

Tuesday, 2 December 2025

Project number: S240427  
Reference: S240427MR6

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Dear Cameron,

## Sydney Biomedical Accelerator Noise and Vibration Monitoring Report – November 2025

# 1 Introduction

Resonate Consultants Pty Ltd (Resonate) was engaged to undertake unattended noise and vibration monitoring at the construction site of the Sydney Biomedical Accelerator, located within the University of Sydney Camperdown campus to monitor the effect of construction noise and vibration at nearby sensitive receivers.

This report presents the results of the unattended noise and vibration measurements in accordance with the Construction Noise and Vibration Management Plan (CNVMP). The following report details the results measured from 1 November to 30 November 2025.

# 2 Criteria

## 2.1 Noise management levels

Table 1 presents the noise management levels (NML) for the identified sensitive receivers surrounding the project site as determined in the CNVMP.

**Table 1 Noise management levels for identified sensitive receivers surrounding project site**

Receiver	Land use	NML for time period, dB(A)			
		Standard Working Hours	Out of Hours Day <sup>(1)</sup> (Saturday afternoon & Sundays)	Out of Hours Evening <sup>(2)</sup>	Out of Hours Night <sup>(3)</sup>
SWHB Susan Wakil Health Building to the north of the subject site	Educational	45 <sup>(4)</sup>	45 <sup>(4)</sup>	45 <sup>(4)</sup>	45 <sup>(4)</sup>
StAC St Andrew's College to the south of the subject site	Student accommodation <sup>(5)</sup>	57	52	50	48

Receiver	Land use	NML for time period, dB(A)			
		Standard Working Hours	Out of Hours Day <sup>(1)</sup> (Saturday afternoon & Sundays)	Out of Hours Evening <sup>(2)</sup>	Out of Hours Night <sup>(3)</sup>
H1 Royal Prince Alfred Hospital to the west of the subject site.	Hospital	45 <sup>(4)</sup>	45 <sup>(4)</sup>	45 <sup>(4)</sup>	45 <sup>(4)</sup>
WC Wesley College located to the east of the subject site	Student accommodation <sup>(5)</sup>	59	54	53	52

- (1) Any out of hours work occurring between 7 am and 6 pm.  
 (2) Any out of hours work occurring between 6 pm and 10 pm.  
 (3) Any out of hours work occurring between 10 pm and 7 am.  
 (4) Internally - applies when property in use. Equivalent to 65 dB(A) externally if windows are closed.  
 (5) Residential land use has been applied to student accommodation.

The ICNG prescribes an internal NMLs of 45 dB(A) for classrooms and other educational institutions. However, confirmation is pending from relevant stakeholders regarding the appropriateness of this criterion for the Susan Wakil Health Building (SWHB). In the interim, an internal NML of 45 dB(A) has been adopted.

## 2.2 Vibration criteria

There is currently no Australian Standard or legislation that specifies vibration limits for the prevention of damage to buildings. Therefore, it is common to make reference to German Standard DIN 4150-3:2016 *Structural Vibration, Part 3 – Effects of Vibration on Structures* (DIN 4150-3), which is widely used for this purpose in NSW.

DIN 4150-3 states that exposing buildings to vibration levels higher than that recommended in the table below does not necessarily result in damage. Rather it suggests that these limits are the levels of vibration at which experience has shown that damage leading to a reduction in the serviceability will not occur. The most stringent DIN 4150-3 vibration limits for different types of building structure are presented in Table 2 with the frequency dependant criteria presented in Figure 1.

**Table 2 DIN 4150-3 vibration limits**

Type of building structure	Peak Particle Velocity (PPV) limit, mm/s
Commercial, industrial and similar buildings	20
Residential and similar structures	5
Heritage listed structures	3

It is noted that the Royal Prince Alfred Hospital, St. Andrews College, The Sibyl centre and Wesley College are all heritage listed buildings. The Susan Wakil Health Building has been identified as a “Commercial, industrial or similar building” structure. The vibration limits applicable are presented in Table 3.

DIN 4150-3 is also considered to be suitable for the assessment of both structural and cosmetic damage as the standard considers a reduction in serviceability of the structure to have occurred if:

- Cracks form in plastered surfaces of walls
- Existing cracks in the building are enlarged
- Partitions become detached from load bearing walls or floors.

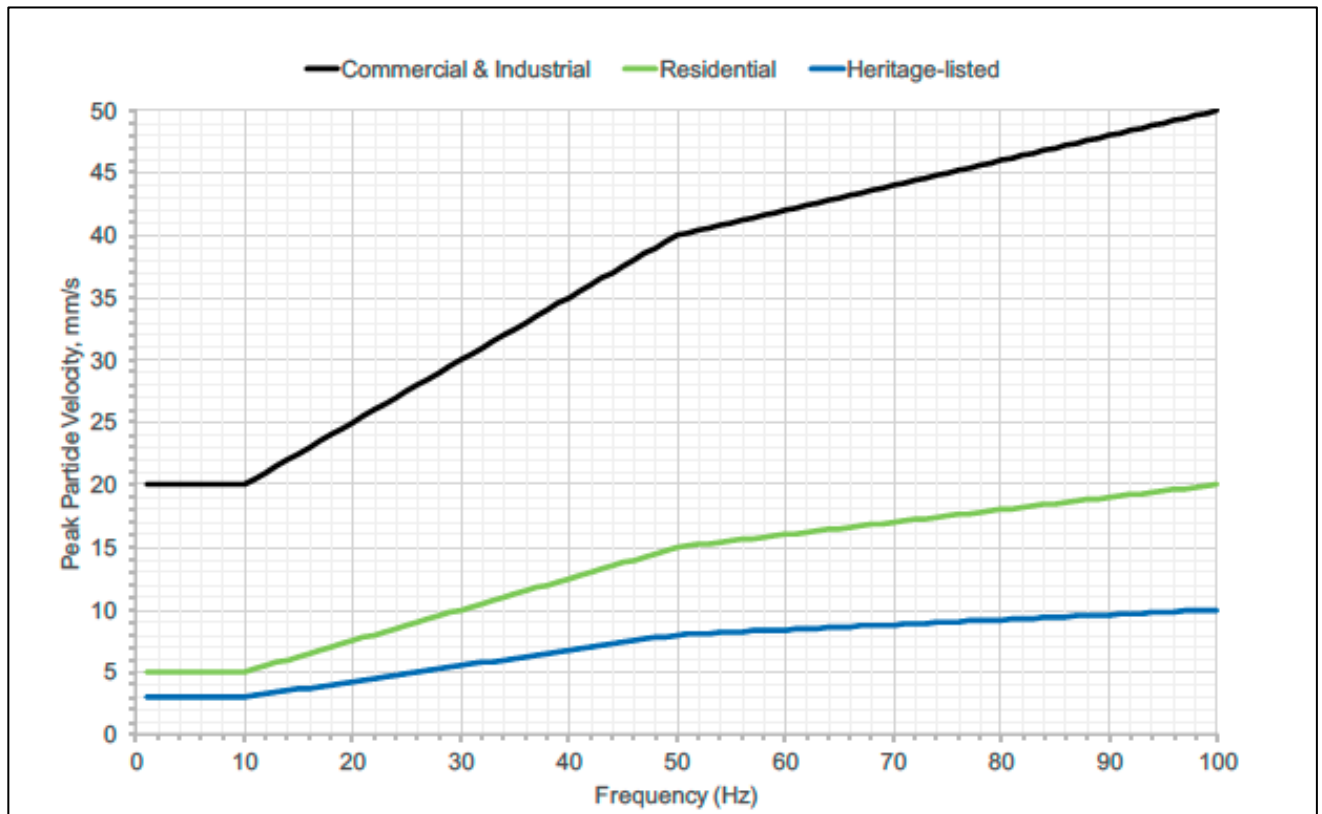
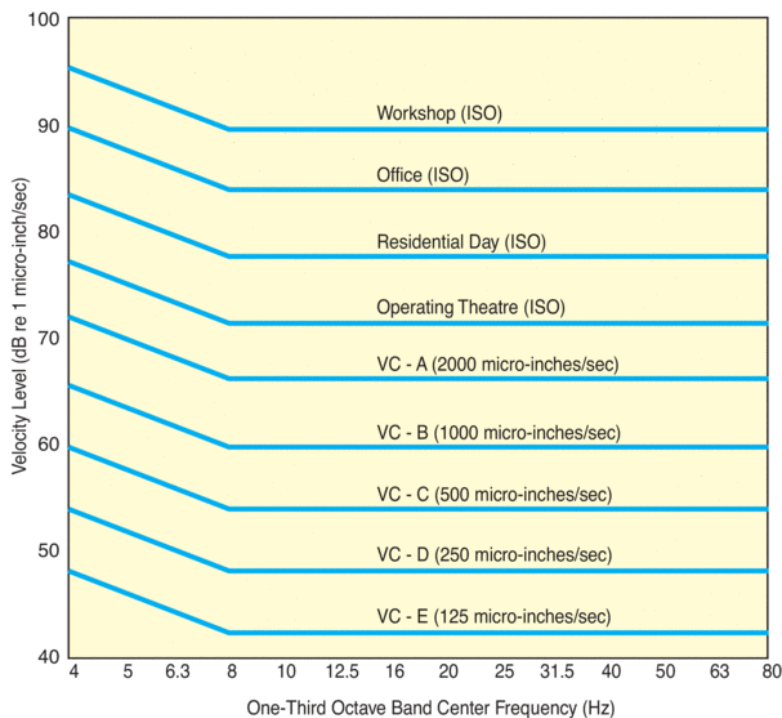


Figure 1: DIN 4150-3 Guideline Values

It should also be noted that the SWHB houses specialised medical equipment that may require more stringent criteria. In the absence of manufacturer specifications, the Vibration Criterion (VC) curves (as per ANSI S2.71/ISO 2631) will be used to define default vibration criteria, these are shown in Figure 2. These curves provide conservative RMS vibration limits, ranging from VC-A (0.050 mm/s) suitable for general labs to VC-E (0.003 mm/s) for ultra-sensitive instruments such as atomic force microscopes (AFMs).



**Figure 2 VC curves**

In consideration of the above, the assigned criteria for each vibration monitor listed below in Table 3. To allow early indication of exceedance, the monitors' alert levels have been set to 75% of their criteria. These alert levels allow ample time to address any potential vibration inducing activities. It is important to note that these alert levels represent the threshold below which even minor cosmetic damage has not been previously observed to structures.

The vibration monitor located within the CT room of SWHB adheres to the much stricter criteria of VC-A, which is equivalent to approximately 0.05 mm/s.

**Table 3 Vibration monitors and criteria**

Monitor	Building structure	Criteria	Alert level (75% criteria)
VM01 RPAH external	Heritage listed structure	3 mm/s PPV	2.25 mm/s PPV
VM02 SWHB speech clinic	Commercial, industrial and similar buildings	20 mm/s PPV	15 mm/s PPV
VM03 SWHB CT room	Specialised medical equipment	0.05 mm/s RMS	0.05 mm/s RMS <sup>1</sup>

(1) Due to the highly sensitive nature of this monitor, it is likely that the criteria will be exceeded by non-construction related activities such as vibration generated by footfall, and thus it may not be practical to assign an alert level.

## 3 Predicted noise levels

Appendix U of the EIS presents the *SSDA Noise and Vibration Impact Assessment* developed by Acoustic Logic dated 28 August 2023. Section 5.3 of the document presents predicted noise levels of the main construction activities, during the construction of the SBA. The predicted noise levels for each construction stage are summarised below in Table 4.

**Table 4 Predicted noise levels for construction activities**

Construction stage	Equipment / process	Maximum predicted noise level for all sensitive receivers ( $L_{Aeq}$ 15 minute)	Comment
Detailed excavation	Excavator with bucket attachment	52-74 (externally) 32-46 (internally)	May exceed NML when working close to site boundary at SWHB and Royal Prince Alfred Hospital.  Likely to exceed NML at St. Andrews College and Wesley College.
	Trucks	52-66 (externally) 32-46 (internally)	
Erection of structure	Concrete pump	57-79 (externally) 37-51 (internally)	Likely to exceed NML when working close to site boundary at SWHB, Royal Prince Alfred Hospital, St. Andrews College and Wesley College.
	Concrete vibrator	57-79 (externally) 37-51 (internally)	
	Site crane	52-74 (externally) 32-46 (internally)	May exceed NML when working close to site boundary at SWHB and Royal Prince Alfred Hospital.  Likely to exceed NML at St. Andrews College and Wesley College.
	Trucks	52-74 (externally) 32-46 (internally)	
General & landscaping	Bobcat	52-74 (externally) 32-46 (internally)	May exceed NML when working close to site boundary at SWHB and Royal Prince Alfred Hospital.  Likely to exceed NML at St. Andrews College and Wesley College.
	Powered hand tools	47-69 (externally) 27-41 (internally)	

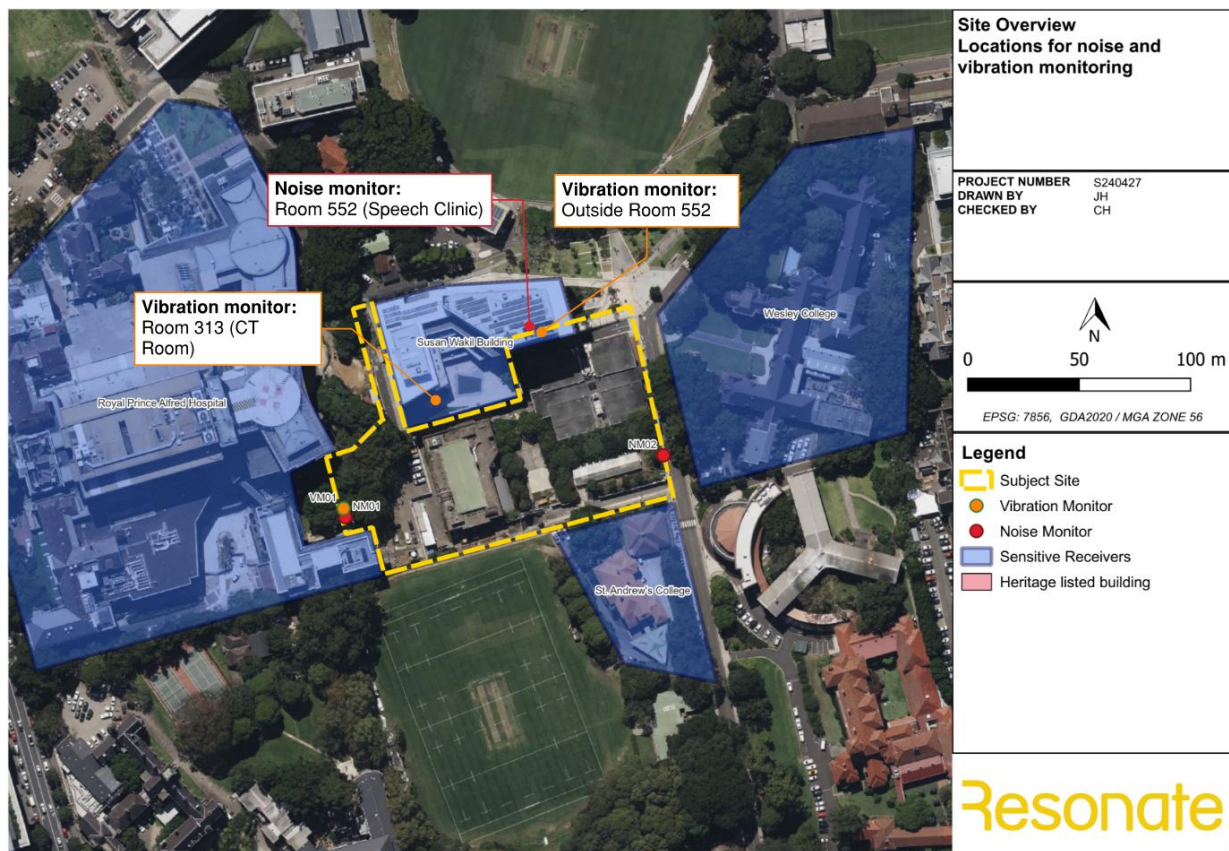
## 4 Noise measurement locations

Resonate attended site on 10 and 12 June 2025 to install unattended vibration and noise monitors respectively. Two vibration monitors were installed, and three noise monitors were installed at locations representative of the potentially affected receivers. On 12 August 2025, Resonate attended site to relocate the previous SWHB external noise monitor to inside the speech clinic (Room 552). Resonate also relocated the previous SWHB external vibration monitor to inside the speech clinic (outside room 552) and installed a vibration monitor within the CT room (Room 313). These locations are presented in Figure 3. The vibration monitor in Room is currently in the server room adjacent to the CT room to reduce the effect of footfall induced exceedances.

The noise monitors were installed to continuously record 15-minute measurement periods, recording  $L_{Aeq}$ ,  $L_{10}$ ,  $L_{90}$ , and  $L_{Max}$  for each measuring period. The vibration monitors were installed to continuously measure peak particle velocity (PPV) in three orthogonal orientations (transversal, vertical, longitudinal) for the duration of the works.

**Table 5 Noise and vibration monitor locations**

ID	Monitor	Location
NM01	SiteHive Hexanode noise monitor	South-East boundary of Royal Prince Alfred Hospital
NM02	SiteHive Hexanode noise monitor	East boundary of construction side, North of St. Andrew's College
NM03	SiteHive Hexanode noise monitor	Inside the Susan Wakil Health Building Speech Clinic (Room 552)
VM01	Avatrace vibration monitor	South-East boundary of Royal Prince Alfred Hospital
VM02	Avatrace vibration monitor	Inside the Susan Wakil Health Building Speech Clinic (Outside Room 552)
VM03	DataFlex vibration monitor	Inside the Susan Wakil Health Building adjacent to CT Room (Room 313)



**Figure 3 Unattended noise and vibration monitor locations**



## 5 Instrumentation

Airborne noise measurements were conducted using SiteHive *Hexanode Noise Monitor* sound level meter (serial numbers: HEX-001050, HEX-001047, HEX-001052). Ground vibration measurements were conducted using Avatrace *M80* vibration monitors (serial numbers: 12040, 12068) and Dataflex Vibration monitor (serial number: DF-024). The sound level meters, and vibration monitors hold current calibration certifications which may be provided upon request.

## 6 Measurement results

### 6.1 Noise monitoring results

Detailed results of the noise monitoring for the period 1 November to 30 November 2025 are located in Appendix A. Measured noise levels were confirmed to be in general alignment with the predicted noise levels stated in the EIS documentation (*Acoustic Logic- SSDA Noise & Vibration Impact Assessment 20221419.4*) as outlined in Section 3. Weather conditions during the noise monitoring are presented in Appendix A.

Table 6 presents selected construction noise events which were identified as having considerable noise level which may have contributed to NML exceedances. The list below presents only the highest noise events identified and is not exhaustive.

**Table 6 Selected construction noise events and sounds levels**

Monitor	Date and time	Sound level, dB(A)	Equipment / noise source
NM01	2:20 pm, 13 November 2025	86	Metal crashing
NM01	8:09 am, 18 November 2025	84	Continuous metal banging
NM01	1:24 pm, 24 November 2025	88	Machinery banging
NM02	9:05am, 3 November 2025	84	Jack hammering
NM02	1:12 pm, 3 November 2025	85	Jack hammering
NM02	4:45 pm – 5:45 pm, 11 November	76 – 85	Rock breaking
NM02	7:09 am, 13 November	88	Metal banging

It should be noted that multiple NML exceedances within the SWHB internal monitor were recorded, however, upon audio analysis it was determined that the source of noise was from classroom activity within the clinic and not the construction site.

### 6.2 Vibration monitoring results

Detailed results of the vibration monitoring for the period 1 November to 30 November are presented in Appendix B.

Frequent exceedances of the VC-A vibration criteria in Room 313 were recorded throughout the month. Considering the highly stringent criteria of the room it is unlikely that all exceedances were induced by construction activities. Resonate has recommended to RCC that stakeholder engagement should be undertaken to determine whether the vibration levels experienced in the room have impacted operation and/or imaging of the CT scanner. If no issues are raised or identified, we recommended increasing the criteria to reduce the number of false alerts.

On 3 November, VM01 measured a vibration level of 4.36 mm/s, which is an exceedance of the 3 mm/s criteria. Another vibration exceedance was recorded at VM01 on 24 November, with a level of 3.67 mm/s.

There were no exceedances of the vibration criteria at VM02.

## 7 Summary

Resonate conducted unattended noise and vibration monitoring for the Sydney Biomedical Accelerator construction site for the period from 1 November to 30 November 2025. Three noise monitors were installed at locations representative of noise sensitive receivers, and three vibration monitors were installed to continuously monitor PPV.

Detailed charts for all monitoring locations are presented in Appendix A and Appendix B, which offer specific information on instances where NMLs or vibration criteria may have been exceeded. Alternatively, a complete record of all logged data is available to access on the Sydney Biomedical Accelerator Avonet web portal (vibration) or the Sydney Biomedical Accelerator SiteHive (noise) web portals.

Please let me know if you have any queries or wish to discuss the above.

Yours sincerely,



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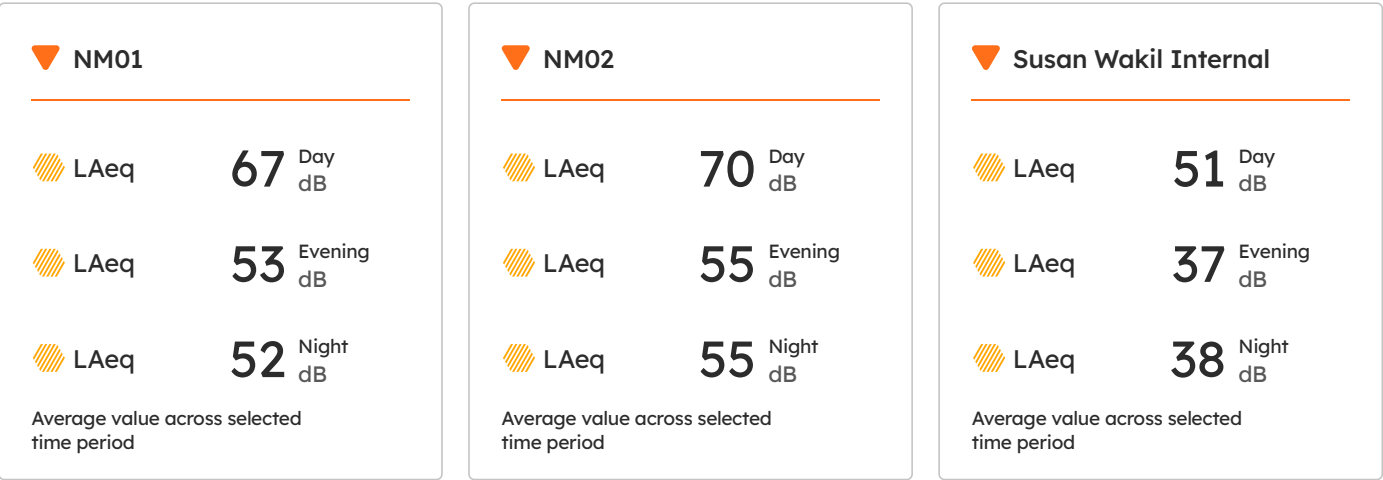
## Appendix A – Noise monitoring results

# November 2025 Full report

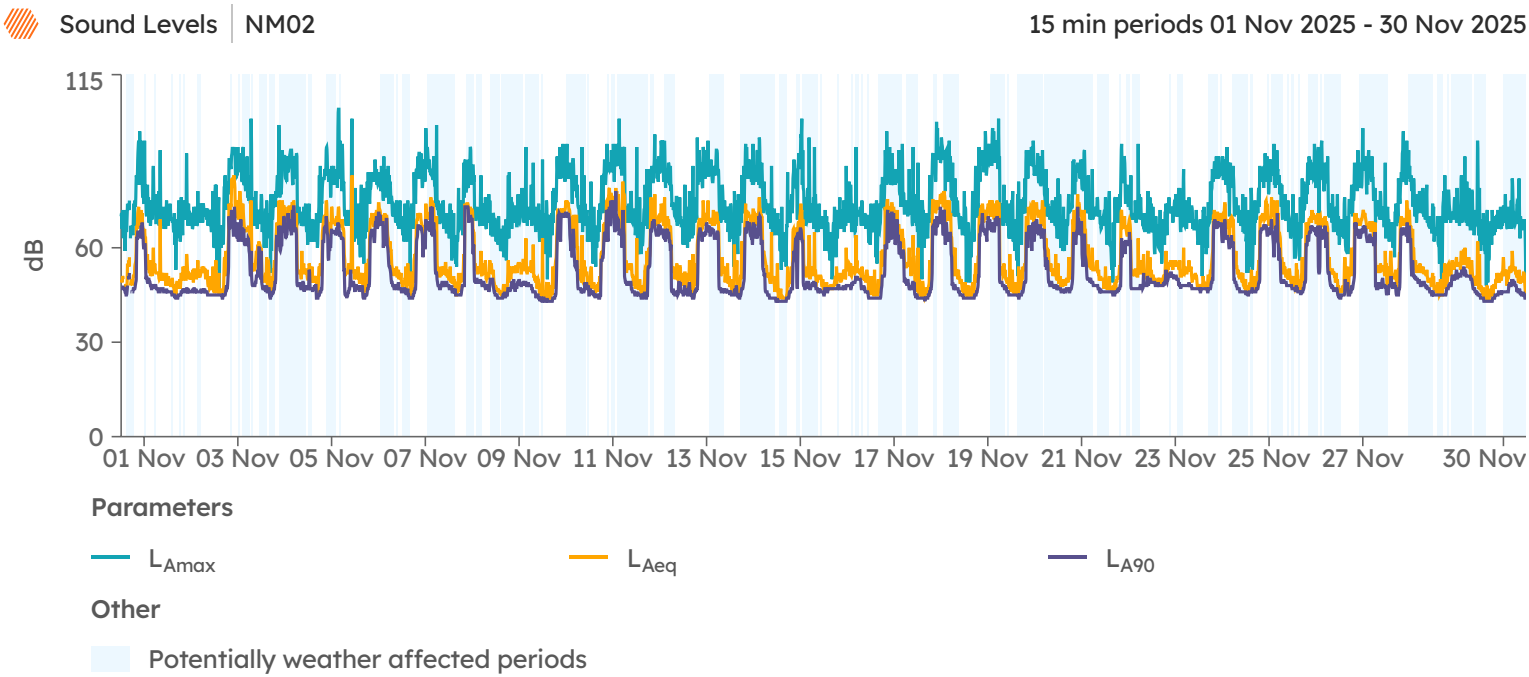
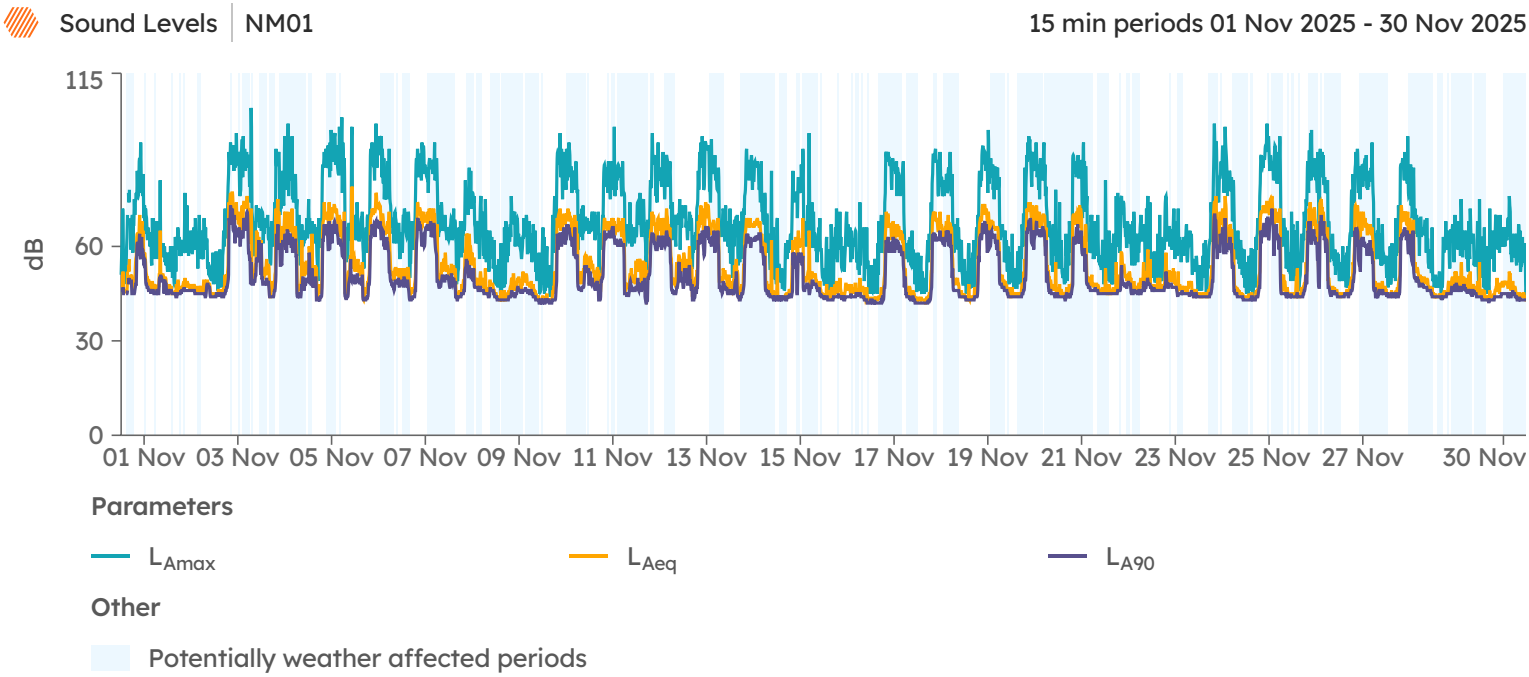


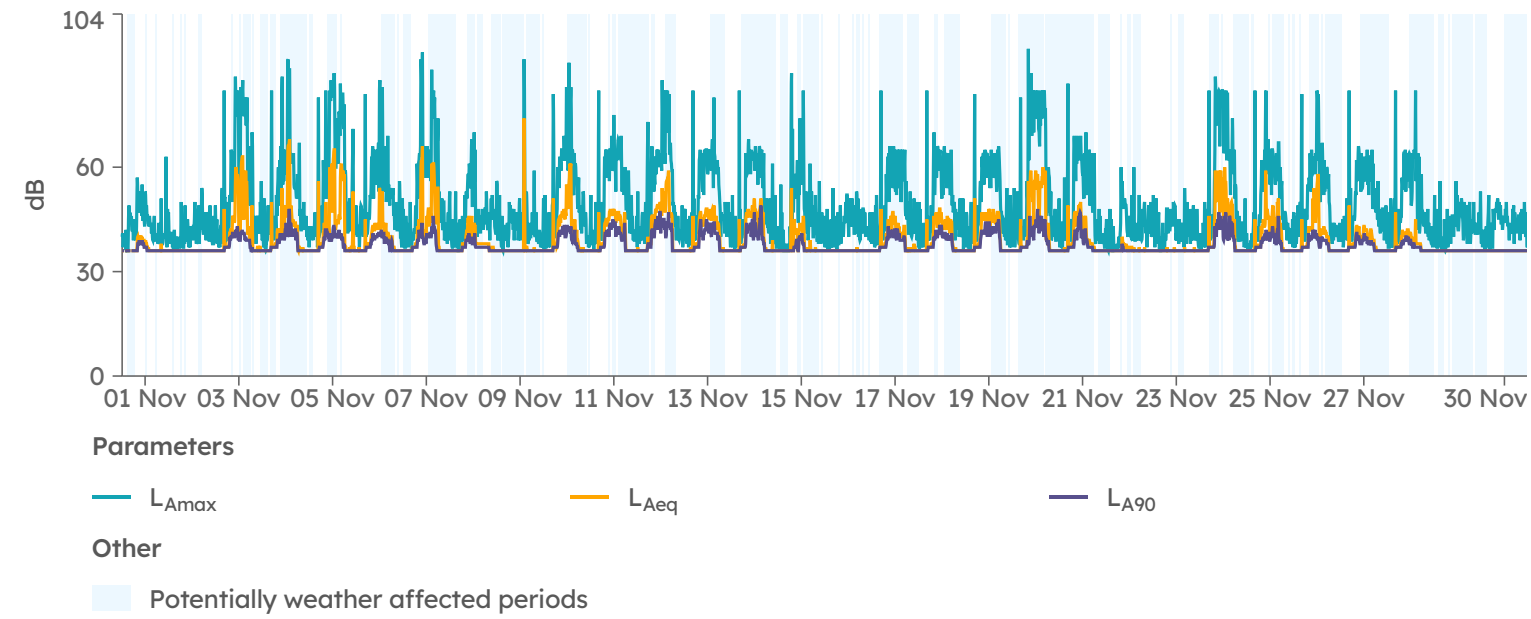
Sydney Biomedical Accelerator  
Resonate Consultants

## Noise Monitoring Statistics



Average value across selected time period. Time of Day Periods: Day (7am to 6pm) Evening (6pm to 10pm) Night (10pm to 7am).

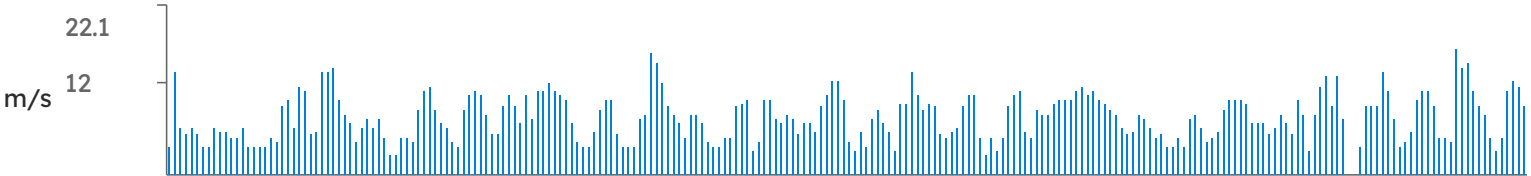




Weather Graphs 01 Nov 2025 - 30 Nov 2025

Source Sydney Airport - 6km

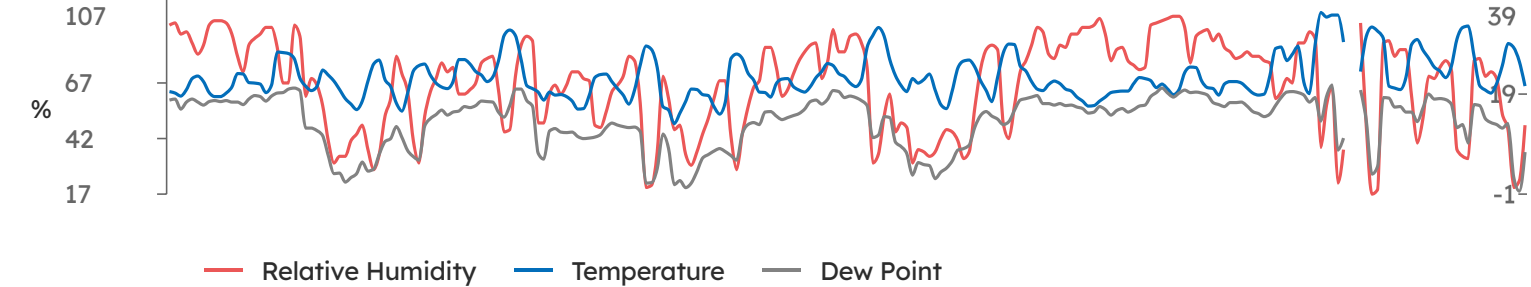
Wind 3 hour max speed and dominant direction



Rainfall 3 hour cumulative



Humidity / Temp / Dew Point 3 hour max



Device Details

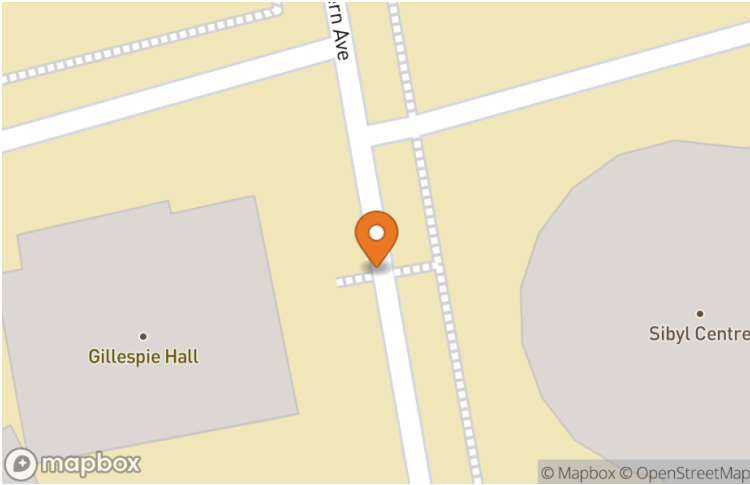
Device Serial	Monitoring Points	Model	Calibration Date	Calibration Due
HEX-001047	NM02	SiteHive Hexanode	26 May 2025	26 May 2027
HEX-001050	NM01	SiteHive Hexanode	28 May 2025	28 May 2027
HEX-001052	Susan Wakil Internal	SiteHive Hexanode	28 May 2025	28 May 2027

Attended Monitoring Summary

Date Range 01 Nov 2025 - 30 Nov 2025

Monitoring Locations

Location Name	Lat	Long
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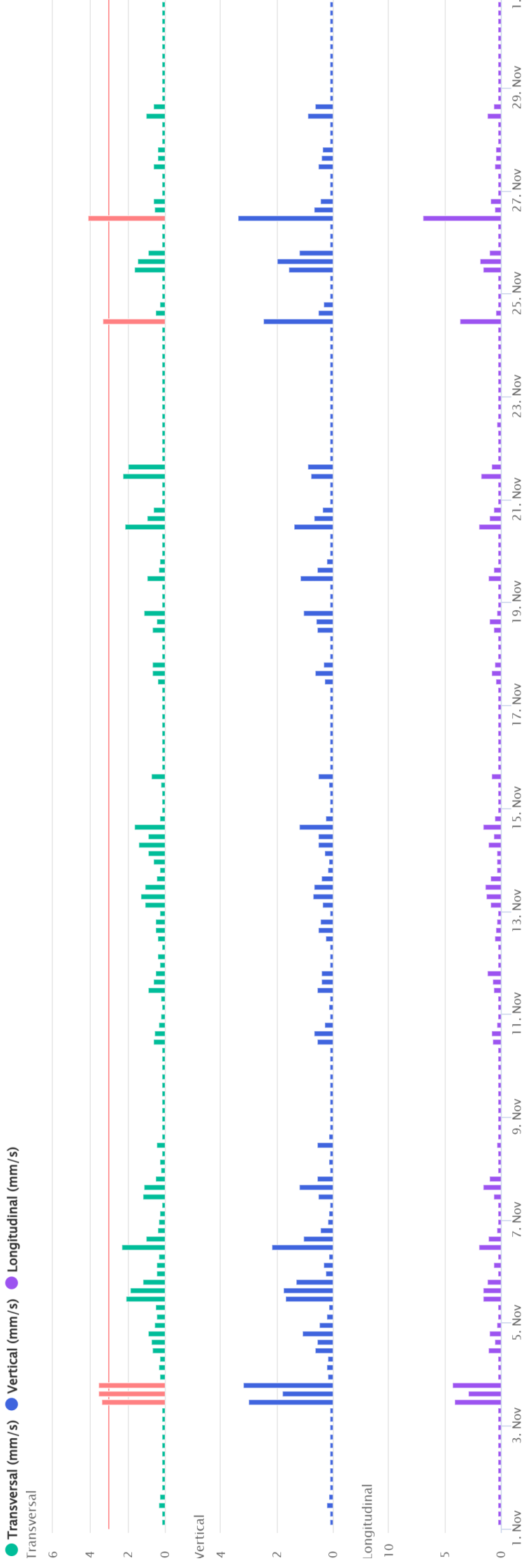


Attended Monitoring Results Summary Table

No measurements for this period

## Appendix B – Vibration monitoring results

RPAH external (VM01)





SWHB Internal (VM02)



VM03 CT Room - Continuous RMS - DF-024

