

Hutt City Council
Private Bag 31-912
Lower Hutt 5040

Attention: Team Leader, Resource Consents

Dear Hutt City Council – Enforcement (c/- Parvati Rotherham)

Noise monitoring results July 2020

1 Introduction

This letter report presents the results of the recent noise monitoring at Wainuiomata Cleanfill site. Monitoring is undertaken on a 3-monthly basis to fulfil Condition 16 of resource consent RM190050. Noise limits for the cleanfill are contained in Condition 12 and reproduced below for reference:

- a Monday to Friday (excluding public holidays) 7.30 am to 5.00 pm – 50 dB LAeq
- b Saturday (excluding public holidays) 7.30 am to 12.00 pm – 50 dB LAeq
- c All other times - 40 dB LAeq
- d 10.00 pm to 7.00 am (all days) – 75 dB LAfmax.

This is the first noise monitoring undertaken for this resource consent.

2 Survey

The noise monitoring at Wainuiomata was undertaken on Friday 10 July 2020 between 9:30am and 1pm. Five locations were monitored for noise levels, each site had two recordings taken at different times during the monitoring period.

It was established prior to the survey that the site was operating in normal conditions during that week. Site personnel were not aware of the day of the noise monitoring.

2.1 Meteorological conditions

Meteorological conditions during the survey are shown in **Table 2.1**.

Table 2.1: Meteorological conditions during survey

Wind speed	Sporadic light breeze observed. Up to 16 km/h winds at 12pm in Wainuiomata (timeanddate.com).
Cloud cover	Clear
Temperature	Up to 14 °C (timeanddate.com)
Precipitation	None

2.2 Monitoring equipment

A 01dB Solo Type 1 sound level meter was used for the noise survey, serial number 45068. It was calibrated before and after measurements and no drift was observed between the calibrations. Measurements were undertaken at 1.5 m above ground level. All measurements were performed in accordance with NZS 6801:2008.

2.3 Monitoring locations

Noise monitoring locations are shown in **Figure 2.1** and listed in **Table 2.2**. Photos from the locations of monitoring are attached in **Appendix A**. Condition 12 states that the noise limit applies at the notional boundary. For ease of access noise levels were measured slightly closer to the cleanfill site at locations 2 and 5. This would result in marginally higher sound levels from cleanfill activities.

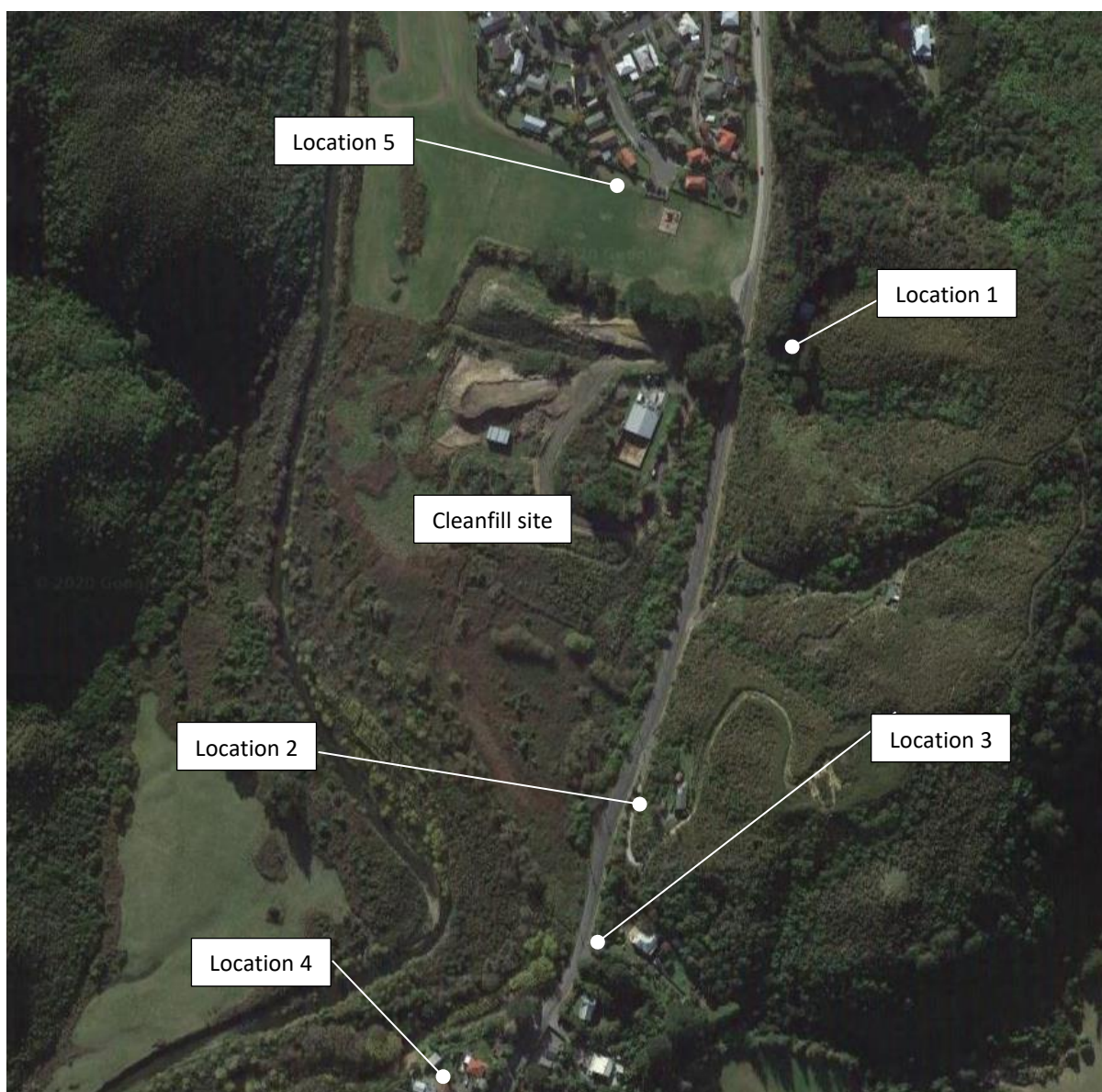


Figure 2.1: Noise monitoring locations

Table 2.2: List of noise monitoring locations

Monitoring location	Description	Comment
Location 1	Within property of 119 Coast Road	At the notional boundary
Location 2	Entrance to 199 Coast Road	c6 m closer to the site than the notional boundary location
Location 3	Within property of 200 Coast Road	At the notional boundary
Location 4	Within property of 204 Coast Road	At the notional boundary
Location 5	Ngaturi Park	c5 m closer to the site than the notional boundary location

2.4 Site activity

At Wainuiomata Cleanfill the frequent use of the site's dozer, excavator and dump truck was observed at the time of monitoring. Outside of the cleanfill property boundary, elevated or background noise levels were observed from vehicles passing, airplanes, construction noise from nearby residential dwelling, the Wainuiomata River, birds and noise from neighbouring residential properties.

3 Results

The following definitions in **Table 3.1** may be useful for interpreting the results of the noise level monitoring completed at Wainuiomata Cleanfill.

Table 3.1: Glossary of terms

Term	Definition
dB	A unit of measurement on a logarithmic scale which describes the magnitude of sound pressure with respect to a reference value (20 μ Pa).
$L_{Aeq(t)}$	The A-weighted time-average sound level over a period of time (t), measured in units of decibels (dB).
L_{Amax}	The maximum A-weighted sound pressure level over a period of time or of a particular noise event, measured in units of decibels (dB).
L_{A90}	The A-weighted 90 th percentile sound level over a period of time (t), measured in units of decibels (dB). The L_{A90} is indicative of the underlying noise level. For a constant noise source, the $L_{Aeq(t)}$ and the L_{A90} will be similar.
L_{A10}	The maximum A-weighted 10 th percentile level over a period of time or of a particular noise event, measured in units of decibels (dB).

Results of the noise monitoring are presented in **Table 3.2**. Plots of the results from this monitoring period are attached in **Appendix B**. Noise levels were assessed in accordance with NZS 6802:2008 and measured over a 15 minute assessment period.

Table 3.2: Noise monitoring results

Location	Time	LAeq(t)	LAmaz	LA90	LA10	Construction equipment operating & other sources of sound heard at measurement
Location 1	9:30-9:45	38	52	34	39	Cleanfill excavator with a break in activity at some point during recording. Sporadic bird noise and some constant light construction noise.
Location 1	11:42-11:57	43	56	36	46	Excavator operational, dump truck tipping, sounds of dozer truck. Motorcycle noises in the park and an airplane.
Location 2	9:58-10:13	61	80	42	63	Dump truck operational, excavator and front-end loader running. Vehicles passing and some bird noise.
Location 2	11:59-12:14	66	87	46	66	Dozer running, truck dumping. Passing vehicles, scaffolding unpacking next to the road, construction rubble tipped, motorcycle in park/road.
Location 3	10:58-11:13	58	75	42	62	Excavator operational, activity stopped periodically. Active flowing river, vehicles passing, airplane passing, some birds, trucks passing.
Location 3	12:39-12:54	54	72	41	57	No activity at clean fill. Road noise, flowing river, airplane, some cutting noise.
Location 4	10:33-10:58	51	64	46	54	Excavator and dump truck operational. Dump truck makes 3-4 loud bangs to remove fill. River flowing, some construction noise, vehicles passing.
Location 4	12:20-12:35	54	72	47	56	Dump truck tipping. River, birds, road noise, motorcycle, construction noise.
Location 5	11:17-11:32	48	60	36	51	Visuals obstructed to site, dump trucks entering and leaving site, no other ops noise observed. Motorcycles, birds, truck on road, kids playing golf in the park, dog barking, construction noise, vehicles passing.
Location 5	12:59-13:14	49	65	38	52	Playing of drums, kids in the park playing, vehicles on the road, motorcycle, airplane, music playing.

Coloured cells in this table have noise monitoring results that were above 50 dB LAeq.

4 Discussion

The measured LAeq levels at locations 1 and 5 were below the limit of 50 dB LAeq specified in the consent during both recording periods. However, the LAeq noise levels at locations 2, 3, and 4 were above the limit during both recording periods at each location.

At locations 2, 3 and 4 the dominating noise was from passing vehicles as these properties are all close to a road with an 80 km/h speed limit. Noise levels from individual passing vehicles can be seen in the noise recording plots (**Appendix B**) as short, discreet events with a fast rise / fall time.

For measurements where it was possible to remove these obvious vehicle passbys from the time trace, the residual LAeq values are in the range of 45 – 50 dB LAeq. These residual LAeq values will still include ambient noise (such as construction noise at Location 4 and river flowing at Location 3) and are not a true indication of site noise only. For some time traces it was not possible to identify individual car passes but their presence was noted by the aural observations.

At location 2 vehicle pass-bys could easily be removed from the first measurement, giving a residual LAeq of 50 dB. This is compliant with the consent conditions. Vehicle pass-bys could not easily be removed from the second measurement.

At location 3 there was no site activity audible for the second measurement, and only periodic activity during the first measurement, yet both recordings were higher than 50 dB LAeq. It was observed on site that sources other than the cleanfill were dominant and, therefore, are considered to be the cause of the elevated noise levels. When vehicle pass-bys are removed from the two measurements at location 3, the residual LAeq values are 45-46 dB which is compliant.

At location 4 vehicle pass-bys could be removed from the first measurement, giving a residual LAeq of 47 dB which is compliant. It was more difficult to distinguish pass-bys from the time trace of the second measurement.

During all recordings, observations noted that there was a significant amount of elevated noise from sources other than the cleanfill. It is noted that there are discrete events from the cleanfill site, such as dump truck tipping, that are audible, but these measurements are dominated by elevated noise levels from passing vehicles.

It is recommended that during the next survey, more detailed notes are made of times of specific site activity so that it can be pinpointed in the subsequent report. Any measurements at the nearby properties will inevitably include noise from passing vehicles. Although specific events from the site (such as bangs from a dump truck removing fill) were audible during the survey these types of isolated short duration events would not have significantly increased the 15 minute LAeq and would not in themselves cause the limits to be exceeded.

We have concluded that the elevated noise levels in excess of the 50 dB LAeq limit are not attributed to Wainuiomata Cleanfill due to the dominance of other noise sources.

The L_{AFmax} limit of 75 dB is only applicable at night-time and the results of this daytime monitoring should not be compared against this criterion.

5 Applicability

This report has been prepared for the exclusive use of our client Hutt City Council, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

We understand and agree that this report will be used by Hutt City Council in undertaking its regulatory functions in connection with Wainuiomata Cleanfill site.

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

Report prepared by:



.....
Melissa Fortune
Environmental Engineer

Authorised for Tonkin & Taylor Ltd by:



.....
Ed Breese
Project Director

Technically reviewed by:



.....
Darran Humpheson
Senior Acoustics Specialist

LL

\\\\ttgroup.local\\corporate\\wellington\\tt projects\\84466\\84466.0050\\issueddocuments\\2020.08.12.ll.noise monitoring report final.docx

Appendix A: Location Photos

Location 1
Recording 1:



Recording 6:



Location 2
Recording 2:



Recording 7:



Location 3
Recording 3:



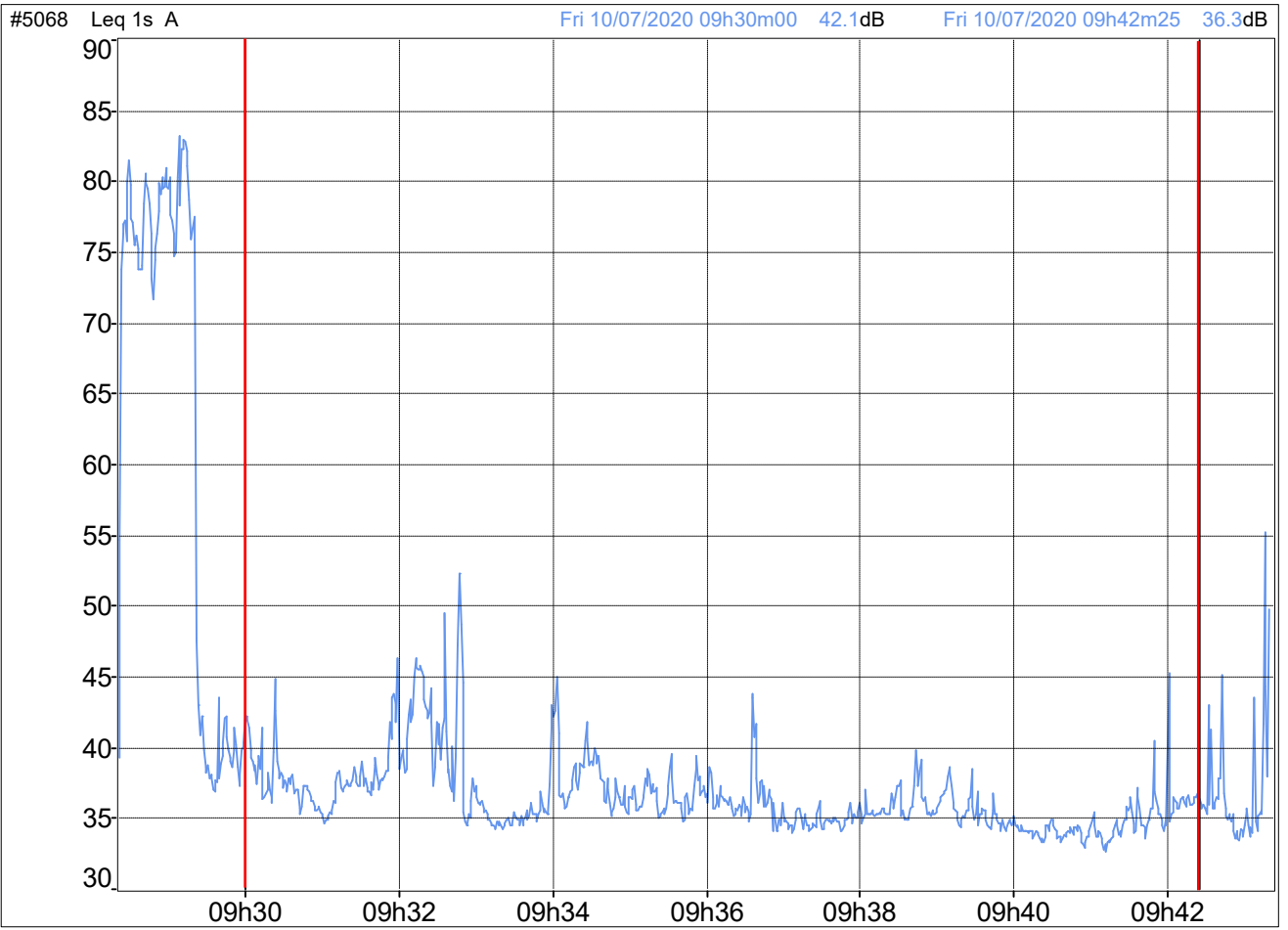
Location 4
Recording 4:



Location 5
Recording 5:



Appendix B: Plot of noise monitoring results

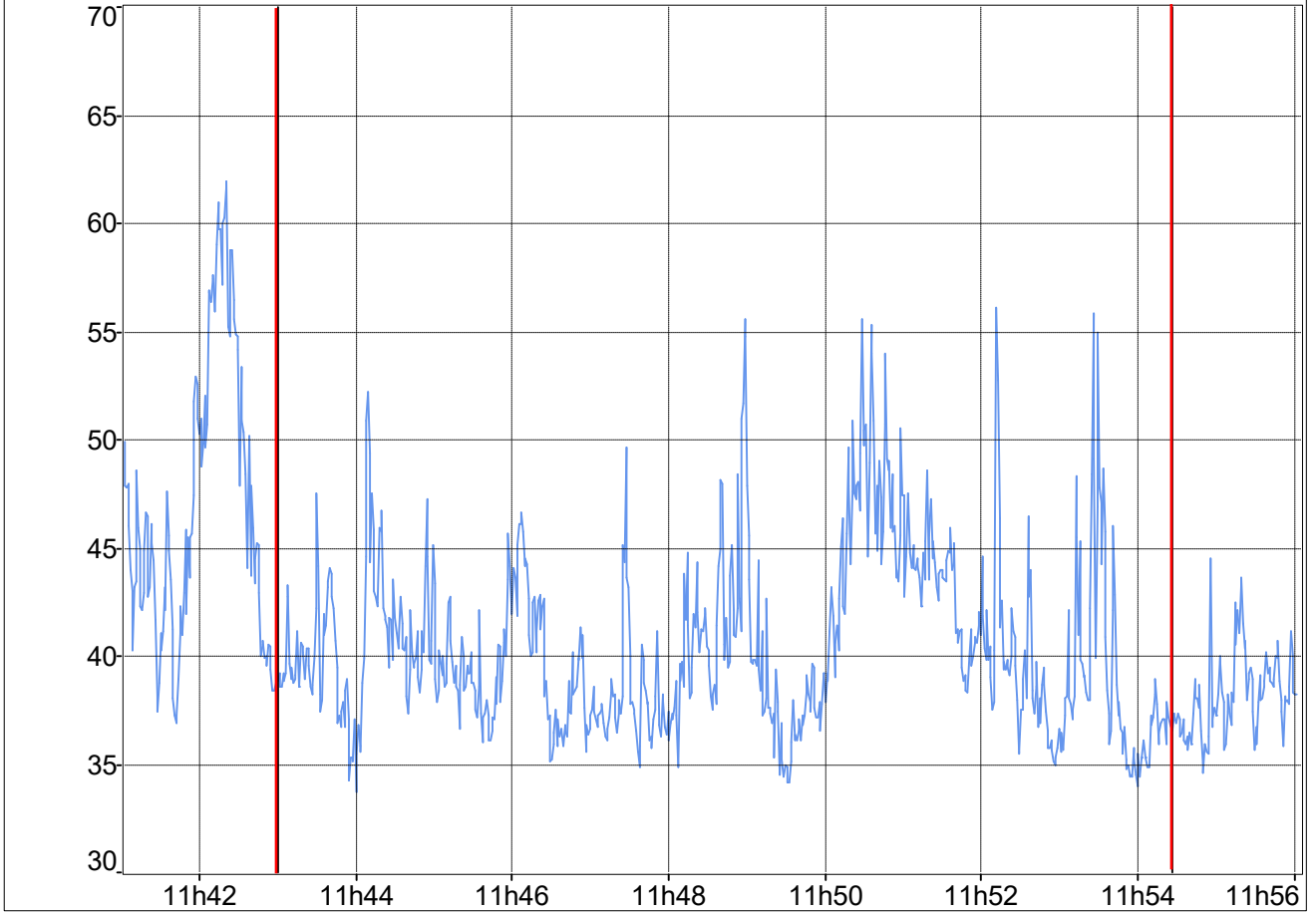


Location 1,
Recording 1

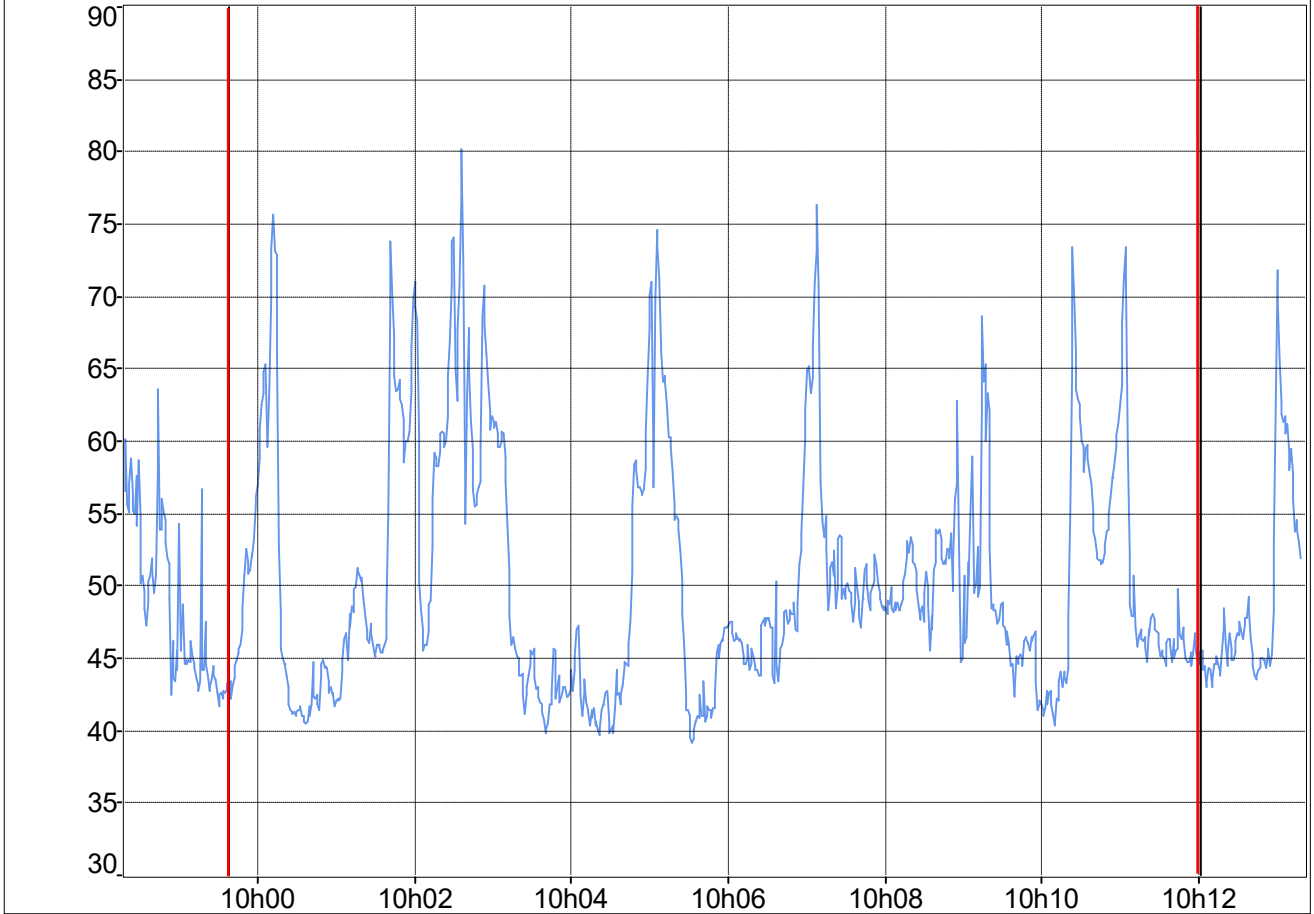
#5068 Leq 1s A

Fri 10/07/2020 11h43m00 39.1dB

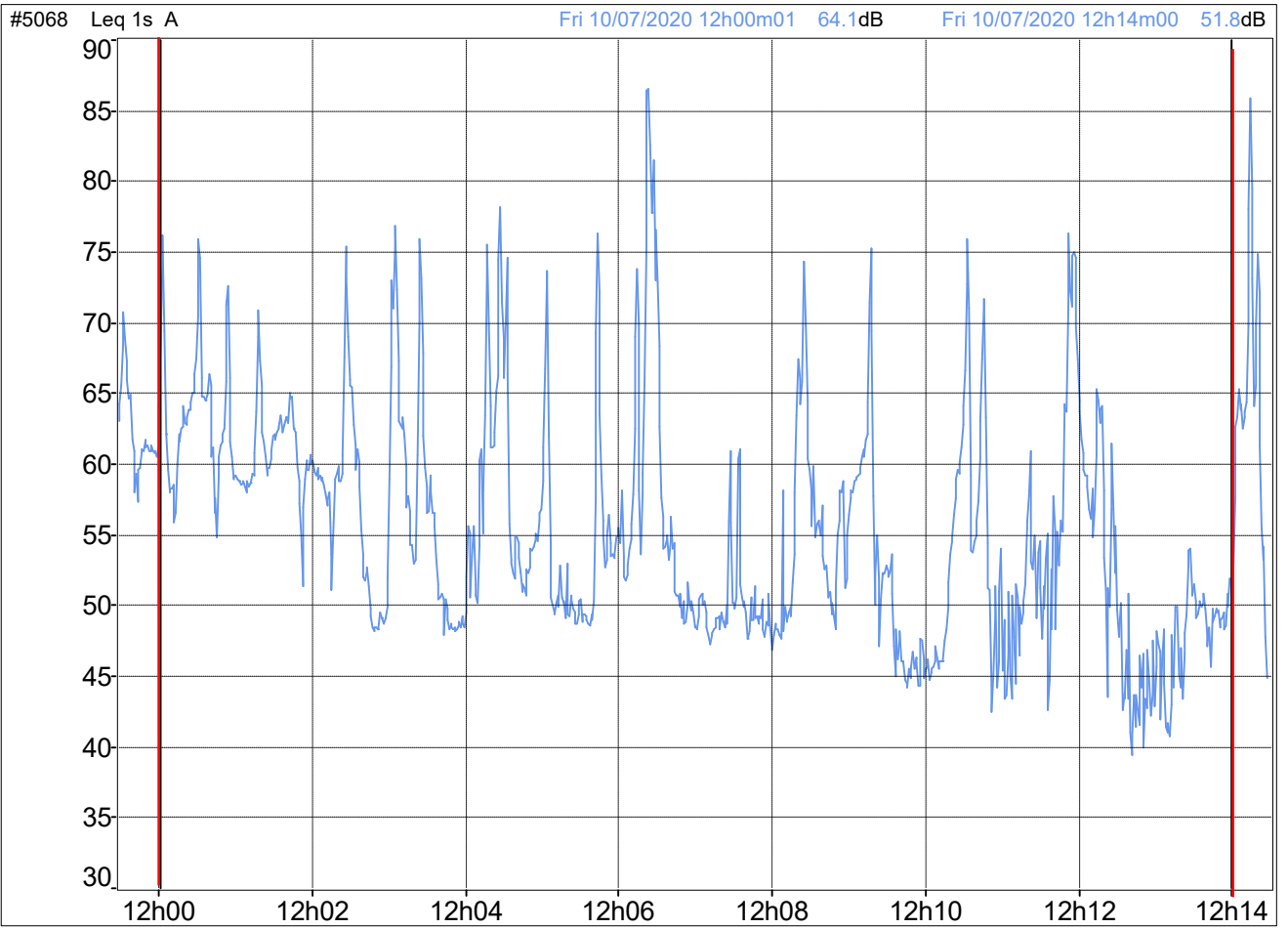
Fri 10/07/2020 11h54m27 36.5dB



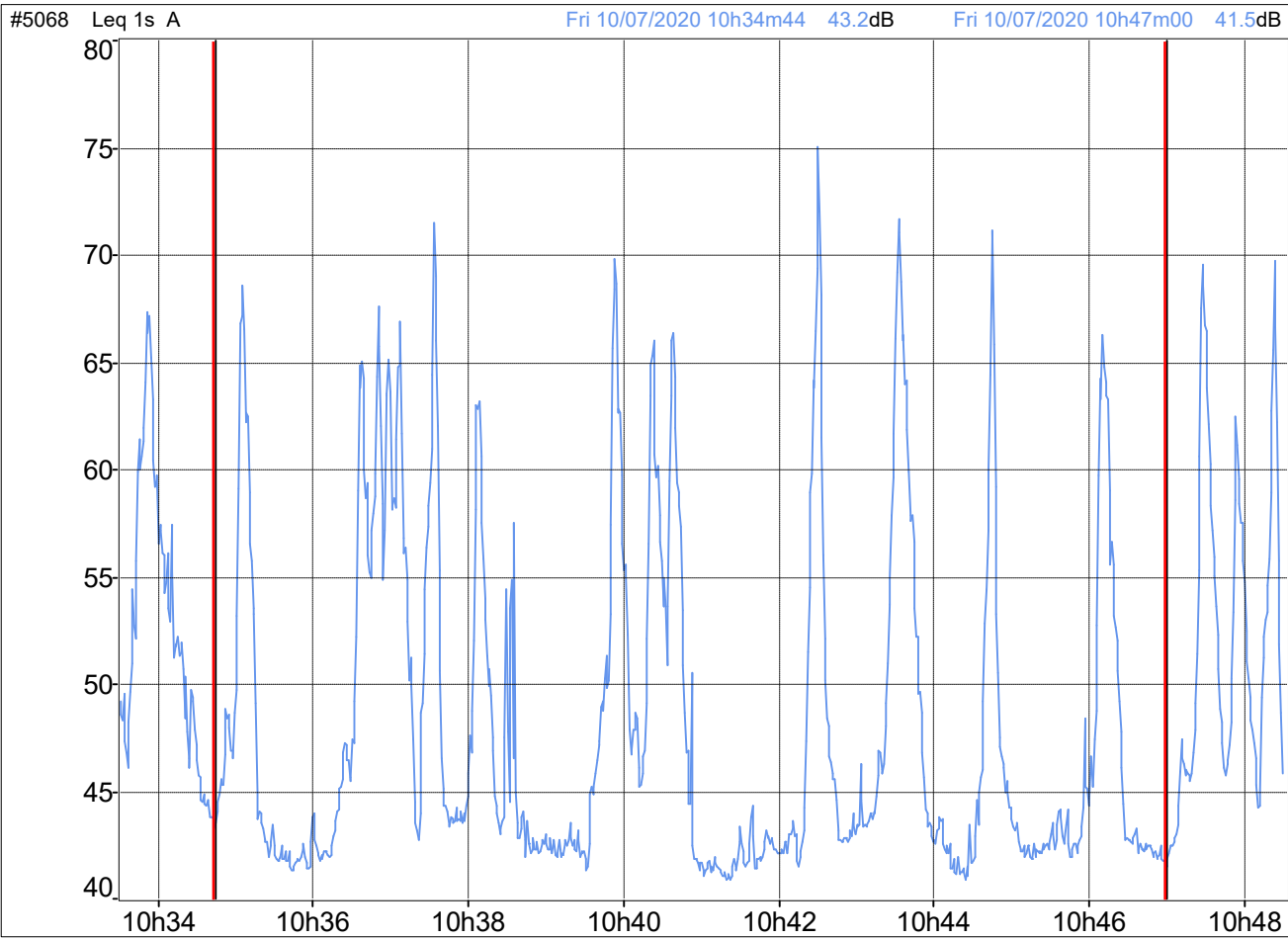
Location 1,
Recording 6



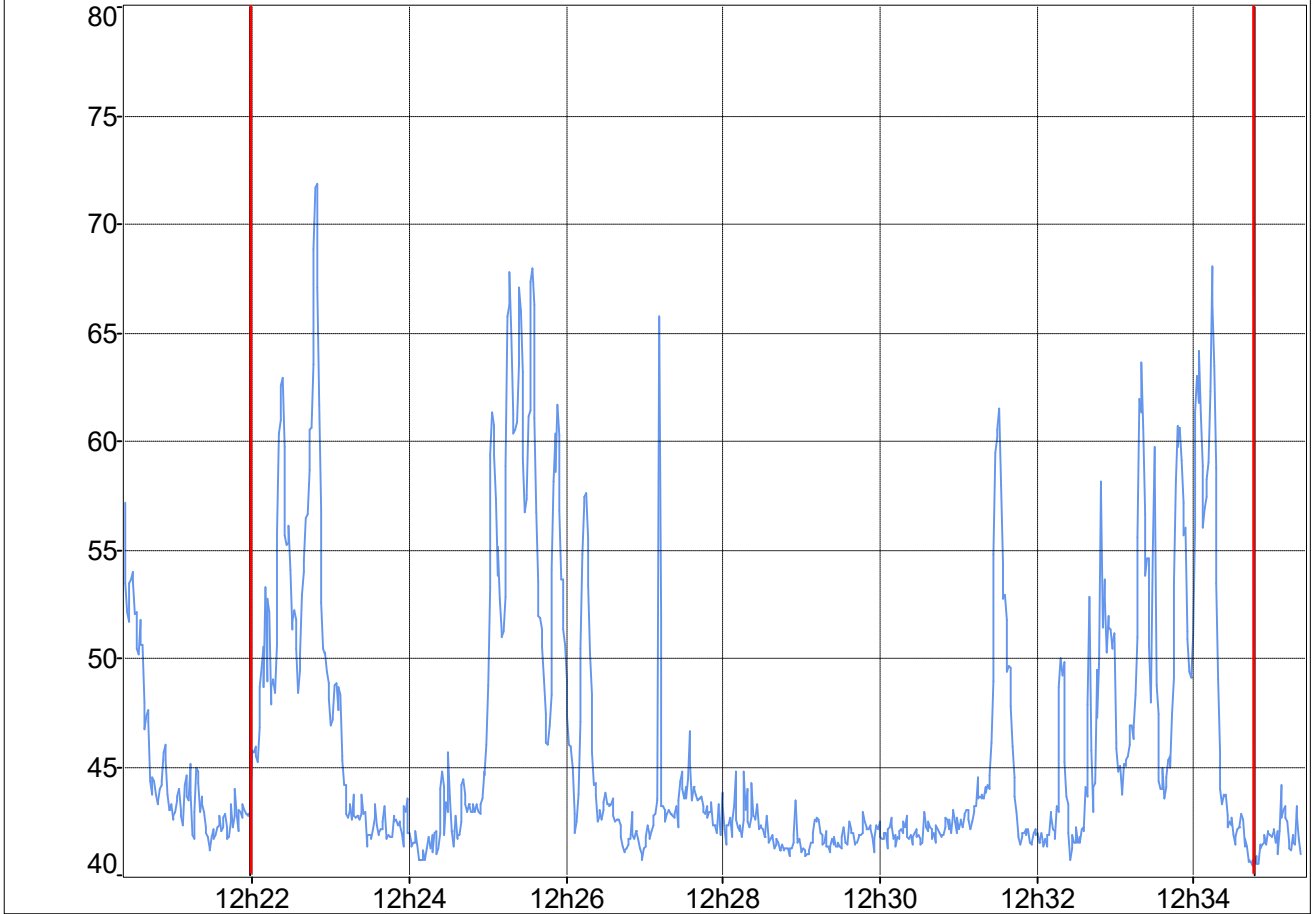
Location 2,
Recording 2



Location 2,
Recording 7



Location 3,
Recording 3

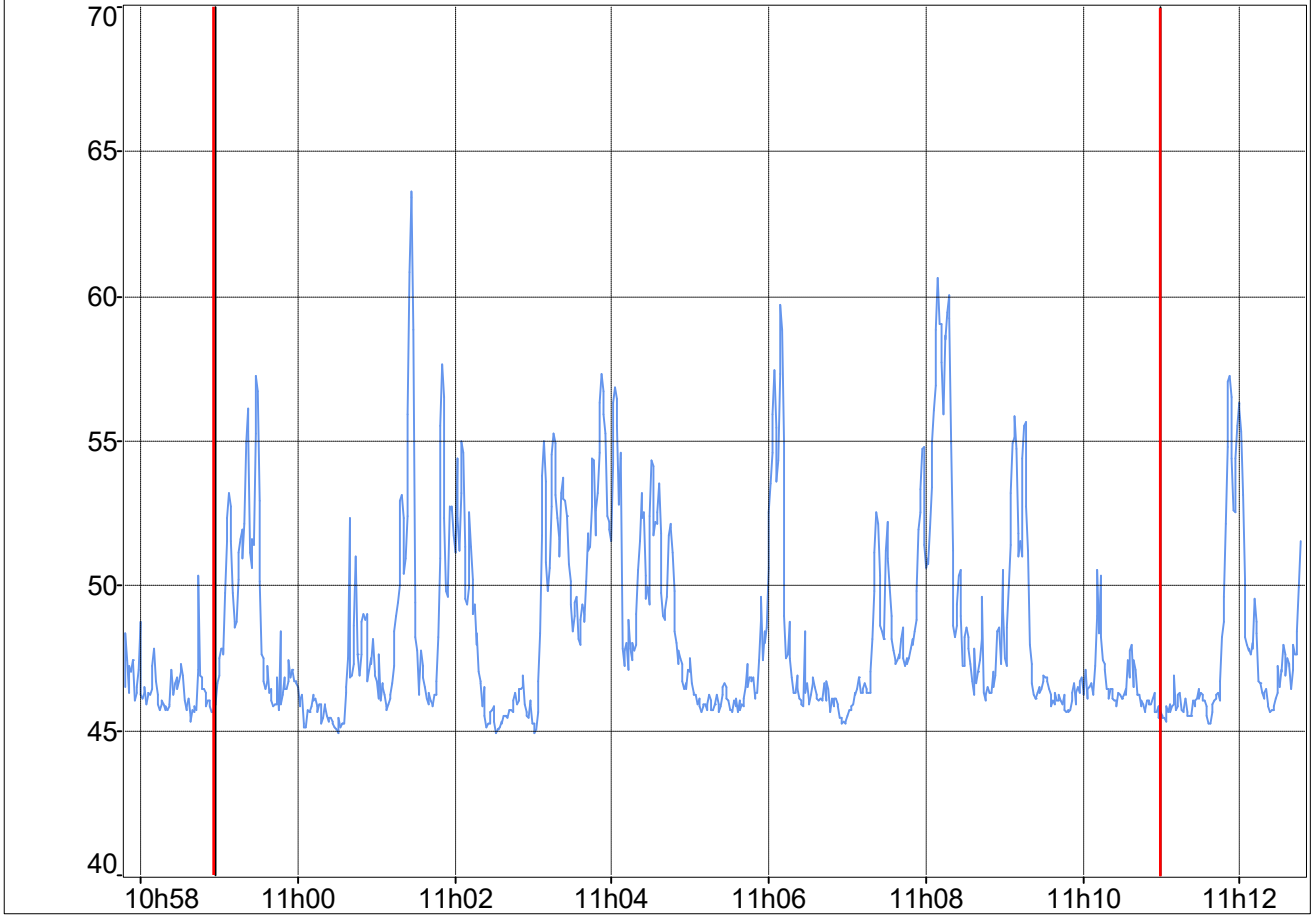


Location 3,
Recording 8

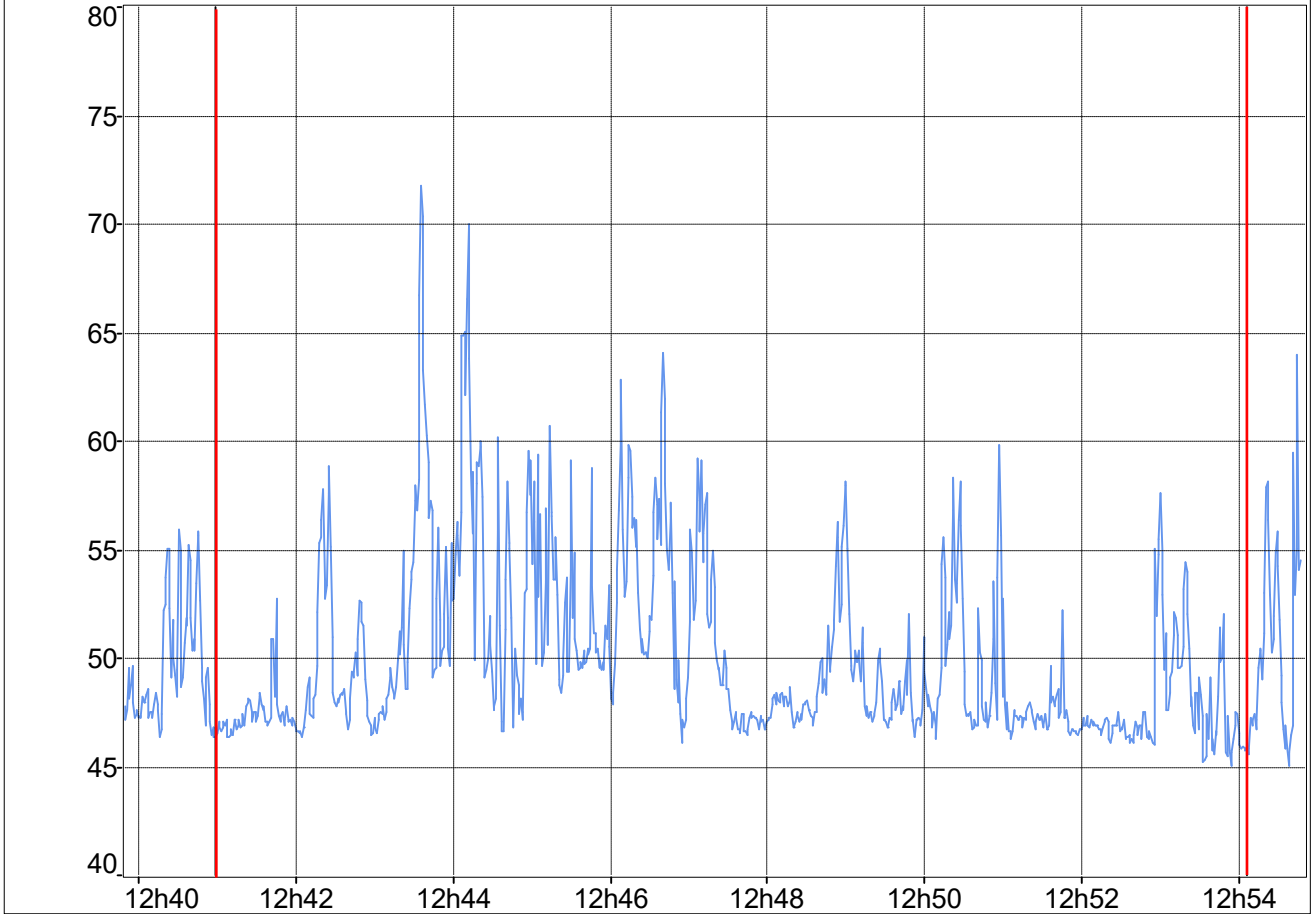
#5068 Leq 1s A

Fri 10/07/2020 10h58m57 45.7dB

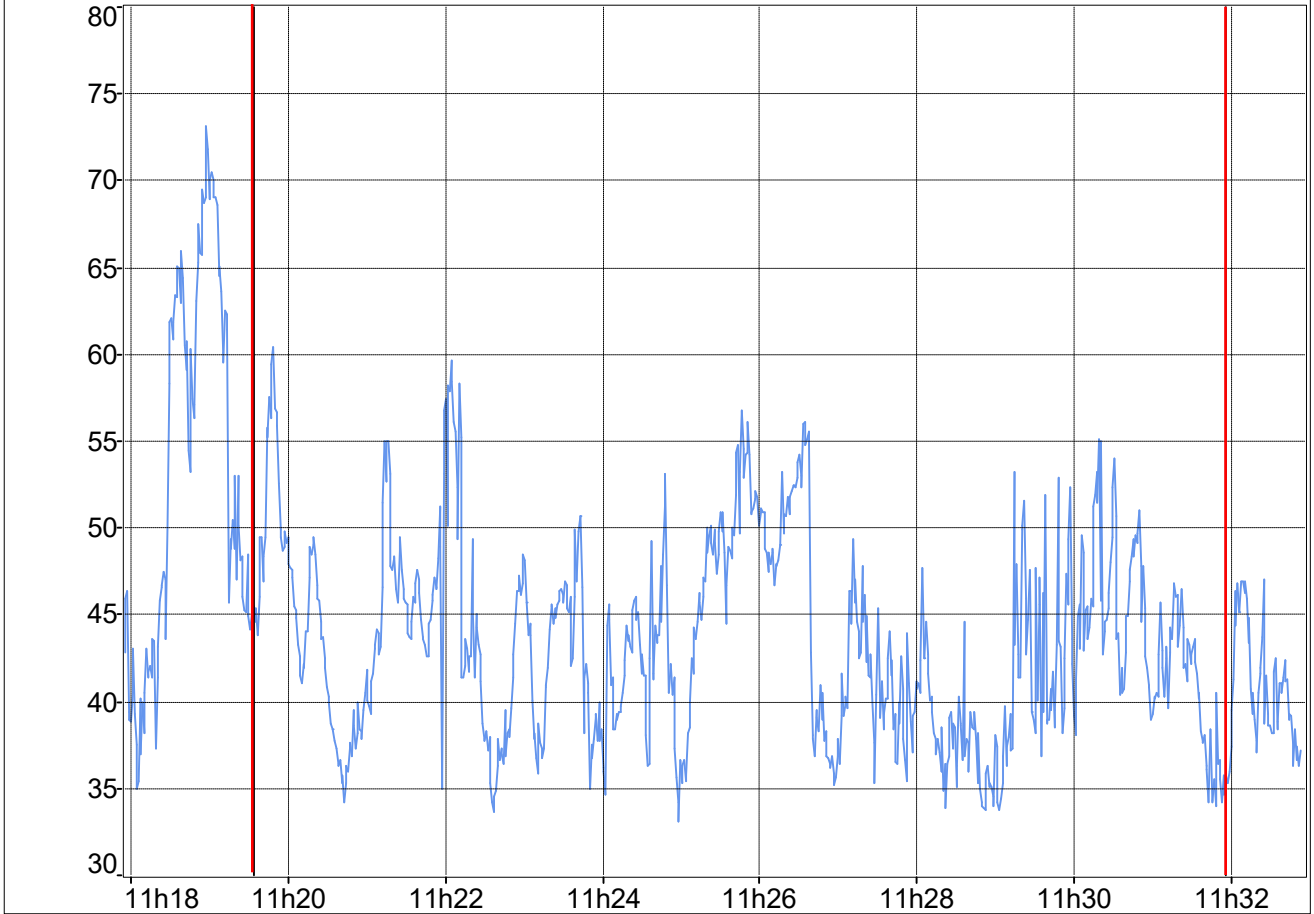
Fri 10/07/2020 11h10m59 45.4dB



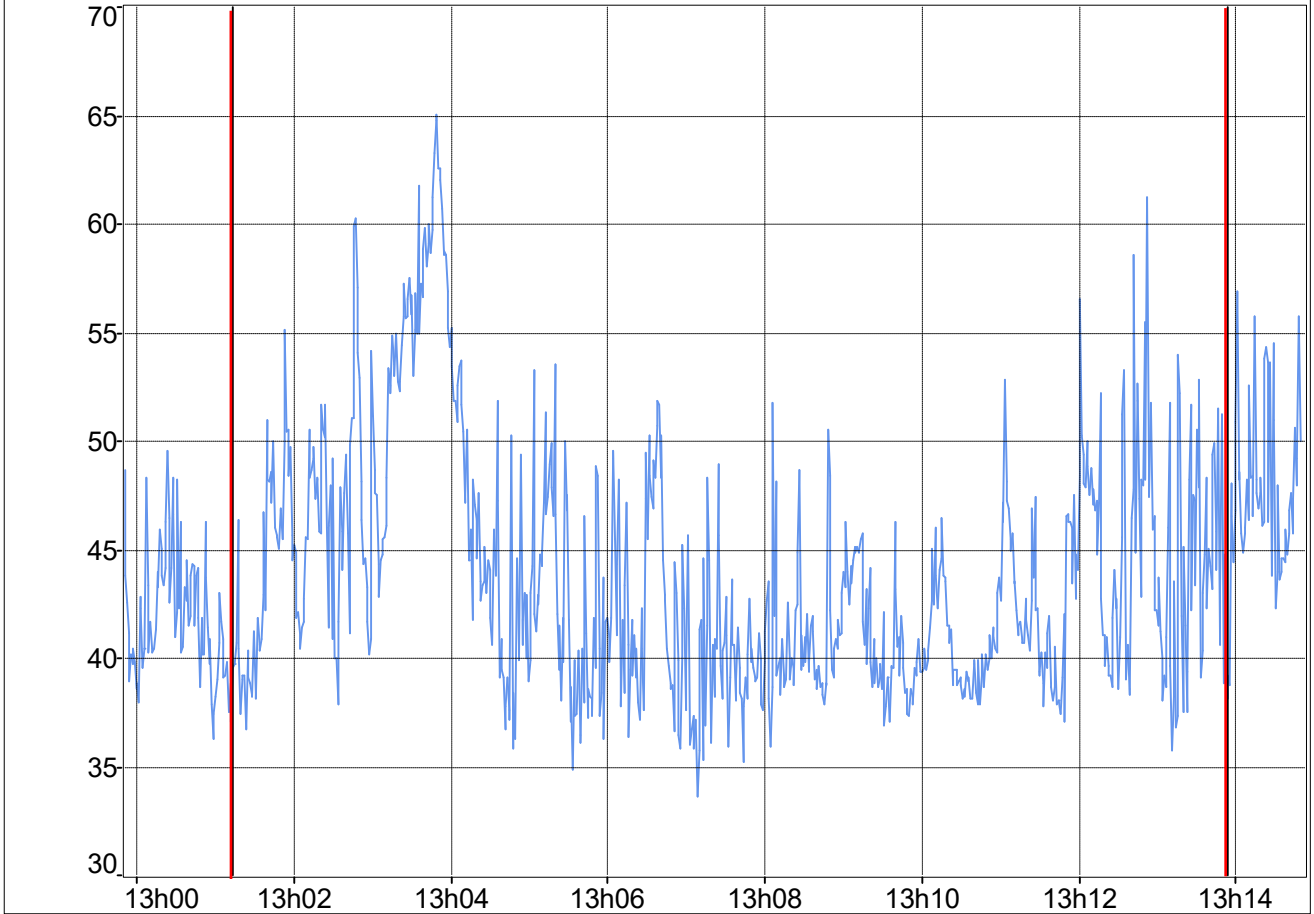
Location 4,
Recording 4



Location 4,
Recording 9



Location 5,
Recording 5



Location 5,
Recording 10