

## **Construction Noise and Vibration Monthly Report – October 2022**

**Buckinghamshire**

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# Non-Technical Summary

This Noise and Vibration Monitoring Report fulfils HS2 Limited's commitment detailed in the Environmental Minimum Requirements (EMRs), Annex 1, Code of Construction Practice, to present the results of noise monitoring carried out within Buckinghamshire (BS) during the month of October 2022.

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 access road construction, topsoil stripping, compound maintenance works, drainage works, excavation and stockpiling were undertaken.
- Noise monitoring was undertaken in the vicinity of the School End (ref.: SE), Rosehill Farm (ref.: RF), and Hermitage Chetwode (ref.: HC) worksites where compound development works, bulk excavation, topsoil stripping, piling platform works, drainage works, vehicle movements and stockpiling were undertaken.
- Noise monitoring was undertaken in the vicinity of the Twyford worksite (ref.: TW) where access road maintenance works, haul road construction, drainage works, topsoil stripping, stockpiling and vehicle movements were underway.
- Noise monitoring was undertaken in the vicinity of the West Street Overbridge worksite (ref.: WSO), where concrete pours, including formwork installation and reinforcement fixing, sheet piling and utility diversion works were underway.
- Noise monitoring was undertaken in the vicinity of the Addison Road worksite (ref.: AR) where construction of embankments and walls, stone laying and compaction, drainage works, excavation, backfilling and compactions, lime stabilisation, backfilling, clay filling and sheet piling were underway.
- Noise monitoring was undertaken in the vicinity of the School Hill Compound worksite (ref.: SHC) where construction of piling platform, topsoil stripping and removal works were underway.
- Noise monitoring was undertaken in the vicinity of the Quainton worksite (ref.: QAR) where micro tunnelling, backfilling, field trenching, removal of embankment, excavation and sheet piling works were underway.
- Noise monitoring was undertaken in the vicinity of the FCC Sidings worksite reference (ref: FCC) where no work activities were undertaken during the reporting period.
- Noise monitoring was undertaken in the vicinity of the Meadoway and Glebe House worksite (ref: MW&GH) where access road construction, earthworks, stockpiling, piling platform construction and haul road construction were underway.

- Noise monitoring was undertaken in the vicinity of Oat Close Worksite (ref: OC) where earthworks, stockpiling, haul road construction, piling works, overhead utility diversions and rail deliveries were underway.
- Noise monitoring was undertaken in the vicinity of Nash Lee Lane Worksite (ref.: NLL) where plant crossing works, fencing works, construction of fuel storage area and plant laydown areas, access road asphaltting and traffic management works were underway.
- Noise monitoring was undertaken in the vicinity of Wendover Green Tunnel (ref.: WGT) worksite where fencing, vegetation clearance, utility, construction of embankment, topsoil stripping, ground investigation, excavation, pond construction and stockpiling works were underway.
- Noise monitoring was undertaken in the vicinity of Rocky Lane Embankment worksite (ref: RLE) where fixed plant installation works, surface water management, installation of security plaza, fencing, excavations, compound installation and grassland maintenance were underway.
- Noise monitoring was undertaken in the vicinity of Wendover Dean Viaduct worksite (ref: WDV) where pile cropping, concrete works, shuttering and steel fixing were underway.
- Noise monitoring was undertaken in the vicinity of Leather Lane worksite (ref: LL) where haul road works, earthworks (stockpile relocation), water utility diversion works and grassland maintenance works were underway.
- Noise monitoring was undertaken in the vicinity of South Heath Cutting worksite (ref: SHCW) where earthworks, culvert installation and grassland maintenance works were undertaken.
- Noise monitoring was undertaken in the vicinity of North Portal Worksite (ref: NP) where temporary utility works, site access road works, fencing works, barrette piling, headwall construction, ground-treatment works, excavation works, drainage works, piezometer installation, site operation and piling platform maintenance were undertaken.
- Noise monitoring was undertaken in the vicinity of Chesham Road Worksite (ref: CR) where site operation and maintenance, earthworks, construction works and shaft construction works were undertaken.
- Noise monitoring was undertaken in the vicinity of Little Missenden Vent Shaft worksite (ref.: LM) where site operation, basement construction, shaft base slab and collar construction were undertaken.
- Noise monitoring was undertaken in the vicinity of Amersham Vent Shaft worksite (ref.: AM), where site operation, waterproofing works, shaft collar construction and

lining works, concrete and floor works and basement construction works were undertaken.

- Noise monitoring was undertaken in the vicinity of Chalfont St Giles Vent Shaft worksite (ref.: CSG) where site operation, road maintenance works, concreting of walls and floors, stockpile removal and basement construction works were undertaken.
- Noise monitoring was undertaken in the vicinity of Chalfont St Peter Vent Shaft worksite (ref.: CSP), where site operation, road maintenance works, demolition works, concrete reinforcement and basement construction works were underway.
- Noise monitoring was undertaken in the vicinity of the Colne Valley Viaduct - Load Test Pile 1 worksite (ref.: LTP #1), where piling works, construction of a cofferdam, girder and deck erection and installation, compound operation, satellite welfare operation, generator farm operation, utility diversions, environmental maintenance, pier construction, River Colne re-alignment and emergency maintenance, ground investigation works, pumped water management, maintenance of haul roads, fencing, concrete drilling, concrete base slab construction, intrusive vegetation removal and gas crossing emergency dismantling works were underway.

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

- Godington where construction of the site access road, topsoil stripping and grass cutting were underway.
- Grovil Embankment – Westbury where excavations were underway.
- North of School End where excavations, vegetation clearance, stockpiling and drainage works were underway.
- Along the A422 where compound development works were underway.
- Turweston South where piling works for the Turweston overbridge and road diversion works were underway.
- East West Rail (EWR) interfaces where drainage works and assembly of steel deck were underway.
- Charndon Lodge where formwork reinforced concrete works, steel and shuttering lifting and fixing works were underway.
- Infrastructure Maintenance Depot (IMD) where reinforcement bar works, shuttering fixing and platform fill works were underway.
- Grendon Underwood Rail Overbridge where piling works were underway.
- Hills Farm where earthworks, including stone deliveries and stockpile maintenance were underway.
- Edgcott Road Overbridge where construction of piling platform was underway.
- Doddershall Culvert where installation of pre-cast culvert units and reinforcement bar and shuttering fixing was underway.

- Along Marylebone to Claydon Junction Line where construction of piling platform was underway.
- Aylesbury Golf Course where construction of stockpiling, earthworks, compound setup, drainage construction and pond construction were underway.
- Thame Valley Viaduct Causeway where temporary bridge construction, piling, aggregate laying, cofferdam works and compound setup were underway.
- Fleet Marston where earthworks, stockpiling, drainage works, culvert installation, habitat site maintenance works and pond construction were underway.
- Along A41 where batching works, geogrid installation, embankment works, stockpiling, beam installation, formwork and earthworks were underway.
- Waddesdon Embankment and North Cutting where earthworks, stockpiling, compound setup, drainage works and construction of site haul road were undertaken.
- Quainton South Embankment where earthworks, stockpiling, drainage works and haul road construction works 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 twice (2) during the reporting period.

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

Three (3) complaints were received within the Buckinghamshire area during the monitoring period. A description of complaints, the results of investigations and any action taken are detailed in Table 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 1<sup>st</sup> to 31<sup>st</sup> October 2022.

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

- A422 Turweston North worksite, reference A422 TN (see Plan 1 in Appendix A), where works activities included:
  - Access road construction.
  - Topsoil stripping.
  - Compound maintenance works.
  - Drainage works and installation of ponds.
  - Excavations.
  - Stockpiling.
- School End worksite, reference SE (see Plan 2 in Appendix A), Rosehill Farm worksite reference RF (see Plan 2 in Appendix A), and Hermitage Chetwode Worksite reference HC (see plan 2 in Appendix A), where works activities included:

- Compound development works.
- Bulk excavation.
- Topsoil stripping.
- Drainage works, including pond maintenance works.
- Vehicle movements.
- Stockpiling.
- Piling platform works.
- Twyford worksite, reference TW (see Plan 2 in Appendix A), where works activities included:
  - Access road maintenance works.
  - Haul road construction.
  - Drainage works.
  - Topsoil stripping.
  - Stockpiling.
  - Vehicle movements.
- West Street Overbridge worksite, reference WSO (see Plan 3 in Appendix A), where works activities included:
  - Utility diversion works, including trenching, duct laying, construction of access chambers, backfilling and ground compacting.
  - Concrete pours, including rebar fixing and formwork installation.
  - Sheet piling of cofferdams for utility connections.
- Addison Road worksite, reference AR (see Plan 3 in Appendix A), where works activities included:
  - Construction of embankments and walls, including stone laying and compacting.
  - Clay filling.
  - Lime stabilisation.
  - Backfilling.
  - Lifting of concrete panels.
  - Drainage and pond installation.

- School Hill Compound worksite, reference SHC (see Plan 3 in Appendix A), where works activities included:
  - Topsoil stripping.
  - Construction of piling platform.
  - Removal of existing ballast.
  - Operation of concrete batching plant.
- Quainton worksite, reference QAR (see Plan 4 in Appendix A) where works activities included:
  - Micro tunnelling.
  - Backfilling.
  - Field trenching for cable with duct laying.
  - Sheet piling.
  - Excavation works.
  - Removal of the embankment.
- FCC Sidings worksite, reference FCC (see Plan 3 in Appendix A) where no works activities were undertaken during the reporting period.
- Meadoway and Glebe House worksite, reference MW&GH (see Plan 5 in Appendix A), where works activities included:
  - Construction of compound access road.
  - Earthworks.
  - Stockpiling.
  - Construction of piling platform.
  - Haul road construction.
- Oat Close worksite, reference OC (see Plan 5 in Appendix A), where works activities included:
  - Earthworks.
  - Stockpiling.
  - Haul road construction.
  - Piling.
  - Overhead utility diversions.



- Night rail deliveries.
- Nash Lee Lane worksite, reference NLL (see Plan 6 in Appendix A), where works activities included:
  - Plant crossing works.
  - Perimeter fencing.
  - Construction of fuel storage.
  - Road construction works, asphaltting of access road and kerbing.
  - Traffic management installation for drainage works.
- Wendover Green Tunnel worksite, reference WGT (see Plan 6 in Appendix A), where works activities included:
  - Fencing works.
  - Vegetation clearance works.
  - Utility works survey.
  - Construction of embankment.
  - Top soil stripping.
  - Excavation works.
  - Pond construction works.
  - Stockpiling.
  - Ground investigation.
- Rocky Lane Embankment worksite, reference RLE (see Plan 7 in Appendix A), where works activities included:
  - Bentonite plant installation works.
  - Installation of temporary surface water management plant.
  - Installation of security plaza.
  - Excavation works.
  - Service diversion.
  - Construction of fuel storage and plant lay down areas.
  - Fencing.
  - Culvert installation.

- Compound installation.
- Grassland maintenance.
- Wendover Dean Viaduct worksite, reference WDV (see Plan 7 in Appendix A), where works activities included:
  - Pile cropping works.
  - Concrete works.
  - Shuttering and steel fixing.
- Leather Lane worksite, reference LL (see Plan 8 in Appendix A), where works activities included:
  - Haul road works.
  - Earthworks (stockpile relocation).
  - Water utility diversion works.
  - Grassland maintenance.
- South Heath Cutting worksite, reference SHCW (see Plan 8 in Appendix A), where works activities included:
  - Earthworks.
  - Culvert installation.
  - Grassland maintenance.
- North Portal worksite, reference NP (see Plan 8 in Appendix A), where works activities included:
  - Fencing works.
  - Site access road works, including scrape formation works, installation of hardstanding and kerbing, service works, installation of signage and asphaltting.
  - Temporary utility works, including water and IT connection.
  - Barrette piling and headwall construction.
  - Site operation.
  - Piling platform works, including reinstatement and maintenance works, dismantling works, scrape formation works, installation of hardstanding.
  - Excavation works.
  - Drainage works, including excavation and backfilling.

- Piezometer installation.
- Chesham Road worksite, reference CR (see Plan 8 in Appendix A), where works activities included:
  - Site operation and maintenance.
  - Earthworks.
  - Concrete works.
  - Shaft construction, which included grouting, reinforced concrete works, backfilling and sheet pile removal.
- Little Missenden Vent Shaft worksite reference LM (see Plan 9 in Appendix A), where works activities included:
  - Site operation.
  - Basement construction.
  - Collar construction.
- Amersham Vent Shaft worksite, reference AM (see Plan 10 in Appendix A), where works activities included:
  - Site operation.
  - Secondary lining works.
  - Concrete and floor works.
  - Small basement construction.
- Chalfont St Giles Vent Shaft worksite, reference CSG (see Plan 11 in Appendix A), where works activities included:
  - Site operation.
  - Road maintenance.
  - Reinforced concrete.
  - Basement construction, including excavation.
- Chalfont St Peter Vent Shaft worksite, reference CSP (see Plan 12 in Appendix A), where works activities included:
  - Site operation.
  - Road maintenance.
  - Concrete reinforcement.

- Demolition works.
- Basement construction.
- Colne Valley Viaduct - Load Test Pile 1 worksite, reference CVV-LTP #1 (see Plan 13 in Appendix A), where works activities included:
  - Piling works, including jetty piling, piling platform relocation, bored piling, de-sanding, installation of reinforcement cage and concrete piling, break-out of bored pile, grout curtain construction around viaduct maintenance plant and clean up around piles.
  - Construction of a cofferdam, including piling, excavation, dewatering and operation of support plant.
  - Site operation.
  - Satellite welfare operation.
  - Generator farm operation.
  - Utility diversion.
  - Environmental maintenance.
  - Pier construction.
  - River Colne re-alignment, crossing and emergency maintenance works.
  - Ground investigation works.
  - Pump water management.
  - Maintenance of haul roads.
  - Fencing works.
  - Core drilling in concrete.
  - Base slab construction.
  - Gas crossing emergency dismantling works.
  - Girder and deck erection and installation, including span segmental erection, grouting, steel structure erection and dismantling.

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

- Godington where construction of the site access road, topsoil stripping and grass cutting were underway.
- Grovil Embankment – Westbury where excavations were underway.

- North of School End where excavations, vegetation clearance, stockpiling and drainage works were underway.
- Along the A422 where compound development works were underway.
- Turweston South where piling works for the Turweston overbridge and road diversion works were underway.
- East West Rail (EWR) interfaces where drainage works and assembly of steel deck were underway.
- Charndon Lodge where formwork reinforced concrete works, steel and shuttering lifting, and fixing works were underway.
- Infrastructure Maintenance Depot (IMD) where reinforcement bar works, shuttering fixing and platform fill works were underway.
- Grendon Underwood Rail Overbridge where piling works were underway.
- Hills Farm where earthworks, including stone deliveries and stockpile maintenance were underway.
- Edgcott Road Overbridge where construction of piling platform was underway.
- Doddershall Culvert where installation of pre-cast culvert units and reinforcement bar and shuttering fixing was underway.
- Along Marylebone to Claydon Junction Line where construction of piling platform was underway.
- Aylesbury Golf Course where construction of stockpiling, earthworks, compound setup, drainage construction and pond construction were underway.
- Thame Valley Viaduct Causeway where temporary bridge construction, piling, aggregate laying, cofferdam works and compound setup were underway.
- Fleet Marston where earthworks, stockpiling, drainage works, culvert installation, habitat site maintenance works, pond construction were underway.
- Along A41 where batching works, geogrid installation, embankment works, stockpiling, beam installation, formwork and earthworks were underway.
- Waddesdon Embankment and North Cutting where earthworks, stockpiling, compound setup, drainage works, and construction of site haul road were undertaken.

- Quainton South Embankment where earthworks, stockpiling, drainage works, and haul road construction works were underway.

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

## 1.2 Measurement Locations

1.2.1 Forty-four (44) noise and four (4) vibration monitoring installations were active in October in the BS area. Table 2 summarises the positions of noise and vibration monitoring installations within the BS area in October 2022.

1.2.2 The noise monitor ref.: MF-NMP1, located in the vicinity of Oat Close worksite (ref.: OC), is currently being repaired and therefore no noise data was recorded at this monitoring location during the reporting period.

1.2.3 Noise monitor ref.: WDV-NMP1 was installed at A413, Wendover, in proximity to the Wendover Dean Viaduct worksite, ref.: WDV, on the 26th of October.

1.2.4 Noise monitor ref.: QAR-NMP3 was installed at Station Road, Quainton, in proximity to the Quainton worksite, ref.: QAR, on the 27th of October.

1.2.5 Vibration monitor ref.: WDV-Vib1 was installed at A413, Wendover, in proximity to the Wendover Dean Viaduct worksite, ref.: WDV, on the 26th of October.

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

Table 2: Monitoring Locations

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

Worksite Reference	Measurement Reference	Address
WSO	WSO-NMP1	West Street, Twyford
AR	AR-NMP1	Addison Road, Rosehill Farm
SHC	SHC-NMP1	School Hill Compound, Calvert
QAR	QAR-NMP2	Station Rd, Quainton
	QAR-NMP3	Station Rd, Quainton
FCC	FCC-NMP1	Calvert South
MW&GH	GH-NMP1	Glebe House, A418, Aylesbury
	MW-NMP1	Aylesbury, Buckinghamshire
OC	OC-NMP1	Oat Close, Bishopstone, Aylesbury
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury
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
WDV	WDV-NMP1	A413, Wendover
	WDV-Vib1	A413, Wendover
RLE	SDVC-NMP1	Rocky Lane, Wendover
	NCAS6-NMP1	Chesham Lane, The Lee, Wendover
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover
LL	HG-NMP1	Hunts Green, Leather Lane, The Lee, South Heath
	GD-NMP1	Grimms Ditch, The Lee, South Heath
SHCW	PR-NMP1	Potters Row, South Heath
	SH-NMP1	Bury Farm, South Heath
NP	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath
	BLH-NMP1	Bayleys Hatch, South Heat, Great Missinden
CR	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath
AM	AM-NMP1	Amersham Vent Shaft Worksite, Whielden Lane, Amersham
LM	LM-NMP1	Little Missenden, A413, Amersham
	PWC-NMP1	Patricia Holmes, Little Missenden Vent Shaft Worksite, Amersham
CSG	CSG-NMP1	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane
	CSG-NMP2	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane
	PIC-NMP1	Bottom House Farm Lane, Chalfont St Giles

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

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



## 2 Summary of Results

### 2.1 Summary of Measured Noise Levels

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

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

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> )					Saturday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> )					Sunday / Public Holiday Average L <sub>Aeq,T</sub> (Highest Day L <sub>Aeq,T</sub> )	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
A422 TN	TN-NMP1	Turweston, Brackley	Free-field	49.4 (52.0)	51.2 (54.8)	48.4 (51.4)	46.5 (51.2)	45.5 (52.1)	47.3 (48.6)	49.5 (51.0)	49.2 (50.3)	48.7 (53.7)	44.9 (48.6)	48.6 (55.9)	45.3 (50.5)
SE	SE-NMP1	School End, Chetwode	Free-field	50.7 (58.5)	59.0 (63.1)	47.3 (54.0)	42.2 (49.9)	41.9 (51.6)	46.6 (56.4)	58.2 (72.4)	53.9 (69.4)	45.1 (51.0)	41.6 (48.0)	45.4 (56.8)	42.1 (46.6)
RF	RF-NMP1	Old Stable Cottage, Rosehill Farm, Chetwode	Free-field	51.1 (56.8)	53.9 (57.4)	48.3 (52.9)	45.7 (50.4)	45.3 (53.2)	51.1 (54.4)	52.8 (54.1)	48.7 (50.2)	48.2 (53.7)	44.2 (51.1)	49.9 (59.3)	45.6 (49.7)
HC	HC-NMP1	Hermitage, Chetwode	Free-field	44.5 (56.1)	54.2 (59.9)	44.3 (52.5)	41.8 (52.9)	40.6 (58.1)	44.3 (45.1)	50.6 (54.0)	50.5 (51.9)	45.8 (52.8)	40.9 (50.1)	46.2 (55.6)	36.7 (48.5)
TW	TW-NMP1	Twyford	Free-field	47.6 (52.1)	58.4 (68.8)	47.3 (55.3)	44.9 (51.0)	44.5 (49.8)	46.7 (48.7)	51.5 (61.1)	50.0 (58.0)	46.4 (51.0)	43.6 (48.9)	48.5 (64.6)	43.5 (46.3)
WSO	WSO-NMP1	West Street, Twyford	Free-field	48.6 (53.2)	53.8 (62.4)	47.5 (53.8)	40.2 (55.6)	38.3 (50.3)	47.3 (51.8)	49.2 (55.0)	48.1 (50.2)	45.7 (52.0)	38.0 (48.1)	46.6 (58.7)	39.9 (52.5)
AR	AR-NMP1	Addison Road, Rosehill Farm	Free-field	56.5 (58.9)	57.6 (63.4)	56.6 (59.0)	52.1 (58.4)	46.6 (57.8)	52.5 (52.8)	58.1 (64.2)	55.6 (57.5)	54.3 (58.7)	44.6 (49.4)	54.5 (62.5)	47.3 (56.4)
SHC	SHC-NMP1	School Hill Compound, Calvert	Free-field	50.2 (54.0)	52.6 (62.9)	48.3 (56.4)	43.8 (55.9)	41.4 (50.3)	49.4 (60.0)	47.9 (49.2)	49.2 (50.7)	46.7 (53.8)	38.8 (48.0)	47.1 (55.7)	42.0 (51.0)

OFFICIAL

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$ )					Saturday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$ )					Sunday / Public Holiday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$ )	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
QAR	QAR-NMP2	Station Rd, Quainton	Free-field	51.2 (61.6)	55.9 (70.0)	47.7 (68.2)	43.3 (59.2)	42.5 (63.3)	47.5 (49.4)	54.8 (64.9)	56.4 (70.4)	54.1 (69.1)	42.8 (61.0)	49.1 (61.4)	45.4 (63.5)
	QAR-NMP3	Station Rd, Quainton	Free-field	57.9 (66.4)	67.2 (68.5)	49.7 (54.0)	40.7 (51.1)	44.0 (51.1)	47.2 (47.2)	62.3 (62.3)	47.9 (47.9)	43.0 (47.3)	30.4 (34.7)	46.9 (53.6)	32.5 (36.3)
FCC	FCC-NMP1	Calvert South	Free-field	55.1 (59.4)	56.2 (60.2)	48.6 (53.7)	42.3 (49.8)	42.3 (55.0)	49.3 (51.4)	50.3 (51.8)	48.1 (49.0)	46.1 (54.0)	39.2 (47.8)	47.5 (57.5)	45.4 (57.8)
MW&GH	GH-NMP1	Glebe House, A418, Aylesbury	Free-field	53.9 (56.6)	54.7 (56.7)	54.3 (58.6)	52.1 (56.6)	48.8 (58.5)	52.5 (53.2)	54.4 (55.6)	54.3 (55.4)	53.4 (61.0)	47.8 (52.5)	52.8 (59.3)	48.2 (55.0)
	MW-NMP1	Aylesbury, Buckinghamshire	Free-field	62.6 (63.9)	62.5 (63.2)	61.8 (63.2)	59.5 (61.8)	56.0 (62.1)	60.5 (61.7)	62.3 (62.9)	62.3 (62.5)	60.8 (62.5)	54.5 (58.2)	61.0 (64.5)	55.6 (62.4)
OC	OC-NMP1	Oat Close, Bishopstone, Aylesbury	Free-field	48.4 (57.9)	54.0 (62.7)	46.7 (57.5)	47.2 (57.9)	46.1 (58.6)	45.4 (51.9)	48.5 (53.5)	46.3 (48.8)	48.2 (54.0)	46.0 (56.4)	48.9 (59.8)	47.3 (54.2)
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury	Free-field	46.5 (52.5)	51.9 (68.2)	46.6 (51.9)	45.3 (59.3)	47.6 (56.2)	46.0 (49.1)	48.8 (50.5)	47.6 (51.7)	46.2 (53.1)	41.0 (50.5)	47.7 (59.4)	46.4 (53.6)
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee	Free-field	58.8 (61.3)	59.6 (63.5)	56.8 (61.2)	53.1 (59.5)	49.0 (58.5)	55.0 (56.4)	56.8 (57.3)	55.7 (56.9)	54.3 (56.6)	46.9 (55.1)	54.6 (62.6)	49.1 (55.7)
	NLL-NMP2	Nash Lee Lane, Nash Lee	Free-field	59.3 (61.1)	59.0 (61.5)	57.7 (59.8)	54.5 (63.3)	51.0 (58.7)	55.7 (56.9)	57.6 (59.6)	56.7 (58.7)	55.8 (59.1)	49.7 (55.4)	56.0 (64.0)	51.1 (57.9)

OFFICIAL

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$ )					Saturday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$ )					Sunday / Public Holiday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$ )	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
WGT	ER-NMP1	Ellesborough Rd, Wendover	Free-field	58.3 (61.3)	58.8 (60.4)	56.8 (61.2)	52.8 (59.5)	48.6 (58.5)	54.7 (56.4)	56.1 (57.0)	56.1 (56.9)	54.5 (57.6)	46.3 (55.1)	55.1 (62.6)	49.8 (58.3)
	BL-NMP1	Bacombe Lane, Wendover	Free-field	49.3 (53.3)	49.6 (53.0)	48.9 (52.9)	47.9 (51.9)	47.2 (52.5)	48.7 (50.2)	48.6 (49.2)	48.9 (51.2)	48.2 (50.3)	46.9 (50.9)	49.0 (57.9)	47.3 (51.4)
	WT-NMP1	A413, Wendover	Free-field	66.9 (68.7)	66.8 (69.5)	66.1 (68.0)	62.6 (67.3)	59.3 (66.7)	63.8 (64.3)	65.3 (66.1)	65.1 (65.9)	64.0 (66.4)	57.1 (66.1)	64.3 (69.1)	59.4 (67.0)
WDV	WDV-NMP1	A413, Wendover	Free-field	51.0 (51.7)	56.8 (58.2)	52.0 (57.1)	46.4 (48.8)	46.0 (56.1)	47.5 (47.5)	53.4 (53.4)	52.5 (52.5)	49.5 (51.9)	42.6 (45.0)	51.8 (57.1)	43.2 (49.6)
RLE	SDVC-NMP1	Rocky Lane, Wendover	Free-field	63.6 (66.8)	65.3 (68.3)	63.5 (65.0)	60.7 (63.3)	57.6 (64.4)	62.3 (63.1)	63.0 (63.5)	62.0 (63.2)	61.6 (63.9)	55.0 (59.4)	62.1 (65.5)	57.8 (66.0)
	NCAS6-NMP1	Chesham Lane, The Lee, Wendover	Free-field	48.9 (54.3)	50.9 (55.4)	48.0 (54.0)	46.0 (53.3)	43.8 (54.1)	47.5 (49.9)	48.3 (48.8)	48.5 (50.3)	48.0 (51.5)	43.5 (49.6)	49.2 (59.6)	45.1 (52.5)
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	Free-field	57.0 (59.5)	57.2 (58.8)	56.4 (58.0)	53.4 (56.9)	50.4 (57.6)	54.7 (55.9)	56.3 (57.4)	55.7 (57.7)	55.2 (58.0)	49.4 (52.8)	55.5 (60.6)	51.2 (57.6)
LL	HG-NMP1	Hunts Green, Leather Lane, The Lee	Free-field	48.5 (53.4)	51.4 (62.1)	48.0 (67.0)	42.5 (69.6)	39.4 (54.4)	48.6 (50.7)	49.4 (55.0)	50.7 (57.2)	49.5 (63.9)	38.8 (48.2)	48.0 (62.3)	40.2 (51.0)
	GD-NMP1	Grimms Ditch, The Lee, South Heath	Free-field	52.0 (61.2)	54.6 (69.4)	51.8 (70.1)	49.3 (69.4)	49.5 (69.3)	49.2 (53.7)	49.9 (55.3)	50.3 (58.1)	50.9 (59.6)	48.1 (60.8)	53.8 (68.6)	51.1 (59.1)

OFFICIAL

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$ )					Saturday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$ )					Sunday / Public Holiday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$ )	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
SHCW	PR-NMP1	Potters Row, South Heath	Free-field	49.4 (54.9)	52.0 (56.4)	47.5 (55.6)	45.1 (56.3)	43.3 (56.4)	46.5 (47.5)	48.6 (52.0)	49.0 (52.4)	48.4 (54.7)	43.7 (54.6)	49.1 (66.9)	45.2 (54.3)
	SH-NMP1	Bury Farm, South Heath	Free-field	50.0 (53.2)	54.3 (73.3)	51.3 (57.1)	50.6 (55.7)	41.8 (51.2)	49.2 (50.6)	51.3 (53.7)	50.5 (52.6)	47.3 (52.3)	43.2 (54.2)	48.3 (67.5)	42.0 (51.4)
NP	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath	Free-field	55.1 (58.1)	57.6 (59.9)	56.0 (59.1)	54.4 (58.5)	44.3 (58.7)	53.1 (55.0)	55.4 (57.2)	54.2 (57.5)	51.0 (55.9)	46.6 (63.3)	52.7 (67.7)	50.4 (62.0)
	BLH-NMP1	Bayleys Hatch, South Heat, Great Missinden	Free-field	49.7 (52.3)	51.8 (54.6)	50.0 (55.8)	47.2 (53.0)	39.6 (50.4)	48.4 (50.9)	51.0 (53.5)	54.4 (63.2)	51.2 (64.9)	42.3 (56.3)	50.2 (67.9)	41.4 (53.6)
CR	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath	Free-field	55.8 (58.3)	57.2 (66.2)	54.5 (57.9)	51.1 (56.8)	46.5 (55.8)	52.5 (54.0)	54.8 (56.1)	54.3 (55.7)	54.0 (64.8)	48.8 (66.9)	53.7 (65.4)	48.5 (57.8)
AM	AM-NMP1	Whielden Lane, Amersham	Free-field	62.1 (63.5)	63.1 (64.7)	60.4 (61.3)	57.9 (60.8)	54.5 (59.9)	59.8 (61.3)	62.9 (66.1)	60.5 (61.8)	58.9 (61.0)	53.0 (58.7)	59.1 (63.7)	54.1 (61.4)
LM	LM-NMP1	Little Missenden, A413, Amersham	Free-field	61.1 (62.7)	60.9 (62.3)	60.7 (61.9)	57.2 (60.3)	52.7 (59.7)	58.3 (59.5)	59.9 (60.2)	59.9 (60.6)	58.8 (61.2)	51.6 (56.8)	58.6 (63.0)	53.1 (60.4)
	PWC-NMP1	Patricia Holmes, Little Missenden Vent Shaft Worksite, Amersham	Free-field	60.6 (62.2)	60.1 (61.4)	60.3 (61.6)	56.6 (59.6)	52.0 (58.8)	57.6 (59.0)	59.4 (59.8)	59.5 (59.9)	58.4 (62.0)	51.4 (59.5)	58.4 (63.4)	52.6 (60.1)
CSG	CSG-NMP1	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane	Free-field	48.3 (59.2)	53.2 (64.5)	45.7 (51.6)	40.6 (55.5)	40.6 (53.6)	46.0 (48.0)	50.3 (52.6)	48.0 (50.2)	45.6 (52.8)	41.1 (59.2)	49.4 (62.8)	44.5 (56.2)

OFFICIAL

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$ )					Saturday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$ )					Sunday / Public Holiday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$ )	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
	CSG-NMP2	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane	Free-field	53.8 (62.9)	60.8 (64.1)	50.3 (54.6)	42.3 (49.4)	44.7 (56.5)	50.7 (53.9)	53.6 (55.8)	49.0 (50.6)	46.6 (51.8)	47.4 (60.1)	53.0 (75.7)	46.8 (58.3)
	PIC-NMP1	Bottom House Farm Lane, Chalfont St Giles, Buckinghamshire	Free-field	55.0 (57.1)	55.1 (56.6)	54.1 (58.6)	51.2 (54.8)	47.7 (56.3)	52.6 (53.4)	54.5 (55.4)	53.6 (55.9)	53.0 (59.5)	46.2 (56.4)	53.8 (63.1)	47.8 (55.0)
CSP	CSP-NMP1	Chalfont St Peter Vent Shaft Worksite	Free-field	57.0 (58.4)	57.6 (59.7)	55.9 (57.8)	52.8 (65.5)	47.2 (53.6)	53.6 (54.2)	56.6 (57.4)	56.4 (58.0)	54.5 (61.9)	46.8 (54.1)	54.8 (65.6)	47.3 (54.3)
	CSP-NMP2	Chalfont St Peter Vent Shaft Worksite	Free-field	47.1 (52.0)	49.4 (51.9)	47.4 (52.2)	44.9 (52.4)	40.5 (48.6)	45.3 (47.5)	49.4 (50.1)	48.4 (49.5)	47.4 (56.5)	41.1 (51.3)	48.8 (63.1)	40.8 (47.3)
	CSP-NMP3	Chalfont St Peter Vent Shaft Worksite	Free-field	57.3 (58.9)	57.0 (58.3)	56.8 (58.3)	54.1 (56.7)	49.4 (56.3)	54.6 (55.5)	57.3 (58.3)	57.1 (57.7)	55.8 (58.2)	48.7 (52.9)	55.7 (64.1)	49.3 (55.8)
CVV-LTP #1	CVV-LTP #1-NMP1	Northern boundary, Load Test Pile 1 Worksite	Free-field	61.9 (64.2)	61.5 (62.5)	60.7 (63.4)	57.7 (61.7)	54.6 (62.6)	58.5 (59.1)	60.6 (60.9)	60.0 (61.1)	58.4 (61.4)	52.7 (62.7)	58.8 (65.1)	54.9 (63.7)
	CVV-WYC-NMP1	Wyatt's Covert, Tilehouse Lane, Denham	Free-field	58.8 (61.9)	58.4 (61.8)	56.9 (59.0)	53.2 (59.0)	49.7 (58.4)	56.3 (59.3)	57.2 (58.1)	56.9 (57.9)	55.0 (57.9)	48.8 (64.8)	56.5 (67.1)	52.5 (60.0)
	CVV-DFS-NMP1	Denham Film Studio, Uxbridge	Free-field	49.8 (53.2)	50.2 (54.6)	50.5 (55.8)	47.9 (61.2)	44.6 (60.5)	48.2 (49.9)	49.8 (50.7)	48.7 (52.9)	47.9 (53.4)	49.6 (71.5)	50.4 (65.4)	48.6 (60.9)
CVV-MR	CVV-SVF-NMP1	Savay Farm, Denham Garden Village, Denham, Buckinghamshire	Free-field	49.9 (53.9)	50.9 (60.3)	47.8 (50.3)	47.1 (51.9)	44.6 (54.1)	48.7 (50.1)	49.1 (52.2)	46.8 (48.9)	46.3 (49.5)	44.7 (56.8)	48.3 (59.6)	45.4 (51.0)

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	0.48 (X-axis)
RF	RF-Vib 1	Old Stable Cottage, Rosehill Farm, Chetwode	2.77 (X-axis)
WGT	ER-Vib 1	46, Ellesborough Rd, Wendover	2.82 (Y-axis)
WDV	WDV-Vib1	A413, Wendover	2.27 (Y-axis)

2.1.3 Appendix C presents graphs of the noise and vibration monitoring data over the month for each of the measurement locations. Noise data presented consists of the hourly  $L_{Aeq}$  values and, where relevant, the  $L_{Aeq,T}$  values (where the time period T has been taken to be the averaging period as specified in Table 1 of HS2 Information Paper E23). Vibration data presented consist of hourly PPV values. The full data set for the monitoring equipment can be found at the following location:

<https://data.gov.uk/dataset/24542ae7-dd44-444f-b259-871c4cc43b5e/environmental-monitoring-data>.

## 2.2 Exceedances of the LOAEL and SOAEL

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

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

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

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

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

Table 5: Summary of Exceedances of LOAEL and SOAEL

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
A422 TN	TN-NMP1	Turweston, Brackley	All days	All periods	No exceedance	No exceedance
SE	SE-NMP1	School End, Chetwode	Saturdays	0800-1300	2	No exceedance
RF	RF-NMP1	Old Stable Cottage, Rosehill Farm, Chetwode	All days	All periods	No exceedance	No exceedance
HC	HC-NMP1	Hermitage, Chetwode	All days	All periods	No exceedance	No exceedance
TW	TW-NMP1	Twyford	Weekdays	0800-1800	2	No exceedance
WSO	WSO-NMP1	West Street, Twyford	All days	All periods	No exceedance	No exceedance
AR	AR-NMP1	Addison Road, Rosehill Farm	Saturdays	1400-2200	2	No exceedance
SHC	SHC-NMP1 *	School Hill Compound, Calvert	All days	All periods	No exceedance	No exceedance
QAR	QAR-NMP2	Station Rd, Quainton	Weekdays	0800-1800	2	No exceedance
	QAR-NMP3	Station Rd, Quainton	Weekdays	0800-1800	3	No exceedance
FCC	FCC-NMP1	Calvert South	All days	All periods	No exceedance	No exceedance
MW&GH	GH-NMP1	Glebe House, A418, Aylesbury	All days	All periods	No exceedance	No exceedance
	MW-NMP1	Aylesbury, Buckinghamshire	All days	All periods	No exceedance	No exceedance



Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
OC	OC-NMP1	Oat Close, Bishopstone, Aylesbury	All days	All periods	No exceedance	No exceedance
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury	Weekdays Nights	0800-1800 2200-0700	1 22	No exceedance 1
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee	All days	All periods	No exceedance	No exceedance
	NLL-NMP2	Nash Lee Lane, Nash Lee	Saturdays	1400-2200	10	No exceedance
WGT	ER-NMP1	Ellesborough Rd, Wendover	Saturdays	1400-2200	1	No exceedance
	BL-NMP1	Bacombe Lane, Wendover	All days	All periods	No exceedance	No exceedance
	WT-NMP1	A413, Wendover	Weekdays  Saturdays	0700-0800 0800-1800 1800-1900 0700-0800 1300-1400 1400-2200	20 8 21 4 5 6	No exceedance No exceedance No exceedance No exceedance No exceedance No exceedance
WDV	WDV-NMP1	A413, Wendover	All days	All periods	No exceedance	No exceedance
RLE	SDVC-NMP1	Rocky Lane, Wendover	All days	All periods	No exceedance	No exceedance
	NCAS6-NMP1	Chesham Lane, The Lee, Wendover	All days	All periods	No exceedance	No exceedance
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	All days	All periods	No exceedance	No exceedance
LL	HG-NMP1	Hunts Green, Leather Lane, The Lee, South Heath	Weekdays Saturdays	1800-1900 1400-2200	1 2	No exceedance No exceedance
	GD-NMP1	Grimms Ditch, The Lee, South Heath	Weekdays Saturdays	0800-1800 1800-1900 1400-2200	1 1 3	No exceedance No exceedance No exceedance
SHCW	PR-NMP1	Potters Row, South Heath	All days	All periods	No exceedance	No exceedance
	SH-NMP1	Bury Farm, South Heath	Weekdays	0800-1800	1	1

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
NP	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath	All days	All periods	No exceedance	No exceedance
	BLH-NMP1	Bayleys Hatch, South Heat, Great Missinden	All days	All periods	No exceedance	No exceedance
CR	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath	Weekdays	0800-1800	1	No exceedance
AM	AM-NMP1	Whielden Lane, Amersham	All days	All periods	No exceedance	No exceedance
LM	LM-NMP1*	Little Missenden Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
	PWC-NMP1	Patricia Holmes, Little Missenden Vent Shaft Worksite, Amersham	Weekdays Saturdays	0700-0800 1800-1900 1900-2200 1300-1400 1400-2200	9 7 29 4 30	No exceedance No exceedance No exceedance No exceedance No exceedance
CSG	CSG-NMP1*	Chalfont St Giles Vent Shaft	All days	All periods	No exceedance	No exceedance
	CSG-NMP2*	Chalfont St Giles Vent Shaft	All days	All periods	No exceedance	No exceedance
	PIC-NMP1	Bottom House Farm Lane, Chalfont St Giles	Weekdays	1900-2200	2	No exceedance
CSP	CSP-NMP1*	Chalfont St Peter Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
	CSP-NMP2*	Chalfont St Peter Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
	CSP-NMP3*	Chalfont St Peter Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
CVV-LTP #1	CVV-LTP #1-NMP1*	Northern boundary, Load Test Pile 1 Worksite	All days	All periods	No exceedance	No exceedance
	CVV-WYC-NMP1**	Wyatt's Covert, Tilehouse Lane, Denham	Weekdays	0700-0800 1800-1900 1900-2200	14 3 10	No exceedance No exceedance No exceedance

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
			Saturdays	0700-0800	1	No exceedance
				1400-2200	19	No exceedance
			Sundays	0700-2200	43	No exceedance
			Nights	2200-0700	79	No exceedance
	CVV-DFS-NMP1**	Denham Film Studio, Uxbridge	Weekdays	1900-2200	3	No exceedance
			Saturdays	1400-2200	1	No exceedance
			Sundays	0700-2200	10	No exceedance
			Nights	2200-0700	70	No exceedance
CVV-MR	CVV-SVF-NMP1	Savay Farm, Denham Garden Village, Denham, Buckinghamshire	All days	All periods	No exceedance	No exceedance

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

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

2.2.6 Exceedances of the LOAEL were recorded at seventeen (17) monitoring locations during the month of October 2022. LOAEL exceedances were recorded during weekdays, nights and Saturday time periods.

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

Table 6: Summary of Total Exceedances of SOAEL

Worksite Reference	Measurement Reference	Monitor Address	Total of SOAEL exceedances in the month
OC	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury	1
SHCW	SH-NMP1	Bury Farm, South Heath	1

2.2.8 Two (2) SOAEL exceedances were recorded due to HS2 construction works during October 2022. These occurred at monitoring location SH-NMP1 during the weekday daytime period and at WES-NMP1 during the night-time period.

## 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
-	-	-	-	-	-

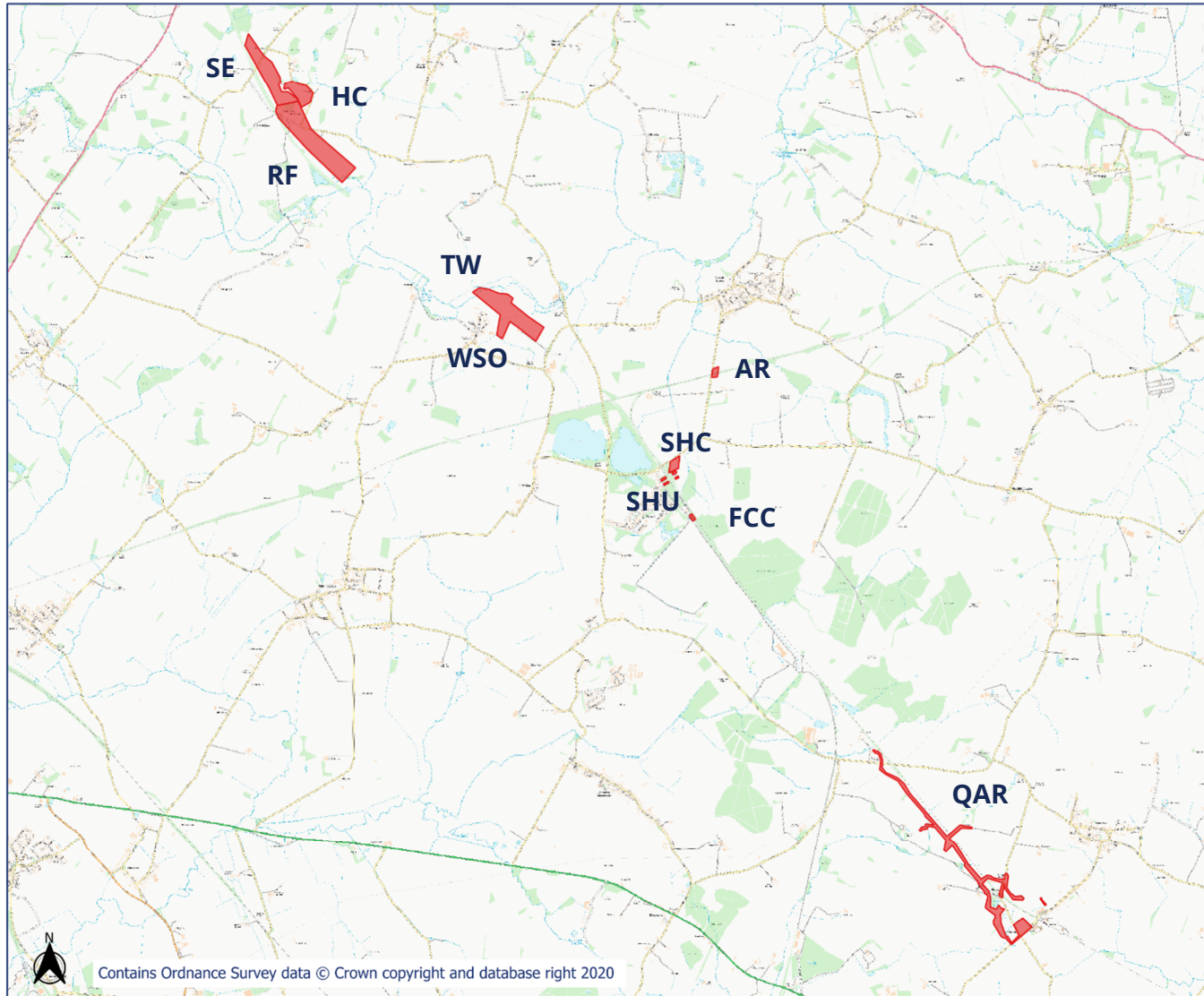
## 2.4 Complaints

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

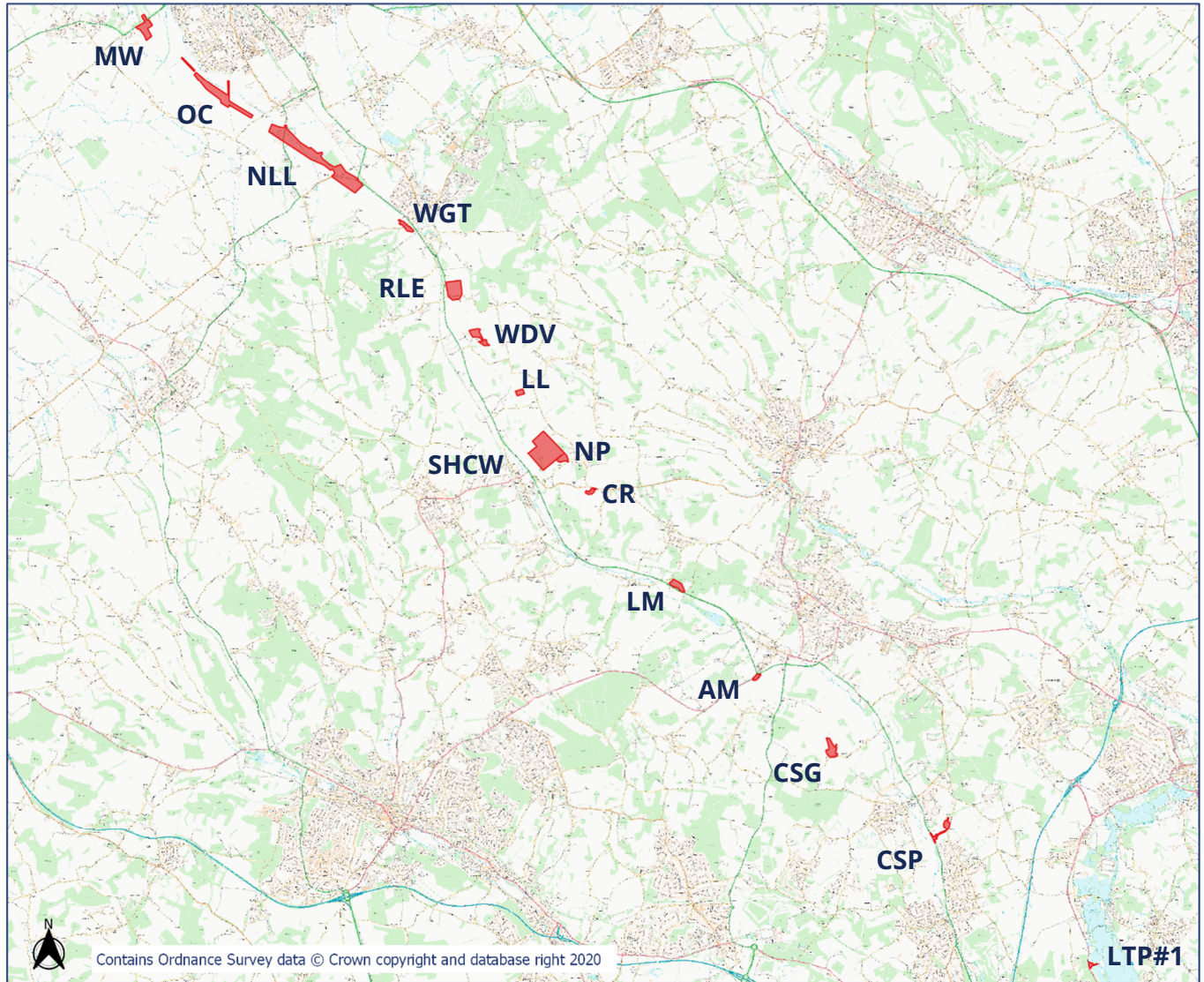
Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
HS2-22-44020-C	SHCW	Disturbance due to construction works and vehicle beeping after 8:30pm.	Investigation showed construction works including vehicle movement was operating within Section 61 consent hours.	Stakeholder has been informed of the results of the investigation.
HS2-22-44064-C	SHC	Disturbance due to flashing lights from construction vehicle shining into property at midnight.	Investigation showed traffic management team were installing signage and equipment as part of the upcoming works in the area.	Stakeholder was issued with an apology. Site staff and drivers were reminded to be respectful of residents during evenings/nights.
HS2-22-84959-E-C	OC	Noise from rail deliveries during night.	Investigation shows overnight rail deliveries are required as only possible when no commuter services are operating. Noise bunds are in place to minimise the noise and no exceedances were recorded at the noise monitor installed on the estate.	Stakeholder has been informed of the results of the investigation. These works have now been completed.

# Appendix A Site Locations

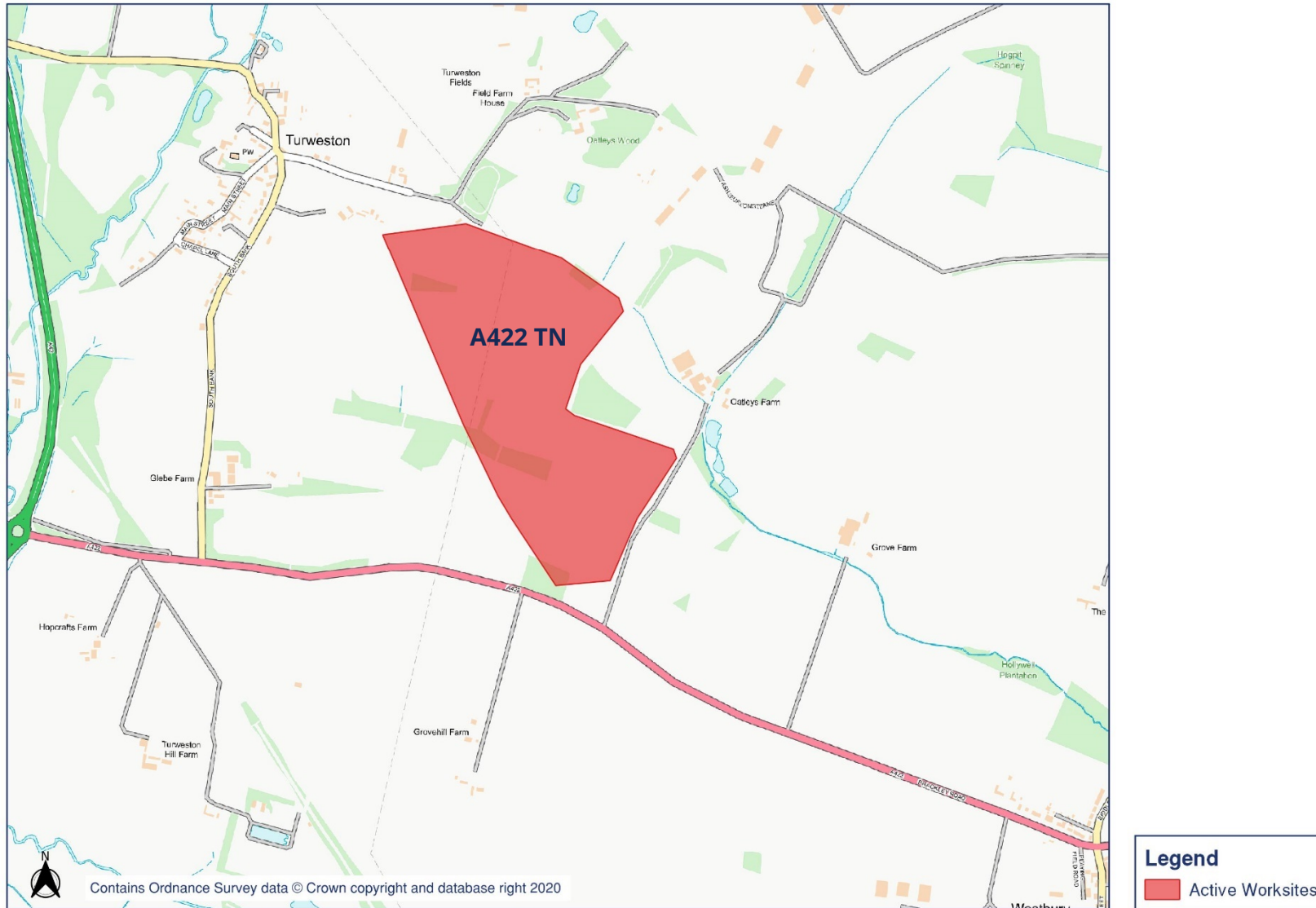




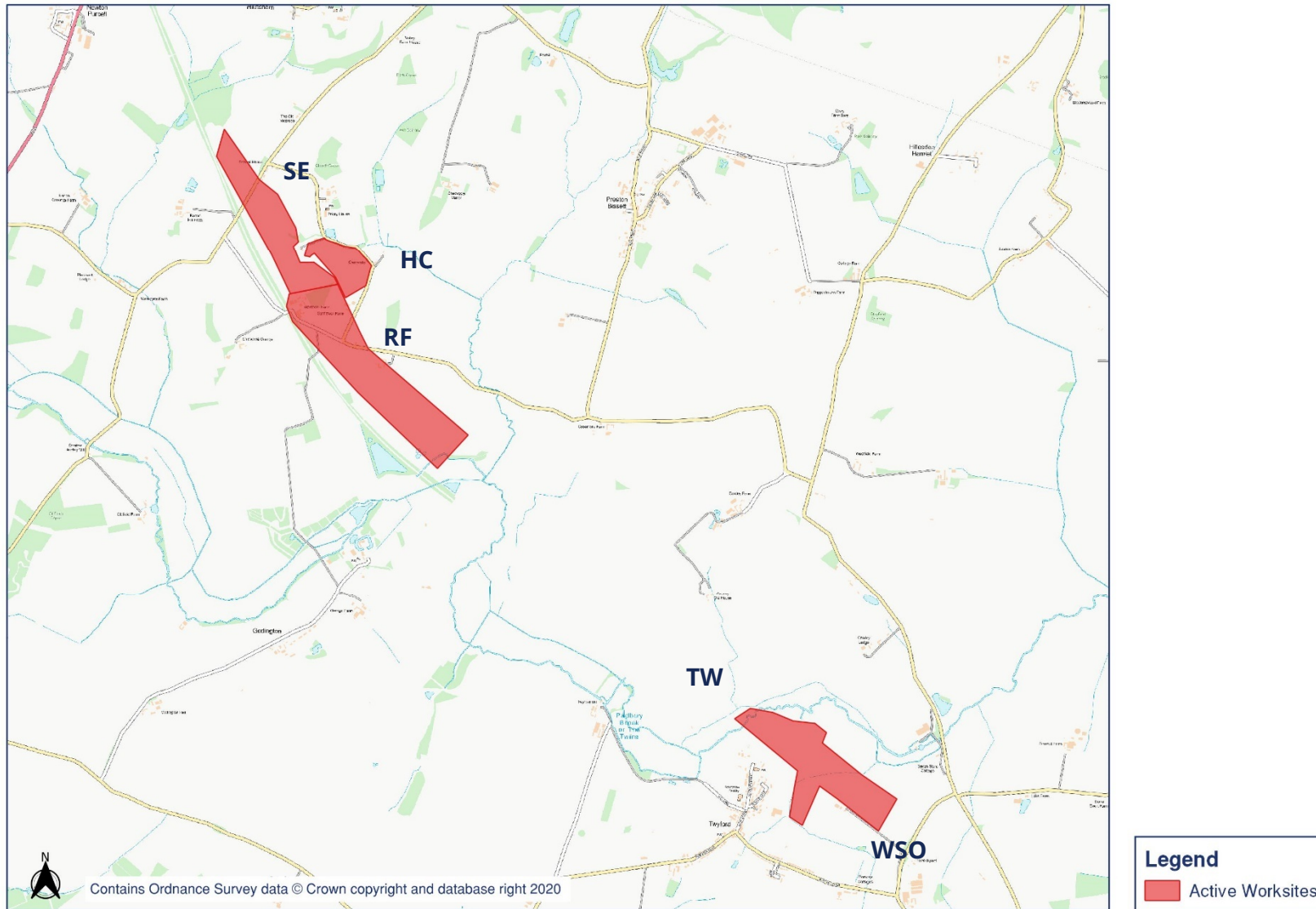
# HS2 Worksite Identification Plan - Overview 2

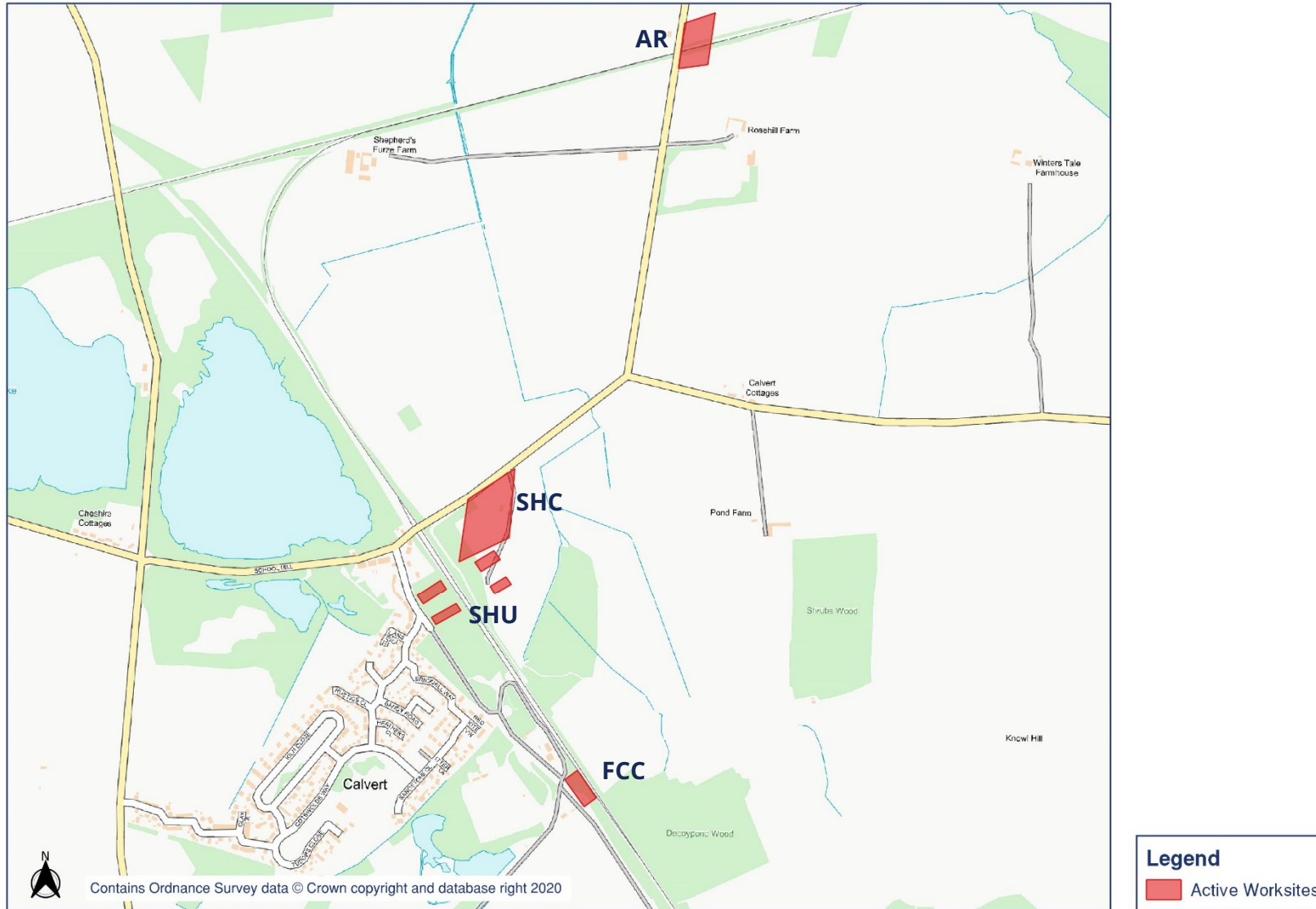


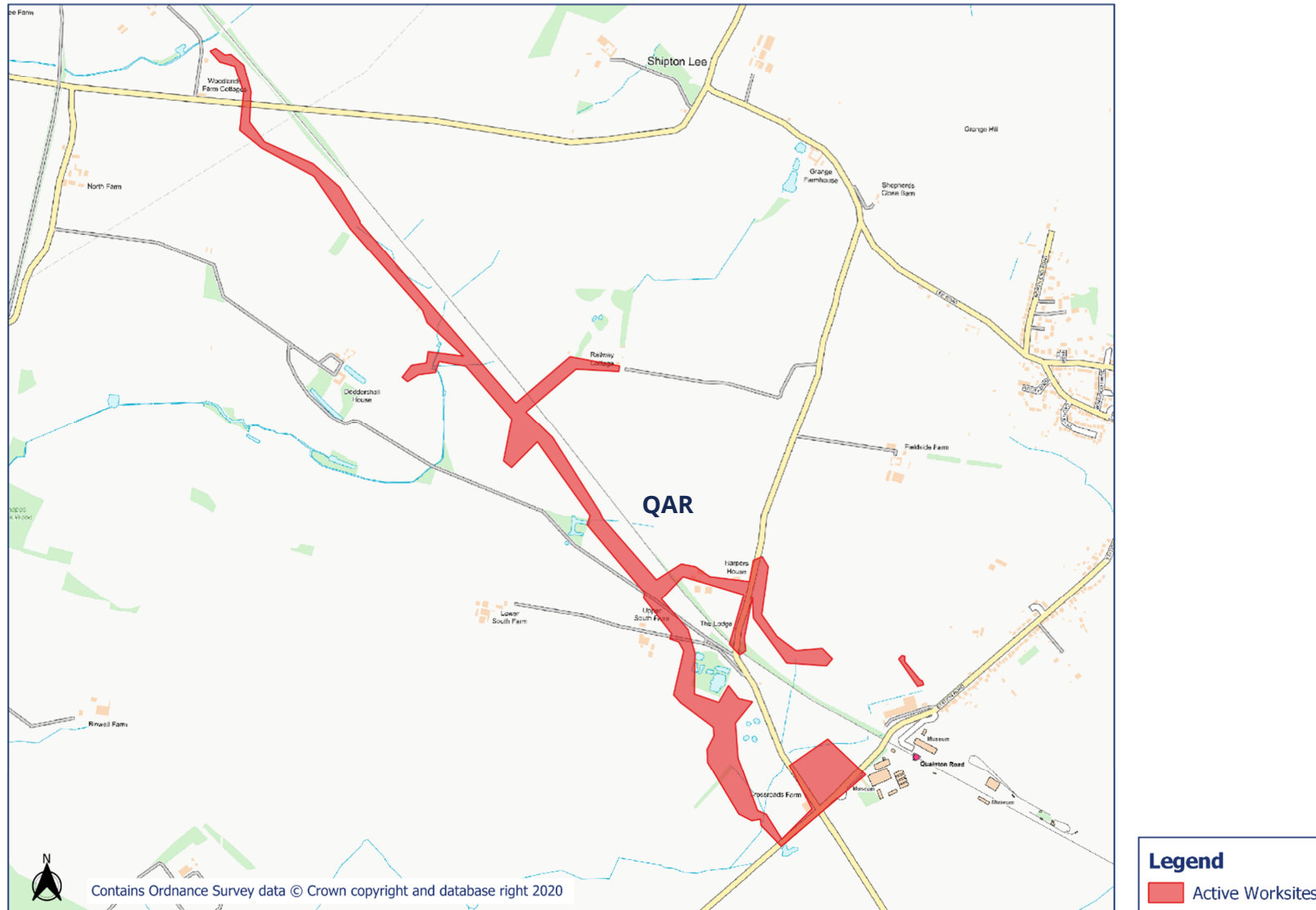
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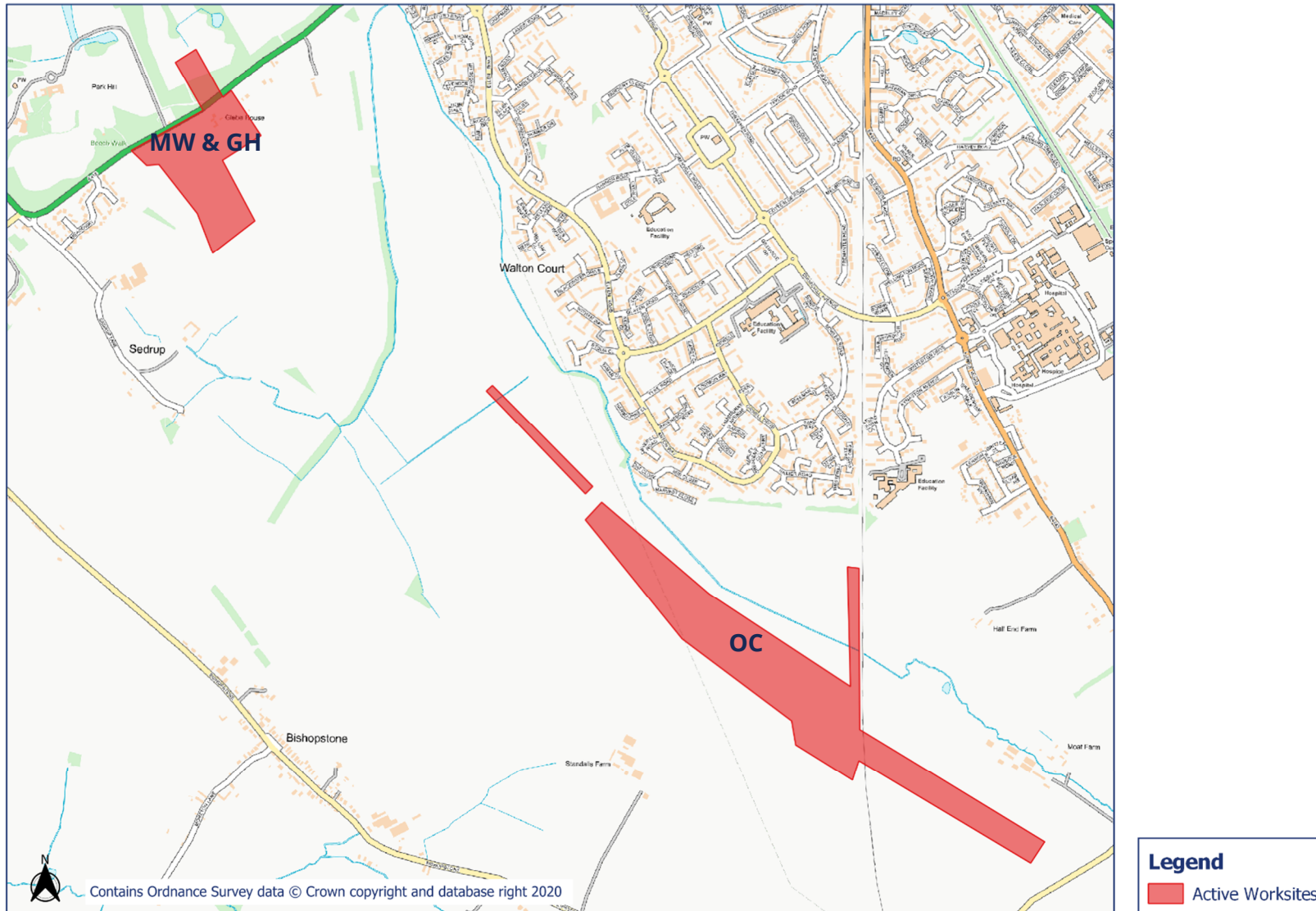




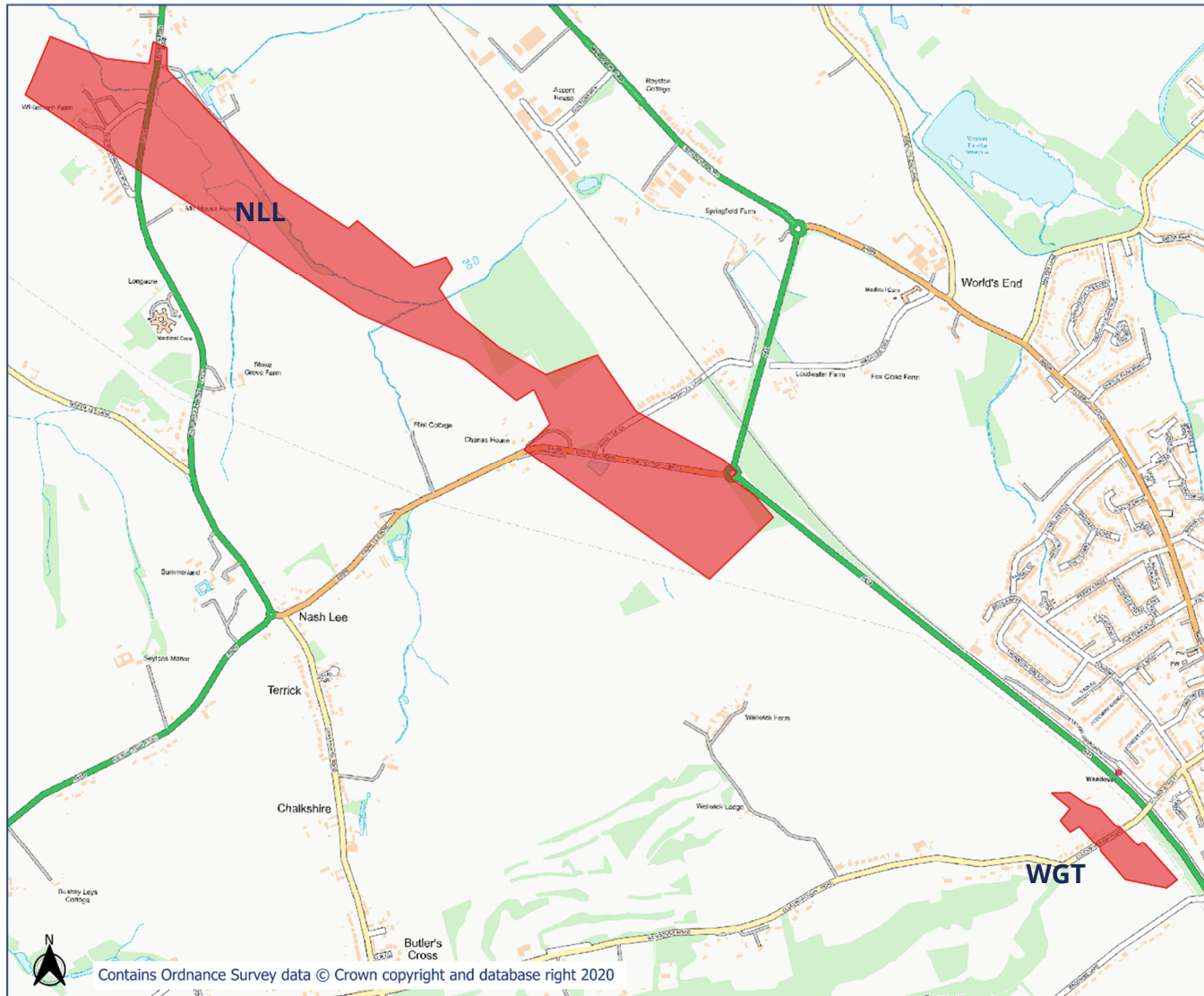


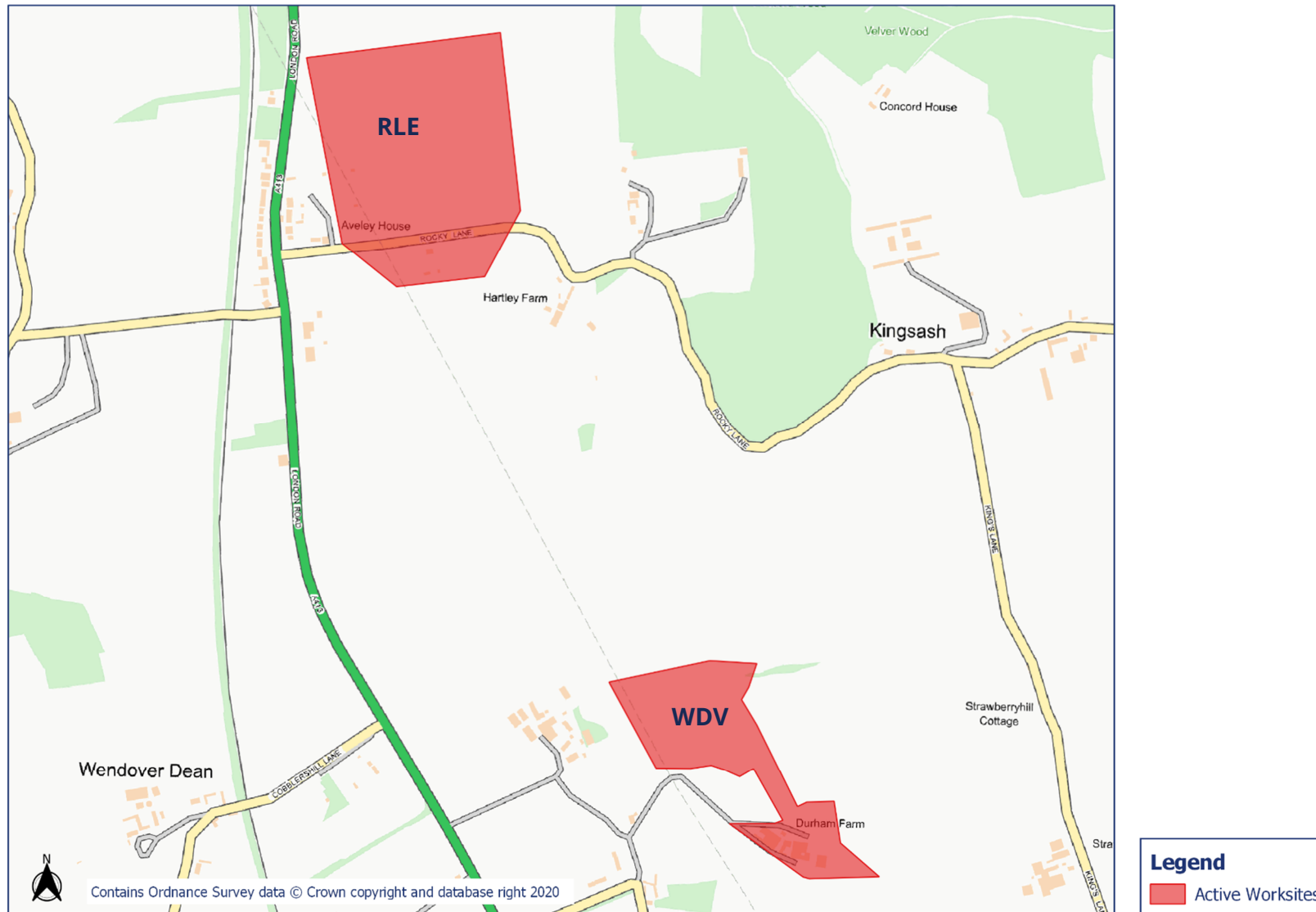


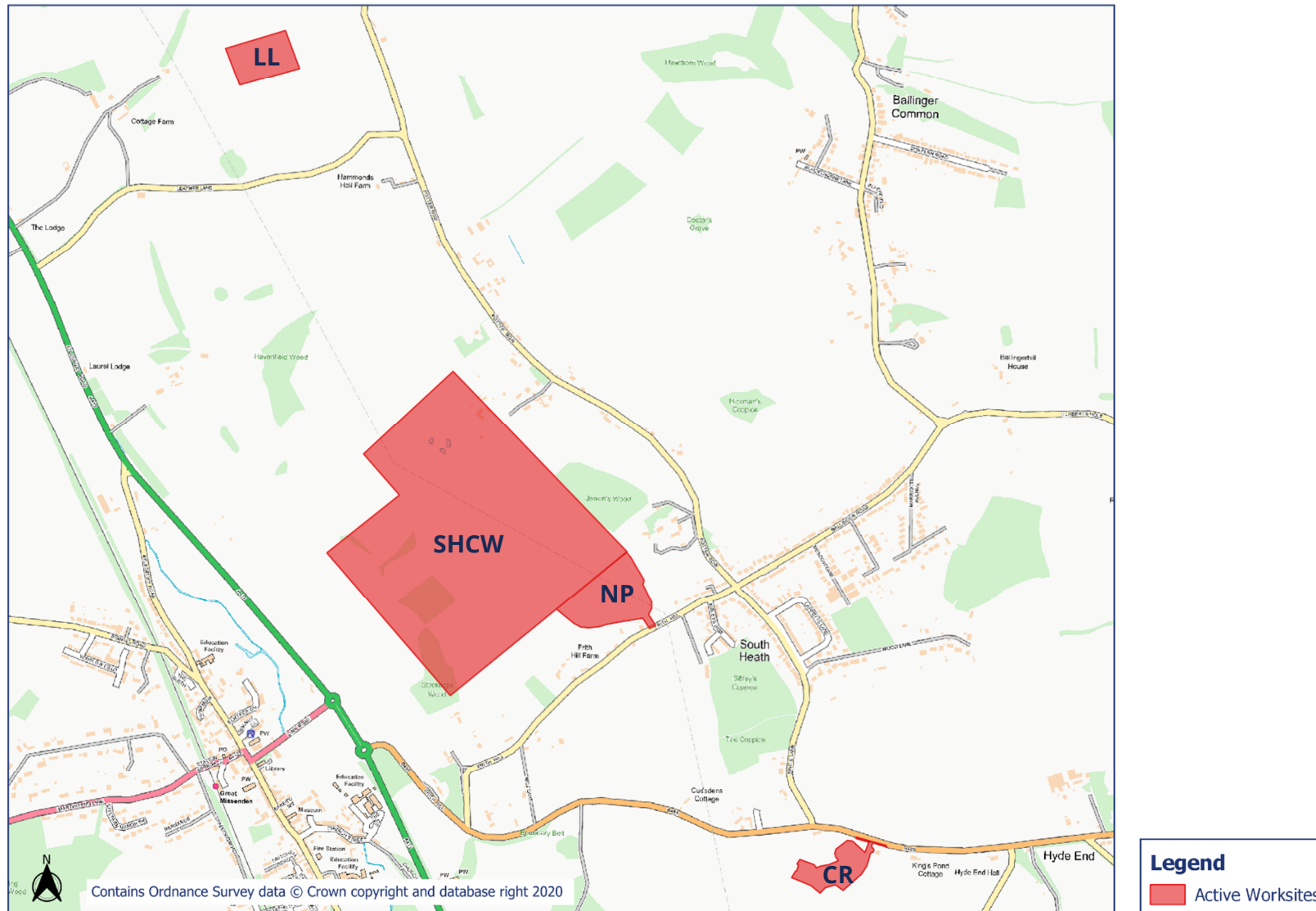








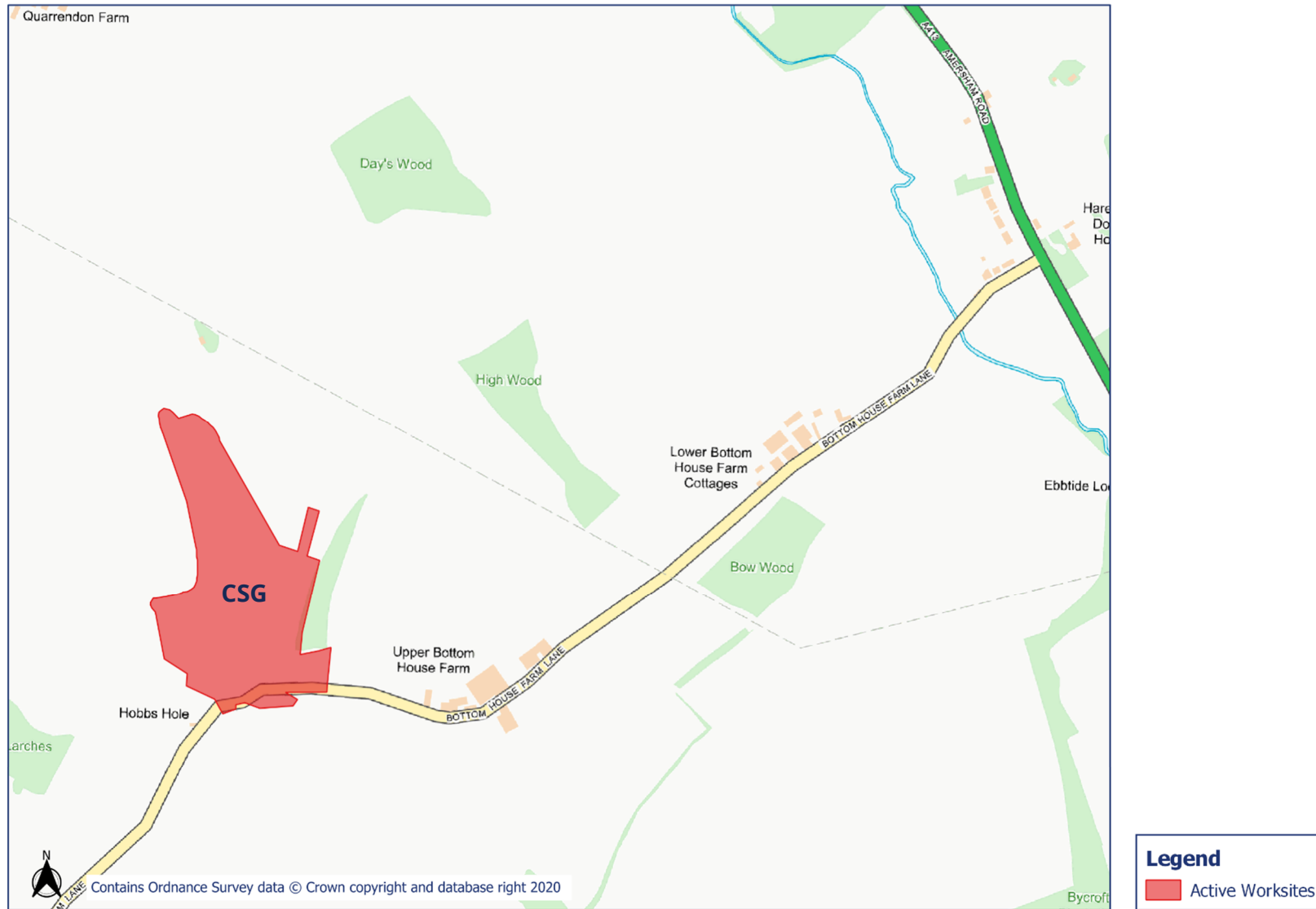








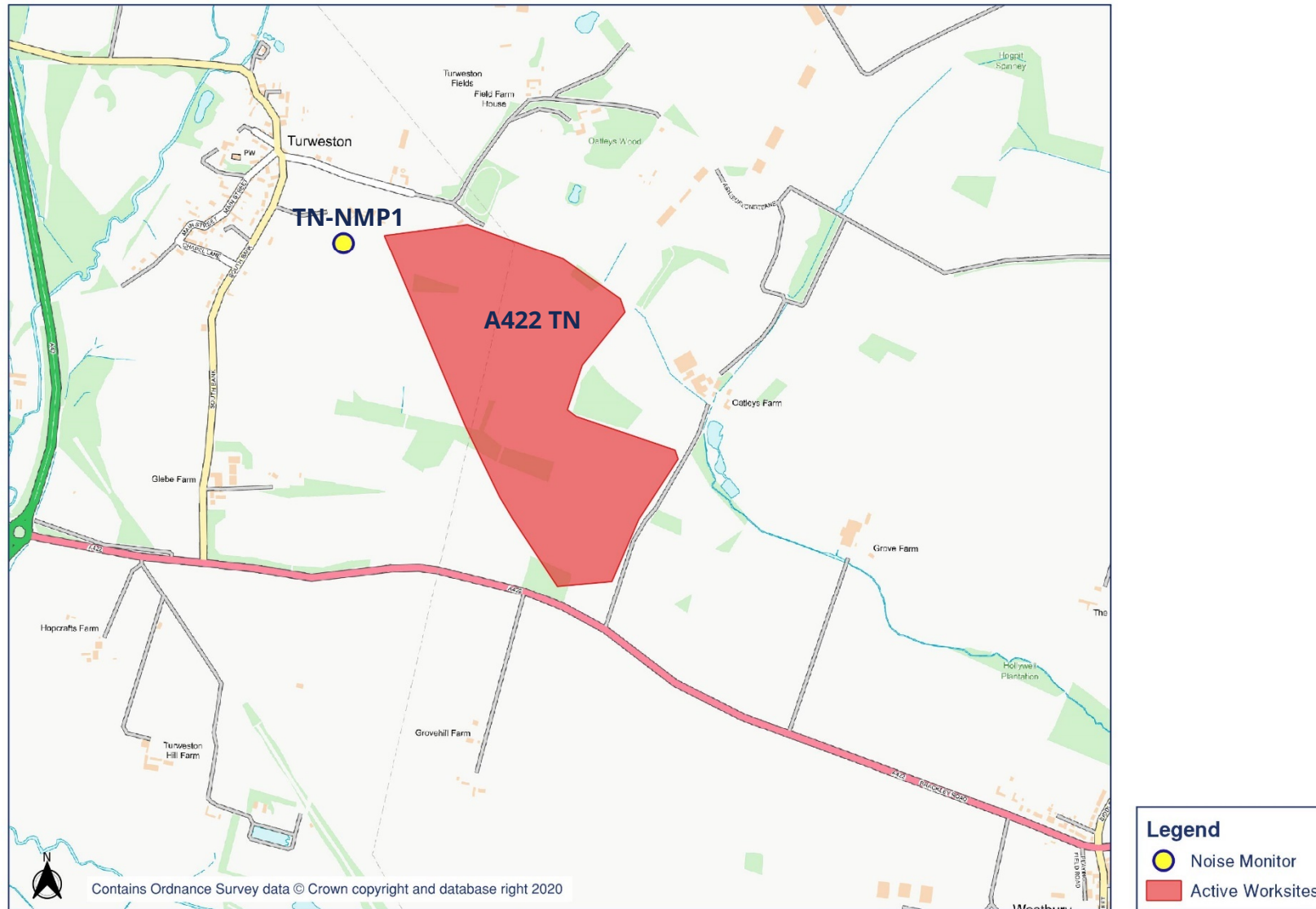








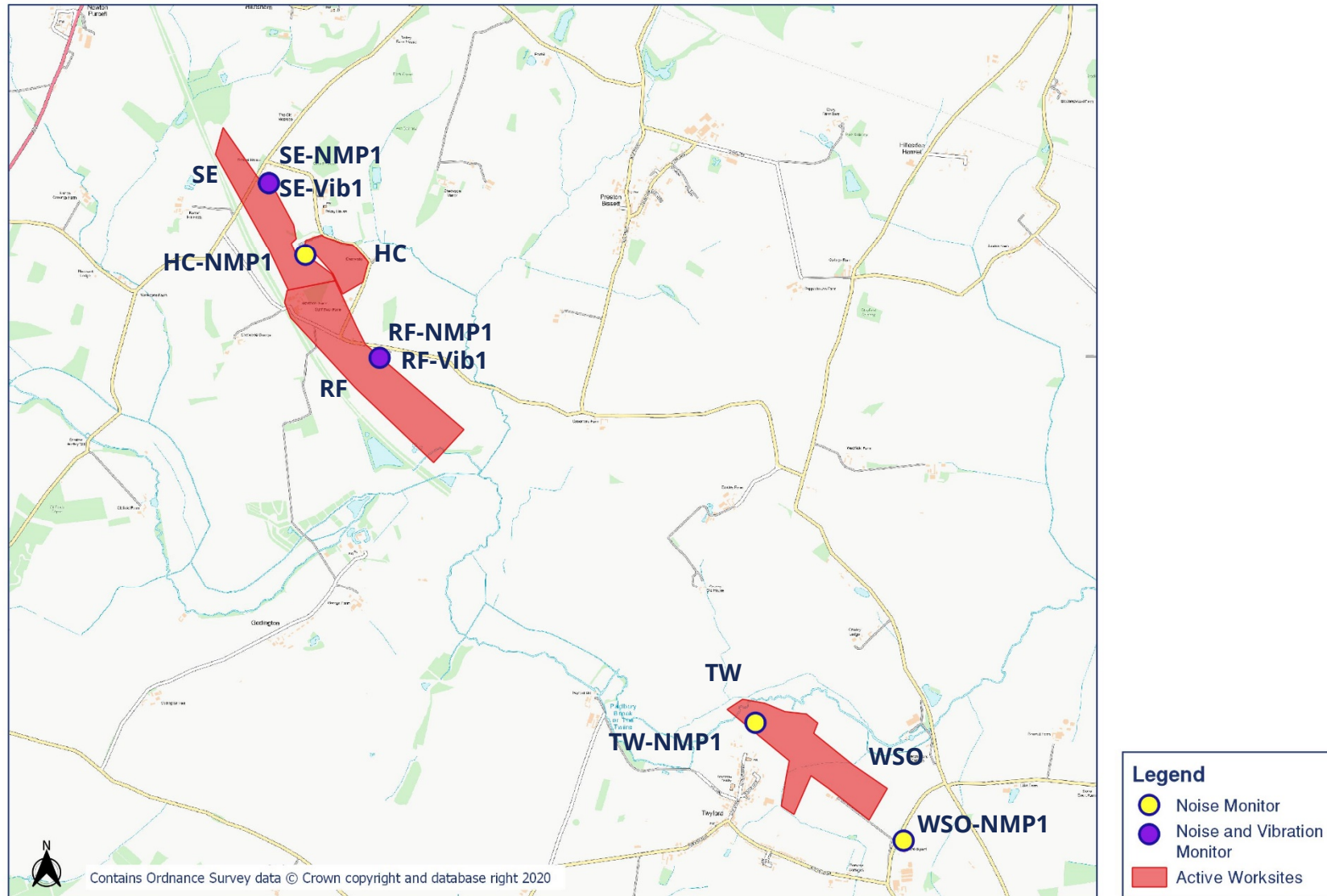
# Appendix B Monitoring Locations





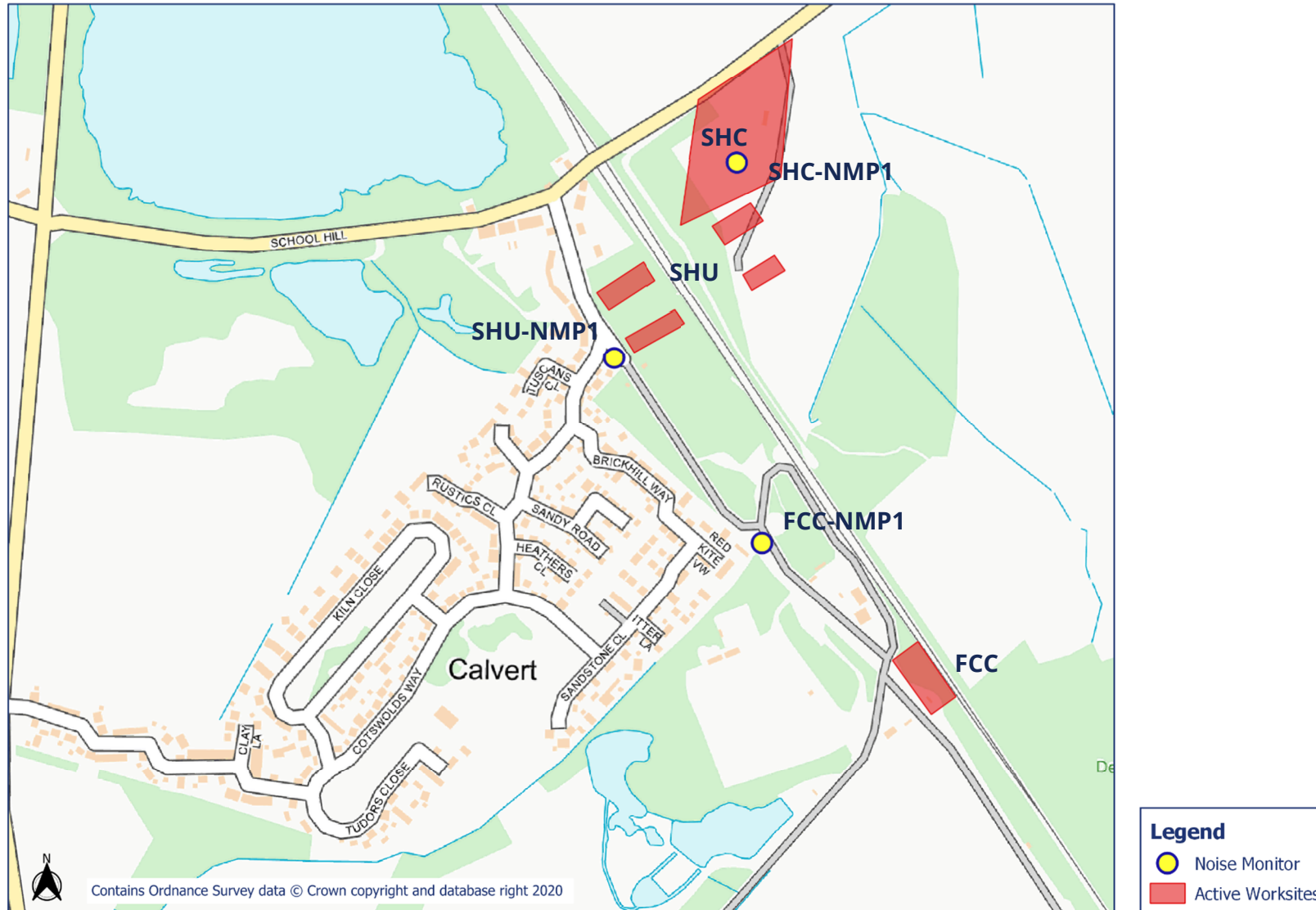
# HS2

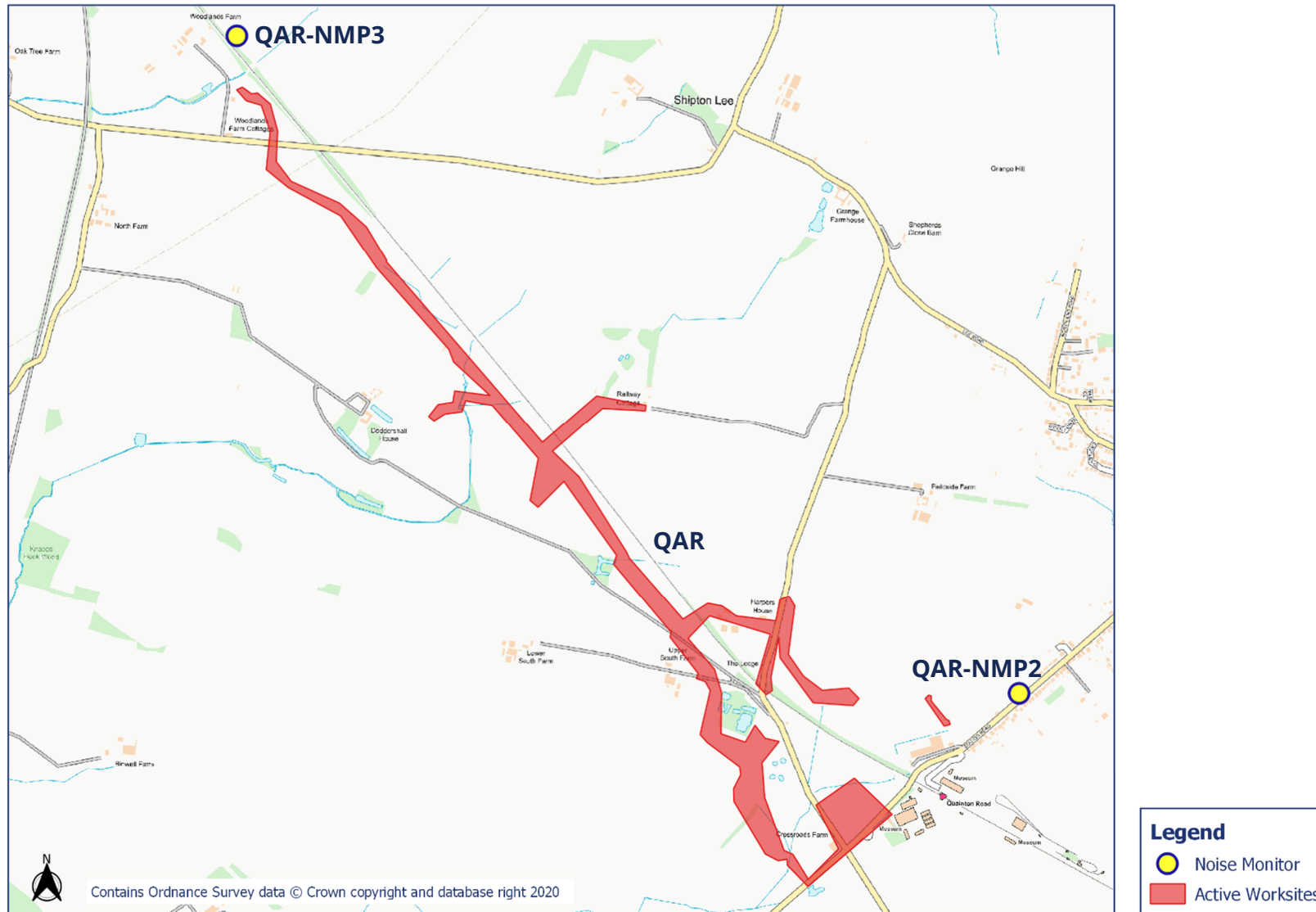
## Noise and Vibration Monitoring Plan - 2

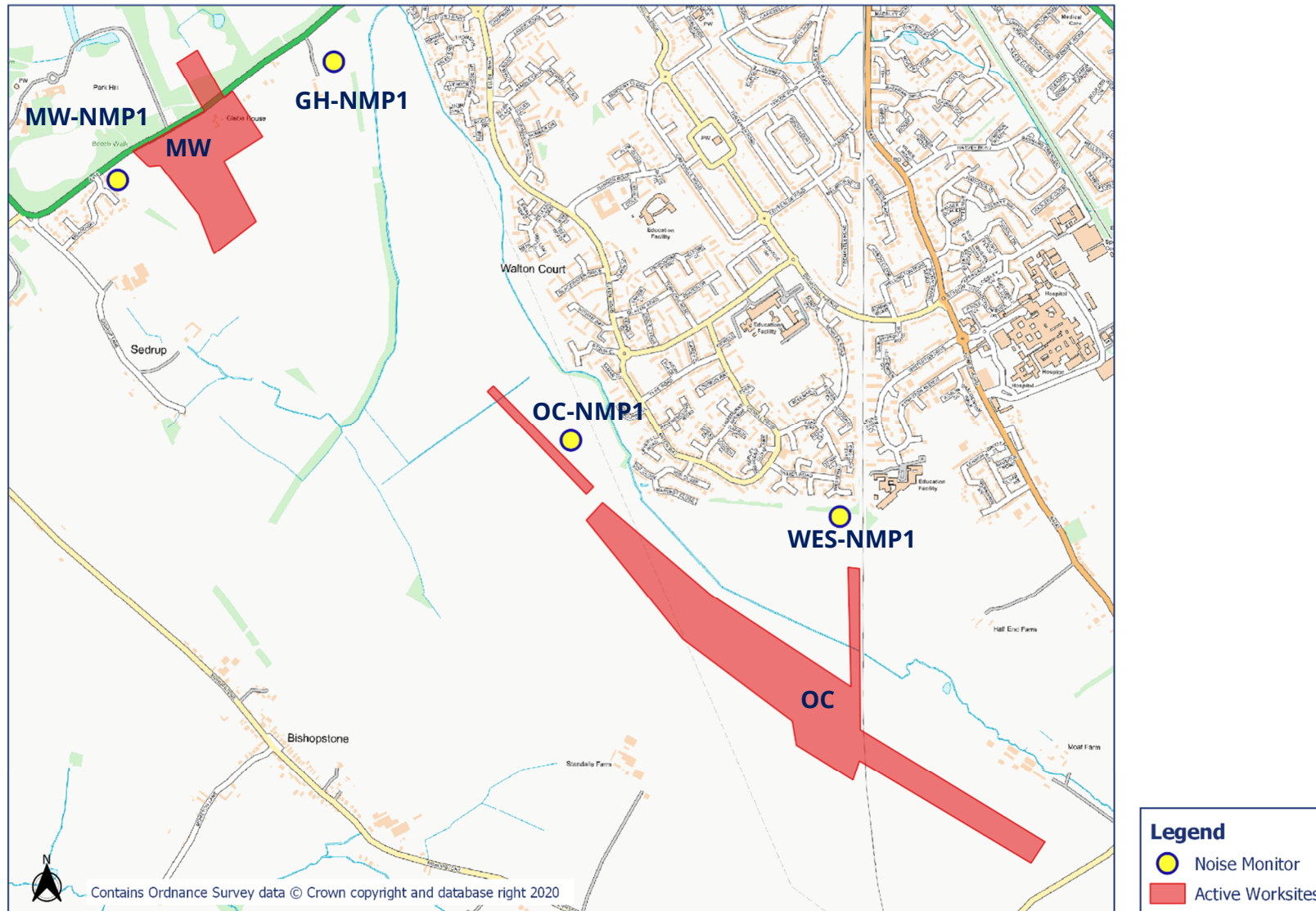


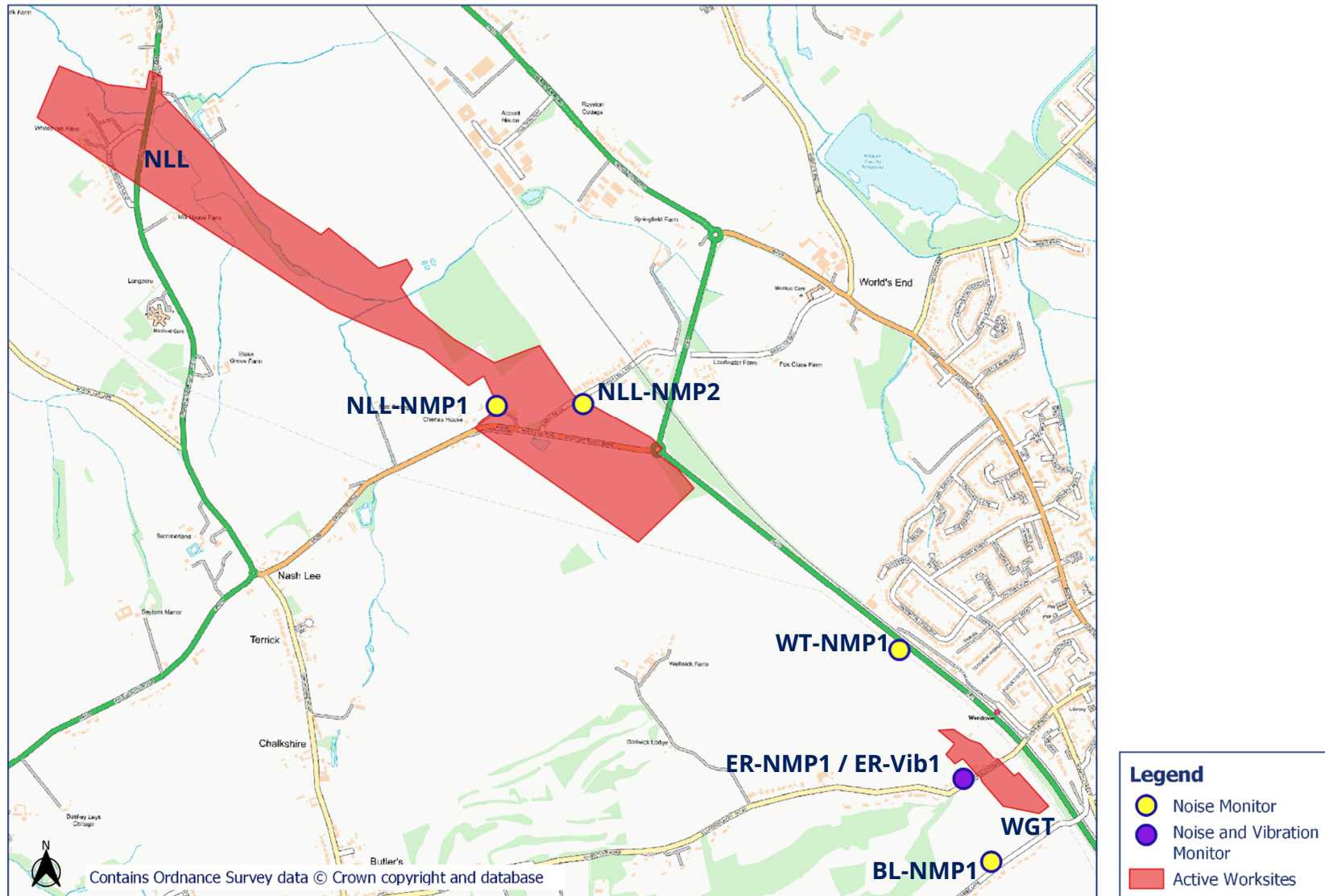






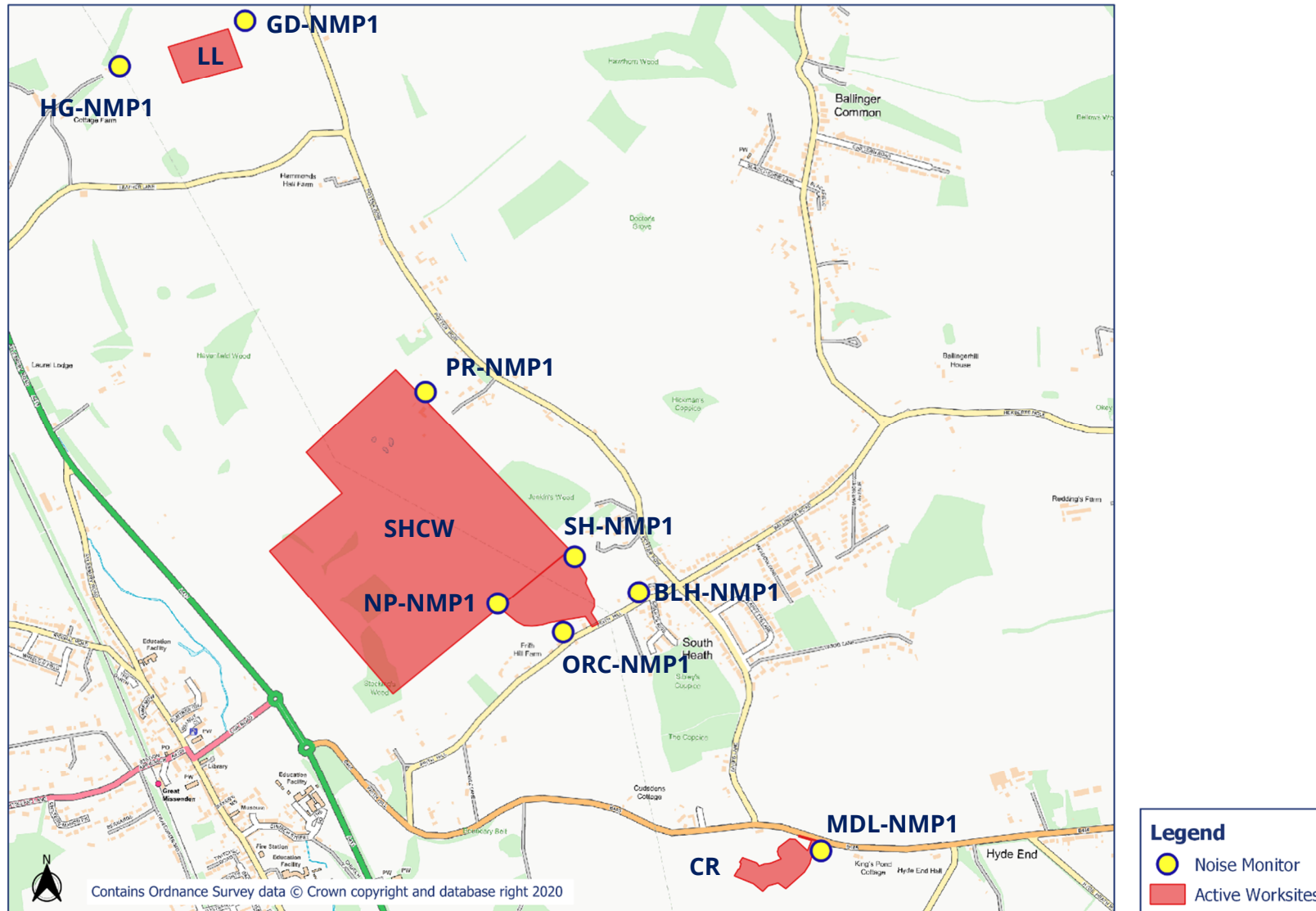






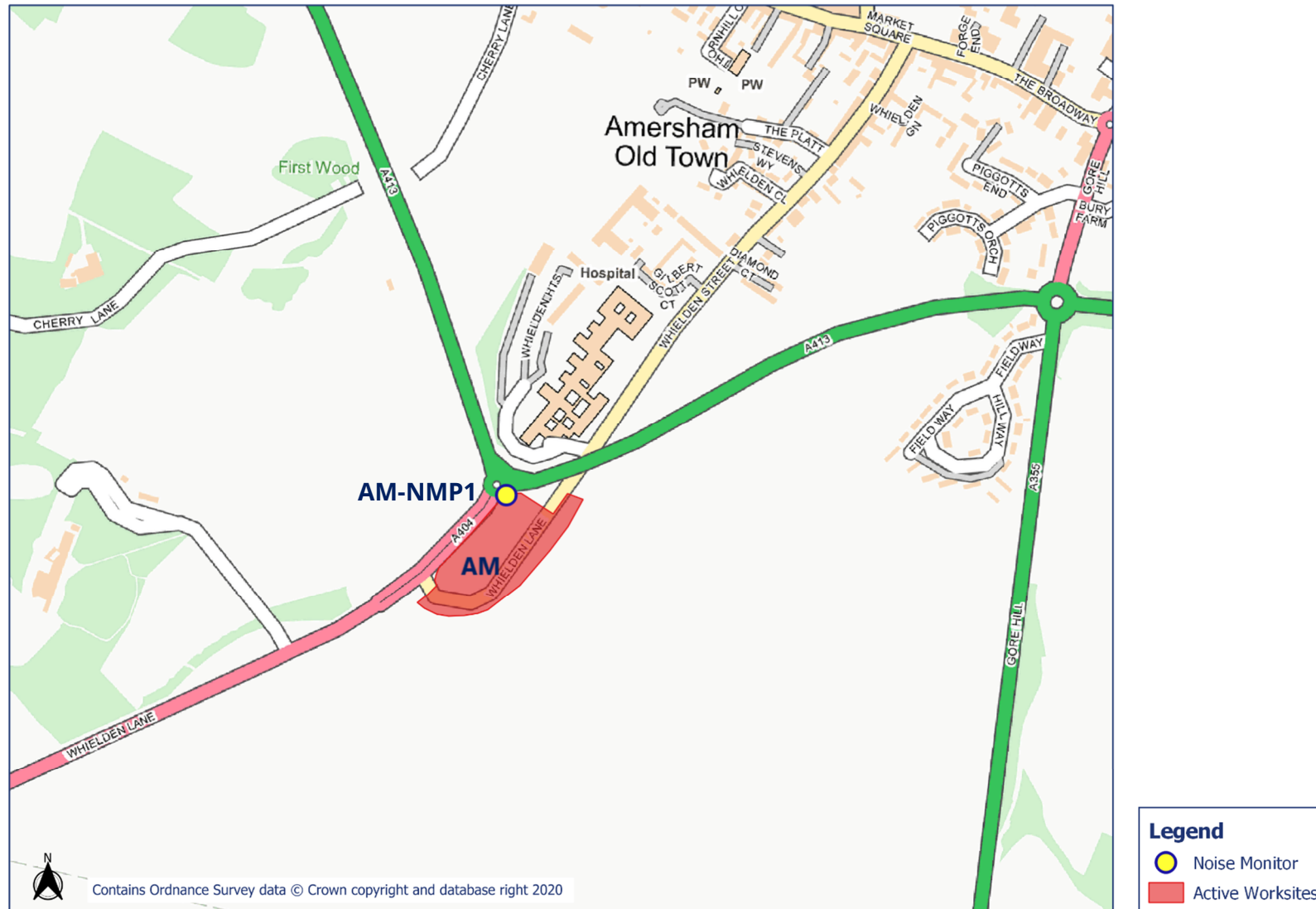




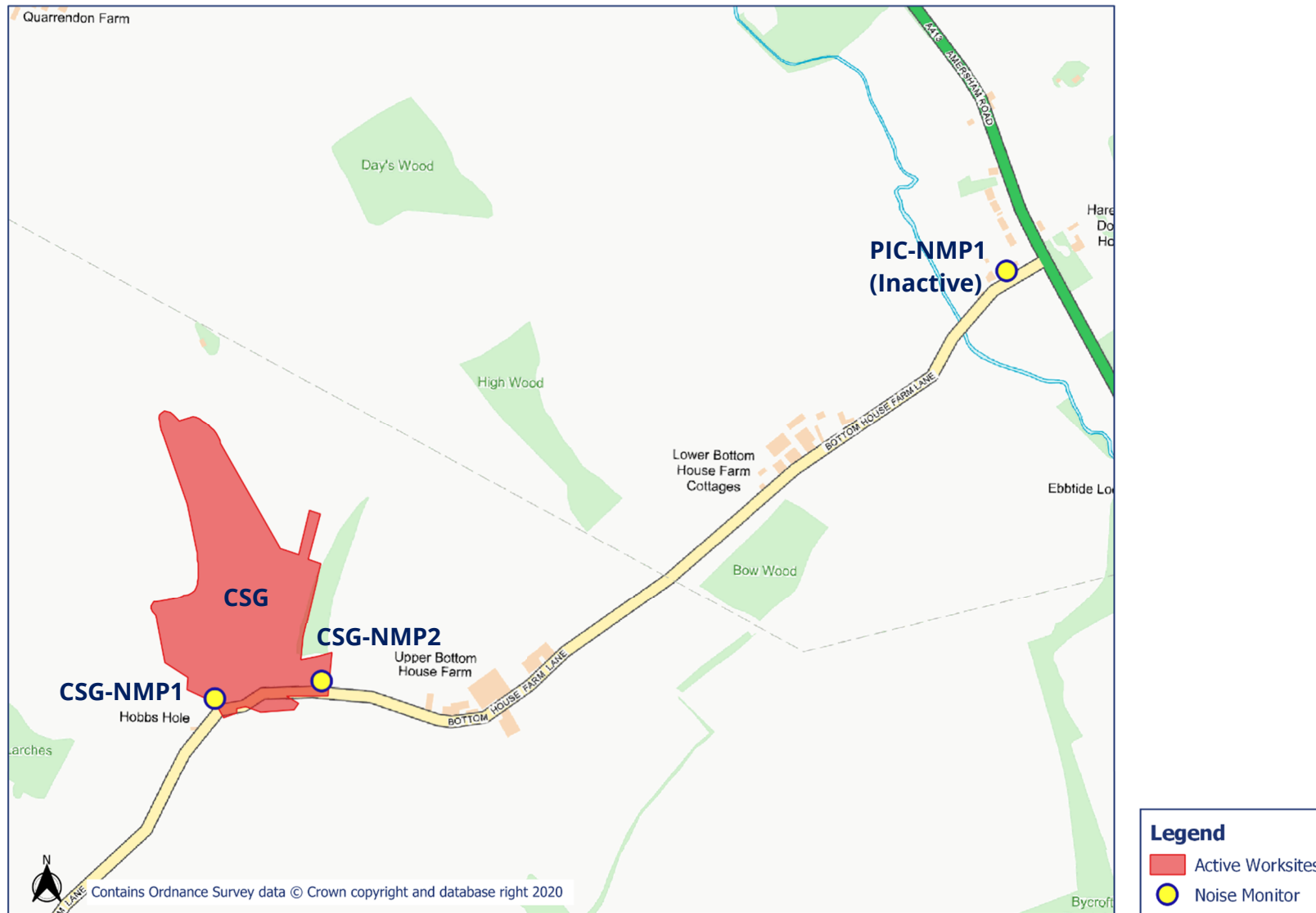


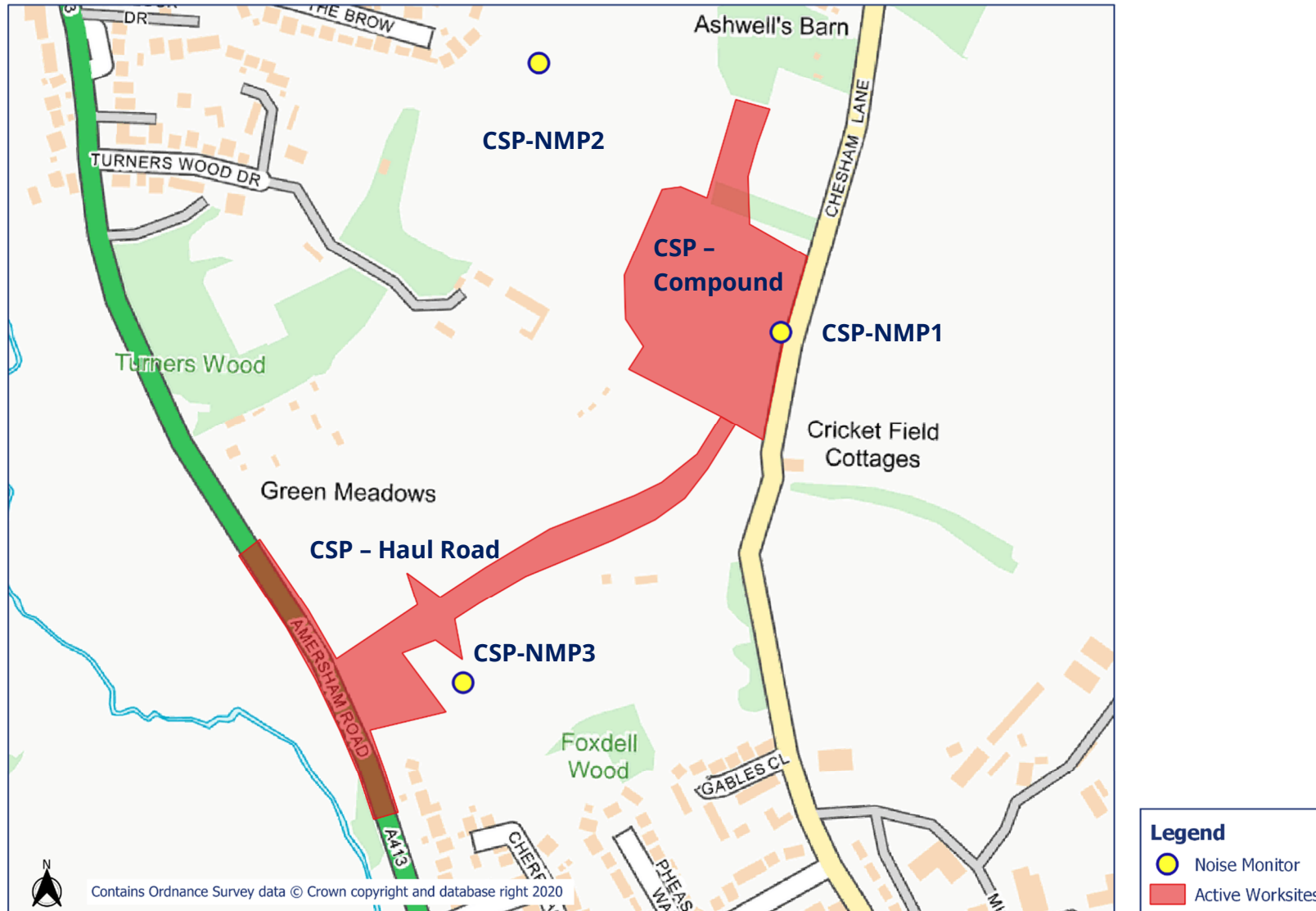


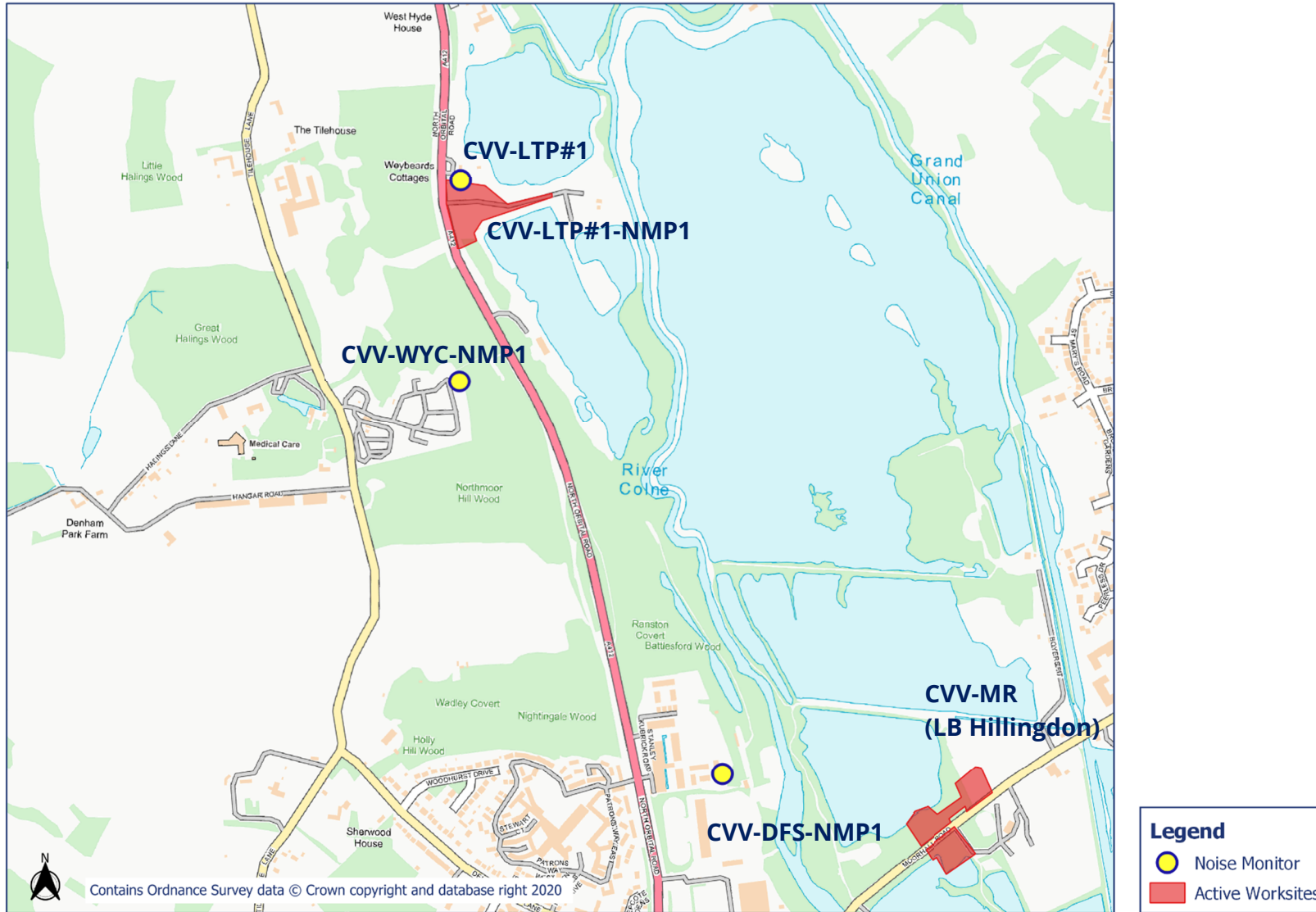
# HS2 Noise and Vibration Monitoring Plan - 11











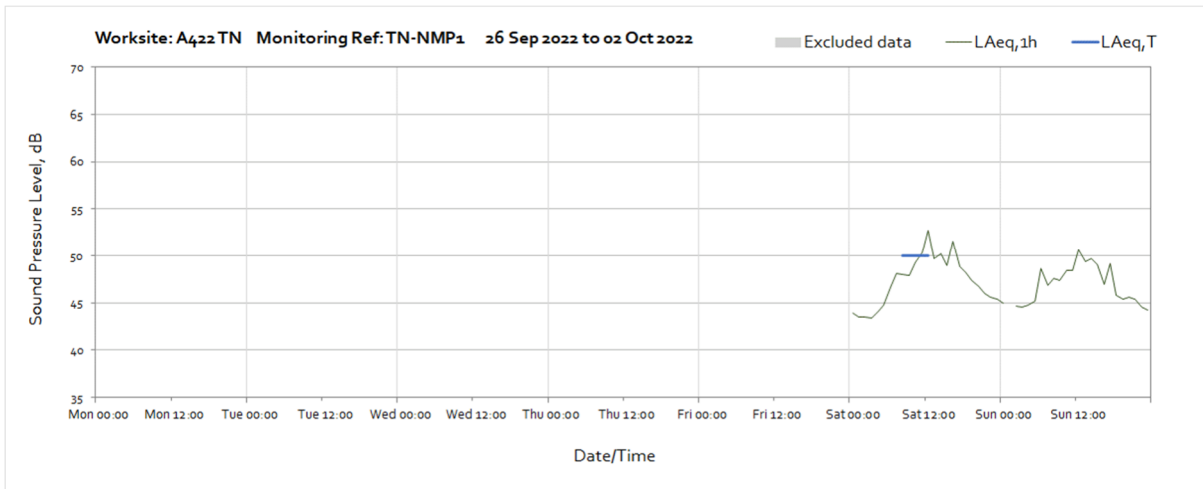


# Appendix C Data

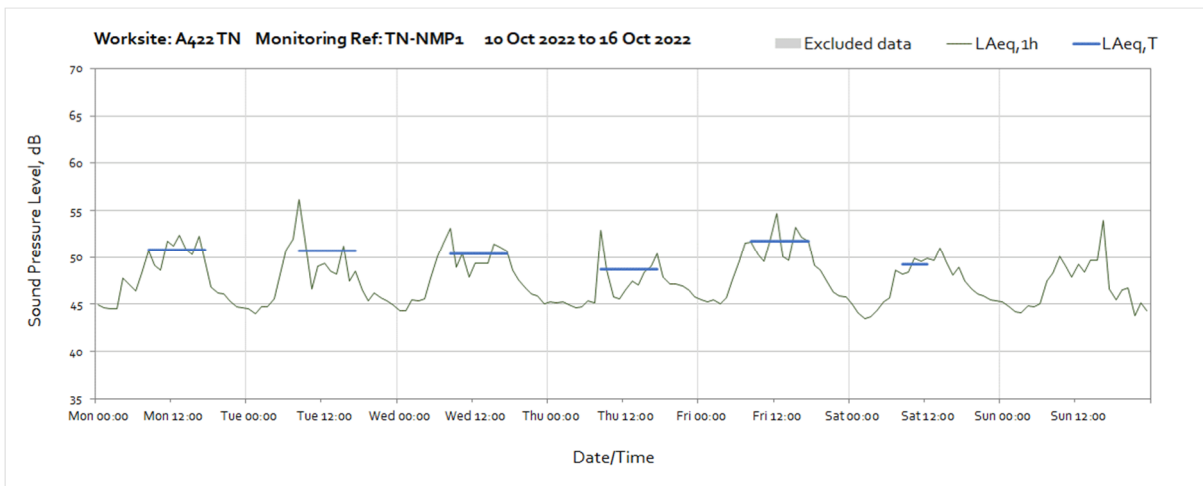
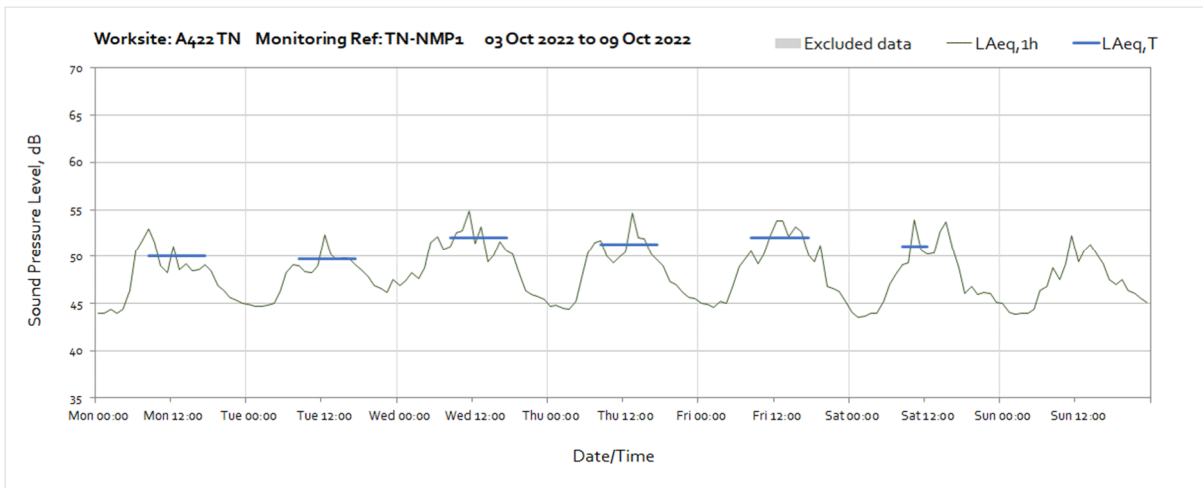
## Noise

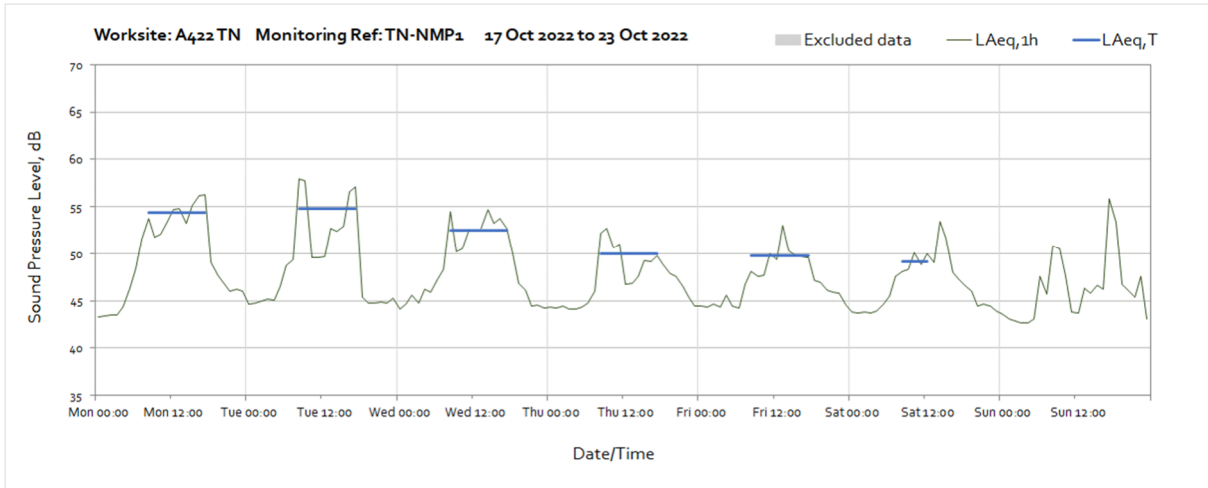
The following graphs show the hourly measured ambient noise level  $L_{Aeq,1h}$  and, where relevant, the averaged noise level  $L_{Aeq,T}$  values, where the time period T is as specified in Table 1 of HS2 Information Paper E23. Periods with adversely weather affected noise levels are greyed out and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

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

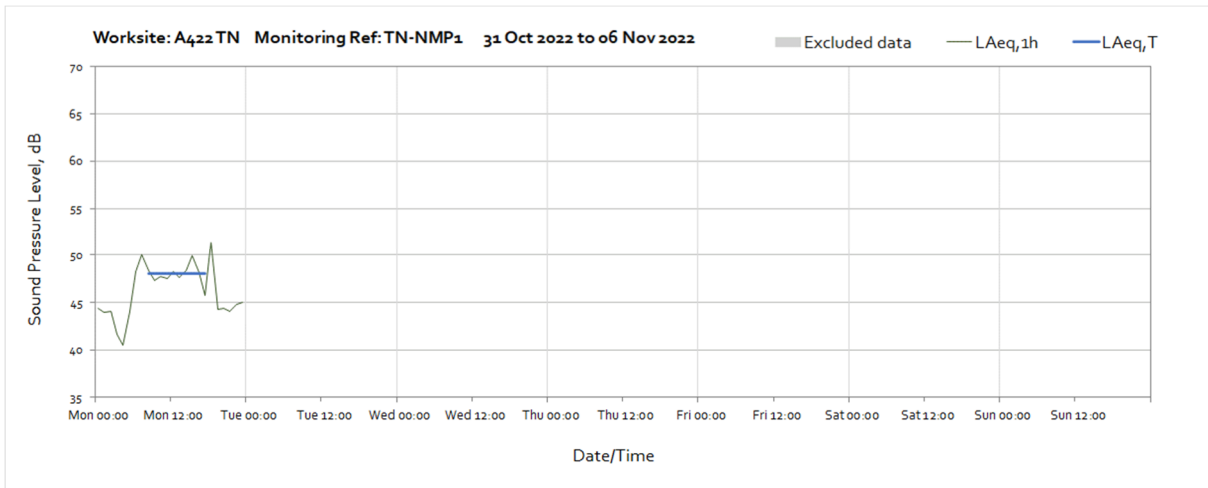
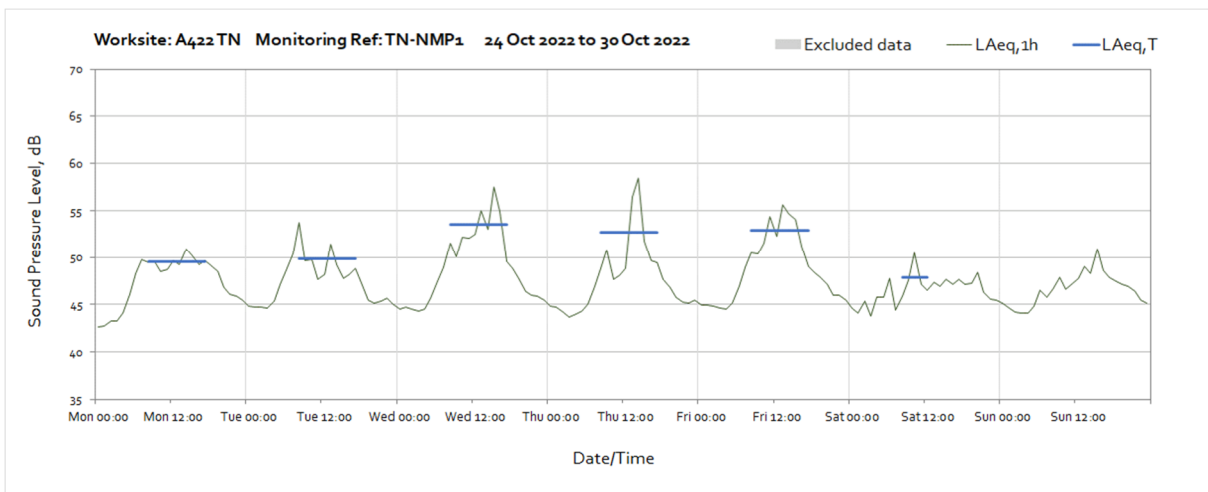


Note: Missing data between 01:00 and 02:00 on the 2<sup>nd</sup> October was due to an automatic system check.

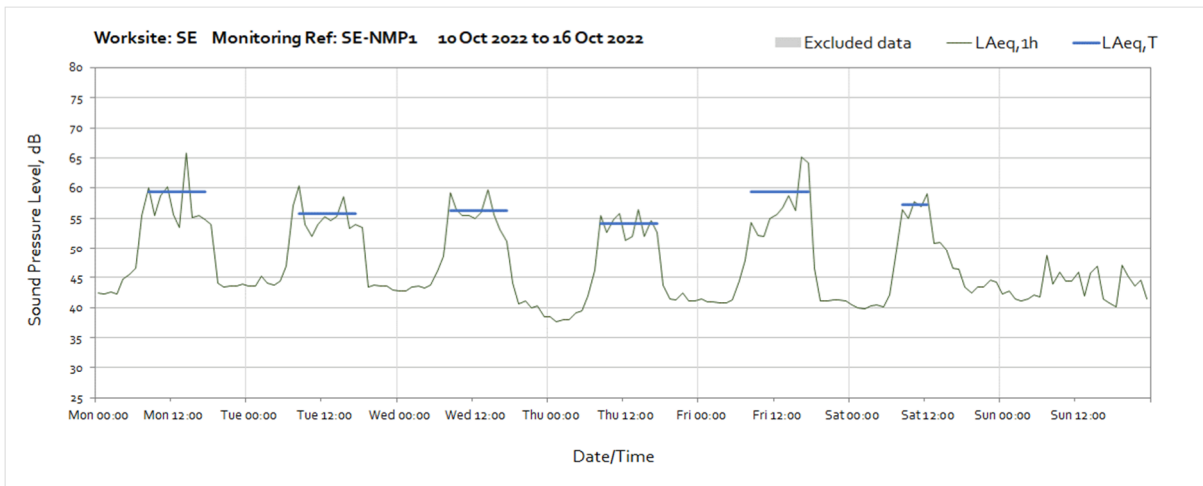
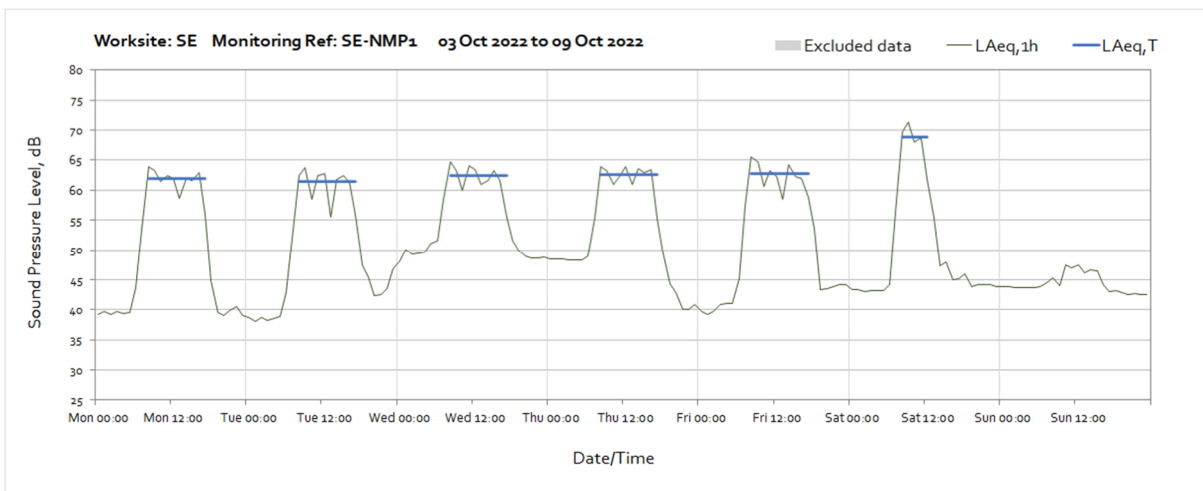
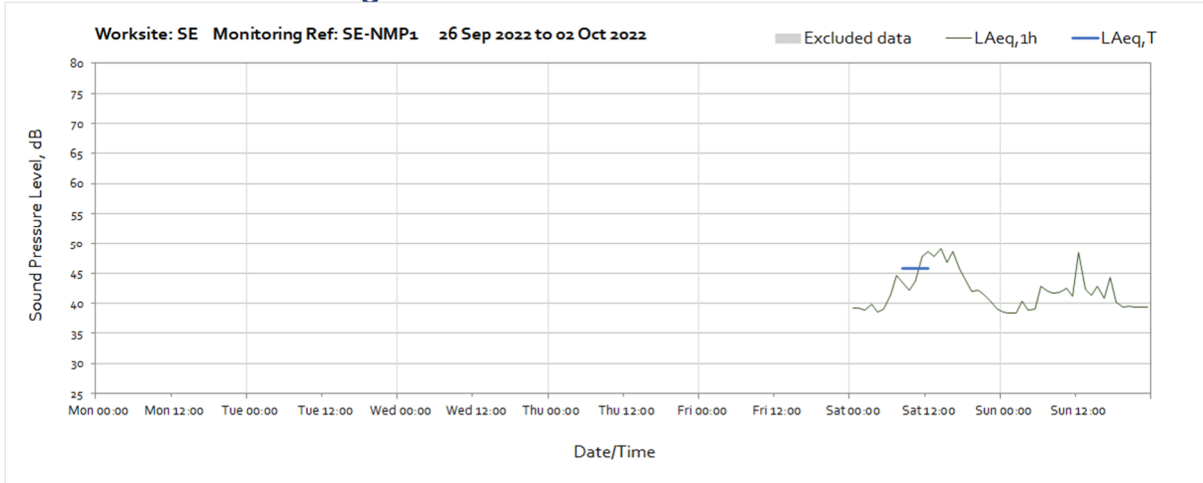




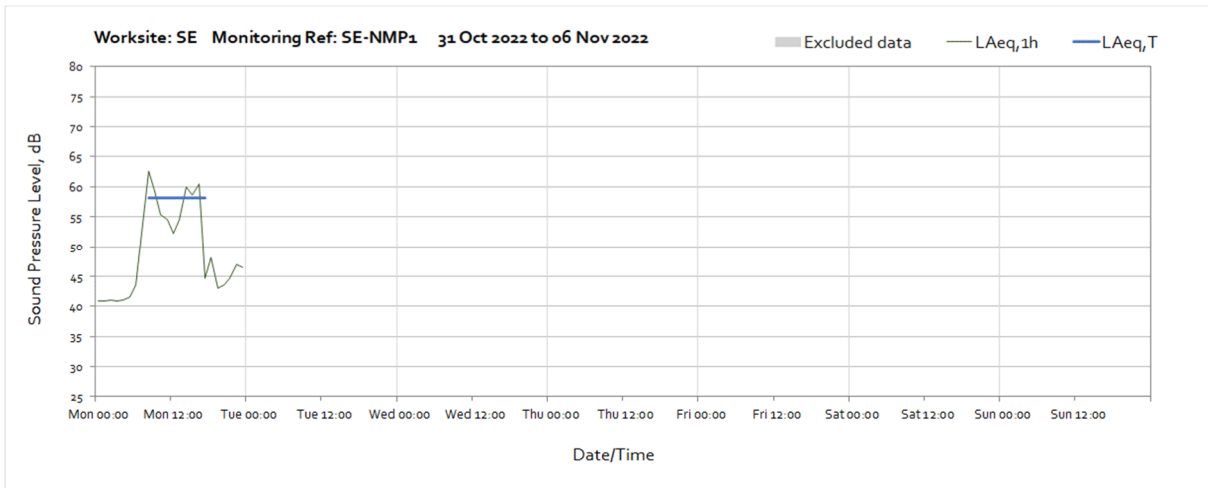
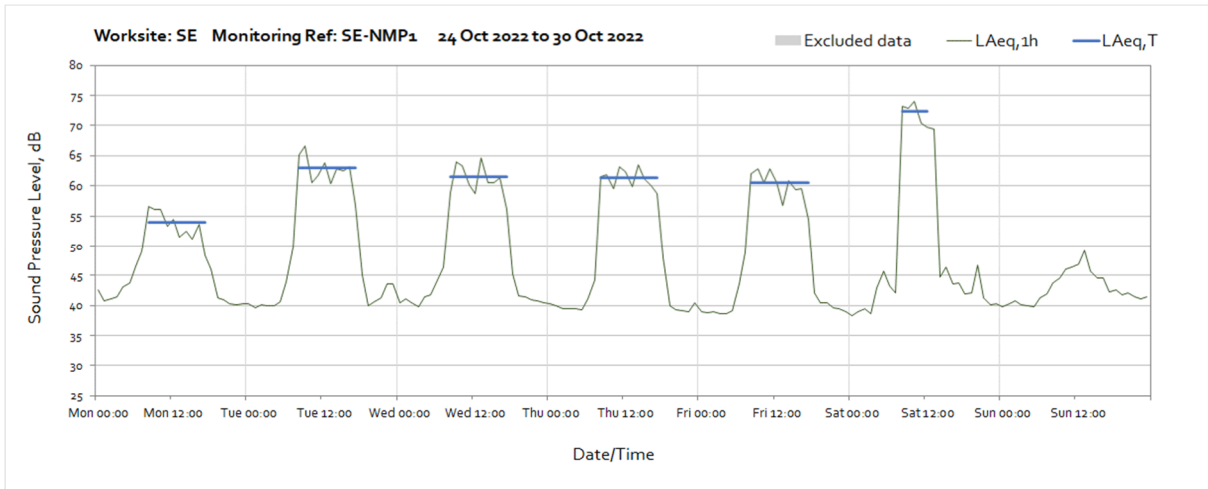
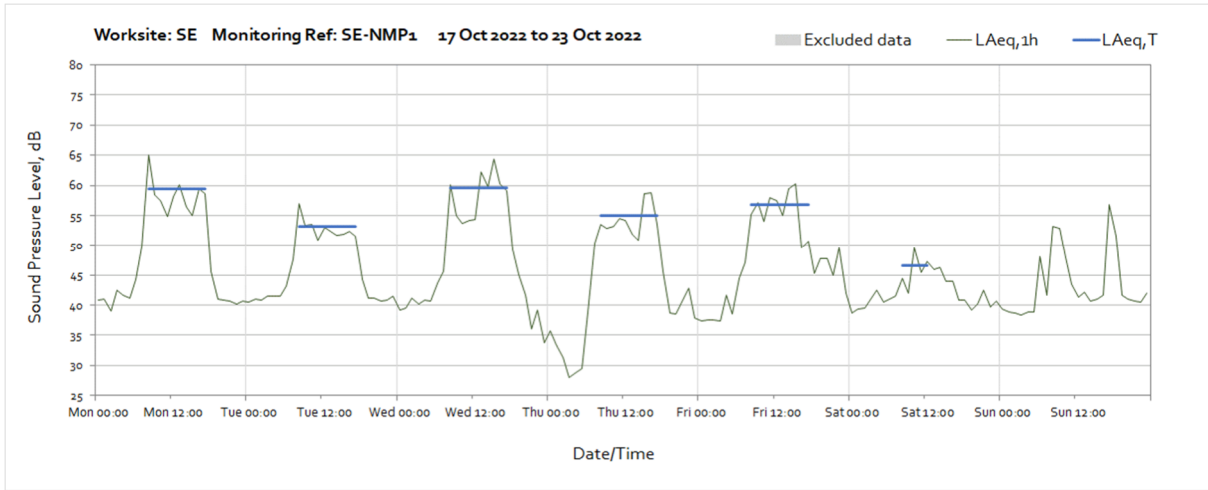
Note: Missing data between 12:00 and 13:00 on the 19<sup>th</sup> October was due to monitor maintenance.



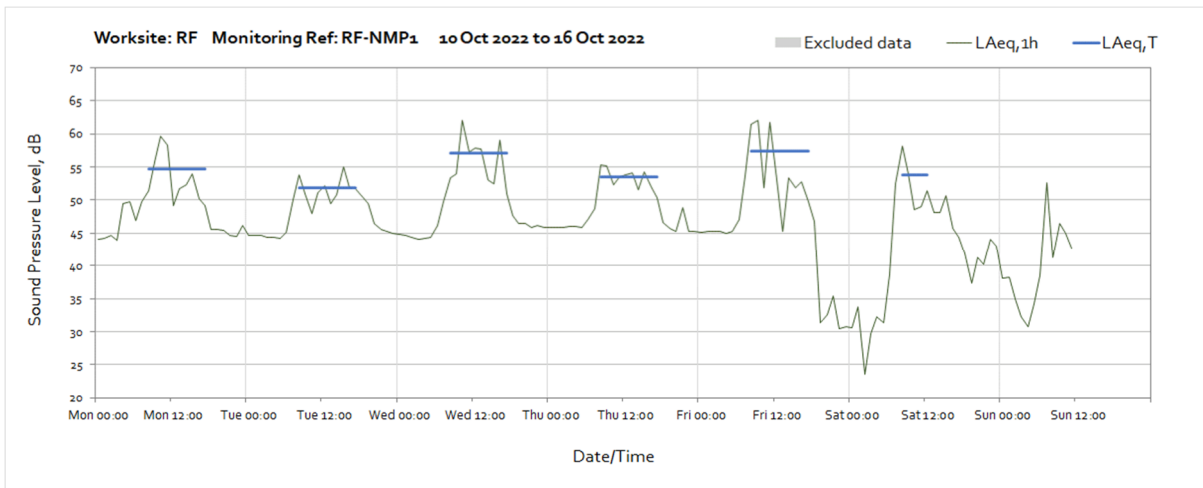
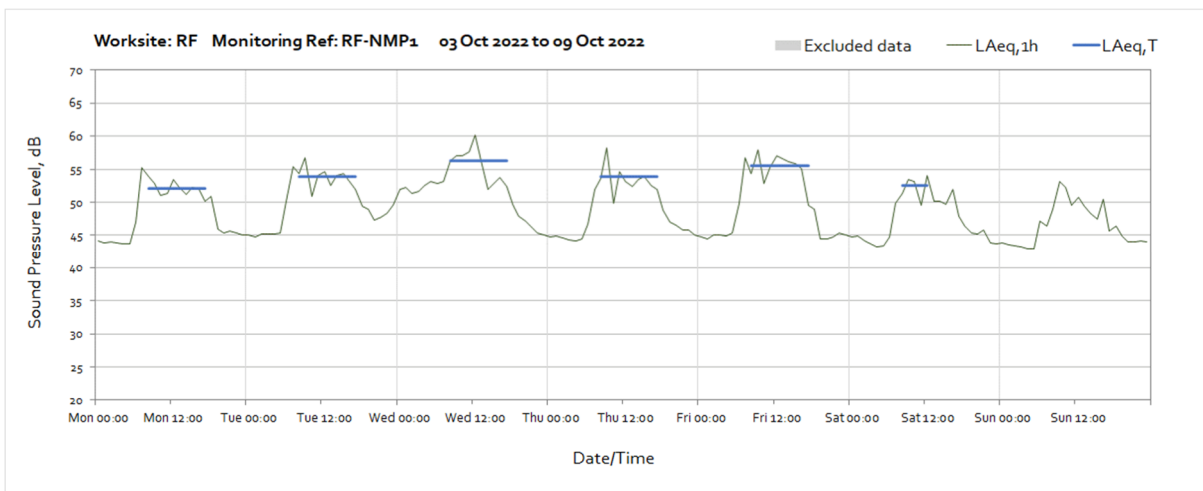
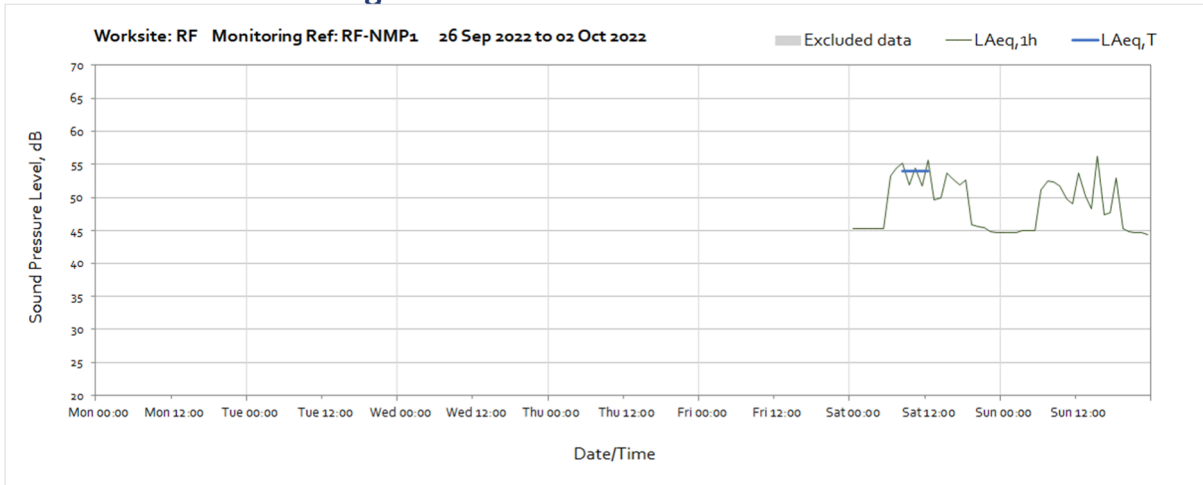
## Worksite: SE – Monitoring Ref: SE-NMP1





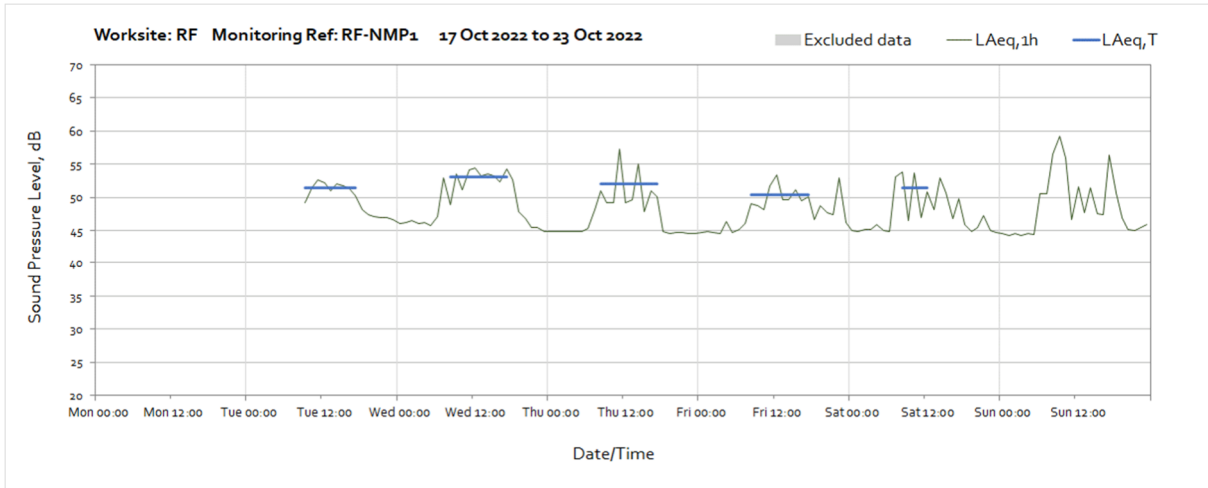


## Worksite: RF – Monitoring Ref: RF-NMP1

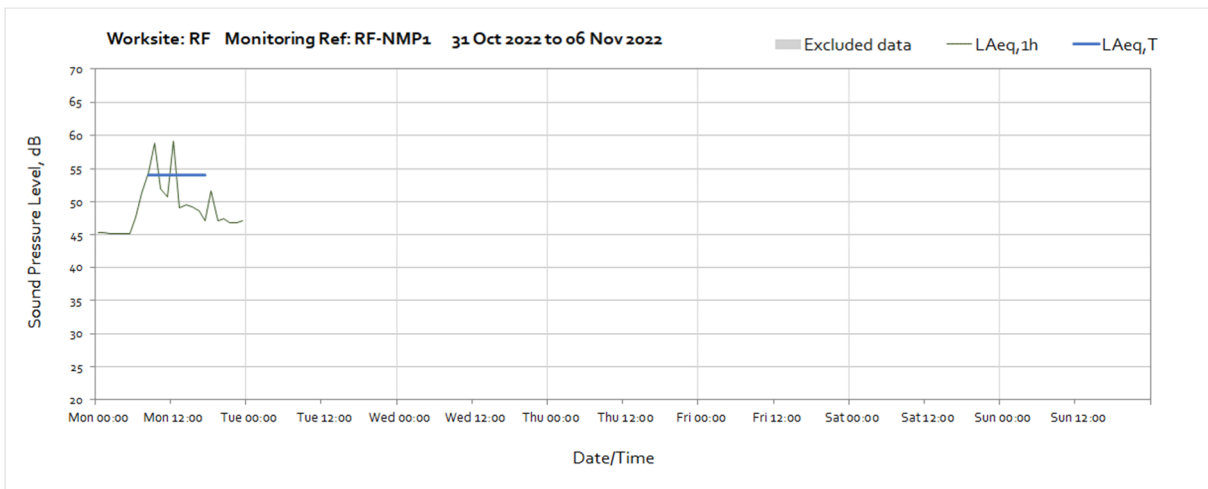
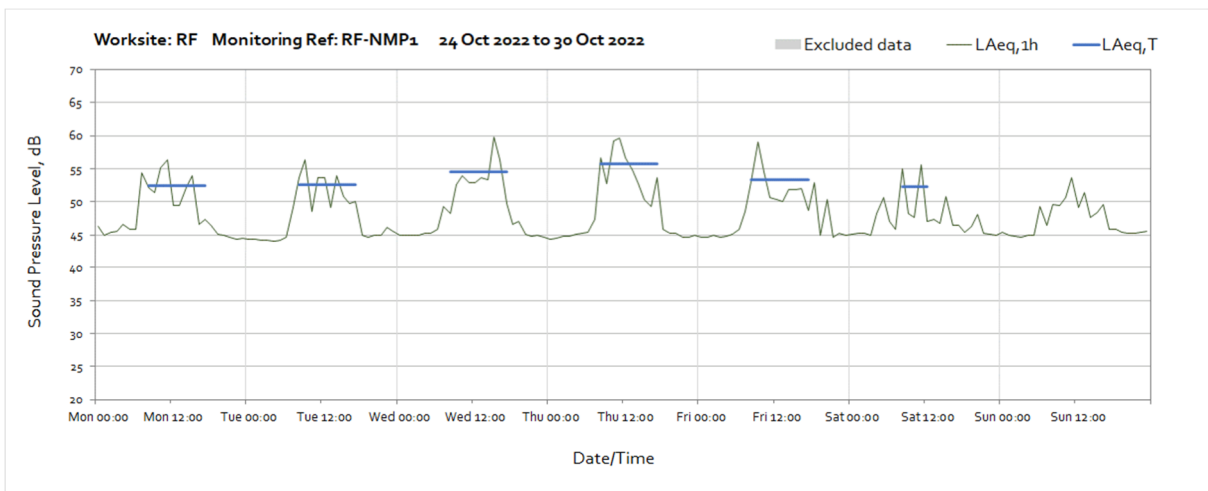


Note: Missing data between 12:00 on the 16<sup>th</sup> until 09:00 on the 19<sup>th</sup> was due to loss of power at the monitoring station.

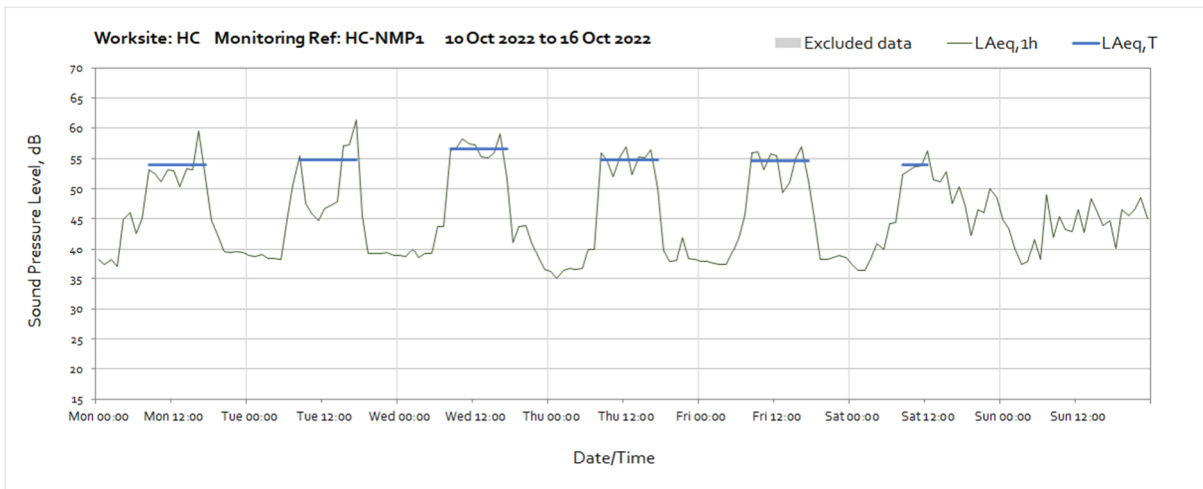
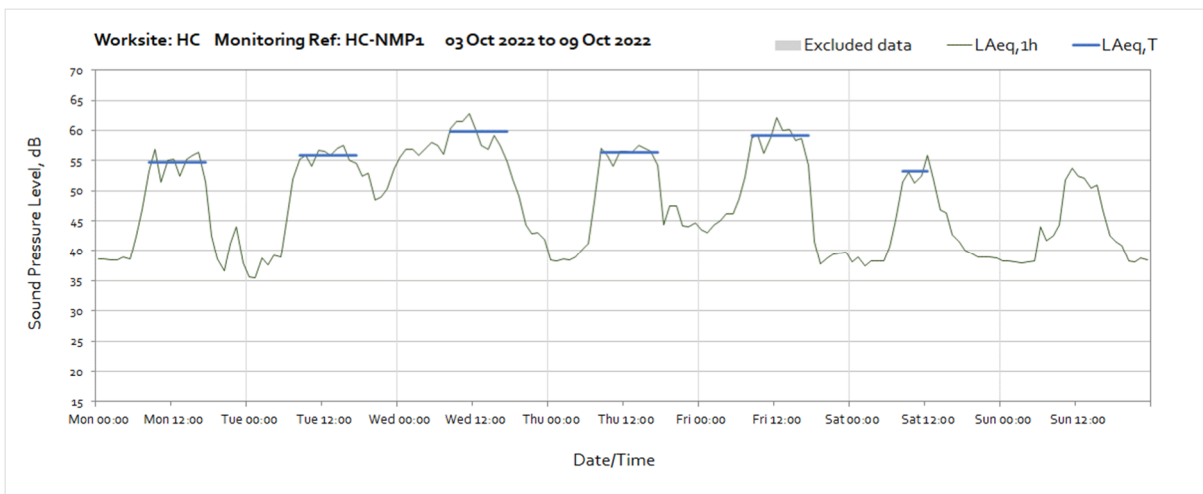
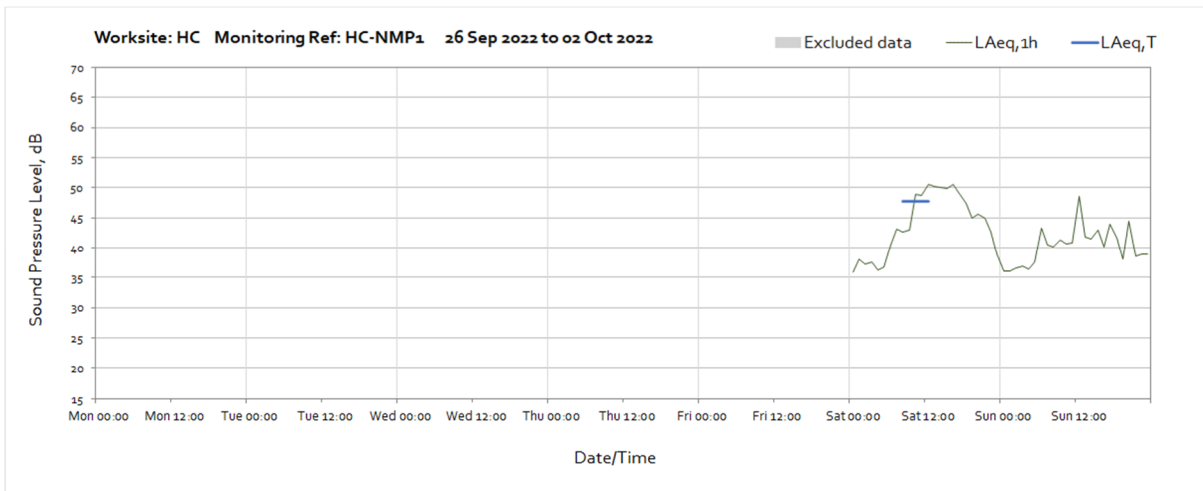
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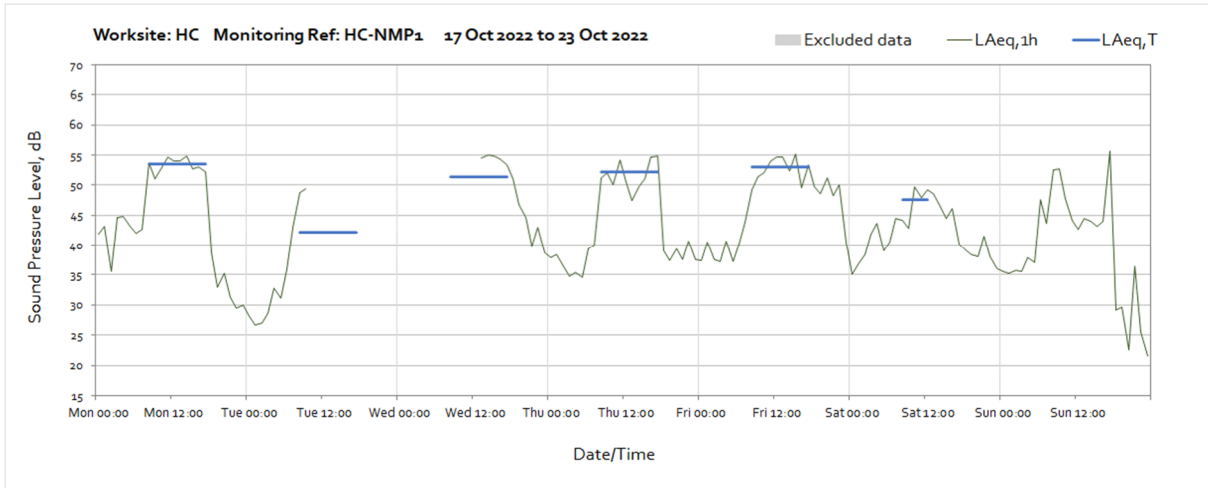


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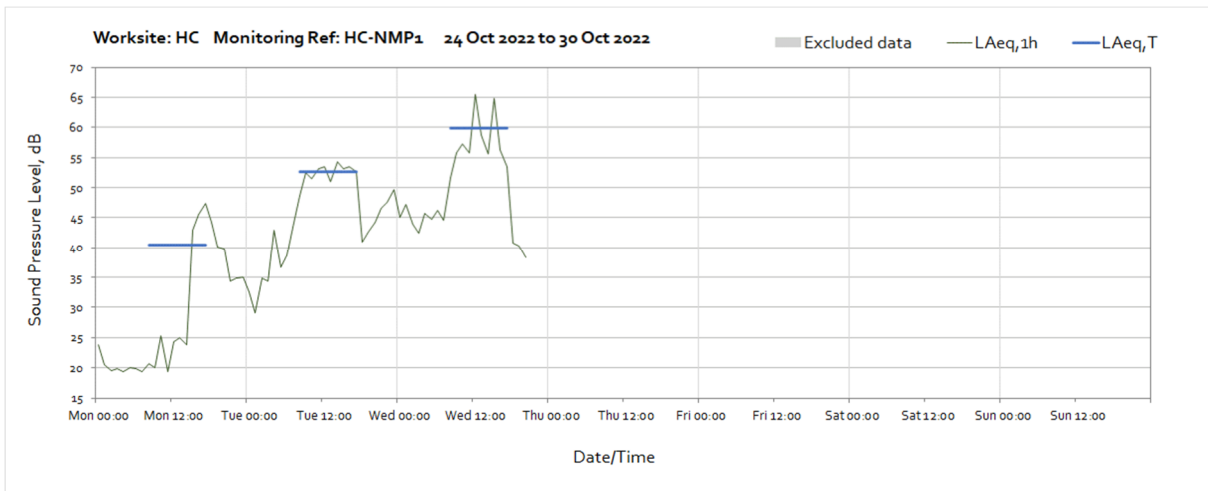


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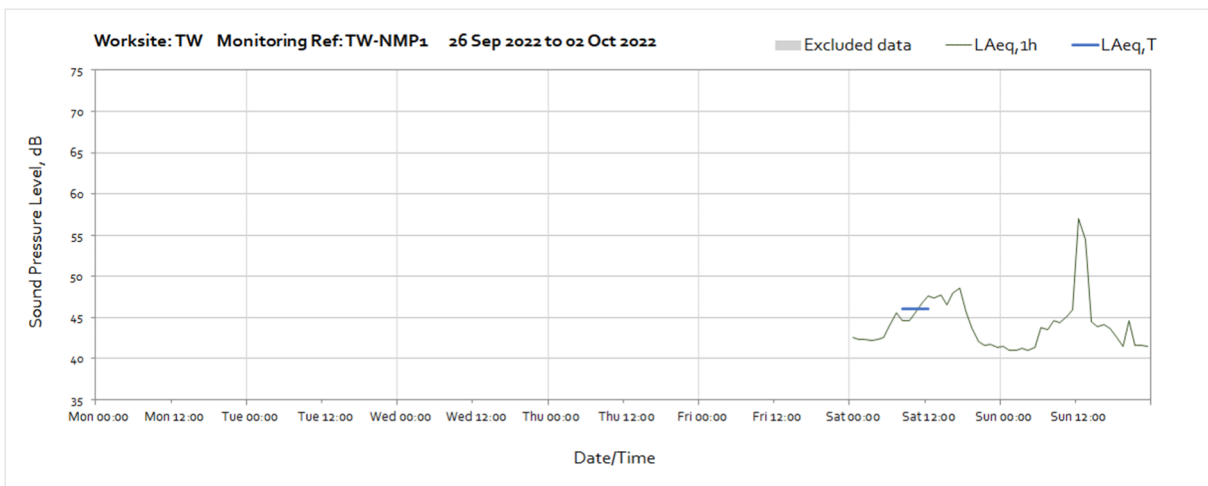


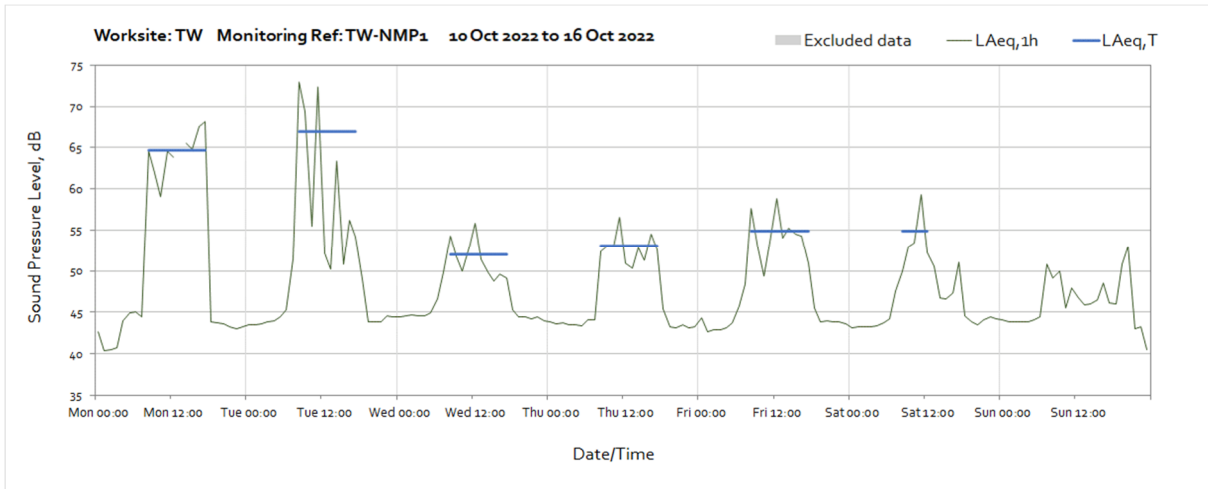
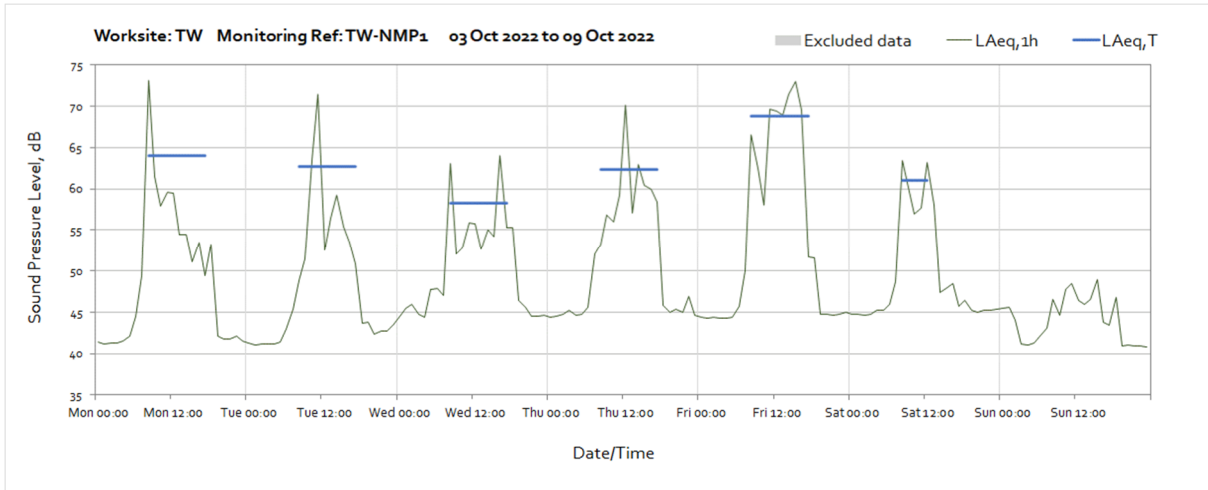
Note: Missing data between 10:00 on the 18<sup>th</sup> October until 13:00 on the 19<sup>th</sup> October was due to battery depletion.



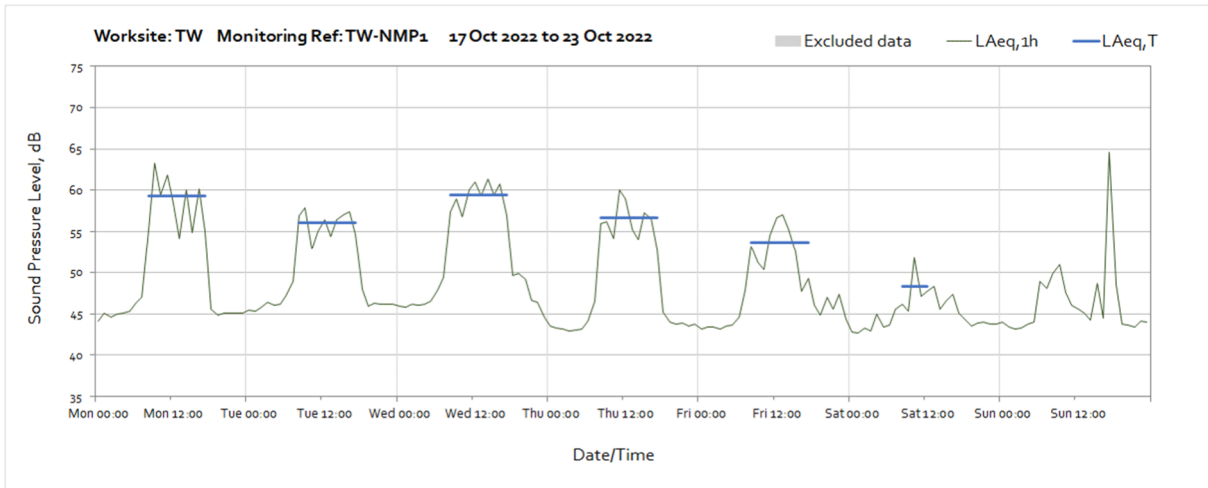
Note: Missing data from 21:00 on the 26<sup>th</sup> October until month end cause is under investigation.

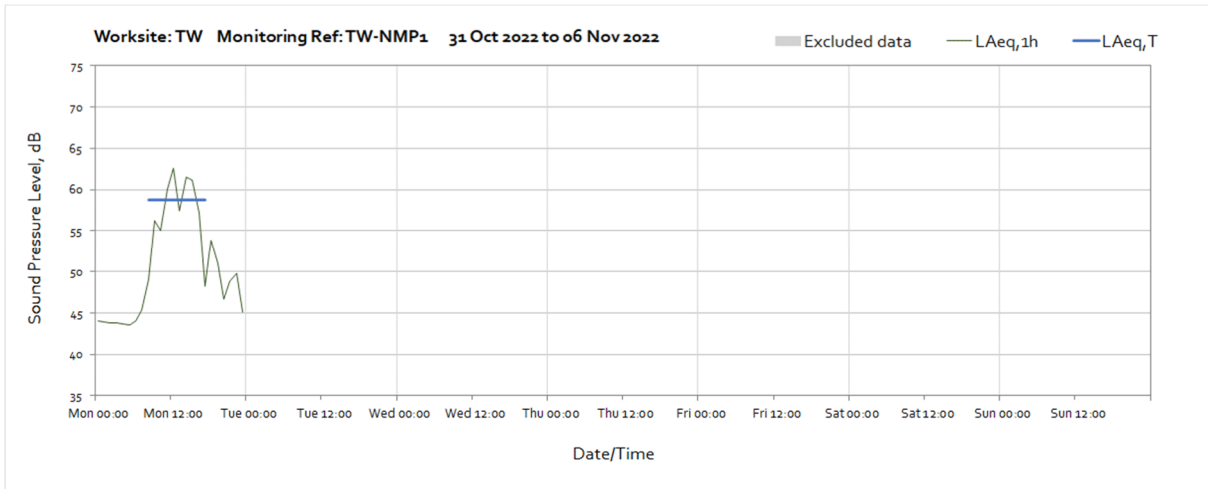
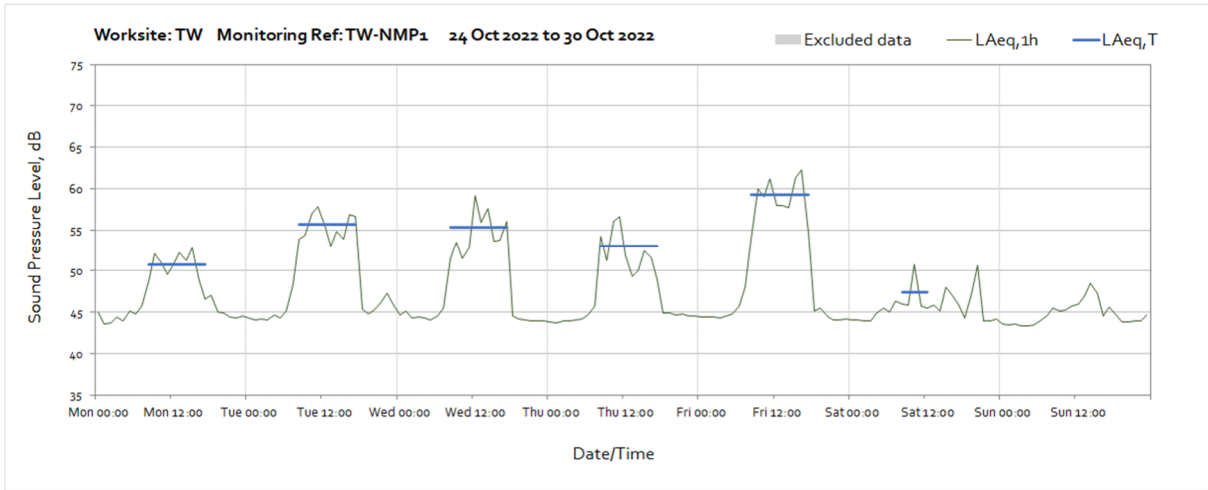
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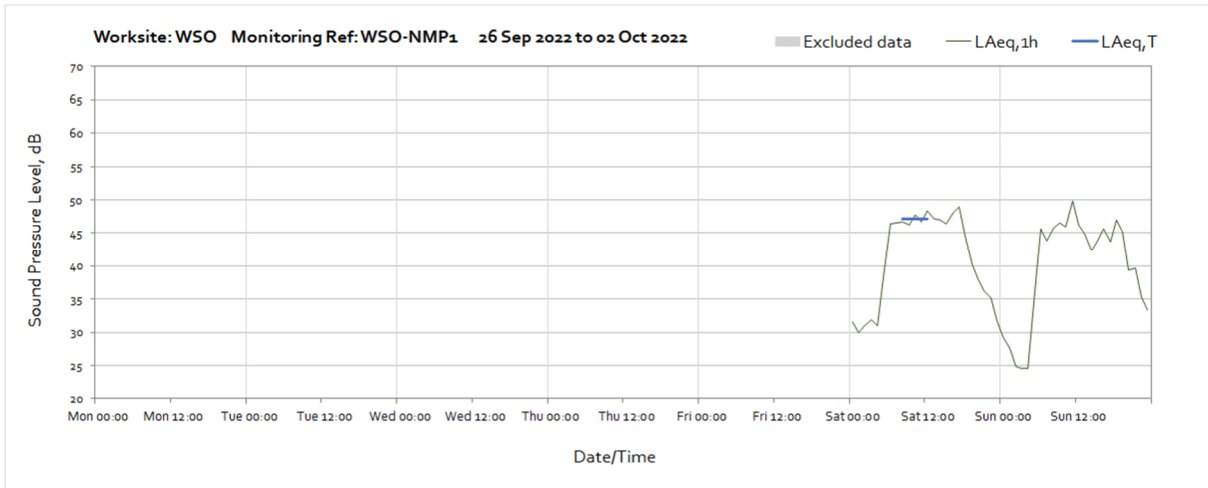


Note: Missing data between 13:00 and 14:00 on the 10<sup>th</sup> October was due to monitor maintenance.

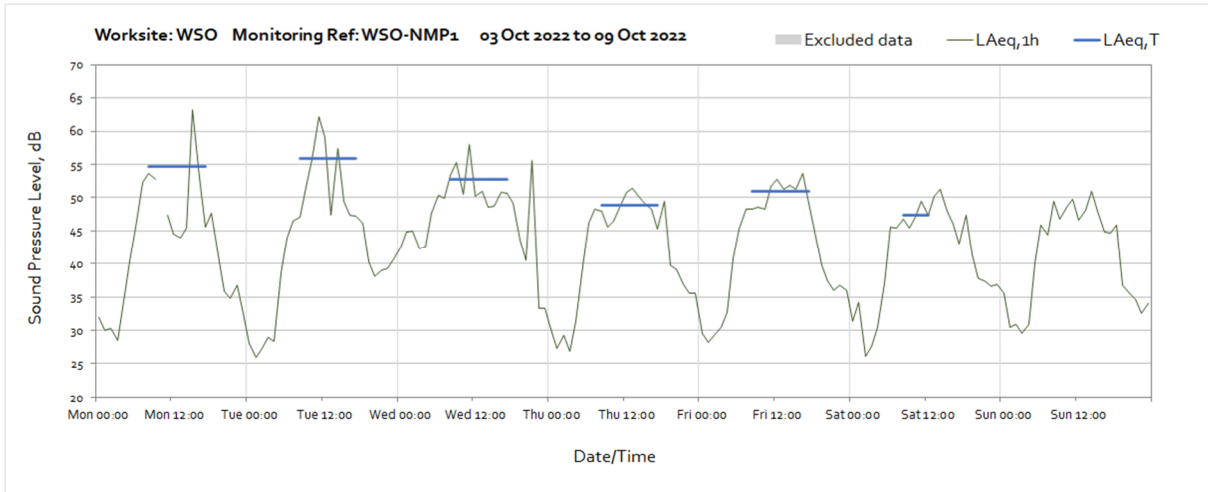




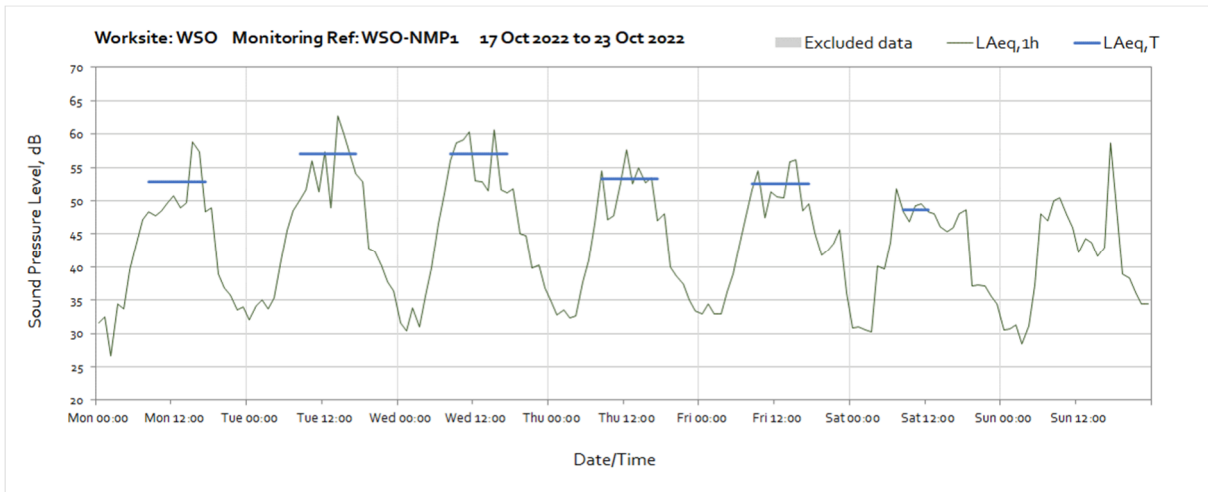
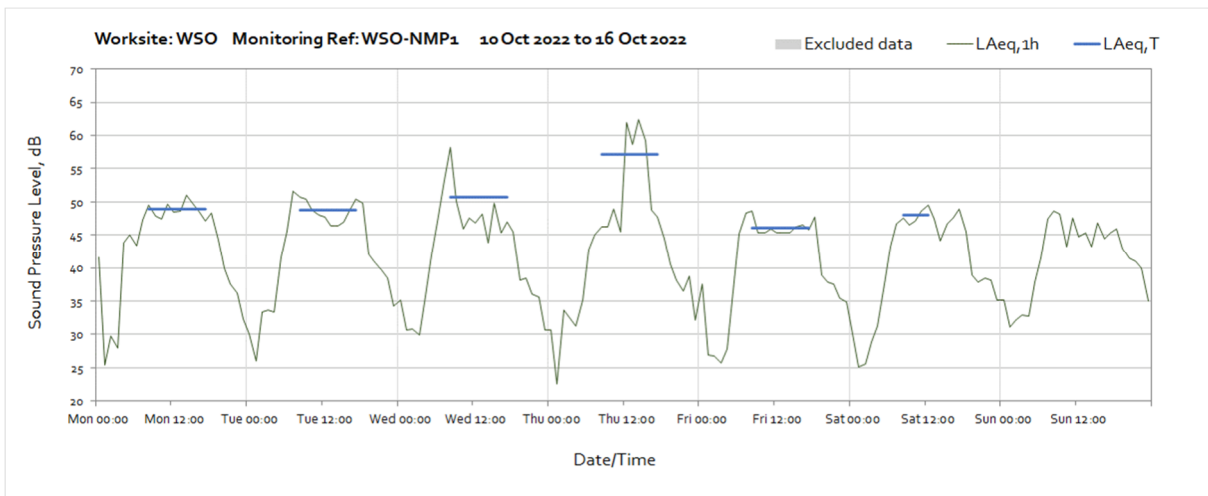
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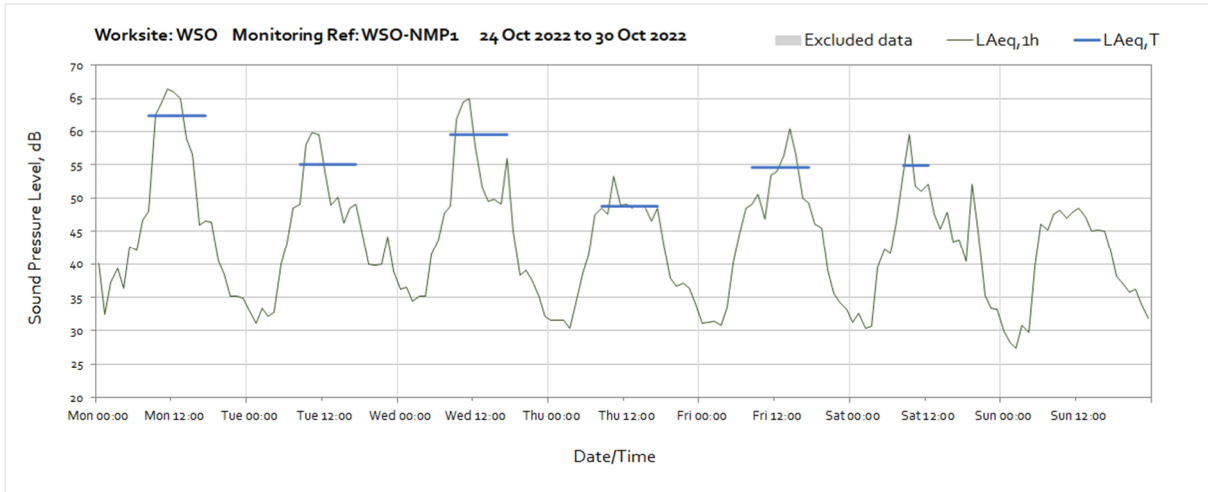




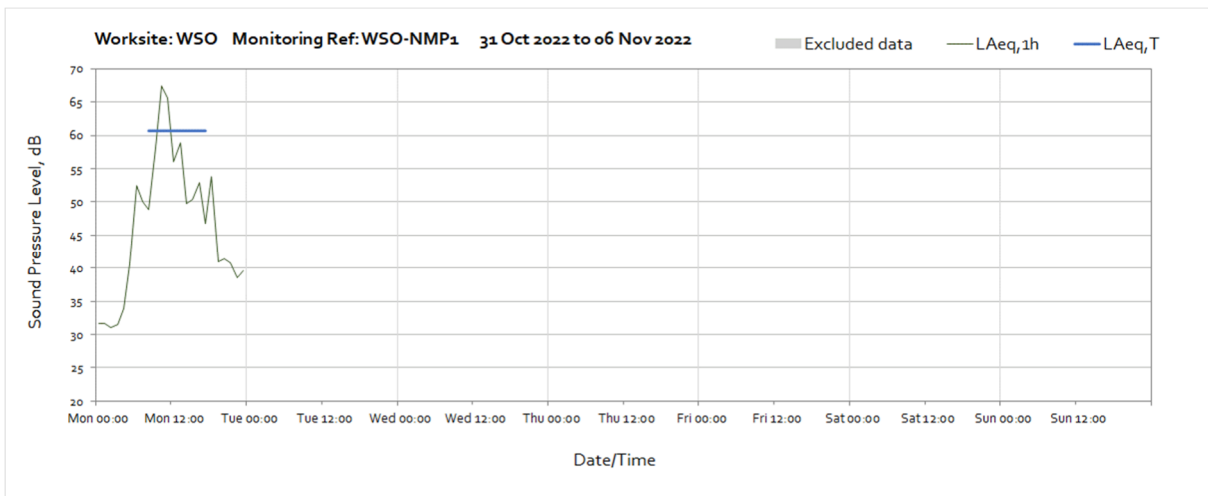


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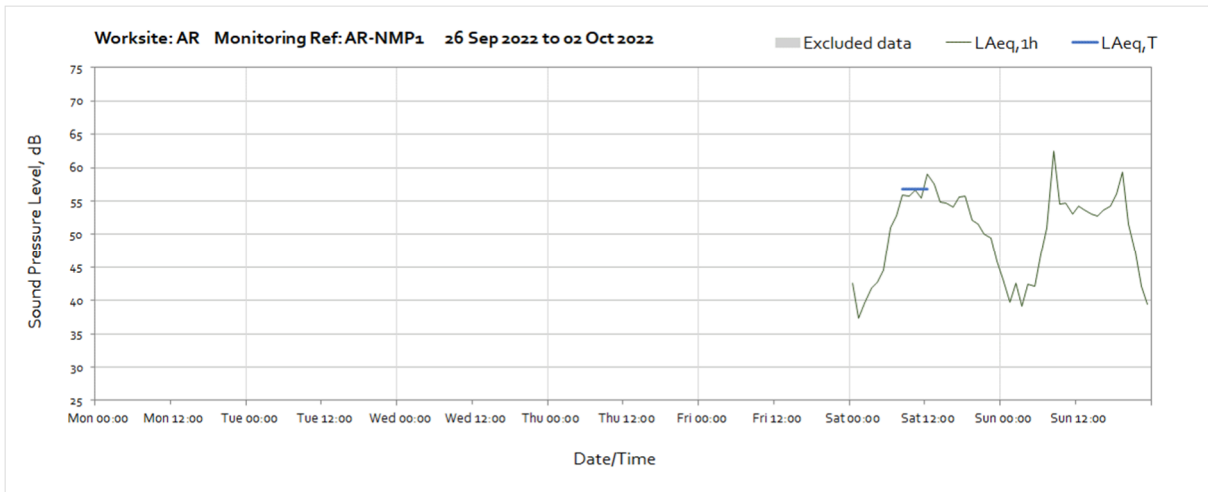


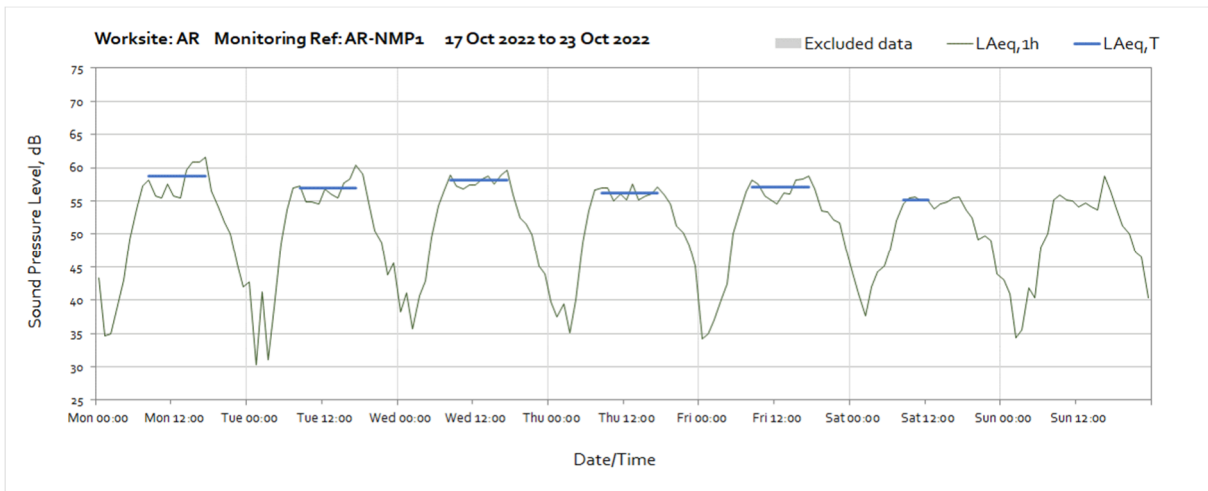
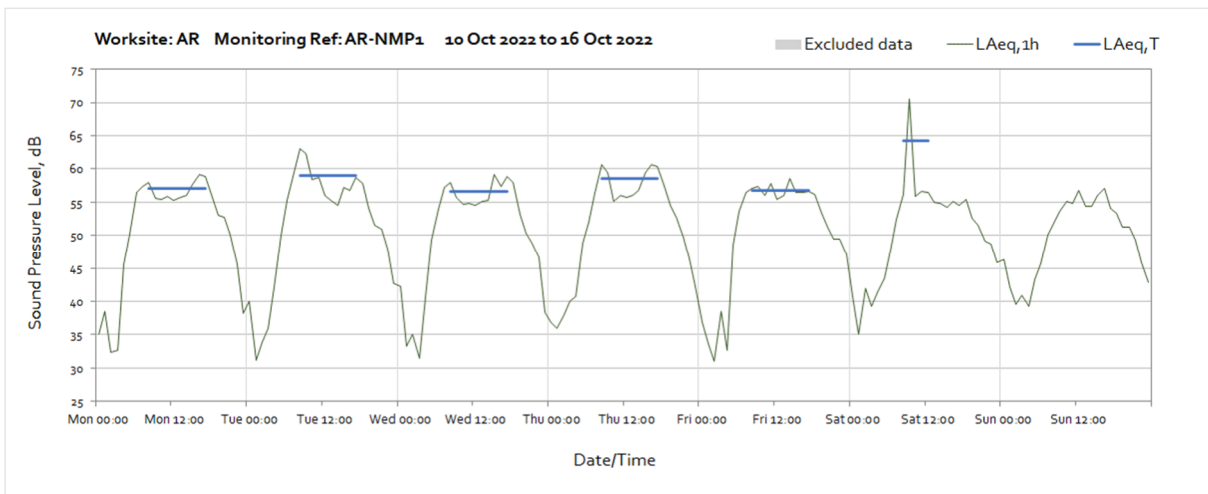
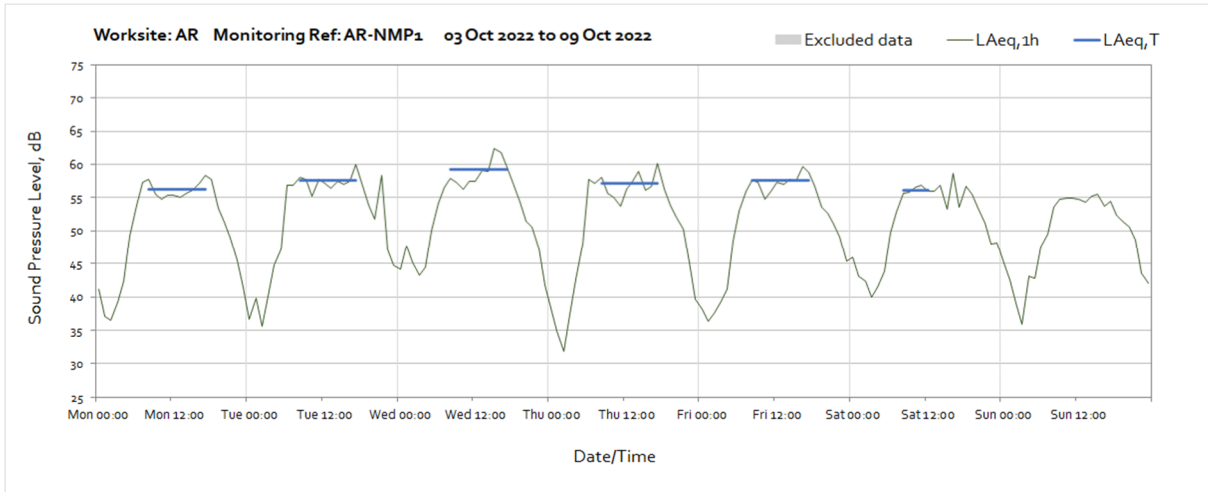


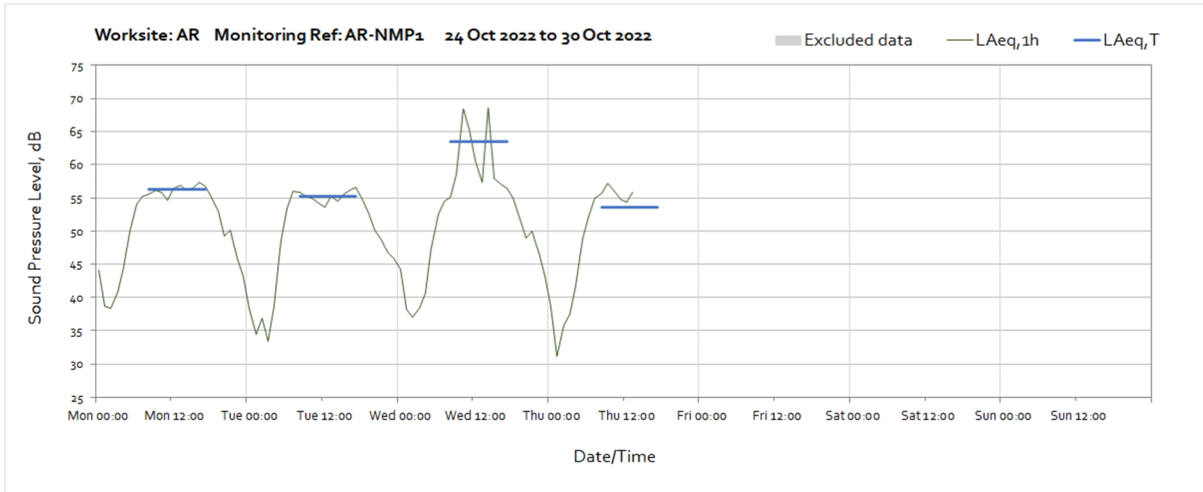
Note: Missing data between 14:00 and 15:00 on the 27<sup>th</sup> October was due to monitor maintenance.



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

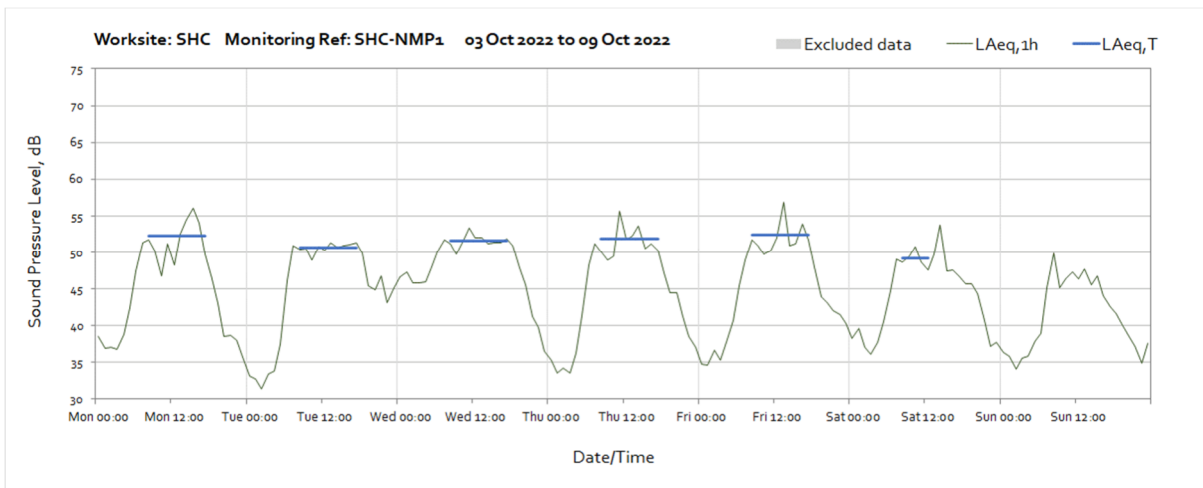
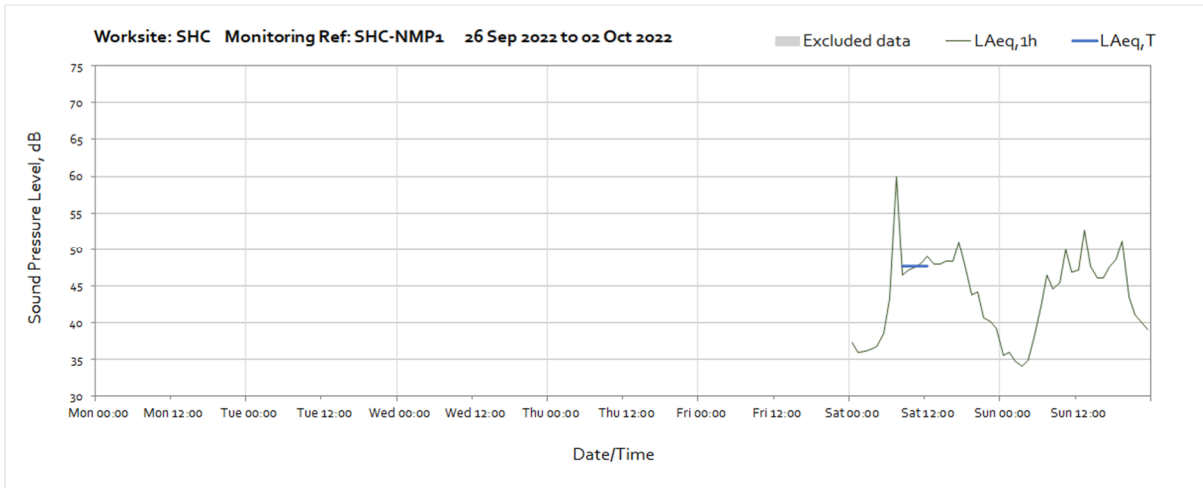


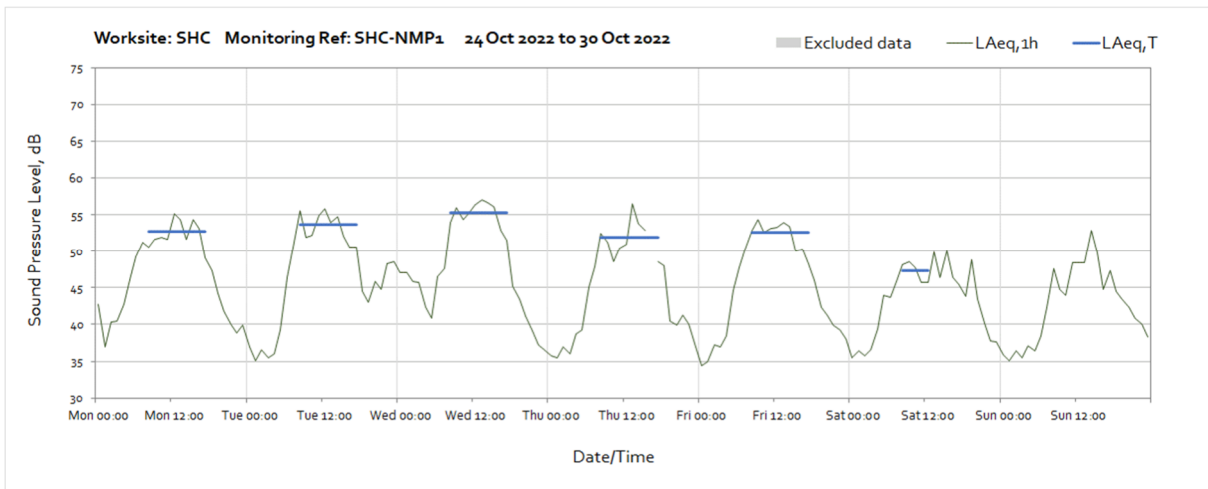
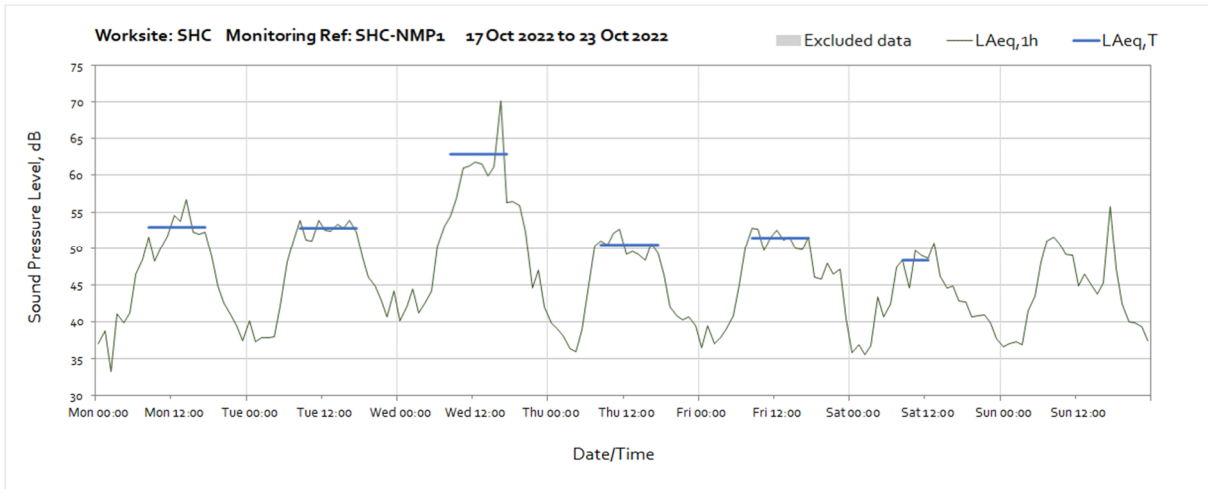
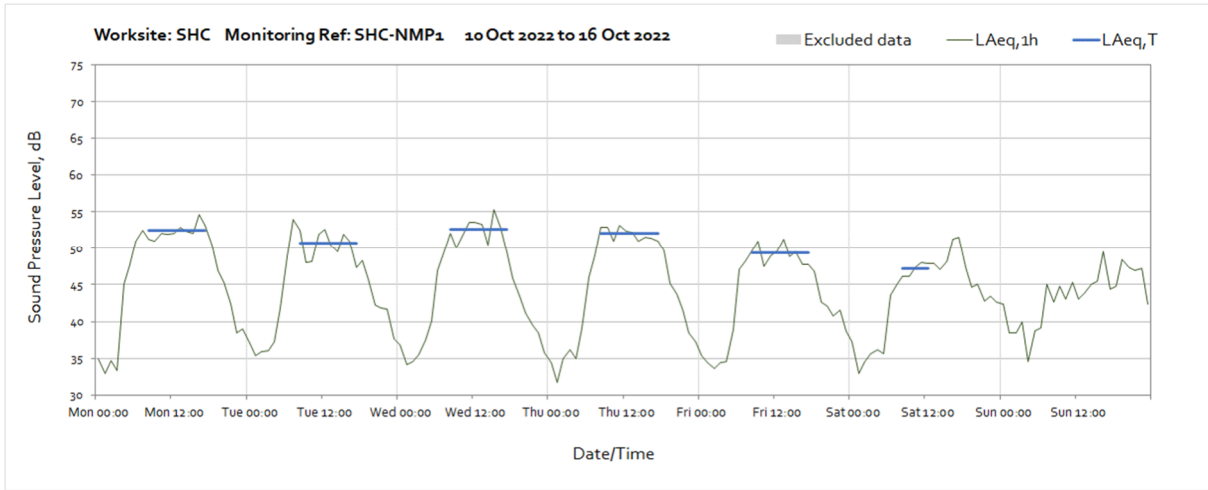




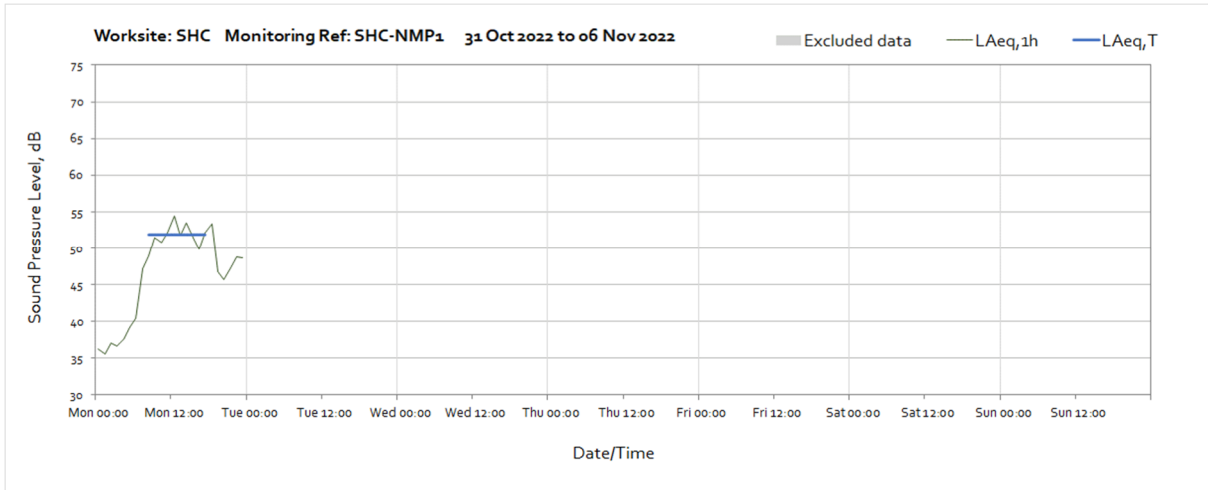
Note: Missing data between 14:00 on the 27<sup>th</sup> October and the end of the month was due to a failed field calibration test, requiring the monitoring equipment to be retrieved for repair.

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

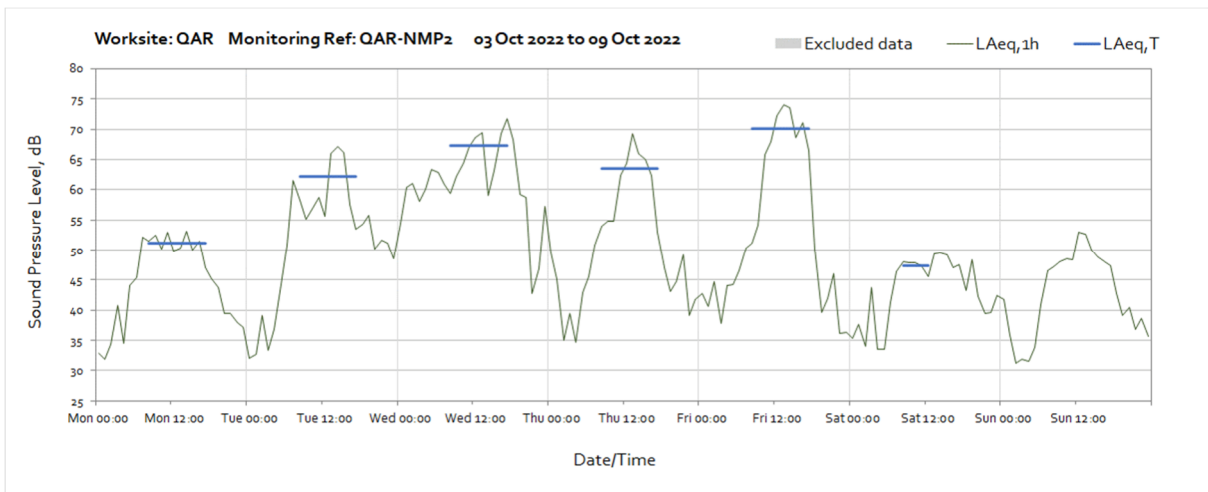
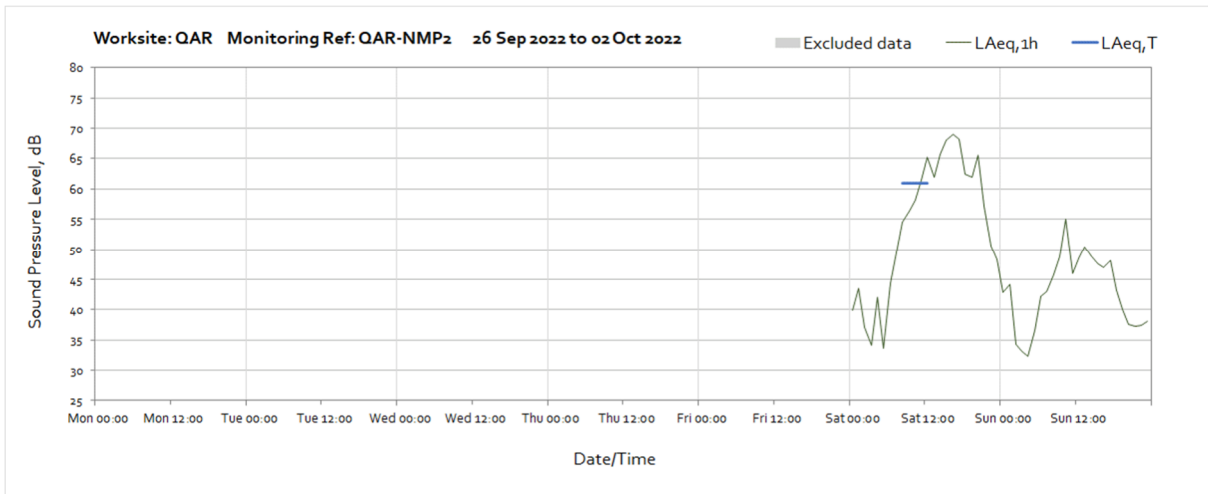


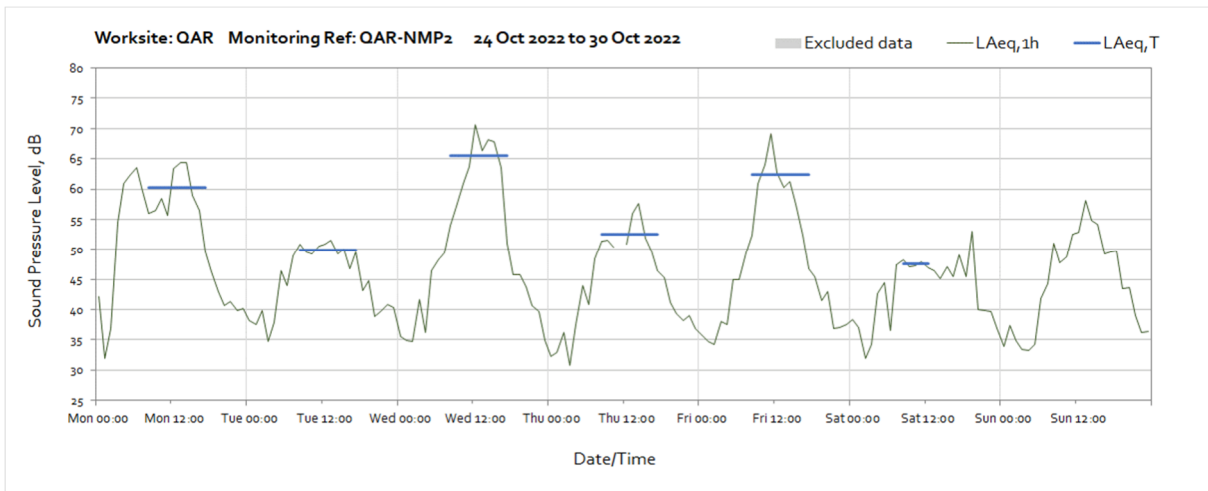
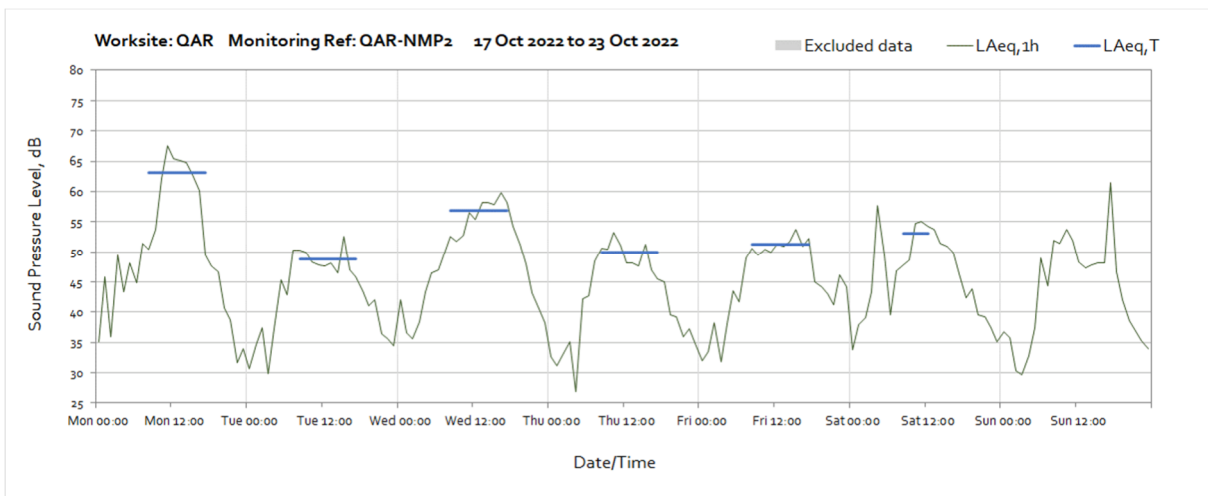
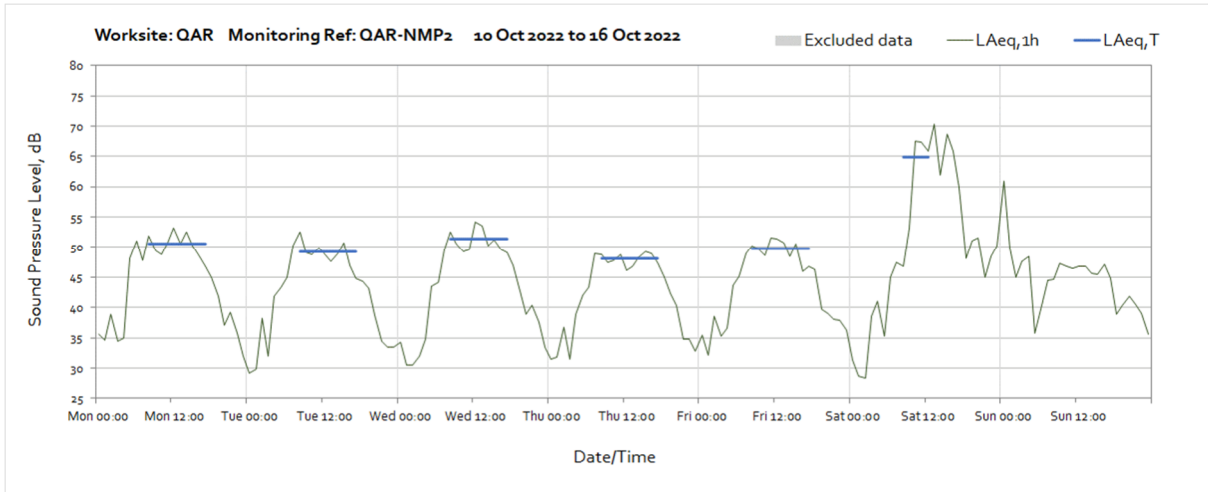


Note: Missing data between 16:00 and 17:00 on the 27<sup>th</sup> October was due to monitor maintenance.



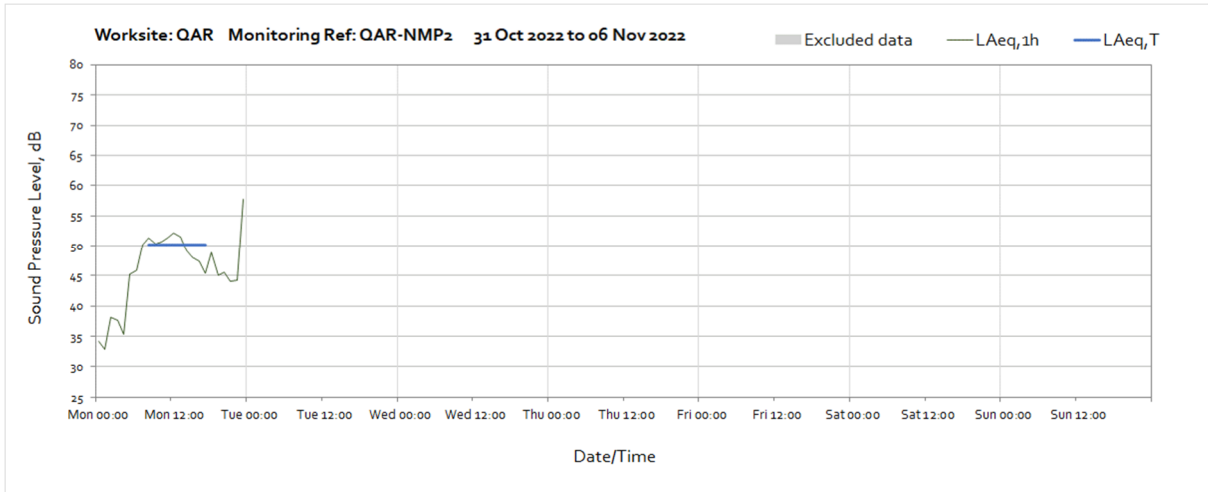
**Worksite: QAR – Monitoring Ref: QAR-NMP2**



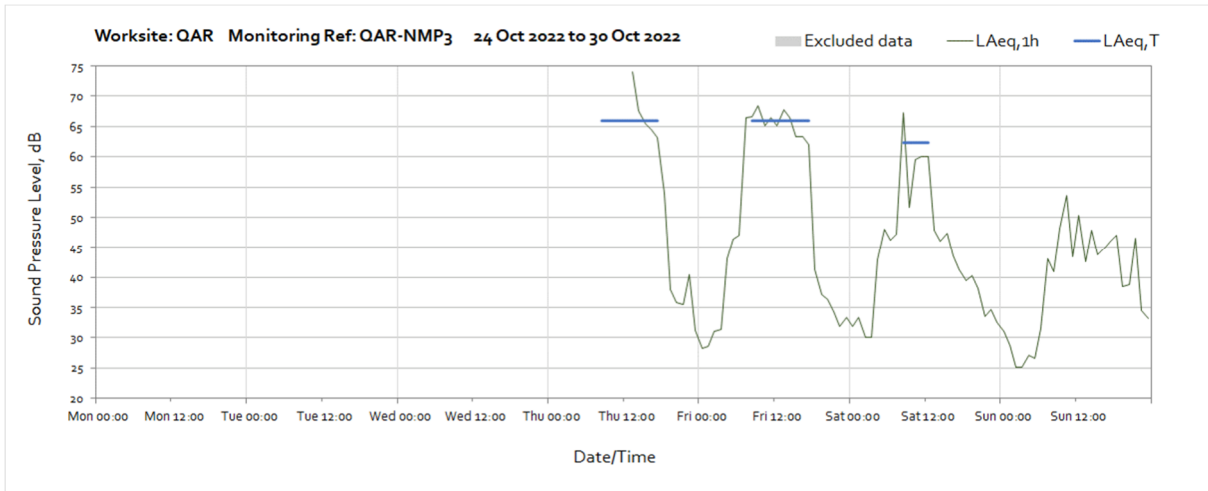


Note: Missing data between 11:00 and 12:00 on the 27<sup>th</sup> October was due to monitor maintenance.

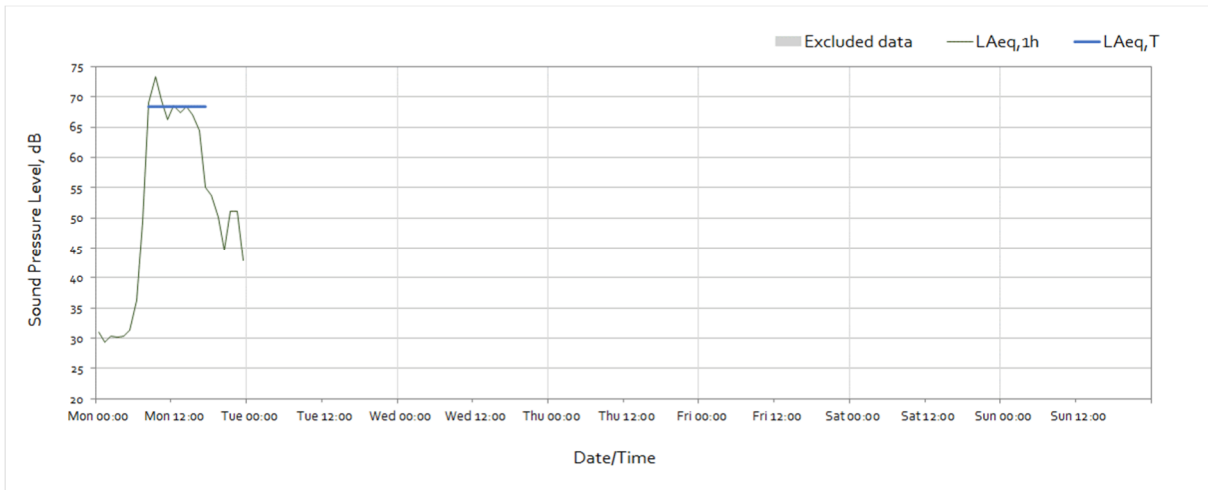




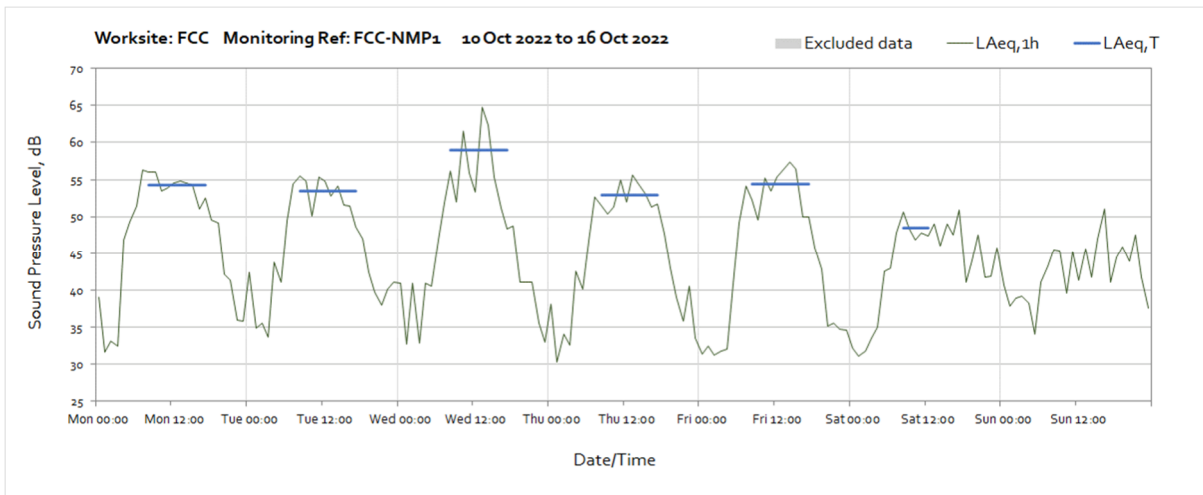
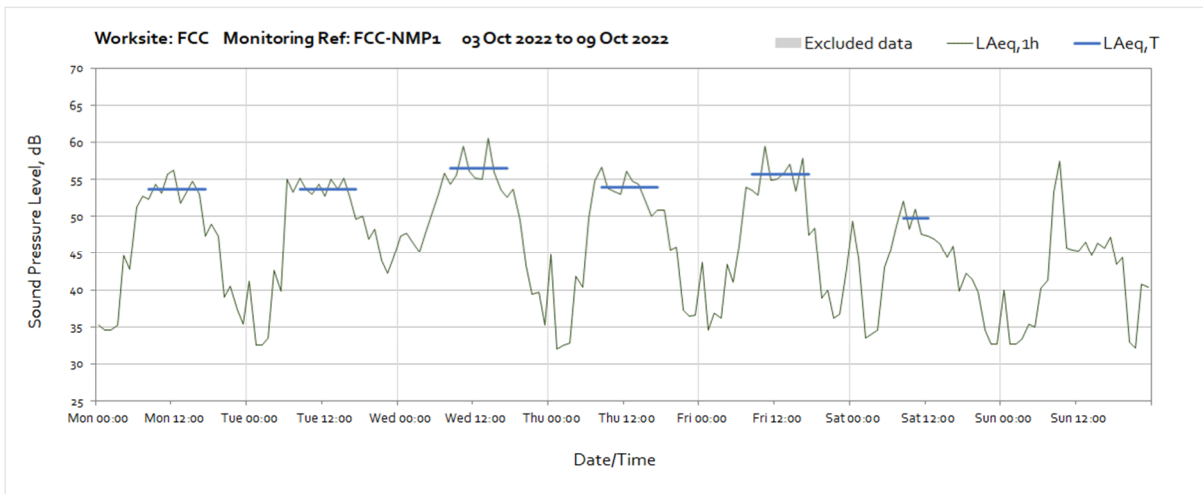
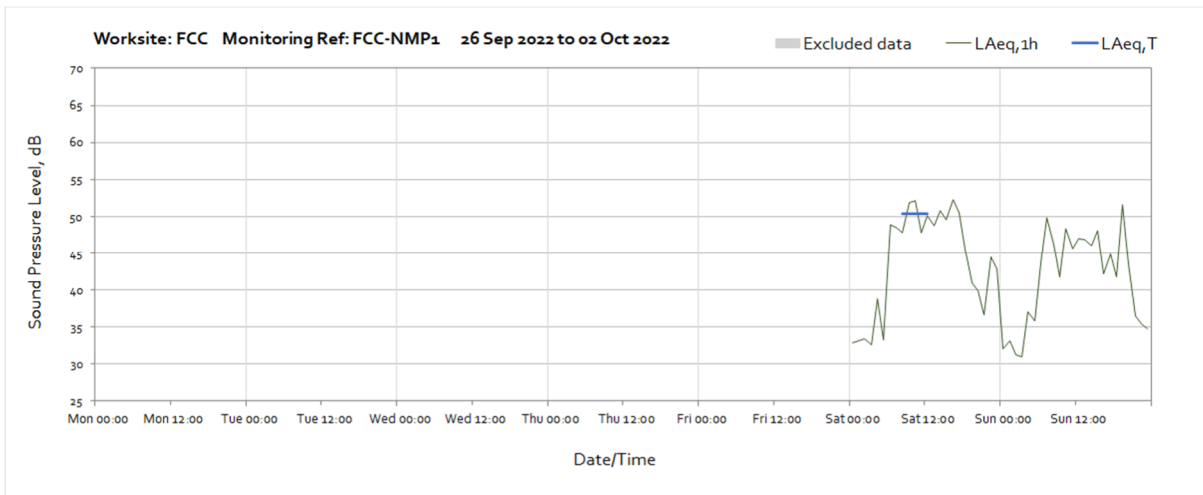
**Worksite: QAR – Monitoring Ref: QAR-NMP3**

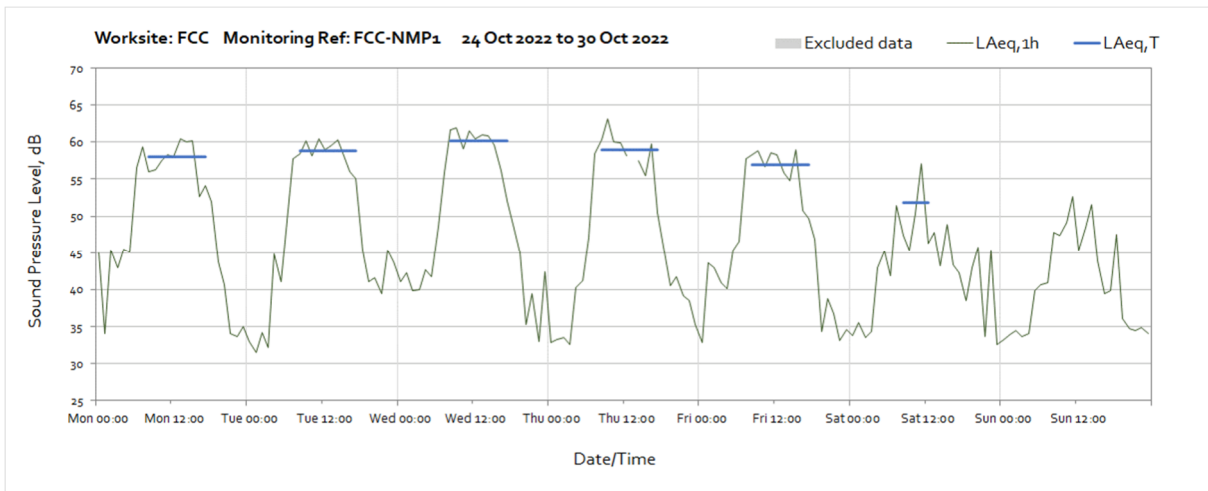
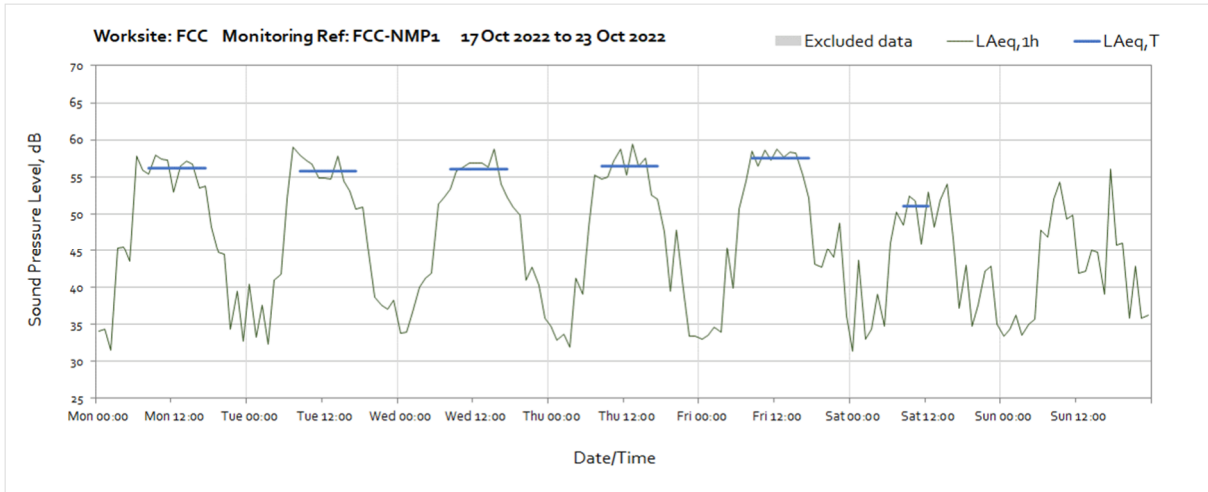


Note: Missing data from start of month until 12:00 on the 27<sup>th</sup> October was due to monitor installation.

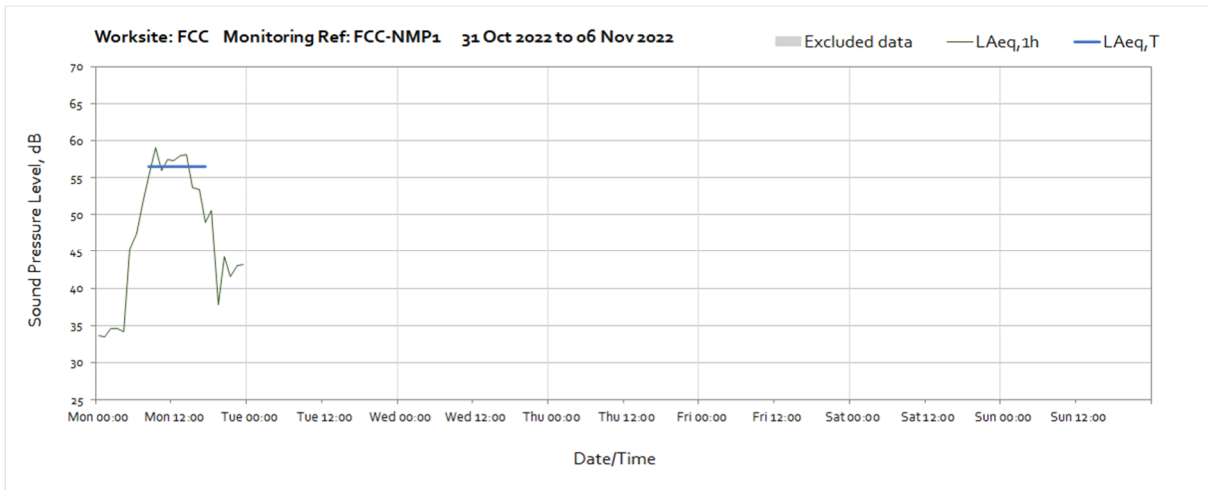


# Worksite: FCC – Monitoring Ref: FCC-NMP1

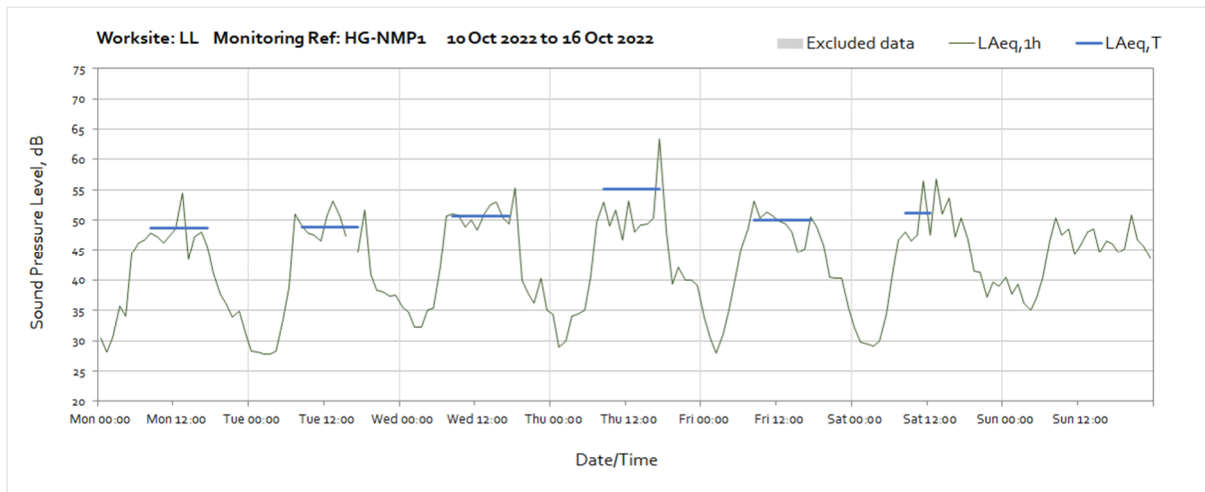
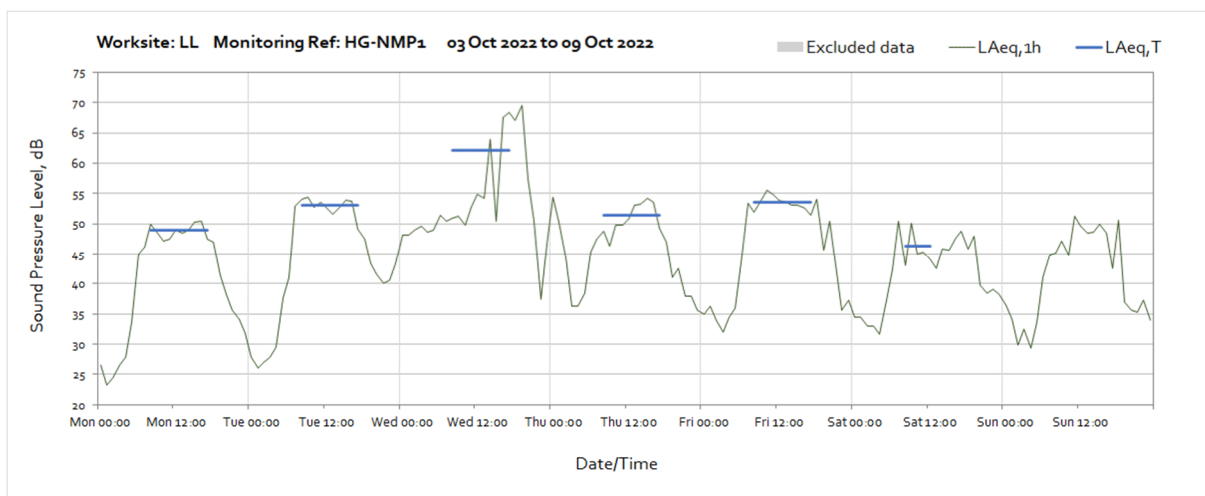
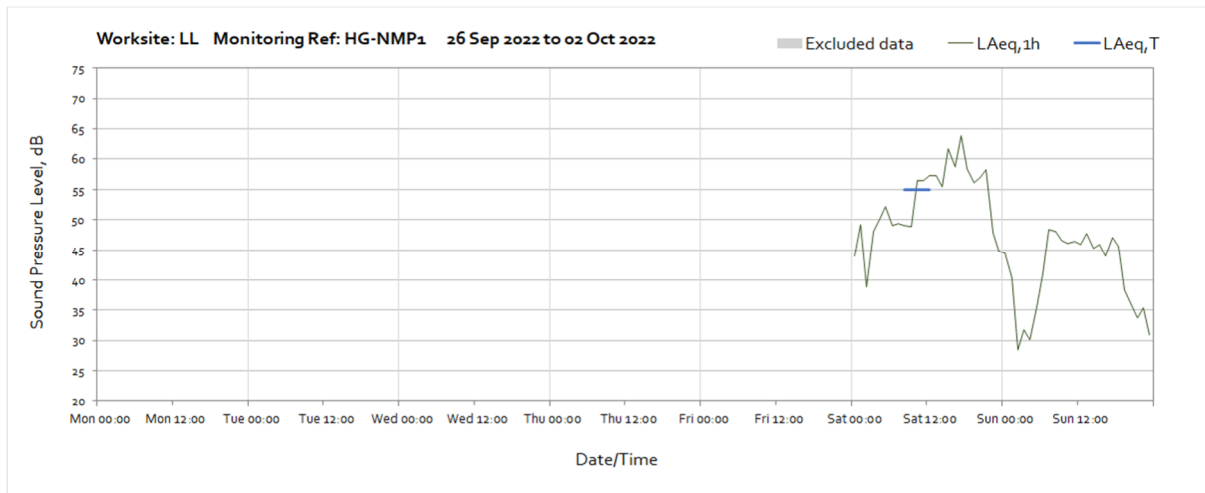




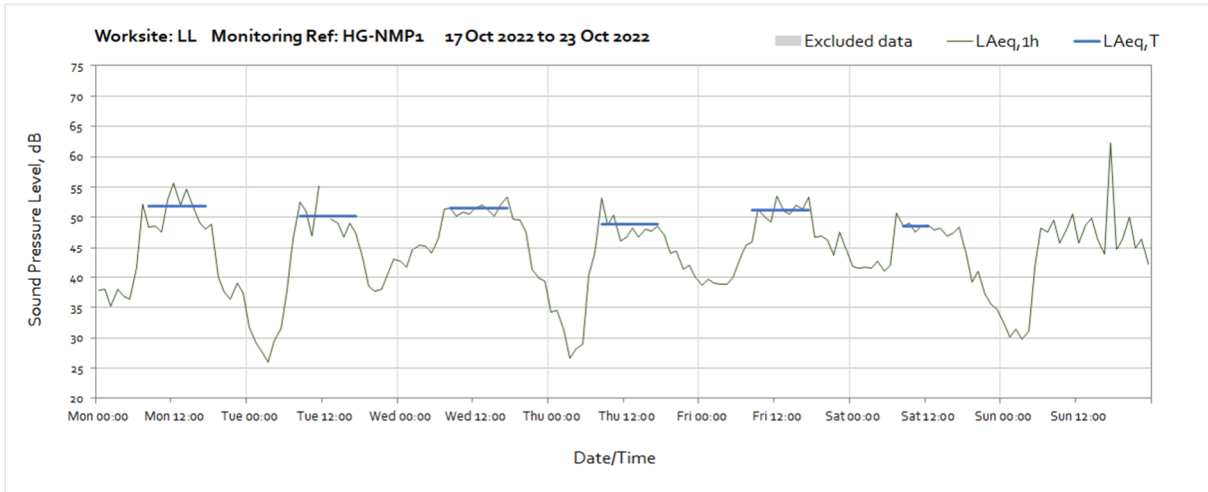
Note: Missing data between 13:00 and 14:00 on the 27<sup>th</sup> October was due to monitor maintenance.



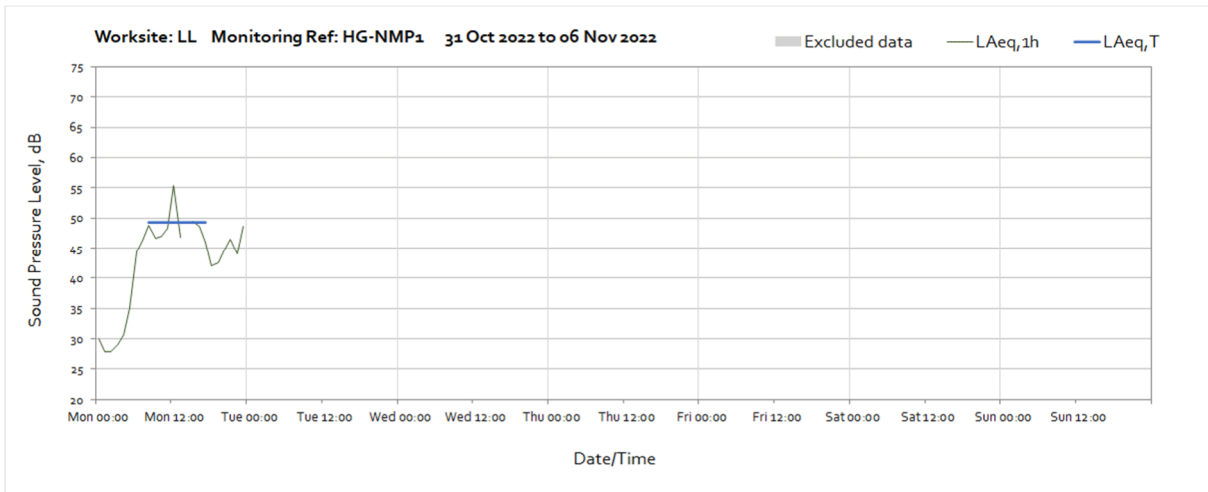
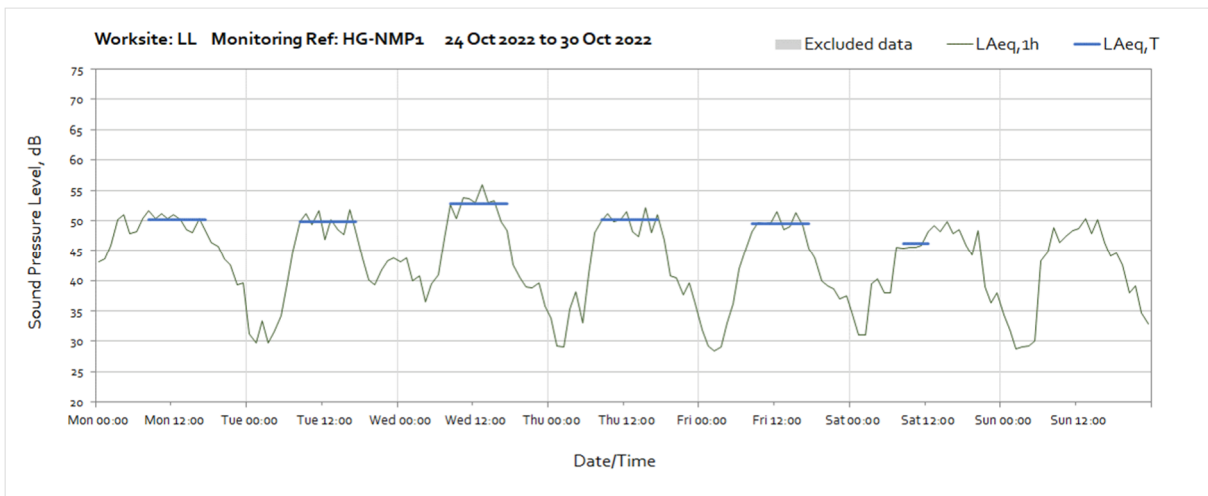
## Worksite: LL - Monitoring Ref: HG-NMP1



Note: Missing data between 16:00 and 17:00 on the 11<sup>th</sup> October was due to monitor maintenance.

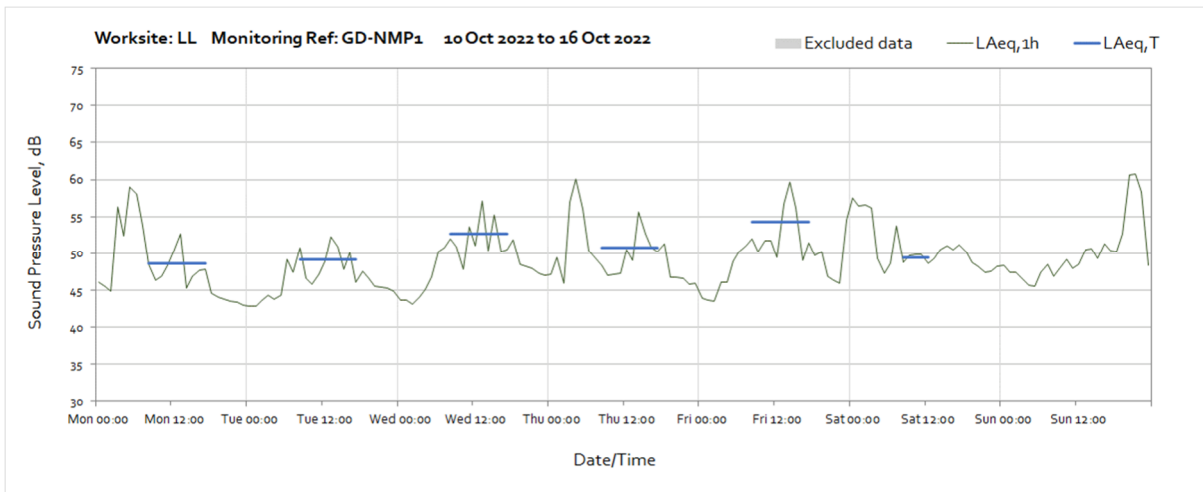
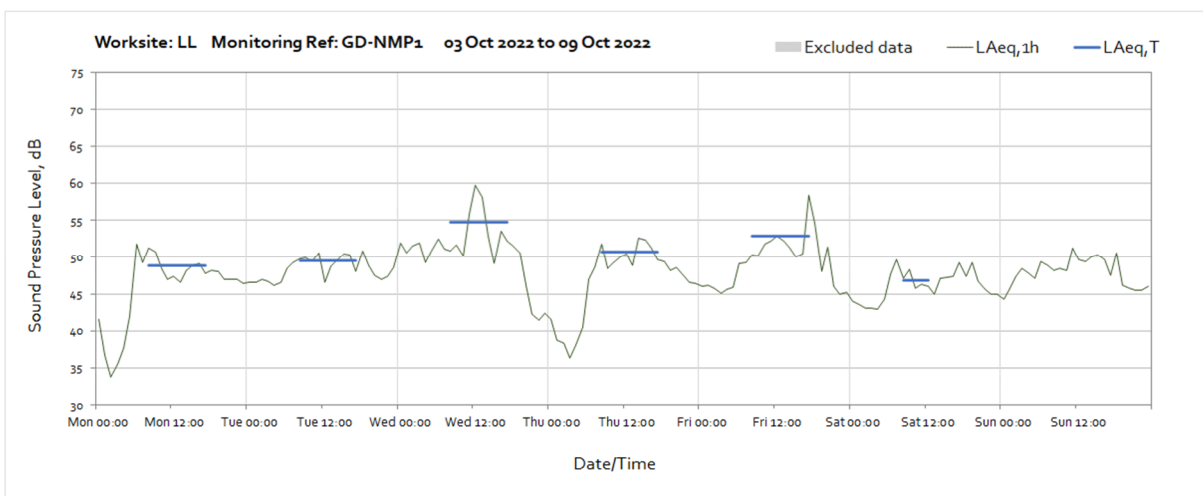
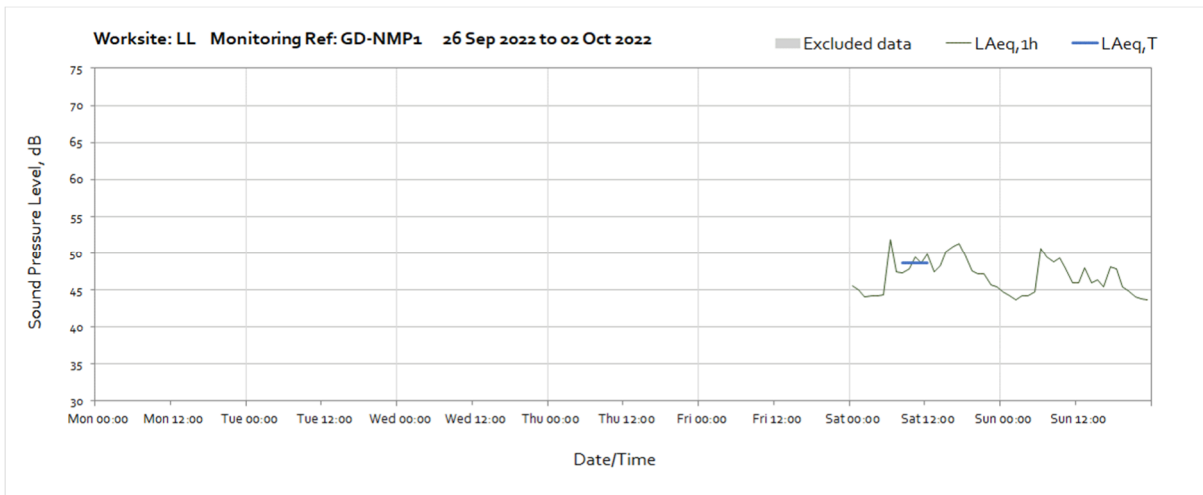


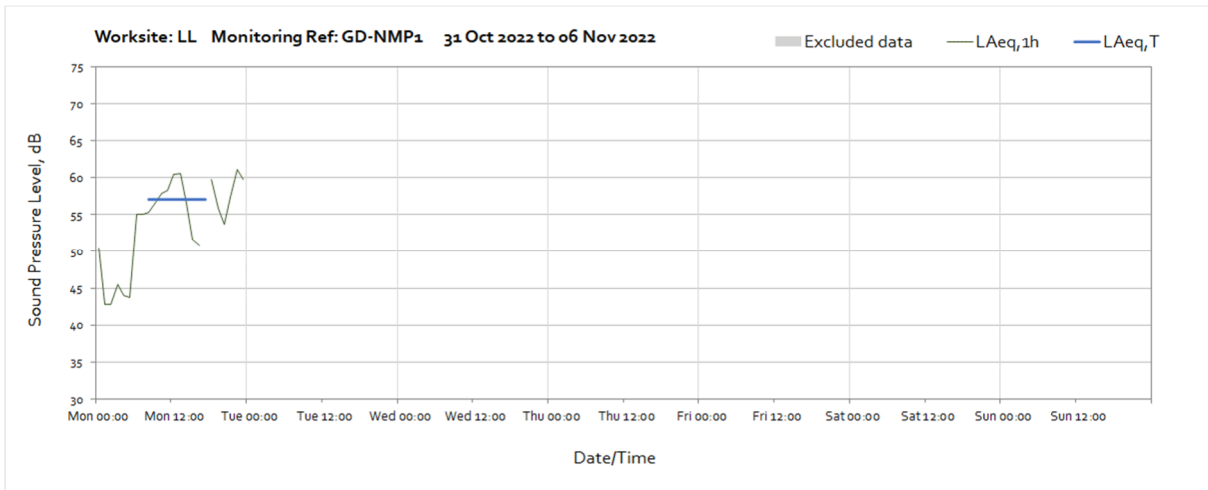
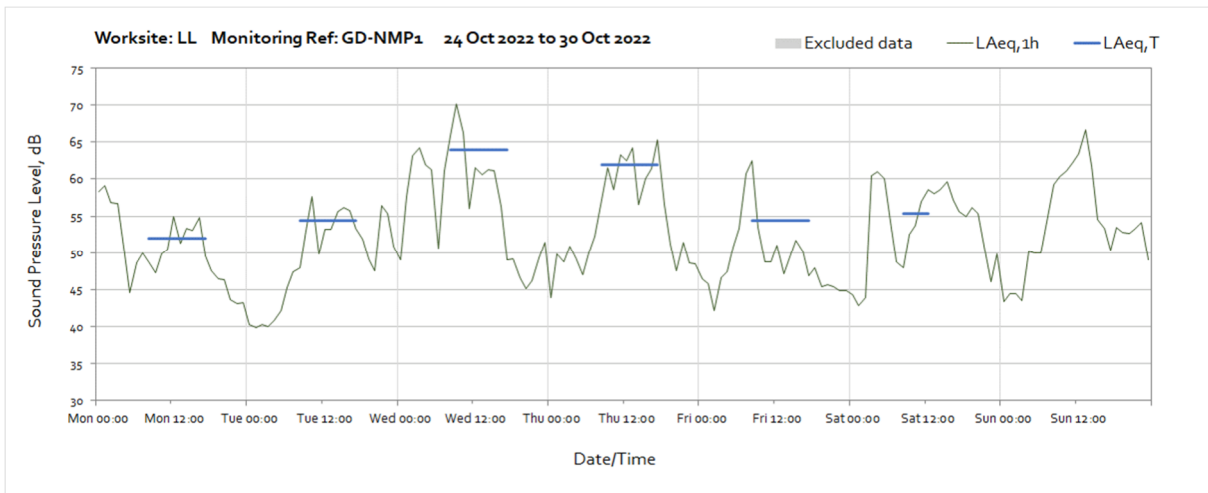
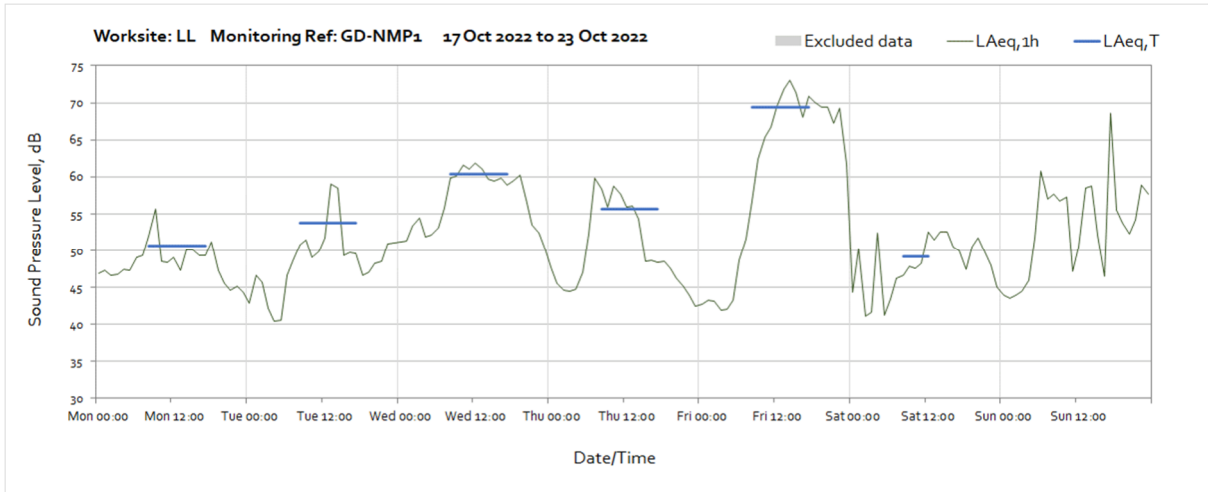
Note: Missing data between 12:00 and 13:00 on the 18<sup>th</sup> October was due to monitor maintenance.



Note: Missing data between 14:00 and 15:00 on the 31<sup>st</sup> October was due to monitor maintenance.

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

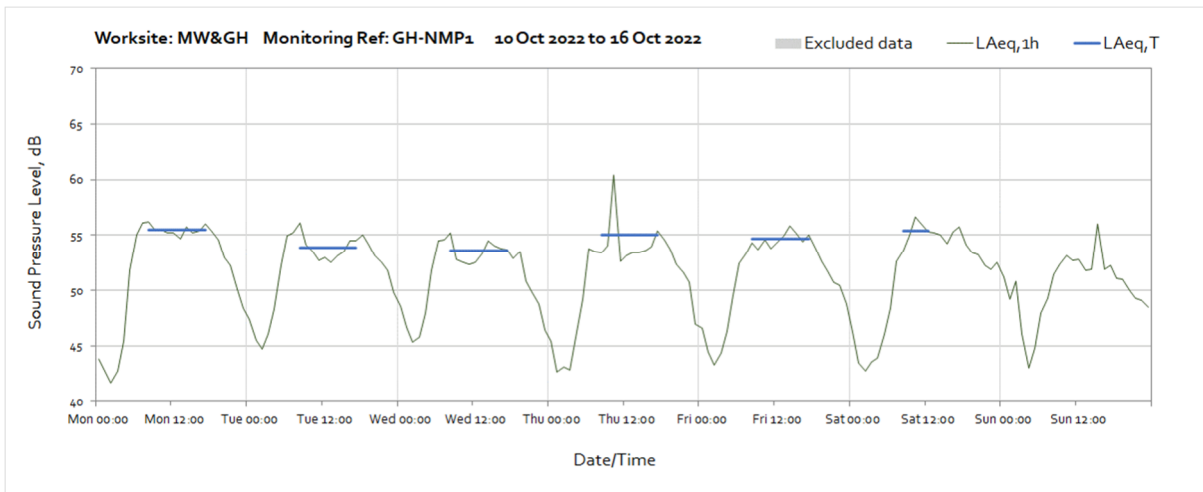
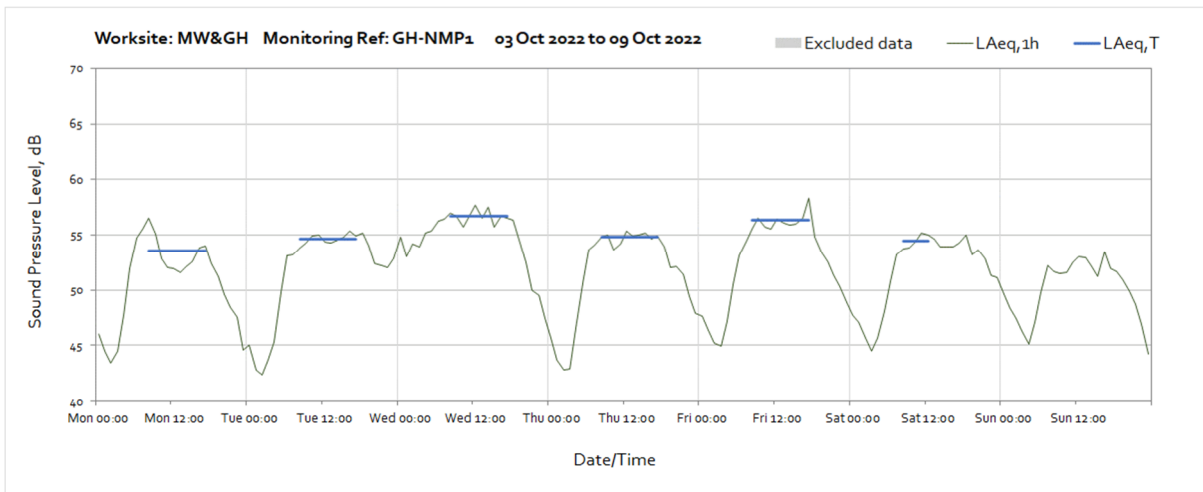
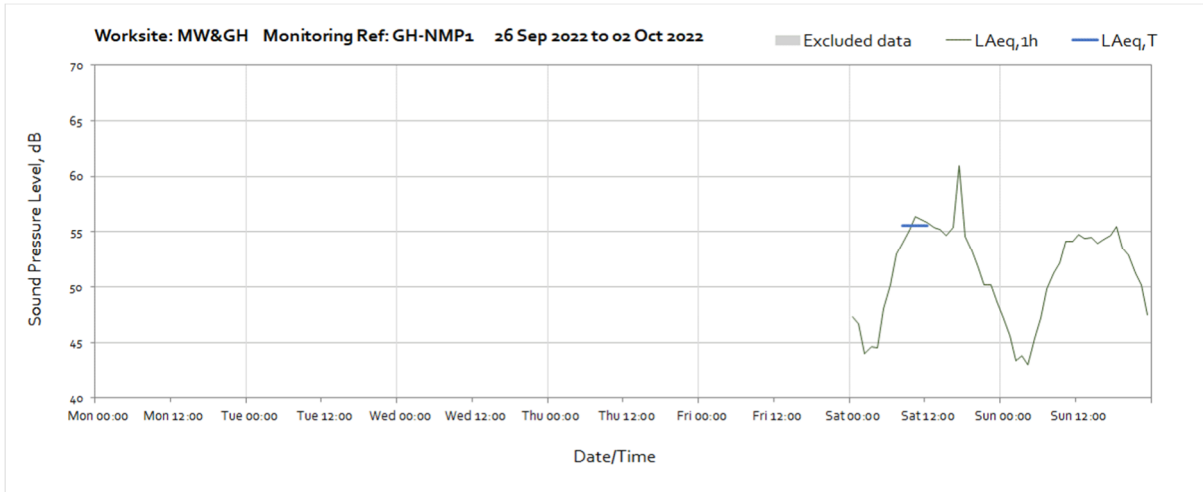


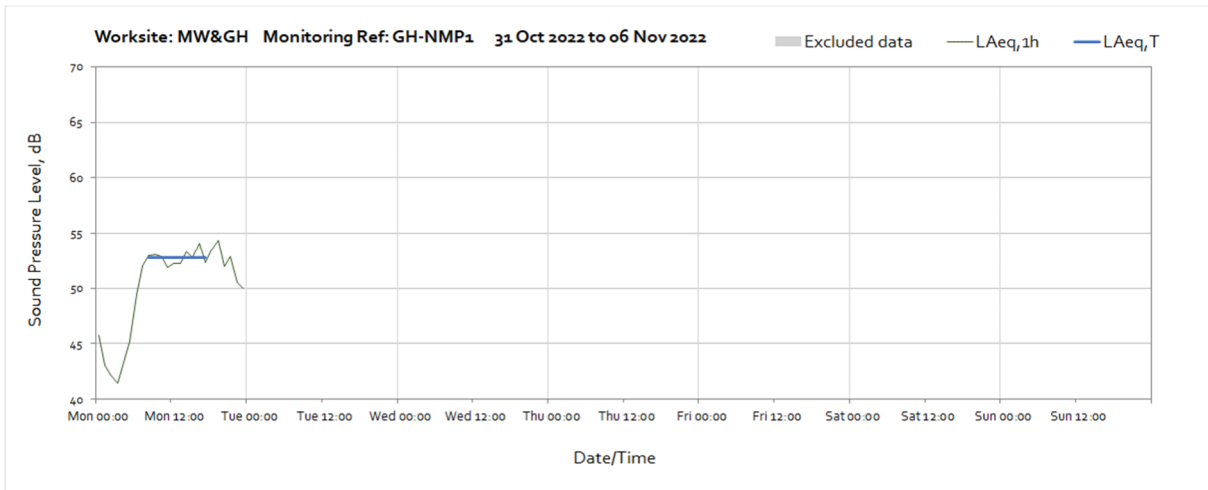
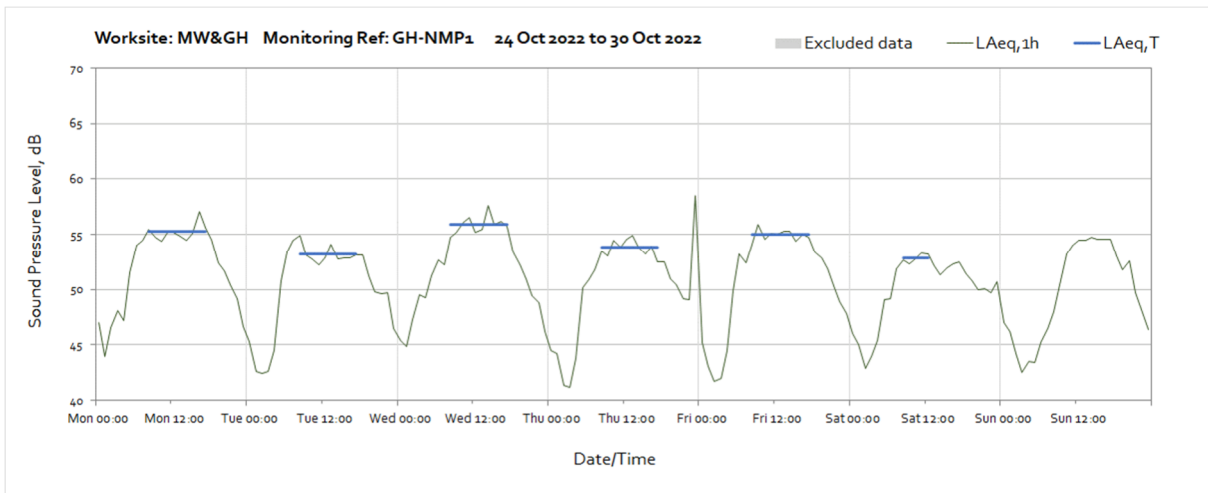
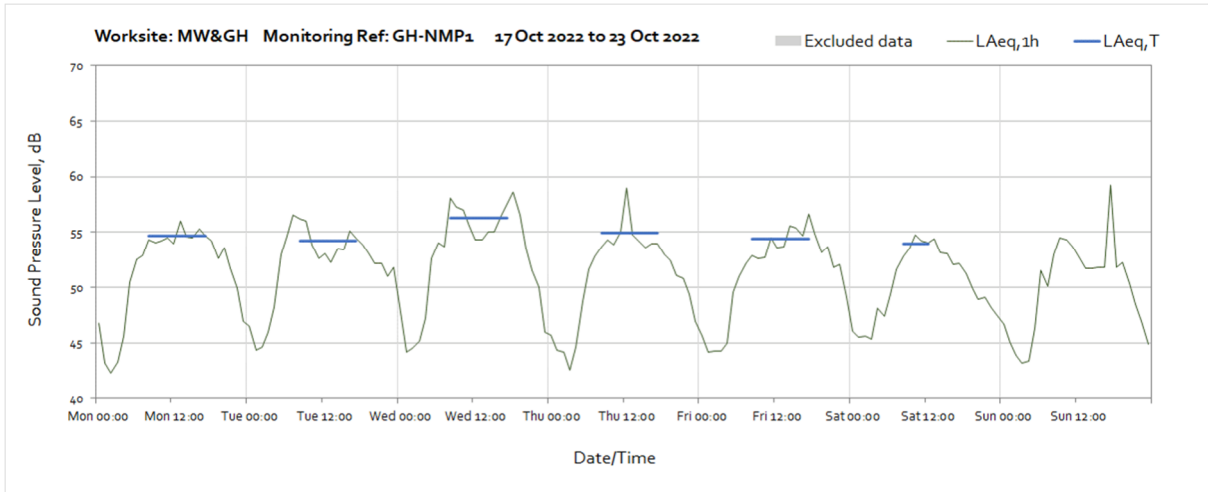


Note: Missing data between 17:00 and 18:00 on the 31<sup>st</sup> was due to monitor maintenance.

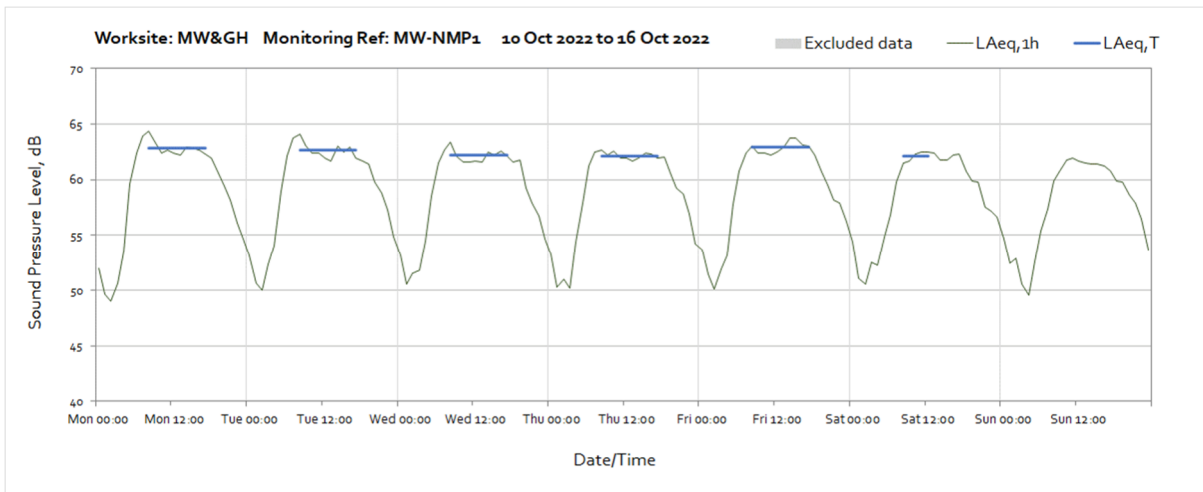
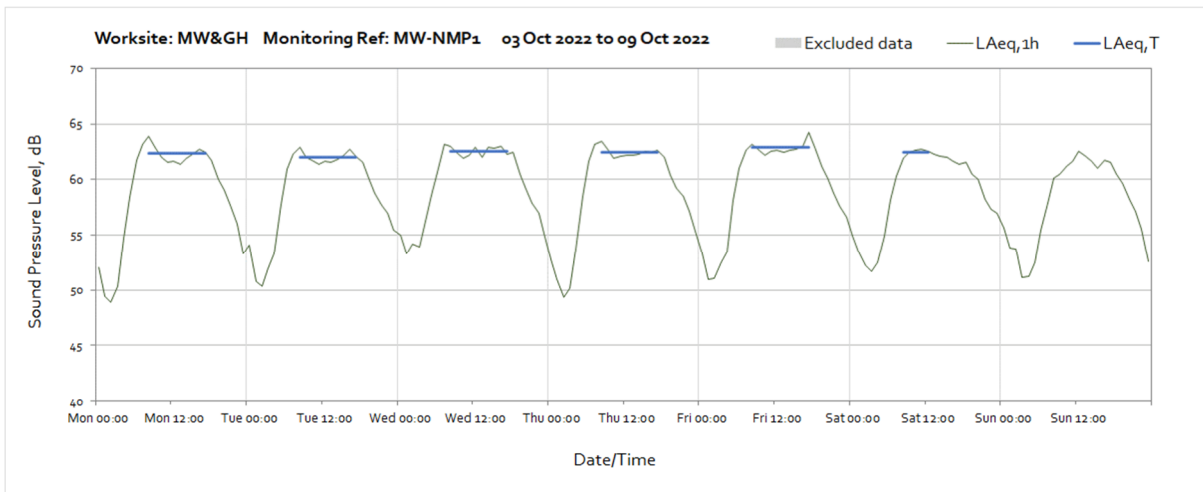
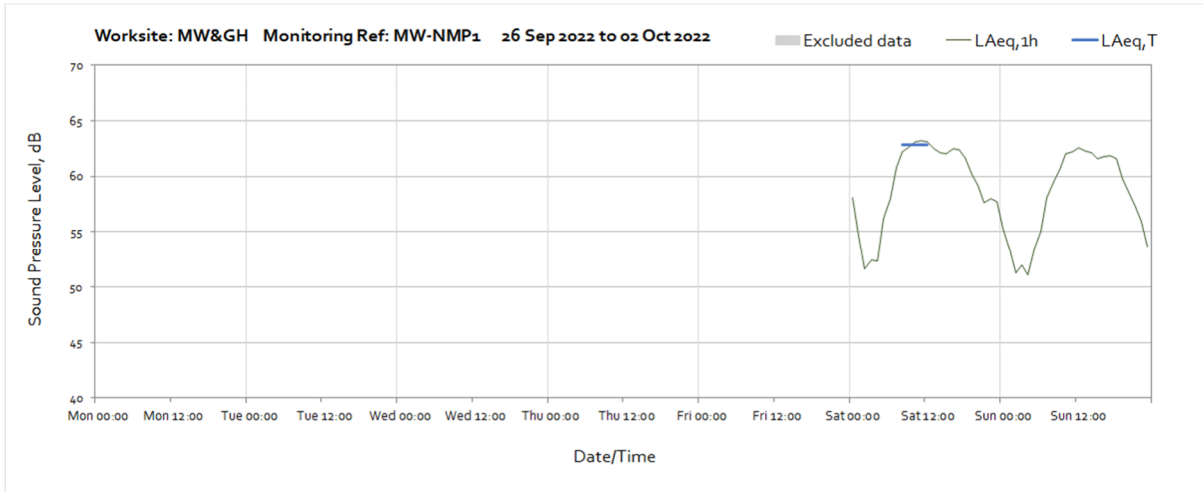


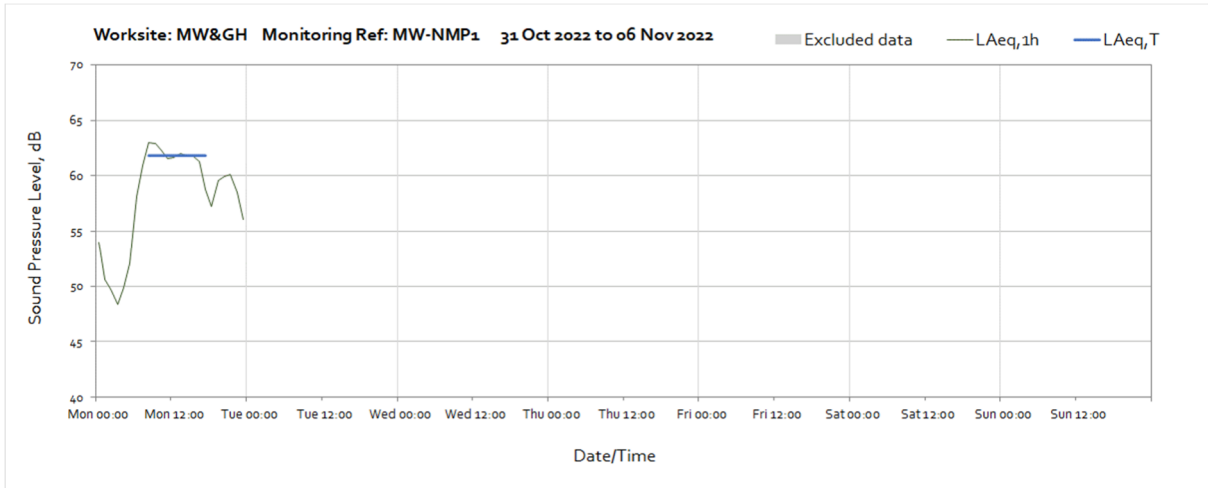
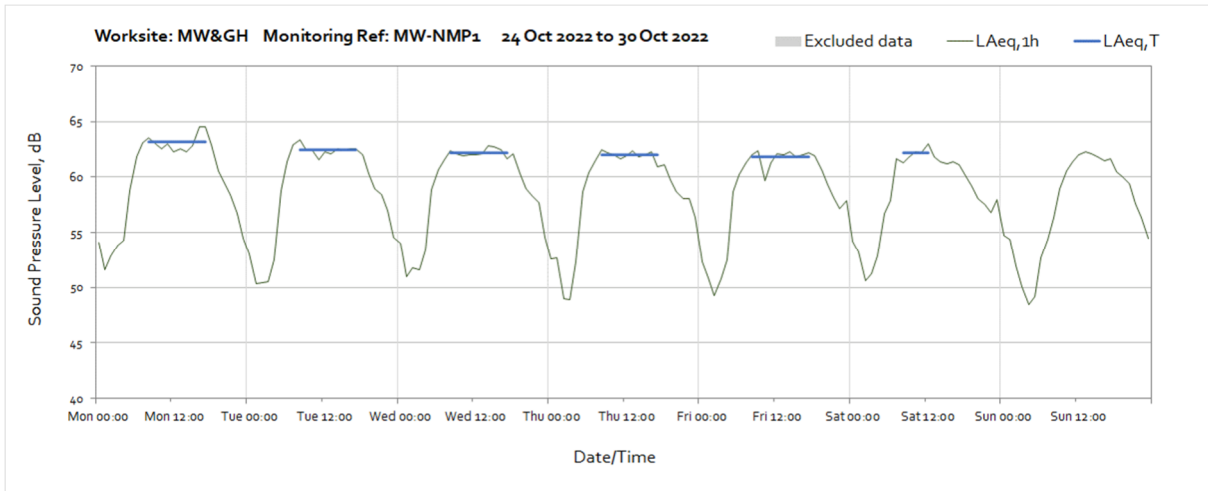
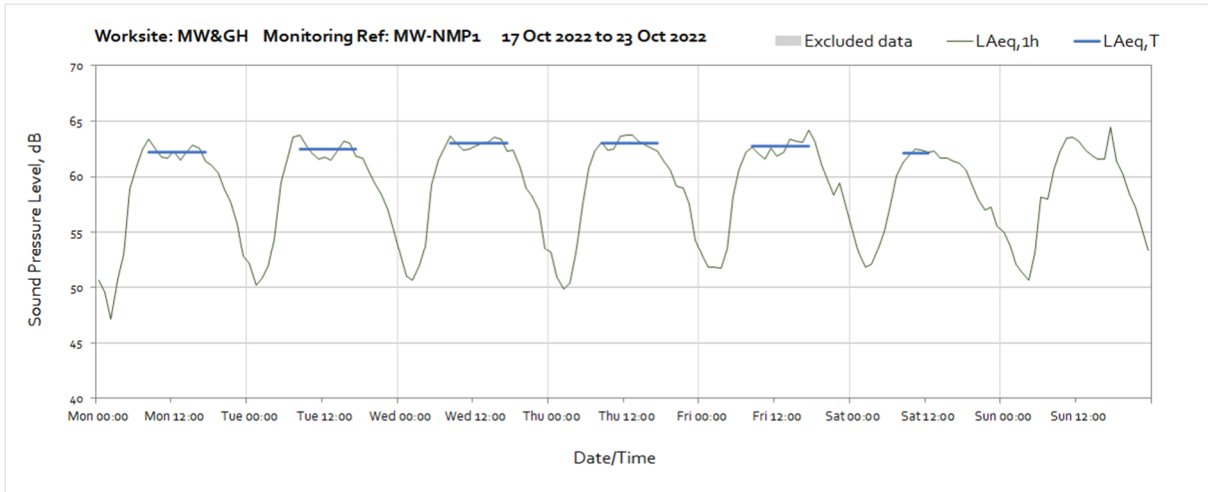
## Worksite: MW&GH – Monitoring Ref: GH-NMP1



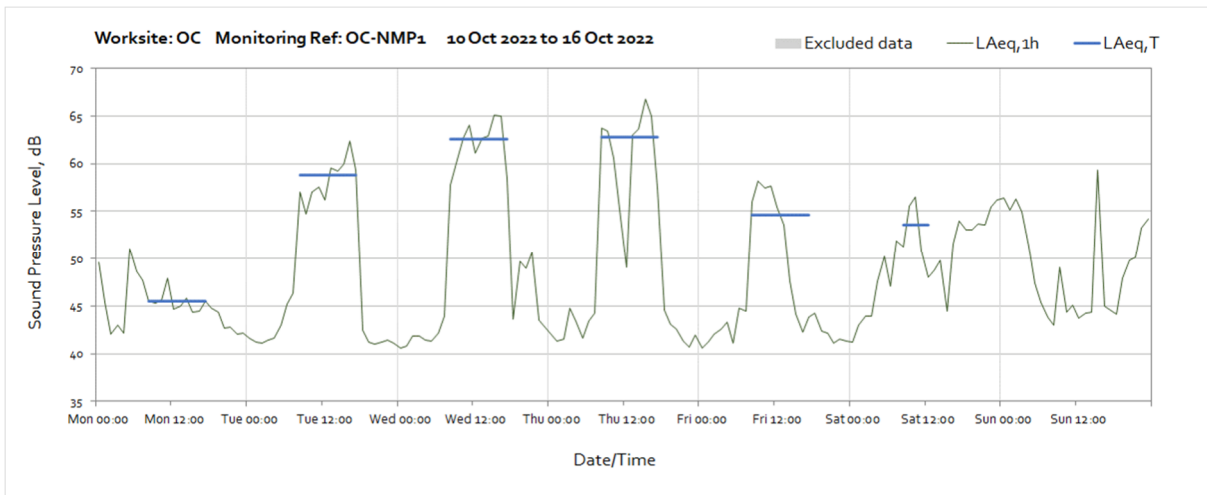
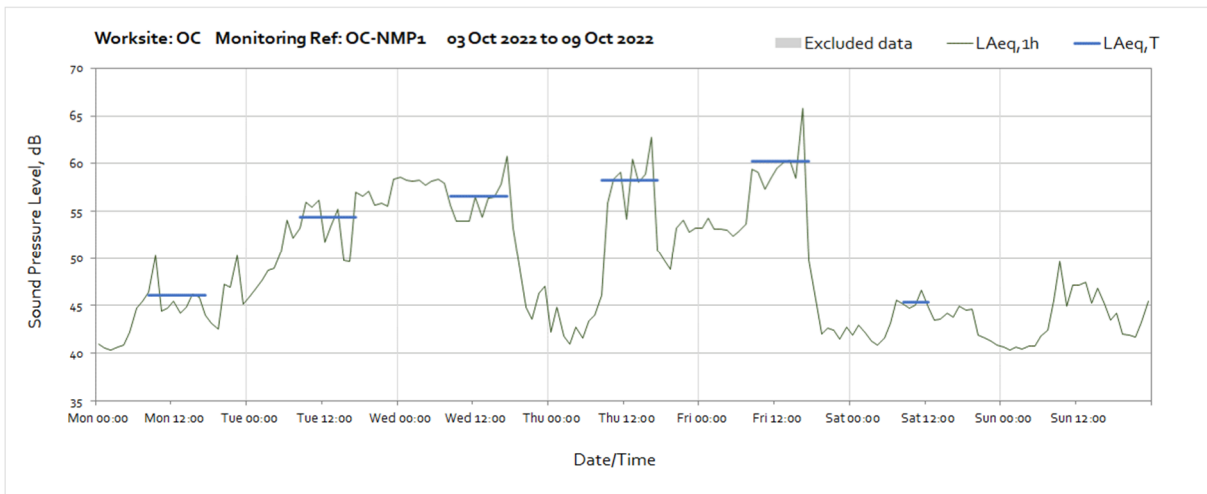
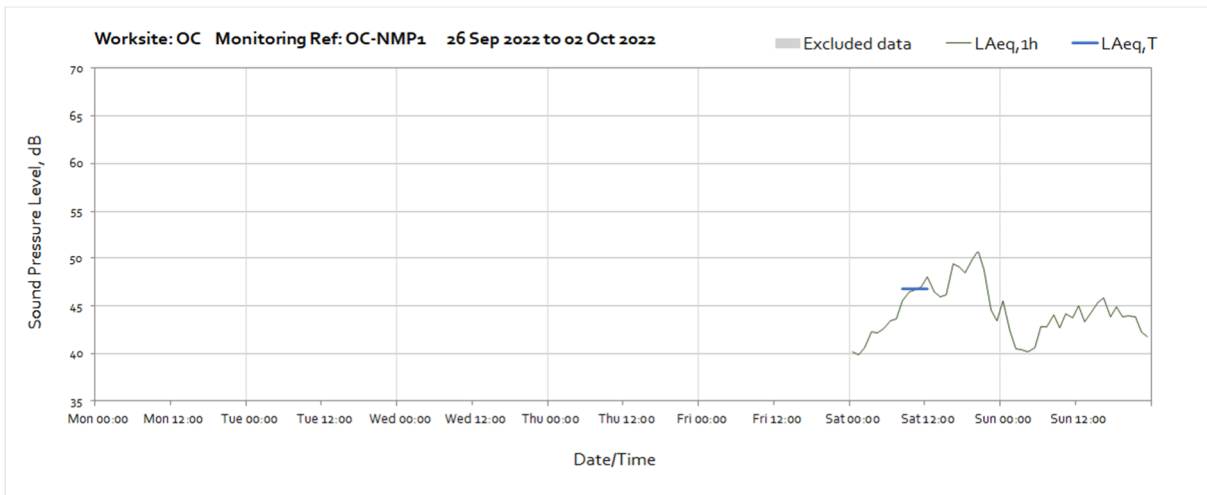


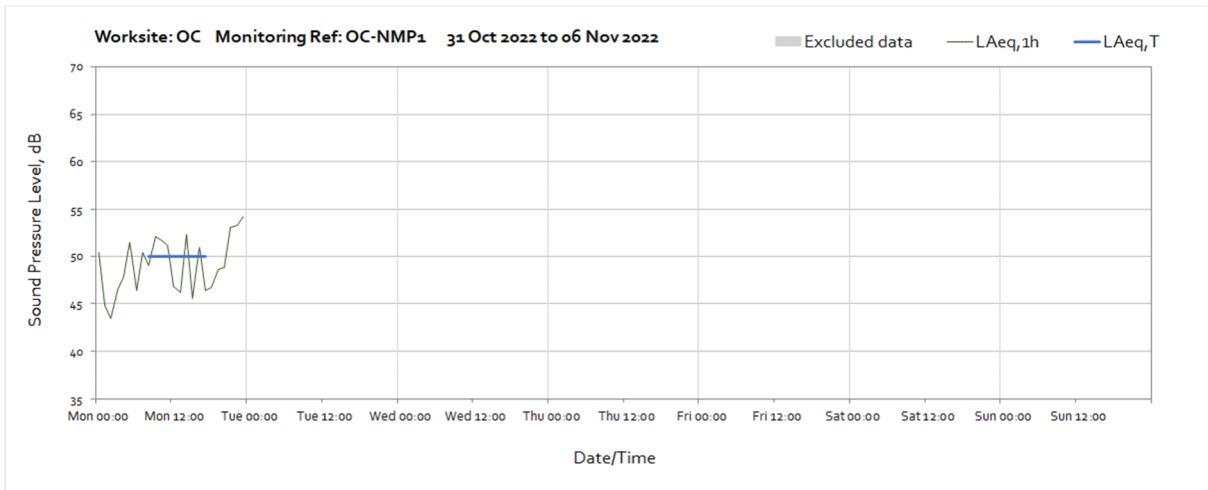
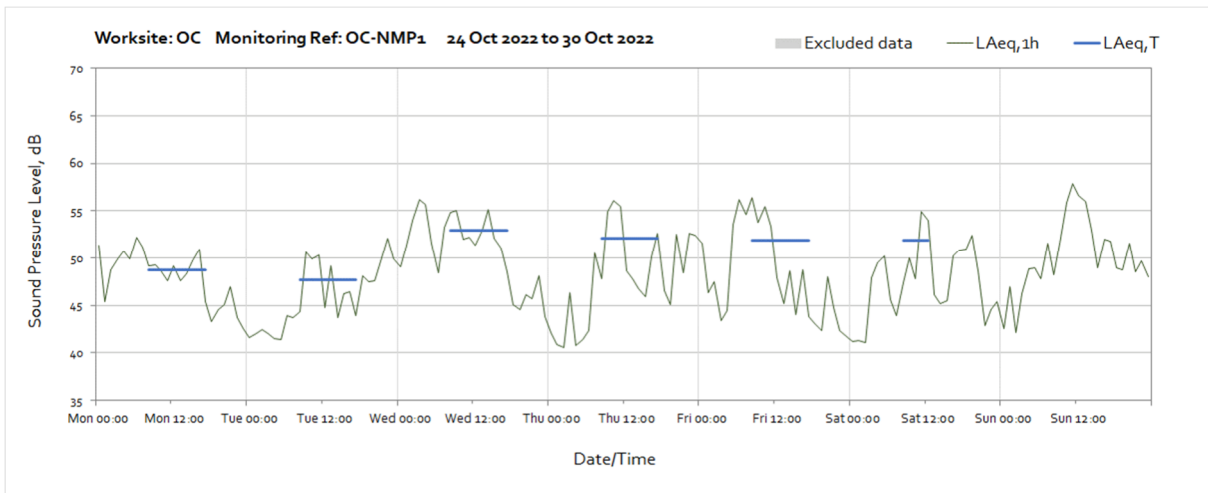
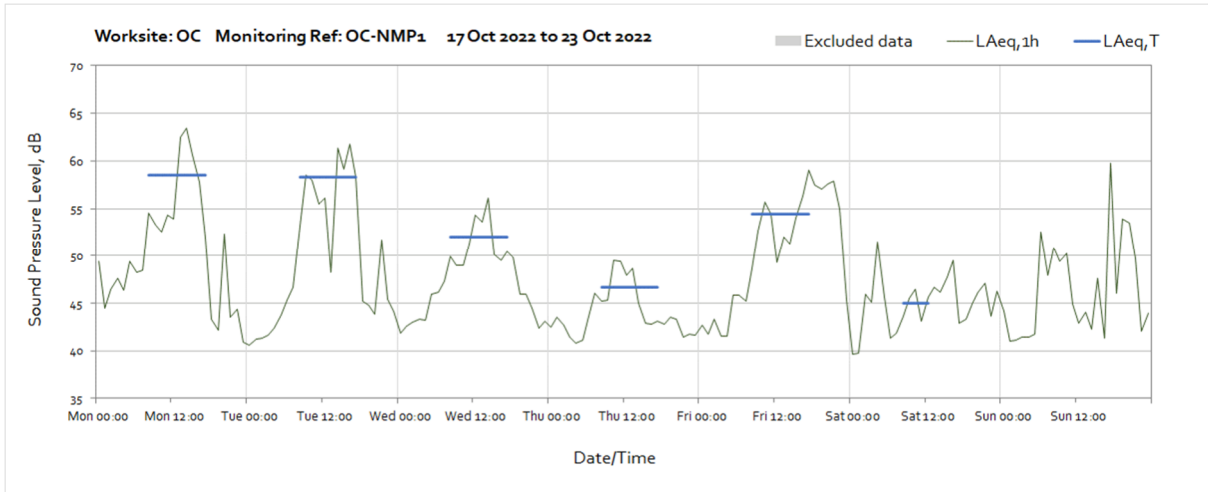
# Worksite: MW&GH – Monitoring Ref: MW-NMP1



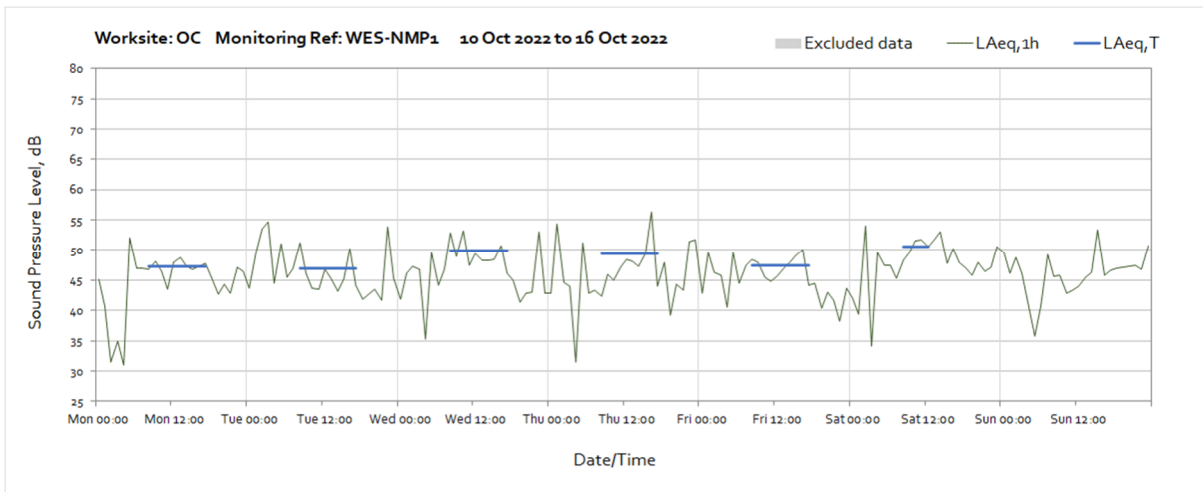
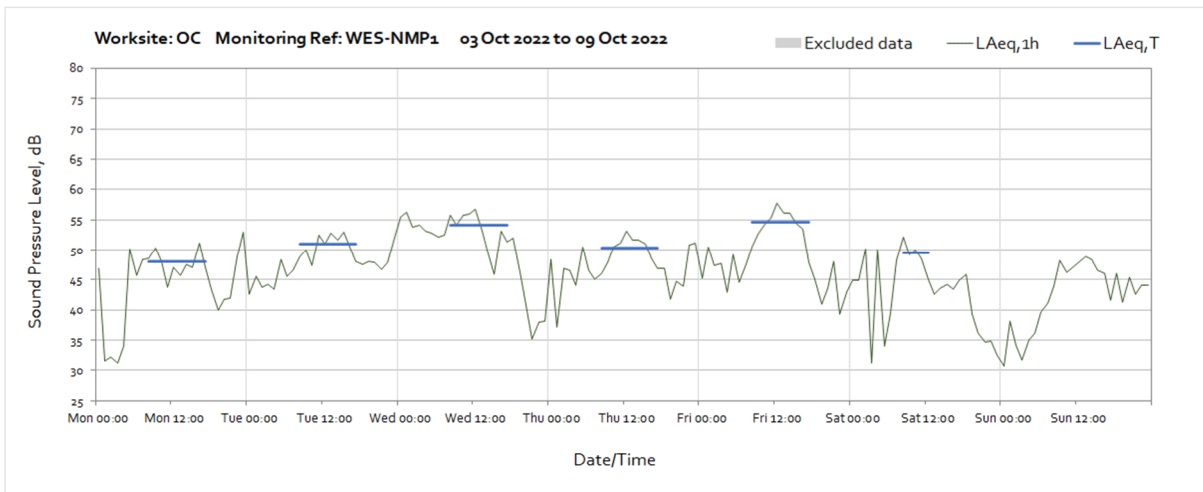
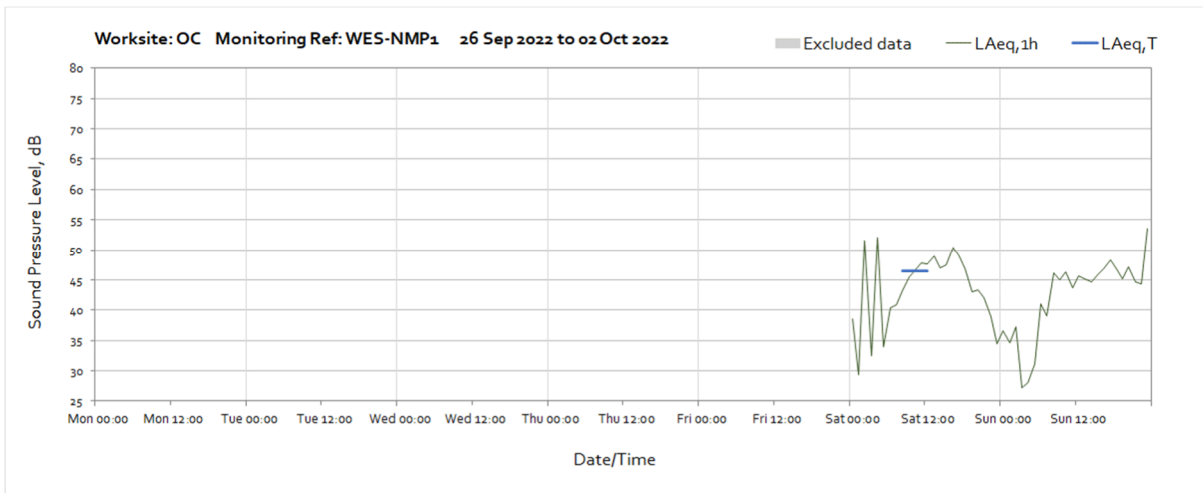


## Worksite: OC – Monitoring Ref: OC-NMP1

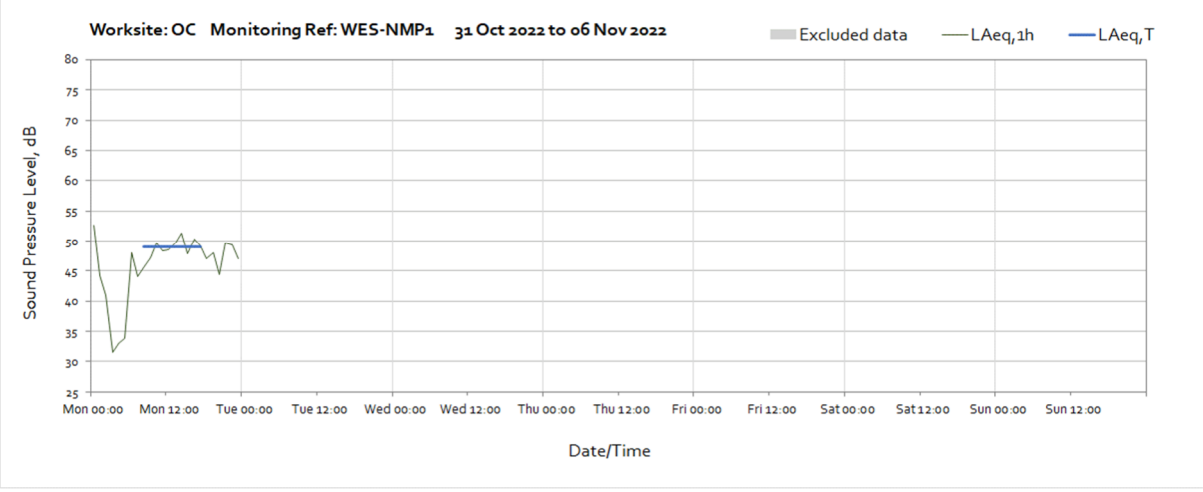
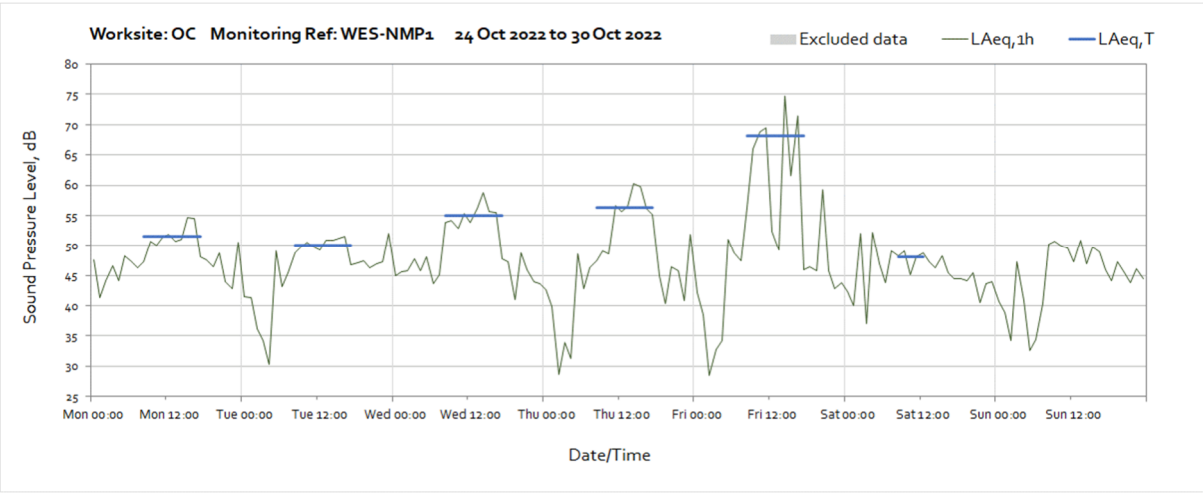
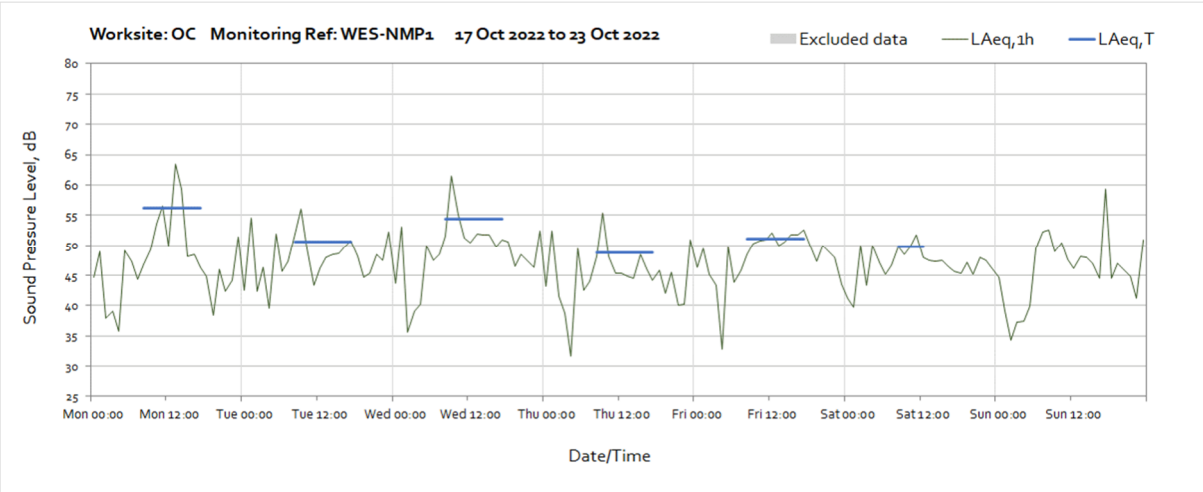




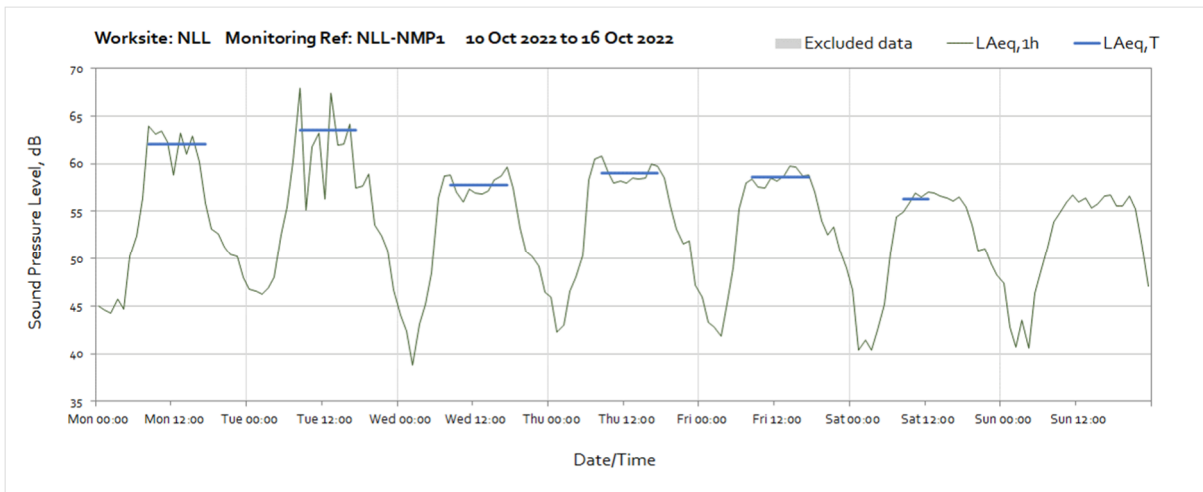
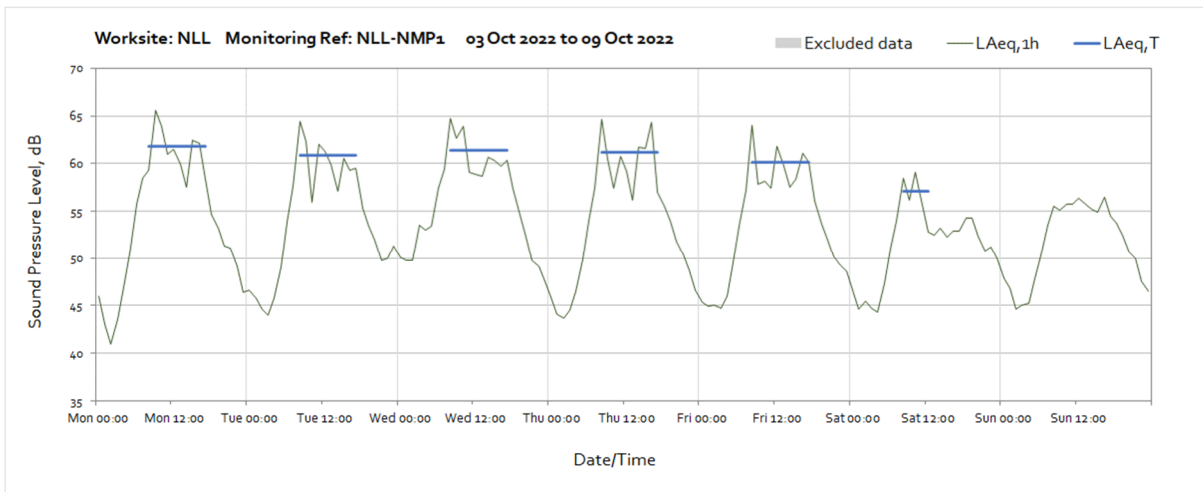
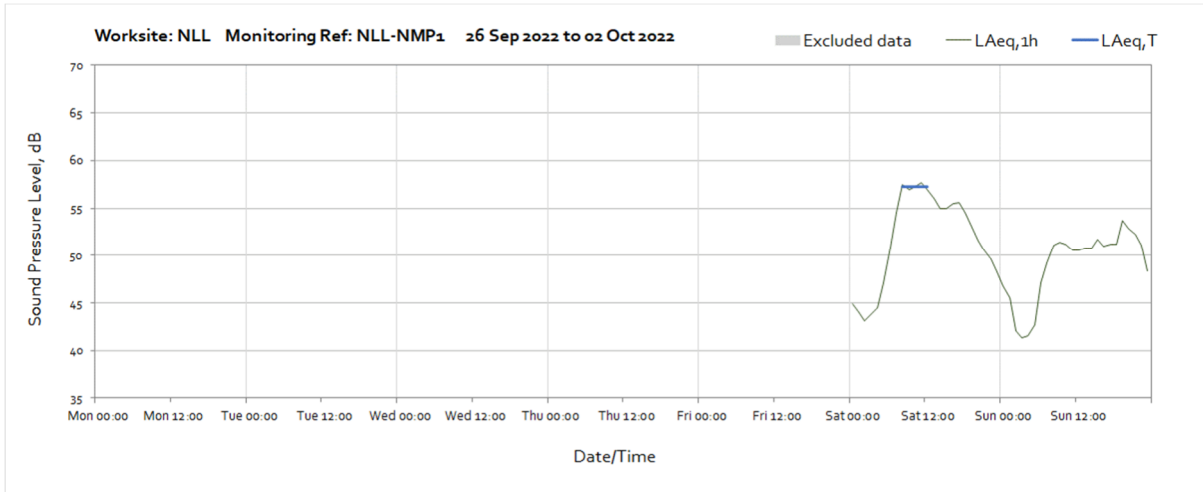
## Worksite: OC – Monitoring Ref: WES-NMP1

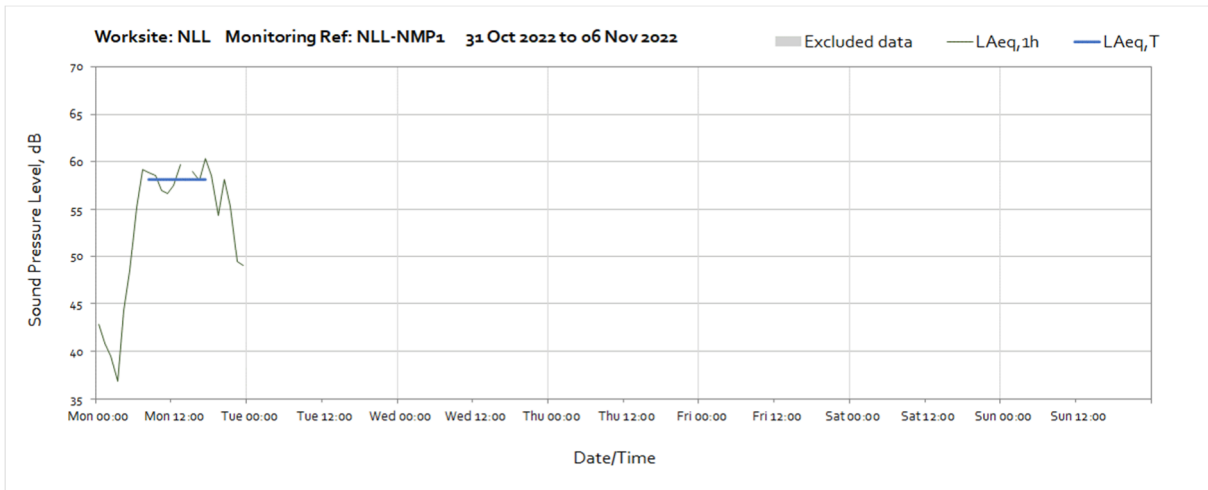
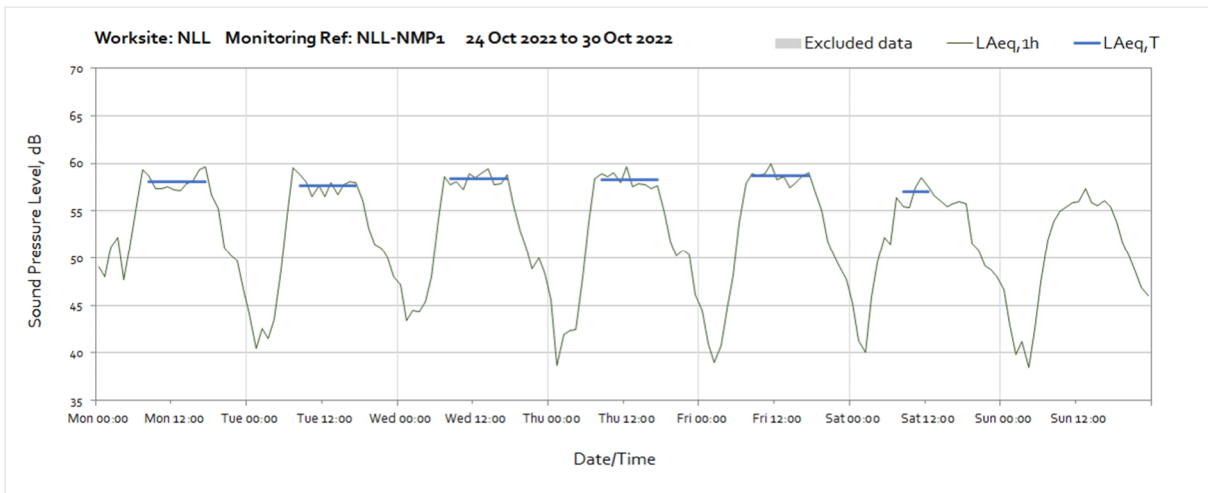
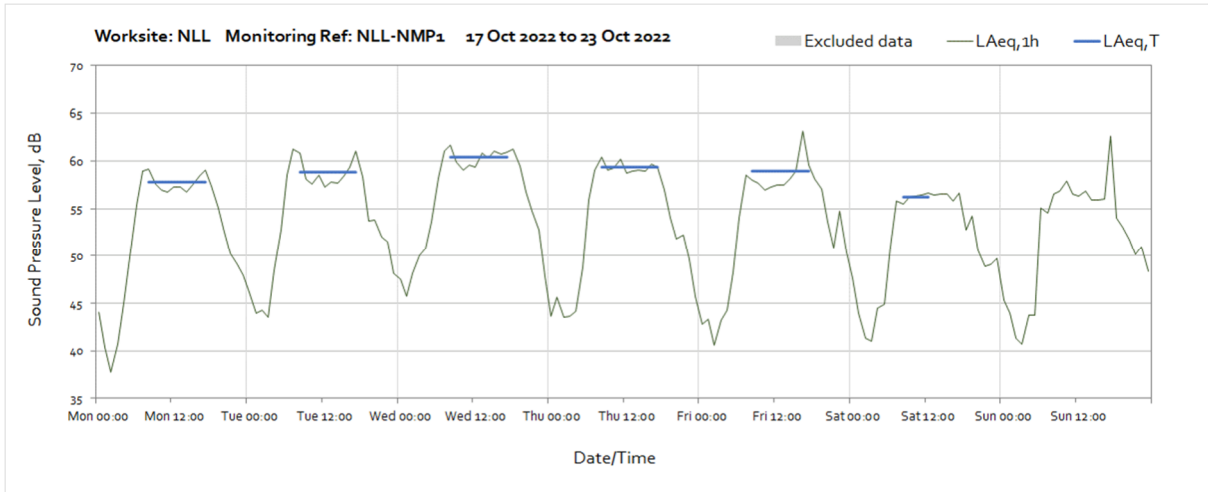






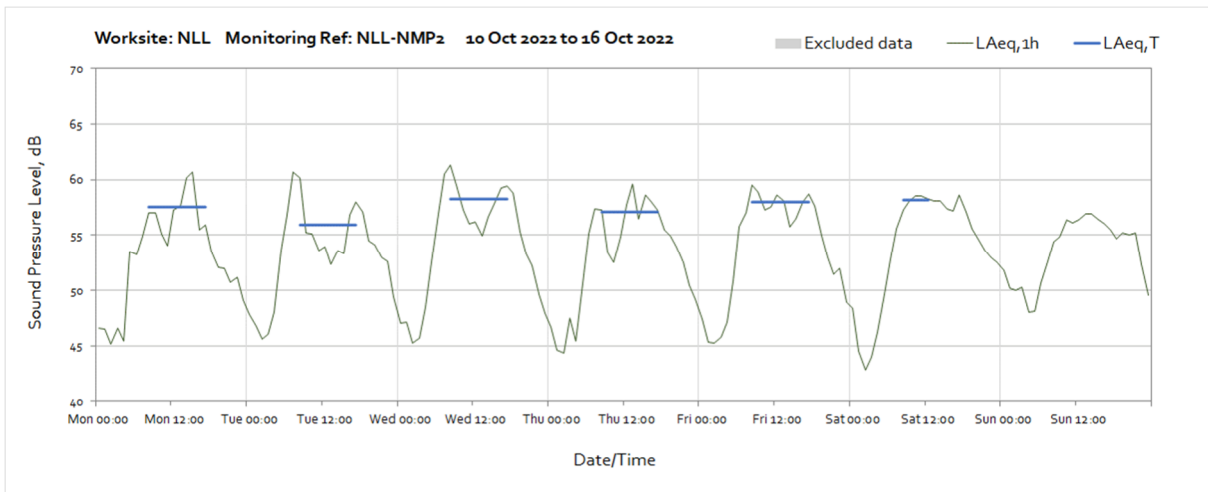
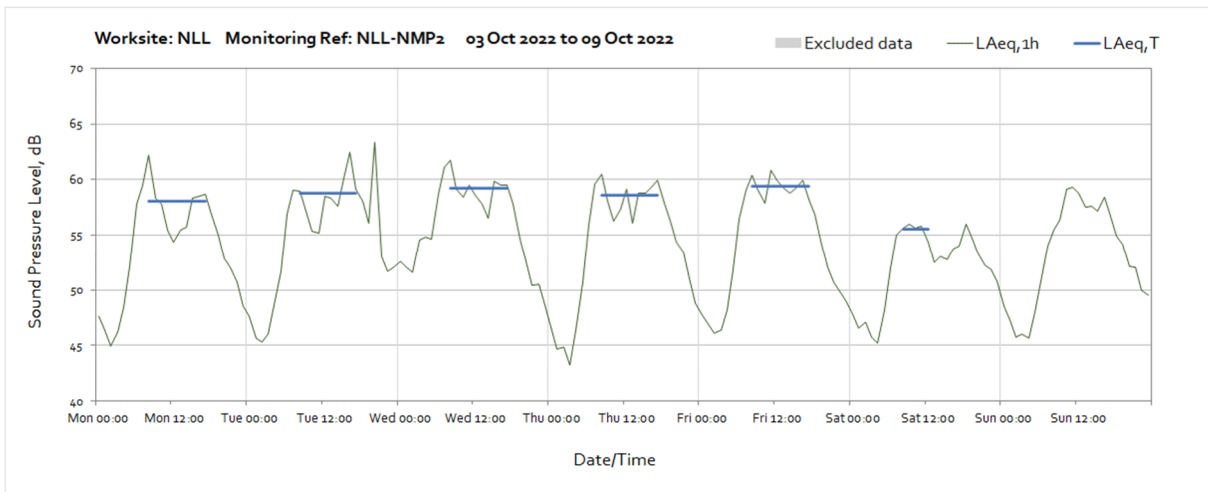
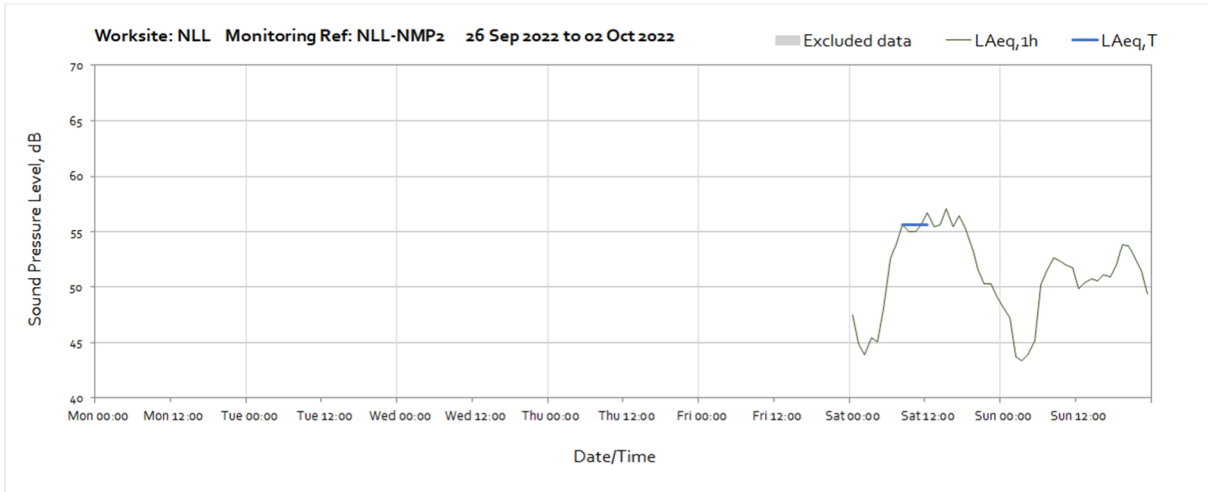
## Worksite: NLL – Monitoring Ref: NLL-NMP1

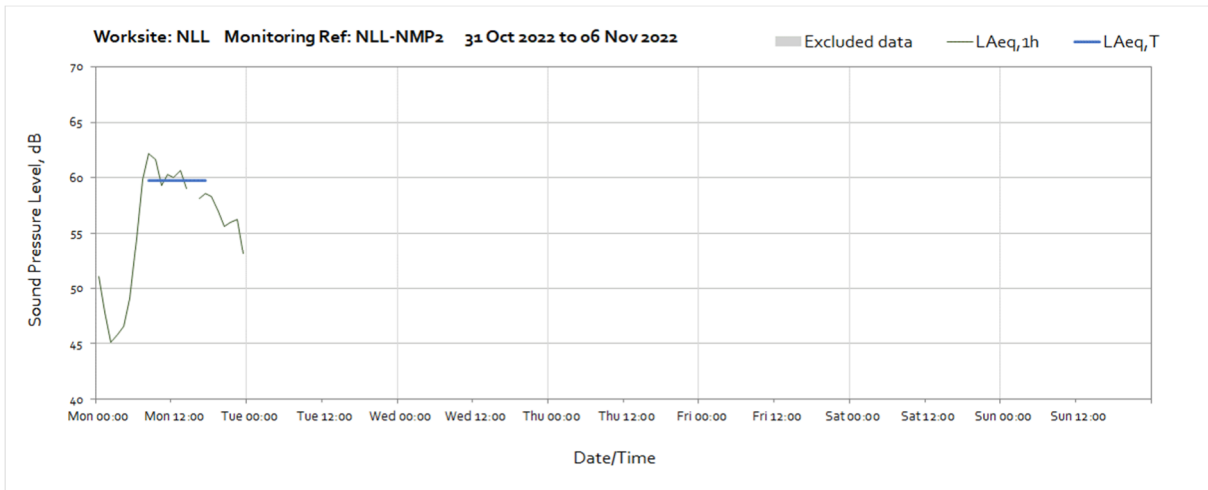
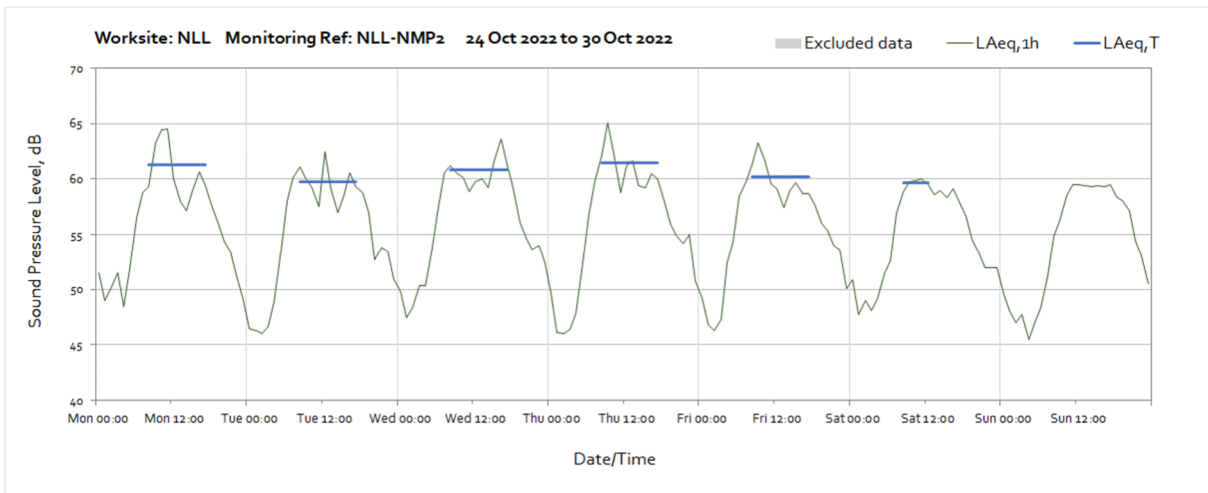
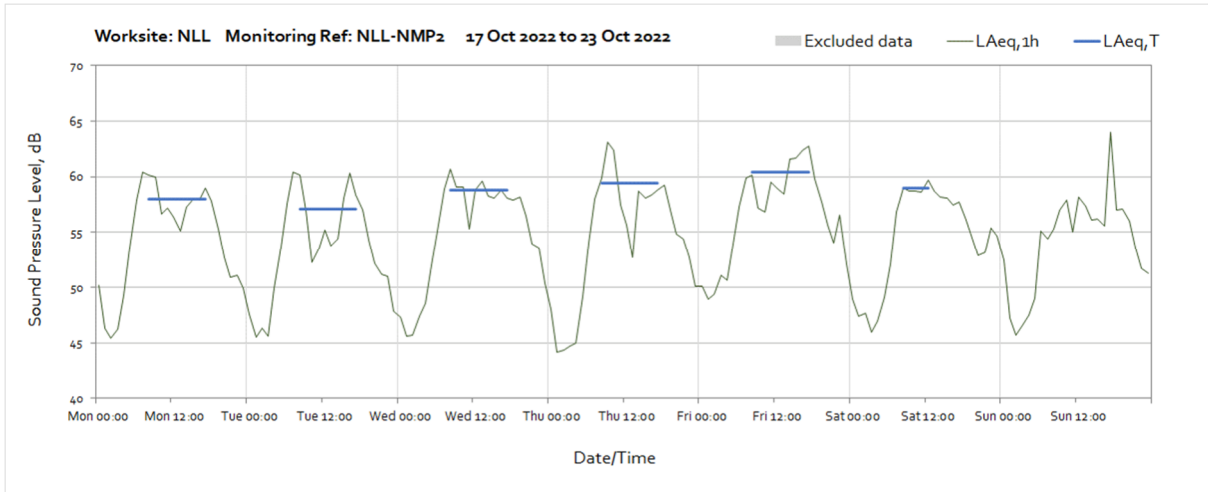




Note: Missing data between 14:00 and 15:00 on the 31<sup>st</sup> October was due to monitor maintenance.

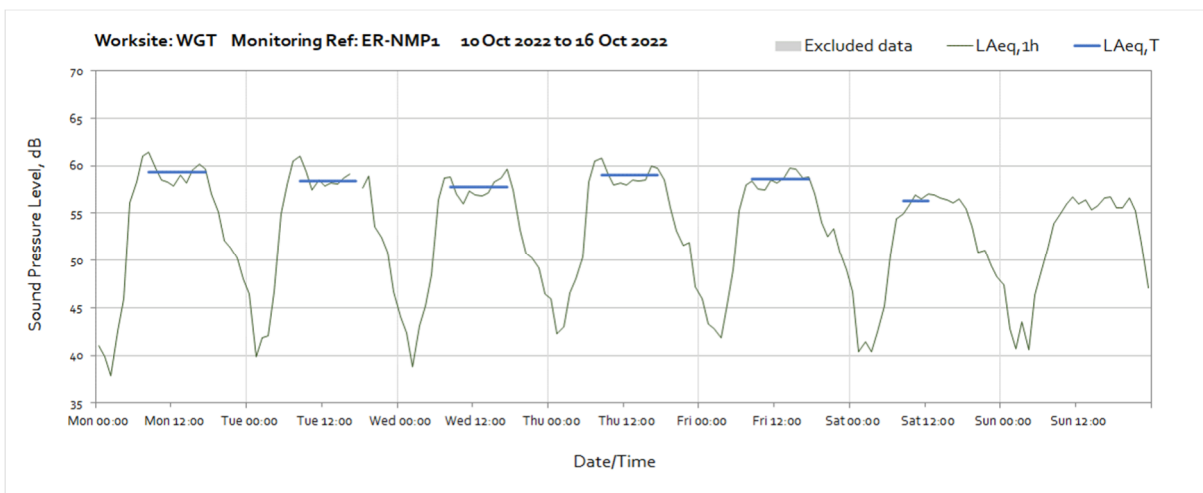
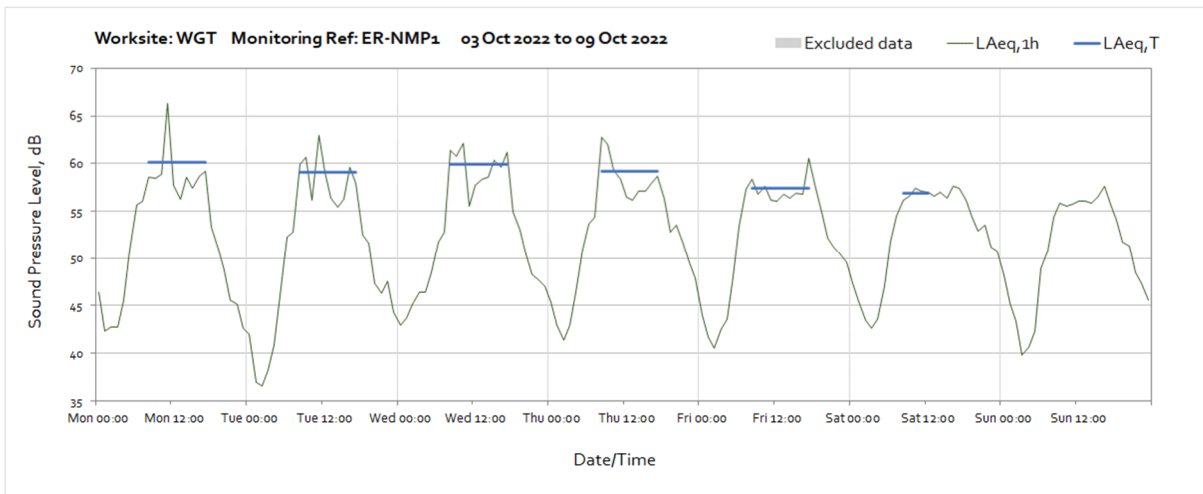
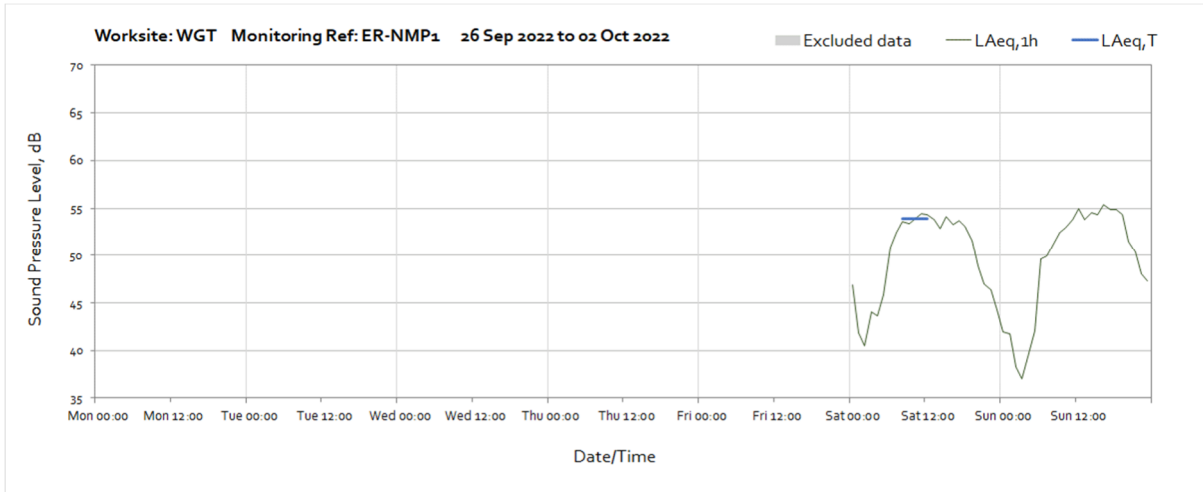
# Worksite: NLL – Monitoring Ref: NLL-NMP2



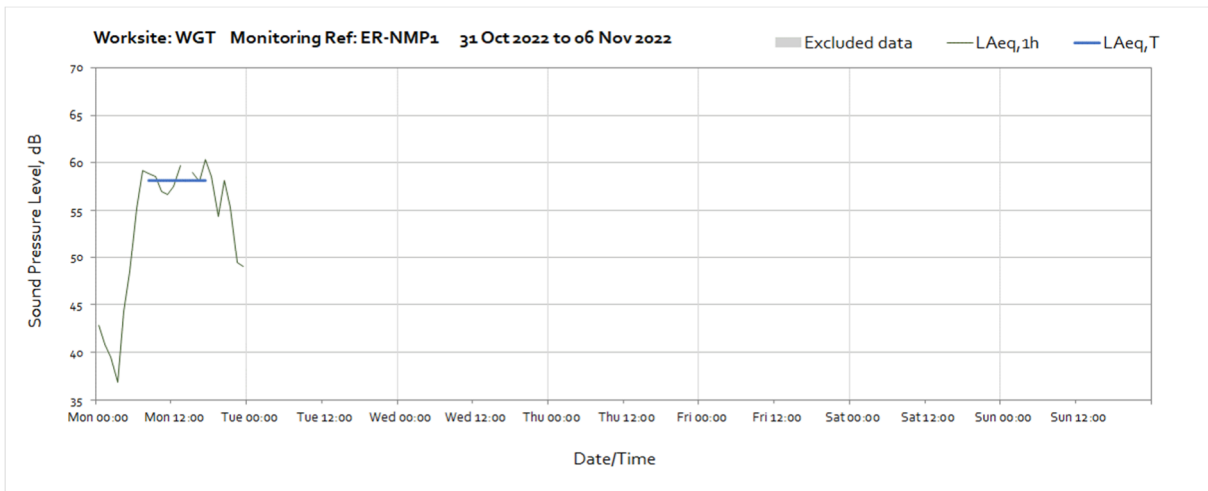
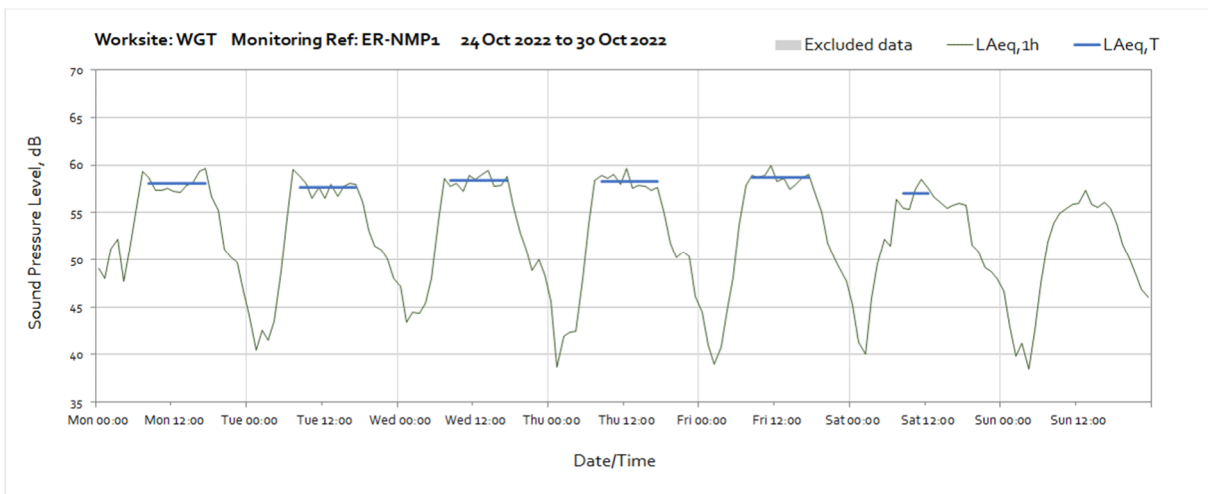
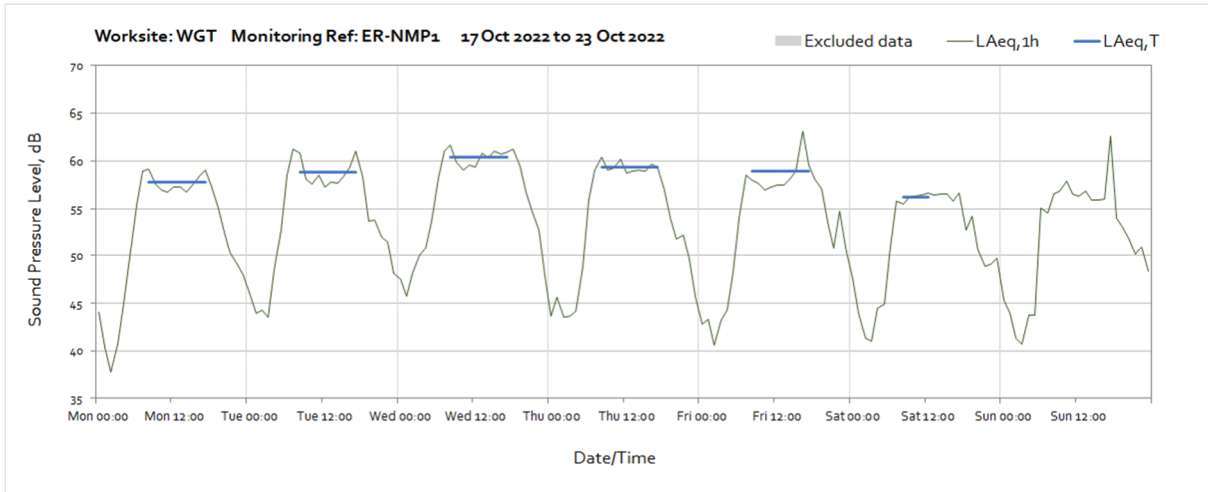


Note: Missing data between 15:00 and 16:00 on the 31<sup>st</sup> October was due to monitor maintenance.

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

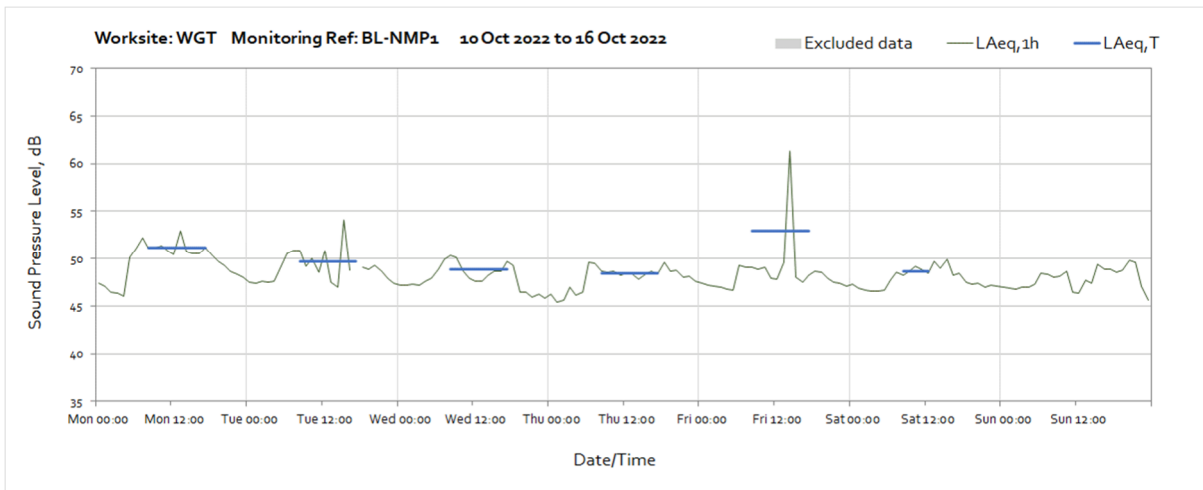
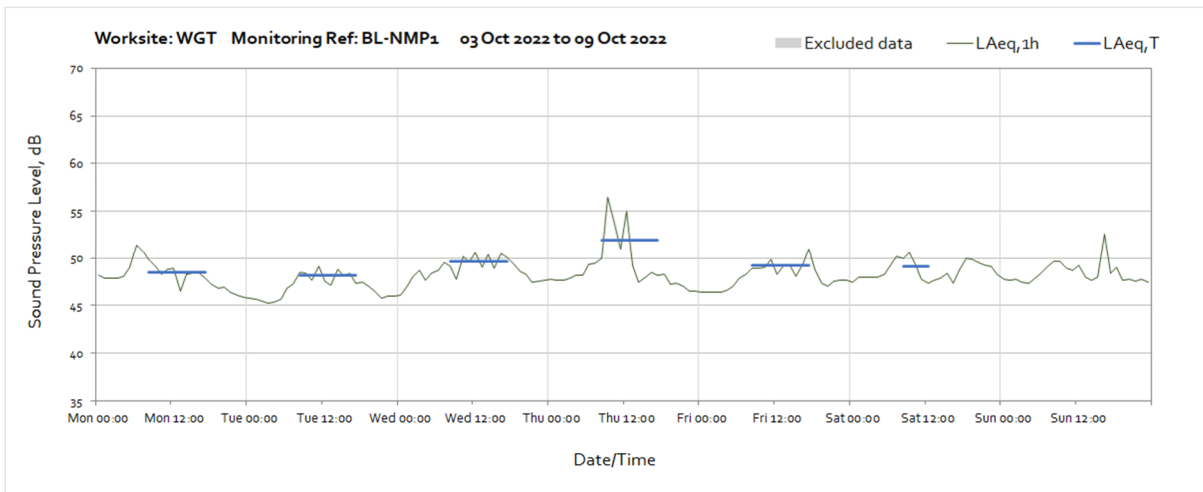
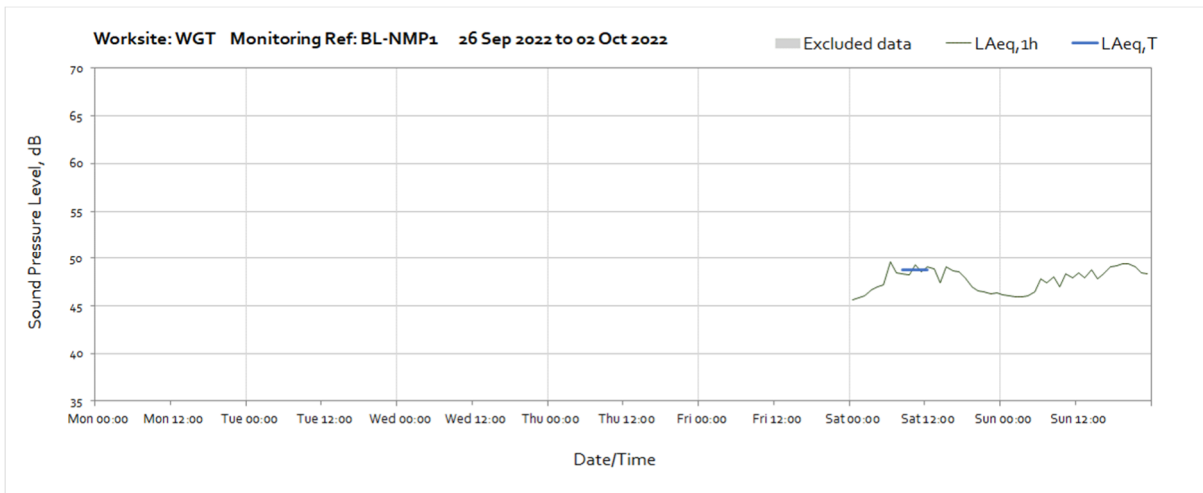


Note: Missing data between 17:00 and 18:00 on the 11<sup>th</sup> October was due to monitor maintenance.



Note: Missing data between 14:00 and 15:00 on the 31<sup>st</sup> October was due to monitor maintenance.

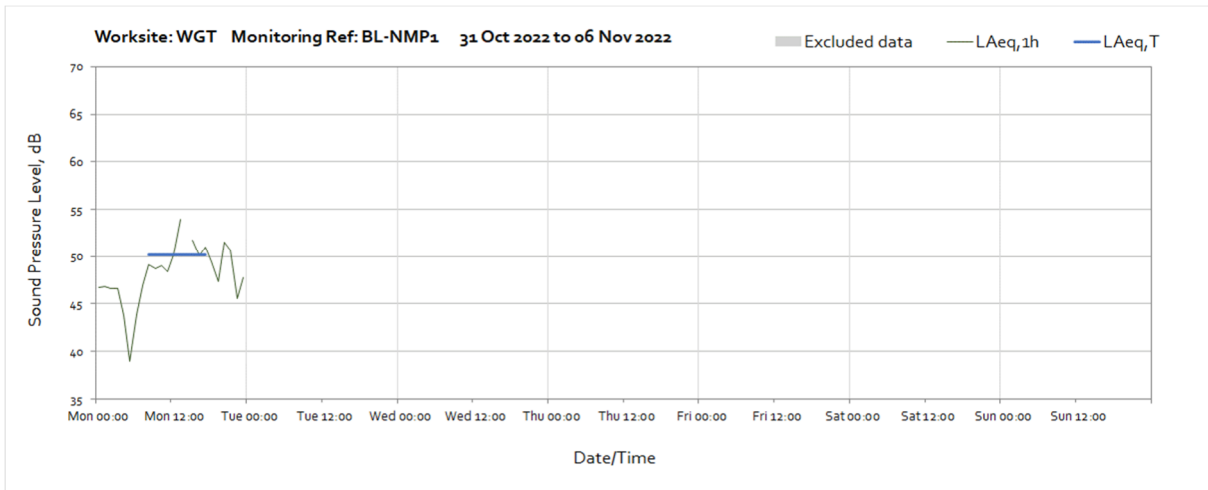
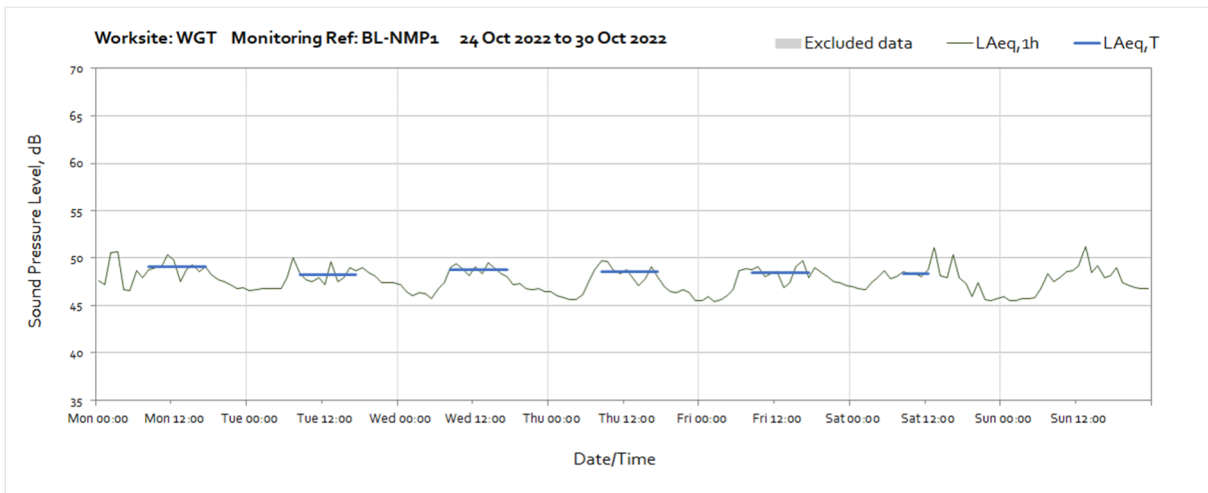
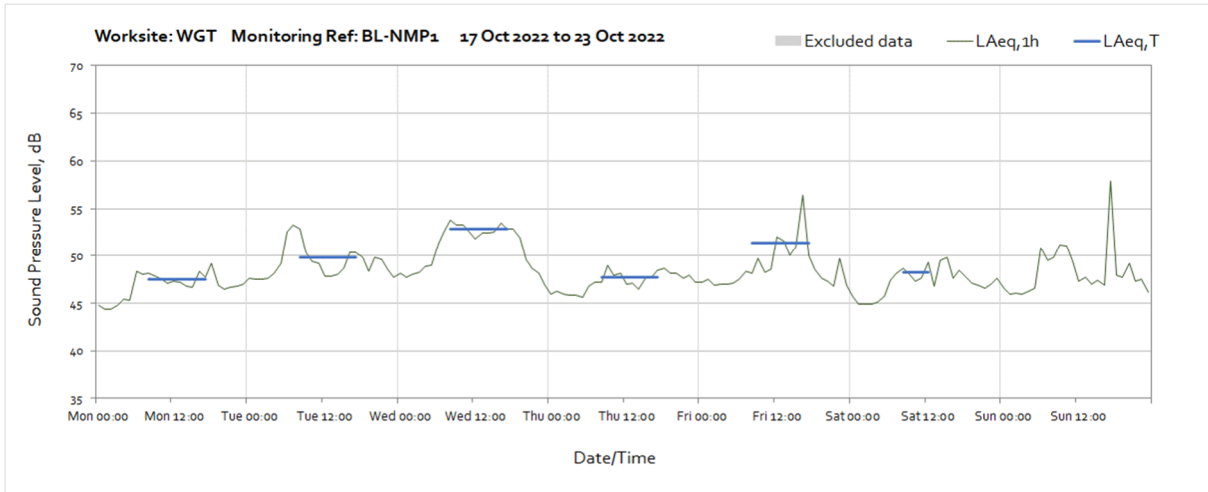
## Worksite: WGT – Monitoring Ref: BL-NMP1



Note: Missing data between 17:00 and 18:00 on the 11<sup>th</sup> October was due to monitor maintenance.

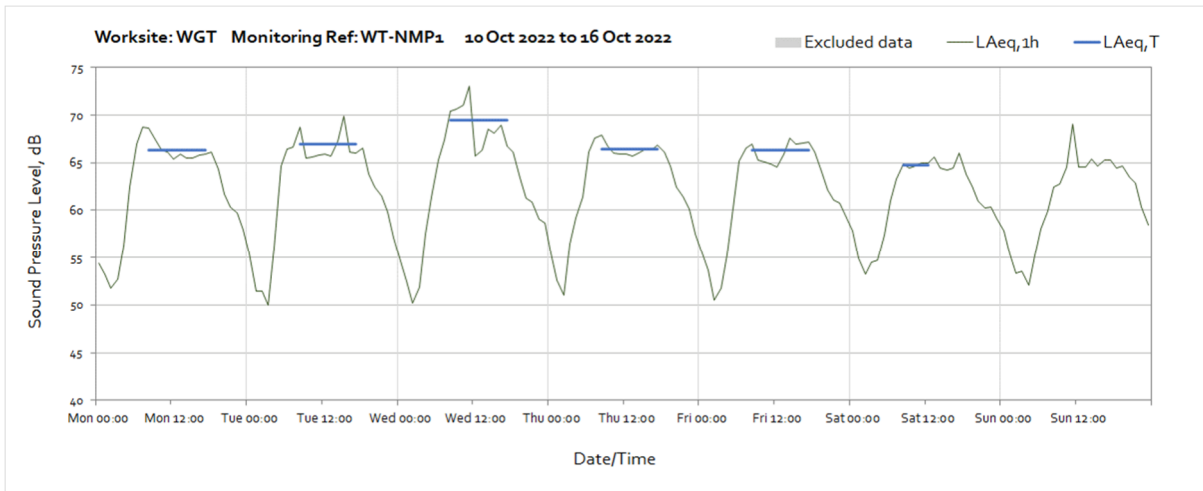
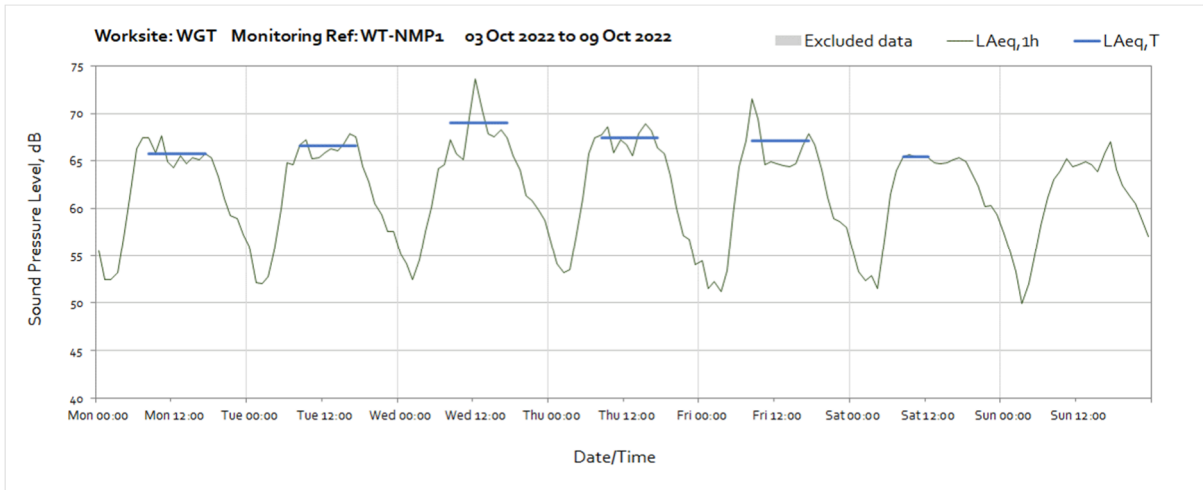
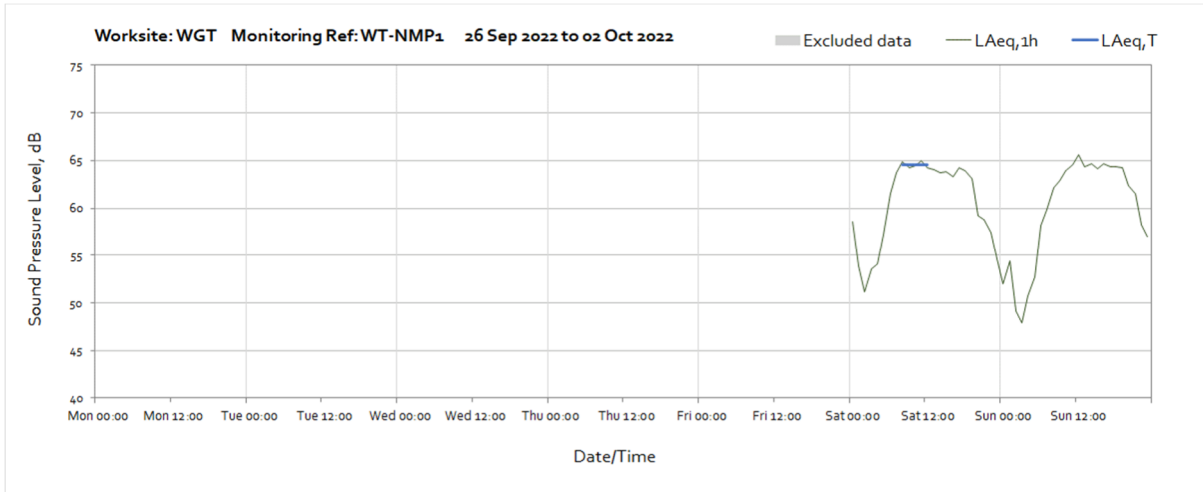
OFFICIAL



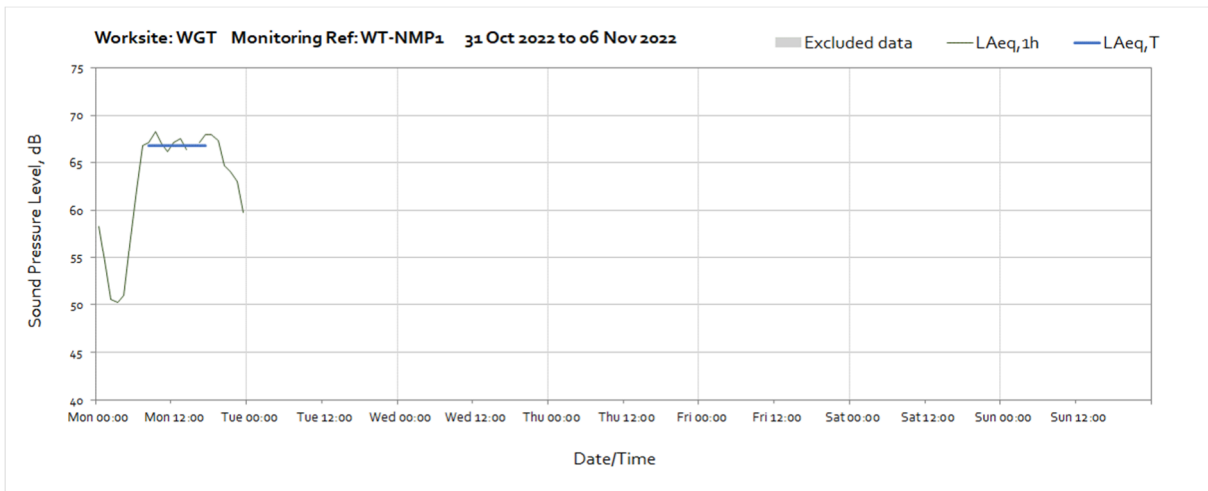
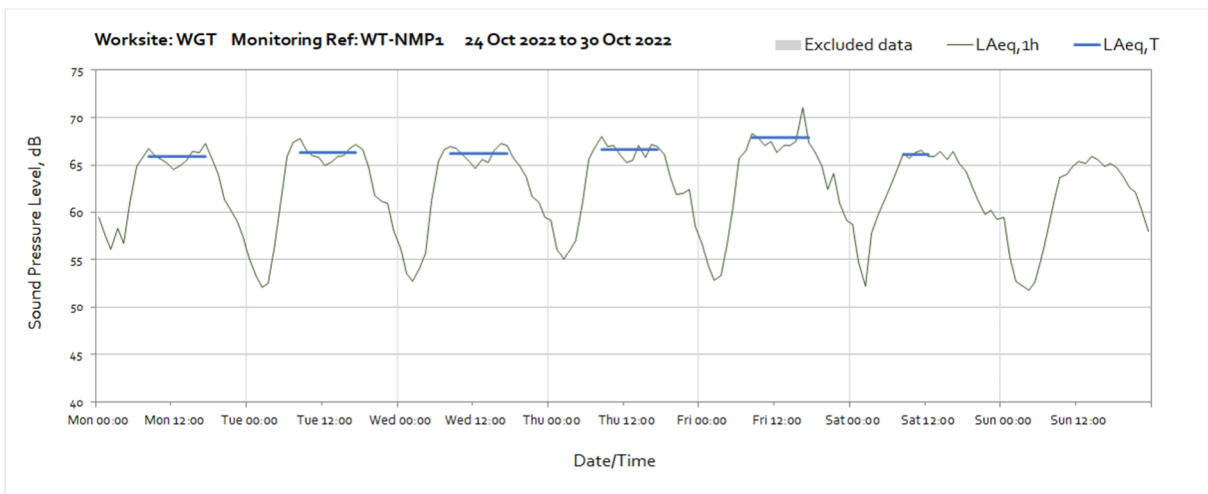
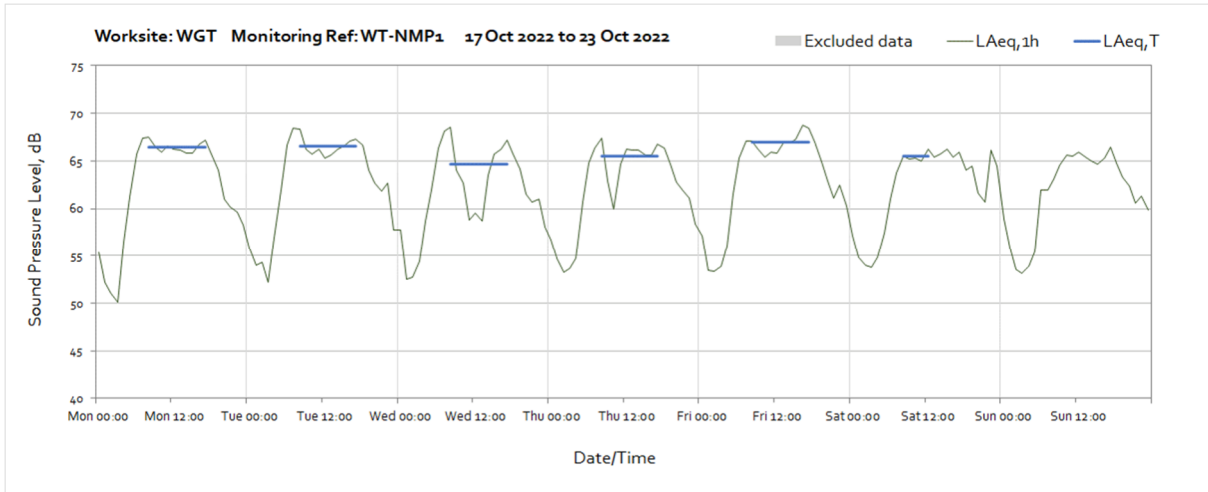


Note: Missing data between 14:0 and 15:00 on the 31<sup>st</sup> October was due to monitor maintenance.

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

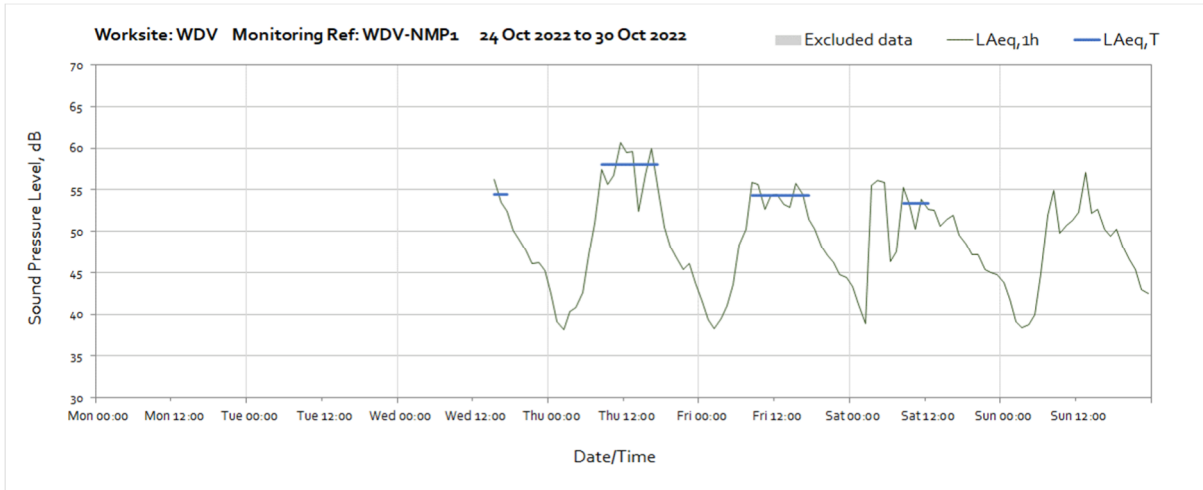


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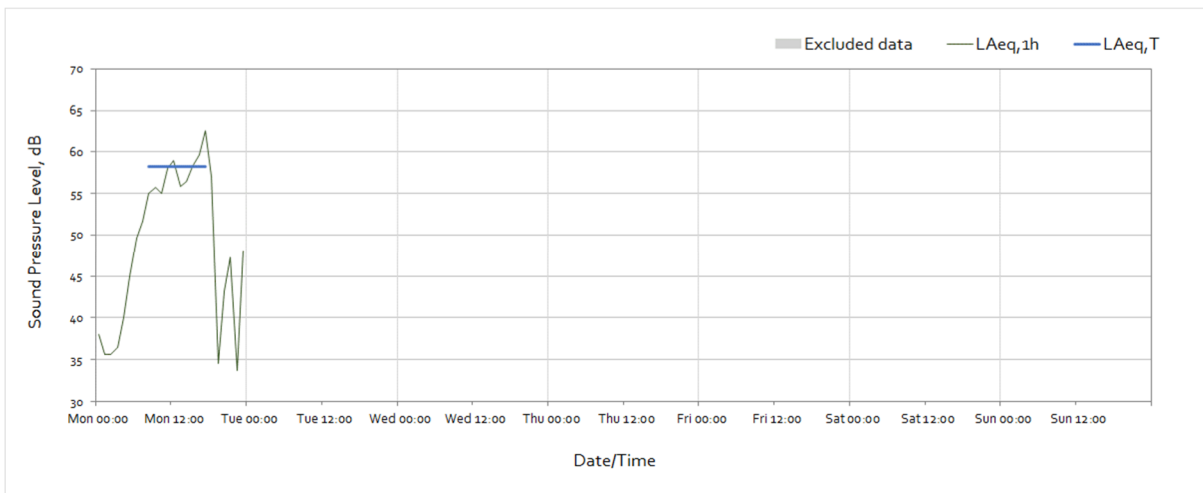


Note: Missing data between 15:00 and 16:00 on the 31<sup>st</sup> October was due to monitor maintenance.

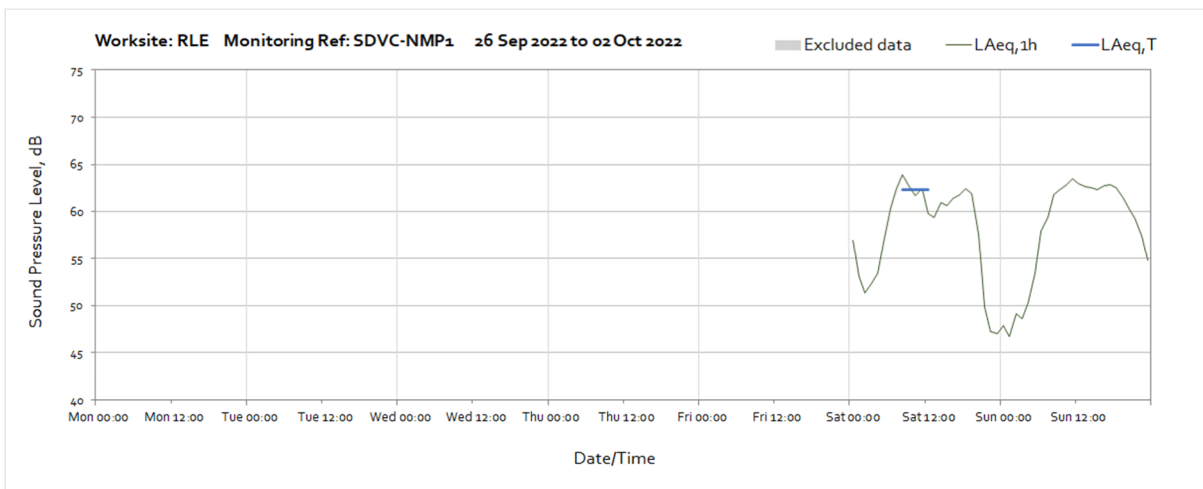
## Worksite: WDV – Monitoring Ref: WDV-NMP1



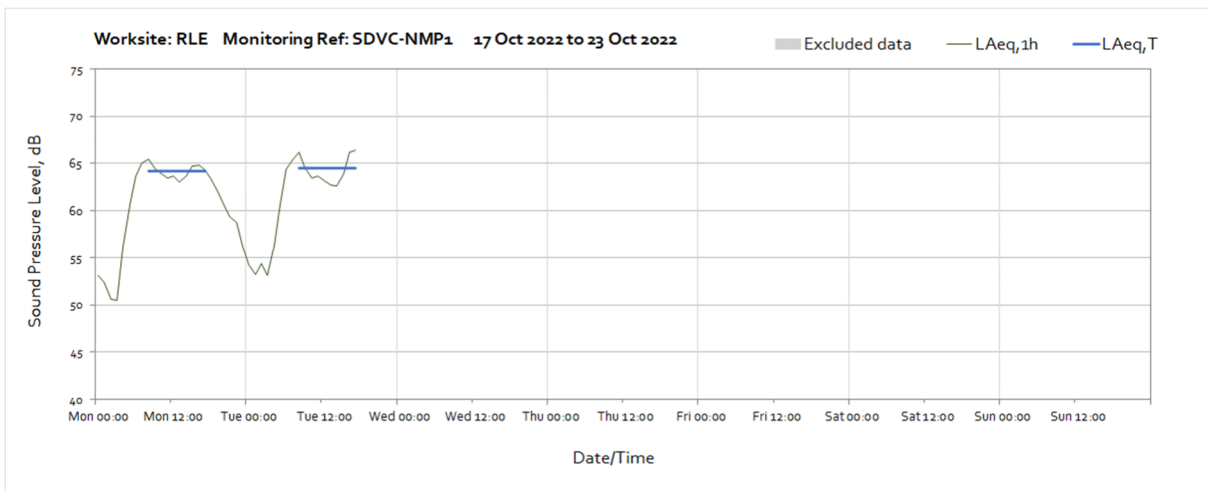
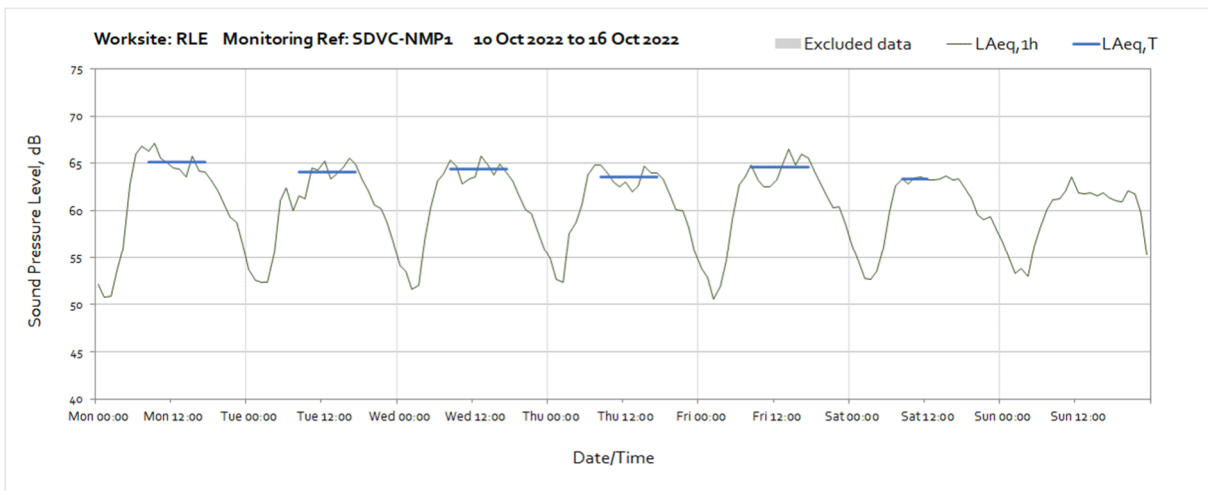
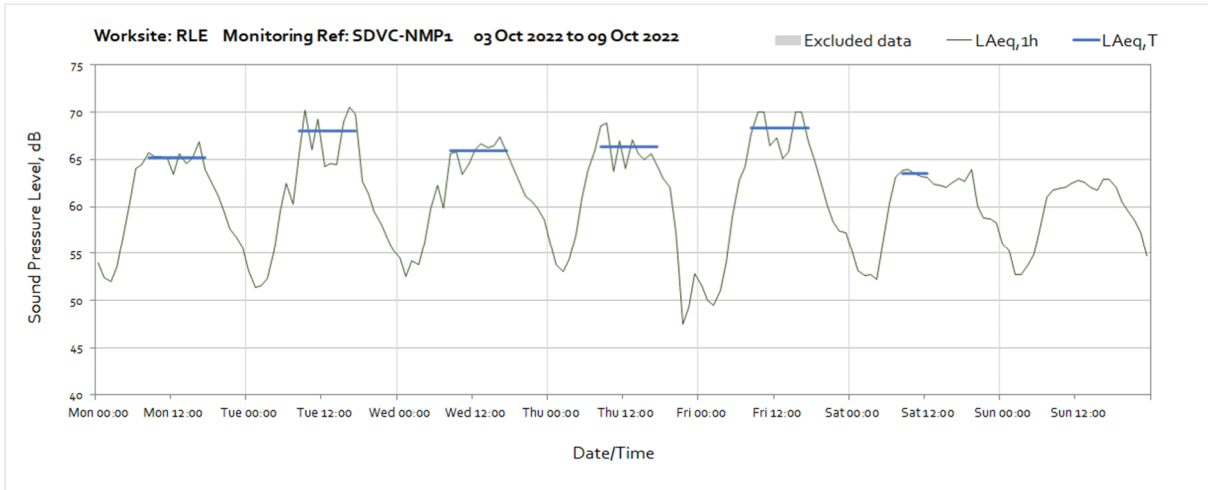
Note: The noise monitor was installed at 14:00 on the 26<sup>th</sup> October.



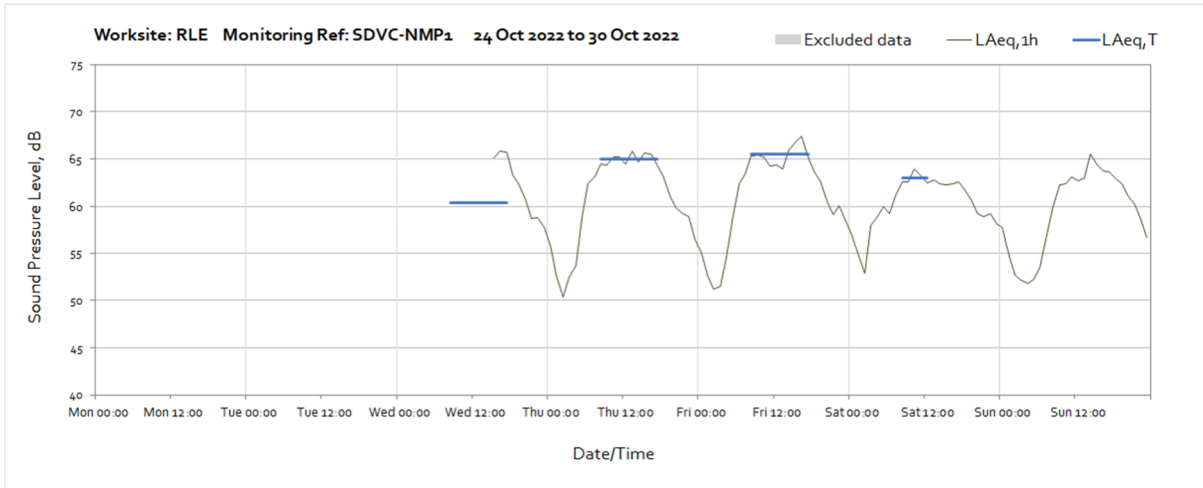
## Worksite: RLE – Monitoring Ref: SDVC-NMP1



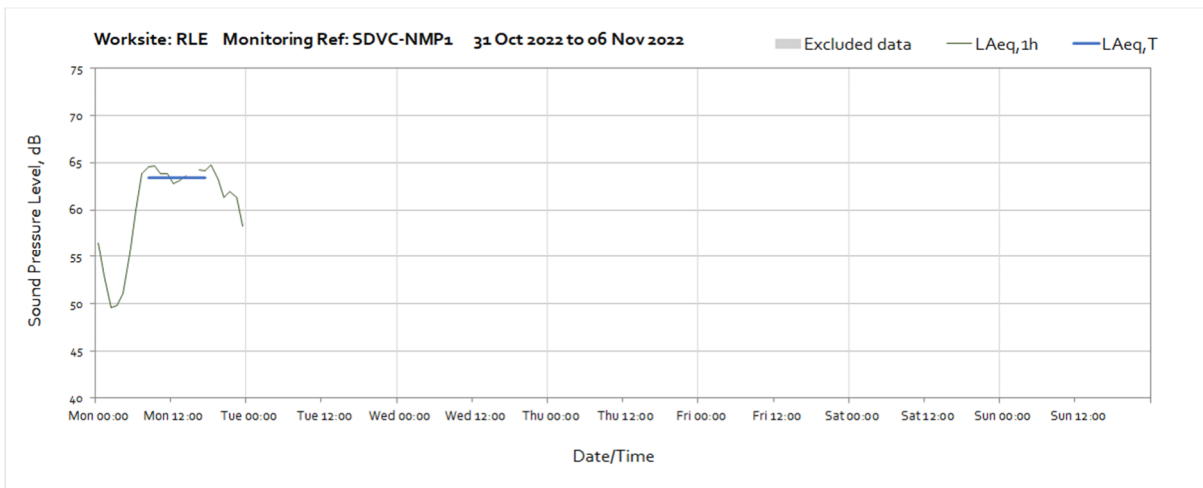
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Note: Missing data between 18:00 on the 18<sup>th</sup> October and 15:00 on the 26<sup>th</sup> October was due to monitor fault.

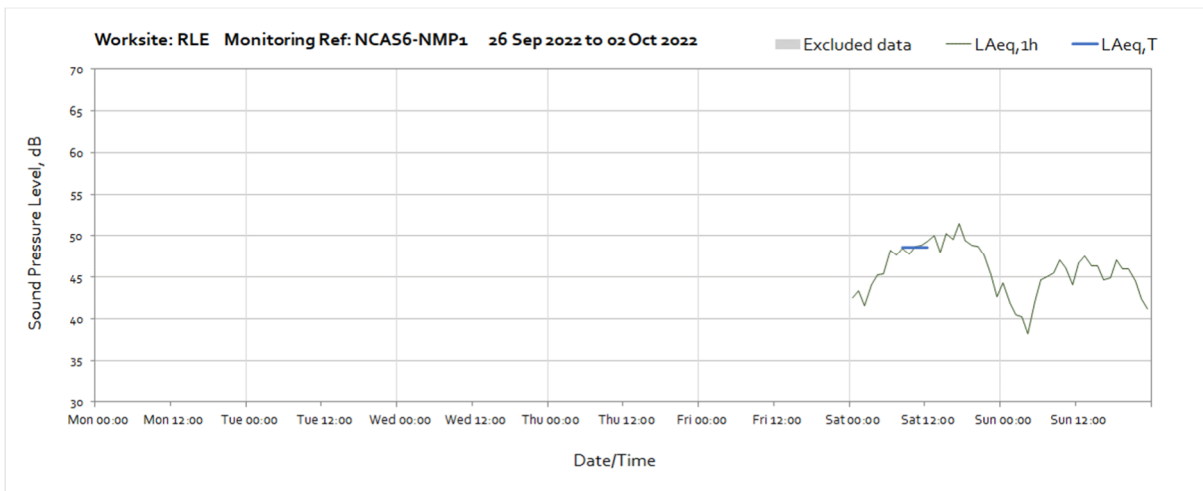


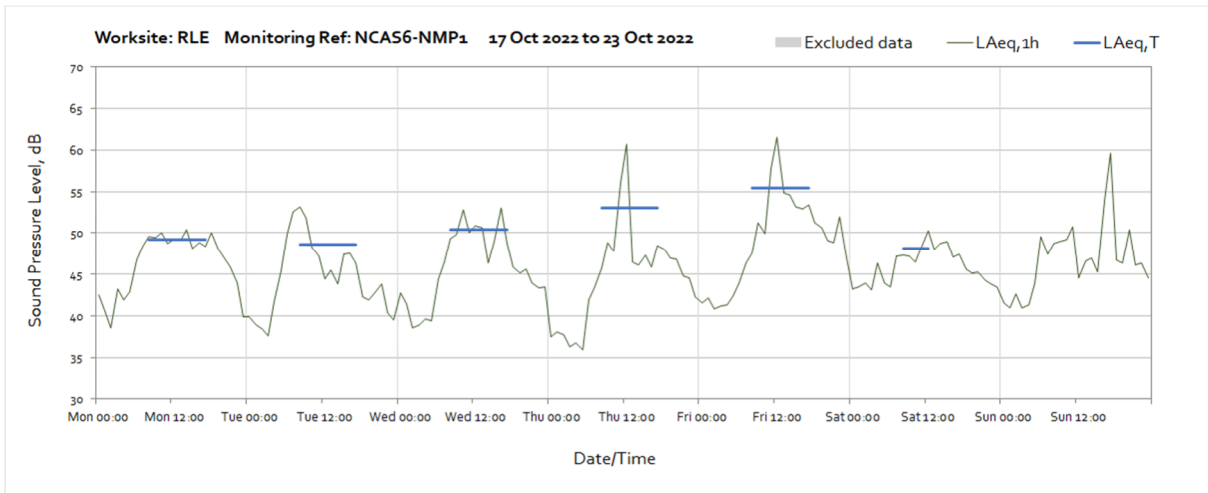
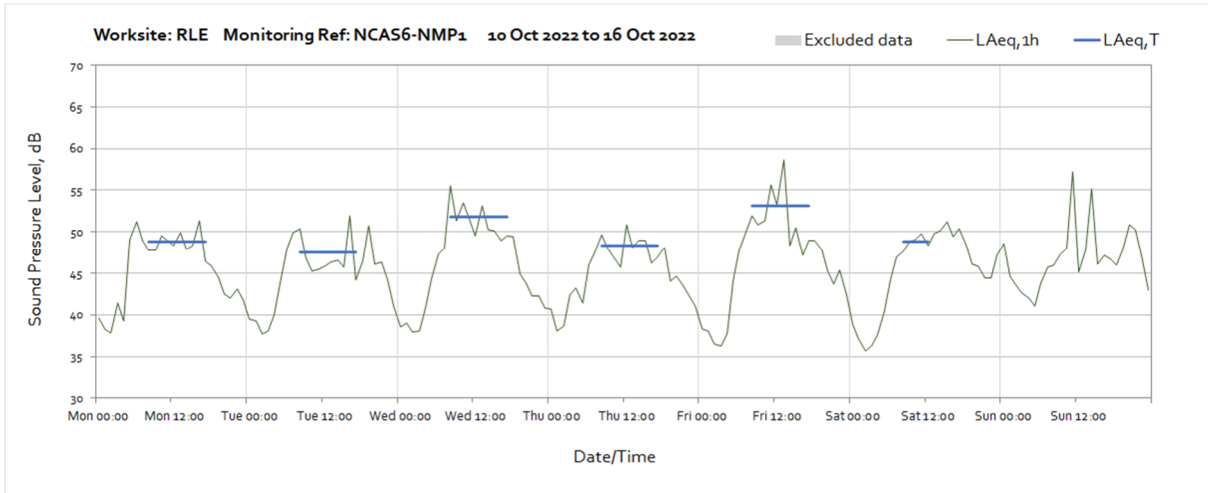
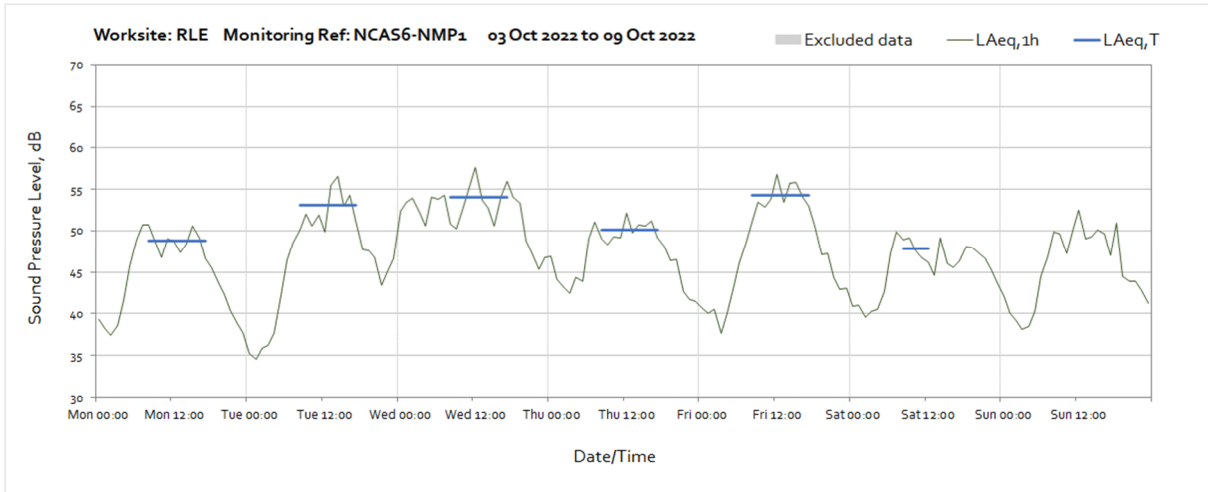
Note: Missing data between 18:00 on the 18<sup>th</sup> October and 15:00 on the 26<sup>th</sup> October was due to monitor fault.

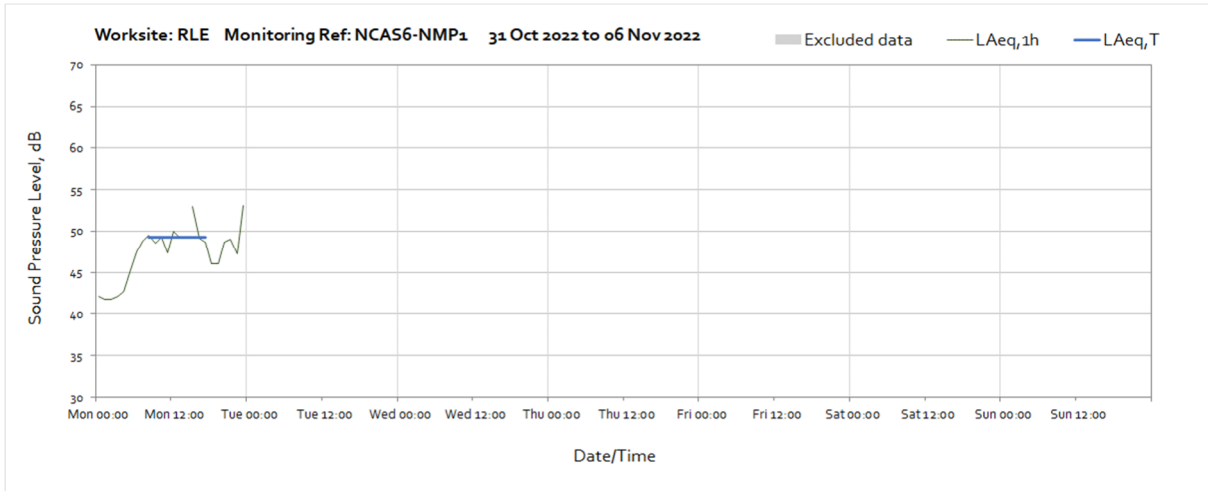
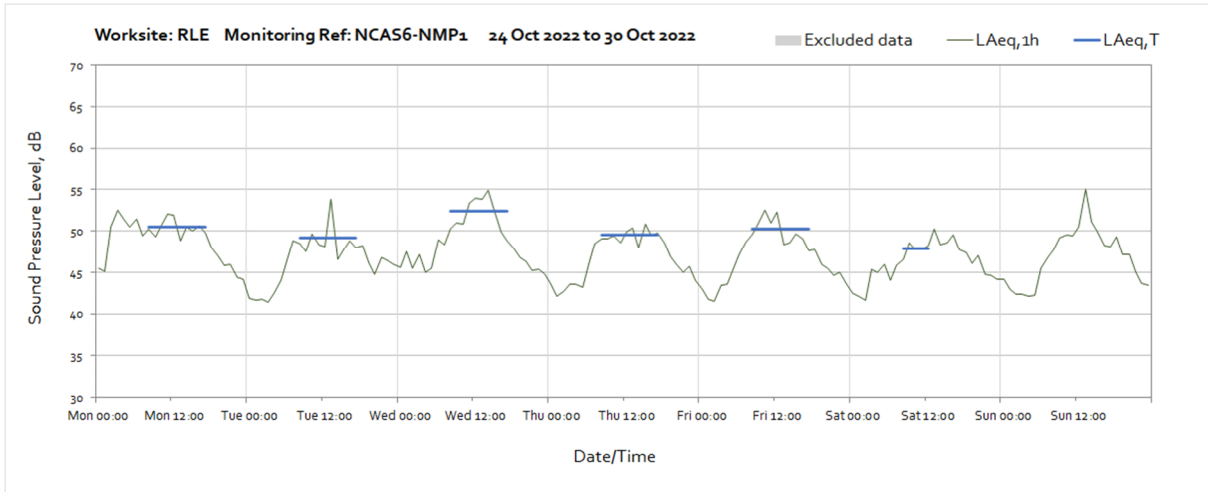


Note: Missing data between 14:00 and 15:00 on the 31<sup>st</sup> October was due to monitor maintenance.

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

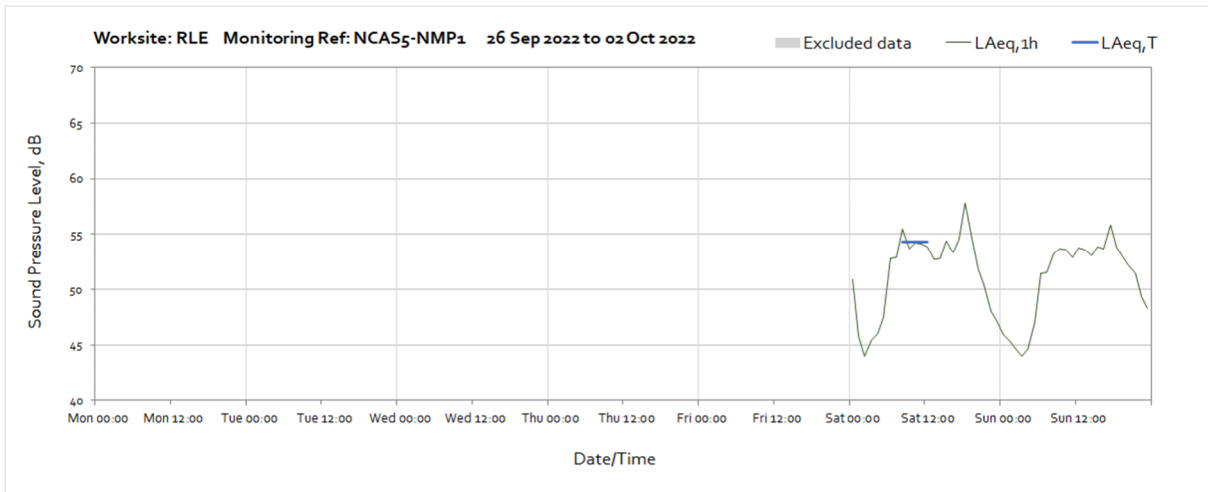




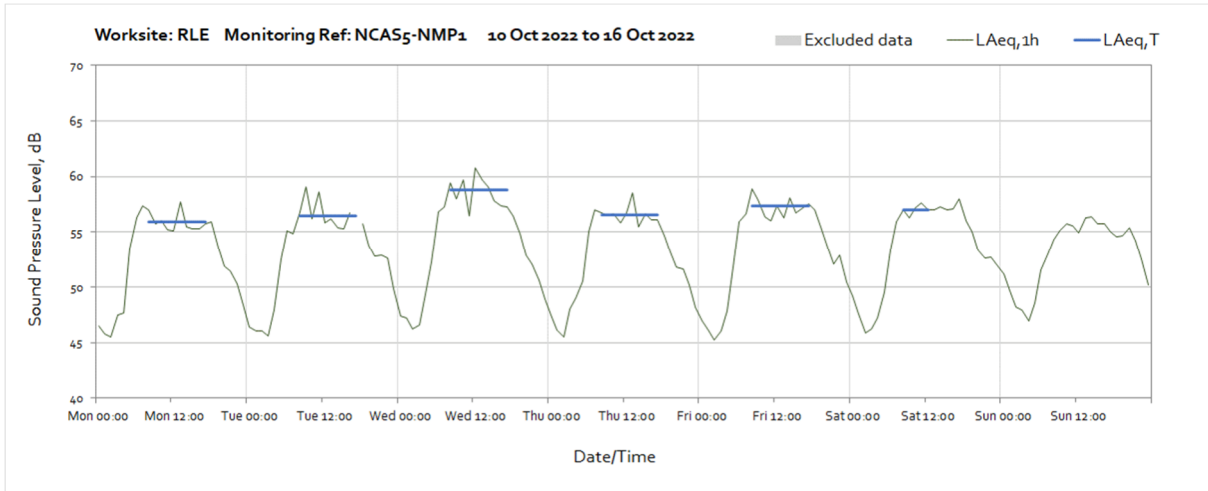
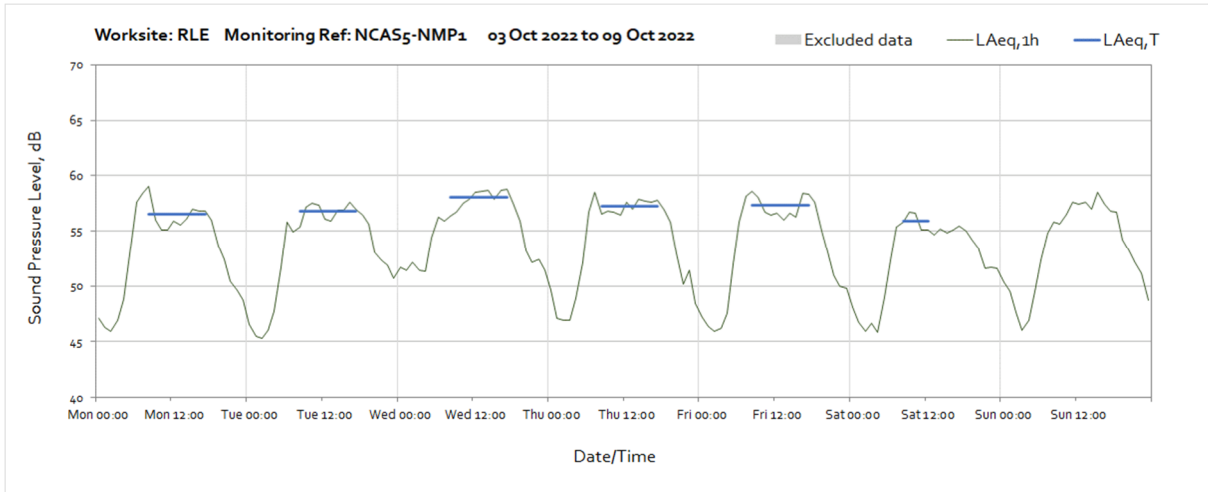


Note: Missing data between 14:00 and 15:00 on the 31<sup>st</sup> October was due to monitor maintenance.

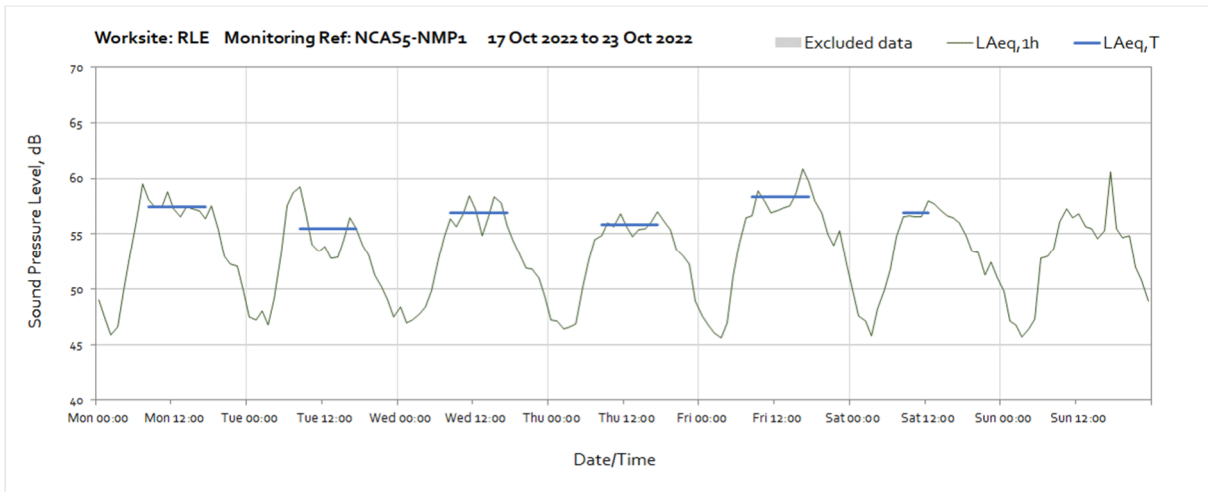
### Worksite: RLE – Monitoring Ref: NCAS5-NMP1

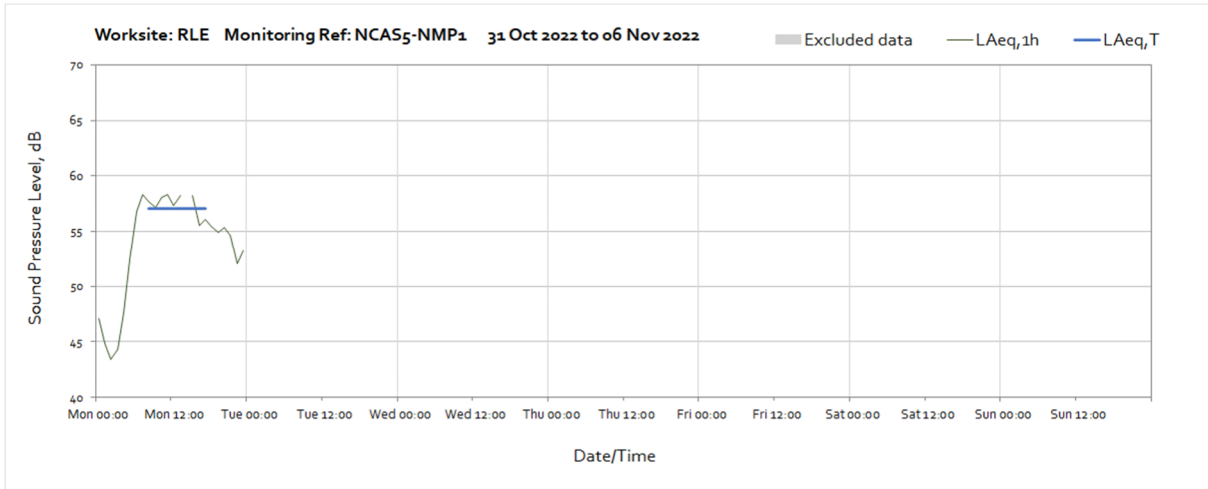
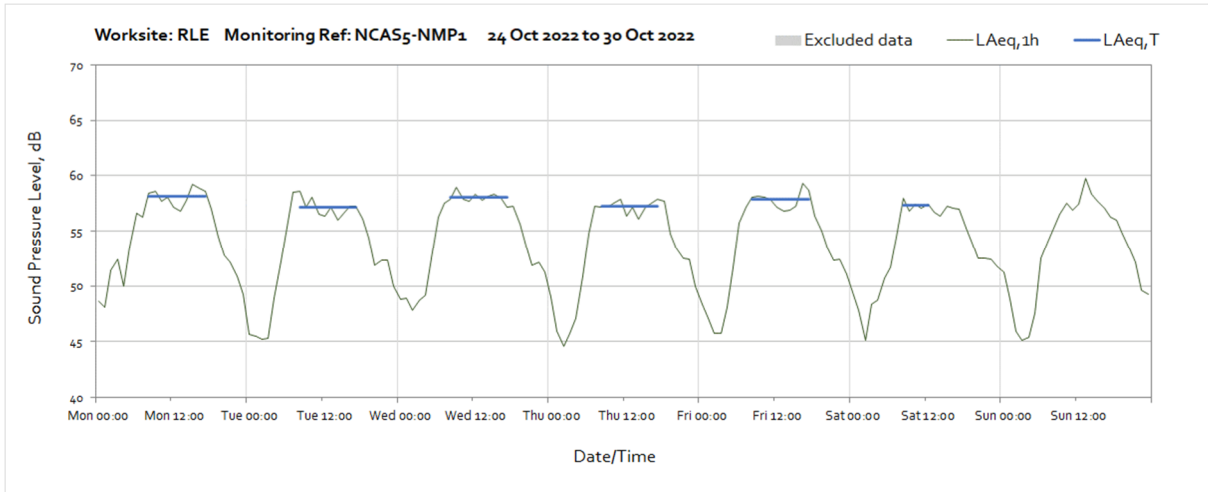






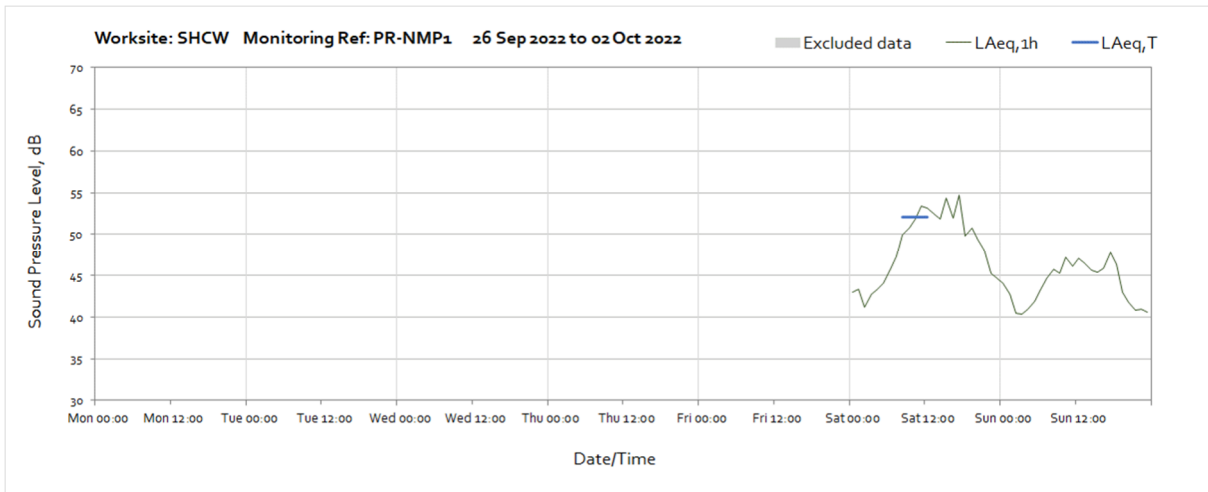
Note: Missing data between 17:00 and 18:00 on the 11<sup>th</sup> October was due to monitor maintenance.

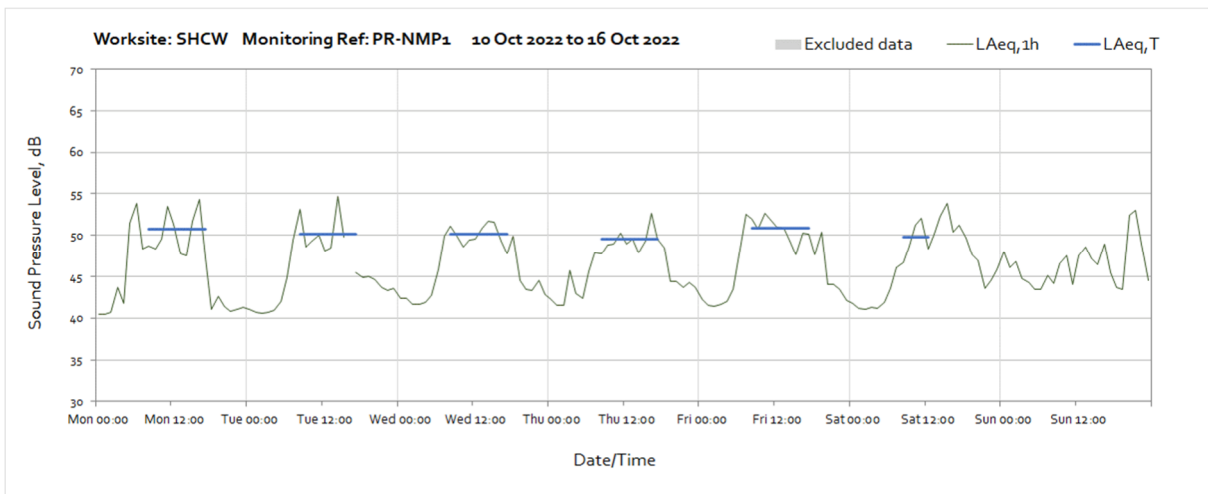
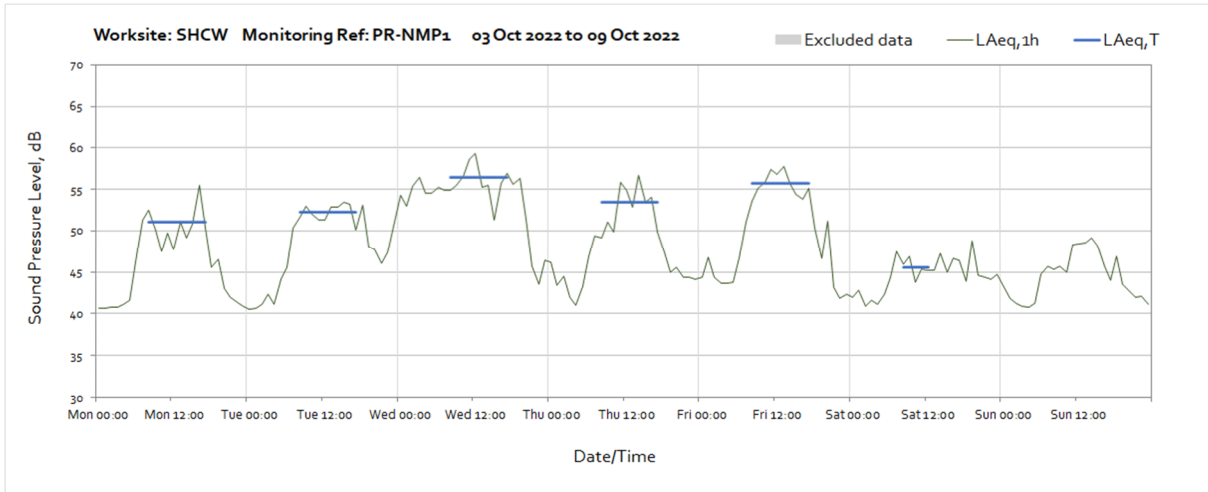




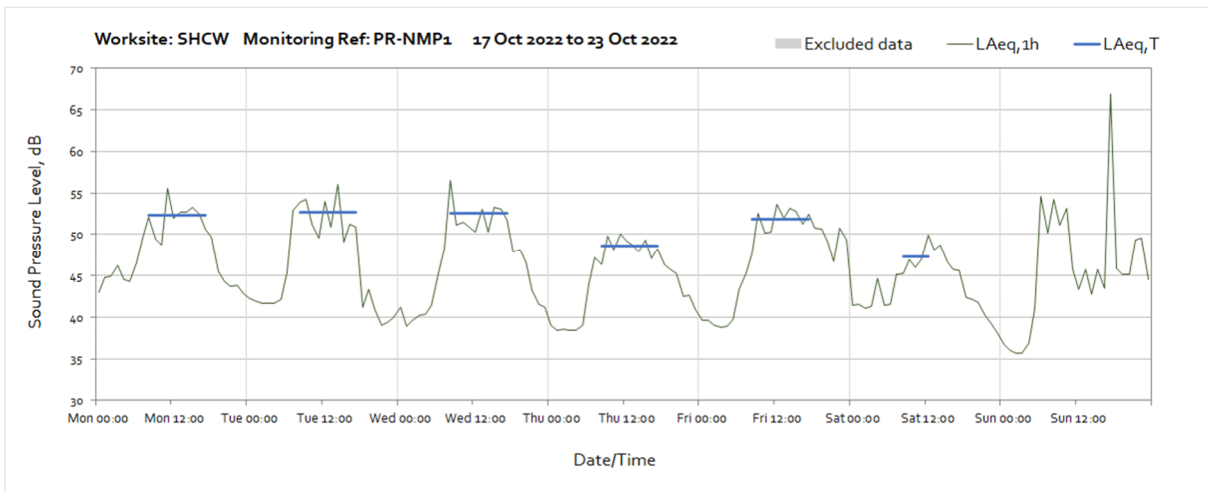
Note: Missing data between 14:00 and 15:00 on the 31<sup>st</sup> October was due to monitor maintenance.

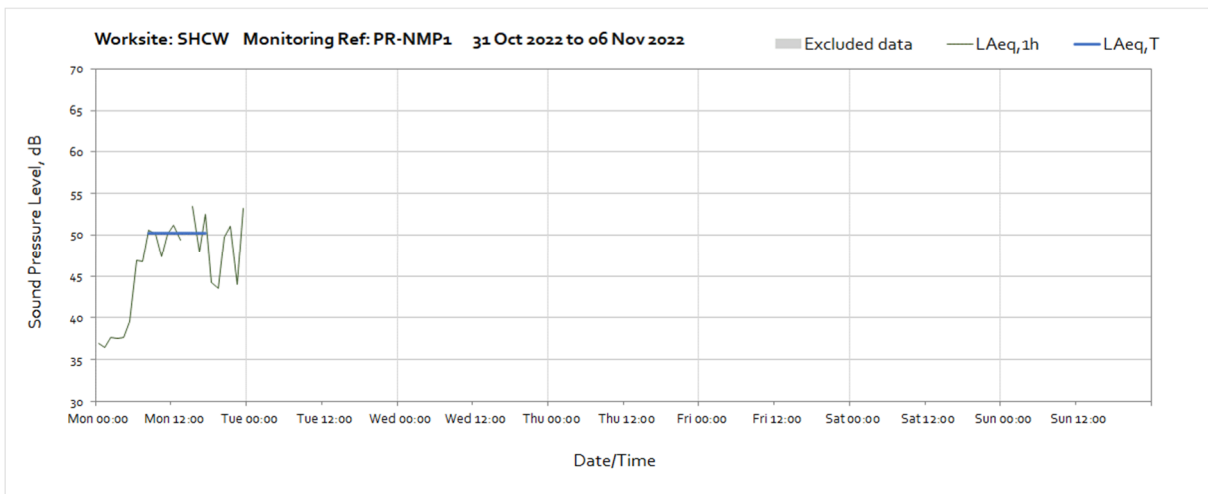
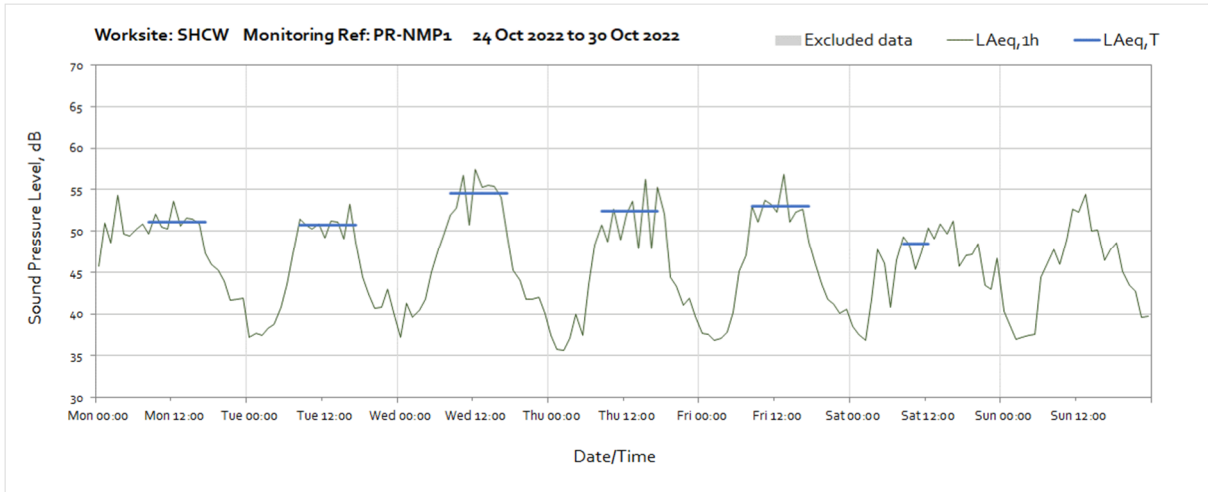
**Worksite: SHCW – Monitoring Ref: PR-NMP1**





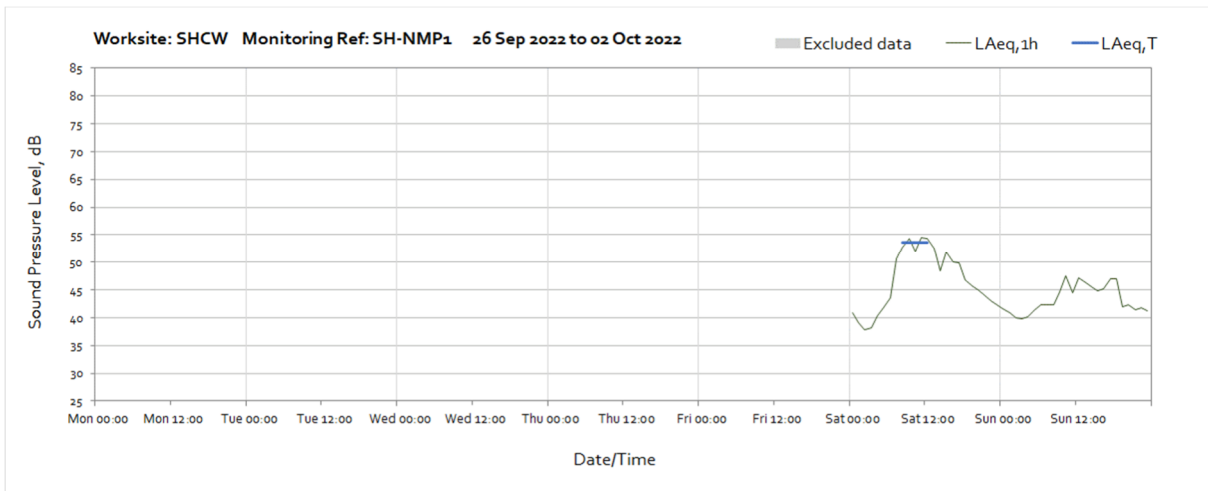
Note: Missing data between 16:00 and 17:00 on the 11<sup>th</sup> October was due to monitor maintenance.

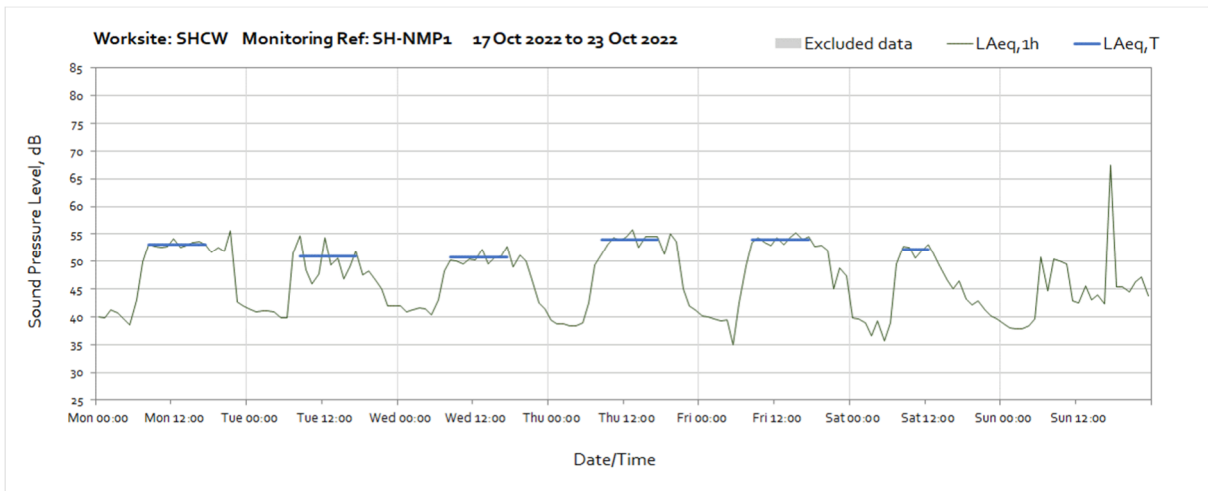
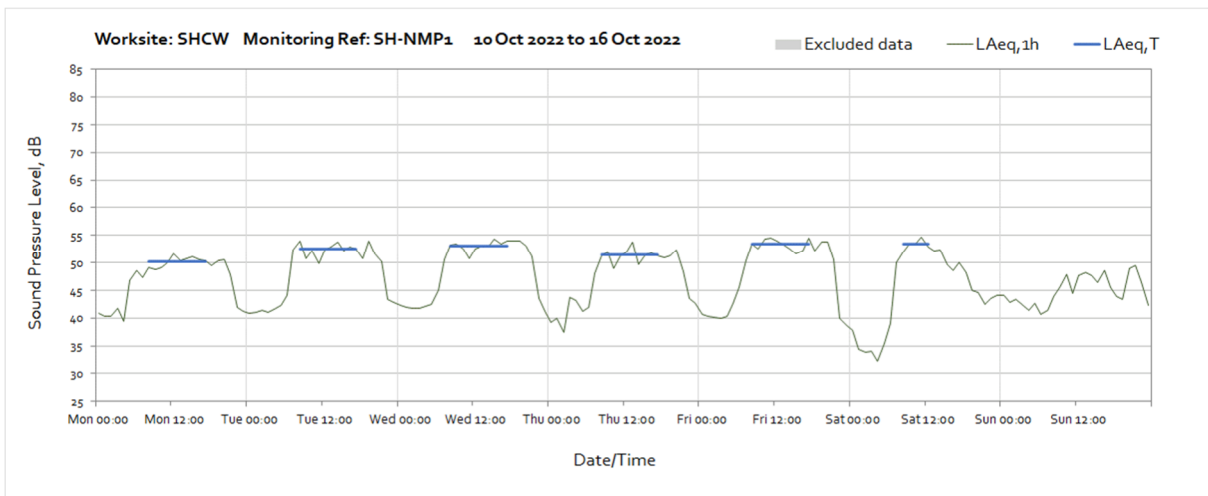
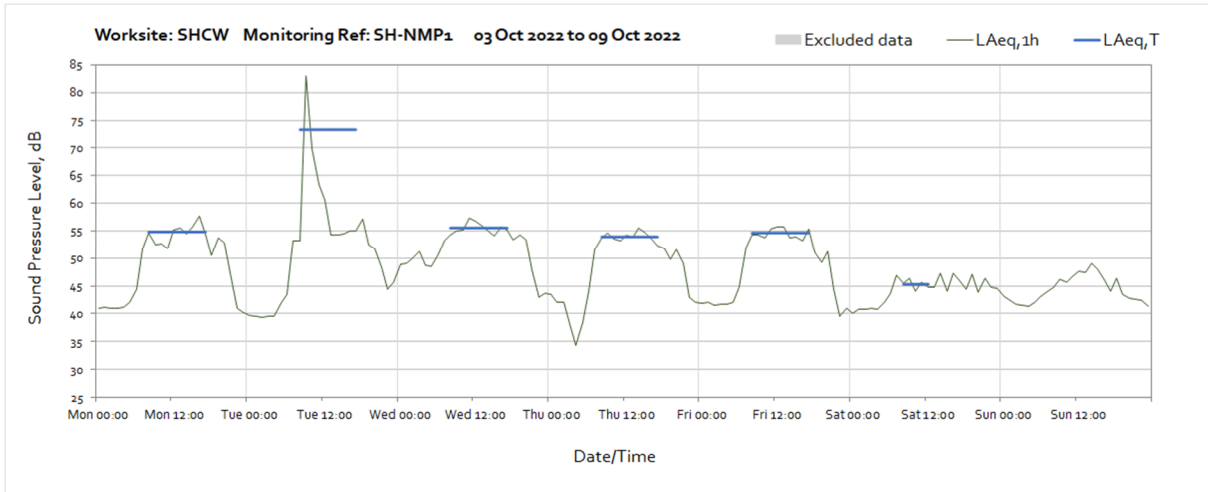


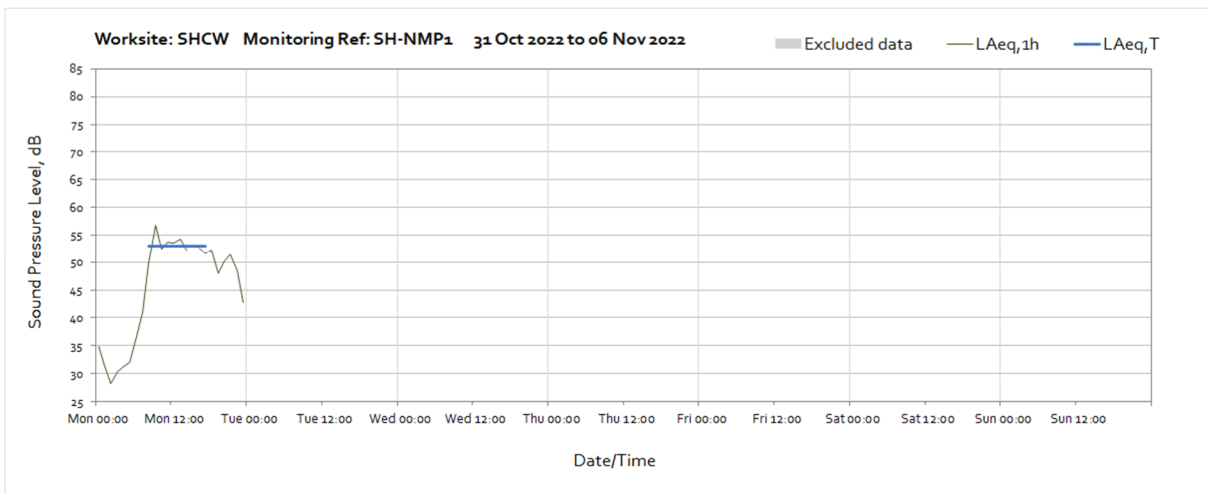
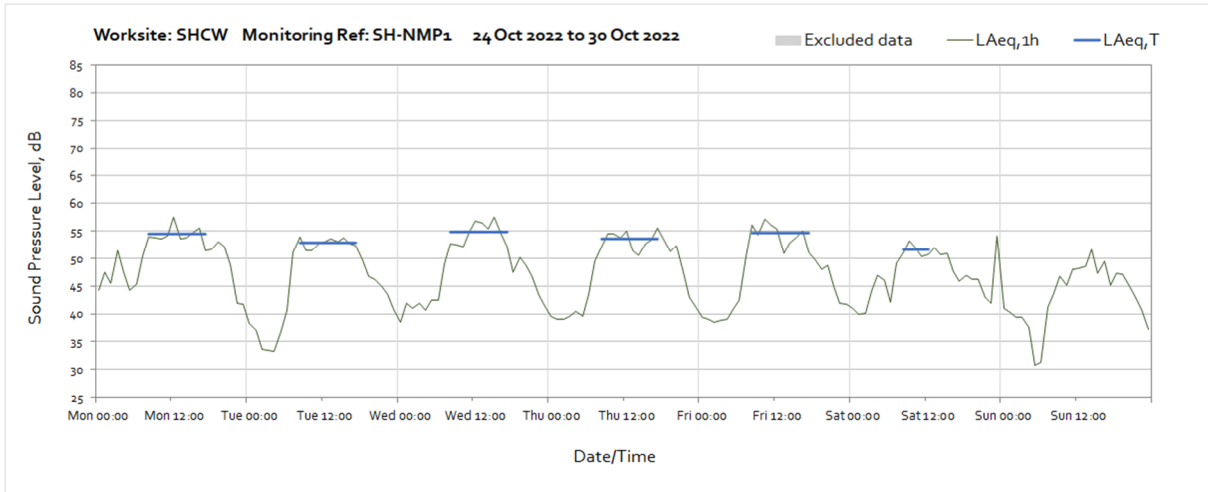


Note: Missing data between 14:00 and 15:00 on the 31<sup>st</sup> October was due to monitor maintenance.

### Worksite: SHCW – Monitoring Ref: SH-NMP1

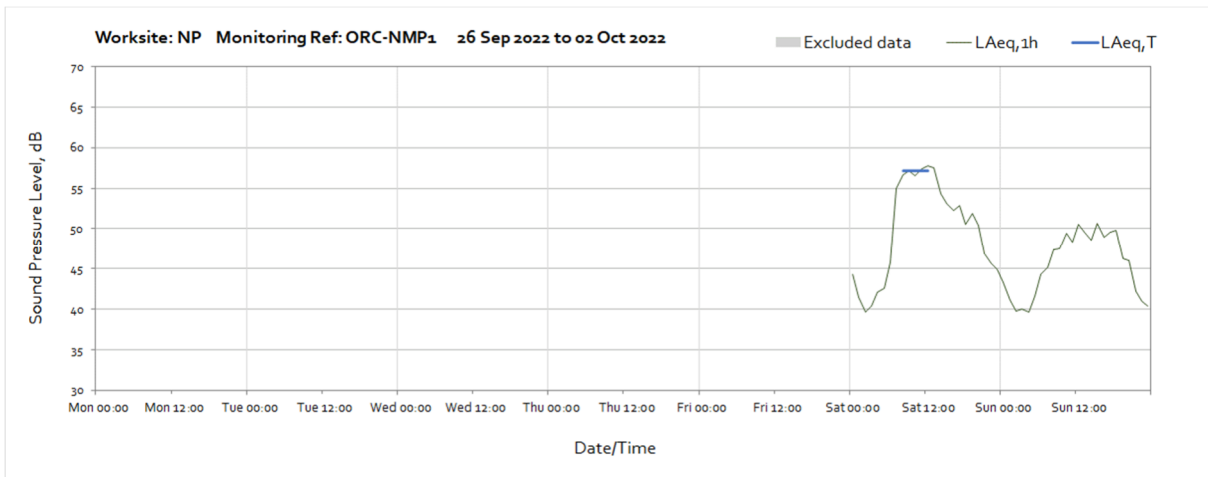


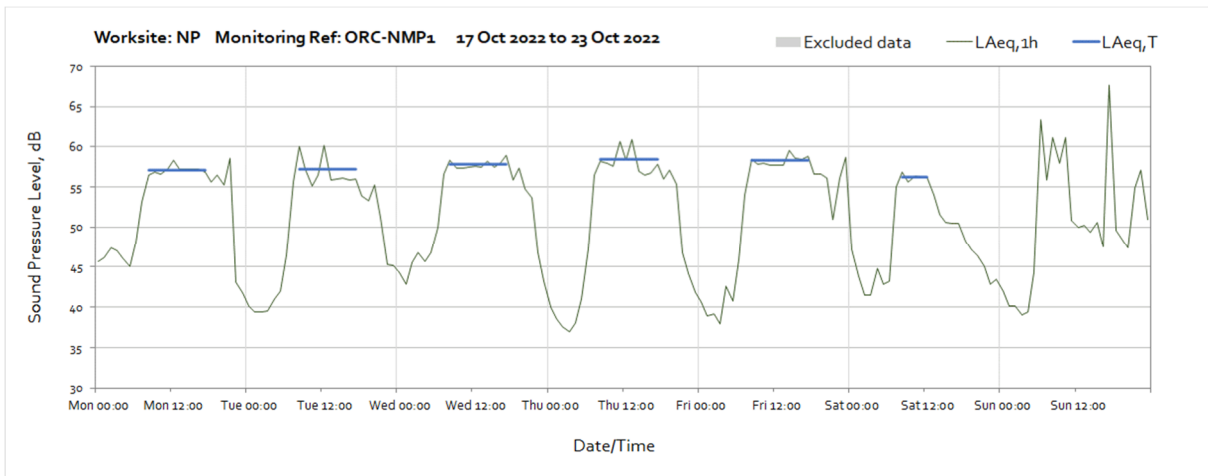
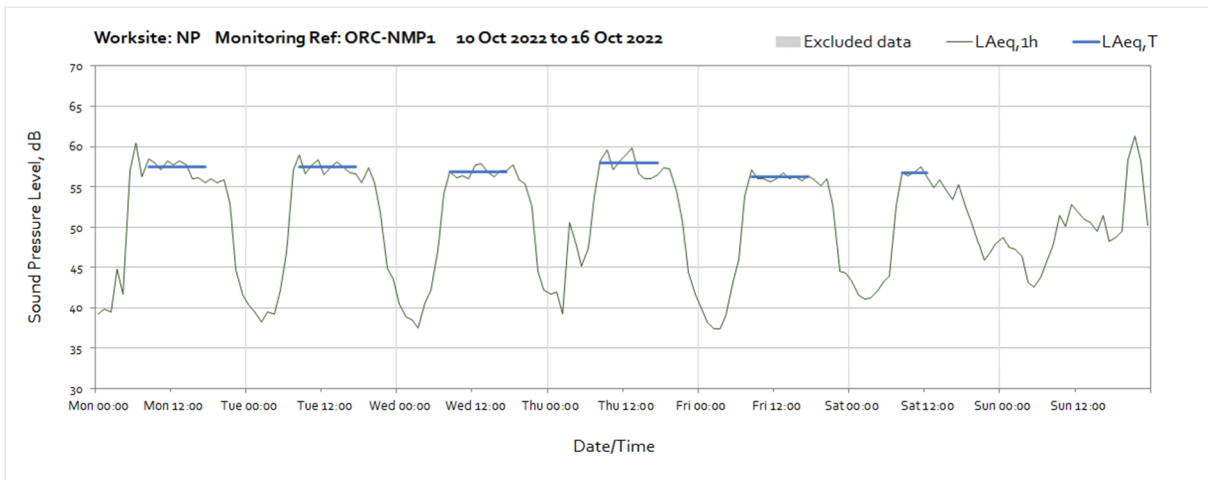
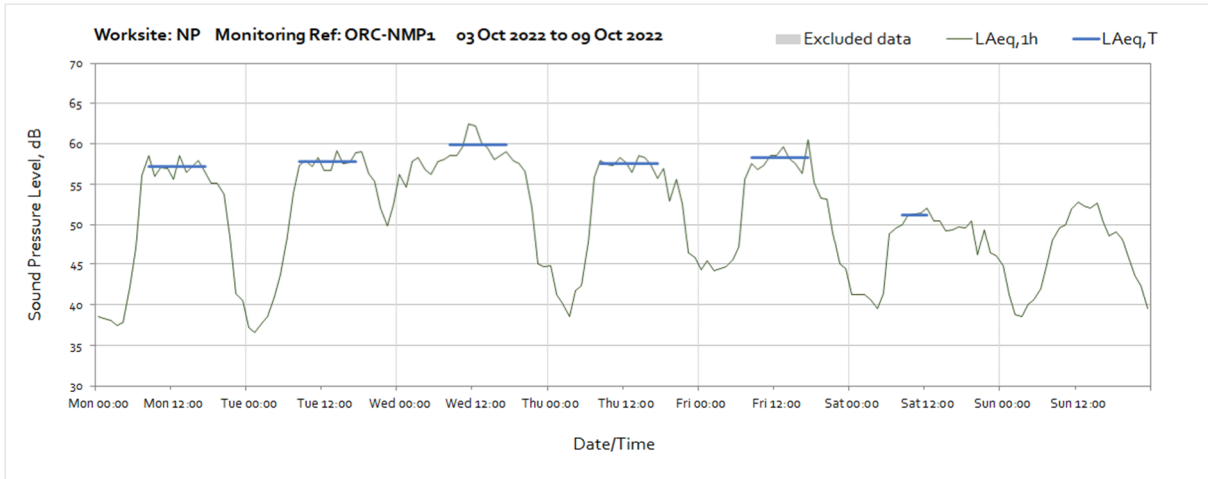


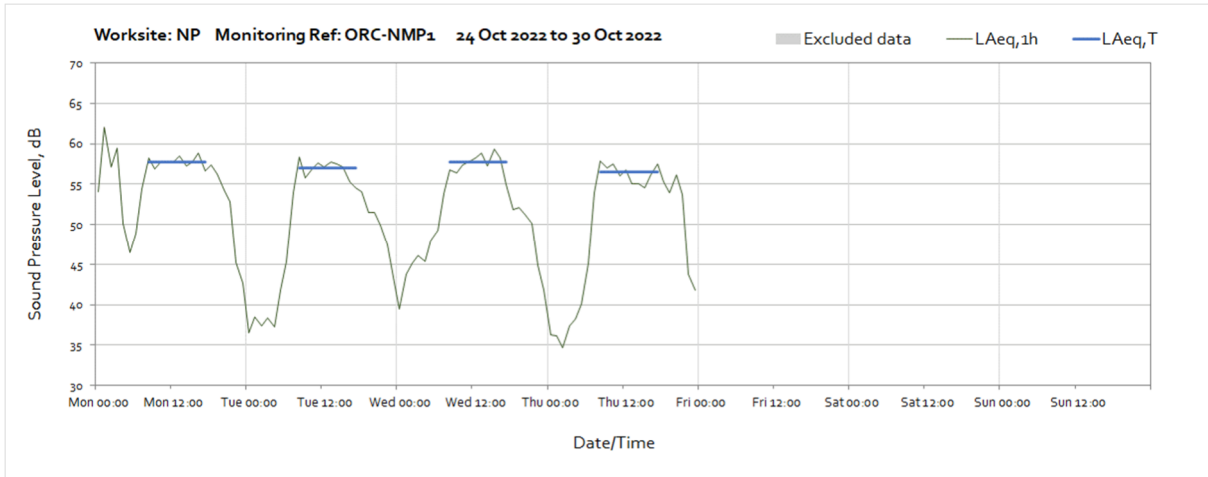


Note: Missing data between 15:00 and 16:00 on the 31<sup>st</sup> October was due to monitor maintenance.

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

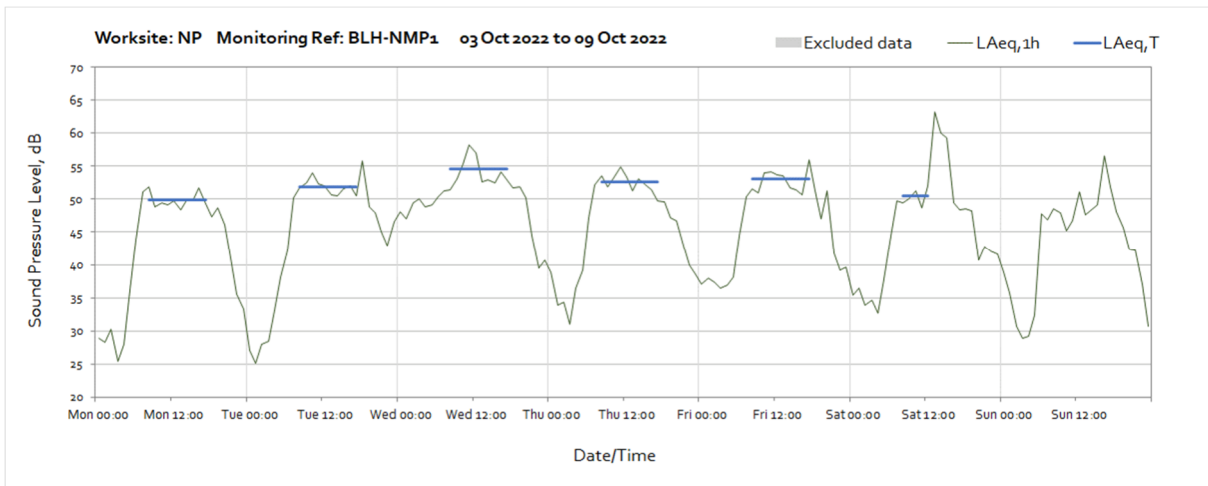
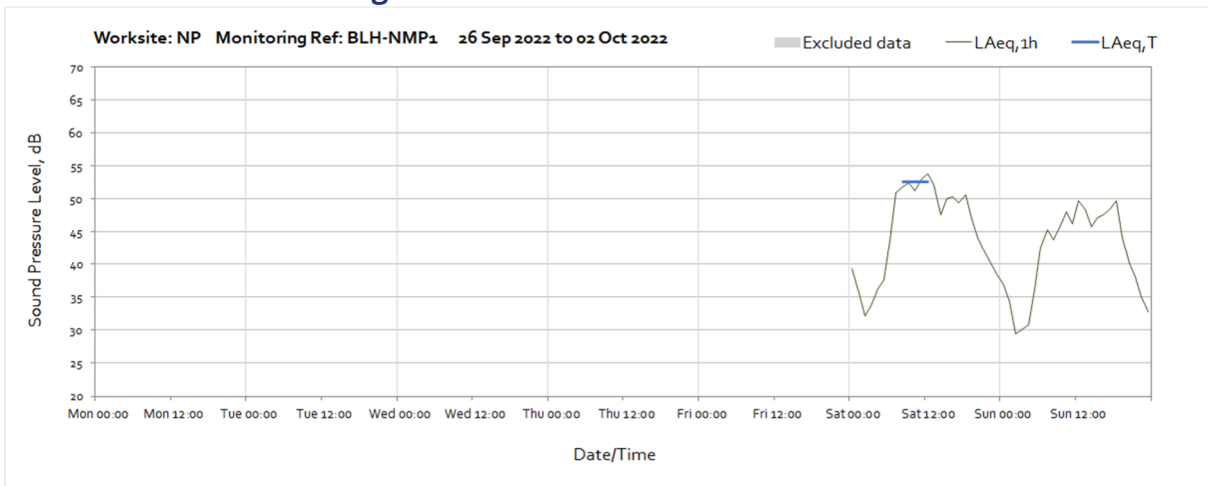




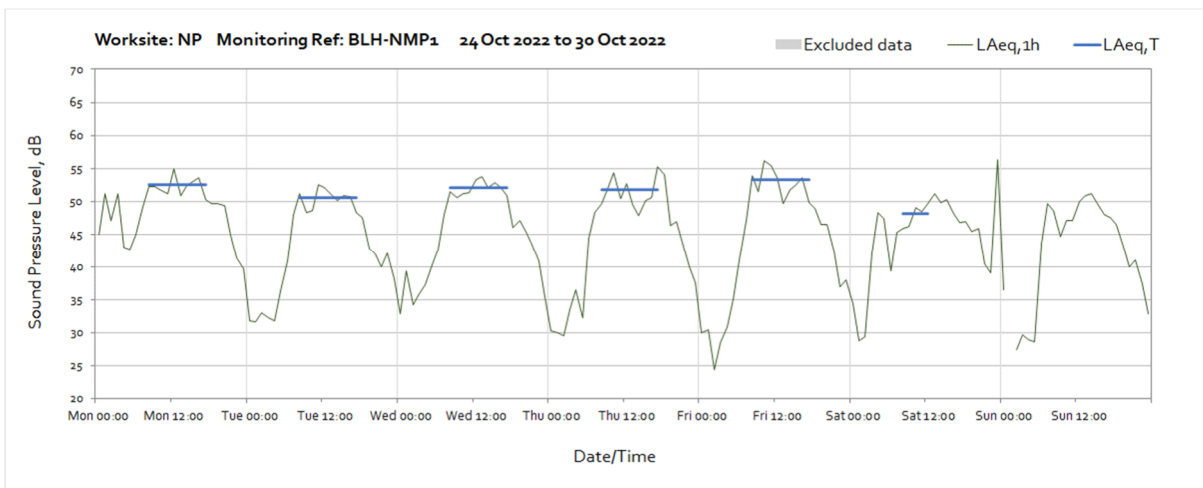
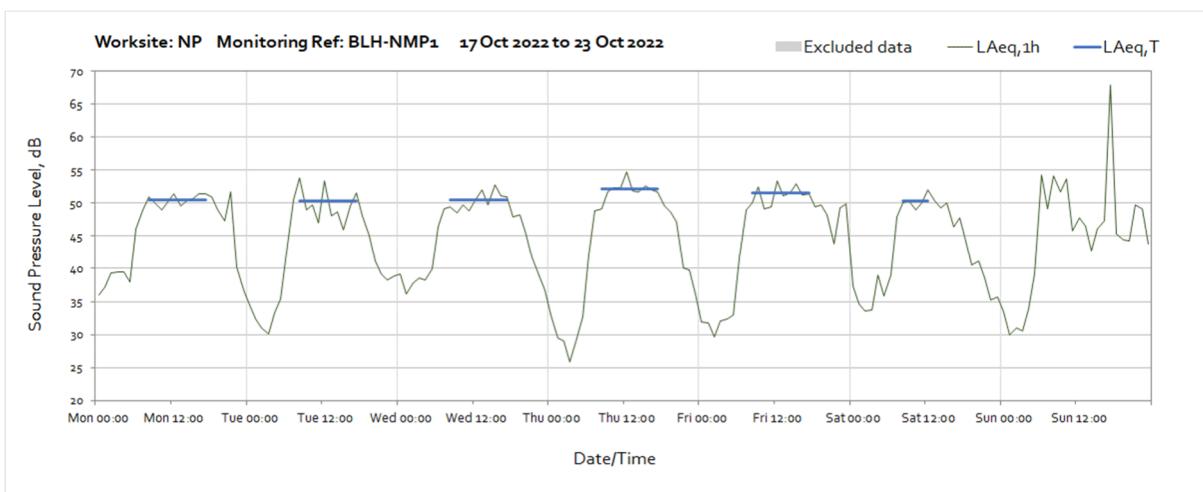
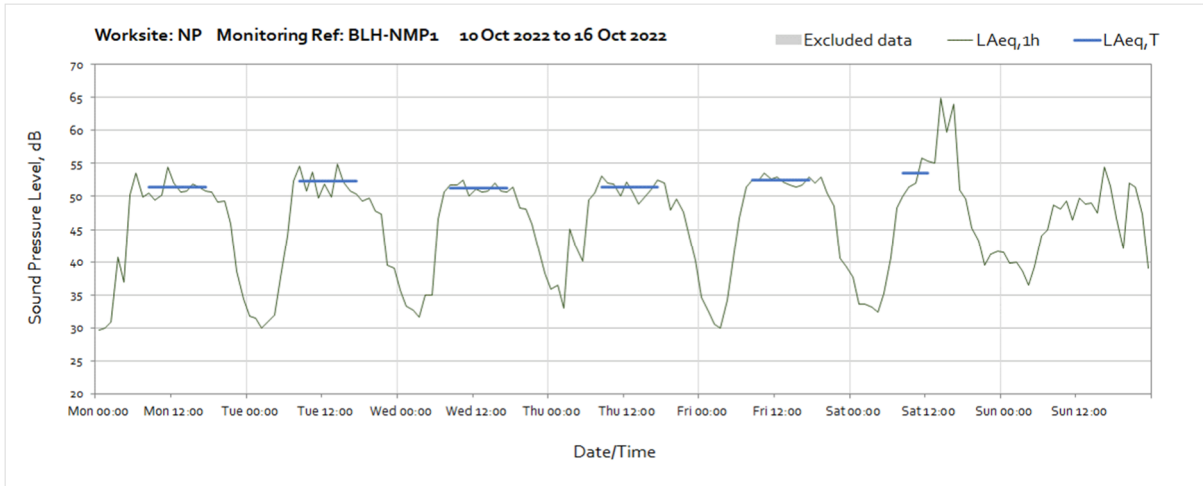


Note: Missing data between 12:00 on the 28<sup>th</sup> October and the end of the month was due to the monitors main power becoming disconnected.

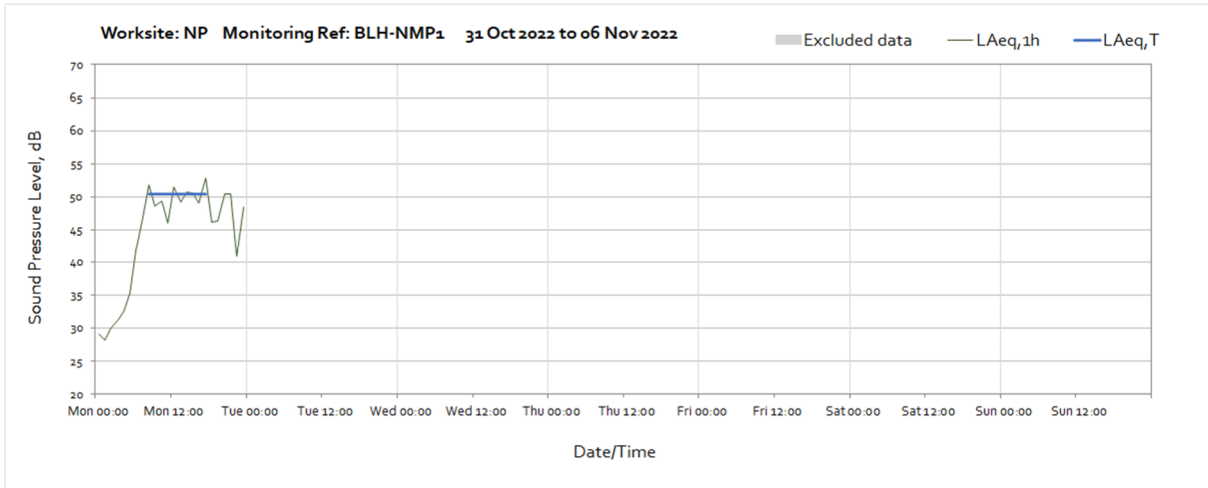
### Worksite: NP - Monitoring Ref: BLH-NMP1



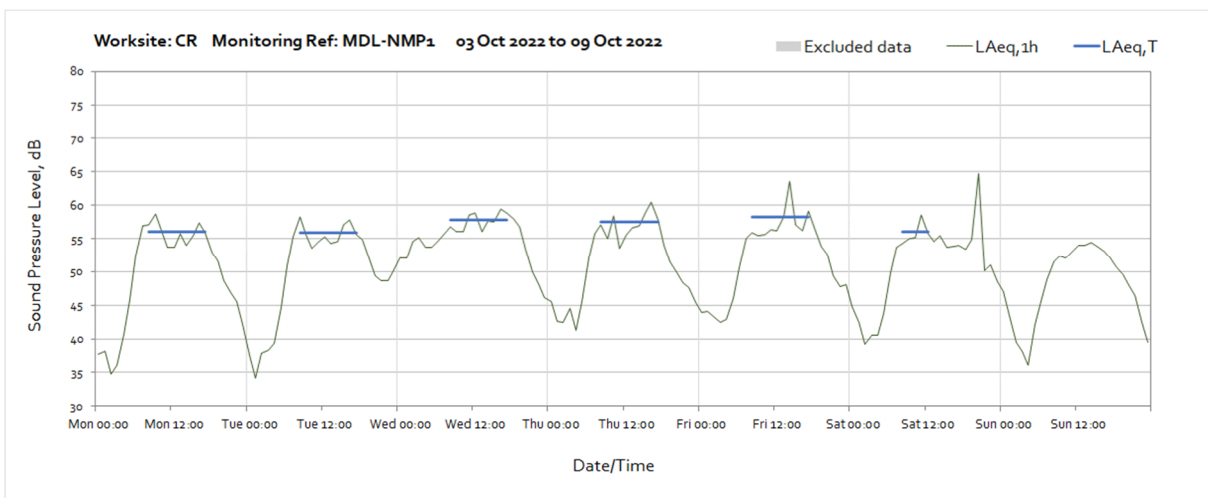
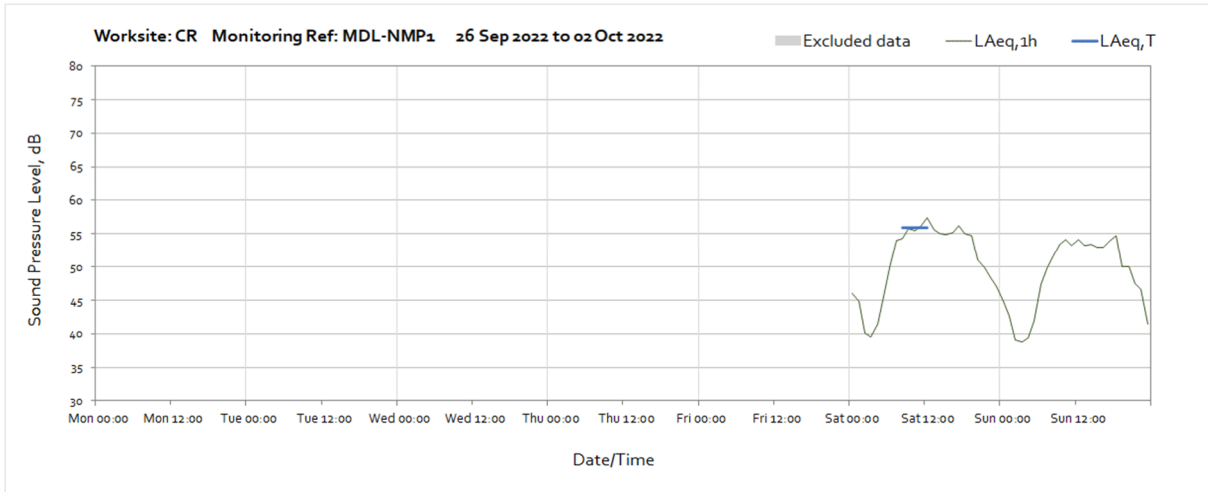


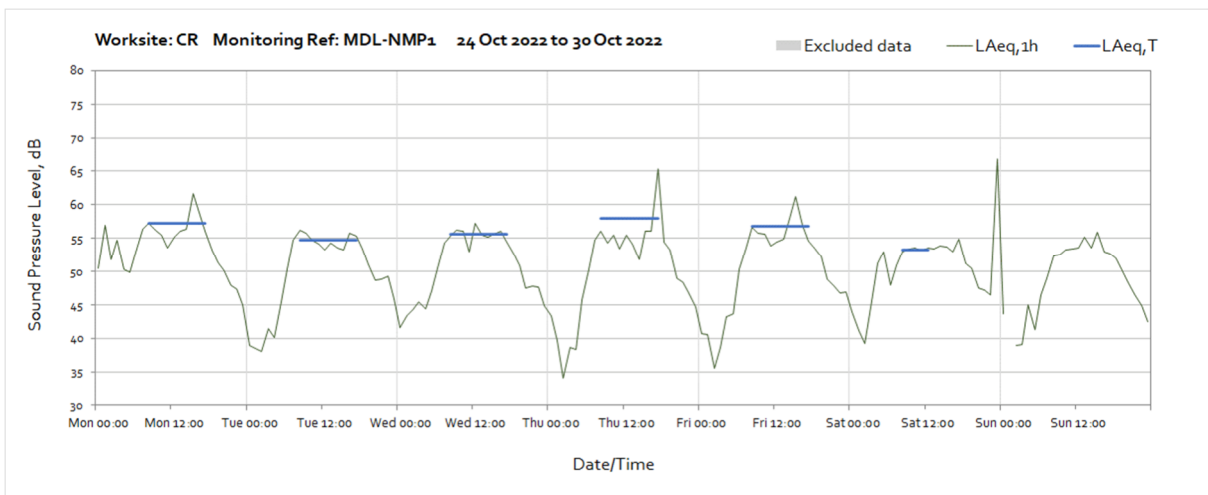
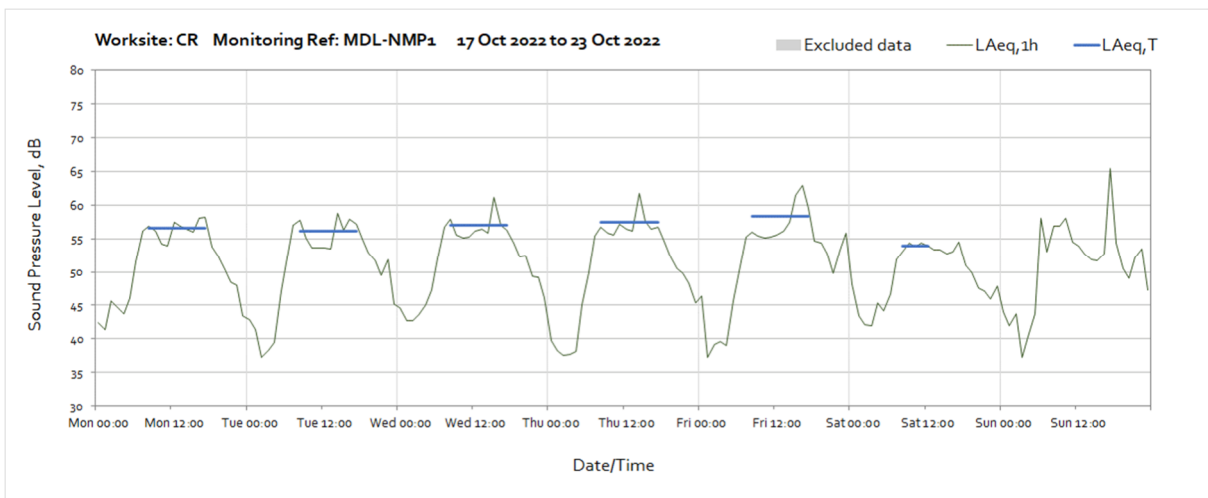
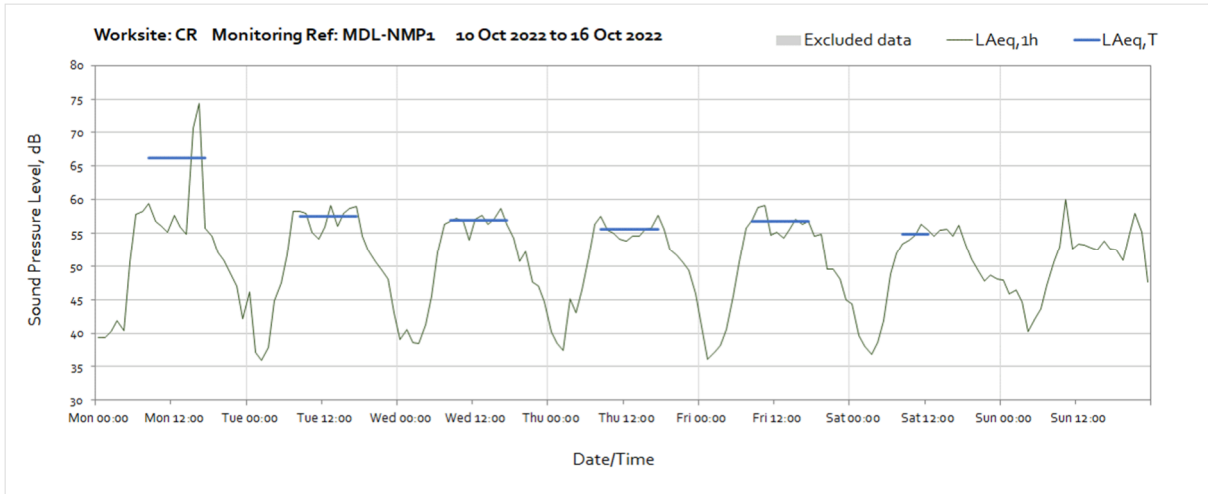


Note: Missing data between 01:00 and 02:00 on Sunday 30th October was due to a software issue associated with the end of British Summer Time.

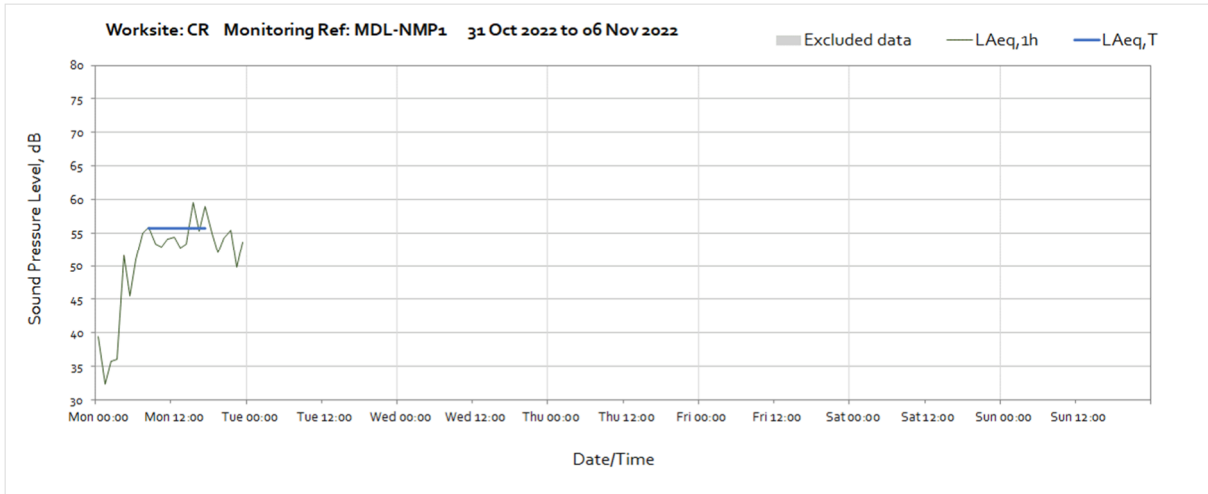


**Worksite: CR – Monitoring Ref: MDL-NMP1**

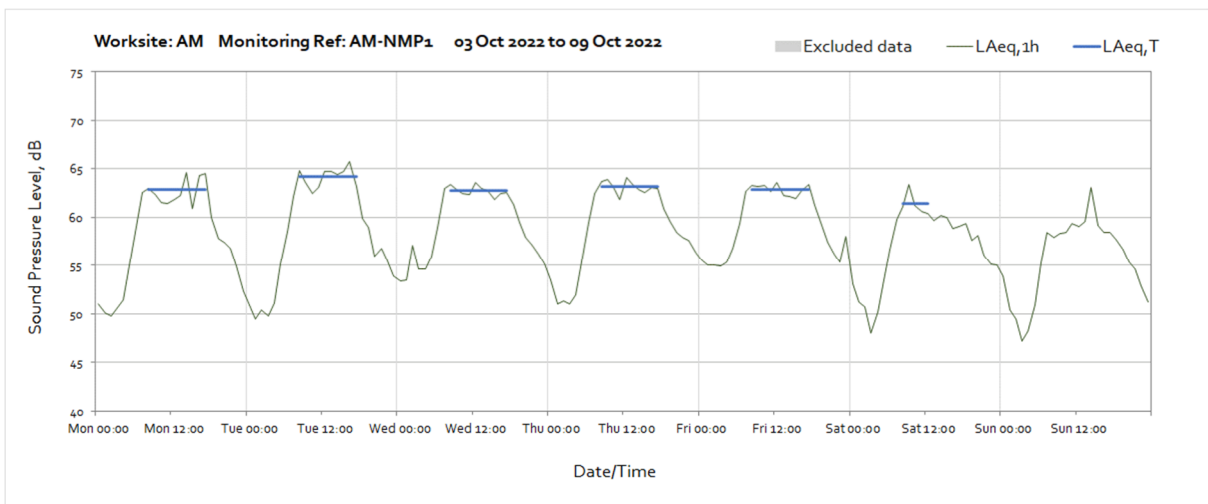
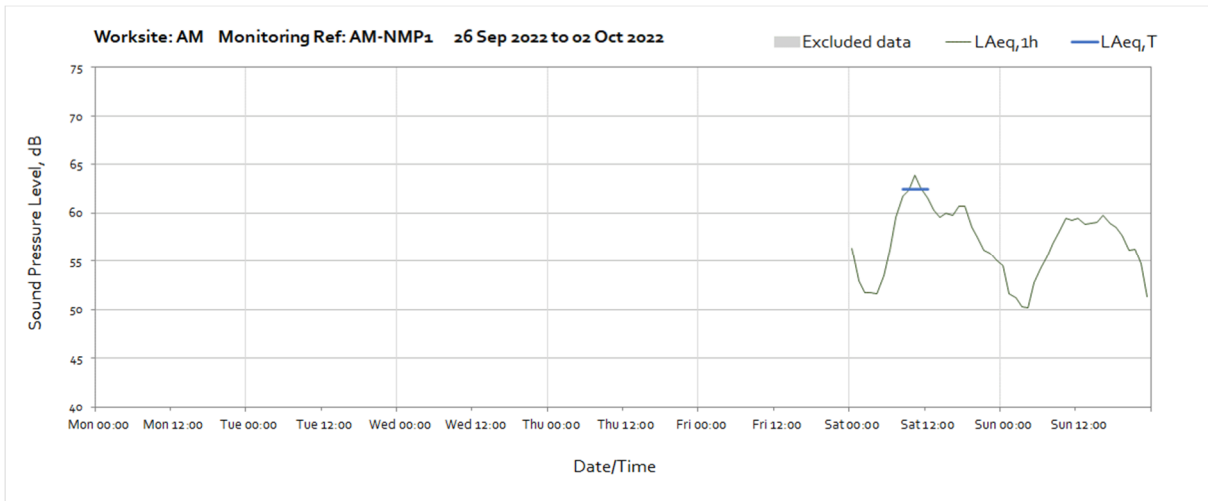


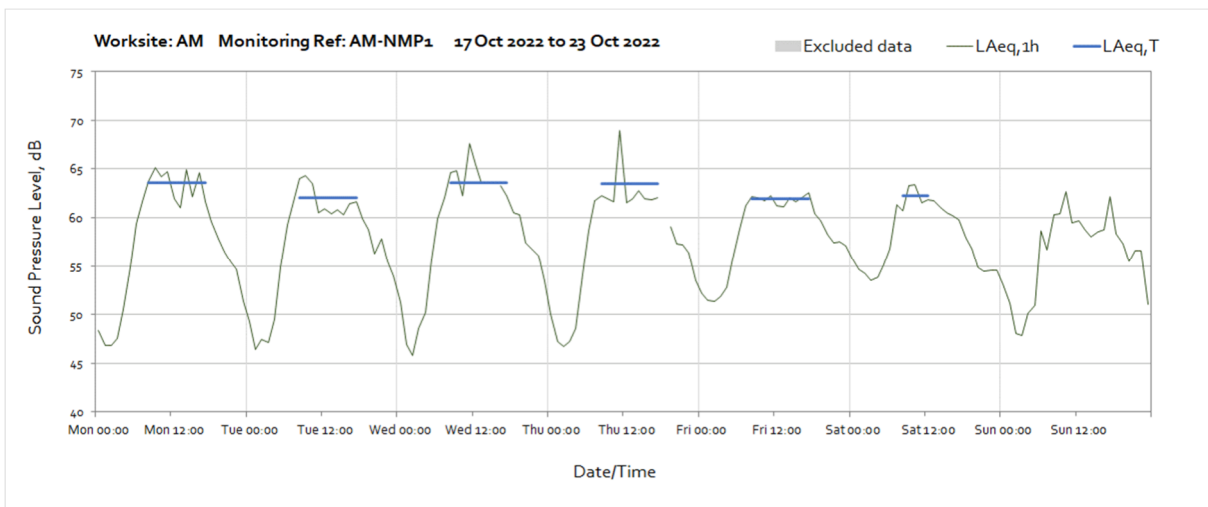
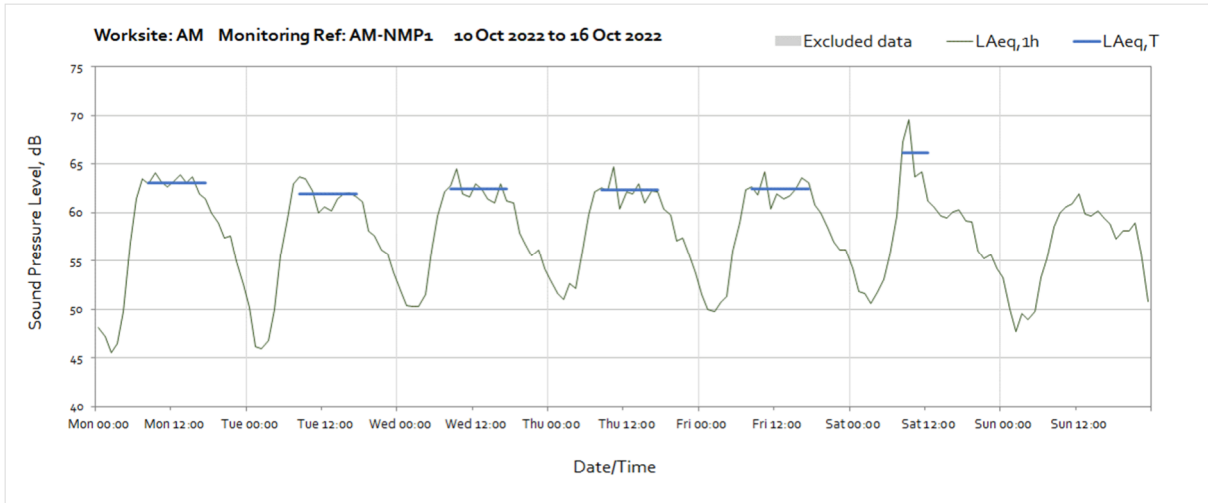


Note: Missing data between 01:00 and 02:00 on Sunday 30th October was due to a software issue associated with the end of British Summer Time.

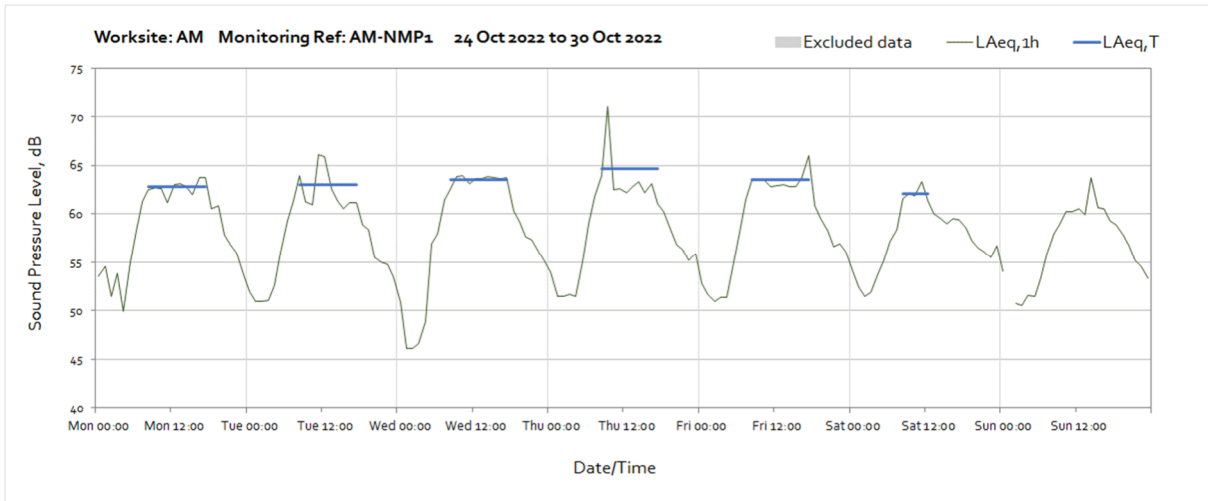


**Worksite: AM - Monitoring Ref: AM-NMP1**

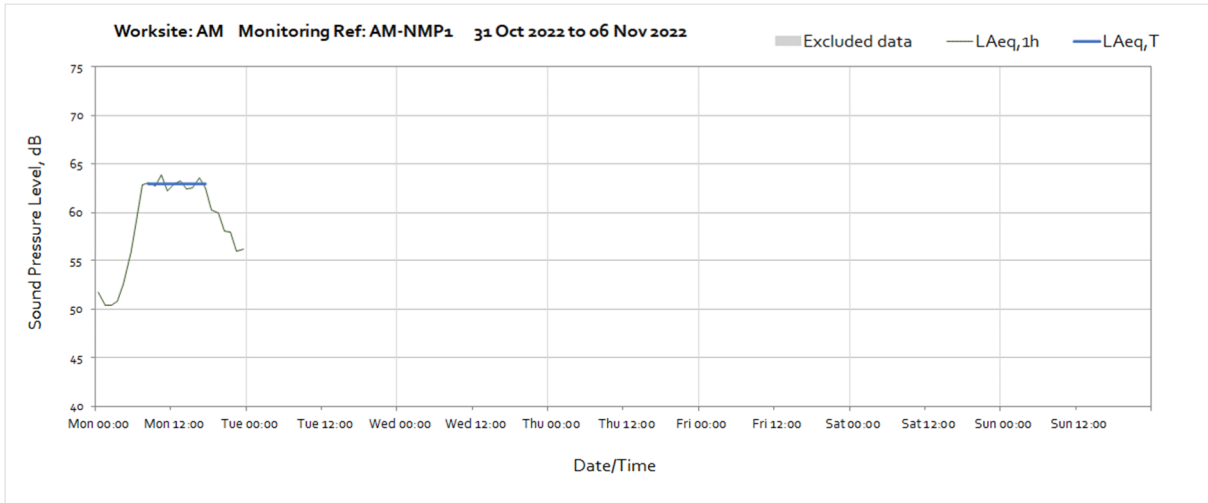




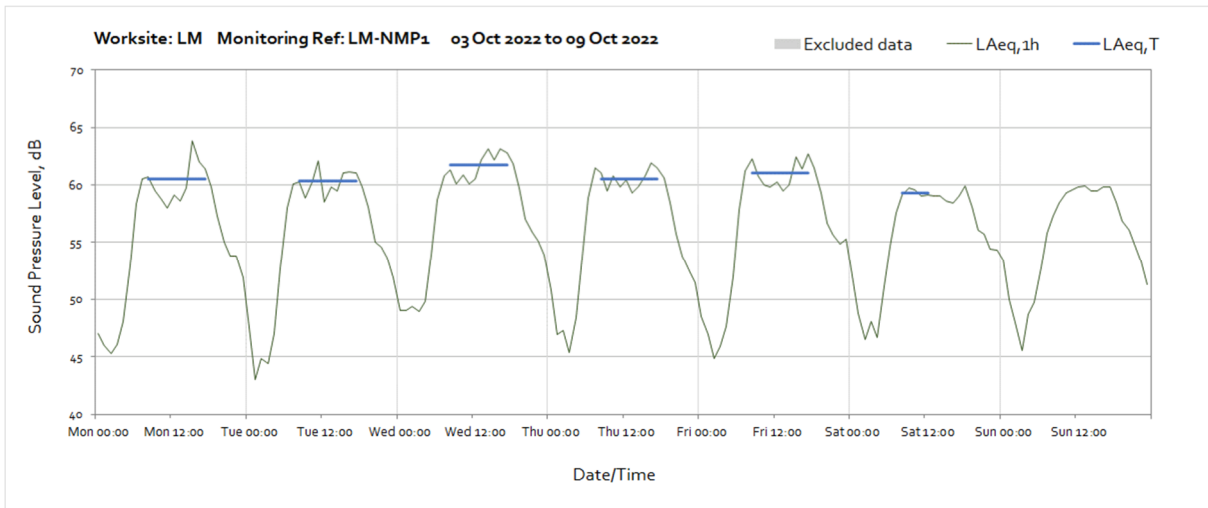
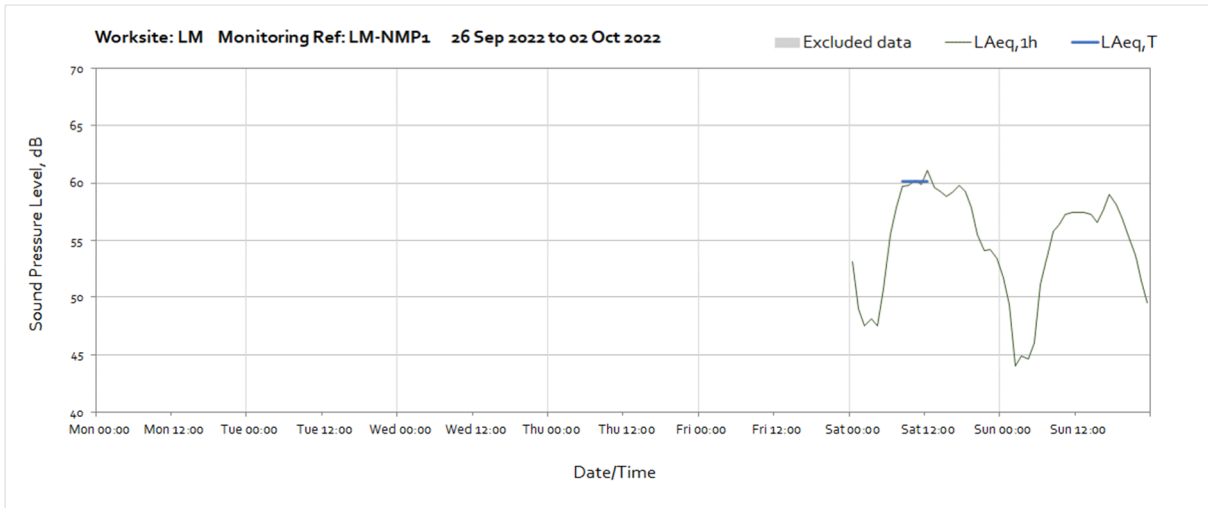
**Note: Missing data between 14:00 and 16:00 on the 19<sup>th</sup> October was due to monitor battery replacement. Missing data between 18:00 and 19:00 on the 20<sup>th</sup> October was due to monitor maintenance.**

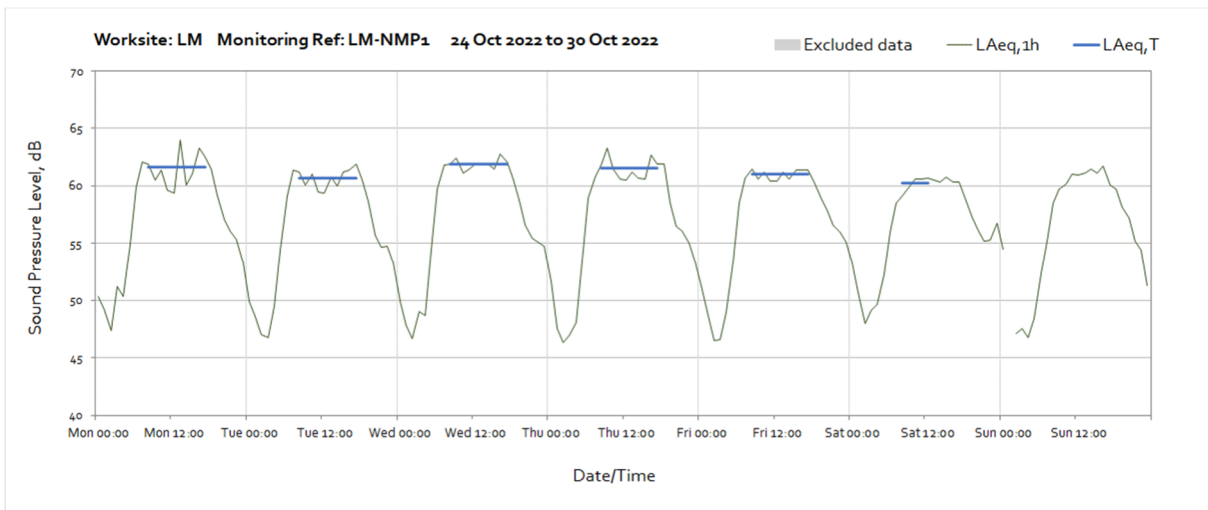
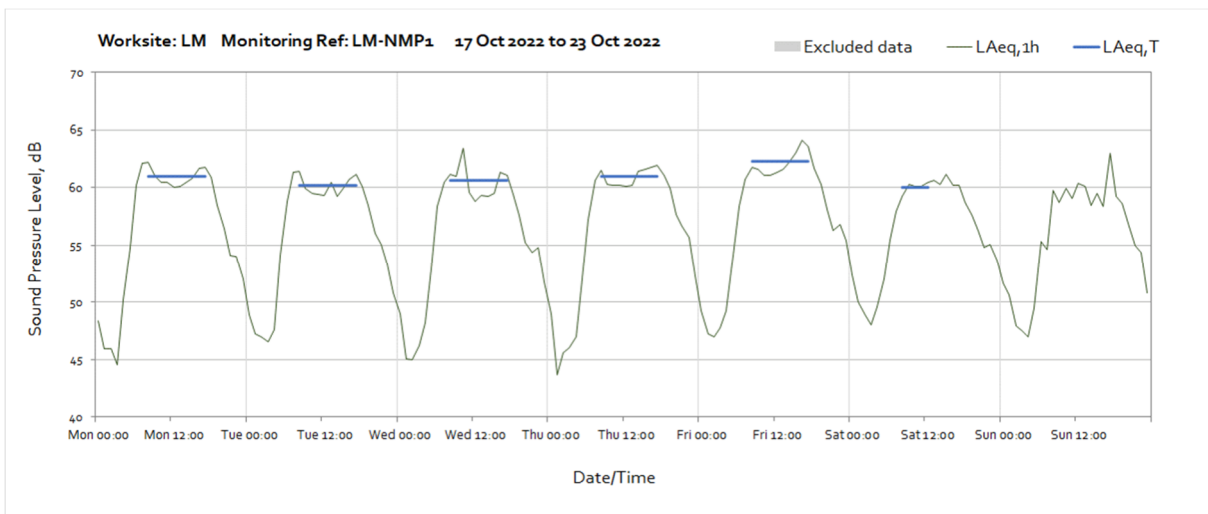
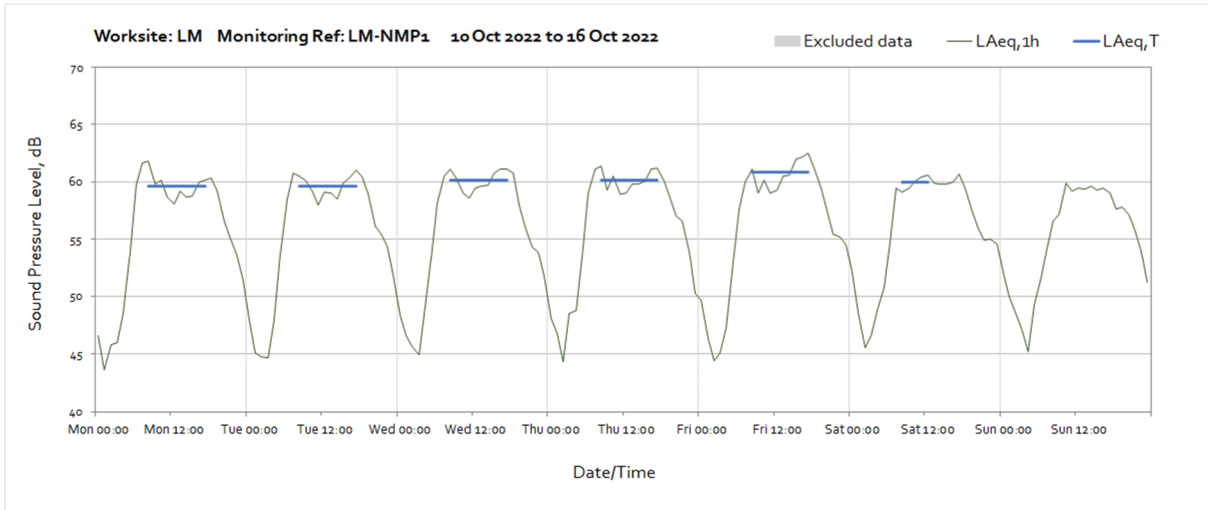


**Note: Missing data between 01:00 and 02:00 on Sunday 30<sup>th</sup> October was due to a software issue associated with the end of British Summer Time.**



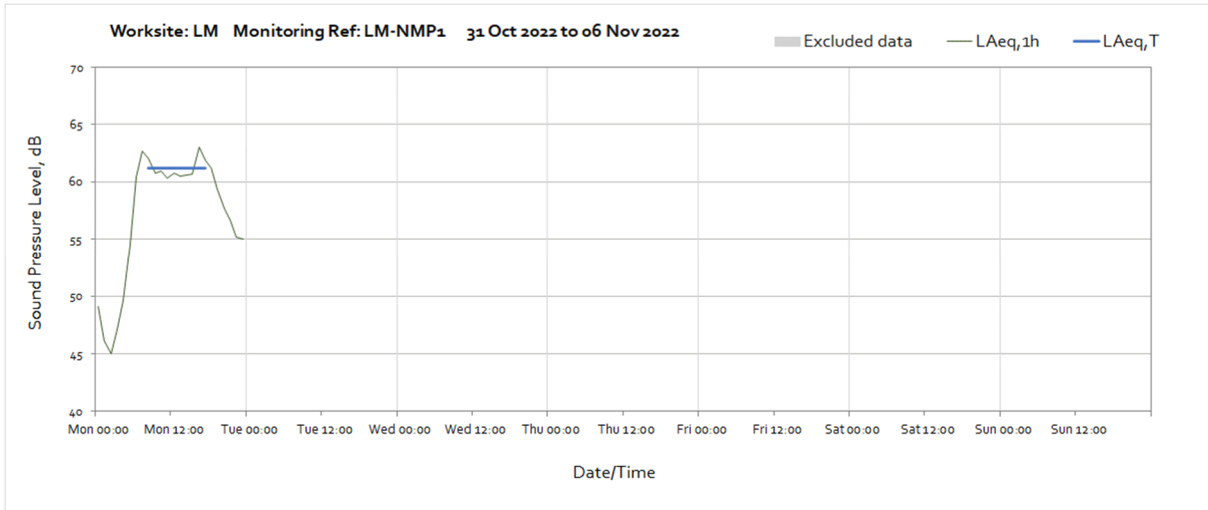
**Worksite: LM – Monitoring Ref: LM-NMP1**



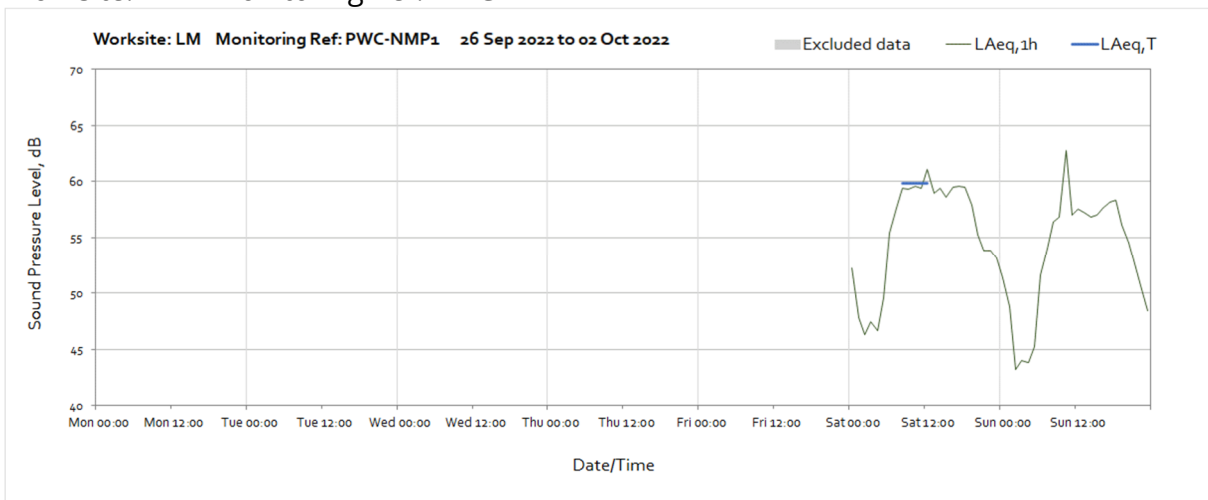


Note: Missing data between 01:00 and 02:00 on Sunday 30th October was due to a software issue associated with the end of British Summer Time.

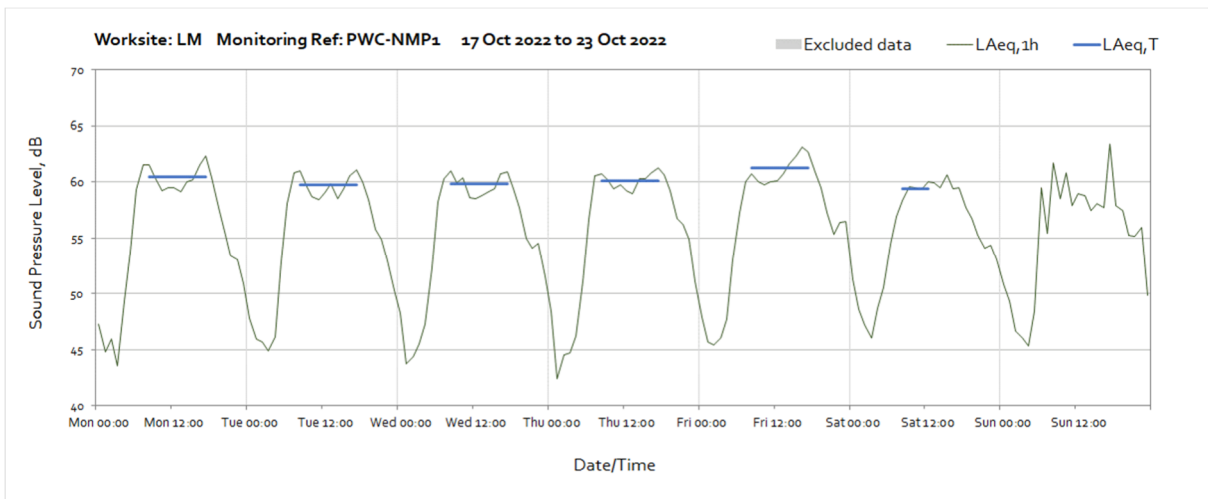
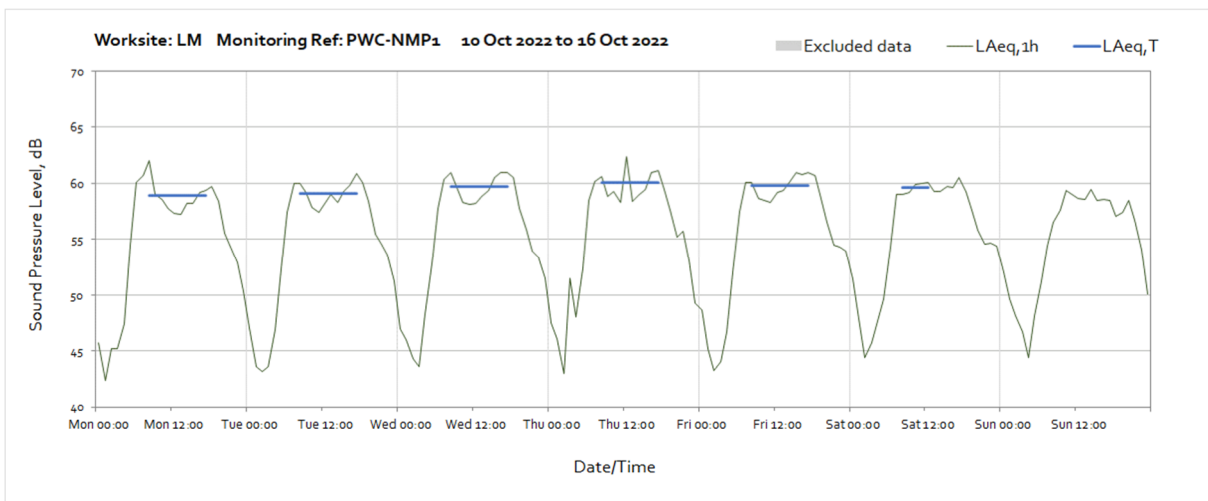
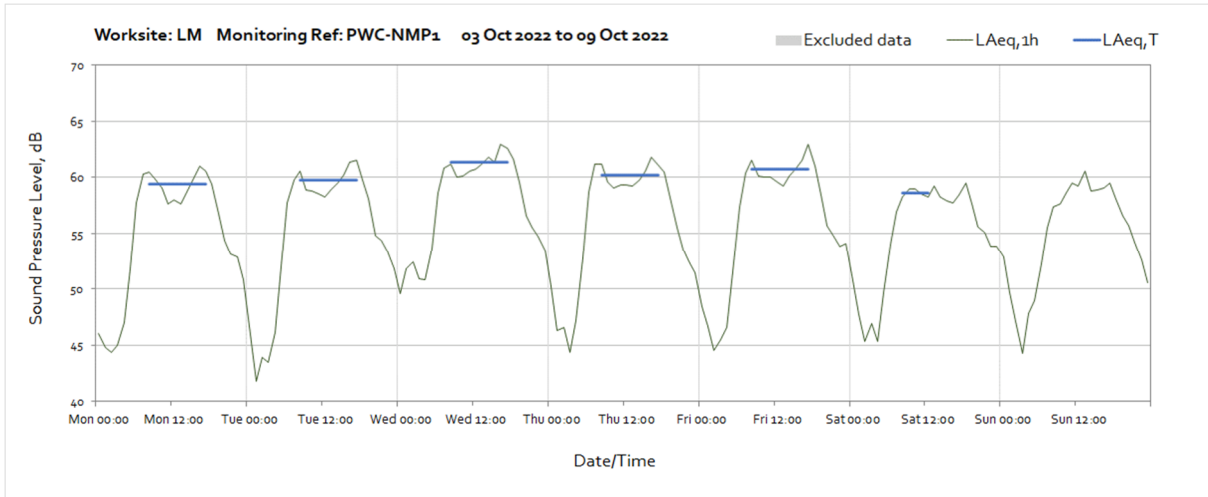
OFFICIAL

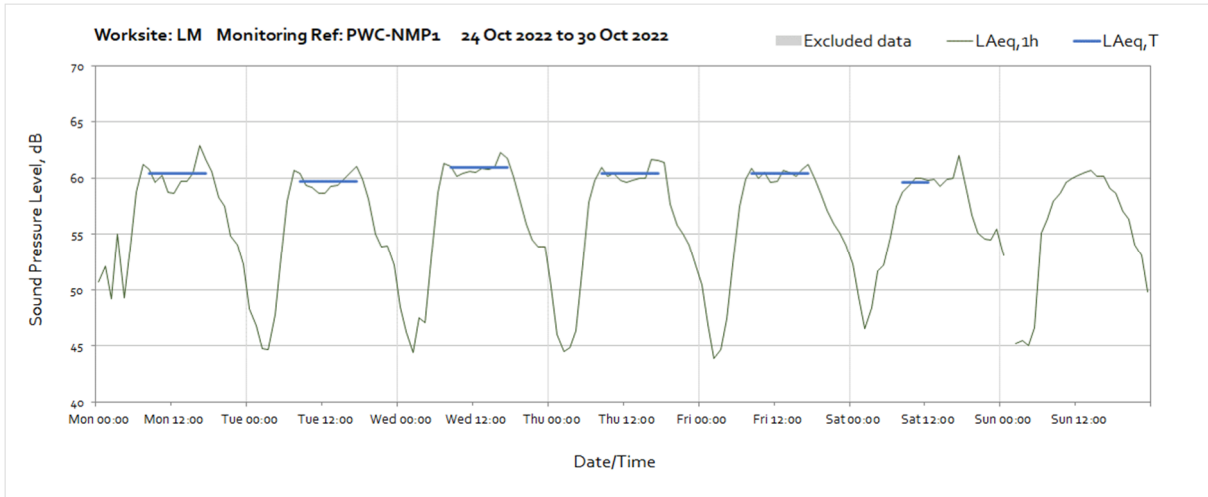


Worksite: LM – Monitoring Ref: PWC-NMP1

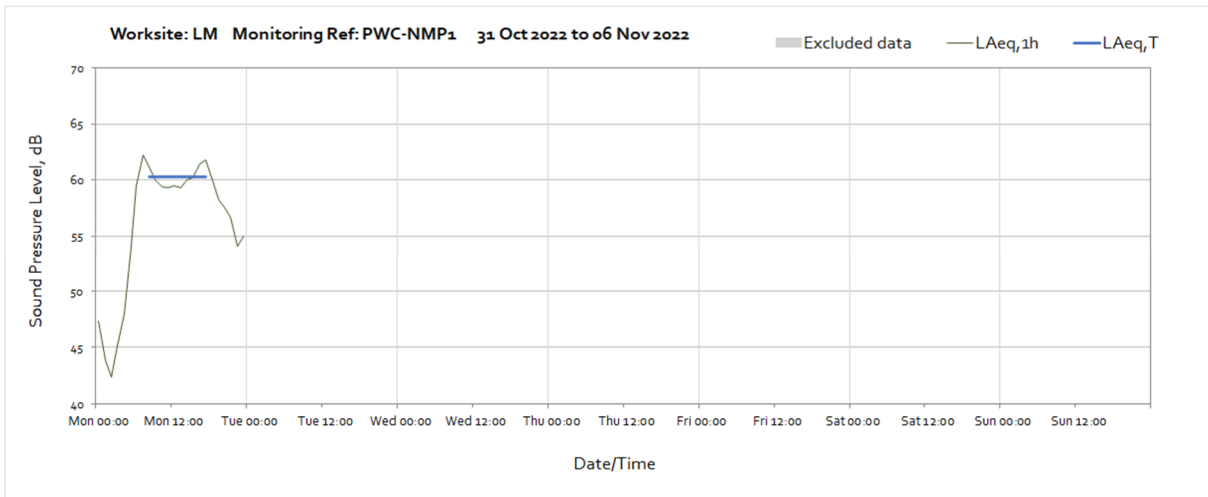




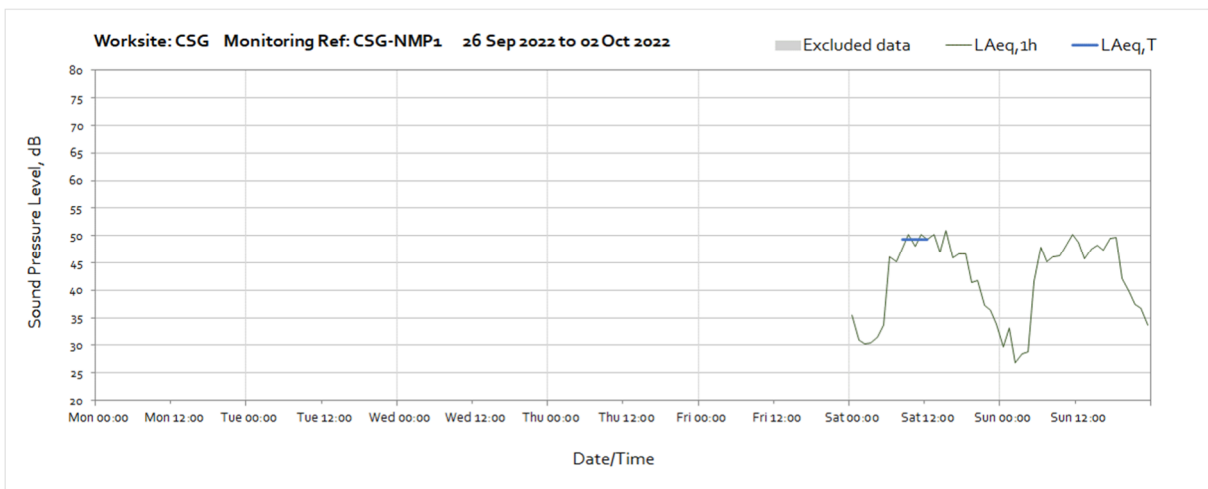


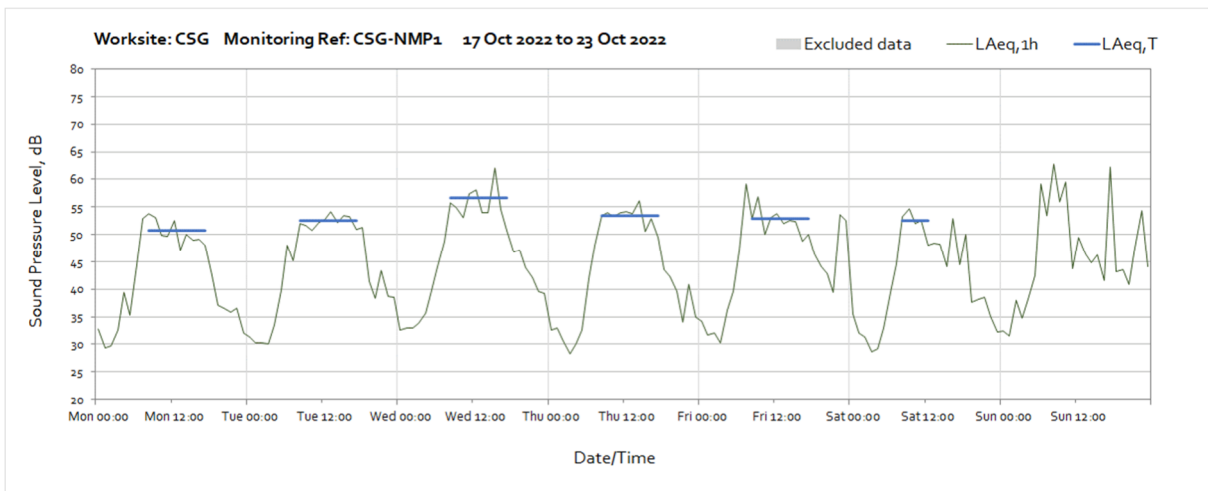
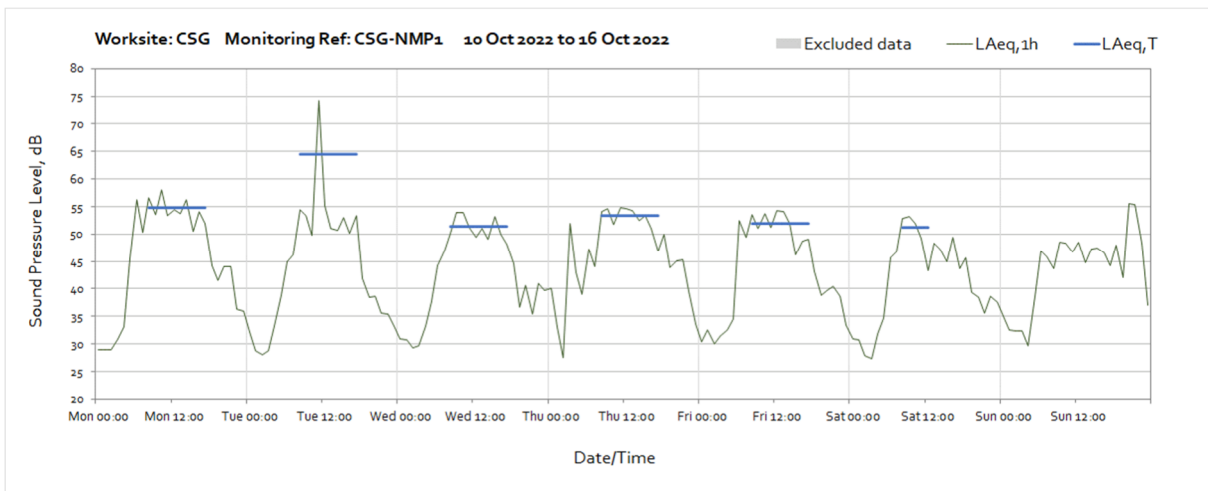
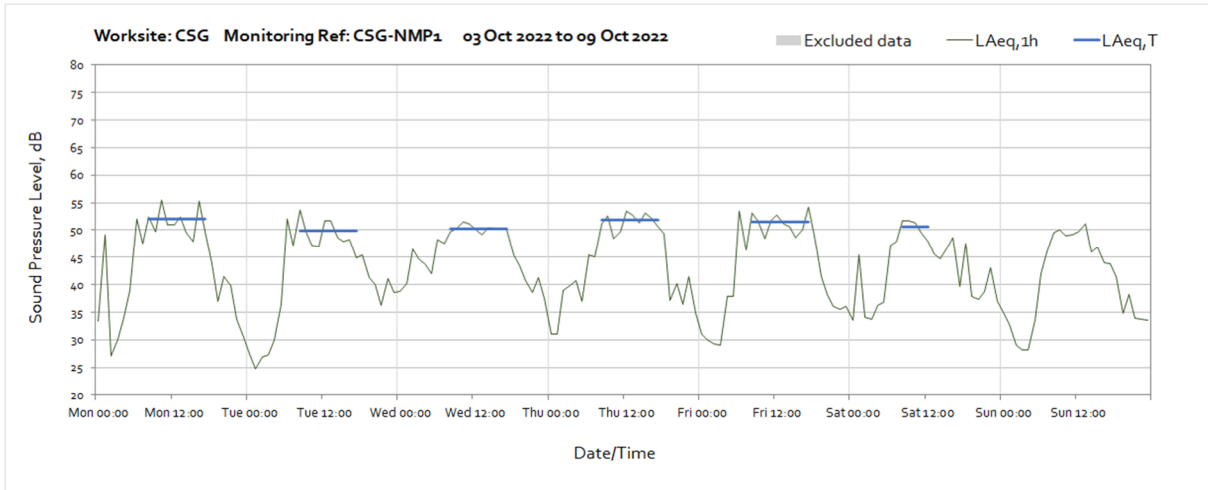


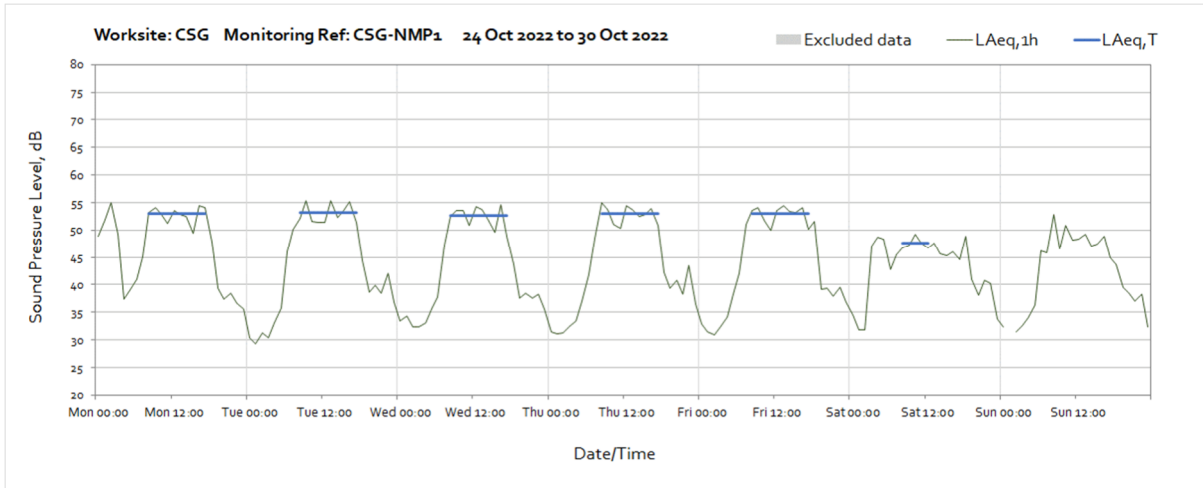
Note: Missing data between 01:00 and 02:00 on Sunday 30th October was due to a software issue associated with the end of British Summer Time.



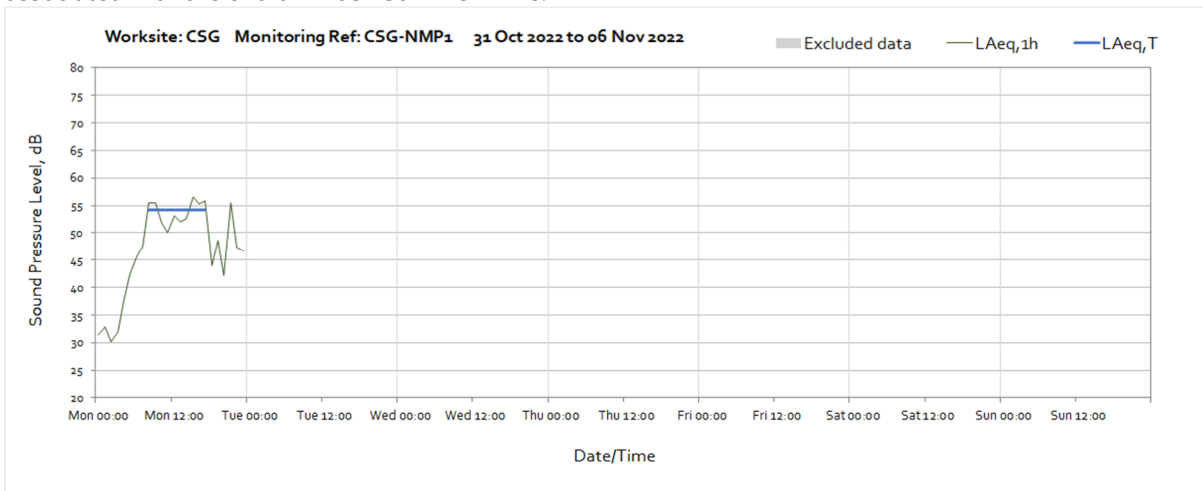
### Worksite: CSG – Monitoring Ref: CSG-NMP1



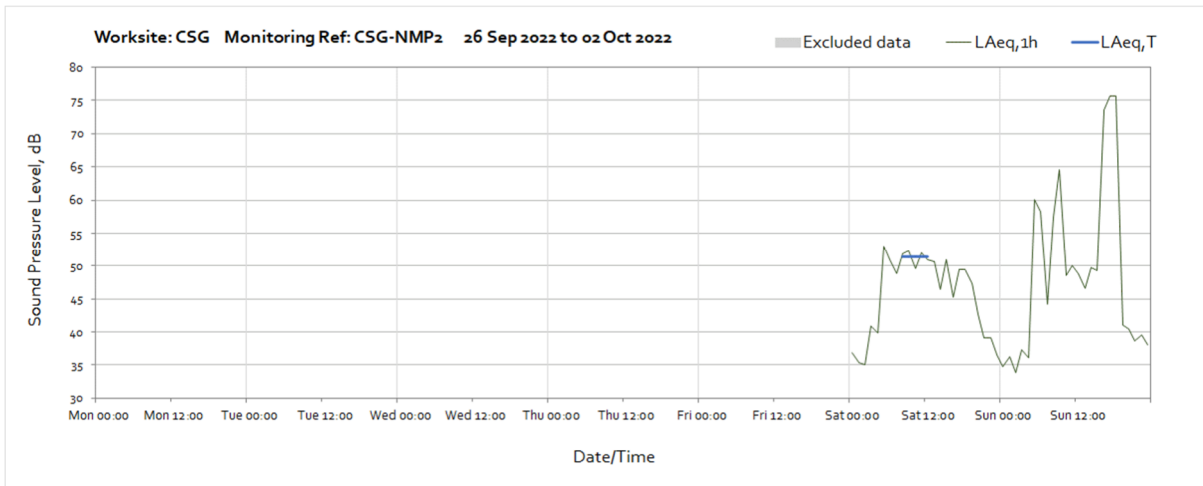


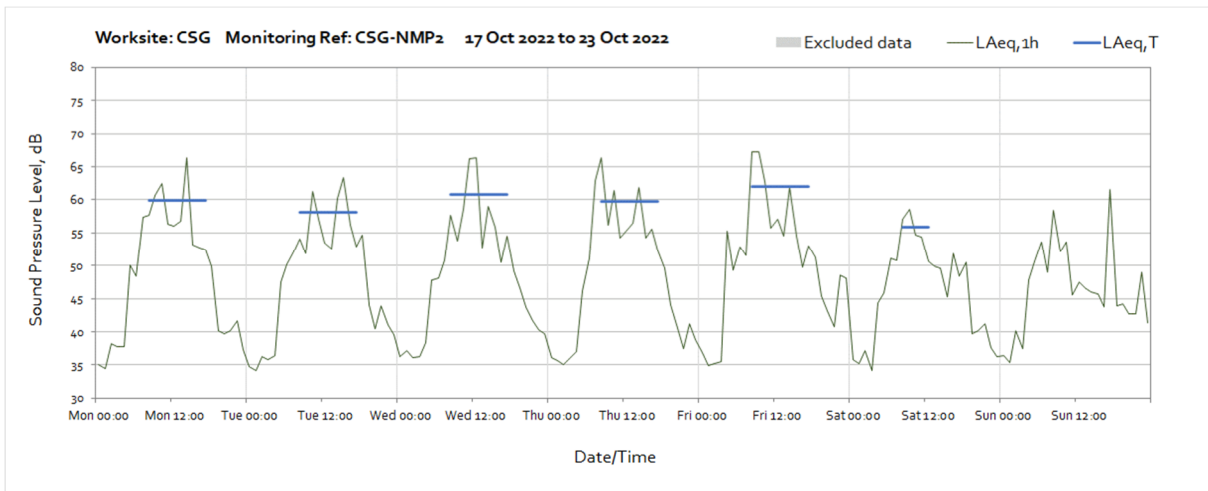
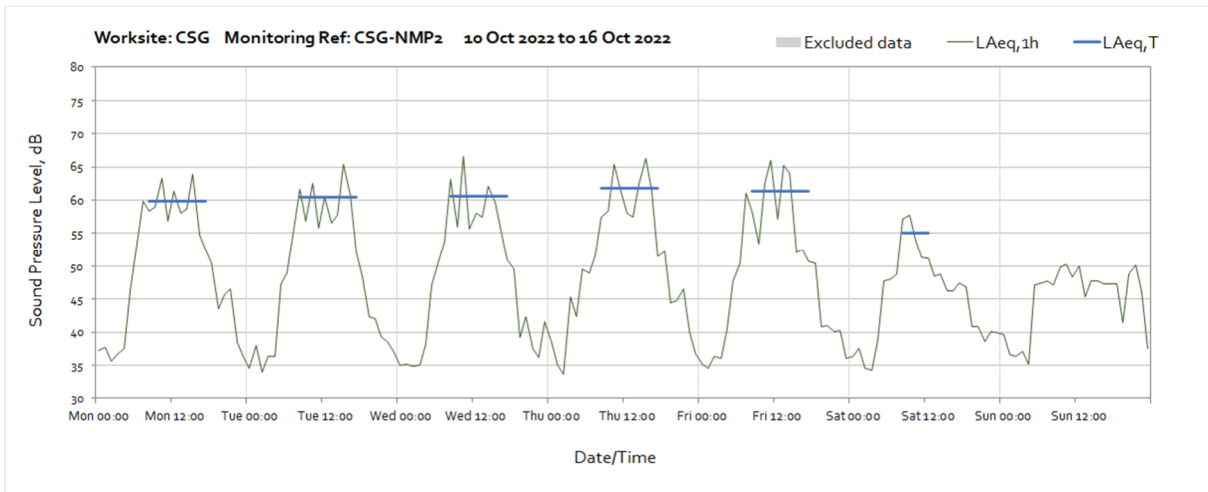
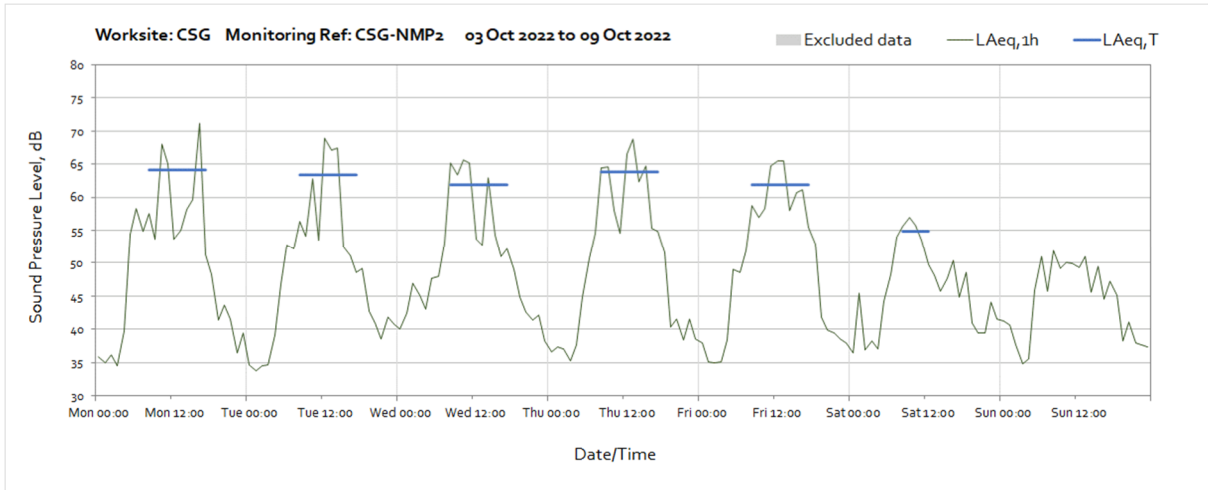


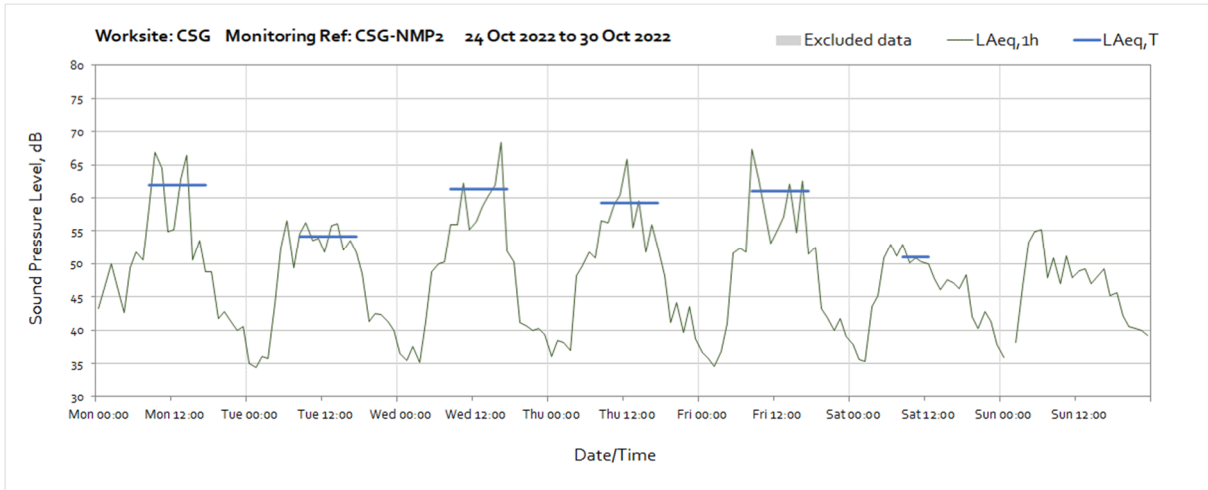
Note: Missing data between 01:00 and 02:00 on Sunday 30th October was due to a software issue associated with the end of British Summer Time.



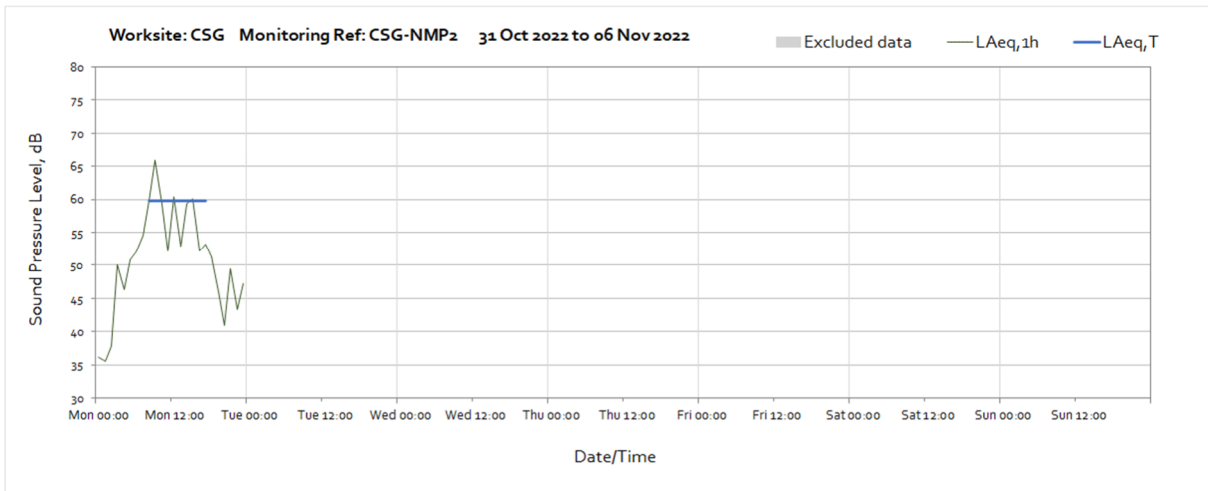
**Worksite: CSG – Monitoring Ref: CSG-NMP2**



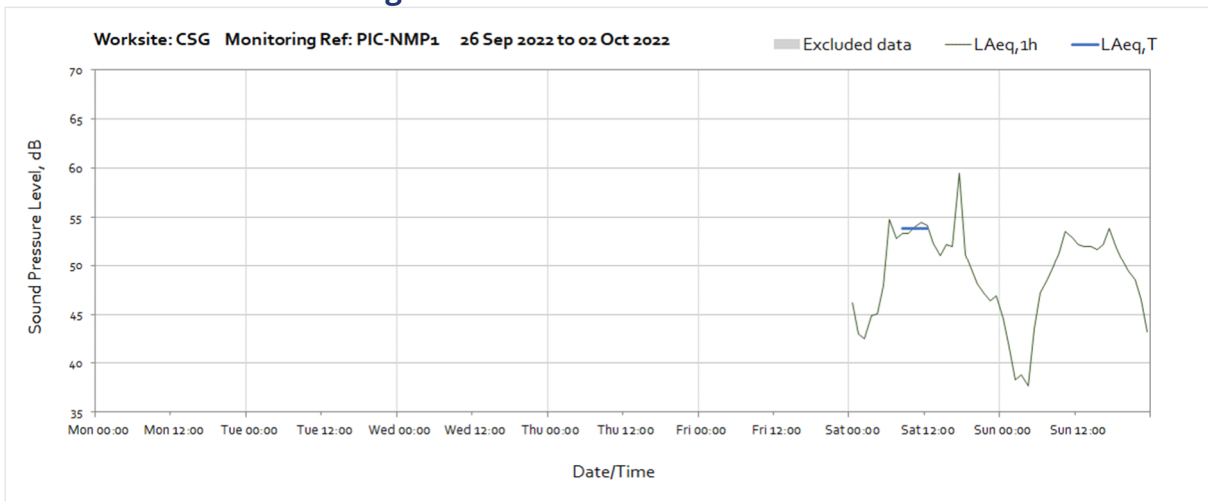


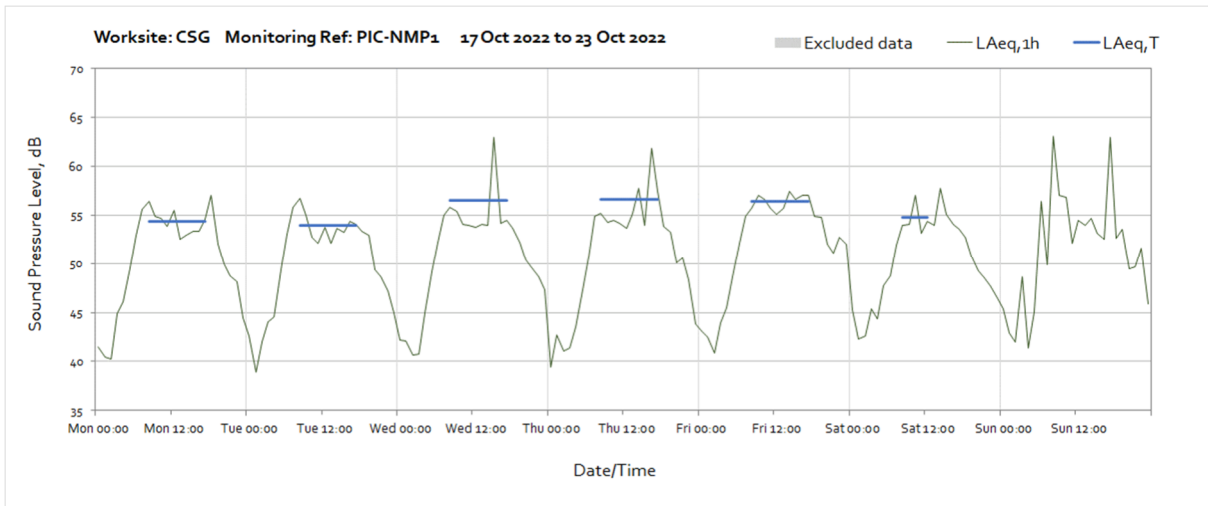
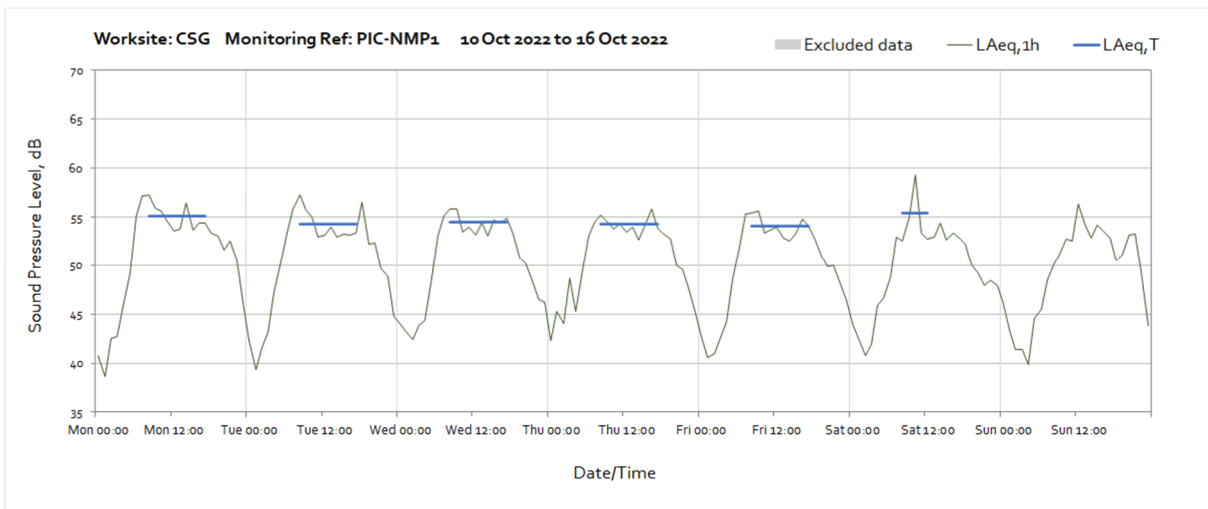
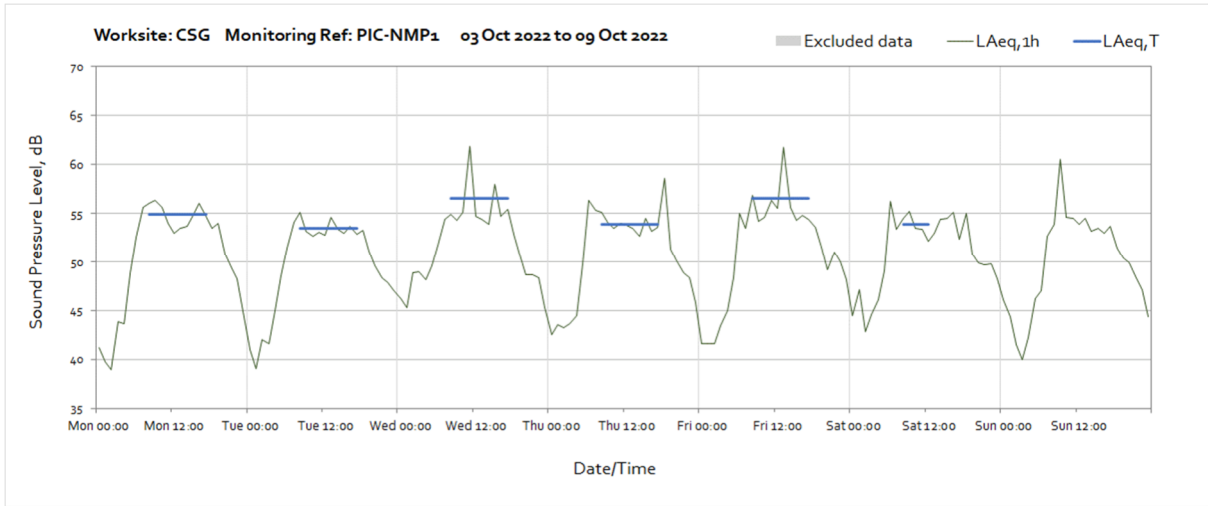


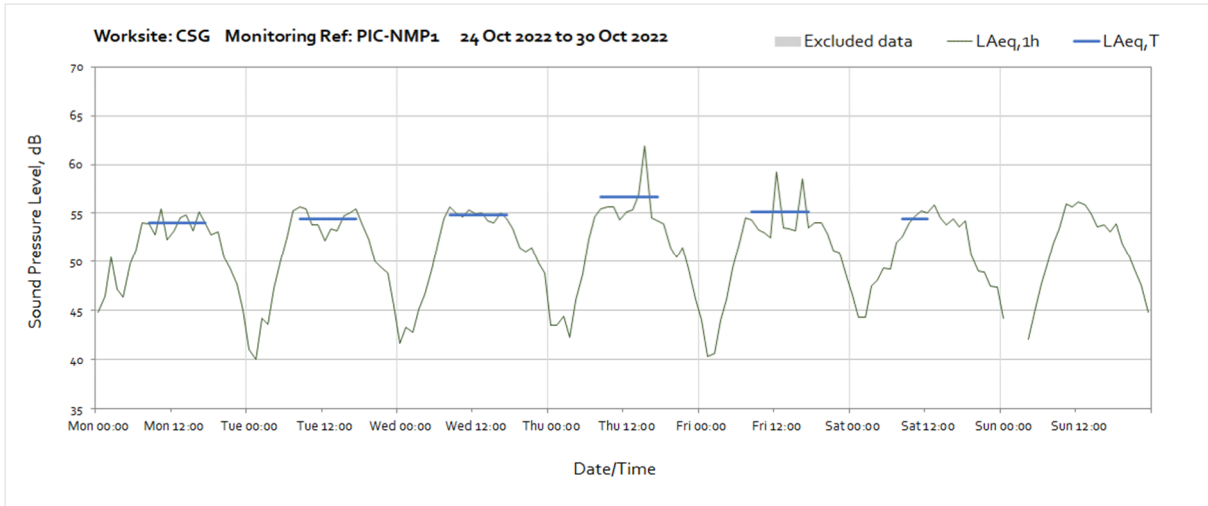
Note: Missing data between 01:00 and 02:00 on Sunday 30th October was due to a software issue associated with the end of British Summer Time.



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

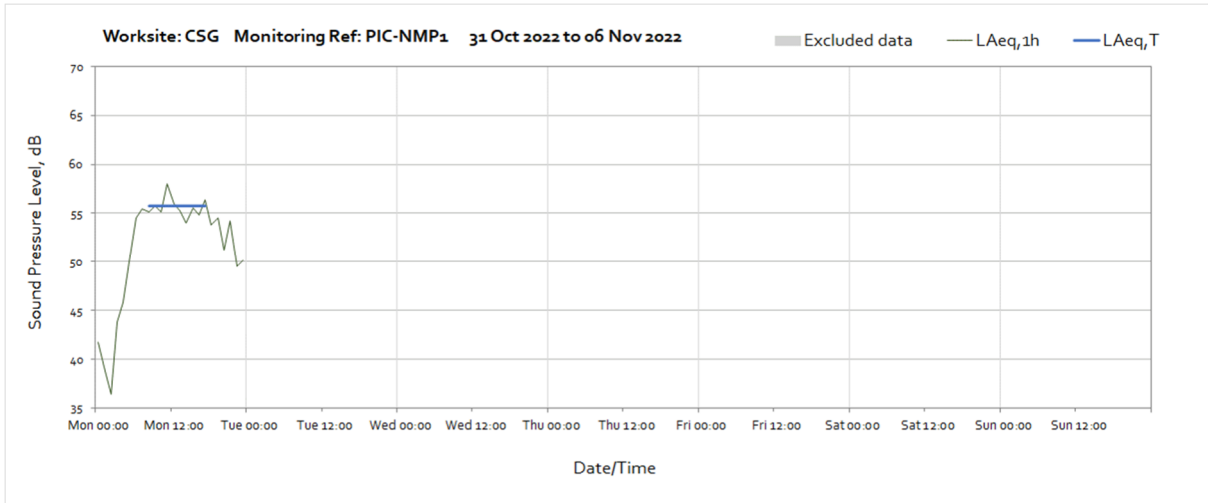




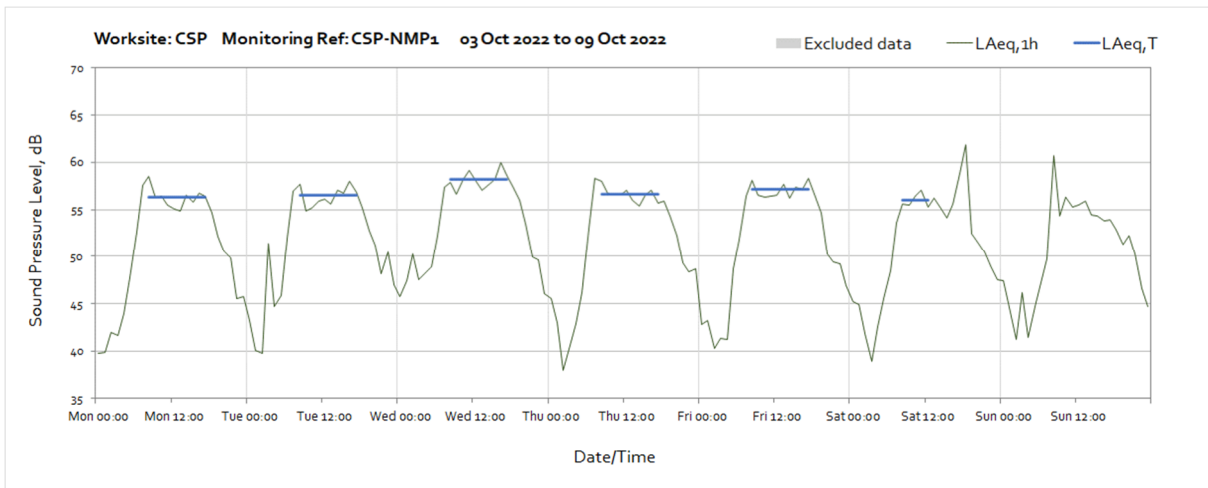
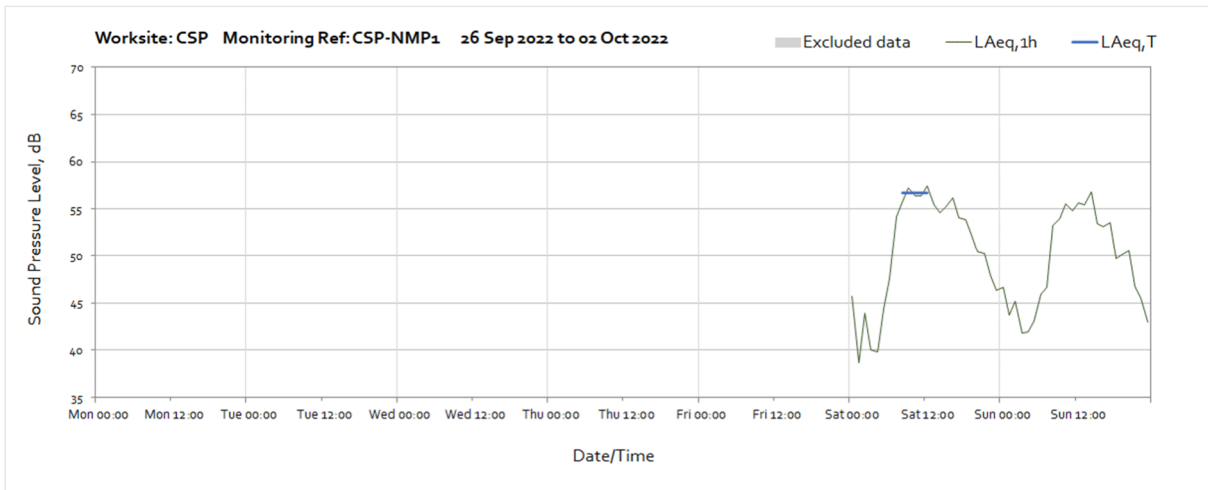


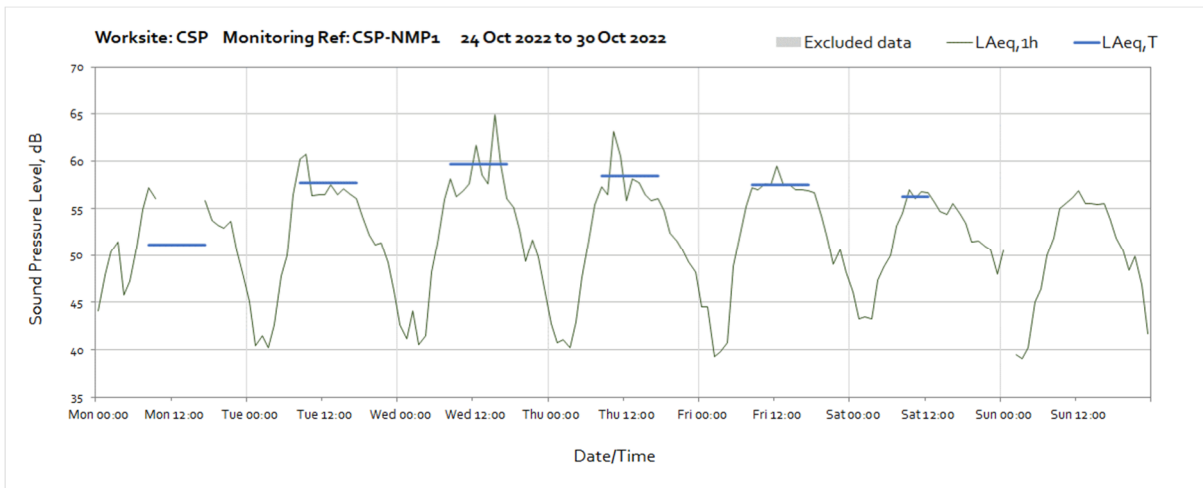
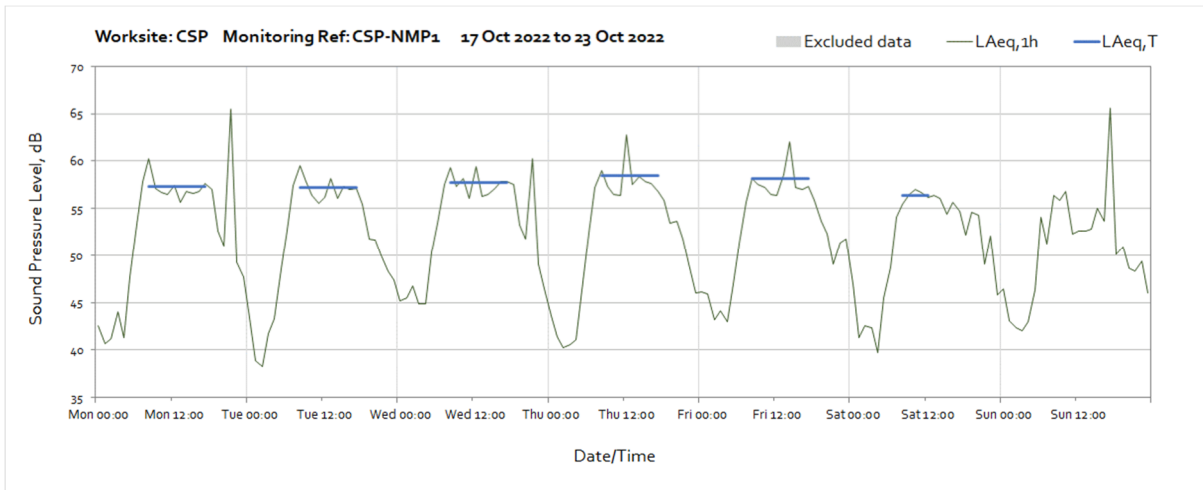
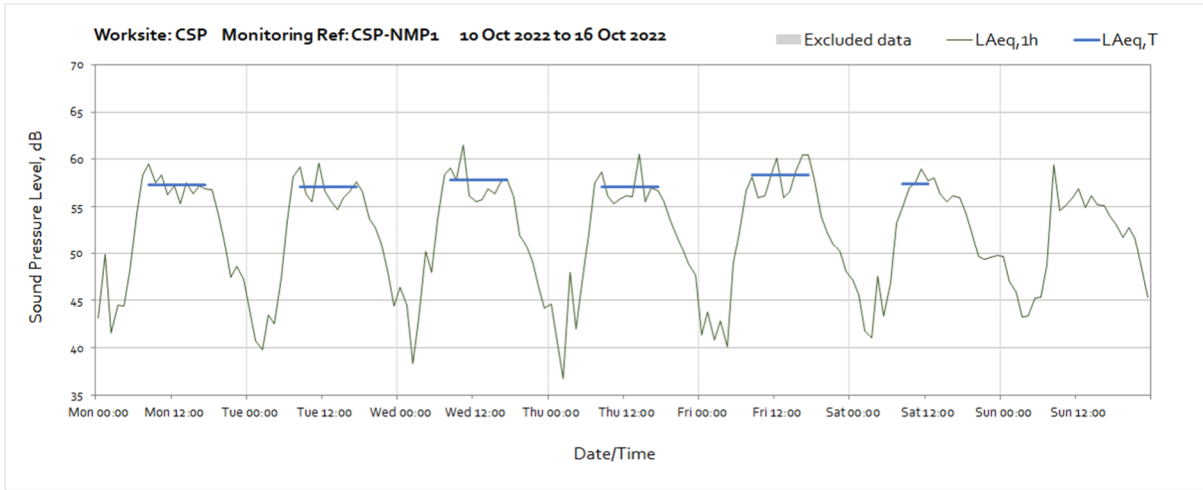
Note: Missing data between 01:00 and 02:00 on Sunday 30th October was due to a software issue associated with the end of British Summer Time. Missing data between 03:00 and 04:00 on the 30<sup>th</sup> October was due to monitor system reboot.



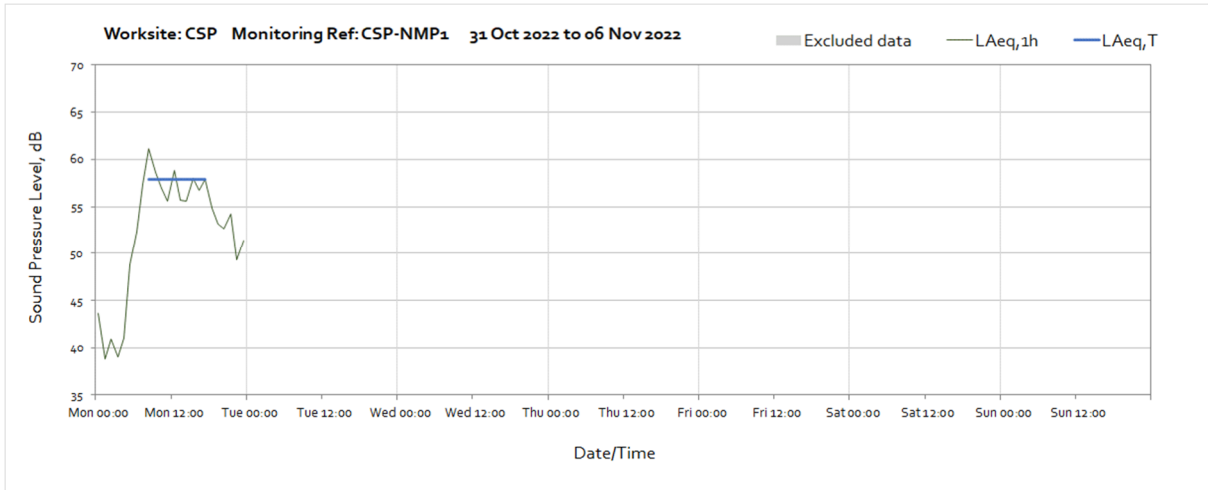


**Worksite: CSP – Monitoring Ref: CSP-NMP1**

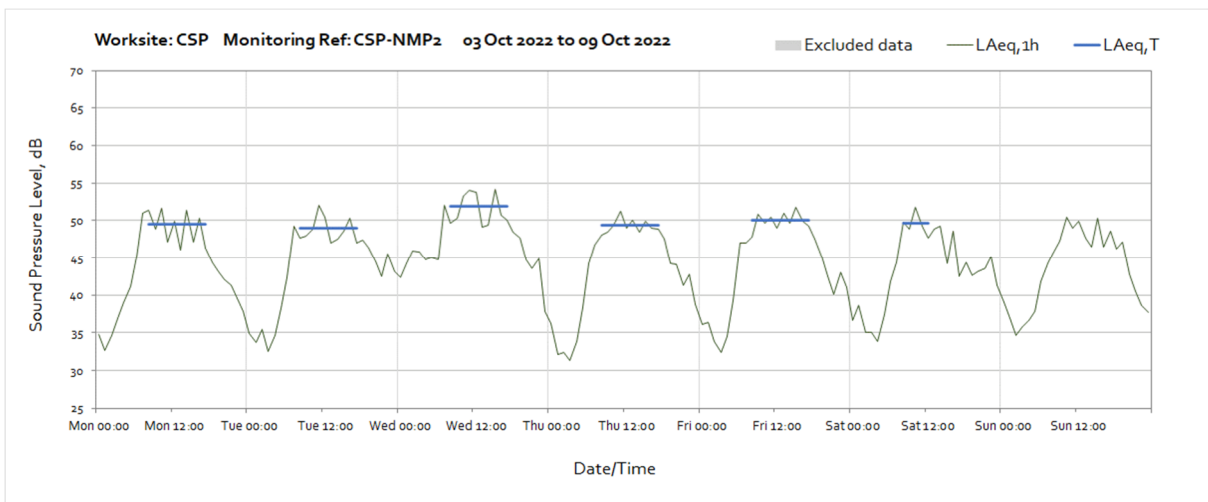
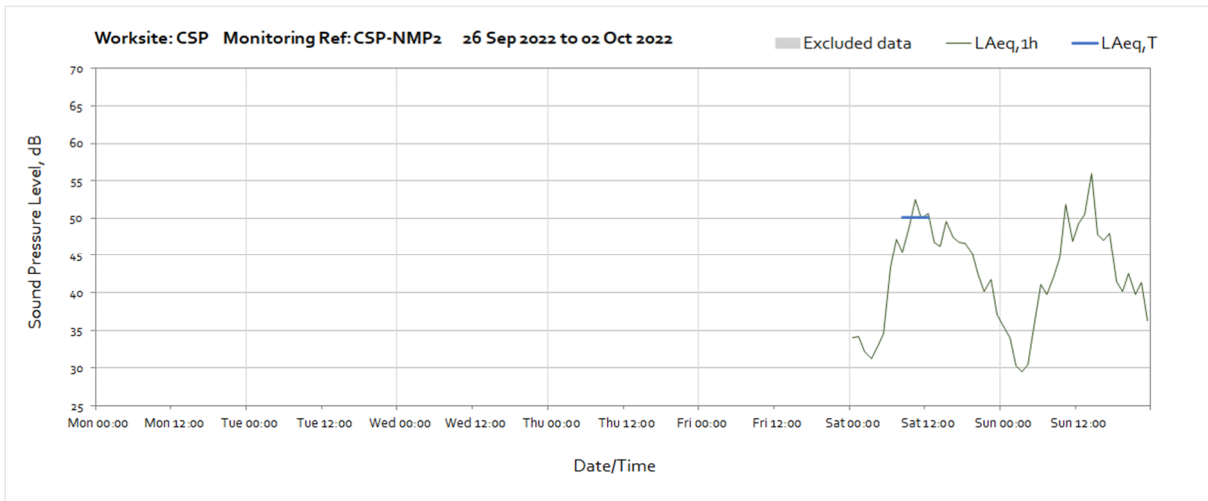


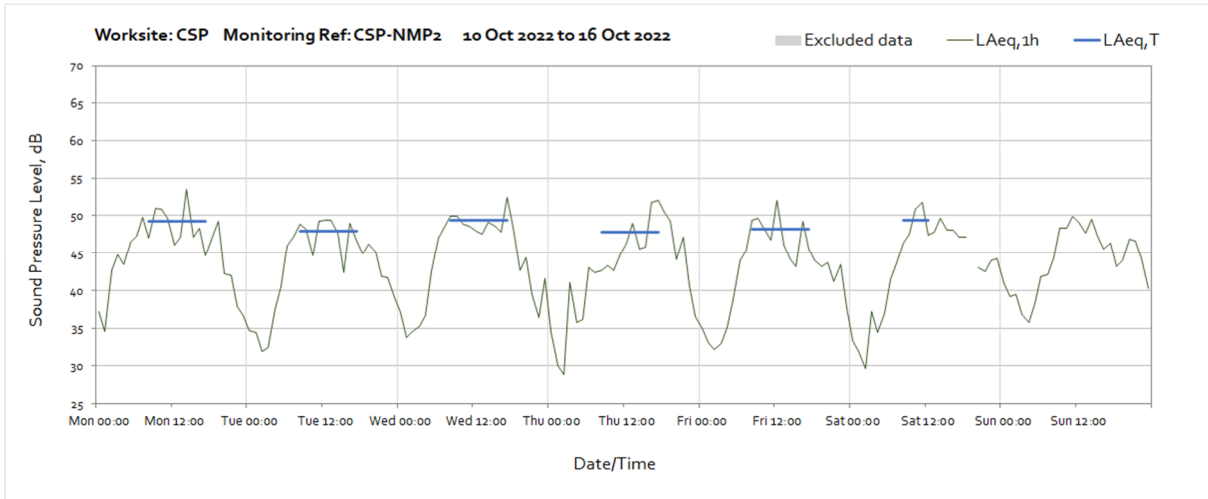


Note: Missing data between 10:00 and 17:00 on the 24<sup>th</sup> October was due to data transfer issue. Missing data between 01:00 and 02:00 on Sunday 30<sup>th</sup> October was due to a software issue associated with the end of British Summer Time.

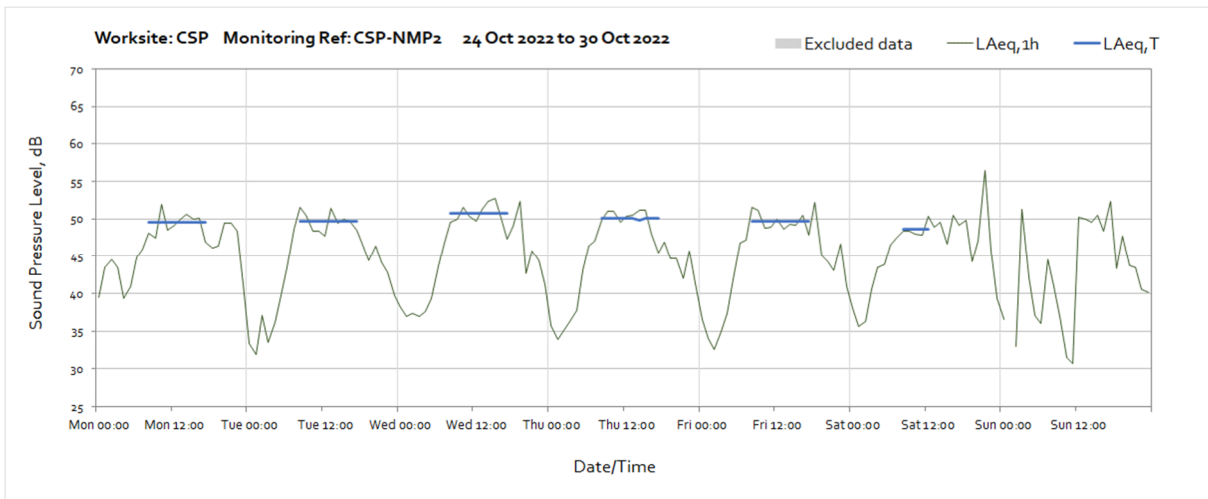
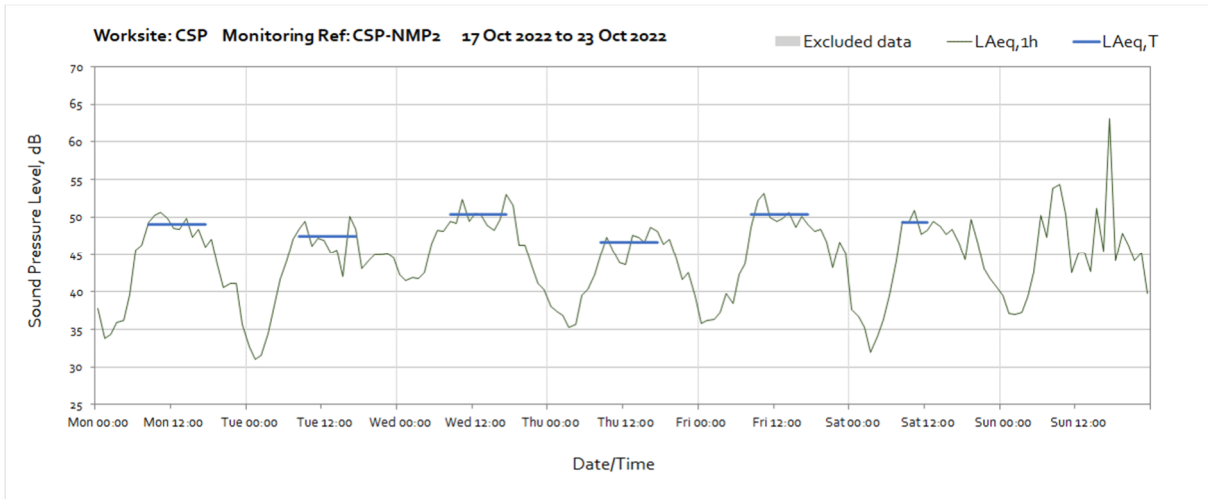


**Worksite: CSP – Monitoring Ref: CSP-NMP2**

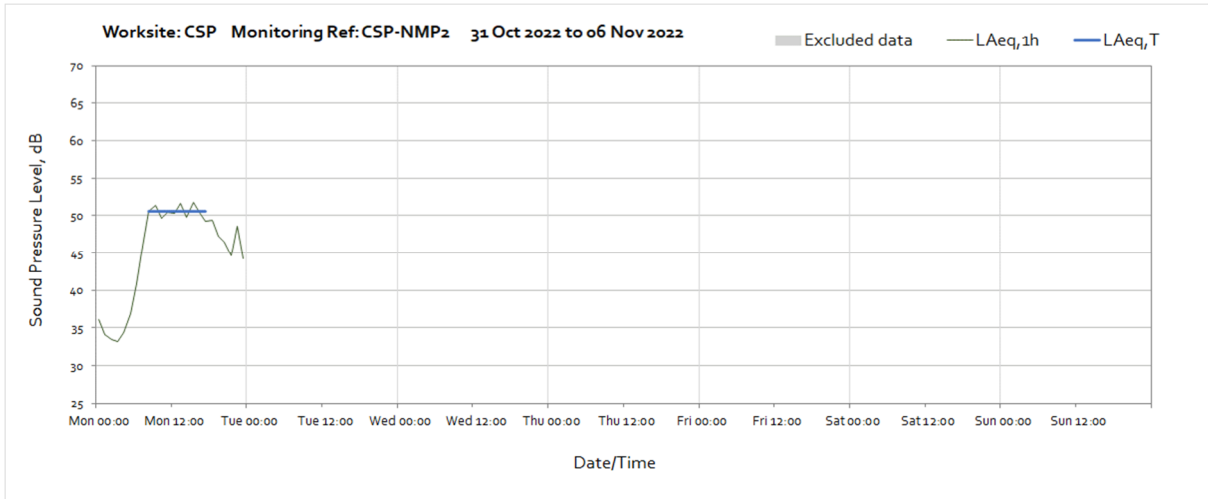




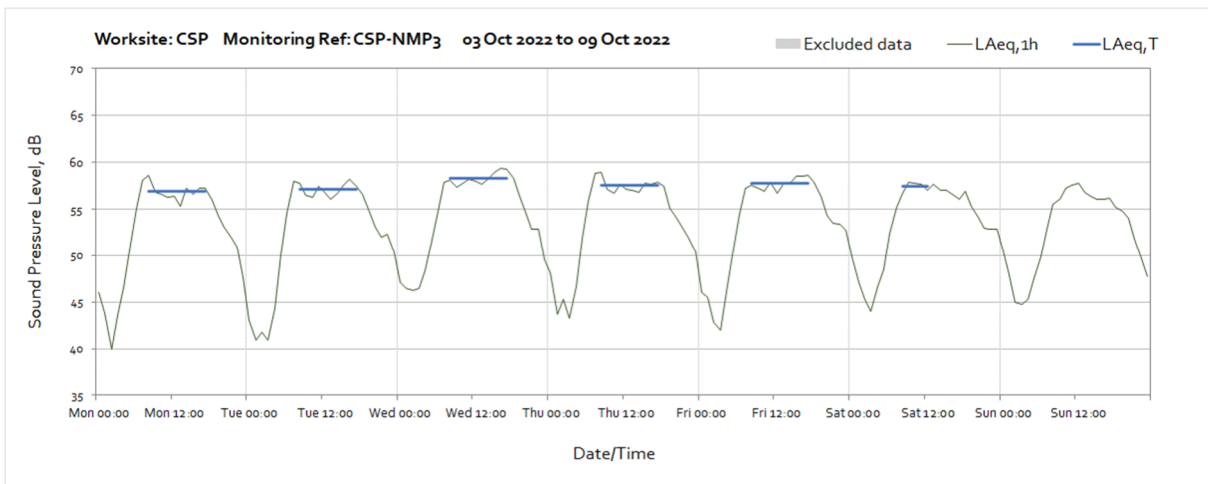
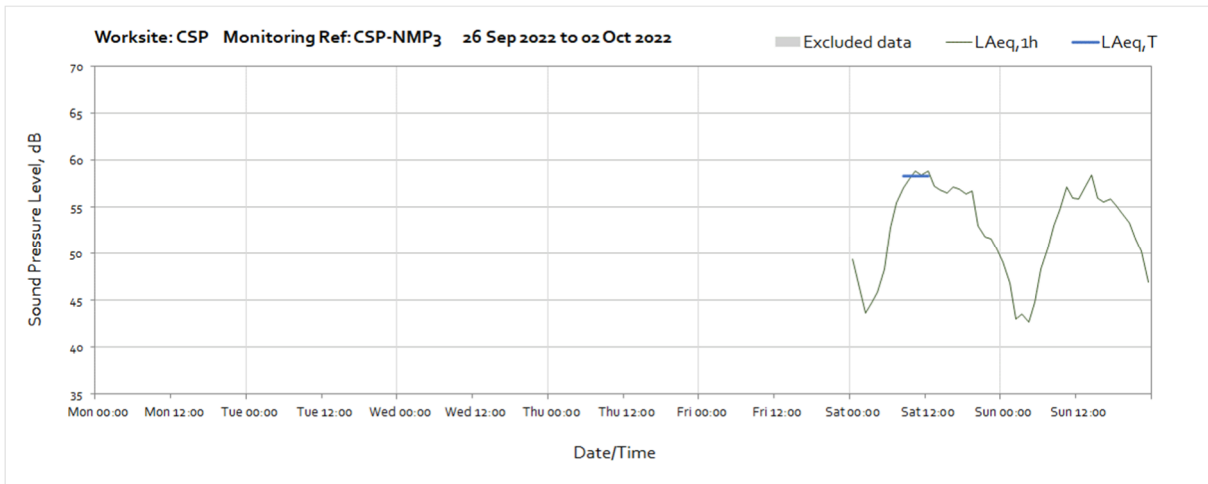
Note: Missing data between 19:00 and 20:00 on the 15<sup>th</sup> October was due to monitor settings update.

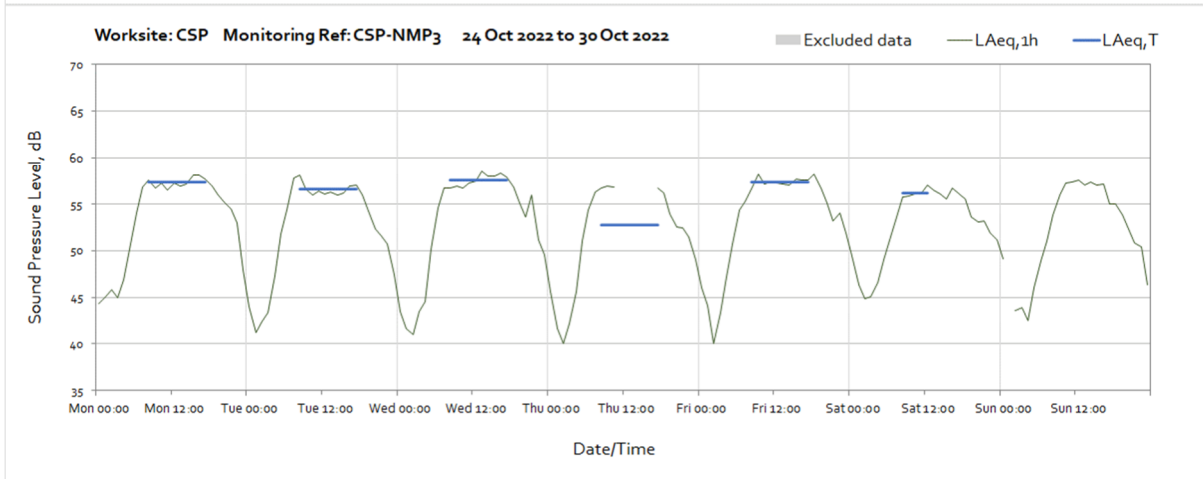
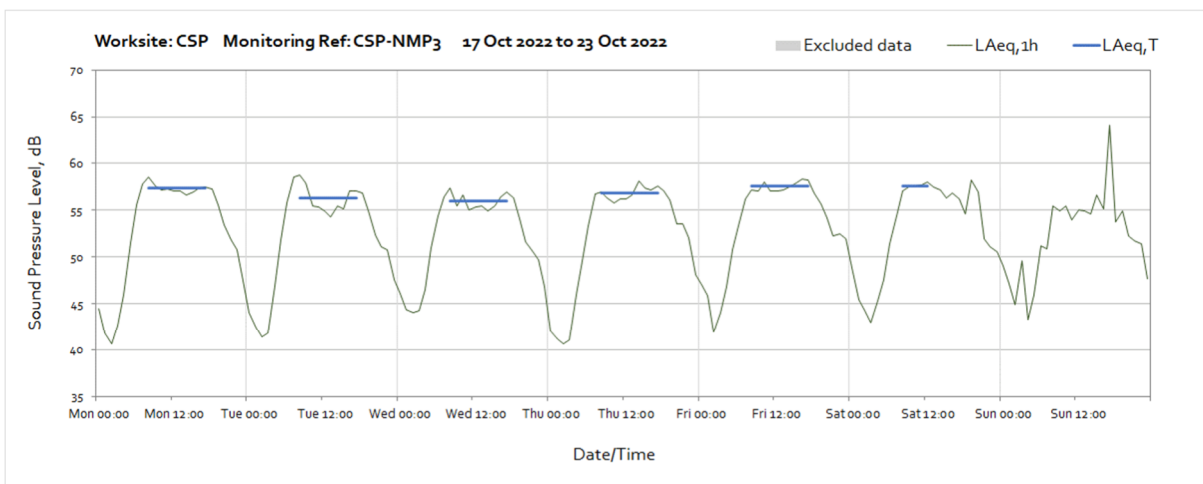
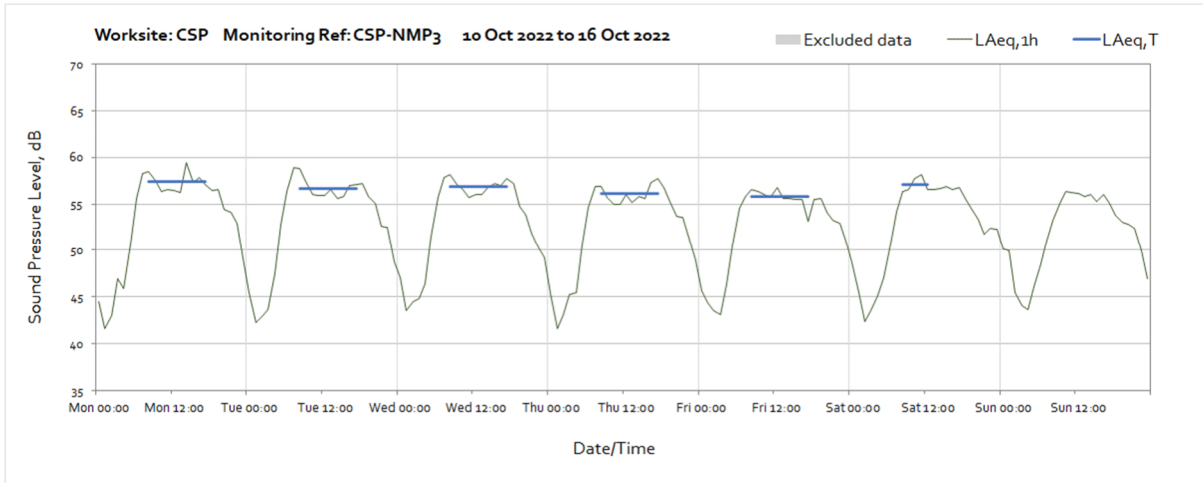


Note: Missing data between 01:00 and 02:00 on Sunday 30<sup>th</sup> October was due to a software issue associated with the end of British Summer Time.

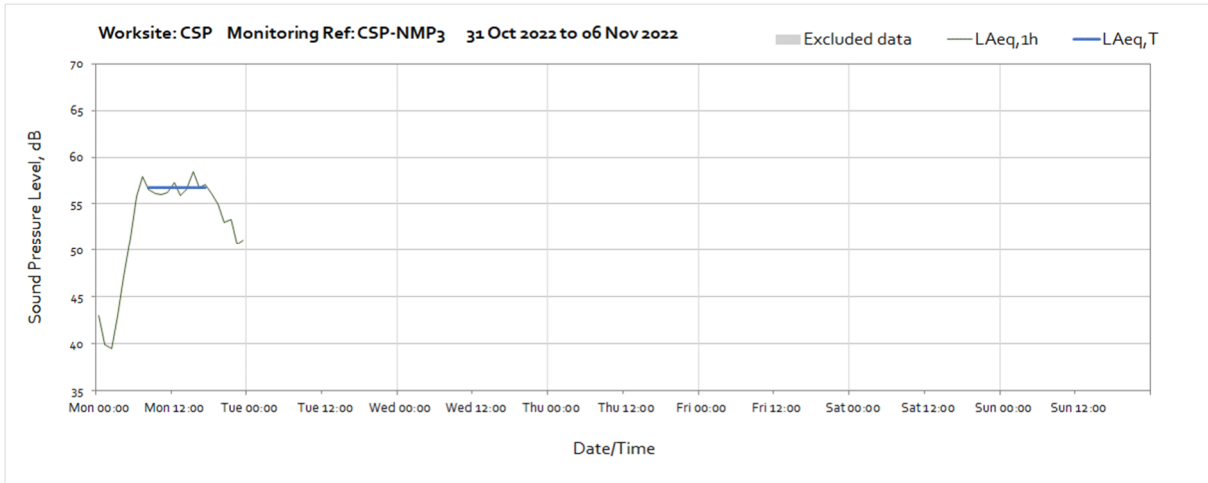


### Worksite: CSP - Monitoring Ref: CSP-NMP3

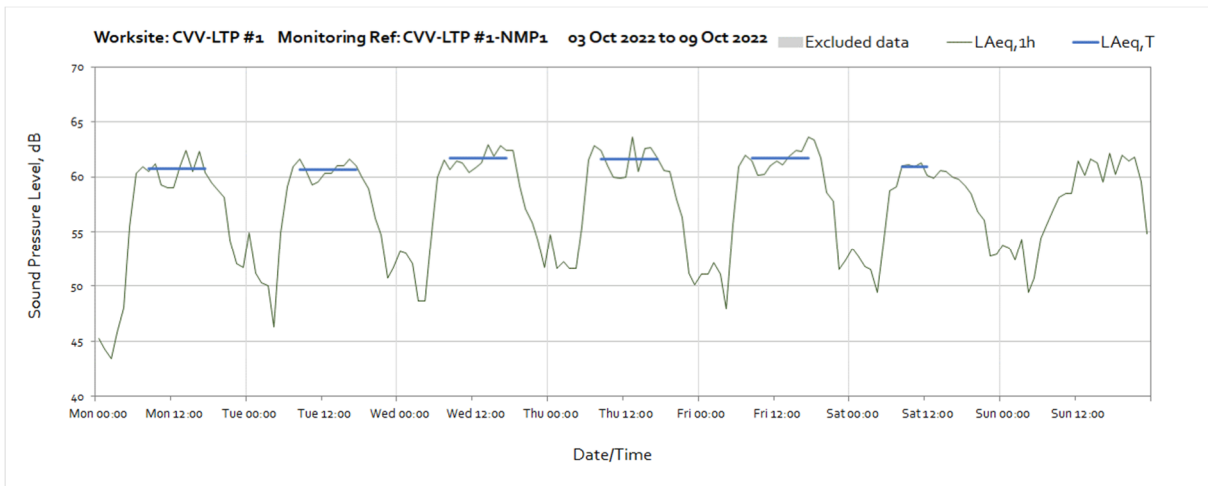
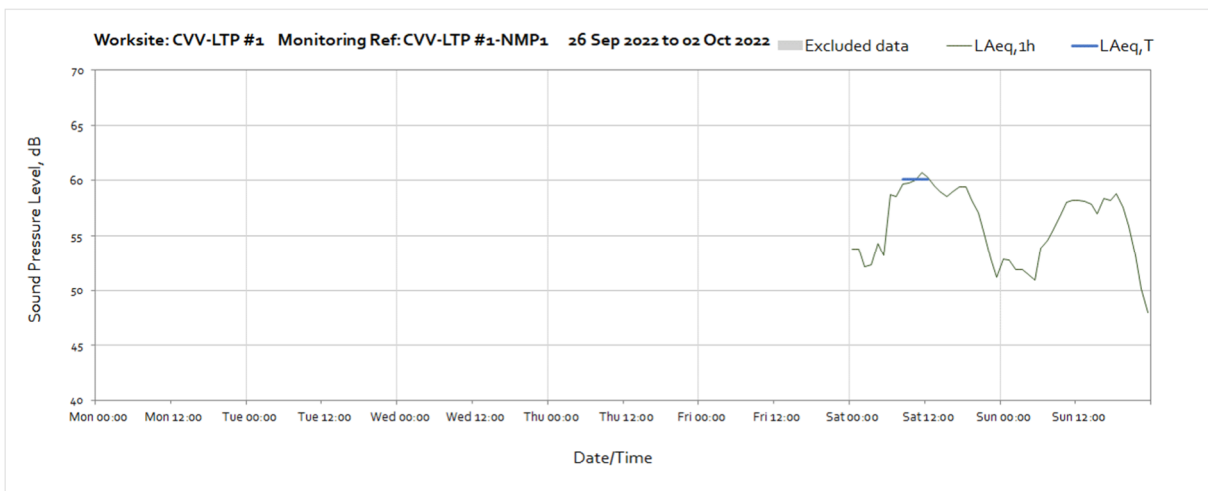


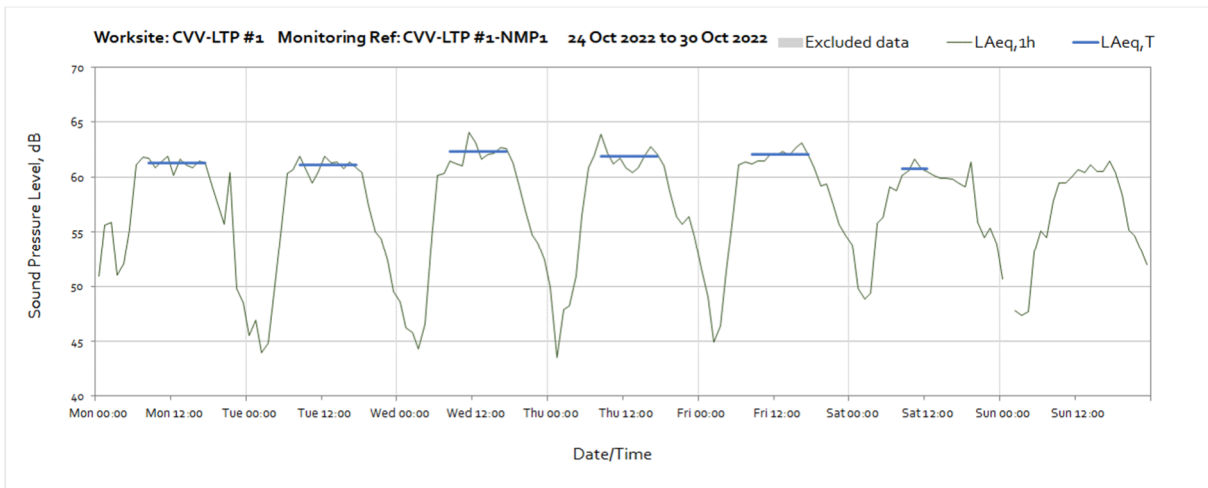
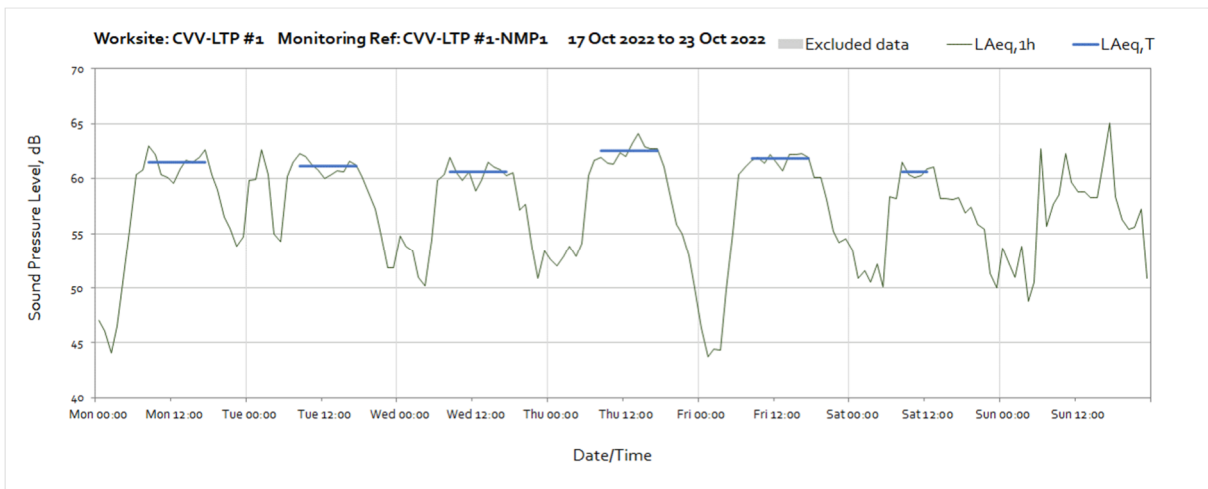
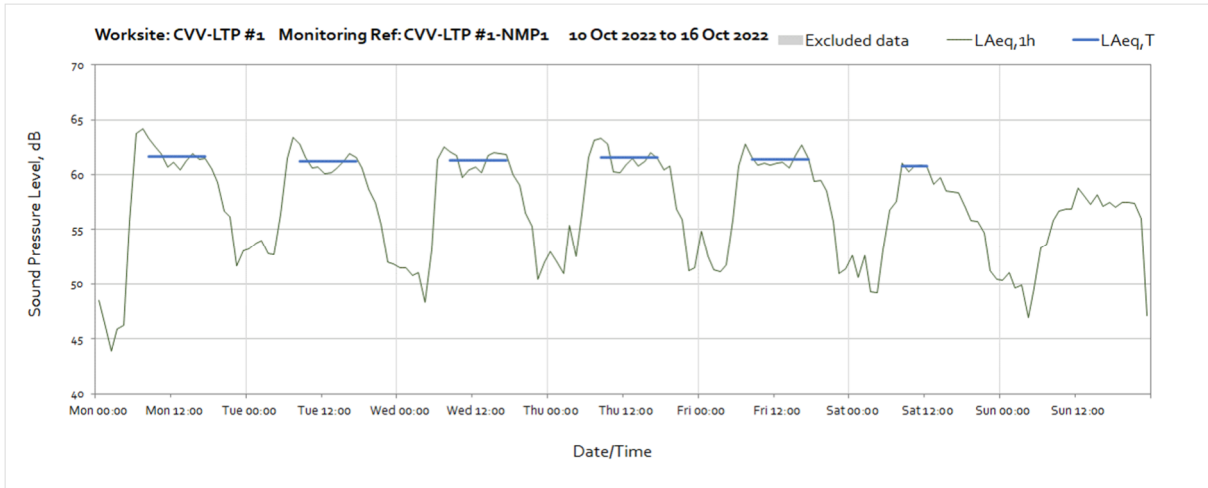


Note: Missing data between 11:00 and 17:00 on the 29<sup>th</sup> October was due to data transfer issue. Missing data between 01:00 and 02:00 on Sunday 30<sup>th</sup> October was due to a software issue associated with the end of British Summer Time.



**Worksite: CVV-LPT#1 – Monitoring Ref: CVV-LPT#1-NMP1**

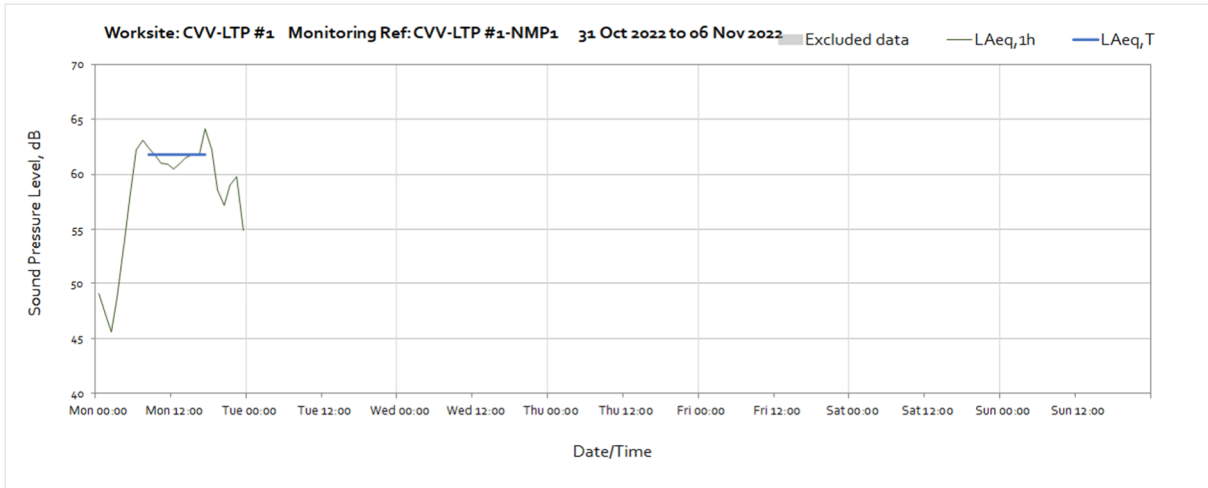




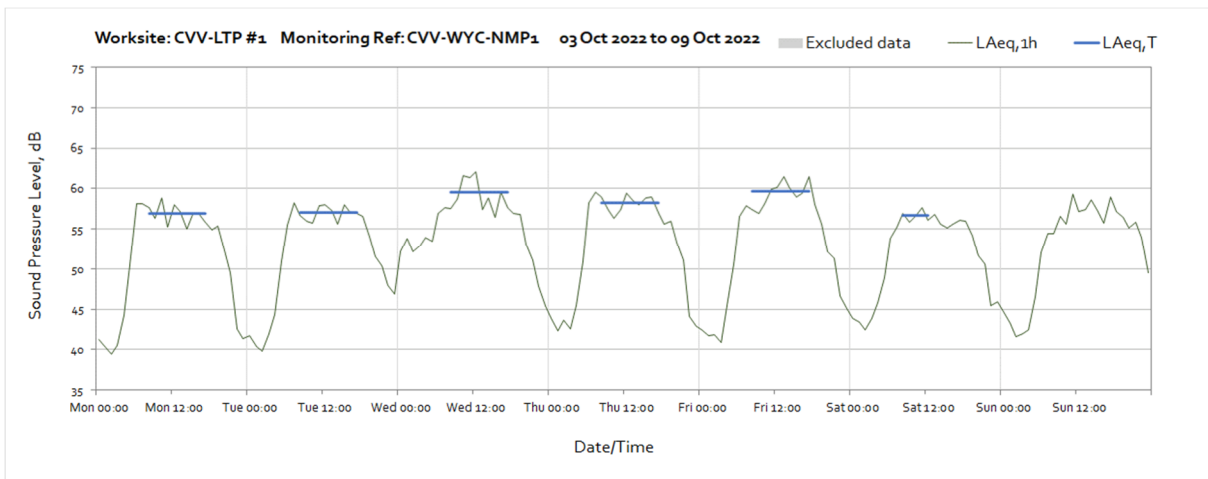
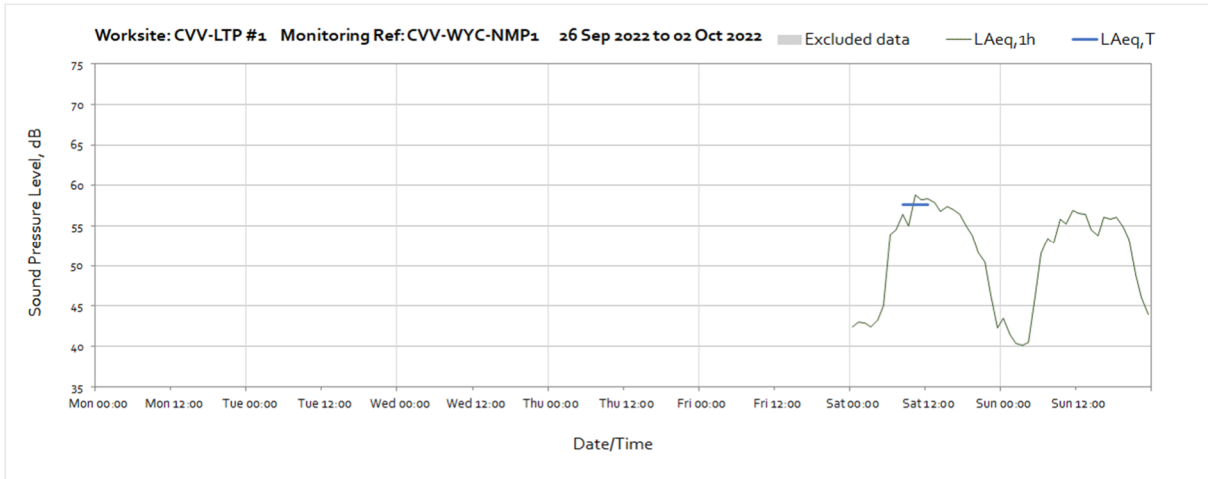
Note: Missing data between 01:00 and 02:00 on Sunday 30th October was due to a software issue associated with the end of British Summer Time.

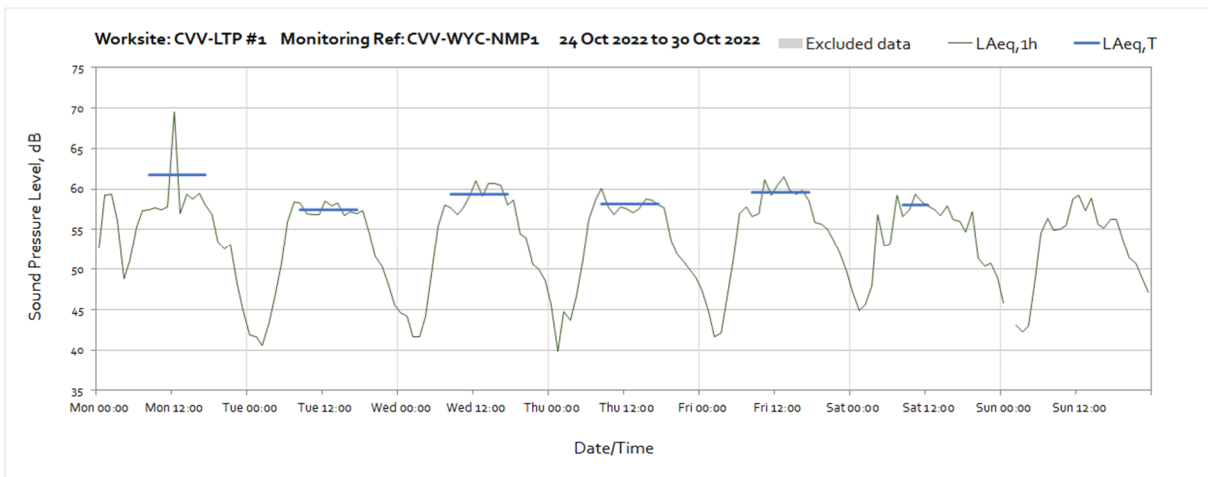
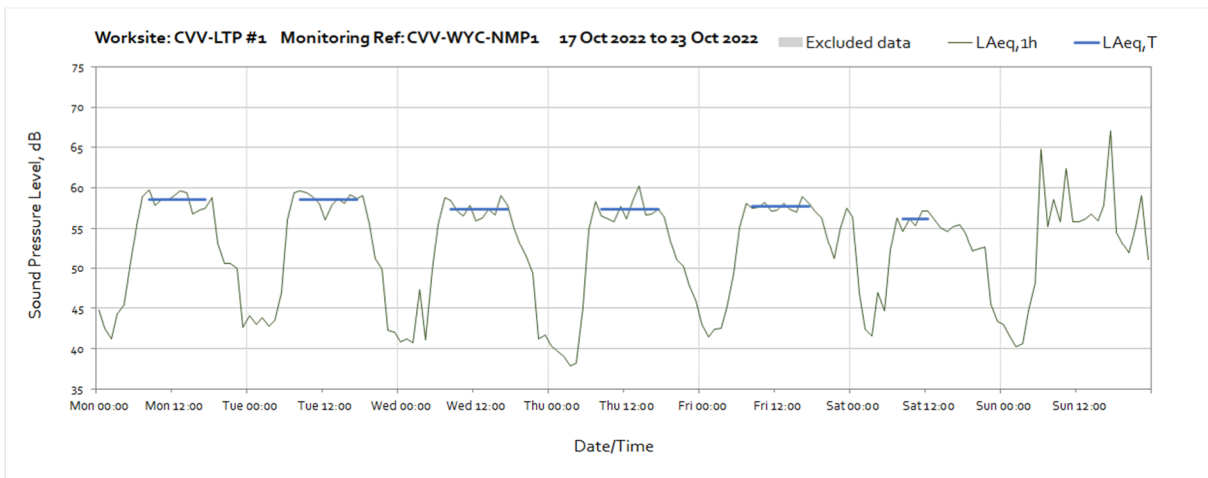
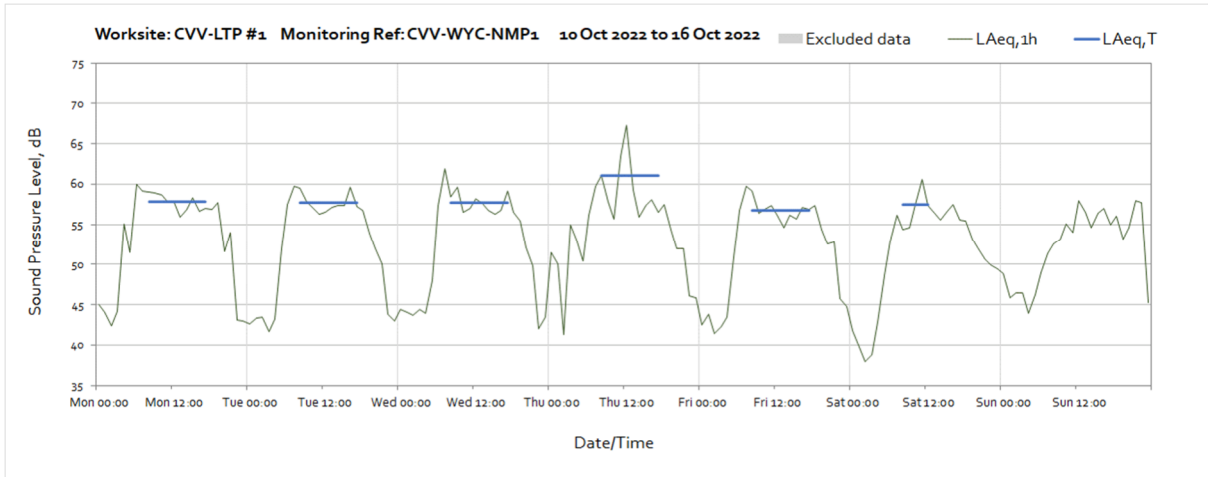
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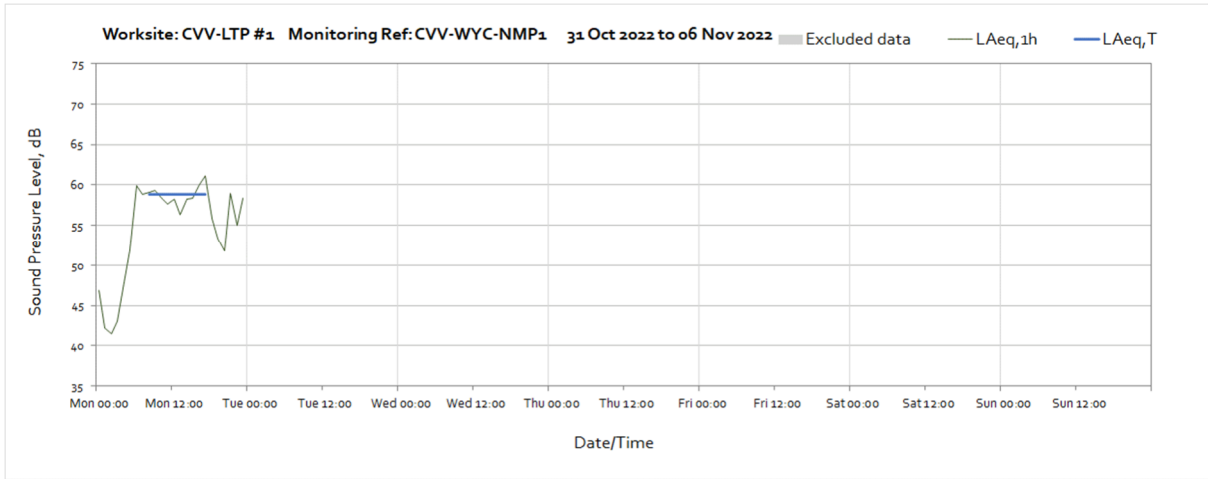


### Worksite: CVV-LPT#1 – Monitoring Ref: CVV-WYC-NMP1

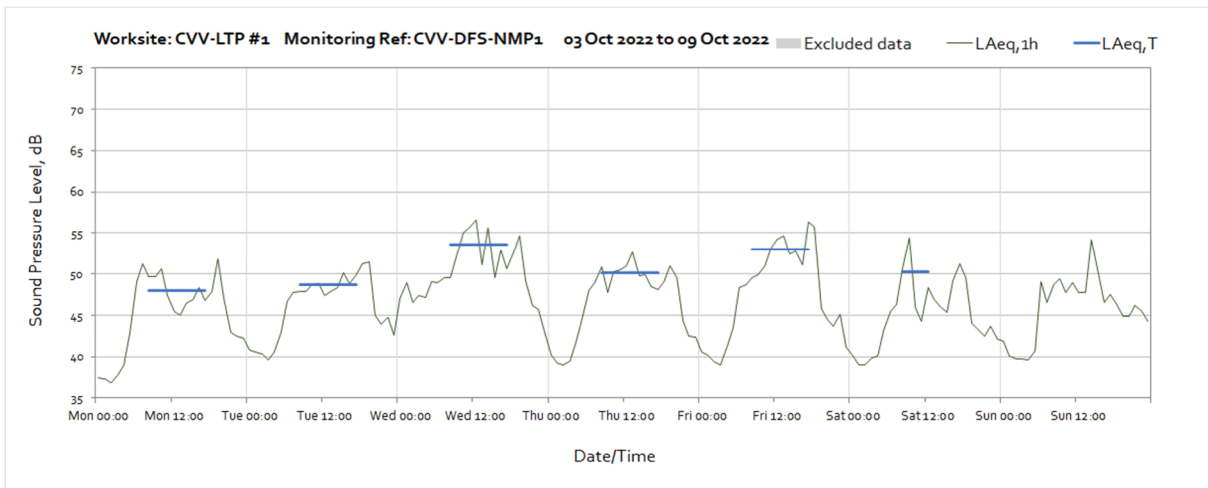
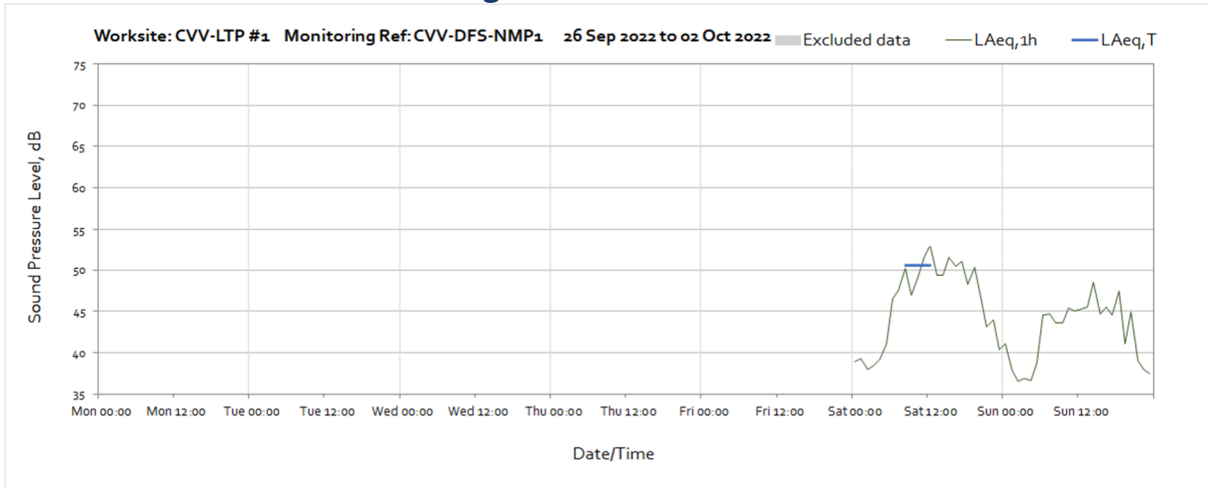


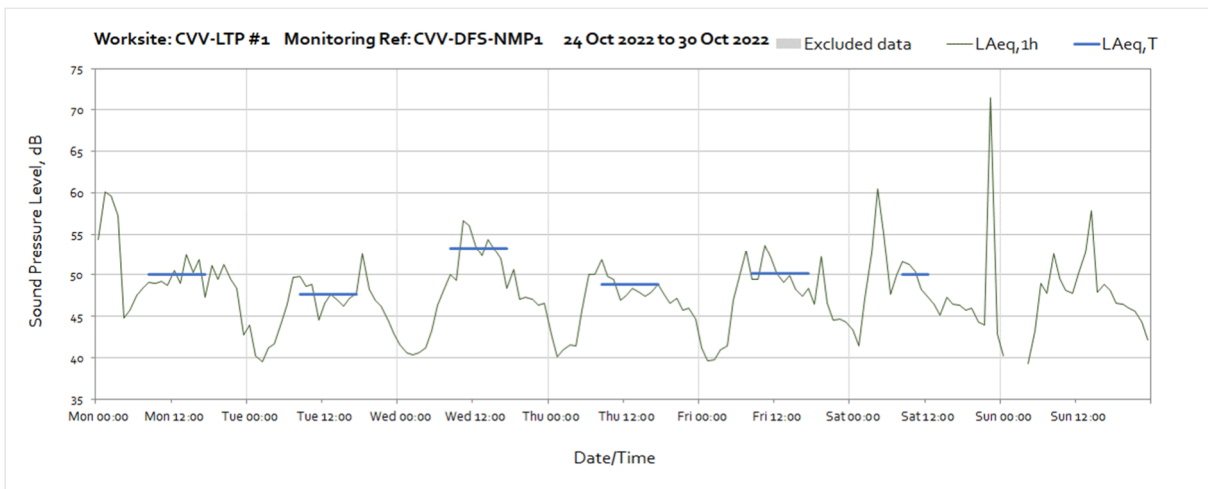
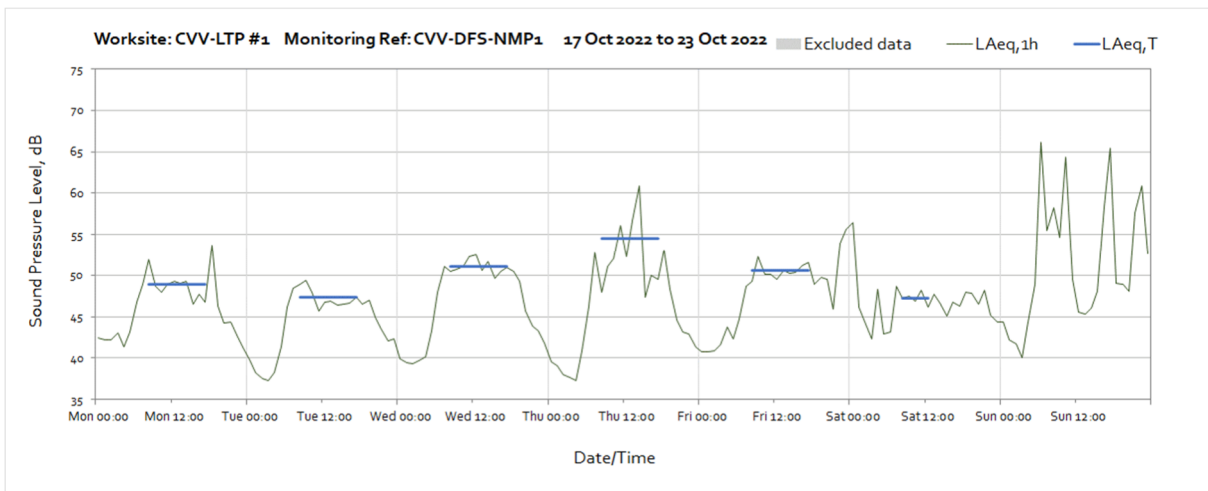
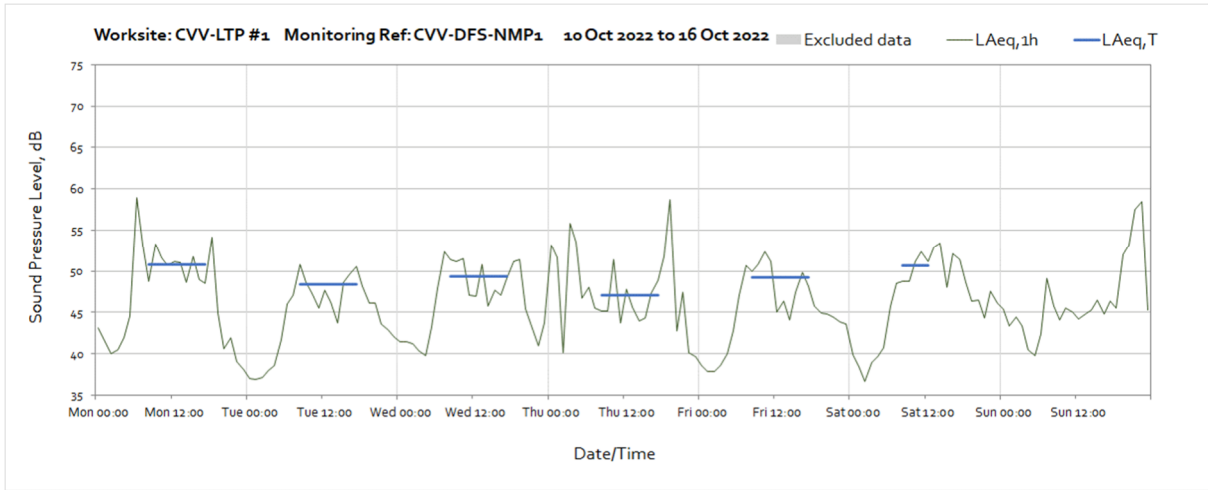


Note: Missing data between 01:00 and 02:00 on Sunday 30th October was due to a software issue associated with the end of British Summer Time.



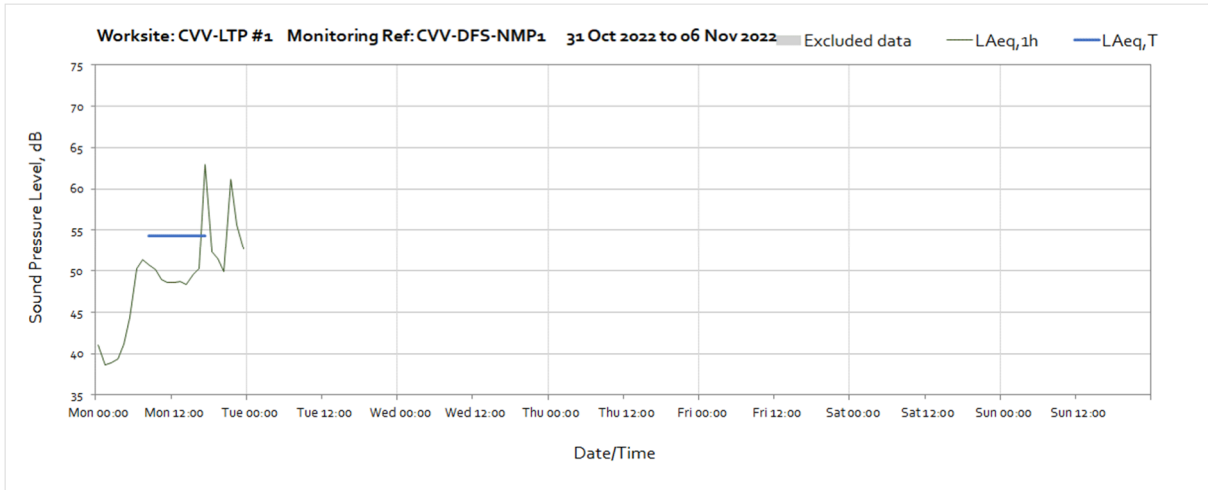
**Worksite: CVV-LTP#1 – Monitoring Ref: CVV-DFS-NMP1**



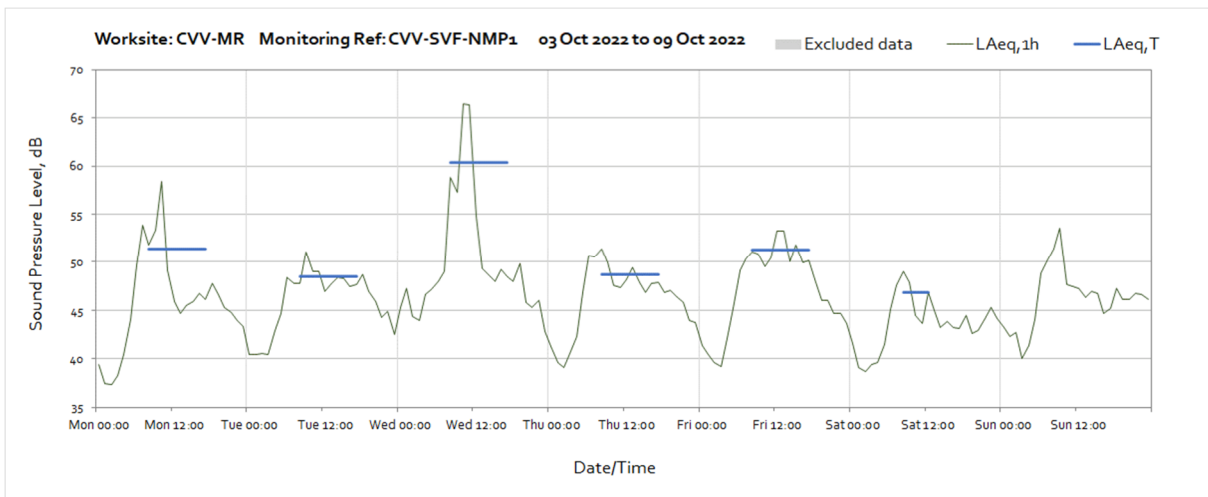
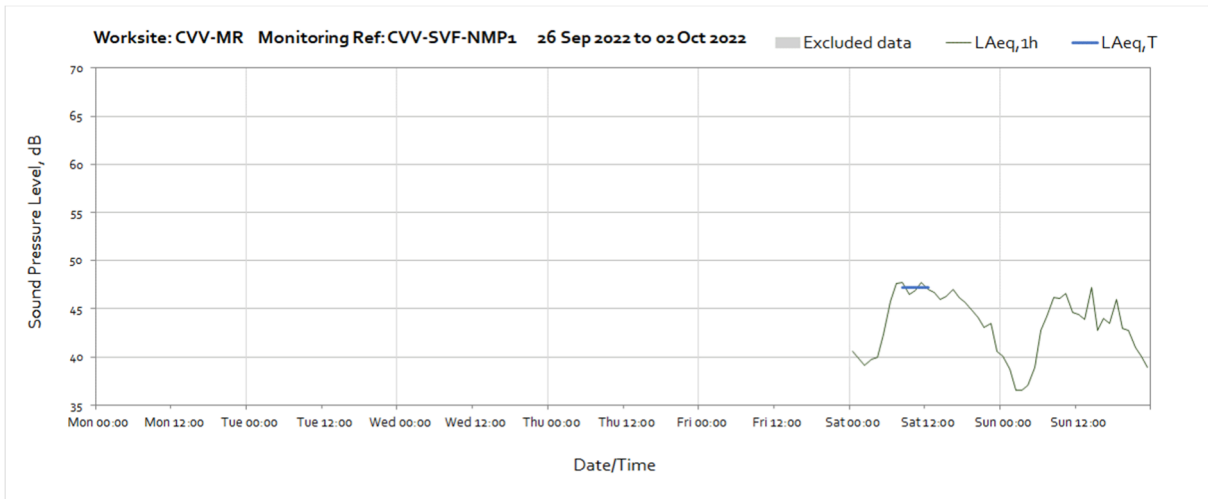


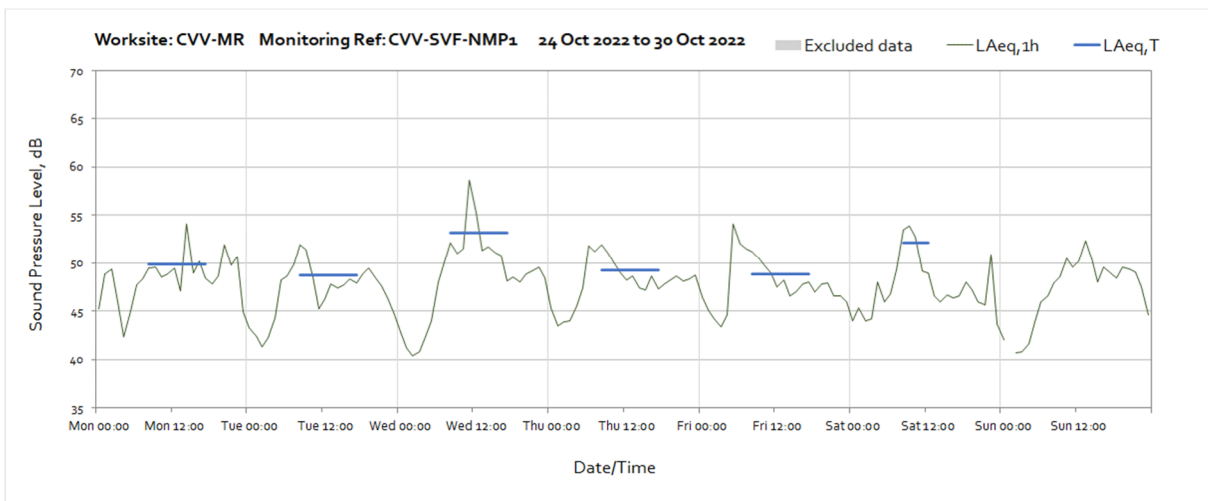
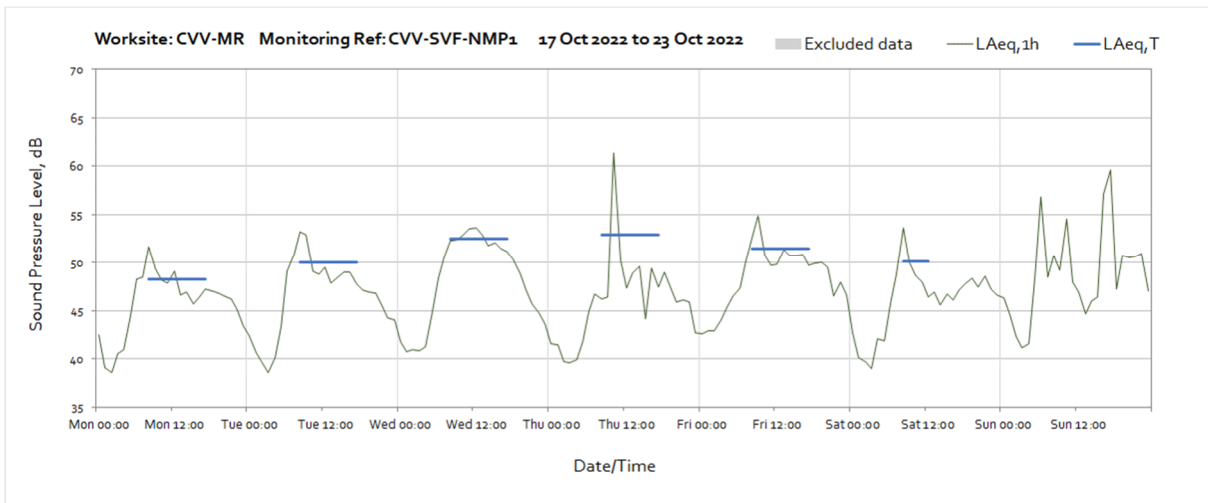
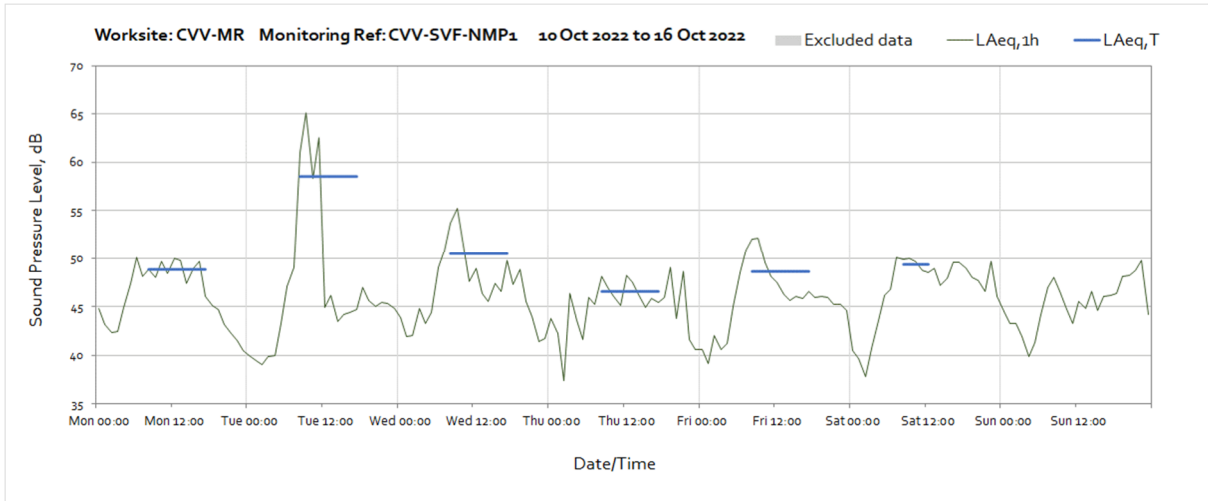
Note: Missing data between 01:00 and 02:00 on Sunday 30th October was due to a software issue associated with the end of British Summer Time.

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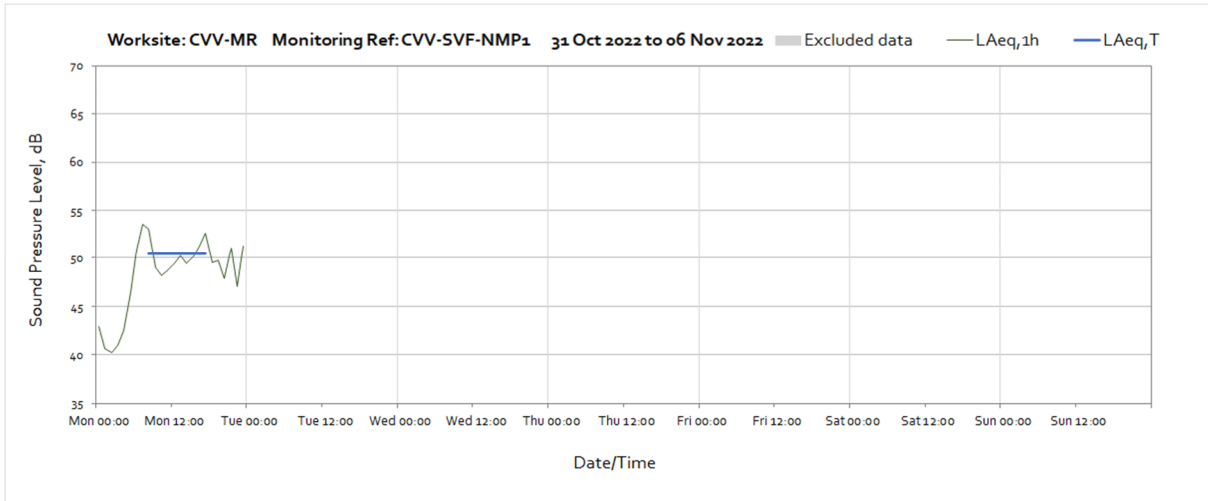
**Worksite: CVV-MR – Monitoring Ref: CVV-SVF-NMP1**





Note: Missing data between 01:00 and 02:00 on Sunday 30th October was due to a software issue associated with the end of British Summer Time.

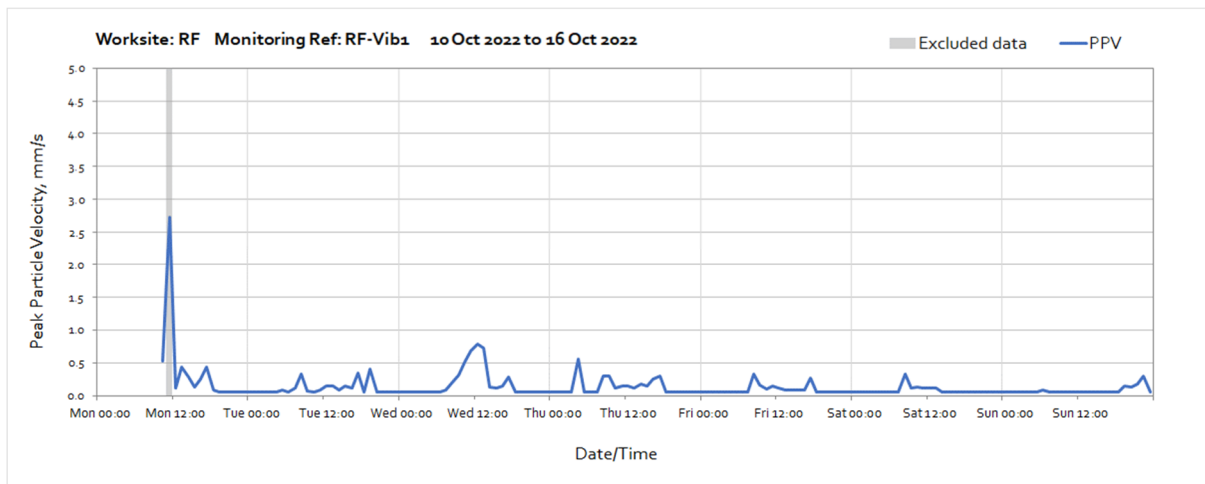
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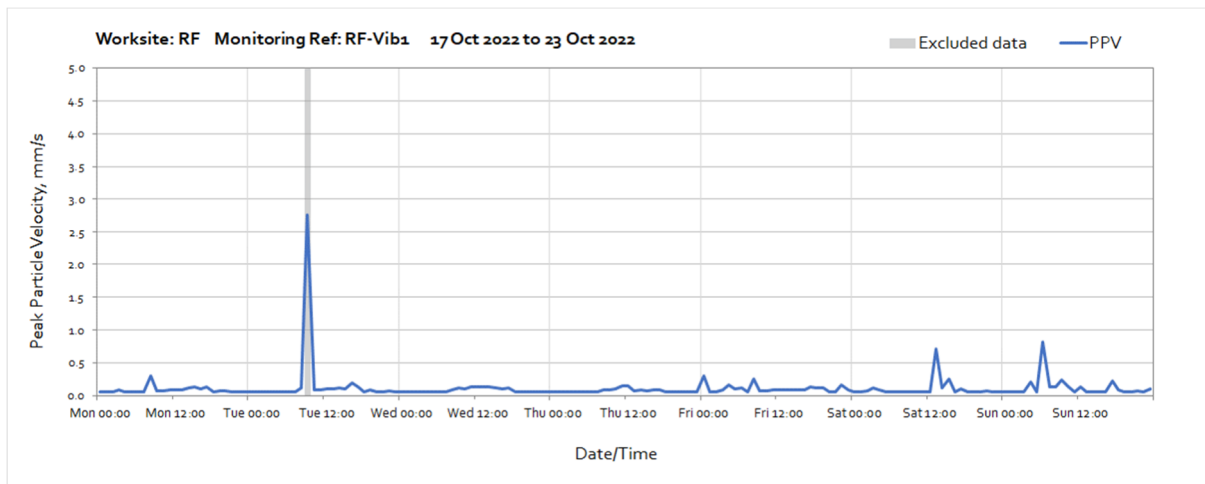
## Vibration

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

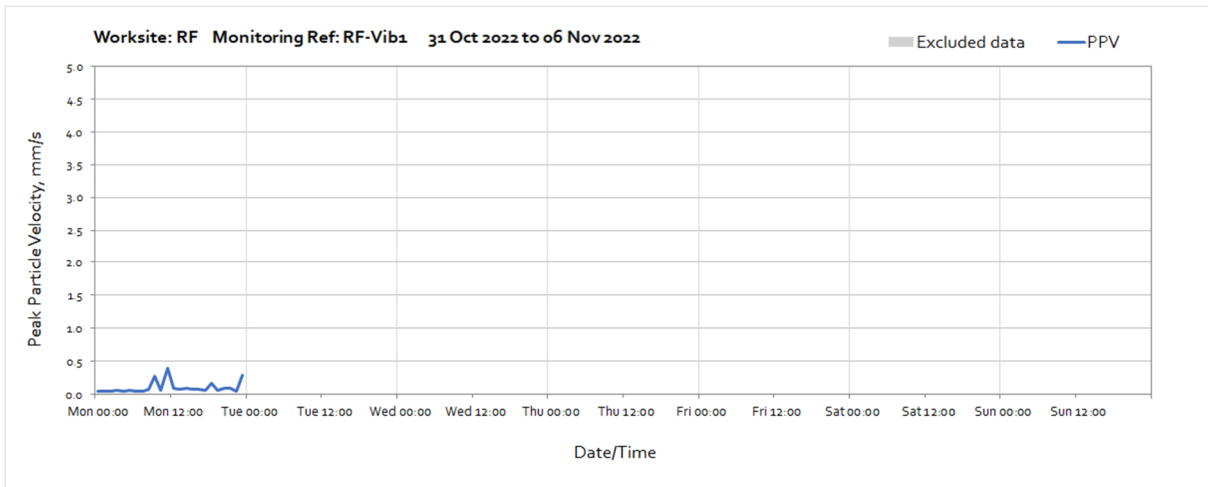
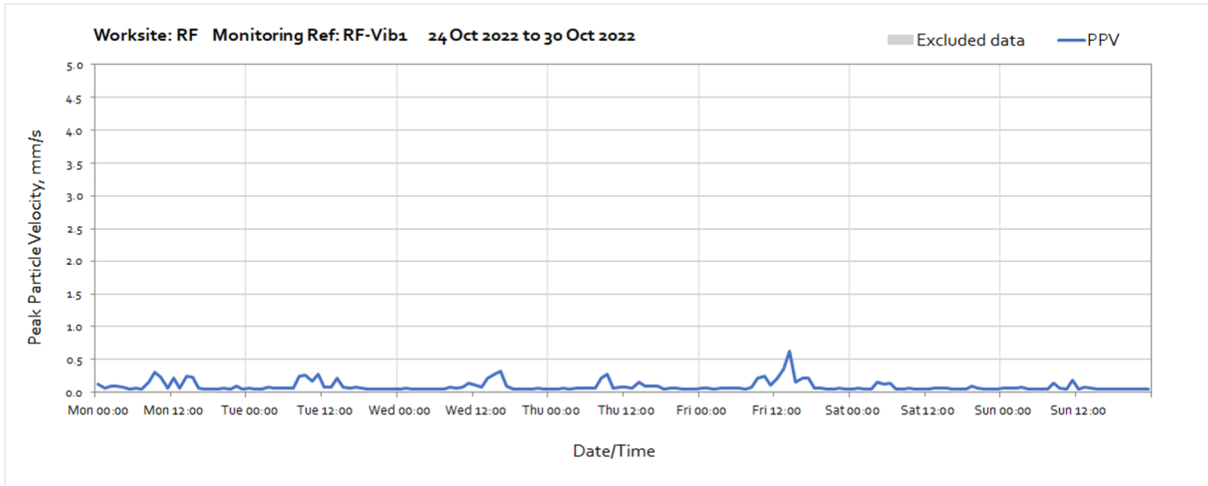
### Worksite: RF – Monitoring Ref: RF-Vib 1



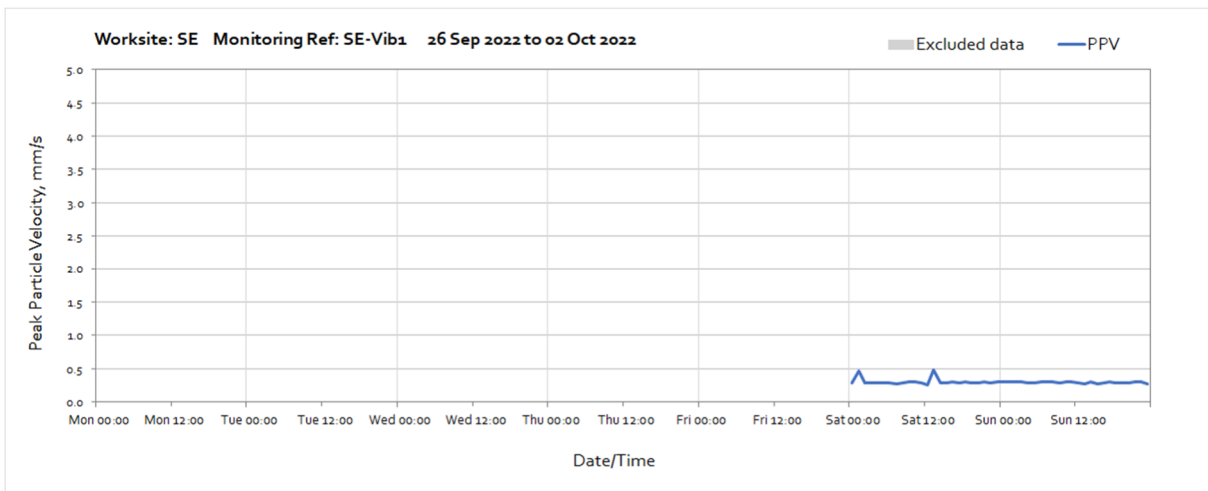
Note: Missing data between the beginning of month and 10:00 on the 10<sup>th</sup> October was due to monitor communication fault.

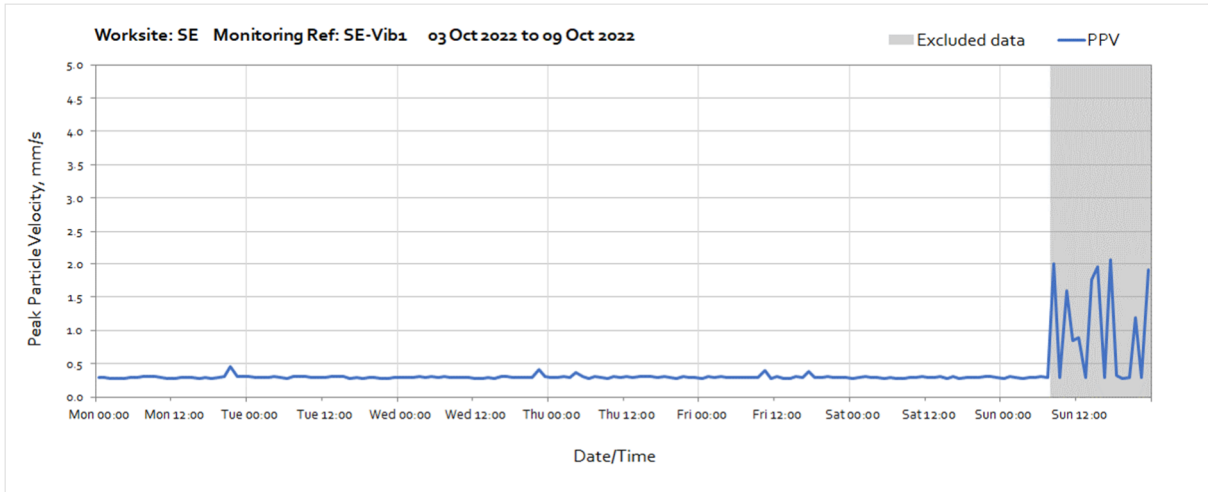




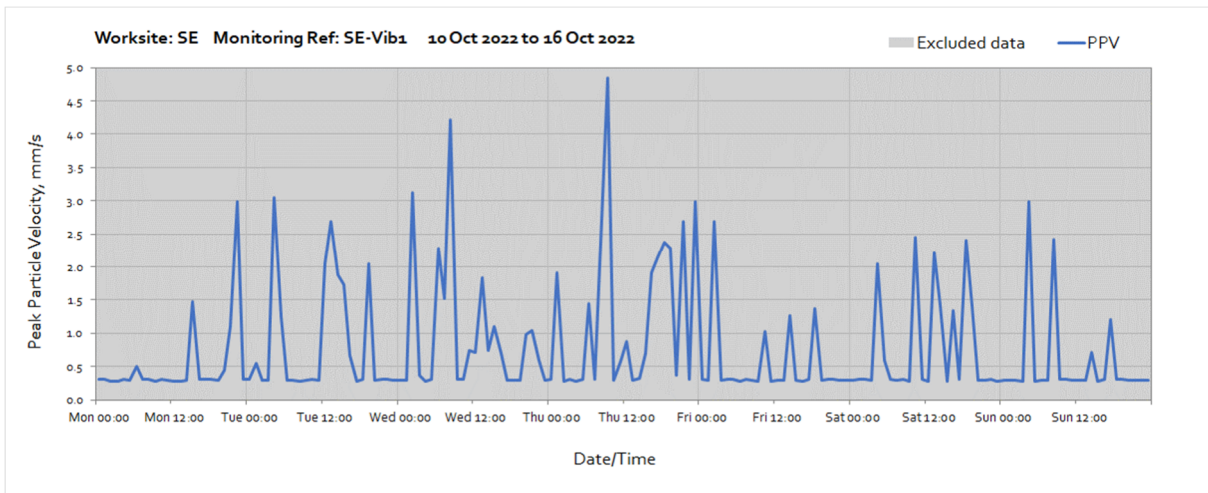


### Worksite: SE - Monitoring Ref: SE-Vib 1

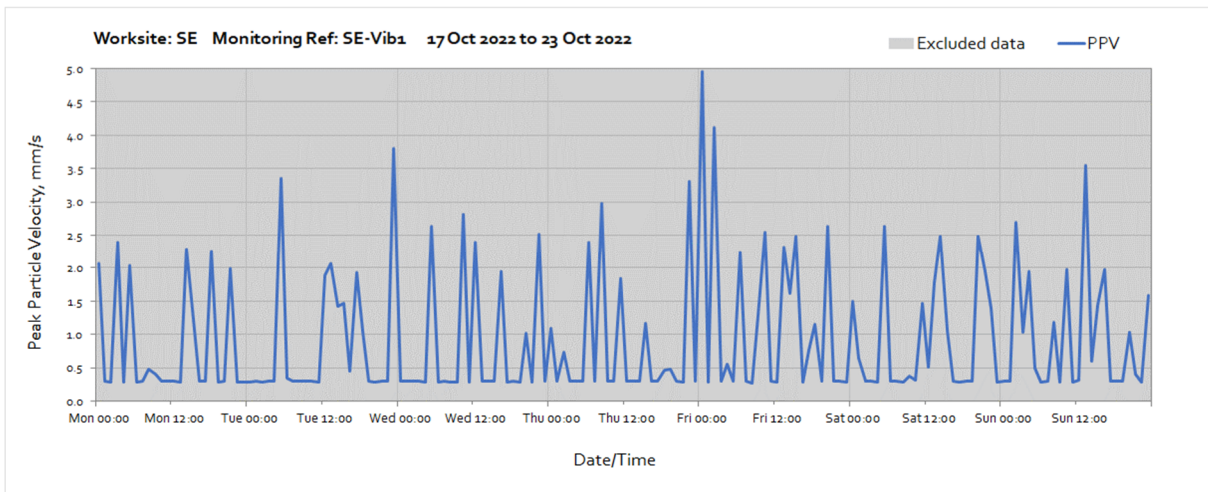




Note: High levels from 08:00 on the 9<sup>th</sup> October are due to wildlife interference. Protection for the geophone is currently being pursued.

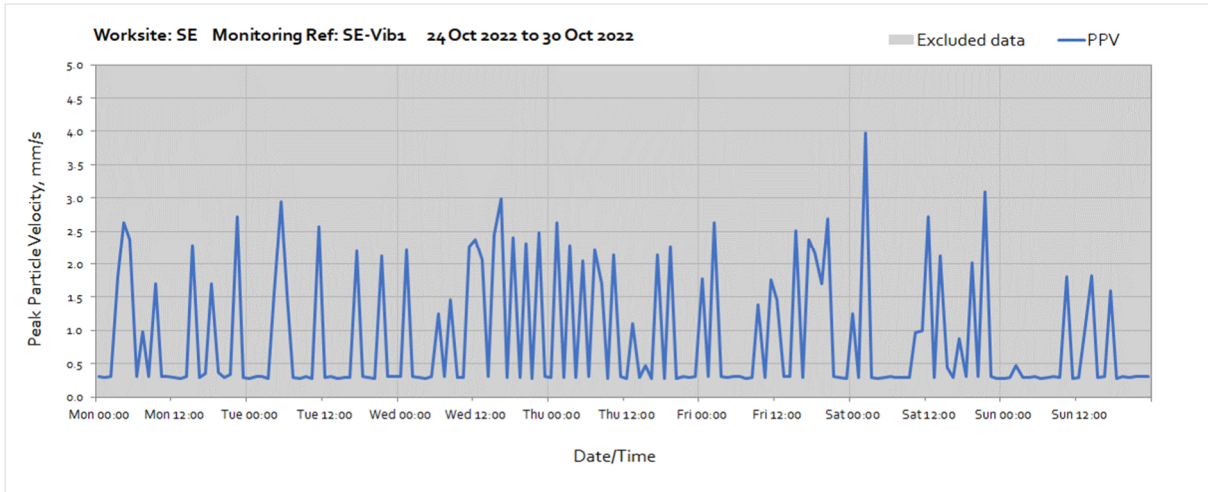


Note: High levels from 08:00 on the 9<sup>th</sup> October are due to wildlife interference. Protection for the geophone is currently being pursued.

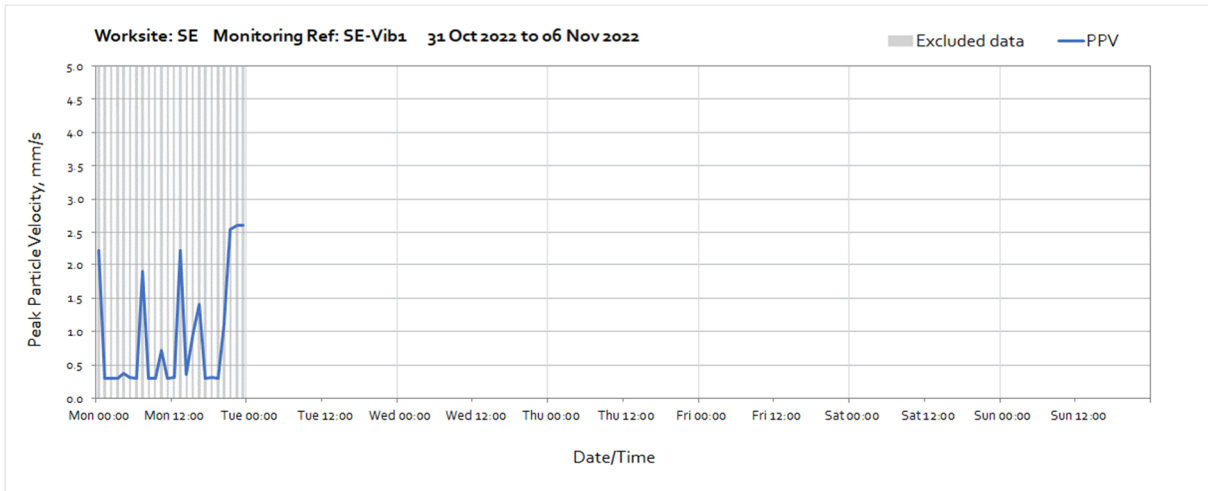


Note: High levels from 08:00 on the 9<sup>th</sup> October are due to wildlife interference. Protection for the geophone is currently being pursued.

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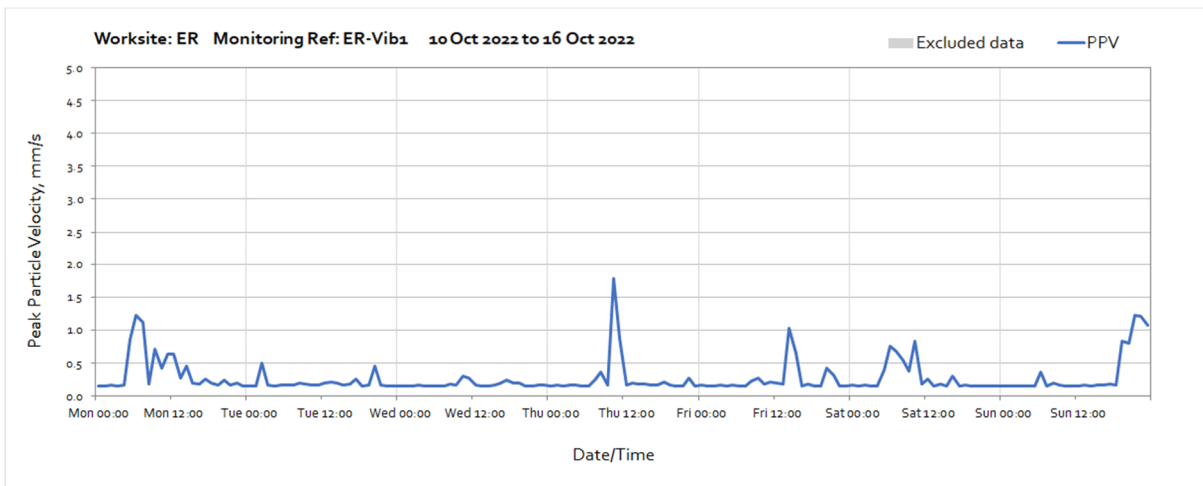
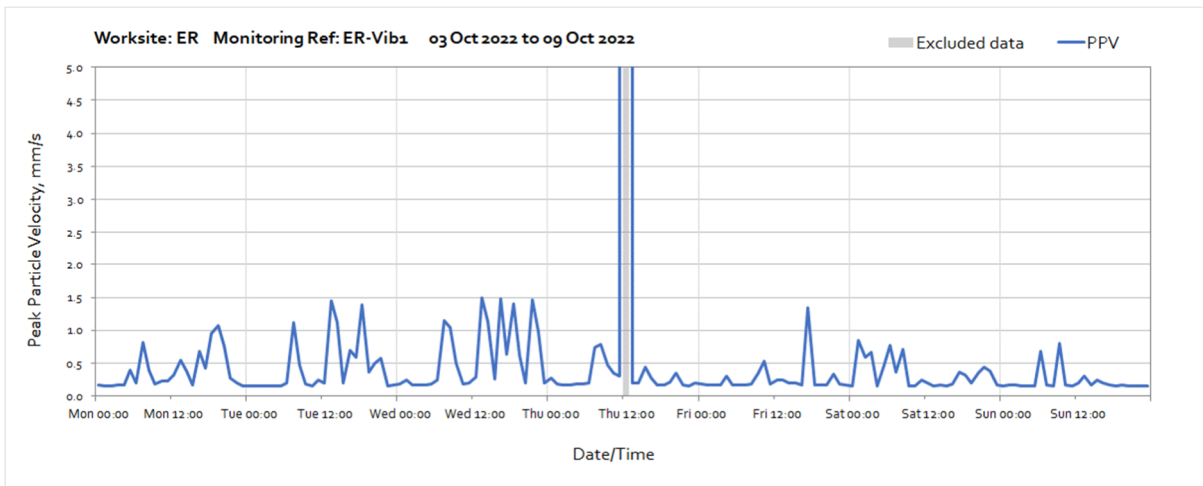
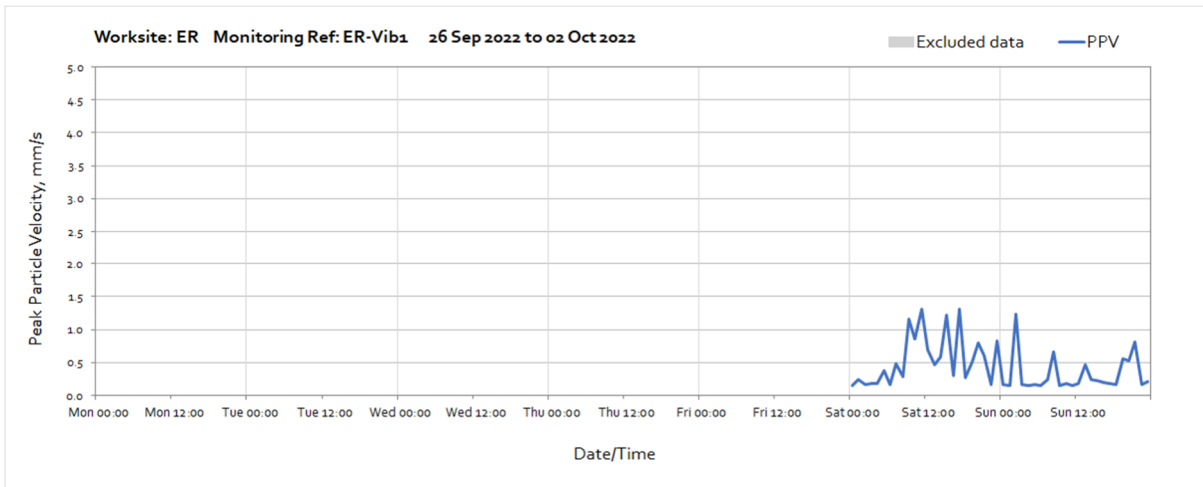


Note: High levels from 08:00 on the 9<sup>th</sup> October are due to wildlife interference. Protection for the geophone is currently being pursued.



Note: High levels from 08:00 on the 9<sup>th</sup> October are due to wildlife interference. Protection for the geophone is currently being pursued.

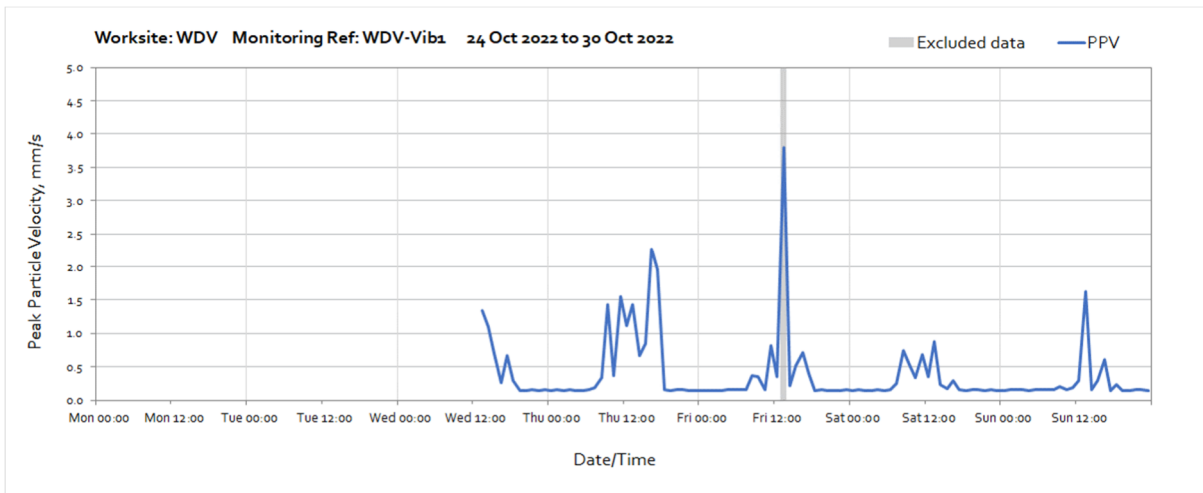
# Worksite: WGT - Monitoring Ref: ER-Vib 1



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



Note: The vibration monitor was installed at 13:00 on 26<sup>th</sup> October.

