

## **Construction Noise and Vibration Monthly Report – November 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 November 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 maintenance, compound maintenance works, drainage works, excavations, topsoil stripping, stockpiling and vehicle movements 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, excavations, topsoil stripping, drainage works, stockpiling, piling platform works, and vehicle movements were undertaken.
- Noise monitoring was undertaken in the vicinity of the Twyford worksite (ref.: TW) where access road maintenance works, vehicle movements, drainage works, topsoil stripping, stockpiling and excavations were underway.
- Noise monitoring was undertaken in the vicinity of the West Street Overbridge worksite (ref.: WSO), where utility works, concrete works and culvert works were underway.
- Noise monitoring was undertaken in the vicinity of the Addison Road worksite (ref.: AR) where reinforced wall works, embankment construction, drainage works, backfilling and topsoil stripping were underway.
- Noise monitoring was undertaken in the vicinity of the School Hill Compound worksite (ref.: SHC) where topsoil stripping, construction of piling platform and operation of concrete batching plant 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 Woodlands worksite (ref.: WDL) where excavation works were underway.
- Noise monitoring was undertaken in the vicinity of the Quanton worksite (ref.: QAR) where backfilling and utility works were underway.

- Noise monitoring was undertaken in the vicinity of the Meadoway and Glebe House worksite (ref: MW&GH) where earthworks, piling works, stockpiling, construction of piling platform works and site haul road construction were underway.
- Noise monitoring was undertaken in the vicinity of Oat Close worksite (ref: OC) where piling works, stockpiling, water treatment plant installation, earthworks, utility diversion works, site haul road construction and night rail deliveries were underway.
- Noise monitoring was undertaken in the vicinity of Nash Lee Lane worksite (ref.: NLL) where road diversion works, surface water management works, installation of fuel storage area and drainage works were underway.
- Noise monitoring was undertaken in the vicinity of Wendover Green Tunnel worksite (ref.: WGT) where fencing, surface water management works, excavations, foundation works, concrete works, heavy vehicle movements, stockpiling and ground investigation works were underway.
- Noise monitoring was undertaken in the vicinity of Rocky Lane Embankment worksite (ref: RLE) where installation of fuel storage area and plant laydown areas, compound installation works, maintenance of the surface water management system, embankment excavation and replacement works, ground investigation works and remedial works were underway.
- Noise monitoring was undertaken in the vicinity of Wendover Dean Viaduct worksite (ref: WDV) where compound construction works, piling works and concrete works were underway.
- Noise monitoring was undertaken in the vicinity of Leather Lane worksite (ref: LL) where water utility diversion works and maintenance of surface water management system were underway.
- Noise monitoring was undertaken in the vicinity of South Heath Cutting worksite (ref: SHCW) where earthworks and culvert installation were underway.
- Noise monitoring was undertaken in the vicinity of North Portal worksite (ref: NP) where site access road works, barrette piling demobilisation, site operations, piling platform and building platform works, headwall capping-beam works, drainage works and porous portal structure works were undertaken.
- Noise monitoring was undertaken in the vicinity of Chesham Road worksite (ref.: CHSM), formally called Chesham Road worksite (ref: CR), where site operation and shaft construction works were undertaken.
- Noise monitoring was undertaken in the vicinity of Little Missenden Vent Shaft worksite (ref.: LM) where site operation, collar construction, secondary lining and small basement construction were undertaken.

- Noise monitoring was undertaken in the vicinity of Amersham Vent Shaft worksite (ref.: AM), where site operation, secondary lining, shaft construction and small basement construction works were undertaken.
- Noise monitoring was undertaken in the vicinity of Chalfont St Giles Vent Shaft worksite (ref.: CSG) where site operation, road maintenance works, reinforced concreting of walls and floors, connection to tunnels 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, reinforced concrete works, connection to tunnels 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, compound operation, maintenance of haul roads, ground investigation works, pier construction, pumping water management, pile trimming, satellite welfare operation, generator farm operation, north abutment works, concrete drilling, gas crossing emergency dismantling works, material storage, fencing, utility diversion works, environmental maintenance, base slab construction, River Colne crossing, girder and deck erection, and deck finishes 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, river realignment works and vegetation clearance were underway.
- Grovill Embankment – Westbury where excavations were underway.
- North of School End where excavations, vegetation clearance, stockpiling and drainage works were underway.
- Turweston along the A422 where compound development works and temporary road diversion works were underway.
- East West Rail (EWR) interfaces where drainage works and assembly of steel deck were underway.
- Charndon Lodge where concrete works, including rebar fixing, formworks lifting, concrete pours, concrete shaft construction and excavations were underway.
- Infrastructure Maintenance Depot (IMD) where concrete works, including rebar fixing, formworks lifting and concrete pours, 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 and piles was underway.
- Doddershall Culvert where installation of pre-cast culvert units and concrete works, including rebar fixing and formworks lifting were underway.
- Aylesbury Golf Course where construction of site haul road, stockpiling, earthworks, compound setup and pond construction were underway.
- Thame Valley Viaduct Causeway where temporary bridge construction, piling, aggregate laying and compound setup were underway.
- Fleet Marston where earthworks, stockpiling, drainage works, habitat site maintenance works and pond construction were underway.
- Along A41 where concrete batching works, geogrid installation, embankment works, stockpiling and earthworks were underway.
- Waddesdon Embankment and North Cutting where earthworks, stockpiling, compound setup, drainage works and construction of site haul road were undertaken.
- Small Dean North Embankment where construction of concrete slabs and fabrication of steel for pre cast slabs were underway.

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

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

Four (4) 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 30<sup>th</sup> November 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 maintenance.
  - Compound maintenance works.
  - Drainage works and installation of ponds.
  - Bulk excavations.
  - Topsoil stripping.
  - Stockpiling.
  - Vehicle movements.
- 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 excavations.
  - Topsoil stripping.
  - Drainage works, including pond maintenance works.
  - Stockpiling.
  - Piling platform works.
  - Vehicle movements.
- Twyford worksite, reference TW (see Plan 2 in Appendix A), where works activities included:
    - Access road maintenance.
    - Vehicle movements.
    - Drainage works.
    - Topsoil stripping.
    - Stockpiling.
    - Excavations.
  - West Street Overbridge worksite, reference WSO (see Plan 3 in Appendix A), where works activities included:
    - Utility works, including trenching, duct laying and construction of access chambers.
    - Concrete works, including rebar fixing, formwork installation and concrete pours.
    - Culvert works, including installation of culvert units and waterproofing works.
  - Addison Road worksite, reference AR (see Plan 3 in Appendix A), where works activities included:
    - Reinforced wall works, including lifting of concrete panels and aggregate backfilling.
    - Construction of embankments.
    - Drainage works, including installation of ponds.

- Backfilling.
- Topsoil stripping.
- School Hill Compound worksite, reference SHC (see Plan 3 in Appendix A), where works activities included:
  - Topsoil stripping.
  - Construction of piling platform.
  - Operation of concrete batching plant.
- FCC Sidings worksite, reference FCC (see Plan 3 in Appendix A) where no works activities were undertaken during the reporting period.
- Woodlands worksite, reference WDL (see Plan 4 in Appendix A) where works activities included:
  - Excavation works.
- Quainton worksite, reference QAR (see Plan 4 in Appendix A) where works activities included:
  - Backfilling.
  - Utility works, including cable pulling.
- Meadoway and Glebe House worksite, reference MW&GH (see Plan 5 in Appendix A), where works activities included:
  - Earthworks.
  - Piling.
  - Stockpiling.
  - Construction of piling platform.
  - Site haul road construction.
- Oat Close worksite, reference OC (see Plan 5 in Appendix A), where works activities included:
  - Piling.
  - Stockpiling.
  - Installation of water treatment plant.
  - Earthworks.
  - Overhead utility diversion works.

- Site haul road construction.
- Night rail deliveries.
- Nash Lee Lane worksite, reference NLL (see Plan 6 in Appendix A), where works activities included:
  - Road diversion works, including drainage works, ducting and tie-in works.
  - Surface water management works.
  - Installation of fuel storage area.
  - Drainage works.
- Wendover Green Tunnel worksite, reference WGT (see Plan 6 in Appendix A), where works activities included:
  - Fencing works.
  - Surface water management works.
  - Excavations.
  - Construction of foundations, including concrete pours.
  - Concrete works, including rebar fixing, formworks, concrete pours, waterproofing and shutter fixing.
  - Heavy vehicles movements.
  - Stockpiling.
  - Ground investigation works.
- Rocky Lane Embankment worksite, reference RLE (see Plan 7 in Appendix A), where works activities included:
  - Installation of the fuel storage area.
  - Installation of the plant laydown areas.
  - Compound installation works.
  - Maintenance of the surface water management system.
  - Embankment excavation and replacement.
  - Ground investigation works.
  - Remedial works between A413 and the railway, including stump removal, material hauling and stone road construction.

- Wendover Dean Viaduct worksite, reference WDV (see Plan 7 in Appendix A), where works activities included:
  - Compound construction works.
  - Piling works, including pile cropping.
  - Concrete works, including shuttering, steel fixing and concrete pours.
- Leather Lane worksite, reference LL (see Plan 8 in Appendix A), where works activities included:
  - Water utility diversion works.
  - Maintenance of the surface waste management system.
- South Heath Cutting worksite, reference SHCW (see Plan 8 in Appendix A), where works activities included:
  - Earthworks, including cutting and material hauling.
  - Culvert installation, including track drainage works.
- North Portal worksite, reference NP (see Plan 8 in Appendix A), where works activities included:
  - Site access road works, including scrape formation works, installation of hardstanding and kerbing, drainage and service works, installation of signage and asphaltting.
  - Demobilisation of diaphragm wall piling equipment for the Barrette piling and headwall construction.
  - General site operation of plant and equipment.
  - Piling platform works, including reinstatement and maintenance works, dismantling works, scrape formation works, installation of hardstanding, surfacing, services and drainage.
  - North Portal building and tracks platform works, including scraping and installation of hardstanding, surfacing, services and drainage.
  - Headwall capping-beam works, including excavation, reinforced concrete works and temporary propping.
  - Drainage works, including excavation and backfilling.
  - Porous portal structure works, including reinforced concrete works and concrete pours.
- Chesham Road worksite, reference CHSM (see Plan 8 in Appendix A), formally CR worksite, where works activities included:

- General site activities including operation of plant and equipment (general compound power).
- Shaft construction, including reinforced concrete works for the internal and superstructure.
- Little Missenden Vent Shaft worksite reference LM (see Plan 9 in Appendix A), where works activities included:
  - General site activities including operation of plant and equipment.
  - Collar construction.
  - Secondary lining works.
  - Small basement construction.
- Amersham Vent Shaft worksite, reference AM (see Plan 10 in Appendix A), where works activities included:
  - General site activities including operation of plant and equipment.
  - Secondary lining works.
  - Internal structure 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:
  - General site activities including operation of plant and equipment.
  - Road maintenance.
  - Reinforced concrete works for internal structure walls and floor.
  - Connection to tunnels, including demolition and reinforced concrete works.
  - Basement construction, including excavation.
- Chalfont St Peter Vent Shaft worksite, reference CSP (see Plan 12 in Appendix A), where works activities included:
  - General site activities including operation of plant and equipment.
  - Road maintenance.
  - Reinforced concrete works for internal structure walls and floor.
  - Connection to tunnels, including demolition and reinforced concrete 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 pile bore, installation of reinforcement cage and concreting pile, grout curtain construction around viaduct pile groups maintenance plant and clean up around piles.
  - Construction of a cofferdam, including excavation and operation of sheet piling and support plant.
  - Compound operations.
  - Maintenance of haul roads.
  - Ground investigation works.
  - Pier construction.
  - Pumping water management.
  - Satellite welfare operation.
  - Generator farm operation.
  - North abutment works, including yard supporting activities.
  - Concrete drilling.
  - Pile trimming.
  - Gas crossing emergency dismantling works.
  - Material storage.
  - Fencing works.
  - Utility diversion.
  - Environmental maintenance.
  - Base slab construction.
  - River Colne crossing, including emergency removal of obstruction to reinforced concrete crossing.
  - Girder and deck erection and installation, including span segmental erection, grouting, steel structure erection and dismantling.
  - Deck finishes, including delivery of parapets, noise barriers, troughs, pipes, steel works and other minor materials to the storage yards and deck, filling of voids and secondary concrete (within deck) and supply and installation of carrier drainpipe and access ramps required within the deck.

- 1.1.4 Further works, where monitoring did not take place, were also undertaken at:
- Godington where construction of the site access road, river realignment works and vegetation clearance were underway.
  - Grovill Embankment – Westbury where excavations were underway.
  - North of School End where excavations, vegetation clearance, stockpiling and drainage works were underway.
  - Turweston along the A422 where compound development works and temporary road diversion works were underway.
  - East West Rail (EWR) interfaces where drainage works and assembly of steel deck were underway.
  - Charndon Lodge where concrete works, including rebar fixing, formworks lifting, concrete pours, concrete shaft construction and excavations were underway.
  - Infrastructure Maintenance Depot (IMD) where concrete works, including rebar fixing, formworks lifting and concrete pours, 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 and piles was underway.
  - Doddershall Culvert where installation of pre-cast culvert units and concrete works, including rebar fixing and formworks lifting were underway.
  - Aylesbury Golf Course where construction of site haul road, stockpiling, earthworks, compound setup and pond construction were underway.
  - Thame Valley Viaduct Causeway where temporary bridge construction, piling, aggregate laying and compound setup were underway.
  - Fleet Marston where earthworks, stockpiling, drainage works, habitat site maintenance works and pond construction were underway.
  - Along A41 where concrete batching works, geogrid installation, embankment works, stockpiling and earthworks were underway.
  - Waddesdon Embankment and North Cutting where earthworks, stockpiling, compound setup, drainage works and construction of site haul road were undertaken.
  - Small Dean North Embankment where construction of concrete slabs and fabrication of steel for pre cast slabs 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-three (43) noise and four (4) vibration monitoring installations were active in November in the BS area. Table 2 summarises the positions of noise and vibration monitoring installations within the BS area in November 2022.

1.2.2 The noise monitor ref.: AR-NMP1, located in the vicinity of Addison Road worksite (ref.: AR) and the noise monitor ref.: MF-NMP1, located in the vicinity of Oat Close worksite (ref.: OC), are currently being repaired and therefore no noise data were recorded at these monitoring locations during the reporting period.

1.2.3 The noise monitor ref.: QAR-NMP3, located in the vicinity of the Woodlands worksite will now be know as noise monitor ref.: WDL-NMP1.

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

Table 2: Monitoring Locations

Worksite Reference	Measurement Reference	Address
A422 TN	TN-NMP1	Turweston, Brackley
SE	SE-NMP1	School End, Chetwode
	SE-Vib1	School End, Chetwode
RF	RF-NMP1	Old Stable Cottage, Rosehill Farm, Chetwode
	RF-Vib1	Old Stable Cottage, Rosehill Farm, Chetwode
HC	HC-NMP1	Hermitage, Chetwode
TW	TW-NMP1	Twyford, Buckinghamshire
WSO	WSO-NMP1	West Street, Twyford
SHC	SHC-NMP1	School Hill Compound, Calvert
FCC	FCC-NMP1	Calvert South
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton
QAR	QAR-NMP2	Station Rd, Quainton
MW&GH	GH-NMP1	Glebe House, A418, Aylesbury

Worksite Reference	Measurement Reference	Address
	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
RLE	SDVC-NMP1	Rocky Lane, Wendover
	NCAS6-NMP1	Chesham Lane, The Lee, Wendover
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover
WDV	WDV-NMP1	Upper Wendover Dean Farm, A413, Wendover
	WDV-Vib1	Upper Wendover Dean Farm, A413, Wendover
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
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath
AM	AM-NMP1	Amersham Vent Shaft Worksite, Whielden Lane, Amersham
LM	LM-NMP1	Little Missenden, A413, Amersham
	PWC-NMP1	Patricia Holmes, Little Missenden Vent Shaft Worksite, Amersham
CSG	CSG-NMP1	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane
	CSG-NMP2	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane
	PIC-NMP1	Bottom House Farm Lane, Chalfont St Giles
CSP	CSP-NMP1	Chalfont St Peter Vent Shaft Worksite, Chesham Lane, Chalfont St. Peter
	CSP-NMP2	Chalfont St Peter Vent Shaft Worksite, Chesham Lane, Chalfont St. Peter
	CSP-NMP3	Chalfont St Peter Vent Shaft Worksite, Chesham Lane, Chalfont St. Peter

Worksite Reference	Measurement Reference	Address
CVV-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*	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	48.8 (52.1)	51.6 (60.8)	47.5 (52.2)	45.5 (52.2)	43.2 (52.1)	45.6 (47.0)	49.2 (50.8)	49.4 (54.3)	48.1 (56.6)	40.6 (45.6)	47.3 (52.9)	41.9 (49.3)
SE	SE-NMP1	School End, Chetwode	Free-field	51.8 (58.6)	62.6 (66.0)	45.4 (54.0)	45.7 (54.5)	45.4 (56.4)	46.9 (51.8)	52.3 (65.3)	50.8 (65.0)	46.0 (50.5)	44.9 (52.1)	45.8 (53.6)	44.2 (46.6)
RF	RF-NMP1	Old Stable Cottage, Rosehill Farm, Chetwode	Free-field	48.7 (58.1)	54.2 (63.4)	46.5 (55.7)	47.0 (56.0)	46.2 (55.1)	46.1 (47.5)	48.4 (49.5)	48.1 (50.3)	48.1 (55.5)	45.1 (48.8)	47.0 (55.4)	45.1 (50.0)
HC	HC-NMP1*	Hermitage, Chetwode	Free-field	48.2 (52.6)	65.0 (68.3)	39.6 (50.6)	40.1 (53.0)	37.3 (48.9)	- -	- -	- -	- -	- -	41.7 (46.0)	33.9 (38.6)
TW	TW-NMP1	Twyford	Free-field	46.7 (51.9)	51.2 (58.5)	45.7 (55.7)	45.6 (55.3)	44.7 (56.9)	44.7 (46.5)	46.9 (48.1)	46.8 (47.3)	46.9 (52.2)	45.2 (57.2)	45.8 (52.6)	42.6 (46.1)
WSO	WSO-NMP1	West Street, Twyford	Free-field	48.4 (52.3)	54.6 (65.2)	44.4 (58.7)	42.0 (56.0)	41.0 (56.1)	46.9 (48.5)	52.5 (56.0)	47.5 (49.6)	44.9 (49.7)	39.8 (49.4)	44.8 (51.1)	39.5 (50.3)
SHC	SHC-NMP1	School Hill Compound, Calvert	Free-field	52.1 (55.5)	53.9 (61.4)	48.3 (56.0)	46.5 (55.3)	44.5 (58.4)	46.8 (48.7)	50.6 (54.3)	50.2 (55.6)	48.6 (58.3)	41.2 (50.6)	48.2 (62.2)	43.8 (54.0)

\*Note: Missing noise data for Saturday monitoring periods at monitor location HC-NMP1 was due to loss of power caused by solar panels not able to charge.

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average LAeq,T (Highest Day LAeq,T)					Saturday Average LAeq,T (Highest Day LAeq,T)					Sunday / Public Holiday Average LAeq,T (Highest Day LAeq,T)	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
FCC	FCC-NMP1	Calvert South	Free-field	57.2 (60.2)	58.1 (60.9)	46.5 (53.9)	43.5 (53.0)	43.8 (57.1)	48.7 (53.4)	51.0 (58.9)	46.1 (49.2)	44.9 (50.3)	37.8 (47.5)	50.8 (72.2)	45.0 (55.6)
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton	Free-field	70.4 (73.1)	67.9 (70.6)	45.2 (54.5)	41.7 (53.7)	42.6 (58.6)	53.1 (58.5)	61.9 (64.3)	59.6 (64.3)	45.5 (53.1)	35.7 (45.8)	58.4 (72.8)	37.5 (49.5)
QAR	QAR-NMP2	Station Rd, Quainton	Free-field	53.0 (65.5)	56.6 (65.9)	50.7 (66.7)	50.4 (73.3)	48.8 (78.1)	45.7 (47.9)	49.3 (53.5)	50.0 (54.6)	52.1 (74.2)	40.0 (58.5)	48.3 (60.0)	41.7 (51.1)
MW&GH	GH-NMP1	Glebe House, A418, Aylesbury	Free-field	54.3 (57.5)	55.4 (57.3)	54.7 (59.1)	53.4 (59.4)	49.8 (59.1)	50.3 (53.3)	53.3 (55.4)	53.7 (55.8)	54.6 (60.2)	48.1 (59.0)	53.1 (59.7)	48.2 (53.0)
	MW-NMP1	Aylesbury, Buckinghamshire	Free-field	63.1 (64.6)	62.6 (63.6)	61.6 (63.1)	59.6 (62.1)	56.0 (62.8)	58.9 (59.8)	60.9 (62.7)	61.3 (63.0)	64.1 (87.1)	54.1 (57.8)	60.1 (63.7)	55.4 (61.3)
OC	OC-NMP1	Oat Close, Bishopstone, Aylesbury	Free-field	47.6 (56.0)	50.0 (57.3)	47.8 (57.0)	47.7 (58.8)	46.9 (62.8)	47.1 (49.9)	51.0 (54.1)	50.7 (54.8)	50.8 (61.4)	48.5 (60.7)	45.7 (54.1)	43.1 (48.8)
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury	Free-field	47.6 (54.7)	50.7 (54.8)	46.7 (55.8)	47.4 (55.5)	47.5 (71.5)	47.1 (48.2)	50.5 (52.7)	50.0 (54.5)	51.2 (62.1)	42.0 (54.0)	46.4 (50.1)	44.1 (51.8)
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee	Free-field	59.0 (62.0)	60.4 (66.5)	57.4 (60.7)	54.1 (58.8)	51.0 (58.7)	54.0 (57.1)	56.7 (59.7)	57.0 (58.2)	56.7 (62.4)	50.8 (56.6)	55.0 (58.2)	51.2 (58.3)
	NLL-NMP2	Nash Lee Lane, Nash Lee	Free-field	60.3 (63.3)	59.3 (62.0)	58.5 (62.6)	55.2 (60.5)	51.7 (60.7)	55.3 (57.4)	58.0 (60.1)	59.1 (60.7)	57.9 (61.1)	51.0 (60.6)	55.9 (60.3)	51.8 (59.9)

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$ )					Saturday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$ )					Sunday / Public Holiday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$ )	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
WGT	ER-NMP1	Ellesborough Rd, Wendover	Free-field	59.9 (62.3)	58.9 (60.6)	57.1 (60.4)	54.2 (60.5)	50.5 (59.5)	54.5 (56.2)	57.1 (57.7)	58.2 (61.1)	58.2 (70.3)	49.2 (57.4)	55.8 (59.9)	48.4 (56.0)
	BL-NMP1	Bacombe Lane, Wendover	Free-field	46.8 (52.9)	49.0 (51.4)	47.7 (51.8)	45.6 (52.6)	43.4 (54.1)	46.3 (48.8)	49.3 (51.5)	49.5 (50.7)	51.4 (64.4)	41.4 (50.8)	47.2 (52.4)	39.9 (46.3)
	WT-NMP1	A413, Wendover	Free-field	67.3 (69.8)	67.4 (69.0)	66.4 (68.3)	63.2 (68.5)	60.1 (68.1)	63.7 (64.0)	65.9 (66.2)	66.4 (66.8)	64.8 (67.1)	58.5 (61.8)	65.1 (67.6)	59.9 (66.8)
RLE	SDVC-NMP1	Rocky Lane, Wendover	Free-field	65.5 (68.1)	64.9 (66.4)	64.0 (65.9)	61.8 (64.5)	58.8 (66.8)	62.3 (62.6)	64.0 (64.4)	63.9 (65.4)	63.0 (65.5)	57.1 (60.4)	63.1 (66.0)	58.2 (65.1)
	NCAS6-NMP1**	Chesham Lane, The Lee, Wendover	Free-field	48.0 (52.6)	50.6 (56.0)	49.6 (56.7)	48.5 (57.0)	46.3 (61.2)	46.4 (48.5)	48.4 (49.1)	50.8 (50.9)	53.6 (65.4)	43.1 (45.9)	47.3 (56.6)	42.9 (48.3)
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	Free-field	58.5 (60.5)	58.3 (60.1)	57.1 (59.7)	54.8 (58.9)	51.7 (58.5)	54.8 (55.4)	57.5 (58.8)	58.9 (60.1)	57.1 (62.9)	50.9 (56.6)	56.0 (59.2)	50.8 (57.1)
WDV	WDV-NMP1	Upper Wendover Dean Farm, A413, Wendover	Free-field	52.8 (58.0)	57.5 (61.5)	51.4 (57.6)	49.2 (58.4)	46.8 (57.8)	48.4 (49.8)	52.2 (53.4)	51.1 (53.9)	50.8 (56.6)	50.2 (57.1)	49.9 (57.0)	43.4 (50.8)
LL	HG-NMP1	Hunts Green, Leather Lane, The Lee	Free-field	47.4 (53.1)	51.0 (58.3)	45.8 (55.3)	44.2 (57.0)	42.2 (62.0)	43.7 (46.7)	47.7 (49.2)	48.2 (50.5)	47.3 (53.0)	41.7 (51.6)	46.0 (52.5)	36.4 (45.8)
	GD-NMP1	Grimms Ditch, The Lee, South Heath	Free-field	52.5 (68.9)	58.0 (71.1)	52.2 (67.1)	51.4 (74.4)	50.6 (77.6)	48.6 (53.1)	55.4 (63.0)	56.8 (67.2)	57.7 (74.0)	57.1 (76.0)	48.7 (59.2)	44.8 (51.9)

\*\*Note: The noise monitor ref.: NCAS6-NMP1 was retrieved and sent for repair due to a microphone failure on Thursday 17<sup>th</sup> November 2022.

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
SHCW	PR-NMP1	Potters Row, South Heath	Free-field	50.3 (56.1)	54.2 (60.1)	48.2 (57.3)	47.0 (60.2)	45.3 (65.6)	48.7 (53.2)	49.8 (51.8)	49.5 (52.3)	49.3 (52.7)	43.9 (55.0)	48.4 (57.2)	41.1 (48.5)
	SH-NMP1	Bury Farm, South Heath	Free-field	50.0 (56.9)	54.7 (60.1)	50.9 (58.0)	49.1 (57.7)	42.6 (60.7)	45.2 (52.2)	49.6 (53.6)	49.0 (53.7)	49.5 (63.7)	42.1 (51.4)	46.8 (54.2)	40.4 (46.3)
NP	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath	Free-field	55.0 (61.0)	59.0 (61.1)	54.3 (61.1)	53.1 (66.5)	46.9 (61.2)	50.0 (54.5)	53.1 (56.9)	52.6 (57.8)	51.9 (60.0)	50.1 (58.3)	51.0 (62.5)	43.2 (50.1)
	BLH-NMP1	Bayleys Hatch, South Heat, Great Missinden	Free-field	50.7 (55.0)	53.2 (57.4)	49.2 (56.1)	47.3 (61.5)	42.3 (58.4)	48.3 (49.9)	53.3 (55.8)	50.4 (52.5)	49.8 (62.2)	41.7 (49.1)	49.4 (56.0)	38.1 (46.4)
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath	Free-field	54.7 (61.4)	55.4 (61.8)	53.1 (59.6)	50.4 (62.0)	46.2 (63.8)	51.4 (52.7)	54.5 (55.9)	55.3 (57.7)	53.4 (58.4)	47.8 (55.9)	57.1 (73.0)	45.4 (53.2)
AM	AM-NMP1	Whielden Lane, Amersham	Free-field	63.1 (65.6)	64.7 (68.9)	60.9 (62.8)	58.6 (62.3)	55.2 (62.6)	59.3 (61.2)	62.6 (63.6)	61.2 (63.1)	59.6 (64.0)	54.2 (58.7)	59.9 (62.6)	54.9 (60.3)
LM	LM-NMP1	Little Missenden, A413, Amersham	Free-field	62.3 (64.3)	61.6 (63.3)	61.7 (62.9)	57.8 (61.4)	53.8 (62.1)	57.5 (58.4)	60.3 (61.5)	61.3 (62.6)	60.3 (64.4)	52.7 (58.2)	59.5 (62.4)	53.0 (60.5)
	PWC-NMP1	Patricia Holmes, LM Worksite, Amersham	Free-field	61.8 (63.3)	61.1 (62.7)	60.9 (62.2)	57.4 (61.6)	53.2 (61.1)	57.2 (58.0)	59.5 (60.4)	60.6 (61.5)	60.8 (72.0)	52.0 (57.8)	58.5 (62.0)	52.0 (59.6)
CSG	CSG-NMP1	CSG Worksite, Bottom House Farm Lane	Free-field	47.2 (52.9)	51.4 (54.4)	43.6 (56.6)	42.6 (57.4)	40.4 (54.6)	44.2 (45.9)	47.9 (49.3)	47.1 (49.1)	44.1 (49.1)	42.0 (50.9)	46.5 (55.5)	36.7 (46.0)
	CSG-NMP2	CSG Worksite, Bottom House Farm Lane	Free-field	52.8 (67.4)	62.3 (67.8)	48.1 (52.6)	43.7 (51.3)	43.9 (56.8)	47.9 (49.3)	49.9 (52.4)	47.6 (49.9)	45.6 (50.4)	43.4 (49.5)	48.3 (57.1)	44.2 (54.9)

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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
CSG	PIC-NMP1	Bottom House Farm Lane, Chalfont St Giles, Buckinghamshire	Free-field	56.3 (61.0)	55.9 (58.2)	54.0 (56.5)	51.7 (55.3)	48.5 (55.7)	53.2 (56.1)	56.3 (59.6)	54.8 (56.2)	54.6 (62.3)	46.8 (52.6)	53.2 (59.6)	47.2 (53.5)
CSP	CSP-NMP1	Chalfont St Peter Vent Shaft Worksite	Free-field	58.7 (61.2)	61.1 (64.3)	56.5 (58.6)	53.0 (57.8)	49.0 (65.1)	53.1 (54.3)	57.3 (59.4)	57.0 (58.4)	54.8 (64.4)	46.8 (53.2)	55.5 (69.7)	46.7 (53.9)
	CSP-NMP2	Chalfont St Peter Vent Shaft Worksite	Free-field	47.0 (50.9)	51.2 (54.9)	46.9 (51.7)	45.2 (52.5)	41.5 (55.5)	46.1 (50.1)	49.1 (52.2)	49.2 (52.5)	50.1 (69.3)	40.6 (49.1)	47.3 (56.6)	39.2 (46.6)
	CSP-NMP3	Chalfont St Peter Vent Shaft Worksite	Free-field	58.3 (61.5)	57.7 (59.3)	57.1 (60.0)	54.7 (58.1)	50.5 (58.9)	54.4 (55.6)	57.3 (58.2)	57.5 (58.6)	56.7 (65.7)	49.1 (54.7)	56.0 (60.5)	49.2 (55.9)
CVV-LTP #1	CVV-LTP #1-NMP1	Northern boundary, Load Test Pile 1 Worksite	Free-field	59.7 (65.6)	63.3 (72.4)	60.9 (79.5)	59.7 (97.5)	54.5 (68.0)	52.0 (60.1)	54.2 (61.7)	54.0 (62.3)	54.3 (68.4)	48.2 (59.7)	53.2 (64.5)	49.2 (62.9)
	CVV-WYC-NMP1	Wyatt's Covert, Tilehouse Lane, Denham	Free-field	59.6 (61.9)	59.1 (61.4)	57.7 (60.5)	54.4 (63.1)	53.7 (68.0)	57.2 (60.7)	57.9 (58.4)	57.5 (58.9)	57.3 (69.4)	53.2 (61.2)	56.4 (60.1)	50.9 (58.6)
	CVV-DFS-NMP1	Denham Film Studio, Uxbridge	Free-field	52.2 (59.5)	51.2 (56.7)	49.9 (60.5)	47.9 (63.1)	46.5 (62.5)	50.4 (54.0)	49.7 (54.6)	48.2 (51.4)	50.1 (61.6)	50.5 (60.0)	50.2 (60.6)	43.8 (49.9)
CVV-MR	SVF-NMP1	Savay Farm, Denham Garden Village, Denham, Buckinghamshire	Free-field	48.1 (54.9)	49.2 (65.4)	46.7 (52.2)	45.4 (53.7)	43.4 (57.6)	48.8 (51.7)	50.1 (54.3)	47.7 (49.4)	51.4 (64.4)	44.8 (48.9)	47.7 (52.1)	45.4 (53.9)

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

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

Worksite Reference	Measurement Reference	Monitor Address	Highest PPV measured in any axis, mm/s
SE	SE-Vib1	School End, Chetwode	4.07* (X-axis)*
RF	RF-Vib 1	Old Stable Cottage, Rosehill Farm, Chetwode	4.70* (X-axis)*
WGT	ER-Vib 1	46, Ellesborough Rd, Wendover	3.31 (Y-axis)
WDV	WDV-Vib1	Upper Wendover Dean Farm, A413, Wendover	2.46 (X-axis)

\*High vibration levels for SE-Vib1 are due to haul road movements and plant operation within the vicinity of the monitor. High vibration levels for RF-Vib1 are due to the proximity of construction of noise barriers in close proximity to the vibration monitor.

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

## 2.2 Exceedances of the LOAEL and SOAEL

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

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

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

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

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

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

Table 5: Summary of Exceedances of LOAEL and SOAEL

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
A422 TN	TN-NMP1	Turweston, Brackley	Weekdays	0800-1800	2	No exceedance
SE	SE-NMP1	School End, Chetwode	Weekdays Saturdays	0800-1800 0800-1300	8 1	No exceedance
RF	RF-NMP1	Old Stable Cottage, Rosehill Farm, Chetwode	Weekdays	0800-1800	2	No exceedance
HC	HC-NMP1	Hermitage, Chetwode	Weekdays	0800-1800	6	No exceedance
TW	TW-NMP1	Twyford	All days	All periods	No exceedance	No exceedance
WSO	WSO-NMP1	West Street, Twyford	Weekdays	0800-1800	1	No exceedance
SHC	SHC-NMP1*	School Hill Compound, Calvert	All days	All periods	No exceedance	No exceedance
FCC	FCC-NMP1	Calvert South	Weekdays	0800-1800	1	No exceedance
WDL	WDL-NMP1	Woodlands Farmhouse, Station Rd, Quainton	All days	All periods	No exceedance	No exceedance
QAR	QAR-NMP2	Station Rd, Quainton	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
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
OC	OC-NMP1	Oat Close, Bishopstone, Aylesbury	All days	All periods	No exceedance	No exceedance
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury	Nights	2200-0700	19	No exceedance
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee	Weekdays	0700-0800	1	No exceedance
			Saturdays	0800-1800 1400-2200	5 9	No exceedance No exceedance
NLL	NLL-NMP2	Nash Lee Lane, Nash Lee	Weekdays	0700-0800	10	No exceedance
			Saturdays	1800-1900 1400-2200	3 9	No exceedance No exceedance
WGT	ER-NMP1	Ellesborough Rd, Wendover	Weekdays Saturdays	0800-1800 1400-2200	1 6	No exceedance 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 180-1900 0700-0800 0800-1300 1400-2200	22 22 22 2 2 14	No exceedance No exceedance No exceedance No exceedance 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
WDV	WDV-NMP1	A413, Wendover	All days	All periods	No exceedance	No exceedance
LL	HG-NMP1	Hunts Green, Leather Lane, The Lee, South Heath	All days	All periods	No exceedance	No exceedance
	GD-NMP1	Grimms Ditch, The Lee, South Heath	Weekdays	0800-1800	6	No exceedance

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
SHCW	PR-NMP1	Potters Row, South Heath	Weekdays	0800-1800	1	No exceedance
	SH-NMP1	Bury Farm, South Heath	Weekdays	0800-1800	1	No exceedance
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	Weekdays Saturdays	1900-2200 1400-2200	2 2	No exceedance
CHSM	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath	Weekdays Saturdays	1900-2200 1400-2200	5 1	No exceedance
AM	AM-NMP1	Whielden Lane, Amersham	Weekdays	0800-1800	2	No exceedance
LM	LM-NMP1*	Little Missenden Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
	PWC-NMP1**	Patricia Holmes, Little Missenden Vent Shaft Worksite, Amersham	All days	All periods	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	Saturdays	1400-2200	3	No exceedance
CSP	CSP-NMP1*	Chalfont St Peter Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
	CSP-NMP2*	Chalfont St Peter Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
	CSP-NMP3*	Chalfont St Peter Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
CVV-LTP #1	CVV-LTP #1-NMP1*	Northern boundary, Load Test Pile 1 Worksite	Weekdays	1800-1900 1900-2200	1 3	No exceedance No exceedance
	CVV-WYC-NMP1**	Wyatt's Covert, Tilehouse Lane, Denham	All days	All periods	No exceedance	No exceedance
	CVV-DFS-NMP1**	Denham Film Studio, Uxbridge	All days	All periods	No exceedance	No exceedance
CVV-MR	SVF-NMP1	Savay Farm, Denham Garden Village, Denham, Buckinghamshire	Weekdays Nights	0800-1800 2200-0700	1 33	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 twenty-one (21) monitoring locations during the month of November 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
QAR	QAR-NMP3	Station Rd, Quainton	14

2.2.8 Fourteen (14) SOAEL exceedances were recorded due to HS2 construction works during November 2022. These occurred at monitoring location QAR-NMP3 during the weekday and Saturday daytime 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.

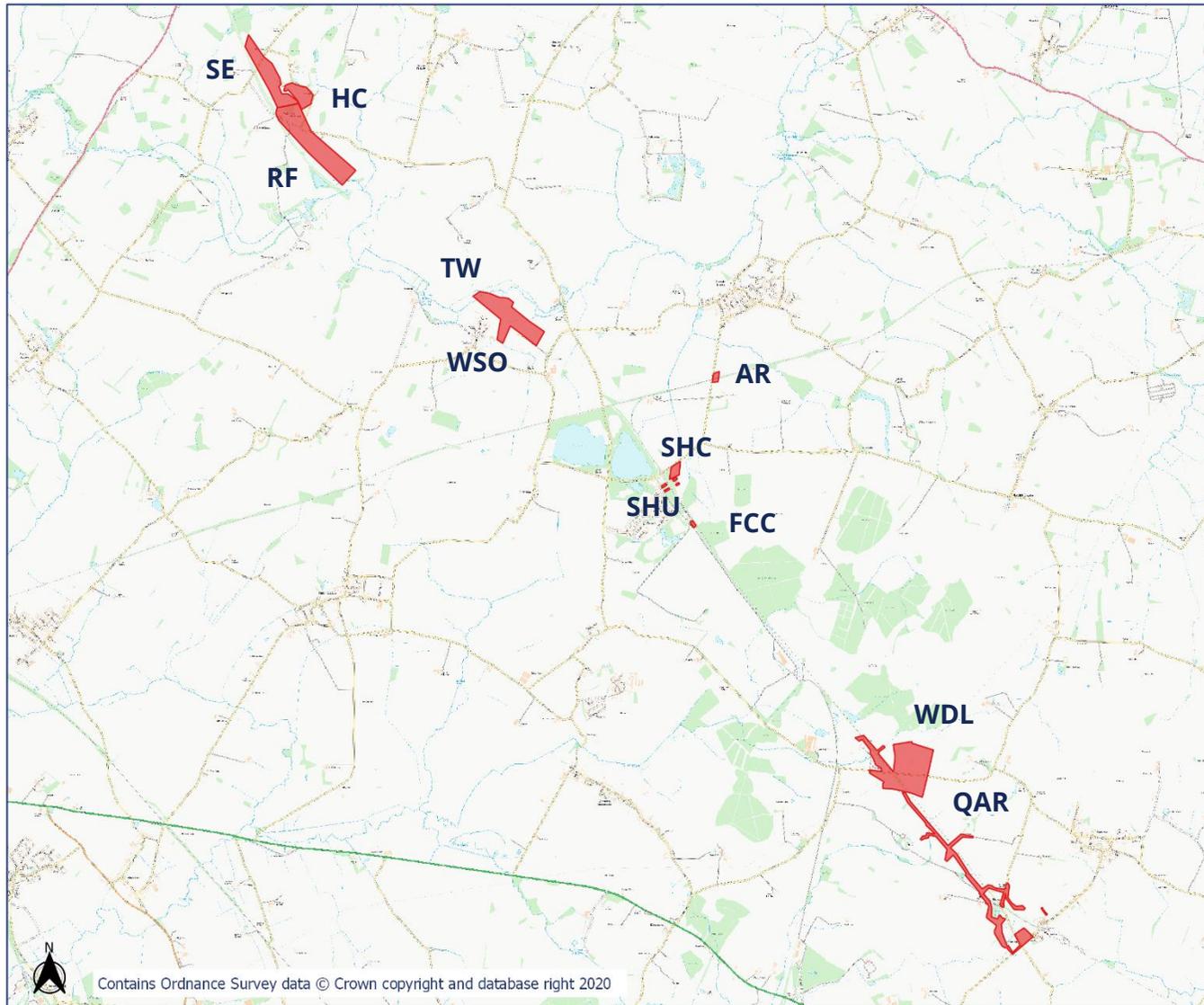
Table 8: Summary of Complaints

Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
HS2-22-85715-E-C	RLE	Complaint regarding noise from workers that were setting up traffic light at 11pm.	Investigation shows that the activity was not related to HS2 works.	The stakeholder has been contacted and information has been provided.
HS2-22-44115-C	CSP	Complaint regarding loud noise coming from below property in the evening.	Investigation shows that the noise was caused by concrete breaking for tunnel connection works. Noise predictions related to this activity suggested that the breaking of concrete would not cause a disturbance to the households and therefore no notification was offered.	The stakeholder has been contacted and the results of the investigation were provided. Moving forward, the contractor will review predictions, data and planning and will use such information for other residents located along the line of route.
HS2-22-44119-C	SHC	Complaint regarding recent noise and vibration levels.	Investigation shows that recent noise and vibration levels are not likely to cause any issue to stakeholder property.	The stakeholder has been contacted and invited to contact the helpdesk if they wish to arrange a visit to

Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
				discuss the matter further.
HS2-22-86066-E-C	CSP	Complaint regarding drilling noise and excavation noise at 9pm without prior notice.	Excavation works were undertaken at the time of the complaint. Noise predictions related to this activity suggested that the works would not cause a disturbance to the households and therefore no notification was offered.	The stakeholder has been contacted and the results of the investigation were provided. Moving forward, the contractor will review predictions, data and planning and will use such information for other residents located along the line of route.

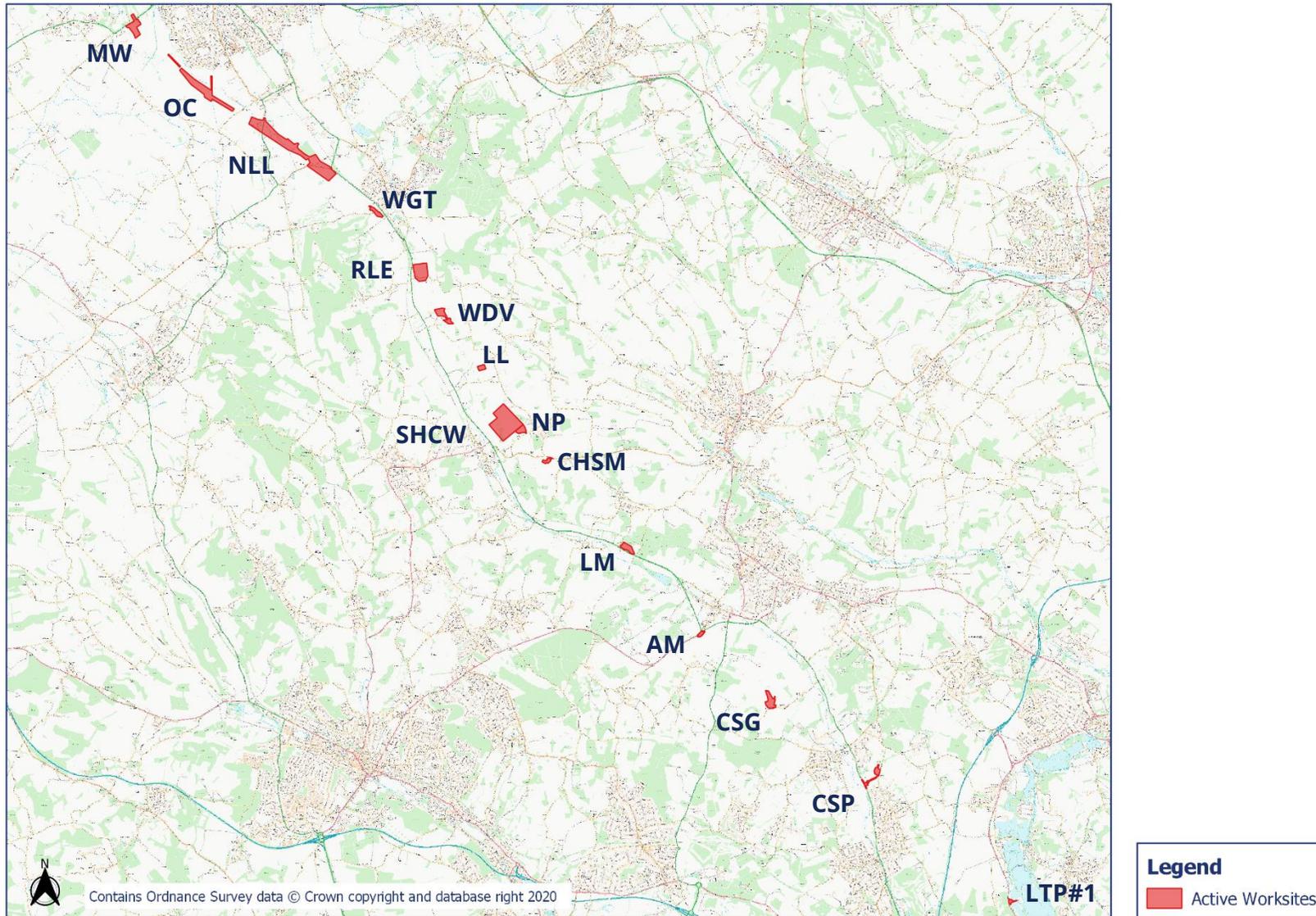
# Appendix A Site Locations

# HS2 Worksite Identification Plan - Overview 1

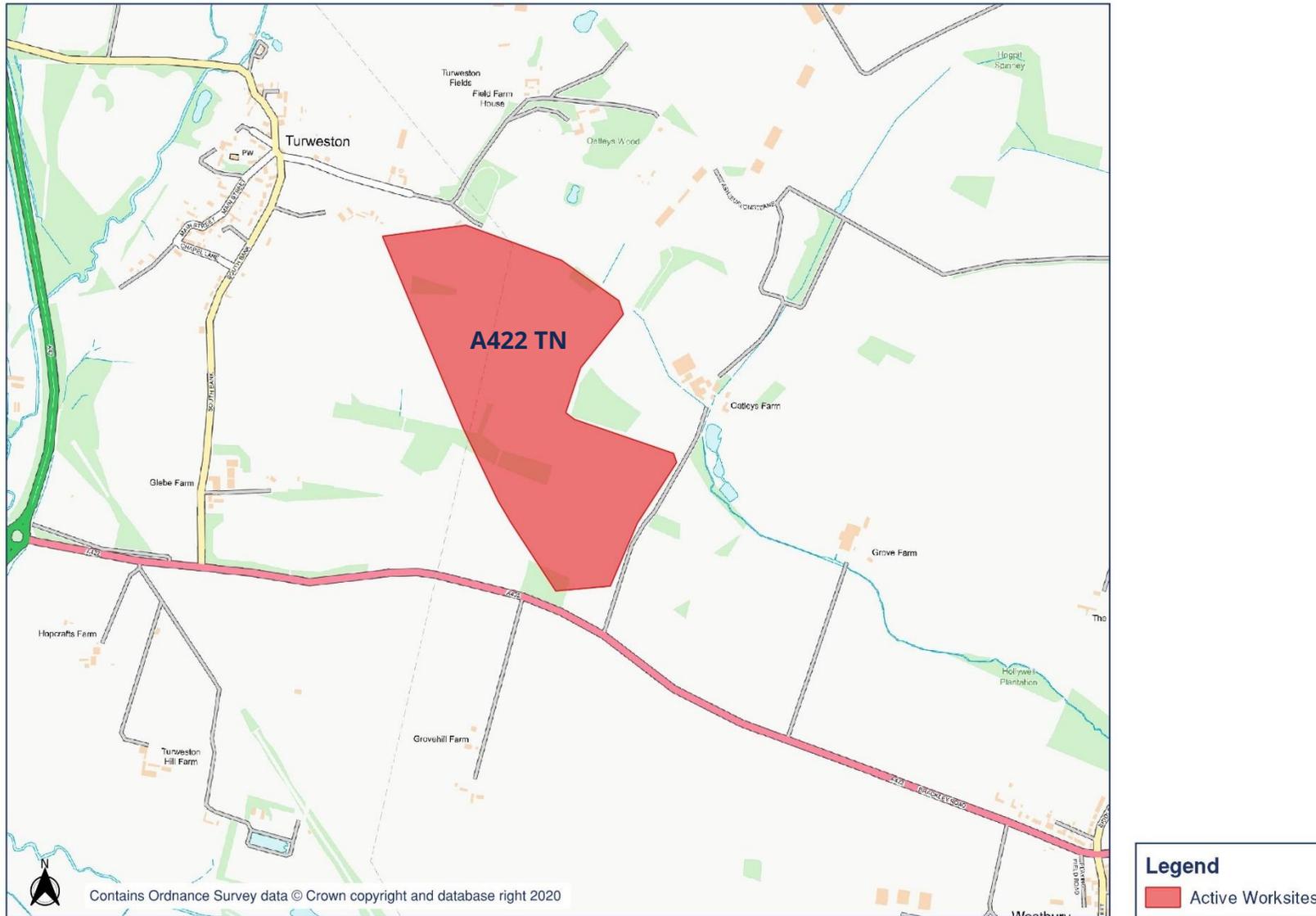


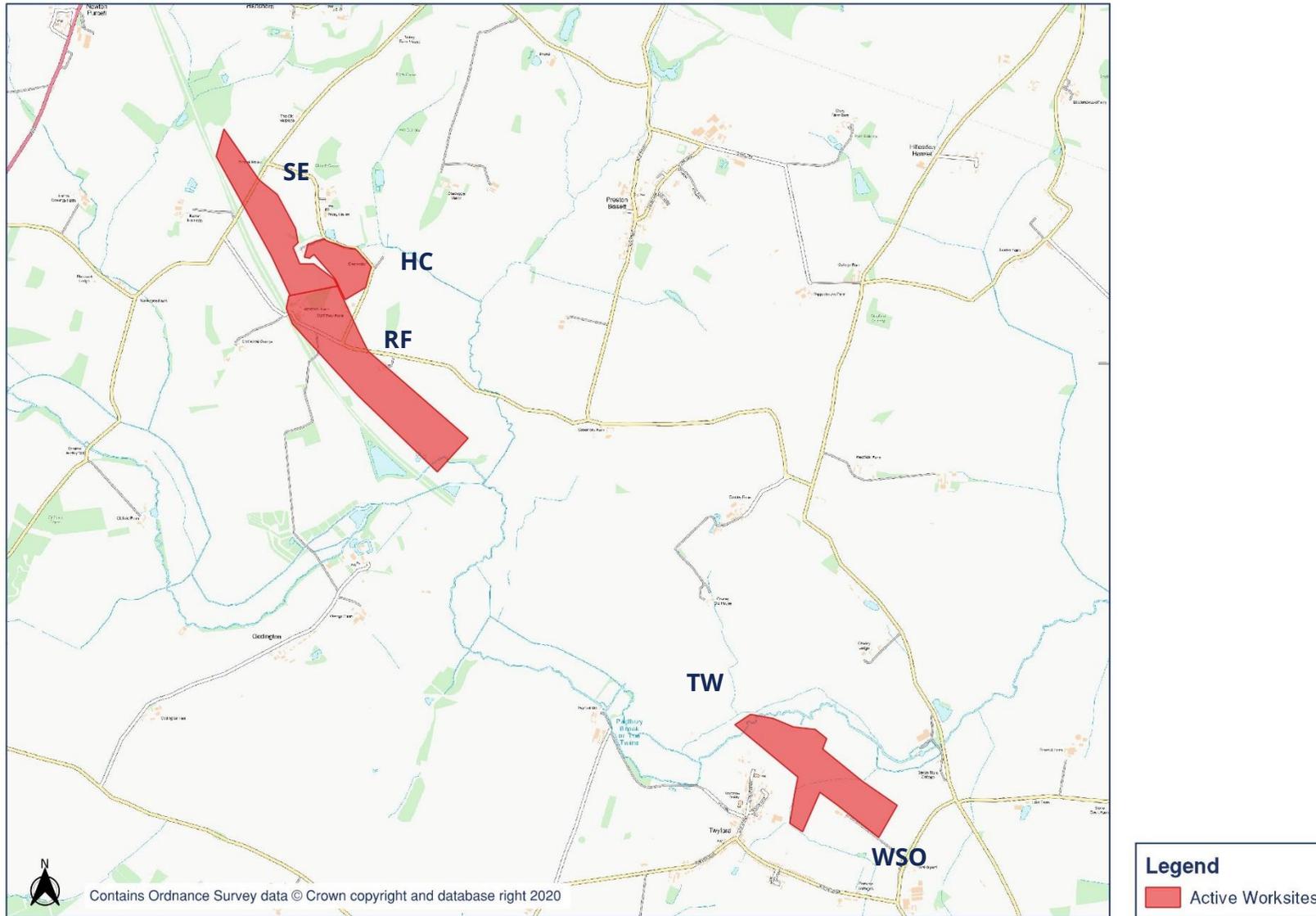
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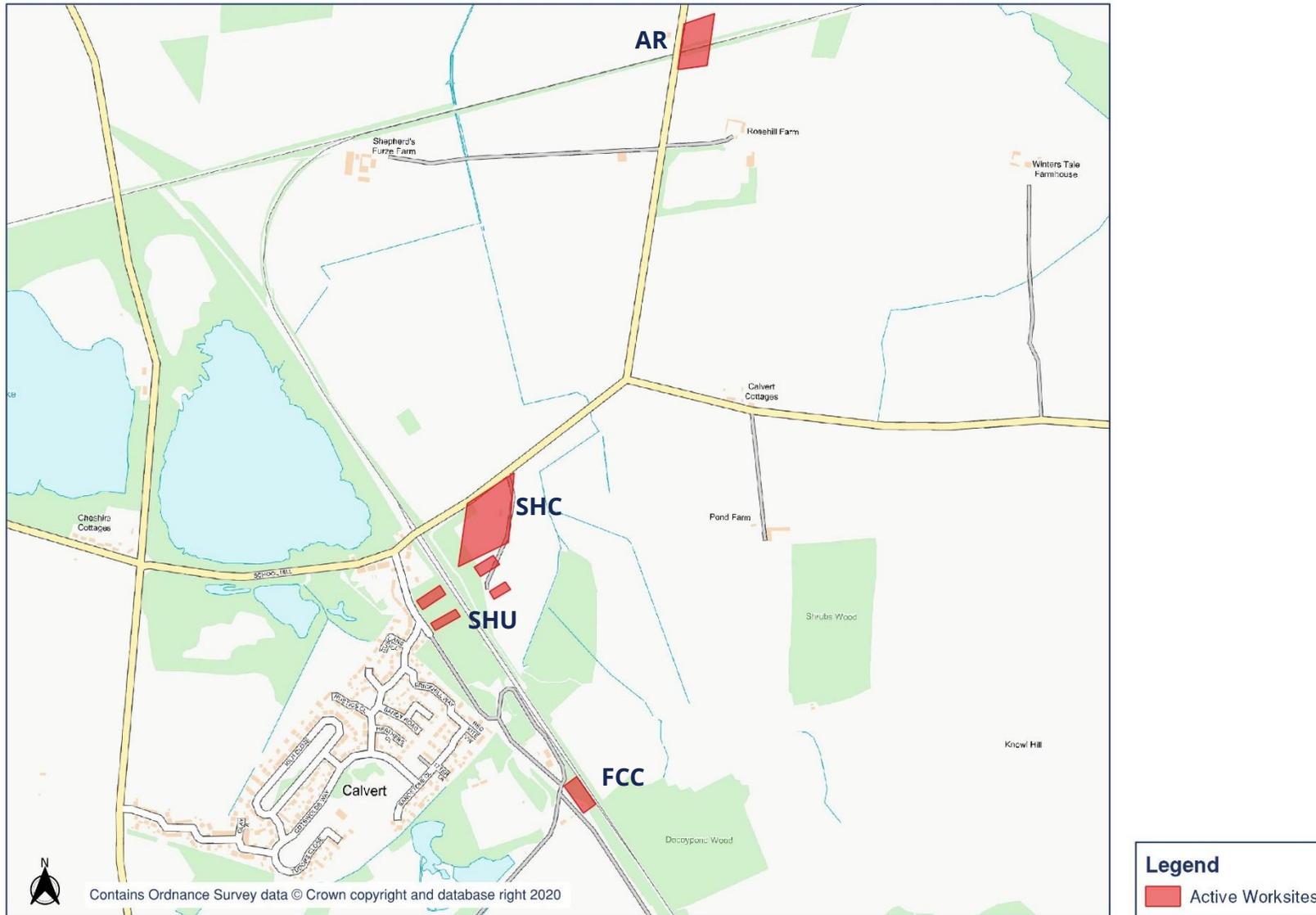
# HS2 Worksite Identification Plan - Overview 2

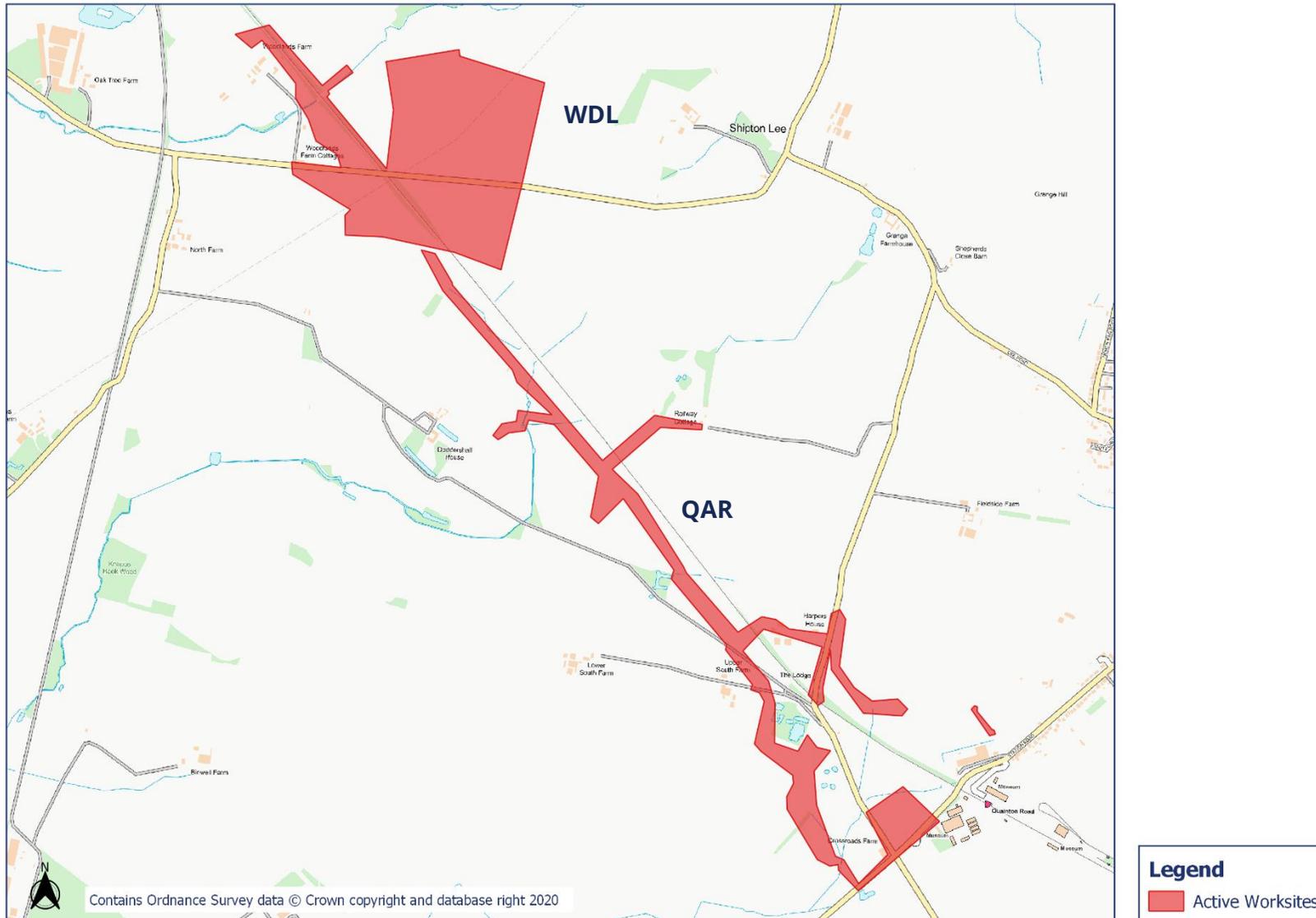


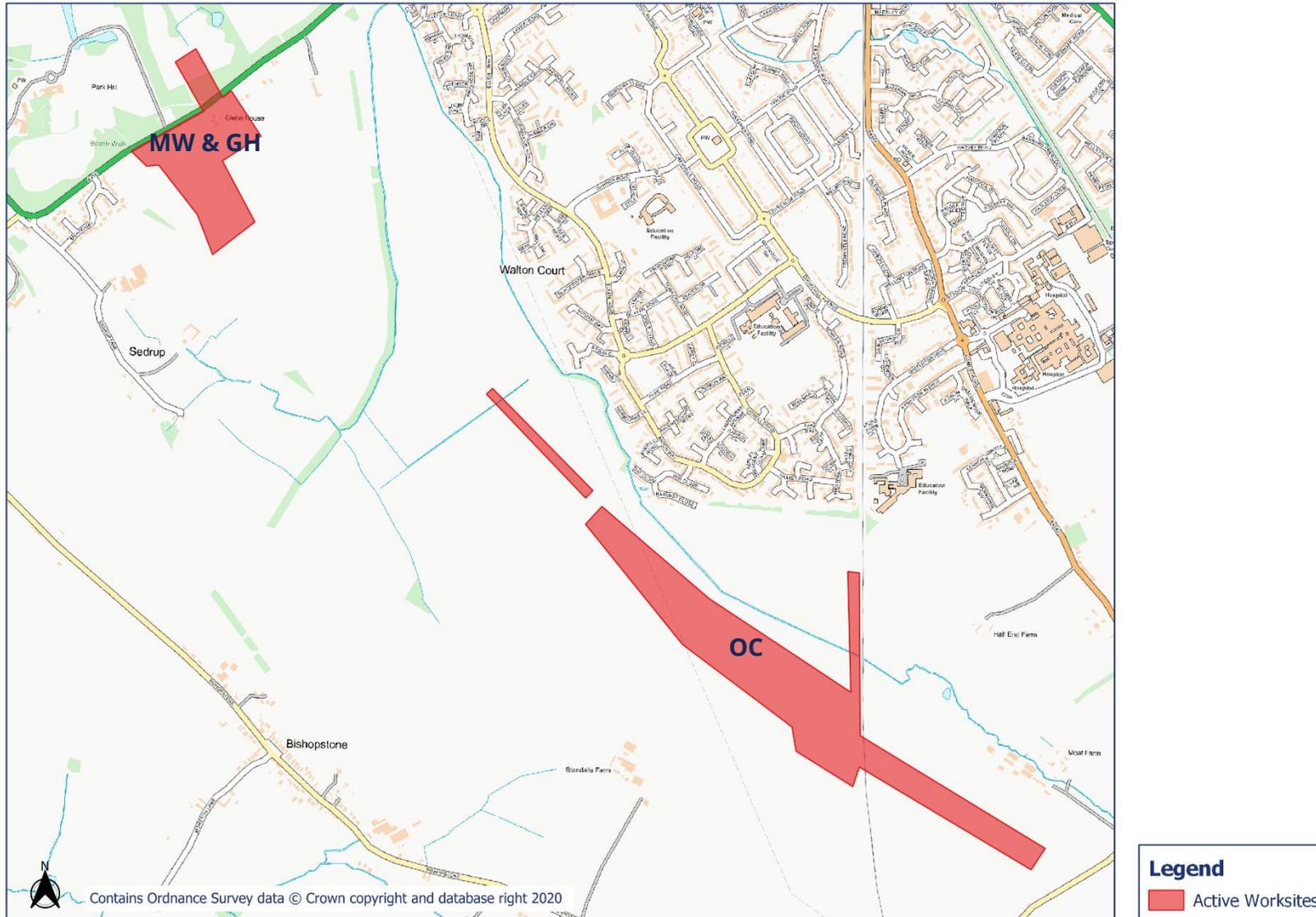
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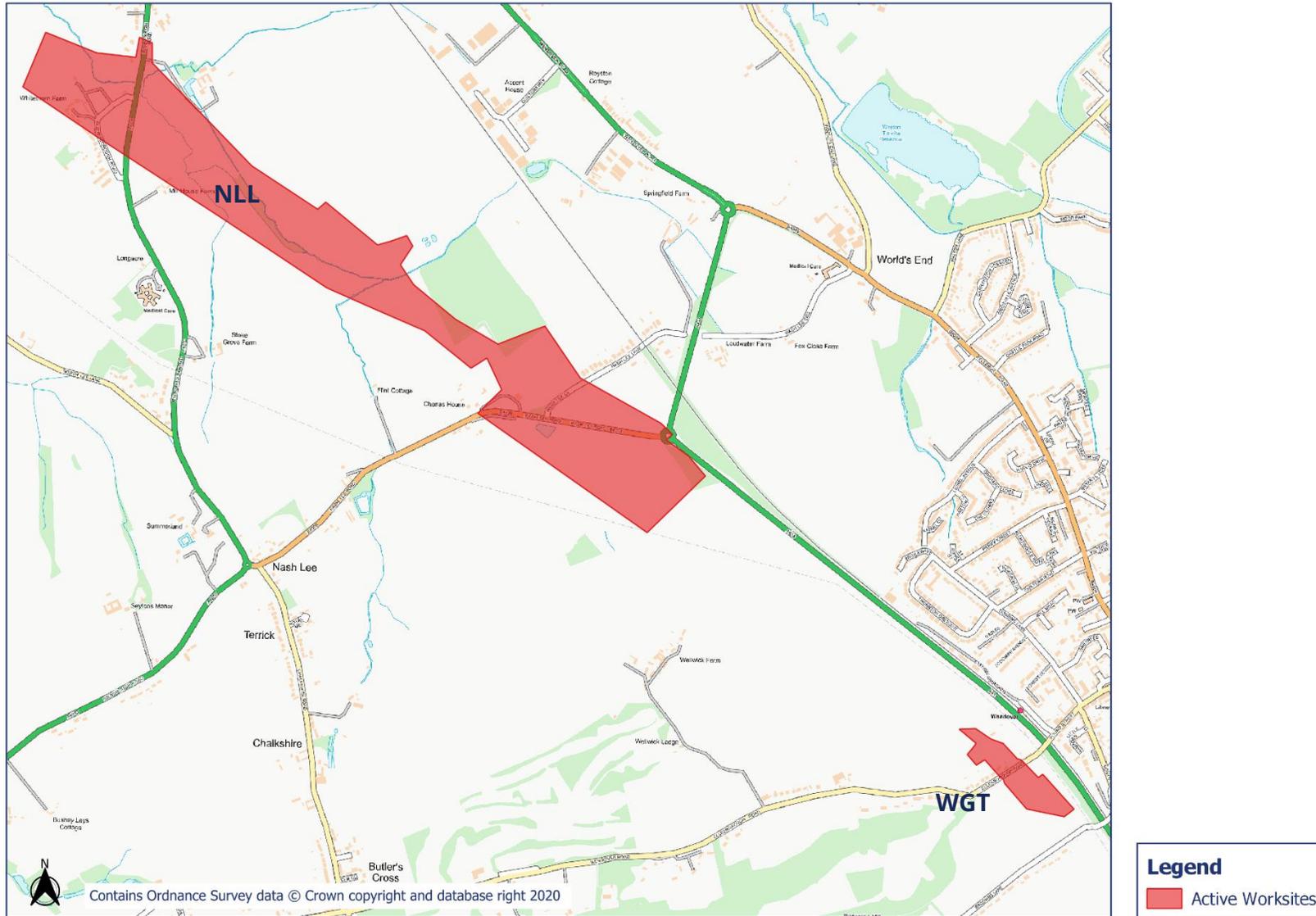


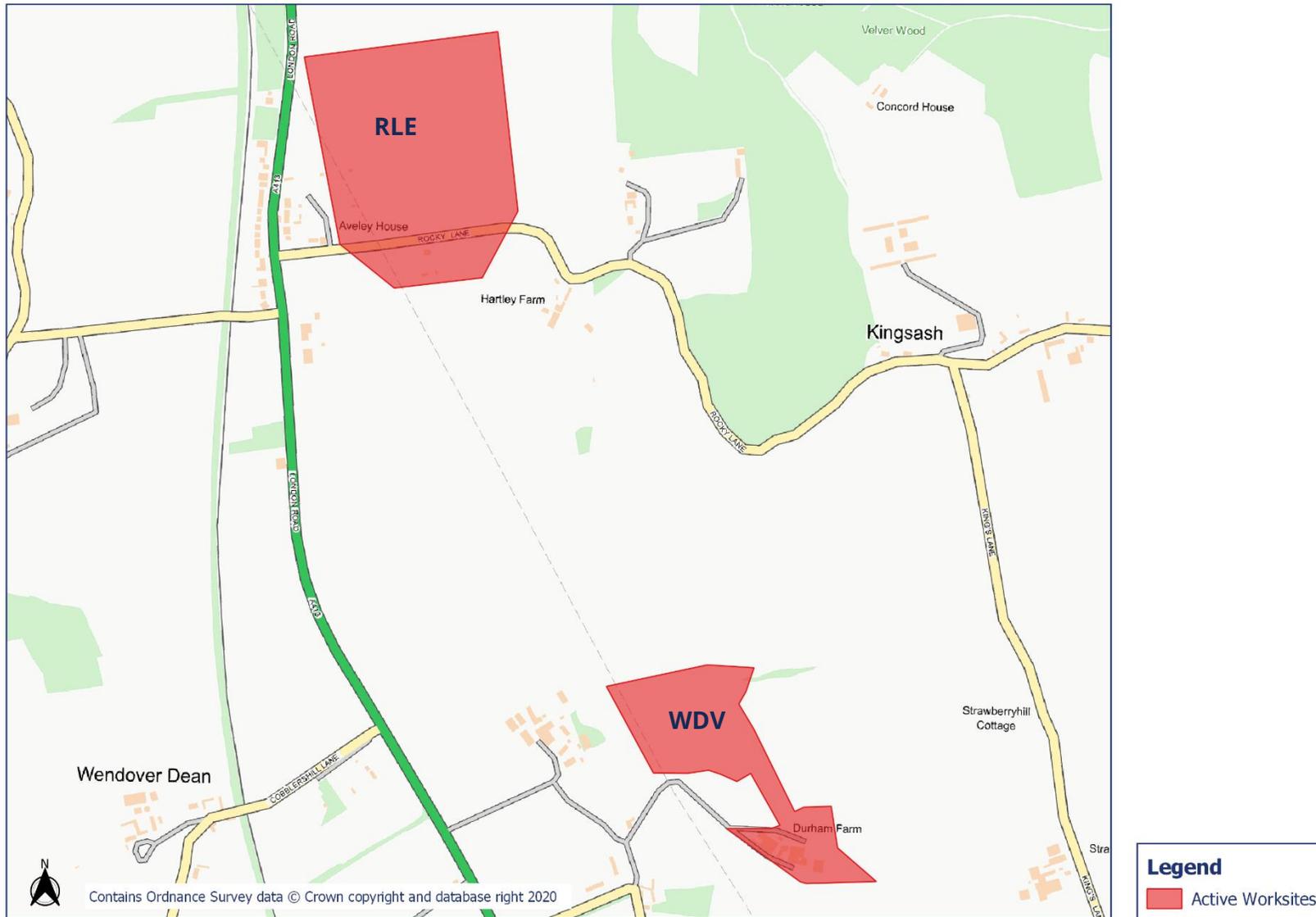


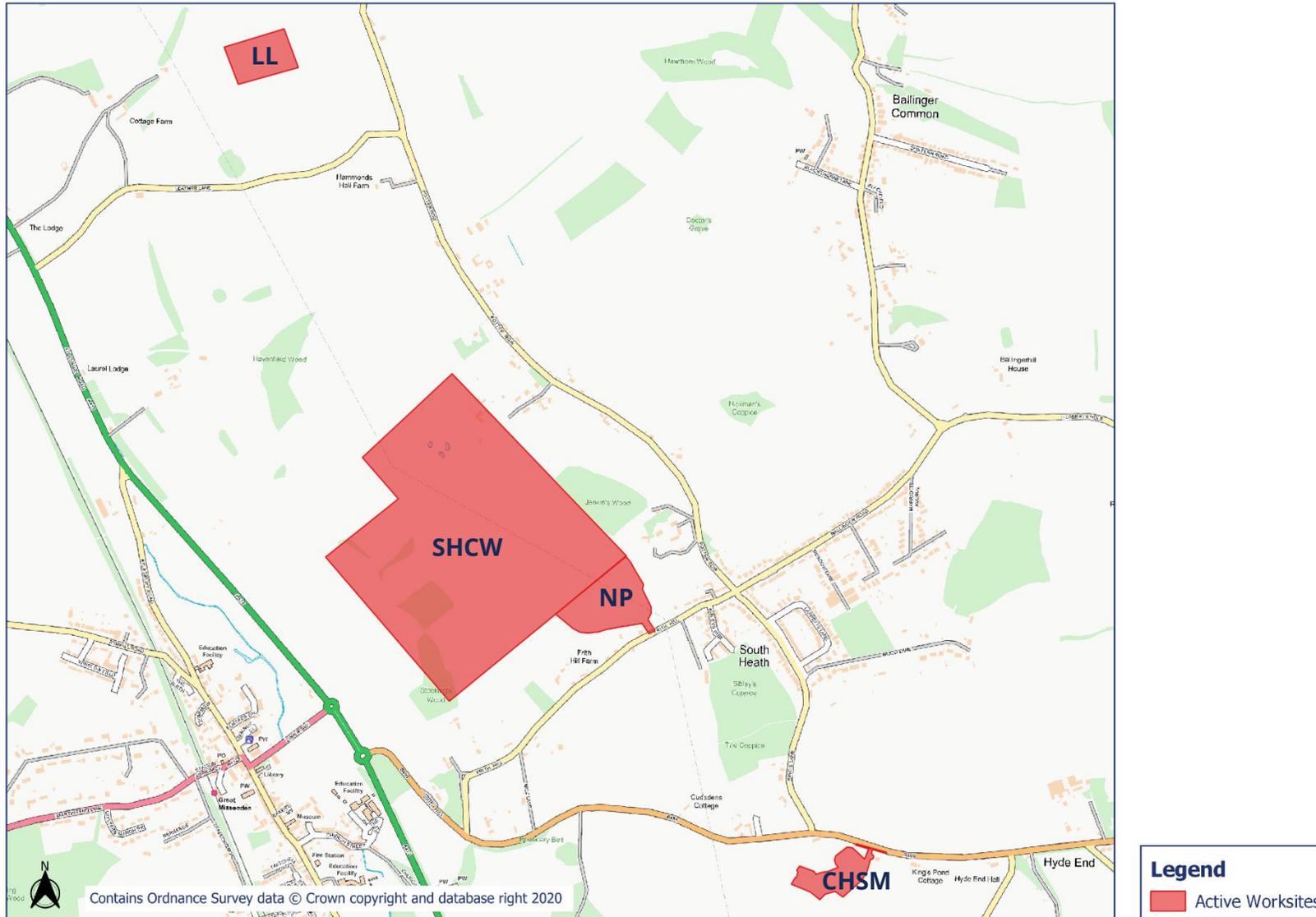










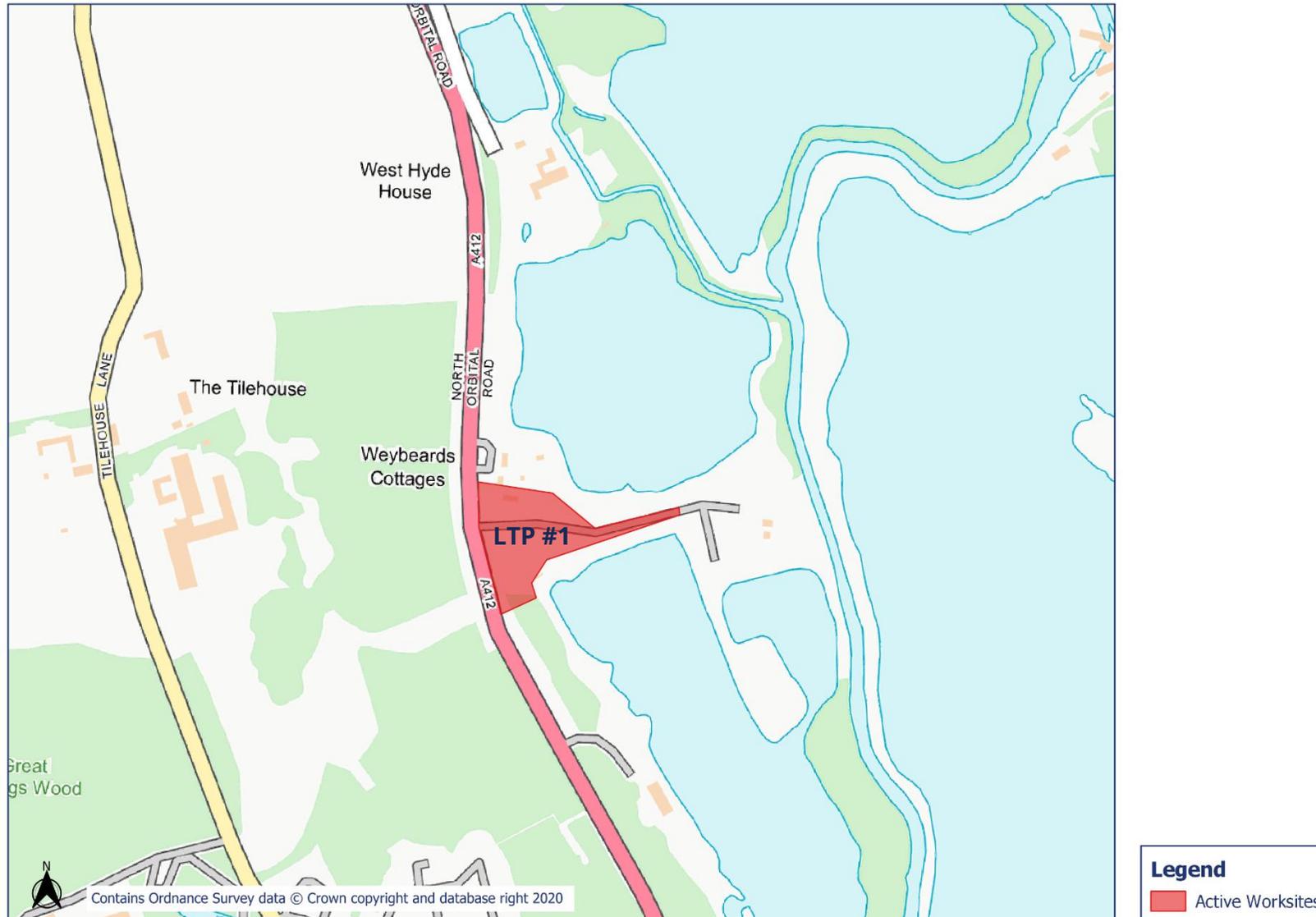




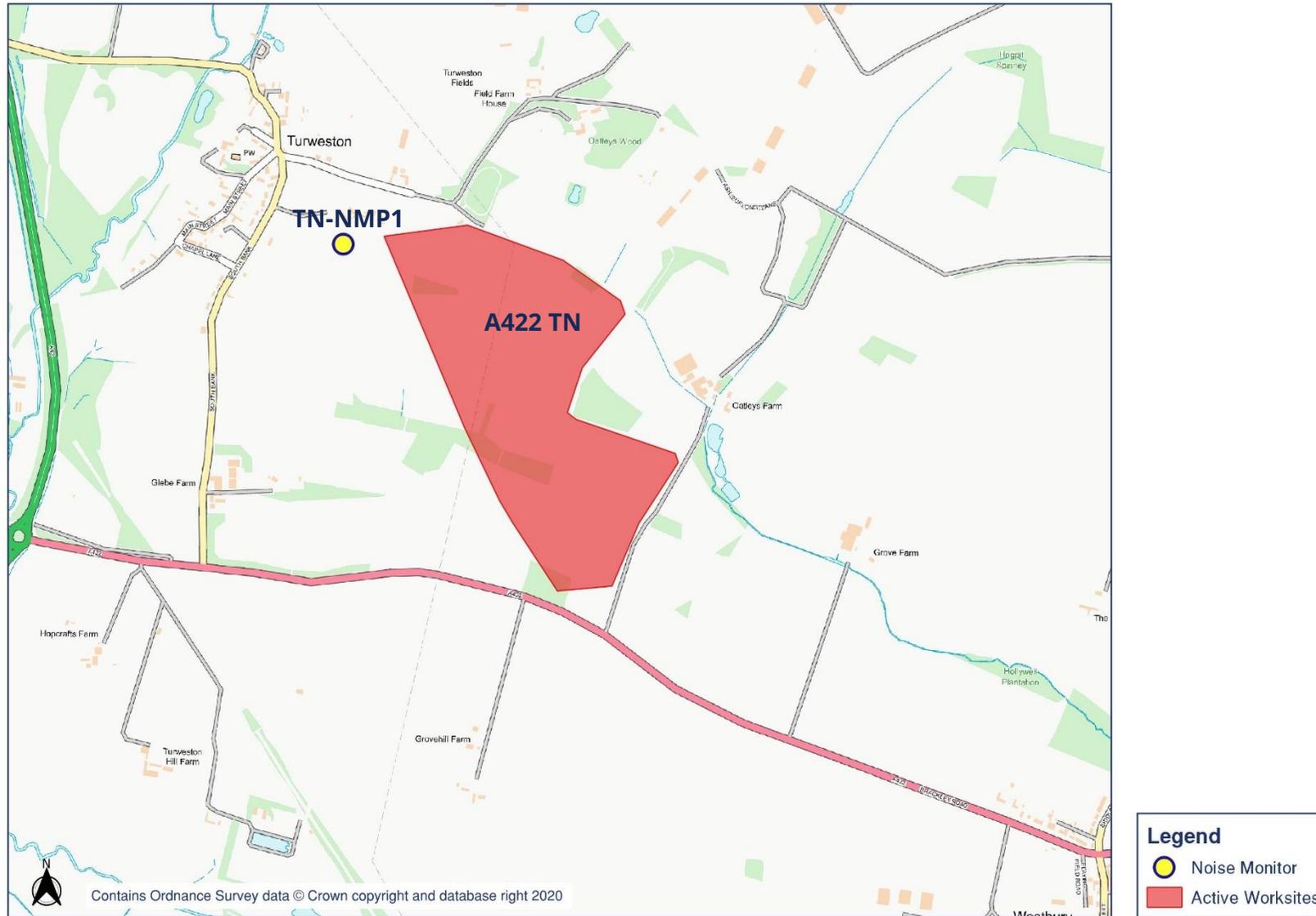


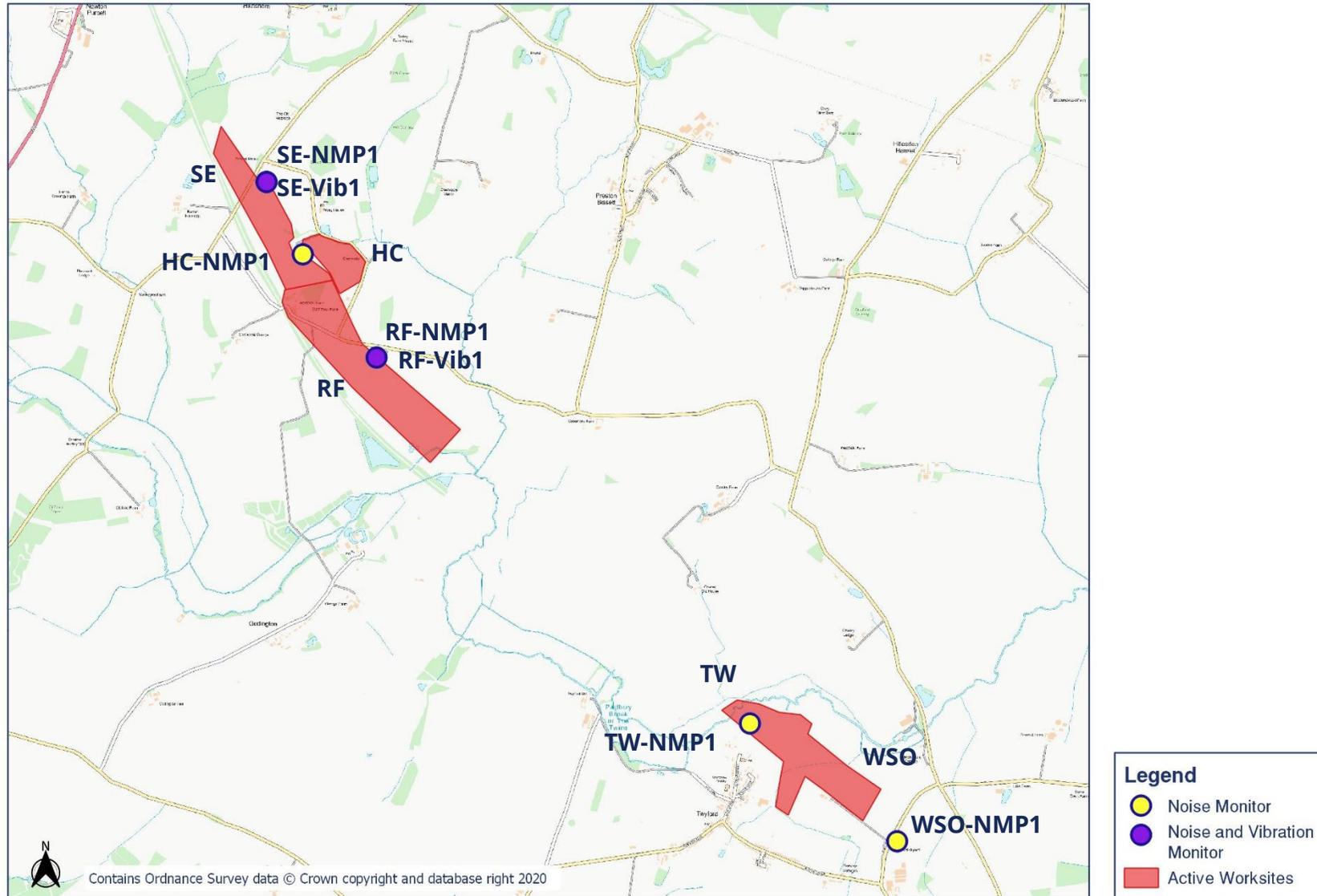


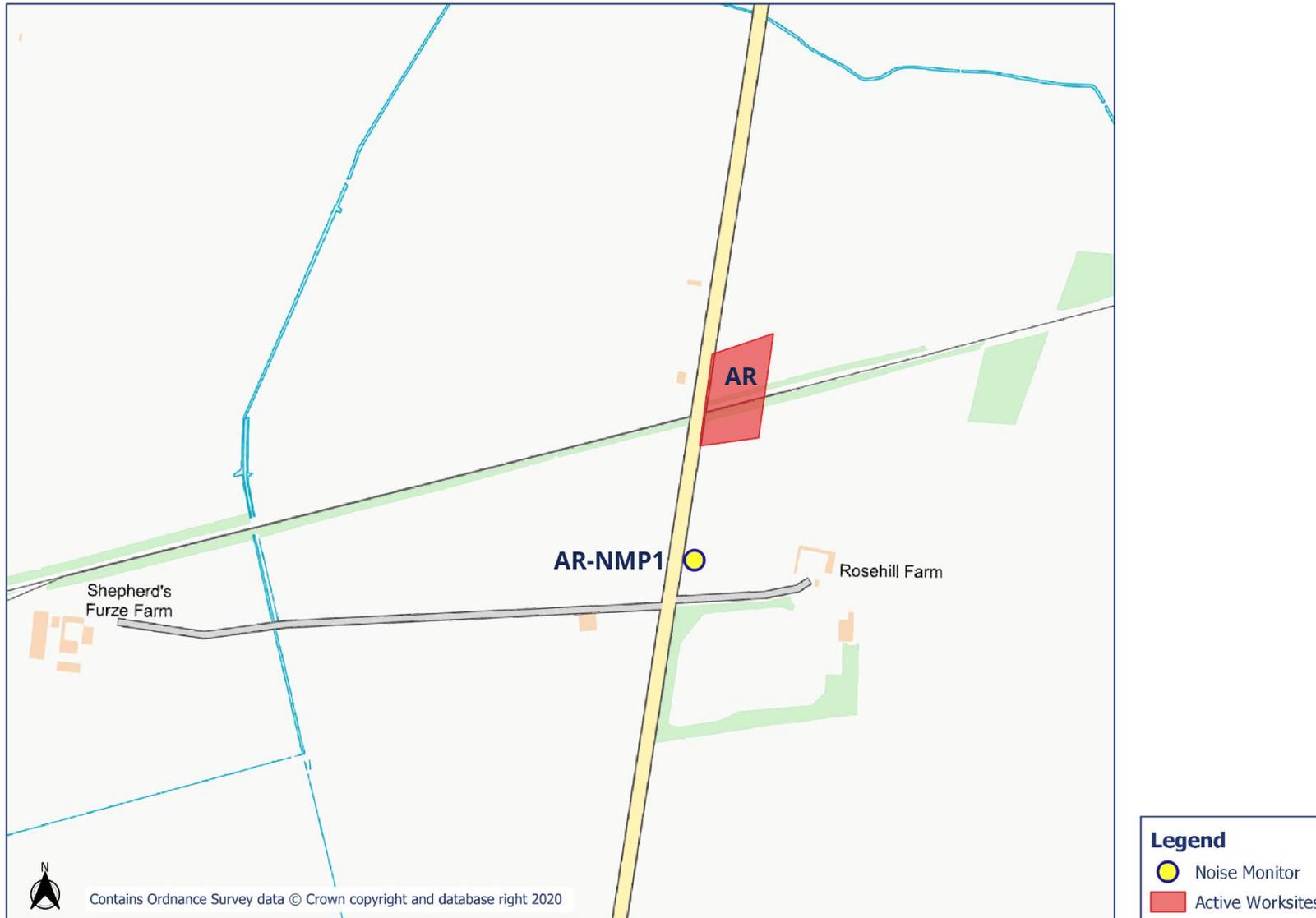


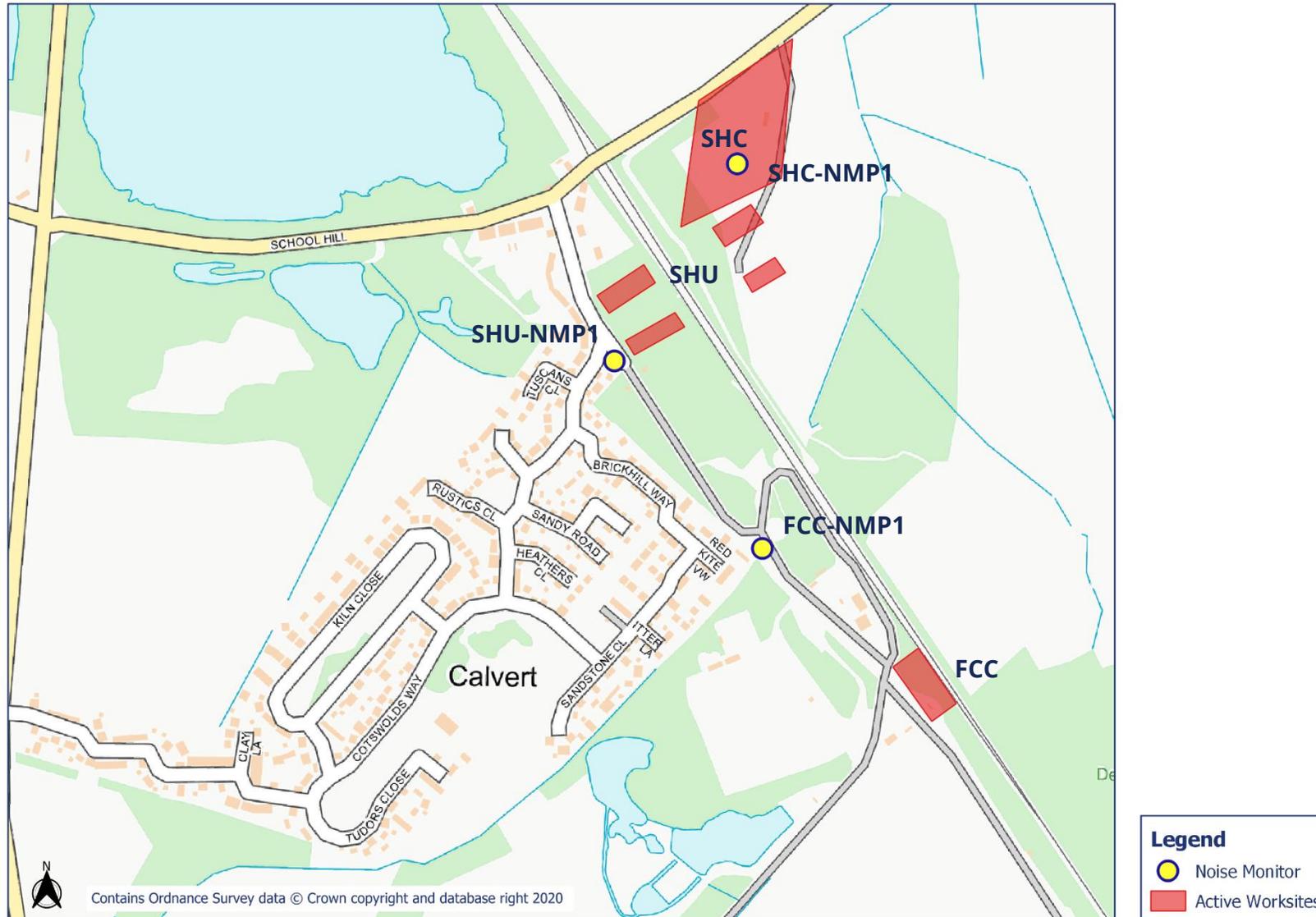


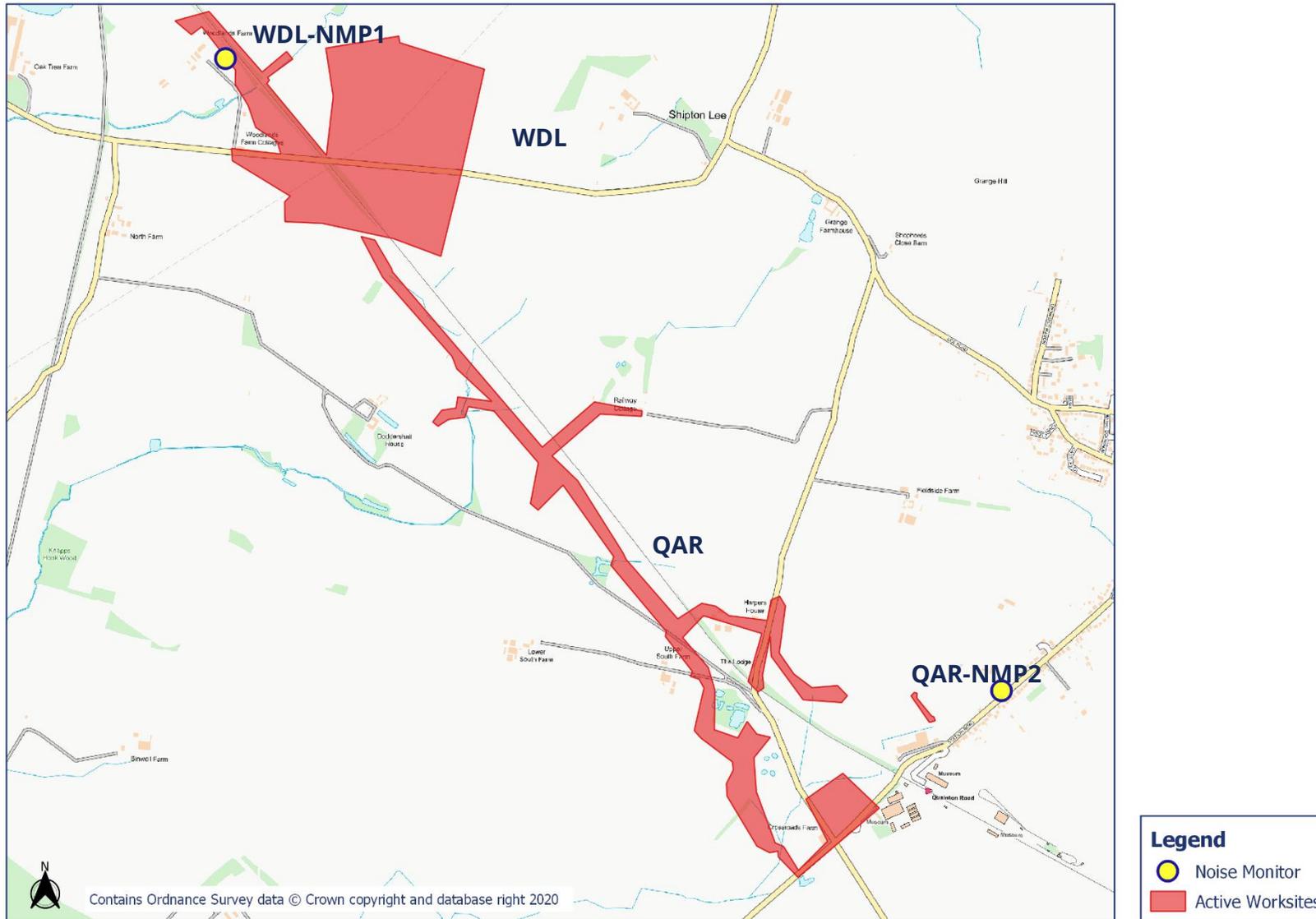
# Appendix B Monitoring Locations

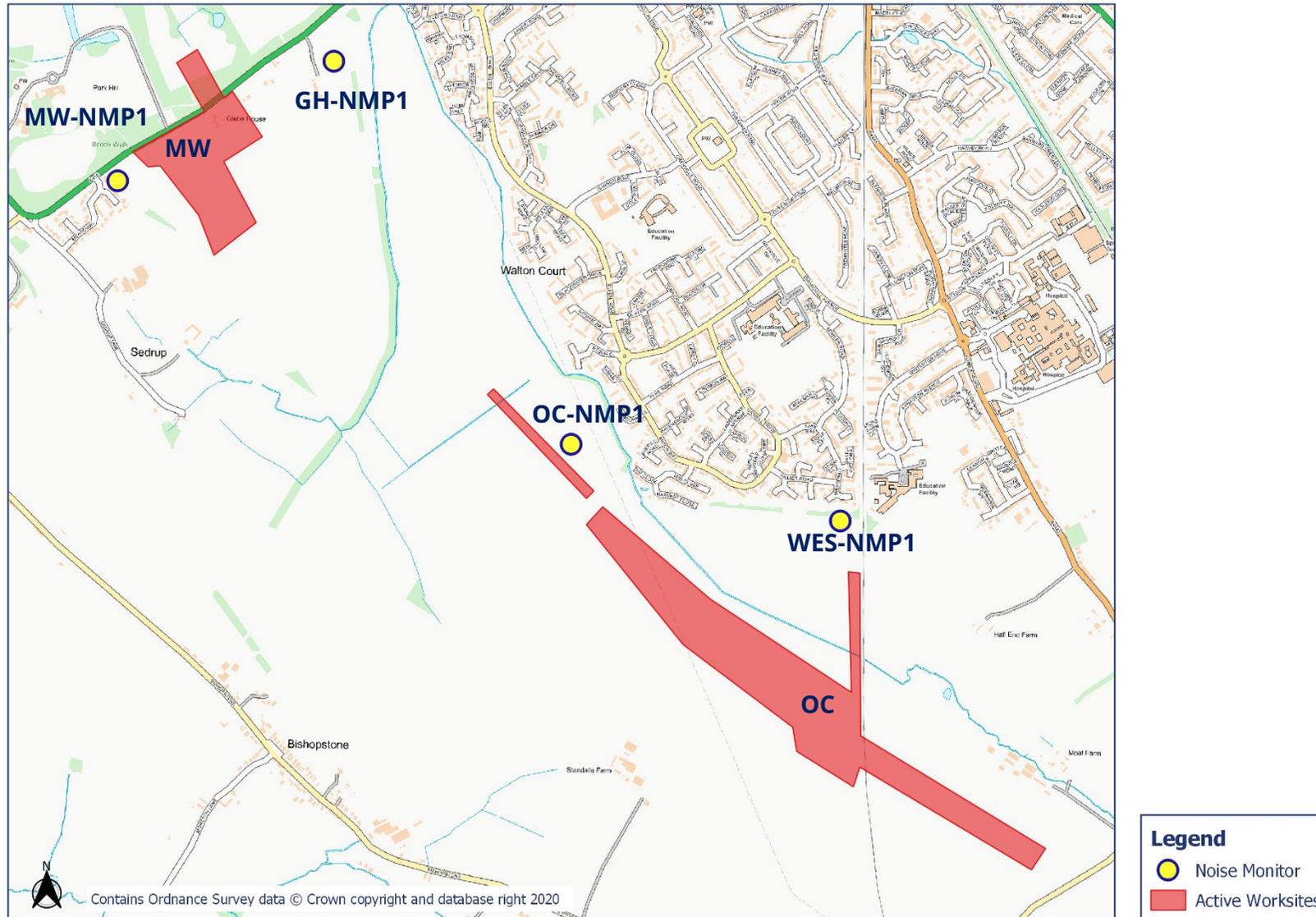


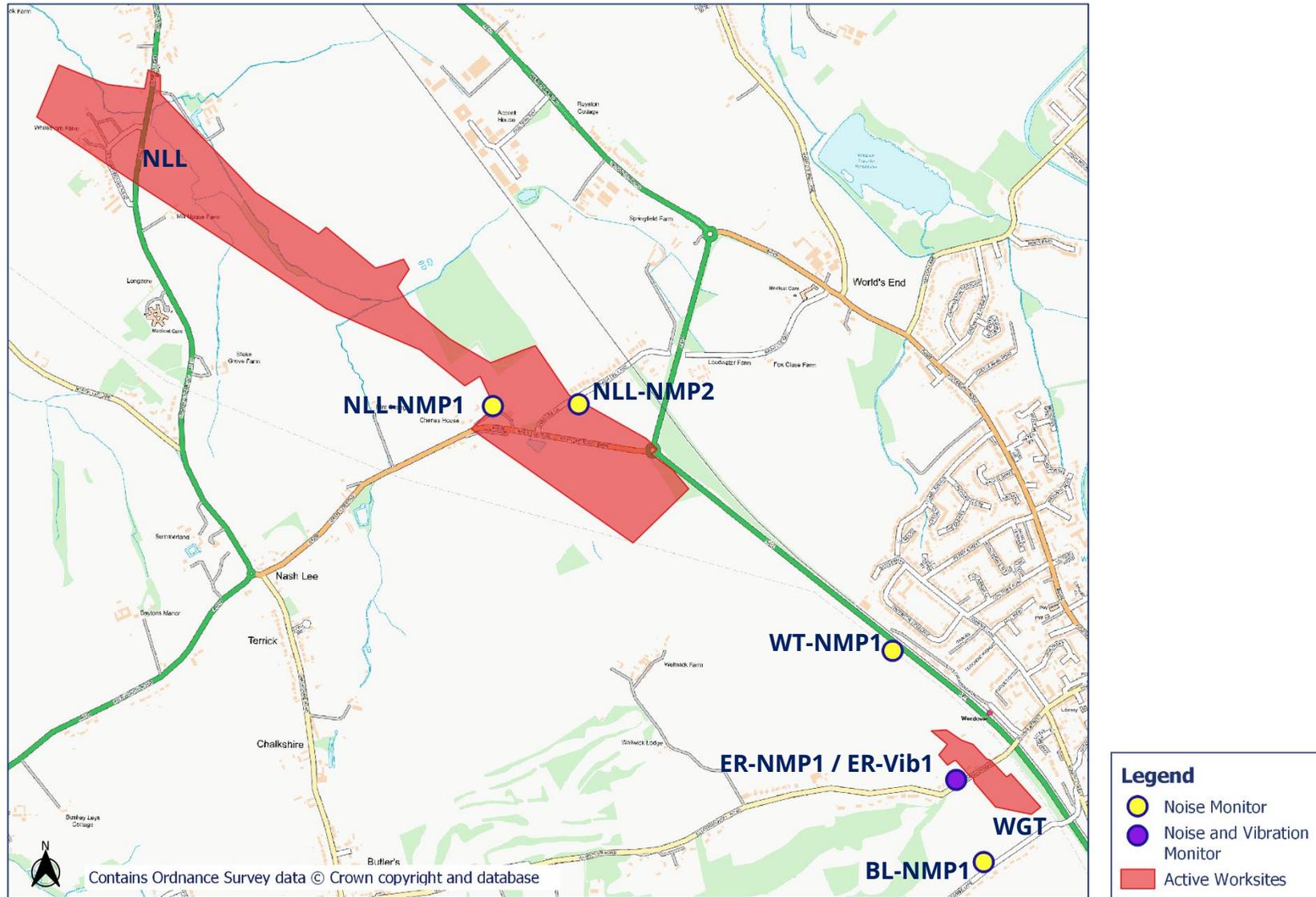


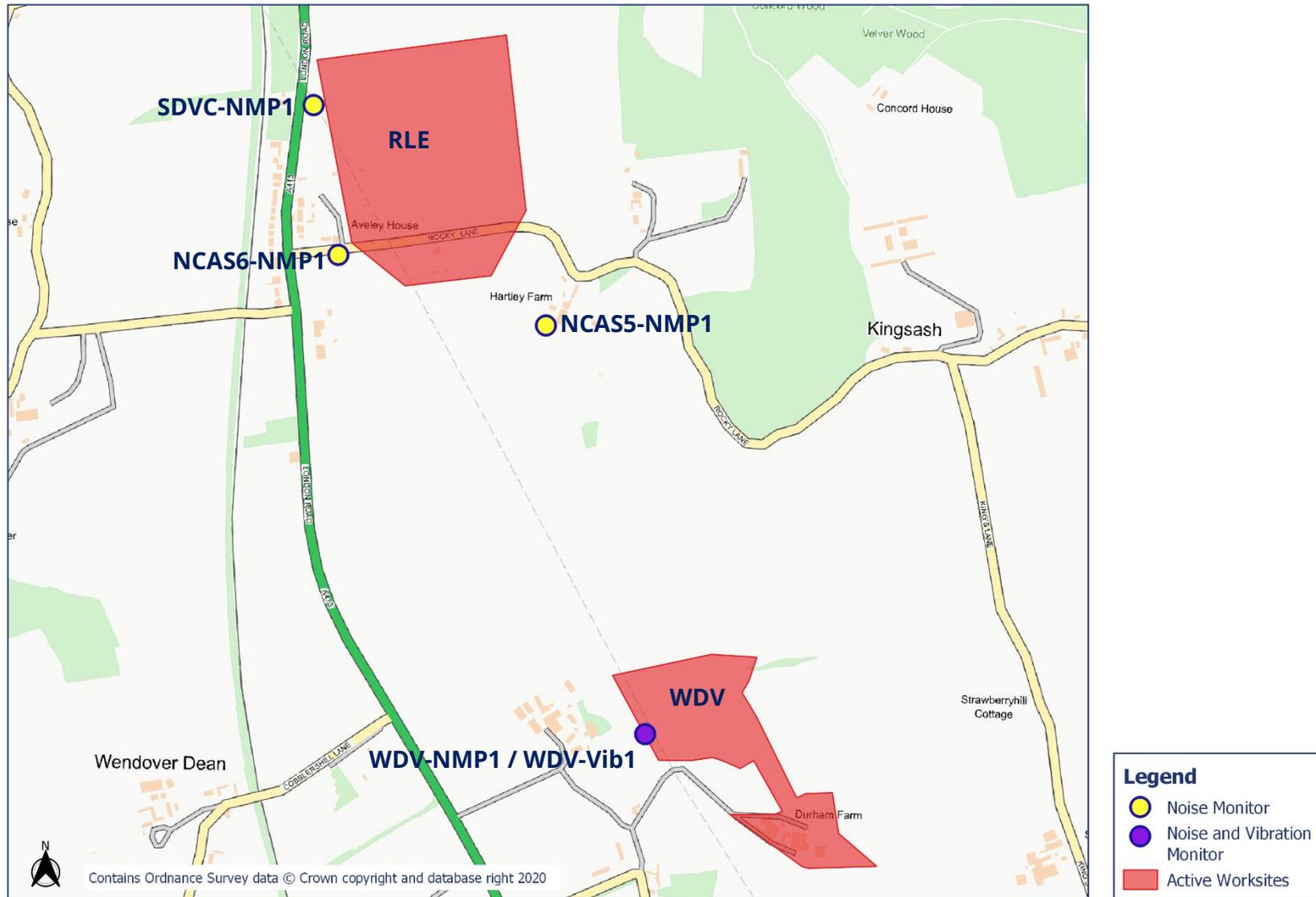


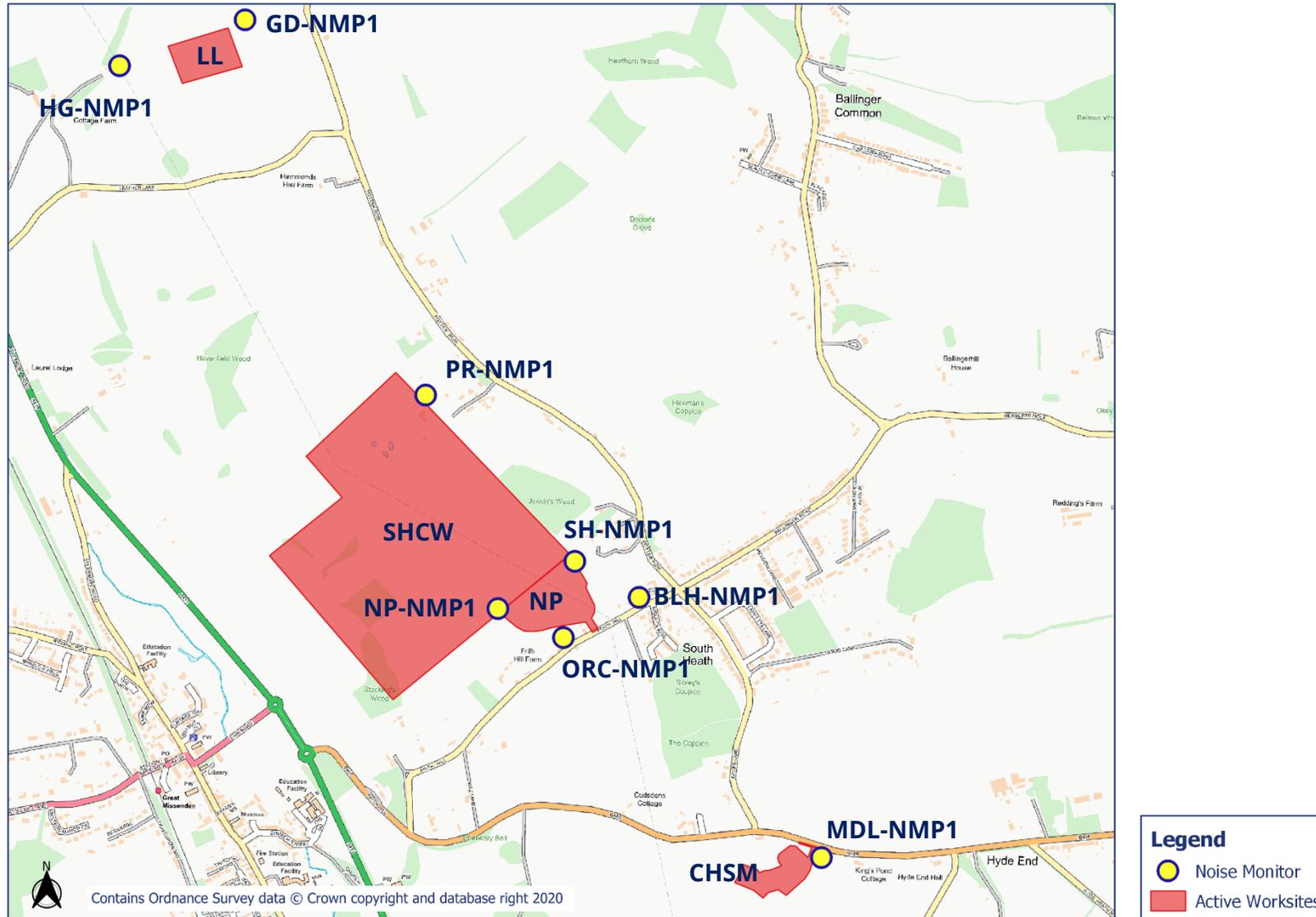




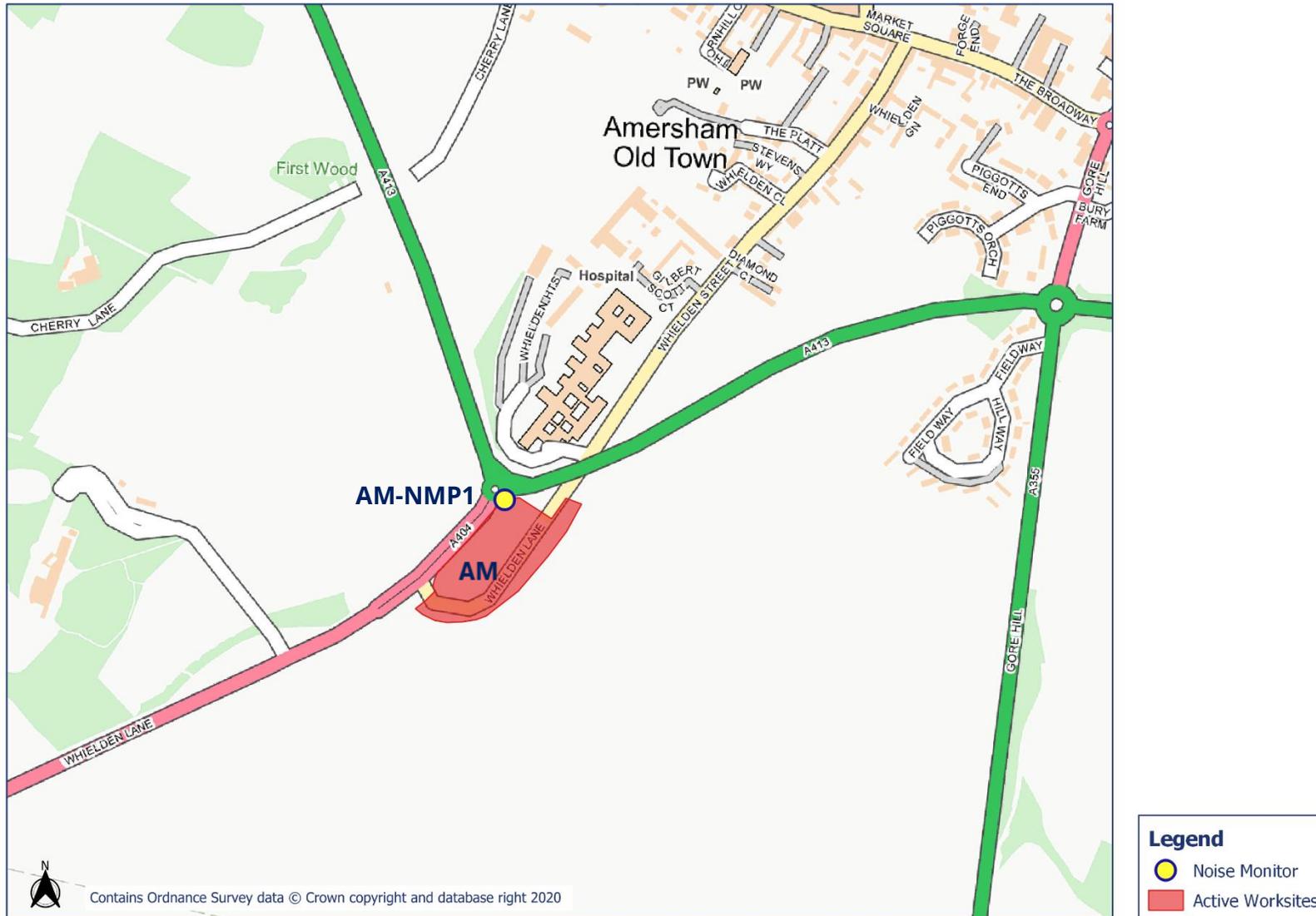


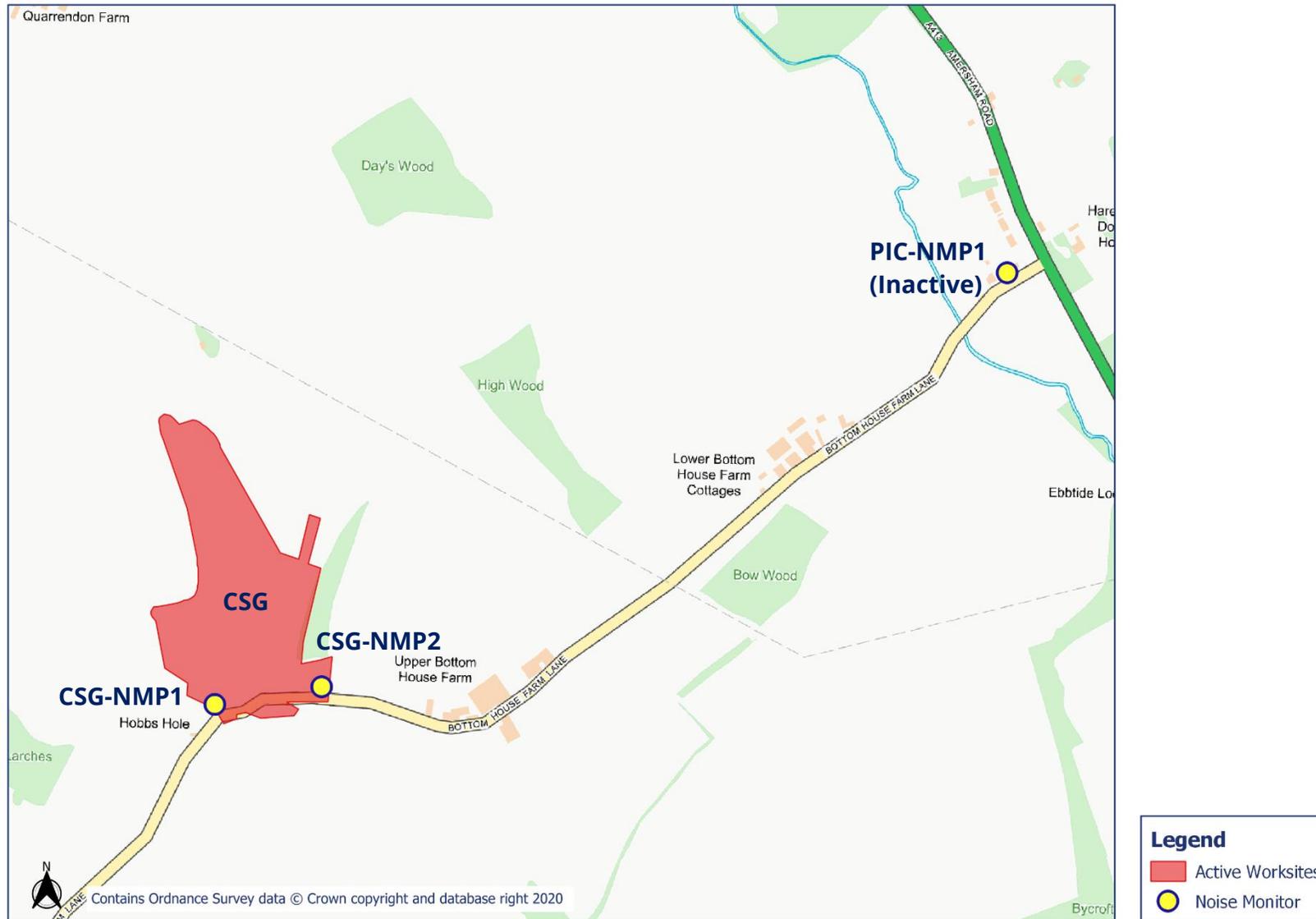




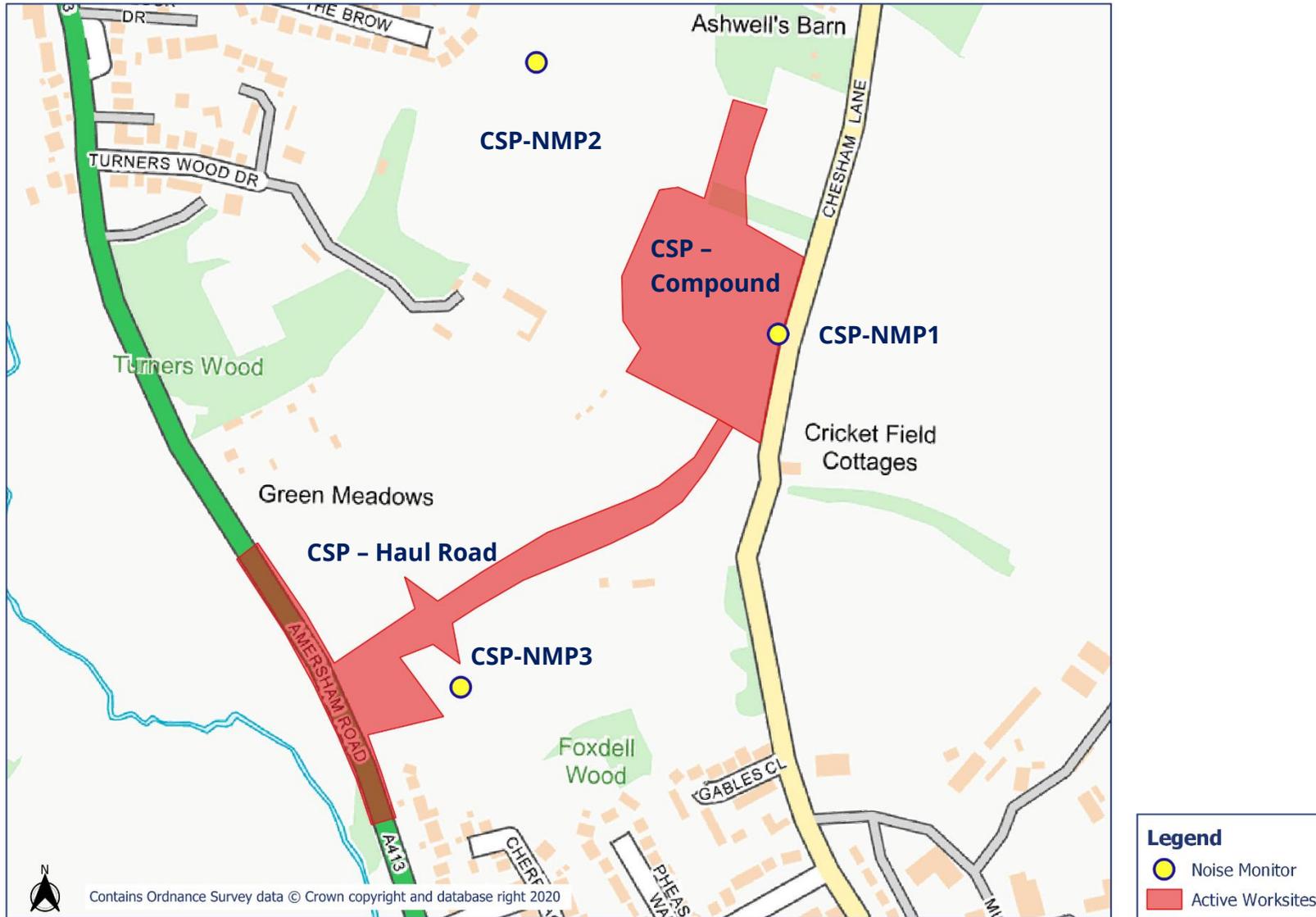


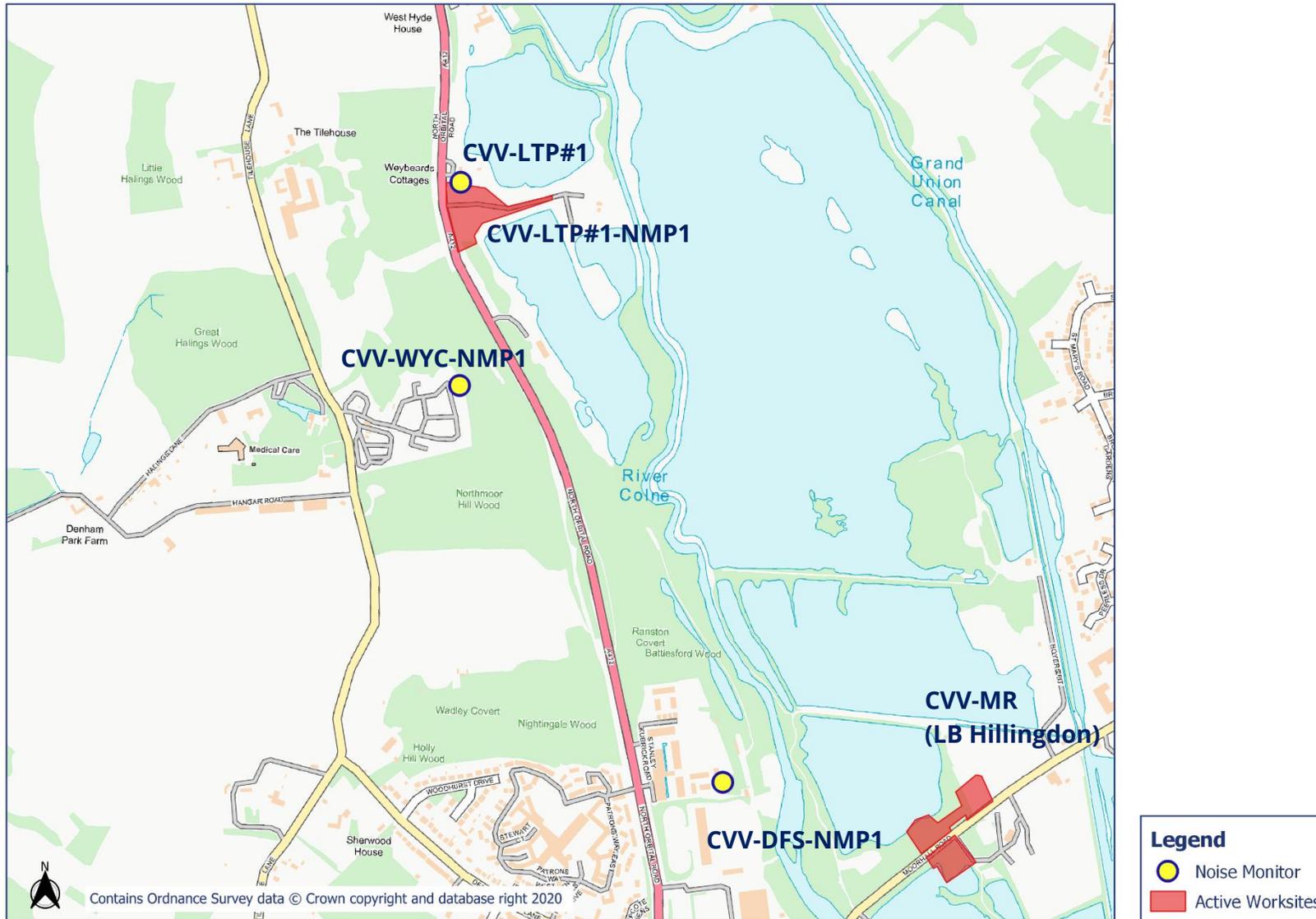


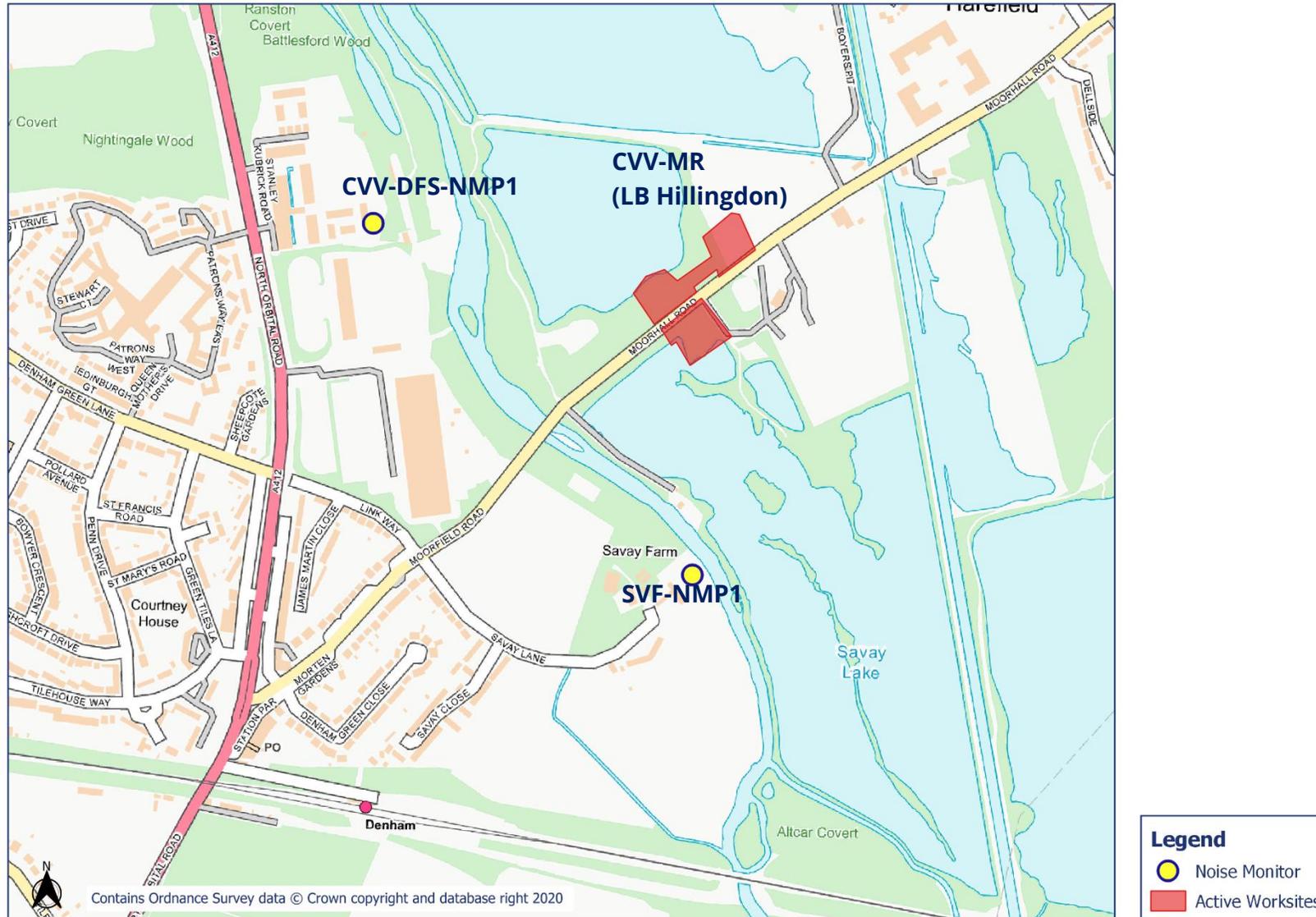




# HS2 Noise and Vibration Monitoring Plan - 13





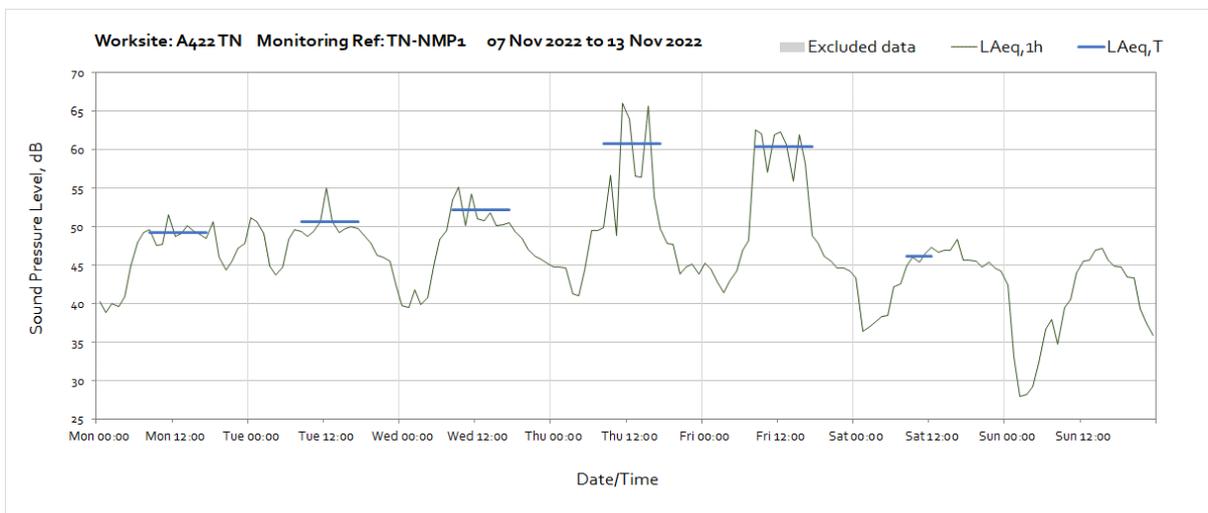
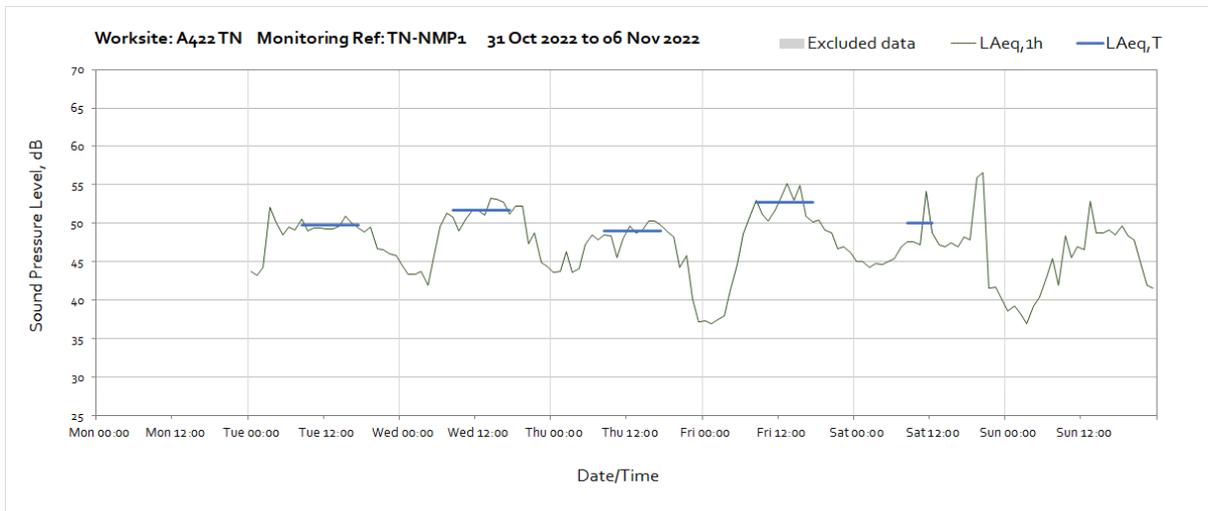


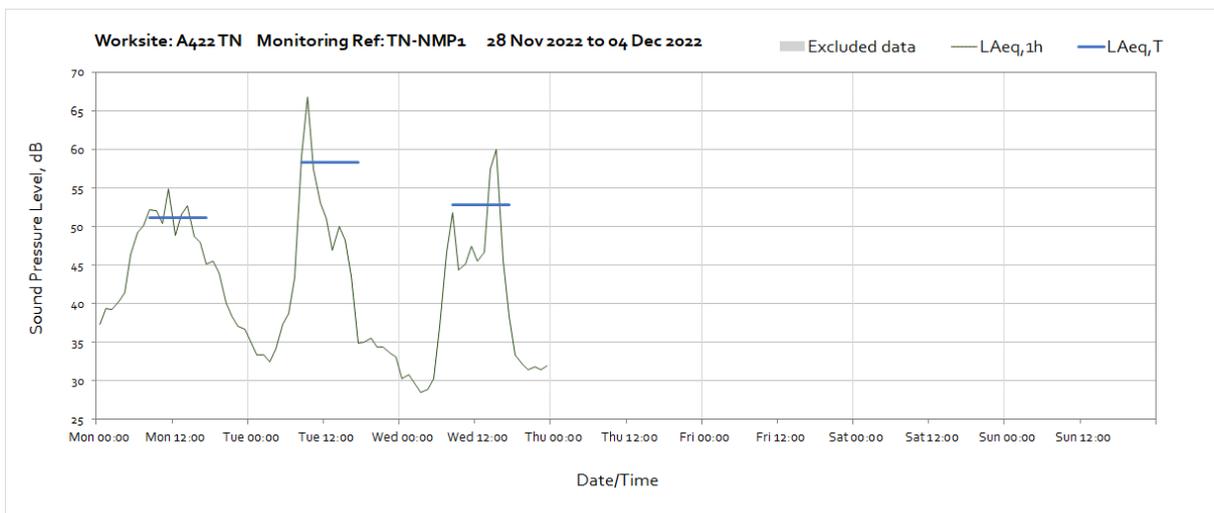
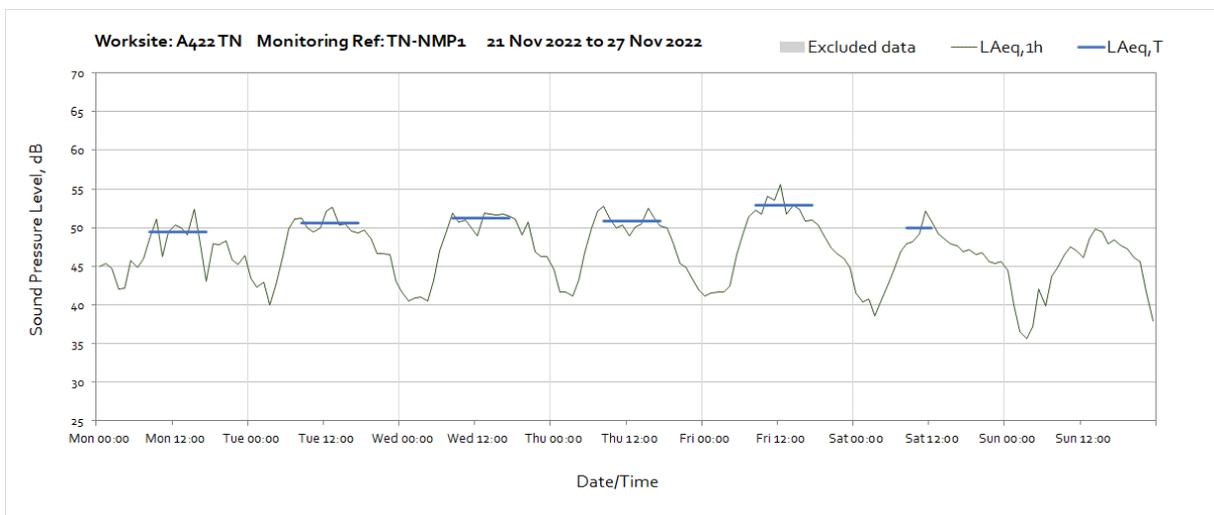
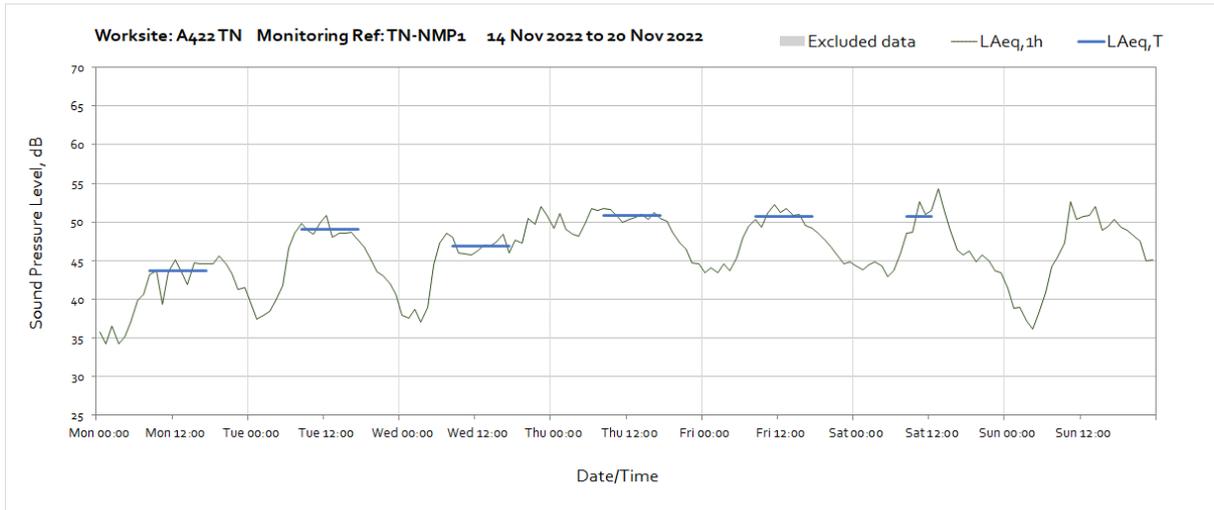
# Appendix C Data

## Noise

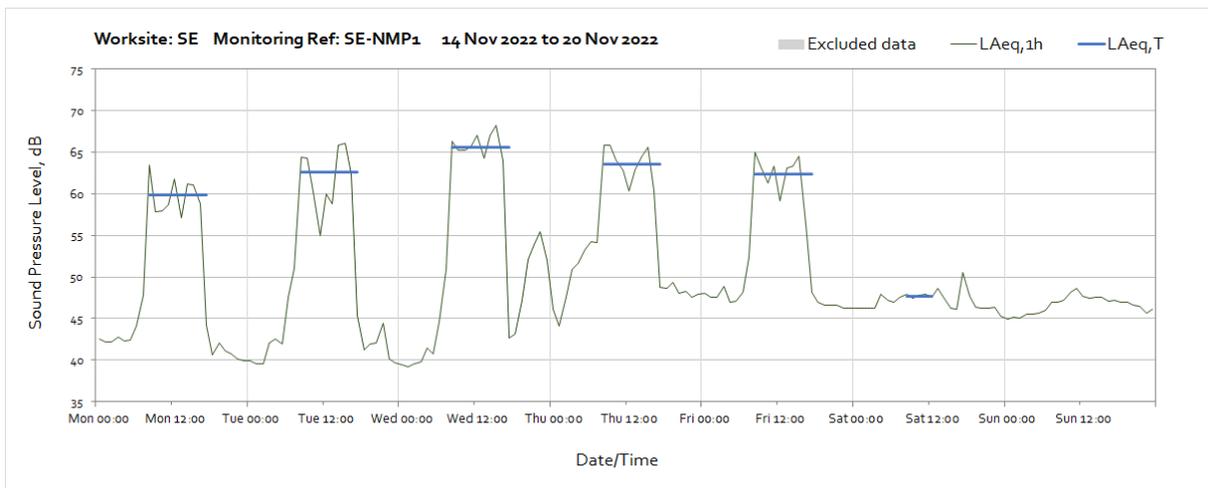
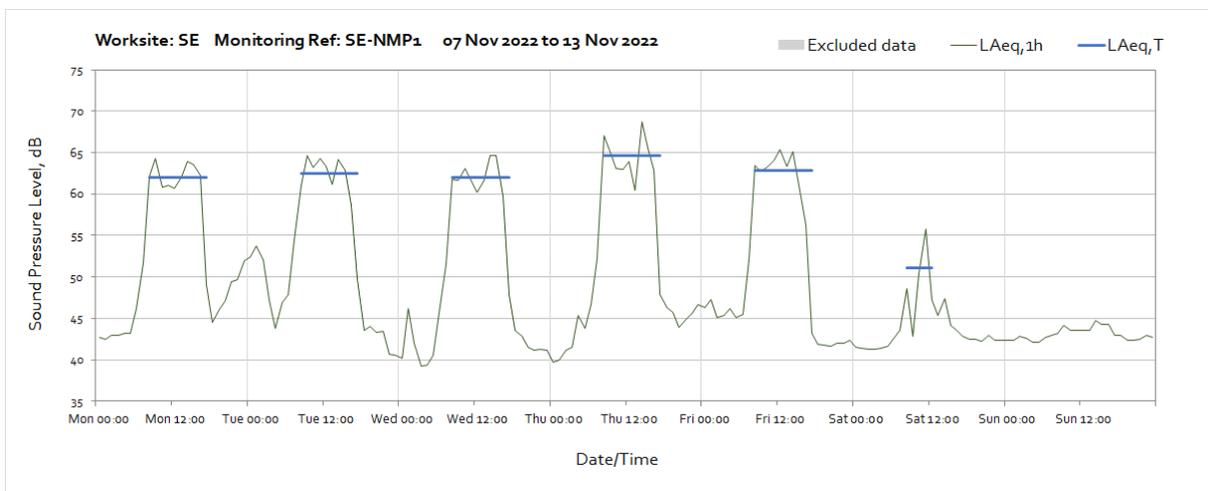
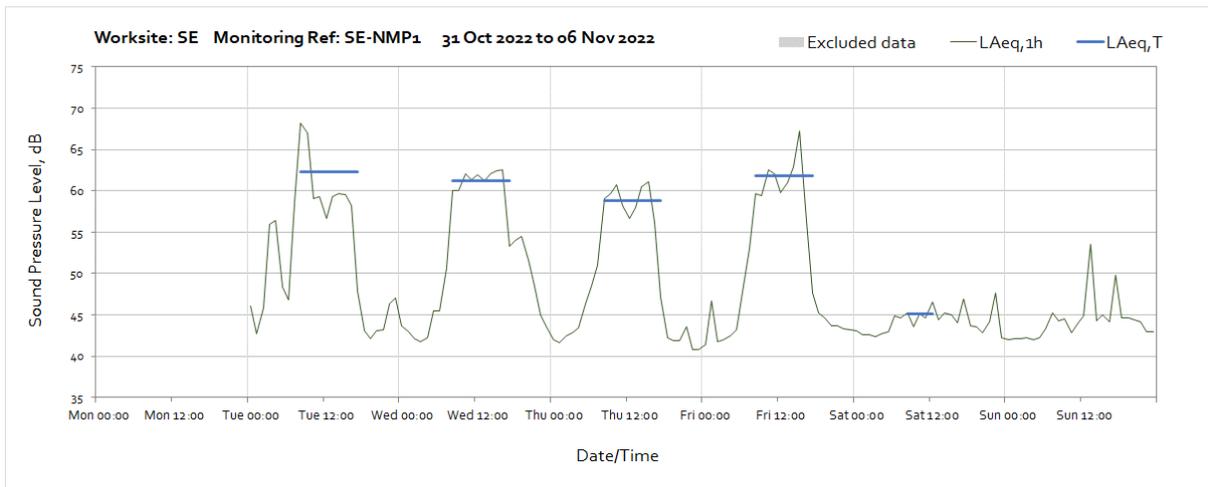
The following graphs show the hourly measured ambient noise level  $L_{Aeq,1h}$  and, where relevant, the averaged noise level  $L_{Aeq,T}$  values, where the time period T is as specified in Table 1 of HS2 Information Paper E23. Periods with adversely weather affected noise levels are greyed out and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

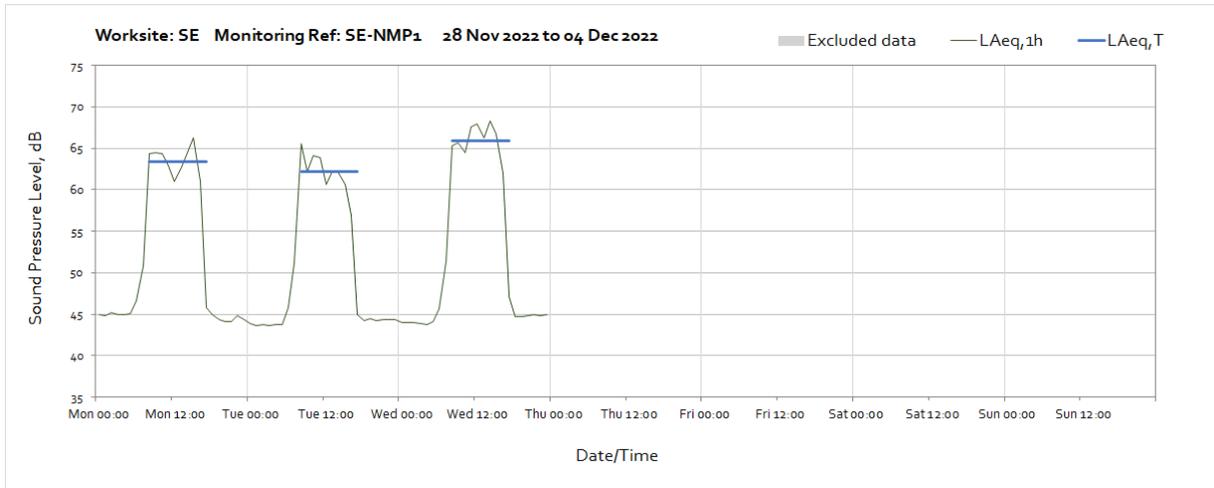
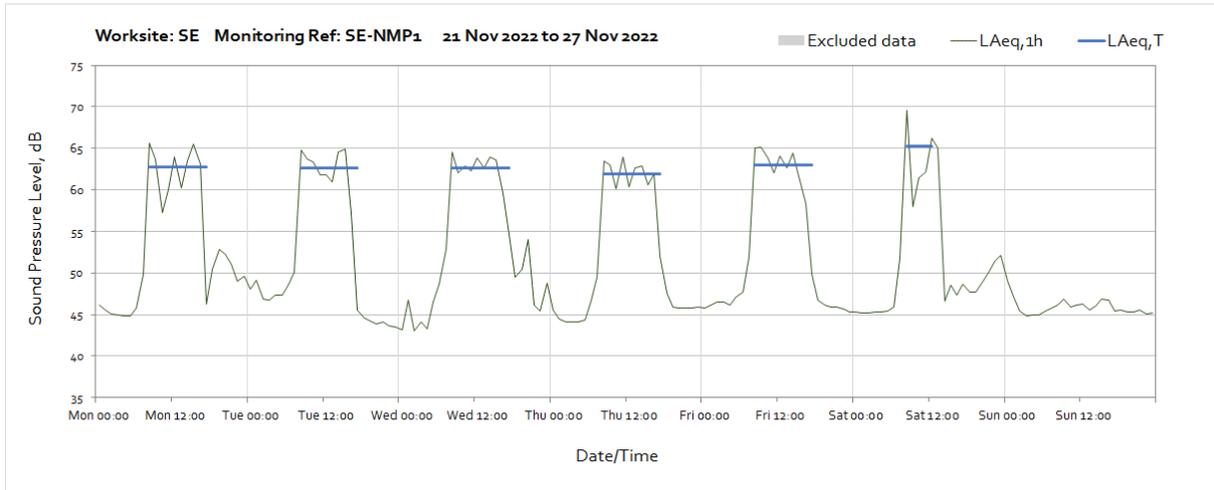
### Worksite: A422 TN – Monitoring Ref: TN-NMP1



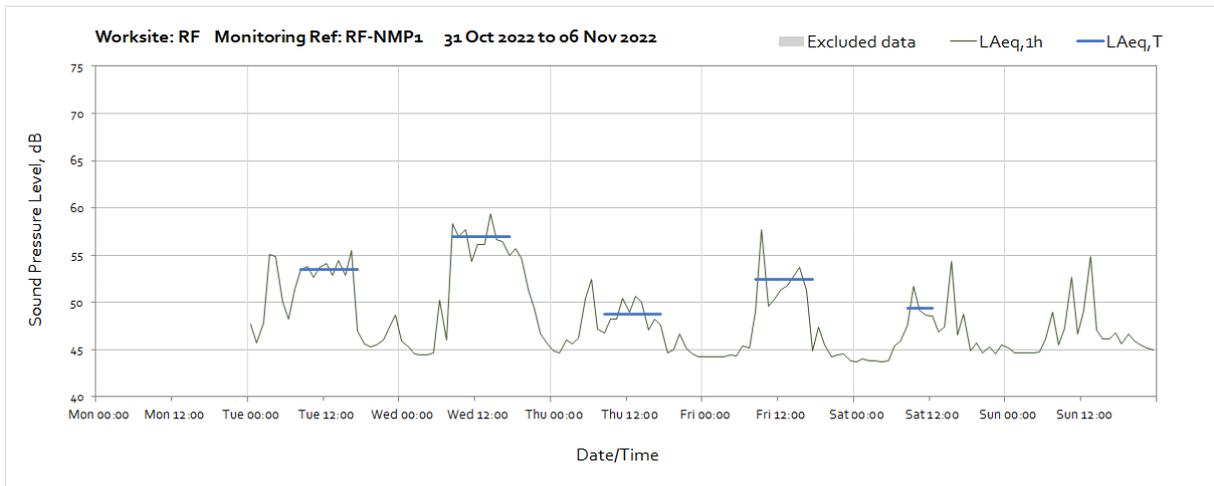


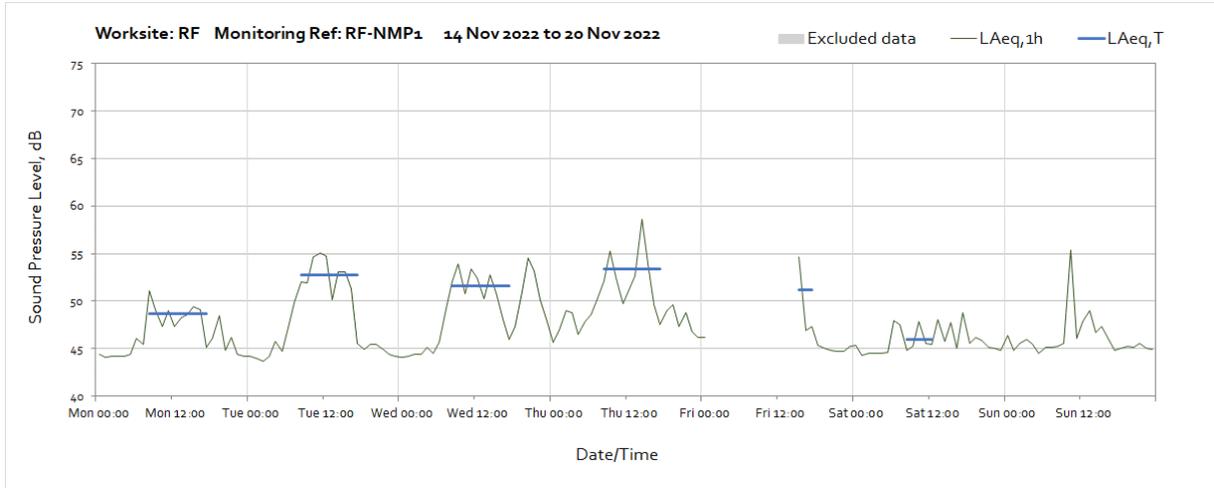
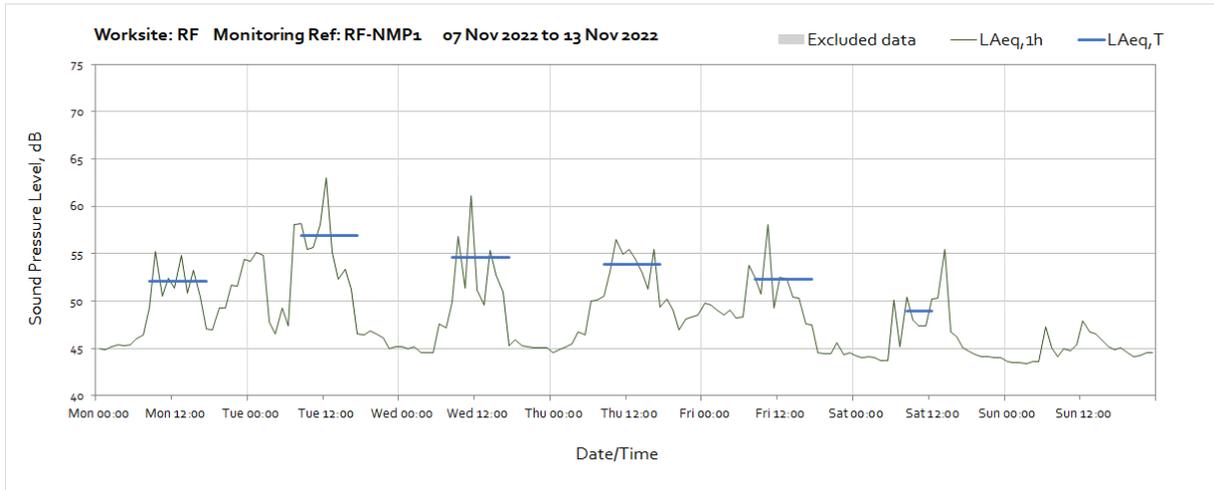
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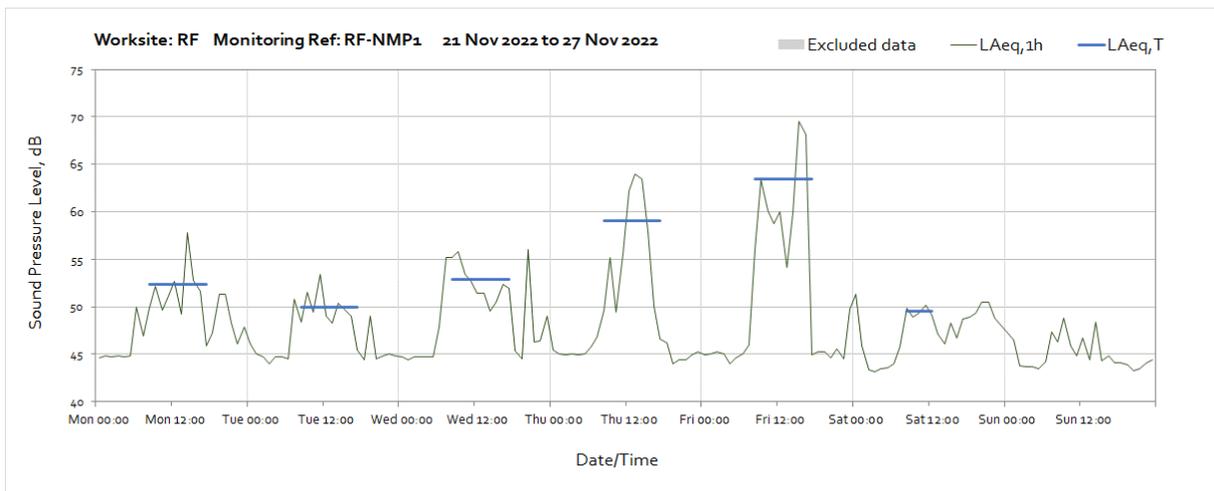


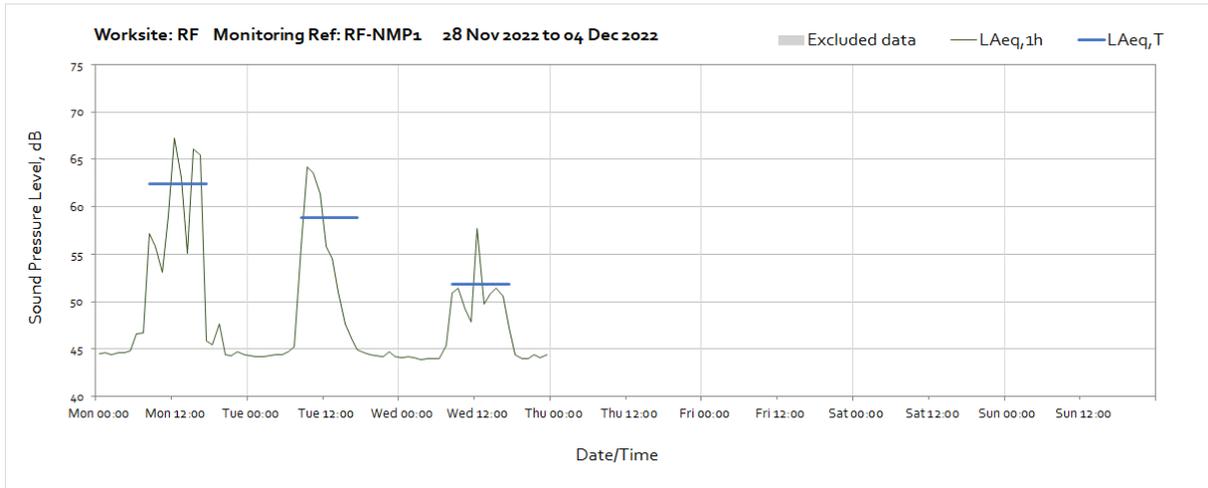
**Worksite: RF – Monitoring Ref: RF-NMP1**



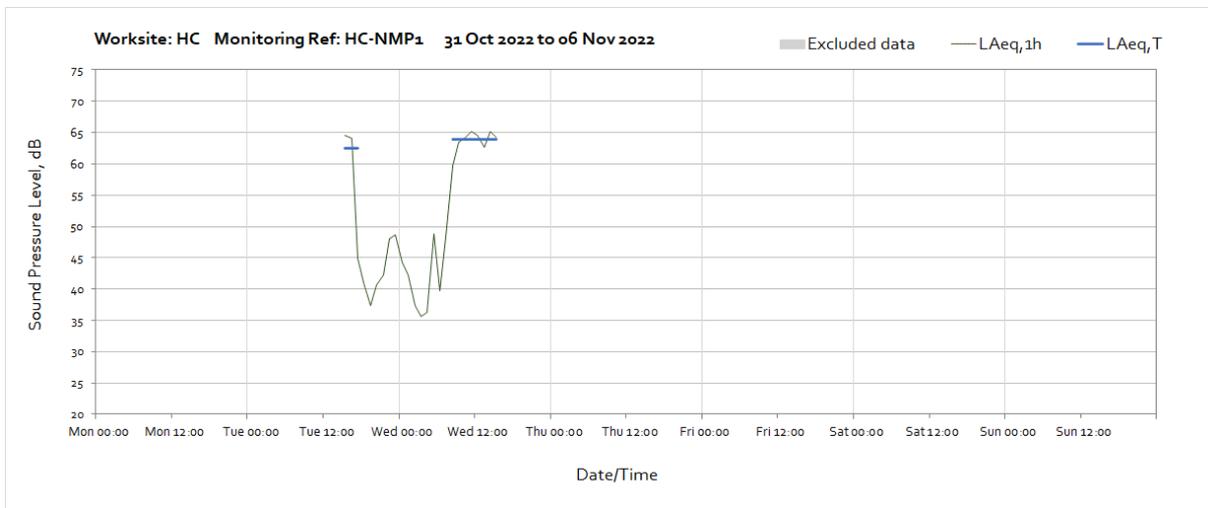


Note: Missing data between 01:00 and 15:00 on Friday 18<sup>th</sup> November 2022 were due to a monitoring station error.

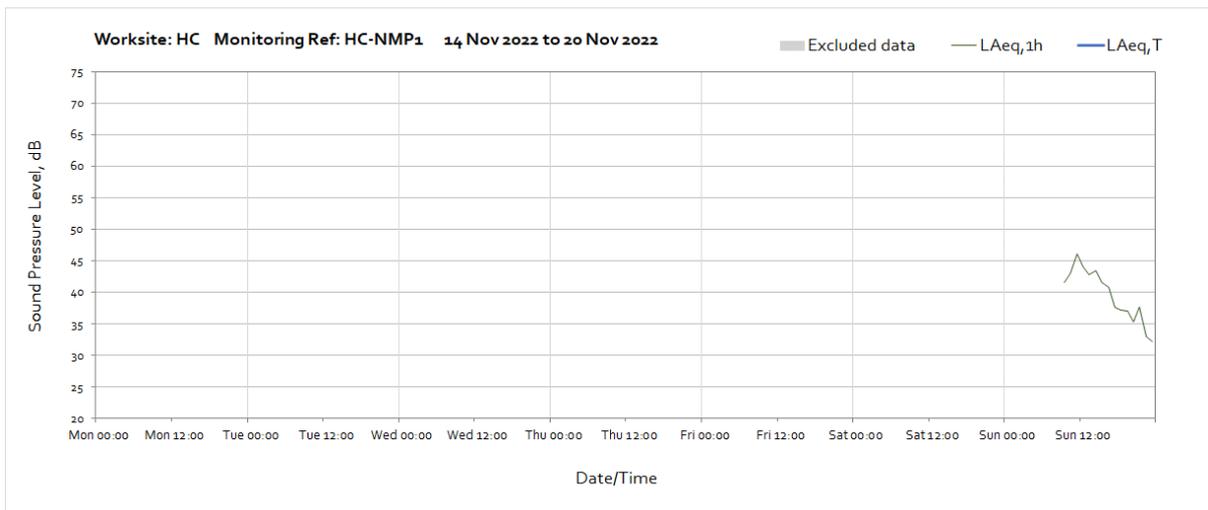




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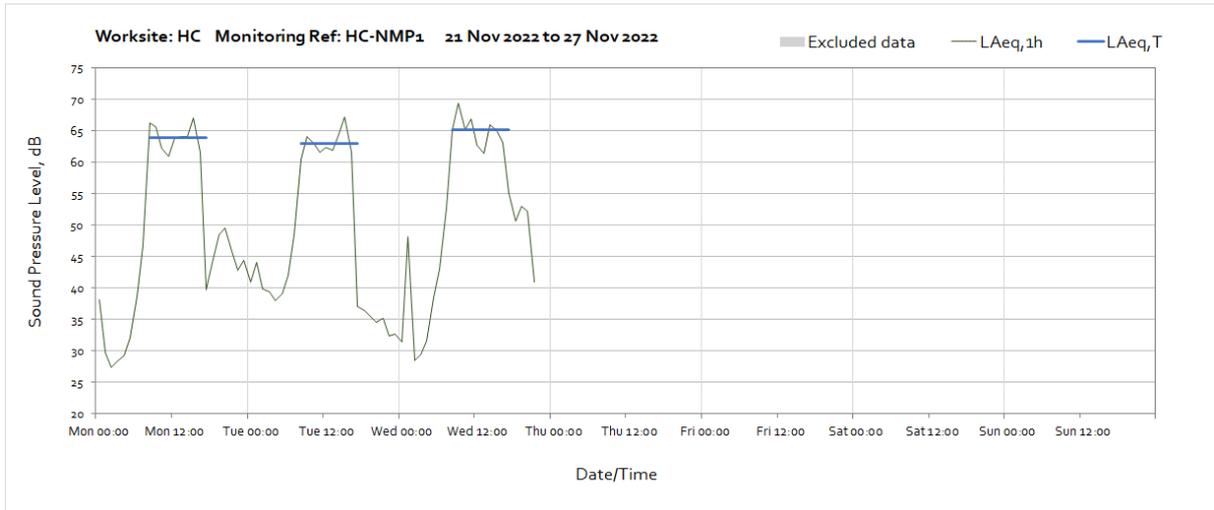


Note: Missing data through the month (including between 7<sup>th</sup> November till the 14<sup>th</sup> November) were due to solar panels not able to charge the batteries of the monitoring station due to lack of sunlight.

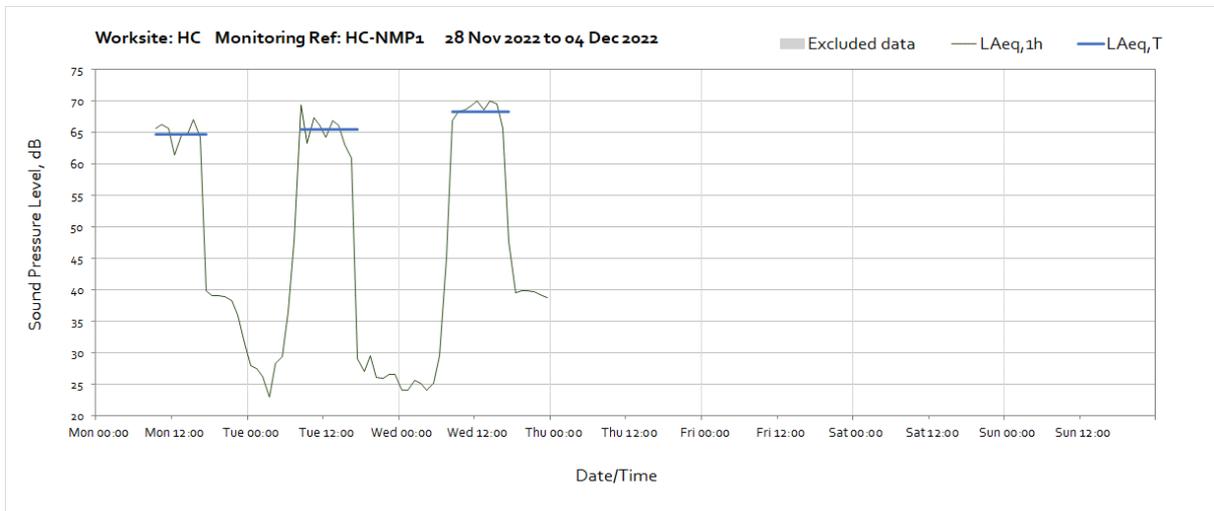


Note: Missing data through the month were due to solar panels not able to charge the batteries of the monitoring station due to lack of sunlight.

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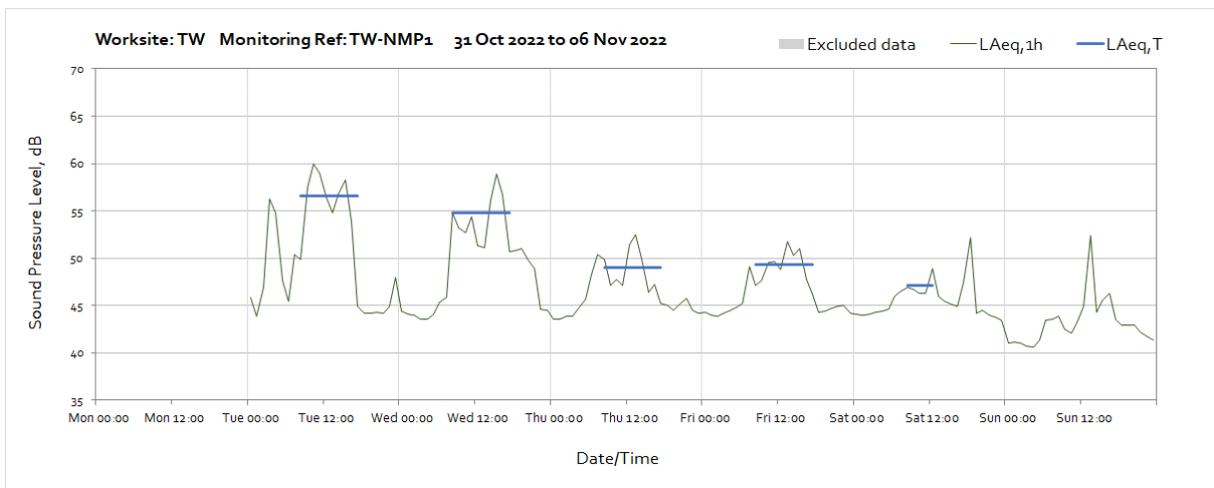


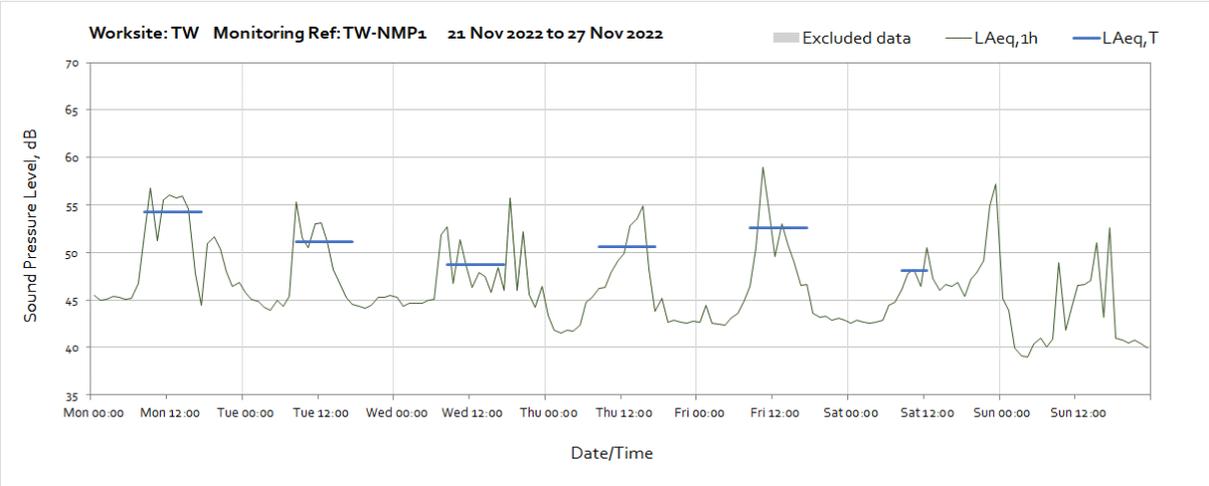
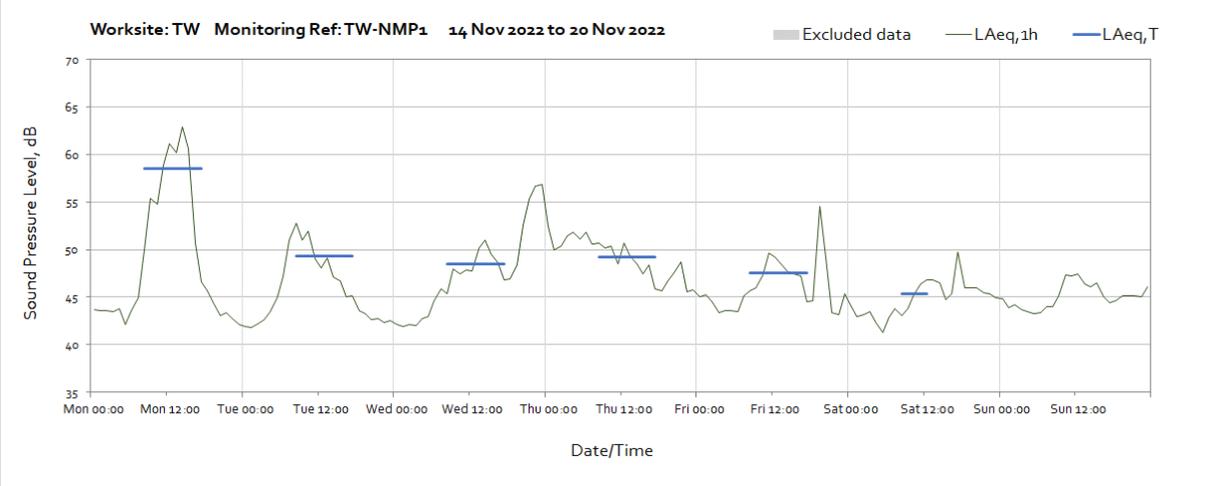
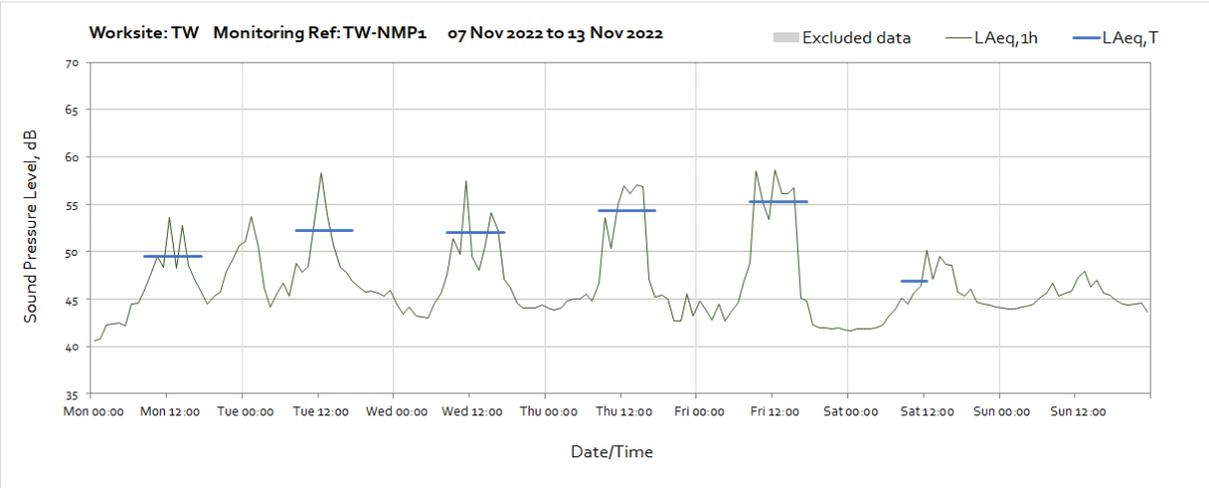
Note: Missing data through the month were due to solar panels not able to charge the batteries of the monitoring station due to lack of sunlight.



Note: Missing data through the month were due to solar panels not able to charge the batteries of the monitoring station due to lack of sunlight.

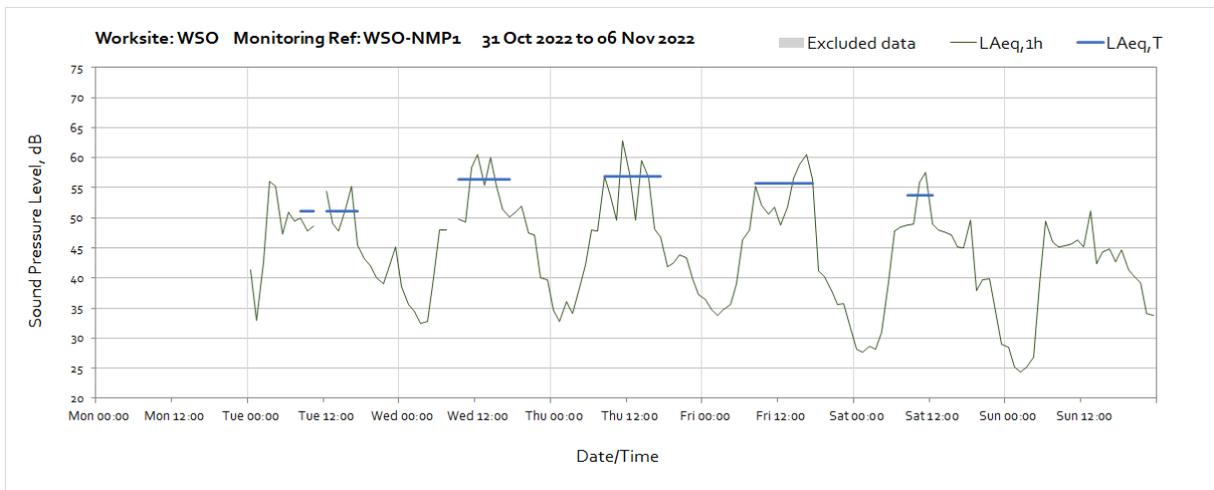
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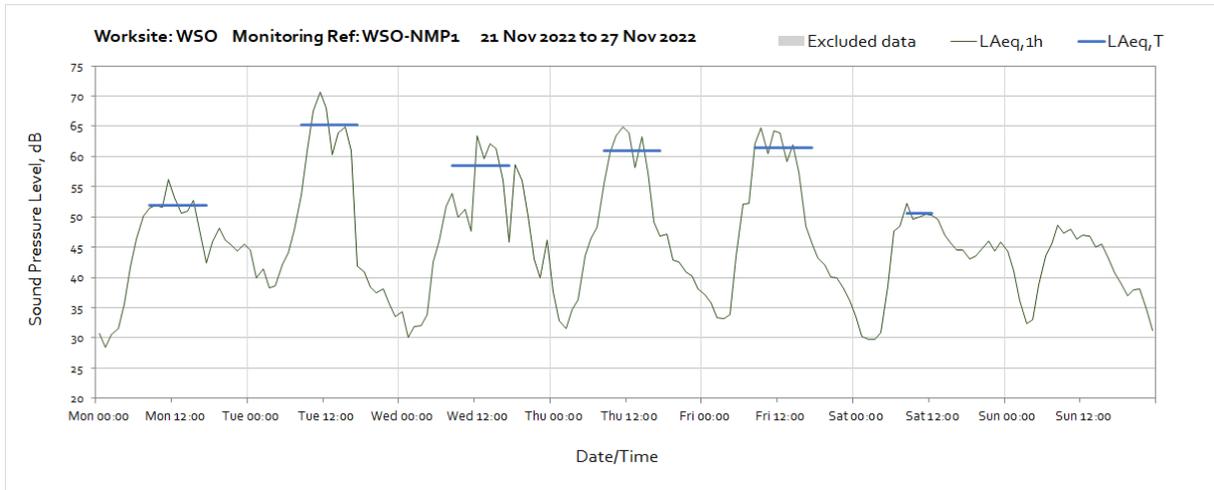


**Worksite: WSO – Monitoring Ref: WSO-NMP1**

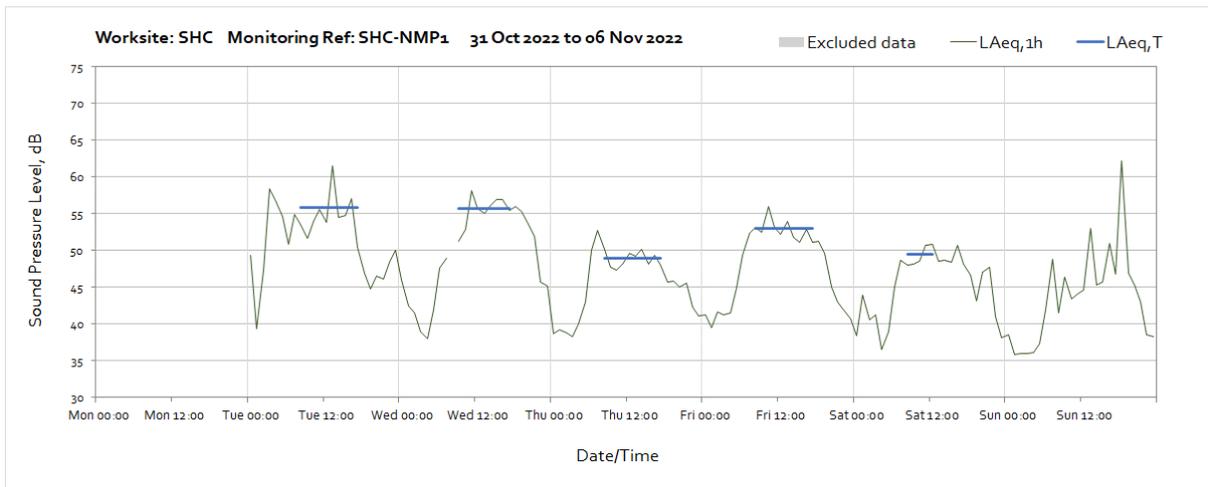


Note: Missing data at 11:00 on Tuesday 1<sup>st</sup> and at 08:00 on Wednesday 2<sup>nd</sup> November 2022 were due to periodical maintenance of the monitoring station.

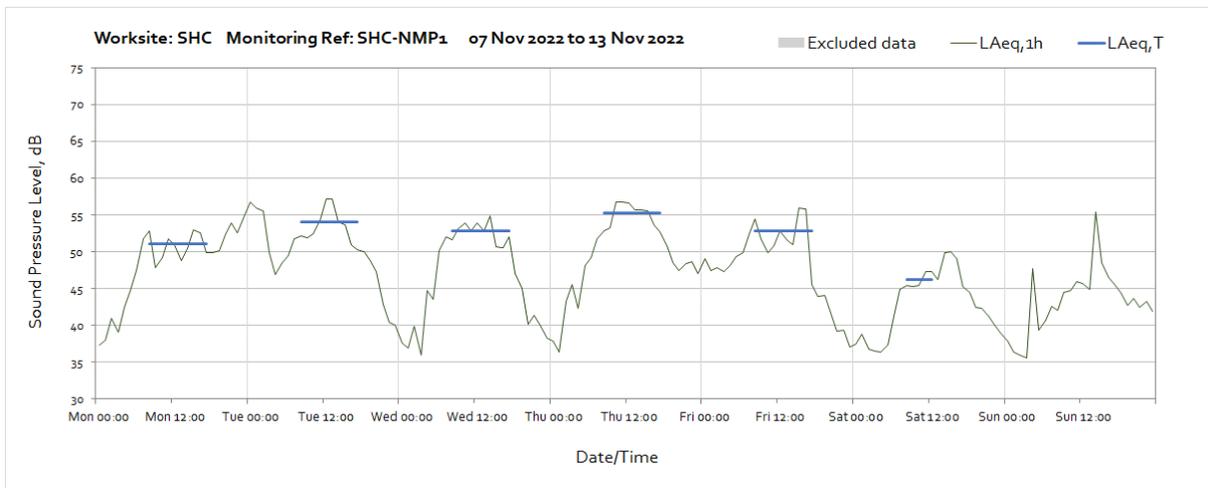


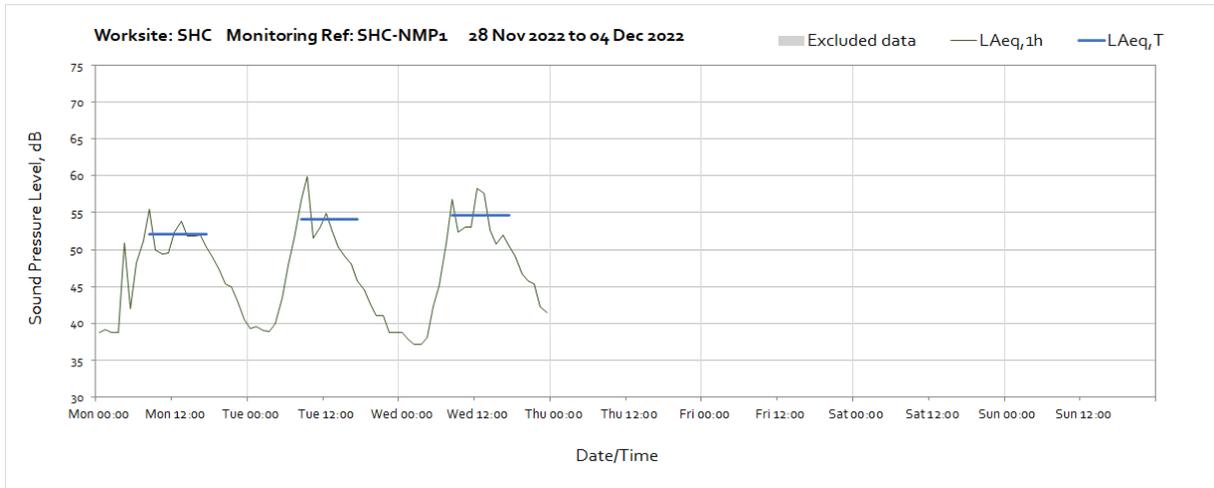
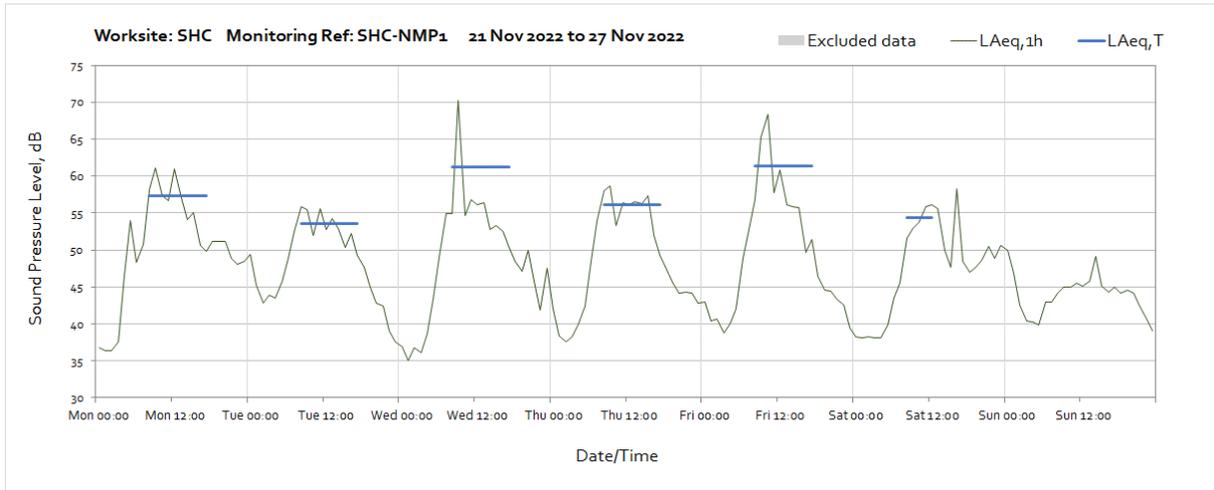


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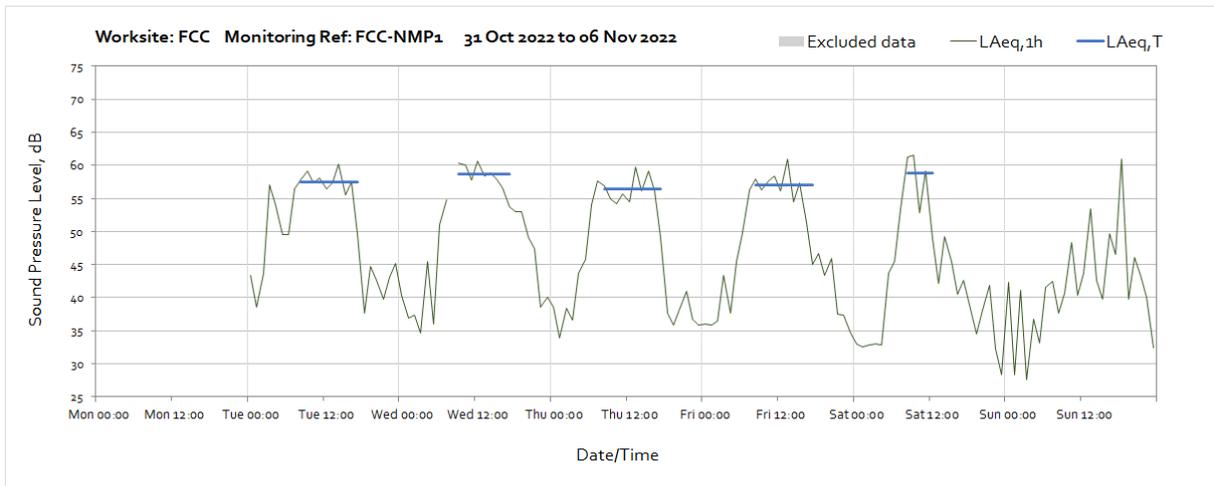


Note: Missing data at 08:00 on Wednesday 2<sup>nd</sup> November 2022 were due to periodical maintenance of the monitoring station.

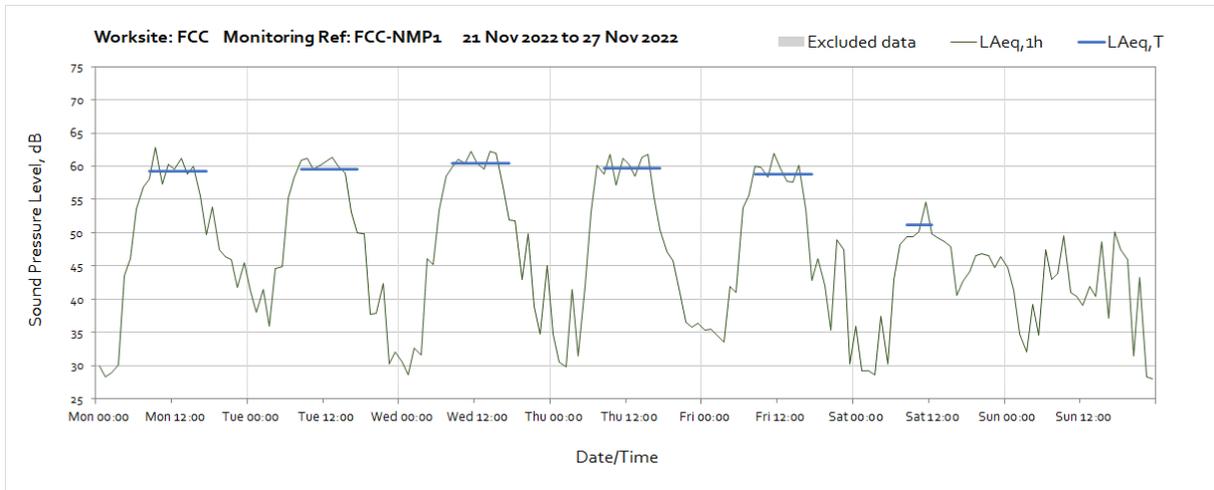
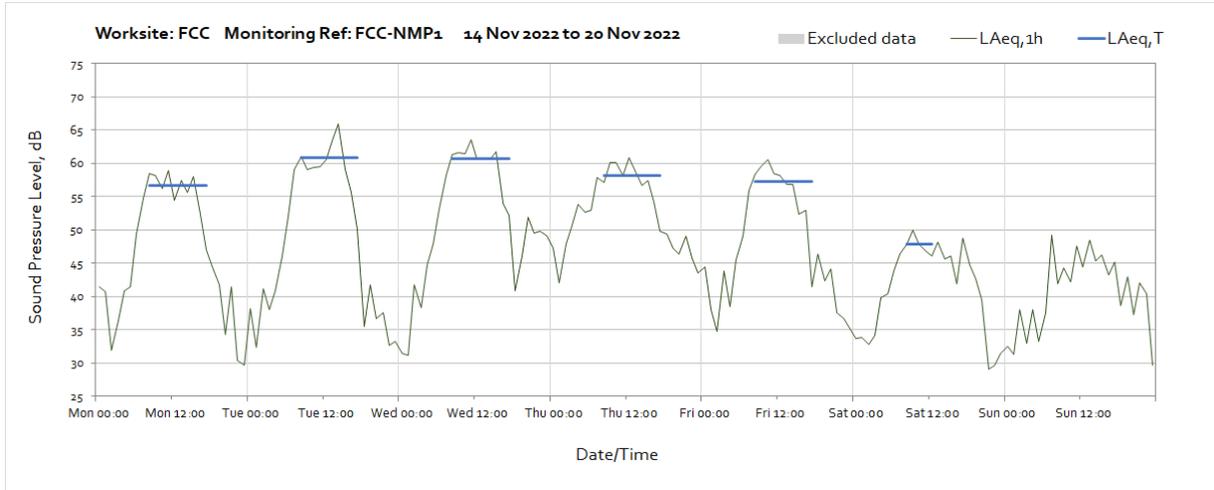
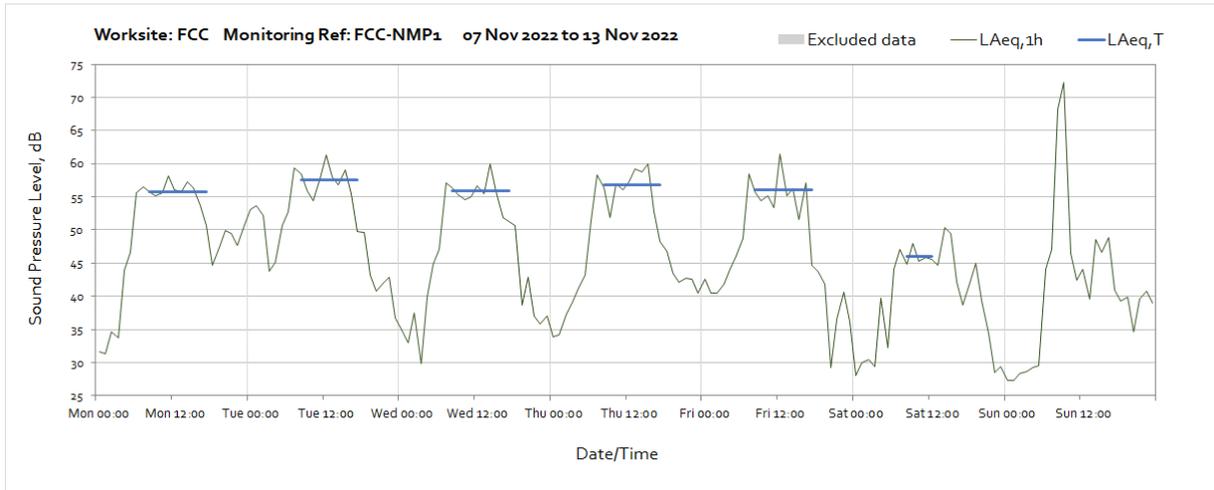


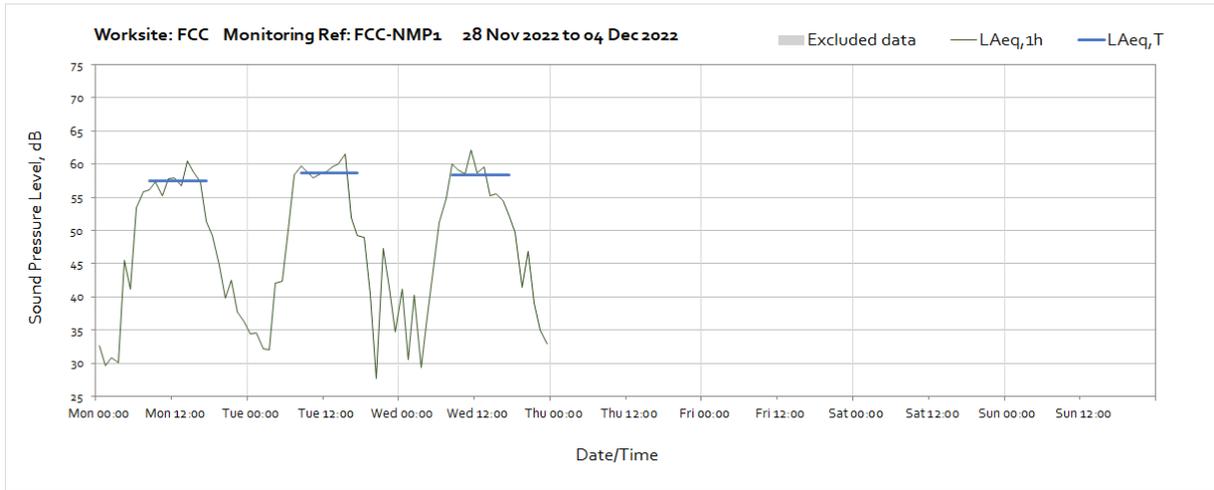


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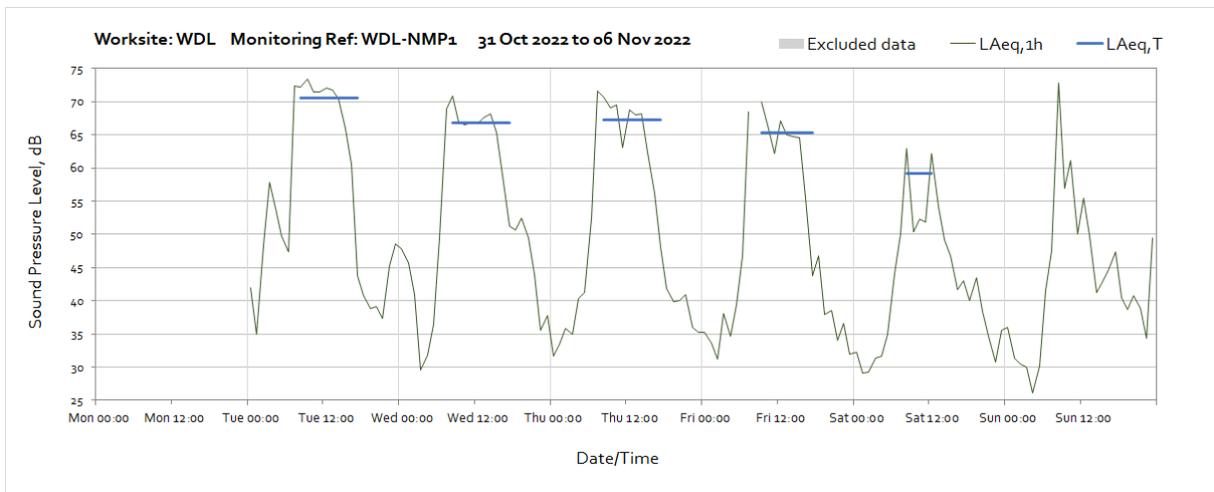


Note: Missing data at 08:00 on Wednesday 2<sup>nd</sup> November 2022 was due to periodical maintenance of the monitoring station.

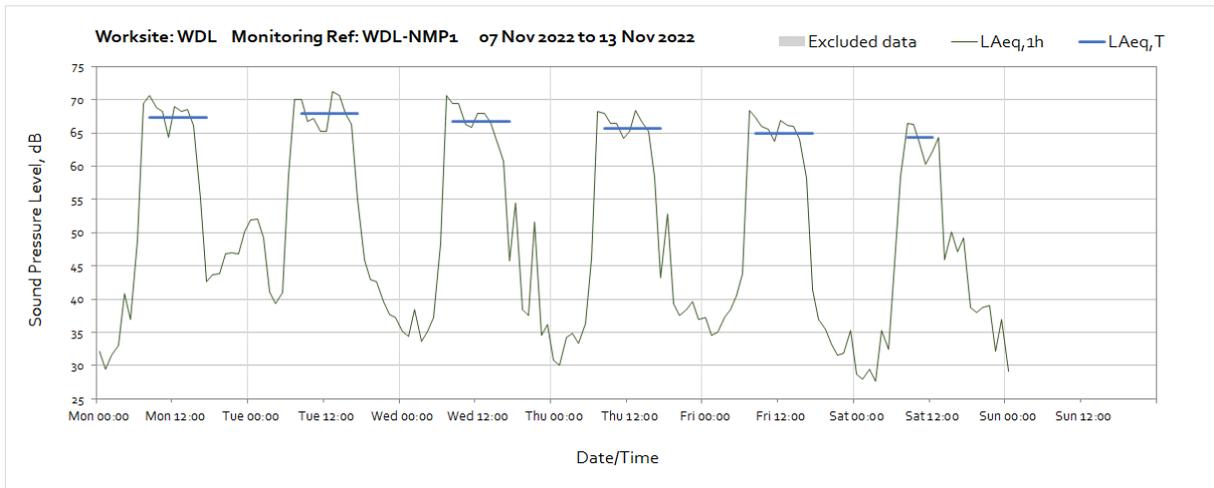




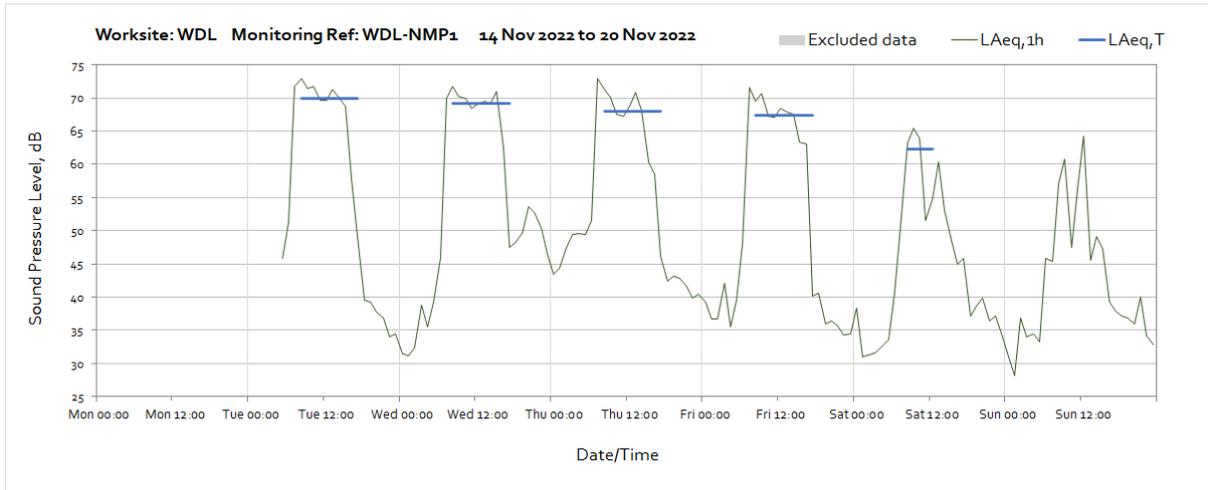
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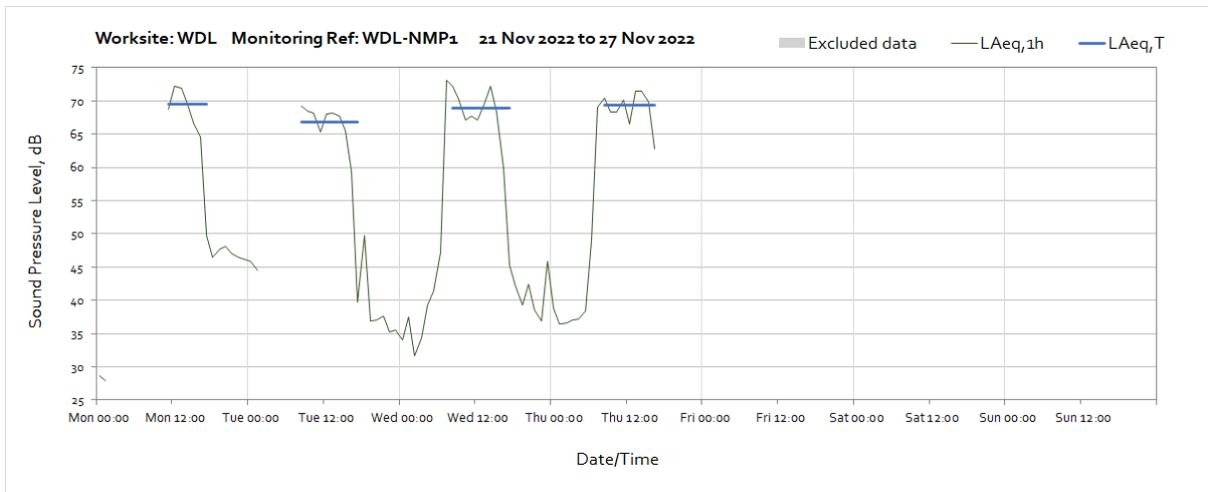
Note: Missing data at 08:00 on Friday 4<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.



Note: Missing data between 01:00 on Sunday 13<sup>th</sup> November and 05:00 on Tuesday 15<sup>th</sup> November 2022 were due to loss of power at the monitoring station.

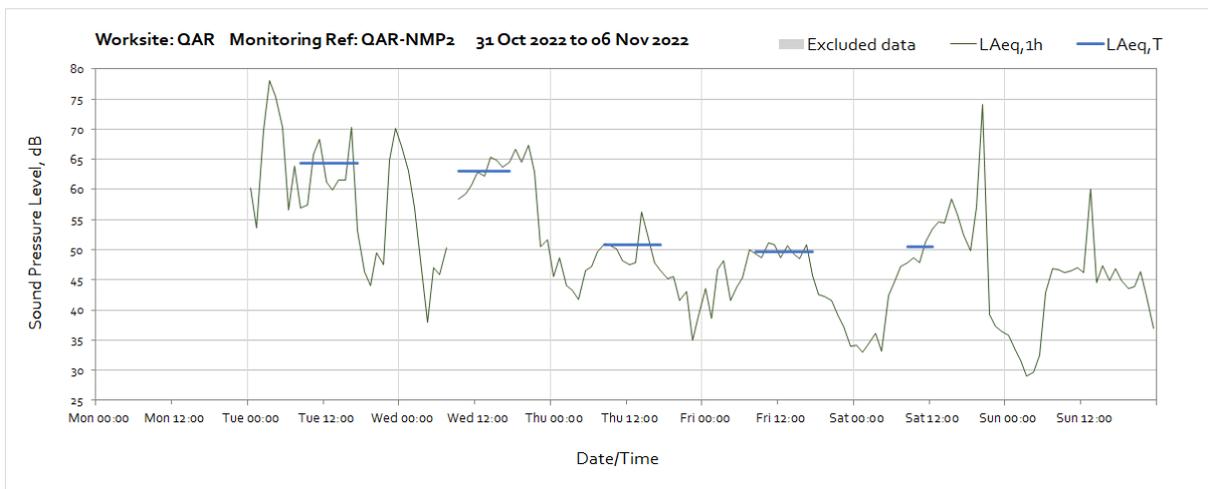


Note: Missing data between 01:00 on Sunday 13<sup>th</sup> November and 05:00 on Tuesday 15<sup>th</sup> November 2022 were due to loss of power at the monitoring station.



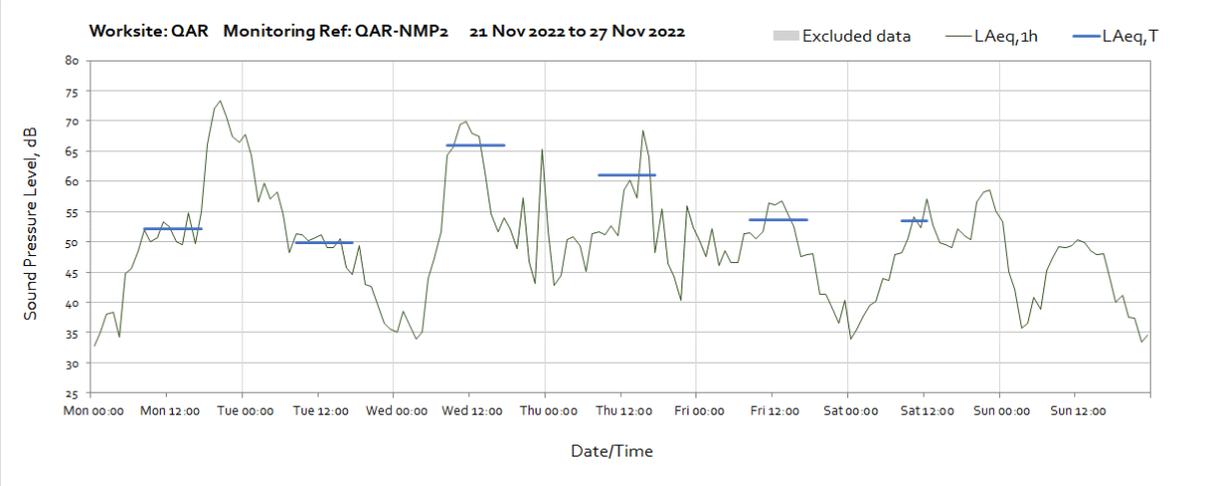
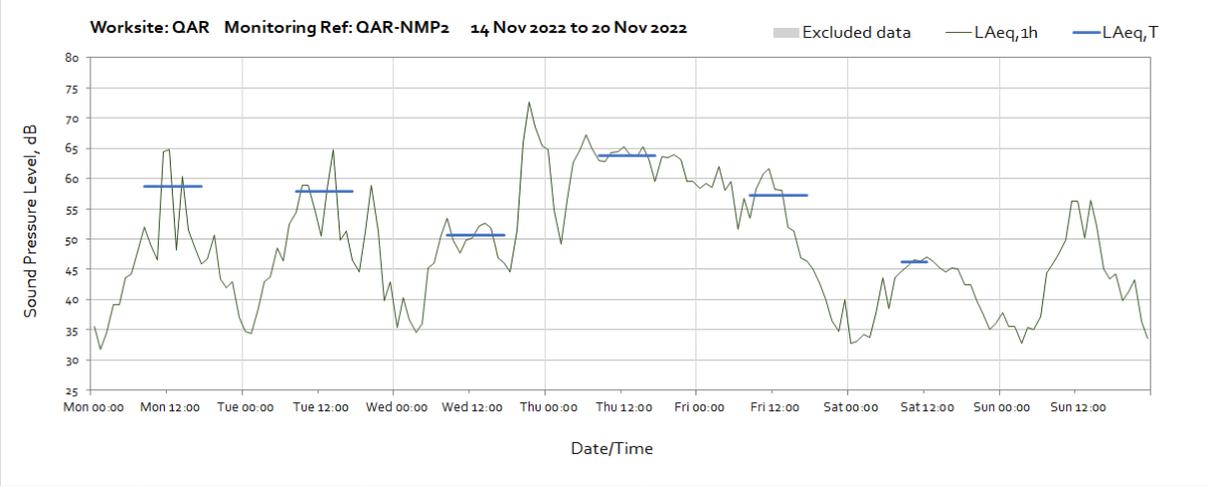
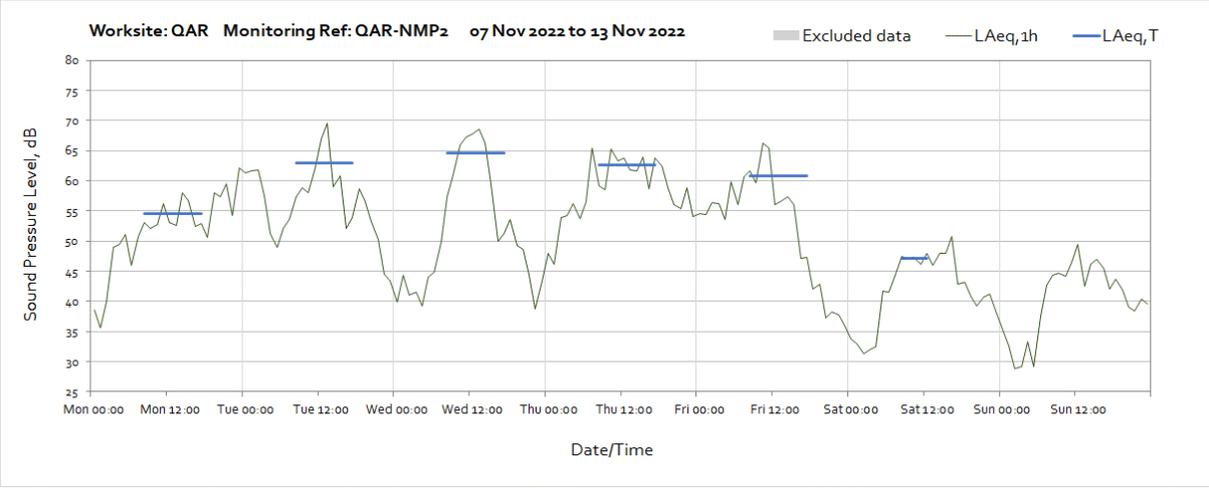
Note: Missing data throughout the week were due to loss of power at the monitoring station.

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



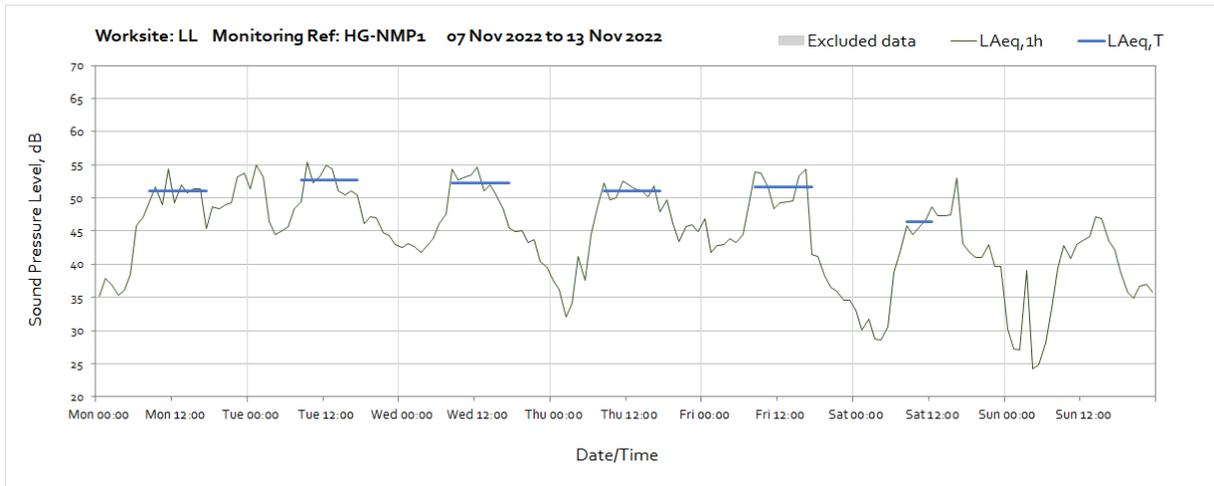
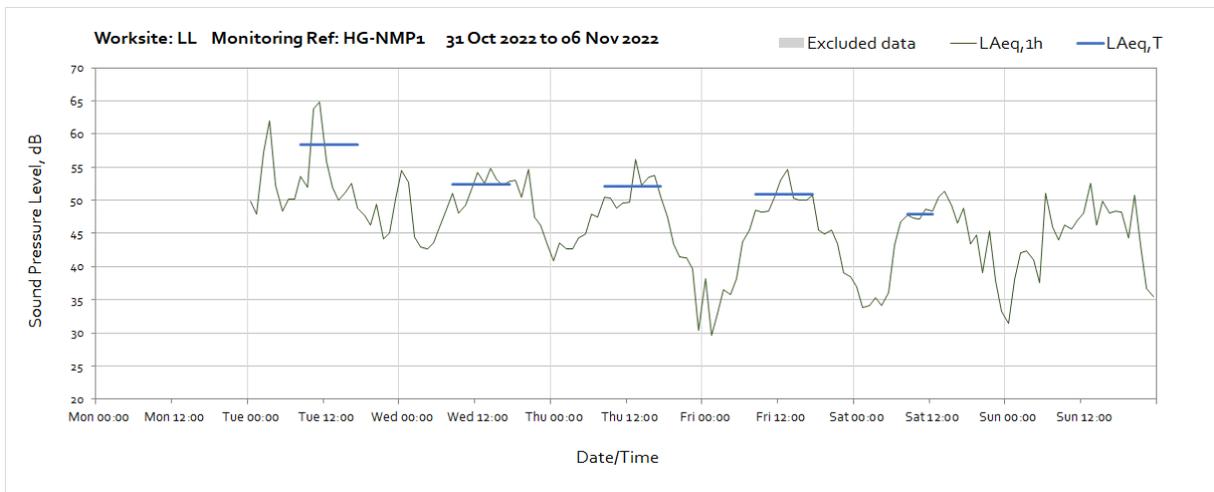
Note: Missing data at 08:00 on Wednesday 2<sup>nd</sup> November 2022 were due to periodical maintenance of the monitoring station.

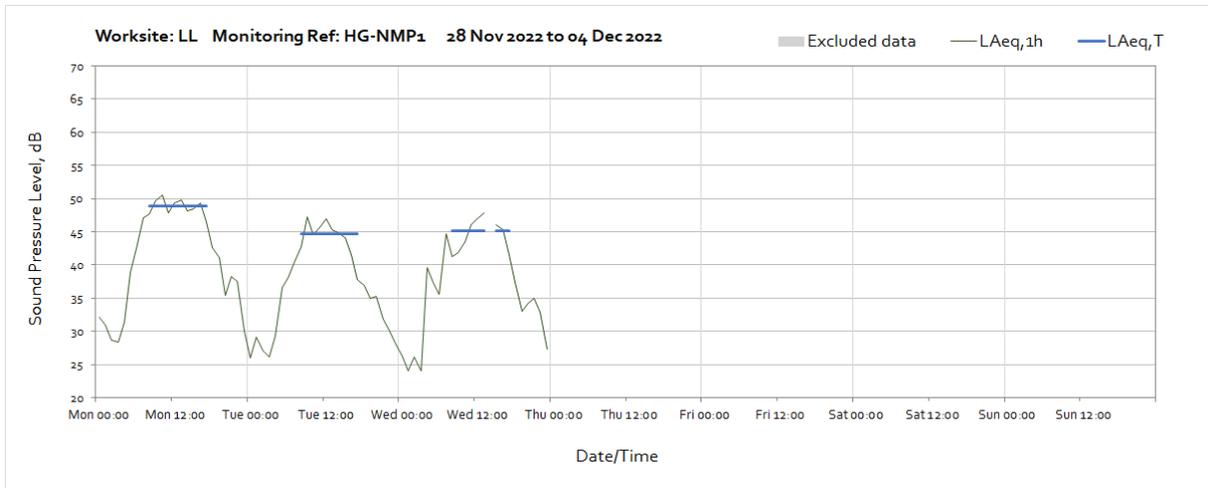
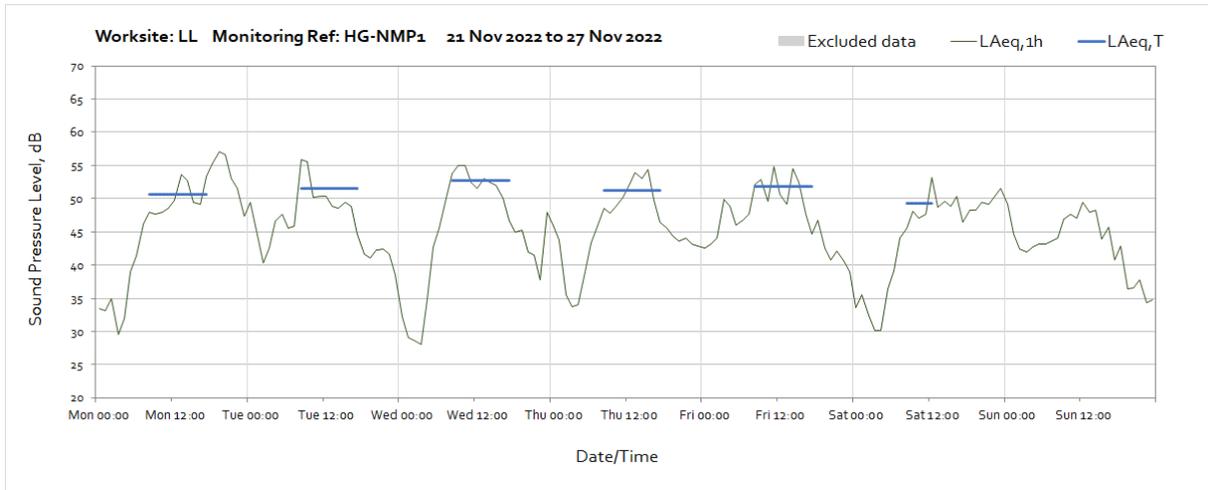
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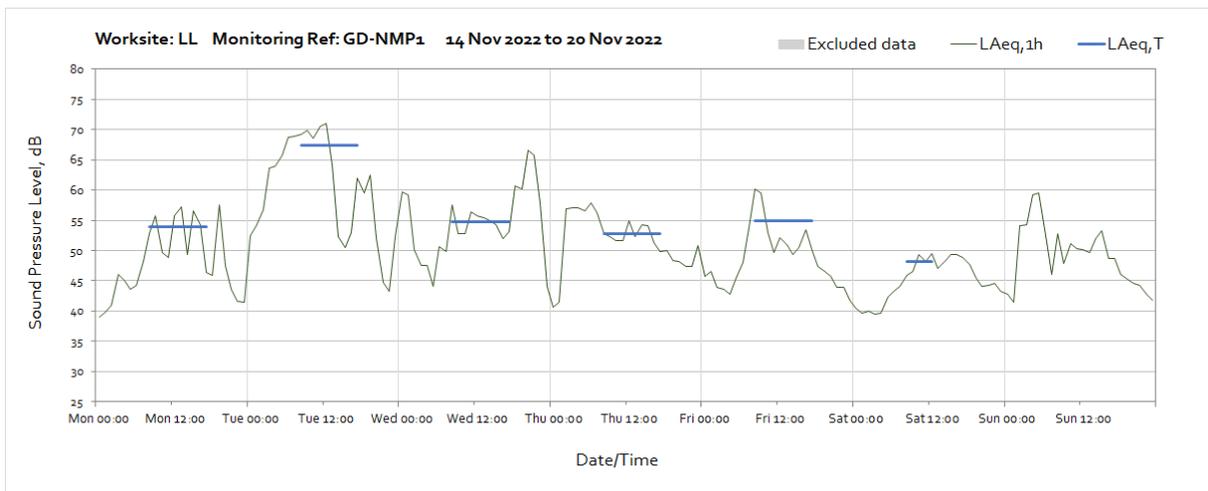
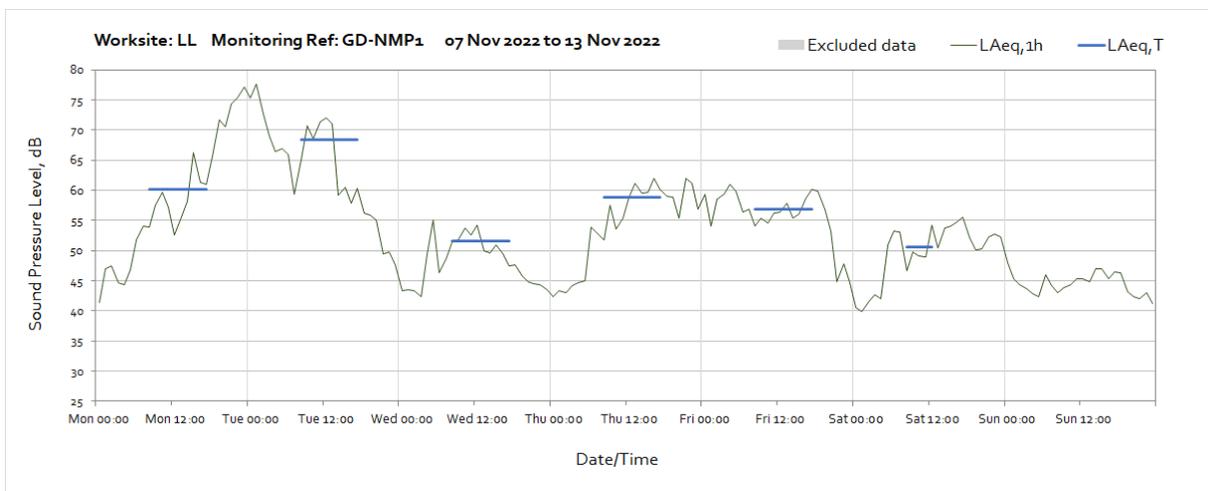
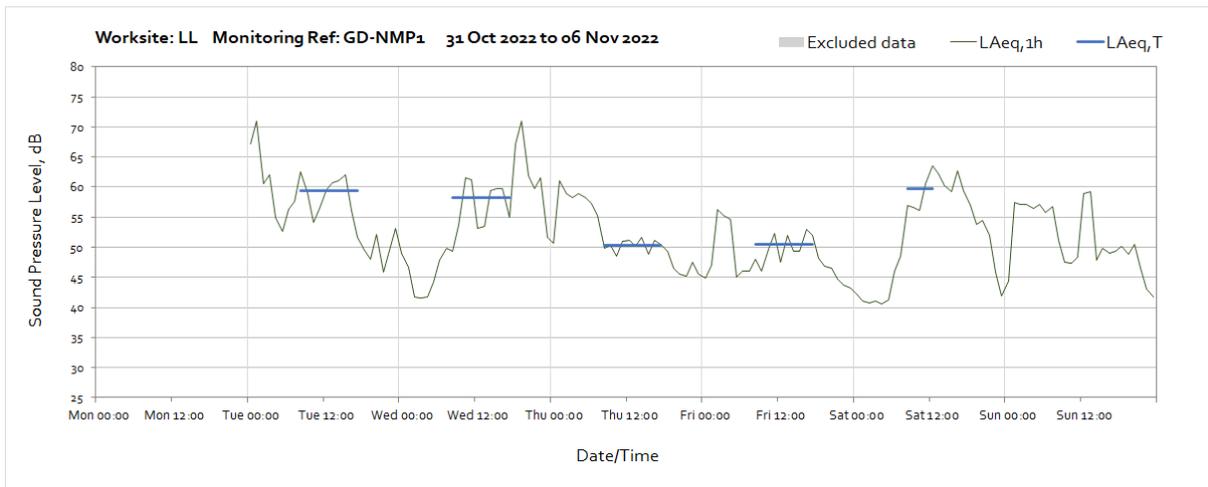
**Worksite: LL - Monitoring Ref: HG-NMP1**

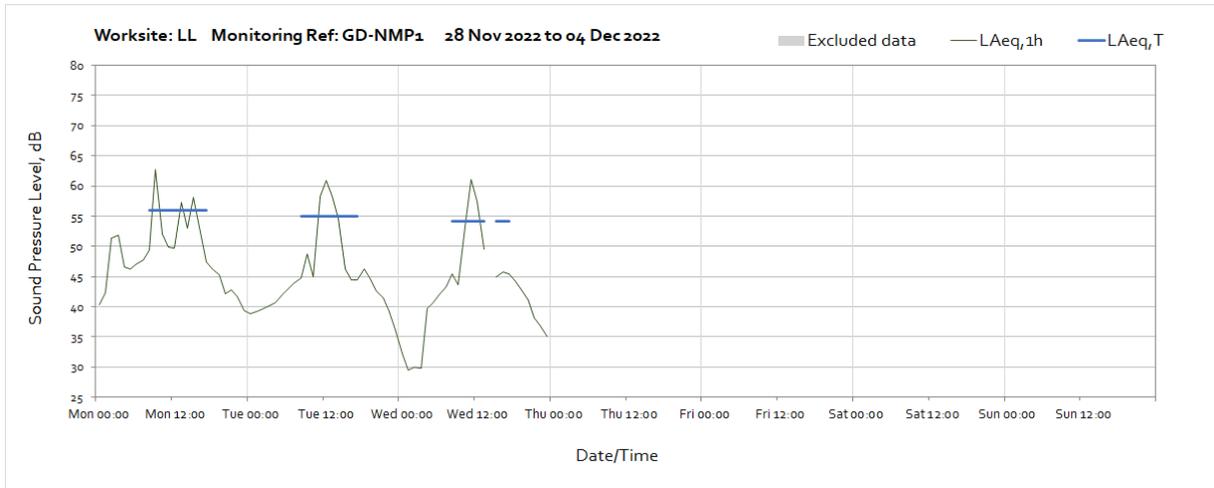
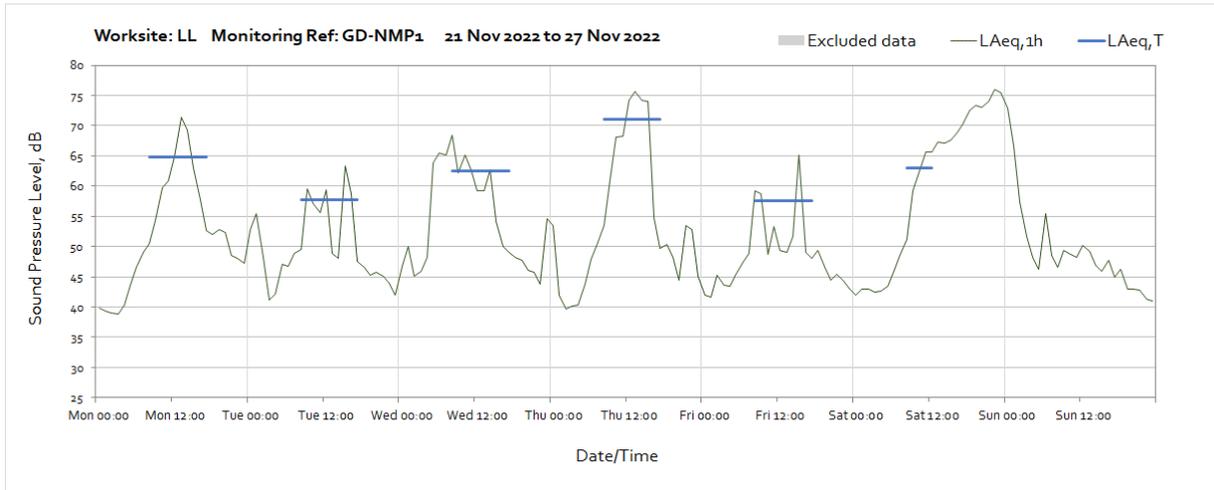




Note: Missing data at 14:00 on Wednesday 30<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.

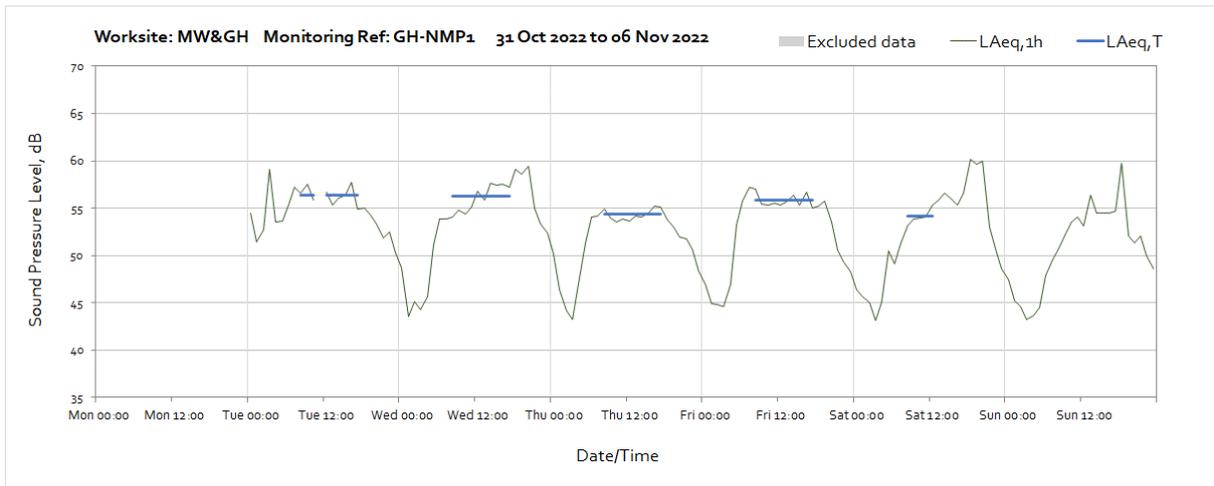
## Worksite: LL - Monitoring Ref: GD-NMP1



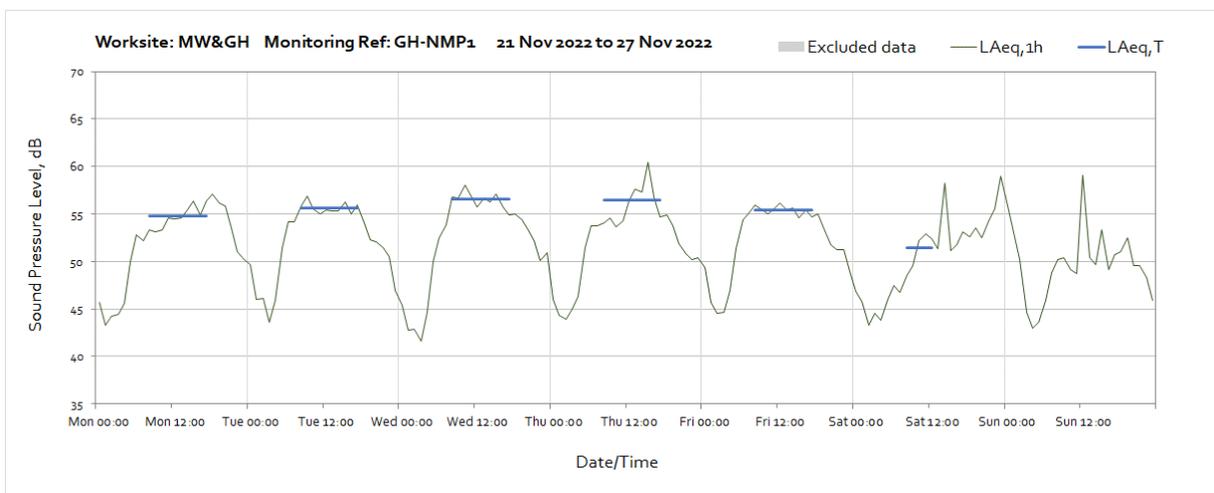
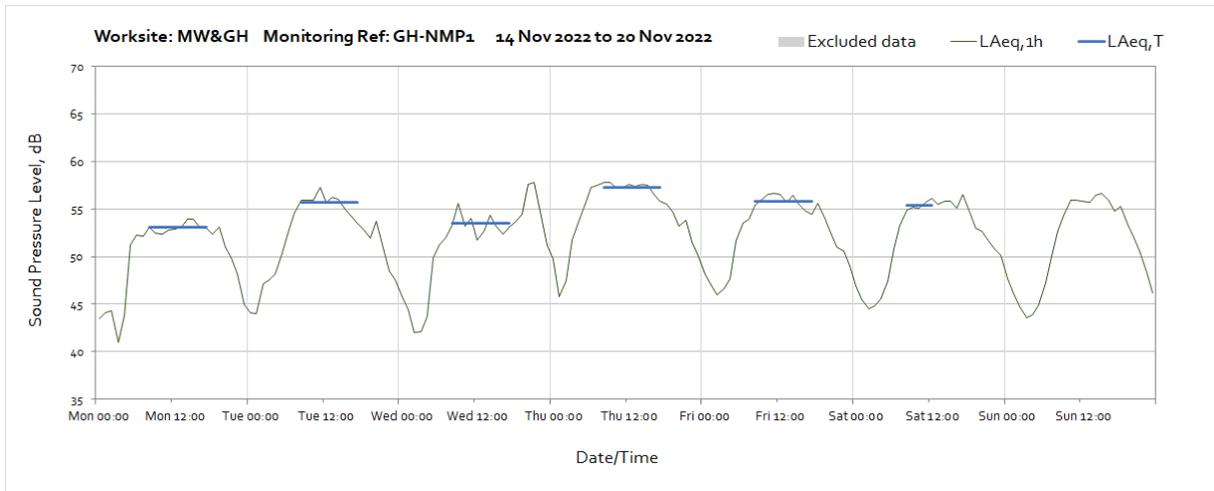
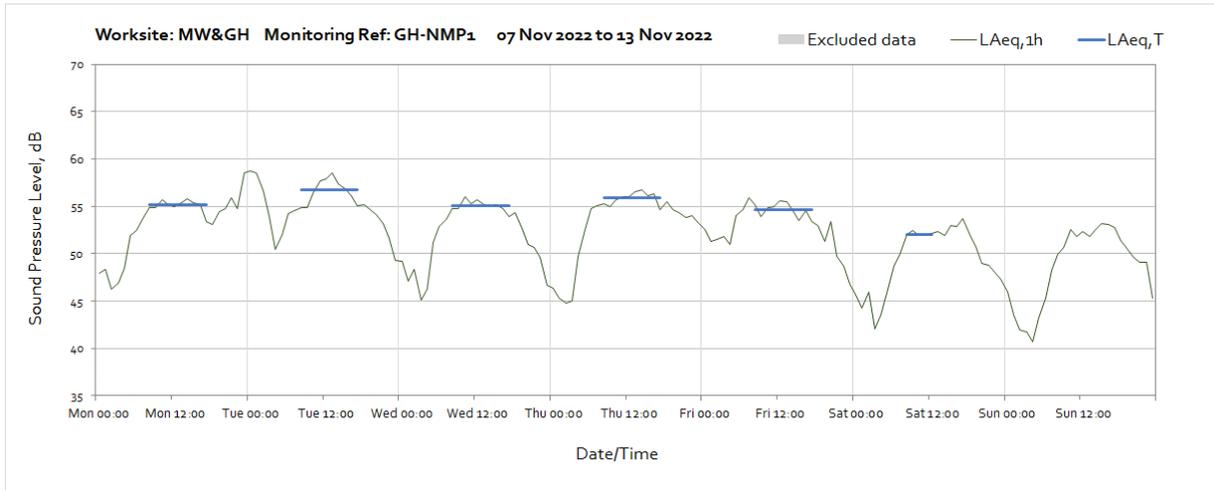


Note: Missing data at 14:00 on Wednesday 30<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.

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

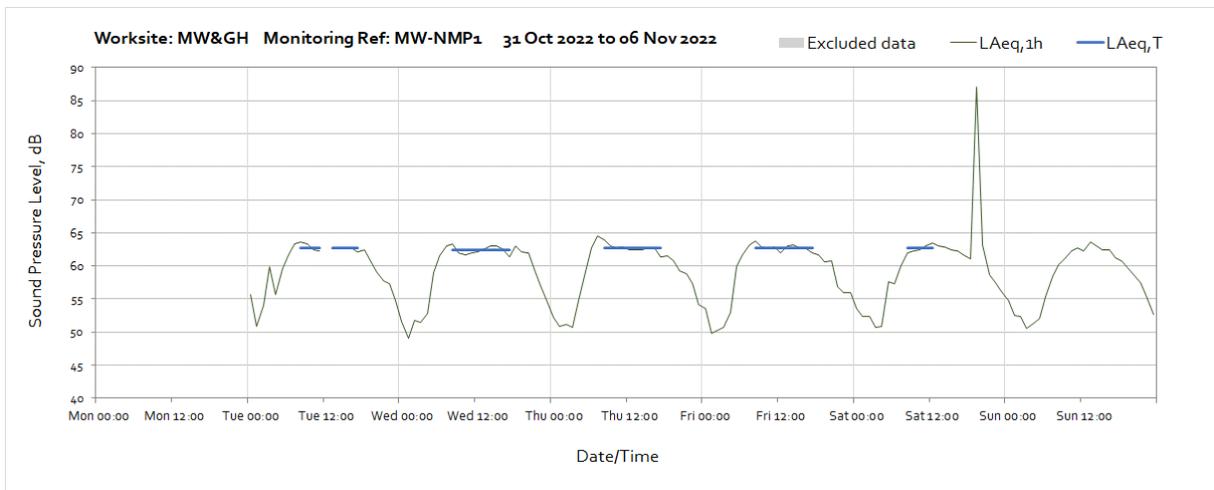


Note: Missing data at 11:00 on Tuesday 1<sup>st</sup> November 2022 were due to periodical maintenance of the monitoring station.

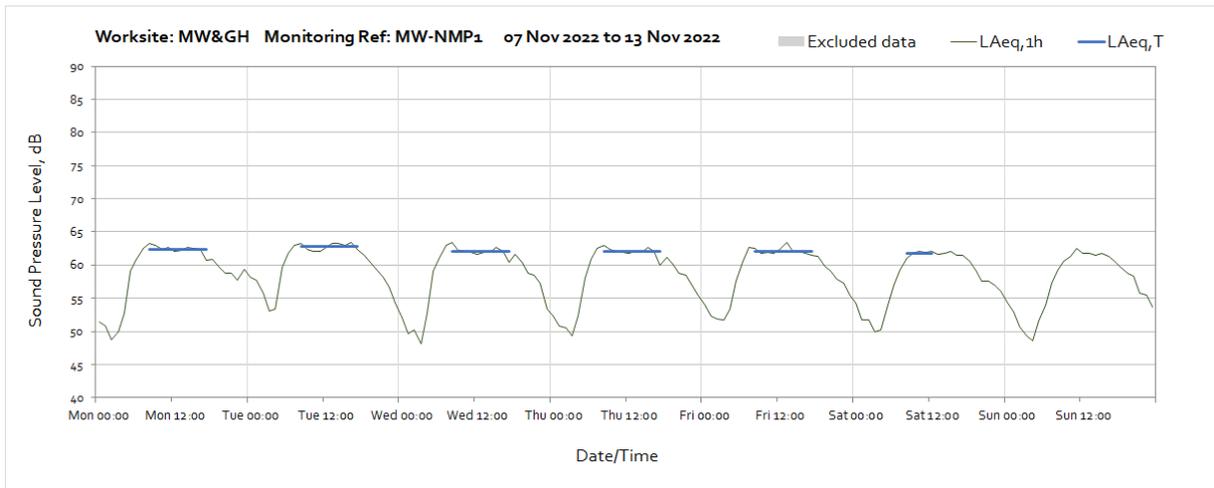


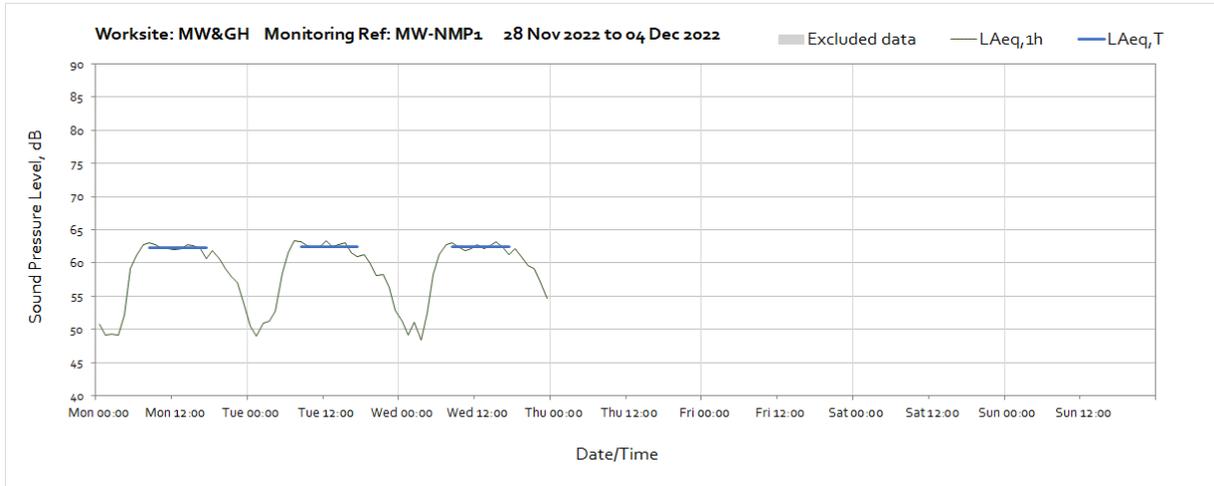
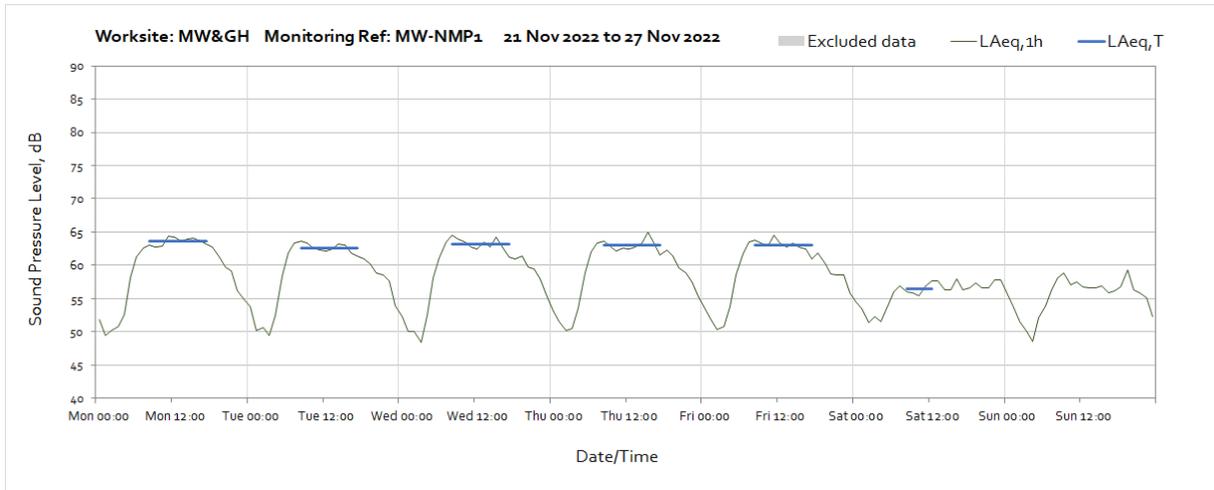
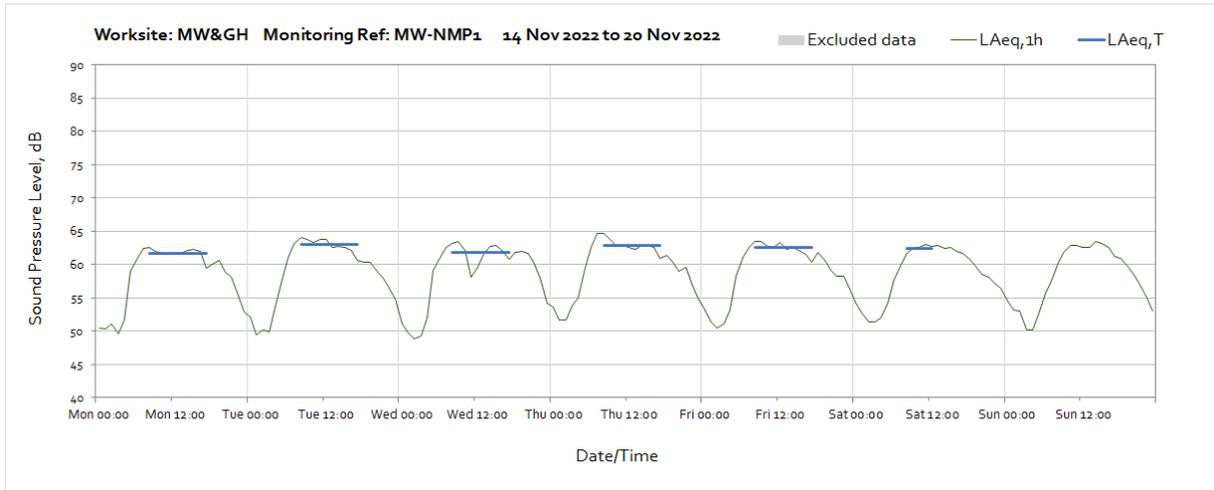


**Worksite: MW&GH – Monitoring Ref: MW-NMP1**

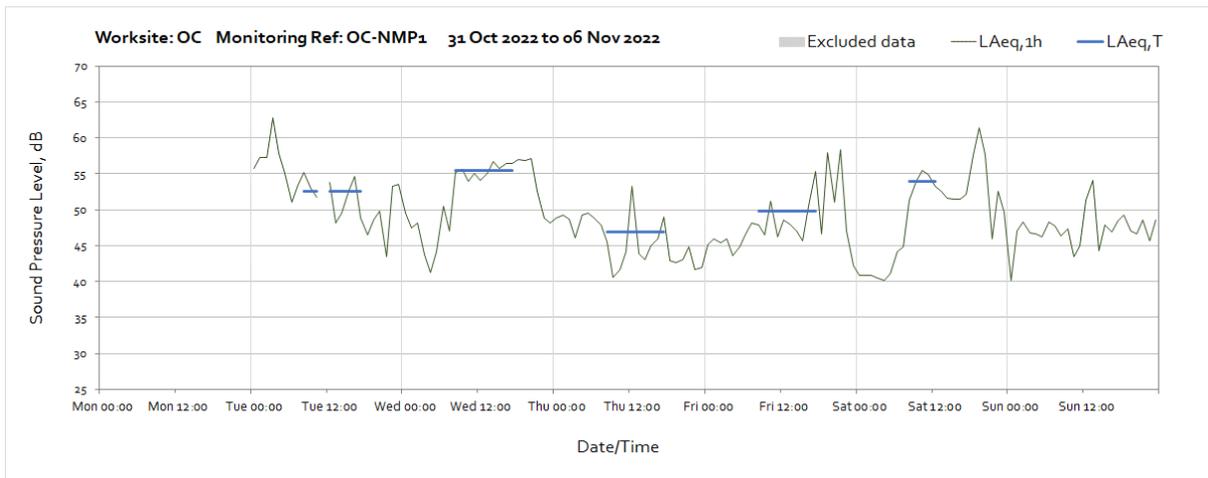


Note: Missing data at 12:00 on Tuesday 1<sup>st</sup> November 2022 were due to periodical maintenance of the monitoring station.

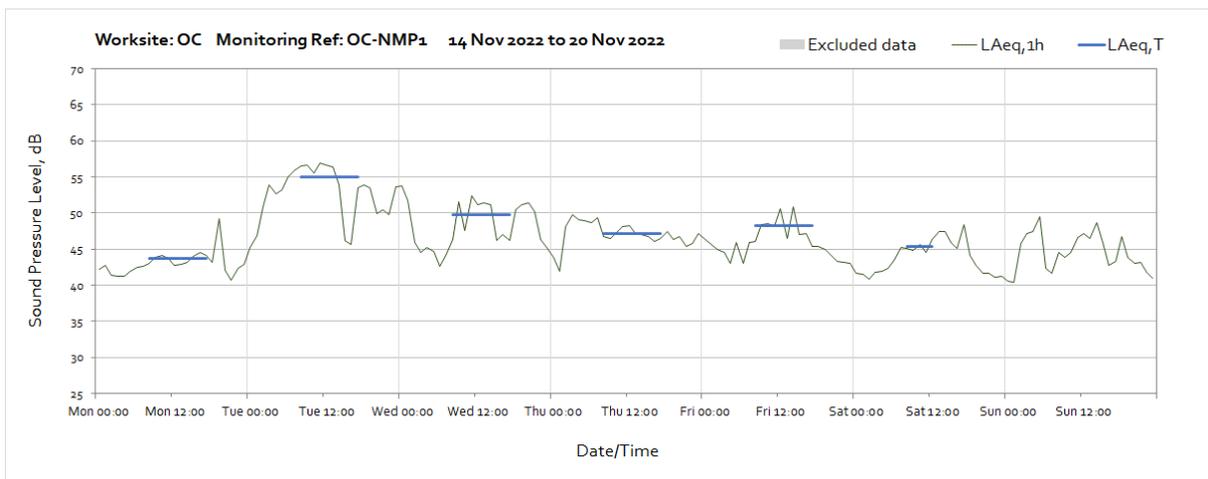
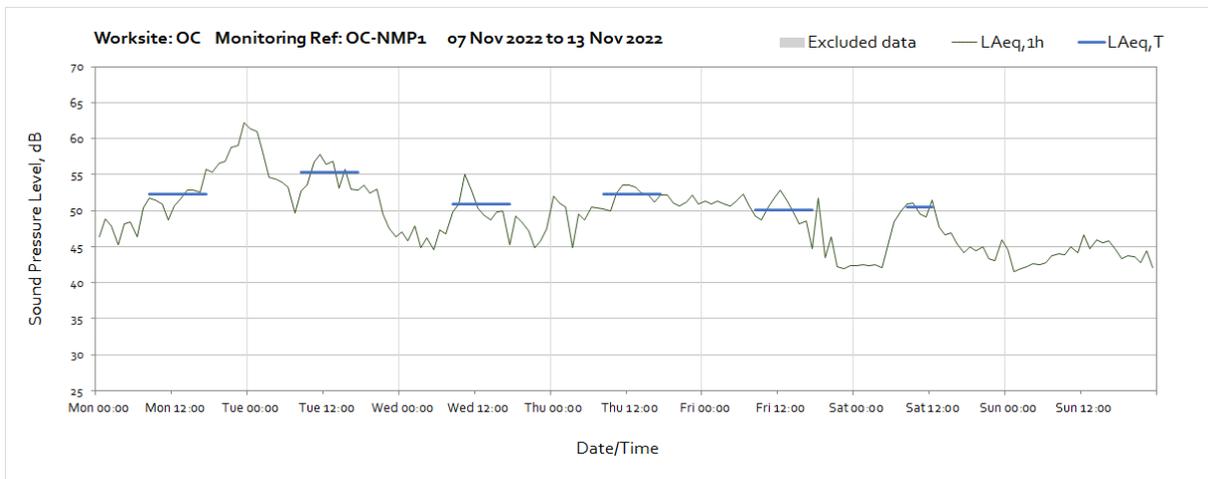


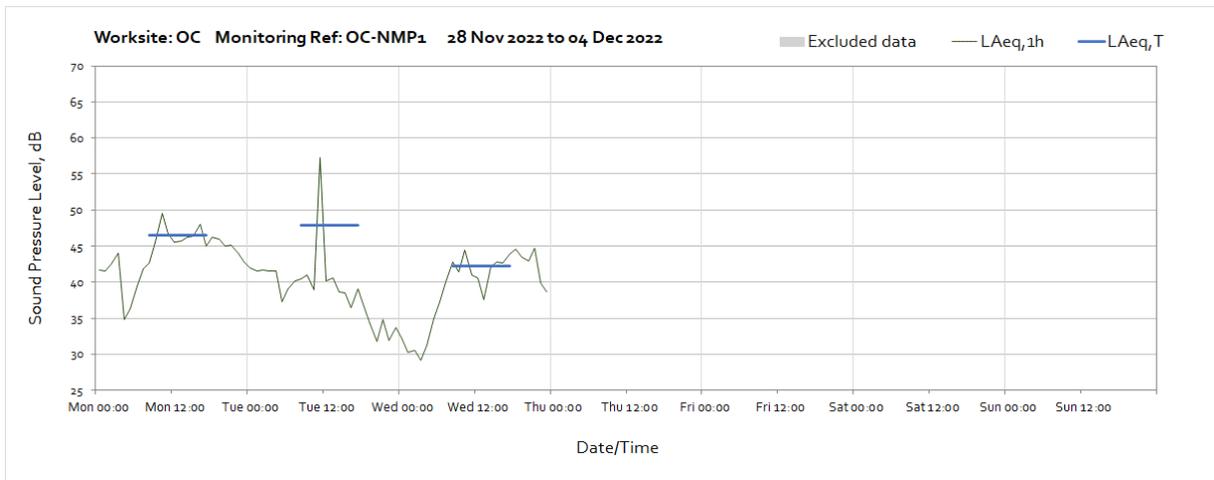
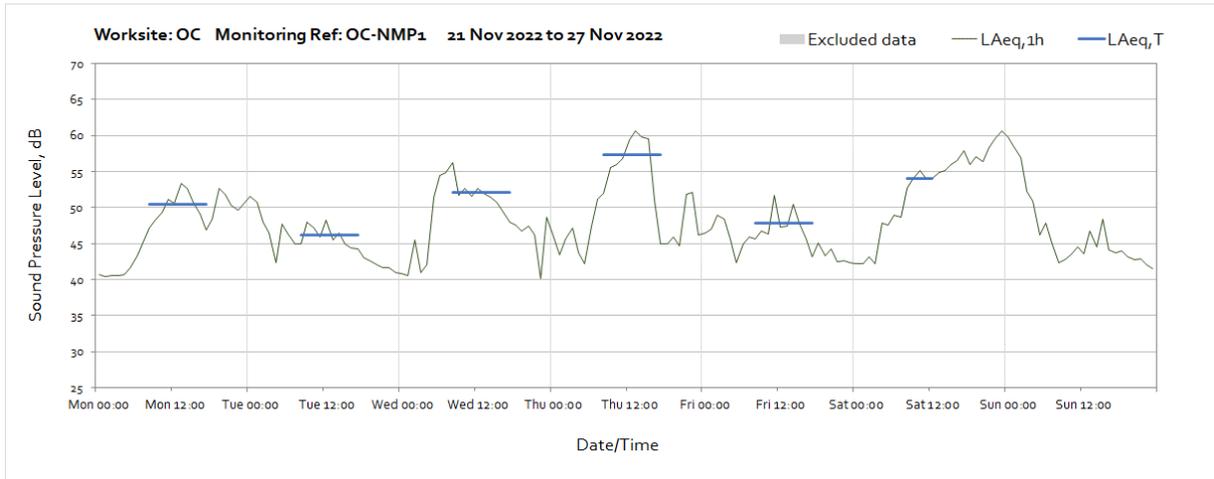


## Worksite: OC – Monitoring Ref: OC-NMP1

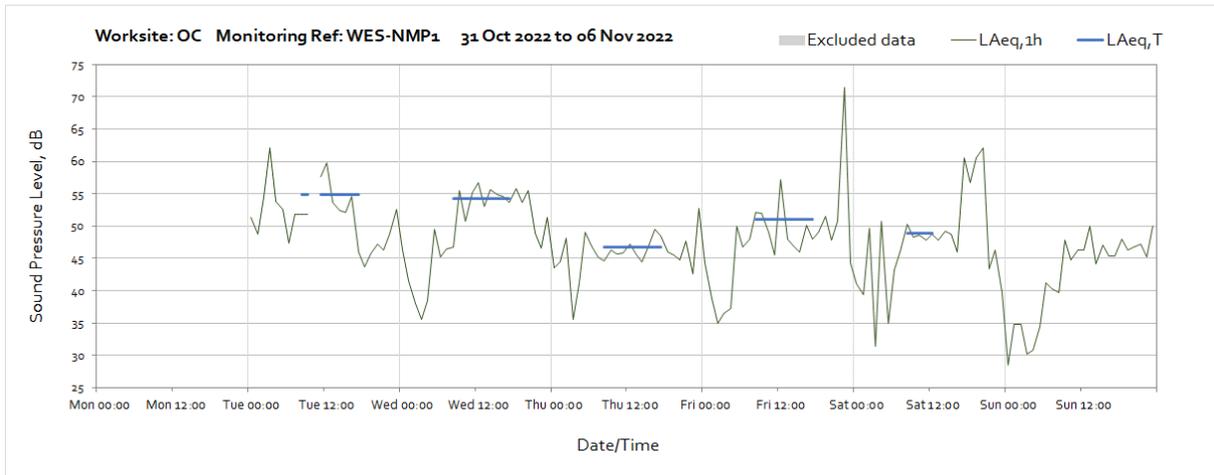


Note: Missing data at 11:00 on Tuesday 1<sup>st</sup> November 2022 were due to periodical maintenance of the monitoring station.

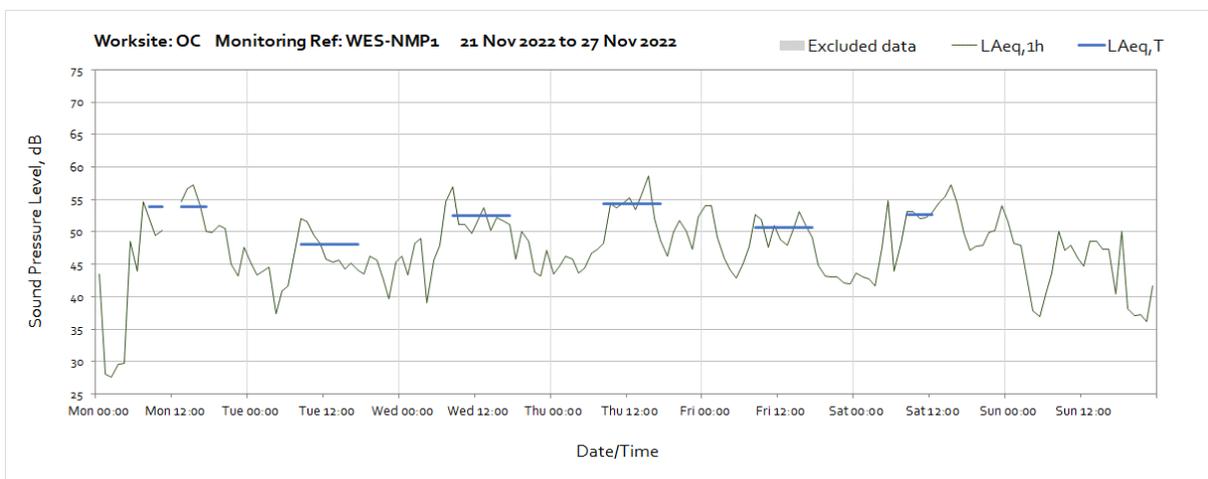
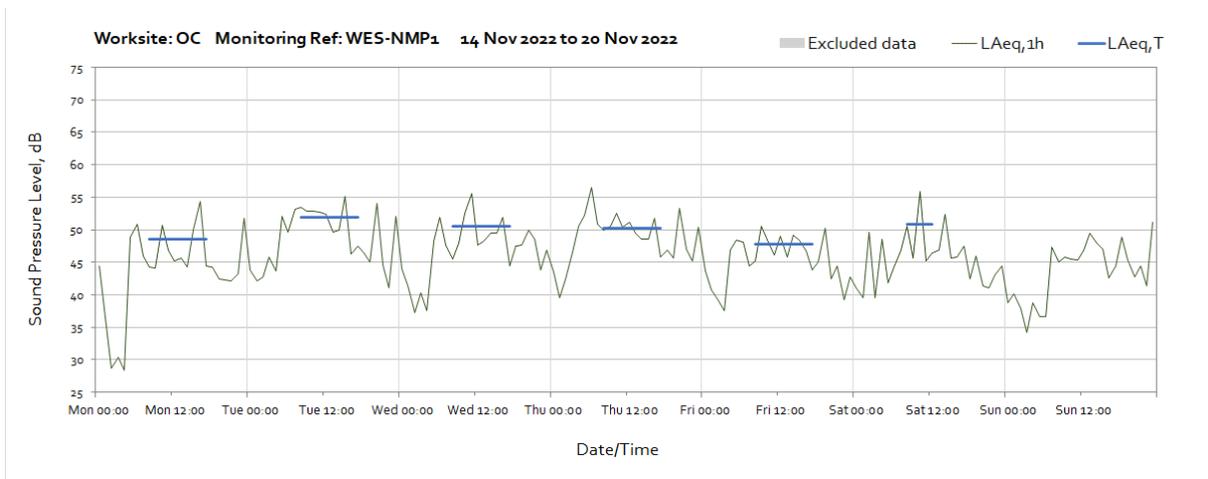
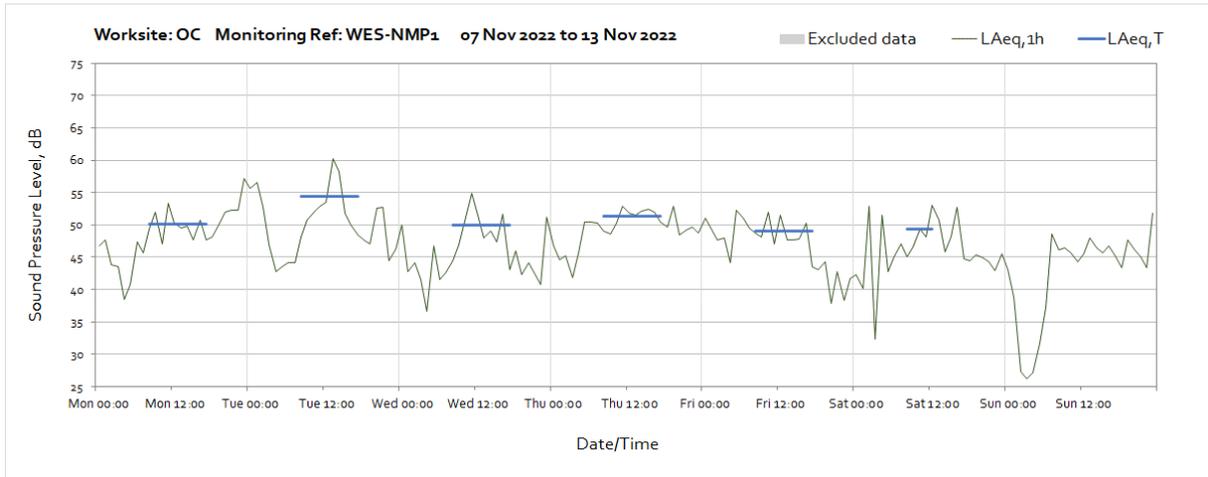




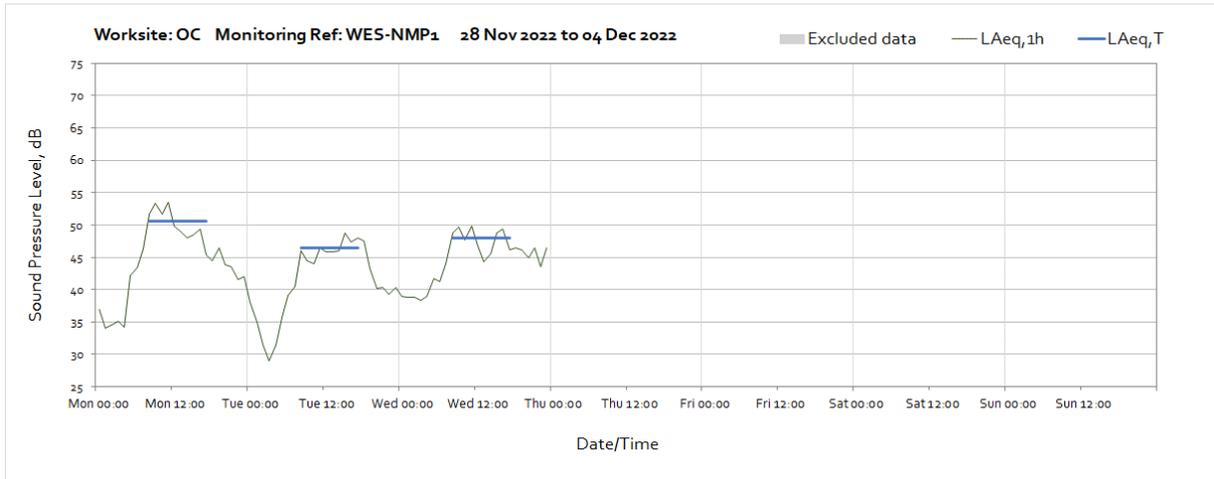
### Worksite: OC - Monitoring Ref: WES-NMP1



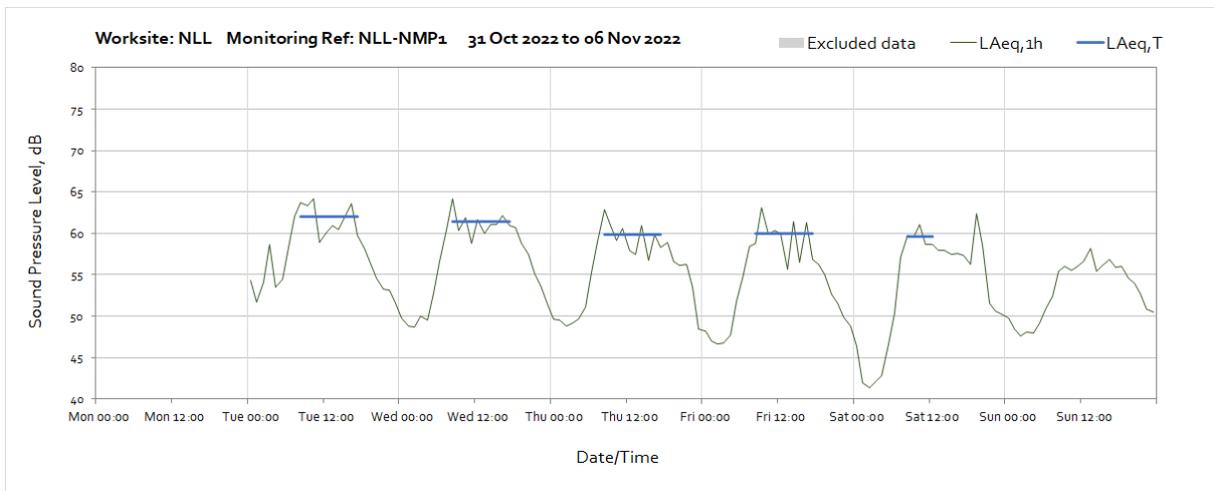
Note: Missing data at 10:00 on Tuesday 1<sup>st</sup> November 2022 was due to periodical maintenance of the monitoring station.

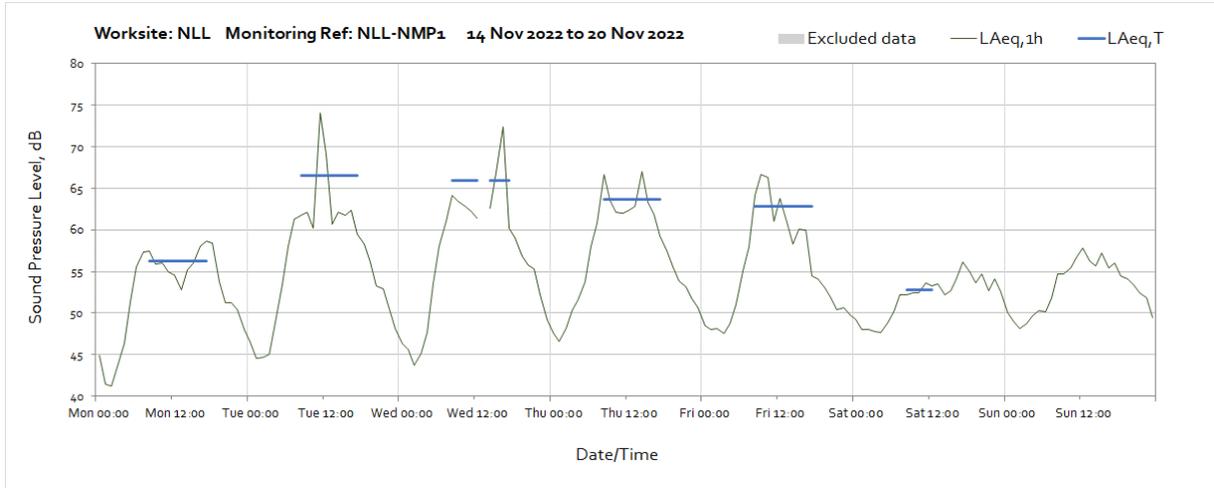
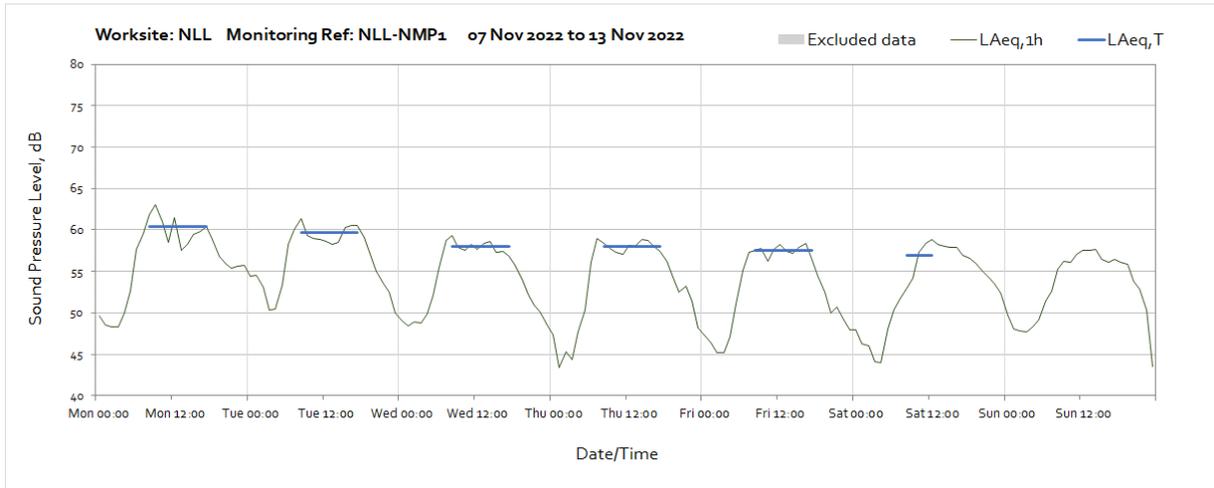


Note: Missing data between 11:00 and 13:00 on Tuesday 21<sup>st</sup> November 2022 were due to periodical maintenance of the monitoring station.

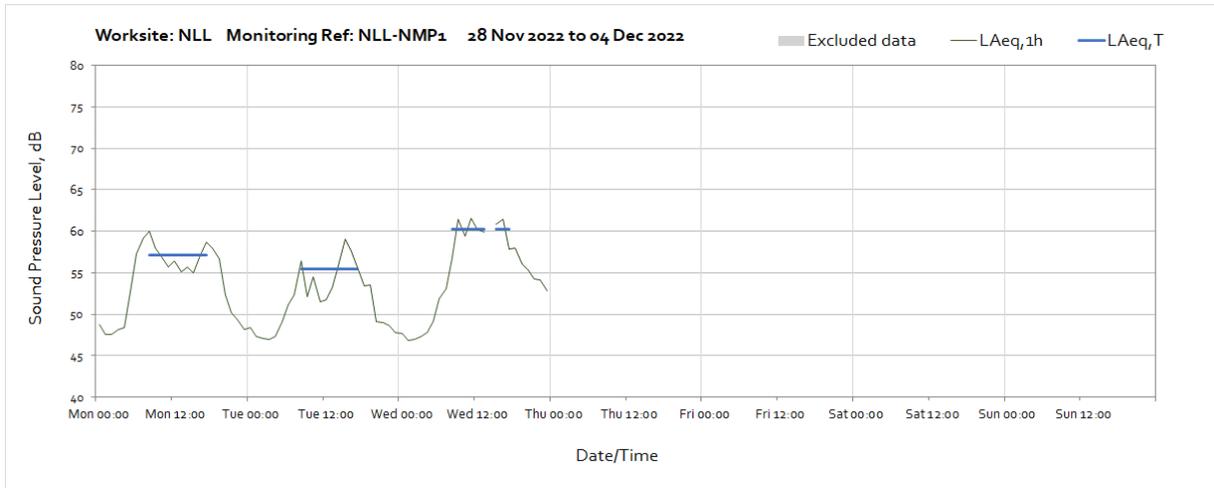
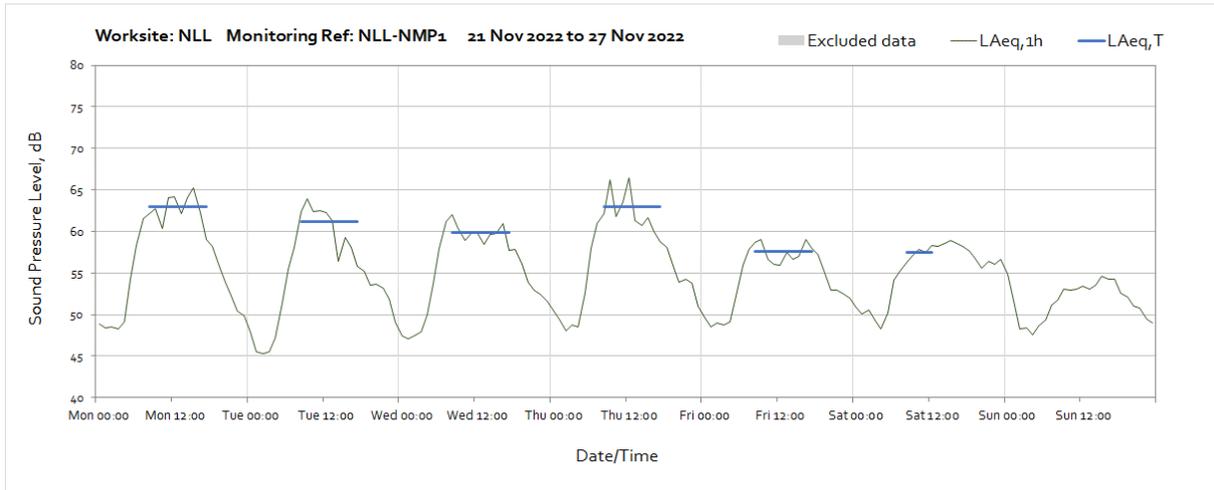


**Worksite: NLL – Monitoring Ref: NLL-NMP1**



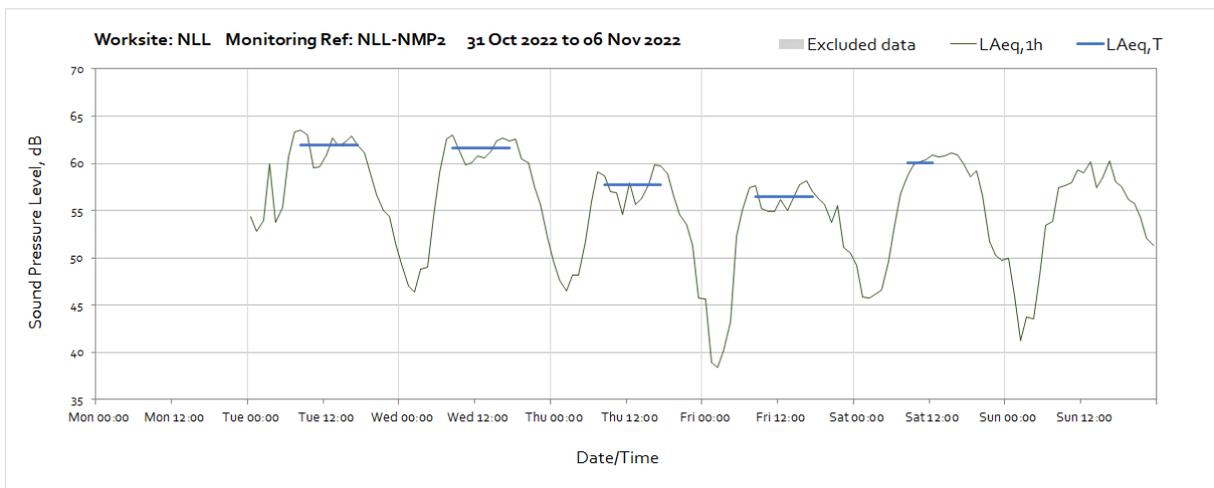


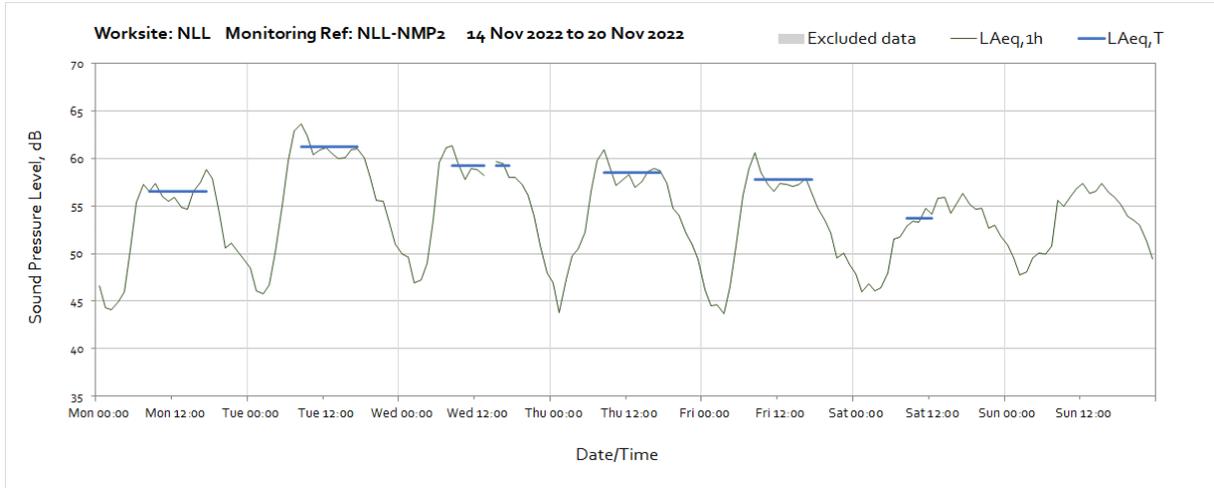
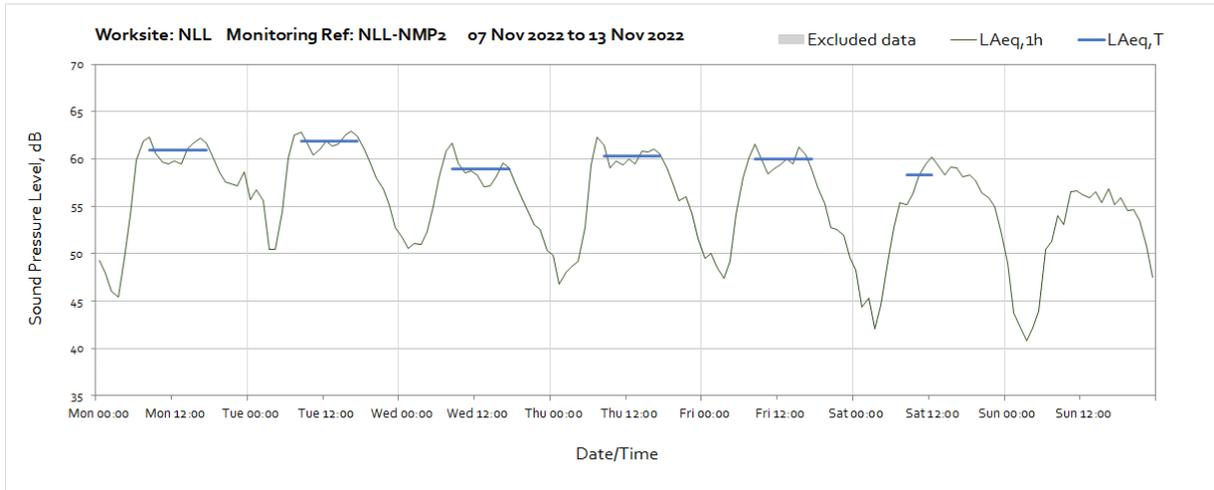
Note: Missing data at 13:00 on Wednesday 16<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.



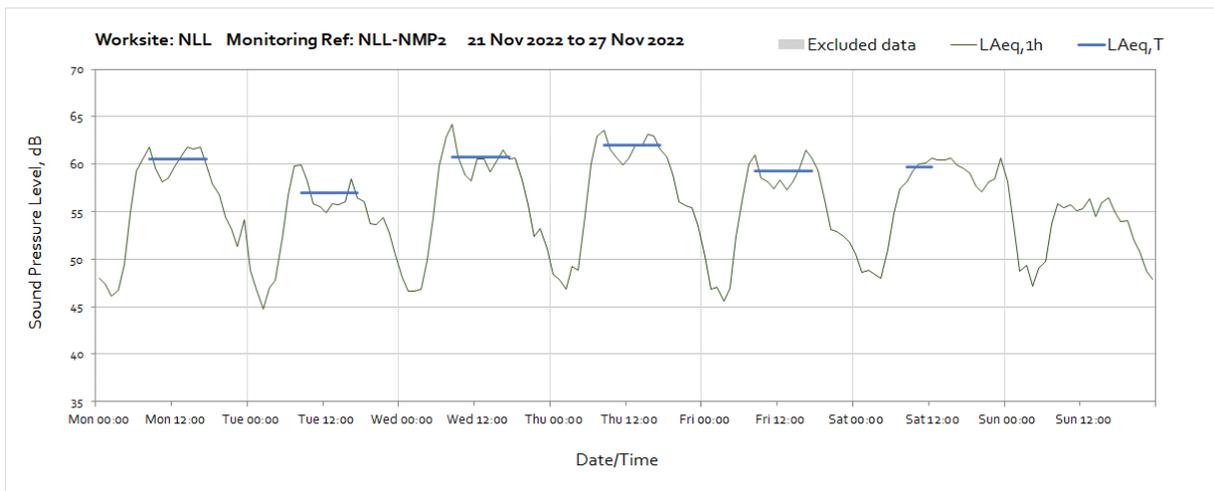
Note: Missing data at 14:00 on Wednesday 30<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.

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





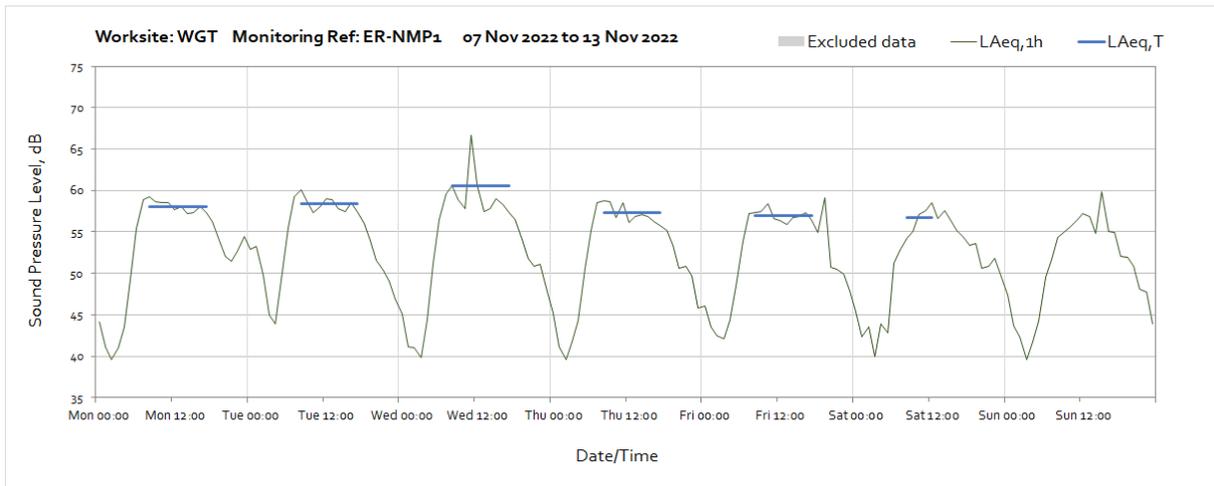
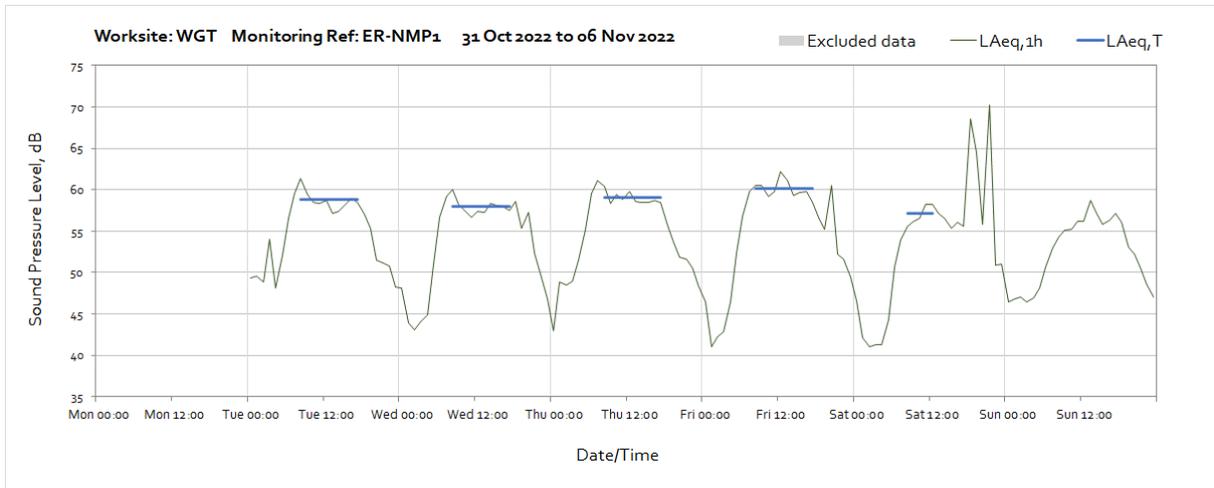
Note: Missing data at 14:00 on Wednesday 16<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.

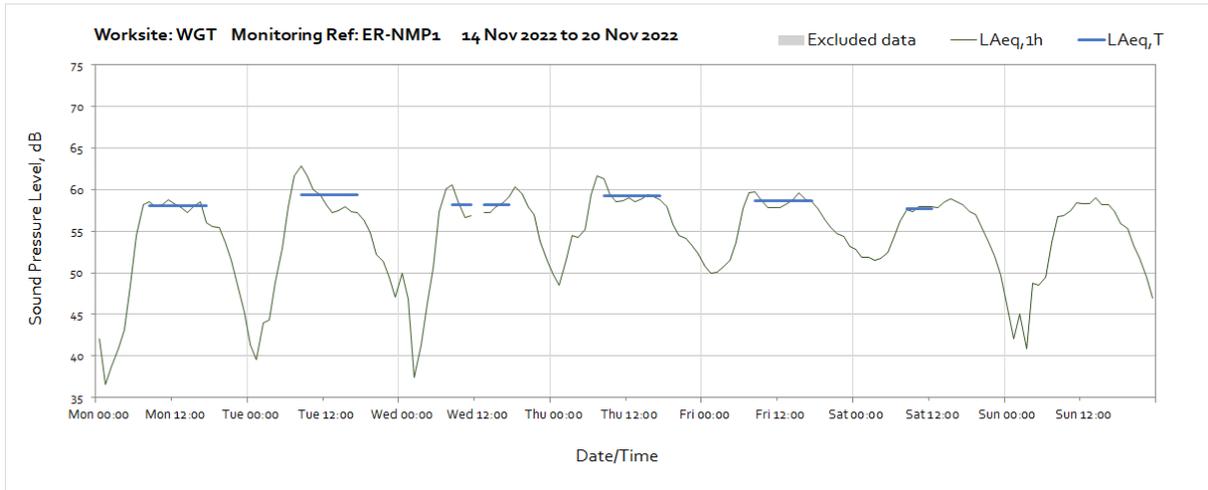




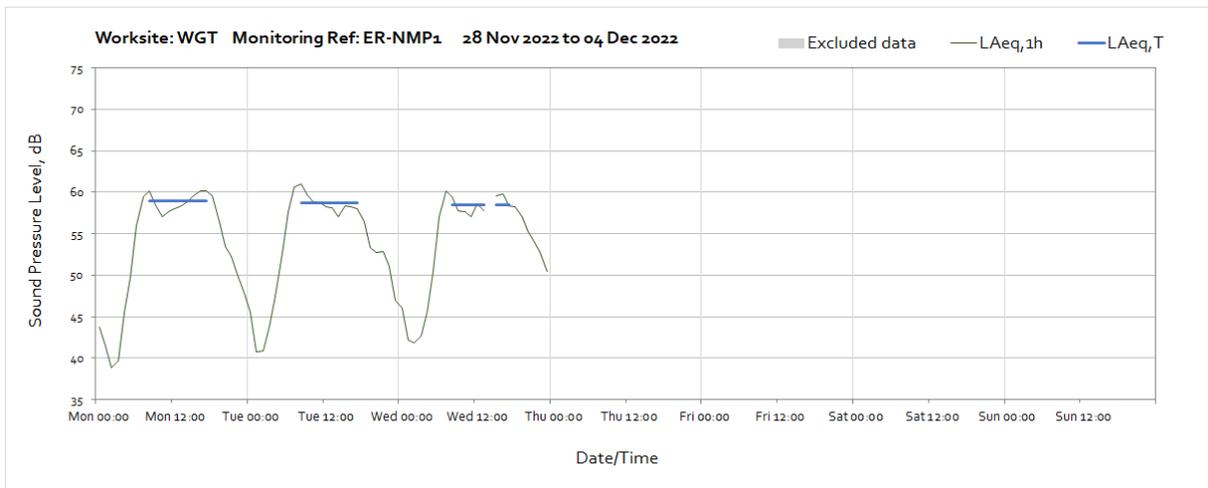
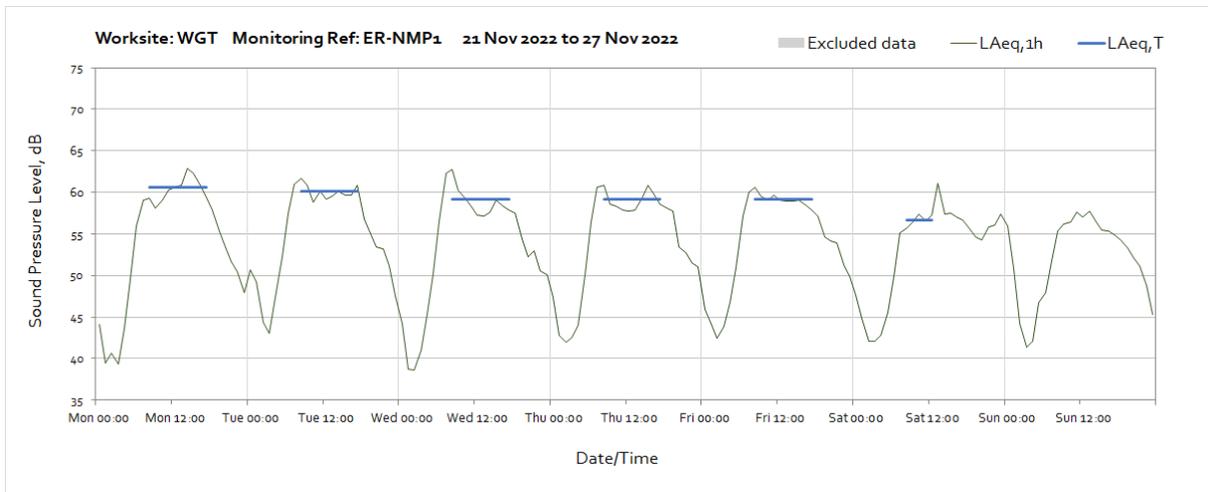
Note: Missing data at 14:00 on Wednesday 30th November 2022 were due to periodical maintenance of the monitoring station.

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



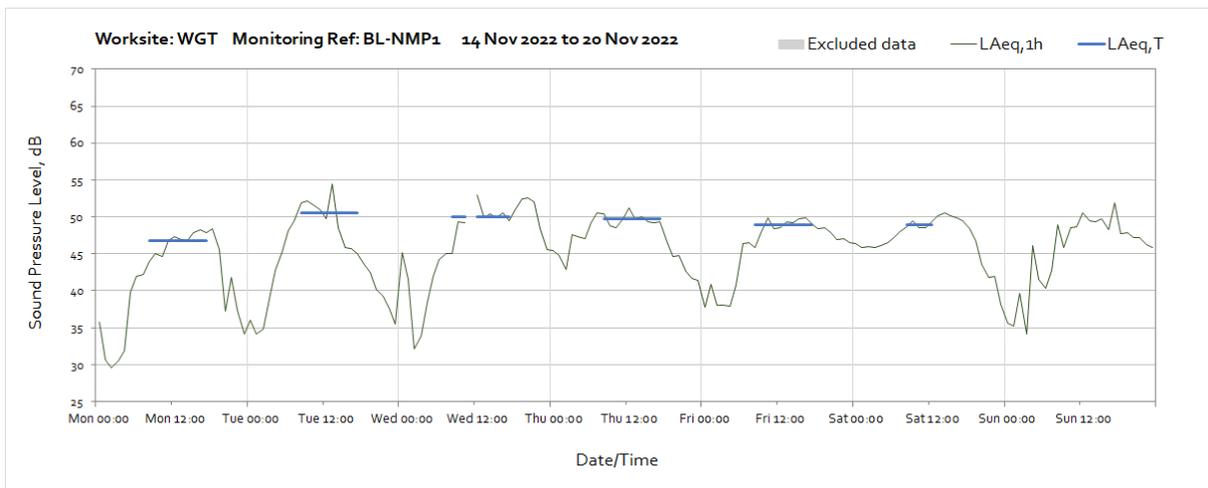
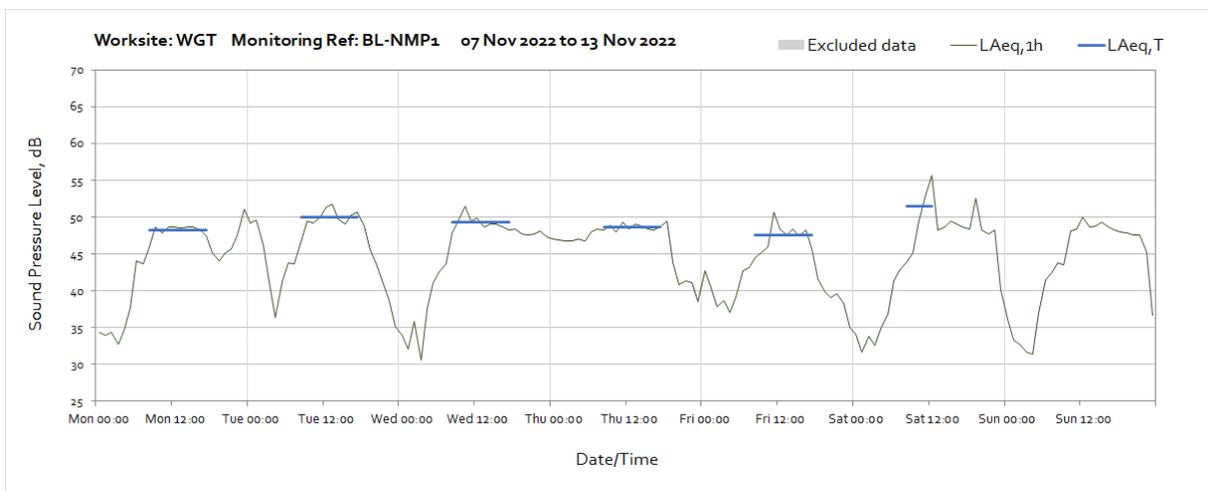
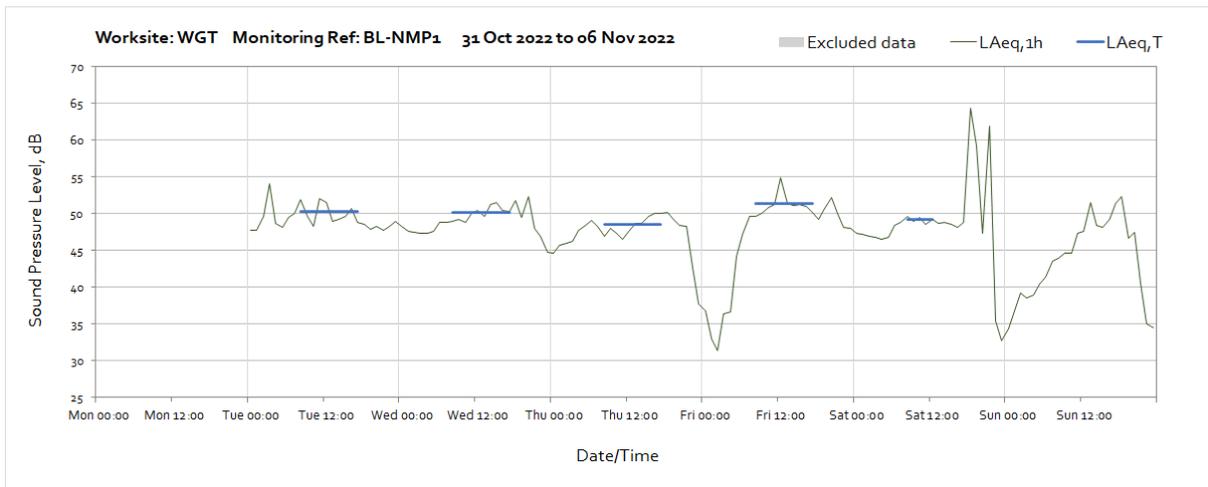


Note: Missing data at 12:00 on Wednesday 16<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.

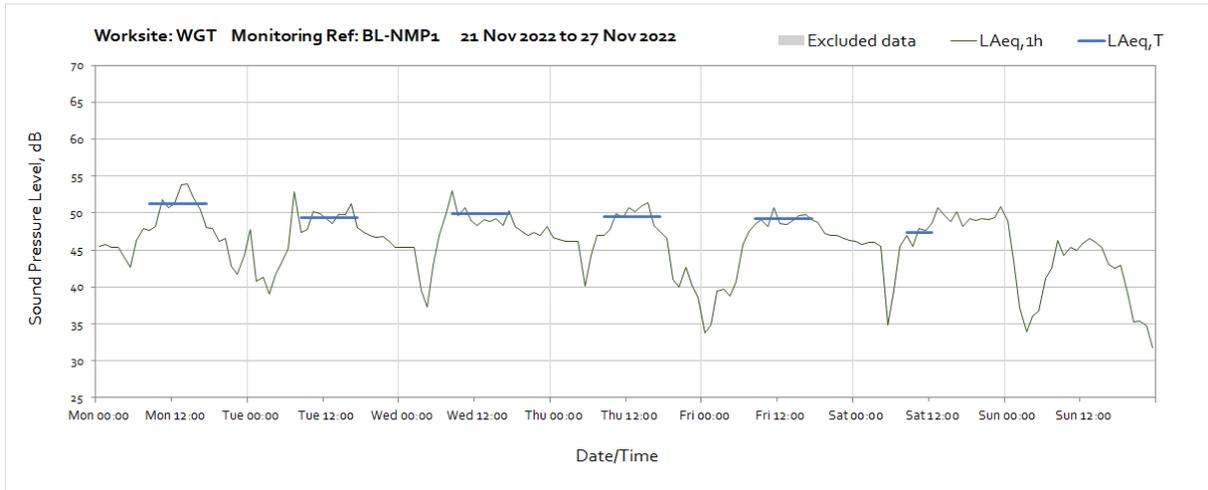


Note: Missing data at 14:00 on Wednesday 30<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.

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

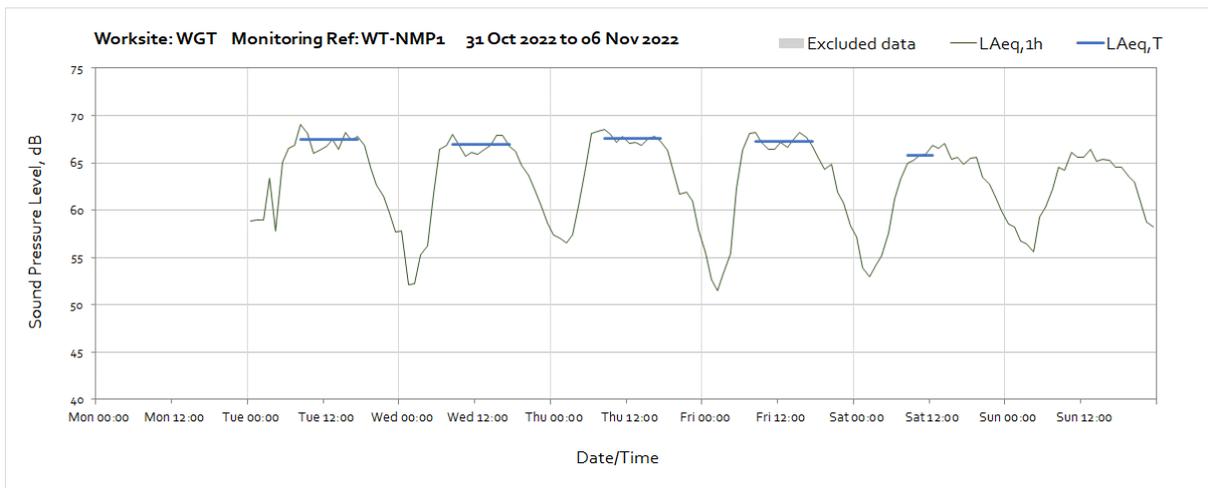


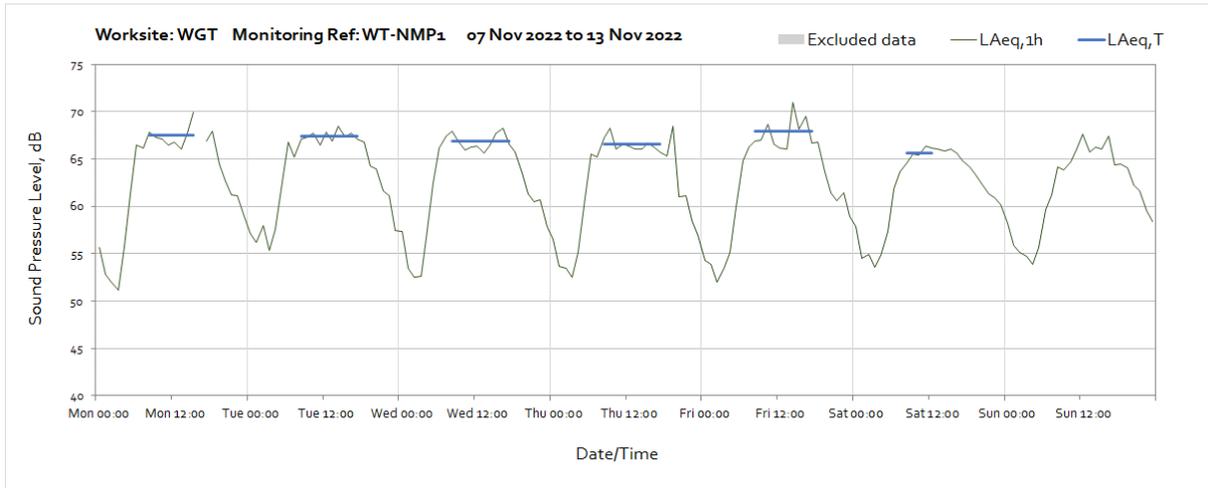
Note: Missing data at 11:00 on Wednesday 16<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.



Note: Missing data at 14:00 on Wednesday 30<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.

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

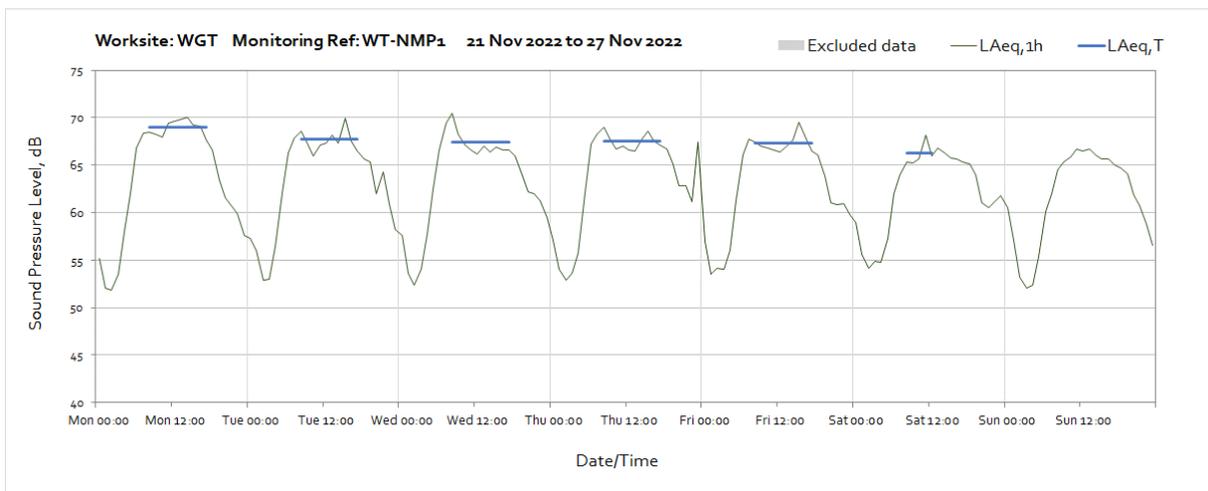


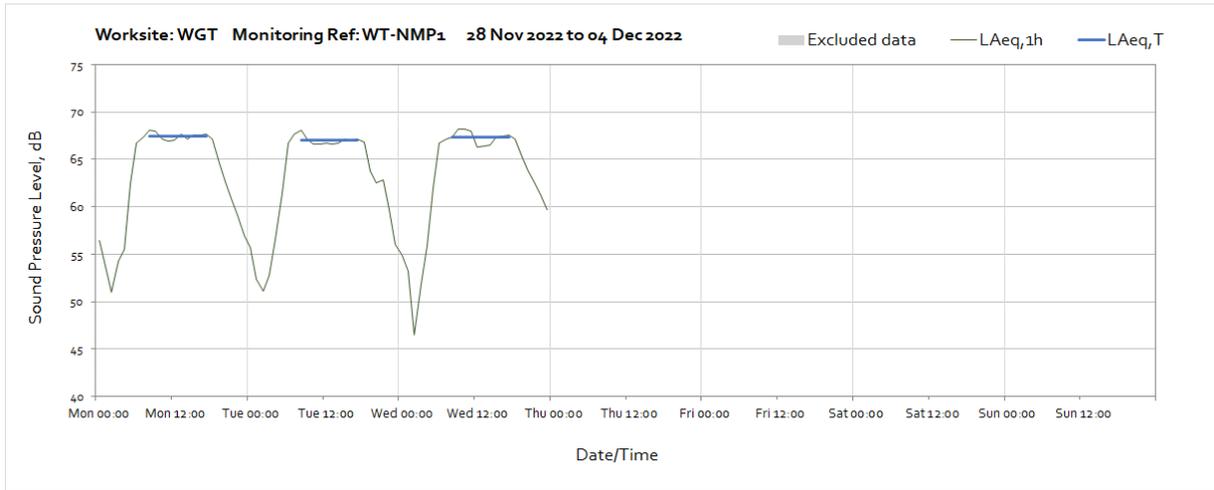


Note: Missing data at 16:00 on Monday 7<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.

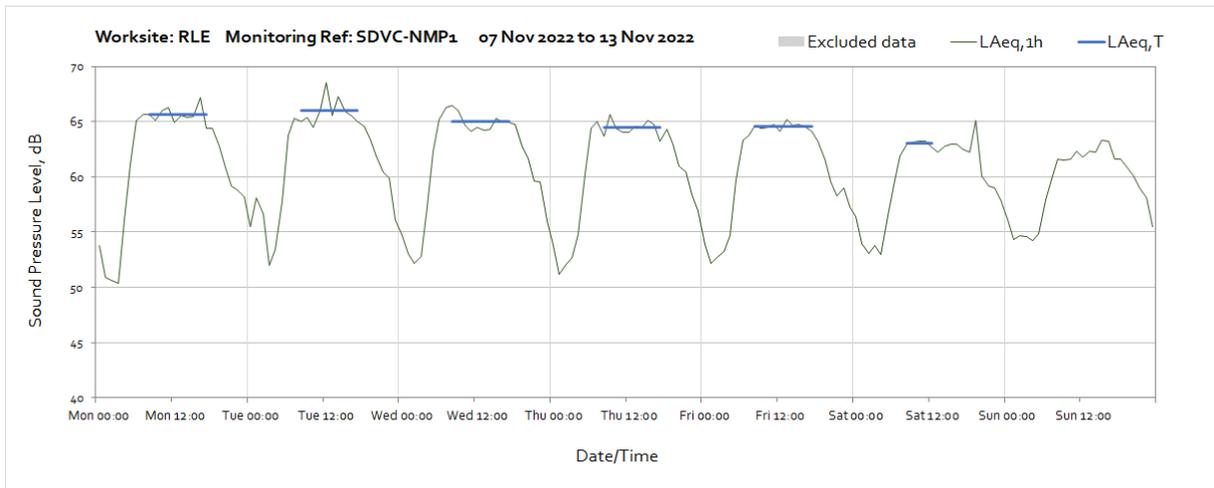
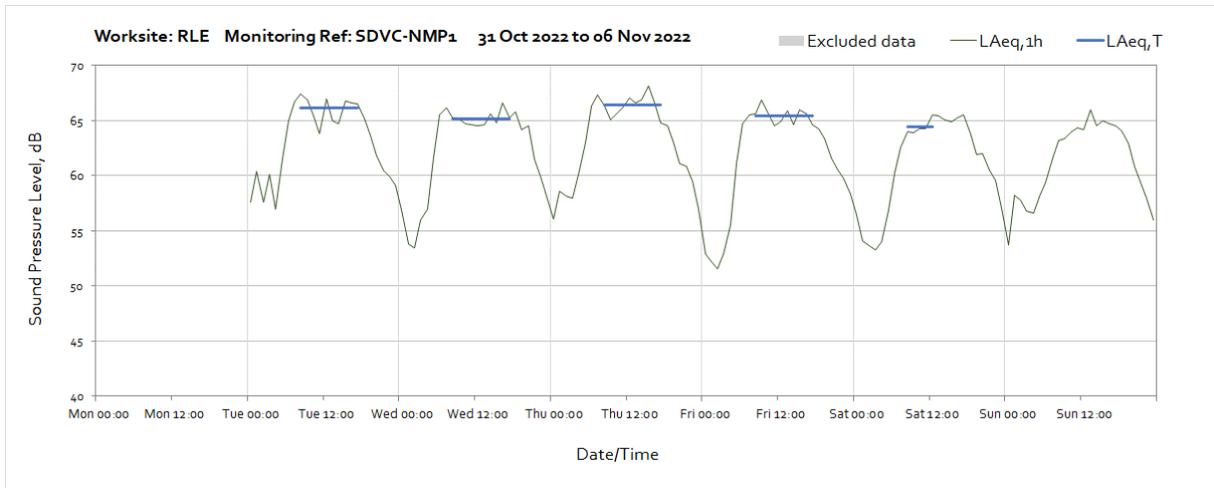


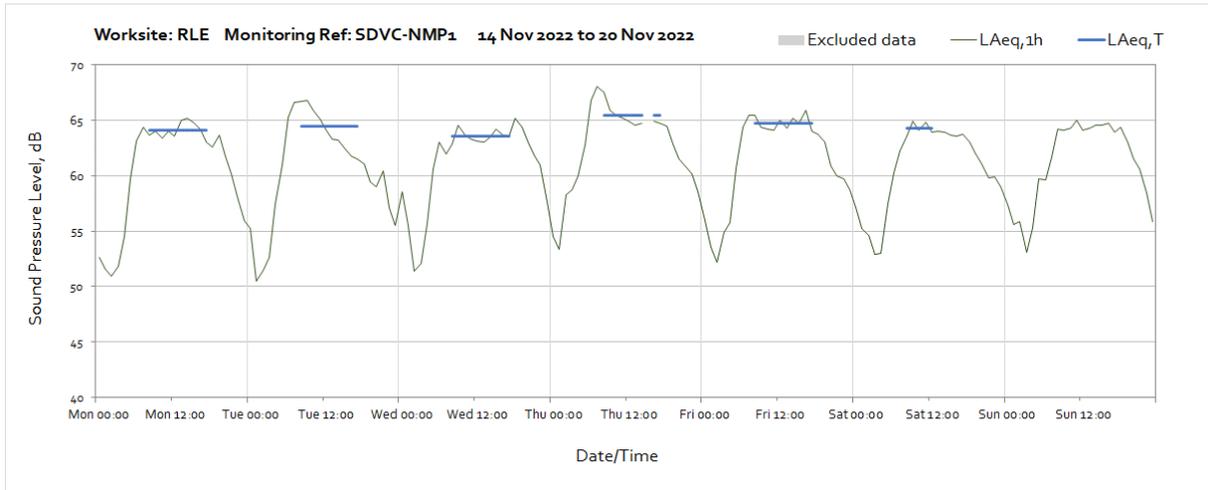
Note: Missing data at 13:00 on Wednesday 16<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.



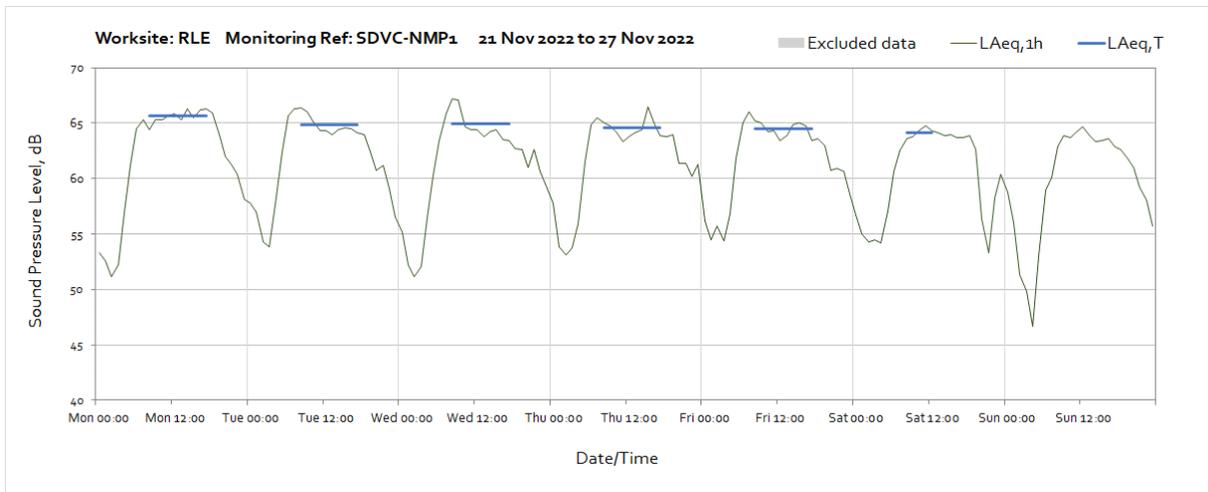


**Worksite: RLE - Monitoring Ref: SDVC-NMP1**



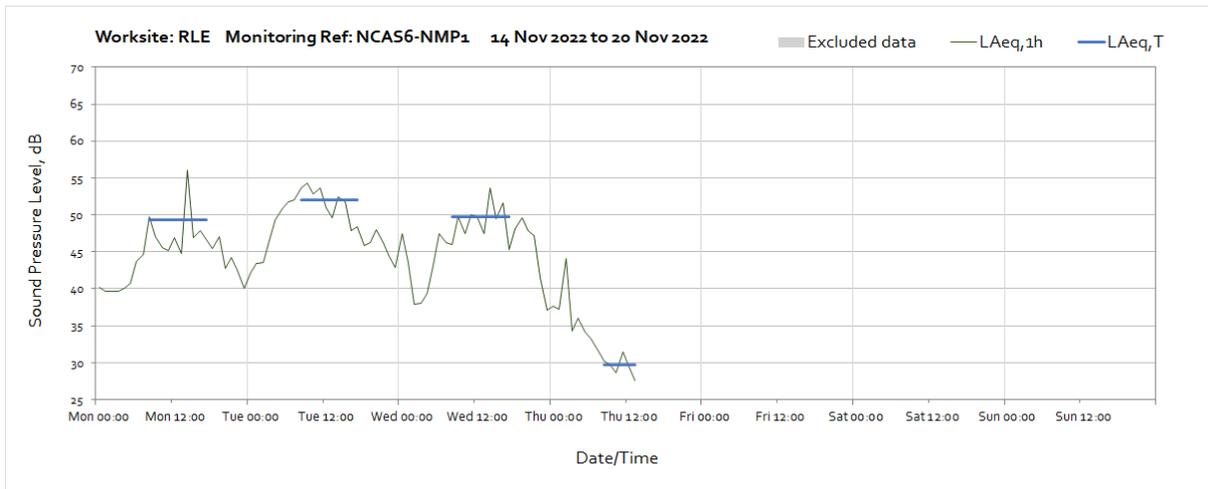
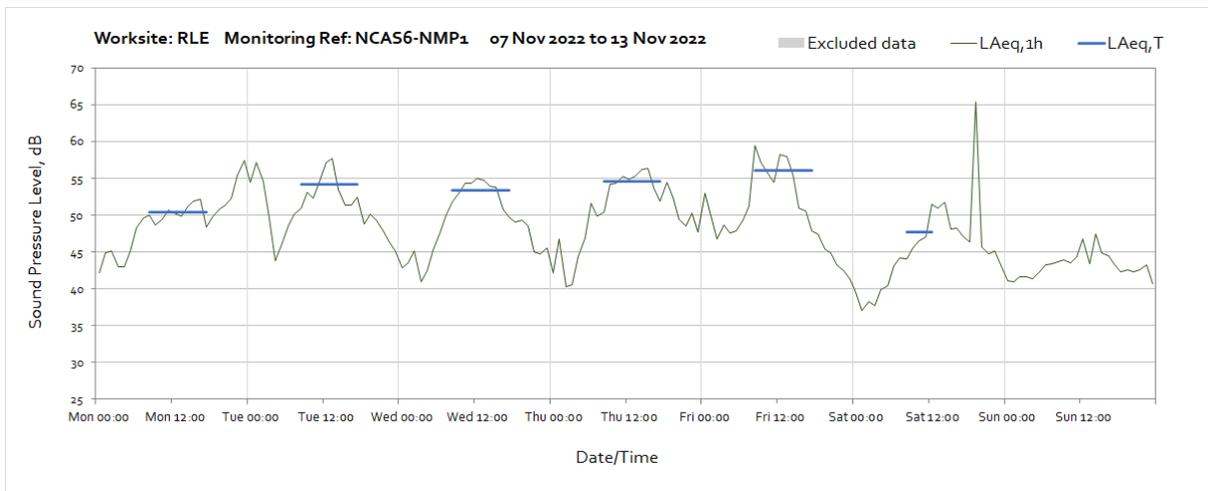
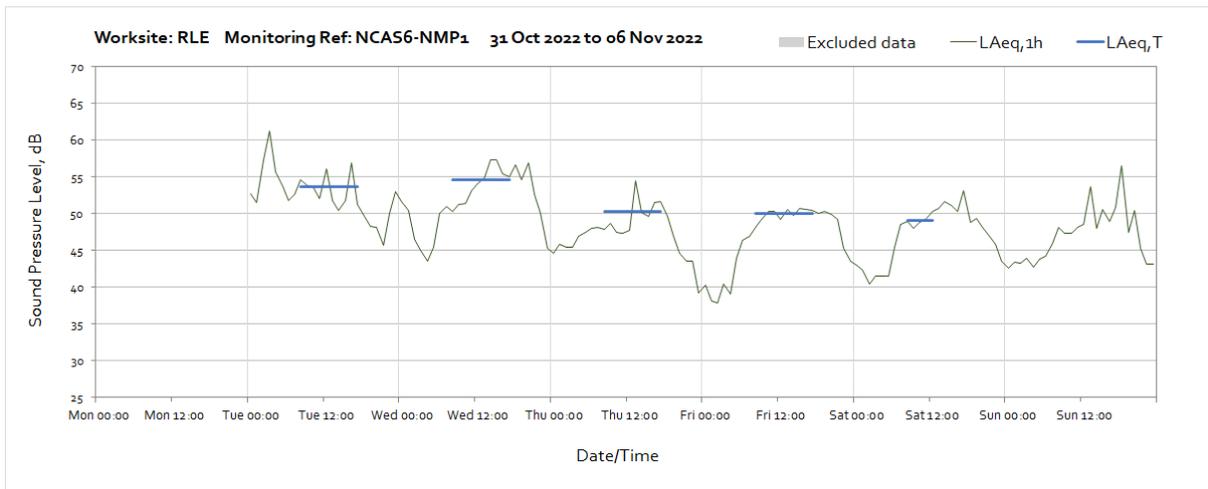


Note: Missing data at 15:00 on Thursday 17<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.



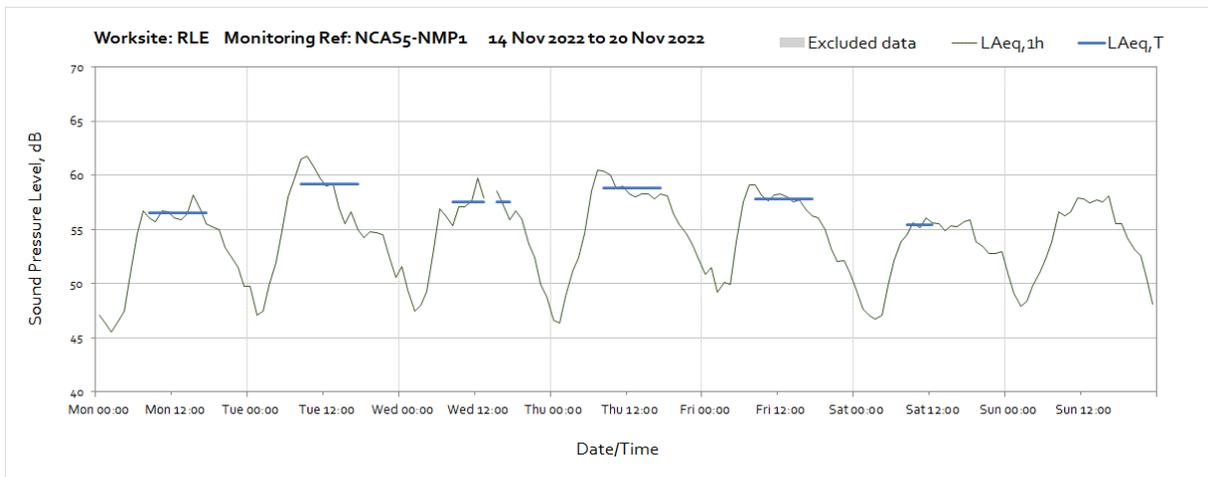
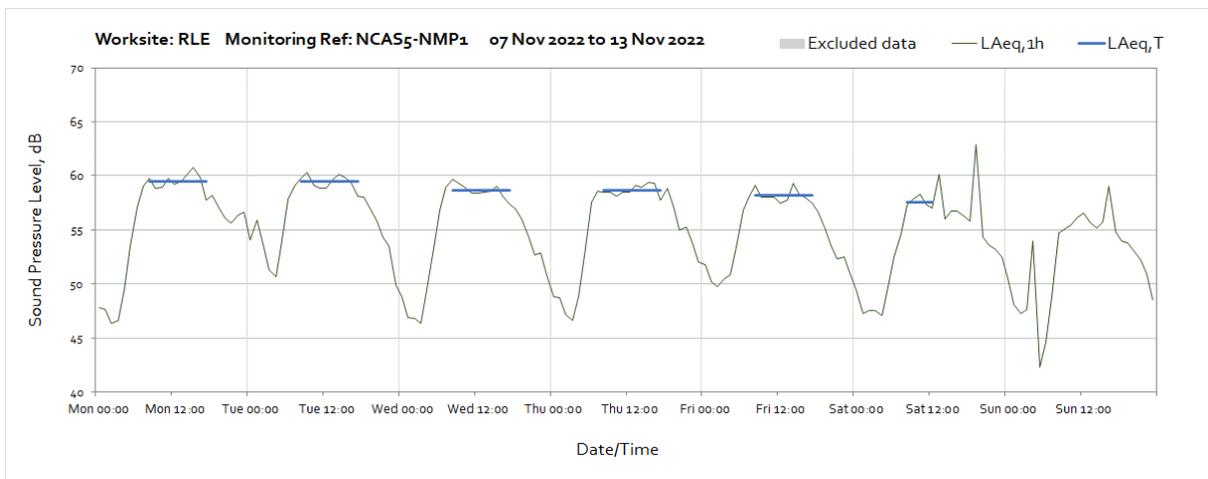
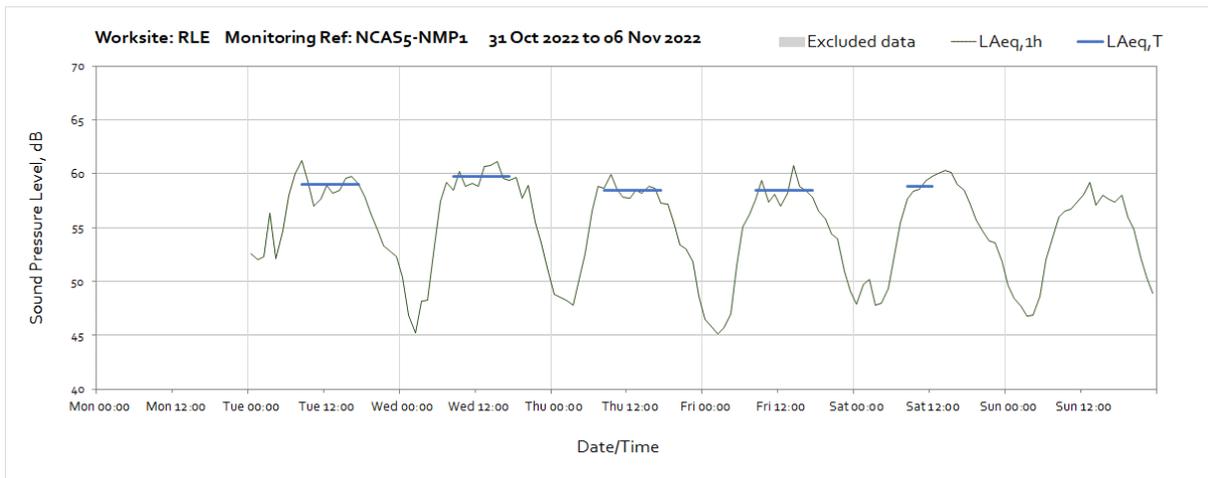
Note: Missing data at 14:00 on Wednesday 30<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.

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

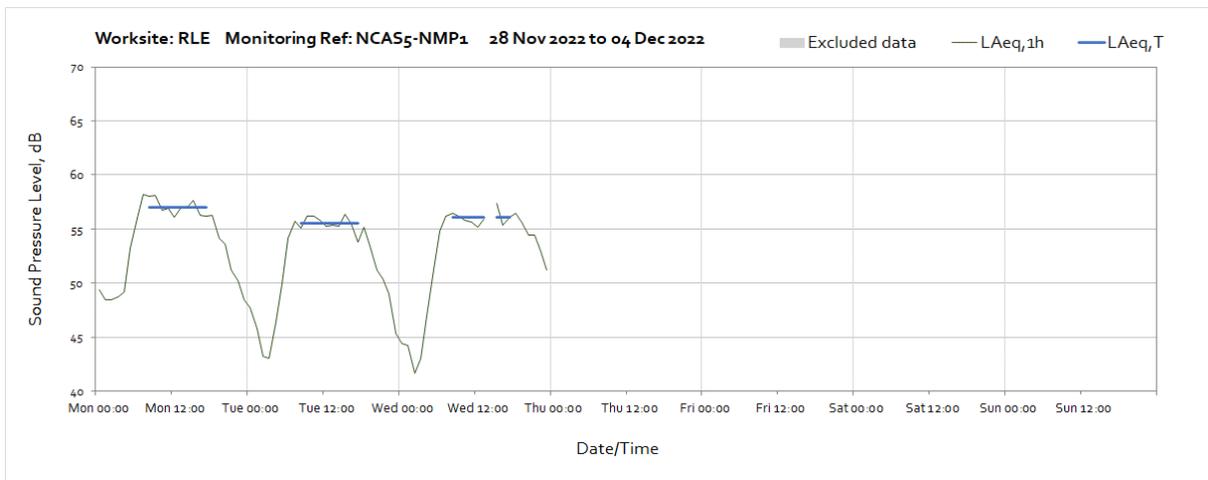
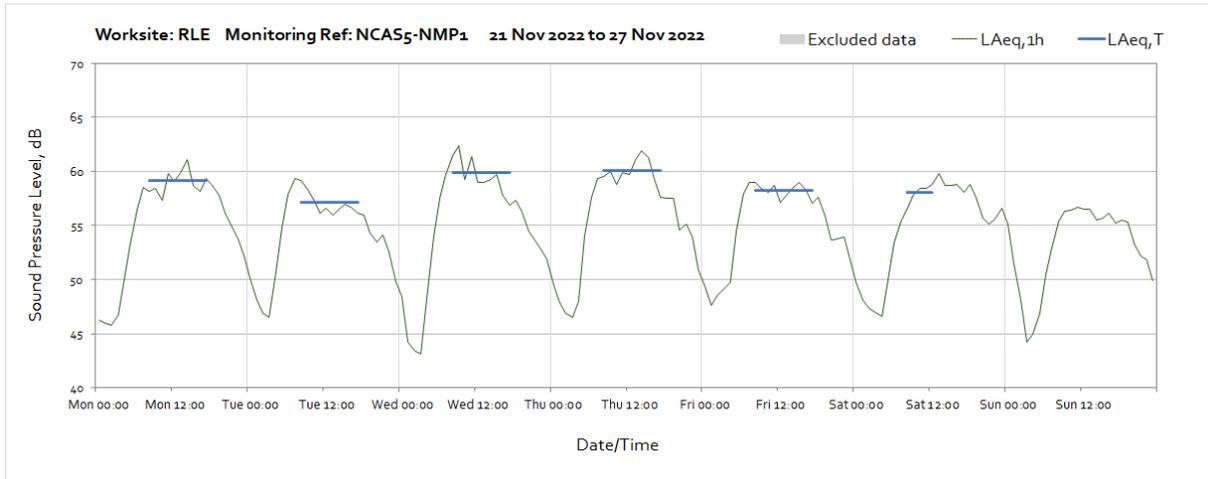


Note: The noise monitor was retrieved at 14:00 on 17<sup>th</sup> November for repair due to microphone failure.

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

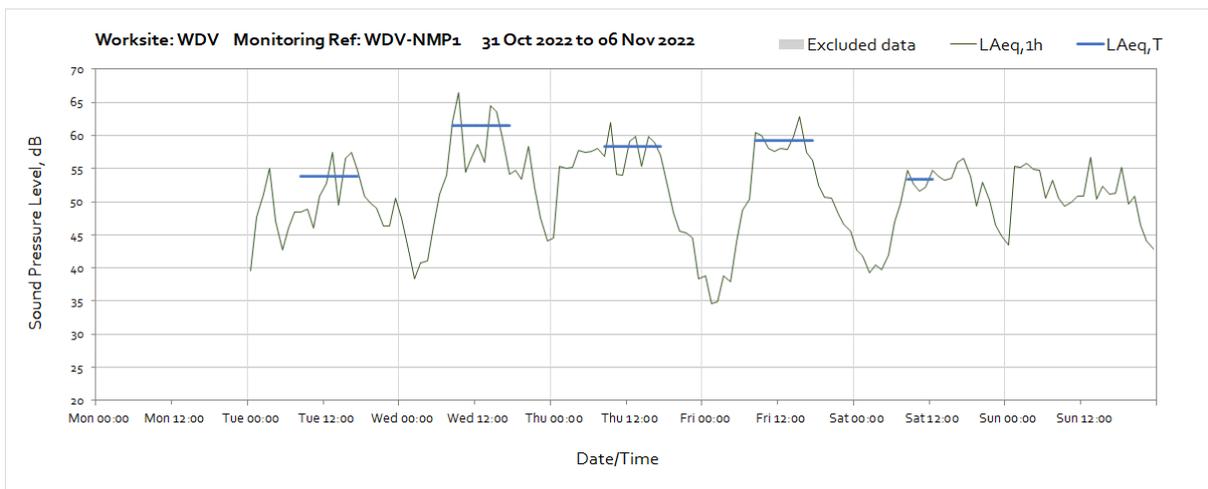


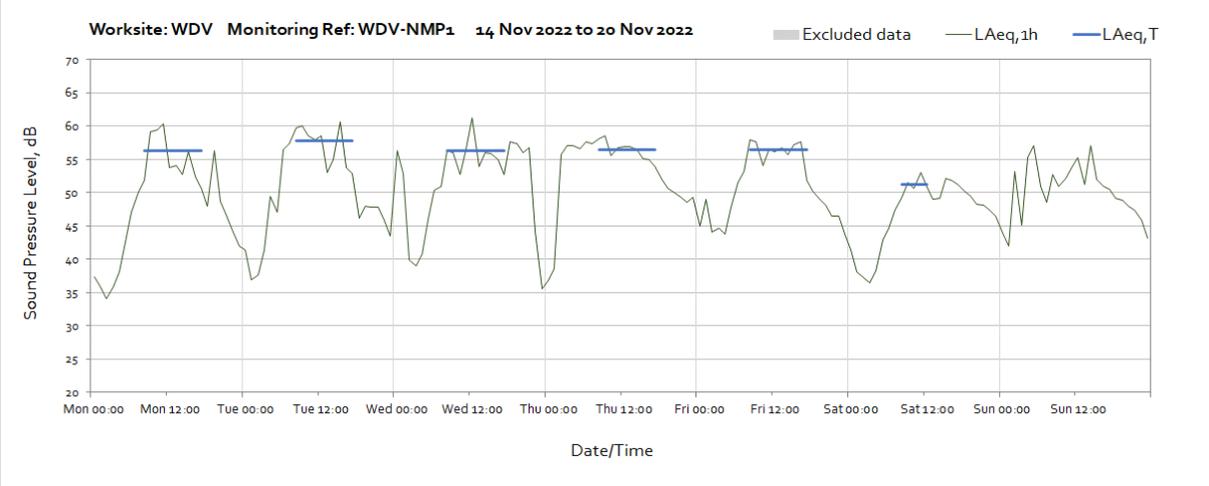
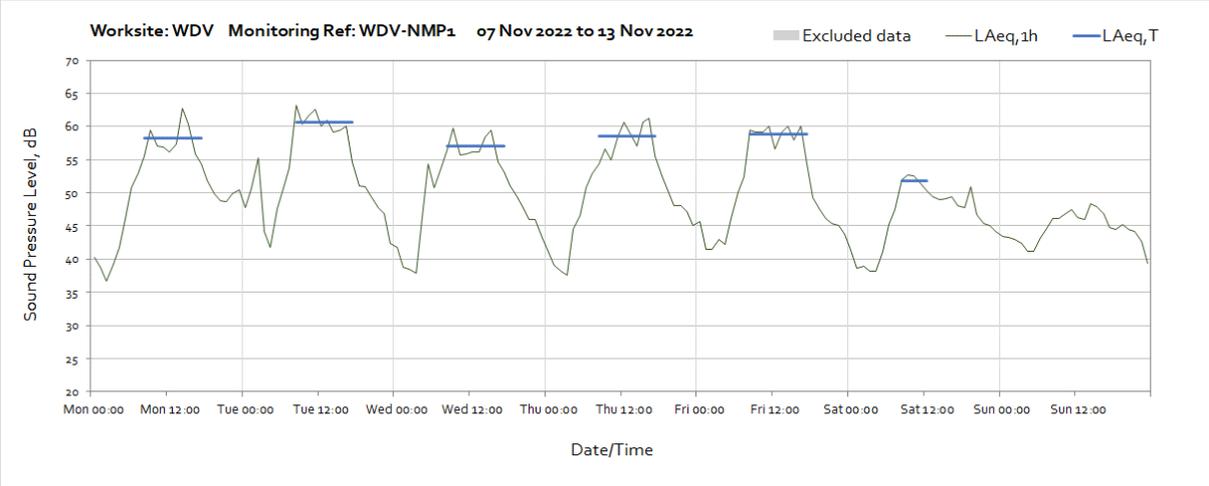
Note: Missing data at 14:00 on Wednesday 16<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.



Note: Missing data at 14:00 on Wednesday 30<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.

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

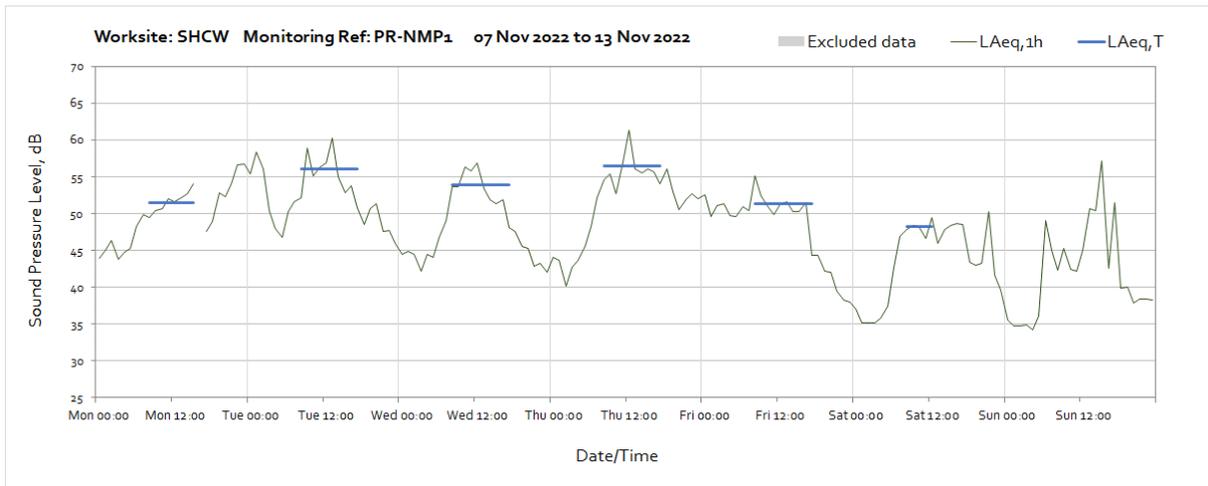
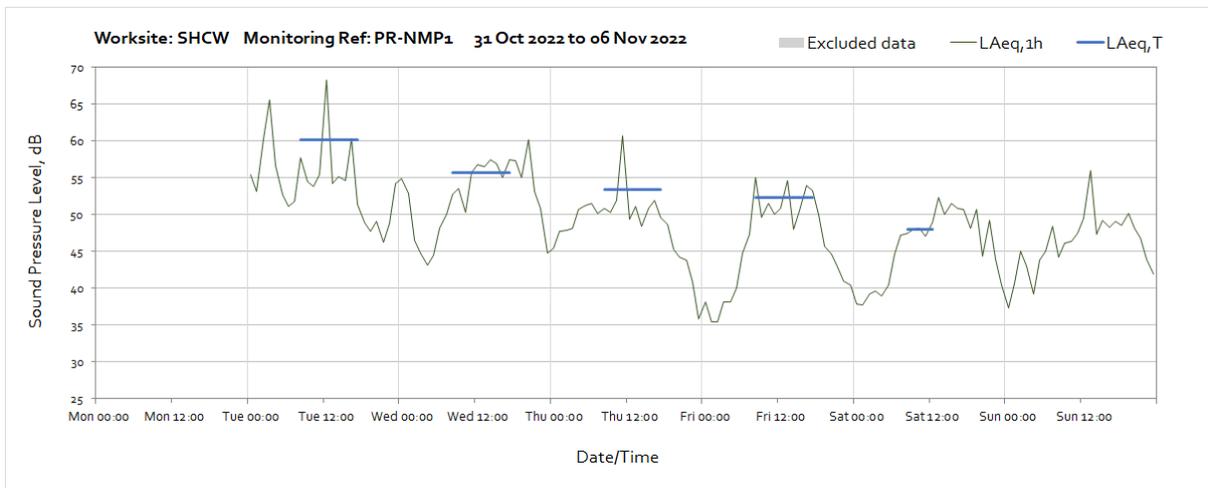




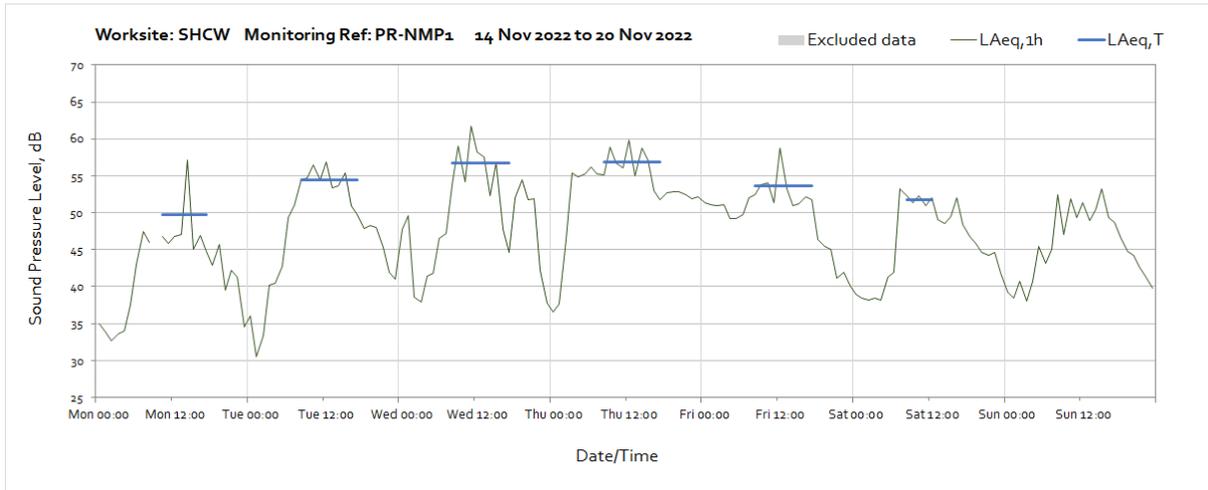


Note: Missing data at 16:00 on Monday 28<sup>th</sup> and at 14:00 on Wednesday 30<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.

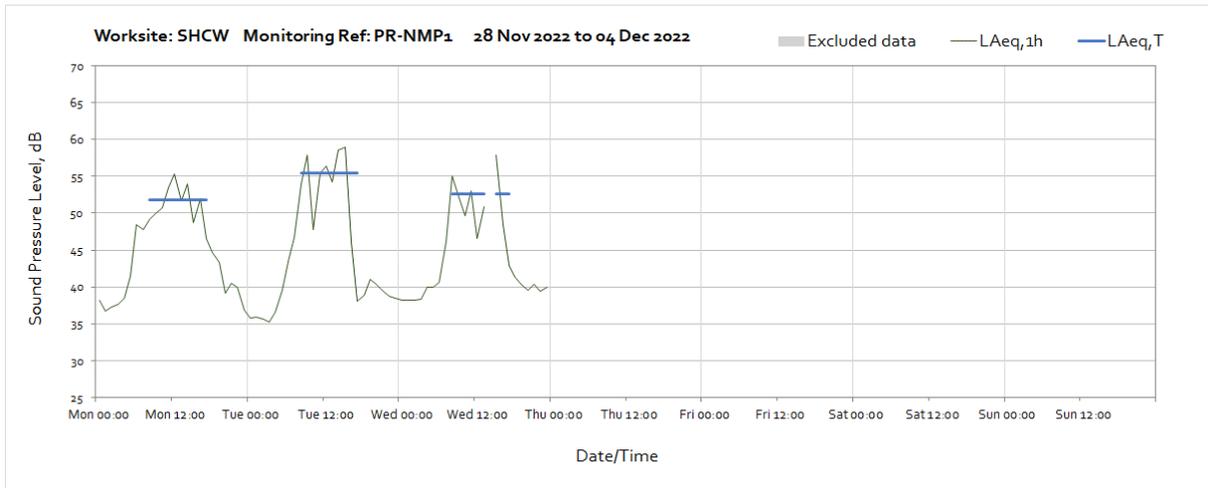
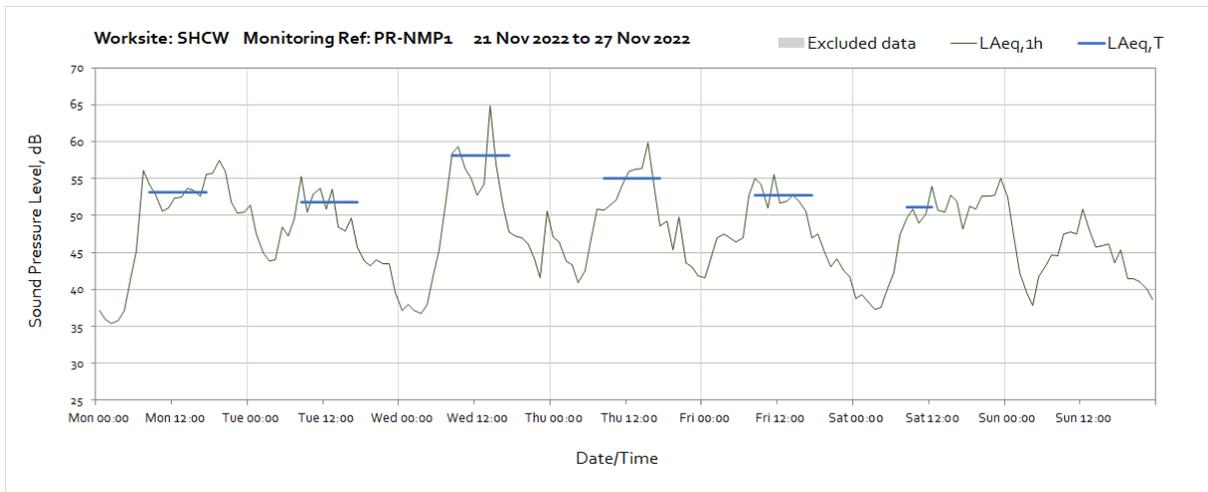
### Worksite: SHCW – Monitoring Ref: PR-NMP1



Note: Missing data at 16:00 on Monday 7<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.

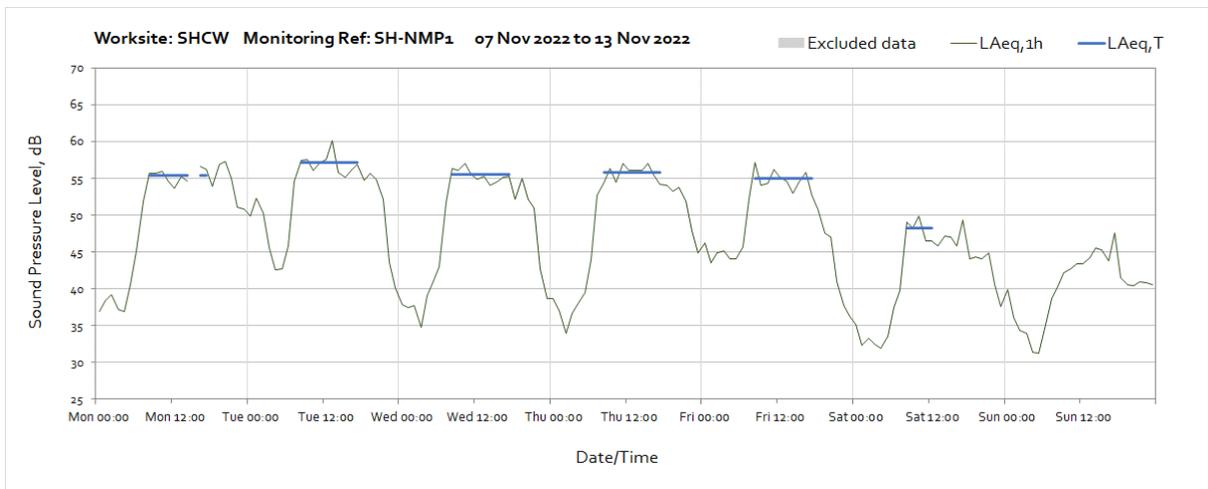
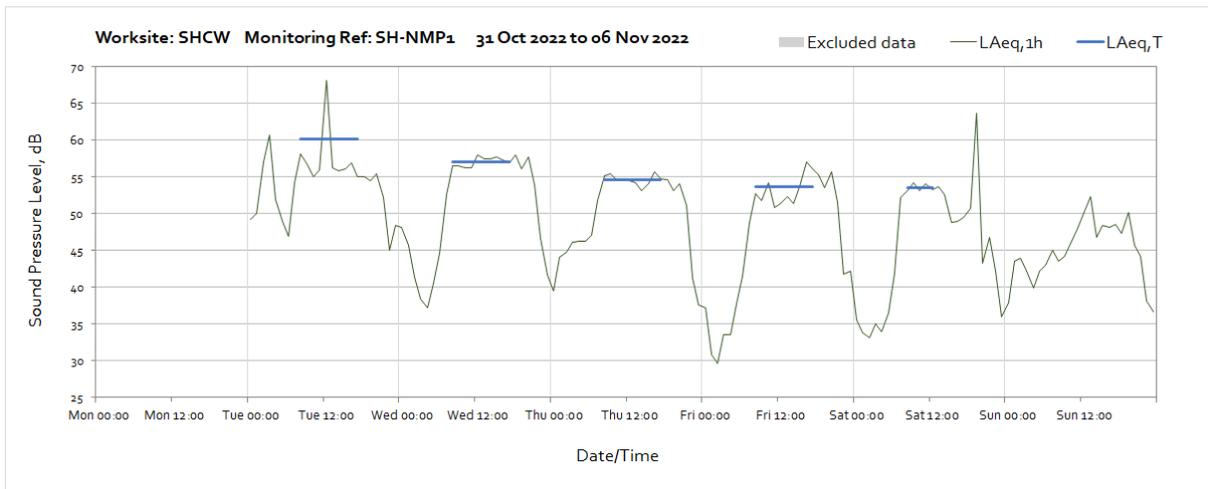


Note: Missing data at 09:00 on Monday 14<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.

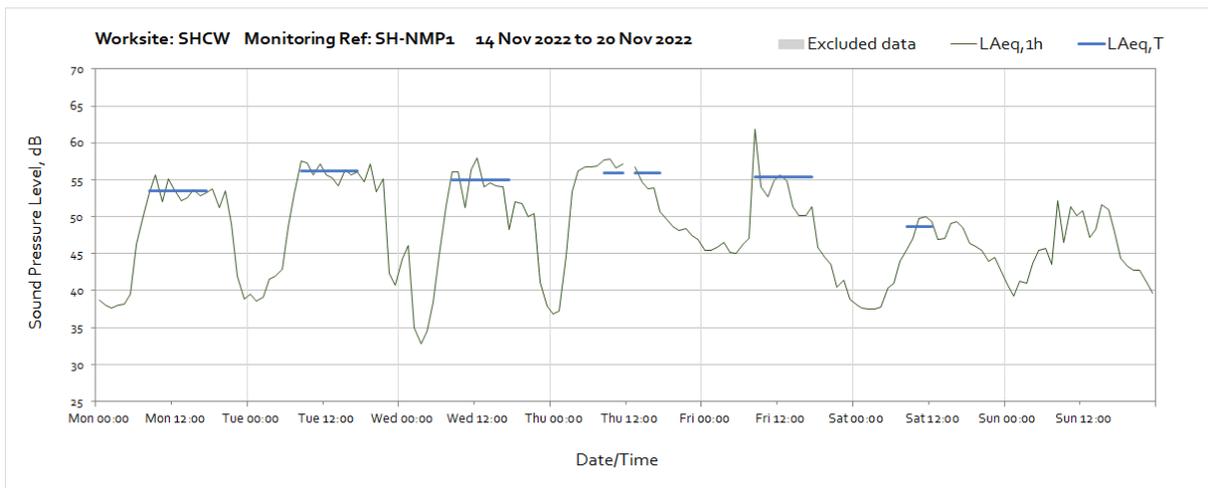


Note: Missing data at 14:00 on Wednesday 30<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.

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

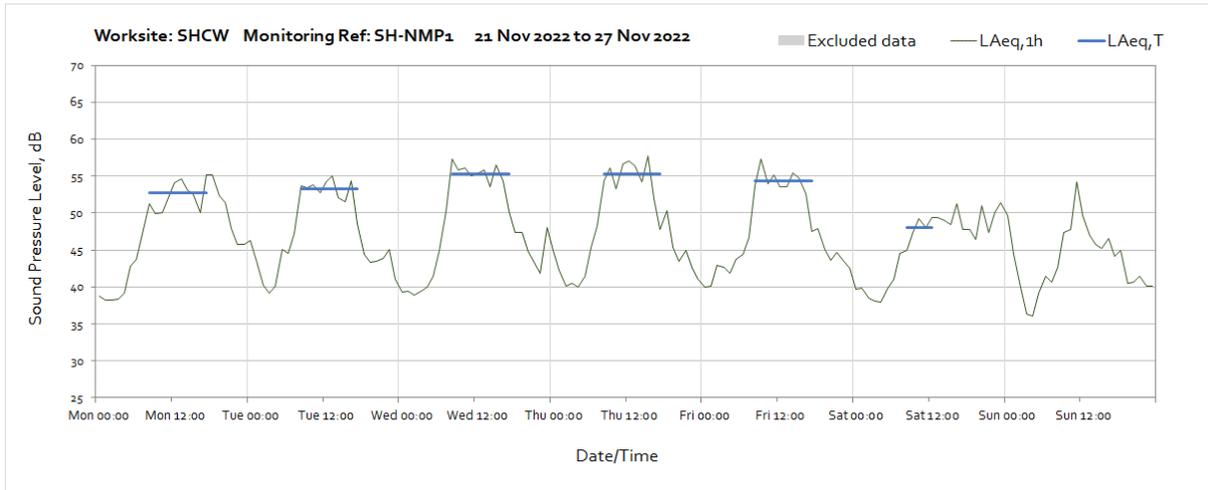


Note: Missing data at 15:00 on Monday 7<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.

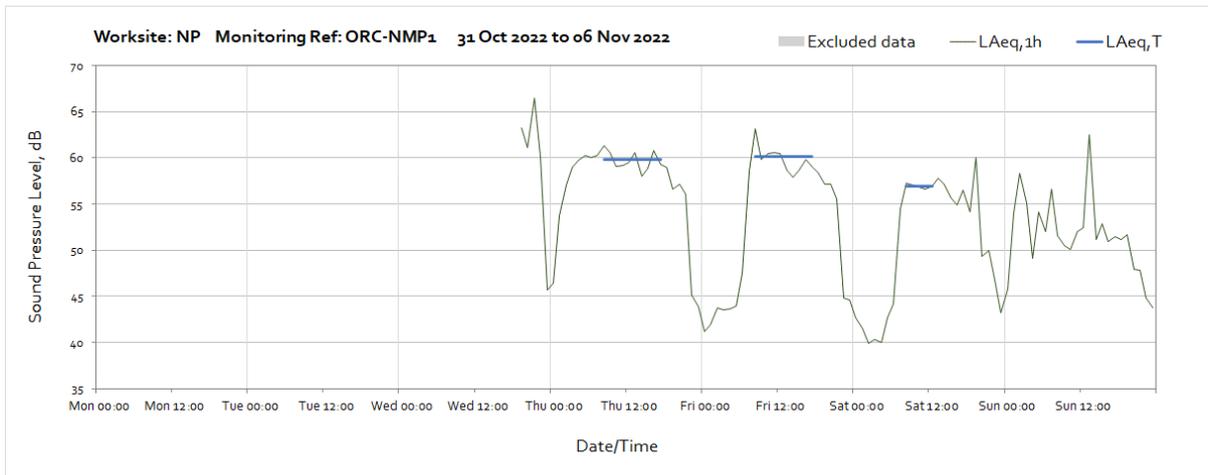


Note: Missing data at 12:00 on Thursday 17<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.

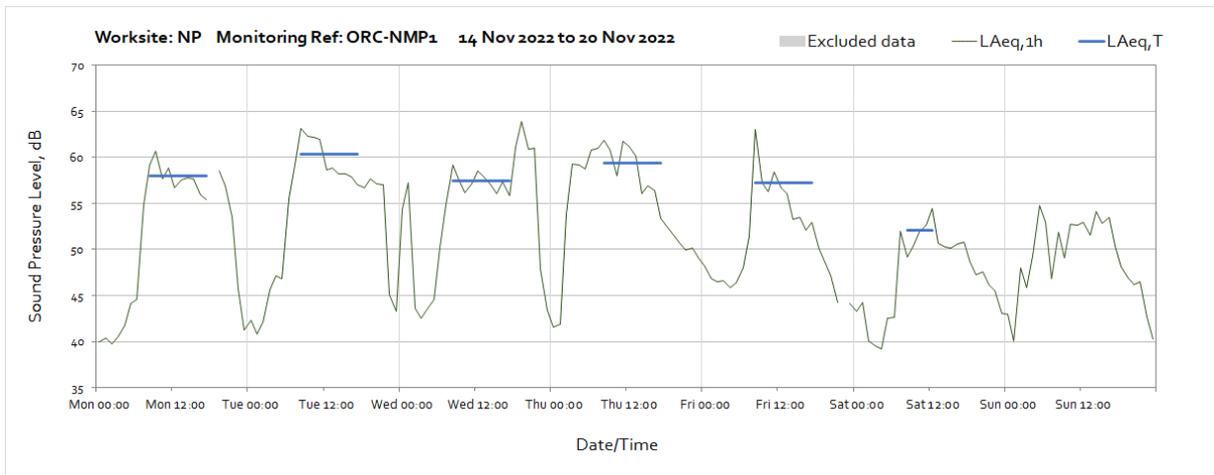
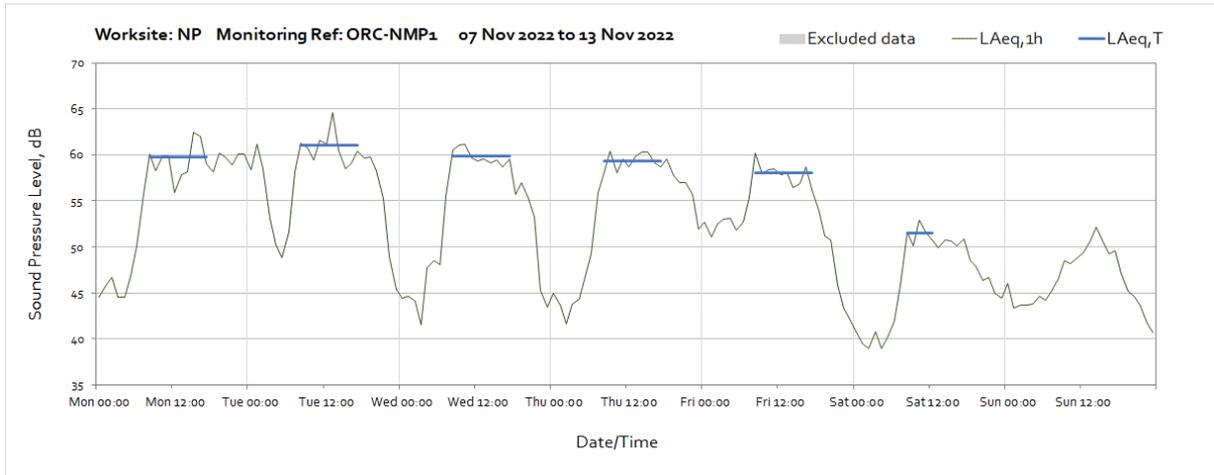
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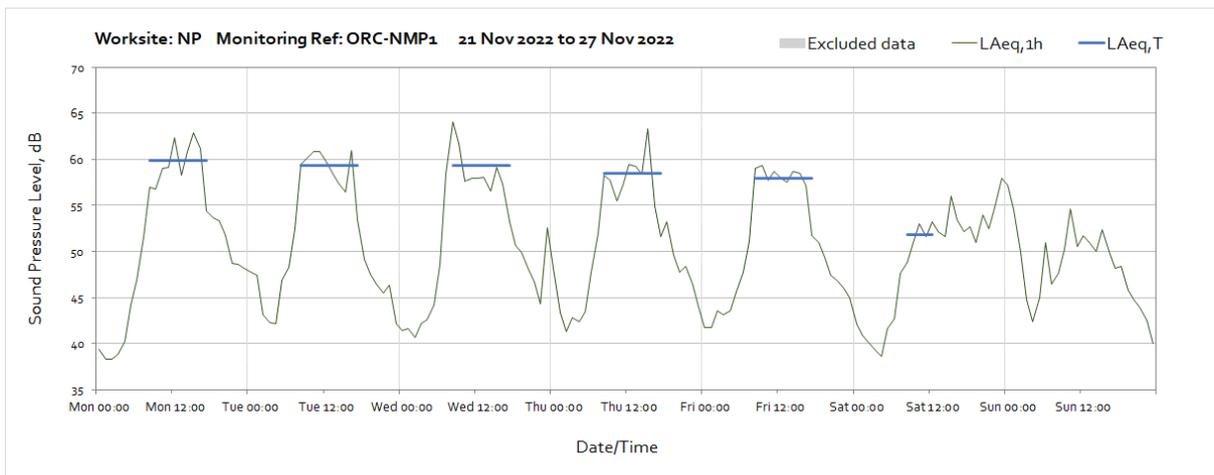
**Worksite: NP - Monitoring Ref: ORC-NMP1**

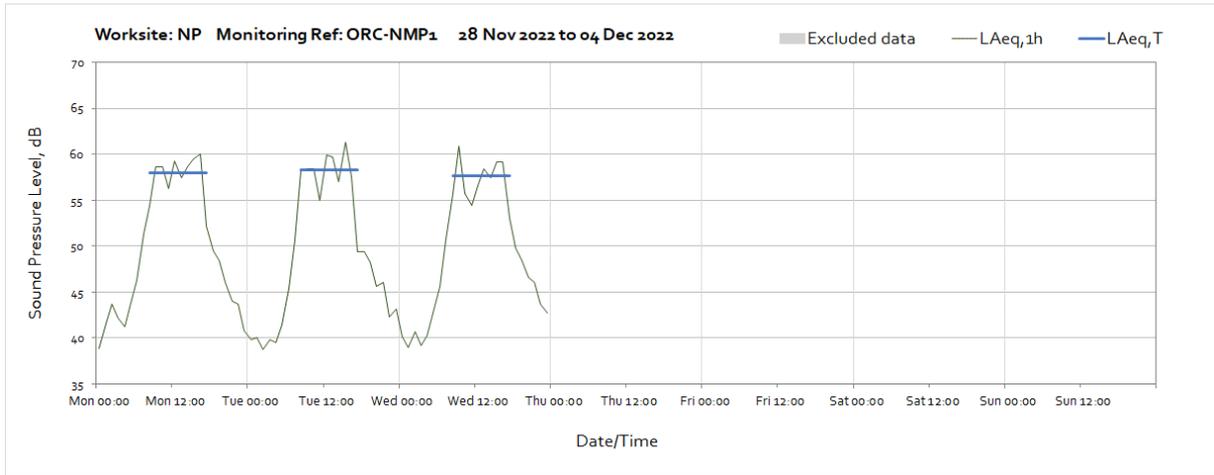


Note: Missing data between start of November and 19:00 on Wednesday 2<sup>nd</sup> November was due to power disconnection from the monitoring station.

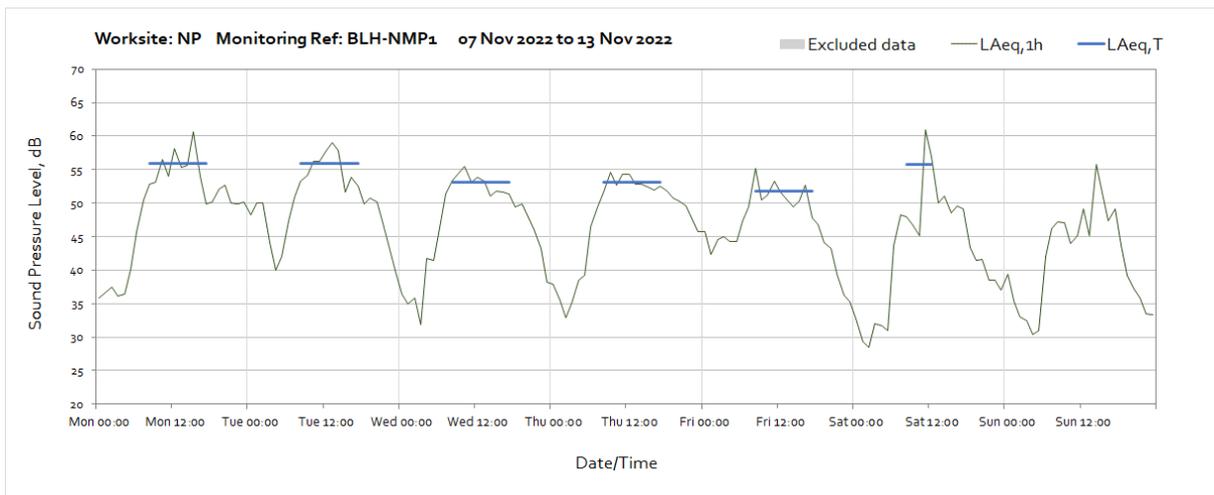
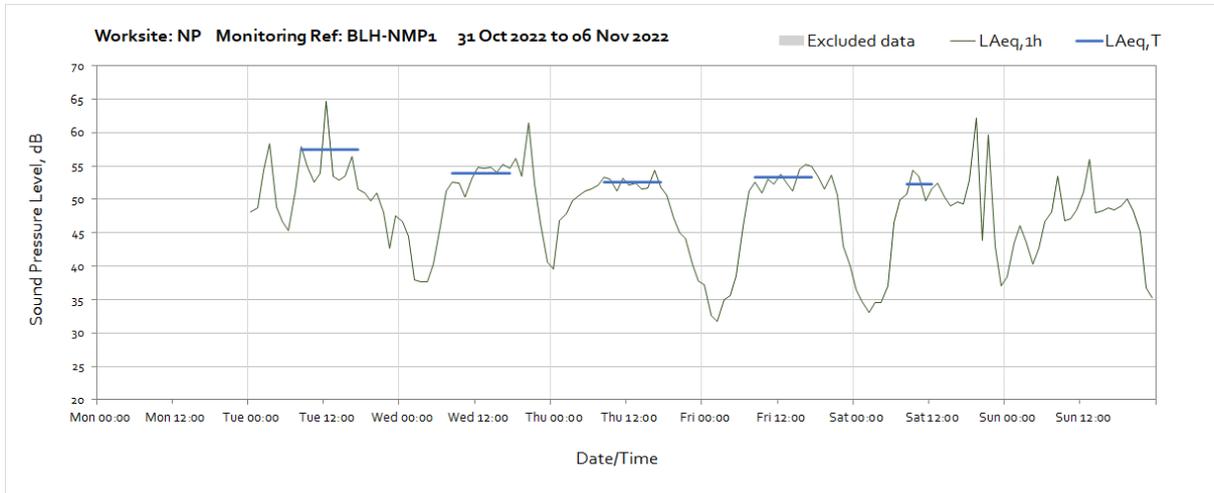


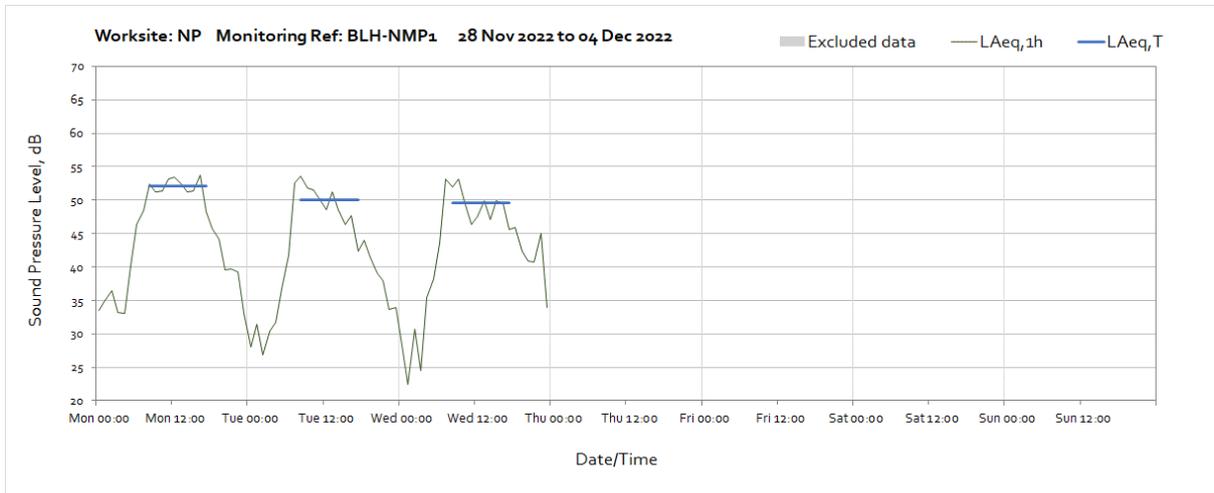
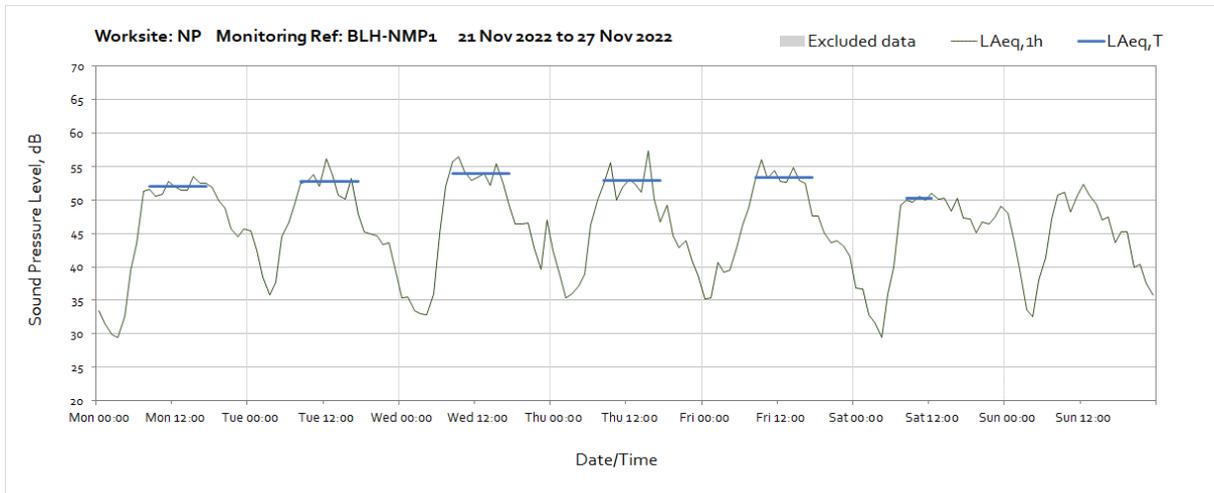
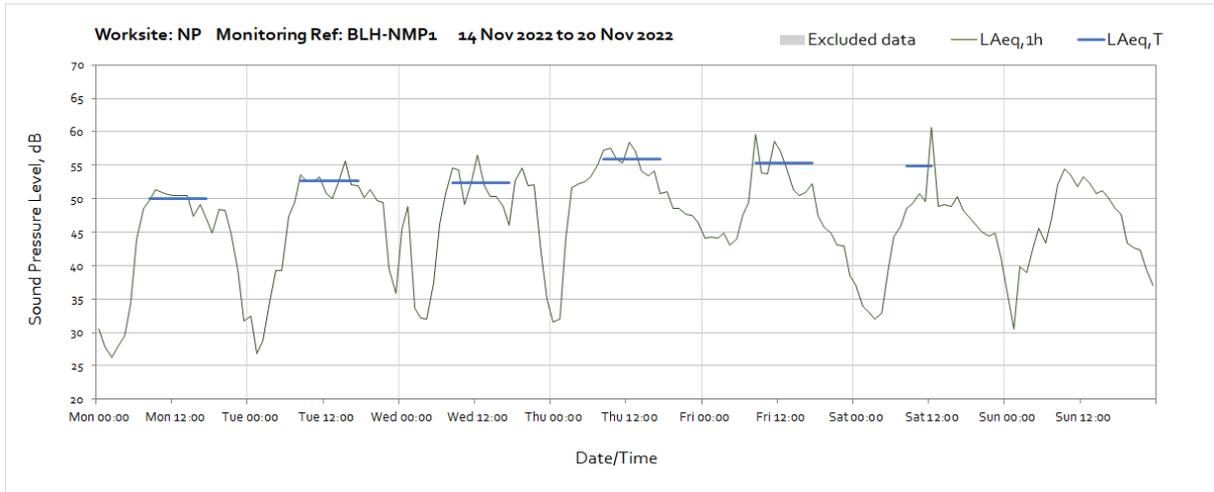
Note: Missing data between 18:00 and 19:00 on Monday 14th November was due to monitor maintenance and missing data between 22:00 and 23:00 on Friday 18th November was due to monitor data transfer error.



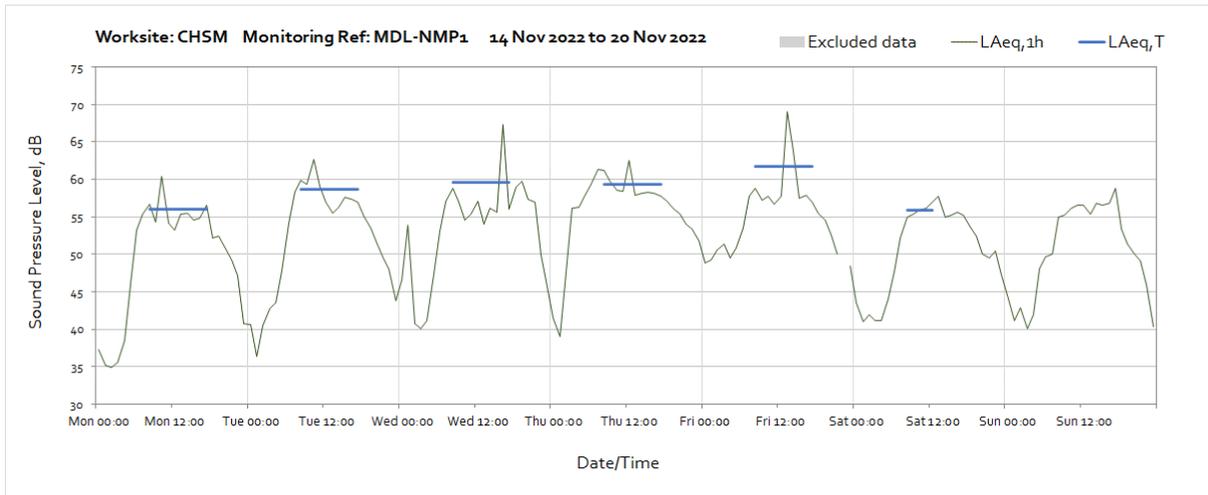
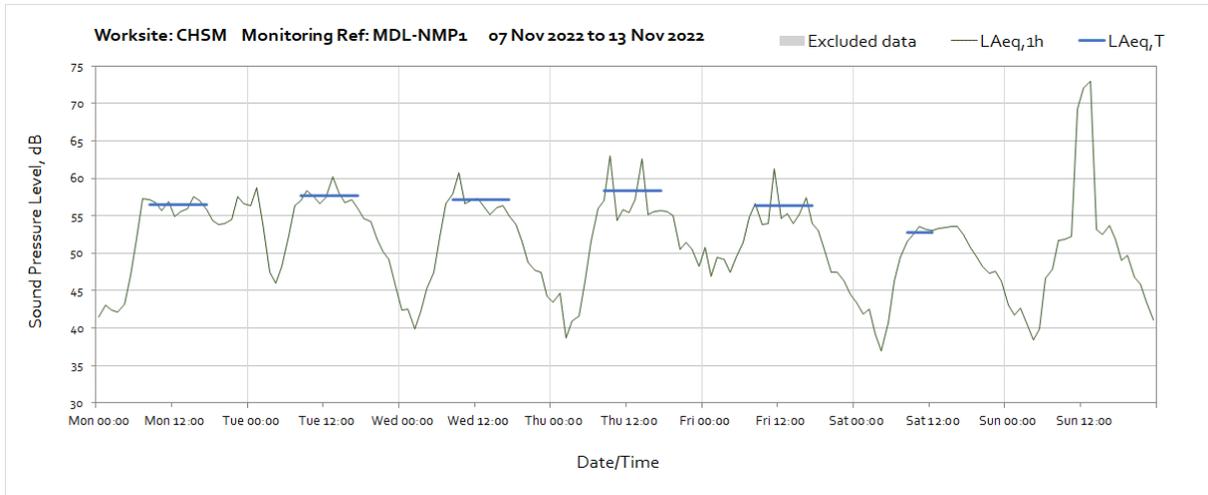
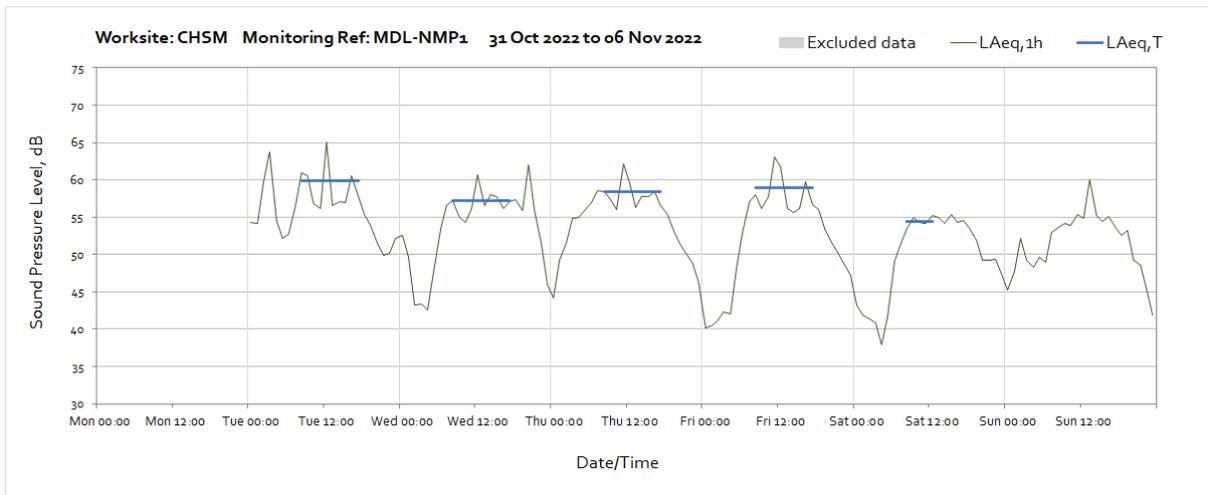


### Worksite: NP - Monitoring Ref: BLH-NMP1



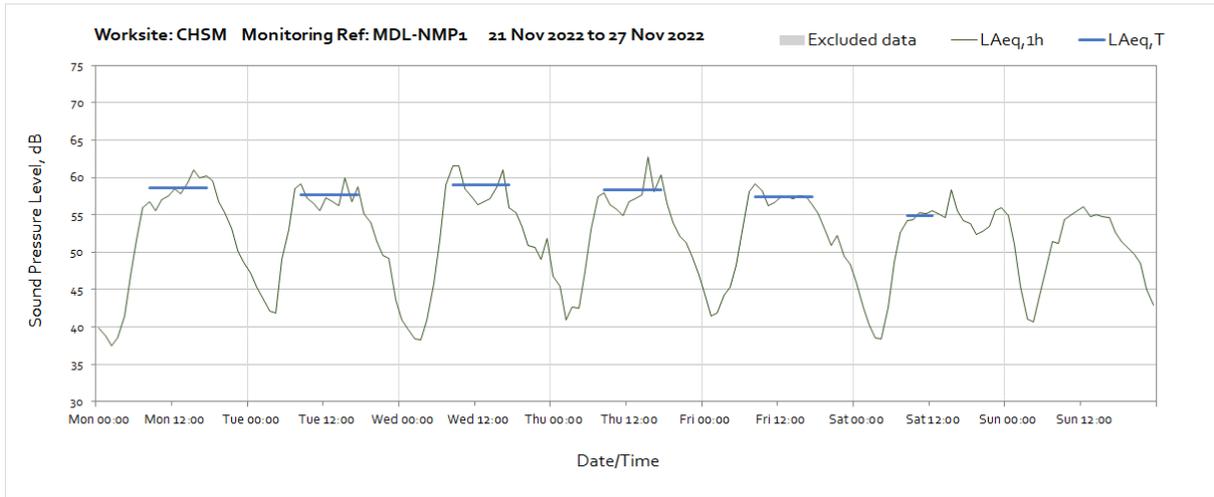


## Worksite: CHSM – Monitoring Ref: MDL-NMP1

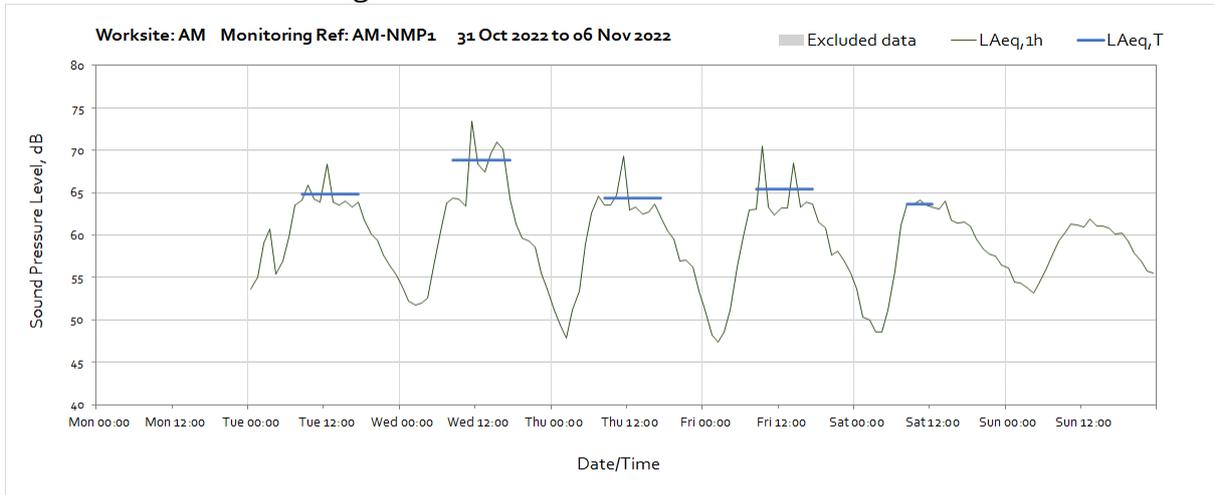


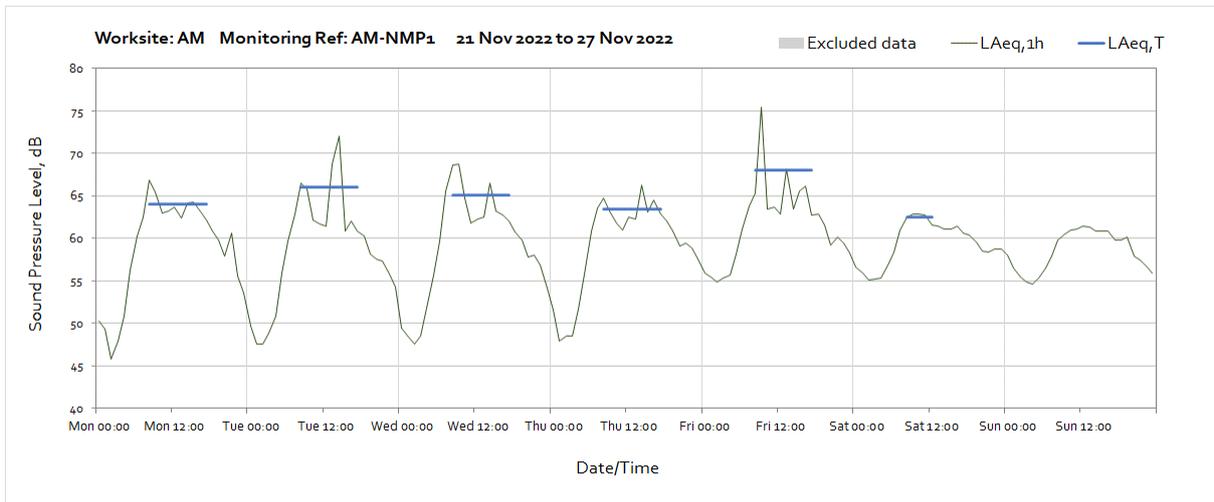
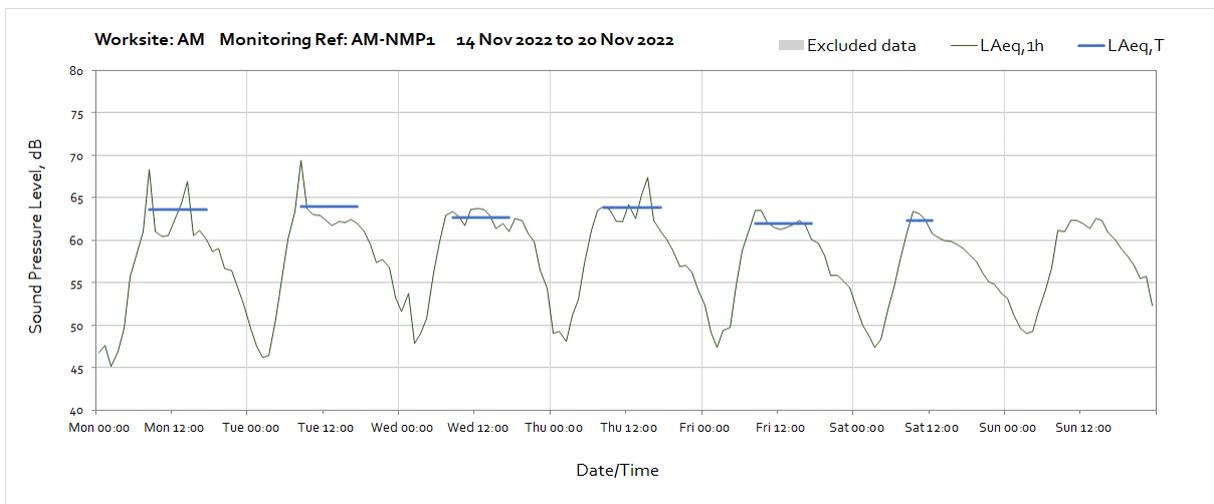
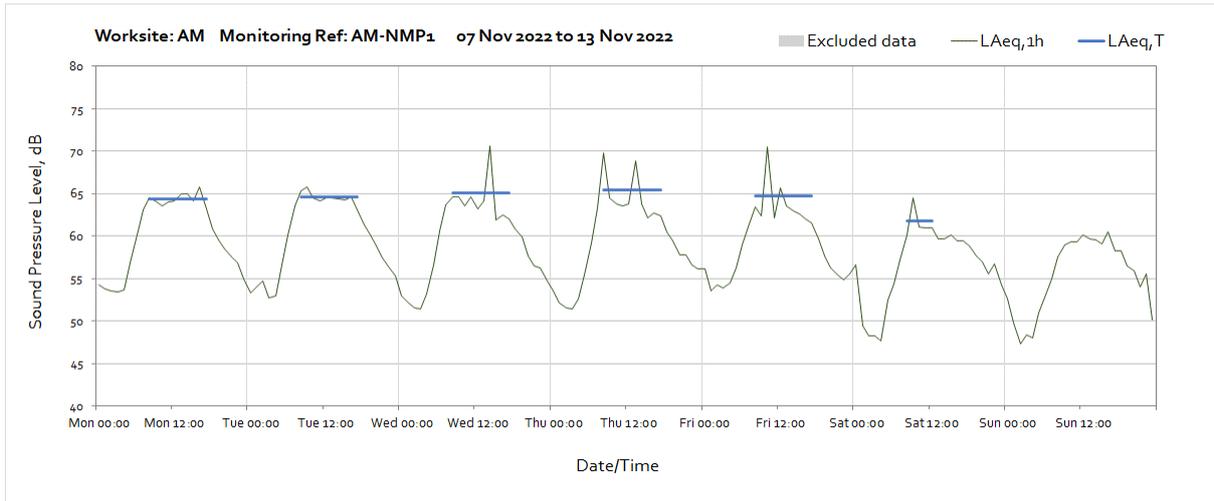
Note: Missing data between 22:00 and 23:00 on Friday 18<sup>th</sup> November was due to remote connection error.

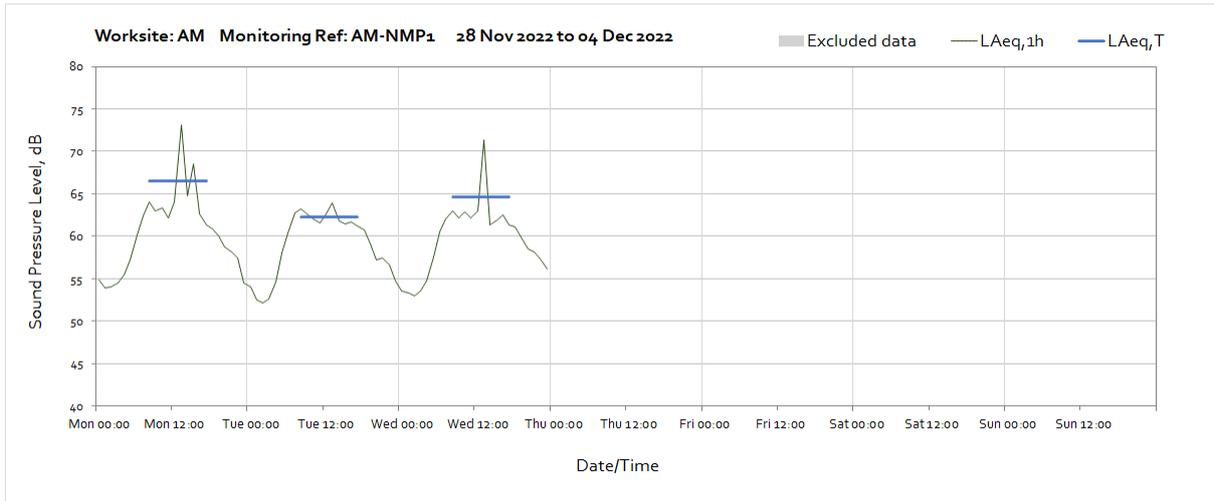
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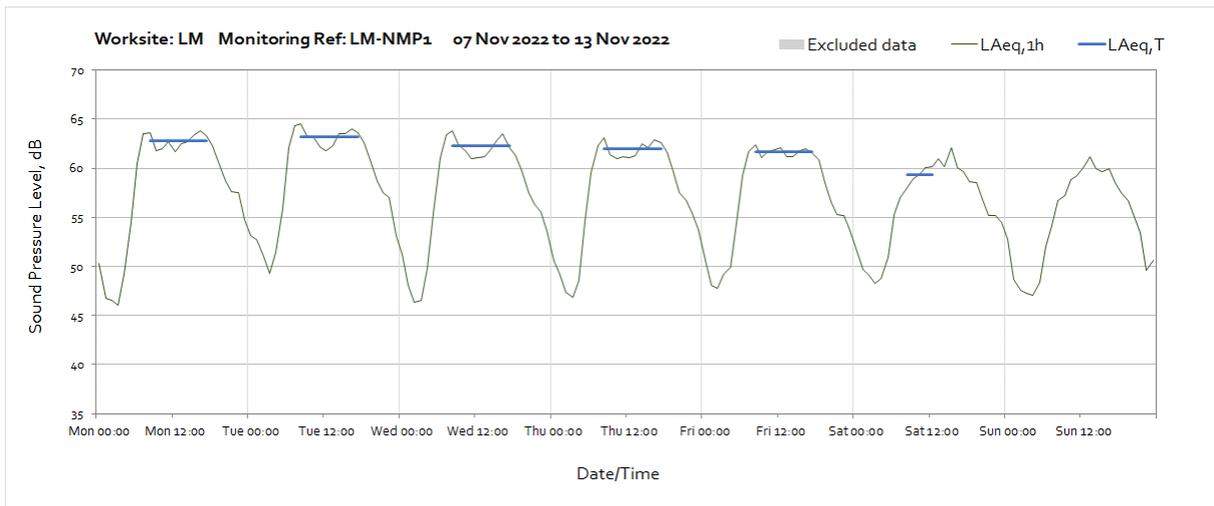
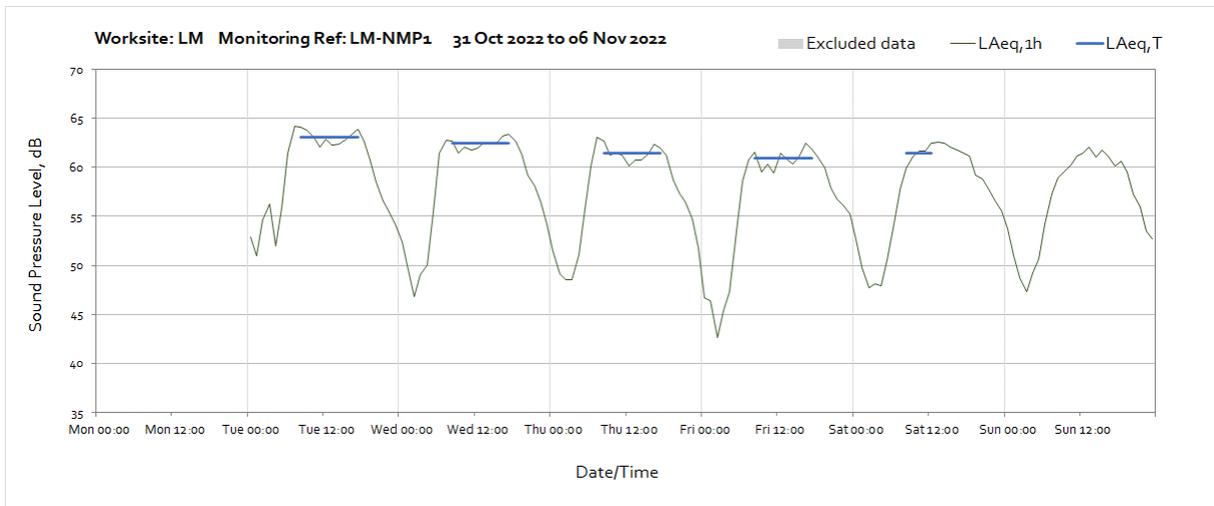
**Worksite: AM – Monitoring Ref: AM-NMP1**

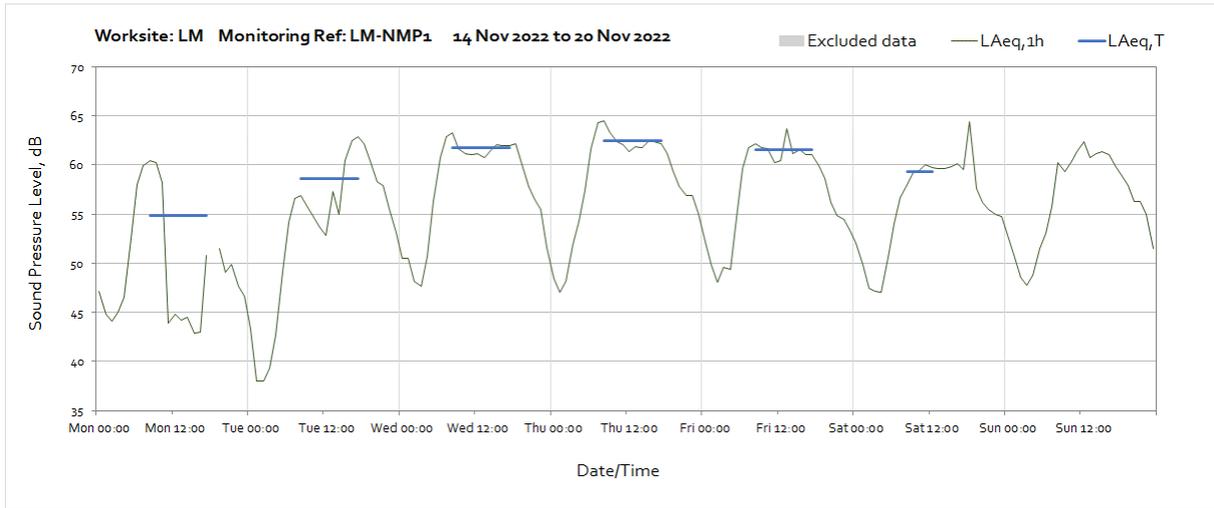




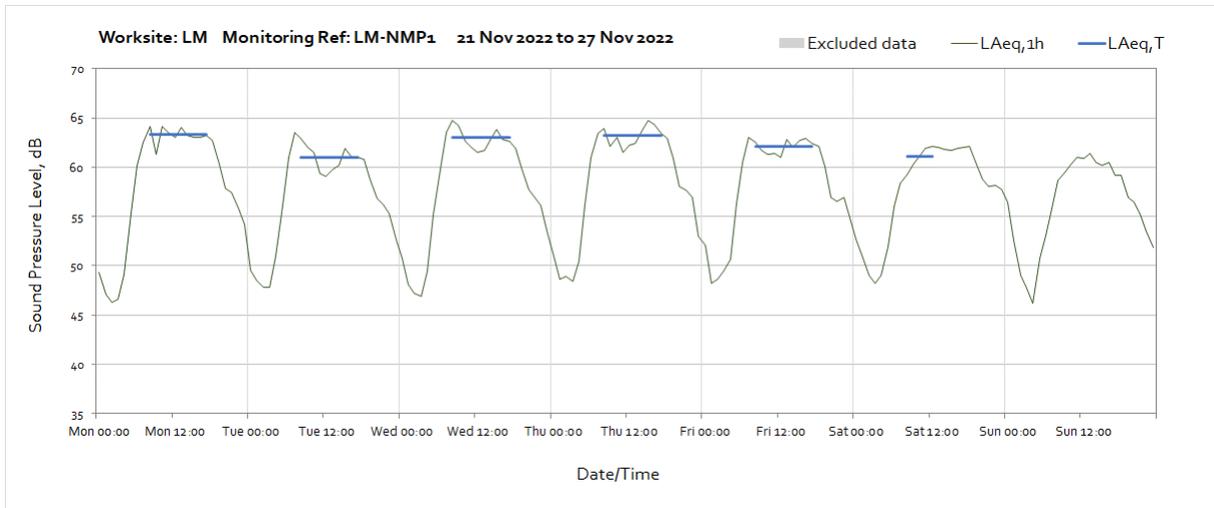


**Worksite: LM – Monitoring Ref: LM-NMP1**

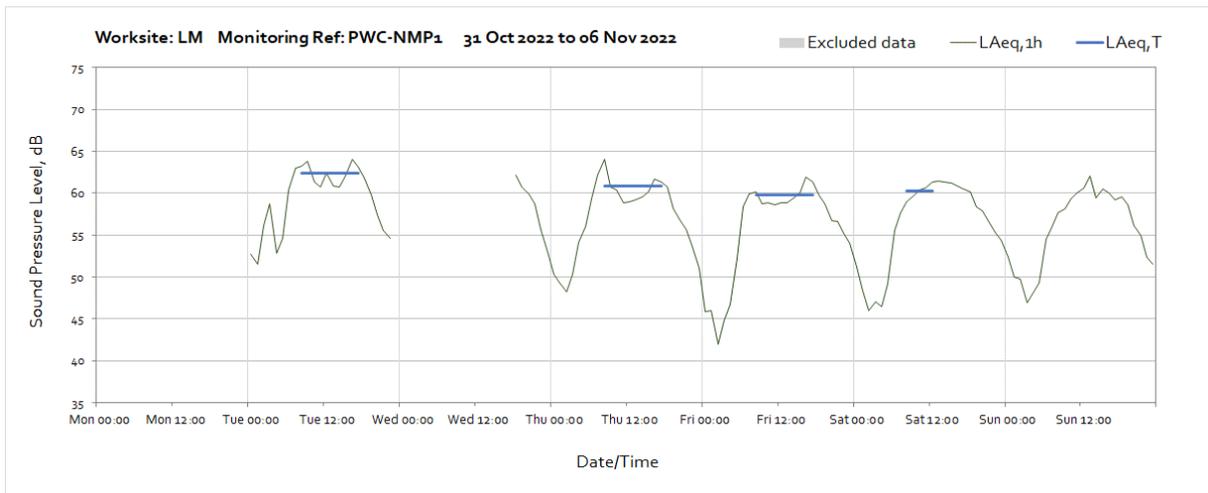




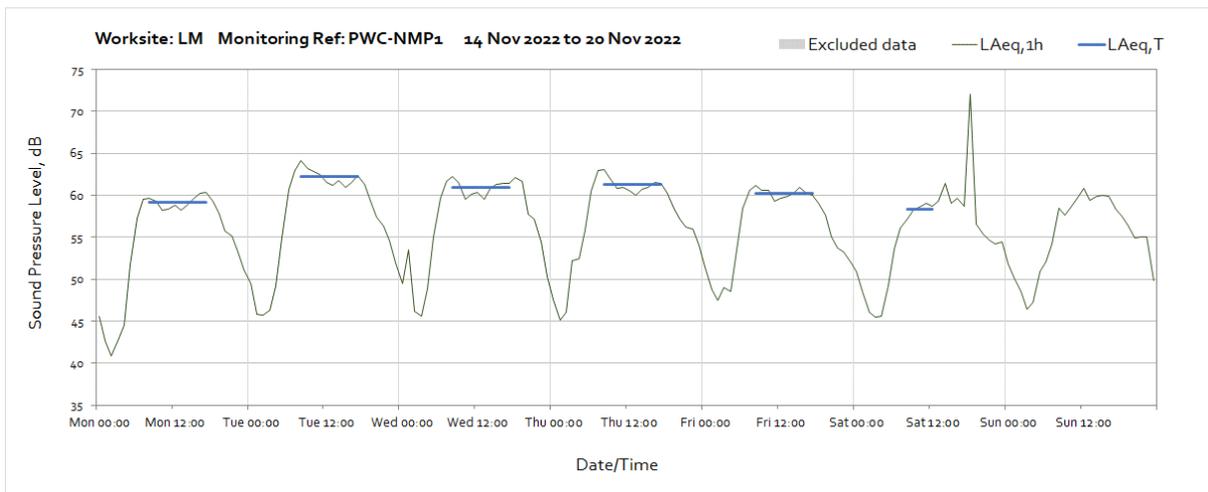
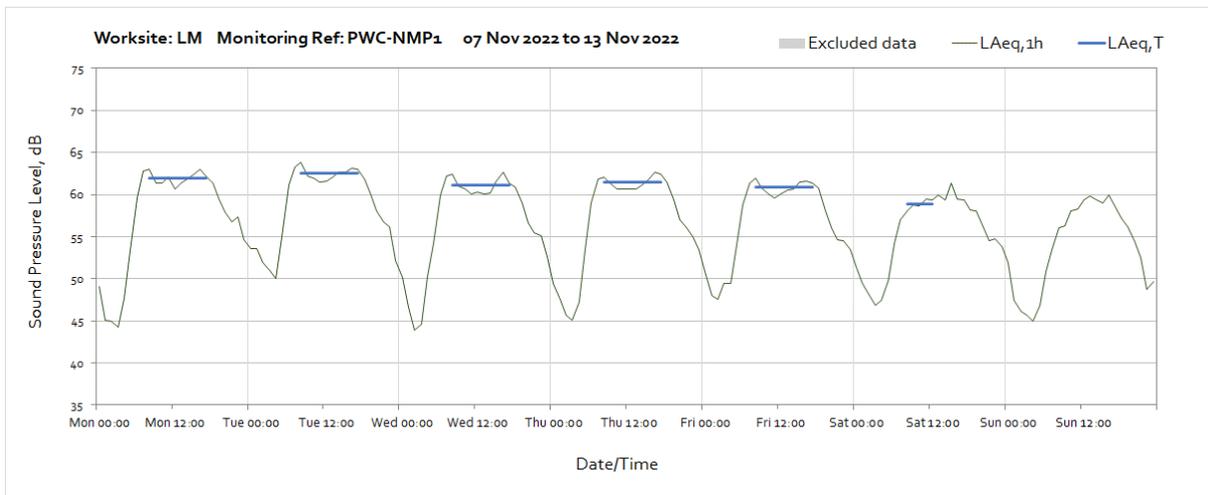
Note: Missing data between 18:00 and 19:00 on Monday 14<sup>th</sup> November was due to monitor maintenance.

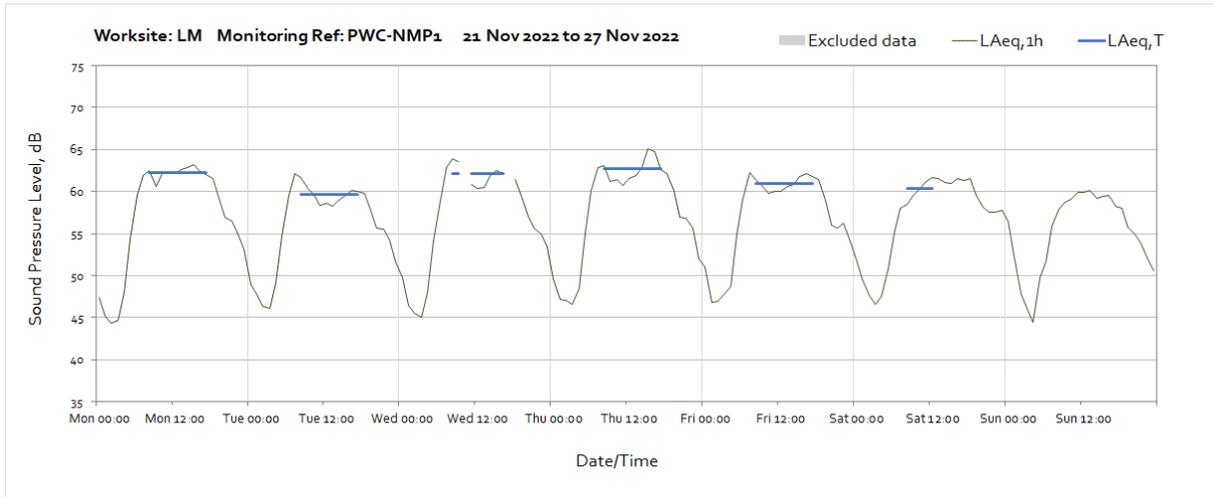


## Worksite: LM – Monitoring Ref: PWC-NMP1



Note: Missing data between 23:00 on Tuesday 1<sup>st</sup> and 16:00 on Wednesday 2<sup>nd</sup> November was due to power disconnection from the monitoring station.

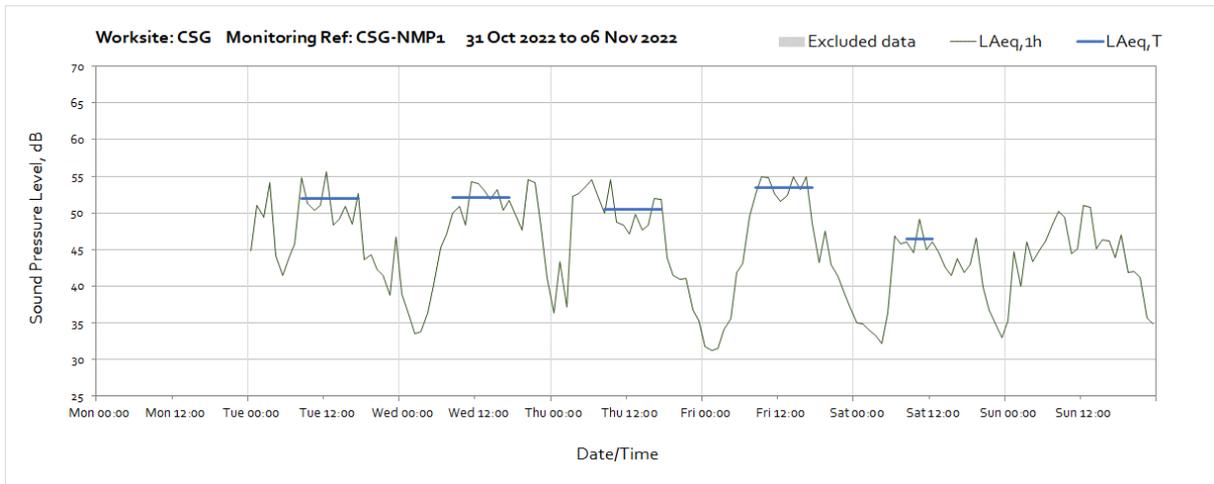


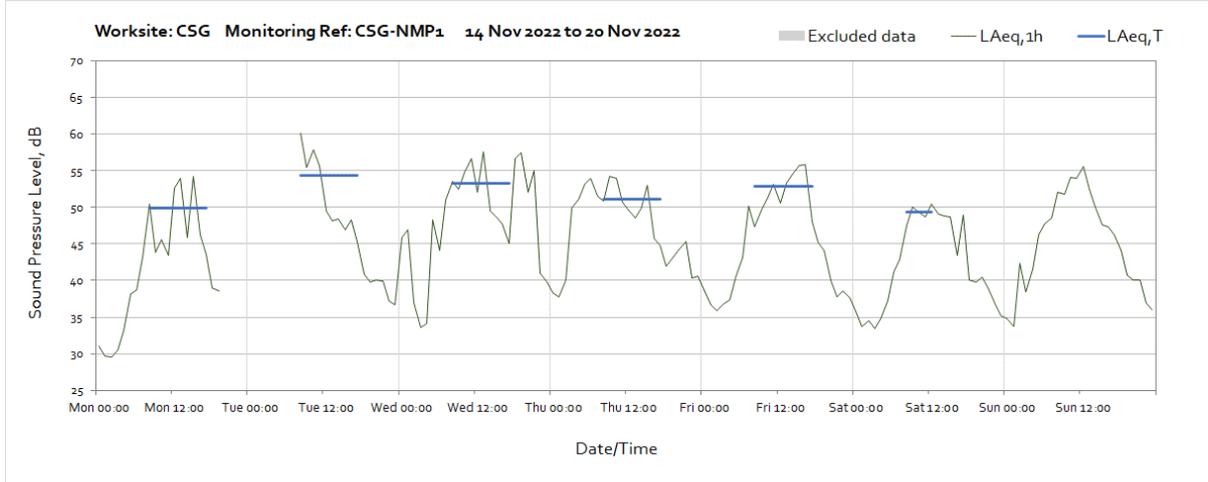
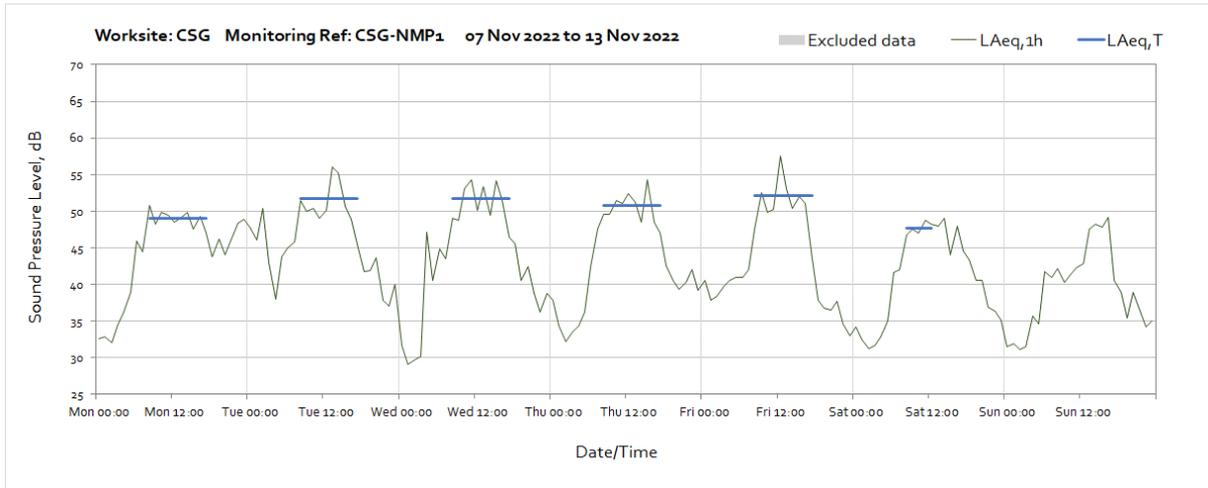


Note: Missing data between 10:00 to 11:00 and 17:00 to 18:00 on Wednesday 23<sup>rd</sup> November was due to monitor maintenance.

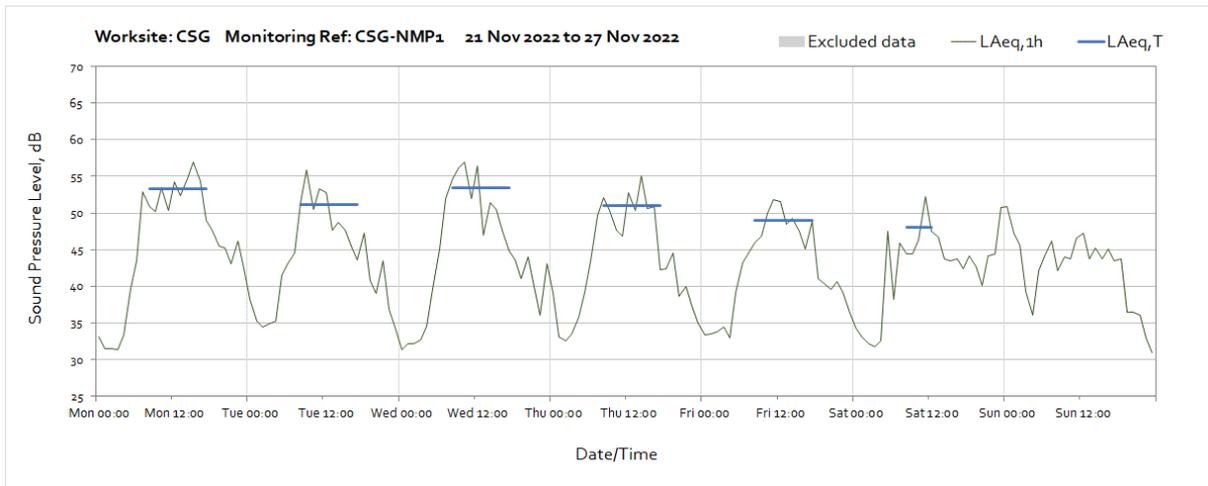


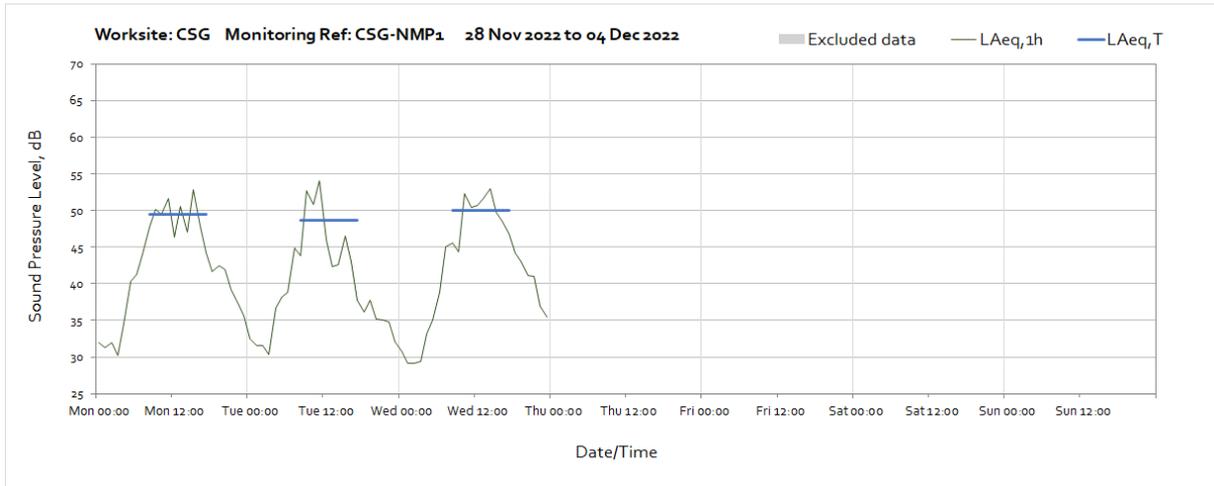
**Worksite: CSG – Monitoring Ref: CSG-NMP1**



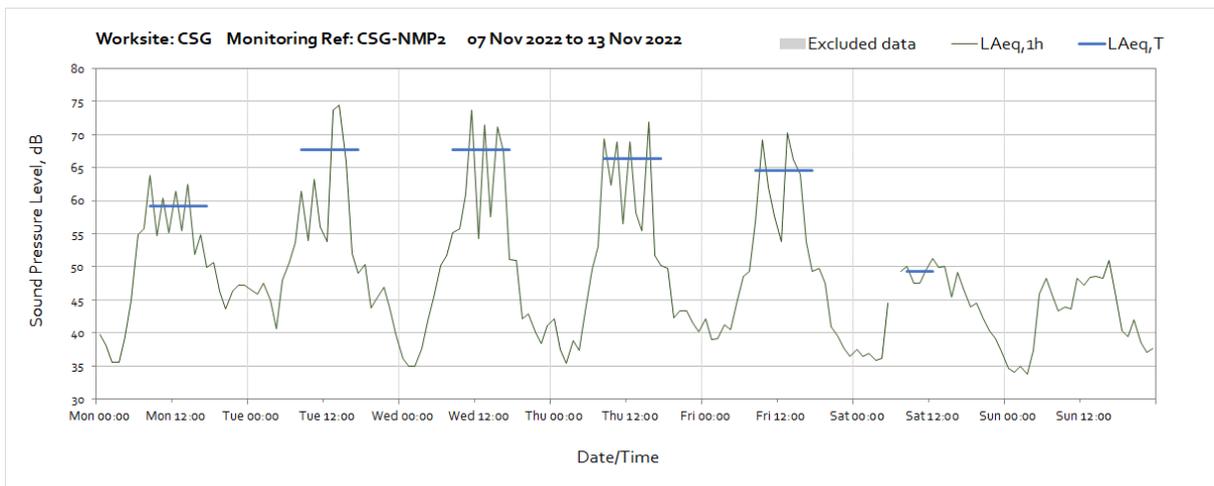
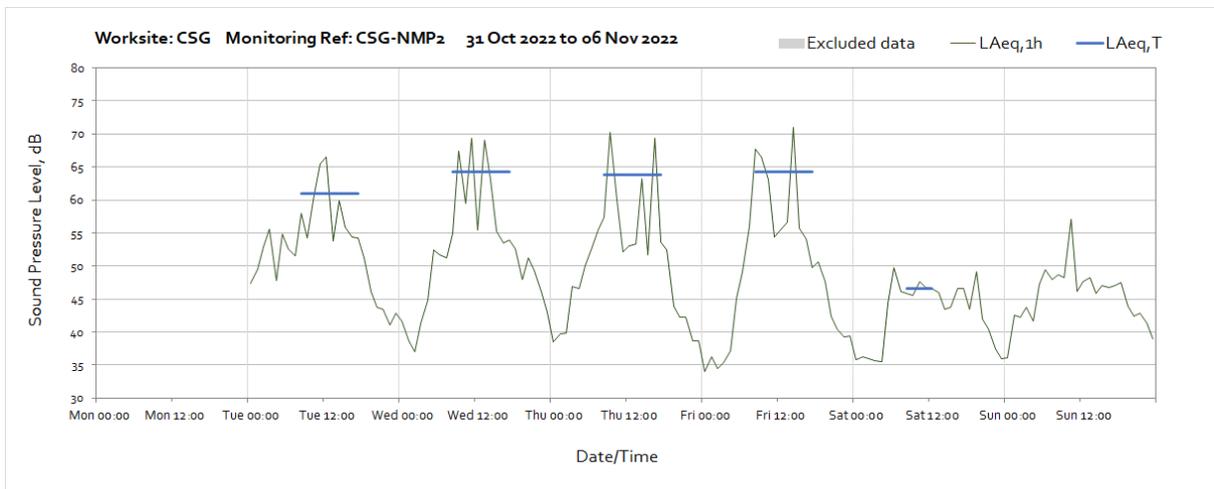


Note: Missing data between 20:00 on Monday 14<sup>th</sup> and 08:00 on Tuesday 15<sup>th</sup> November was due to a power connection issue.

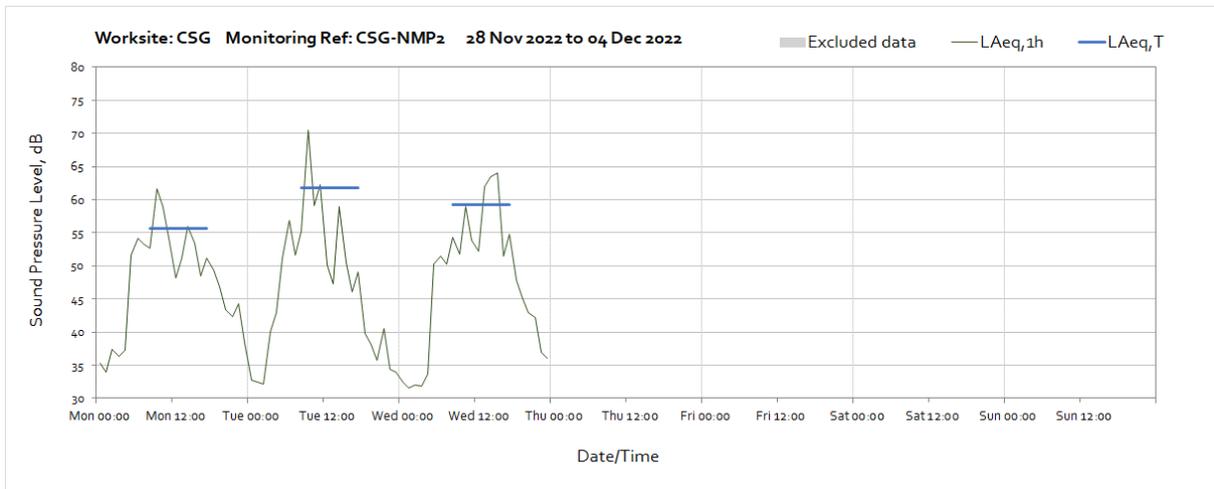
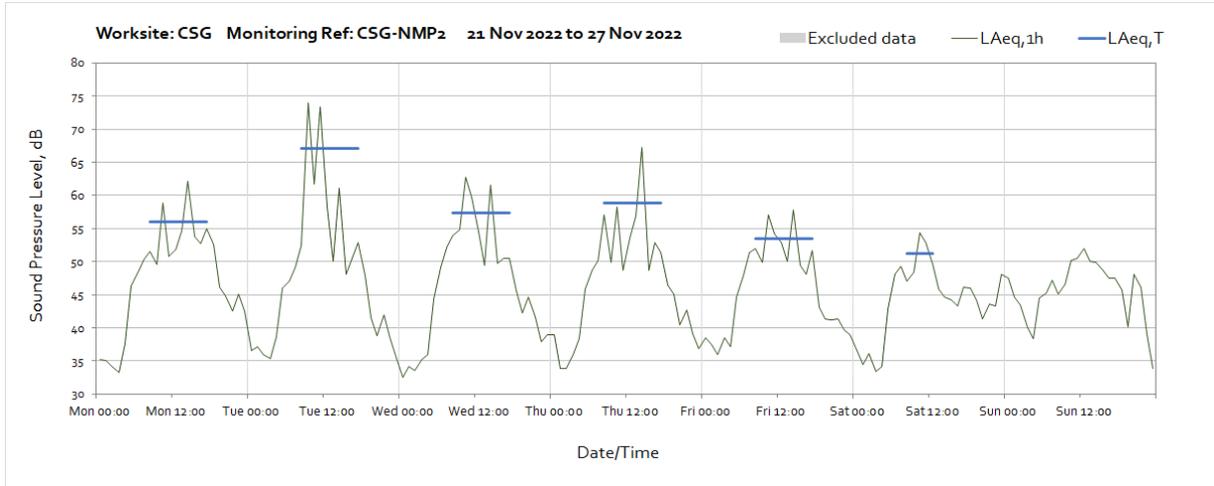
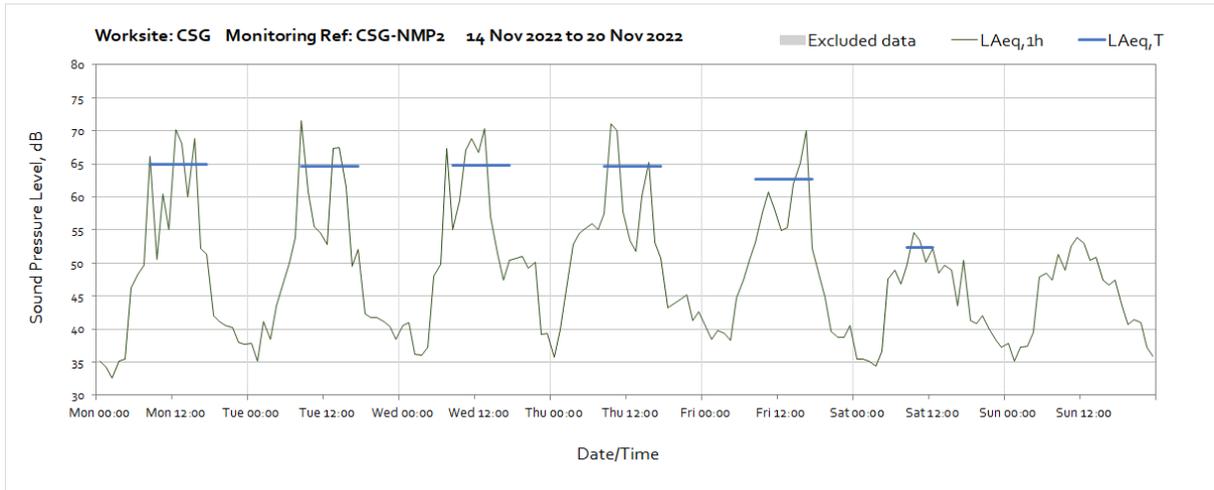




### Worksite: CSG - Monitoring Ref: CSG-NMP2



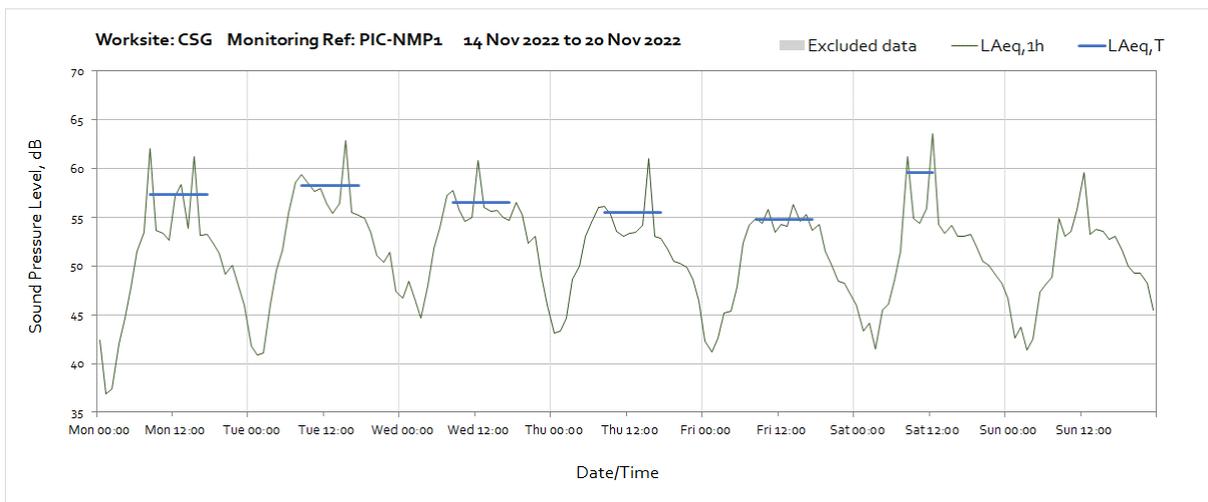
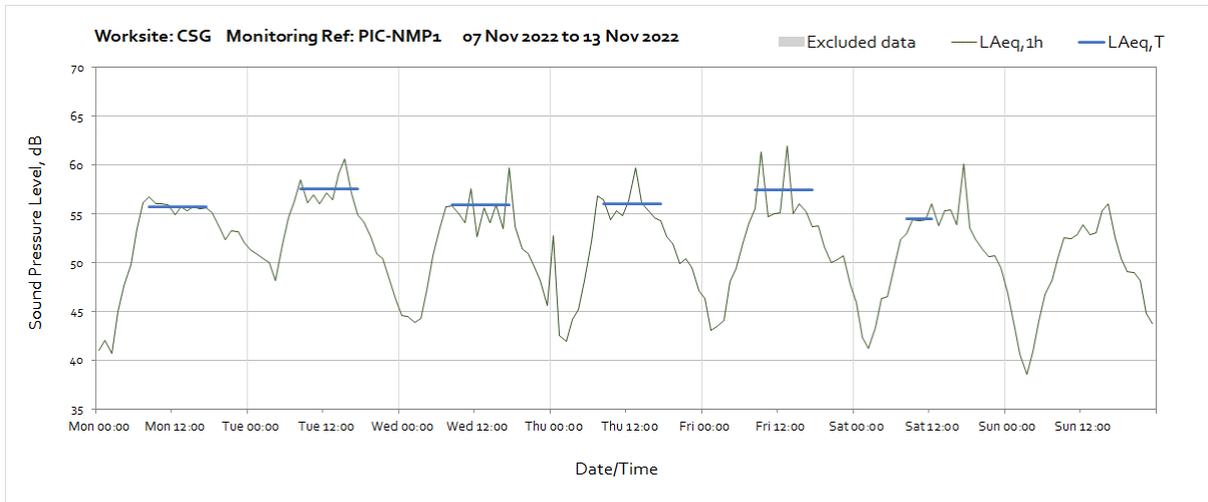
Note: Missing data between 06:00 and 07:00 on Saturday 12<sup>th</sup> November was due to monitor setting update.

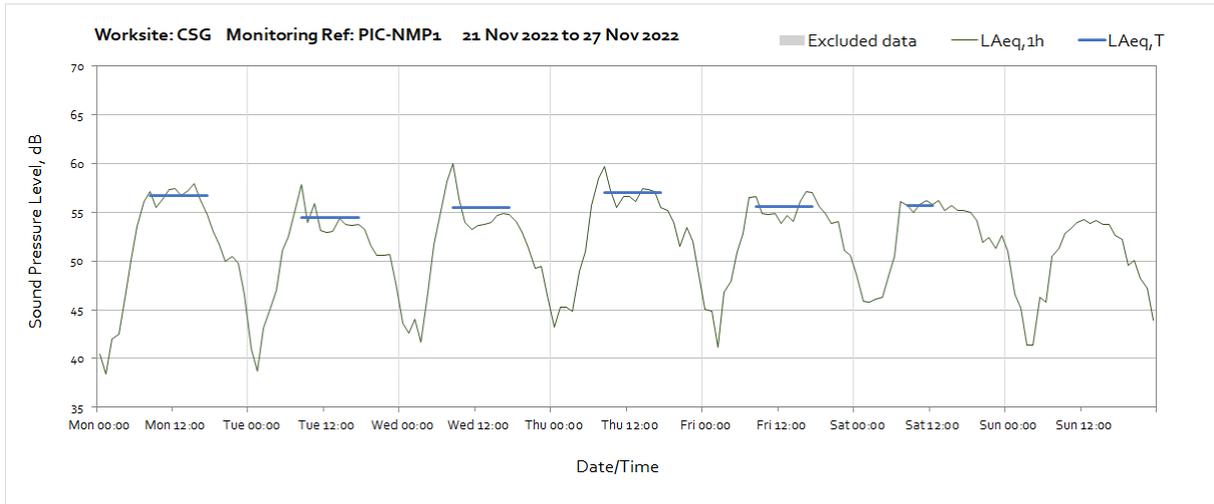


## Worksite: CSG – Monitoring Ref: PIC-NMP1

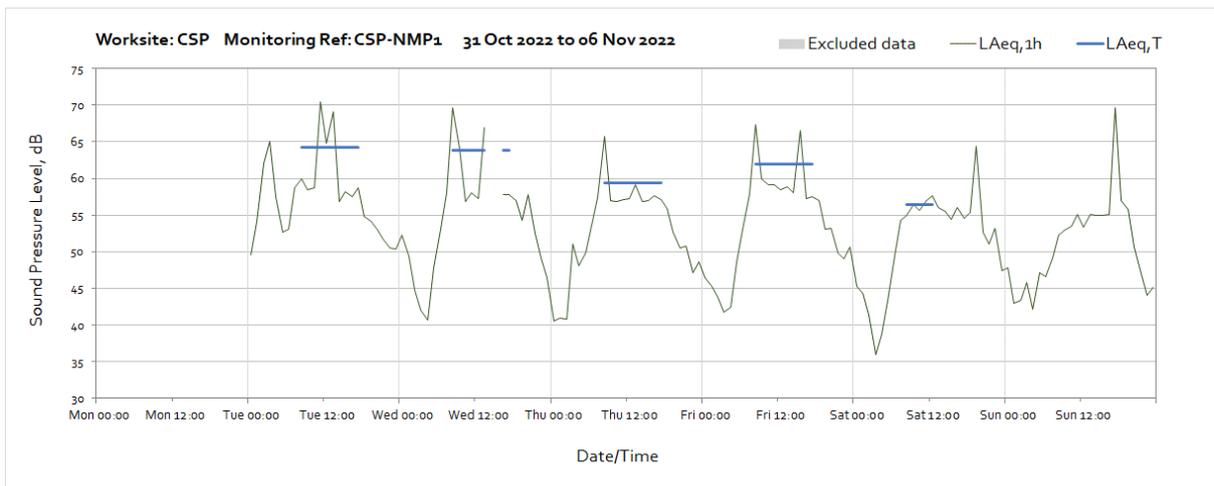


Note: Missing data between 05:00 on Tuesday 1<sup>st</sup> and 19:00 on Wednesday 2<sup>nd</sup> November was due to loss of battery power.

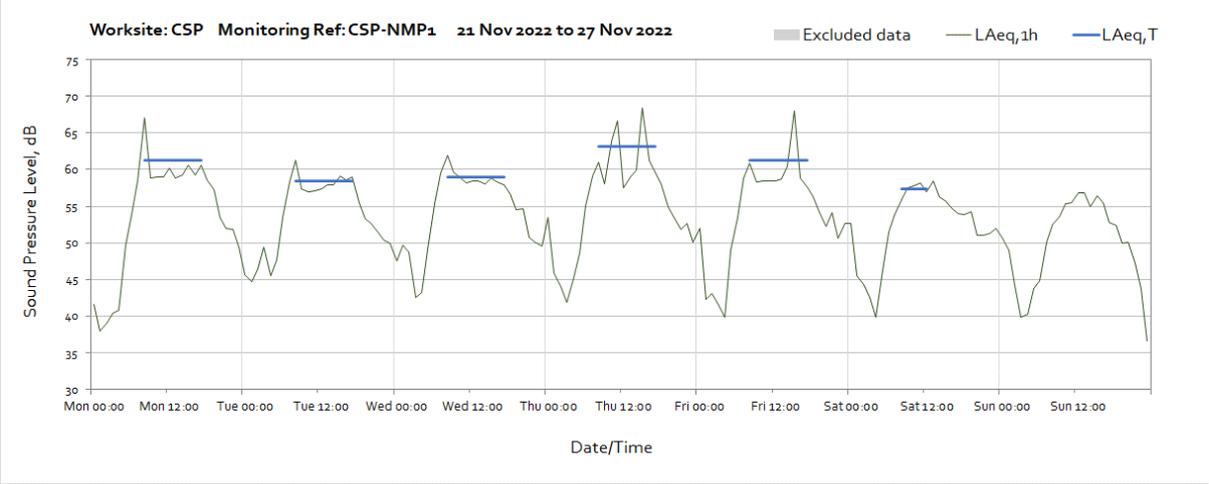
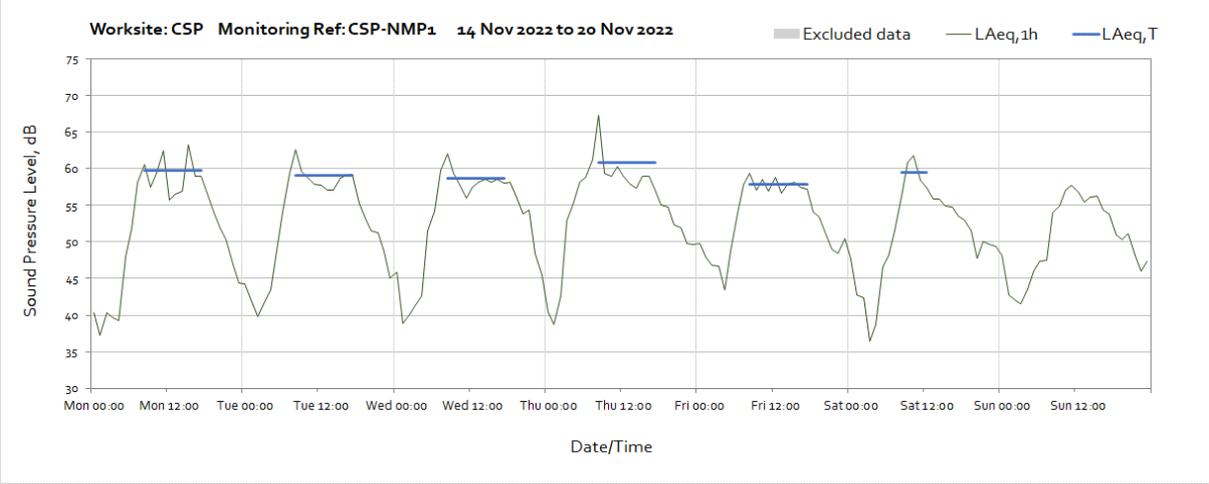
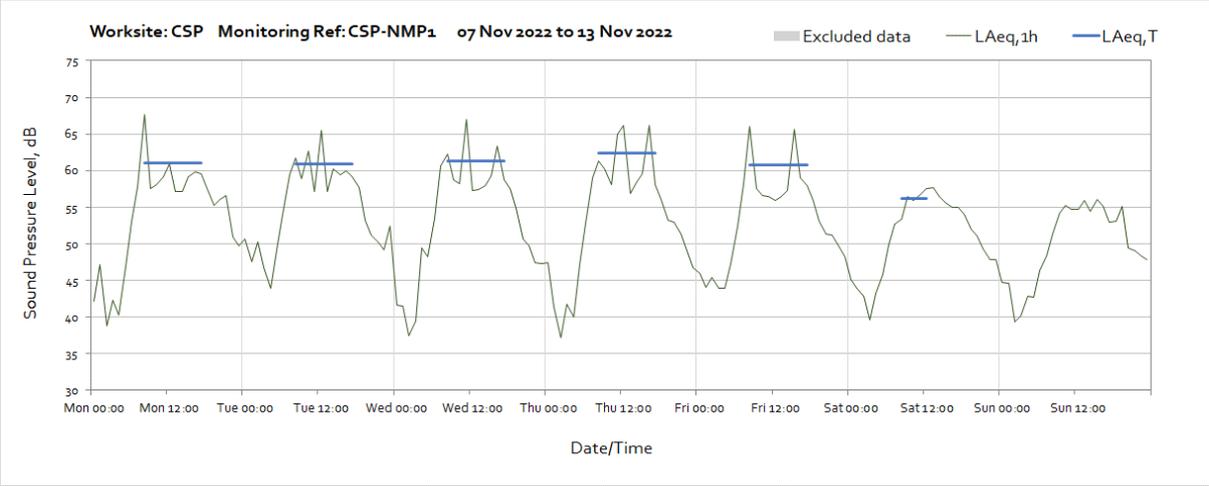


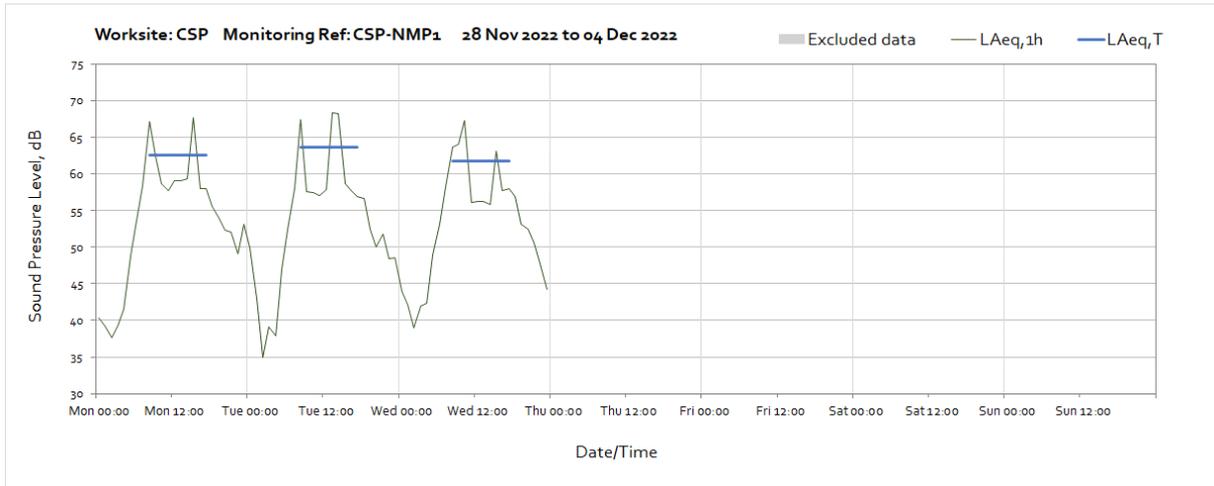


**Worksite: CSP – Monitoring Ref: CSP-NMP1**

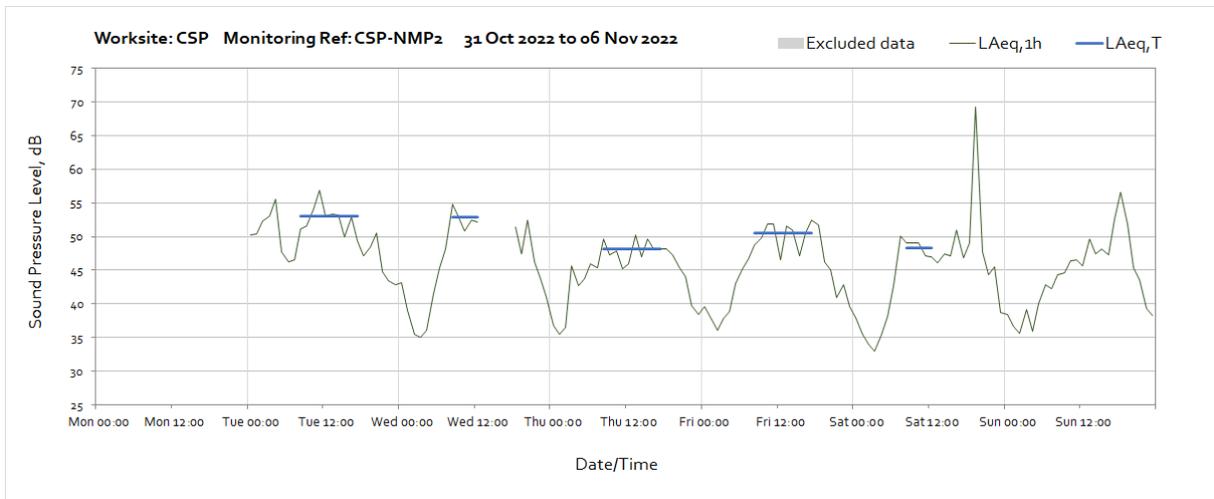


Note: Missing data between 14:00 and 16:00 on Wednesday 2<sup>nd</sup> November was due to a data transfer error.

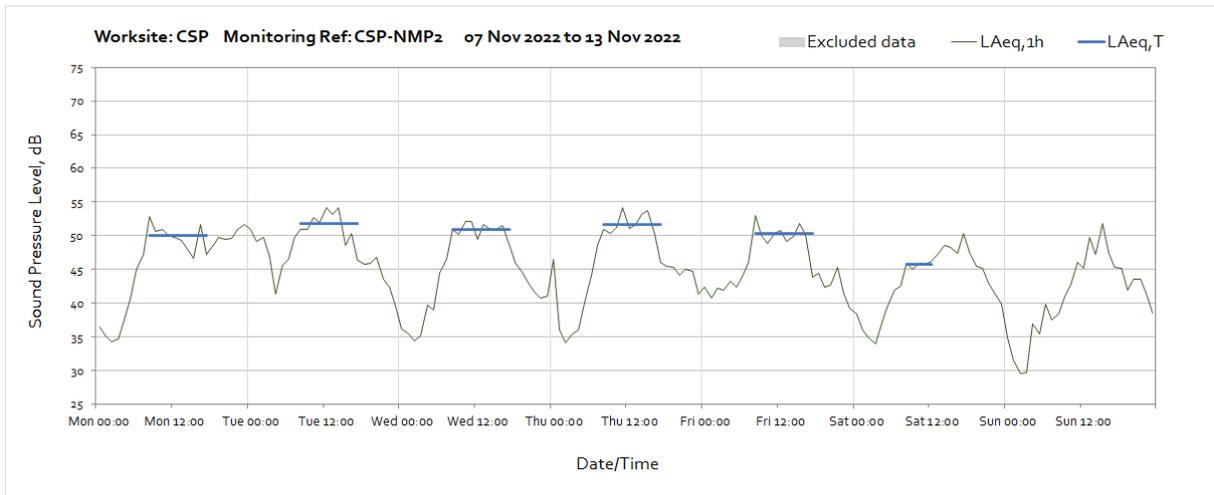


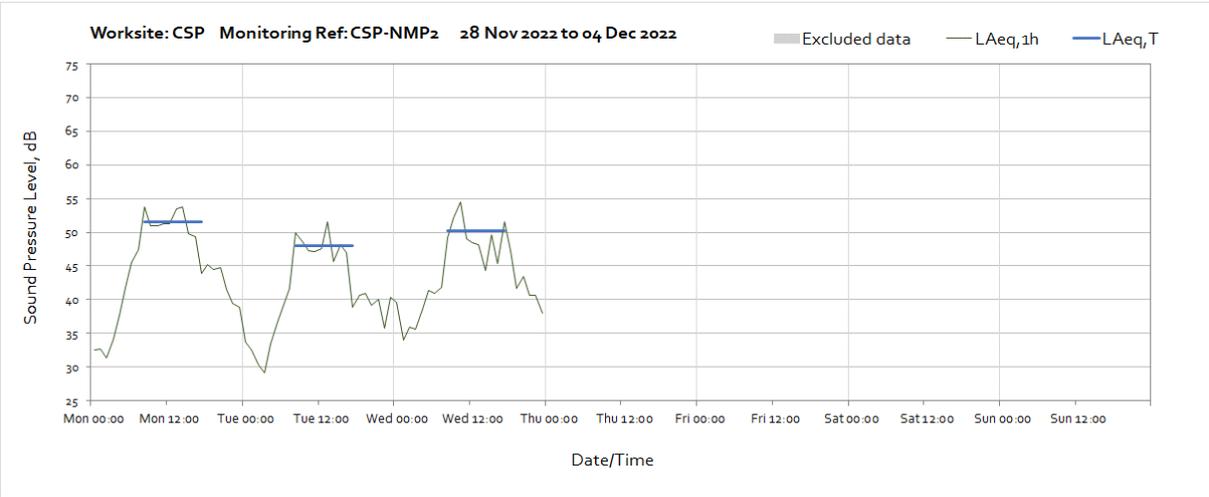
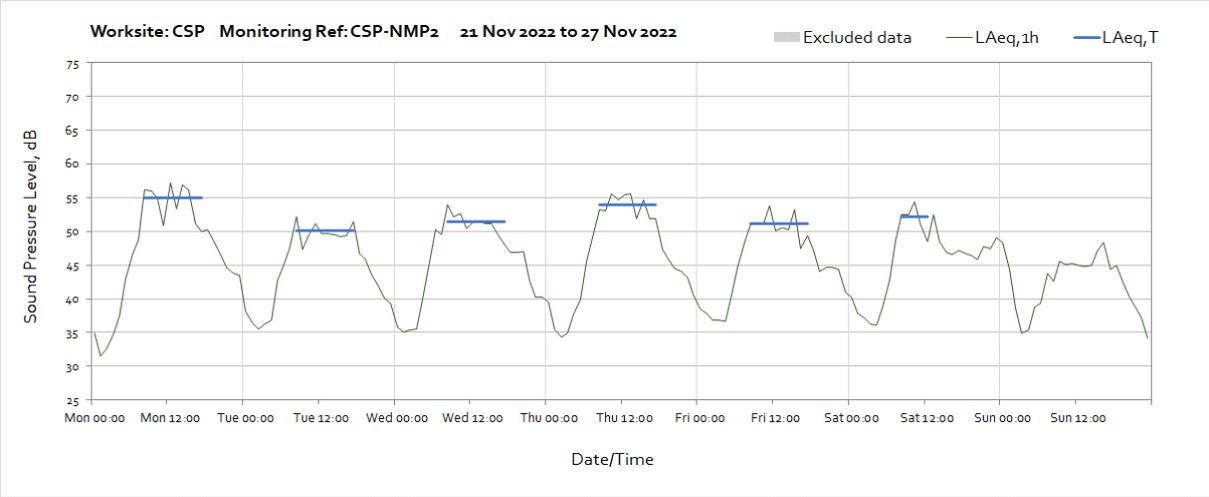
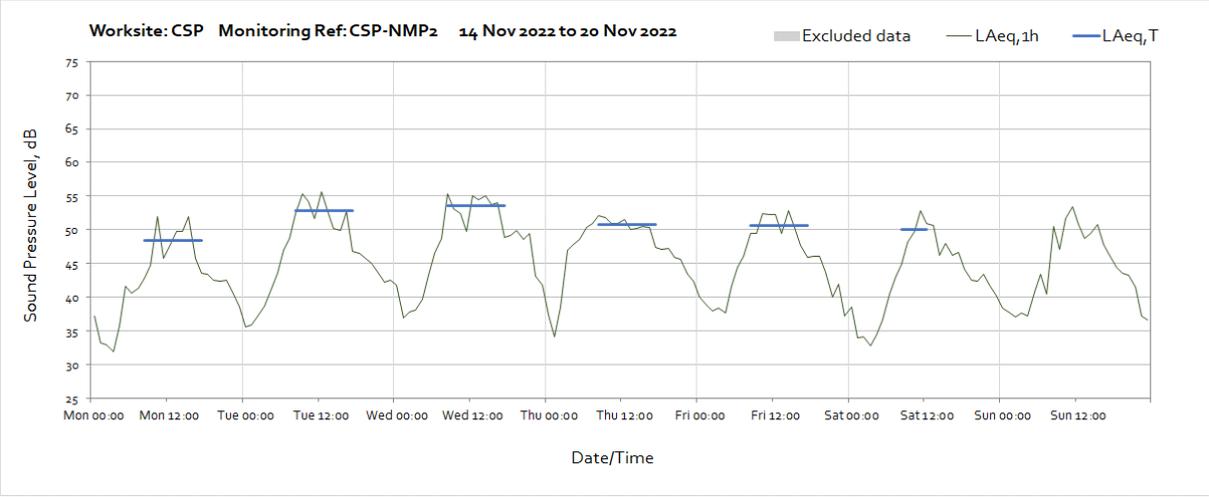


**Worksite: CSP - Monitoring Ref: CSP-NMP2**

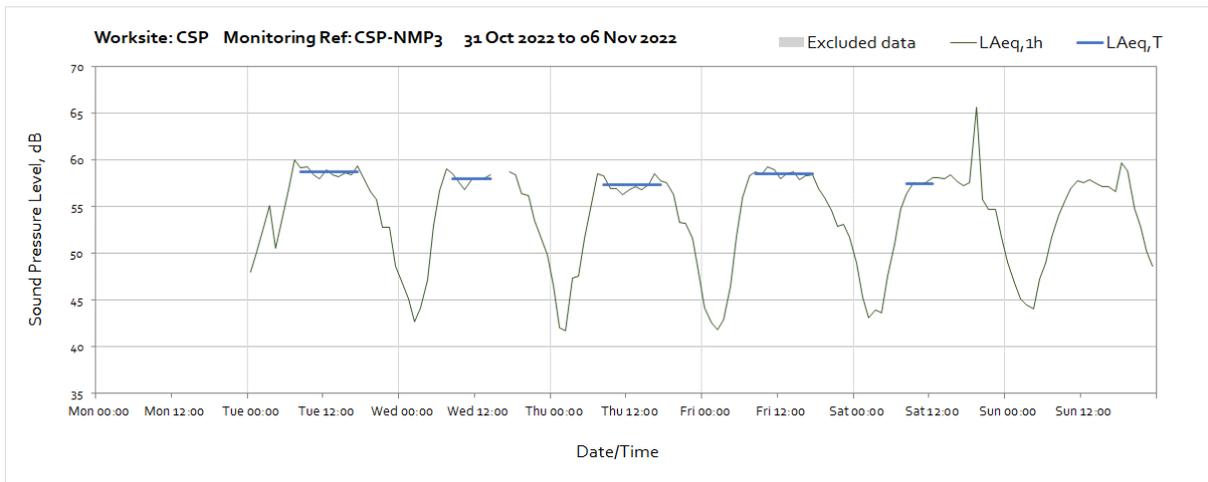


Note: Missing data between 13:00 and 18:00 on Wednesday 2<sup>nd</sup> November was due to sound level meter swapped for calibration.

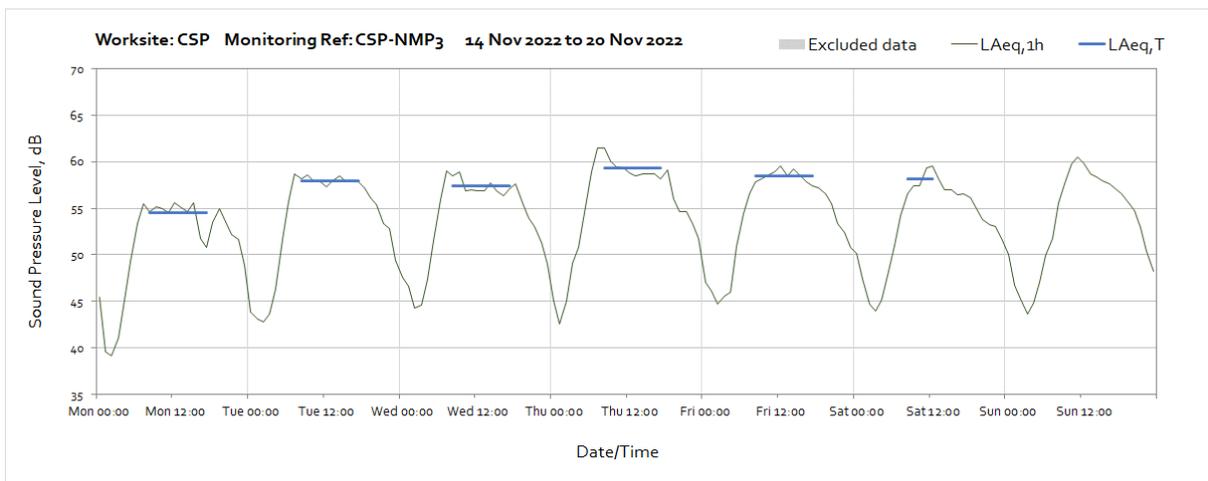
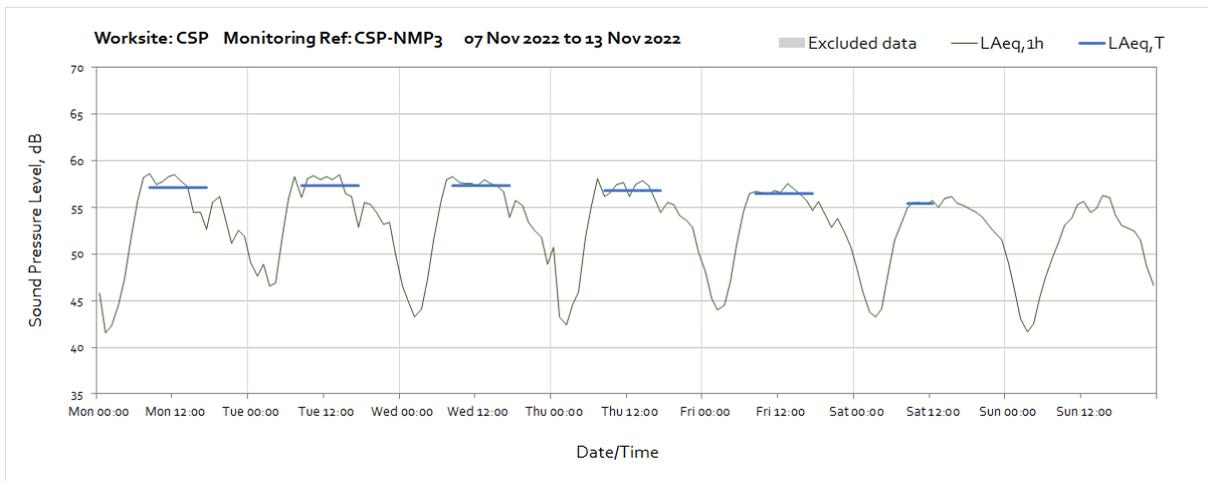


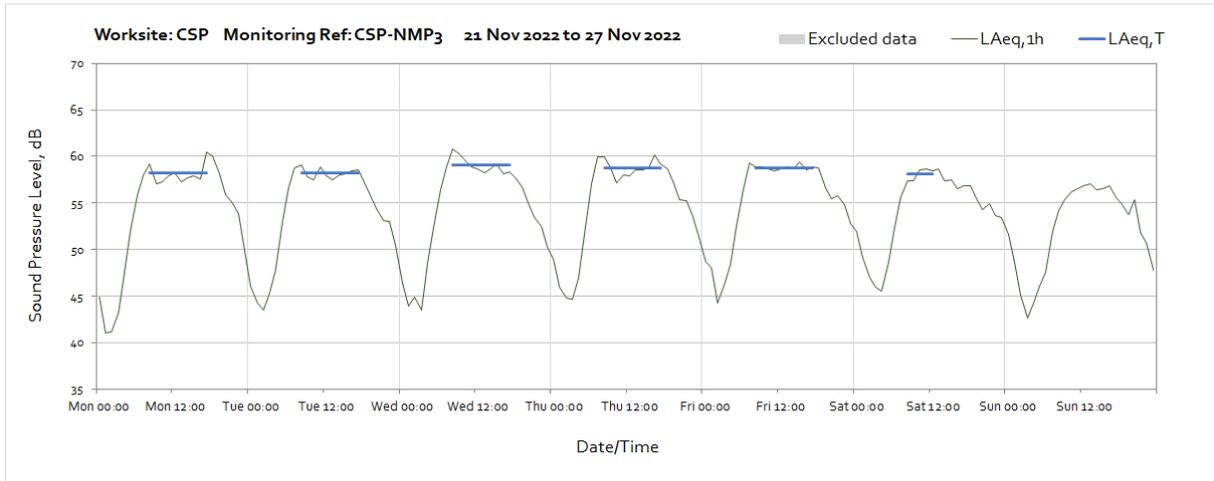


## Worksite: CSP – Monitoring Ref: CSP-NMP3

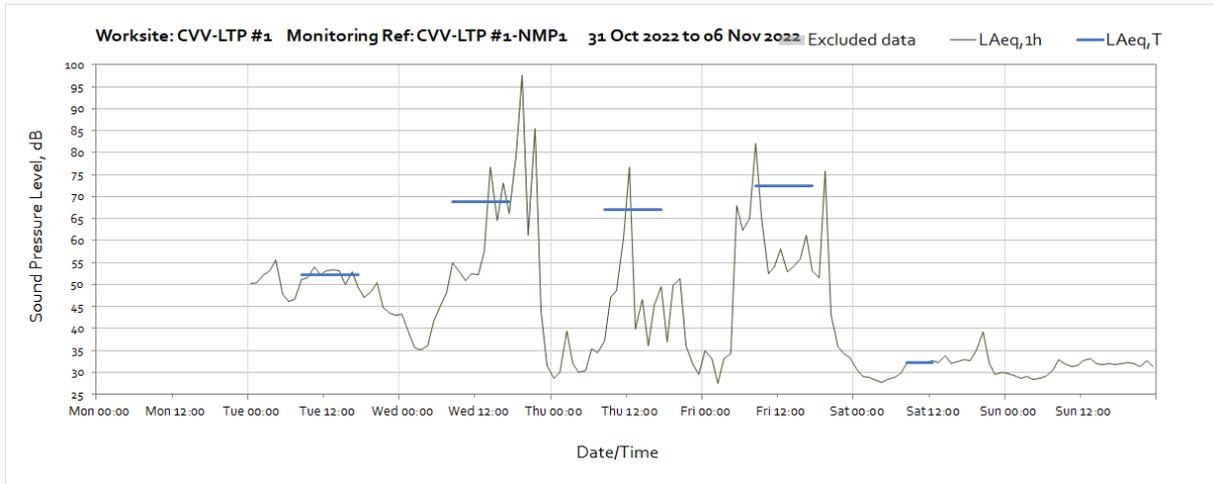


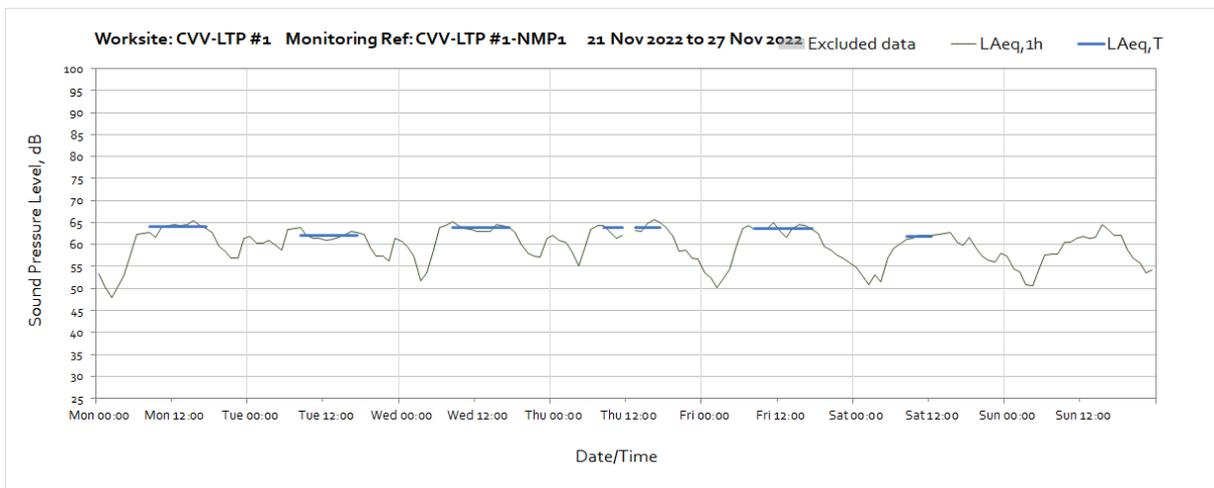
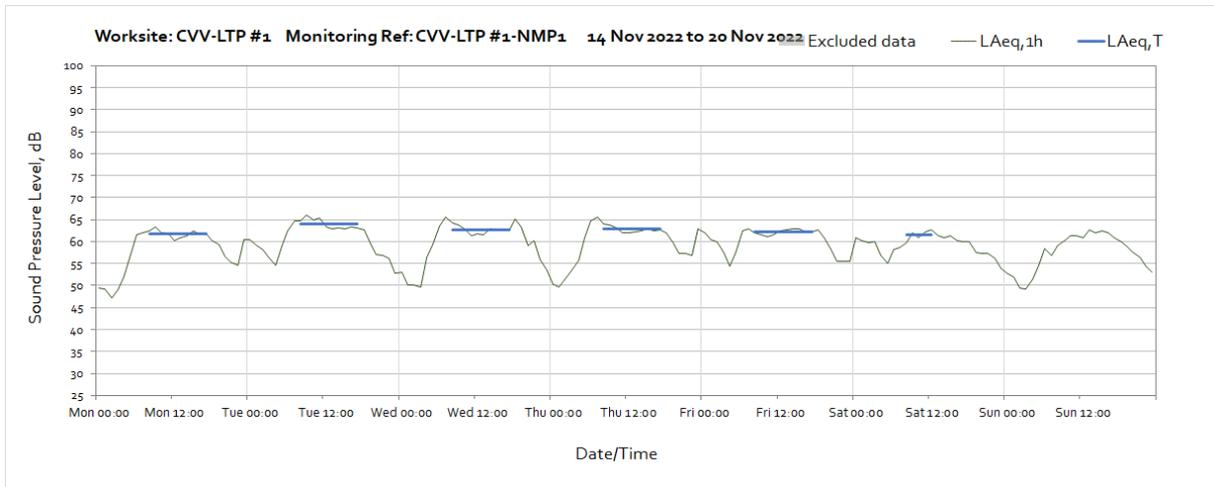
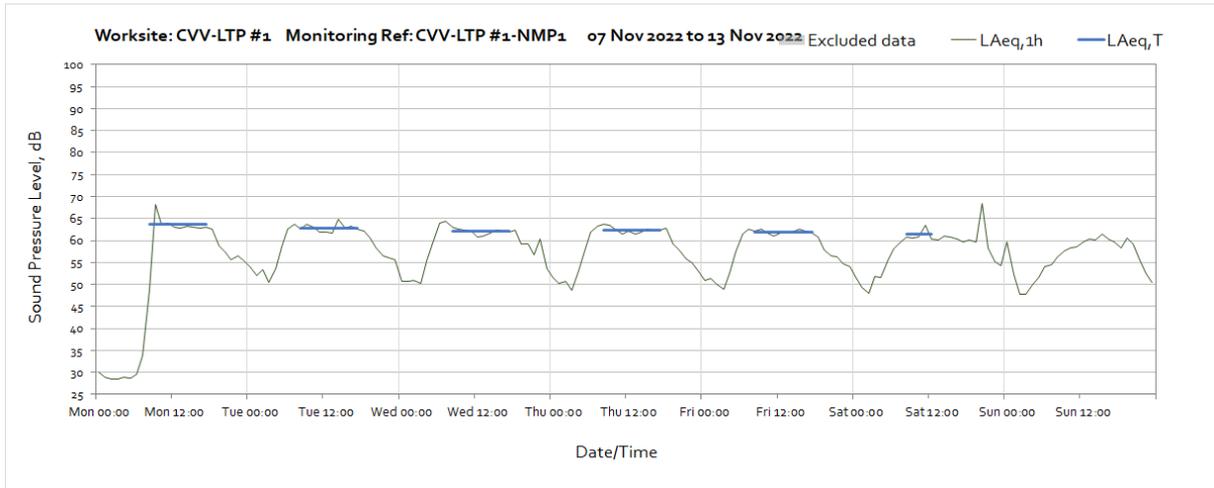
Note: Missing data between 15:00 and 17:00 on Wednesday 2<sup>nd</sup> November was due to sound level meter swapped for calibration.



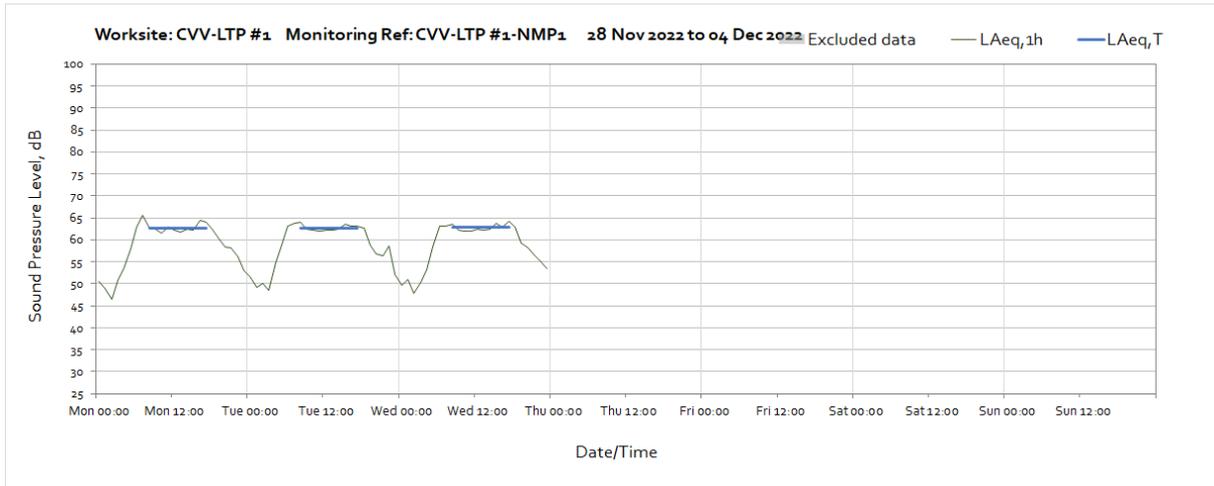


**Worksite: CVV-LPT#1 - Monitoring Ref: CVV-LPT#1-NMP1**

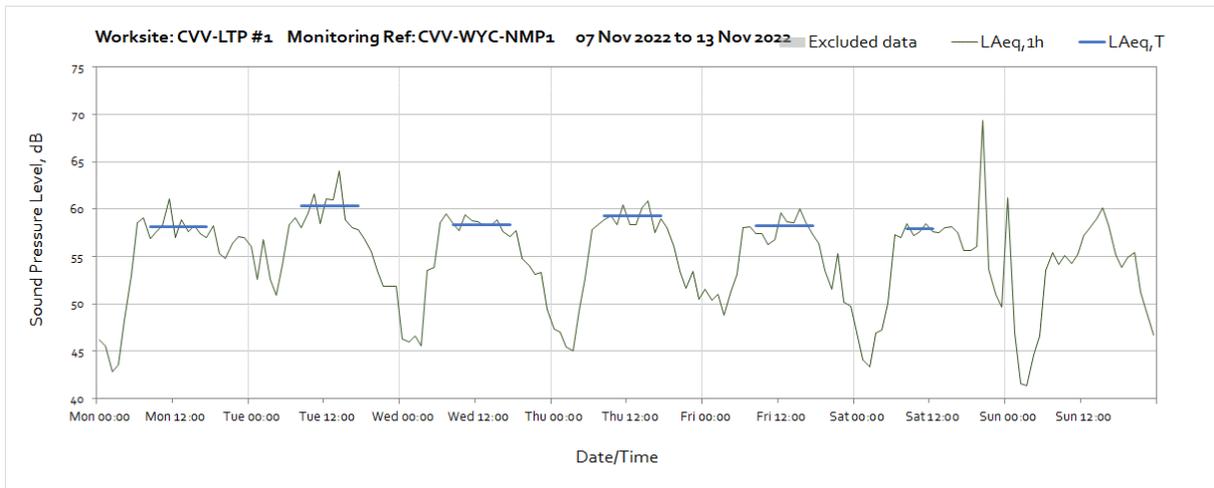
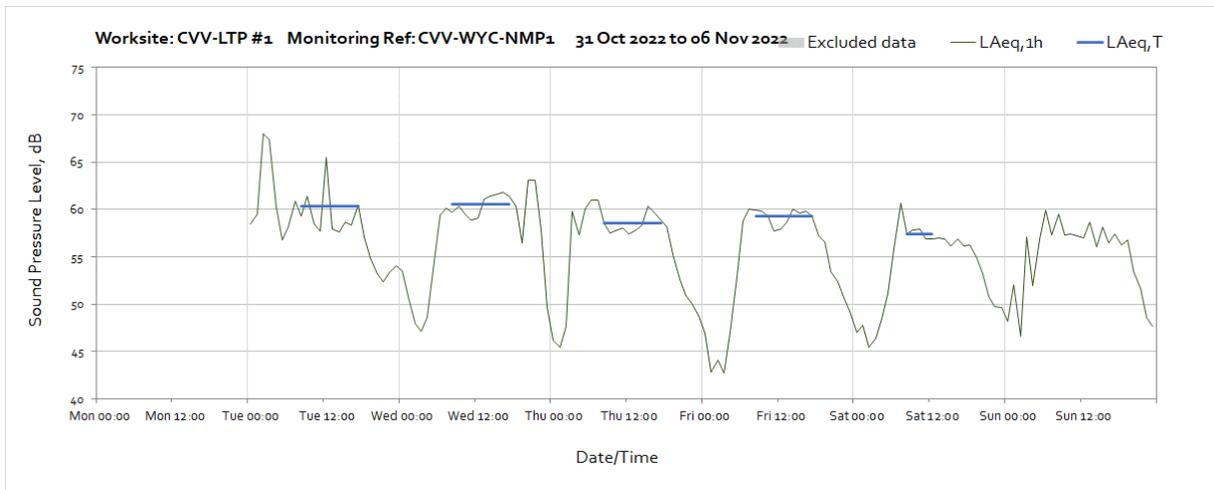


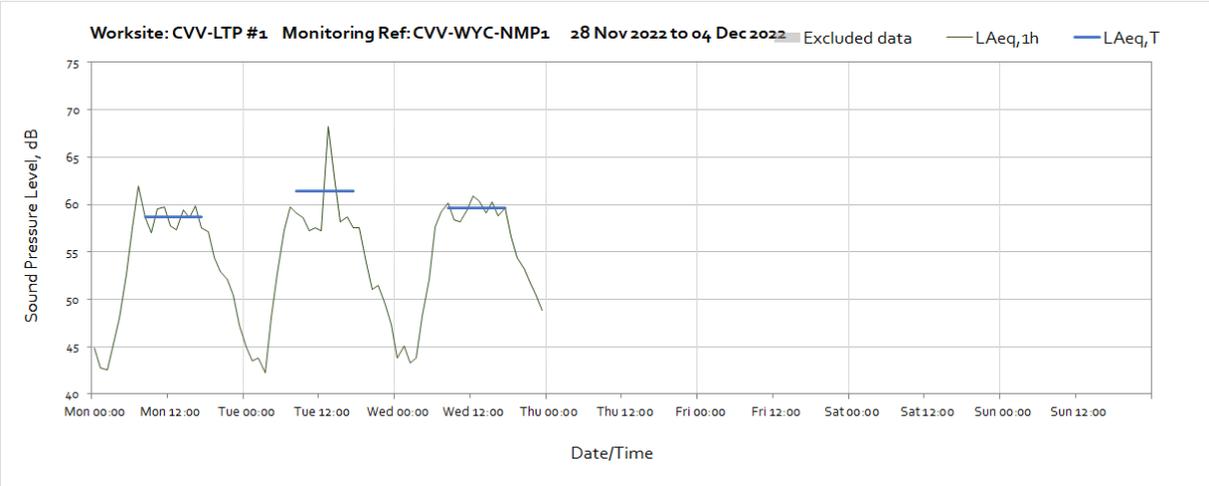
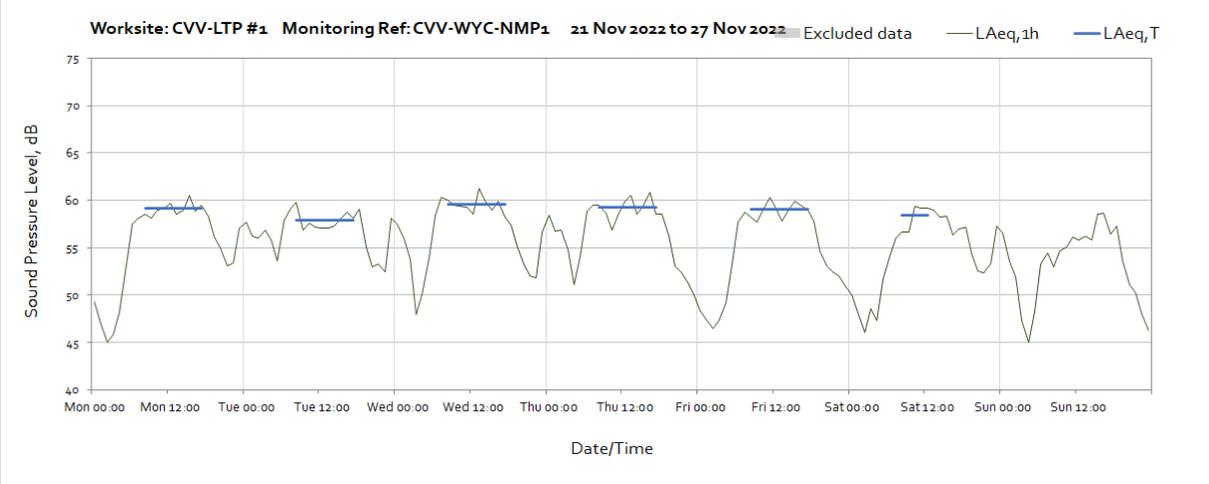
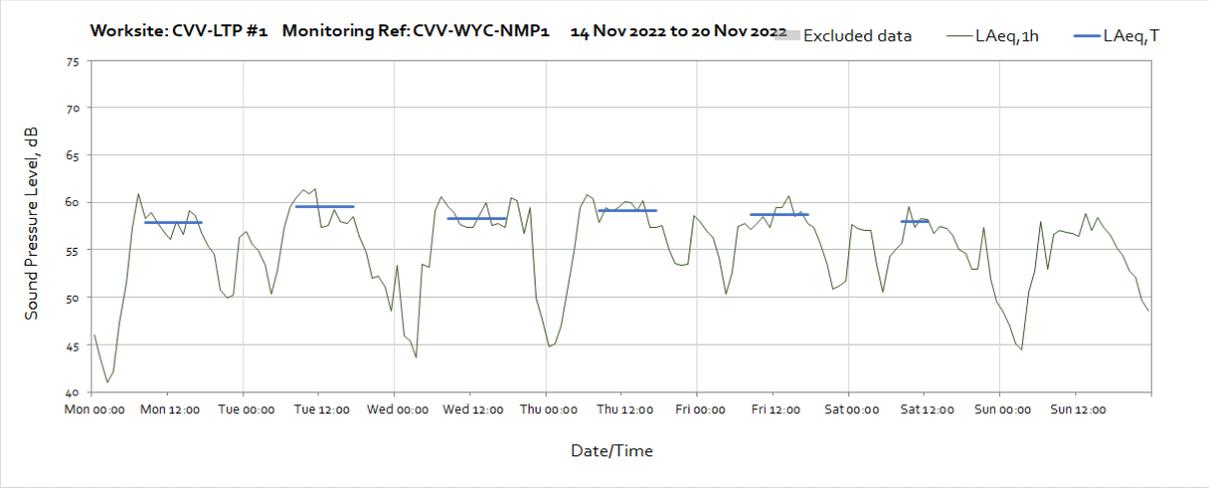


Note: Missing data between 12:00 and 13:00 on Thursday 24<sup>th</sup> November was due to sound level meter swapped for calibration.

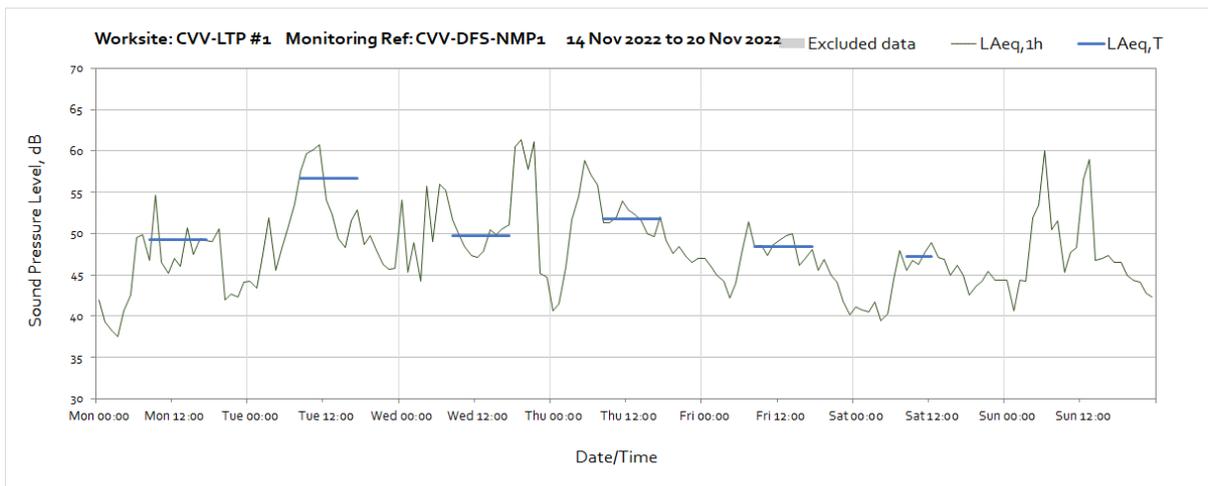
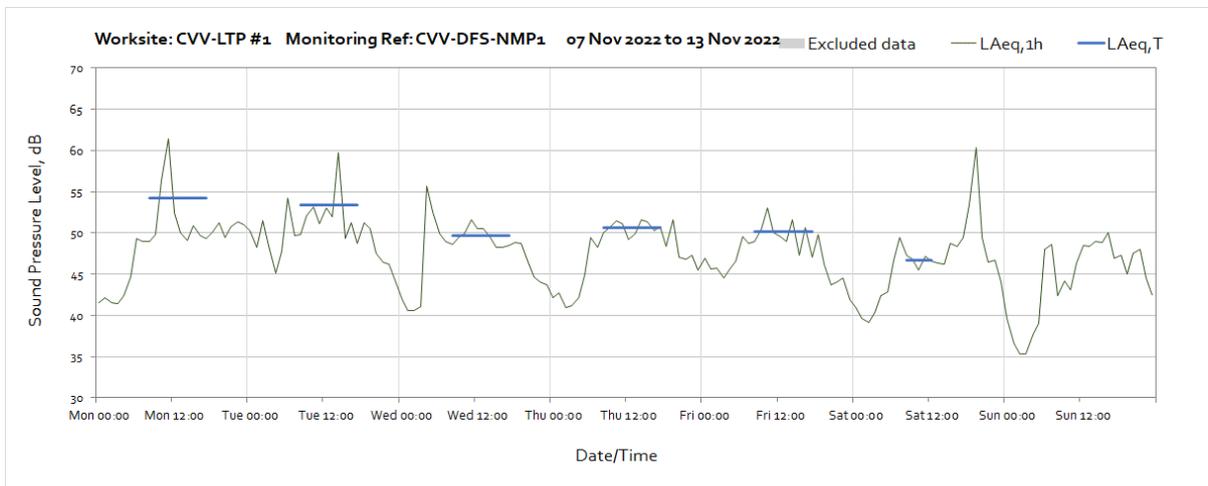
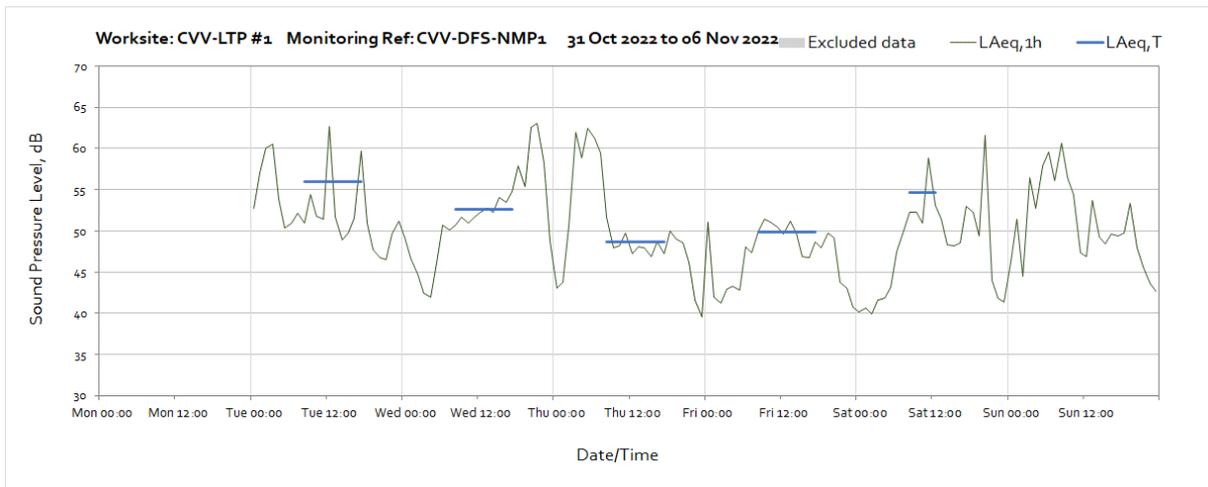


**Worksite: CVV-LPT#1 – Monitoring Ref: CVV-WYC-NMP1**

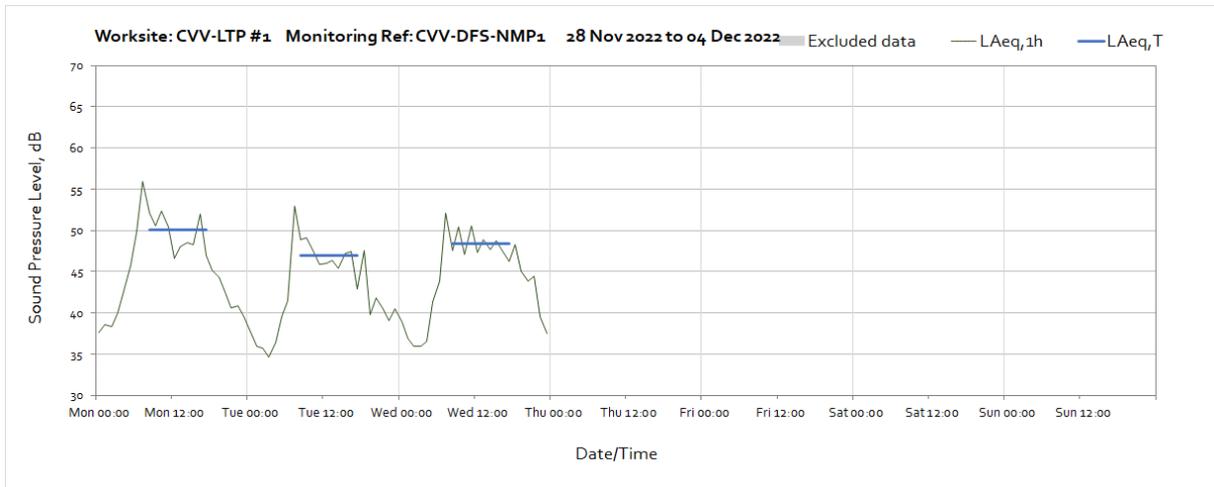
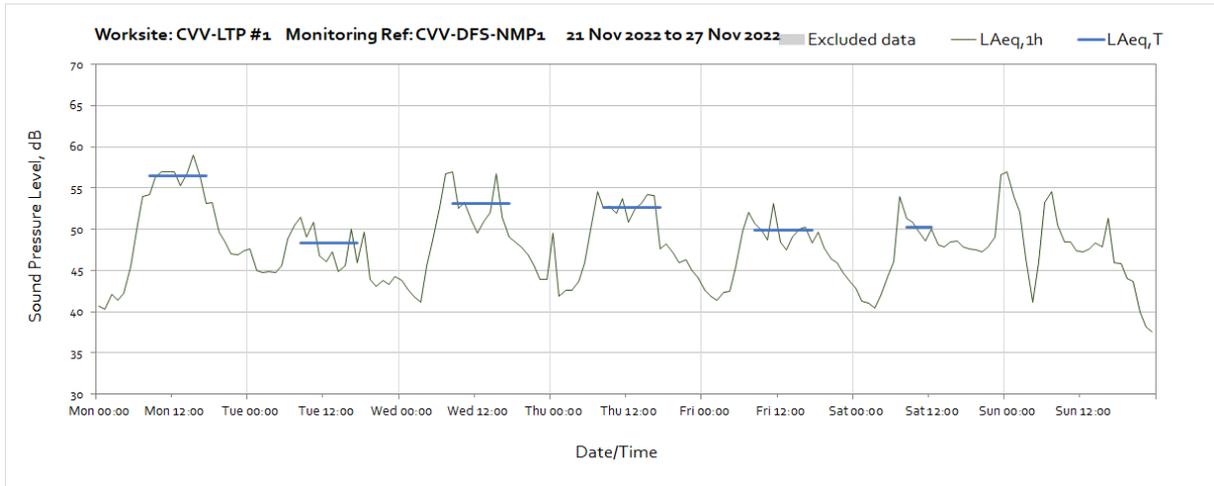




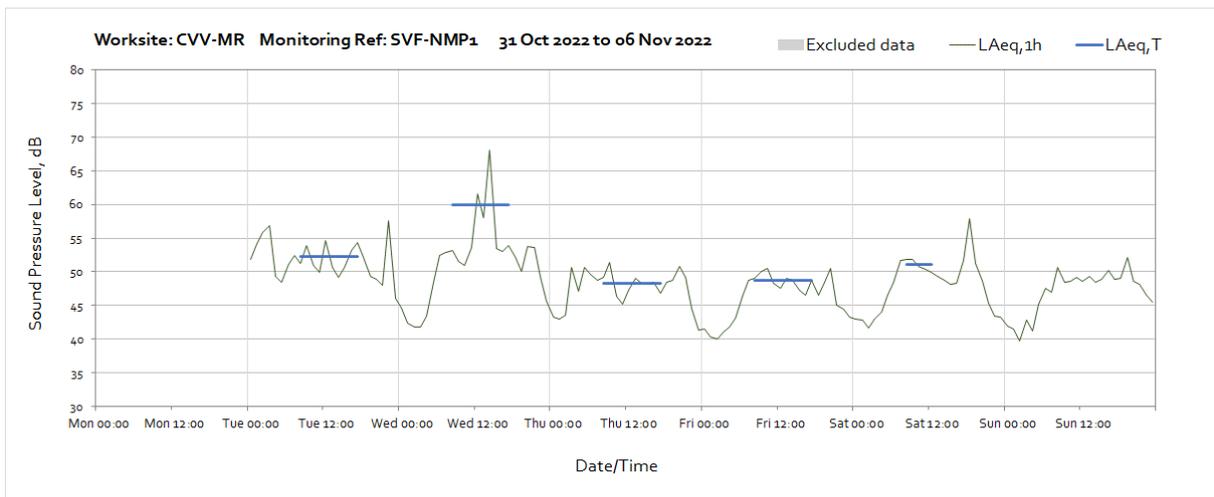
## Worksite: CVV-LTP#1 – Monitoring Ref: CVV-DFS-NMP1

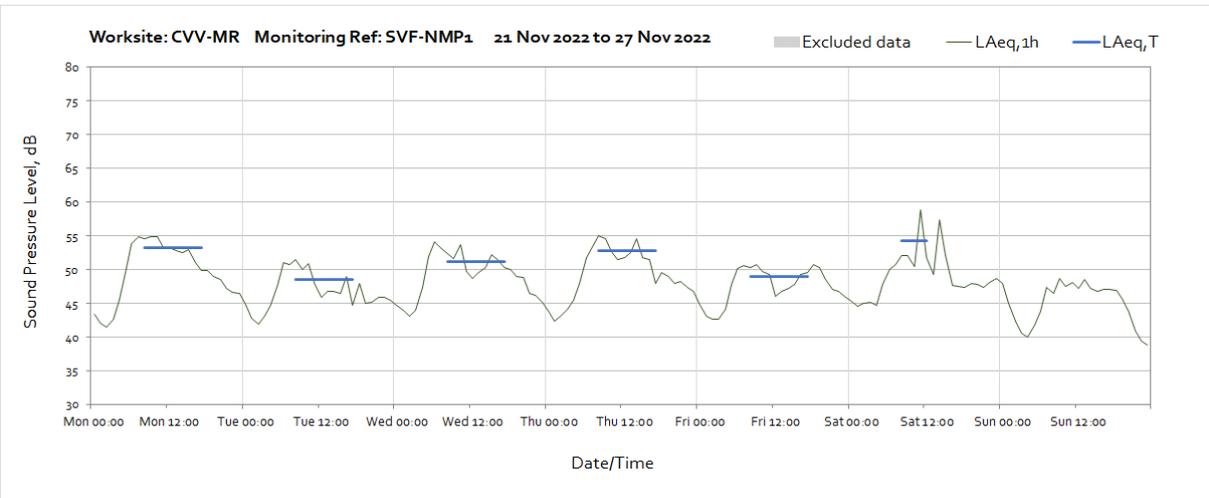
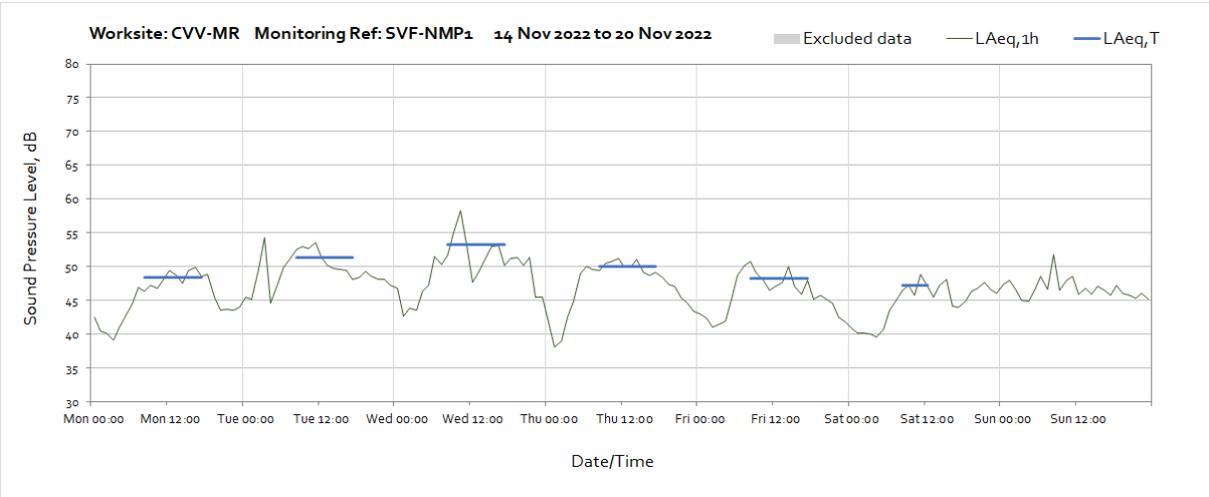
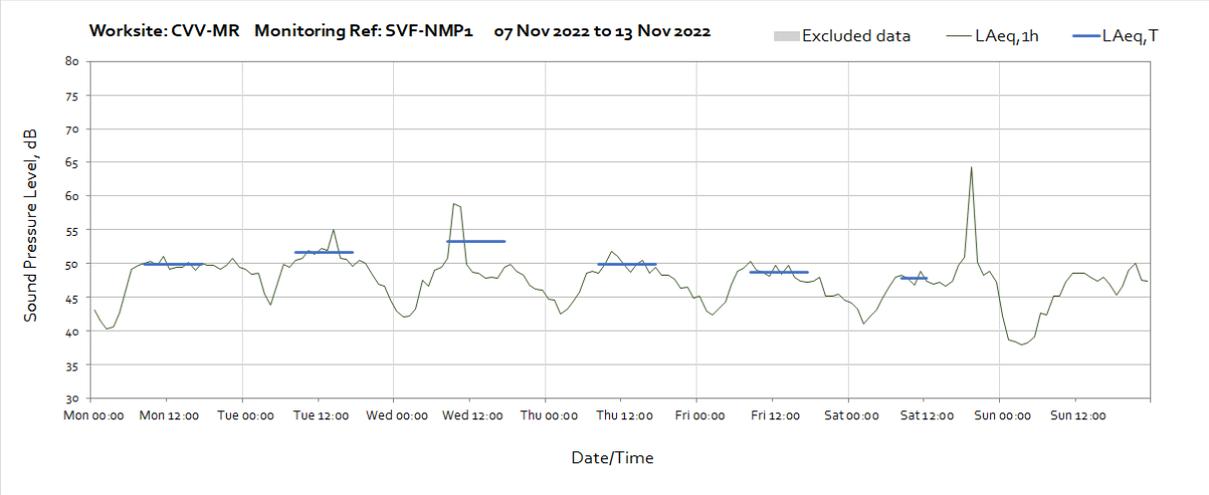


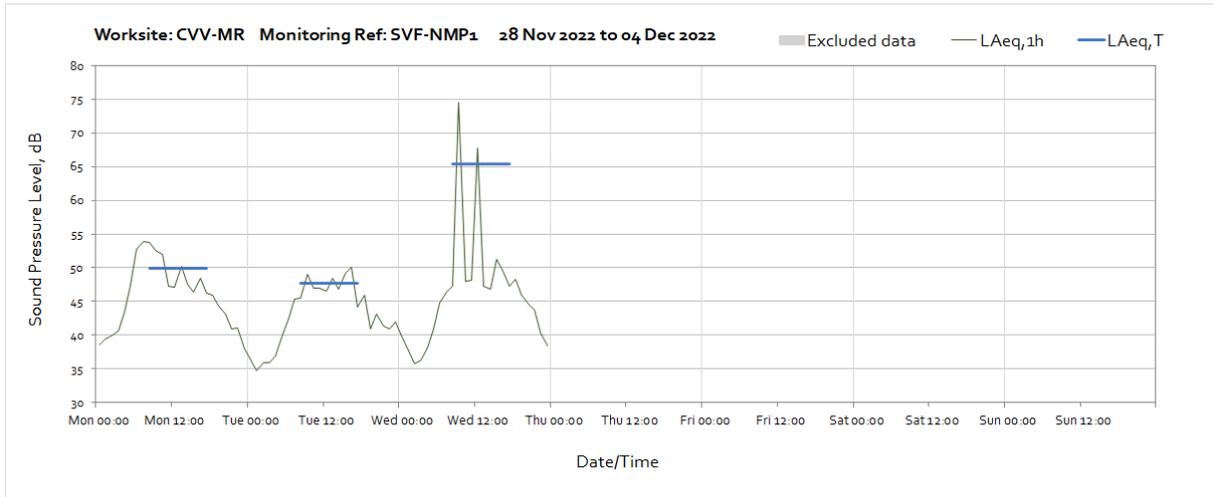
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**Worksite: CVV-MR – Monitoring Ref: SVF-NMP1**



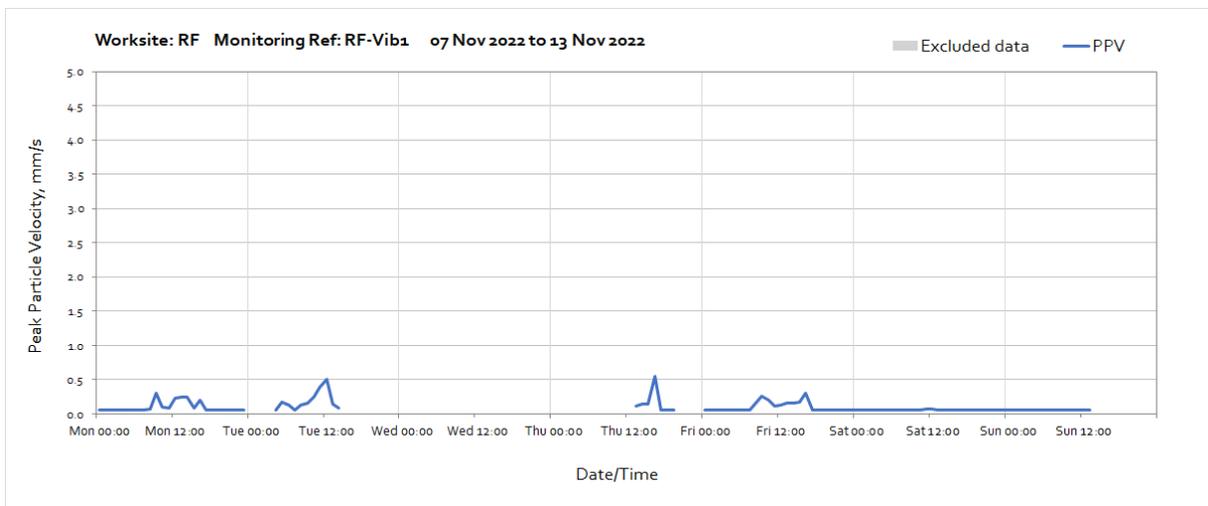
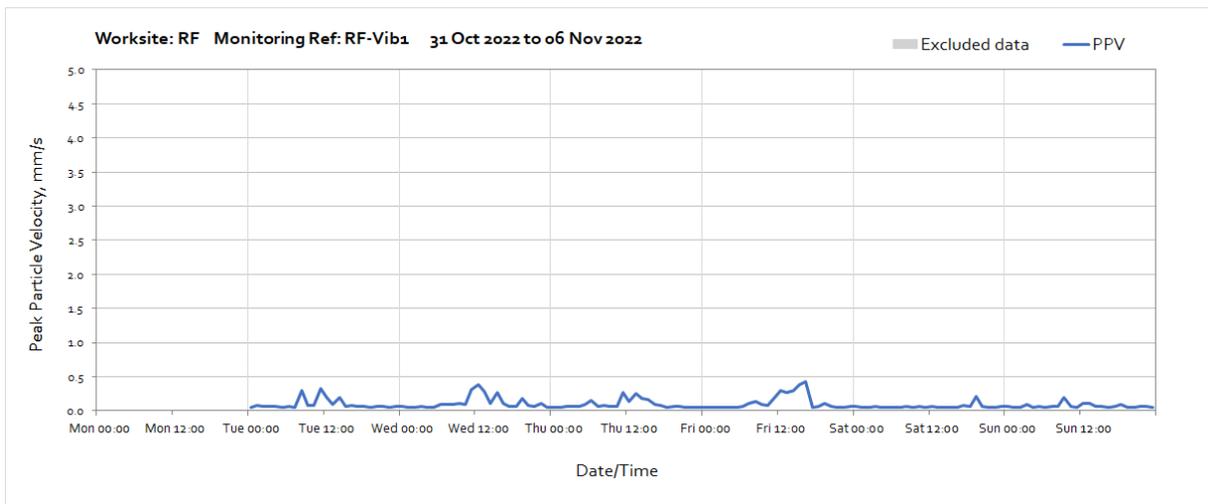




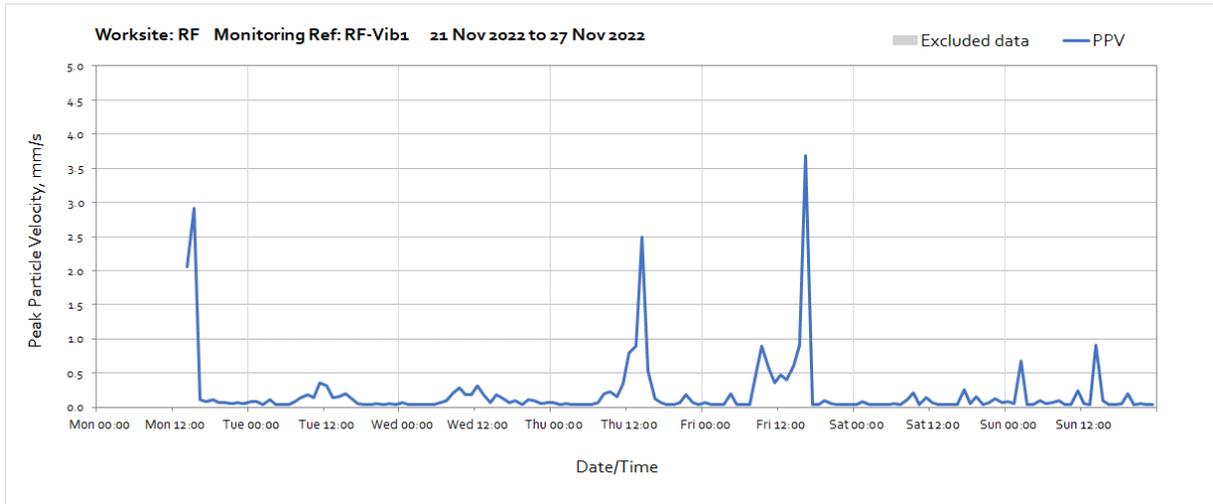
## Vibration

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.

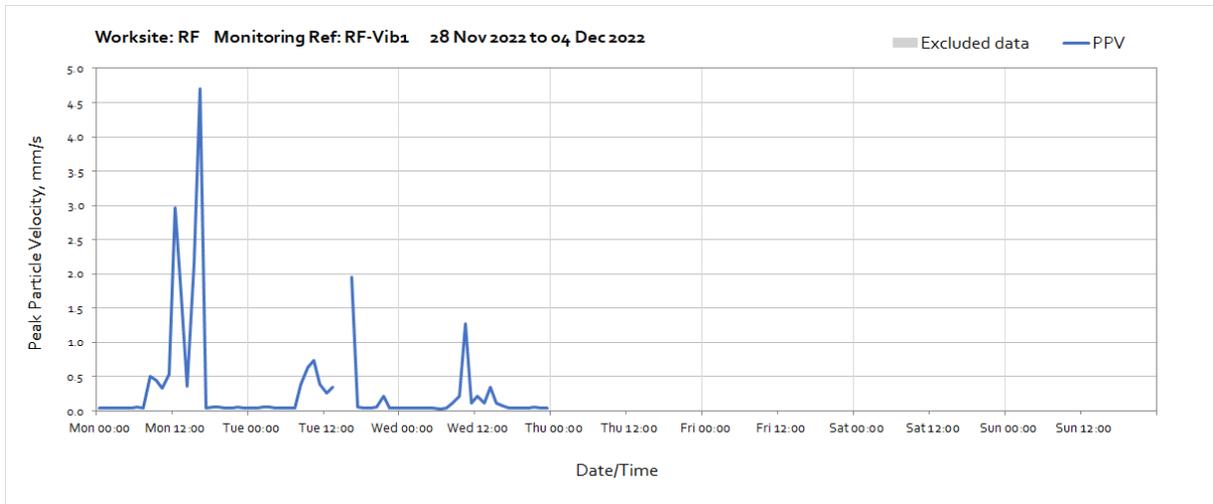
### Worksite: RF – Monitoring Ref: RF-Vib 1



Note: Missing data through the week and from Sunday 13<sup>th</sup> and Monday 21<sup>st</sup> November 2022 were due to a software fault within the monitoring station.

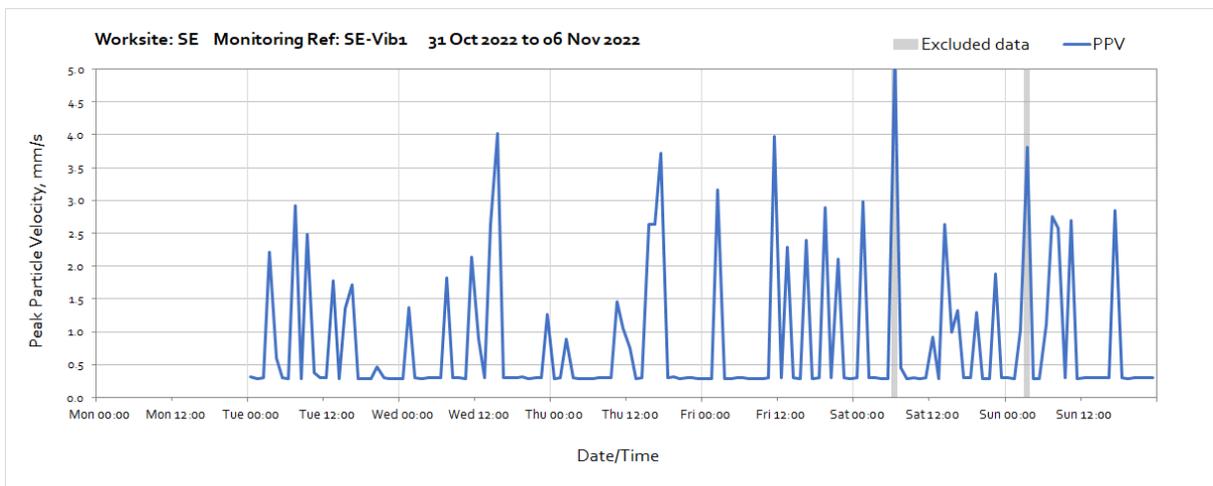


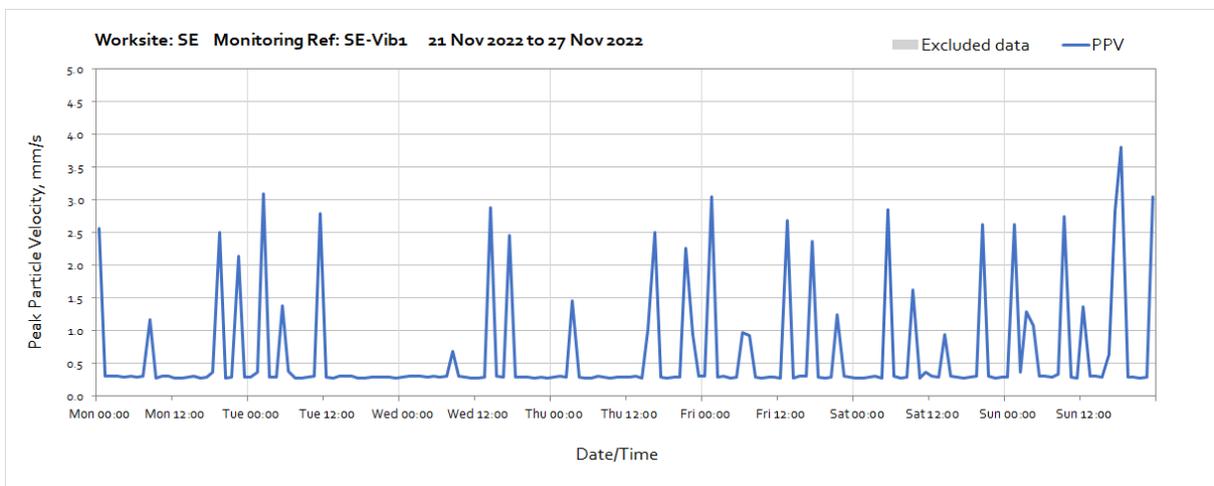
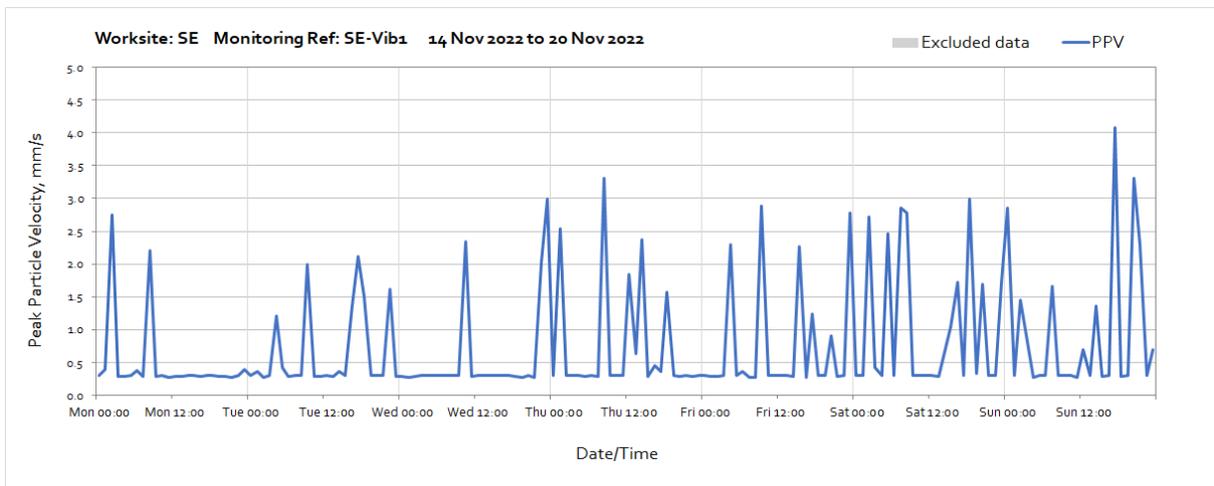
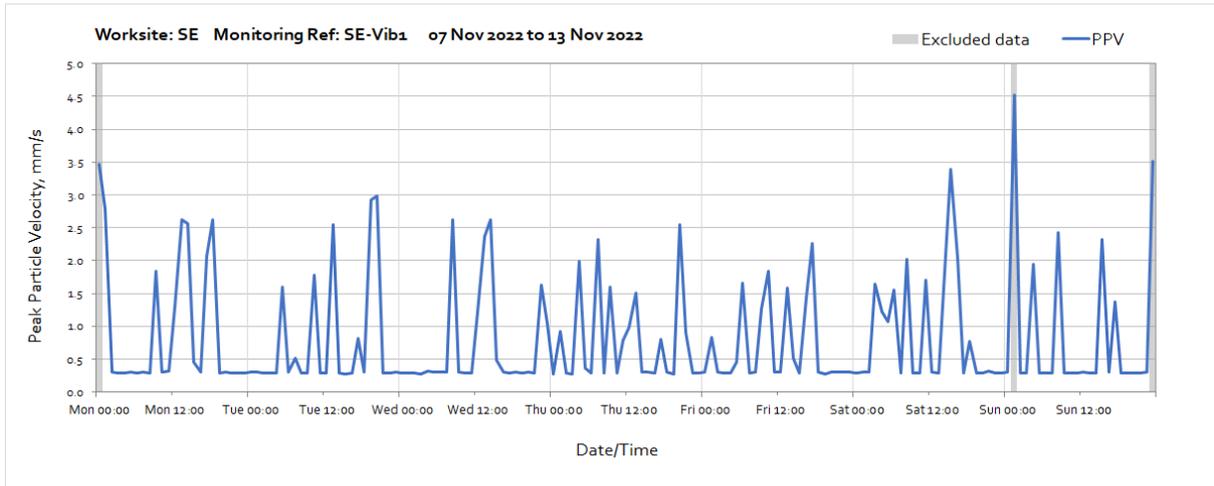
Note: Missing data from Sunday 13<sup>th</sup> and Monday 21<sup>st</sup> November 2022 were due a software fault of the monitoring station.

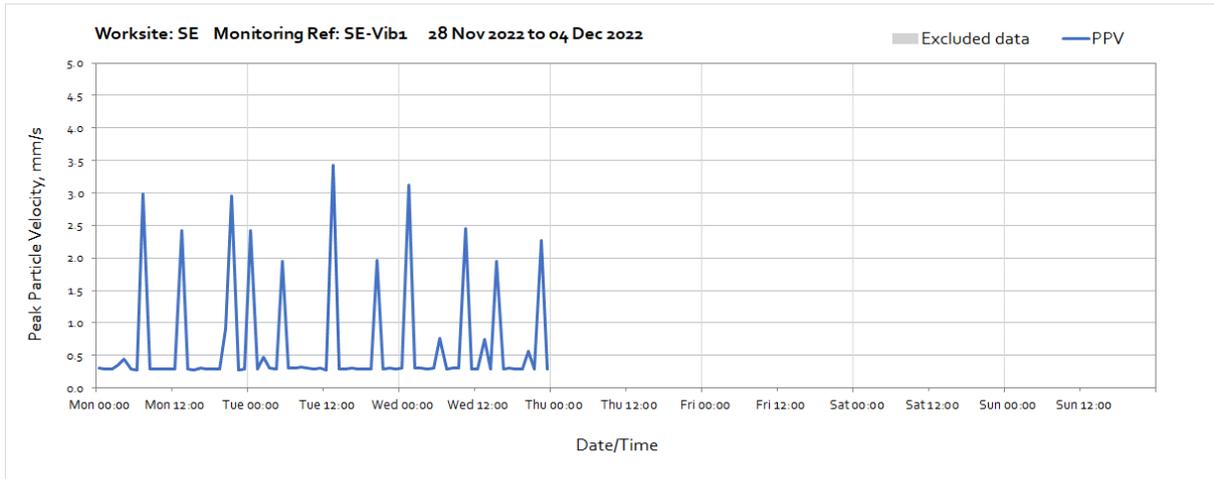


Note: Missing data between 14:00 and 16:00 on Tuesday 29<sup>th</sup> November 2022 were due to periodical maintenance of the monitoring station.

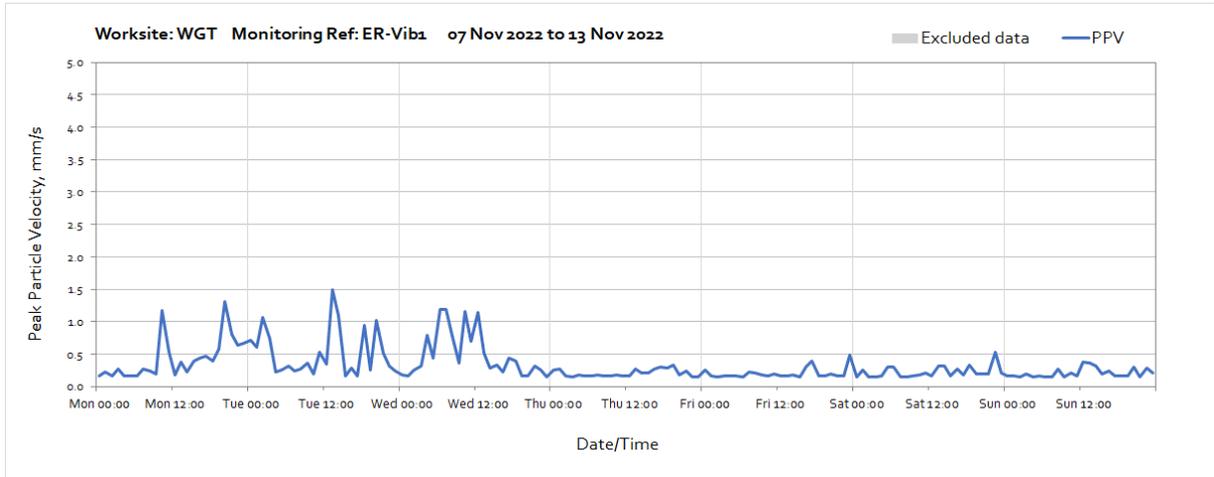
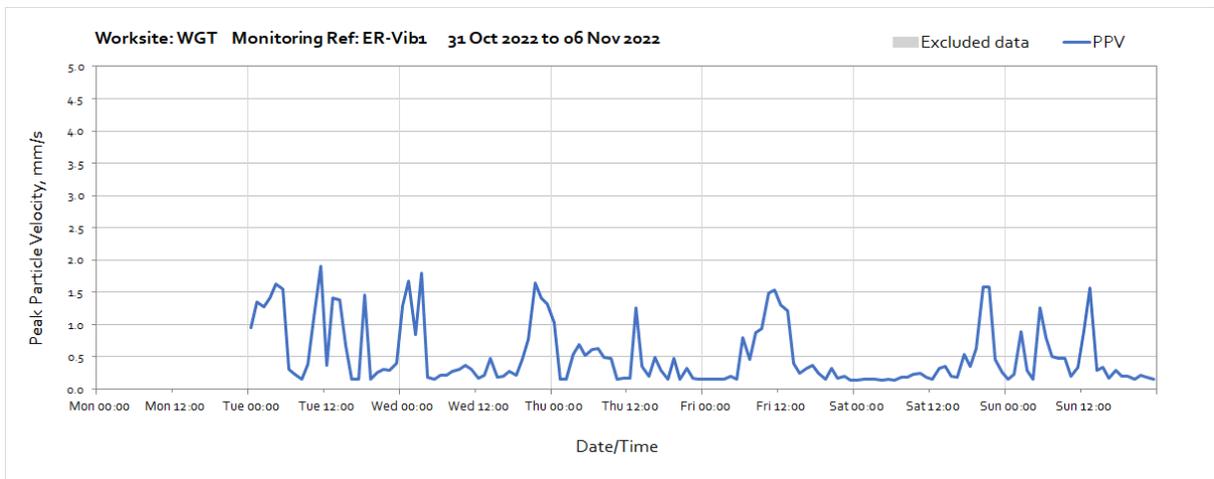
### Worksite: SE – Monitoring Ref: SE-Vib 1

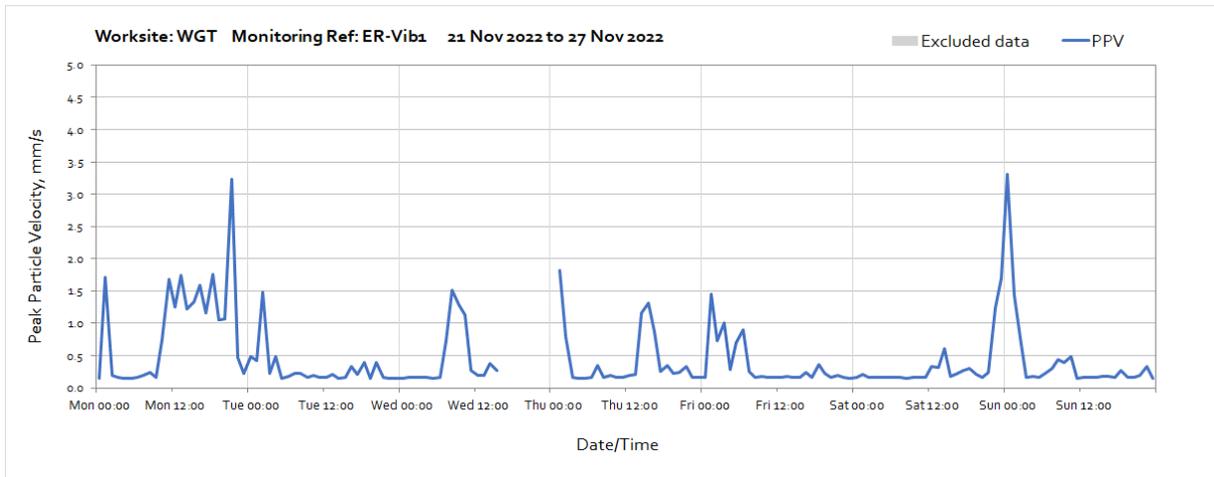
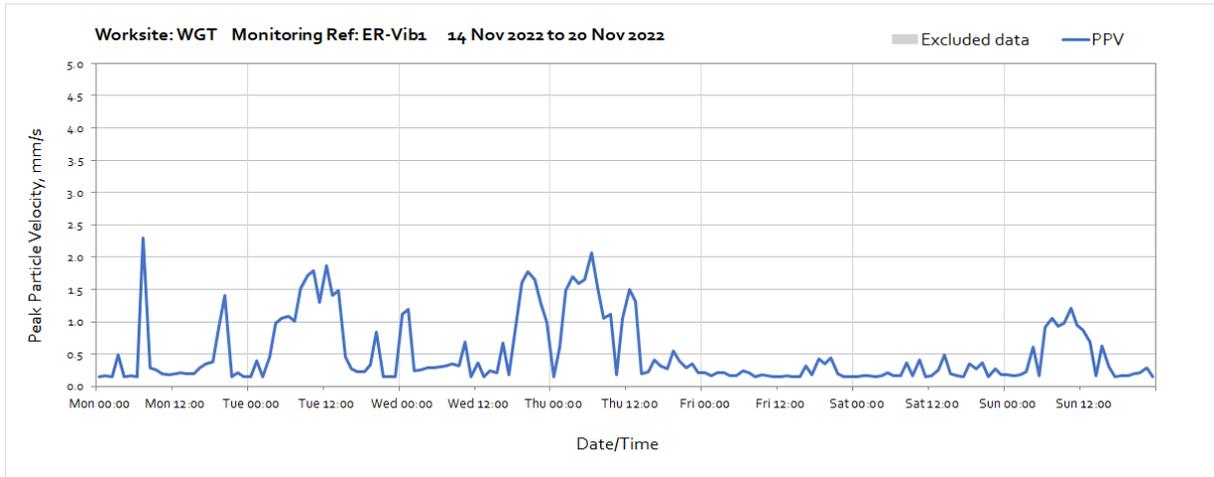




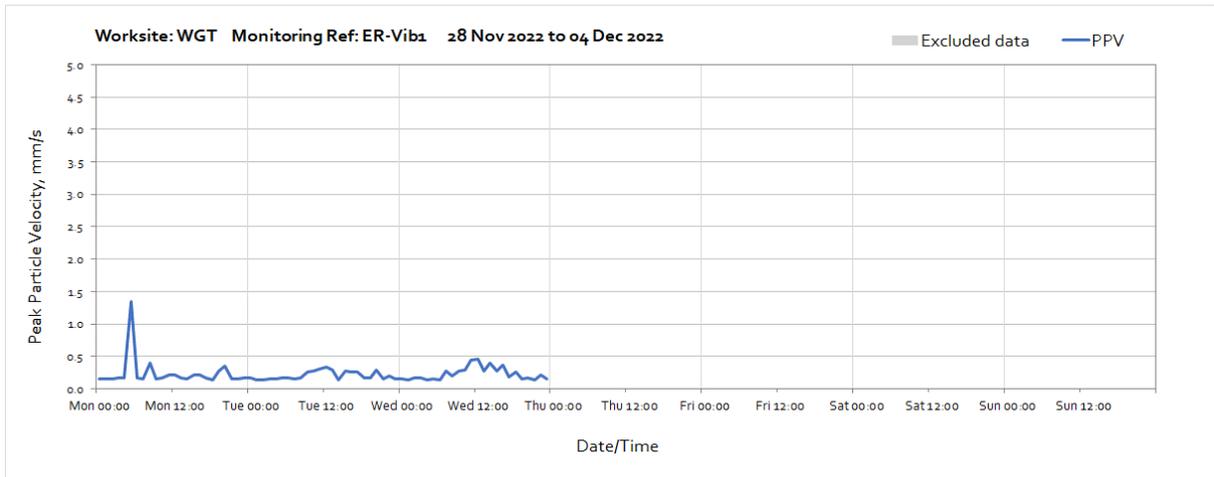


**Worksite: WGT – Monitoring Ref: ER-Vib 1**

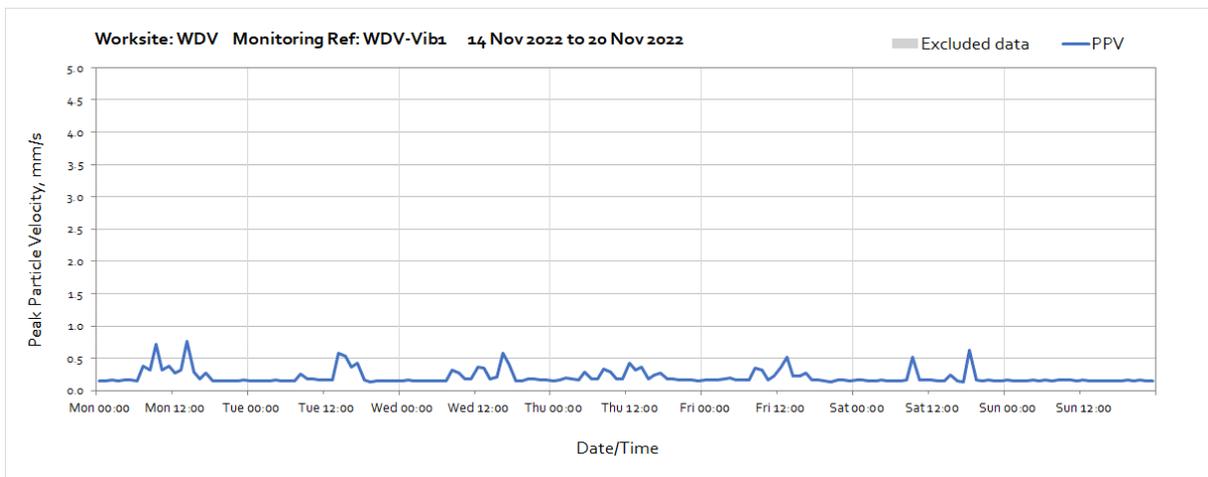
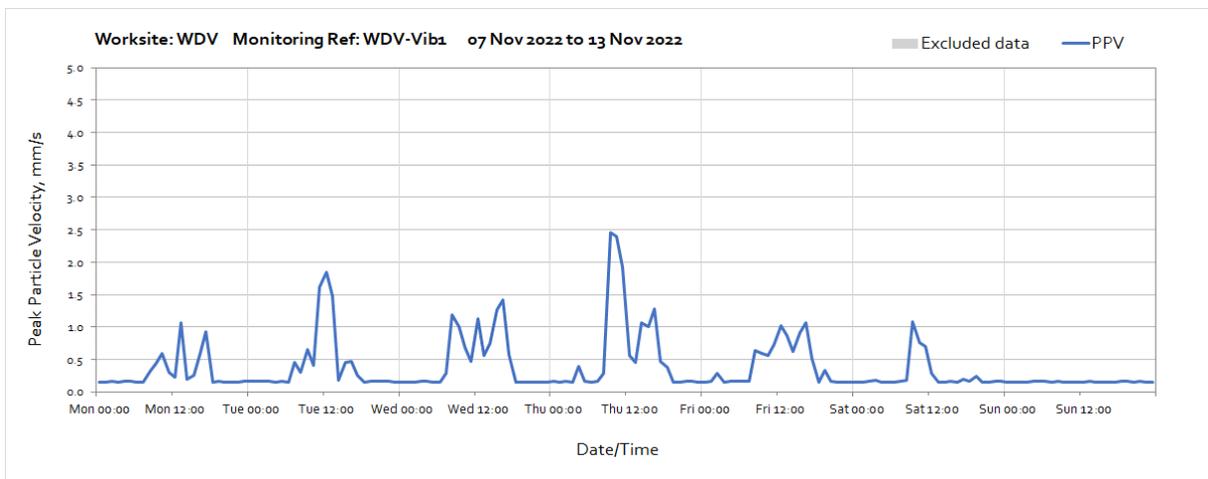
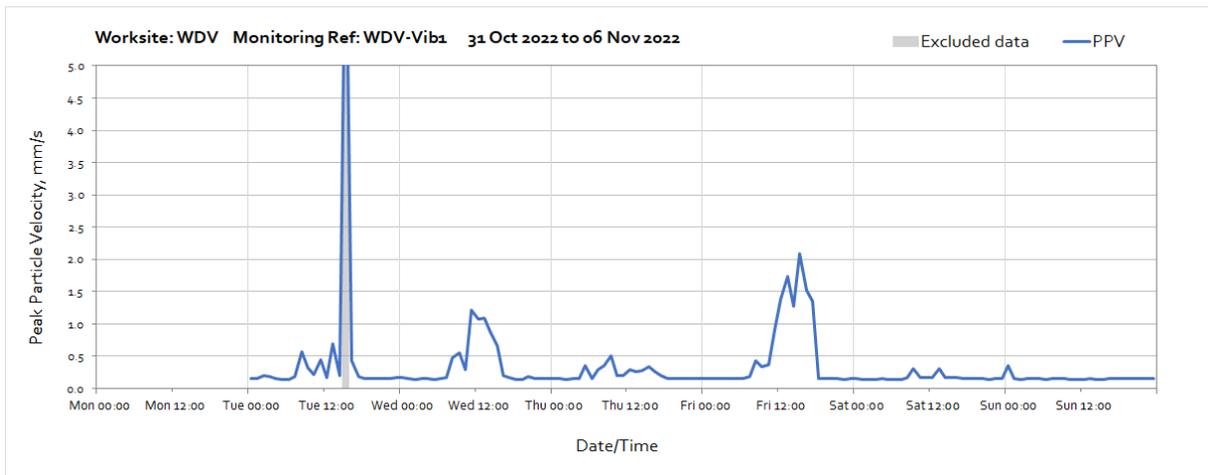


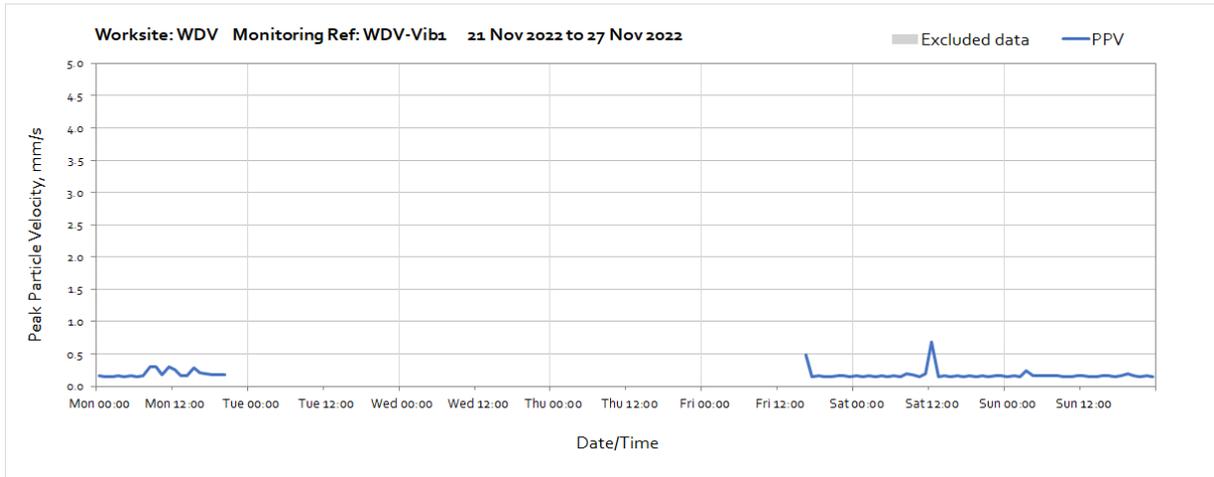


Note: Missing data between 16:00 on Wednesday 23<sup>rd</sup> and 01:00 on Thursday 24<sup>th</sup> November 2022 was due to monitor battery changes, the monitor did not restart until 01:00.



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





Note: Missing data between 21:00 on Tuesday 21<sup>st</sup> and 16:00 on Friday 25<sup>th</sup> November 2022 are currently being investigated.

