

Royal Prince Alfred Hospital Redevelopment (RPAH
Redevelopment)

Construction Noise and Vibration Monitoring Report 15

Client Doc. No. RPA-ACO-ACL-RPT-MW-000018 - Rev A

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|----------------|---|
| Project ID | 20230239.17 |
| Document Title | Construction Noise and Vibration Monitoring |
| Attention To | CPB Contractors Pty Limited |

| Revision | Date | Document Reference | Prepared By | Checked By | Approved By |
|-----------------|-------------|---------------------------|--------------------|-------------------|--------------------|
| 0 | 22/07/2024 | 20230239.17/2207A/R0/LA | LA | | AW |
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TABLE OF CONTENTS

| | | |
|-----|--|----|
| 1 | INTRODUCTION | 4 |
| 2 | SITE DESCRIPTION | 5 |
| 3 | NOISE AND VIBRATION MANAGEMENT LEVELS..... | 6 |
| 3.1 | NOISE MANAGEMENT LEVELS | 6 |
| 3.2 | PROJECT VIBRATION CRITERIA..... | 6 |
| 4 | MONITORING EQUIPMENT AND LOCATIONS | 7 |
| 4.1 | NOISE MONITORING EQUIPMENT AND LOCATIONS..... | 7 |
| 4.2 | VIBRATION MONITORING EQUIPMENT AND LOCATIONS..... | 8 |
| 5 | RESULTS | 9 |
| 5.1 | NOISE MONITONG RESULTS DISCUSSION | 9 |
| 5.2 | VIBRATION MONITORING RESULTS DISCUSSION | 10 |
| 6 | CONCLUSION..... | 14 |
| | APPENDIX A – NOISE MONITORING RESULTS..... | 15 |
| | CENTENARY INSTITUTE – LEVEL 4 SURGERY ROOM (SOUTHERN FAÇADE) | 15 |
| | RPA HOSPITAL MAIN BUILDING – LEVEL 3 NICU..... | 16 |
| | OUTSIDE SUSAN WAKIL HEALTH BUILDING | 17 |
| | APPENDIX B – VIBRATION MONITORING RESULTS..... | 18 |
| | CENTENARY INSTITUTE – LEVEL 3 FISH TANKS | 18 |
| | CENTENARY INSTITUTE – LEVEL 4 SURGERY ROOM (SOUTHERN FAÇADE) | 19 |
| | CENTENARY INSTITUTE – LEVEL 4 BATHROOM (NORTHERN FAÇADE) | 20 |
| | CENTENARY INSTITUTE – LEVEL 4 CLEAN CHANGEROOM (SOUTHERN FAÇADE)..... | 21 |
| | CHARLES PERKINS CENTRE – LEVEL B1 SOUTHERN CORRIDOR | 22 |
| | CHARLES PERKINS CENTRE – LEVEL B1 SOUTHERN WING OBSERVATION ROOM CORRIDOR | 23 |
| | RPA HOSPITAL MAIN BUILDING – LEVEL 03 NICU | 24 |
| | OUTSIDE SUSAN WAKIL HEALTH BUILDING | 25 |

1 INTRODUCTION

This report presents the results of the noise and vibration monitoring conducted by Acoustic Logic during the site establishment works for the RPA Hospital redevelopment, located at 50 Missenden Road, Camperdown. Details presented in this report include monitoring locations, relevant noise and vibration objectives, measured noise and vibration levels over the presented monitoring period and a discussion of results where applicable.

This report covers the fifteenth fortnight since the beginning of construction monitoring, being between Monday 24th June, 2024 and Sunday 07th July, 2024.

Unattended noise and vibration monitoring has been undertaken to satisfy the requirements of Condition B26 of SSD-47662959's Development Consent, in conjunction with the noise and vibration management levels established within the *Early Works Construction Noise and Vibration Management Plan*, prepared by this office, and as they are so updated throughout the construction process where necessitated (Ref: 20230239.9/0610A/R1/LA). Condition B26 of SSD-47662959's Development Consent is provided below for reference:

"Environmental Management Plan Requirements

B26. *Management plans required under this consent must be prepared having regard to the relevant guidelines, including but not limited to the Environmental Management Plan Guideline: Guideline for Infrastructure Projects (DPIE April 2020).*

Notes:

The Environmental Management Plan Guideline is available on the Planning Portal at: <https://www.planningportal.nsw.gov.au/major-projects/assessment/post-approval>.

The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans."

2 SITE DESCRIPTION

The site is maintained on Lot 1000 DP 1159799, and is bound by the existing operational RPA Hospital to the west, the Centenary Institute to the north, and University of Sydney’s Bruce William Pavilion and Susan Wakil Health Building to the east and south respectively. The site is surrounded by various residential, commercial, hospital, university, research and active recreation sensitive receivers generally.

The works maintained within Early Works and Site Establishment pertain specifically to works along Lambie Dew Drive and John Hopkins Drive.

The surrounding affected sensitive receivers that are investigated within the contents of this monitoring assessment are as presented below:

Table 1 – Surrounding Sensitive Receivers

| ID No. | Receiver Description | Receiver Category |
|--------|---|---------------------|
| H1 | RPA Hospital Main Building | Hospital |
| Re1 | Centenary Institute | Research Facilities |
| E1 | CreateSpace and Susan Wakil Health Building | Education |
| E2 | Charles Perkins Centre | |

See an aerial photo in Figure 1 below for detailed receiver locations.

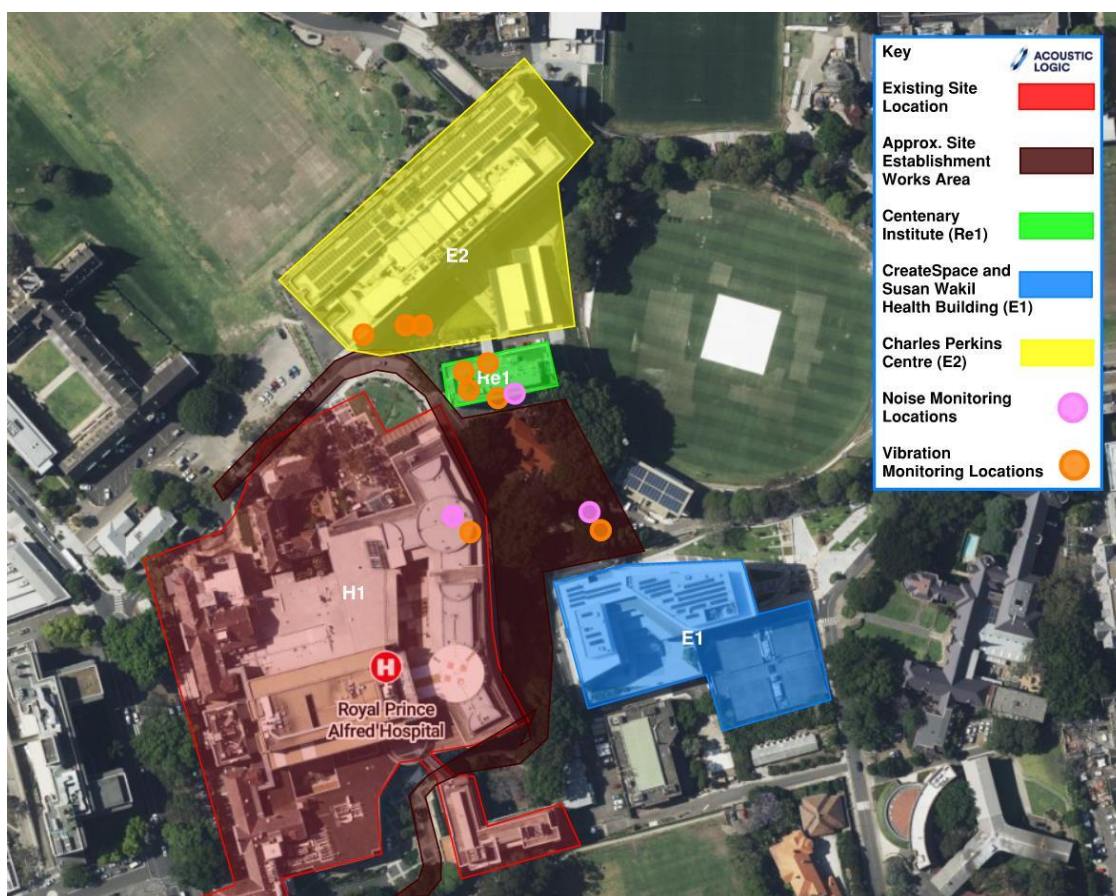


Figure 1: Aerial Site Map with Nearest Sensitive Receivers (Sourced from Sixmaps)

3 NOISE AND VIBRATION MANAGEMENT LEVELS

The following section details the relevant construction noise and vibration requirements assessed throughout the monitoring period.

3.1 NOISE MANAGEMENT LEVELS

Noise Management levels relevant to the contents of this report are summarised in the table below, as provided within the *Early Works Construction Noise and Vibration Management Plan*, prepared for the project by this office (Ref: 20230239.9/0610A/R1/LA). Note that based upon measurements and discussions with relevant stakeholders on 12/03/2024, the Noise Management Level for the Animal Housing, Breeding and Observation Rooms within Centenary Institute will be reduced to 62dB(A) $L_{eq(15\text{ min})}$, and this will be adopted within this report, as well as further subsequent assessments:

Table 2 – Noise Management Levels

| Receiver | Room Usage | Noise Management Level dB(A) $L_{eq(15\text{min})}$ |
|-----------------|---|---|
| H1 | NICU | 60 (Internally) |
| E1 and E2 | All | 45 (Internally) |
| R1 | Animal Housing / Breeding / Observation Rooms | 62 (Internally) |
| | Rat Operating Room | 48 (Internally) |

3.2 PROJECT VIBRATION CRITERIA

Relevant project vibration criteria to the contents of this report are provided within the table below. Vibration criteria presented for spaces within Re1 and E2 have been updated based upon the conclusion of the "Baseline Monitoring Results," report, as well as the "Construction Noise and Vibration Monitoring Report 1," both of which were prepared by this office for the project (Ref: 20230239.17/0412A/R1/LA and 20230239.17/2301A/R0/LA). Supplementarily, further correspondence between Charles Perkins Centre and the project team on 20/02/2024 has resulted in the reduction of criteria within the animal spaces on B2 to VC-A criteria, and this is reflected within the table below and has been in effect through this monitoring period:

Table 3 – Summarised Proposed Project Vibration Limits

| Receiver | Location | Vibration Criteria (μms^{-1}) |
|---|--|--|
| Re1 Centenary Institute | L3 Fish Tank Room | 400 μms^{-1} Peak Particle Velocity |
| | L4 – Animal Behaviour / Holding / Breeding Rooms | VC-A (ASHRAE Handbook) (50 μms^{-1}) RMS Velocity |
| E1 Createspace and Susan Wakil Health Building | All spaces | DIN 4150-3 Type 1 Criteria (20,000 μms^{-1} / 20 mms^{-1}) Peak Particle Velocity |
| E2 Charles Perkins Centre | Imaging Equipment (Southern Wing Corridor) | VC-B (ASHRAE Handbook) (25 μms^{-1}) RMS Velocity |
| | Animal Behaviour / Holding / Breeding Rooms | VC-A (ASHRAE Handbook) (50 μms^{-1}) RMS Velocity |
| H1 RPA Hospital Main Building | Operating Theatres (Level 3) | 100 μms^{-1} RMS Velocity |

4 MONITORING EQUIPMENT AND LOCATIONS

4.1 NOISE MONITORING EQUIPMENT AND LOCATIONS

Unattended noise monitoring was conducted using Acoustic Research Laboratories Pty Ltd noise loggers. The loggers were programmed to store 15-minute statistical noise levels throughout the monitoring period. The equipment was calibrated at the beginning and the end of each measurement using a Rion NC-73 calibrator; no significant drift was detected. All measurements were taken on A-weighted fast response mode.

Three individual noise monitors have been installed surrounding the site at the following locations:

- Centenary Institute Level 4 Surgery (Southern Façade).
- RPA Hospital Main Building – Level 03 NICU.
- Outside Susan Wakil Health Building, on grade.

Please refer to Figure 1 for detailed monitoring locations. Appendix C provides photos of the monitors installed at the project site.

4.2 VIBRATION MONITORING EQUIPMENT AND LOCATIONS

Vibration monitoring was conducted using either Texcel ETM vibration monitors with external Tri-axial Geophones, or Bruel and Kjaer Type 4450 vibration monitors.

Three Texcel ETM monitors have been placed surrounding the site at the following locations:

- Centenary Institute Level 3, Fish Tanks.
- Charles Perkins Centre Level B1, Southern Wing Observation Room E (Note that this monitor has been installed at this location to send alert messages at $100 \mu\text{ms}^{-1}$ PPV vibration events, due to the limited reception achieved within the B2 area from the Bruel and Kjaer Type 4450 monitor installed to assess vibration impacts with respect to the VC-A vibration criteria curve within the animal holding area.
- Outside Susan Wakil Health Building, on grade.

Additionally, six Bruel and Kjaer Type 4450 Vibration monitors have been installed surrounding the site at the following locations:

- Centenary Institute:
 - Level 4 Surgery (Southern Façade).
 - Level 4 Change Rooms (Northern Façade)
 - Level 4 South-eastern Experimentation Room.
- Charles Perkins Centre:
 - Level B1, Southern Wing Corridor.
 - Level B1, Southern Wing Observation Room E
- RPA Hospital Main Building Level 3 NICU.

Please refer to Figure 1 for detailed monitoring locations.

5 RESULTS

Appendix A presents the results of the noise monitoring, whilst Appendix B presents the results of the vibration monitoring where exceedances occurred during the monitoring period as presented within the contents of this report.

A discussion pertaining the findings of the noise and vibration monitoring undertaken during this monitoring period is provided within the proceeding sections.

5.1 NOISE MONITING RESULTS DISCUSSION

Noise monitoring conducted throughout the monitoring period shows general adherence to the noise management levels provided within Section 3 of this letter.

For the Holding, Breeding and Observation Rooms

- Noise levels were found to be above the NML for holding, breeding and observation rooms on the dates listed below, however each of these events were noted by CI to be caused by internal operational activity within the Surgery Room, and were not caused by construction:
 - 26/06/2024.
 - 27/06/2024.
- There was one measured 15-minute period on 26/06/2024 where the measured L_{eq} of approx.. 63dB(A), or 1dB(A) above the NML, was observed at the monitoring station, which was neither confirmed nor denied being the result of internal operation by CI.
- This peak noise event is not characteristic of the construction activity which occurred on site for the remainder of the day, noting that, exclusive of the period confirmed to be impacted CI operational activity, the highest L_{eq} measured by the monitor was approximately 54dB(A). Hence, it is unlikely that this event was caused by construction.
- Exclusive of the above, no further measurements above the NML were observed throughout the monitoring period.

For RPAH Main Building L03 NICU

- The monitor is located underneath a benchtop and against two individual walls within the NICU area on Level 03 of the hospital main building. Due to the reflections experienced at the monitoring location due to this, a 5dB correction has been conservatively applied to the noise levels measured at the monitoring station.
- Noise levels were observed to be measured above the NML within the NICU space for the following dates:
 - 24/06/2024.
 - 25/06/2024.
 - 26/06/2024.
 - 27/06/2024.
 - 05/07/2024.

- Noise levels were never observed to be above the NML for longer than one 15-minute period, and hence it is likely that these events were caused by internal operational activity within the space, as opposed to construction works, noting that construction works are typically continuous in nature.
- All other measured levels above the NML have been found to occur outside of construction hours.
- Ongoing monitoring to continue within the NICU space.

For the Susan Wakil Health Building

- The monitor located outside of the Susan Wakil Health Building is within the demolition site boundary and approximately 15m closer to the area of the works than the façade of the Susan Wakil Health Building.
- Noting this increased distance attenuation, in conjunction with the transmission loss experienced through the inoperable façade of the Susan Wakil Health Building when comparing internal and external noise levels, Acoustic Logic expect that, at minimum, there is a 30dB reduction between the measured noise levels by the monitor, when compared with the resultant internal noise levels within the receiver.
- This reduction is considered conservative due to the distance between the monitor and the building, and hence, the noise impacts would be further reduced than what is outlined below in reality.
- Notwithstanding, noise levels have been measured to be above the NML at the monitoring location on the following dates during the monitoring period:
 - 26/06/2024.
 - 28/06/2024.
 - 01/07/2024.
 - 03/07/2024.
- Noise levels impacting Susan Wakil will be continued to be monitored throughout the early works construction to assess the impact of this receiver.

5.2 VIBRATION MONITORING RESULTS DISCUSSION

With regards to the vibration measured vibration levels during the monitoring period, we note the following:

- Note that the graphs presented within the Appendix of this document show the maximum recorded velocity for each individual frequency within a given day's monitoring period.
- Data has only been provided for days in which exceedances attributed to vibration works have been experienced at the monitoring station.
- The following section provides discussion pertaining the measured exceedances observed throughout the period at individual monitoring locations:

- Centenary Institute:
 - Level 1 – Laser Imaging Room (Electrical Cupboard):
 - Precision imaging equipment such as the laser scanning apparatus investigated by this monitoring station are impacted by vibration through impacts on output results.
 - This would hence be observed by operators of the equipment, whereby the system would not be operating correctly/results of the system would be impacted.
 - To the knowledge of this office, no impacts on the results output of the equipment have been reported by Centenary Institute throughout the early works construction period.
 - Further, and based upon onsite inspections and testing, AL note that the Laser room is subject to various sources of ambient vibration from the operation of the facility which contribute to the levels measured during construction, inclusive of refrigerant plant maintained within the basement of the facility.
 - Where any changes to the operation / results of the laser scanning apparatus are observed by the operators of the equipment, this is to be relayed to this office for investigation and alignment with construction activity to appropriately assess and mitigate impacts.
 - Level 3 – Fish Tanks:
 - One exceedance was measured at the monitoring station on 01/07/2024, however no further exceedances were observed by any of the other monitoring stations within CI or any other location surrounding the project site, and hence has not been attributed to the construction activity within the RPA Redevelopment Site.
 - No other exceedances of applicable L3 criteria were measured throughout the monitoring period that have been attributed to construction activity.
 - Level 4 – Surgery Room (Southern Façade), Clean Changeroom (Southern Façade) and Bathroom (Northern Façade):
 - Non-correlated exceedances were measured on the following dates at each respective monitor:
 - Surgery Room:
 - 24/06/2024 – 7.30am (<24% exceedance).
 - 03/07/2024 – 10.15am (Marginal, <7% exceedance).
 - 05/07/2024 – 11.45am (Marginal, <7% exceedance).
 - Southern Changeroom:
 - 25/06/2024 – 11.45am (Marginal, <17% exceedance).
 - Generally, of the measured exceedance events within the monitoring period from any of the monitoring stations on the L4 floorplate, most of these measured exceedances for the period would be considered marginal exceedances ($\leq 20\%$ of applicable criteria.) The maximum recorded result by any of the monitors on the floorplate during the period was $62\mu\text{ms}^{-1}$, measured in the Surgery Room on 24/06/2024.

- Based upon site investigation, it was determined that exceedances throughout the monitoring period were associated with the use of the excavator close to the CI façade.
 - Use of the smallest available excavator was implemented, and this was effective in minimising the impacts of the use of the excavator on the L4 floorplate throughout the monitoring period, noting the relatively small number of exceedances and the amplitudes of these exceedances.
- Charles Perkins Centre:
 - Southern Corridor (Imaging):
 - Exceedances of B2 VC-B criteria which display characteristics consistent with construction activity were observed at the monitoring station on the following dates:
 - 25/06/2024 – 9.30am and 3.15pm.
 - 26/06/2024 – 10.45am.
 - 27/06/2024 – 1.45pm, 2.15pm.
 - Exceedances are generally observed to result at up to a maximum of 100% of the VC-B criteria at a given frequency (Approximately measured at $50\mu\text{ms}^{-1}$). The maximum level measured during the monitoring period was $60\mu\text{ms}^{-1}$ at 16Hz on 25/06/2024.
 - Exceedances are generally observed at 12.5Hz, likely to be the natural frequency of the CPC suspended slab. Exceedances at frequencies exclusive of 12.5Hz, 16Hz and 20Hz are rarely observed.
 - With regards to the monitoring period within the CPC Basement, we note the following:
 - Based upon site investigation, it was determined that exceedances throughout the monitoring period were associated with the use of the excavator.
 - Use of the smallest available excavator was implemented, and this was effective in minimising the impacts of the use of the excavator on the CPC floorplate throughout the monitoring period, noting that there were no observed exceedances during the period after 27/06/2024.
 - The impacts of this plant were mitigated through implementation of an alternative smaller excavator than what was originally used.
 - When comparing the results of the B2 monitoring location with other surrounding monitors, we note that the B2 monitor is located on a suspended slab, and hence it is possible that significant amplification of the vibration impacts from these works is occurring and resulting in exceedances at the monitoring location.
 - Notwithstanding, and due to the lack of correlation between the significant spikes measured by the B2 monitor and exceedances at other monitoring stations surrounding the project site, it is likely that some or most of these spikes have been caused by factors exclusive of the construction activity within the RPA Hospital project area.
 - It is prudent to note that CPC is undergoing a façade refurbishment exclusive to the scope of the construction activity assessed within this report, and it is likely that these works attributed to some of the exceedances observed throughout the period.

- It is also prudent to note that there were significant exceedances observed within the monitoring period which were outside of hours of works throughout the period, noting that various repeated exceedances were observed after 5.00pm and on weekend days during the period. These events have not been attributed to the impacts of the construction.
 - Observation Room E (Adjoining corridor):
 - Three exceedances of criteria were measured on the following dates:
 - 03/07/2024.
 - 06/07/2024.
 - 07/07/2024.
 - The above exceedances were measured by the less-sensitive Texcel monitor but were not measured by the more-sensitive B & K monitor installed adjacent to the Texcel monitor.
 - Notably, these exceedances were not found to correlate with any recorded exceedance at any of the other monitoring stations surrounding the site, inclusive of the other CPC monitors.
 - It is also prudent to note that there were significant exceedances observed within the monitoring period which were outside of hours of works throughout the period, noting that various repeated exceedances were observed after 5.00pm and on weekend days during the period. These events have not been attributed to the impacts of the construction.
 - This is not indicative of construction vibration, noting that construction-borne vibration would be expected to impact the monitors equally and similar results would be measured.
 - As the Texcel monitor is operating at it's floor of measurement, it is possible that a small perturbation measured by both of the monitors was artificially inflated by the Texcel monitor due to it's relatively lower accuracy and the relatively low vibration levels measured.
 - Alternatively, this may have been caused by operational activity within the facility such as a step or a trolley movement, which occurred closer to the texcel monitor however did not register an exceedance at the B & K monitor.
 - Also, the measured exceedances where recorded at frequencies which do not align with the resonant frequency response frequency for the animal's abdomen (27-29Hz), and hence the impacts of these measured values would be less perceivable to the animals than compared with measured values at frequencies closer to those listed above.
 - Exclusive of the above, there were no further exceedances measured throughout the monitoring period.
- RPA Hospital Main Building:
 - Level 03 NICU:
 - Exceedances of the NICU $100\mu\text{ms}^{-1}$ criteria which display characteristics consistent with construction activity were observed at the monitoring station on 27/06/2024 at approximately 12.30pm.
 - The maximum measured level was recorded at $265\mu\text{ms}^{-1}$ at 31.5Hz, approximately 220% of the applicable criteria.

- Exclusive of these periods, no further exceedance events were measured at the monitoring station throughout the monitoring period.
- Susan Wakil Health Building:
 - No exceedances of criteria were observed due to construction works during the monitoring period.

6 CONCLUSION

Noise and vibration monitoring has been conducted by Acoustic Logic for the Early Works being undertaken for SSD-47662959, the RPA Hospital Redevelopment, located at 50 Missenden Road, Camperdown.

This letter presents the results of the monitoring between the period of Monday 24th June, 2024 and Sunday 07th July, 2024.

Monitoring results have been provided with reference to the Noise and Vibration Management Levels established within the *Early Works Construction Noise and Vibration Management Plan*, prepared by this office, or as they have been updated throughout the construction process, specifically pertaining to the recommendations of the *Baseline Monitoring Results and Construction Noise and Vibration Monitoring Report 1*, both also prepared by this office (Ref: 20230239.9/0610A/R1/LA, 20230239.17/0412A/R1/LA and 20230239.17/2301A/R0/LA).

Noise monitoring results have been provided within Appendix A, whilst vibration monitoring results have been provided throughout Appendix B of this letter.

We trust this information is satisfactory. Please contact us should you have any further queries.

Yours faithfully,



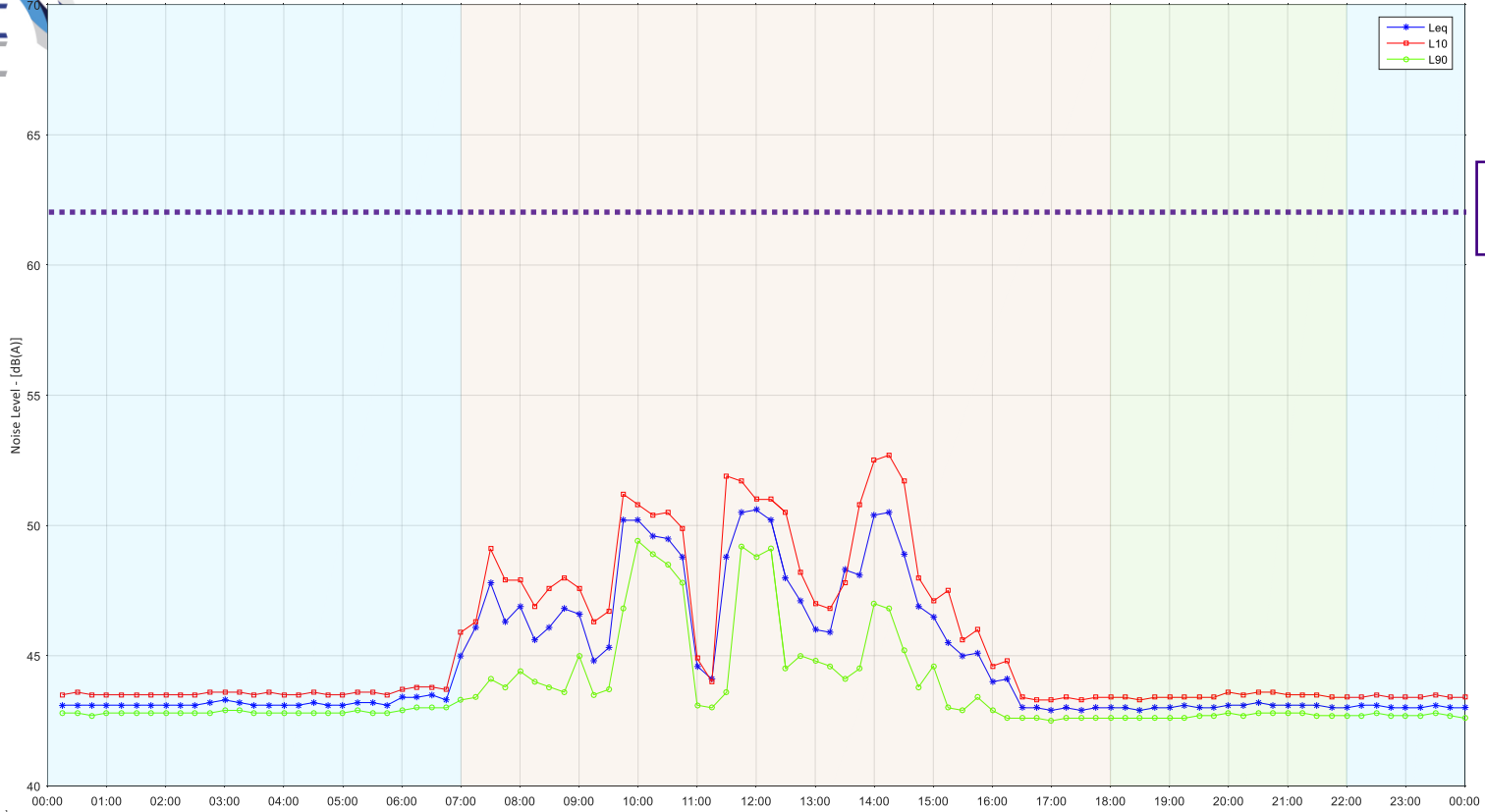
Acoustic Logic Pty Ltd
Lachlan Abood

APPENDIX A – NOISE MONITORING RESULTS

CENTENARY INSTITUTE – LEVEL 4 SURGERY ROOM (SOUTHERN FAÇADE)



Centenary Institute - L4 Surgery Room: Monday 24 June, 2024

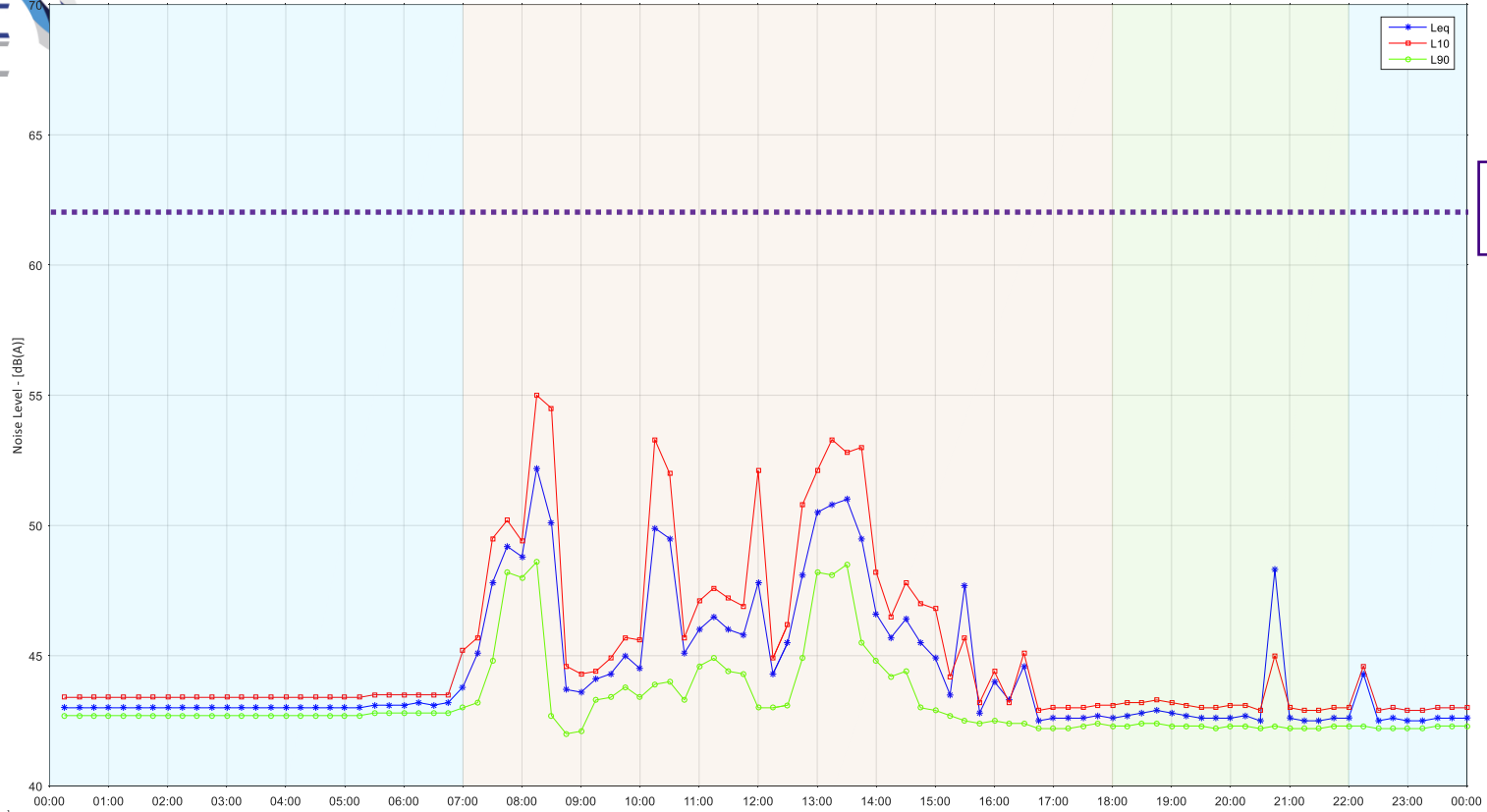


Animal Housing / Breeding /
Observation Room NML
≤ 62dB(A)_{Leq}

- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]



Centenary Institute - L4 Surgery Room: Tuesday 25 June, 2024

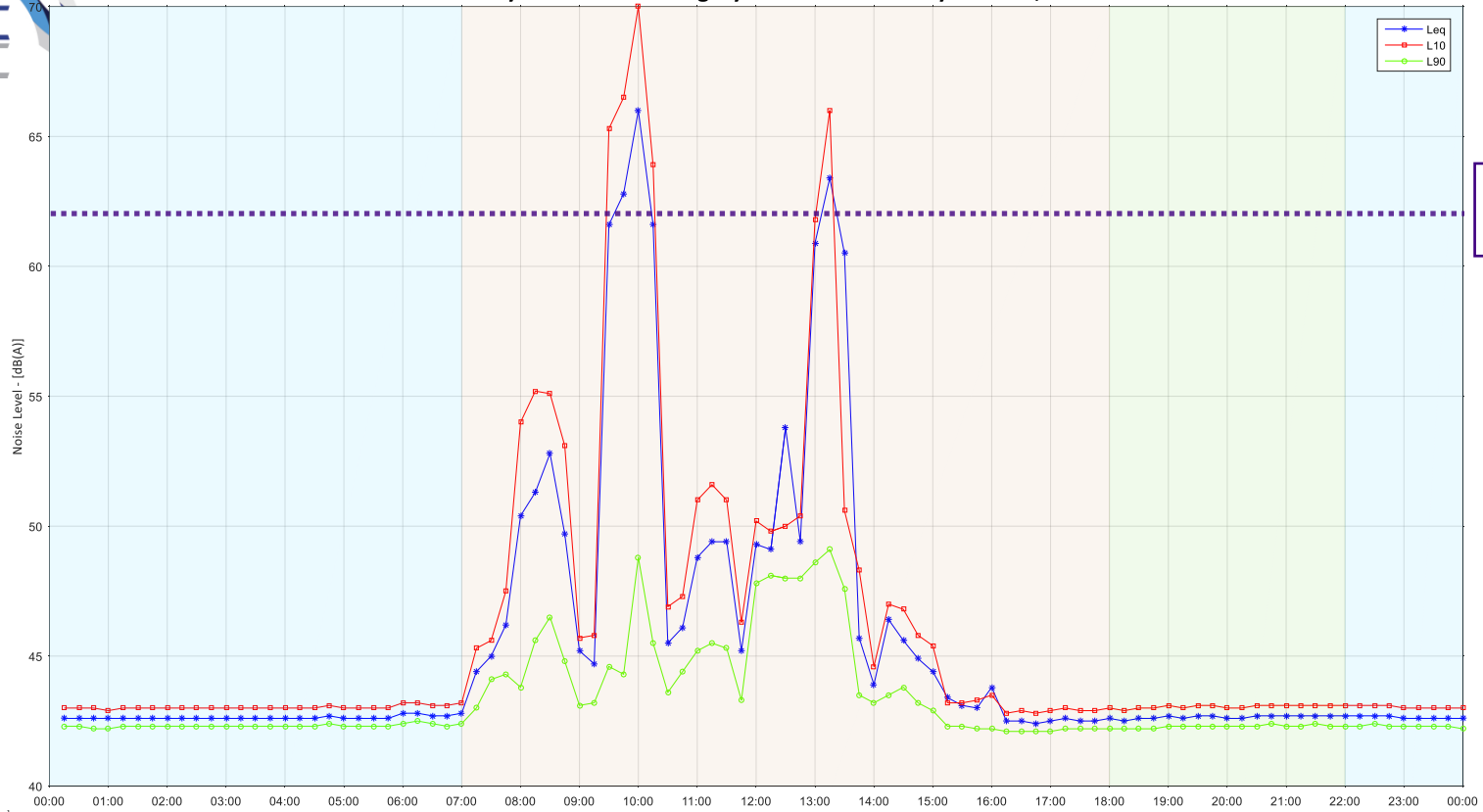


Animal Housing / Breeding /
Observation Room NML
≤ 62dB(A)_{L_{eq}}

- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]



Centenary Institute - L4 Surgery Room: Wednesday 26 June, 2024

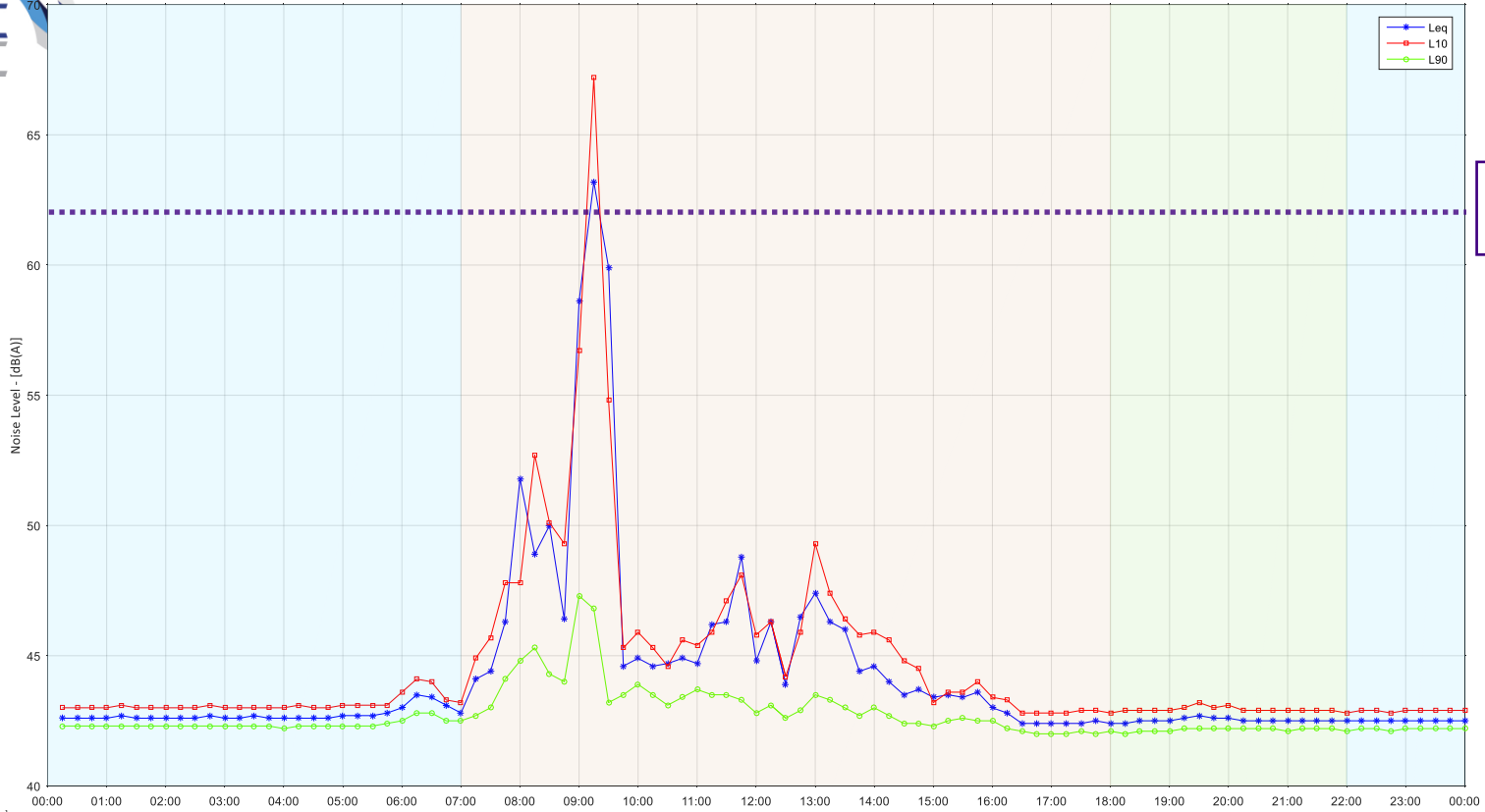


Animal Housing / Breeding /
Observation Room NML
≤ 62dB(A)_{Leq}

- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]



Centenary Institute - L4 Surgery Room: Thursday 27 June, 2024

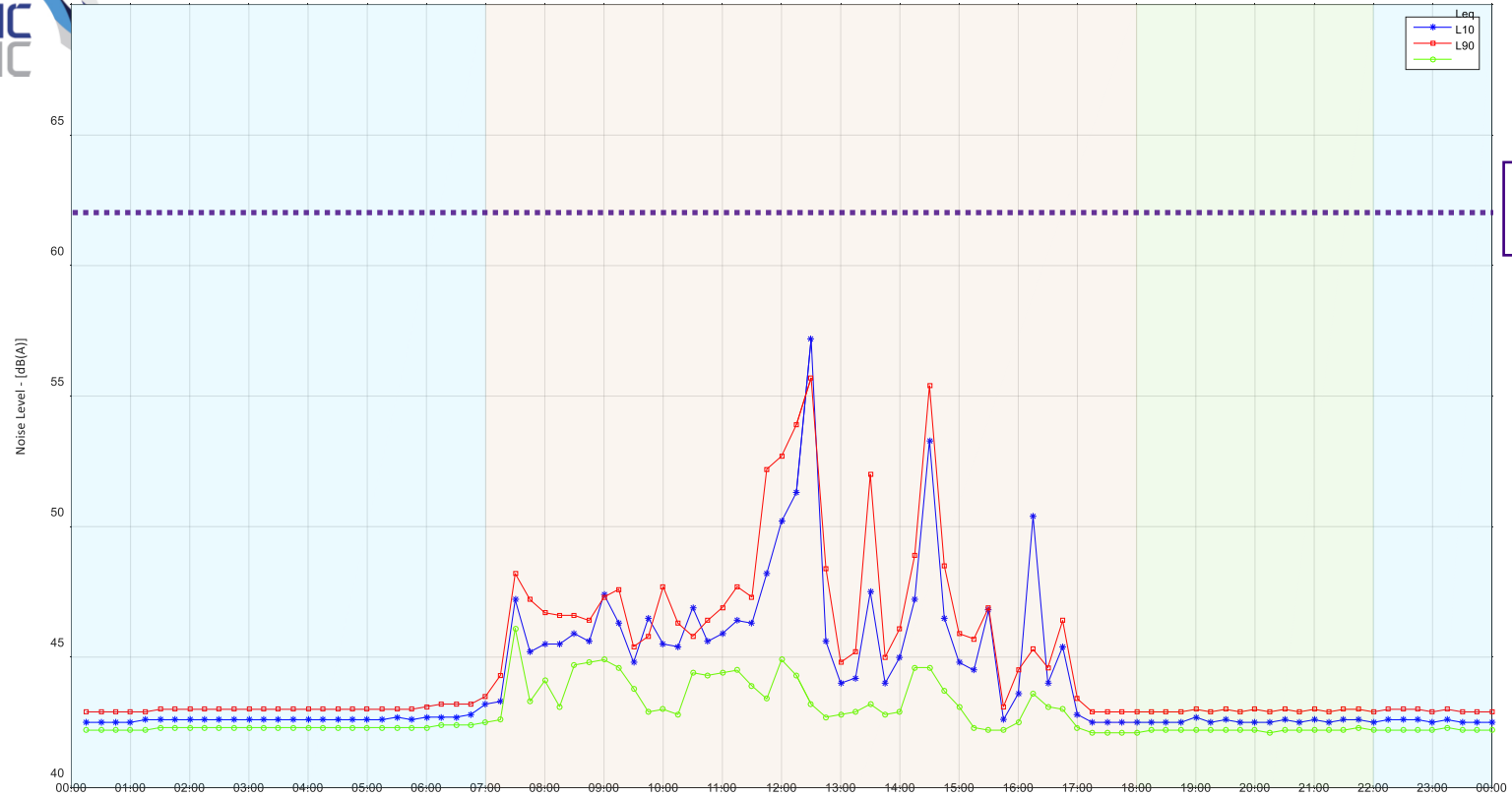


Animal Housing / Breeding /
Observation Room NML
≤ 62dB(A)_{Leq}

- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]



Centenary Institute - L4 Surgery Room: Friday 28 June, 2024

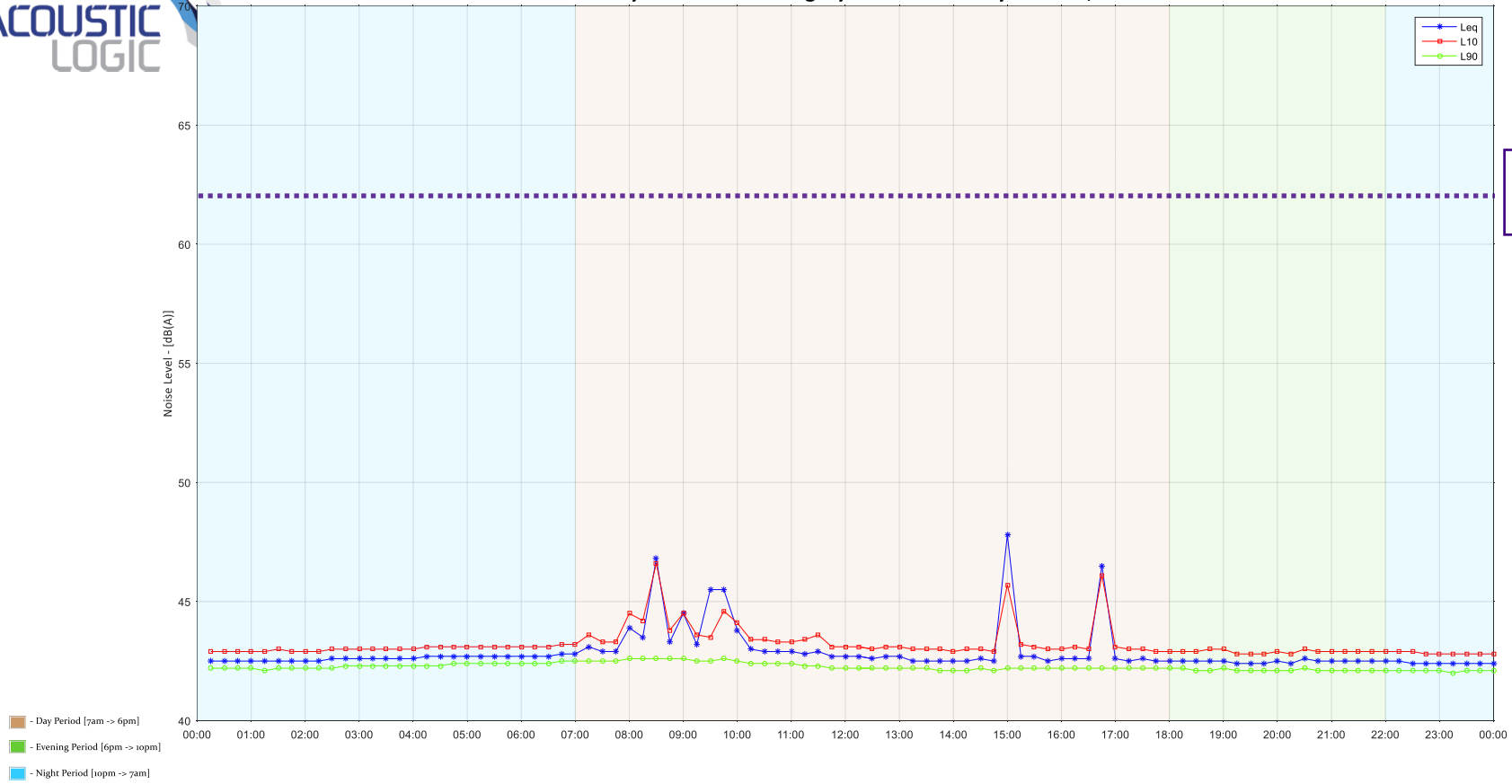


Animal Housing / Breeding /
Observation Room NML
 $\leq 62\text{dB(A)}_{L_{eq}}$





Centenary Institute - L4 Surgery Room: Saturday 29 June, 2024



**Animal Housing / Breeding /
Observation Room NML
≤ 62dB(A)_{Leq}**



Centenary Institute - L4 Surgery Room: Sunday 30 June, 2024

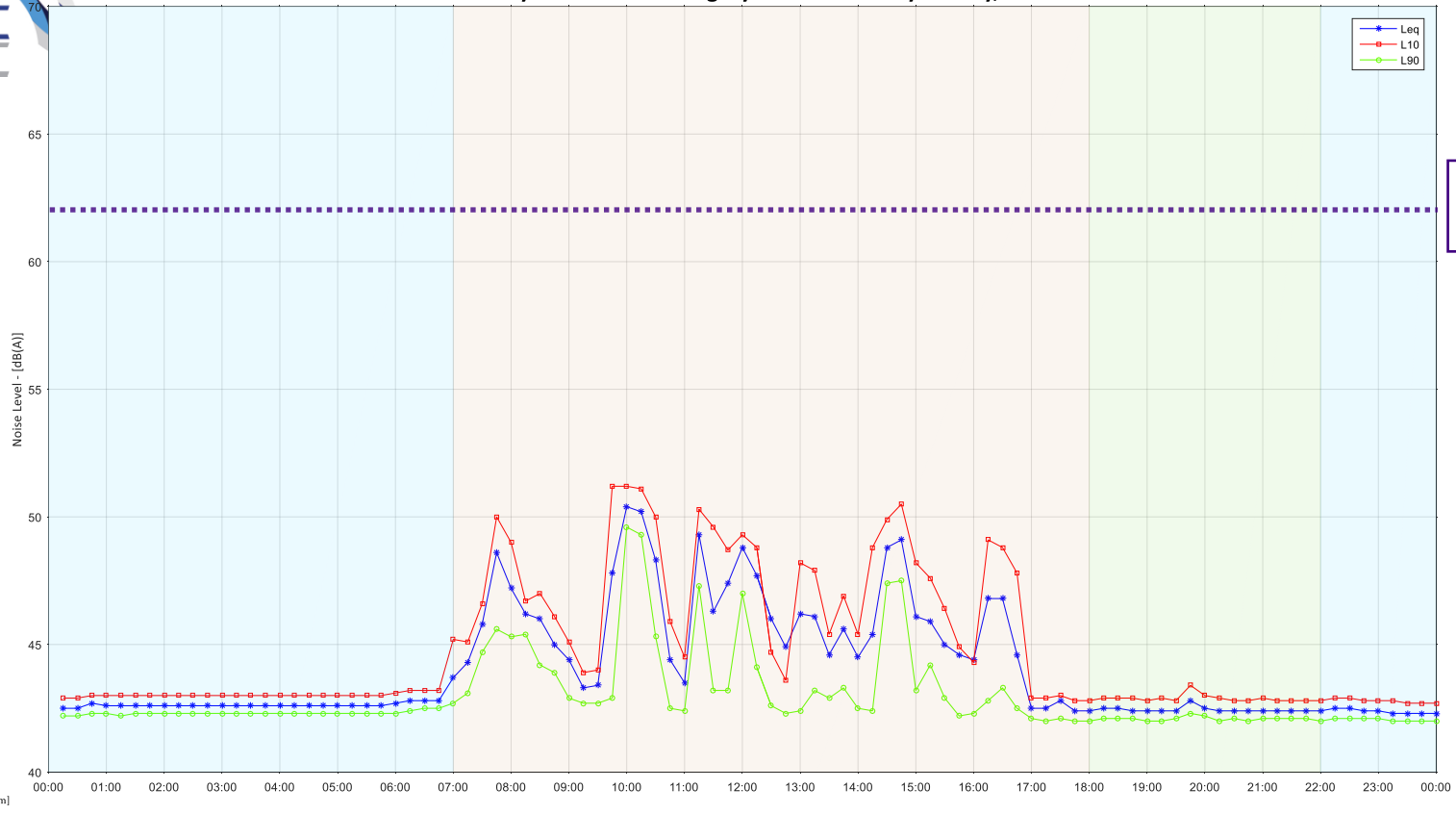


**Animal Housing / Breeding /
Observation Room NML
≤ 62dB(A)_{Leq}**

- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]



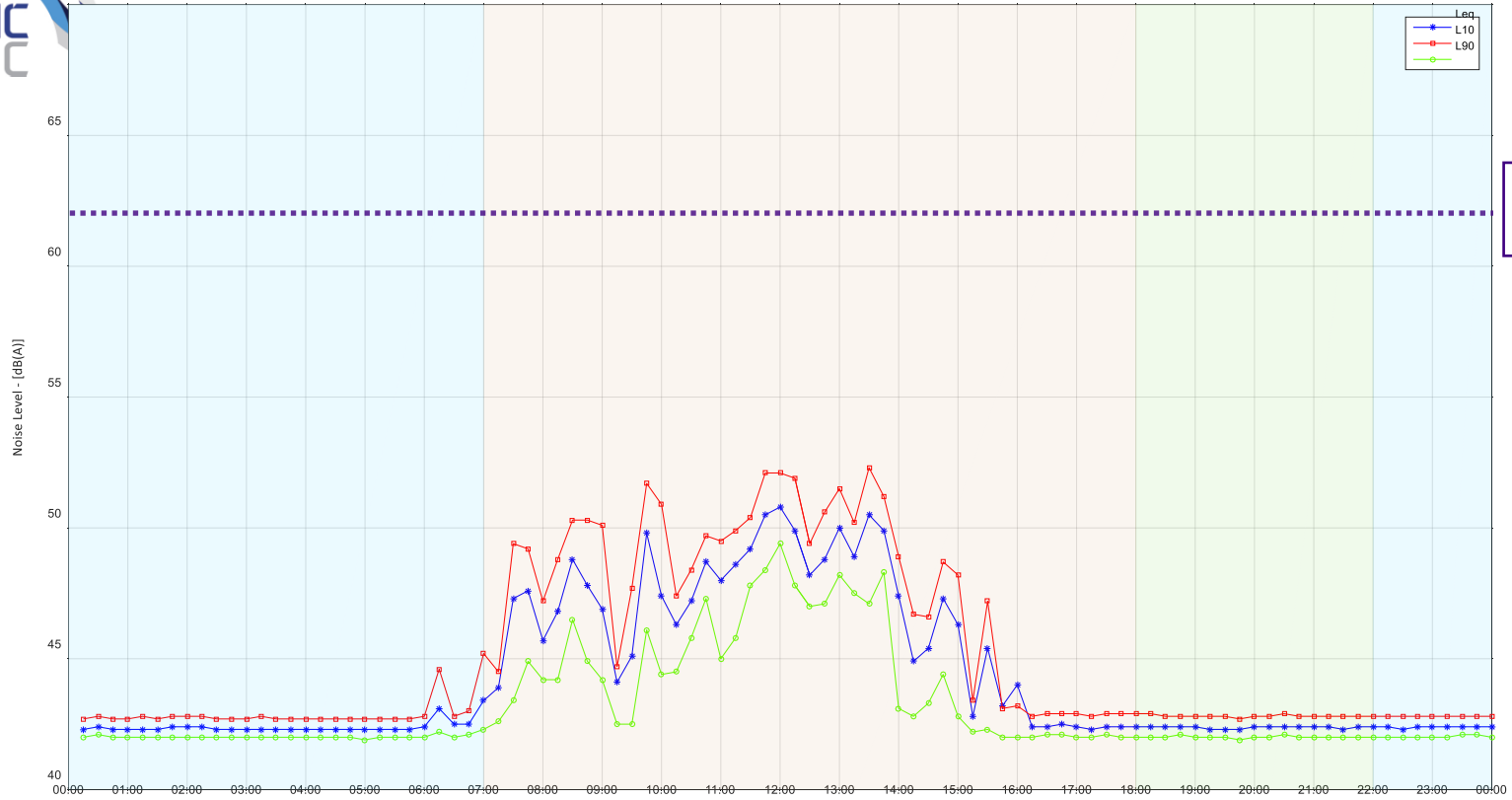
Centenary Institute - L4 Surgery Room: Monday 01 July, 2024



Animal Housing / Breeding /
Observation Room NML
 $\leq 62\text{dB(A)}_{L_{eq}}$



Centenary Institute - L4 Surgery Room: Tuesday 02 July, 2024



**Animal Housing / Breeding /
Observation Room NML
≤ 62dB(A)_{Leq}**





Centenary Institute - L4 Surgery Room: Wednesday 03 July, 2024

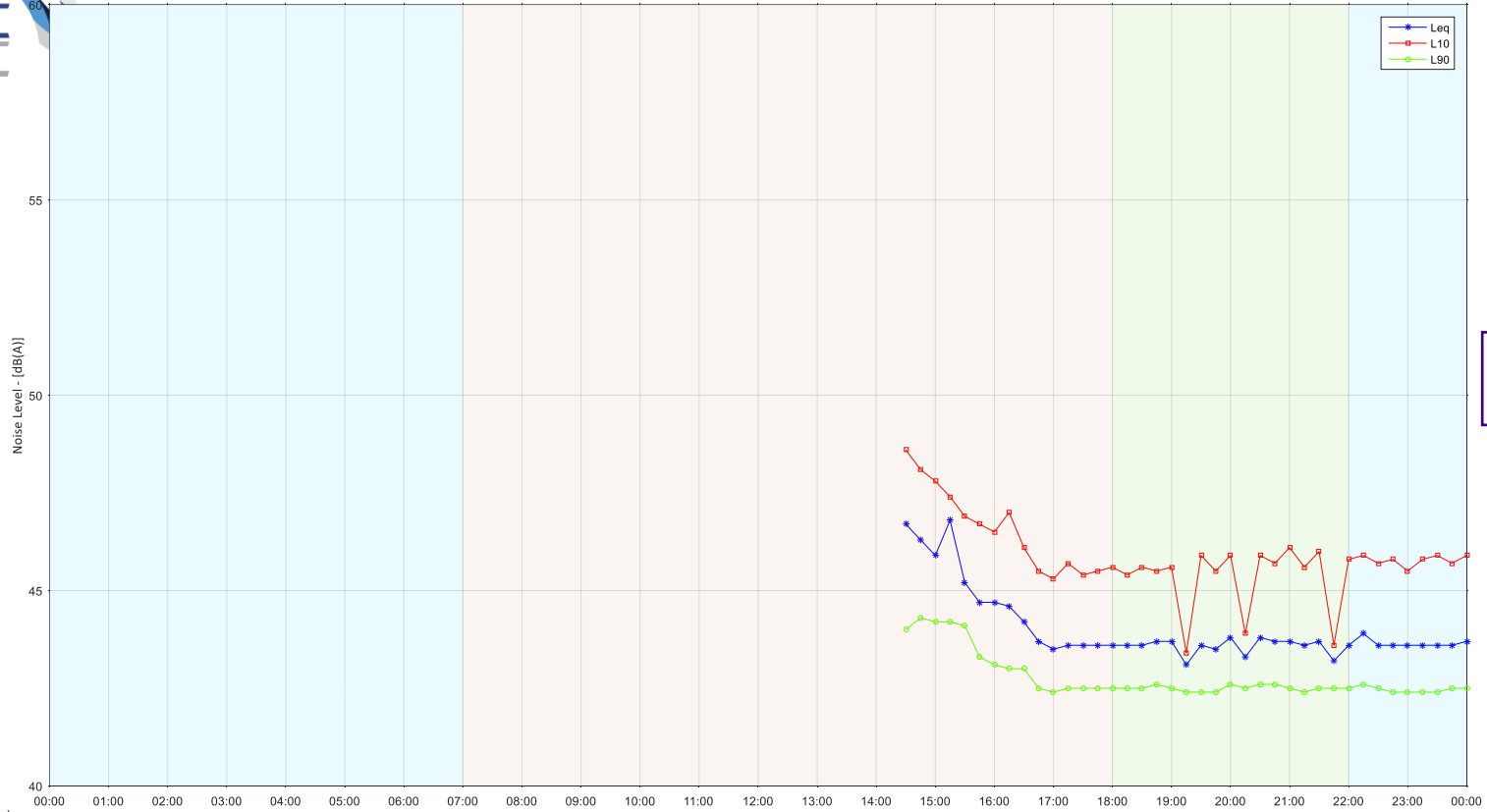


Animal Housing / Breeding /
Observation Room NML
≤ 62dB(A)_{Leq}





Centenary Institute - L4 Surgery Room: Wednesday 03 July, 2024

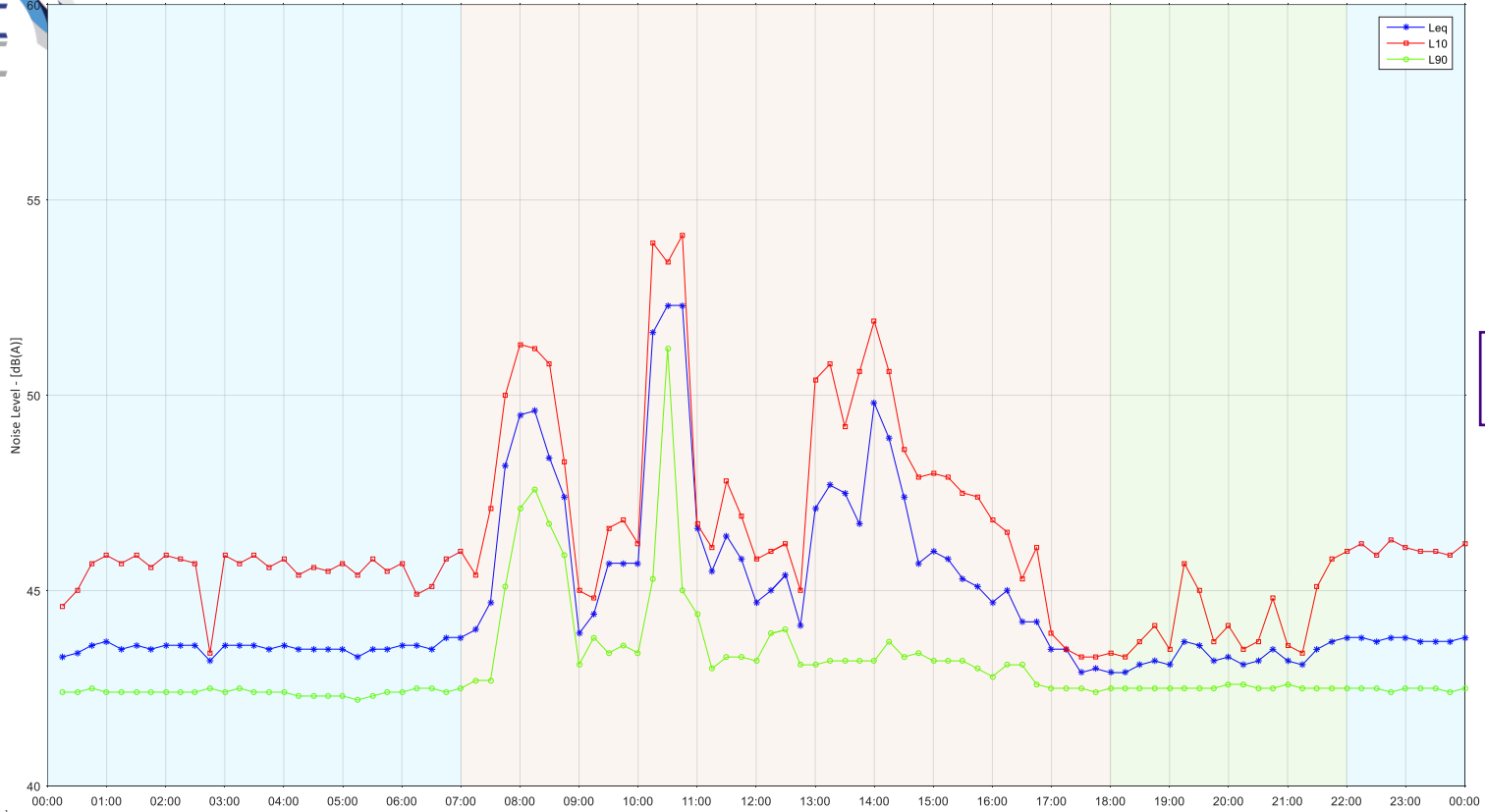


All values below Animal Housing / Breeding / Observation Room NML

- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]



Centenary Institute - L4 Surgery Room: Thursday 04 July, 2024

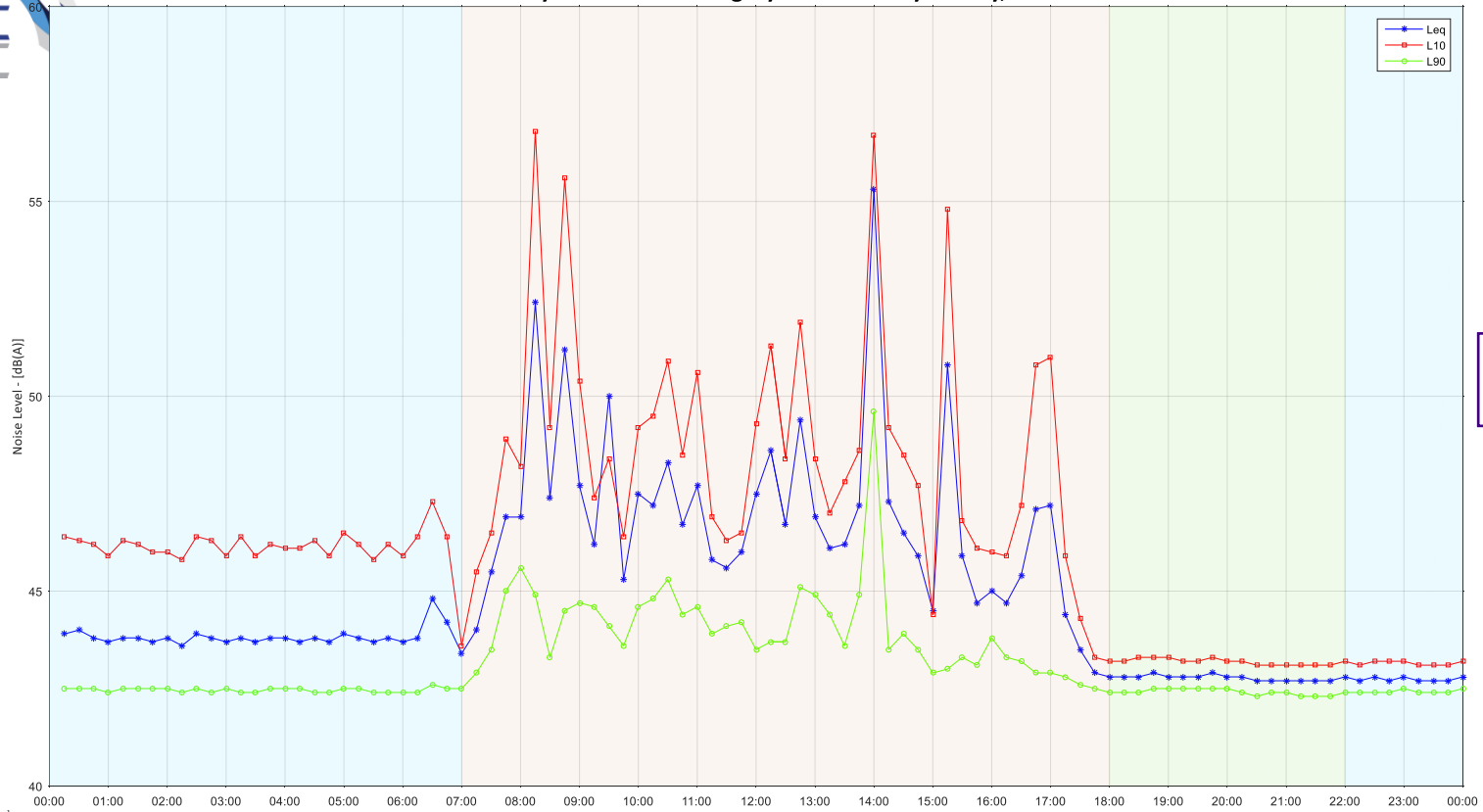


All values below Animal Housing / Breeding / Observation Room NML

- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]



Centenary Institute - L4 Surgery Room: Friday 05 July, 2024

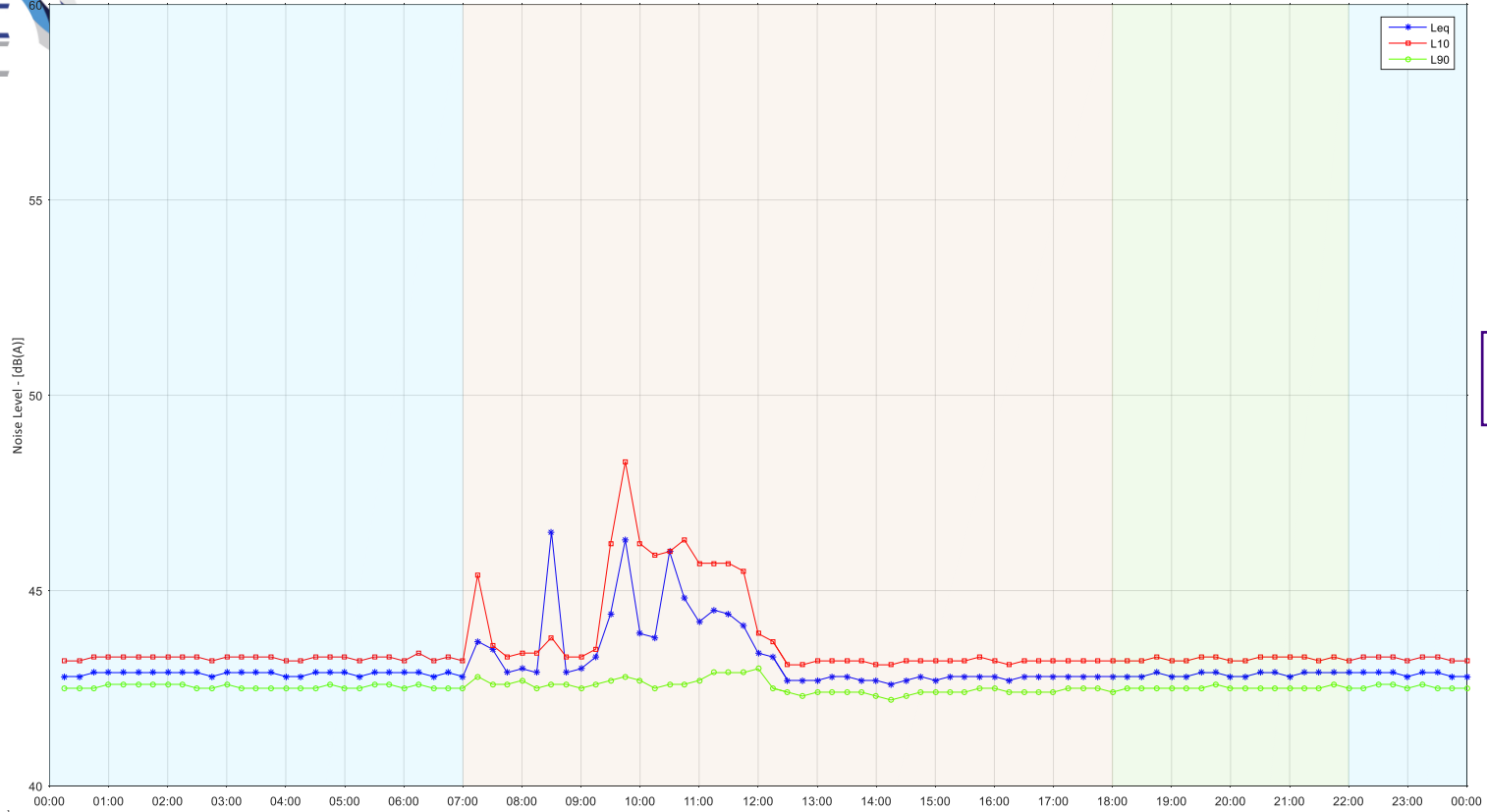


All values below Animal Housing / Breeding / Observation Room NML

- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]



Centenary Institute - L4 Surgery Room: Saturday 06 July, 2024

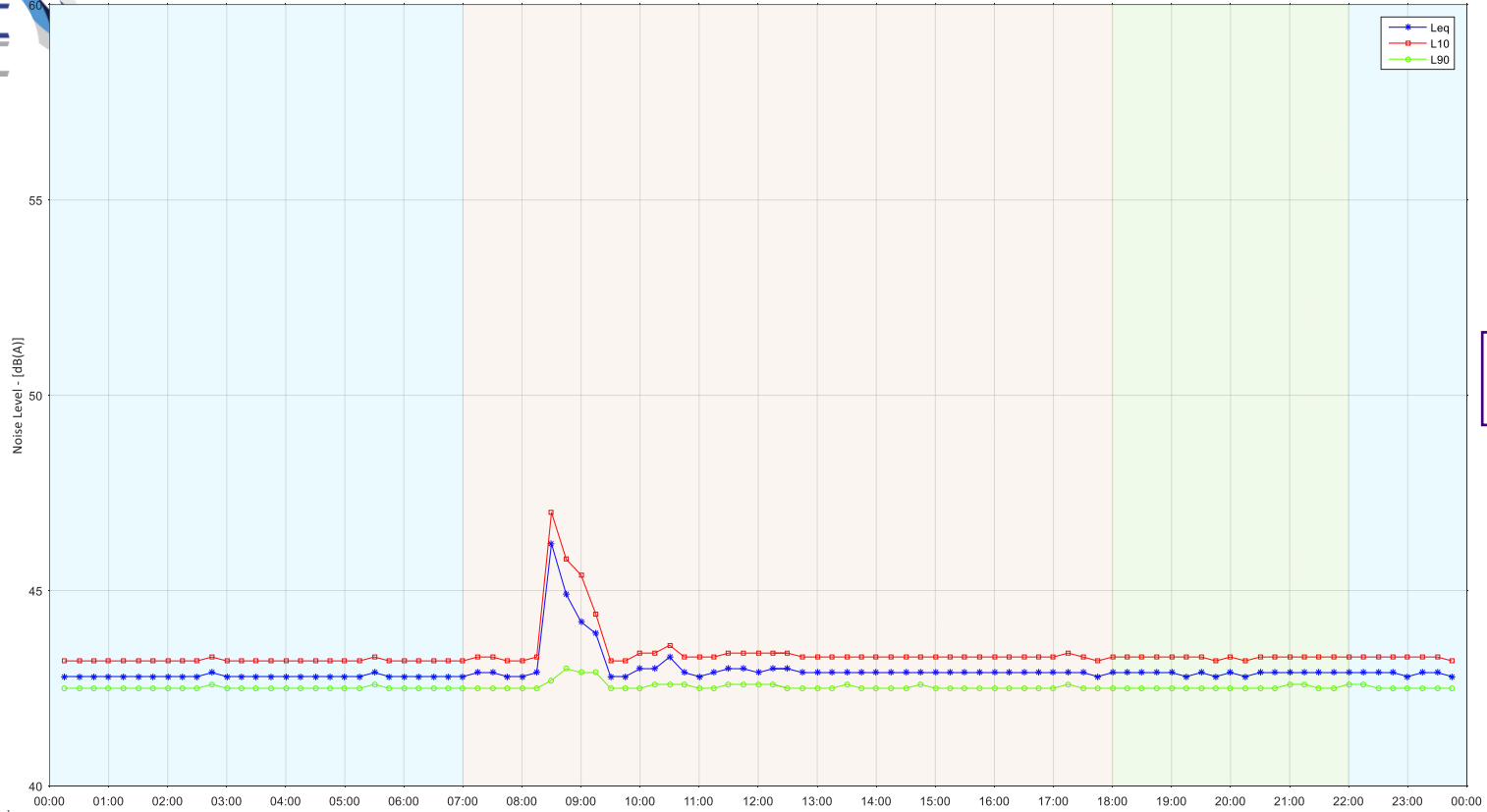


All values below Animal Housing / Breeding / Observation Room NML

- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]



Centenary Institute - L4 Surgery Room: Sunday 07 July, 2024



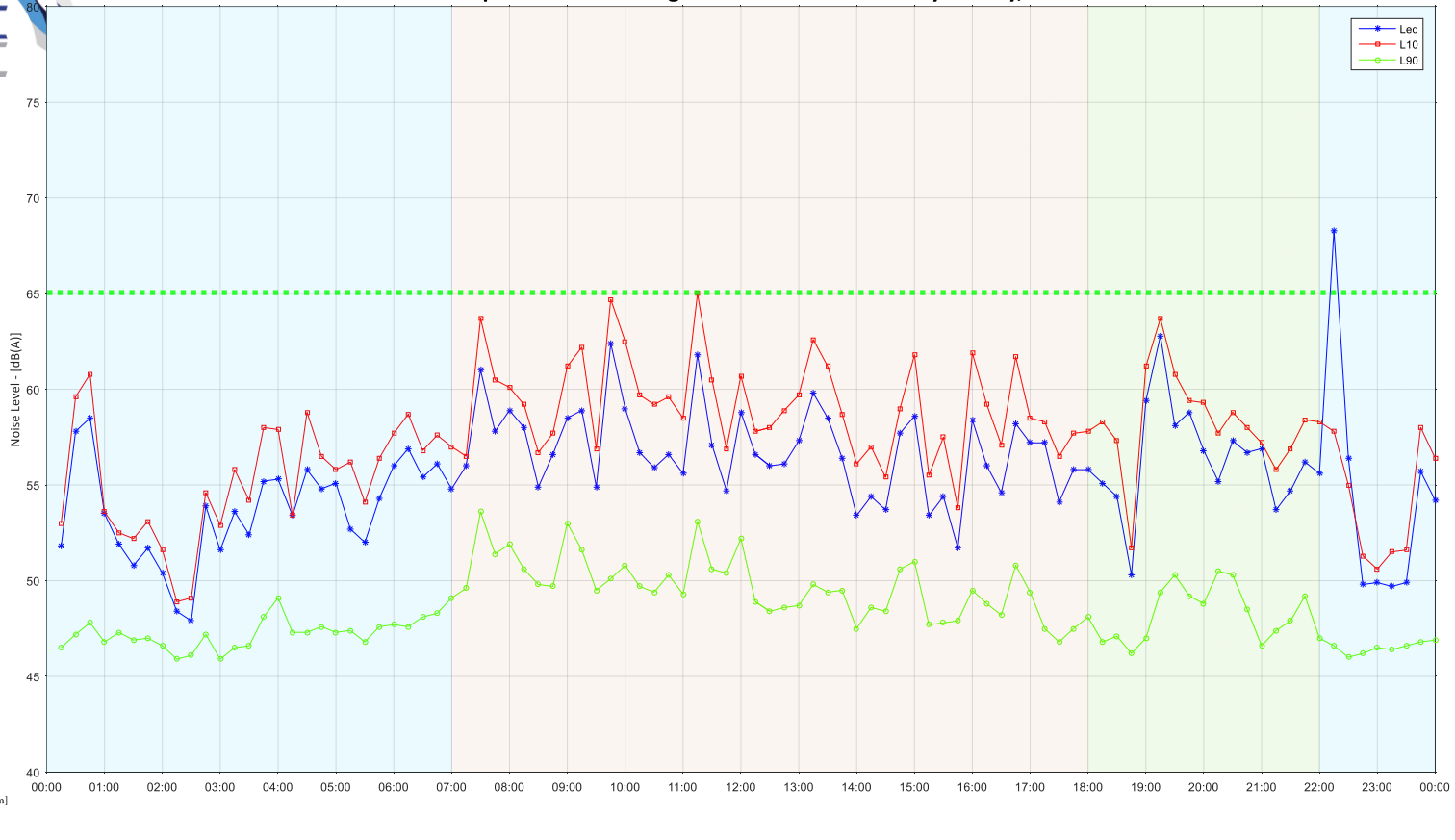
All values below Animal Housing / Breeding / Observation Room NML

- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]

RPA HOSPITAL MAIN BUILDING – LEVEL 3 NICU



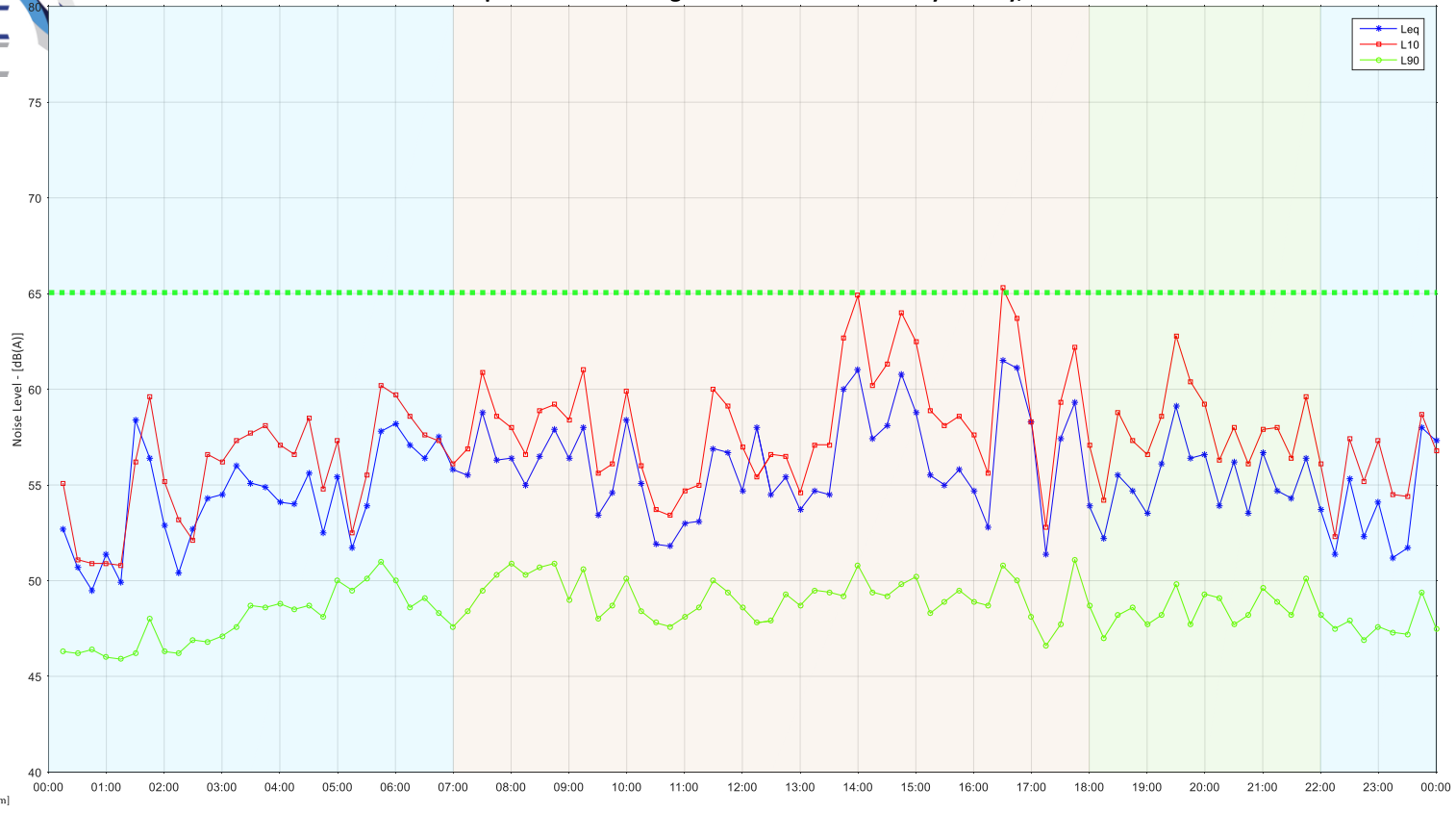
RPA Hospital Main Building - Level 03 NICU: Monday 08 July, 2024



**NICU NML
(Including correction)
≤ 65dB(A)_{L_{eq}}**



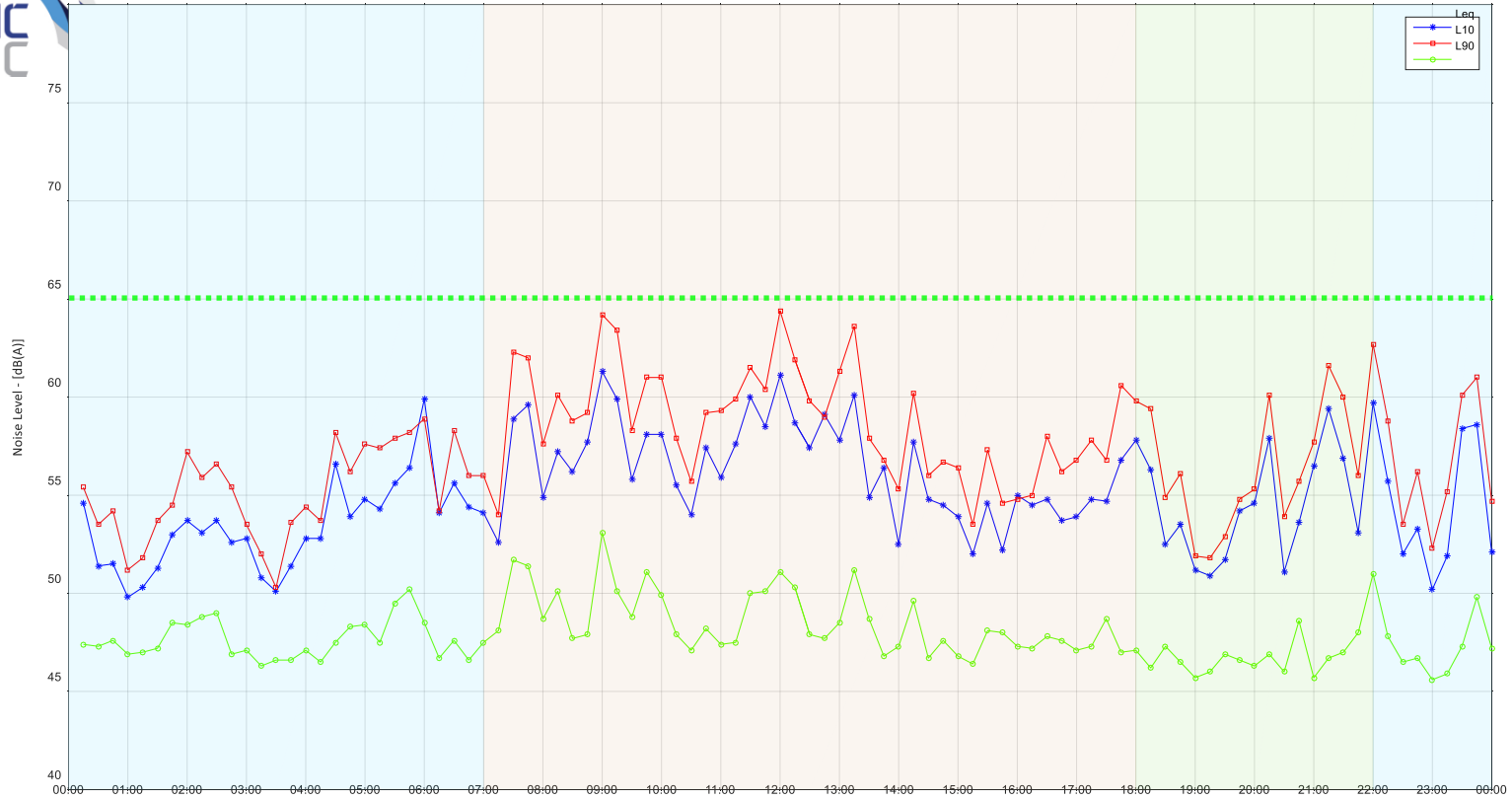
RPA Hospital Main Building - Level 03 NICU: Tuesday 09 July, 2024



**NICU NML
(Including correction)
≤ 65dB(A)_{Leq}**



RPA Hospital Main Building - Level 03 NICU: Wednesday 10 July, 2024

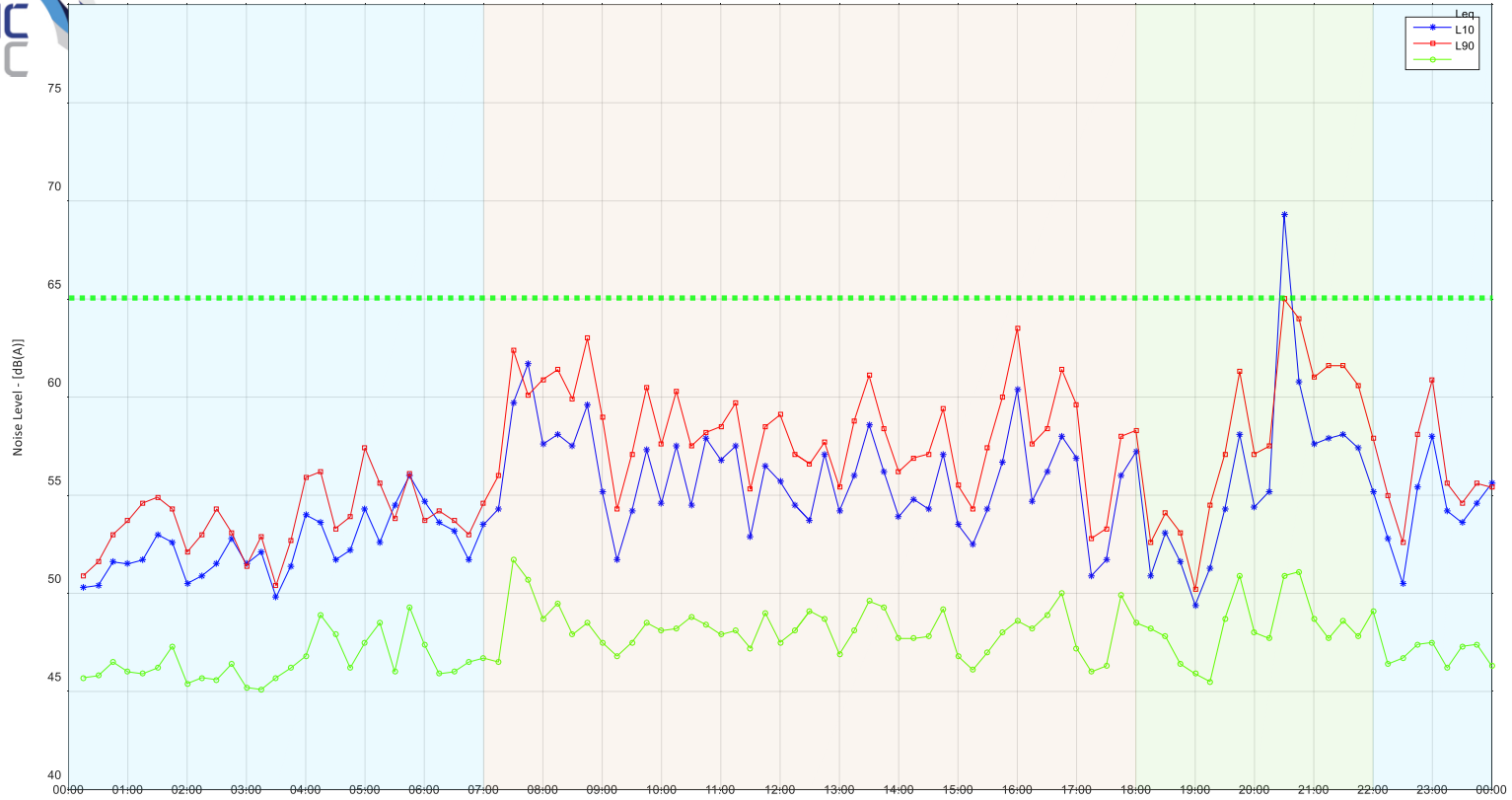


**NICU NML
(Including correction)
≤ 65dB(A)_{L_{eq}}**





RPA Hospital Main Building - Level 03 NICU: Thursday 11 July, 2024

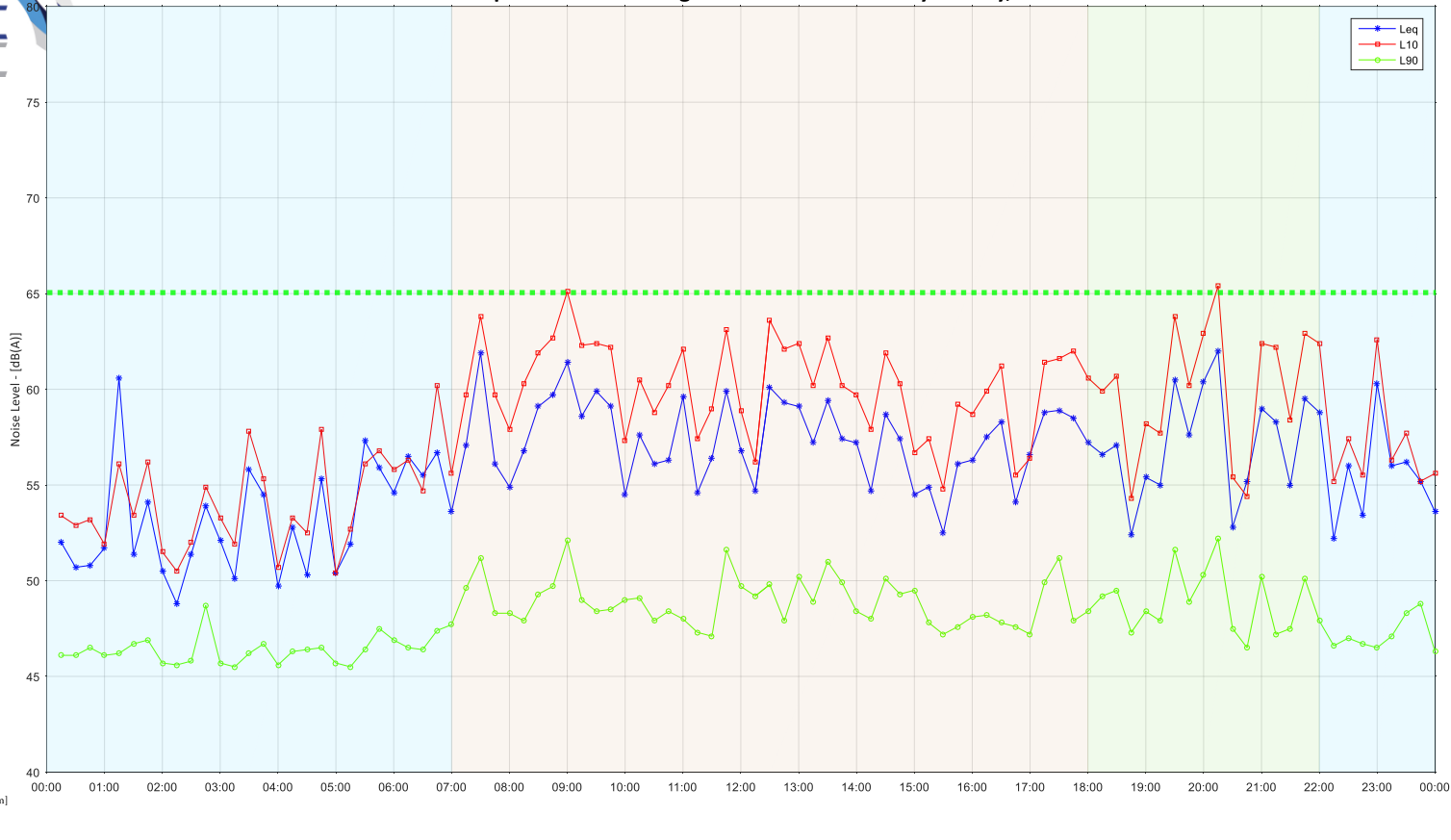


**NICU NML
(Including correction)
≤ 65dB(A)_{L_{eq}}**





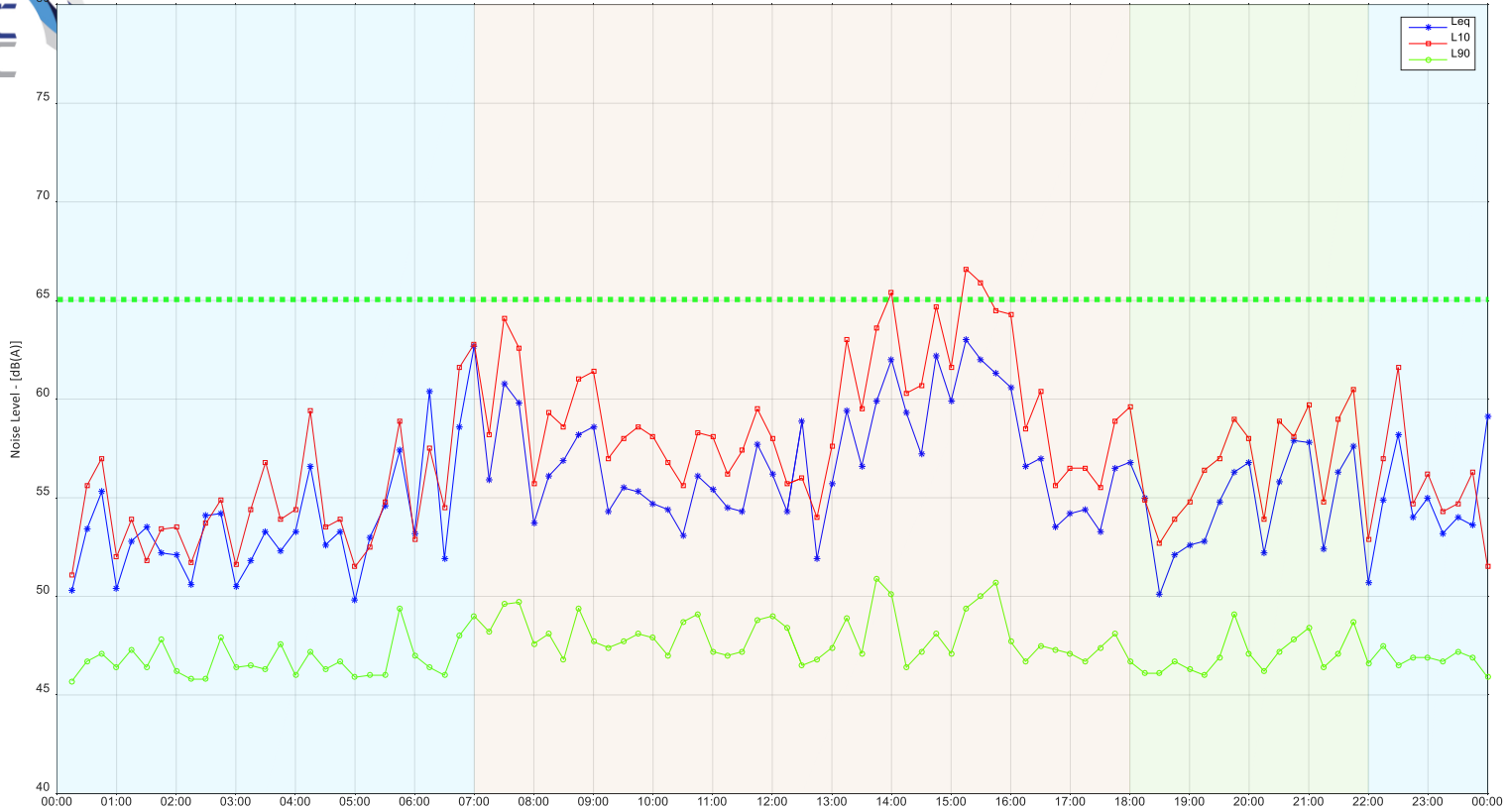
RPA Hospital Main Building - Level 03 NICU: Friday 12 July, 2024



**NICU NML
(Including correction)
≤ 65dB(A)_{L_{eq}}**



RPA Hospital Main Building - Level 03 NICU: Saturday 13 July, 2024

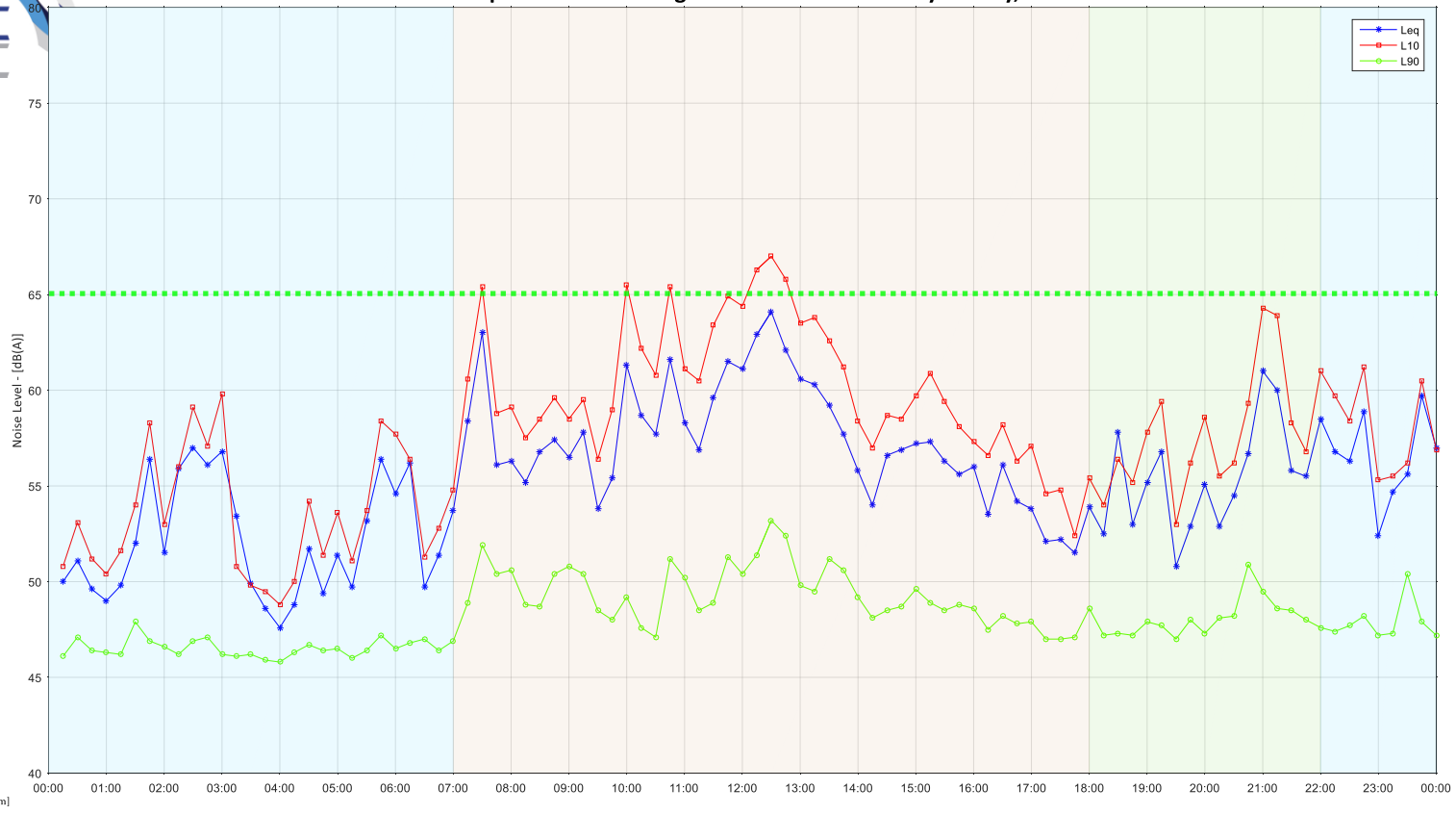


**NICU NML
(Including correction)
≤ 65dB(A)_{L_{eq}}**

00:00 - 07:00
07:00 - 18:00
18:00 - 22:00
22:00 - 00:00



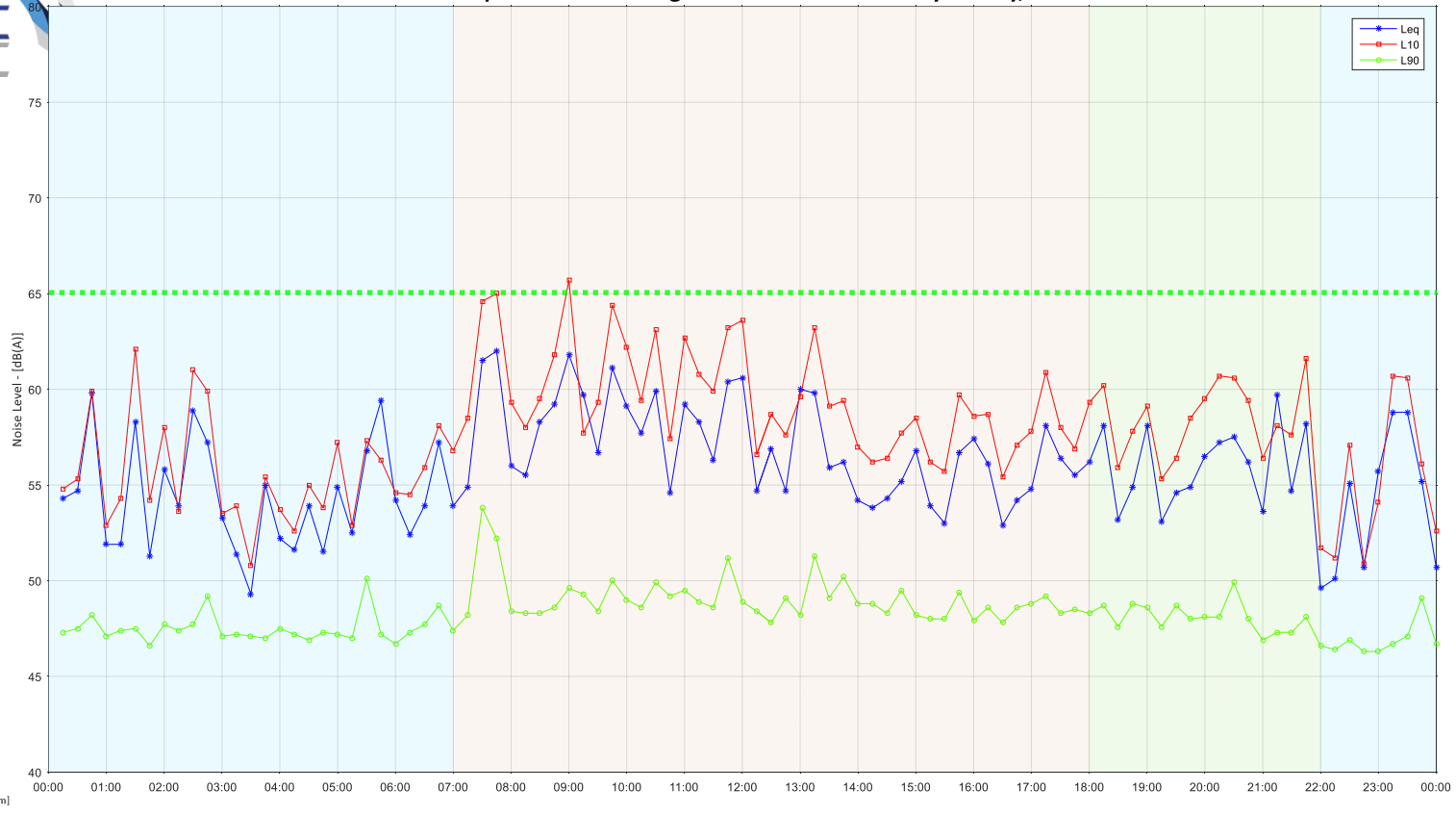
RPA Hospital Main Building - Level 03 NICU: Sunday 14 July, 2024



**NICU NML
(Including correction)
≤ 65dB(A)_{L_{eq}}**



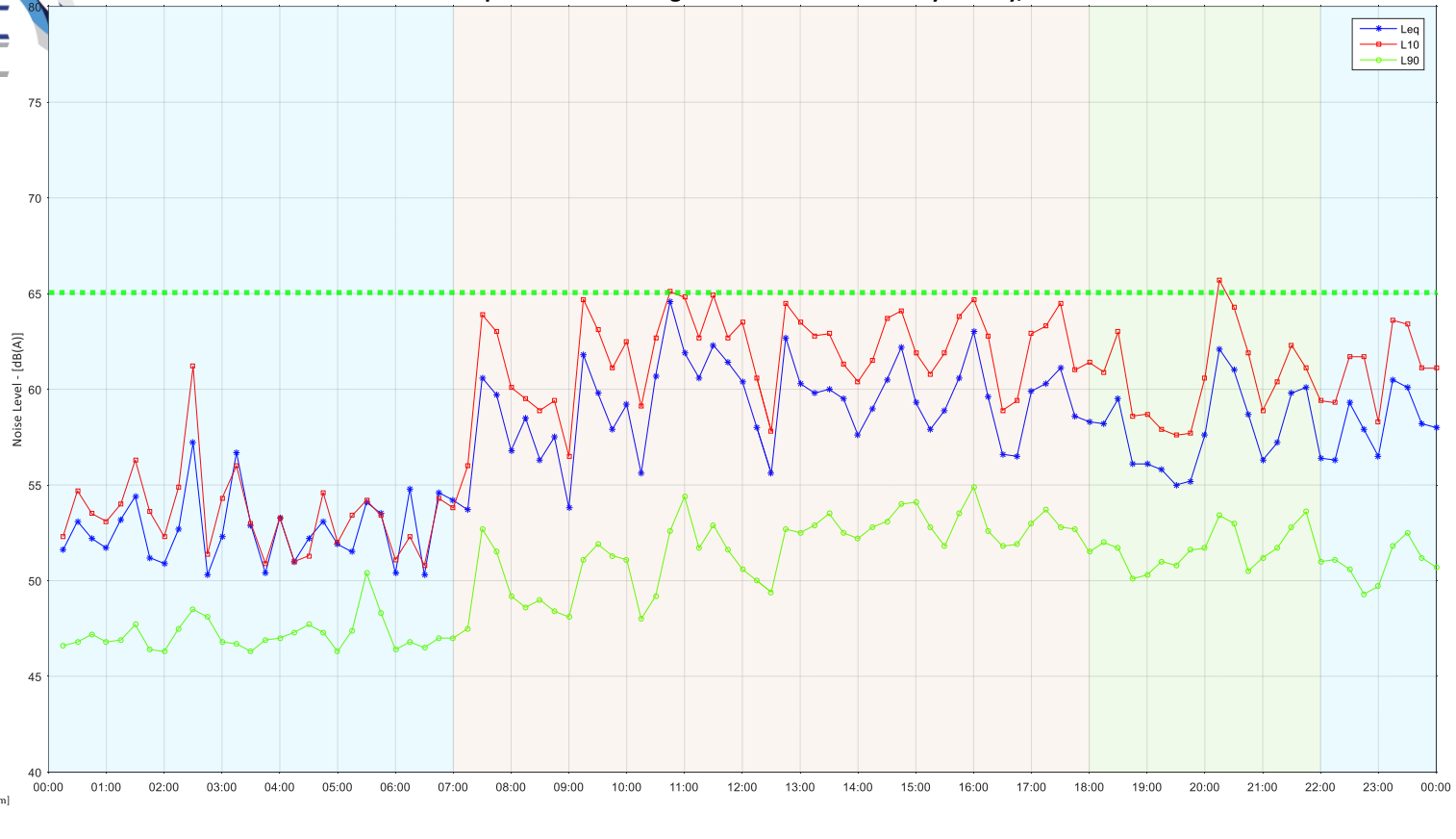
RPA Hospital Main Building - Level 03 NICU: Monday 15 July, 2024



**NICU NML
(Including correction)
≤ 65dB(A)_{L_{eq}}**



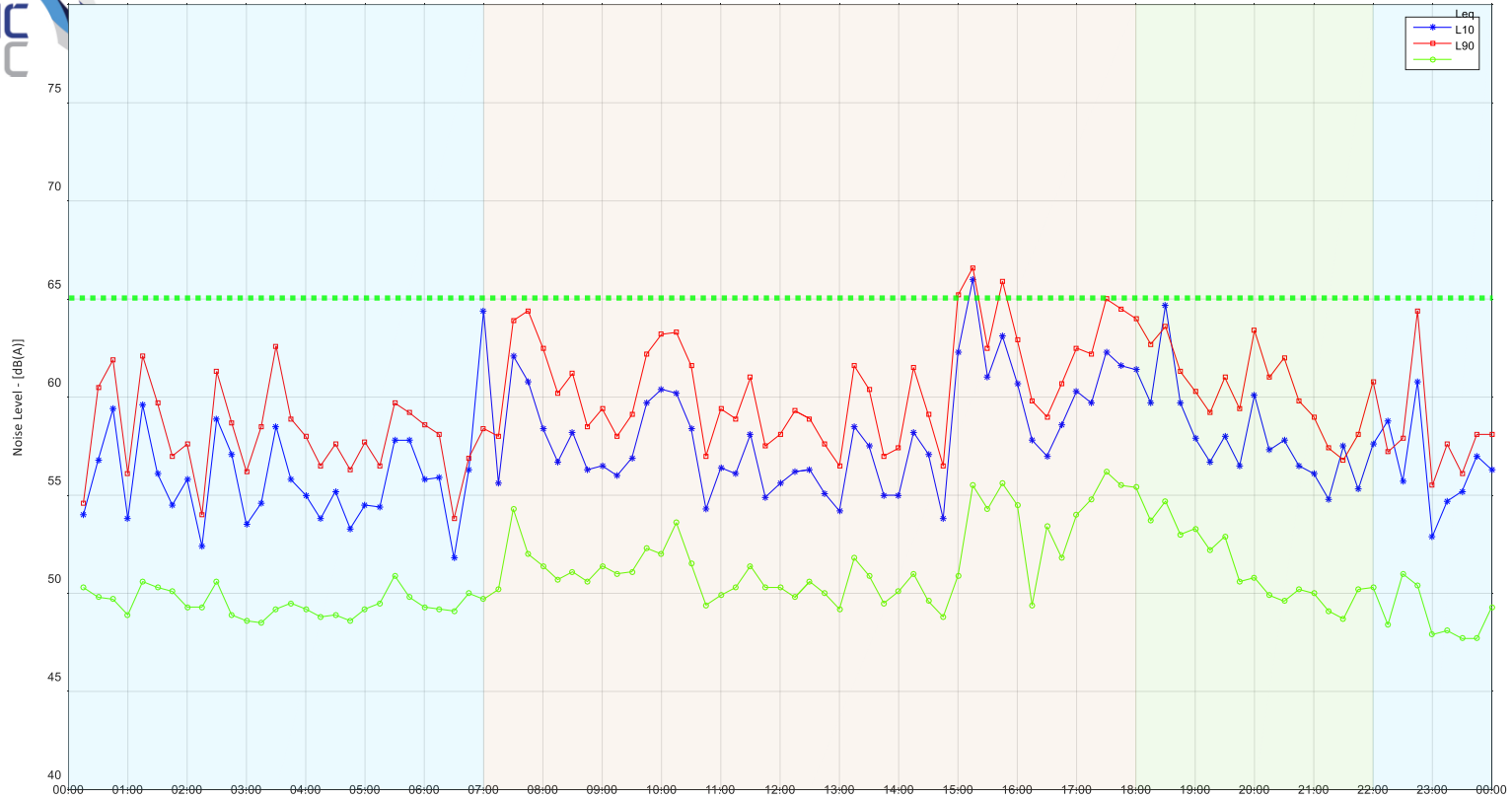
RPA Hospital Main Building - Level 03 NICU: Tuesday 16 July, 2024



**NICU NML
(Including correction)
≤ 65dB(A)_{L_{eq}}**



RPA Hospital Main Building - Level 03 NICU: Wednesday 17 July, 2024

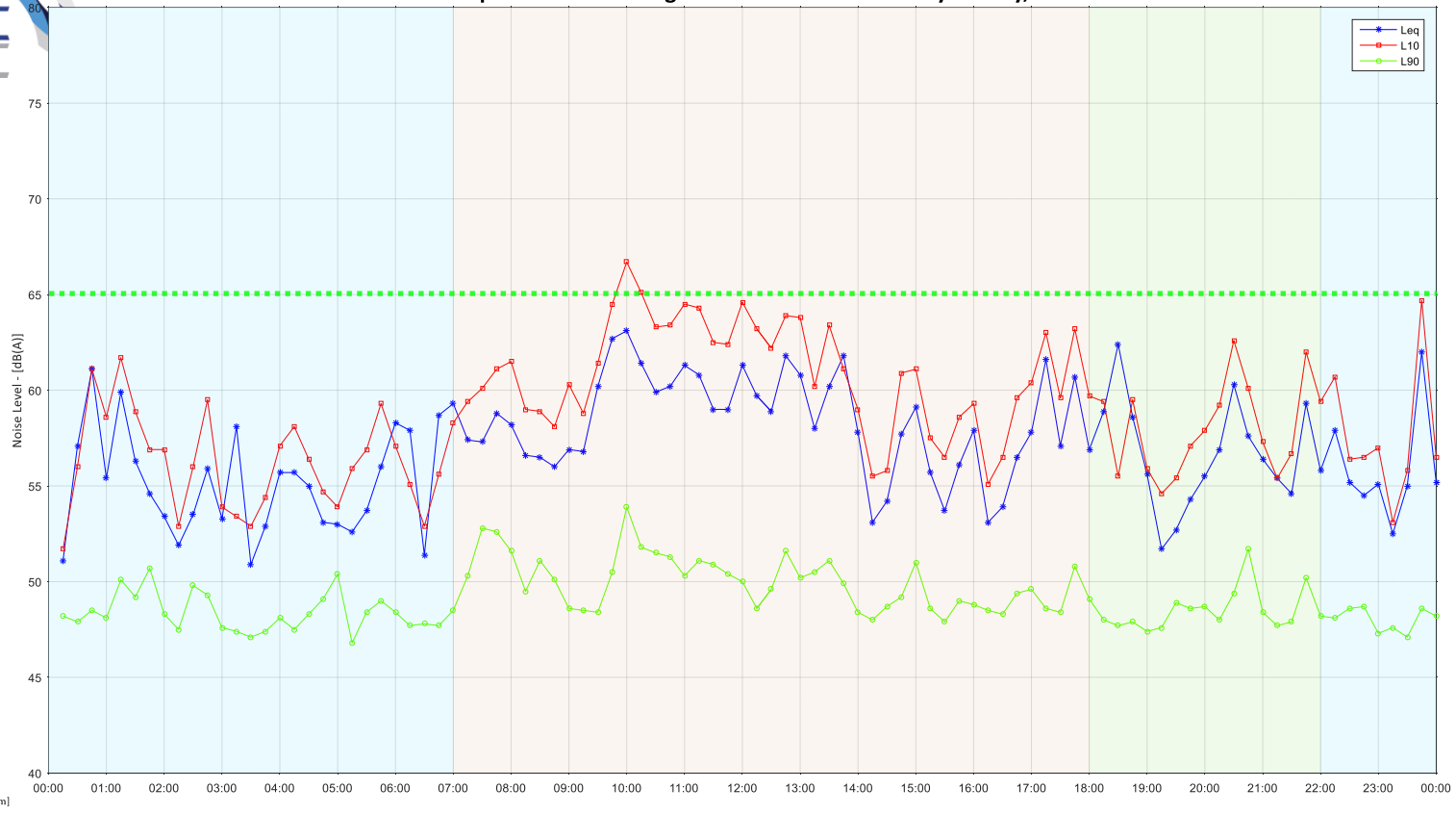


NICU NML
(Including correction)
 $\leq 65\text{dB(A)}_{L_{eq}}$





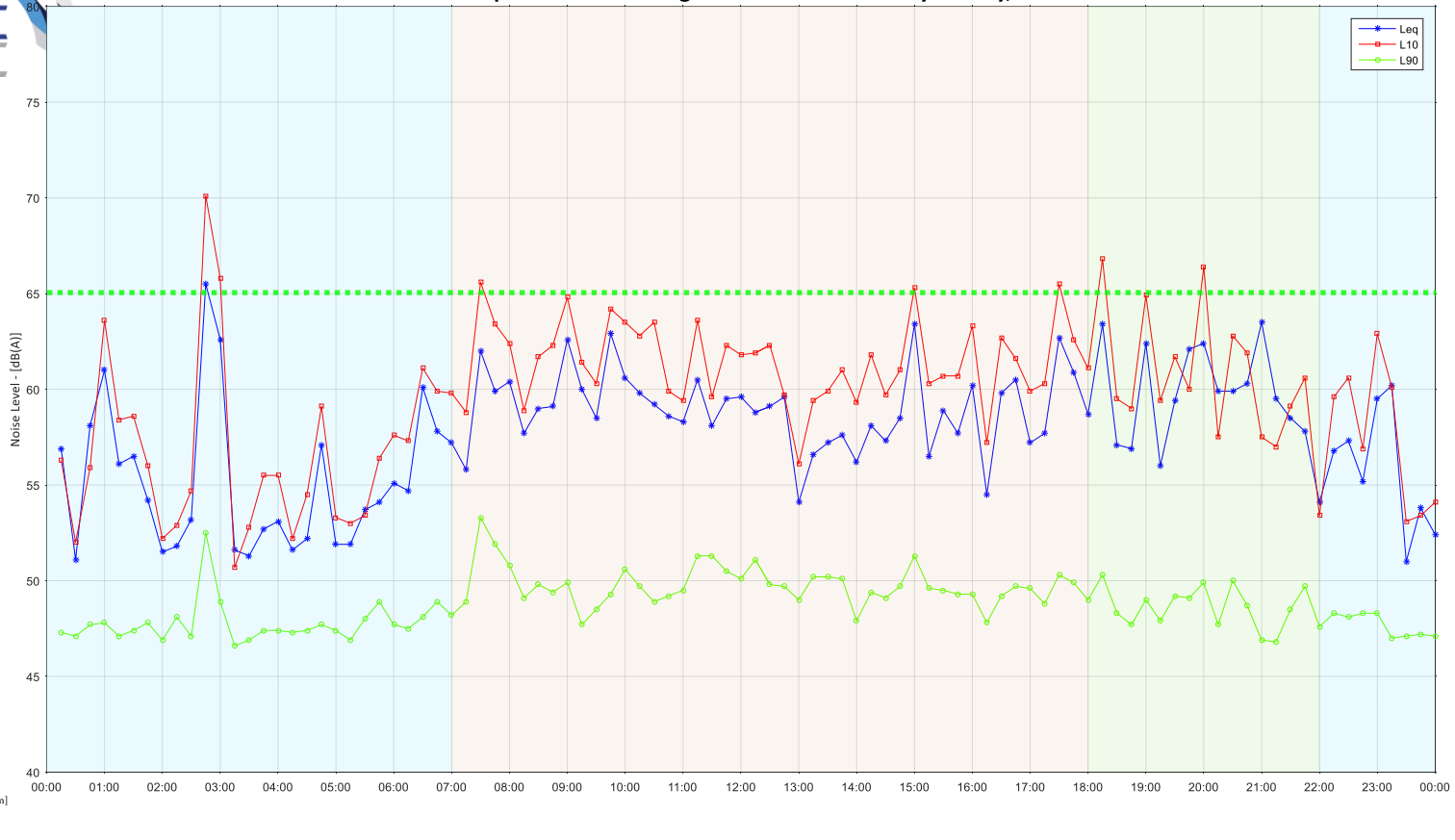
RPA Hospital Main Building - Level 03 NICU: Thursday 18 July, 2024



**NICU NML
(Including correction)
≤ 65dB(A)_{L_{eq}}**



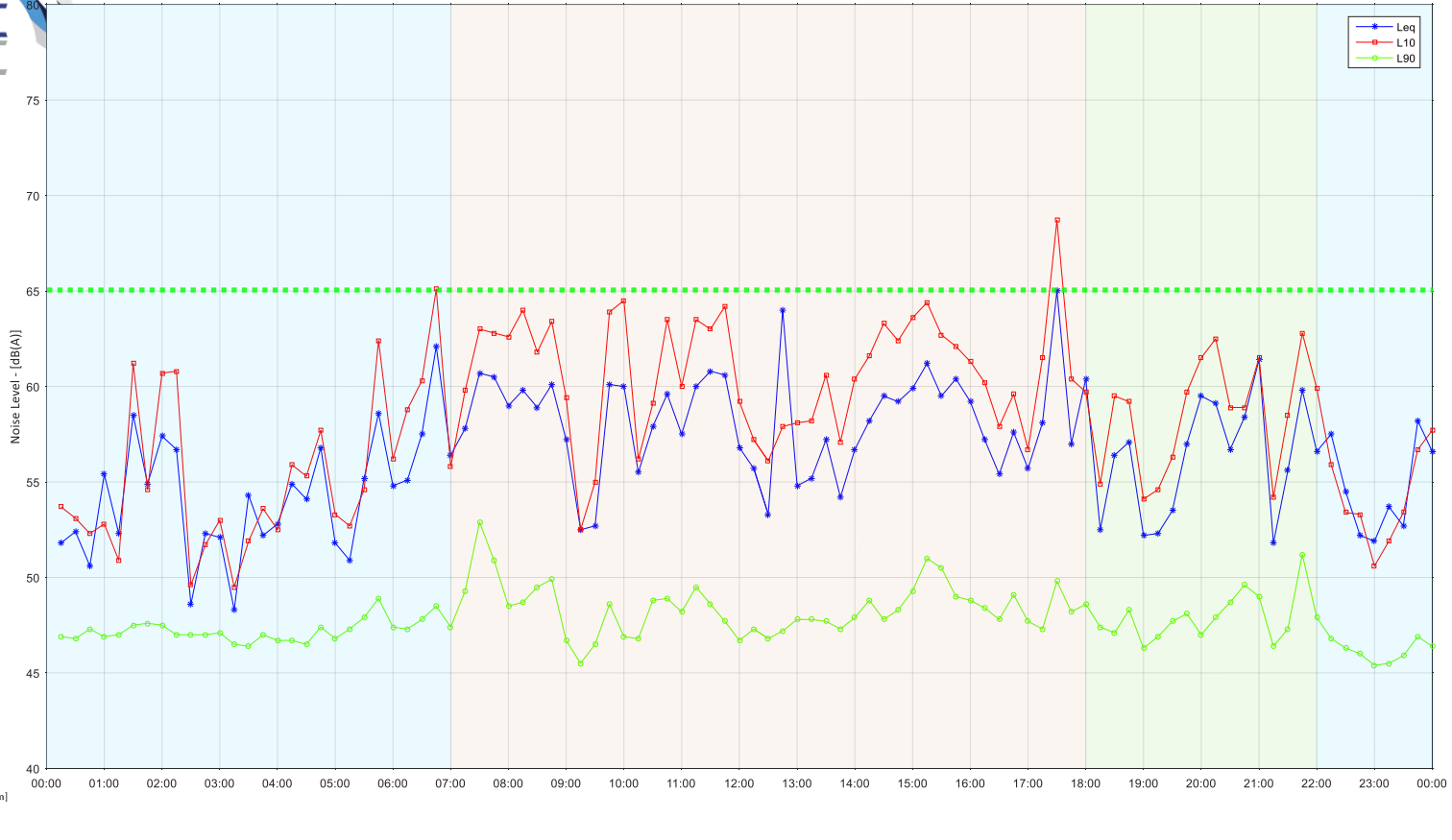
RPA Hospital Main Building - Level 03 NICU: Friday 19 July, 2024



**NICU NML
(Including correction)
≤ 65dB(A)_{Leq}**



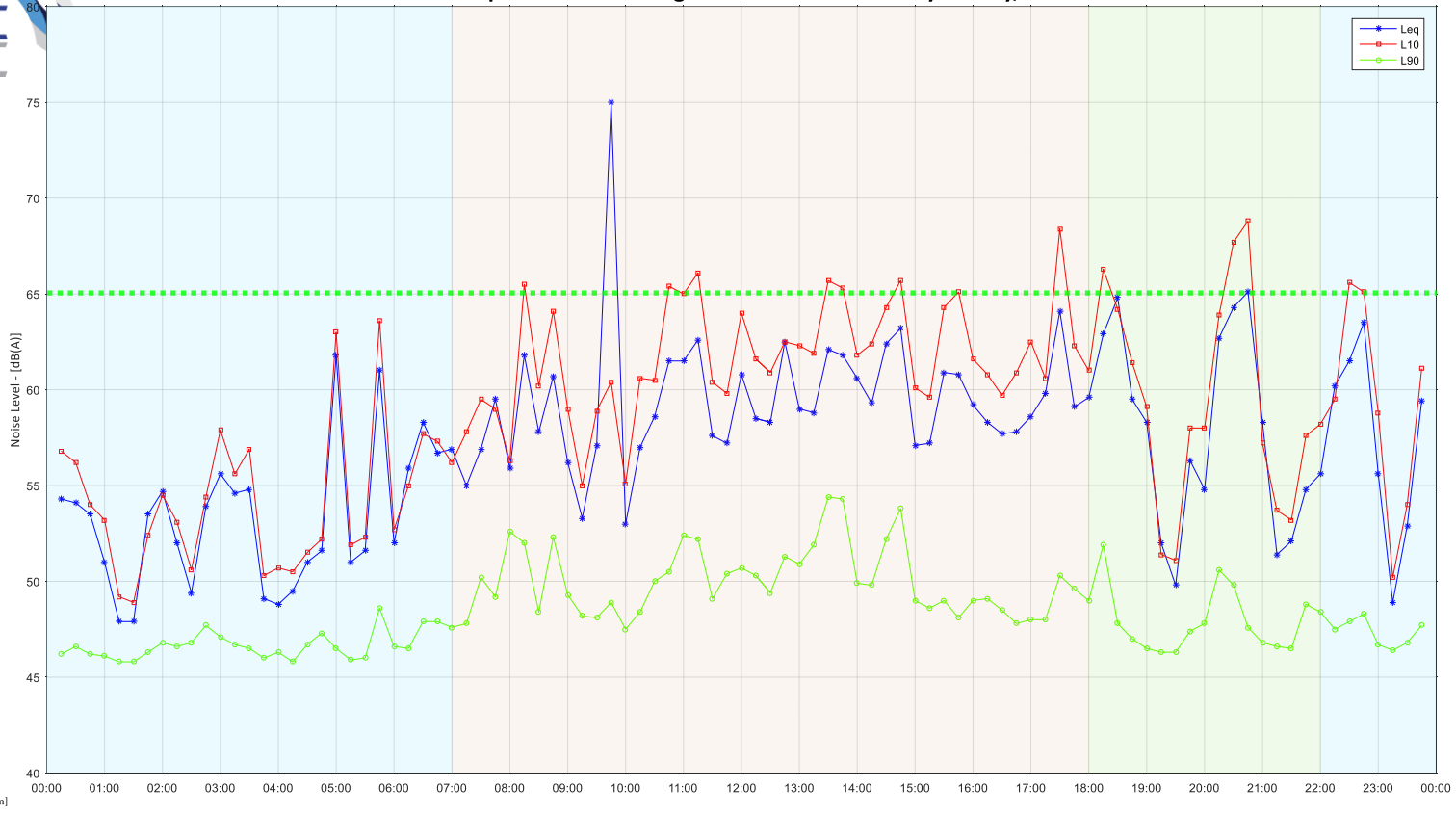
RPA Hospital Main Building - Level 03 NICU: Saturday 20 July, 2024



**NICU NML
(Including correction)
≤ 65dB(A)_{Leq}**



RPA Hospital Main Building - Level 03 NICU: Sunday 21 July, 2024

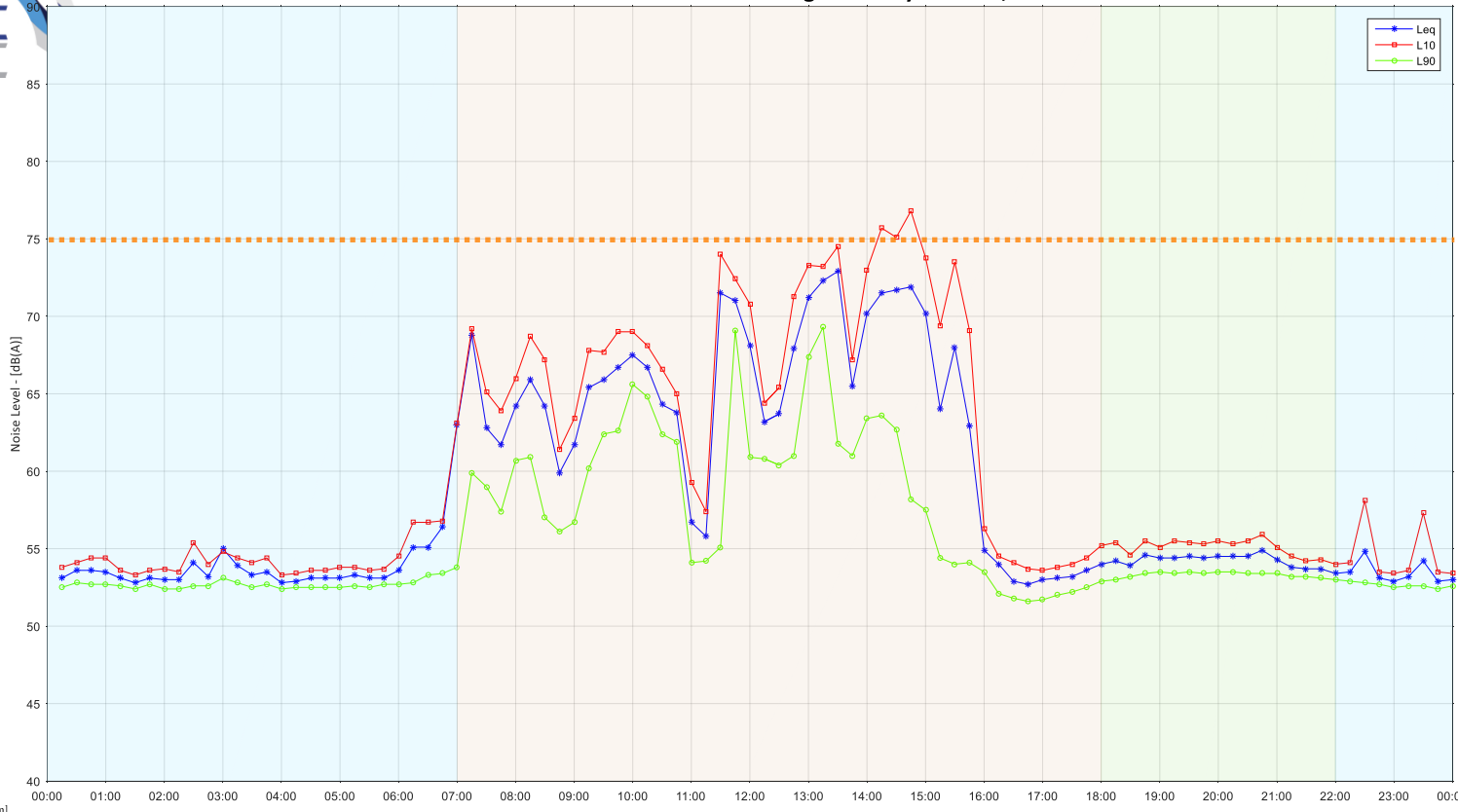


**NICU NML
(Including correction)
≤ 65dB(A)_{L_{eq}}**

OUTSIDE SUSAN WAKIL HEALTH BUILDING



Outside Susan Wakil Health Building: Monday 24 June, 2024

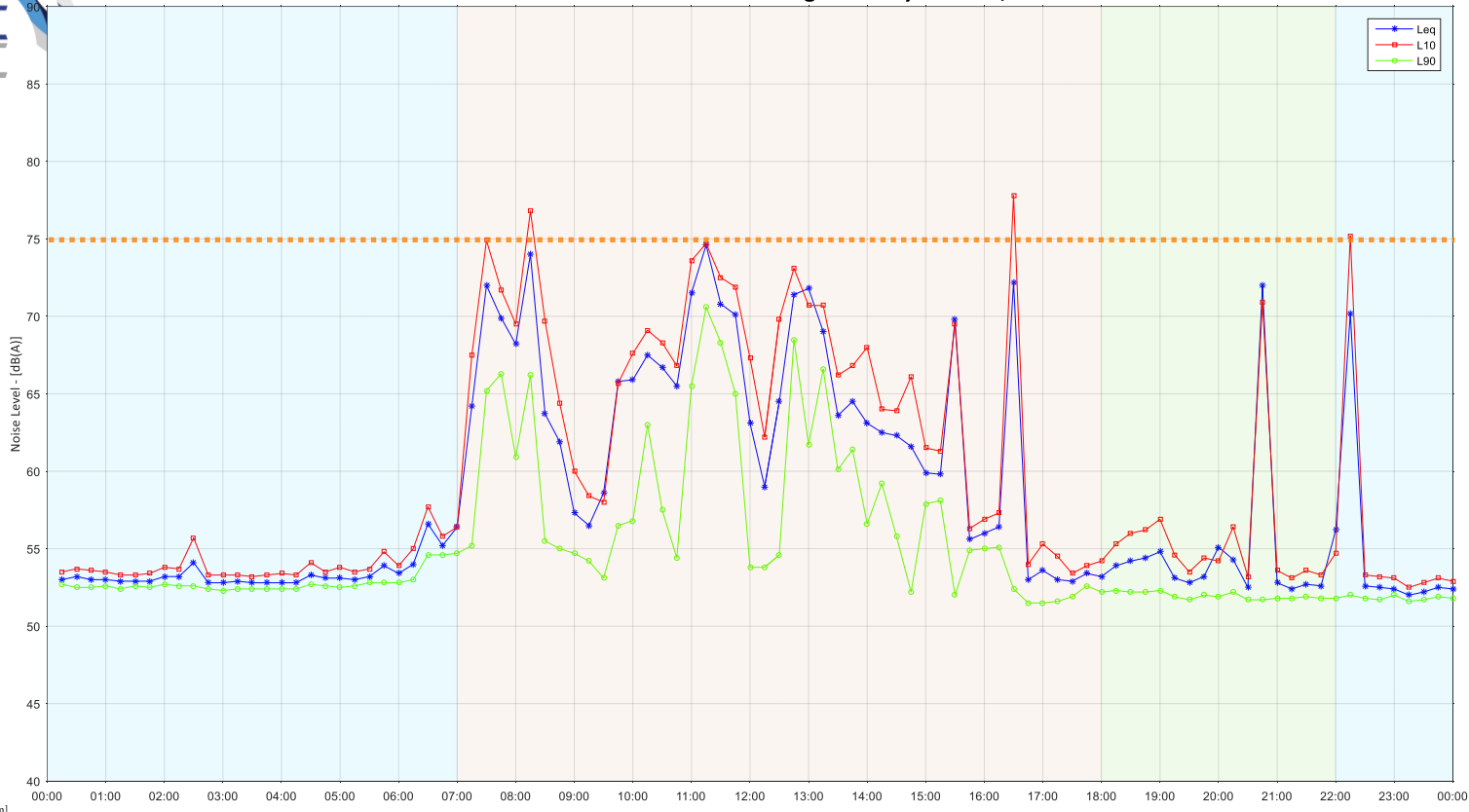


Education NML
(Including correction)
≤ 75dB(A)_{L_{eq}}

- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]



Outside Susan Wakil Health Building: Tuesday 25 June, 2024

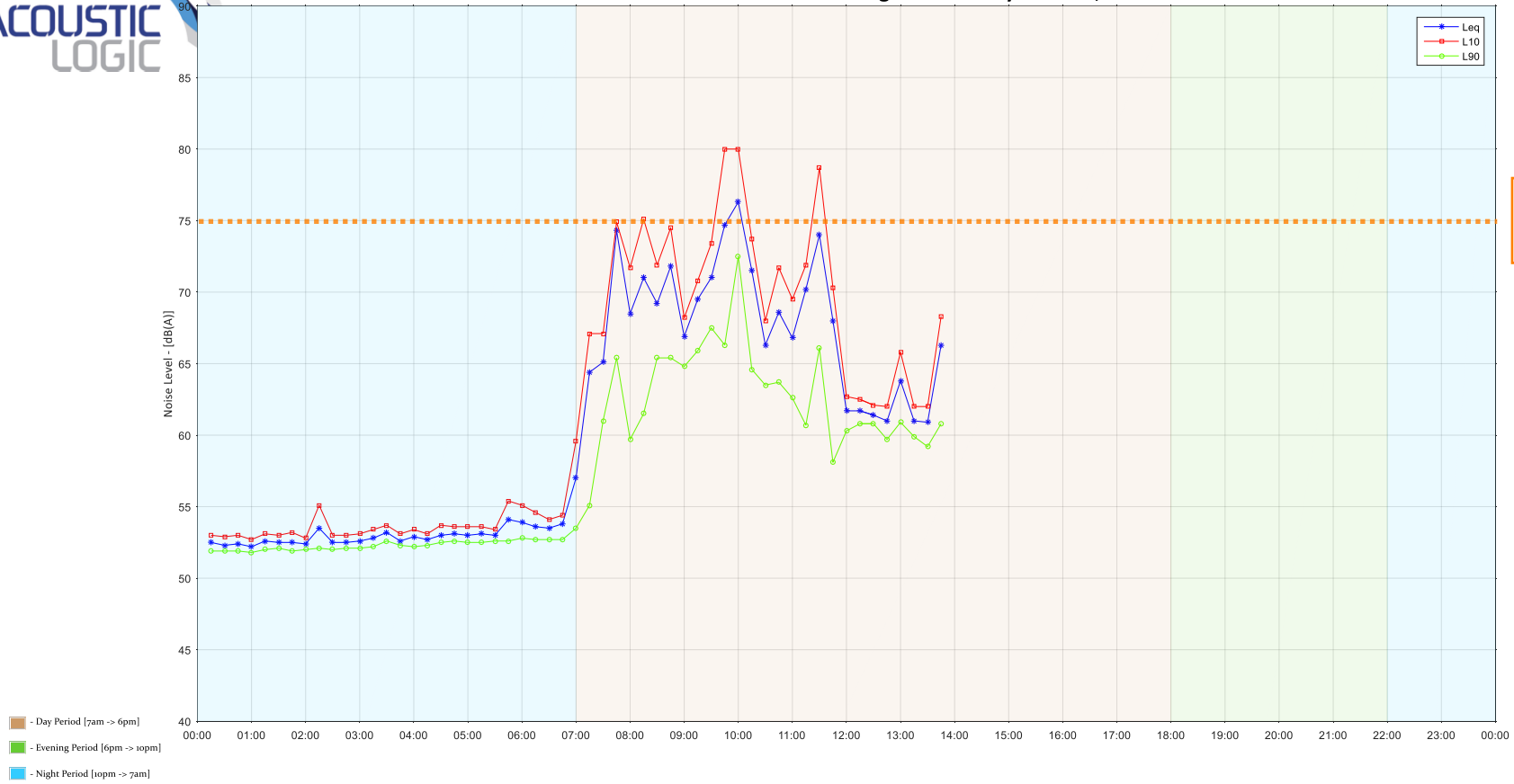


Education NML
(Including correction)
 $\leq 75\text{dB(A)}_{L_{eq}}$

- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]



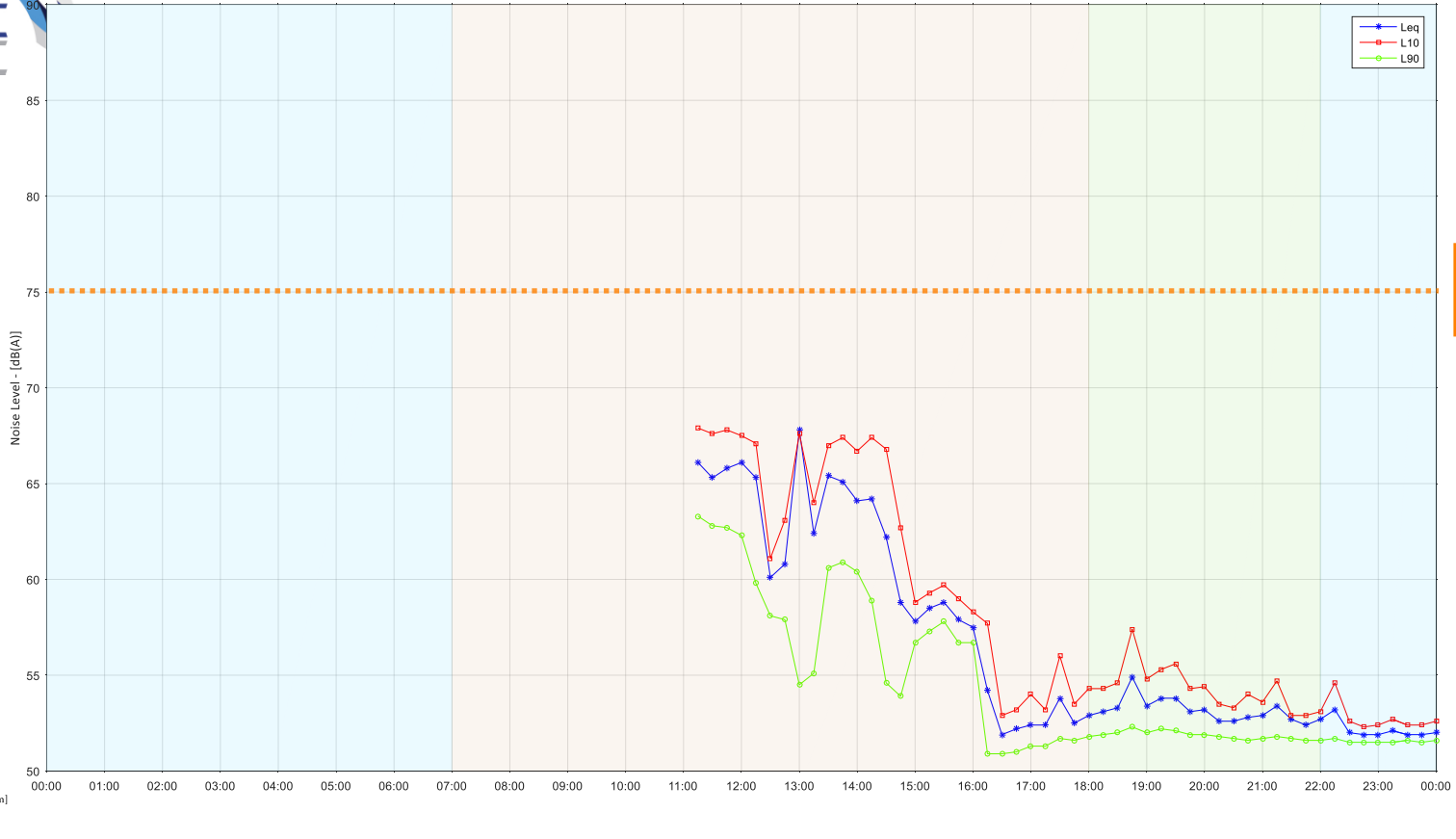
Outside Susan Wakil Health Building: Wednesday 26 June, 2024



Education NML
(Including correction)
 $\leq 75\text{dB(A)}_{L_{eq}}$



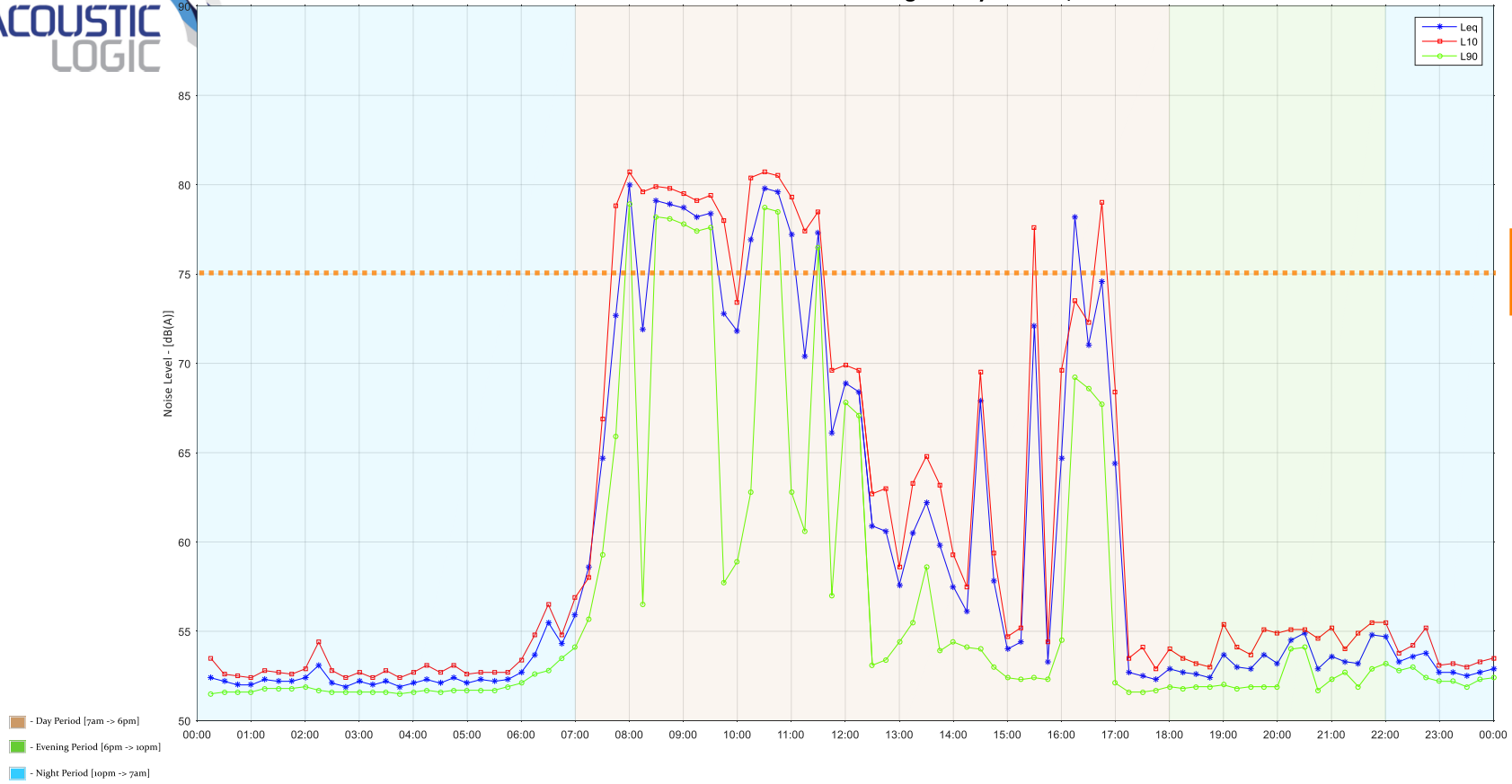
Outside Susan Wakil Health Building: Thursday 27 June, 2024



**Education NML
(Including correction)
≤ 75dB(A)_{L_{eq}}**



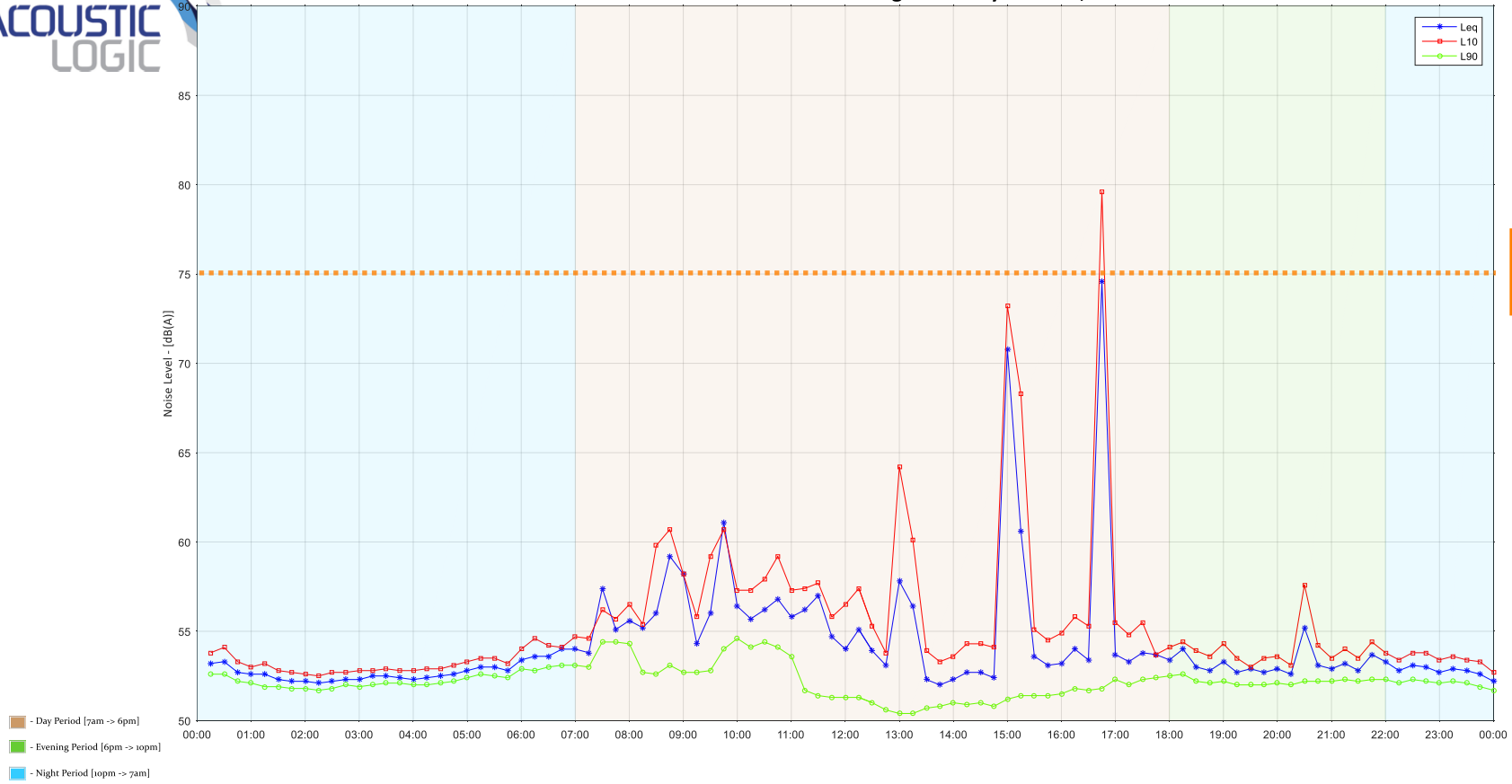
Outside Susan Wakil Health Building: Friday 28 June, 2024



Education NML
(Including correction)
 $\leq 75\text{dB(A)}L_{\text{eq}}$



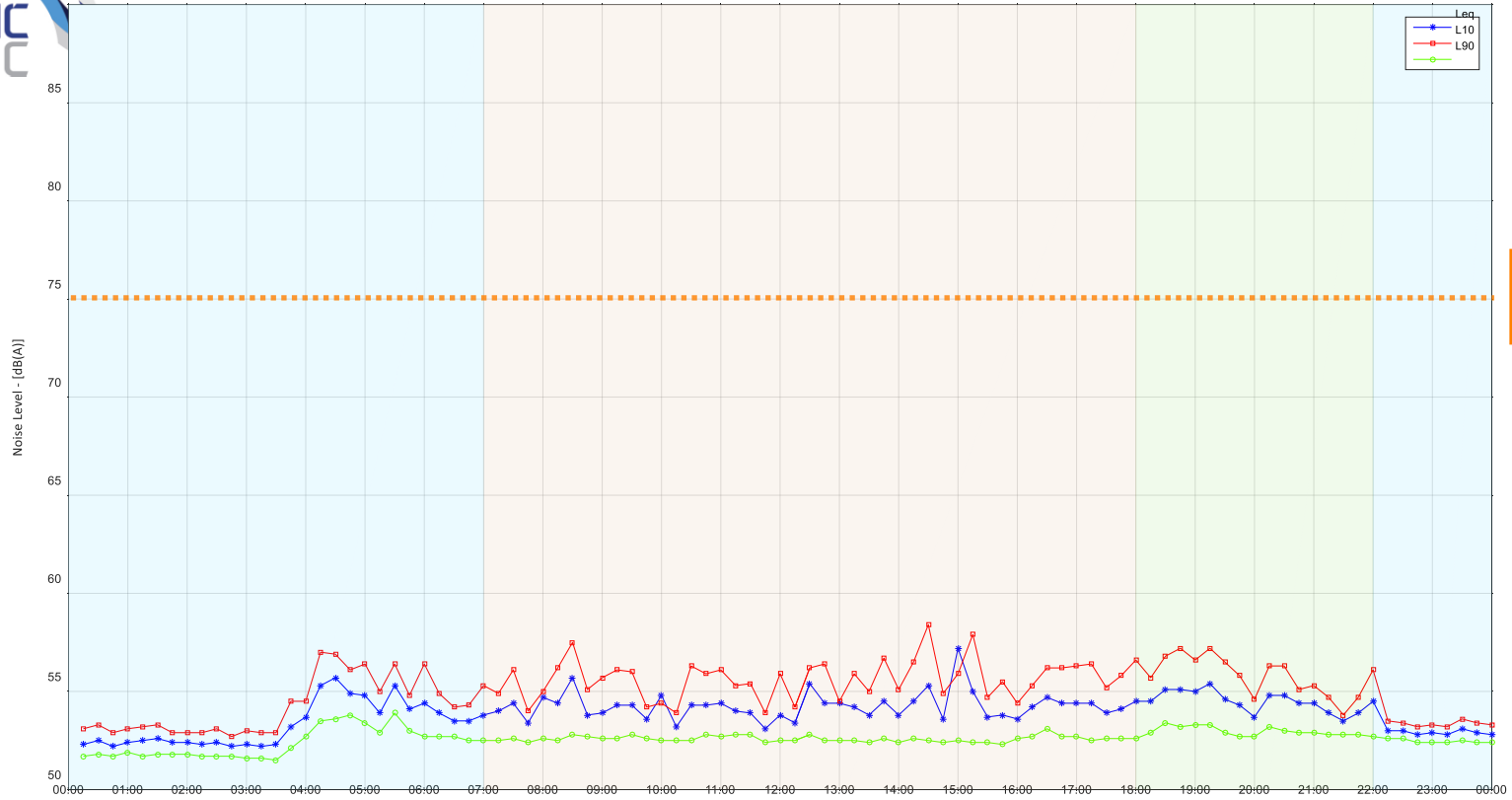
Outside Susan Wakil Health Building: Saturday 29 June, 2024



Education NML
(Including correction)
 $\leq 75\text{dB(A)}L_{\text{eq}}$



Outside Susan Wakil Health Building: Sunday 30 June, 2024

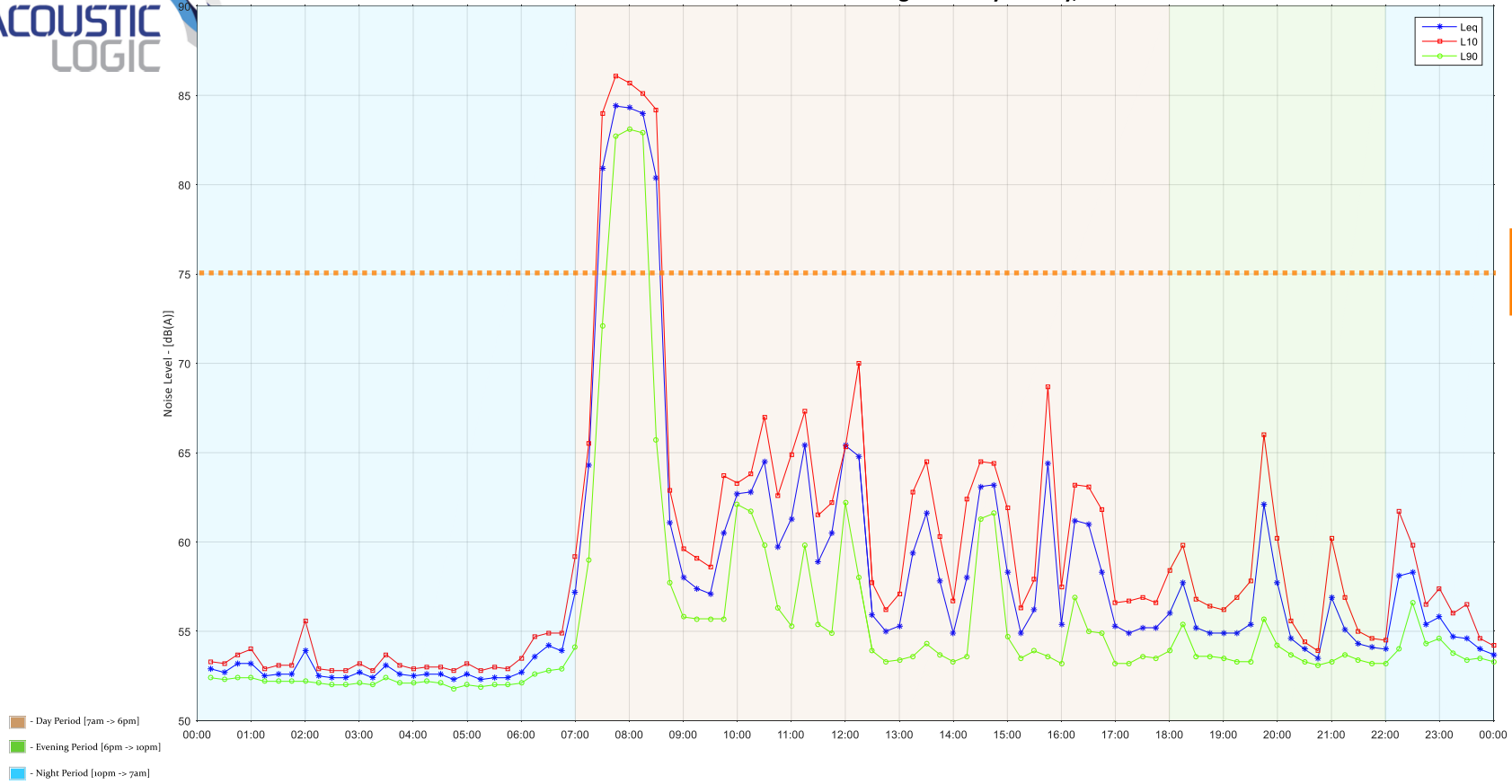


Education NML
(Including correction)
 $\leq 75\text{dB(A)}L_{\text{eq}}$





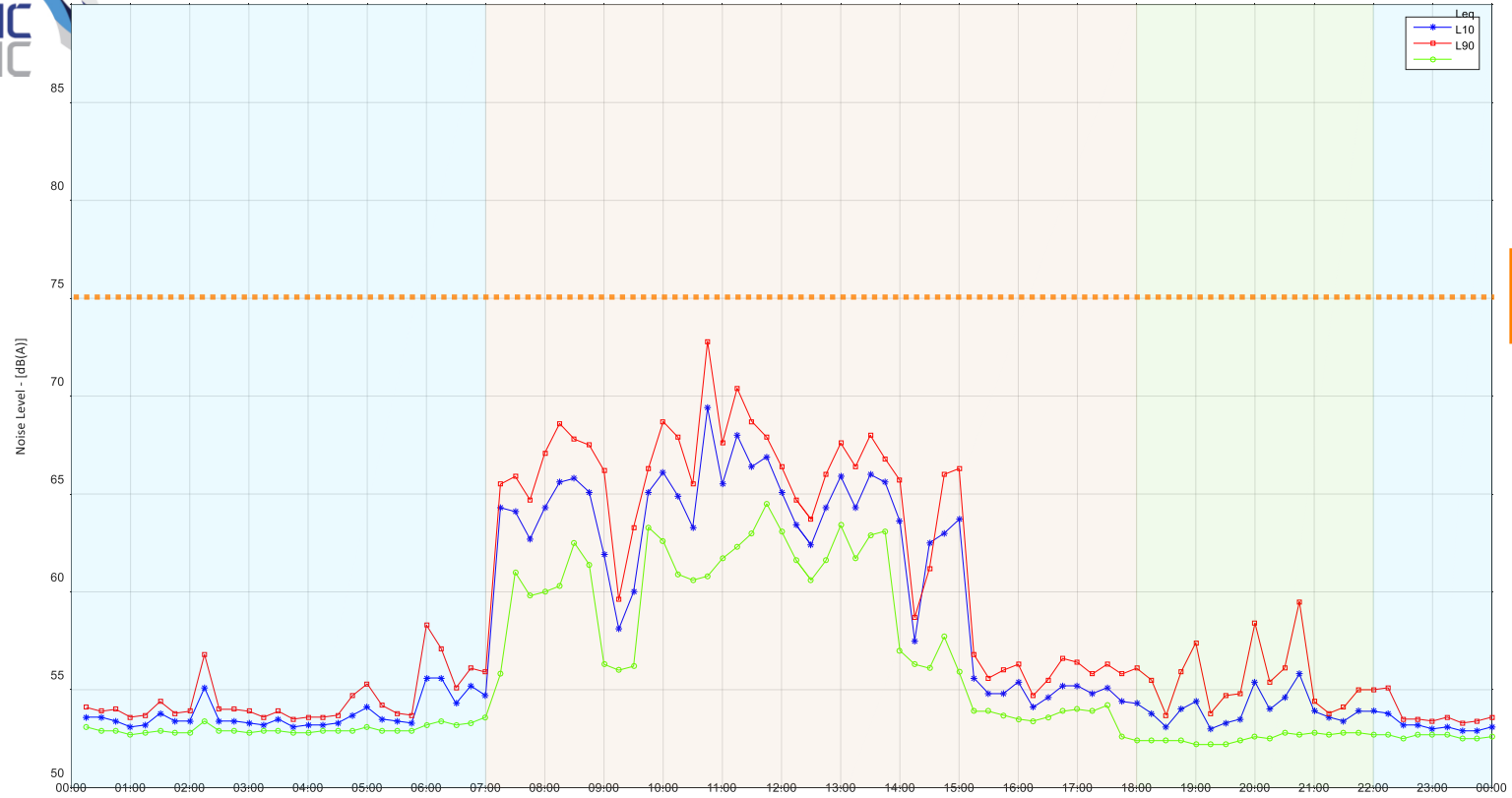
Outside Susan Wakil Health Building: Monday 01 July, 2024



**Education NML
(Including correction)
≤ 75dB(A)L_{eq}**



Outside Susan Wakil Health Building: Tuesday 02 July, 2024

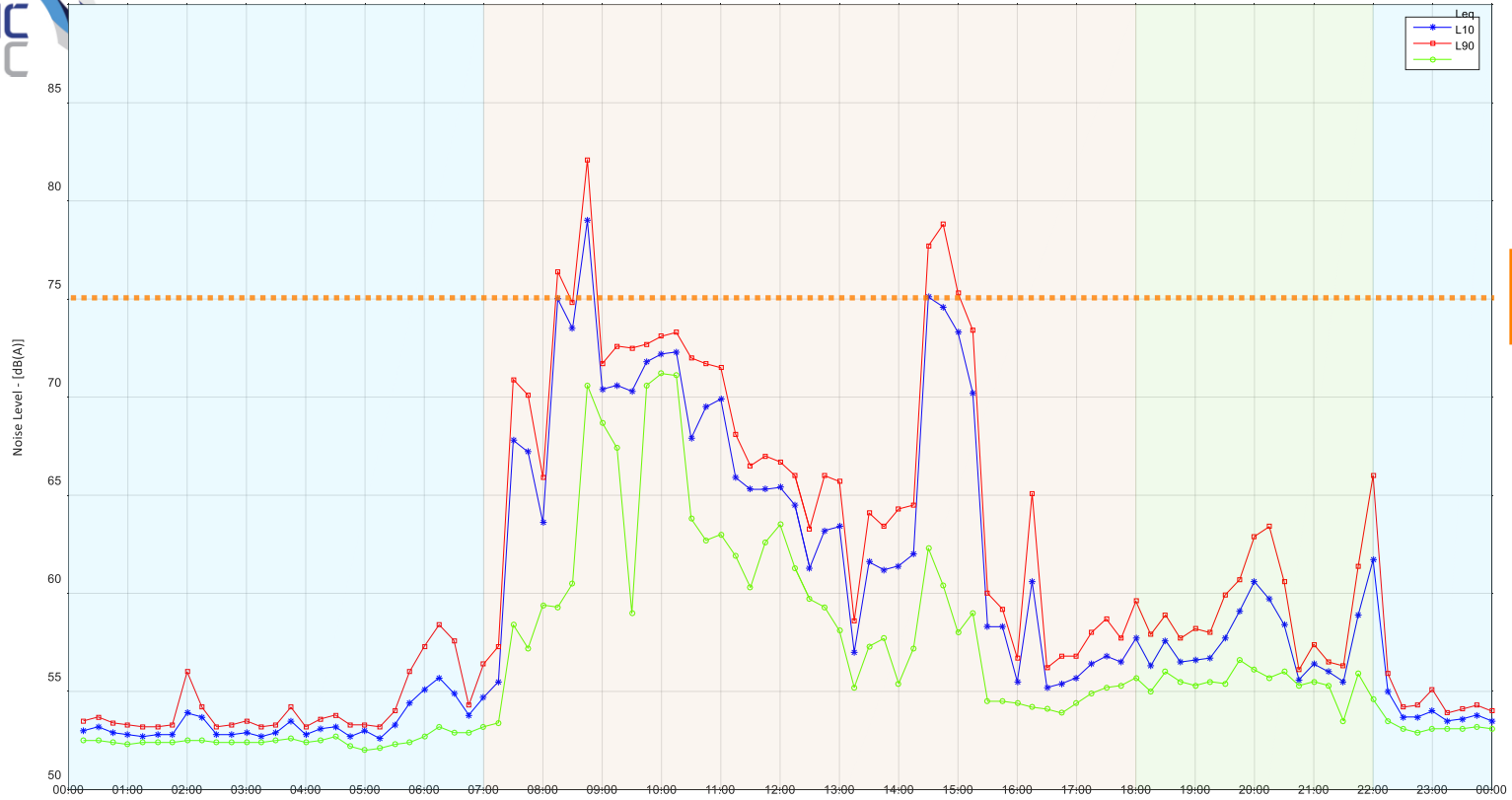


Education NML
(Including correction)
≤ 75dB(A)_{L_{eq}}





Outside Susan Wakil Health Building: Wednesday 03 July, 2024

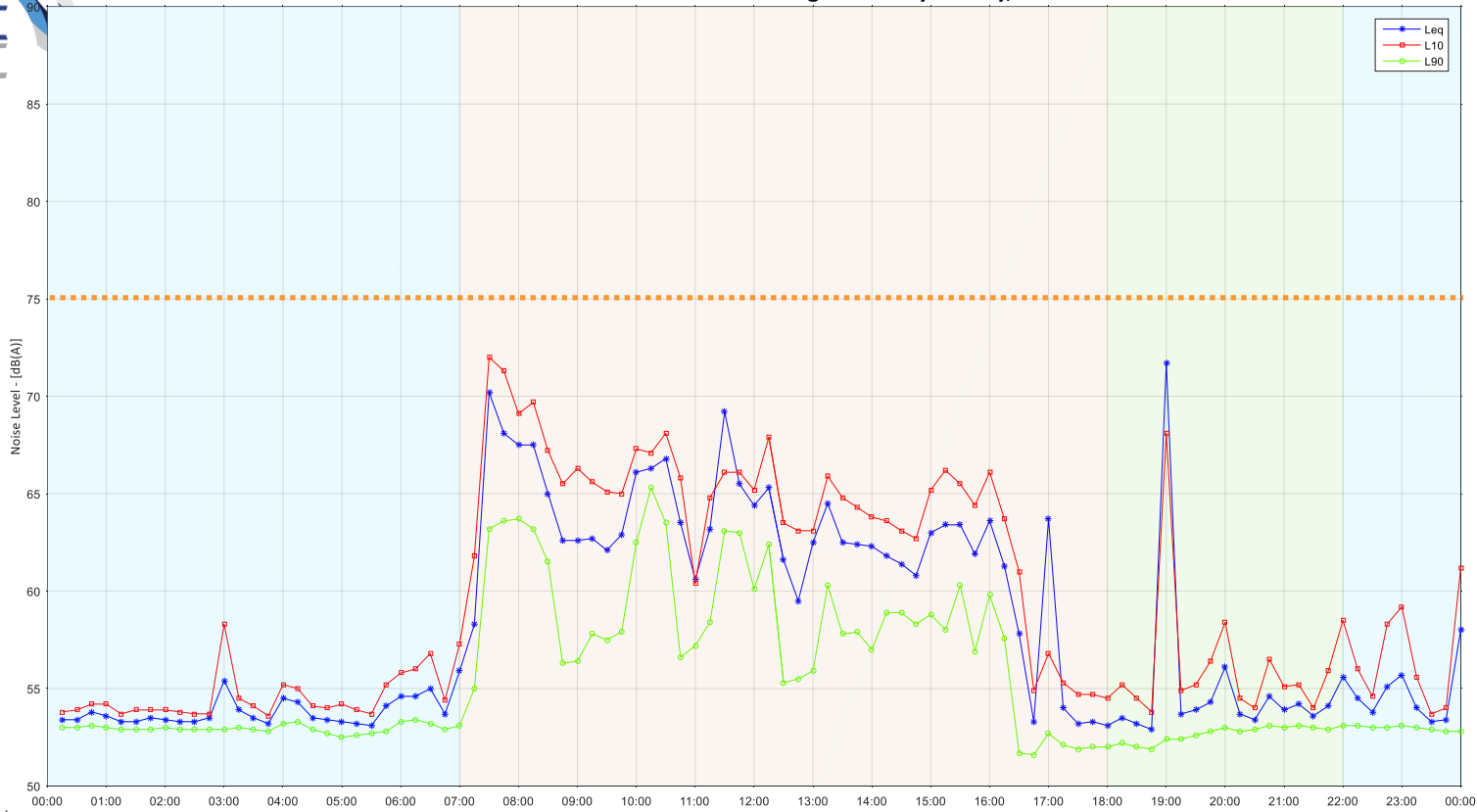


Education NML
(Including correction)
 $\leq 75\text{dB(A)}L_{\text{eq}}$





Outside Susan Wakil Health Building: Thursday 04 July, 2024

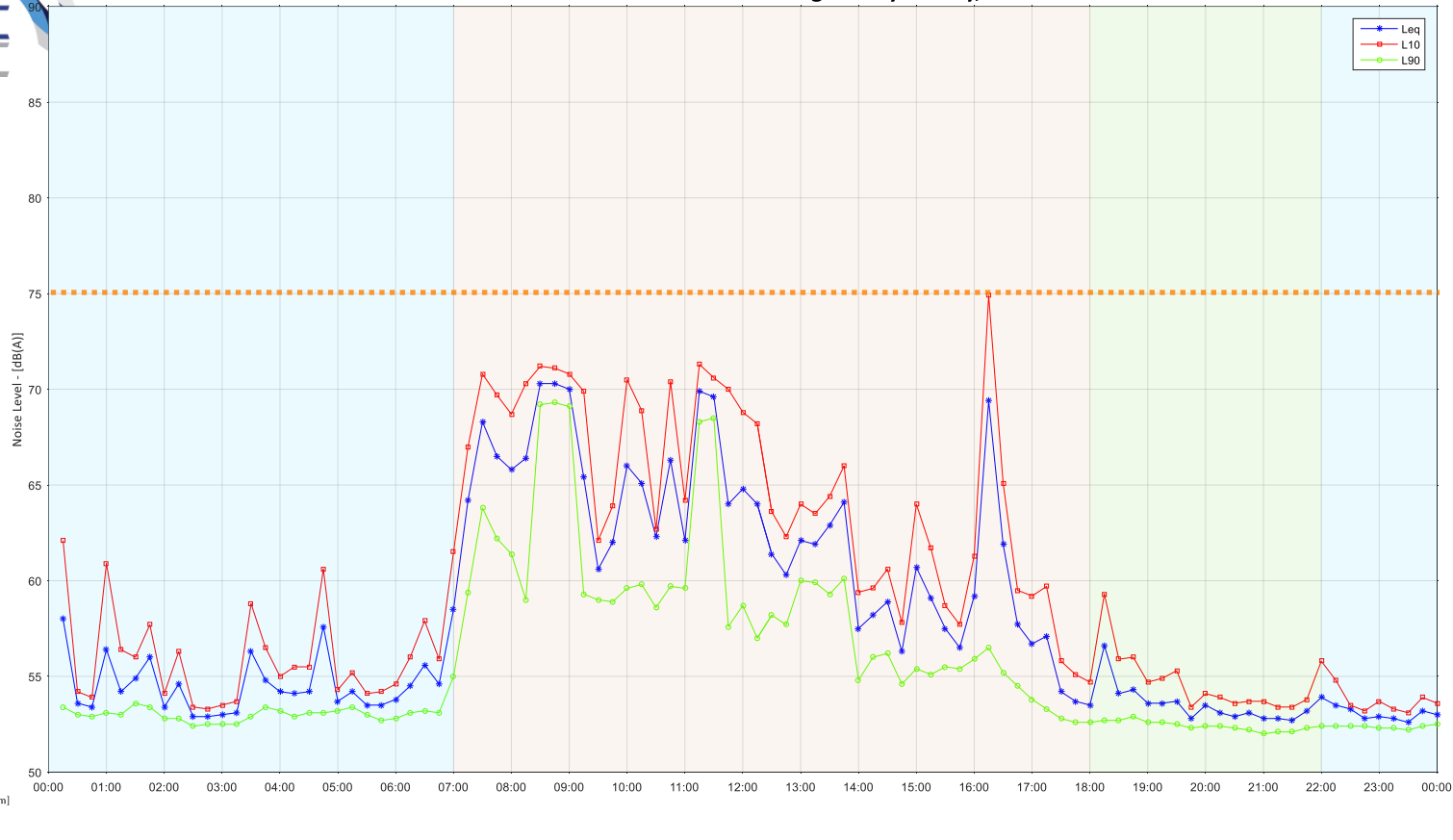


Education NML
(Including correction)
 $\leq 75\text{dB(A)}L_{\text{eq}}$

- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]



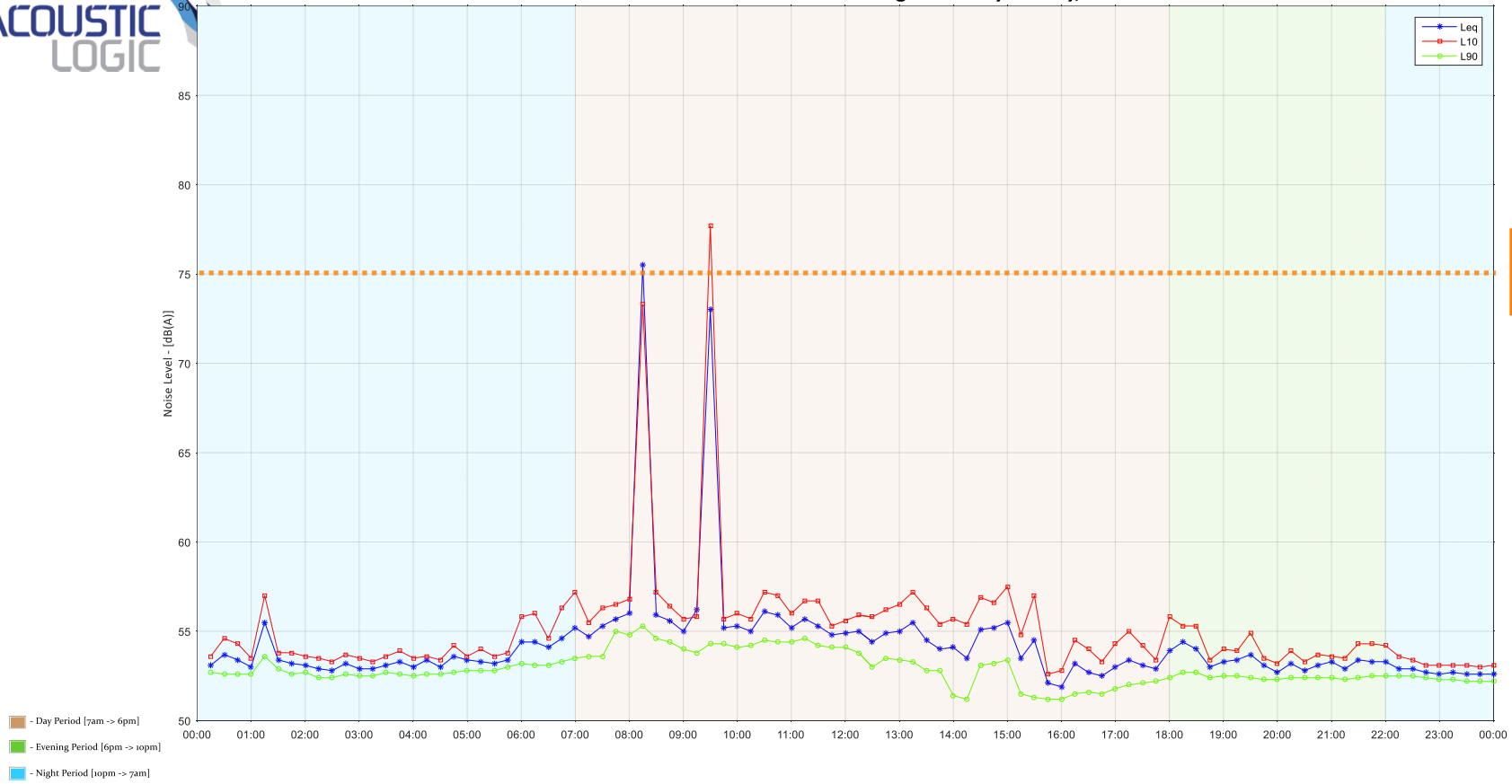
Outside Susan Wakil Health Building: Friday 05 July, 2024



**Education NML
(Including correction)
≤ 75dB(A)L_{eq}**

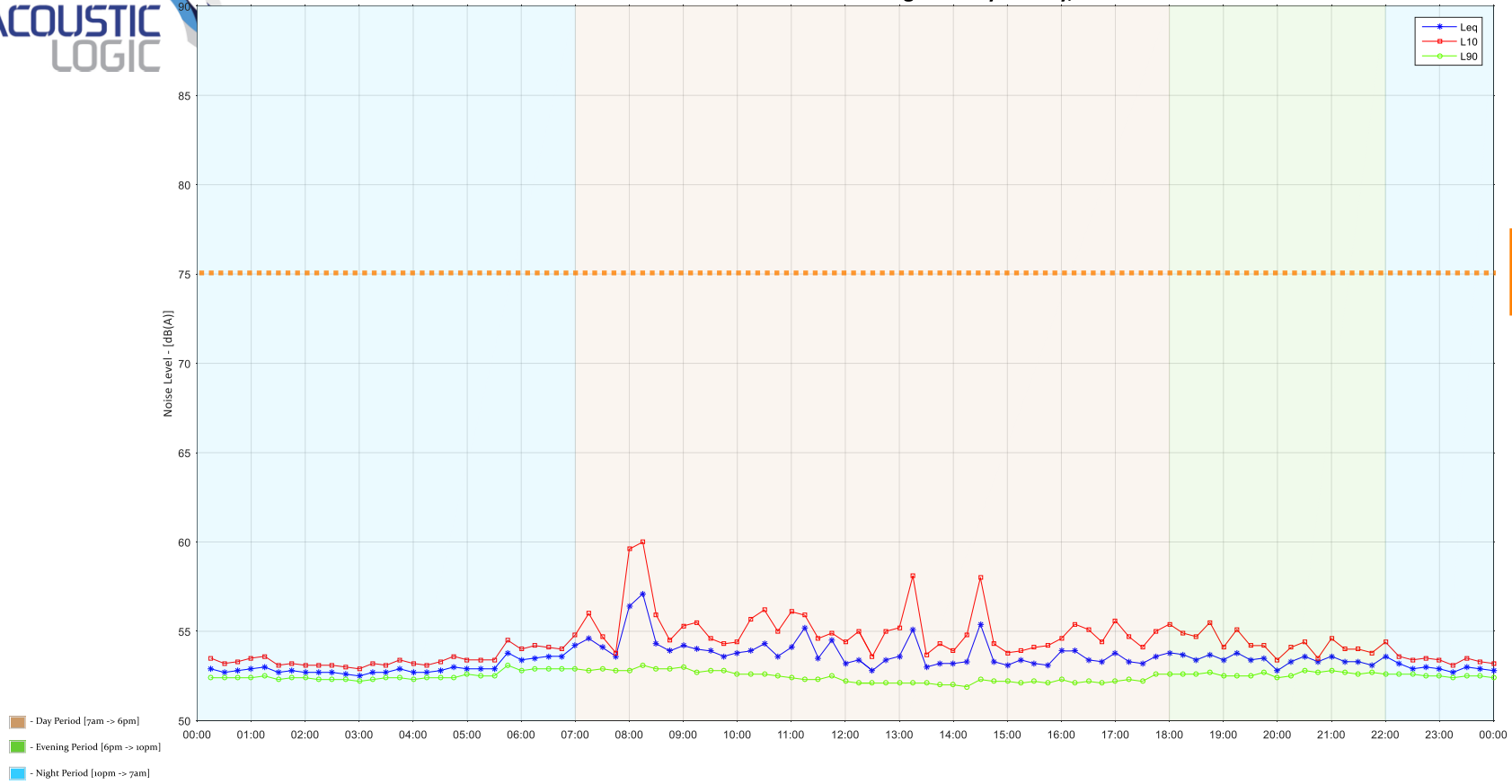


Outside Susan Wakil Health Building: Saturday 06 July, 2024





Outside Susan Wakil Health Building: Sunday 07 July, 2024



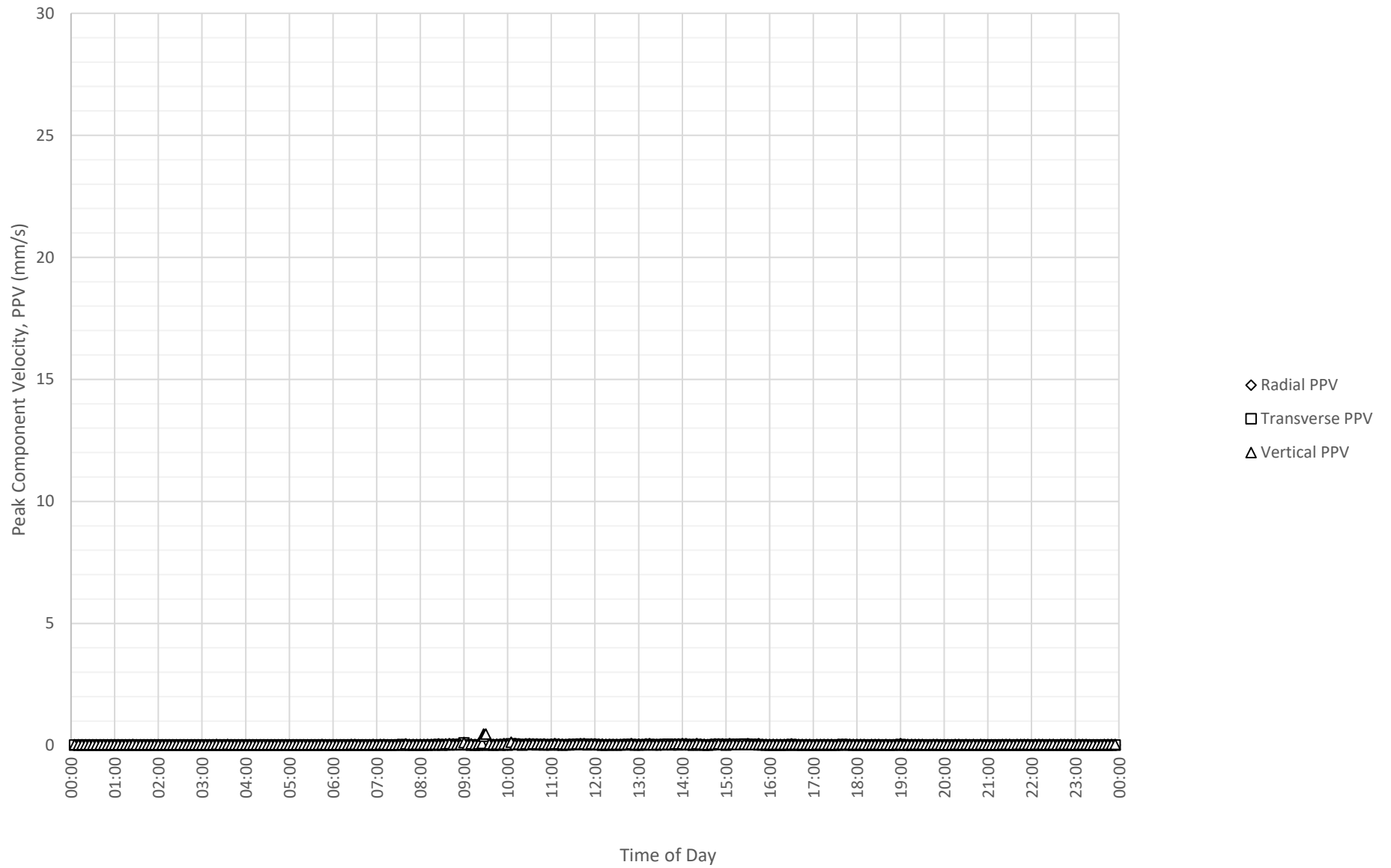
**Education NML
(Including correction)
≤ 75dB(A)_{L_{eq}}**

APPENDIX B – VIBRATION MONITORING RESULTS

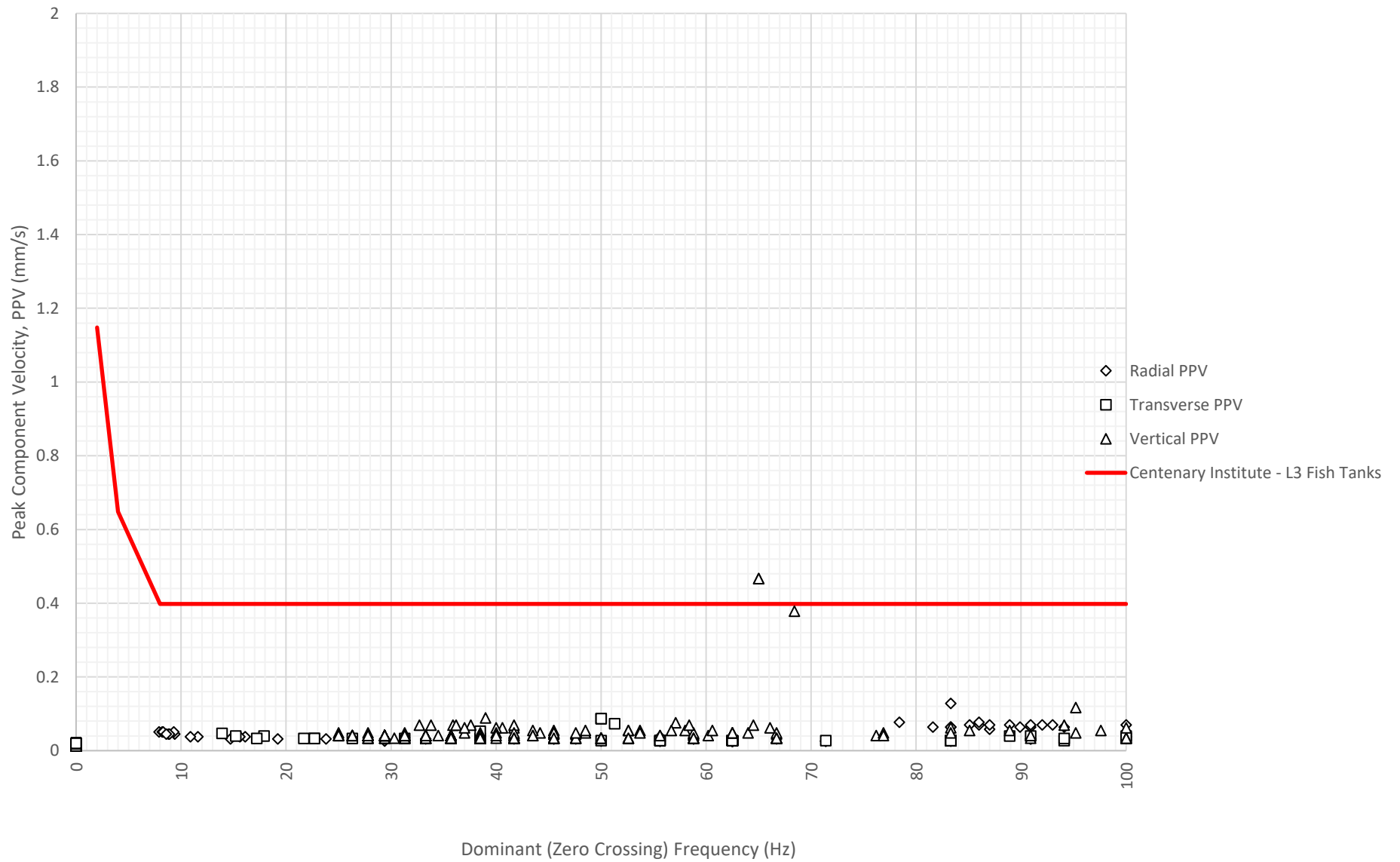
Note that only dates where exceedances of events were experienced have been provided as per discussion with relevant stakeholders.

CENTENARY INSTITUTE – LEVEL 3 FISH TANKS

Daily Monitored Vibration Levels at Centenary Institute - L3 Fish Tanks on 1-07-2024

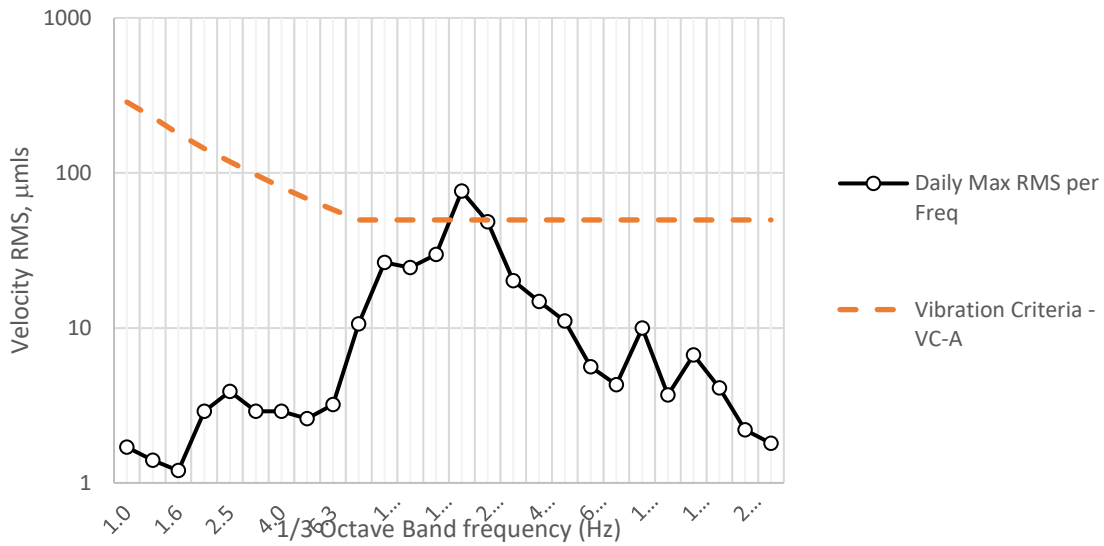


Frequency Content of Vibration Levels at Centenary Institute - L3 Fish Tanks on 1-07-2024

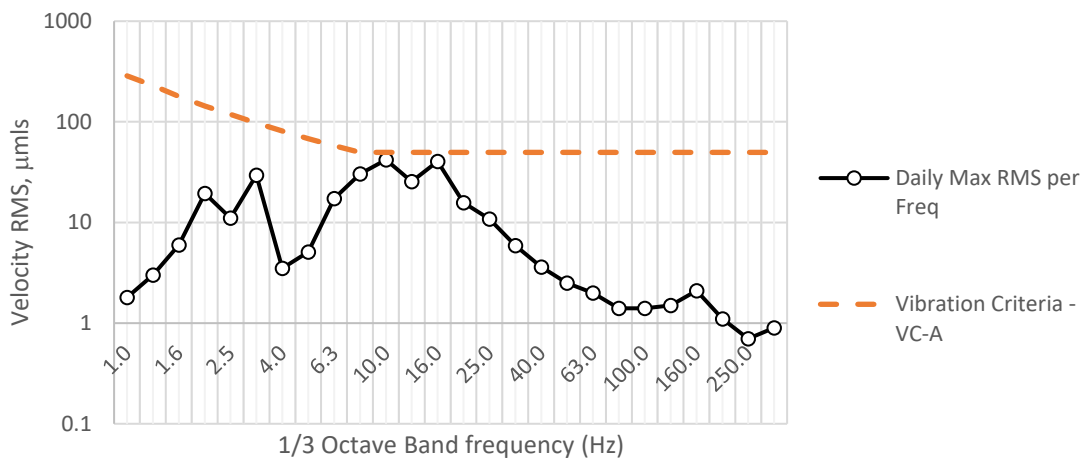


CENTENARY INSTITUTE – LEVEL 4 SURGERY ROOM (SOUTHERN FAÇADE)

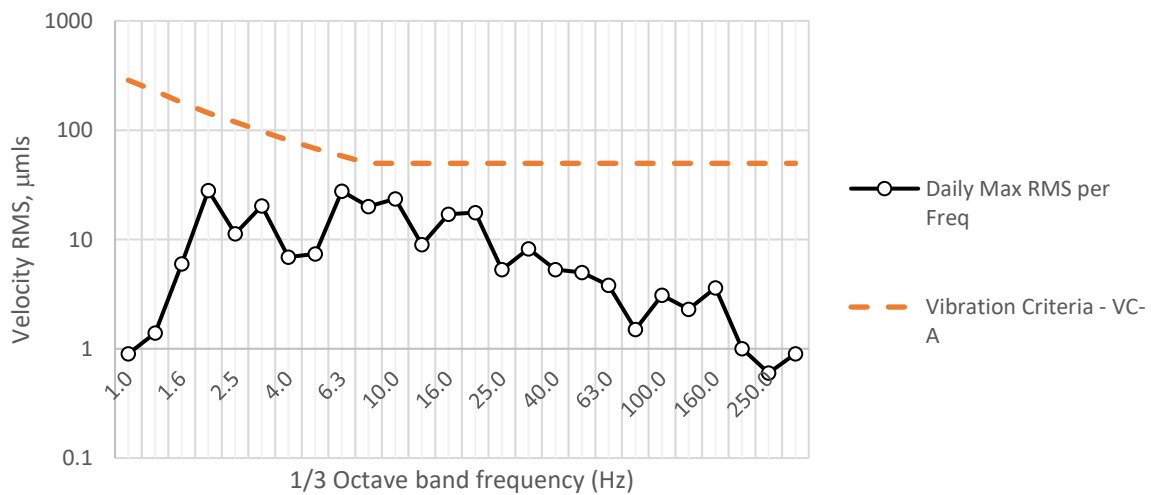
Vertical Vibration



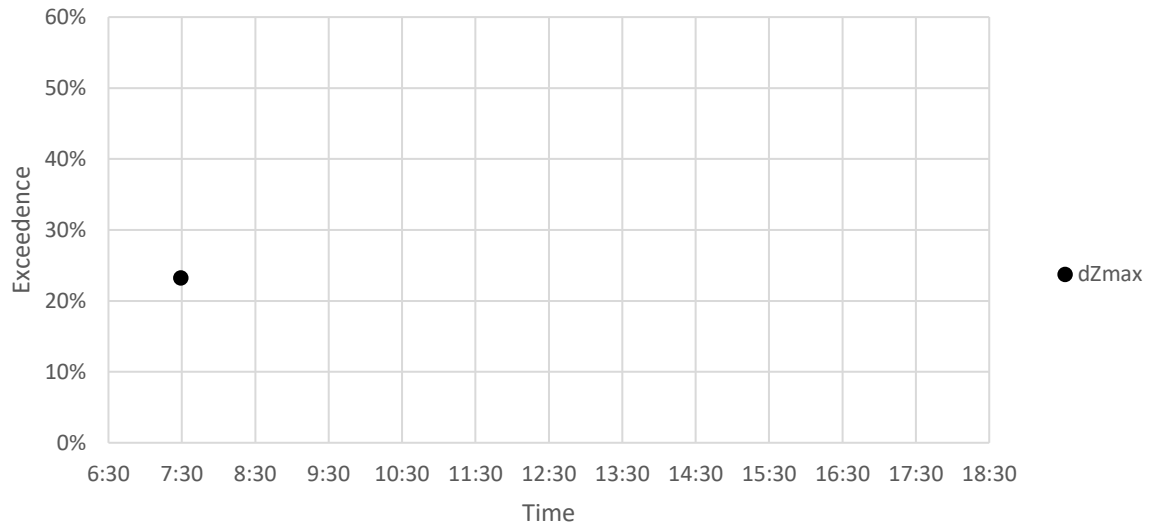
FwdBackwd Vibration



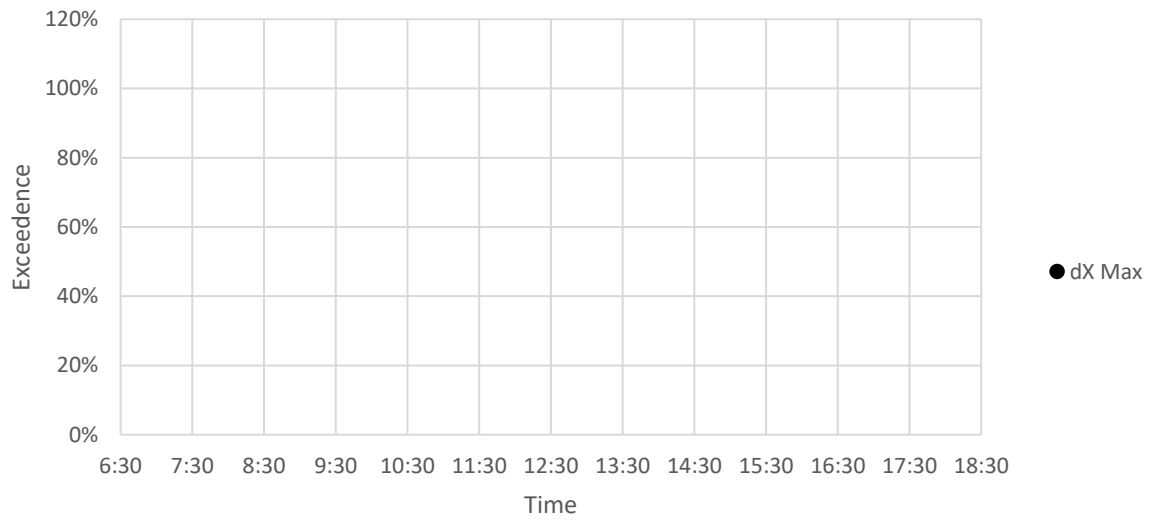
Sideways Vibration



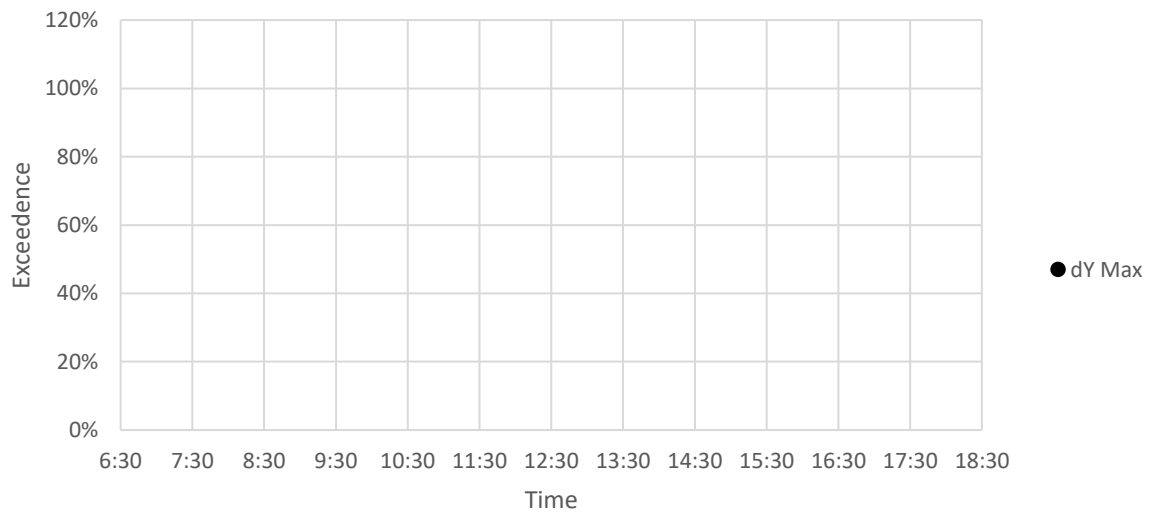
Vertical

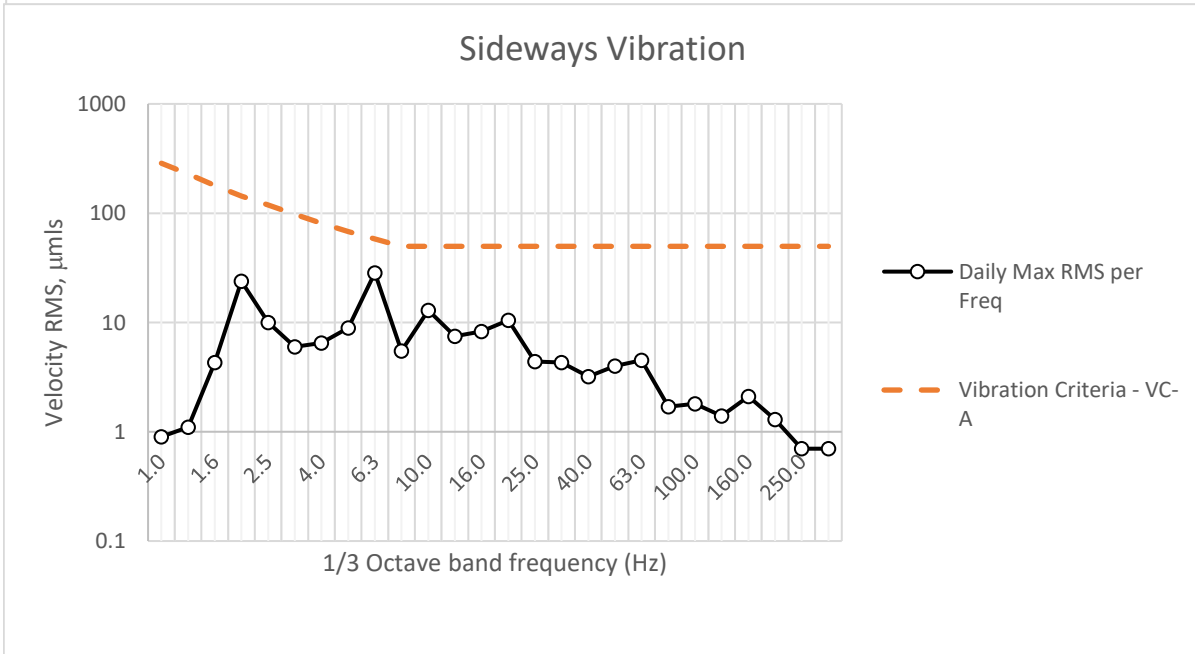
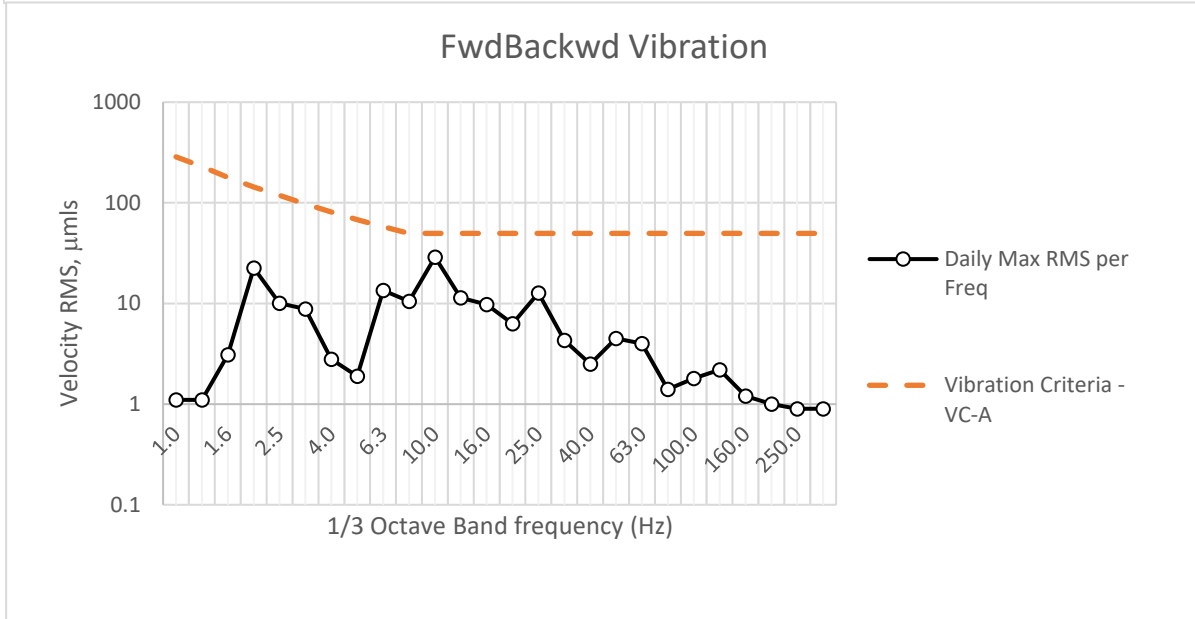
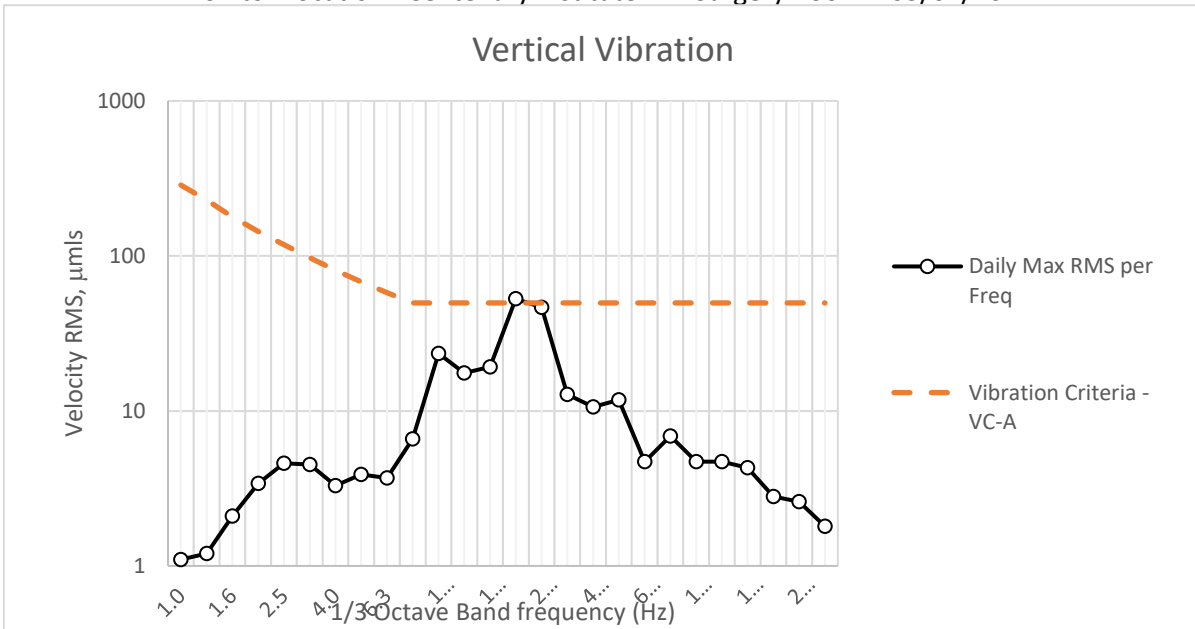


Fwd/Backwards

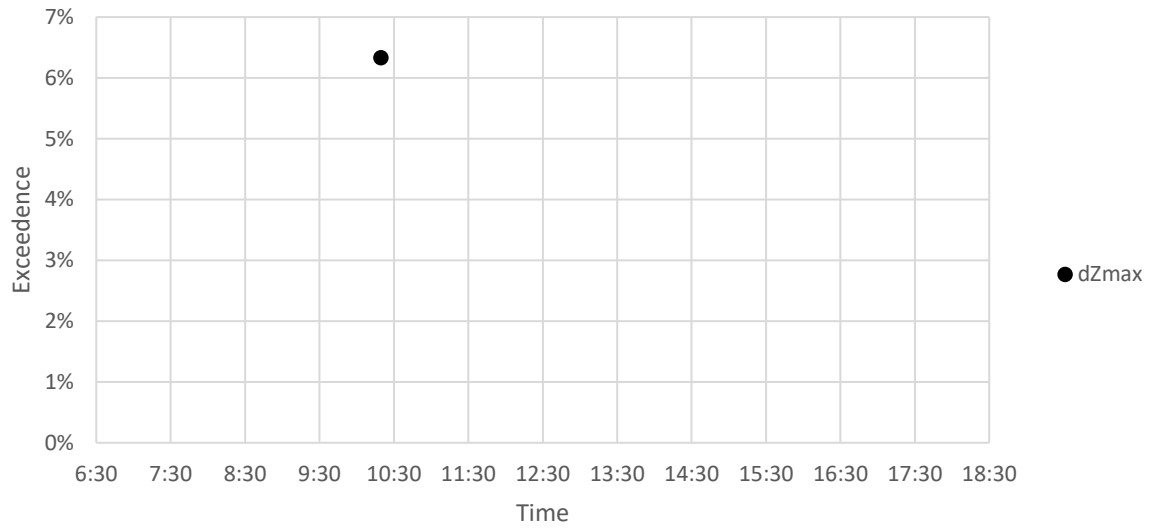


Sideways

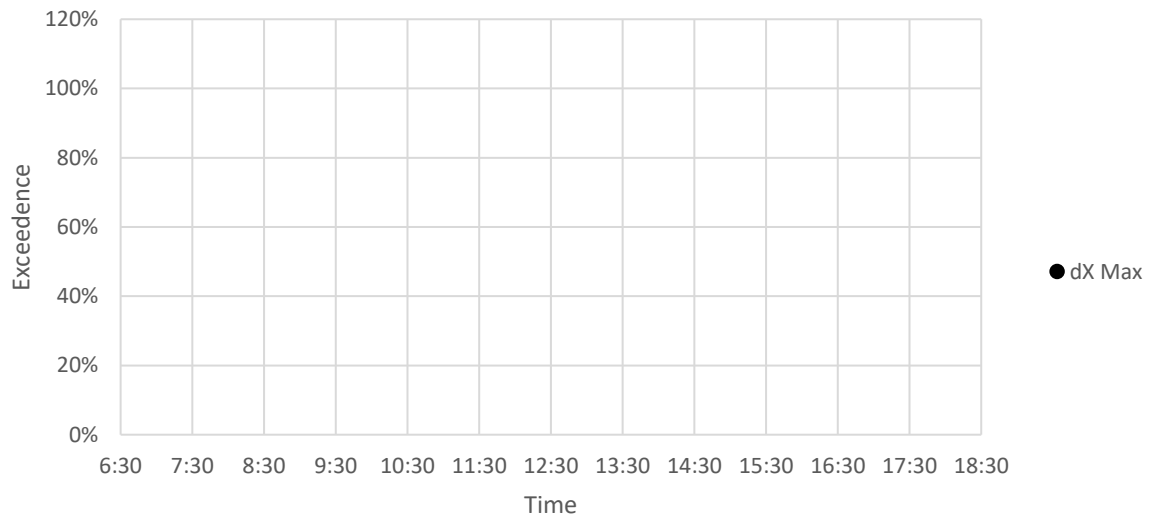




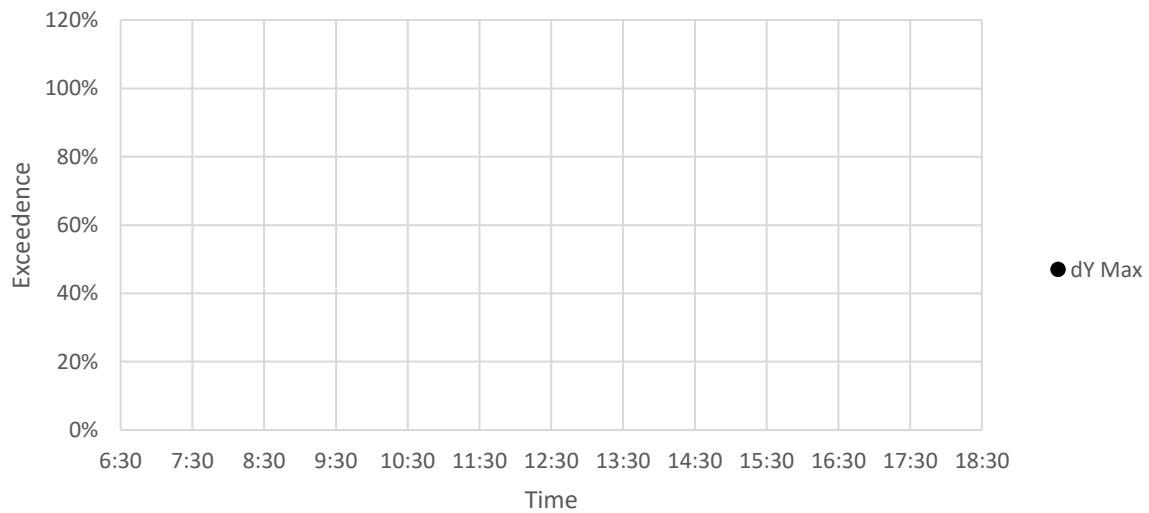
Vertical



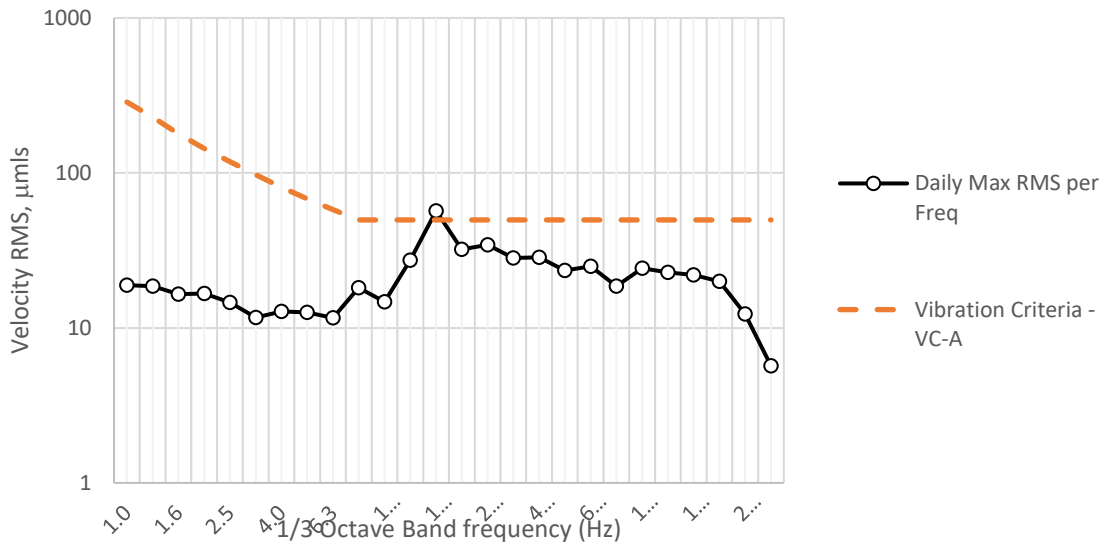
Fwd/Backwards



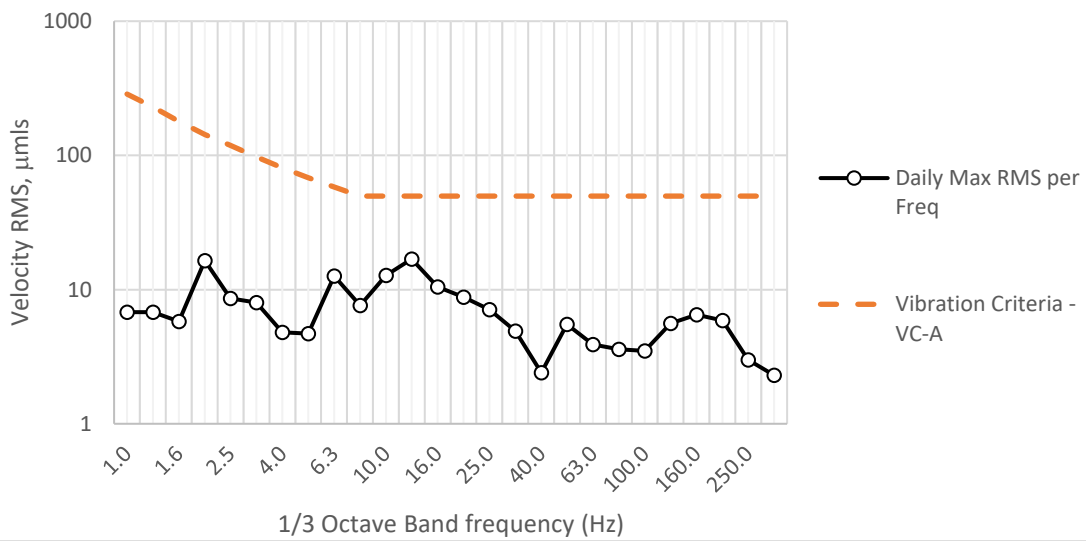
Sideways



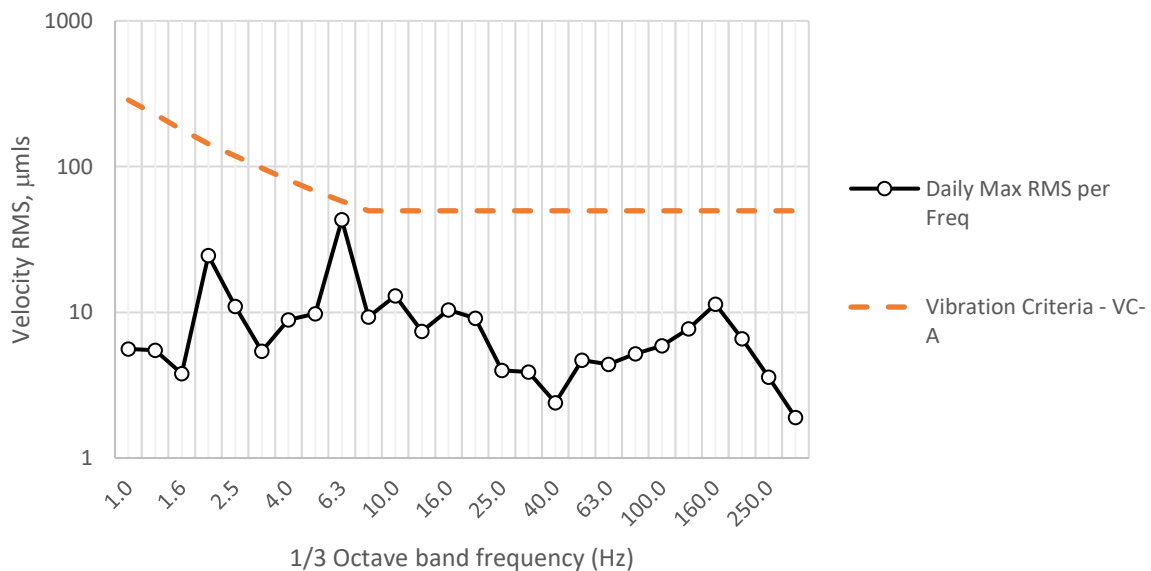
Vertical Vibration



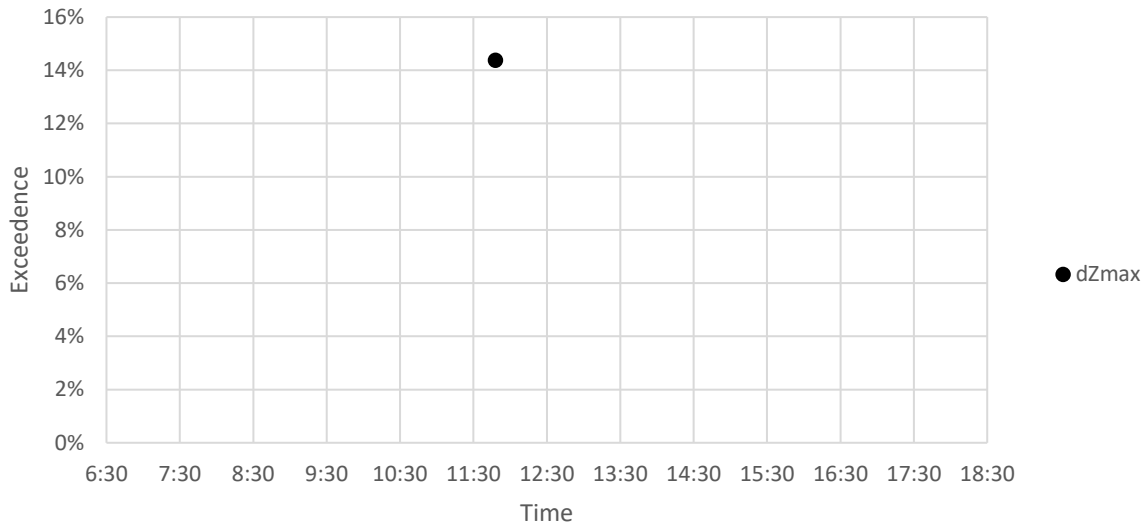
FwdBackwd Vibration



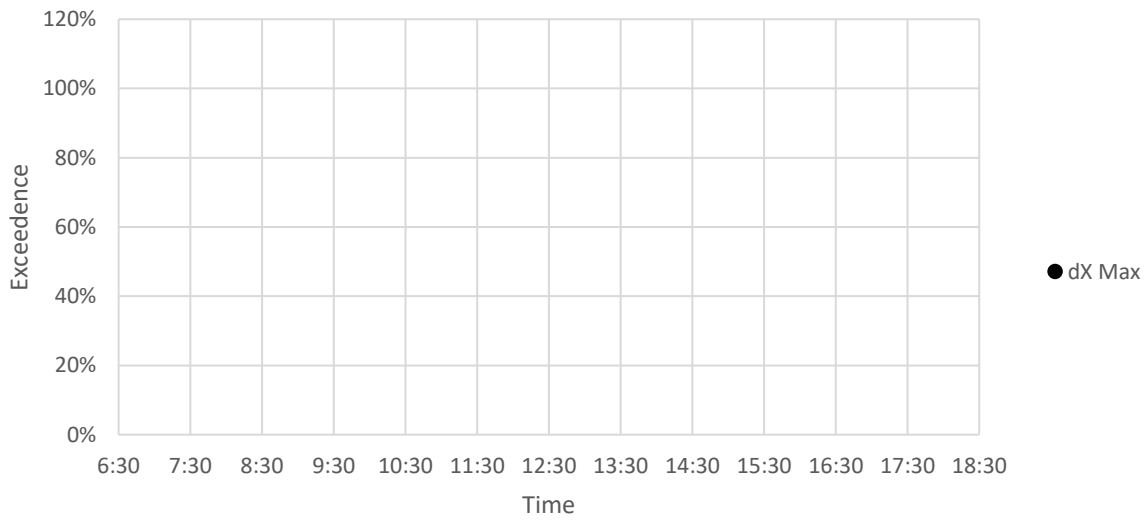
Sideways Vibration



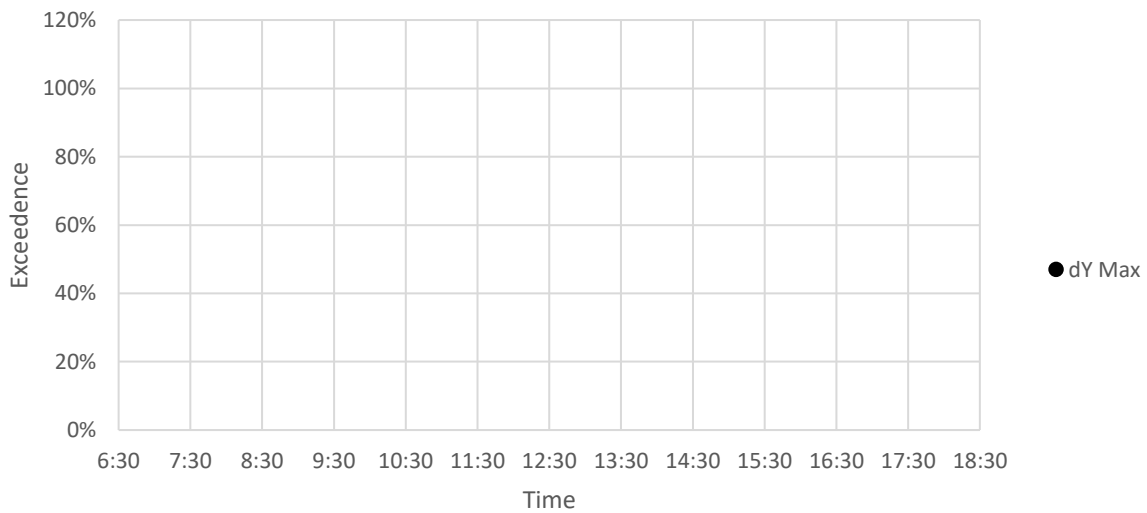
Vertical



Fwd/Backwards



Sideways

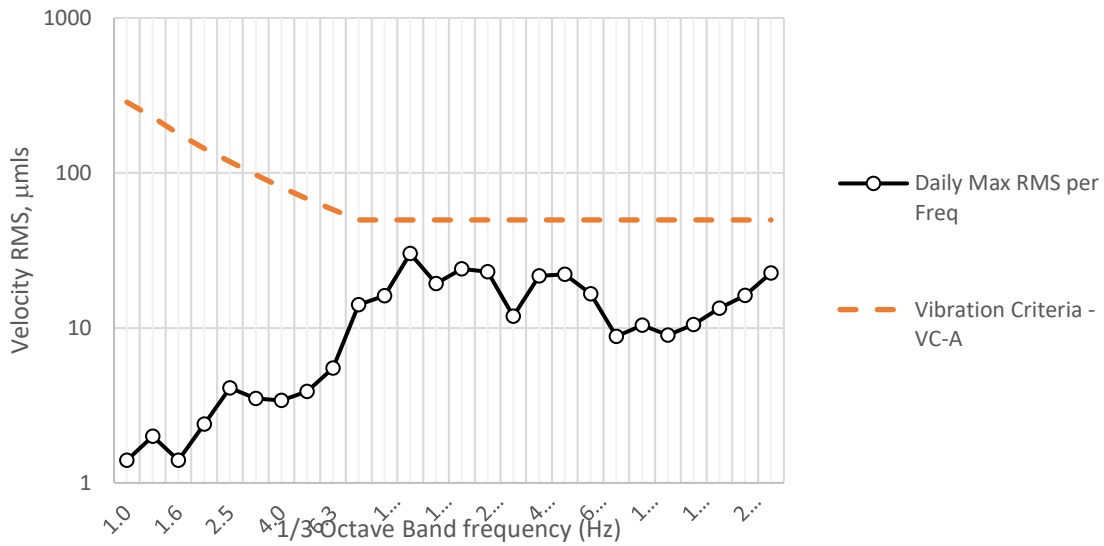


CENTENARY INSTITUTE – LEVEL 4 BATHROOM (NORTHERN FAÇADE)

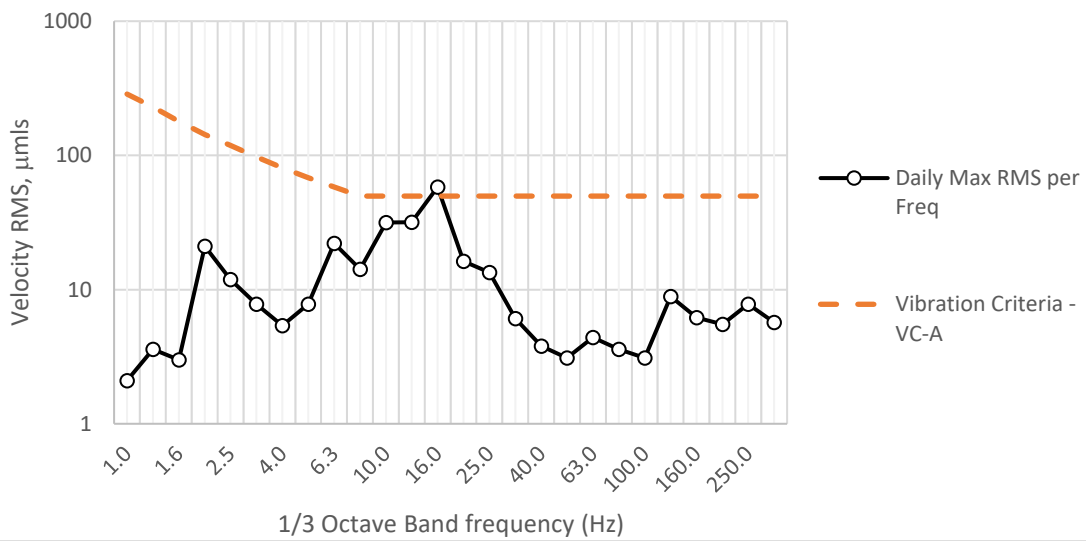
No exceedances occurred during the monitoring period.

CENTENARY INSTITUTE – LEVEL 4 CLEAN CHANGEROOM (SOUTHERN FAÇADE)

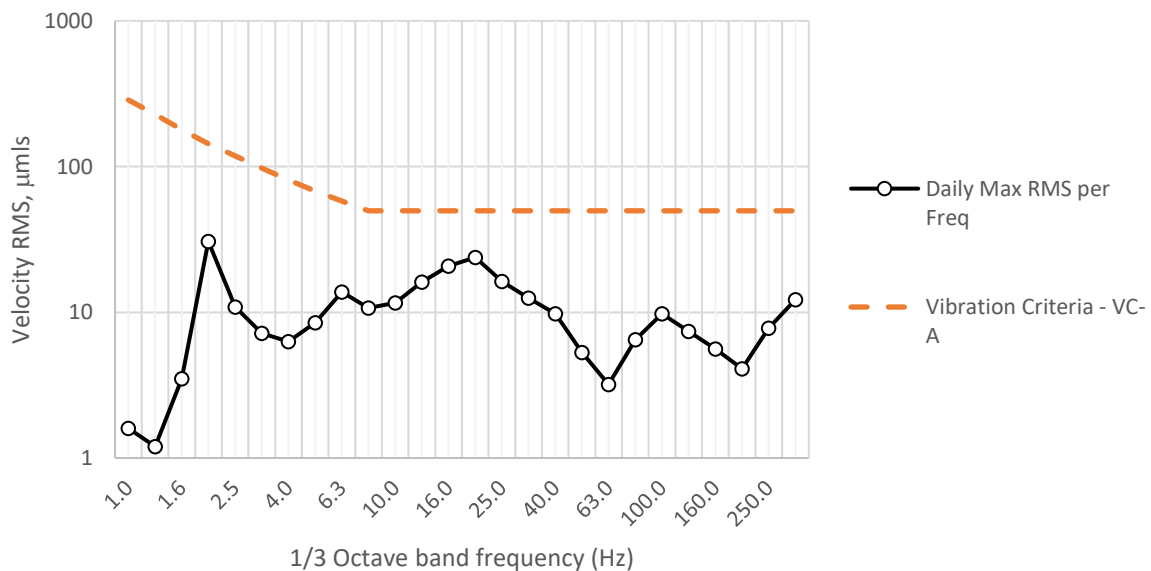
Vertical Vibration



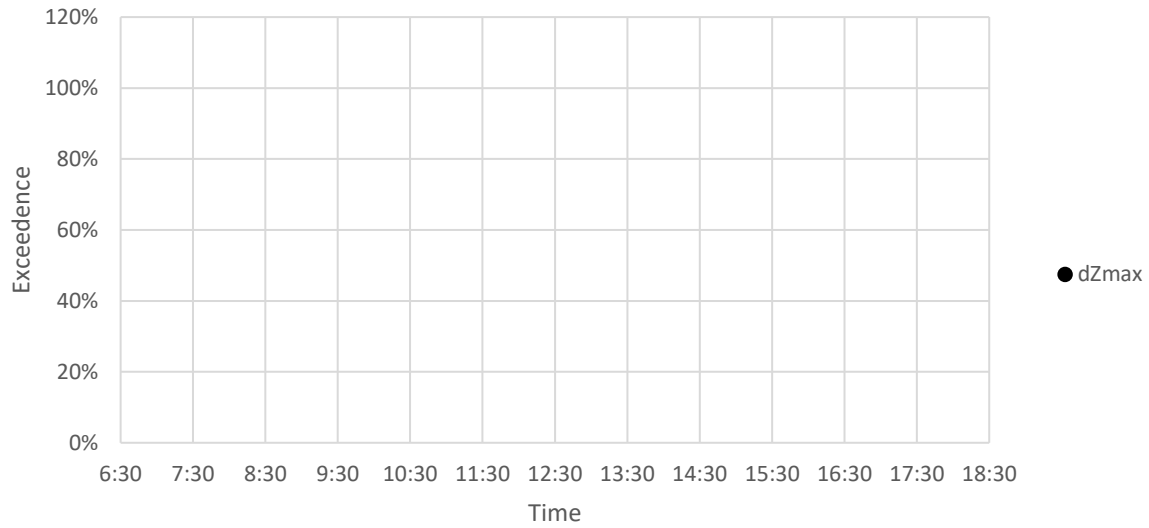
FwdBackwd Vibration



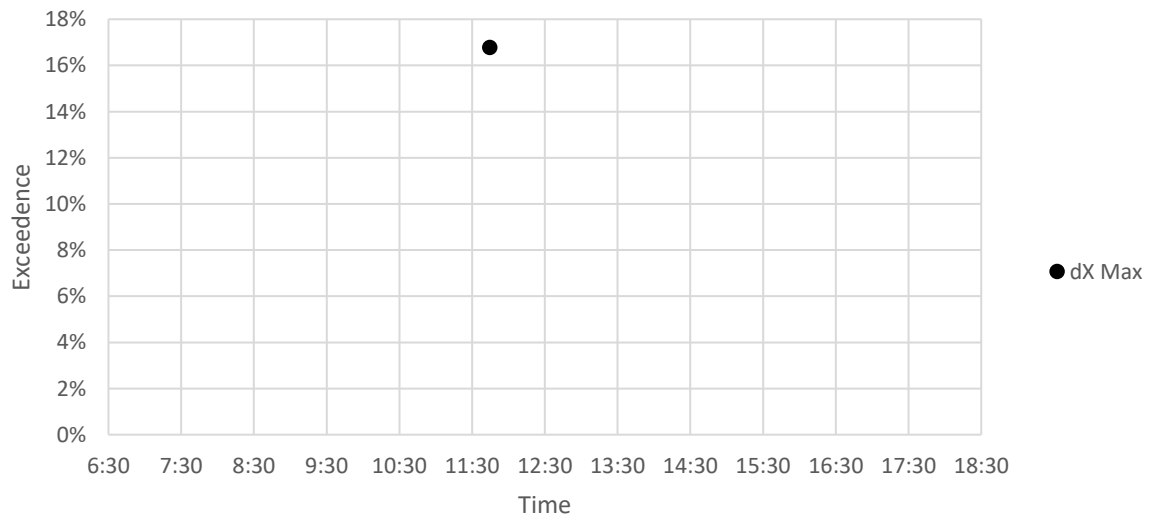
Sideways Vibration



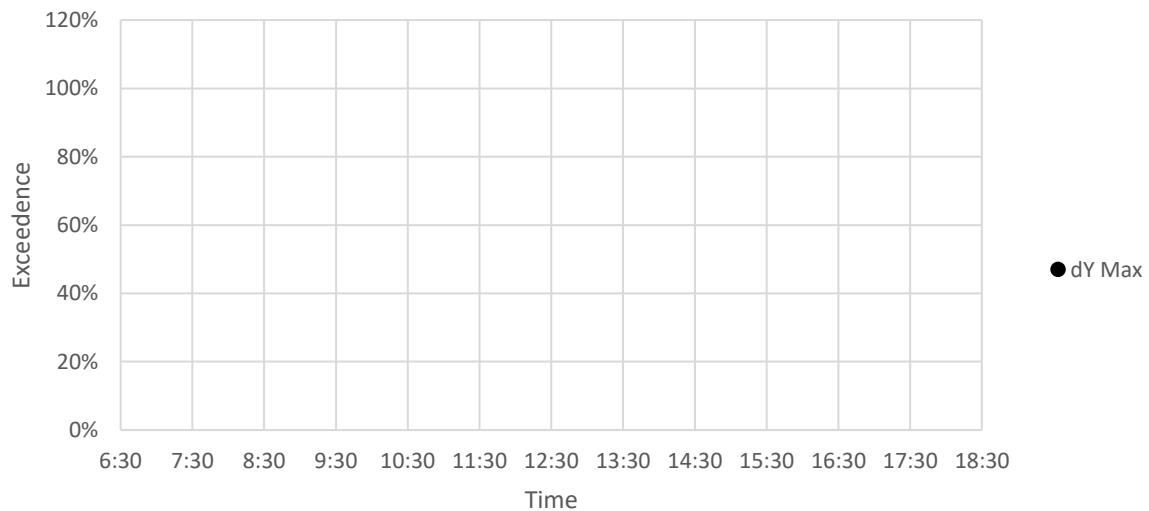
Vertical



Fwd/Backwards

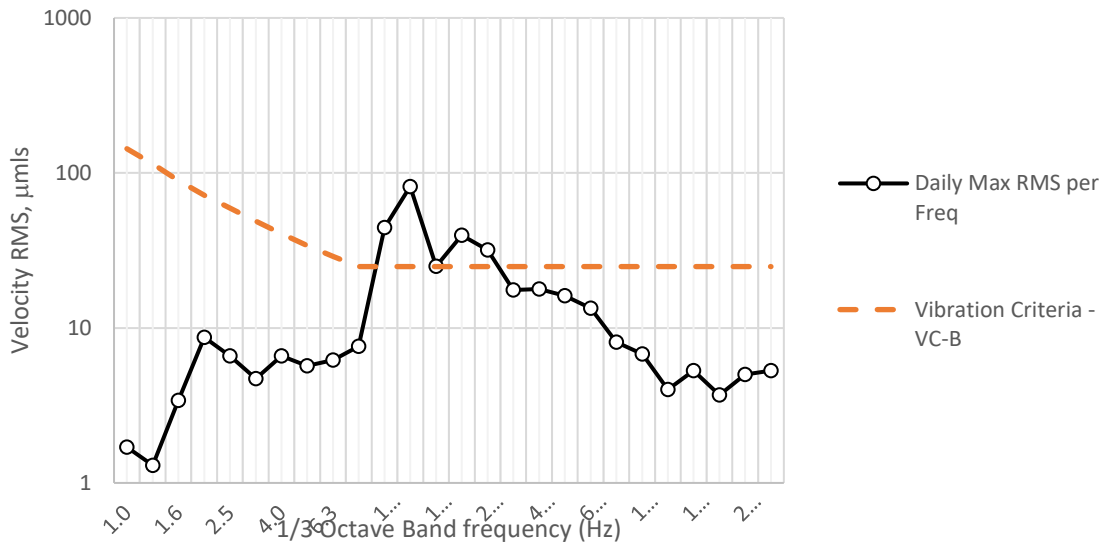


Sideways

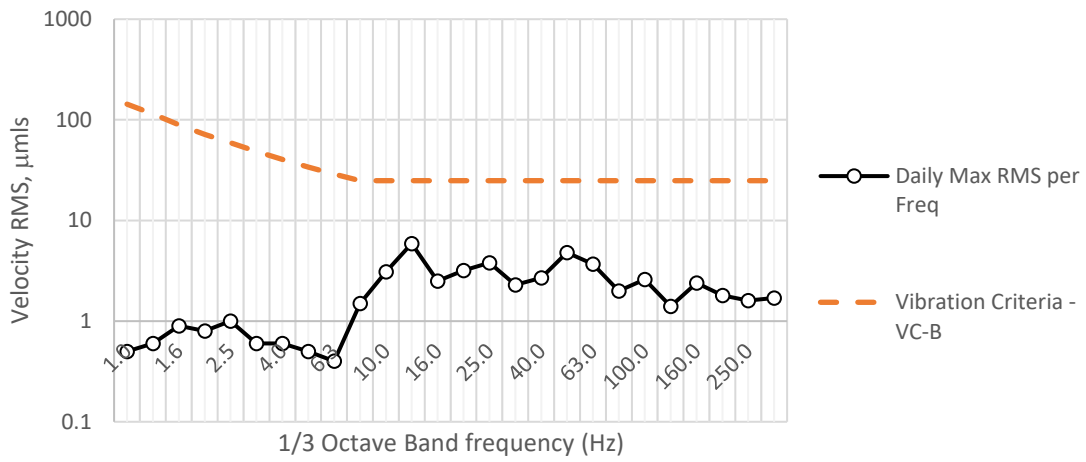


CHARLES PERKINS CENTRE – LEVEL B1 SOUTHERN CORRIDOR

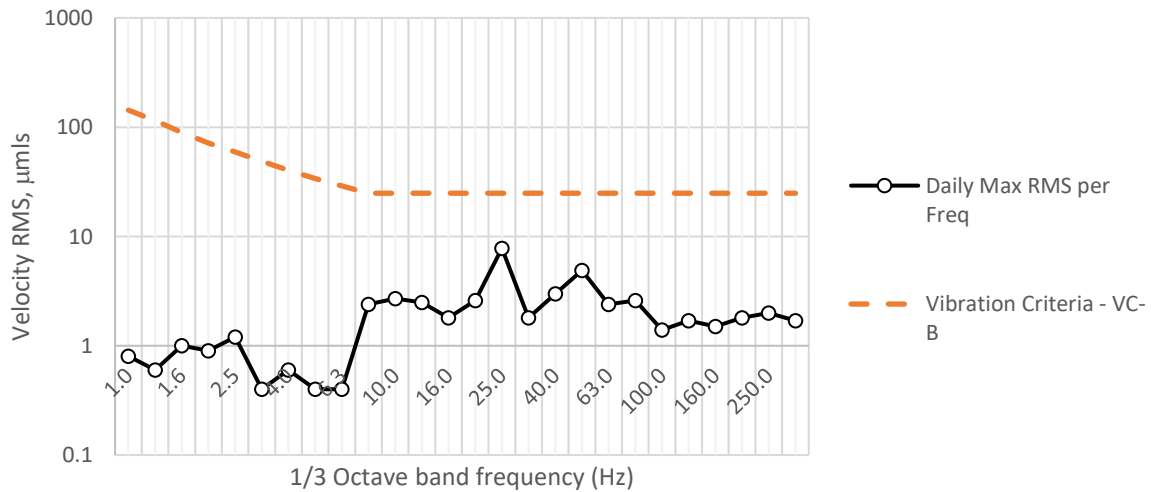
Vertical Vibration



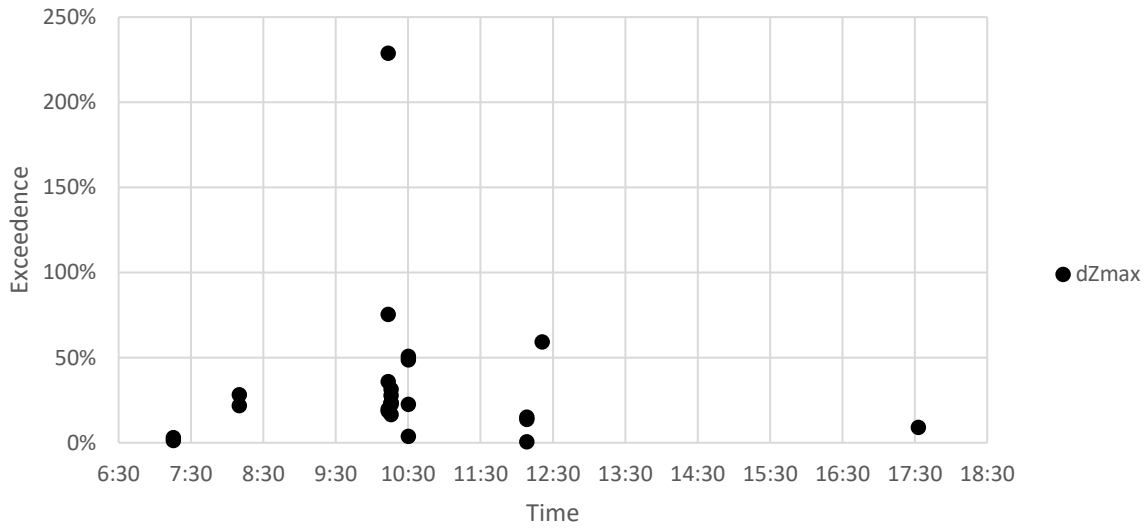
FwdBackwd Vibration



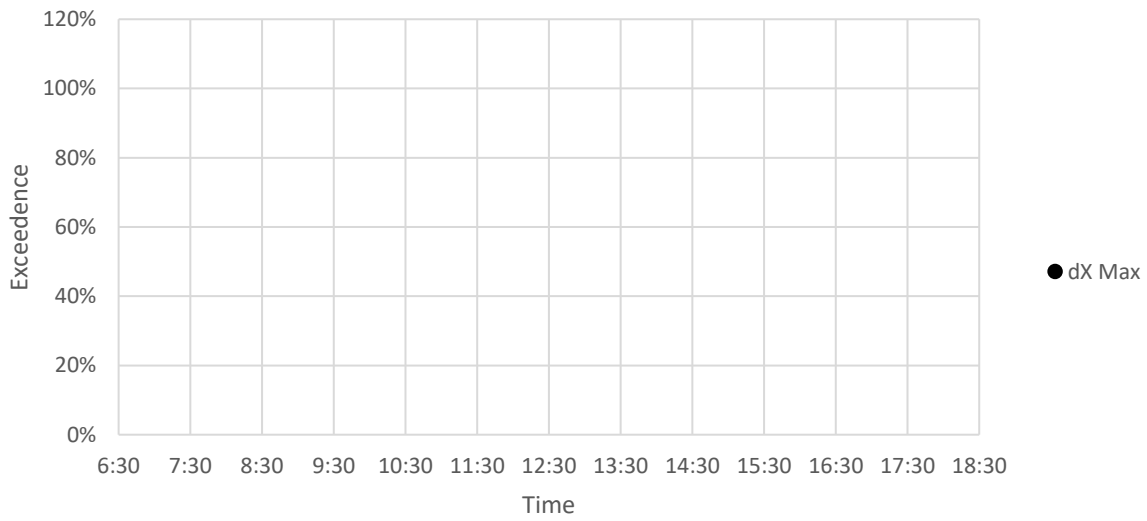
Sideways Vibration



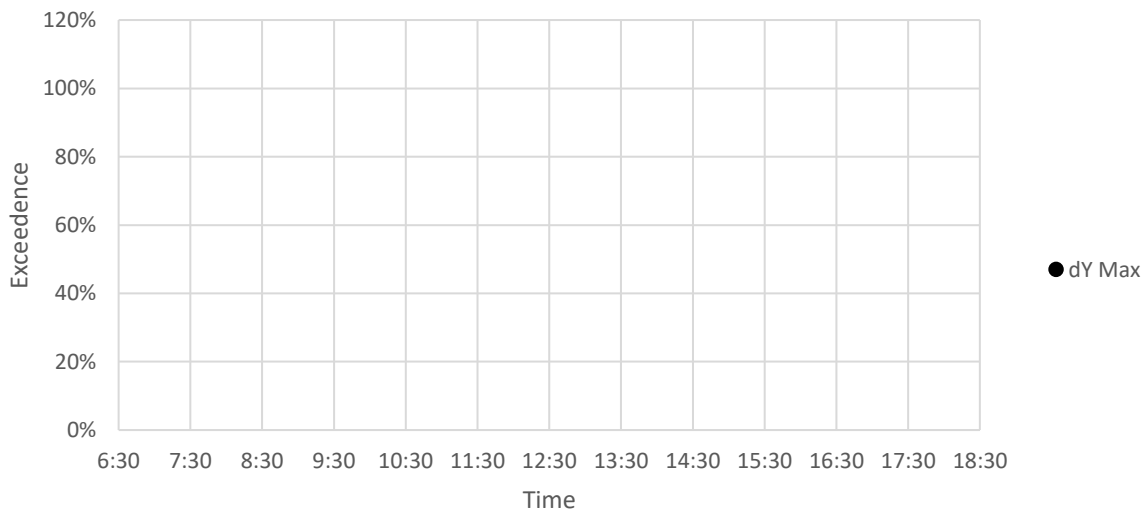
Vertical



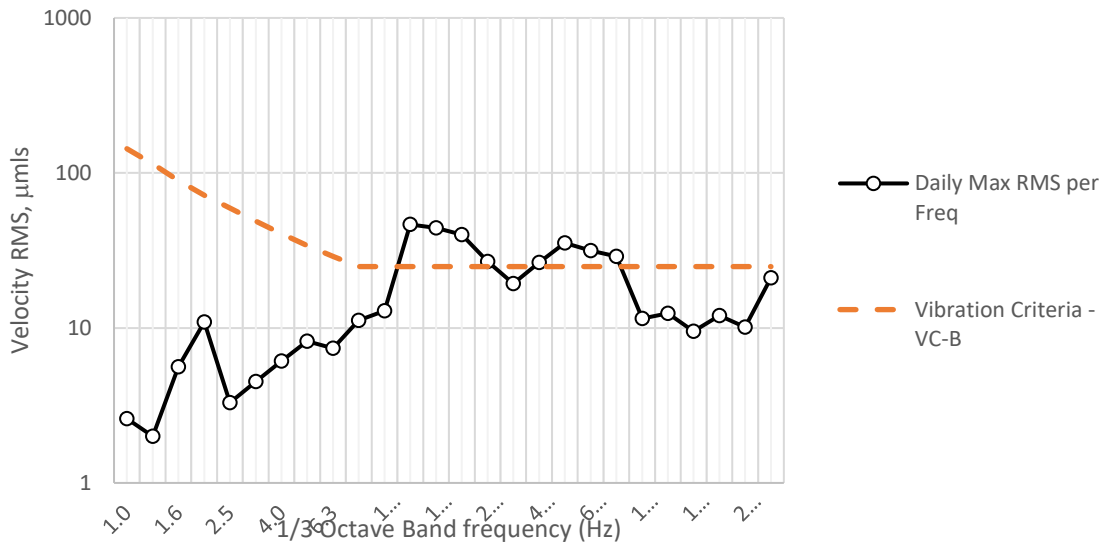
Fwd/Backwards



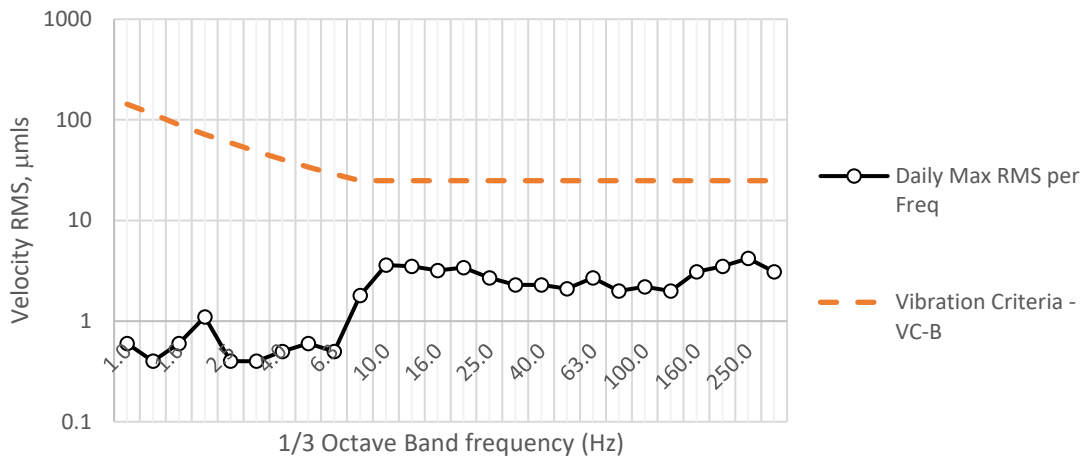
Sideways



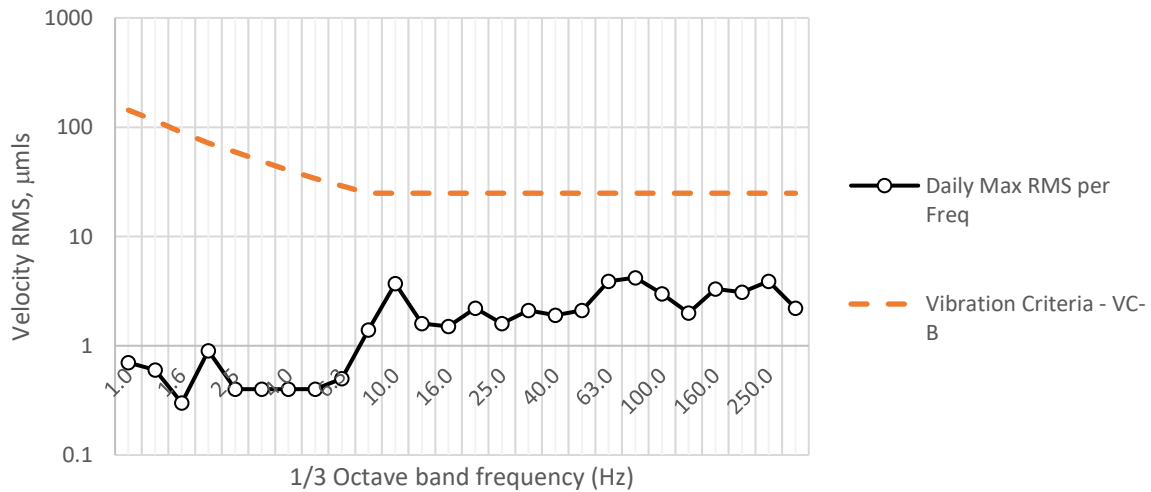
Vertical Vibration



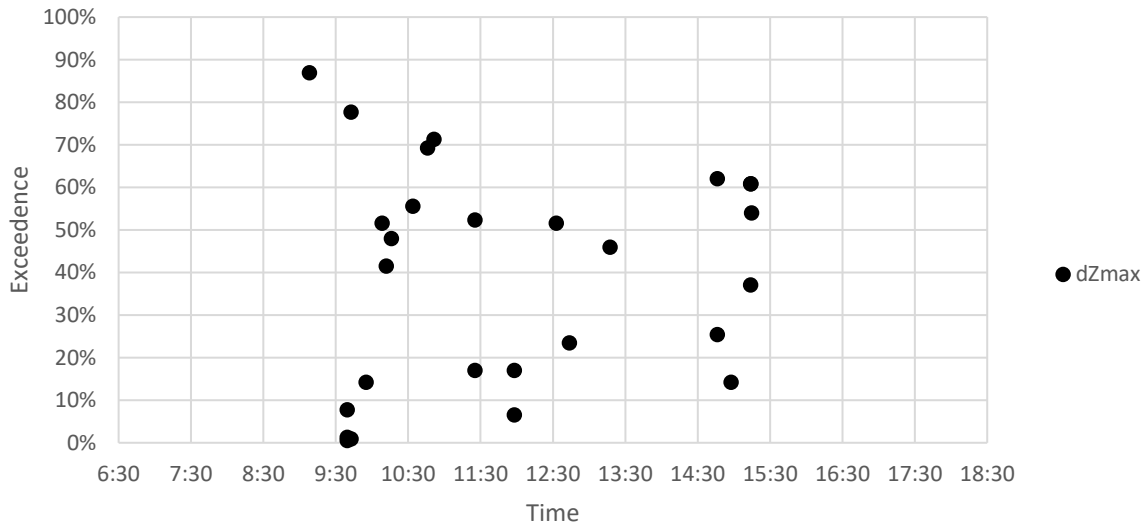
FwdBackwd Vibration



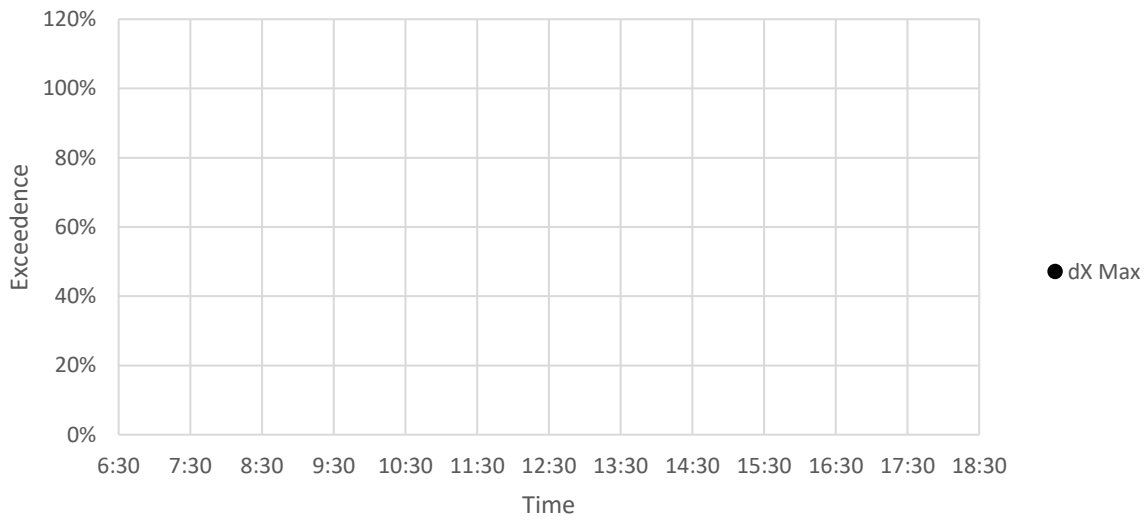
Sideways Vibration



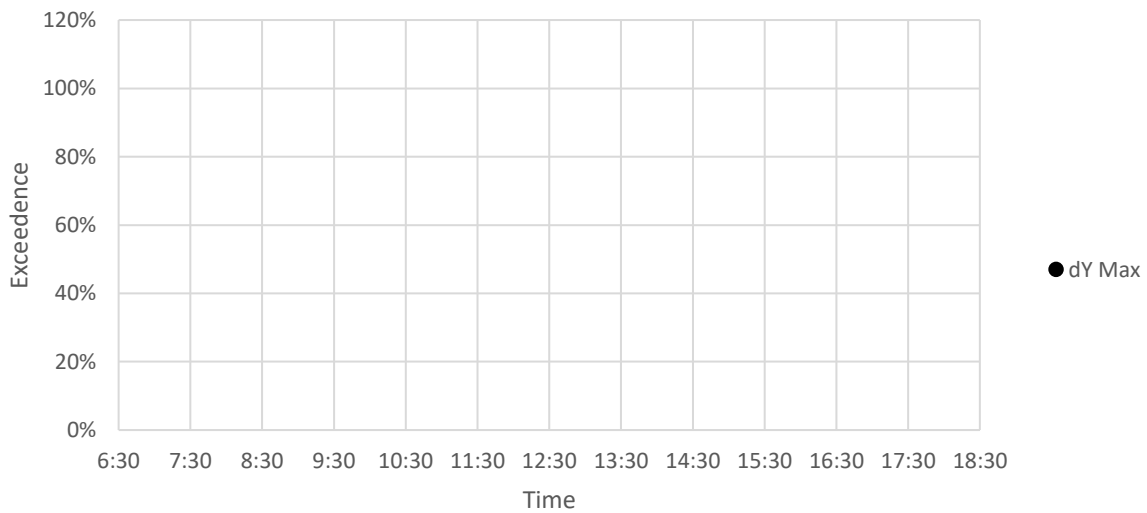
Vertical



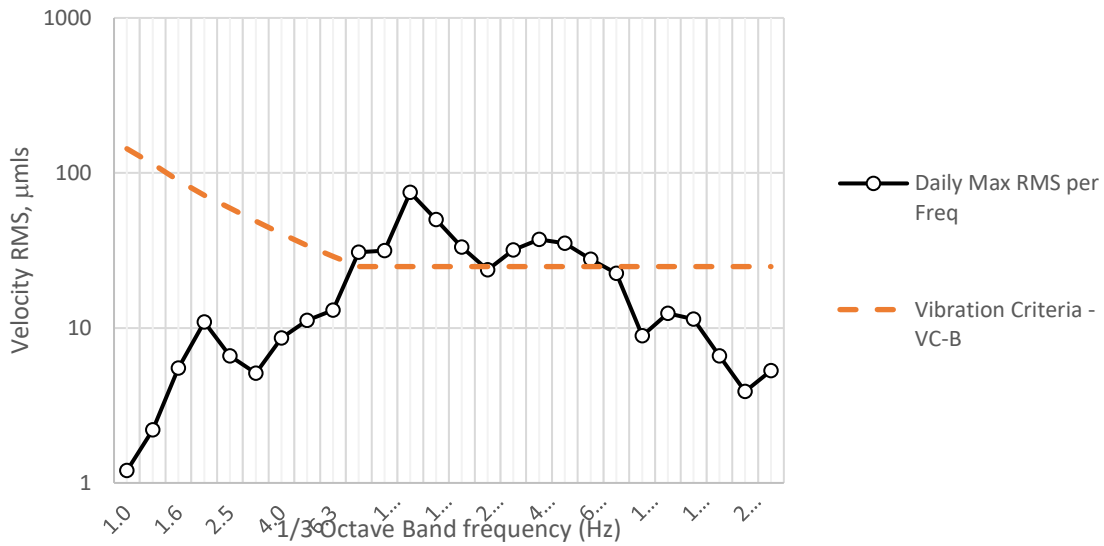
Fwd/Backwards



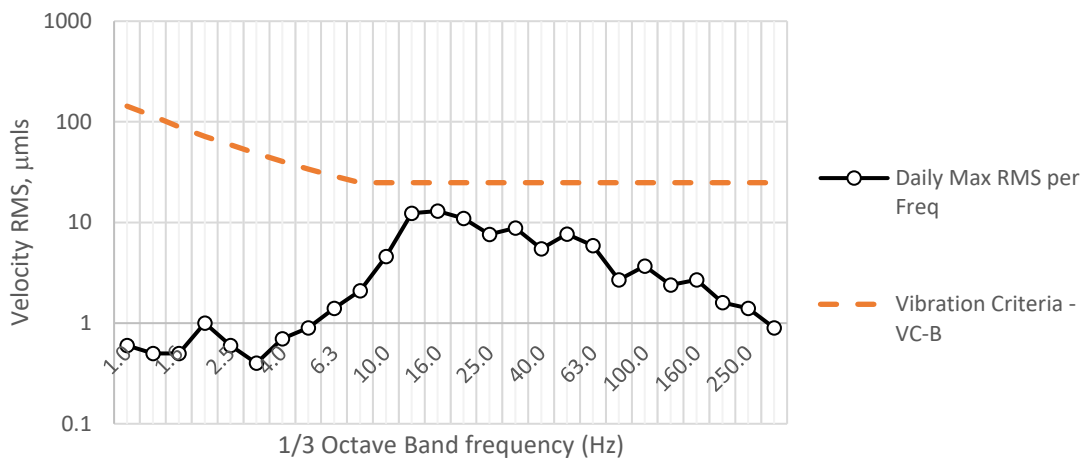
Sideways



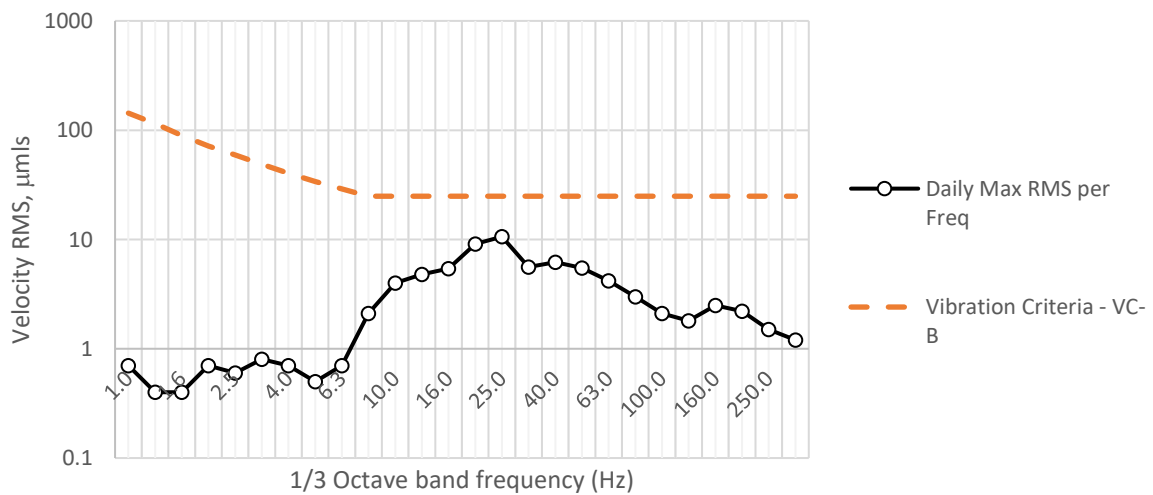
Vertical Vibration



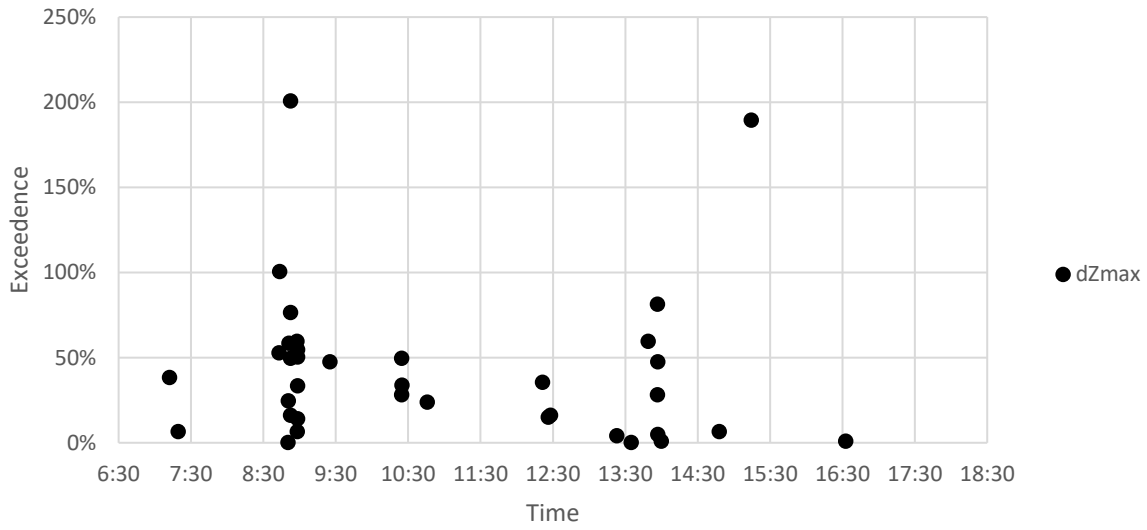
FwdBackwd Vibration



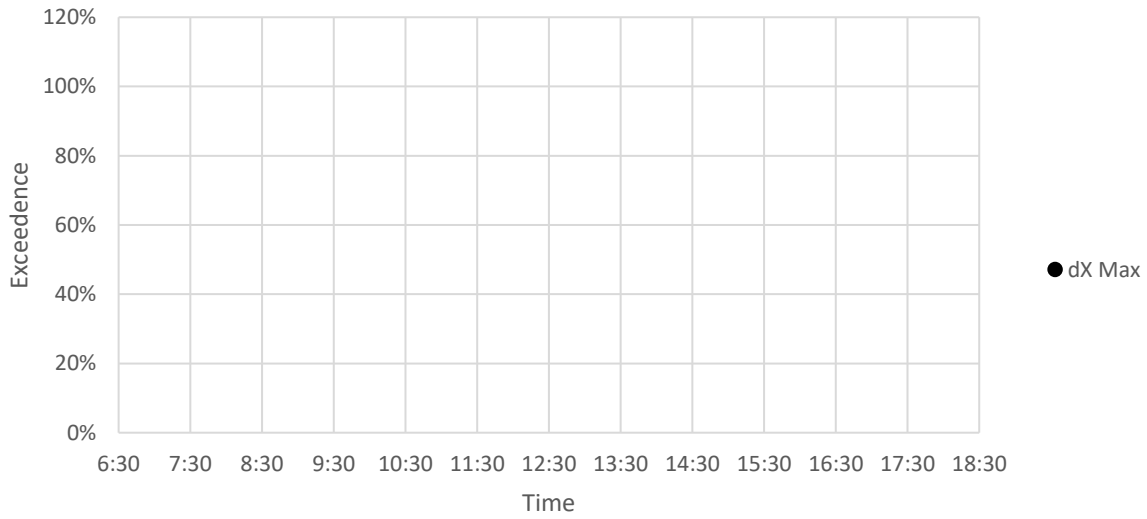
Sideways Vibration



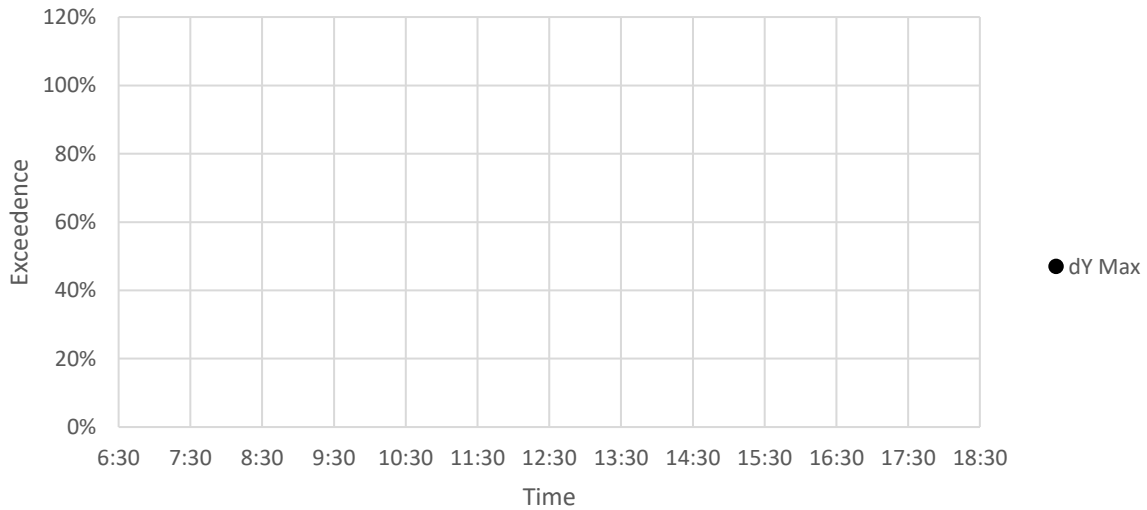
Vertical



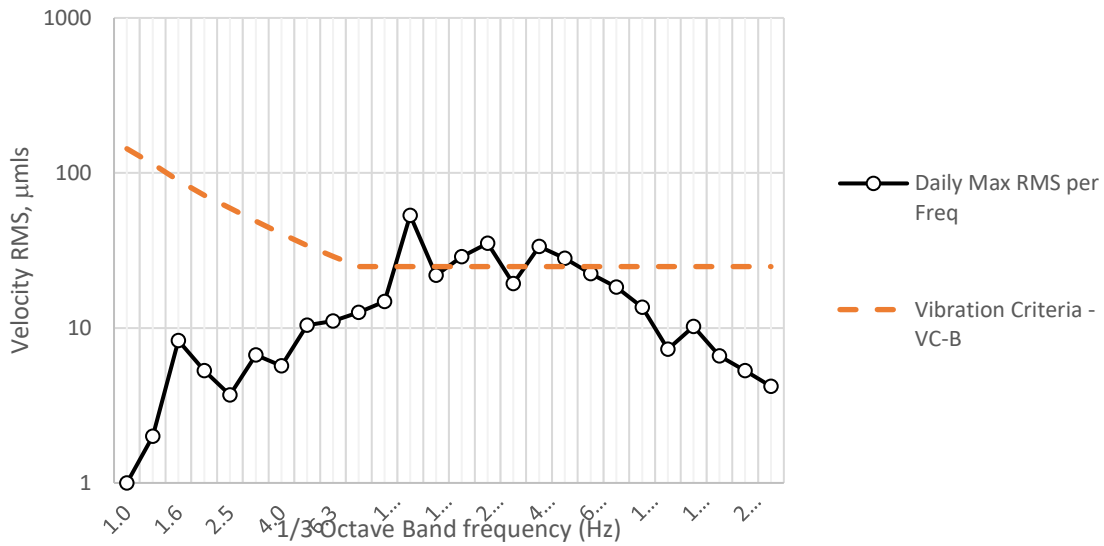
Fwd/Backwards



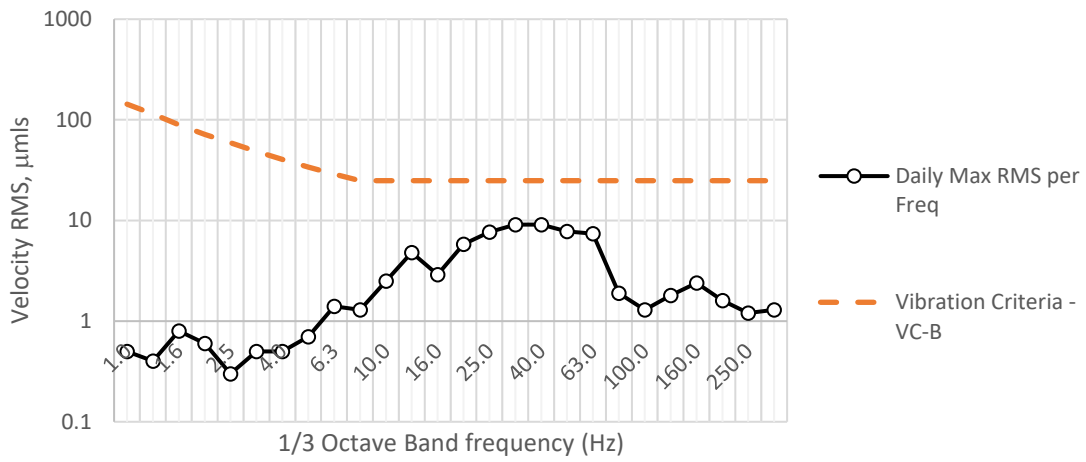
Sideways



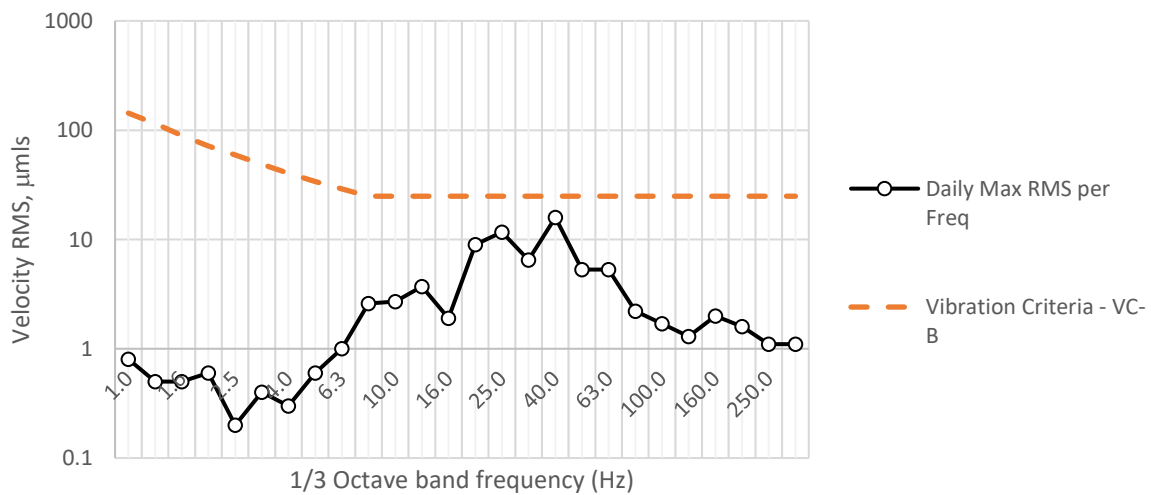
Vertical Vibration



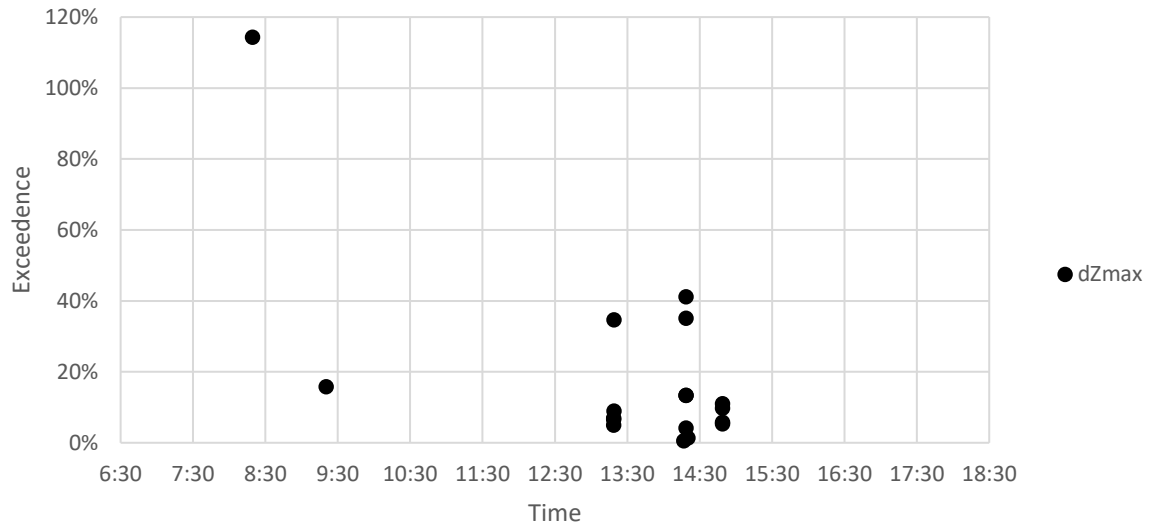
FwdBackwd Vibration



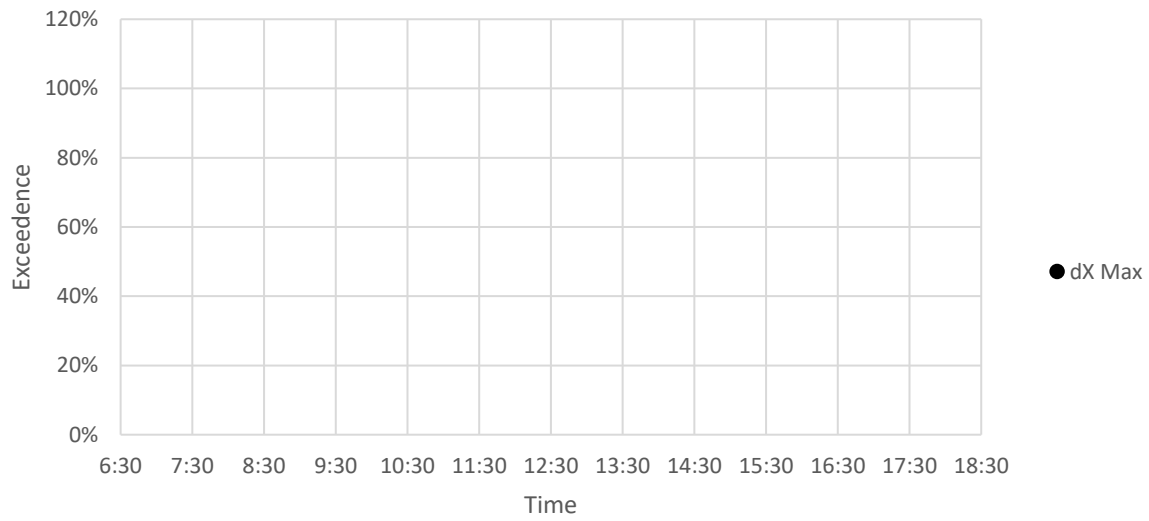
Sideways Vibration



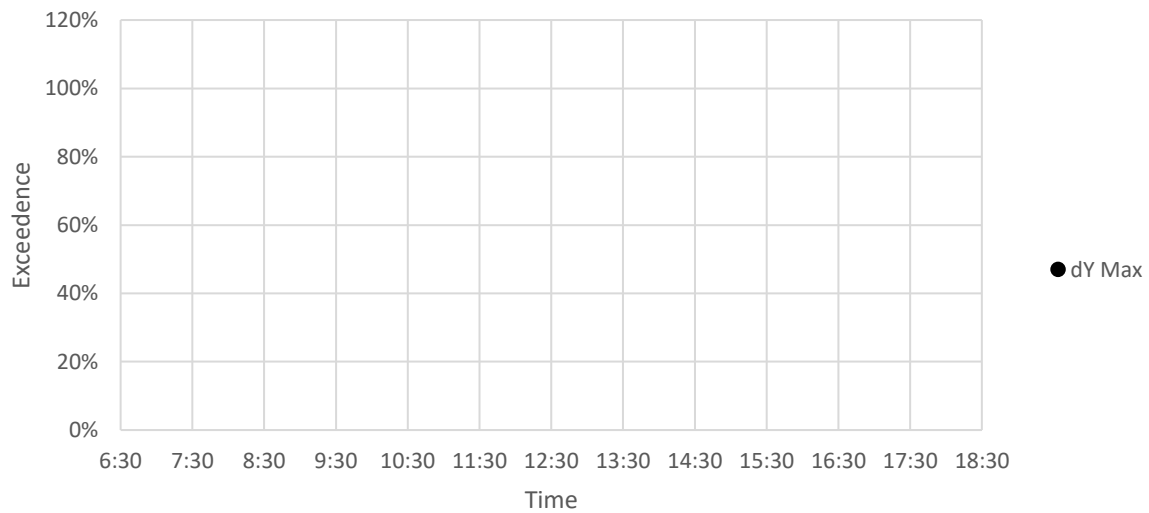
Vertical



Fwd/Backwards



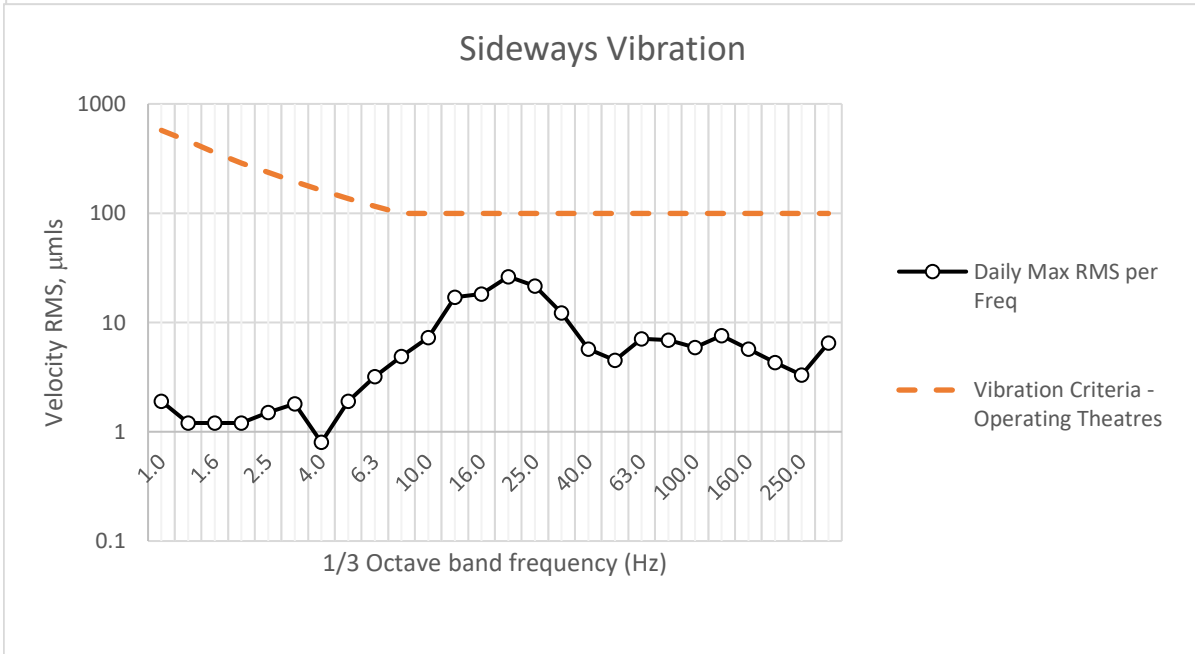
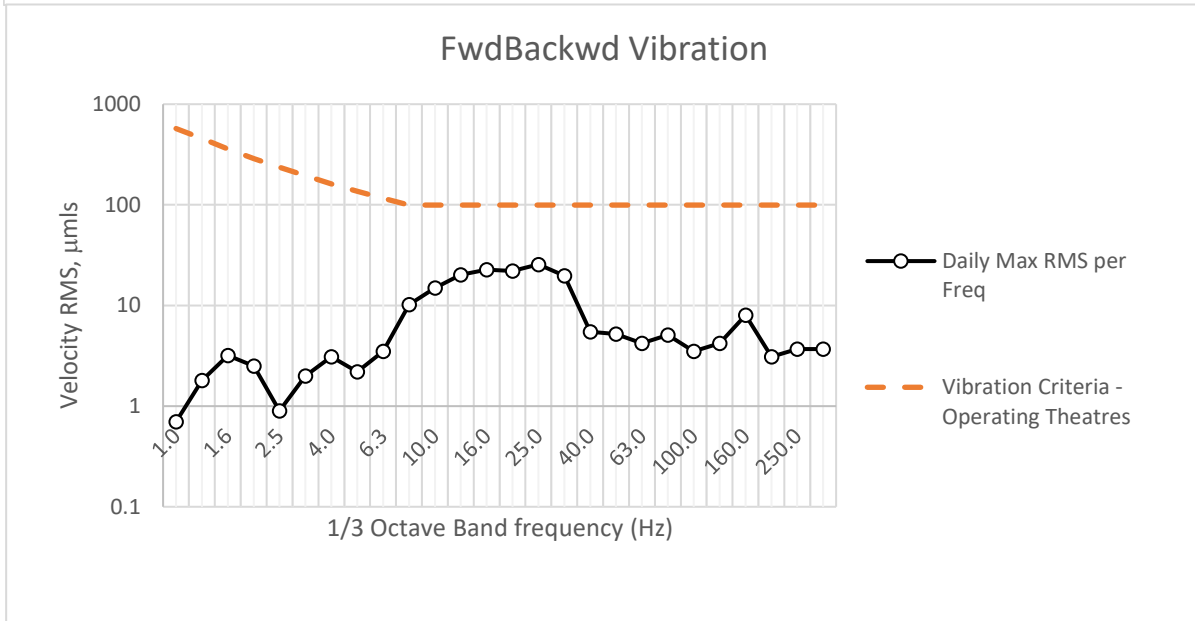
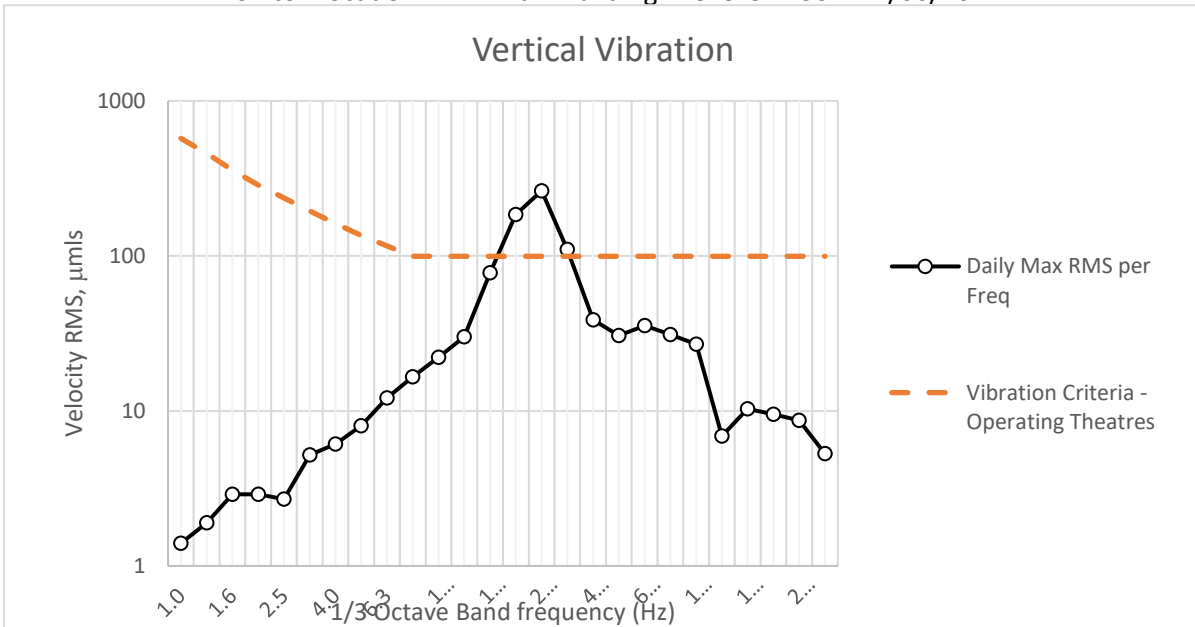
Sideways



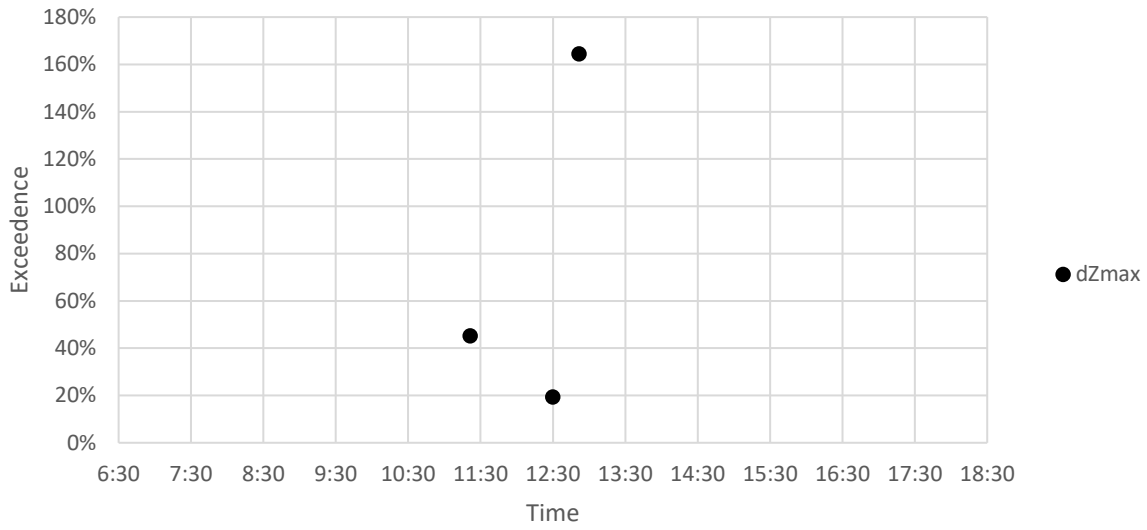
CHARLES PERKINS CENTRE – LEVEL B1 SOUTHERN WING OBSERVATION ROOM CORRIDOR

No exceedances occurred during the monitoring period.

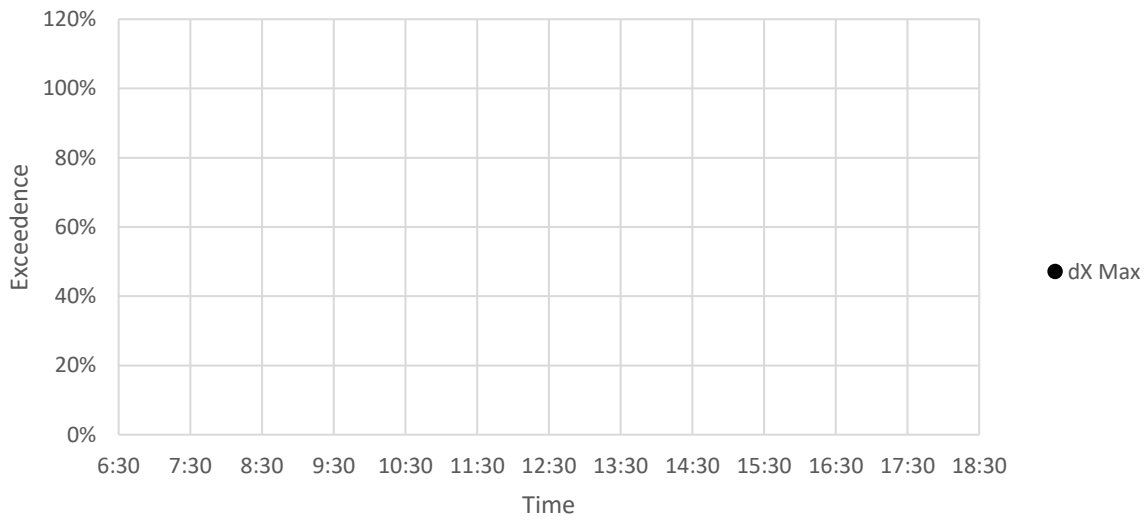
RPA HOSPITAL MAIN BUILDING – LEVEL 03 NICU



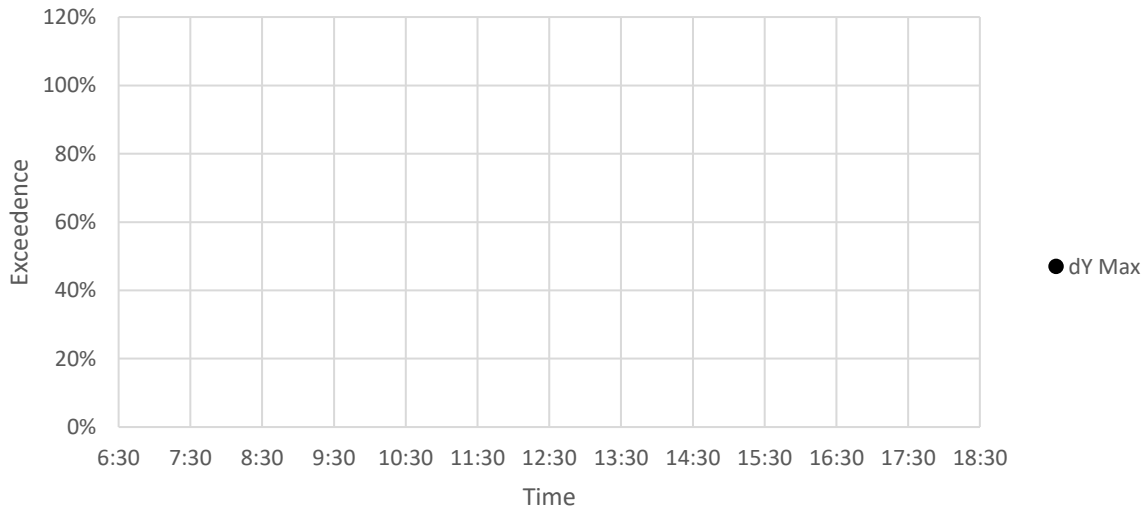
Vertical



Fwd/Backwards



Sideways



OUTSIDE SUSAN WAKIL HEALTH BUILDING

No exceedances occurred during the monitoring period.