

**Glen Isla Dune
Coastal Protection Project**

Dear Glen Isla Place Neighbours,

We are writing to you on behalf of the Owners of the seven beachfront properties of Glen Isla Place; to advise you we are in the process of preparing a Resource Consent Application for a coastal protection project on the dune area of the Western Bay of Plenty District Council land fronting those Properties.

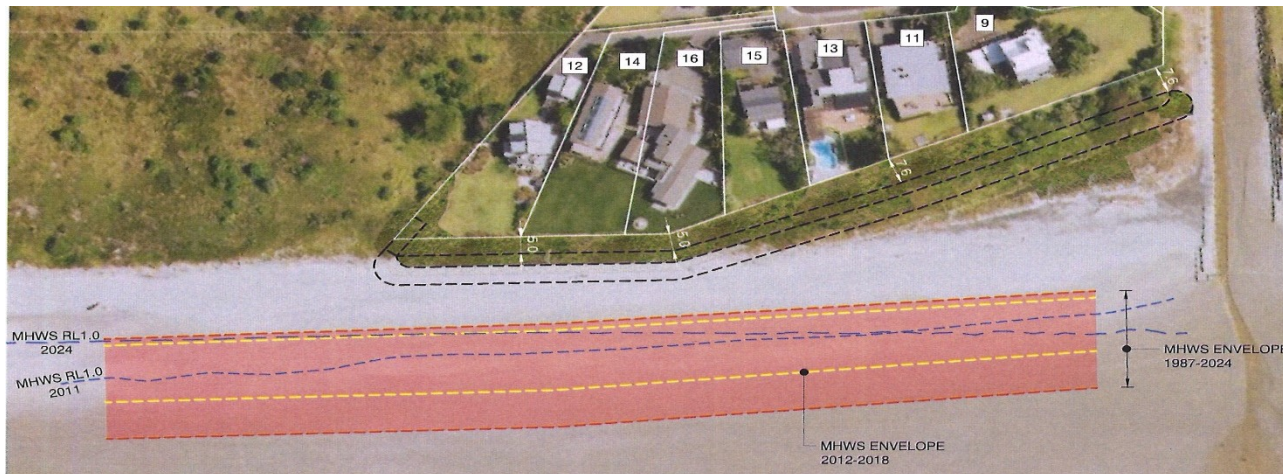
The purpose of this project is to provide long-term protection from coastal erosion at the site.

At completion of the works, the structure would be mostly below current ground level and the excavated sand would be recontoured over the structure to mimic the natural dune form. This will also enable enhancement of the dune environment and reserve area through permitting replanting of the areas over the buried wall with Indigenous dune varieties such as Spinifex and Pingyao.

- The proposal will not affect the public accessway beside Three Mile Creek leading to the beach.
- The dune habitat would be disturbed as little as possible to provide for the works.
- The timing of the works would be programmed to avoid the bird breeding season.
- The works are also located outside the CMA, or Coastal Marine Area, being above Mean High-Water Springs (MHWS).
- This MHWS position will assist having dry sand at high tide.

Please refer to the attached images over leaf for Location, Layout, as well as Cross Sections through both the Southern and Northern revetments.

The proposed layout and build for this protection project are seeking to achieve a result quite different to other parts of the Beach, in so far as the build will be mostly hidden. The Appearance and Visual Effect will be more akin to a natural Dune, as opposed to the Rocks on the beach.





COASTAL PROTECTION PROJECT
KEY PLAN



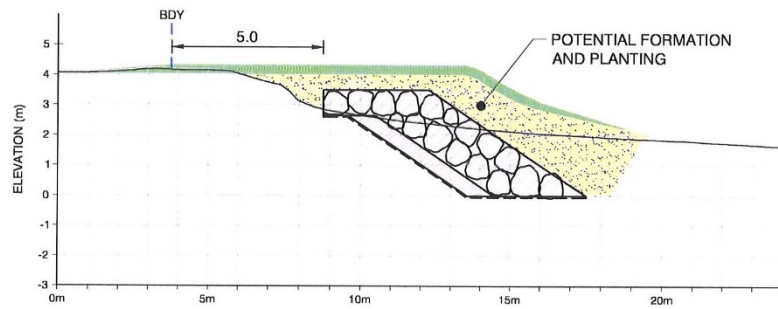
GLEN ISLA PLACE
WAIHI BEACH
SCALE 1:10000
DATE: 01.07.24
REV: -



COASTAL PROTECTION PROJECT
LAYOUT

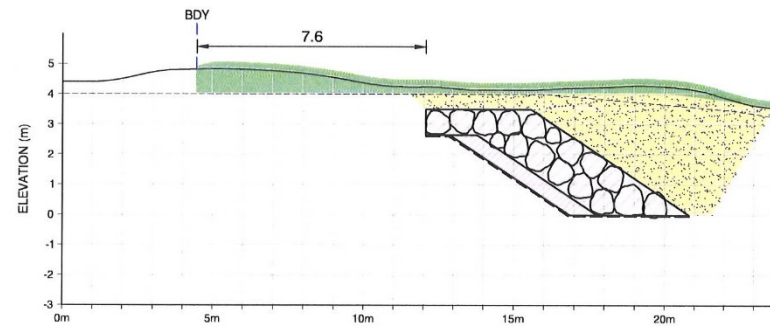


GLEN ISLA PLACE
WAIHI BEACH
SCALE 1:1000
DATE: 29.05.24



No 16 GLEN ISLA

SOUTHERN DUNE
 PROTECTION OVERTOPPED WITH SAND AND PLANTED DUNE SPECIES.
 LOWER LEVEL BACK FILLED



No 11 GLEN ISLA

NORTHERN DUNE
 PROTECTION BACK FILLED & OVERTOPPED
 WITH SAND AND PLANTED WITH DUNE SPECIES

**COASTAL PROTECTION PROJECT
 CROSS SECTIONS**



GLEN ISLA PLACE
 WAIHI BEACH
 SCALE: NTS
 DATE: 18.07.24
 REV: A

Background

The Glen Isla Sea Wall

In 1983, Glen Isla Place had a Council built Sea Wall constructed in front of our dune, extending the various sections of sea walls that had been built over the preceding 15 odd years to other beach frontage residential areas making up our community. Our new wall was located 20m seaward of the private property seaward boundaries. These various walls had fallen into disrepair by 2011 but the Glen Isla wall, as the last constructed, was still providing a good degree of protection to our dune. The wall and its rock back carpet, as well as 12-metre-long radial gabion basket rock groynes at 40 metre intervals along the beach, was taken out by the Council in 2011.



WBOPDC'S 2004 – 2011 Sea Wall Scheme

As part of the design and construction process for the WBOPDC's 2004-2011 sea wall scheme, to replace the then existing sea walls and ad hock protection at Waihi Beach with a 1.6 Kilometre rock revetment, the Glen Isla Place seaward frontage was downgraded from the Council's Coastal Engineers recommendation for a permanent revetment, with the rear of the wall located 5 metres off the private property boundaries, and was substituted with a **soft Enhanced with an Imported Sand and Planted Dune** concept, which was subsequently constructed in 2011.

This sand dune construction was entirely washed away, along with hundreds of plants, by a severe storm within 2-3 weeks of being finished. The same result occurred at the northern Shaw Road properties, that had also been downgraded to the "Enhanced Dune" model. Since that time 13 years ago, the Glen Isla Dune and Northern Shaw Road waterfronts have remained defenceless.

Key

- 1969-2011 Existing sea wall
- 2010-2011 Installed rock revetment wall
- 2011 Installed dune enhancement - Washed Away 2011
- 2025 Proposed new coastal protection works

(positions indicative, not to scale)



Shaw Road

SUMMARY OF COASTAL PROTECTION WAIHI BEACH 2024

Glen Isla Place

Gabrielle and Hale Storm Damage

You will be aware that because of the 2023 storms Hale and Gabrielle, the Glen Isla dune was substantially damaged, with the dune retreating up to 3 metres in the southern part. The Three Mile Creek sand sausage wall on the south bank behind No's 5 and 7 Glen Isla Place was also damaged at that time and was rebuilt in local rock by the Council, post Gabrielle without damage.



The Current Initiative

Post Gabrielle, the owners of the waterfront properties formed an Incorporated Society known as the Glen Isla Protection Society Inc., (GIPS for short), and this group worked with Western Bay of Plenty District Council on this erosion protection issue through 2023, which resulted in the Council approving the construction of the proposed Revetment on their land, subject to conditions, which included that the Owners of the seven property's would pay for the entire design, consenting and construction of the protection.

GIPS have assembled a highly regarded Consultant team who are guiding our project through the Process. They include the lead Planner, a Coastal Design Engineer, an Ecologist, A Landscape Architect, a Vibration and Noise Engineer, and an Arborist. The path forward from here will involve Resource Consent Applications to Western Bay of Plenty District Council and Bay of Plenty Regional Council. Once Consents are issued, we expect the construction process itself may take 4-5 months and likely to be in a post Easter period.

We are conscious of the issue Lorne Fell had in 2010/11 where his house at no. 7 was the subject of an insurance claim for damage following the use of the reserve on the north side of Three Mile Creek as an access way to the beach as part of the 2010/11 revetment construction process. With this background, we have engaged the services of a leading NZ Vibration and Noise Consultancy, Marshall Day Acoustics Limited to assist us in ensuring a methodology is adopted that avoids a repeat of this issue. A key decision on this aspect is there will be no rocks stockpiled on the Tree Mile Creek Reserve and there will be no Excavators running backward and forwards carrying Rock on that reserve. As we tested in the trial, our excavator(s) will be brought to site on a transporter and unloaded just above the beach and be driven to the Glen Isla Dune and work from that area.

Marshall Day designed a Monitored Vibration and Noise Trial to establish levels of vibration and noise in effecting the proposed works. This Trial was undertaken on Tuesday 9th July, with the assistance of Beach Contractors Limited and under the direction and supervision of Marshall Day. Marshall Day attended to setting up all the monitoring equipment to their requirements prior to starting the test. The test itself comprised individual tests for both movement of construction vehicles along the reserve, using an Excavator Transporter truck, carrying a 23.5 Ton Excavator, (both driving and unloading/reloading), as well as movement of a road legal, pneumatic tyred Tractor towing a Trailer Unit with a 20-ton load of rocks of the size we plan to use. Separately, we monitored the unloading of the trailer load of rocks onto the ground.

We have attached the Marshall Day Report to this document for your information. This report sets out where equipment was located including a Monitor adjacent to No.7's boundary on the Three Mile Creek walkway as that property is the closest house to the proposed revetment outside of the GIPS Group. The summary of the Trial was that the Vibration and Noise levels will comfortably comply with the District Plan Standards.

With the monitor at Lorne's boundary closest to the test area, the result was that the vibration levels at this location never exceeded 10% of the allowable Standard. Marshall Day advises that level will have reduced further between the boundary and the house, and further again when transferring from the ground into the house structure.

All construction activities will be very carefully managed to ensure there will be no physical effects on properties in the vicinity and that any disruption is minimised. We do not expect that any heavy vehicles associated with the construction will use the Glen Isla Place Cul de Sac

GIPS are contacting you as our Neighbours, to introduce the proposed project. If you would like to discuss any aspect of the project or to assist you with any other information you may request, we would be pleased to hear from you.

Kind Regards

Allan Fraser

On Behalf of the Glen Isla Protection Society Inc.

Mob. 021 925 482

Coastal Protection Project

Marshall Day Acoustics Report

Noise and Vibration Trial Summary

12 July 2024

MEMO

Project:	Glen Isla Protection Society - Coastal Protection Project	Document No.:	Mm 001 r01		
To:	Allan Fraser	Date:	12 July 2024		
Attention:	Allan Fraser	Cross Reference:			
Delivery:	Email	Project No.:	20240399		
From:	Ayla Wesley	No. Pages:	3	Attachments:	Yes
CC:	Luke Faithfull				
Subject:	Noise and vibration trial summary				

Summary

We have measured noise and vibration levels from a trial of rock dropping and general construction activities near Glen Isla Place, Waihi Beach. The trial was to simulate the worst-case noise and vibration levels during the proposed construction of a rock revetment along the Glen Isla Place beachfront properties.

Our measurements indicate the revetment works will comply with the relevant noise and vibration limits in the Western Bay of Plenty (WBOP) Operative District Plan (District Plan).

Section 4C.1.3 of the WBOP District Plan sets out the noise and vibration limits

The District Plan outlines the noise and vibration limits.

In Section 4C.1.3.1, the District Plan states that ‘*construction noise shall not exceed the noise limits in, and shall be measured and assessed in accordance with the requirements of NZS 6803:1999 – Construction Noise*’.

Table 2 – ‘*Recommended upper limits for construction noise received in residential zones and dwellings in rural areas*’ says that the L_{Aeq} and L_{AFmax} upper limits are 75dB and 90dB respectively, for work carried out between 7:30am and 6:00pm on weekdays.

While the District Plan does not contain vibration limits¹, we have adopted German Standard DIN 4150-3:2016, taking a conservative approach to avoiding cosmetic building damage. The limits for short term (transient) events like a rock drop are:

- 5 mm/s peak particle velocity (PPV) for frequencies between 0 – 10 Hz
- 5 – 15 mm/s PPV for frequencies between 10 – 50Hz
- 15-20mm/s for frequencies ranging from 50 – 100Hz

This means that the limit will change depending on the frequencies generated by the rock drop. The most stringent limit is 5 mm/s PPV and this is the limit we have applied to the trial.

During the trial we measured at distances relevant to the actual revetment works

During the trial, we carried out noise and vibration measurements of a rock drop and general equipment movement on 9 July 2024 from 9:50 to 10:05 am. The weather was overcast (6 okta) with calm winds of approximately 0-1 m/s. The temperature was mild, at around 13°C.

¹ Noise and vibration, Section 4C.1 of the District Plan – The Explanatory Statement identifies that ‘*Vibration from activities has not been an issue in the District. In many cases Council can manage vibration effects through the management of noise emissions or through the provisions of the Health Act. Specific standards to manage vibration are therefore not proposed.*’



We used two InstanTel vibration monitors (a Minimate unit with two geophones and a Micromate with a single geophone), an NTi XL3 sound level meter and a 01 dB Cube noise monitor. All instrumentation had valid calibration certificates, microphones were field-calibrated on site, and geophones were checked for level and weighted down with 5kg rice bags.

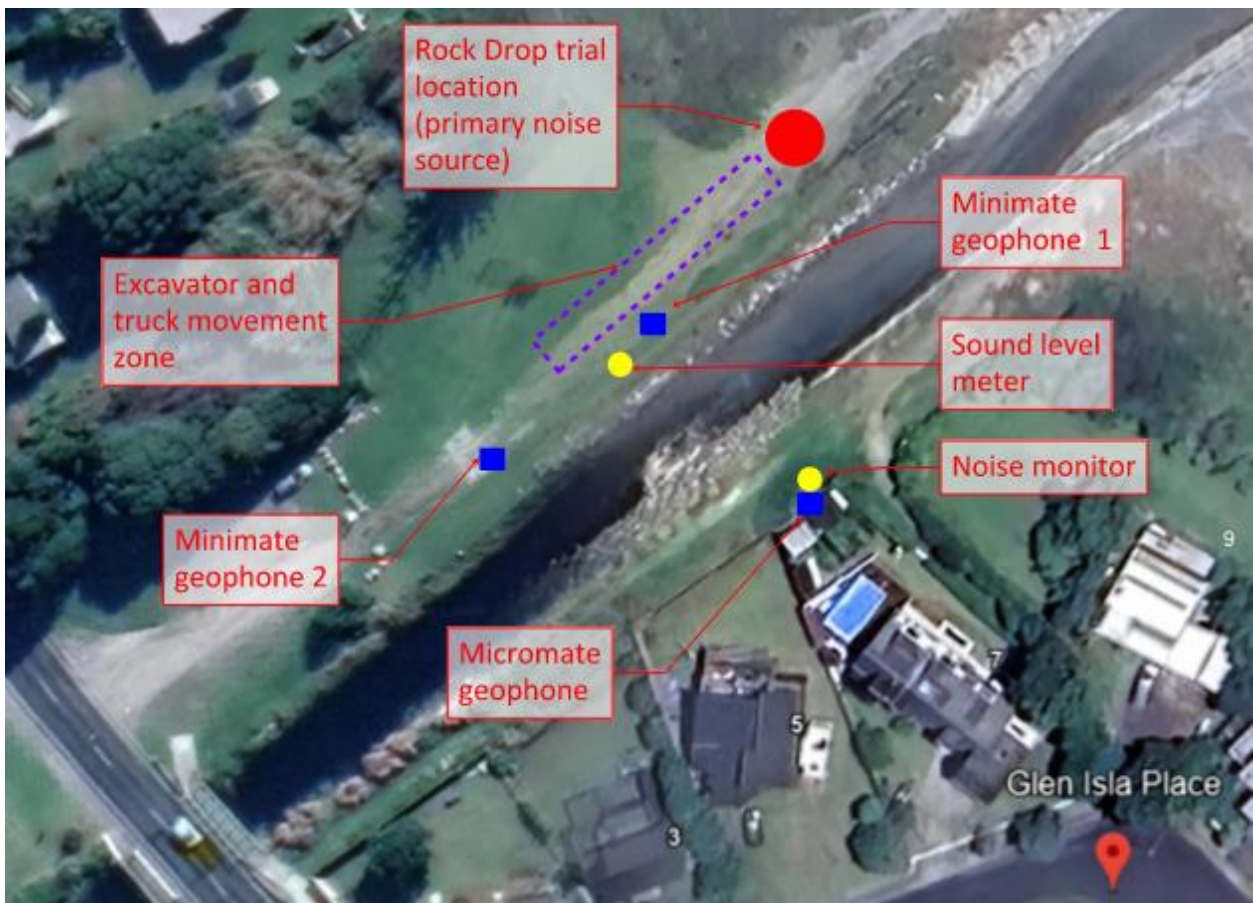
Beach Contractors Ltd operated the equipment they will use for construction activities associated with the proposed rock revetment structure and we measured it at relevant distances. The rock drop trial involved a tractor-trailer unit with several large rocks, tipping them onto the sand. The general equipment movement involved a 24t excavator (Hyundai 235 LCR-9) tracking back and forth. We measured this because we understand it was the subject of vibration damage complaints in the past.

We set up the Minimate vibration monitor with its geophones at 35m and 65m from where the rock drop took place. We also positioned the sound level meter at 35 metres. These positions match the distances the dwellings at 9 and 7 Glen Isla Place will be from the proposed revetment works.

We placed the Micromate vibration monitor in the ground just next to the boundary of 7 Glen Isla Place, and the noise monitor at 1 metre from the shed on that property. These units measured all trial activities, but the general equipment movement was most relevant based on historical issues.

Figure 1 shows an aerial photo of the trial area, with monitor locations and addresses.

Figure 1: Aerial photo showing trial area



The results indicate that noise and vibration levels during the revetment works will comply

Noise

During the rock drop, we measured noise levels of 72dB L_{Aeq} and 88 dB L_{AFmax} at 35 metres. These levels comply with the District Plan noise limits.

Appendix A shows the noise monitor data we captured at the 7 Glen Isla Place boundary (including 2.5 dB façade reflection off the shed). This shows 73 dB L_{Aeq} during the rock drop, and 60 dB L_{Aeq} during the other general works.

Note that we measured just the rock drop operation, which occurred for 45 seconds (from when the trailer started tipping to when the last rock hit the ground). This will be the noisiest part of the revetment works, but will only occur from time to time. Based on the other activities we measured during the trial (excavator works and general movement) we expect the average 15 minute noise level (specified by NZS 6803:1999) will be around 63 dB $L_{Aeq,15m}$. This readily complies with the 75 dB L_{Aeq} limit.

We were asked to predict the L_{Aeq} noise level at 20 metres (in case rock placement is needed closer than 35 metres). We estimate it would be 68 dB $L_{Aeq,15m}$, which also complies with the limits.

Vibration

During the rock drop, we measured vibration levels of 0.7 mm/s PPV and 0.6 mm/s PPV at 35 and 65 metres respectively. These values readily comply with the most stringent restrictions being the 5 mm/s PPV limit at 9 and 7 Glen Isla Place. We note that our measurements were on the ground, and as vibration transfers from the ground into a building structure, it loses energy. This means that any actual vibration levels on dwelling foundations themselves would be less than the recorded measurement.

The other activities (excavator works and general movement) generated around 0.2 – 0.4 mm/s PPV at the 7 Glen Isla Place boundary, which again readily complies with the limit. The rock drop generated 0.45 mm/s PPV (see circled area on the graph).

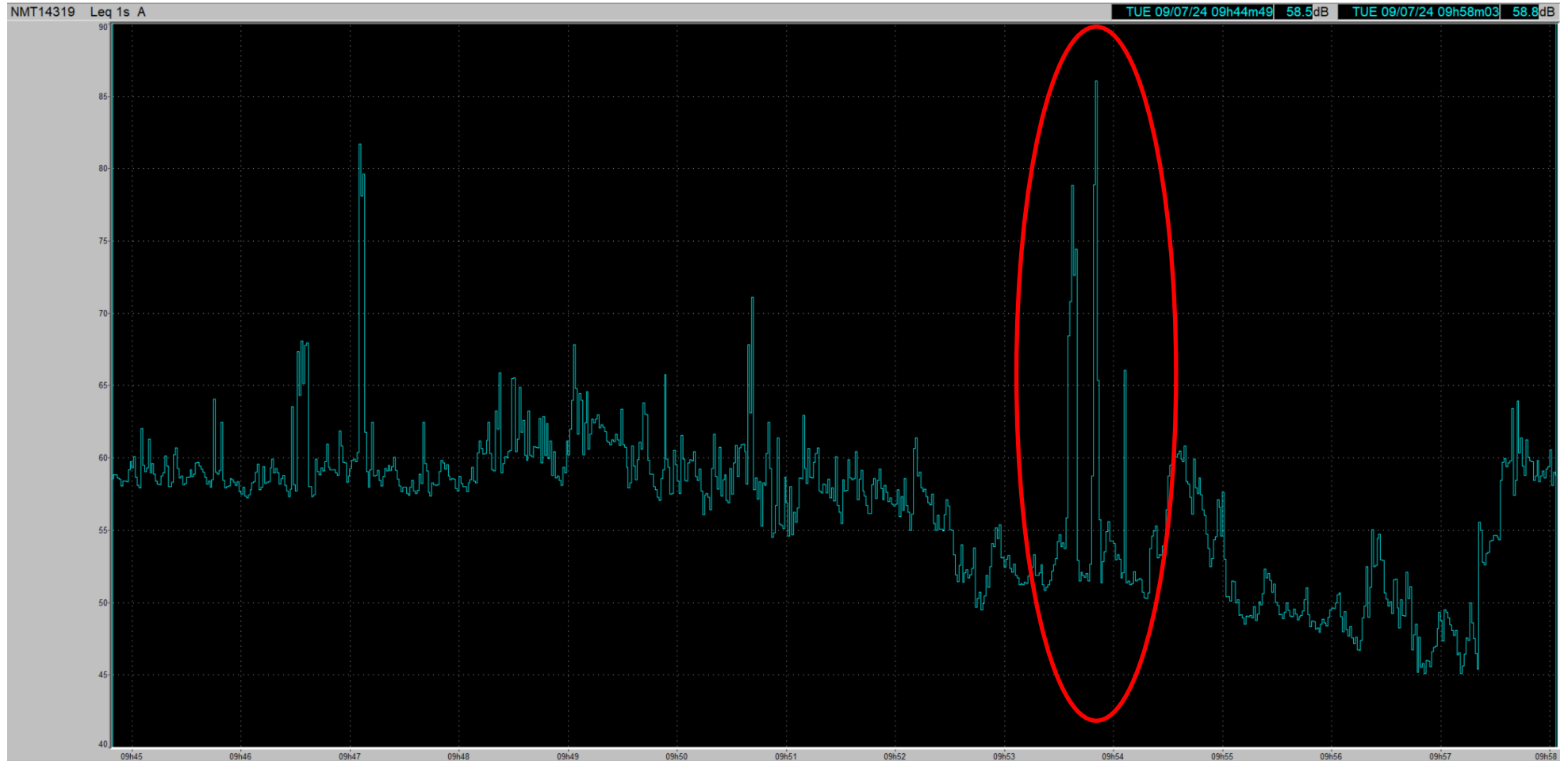
We also measured a peak of 0.66 mm/s PPV before the machinery mobilised. This was likely due to a neighbourhood dog that was running around the monitoring area, before we vacated for the measurements.

The graphs in Appendix B show our measured vibration levels, with the rock drop event indicated.

We were asked to predict the vibration level at 20 metres (in case rock placement is needed closer than 35 metres). We estimate it would be 0.9 mm/s PPV which also complies with the limits.

Appendix A – Noise data

L_{Aeq} noise level measured at 7 Glen Isla Place (rock drop circled in red)



TUE 09/07/24 09h44m49 58.5dB TUE 09/07/24 09h58m03 58.8dB

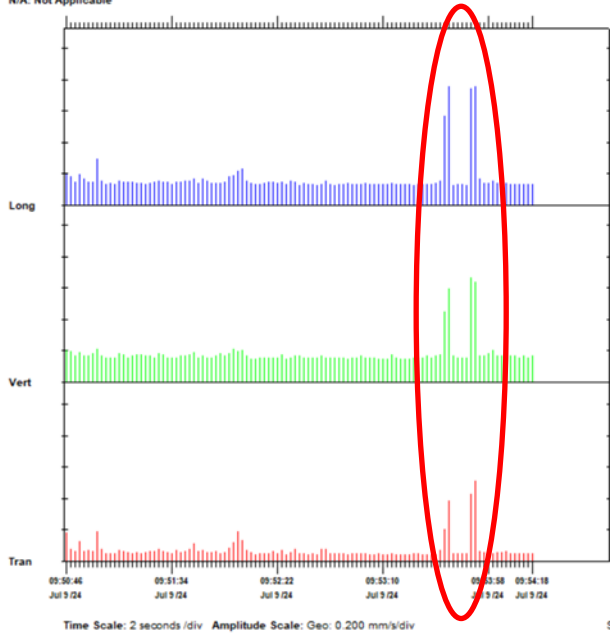


Appendix B – Vibration data

Minimate vibration monitor one and two (rock drop circled in red)

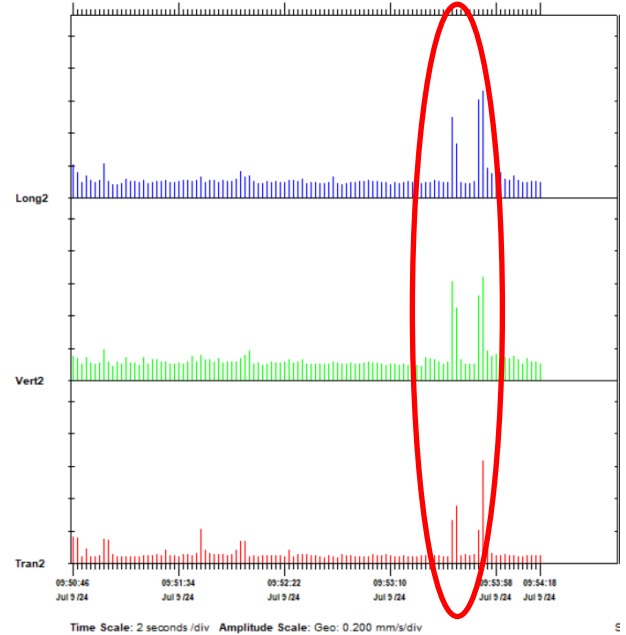
	Tran	Vert	Long	mm/s
PPV	0.512	0.670	0.757	
ZC Freq	17.7	N/A	28.8	Hz
Date	Jul 9 /24	Jul 9 /24	Jul 9 /24	
Time	09:53:50	09:53:50	09:53:38	
Sensor Check	Check	Disabled	Disabled	
Frequency	***	***	***	Hz
Overswing Ratio	0.0	***	***	

Peak Vector Sum 0.869 mm/s on July 9, 2024 at 09:53:50
N/A: Not Applicable



	Tran2	Vert2	Long2	mm/s
PPV	0.631	0.638	0.662	
ZC Freq	1.2	22.5	26.6	Hz
Date	Jul 9 /24	Jul 9 /24	Jul 9 /24	
Time	09:53:50	09:53:50	09:53:50	
Sensor Check	Passed	Passed	Passed	
Frequency	7.3	7.3	7.3	Hz
Overswing Ratio	3.9	3.7	3.9	

Peak Vector Sum 0.861 mm/s on July 9, 2024 at 09:53:50



Micromate vibration monitor (rock drop circled in red)

	Tran	Vert	Long	mm/s
PPV	0.428	0.441	0.662	
ZC Freq	31	79	>200	Hz
Date	Jul 9 /24	Jul 9 /24	Jul 9 /24	
Time	09:53:18	09:41:28	09:41:28	
Sensor Check	Passed	Passed	Passed	
Frequency	7.1	7.5	7.3	Hz
Overswing Ratio	4.7	4.5	4.5	

Peak Vector Sum 0.768 mm/s on July 9, 2024 at 09:41:28

