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## **ACOUSTICAL REPORT**

### **VIBRATION MONITORING**

**KURRAJONG ROAD AND MOWBRAY STREET INTERSECTION,**

**PRESTONS NSW**

**Date:** Monday, 10<sup>th</sup> July 2023

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**ACOUSTICAL REPORT**  
**VIBRATION MONITORING**  
**KURRAJONG ROAD AND MOWBRAY STREET INTERSECTION, PRESTONS NSW**

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## 1.0 INTRODUCTION

Koikas Acoustics was requested to undertake vibration monitoring at the intersection of Kurrajong Road and Mowbray Street, Prestons NSW.

This acoustic report is based on the vibration survey taken between Friday 23<sup>rd</sup> June and Thursday 6<sup>th</sup> July 2023.

Monitoring of vibration levels was surveyed and compared against the nominated vibration criterion, German Standard DIN 4150 Part 3.



## 2.0 VIBRATION CRITERION

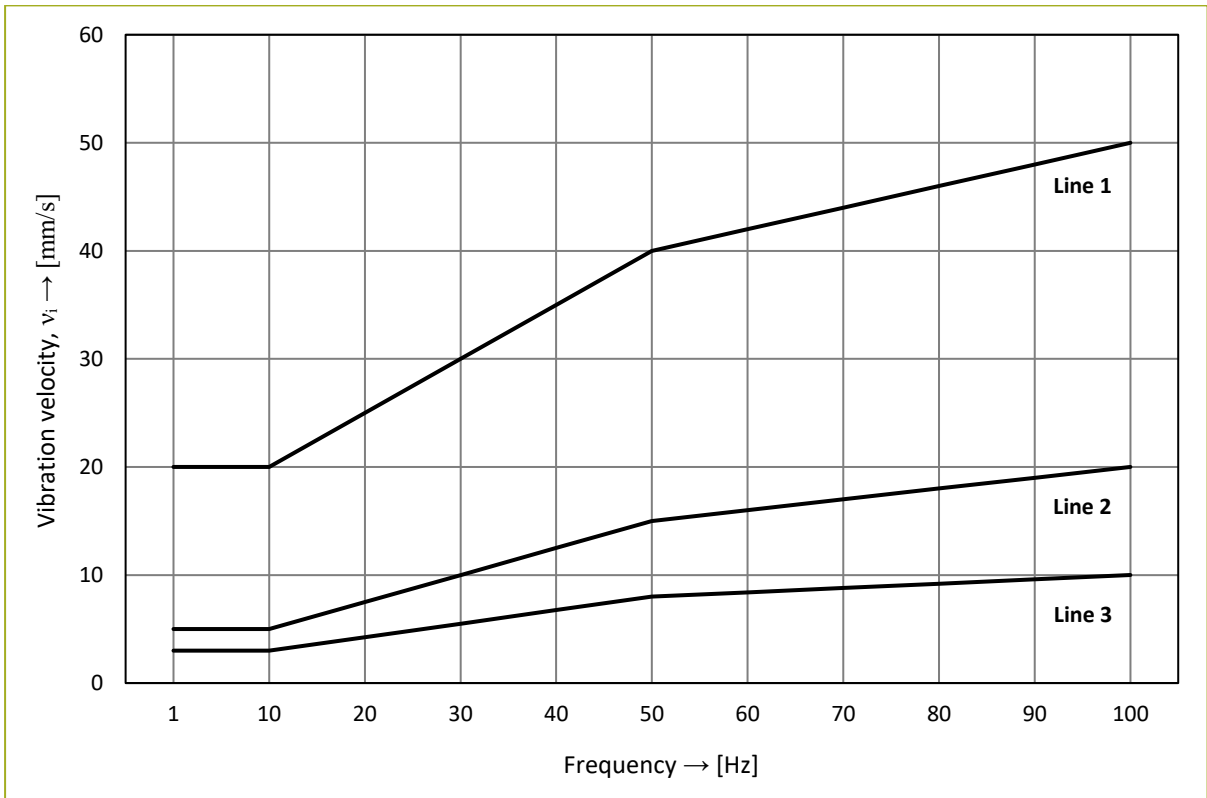
Koikas Acoustics has not been provided with a vibration level criterion from Liverpool City Council, and as such, the following has been adopted.

A frequency-dependent vibration limit measured in Peak Particle Velocity (PPV) has been adopted as per Table B3 of German Standard DIN 4150 Part 3: 1999, suitable for dwellings or buildings of similar design.

The vibration monitor for the neighbouring residential building was set up with frequency-dependent alarm activation threshold levels in line with Table B3 of the German Standard DIN 4150-3, reproduced below:

<b>Table 3. DIN4150-3 guideline values for assessing short-term vibration effects</b>						
<b>Line</b>	<b>Type of structure</b>	<b>Vibration velocity, <math>v_i</math>, in mm/s</b>				<b>Plane of the floor of the uppermost full storey</b>
		<b>Foundation</b>			<b>Frequency mixture</b>	
		<b>At a frequency of</b>				
		<b>Less than 10Hz</b>	<b>10 to 50Hz</b>	<b>50 to 100Hz</b>		
1	Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40	
2	Dwellings and buildings of similar design and/or use	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 and 2 and are of great intrinsic value (e.g. buildings that are under a preservation order)	3	3 to 8	8 to 10	8	





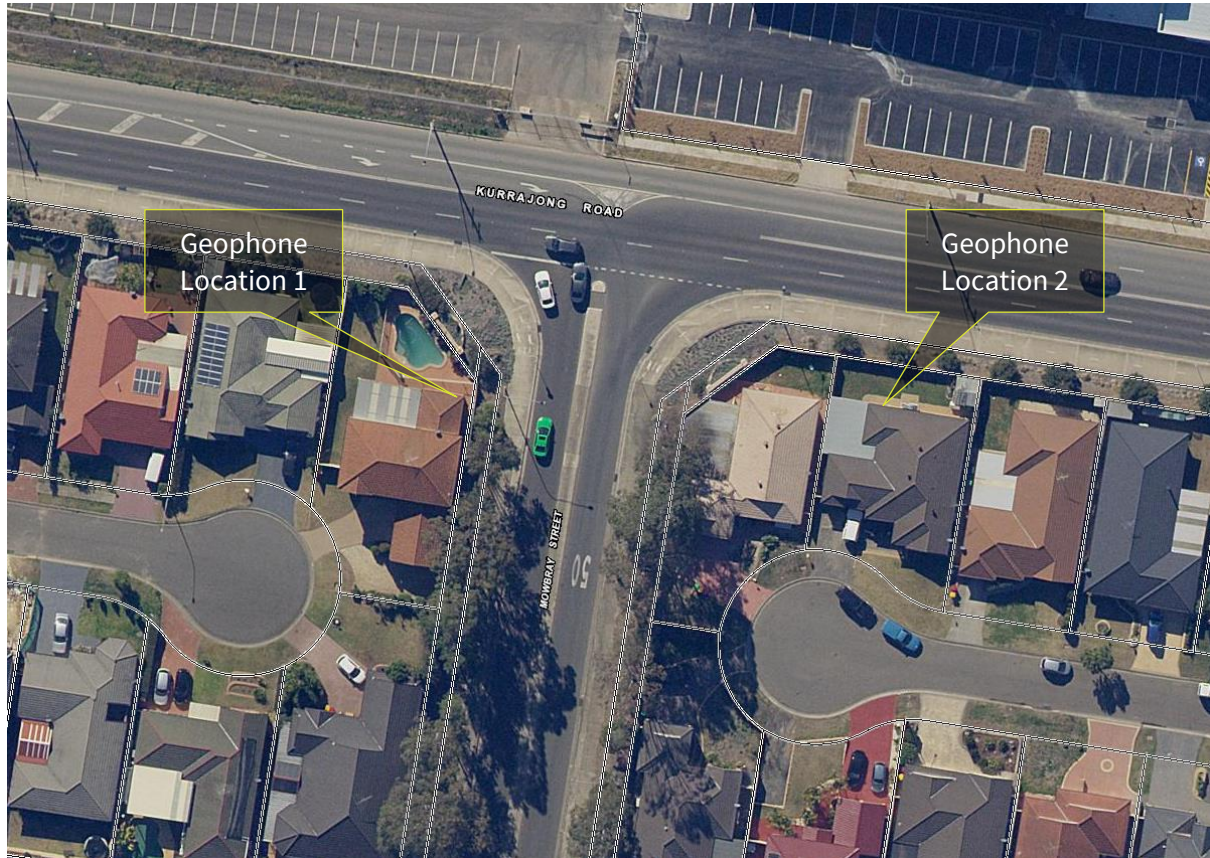
**Figure 1.** DIN4150-3 Curves representing guideline vibration velocity values at the building foundation

In this case, frequency-dependent vibrations associated with Line 2 are appropriate.

### 3.0 THE SITE

The vibration monitoring was conducted at residences fronting the Kurrajong Road and Mowbray Street intersection in Prestons NSW.

The surrounding premises and vibration monitoring locations are shown in Figure 1.



**Figure 2.** Aerial photo of the subject site, monitoring locations and surrounding area (Image source – Six Maps)

The development location is situated in a primarily suburban residential and industrial area.

## 4.0 VIBRATION SURVEY

### 4.1 VIBRATION LOGGERS

Both vibration monitoring surveys were conducted using AvaTrace M80 vibration loggers. Each vibration logger was connected to one triaxial geophone and fitted with an audio-visual alarm.

### 4.2 VIBRATION MONITORING LOCATIONS

The geophones were mounted in the locations as marked in Figure 1 in **Section 3.0**:

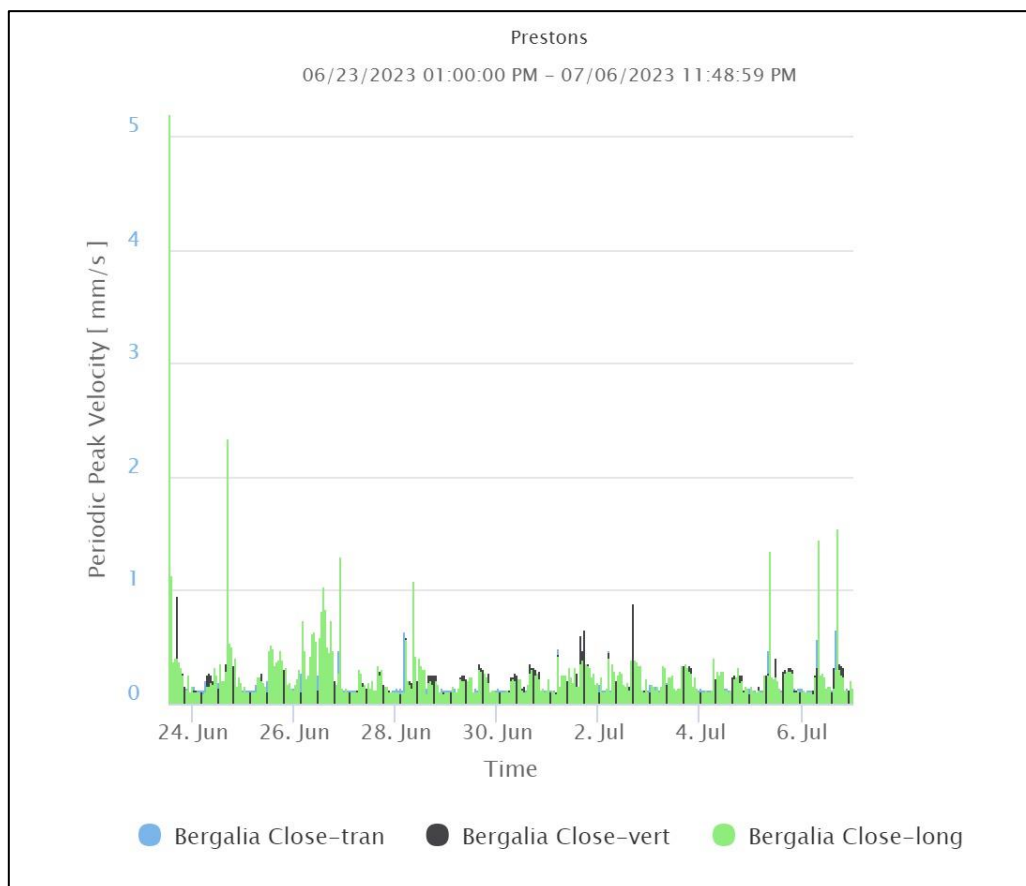
- **Geophone 1:** 24 Bergalia Close, Prestons (*Rear Yard*)
- **Geophone 2:** 33 Huskisson Street, Prestons (*Rear Yard*)

### 4.3 PERIOD OF VIBRATION MONITORING

Vibration data was obtained between Friday 23<sup>rd</sup> June and Thursday 6<sup>th</sup> July 2023.

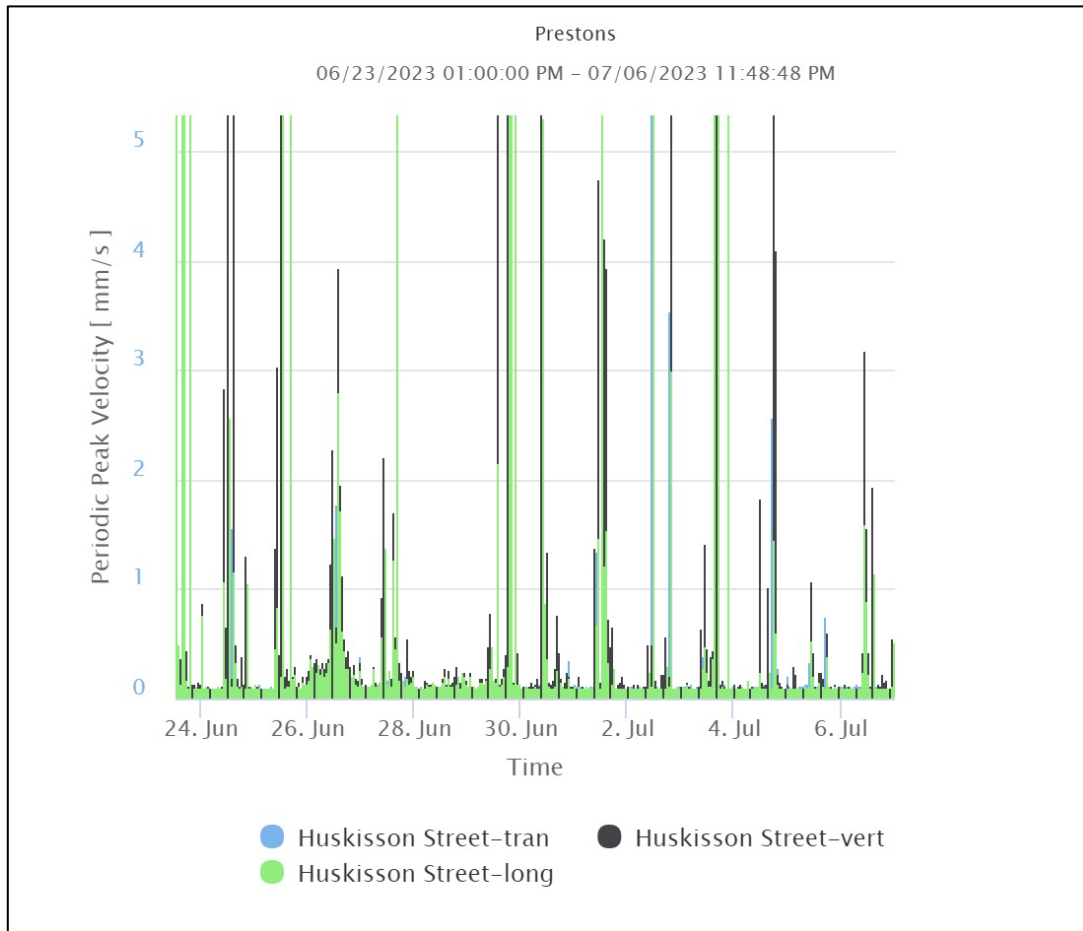
### 4.4 VIBRATION MONITORING RESULTS

Figures 3 and 4 present the logged broadband PPV results for **Geophones 1 and 2** for the monitoring period.



**Figure 2.** Geophone 1 vibration monitoring





**Figure 3.** Geophone 2 vibration monitoring

Table 2 are the maximum and typical logged broadband PPV results for **Geophones 1 and 2** for the monitoring period.

**Table 2. Summary of Vibration Survey Results**

DAY	DATE	Maximum Vibration Level [mm/s]	
		Geophone 1	Geophone 2 <sup>1</sup>
Friday	23 <sup>rd</sup> June	1.24	1.71
Saturday	24 <sup>th</sup> June	2.56	3.09
Sunday	25 <sup>th</sup> June	0.62	3.29
Monday	26 <sup>th</sup> June	1.39	2.88
Tuesday	27 <sup>th</sup> June	0.46	4.38
Wednesday	28 <sup>th</sup> June	1.19	0.37
Thursday	29 <sup>th</sup> June	0.51	1.01
Friday	30 <sup>th</sup> June	0.49	3.32
Saturday	1 <sup>st</sup> July	0.78	4.56
Sunday	2 <sup>nd</sup> July	1.01	0.74
Monday	3 <sup>rd</sup> July	0.51	1.56
Tuesday	4 <sup>th</sup> July	0.45	1.95
Wednesday	5 <sup>th</sup> July	1.46	1.25
Thursday	6 <sup>th</sup> July	1.71	3.84

**Notes:**

1. Geophone 2 measured single-event vibration levels that exceeded the adopted criteria significantly on most days. Koikas Acoustics has been advised that these were from the residence dogs bumping the monitor throughout the day. Additionally, Koikas Acoustics has been advised by the residents and Liverpool City Council that no construction works were undertaken during the monitoring period. As such, the maximum single-event vibration noise levels have not been presented, as these vibration levels are unrelated to ground-induced vibrations from the road or any construction/excavation works. The typical maximum PPV are presented in Table 1 instead.



## 5.0 DISCUSSION AND CONCLUSION

Koikas Acoustics was requested to conduct a vibration survey at the intersection of Kurrajong Road and Mowbray Street, Prestons NSW.

The survey was conducted between Friday 23<sup>rd</sup> June and Thursday 6<sup>th</sup> July 2023.

The measured vibration levels that relate to ground-induced vibrations from the road or any works were all less than the vibration criterion level of 5 mm/s.

Additional vibration monitoring should be conducted if any road works are to be conducted at this intersection to ensure that the construction or excavation works do not cause cosmetic or structural damage to the nearby residential premises.

