

Tweed Valley Hospital Health Hub

Construction Noise, Dust and Vibration Monitoring Monthly Report 1

03.08.2022 - 02.09.2022

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TABLE OF CONTENTS

1	INTRODUCTION	4
1.1	SITE DESCRIPTION AND SENSITIVE RECEIVERS	4
2	CONSTRUCTION NOISE, DUST & VIBRATION MANAGEMENT LEVELS.....	6
2.1	VIBRATION MONITORING OBJECTIVES.....	6
2.2	NOISE MONITORING OBJECTIVES	7
2.3	DUST MONITORING OBJECTIVES	7
3	MONITOR/MEASUREMENT EQUIPMENT AND LOCATIONS	8
3.1	VIBRATION MONITOR	8
3.1.1	Measurement Equipment.....	8
3.1.2	Measurement Locations & Installation Dates.....	8
3.2	NOISE AND DUST MONITOR.....	8
3.2.1	Measurement Equipment.....	8
3.2.2	Measurement Locations & Installation Dates.....	8
4	NOISE, DUST & VIBRATION MEASUREMENTS	9
4.1	MONITORING PERIOD	9
4.2	VIBRATION MONITORING RESULTS.....	9
4.3	NOISE MONITORING RESULTS.....	11
4.4	DUST MONITORING RESULTS	13
5	CONCLUSION.....	17
APPENDIX 1 – NOISE MONITORING RESULTS		18
APPENDIX 2 – VIBRATION MONITORING RESULTS		51
APPENDIX 3 – DUST MONITORING RESULTS.....		52

1 INTRODUCTION

Acoustic Logic has been engaged to carry out noise, dust and vibration monitoring for the impacts associated with the construction activity of Health Hub at Tweed Valley Hospital.

This report provides the results of the following monitoring items:

- Vibration Monitoring: 3rd of August to 2nd of September 2022
- Noise Monitoring: 3rd of August to 2nd of September 2022, and
- Dust Monitoring: 3rd of August to 2nd of September 2022.

Unattended noise, dust and vibration monitoring has been carried out with reference to the management levels identified in the *Construction Noise, Dust & Vibration Management Plan* (CNVMP) for Tweed Valley Hospital Health Hub site prepared by AL (ref: 20220803.1/2806A/R0/PF, dated 28/06/2022). The criteria set up in the above management plan will be adopted to the proposed intersection upgrade site.

1.1 SITE DESCRIPTION AND SENSITIVE RECEIVERS

The subject site is located at the southern boundary of Tweed Valley Hospital site, as indicated in Figure 1-1. The land uses surrounding the intersection are existing residential, commercial, educational and agricultural receivers. The nearest potentially most affected receivers are:

- **C1:** Commercial Receiver 1 - Tweed Regional Aquatic Centre – Kingscliff to the east
- **R1:** Residential Receiver 1 - Residential dwellings located on 32-58 Cudgen Road to the east
- **R2:** Residential Receiver 2 - Residential dwelling located at 792 Cudgen Road to the south
- **E1:** Educational Receiver 1 - TAFE NSW – Kingscliff to the south
- **R3:** Residential Receiver 3 - Residential dwelling located at 764 Cudgen Road to the south, and
- **R4:** Residential Receiver 4 - Residential receivers at 6-30 John Robb Way to the west

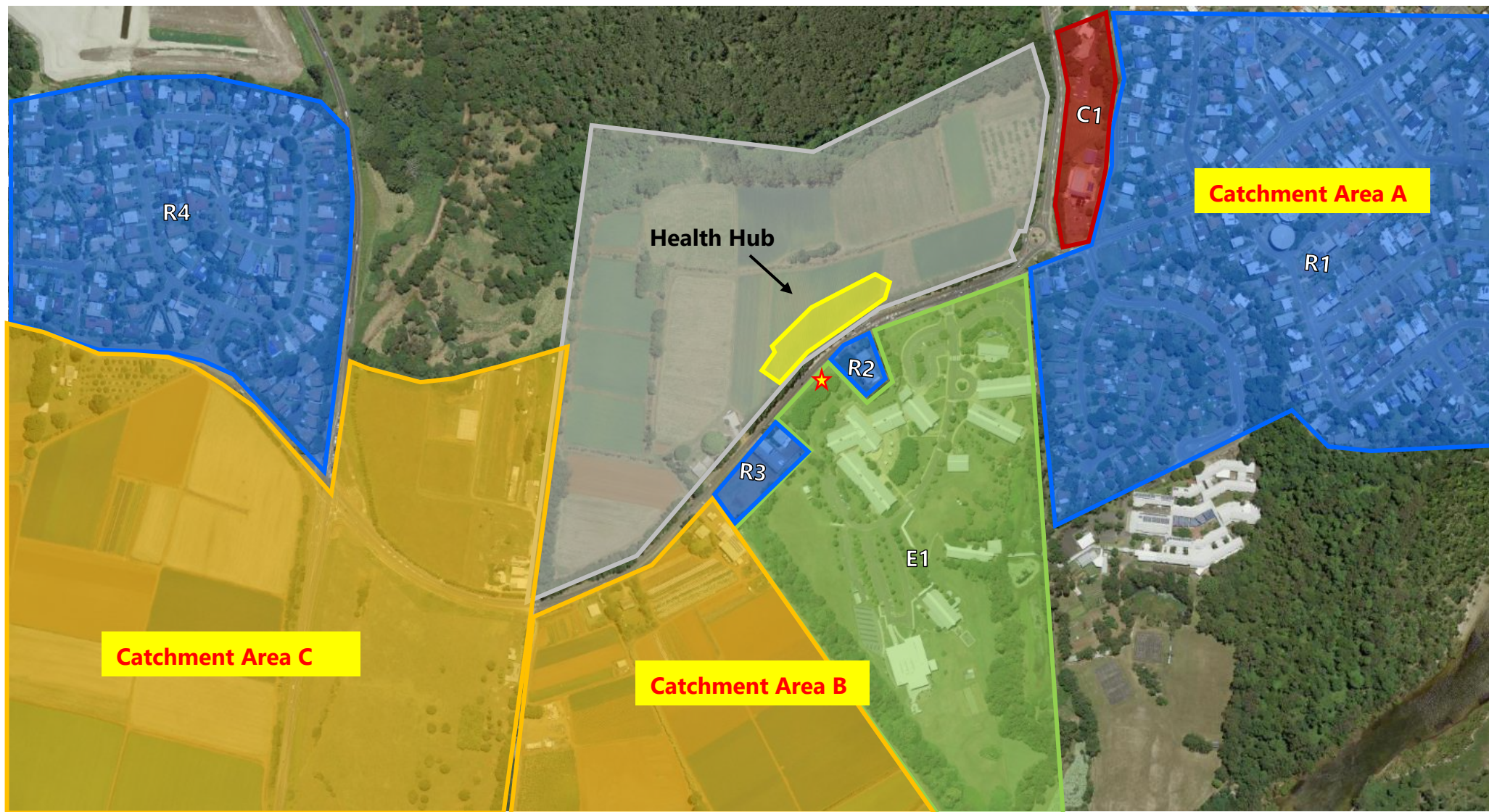


Figure 1-1 – Project Site and Sensitive Receiver Locations



2 CONSTRUCTION NOISE, DUST & VIBRATION MANAGEMENT LEVELS

Noise, dust and vibration management levels which are presented below have been adopted from the following documents:

- *Construction Noise, Dust & Vibration Management Plan (CNVMP)* for Tweed Valley Hospital Health Hub site prepared by AL (ref: 20220803.1/2806A/R0/PF, dated 28/06/2022).
- For structural damage vibration, German Standard DIN 4150-3 Structural Vibration: Effects of Vibration on Structures, and
- For human exposure to vibration, the NSW EPA document *Assessing Vibration: A Technical Guideline*.

2.1 VIBRATION MONITORING OBJECTIVES

German Standard DIN 4150-3 provides vibration velocity guideline levels for use in evaluating the effects of vibration on structures. The criteria presented in DIN 4150-3 are presented in Table 2-1.

It is noted that the peak velocity is the absolute value of the maximum of any of the three orthogonal component particle velocities as measured at the foundation, and the maximum levels measured in the x- and y-horizontal directions in the plane of the floor of the uppermost storey.

Table 2-1 – DIN4150-3 Safe Limits for Building Vibration

TYPE OF STRUCTURE		PEAK PARTICLE VELOCITY (mms ⁻¹)			
		At Foundation at a Frequency of			Plane of Floor of Uppermost Storey
		< 10Hz	10Hz to 50Hz	50Hz to 100Hz	All Frequencies
1	Buildings used in commercial purposes, industrial buildings and buildings of similar design Receiver C1	20	20 to 40	40 to 50	40
2	Dwellings and buildings of similar design and/or use Receivers R2 & R3	5	5 to 15	15 to 20	15
3	Structures that because of their particular sensitivity to vibration, do not correspond to those listed in Lines 1 or 2 and have intrinsic value (e.g. buildings that are under a preservation order)	3	3 to 8	8 to 10	8

The surrounding residential properties are considered type 2 structures and are the most sensitive receivers as such vibration will be assessed to the Type 2 criteria.

2.2 NOISE MONITORING OBJECTIVES

Project specific noise construction noise management levels are outlined in the approved CNVMP and summarised in Table 2-2 below:

Table 2-2 – Summarised Construction Noise Requirements During Proposed Hours

Location	Management Level dB(A) L_{eq} (15 min)
Residential Receivers	<u>Recommended Standard Hours</u> "Noise Affected" Level - 55 "Highly Noise Affected" Level – 75
Commercial Receivers	70
Educational Receivers & Office Areas	45 (Internal)

2.3 DUST MONITORING OBJECTIVES

Dust monitoring has been conducted to measure mechanically generated respirable PM_{2.5} dust particles (< 2.5µm) and PM₁₀ dust particles (< 10µm), which are generally understood to be the main health concern in airborne dust. The air quality limits are based on the standards outlined in Department of the Environment's *National Environment Protection (Ambient Air Quality) Measure* and NSW EPA's air quality categories.

It should be noted that the dust monitoring results can be influenced by events such as fires and dust storms, thus the PM₁₀ limit has an allowance of 5 days per year to account for the effects of such events.

The PM_{2.5} and PM₁₀ goals are summarised below.

Table 3 – PM_{2.5} and PM₁₀ Goals (24-Hour Average)

Pollutant	Averaging Time	Maximum Concentration
PM _{2.5}	24 hours	25 µg/m ³
PM ₁₀	24 hours	50 µg/m ³

The EPA has air quality categories based on particle concentration over a one hour average. As per the Construction Noise, Dust and Vibration management Plan, this project has targeted the 'Poor' category as a reference, **however, the assessment level is the 24-hour average.**

Table 4 – PM_{2.5} and PM₁₀ Goals (1-Hour Average)

Pollutant	Air Quality Category	Maximum Concentration
PM _{2.5}	Poor	62-97 µg/m ³
PM ₁₀		80-120 µg/m ³

3 MONITOR/MEASUREMENT EQUIPMENT AND LOCATIONS

3.1 VIBRATION MONITOR

3.1.1 Measurement Equipment

Vibration monitoring was conducted using Texcel ETM vibration monitors with external Tri-axial Geophones. The monitors are programmed to store statistical vibration data every 5-minute intervals, along with any 'triggered' events that occur throughout the monitoring period.

3.1.2 Measurement Locations & Installation Dates

A vibration monitor (M7426) has been installed, representative of the potential impact for vibration transmission to the closest residential receiver **R2**, to the south of the construction site across Cudgen Road (at the ground level, also see Figure 3-1). The monitor was installed on Wednesday 3rd August 2022. If vibration levels at the measured location comply with the proposed criteria, all other receivers will comply.

3.2 NOISE AND DUST MONITOR

3.2.1 Measurement Equipment

Unattended noise monitoring was conducted using a *SiteHive Hexanode 134* noise and dust monitor. The monitor was programmed to store 15-minute statistical noise levels throughout the monitoring period. Measurements were taken on A-frequency weighting and fast time weighting.

3.2.2 Measurement Locations & Installation Dates

A noise monitor has been installed, representative of the potential impact for noise transmission to surrounding residential houses, at the northern boundary of the construction site (at the ground level, also see Figure below). The monitor was installed on Wednesday 3rd August 2022.



Figure 3-1 Noise, dust and vibration monitor installation locations

4 NOISE, DUST & VIBRATION MEASUREMENTS

4.1 MONITORING PERIOD

This report provides the available results of noise, dust and vibration monitoring between the Wednesday 3rd August 2022 and 2nd September 2022.

4.2 VIBRATION MONITORING RESULTS

The highest axial (transverse / radial / vertical) vibration level, Peak Particle Velocity (PPV), during the monitoring period have been presented below. Graphs of the results are presented in Appendix A.

Table 5 – Vibration Monitoring Results-M7426

Date	Maximum Measured Vibration Level mm/s	Structural Damage Criteria for Type 2 (DIN4150-3)	Comments
Wednesday 2022-08-03	<3mm/s	5 mm/s (<10Hz) 5-15 mm/s (10-50Hz) 15-20mm/s (50-100Hz)	Vibration levels satisfy DIN4150-3 Type 2 criteria
Thursday 2022-08-04	<3mm/s		
Friday 2022-08-05	<3mm/s		
Saturday 2022-08-06	<3mm/s		
Sunday 2022-08-07	<3mm/s		
Monday 2022-08-08	<3mm/s		
Tuesday 2022-08-09	4mm/s		
Wednesday 2022-08-10	<3mm/s		
Thursday 2022-08-11	9.27mm/s@4.8Hz		Exceedance due to Monitor service (Not construction activity related)
Friday 2022-08-12	<3mm/s		Vibration levels satisfy DIN4150-3 Type 2 criteria
Saturday 2022-08-13	<3mm/s		
Sunday 2022-08-14	<3mm/s		
Date	Maximum Measured	Structural Damage Criteria for Type 2	Comments

	Vibration Level mm/s	(DIN4150-3)	
Monday 2022-08-15	<3mm/s	5 mm/s (<10Hz) 5-15 mm/s (10-50Hz) 15-20mm/s (50-100Hz)	Vibration levels satisfy DIN4150-3 Type 2 criteria
Tuesday 2022-08-16	<3mm/s		
Wednesday 2022-08-17	<3mm/s		
Thursday 2022-08-18	<3mm/s		
Friday 2022-08-19	<3mm/s		
Saturday 2022-08-20	<3mm/s		
Sunday 2022-08-21	<3mm/s		
Monday 2022-08-22	<3mm/s		
Tuesday 2022-08-23	<3mm/s		
Wednesday 2022-08-24	<3mm/s		
Thursday 2022-08-25	<3mm/s		
Friday 2022-08-26	<3mm/s		
Saturday 2022-08-27	<3mm/s		
Monday 2022-08-29	<3mm/s		
Tuesday 2022-08-30	<3mm/s		
Wednesday 2022-08-31	<3mm/s		
Thursday 2022-09-01	<3mm/s		
Friday 2022-09-02	<3mm/s		

Vibration levels for monitor M7426 to the south of the construction site were within the nominated criteria for the whole monitoring period between 3rd August to 2nd September 2022. Except one exceedance occurred on Thursday 11th August due to monitor service.

4.3 NOISE MONITORING RESULTS

The available measured noise levels have been analysed by this office and the graphed noise data presented in Appendix 1. Summarised results are also in Table 6 below.

Table 6 – Measured Construction Noise Levels @ R2

Date	Time Period	Percentage of Time that Measured Noise Level dB(A) _{Leq(15min)} Exceeds			
		0-5 above Noise affected level 55 dB(A) _{Leq(15min)}	5-10 above Noise affected level 55 dB(A) _{Leq(15min)}	10-15 above Noise affected level 55 dB(A) _{Leq(15min)}	Above Highly Noise affected level 75 dB(A) _{Leq(15min)}
Wednesday 2022-08-03	7am – 6pm	4.76%	66.67%	23.81%	0.00%
Thursday 2022-08-04		0.00%	75.00%	25.00%	0.00%
Friday 2022-08-05		2.27%	59.09%	38.64%	0.00%
Saturday 2022-08-06	8am – 1pm	23.81%	76.19%	0.00%	0.00%
Sunday 2022-08-07	No Works				
Monday 2022-08-08	7am – 6pm	2.27%	77.27%	20.45%	0.00%
Tuesday 2022-08-09		0.00%	88.64%	11.36%	0.00%
Wednesday 2022-08-10		2.27%	86.36%	11.36%	0.00%
Thursday 2022-08-11		2.27%	95.45%	2.27%	0.00%
Friday 2022-08-12		2.27%	65.91%	31.82%	0.00%
Saturday 2022-08-13	8am – 1pm	0.00%	0.00%	0.00%	0.00%
Sunday 2022-08-14	No Works				
Monday 2022-08-15	7am – 6pm	0.00%	86.36%	13.64%	0.00%
Tuesday 2022-08-16		6.82%	88.64%	4.55%	0.00%
Wednesday 2022-08-17		2.27%	79.55%	18.18%	0.00%

Date	Time Period	Percentage of Time that Measured Noise Level dB(A) _{Leq(15min)} Exceeds			
		0-5 above Noise affected level 55 dB(A) _{Leq(15min)}	5-10 above Noise affected level 55 dB(A) _{Leq(15min)}	10-15 above Noise affected level 55 dB(A) _{Leq(15min)}	Above Highly Noise affected level 75 dB(A) _{Leq(15min)}
Thursday 2022-08-18	7am – 6pm	6.82%	90.91%	2.27%	0.00%
Friday 2022-08-19		6.82%	88.64%	4.55%	0.00%
Saturday 2022-08-20	8am – 1pm	85.71%	14.29%	0.00%	0.00%
Sunday 2022-08-21	No Works				
Monday 2022-08-22	7am – 6pm	18.18%	72.73%	9.09%	0.00%
Tuesday 2022-08-23		4.55%	88.64%	2.27%	0.00%
Wednesday 2022-08-24		13.64%	84.09%	2.27%	0.00%
Thursday 2022-08-25		9.09%	84.09%	6.82%	0.00%
Friday 2022-08-26		9.09%	88.64%	2.27%	0.00%
Saturday 2022-08-27	8am – 1pm	57.14%	42.86%	0.00%	0.00%
Sunday 2022-08-28	No Works				
Monday 2022-08-29	7am – 6pm	4.55%	88.64%	6.82%	0.00%
Tuesday 2022-08-30		6.82%	79.55%	13.64%	0.00%
Wednesday 2022-08-31		6.82%	88.64%	4.55%	0.00%
Thursday 2022-09-01		22.73%	77.27%	0.00%	0.00%
Friday 2022-09-02		2.27%	97.73%	0.00%	0.00%

Noise levels were below the highly noise affected level (75dB(A)) during the whole monitoring period. Noise levels were normally between 5-10 dB higher than the noise affected level. This is expected to lower at the residential façade due to distance attenuation.

4.4 DUST MONITORING RESULTS

The daily average PM_{2.5} and PM₁₀ concentration levels are presented below.

Table 7 – 24hr Average PM_{2.5} and PM₁₀ Concentration

Date	24hr Average PM _{2.5} and PM ₁₀ Concentration					
	PM _{2.5} Level (µg/m ³)	PM _{2.5} Limit (µg/m ³)	Complies	PM ₁₀ Level (µg/m ³)	PM ₁₀ Limit (µg/m ³)	Complies
Wednesday 2022-08-03	8	25	Yes	24	50	Yes
Thursday 2022-08-04	8		Yes	32		Yes
Friday 2022-08-05	8		Yes	30		Yes
Saturday 2022-08-06	3		Yes	13		Yes
Sunday 2022-08-07	2		Yes	6		Yes
Monday 2022-08-08	3		Yes	11		Yes
Tuesday 2022-08-09	6		Yes	20		Yes
Wednesday 2022-08-10	7		Yes	22		Yes
Thursday 2022-08-11	8		Yes	33		Yes
Friday 2022-08-12	5		Yes	21		Yes
Saturday 2022-08-13	6		Yes	23		Yes
Sunday 2022-08-14	1		Yes	5		Yes
Monday 2022-08-15	3		Yes	18		Yes
Tuesday 2022-08-16	4		Yes	24		Yes
Wednesday 2022-08-17	4		Yes	15		Yes
Thursday 2022-08-18	5		Yes	28		Yes

Date	24hr Average PM _{2.5} and PM ₁₀ Concentration					
	PM _{2.5} Level (µg/m ³)	PM _{2.5} Limit (µg/m ³)	Complies	PM ₁₀ Level (µg/m ³)	PM ₁₀ Limit (µg/m ³)	Complies
Friday 2022-08-19	8	25	Yes	42	50	Yes
Saturday 2022-08-20	5		Yes	27		Yes
Sunday 2022-08-21	7		Yes	22		Yes
Monday 2022-08-22	9		Yes	37		Yes
Tuesday 2022-08-23	18		Weather affected	49		Weather affected
Wednesday 2022-08-24	2		Yes	16		Yes
Thursday 2022-08-25	-		No data due to power outage	-		No data due to power outage
Friday 2022-08-26	8		Yes	27		Yes
Saturday 2022-08-27	5		Yes	15		Yes
Sunday 2022-08-28	4		Yes	16		Yes
Monday 2022-08-29	6		Yes	24		Yes
Tuesday 2022-08-30	6		Yes	27		Yes
Wednesday 2022-08-31	8		Yes	30		Yes
Thursday 2022-09-01	8		Yes	33		Yes
Friday 2022-09-02	10		Weather affected	59 ¹		Weather affected

Note 1: Extreme rainfall events caused dust exceedances (not Construction works)

Adverse weather events caused technical failures and limited maintenance works, impacting measurements on 23rd, 25th August and 2nd September.

The **daily maximum 1hour** PM_{2.5} and PM₁₀ concentration levels are presented below.

Table 8 – 1Hr Maximum PM_{2.5} and PM₁₀ Concentration

Date	Maximum 1hr Average PM _{2.5} and PM ₁₀ Concentration					
	PM _{2.5} Level (µg/m ³)	PM _{2.5} Limit (µg/m ³)	Complies	PM ₁₀ Level (µg/m ³)	PM ₁₀ Limit (µg/m ³)	Complies
Wednesday 2022-08-03	12	62-97	Yes	37	80-120	Yes
Thursday 2022-08-04	13		Yes	80		Yes
Friday 2022-08-05	12		Yes	71		Yes
Saturday 2022-08-06	17		Yes	96		Yes
Sunday 2022-08-07	6		Yes	13		Yes
Monday 2022-08-08	7		Yes	29		Yes
Tuesday 2022-08-09	19		Yes	56		Yes
Wednesday 2022-08-10	12		Yes	40		Yes
Thursday 2022-08-11	18		Yes	51		Yes
Friday 2022-08-12	9		Yes	45		Yes
Saturday 2022-08-13	10		Yes	44		Yes
Sunday 2022-08-14	2		Yes	7		Yes
Monday 2022-08-15	11		Yes	59		Yes
Tuesday 2022-08-16	11		Yes	114		Yes
Wednesday 2022-08-17	7		Yes	34		Yes
Thursday 2022-08-18	9		Yes	73		Yes
Friday 2022-08-19	27		Yes	119		Yes

Date	Maximum 1hr Average PM _{2.5} and PM ₁₀ Concentration					
	PM _{2.5} Level (µg/m ³)	PM _{2.5} Limit (µg/m ³)	Complies	PM ₁₀ Level (µg/m ³)	PM ₁₀ Limit (µg/m ³)	Complies
Saturday 2022-08-20	12	62-97	Yes	89	80-120	Yes
Sunday 2022-08-21	13		Yes	35		Yes
Monday 2022-08-22	17		Yes	85		Yes
Tuesday 2022-08-23	200		Weather affected	309		Weather affected
Wednesday 2022-08-24	4		Yes	45		Yes
Thursday 2022-08-25	-		No data due to power outage	-		No data due to power outage
Friday 2022-08-26	13		Yes	49		Yes
Saturday 2022-08-27	6		Yes	23		Yes
Sunday 2022-08-28	6		Yes	47		Yes
Monday 2022-08-29	8		Yes	42		Yes
Tuesday 2022-08-30	8		Yes	45		Yes
Wednesday 2022-08-31	16		Yes	59		Yes
Thursday 2022-09-01	9		Yes	47		Yes
Friday 2022-09-02	42		Weather affected	272		Weather affected

Exceedances on 23th August and 2nd September were caused by extreme weather conditions.

5 CONCLUSION

Acoustic Logic Consultancy has carried out noise, dust and vibration monitoring for the construction activity at Tweed Valley Hospital Health Hub.

This monitoring report presents the noise and vibration monitoring for the periods as follows:

- Vibration Monitoring: 3rd of August to 2nd of September 2022
- Noise Monitoring: 3rd of August to 2nd of September 2022, and
- Dust Monitoring: 3rd of August to 2nd of September 2022.

Vibration levels were below the criteria during the whole monitoring period. Noise levels were normally below 10dB(A) exceedance of noise affected level (55dB(A)). This is believed to be lower at the closest residential receiver due to distance attenuation. Dust measurements exceeded the criteria limits on the 23rd August and 2nd September, however were determined to be the result of extreme weather conditions instead of construction works as per the results notes in this report.

Please contact us should you have any further queries.

Yours faithfully,

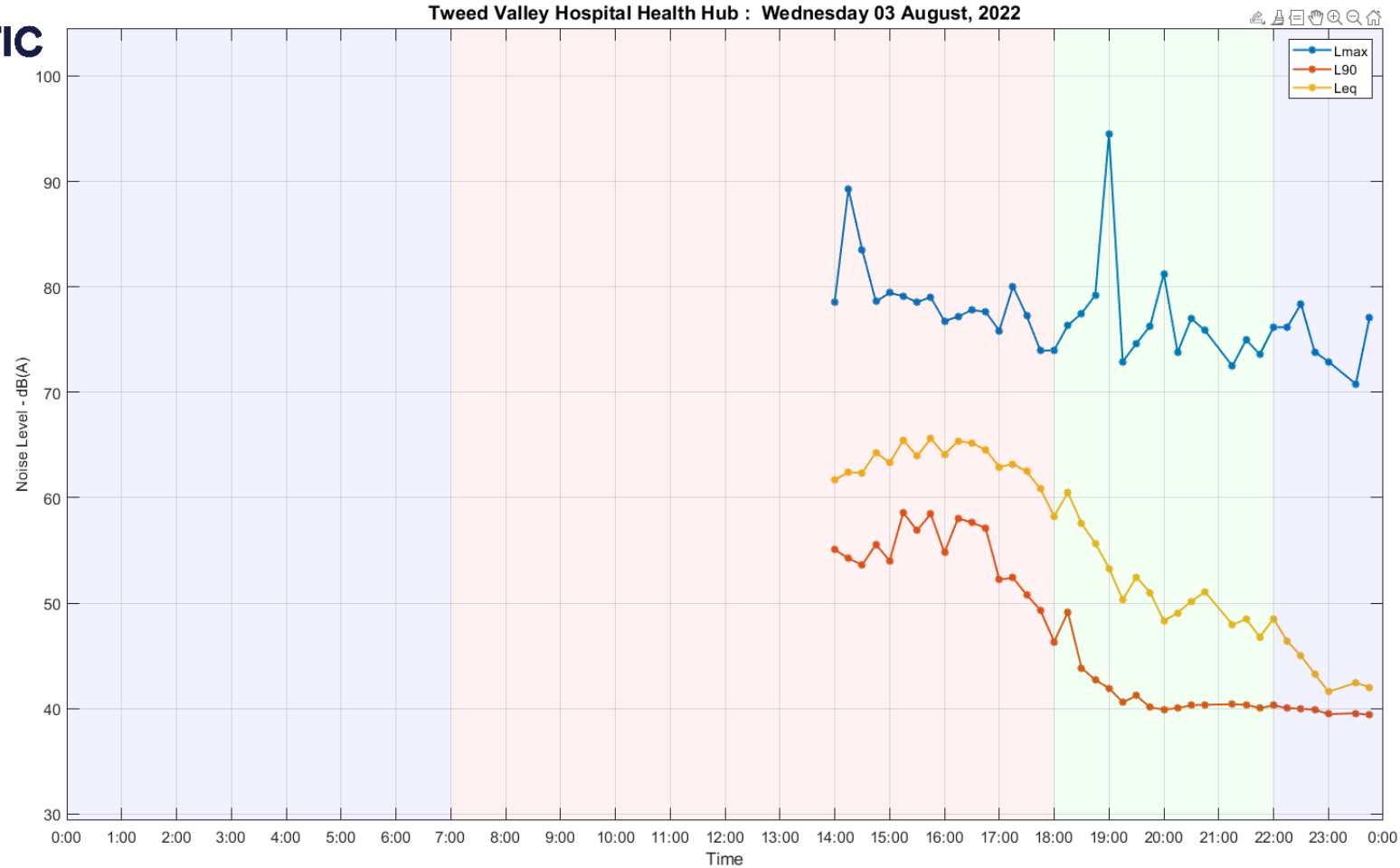
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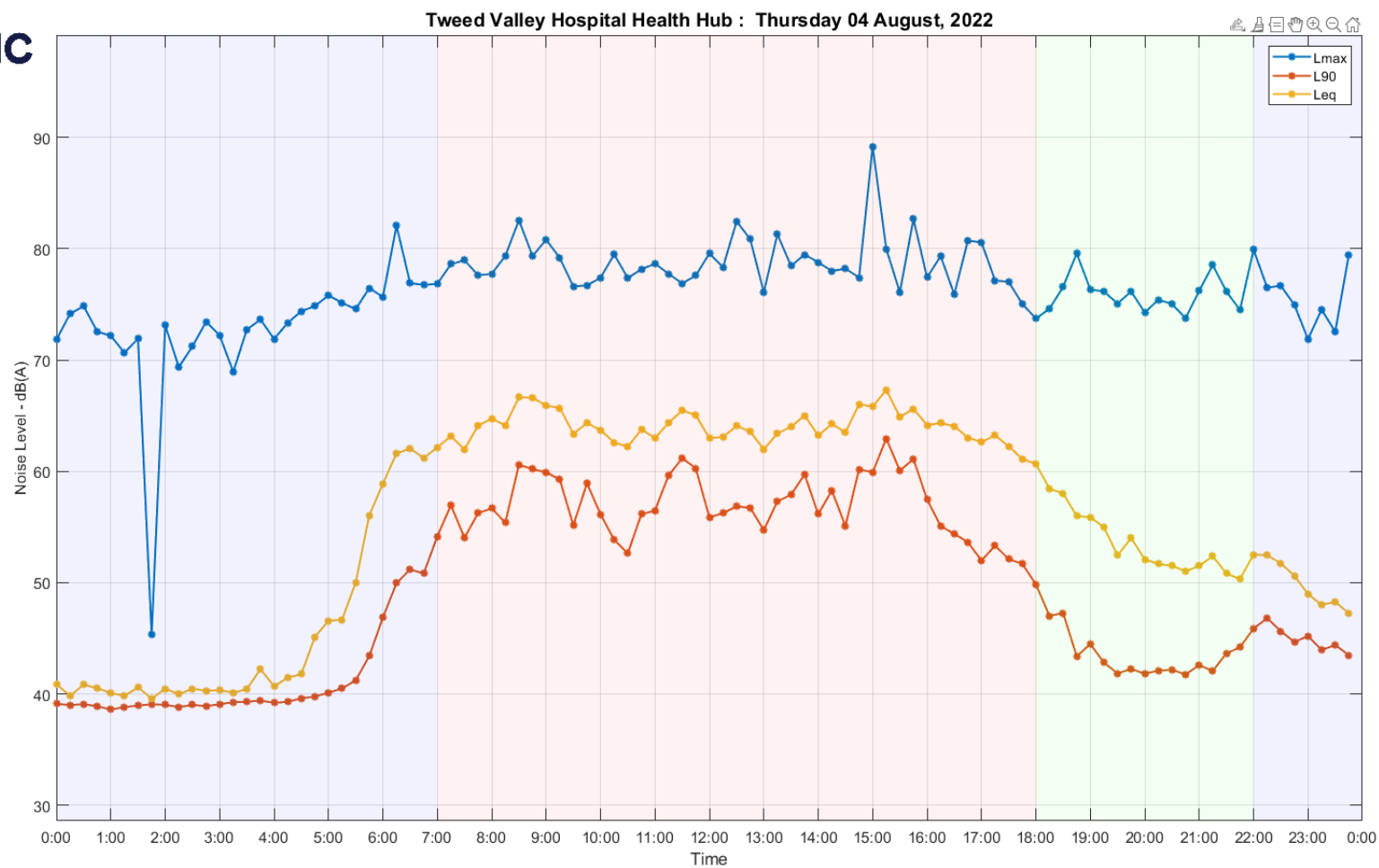
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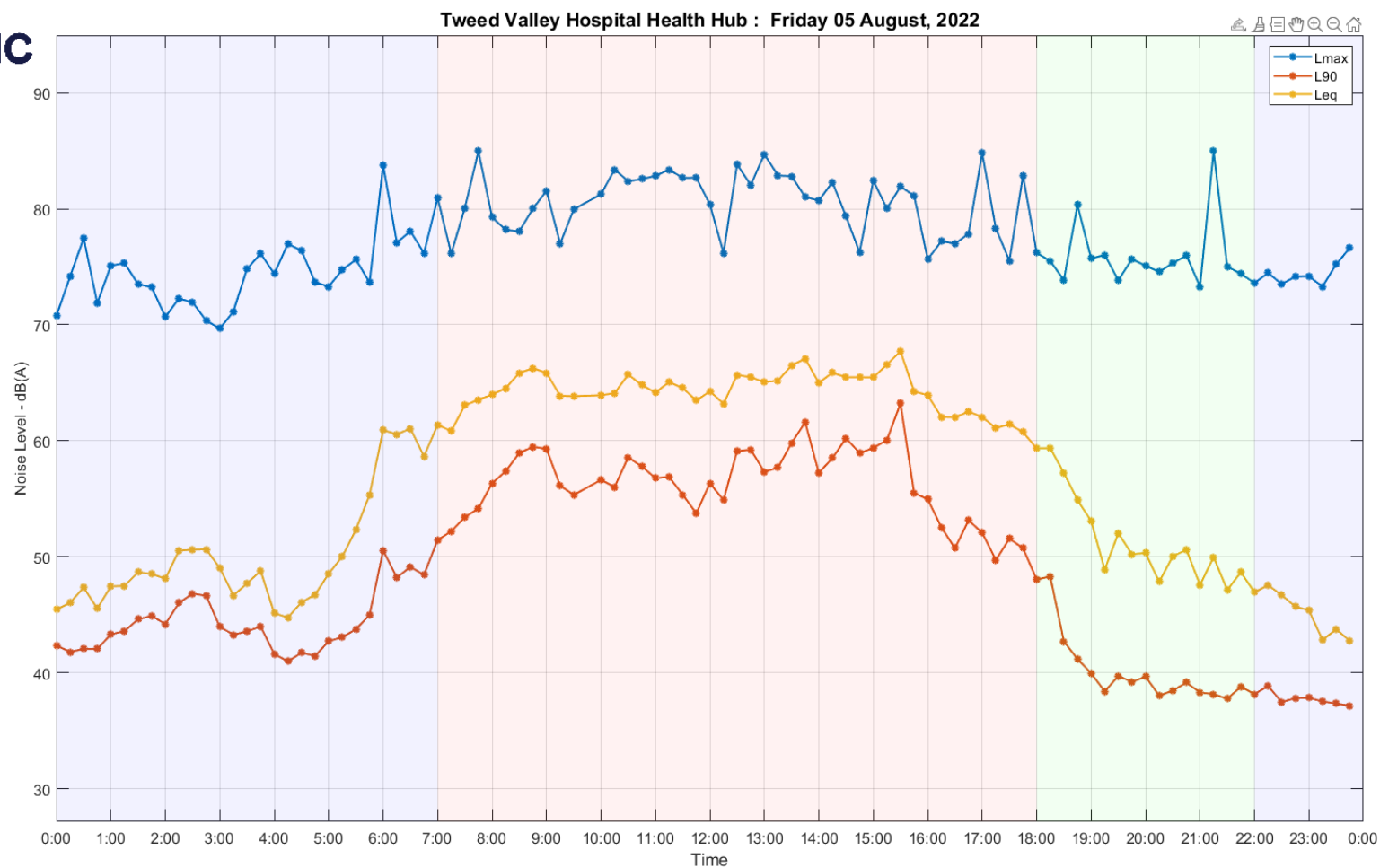


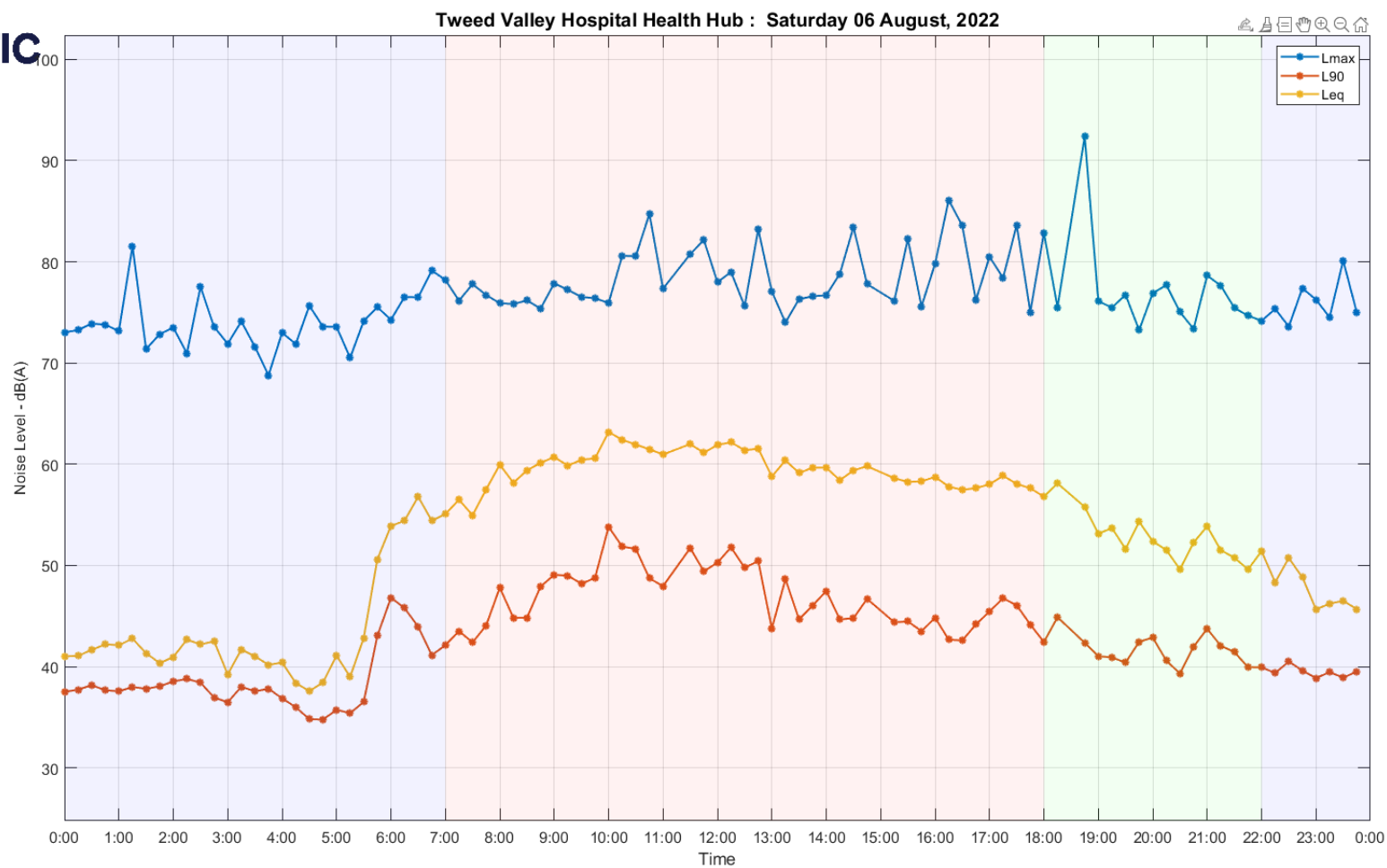
APPENDIX 1 – NOISE MONITORING RESULTS

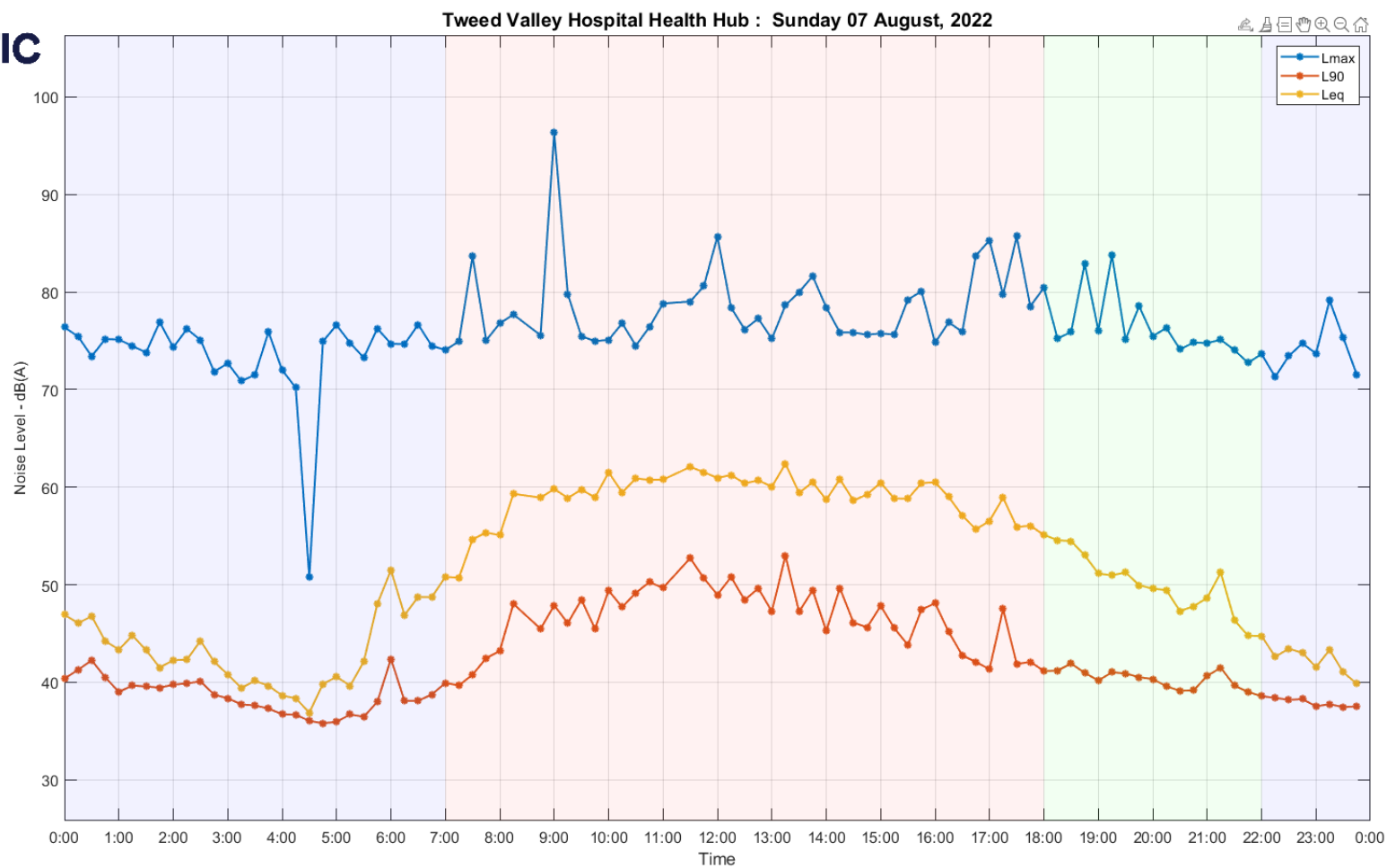
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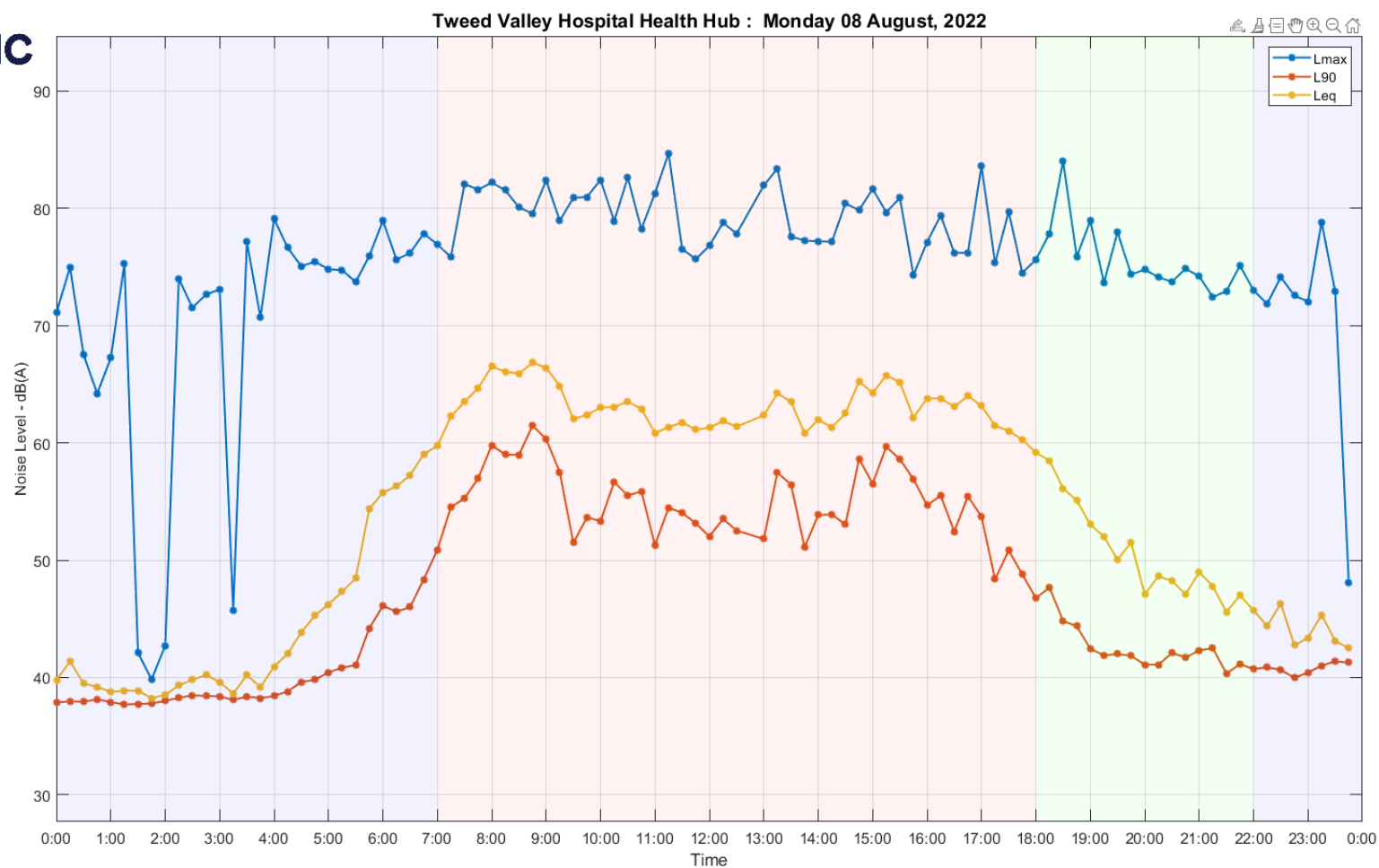


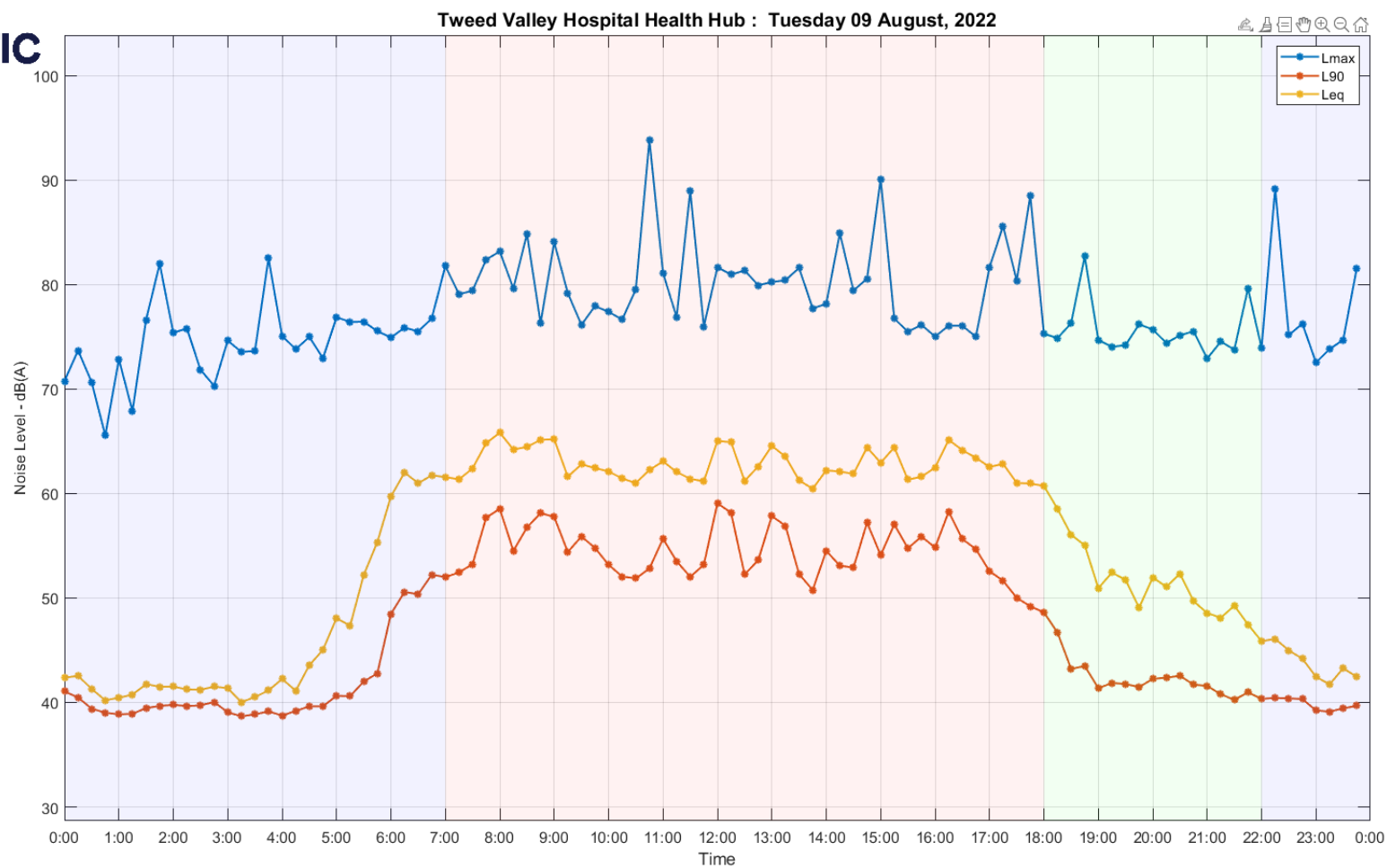


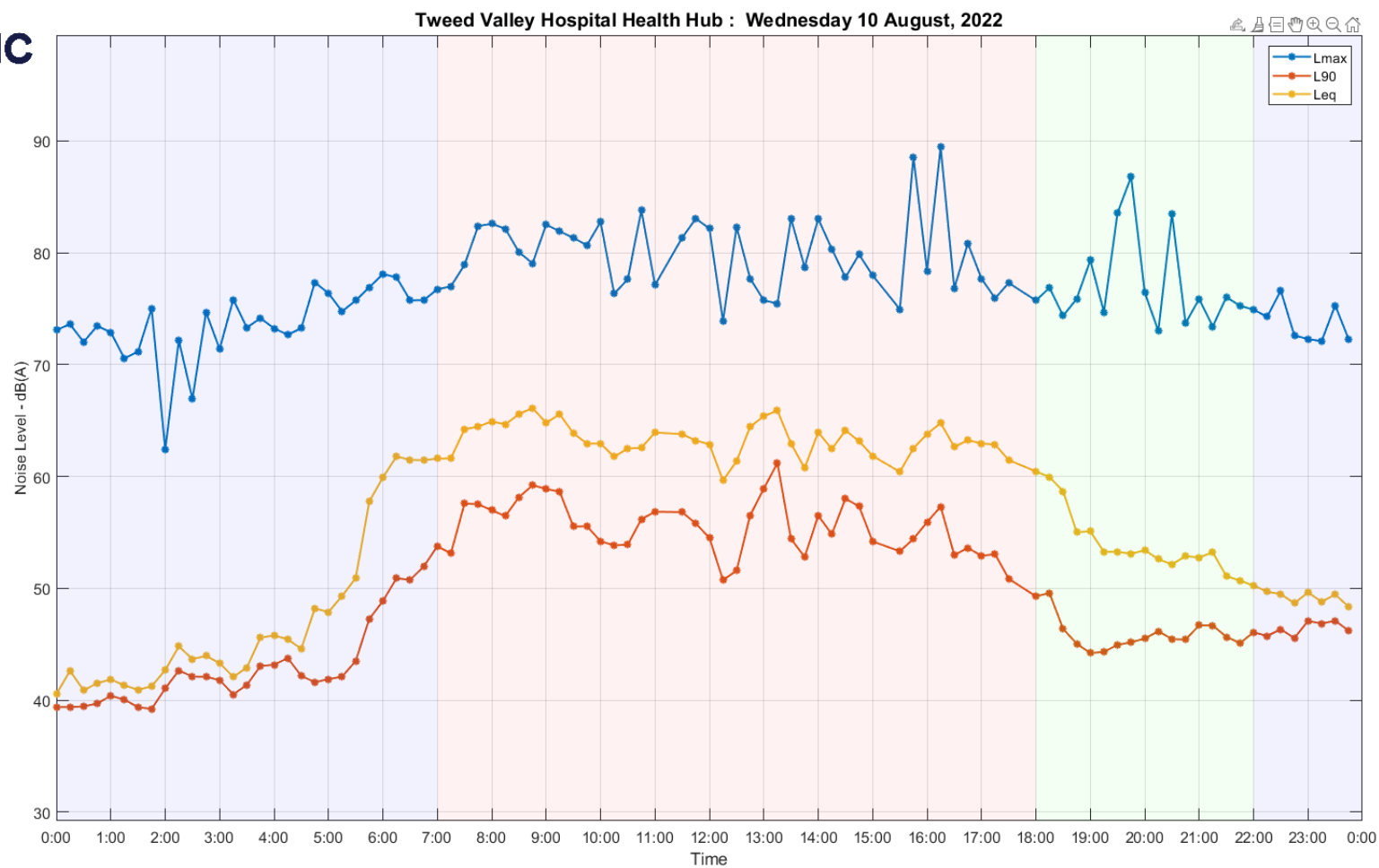


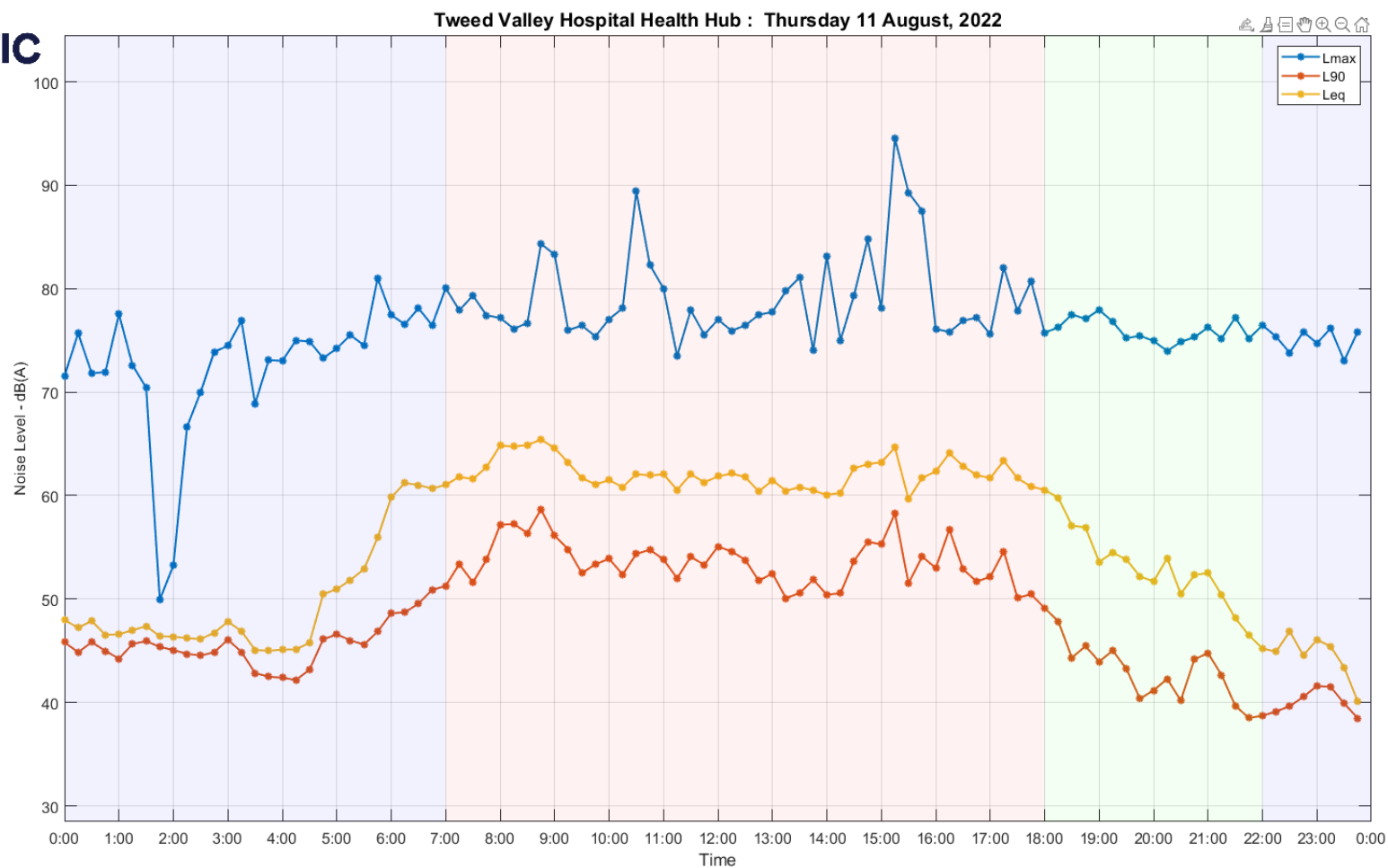


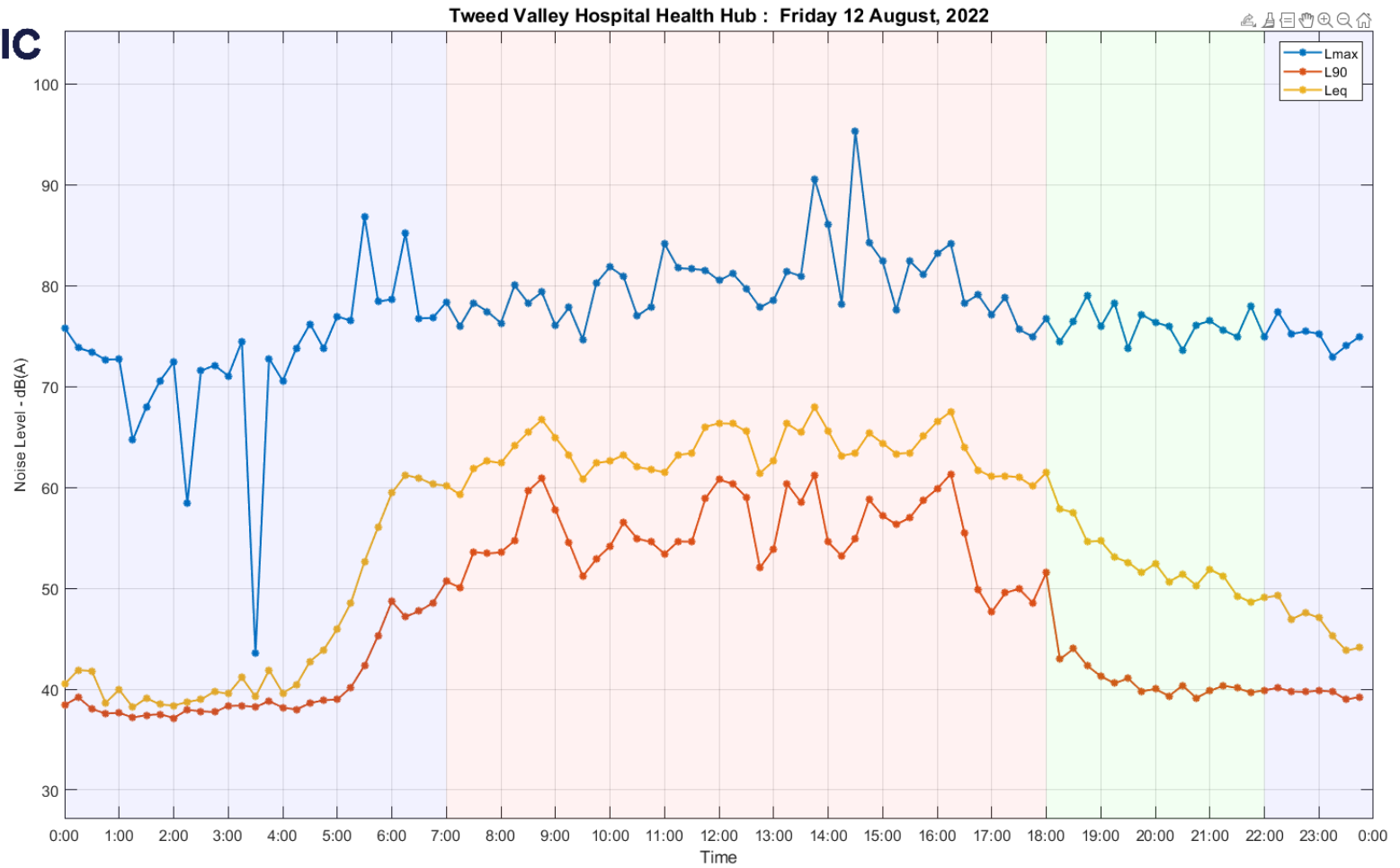


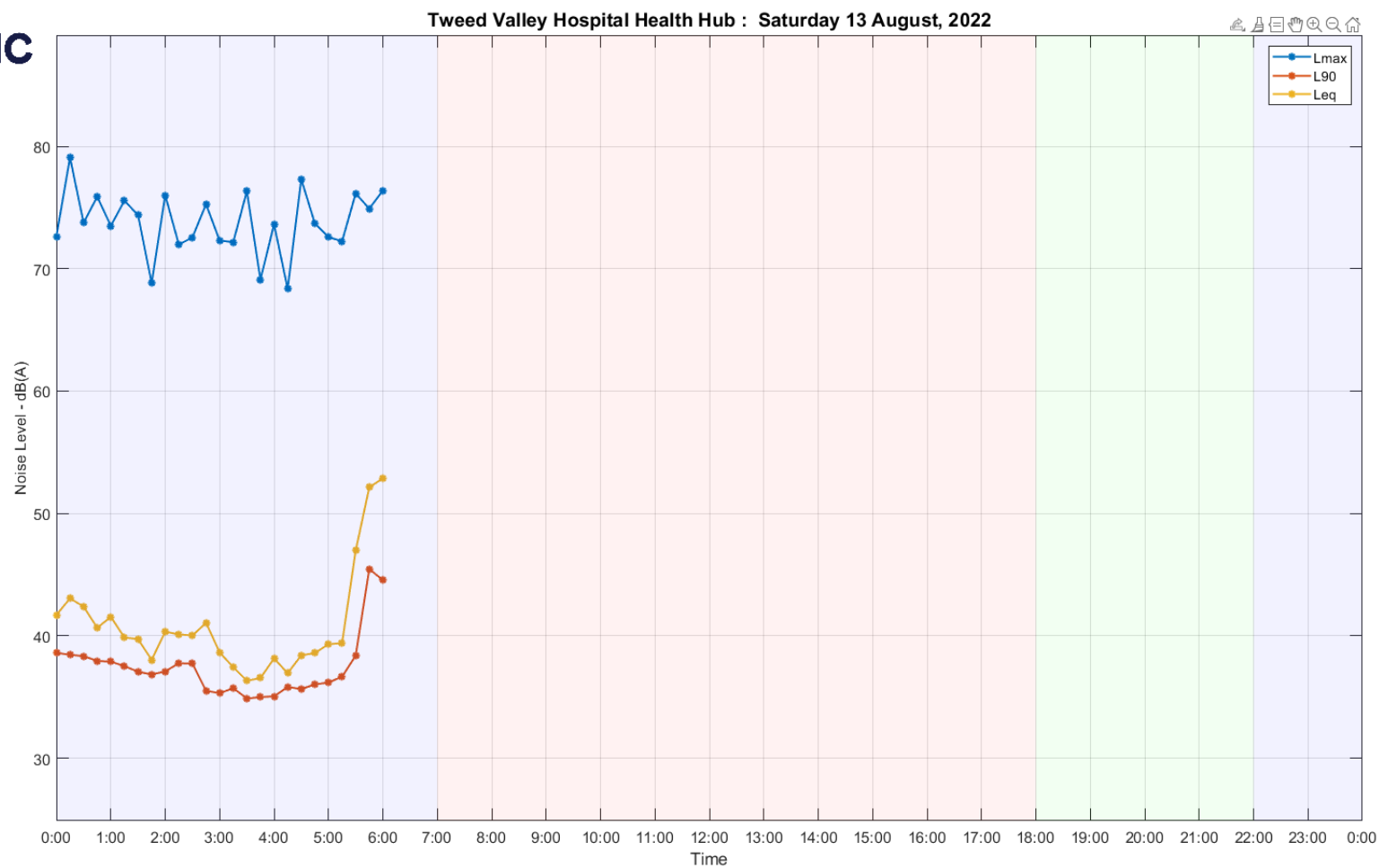


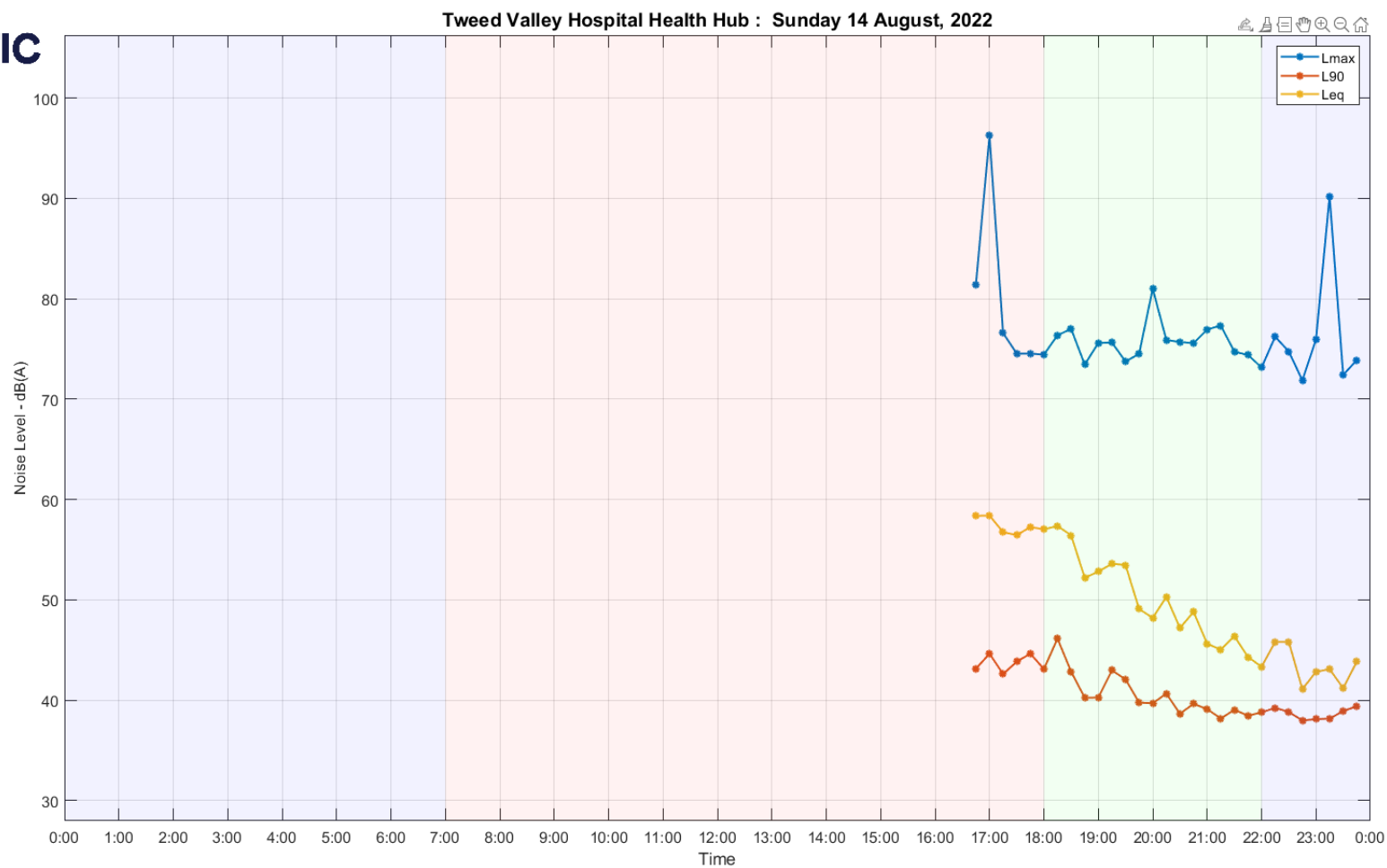


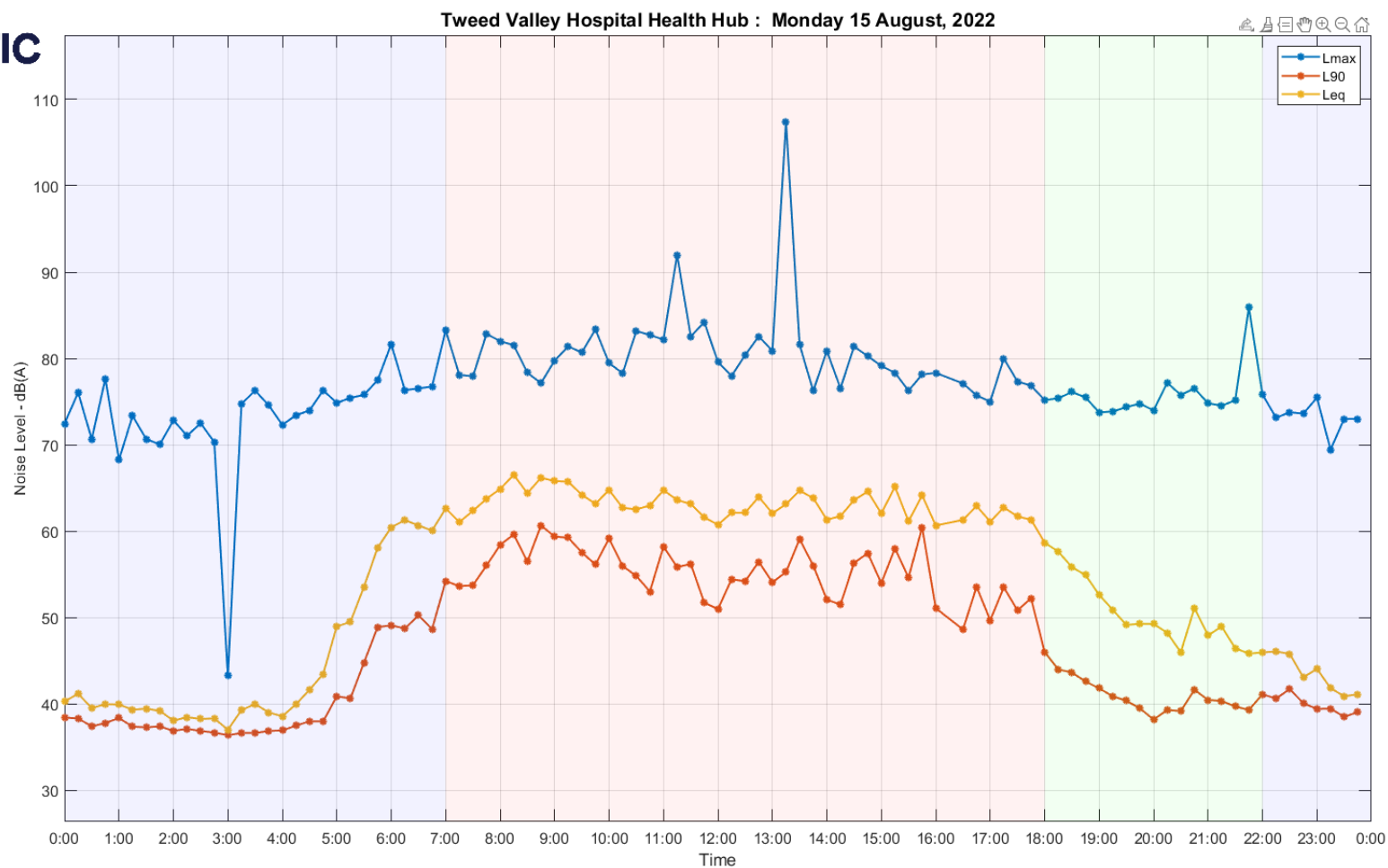


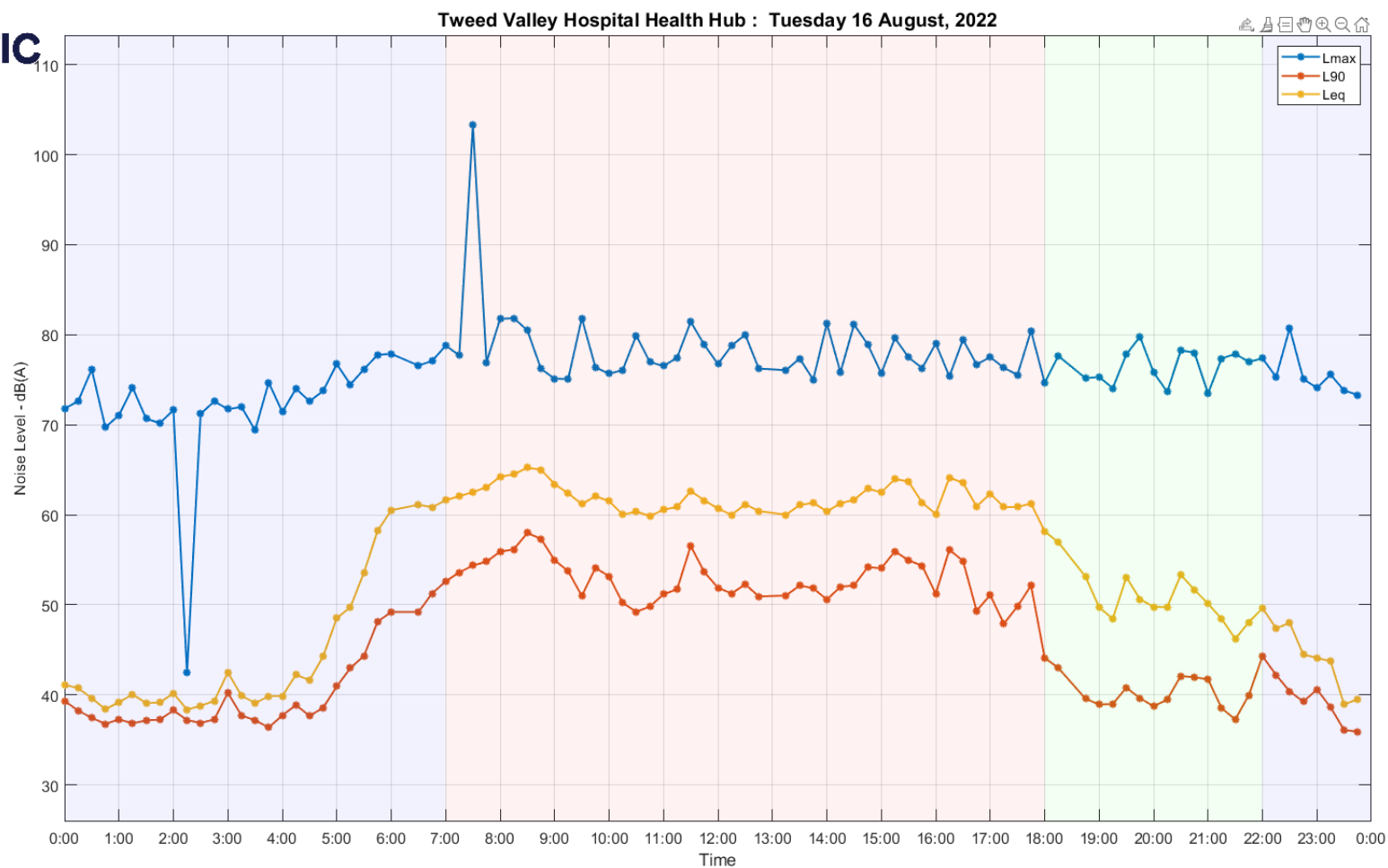


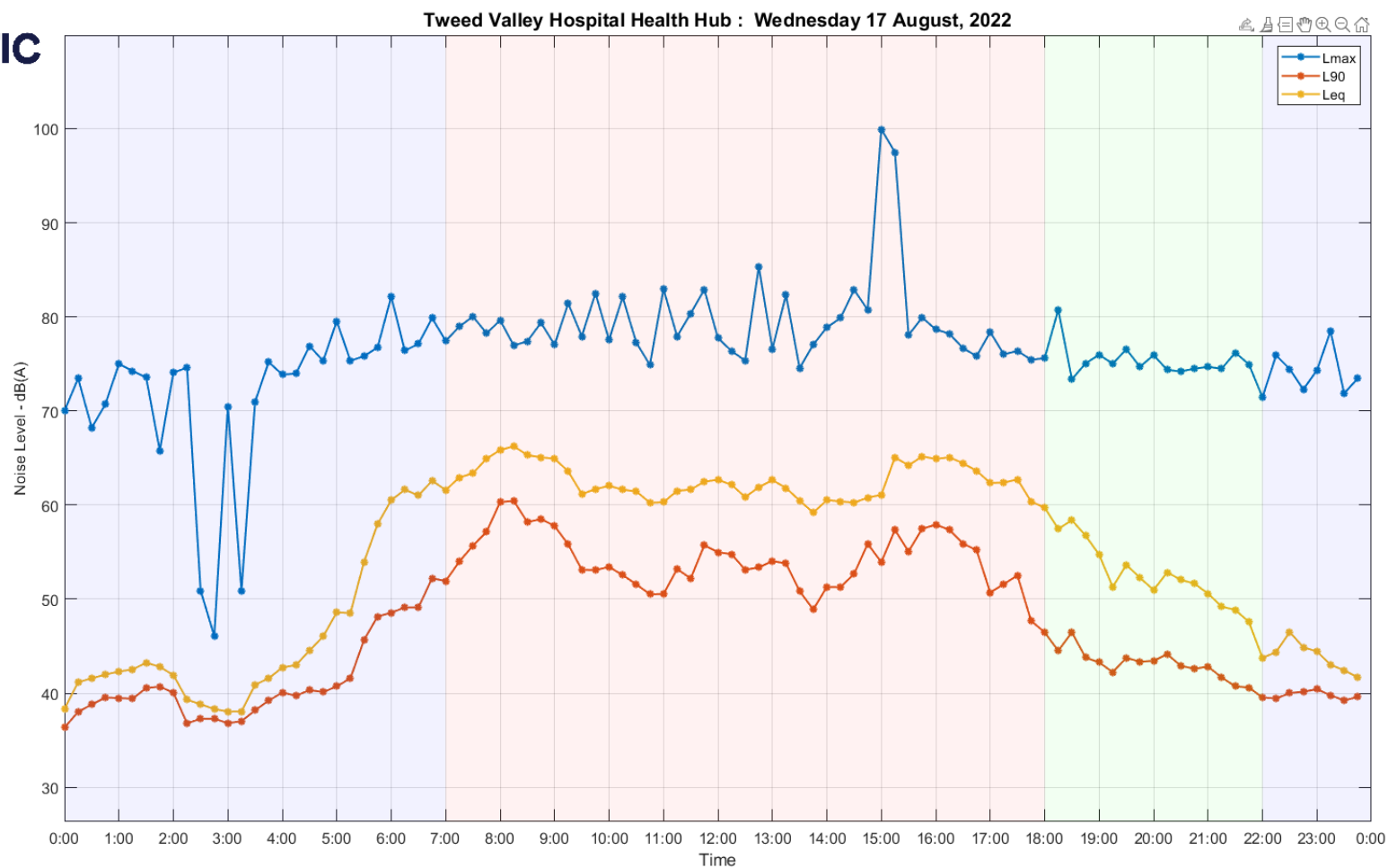


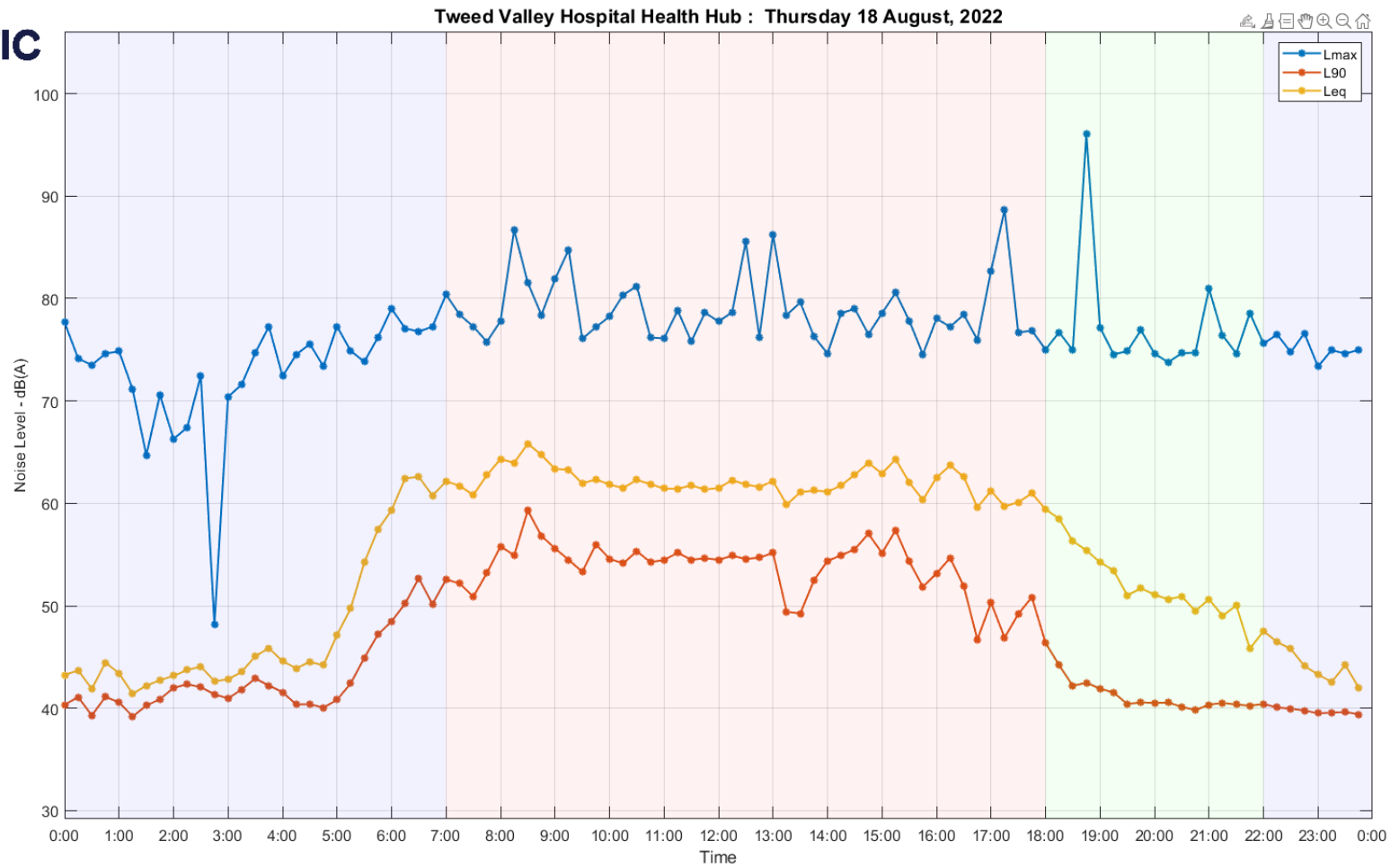


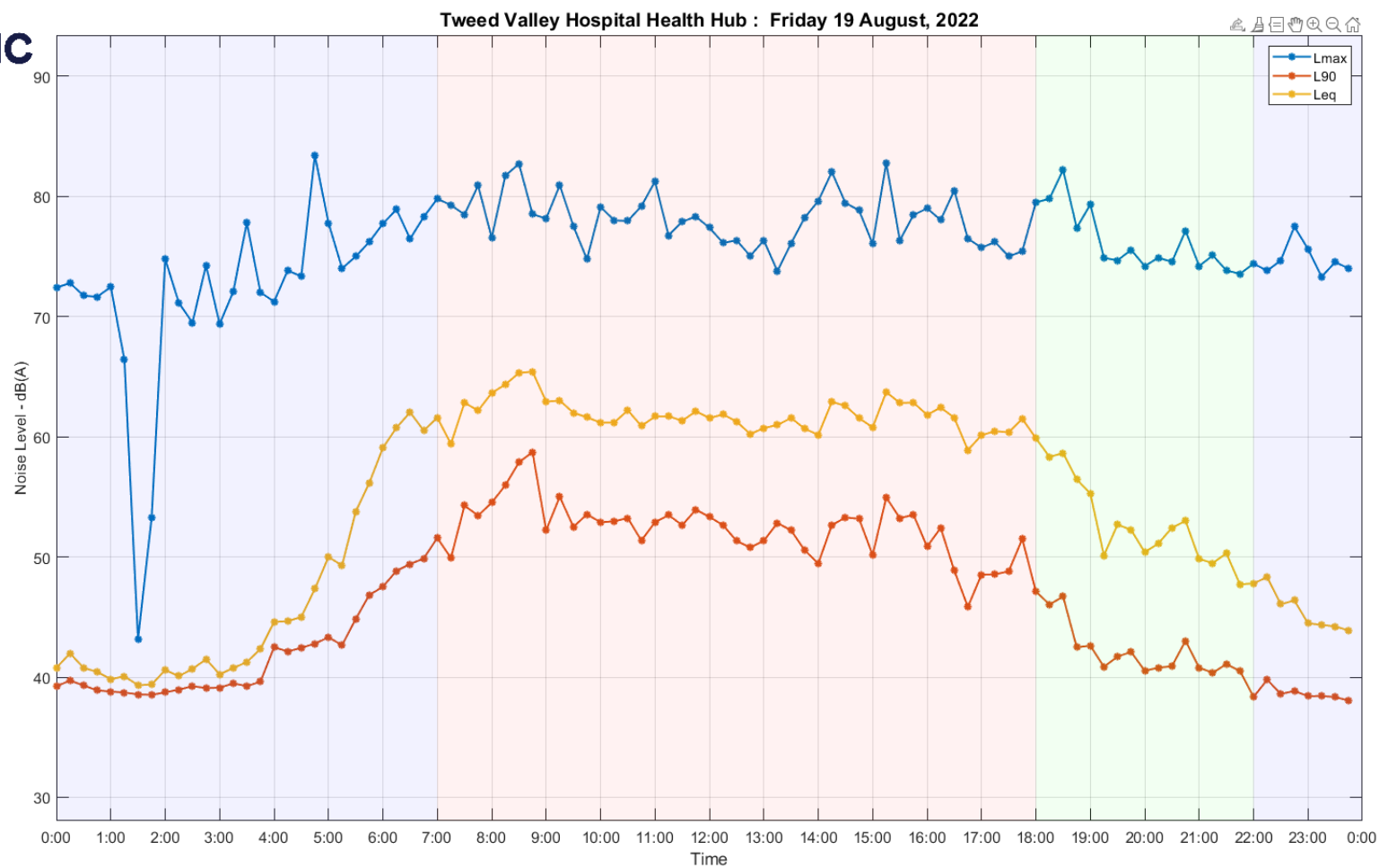


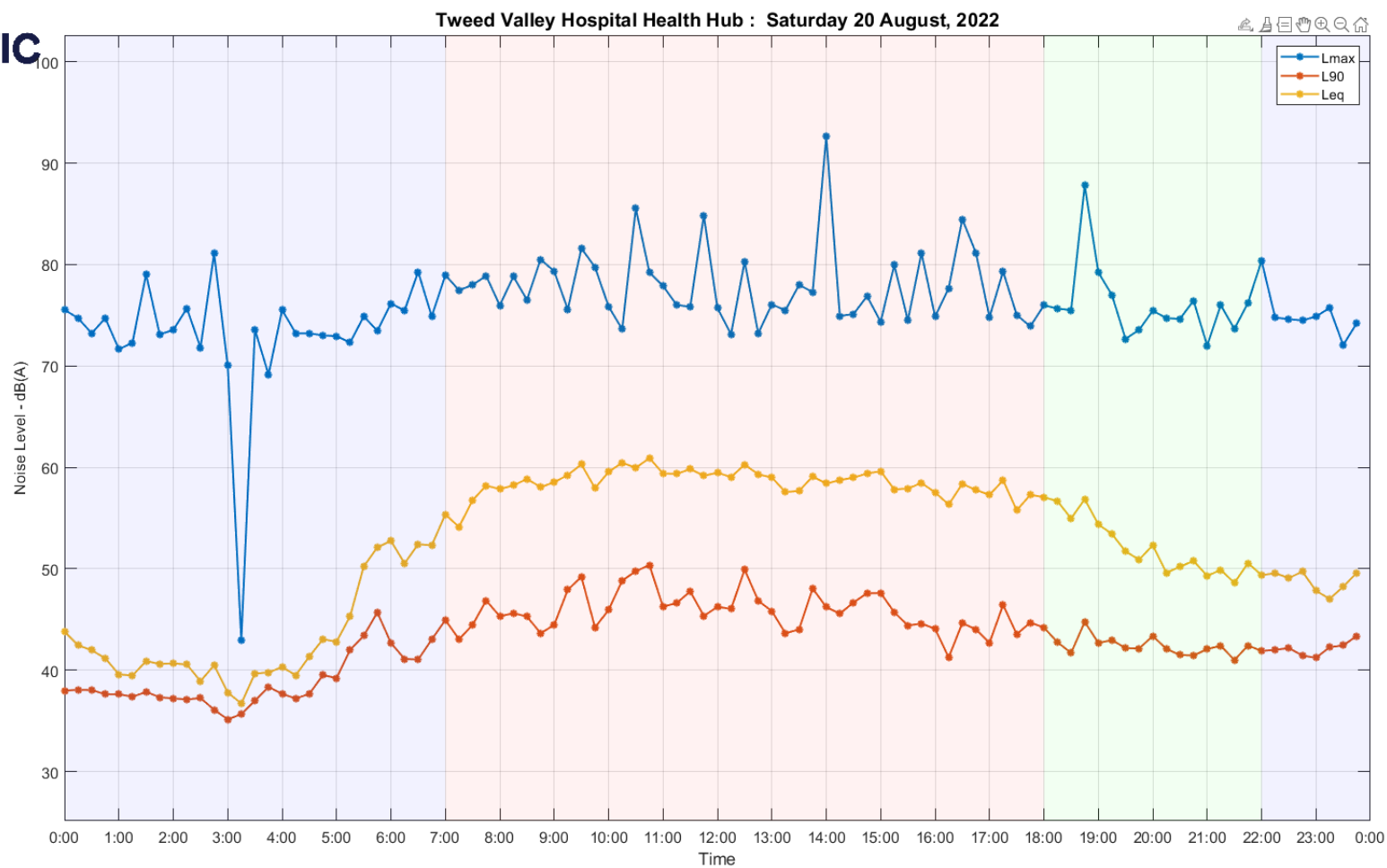


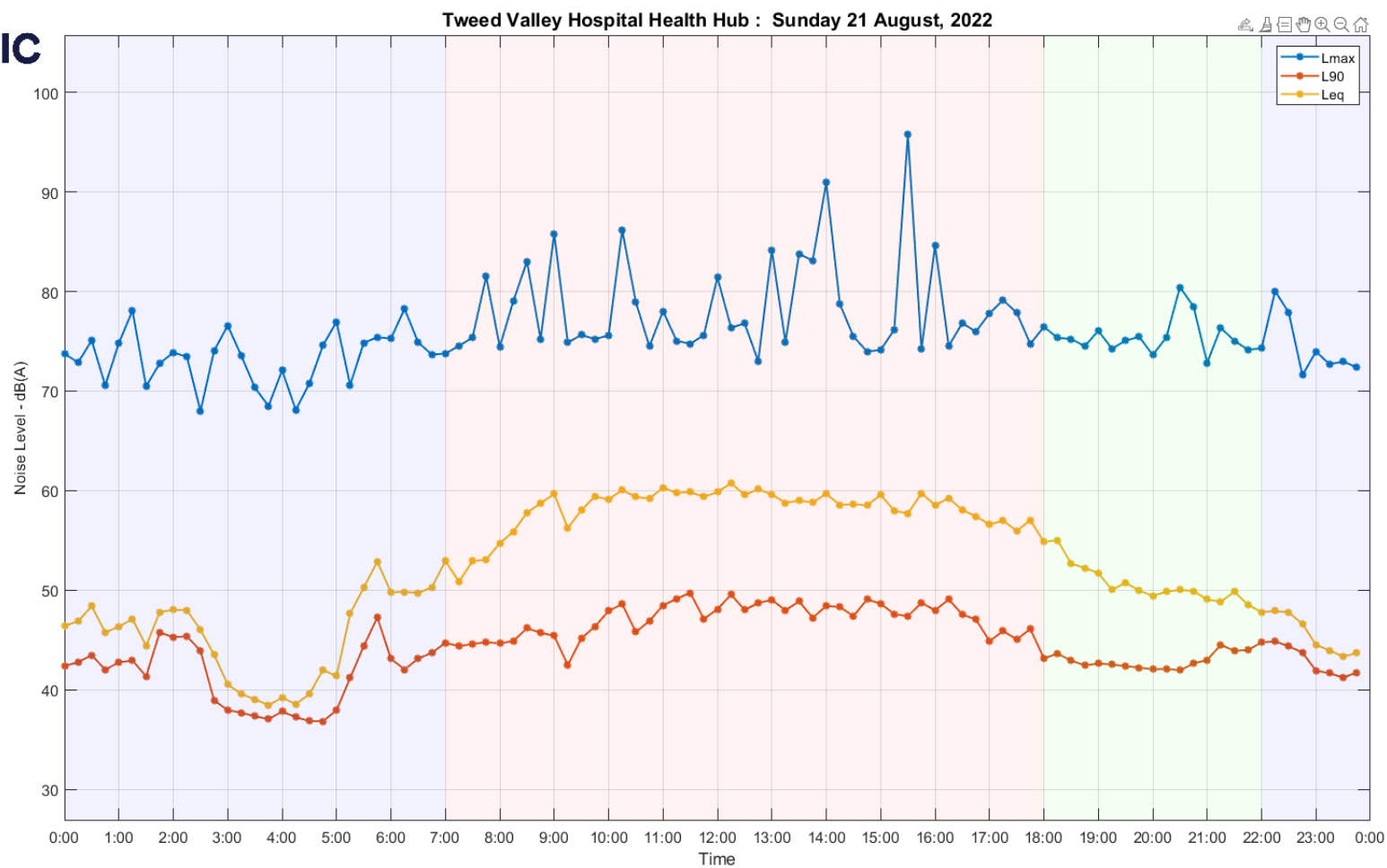


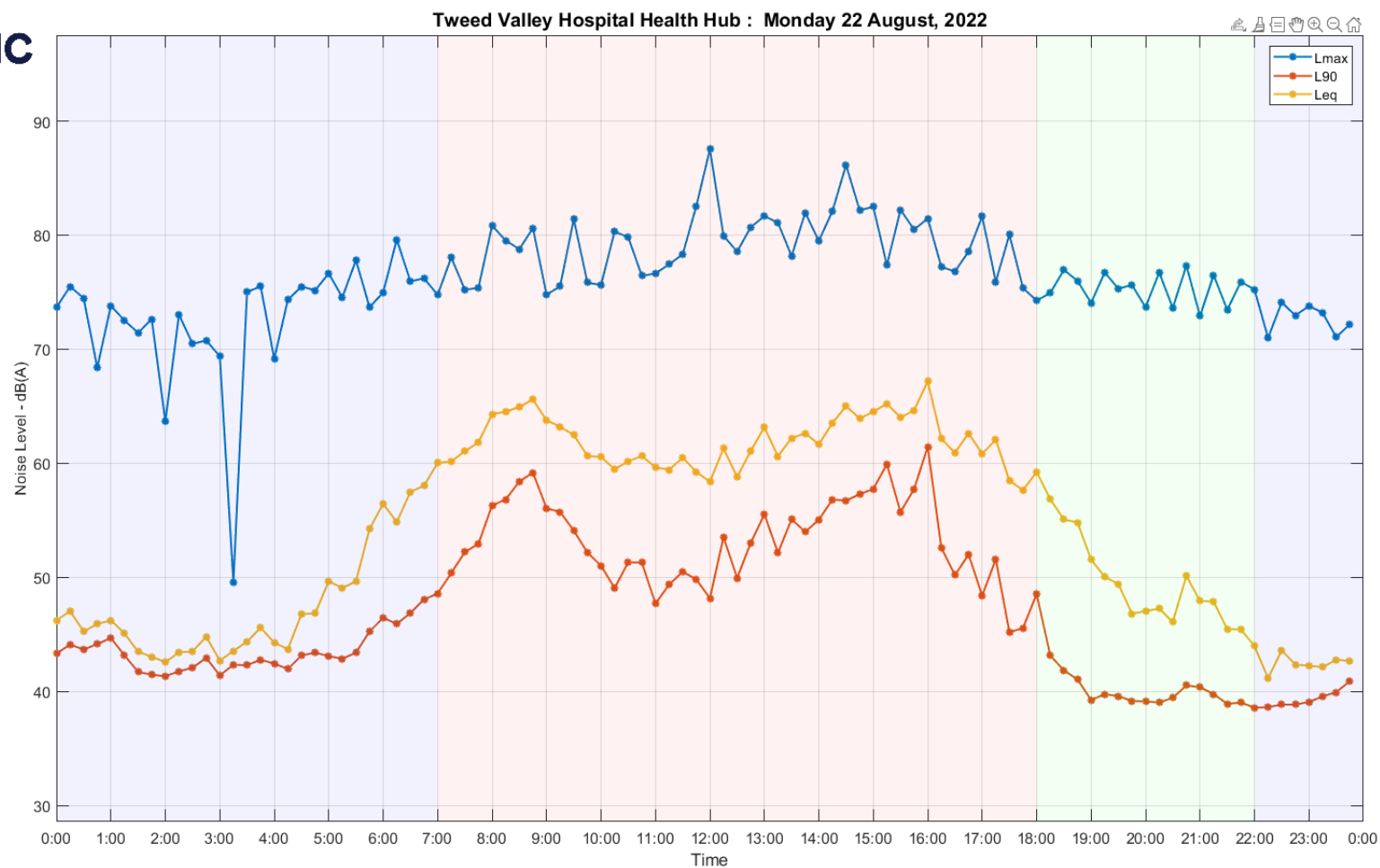


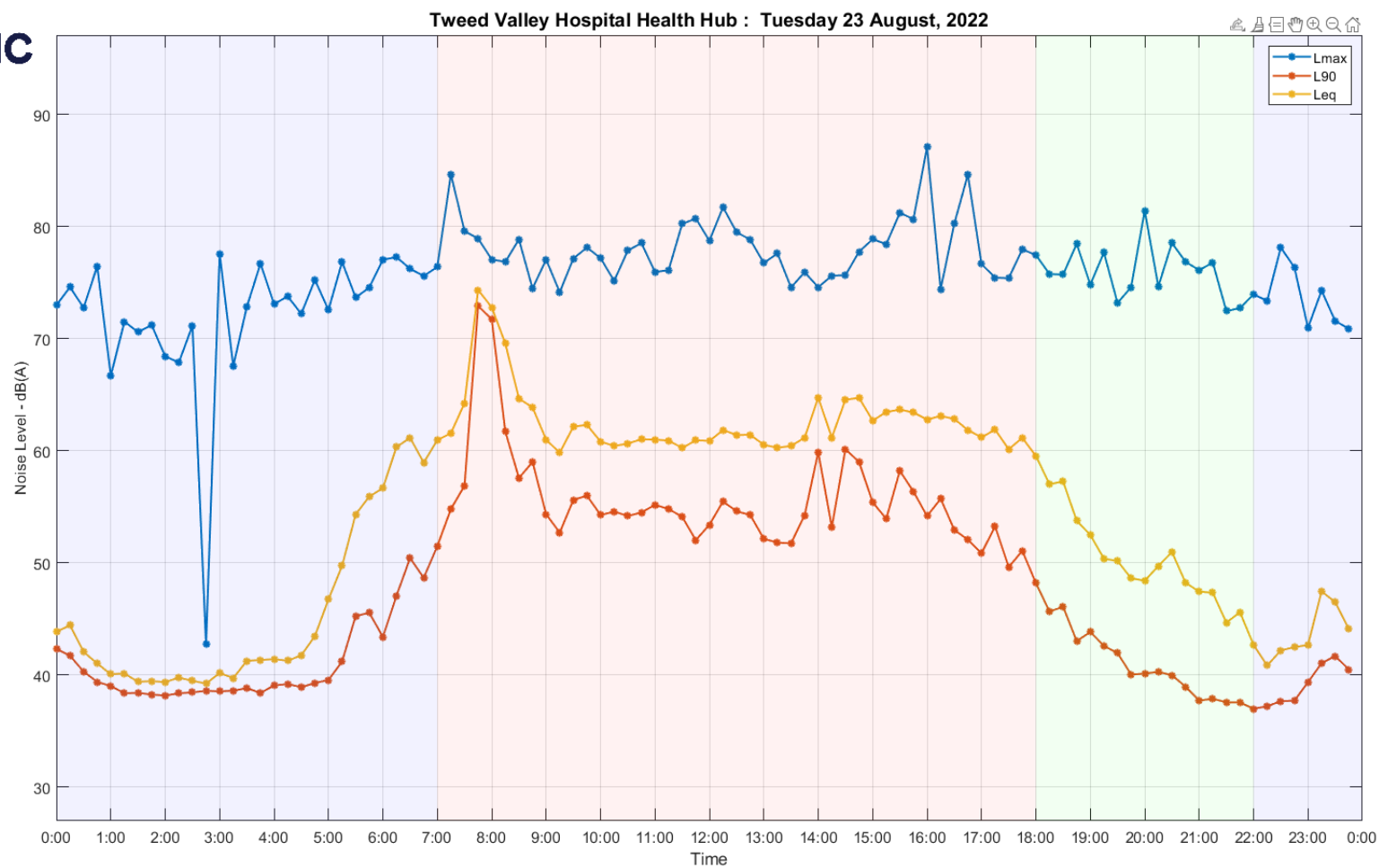


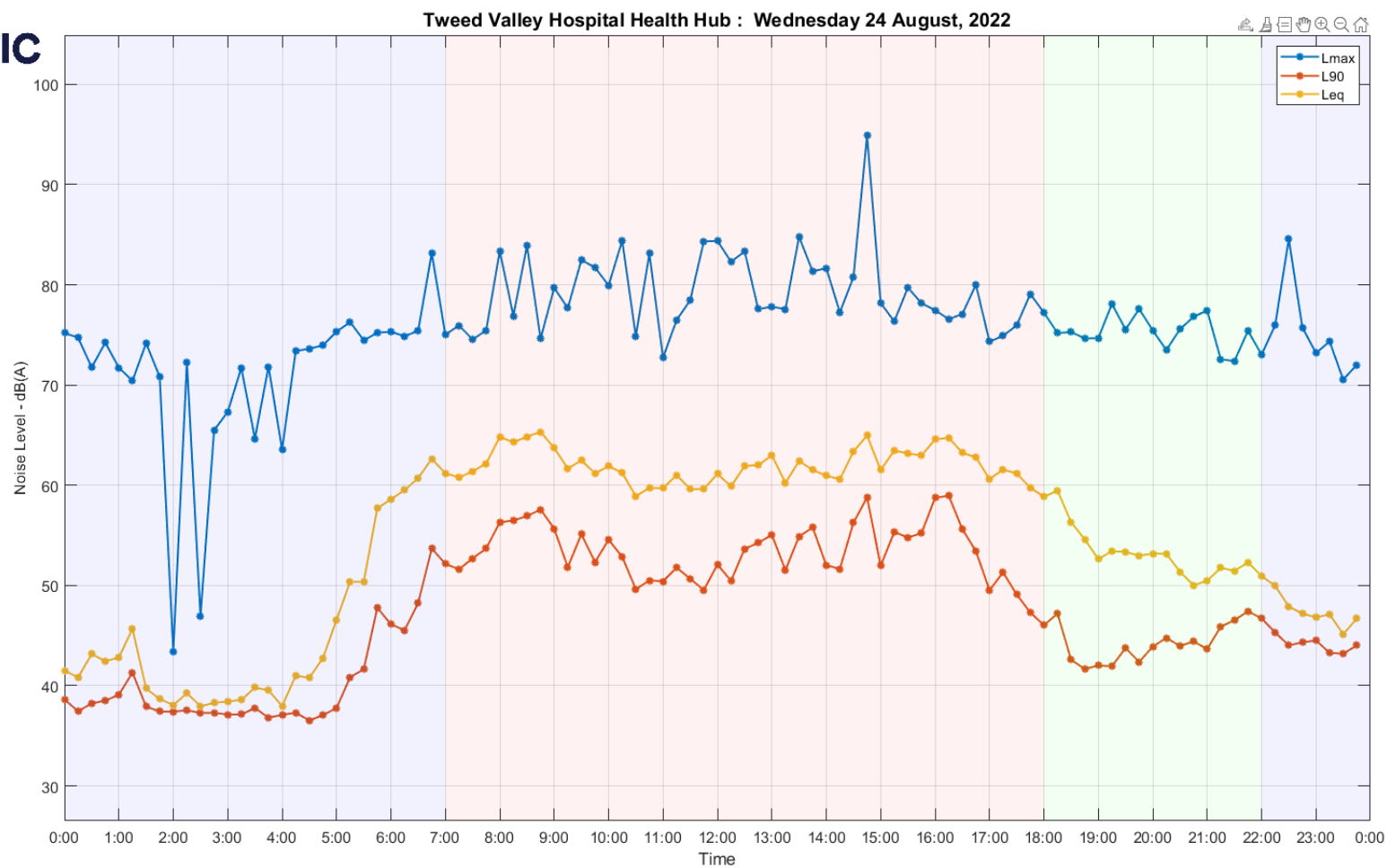


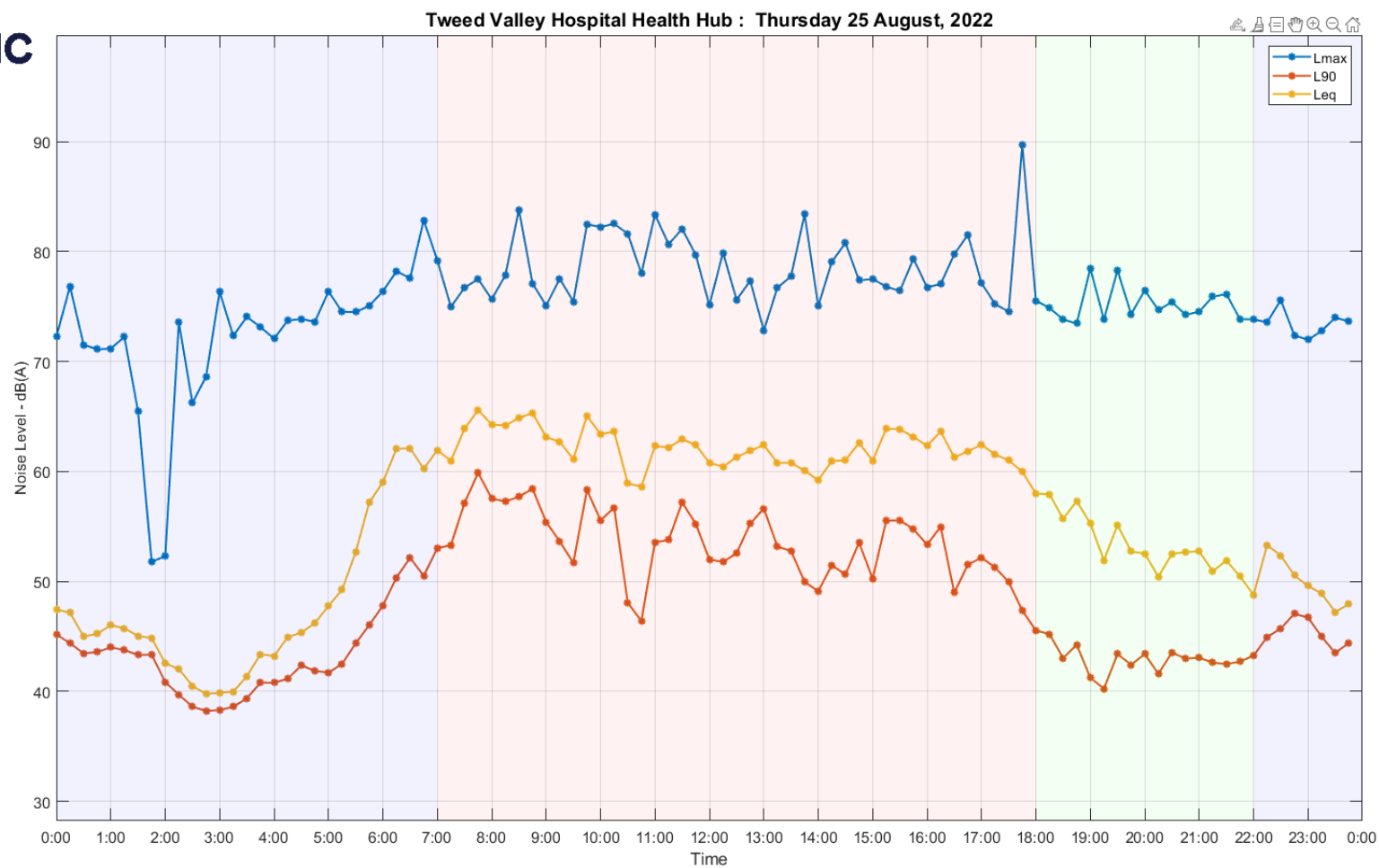


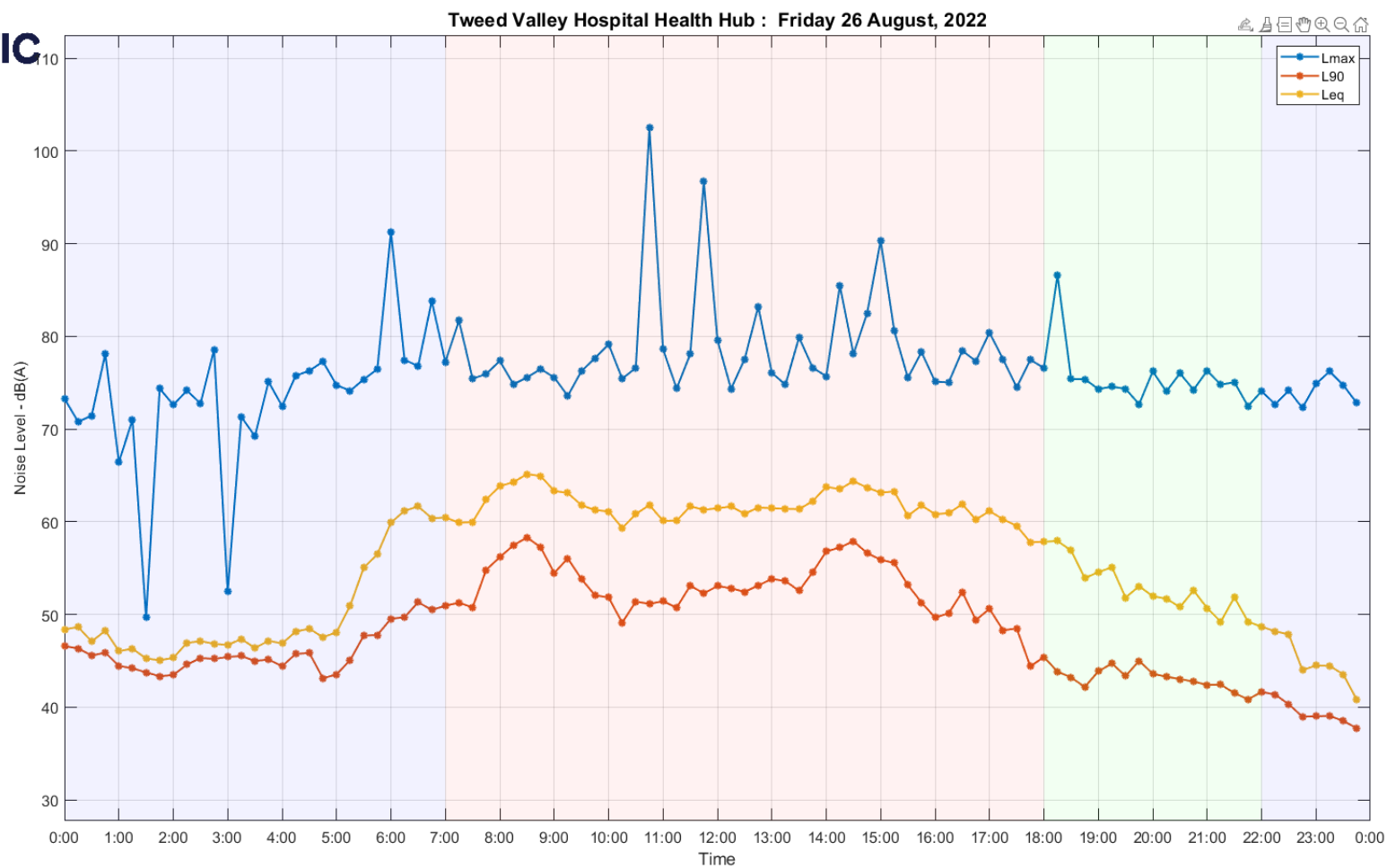


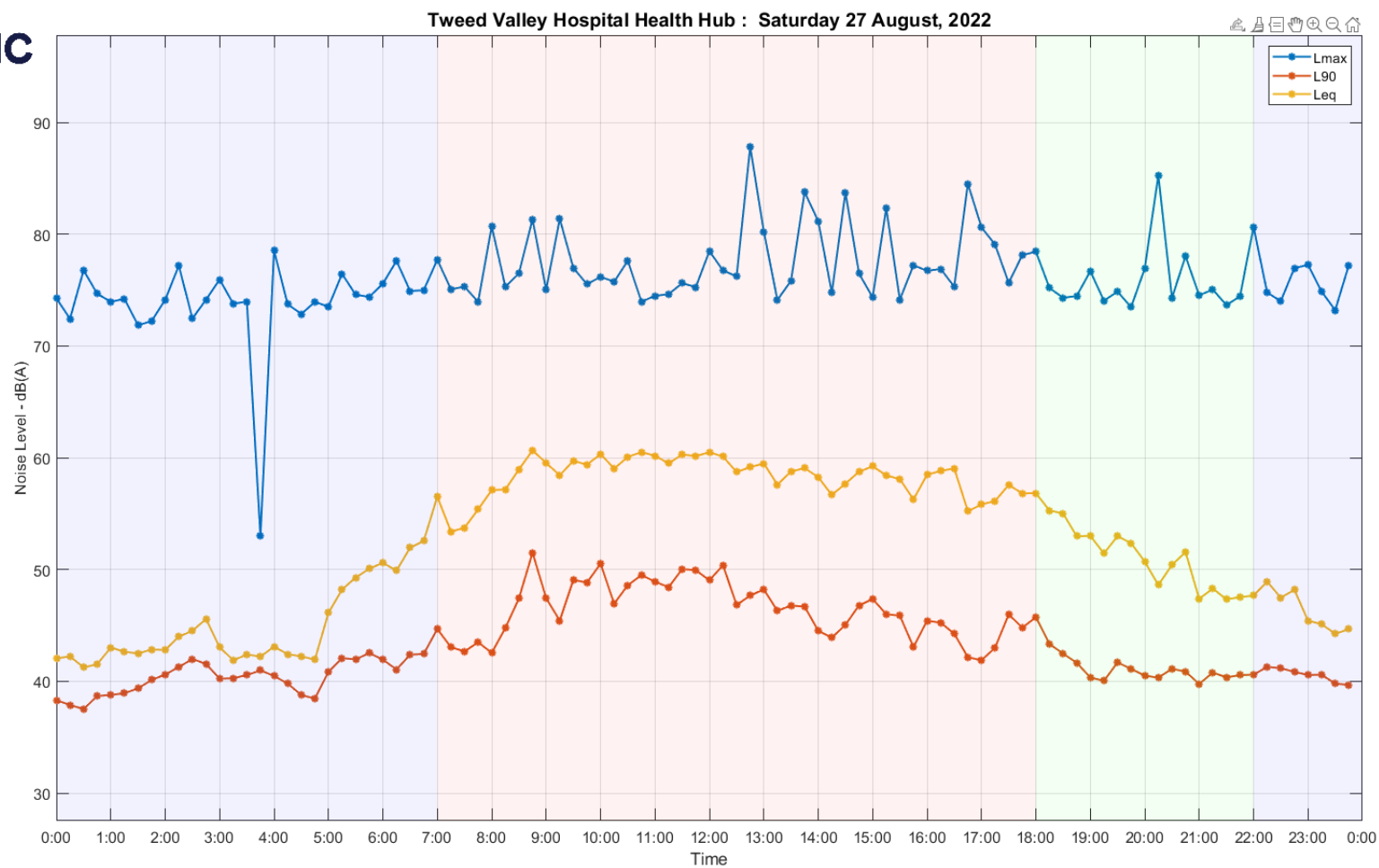


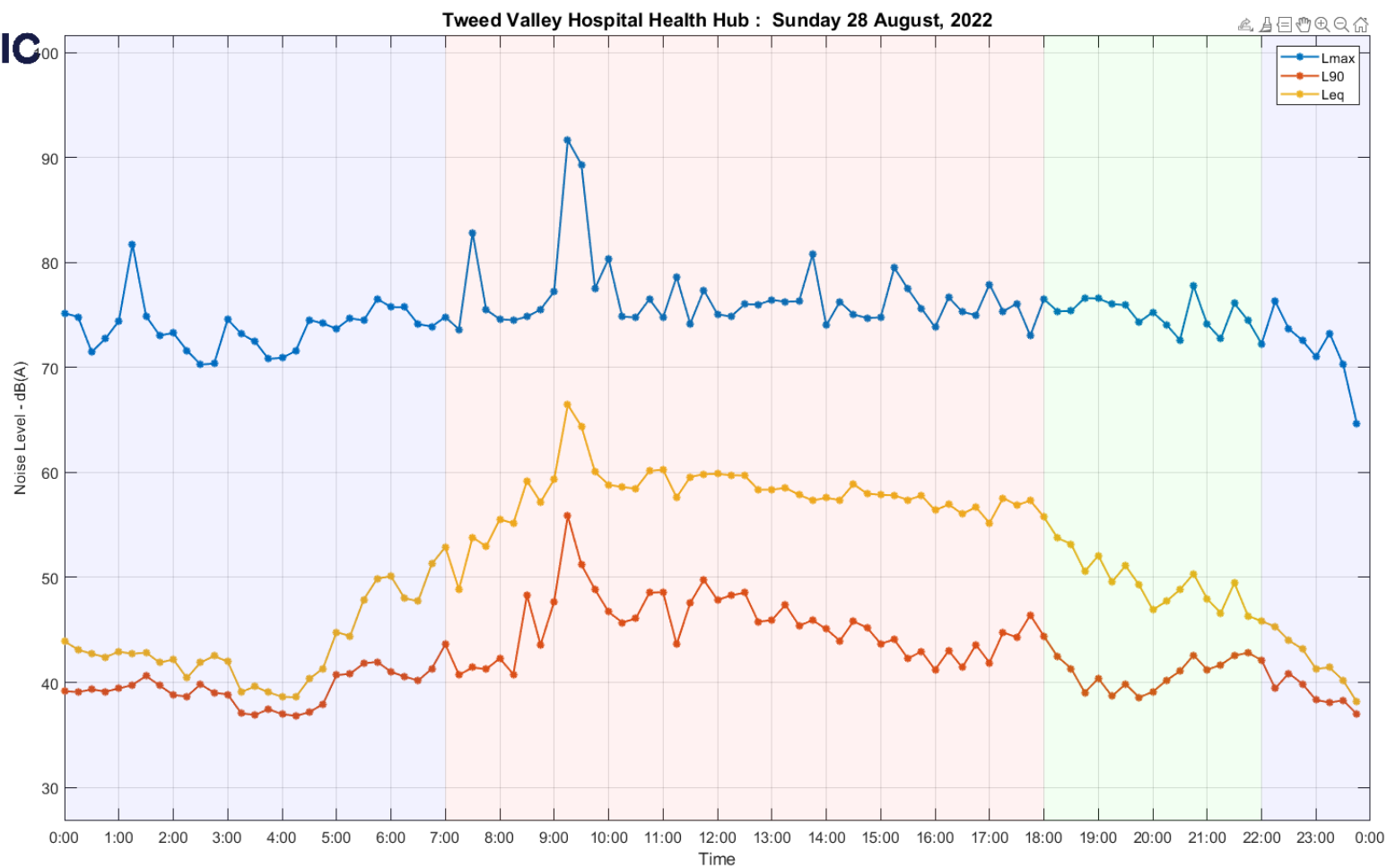


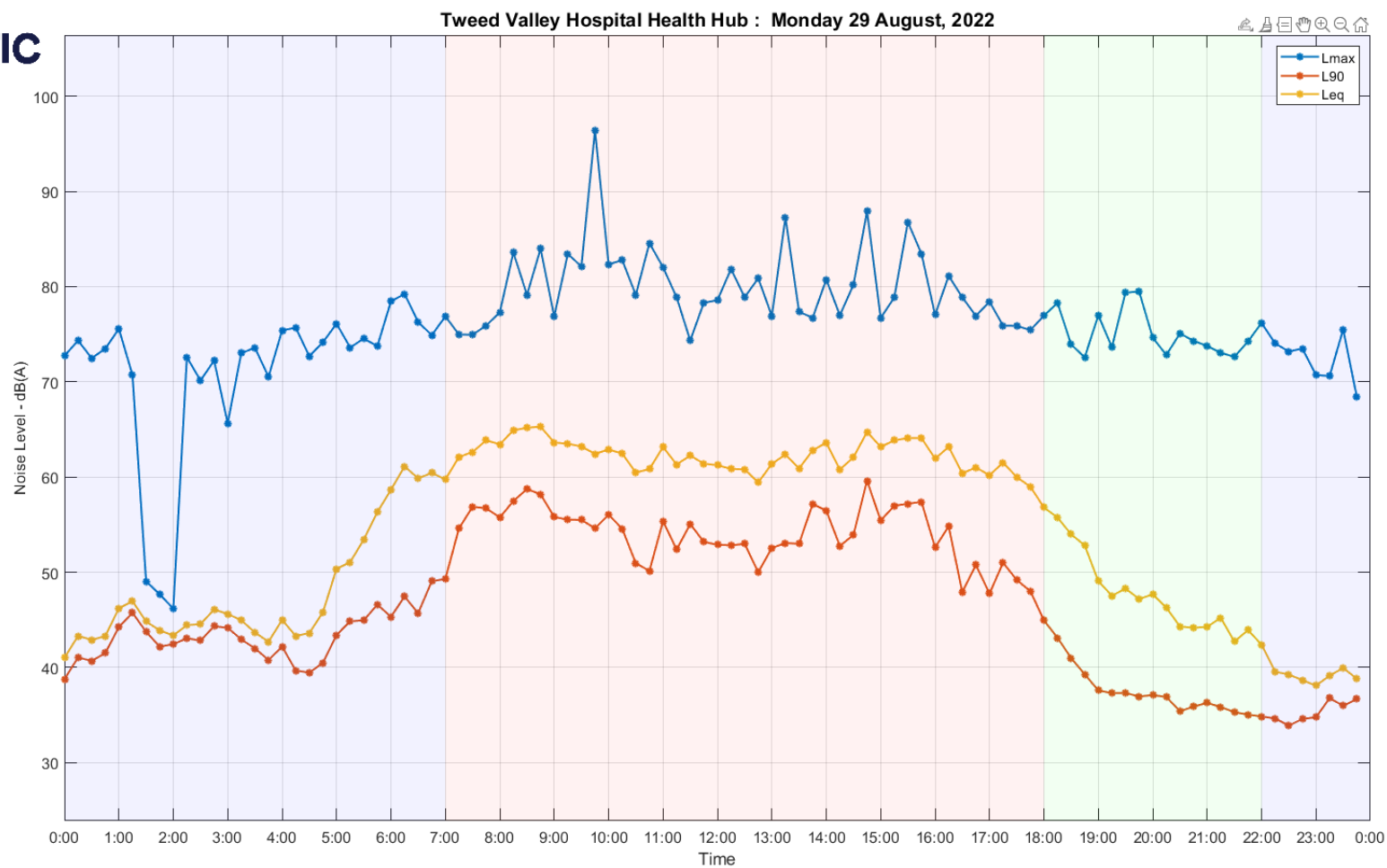


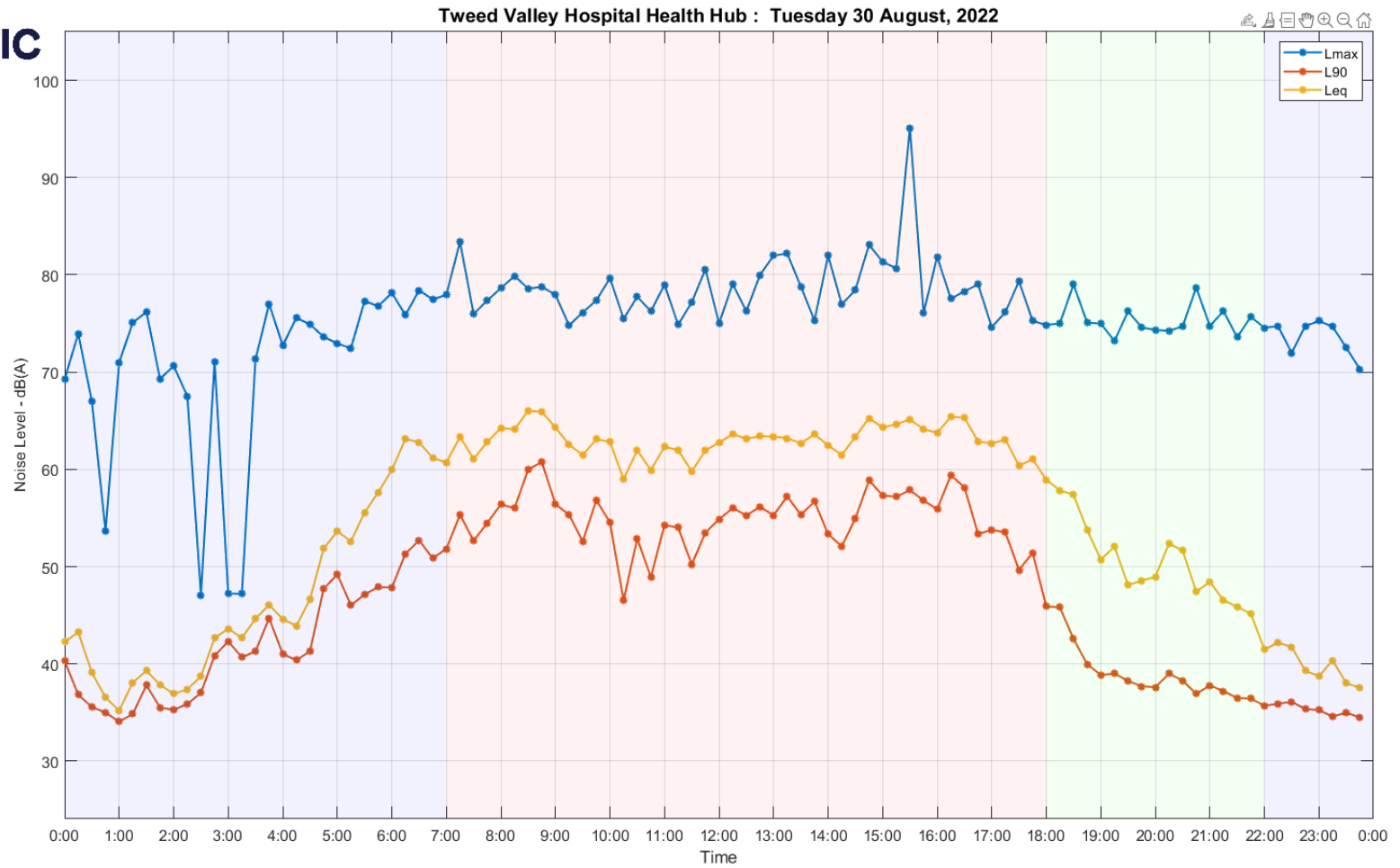


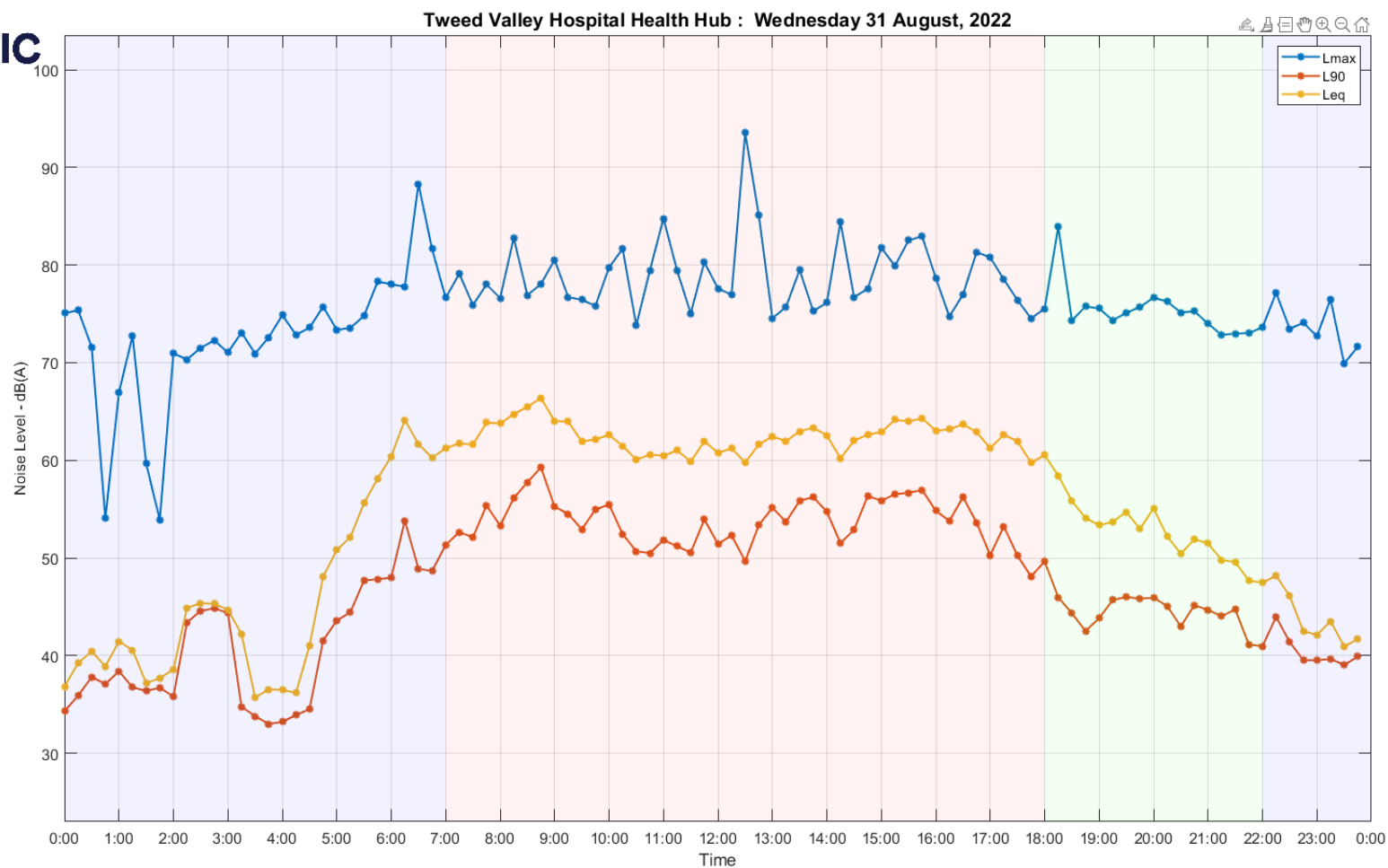


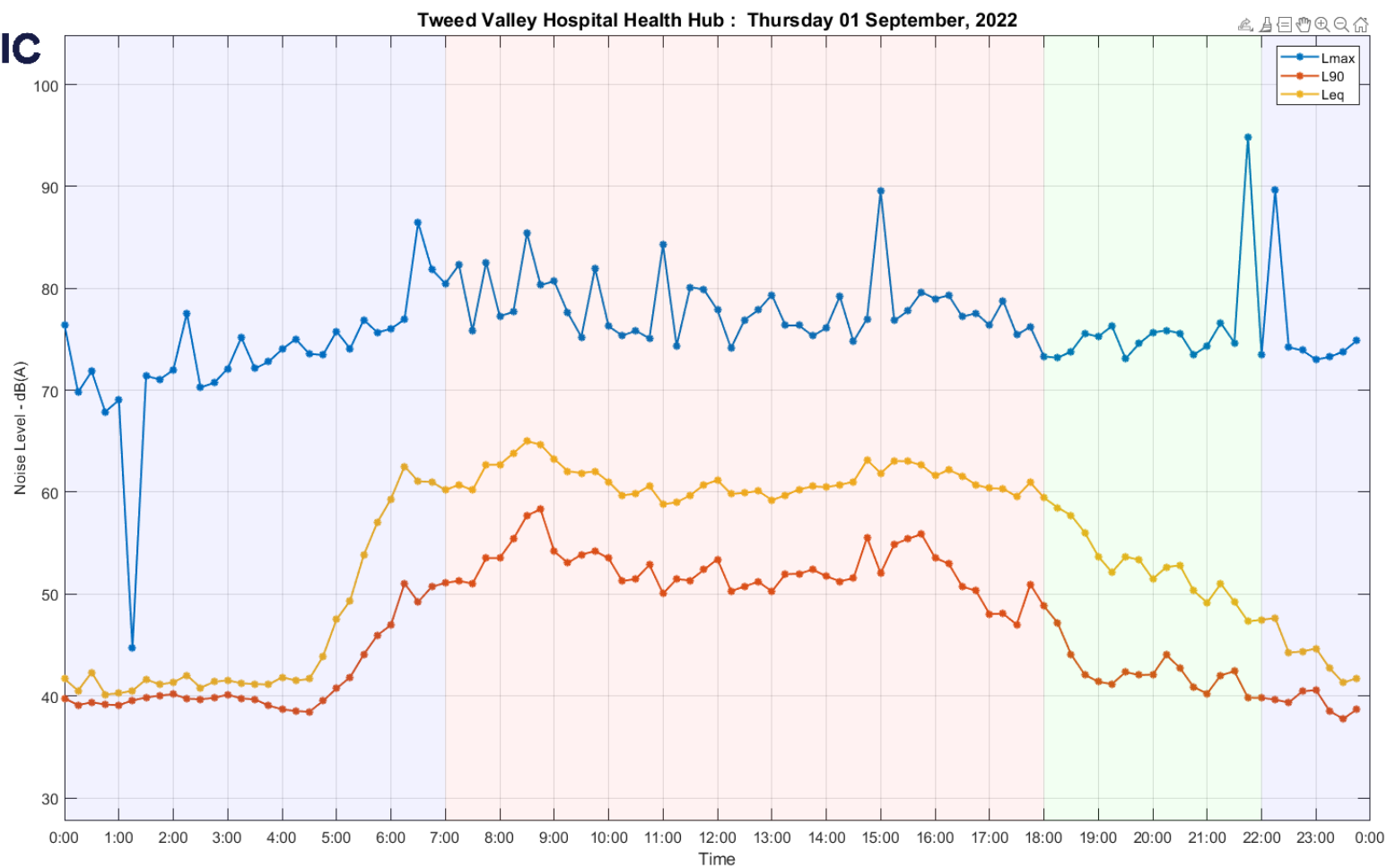


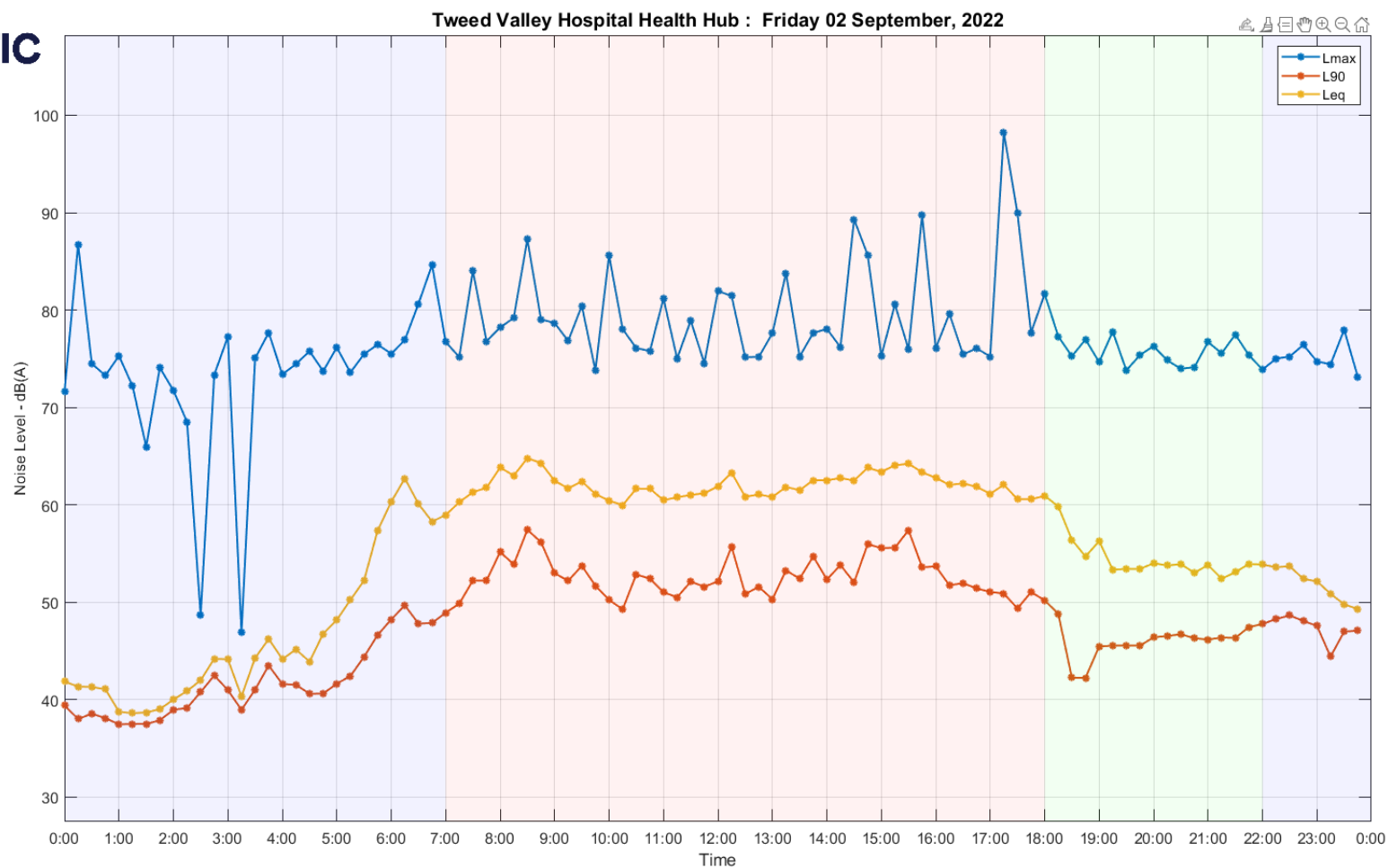


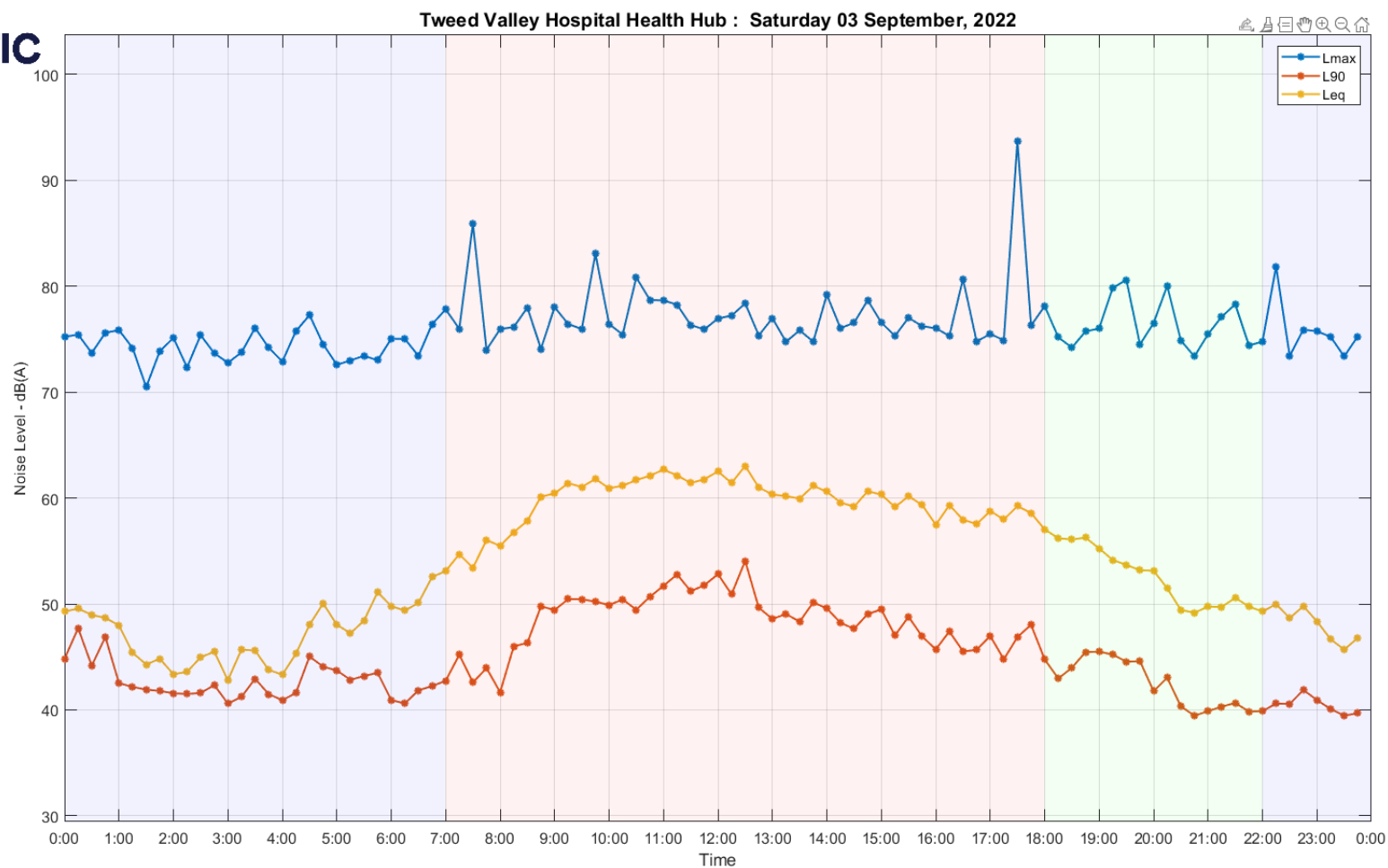






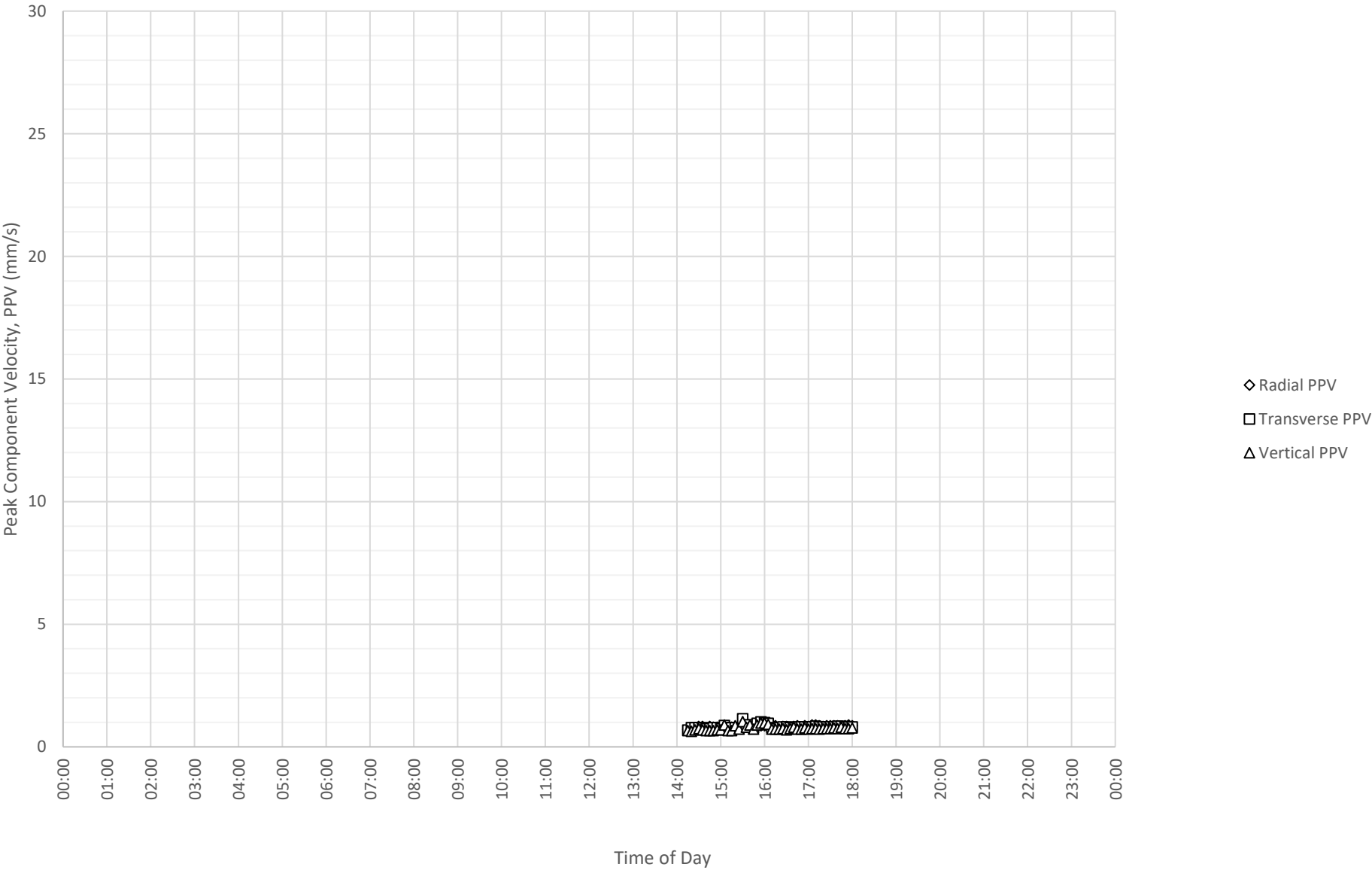




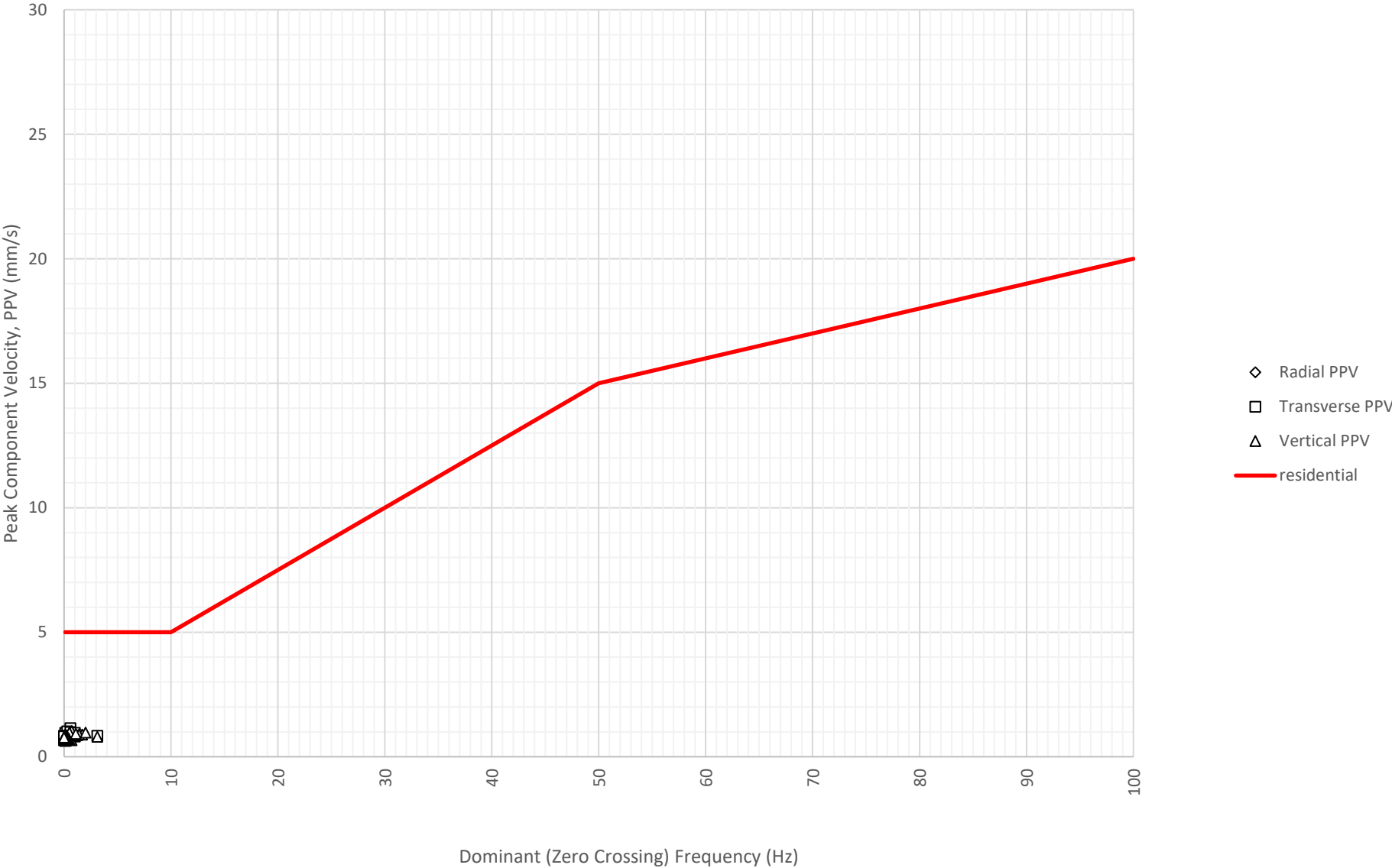


APPENDIX 2 – VIBRATION MONITORING RESULTS

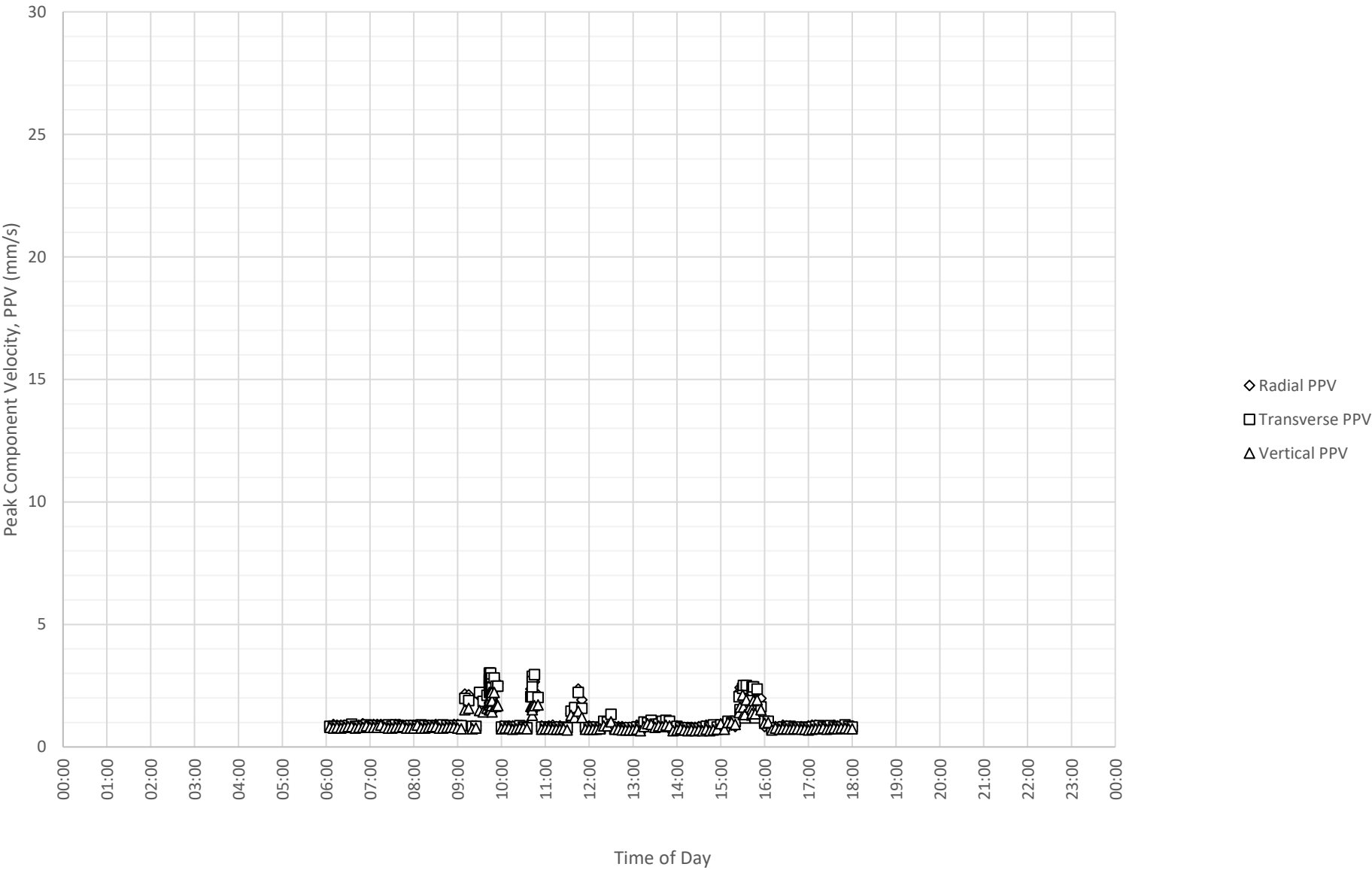
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 3-08-2022



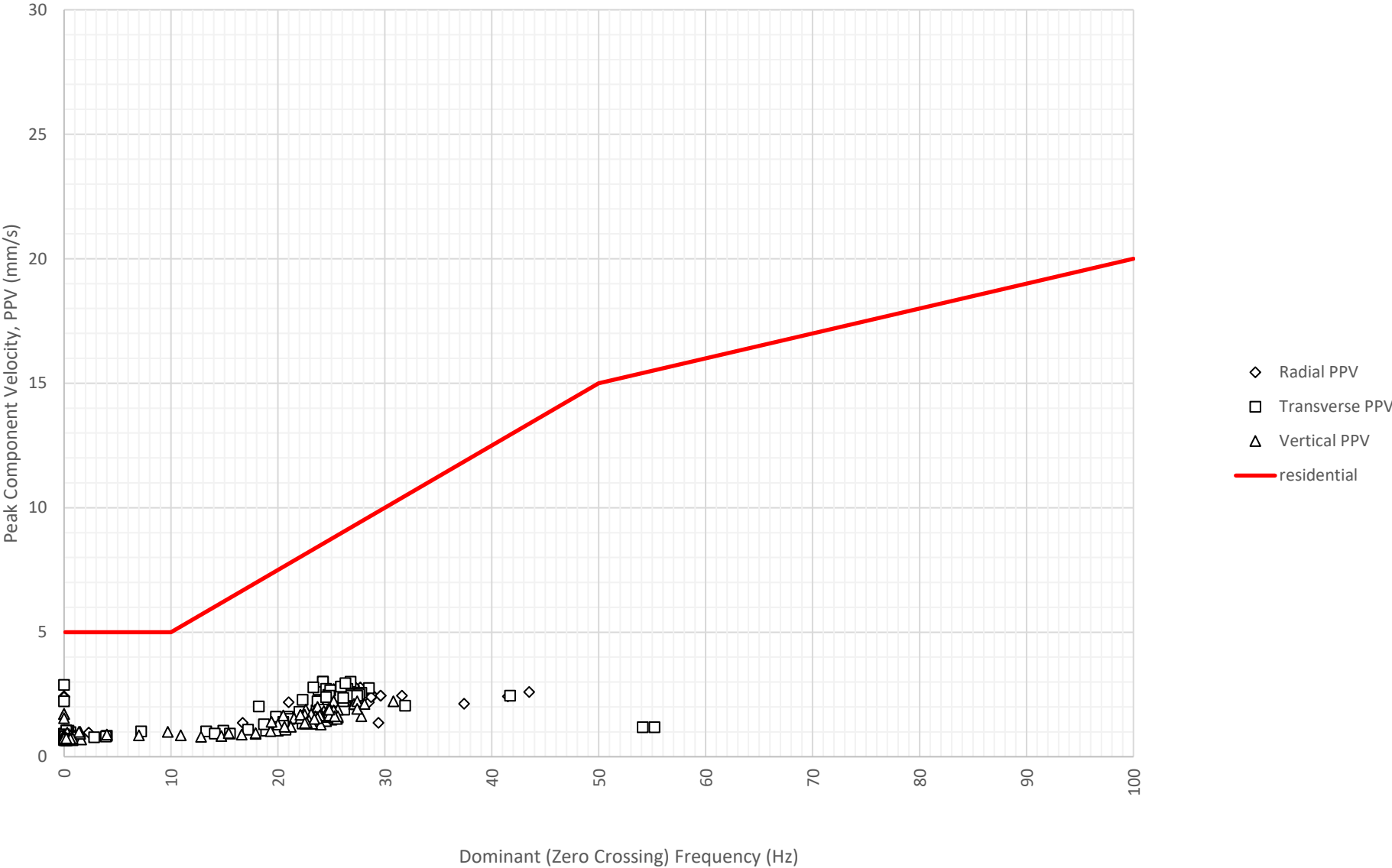
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 3-08-2022



Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 4-08-2022



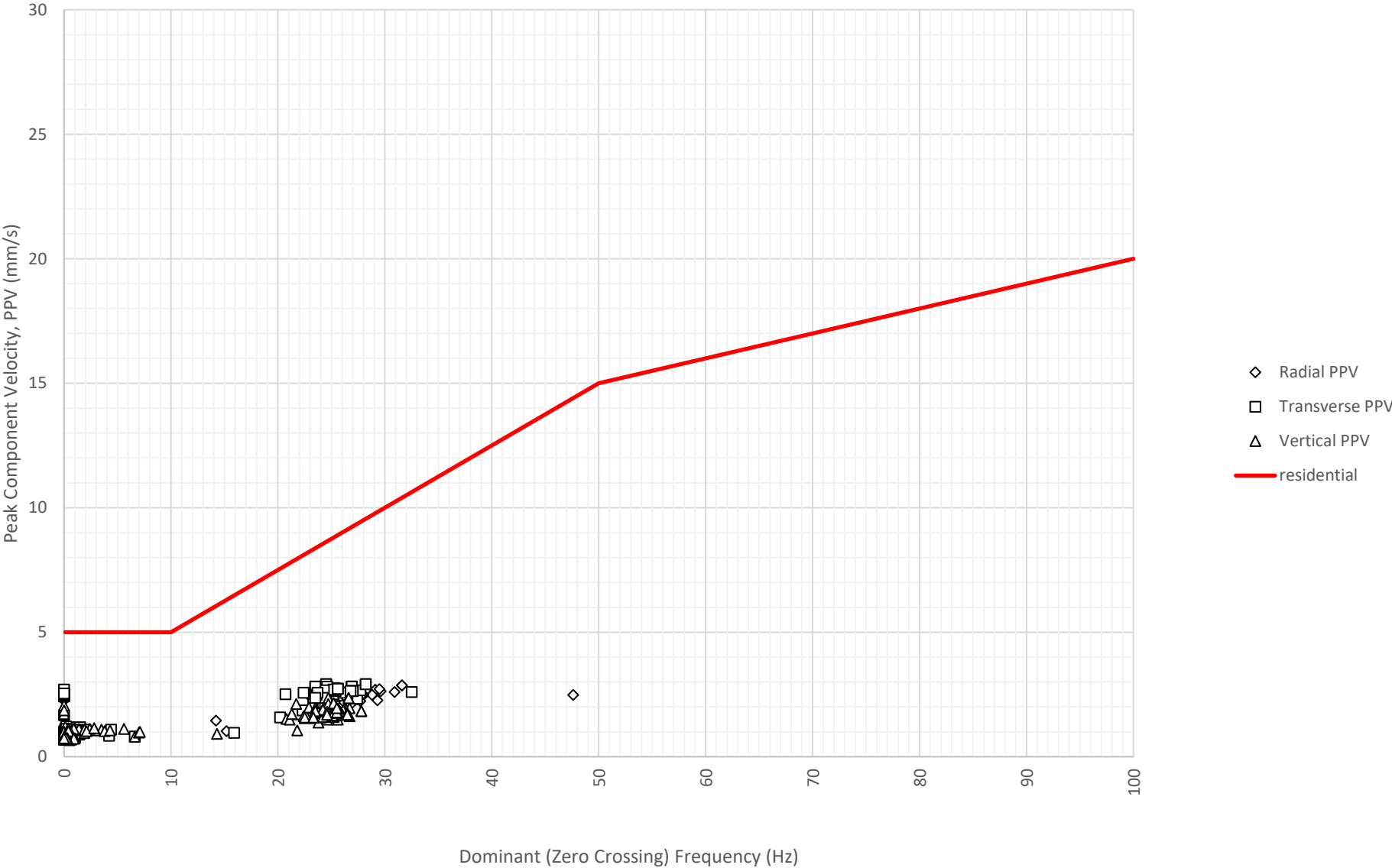
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 4-08-2022



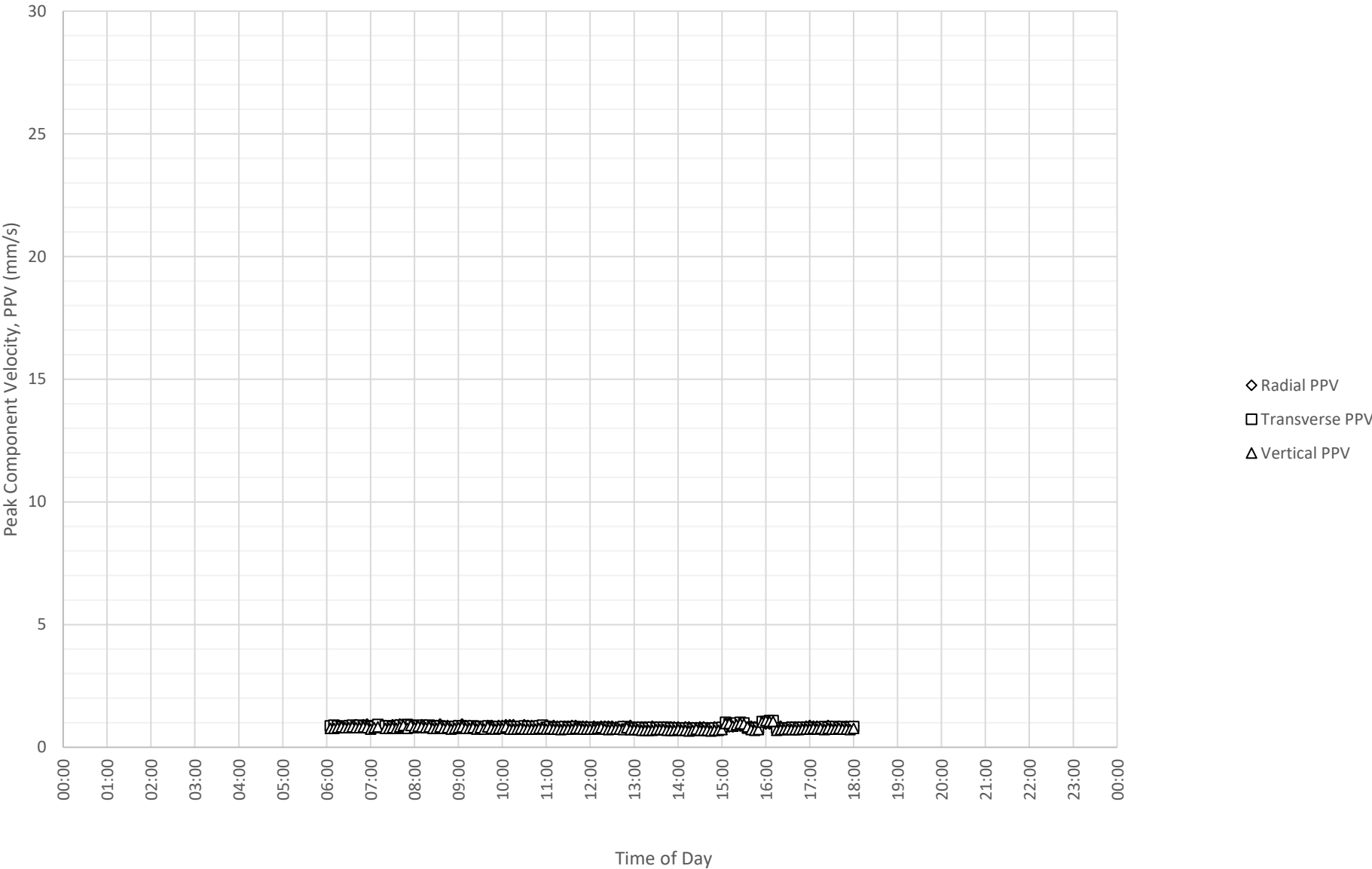
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 5-08-2022



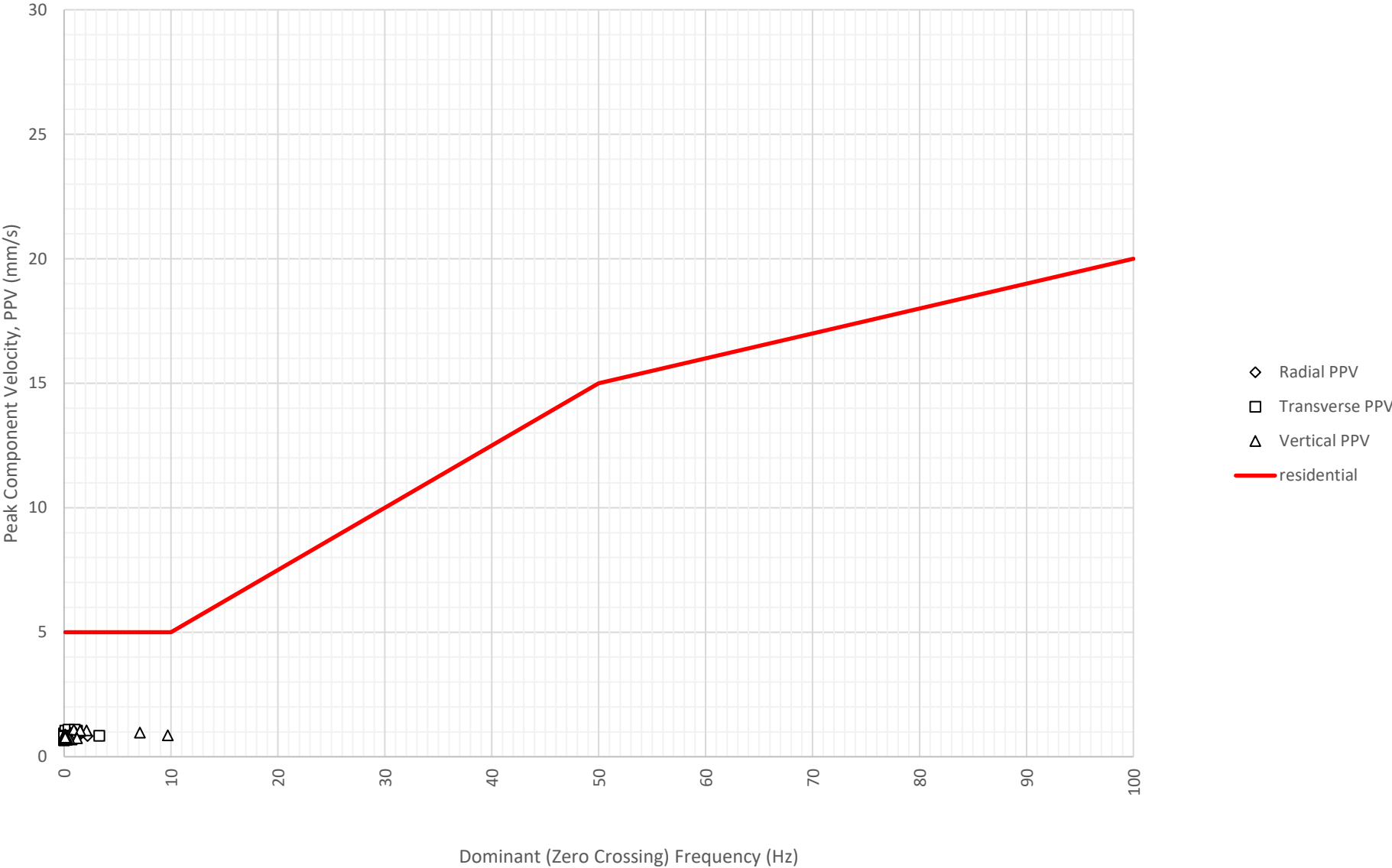
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 5-08-2022



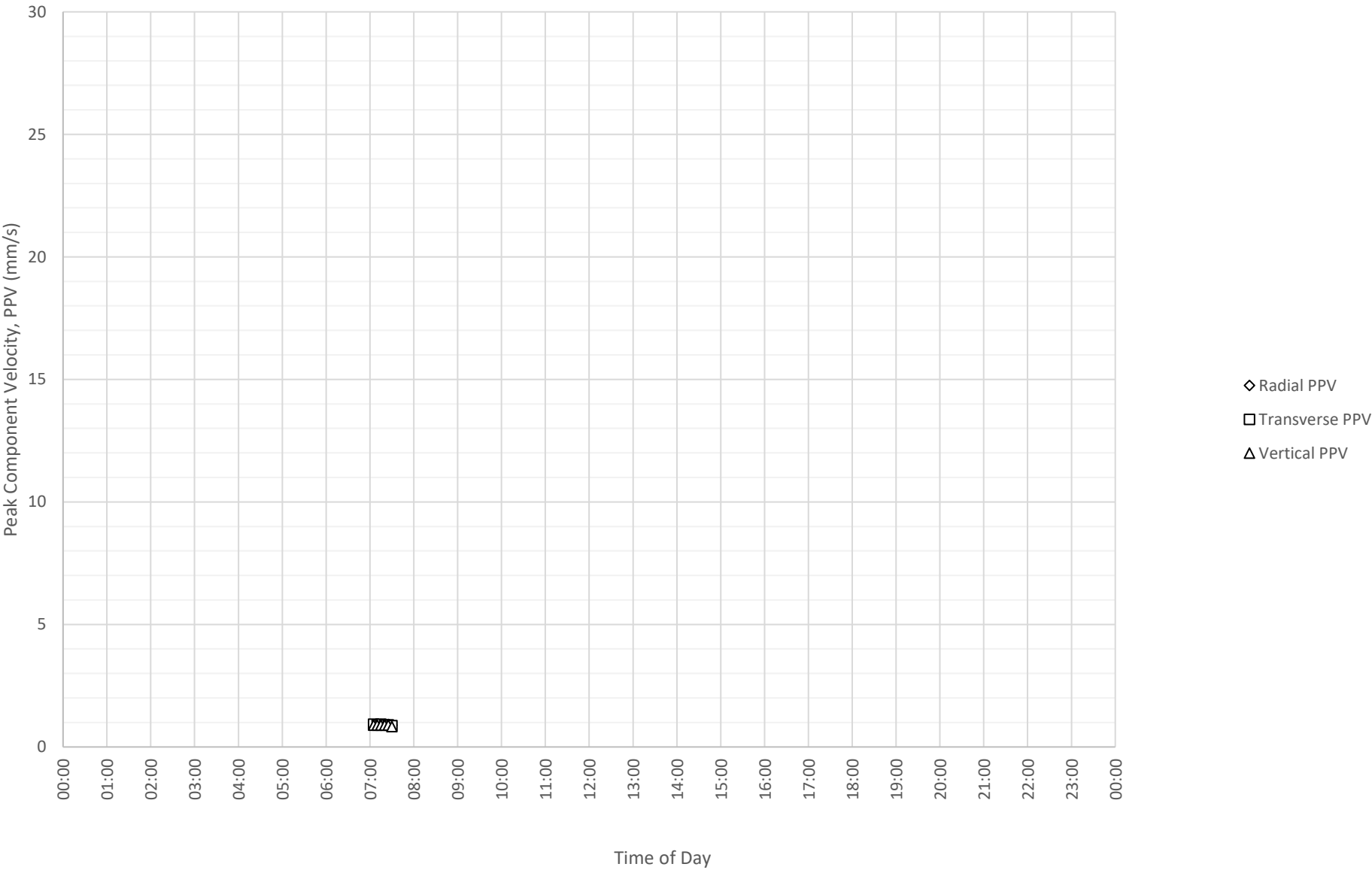
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 6-08-2022



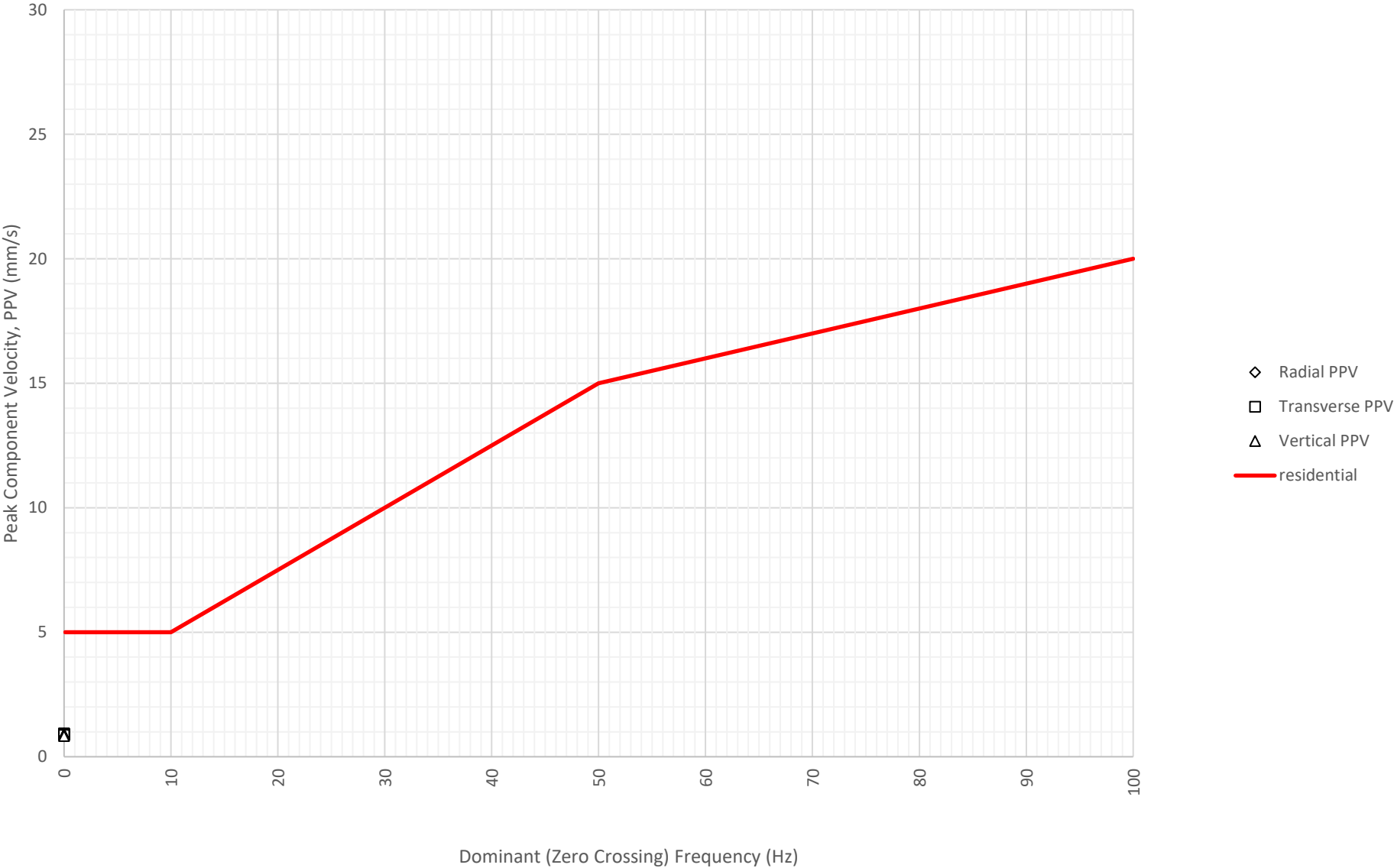
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 6-08-2022



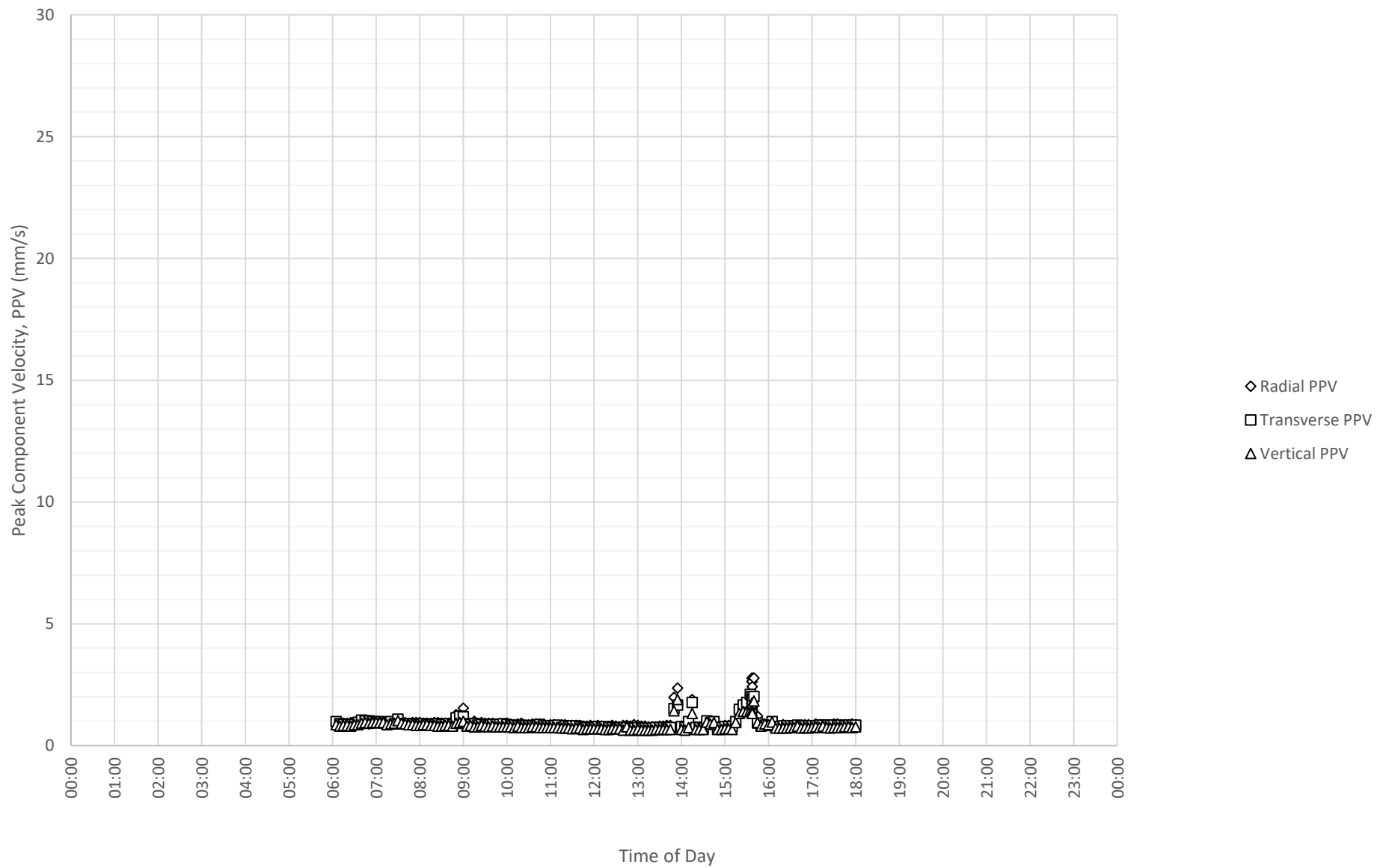
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 7-08-2022



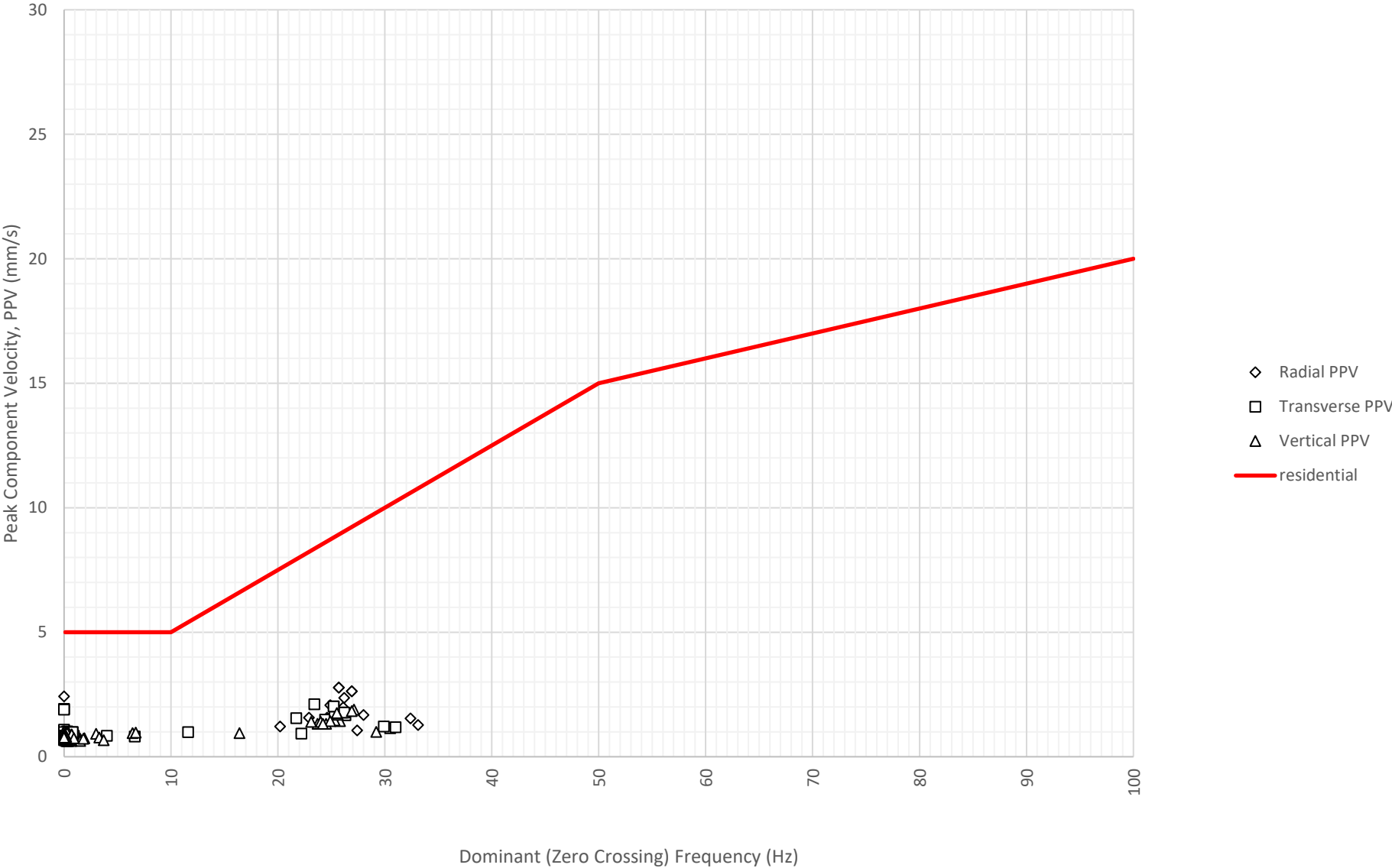
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 7-08-2022



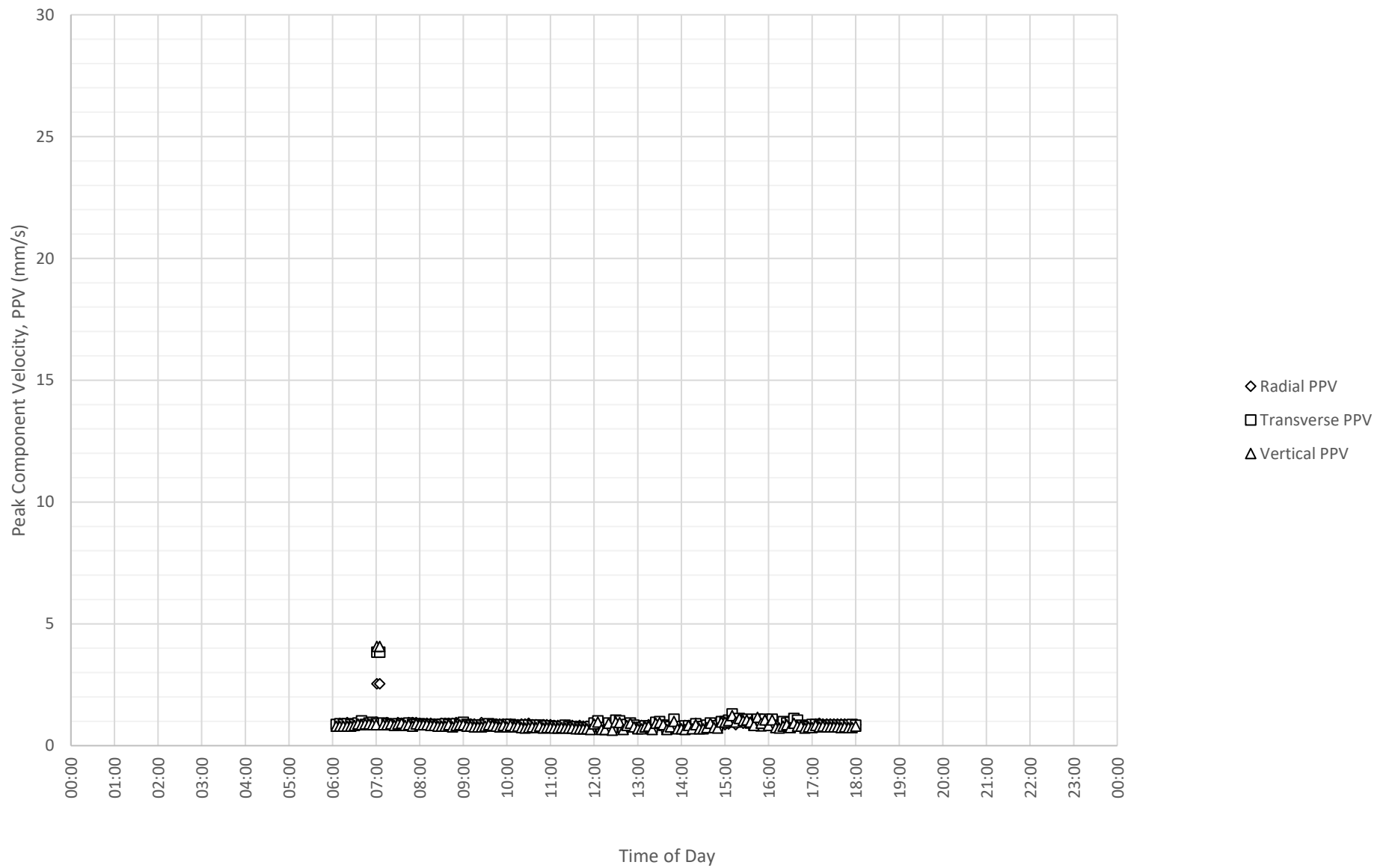
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 8-08-2022



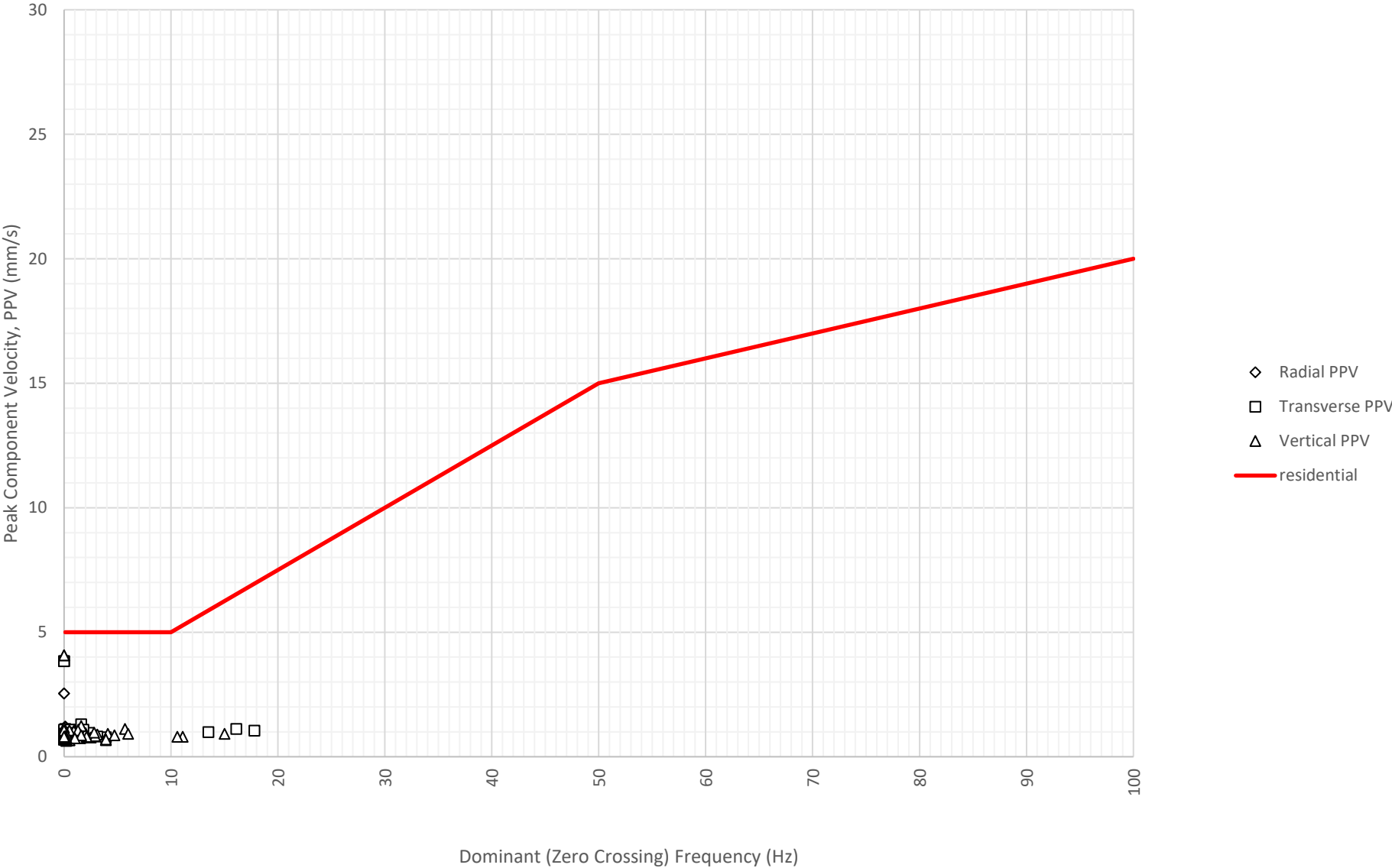
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 8-08-2022



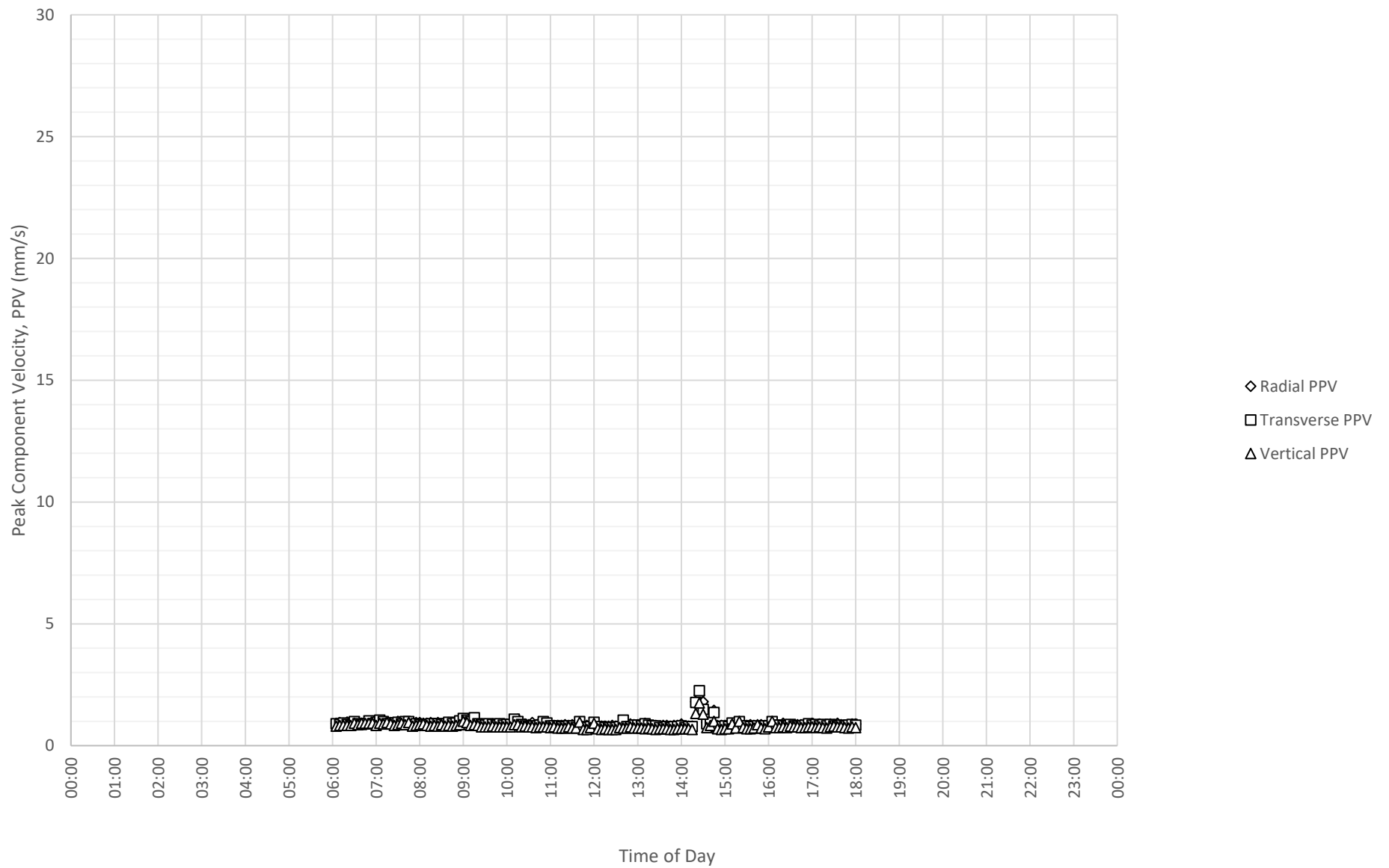
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 9-08-2022



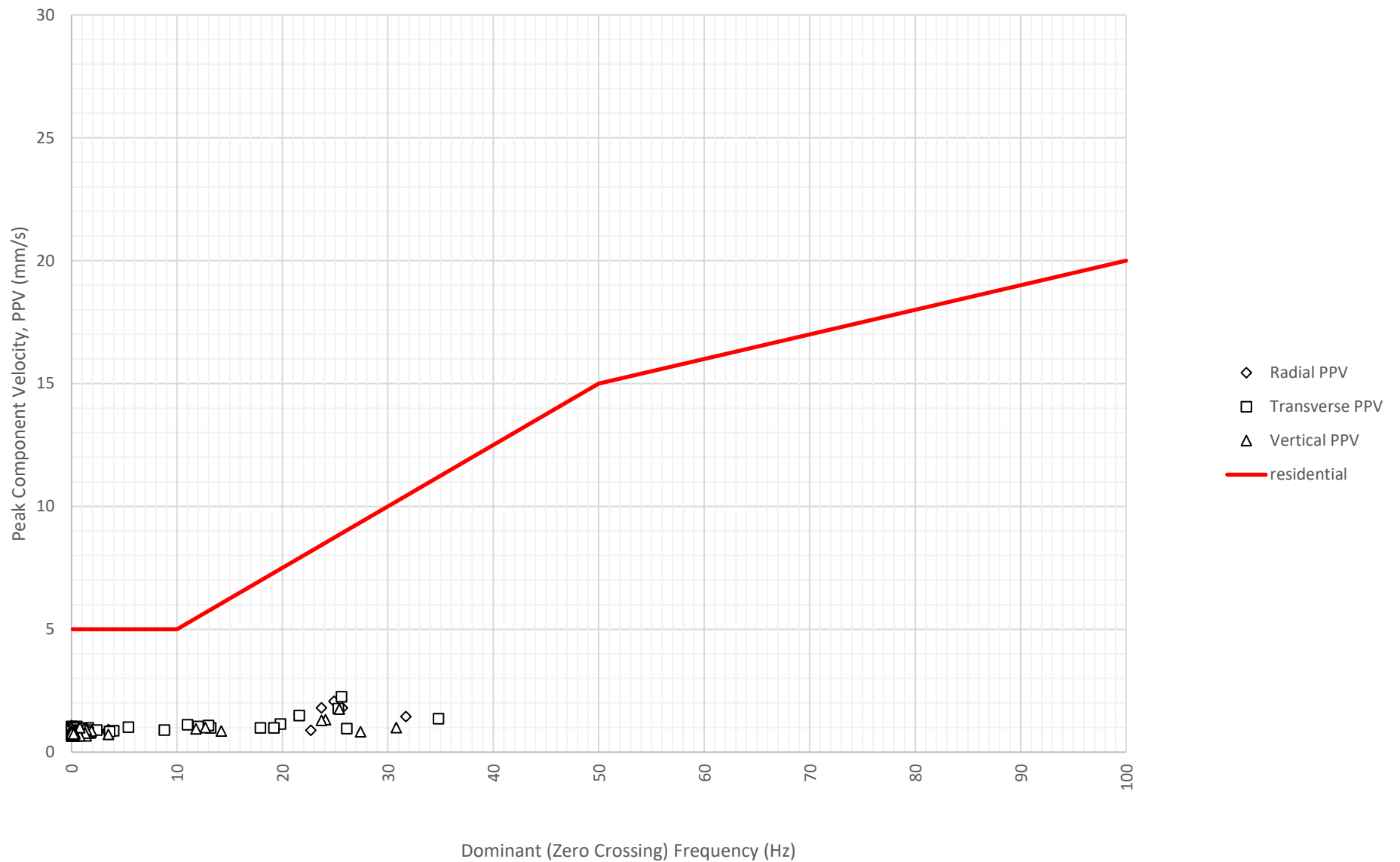
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 9-08-2022



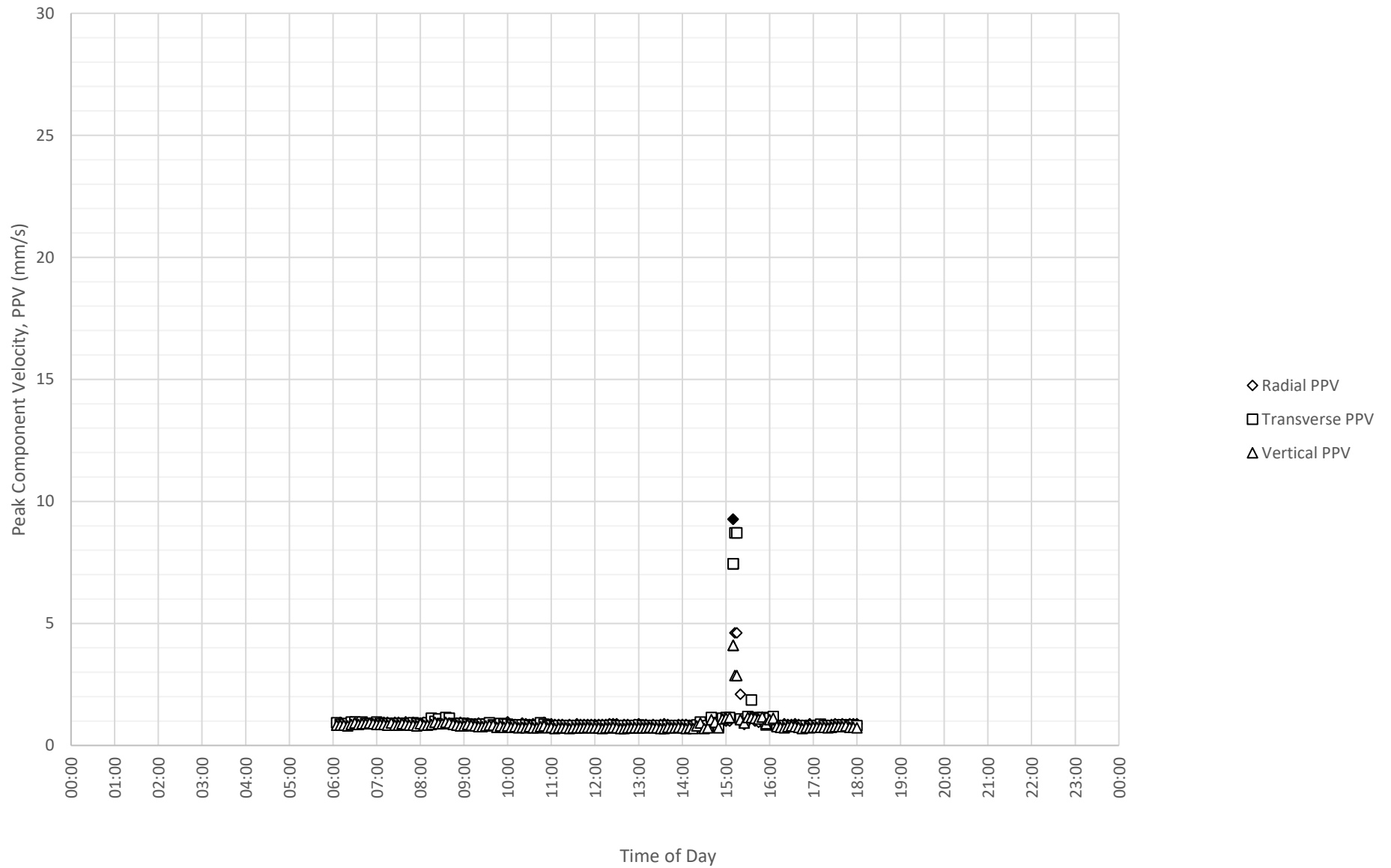
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 10-08-2022



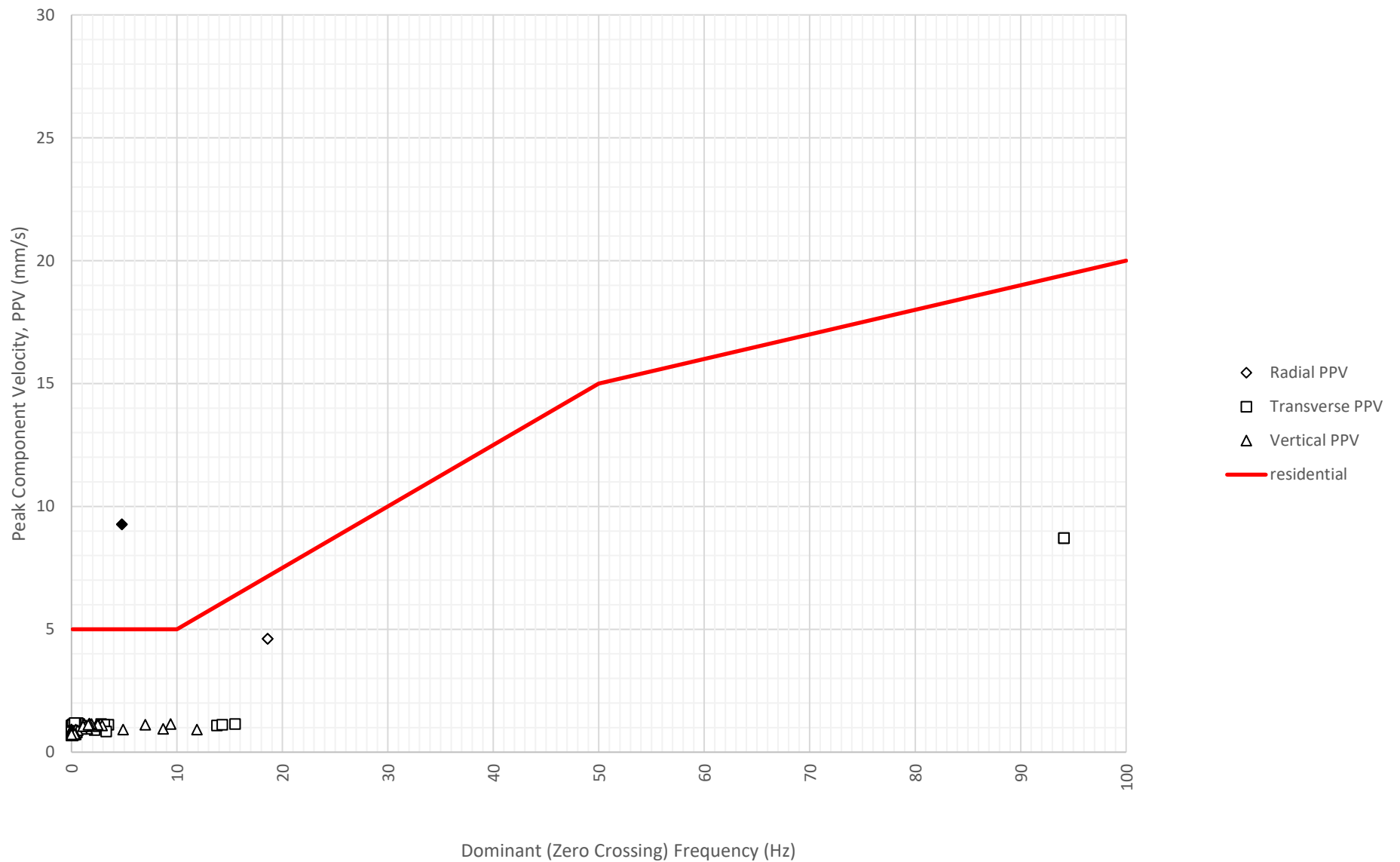
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 10-08-2022



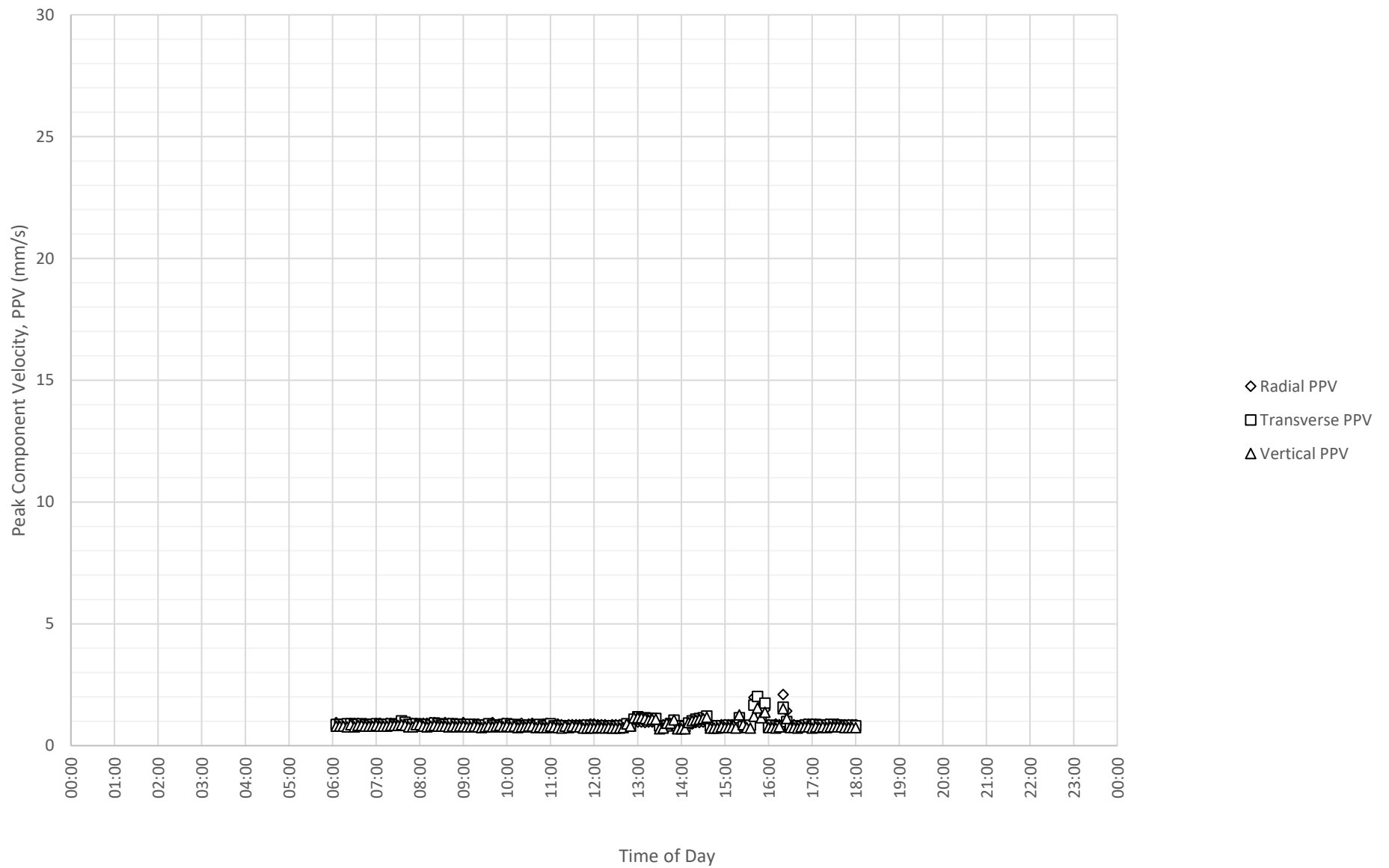
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 11-08-2022



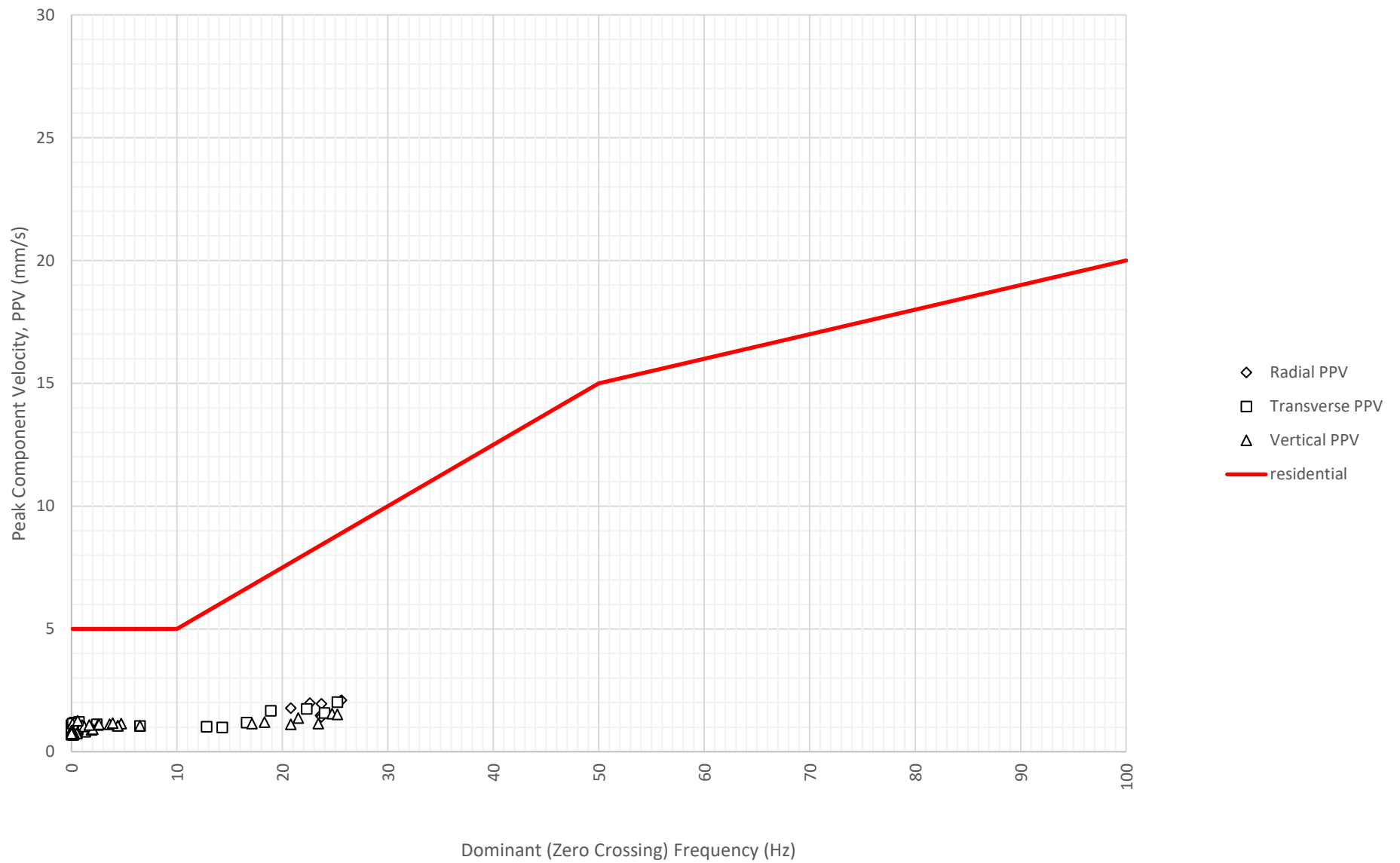
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 11-08-2022



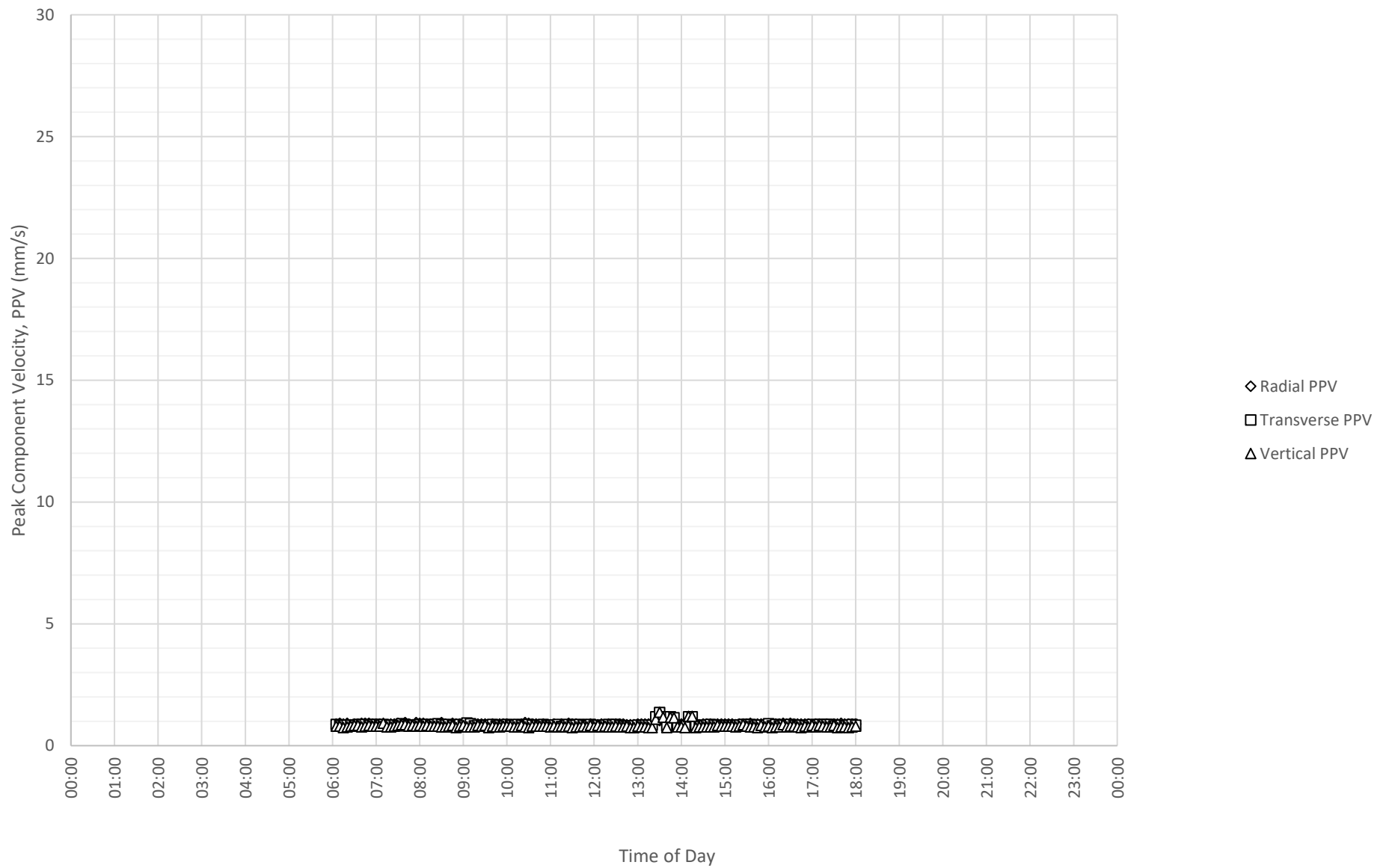
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 12-08-2022



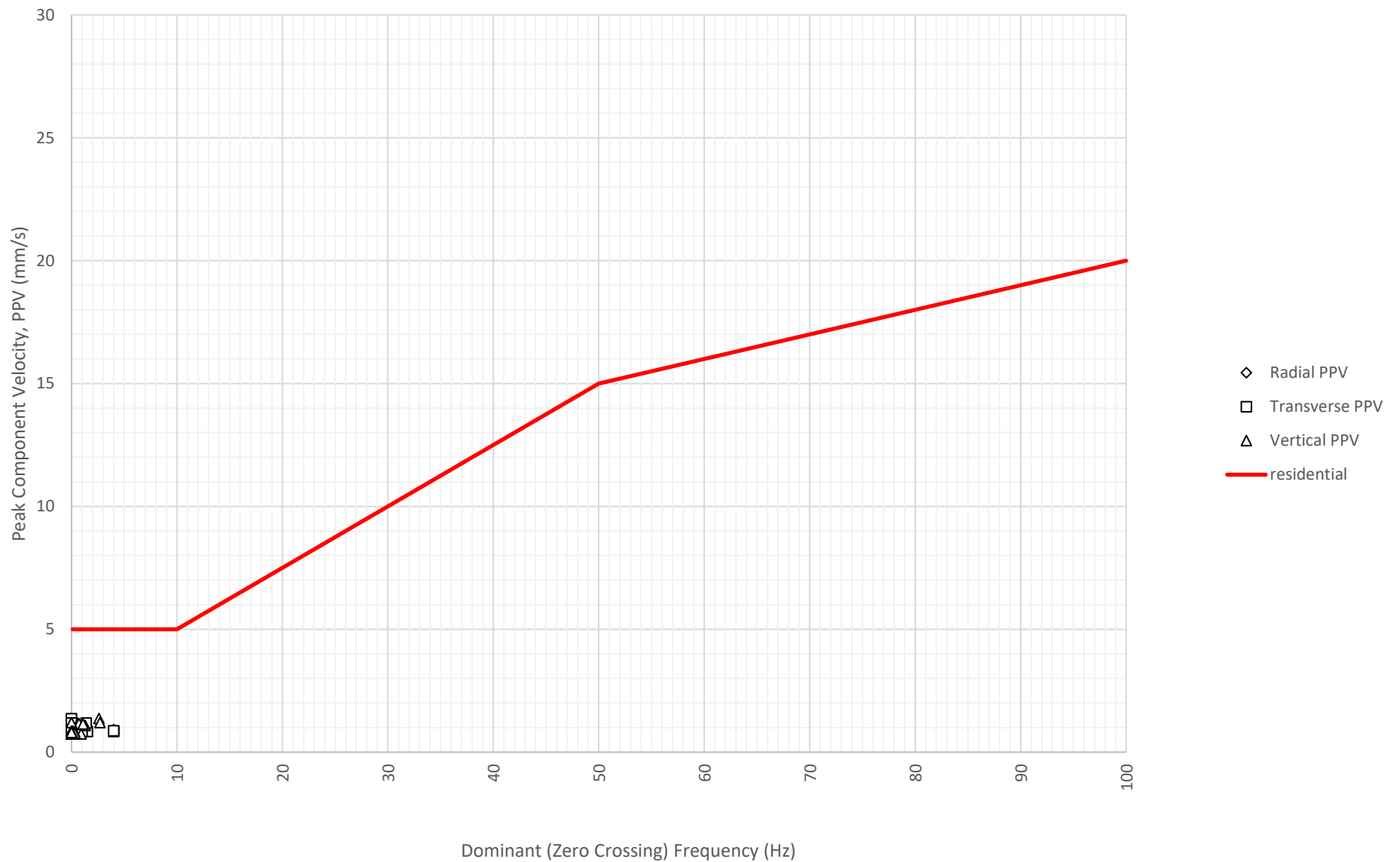
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 12-08-2022



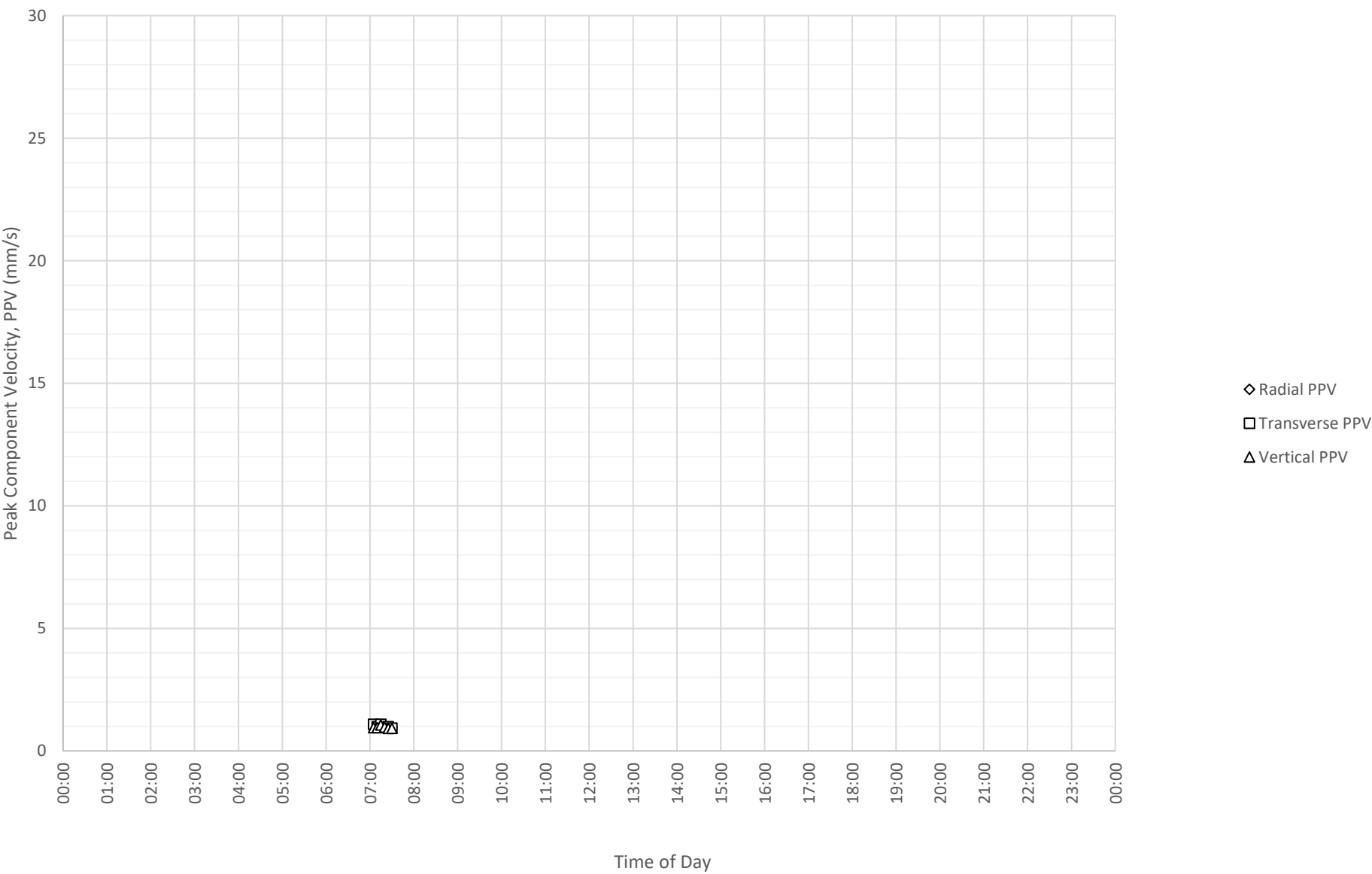
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 13-08-2022



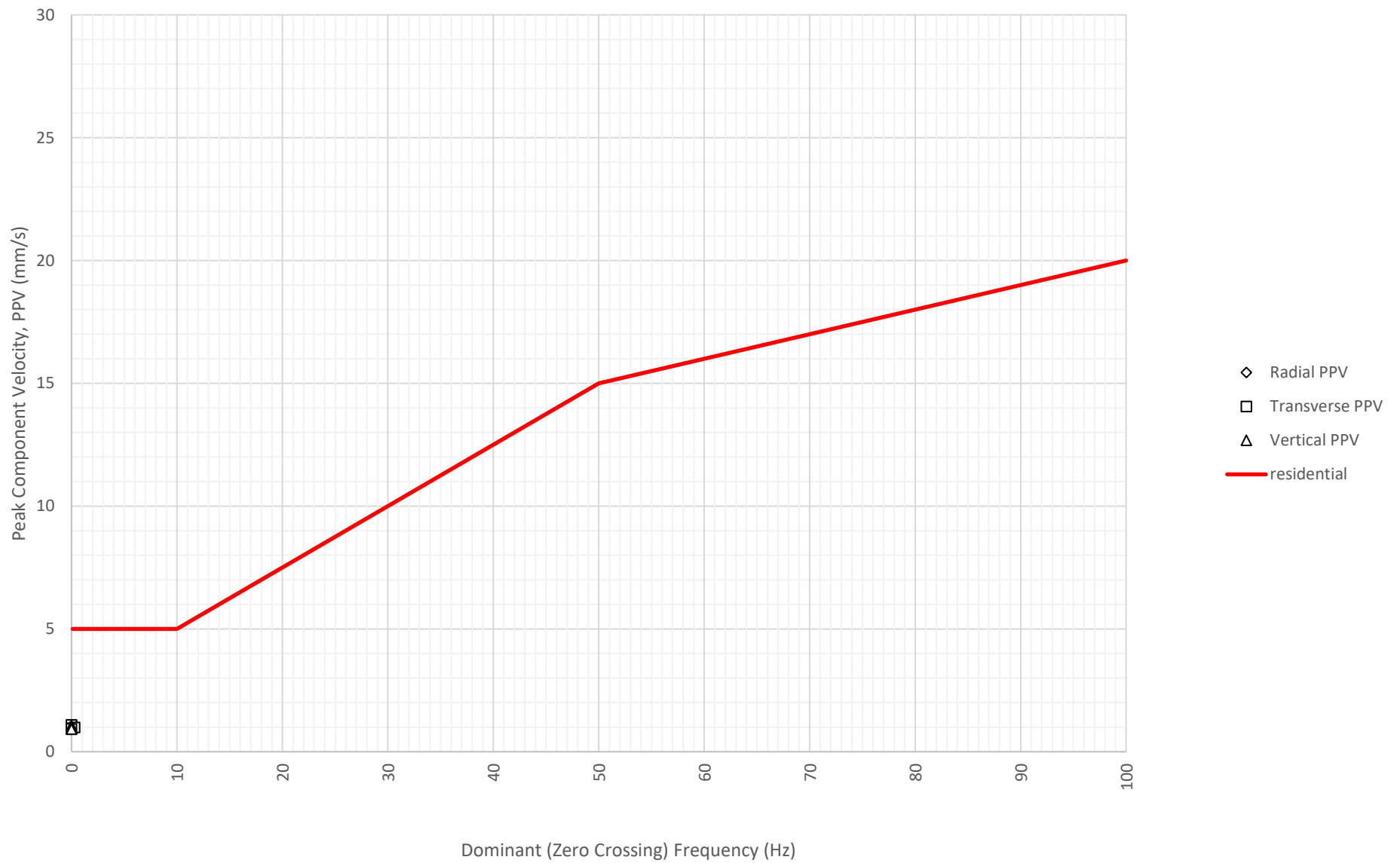
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 13-08-2022



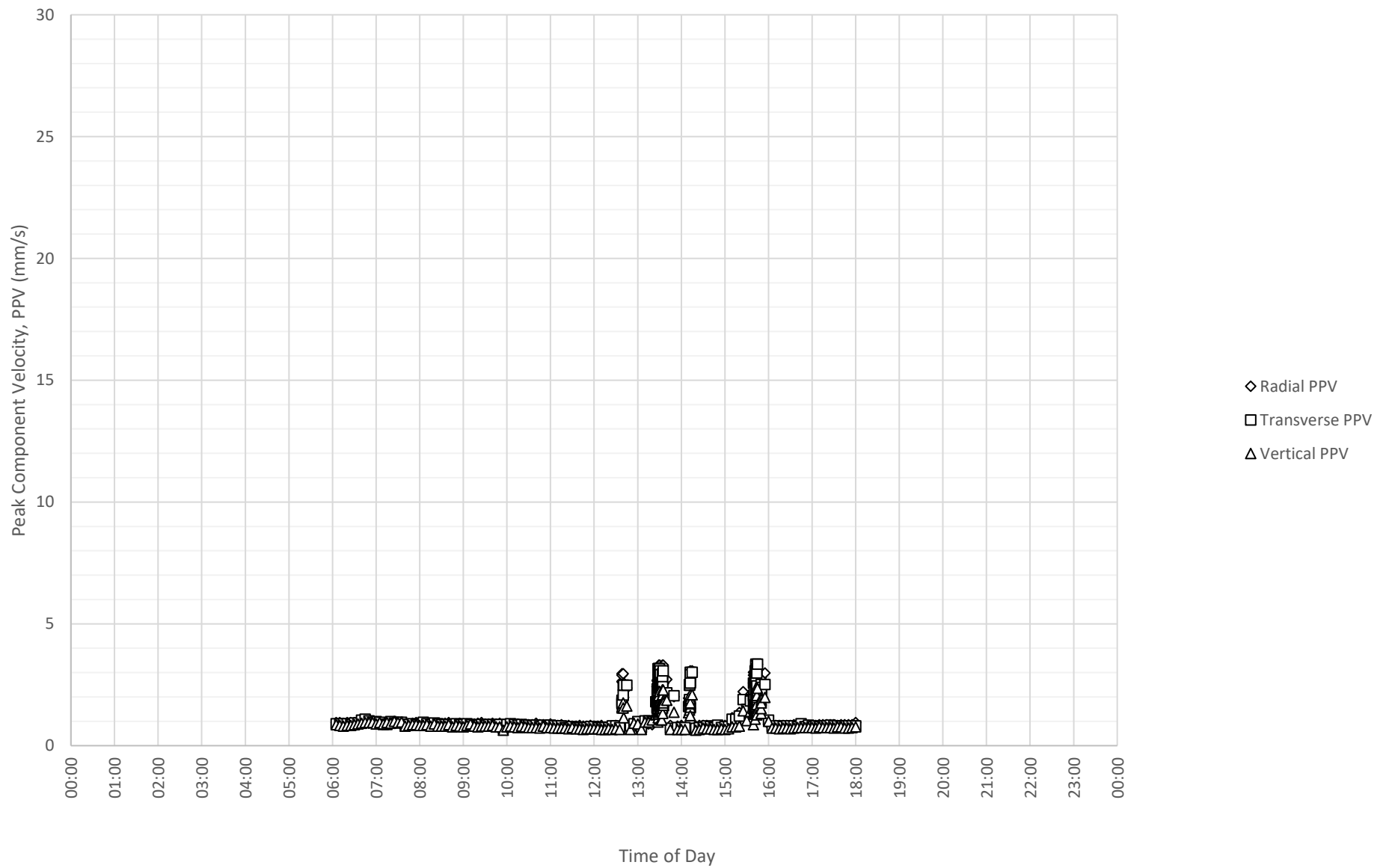
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 14-08-2022



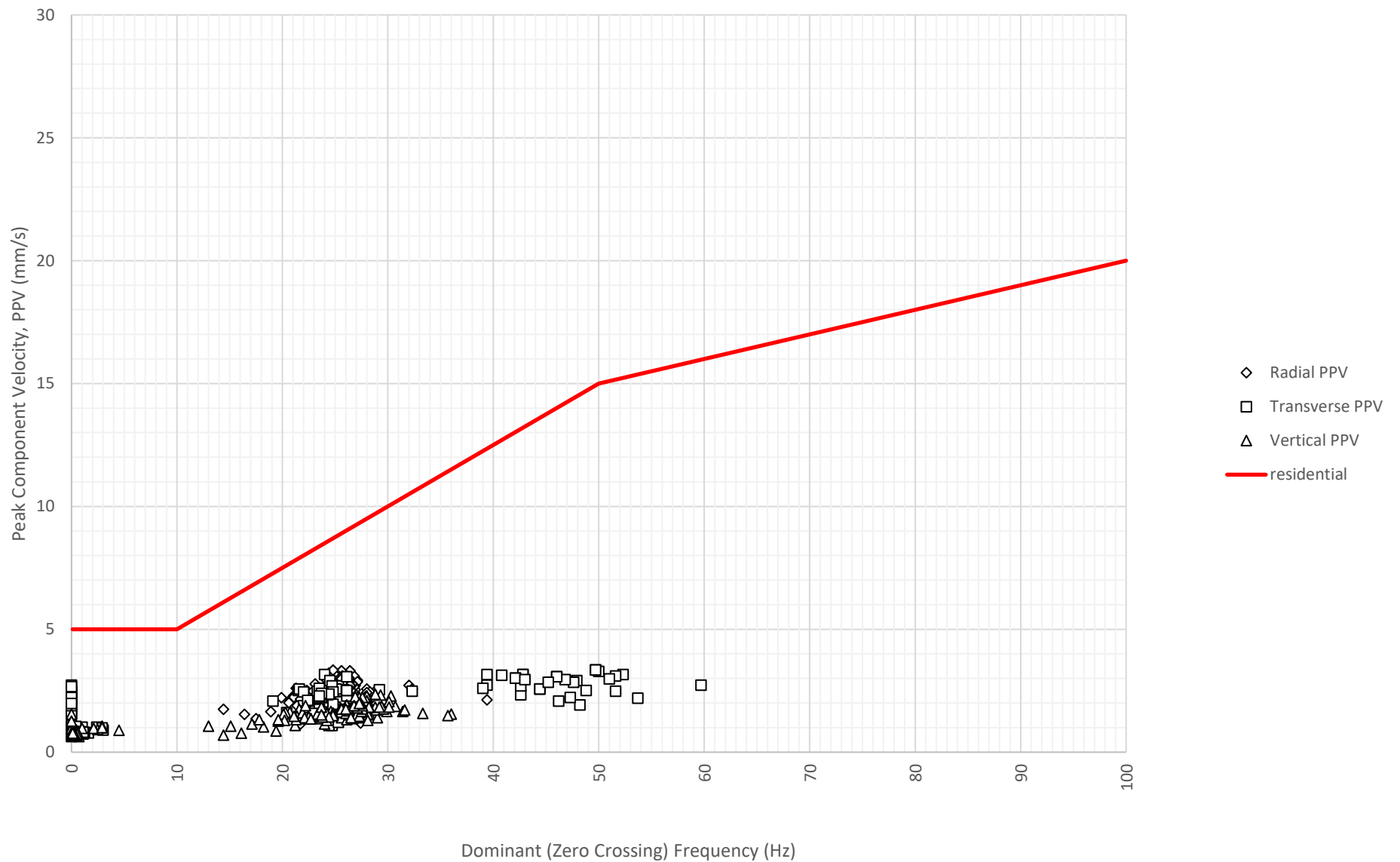
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 14-08-2022



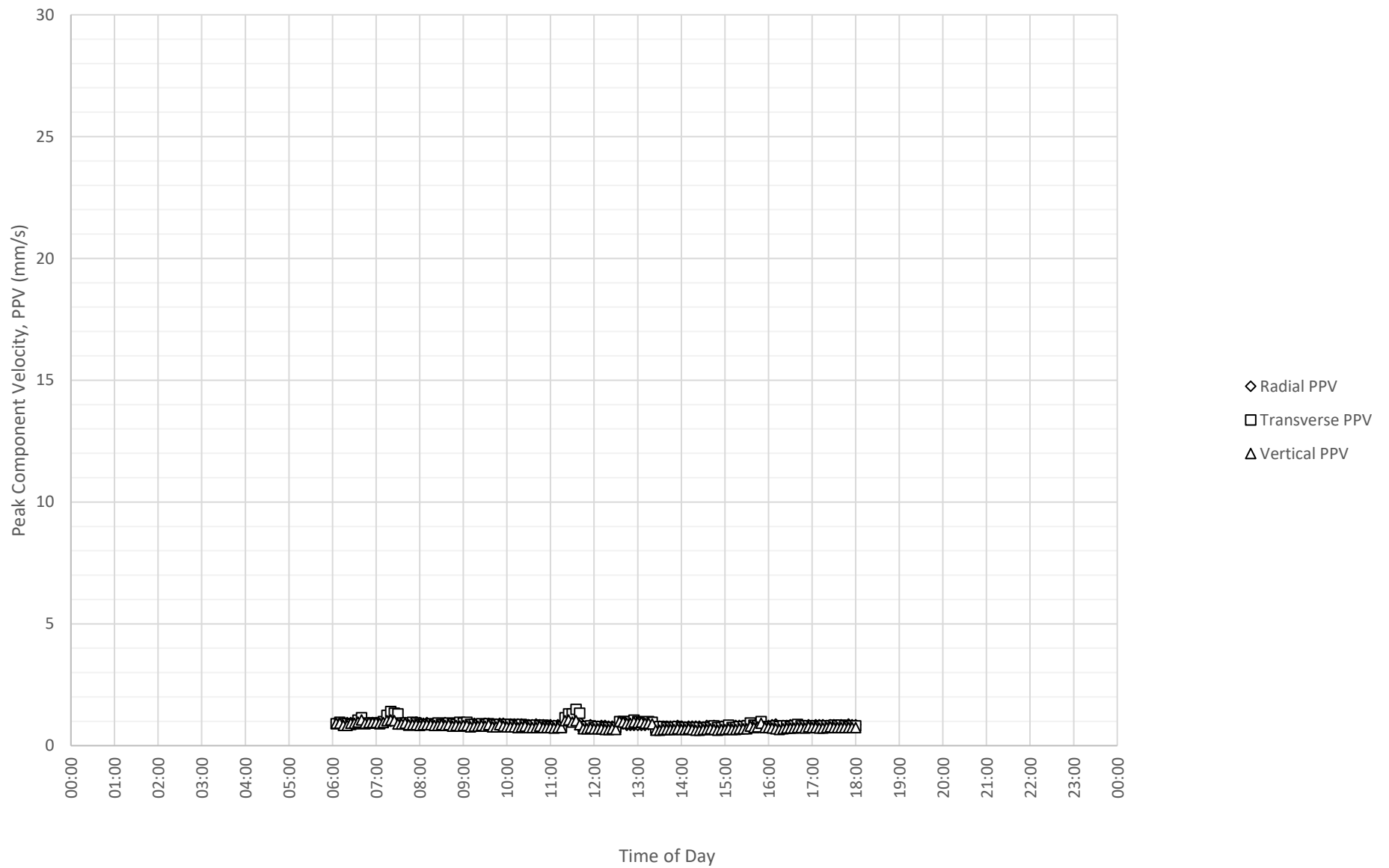
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 15-08-2022



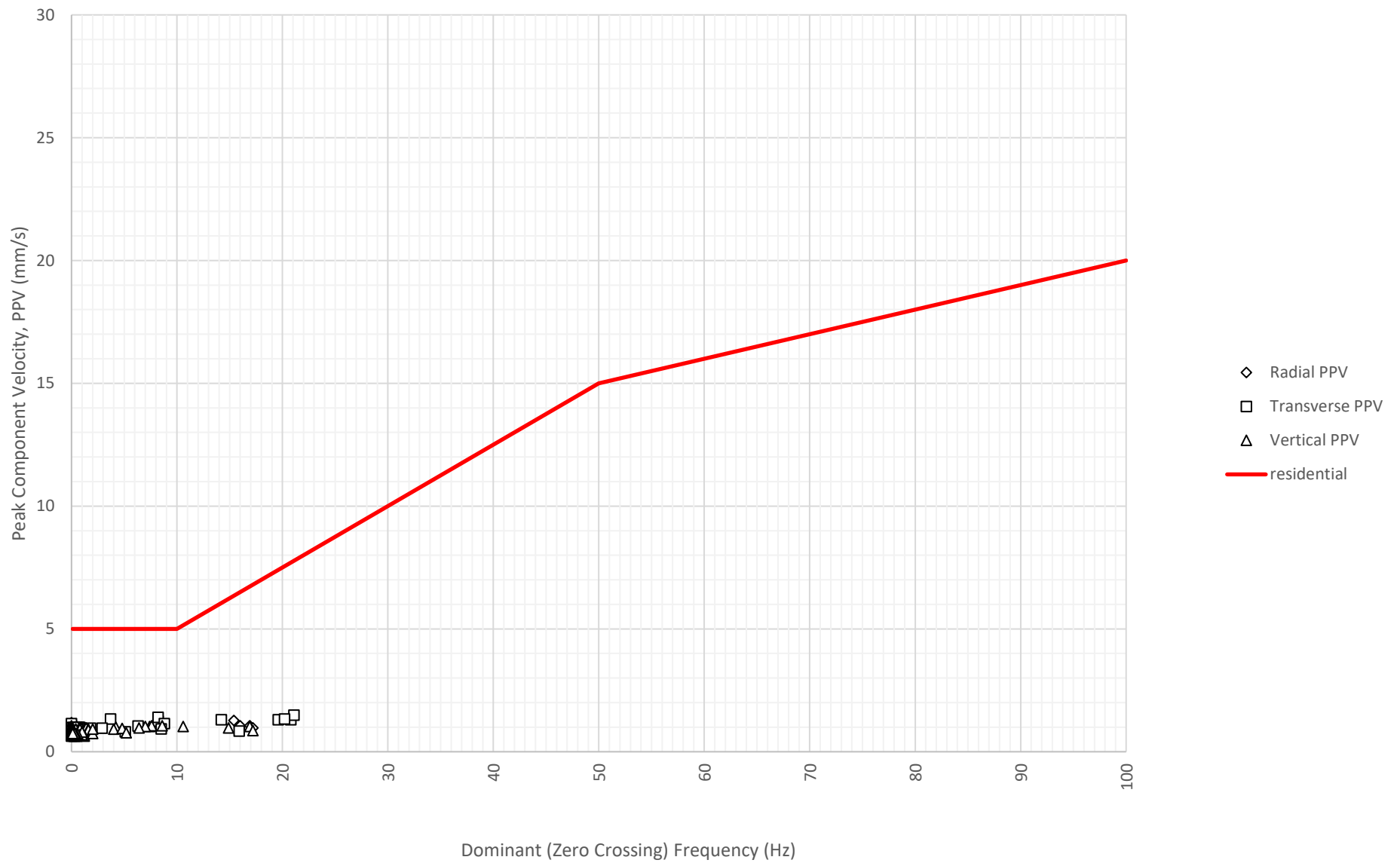
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 15-08-2022



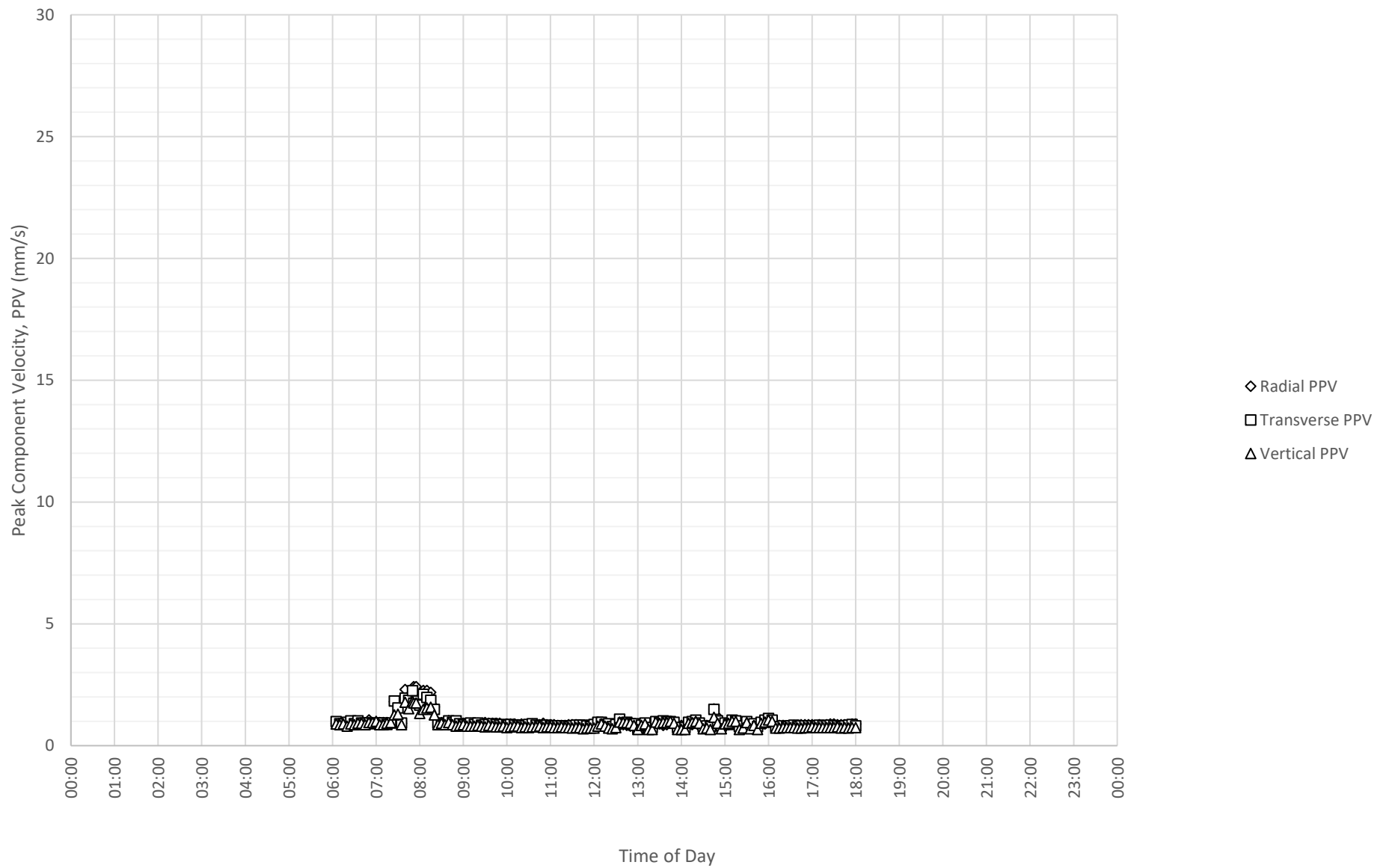
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 16-08-2022



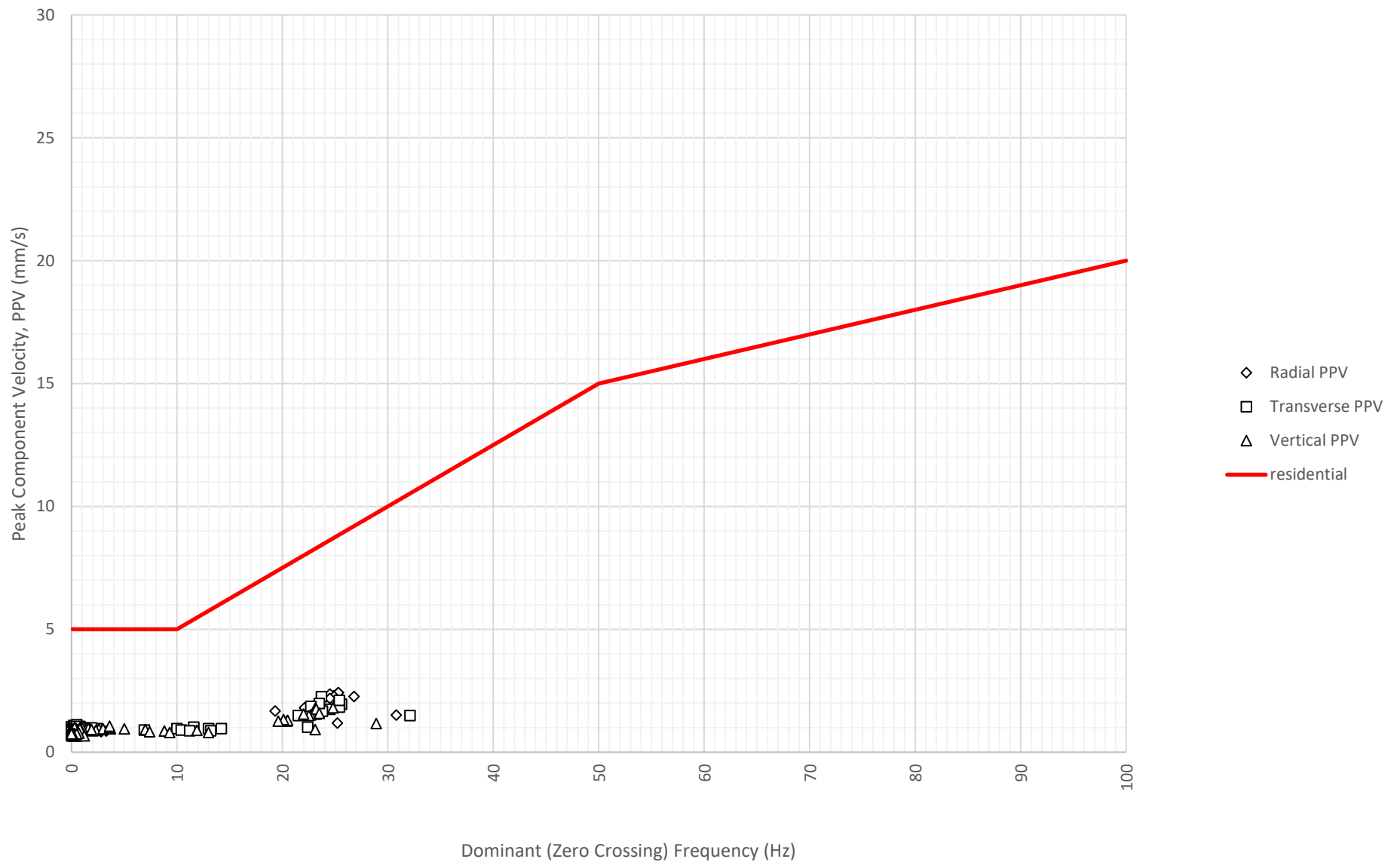
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 16-08-2022



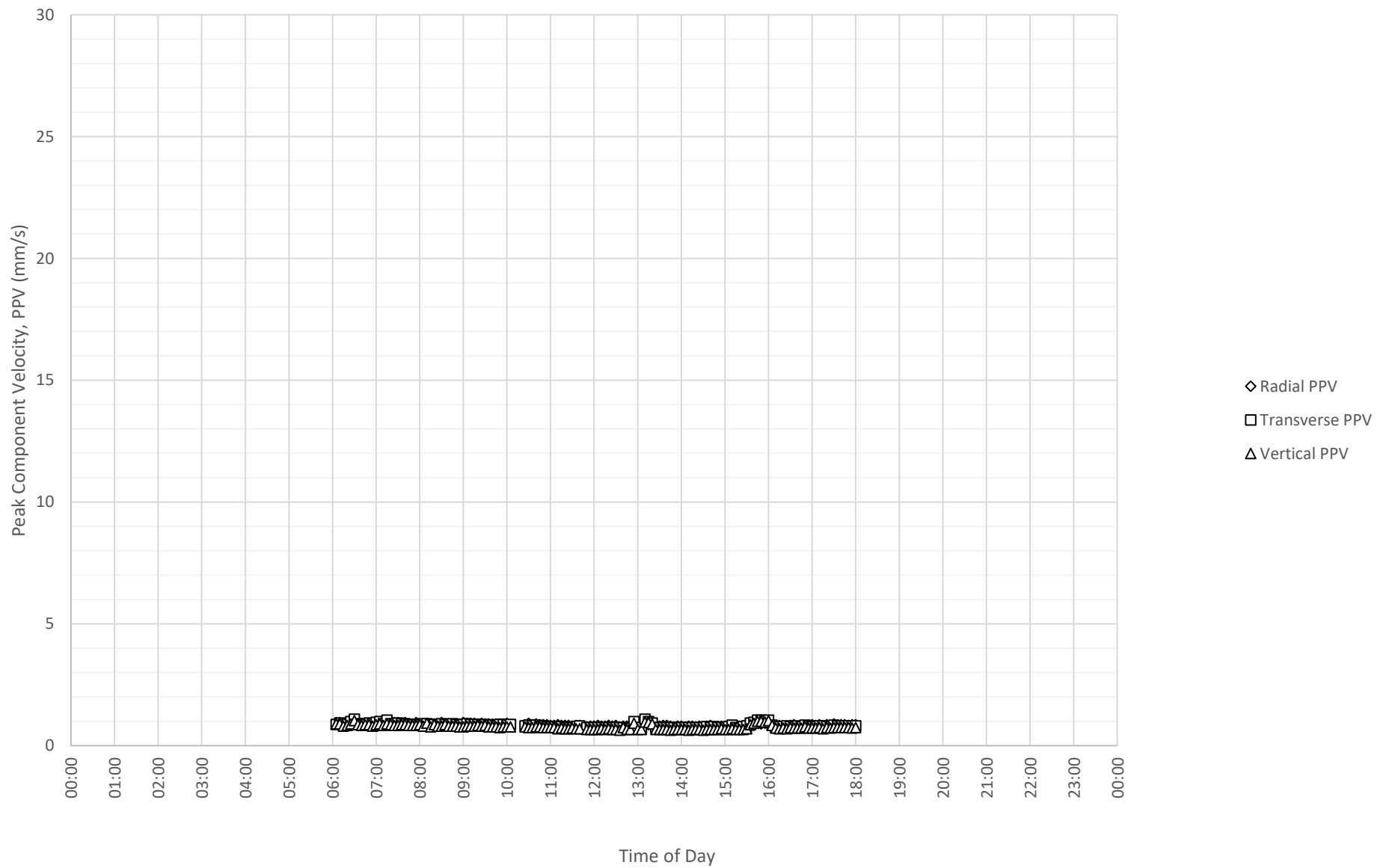
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 17-08-2022



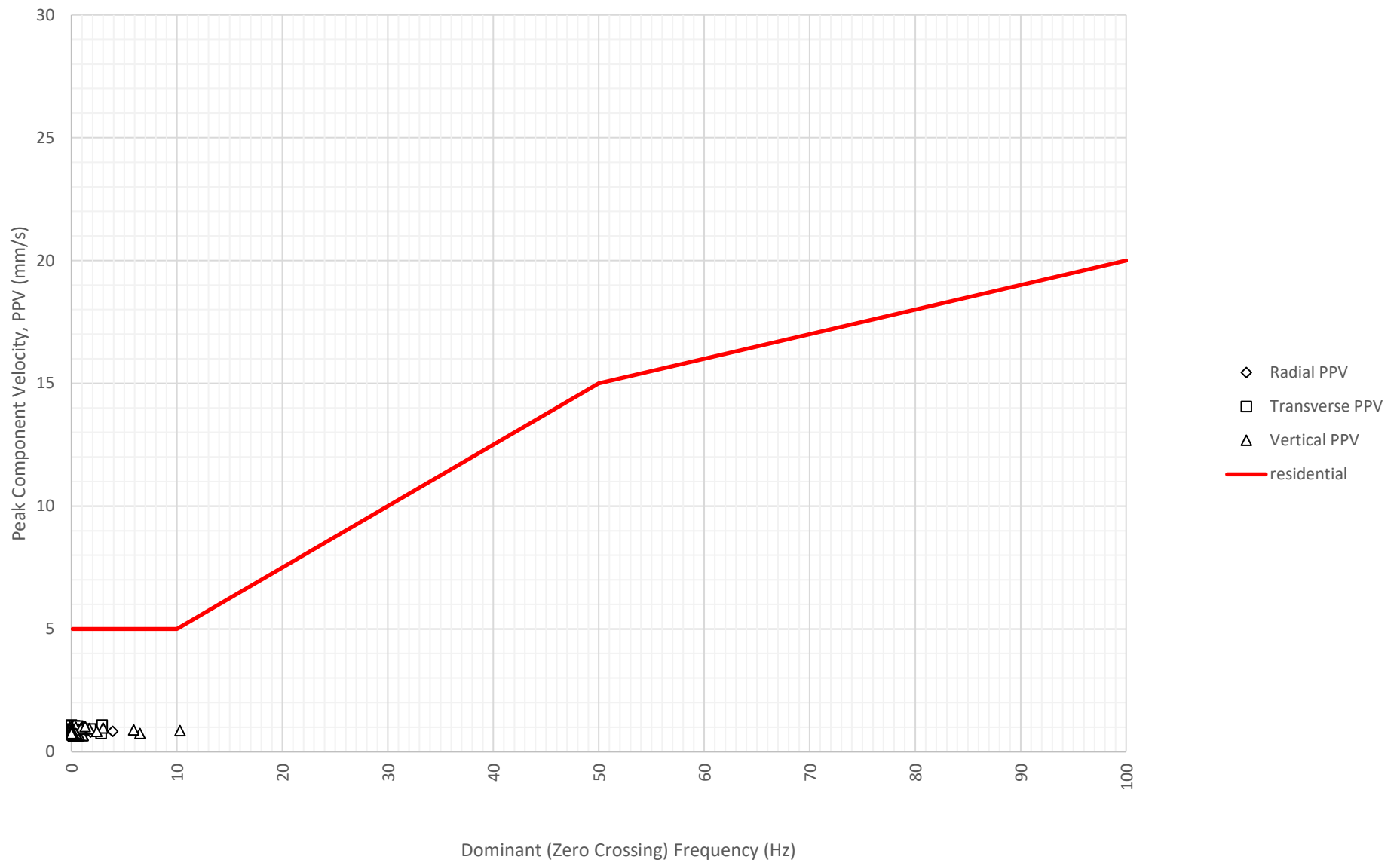
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 17-08-2022



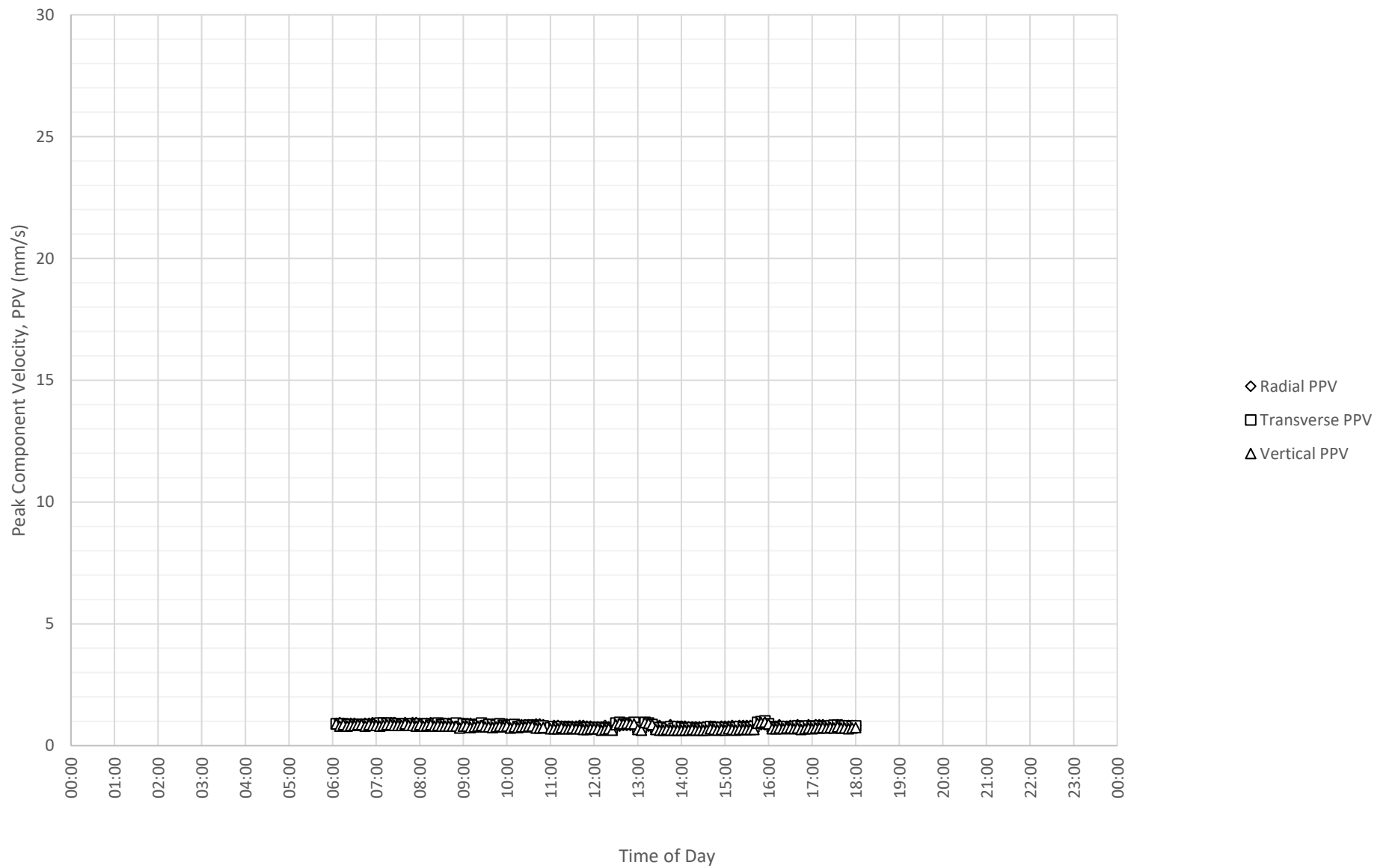
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 18-08-2022



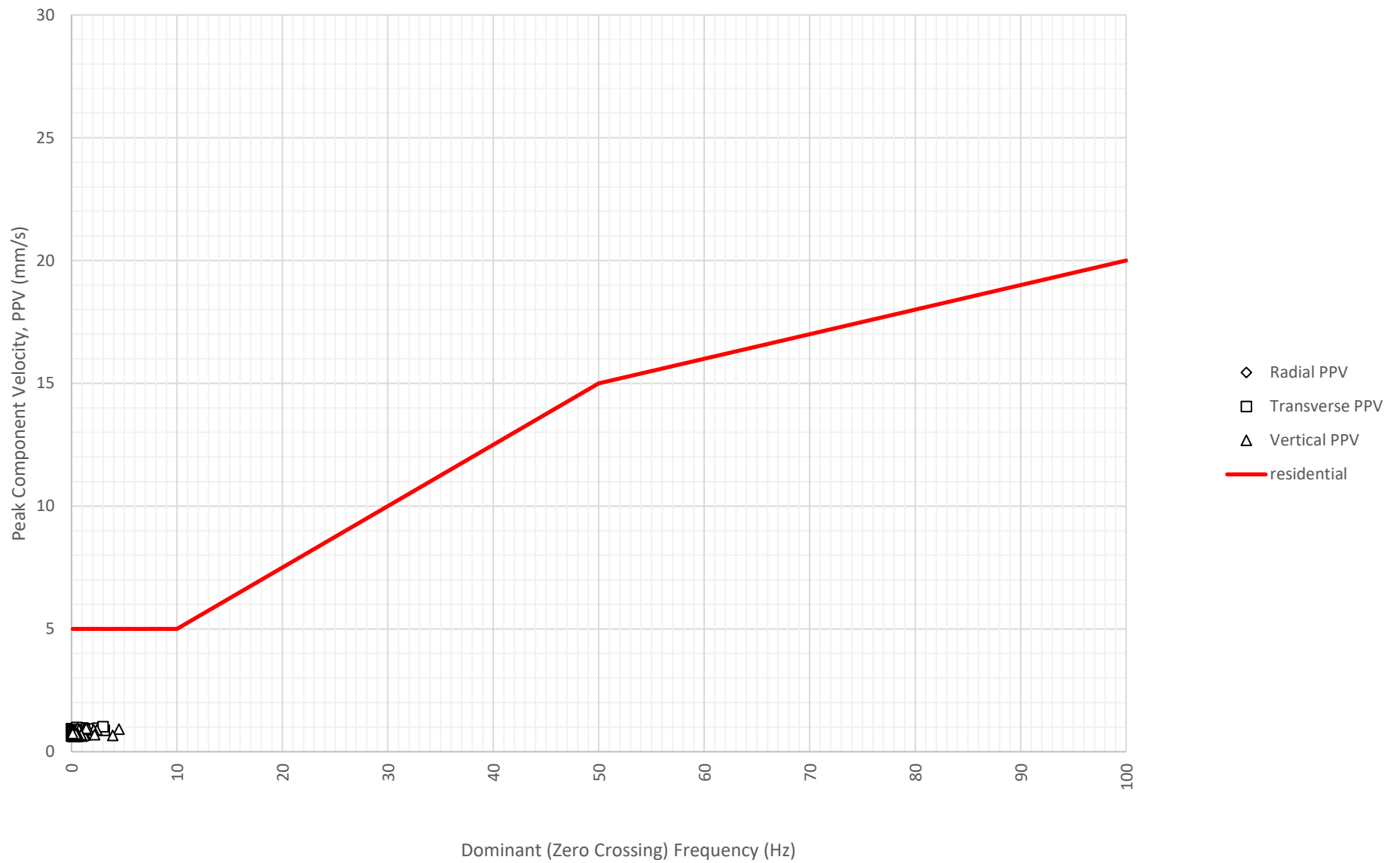
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 18-08-2022



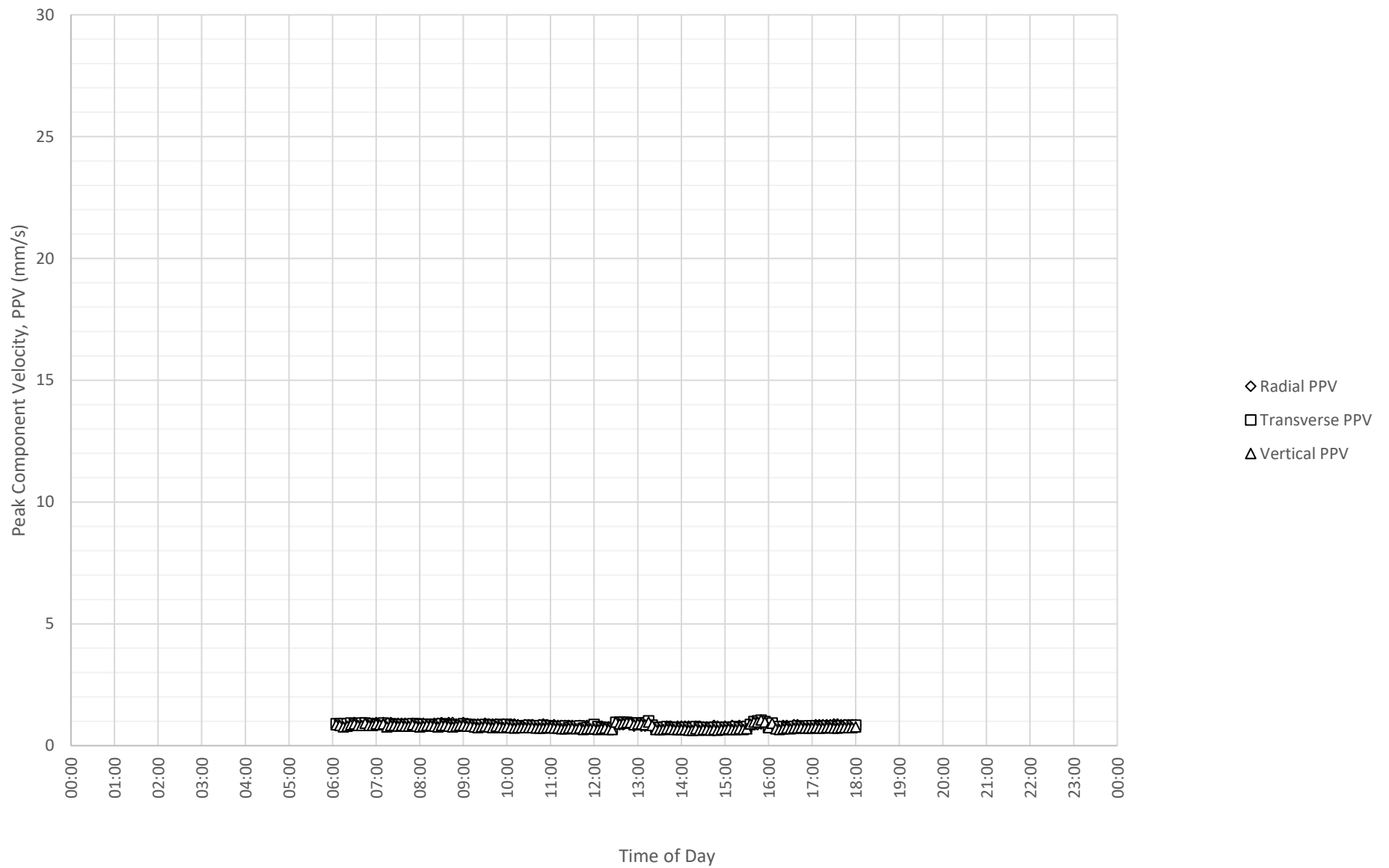
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 19-08-2022



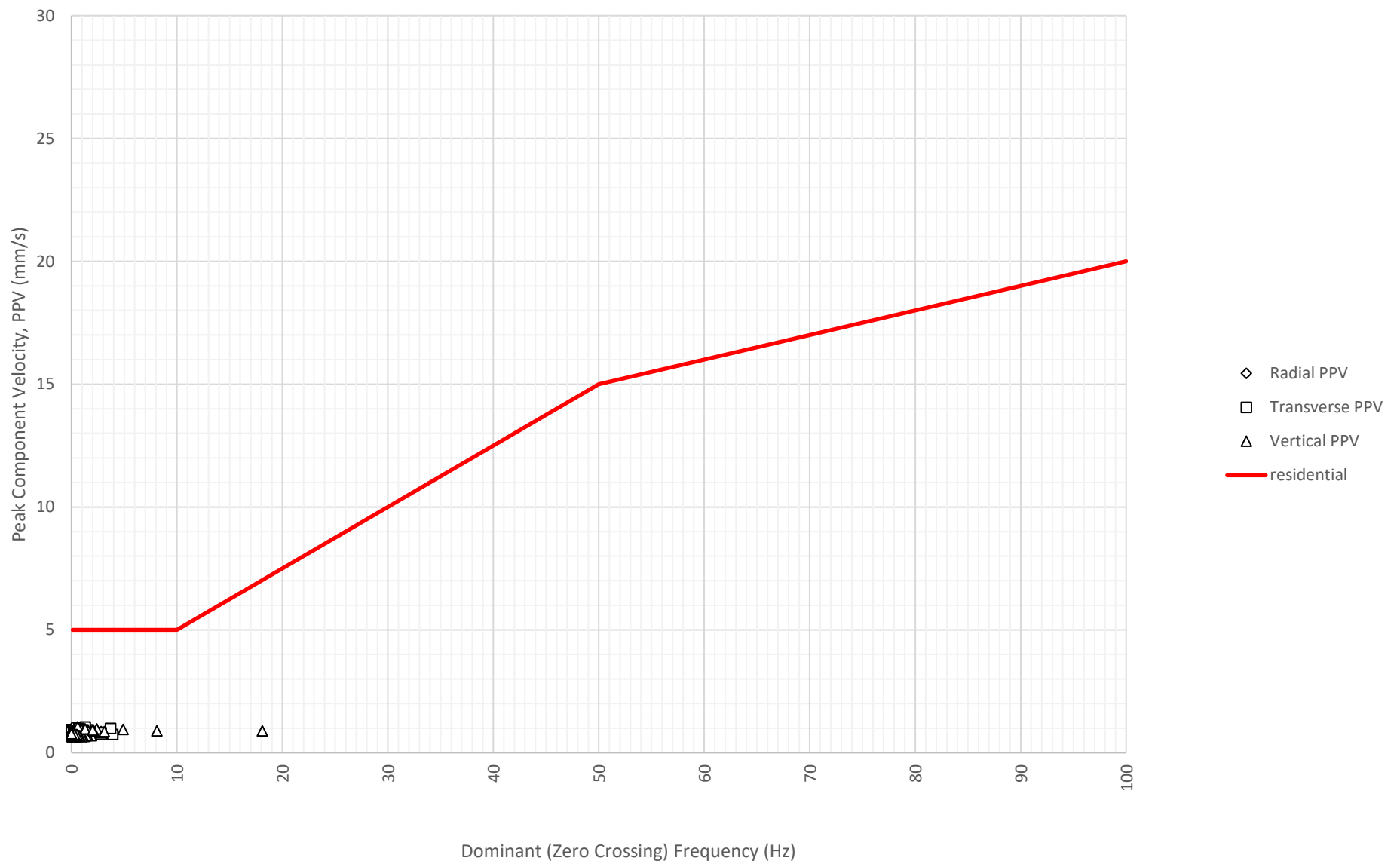
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 19-08-2022



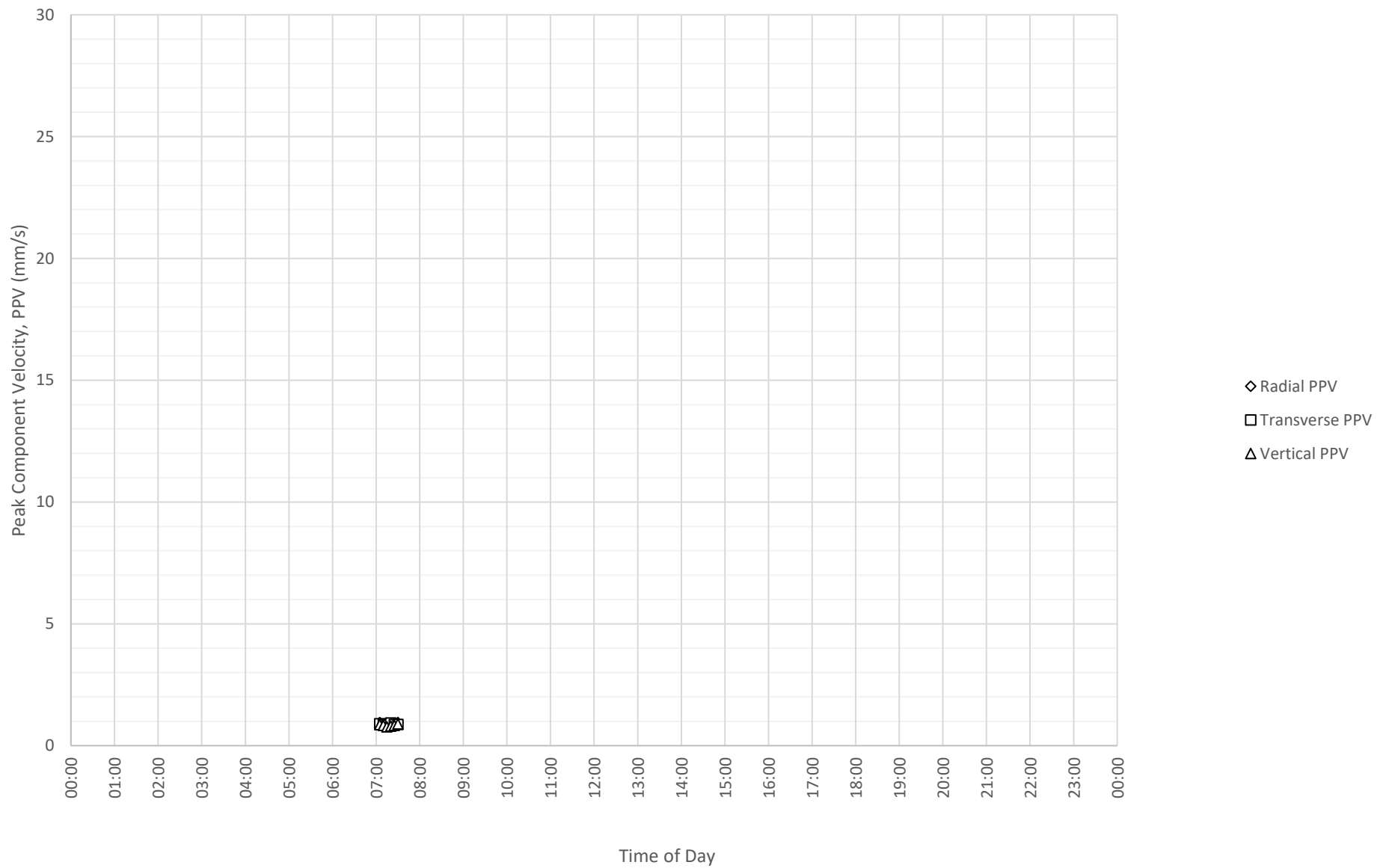
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 20-08-2022



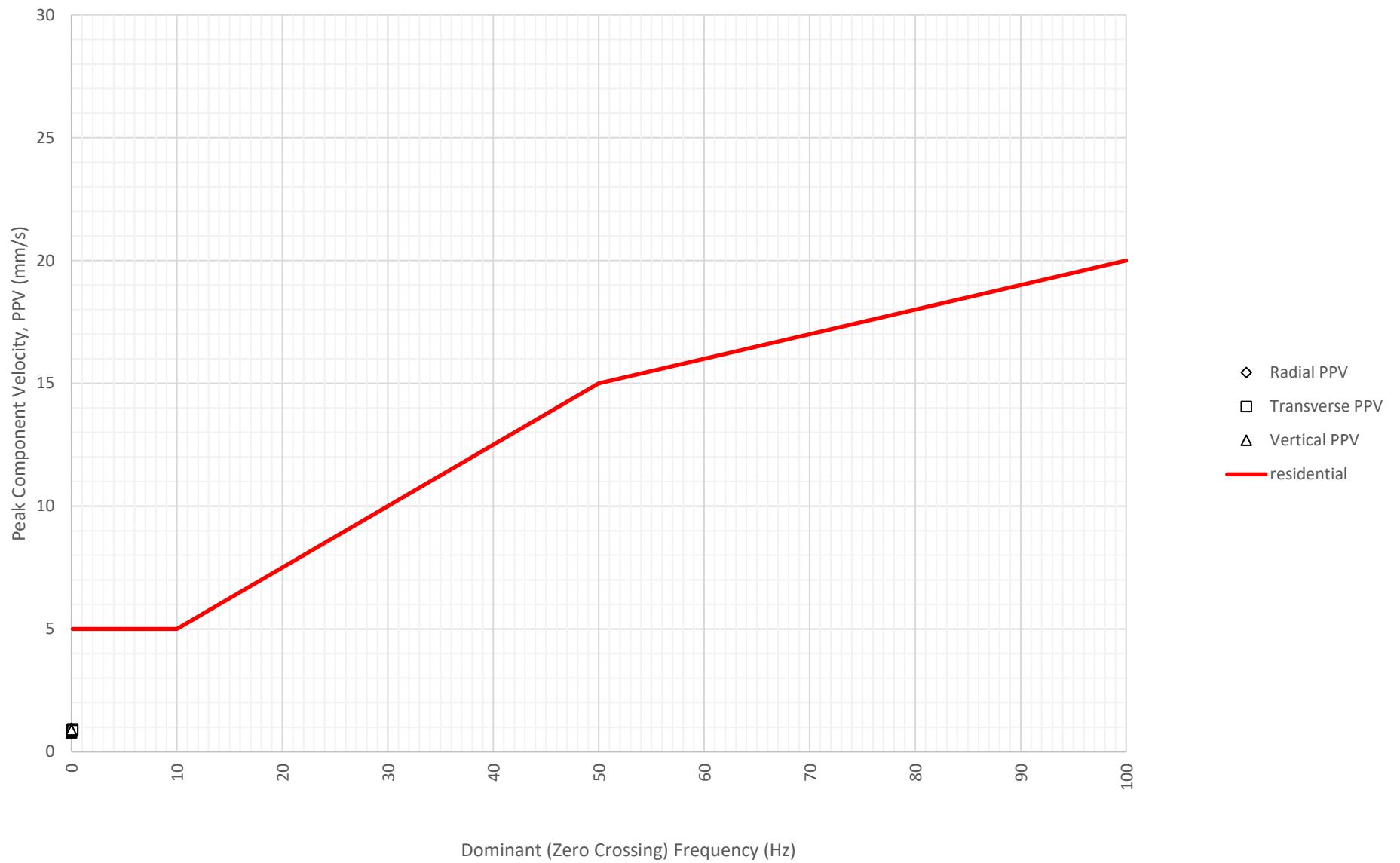
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 20-08-2022



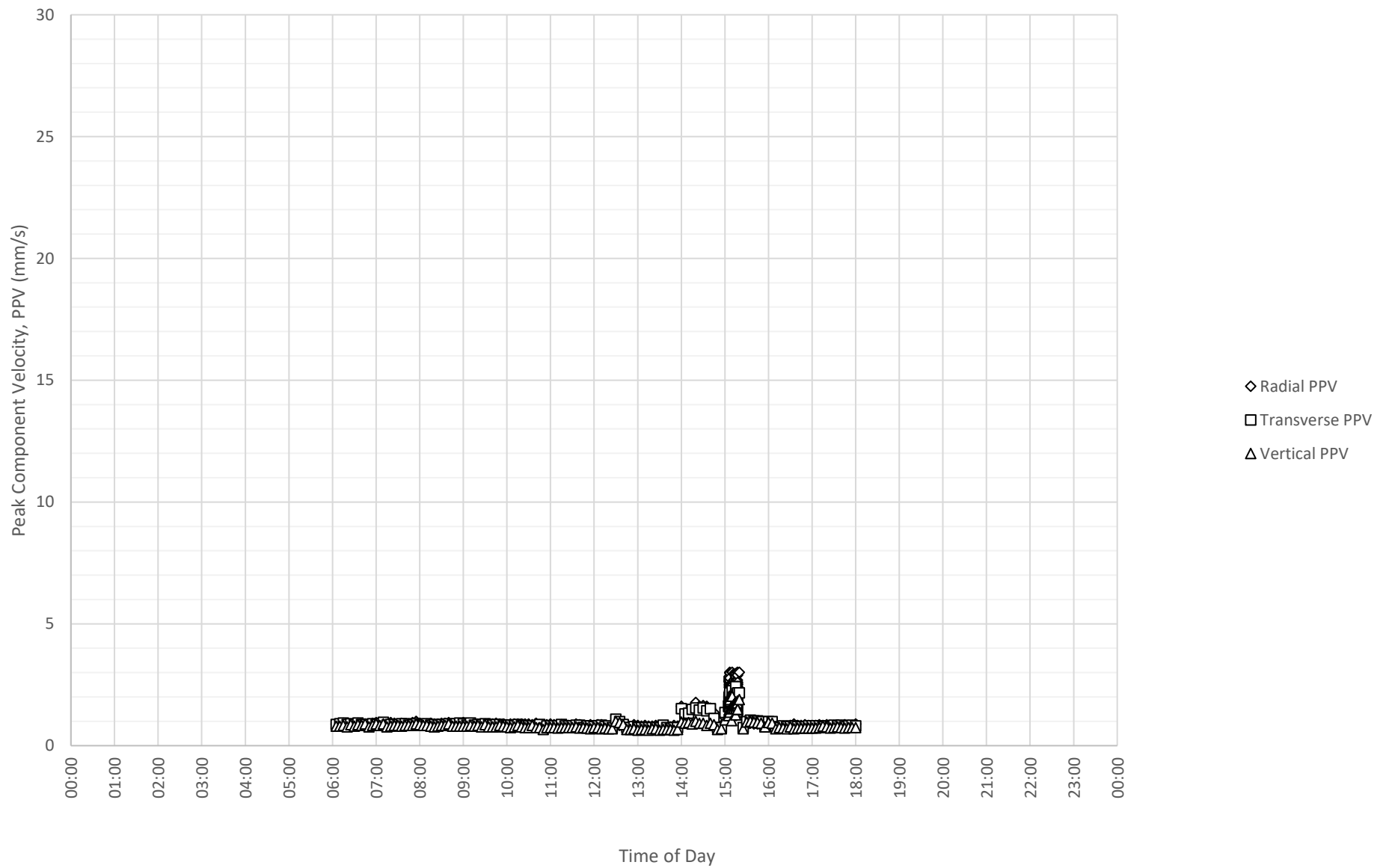
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 21-08-2022



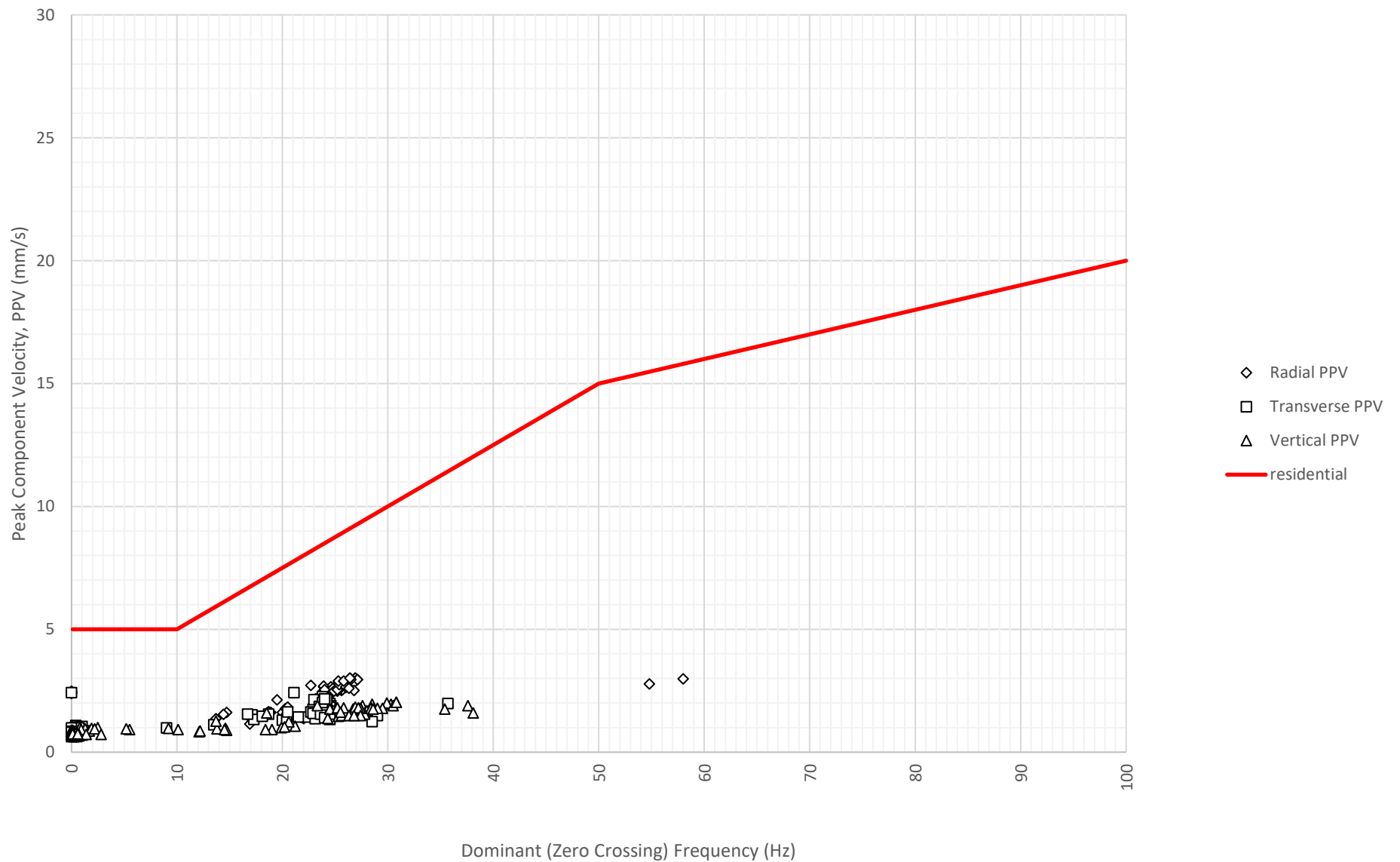
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 21-08-2022



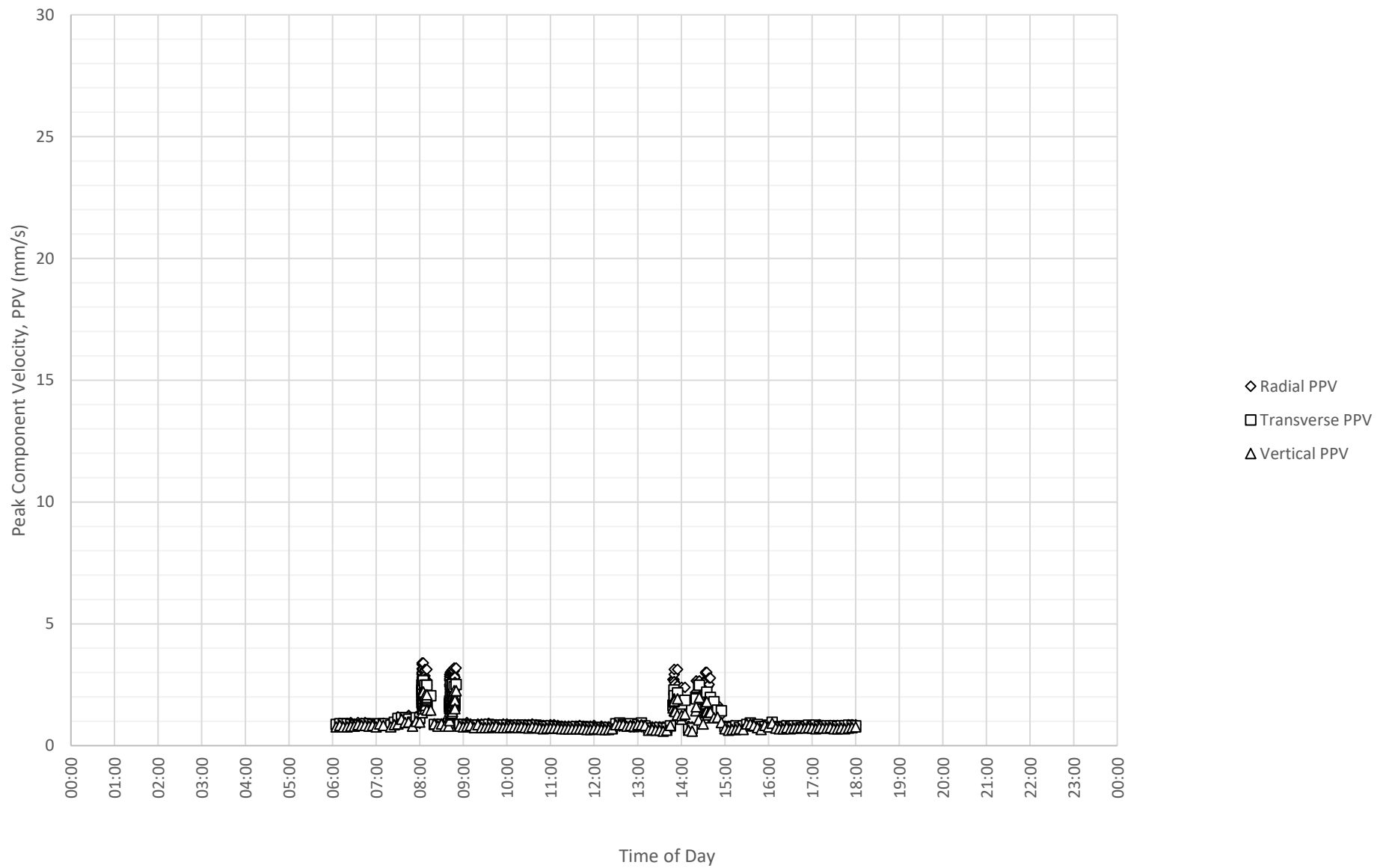
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 22-08-2022



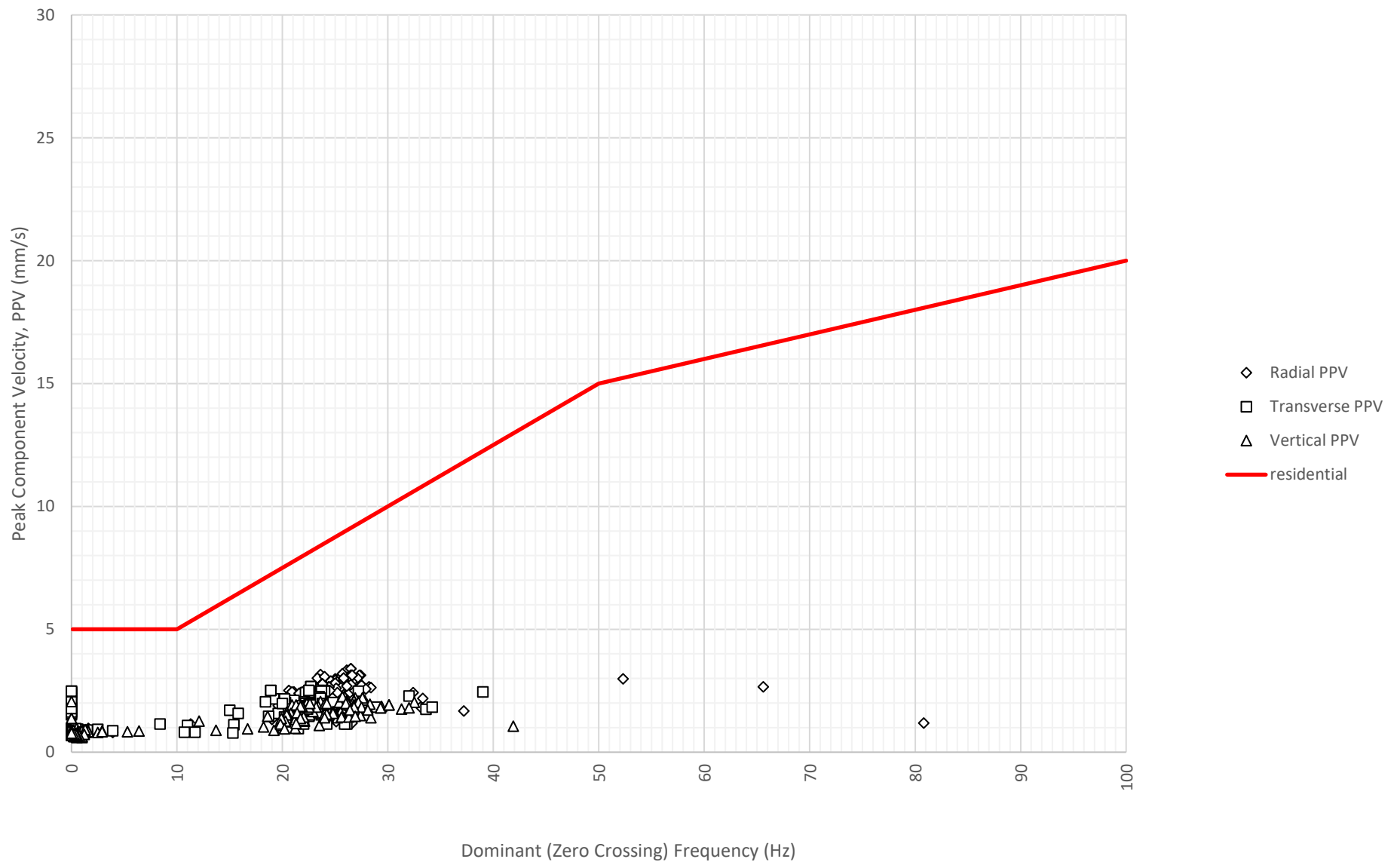
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 22-08-2022



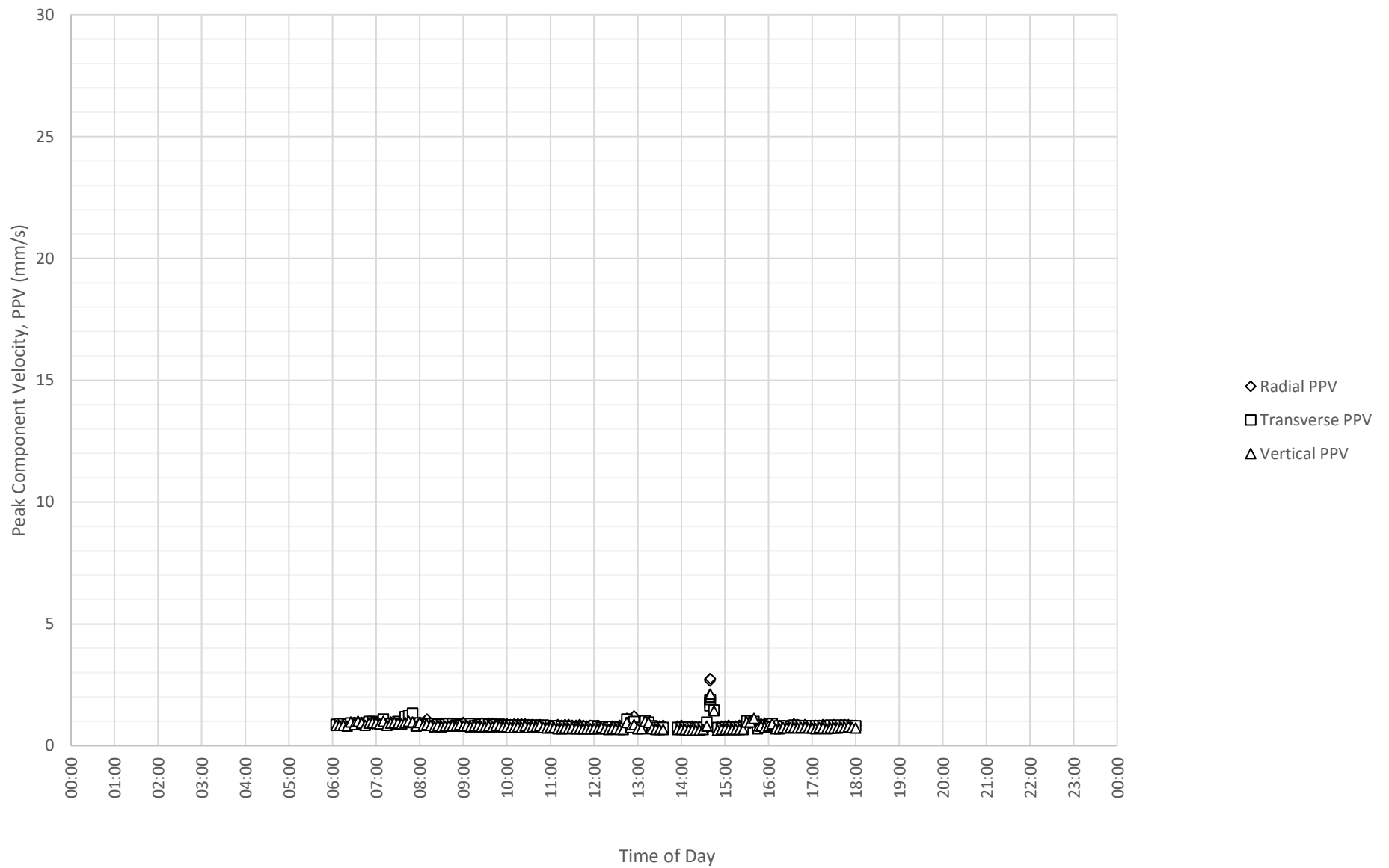
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 23-08-2022



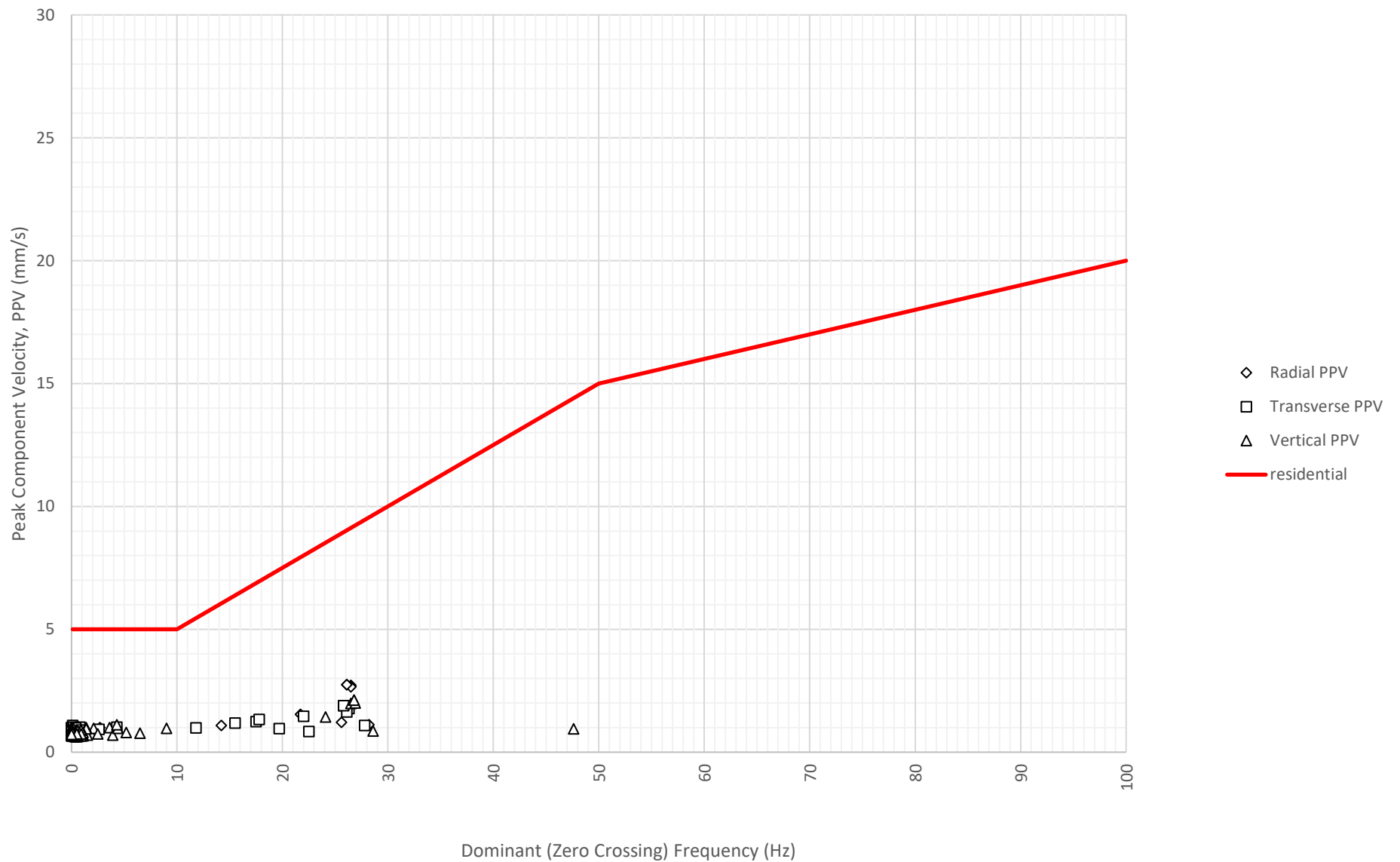
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 23-08-2022



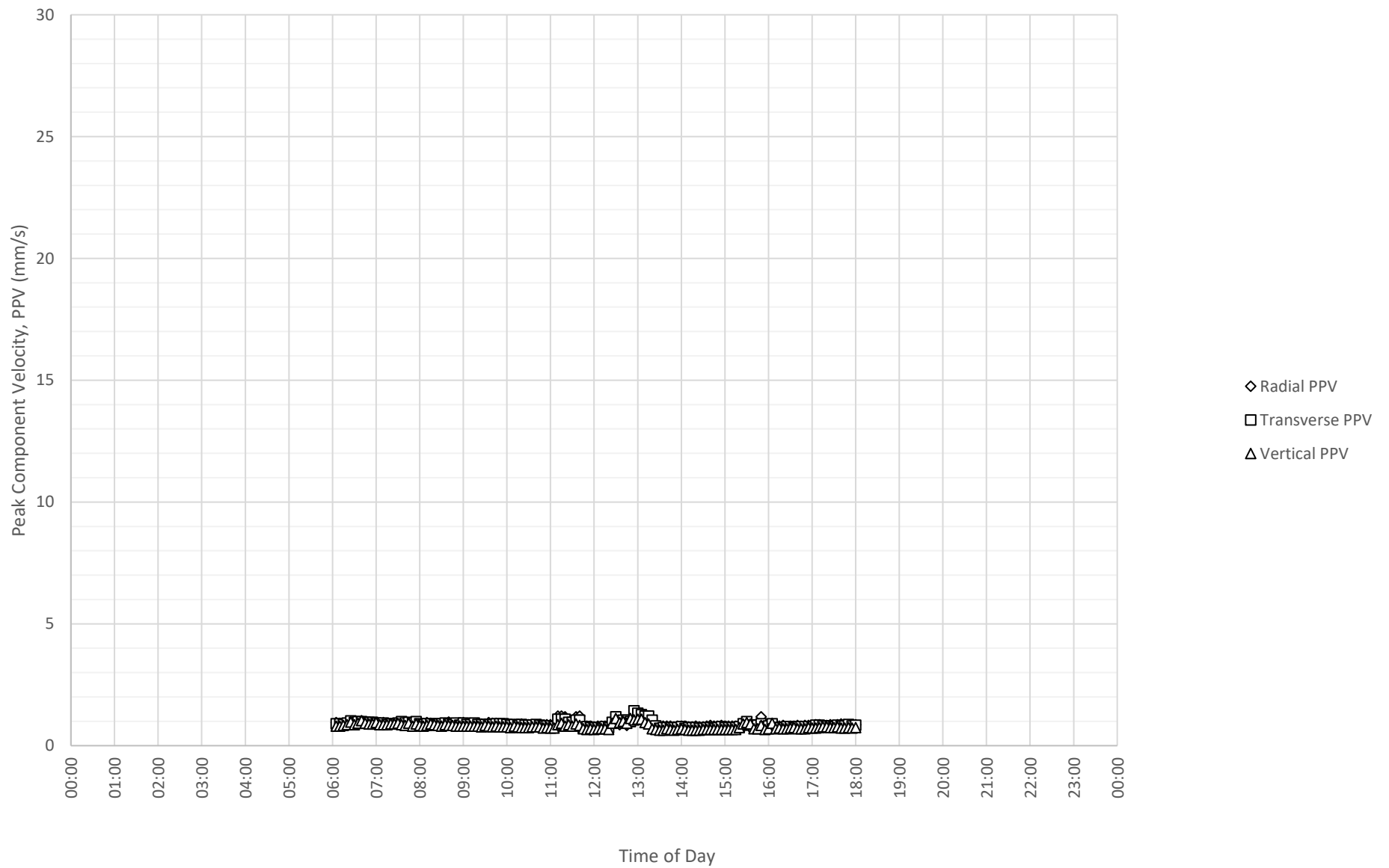
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 24-08-2022



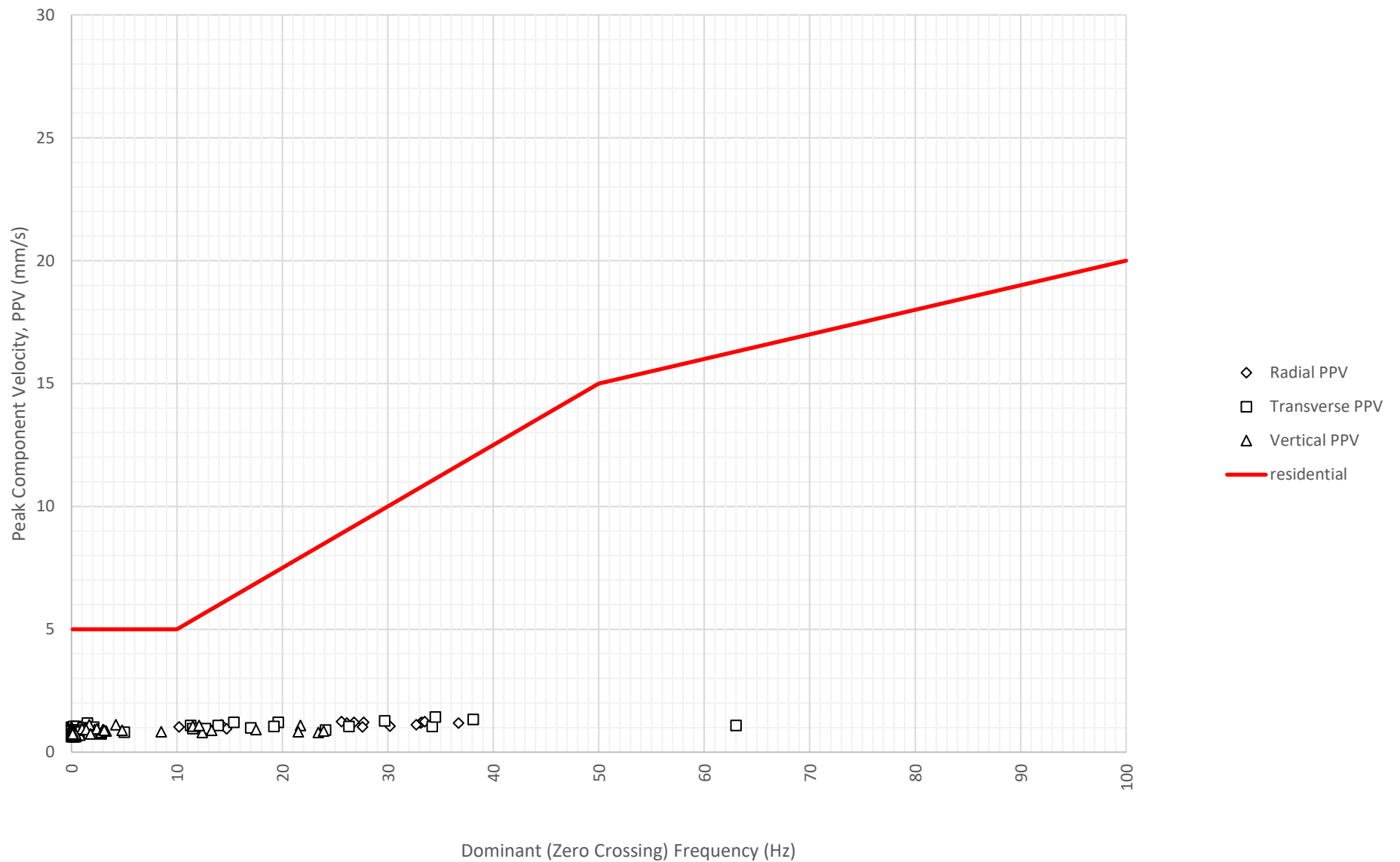
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 24-08-2022



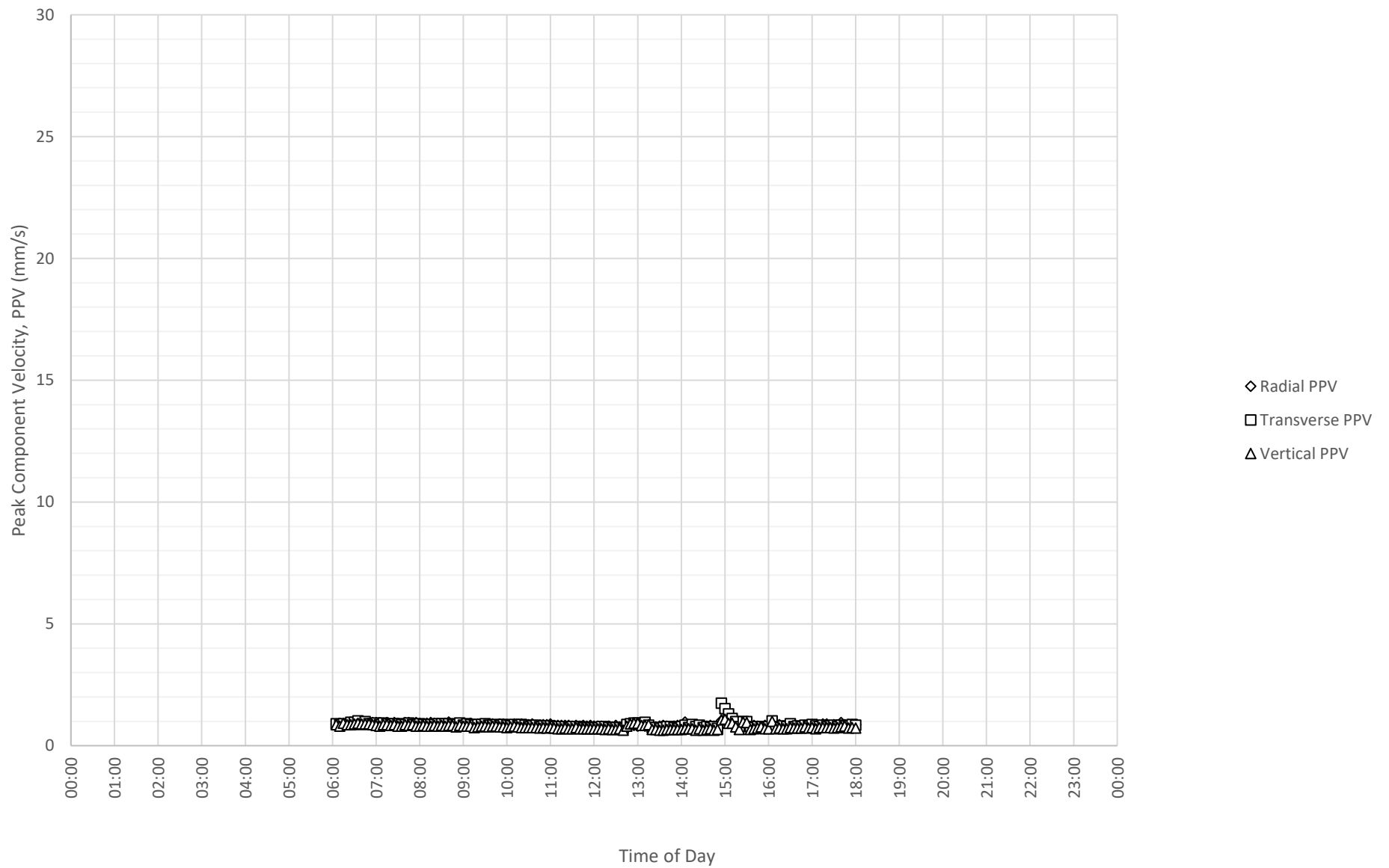
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 25-08-2022



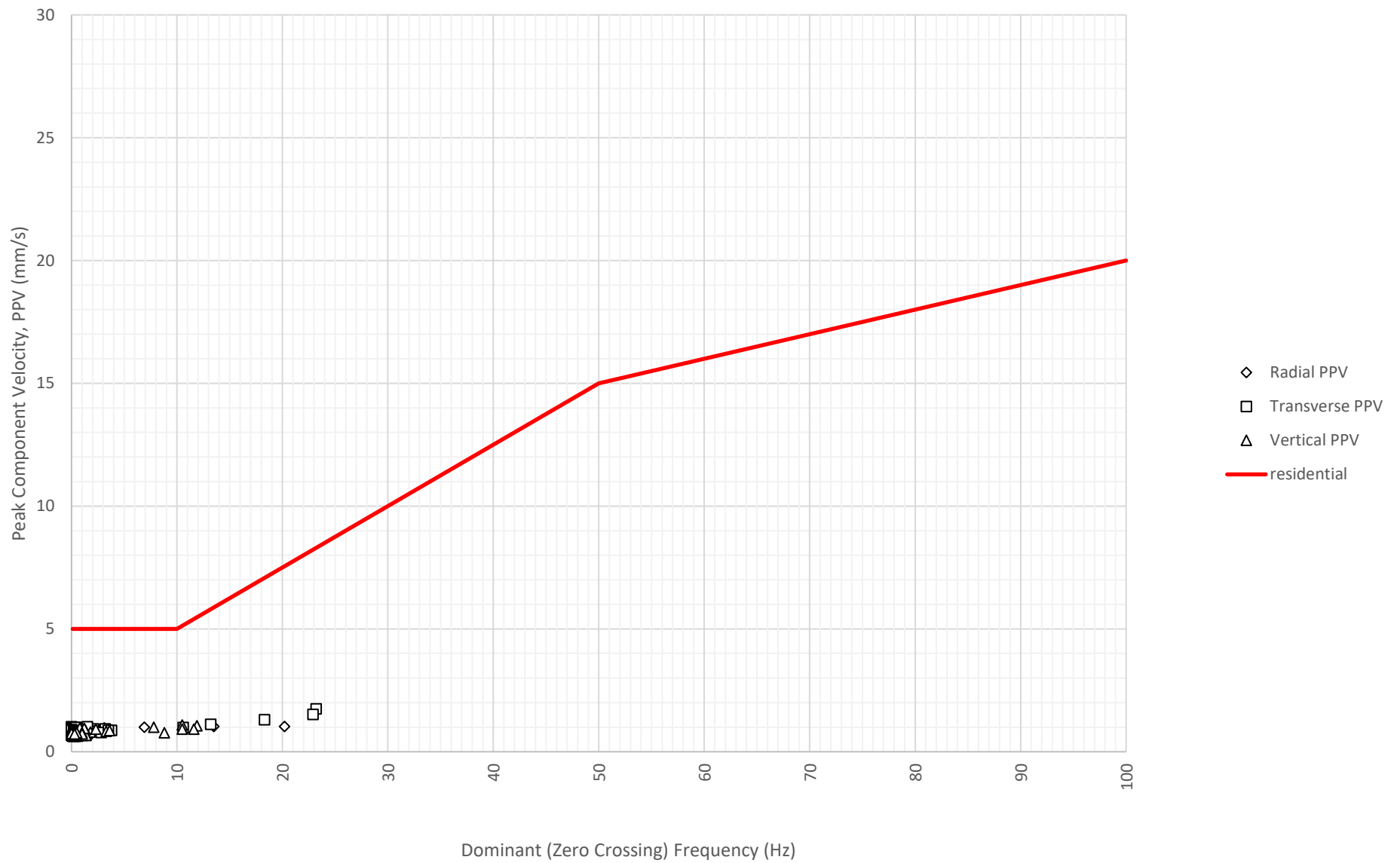
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 25-08-2022



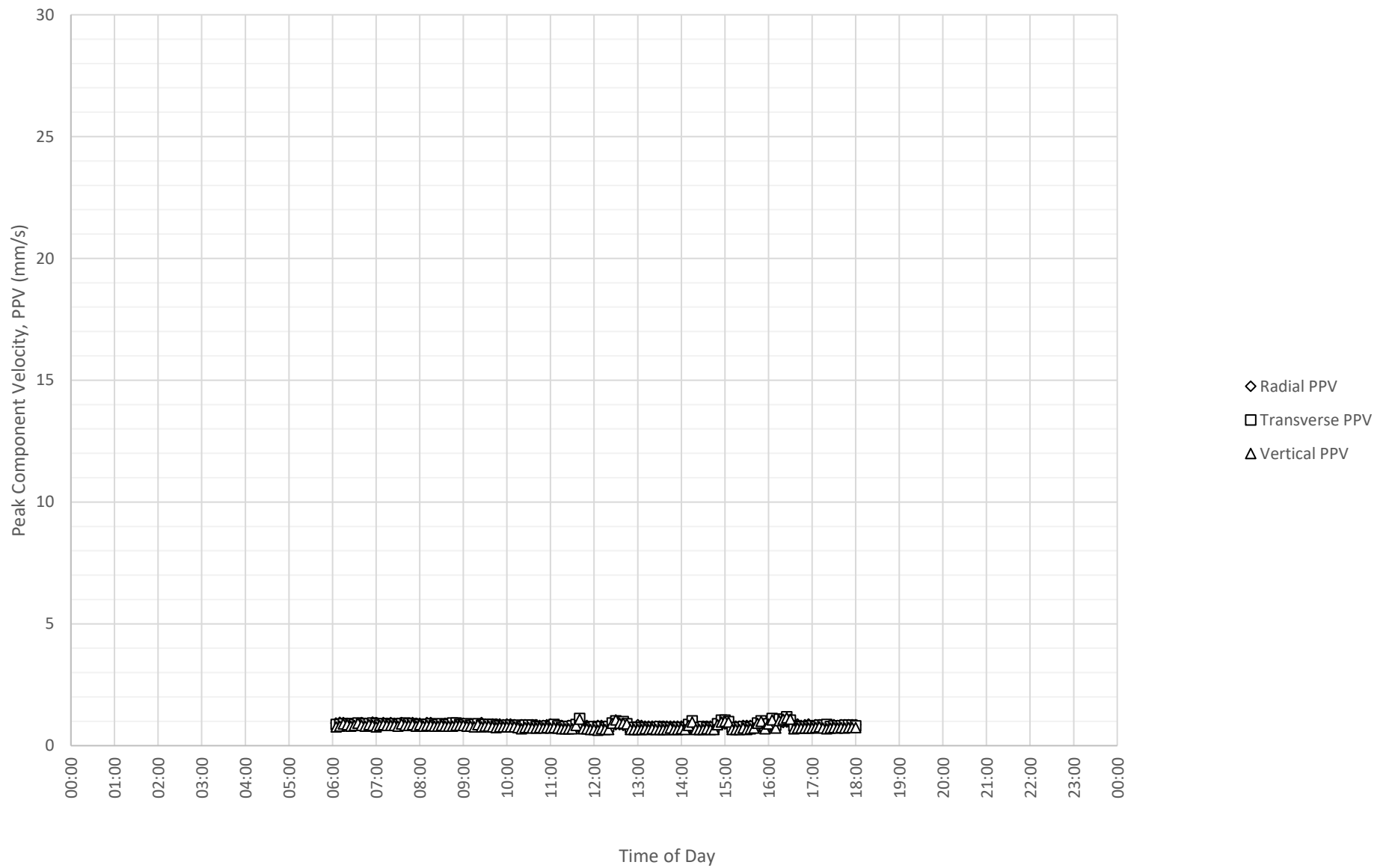
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 26-08-2022



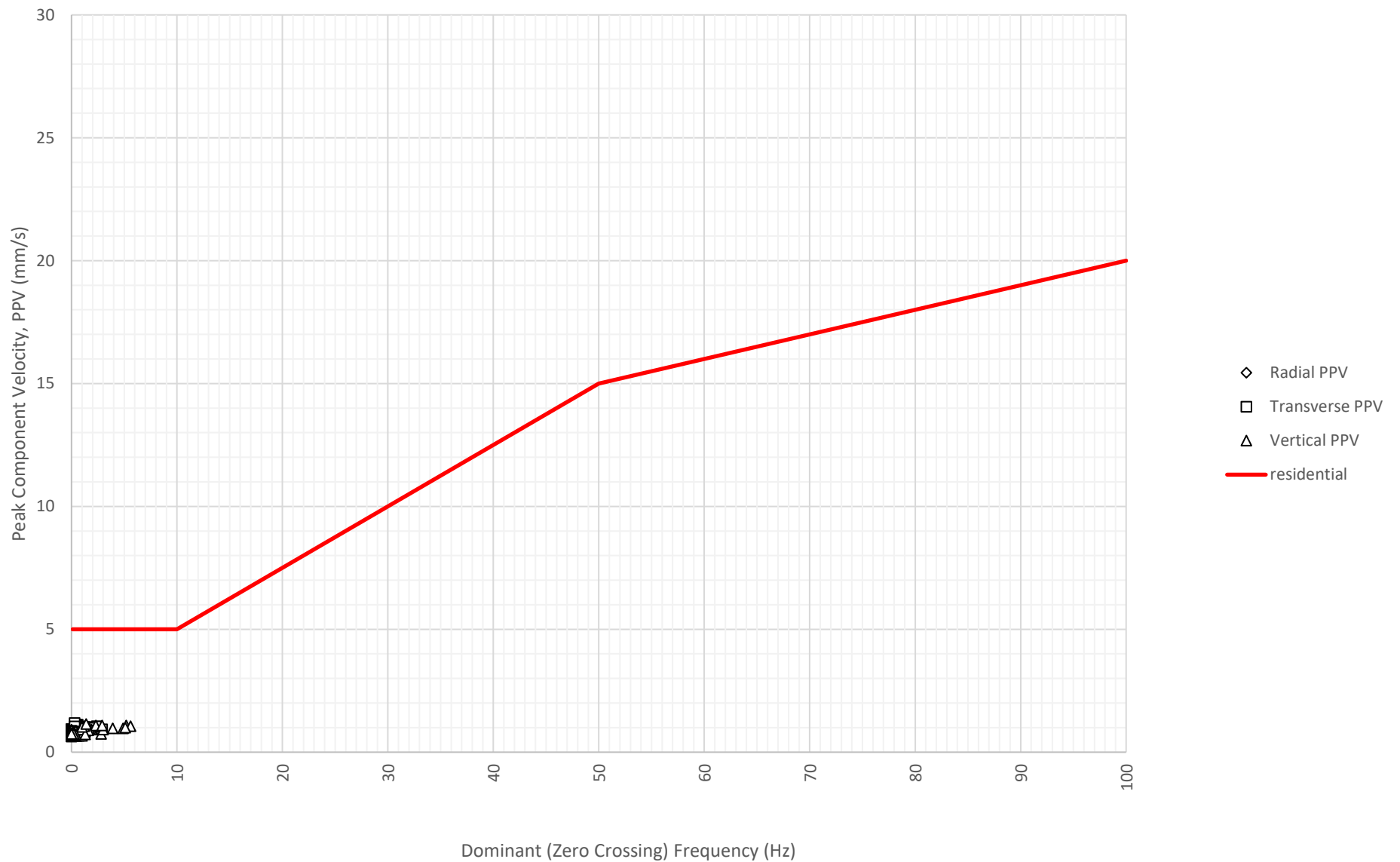
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 26-08-2022



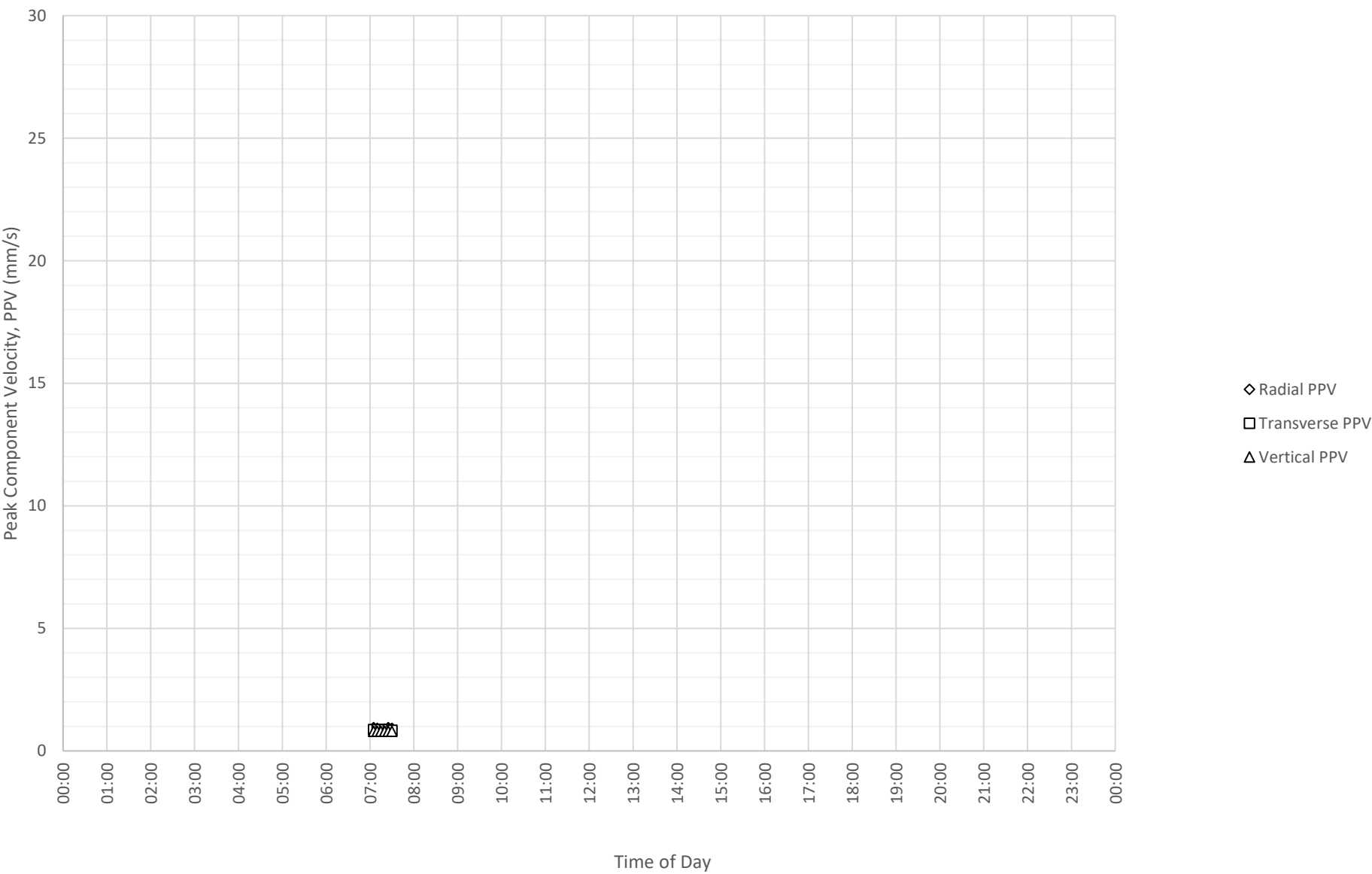
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 27-08-2022



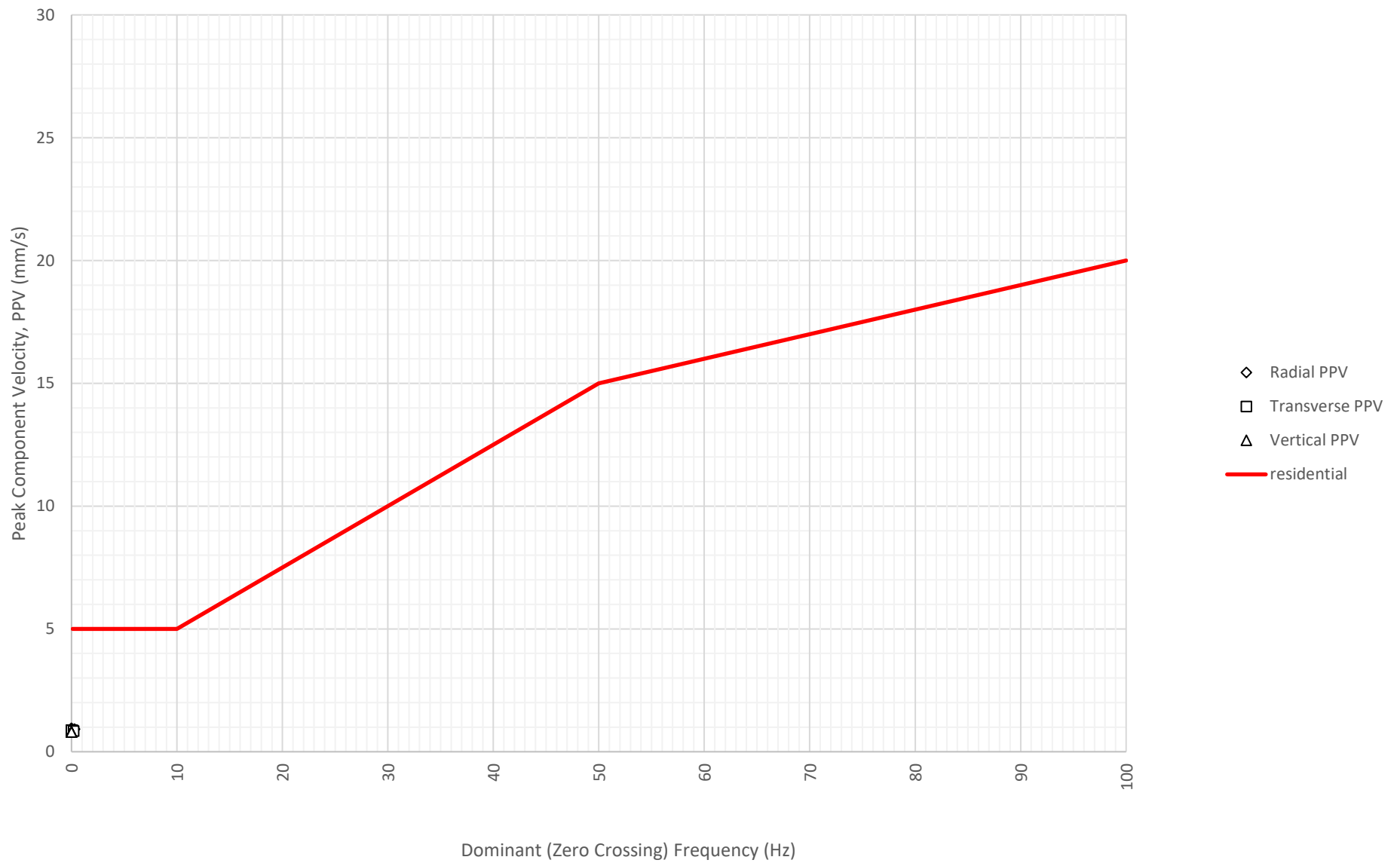
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 27-08-2022



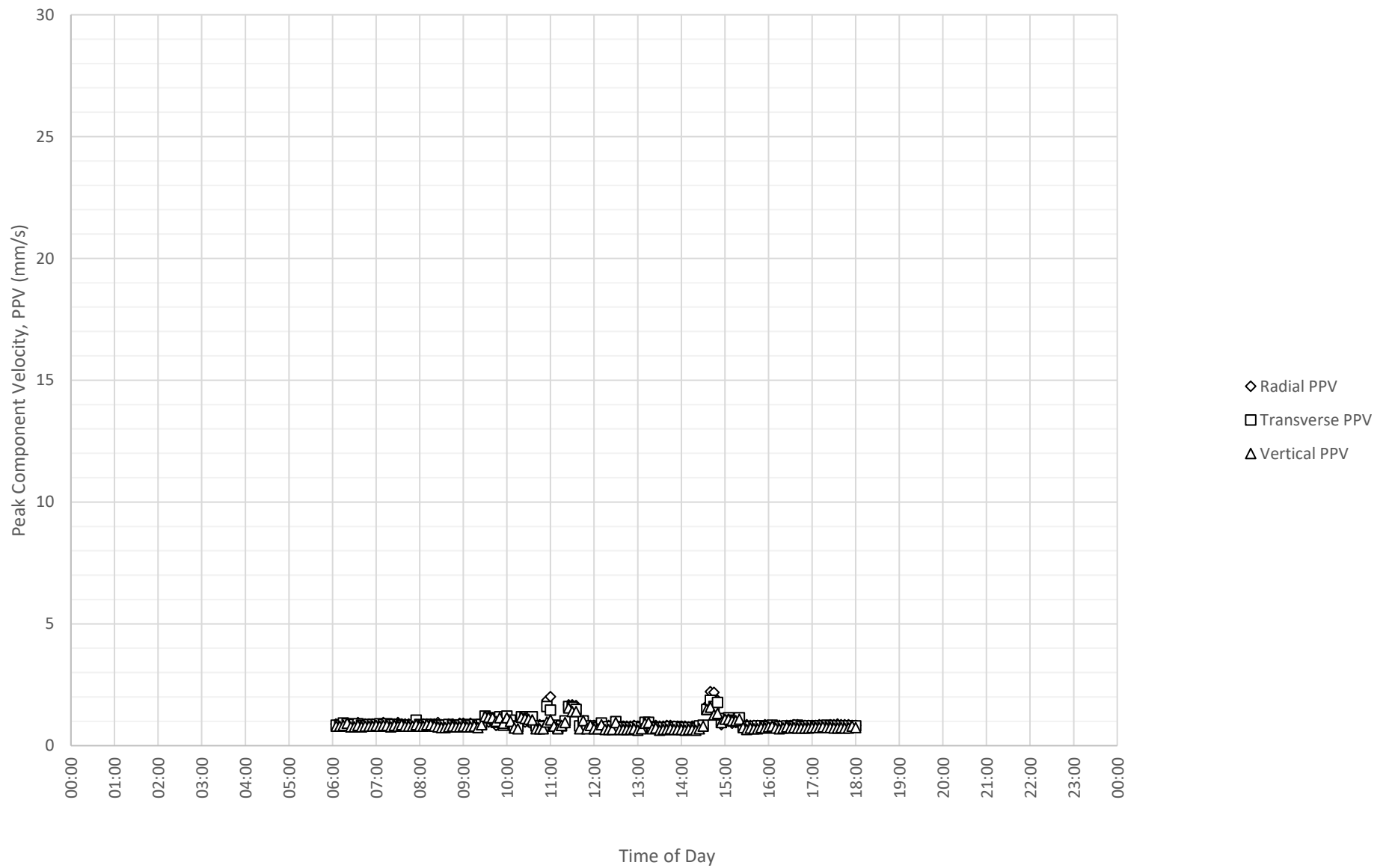
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 28-08-2022



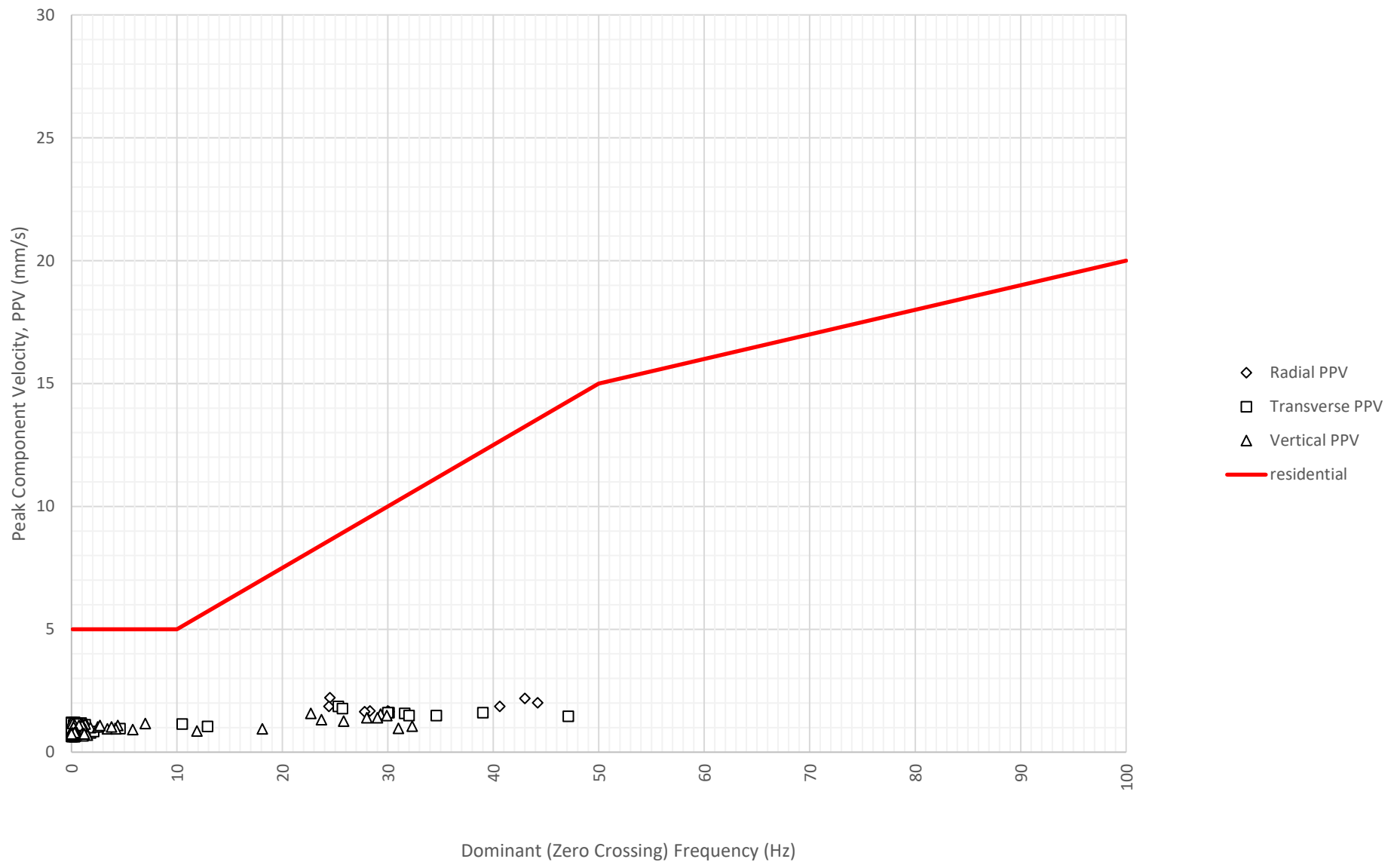
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 28-08-2022



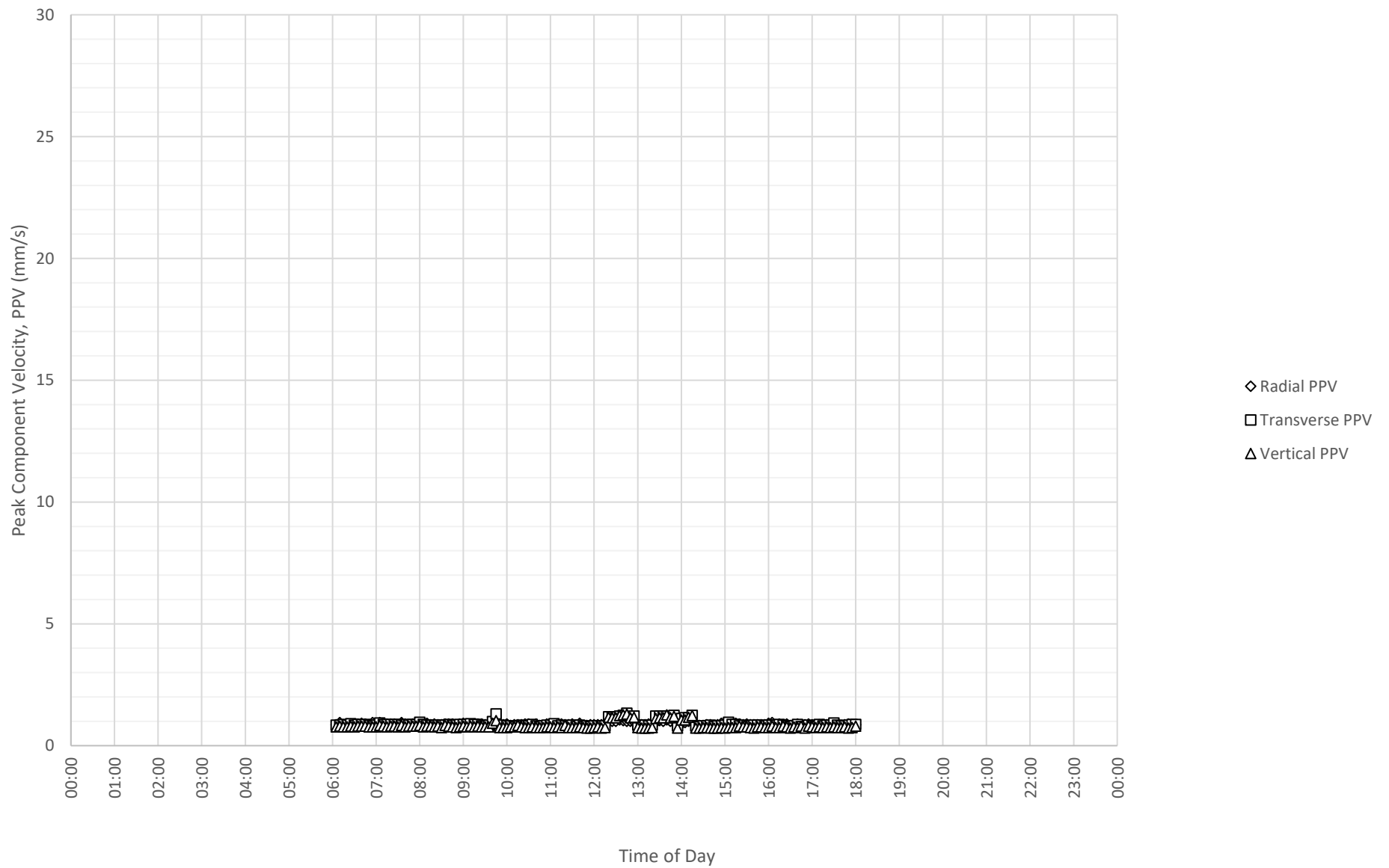
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 29-08-2022



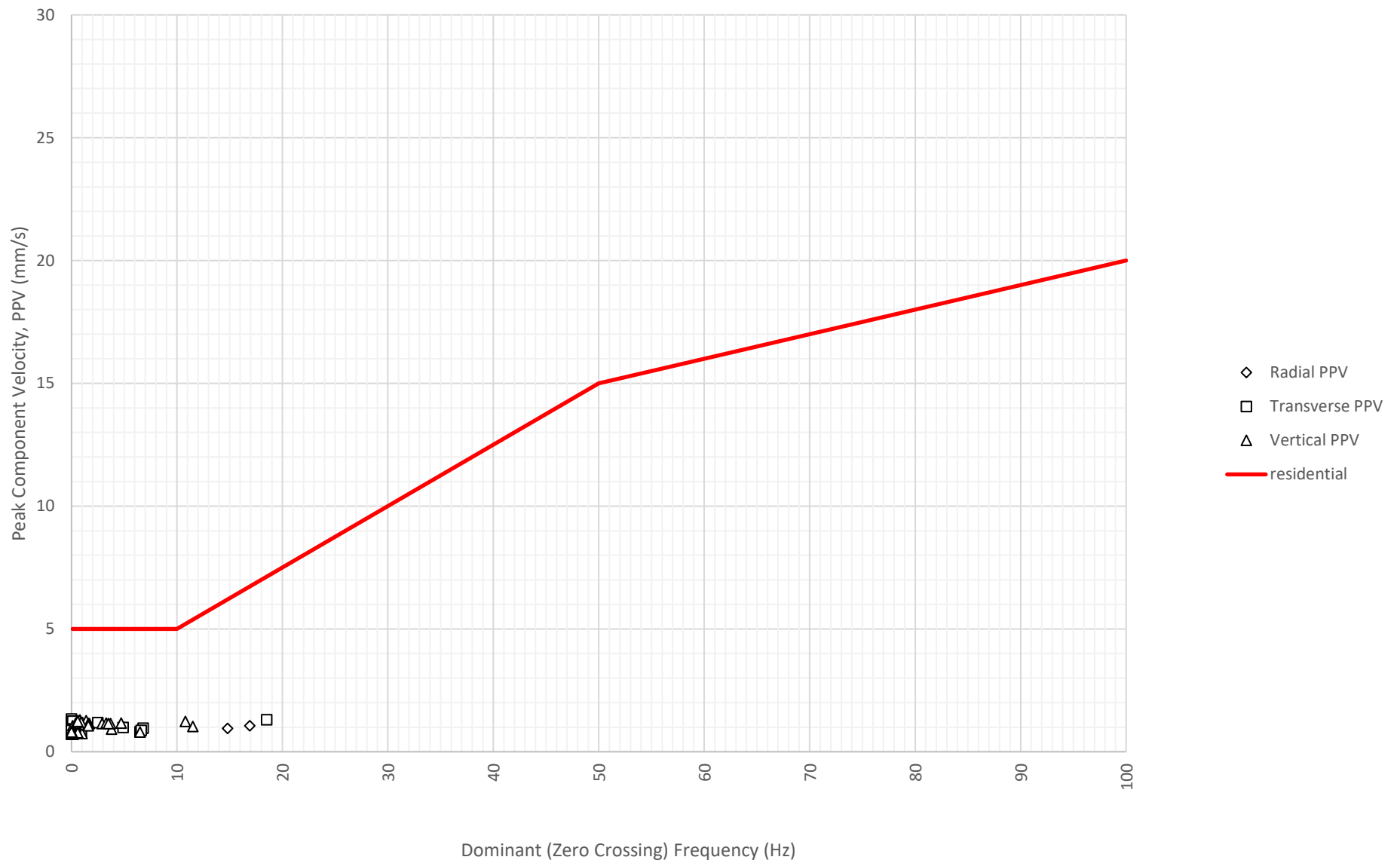
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 29-08-2022



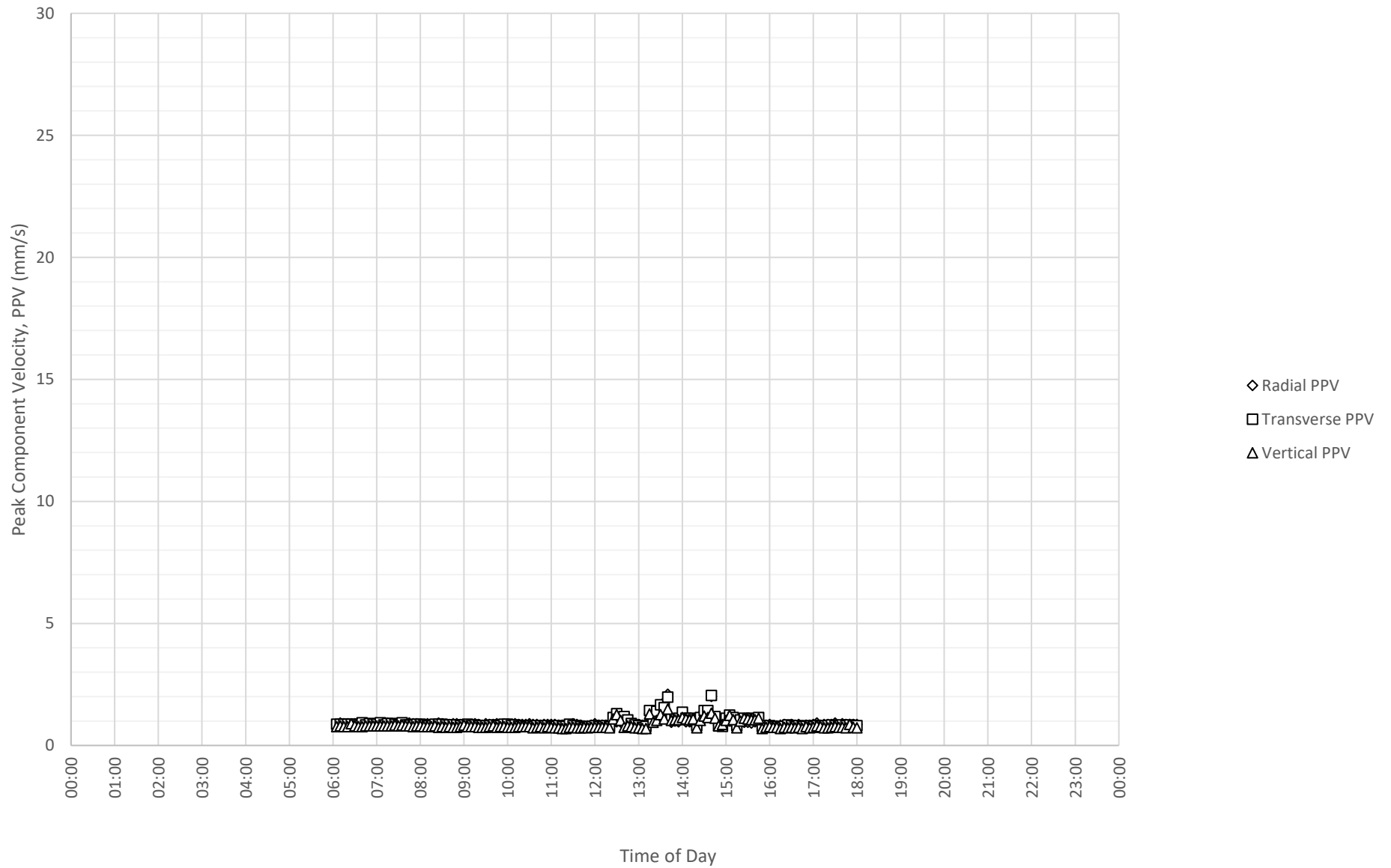
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 30-08-2022



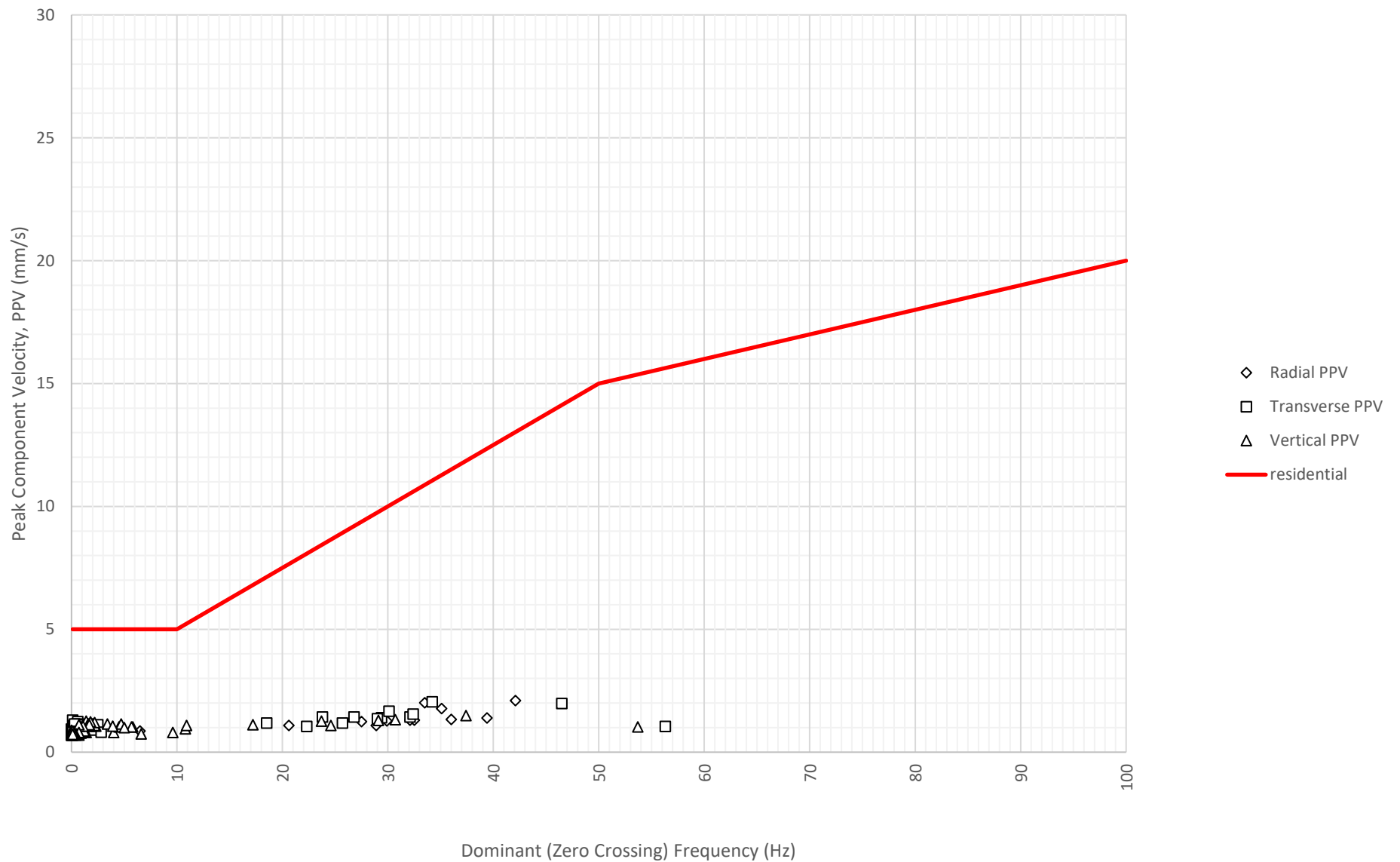
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 30-08-2022



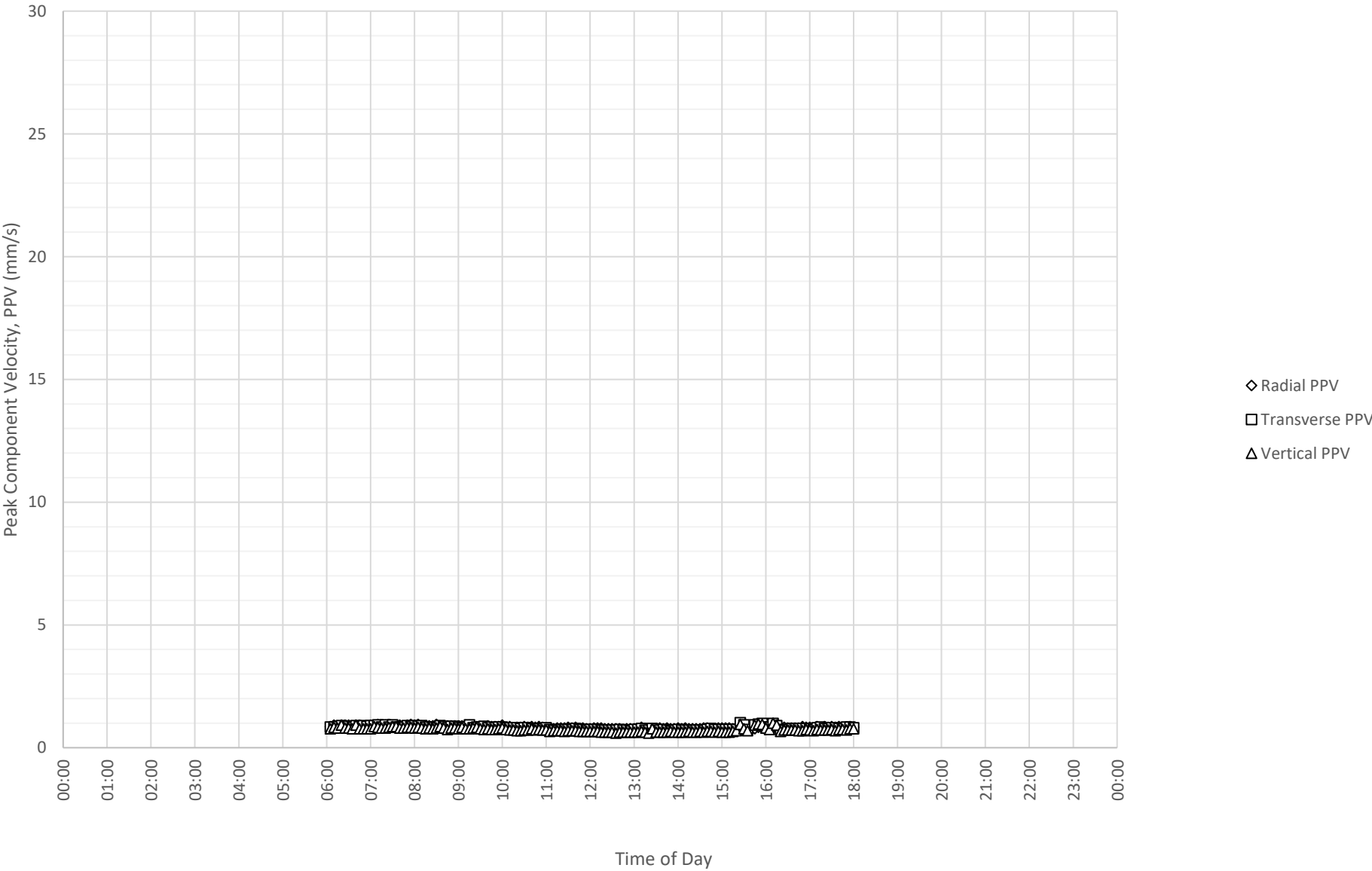
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 31-08-2022



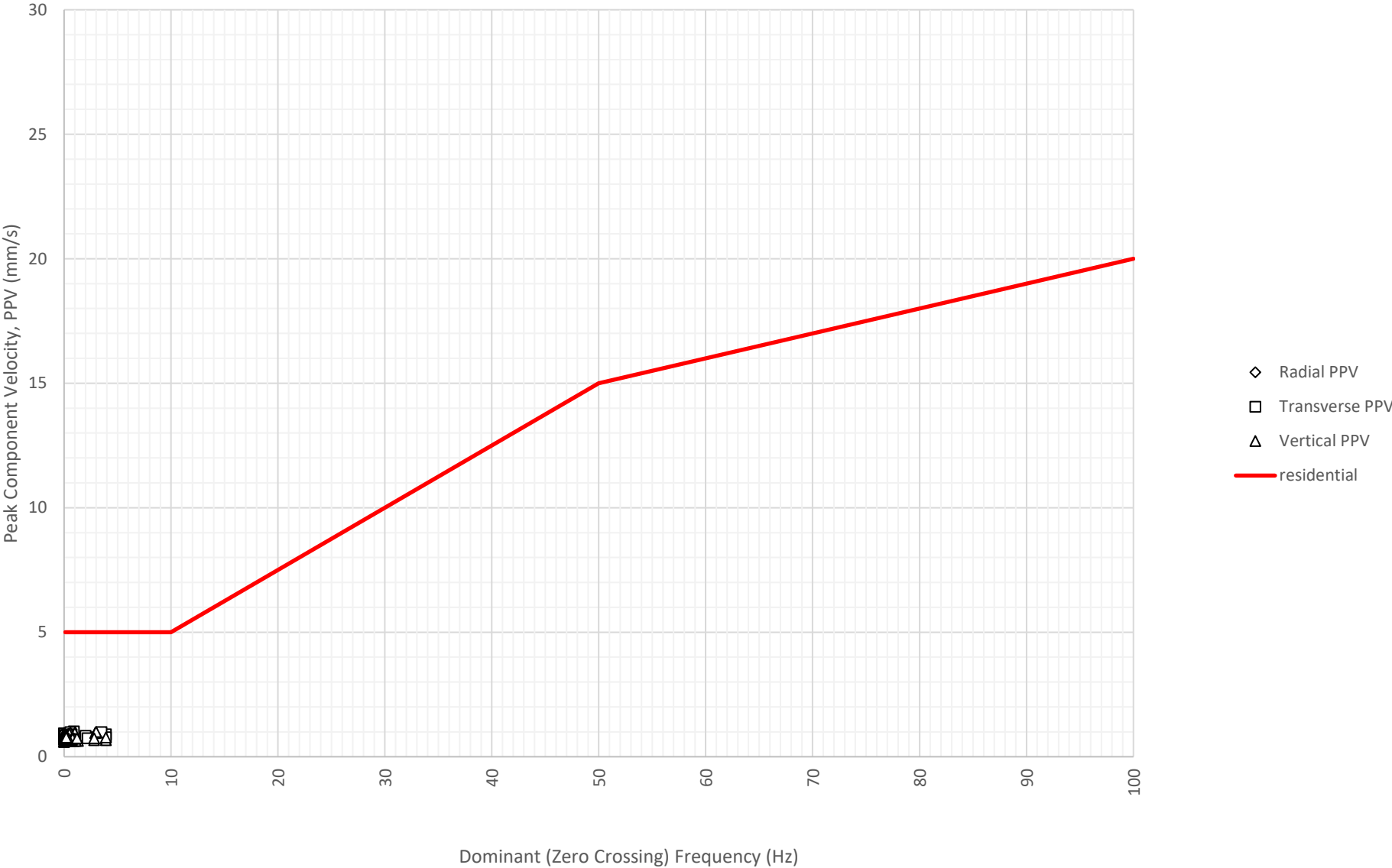
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 31-08-2022



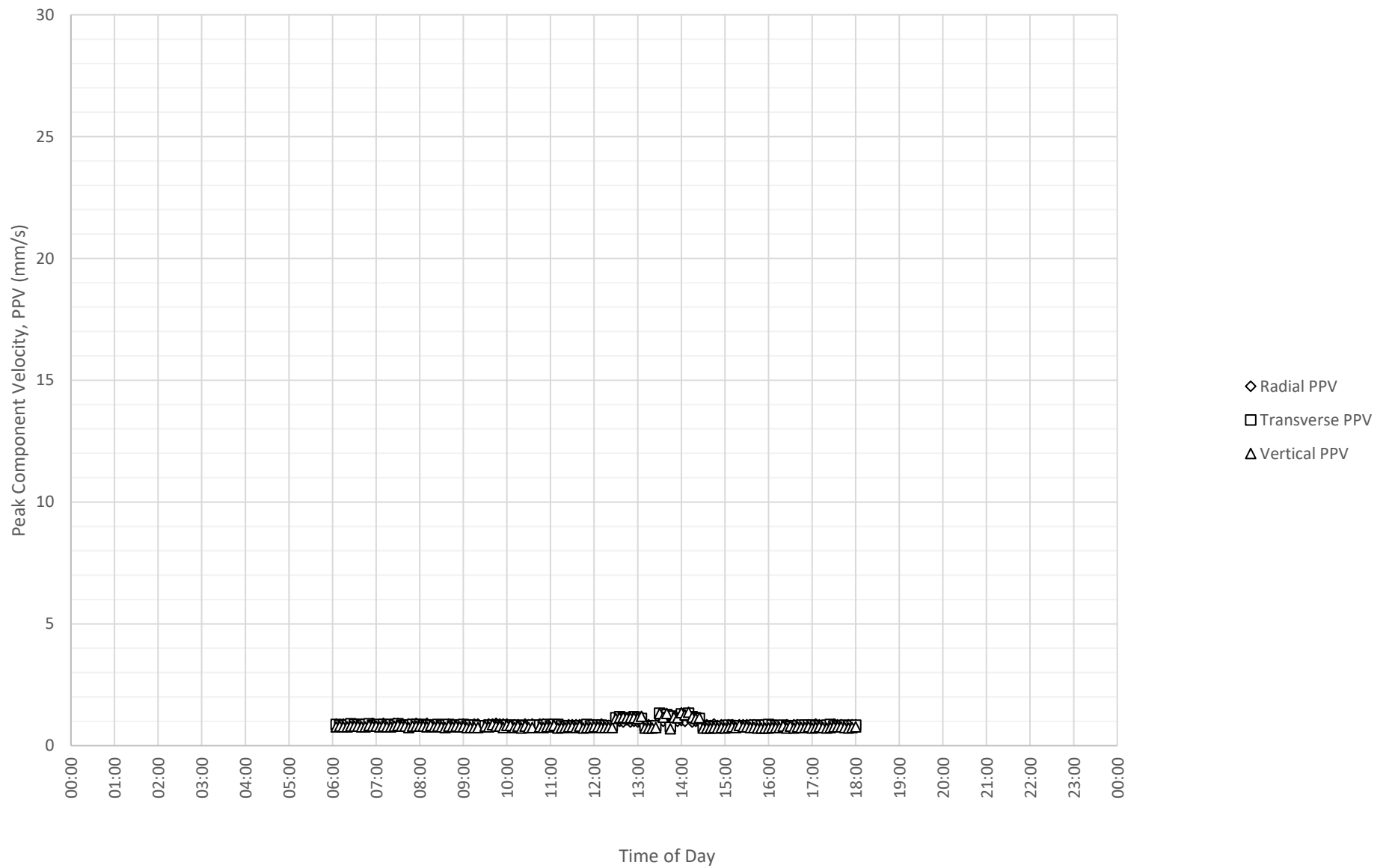
Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 1-09-2022



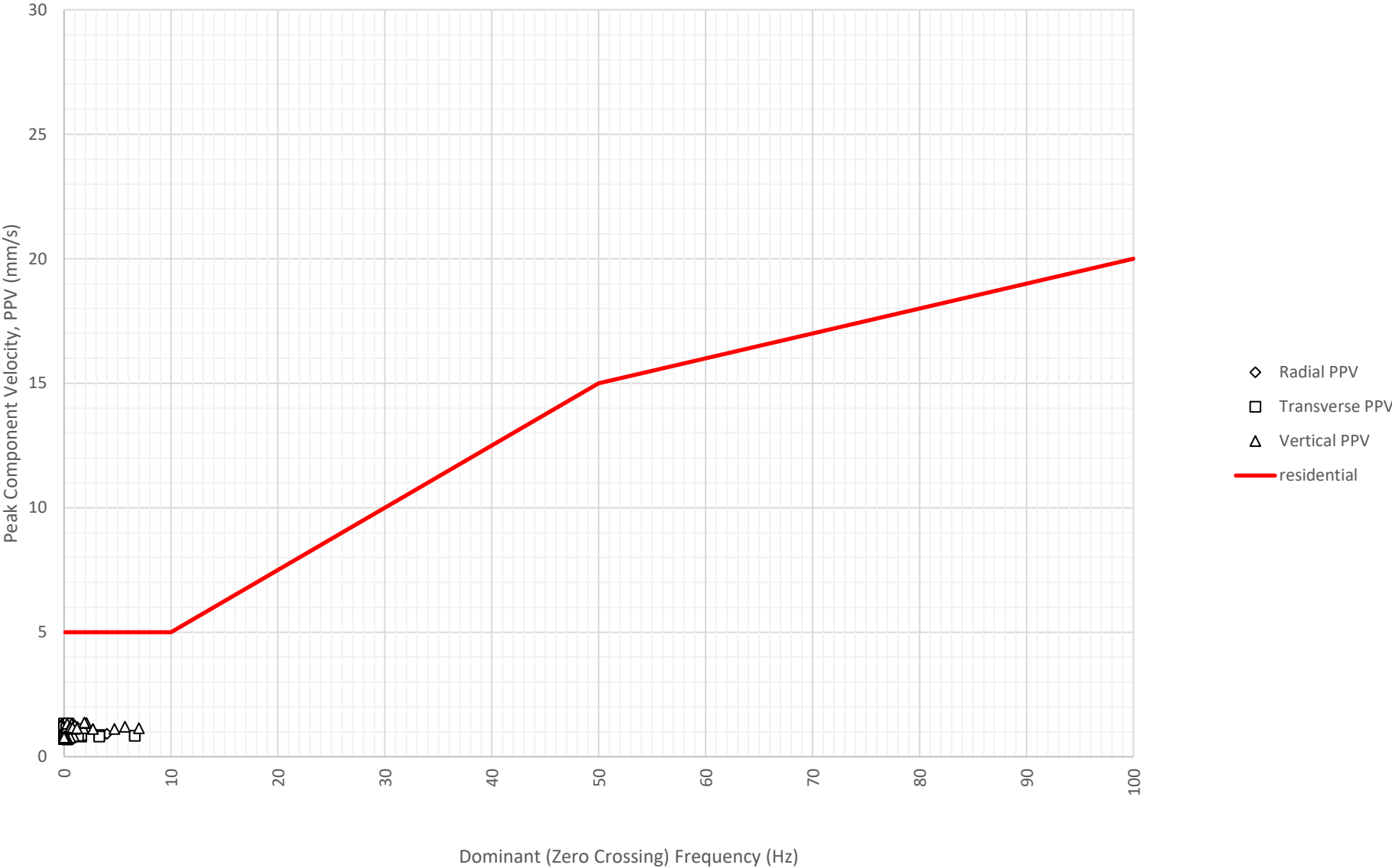
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 1-09-2022



Daily Monitored Vibration Levels at Tweed Valley Hospital Health Hub on 2-09-2022



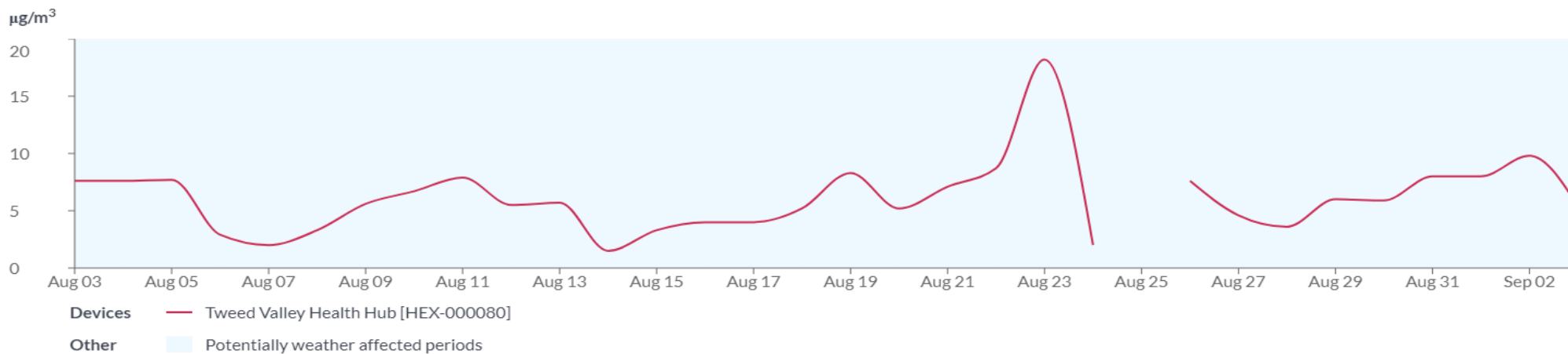
Frequency Content of Vibration Levels at Tweed Valley Hospital Health Hub on 2-09-2022



APPENDIX 3 – DUST MONITORING RESULTS

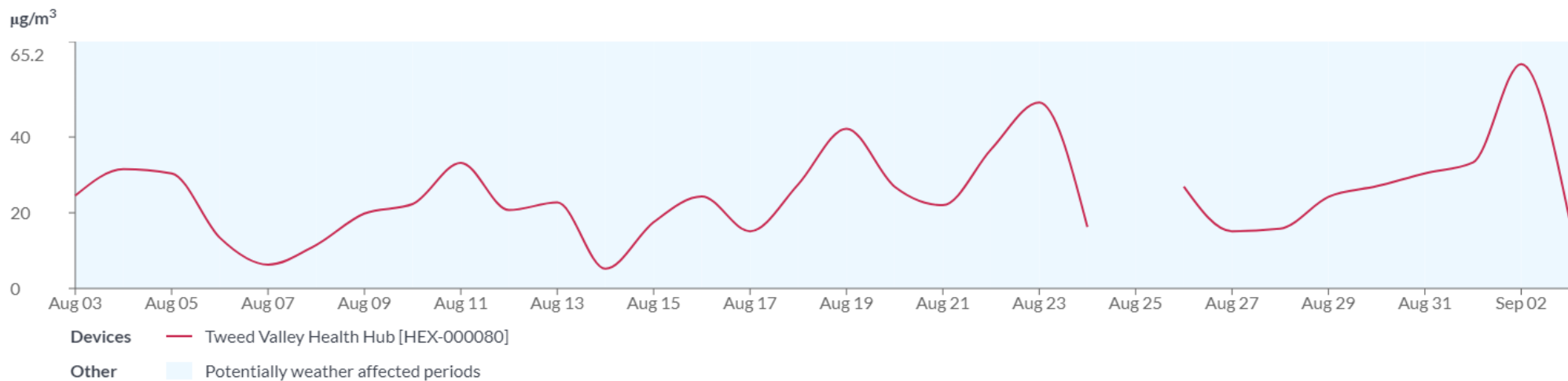
 PM2.5

Aug 3 2022 - Sep 3 2022



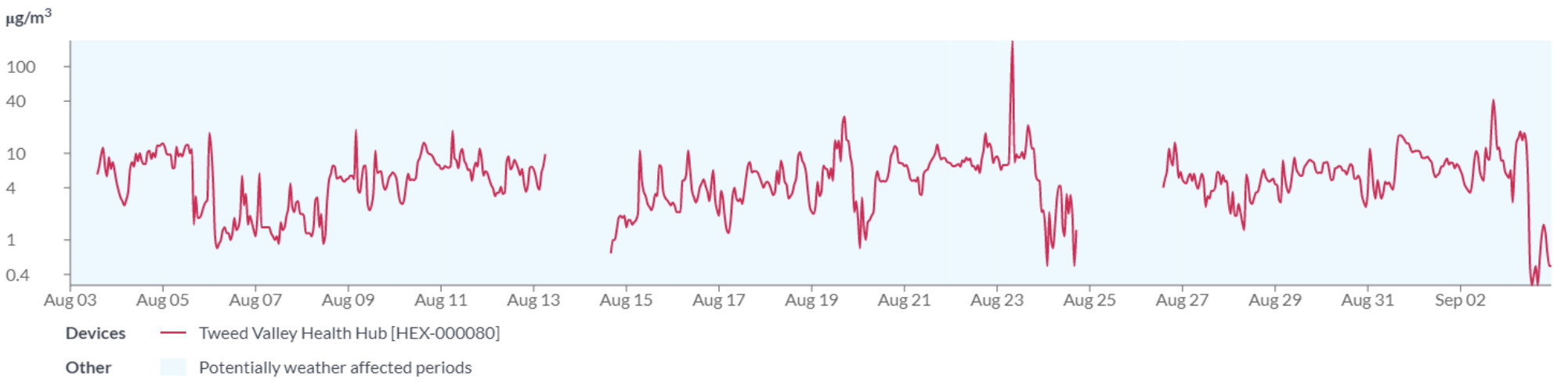
 PM10

Aug 3 2022 - Sep 3 2022



 PM2.5

Aug 3 2022 - Sep 3 2022



 PM10

Aug 3 2022 - Sep 3 2022

