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Memorandum

To	Hansen Yuncken Pty Ltd	Marcus Amico	mamico@hansenyuncken.com.au
From	Jeremy Hill	**Date**	23 Oct 2023
Subject	UNSW Health Translation Hub Corner of Botany and High Streets, Randwick	**Project No.** **Document No.**	99852.02 VR.005.Rev0

Background

Texcel Construction Vibration Monitor 7222 was installed with the sensor attached to the concrete pavement at the western site boundary (Monitoring Location A on the attached Monitor Location Plan). Vibration Monitor 7285 was installed with the sensor coupled to the ground surface using soil spikes at the northern site boundary (Monitoring Location B on the attached Monitor Location Plan). The monitors were installed on 5 June 2023 to monitor vibrations generated during the earthworks including piling, excavation and compaction for the development at the subject site.

The monitors were configured for continuous monitoring between 6 am and 6 pm, Monday to Saturday, with SMS alarms to be sent automatically to selected Hansen Yuncken and DP personnel in the event of vibration levels exceeding a preset trigger level of 7 mm/s PPV (Peak Particle Velocity), as a contingency for the allowed vibration limit of 8 mm/s PPV.

The monitor data is uploaded regularly and is being reported every four weeks. The results of the vibration monitoring are provided in Table 1.

Table 1: Results of Vibration Monitoring, 25 September – 21 October 2023

Location	Monitor	Exceedances (VSPPV)		Time of maximum exceedance
		No.	Max (mm/s)	
Monitoring Location A	7222	2*	22.3	13-Oct, 7:50 am
Monitoring Location B	7285	0	-	-

Notes: *Analysis of waveforms indicates that the exceedance on 9-Oct was an isolated impulsive event, possible direct bump to sensor. The exceedance on 13-Oct was a transient event, likely caused by electrical interference (no waveform recorded or SMS alarm was triggered for this event).

Douglas Partners Pty Ltd

Jeremy Hill
Senior Geophysicist

Reviewed by

Peter Oitmaa
Principal

Attachments: Graphs of Vibration Levels, Monitor Location Plan, About This Report

Limitations

Douglas Partners (DP) has prepared this report for this project at the corner of Botany and High Streets, Randwick in accordance with DP's proposal (99852.02.P.001.Rev1 dated 22 November 2022) and acceptance received from Hansen Yuncken Pty Ltd. The work was carried out under a variation to Consultancy Agreement (No. SC152_008 dated 31 January 2023). The report is provided for the exclusive use of Hansen Yuncken Pty Ltd for this project only and for the purpose described in the report. It should not be used for other projects or by a third party. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

DP's comments are based on observations, measurements, and derived interpretations. The accuracy of the comments provided by DP in this report may be affected by unobserved features and variations in ground conditions and conditions affecting vibration across the site, between and beyond the testing locations or by variations with time. Vibration monitoring and advice may also be limited by budget constraints imposed by others or by site accessibility.

The results provided in the report are indicative of the vibration levels at the sensor location only and only during the specified period of monitoring. Vibration levels in other locations may therefore differ from those reported herein.

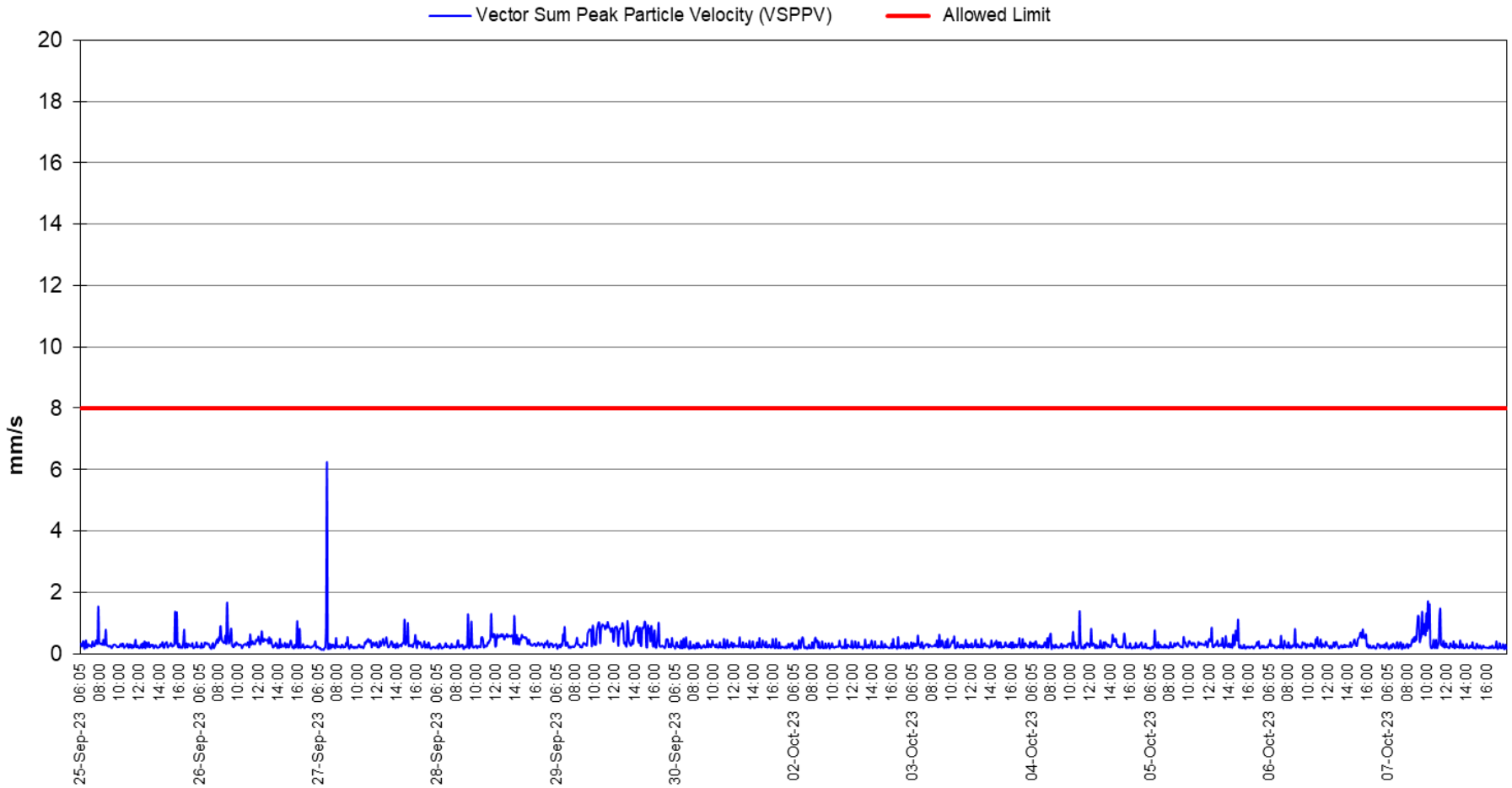
As neither estimations of safe operating distances for vibrations nor the presence of an unattended vibration monitor can prevent exceedances, the real-time management of vibration remains the responsibility of Hansen Yuncken Pty Ltd and its plant operators. Interference with (e.g. movement or damage to) the monitoring equipment may influence readings and the Client is responsible for advising DP immediately to assess whether readings are affected, re-installation and/or repair is required.

This report must be read in conjunction with all of the attached notes and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion given in this report.

Vibration Levels - Corner of Botany and High Streets, Randwick

Monitoring Location A

Monitor 7222



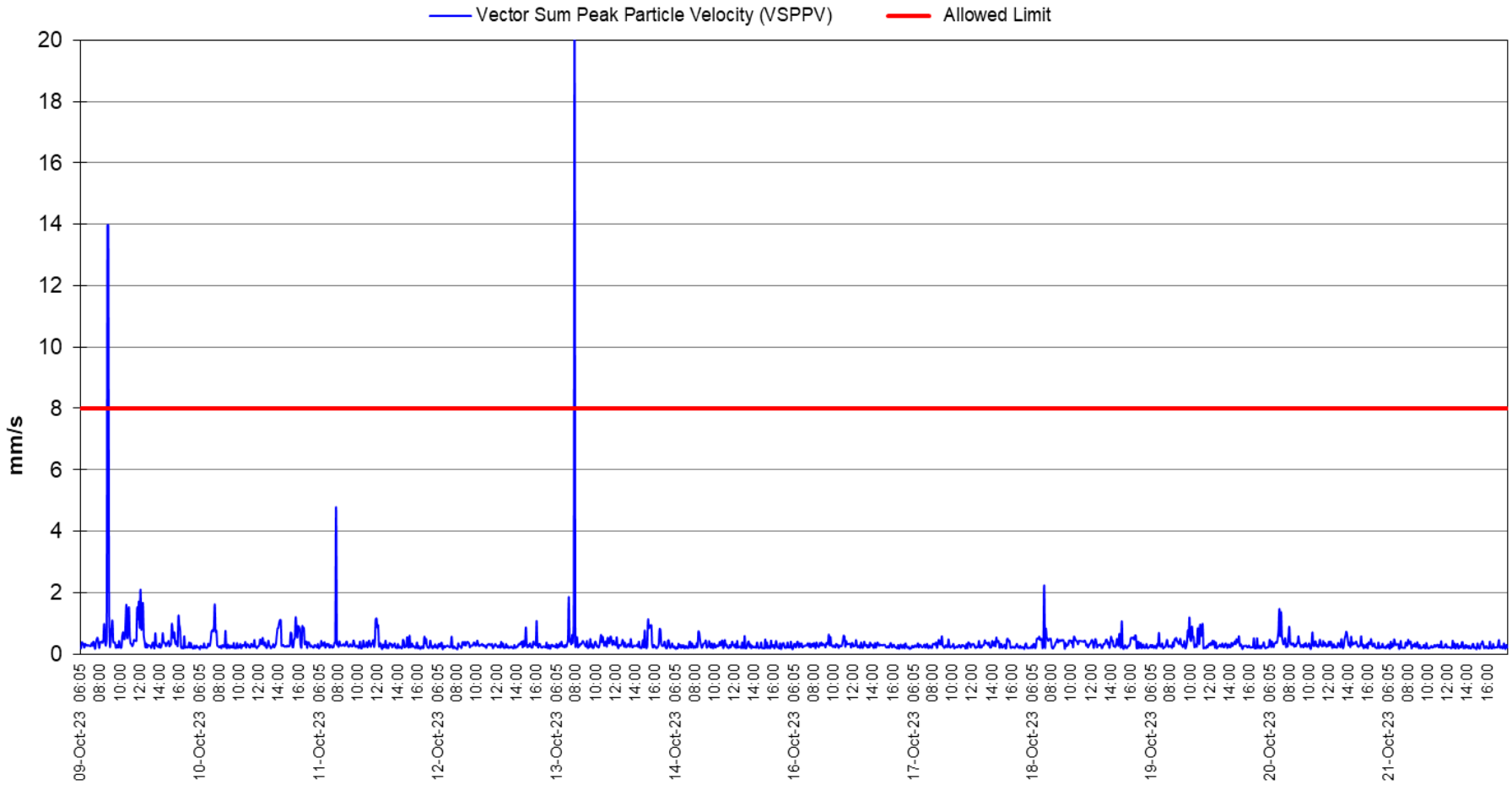
Time Axis Note:
Ambient levels are recorded at 5min intervals and drawn evenly spaced. For display purposes, the axis is stretched where triggered events occur.

Date and Time
Duty Cycle 6am - 6pm Mon - Sat (not continuous overnight)

Vibration Levels - Corner of Botany and High Streets, Randwick

Monitoring Location A

Monitor 7222



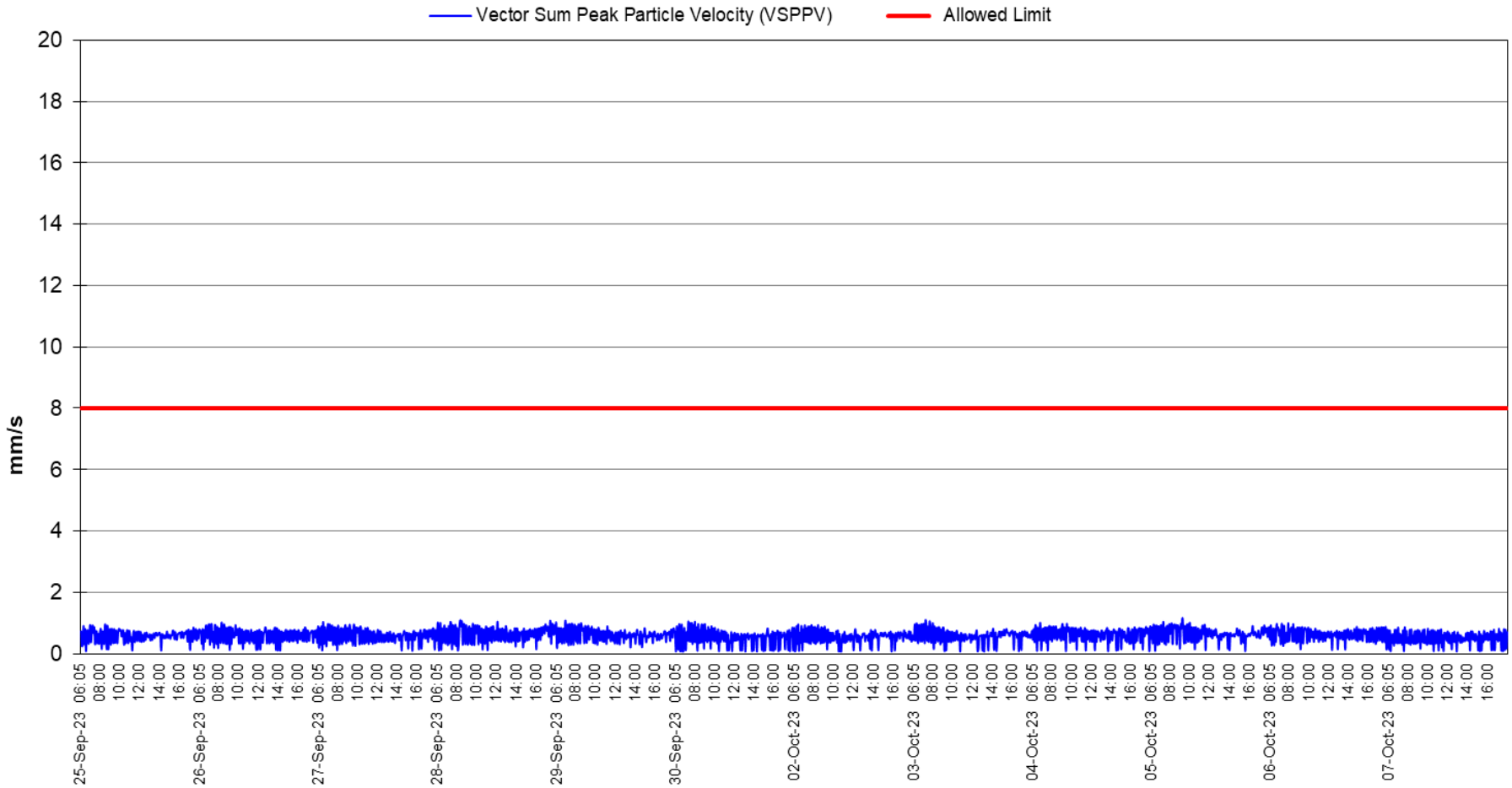
Time Axis Note:
Ambient levels are recorded at 5min intervals and drawn evenly spaced. For display purposes, the axis is stretched where triggered events occur.

Date and Time
Duty Cycle 6am - 6pm Mon - Sat (not continuous overnight)

Vibration Levels - Corner of Botany and High Streets, Randwick

Monitoring Location B

Monitor 7285



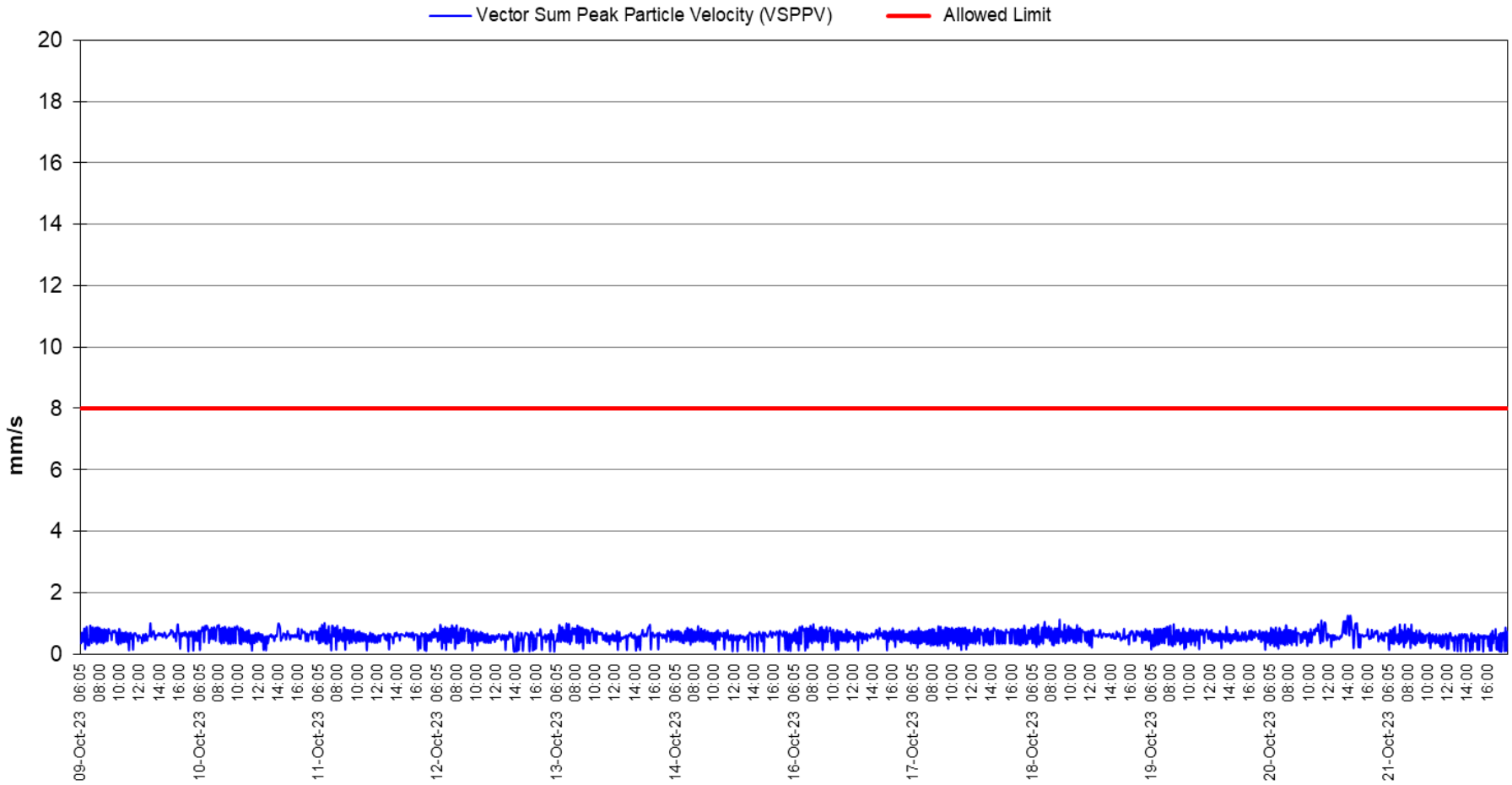
Time Axis Note:
Ambient levels are recorded at 5min intervals and drawn evenly spaced. For display purposes, the axis is stretched where triggered events occur.

Date and Time
Duty Cycle 6am - 6pm Mon - Sat (not continuous overnight)

Vibration Levels - Corner of Botany and High Streets, Randwick

Monitoring Location B

Monitor 7285



Time Axis Note:
Ambient levels are recorded at 5min intervals and drawn evenly spaced. For display purposes, the axis is stretched where triggered events occur.

Date and Time
Duty Cycle 6am - 6pm Mon - Sat (not continuous overnight)


Monitor #7285
(Location B)
Monitor #7222
(Location A)
Approximate site
boundary

About this Report

Douglas Partners

Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.