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

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

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

Table 5: Summary of Exceedances of LOEL and SOAEL

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOEL	Number of exceedances of SOAEL
A422 TN	TN-NMP1	Turweston, Brackley	All days	All periods	No exceedance	No exceedance
SE	SE-NMP1	School End, Chetwode	Weekday	0800-1800	12	No exceedance
HC	HC-NMP1	Hermitage, Chetwode	Weekday	0800-1800	1	No exceedance
TW	TW-NMP1	Twyford	Weekday	0800-1800	1	No exceedance
WSO	WSO-NMP1	West Street, Twyford	Weekday	0800-1800	2	No exceedance
CAL	SHC-NMP1	School Hill Compound, Calvert	All days	All periods	Not Applicable**	Not Applicable**
	FCC-NMP1	Calvert South	Weekday Saturday Night	1900-2200 1400-2200 2200-0700	1 1 18	No exceedance 1 No exceedance
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton	Weekday	0800-1800	23	1
QAR	QAR-NMP2	Station Rd, Quainton	All days	All periods	No exceedance	No exceedance
OC	MF-NMP1	Moat Farm, Marsh Lane	Weekday	0800-1800	1	No exceedance

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
	WES-NMP1	Westfield, Stoke Mandeville	All days	All periods	No exceedance	No exceedance
WAD	WAD-NMP1	Waddesdon, Buckinghamshire	All days	All periods	No exceedance	No exceedance
MW	MW-NMP1	Waddesdon, Buckinghamshire	Weekday	0800-1800 1900-2200	1 2	No exceedance 1
			Saturday	0800-1300 1300-1400 1400-2200	1 1 9	No exceedance 1 4
			Sunday Night	0700-2200 2200-0700	9 35	4 29
BG	BG-NMP1	Waddesdon, Buckinghamshire	All days	All periods	No exceedance	No exceedance
RR	RR-NMP1	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	Weekday	0800-1800	1	No exceedance
	WT-NMP1	A413, Wendover	Weekday Saturday	0800-1800 0800-1300	22 2	No exceedance No exceedance
	WGT-NMP1	Wendove, Aylesbury	All days	All periods	No exceedance	No exceedance
GF	GF-NMP1	Grove Farm, Wendover	Weekday	0800-1800	1	No exceedance
SDVC	SDVC-NMP1	Rocky Lane, Wendover	All days	All periods	No exceedance	No exceedance
RLE	NCAS6-NMP1	Chesham Lane, The Lee, Wendover	Weekday	0800-1800	2	1
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	Weekday	0800-1800	1	No exceedance
WDV	WDV-NMP1	A413, Wendover	Weekday	0800-1800	1	No exceedance

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
LL	GD-NMP1	Grimms Ditch, The Lee, South Heath	Weekday	0800-1800	1	No exceedance
NP	BFH-NMP1	Bury Farm, Great Missenden	Weekday	1900-2200	3	No exceedance
			Saturday	1300-1400	1	No exceedance
			Sunday	1400-2200	2	No exceedance
			Night	0700-2200	2	No exceedance
				2200-0700	11	No exceedance
	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath	Weekday	1800-1900	1	No exceedance
			Saturday	1900-2200	6	No exceedance
			Sunday	0700-2200	4	No exceedance
			Night	2200-0700	1	No exceedance
	BLH-NMP1	Bayleys Hatch, South Heath, Great Missinden	Weekday	1900-2200	1	No exceedance
			Saturday	1400-2200	1	No exceedance
			Sunday	0700-2200	9	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	Not applicable**	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

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
CVV	CVV-NMP1*	Denham Water Ski Club, North Orbital Road	All days	All periods	Not applicable**	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.

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

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

2.2.6 Exceedances of the LOAEL were recorded at eighteen (18) monitoring locations during the month of July 2024. LOAEL exceedances were recorded during weekday, Saturday and Sunday daytime, evening and nighttime 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
CAL	FCC-NMP1	Calvert South	1
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton	1
MW	MW-NMP1	Waddesdon, Buckinghamshire	5
RLE	NCAS6-NMP1	Chesham Lane, The Lee, Wendover	1

2.2.8 Eight (8) SOAEL exceedances were recorded due to HS2 construction works during July 2024. The exceedances occurred at FCC-NMP1, WDL-NMP1, MW-NMP1 and NCAS6-NMP1 during weekday daytime and evening, and Saturday daytime and afternoon, Sunday and nighttime working 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
-	-	-	-	-	-

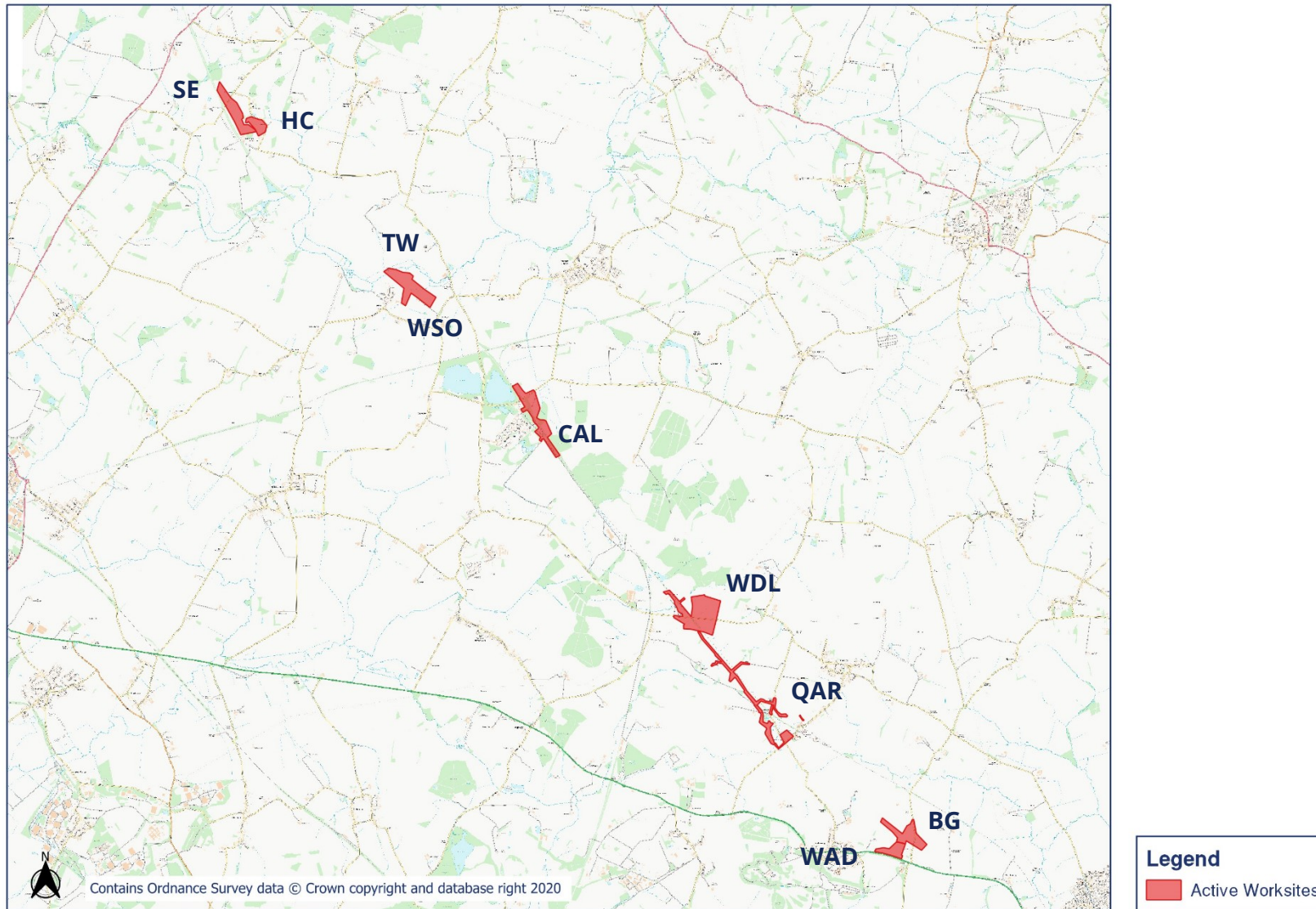
2.4 Complaints

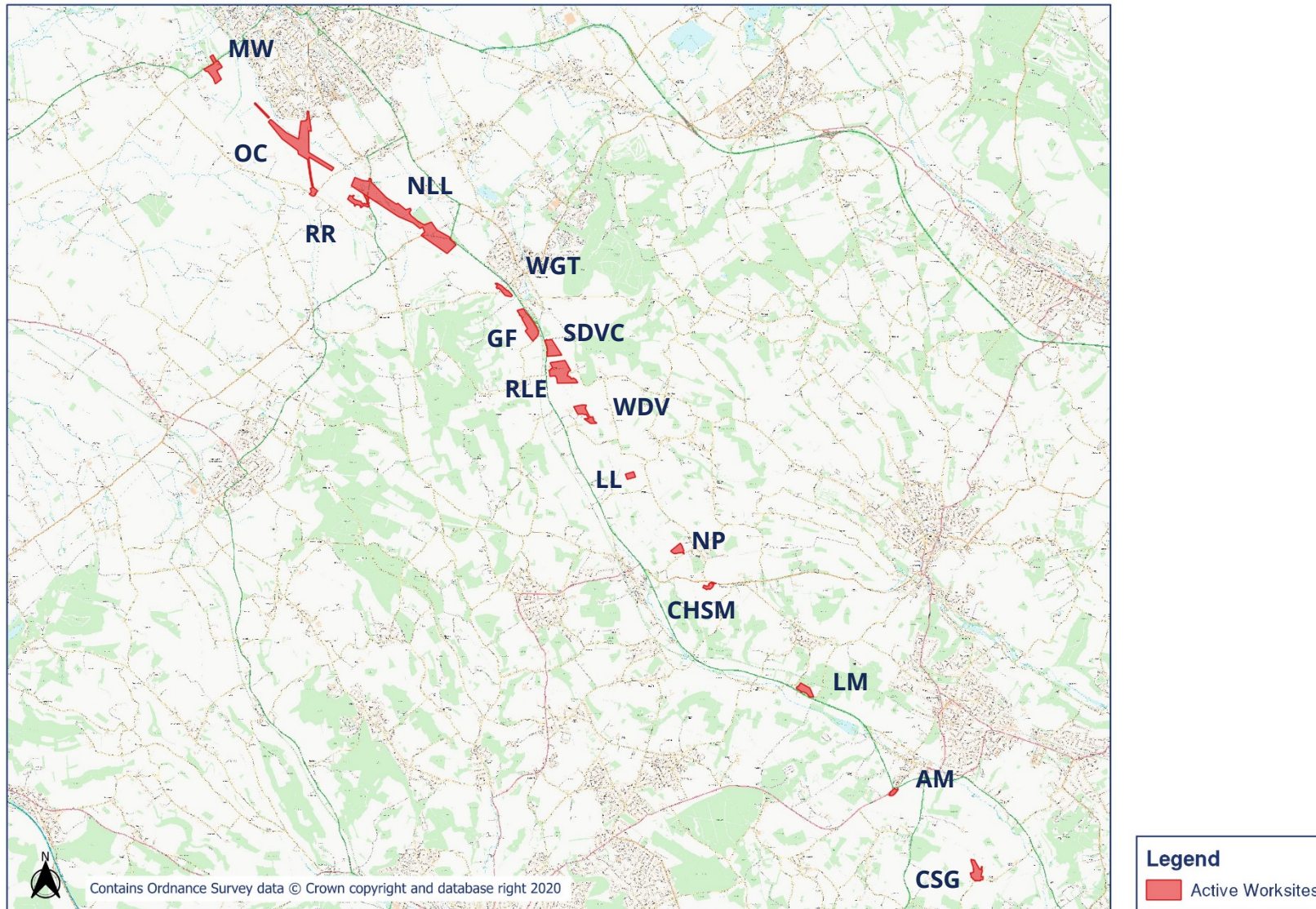
2.4.1 Table 8 provides a summary of complaint information related to noise and vibration received during the reporting period, along with the findings of any investigation.

Table 8: Summary of Complaints

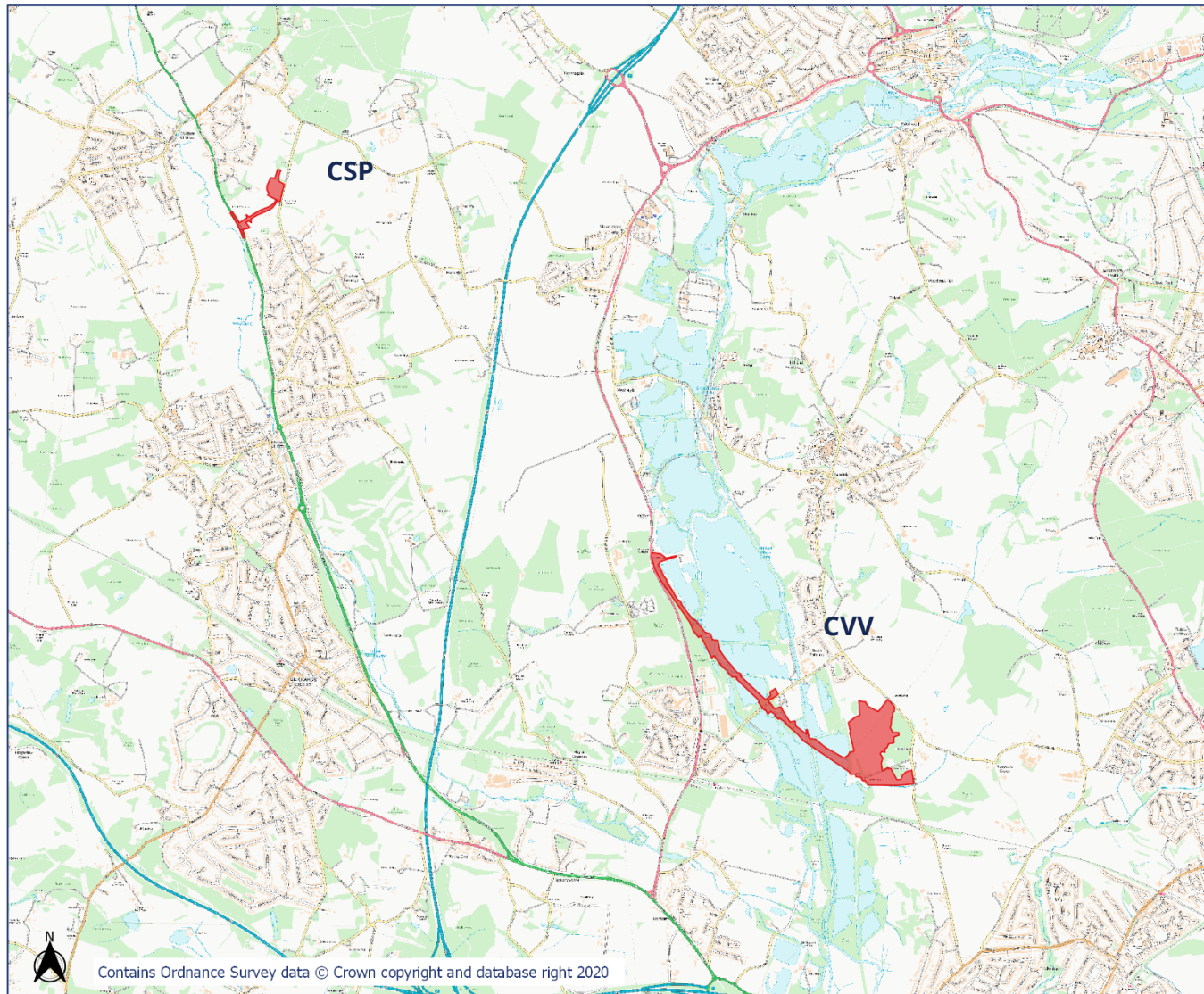
Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
HS2-24-45548-C	SE	Disturbance due to loud high-pitched noise.	Noise due to operation of road sweepers. Equipment was only used in emergency situations, and not used continually.	The results of the investigation were provided to the resident.

Appendix A Site Locations

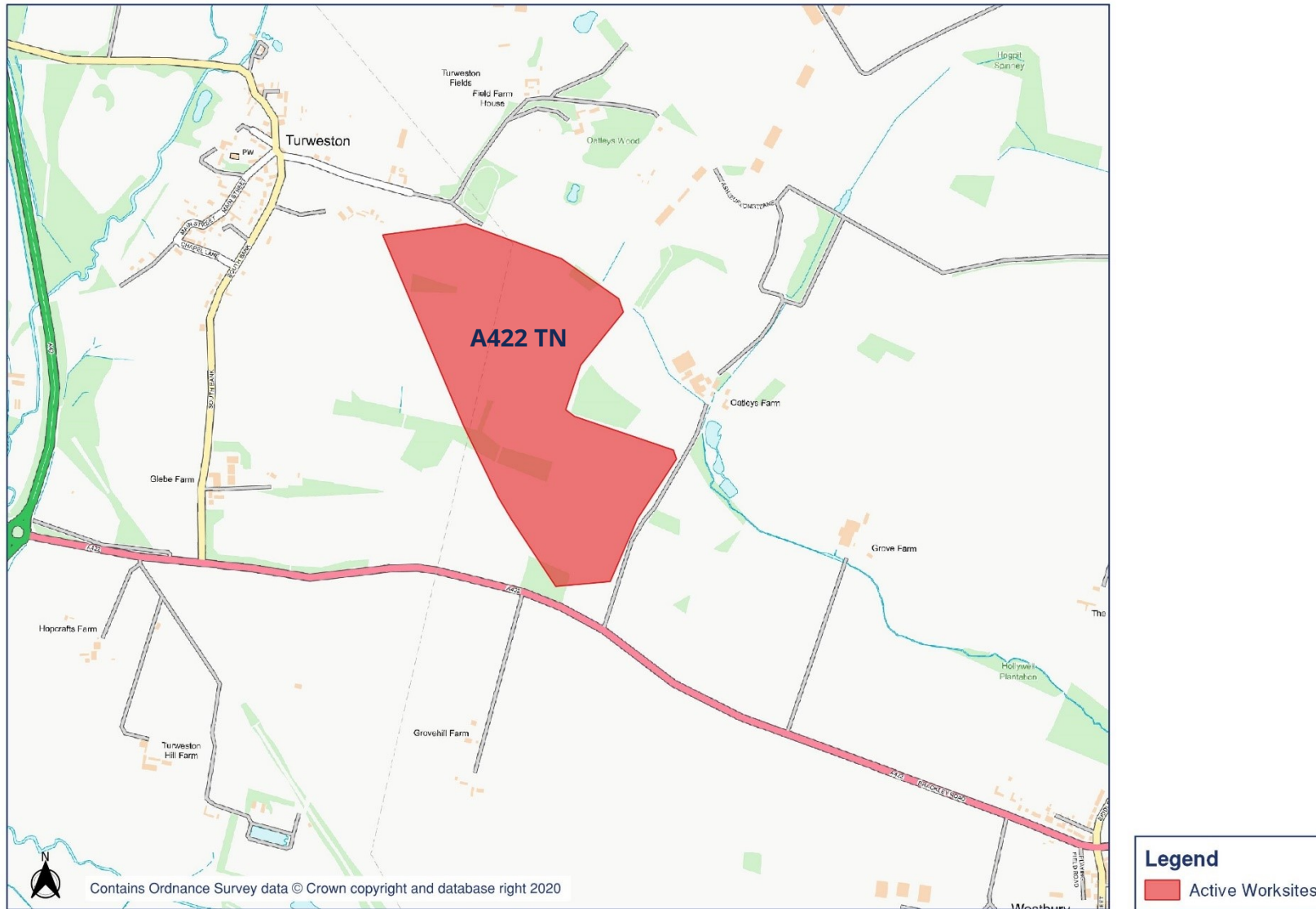


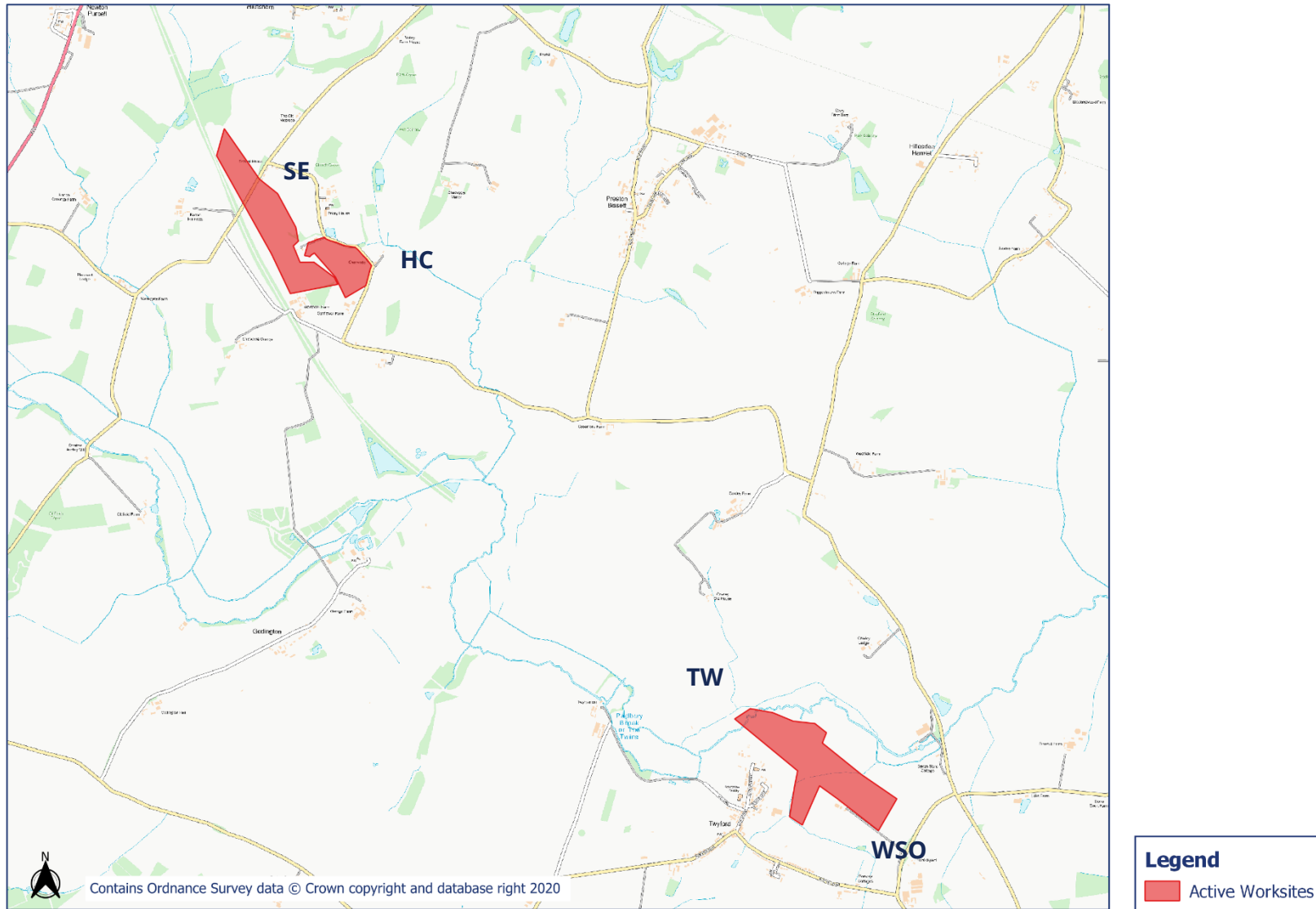


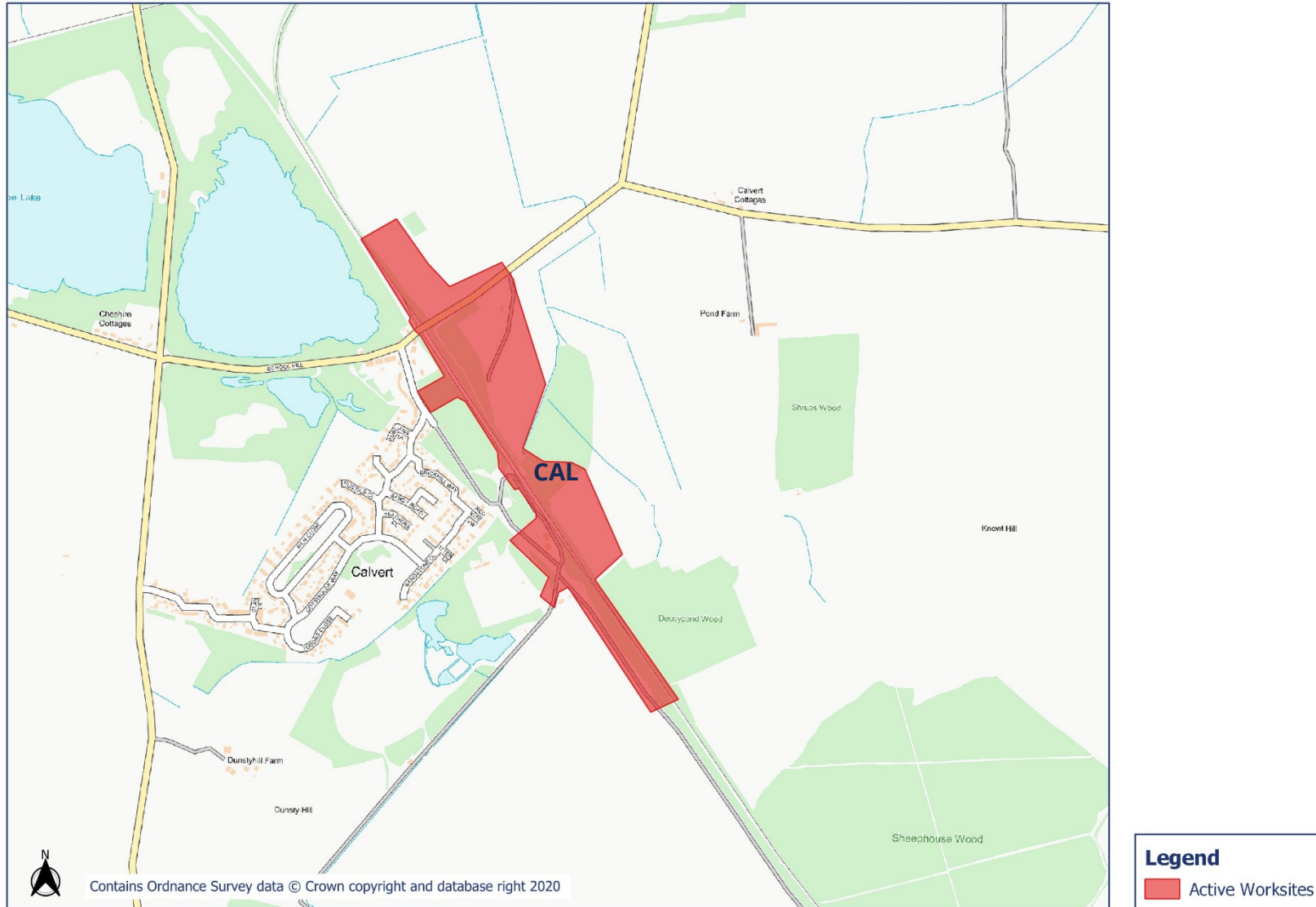
HS2 Worksite Identification Plan - Overview 3

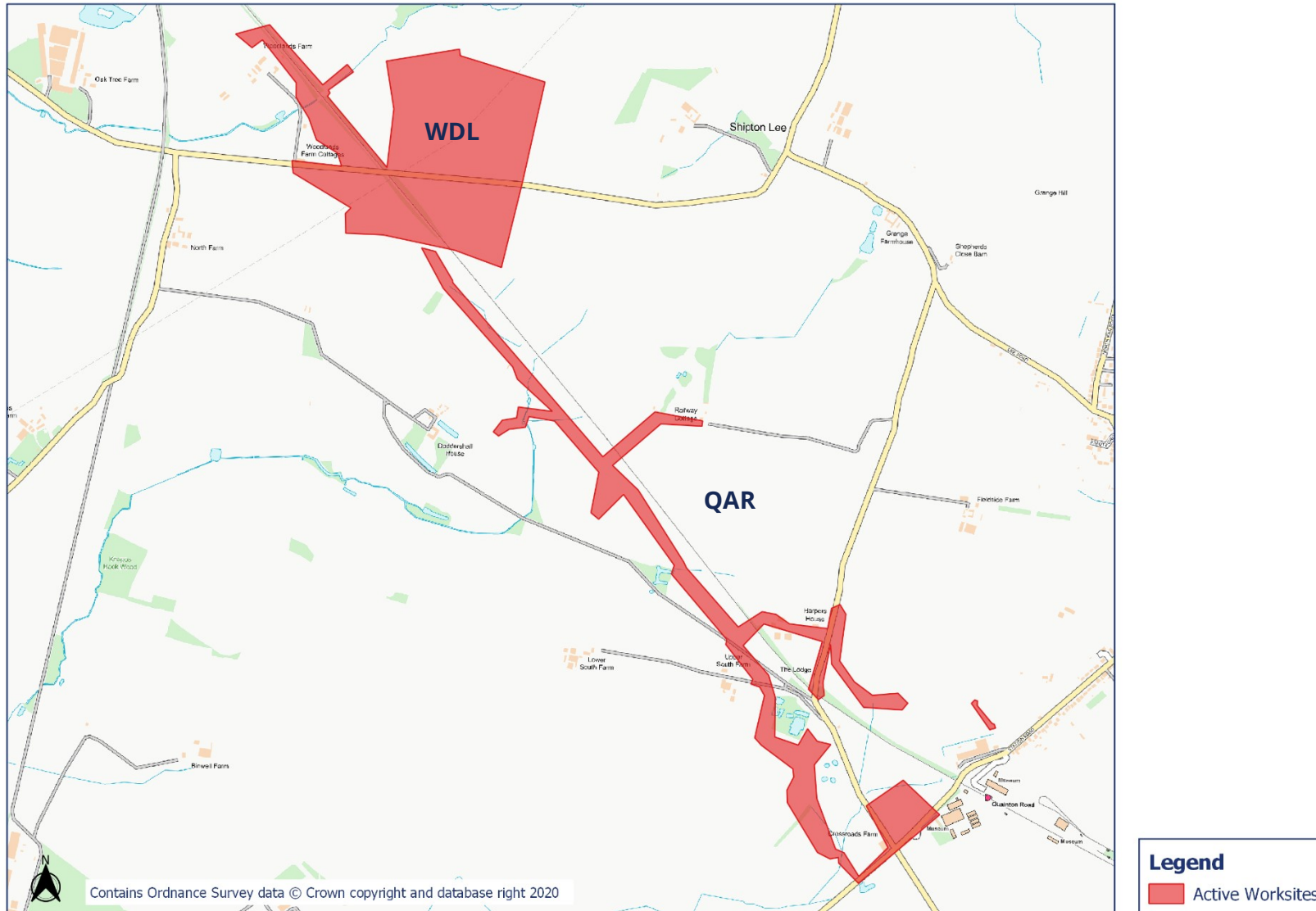


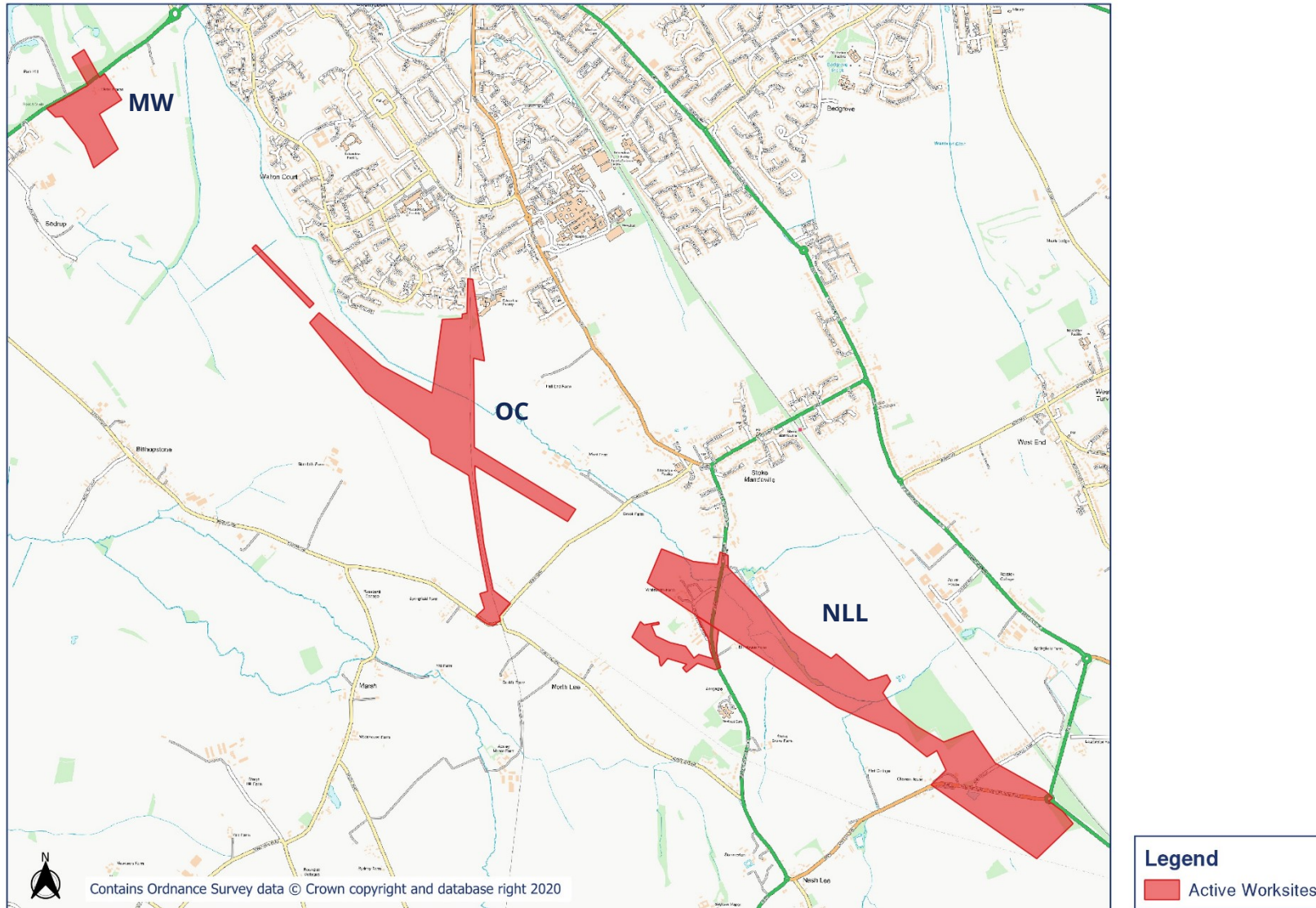
OFFICIAL

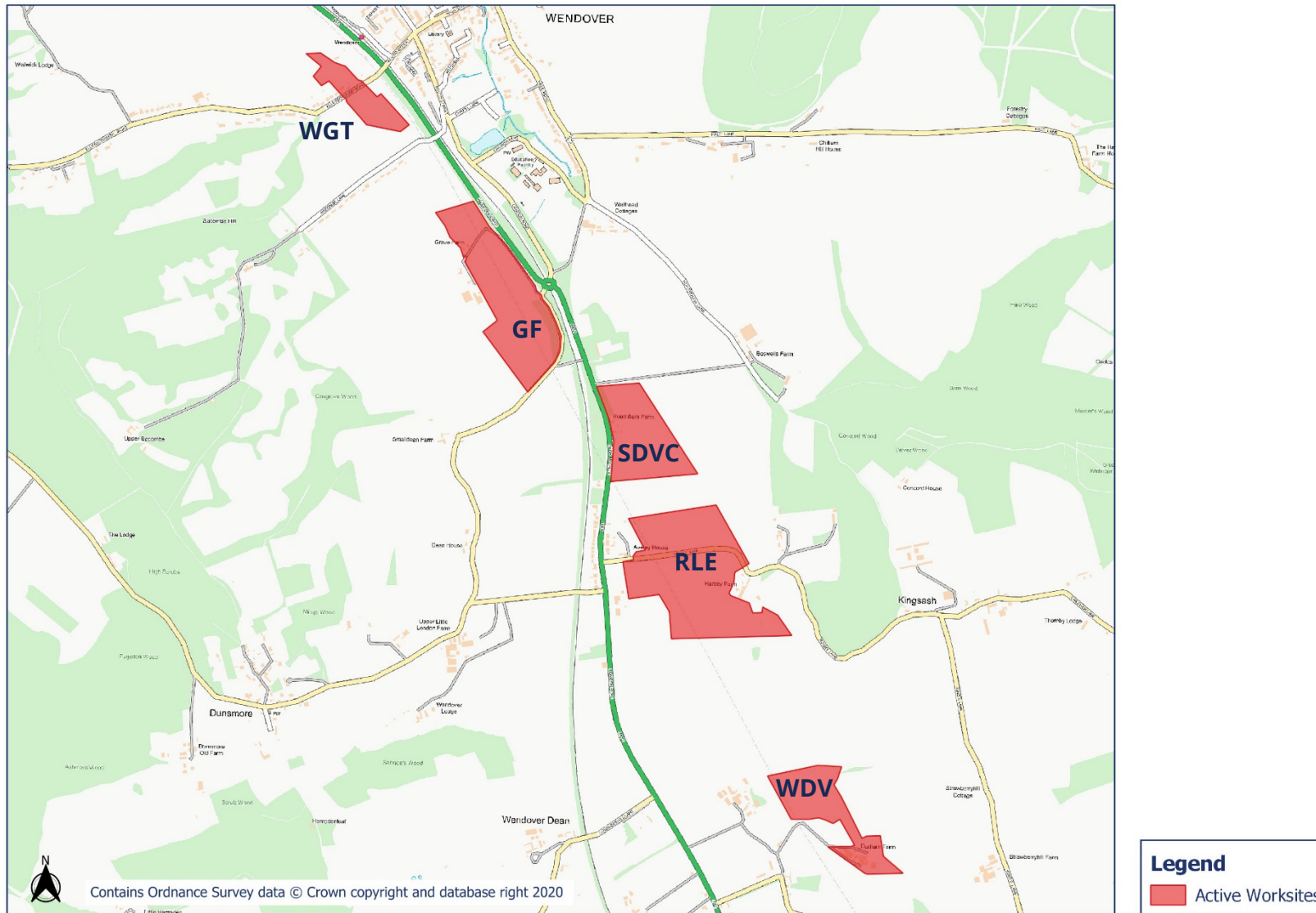


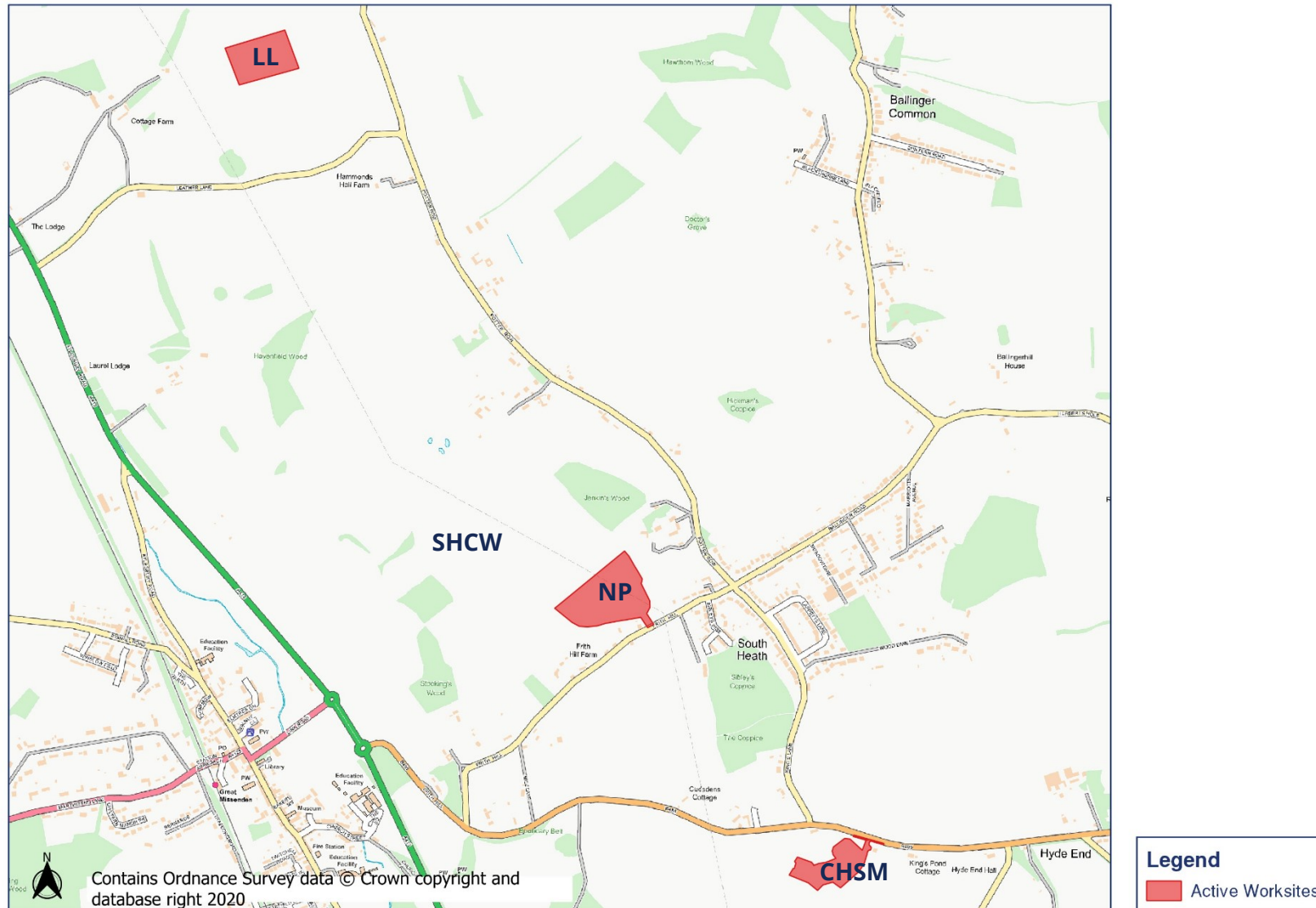




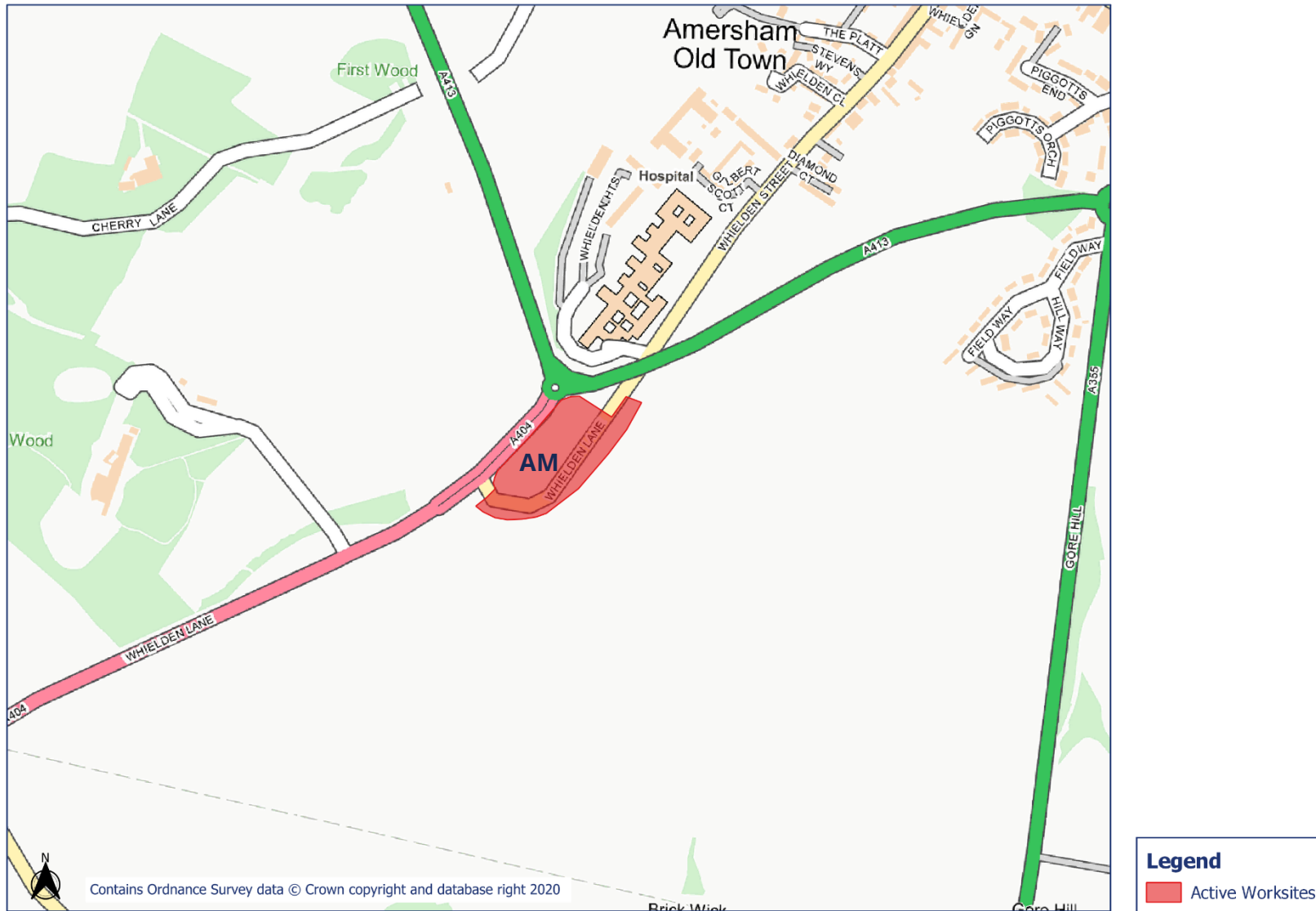


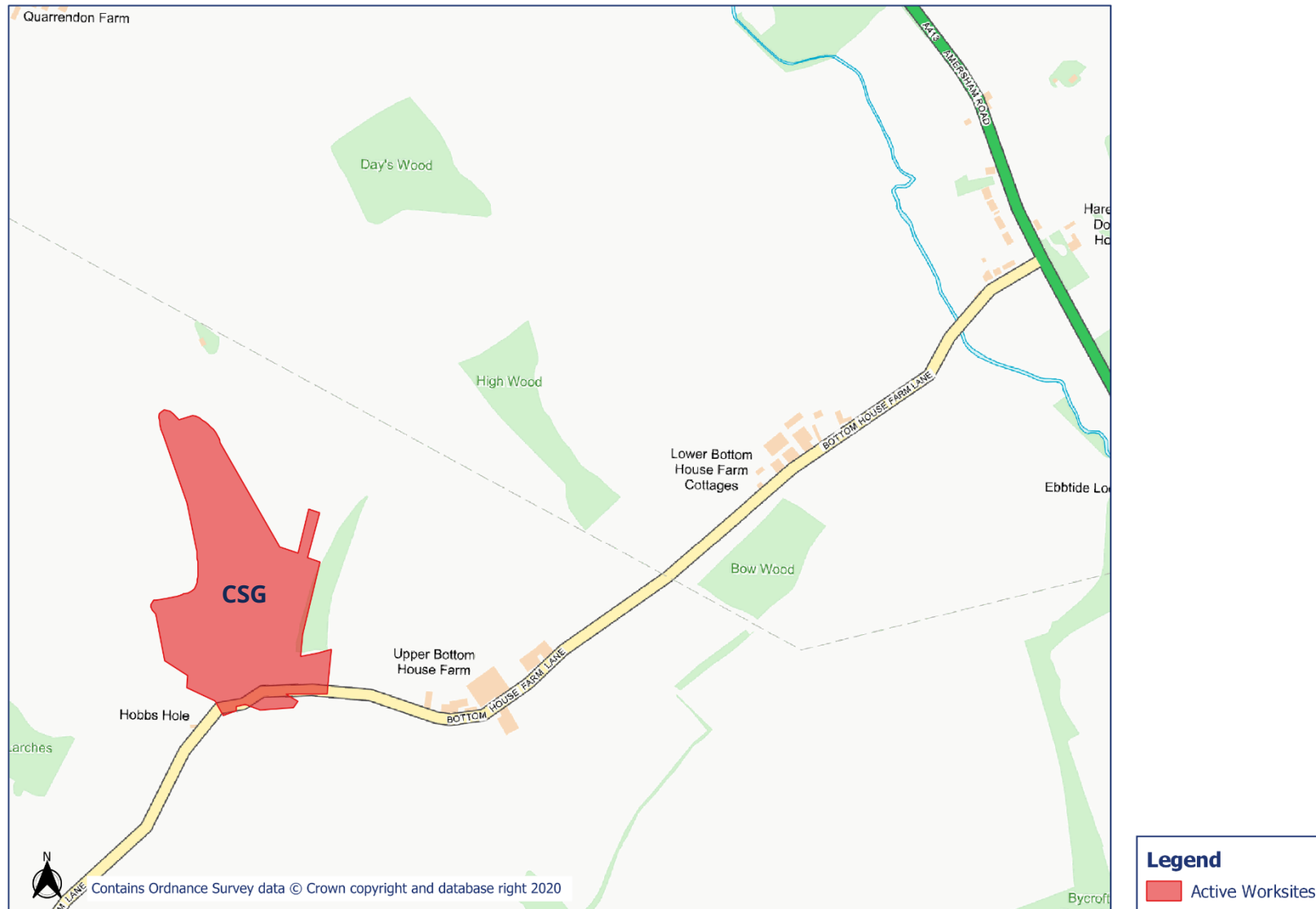


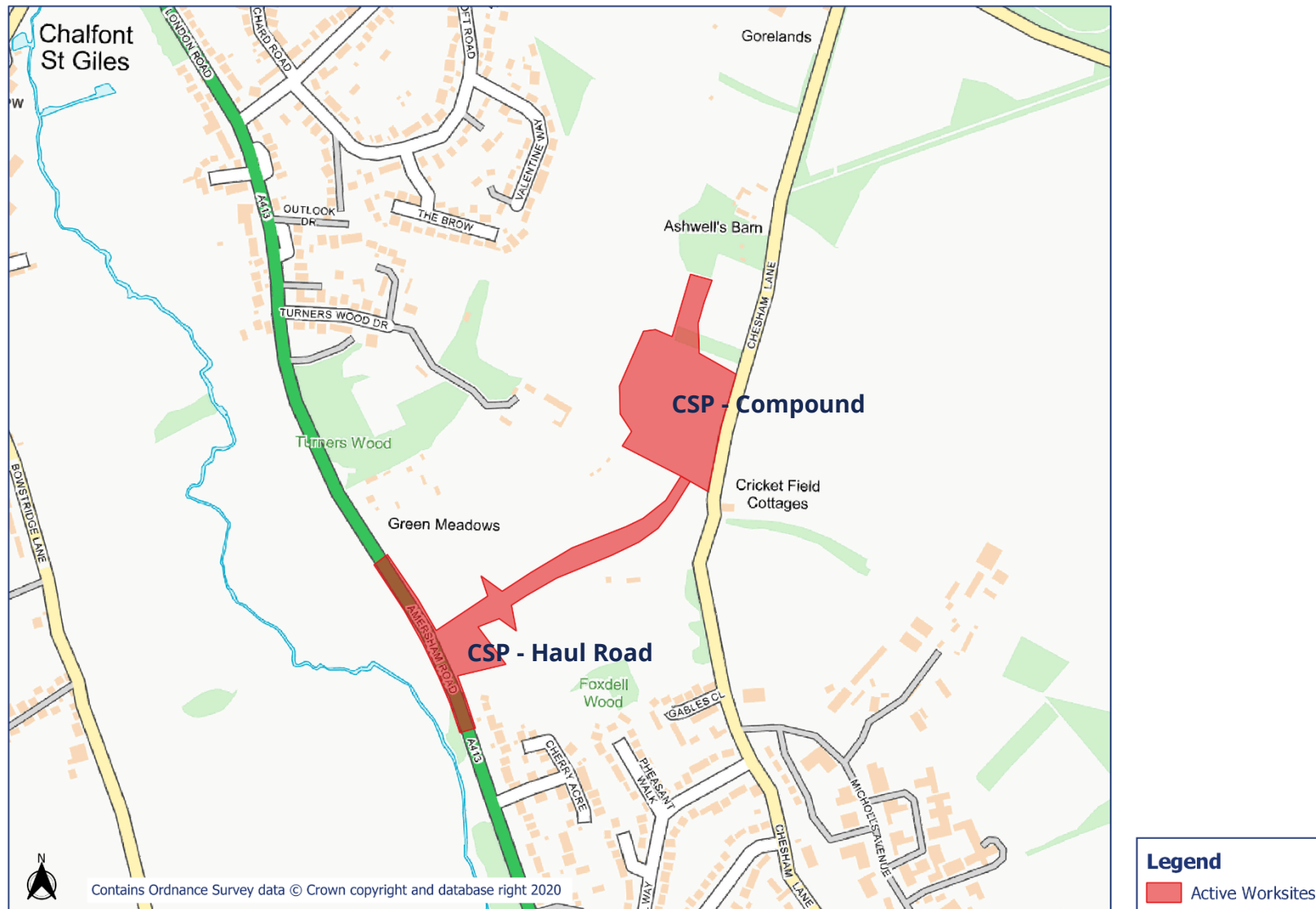


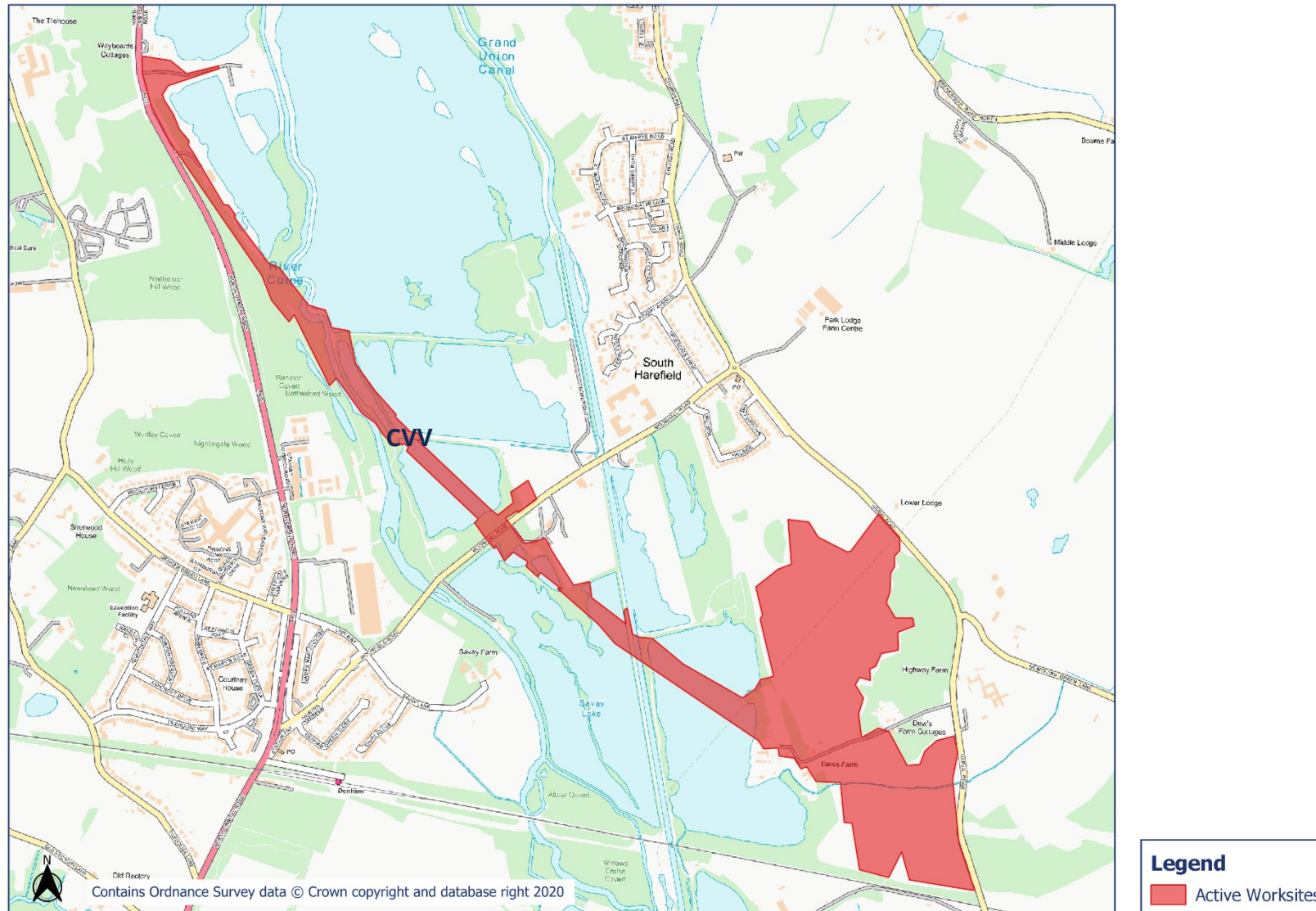




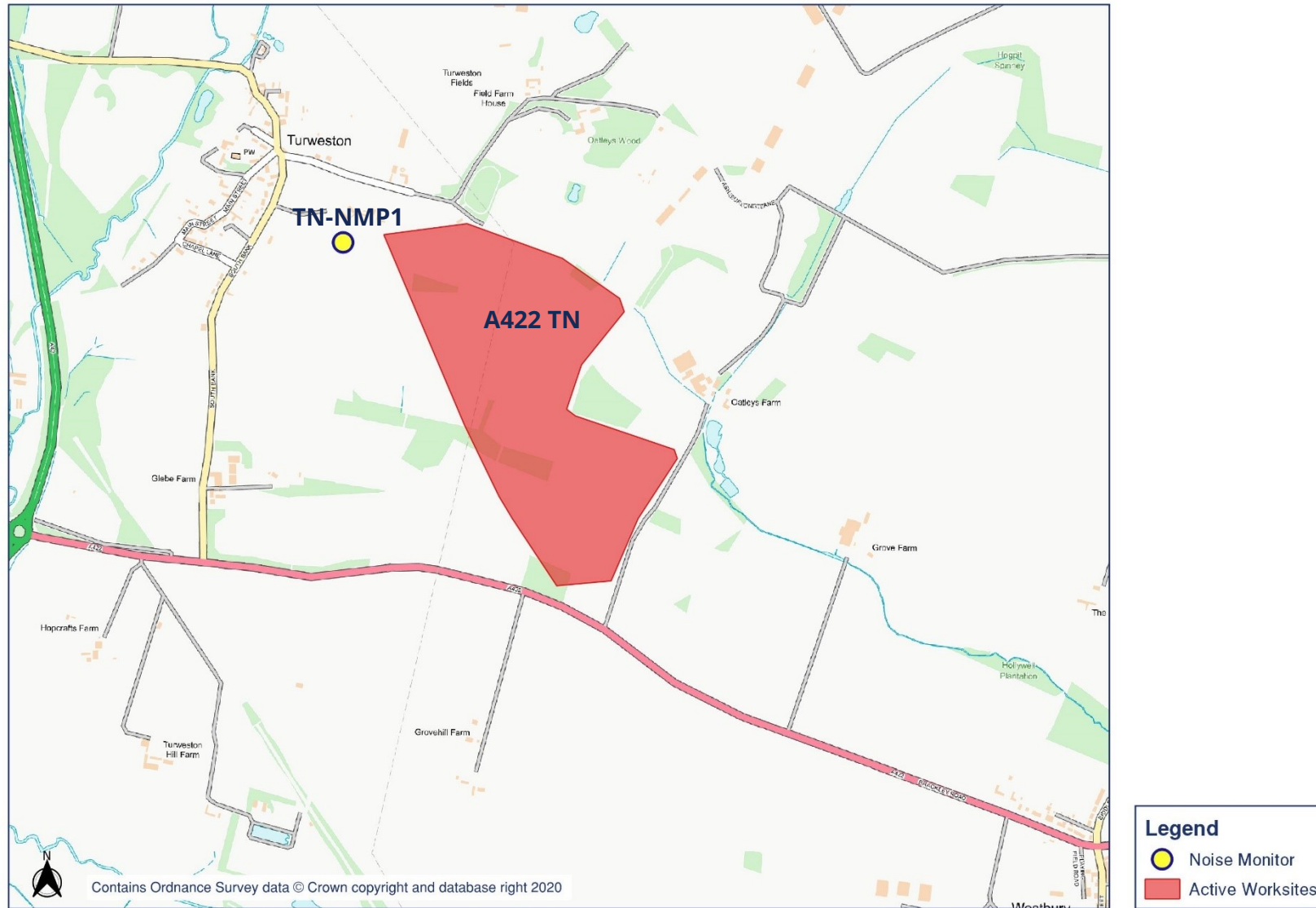


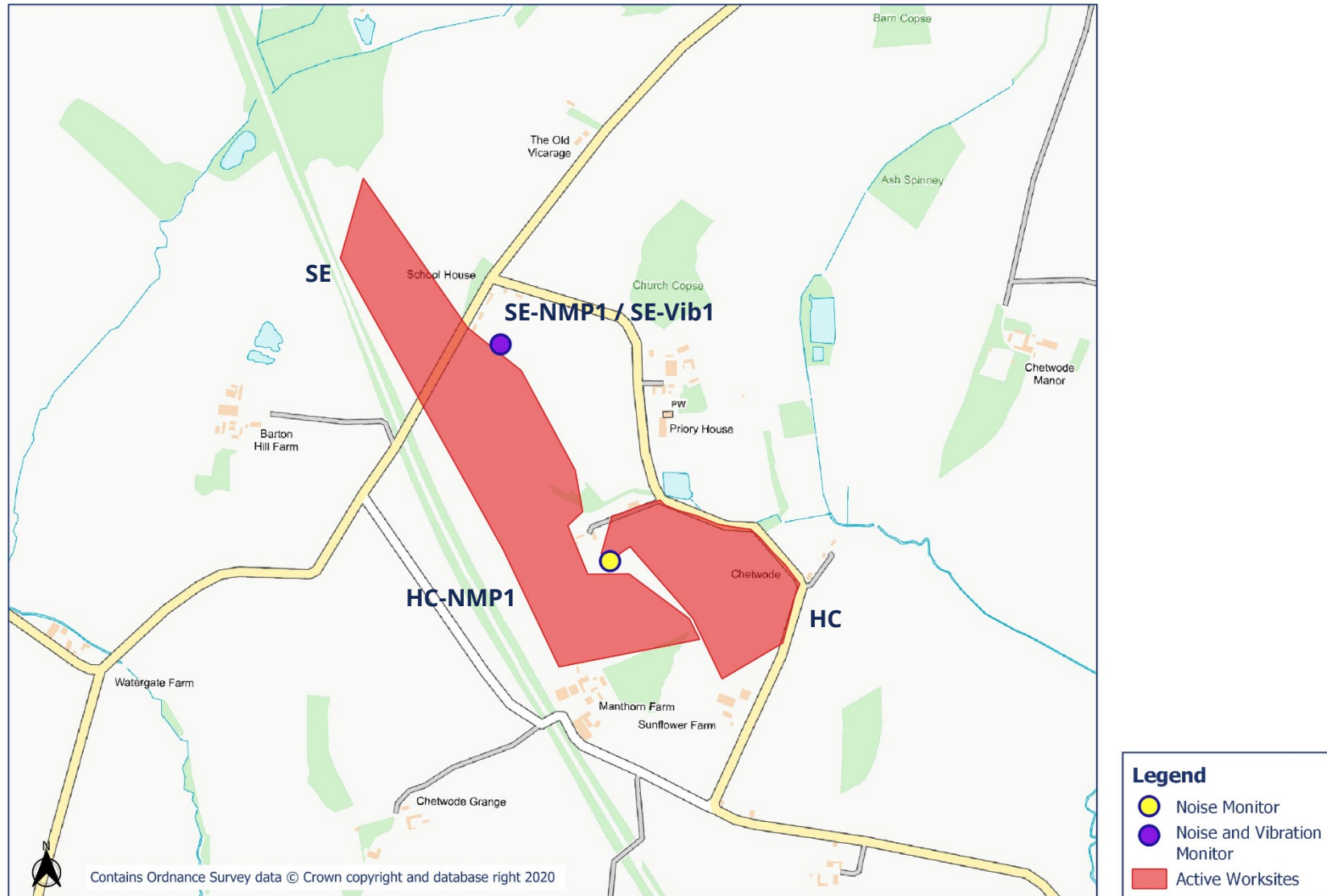


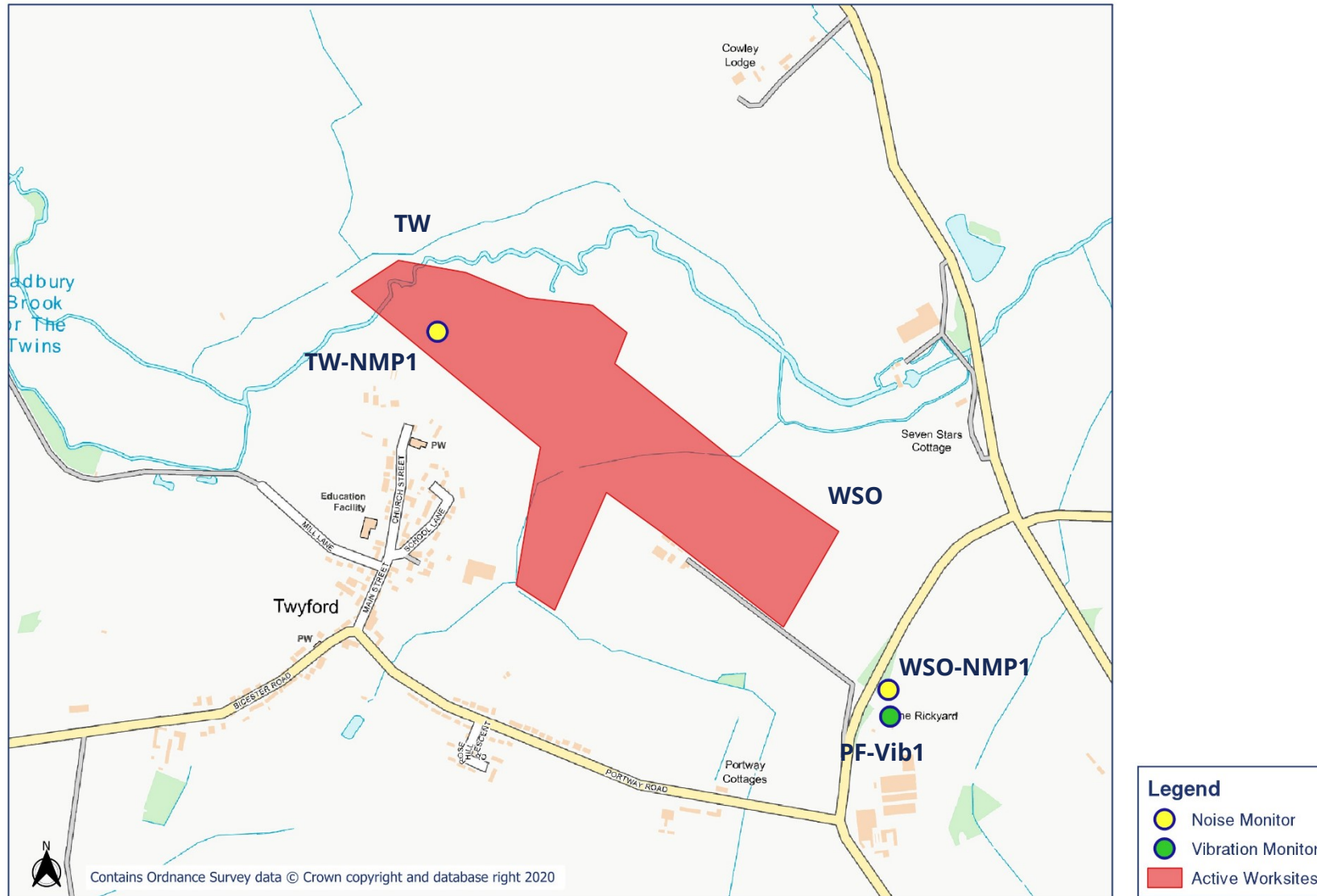


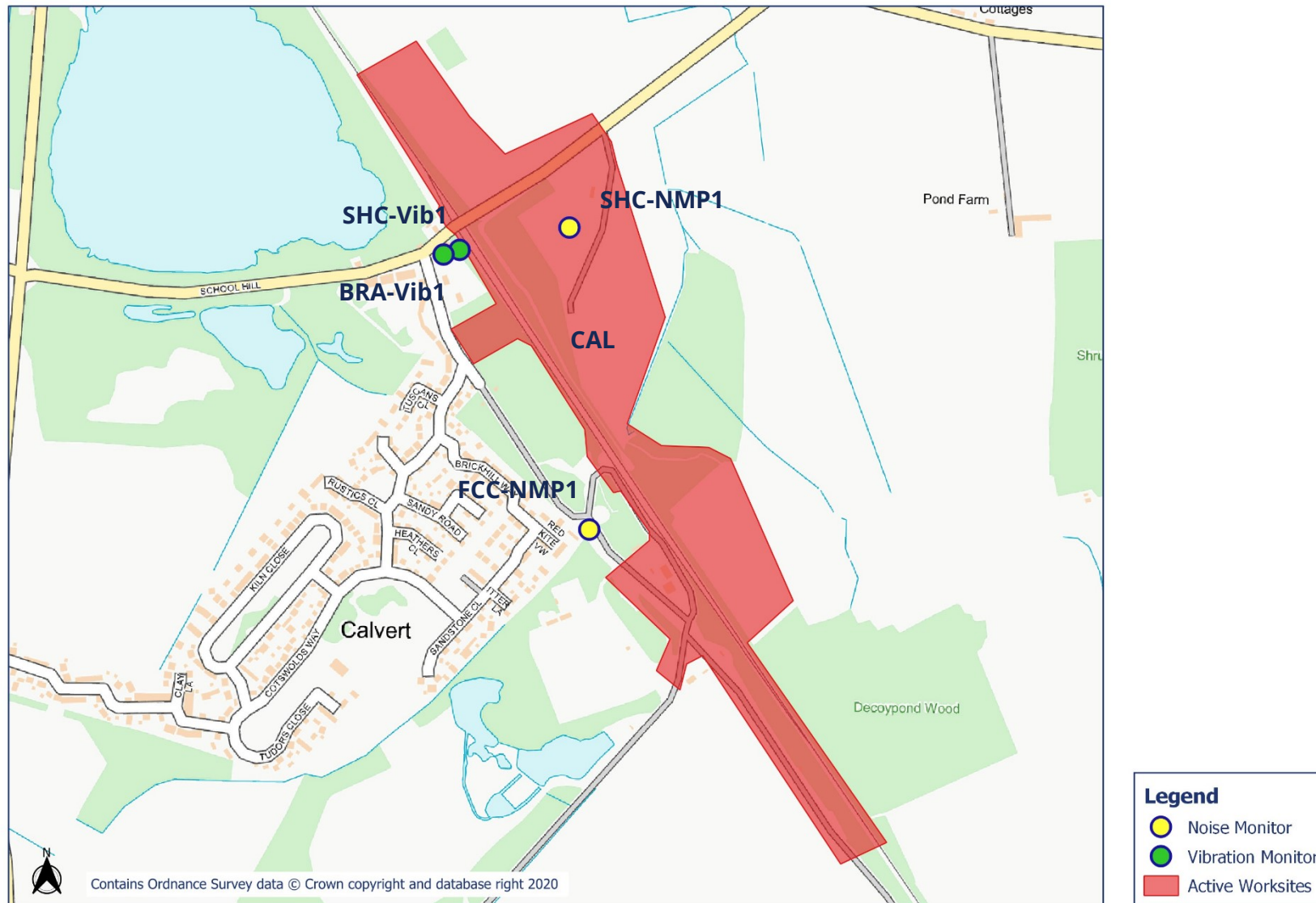


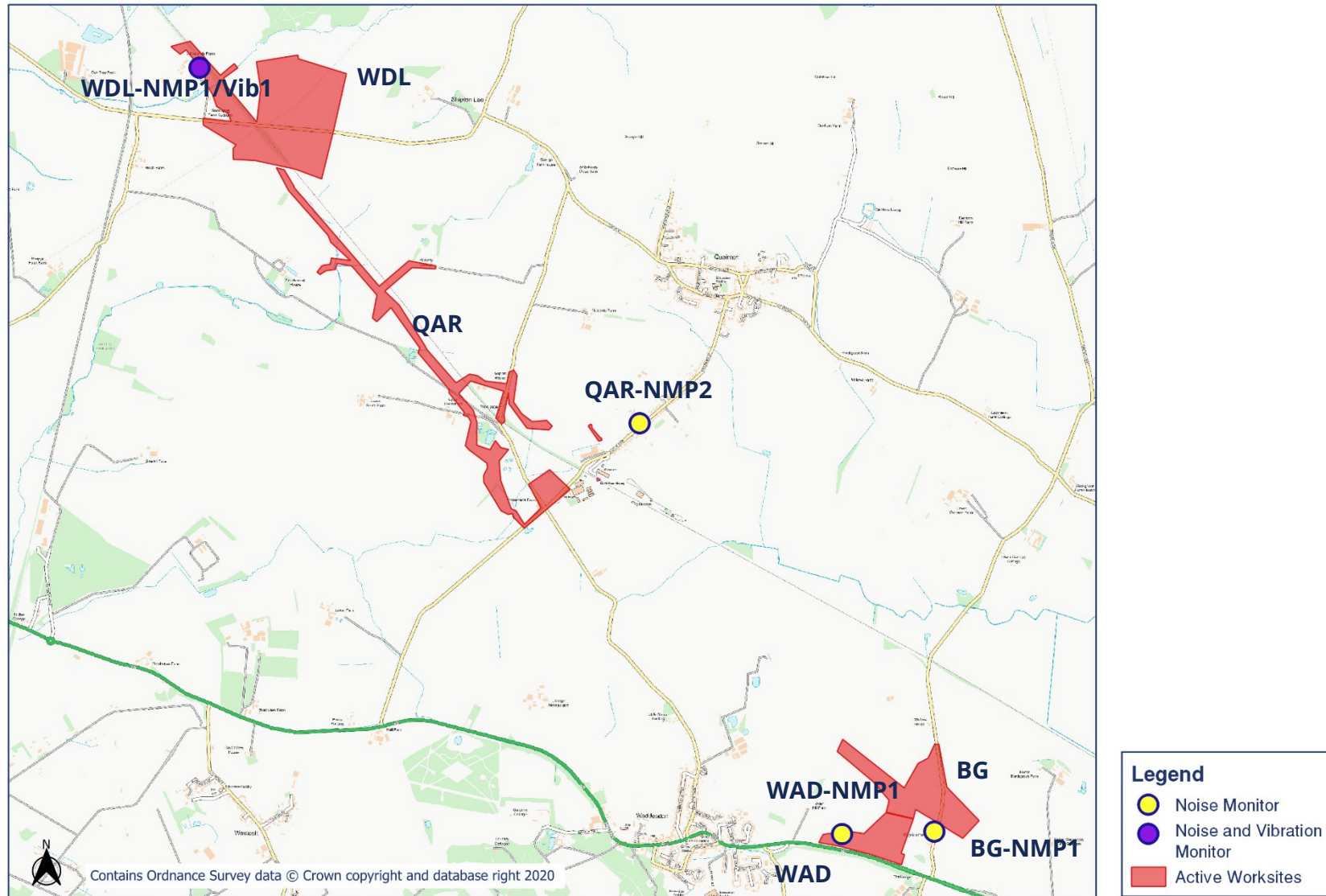
Appendix B Monitoring Locations

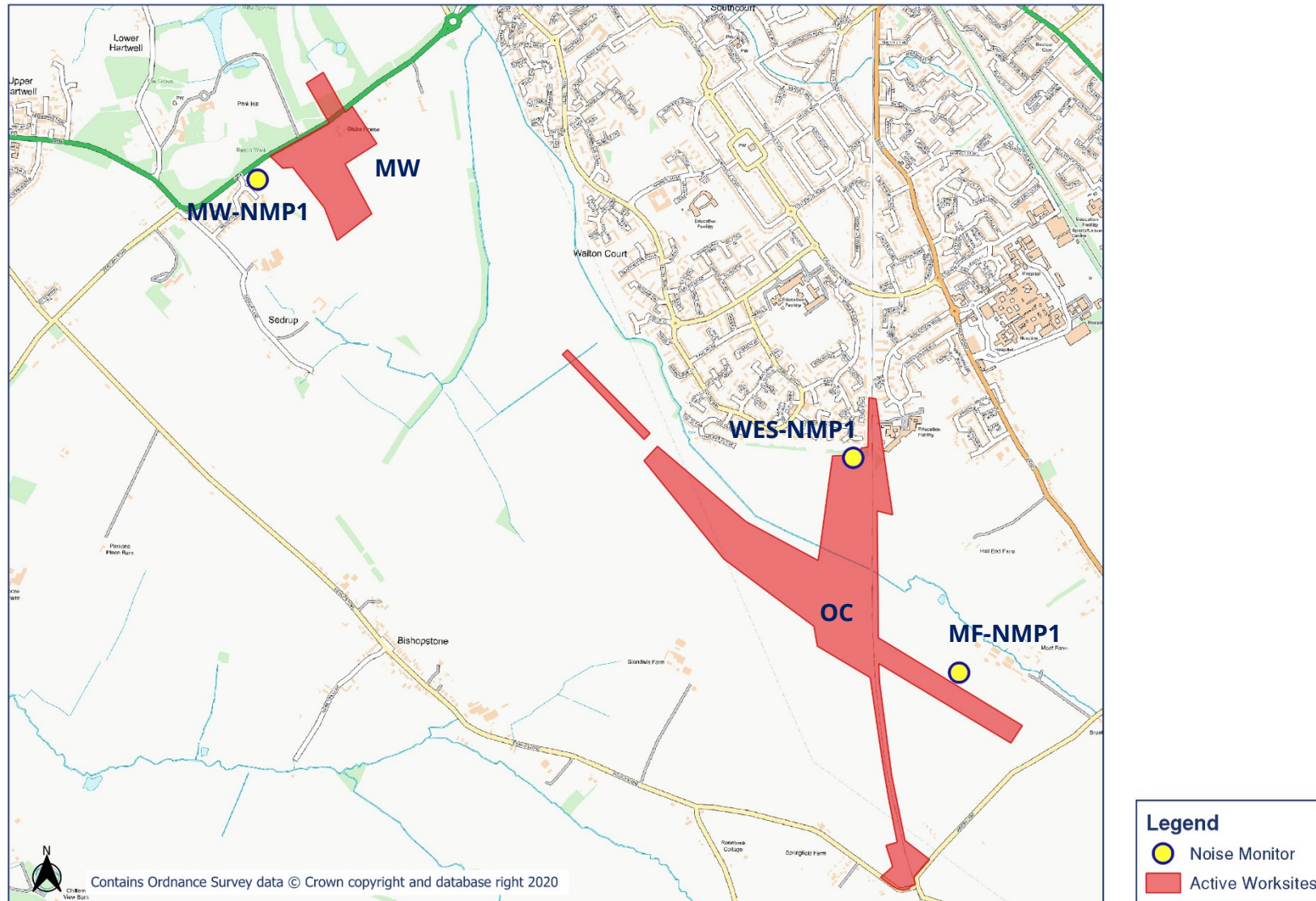


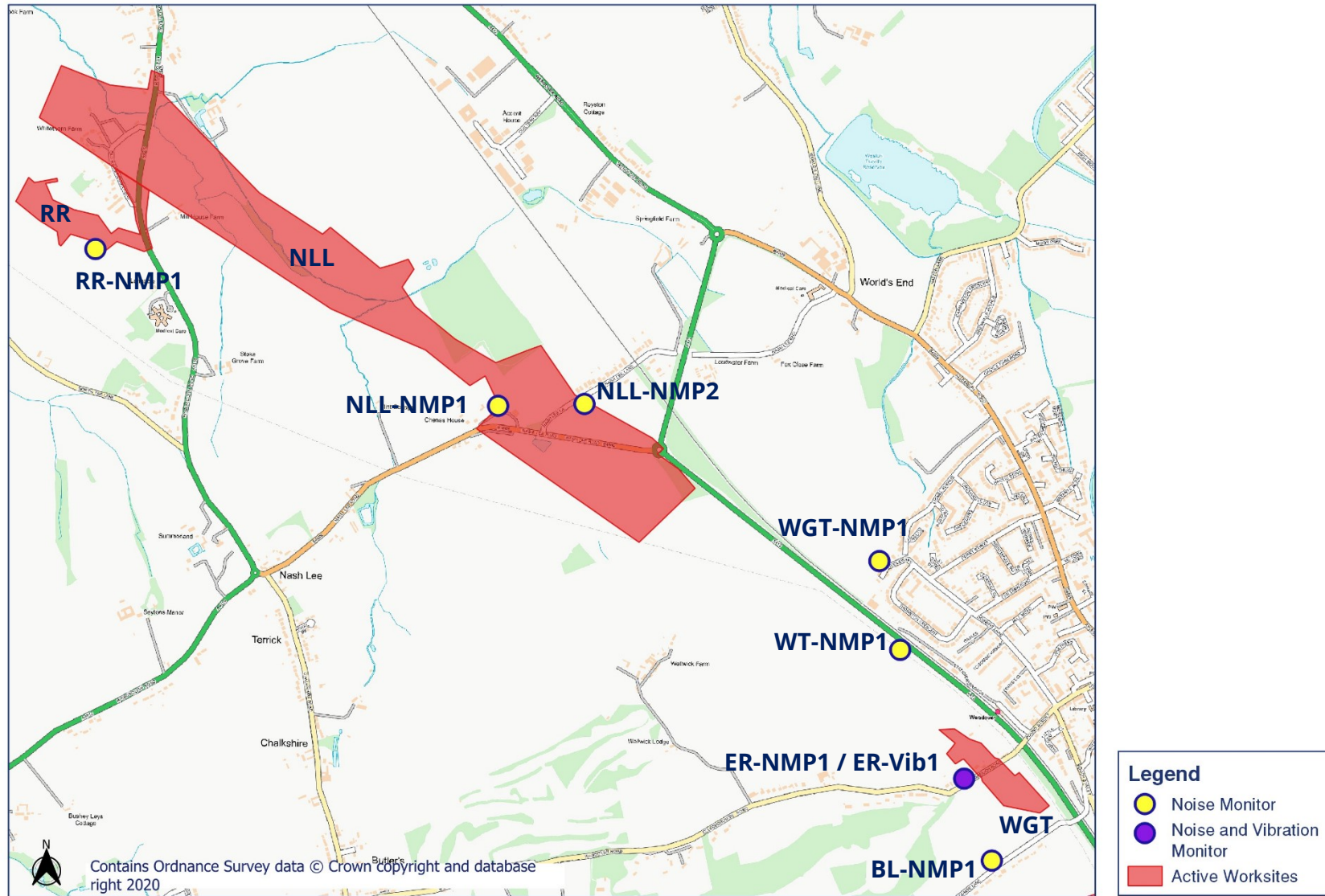


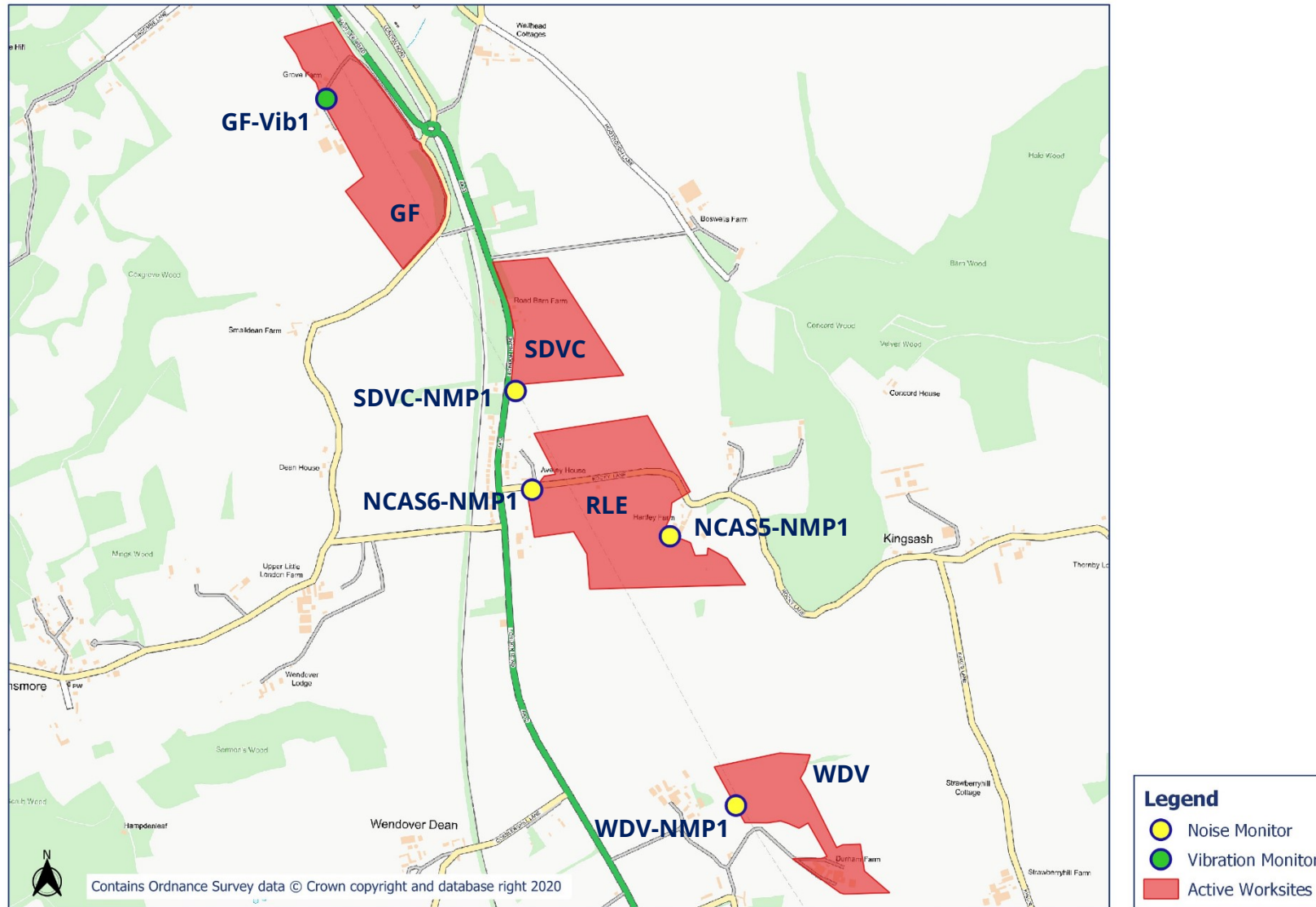


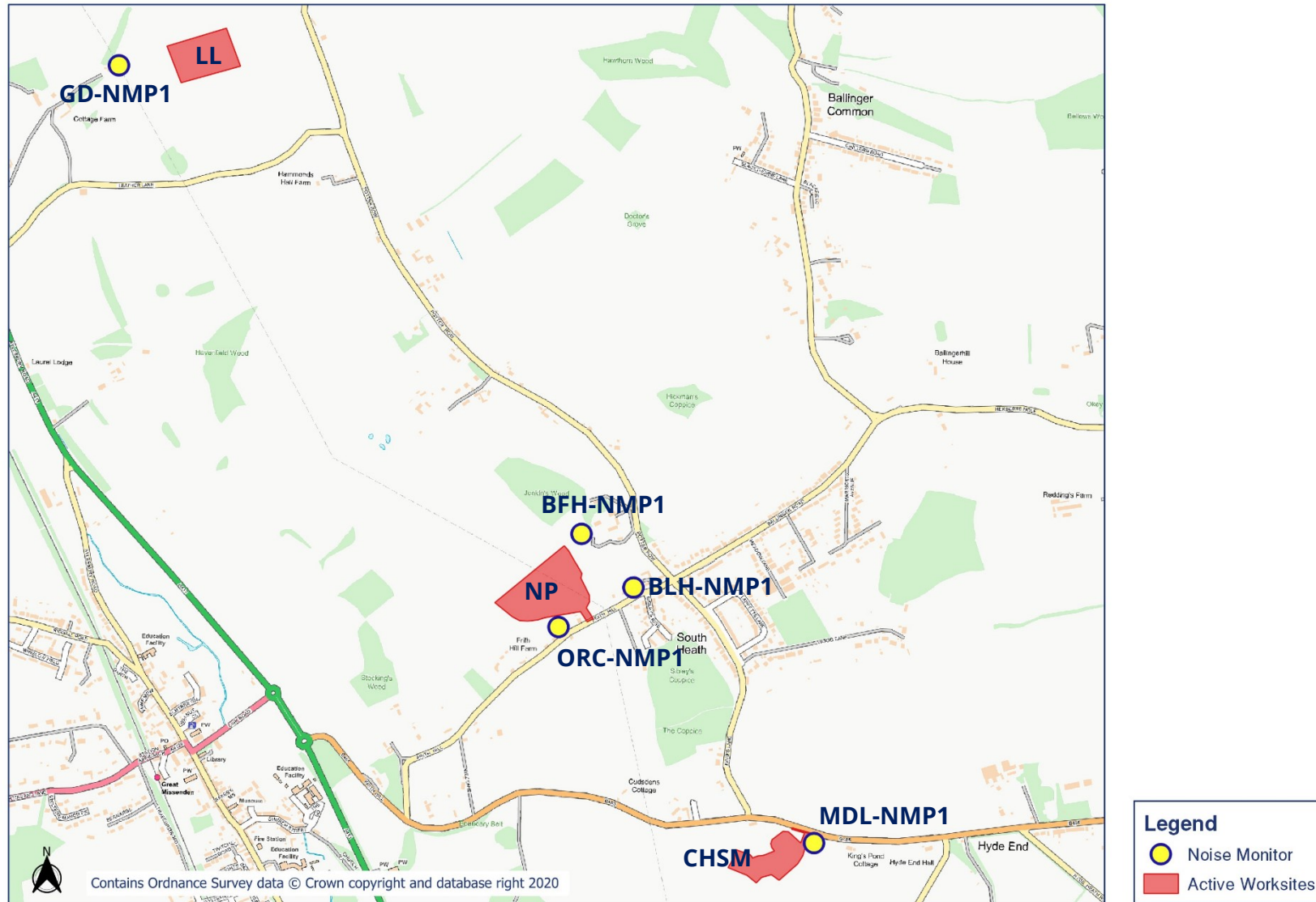




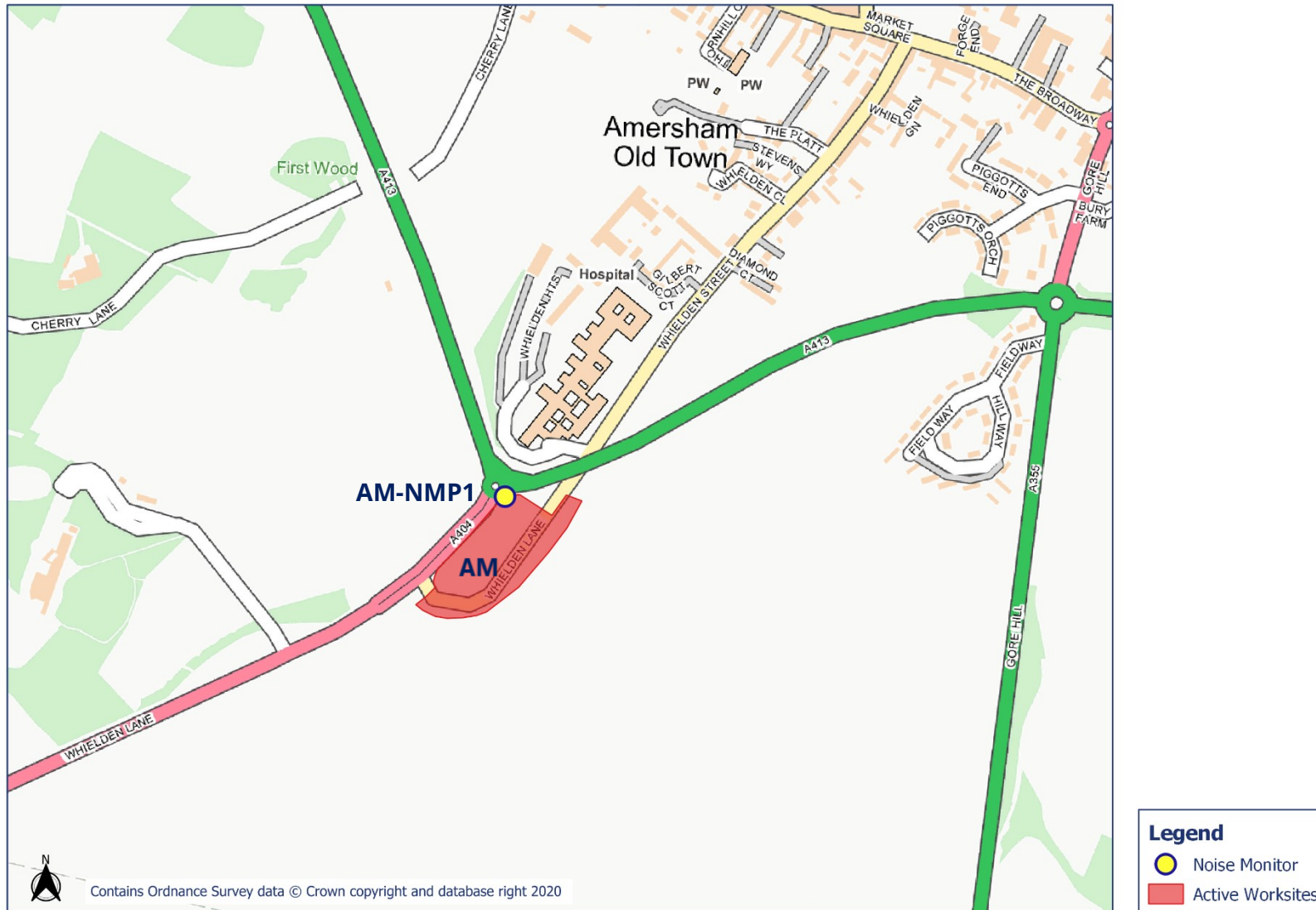






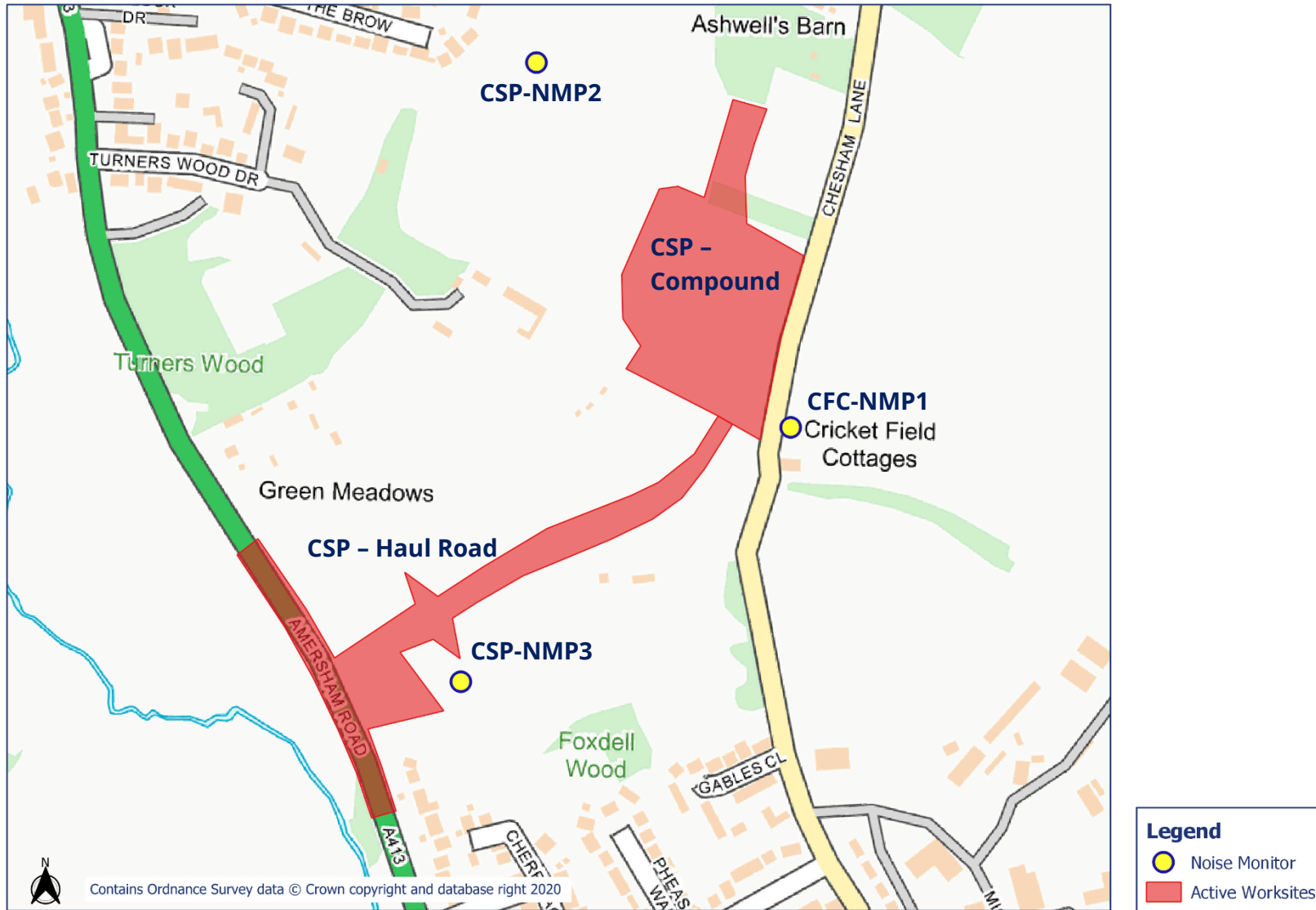


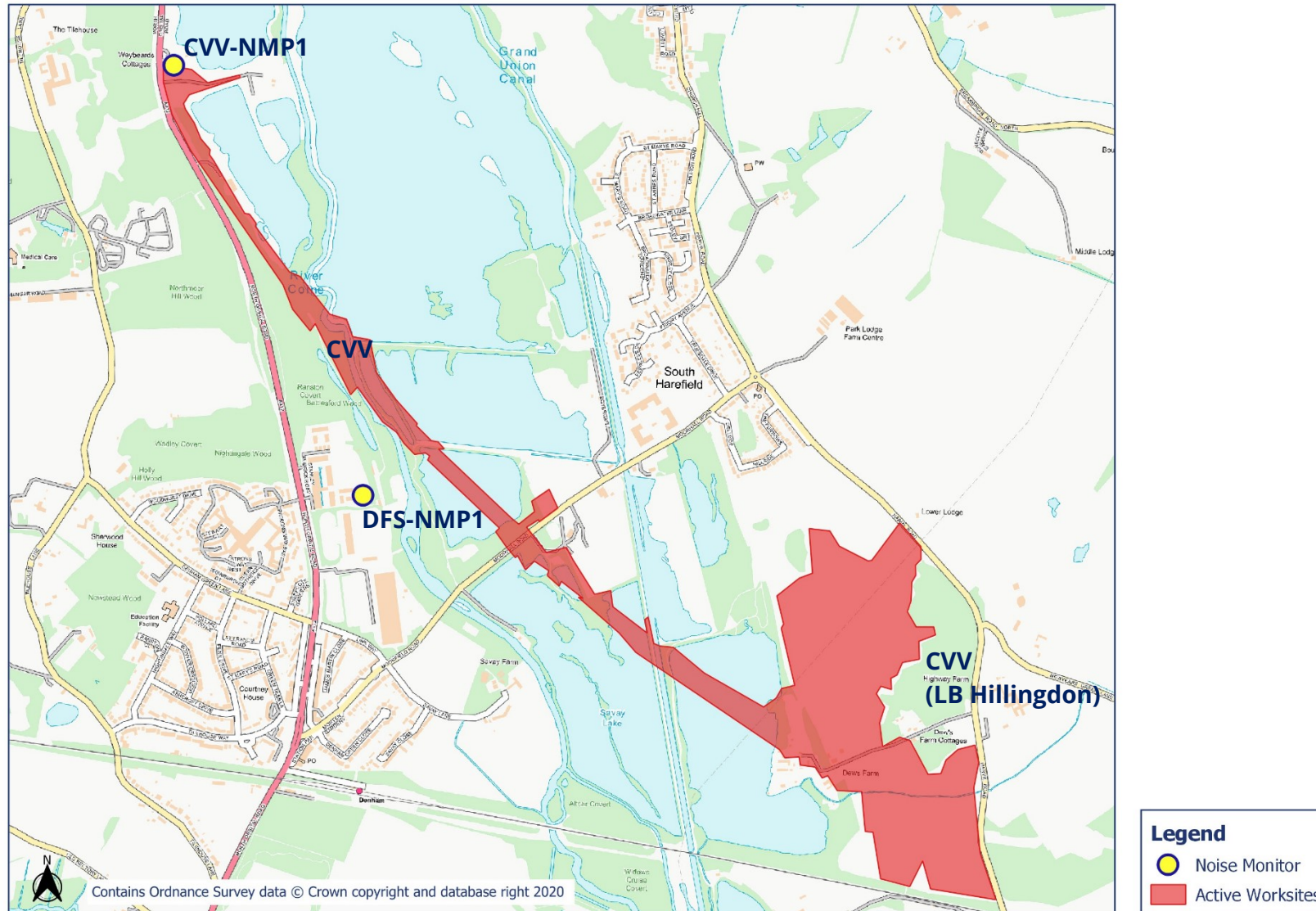






HS2 Noise and Vibration Monitoring Plan - 13



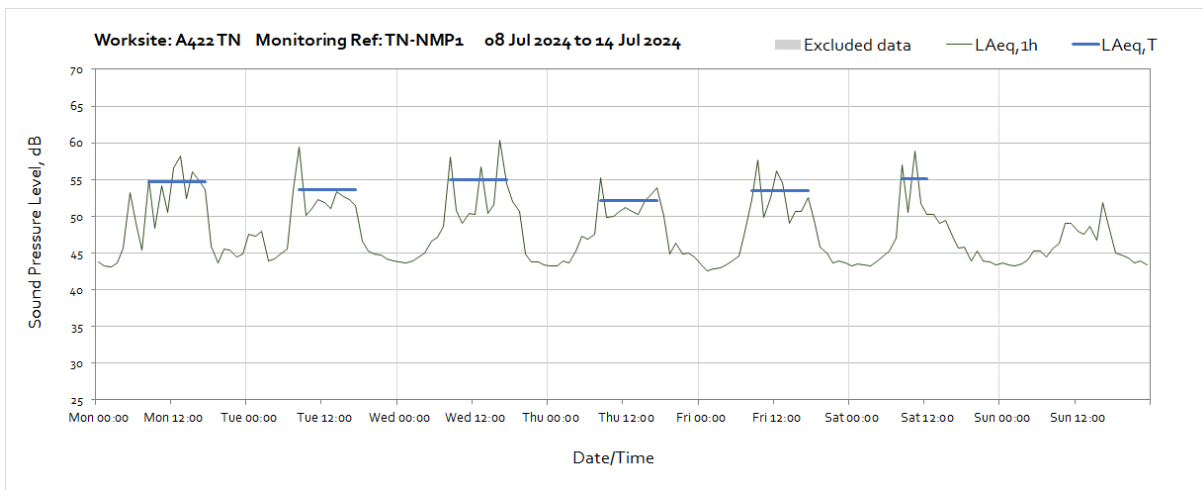
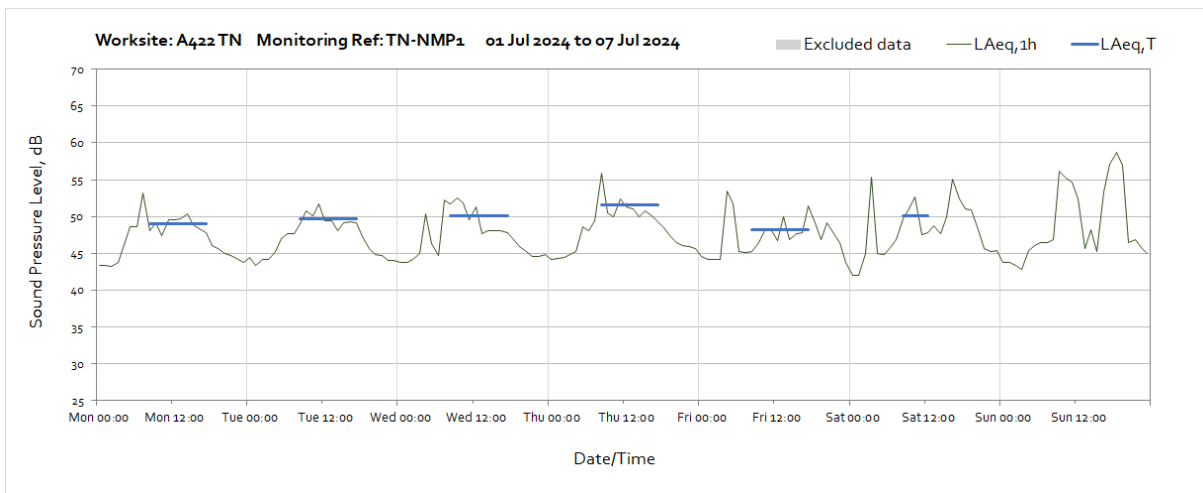


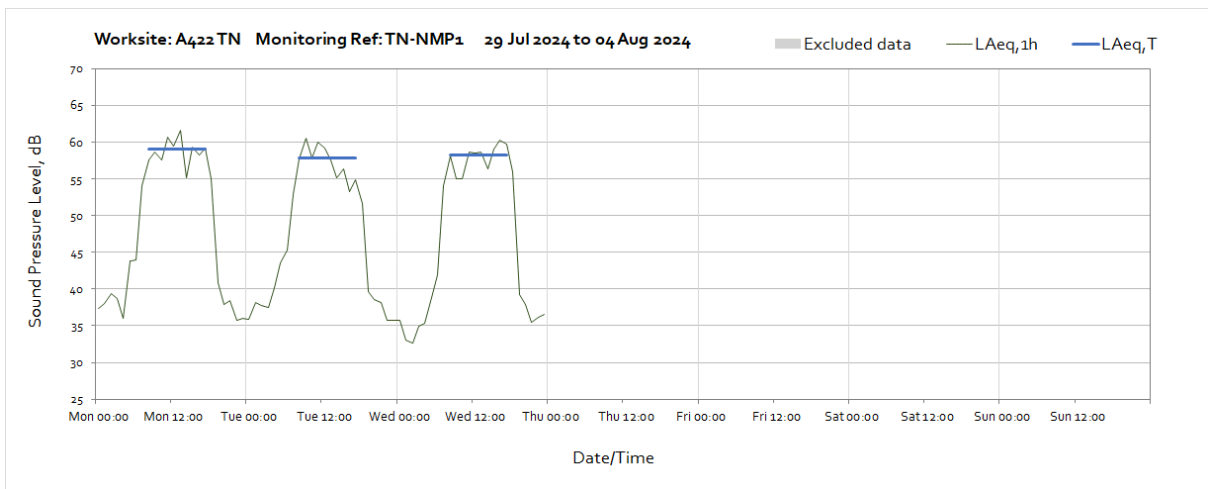
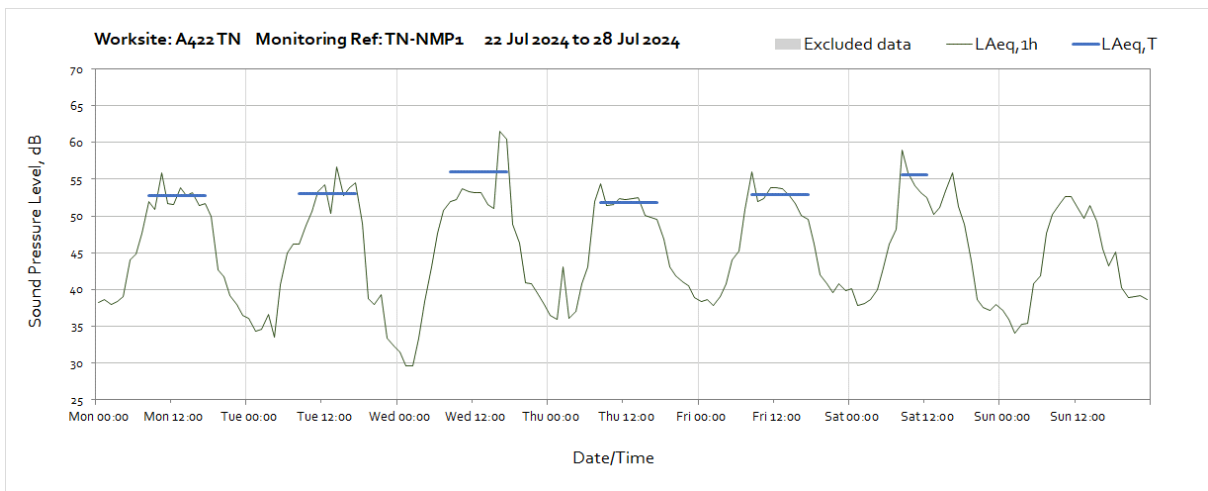
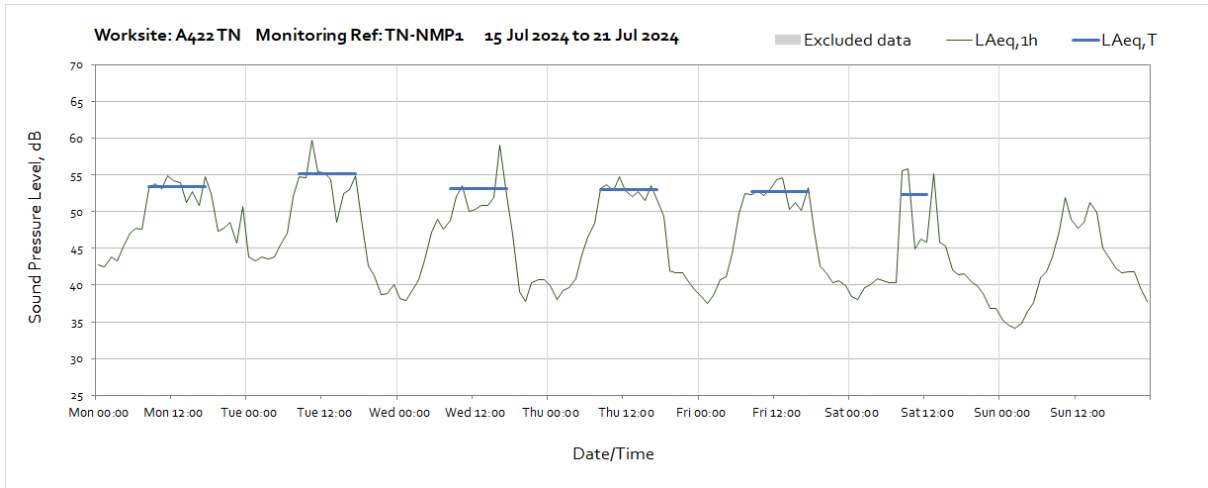
Appendix C Data

Noise

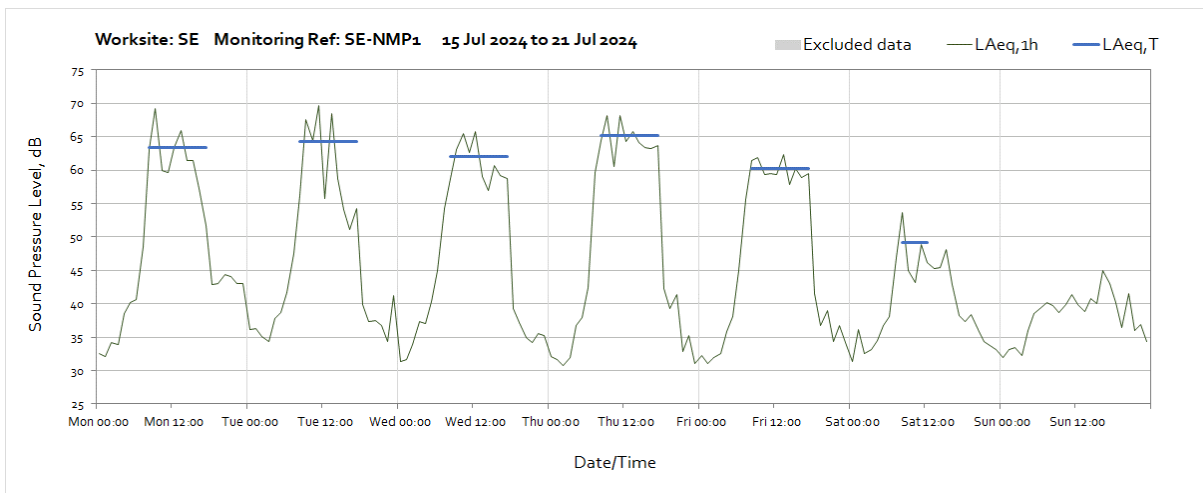
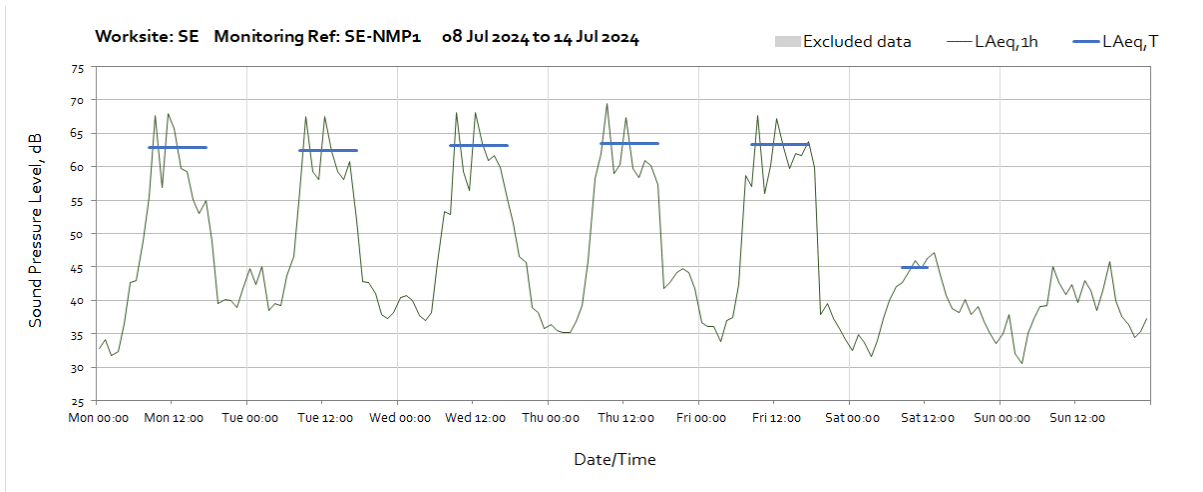
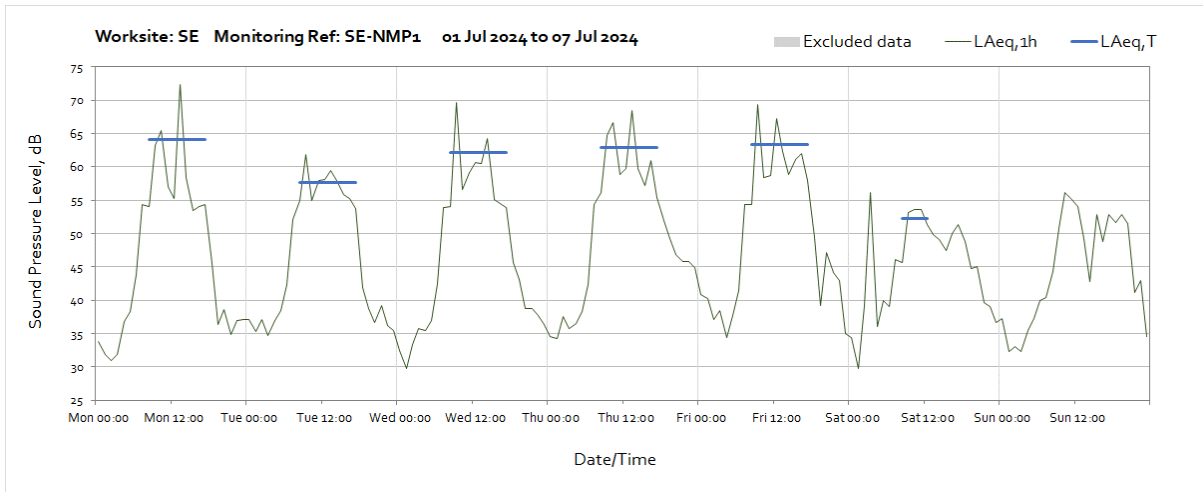
The following graphs show the hourly measured ambient noise level $L_{Aeq,1h}$ and, where relevant, the averaged noise level $L_{Aeq,T}$ values, where the time period T is as specified in Table 1 of HS2 Information Paper E23. Periods where noise levels are adversely affected by weather or only measured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

Worksite: A422 TN – Monitoring Ref: TN-NMP1

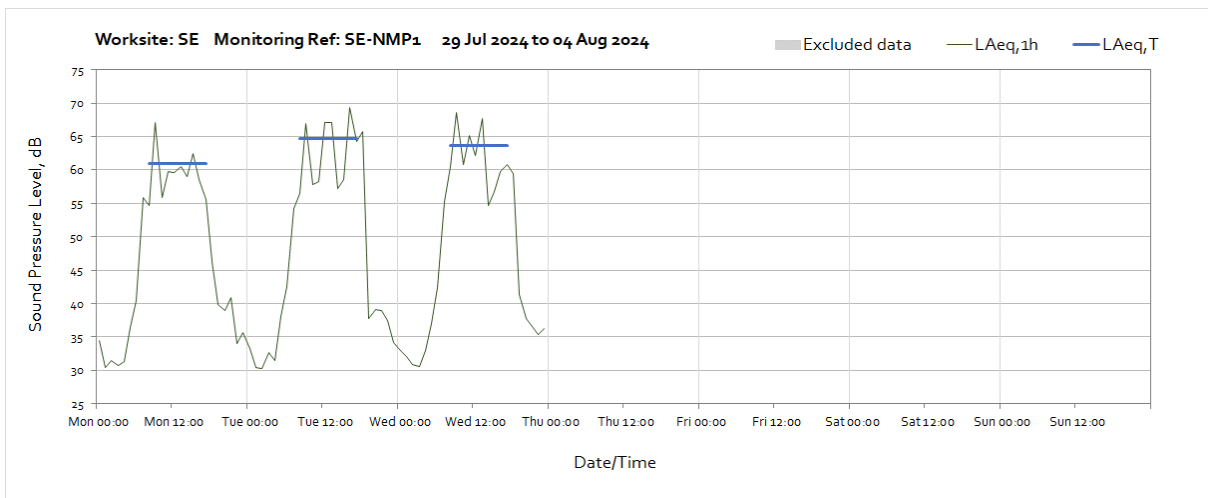
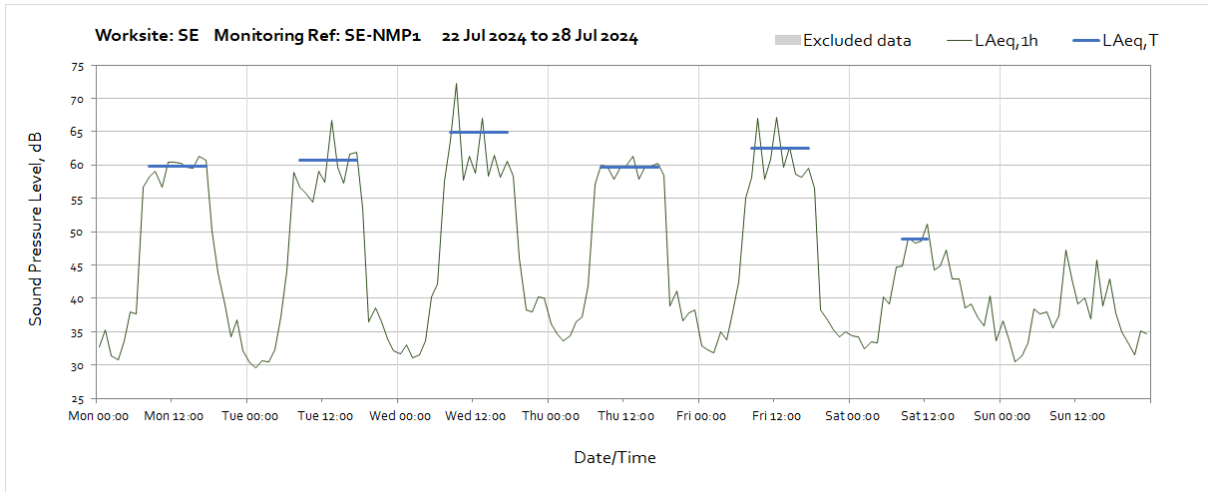




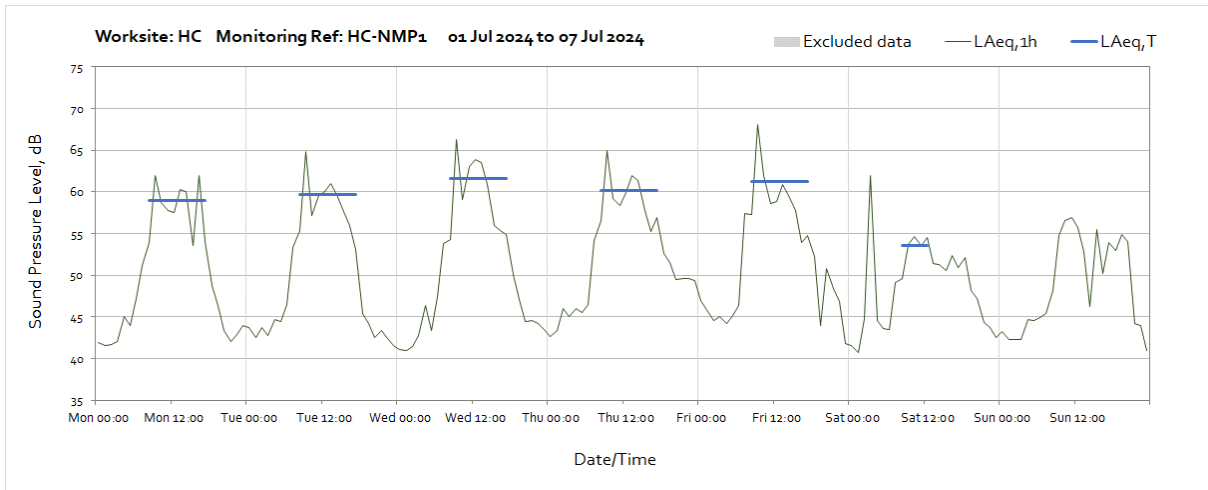
Worksite: SE – Monitoring Ref: SE-NMP1

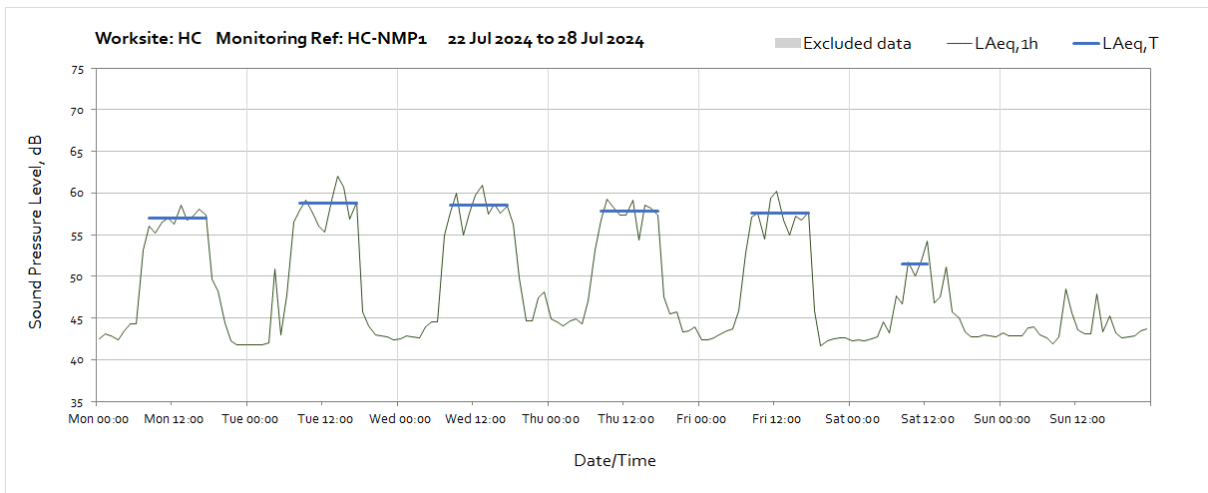
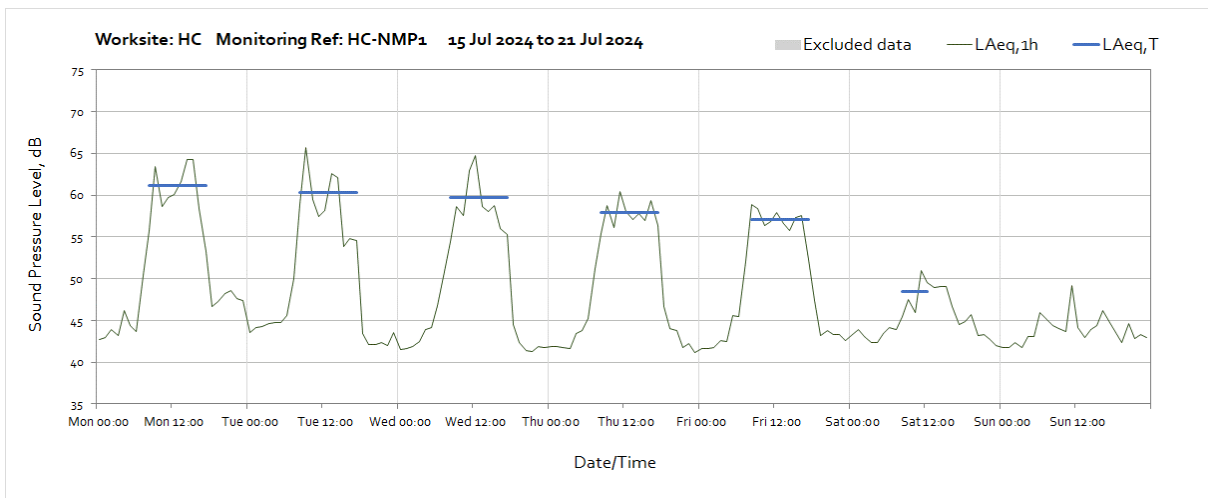
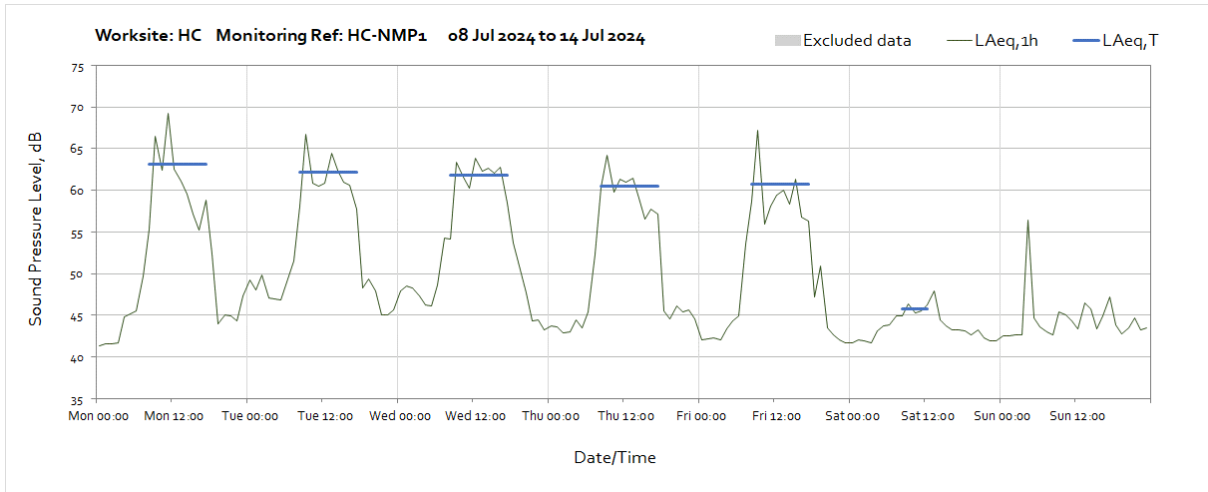


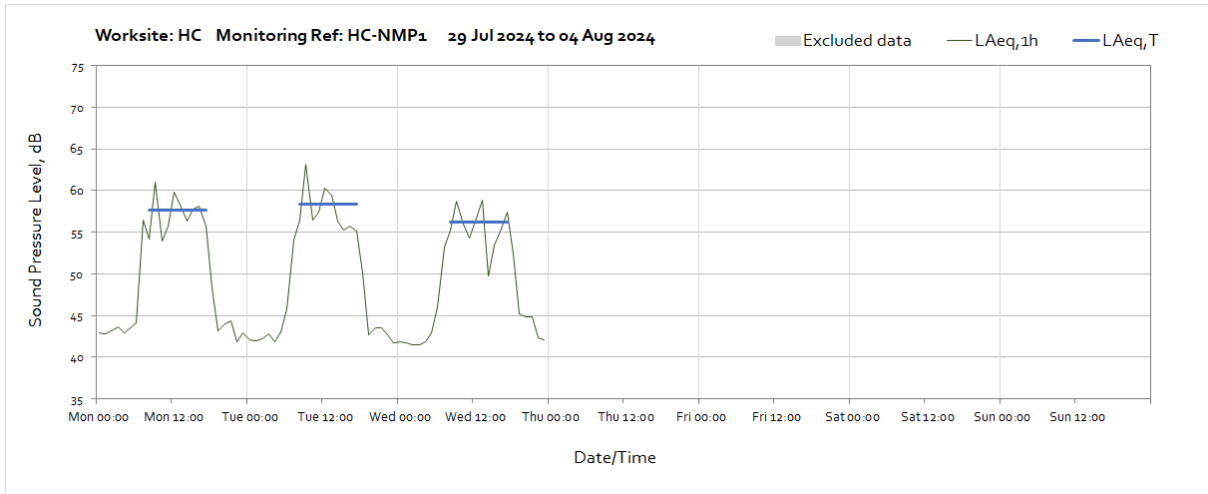
OFFICIAL



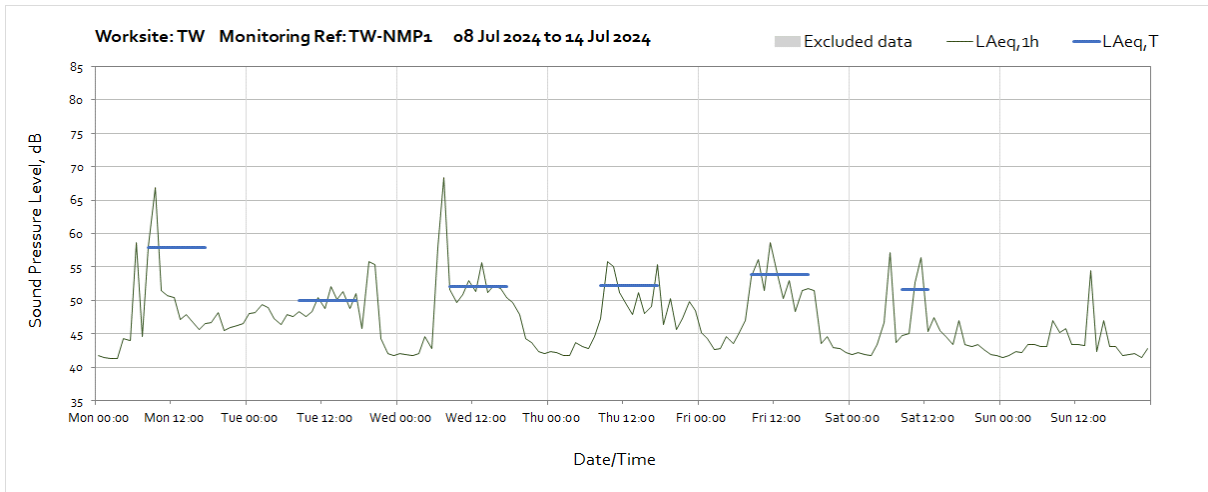
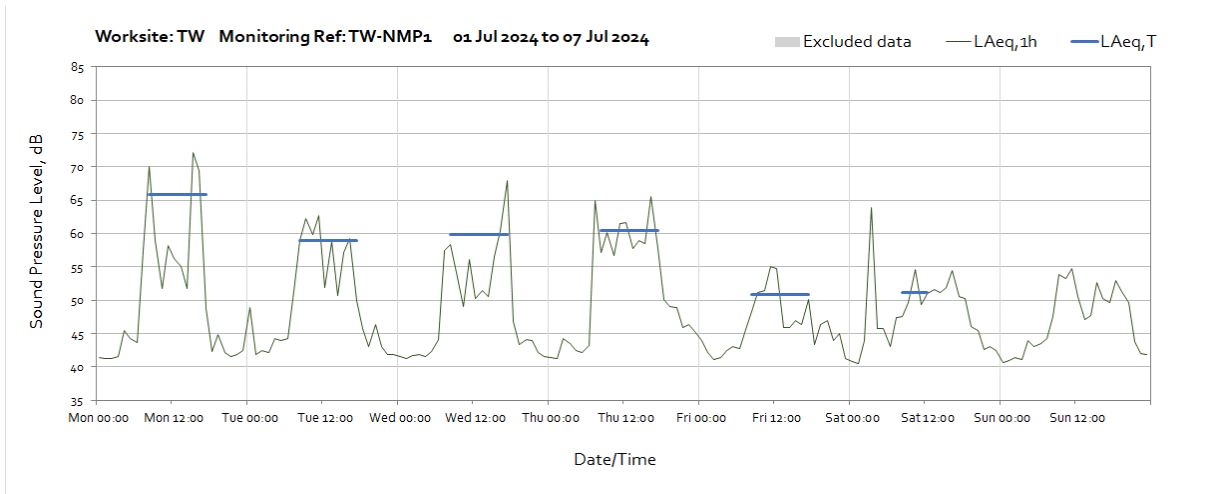
Worksite: HC - Monitoring Ref: HC-NMP1

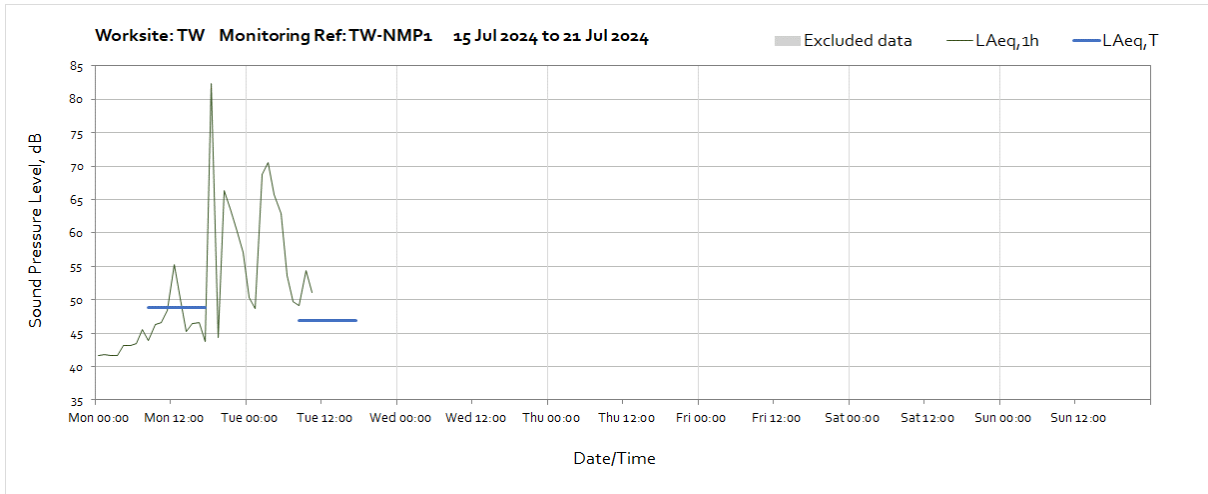






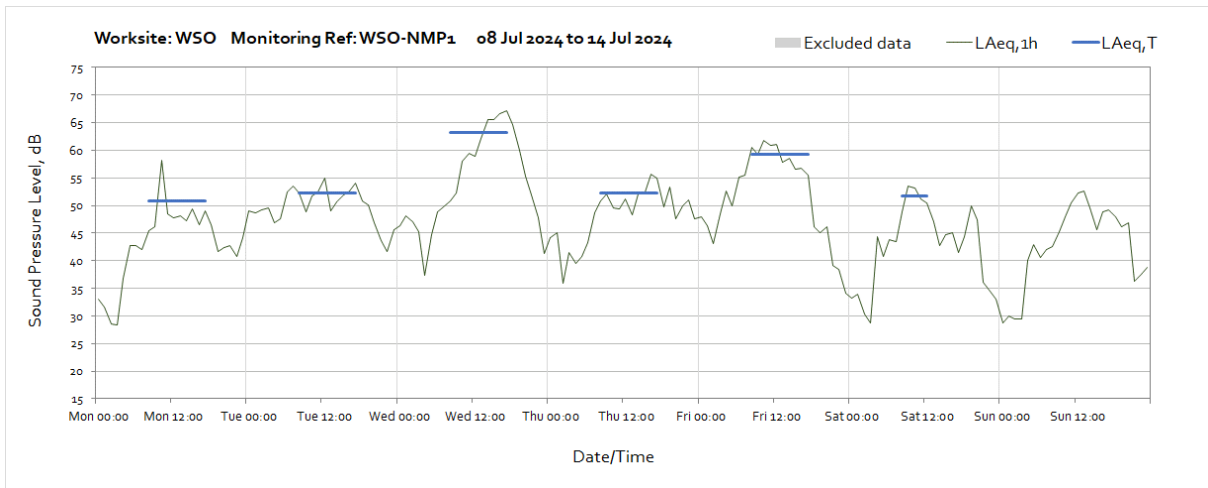
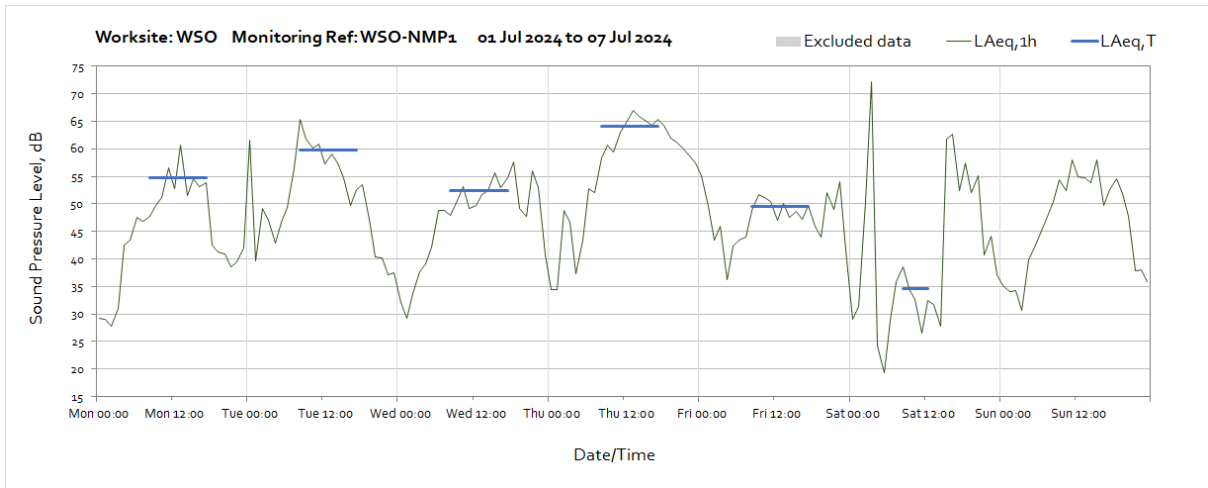
Worksite: TW – Monitoring Ref: TW-NMP1

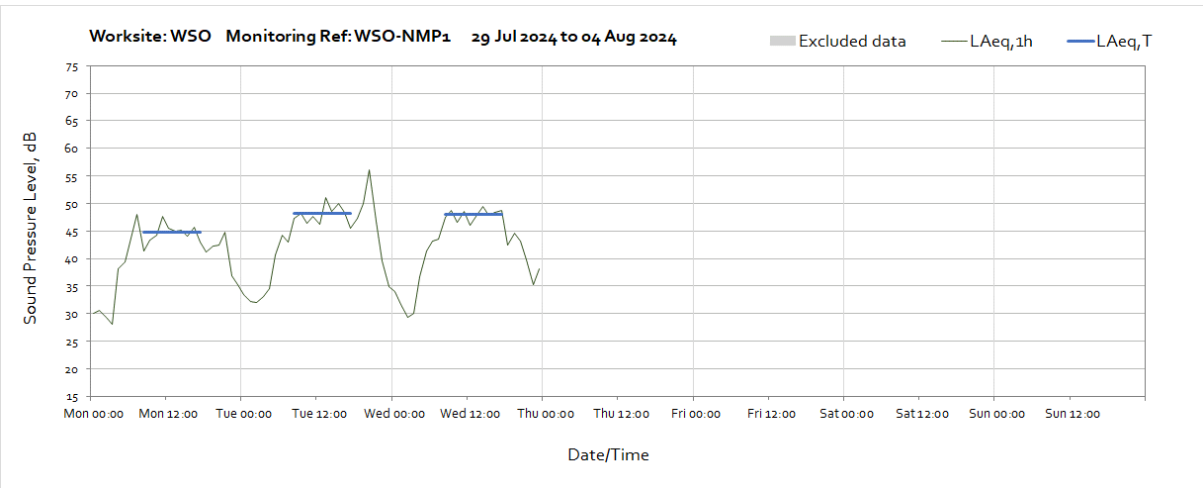
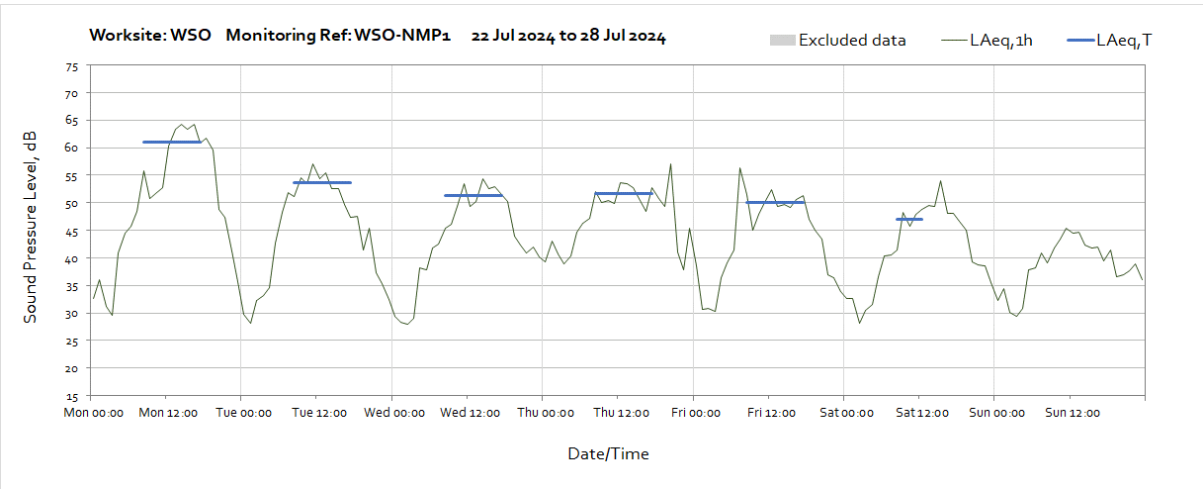
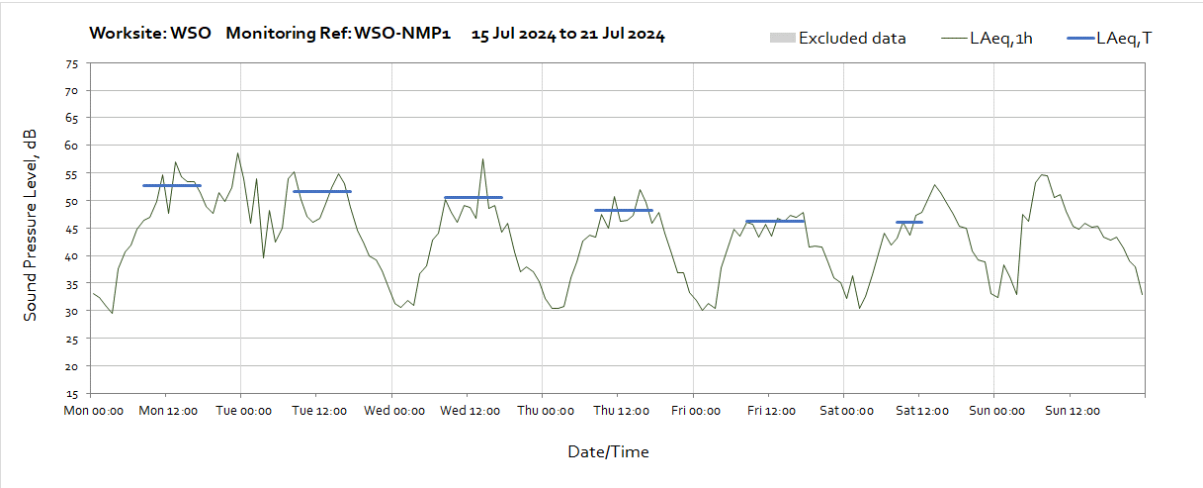




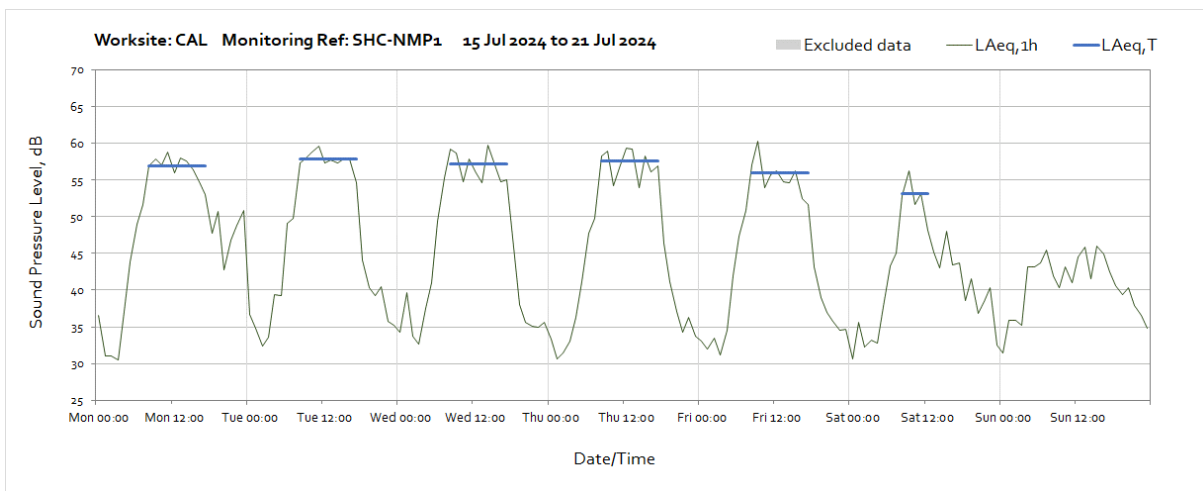
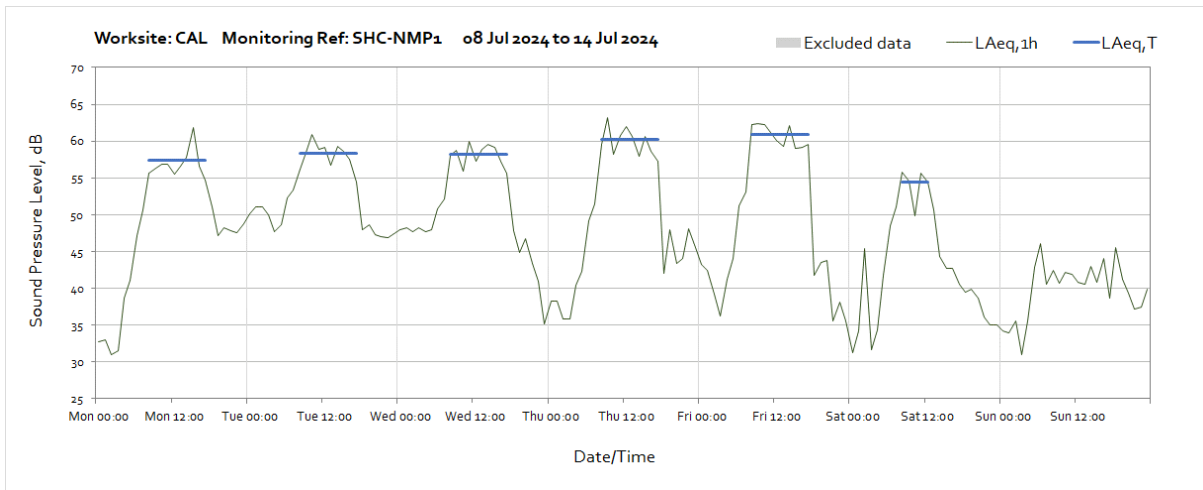
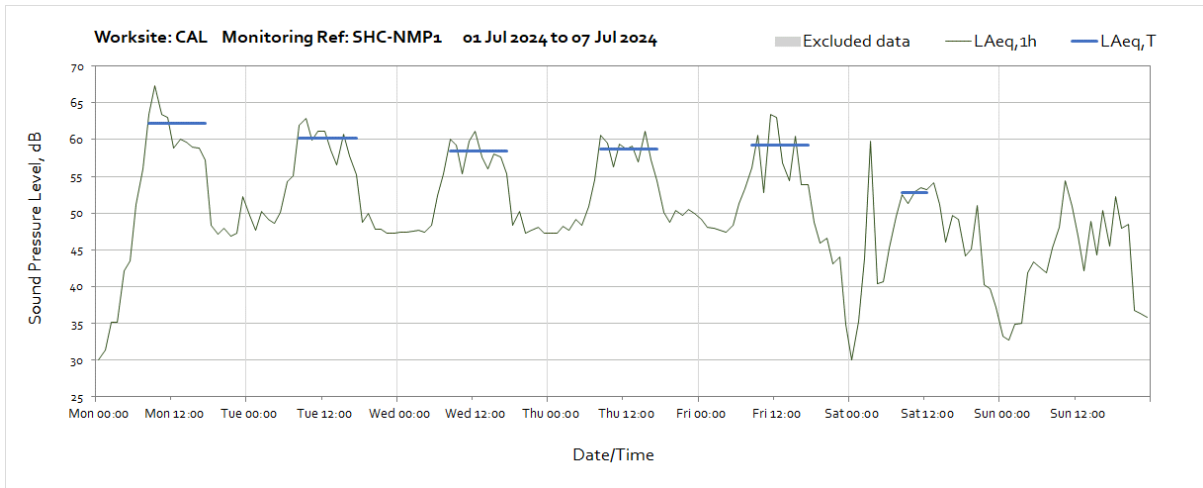
Note: Monitor was retrieved for repair at 11:00 on Tuesday 16th July.

Worksite: WSO – Monitoring Ref: WSO-NMP1

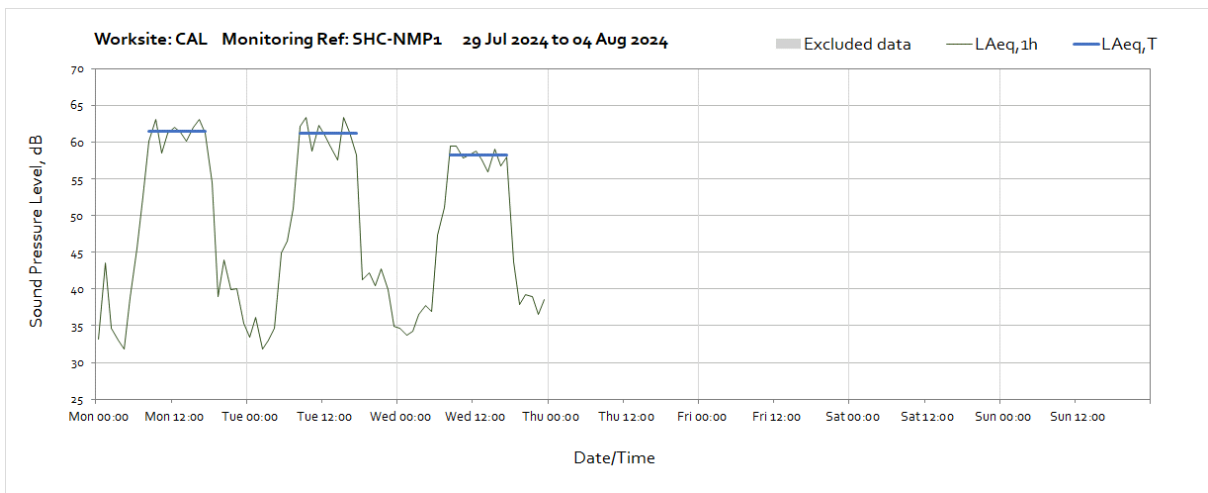
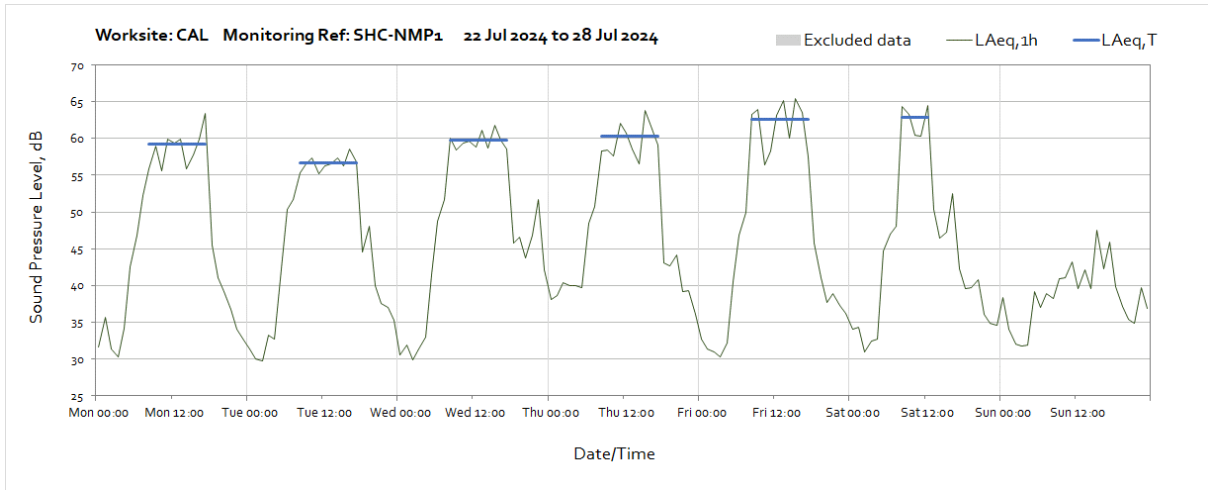




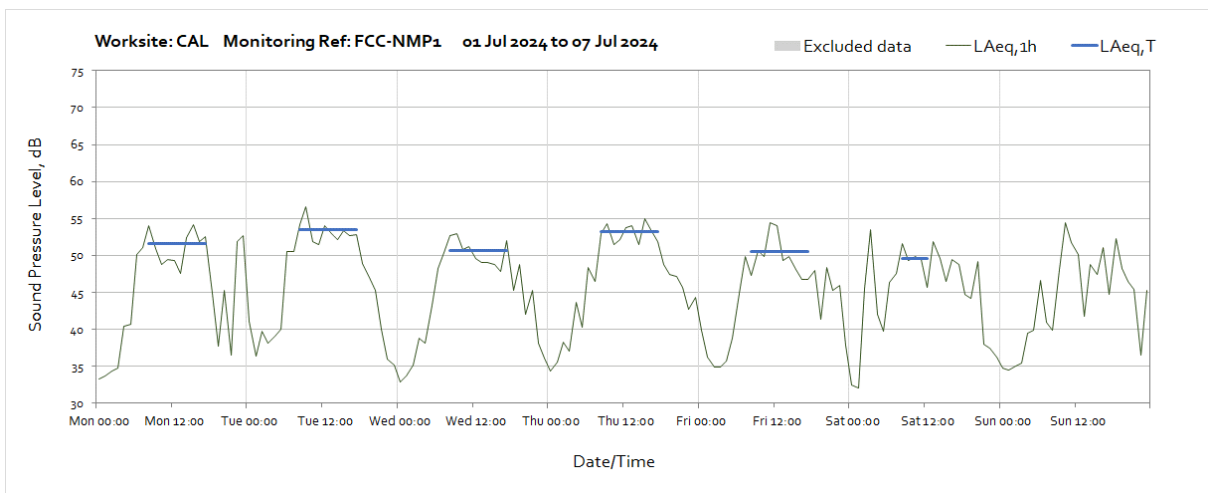
Worksite: CAL – Monitoring Ref: SHC-NMP1

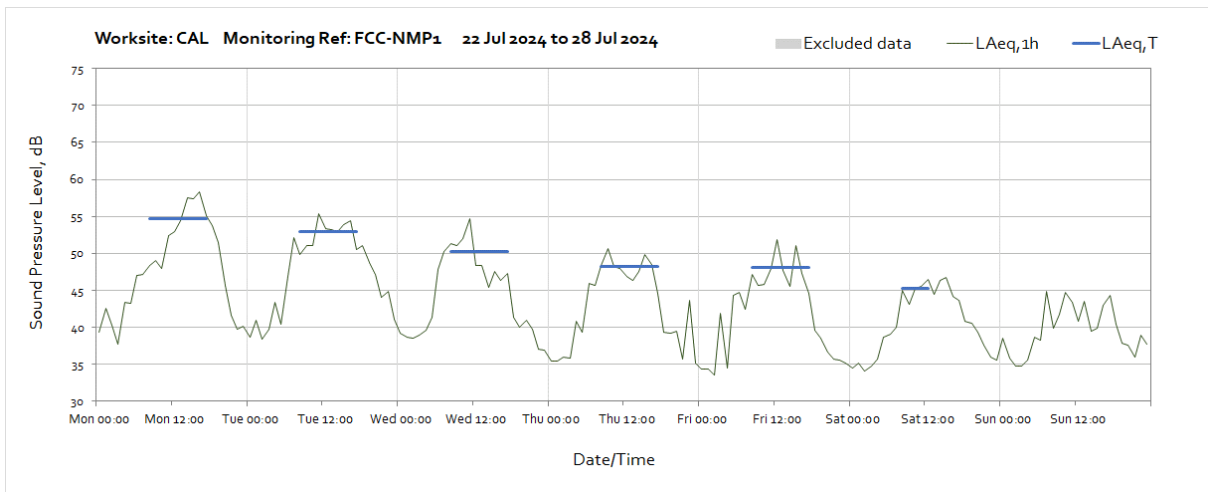
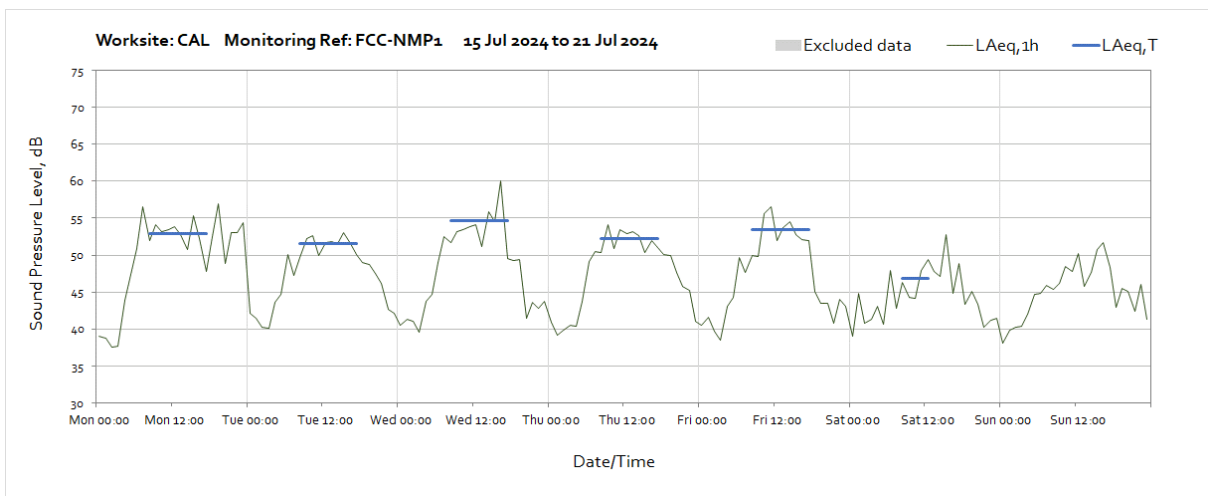
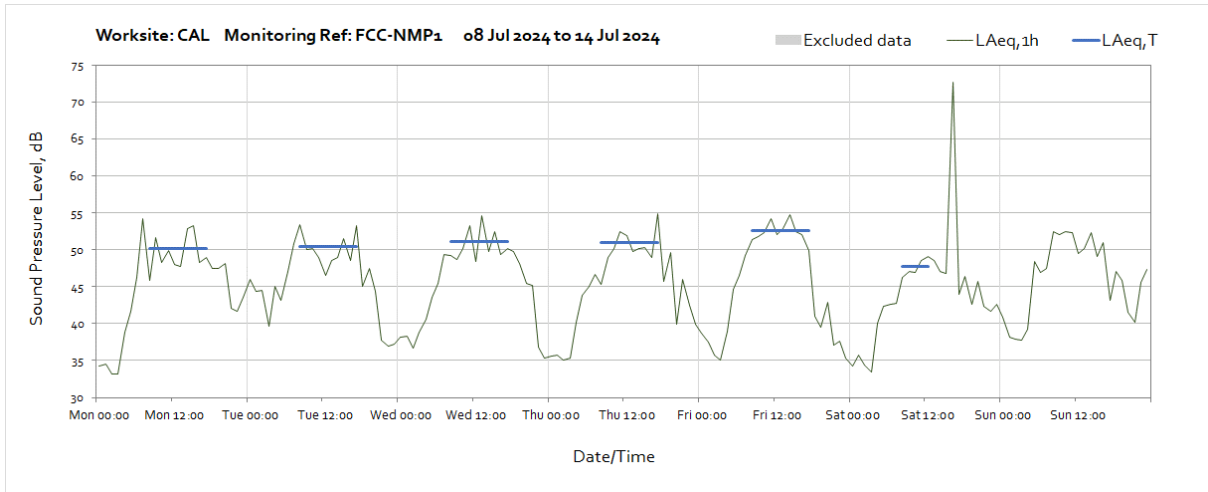


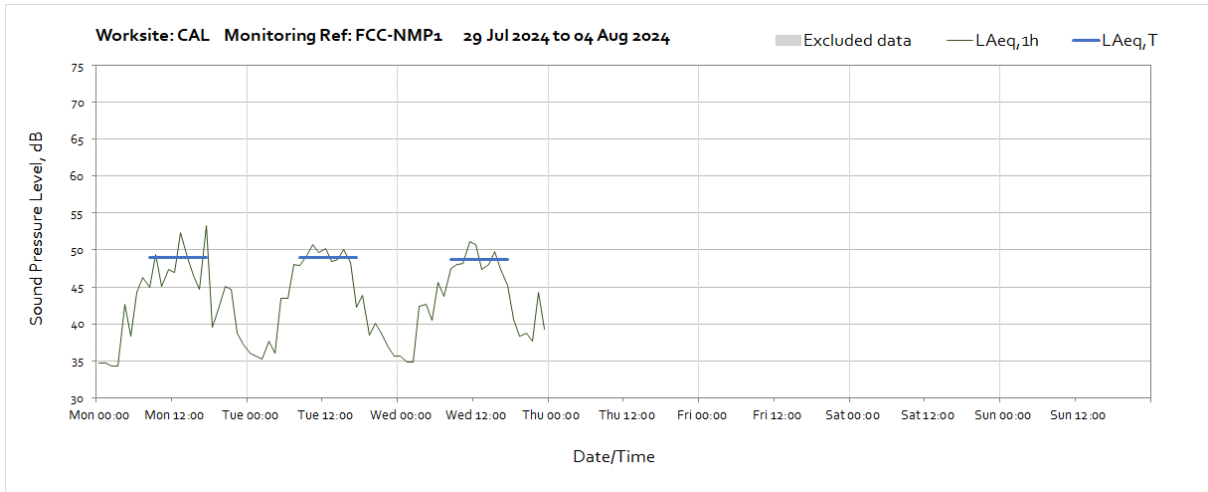
OFFICIAL



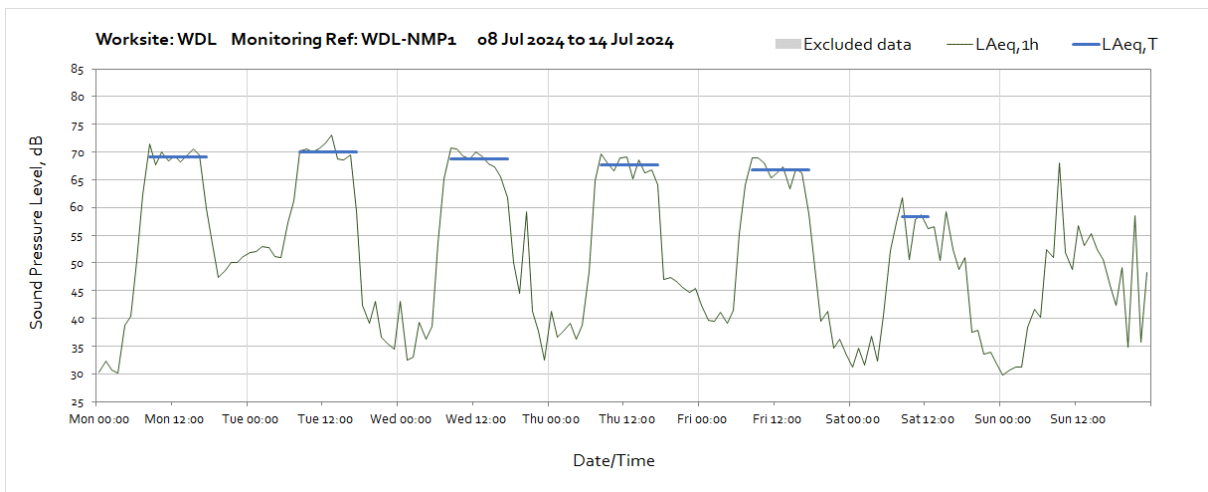
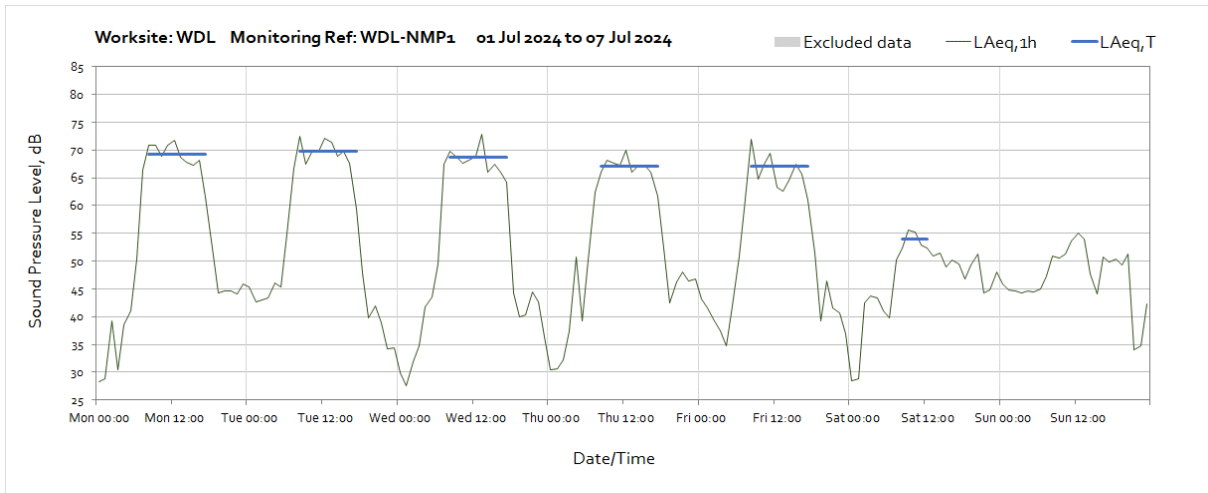
Worksite: CAL – Monitoring Re: FCC-NMP1

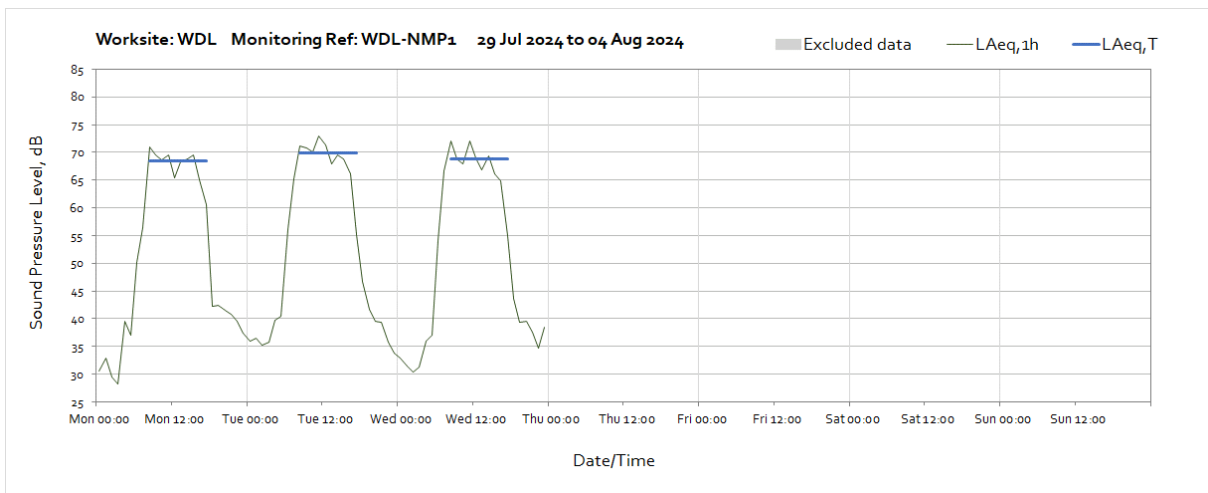
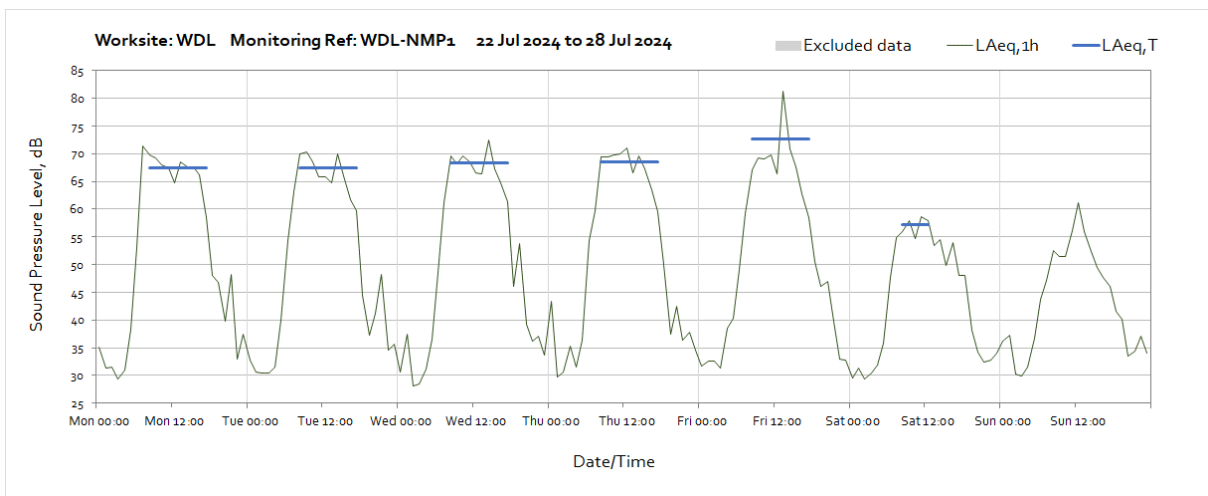
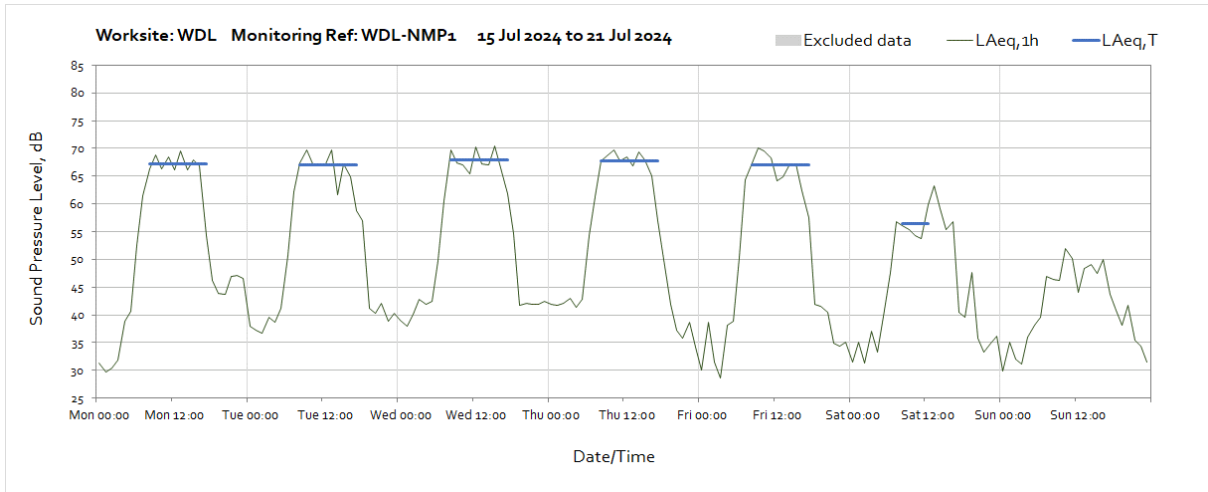




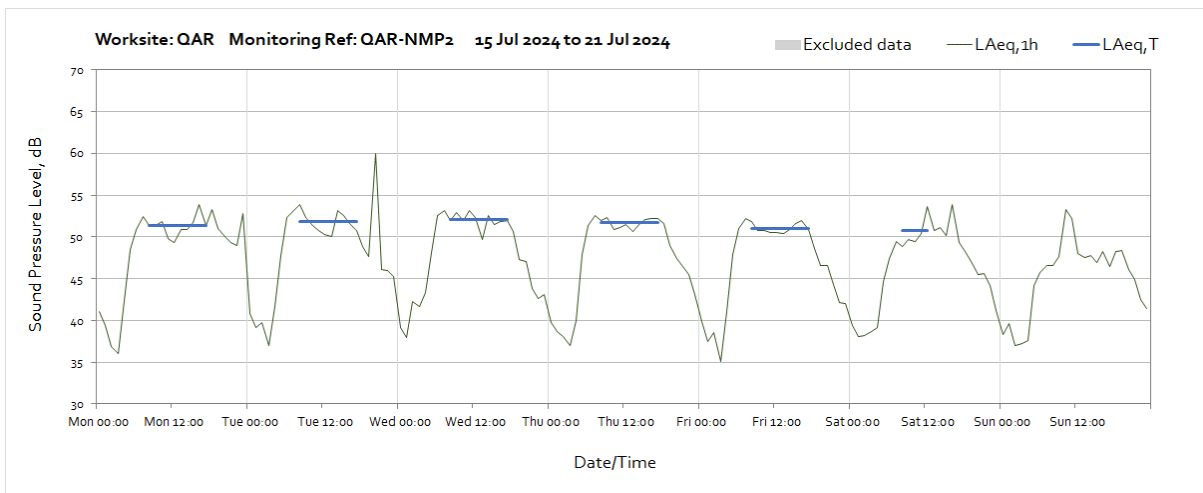
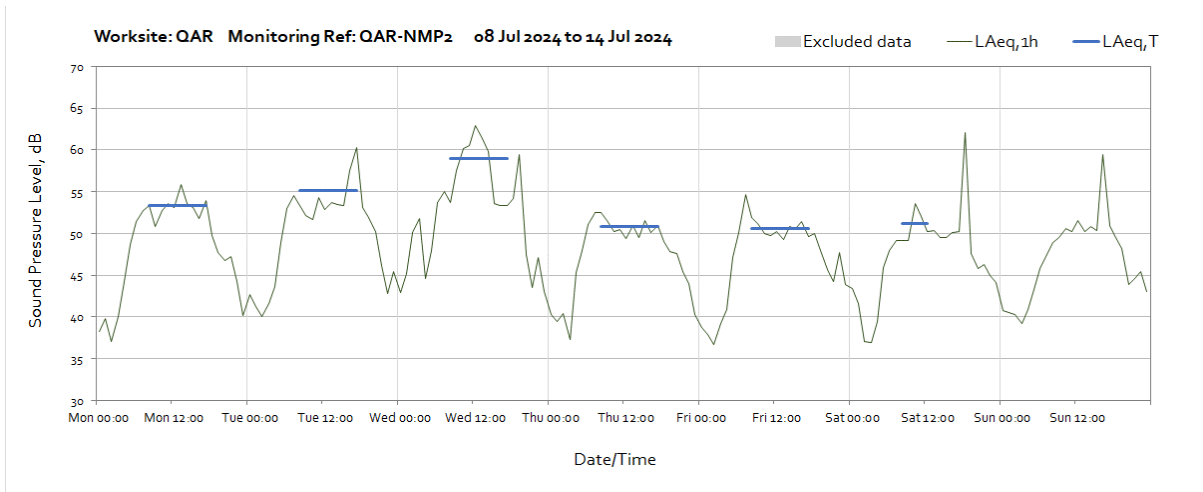
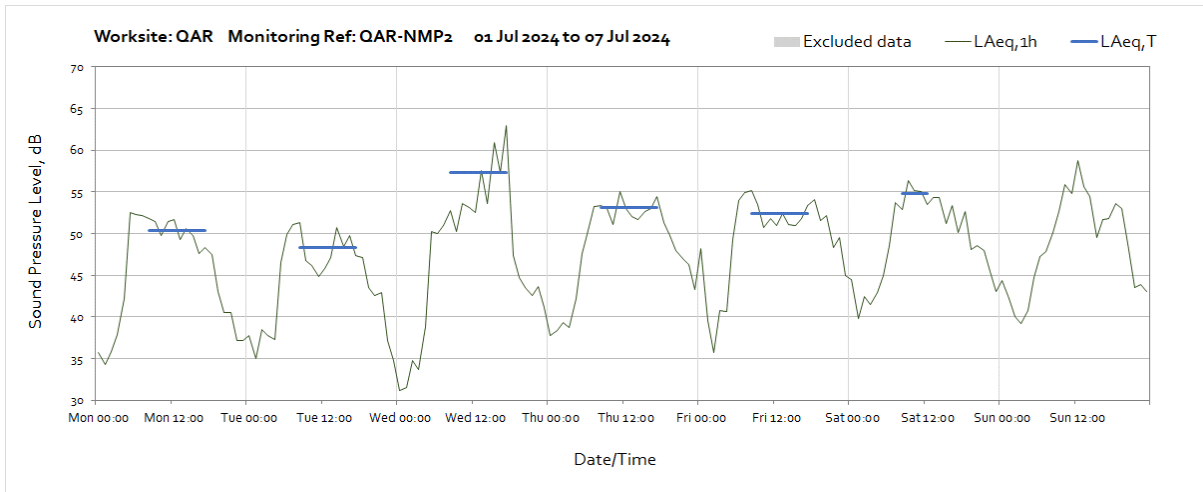


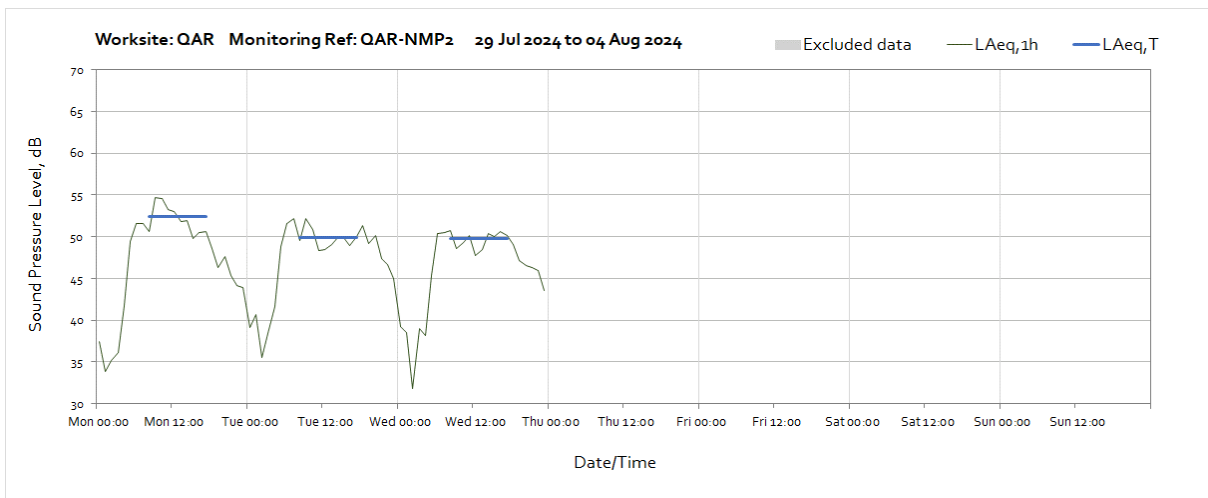
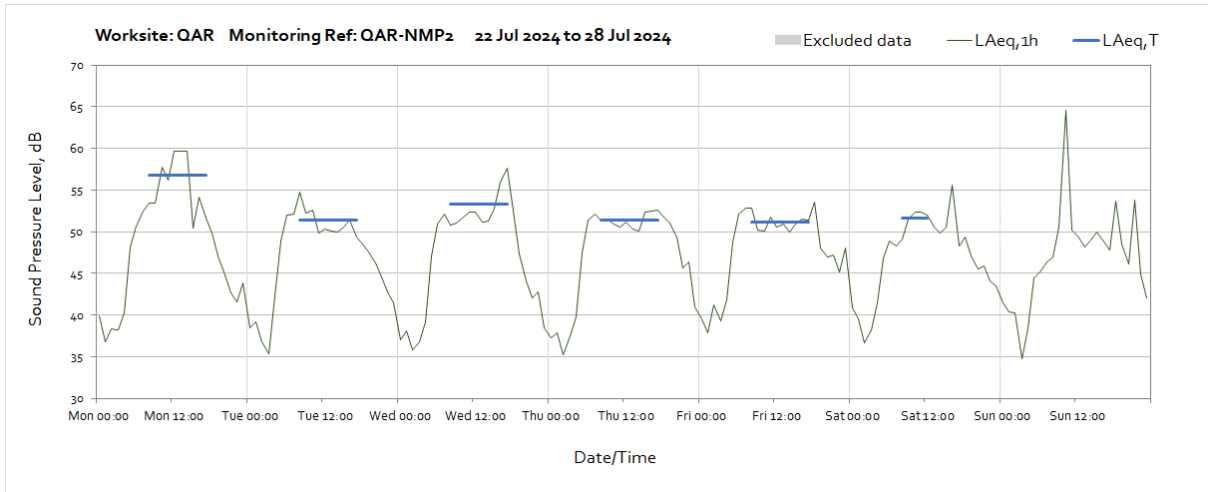
Worksite: WDL - Monitoring Ref: WDL-NMP1



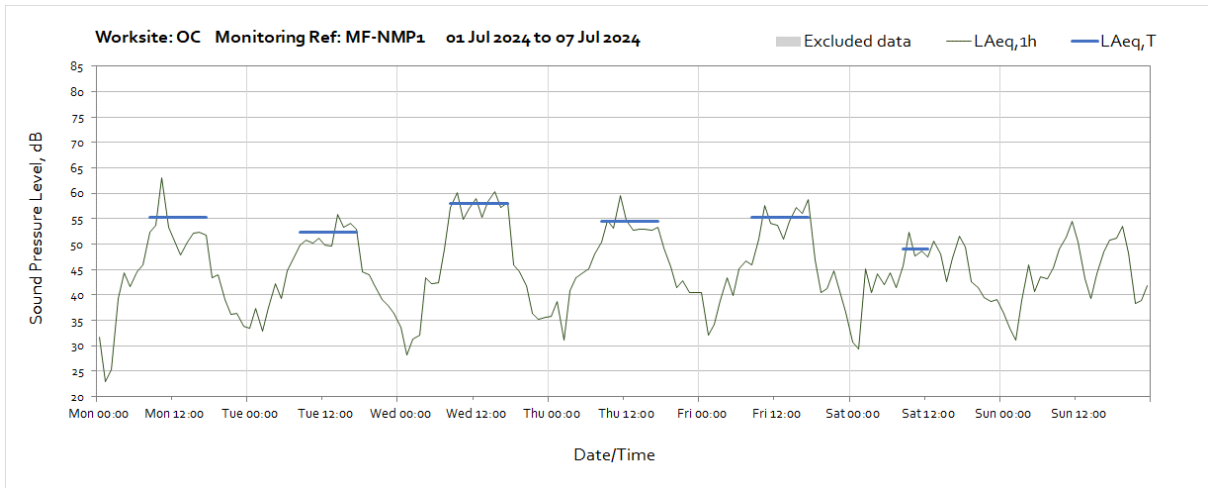


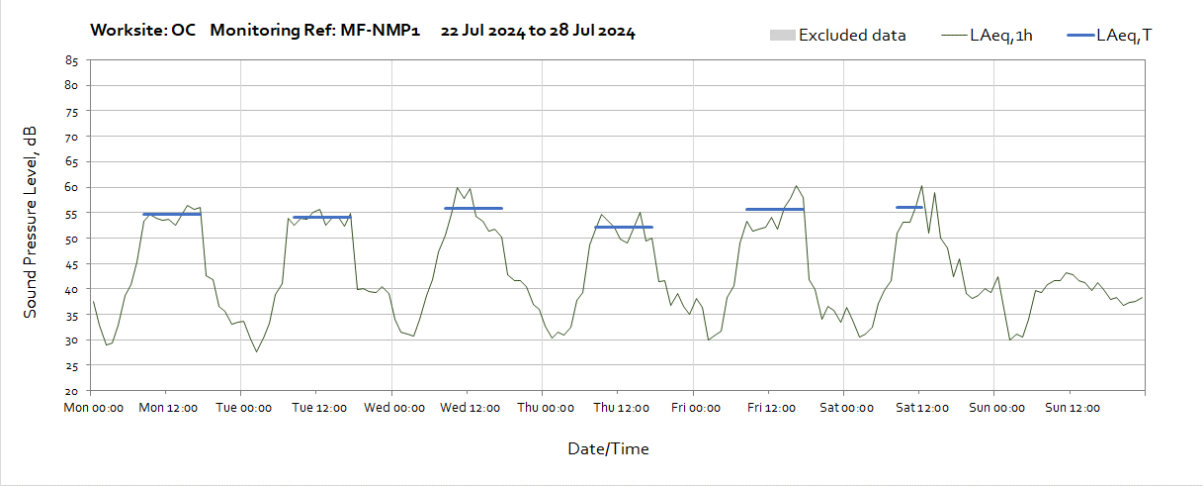
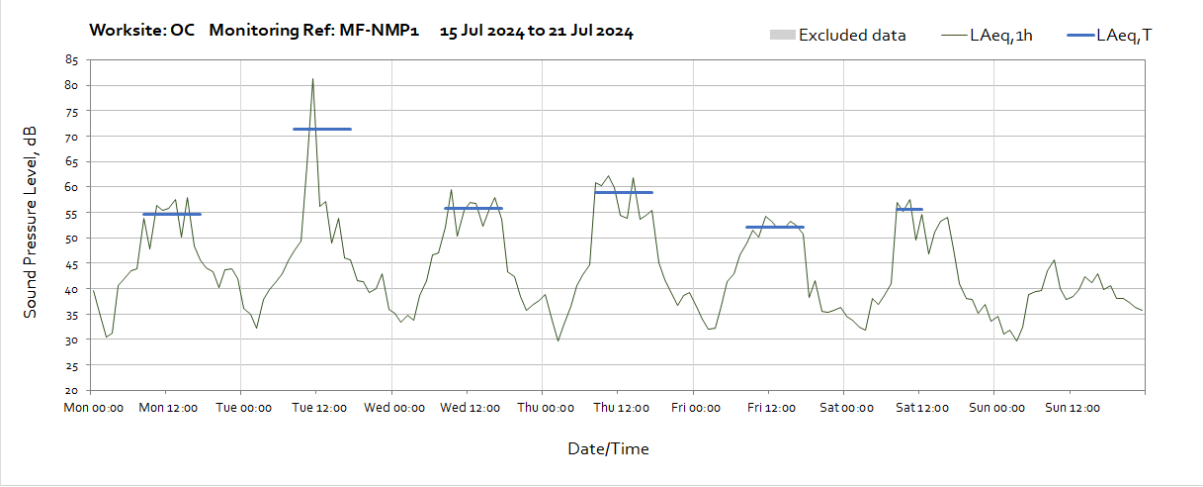
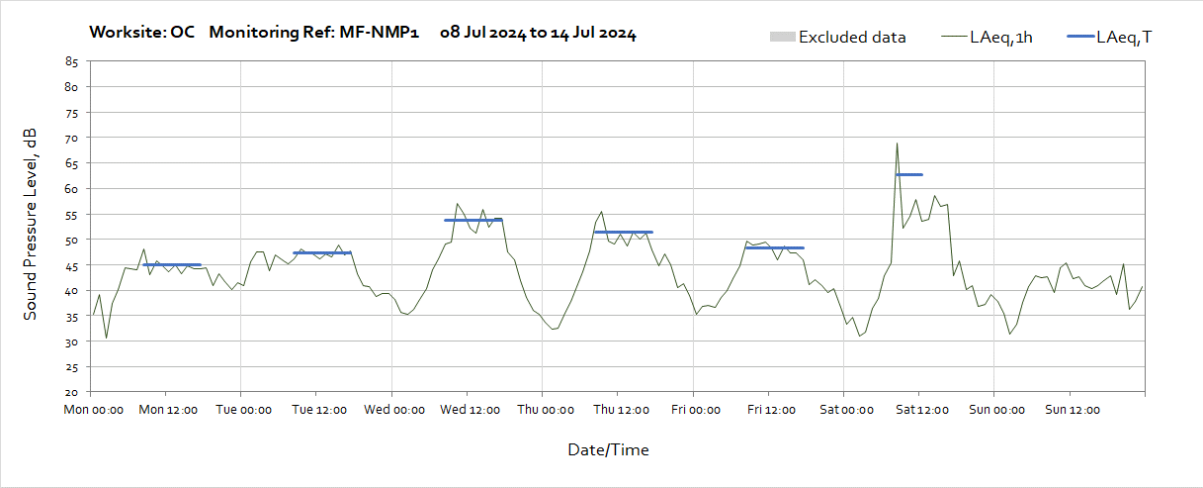
Worksite: QAR – Monitoring Ref: QAR-NMP2

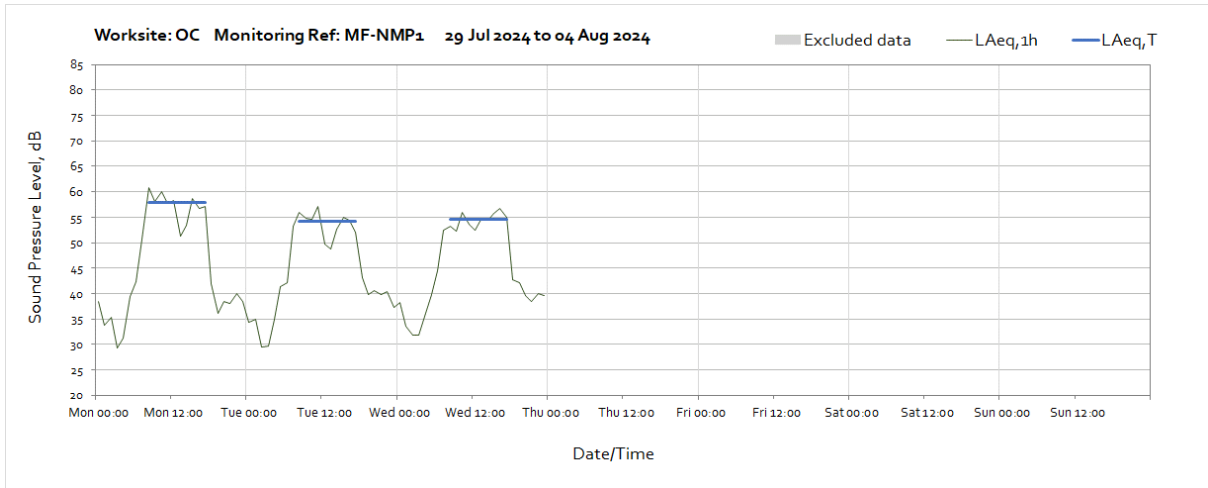




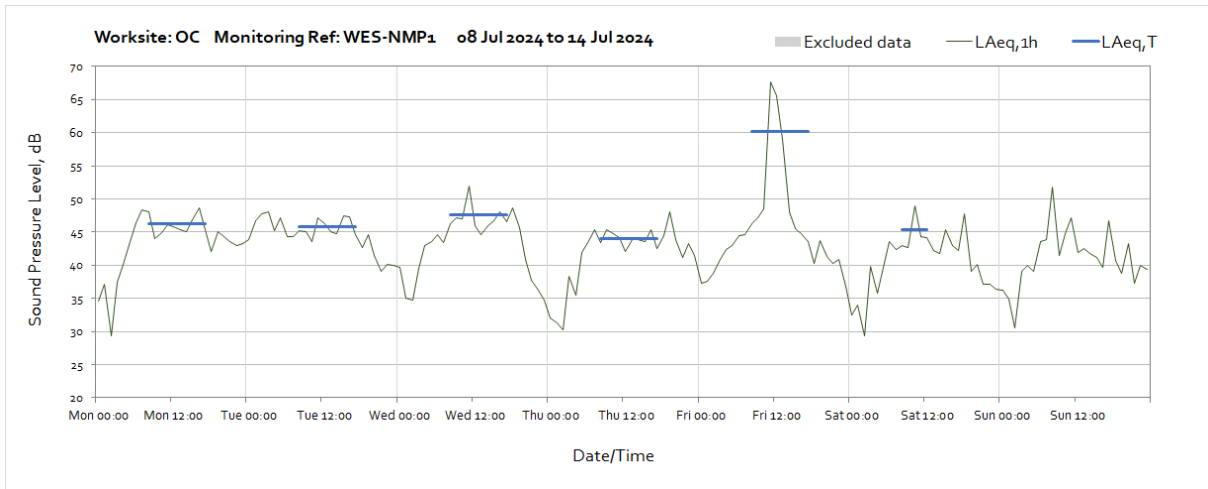
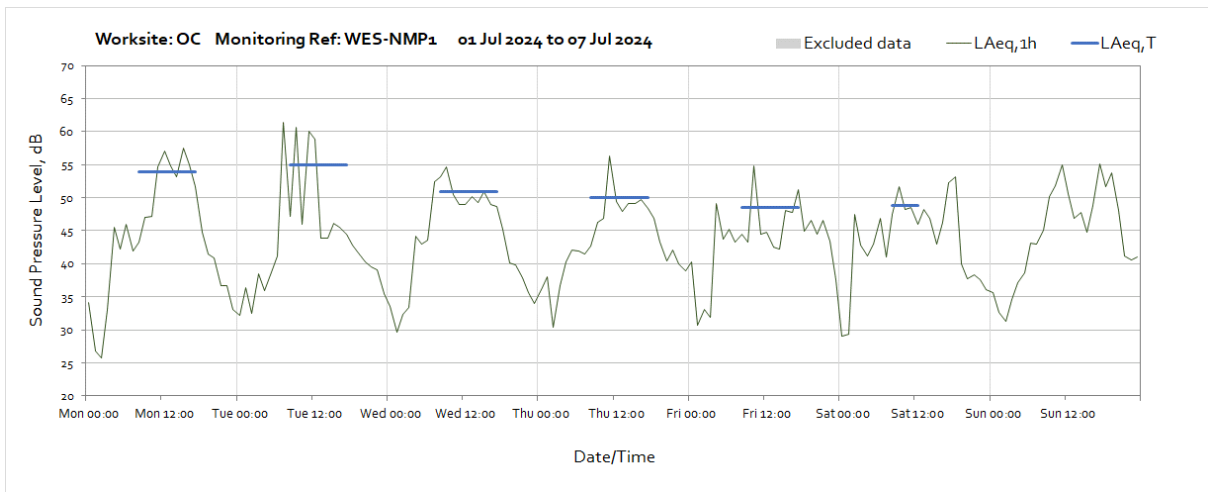
Worksite: OC – Monitoring Ref: MF-NMP1

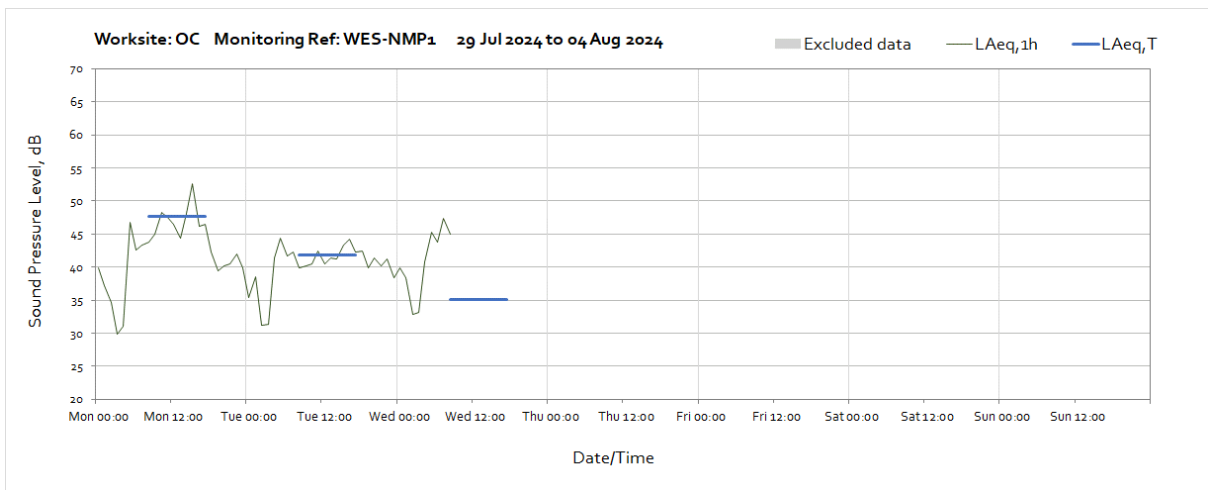
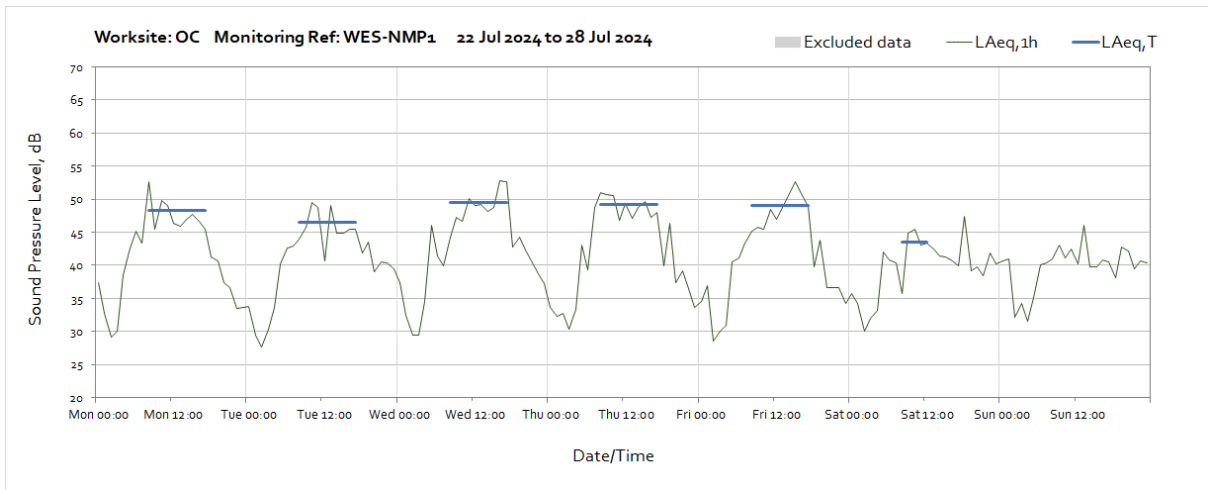
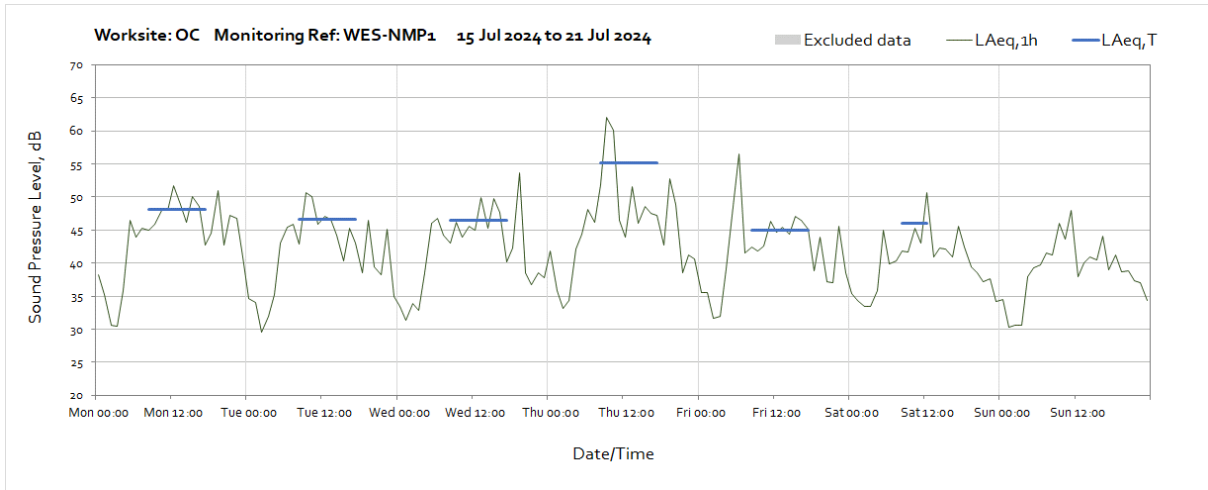






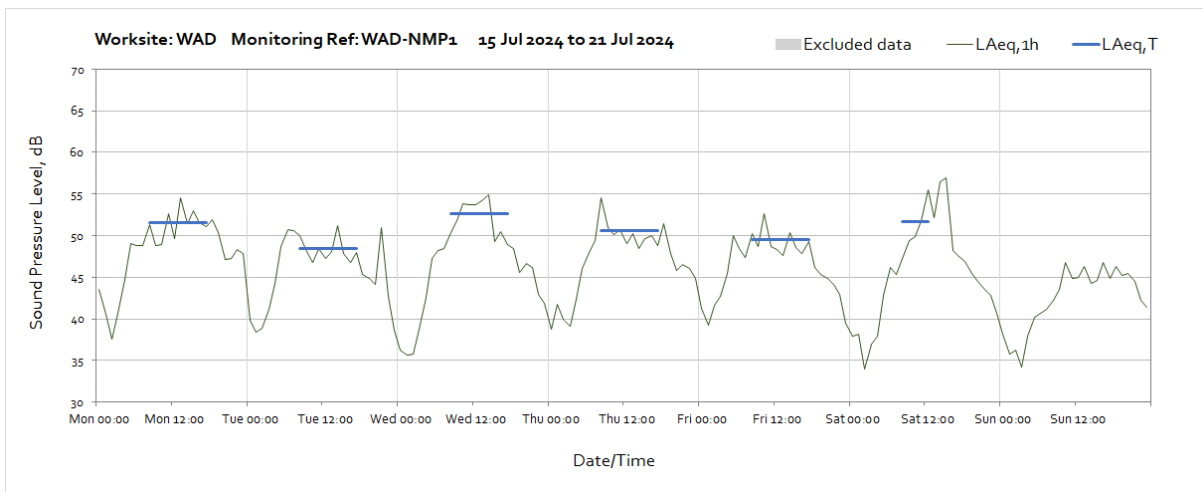
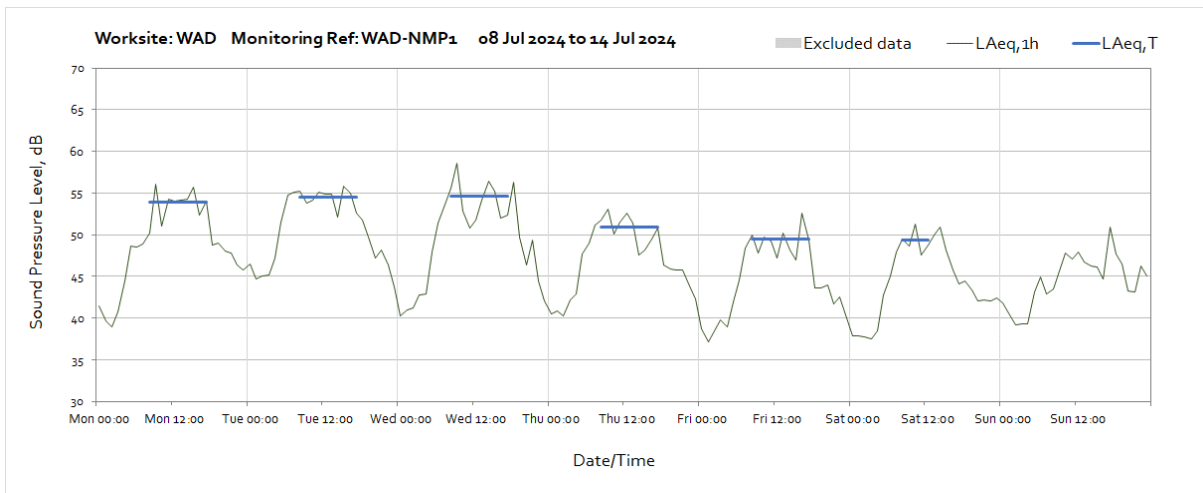
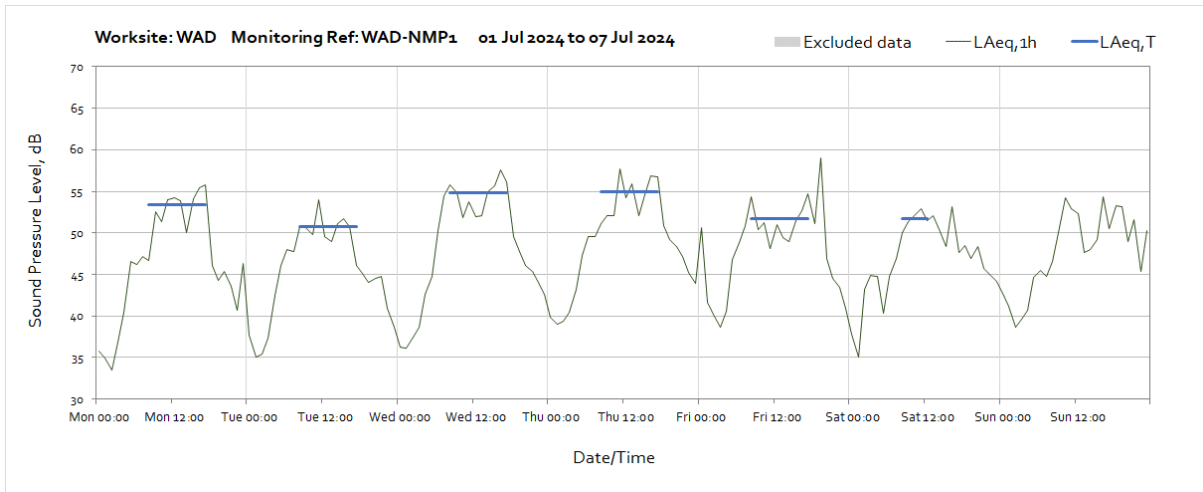
Worksite: OC - Monitoring Ref: WES-NMP1

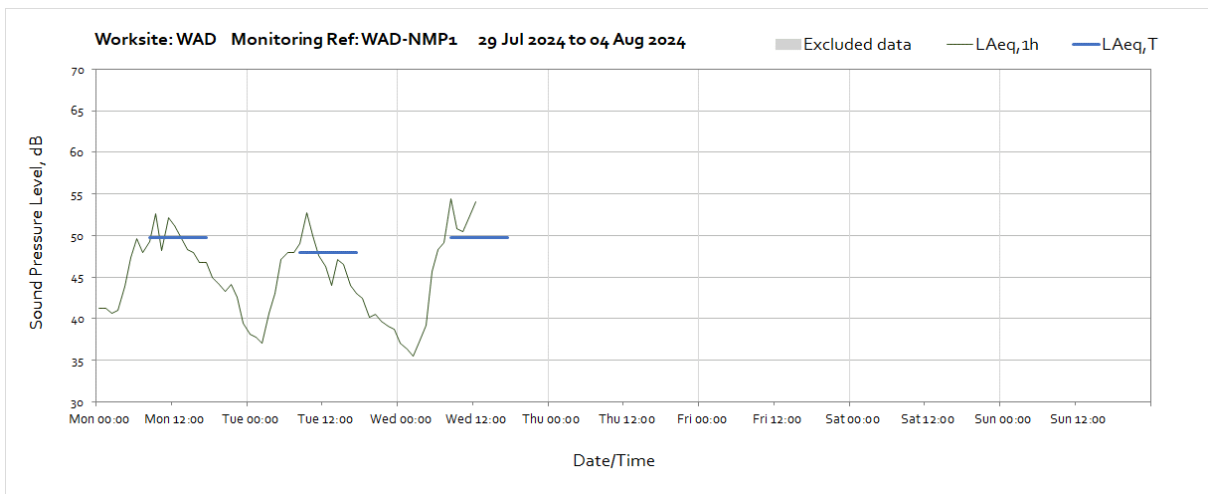
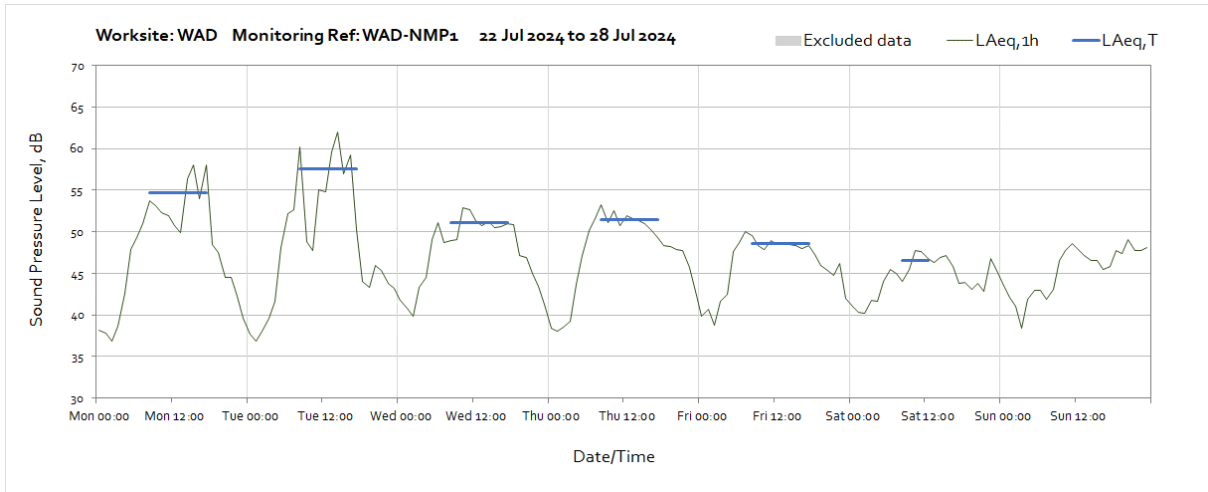




Note: Monitor was decommissioned at 09:00 on Wednesday 31st July.

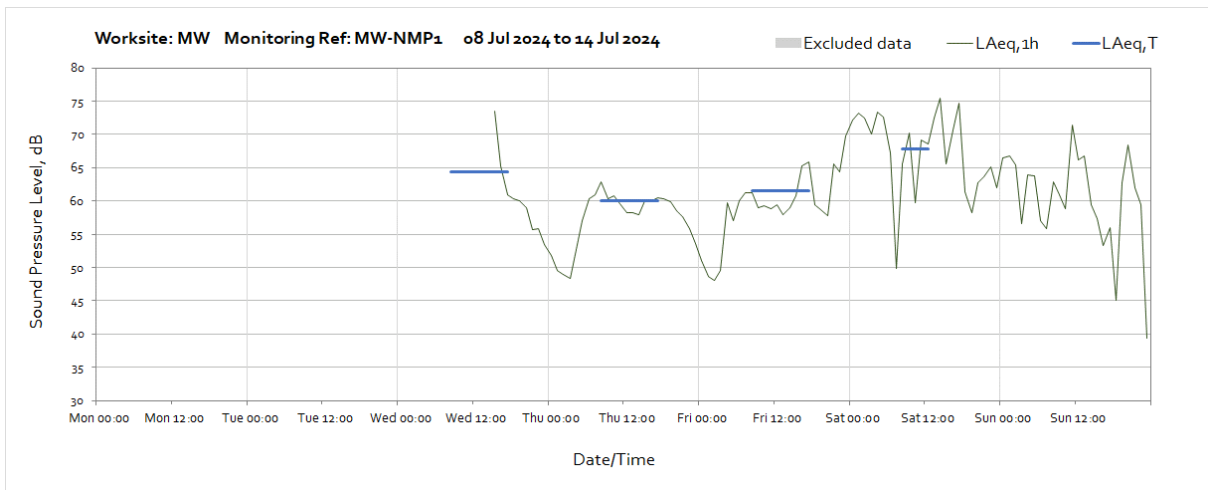
Worksite: WAD – Monitoring Ref: WAD-NMP1





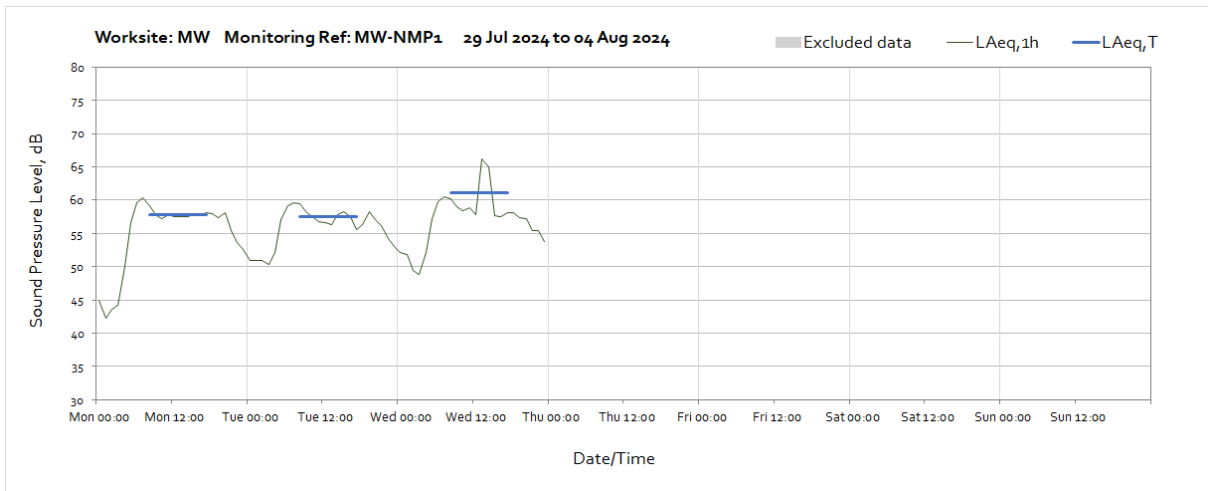
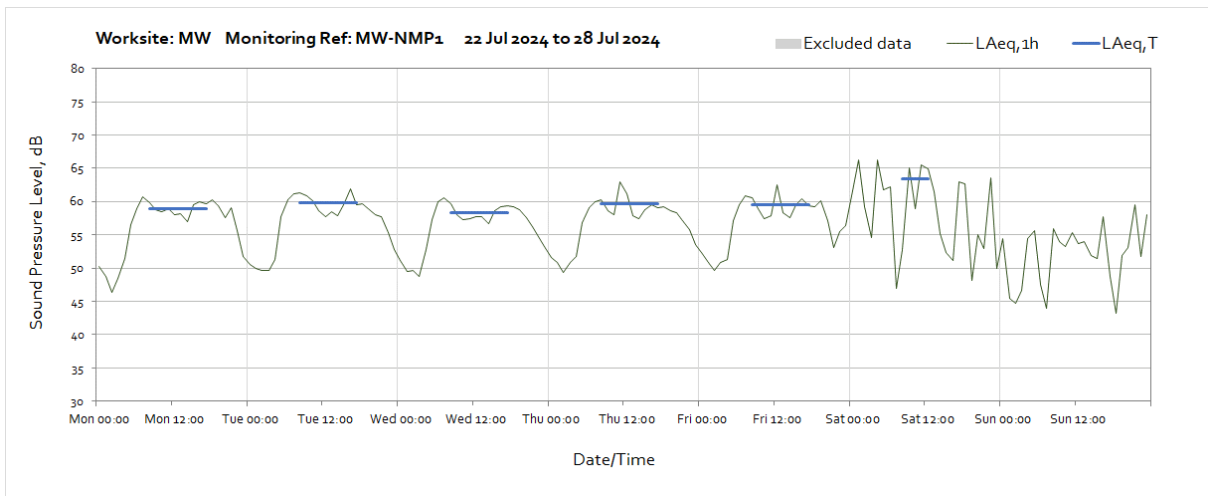
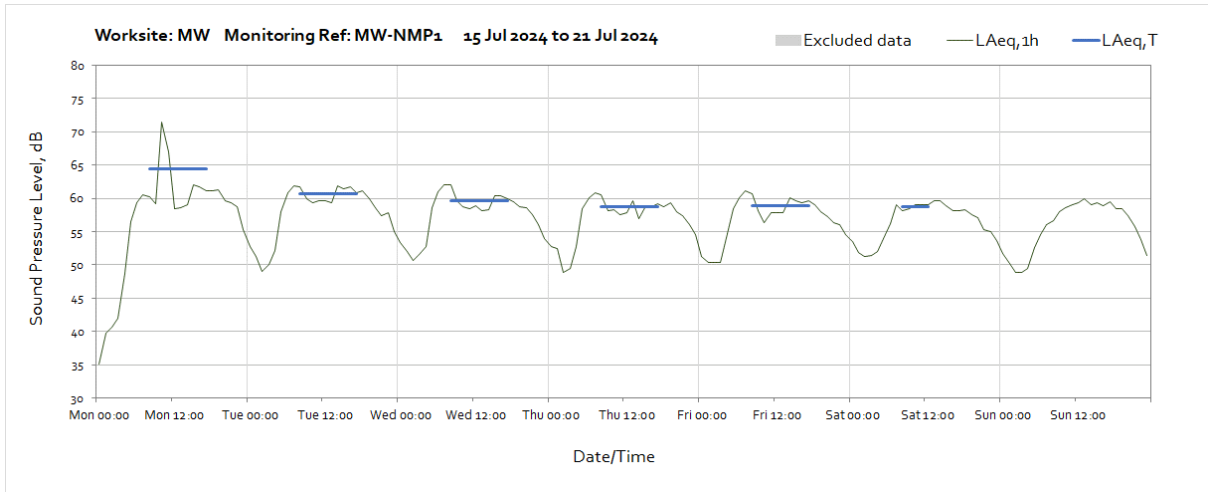
Note: Monitor was decommissioned at 13:00 on Wednesday 31st July.

Worksite: MW – Monitoring Ref: MW-NMP1

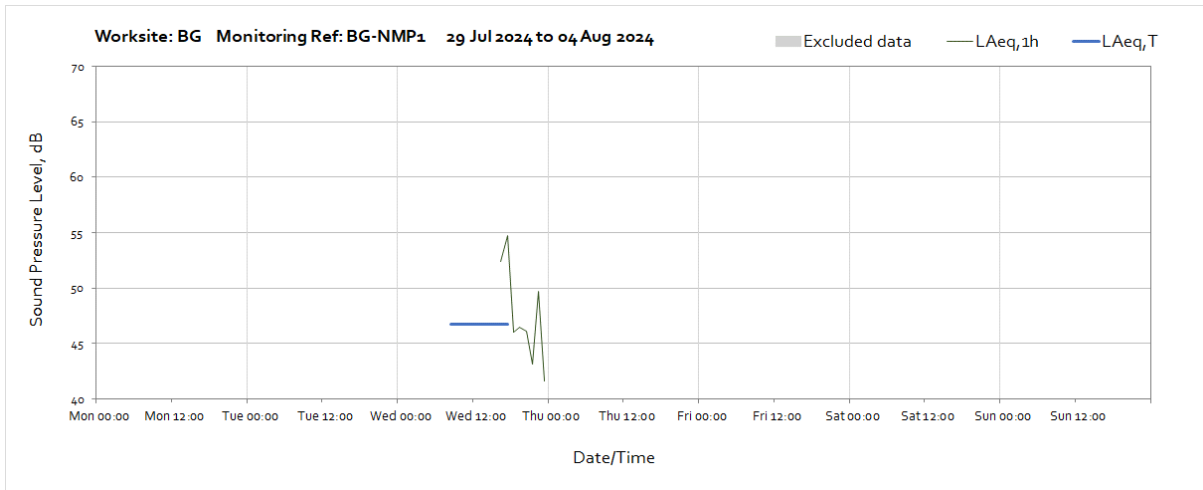


Note: Monitor was installed at 15:00 on Wednesday 10th July.

OFFICIAL

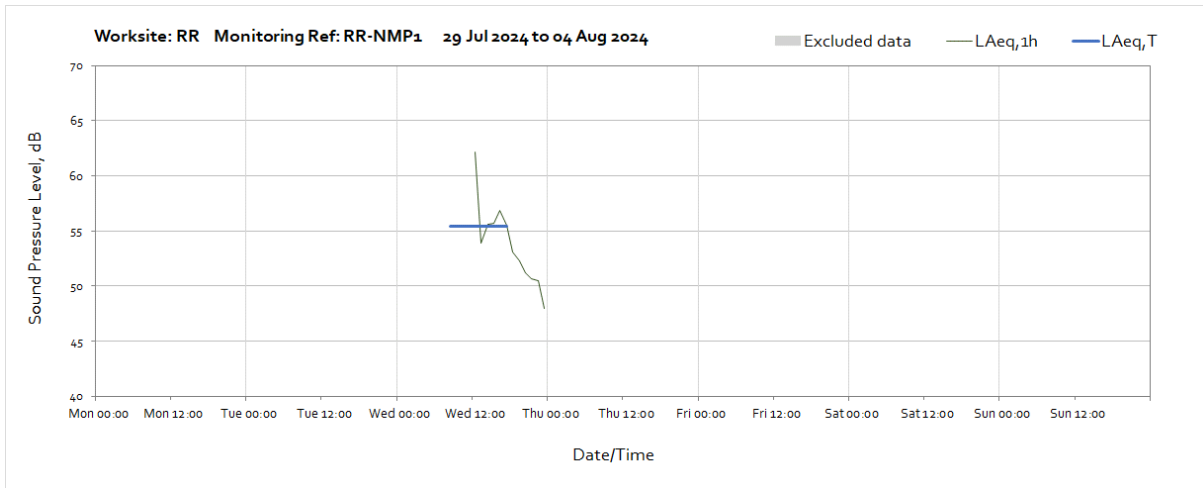


Worksite: BG – Monitoring Ref: BG-NMP1



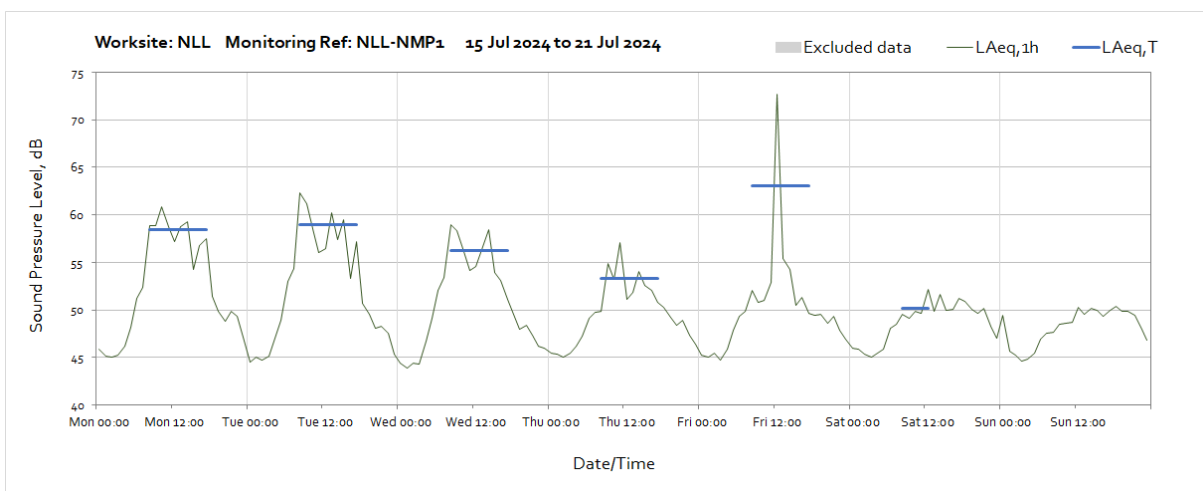
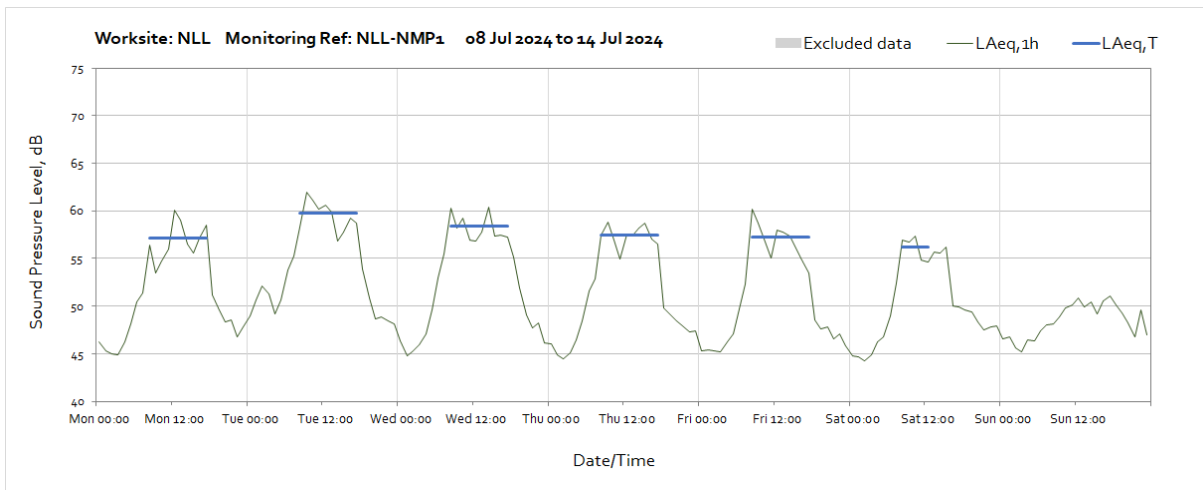
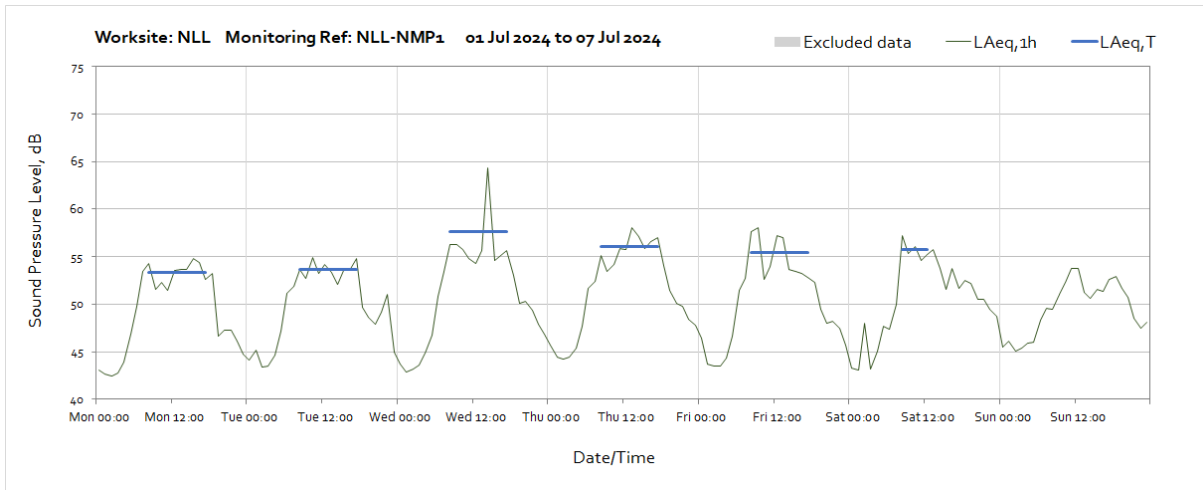
Note: Monitor was installed at 16:00 on Wednesday 31st July.

Worksite: RR – Monitoring Ref: RR-NMP1

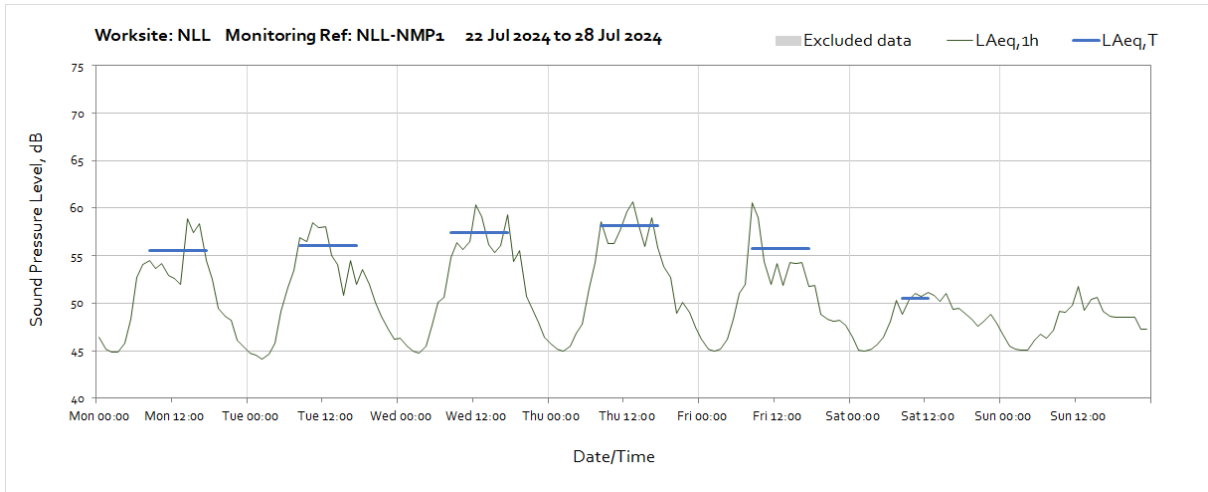


Note: Monitor was installed at 12:00 on Wednesday 31st July.

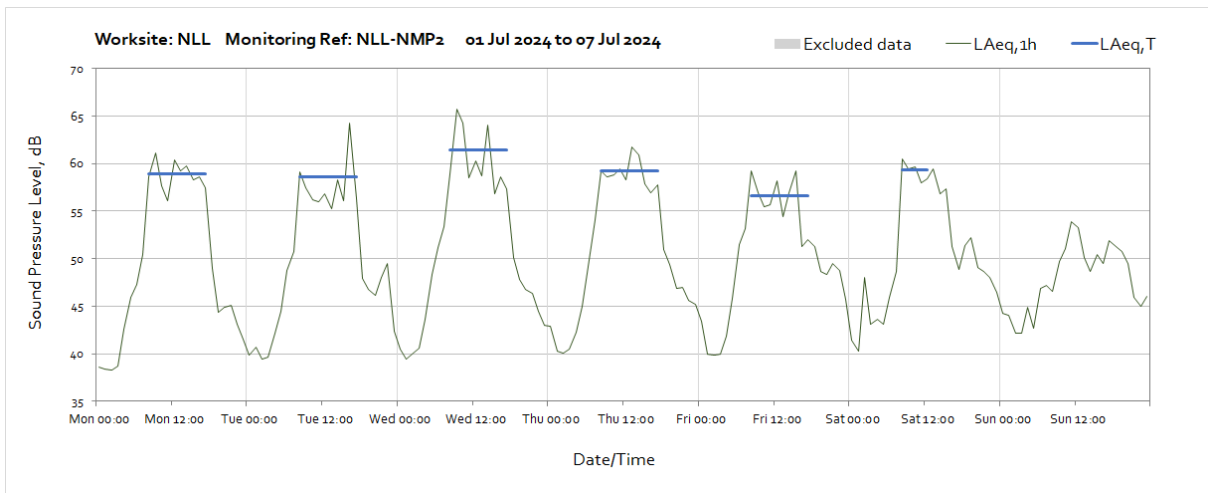
Worksite: NLL – Monitoring Ref: NLL-NMP1

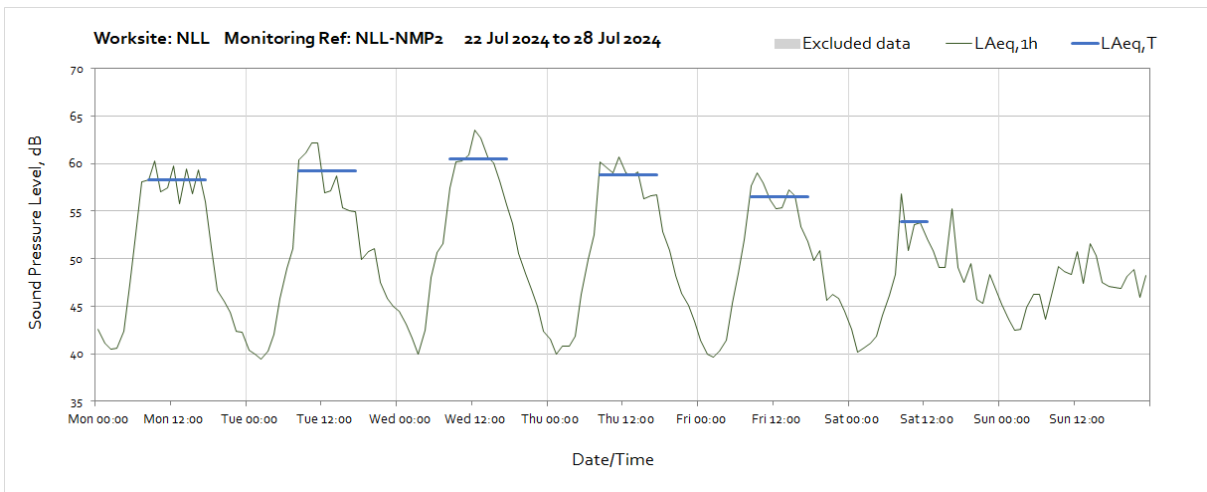
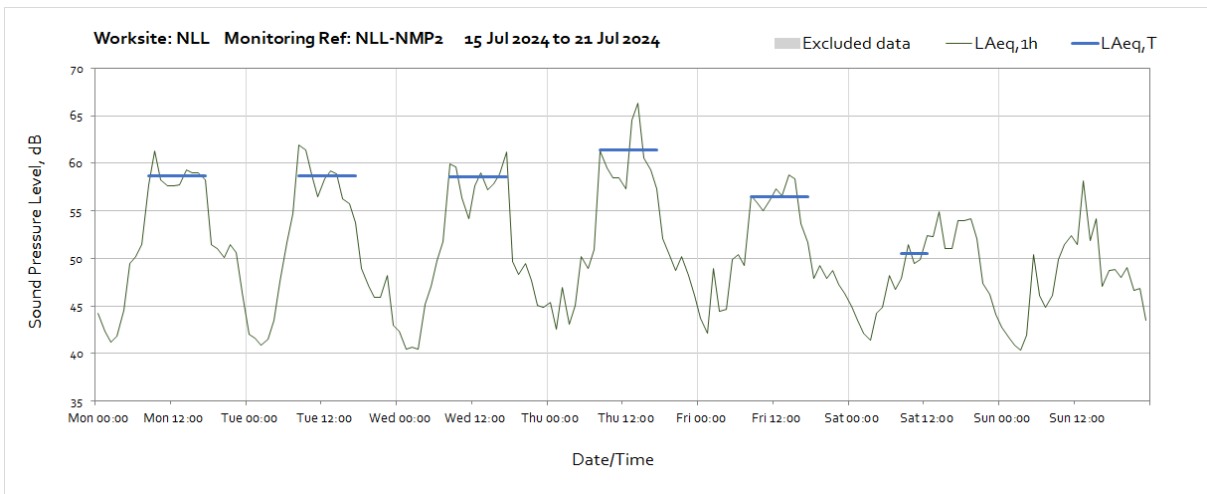
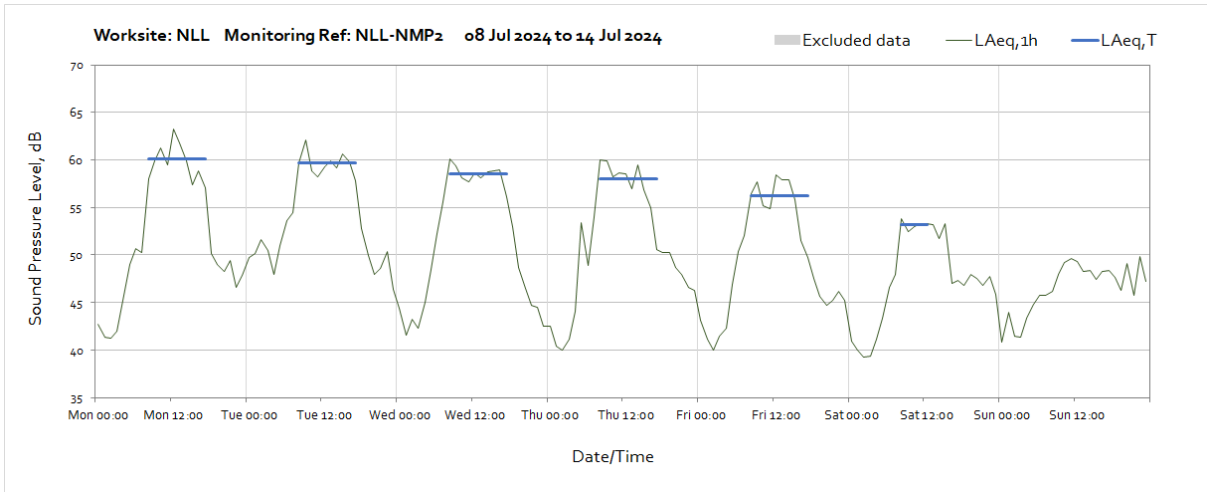


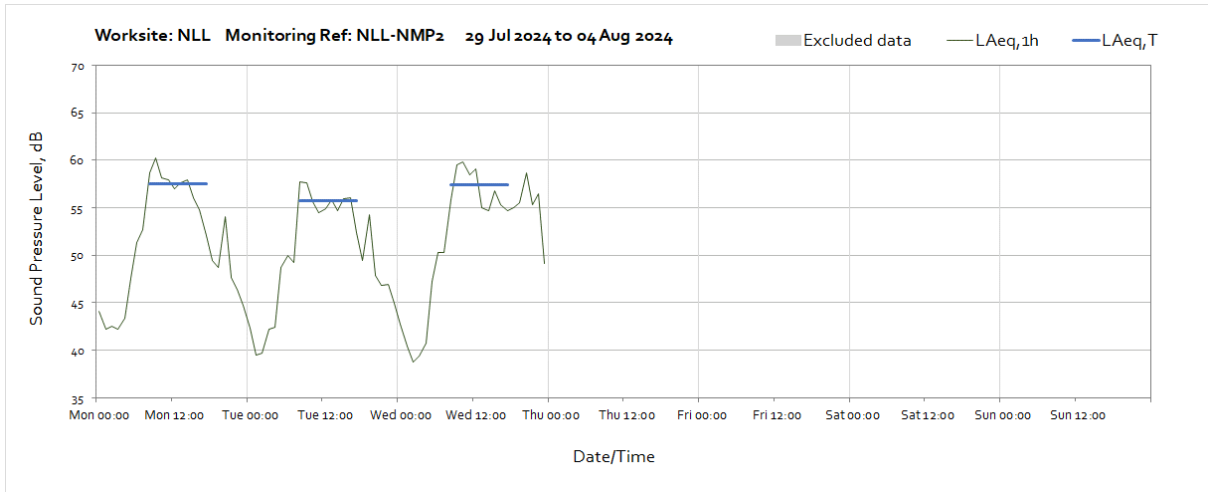
OFFICIAL



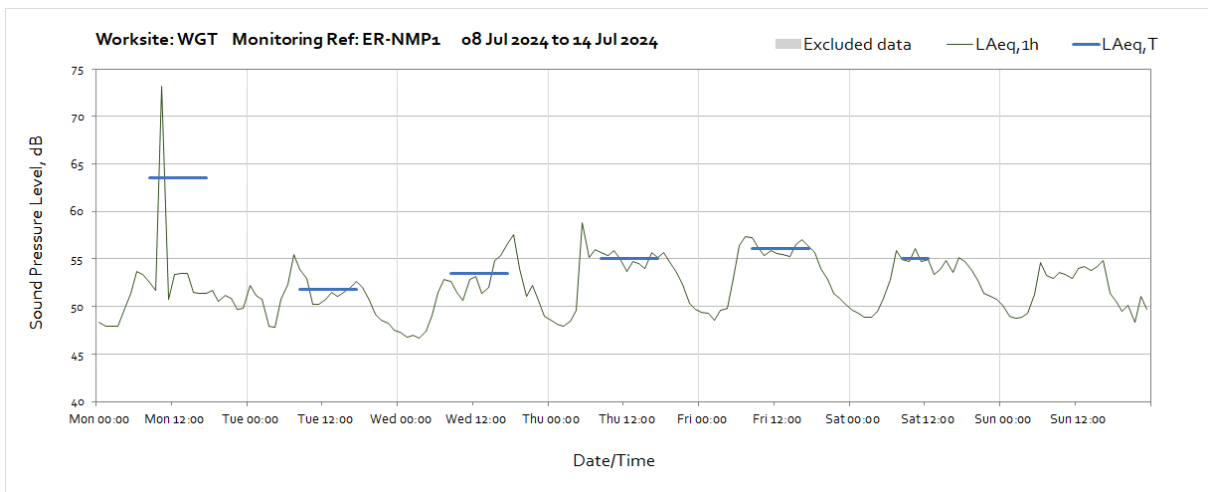
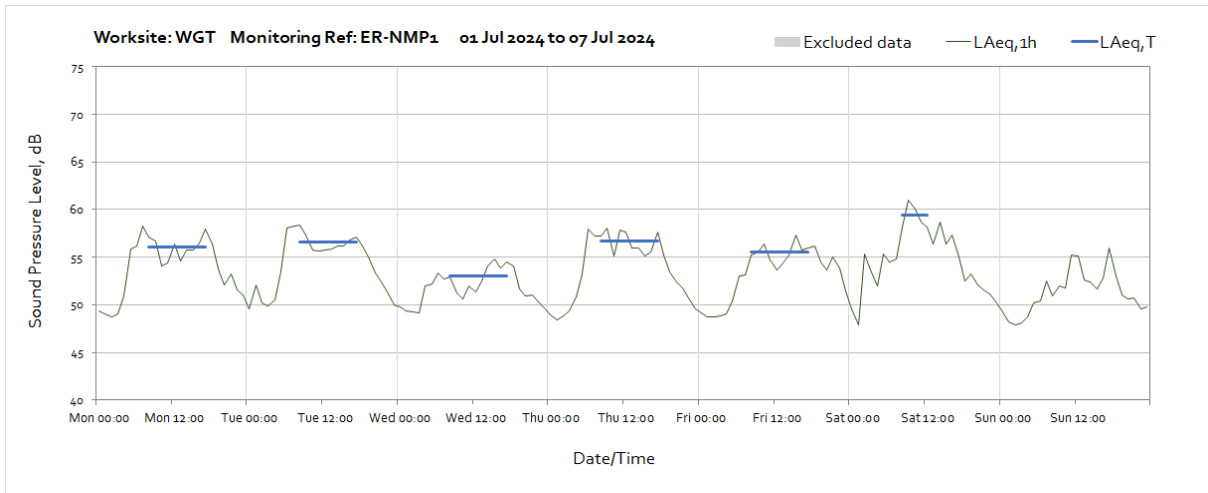
Worksite: NLL - Monitoring Ref: NLL-NMP2

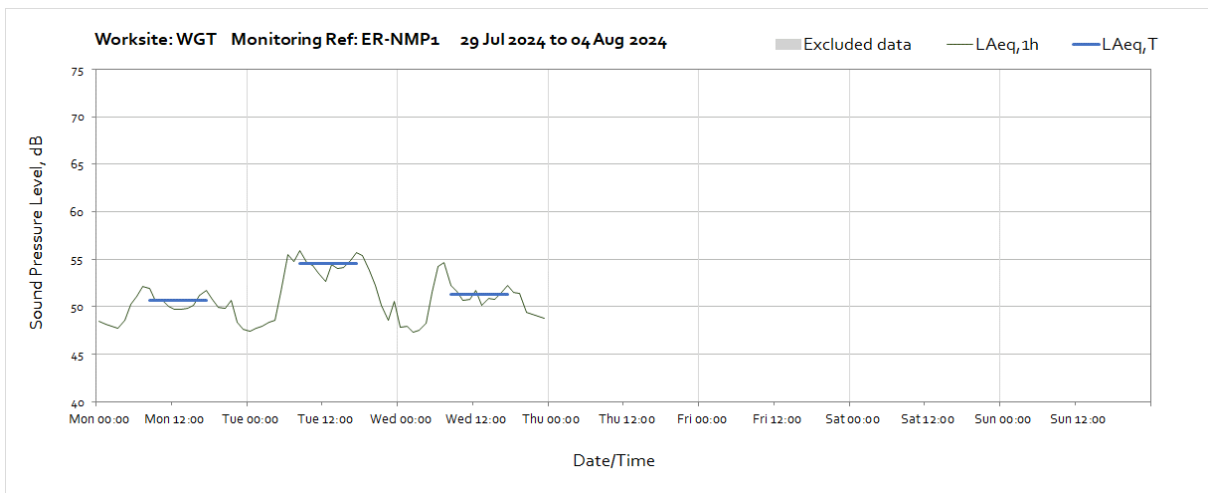
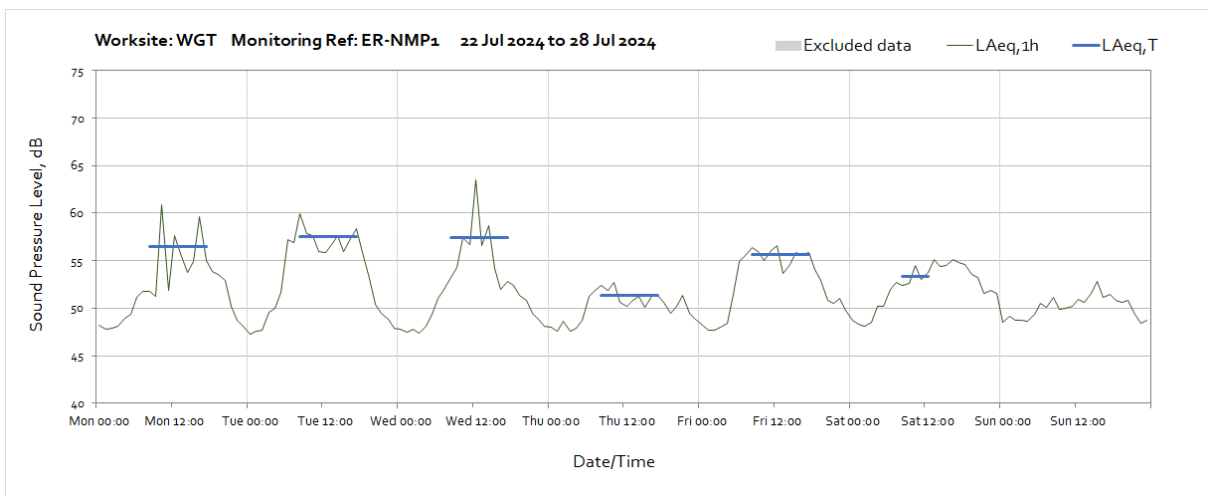
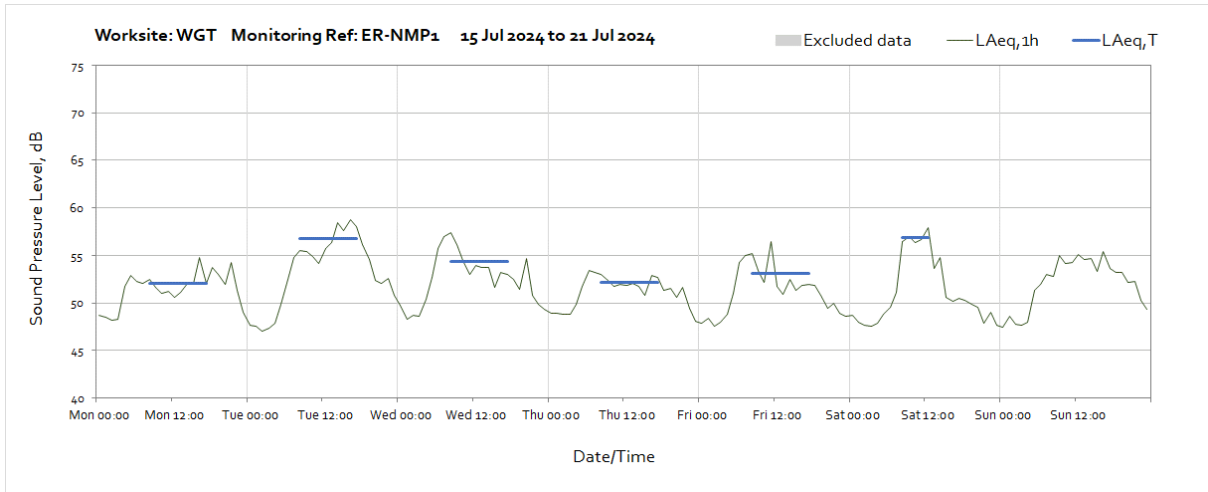




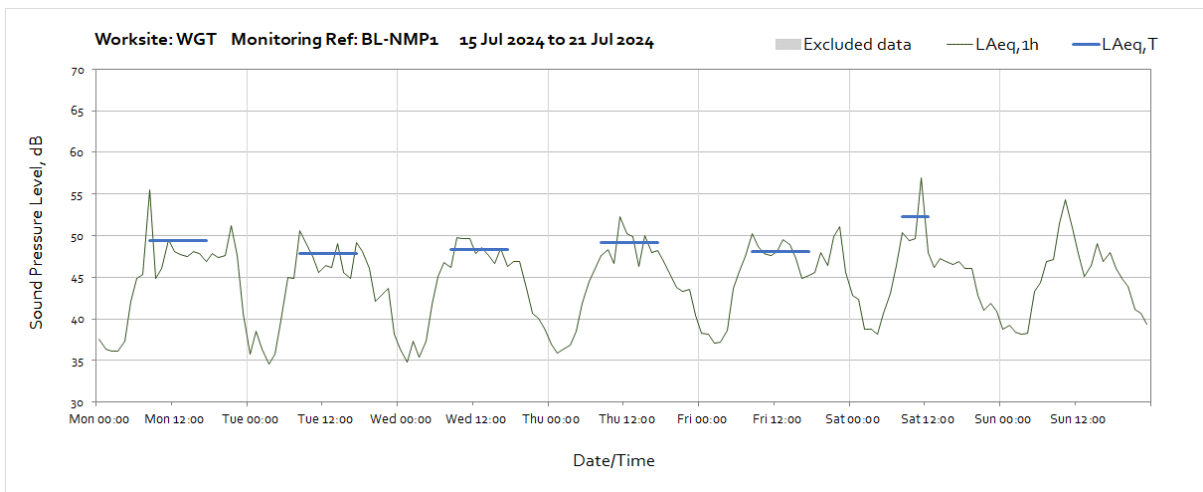
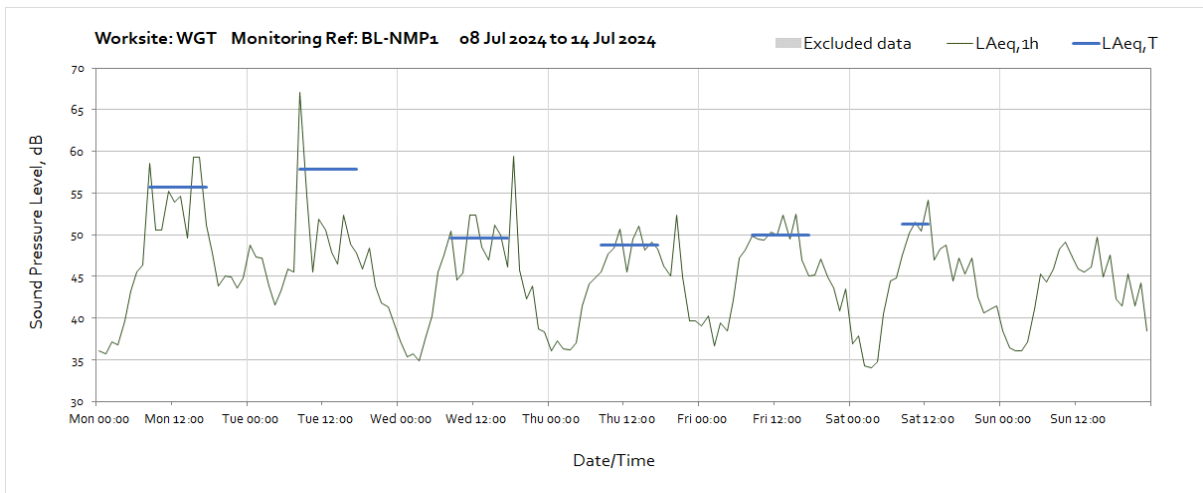
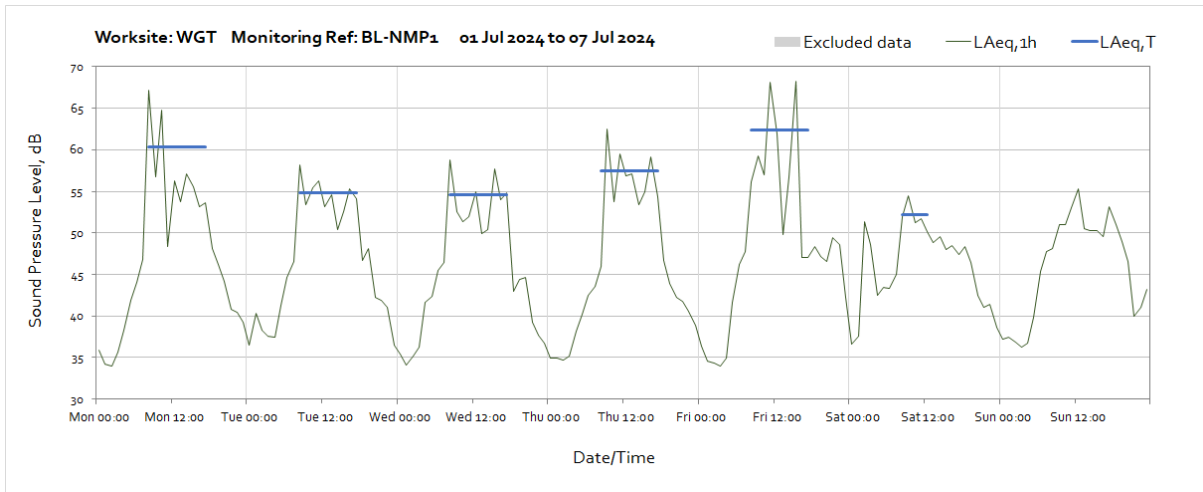


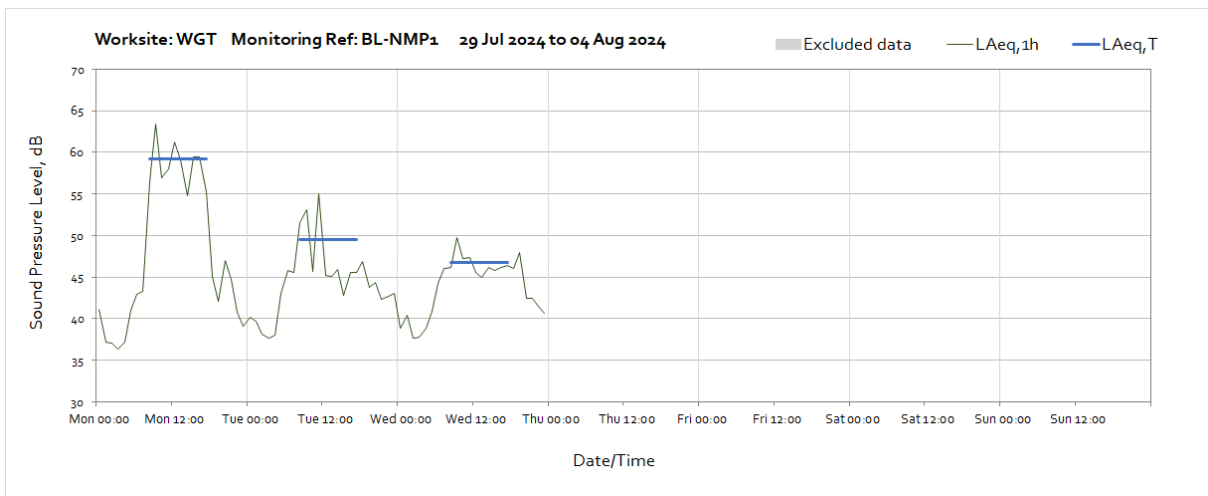
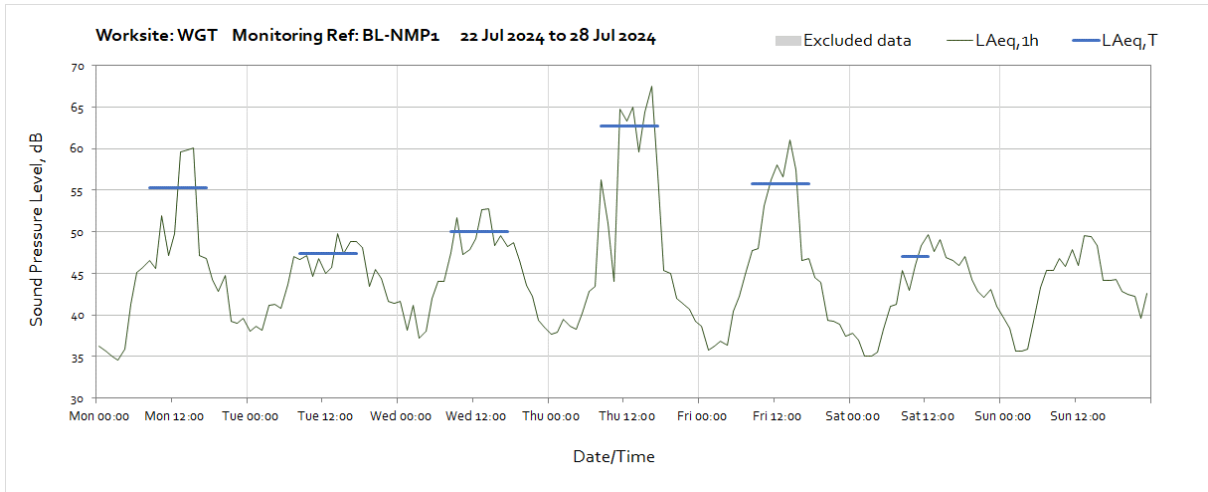
Worksite: WGT – Monitoring Ref: ER-NMP1



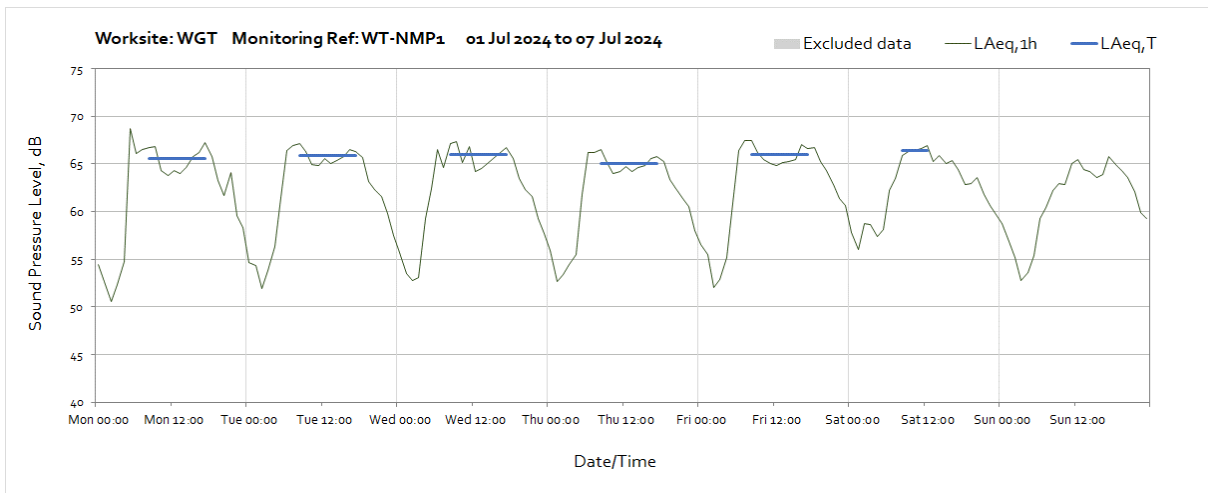


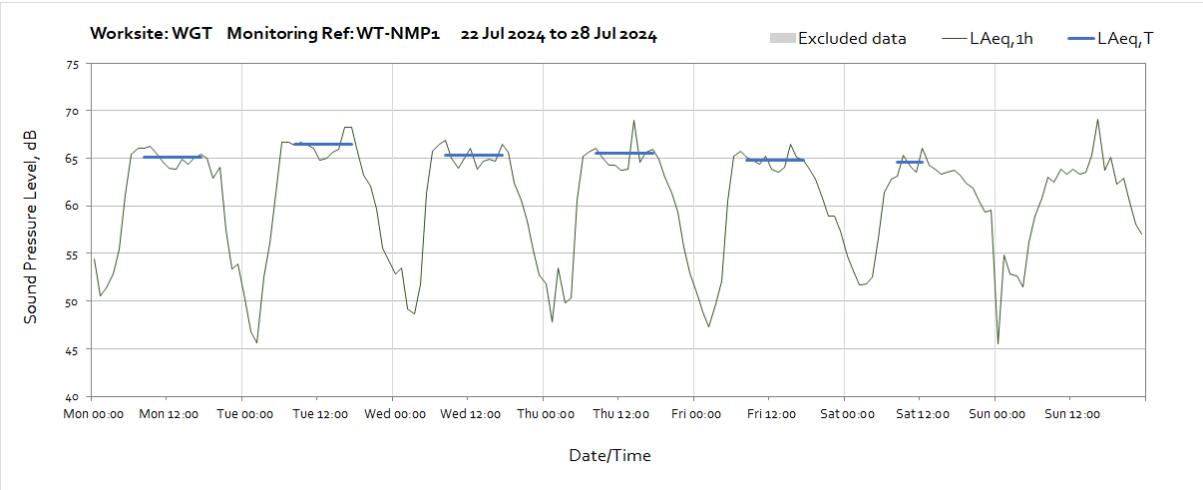
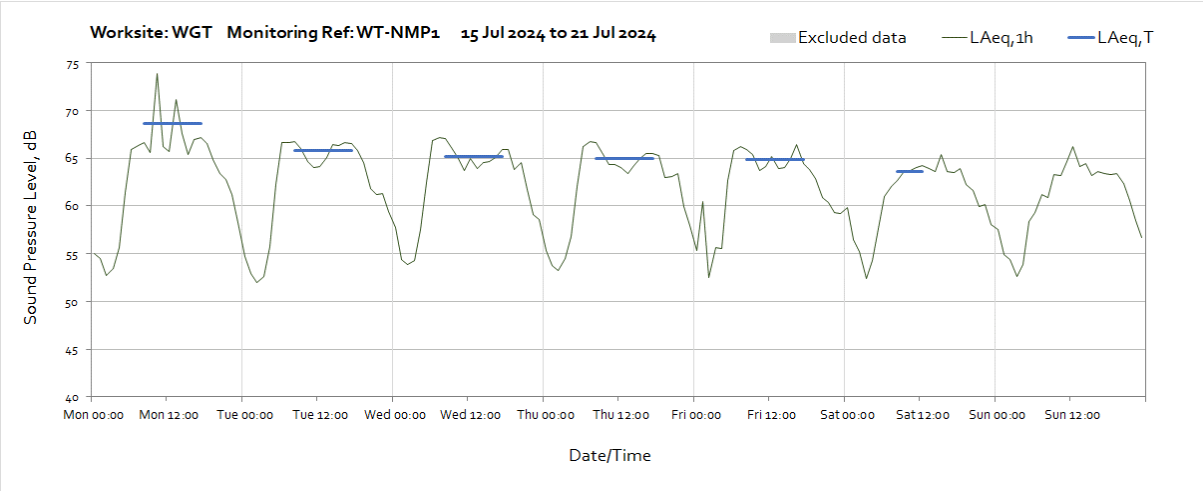
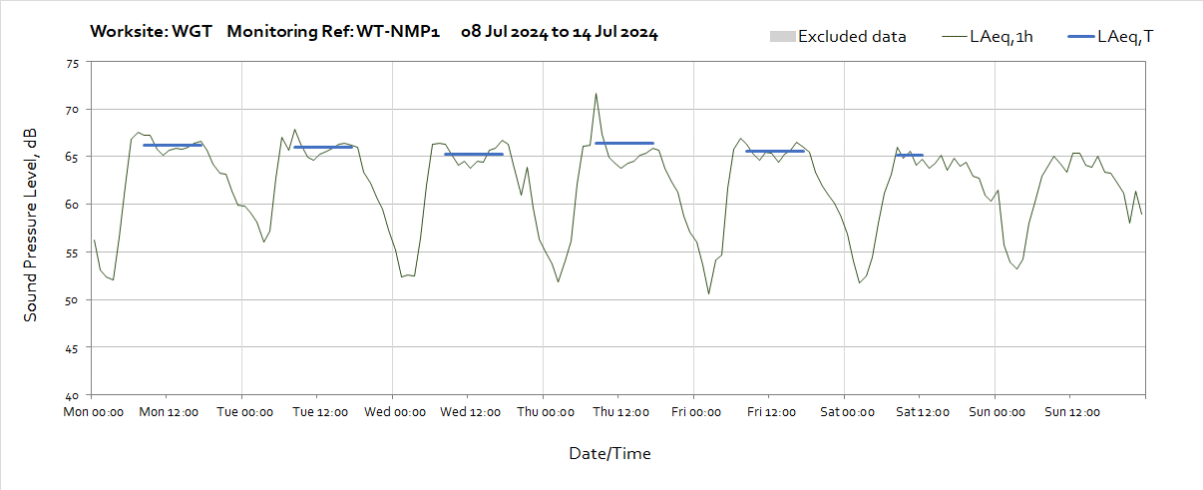
Worksite: WGT – Monitoring Ref: BL-NMP1

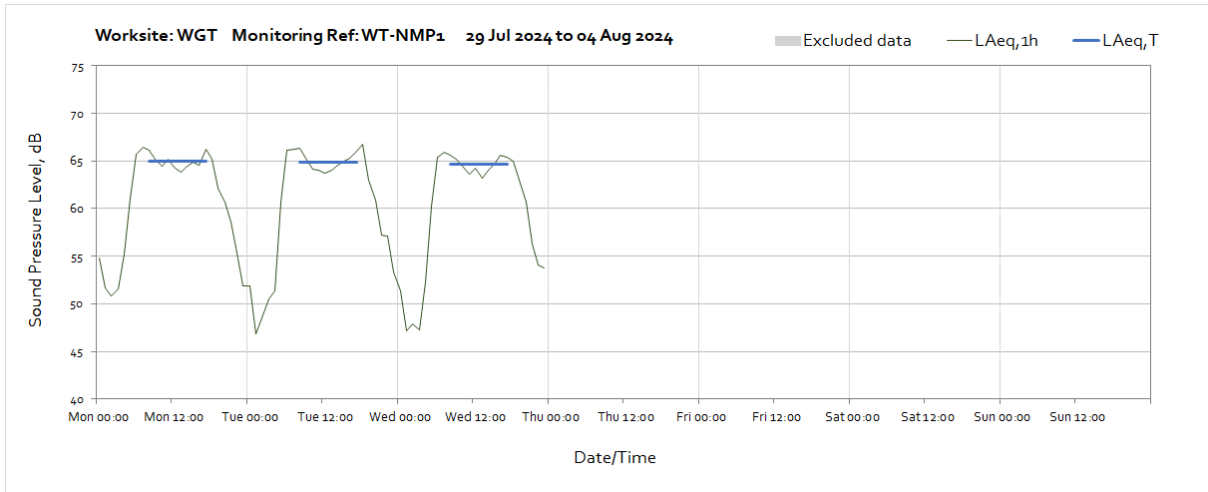




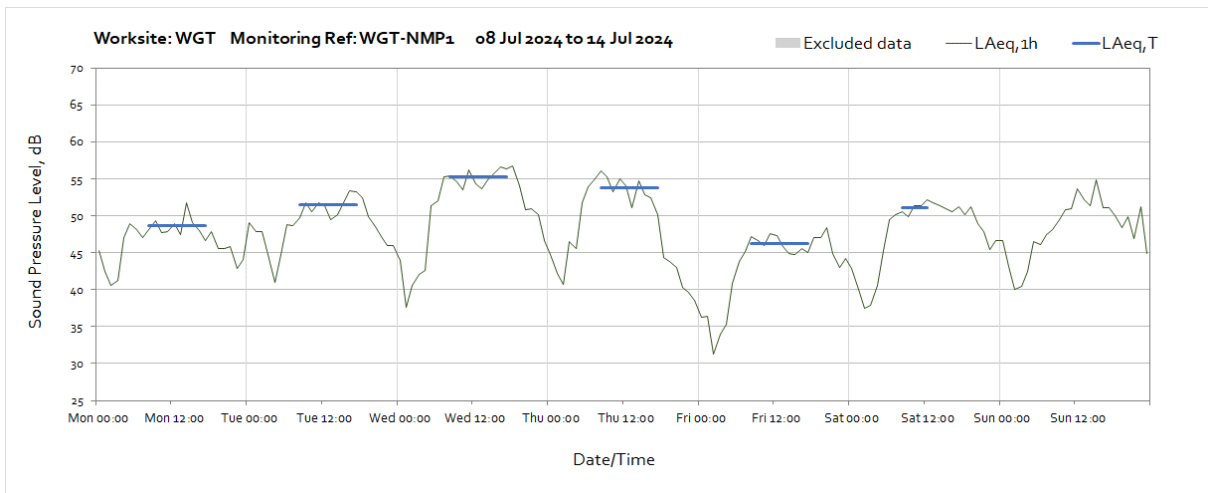
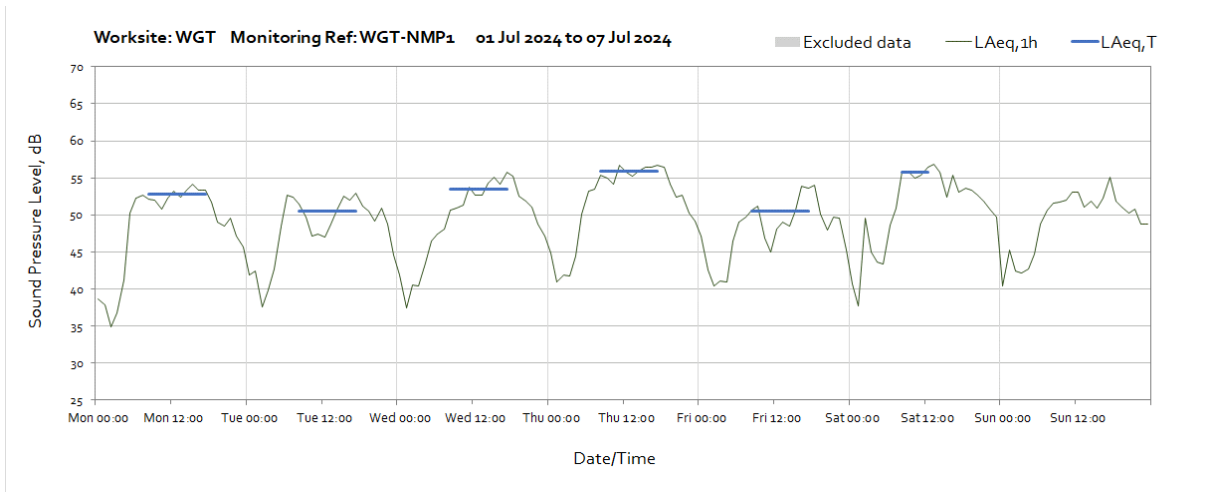
Worksite: WGT - Monitoring Ref: WT-NMP1

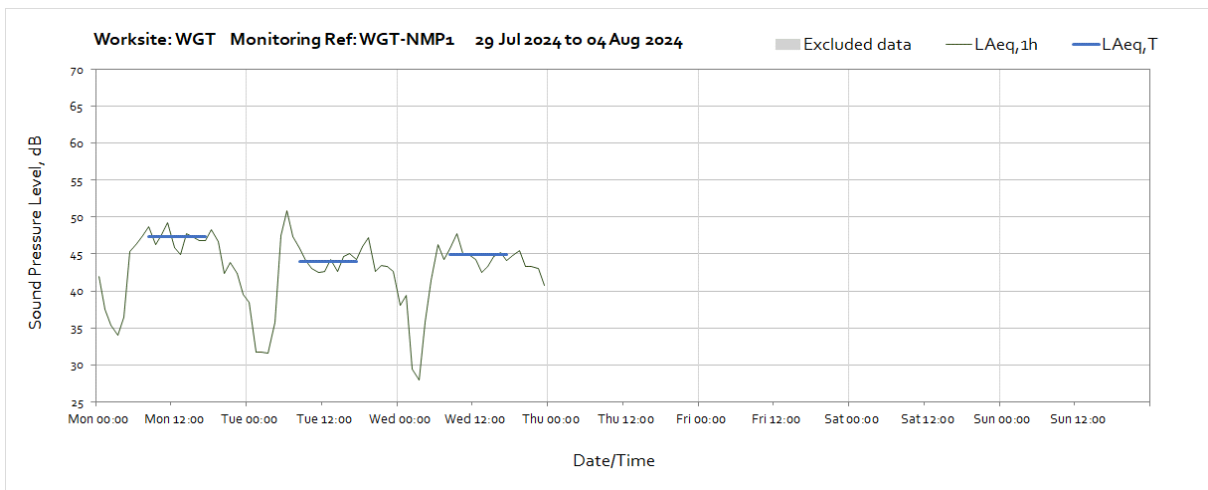
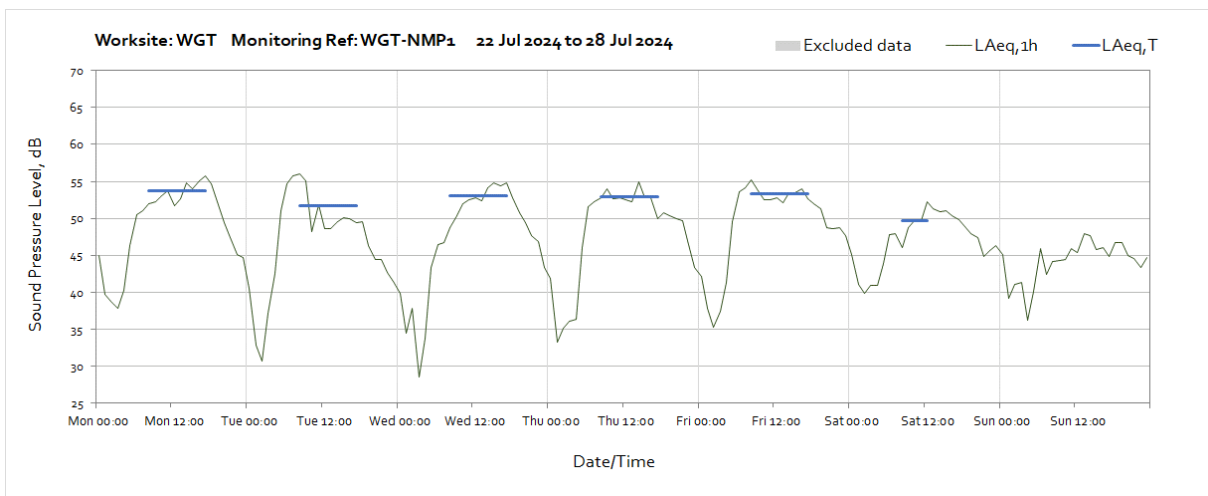
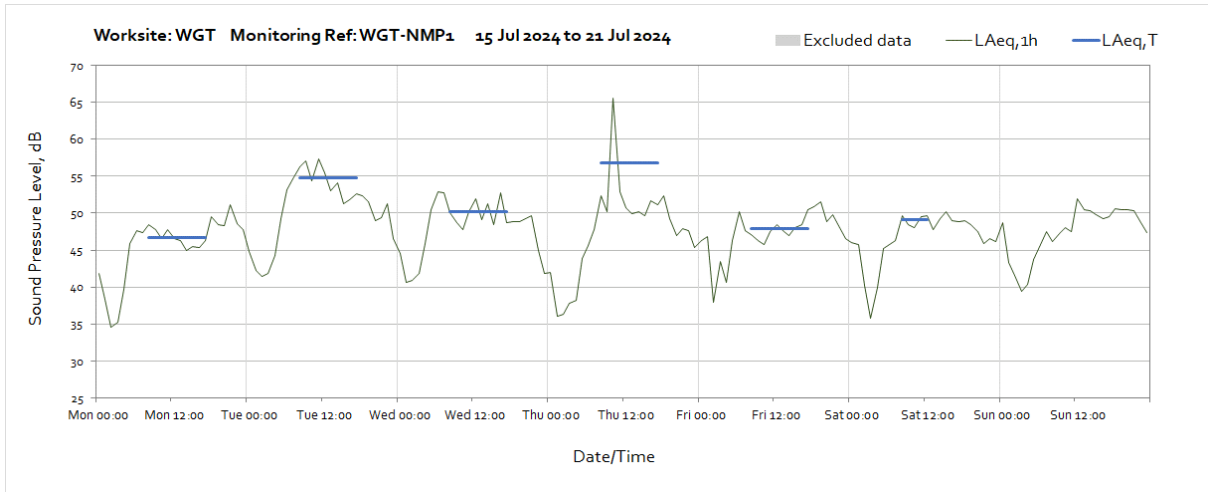




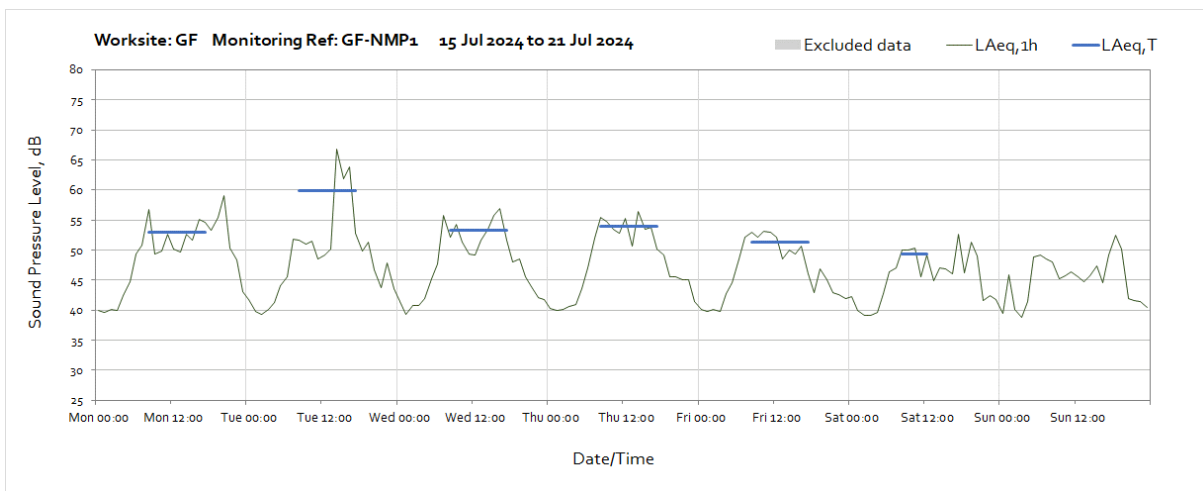
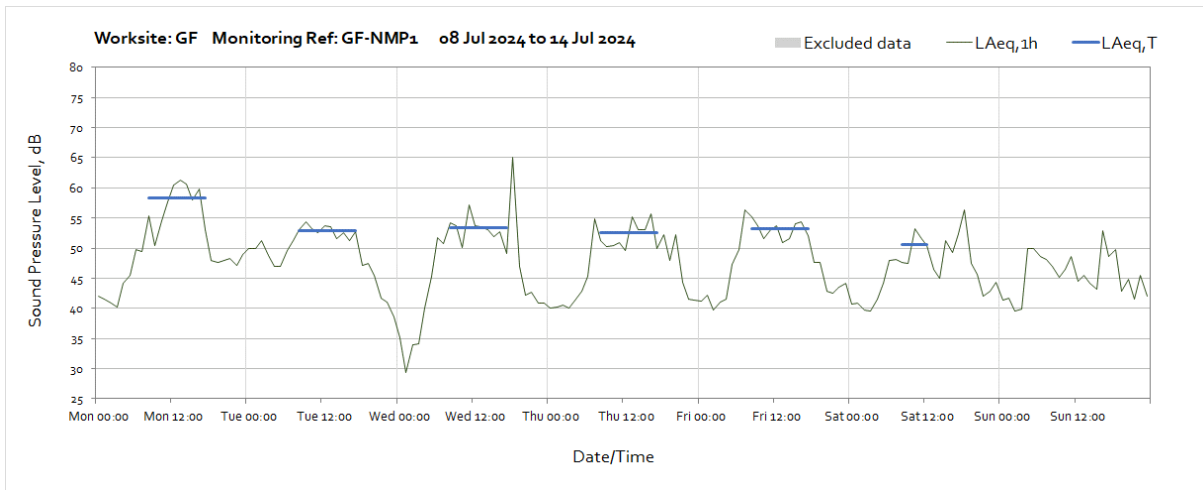
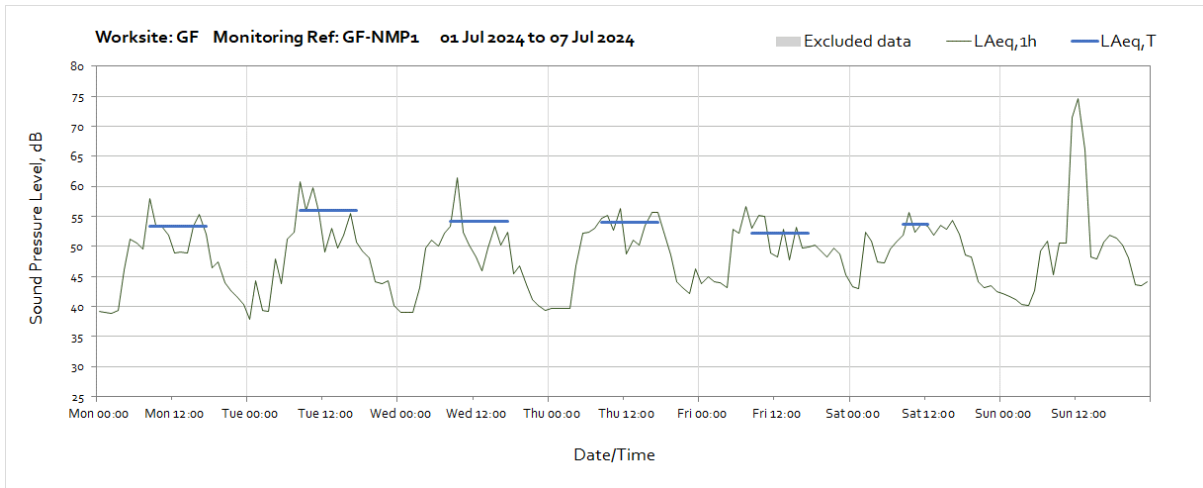


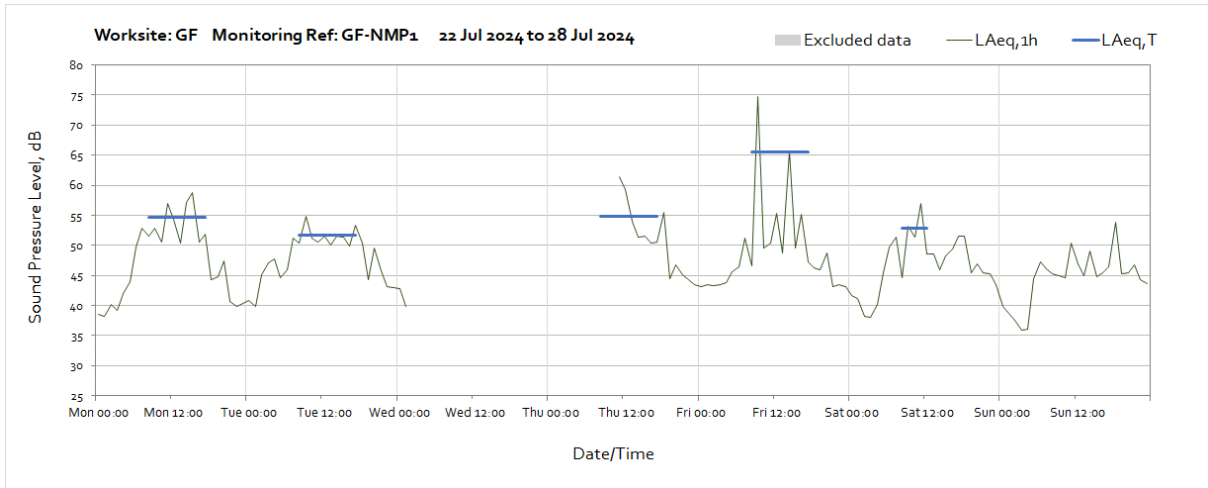
Worksite: WGT - Monitoring Ref: WGT-NMP1



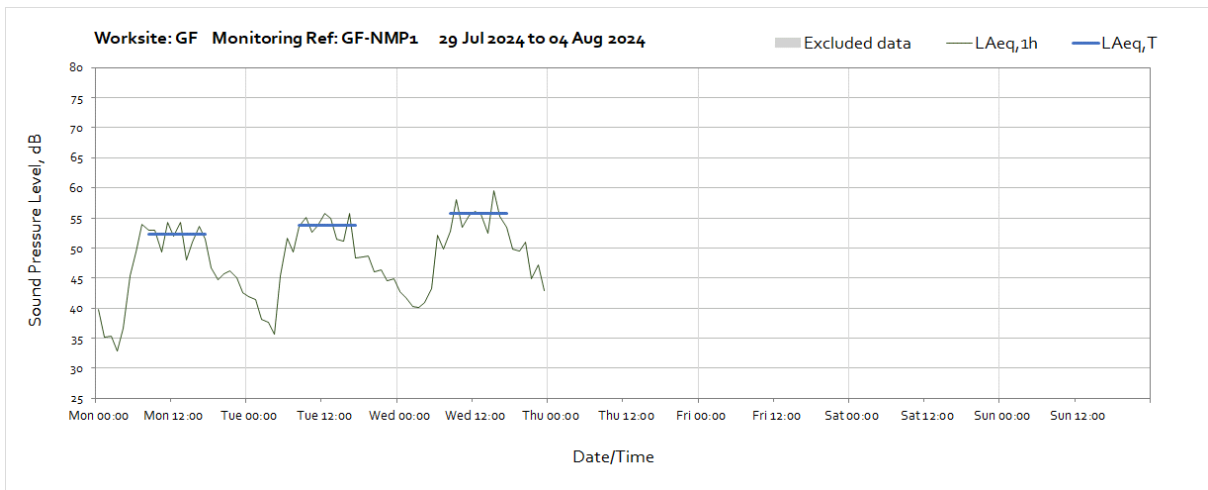


Worksite: GF – Monitoring Ref: GF-NMP1

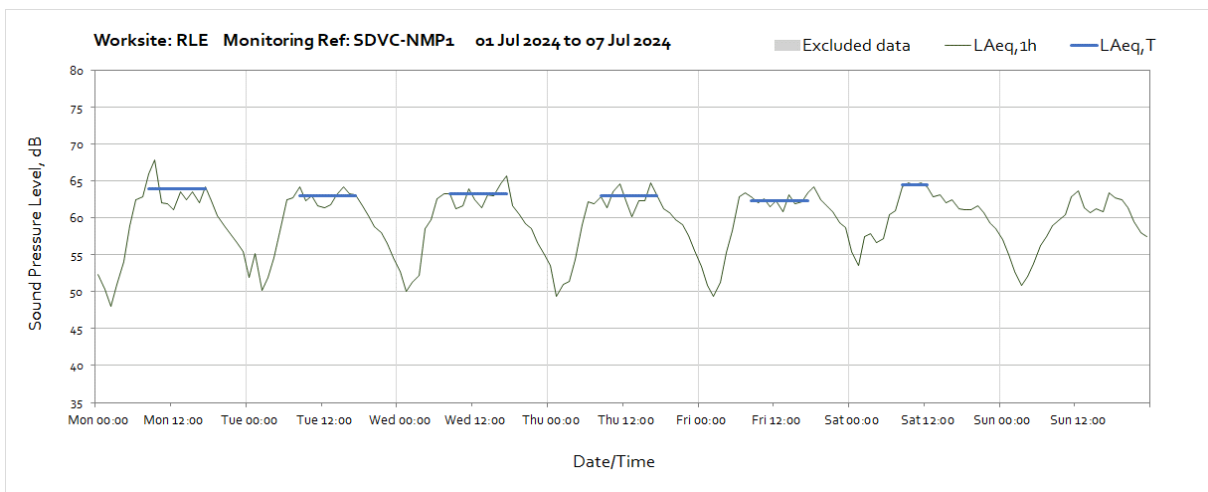


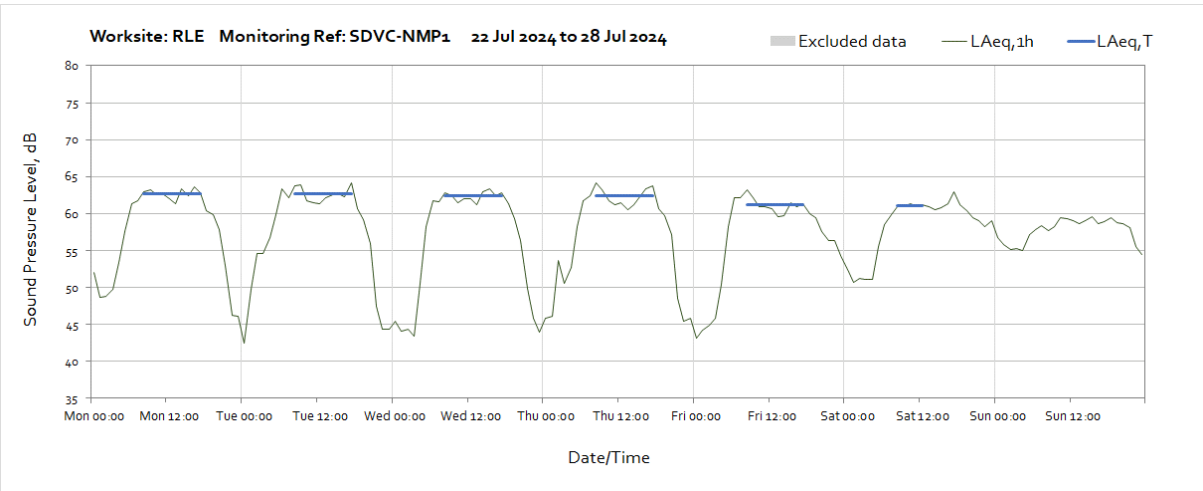
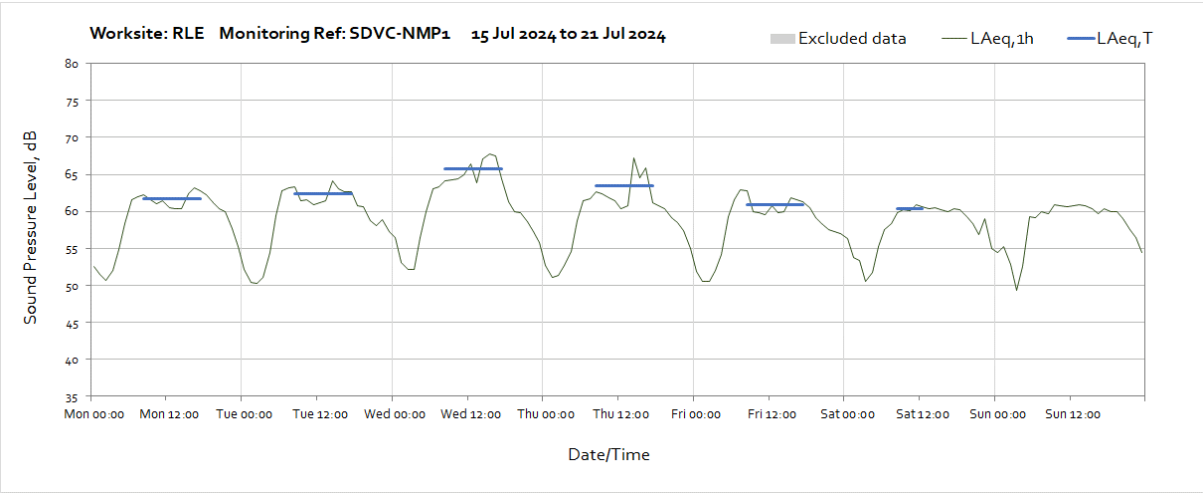
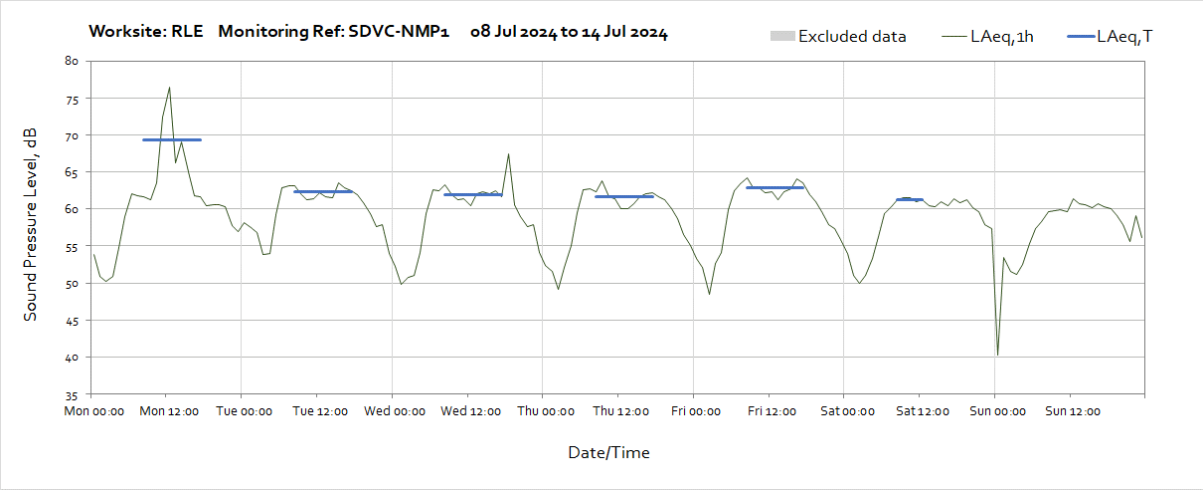


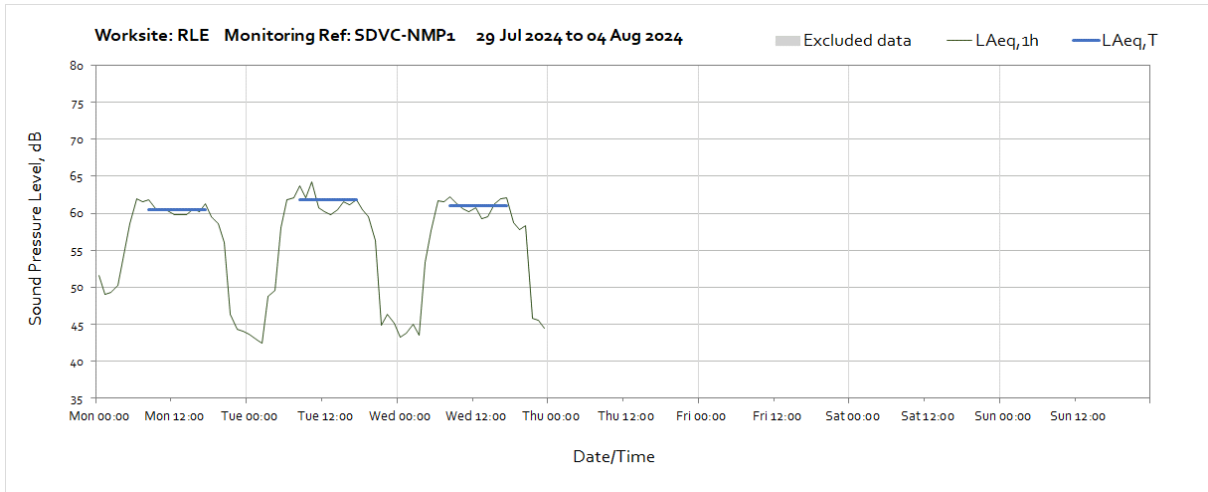
Note: Missing data between 02:00 on Wednesday 24th July and 11:00 on Thursday 25th July was due to loss of connection to monitoring station.



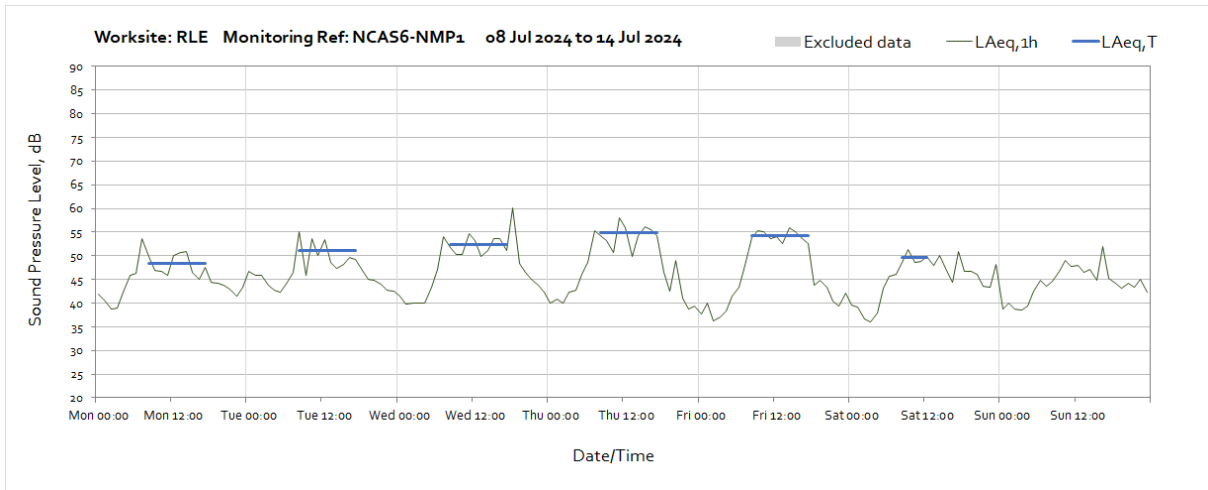
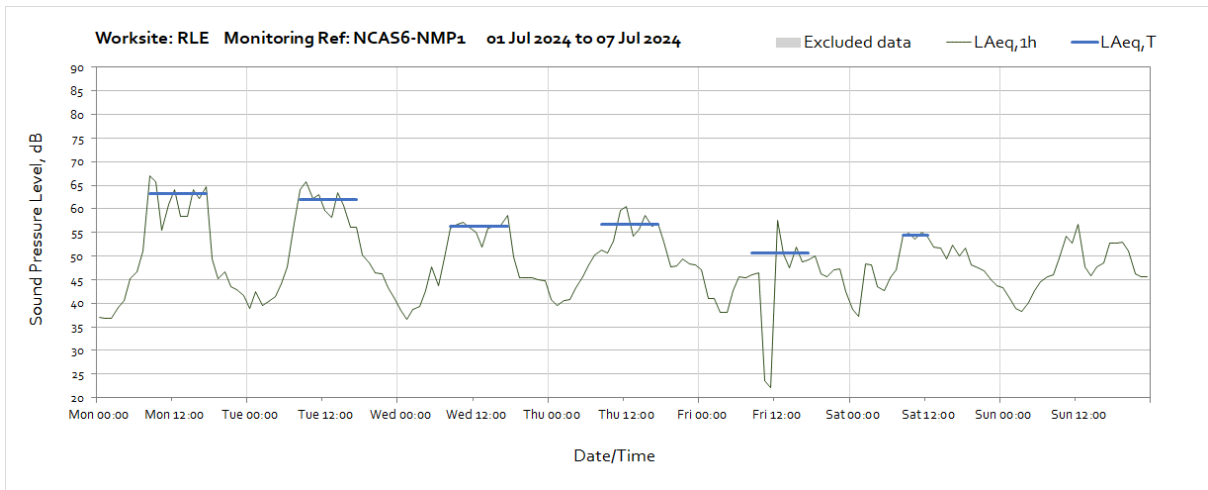
Worksite: RLE – Monitoring Ref: SDVC-NMP1

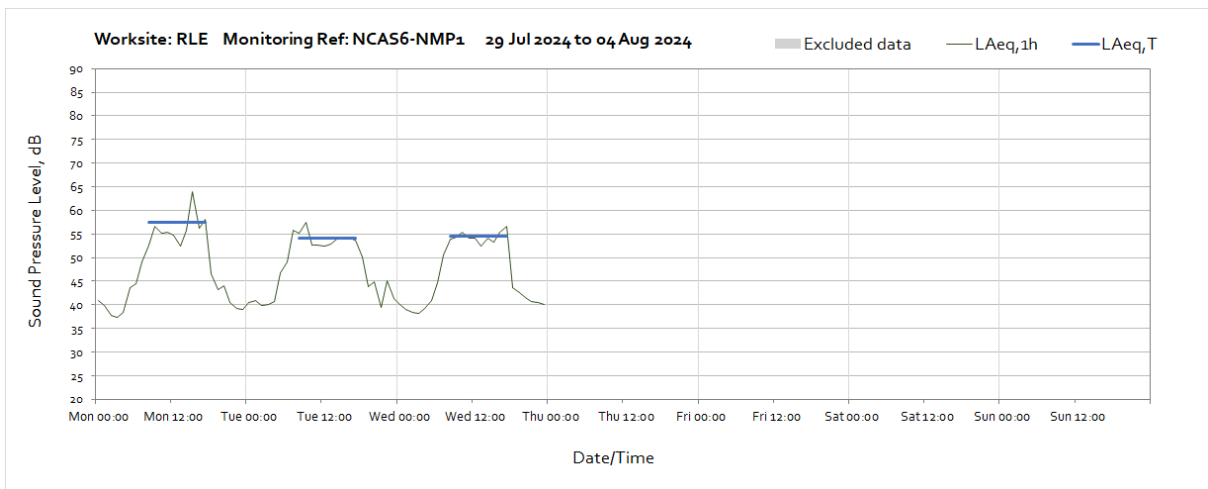
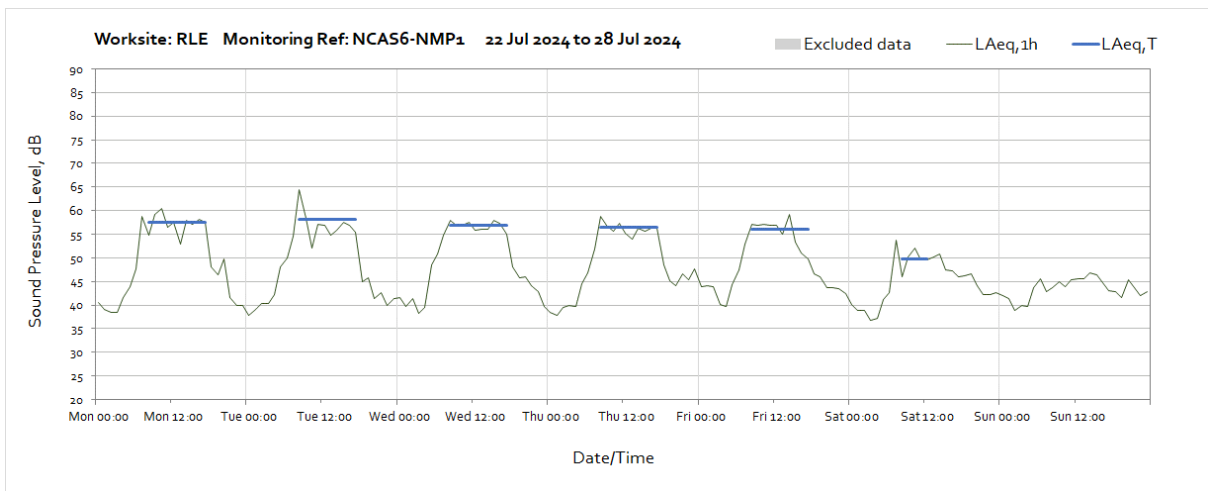
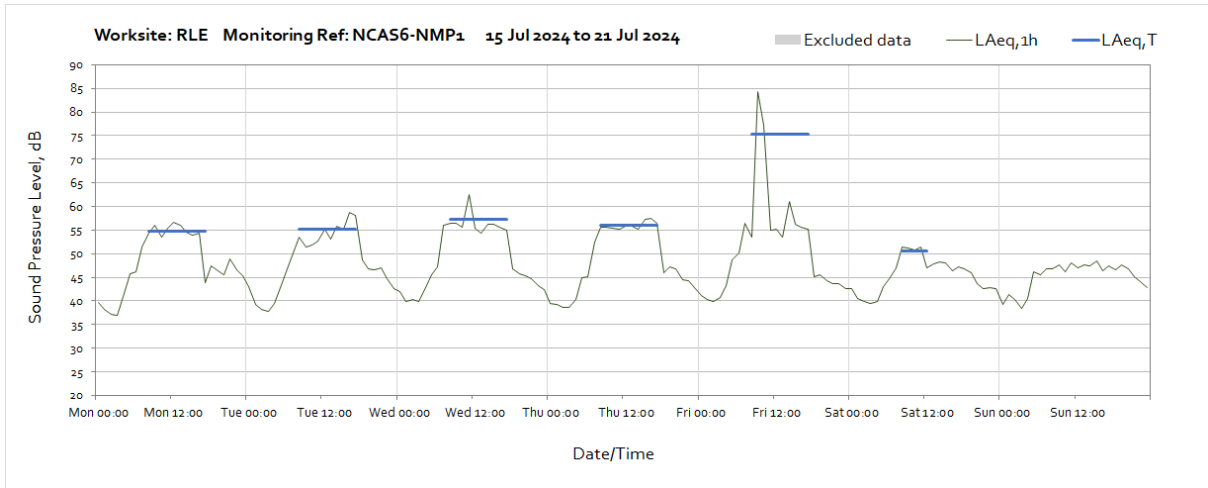




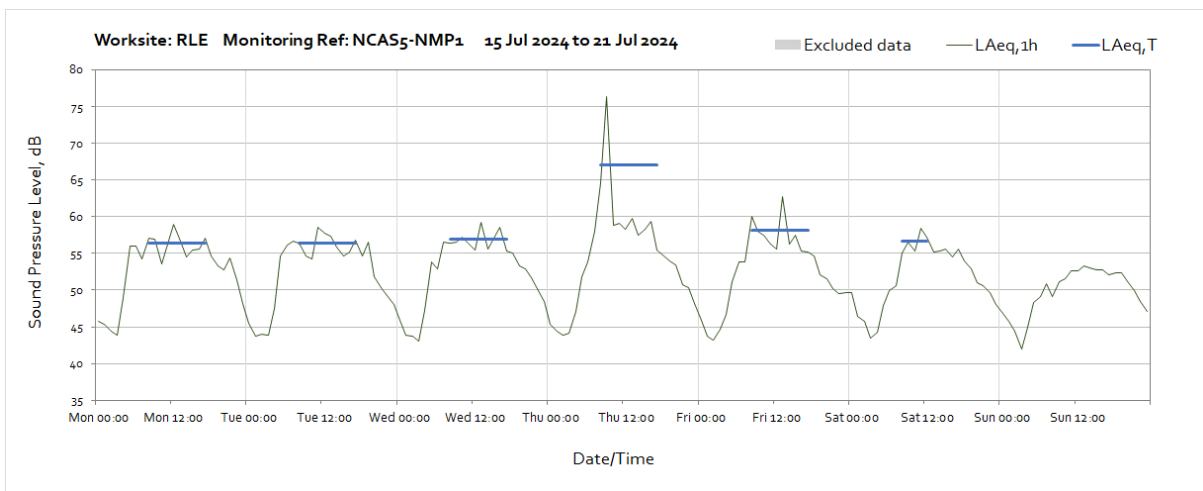
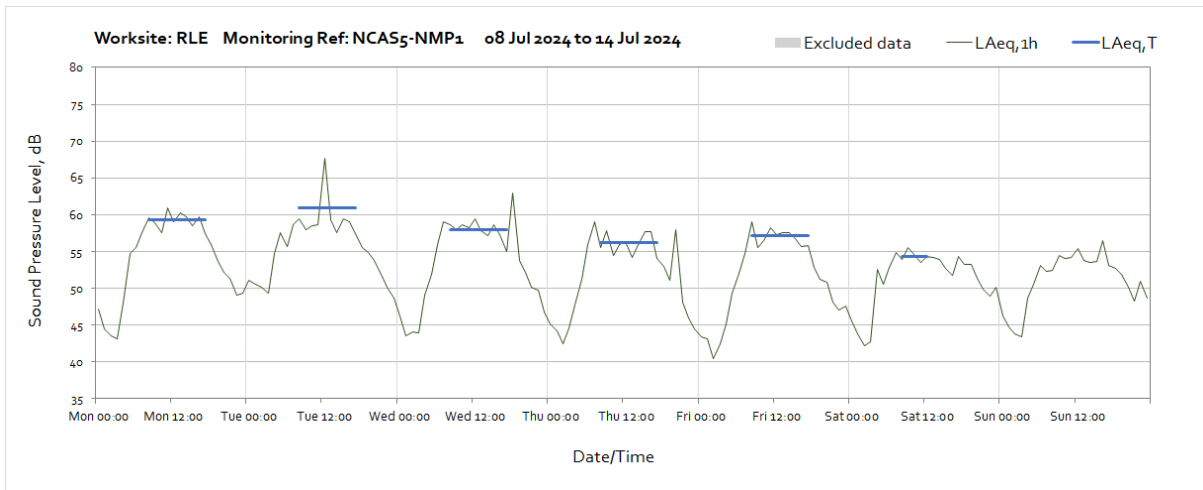
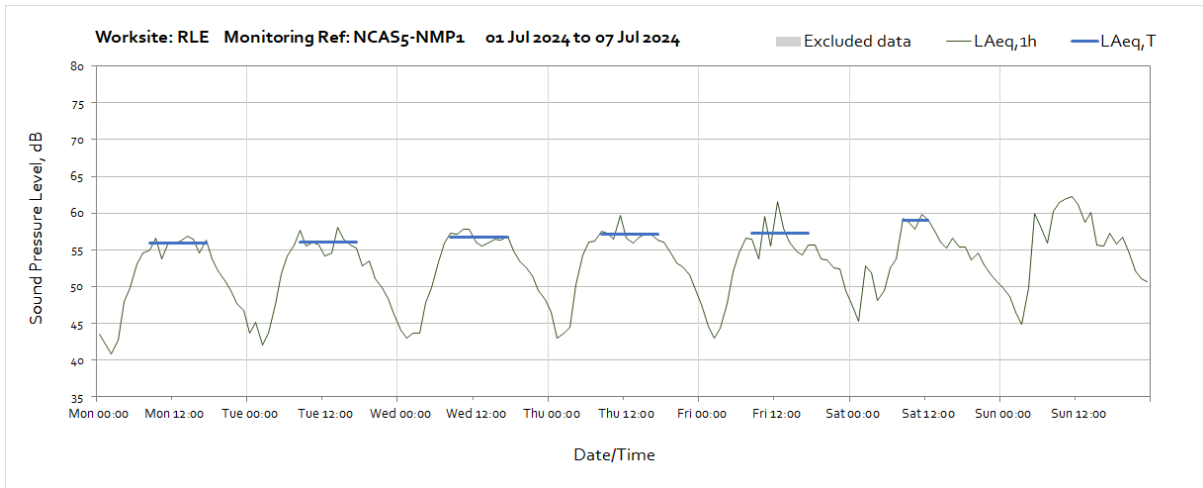


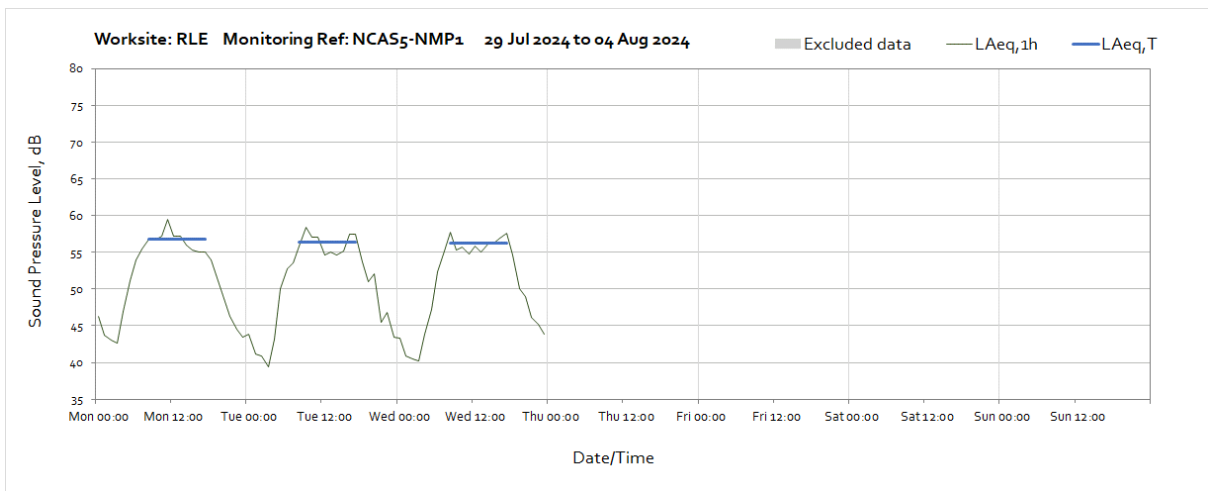
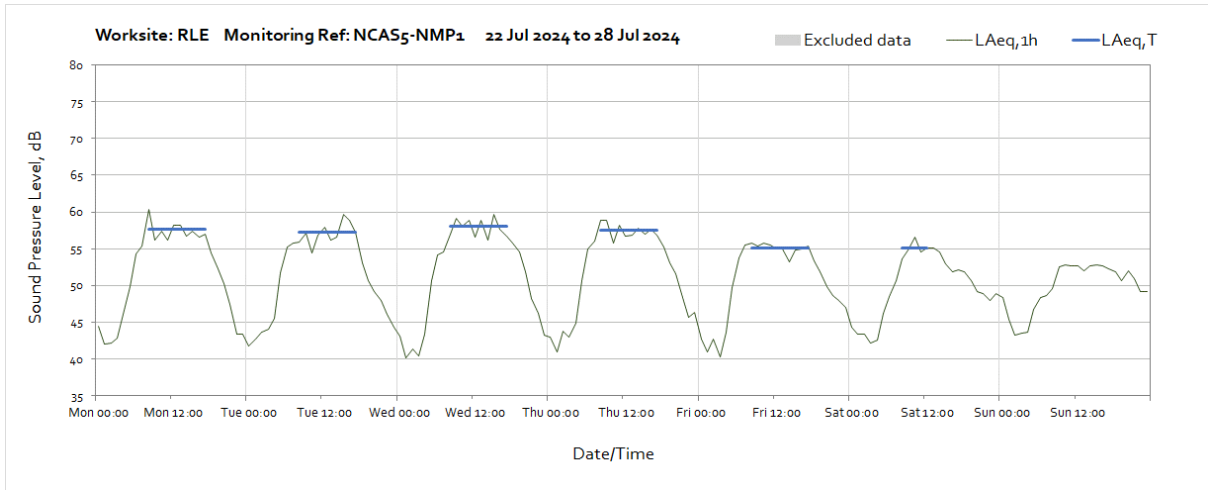
Worksite: RLE – Monitoring Ref: NCAS6-NMP1



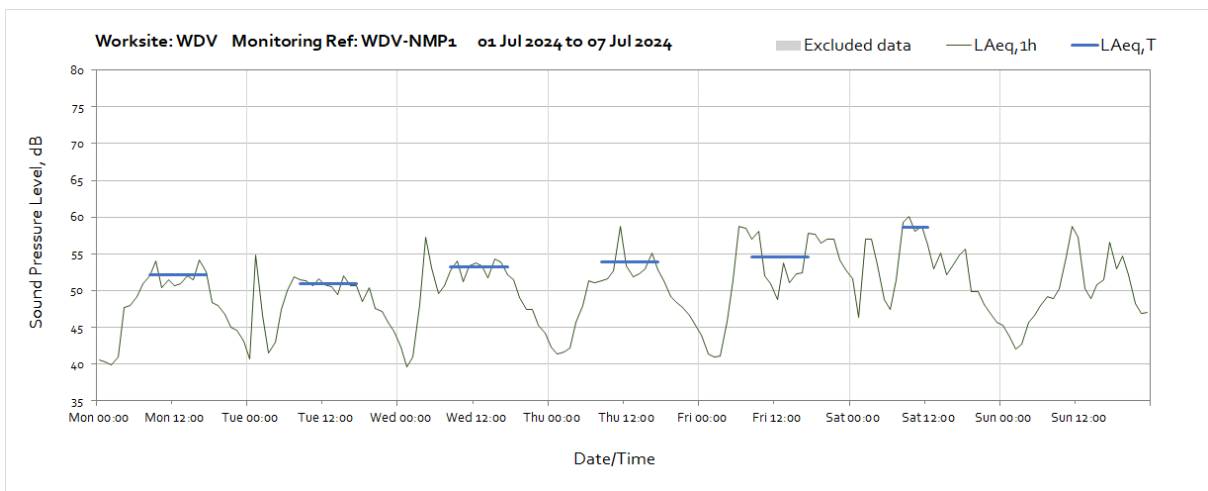


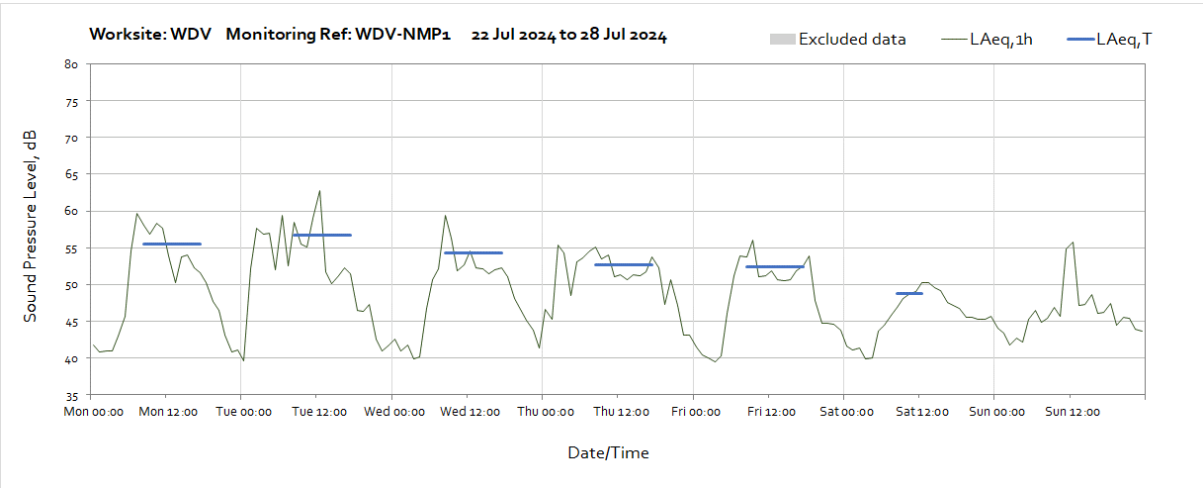
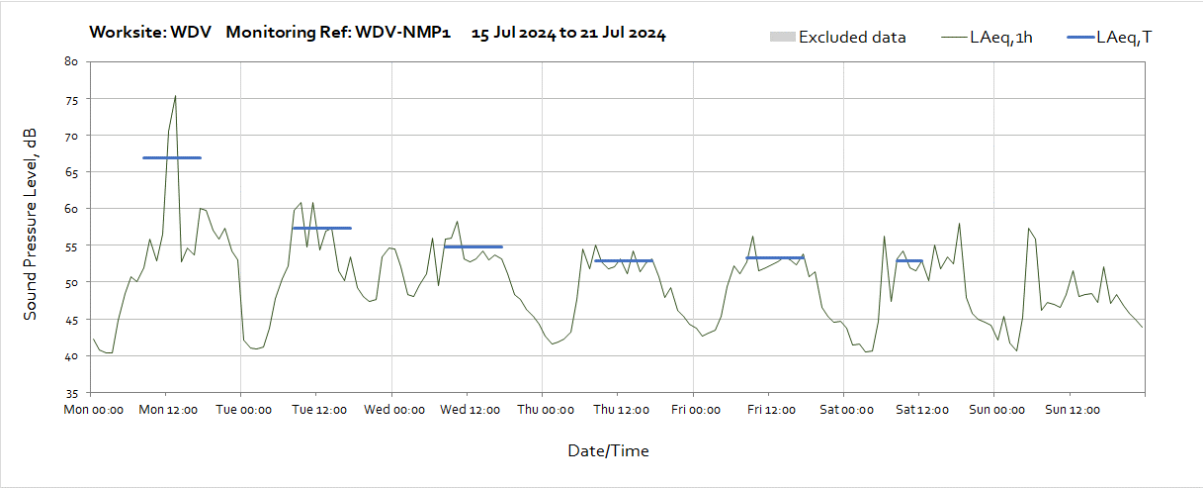
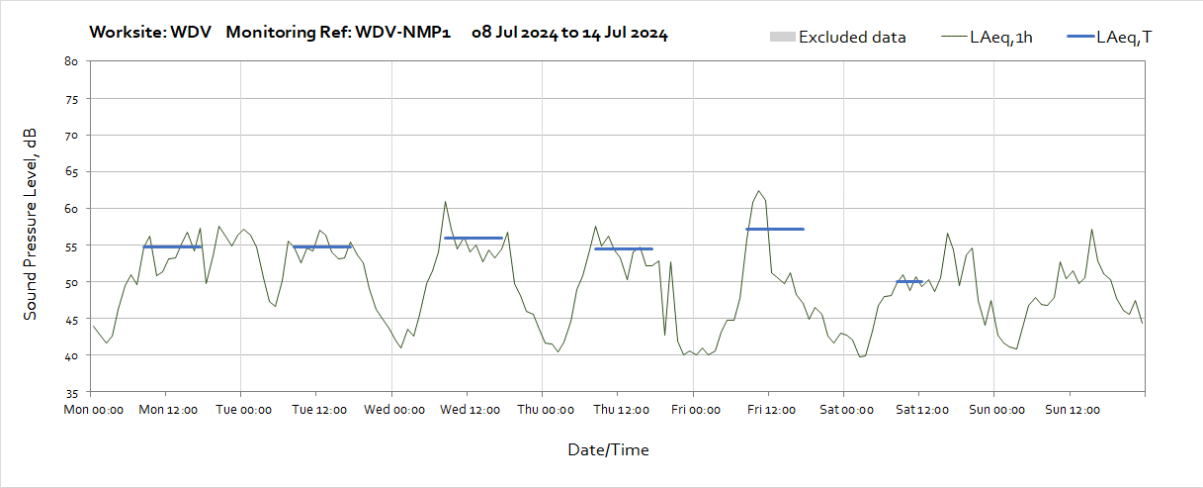
Worksite: RLE - Monitoring Ref: NCAS5-NMP1

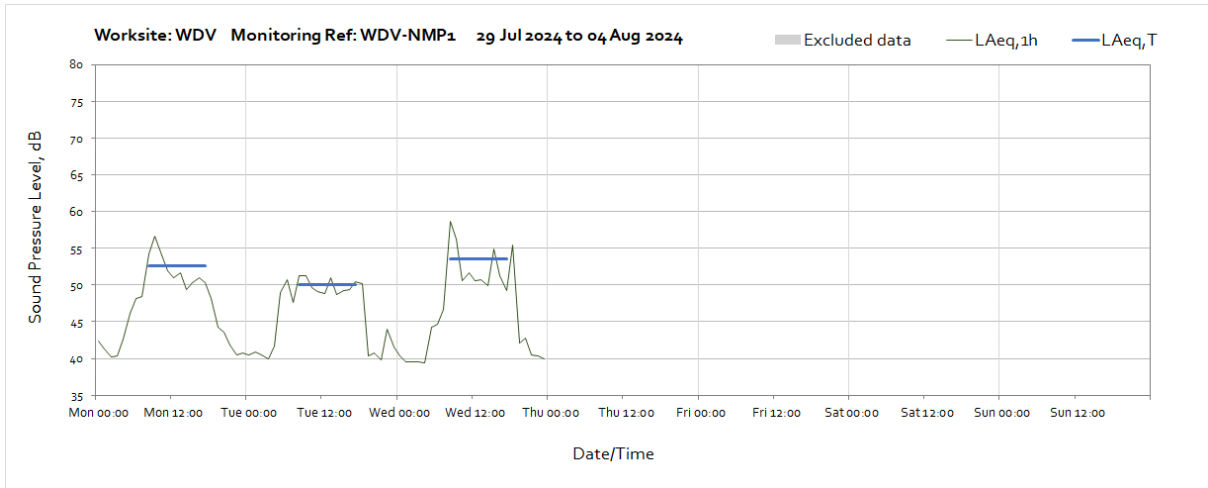




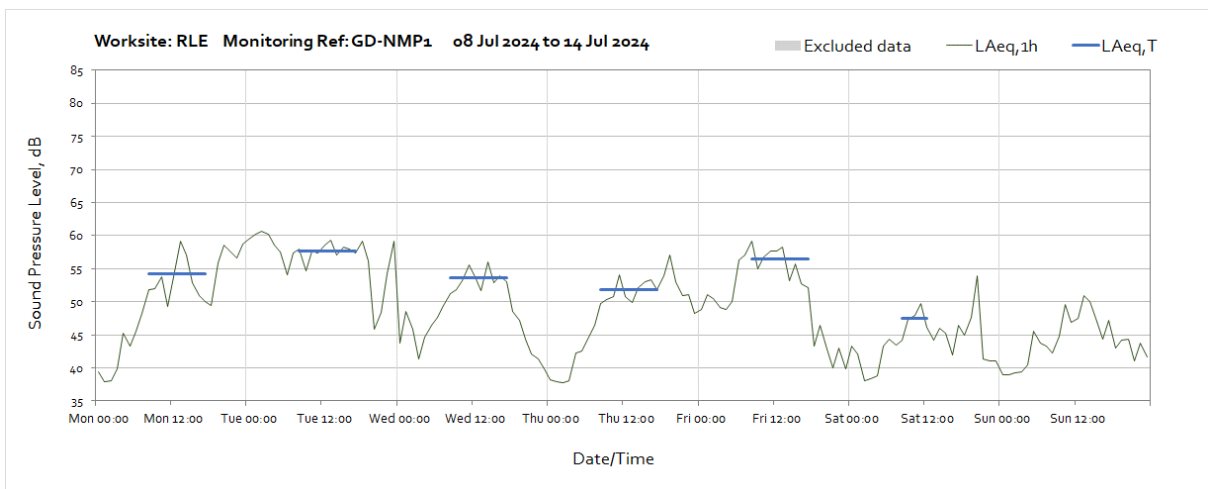
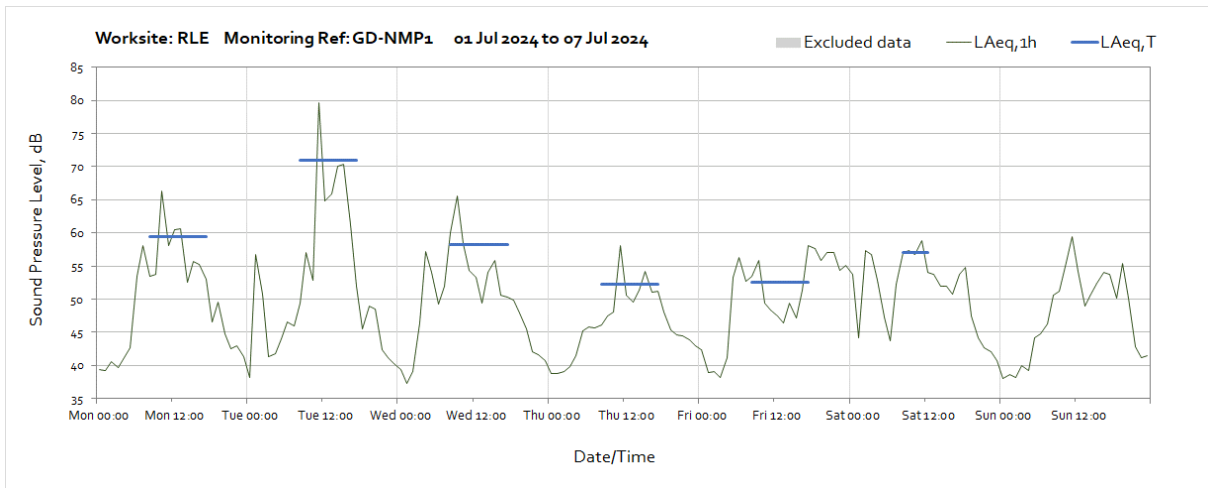
Worksite: WDV – Monitoring Ref: WDV-NMP1

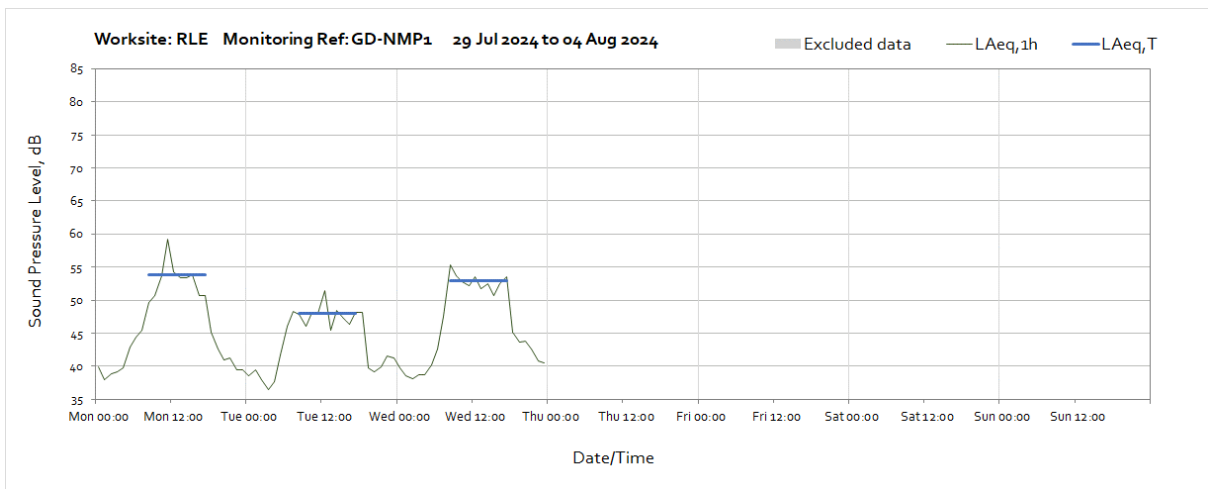
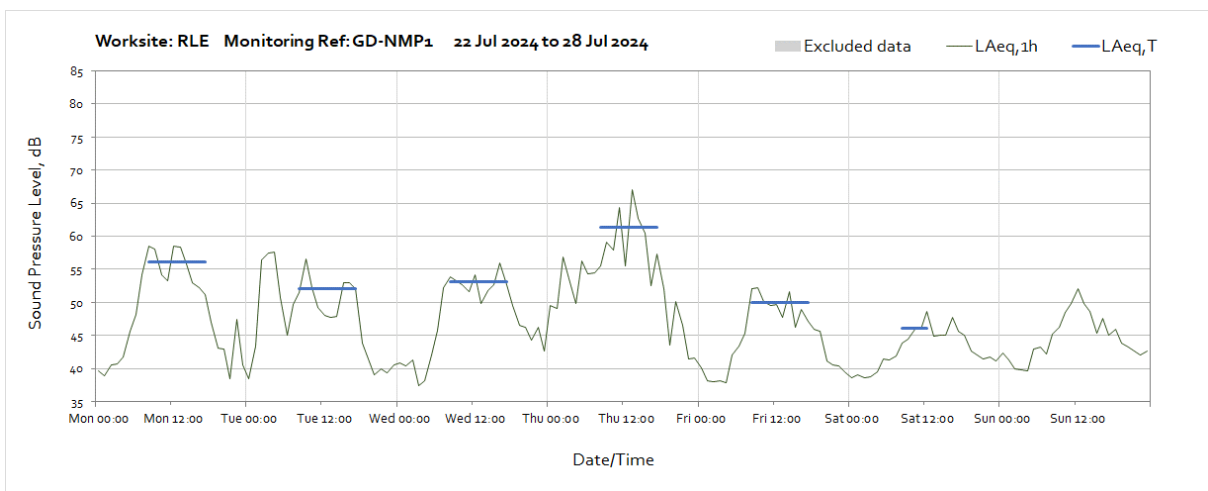
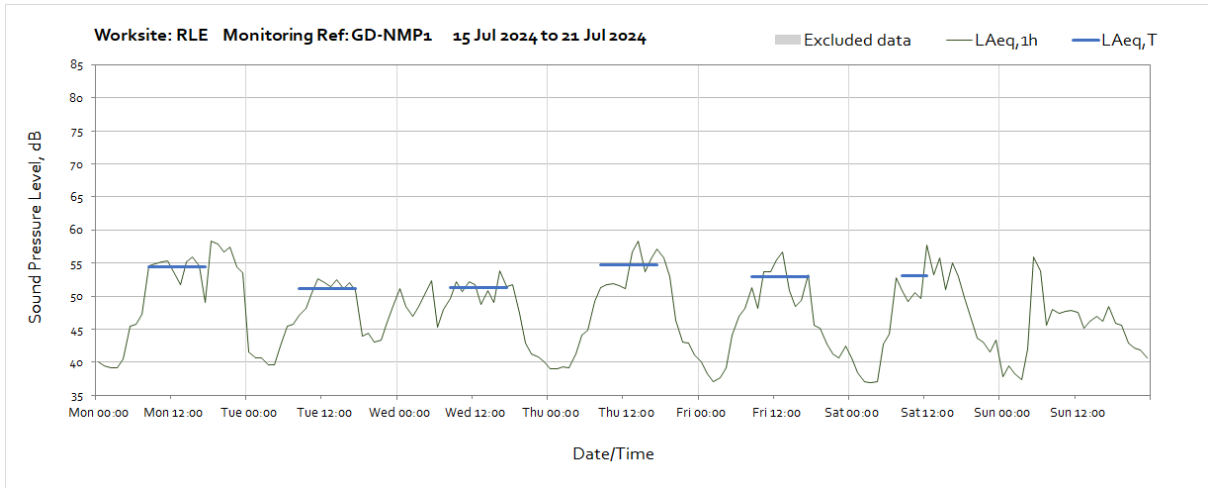




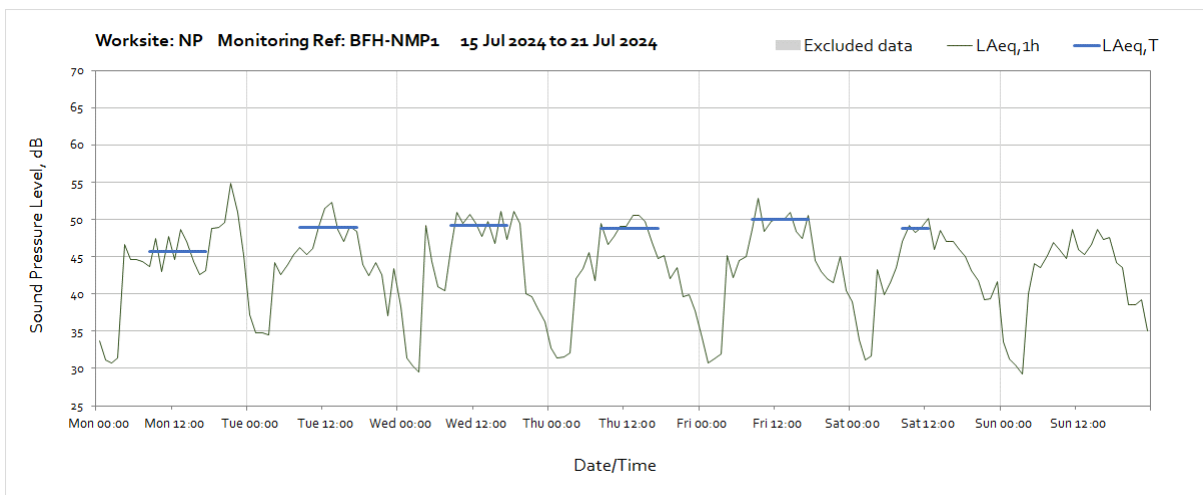
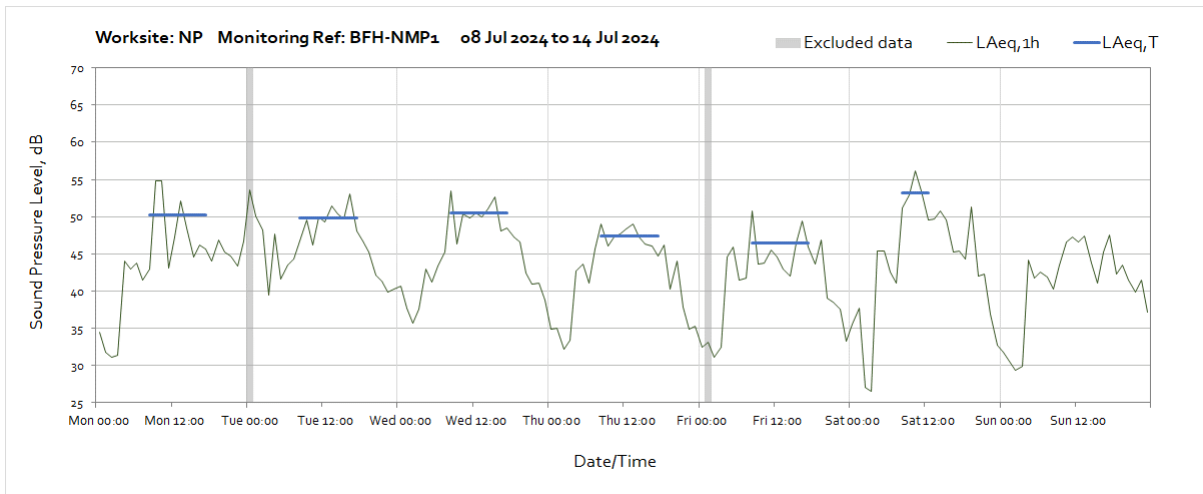
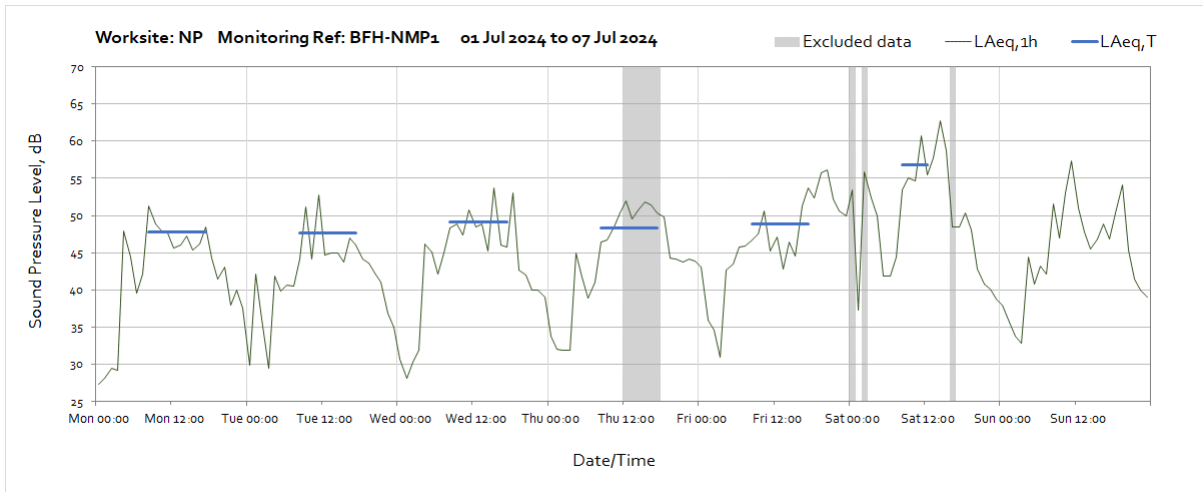


Worksite: LL - Monitoring Ref: GD-NMP1

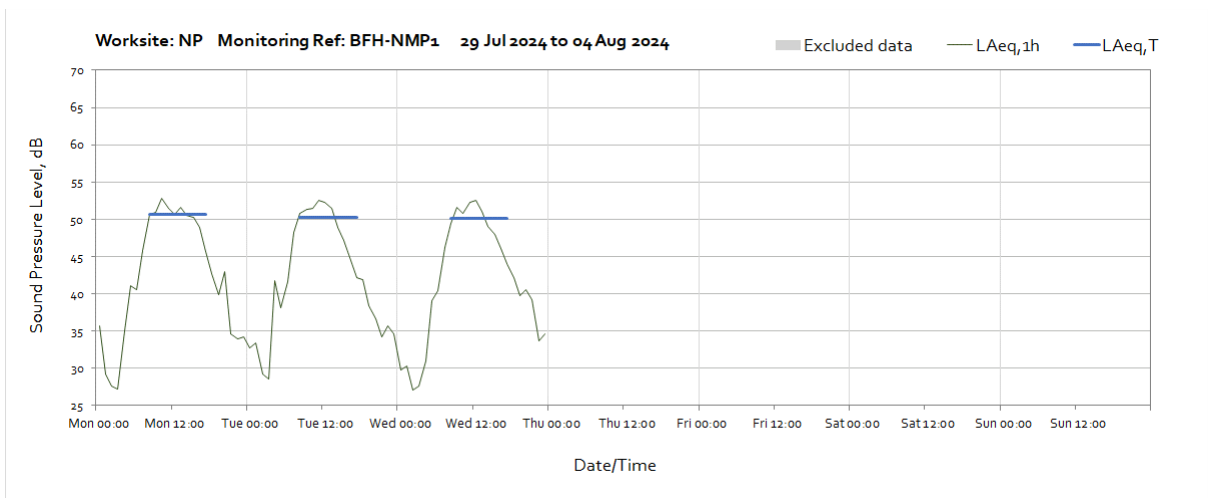
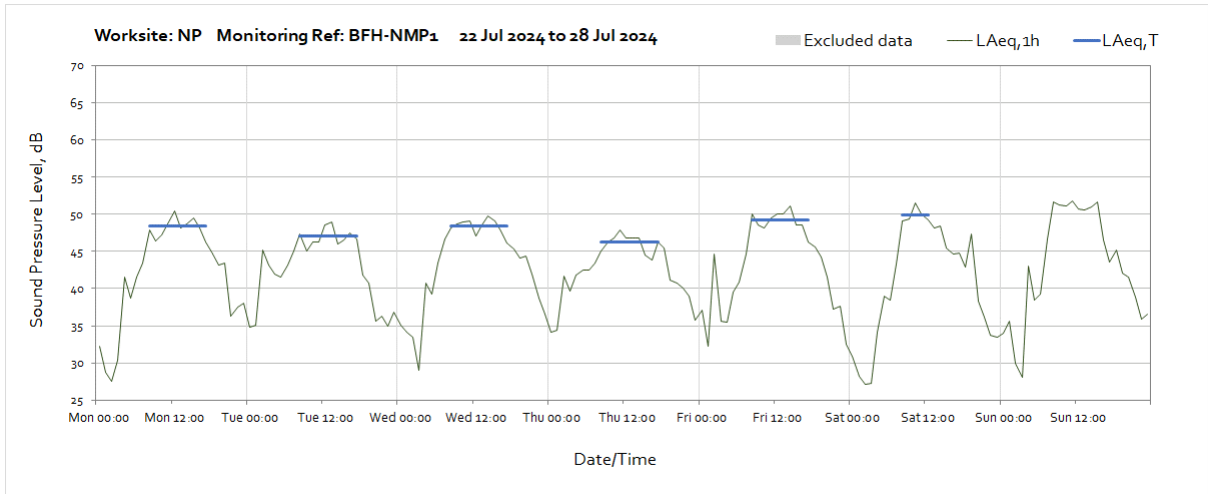




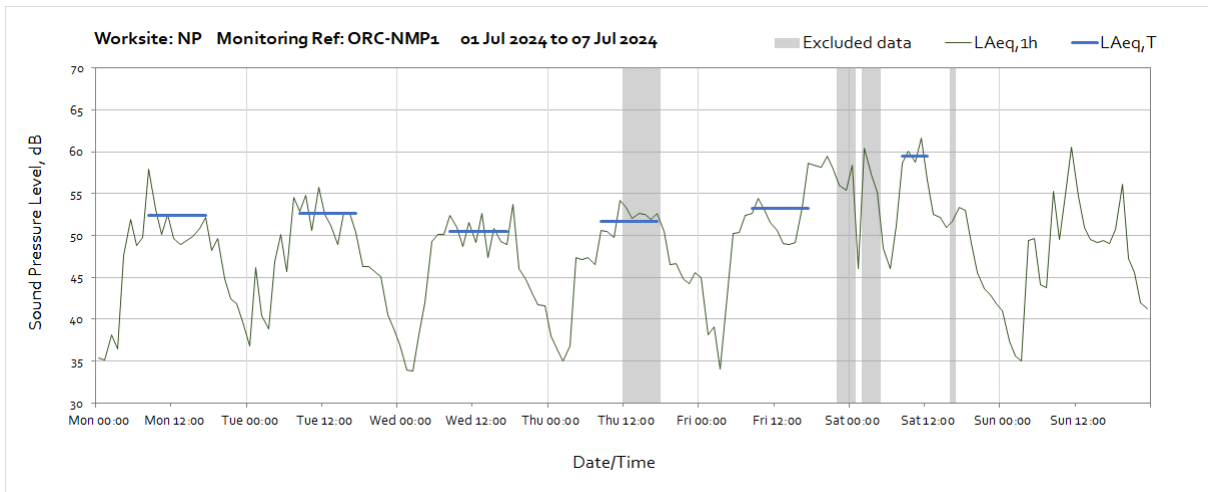
Worksite: NP – Monitoring Ref: BFH-NMP1

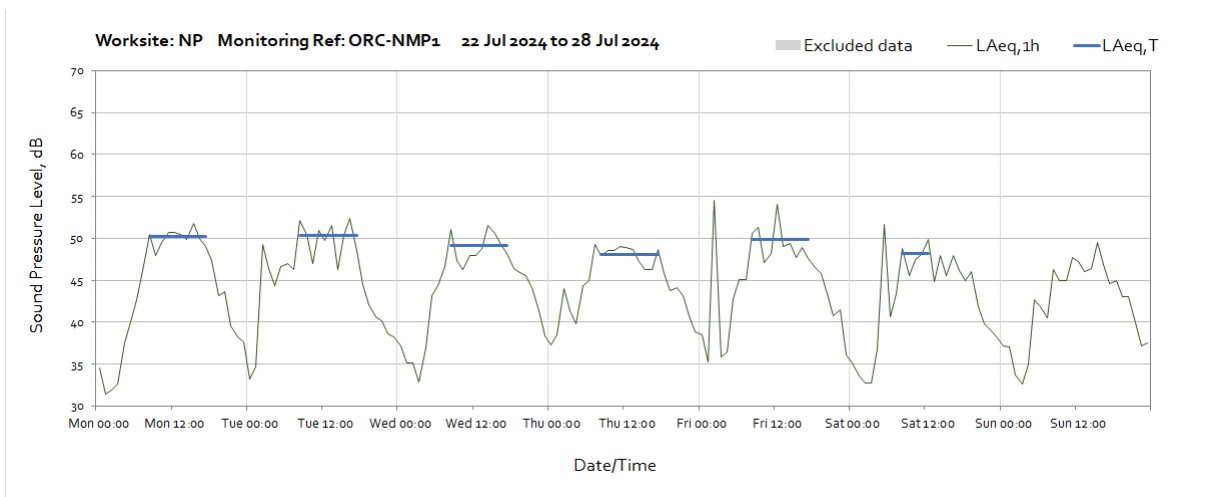
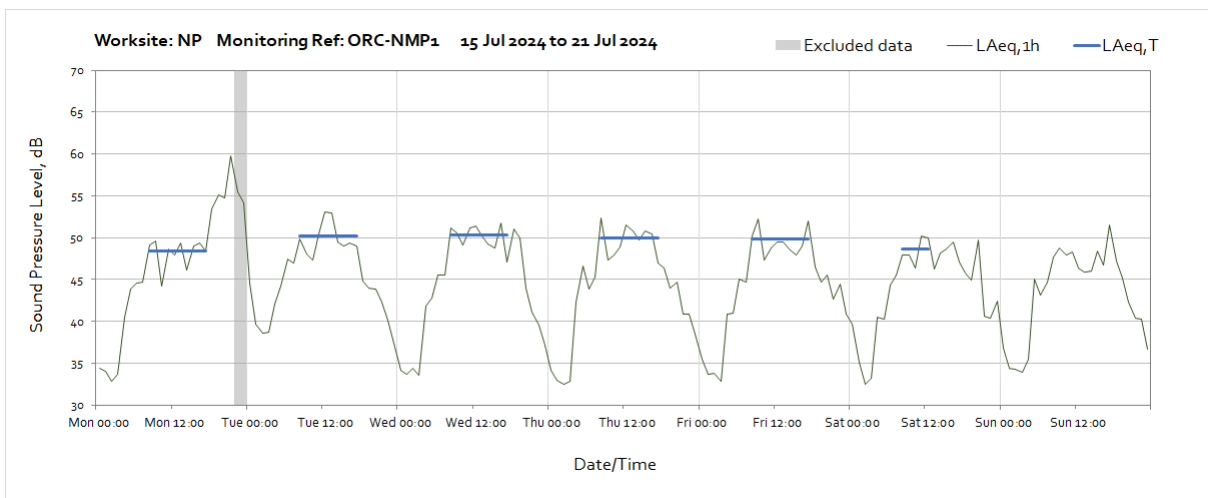
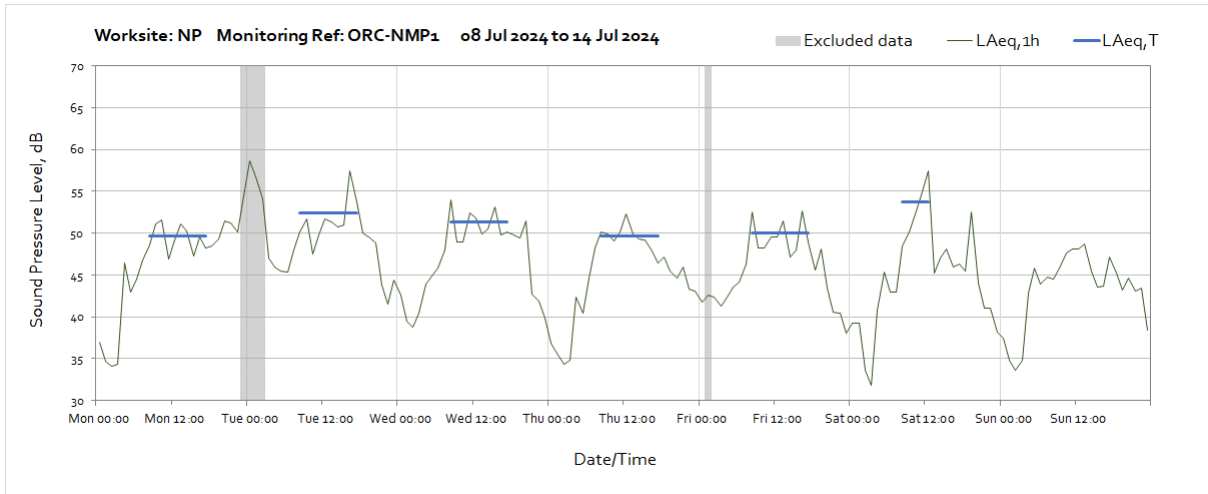


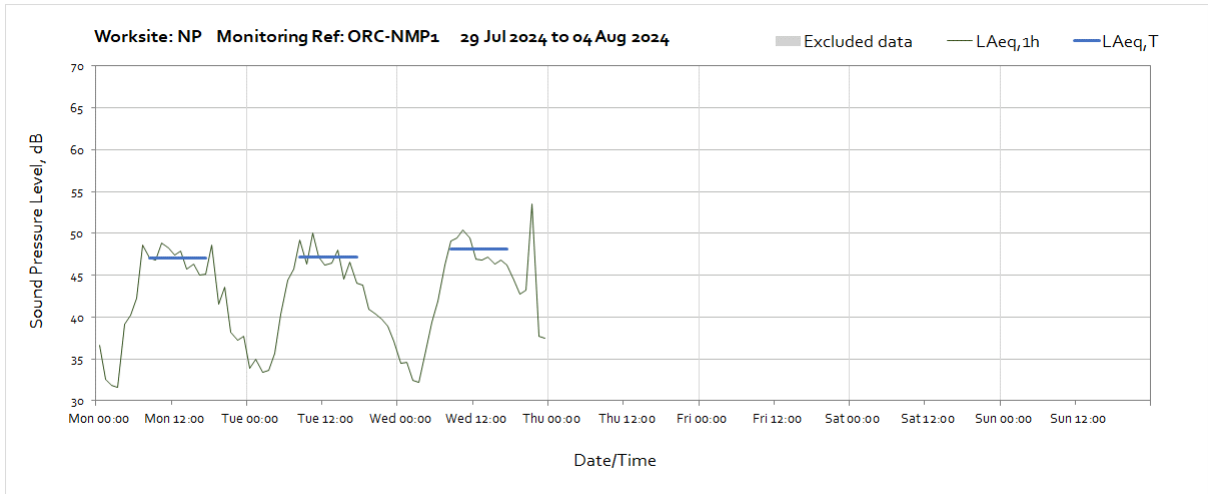
OFFICIAL



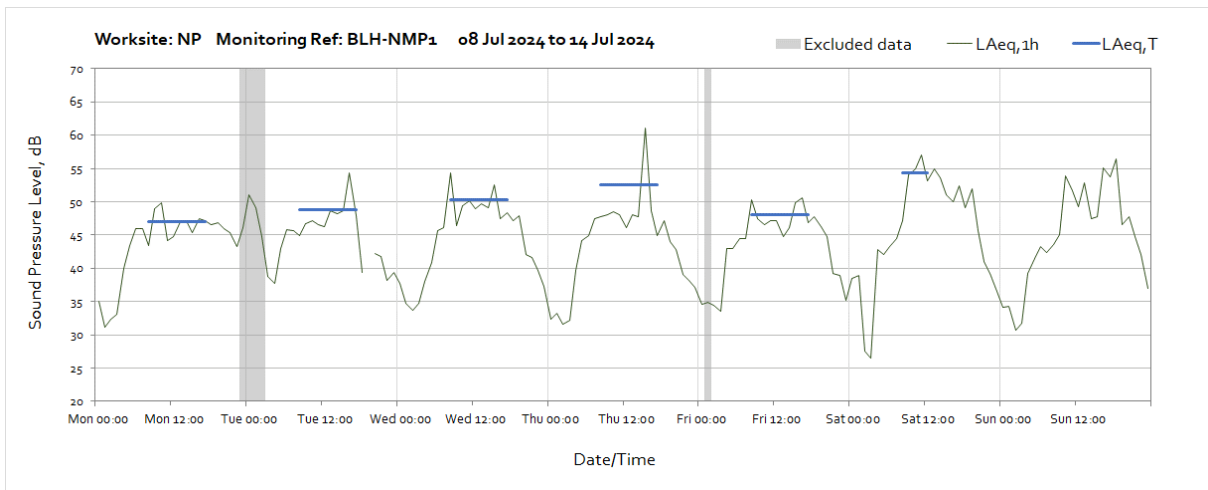
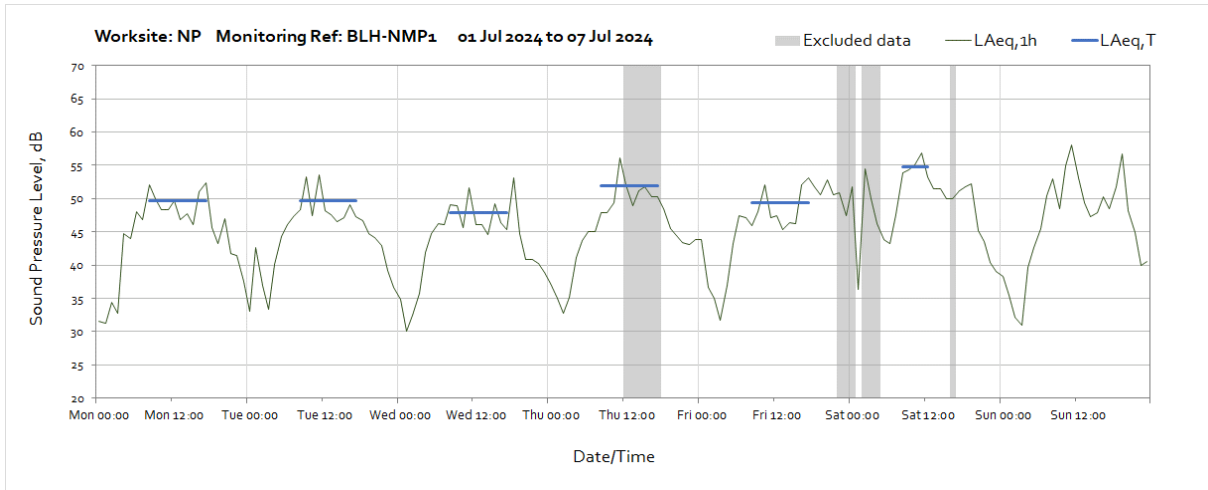
Worksite: NP – Monitoring Ref: ORC-NMP1





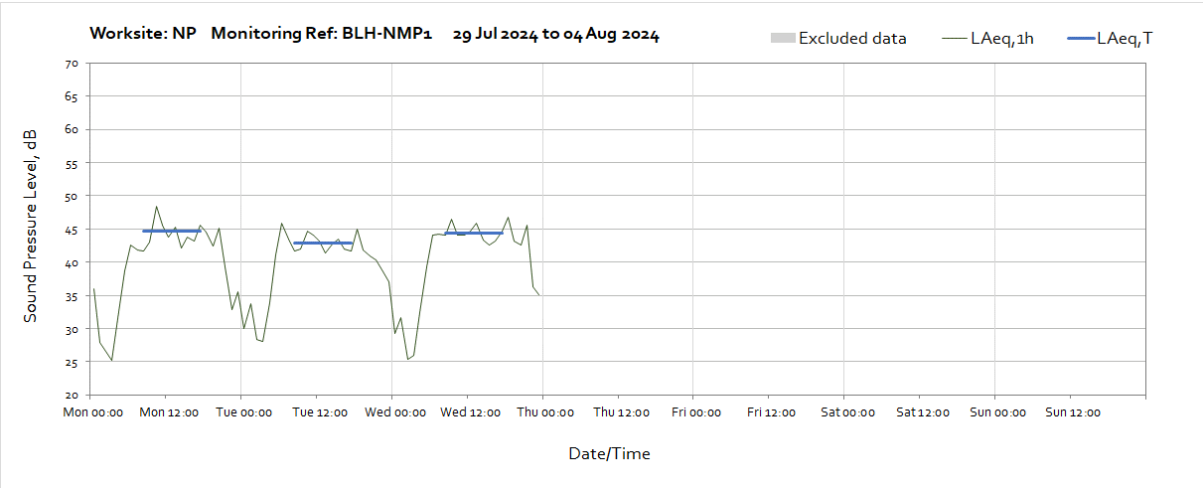
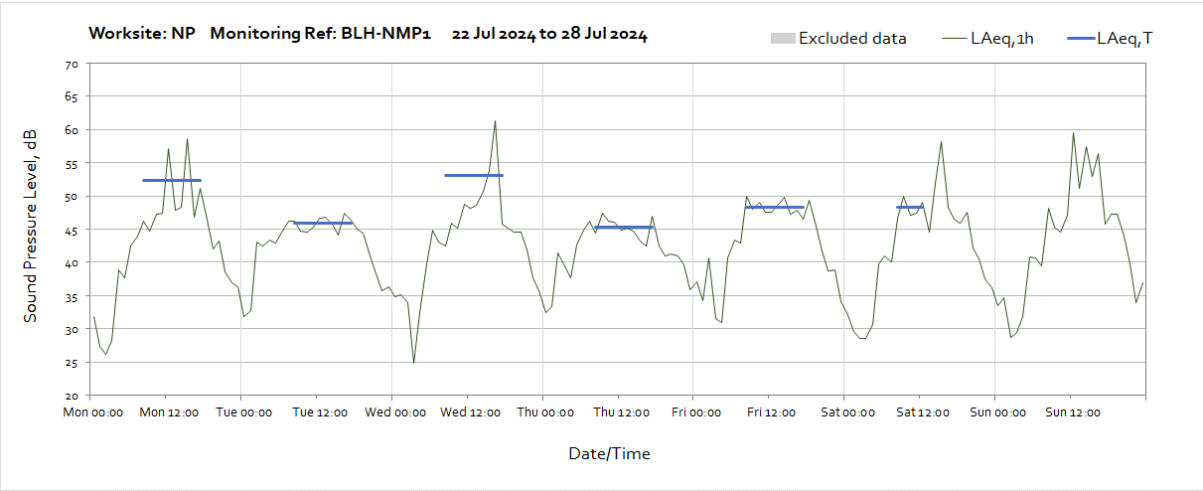
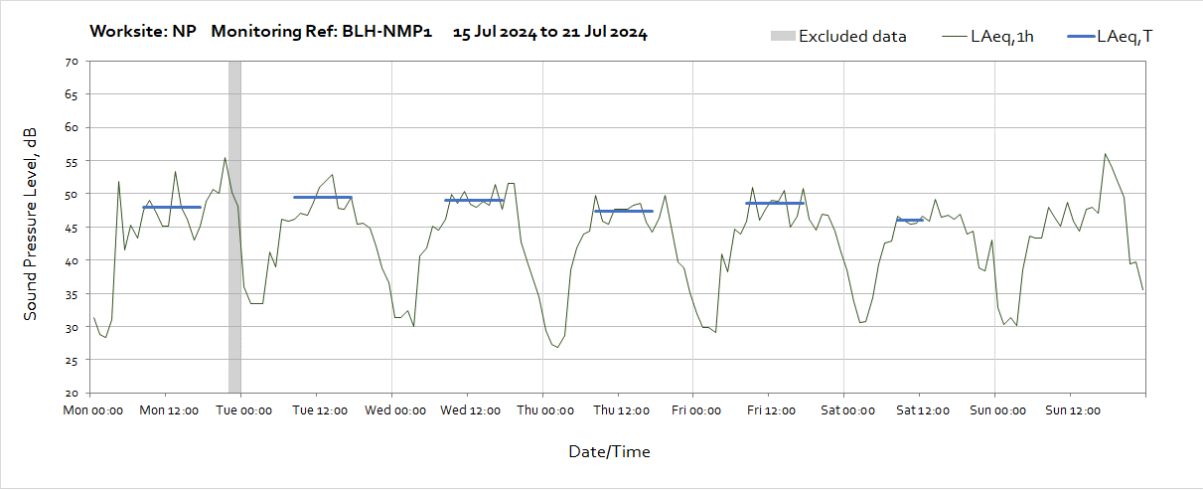


Worksite: NP – Monitoring Ref: BLH-NMP1

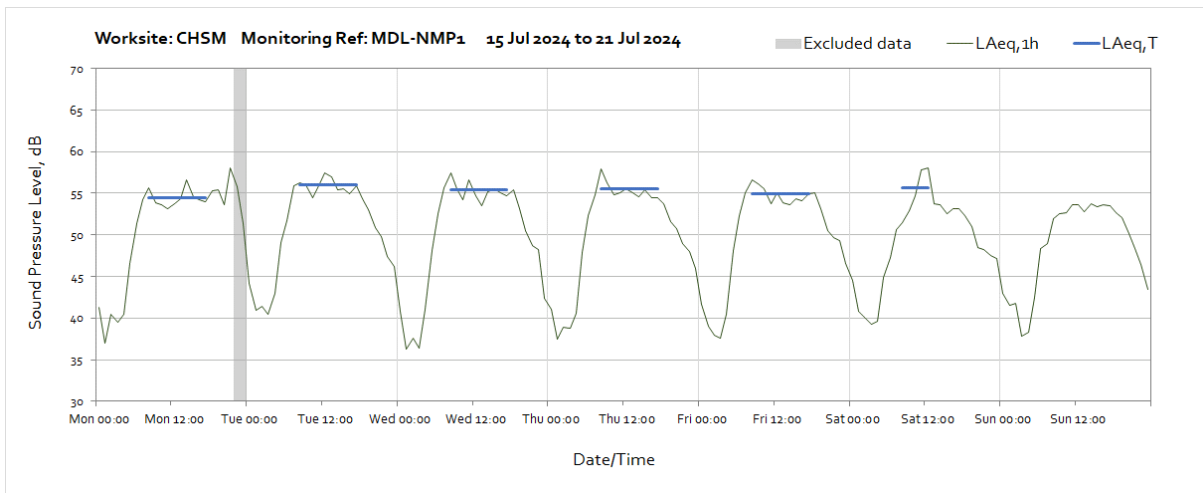
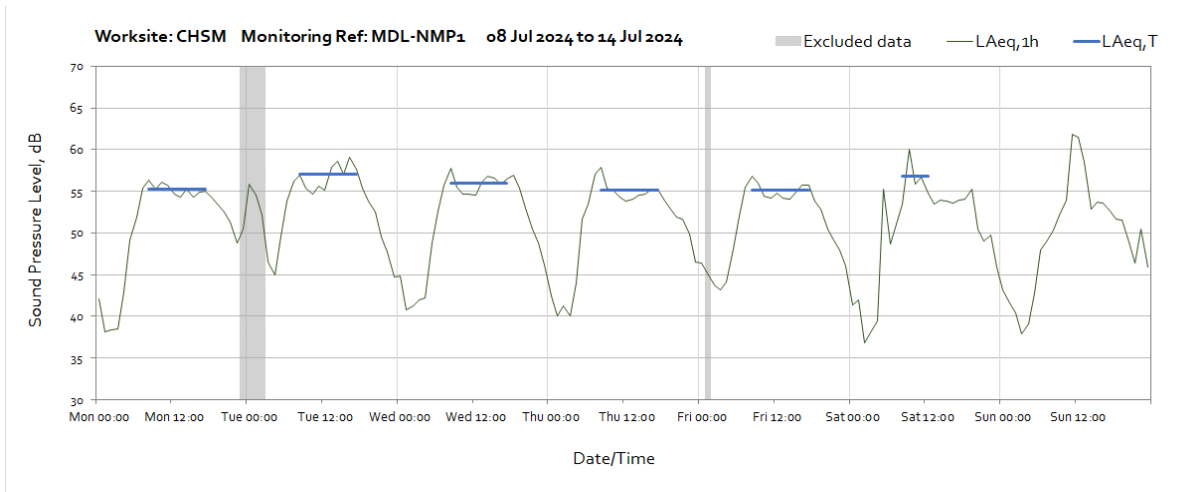
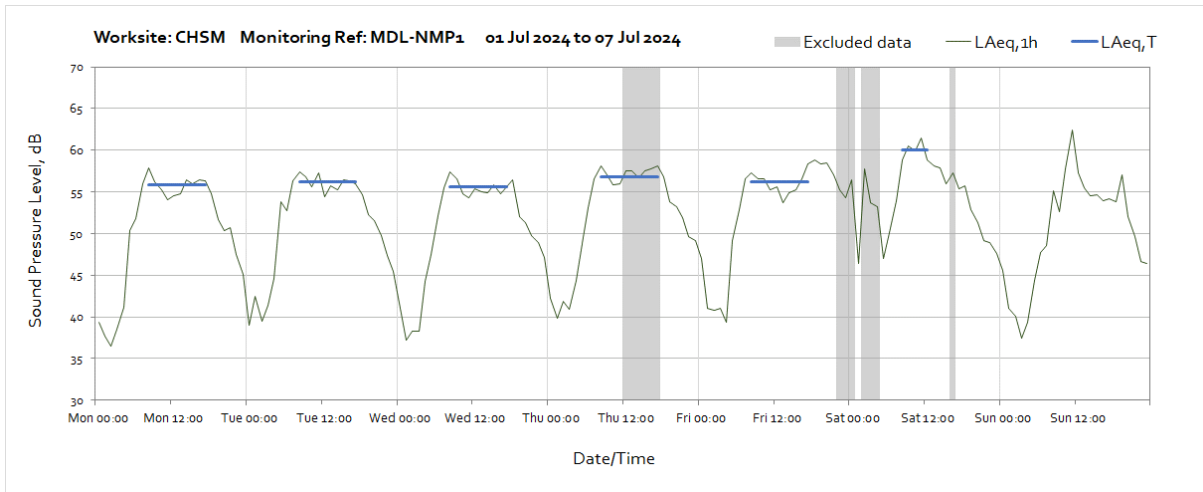


Note: Missing data between 19:00 and 20:00 on Tuesday 9th July was due to data transfer issue.

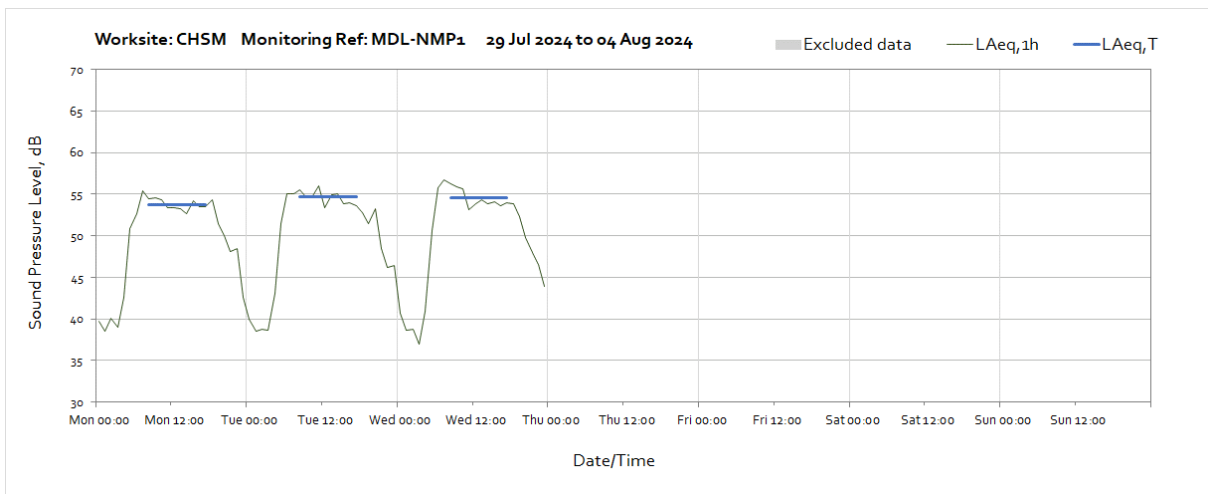
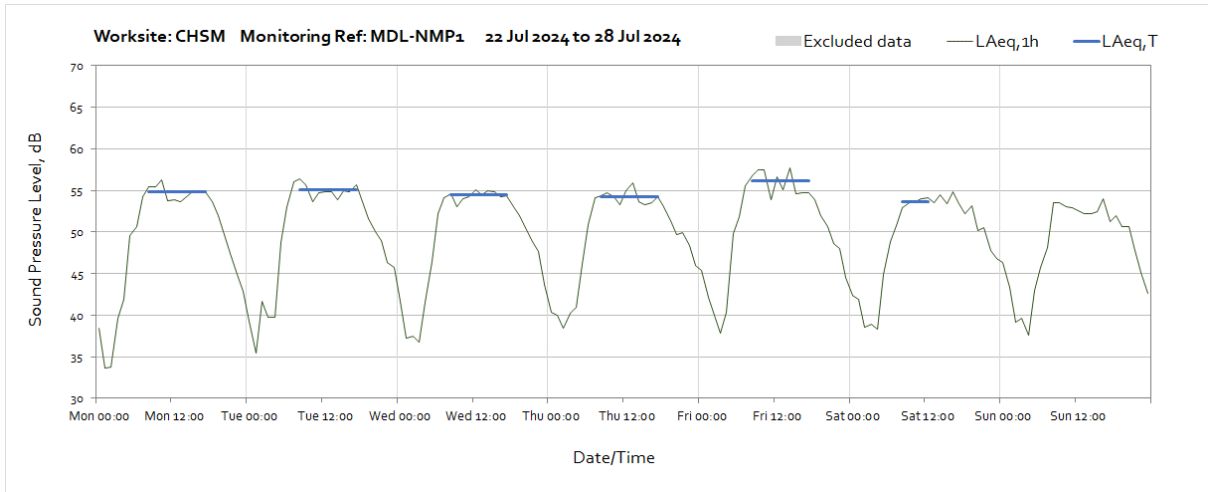
OFFICIAL



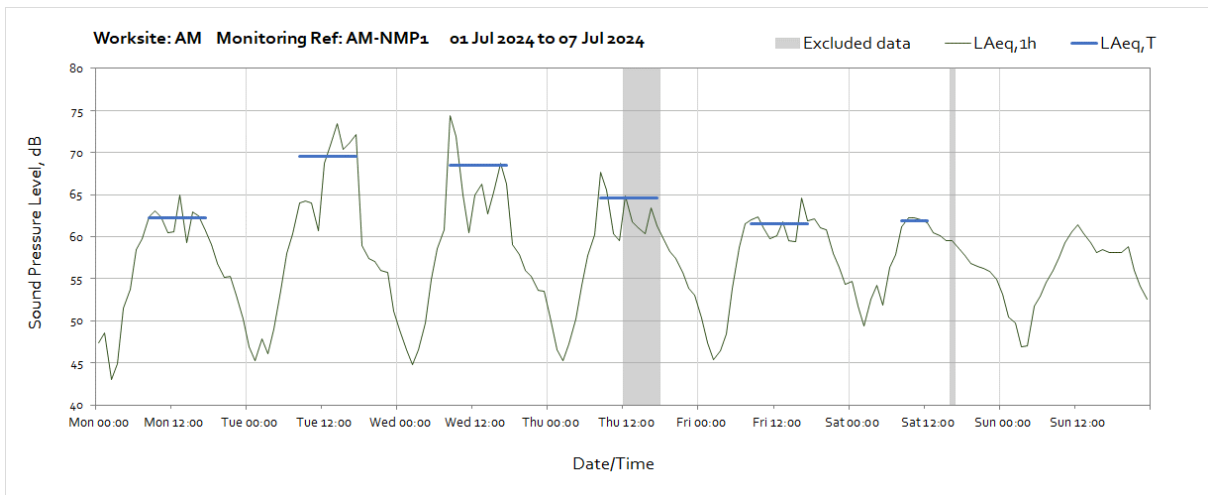
Worksite: CHSM – Monitoring Ref: MDL-NMP1

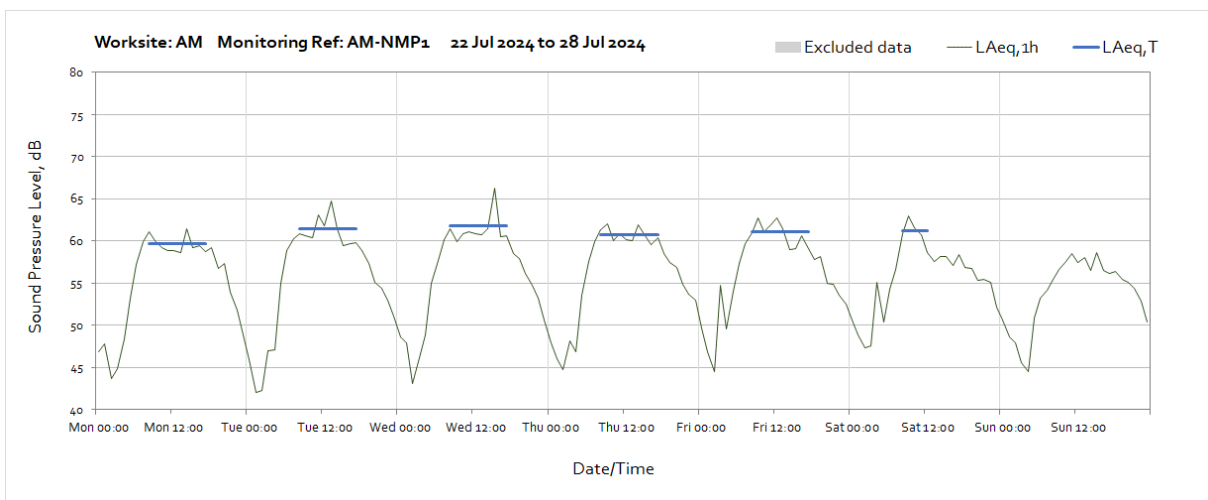
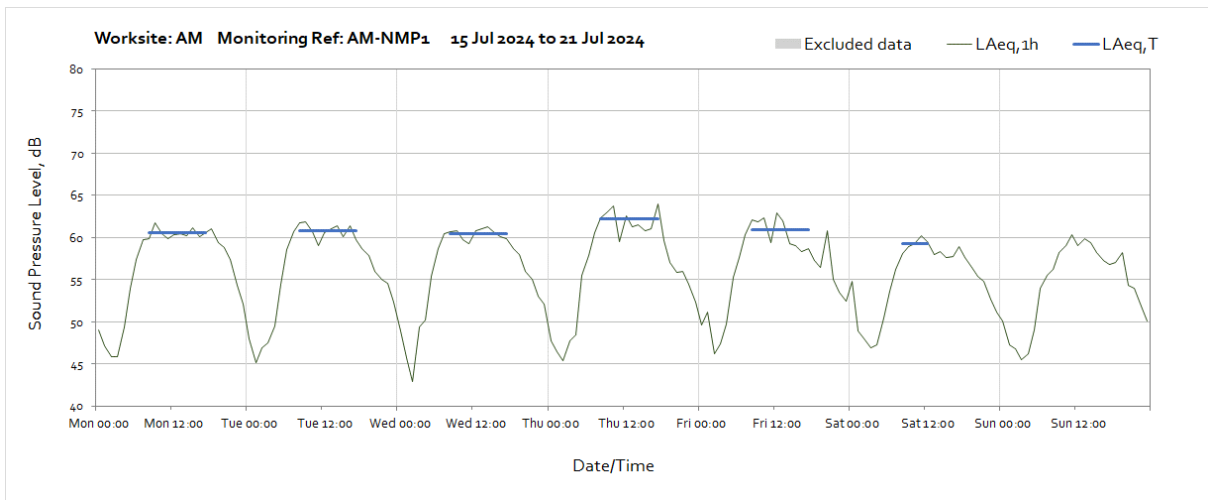
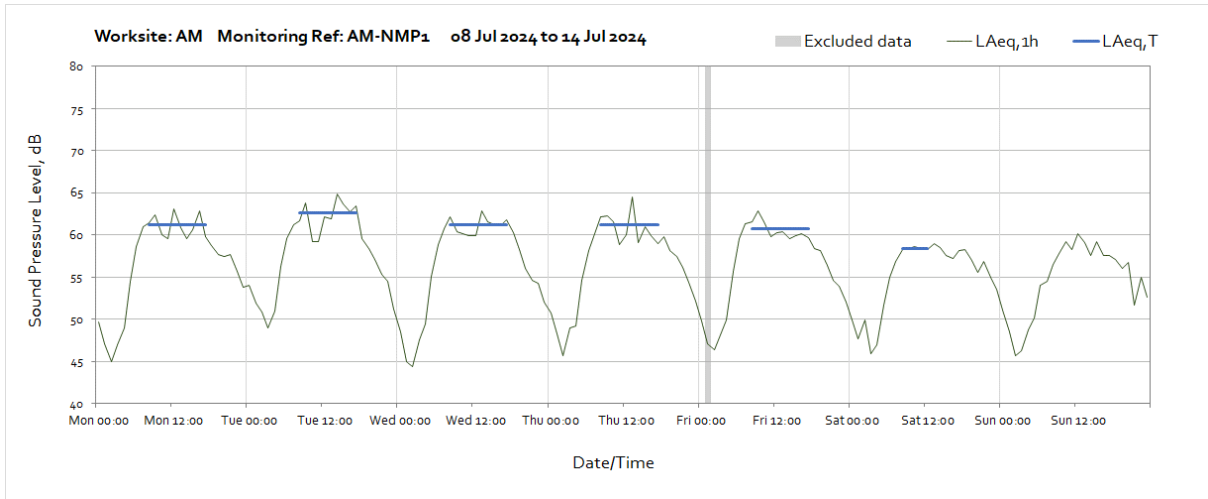


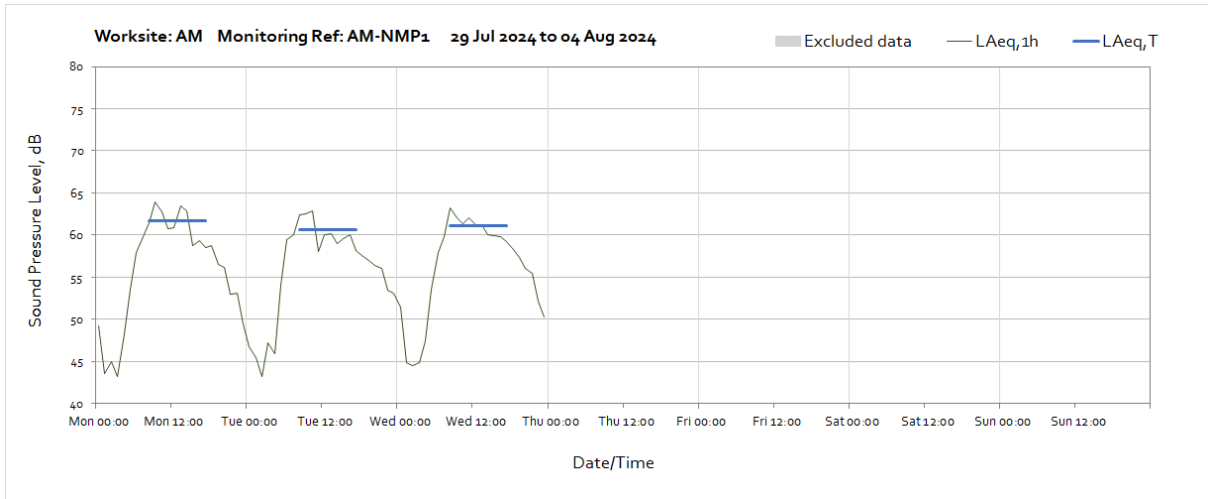
OFFICIAL



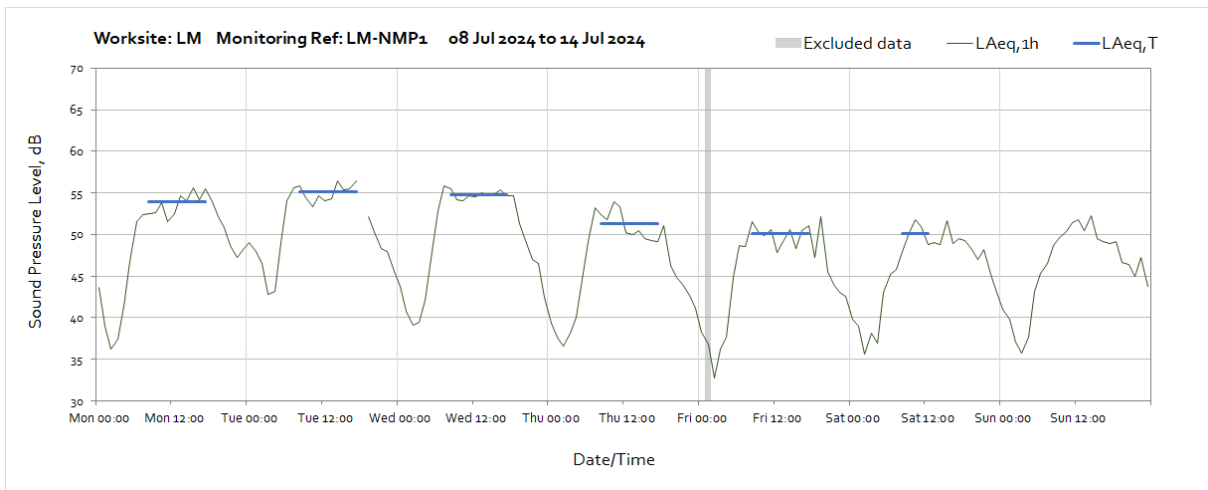
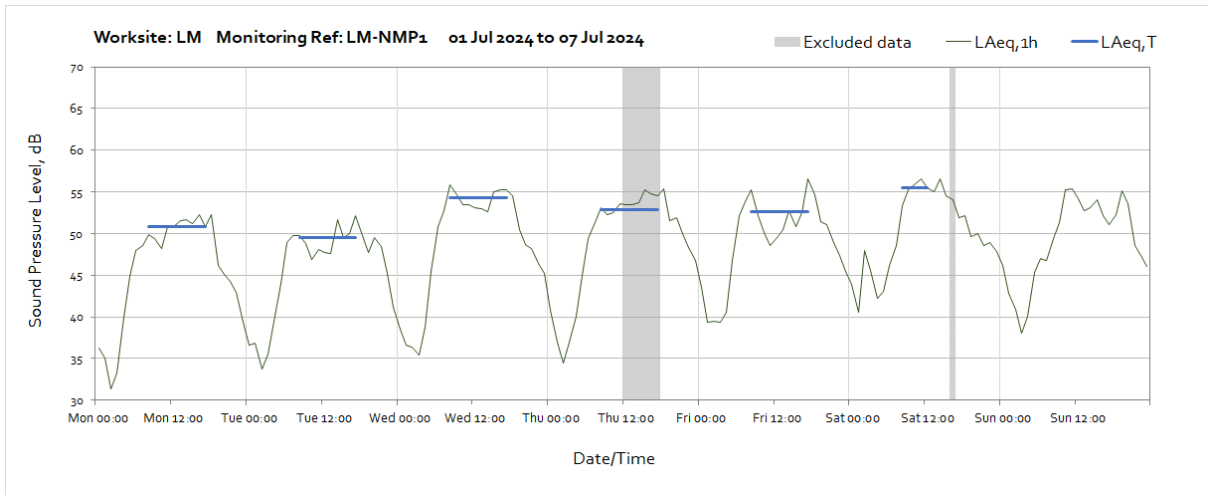
Worksite: AM - Monitoring Ref: AM-NMP1



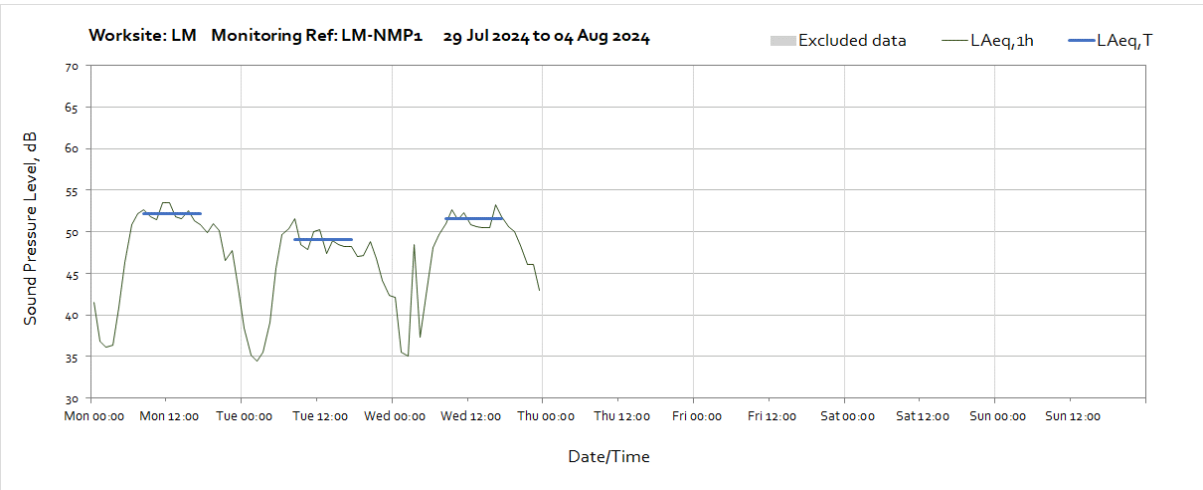
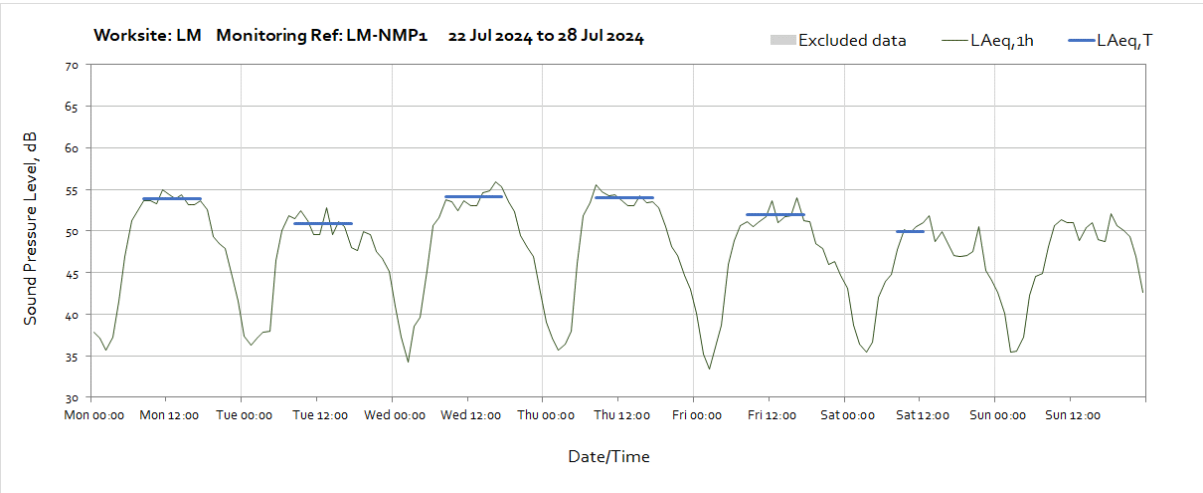
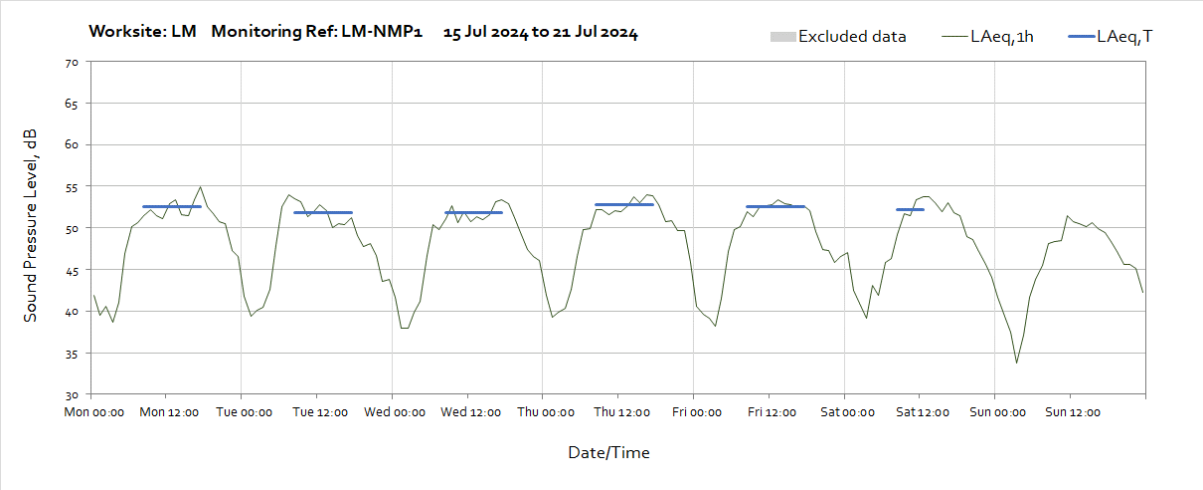




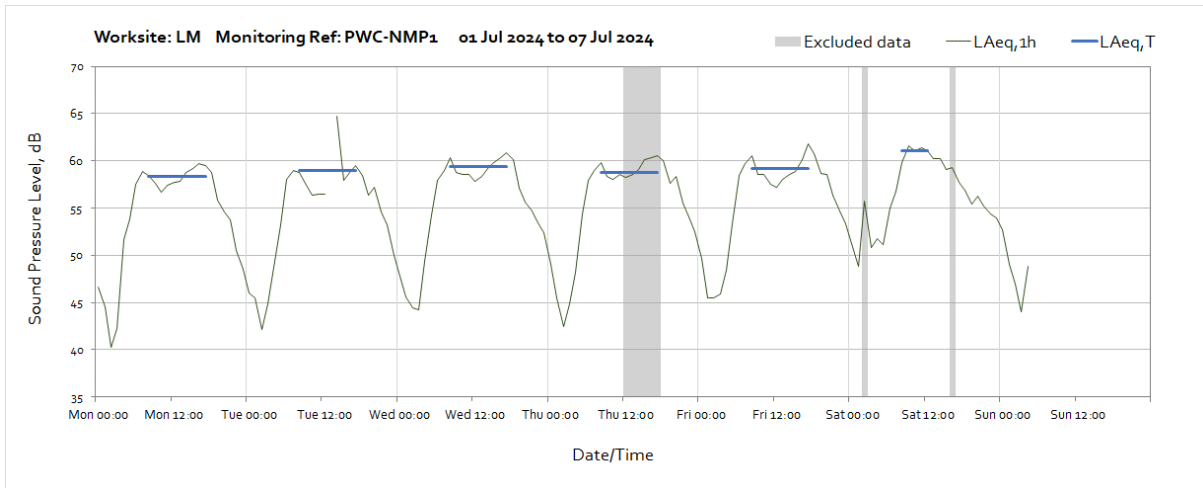
Worksite: LM – Monitoring Ref: LM-NMP1



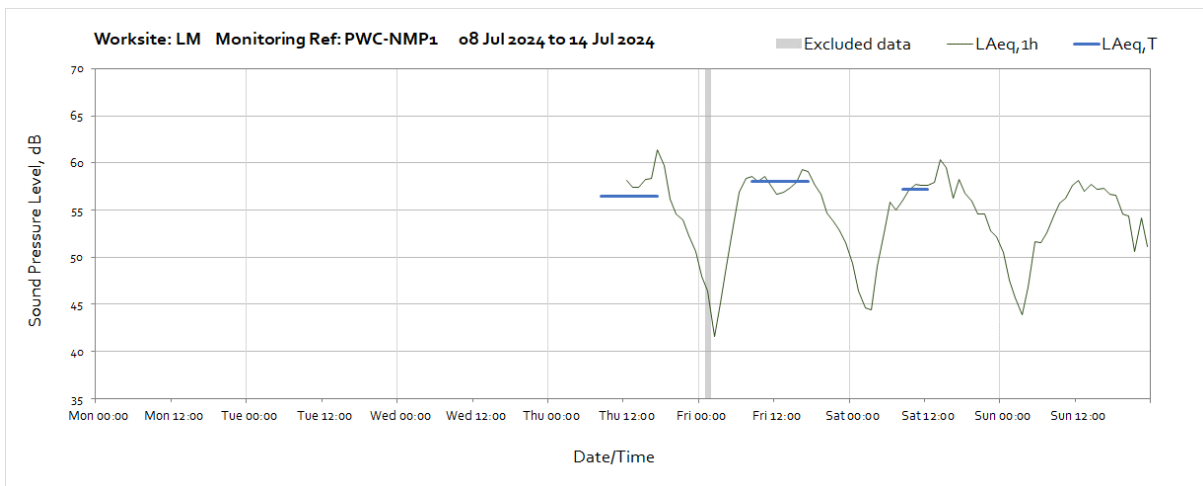
Note: Missing data between 18:00 and 19:00 on Tuesday 9th July was due to a data transfer issue.



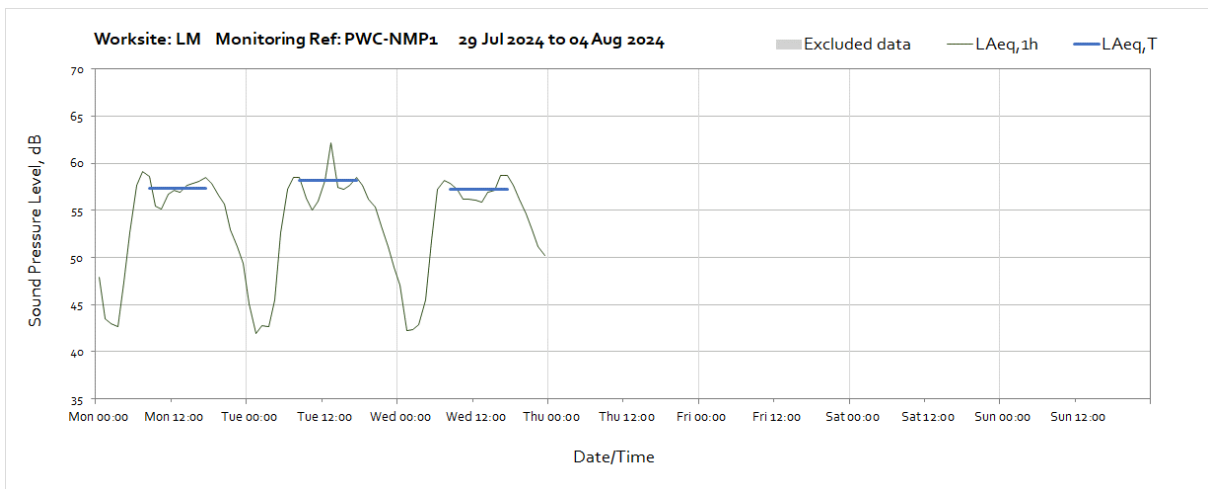
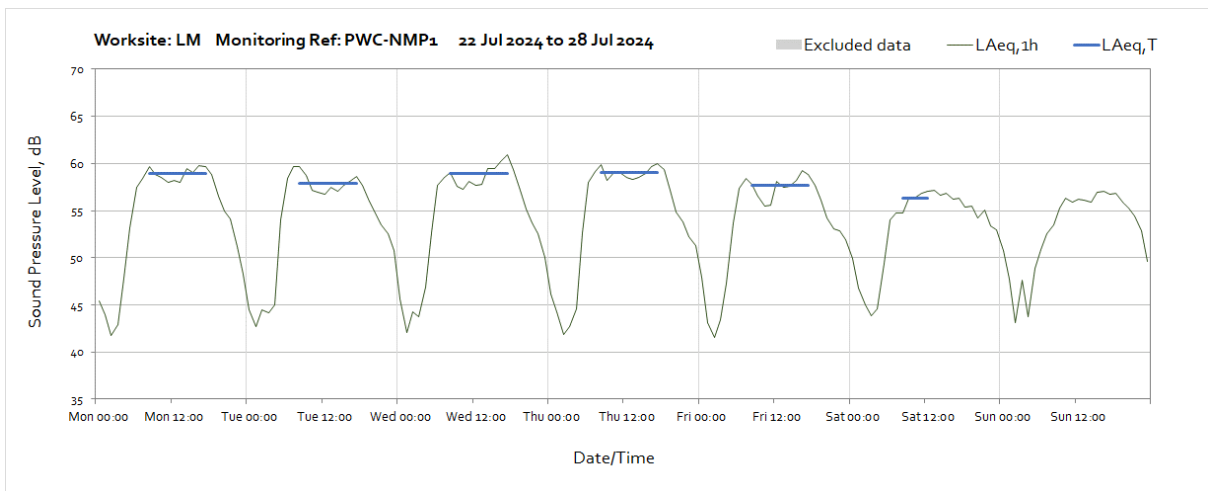
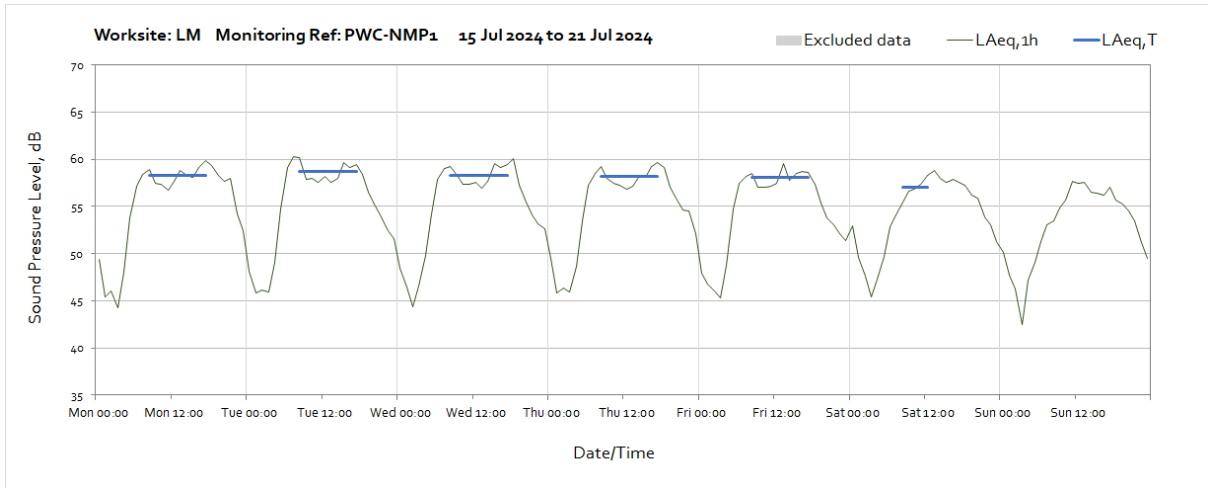
Worksite: LM – Monitoring Ref: PWC-NMP1



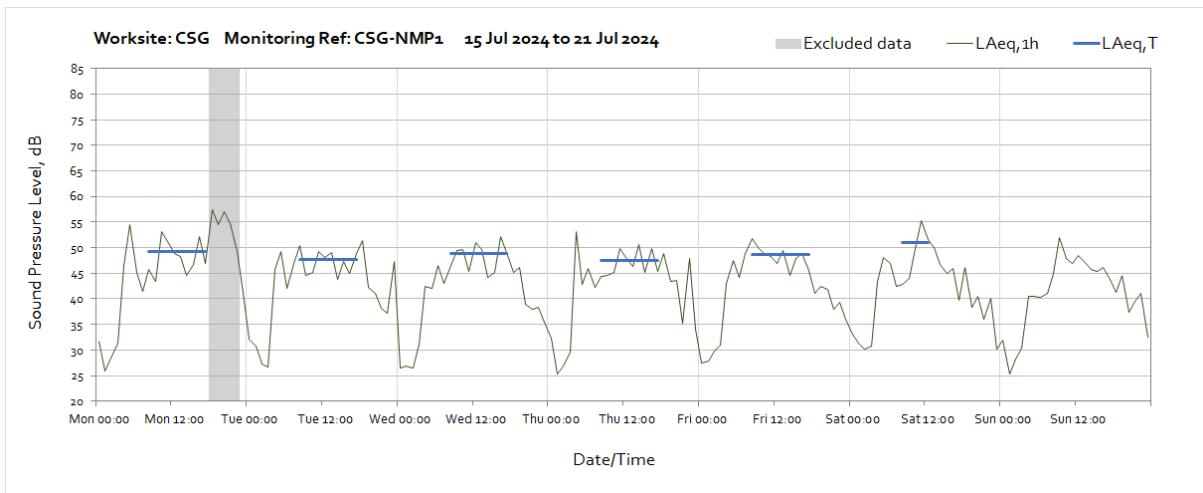
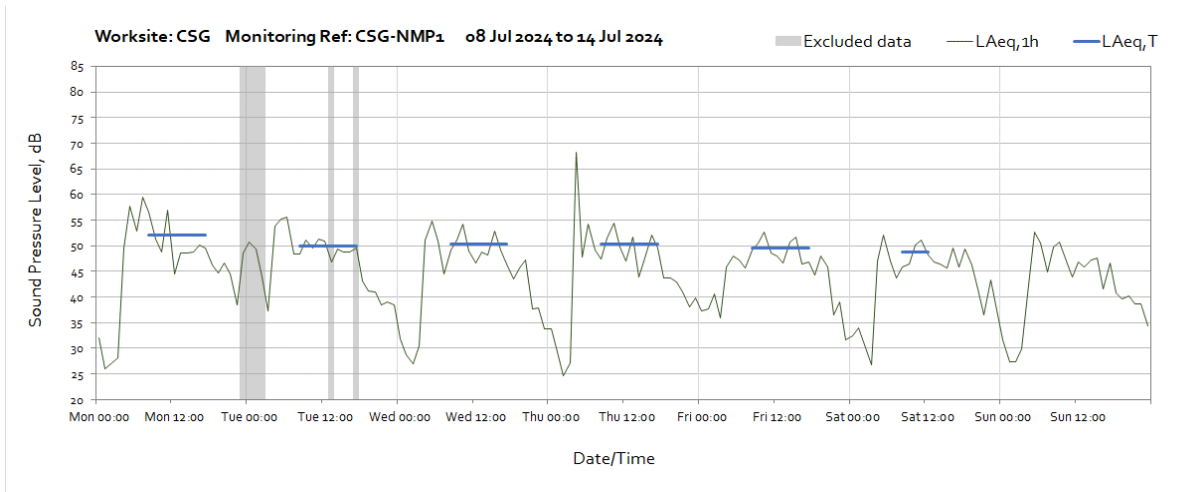
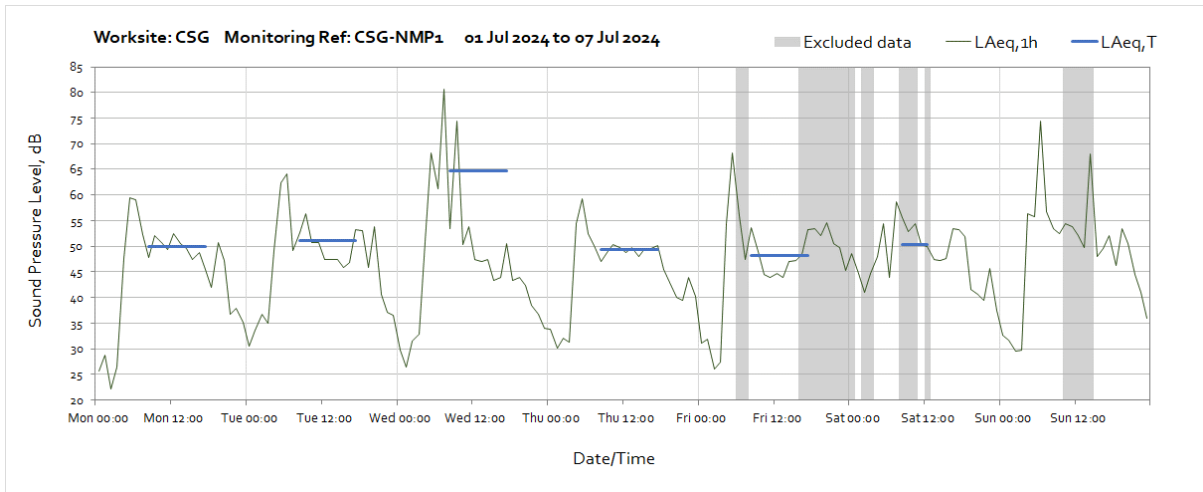
Note: Missing data between 13:00 and 14:00 on Tuesday 2nd July was due to monitor field calibration. Missing data from 05:00 on Sunday 7th July until 12:00 on Thursday 11th July was due to depleted battery power, the battery has now been replaced.

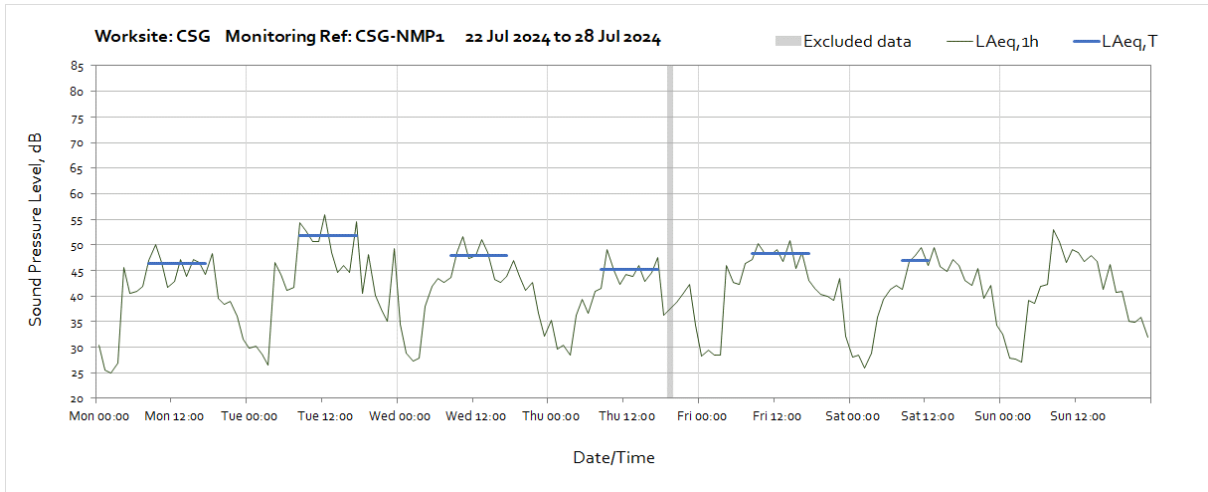


Note: Missing data from 05:00 on Sunday 7th July until 12:00 on Thursday 11th July was due to depleted battery power, the battery has now been replaced.

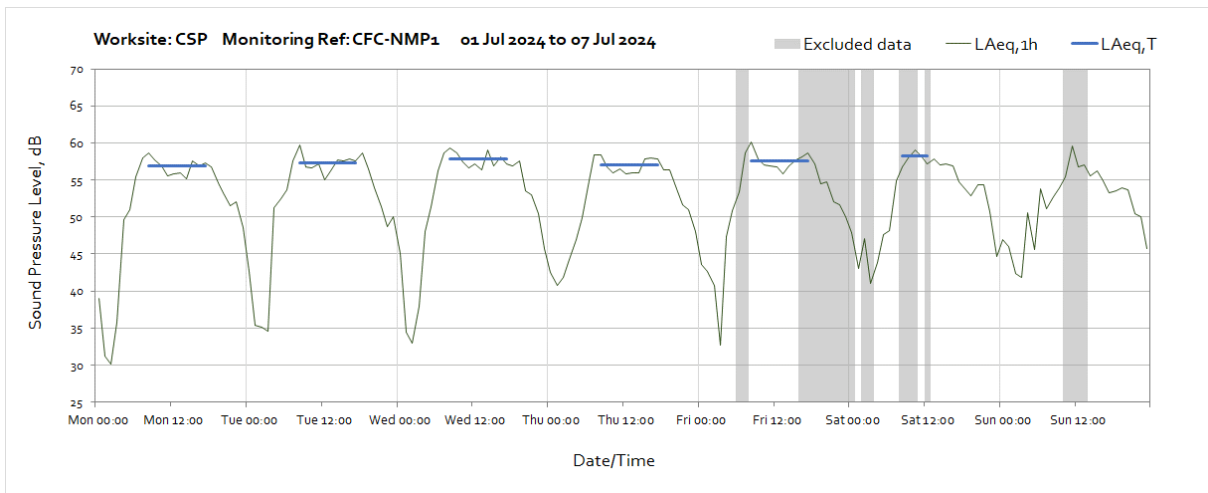


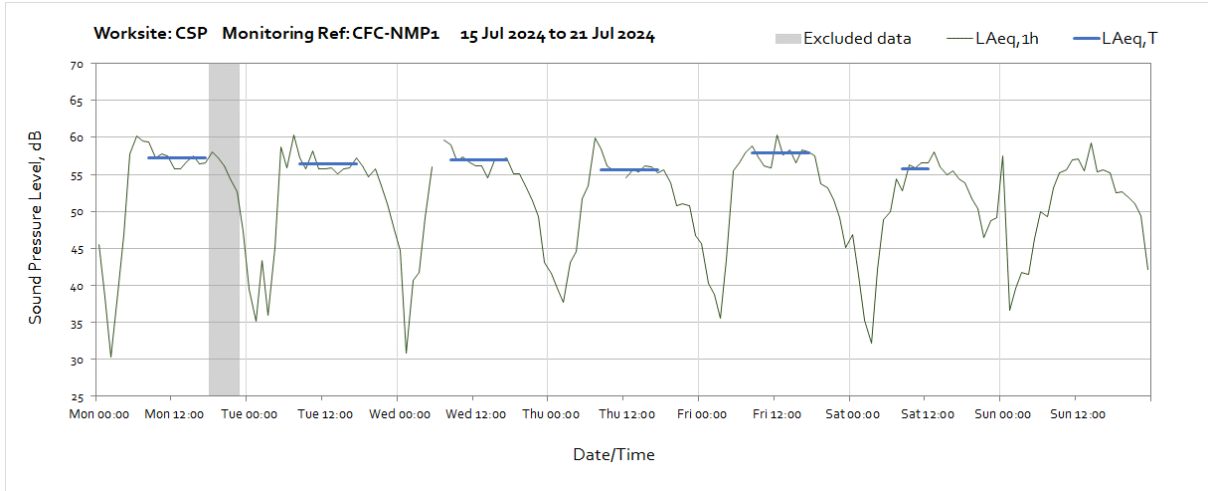
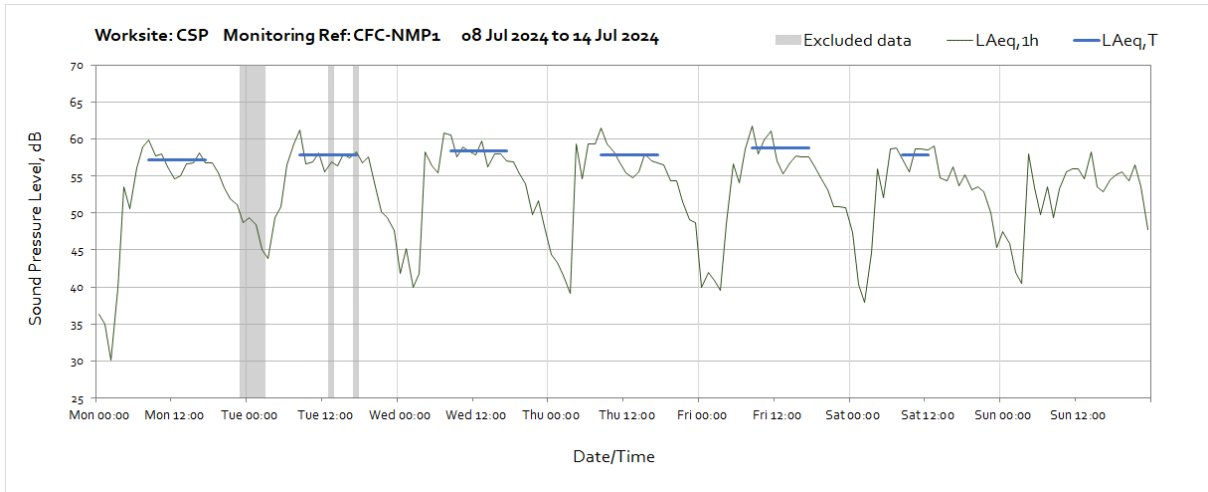
Worksite: CSG – Monitoring Ref: CSG-NMP1



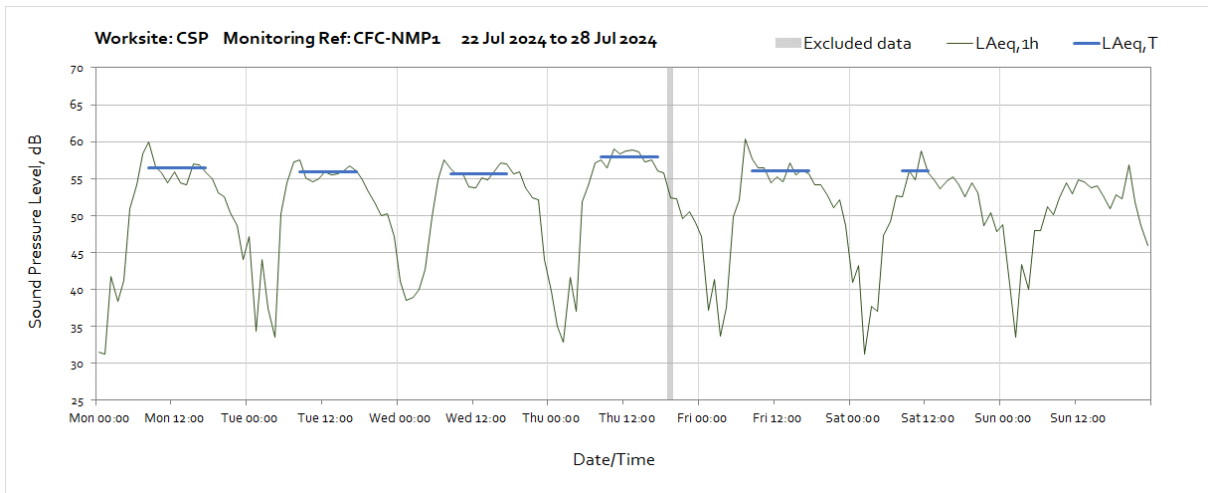


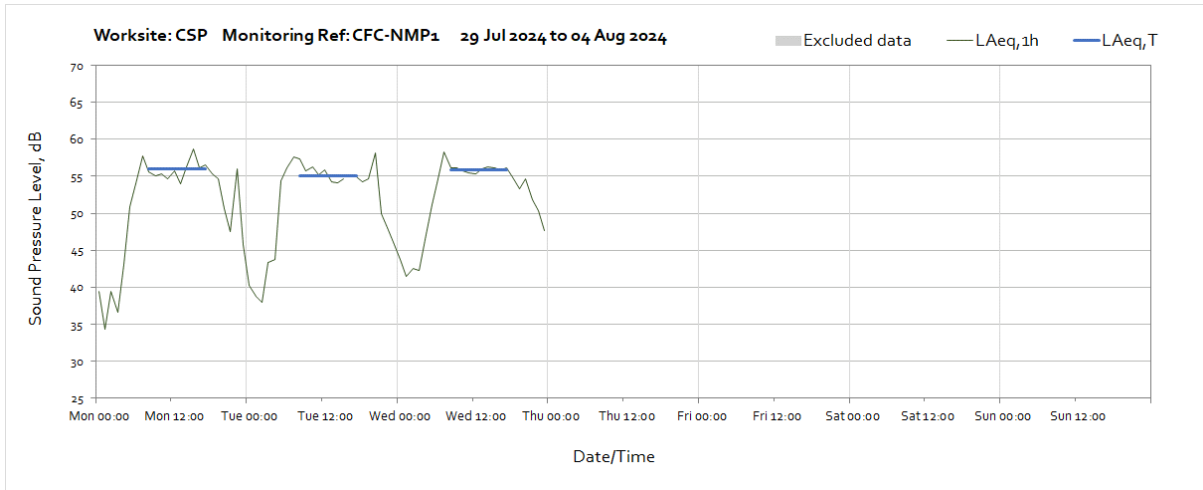
Worksite: CSP – Monitoring Ref: CFC-NMP1





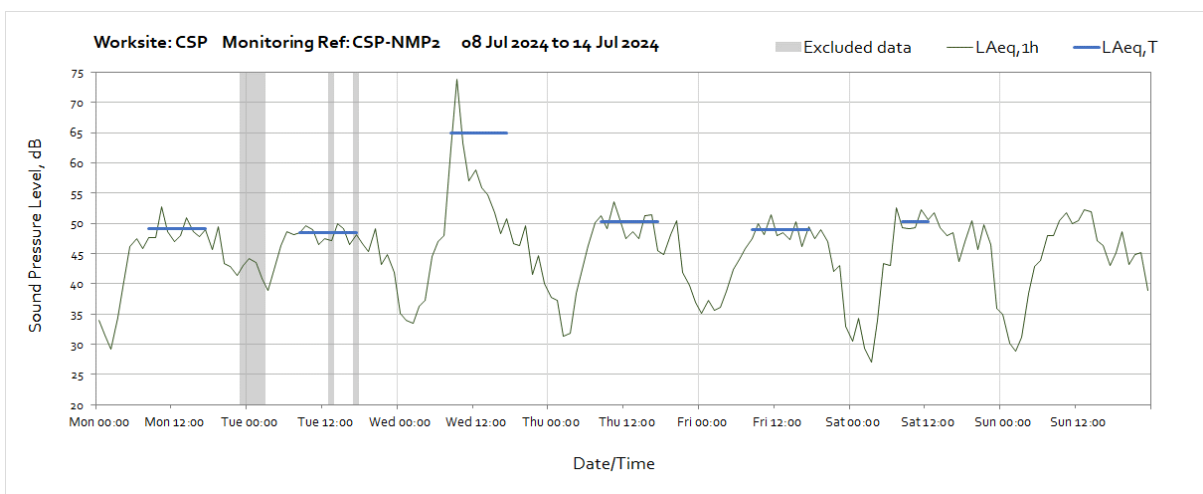
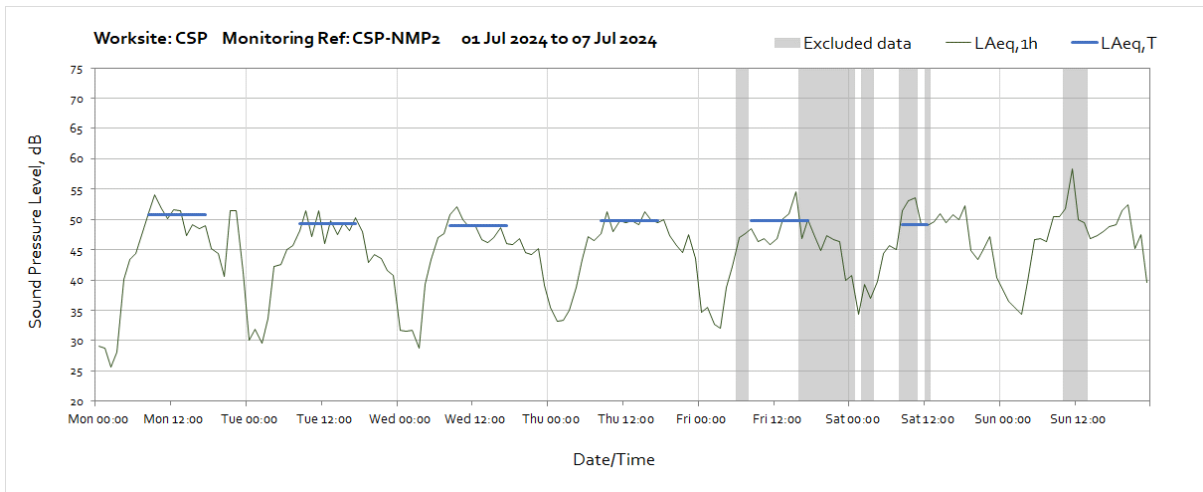
Note: Missing data between 06:00 and 07:00 on Wednesday 17th July was due to a communication error between the monitoring station and server. Missing data between 11:00 and 12:00 on Thursday 18th July was due to monitor field calibration.

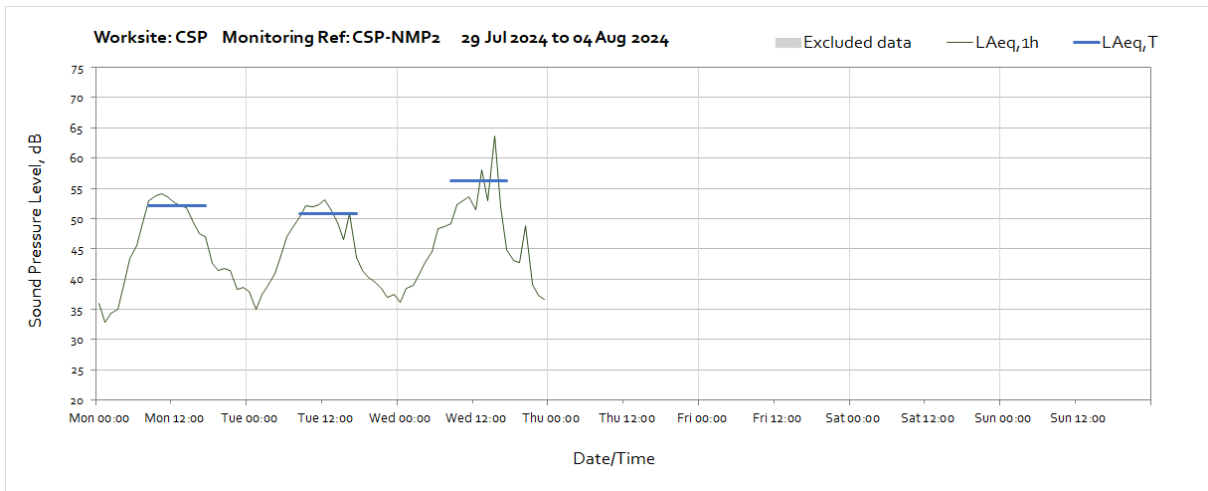
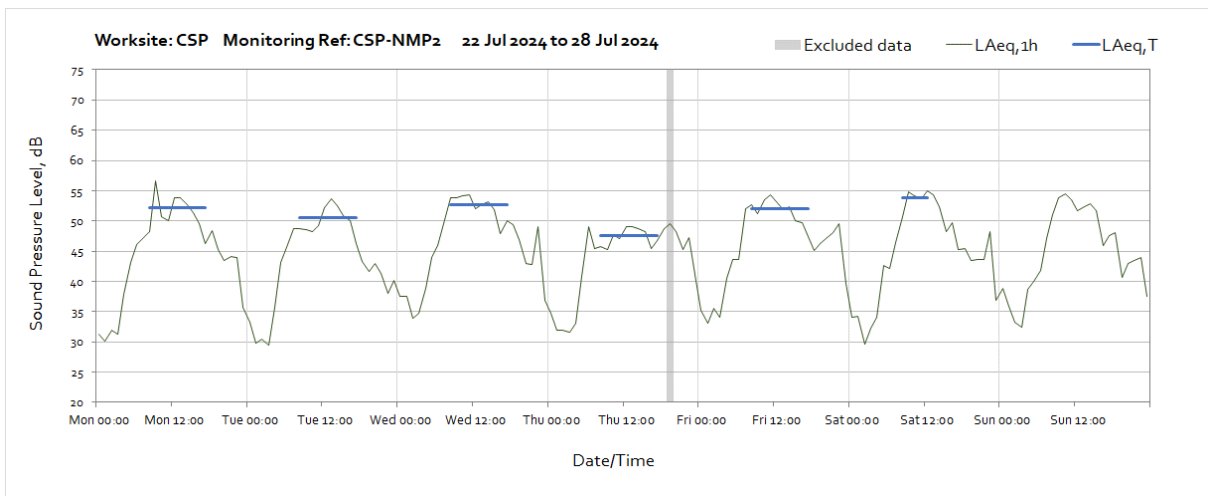
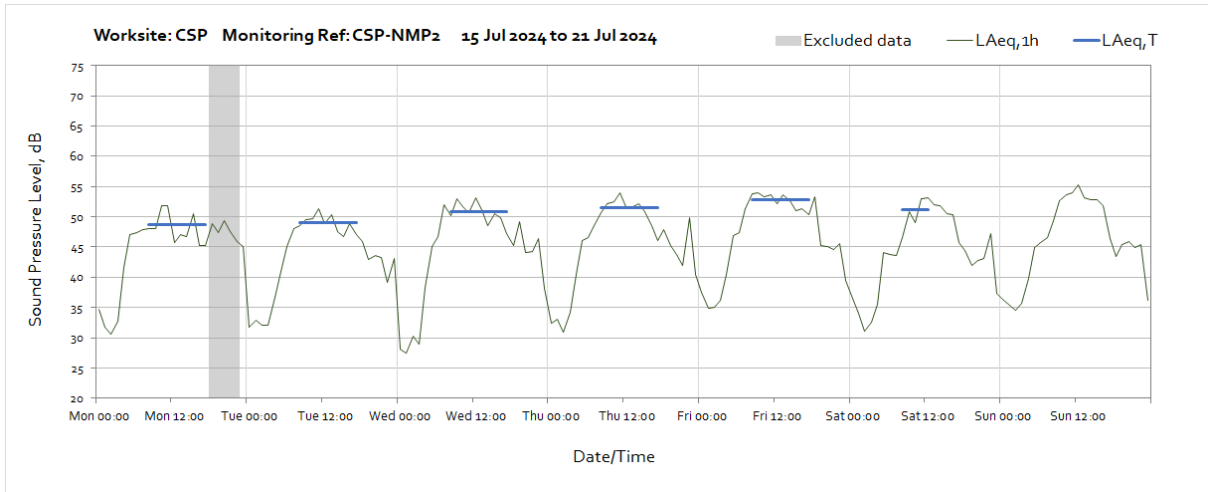




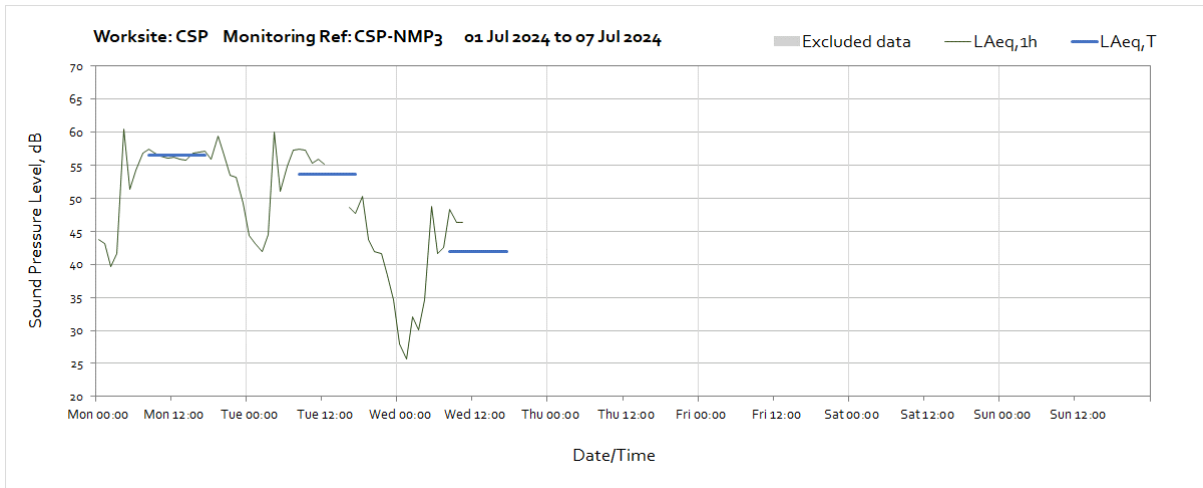
Note: Missing data between 16:00 and 17:00 on Tuesday 30th July was due to a communication error between the monitoring station and server.

Worksite: CSP - Monitoring Ref: CSP-NMP2



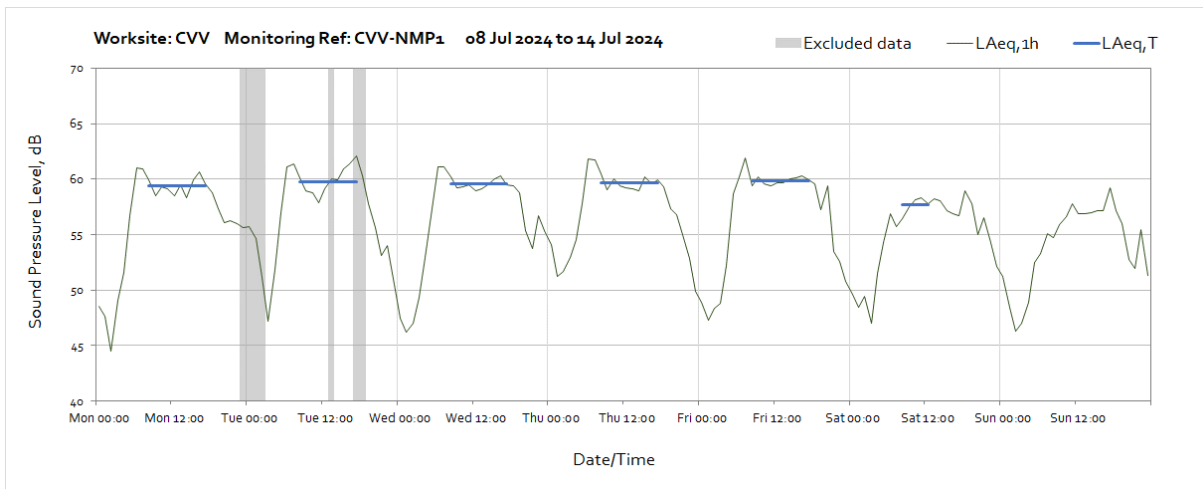
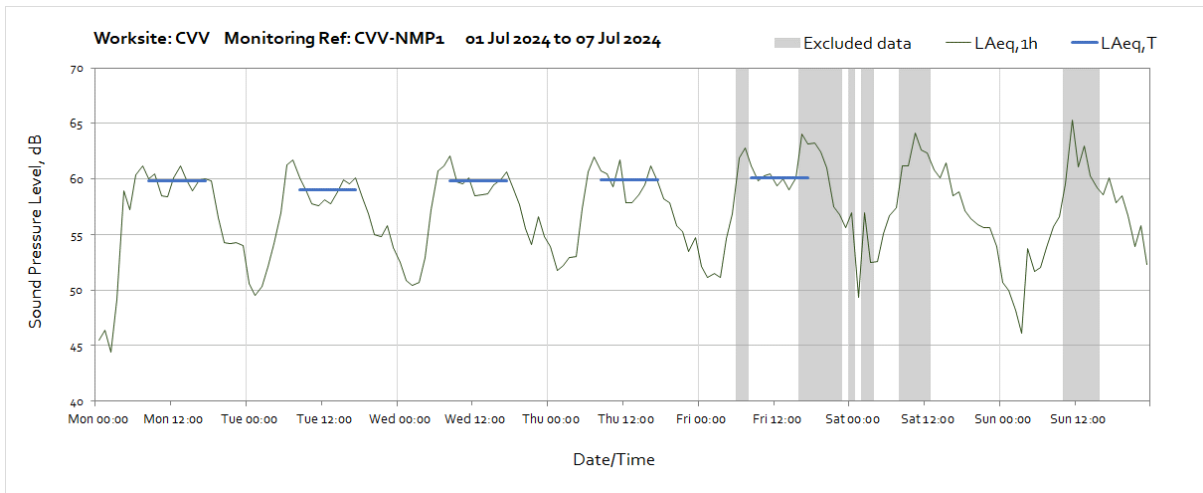


Worksite: CSP – Monitoring Ref: CSP-NMP3

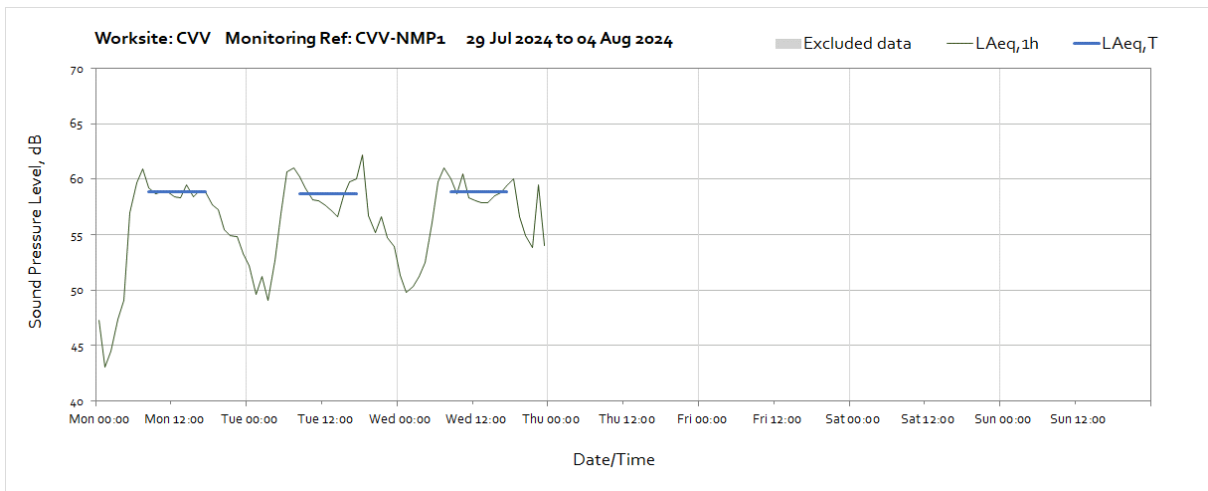
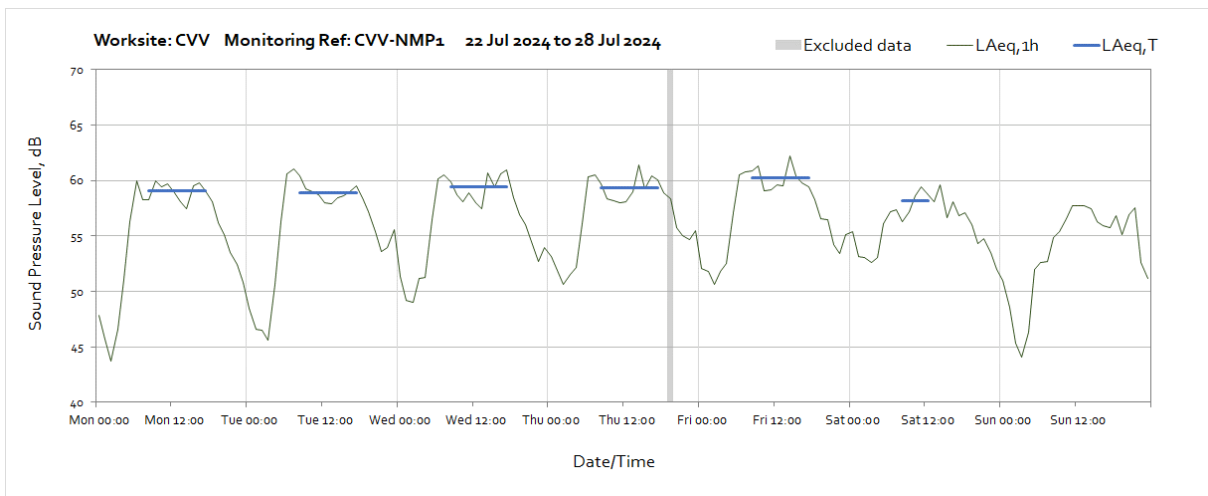
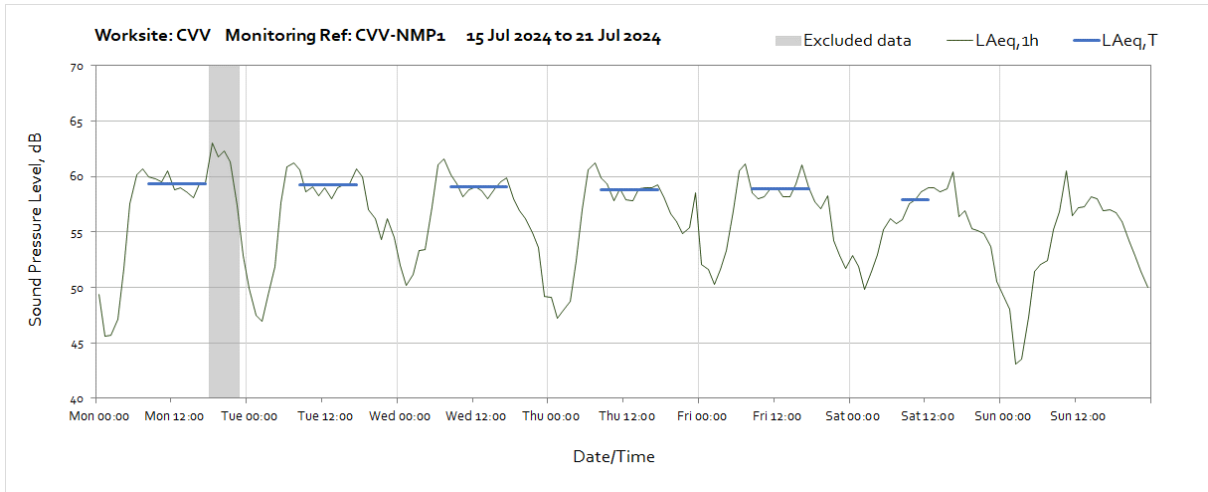


Note: Missing data between 13:00 and 16:00 on Tuesday 2nd July was due to a monitor field calibration. Monitor was decommissioned at 11:00 on Wednesday 3rd July.

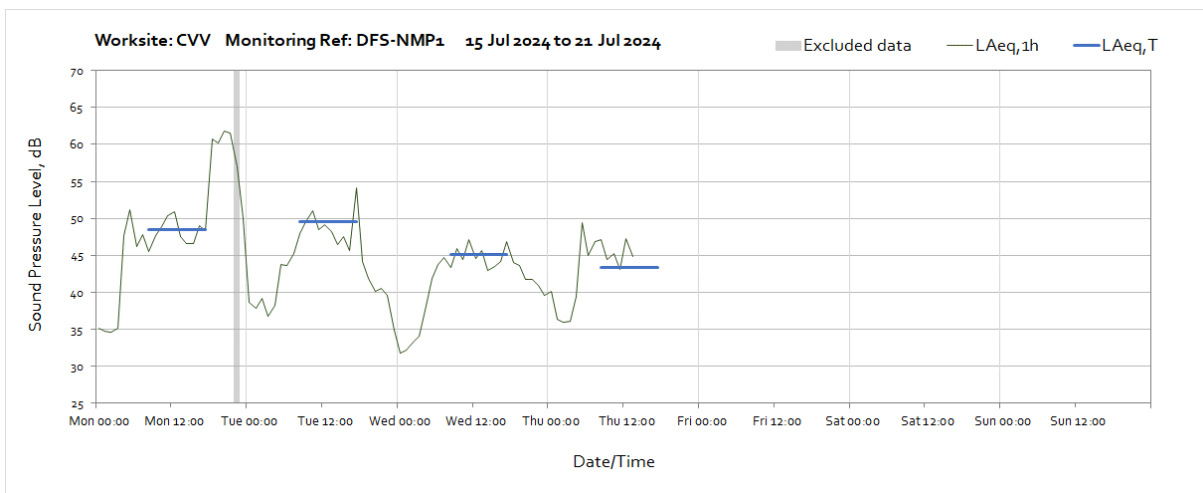
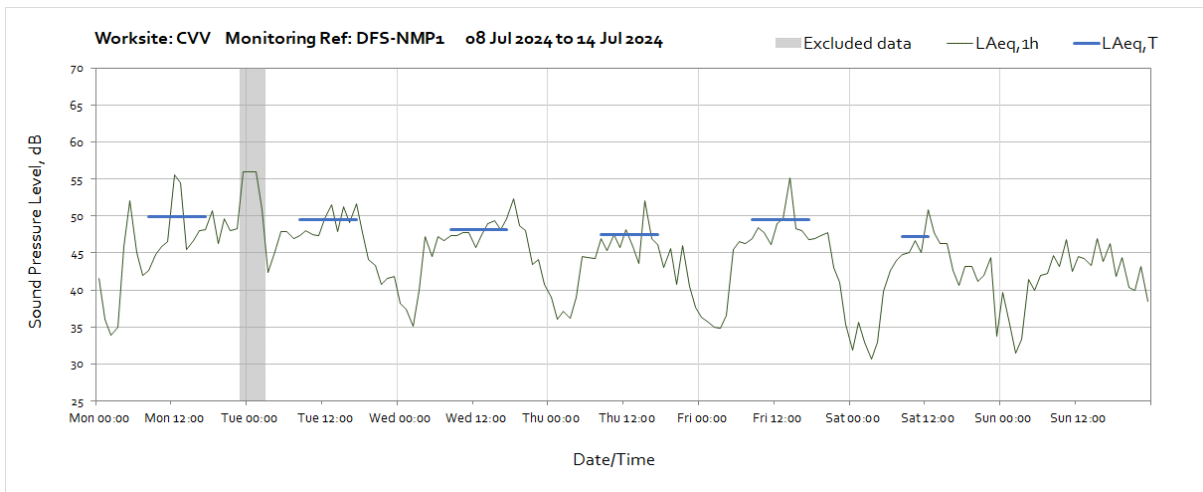
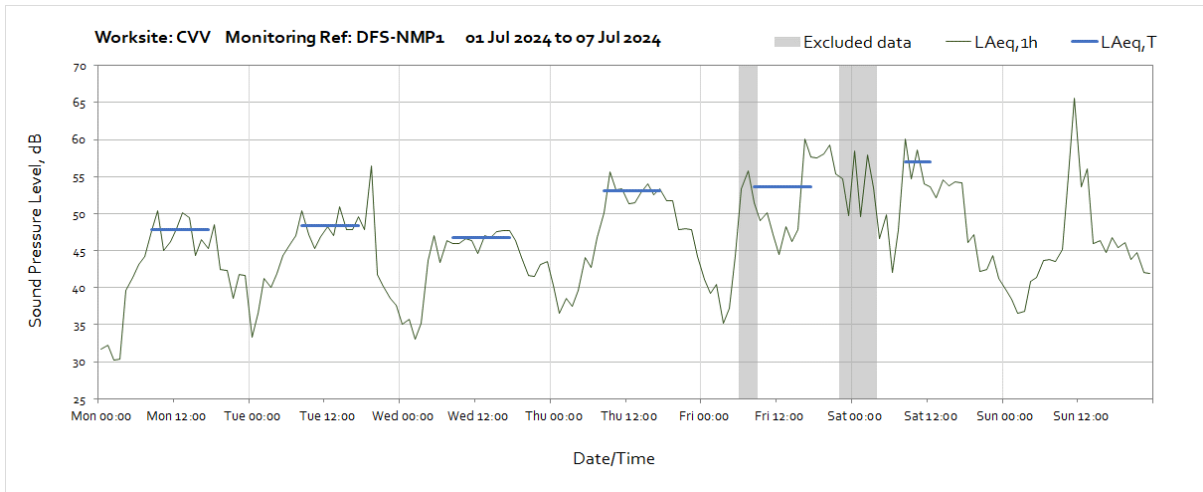
Worksite: CVV- Monitoring Ref: CVV-NMP1



OFFICIAL



Worksite: CVV – Monitoring Ref: DFS-NMP1



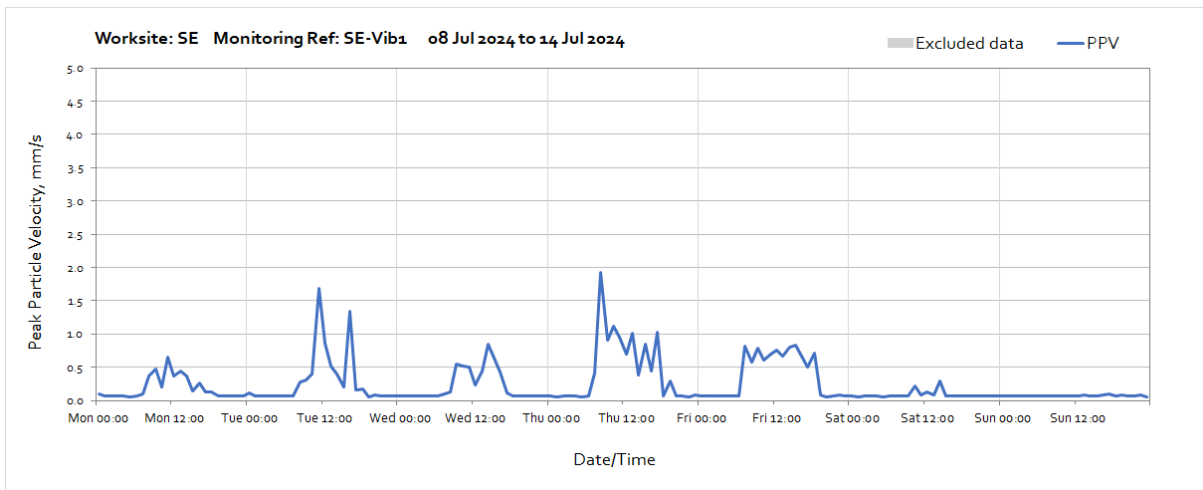
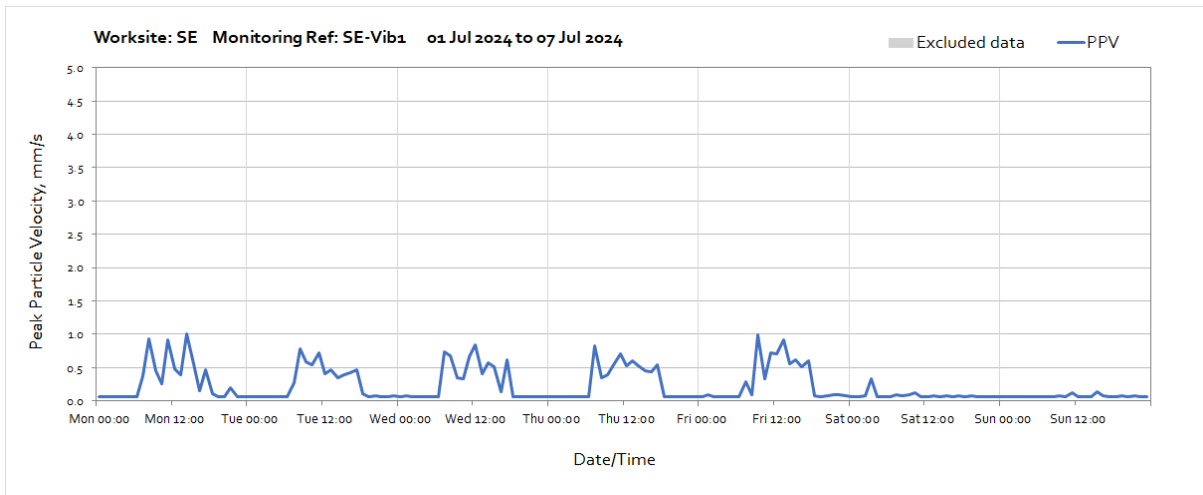
Note: Monitor was decommissioned at 14:00 on Thursday 18th July.

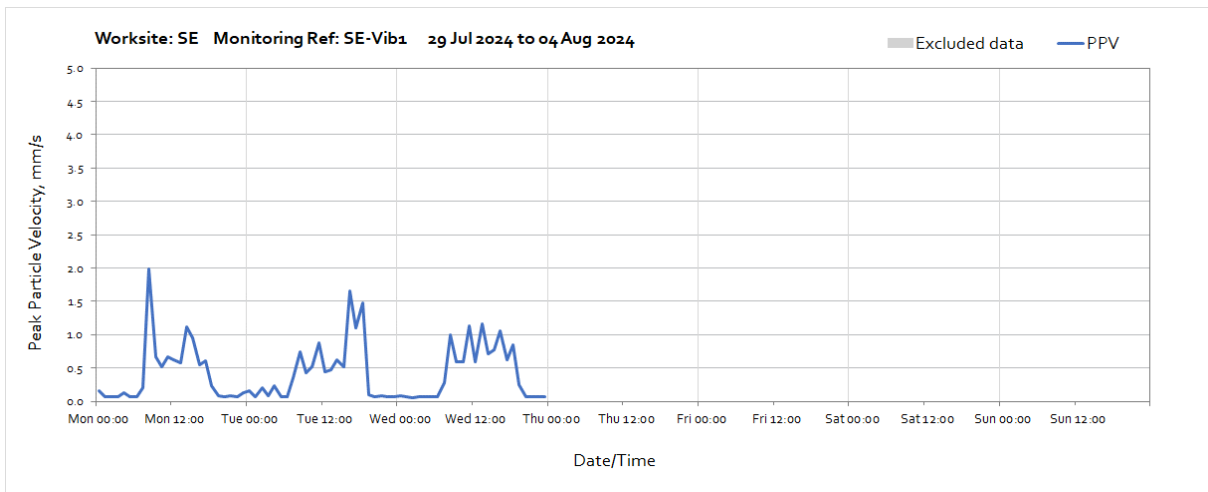
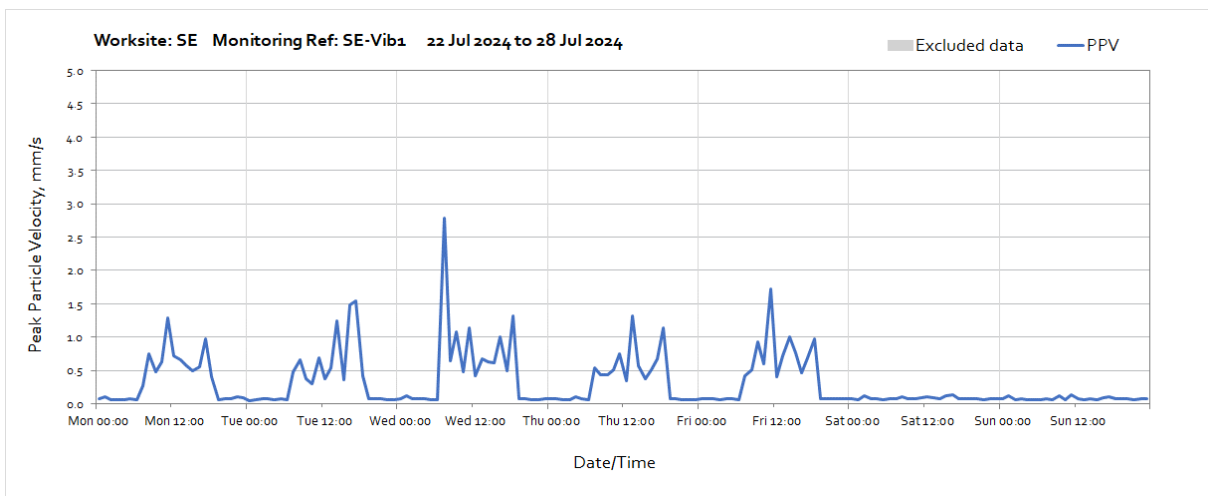
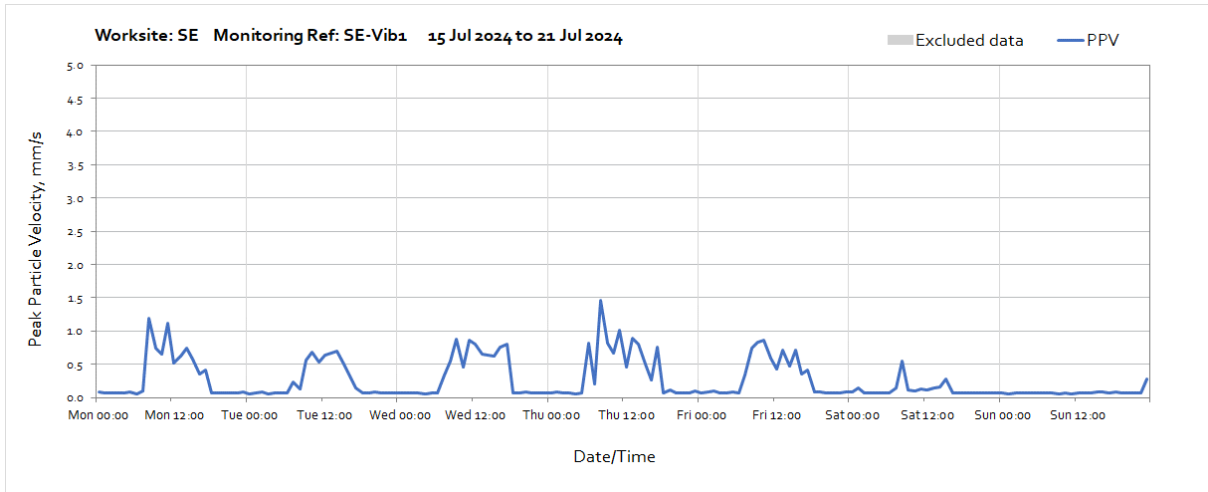
OFFICIAL

Vibration

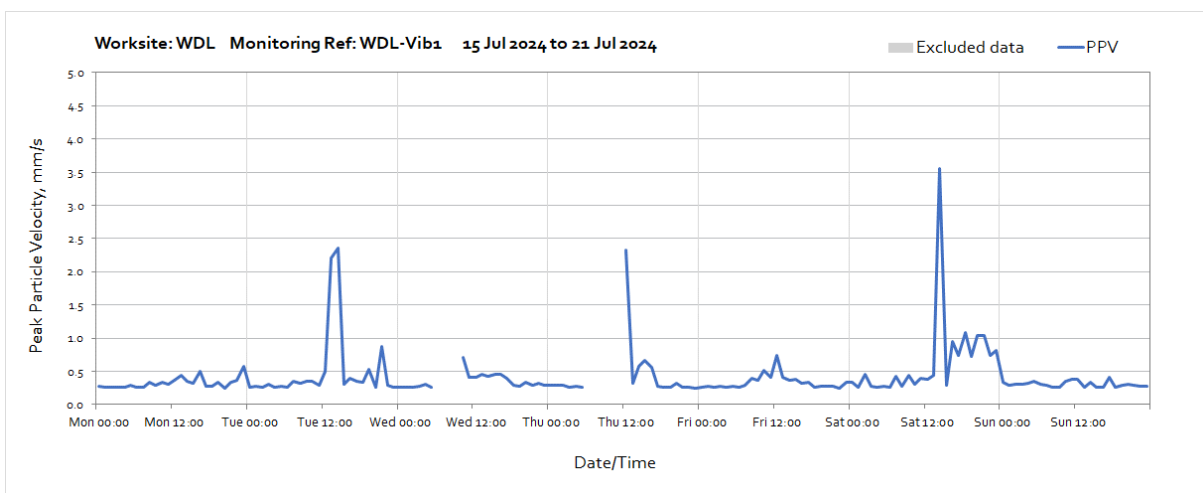
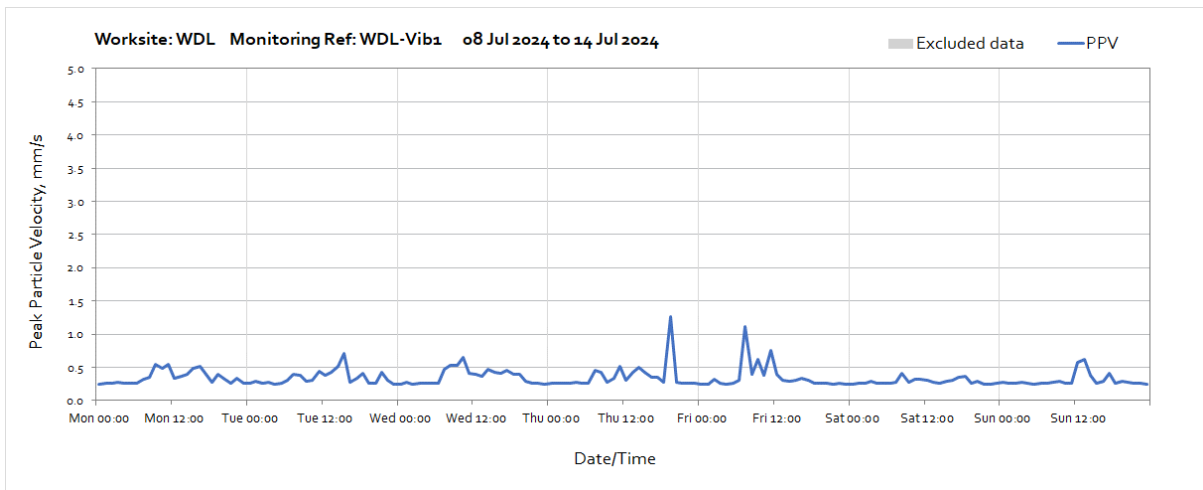
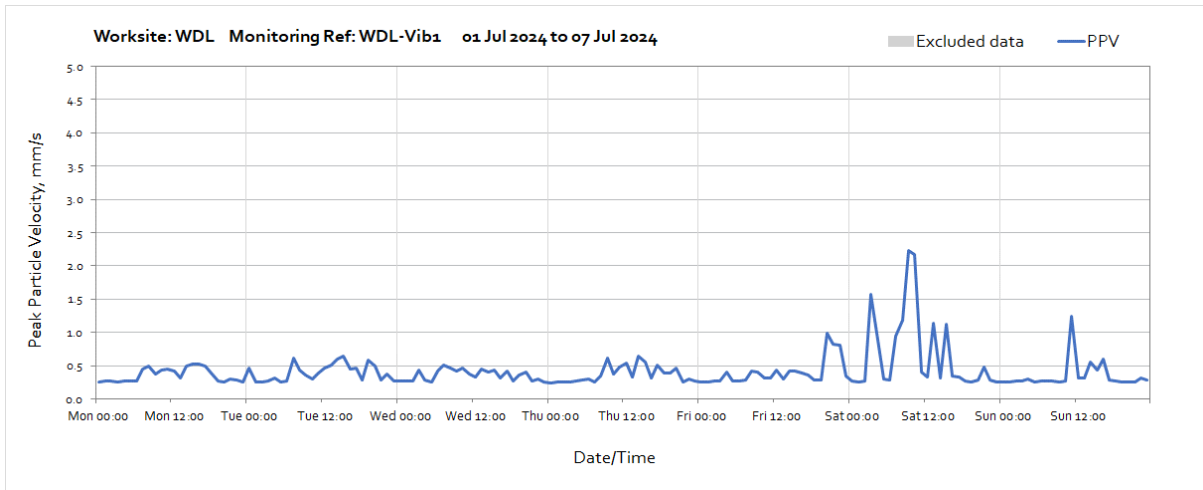
The following graphs show the hourly measured peak particle velocity PPV recorded during the monitoring period. The graphs show the highest PPV of the three orthogonal axes x, y and z. Periods where PPV values have been affected by local interference with the vibration monitor or only measured for part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

Worksite: SE – Monitoring Ref: SE-Vib1



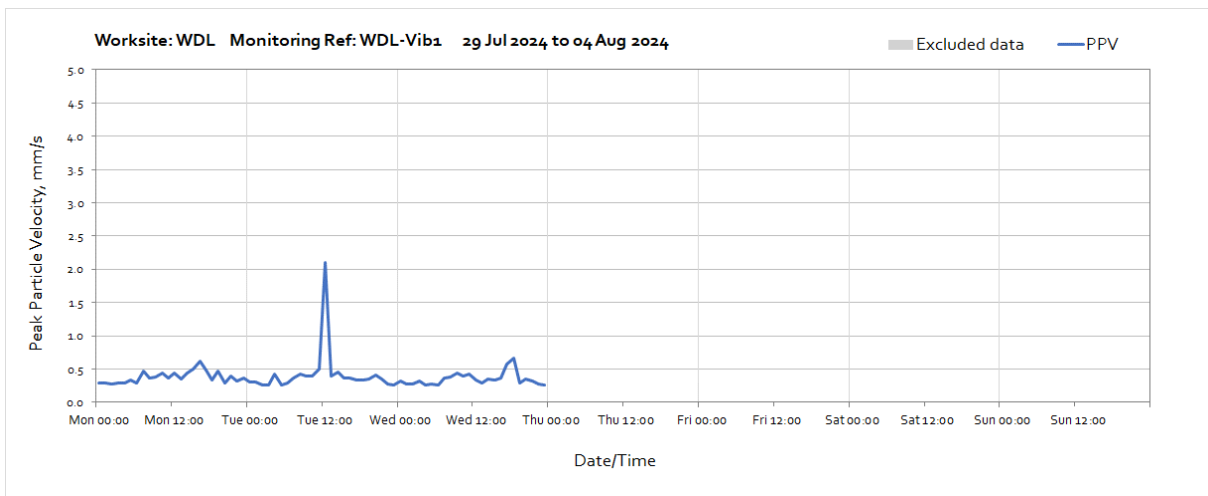
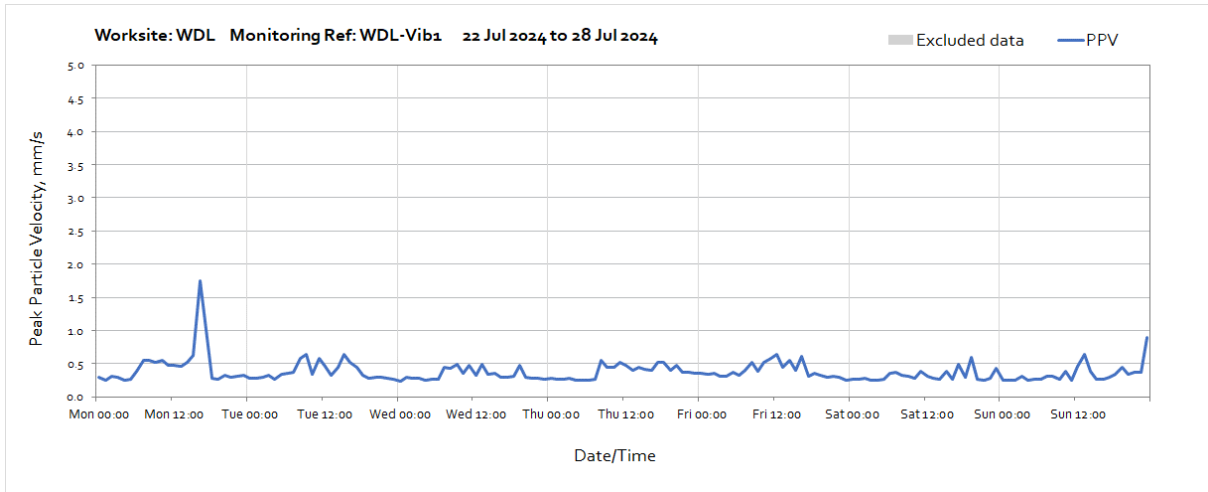


Worksite: WDL – Monitoring Ref: WDL-Vib1

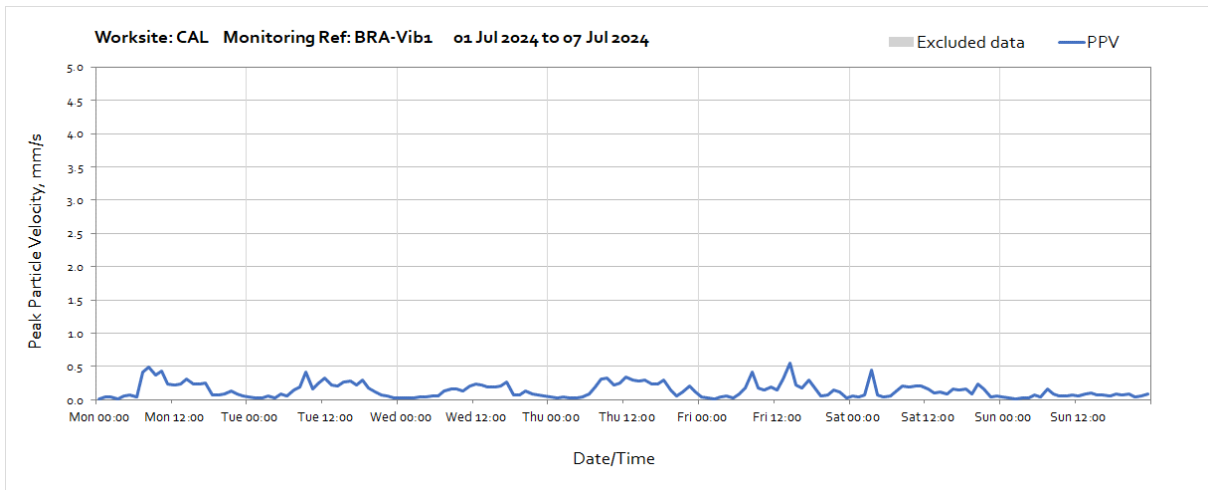


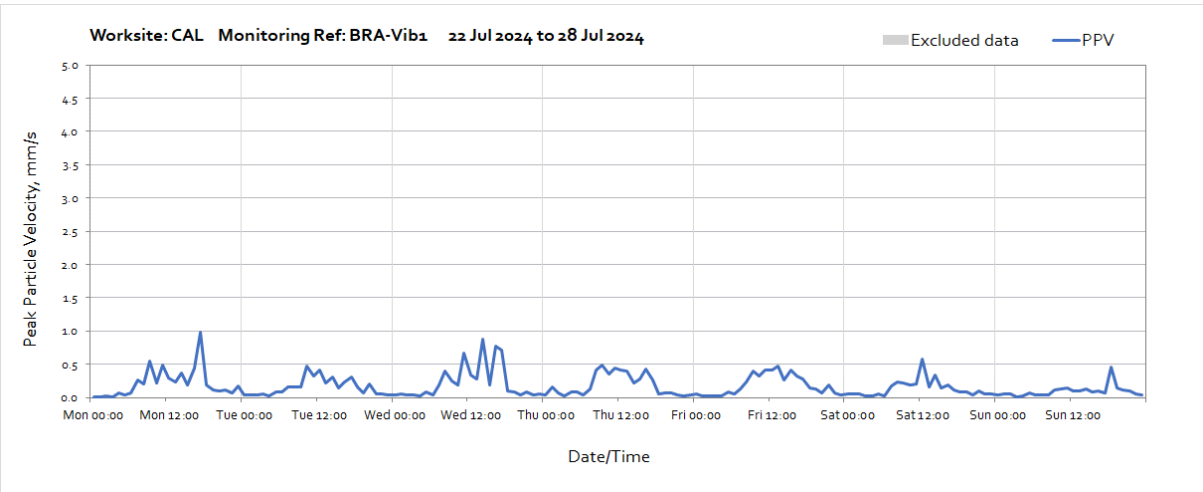
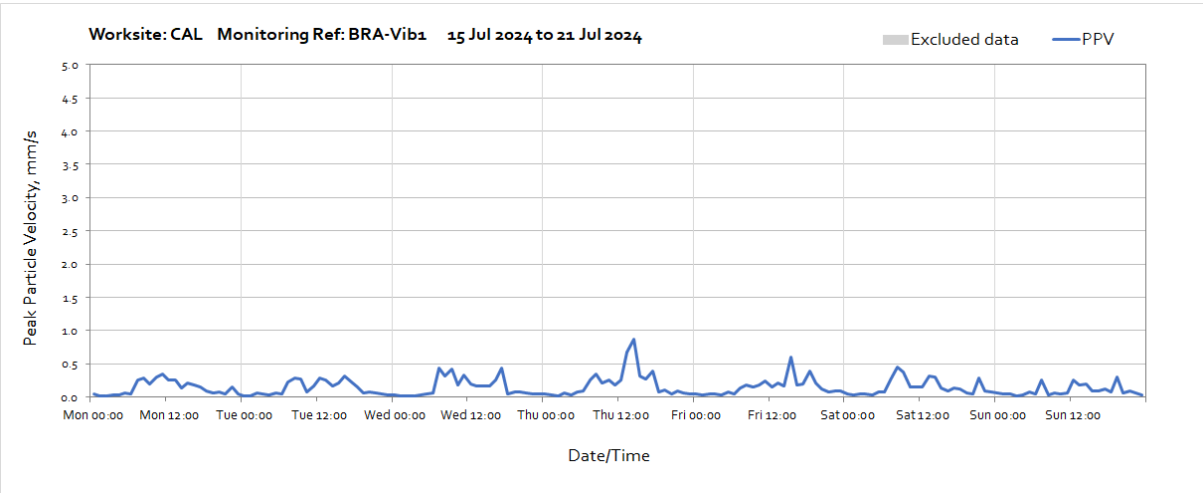
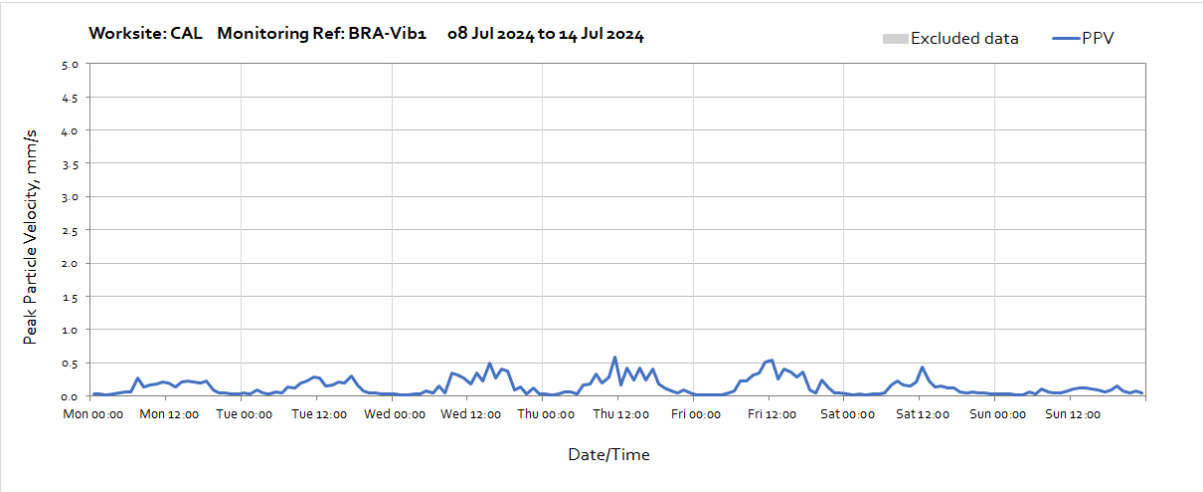
Note: Missing data throughout the week was due to a depleted monitor battery.

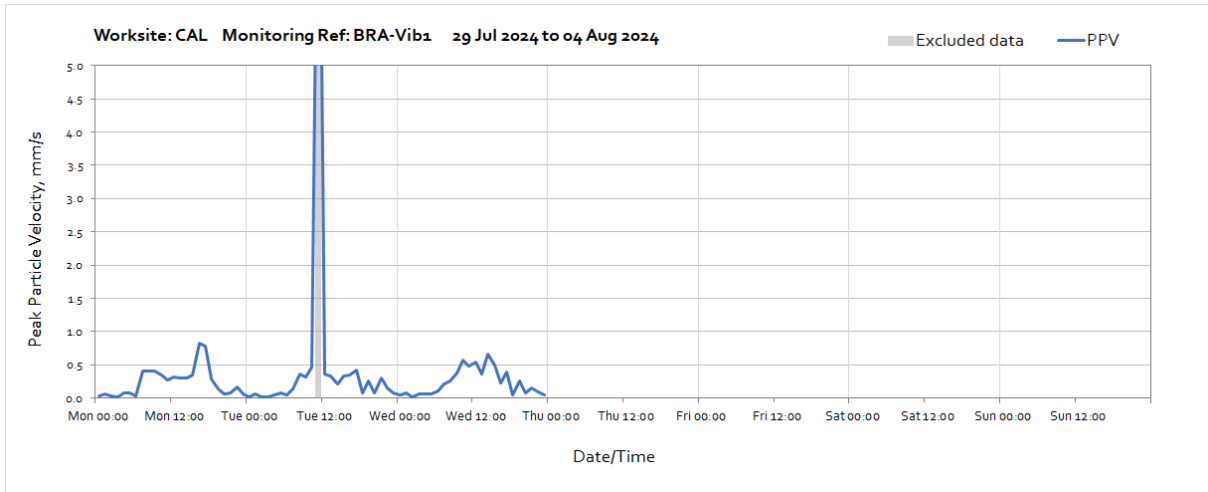
OFFICIAL



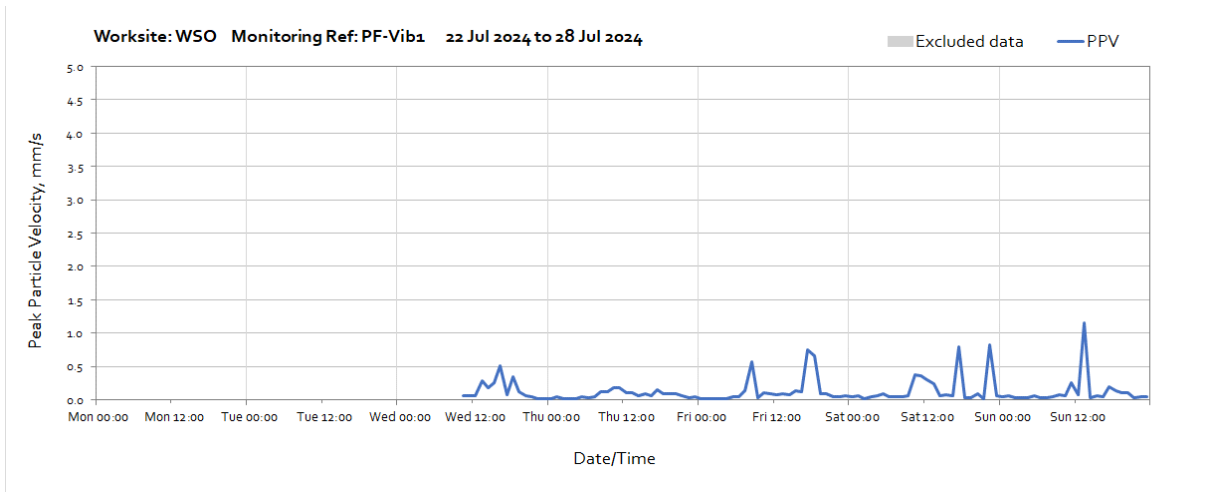
Worksite: CAL – Monitoring Ref: BRA-Vib1



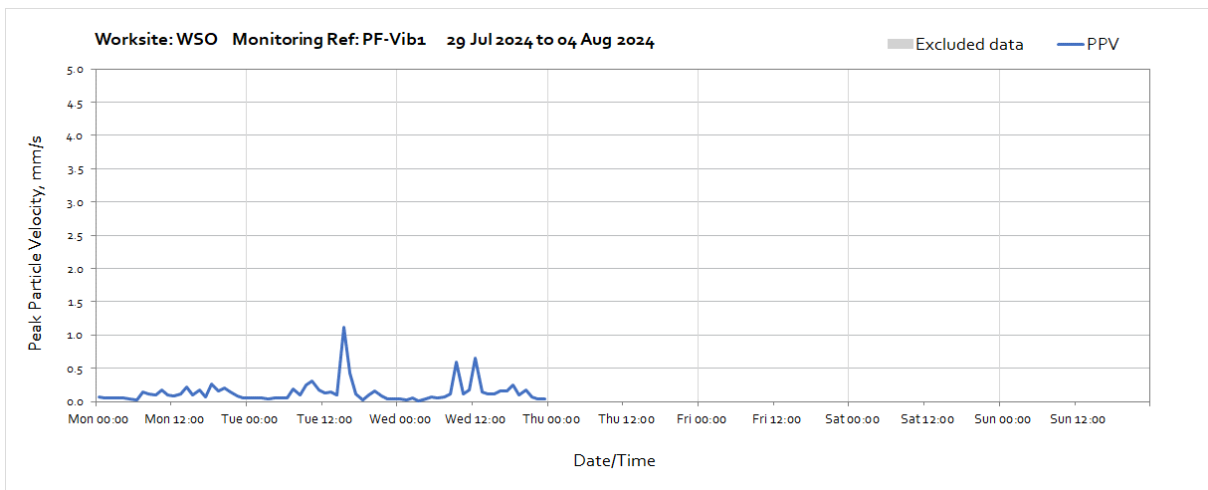




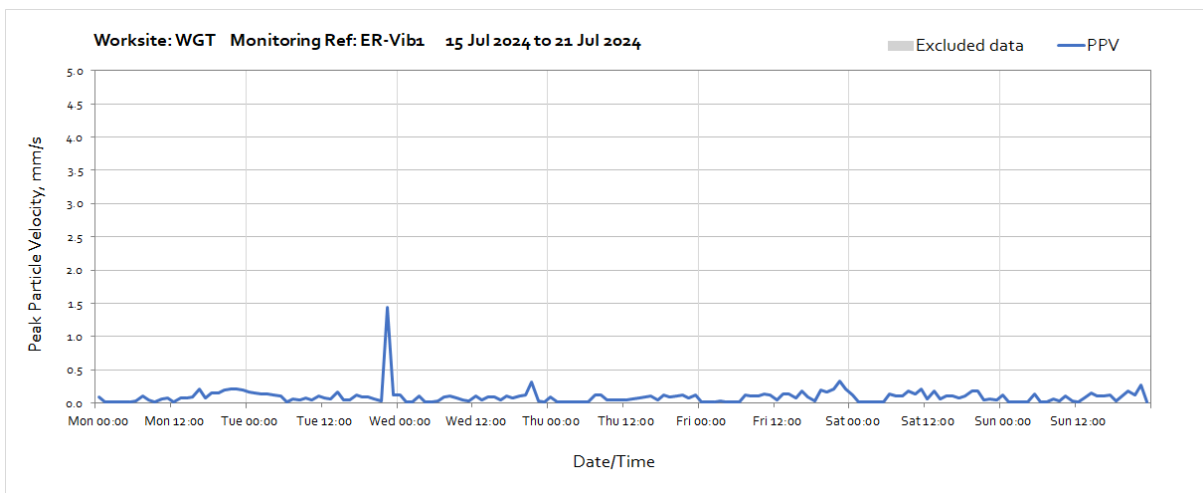
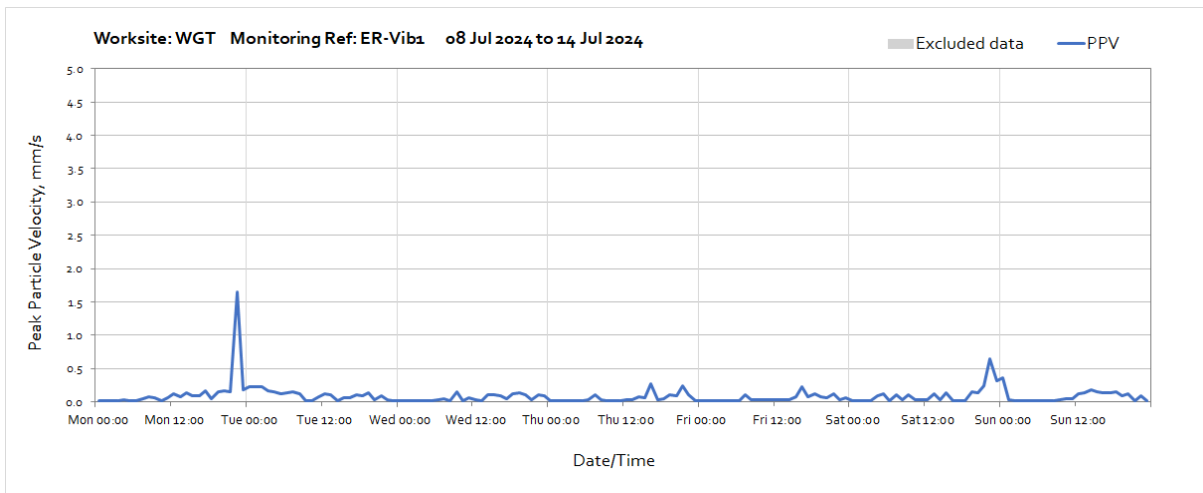
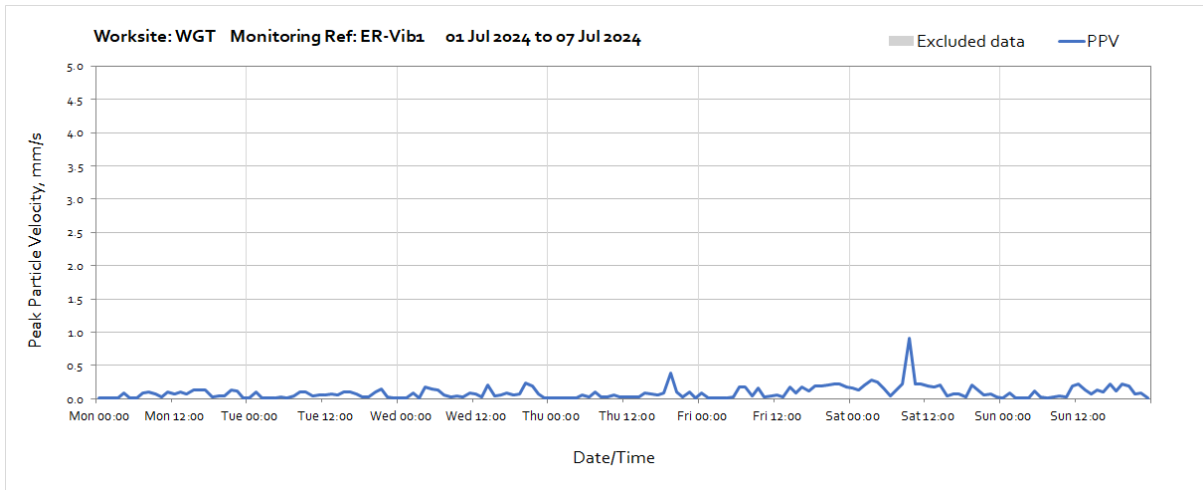
Worksite: WSO – Monitoring Ref: PF-Vib1

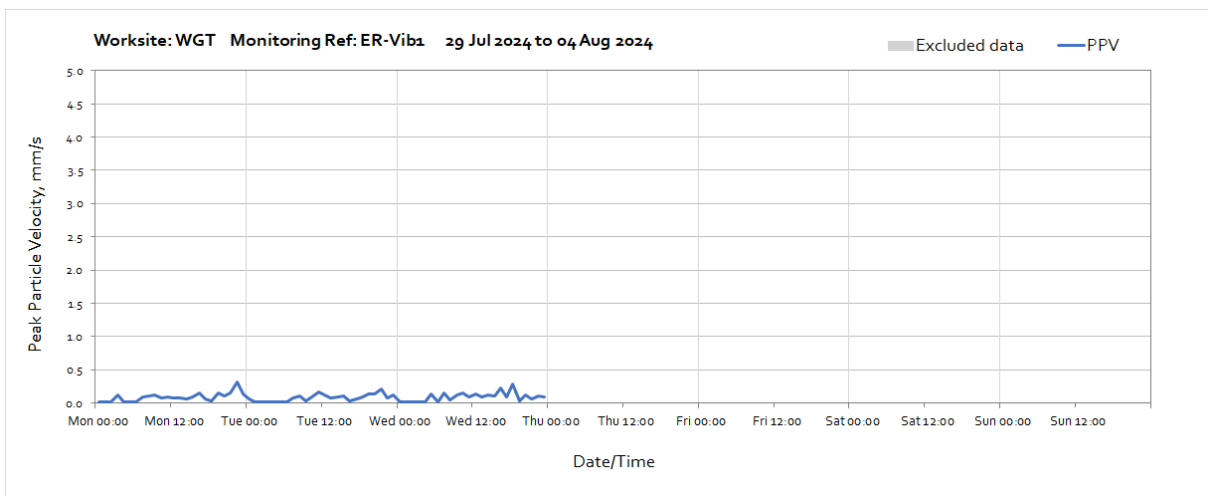
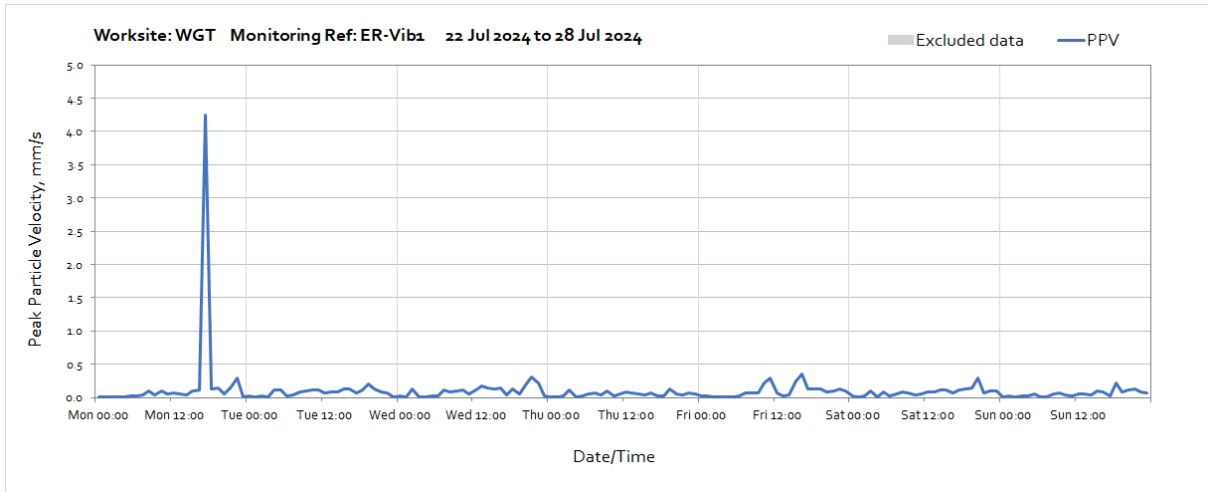


Note: Monitor was installed at 10:00 on Wednesday 24th July.

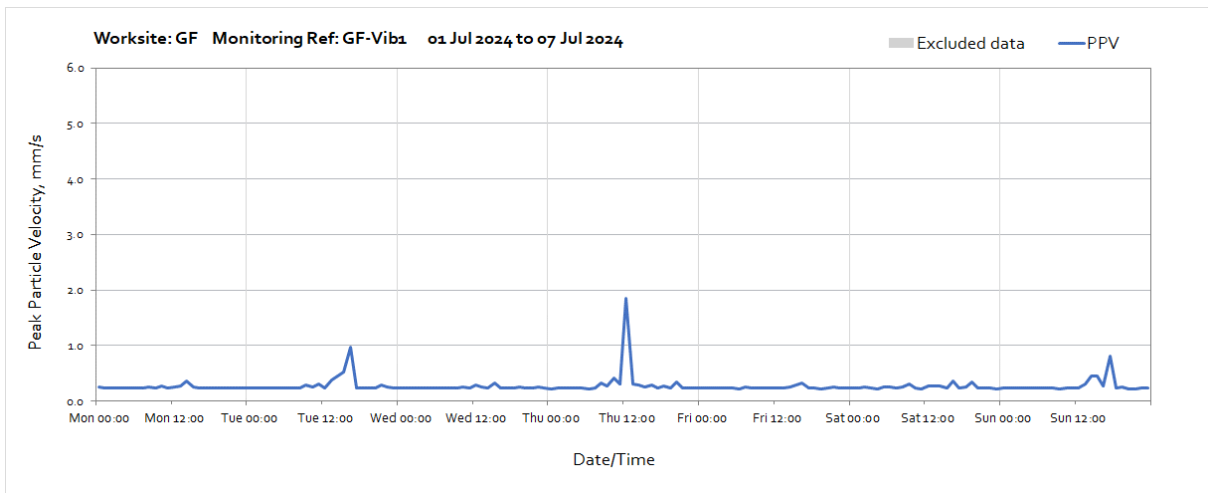


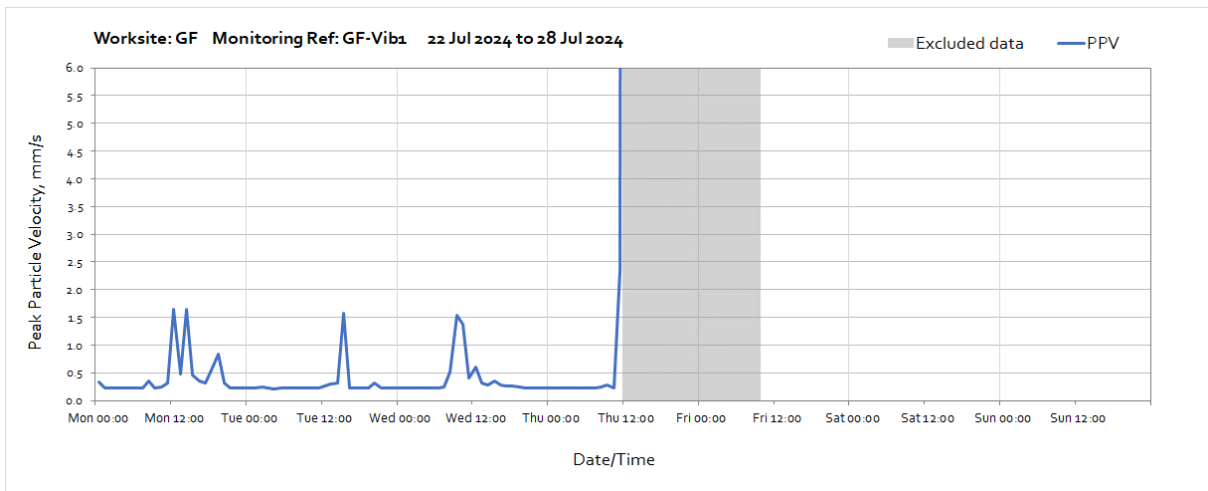
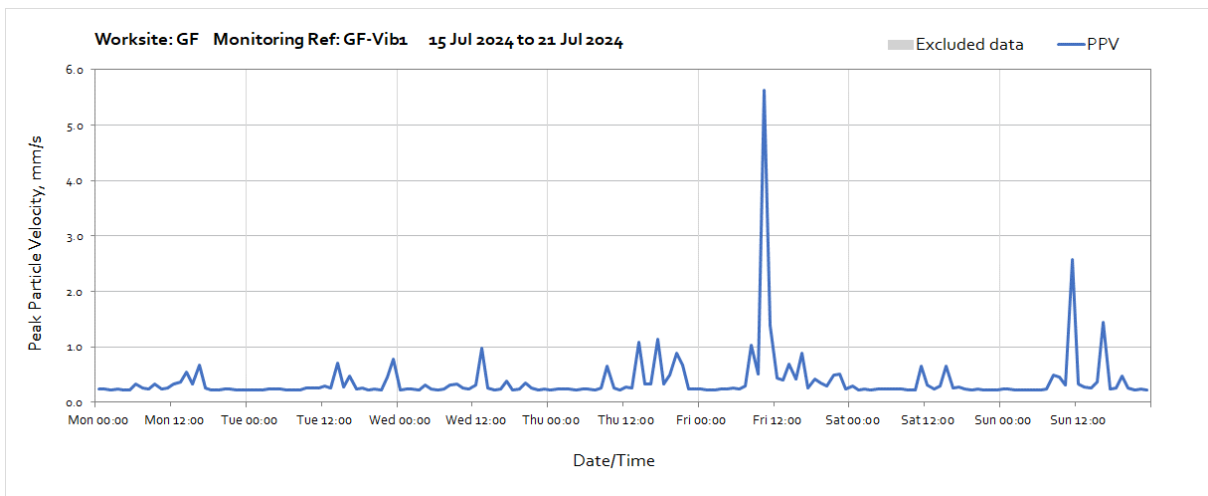
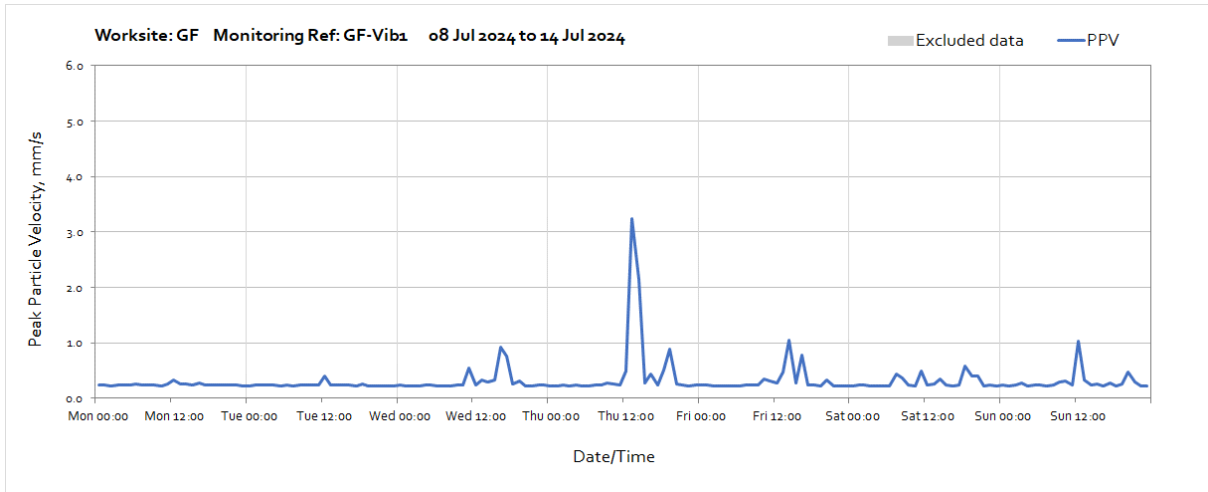
Worksite: WGT – Monitoring Ref: ER-Vib1





Worksite: GF – Monitoring Ref: GF-Vib1





Note: Monitor retrieved for repair at 10:00 on Friday 26th July.

OFFICIAL