

## **Construction noise and vibration Monthly Report – May 2018**

### **London Borough of Camden**



**SKANSKA**

<b>Non-technical summary</b>	<b>1</b>
<b>Abbreviations and descriptions</b>	<b>3</b>
<b>1 Introduction</b>	<b>5</b>
1.2 Measurement Locations	7
<b>2 Summary of results</b>	<b>8</b>
2.1 Exceedances of SOAEL	8
2.2 Summary of Measured Noise Levels	11
2.3 Exceedances of Trigger Level	15
2.4 Complaints	15
<b>Appendix A Site Locations</b>	<b>16</b>
<b>Appendix B Monitoring Locations</b>	<b>20</b>
<b>Appendix C Data</b>	<b>25</b>

## List of tables

Table 1: Table of abbreviations	3
Table 2: Monitoring locations	7
Table 3: Summary of exceedances of SOAEL for each time period	8
Table 4: Summary of total exceedances of SOAEL	10
Table 5: Summary of measured dB L <sub>Aeq</sub> data over the monitoring period.	12
Table 6: Summary of exceedances of trigger levels.	15
Table 7: Summary of complaints.	15

# 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 and vibration monitoring carried out within the London Borough of Camden (LBC) during the month of May 2018.

A number of worksites were active during the reporting month in the LBC area. Demolition was undertaken at the DB Cargo worksite (ref. S001-WS01), along with site establishment works at the former Addison Lee site. Construction of staff accommodation and deliveries were underway at the former National Temperance Hospital, 110-122 Hamsptead Road worksite (ref. S003-WS06). Hoarding and taxi ranks construction were undertaken at Euston Square Gardens (west) worksite (ref. S003-WS08). Pre-demolition surveys were carried out at Walkden House worksite (ref. S003-WS03), Drummond Street / Euston Street worksites (ref.: S003-WS07), and the Ibis Hotel, 3 Cardington Street & 1-3 Cobourg Street worksite (ref. S003-WS05). Machinery on and off track were active at Network Rail worksite B. Works to realign the tracks were undertaken by the DB Cargo and in the west side clearance at Network Rail worksites D and E. Further non-intrusive activities were underway at other worksites around Euston Station (worksites ref. S001-WS02, S003-WS01, S003-WS02, S003-WS04, S003-WS06, S003-WS09). Details of works undertaken at each worksite is presented in the report.

Noise monitoring was undertaken in the vicinity of the DB Cargo worksite (ref.: S001-WS01), National Temperance Hospital, 110-122 Hamsptead Road worksite (ref. S003-WS06), Walkden House worksite (ref.: S003-WS03), Drummond Street / Euston Street worksites (ref.: S003-WS07), Ibis Hotel, 3 Cardington Street & 1-3 Cobourg Street worksite (ref. S003-WS05), Euston Square Gardens (west) worksite (ref. S003-WS08) and Network Rail worksites B, C, D, E and F.

Exceedances of the SOAELs were measured at some monitoring positions surrounding worksites S001-WS01, B, C, D, E and F, which were caused by activities at Network Rail on-network HS2 construction sites outside core working hours. No exceedances of S61 trigger levels due to HS2 related works were measured during the monitoring period. However, a total of two complaints were received. The first complaint was regarding delivery of traffic management materials at various worksites outside of core working hours. Following receipt of the complaint future out of hour deliveries were stopped, with activities recommenced during core working hours, and the traffic management contractor re-briefed regarding delivery of materials and working hours. The second complaint was regarding site noise from the DB Cargo worksite and queries about noise insulation installation. Works and noise levels from the worksite were compliant with S61 consent and there had been no exceedances of noise insulation trigger levels.

New noise monitoring installations within the LBC are in place at Hampstead Road (monitoring at N017 commenced on the 18<sup>th</sup> May), Stanhope Street (monitoring at N021 commenced on the 17<sup>th</sup> May) and the Regents Park Lorry Holding Area (monitoring at N026 commenced on the 31<sup>st</sup> May), with further installations to follow in advance of significant demolition and construction activities. Resulting data will be incorporated within future monitoring reports.



# Abbreviations and descriptions

The abbreviations, descriptions and project terminology used within this report can be found in the Project Dictionary (HS2-HS2-PM-GDE-000-000002).

Table 1: Table of abbreviations

Acronym	Meaning
$L_{Aeq,T}$	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 $L_{pAeq,T}$	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.
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 +2.5 to +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.
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.
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.
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.
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.

Acronym	Meaning
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 $\text{m/s}^{1.75}$ .

# 1 Introduction

1.1.1 The nominated undertaker 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.

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 London Borough of Camden (LBC) for the period 1<sup>st</sup> to 31<sup>st</sup> May 2018.

1.1.2 Active construction sites in the local authority area during this period include:

- Network Rail on-networks HS2 preparatory works: worksite ref. B (see plan 1 in Appendix A)
  - Works activities include movements of machineries on and off the tracks.
- Network Rail on-networks HS2 preparatory works: worksite ref. D and E (see plan 2 in Appendix A)
  - Works activities include drainage excavation works, delivery of S&C units, removal of scrap from Line E, installation of 2011B Points, creation of Greenfield Site.
- DB Cargo shed and adjacent land on Granby Terrace, worksite ref. S001-WS01 (see plan 2 in Appendix A)
  - Works activities include demolition. Works at the former Addison Lee site include site preparation in advance of installation of accommodation.

- 132 and 140 Hampstead Road and Petrol Station, worksite ref. S001-WS02 (see plan 3 in Appendix A)
  - Works activities include pre-demolition surveys.
- St James' Gardens, worksite ref. S003-WS01 (see plan 3 in Appendix A)
  - Works activities include archaeological surveys.
- National Temperance Hospital, Insull Wing, worksite ref. S003-WS02 (see plan 3 in Appendix A)
  - Works activities include pre-demolition surveys.
- Walkden House, 67-75 & 77-79 Euston Rd, worksite ref. S003-WS03 (see plan 3 in Appendix A)
  - Works activities include pre-demolition surveys.
- Thistle Hotel, Cardington Street, worksite ref. S003-WS04 (see plan 3 in Appendix A)
  - Works activities include pre-demolition surveys.
- Ibis Hotel, 3 Cardington Street & 1-3 Cobourg Street, worksite ref. S003-WS05 (see plan 3 in Appendix A)
  - Works activities include pre-demolition surveys
- Former National Temperance Hospital, 110-122 Hampstead Road, worksite ref. S003-WS06 (see plan 3 in Appendix A)
  - Site activities include construction of staff accommodation and deliveries.
- 93-103 Drummond Street, 11-15 Melton Street, 54-64 Euston Street, 69 Cobourg Street, worksite ref. S003-WS07 (see plan 3 in Appendix A)
  - Works activities include pre-demolition surveys.
- Euston Square Gardens (west), worksite ref. S003-WS08 (see plan 3 in Appendix A)
  - Works activities hoarding and taxi rank construction.
- One Euston Square, 40 Melton Street, Grant Thornton House, 22 Melton Street, worksite ref. S003-WS09 (see plan 3 in Appendix A)
  - Works activities include site possession and hoarding.

- 1.1.3 The applicable standards, guidance, and monitoring methodology is outlined in the construction noise and vibration monitoring methodology report which can be found at the following location  
[www.gov.uk/government/publications/monitoring-noise-and-vibration-on-the-hs2-phase-one-route](http://www.gov.uk/government/publications/monitoring-noise-and-vibration-on-the-hs2-phase-one-route).

## 1.2 Measurement Locations

- 1.2.1 The following table summarises the position of noise monitoring installations within the LBC area in May 2018.
- 1.2.2 Maps showing the position of noise monitoring installations are presented in Appendix B.

Table 2: Monitoring locations

Worksite Reference	Measurement Reference	Address
S001-WS01	N001	Park Village East lamppost #1 (external to Cubitt Court, 100 Park Village East)
	N002	Park Village East lamppost #2 (external to Richmond Court)
	N003	Park Village East lamppost #9 (external to Silsoe House)
S003-WS08	N007	Royal College of General Practitioners, Melton Street
S003-WS03	N008	Stephenson's Way lamppost (external to RCGP)
	N011	Euston Street lamppost #4 (external to 82 Euston Street)
S003-WS07	N012	Drummond Street lamppost #14 (opposite to 92-94 Drummond Street)
S003-WS05	N014	Starcross Street lamppost (external to Exmouth Arms)
S003-WS06	N017	Hampstead Road, Lamppost #48
S001-WS02	N018	Outside replacement housing, Hampstead Road
	N019	Outside Cartmel, Hampstead Road
Not near worksite	N020	Mackworth Street lamppost #1
Not near worksite	N021	Stanhope Street, Lamppost #2
Not near worksite	N025	External to #3 Prince Albert Road
Not near worksite	N026	Thames Water Compound
B	JC	Juniper Crescent, London, NW1 8HA
C	N022	External to #34 Mornington Terrace
	N024	External to Park Village Studios, Park Village East

Worksite Reference	Measurement Reference	Address
D	N004	Mornington Terrace lamppost #7 (junction of Mornington Terrace, Mornington Place and Clarkson Row)
	MT	13 Mornington Terrace, Kings Cross, London, NW1 7RR
E	GT	5A Granby Terrace, Kings Cross, London, NW1 3SA
F	N023	Amphill Estate lighting column #21, Hampstead Road
	BS	Roof of Stockbeck House, Barnby Street, Kings Cross, London, NW1 2RS

## 2 Summary of results

### 2.1 Exceedances of SOAEL

- 2.1.1 The significant observed adverse effect levels (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."
- 2.1.2 Where construction noise levels exceed the SOAEL, relevant periods will be identified and summary statistics provided in order to evaluate ongoing qualification for noise insulation and temporary rehousing.
- 2.1.3 Table 3 presents a summary of recorded exceedances of the SOAEL due to HS2 related construction noise at each measurement location over the reporting period, including the number of exceedances during each time period.

Table 3: Summary of exceedances of SOAEL for each time period

Worksite Reference	Measurement Reference	Site Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of SOAEL
S001-WS01	N001	DB Cargo shed and adjacent land on Granby Terrace	Sunday	0700-2200	1
	N002	DB Cargo shed and adjacent land on Granby Terrace	Night	0700-2200	1

Worksite Reference	Measurement Reference	Site Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of SOAEL
	N003	DB Cargo shed and adjacent land on Granby Terrace	Night Sunday	2200-0700 0700-2200	1 1
S003-WS08	N007	Euston Square Gardens (west)	All days	All periods	No exceedance
S003-WS03	N008	Walkden House, 67-75 & 77-79 Euston Rd	All days	All periods	No exceedance
	N011	Walkden House, 67-75 & 77-79 Euston Rd	All days	All periods	No exceedance
S003-WS07	N012	93-103 Drummond Street, 11-15 Melton Street, 54-64 Euston Street, 69 Cobourg Street	All days	All periods	No exceedance
S003-WS05	N014	Ibis Hotel, 3 Cardington Street & 1-3 Cobourg Street	All days	All periods	No exceedance
S003-WS06	N017	Hampstead Road, Lamppost #48	All days	All periods	No exceedance
S001-WS02	N018	132 and 140 Hampstead Road and Petrol Station	All days	All periods	No exceedance
	N019	132 and 140 Hampstead Road and Petrol Station	All days	All periods	No exceedance
Not near worksite	N020	Mackworth Street lamppost #1	All days	All periods	No exceedance
Not near worksite	N021	Stanhope Street, Lamppost #2	All days	All periods	No exceedance
Not near worksite	N025	External to #3 Prince Albert Road	All days	All periods	No exceedance
Not near worksite	N026	Thames Water Compound	All days	All periods	No exceedance
B	JC	Juniper Crescent	Night	2200-0700	4
C	N022	External to #34 Mornington Terrace	Night	2200-0700	1
	N024	External to Park Village Studios, Park Village East	Saturday	1400-2200	1
D	N004	DB Cargo shed and adjacent land on Granby Terrace	Night Sunday	2200-0700 0700-2200	1 2

Worksite Reference	Measurement Reference	Site Address	Day (Weekday, Saturday, Sunday, Night)	Time period	Number of exceedances of SOAEL
	MT	Mornington Terrace	Saturday	2200-0700	2
E	GT	Granby Terrace	Night Sunday	2200-0700 0700-2200	1 1
F	N023	Ampthill Estate lighting column #21, Hampstead Road	Sunday	0700-2200	1
	BS	Barnby Street	All days	All periods	No exceedance

2.1.4 Over the reporting period the SOAEL was exceeded at a number of measurement locations in the vicinity of worksites S001-WS01, B, C, D, E and F. These were caused by activities at Network Rail on-network HS2 construction sites mainly during night-time periods and during weekend days. Outside of these times any exceedances of the SOAEL were caused by the underlying ambient noise levels or other construction activities not related to HS2, rather than being attributable to HS2 construction noise.

2.1.5 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 4 and may be lower than the total sum of individual exceedances reported in Table 3 for each location.

Table 4: Summary of total exceedances of SOAEL

Worksite Reference	Measurement Reference	Site Address	Total of SOAEL exceedances in the month
S001-WS01	N001	DB Cargo shed and adjacent land on Granby Terrace	1
	N002	DB Cargo shed and adjacent land on Granby Terrace	1
	N003	DB Cargo shed and adjacent land on Granby Terrace	2
B	JC	Juniper Crescent	4
C	N022	External to #34 Mornington Terrace	1
	N024	External to Park Village Studios, Park Village East	1



Worksite Reference	Measurement Reference	Site Address	Total of SOAEL exceedances in the month
D	N004	DB Cargo shed and adjacent land on Granby Terrace	2
	MT	Mornington Terrace	2
E	GT	Granby Terrace	1
F	N023	Amphill Estate lighting column #21, Hampstead Road	1

## 2.2 Summary of Measured Noise Levels

- 2.2.1 Table 5 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.
- 2.2.2 Appendix C presents graphs of the noise monitoring data over the month for each of the measurement locations. Data presented includes 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). The full data set for the monitoring equipment can be found at the following location [www.DATA.gov.uk](http://www.DATA.gov.uk).
- 2.2.3 Noise monitoring in the vicinity of worksites S001-WS01, S003-WS08, B, D and E is considered representative of HS2 Area South works during periods of construction works. Other worksites were not considered to be giving rise to substantial levels of HS2 related construction noise, with the measured noise levels largely dominated by the underlying ambient noise, acknowledging that intermittent HS2 works may on occasion be taking place within the area.

Table 5: Summary of measured dB L<sub>Aeq</sub> data over the monitoring period.

Worksite Reference	Measurement Reference	Site Address	Free-field or Façade measurement	Weekly Average L <sub>Aeq,T</sub> (highest day L <sub>Aeq,T</sub> ) *					Saturday Average L <sub>Aeq,T</sub> (highest day L <sub>Aeq,T</sub> ) *					Sunday / Public Holiday Average L <sub>Aeq,T</sub> (highest day L <sub>Aeq,T</sub> ) *	
				0700 -0800	0800 -1800	1800 -1900	1900 -2200	2200 -0700	0700 -0800	0800 -1300	1300 -1400	1400 -2200	2200 -0700	0700 -2200	2200 -0700
S001-WS01	N001	External to Cubitt Court, 100 Park Village East	Free-field	60.5 (63.6)	65.7 (72.9)	62.1 (70.1)	59.8 (64.8)	55.7 (61.0)	58.7 (61.6)	67.8 (68.9)	60.6 (61.4)	60.6 (65.7)	56.2 (61.7)	58.9 (66.9)	54.6 (59.1)
	N002	Richmond Court, Park Village East	Free-field	61.8 (64.1)	62.8 (64.7)	63.4 (71.1)	61.2 (64.0)	57.3 (62.8)	60.1 (61.3)	62.1 (66.0)	62.0 (63.9)	62.1 (66.1)	58.1 (63.8)	60.4 (64.4)	56.4 (61.2)
	N003	Silsoe House, Park Village East	Free-field	62.0 (64.1)	63.1 (66.7)	63.7 (69.7)	61.5 (64.6)	57.8 (63.8)	59.7 (60.1)	61.6 (62.3)	62.5 (64.5)	62.6 (67.8)	58.6 (64.0)	60.5 (64.7)	56.9 (61.3)
S003-WS08	N007	RCGP, Melton Street	Free-field	68.3 (69.8)	69.6 (71.6)	68.5 (70.5)	67.9 (71.0)	65.4 (70.4)	66.9 (68.7)	68.2 (69.0)	68.0 (68.1)	68.1 (70.1)	65.2 (68.5)	66.8 (70.2)	64.9 (68.5)
S003-WS03	N008	RCGP Stephenson Way	Free-field	62.6 (67.3)	62.0 (64.5)	57.5 (64.0)	57.5 (64.9)	58.0 (74.9)	57.0 (58.6)	56.9 (58.8)	55.4 (56.0)	56.2 (58.7)	57.2 (72.0)	55.5 (60.9)	59.3 (71.3)
	N011	Outside #82 Euston Street	Free-field	60.1 (63.3)	62.1 (65.2)	62.1 (67.7)	60.3 (67.2)	57.0 (67.0)	57.4 (58.4)	61.2 (65.8)	59.3 (60.3)	59.8 (65.1)	56.4 (61.9)	57.8 (60.8)	55.6 (60.4)
S003-WS07	N012	Opposite #92-94 Drummond Street	Free-field	59.8 (61.8)	63.8 (77.4)	60.5 (61.9)	59.4 (64.7)	55.7 (61.7)	57.5 (58.4)	58.2 (59.4)	58.7 (58.9)	59.3 (61.9)	56.2 (62.4)	58.2 (62.4)	55.7 (66.5)
S003-WS05	N014	Starcross Street	Free-field	54.5 (61.2)	58.9 (70.9)	61.7 (66.9)	61.1 (67.9)	54.2 (68.3)	54.5 (56.6)	55.9 (59.6)	57.1 (60.6)	58.5 (64.2)	52.9 (60.7)	54.6 (61.4)	52.7 (61.6)
S003-WS06	N017	Hampstead Road, Lampost #48	Free-field	72.1 (73.7)	73.4 (75.7)	72.6 (74.8)	72.1 (75.4)	70.6 (76.2)	70.4 (70.5)	73.0 (74.5)	72.3 (72.3)	71.7 (73.1)	72.5 (78.3)	71.0 (74.2)	69.4 (71.2)
S001-WS02	N018	Outside replacement housing, Hampstead Road	Free-field	71.6 (74.3)	73.6 (77.0)	73.3 (75.7)	72.3 (75.1)	71.0 (78.1)	71.0 (73.2)	75.3 (84.0)	72.5 (73.3)	72.6 (75.7)	71.3 (78.5)	71.9 (81.8)	69.4 (71.9)

Worksite Reference	Measurement Reference	Site Address	Free-field or Façade measurement	Weekly 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
	N019	Outside Cartmel, Hampstead Road	Free-field	70.9 (73.8)	71.4 (73.9)	72.2 (74.3)	71.2 (73.7)	70.1 (75.3)	70.0 (70.8)	70.9 (71.6)	71.2 (71.5)	72.4 (75.6)	70.6 (75.1)	70.2 (73.9)	69.3 (73.2)
-	N020	Mackworth Street	Free-field	51.7 (54.5)	55.2 (62.7)	56.4 (69.9)	52.9 (58.2)	50.1 (65.2)	50.4 (51.0)	51.6 (53.3)	52.5 (52.9)	57.0 (67.7)	50.6 (57.5)	52.0 (58.0)	50.2 (63.3)
-	N021	Stanhope Street, Lampost #2	Free-field	59.9 (63.9)	63.8 (68.1)	60.9 (65.7)	59.7 (64.3)	57.9 (68.1)	57.2 (58.3)	63.1 (65.2)	60.5 (60.5)	60.2 (65.6)	57.1 (64.0)	57.9 (62.7)	54.1 (59.0)
-	N025	External to #3 Prince Albert Road	Free-field	67.5 (68.3)	67.6 (69.9)	67.1 (71.0)	66.7 (71.9)	64.9 (71.6)	66.0 (66.4)	66.5 (68.6)	67.3 (68.8)	67.5 (71.5)	65.8 (69.8)	65.1 (68.5)	64.1 (68.5)
-	N026 <sup>(1)</sup>	Thames Water Compound	Free-field	56.6 (56.6)	59.1 (59.1)	- -	56.8 (58.4)	53.2 (55.4)	- -	- -	- -	- -	- -	- -	- -
B	JC	Juniper Crescent, London, NW1 8HA	Free-field	68.4 (70.2)	68.2 (70.0)	69.0 (71.6)	68.2 (70.7)	63.8 (69.0)	66.5 (67.0)	67.2 (67.5)	66.3 (67.1)	66.8 (70.0)	61.7 (67.7)	65.8 (68.4)	62.1 (67.9)
C	N022	External to #34 Mornington Terrace	Free-field	59.0 (61.4)	60.0 (65.0)	60.1 (62.2)	59.4 (64.4)	54.7 (64.4)	56.9 (57.6)	58.3 (59.2)	58.7 (59.3)	59.2 (61.6)	56.6 (67.0)	57.5 (64.2)	53.4 (57.9)
	N024	External to Park Village Studios, Park Village East	Free-field	63.0 (65.9)	64.6 (73.2)	65.4 (70.7)	62.3 (67.7)	59.0 (74.0)	61.2 (63.2)	61.7 (64.2)	61.3 (62.0)	61.8 (65.2)	59.5 (64.2)	60.3 (63.9)	57.3 (62.7)
D	N004	Junction of Mornington Terrace and Clarkson Row	Free-field	63.8 (65.7)	65.1 (67.9)	65.4 (66.8)	65.3 (67.9)	61.8 (71.7)	64.8 (68.1)	64.1 (65.0)	62.5 (63.0)	66.2 (73.3)	61.7 (70.0)	66.3 (72.8)	62.4 (69.9)
	MT	13 Mornington Terrace, Kings Cross, London, NW1 7RR	Free-field	55.6 (59.0)	58.2 (60.7)	58.4 (65.9)	56.9 (65.5)	51.9 (63.8)	53.9 (55.1)	56.4 (57.0)	56.3 (56.8)	56.8 (61.7)	53.7 (59.5)	55.8 (60.0)	50.5 (54.3)
E	GT	5A Granby Terrace, Kings Cross, London, NW1 3SA	Free-field	69.3 (73.7)	70.3 (74.8)	70.2 (72.5)	68.5 (72.0)	63.4 (73.0)	67.1 (70.3)	69.9 (71.1)	66.4 (67.3)	66.9 (72.9)	61.5 (68.2)	67.6 (71.7)	63.6 (70.7)

Worksite Reference	Measurement Reference	Site Address	Free-field or Façade measurement	Weekly 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
F	N023	Amphill Estate, Hampstead Road	Free-field	71.9 (75.1)	71.1 (74.7)	70.7 (72.7)	70.2 (73.9)	68.3 (72.4)	69.5 (69.9)	70.3 (71.7)	69.6 (70.6)	70.7 (73.4)	69.0 (72.8)	69.1 (73.3)	67.9 (71.8)
	BS	Roof of Stockbeck House, Barnby Street, Kings Cross, London, NW1 2RS	Free-field	62.2 (65.8)	64.0 (67.2)	62.2 (64.7)	62.3 (66.2)	58.2 (65.1)	61.0 (63.2)	63.1 (66.0)	60.8 (62.2)	60.4 (63.0)	56.2 (60.4)	61.1 (64.5)	58.2 (63.7)

<sup>(1)</sup> Measurement location N026 commenced on the 31 May 2018, therefore data only for one weekday is available for this monitoring period.

## 2.3 Exceedances of Trigger Level

2.3.1 Table 6 provides a summary of exceedances of the S61 trigger noise levels determined to be due to HS2 related construction measured during the reporting period, along with the findings of any investigation.

Table 6: 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
-	-	-	-	-	-

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

## 2.4 Complaints

2.4.1 Table 7 provides a summary of complaint information related to noise and vibration received during the reporting period, along with the findings of any investigation.

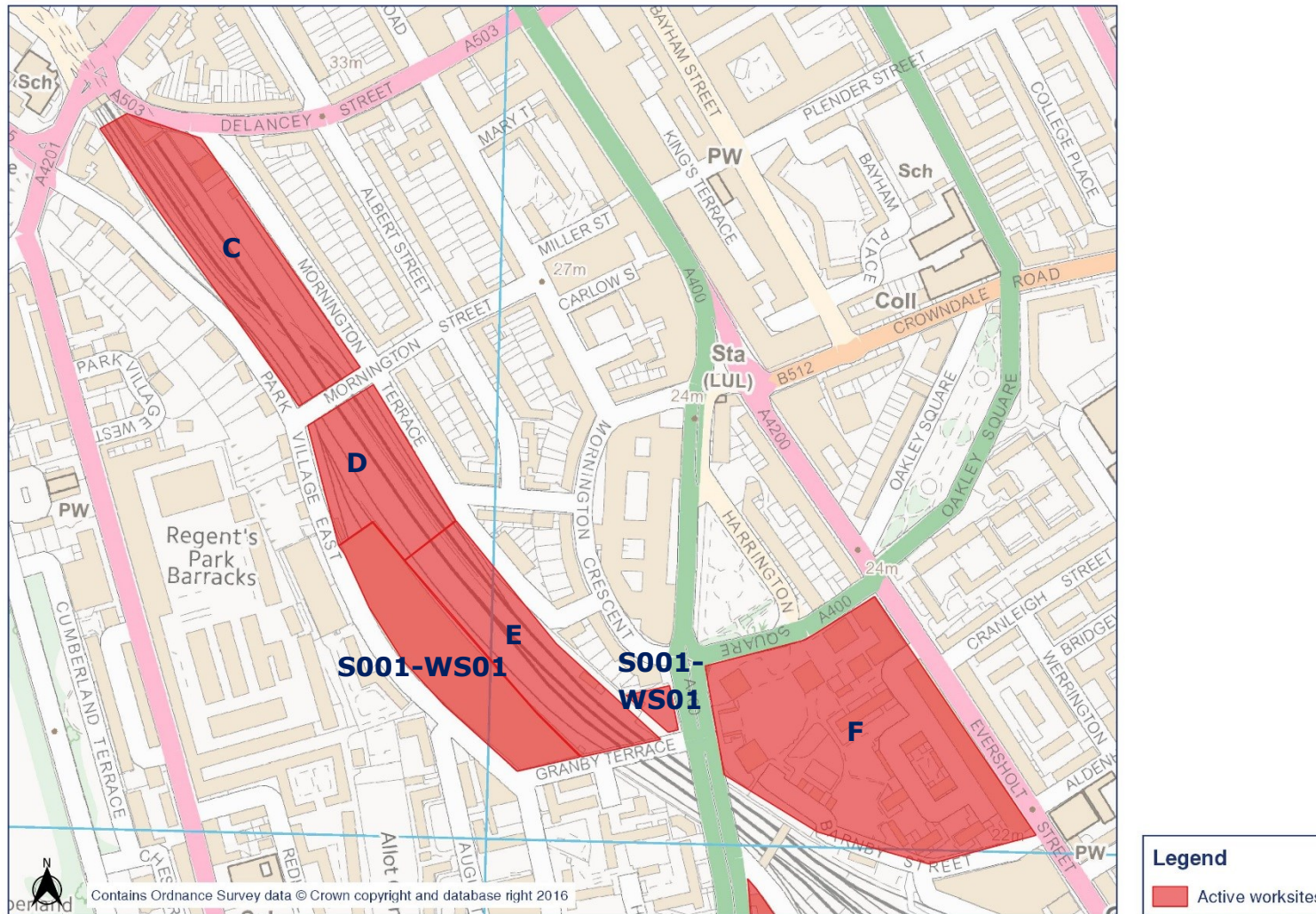
Table 7: Summary of complaints.

Complaint reference number	Worksite reference	Description of complaint	Results of investigation	Actions taken
-	Utilities trial holes - Various	Complaint from resident on Robert Street regarding delivery of traffic management materials (barriers etc) prior to 7am.	Delivery of traffic management materials to site in advance of set up for utilities trial hole.	Delivery stopped on complaint to site operatives, with activity recommenced during core working hours. Traffic Management contractor re-briefed regarding avoiding delivery of materials outside core working hours.
-	S001-WS01	General reference to site noise and railway activities over bank holiday weekend and query regarding noise insulation installation from resident on Park Village East.	Works and noise levels from DB Cargo site were compliant with S61 consent and no exceedance of NI trigger levels due to works at the DB Cargo site.	Construction noise was compliant with S61 and noise insulation trigger levels, no further action taken.

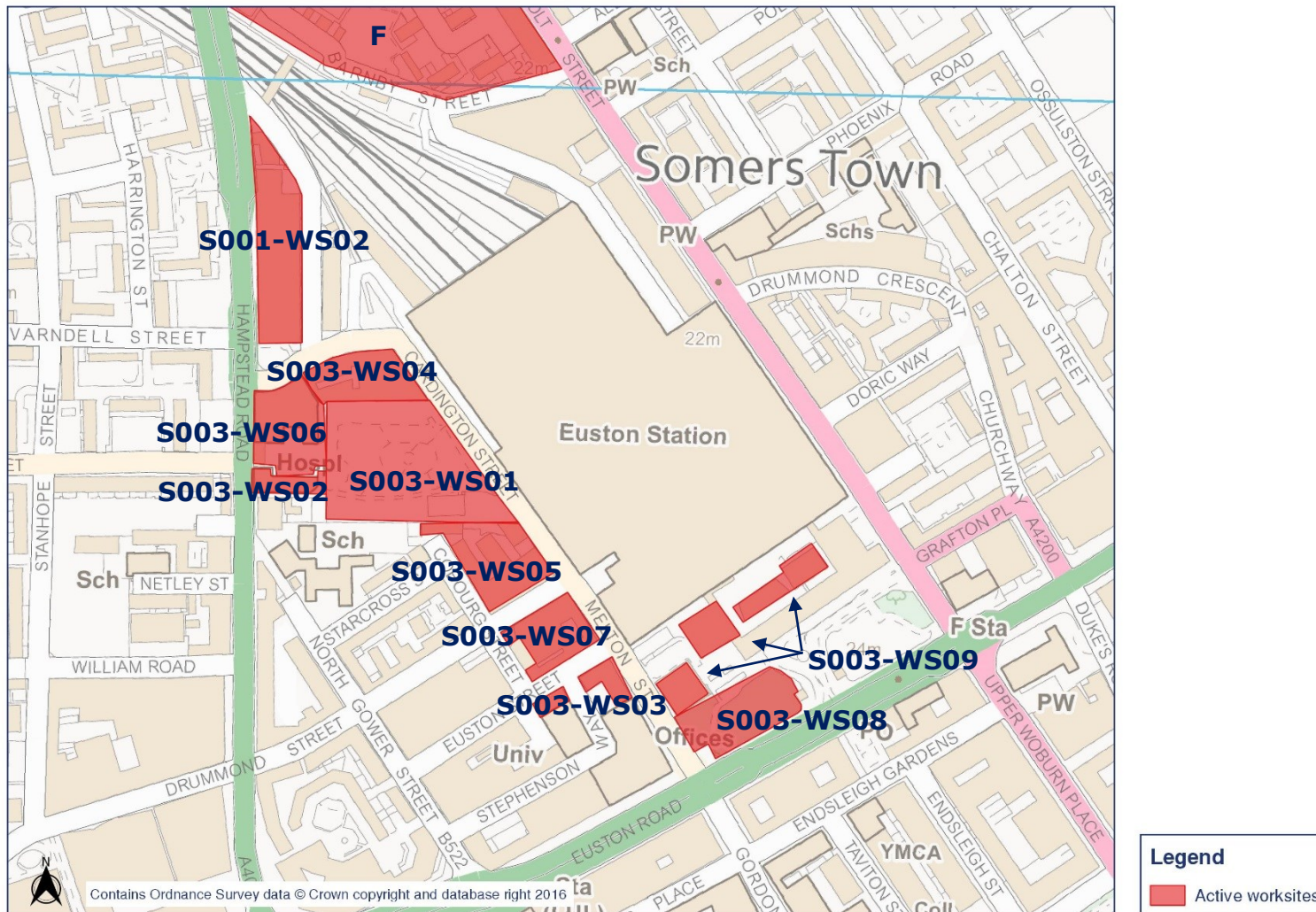
# Appendix A Site Locations



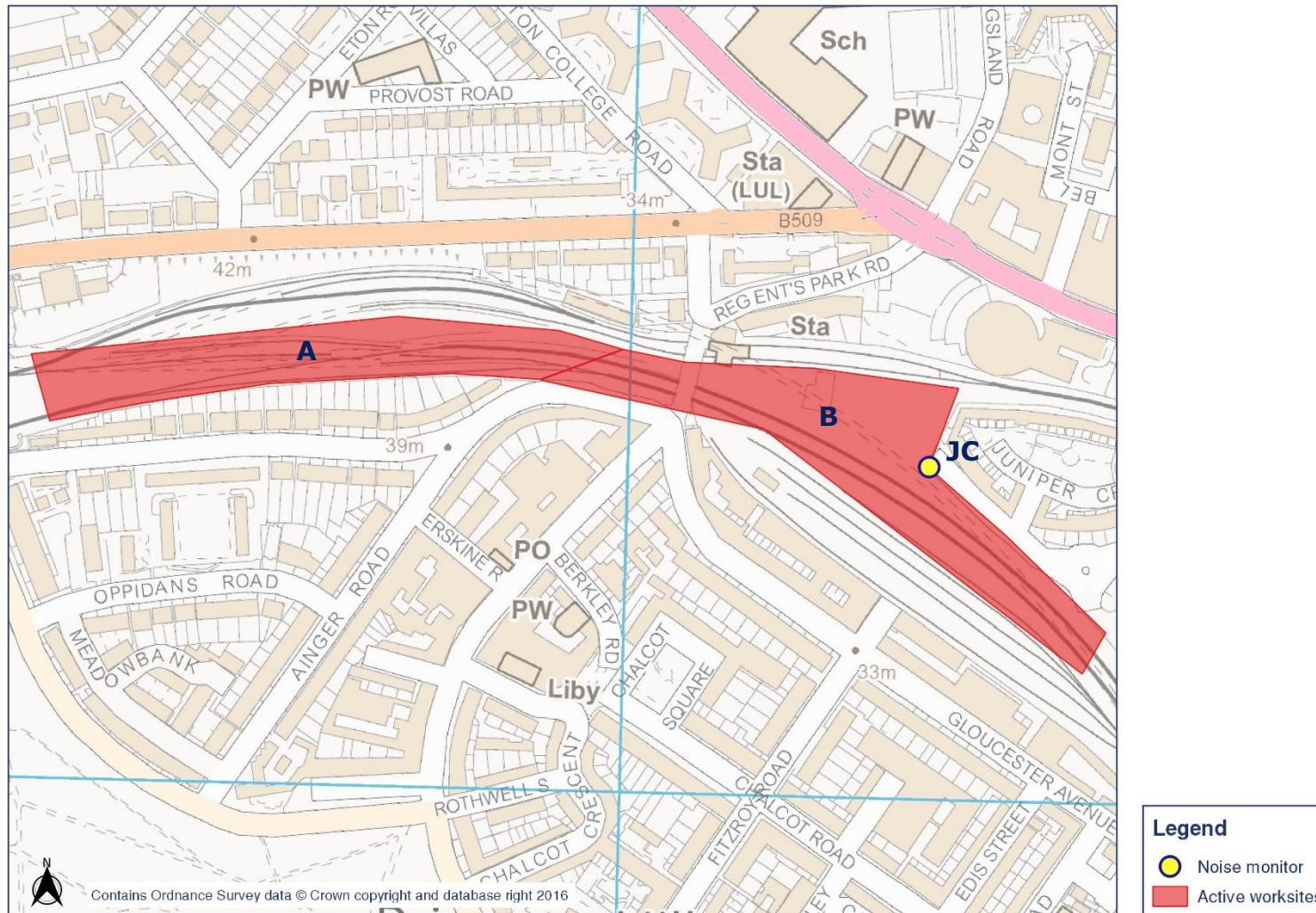




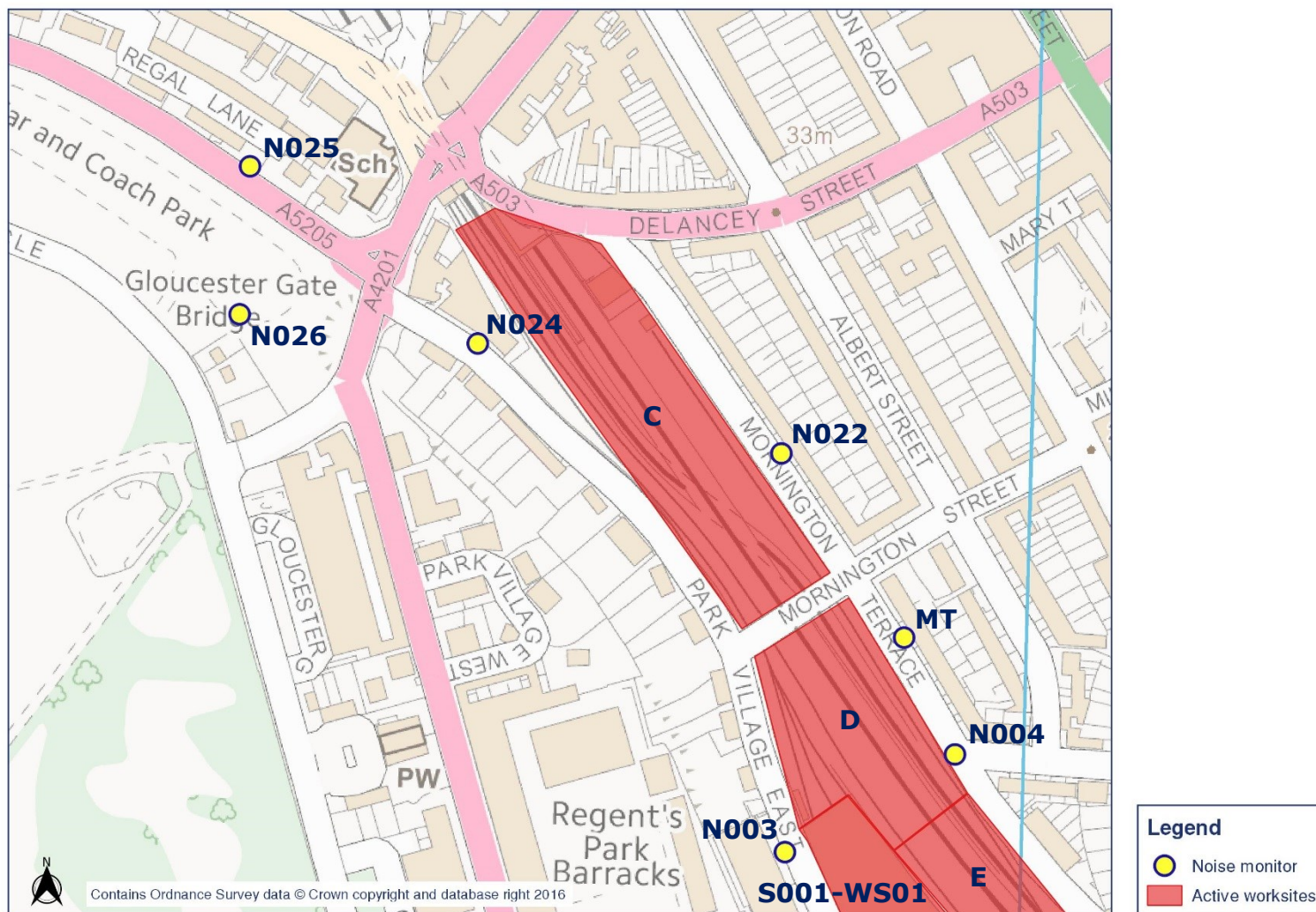


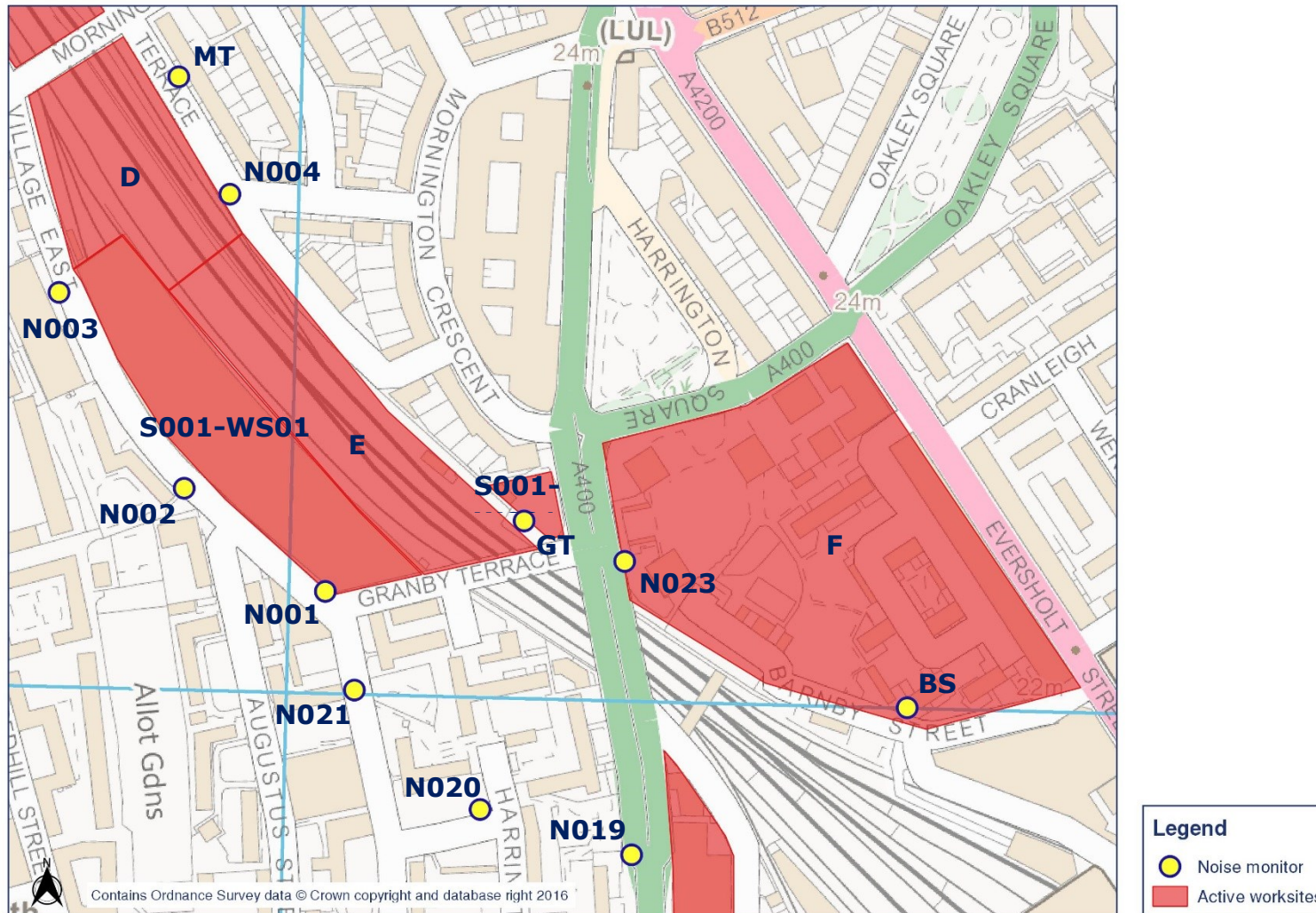


# Appendix B Monitoring Locations

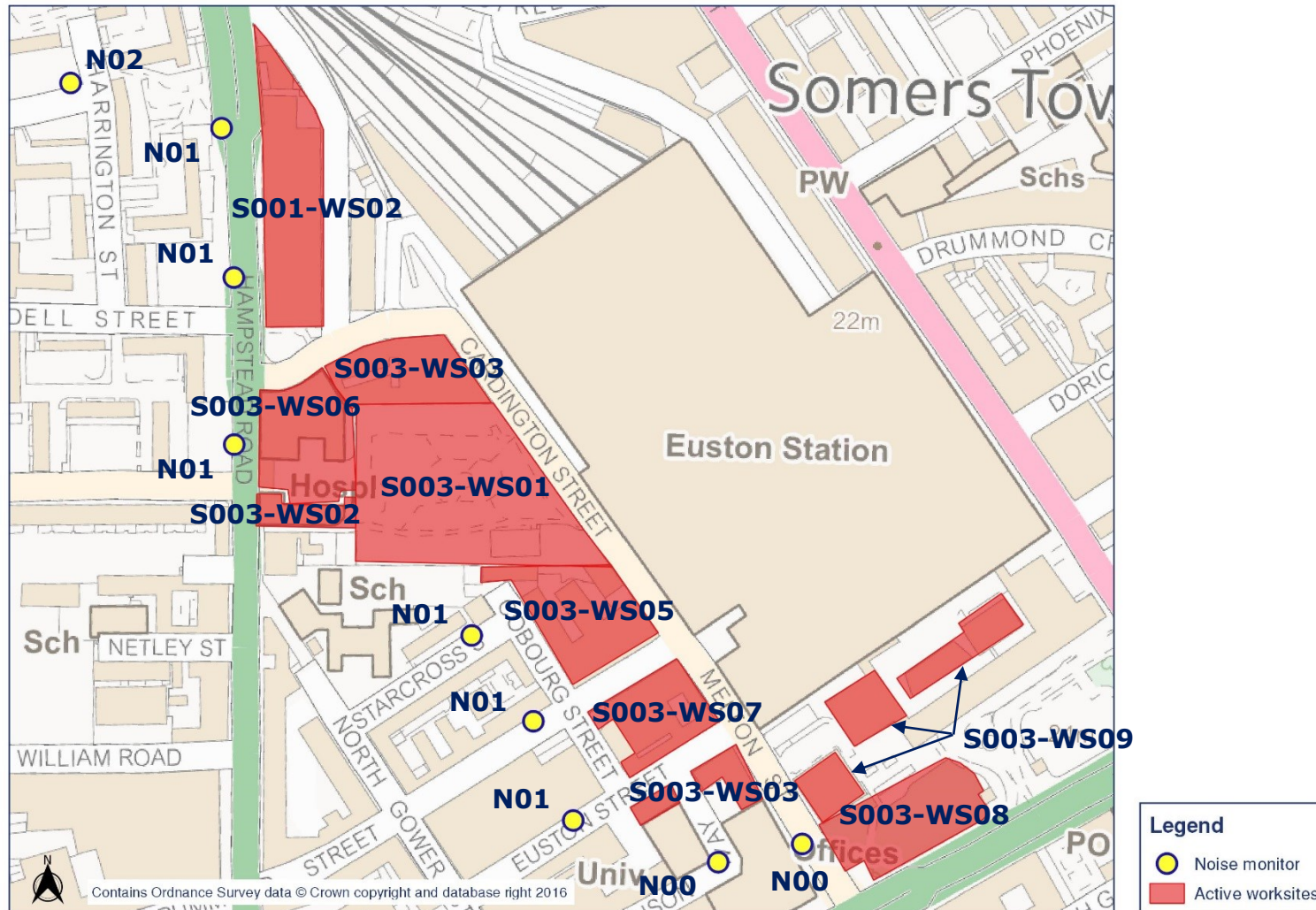








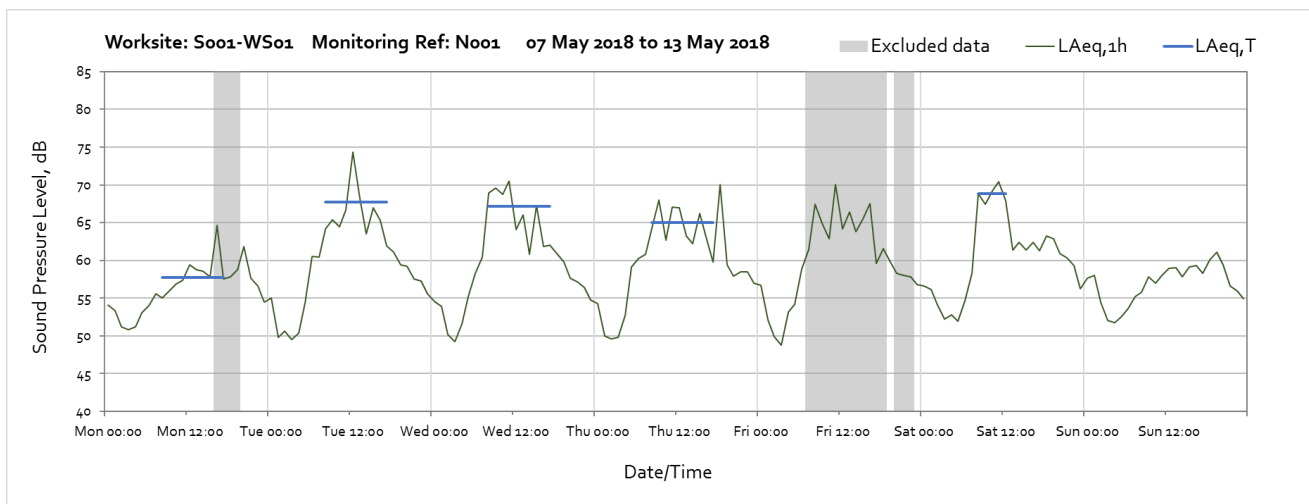
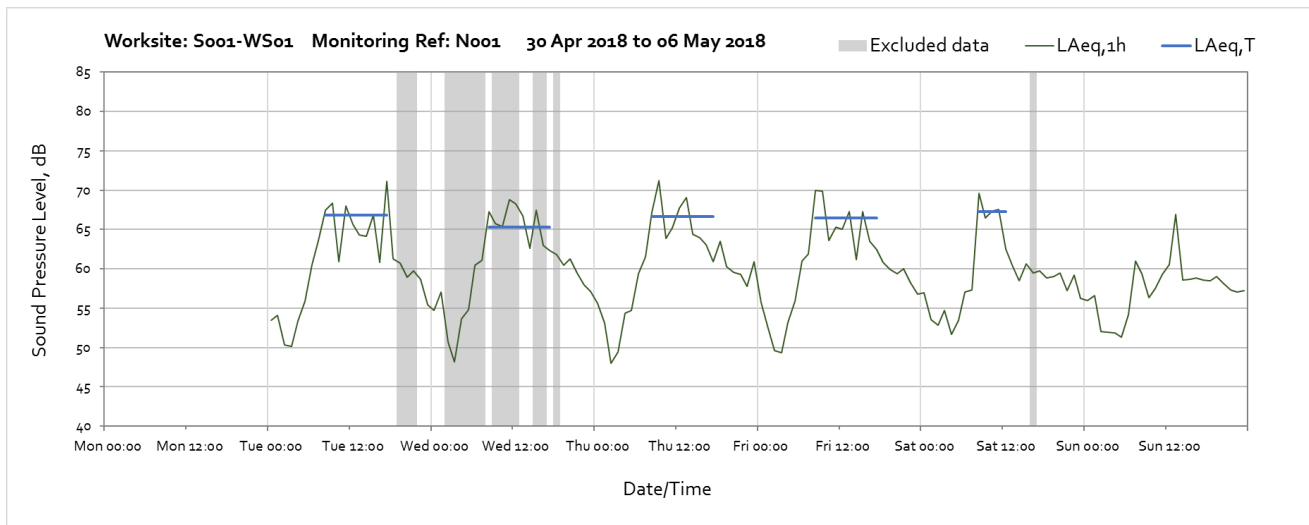


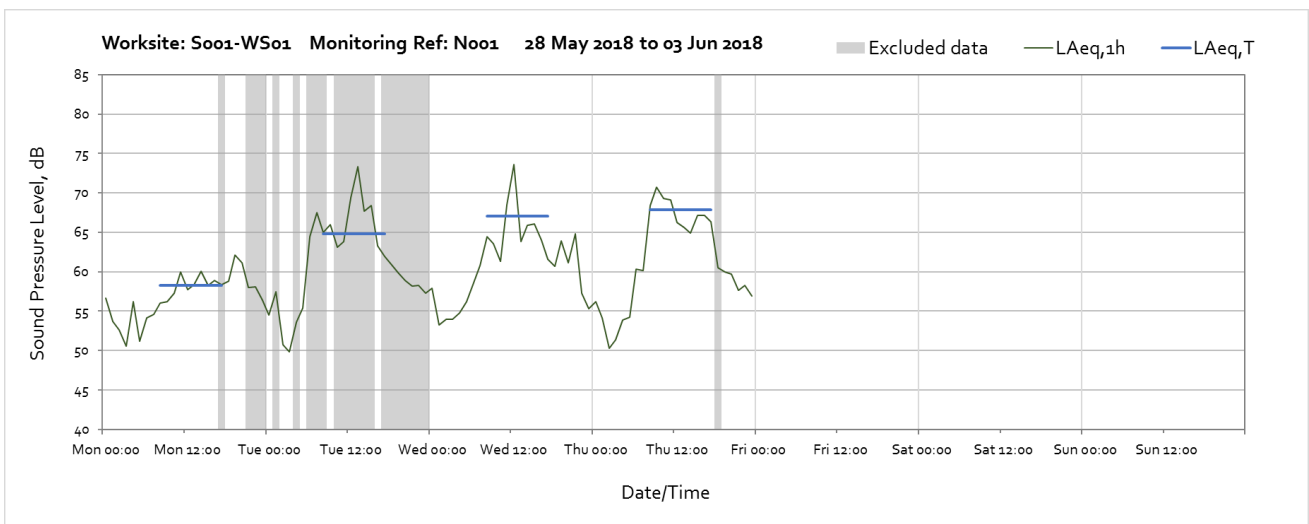
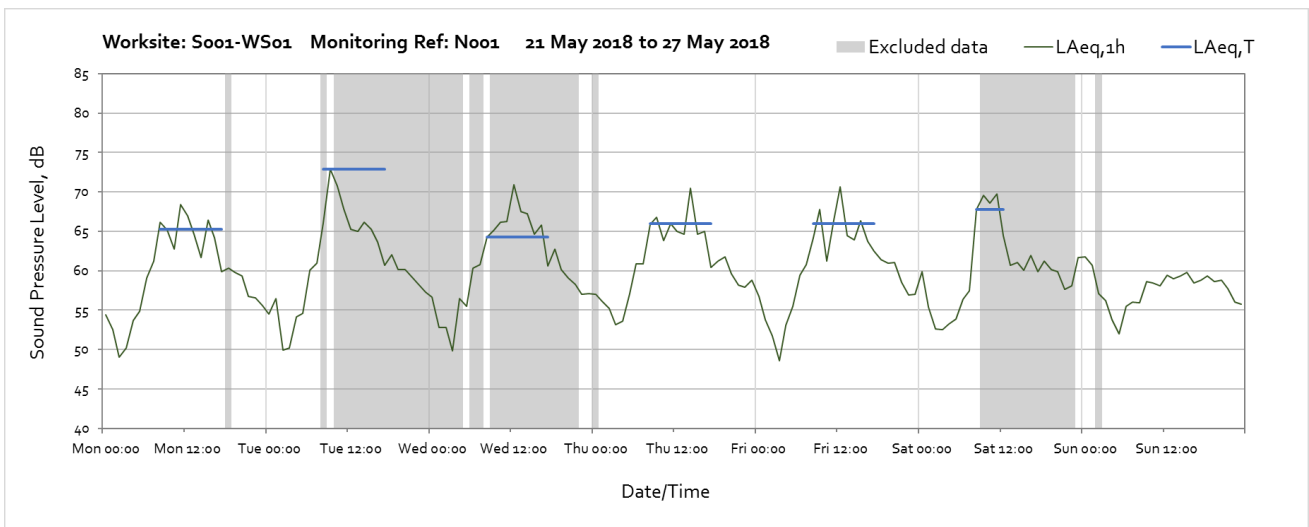
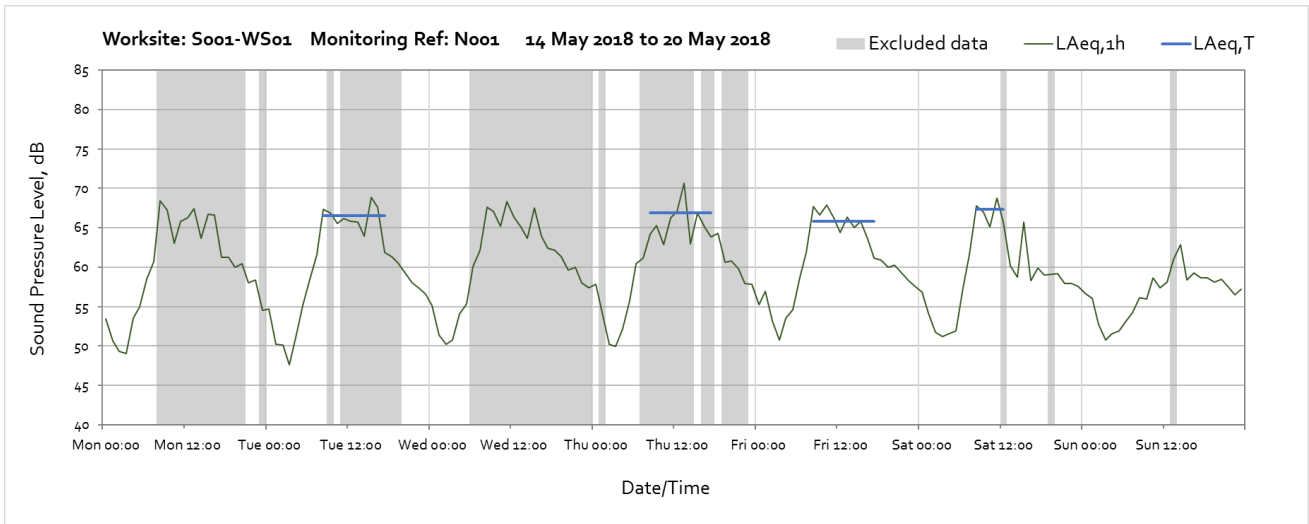


# Appendix C Data

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.

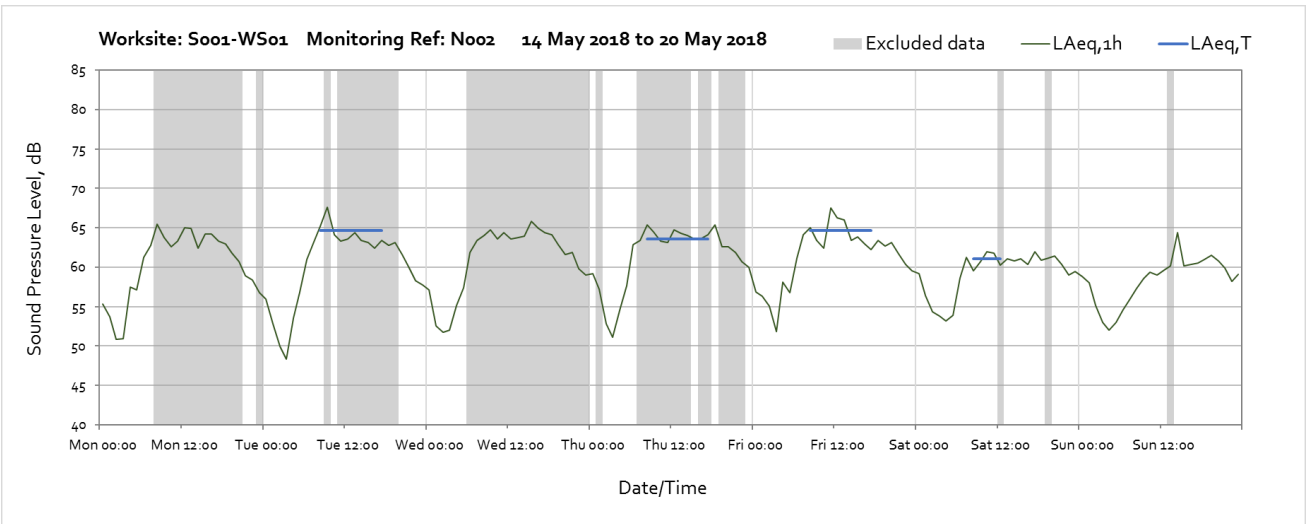
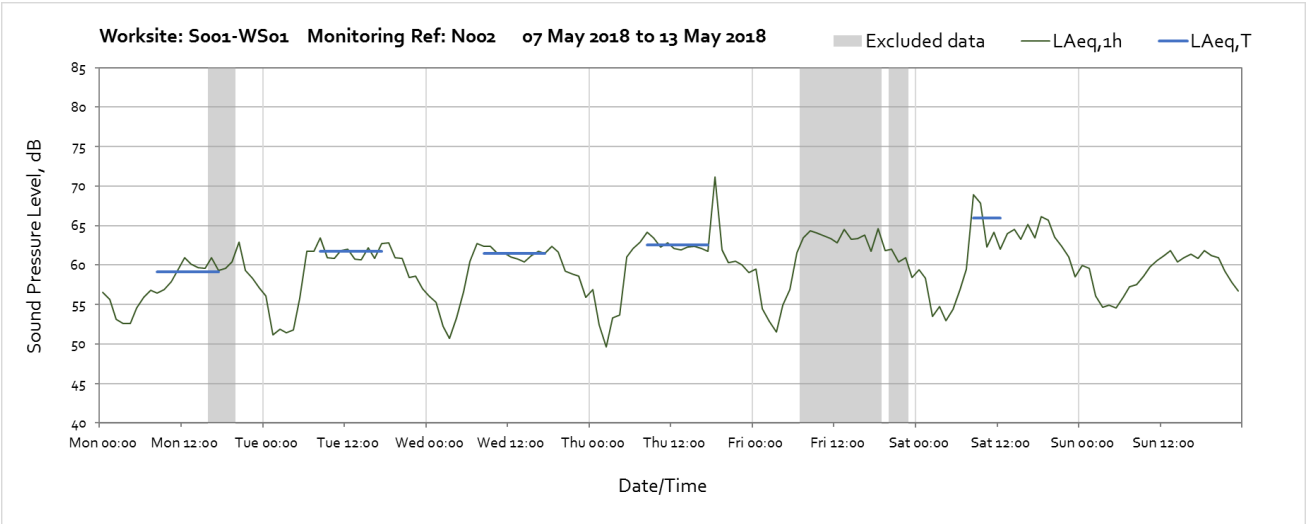
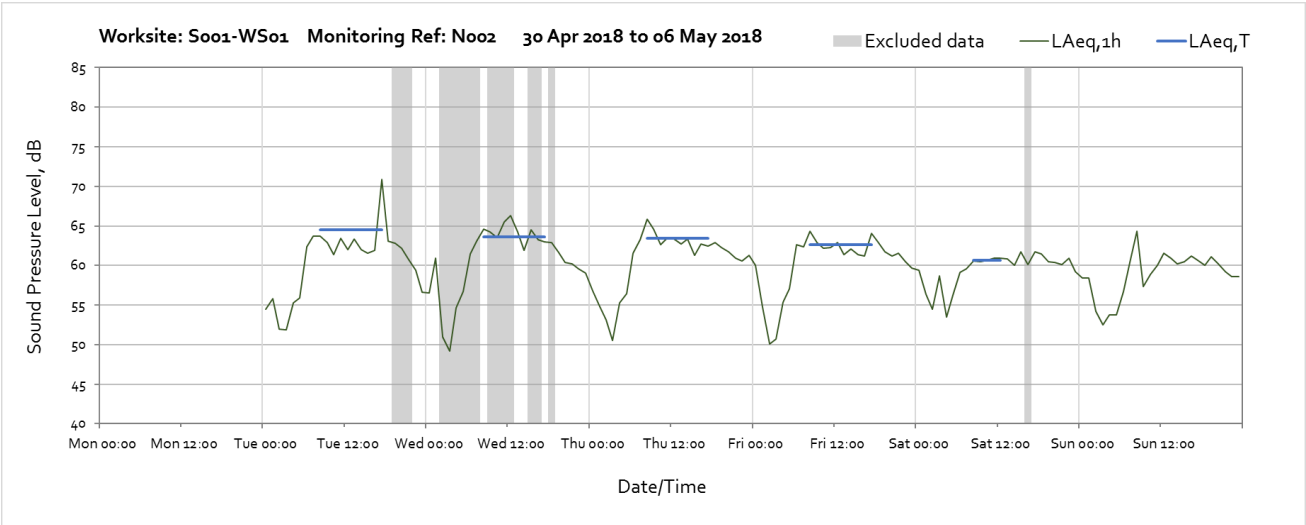
## Worksite: S001-WS01 – Monitoring Ref: N001

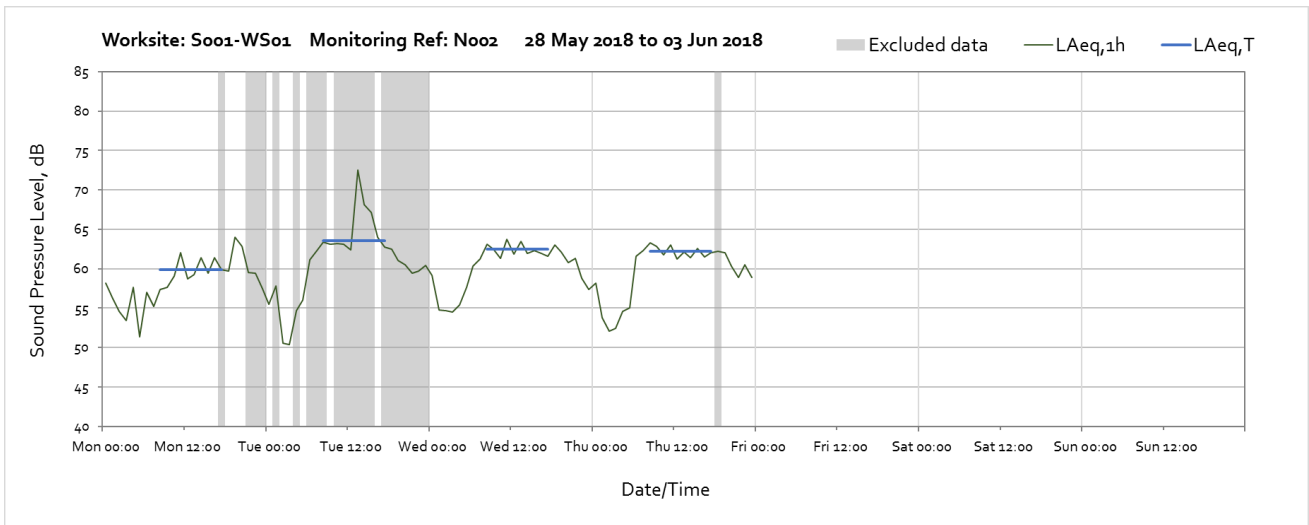
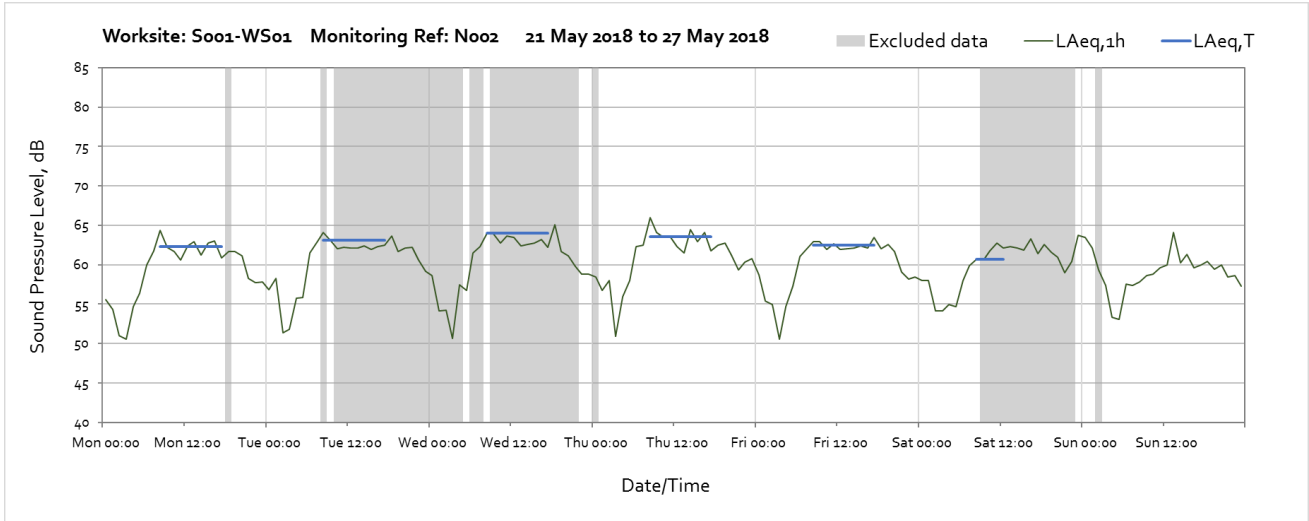




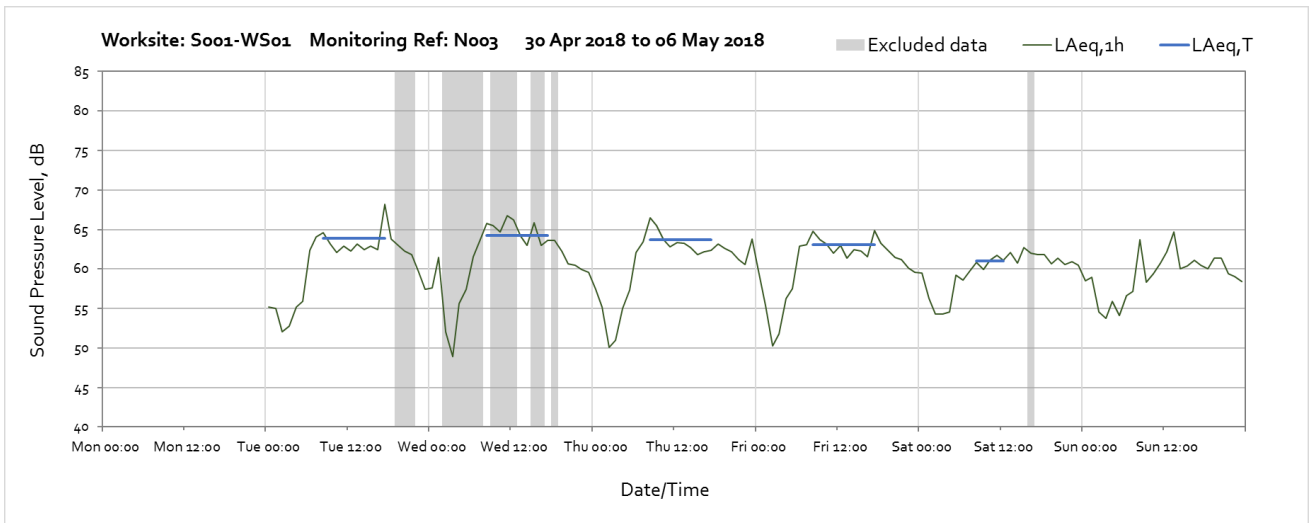


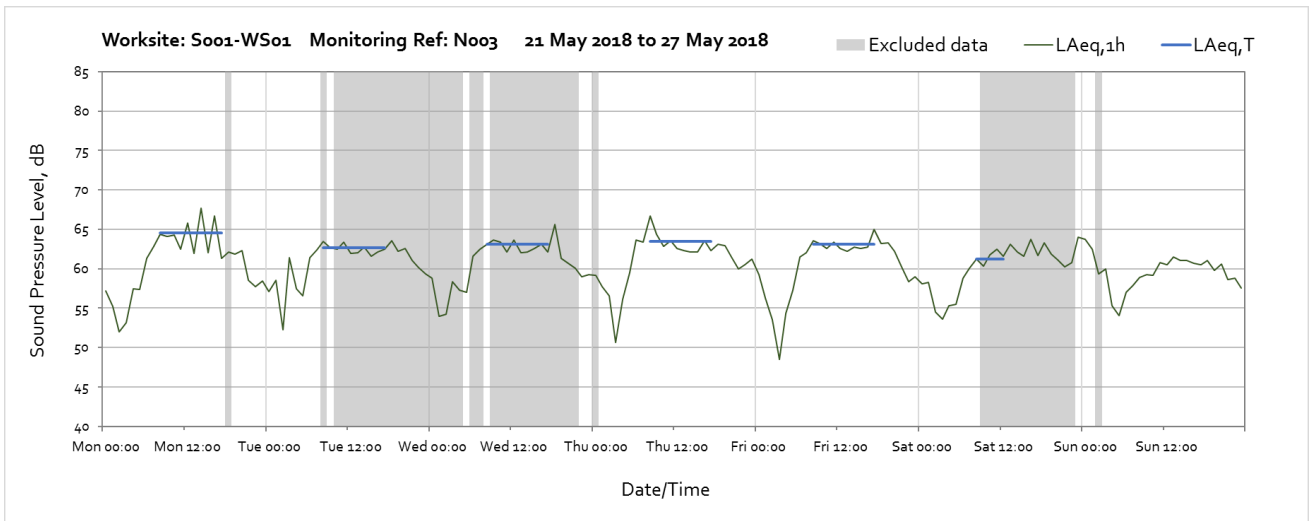
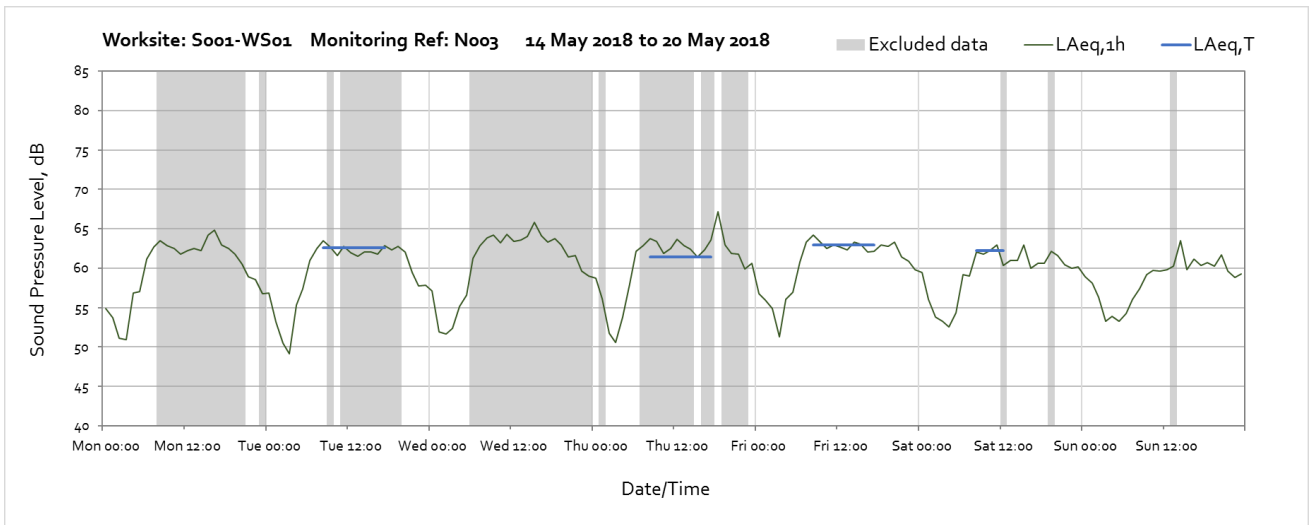
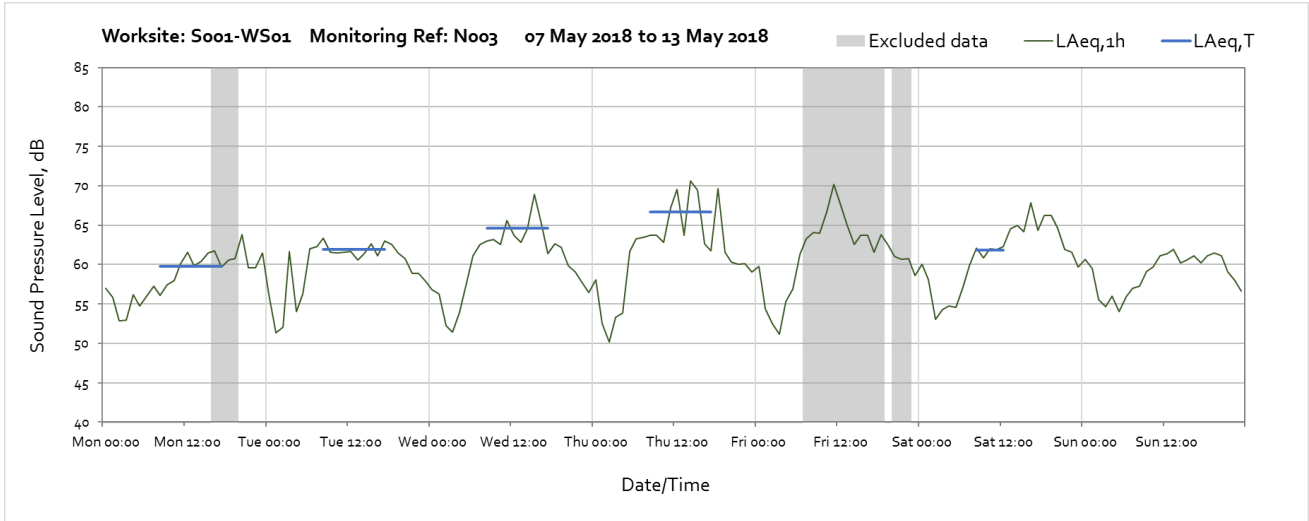
**Worksite: S001-WS01 – Monitoring Ref: N002**

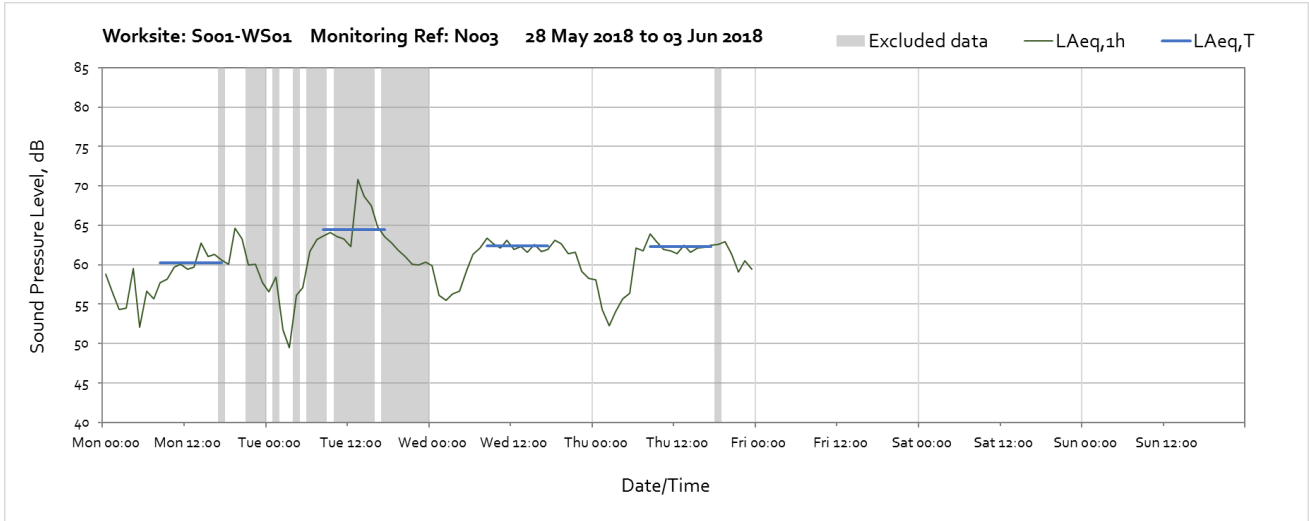




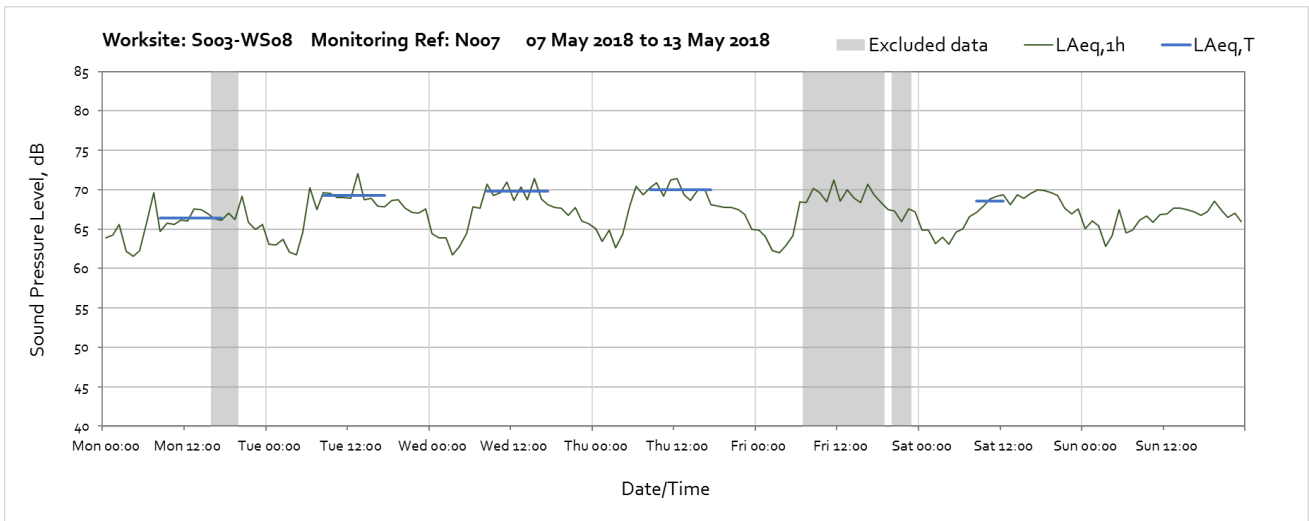
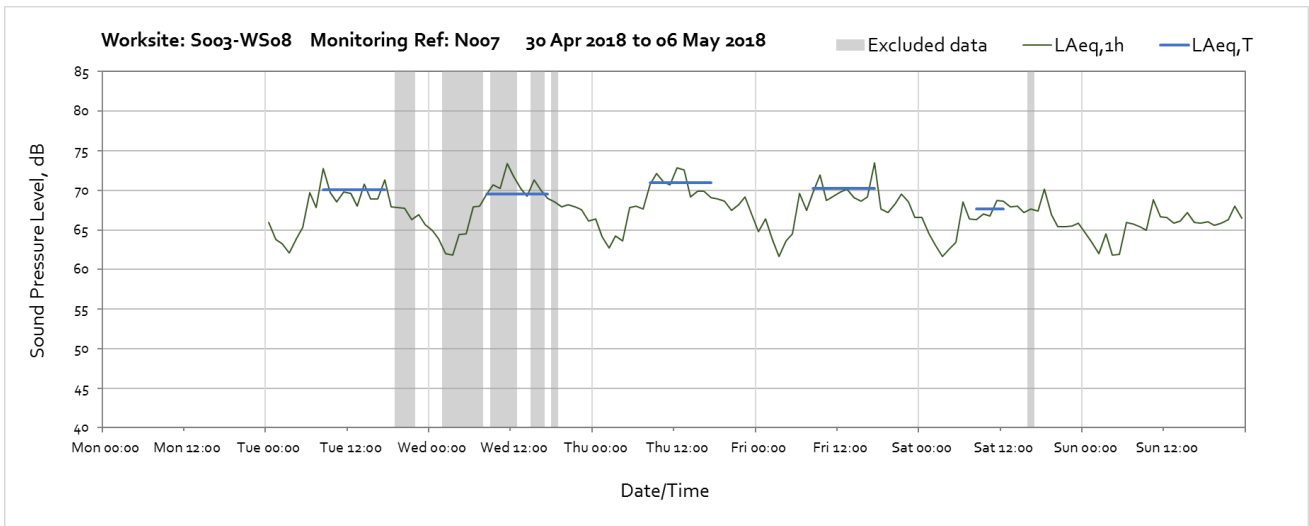
## Worksite: S001-WS01 – Monitoring Ref: N003

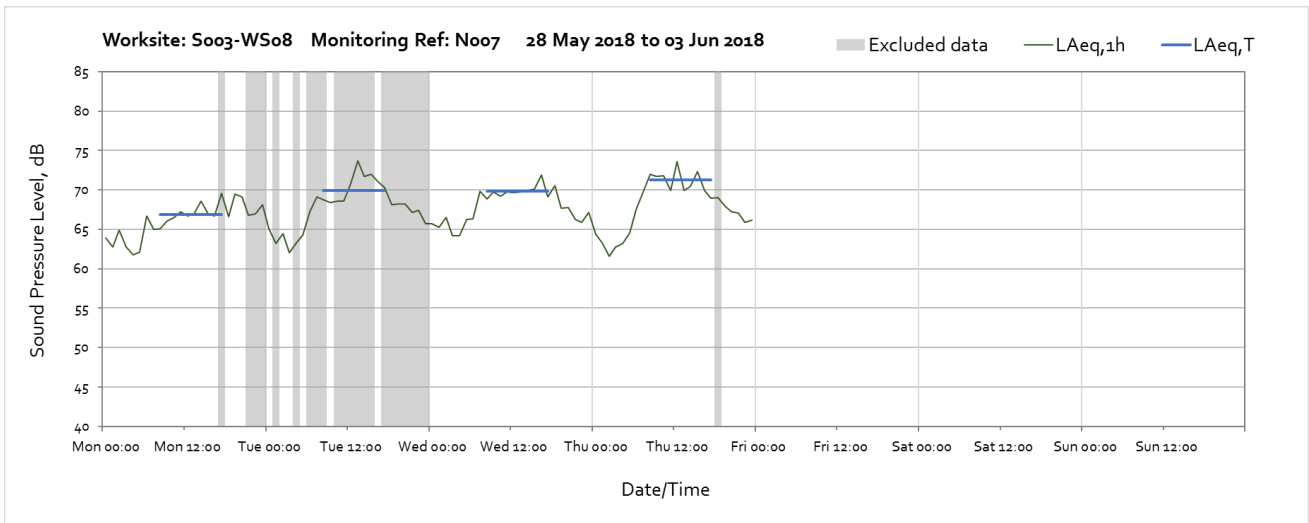
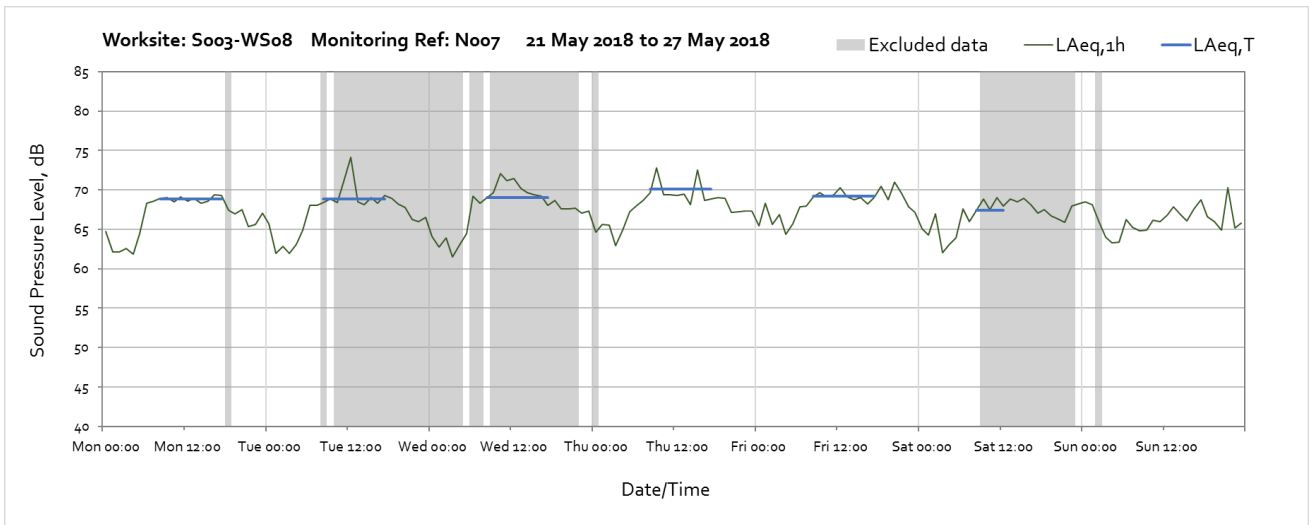
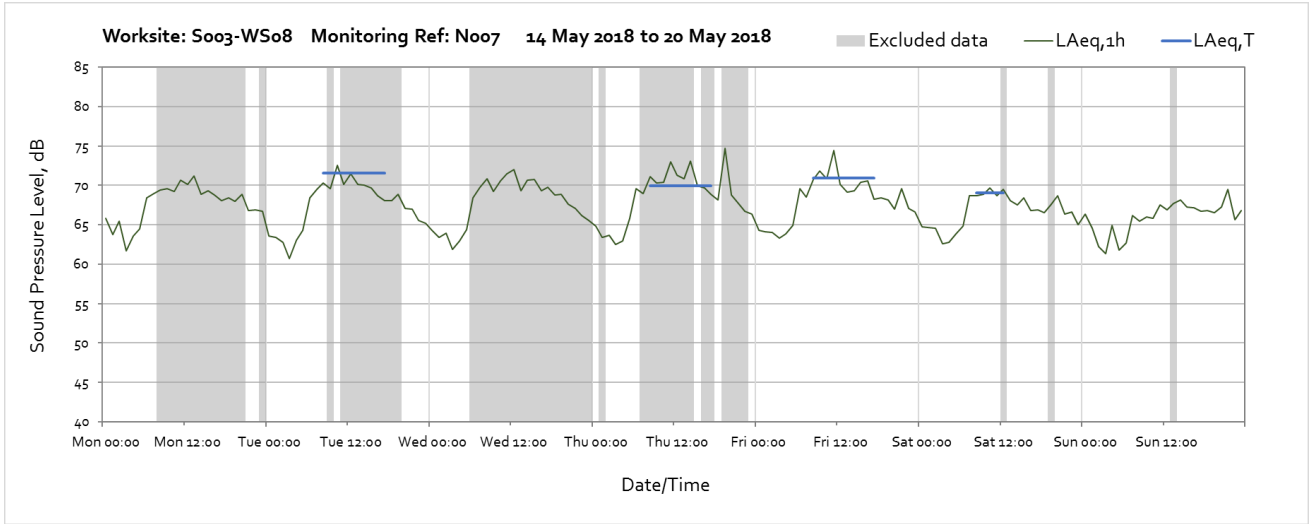




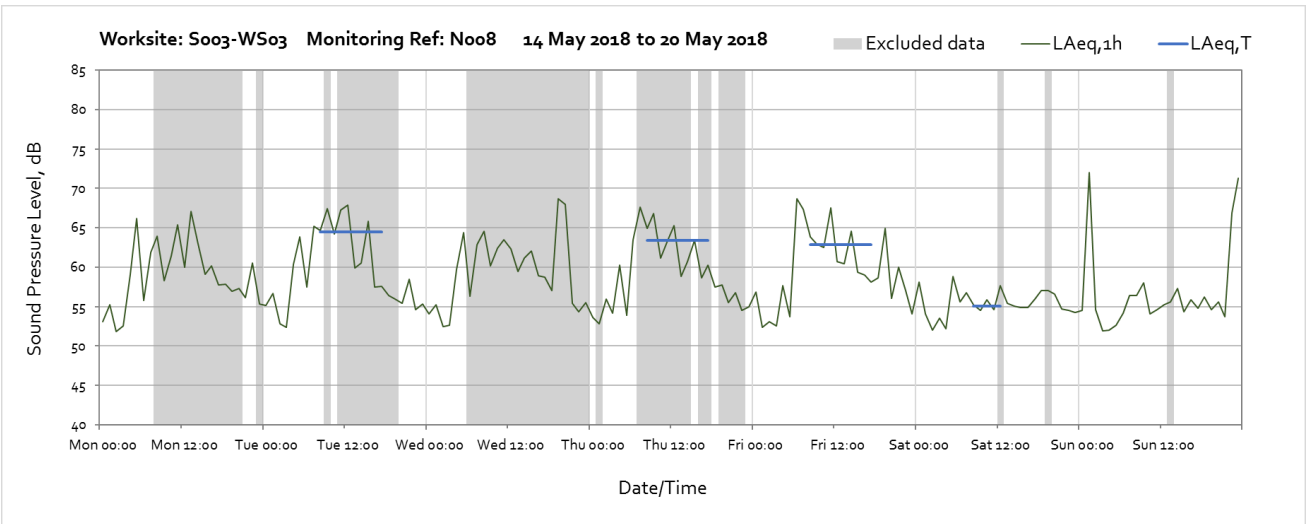
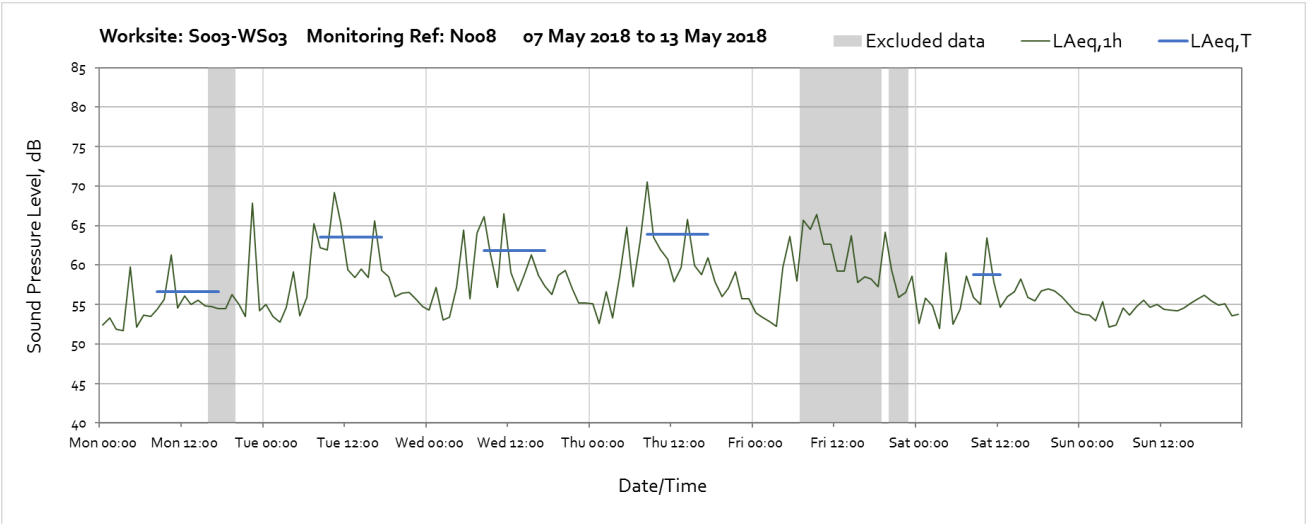
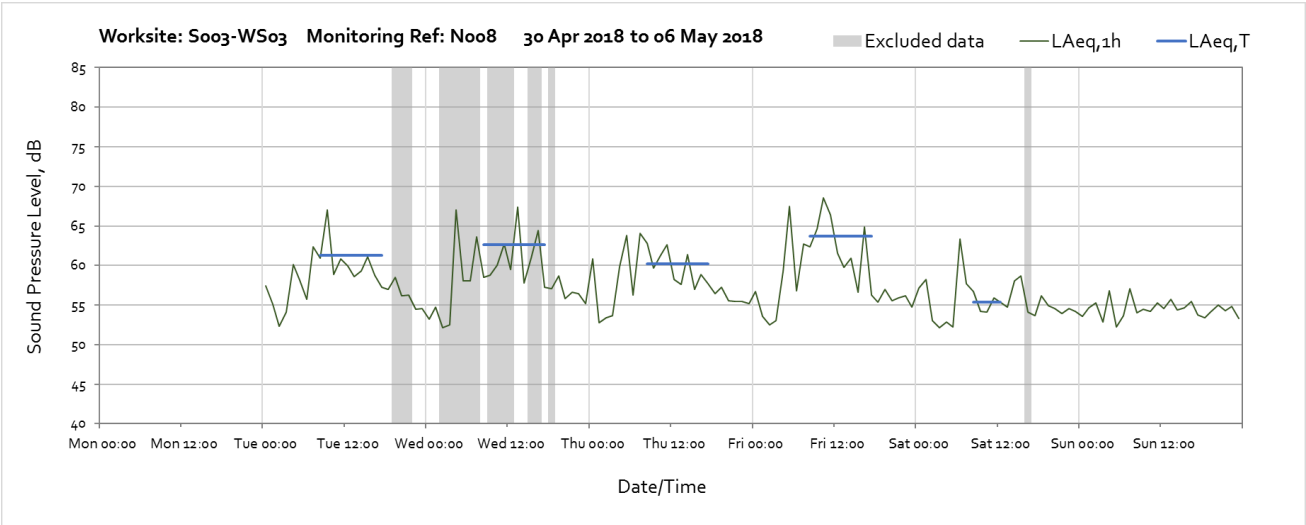


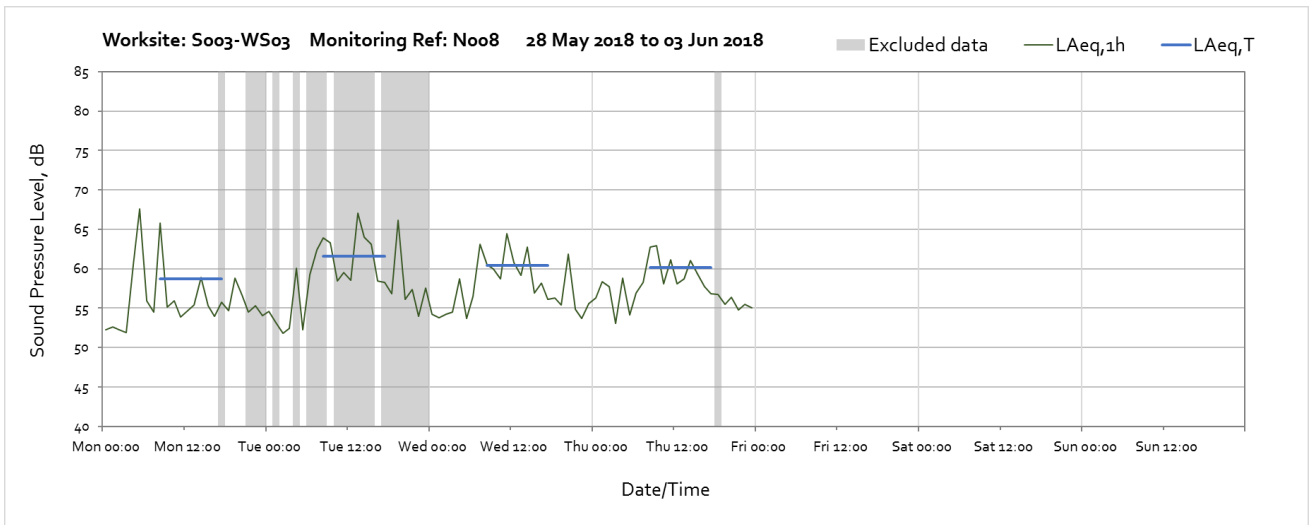
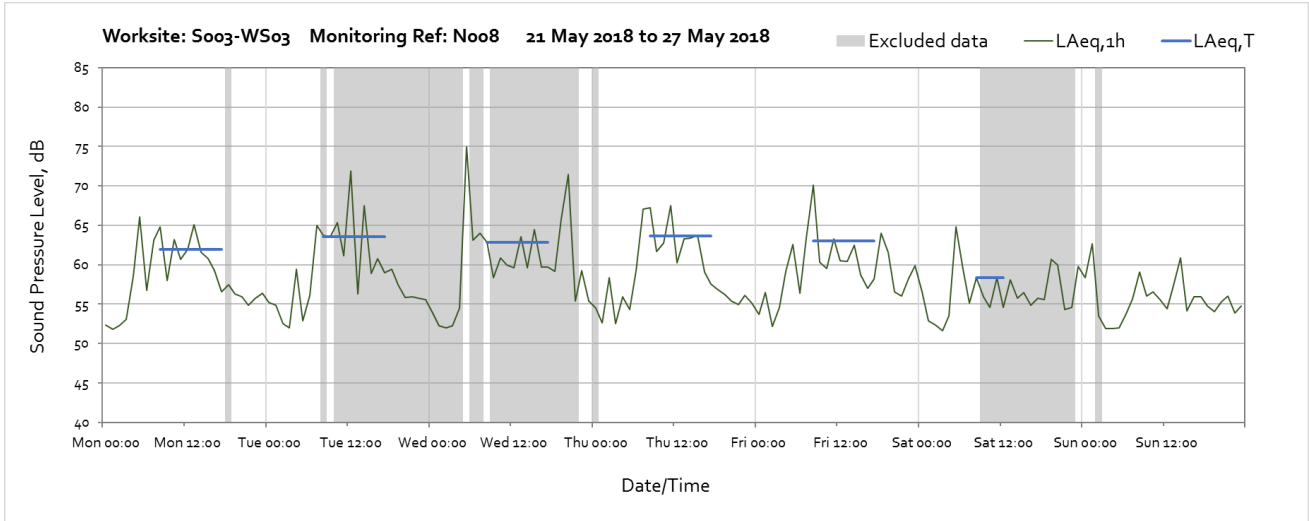
## Worksite: S003-WS08 – Monitoring Ref: N007



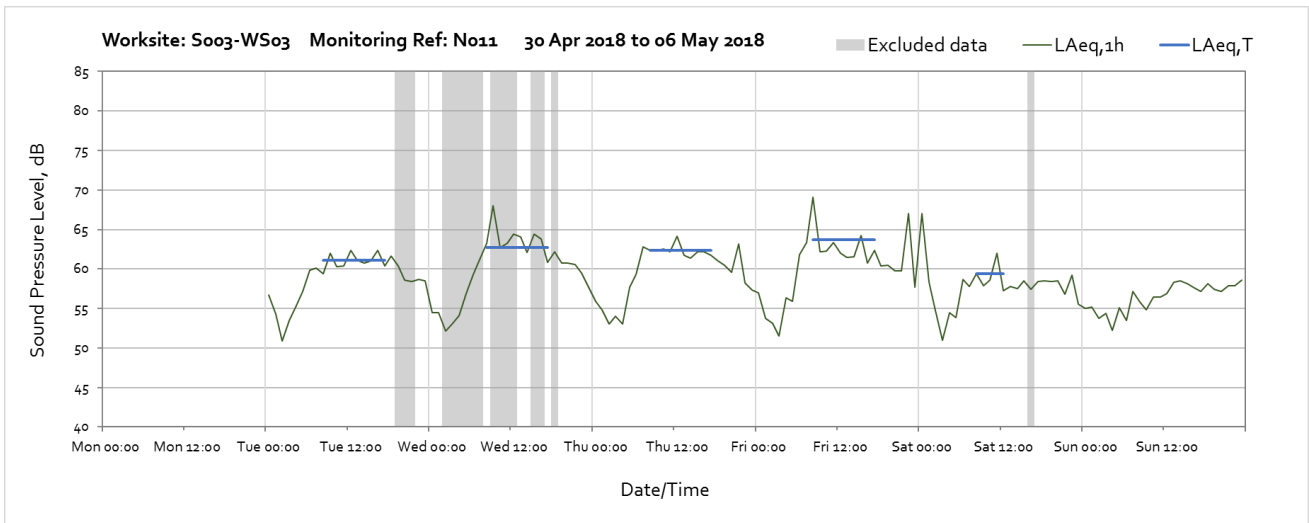


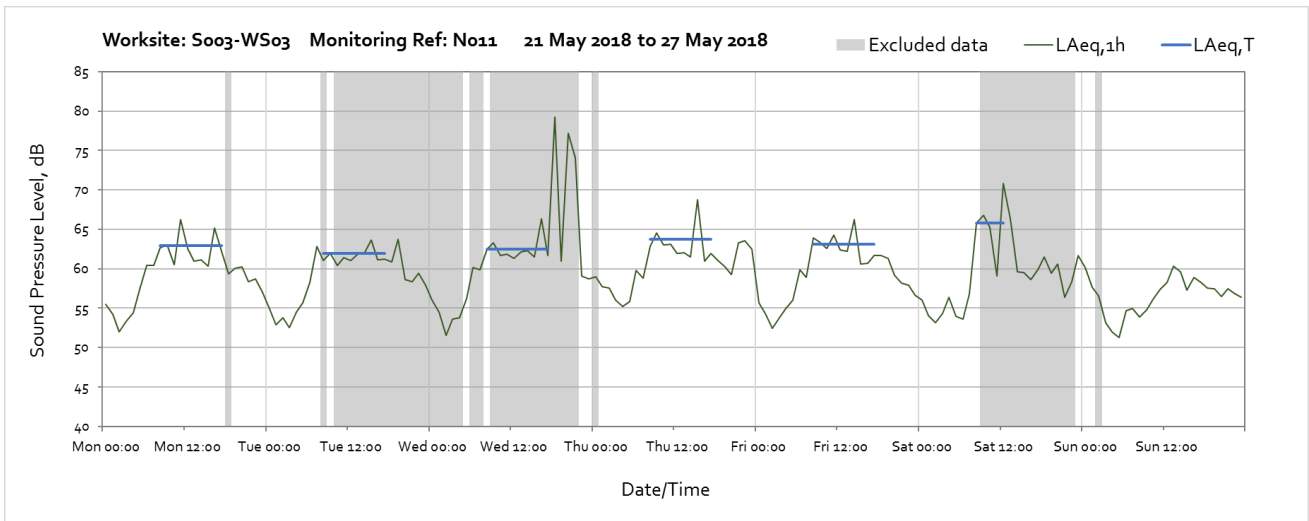
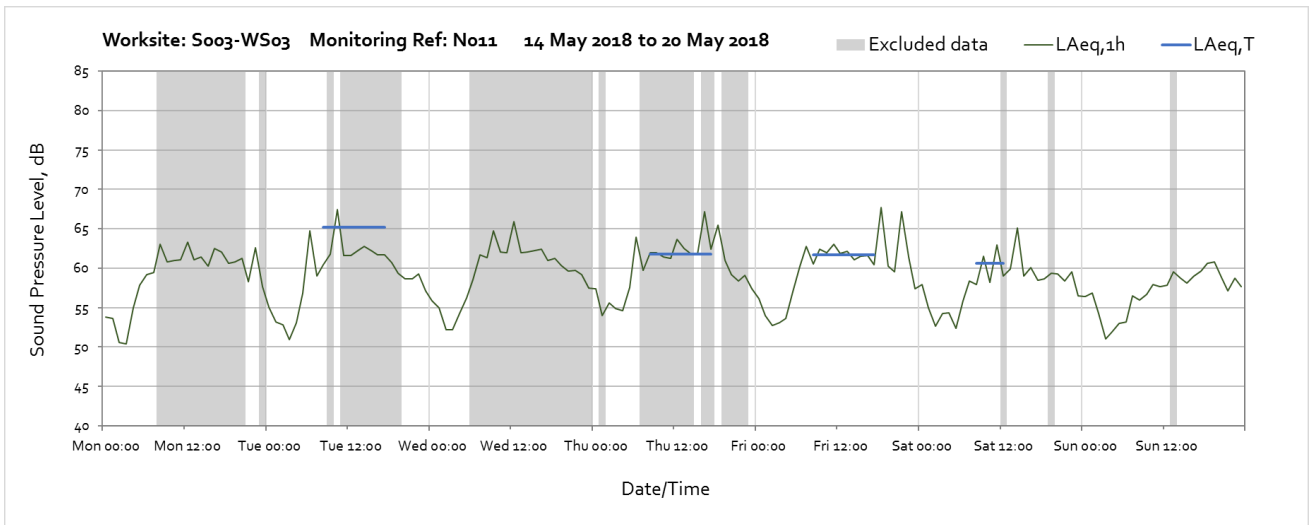
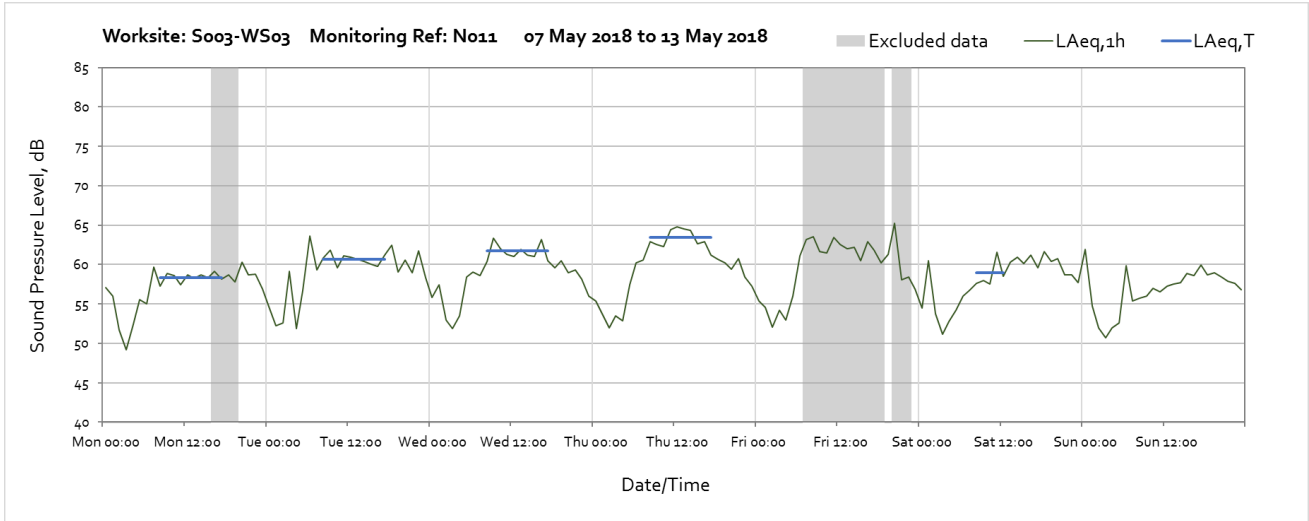
**Worksite: S003-WS03 – Monitoring Ref: N008**



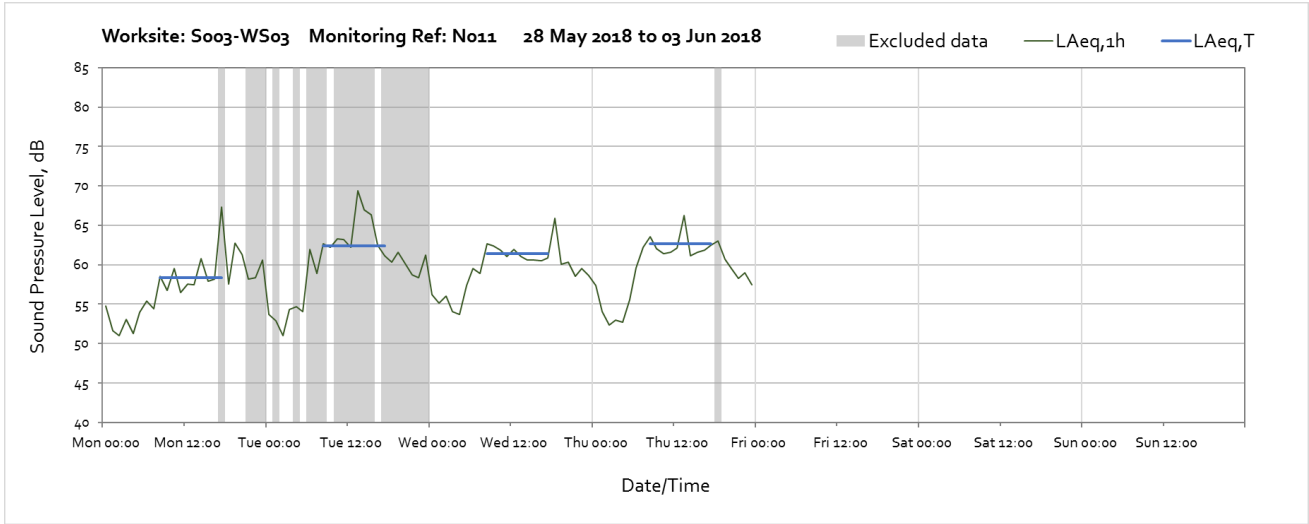


### Worksite: S003-WS03 – Monitoring Ref: N011

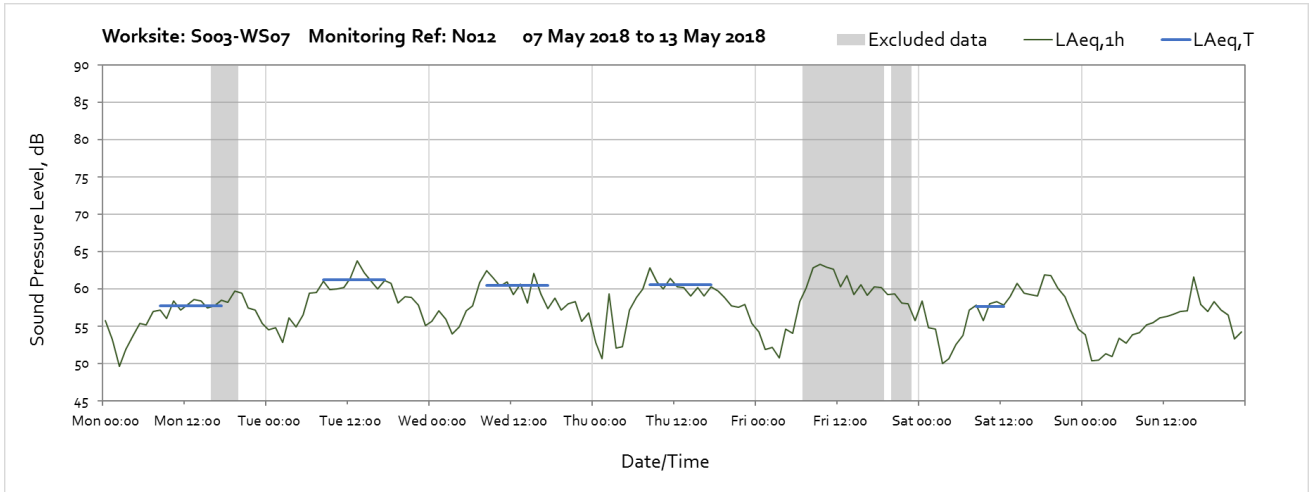
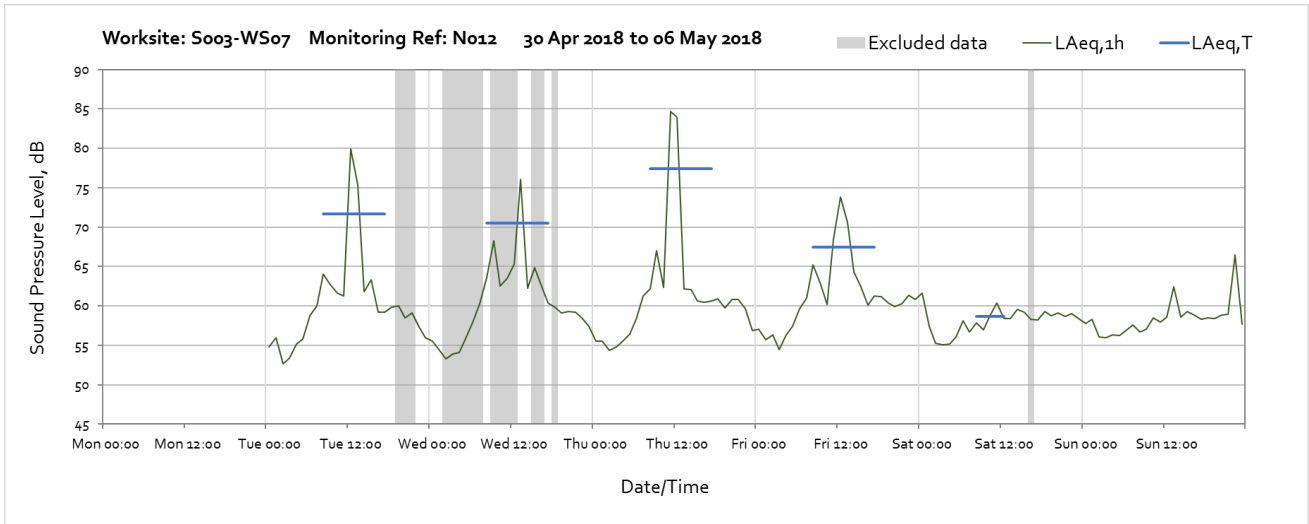


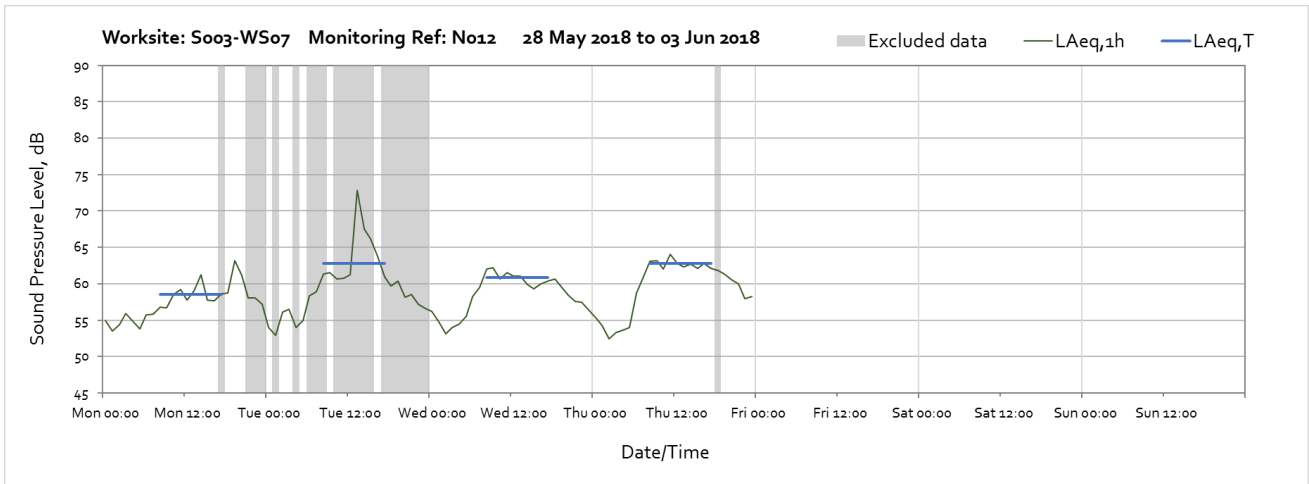
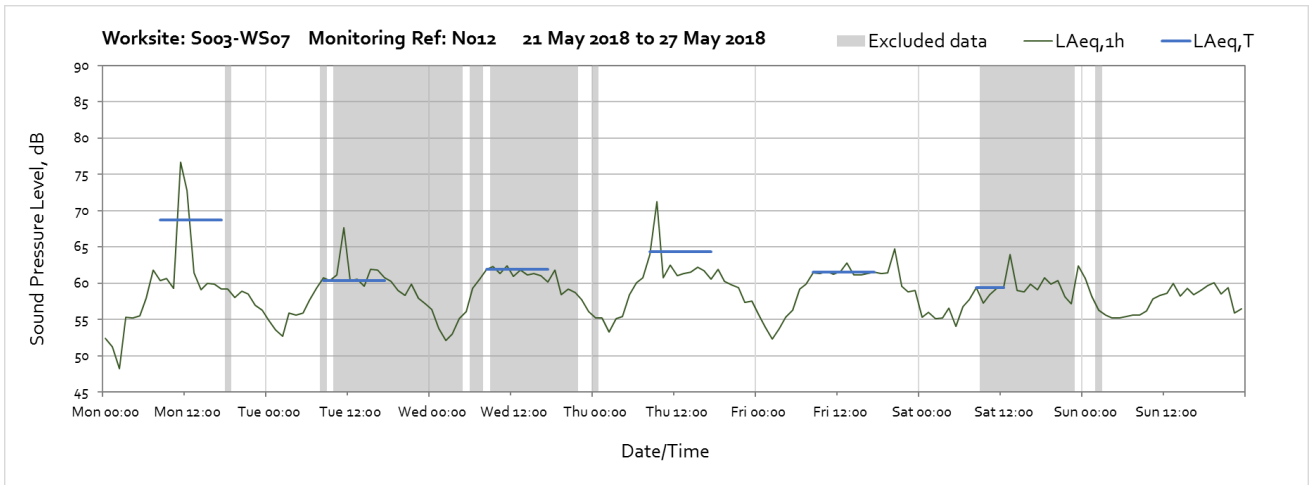
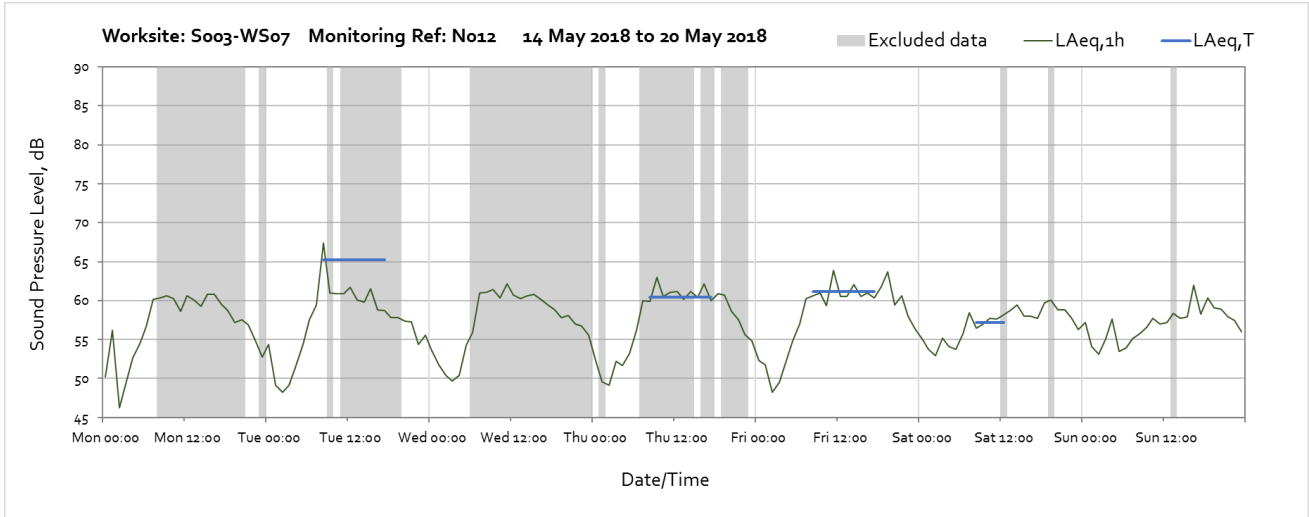




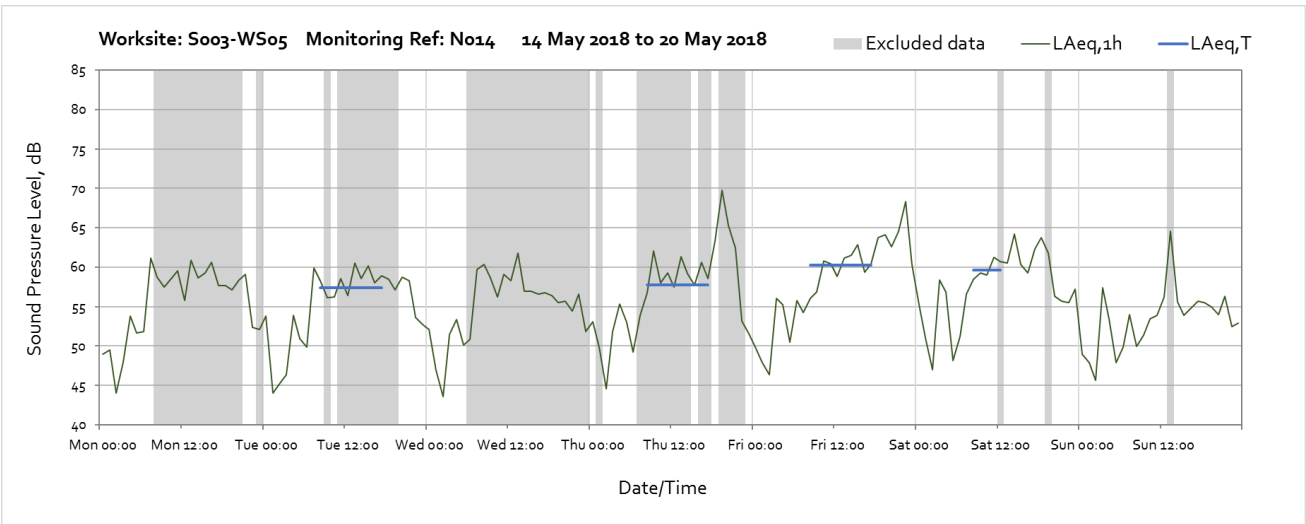
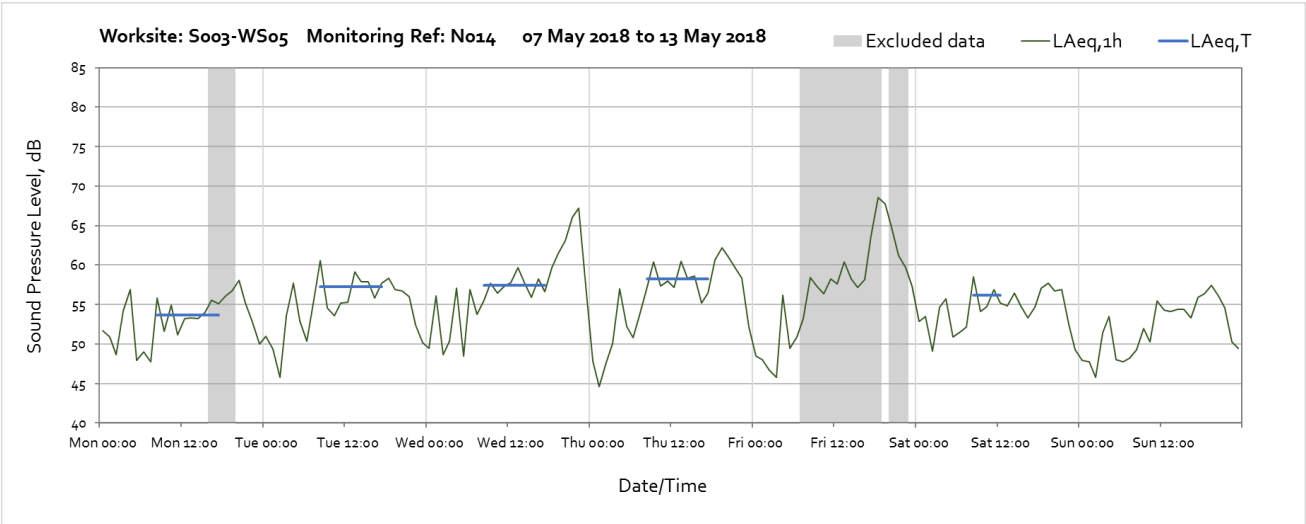
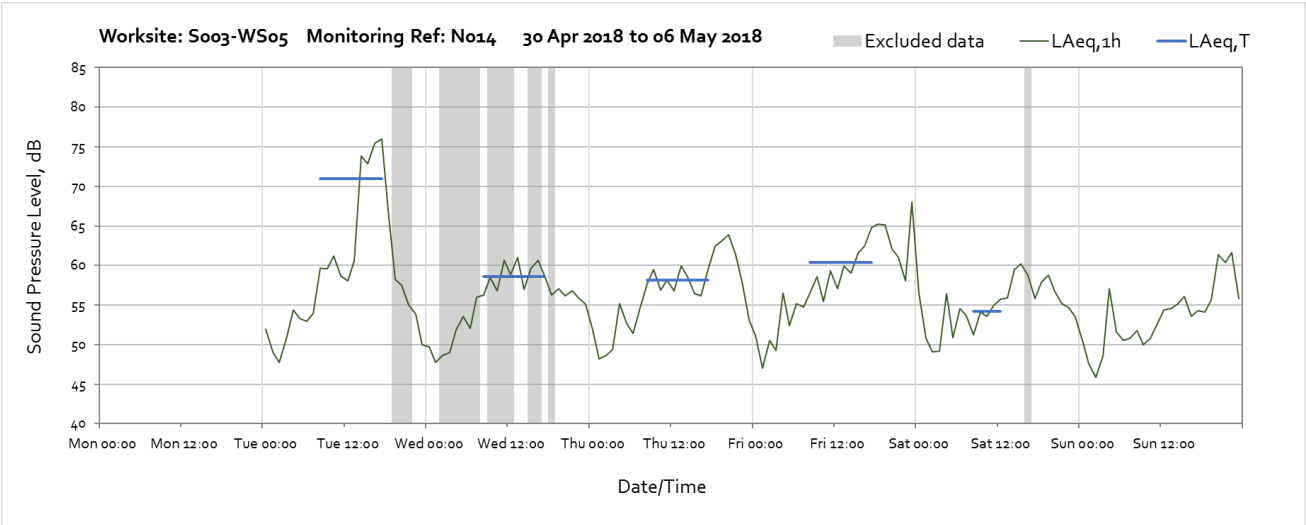


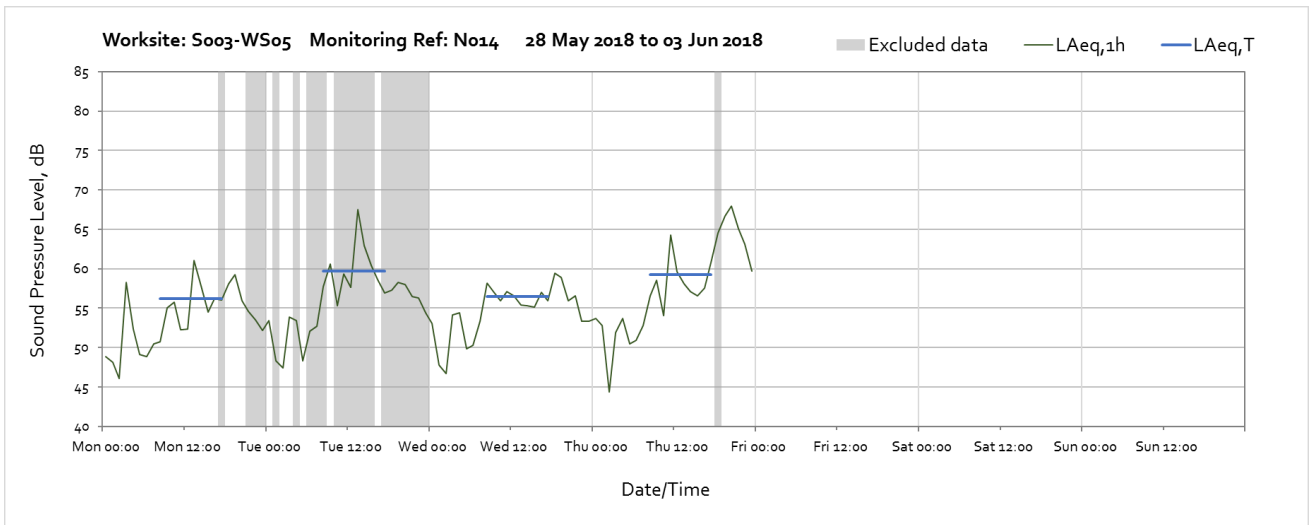
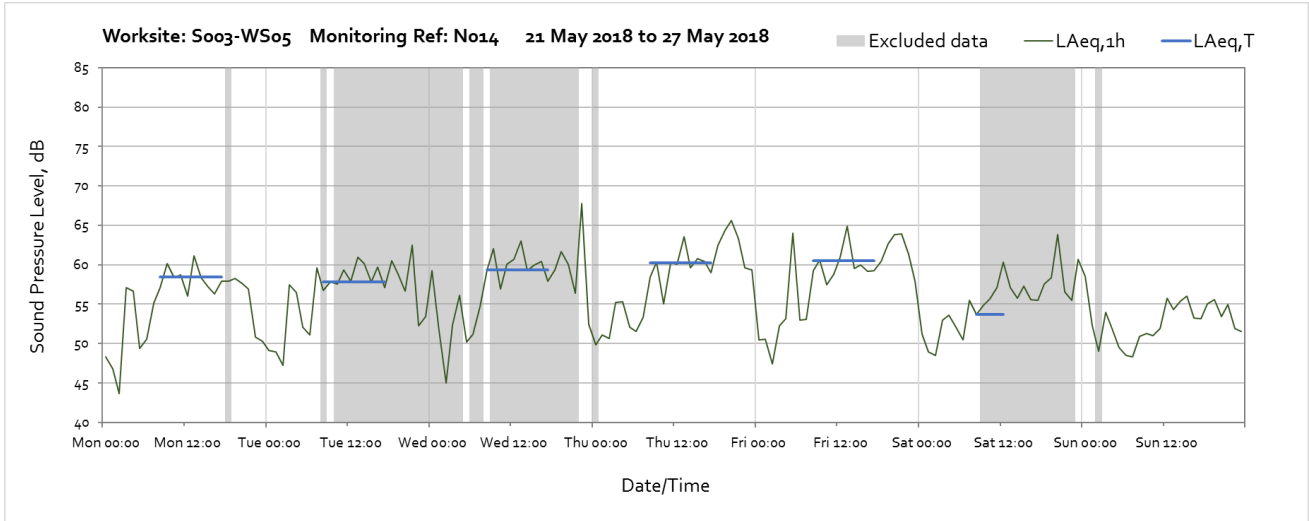
**Worksite: S003-WS07 – Monitoring Ref: N012**



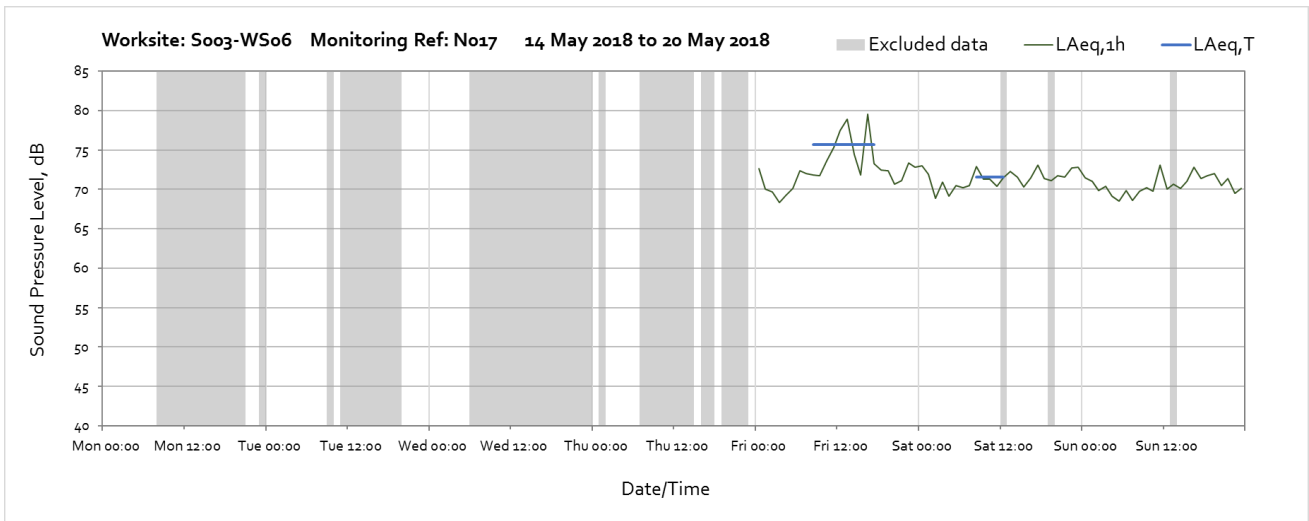


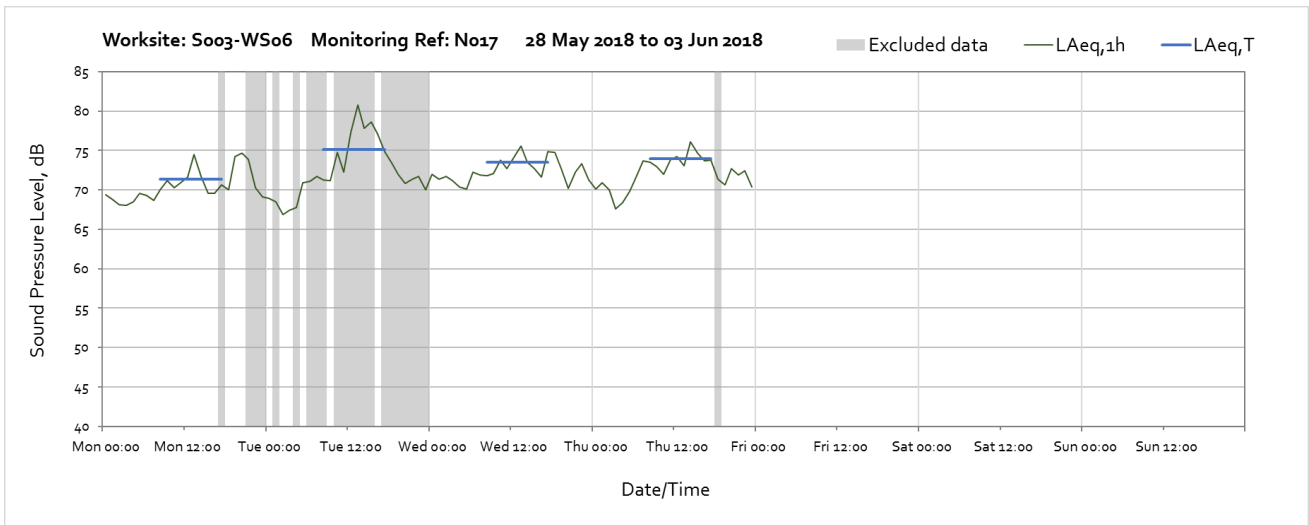
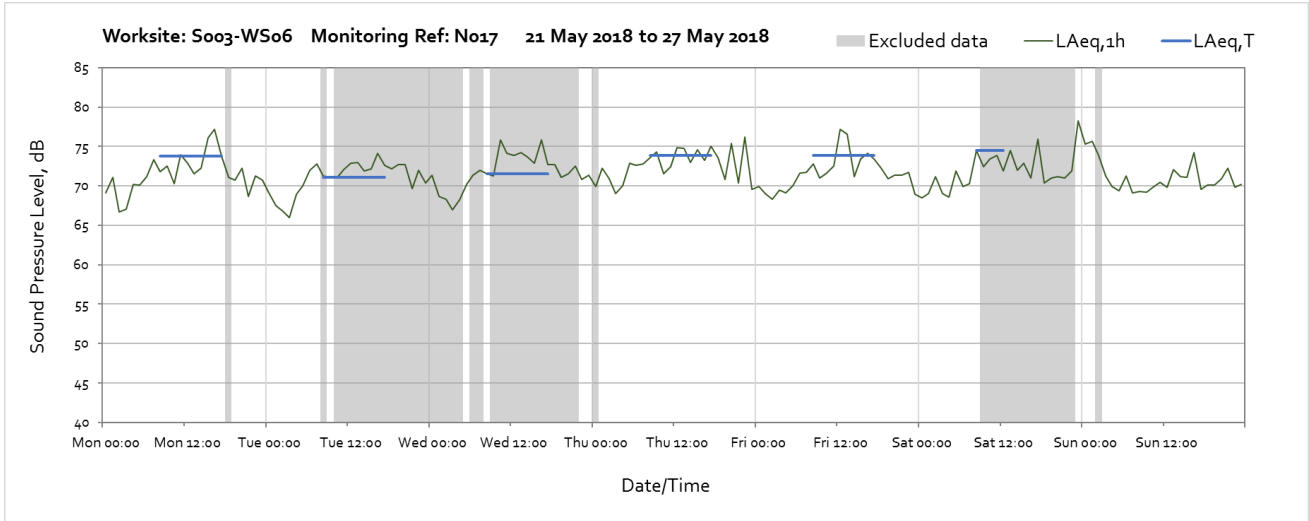
**Worksite: S003-WS05 – Monitoring Ref: N014**



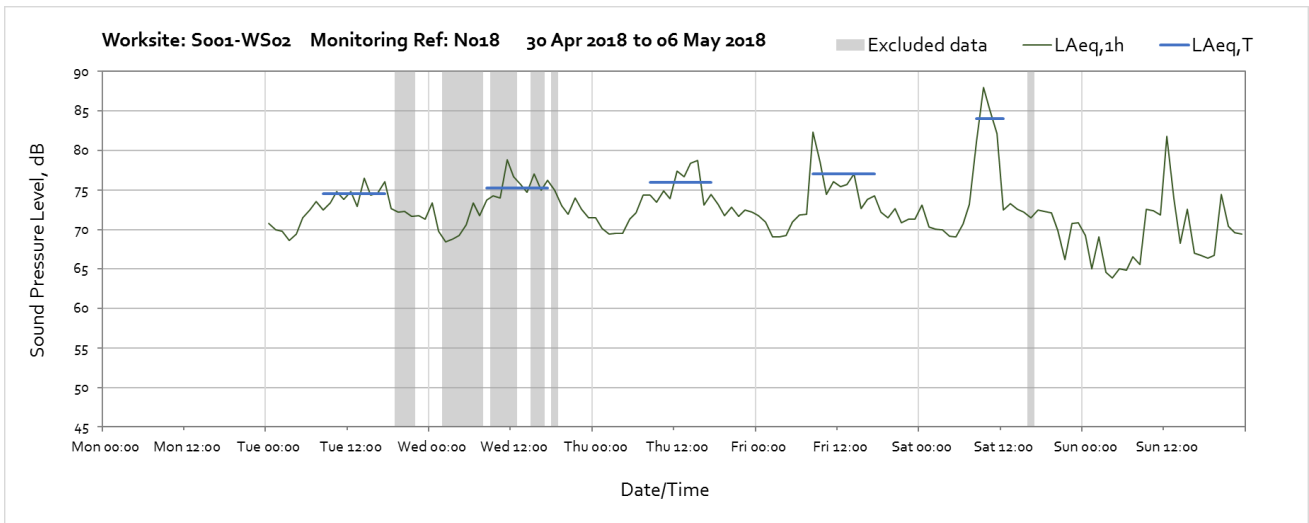


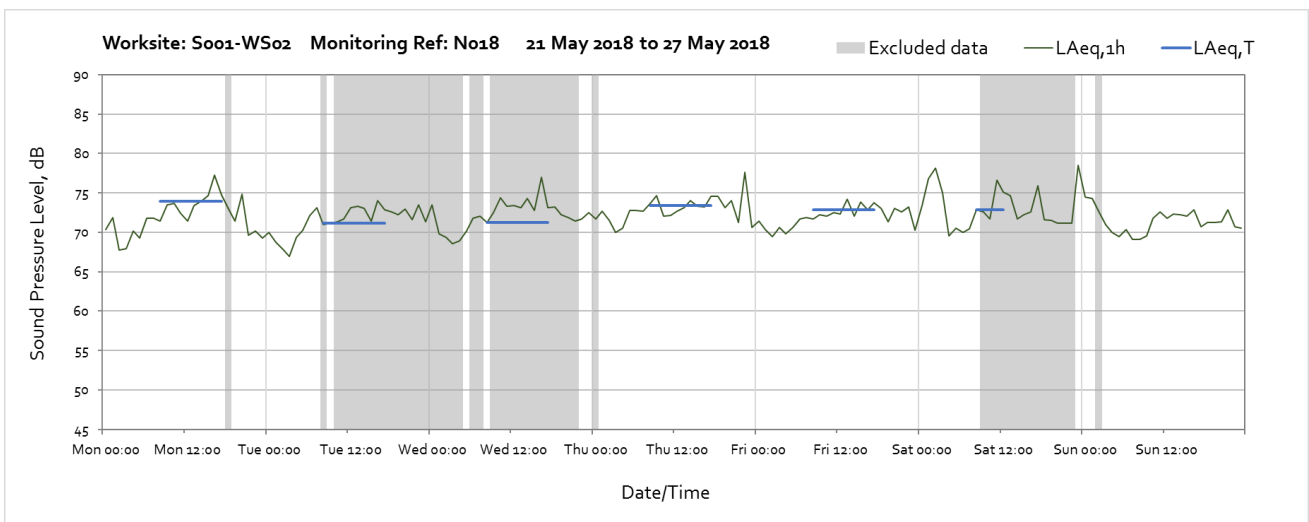
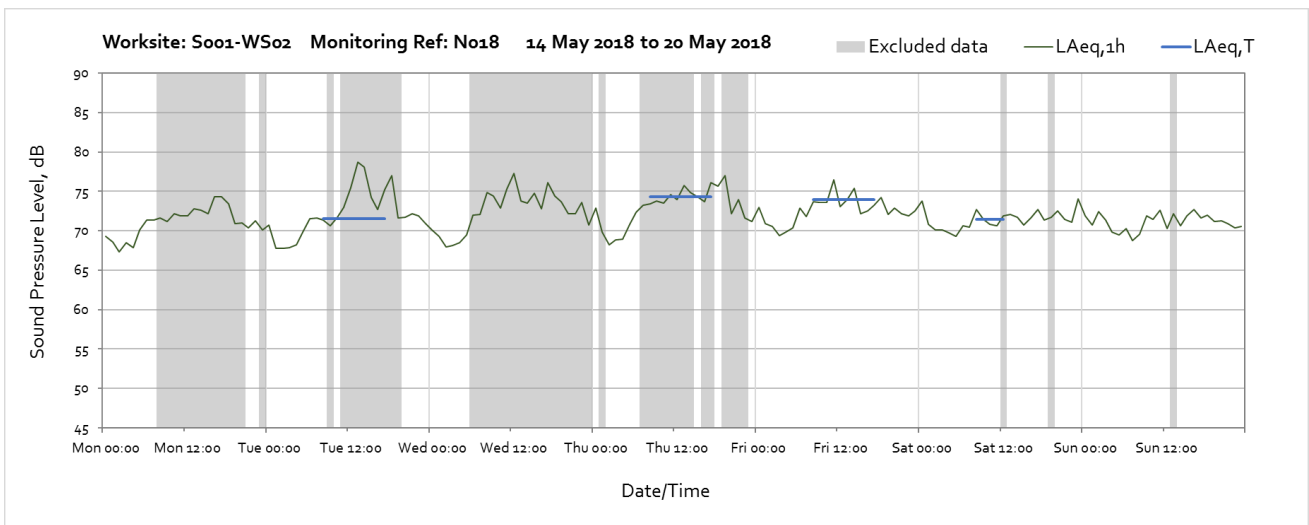
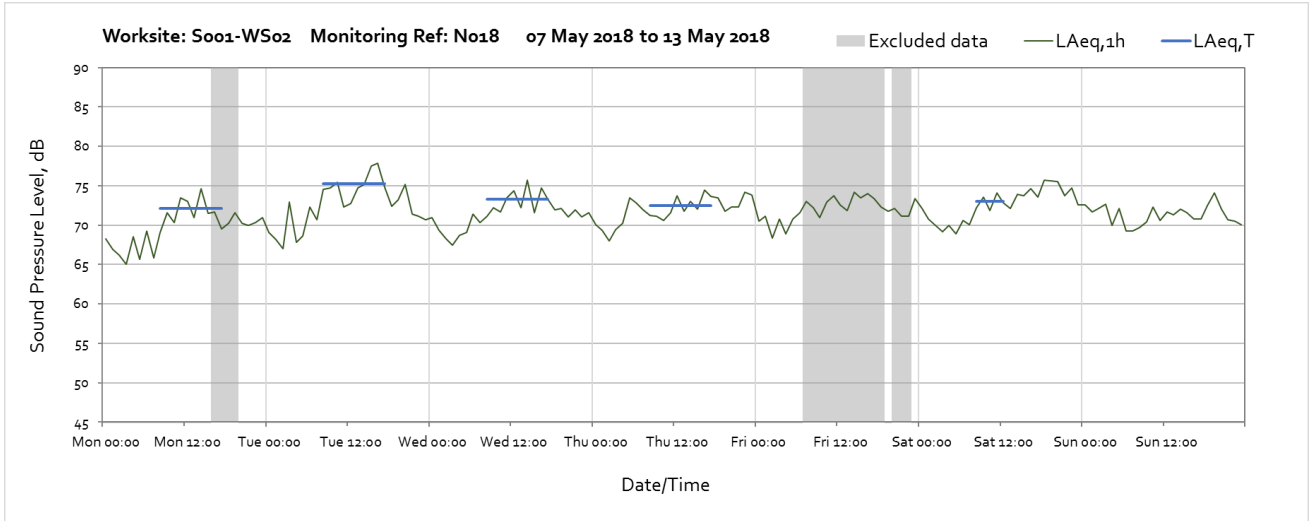
## Worksite: S003-WS06 – Monitoring Ref: N017

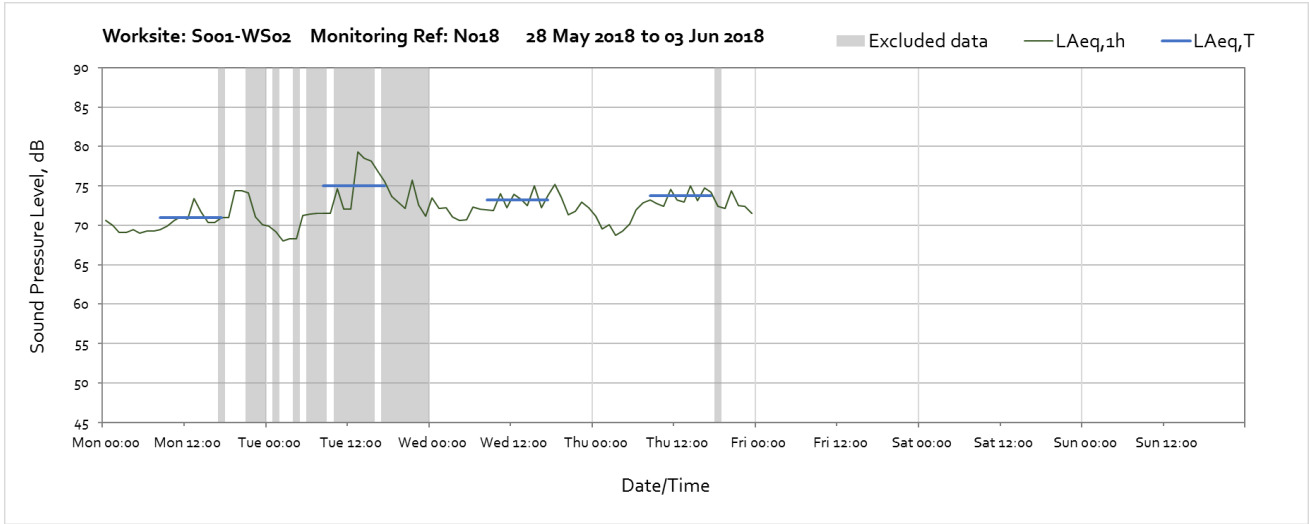




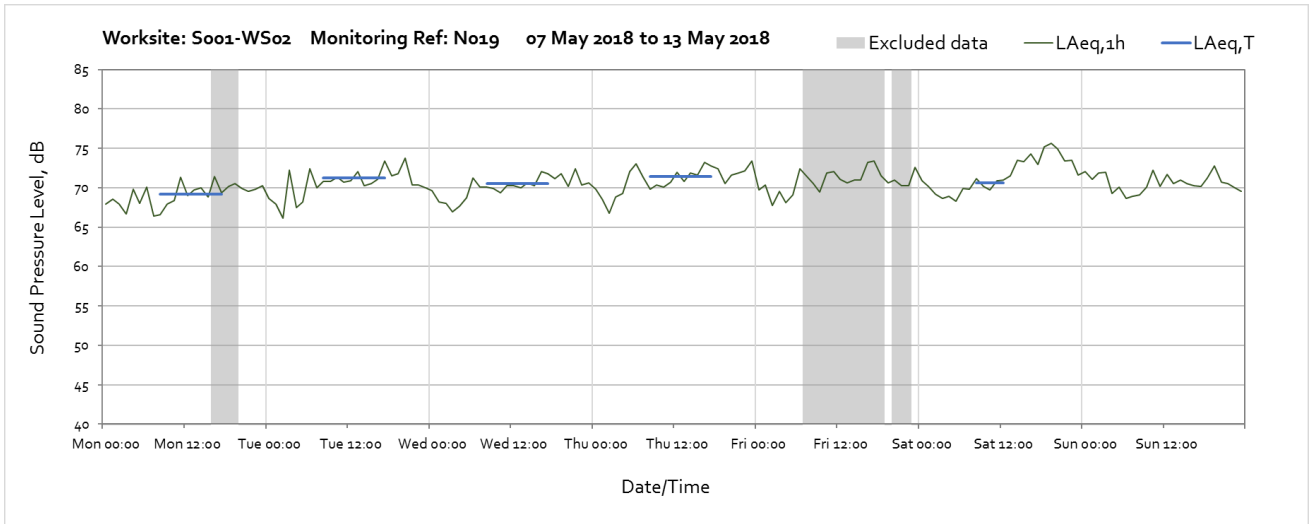
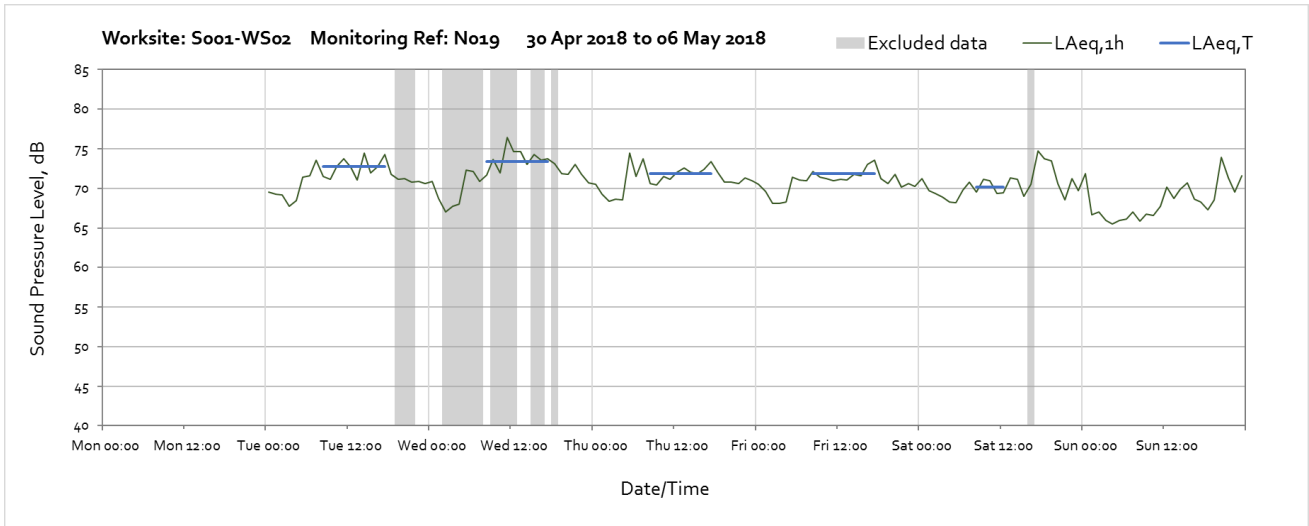
### Worksite: S001-WSo2 – Monitoring Ref: N018

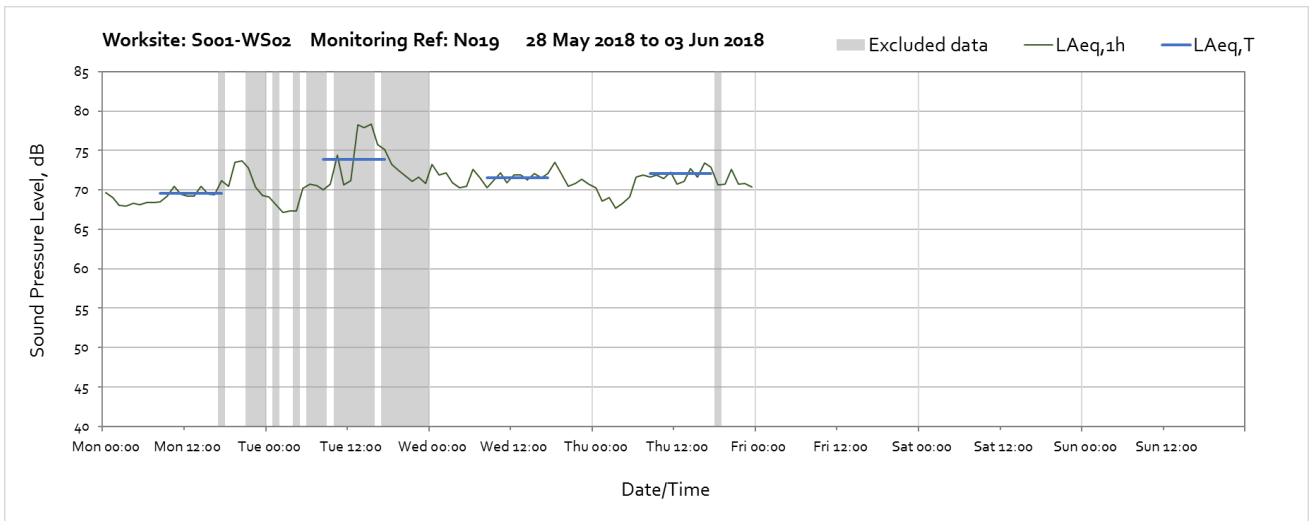
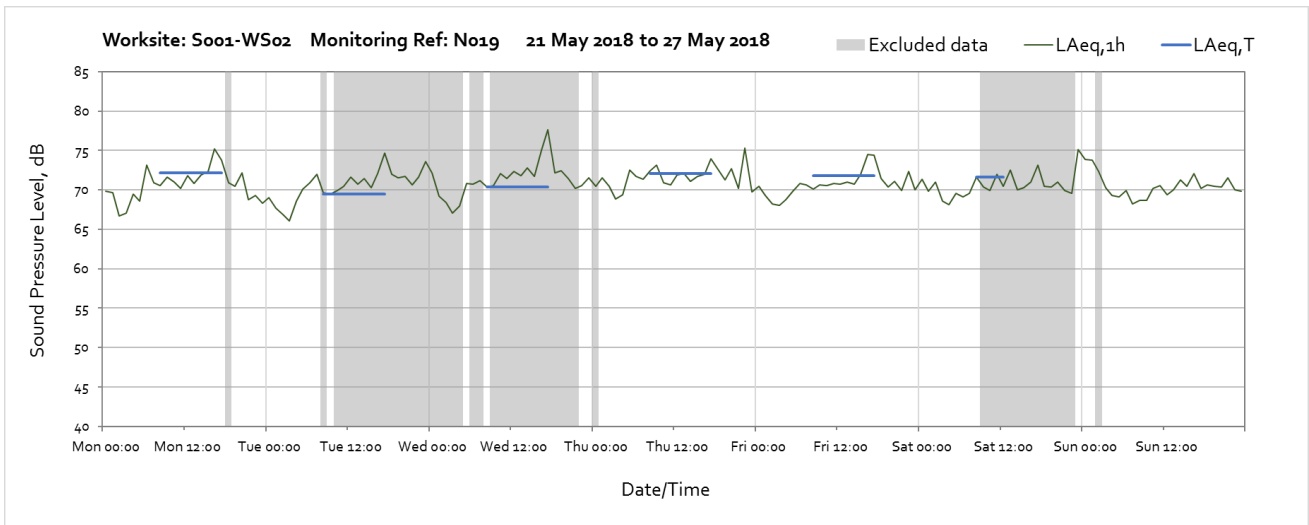
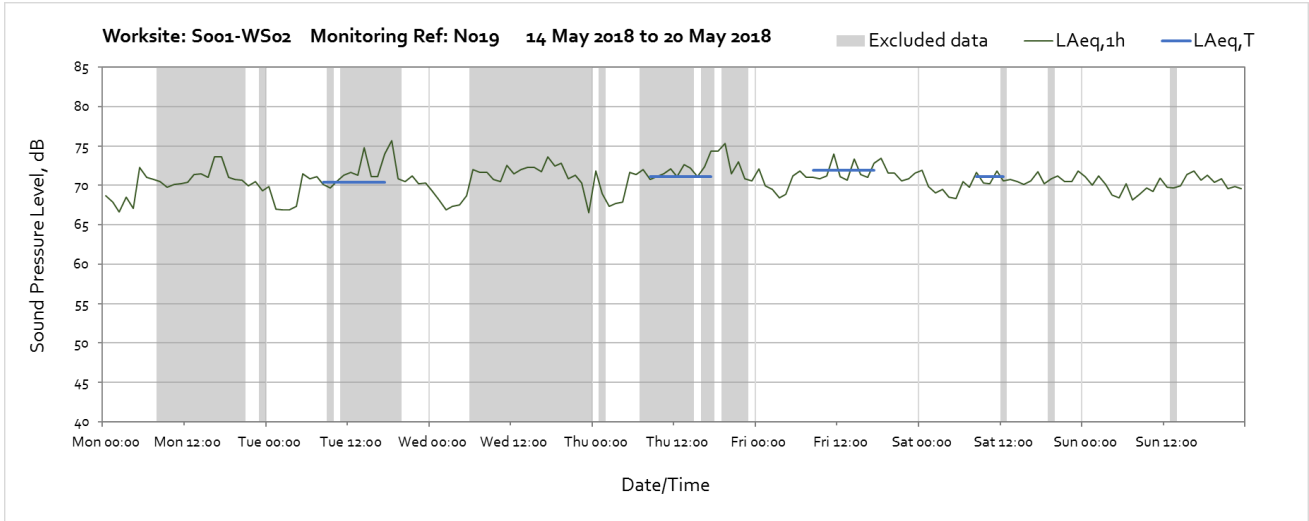






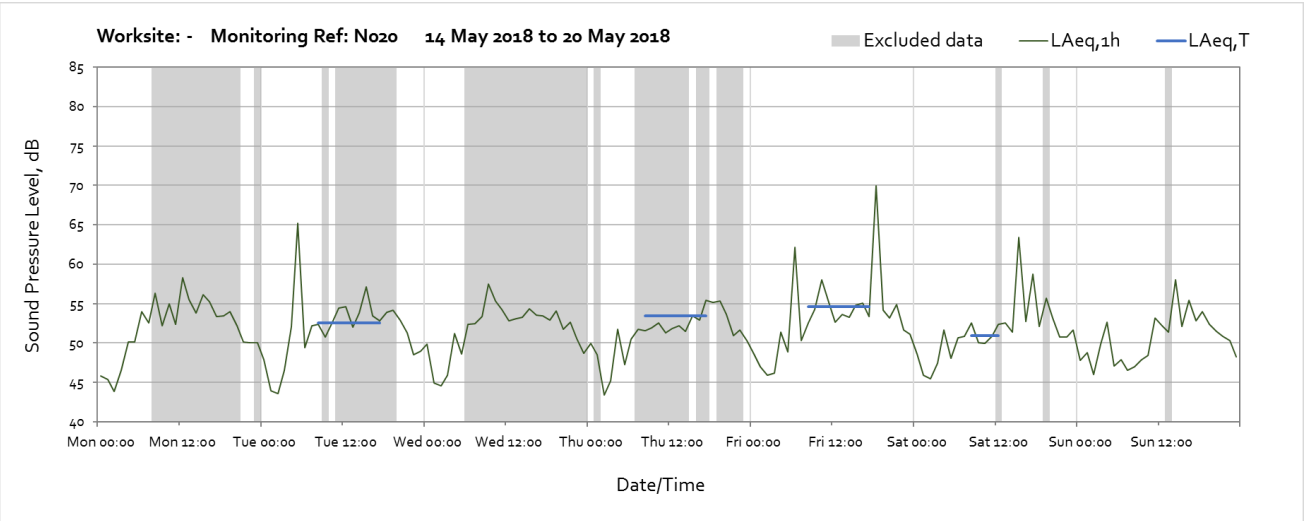
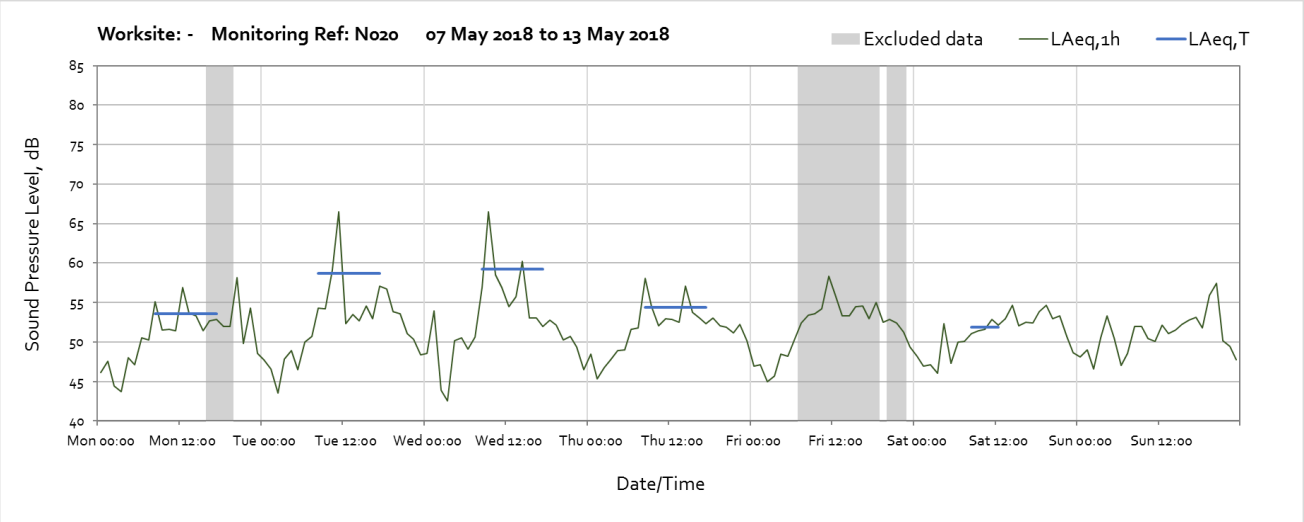
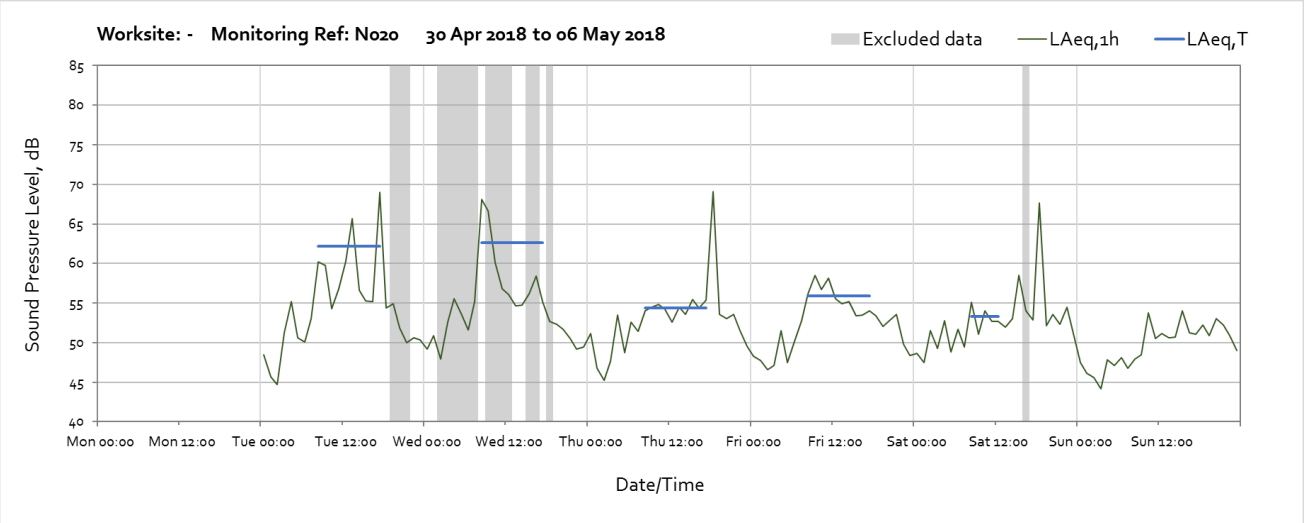
**Worksite: S001-WS02 – Monitoring Ref: N019**

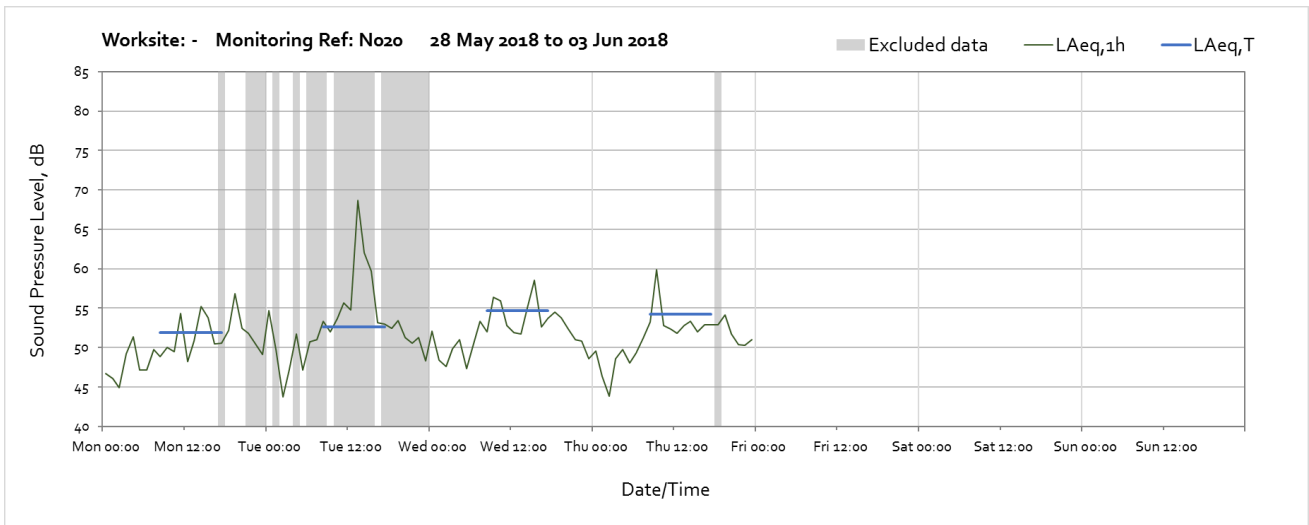
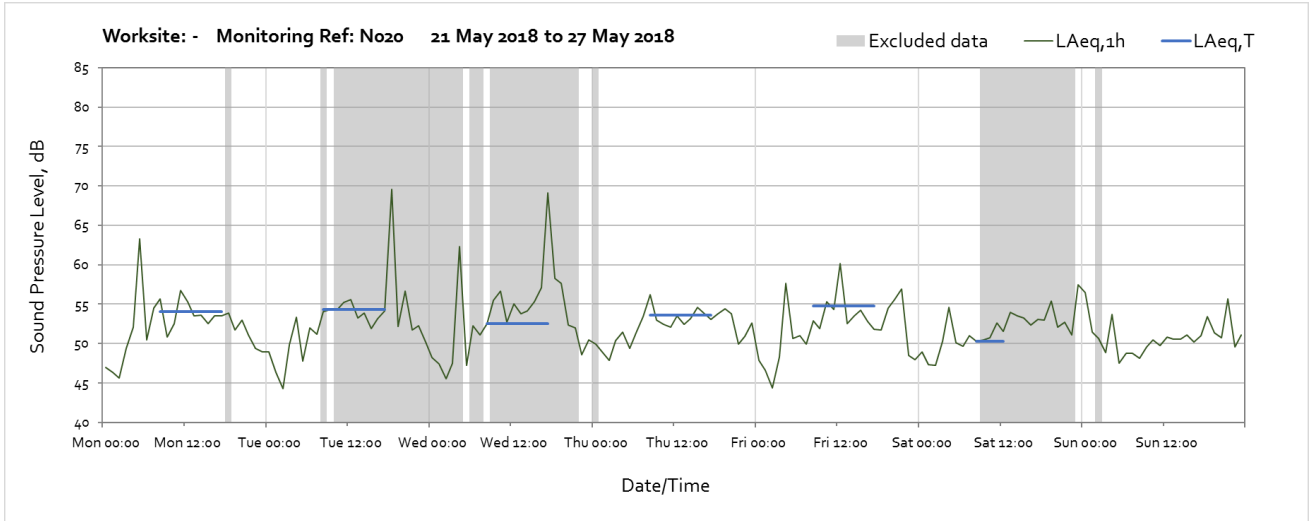




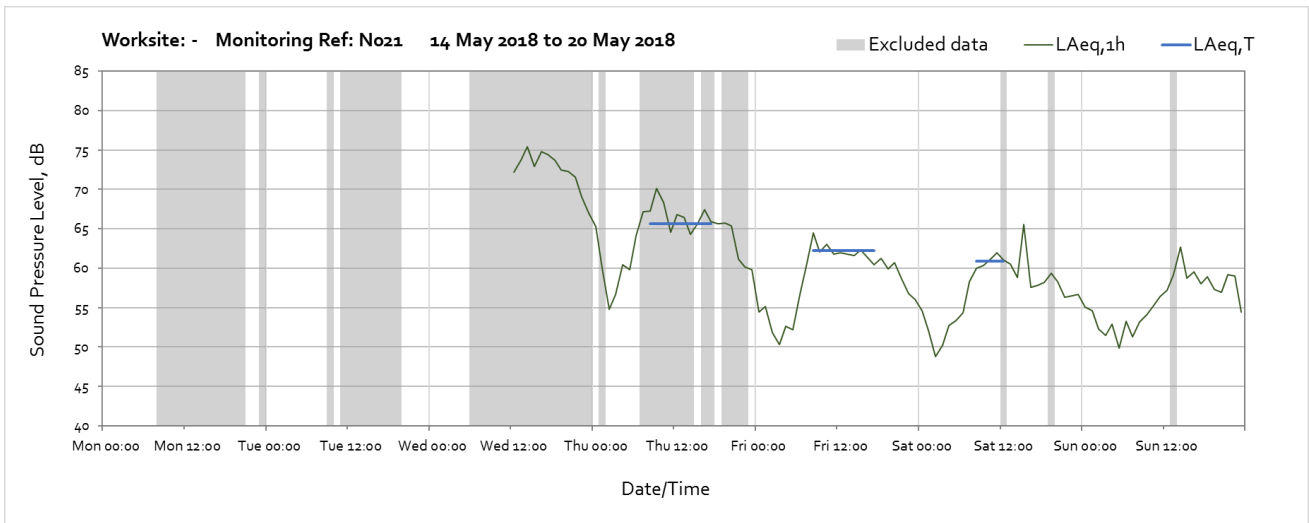


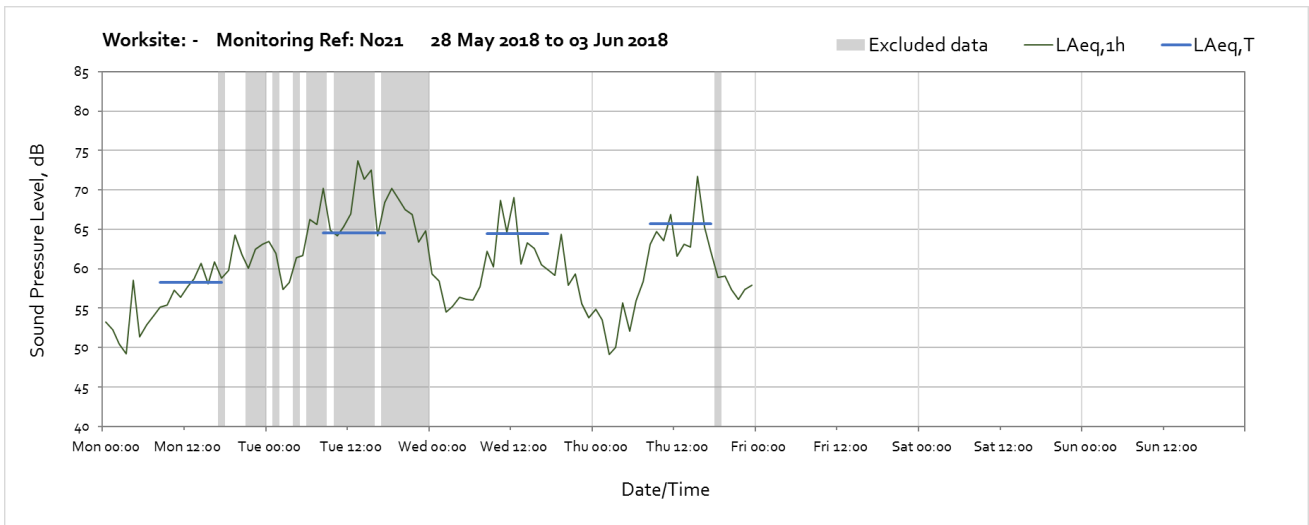
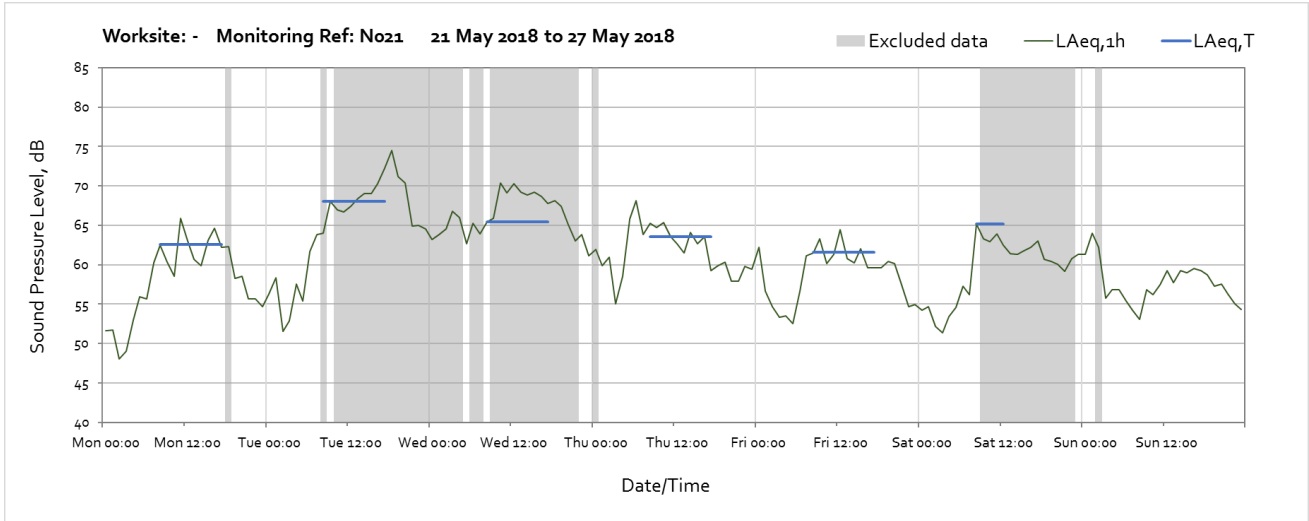
Monitoring Ref: N020



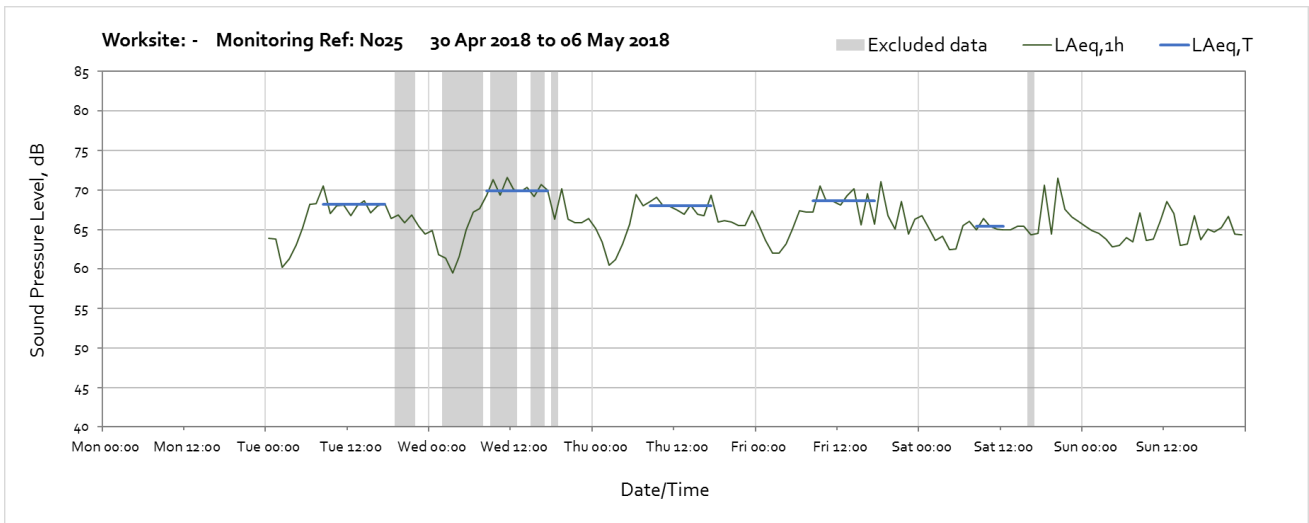


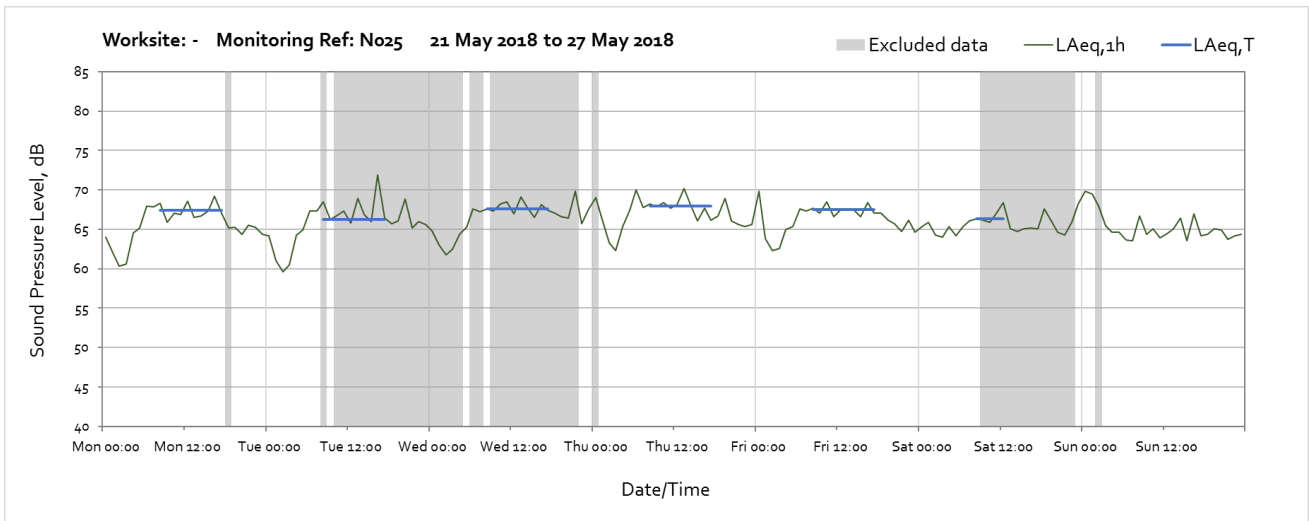
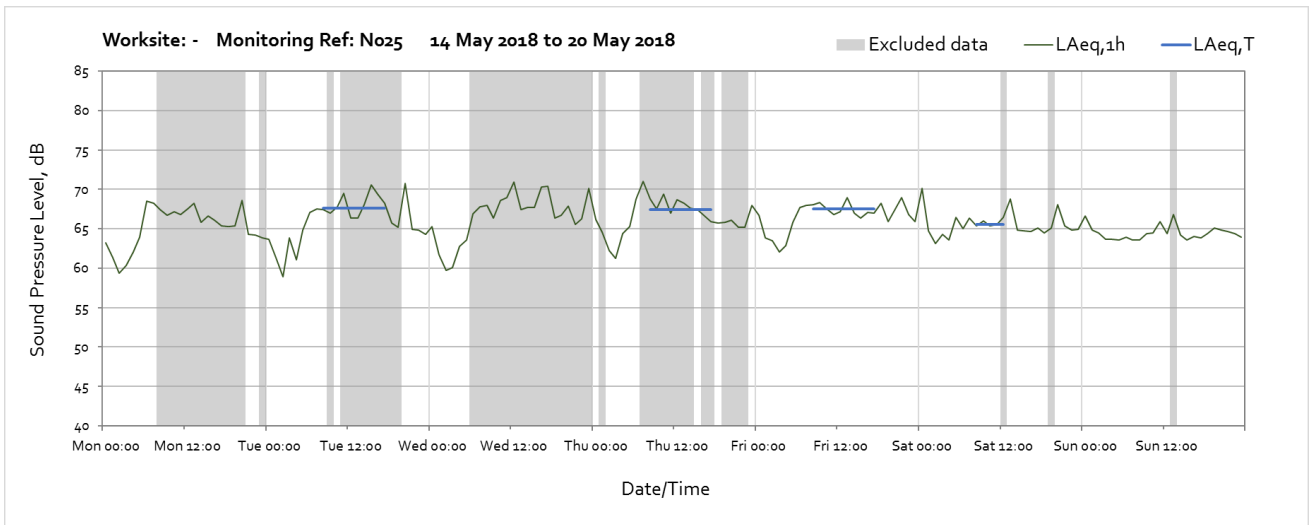
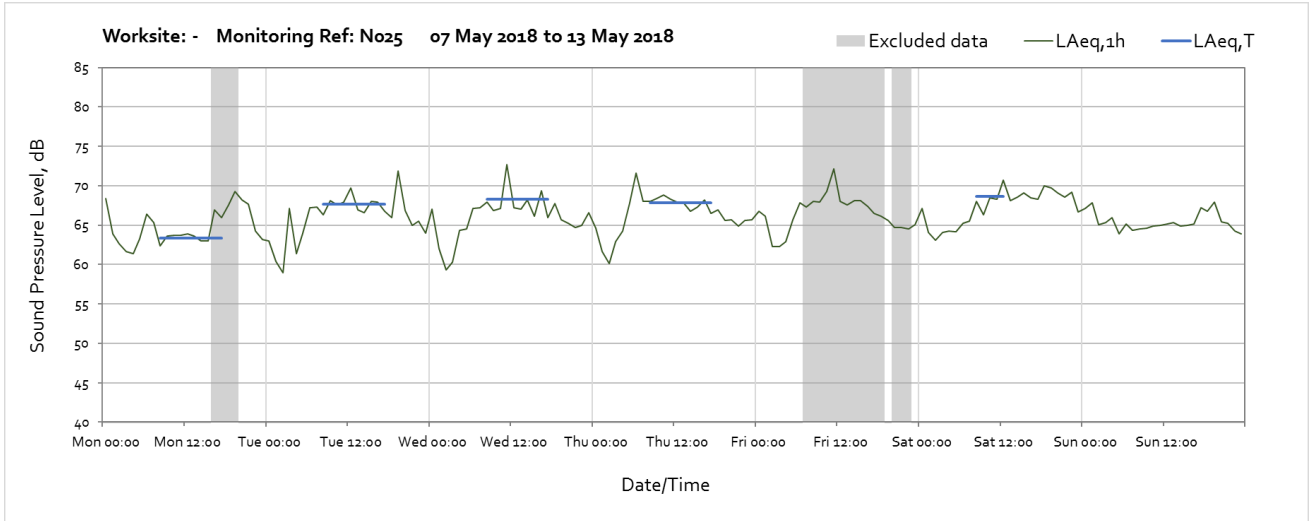
## Monitoring Ref: N021

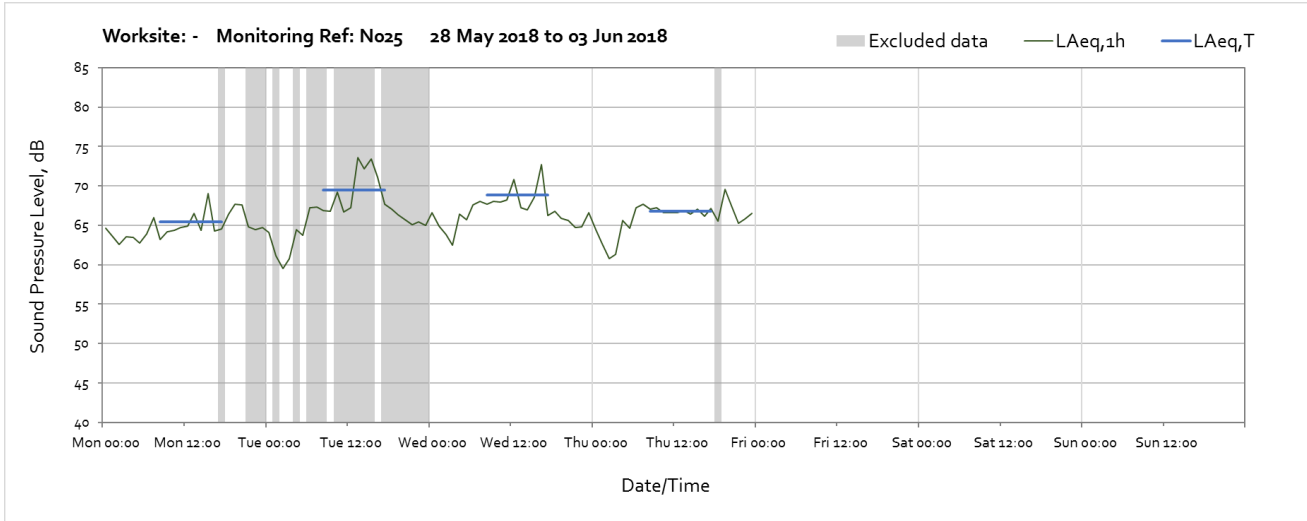




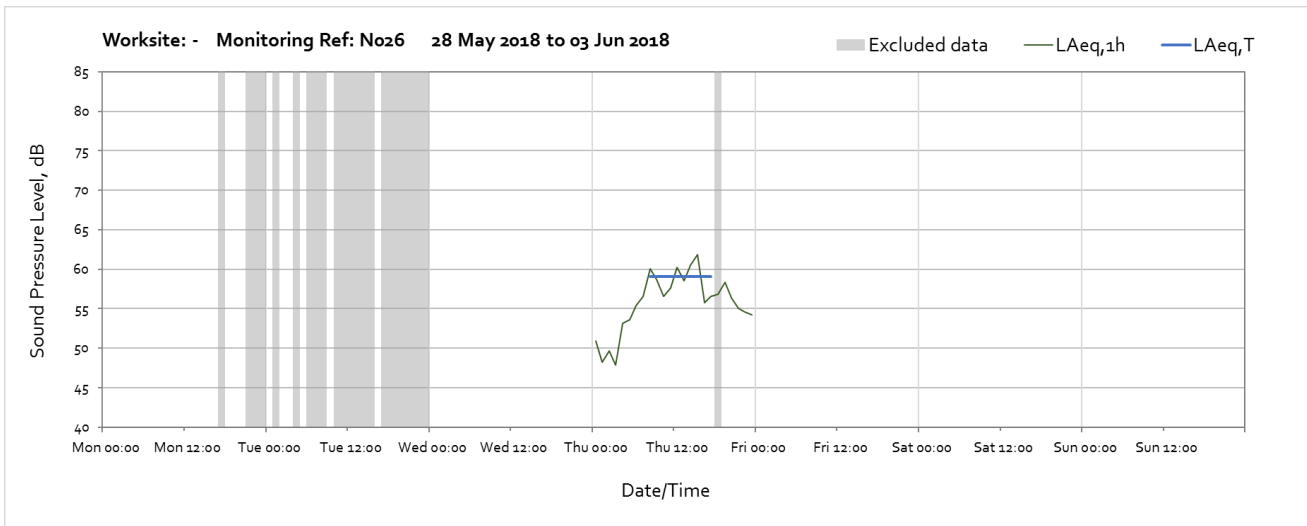
## Monitoring Ref: N025



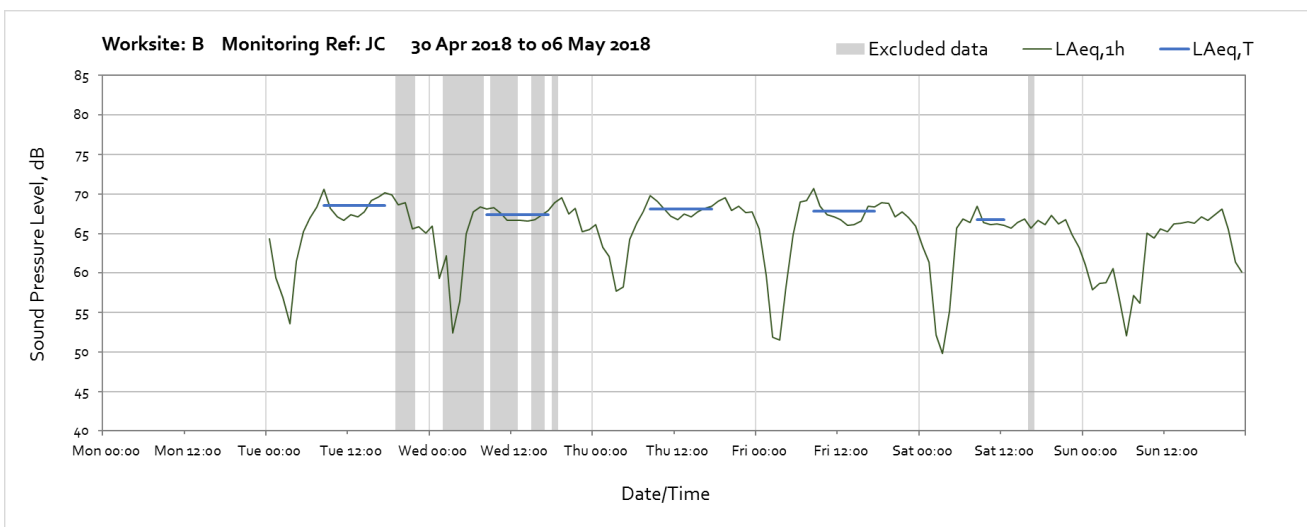


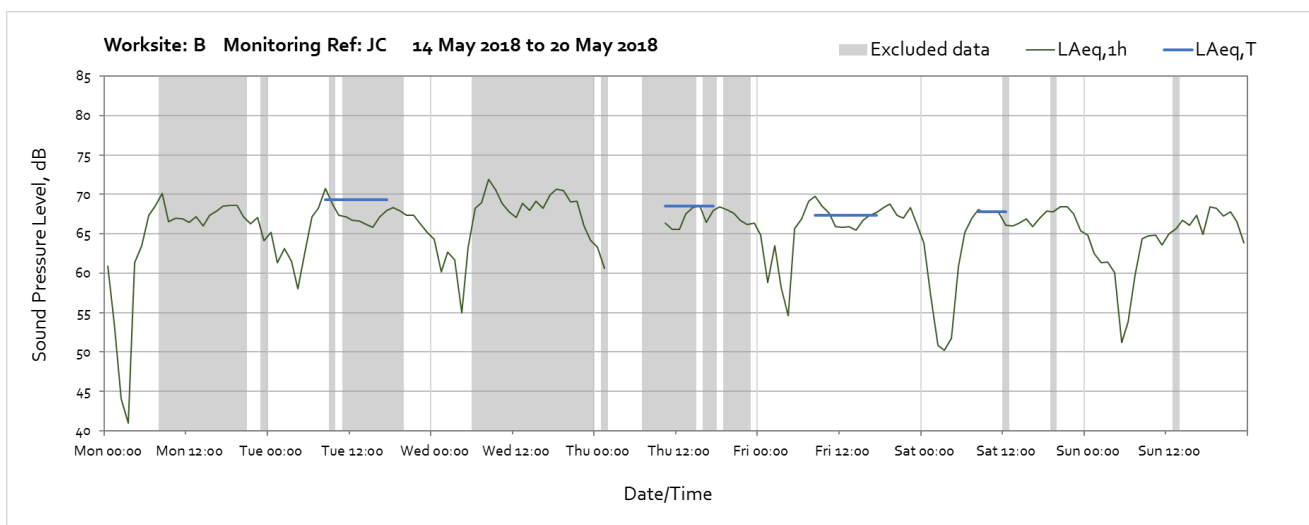
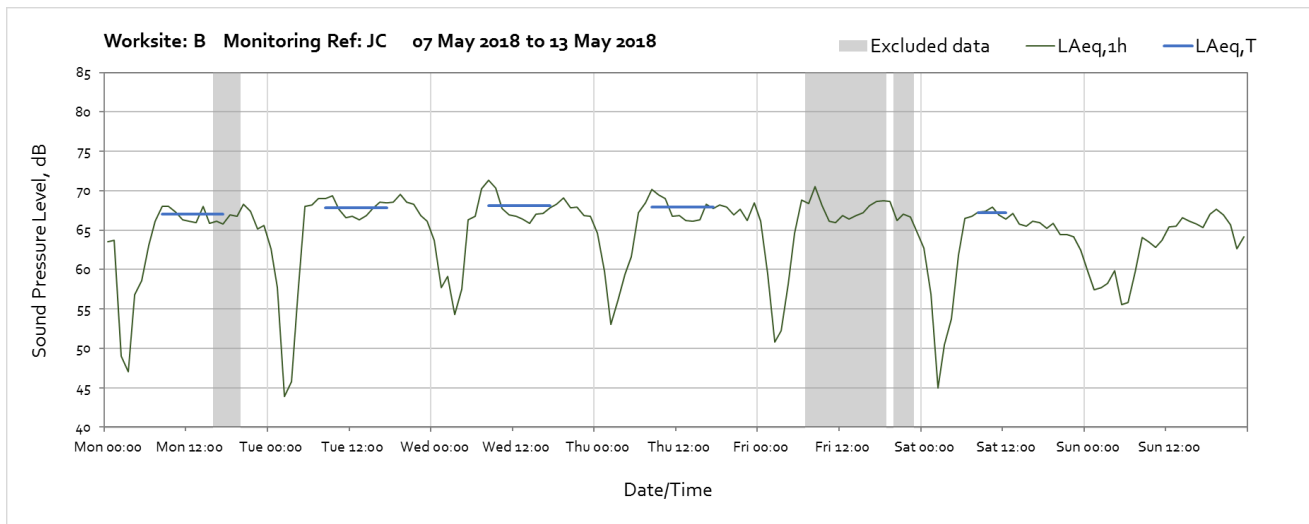


### Monitoring Ref: N026

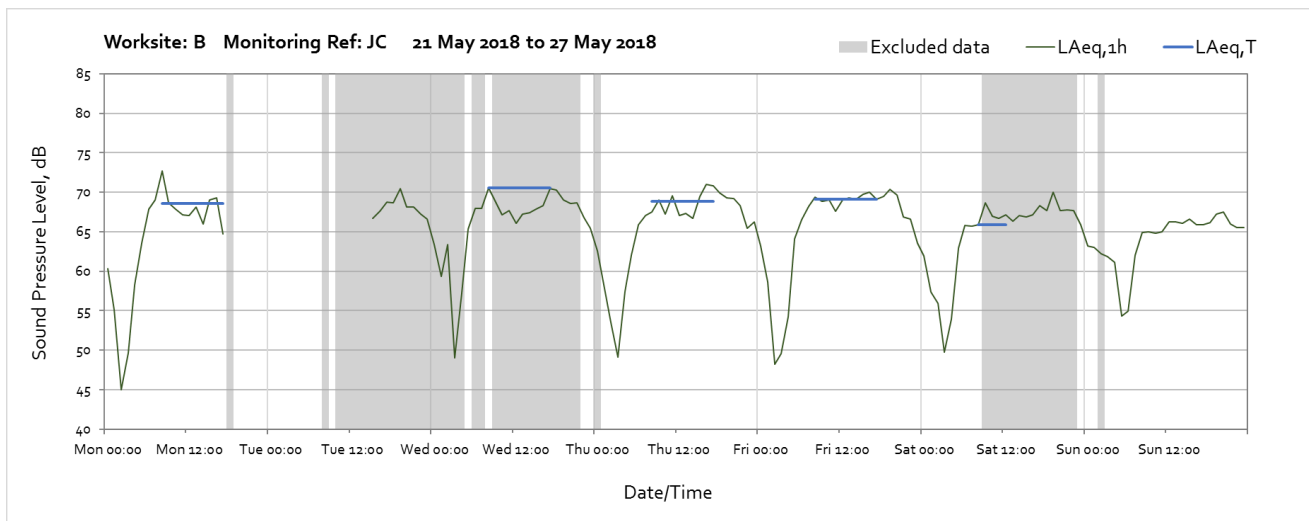


### Worksite: B – Monitoring Ref: JC



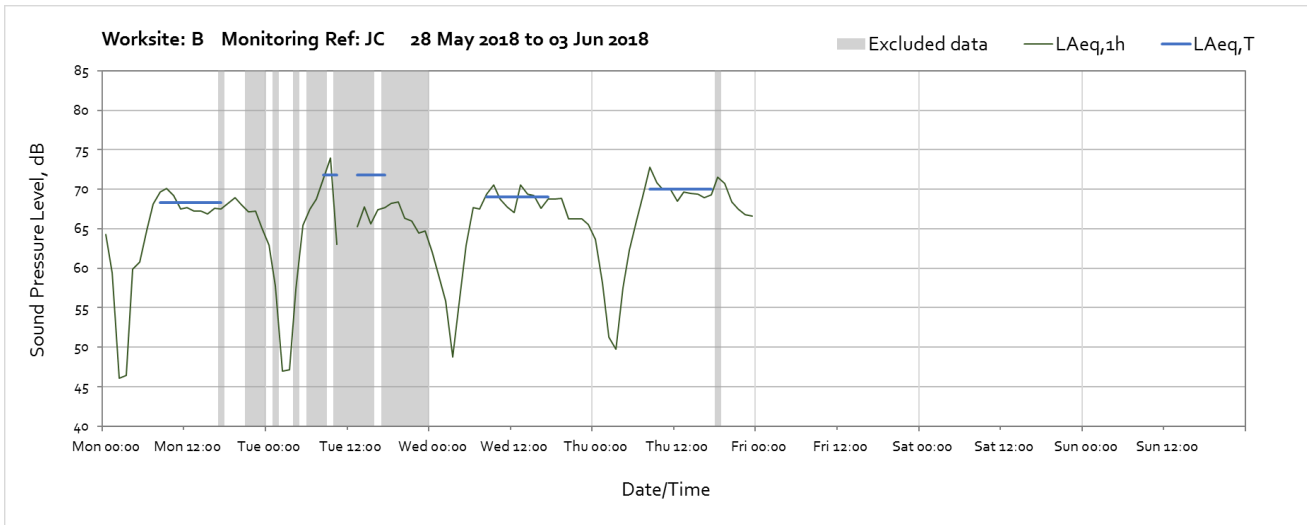


Note – Missing data between 2:00 and 10:00 on Thursday 17 due to dropout of the signal uploading data to remote database.



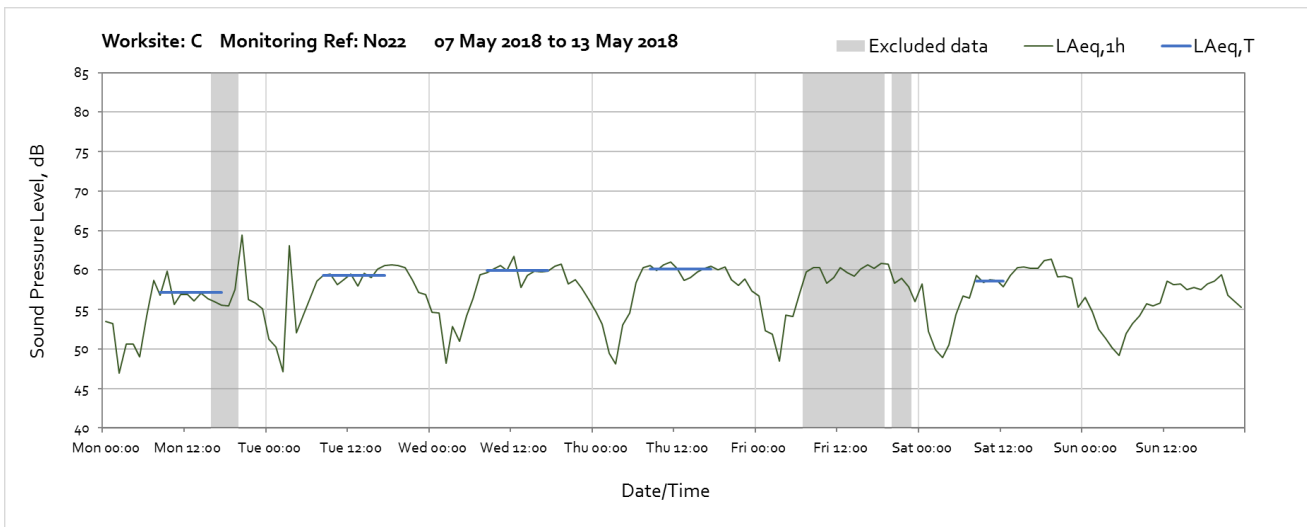
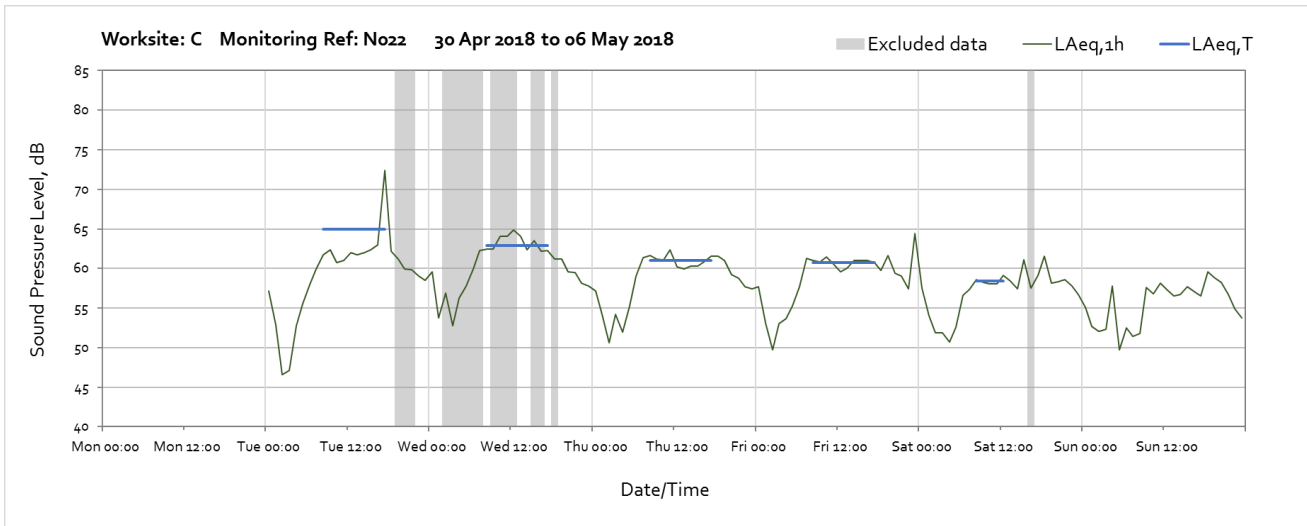
Note – Missing data between 18:00 on Monday 21 and 15:00 on Tuesday 22 due to dropout of the signal uploading data to remote database.

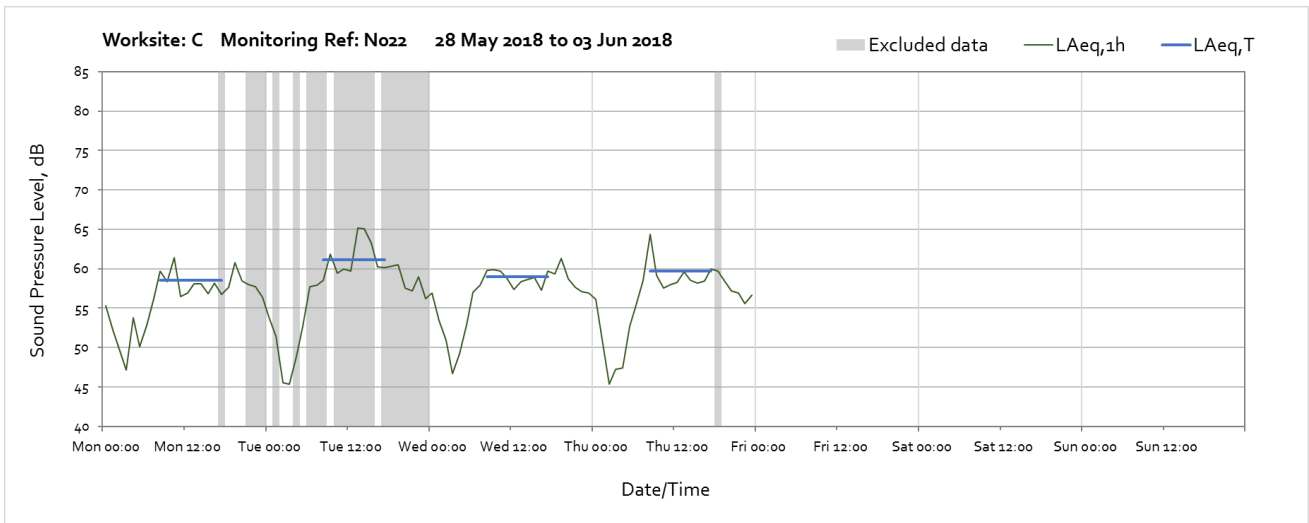
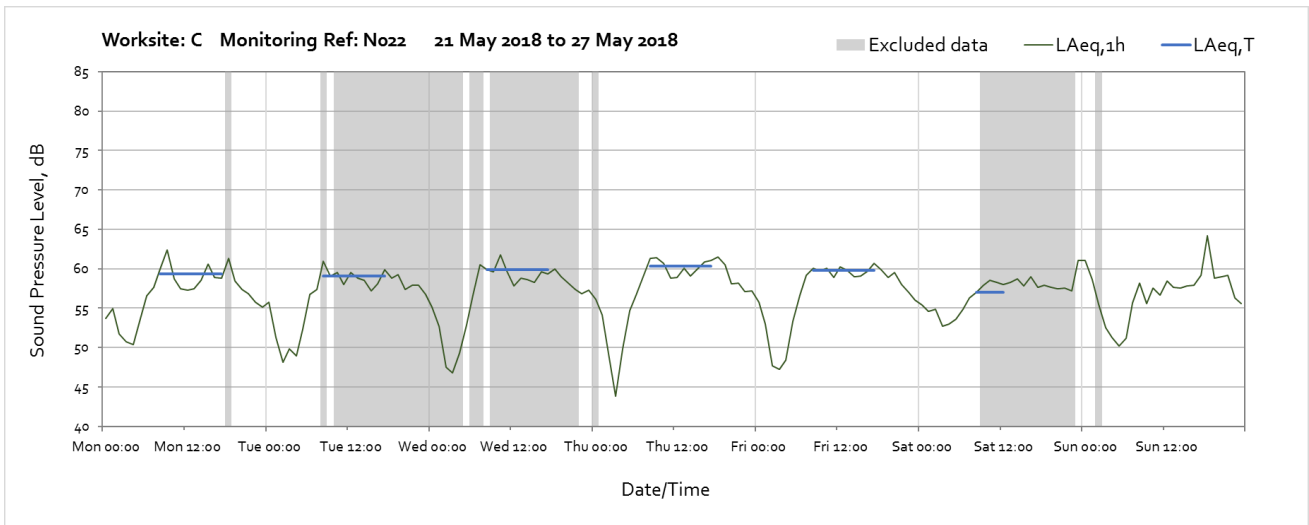
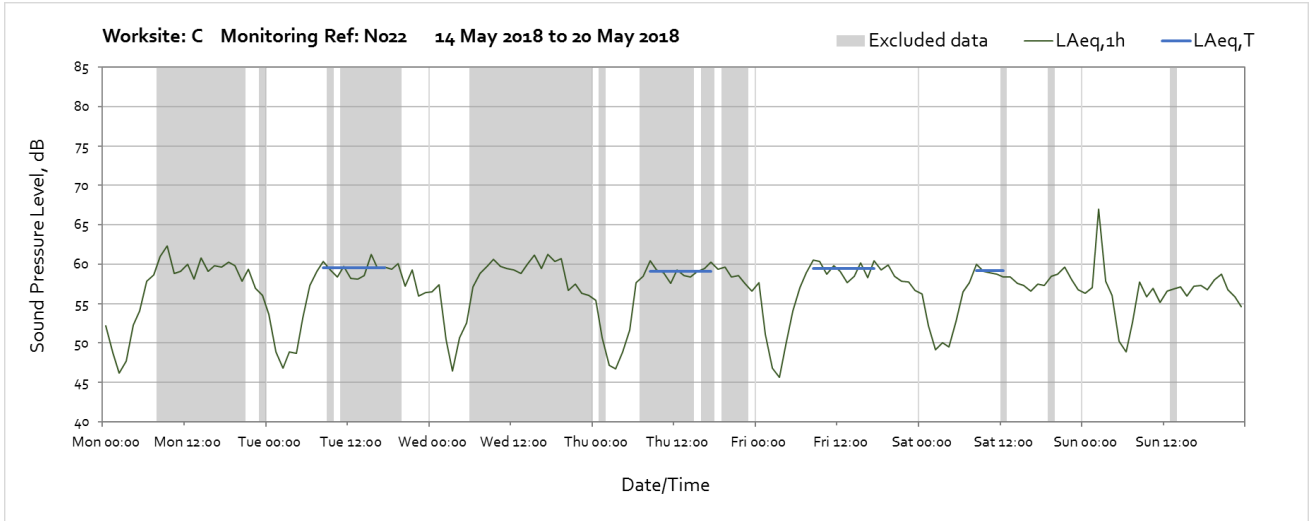




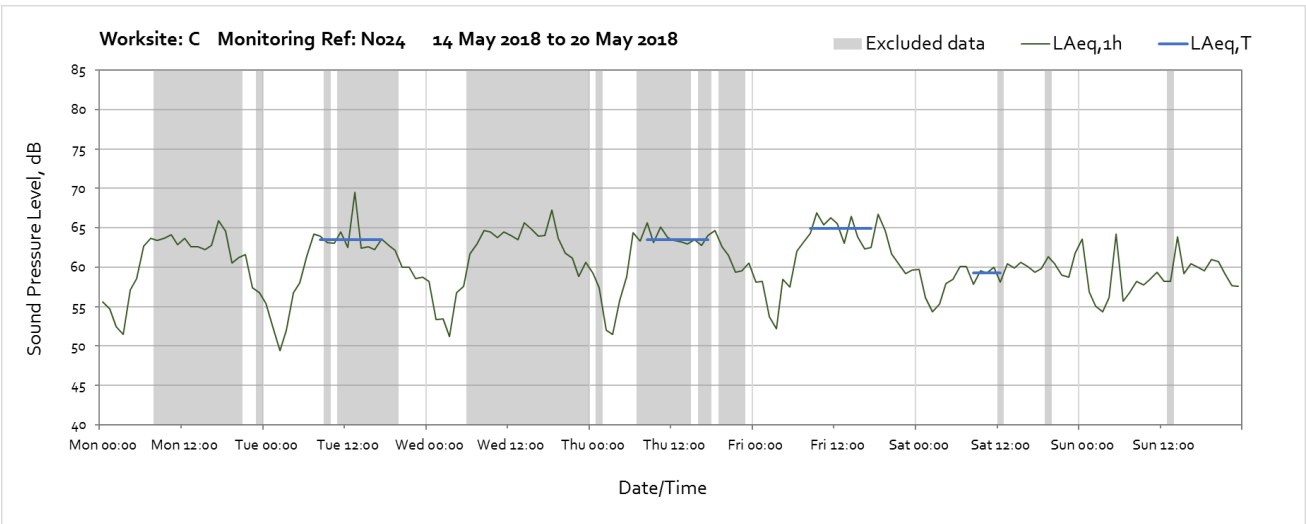
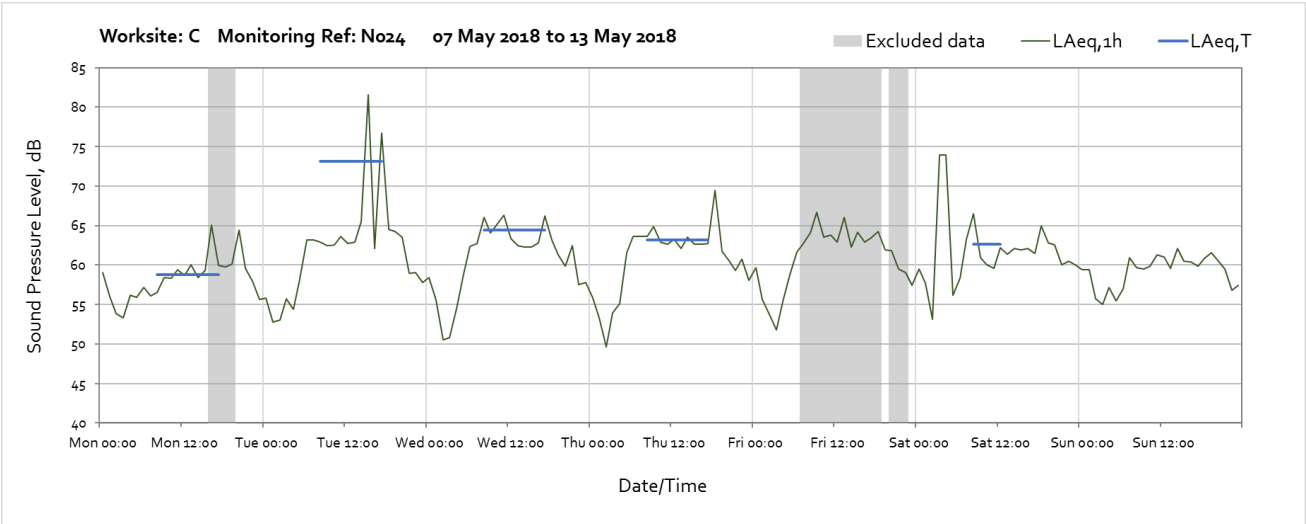
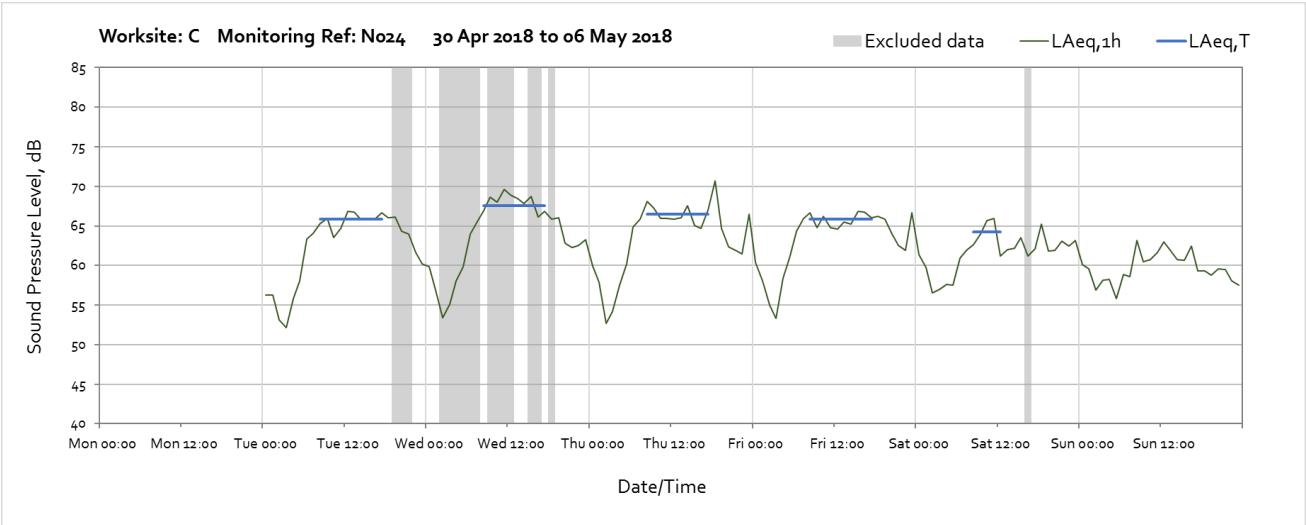
Note – Missing data between 11:00 and 13:00 on Tuesday 29 due to dropout of the signal uploading data to remote database.

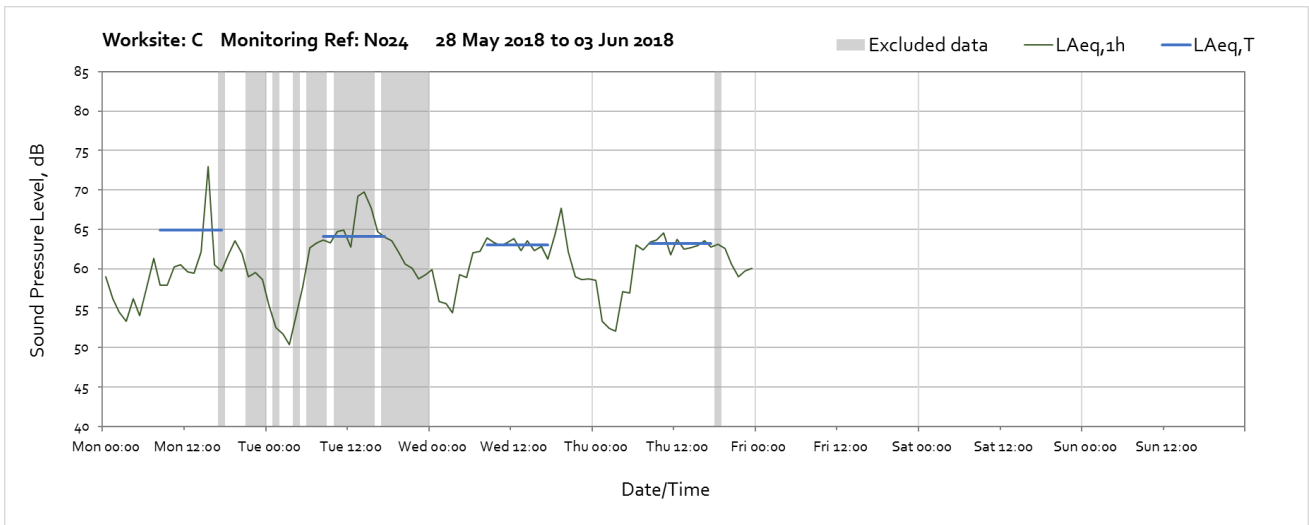
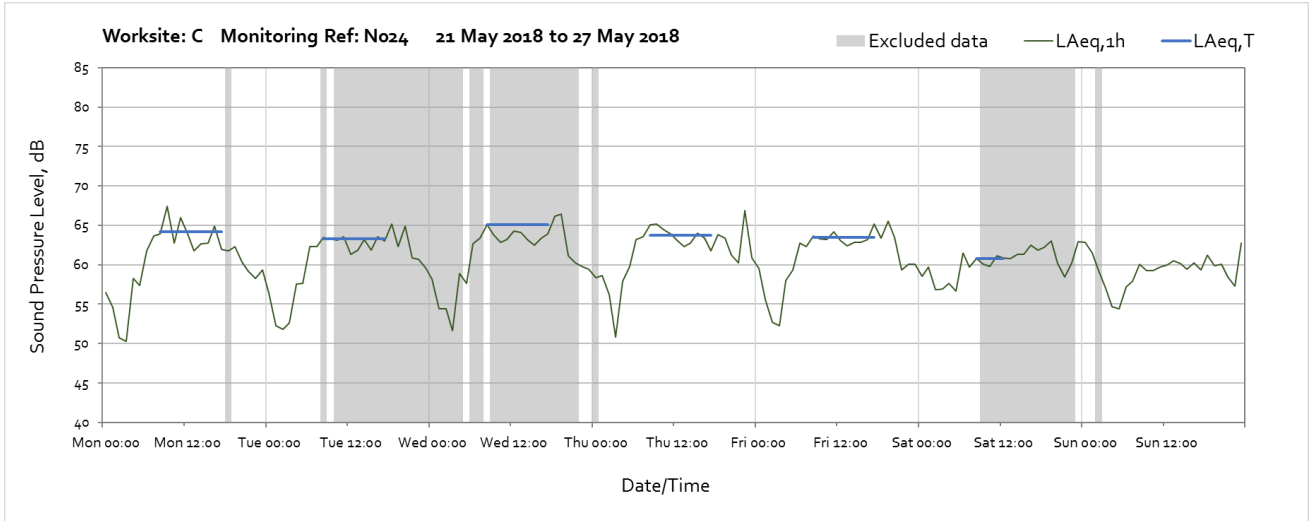
### Worksite: C – Monitoring Ref: N022



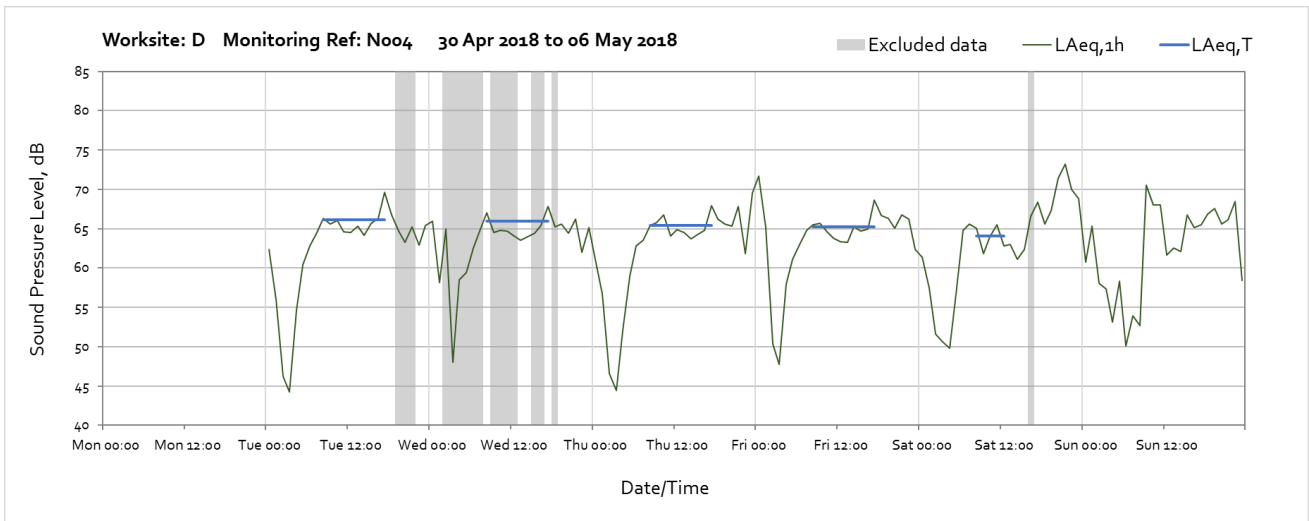


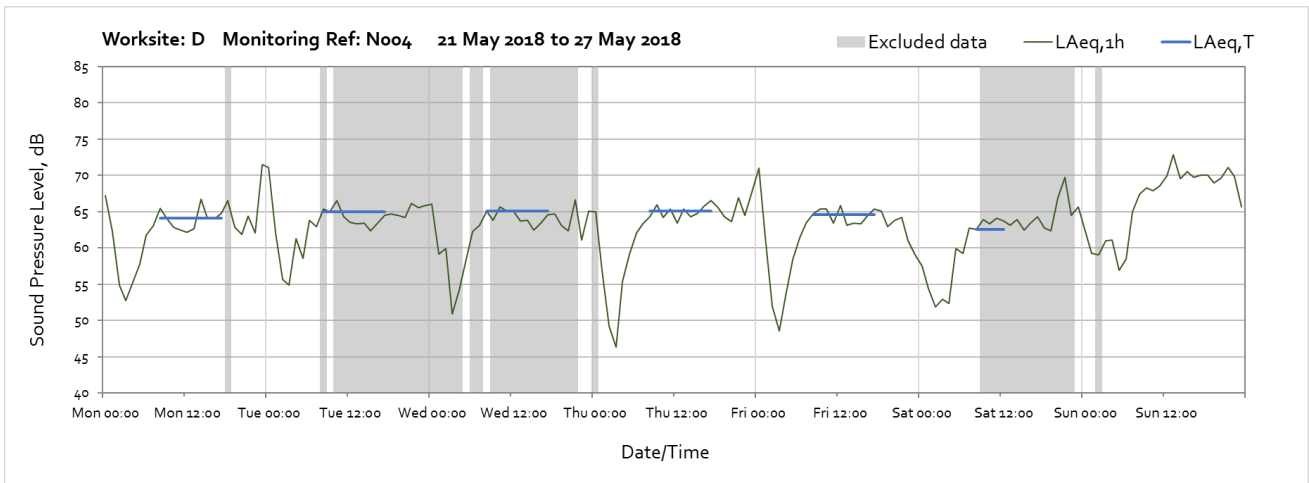
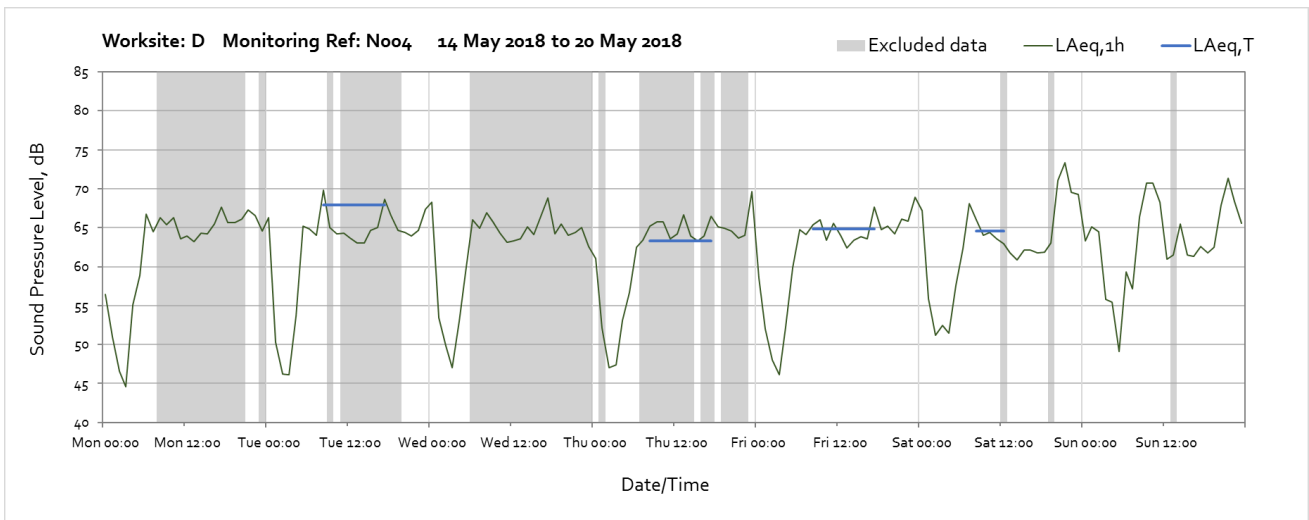
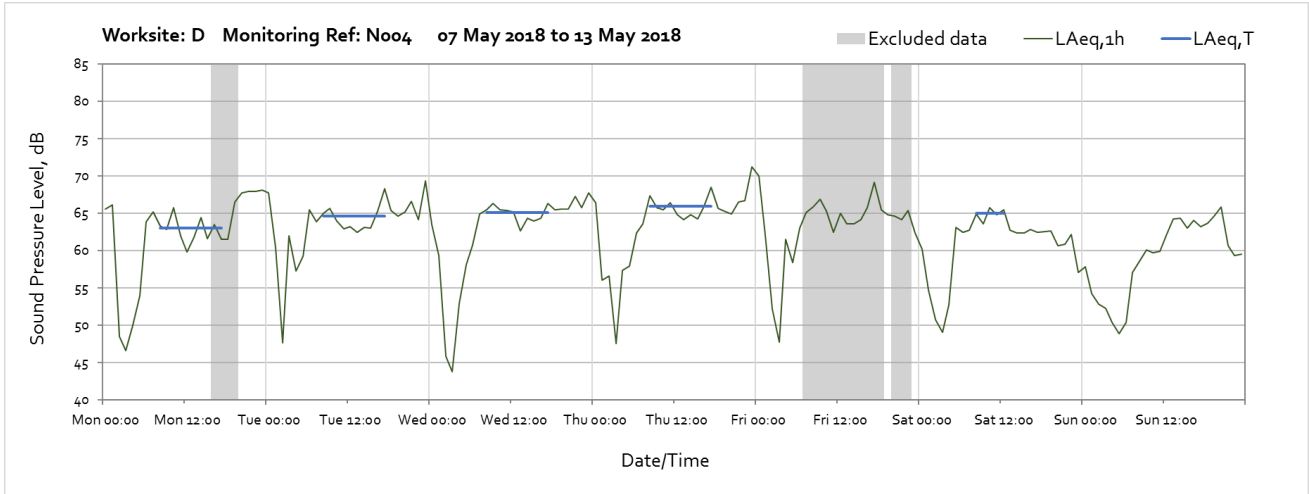
Worksite: C – Monitoring Ref: N024

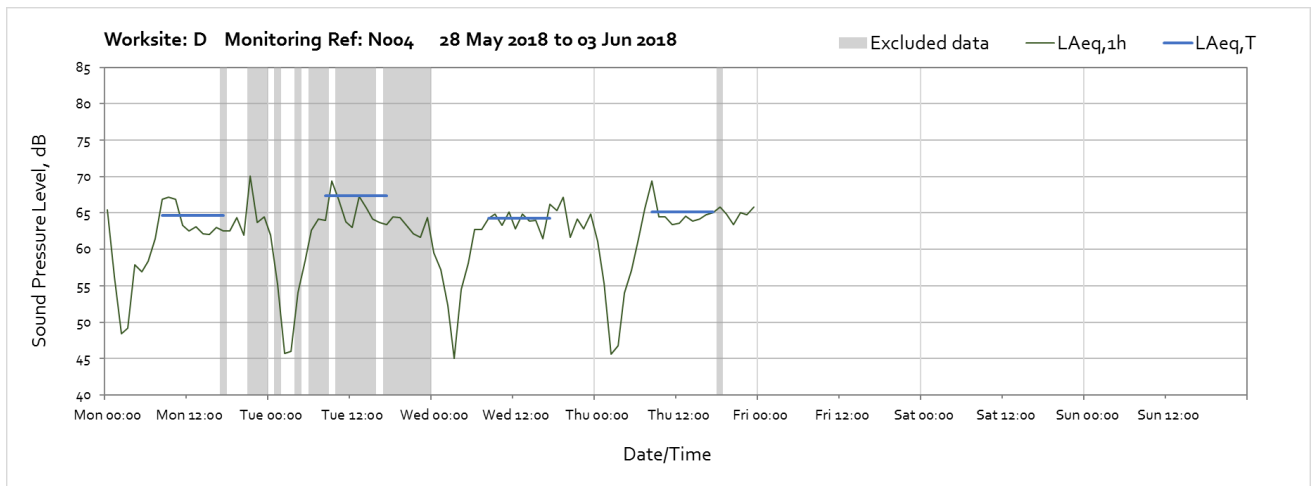




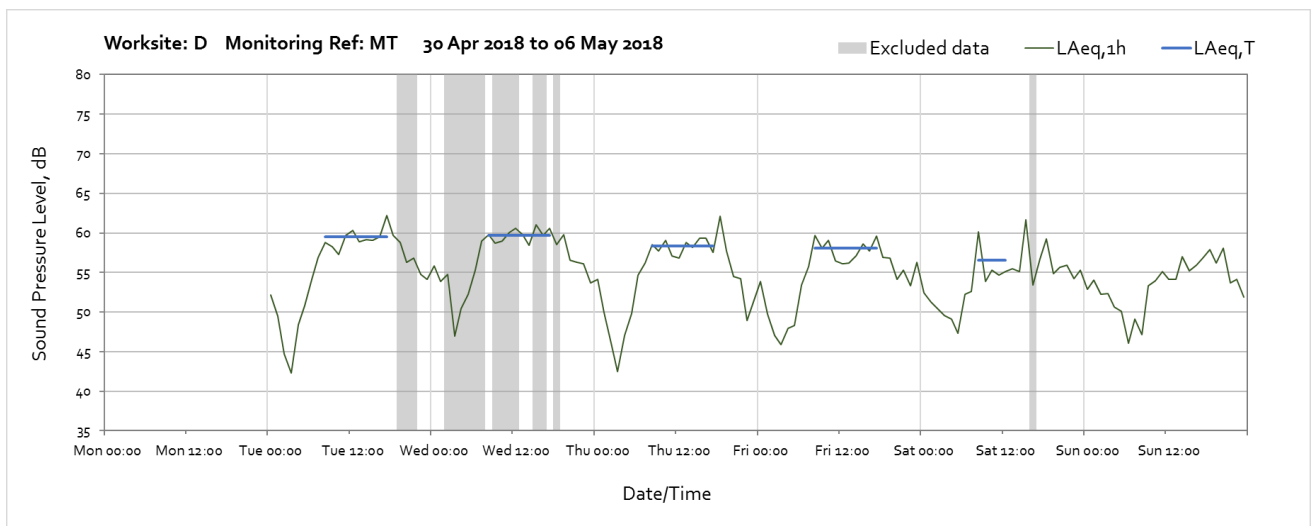
## Worksite: D – Monitoring Ref: N004



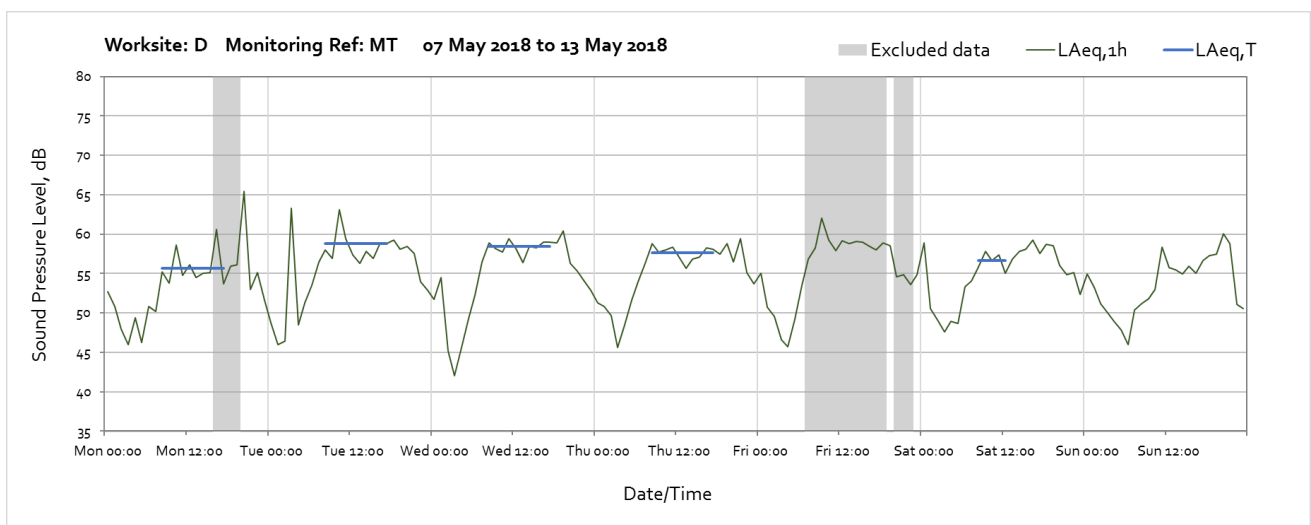




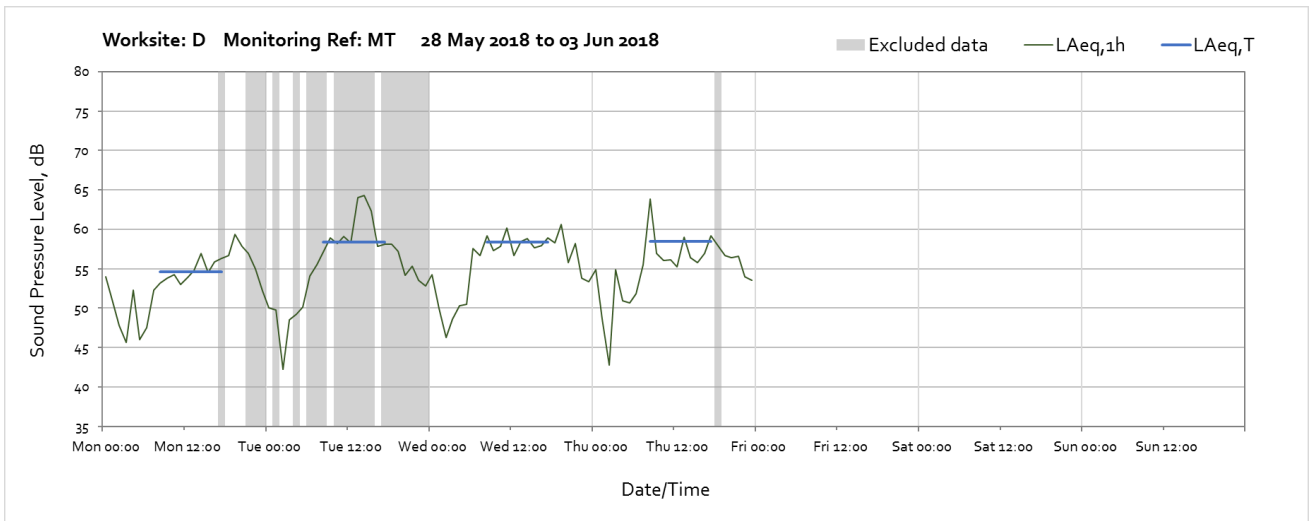
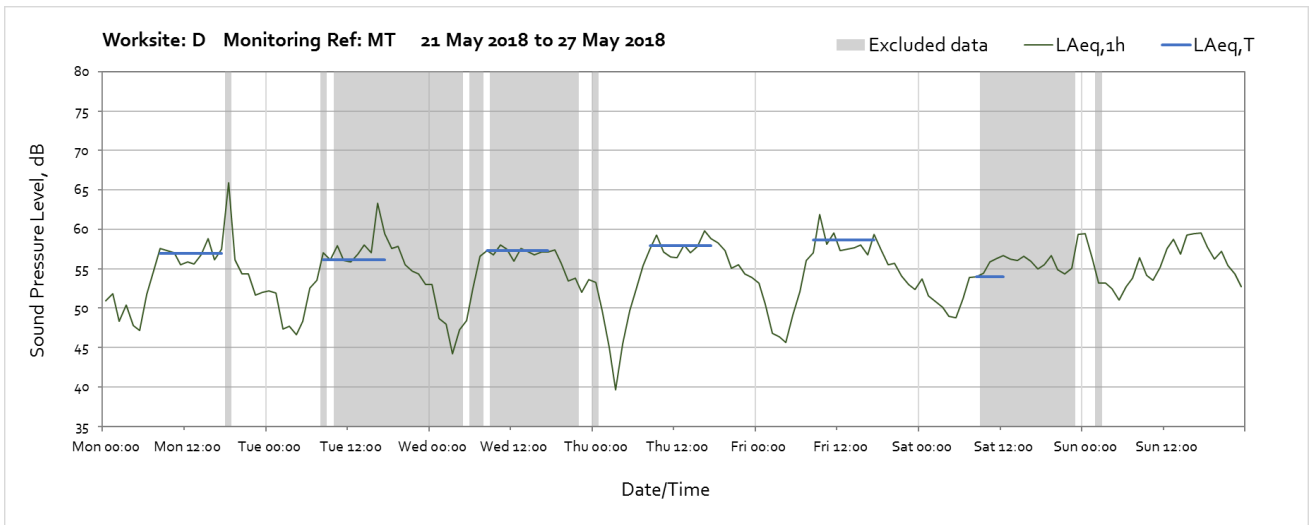
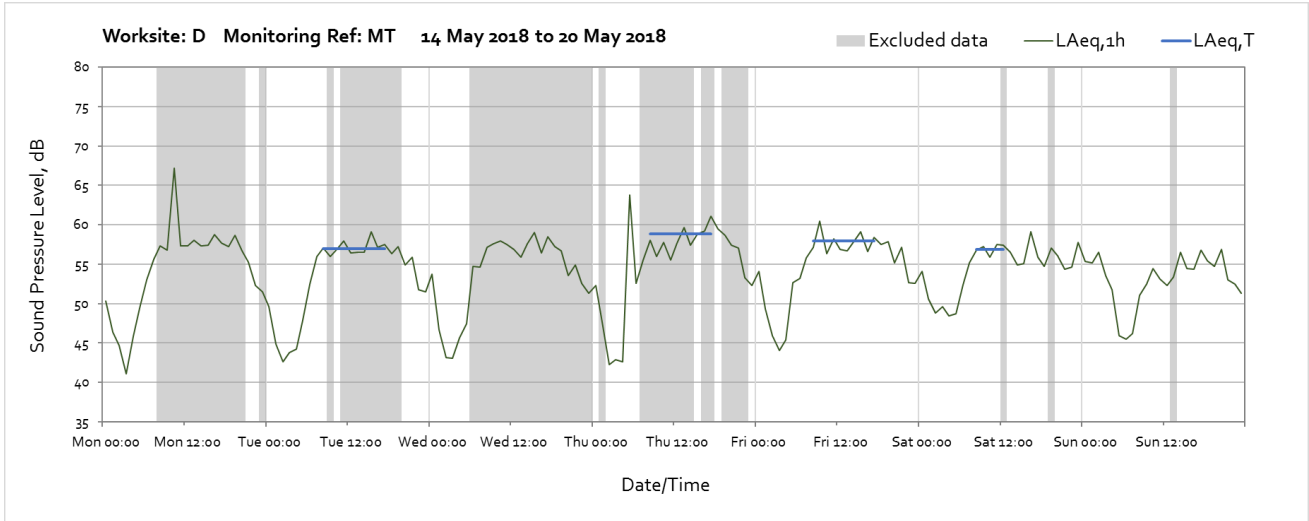
## Worksite: D – Monitoring Ref: MT



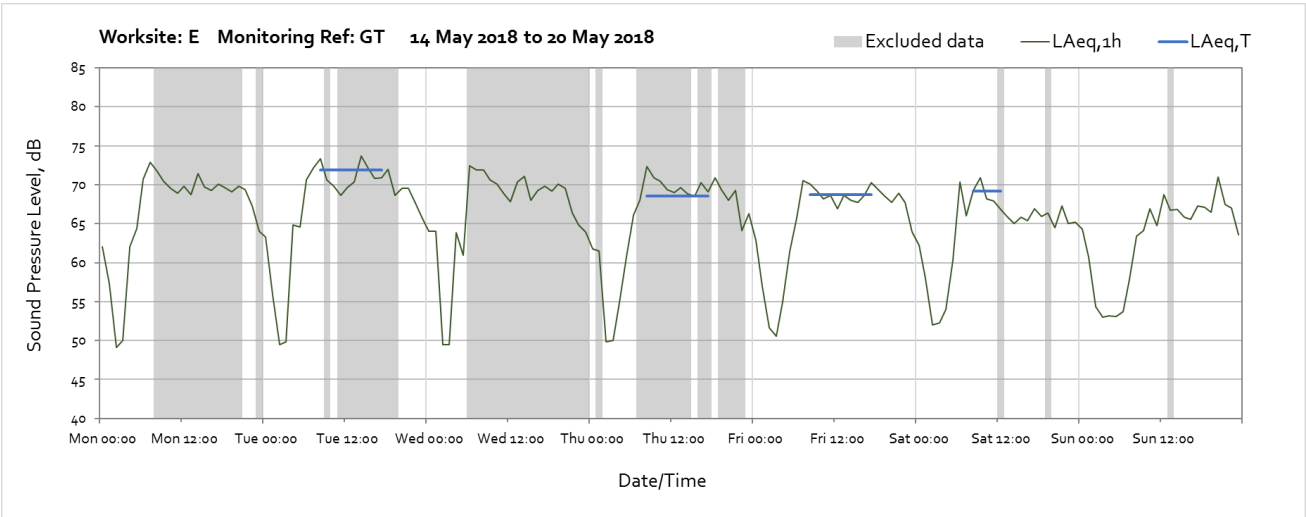
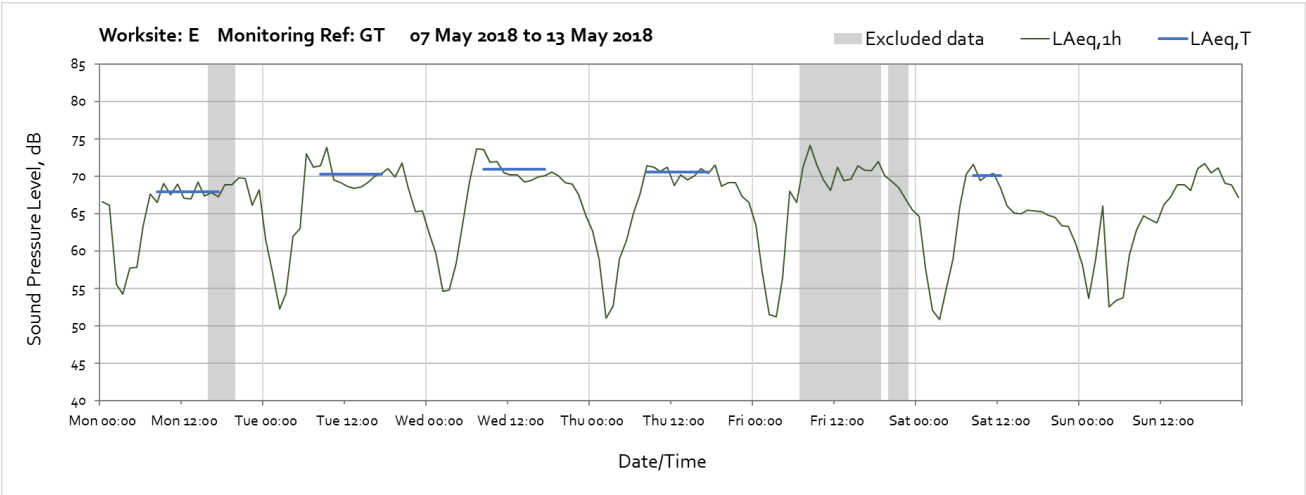
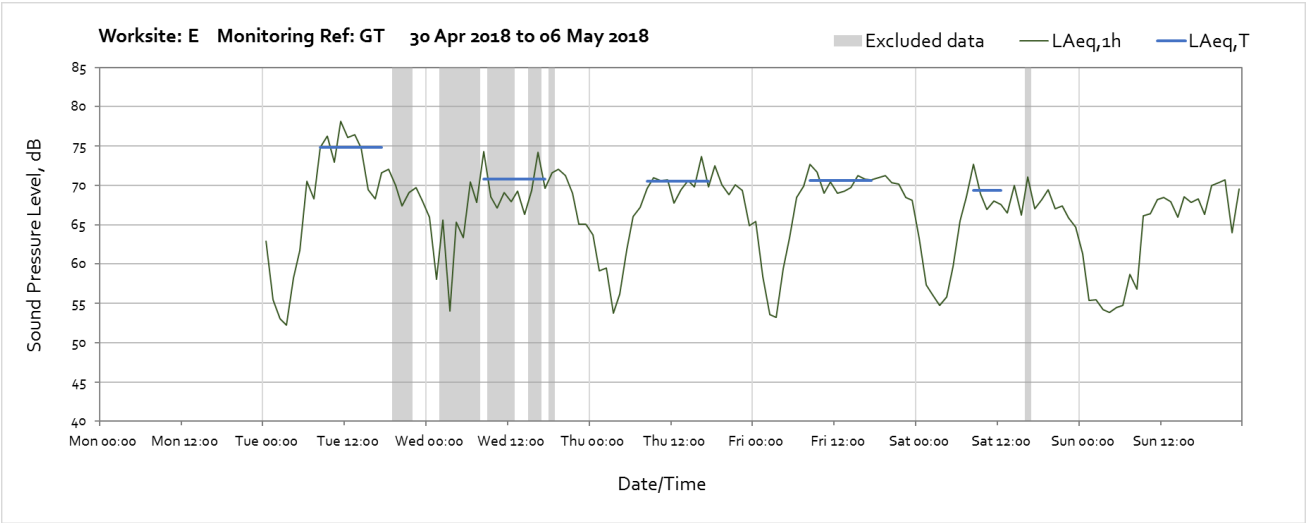
Note – Missing data between 23:00 on Thursday 3 and 00:00 on Friday 4 due to dropout of the signal uploading data to remote database.

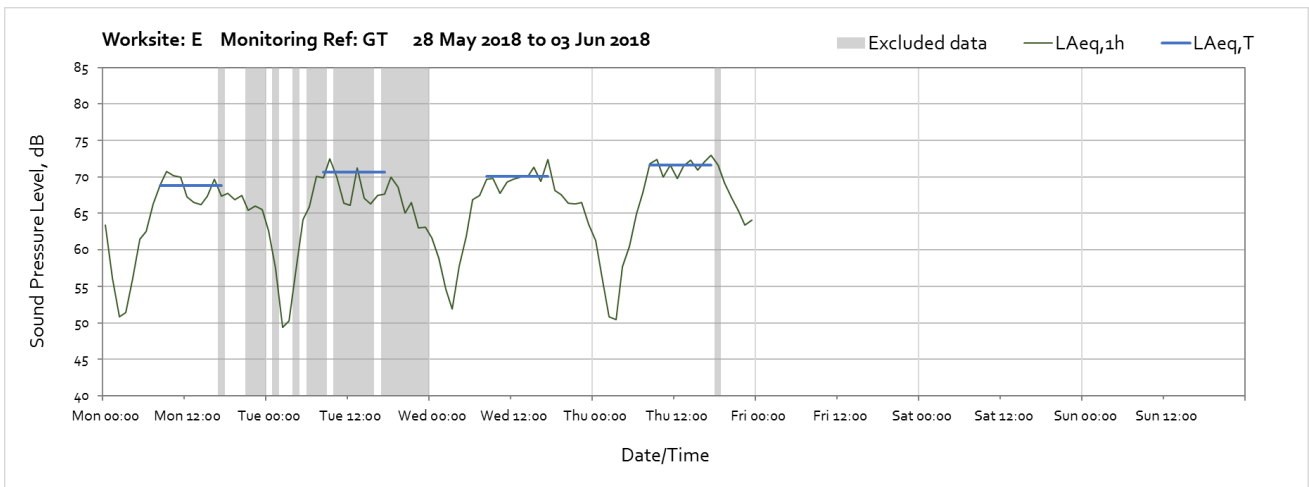
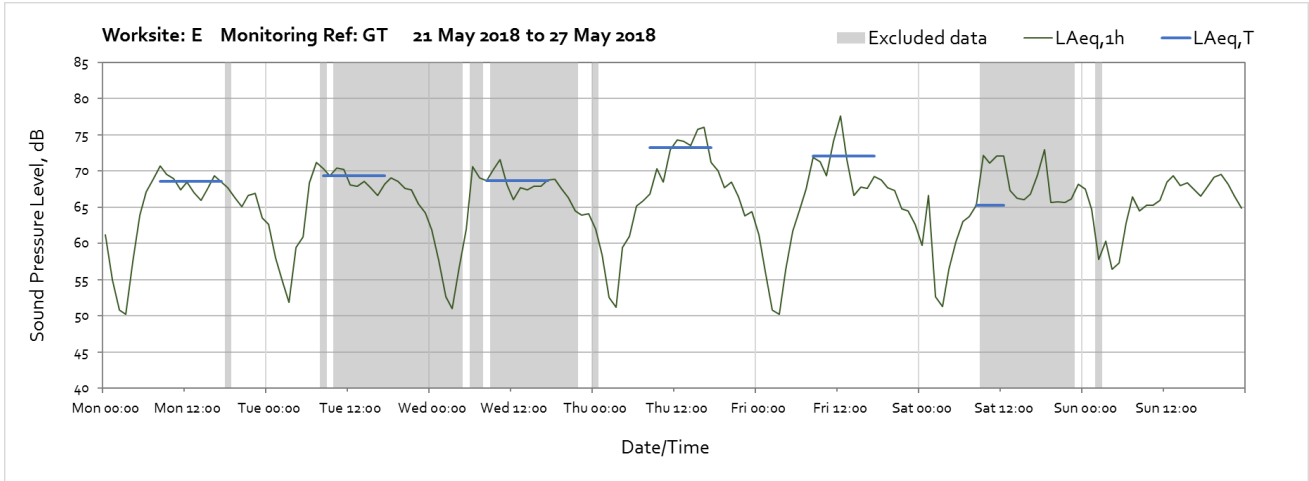




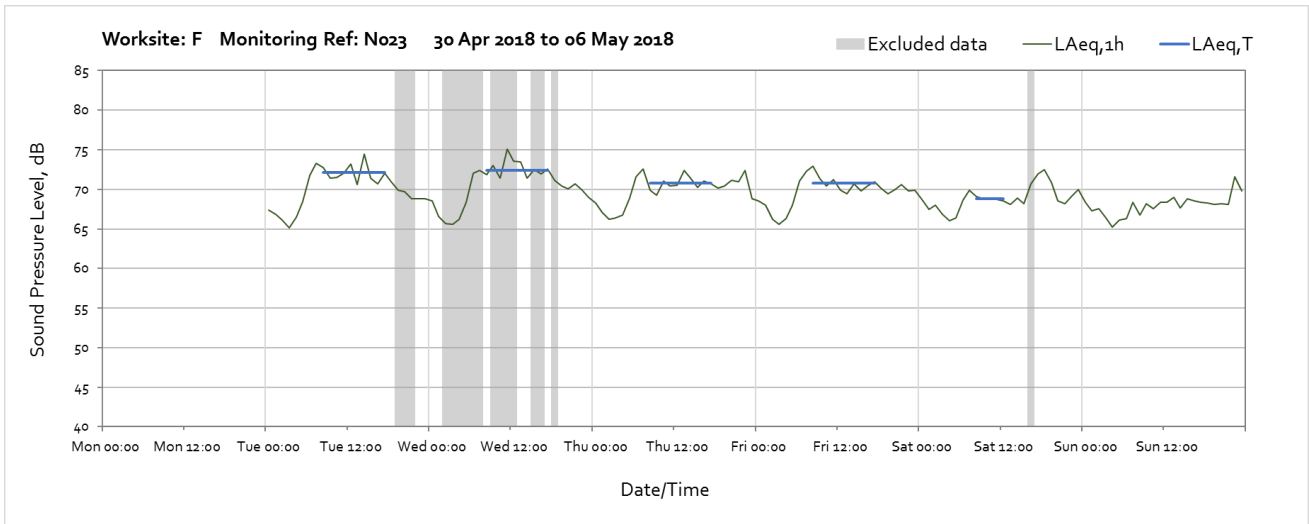


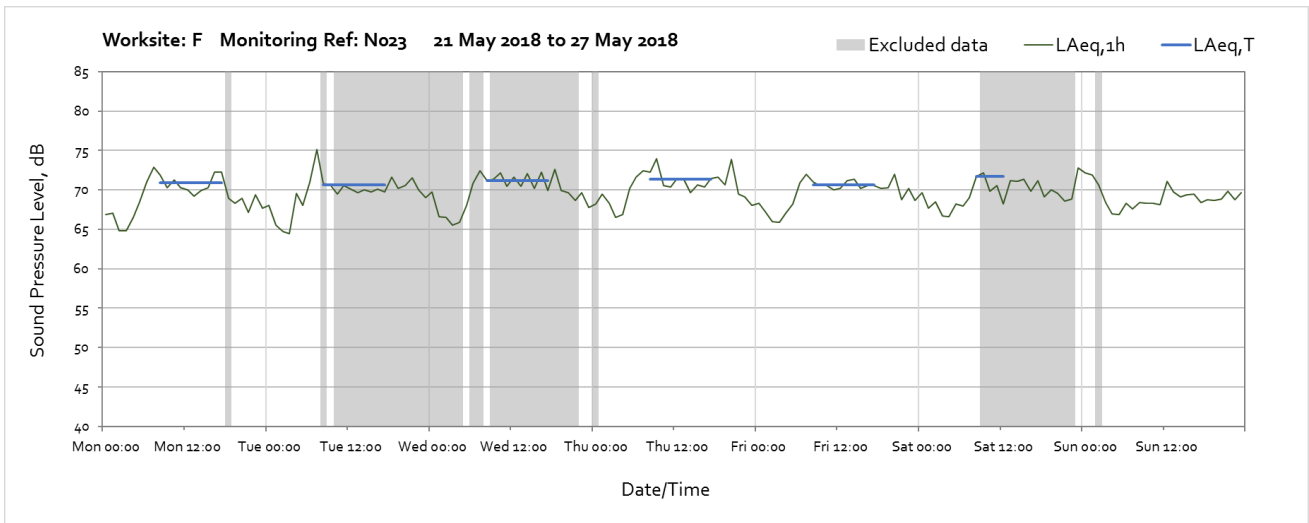
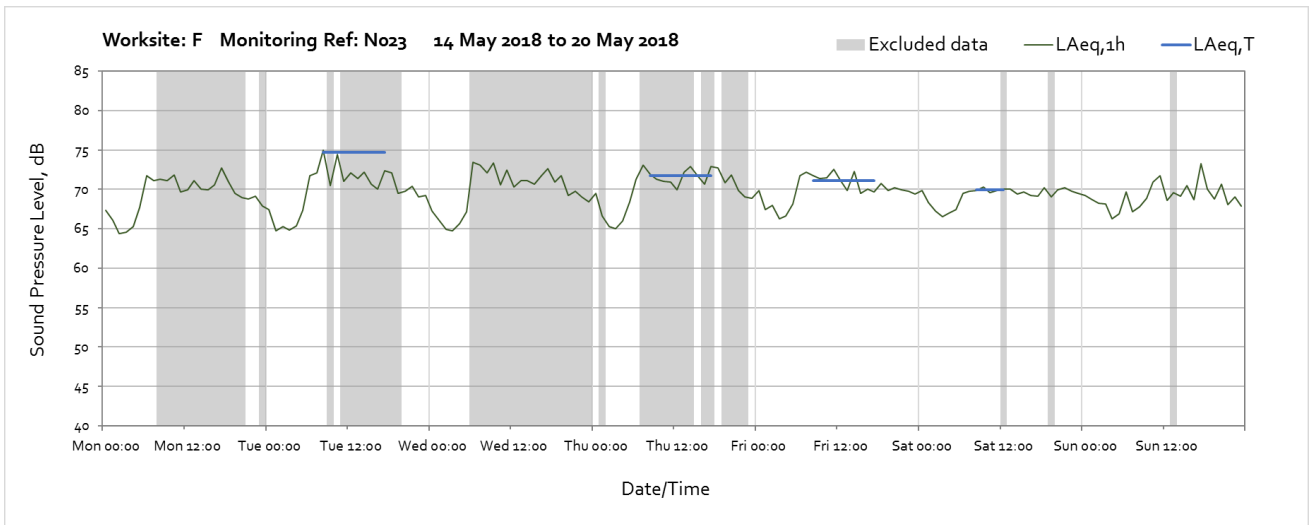
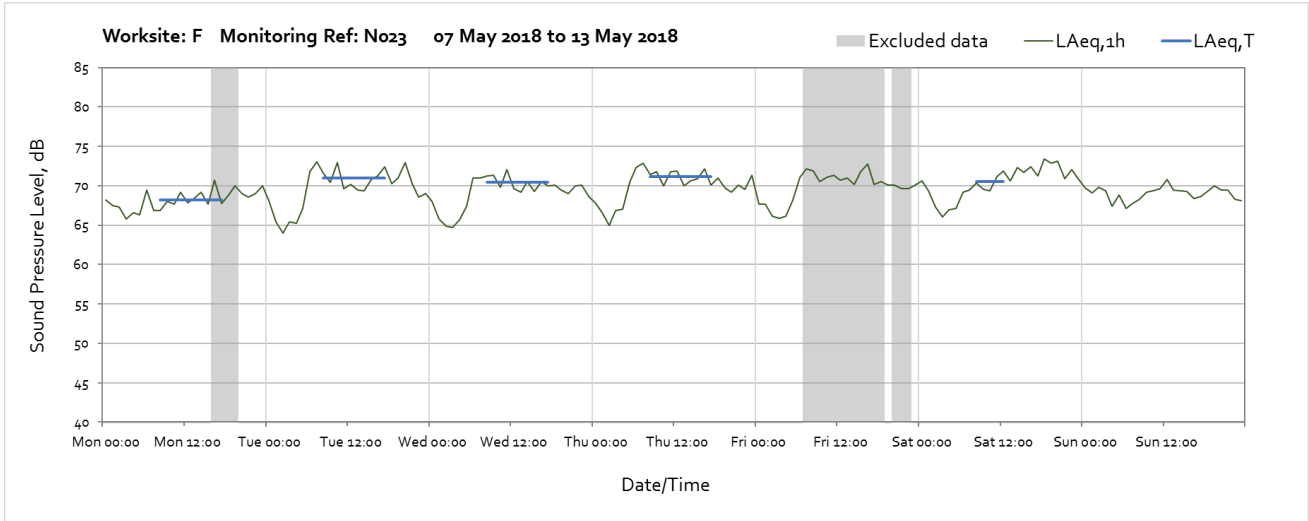
Worksite: E – Monitoring Ref: GT

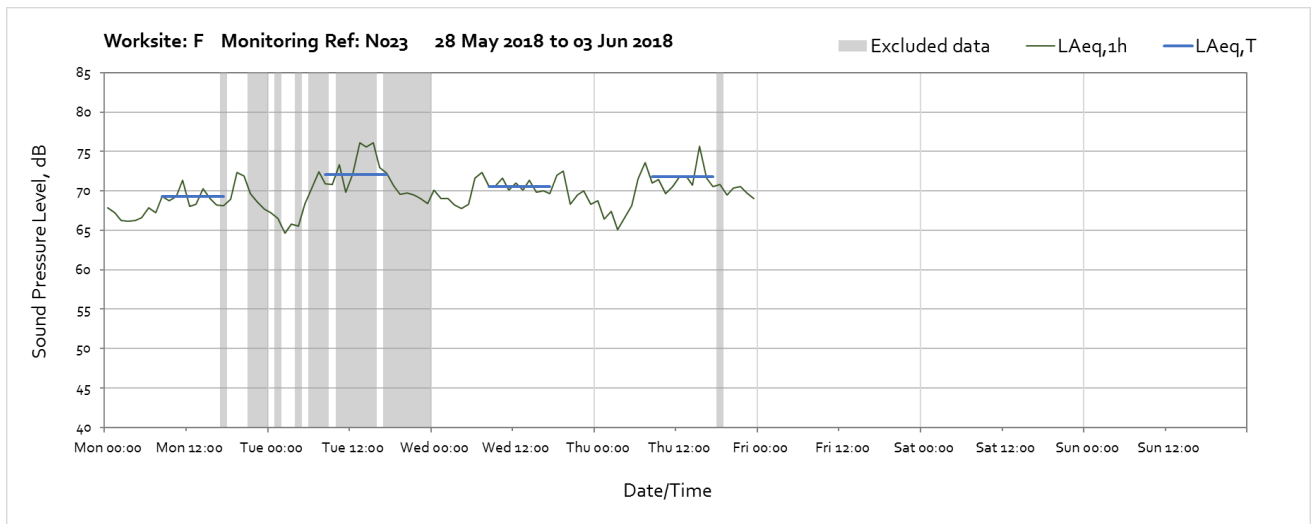




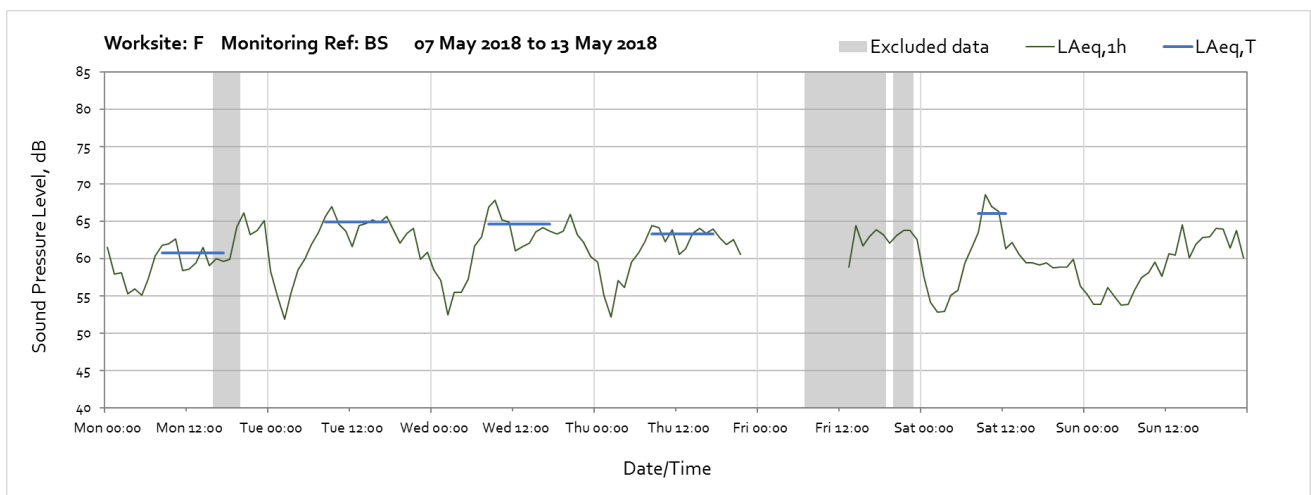
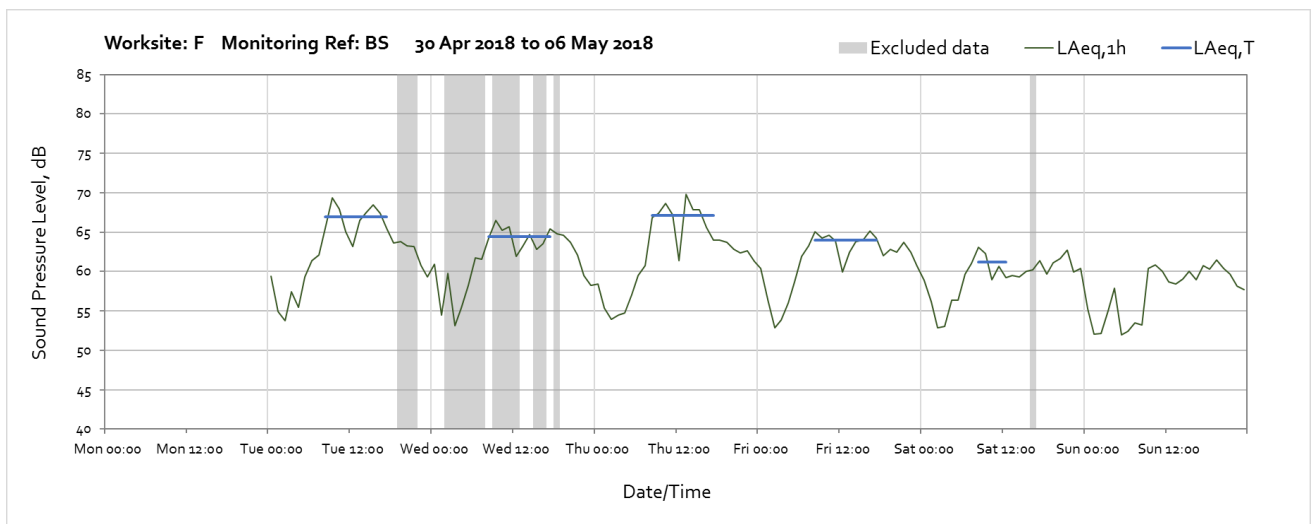
## Worksite: F – Monitoring Ref: N023



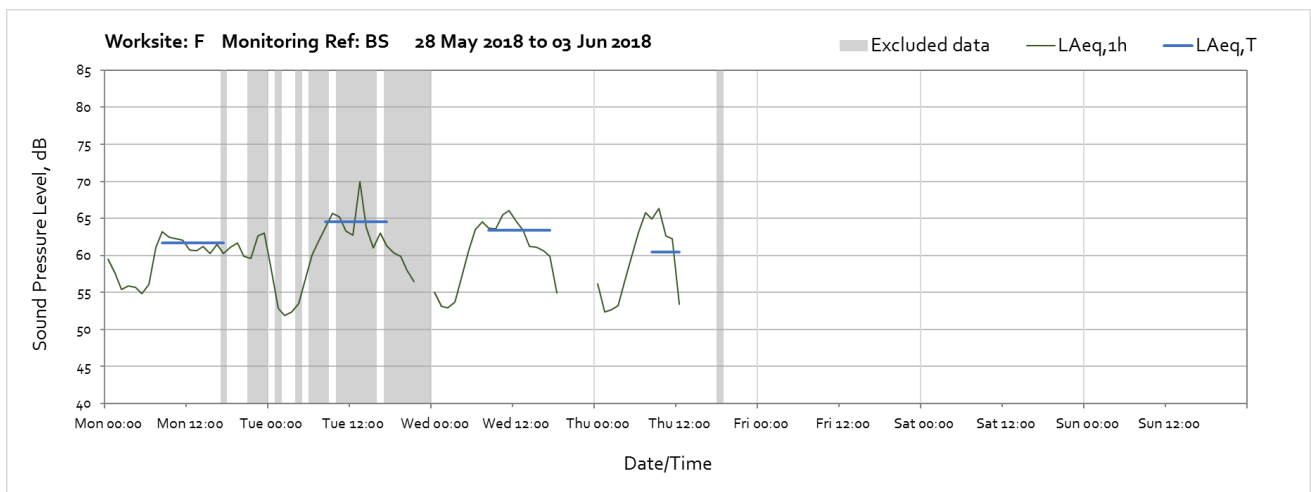
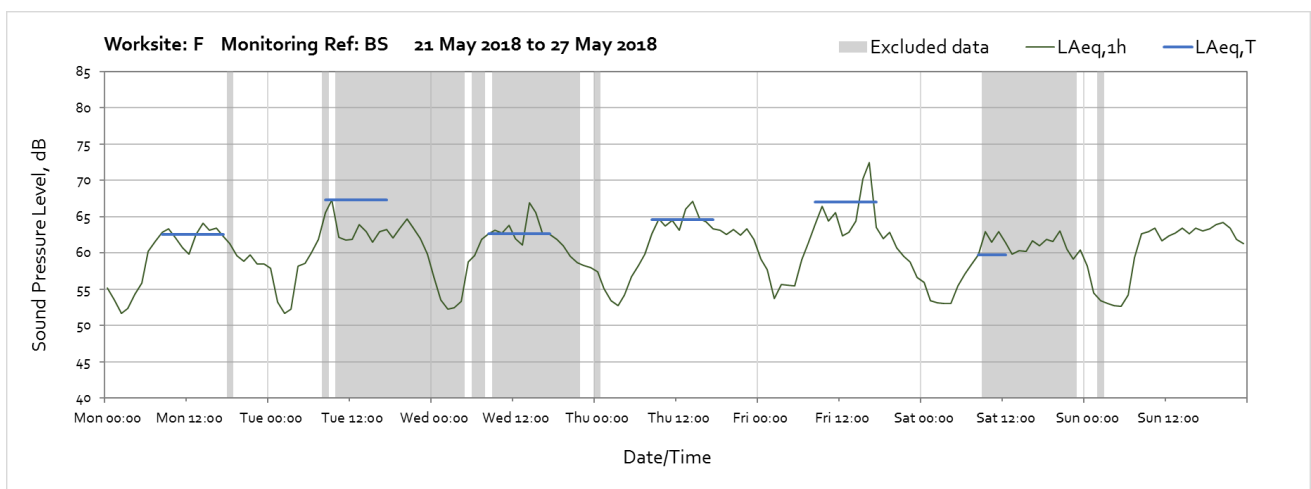
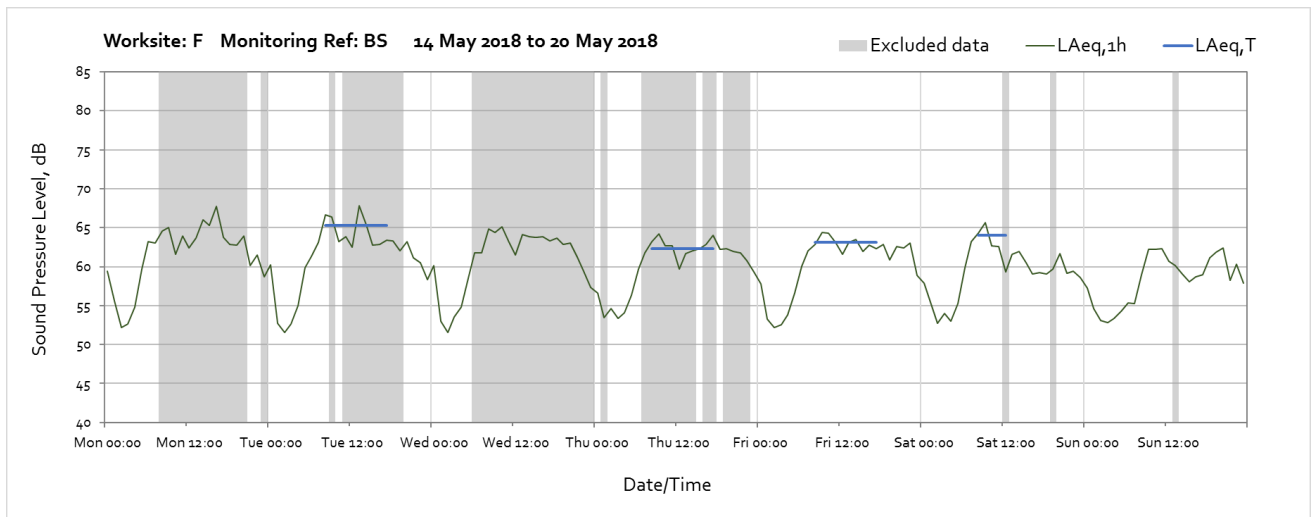




## Worksite: F – Monitoring Ref: BS



Note – Missing data between 22:00 on Thursday 10 and 13:00 on Friday 11 due to dropout of the signal uploading data to remote database.



Note – Missing data between 22:00 on Tuesday 29 and 00:00 on Wednesday 30, between 19:00 on Wednesday 30 and 00:00 on Thursday 31, and after 13:00 on Thursday 31 due to dropout of the signal uploading data to remote database.