

Construction Noise and Vibration Monthly Report – April 2022

Buckinghamshire

Non-Technical Summary	1
Abbreviations and Descriptions	5
1 Introduction	6
1.2 Measurement Locations	13
2 Summary of Results	16
2.1 Summary of Measured Noise Levels	16
2.2 Exceedances of the LOAEL and SOAEL	23
2.3 Exceedances of Trigger Level	27
2.4 Complaints	28
Appendix A Site Locations	30
Appendix B Monitoring Locations	46
Appendix C Data	62

List of tables

Table 1: Table of Abbreviations	5
Table 2: Monitoring Locations	13
Table 3: Summary of Measured dB L_{Aeq} Data over the Monitoring Period	17
Table 4: Summary of Measured PPV Data over the Monitoring Period	23
Table 5: Summary of Exceedances of LOAEL and SOAEL	24
Table 6: Summary of Exceedances of Trigger Levels	28
Table 7: Summary of Complaints	28

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 April 2022.

Within this period monitoring was undertaken at the following worksites:

- Noise monitoring was undertaken in the vicinity of A422 Turweston North Worksite (ref.: A422 TN) where construction of the access road, topsoil stripping, compound maintenance works, drainage works, stone deliveries excavations and construction of slab crossing were undertaken.
- Noise monitoring was undertaken in the vicinity of School End worksite (ref.: SE) where compound setup, stone deliveries, topsoil stripping, drainage works and instrumentation and monitoring works were undertaken.
- Noise monitoring was undertaken in the vicinity of Rosehill Farm worksite (ref.: RF) where demolition works, instrumentation and monitoring, vegetation clearance, access road construction, drainage works and pond maintenance works were undertaken.
- Noise monitoring was undertaken in the vicinity of Hermitage Chetwode worksite (ref.: HC), where no works were undertaken during the reporting period.
- Noise monitoring was undertaken in the vicinity of West Street Overbridge worksite (ref.: WSO) where construction of access road, drainage works and culvert installation works were undertaken.
- Noise monitoring was undertaken in the vicinity of Addison Road worksite (ref.: AR) where piling works and utility diversions were underway.
- Noise monitoring was undertaken in the vicinity of School Hill Compound worksite (ref.: SHC) where construction of site access roads was undertaken.
- Noise monitoring was undertaken in the vicinity of the School Hill UTX worksite (ref.: SHU) where vacuum excavation works of joining pits at Brackley Lane were underway.
- Noise monitoring was undertaken in the vicinity of the Quainton worksite (ref.: QAR) where utility diversion works were underway.
- Noise monitoring was undertaken in the vicinity of the FCC Sidings worksite reference (ref: FCC) where construction of site access road and crane demolition works were underway.

- Noise monitoring was undertaken in the vicinity of Meadoway and Glebe House, Aylesbury worksite (ref: MW&GH) where compound construction works and road construction, earthworks and stockpiling were undertaken.
- Noise monitoring was undertaken in the vicinity of Oat Close Worksite (ref: OC) where earthworks, stockpile management, piling works, access road maintenance works and material deliveries were underway.
- Noise monitoring was undertaken in the vicinity of Nash Lee Lane Worksite (ref.: NLL) where stockpiling, excavations, brook diversion works, drainage works, kerb laying works, road works, concrete works and temporary bridge diversion works were underway.
- Noise monitoring was undertaken in the vicinity of Ellesborough Road Worksite (ref.: ER) where topsoil stripping, archaeology works and ground investigations were underway.
- Noise monitoring was undertaken in the vicinity of Rocky Lane Embankment worksite (ref: RLE) where access road construction, haul road works, sheet piling, ground investigation works, earthworks and asphaltting were underway.
- Noise monitoring was undertaken in the vicinity of Leather Lane worksite (ref: LL) where earthworks and site haul road works, stockpiling and asphaltting works were underway.
- Noise monitoring was undertaken in the vicinity of South Heath Cutting worksite (ref: SHCW) where earthworks and culvert installation works were undertaken.
- Noise monitoring was undertaken in the vicinity of North Portal Worksite (ref: NP) where site mobilisation and site set-up, piling platform construction, utility works and wall works were undertaken.
- Noise monitoring was undertaken in the vicinity of Chesham Road Worksite (ref: CR) where site maintenance and operation and shaft construction were undertaken.
- Noise monitoring was undertaken in the vicinity of Little Missenden Vent Shaft worksite (ref.: LM) where site maintenance and operation, ground post installation, including drilling and grouting works, dewatering works, shaft excavation and piling works were underway.
- Noise monitoring was undertaken in the vicinity of Amersham Vent Shaft worksite (ref.: AM), where site maintenance and operation, ground treatment works, dewatering works, temporary capping of beams, concrete pours works and piling were underway.
- Noise monitoring was undertaken in the vicinity of Chalfont St Giles Vent Shaft worksite (ref.: CSG) where general site operations, piling, road maintenance,

secondary lining, construction of concrete structures, tunnel connections and construction of basement were underway.

- Noise monitoring was undertaken in the vicinity of Chalfont St Peter Vent Shaft worksite (ref.: CSP), where general plant operations, piling works, road maintenance, secondary lining for concrete walls and floors, tunnel connections and basement construction were underway.
- Noise monitoring was undertaken in the vicinity of Load Test Pile 1 worksite (ref.: LTP #1), where piling works, compound operations, ground investigation works, realignment of River Colne, drilling works, duct installations, pumping water management, installation of satellite welfare, maintenance for generator farms, material storage, fencing works, utility diversion and installation, environmental maintenance works, compound operation works, crossing construction, concrete drilling works, slab construction and demolition, pier construction, gas utility works and girder and deck works were underway.

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

- East West Rail (EWR) Overbridge where concrete work and repairs were undertaken;
- Charndon Lodge Underbridge where concrete works and repairs and installation of abutment wall rebar were undertaken;
- Perry Hill Overbridge where piling works and foundation works were underway;
- EWR Calvert where concrete works and drainage repair works were undertaken;
- West and East of Calvert Infrastructure Maintenance Depot (IMD) where temporary watercourse diversion works and drainage repair works were underway;
- West Street where temporary utility diversion works and road diversions were underway;
- Calvert Area North where earthworks, site haul road works and drainage repair works were underway.
- Park Hill where landscaping works were underway;
- Doddershall and from Shipton Lee to Decoypond Wood where vegetation clearance and reptile mitigation works were underway;
- Shipton Lee compound where fencing works, vegetation clearance and reptile mitigation measures were underway;

- Great Missendend to Waddesdon where bat mitigation works, vegetation clearance and asbestos removal were underway;
- School Hill where railway extension works were underway;
- Rose Hill Farm where vegetation clearance and mitigation works were underway;
- A422 North where compound development works were underway;
- A422 South Turweston cutting where compound development and maintenance works, stone deliveries, excavations and limestone screening were underway;
- Westbury where topsoil stripping and construction of piling platform were underway;
- Barton Hartshorn where railway bridge removal works, removal of the existing railway embankment, rail maintenance works and construction of the access road were underway.

The HS2 threshold levels for significant noise impacts, which are defined in Information Paper E23 (<https://www.gov.uk/government/publications/hs2-information-papers-environment>), were exceeded one (1) time 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.

Five (5) 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 1st to 30th April 2022.

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

- A422 Turweston North worksite, reference A422 TN (see Plan 1 in Appendix A), where works activities included:
 - access road construction;
 - topsoil stripping;
 - compound maintenance works;
 - drainage works;
 - stone deliveries;
 - excavations; and
 - slab crossing.
- School End worksite reference SE (see Plan 2 in Appendix A), where works activities included:
 - compound setup;

- stone deliveries;
 - topsoil stripping;
 - drainage works; and
 - instrumentation and monitoring installations.
- Rosehill Farm worksite reference RF (see Plan 2 in Appendix A), where works activities included:
 - demolition works;
 - instrumentation and monitoring installation;
 - vegetation clearance;
 - construction of the access road;
 - drainage and pond maintenance works.
 - Hermitage Chetwode Worksite reference – HC (see plan 2 in Appendix A), where no works were undertaken during the reporting period.
 - West Street Overbridge worksite reference WSO (see Plan 2 in Appendix A), where works activities included:
 - construction of access road;
 - drainage works; and
 - culvert installation works.
 - Addison Road worksite reference AR (see Plan 3 in Appendix A), where works activities included:
 - piling works, including pile cropping; and
 - utility diversion works.
 - School Hill Compound worksite reference SHC (see Plan 3 in Appendix A), where works activities included:
 - construction of site access roads.
 - School Hill UTX worksite reference - SHU (see Plan 3 in Appendix A), where works activities included:
 - vacuum excavation works of joining pits at Brackley Lane.
 - Quainton worksite, reference – QAR (see Plan 4 in Appendix A) where works activities included:

- utility diversion works, including concrete works, ducting and trenching works.
- FCC Sidings worksite, reference – FCC (see Plan 3 in Appendix A) where works activities included:
 - construction of site access road; and
 - crane demolition works.
- Meadoway and Glebe House, Aylesbury Worksite, reference – MW&GH (see Plan 5 in Appendix A), where works activities included:
 - construction of main compound and access road;
 - earthworks; and
 - stockpiling.
- Oat Close Worksite, reference – OC (see Plan 5 in Appendix A), where works activities included:
 - earthworks;
 - stockpiling management;
 - piling works;
 - access road maintenance works; and
 - material deliveries.
- Nash Lee Lane Worksite, reference – NLL (see Plan 6 in Appendix A), where works activities included:
 - stockpiling;
 - excavations;
 - brook diversion works;
 - drainage works;
 - kerb laying works and road works;
 - concrete works; and
 - temporary bridge diversion construction.
- Ellesborough Road Worksite, reference – ER (see Plan 6 in Appendix A), where works activities included:
 - topsoil stripping;

- archaeology works; and
- ground investigations.
- Rocky Lane Embankment Worksite, reference – RLE (see Plan 7 in Appendix A), where works activities included:
 - access road construction;
 - haul road works;
 - sheet piling;
 - ground investigation works;
 - stabilising of the haul road, including earthworks; and
 - asphaltting.
- Leather Lane Worksite, reference – LL (see Plan 8 in Appendix A), where works activities included:
 - asphaltting;
 - stockpiling;
 - earthworks; and
 - stabilising of the haul road.
- South Heath Cutting Worksite, reference – SHCW (see Plan 8 in Appendix A), where works activities included:
 - earthworks; and
 - culvert installation.
- North Portal Worksite, reference – NP (see Plan 8 in Appendix A), where works activities included:
 - site mobilisation and site set-up
 - piling platform construction
 - utility works; and
 - wall works.
- Chesham Road Worksite reference – CR (see Plan 8 in Appendix A), where works activities included:
 - site maintenance and operation; and

- shaft construction, which included setting up of cutting shoe, concrete pour of shaft walls and sinking of shaft to formation levels.
- Little Missenden Vent Shaft worksite reference LM (see Plan 9 in Appendix A), where works activities included:
 - site maintenance and operation
 - ground post treatment, including drilling and grouting works;
 - dewatering works;
 - capping beam and shaft excavation; and
 - secant piling works.
- Amersham Vent Shaft Worksite, reference – AM (see Plan 10 in Appendix A), where works activities included:
 - site maintenance and operation;
 - ground post treatment, including drilling and grouting works;
 - dewatering works;
 - temporary capping of beams, including ground monitoring;
 - concrete pours; and
 - secant piling works.
- Chalfont St Giles Vent Shaft Worksite, reference - CSG (see Plan 11 in Appendix A), where works activities included:
 - site maintenance and operation, including tower crane erection;
 - secant piling works;
 - road maintenance works;
 - secondary lining to the concrete;
 - construction of reinforced concrete structures;
 - connection to tunnel; and
 - construction of basement;
- Chalfont St Peter Vent Shaft Worksite, reference – CSP (see Plan 12 in Appendix A), where works activities included:
 - general plant operations;
 - basement secant piling works, including excavation and cutting of piles;

- road maintenance works;
 - secondary lining for concrete walls and floors;
 - connections to tunnel, including demolition and reinforced concrete works; and
 - basement construction works, including reinforced concrete capping beam, ground beam, excavation of capping beam and basement, and waterproofing works.
- Colne Valley Viaduct - Load Test Pile 1 Worksite, reference – CWV-LTP #1 (see Plan 13 in Appendix A), where works activities included:
 - construction of a cofferdam, including piling, operation of support plant and excavation);
 - main piling works, including bored piling, de-sanding, installation of reinforcement cage and concrete piling, break-out of bored pile and core drilling for integrity test of concrete piles;
 - realignment of River Colne, including removal of reinforced concrete crossing structures;
 - construction of north abutment pile wall;
 - pumping water management works;
 - installation of satellite welfare;
 - operation and maintenance for generator farms;
 - stockpiling;
 - fencing and finishing works;
 - environmental maintenance;
 - compound operation works;
 - crossing construction;
 - concrete drilling works;
 - backfilling;
 - slab construction and demolition;
 - pier construction;
 - gas utility works; and
 - girder and deck works.

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

- East West Rail (EWR) Overbridge where concrete work and repairs were undertaken;
- Charndon Lodge Underbridge where concrete works and repairs and installation of abutment wall rebar were undertaken;
- Perry Hill Overbridge where piling works and foundation works were underway;
- EWR Calvert where concrete works and drainage repair works were undertaken;
- West and East of Calvert Infrastructure Maintenance Depot (IMD) where temporary watercourse diversion works and drainage repair works were underway;
- West Street where temporary utility diversion works and road diversions were underway;
- Calvert Area North where earthworks, site haul road works and drainage repair works were underway.
- Park Hill where landscaping works were underway;
- Doodershall and from Shipton Lee to Decoypond Wood where vegetation clearance and reptile mitigation works were underway;
- Shipton Lee compound where fencing works, vegetation clearance and reptile mitigation measures were underway;
- Great Missenden to Waddesdon where bat mitigation works, vegetation clearance and asbestos removal were underway;
- School Hill where railway extension works were underway;
- Rose Hill Farm where vegetation clearance and mitigation works were underway;
- A422 North where compound development works were underway;
- A422 South Turweston cutting where compound development and maintenance works, stone deliveries, excavations and limestone screening were underway;
- Westbury where topsoil stripping and construction of piling platform were underway;

- Barton Hartshorn where railway bridge removal works, removal of the existing railway embankment, rail maintenance works and construction of the access road 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 three (3) vibration monitoring installations were active in April in the BS area. Table 2 summarises the positions of noise and vibration monitoring installations within the BS area in April 2022.

1.2.2 The noise monitor NP-NMP1 (worksite ref.: NP) was relocated on 14th April and the new monitoring position has been detailed as ORC-NMP1.

1.2.3 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
WSO	WSO-NMP1	West Street, Twyford
	WSO-NMP2	Cross Bucks Way, Twyford
AR	AR-NMP1	Addison Road, Rosehill Farm
SHC	SHC-NMP1	School Hill Compound, Calvert
SHU	SHU-NMP1	70 Cotswold Way, Calvert
QAR	QAR-NMP2	Station Rd, Quainton
FCC	FCC-NMP1	Calvert South
MW&GH	GH-NMP1	Glebe House, A418, Aylesbury
	MW-NMP1	Aylesbury, Buckinghamshire

Worksite Reference	Measurement Reference	Address
OC	OC-NMP1	Oat Close, Bishopstone, Aylesbury
	MF-NMP1	Moat Farm, Marsh Lane, Stoke Mandeville
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee
	NLL-NMP2	Nash Lee Lane, Nash Lee
ER	ER-NMP1	Ellesborough Rd, Wendover
	BL-NMP1	Bacombe Lane, Wendover
	ER-Vib1	Ellesborough Rd, Wendover
RLE	SDVC-NMP1	Rocky Lane, Wendover
	NCAS6-NMP1	Chesham Lane, The Lee, Wendover
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover
LL	HG-NMP1	Hunts Green, Leather Lane, The Lee, South Heath
	GD-NMP1	Grimms Ditch, The Lee, South Heath
SHCW	PR-NMP1	Potters Row, South Heath
	SH-NMP1	Bury Farm, South Heath
NP	NP-NMP1	North Portal worksite, Great Missenden
	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath
	BLH-NMP1	Bayleys Hatch, South Heat, Great Missinden
CR	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath
AM	AM-NMP1	Amersham Vent Shaft Worksite, Whielden Lane, Amersham
LM	LM-NMP1	Little Missenden, A413, Amersham
	PWC-NMP1	Patricia Holmes, Little Missenden Vent Shaft Worksite, Amersham
CSG	CSG-NMP1	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane
	CSG-NMP2	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane
	PIC-NMP1	Bottom House Farm Lane, Chalfont St Giles
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*	CVV-SVF-NMP1	Savay Farm, Denham Garden Village, Denham, Buckinghamshire

* This worksite is within the London Borough of Hillingdon, for more details on the works taking place please refer to the London Borough of Hillingdon Noise and Vibration Report available at:

<https://www.gov.uk/government/collections/monitoring-the-environmental-effects-of-hs2>

2 Summary of Results

2.1 Summary of Measured Noise Levels

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

Table 3: Summary of Measured dB L_{Aeq} Data over the Monitoring Period

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
A422 TN	TN-NMP1	Turweston, Brackley	Free-field	51.8 (55.1)	54.4 (58.6)	52.1 (59.8)	48.1 (54.6)	46.7 (53.0)	48.4 (49.5)	49.2 (50.4)	49.0 (51.0)	48.2 (53.2)	45.2 (49.1)	48.0 (51.3)	46.4 (51.9)
SE	SE-NMP1	School End, Chetwode	Free-field	48.0 (52.7)	55.9 (62.8)	45.5 (54.8)	42.2 (56.7)	42.6 (55.8)	46.0 (47.6)	49.6 (52.6)	47.4 (53.2)	45.0 (50.6)	41.8 (47.6)	45.2 (53.0)	42.6 (48.0)
RF	RF-NMP1	Old Stable Cottage, Rosehill Farm, Chetwode	Free-field	47.9 (53.5)	52.3 (62.8)	46.7 (52.4)	46.6 (52.7)	47.3 (57.9)	47.7 (52.6)	48.3 (50.6)	47.0 (50.9)	46.8 (51.8)	46.5 (56.9)	46.9 (51.3)	47.3 (53.7)
HC	HC-NMP1	Hermitage, Chetwode	Free-field	47.4 (49.8)	54.5 (64.0)	43.4 (46.8)	43.4 (49.1)	43.9 (55.8)	47.8 (50.7)	47.7 (49.1)	47.4 (49.6)	43.9 (47.7)	42.4 (53.5)	45.0 (51.7)	43.6 (49.8)
WSO	WSO-NMP1	West Street, Twyford	Free-field	48.7 (53.0)	52.0 (63.8)	47.6 (54.2)	45.7 (53.3)	44.0 (74.7)	48.0 (51.5)	47.4 (49.5)	47.7 (50.6)	47.3 (55.2)	41.3 (53.5)	46.9 (51.4)	42.7 (53.5)
	WSO-NMP2	Twyford	Free-field	46.4 (50.3)	49.5 (60.1)	45.5 (54.9)	44.8 (52.9)	43.6 (54.7)	45.5 (47.1)	47.6 (51.2)	46.9 (52.0)	45.2 (51.3)	42.9 (48.5)	46.1 (50.7)	43.5 (47.4)
AR	AR-NMP1	Addison Road, Rosehill Farm	Free-field	48.2 (50.9)	51.1 (59.9)	46.1 (53.3)	44.5 (51.0)	45.0 (55.4)	48.8 (52.5)	48.8 (53.6)	47.0 (51.7)	47.0 (52.9)	42.3 (53.8)	47.1 (53.1)	44.7 (53.1)
SHC	SHC-NMP1	School Hill Compound, Calvert	Free-field	52.3 (64.0)	56.5 (68.9)	52.9 (68.5)	48.5 (67.5)	45.9 (65.1)	49.2 (61.4)	52.9 (68.3)	55.9 (68.2)	52.0 (68.0)	44.5 (65.5)	50.6 (66.1)	45.8 (57.9)

OFFICIAL

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average $L_{Aeq,T}$ (Highest day $L_{Aeq,T}$)					Saturday Average $L_{Aeq,T}$ (Highest day $L_{Aeq,T}$)					Sunday / Public Holiday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$)	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
SHU	SHU-NMP1	70 Cotswold Way, Calvert	Free-field	53.2 (56.2)	56.1 (65.2)	51.4 (55.8)	48.4 (64.3)	46.5 (54.9)	51.2 (53.0)	51.1 (53.4)	52.2 (59.4)	50.8 (61.7)	44.9 (54.5)	51.6 (66.5)	45.8 (53.8)
QAR	QAR-NMP2	Station Rd, Quainton	Free-field	52.6 (65.1)	53.3 (72.0)	48.8 (52.8)	47.1 (72.8)	45.9 (65.3)	49.7 (52.5)	52.5 (57.9)	49.0 (49.5)	48.7 (52.5)	44.3 (56.0)	48.9 (52.4)	45.1 (54.0)
FCC	FCC-NMP1	Calvert South	Free-field	59.1 (61.9)	57.4 (63.9)	49.4 (55.6)	46.2 (51.7)	47.6 (60.3)	51.2 (53.6)	49.5 (51.8)	48.4 (54.6)	48.0 (55.4)	45.8 (53.7)	51.2 (64.1)	48.7 (58.1)
MW&GH	GH-NMP1	Glebe House, A418, Aylesbury	Free-field	55.5 (57.5)	56.5 (60.9)	56.6 (59.1)	54.3 (58.0)	50.2 (57.8)	53.9 (56.1)	55.5 (57.8)	55.6 (58.3)	54.8 (58.5)	49.9 (56.5)	54.0 (64.4)	49.9 (58.4)
	MW-NMP1	Aylesbury, Buckinghamshire	Free-field	63.3 (65.6)	63.8 (87.0)	62.5 (64.0)	60.3 (63.5)	56.6 (63.5)	60.8 (61.6)	62.2 (63.5)	62.6 (64.0)	61.3 (63.1)	55.7 (58.5)	60.8 (63.8)	56.1 (64.1)
OC	OC-NMP1	Oat Close, Bishopstone, Aylesbury	Free-field	48.0 (52.8)	52.4 (60.4)	51.1 (55.7)	45.9 (53.0)	44.2 (59.3)	45.1 (46.1)	46.2 (47.5)	45.8 (48.0)	45.1 (48.9)	40.5 (43.6)	46.3 (51.5)	38.6 (44.0)
	MF-NMP1	Moat Farm, Marsh Lane, Stoke Mandeville	Free-field	46.6 (51.3)	53.2 (66.4)	48.1 (61.6)	43.0 (55.7)	42.6 (58.7)	44.2 (45.8)	45.2 (48.7)	44.3 (48.4)	43.9 (49.0)	41.3 (55.2)	43.2 (50.8)	44.5 (52.9)
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury	Free-field	46.3 (52.1)	49.7 (62.0)	45.9 (49.8)	43.7 (52.2)	43.4 (60.1)	44.8 (45.4)	45.2 (47.7)	44.3 (46.4)	44.6 (49.3)	42.1 (59.8)	44.0 (50.2)	43.8 (50.0)
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee	Free-field	54.8 (58.1)	57.1 (64.0)	53.2 (56.0)	51.5 (54.3)	50.9 (56.2)	51.9 (52.8)	53.7 (56.2)	52.9 (57.3)	52.1 (57.1)	50.8 (55.8)	52.5 (59.0)	50.7 (57.2)

OFFICIAL

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average $L_{Aeq,T}$ (Highest day $L_{Aeq,T}$)					Saturday Average $L_{Aeq,T}$ (Highest day $L_{Aeq,T}$)					Sunday / Public Holiday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$)	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
	NLL-NMP2	Nash Lee Lane, Nash Lee	Free-field	58.5 (63.9)	57.1 (59.8)	53.5 (56.8)	51.1 (54.9)	50.9 (60.6)	53.4 (56.4)	53.9 (56.6)	52.8 (55.0)	52.7 (56.9)	50.1 (56.5)	55.4 (68.3)	51.8 (61.2)
ER	ER-NMP1	Ellesborough Rd, Wendover	Free-field	56.6 (59.4)	57.3 (62.7)	55.4 (60.8)	52.8 (57.8)	50.4 (58.1)	53.5 (55.6)	55.4 (59.8)	53.7 (55.3)	53.4 (58.5)	49.0 (54.5)	52.2 (58.6)	49.3 (56.8)
	BL-NMP1	Bacombe Lane, Wendover	Free-field	51.1 (52.9)	51.6 (61.2)	49.6 (52.6)	49.3 (54.9)	49.5 (52.5)	50.8 (51.5)	49.9 (51.2)	49.3 (51.3)	49.4 (52.0)	49.4 (52.5)	49.5 (52.7)	49.7 (52.1)
RLE	SDVC-NMP1	Rocky Lane, Wendover	Free-field	64.2 (68.8)	63.4 (66.3)	63.3 (65.3)	60.4 (64.4)	57.8 (66.3)	61.7 (62.4)	61.7 (63.3)	61.4 (62.9)	61.1 (63.0)	57.1 (60.9)	61.2 (63.5)	57.7 (67.6)
	NCAS6-NMP1	Chesham Lane, The Lee, Wendover	Free-field	53.9 (66.5)	60.6 (69.3)	57.6 (68.1)	45.5 (54.3)	44.1 (55.9)	47.6 (54.0)	50.5 (65.2)	47.6 (50.6)	45.5 (49.5)	43.6 (48.1)	48.7 (62.7)	43.9 (55.6)
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	Free-field	56.9 (61.9)	57.9 (61.4)	56.0 (60.8)	52.7 (57.8)	49.9 (58.7)	53.4 (54.6)	54.8 (56.6)	54.1 (57.1)	53.9 (64.9)	49.2 (53.1)	55.2 (63.3)	50.4 (60.3)
LL	HG-NMP1	Hunts Green, Leather Lane, The Lee	Free-field	48.8 (55.7)	50.1 (57.0)	48.4 (53.1)	45.9 (54.6)	47.2 (59.9)	46.5 (50.0)	48.3 (49.7)	47.9 (50.5)	47.5 (56.8)	45.1 (54.3)	48.5 (57.4)	47.5 (58.7)
	GD-NMP1	Grimms Ditch, The Lee, South Heath	Free-field	50.1 (74.9)	53.7 (74.6)	51.3 (66.2)	46.0 (68.8)	45.1 (71.2)	46.3 (47.3)	49.4 (57.7)	49.8 (57.5)	47.7 (59.0)	40.2 (51.2)	46.7 (53.2)	45.9 (66.8)
SHCW	PR-NMP1	Potters Row, South Heath	Free-field	51.1 (56.9)	52.6 (60.9)	49.6 (54.9)	45.9 (53.1)	45.8 (55.3)	49.9 (52.9)	52.3 (54.9)	52.0 (56.7)	49.6 (56.3)	45.3 (52.0)	49.0 (57.9)	45.6 (53.3)

OFFICIAL

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average $L_{Aeq,T}$ (Highest day $L_{Aeq,T}$)					Saturday Average $L_{Aeq,T}$ (Highest day $L_{Aeq,T}$)					Sunday / Public Holiday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$)	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
	SH-NMP1	Bury Farm, South Heath	Free-field	49.7 (55.3)	51.9 (61.5)	48.2 (54.8)	45.7 (55.9)	43.0 (54.6)	48.6 (50.7)	48.7 (51.2)	46.8 (48.4)	45.3 (49.4)	41.5 (47.0)	45.7 (51.9)	43.1 (50.5)
NP	NP-NMP1	North Portal worksite, Great Missenden	Free-field	55.3 (58.8)	60.7 (63.0)	52.3 (60.0)	49.9 (60.6)	43.7 (52.1)	52.3 (53.1)	53.2 (54.7)	47.8 (49.9)	45.7 (48.7)	40.2 (45.1)	46.4 (49.3)	44.2 (52.0)
	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath	Free-field	55.7 (57.5)	56.9 (64.1)	55.1 (58.2)	54.6 (61.0)	47.1 (61.2)	54.9 (59.1)	55.6 (56.7)	52.4 (53.2)	51.9 (55.7)	46.9 (56.0)	51.8 (55.6)	46.7 (55.8)
	BLH-NMP1	Bayleys Hatch, South Heat, Great Missinden	Free-field	50.8 (55.3)	52.3 (58.2)	48.9 (54.6)	45.4 (54.3)	43.8 (53.4)	49.3 (51.3)	52.2 (57.7)	50.3 (61.0)	48.0 (54.5)	42.0 (51.1)	49.5 (59.4)	43.9 (53.0)
CR	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath	Free-field	58.9 (62.2)	58.2 (64.0)	57.5 (60.7)	54.6 (60.6)	51.3 (60.5)	56.5 (59.4)	57.7 (59.9)	58.4 (69.6)	56.5 (68.5)	50.2 (57.2)	60.6 (73.7)	51.3 (59.4)
AM	AM-NMP1	Whielden Lane, Amersham	Free-field	61.6 (63.9)	61.3 (64.1)	60.3 (61.5)	58.0 (60.8)	54.4 (61.2)	58.5 (60.0)	60.1 (61.8)	59.8 (62.3)	59.0 (62.8)	53.9 (57.6)	58.6 (62.9)	54.8 (61.3)
LM	LM-NMP1	Little Missenden, A413, Amersham	Free-field	58.6 (63.8)	58.8 (61.9)	59.1 (65.0)	55.4 (59.7)	51.0 (60.6)	54.7 (56.2)	56.6 (57.1)	57.3 (58.1)	56.4 (57.9)	50.0 (55.5)	56.1 (59.1)	51.0 (61.5)
	PWC-NMP1	Patricia Holmes, Little Missenden Vent Shaft Worksite, Amersham	Free-field	59.4 (63.4)	58.9 (61.8)	58.9 (61.7)	55.6 (59.8)	53.0 (61.2)	56.4 (58.8)	57.6 (60.1)	57.6 (58.1)	57.2 (63.0)	52.4 (58.6)	56.7 (60.9)	52.6 (61.2)
CSG	CSG-NMP1	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane	Free-field	49.4 (54.3)	51.7 (57.6)	47.8 (54.0)	45.8 (54.0)	46.3 (60.9)	48.0 (52.5)	49.8 (52.9)	46.3 (50.2)	48.5 (55.0)	45.9 (57.8)	47.6 (54.1)	47.8 (58.8)

OFFICIAL

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average $L_{Aeq,T}$ (Highest day $L_{Aeq,T}$)					Saturday Average $L_{Aeq,T}$ (Highest day $L_{Aeq,T}$)					Sunday / Public Holiday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$)	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
	CSG-NMP2	Chalfont St Giles Vent Shaft Worksite, Bottom House Farm Lane	Free-field	50.5 (55.2)	56.0 (61.0)	49.7 (54.2)	43.0 (49.8)	44.3 (56.5)	48.4 (49.6)	49.1 (51.0)	45.9 (50.8)	47.7 (52.8)	41.7 (50.2)	46.2 (52.0)	42.5 (50.4)
	PIC-NMP1	Bottom House Farm Lane, Chalfont St Giles, Buckinghamshire	Free-field	54.6 (57.5)	54.0 (57.8)	54.2 (63.9)	52.0 (67.3)	50.2 (62.3)	51.9 (52.4)	53.2 (54.0)	52.5 (52.7)	52.5 (57.0)	48.8 (58.8)	53.7 (61.6)	49.4 (56.4)
CSP	CSP-NMP1	Chalfont St Peter Vent Shaft Worksite	Free-field	58.6 (65.4)	61.2 (73.0)	58.1 (70.7)	52.6 (56.2)	49.5 (68.4)	53.2 (54.6)	55.9 (56.7)	55.8 (57.1)	54.3 (57.5)	48.3 (56.1)	54.1 (62.6)	49.2 (55.7)
	CSP-NMP2	Chalfont St Peter Vent Shaft Worksite	Free-field	47.6 (51.3)	49.5 (54.4)	46.7 (51.3)	44.0 (51.5)	42.3 (50.4)	45.3 (45.9)	47.1 (48.8)	47.5 (48.9)	46.4 (52.1)	40.9 (47.3)	46.3 (53.3)	41.6 (48.9)
	CSP-NMP3	Chalfont St Peter Vent Shaft Worksite	Free-field	56.7 (61.7)	56.3 (61.3)	56.0 (60.7)	53.9 (58.9)	51.9 (64.4)	54.2 (55.9)	55.8 (58.1)	55.6 (58.4)	54.9 (57.9)	49.9 (55.7)	54.7 (58.0)	51.2 (59.9)
CVV-LTP #1	CVV-LTP #1-NMP1	Northern boundary, Load Test Pile 1 Worksite	Free-field	62.0 (66.3)	61.6 (63.4)	60.8 (65.1)	57.3 (61.0)	56.2 (63.7)	57.7 (58.5)	59.9 (60.5)	61.1 (61.3)	58.8 (64.1)	53.9 (60.4)	58.1 (63.3)	55.5 (63.8)
	CVV-WYC-NMP1	Wyatt's Covert, Tilehouse Lane, Denham	Free-field	58.6 (60.9)	59.4 (62.3)	58.2 (61.3)	53.9 (58.0)	53.0 (62.0)	55.4 (56.3)	58.7 (59.4)	59.1 (60.6)	56.2 (60.2)	51.2 (58.8)	56.4 (61.6)	52.1 (59.8)
	CVV-DFS-NMP1	Denham Film Studio, Uxbridge	Free-field	50.4 (53.1)	51.4 (59.6)	52.8 (66.0)	48.7 (55.5)	46.1 (58.3)	49.9 (51.3)	49.5 (50.4)	47.9 (49.7)	51.6 (57.7)	45.4 (53.4)	48.4 (56.5)	46.0 (53.1)

Worksite Reference	Measurement Reference	Site Address	Free-Field or Façade Measurement	Weekday Average $L_{Aeq,T}$ (Highest day $L_{Aeq,T}$)					Saturday Average $L_{Aeq,T}$ (Highest day $L_{Aeq,T}$)					Sunday / Public Holiday Average $L_{Aeq,T}$ (Highest Day $L_{Aeq,T}$)	
				0700 - 0800	0800 - 1800	1800 - 1900	1900 - 2200	2200 - 0700	0700 - 0800	0800 - 1300	1300 - 1400	1400 - 2200	2200 - 0700	0700 - 2200	2200 - 0700
CVV-MR	CVV-SVF-NMP1	Savay Farm, Denham Garden Village, Denham, Buckinghamshire	Free-field	54.0 (59.0)	52.5 (55.9)	50.1 (53.7)	48.0 (52.6)	48.5 (56.4)	52.6 (54.9)	52.0 (53.5)	49.2 (50.8)	48.1 (52.4)	47.1 (56.8)	49.5 (55.3)	48.7 (56.1)

*No data available for this period as monitor NLL-NMP2 was installed on the 23rd of April and an issue with the SIM card that occurred from the 27th of April until the end of the month prevented data capture during this time period.

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-Vib 1	School End, Chetwode	1.32 (X-axis)
RF	RF-Vib 1	Old Stable Cottage, Rosehill Farm, Chetwode	3.72 (Y-axis)
ER	ER-Vib1	Ellesborough Rd, Wendover	2.40 (X-axis)

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

2.2 Exceedances of the LOAEL and SOAEL

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

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

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

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

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

Table 5: Summary of Exceedances of LOAEL and SOAEL

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
A422 TN	TN-NMP1	Turweston, Brackley	Saturdays	14:00-22:00	1	No exceedance
SE	SE-NMP1	School End, Chetwode	Weekdays	08:00-18:00	1	No exceedance
RF	RF-NMP1	Old Stable Cottage, Rosehill Farm, Chetwode	Weekdays	08:00-18:00	1	No exceedance
HC	HC-NMP1	Hermitage, Chetwode	Weekdays	08:00-18:00	1	No exceedance
WSO	WSO-NMP1	West Street, Twyford	Weekdays	08:00-18:00	1	No exceedance
	WSO-NMP2	Twyford	All days	All periods	No exceedance	No exceedance
AR	AR-NMP1	Addison Road, Rosehill Farm	All days	All periods	No exceedance	No exceedance
SHC	SHC-NMP1*	School Hill Compound, Calvert	All days	All periods	No exceedance	No exceedance
SHU	SHU-NMP1	70 Cotswold Way, Calvert	Weekdays	08:00-18:00	1	No exceedance
QAR	QAR-NMP2	Station Rd, Quainton	Weekdays	08:00-18:00	1	No exceedance
FCC	FCC-NMP1	Calvert South	Weekday	08:00-1:00	1	No exceedance
MW&GH	GH-NMP1	Glebe House, A418, Aylesbury	All days	All periods	No exceedance	No exceedance
	MW-NMP1	Aylesbury, Buckinghamshire	Weekdays Saturdays	08:00-18:00 08:00-13:00	15 3	No exceedance No exceedance

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
OC	OC-NMP1	Oat Close, Bishopstone, Aylesbury	All days	All Periods	No exceedance	No exceedance
	MF-NMP1*	Moat Farm, Marsh Lane, Stoke Mandeville	All days	All Periods	No exceedance	No exceedance
	WES-NMP1	Westfield, Stoke Mandeville, Aylesbury	All days	All Periods	No exceedance	No exceedance
NLL	NLL-NMP1	Nash Lee Lane, Nash Lee	Weekdays	08:00-18:00	1	No exceedance
	NLL-NMP2	Nash Lee Lane, Nash Lee	All days	All periods	No exceedance	No exceedance
ER	ER-NMP1	Ellesborough Rd, Wendover	Weekdays	08:00-18:00	1	No exceedance
	BL-NMP1	Bacombe Lane, Wendover	All days	All periods	No exceedance	No exceedance
RLE	SDVC-NMP1	Rocky Lane, Wendover	Weekdays Saturdays	08:00-18:00 08:00-13:00	17 3	No exceedance No exceedance
	NCAS6-NMP1	Chesham Lane, The Lee, Wendover	Weekdays Saturdays	08:00-18:00 08:00-13:00	11 1	No exceedance No exceedance
	NCAS5-NMP1	Chesham Lane, The Lee, Wendover	All days	All periods	No exceedance	No exceedance
LL	HG-NMP1	Hunts Green, Leather Lane, The Lee, South Heath	All days	All periods	No exceedance	No exceedance
	GD-NMP1	Grimms Ditch, The Lee, South Heath	Weekdays	08:00-18:00	2	1
SHCW	PR-NMP1	Potters Row, South Heath	All days	All periods	No exceedance	No exceedance
	SH-NMP1	Bury Farm, South Heath	All days	All periods	No exceedance	No exceedance

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
NP	NP-NMP1*	North Portal worksite, Great Missenden	Weekdays	All periods	No exceedance	No exceedance
	ORC-NMP1	Orchard Cottage, Ballinger Road, South Heath	Weekdays	All periods	No exceedance	No exceedance
	BLH-NMP1	Bayleys Hatch, South Heat, Great Missinden	All days	All periods	No exceedance	No exceedance
CR	MDL-NMP1	Meadow Leigh Cottage, Firth Hill, South Heath	Weekdays	08:00-18:00	1	No exceedance
AM	AM-NMP1*	Whielden Lane, Amersham	All days	All periods	No exceedance	No exceedance
LM	LM-NMP1*	Little Missenden Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
	PWC-NMP1**	Patricia Holmes, Little Missenden Vent Shaft Worksite, Amersham	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	All days	All periods	No exceedance	No exceedance
CSP	CSP-NMP1*	Chalfont St Peter Vent Shaft Worksite	Weekdays	08:00-18:00	1	No exceedance
	CSP-NMP2*	Chalfont St Peter Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
	CSP-NMP3*	Chalfont St Peter Vent Shaft Worksite	All days	All periods	No exceedance	No exceedance
CVV-LTP #1	CVV-LTP #1-NMP1*	Northern boundary, Load Test Pile 1 Worksite	All days	All periods	No exceedance	No exceedance

Worksite Reference	Measurement Reference	Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of LOAEL	Number of exceedances of SOAEL
	CVV-WYC-NMP1**	Wyatt's Covert, Tilehouse Lane, Denham	Weekdays	08:00-18:00	1	No exceedance
	CVV-DFS-NMP1**	Denham Film Studio, Uxbridge	All days	All periods	No exceedance	No exceedance
CVV-MR	CVV-SVF-NMP1**	Savay Farm, Denham Garden Village, Denham, Buckinghamshire	All days	All periods	No exceedance	No exceedance

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

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

2.2.6 Exceedances of the LOAEL were recorded at seventeen (17) monitoring locations during the month of April 2022.

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
LL	GD-NMP1	Grimms Ditch, The Lee, South Heath	1

2.2.8 One (1) SOAEL exceedance was recorded due to HS2 construction works during April 2022. The exceedance occurred at monitoring locations GD-NMP1 during core working hours.

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

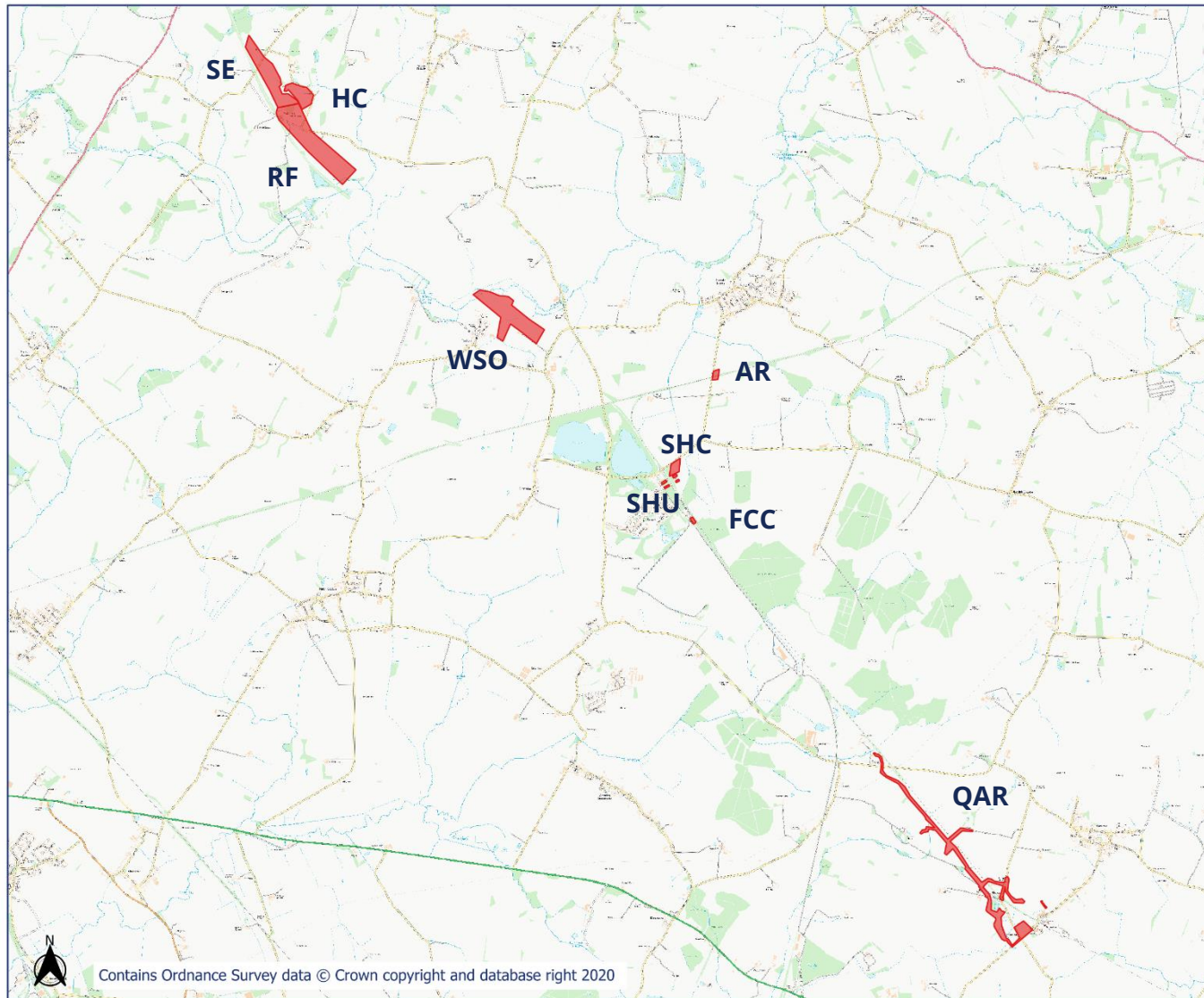
2.4.1 Table 8 provides a summary of complaint information related to noise and vibration received during the reporting period, along with the findings of any investigation.

Table 8: Summary of Complaints

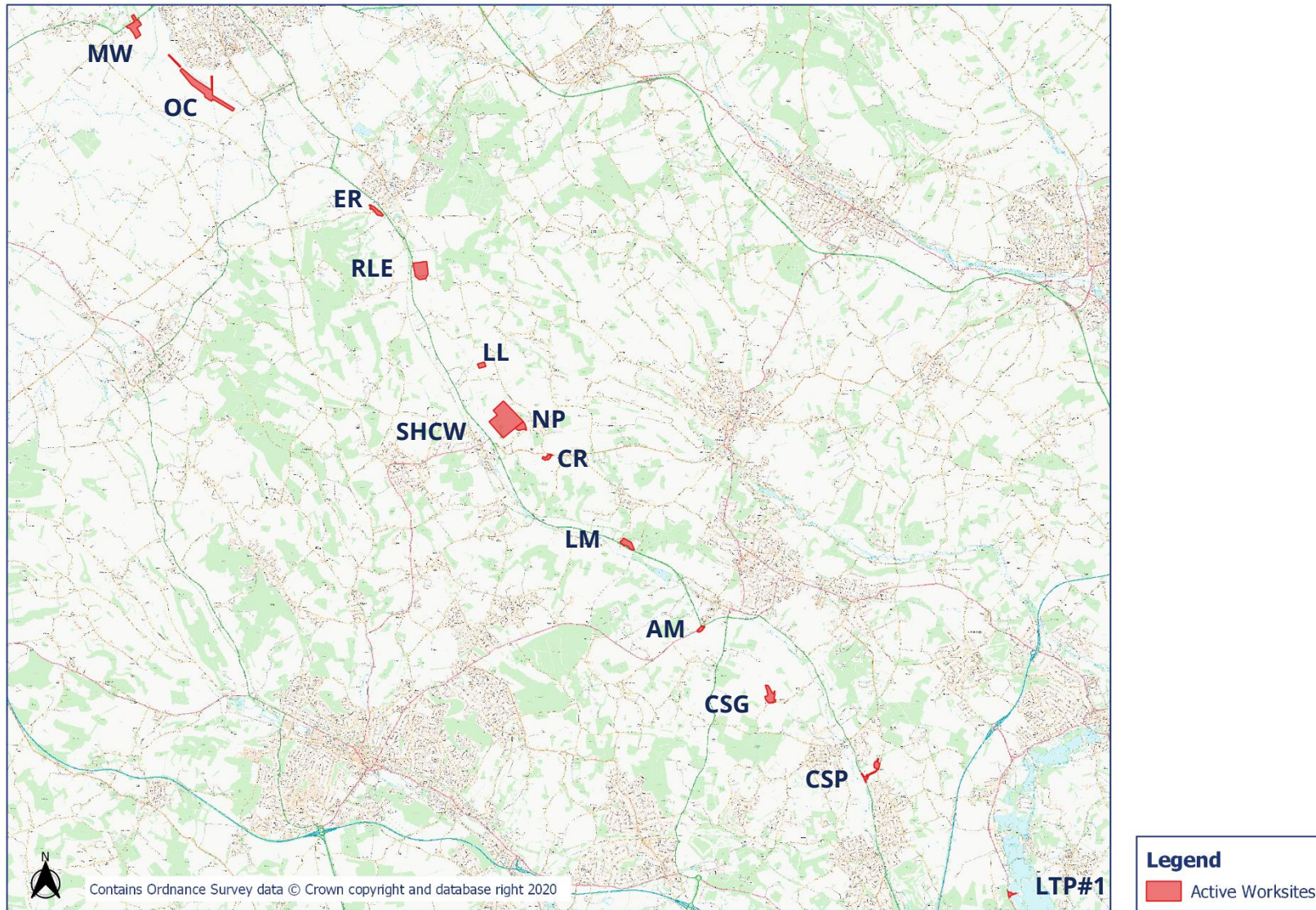
Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
HS2-22-43500-C	OC	Compliant due to noise disturbance from construction heard at 4am.	The nearest works to stakeholder were being undertaken by National Rail and were unrelated to HS2. Although HS2 works were being undertaken at this time they were further away and unlikely to be the cause of the disturbance	Stakeholder has been contacted and information about the results of investigation has been provided.
HS2-22-43561-C	OC	Complaint due to noise disturbance & light pollution from works taking place overnight.	Investigation concluded that the railway line is currently being used to take deliveries of materials overnight. Works are undertaken in line with Section 61 consent and can only be done overnight as commuter lines during the day and evening.	Noise mitigations and monitors are already in place. Stakeholder has been contacted and information about the results of investigations have been provided.
HS2-22-43517-C	NP	Complaint due to noise disturbance from high pitched whine throughout day.	Investigations confirmed that concrete pouring took place during complaint timeframe. Other non-HS2 works were being undertaken nearby which may be the cause of disturbance.	Stakeholder has been contacted and information about the results of investigations have been provided. Noise monitors will be checked for any whining which may be the noise in question.
HS2-22-43535-C	CVV-LTP #1	Complaint due to noise disturbance from constant loud	Investigation concluded works did not commence until 08:02 with noise and	Stakeholder has been contacted and information about the

Complaint Reference Number	Worksite Reference	Description of Complaint	Results of Investigation	Actions Taken
		banging noise from 7.40AM.	vibration monitoring registering no audio spikes.	results of investigations have been provided.
HS2-22-43556-C	CVV-LTP #1	Complaint due to noise disturbance from screeching noise audible from within the house.	Investigation showed that no noise exceedances were detected by monitors in the area.	Noise monitoring equipment will be installed at the stakeholder's property to monitor this issue.

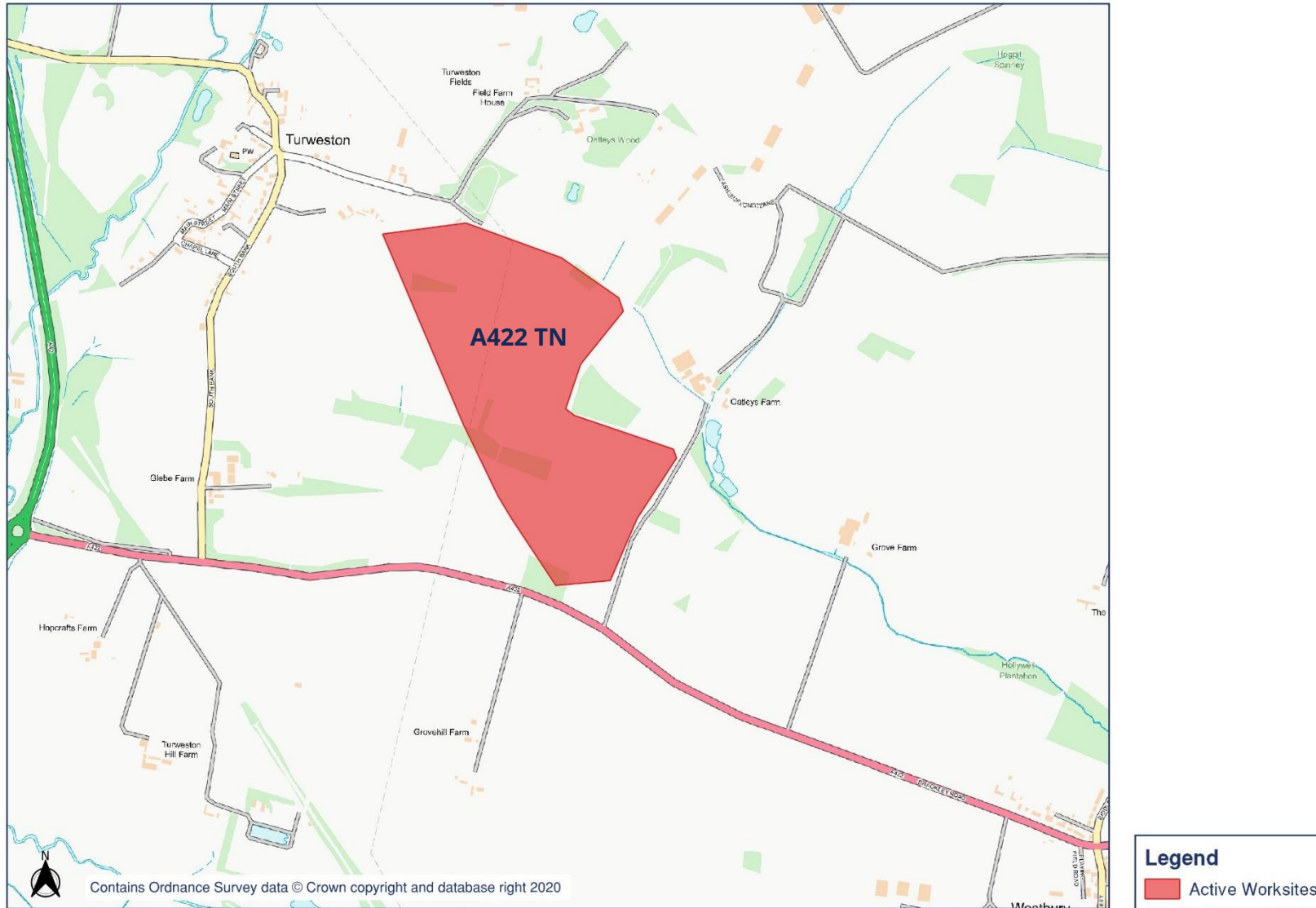
Appendix A Site Locations

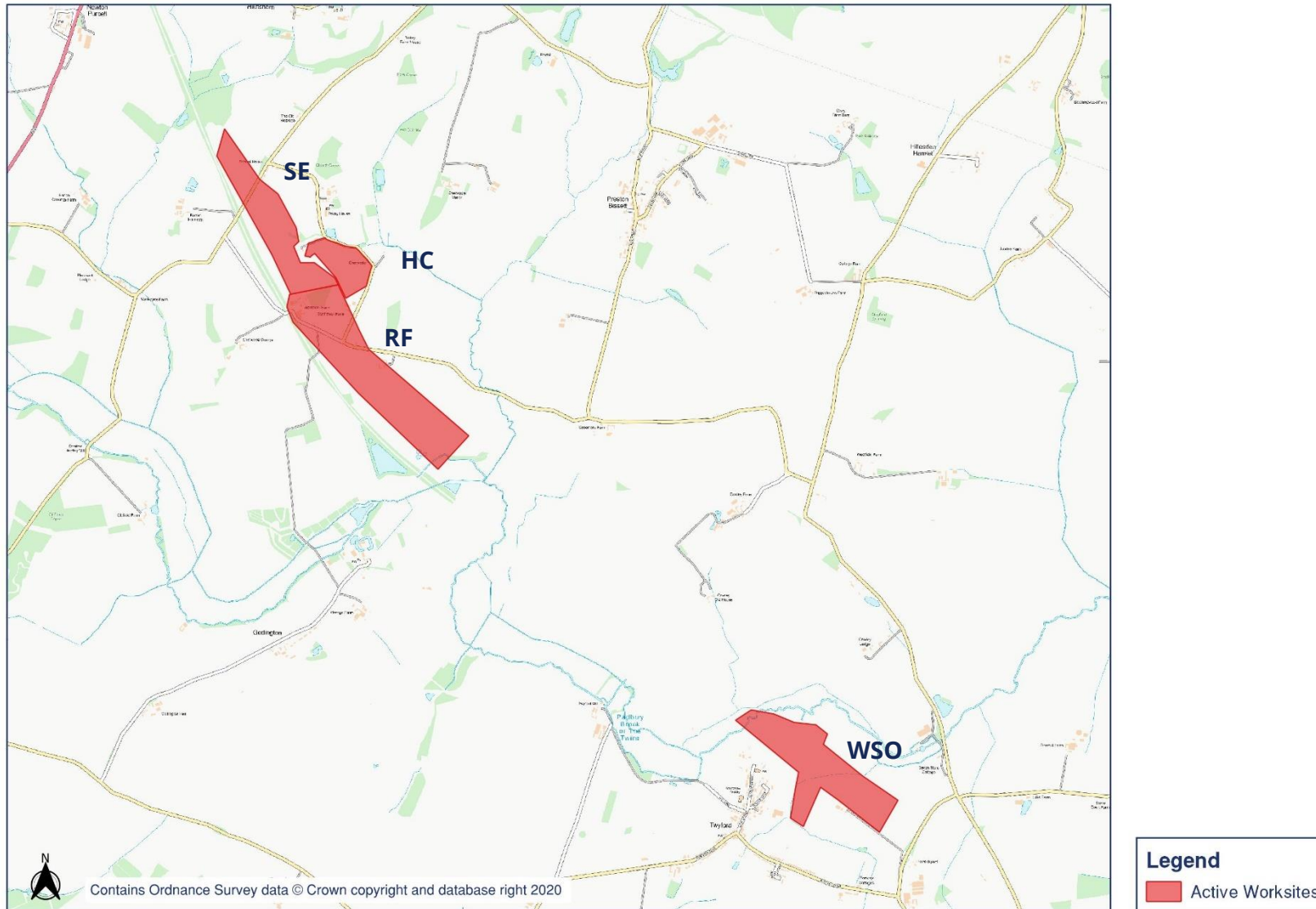


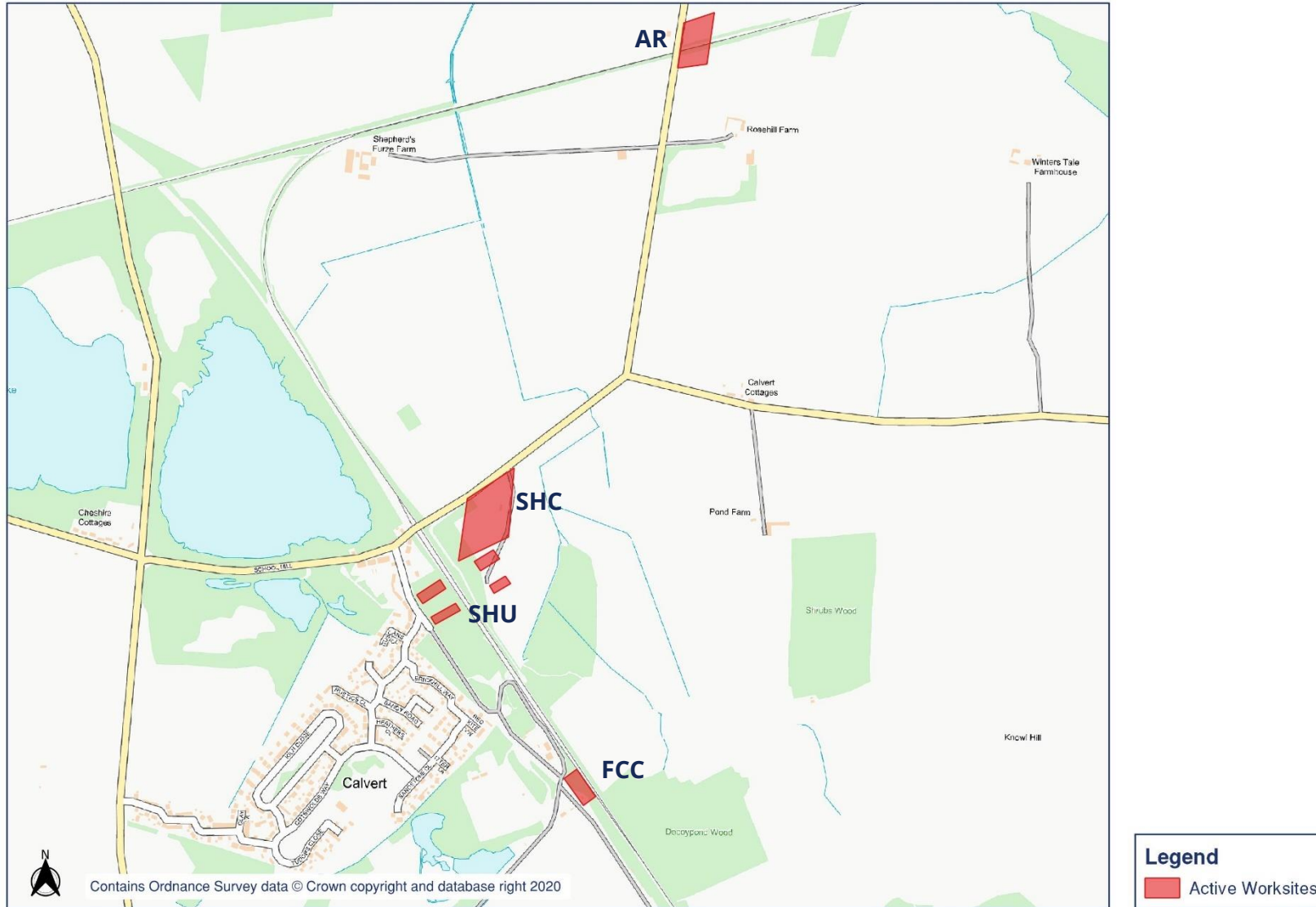
HS2 Worksite Identification Plan - Overview 2

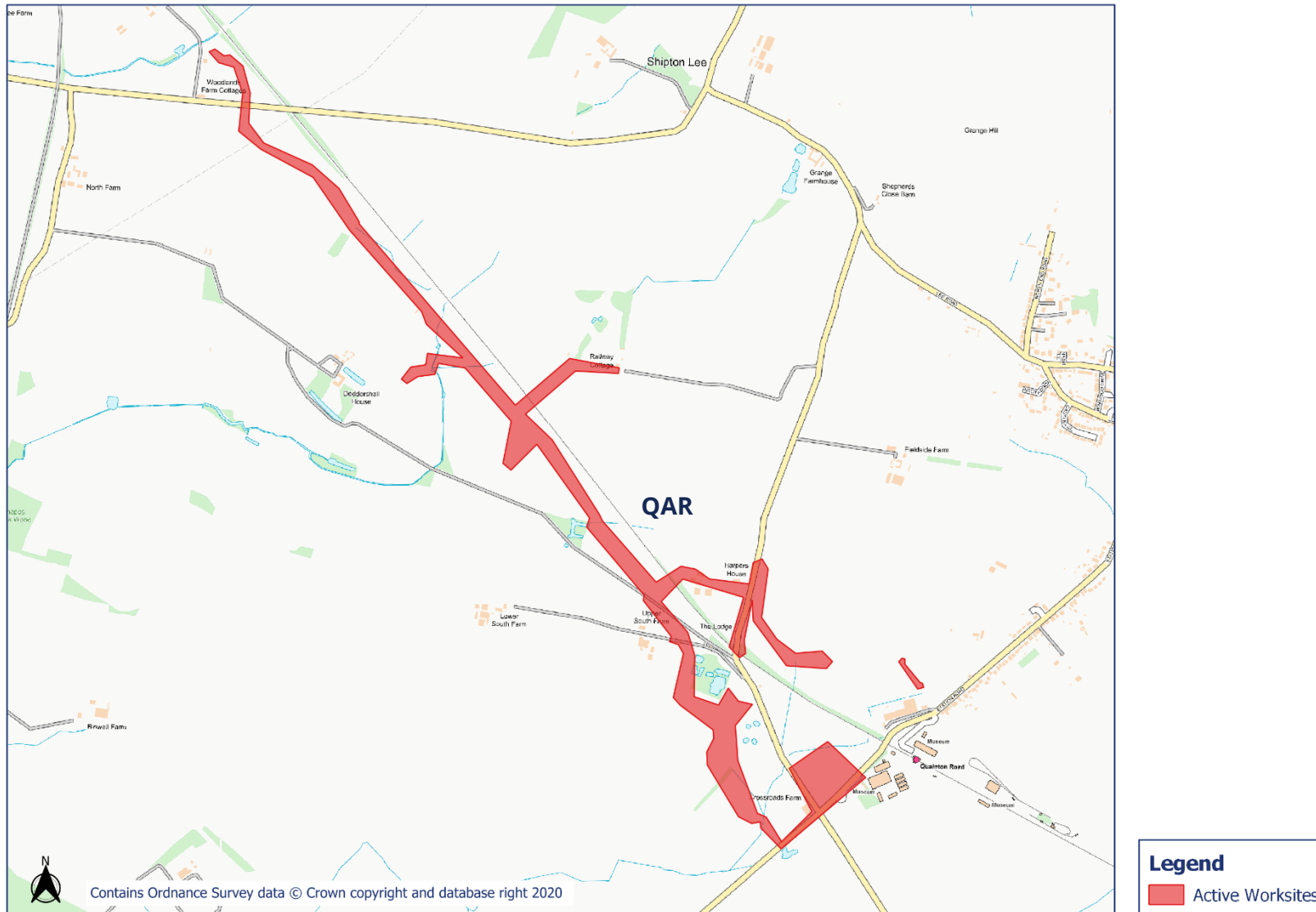


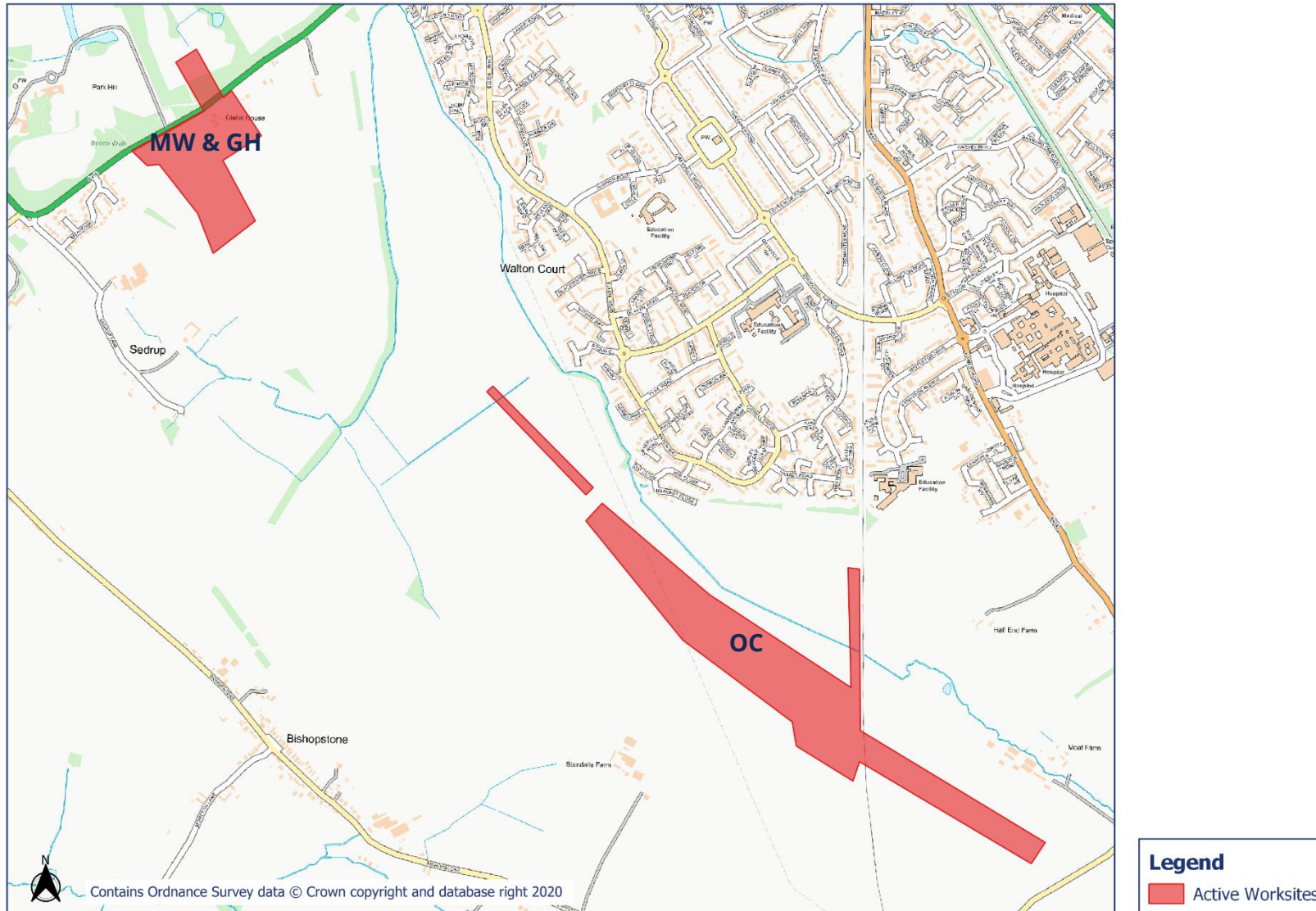
OFFICIAL

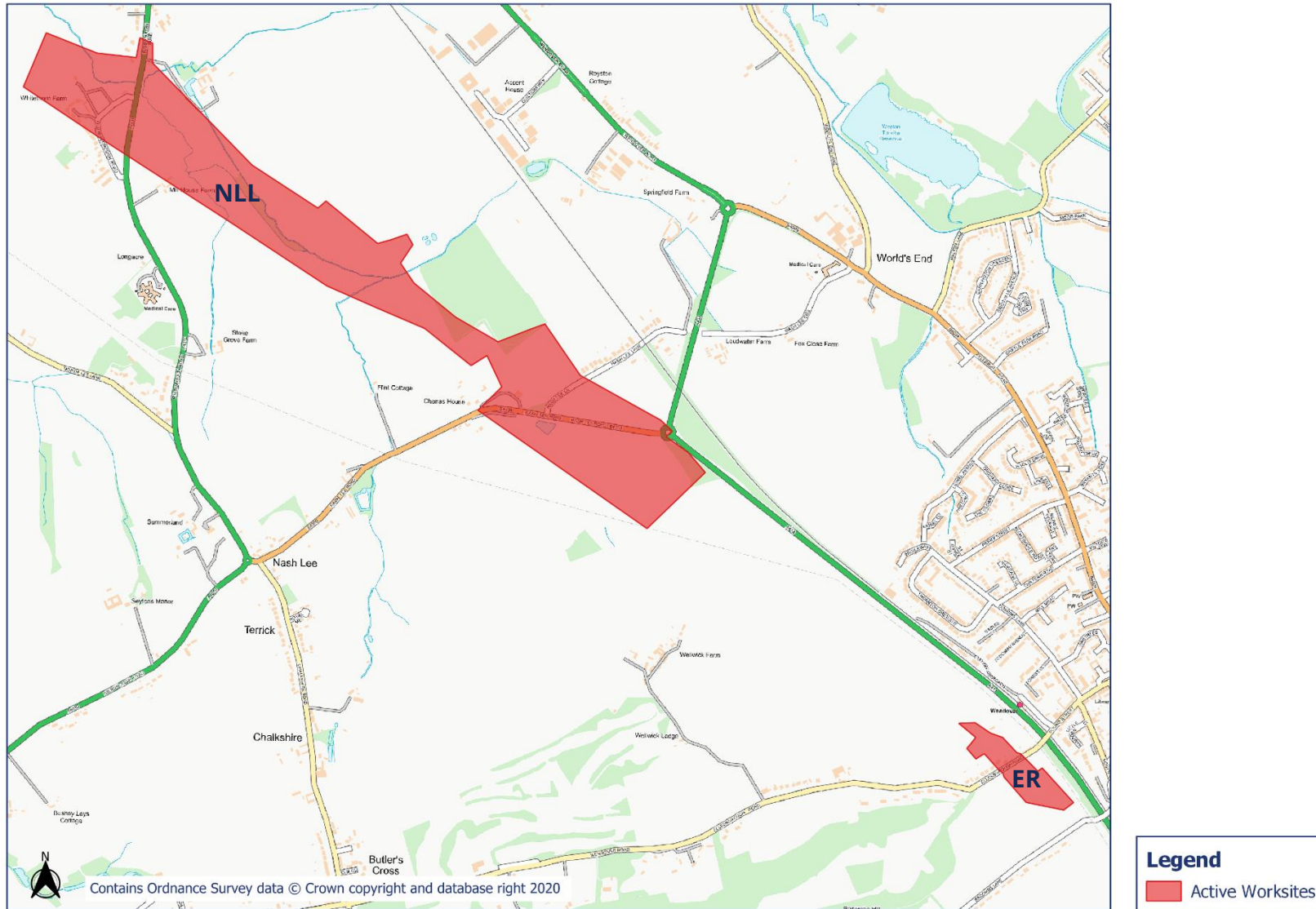


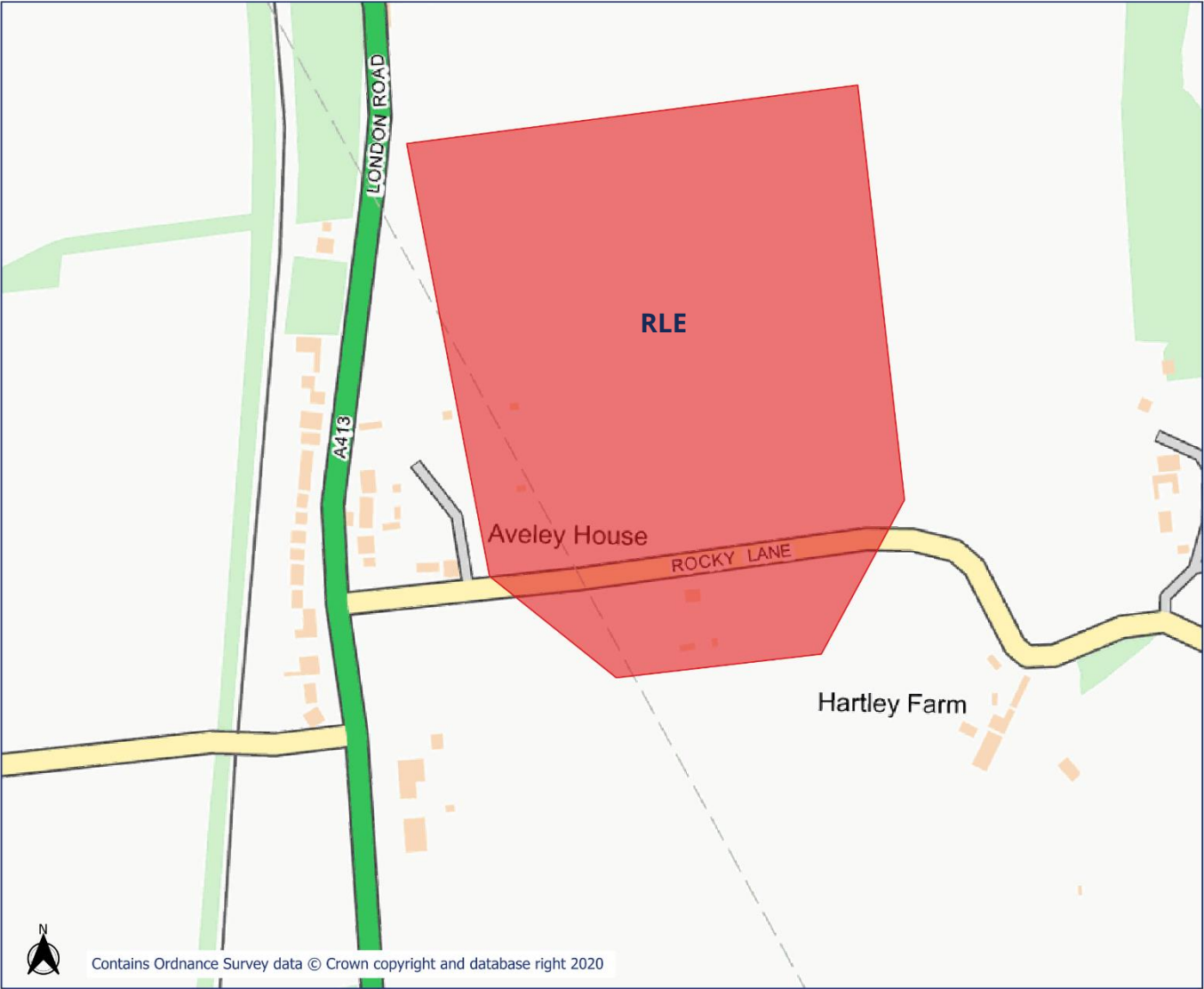


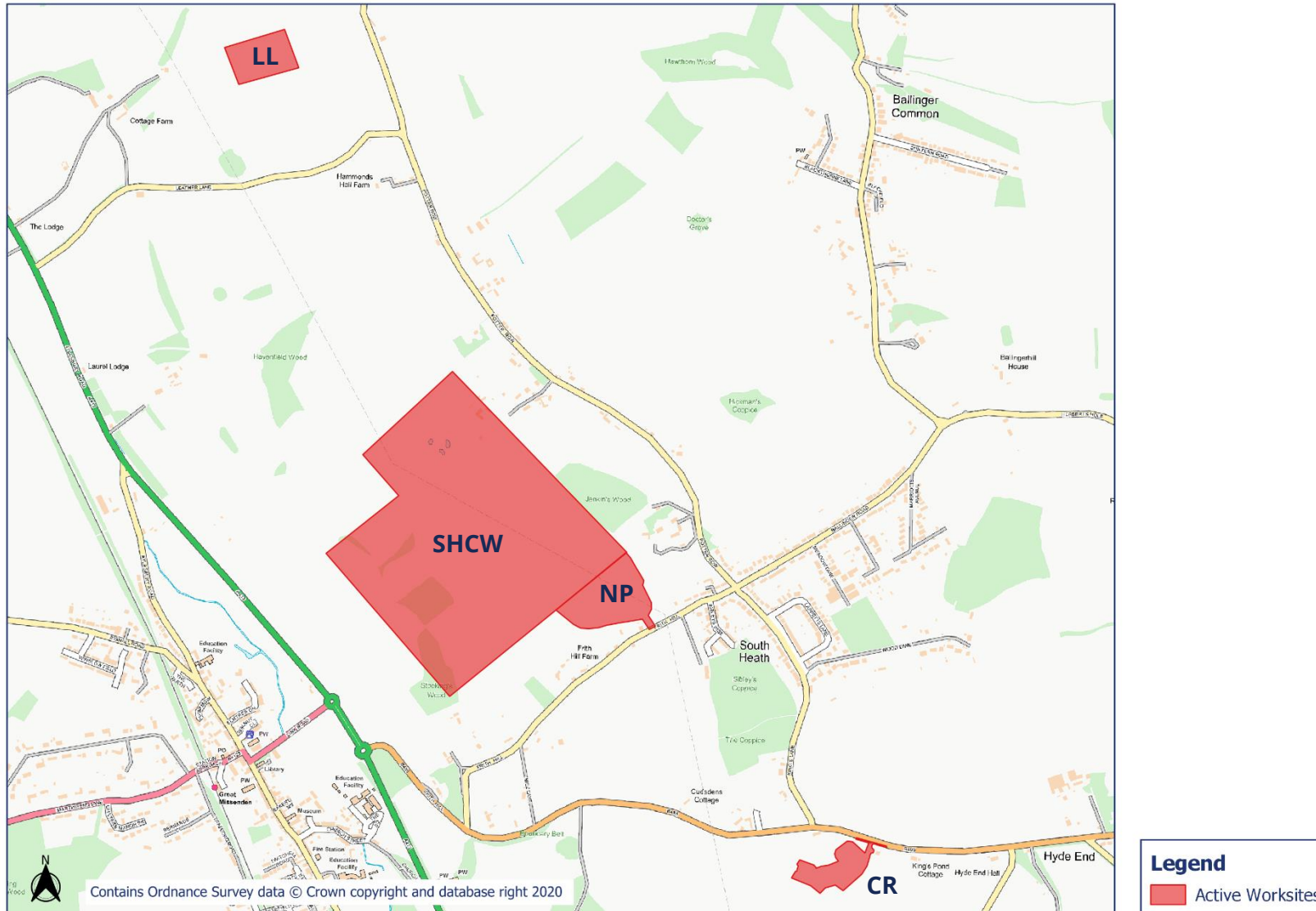








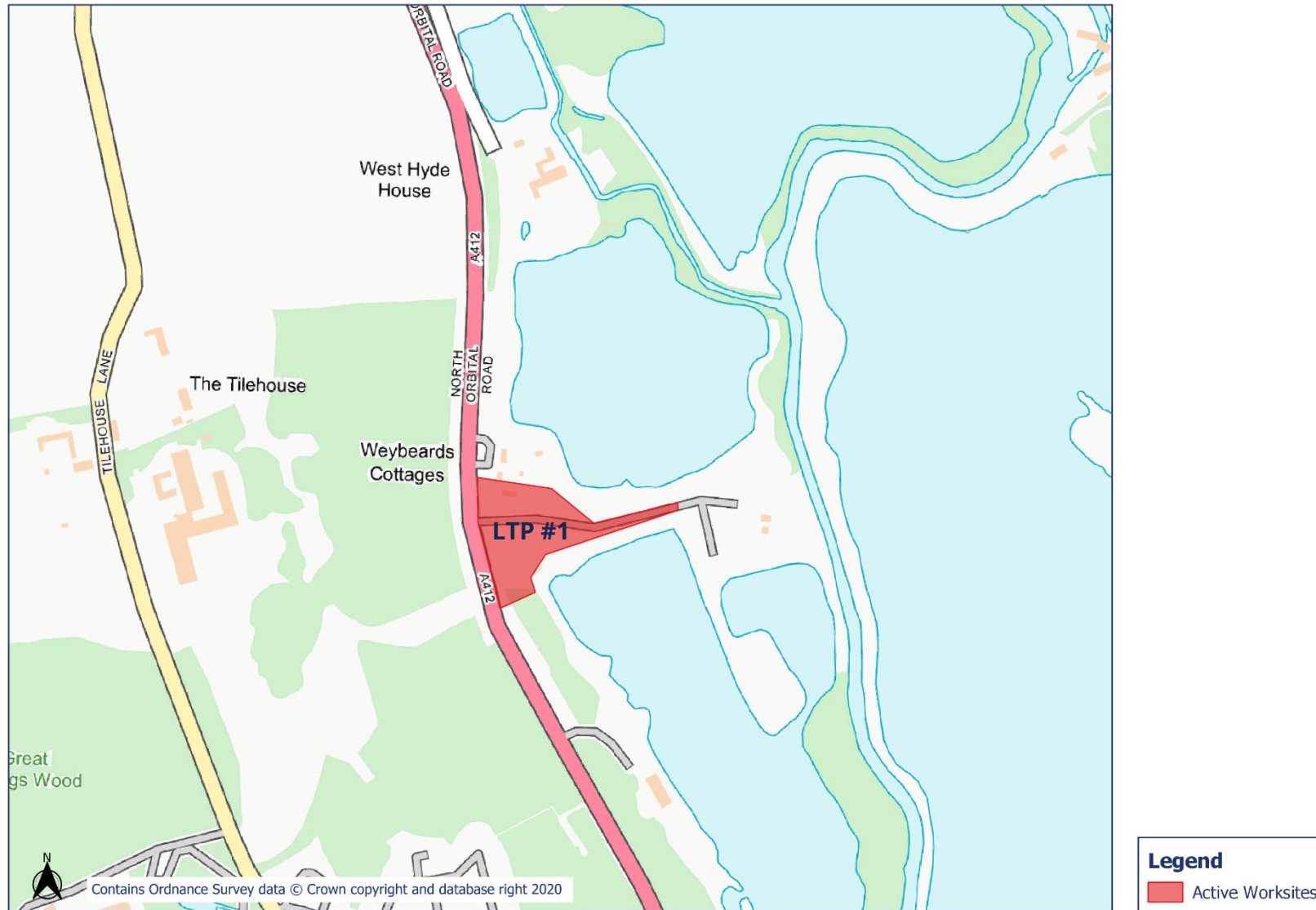




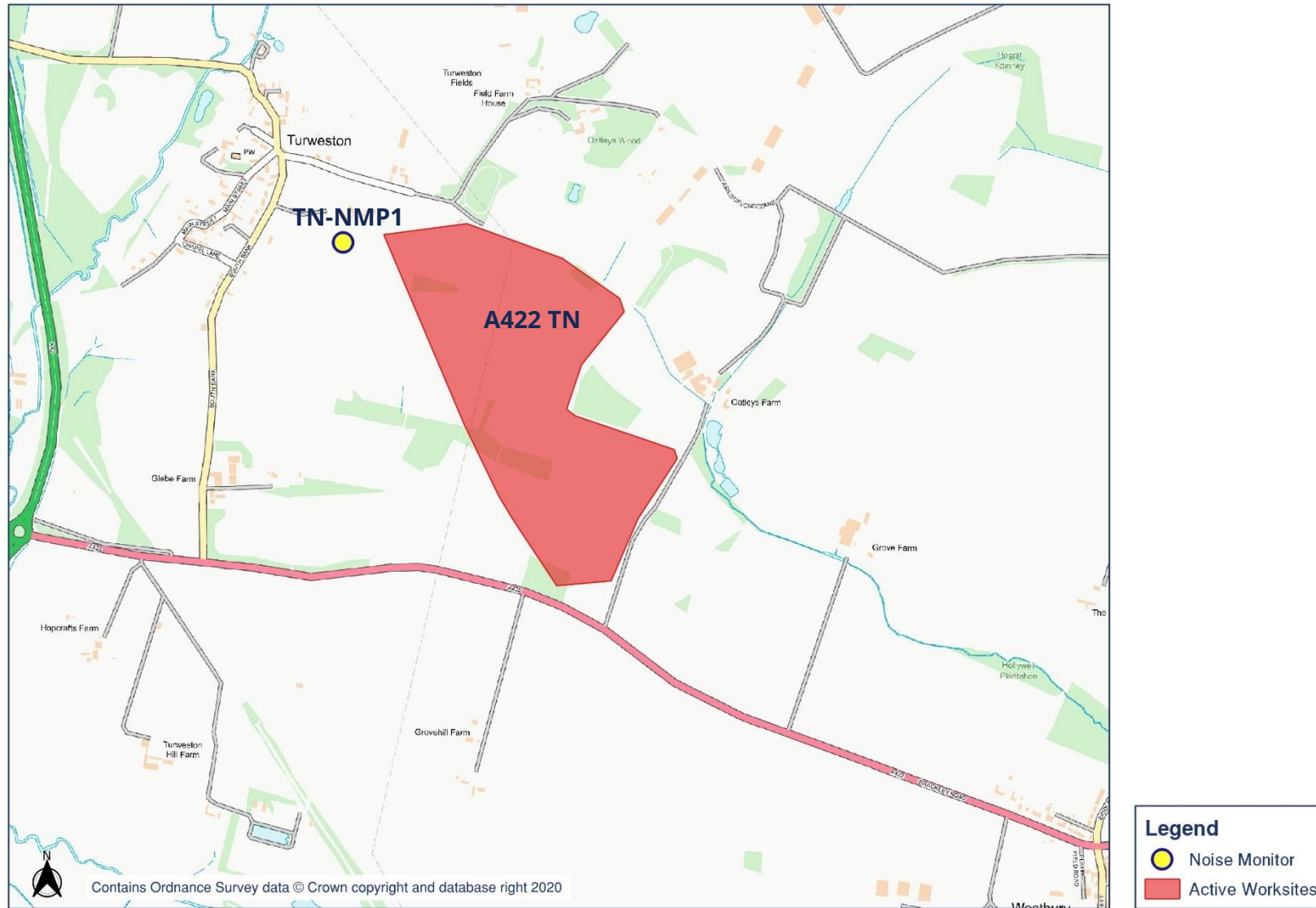


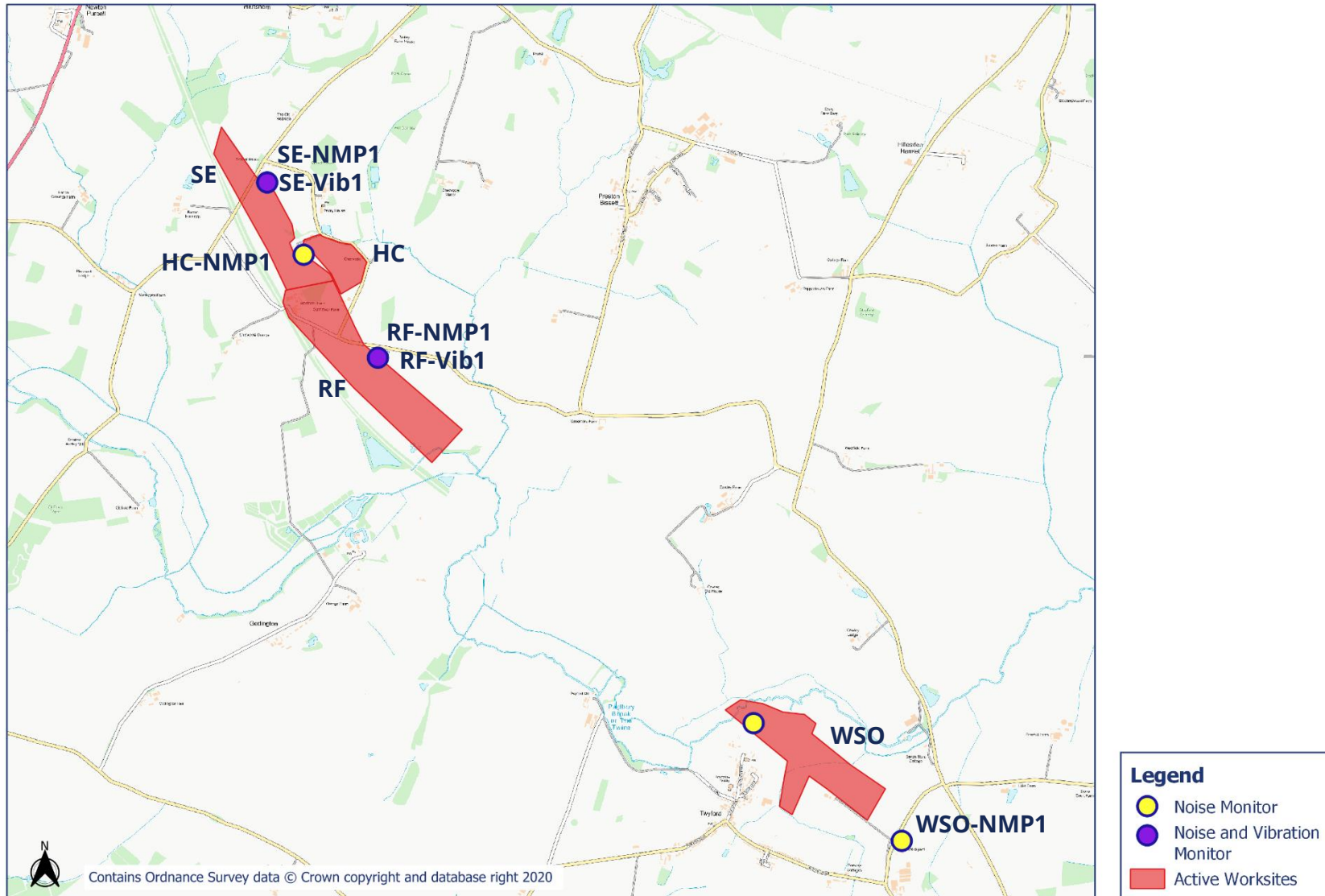




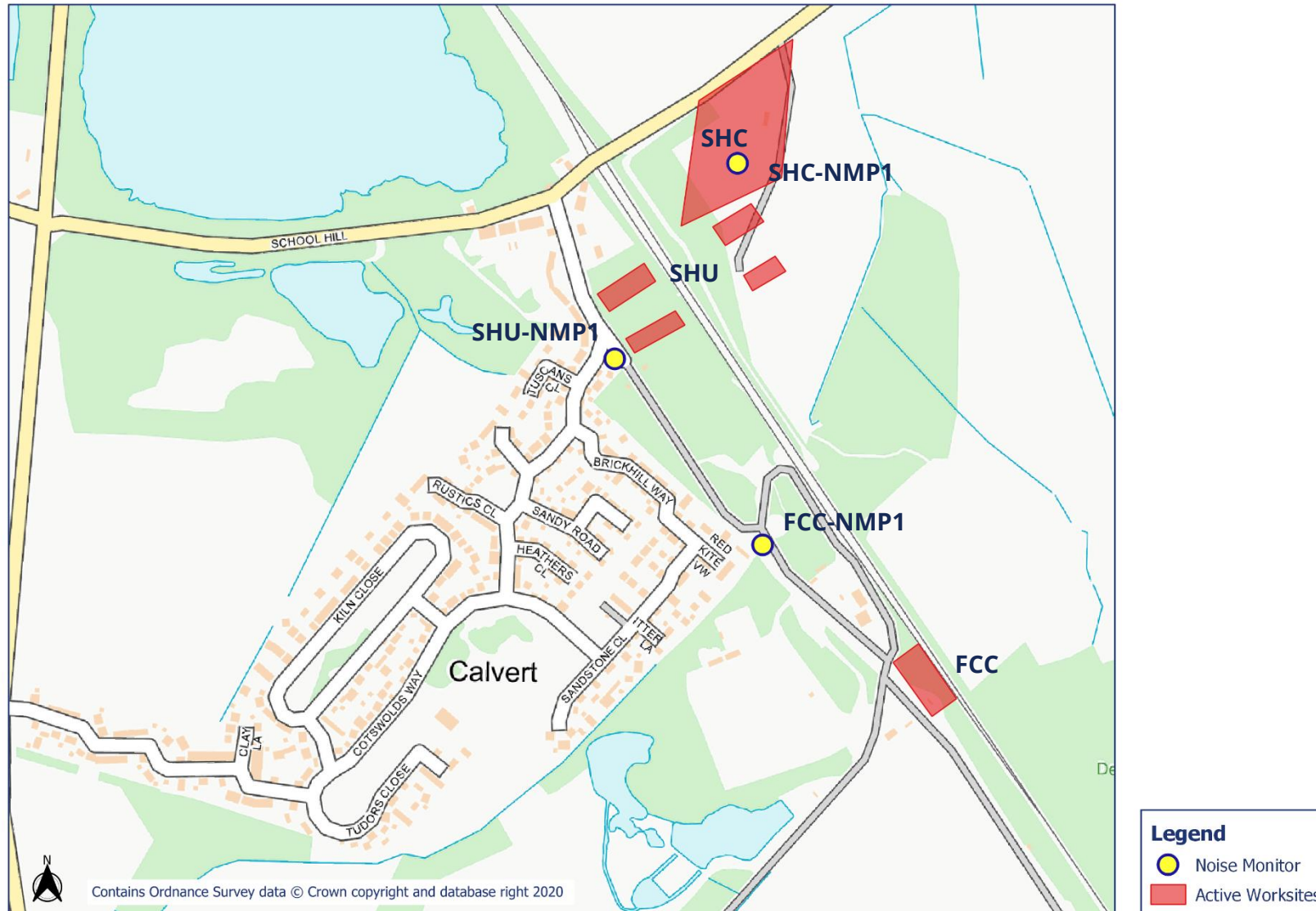


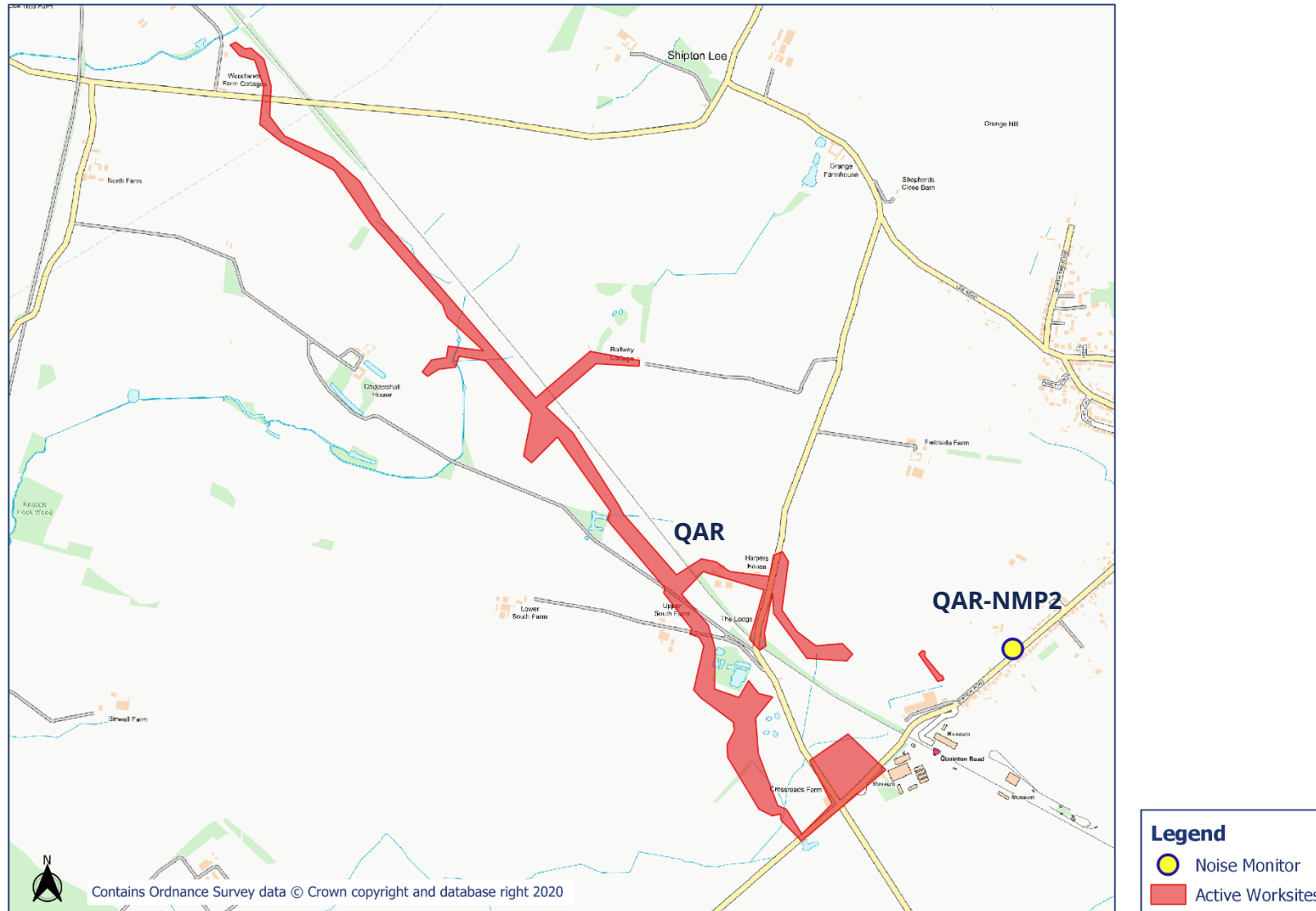
Appendix B Monitoring Locations

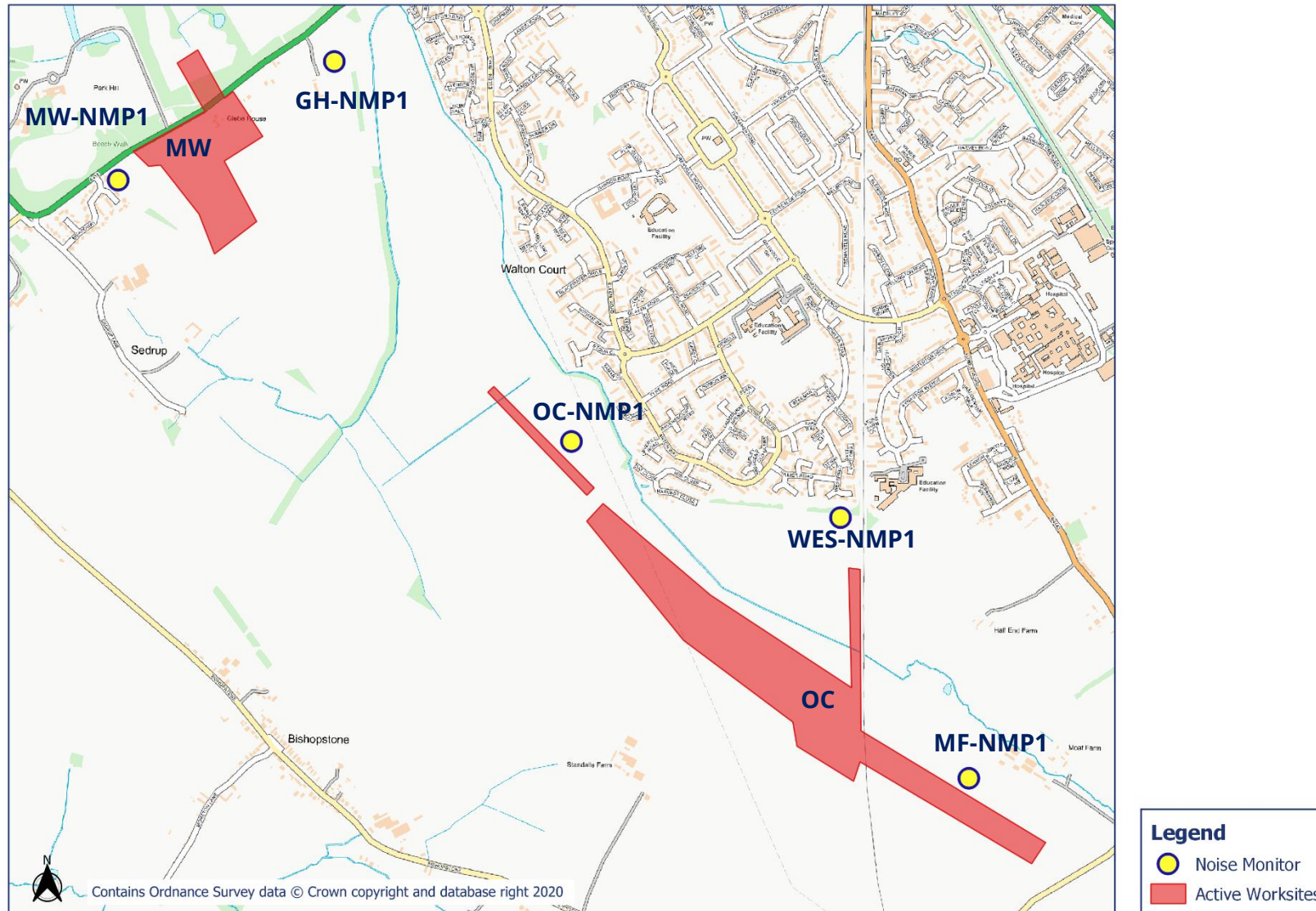


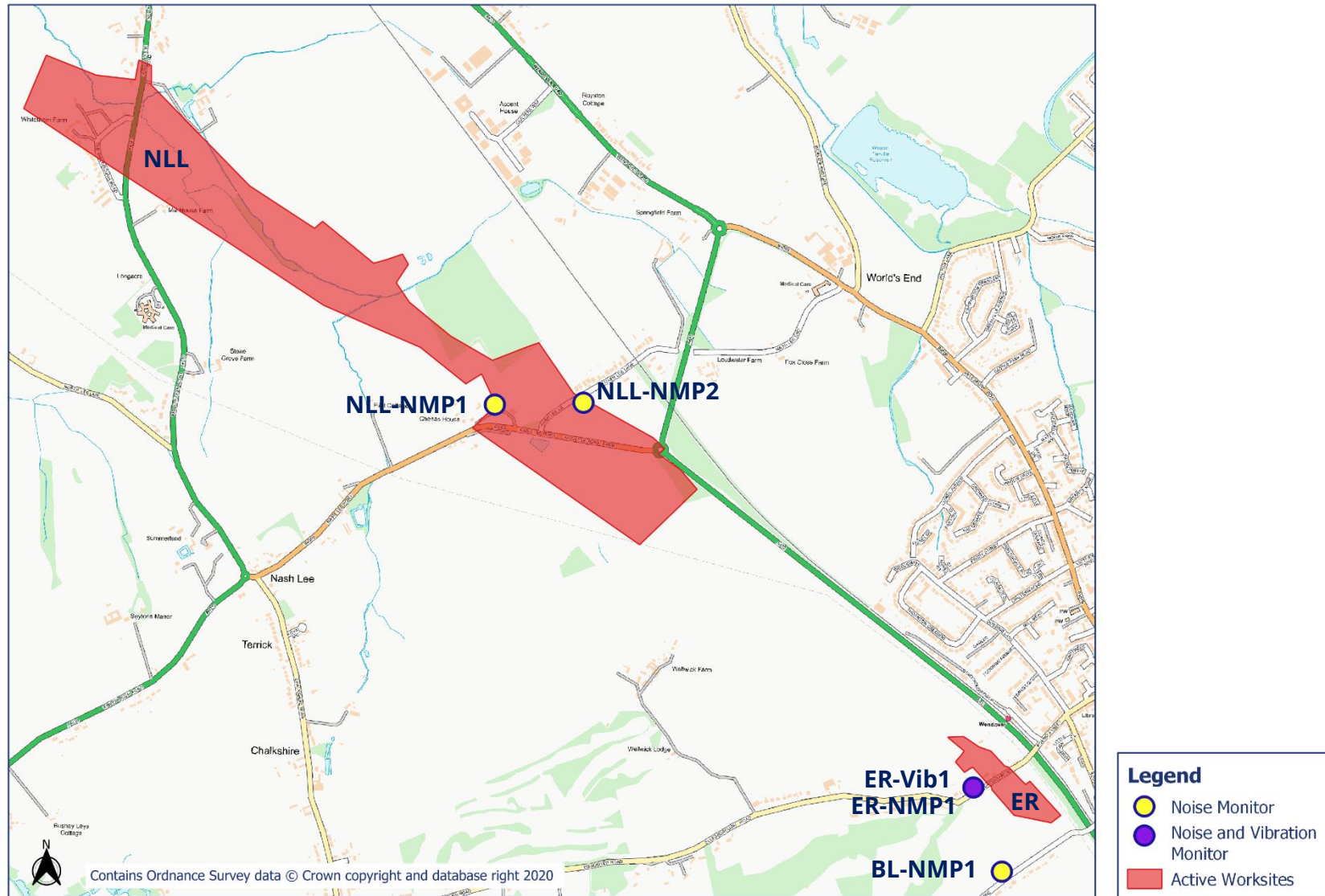


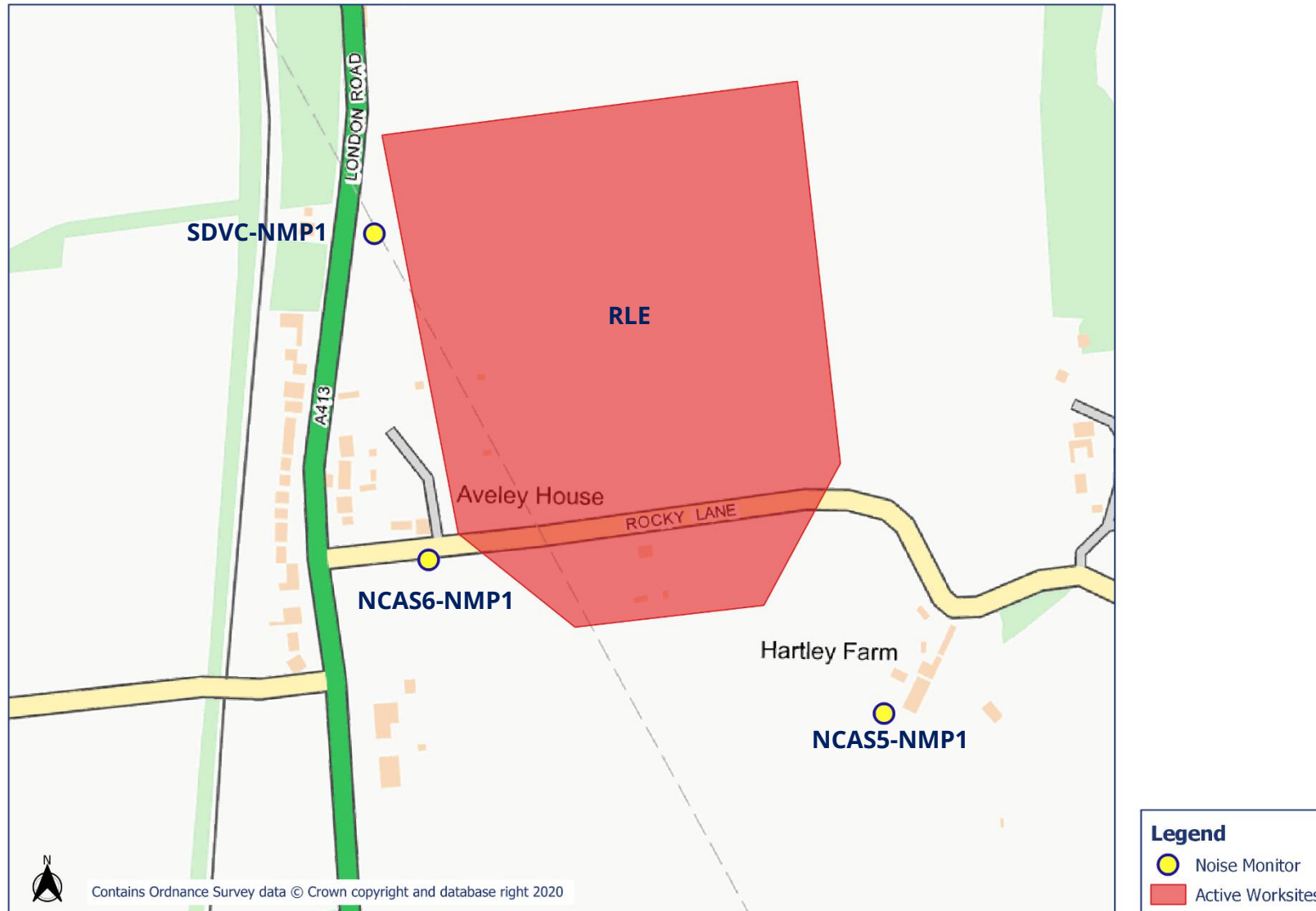


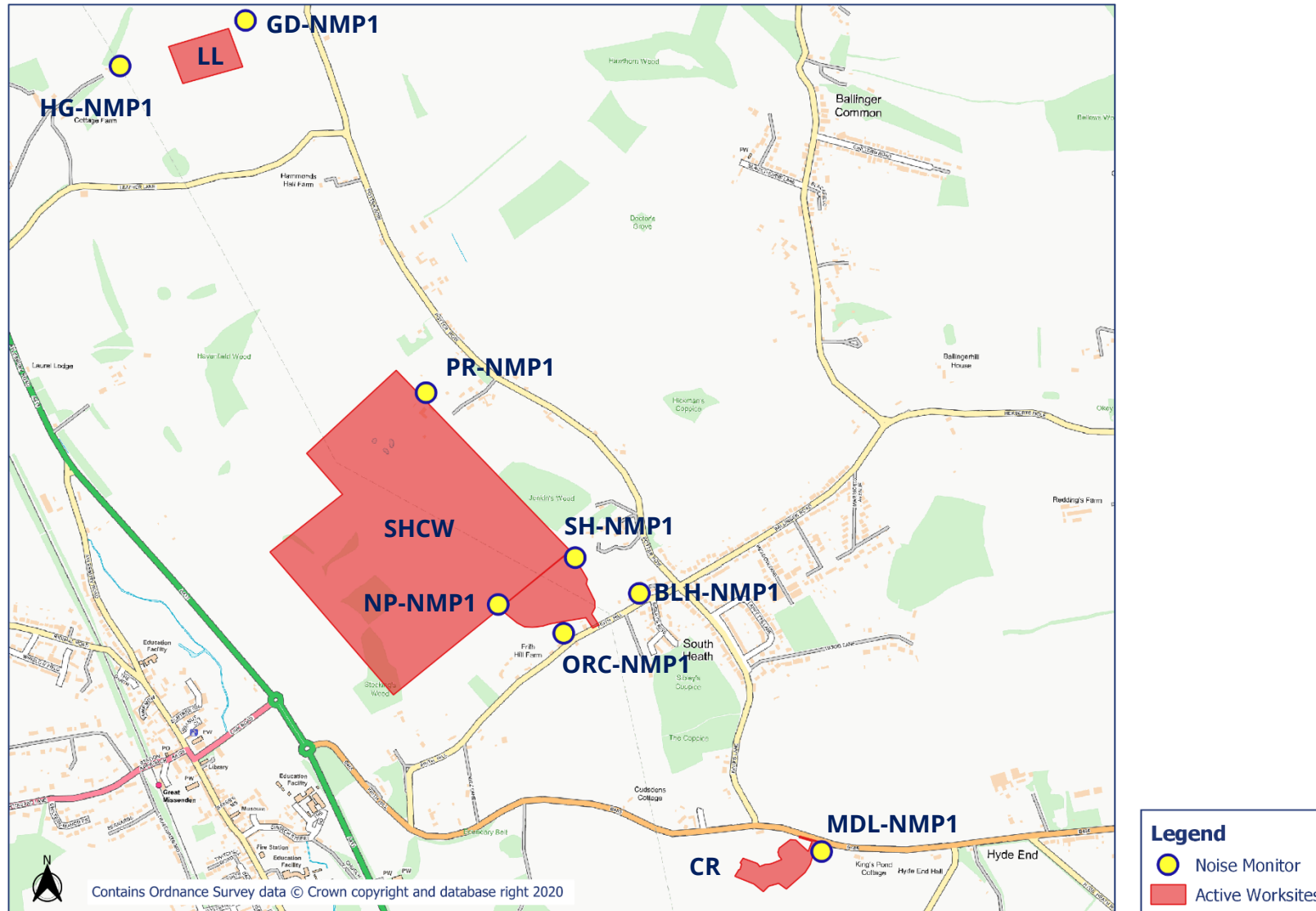




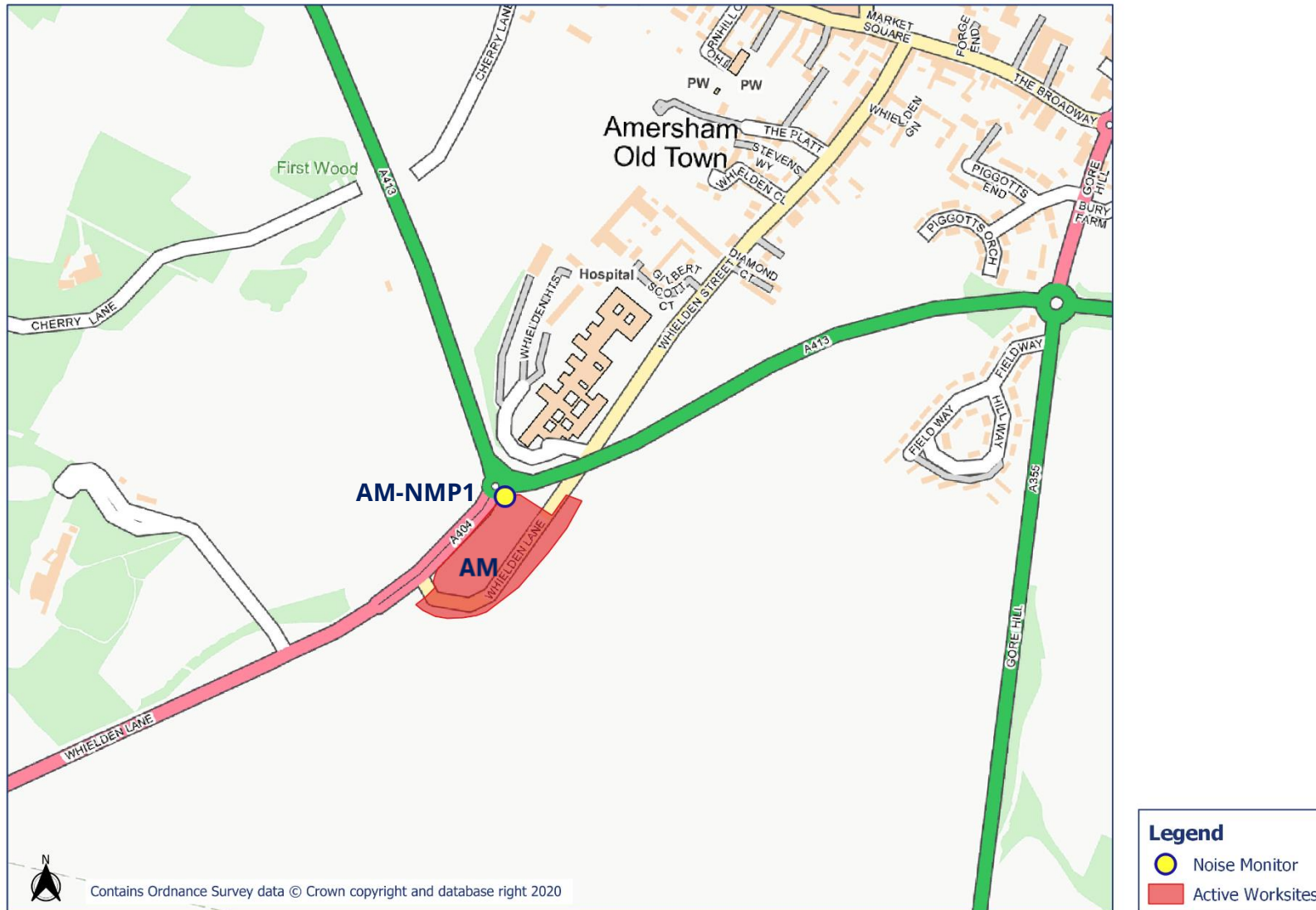


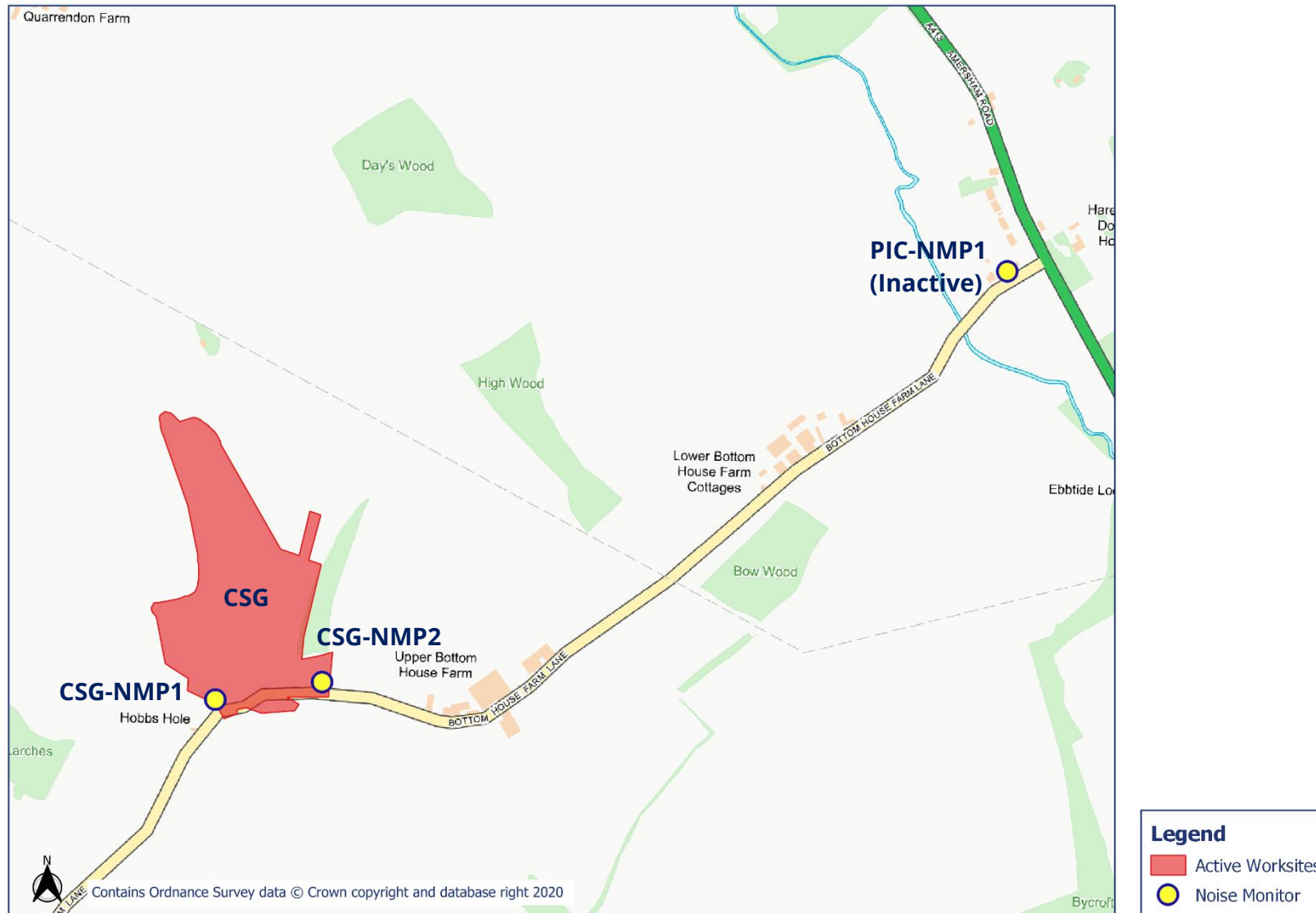




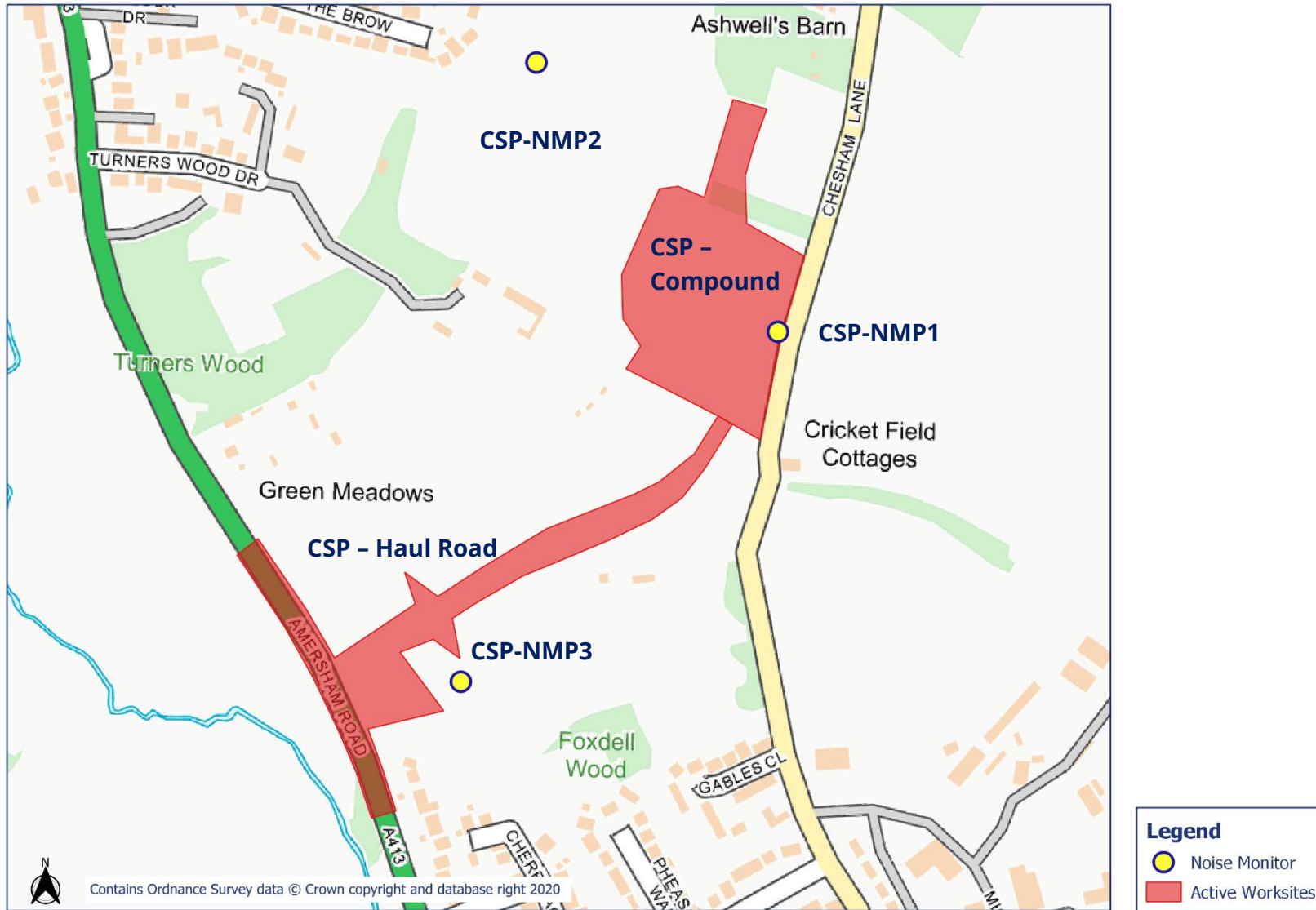


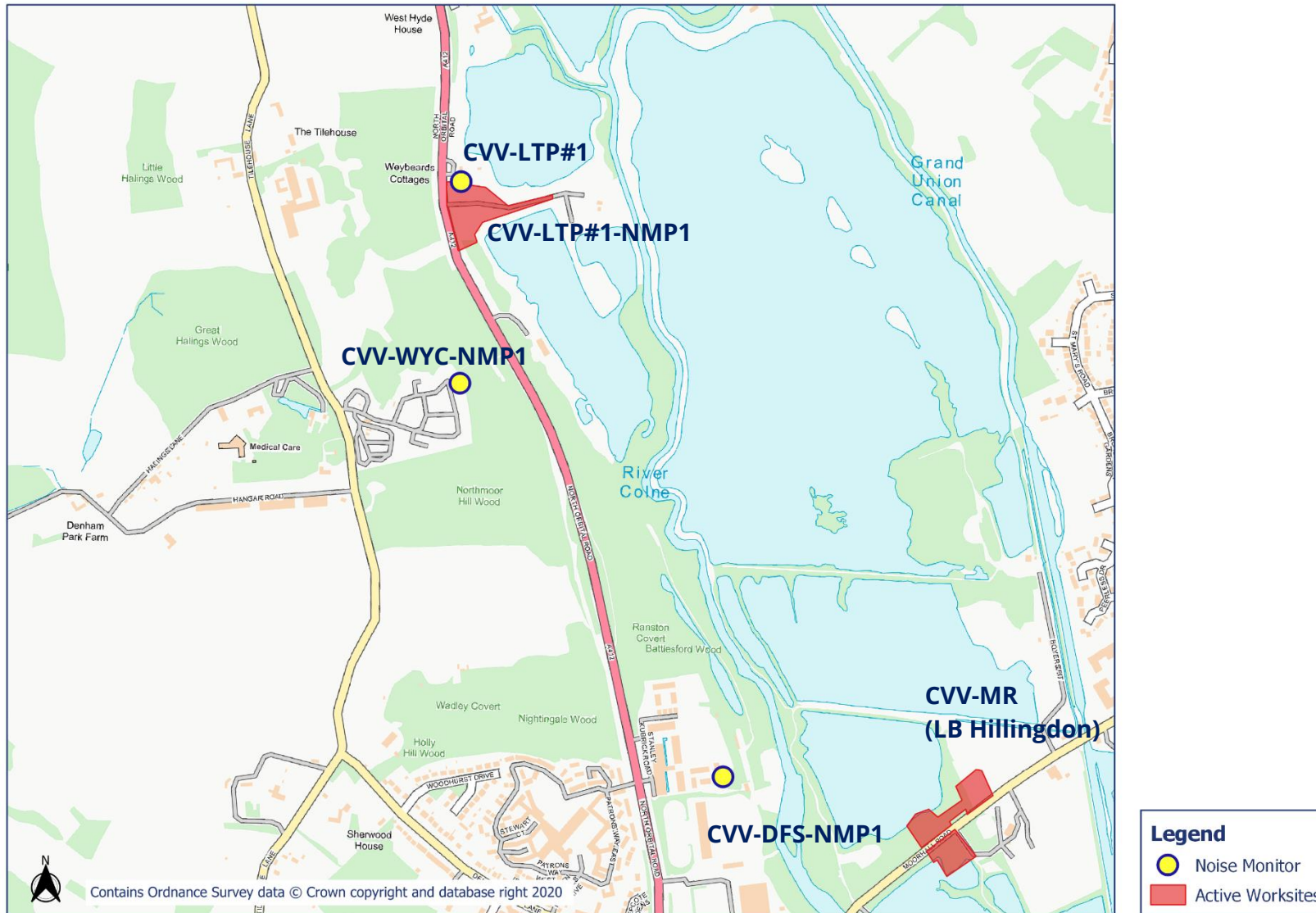


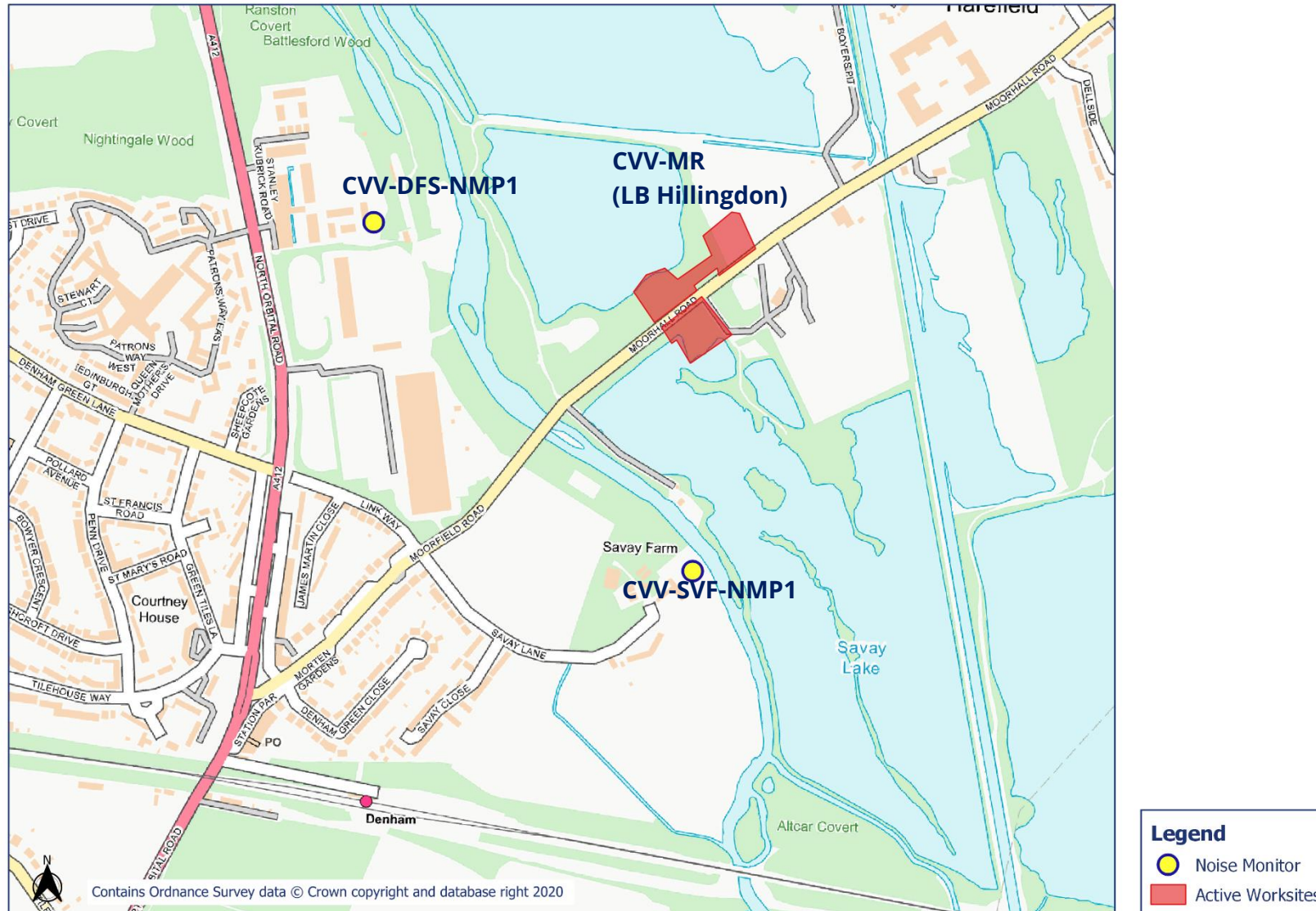




HS2 Noise and Vibration Monitoring Plan - 13





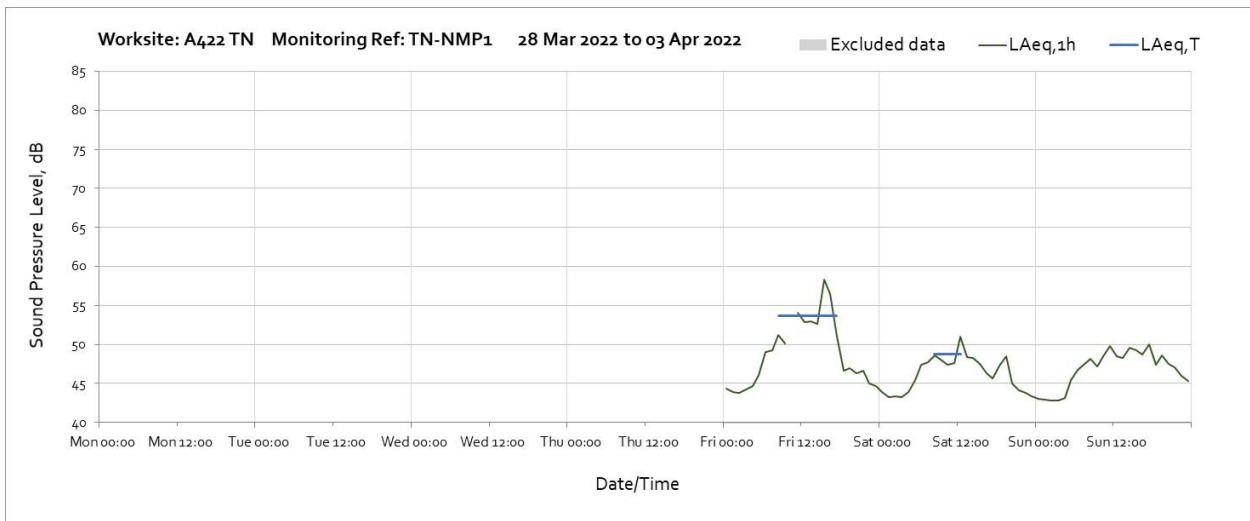


Appendix C Data

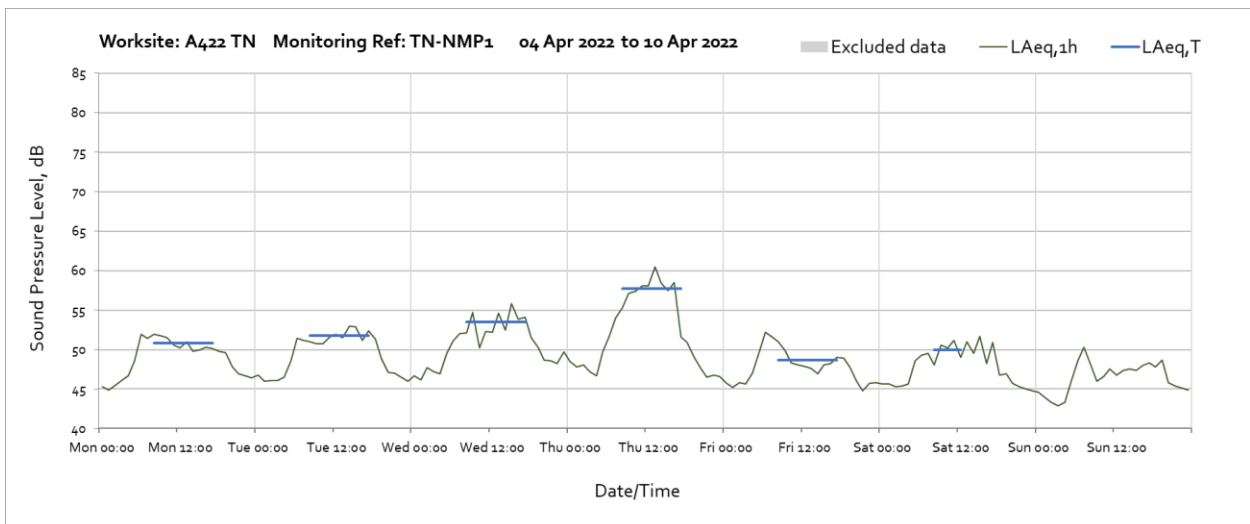
Noise

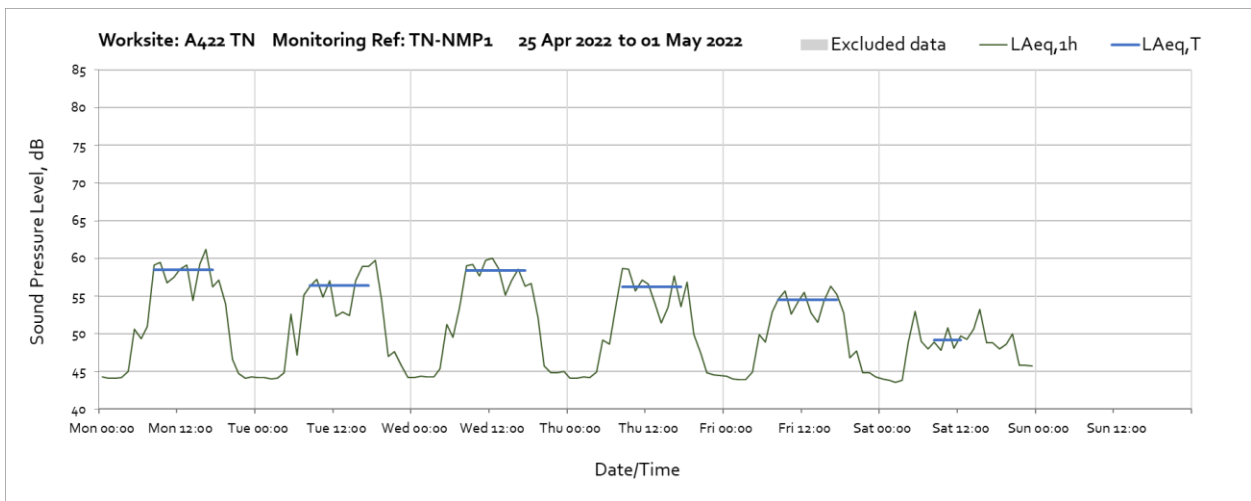
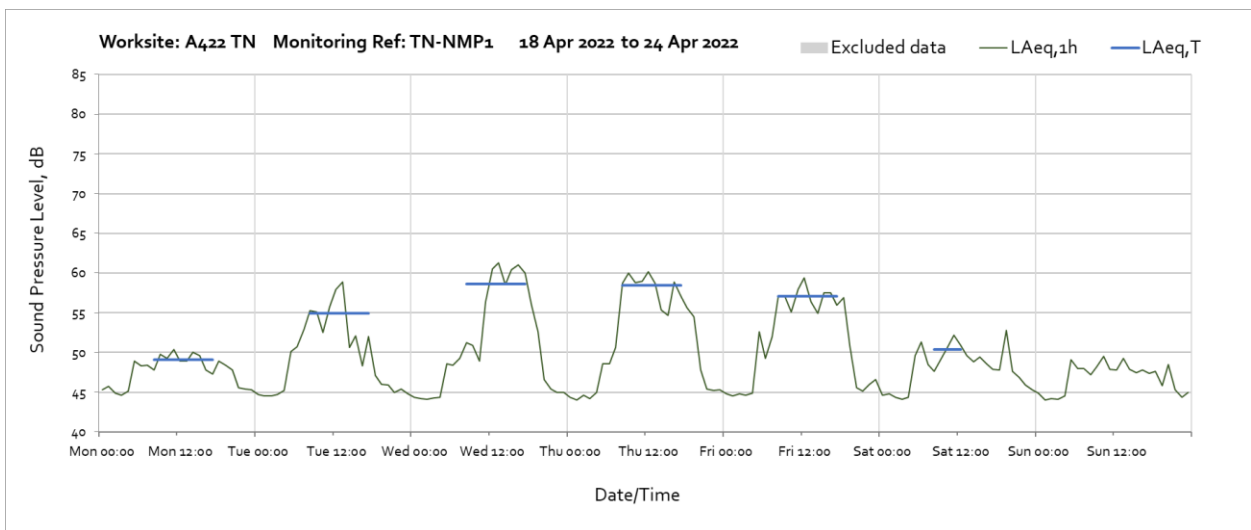
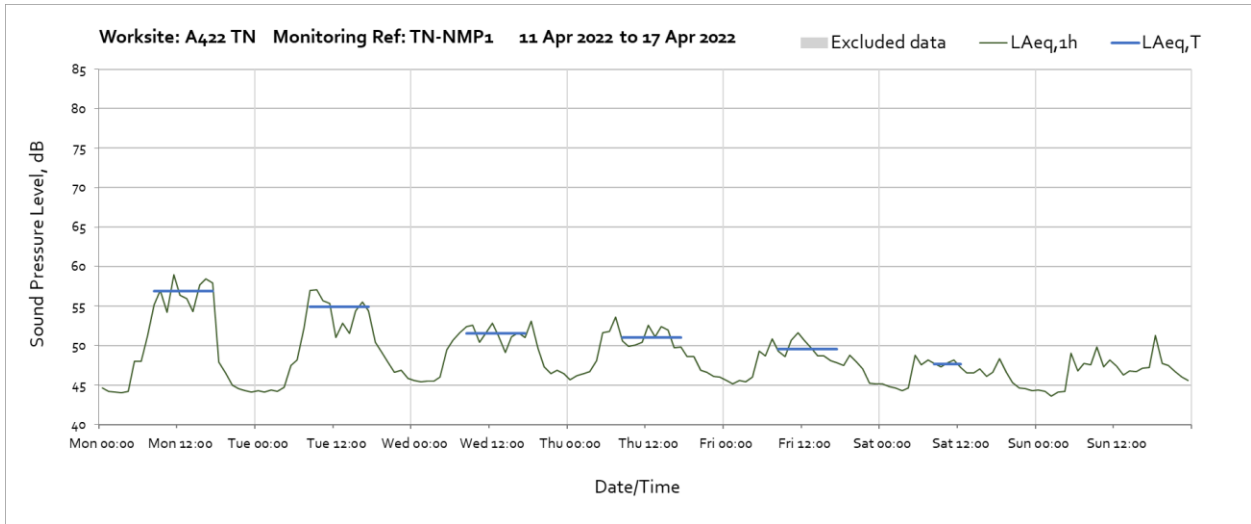
The following graphs show the hourly measured ambient noise level $L_{Aeq,1h}$ and, where relevant, the averaged noise level $L_{Aeq,T}$ values, where the time period T is as specified in Table 1 of HS2 Information Paper E23. Periods with adversely weather affected noise levels are greyed out and have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

Worksite: A422 TN – Monitoring Ref: TN-NMP1

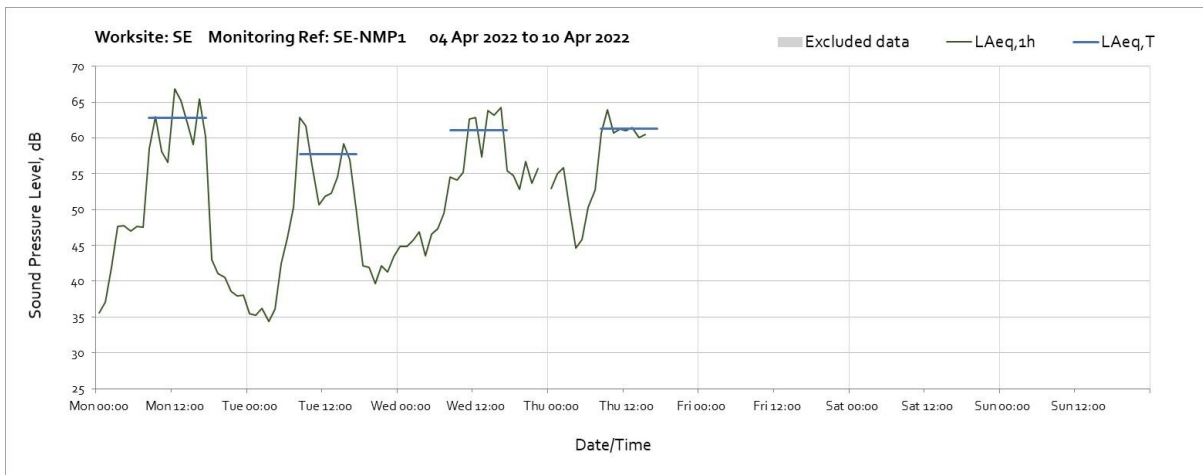


Note: Missing data at 10:00 on Friday 1st April was due to loss of continuous site power.

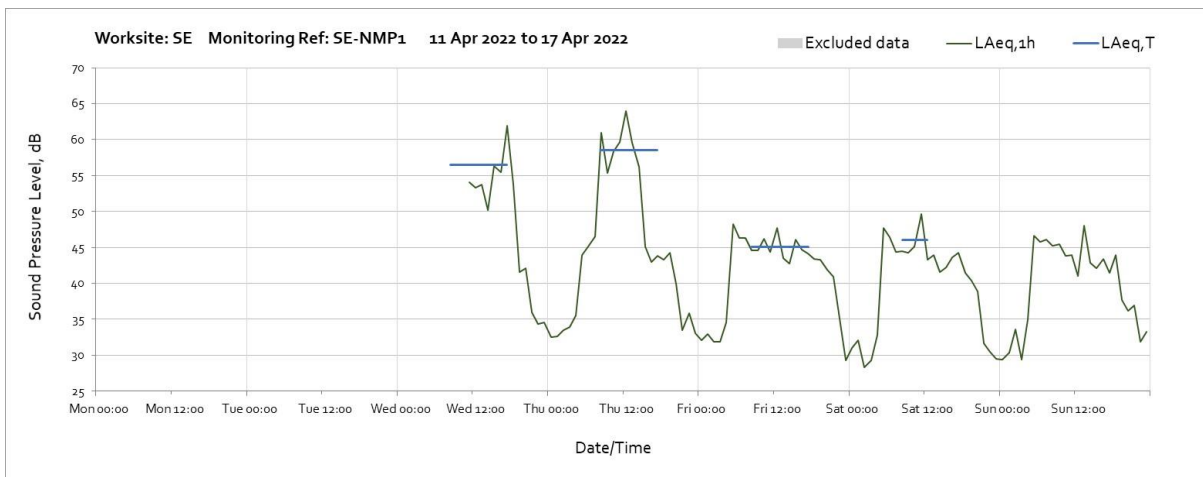




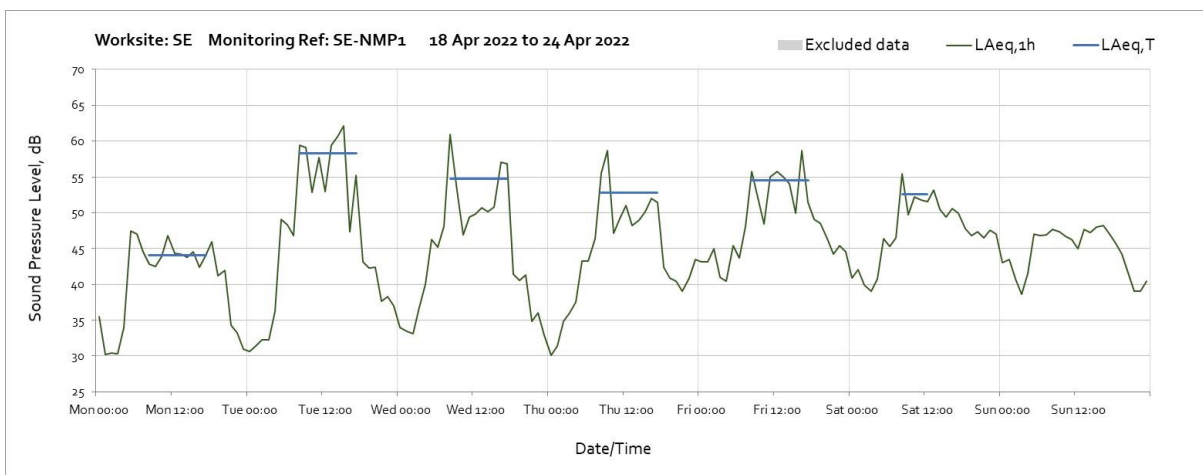
Worksite: SE – Monitoring Ref: SE-NMP1

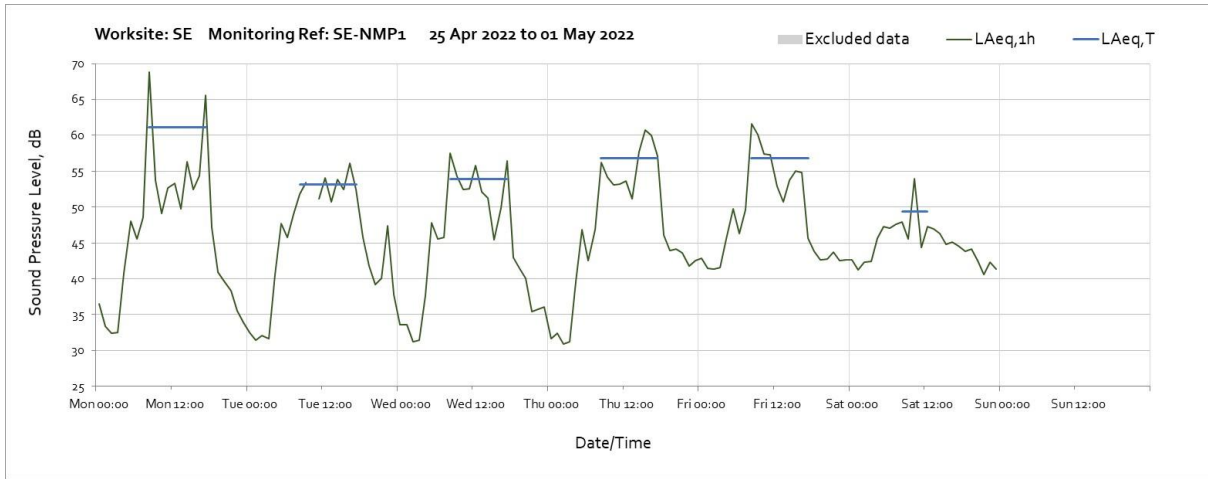


Note: Missing data at 23:00 on Wednesday 6th April and between 16:00 on Thursday 7th April and 13:00 on Wednesday 13th April was due to loss of continuous site power.

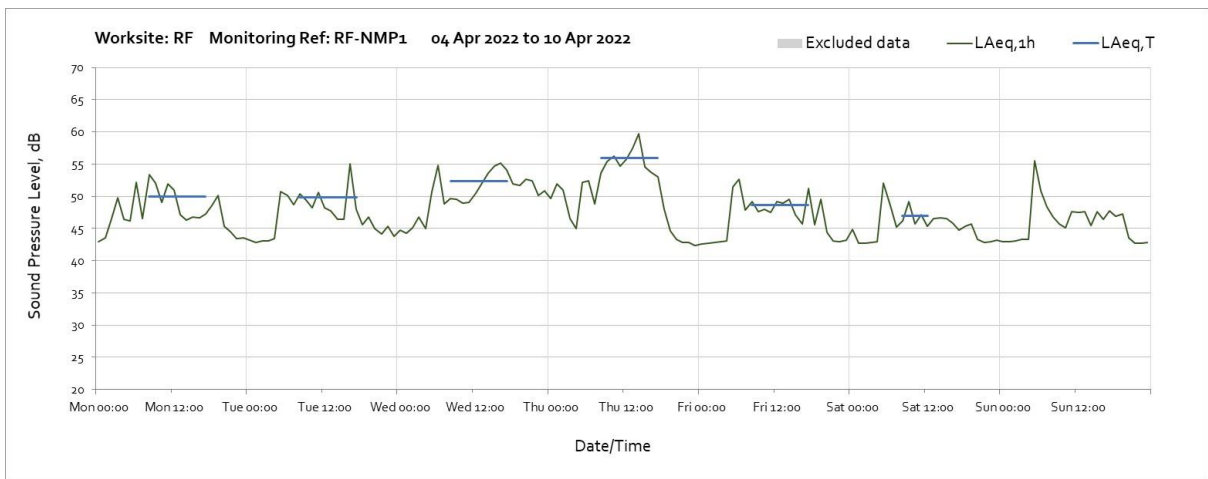
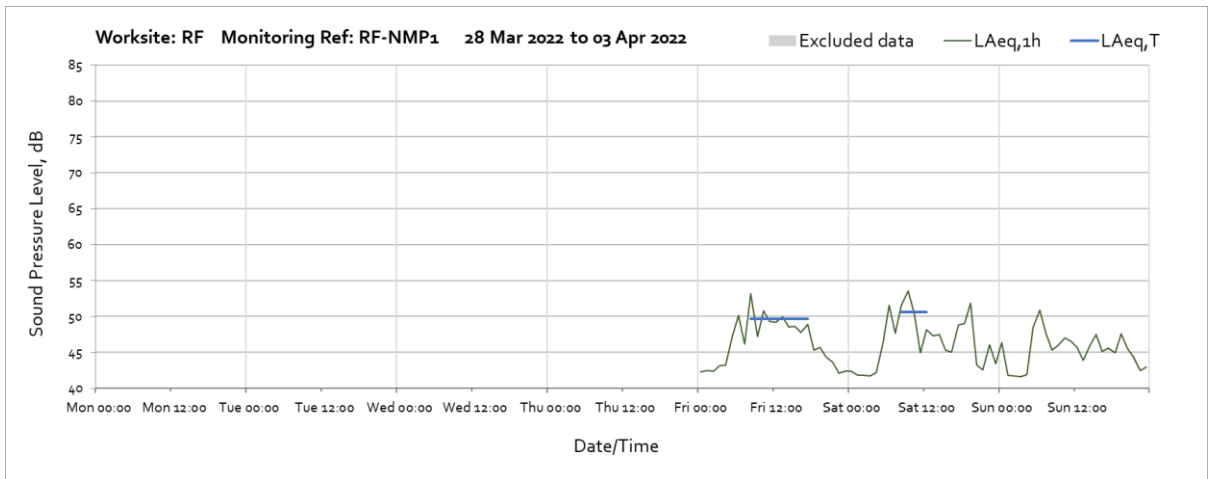


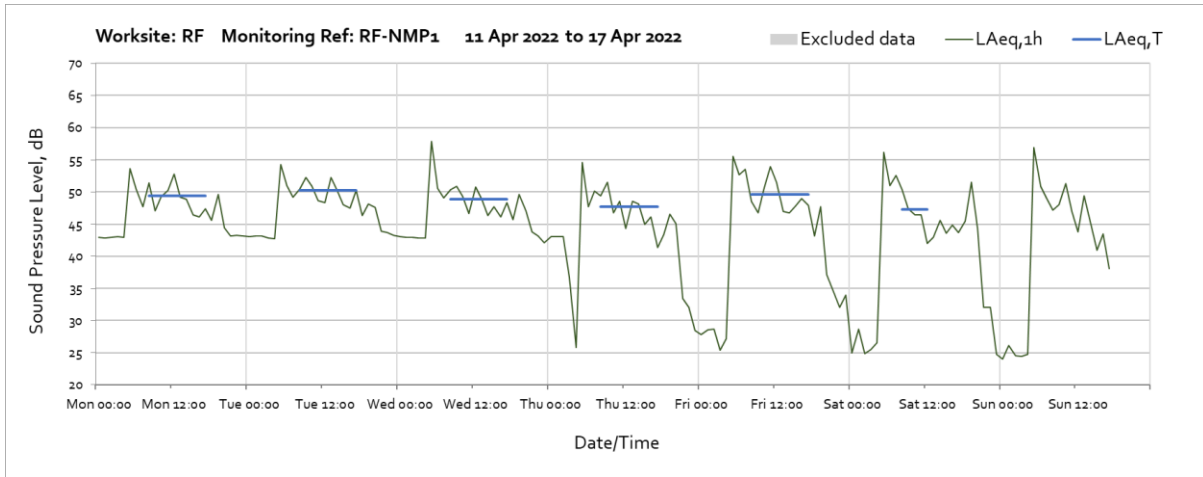
Note: Missing data between 16:00 on Thursday 7th April and 13:00 on Wednesday 13th was due to loss of continuous site power.





Worksite: RF – Monitoring Ref: RF-NMP1

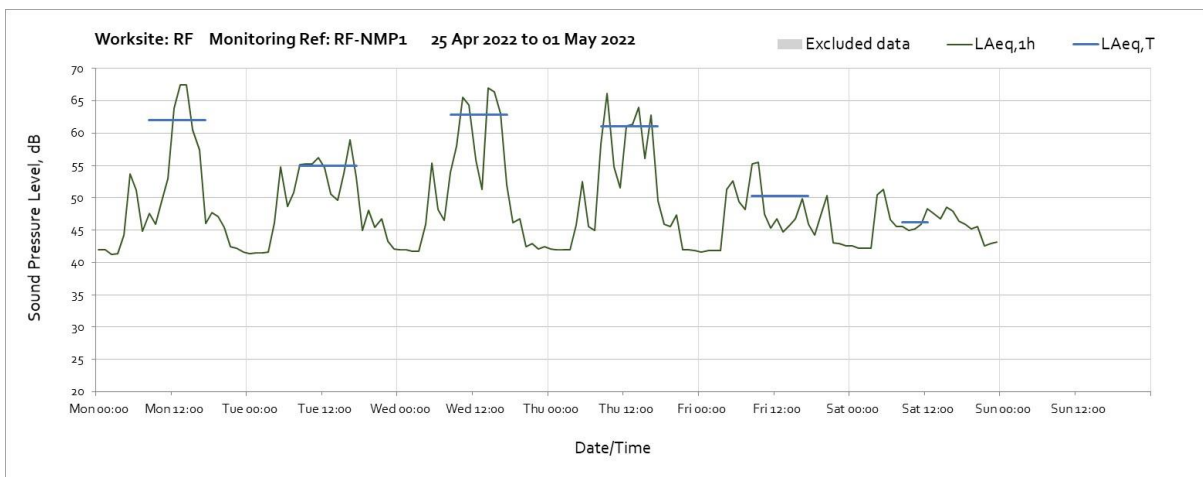




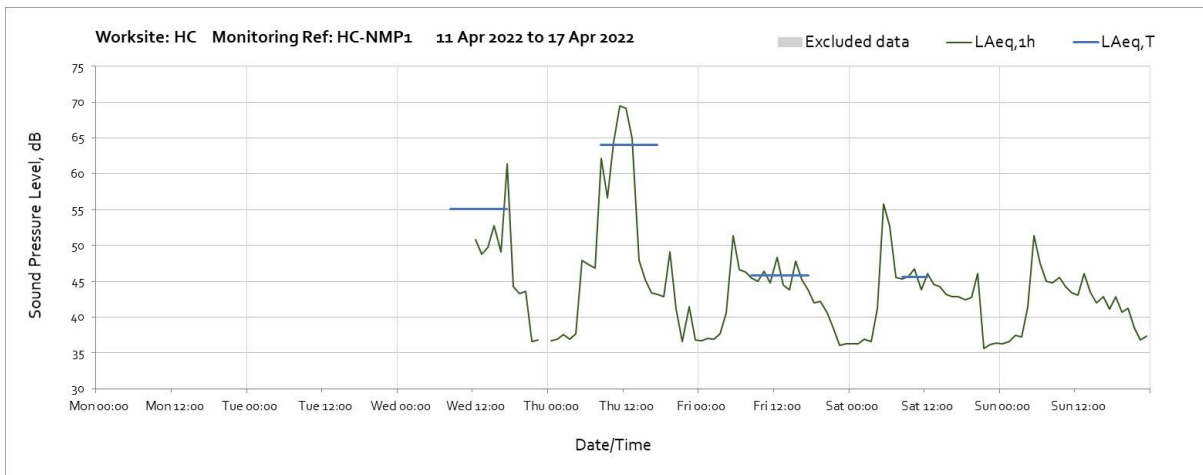
Note: Missing data between 18:00 on Sunday 17th April and 10:00 on Wednesday 20th April was due to loss of continuous site power. Power supply equipment has now been replaced.



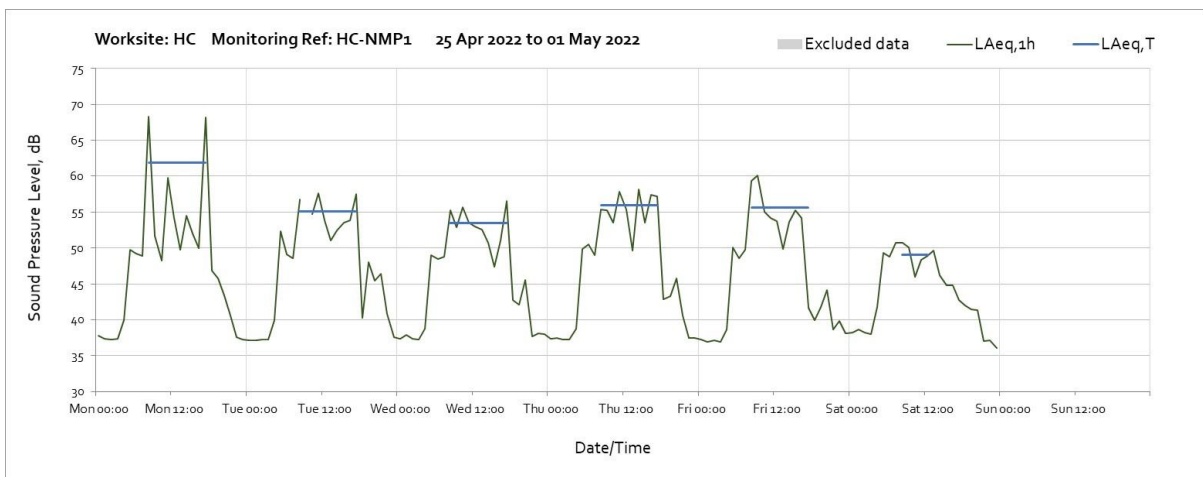
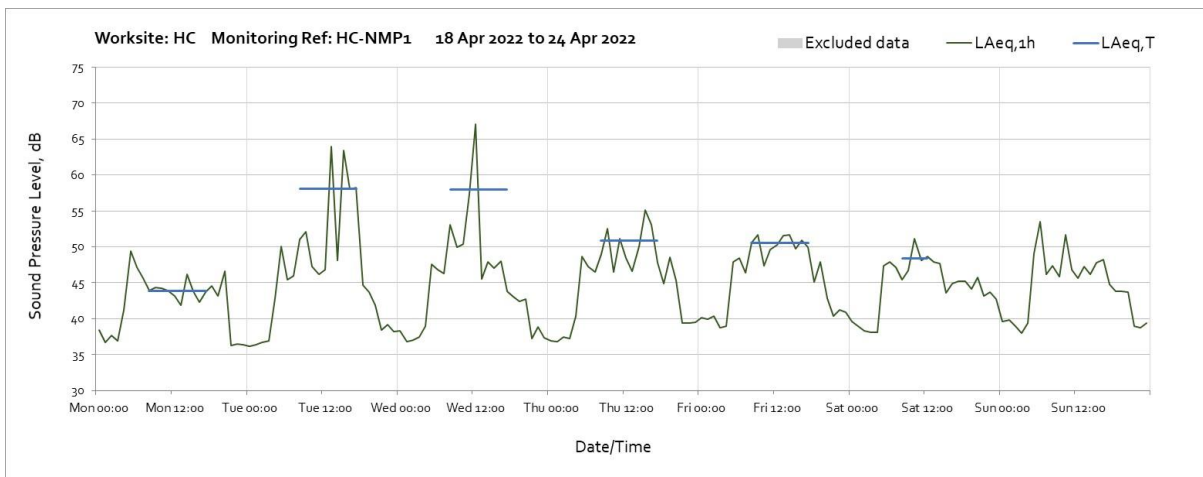
Note: Missing data between 18:00 on Sunday 17th April and 10:00 on Wednesday 20th April was due to loss of continuous site power. Power supply equipment has now been replaced.



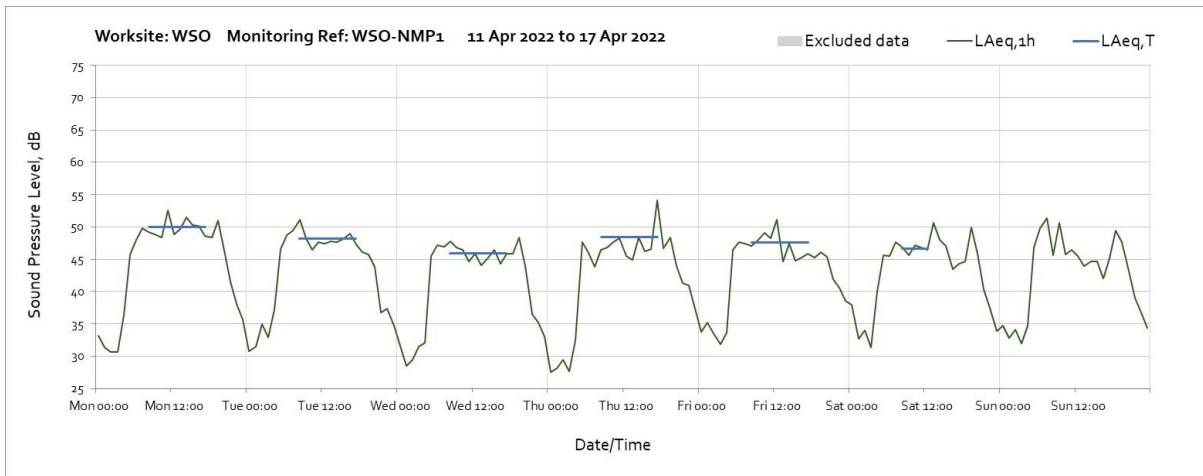
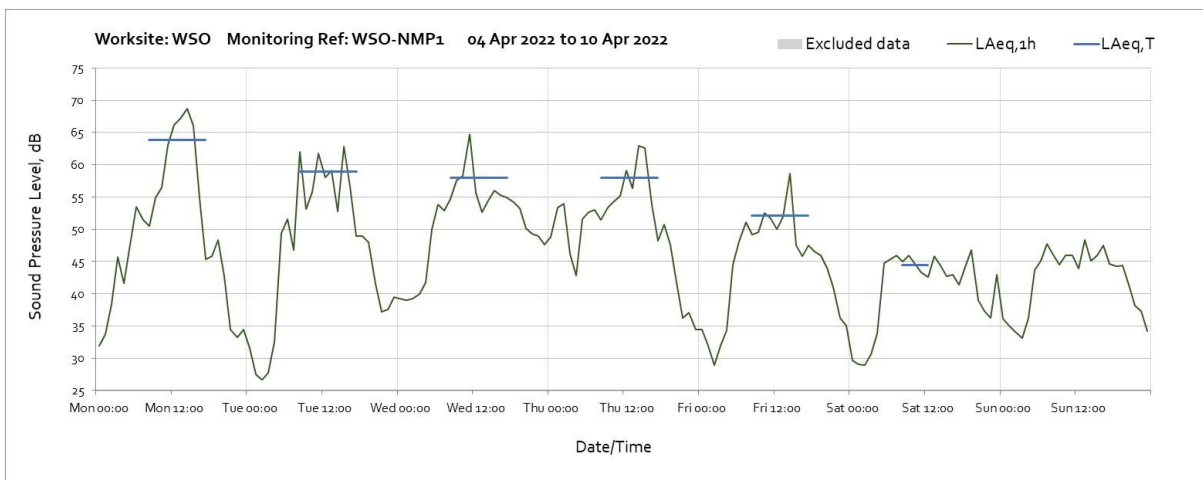
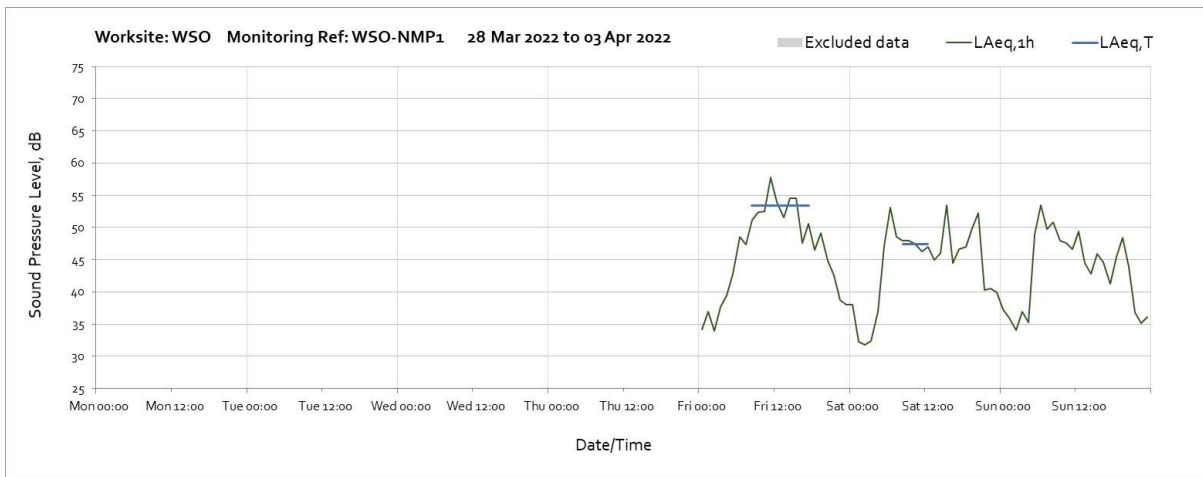
Worksite: HC – Monitoring Ref: HC-NMP1



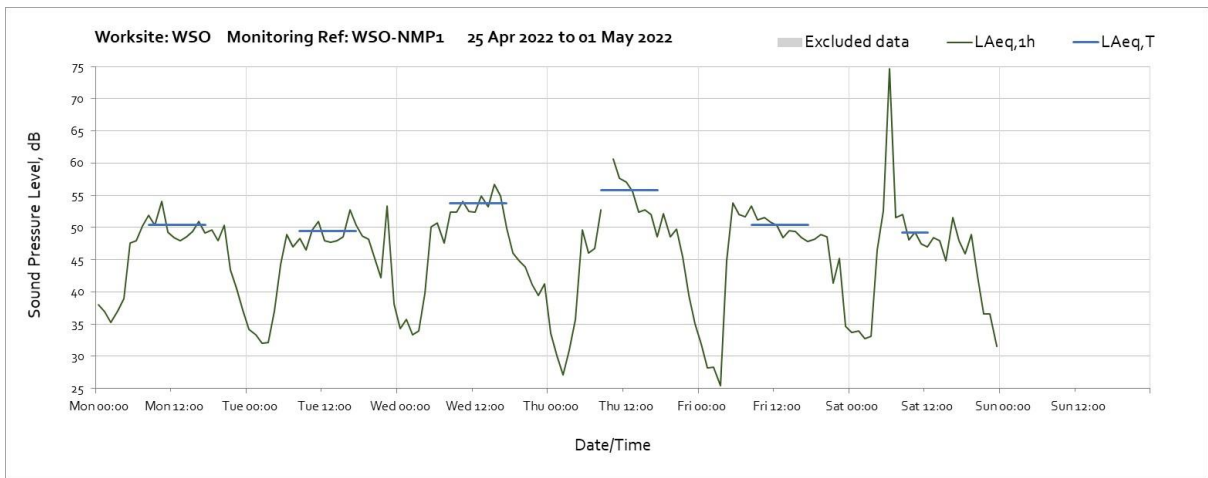
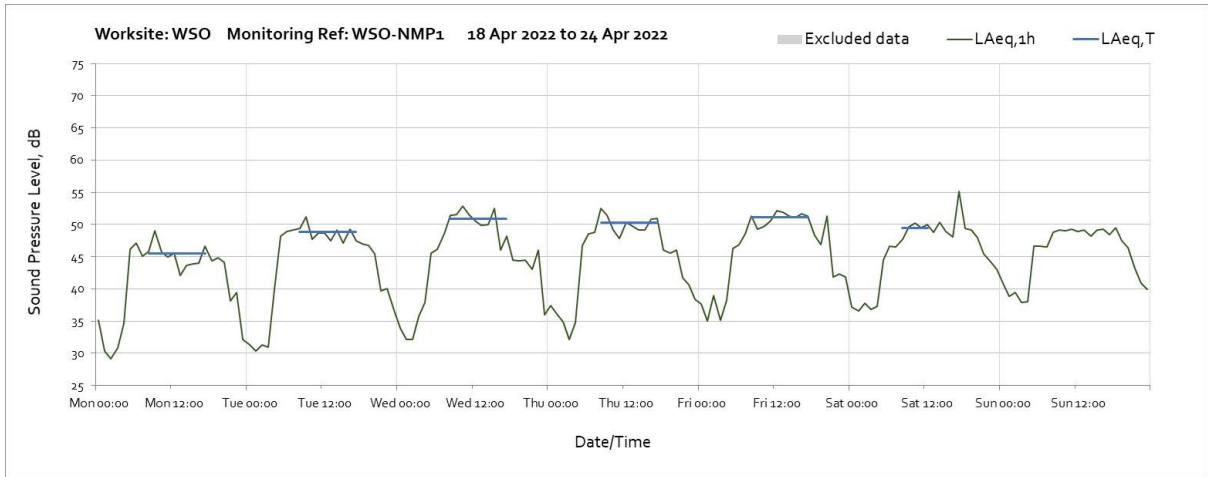
Note: Missing data from the beginning of the month to 11:00 on Wednesday 13th April and at 23:00 on Wednesday 13th April was due to loss of continuous site power.



Worksite: WSO – Monitoring Ref: WSO-NMP1

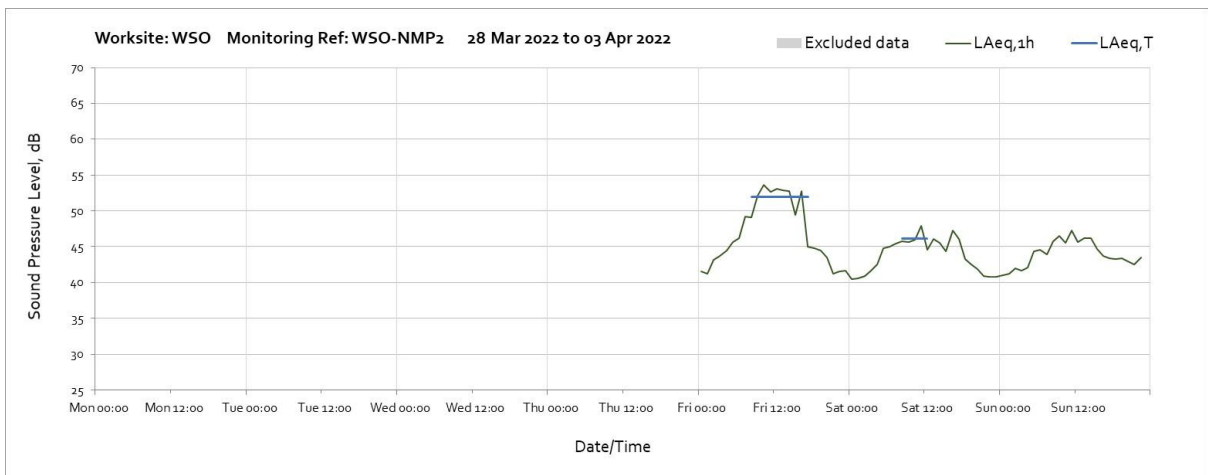


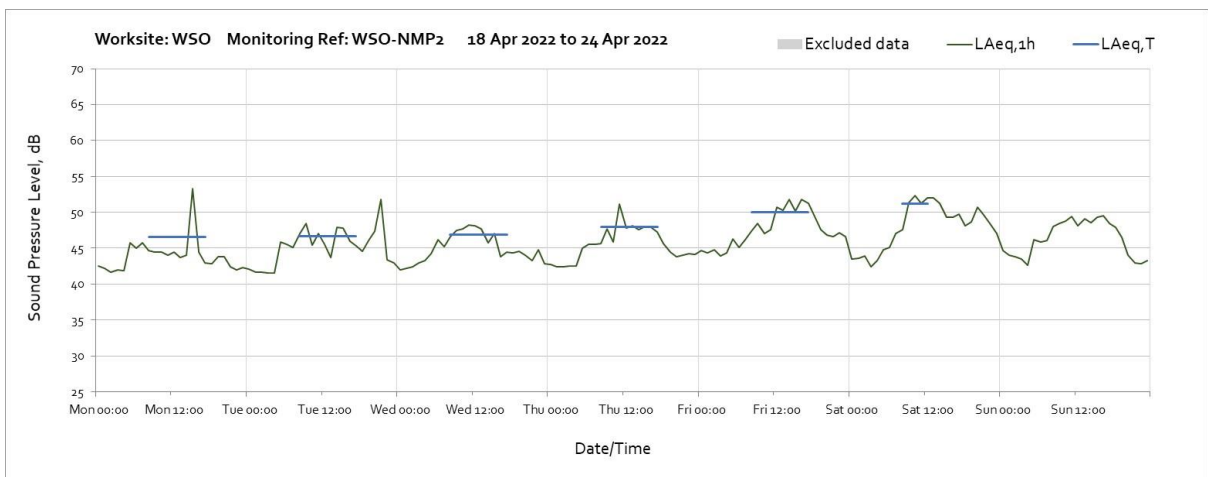
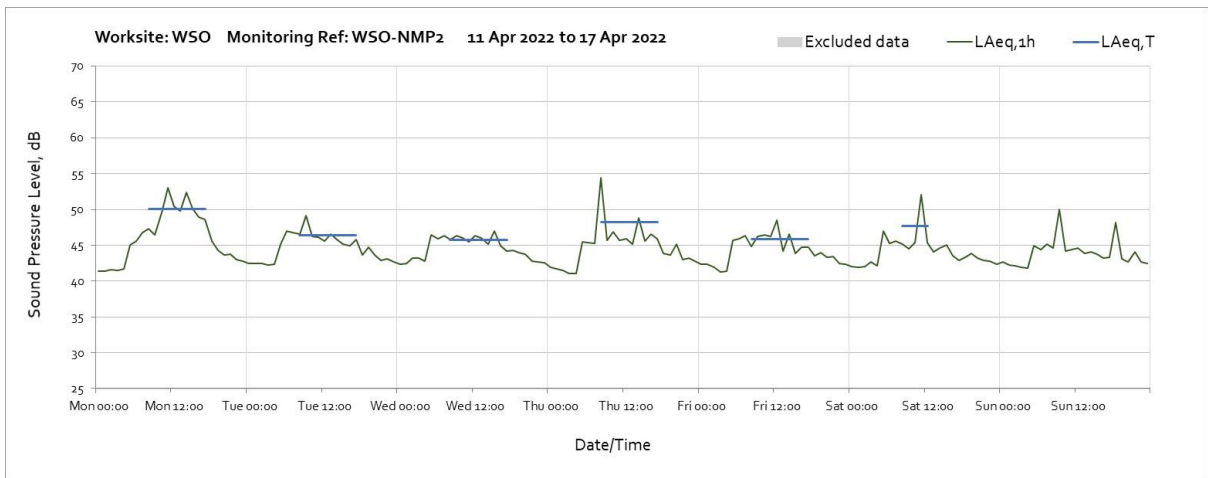
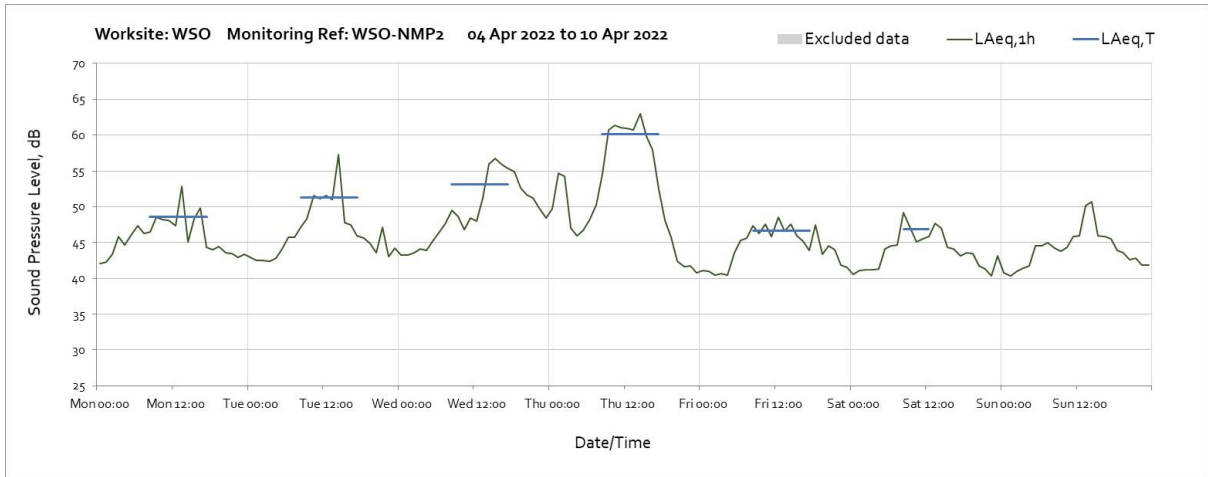
OFFICIAL

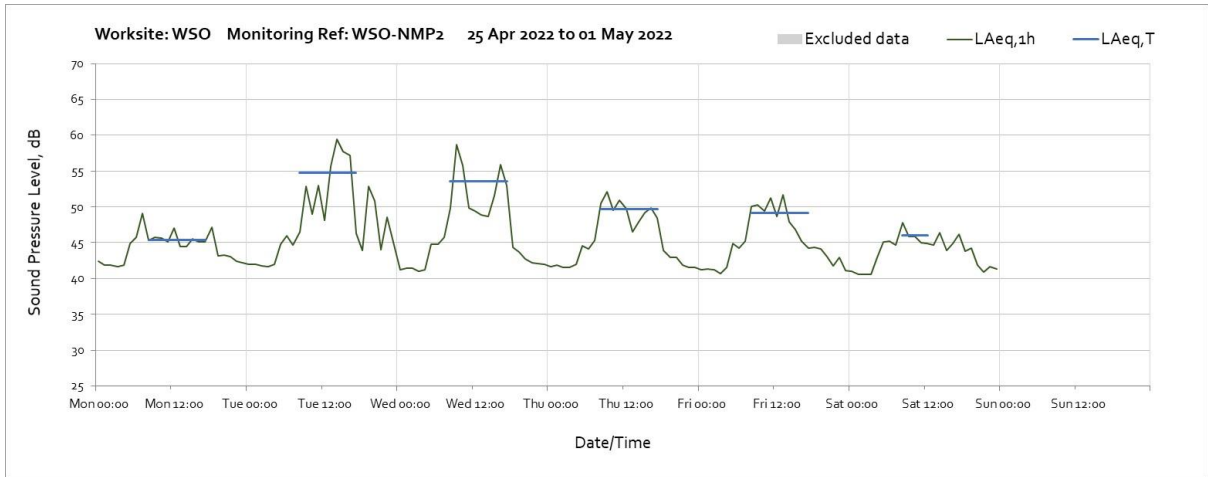


Note: Missing data at 09:00 on Thursday 28th April was due to equipment calibration.

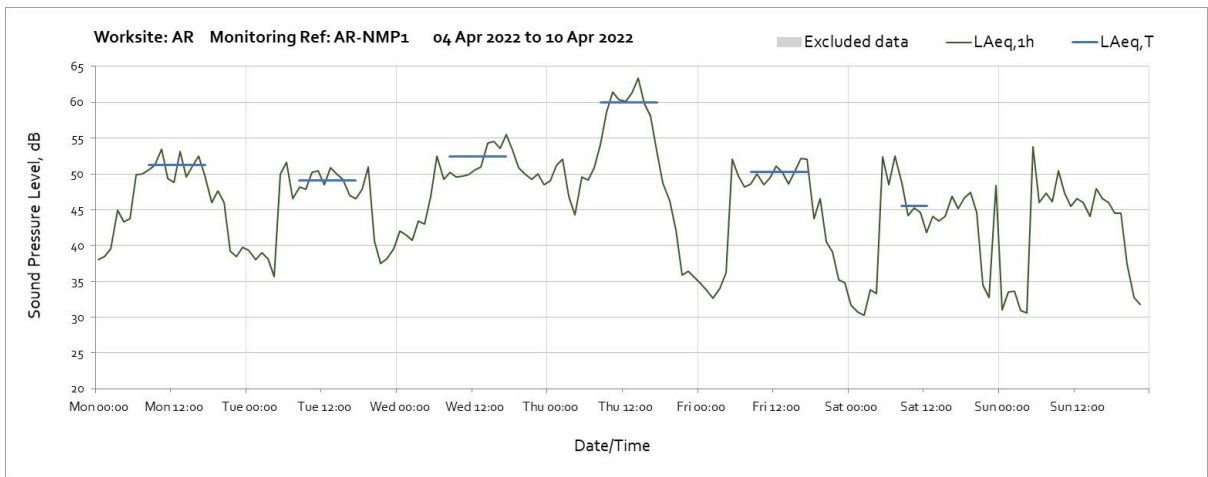
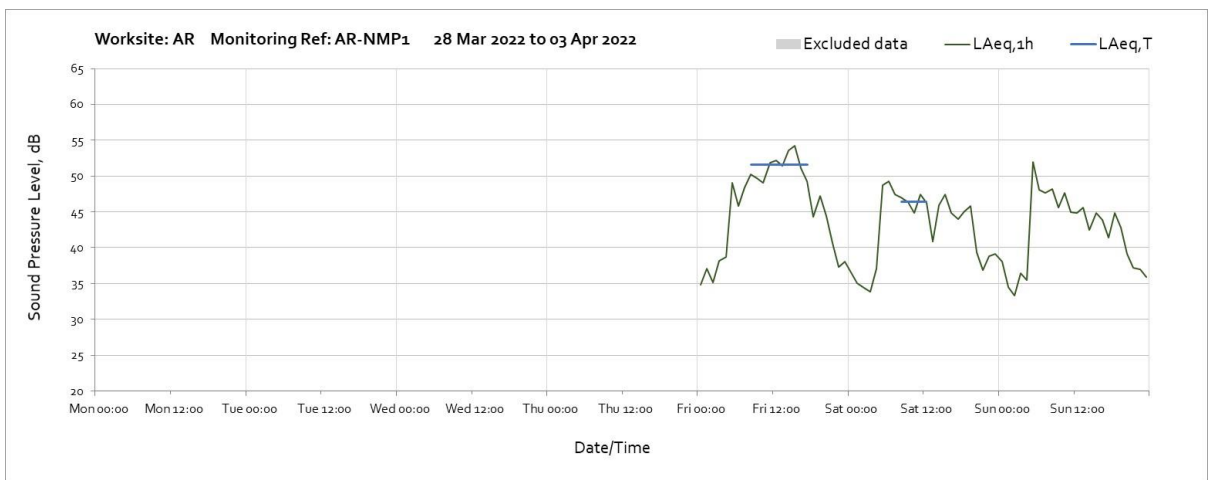
Worksite: WSO - Monitoring Ref: WSO-NMP2



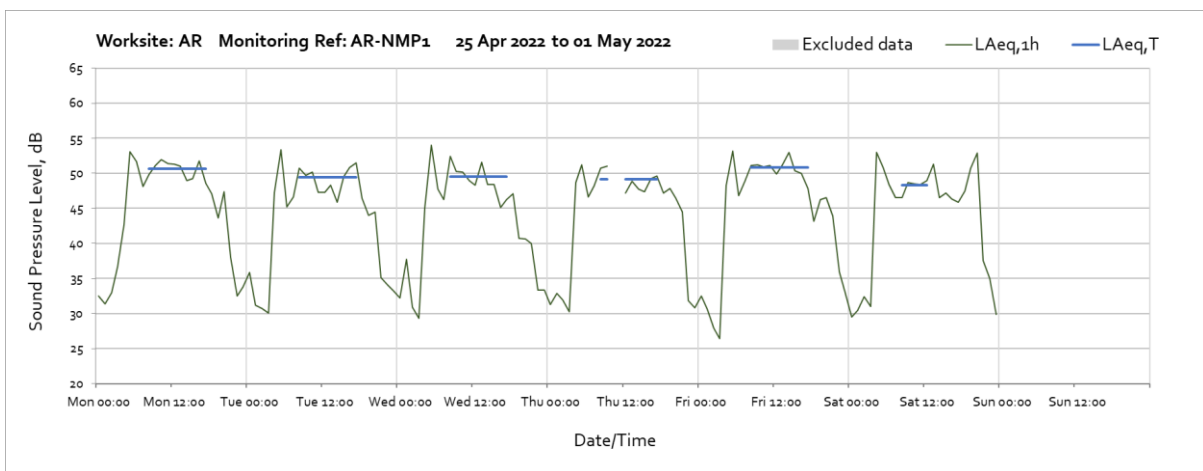
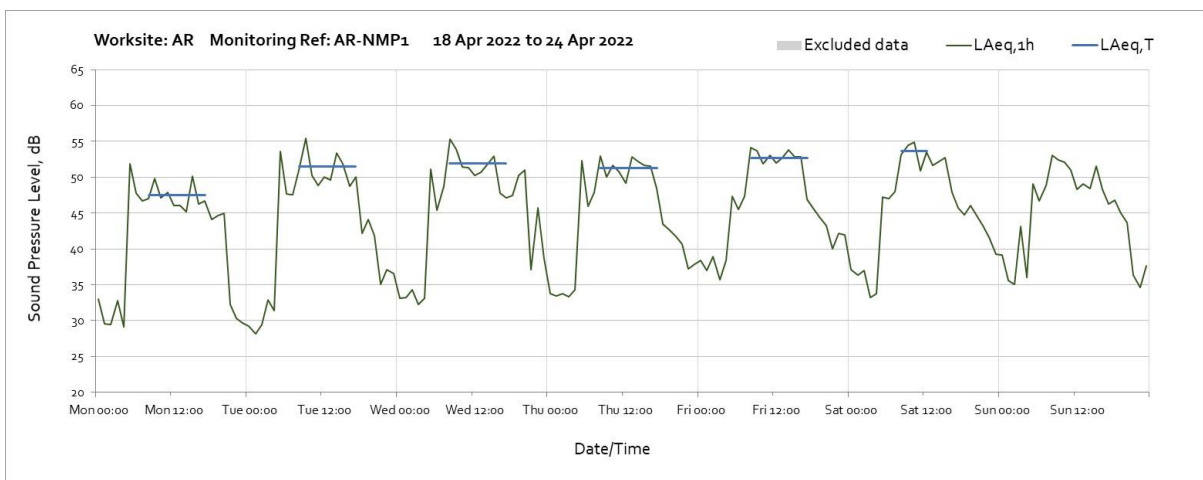
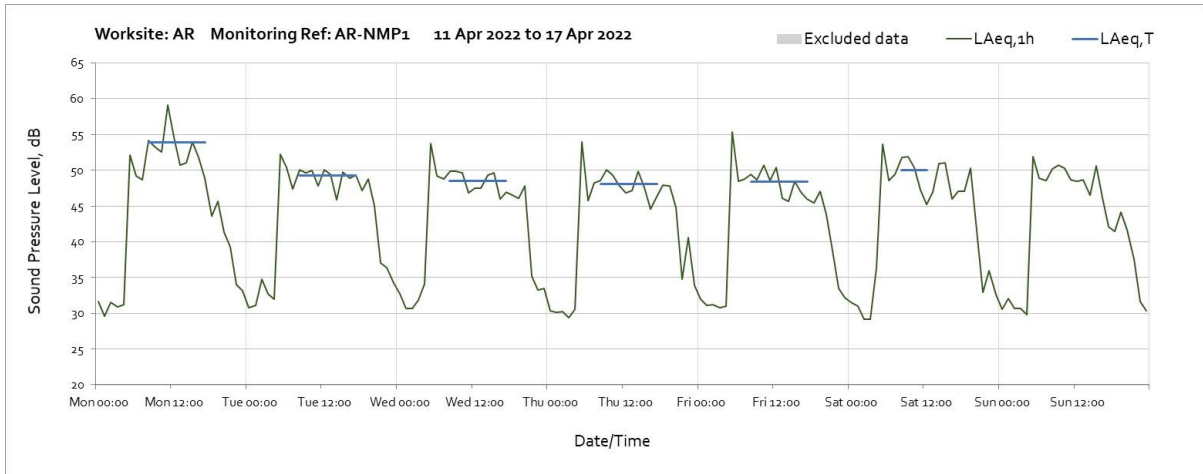




Worksite: AR – Monitoring Ref: AR-NMP1

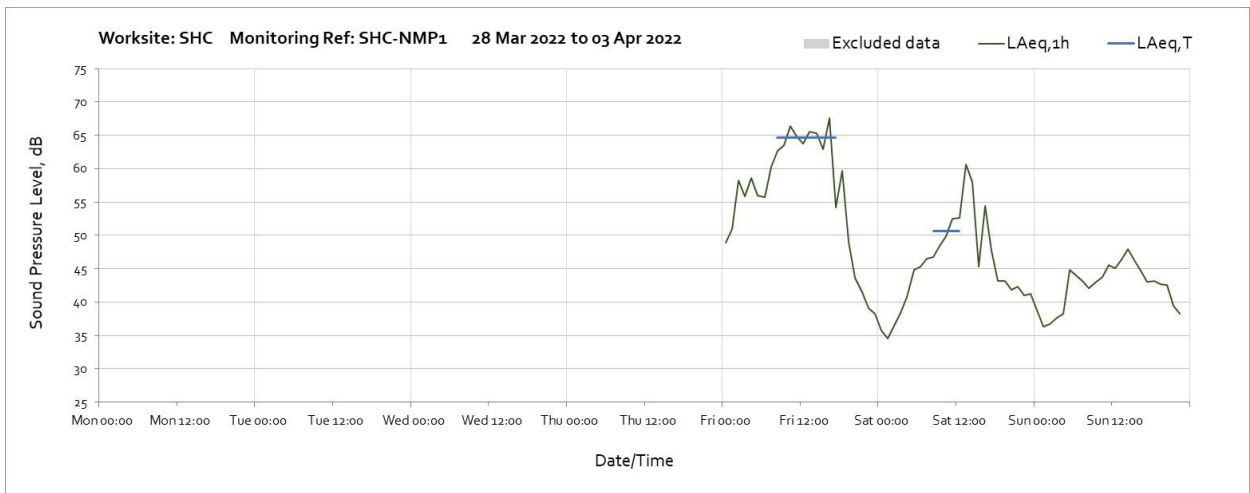


Note: Missing data on the 10th at 23:00 is due to a temporary power supply issue.

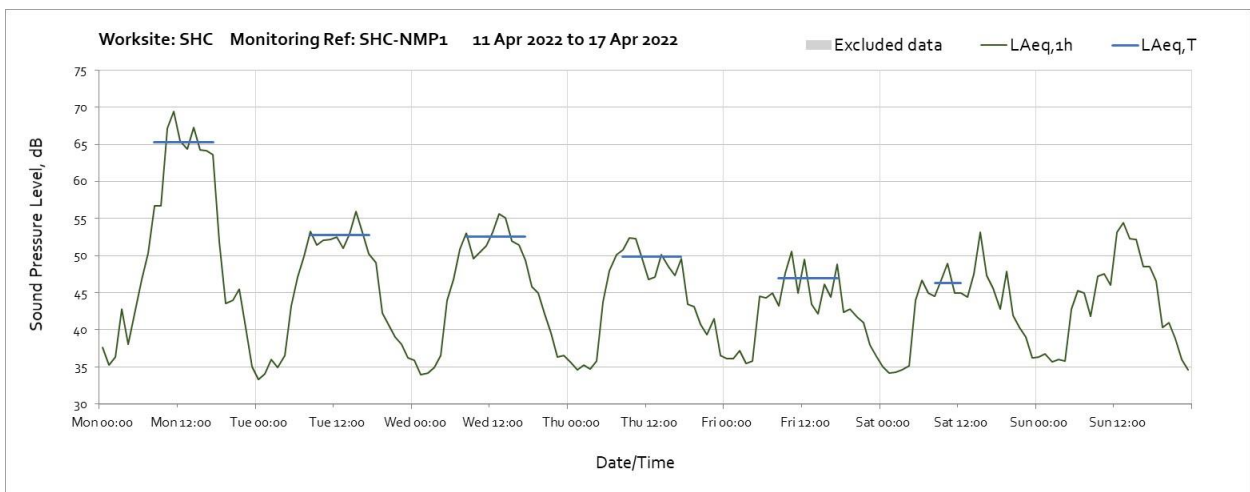
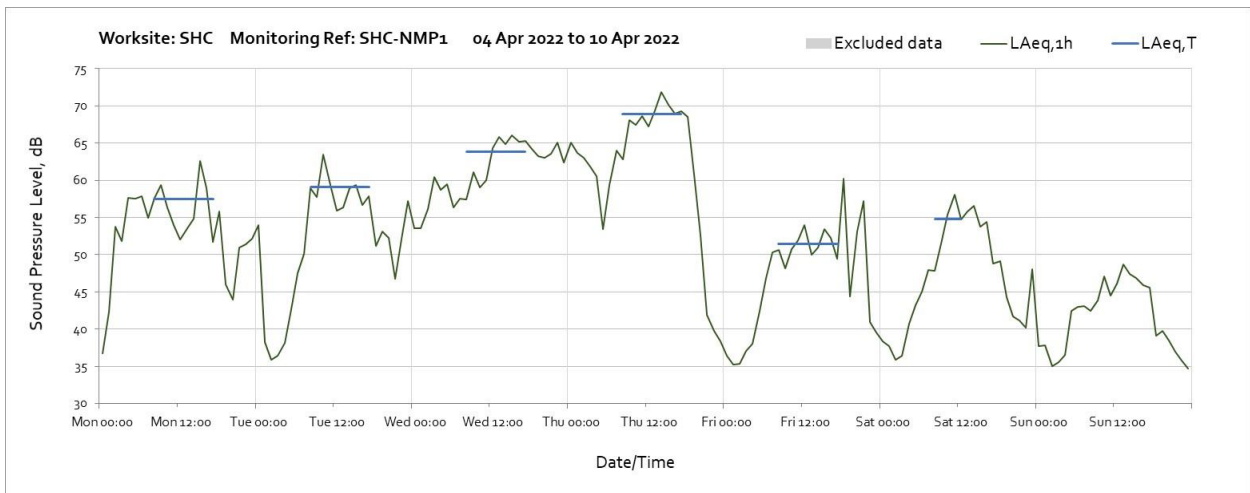


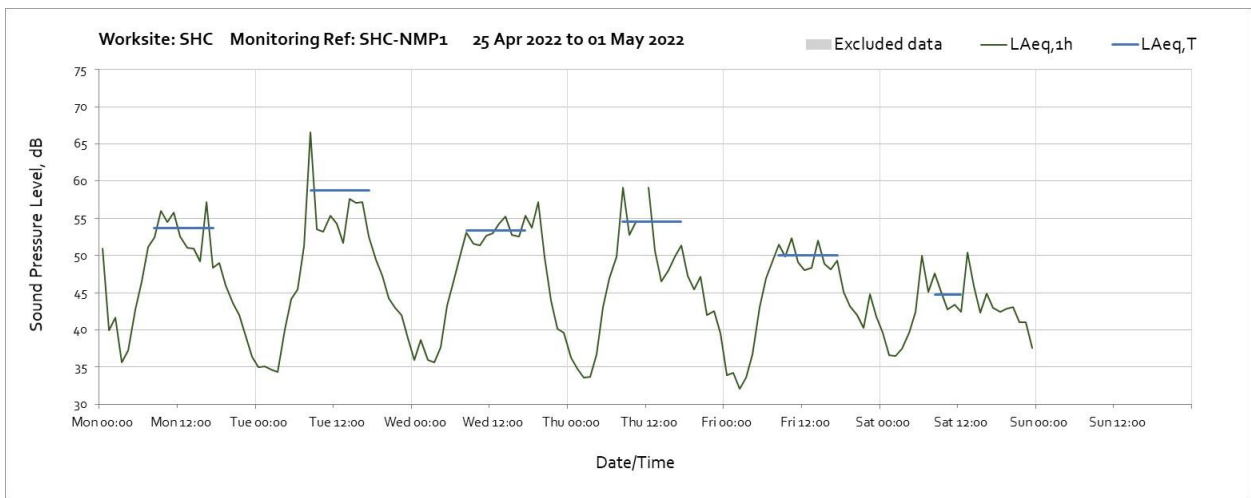
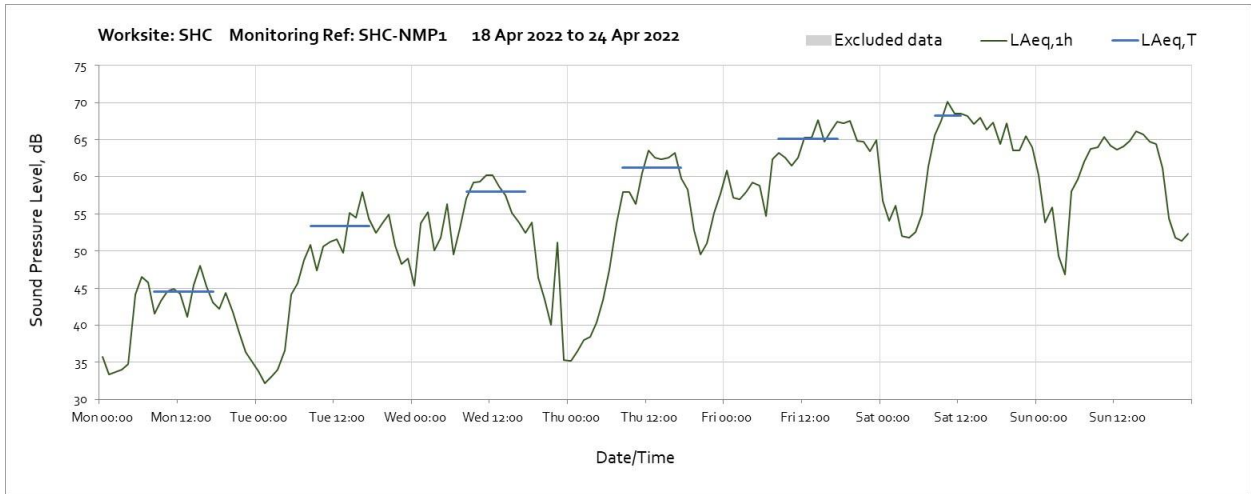
Note: Missing data on the 28th between 10:00 and 11:00 is due to the periodic calibration of the monitoring equipment.

Worksite: SHC – Monitoring Ref: SHC-NMP1



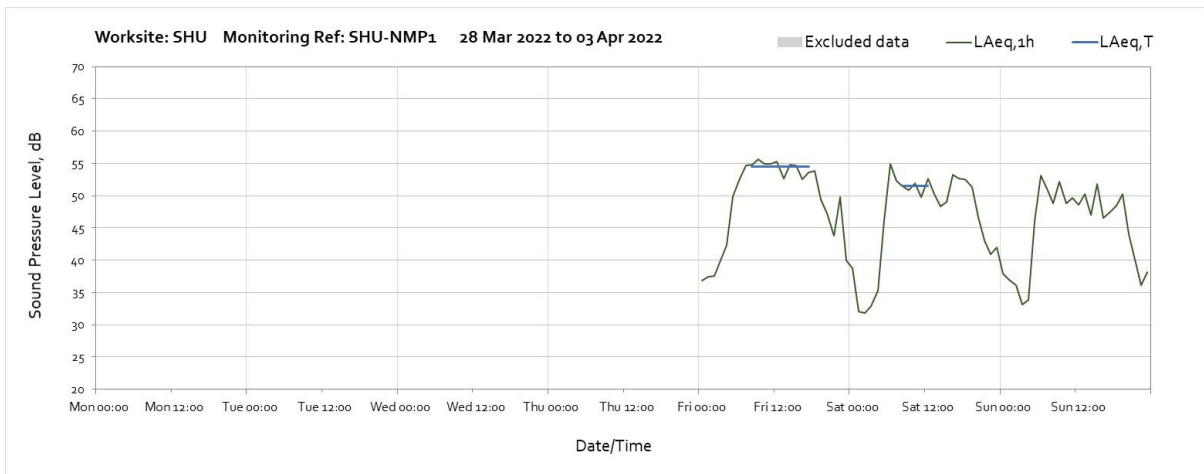
Note: Missing data on Friday 3rd April at 00:00 was due to a temporary power supply issue.

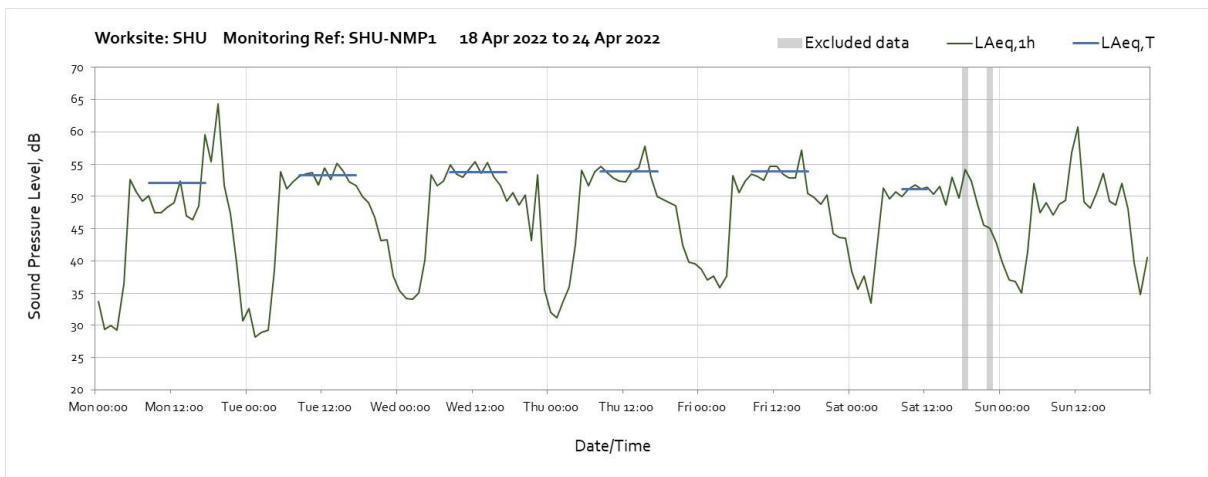
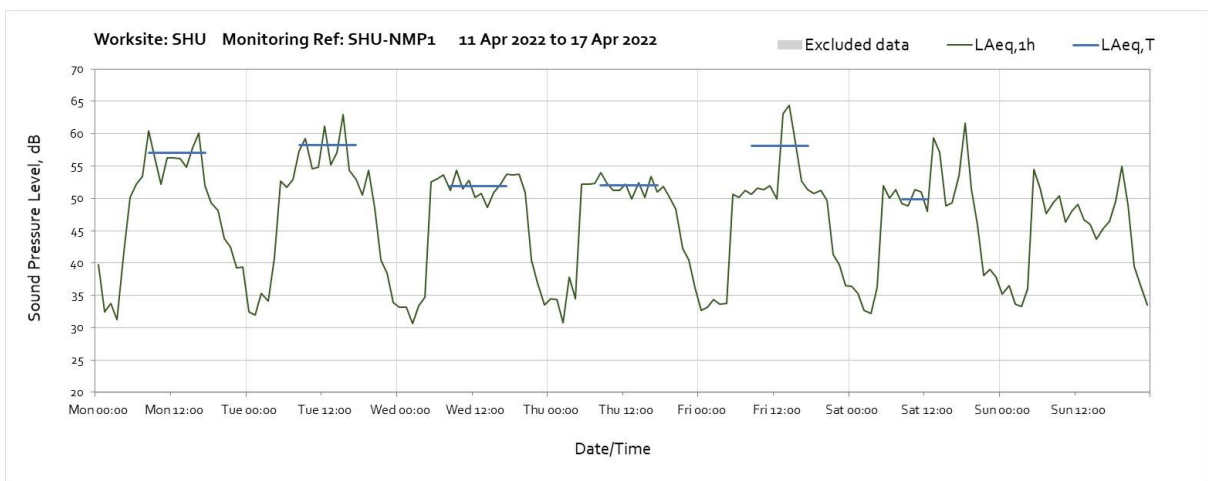


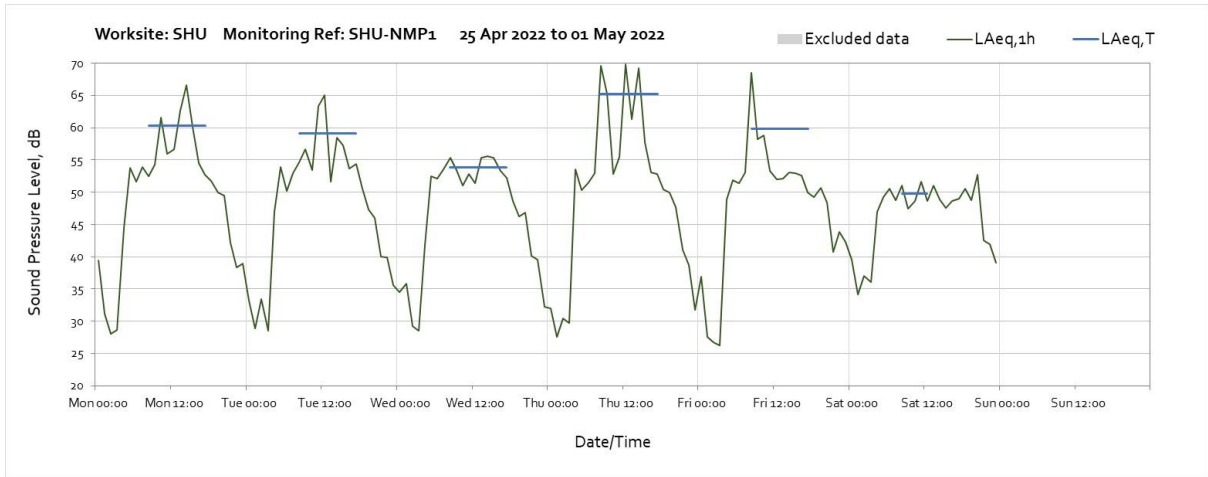


Note: Missing data at 11:00 on Thursday 28th April was due to field calibration of the monitoring station.

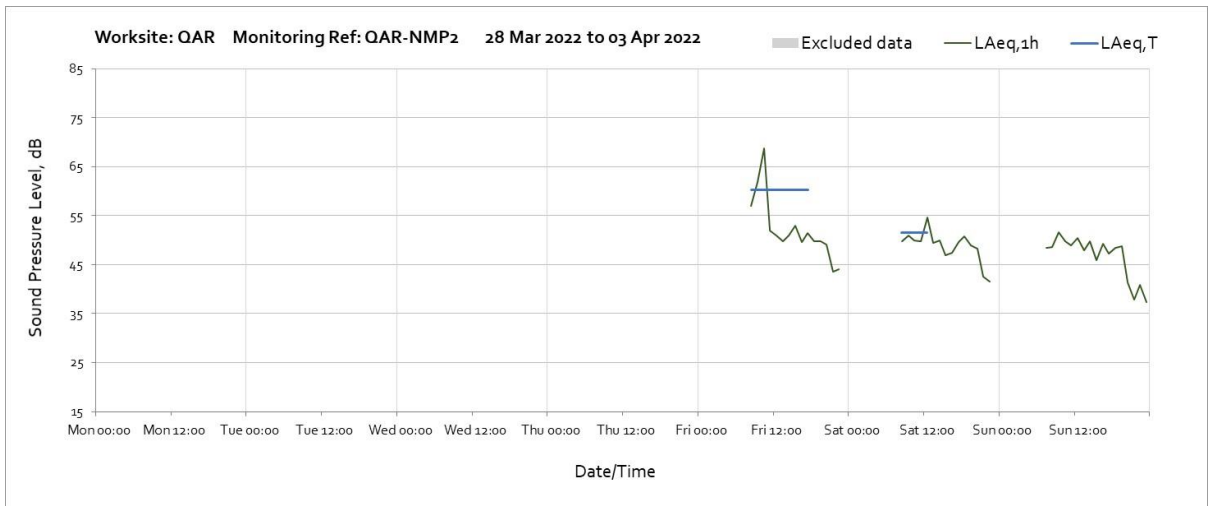
Worksite: SHU – Monitoring Ref: SHU-NMP1



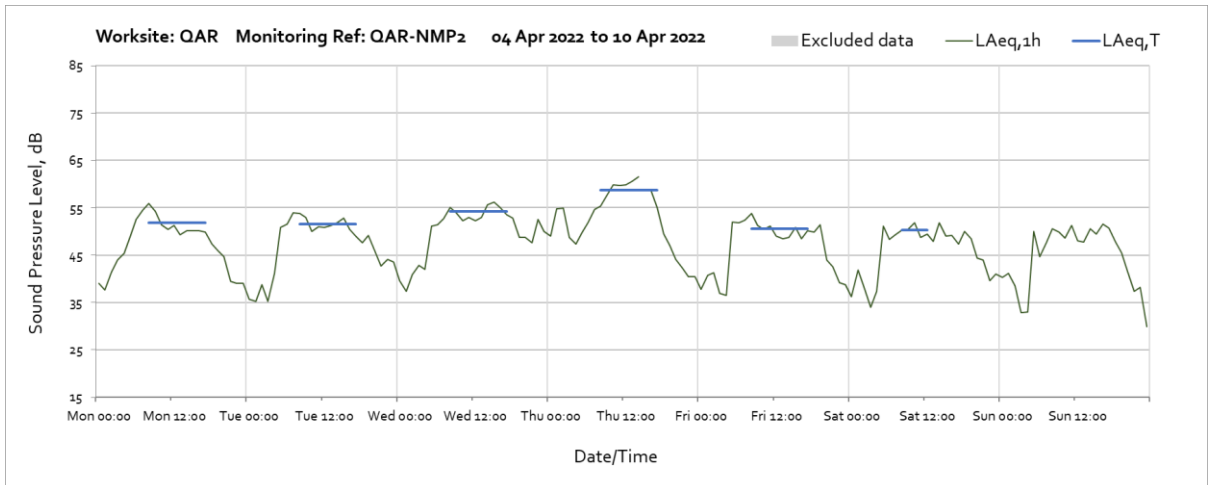




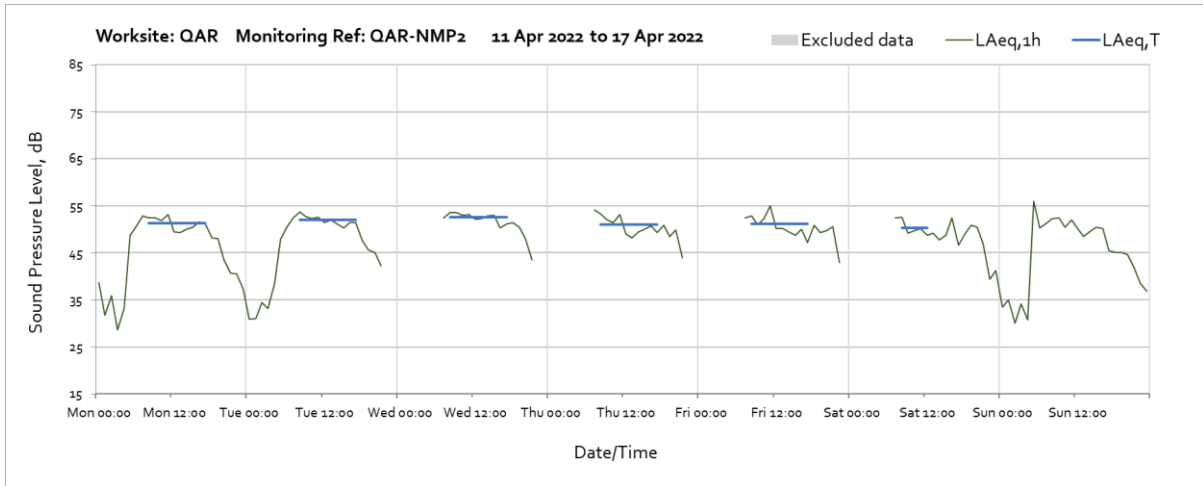
Worksite: QAR – Monitoring Ref: QAR-NMP2



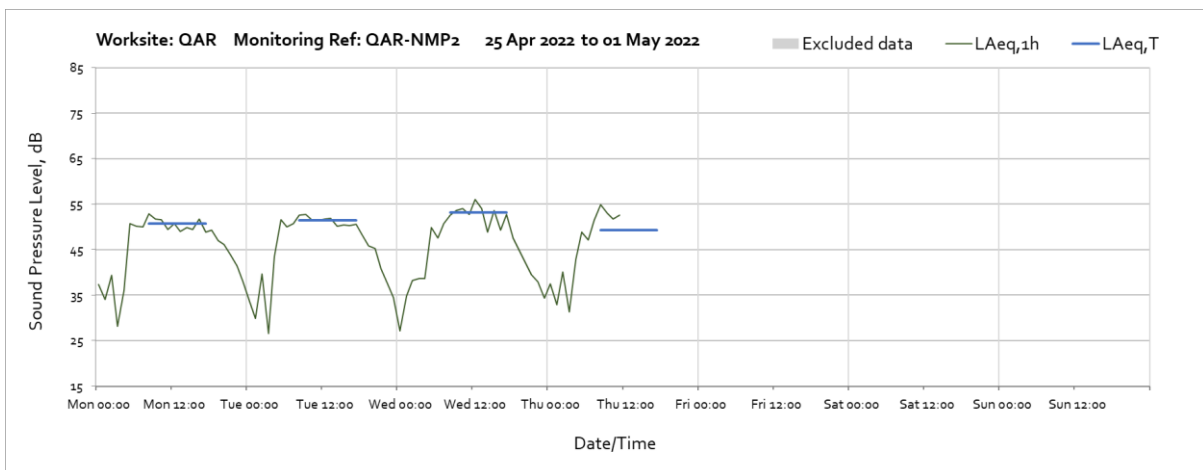
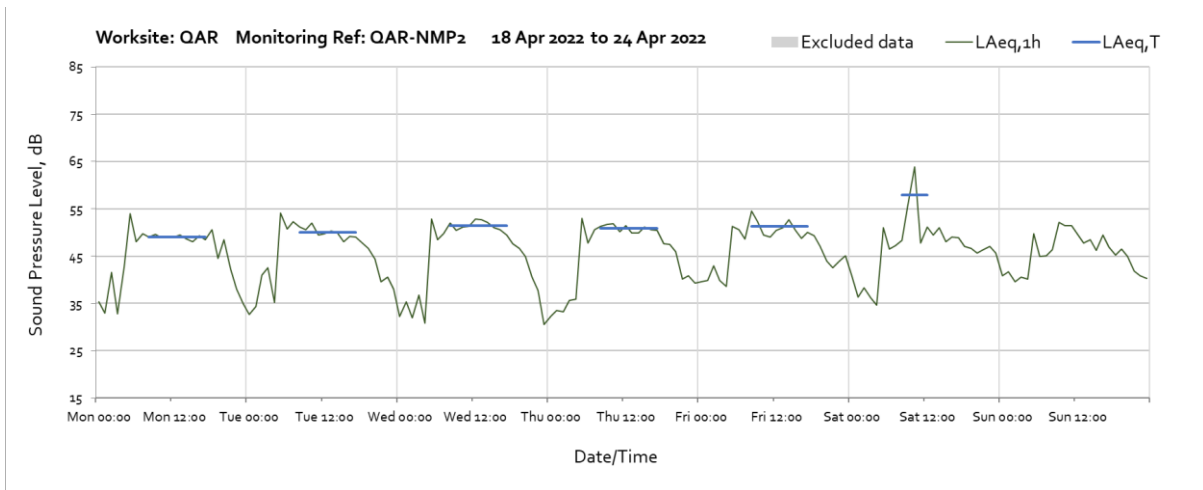
Note: Missing data across the week was due to loss of power at the monitoring station.



Note: Missing data at 15:00 on Thursday 7th April was due to loss of power at the monitoring station.

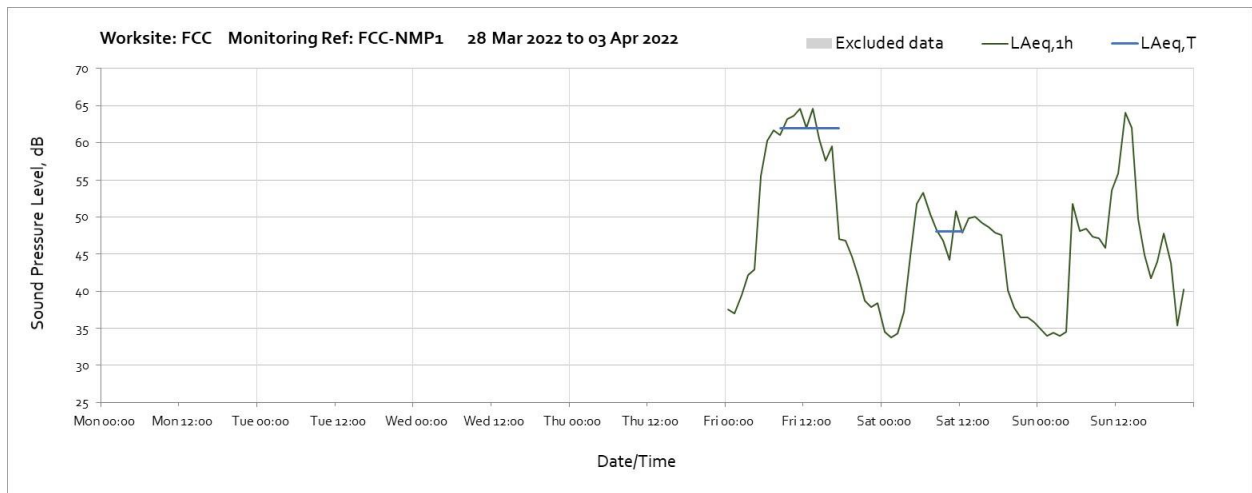


Note: Missing data across the week was due to loss of power at the monitoring station.

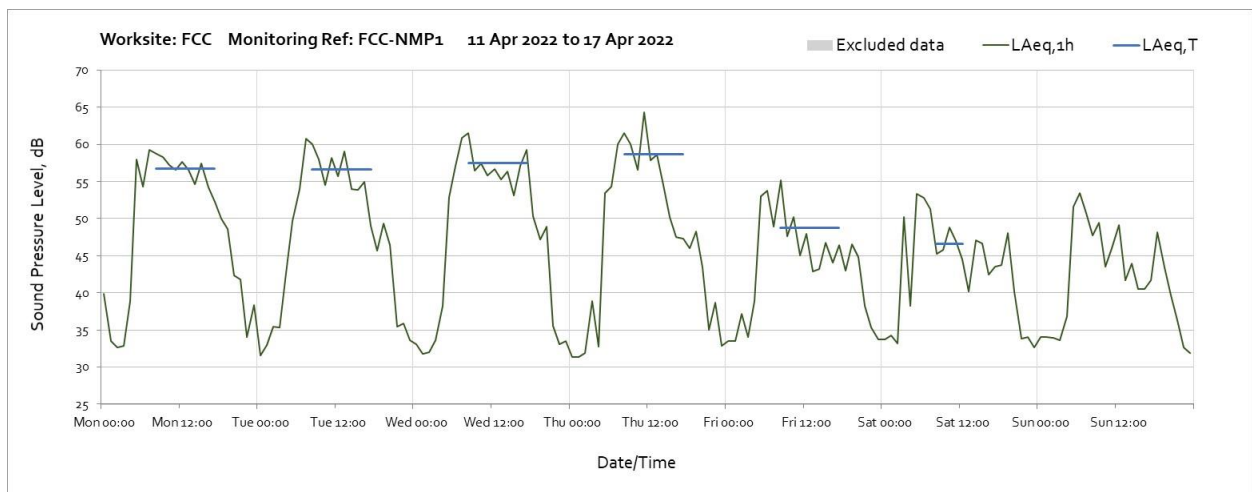
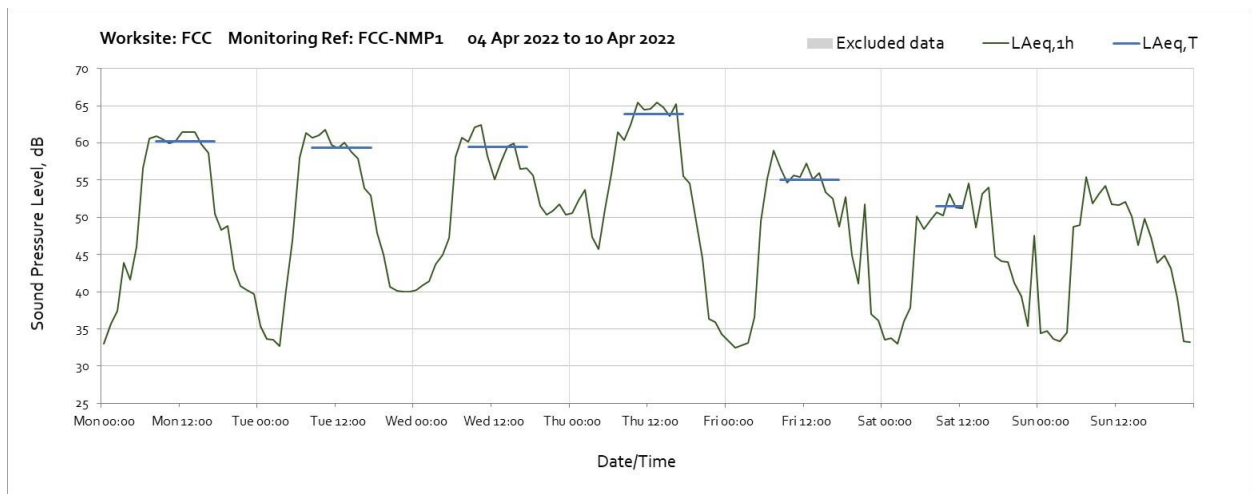


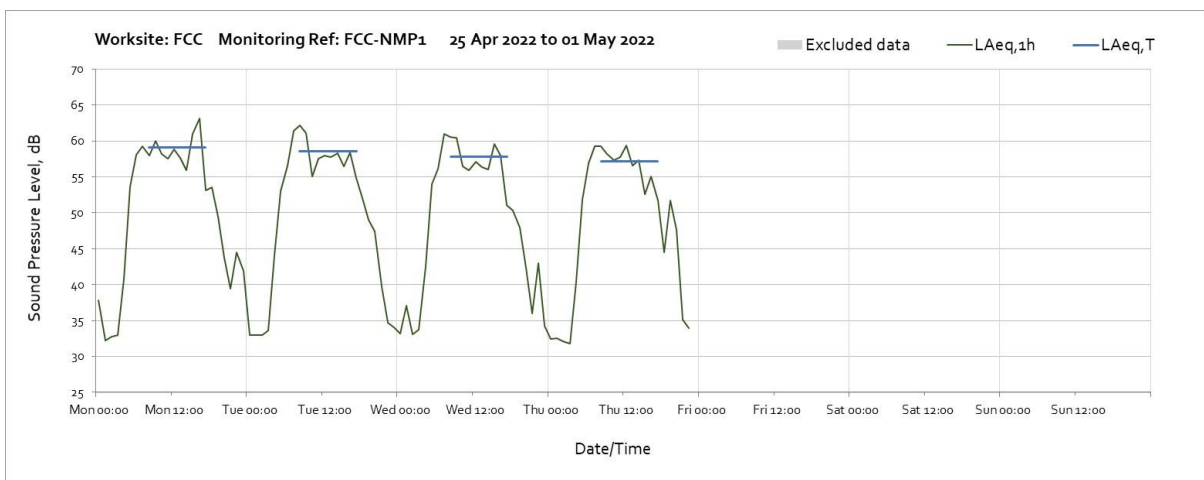
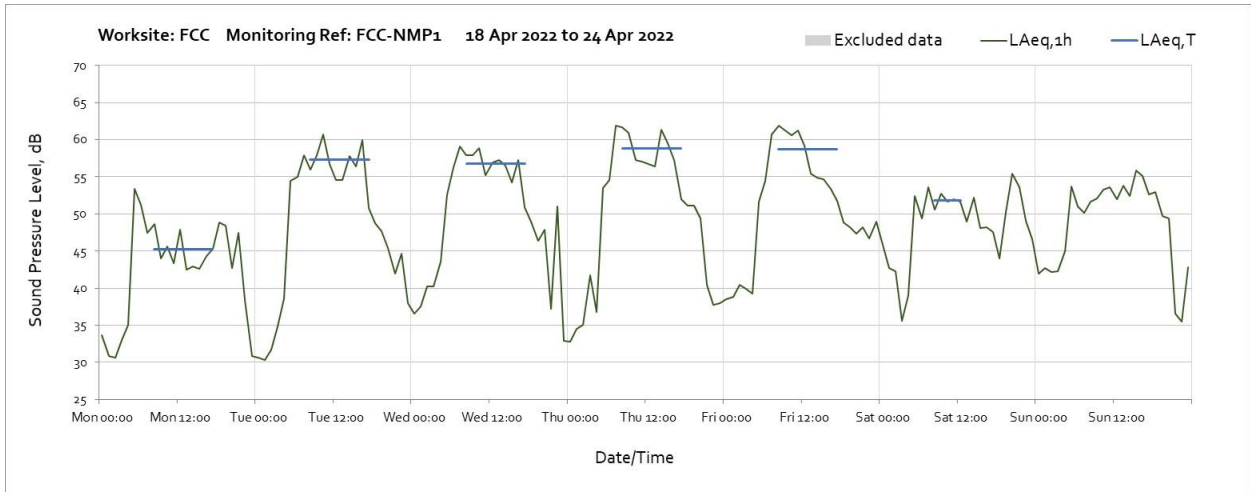
Note: Field calibration on Thursday 28th April revealed a problem with the equipment and data for the remaining period was excluded. The equipment has been sent for repair and a temporary equipment has installed on the 5th of May.

Worksite: FCC – Monitoring Ref: FCC-NMP1



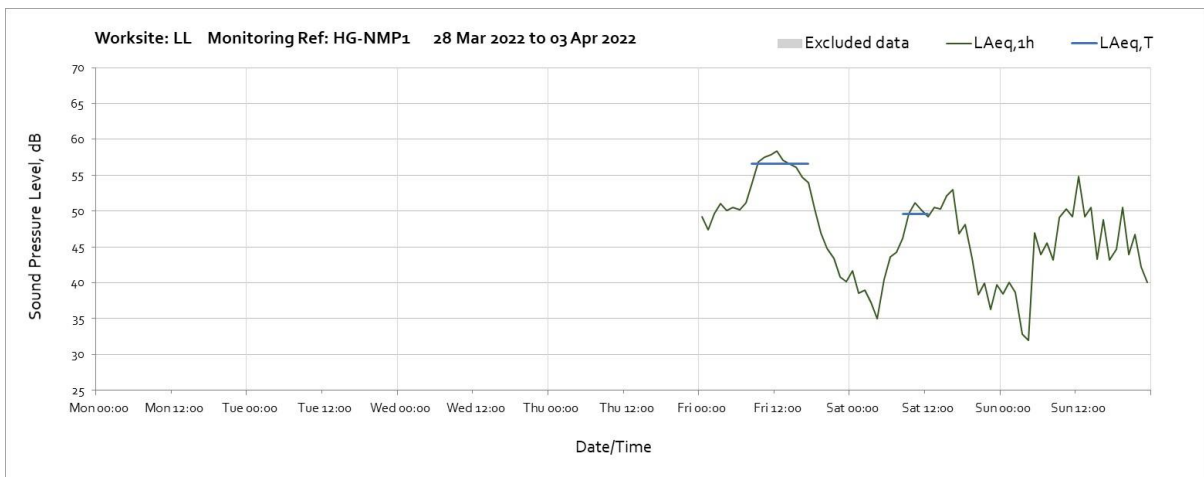
Note: Missing data on Sunday 3rd April at 23:00 is due to equipment power problems.

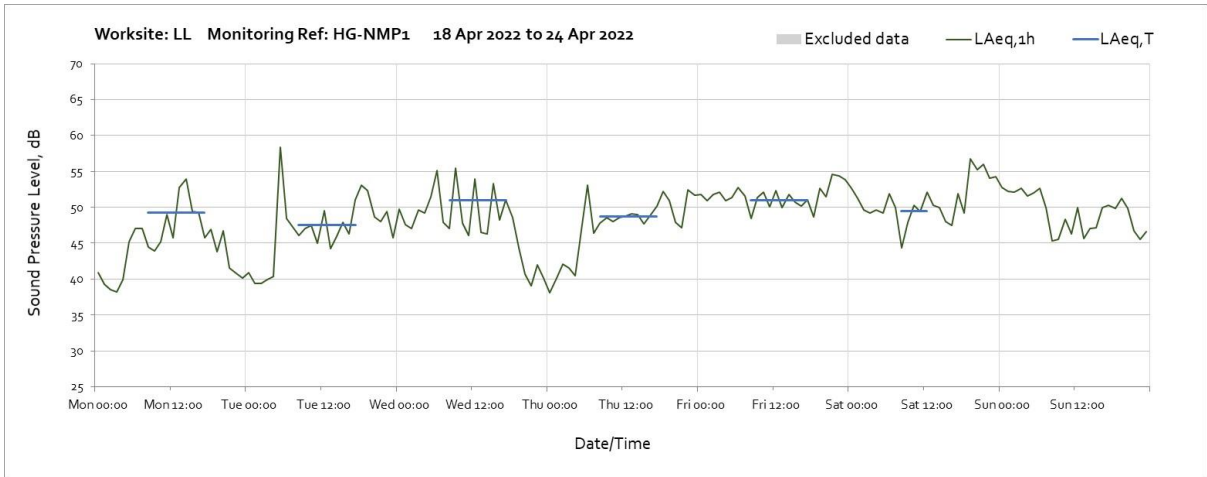
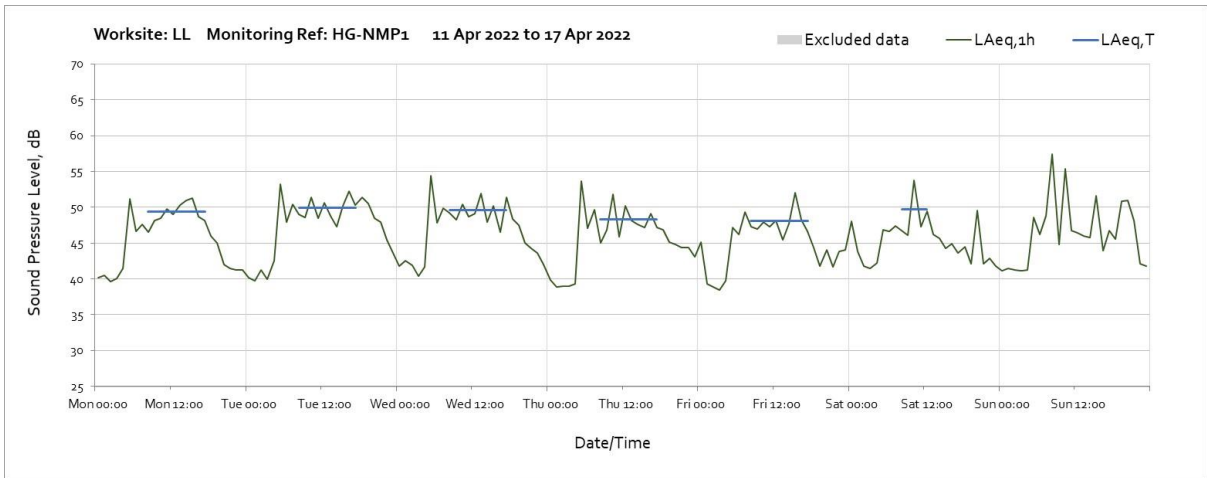
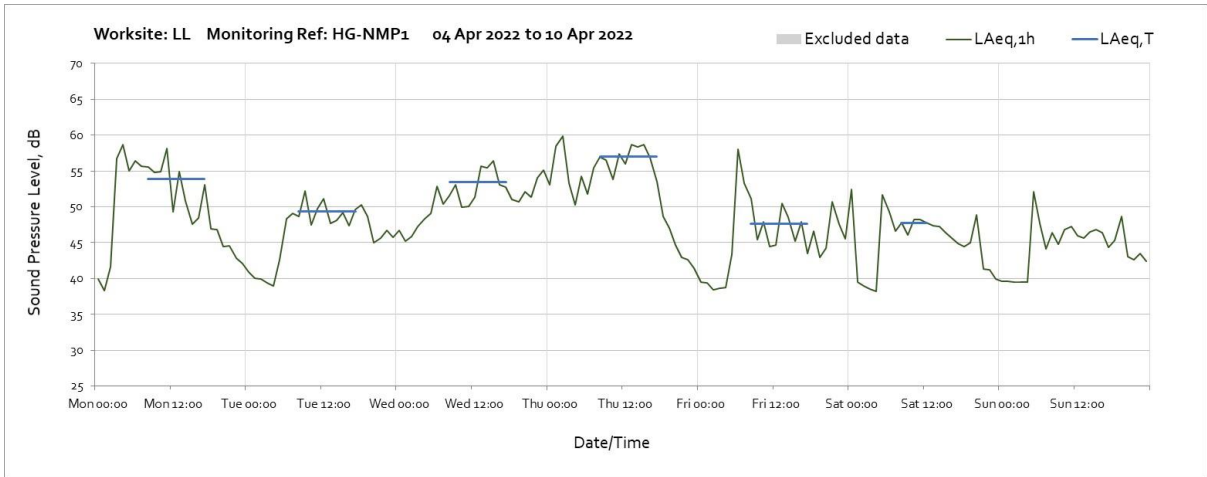


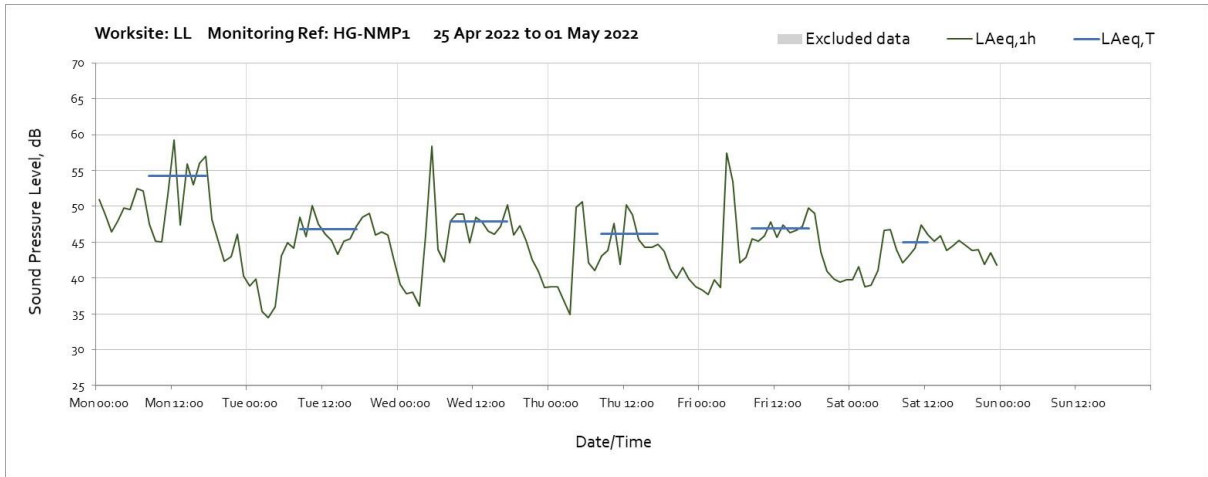


Note: Missing data from Thursday 28th April onwards is due to equipment not restarting after calibration. This matter is being investigated.

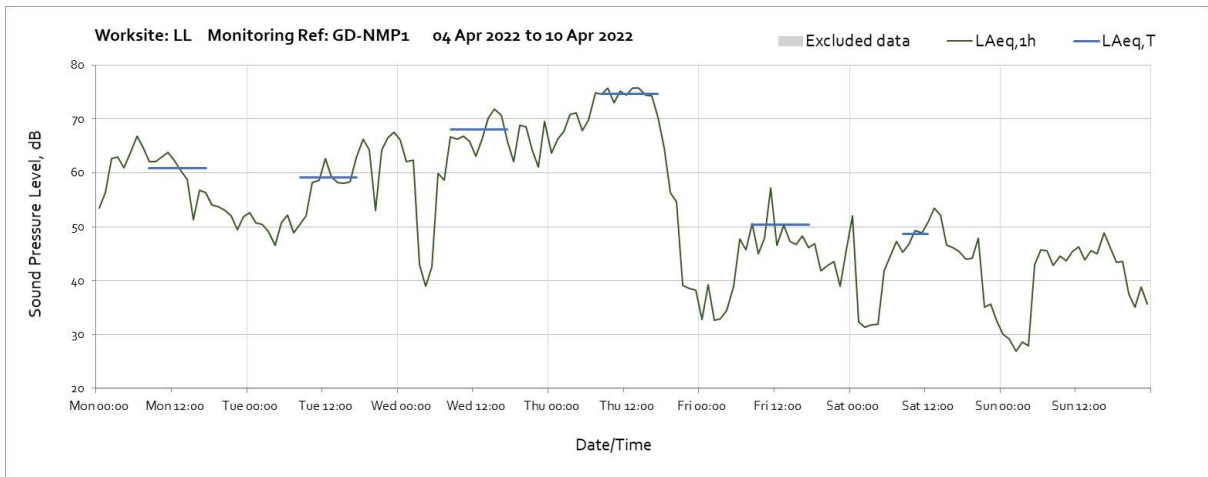
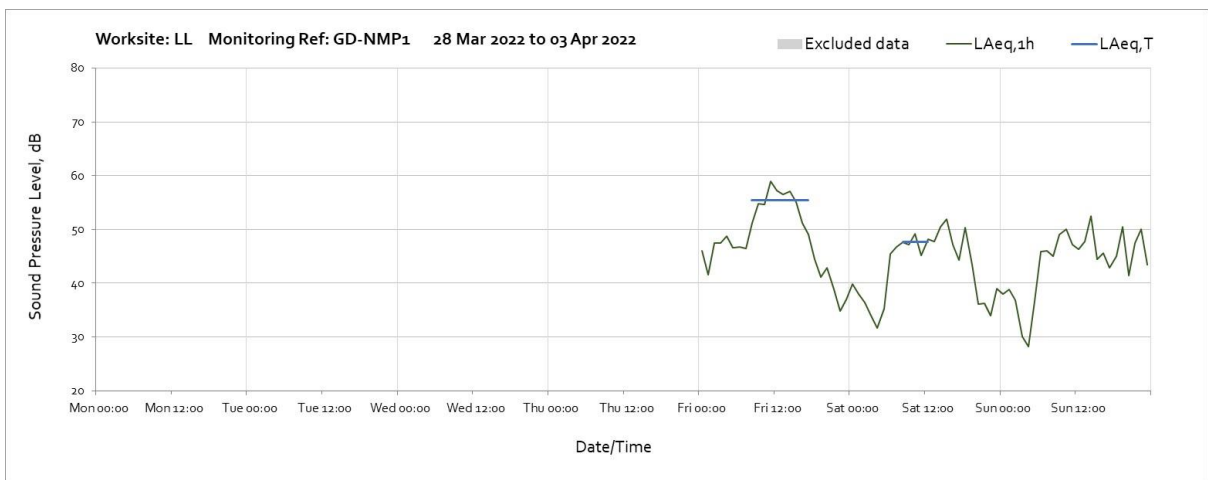
Worksite: LL - Monitoring Ref: HG-NMP1

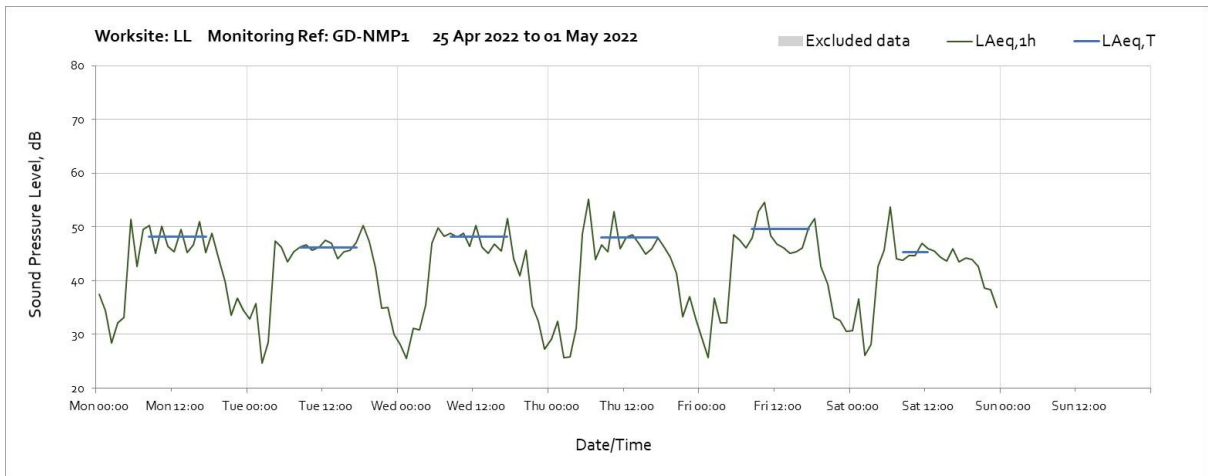
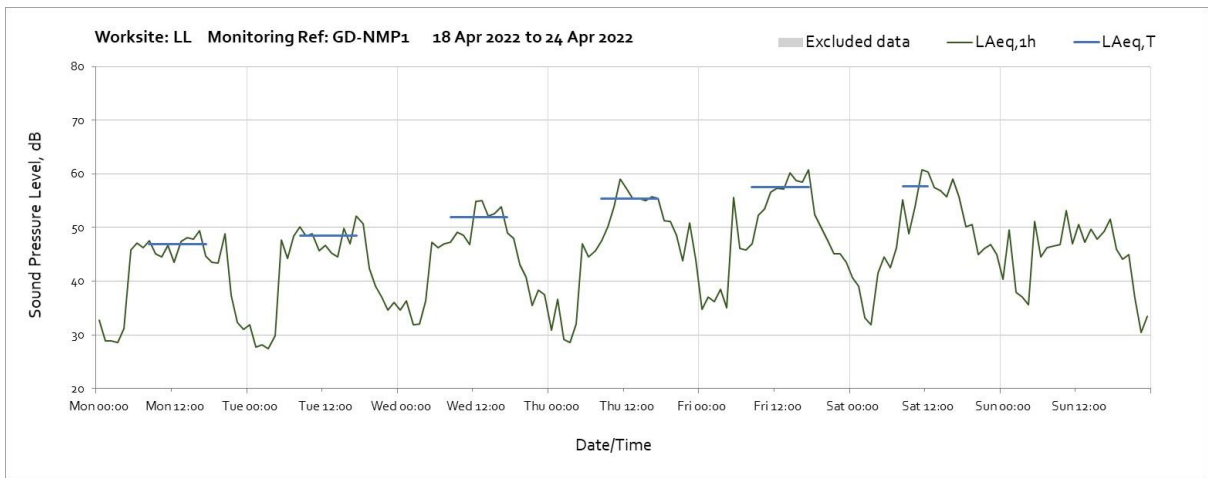
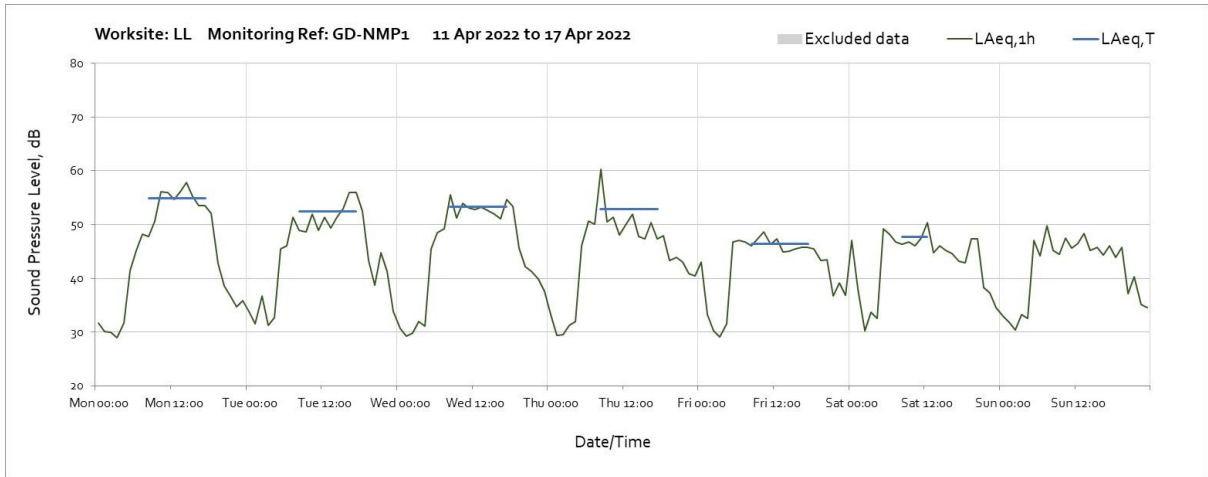




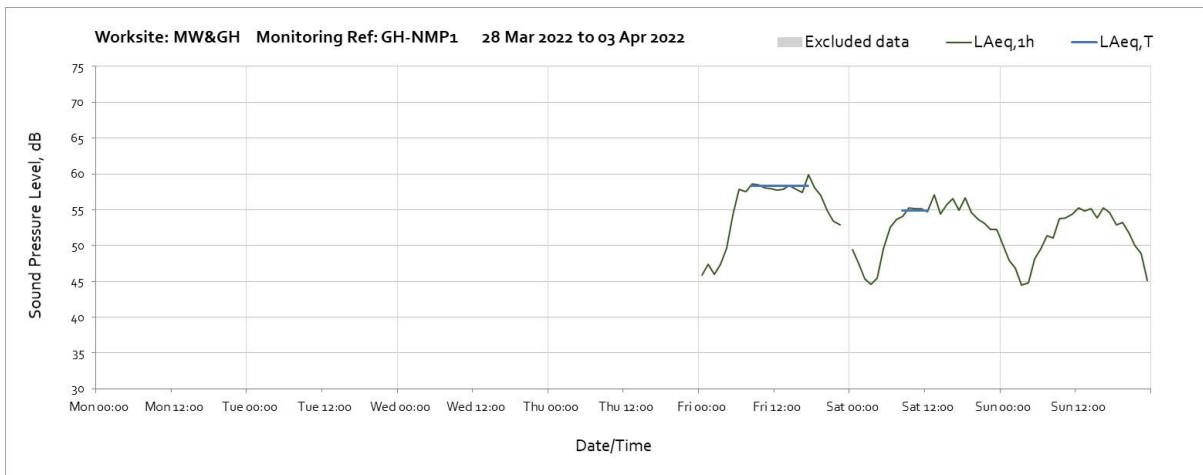


Worksite: LL - Monitoring Ref: GD-NMP1

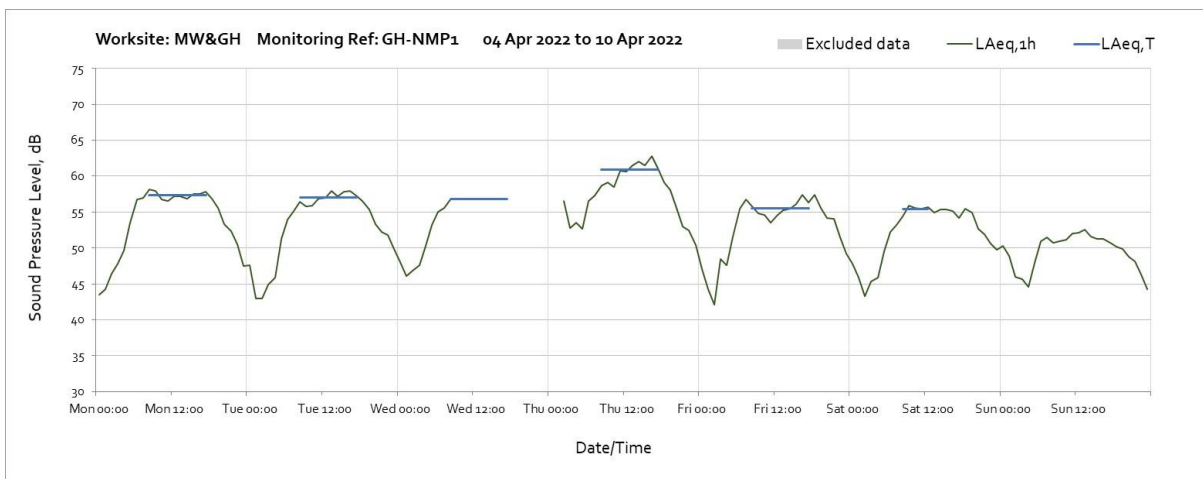




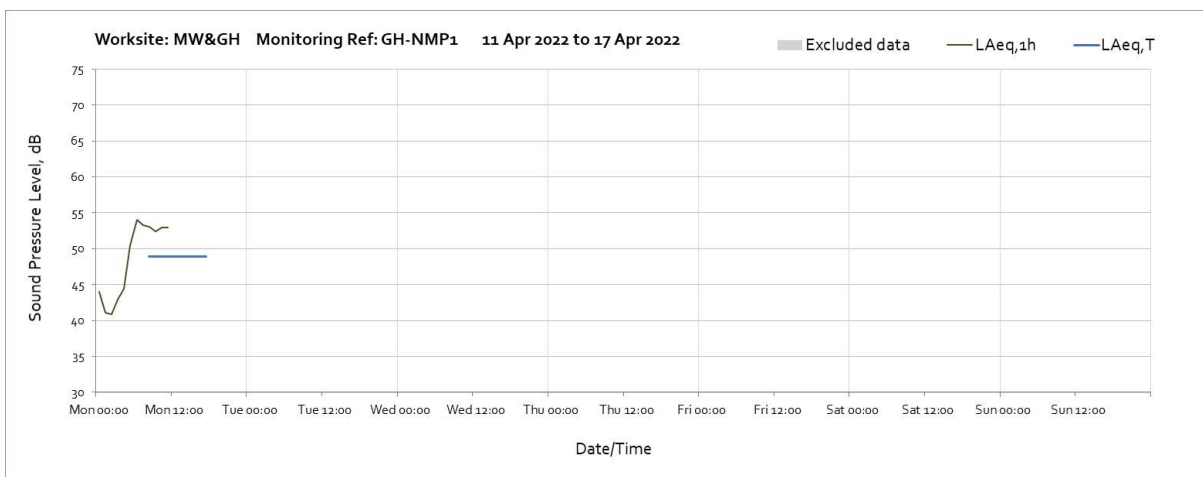
Worksite: MW&GH – Monitoring Ref: GH-NMP1



Note: Missing data at 23:00 on Friday 1st April was due to loss of power at the monitoring station.

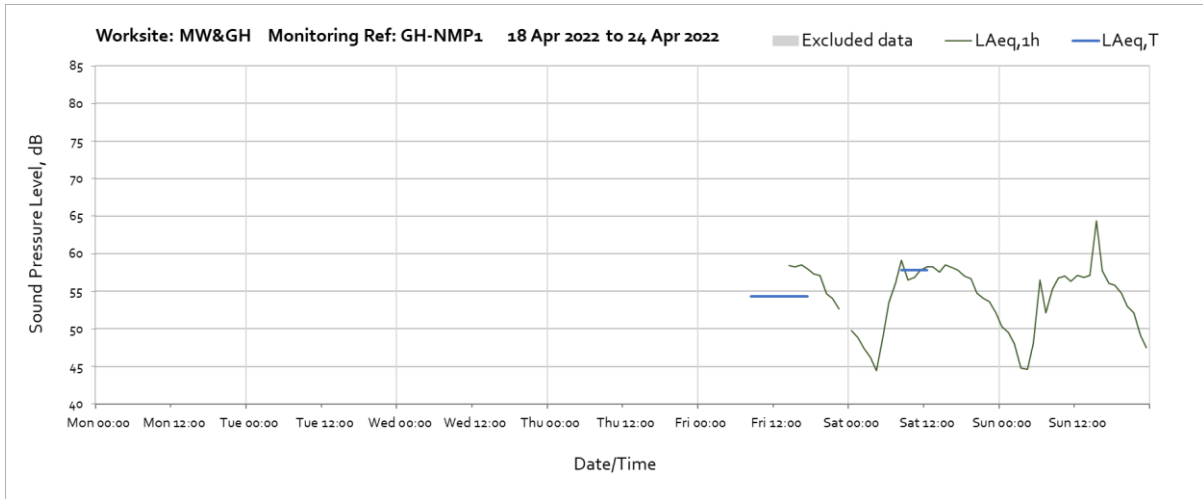


Note: Missing data between 09:00 on Wednesday 6th April and 02:00 on Thursday 7th April was due to loss of power at the monitoring station.

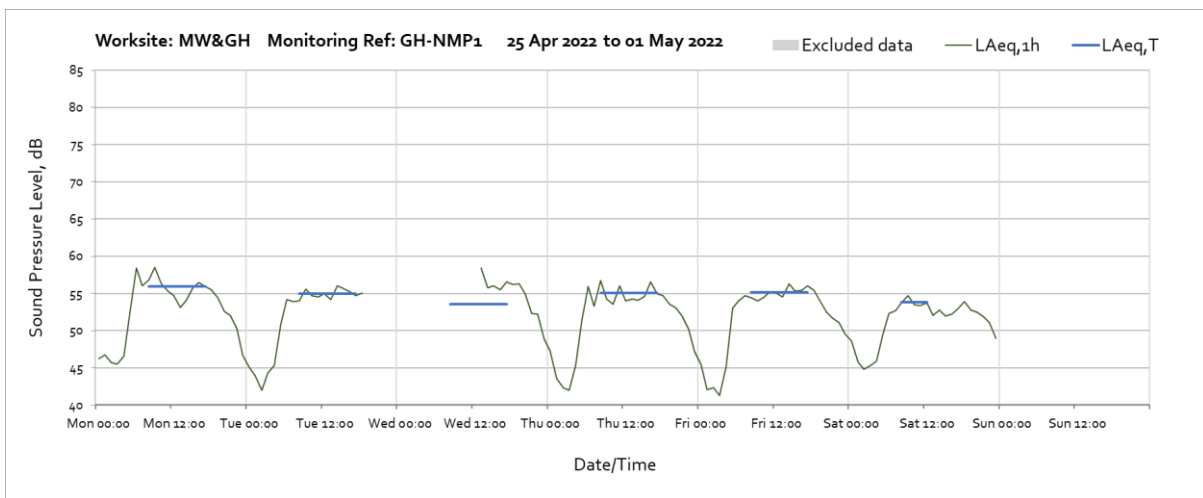


Note: Missing data across the week was due to loss of power at the monitoring station.

OFFICIAL

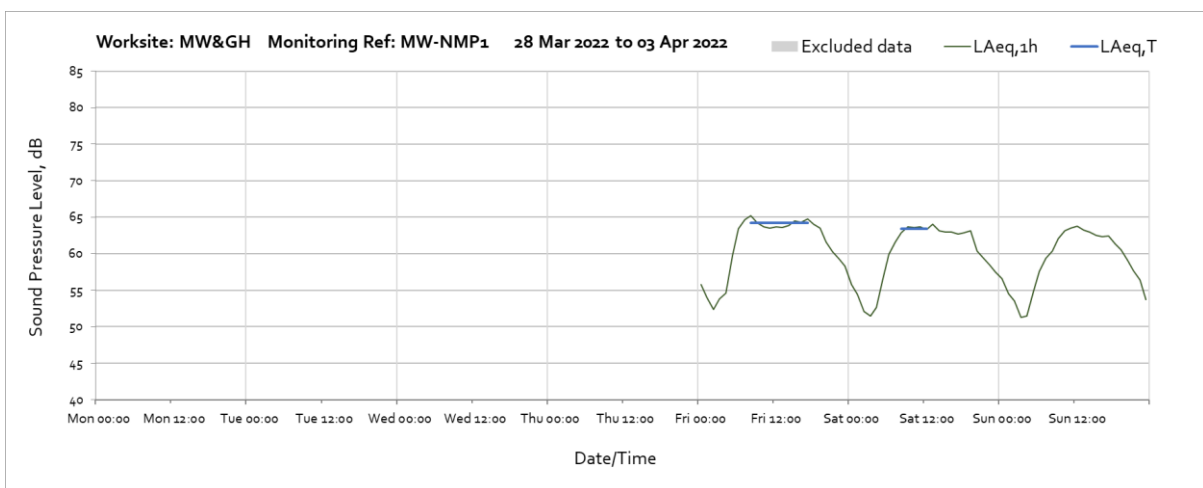


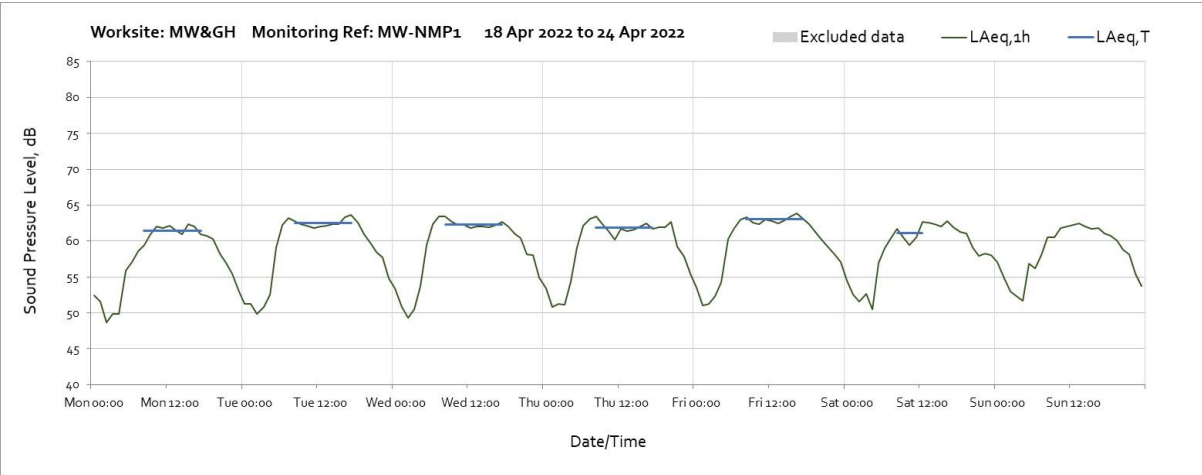
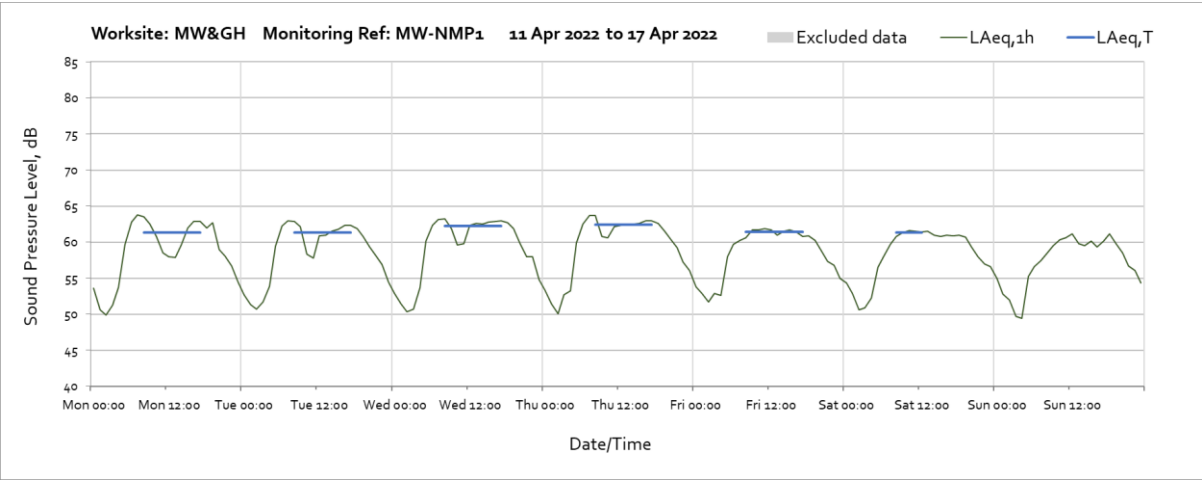
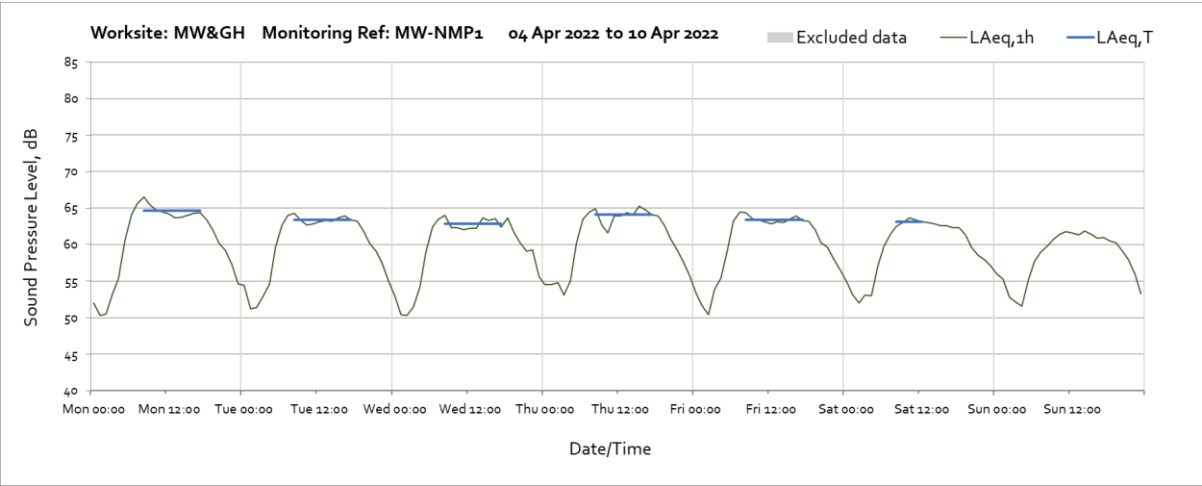
Note: Missing data across the week was due to loss of power at the monitoring station.

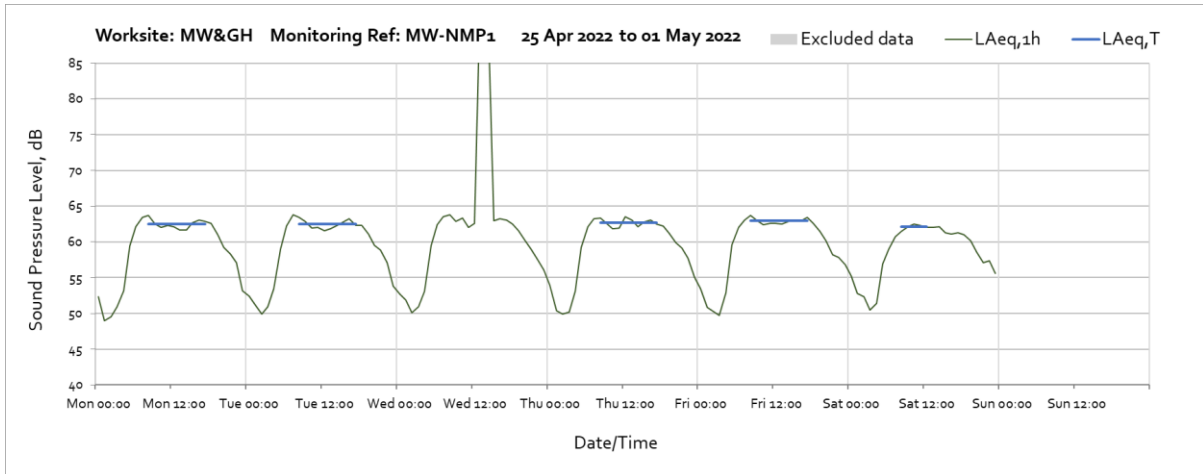


Note: Missing data between 19:00 on Tuesday 26th April and 13:00 on Wednesday 27th was due to loss of power at the monitoring station.

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

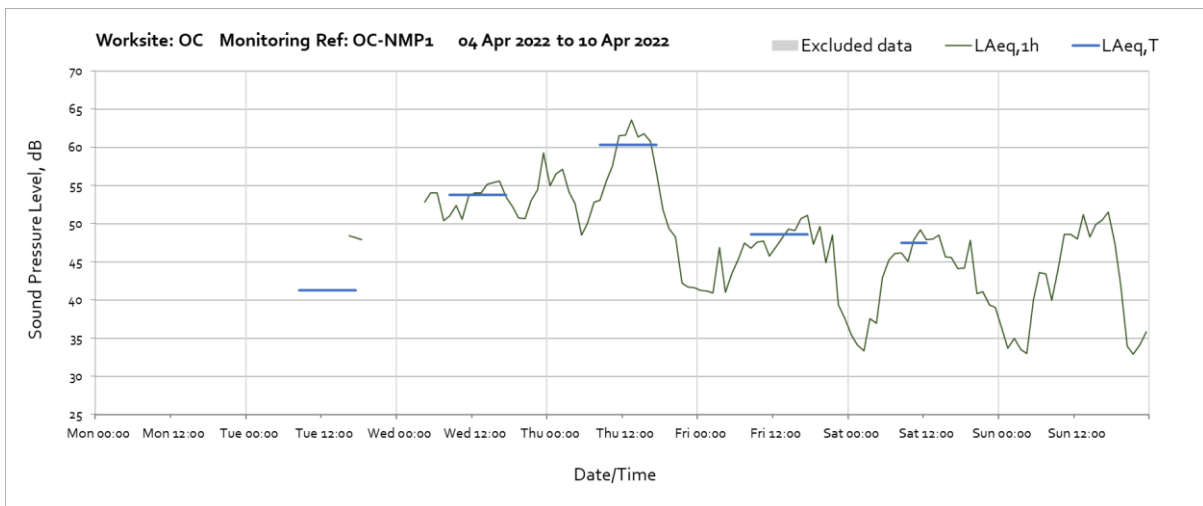
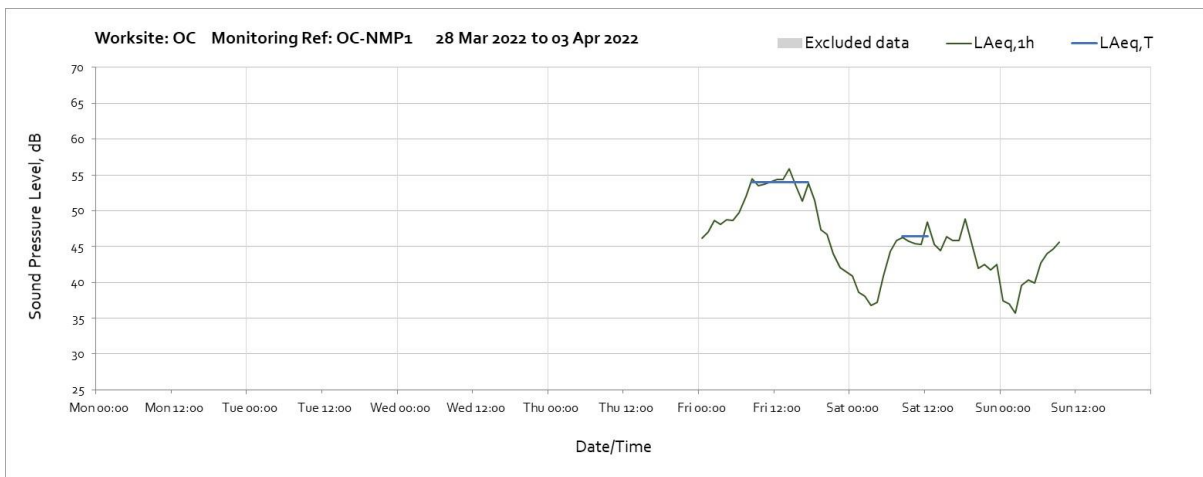






Note: High noise levels at 13:00 on Wednesday 27th April was due to local disturbance at the monitor and not representative of HS2 noise levels.

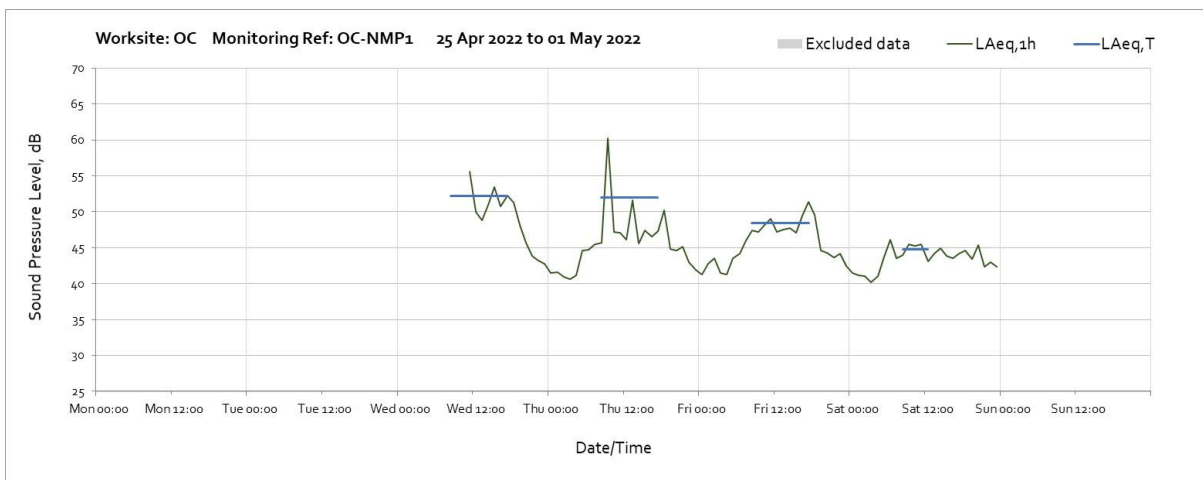
Worksite: OC - Monitoring Ref: OC-NMP1



Note: Missing data across the week was due to loss of power at the monitoring station.

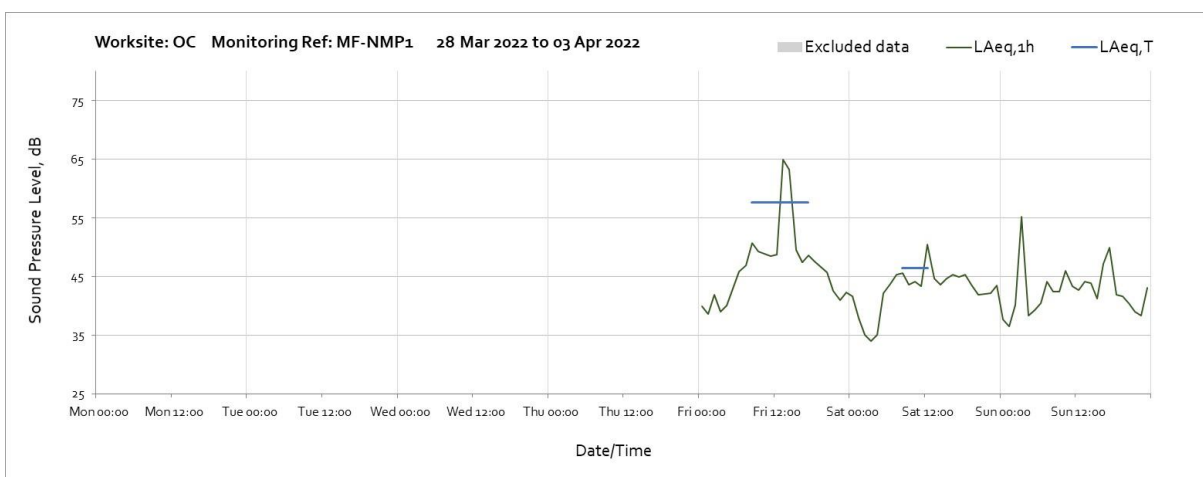


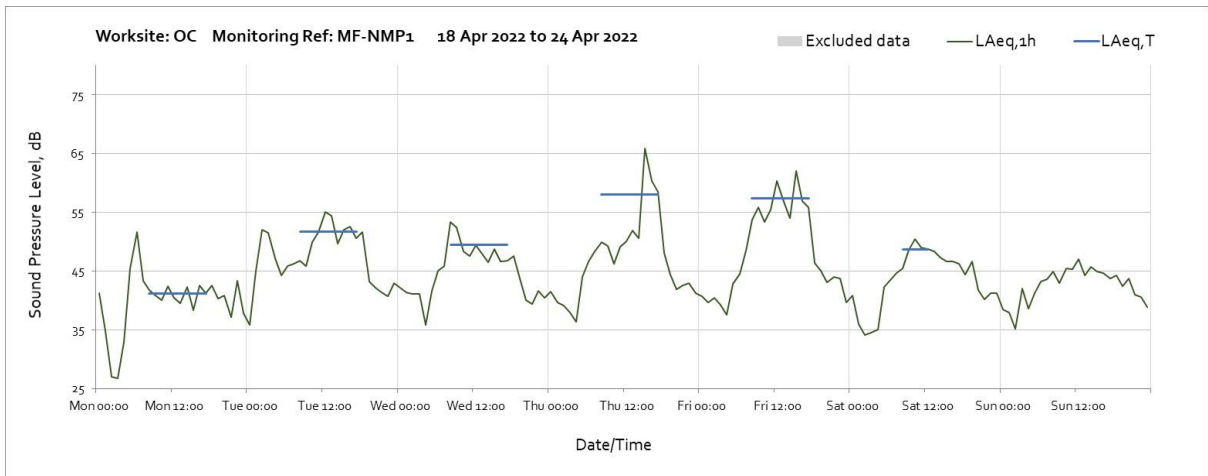
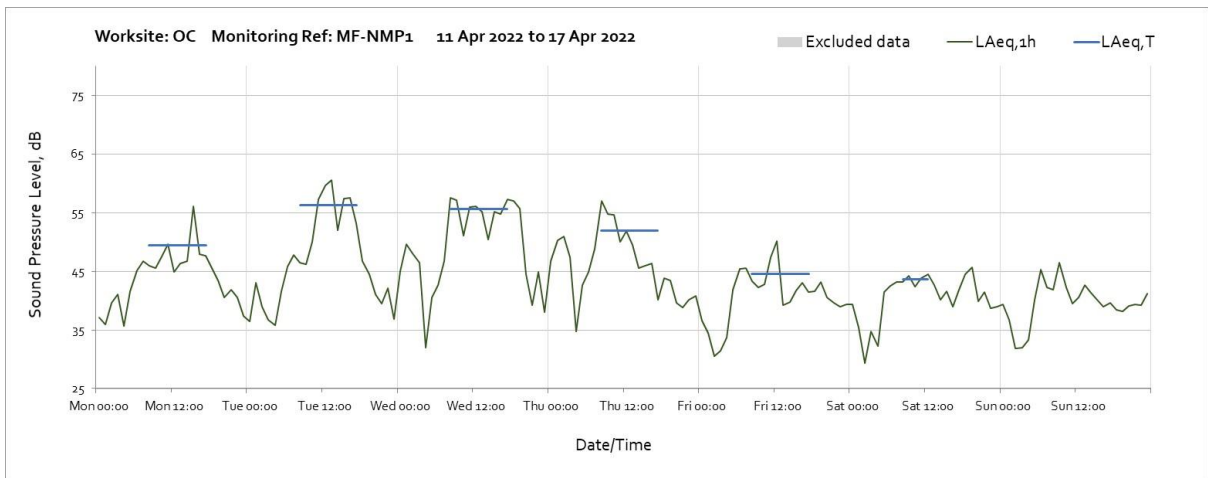
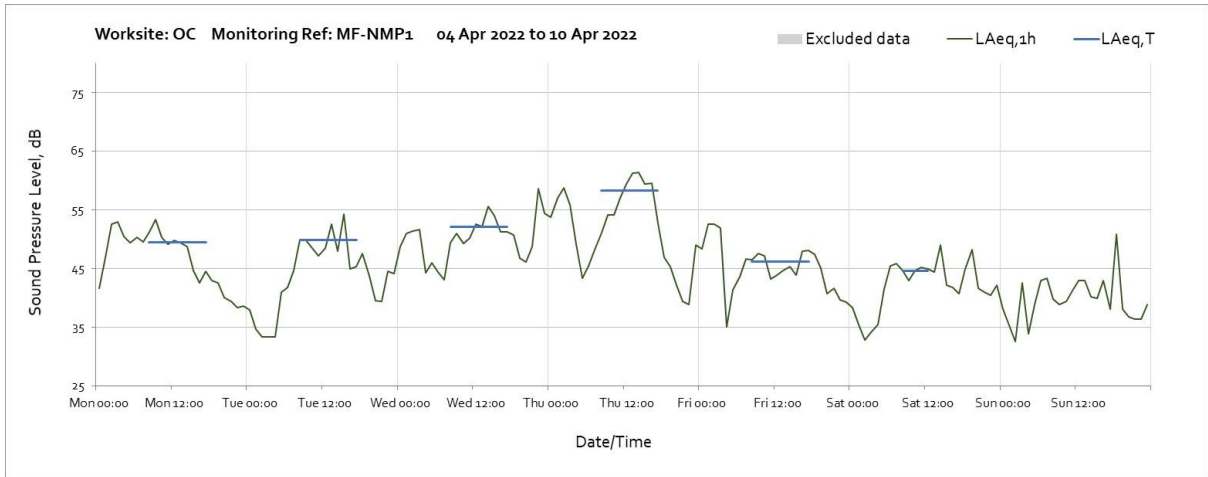
Note: Missing data between 06:00 on Wednesday 13th April and 11:00 on Wednesday 27th April was due to loss of power at the monitoring station.

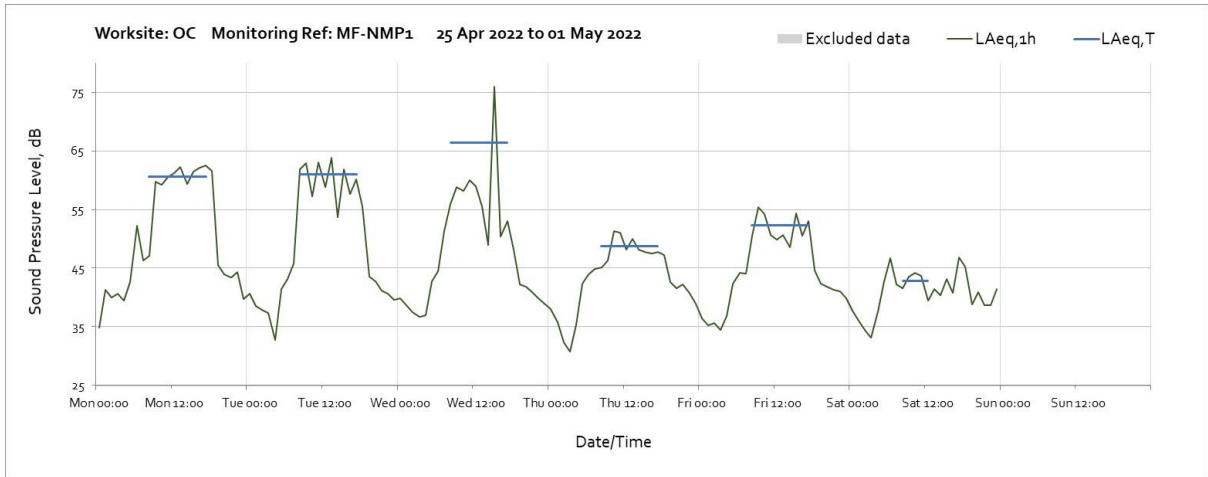


Note: Missing data between 06:00 on Wednesday 13th April and 11:00 on Wednesday 27th April was due to loss of power at the monitoring station.

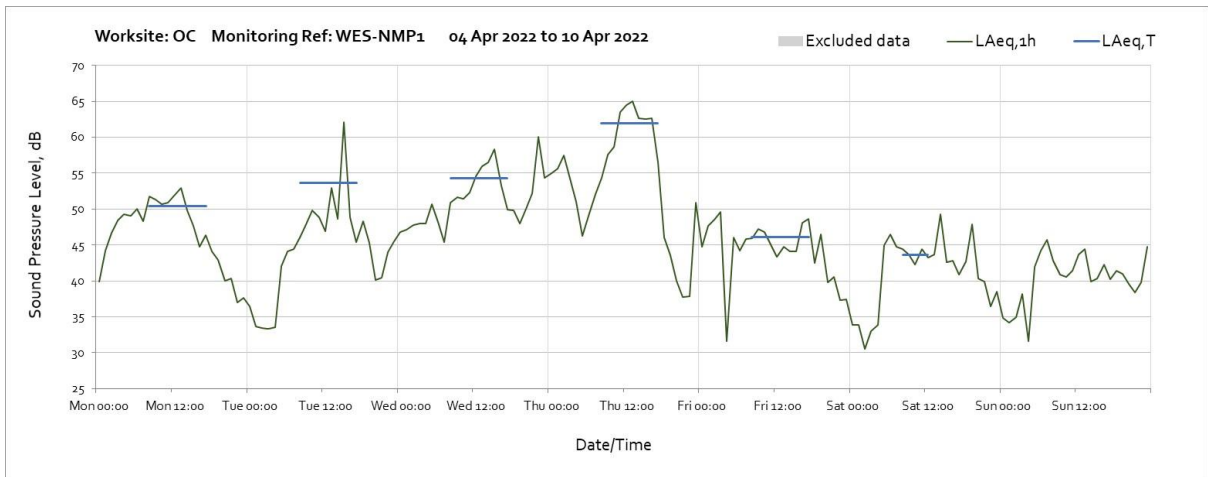
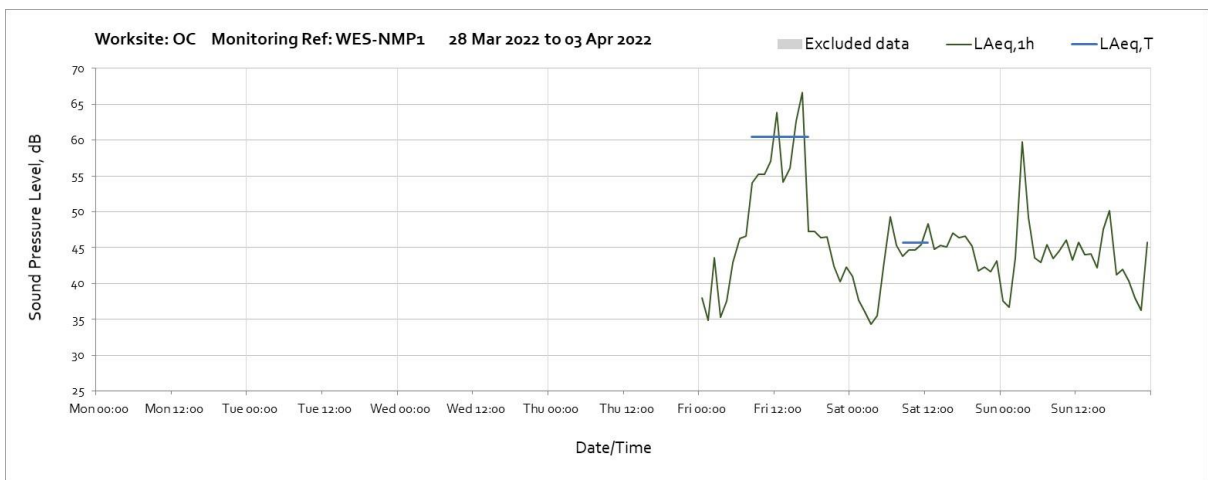
Worksite: OC – Monitoring Ref: MF-NMP1

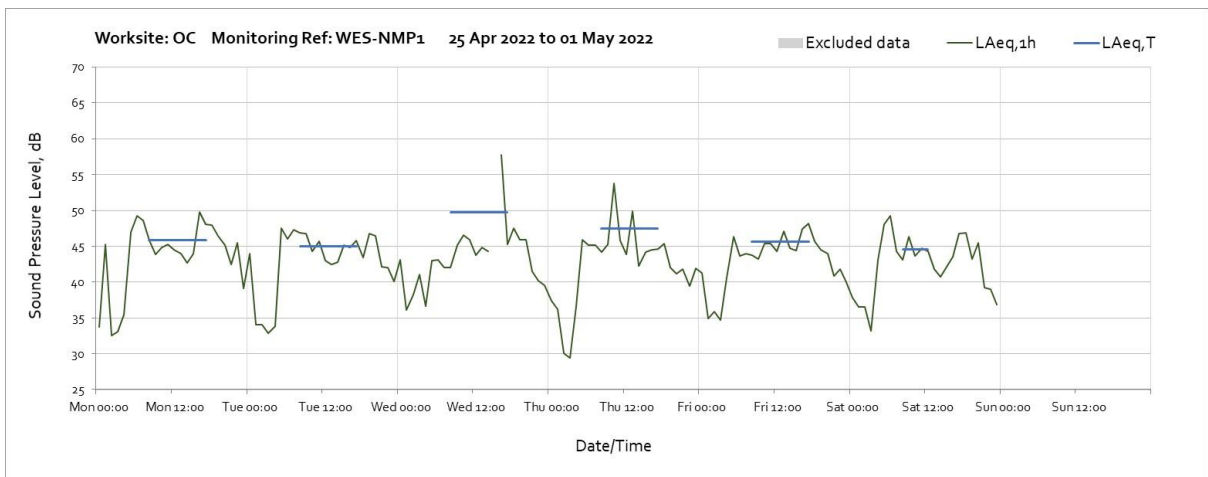
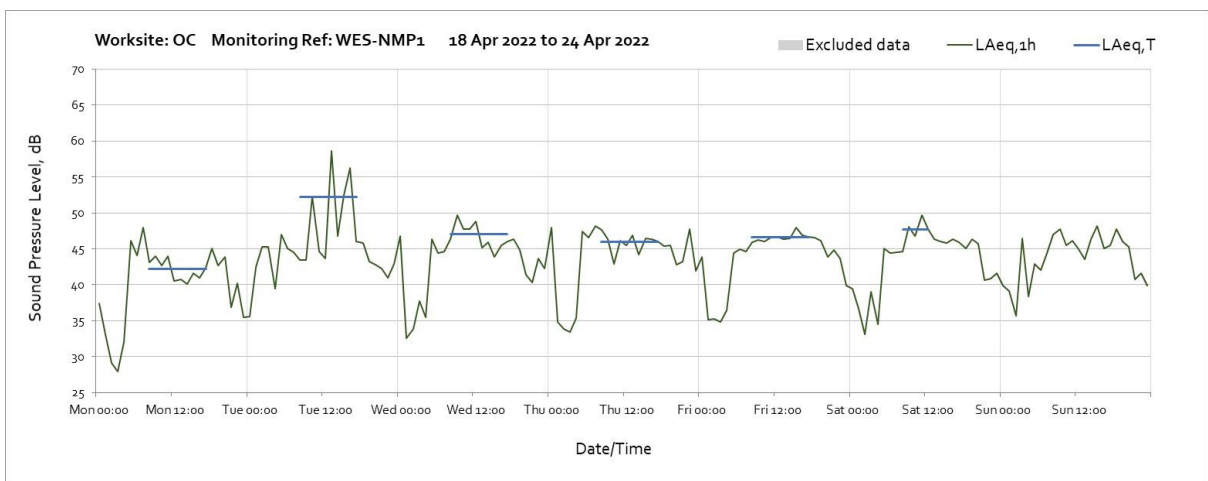
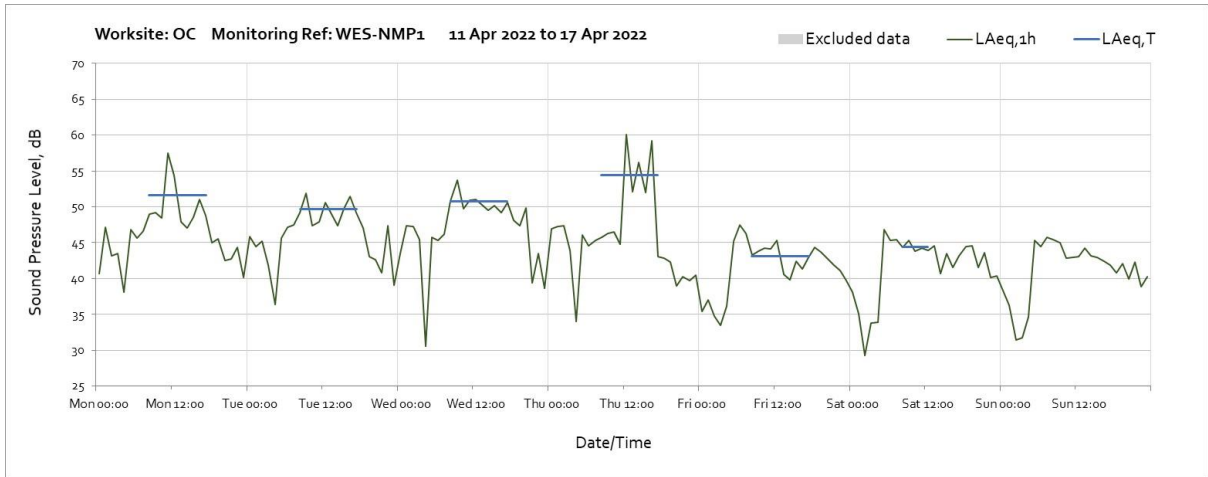






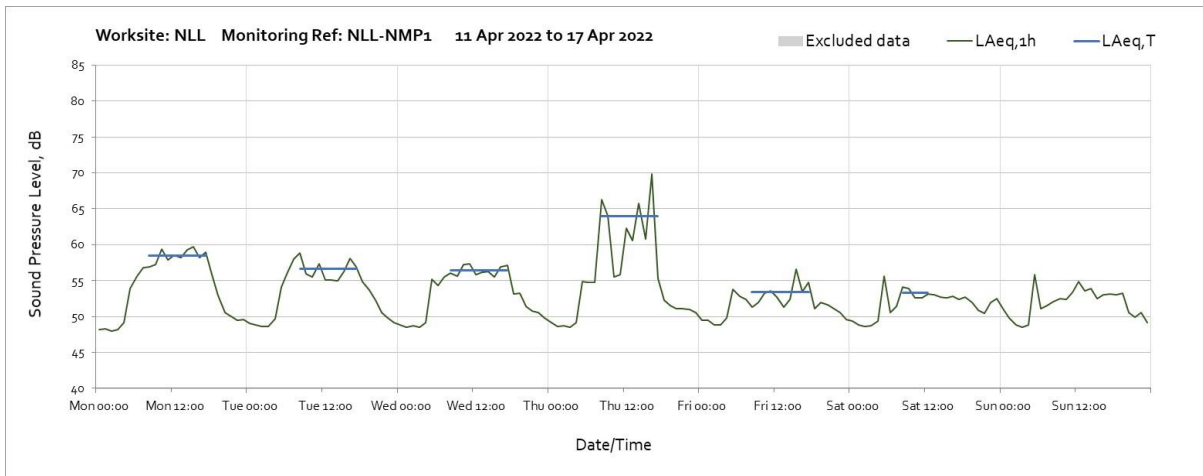
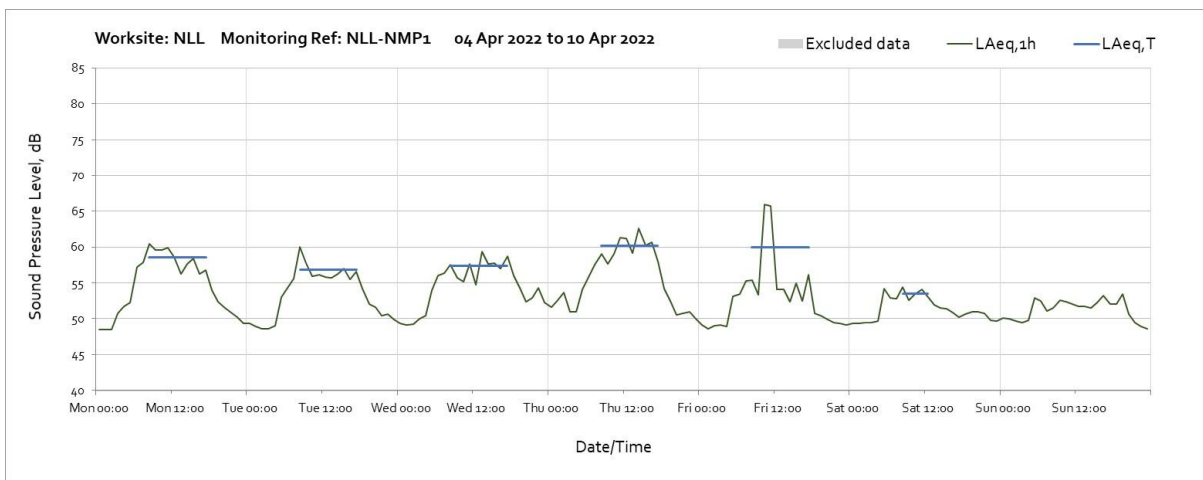
Worksite: OC – Monitoring Ref: WES-NMP1

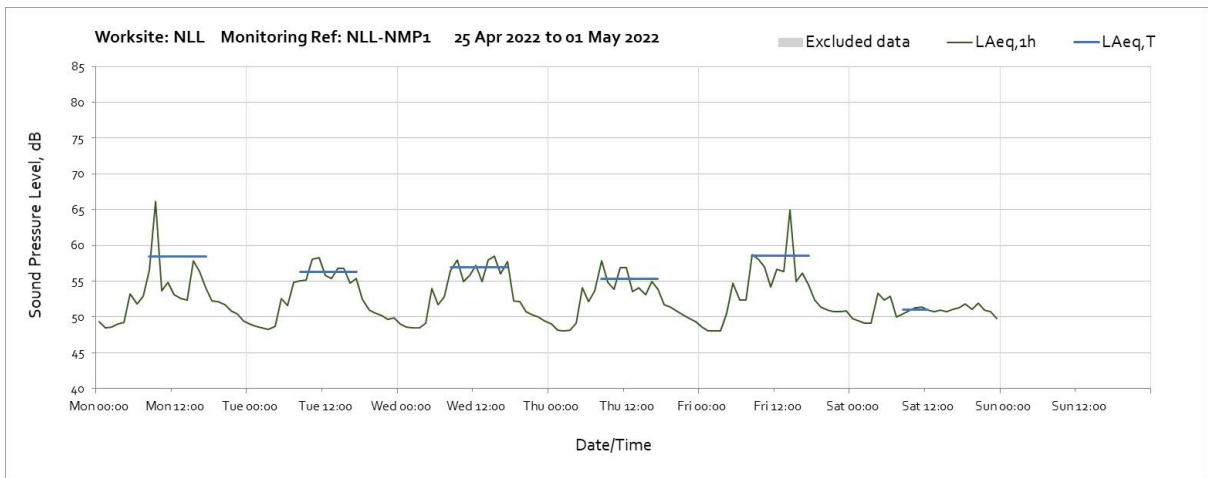
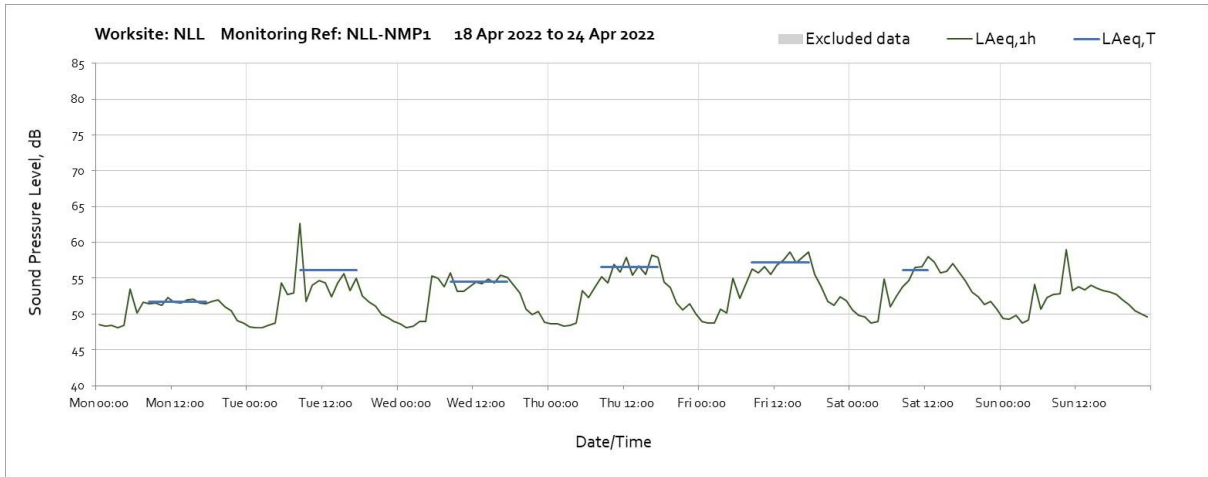




Note: Missing data at 15:00 on Wednesday 27th April was due to loss of power at the monitoring station.

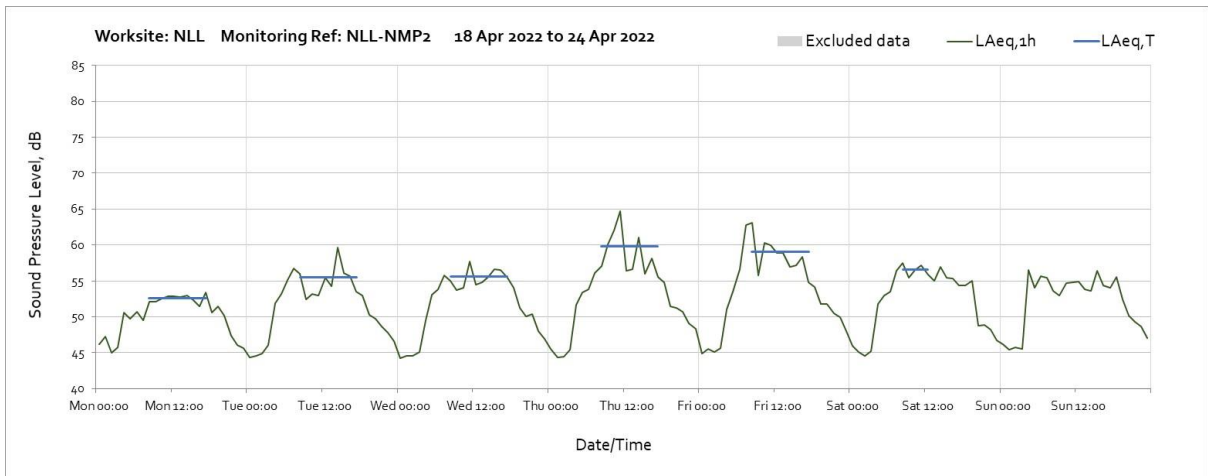
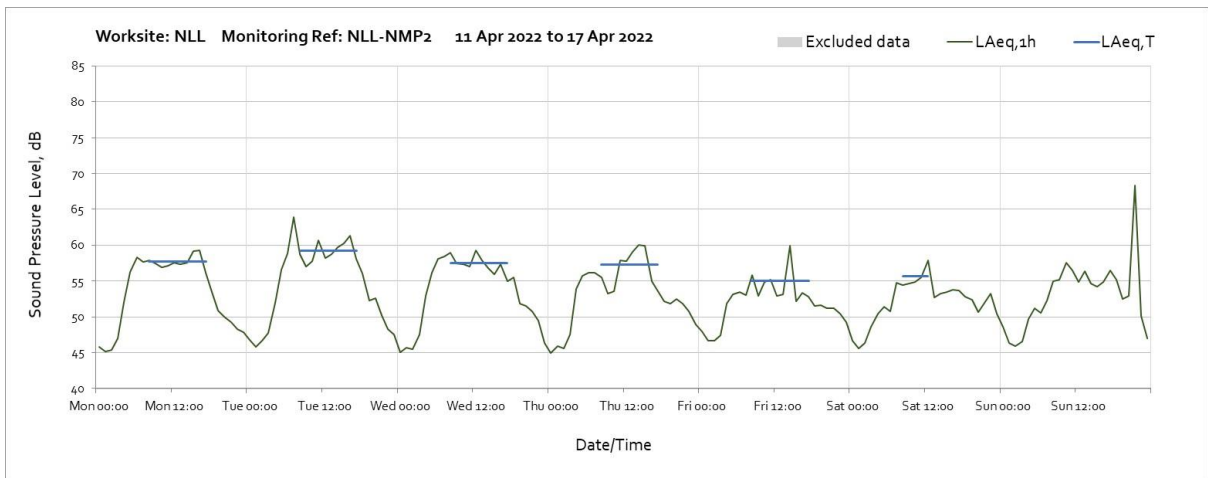
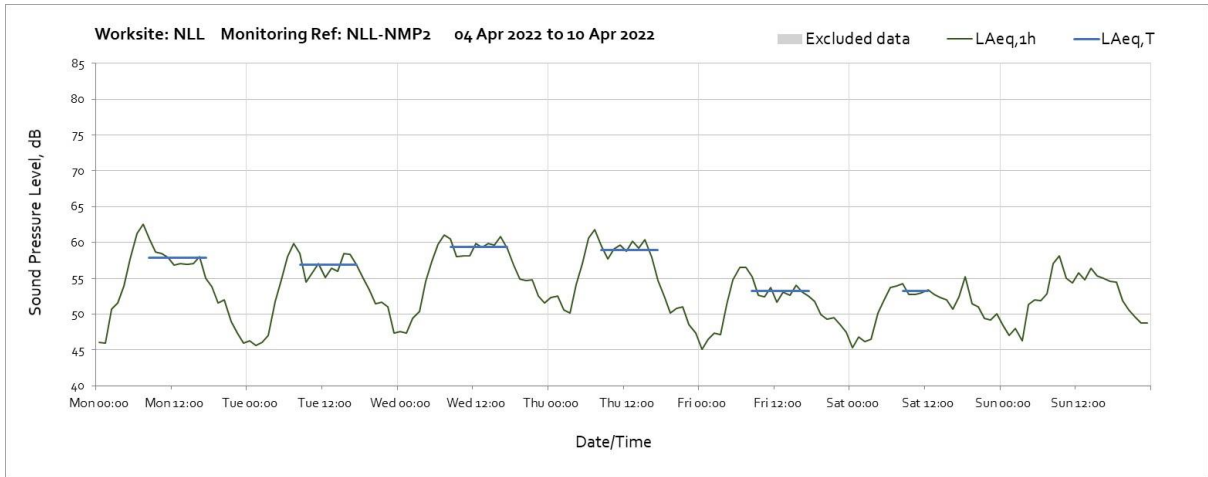
Worksite: NLL – Monitoring Ref: NLL-NMP1

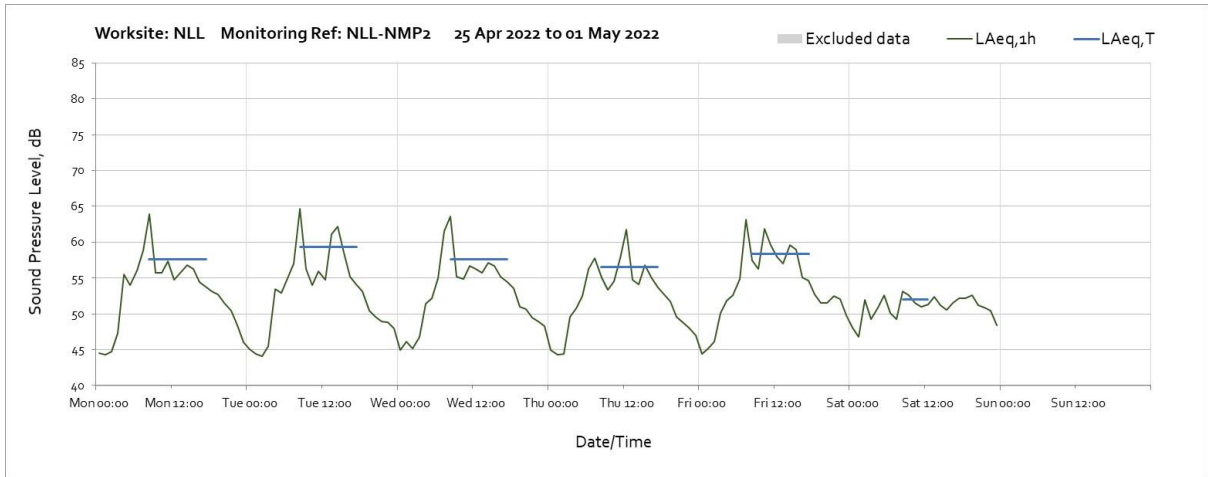




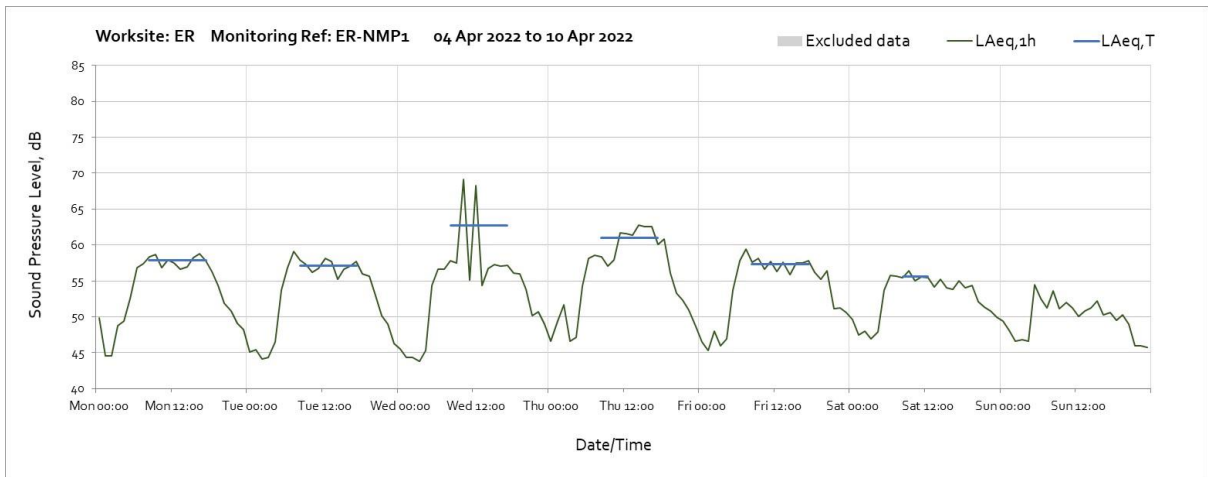
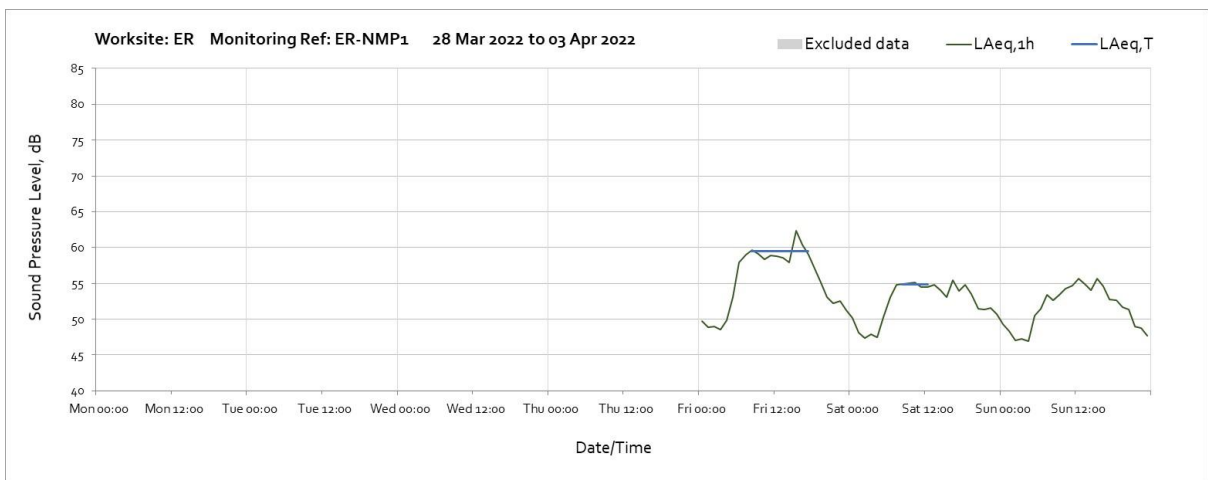
Worksite: NLL – Monitoring Ref: NLL-NMP2

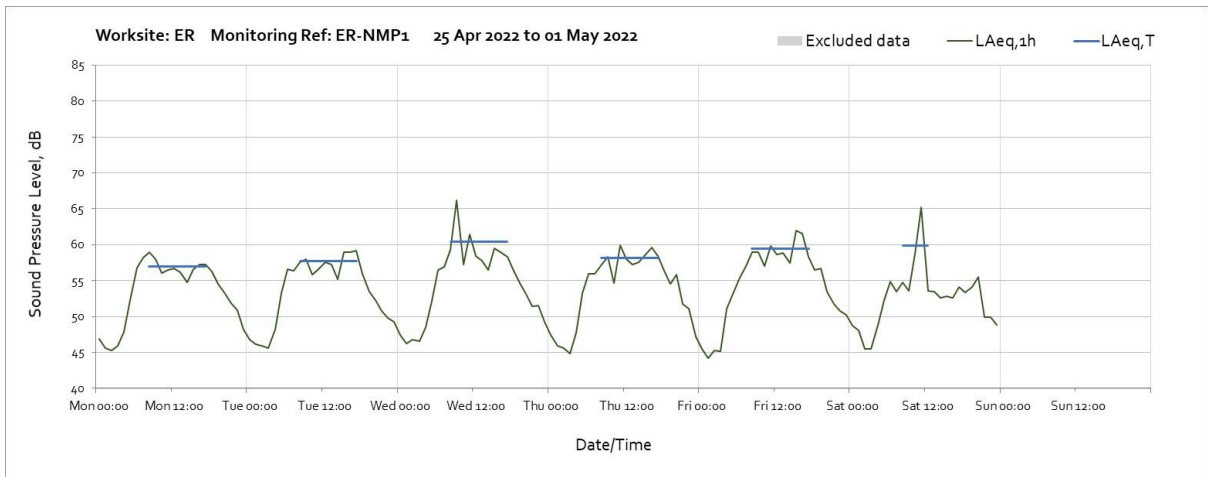
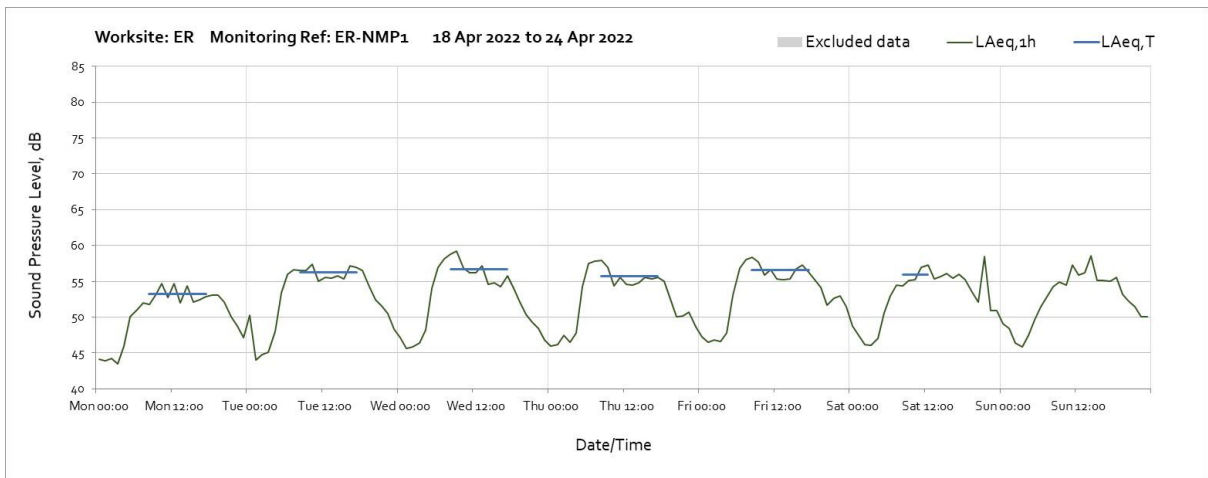
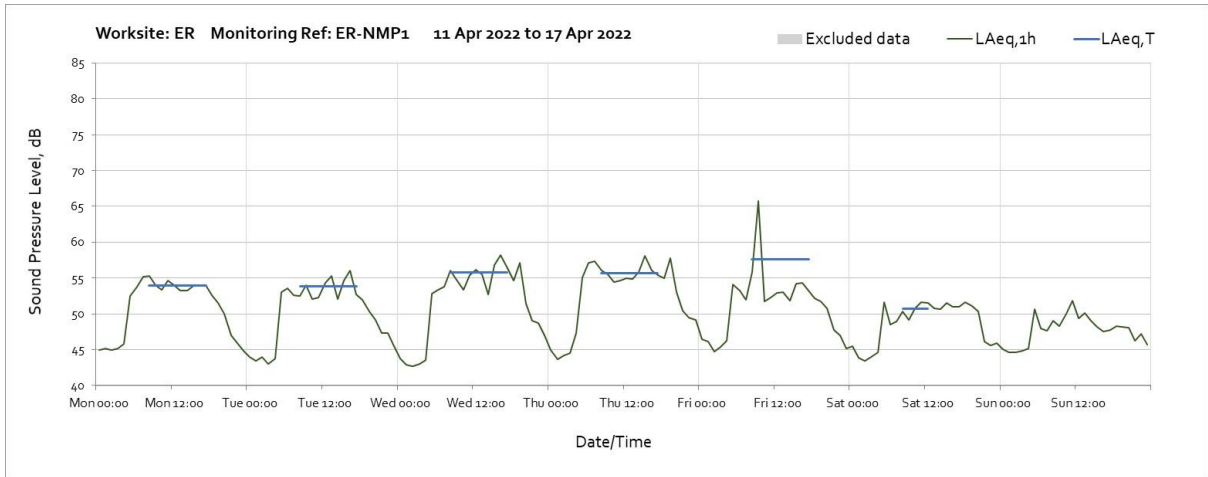




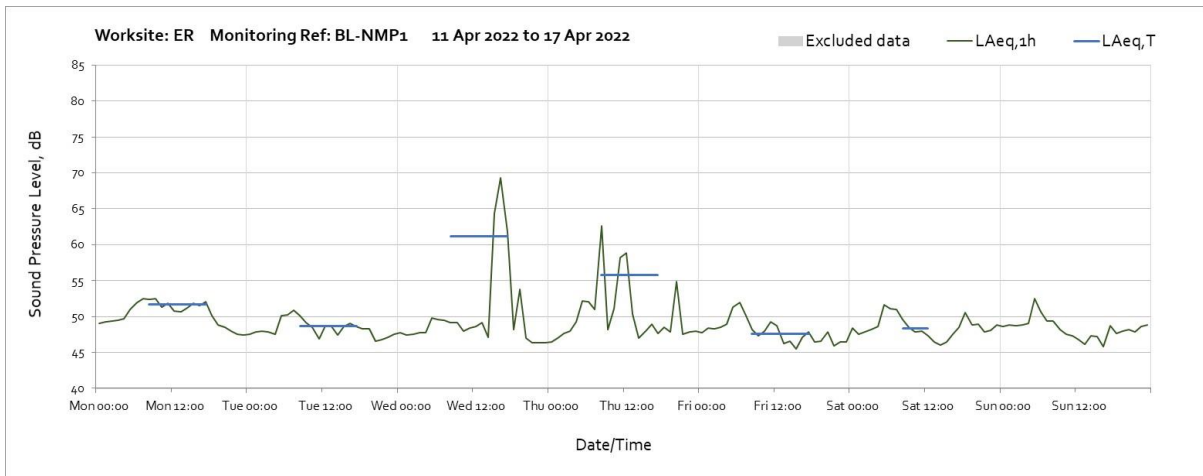
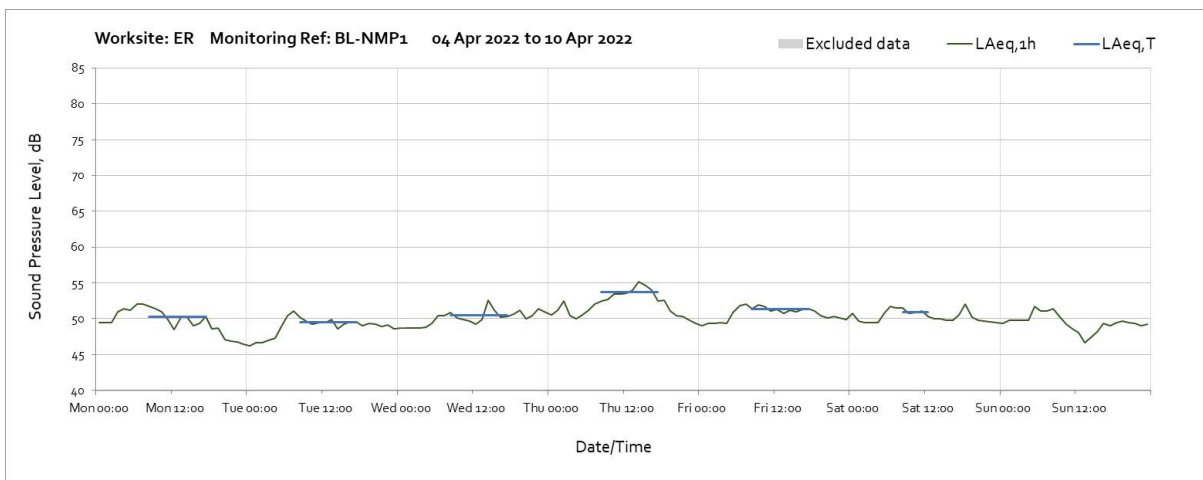
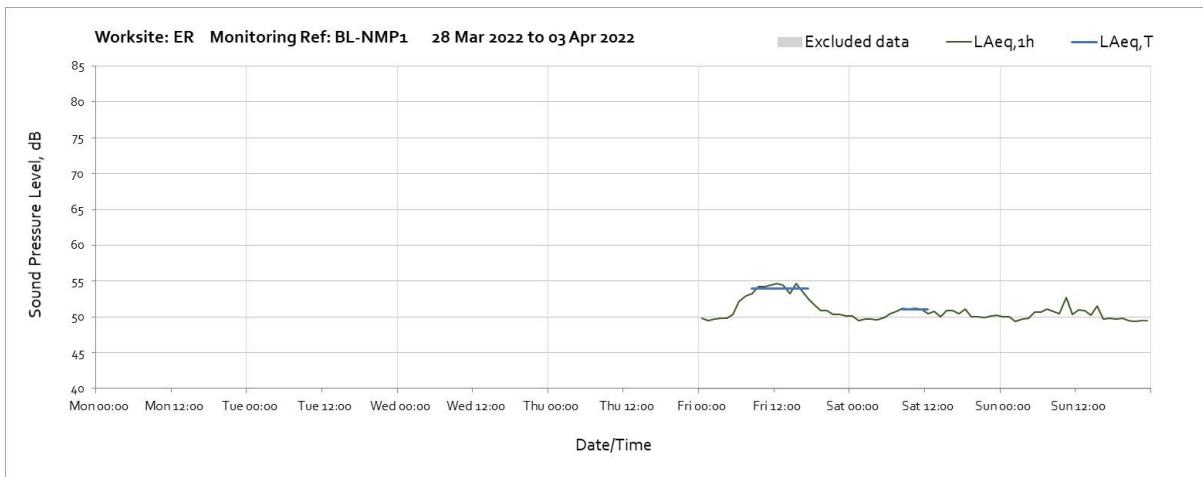


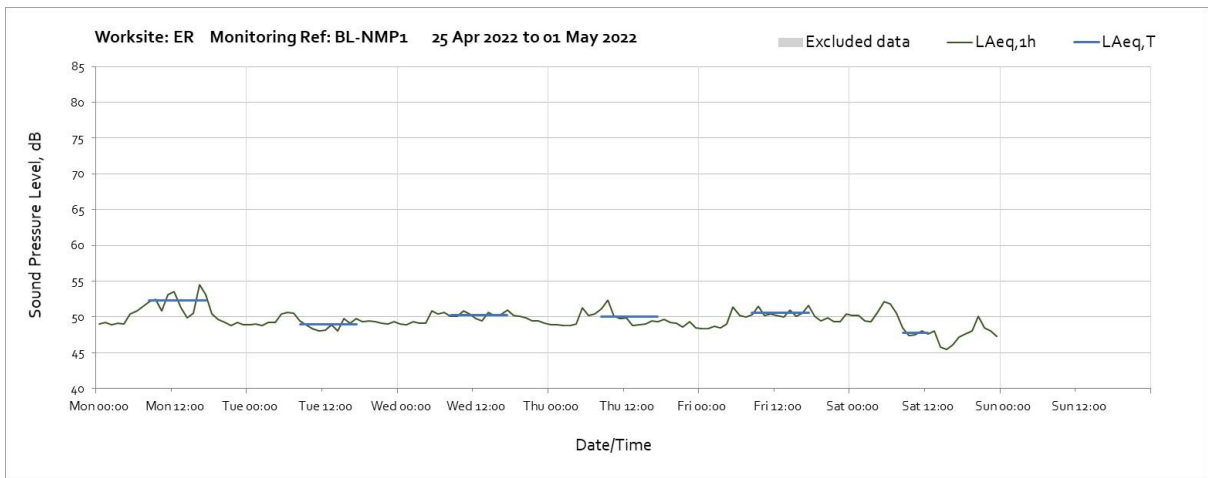
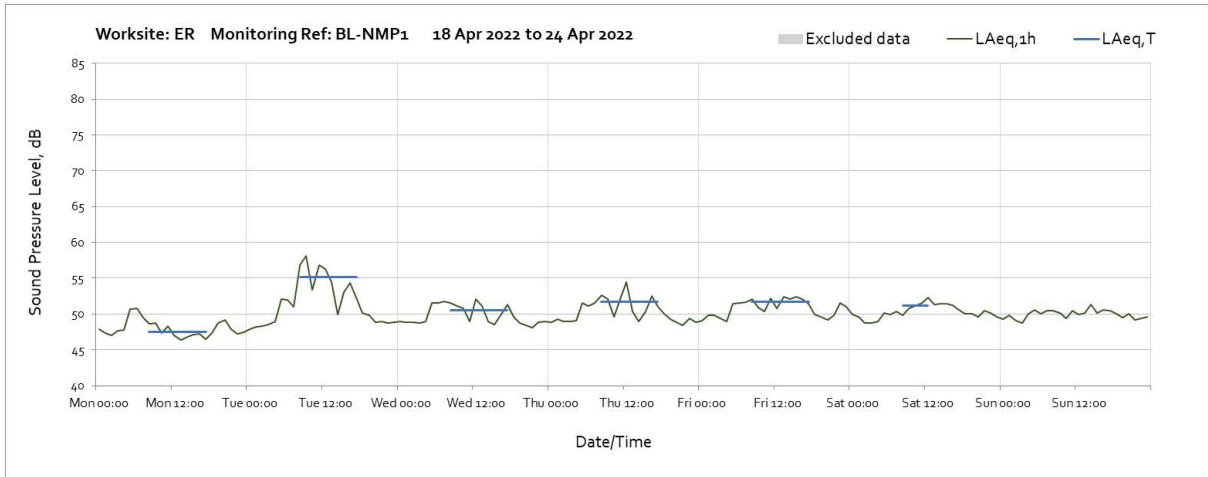
Worksite: ER – Monitoring Ref: ER-NMP1



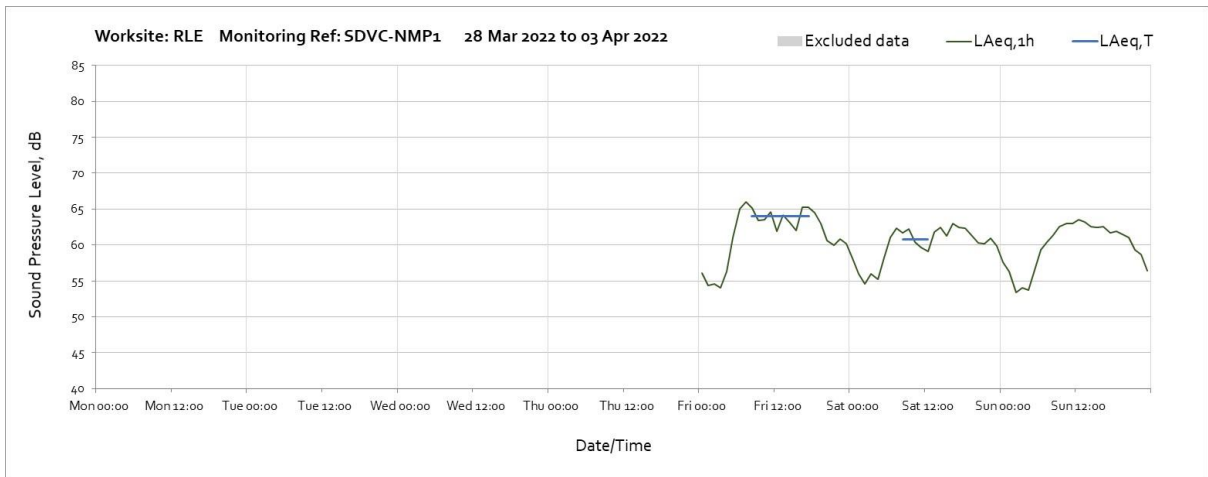


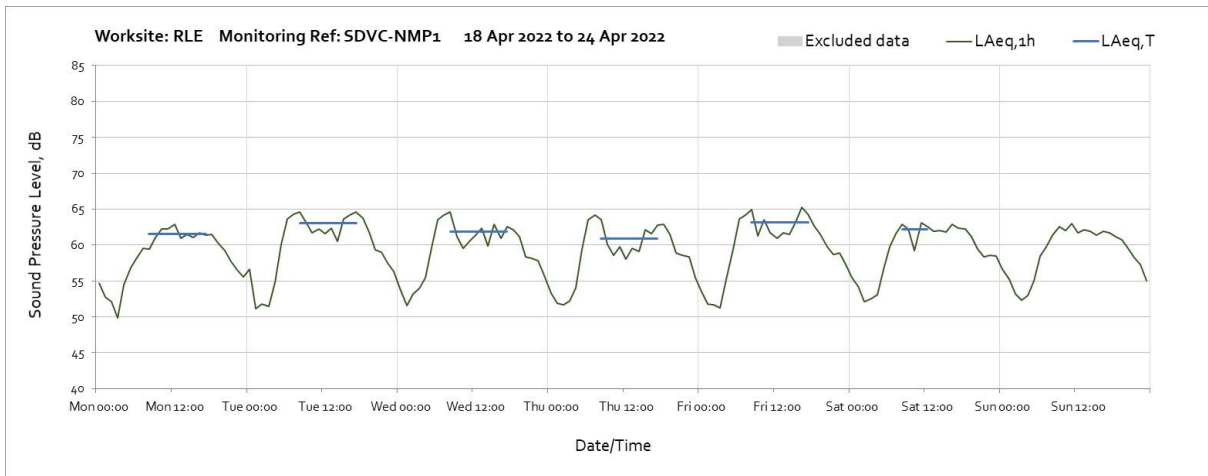
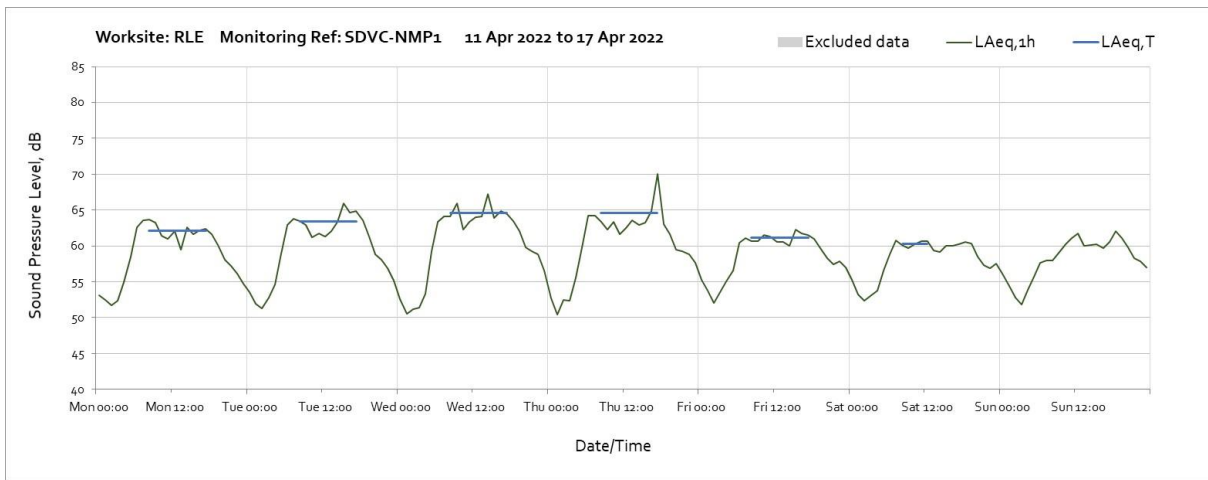
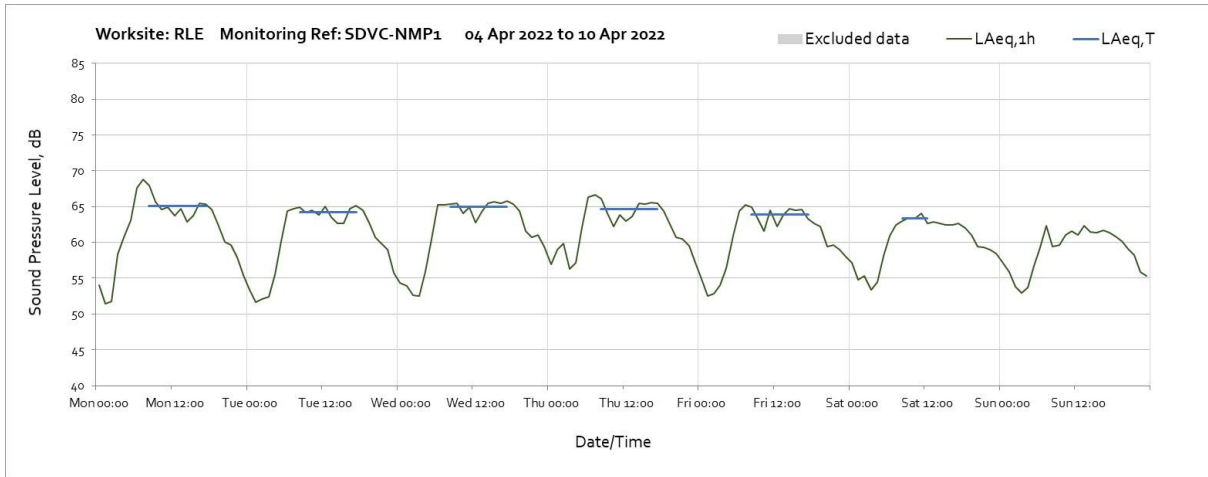
Worksite: ER – Monitoring Ref: BL-NMP1

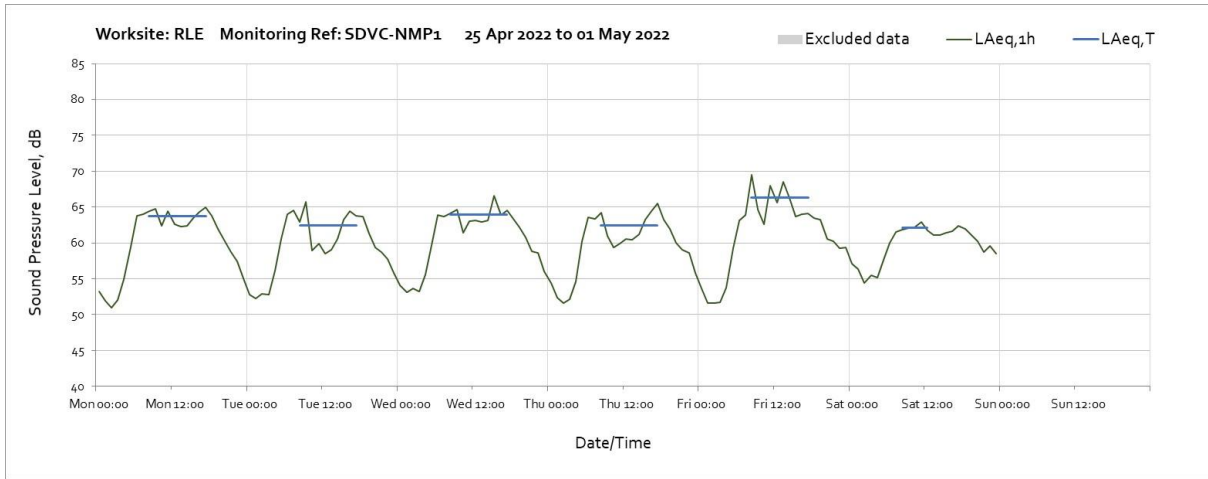




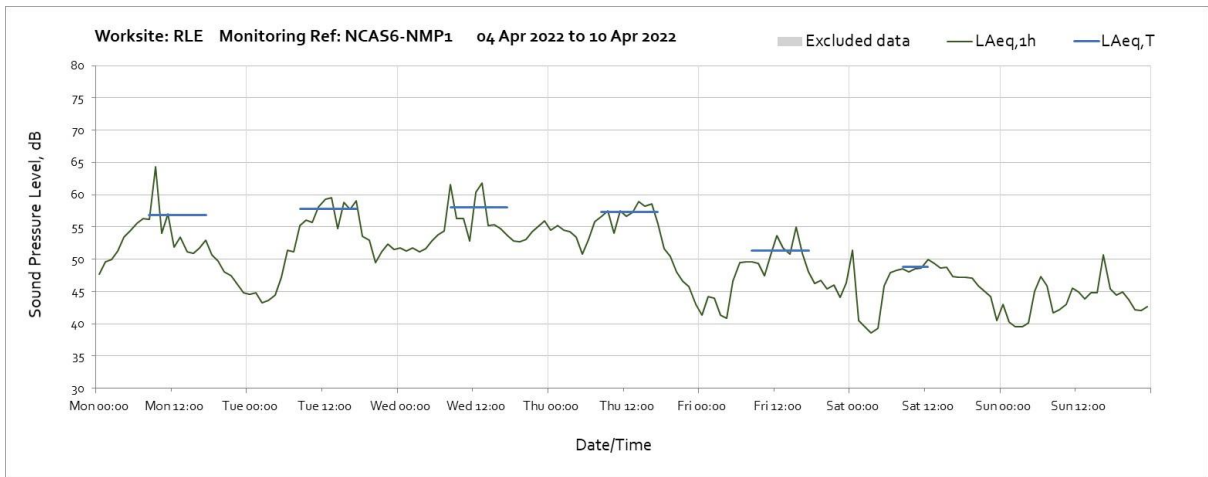
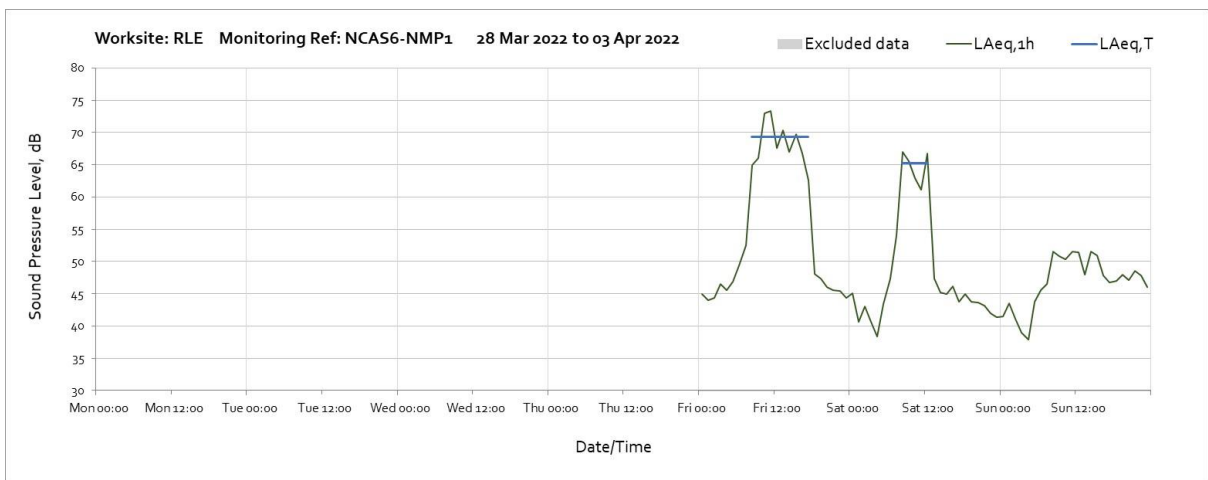
Worksite: RLE - Monitoring Ref: SDVC-NMP1

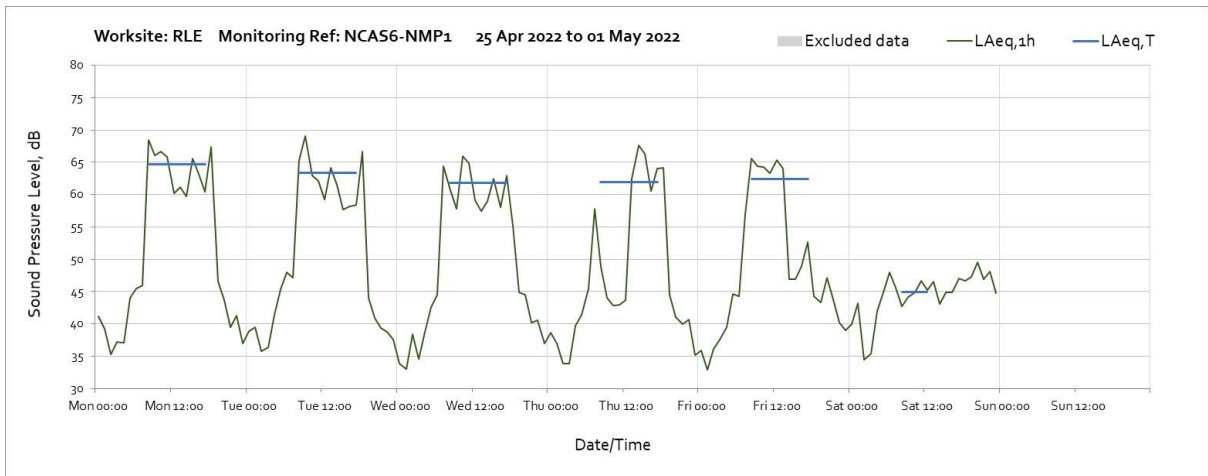
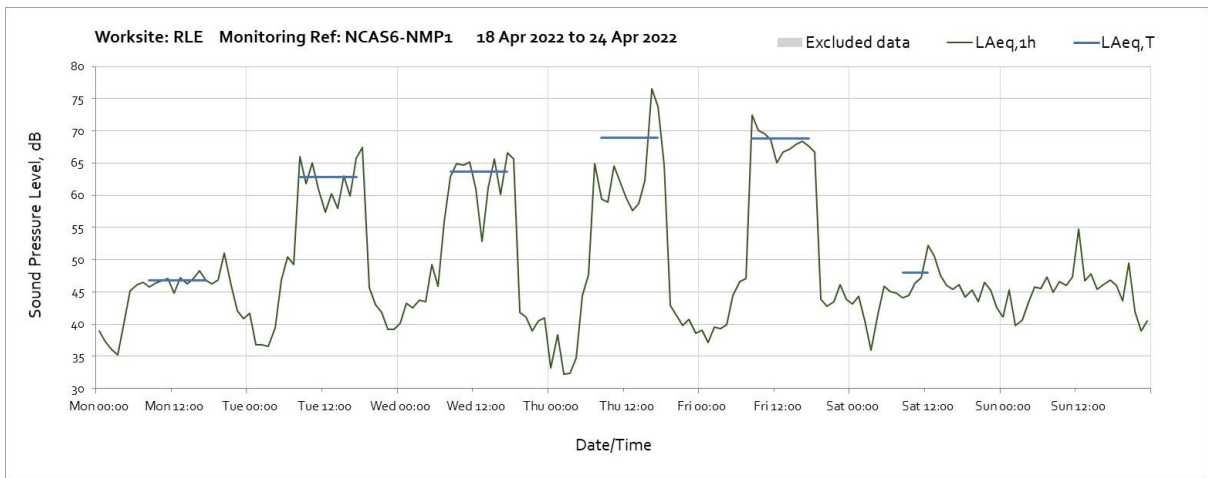
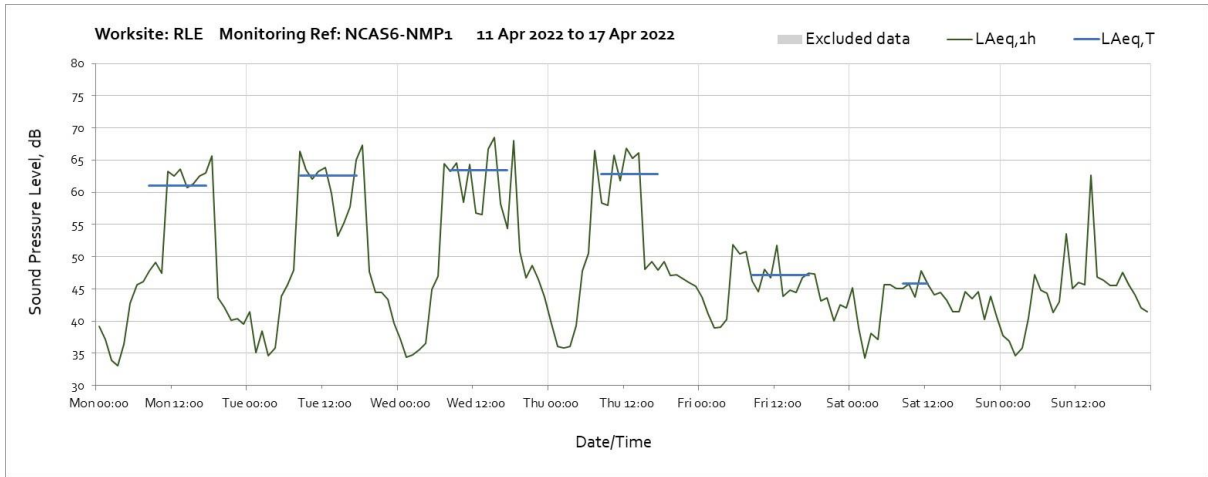




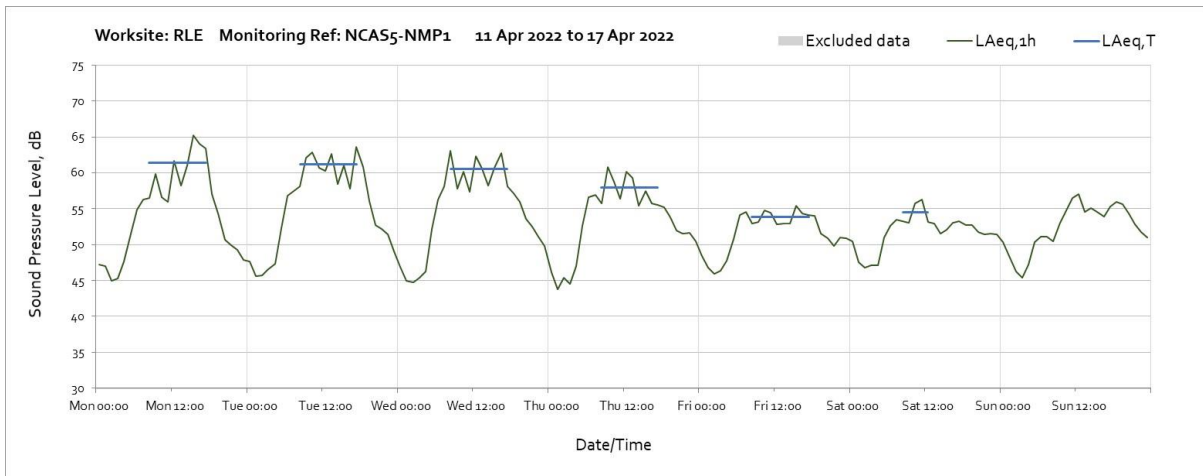
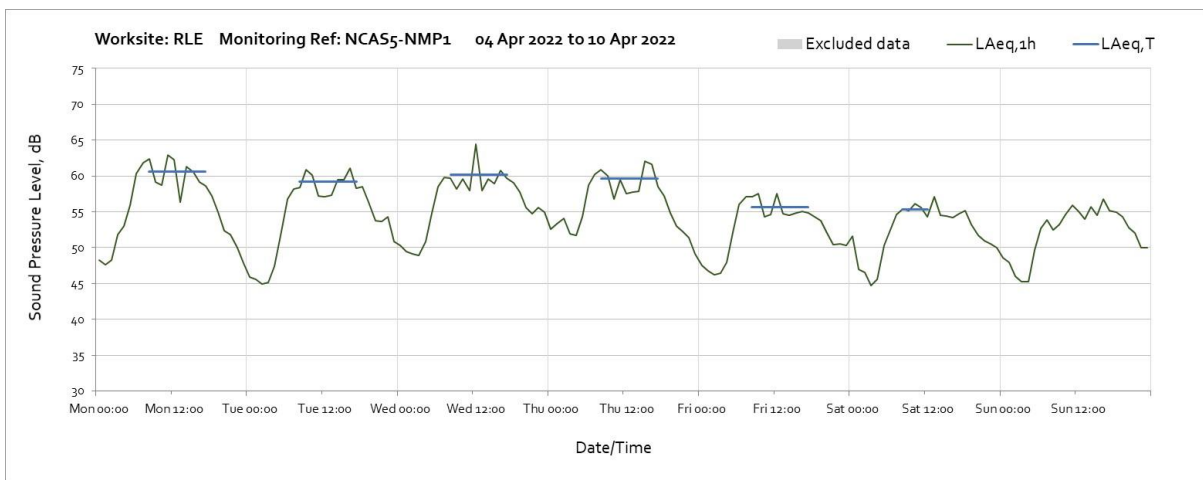
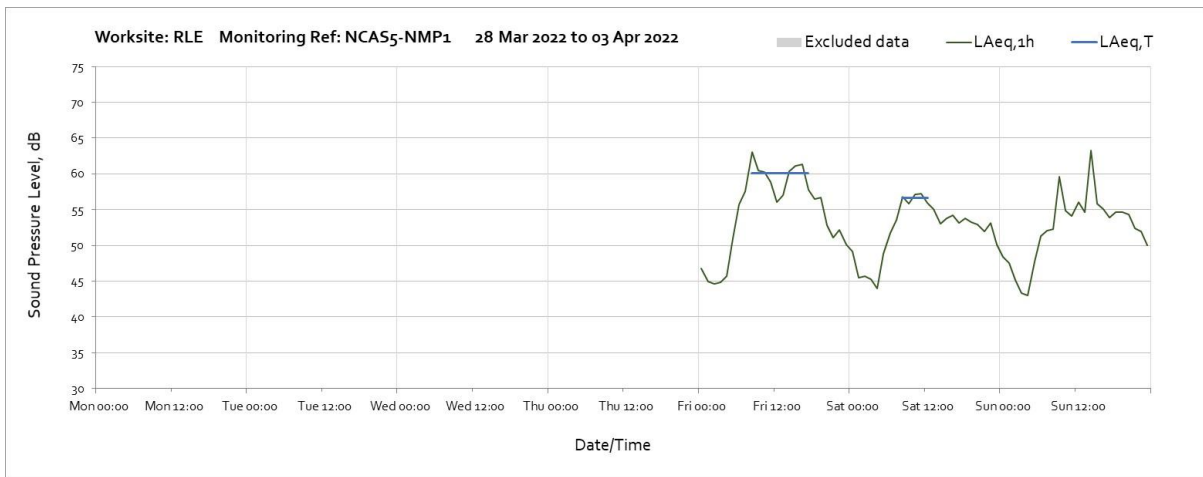


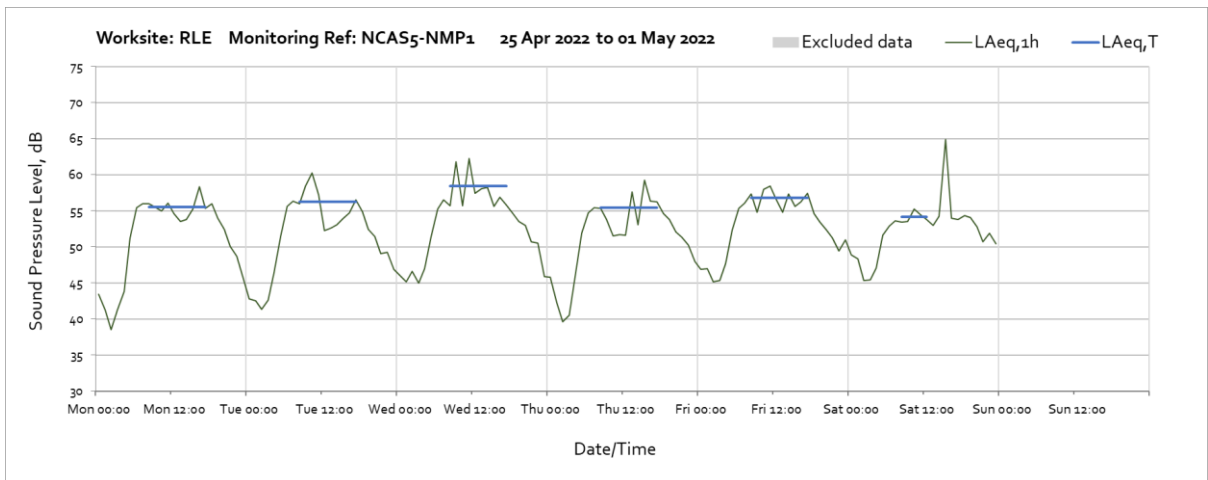
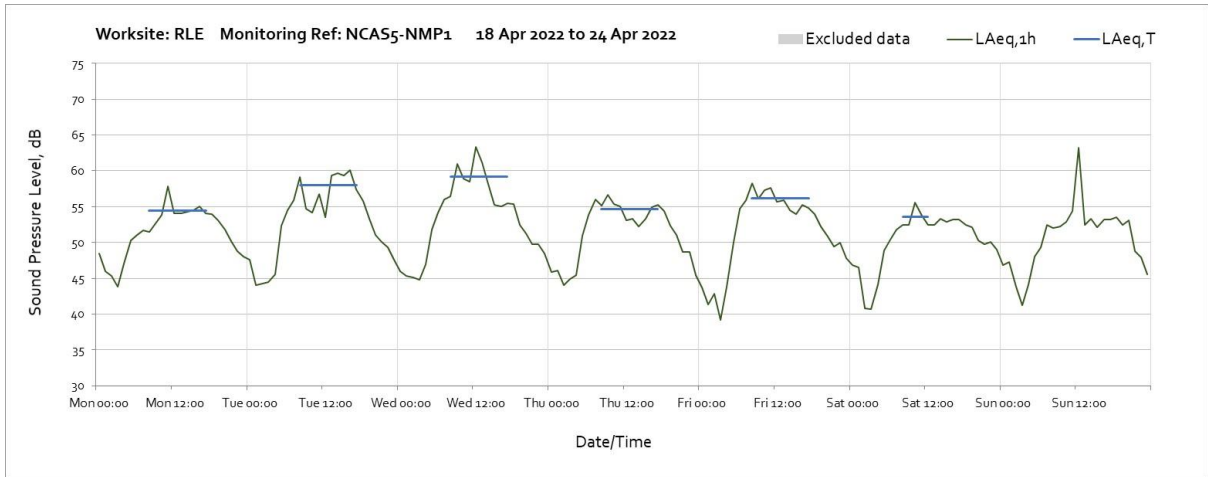
Worksite: RLE – Monitoring Ref: NCAS6-NMP1



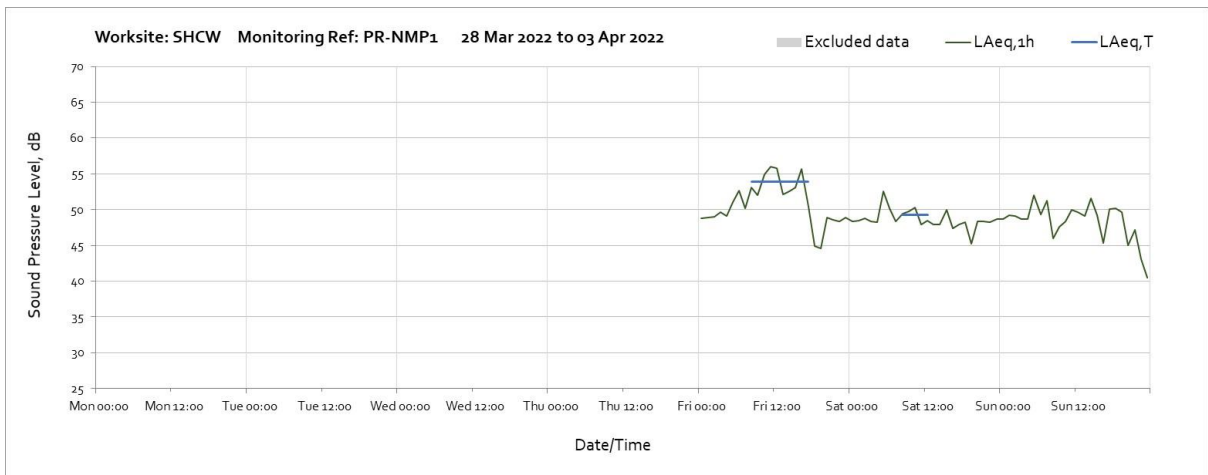


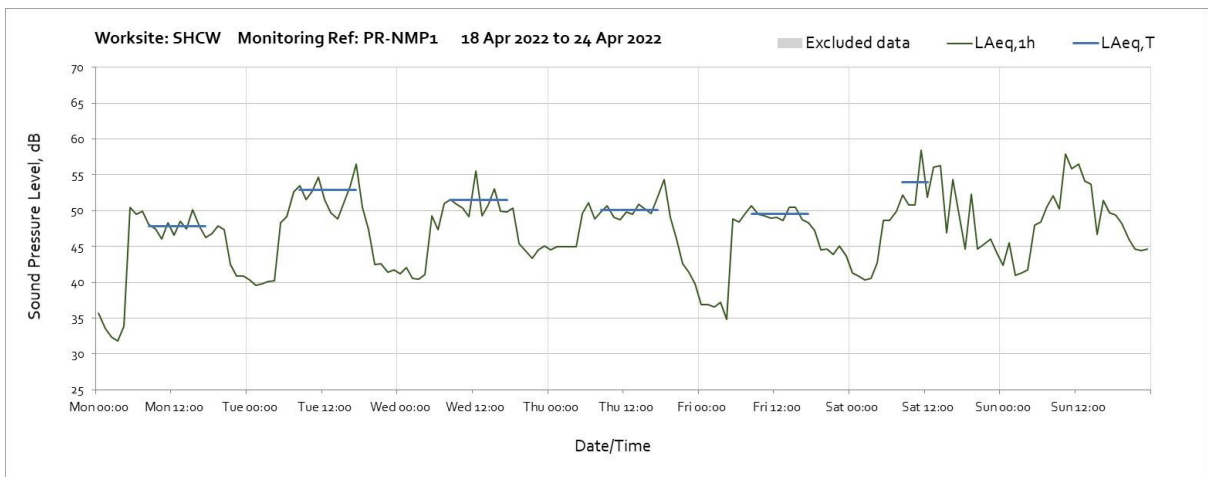
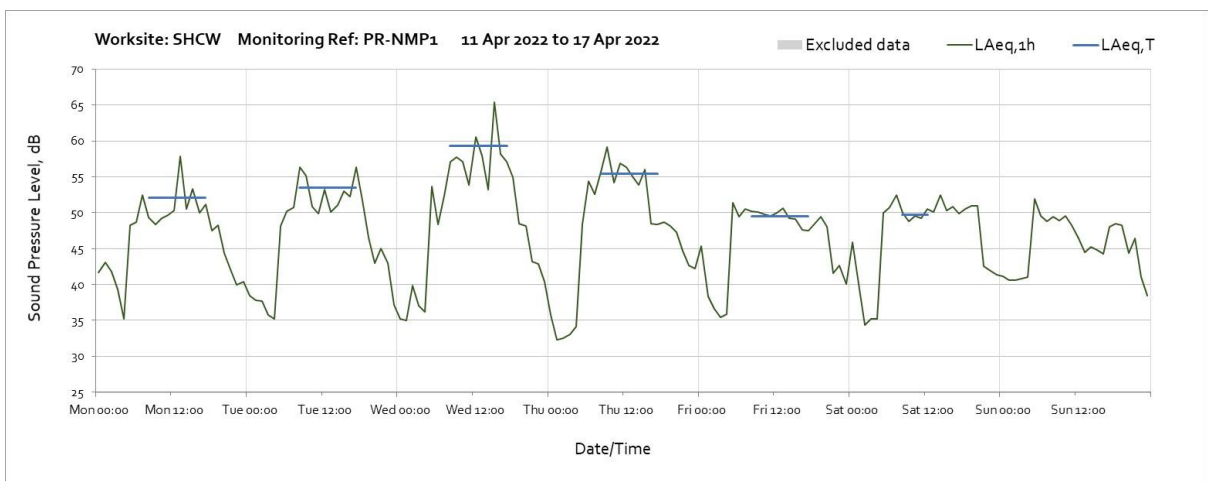
Worksite: RLE – Monitoring Ref: NCAS5-NMP1

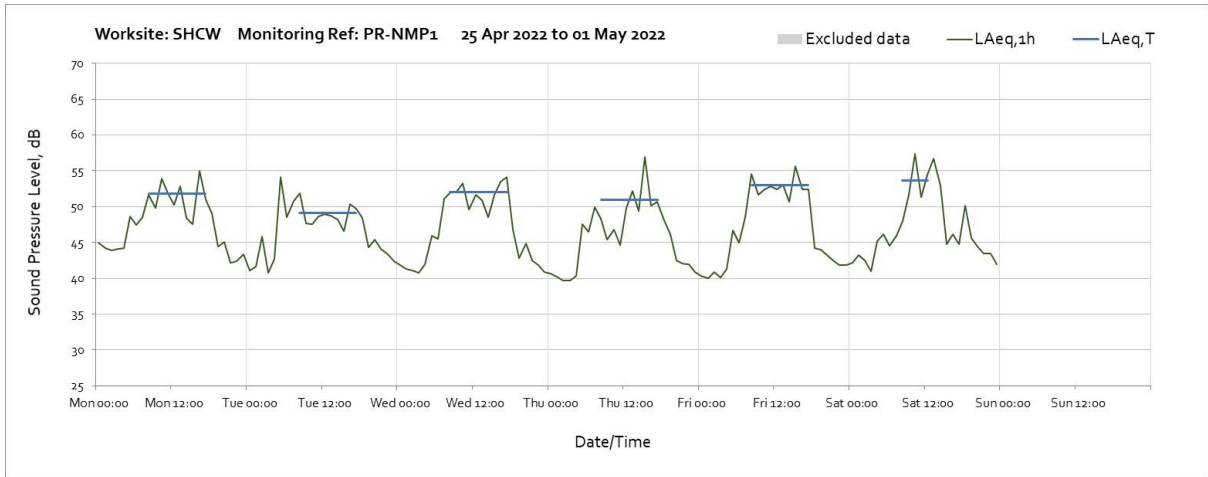




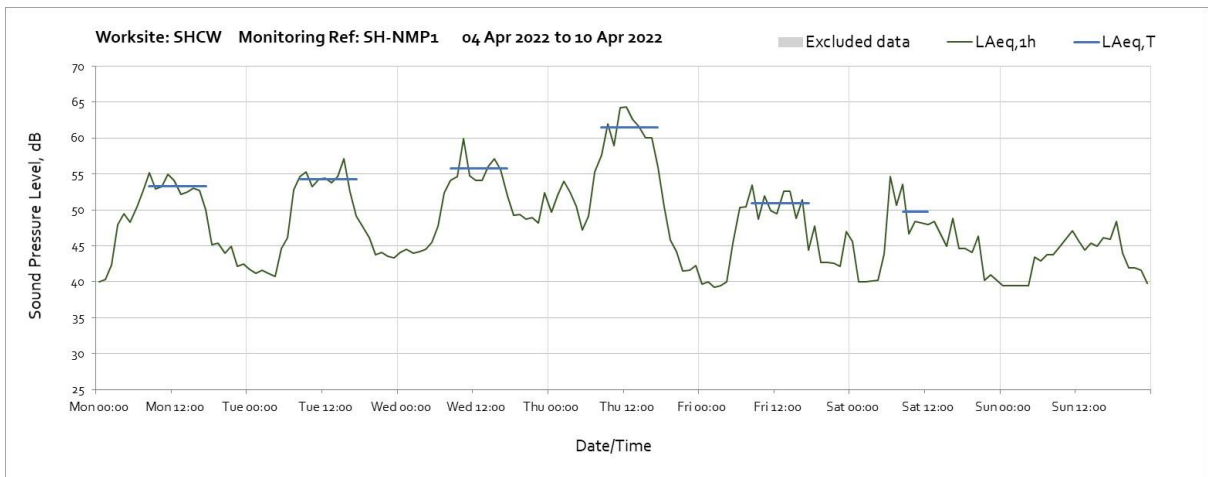
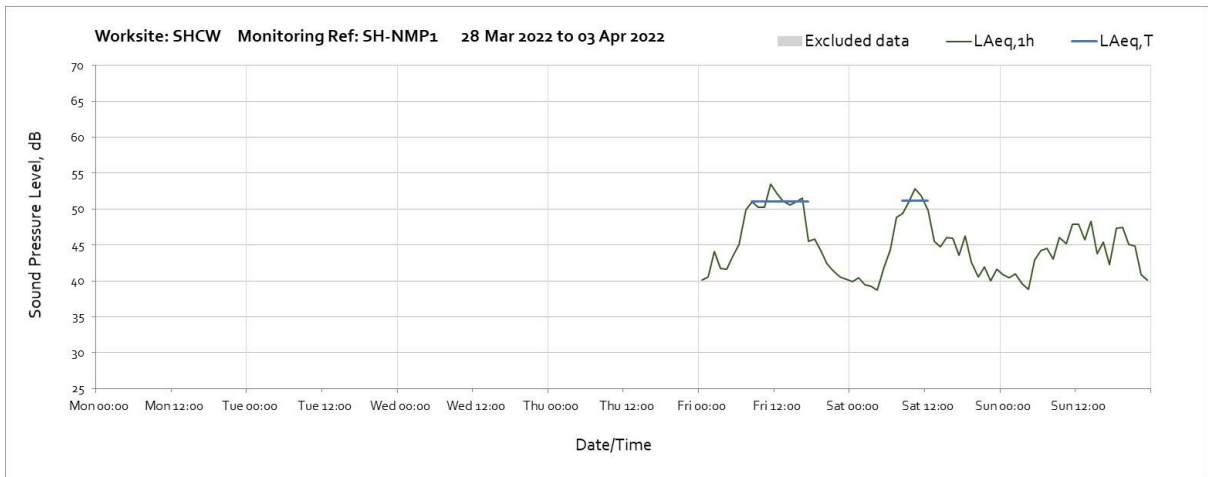
Worksite: SHCW - Monitoring Ref: PR-NMP1

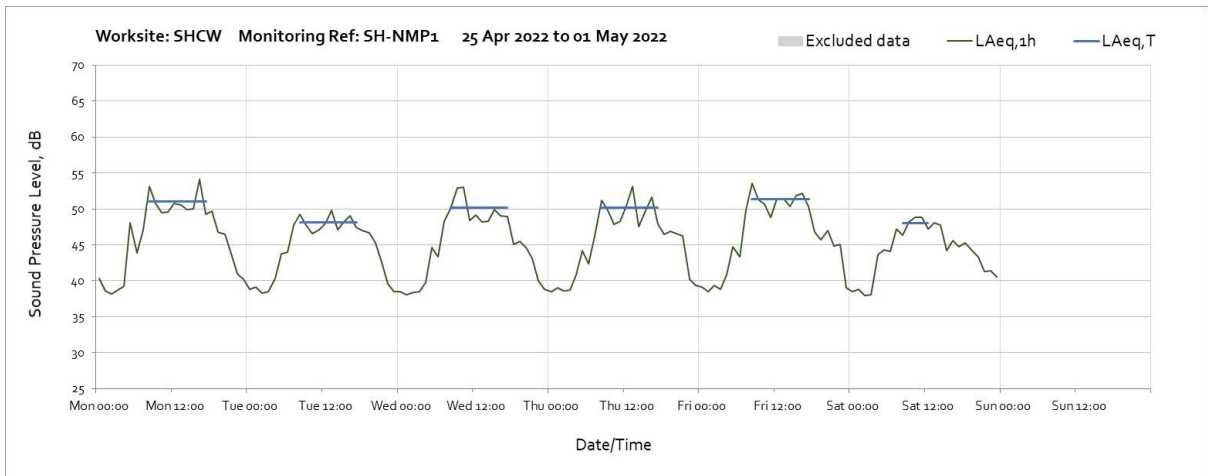
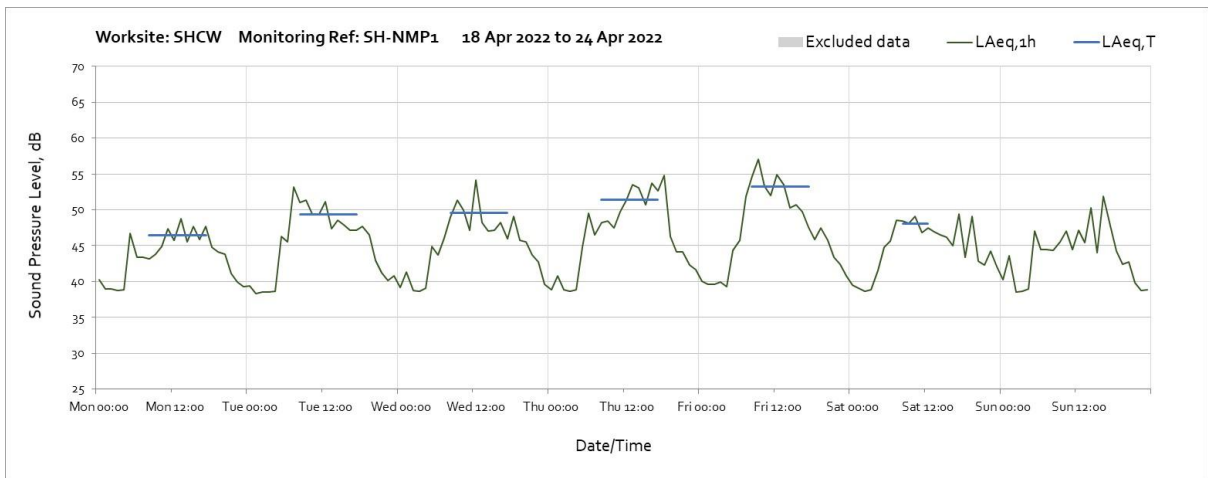
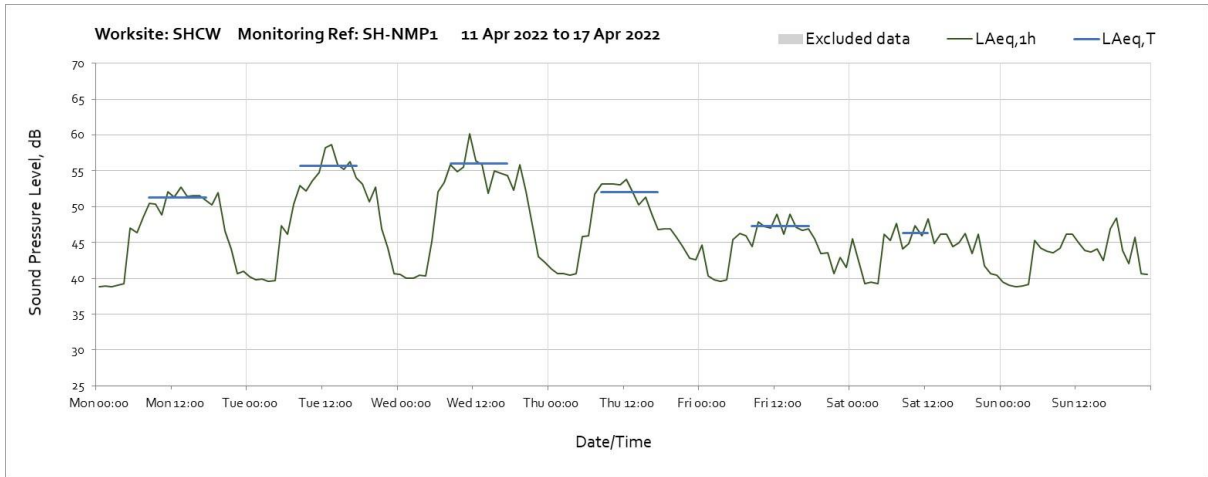




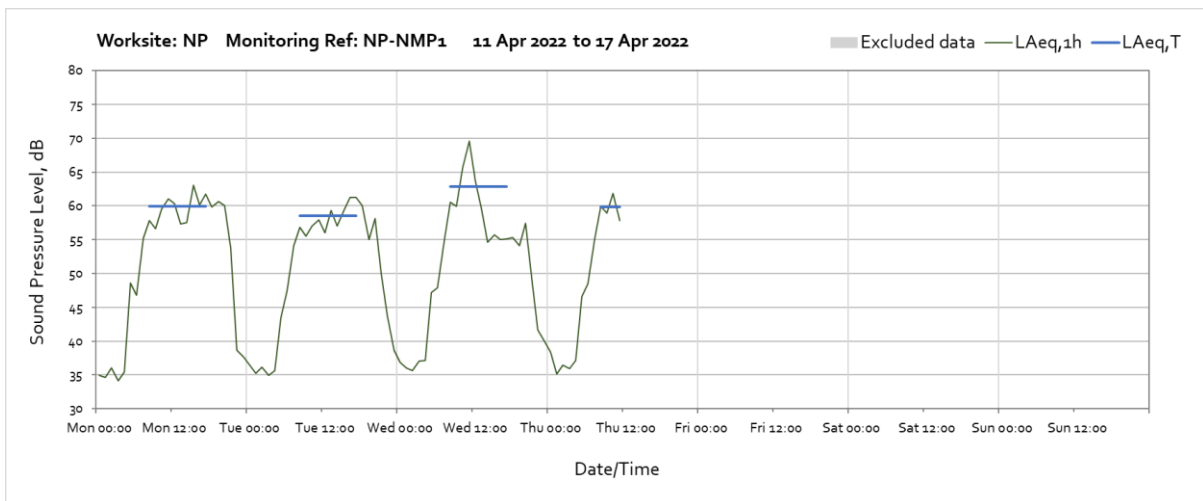
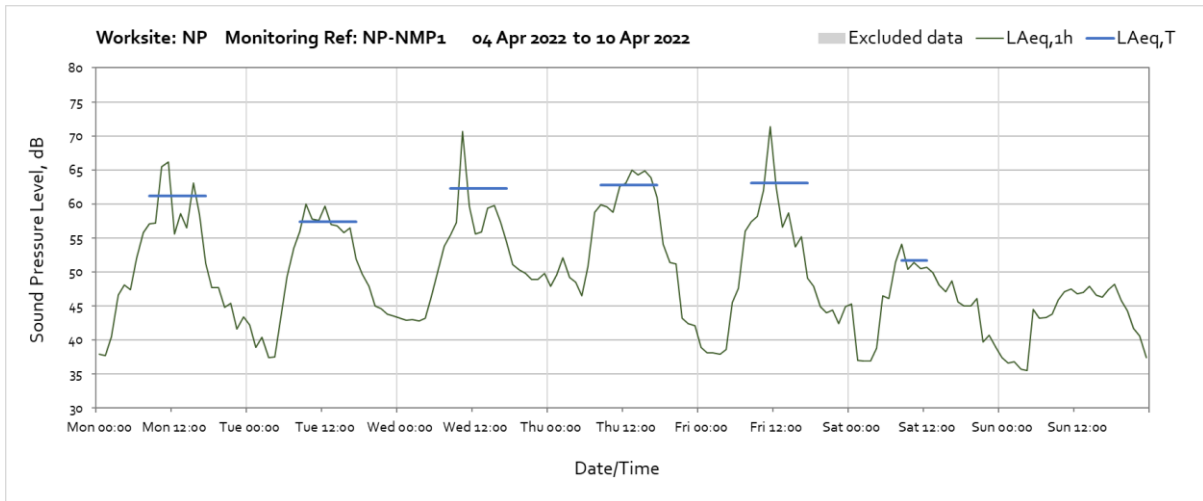
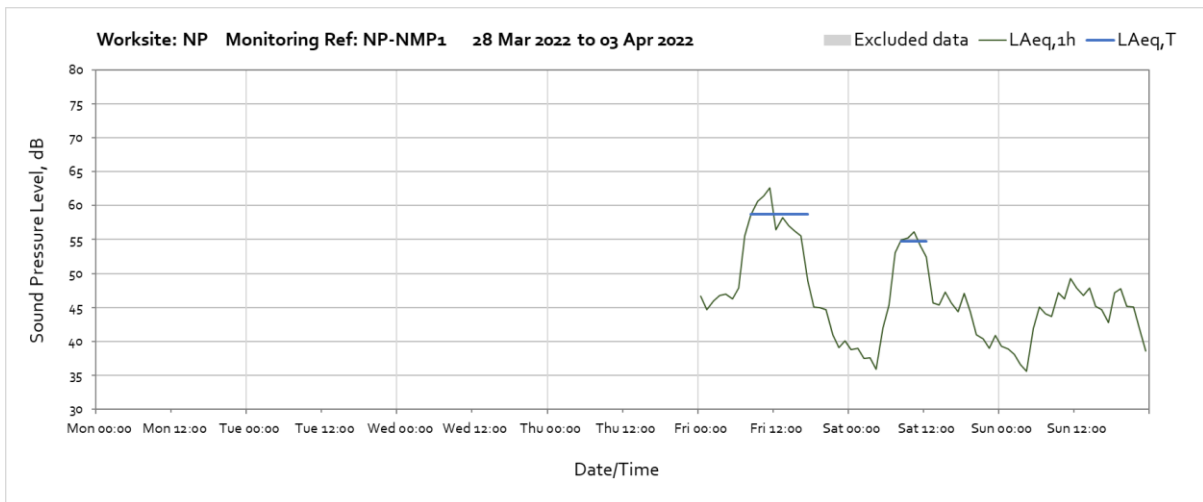


Worksite: SHCW – Monitoring Ref: SH-NMP1





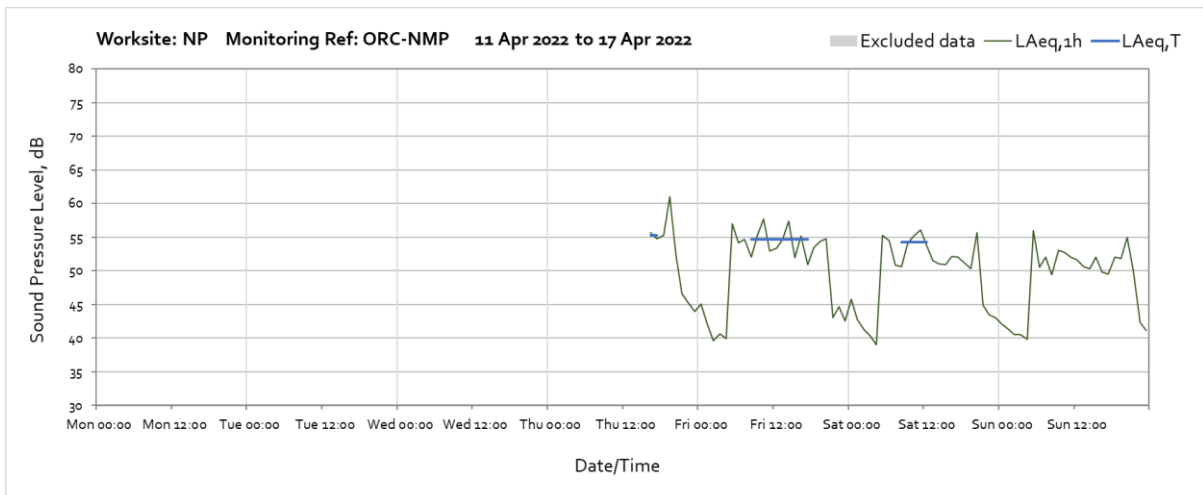
Worksite: NP – Monitoring Ref: NP-NMP1



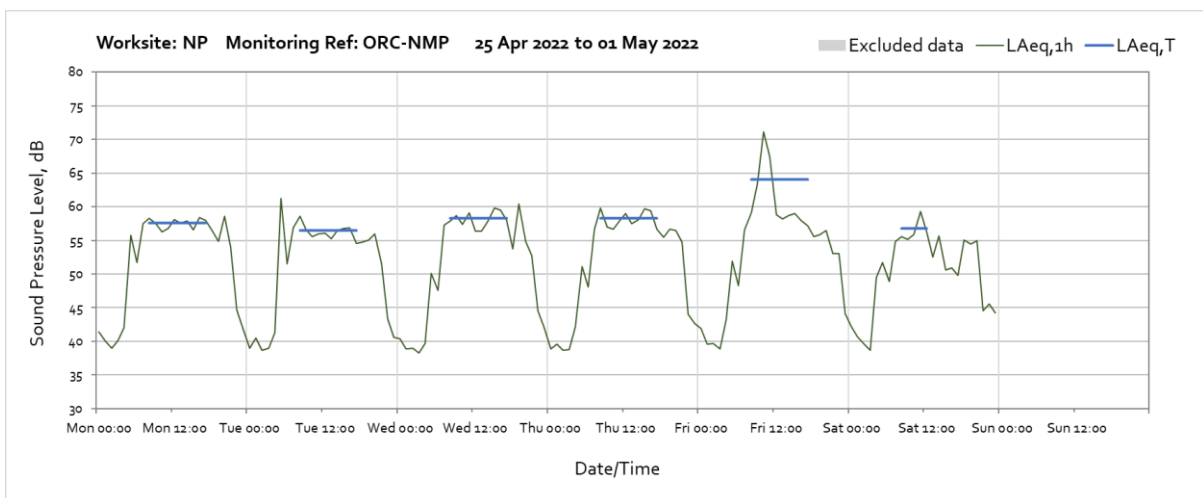
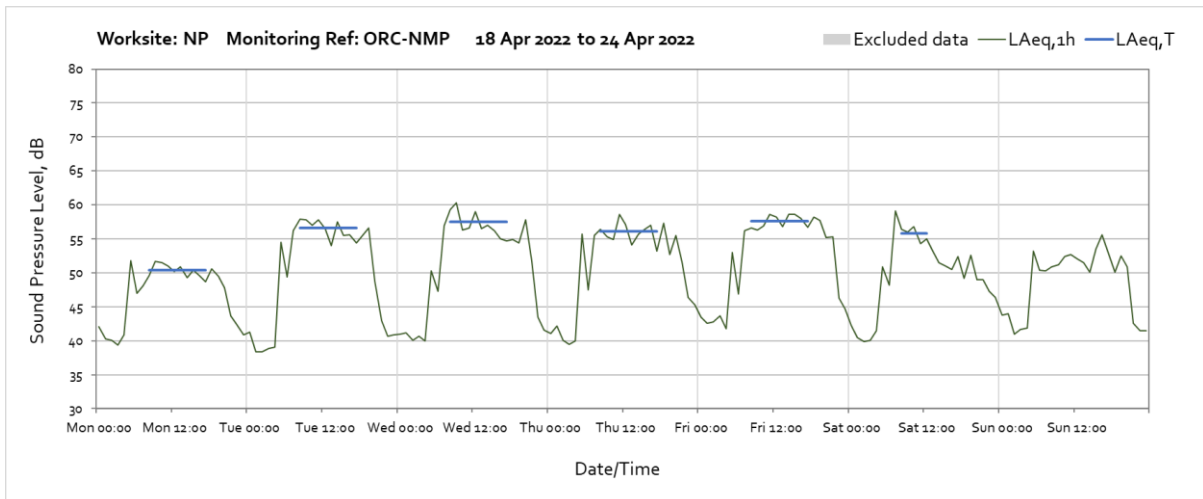
Note: Missing data from 14th April at 12:00 is due to monitor relocated to the location ref.: ORC-NMP1

OFFICIAL

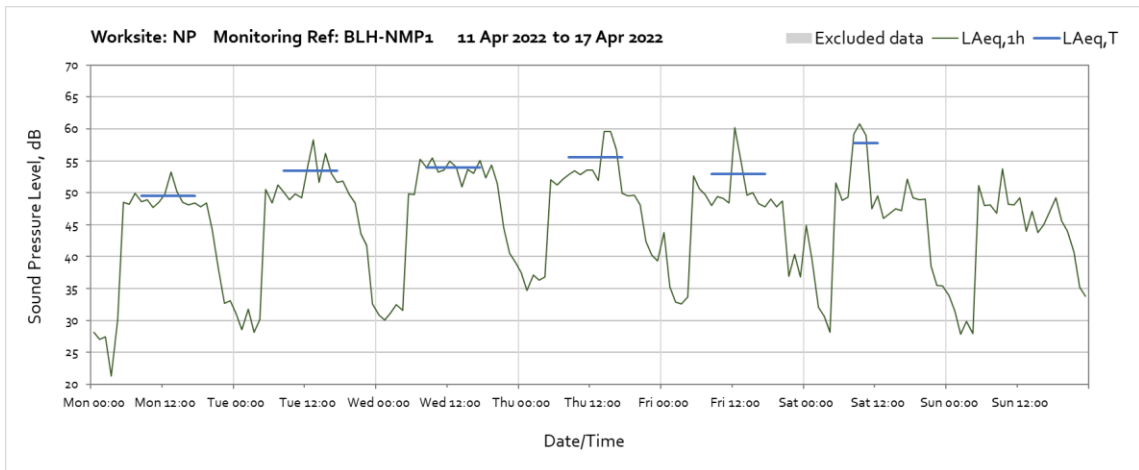
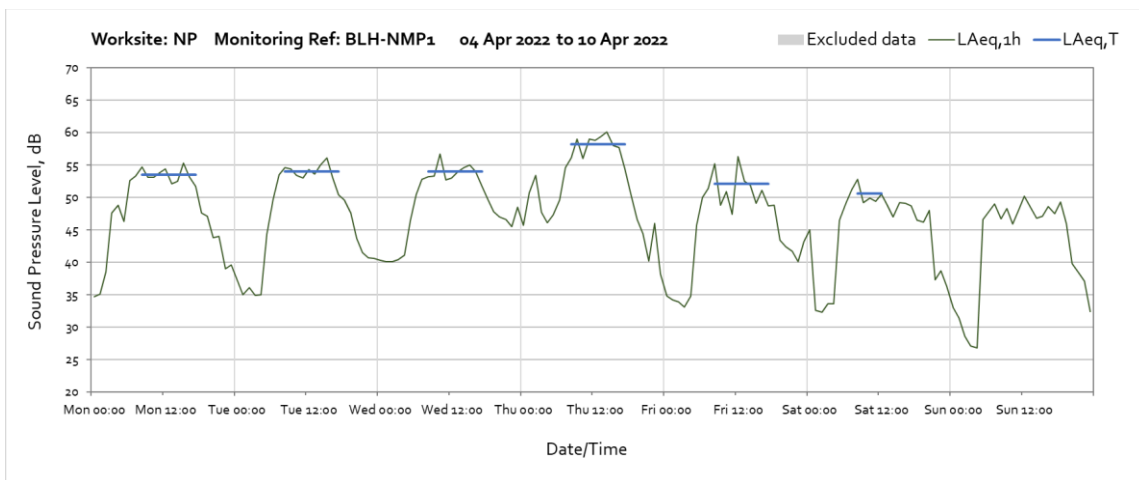
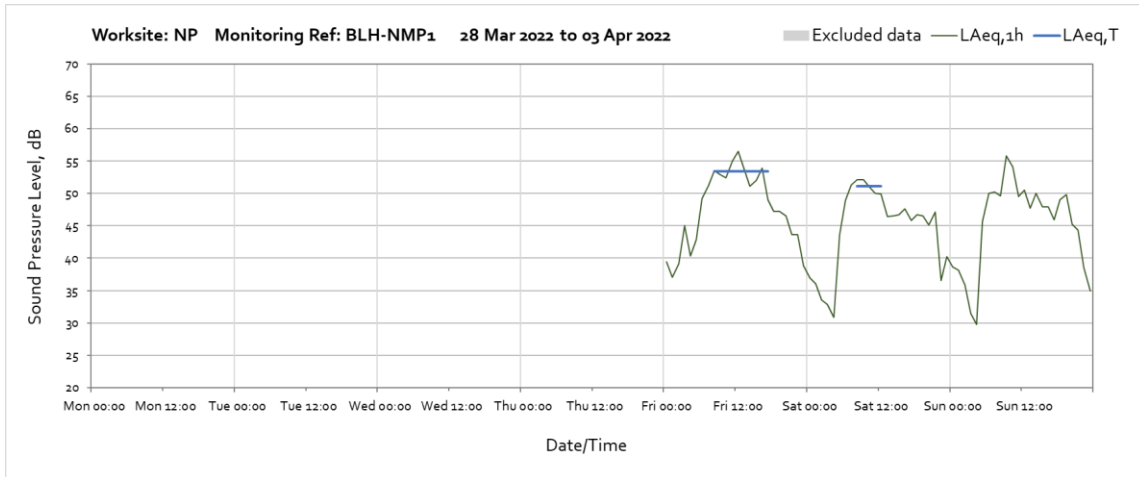
Worksite: NP – Monitoring Ref: ORC-NMP1

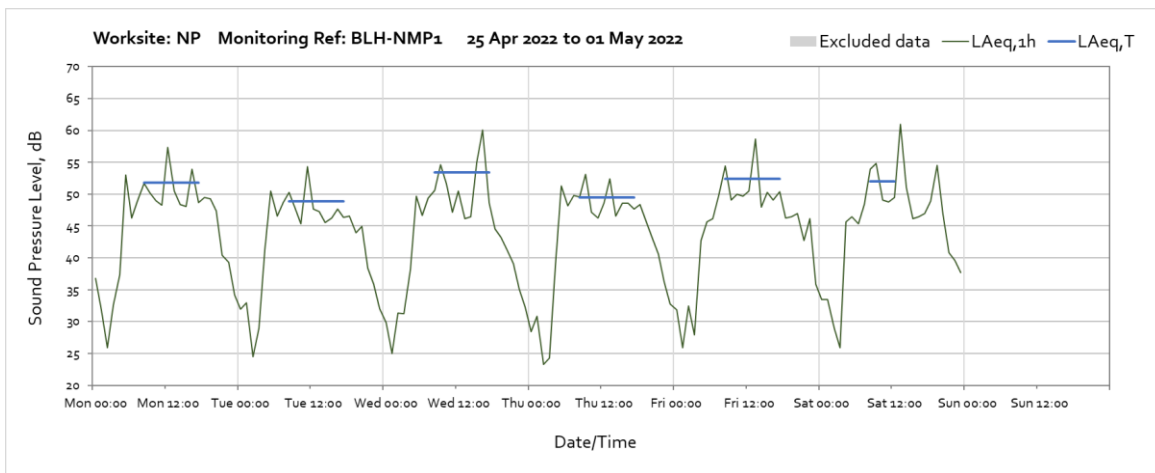
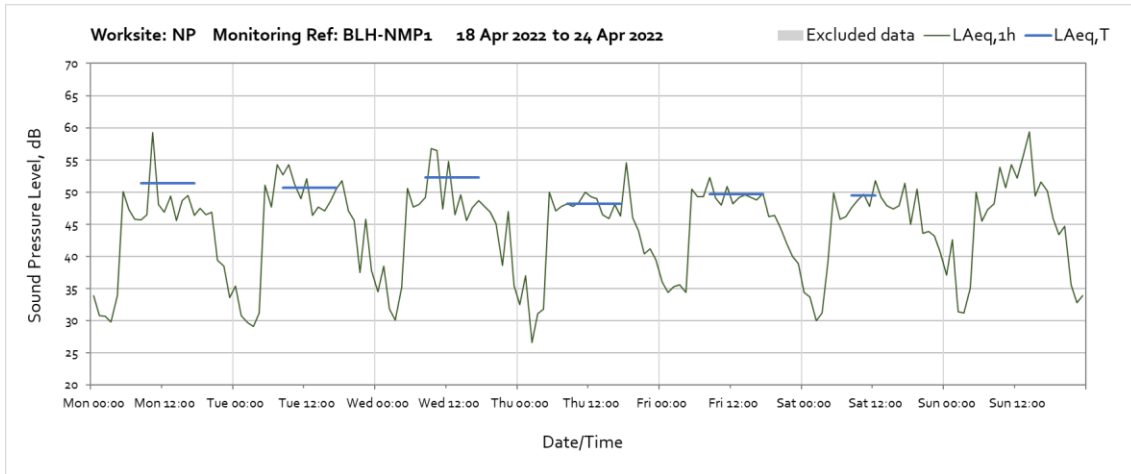


Note: Missing data up until 14th April at 12:00 was due monitor relocated to the location ref.: ORC-NMP1.

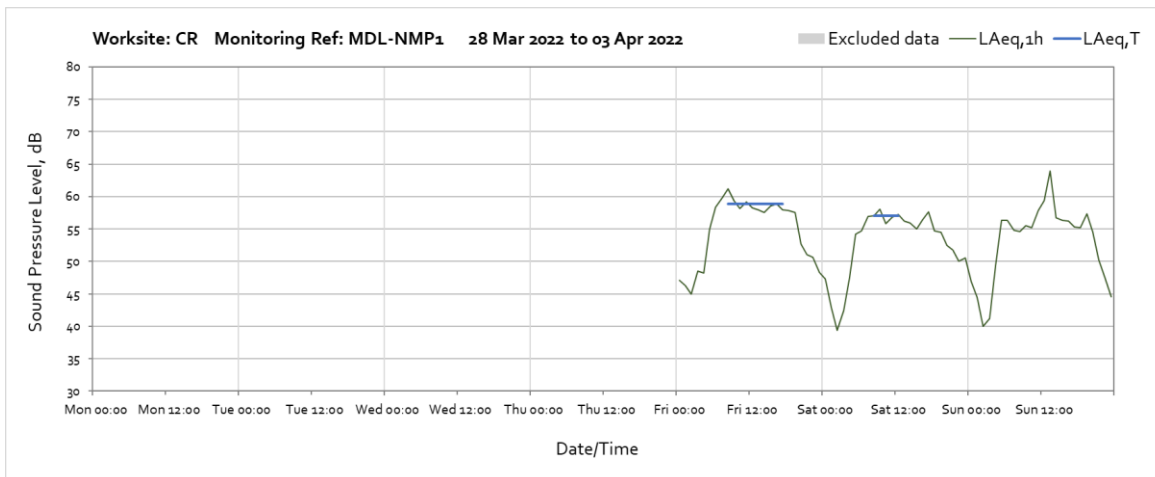


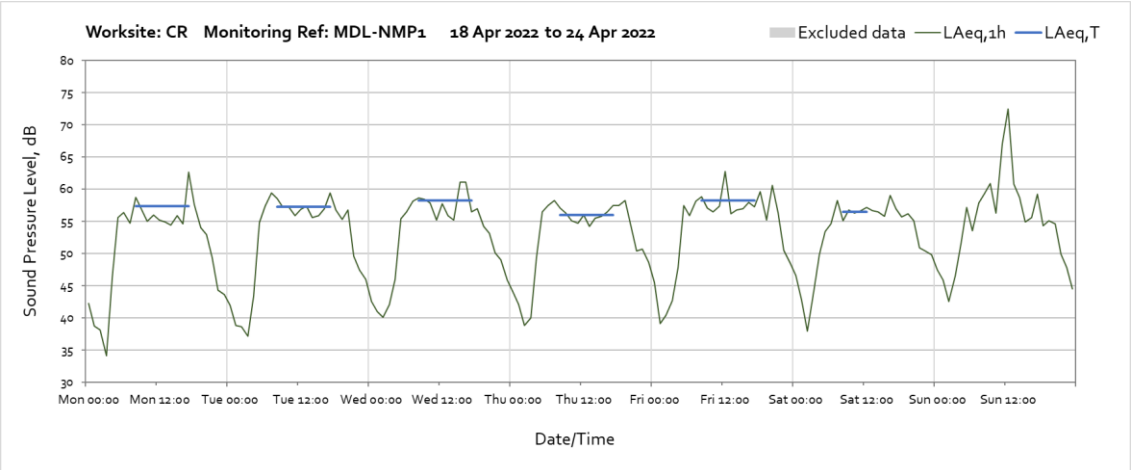
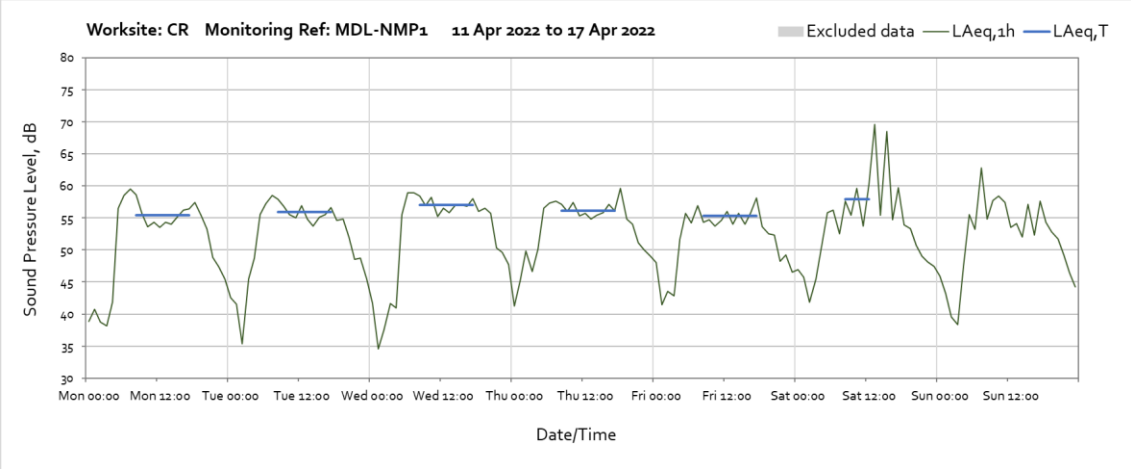
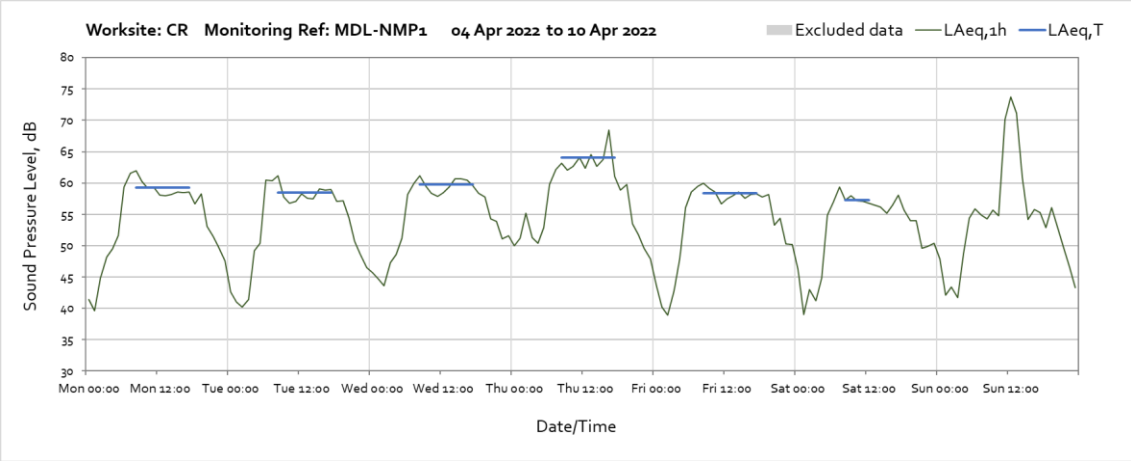
Worksite: NP – Monitoring Ref: BLH-NMP1

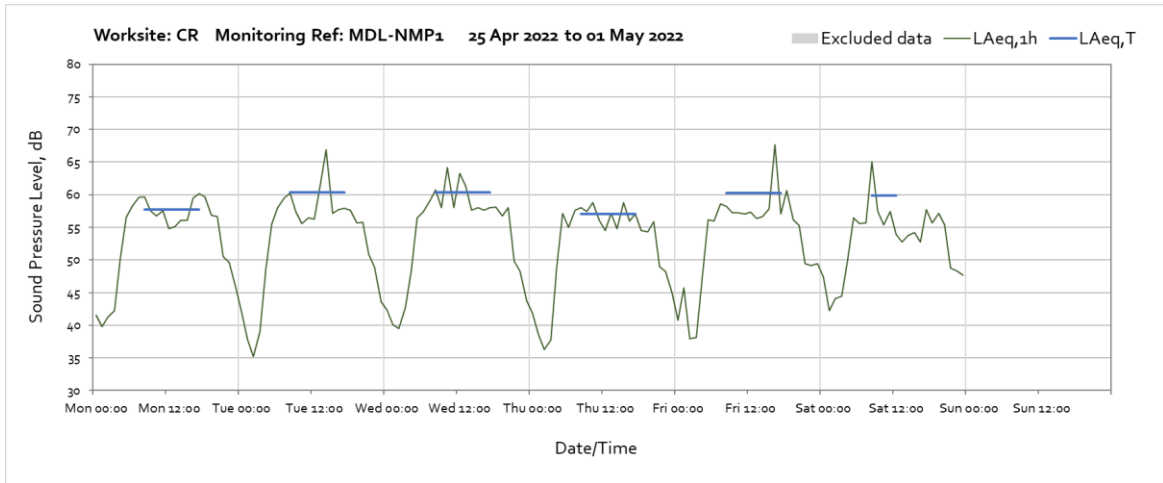




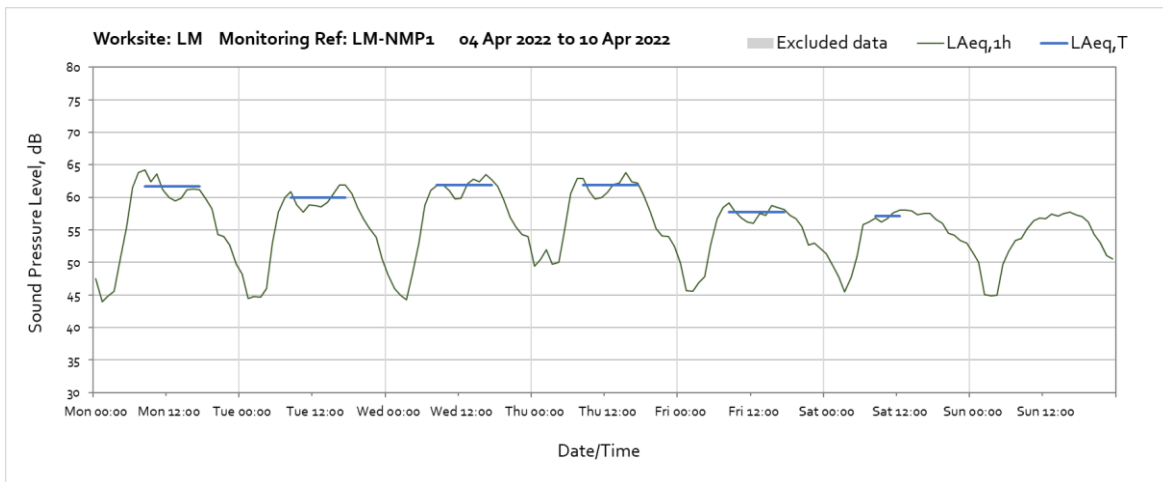
Worksite: CR – Monitoring Ref: MDL-NMP1

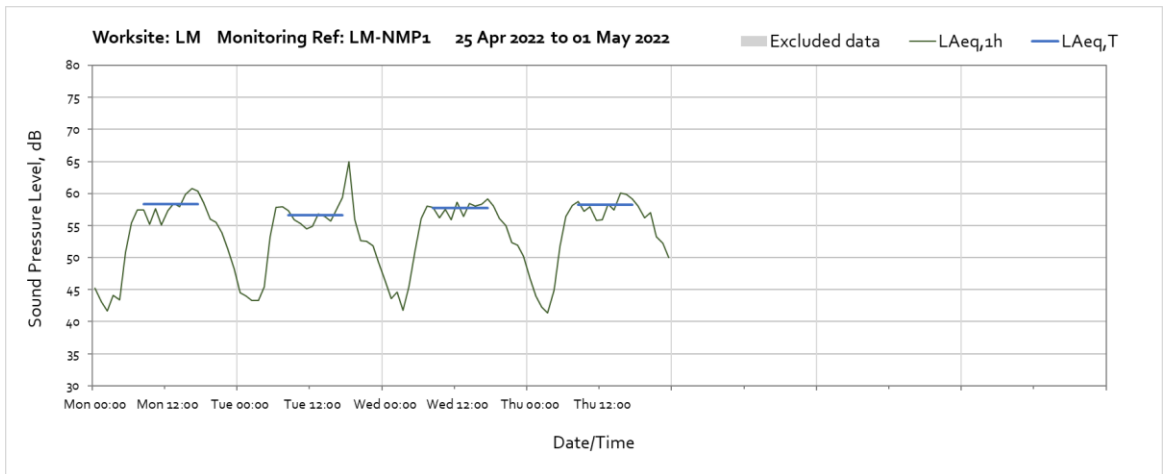
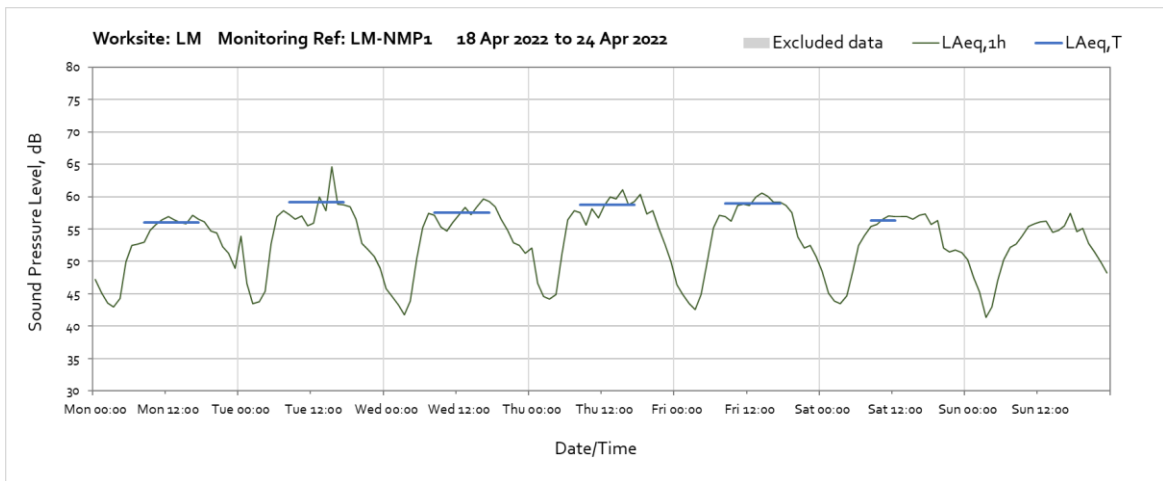




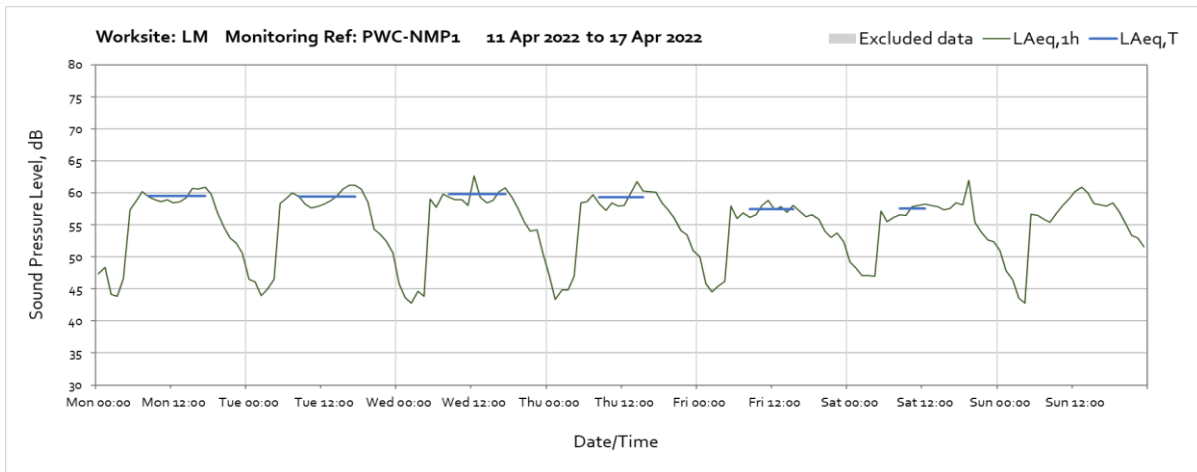
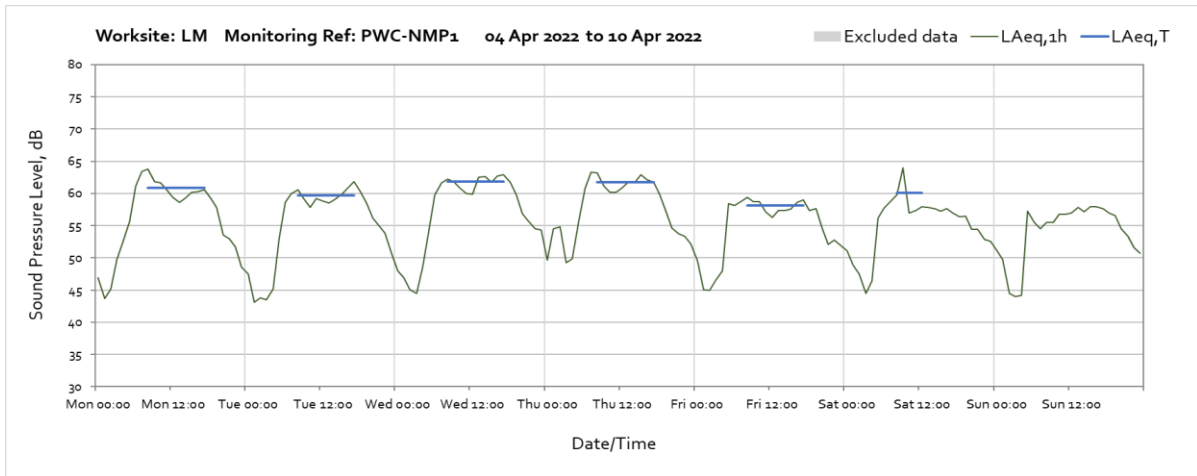
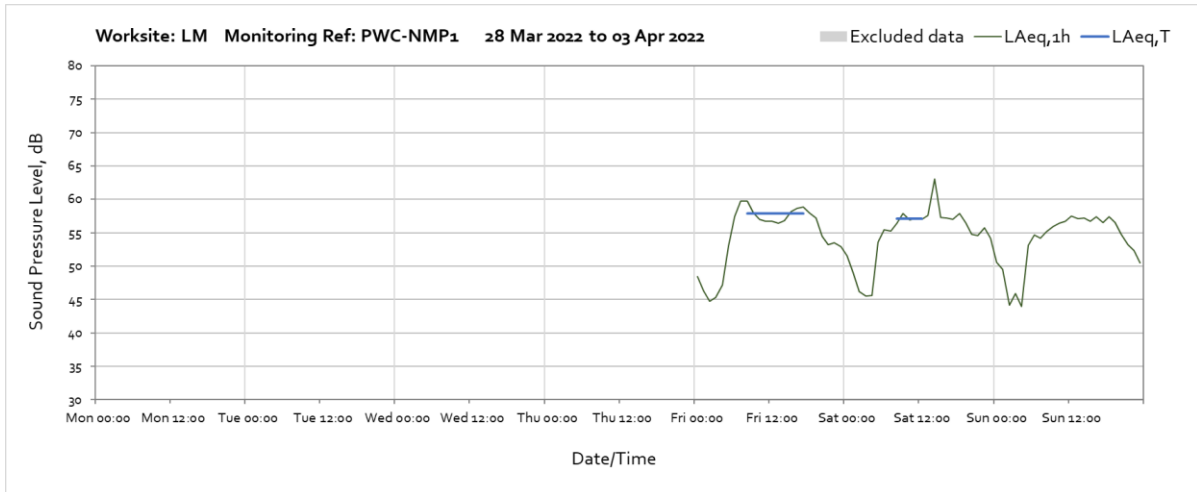


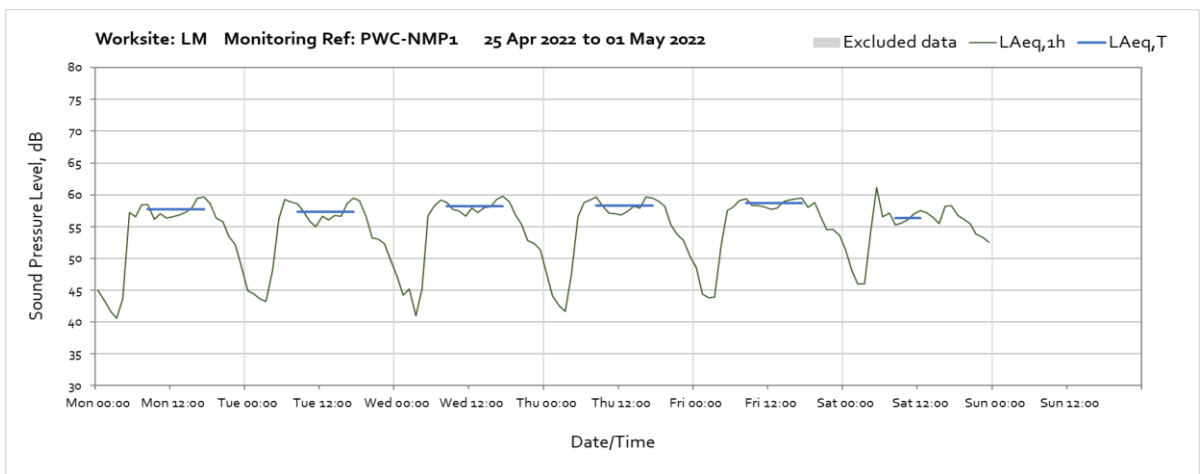
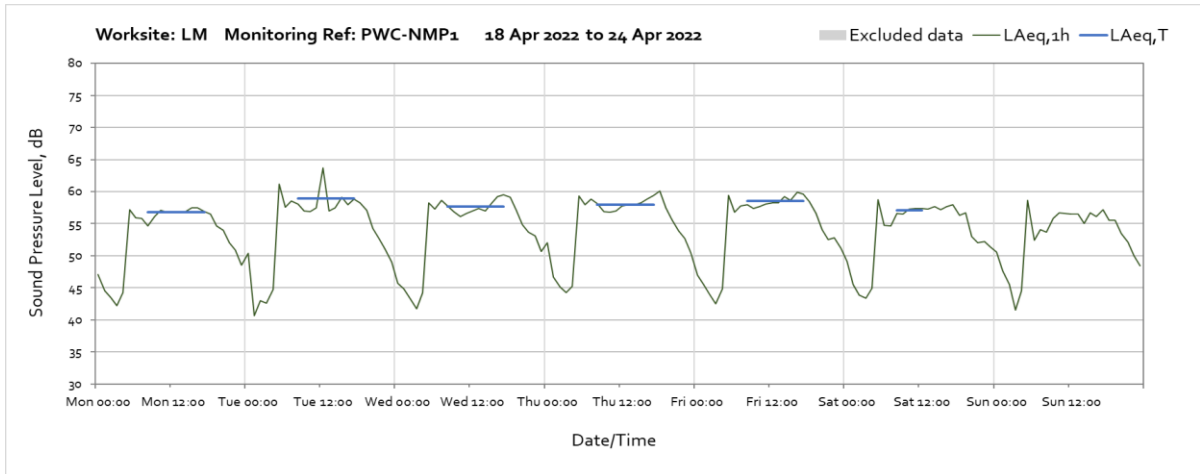
Worksite: LM – Monitoring Ref: LM-NMP1



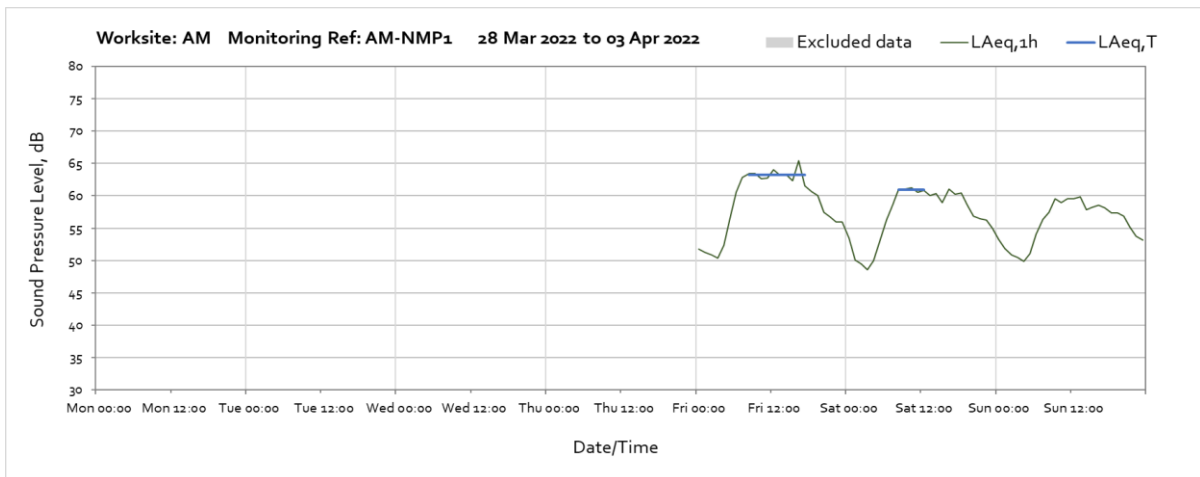


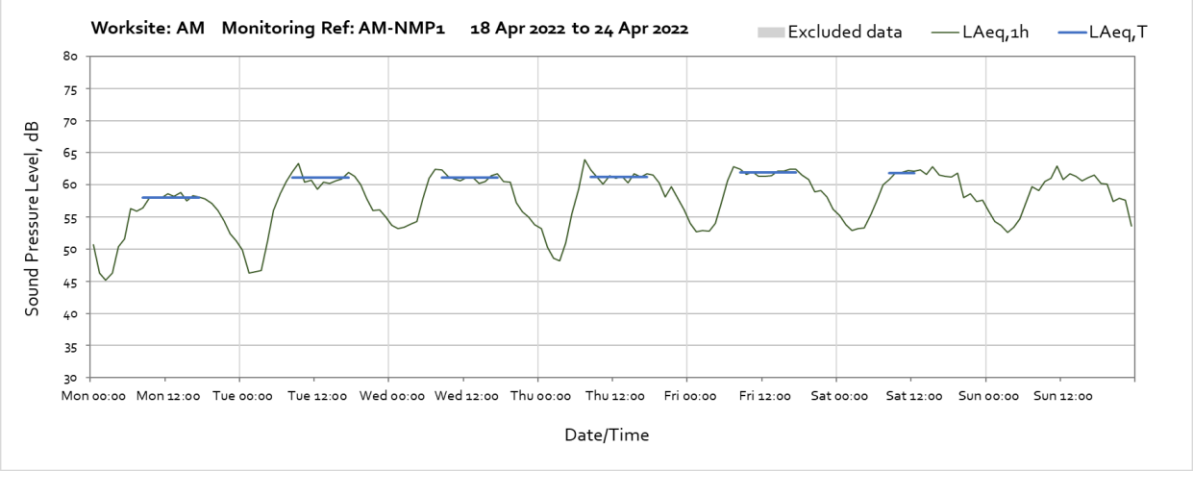
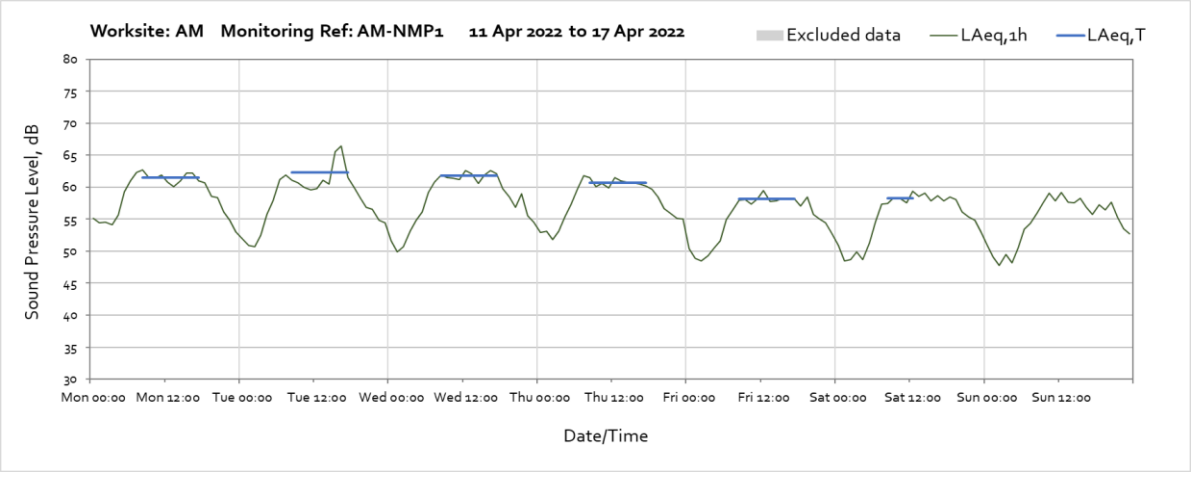
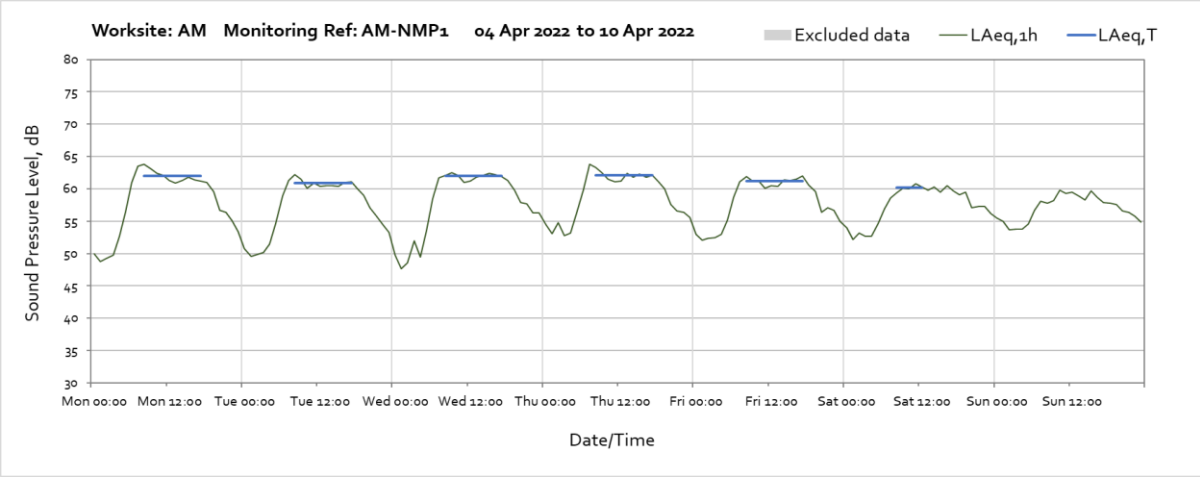
Worksite: LM – Monitoring Ref: PWC-NMP1

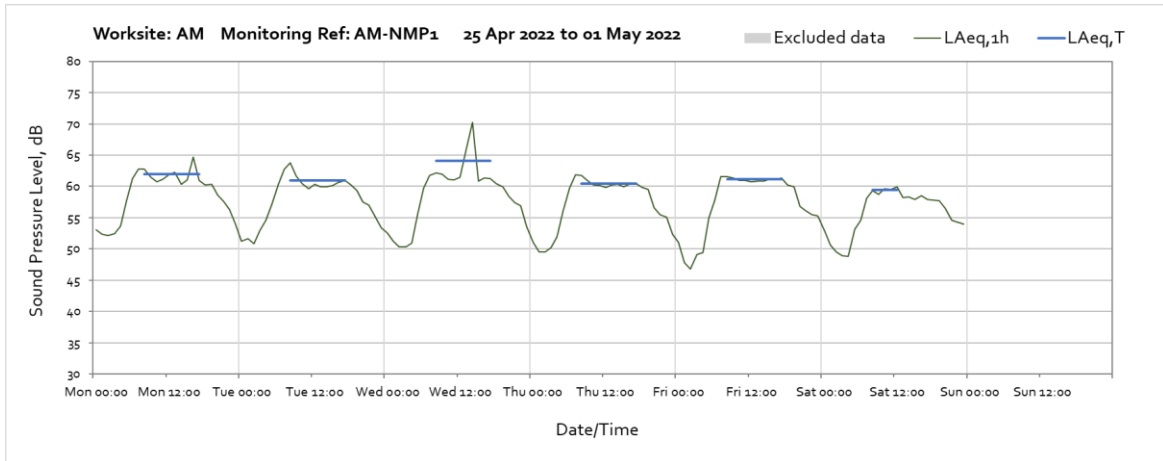




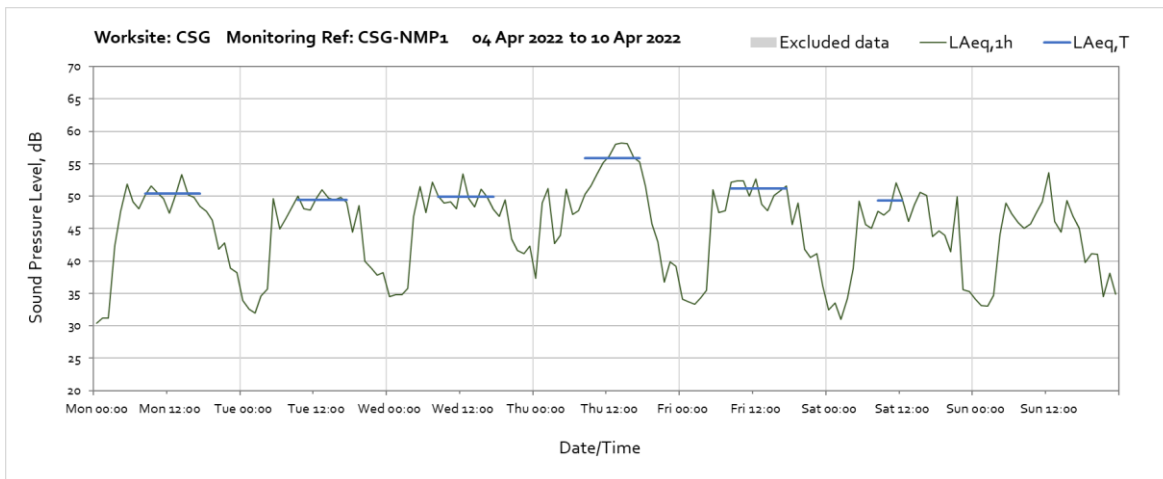
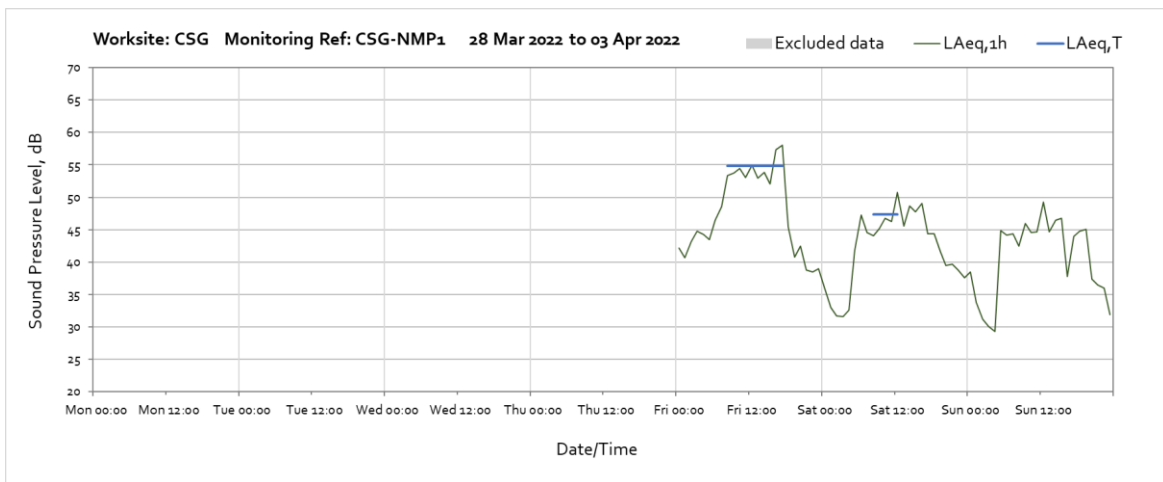
Worksite: AM - Monitoring Ref: AM-NMP1

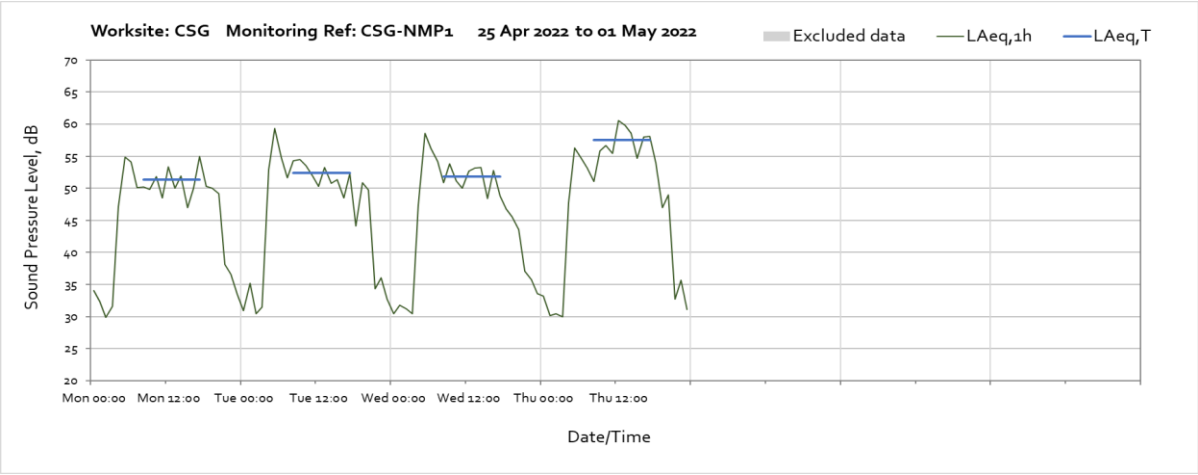
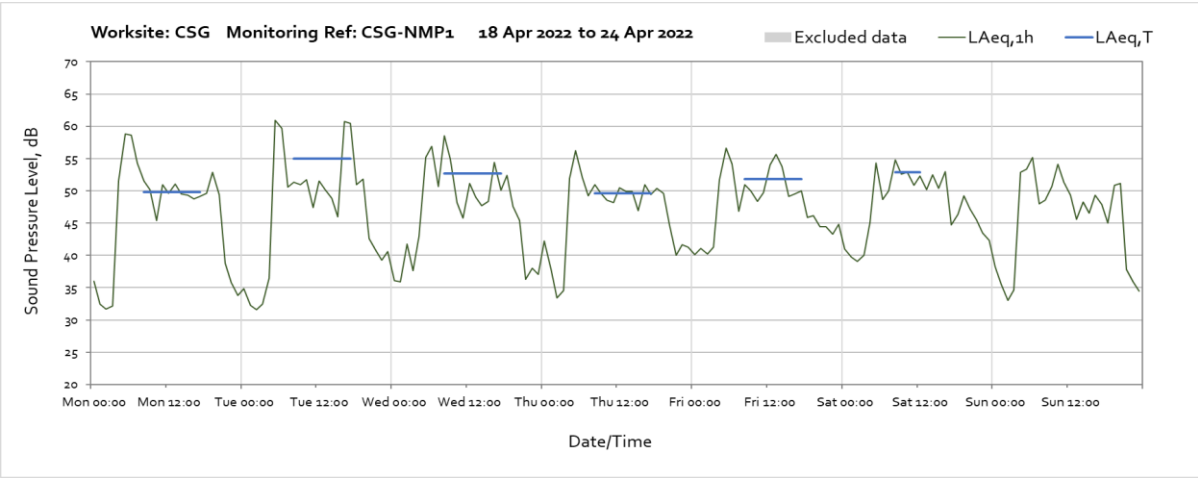
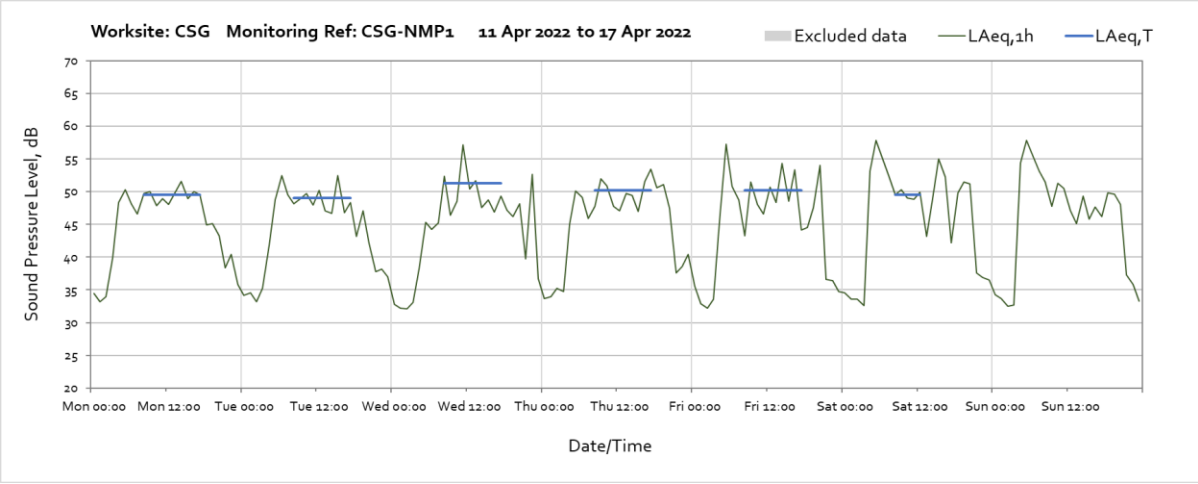




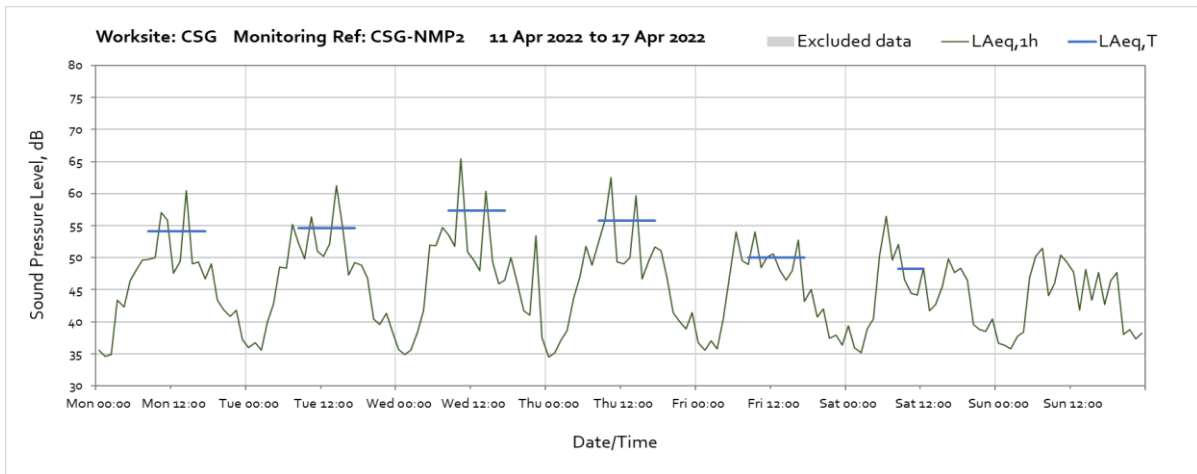
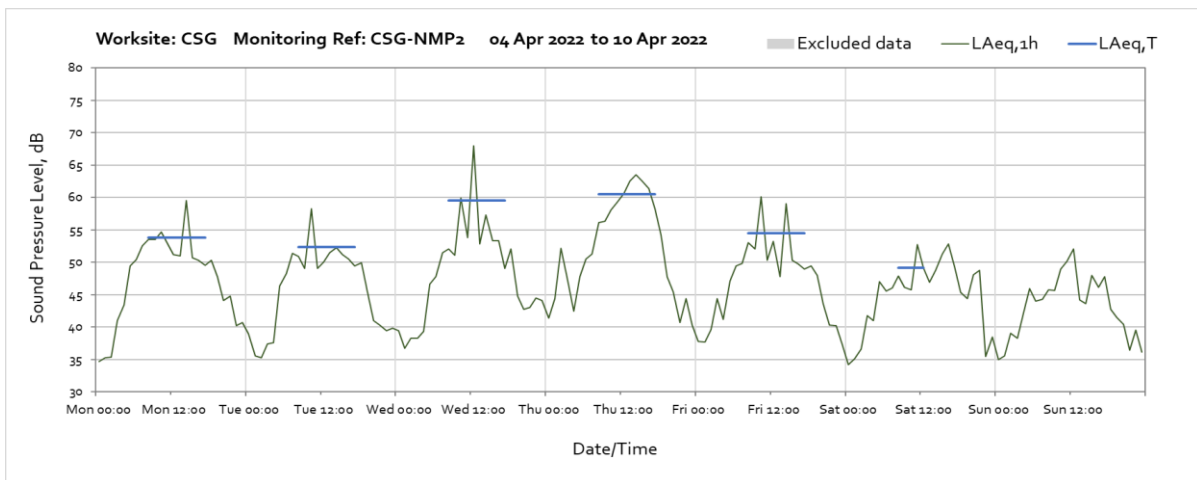
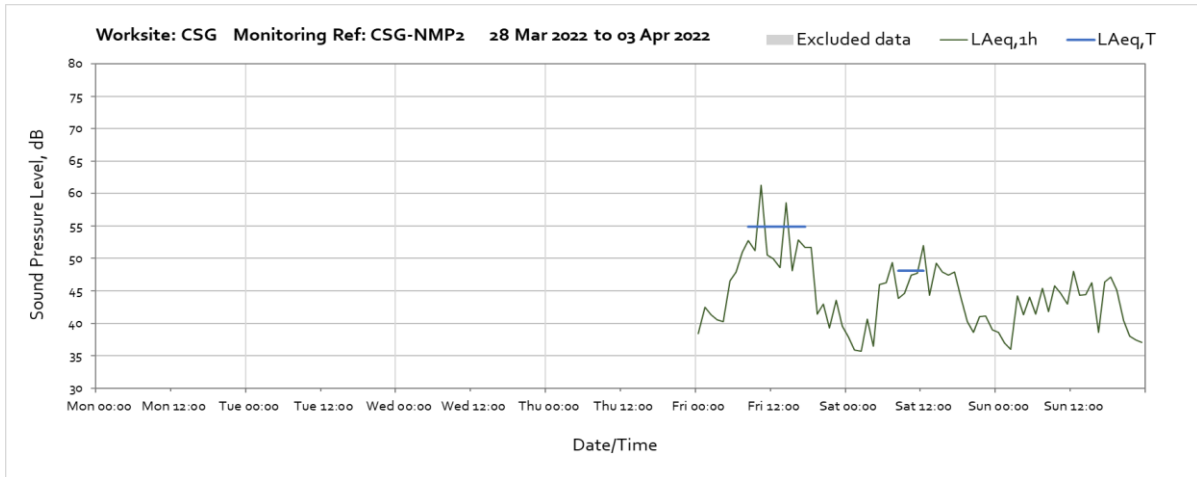


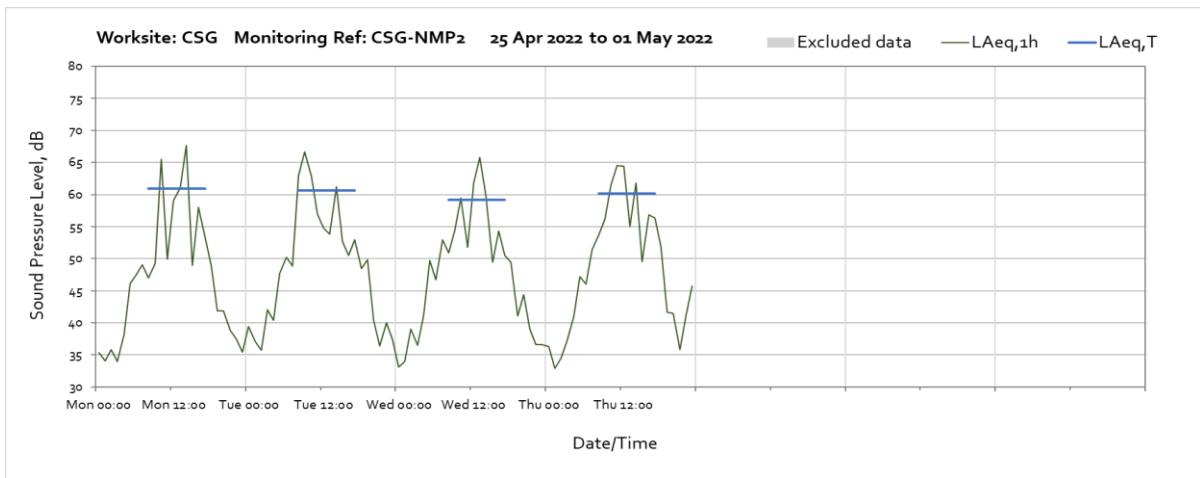
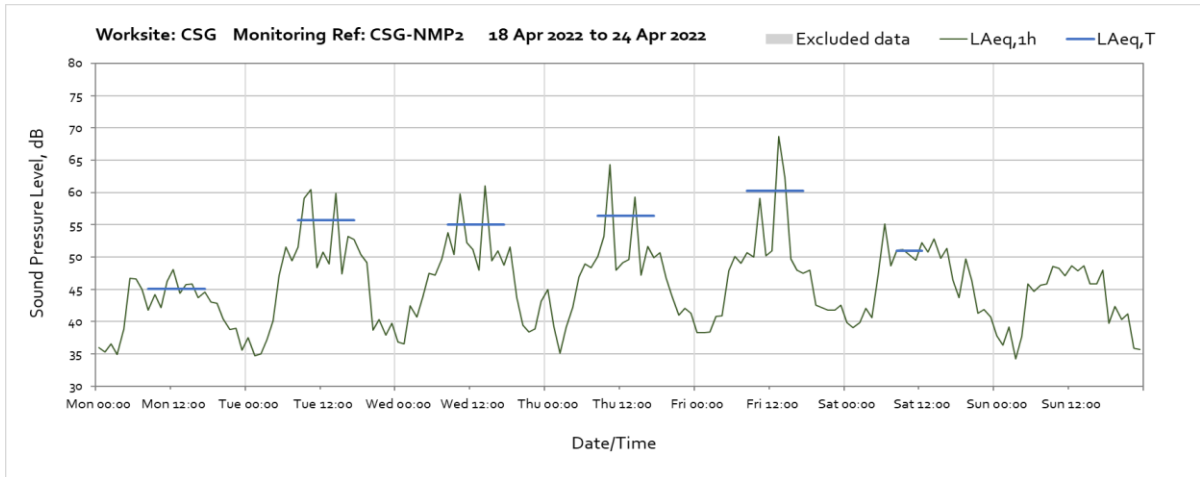
Worksite: CSG – Monitoring Ref: CSG-NMP1



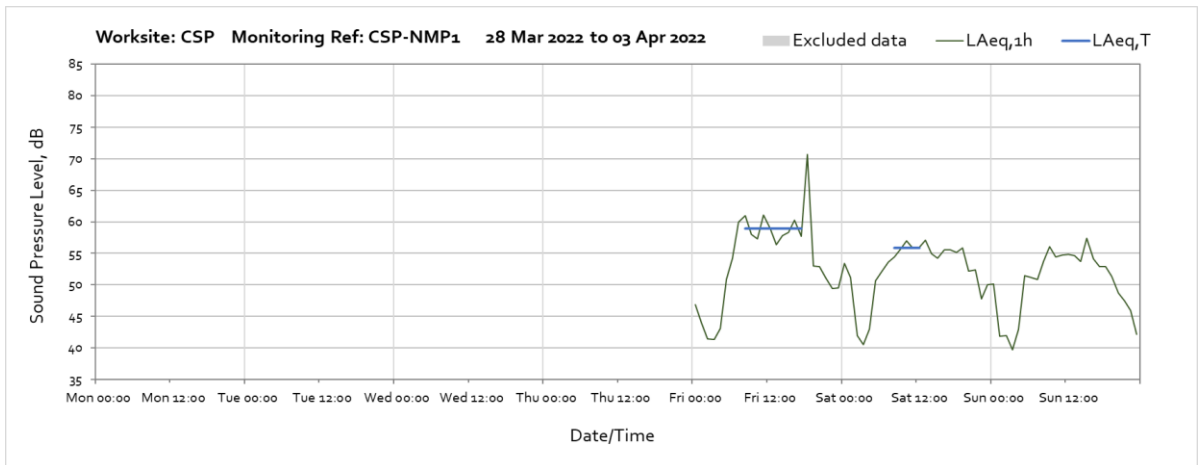


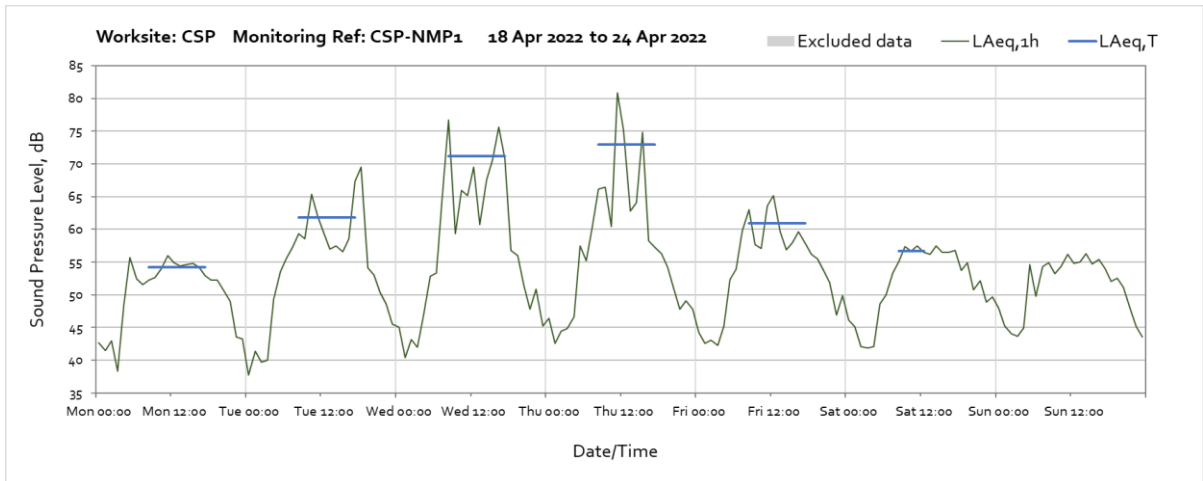
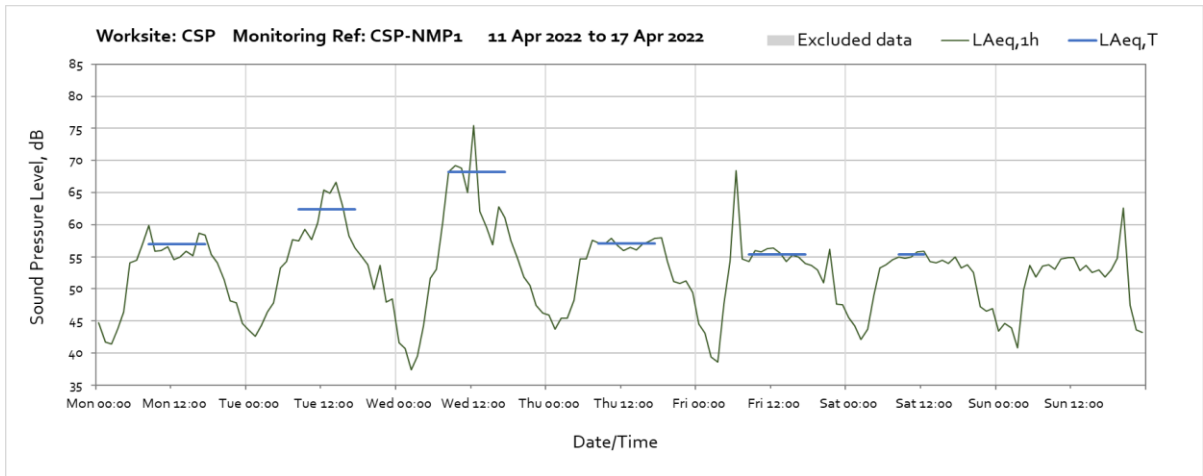
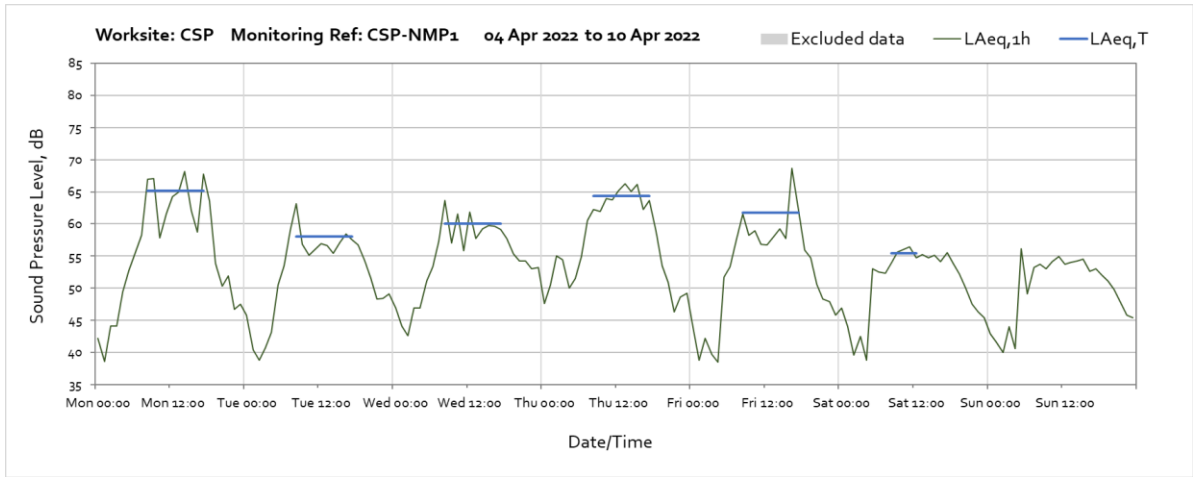
Worksite: CSG – Monitoring Ref: CSG-NMP2

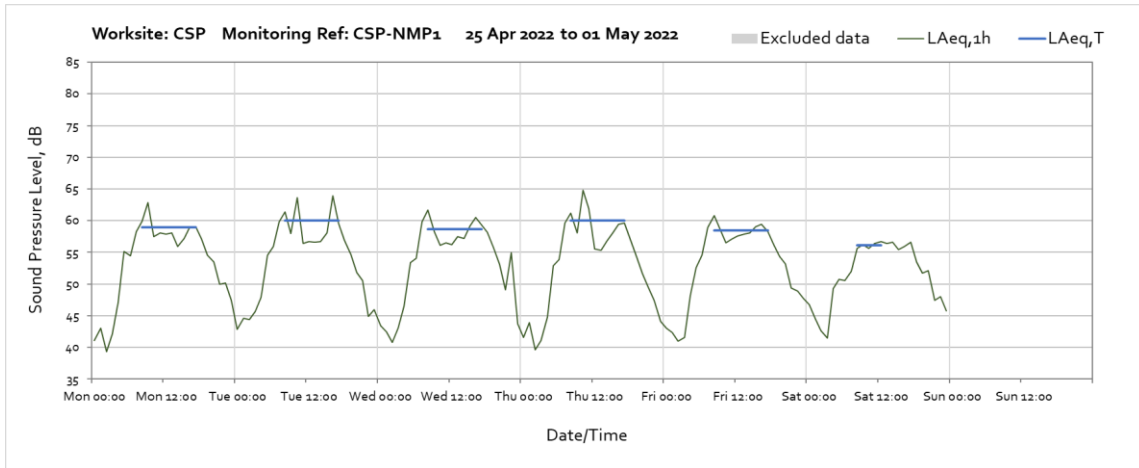




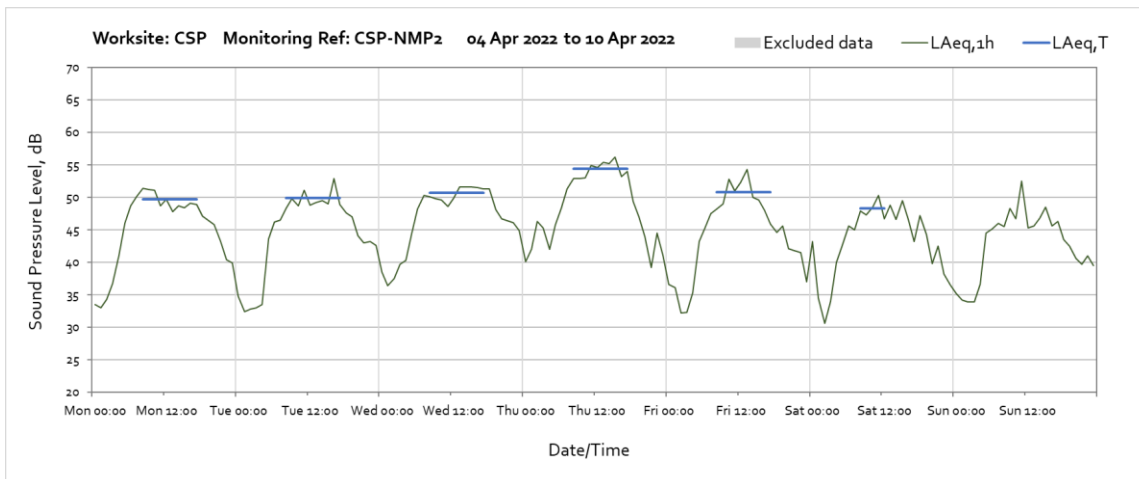
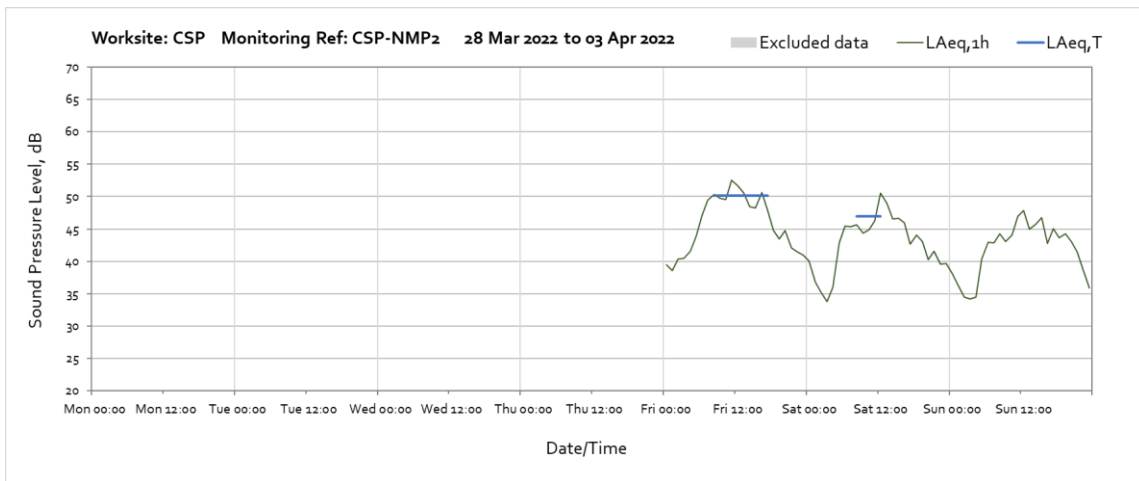
Worksite: CSP - Monitoring Ref: CSP-NMP1

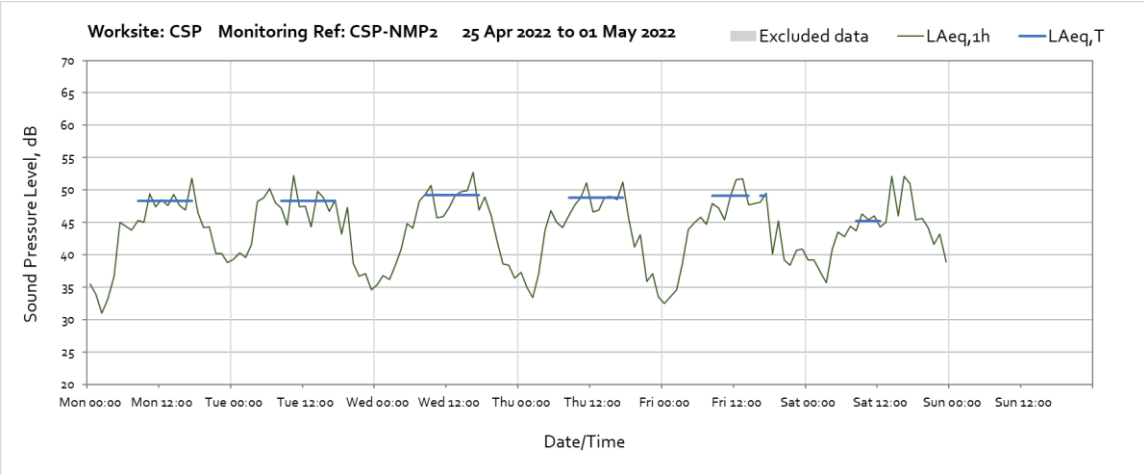
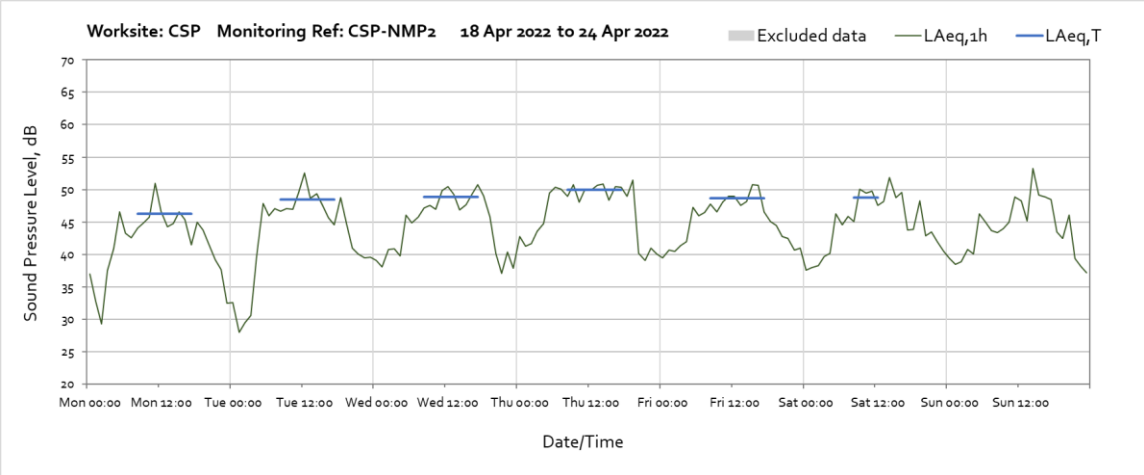
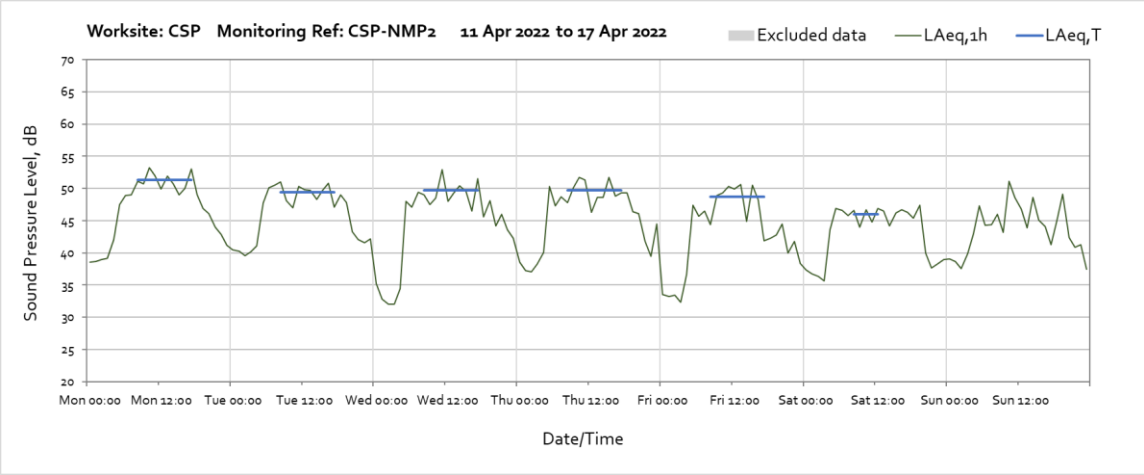




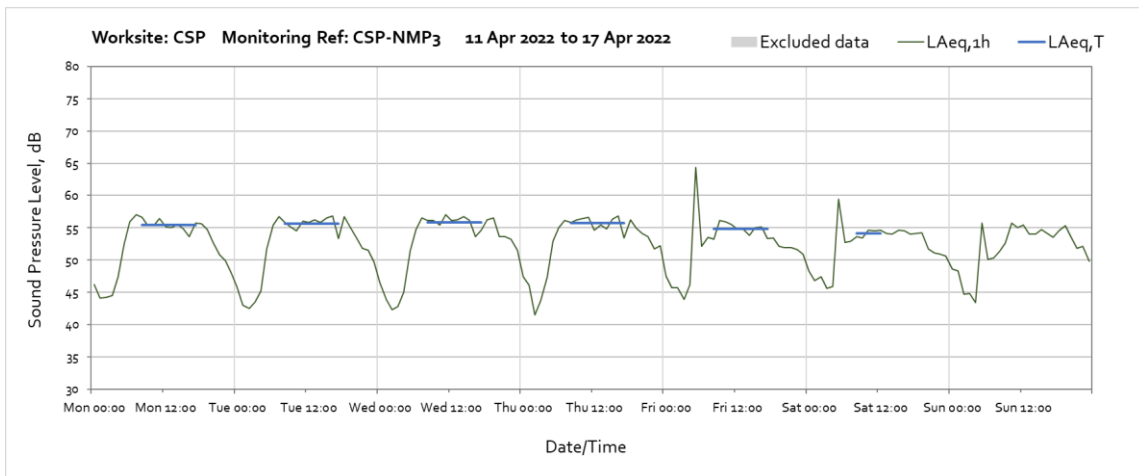
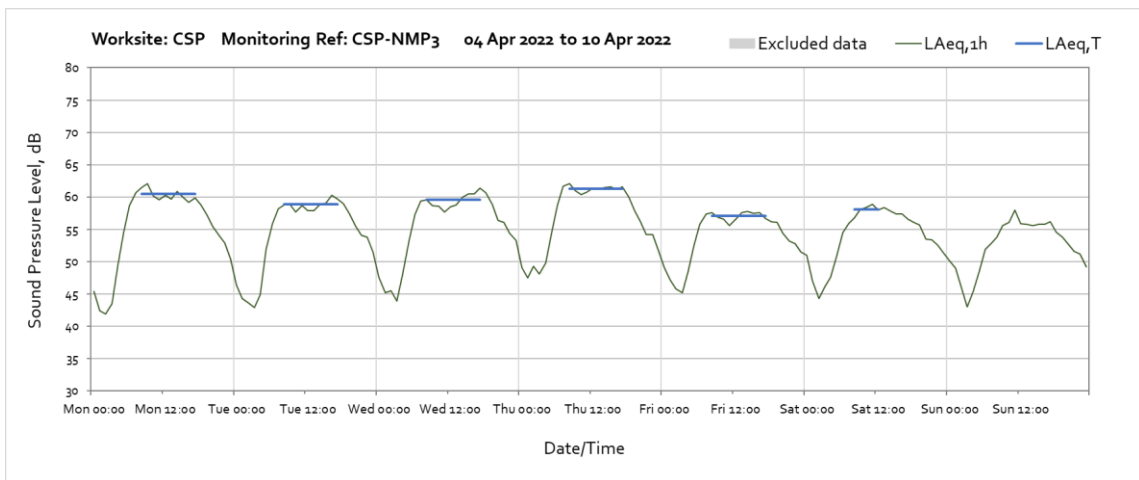
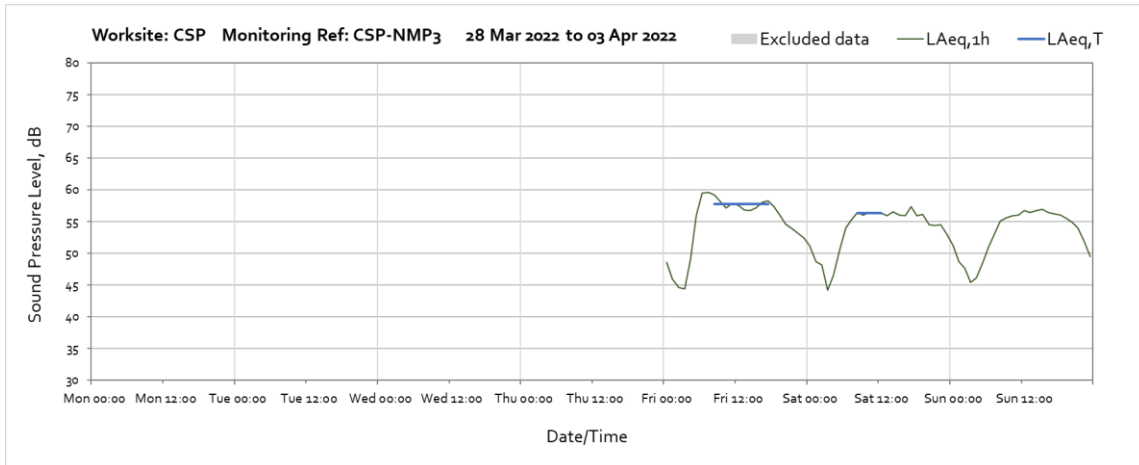


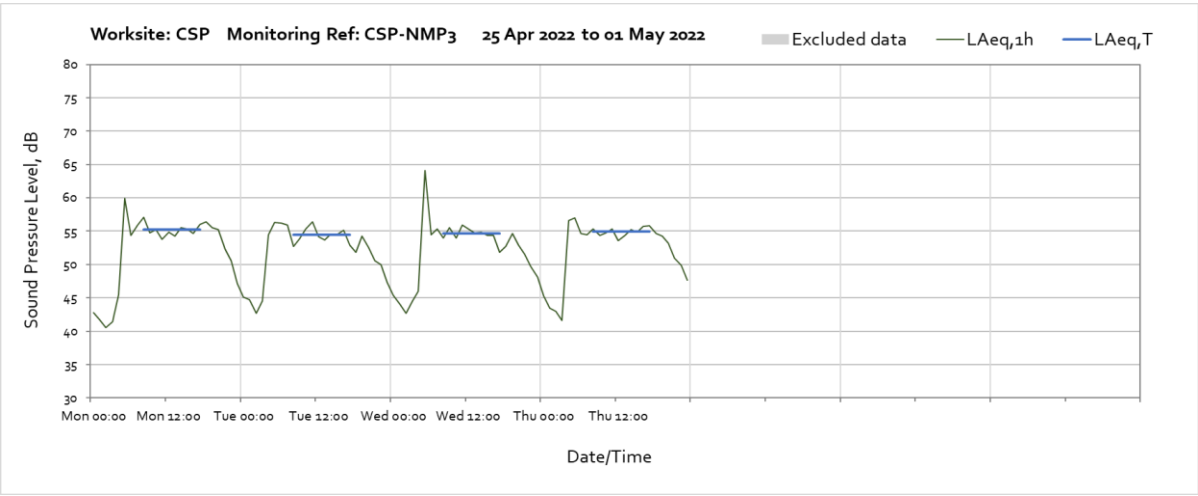
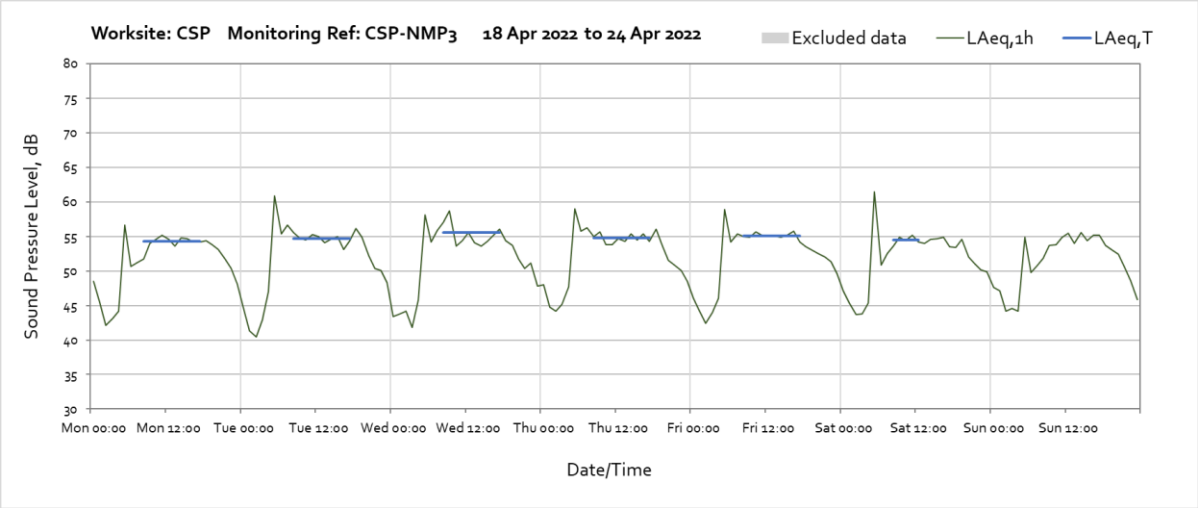
Worksite: CSP - Monitoring Ref: CSP-NMP2



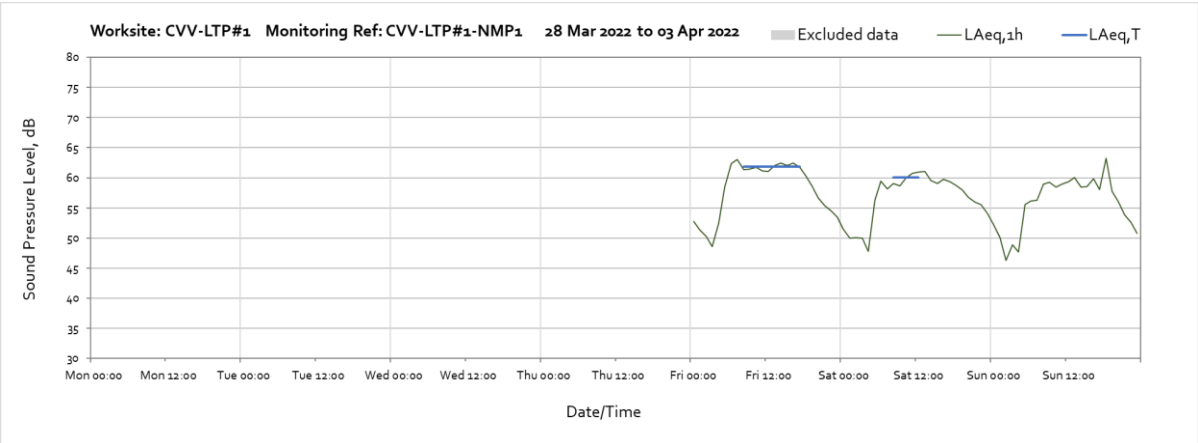


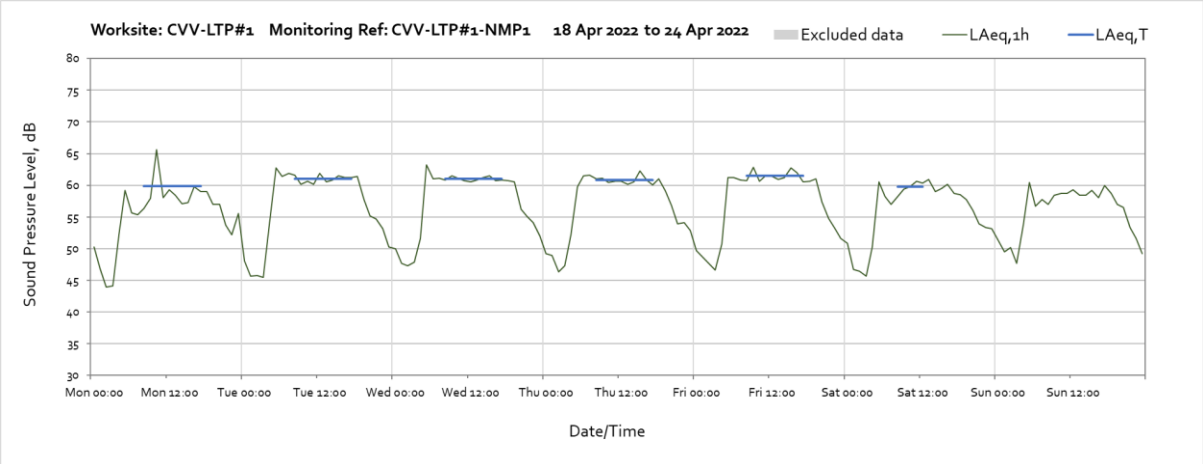
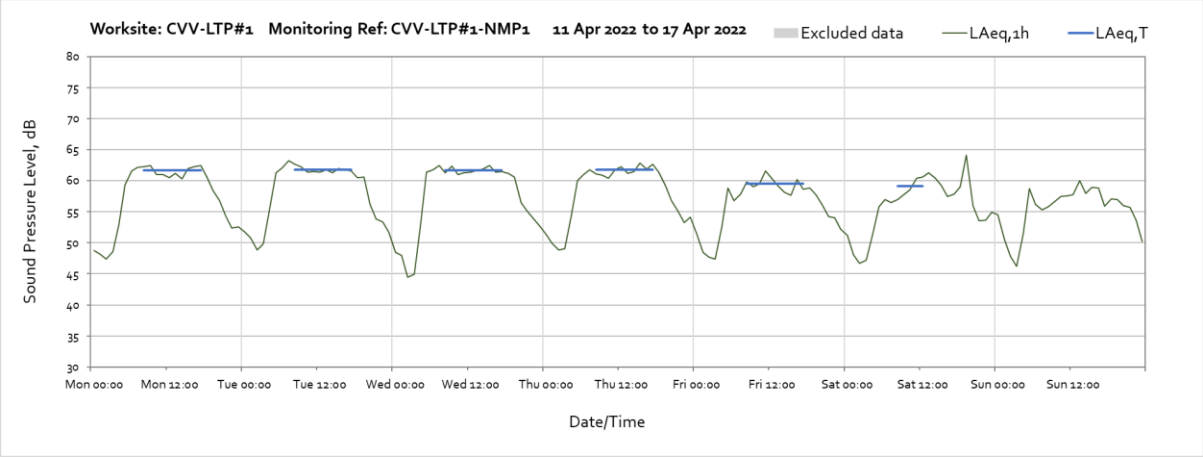
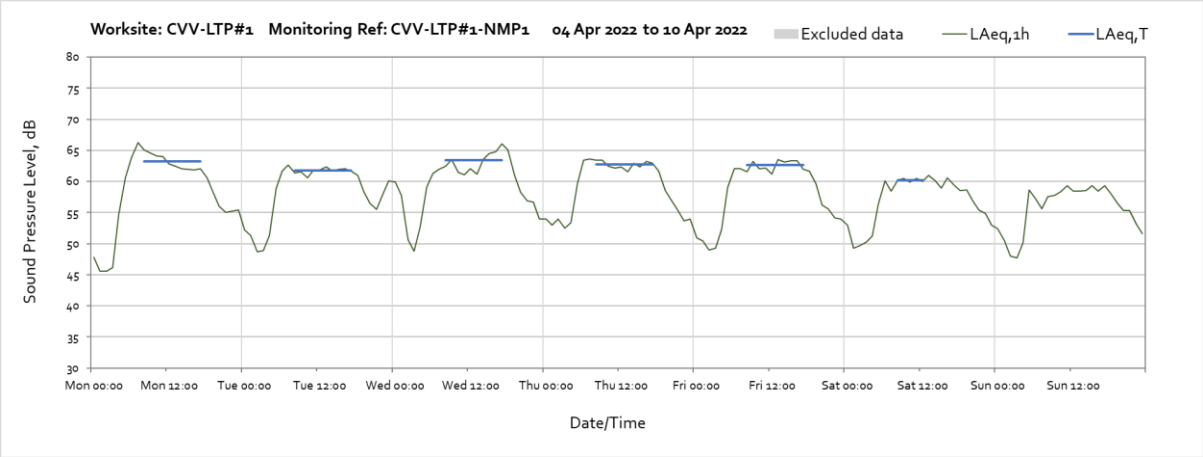
Worksite: CSP – Monitoring Ref: CSP-NMP3

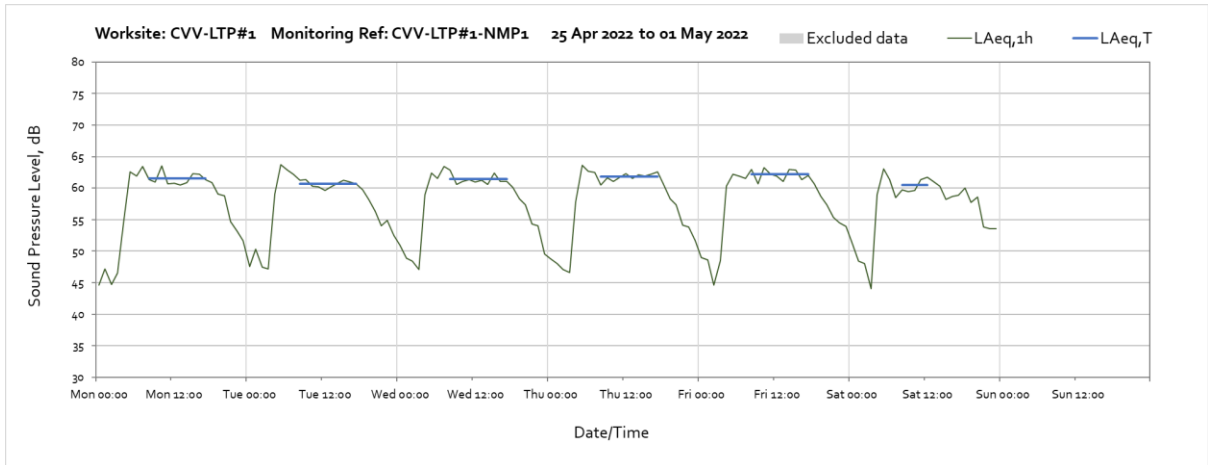




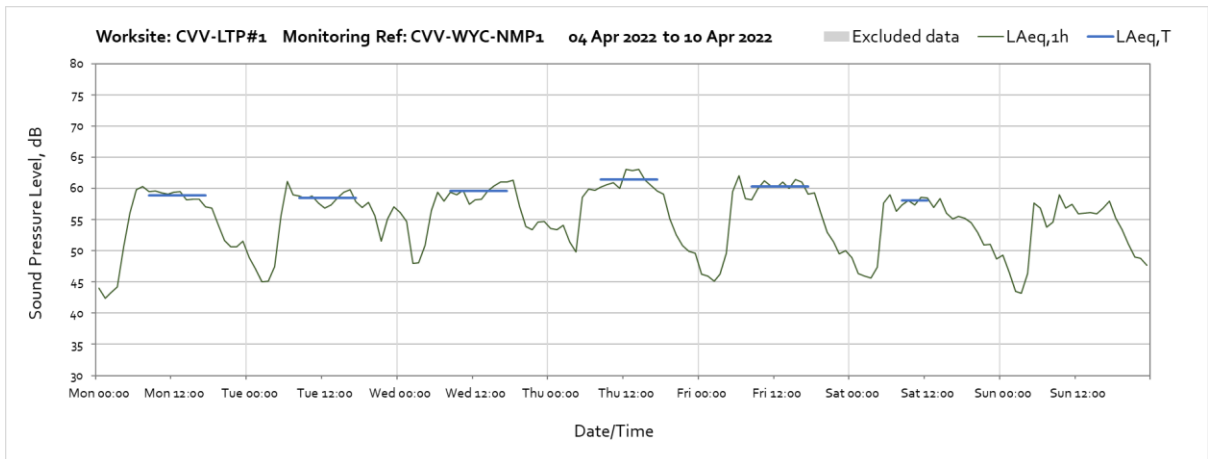
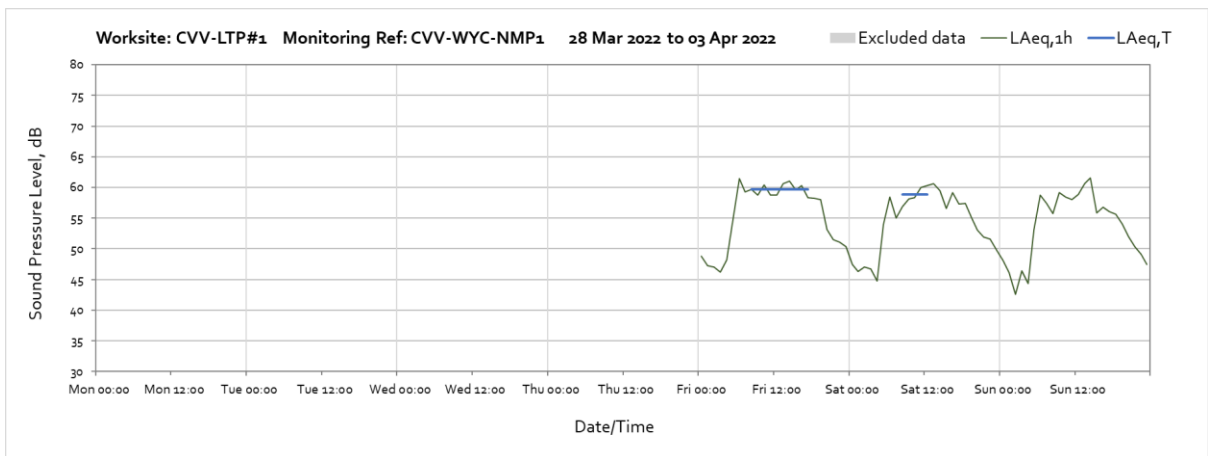
Worksite: CVV-LPT#1 – Monitoring Ref: CVV-LPT#1-NMP1

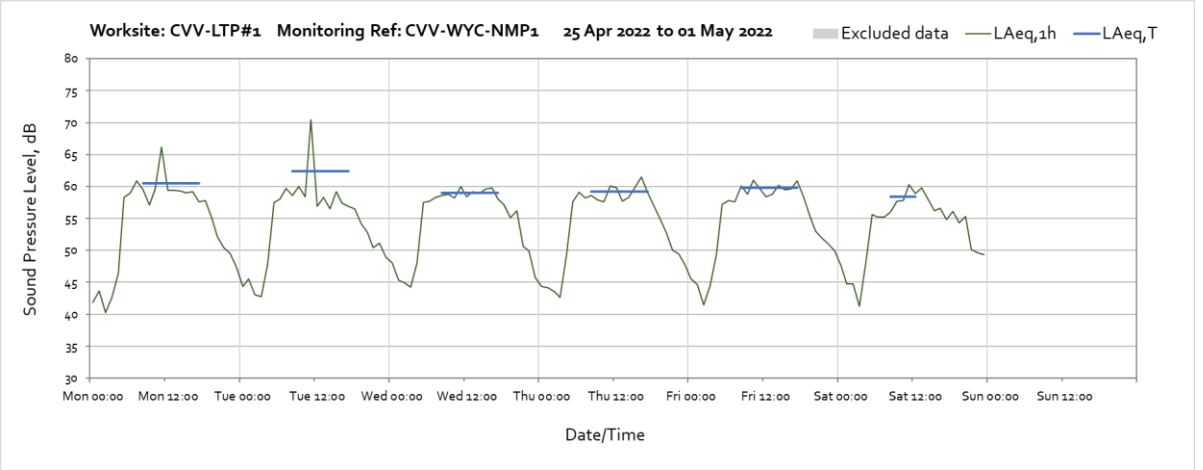
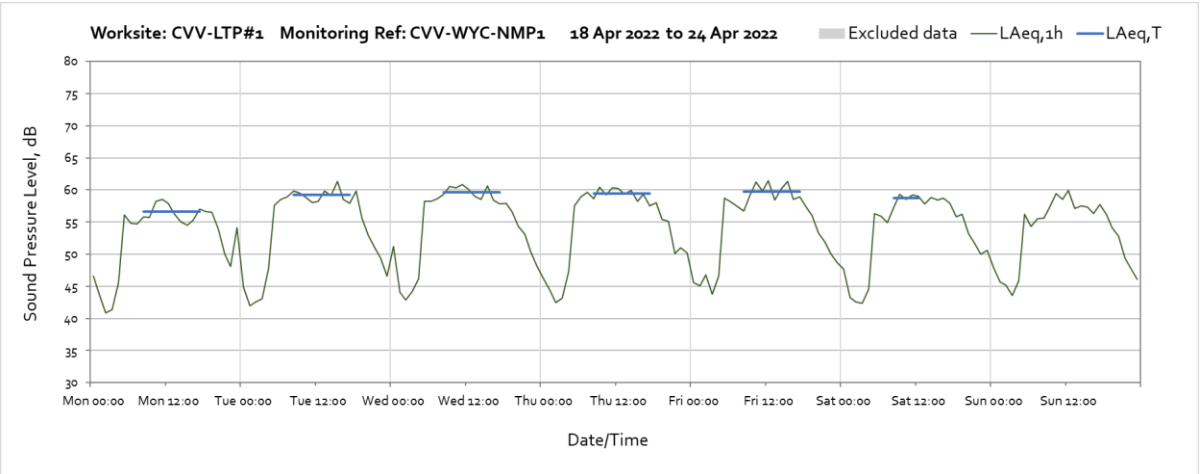
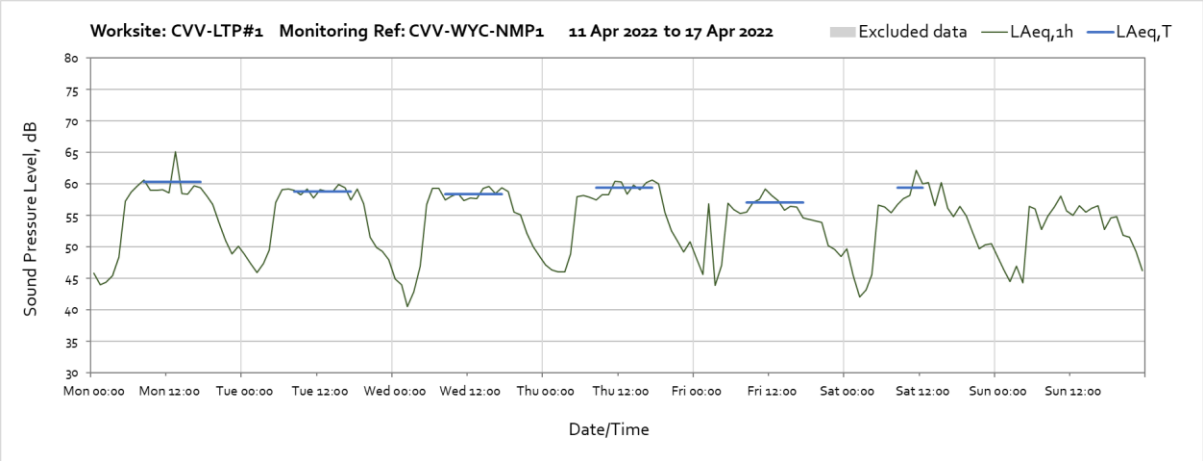




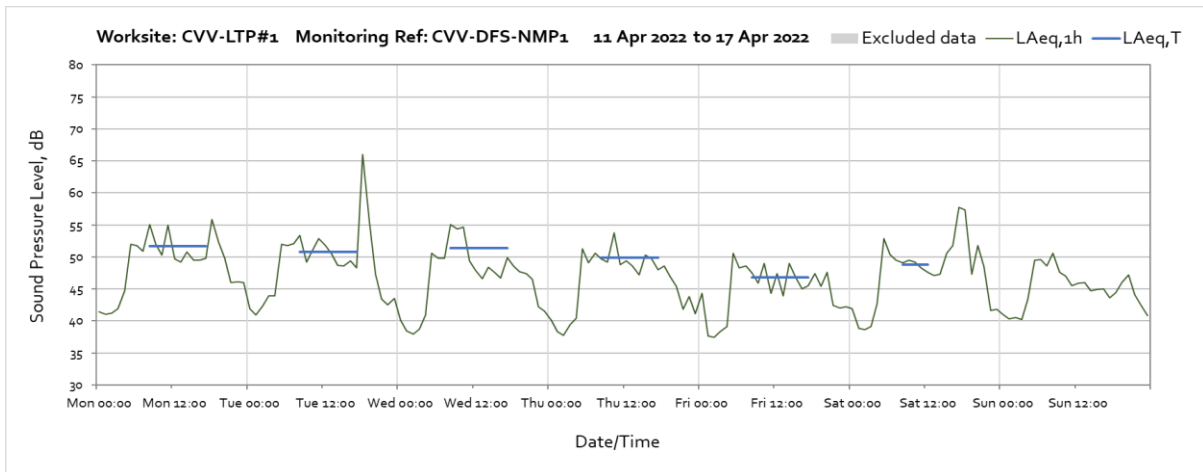
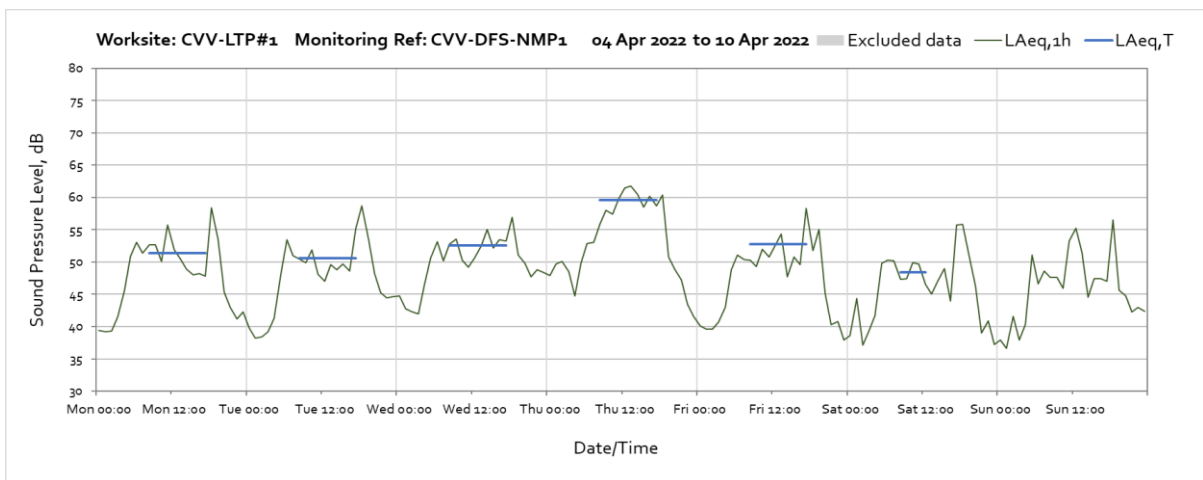
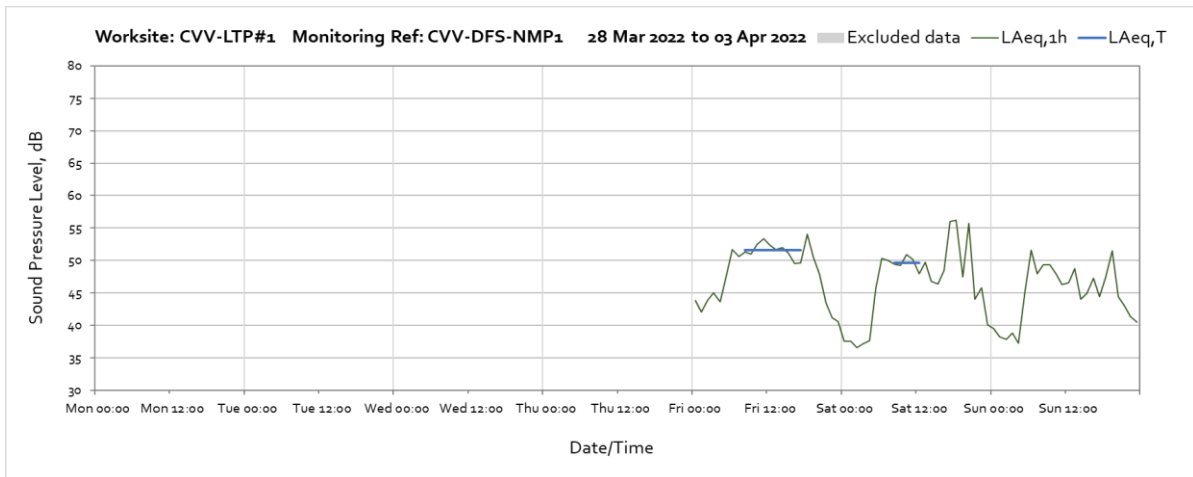


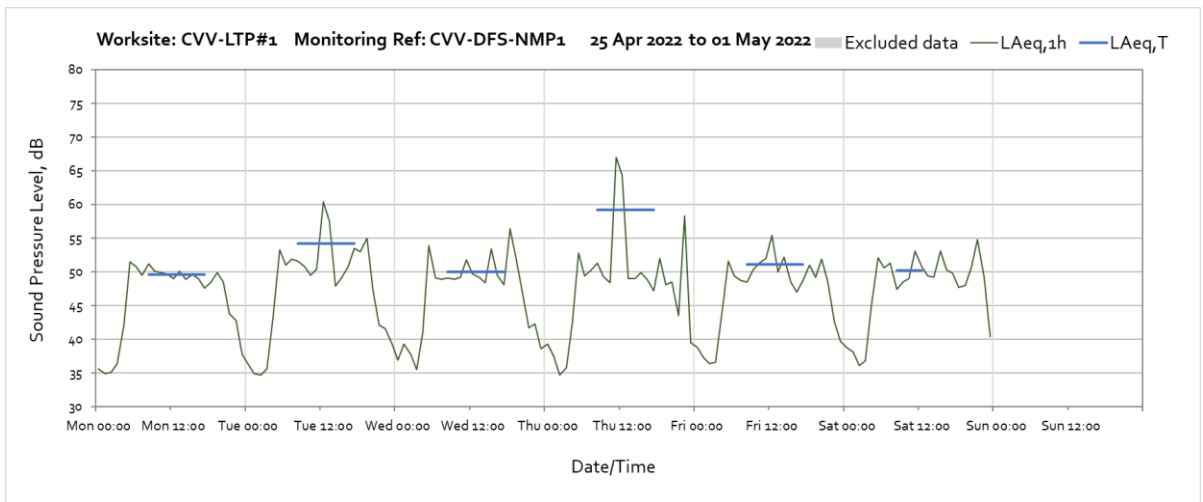
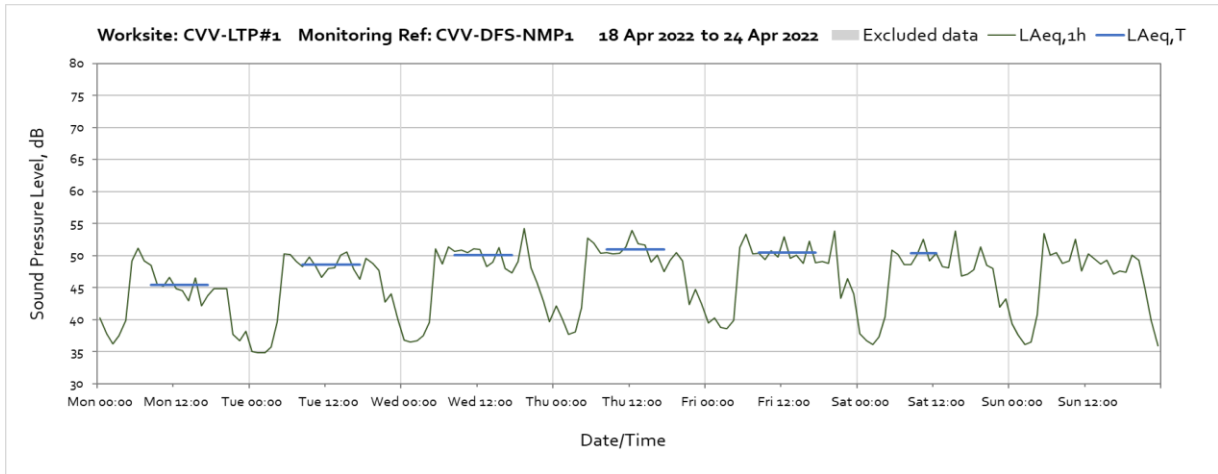
Worksite: CVV-LPT#1 - Monitoring Ref: CVV-WYC-NMP1



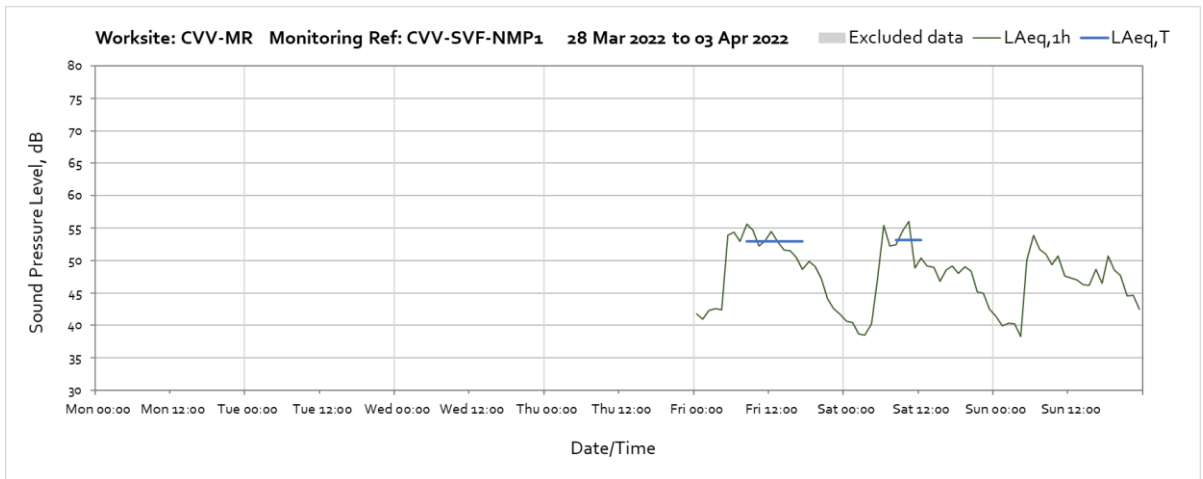


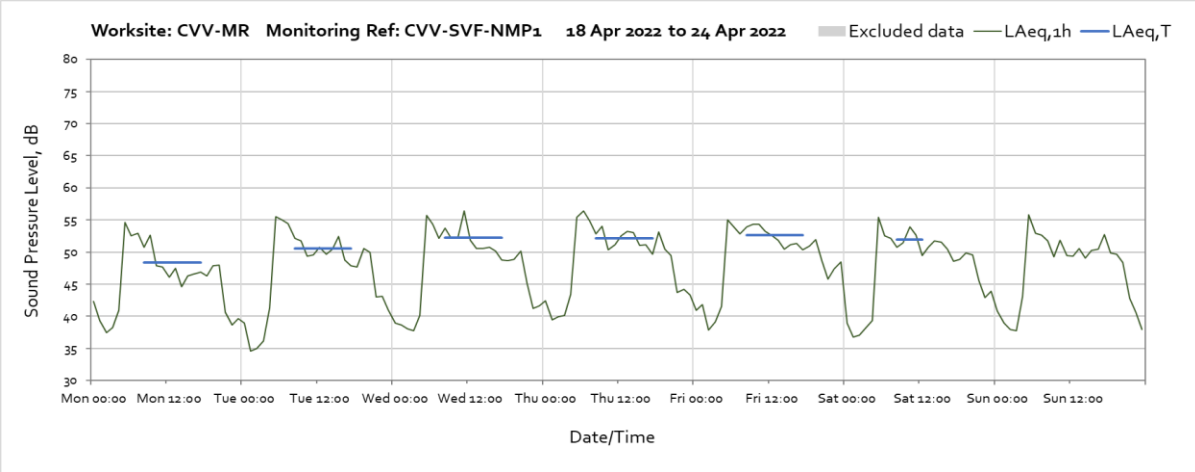
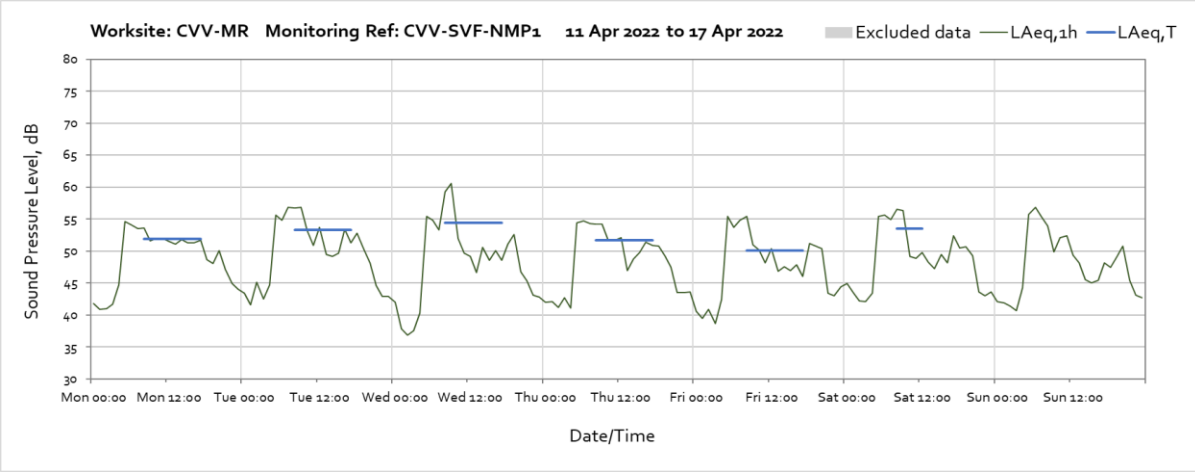
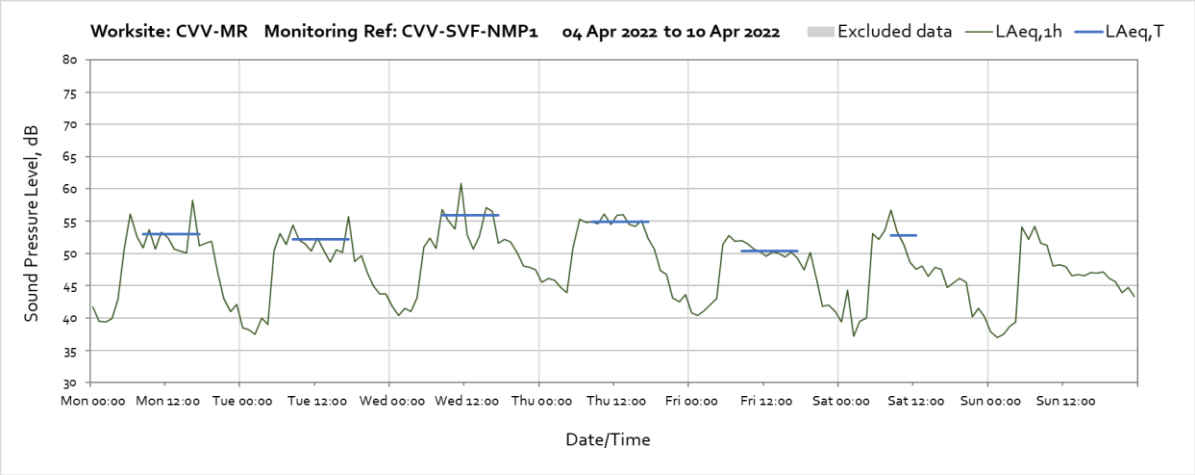
Worksite: CVV-LTP#1 – Monitoring Ref: CVV-DFS-NMP1

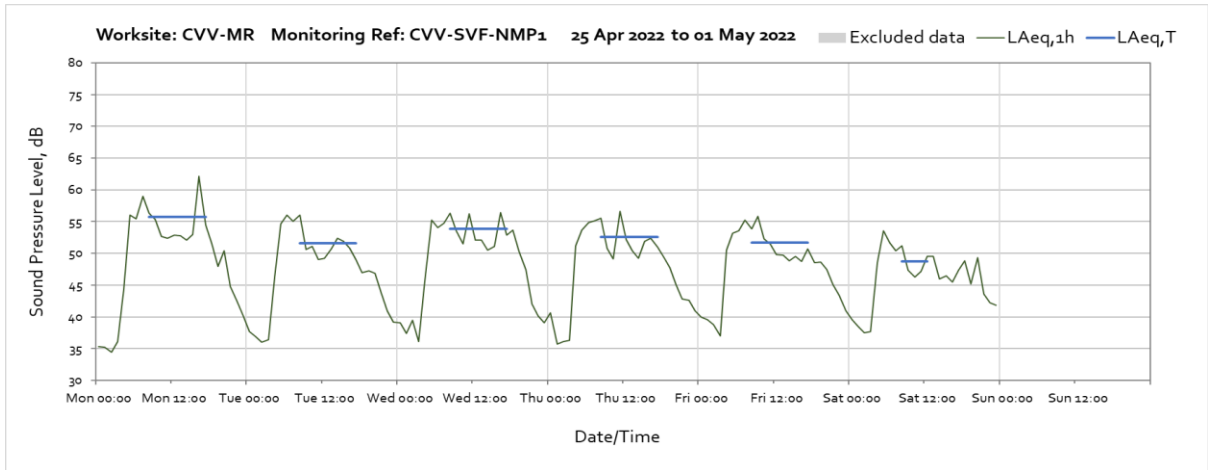




Worksite: CVV-MR – Monitoring Ref: CVV-SVF-NMP1



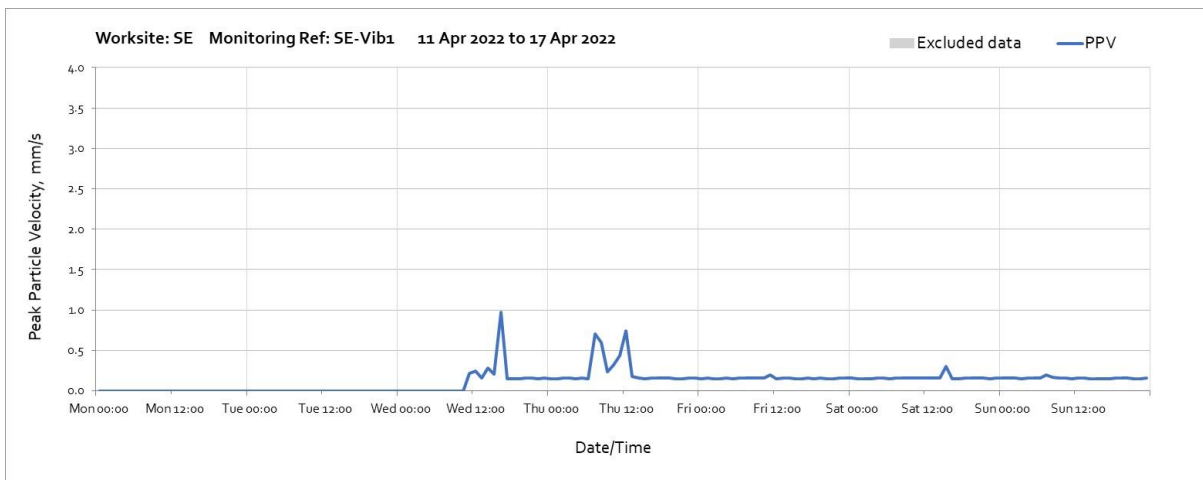




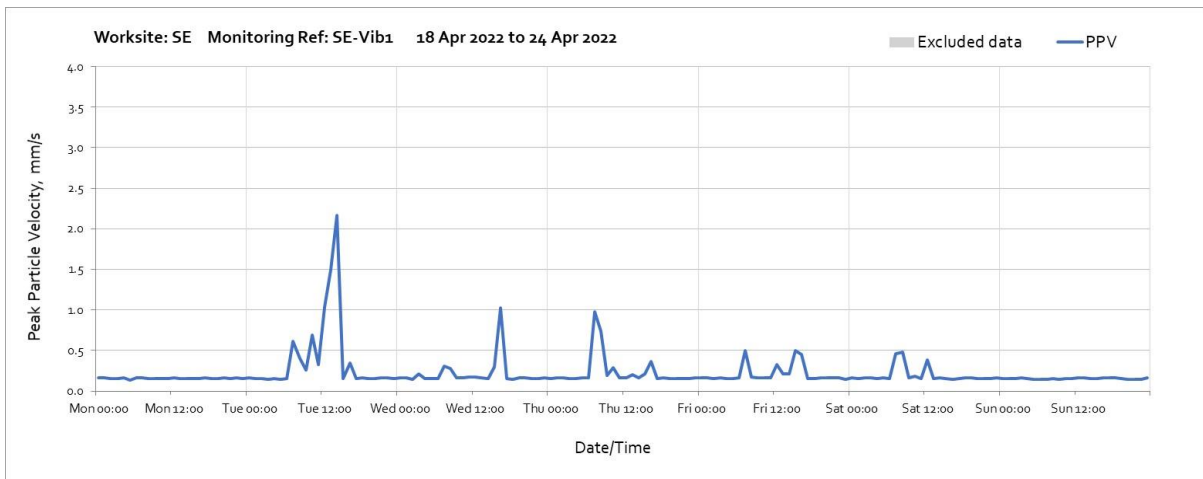
Vibration

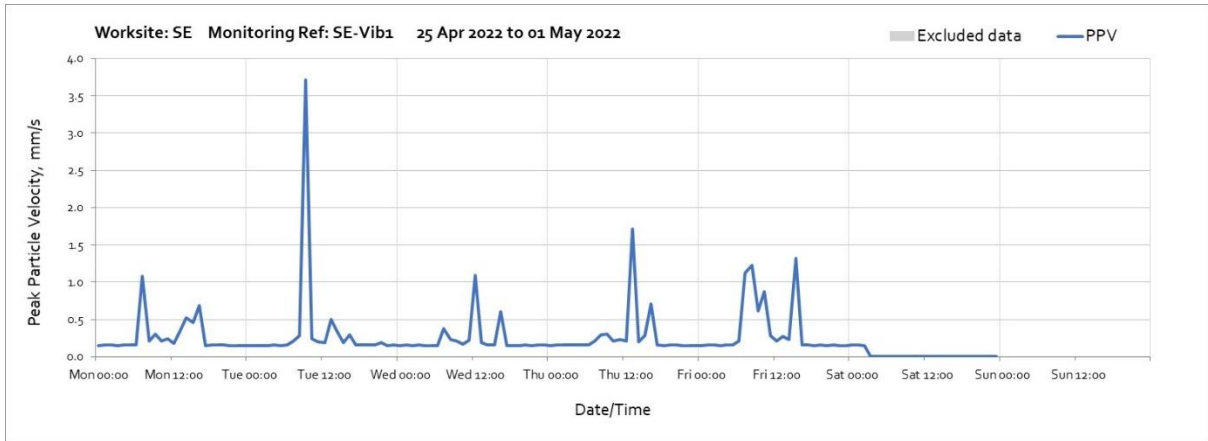
The following graphs show the hourly measured peak particle velocity PPV recorded during the monitoring period. The graphs show the highest PPV of the three orthogonal axes x, y and z. Where high values of PPV were caused by local interference with the vibration monitor, which are not representative 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: SE – Monitoring Ref: SE-Vib 1

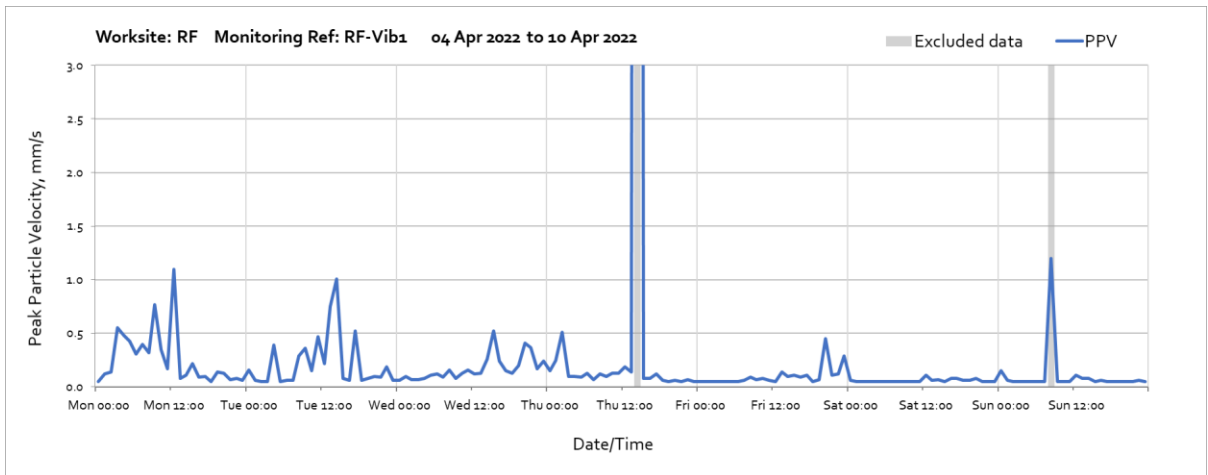
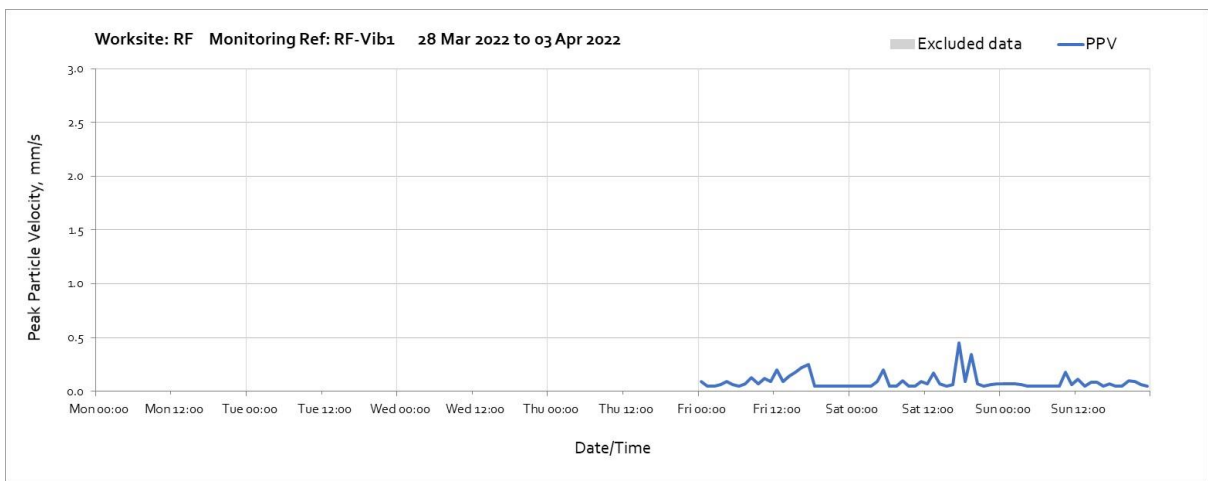


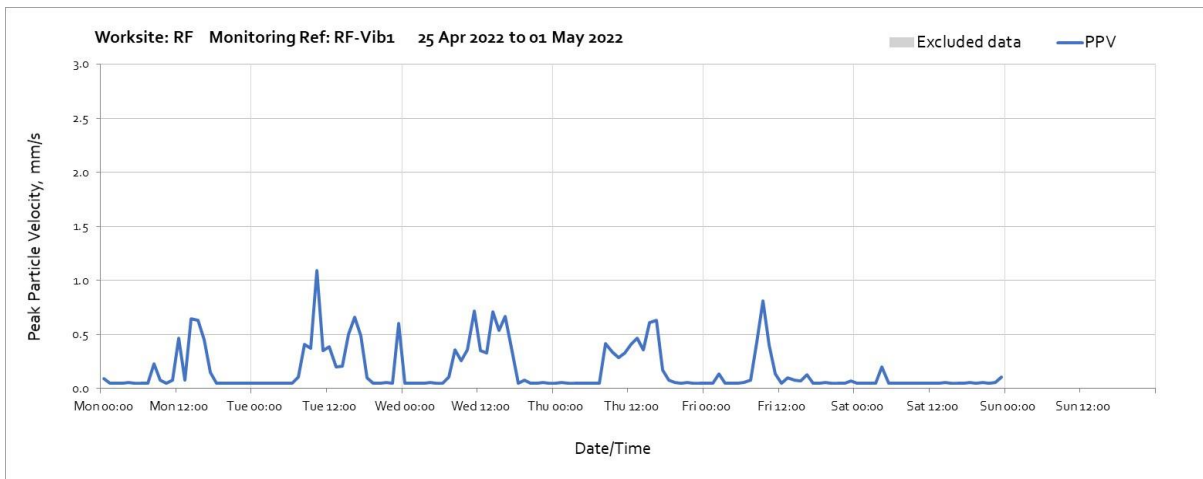
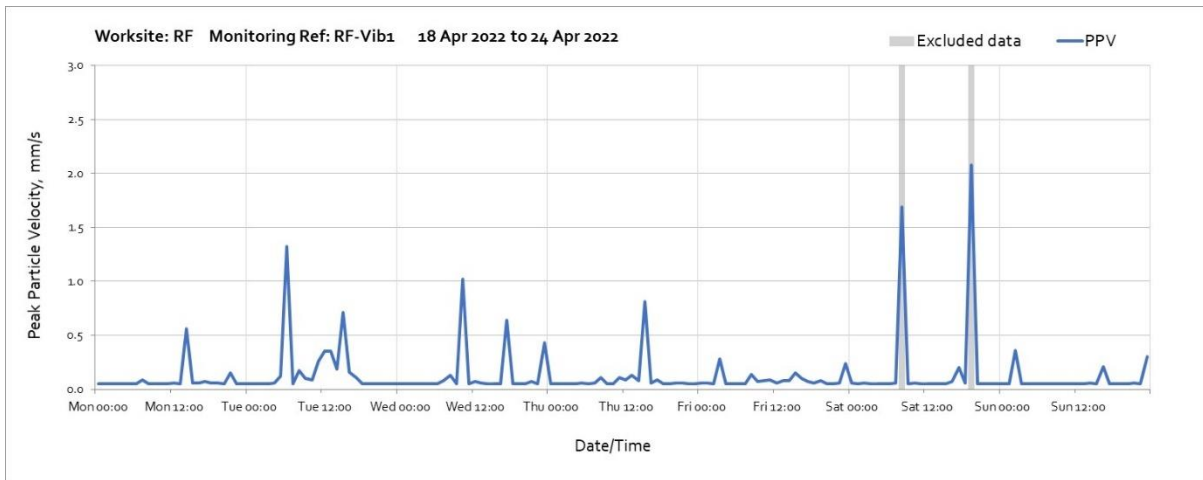
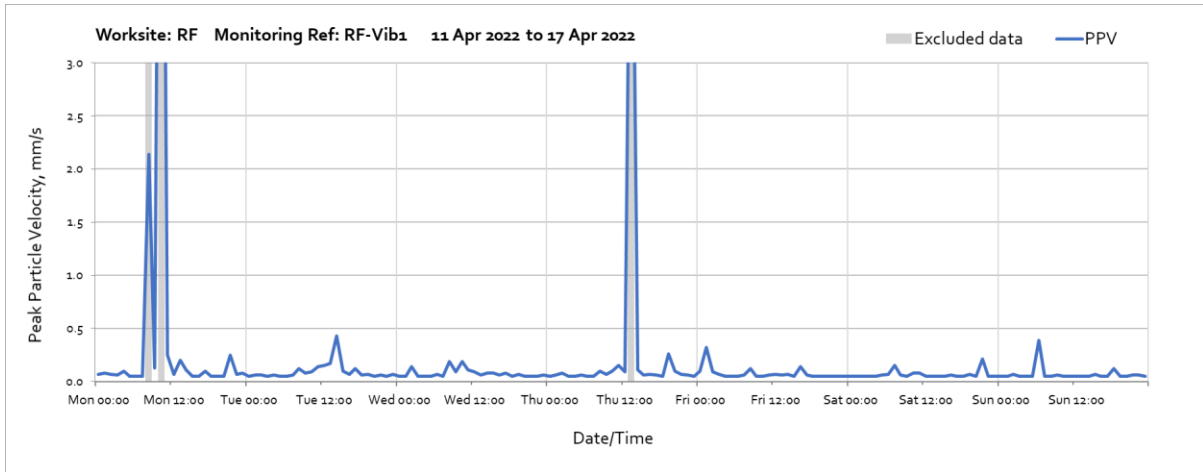
Note: Missing data from the beginning of the month to Wednesday 13th April was due to operational maintenance of the monitoring equipment.



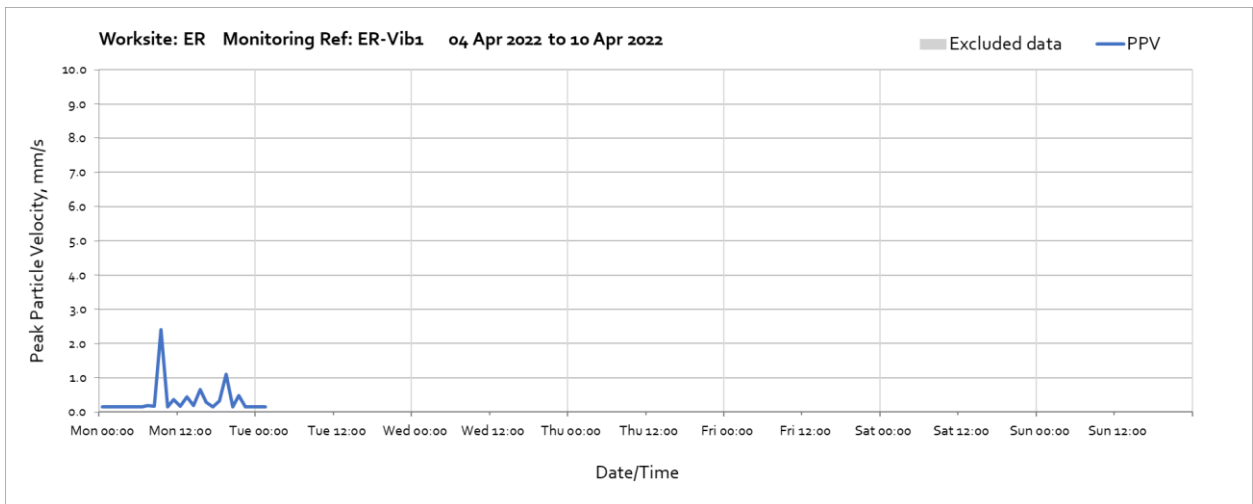
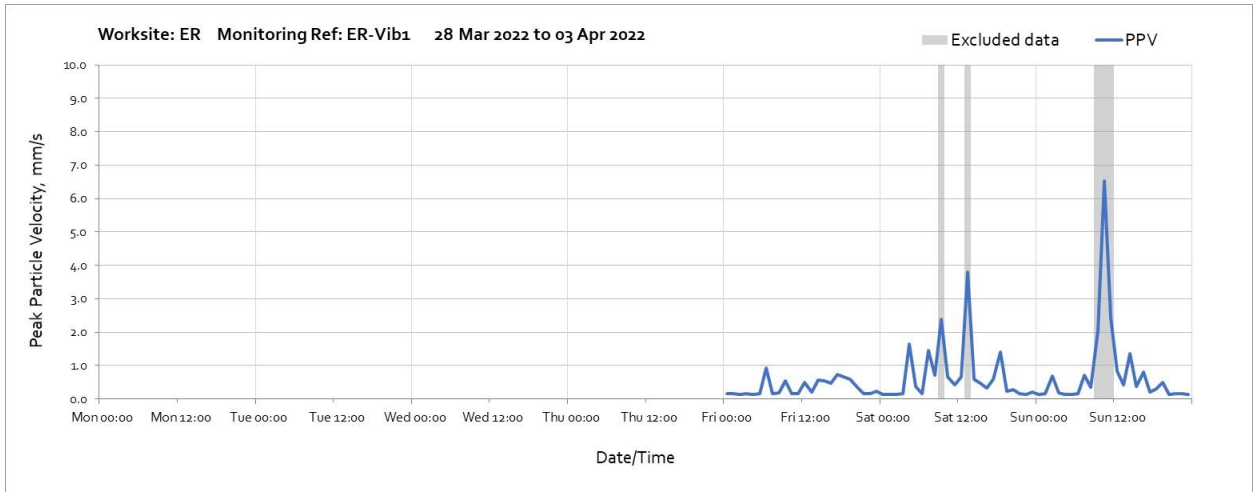


Worksite: RF – Monitoring Ref: RF-Vib 1

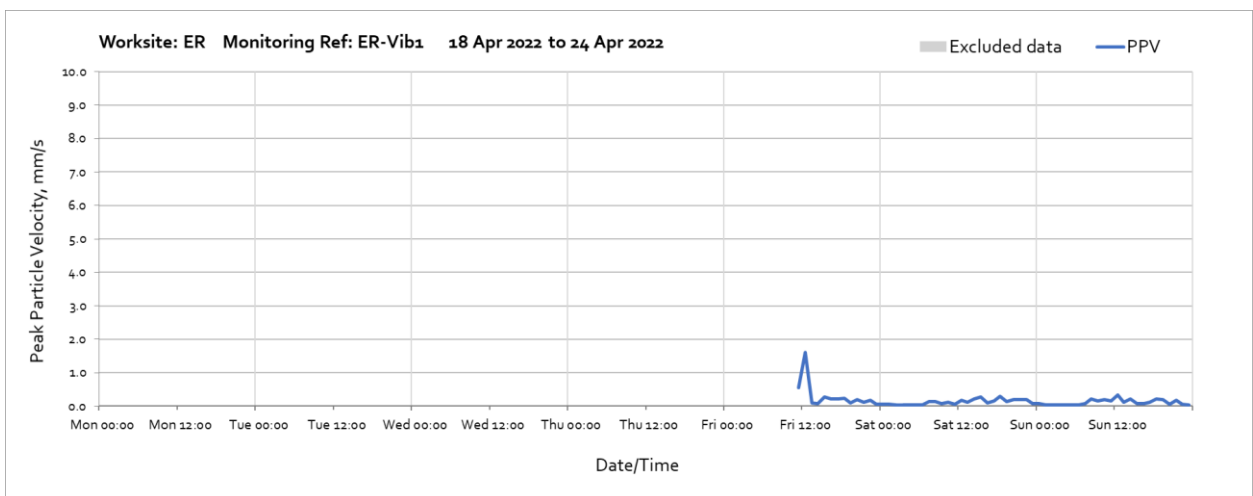




Worksite: ER – Monitoring Ref: ER-Vib 1



Note: Missing data from 02:00 on Tuesday 5th April to 11:00 on Friday 22nd April was due to internal fault of the monitoring equipment. A temporary monitor was installed on Friday 22nd April.



Note: Missing data from 02:00 on Tuesday 5th April to 11:00 on Friday 22nd April was due to internal fault of the monitoring equipment. A temporary monitor was installed on Friday 22nd April.

OFFICIAL

