

From: Information Management Team
Sent: Wednesday, 15 December 2021 9:18 am
To: [REDACTED]
Subject: RE: LGOIMA - [REDACTED] re Quarry

Tēnā koe [REDACTED]

I refer to your request dated 1 November.

Please find attached your response letter. I apologise for the delay in getting this to you.

If you have any further questions on this please contact me via informationmanagementteam@huttcity.govt.nz.

Ngā mihi,
Kate

Kate Ostapowicz
Senior Advisor, Official Information

Hutt City Council, 30 Laings Road, Private Bag 31912, Lower Hutt 5040, New Zealand
M 027 265 5849 W www.huttcity.govt.nz

From: Information Management Team
Sent: Monday, 6 December 2021 2:25 PM
To: [REDACTED]
Subject: RE: LGOIMA - [REDACTED] re Quarry

Tēnā koe [REDACTED]

I am emailing to provide you with an update on this request.

Apologies for the delay in getting back to you, and for the delay in getting this information to you. The team are still working on this, and we hope to provide the information to you as soon as possible.

Please contact me if you have any questions.

Ngā mihi,
Kate

From: Information Management Team
Sent: Wednesday, 17 November 2021 3:27 PM
To: [REDACTED]
Subject: RE: LGOIMA - [REDACTED] re Quarry

Tēnā koe [REDACTED]

I am emailing to provide you an update on this LGOIMA request.

The team will undertake a manual check of records, and this includes a check of our archives. This may take some time as the team currently have a busy workload, however I will keep you updated with progress.

If you have any questions please do not hesitate to get in touch with me.

Ngā mihi,
Kate

Kate Ostapowicz (she/her)
Senior Advisor, Official Information

Hutt City Council, 30 Laings Road, Private Bag 31912, Lower Hutt 5040, New Zealand
M 027 265 5849 W www.huttcity.govt.nz

From: Information Management Team
Sent: Monday, 15 November 2021 10:53 AM
To: [REDACTED]
Subject: RE: LGOIMA - [REDACTED] re Quarry

Tēnā koe [REDACTED]

REQUEST FOR INFORMATION - LOCAL GOVERNMENT OFFICIAL INFORMATION AND MEETINGS ACT 1987: ACKNOWLEDGEMENT OF REQUEST

I am writing to acknowledge receipt of your official information request dated 1 November 2021. Apologies for the delay in acknowledging this request.

We received your request on 1 November 2021. We will endeavour to respond to your request as soon as possible and in any event no later than 20 working days after the day your request was received. If we are unable to respond to your request by then, we will notify you of an extension of that timeframe.

If any additional factors come to light which are relevant to your request, please do not hesitate to contact us so that these can be taken into account.

Nāku noa, nā

Kate Ostapowicz
Senior Advisor, Official Information

Hutt City Council, 30 Laings Road, Private Bag 31912, Lower Hutt 5040, New Zealand
M 027 265 5849 W www.huttcity.govt.nz

From: [REDACTED]
Sent: Monday, 1 November 2021 6:21 PM
To: Krisna Crowley Nepia <Krisna.CrowleyNepia@huttcity.govt.nz>

Cc: Paul Duffin <Paul.Duffin@huttcity.govt.nz>

Subject: Re: FW: [EXTERNAL] Quarry

Hi Krishna

Yes please I would like to proceed with this.

On Mon, 1 Nov 2021 at 5:17 PM, Krisna Crowley Nepia <Krisna.CrowleyNepia@huttcity.govt.nz> wrote:

Kia ora [REDACTED]

Further to my email below, Council's Policy Planner Stephen Davis has advised that he understands the vibration standards for the Extraction Activity Area date back to at least the original notified district plan from the 1990s, and due to not having the background information for that digitised it would take a significant amount of time to look up the records so doesn't have this information on hand. He has however advised that you could request this under the Local Government Official Information and Meetings Act. If this is what you would like to do please let me know and I can pass this on to the Information Services team.

Thanks

Ngā mihi

Krisna Crowley Nepia ([she/her](#))

[Ringa Āwhina Tāhūhū ki Te Koromatua](#) | Executive Assistant to the Mayor

Te Kaunihera o Te Awa Kairangi | Hutt City Council, [30 Laings Road](#), Private Bag 31912, Lower Hutt 5040, New Zealand

Paetukutuku: www.huttcity.govt.nz

From: Krisna Crowley Nepia <Krisna.CrowleyNepia@huttcity.govt.nz>

Sent: Thursday, 28 October 2021 9:11 AM

To: [REDACTED]

Subject: RE: FW: [EXTERNAL] Quarry

Kia ora [REDACTED]

Thanks for your reply. We will need to pass on your query to Council officers for response so will do that today and ask that they come back to you – I'll also let Paul know that you've been in touch again.

Ngā mihi

Krisna Crowley Nepia ([she/her](#))

[Ringa Āwhina Tāhūhū ki Te Koromatua](#) | Executive Assistant to the Mayor

Te Kaunihera o Te Awa Kairangi | Hutt City Council, [30 Laings Road](#), Private Bag 31912, Lower Hutt 5040, New Zealand

Paetukutuku: www.huttcity.govt.nz

From: [REDACTED]

Sent: Thursday, 28 October 2021 8:22 AM

To: Krisna Crowley Nepia <Krisna.CrowleyNepia@huttcity.govt.nz>

Subject: Re: FW: [EXTERNAL] Quarry

Morning Krisna

I have been emailing Paul Duffin who has been prompt in every reply but the question I raised has never been answered.

I understand the blasts are within the limits of the noise regulations , but that was not my concern. The device was used on the quietest blast ever. In fact if I did not know that they were blasting at that time I would have thought it was just a truck passing with a load that bounced a bit.

TP put it in context a few years ago a dip gradually appeared approx outside number 109 Molesworth Street which caused a bang each time a bus or truck was travelling up or down the street and the blast was less than that noise.

So again **what science has been used by the council to ensure the blasting is safe to the rock sub structure ?**

[REDACTED]

On Wed, Oct 27, 2021 at 3:22 PM Krisna Crowley Nepia <Krisna.CrowleyNepia@huttcity.govt.nz> wrote:

Kia ora [REDACTED]

Thank you for your email.

Following you raising this matter with the Mayor in May contact was made with Council's Senior Monitoring and Enforcement Officer and we were also advised that the measuring device was to be put in place at your home. As our office hasn't heard from you since then are you able to please let me know who you have sent your many emails to. We'll happily follow up with them.

Ngā mihi

Krisna Crowley Nepia ([she/her](#))

[Ringa Āwhina Tāhūhū ki Te Koromatua](#) | Executive Assistant to the Mayor

Te Kaunihera o Te Awa Kairangi | Hutt City Council, [30 Laings Road](#), Private Bag 31912, Lower Hutt 5040, New Zealand

[Paetukutuku: www.huttcity.govt.nz](#)

From: [REDACTED]

Sent: Tuesday, 26 October 2021 1:22 PM

To: Campbell Barry <Campbell.Barry@huttcity.govt.nz>

Subject: [EXTERNAL] Quarry

Afternoon Mayor

Some time ago I met you at the Taita library to ask if there was any research to indicate the level of blasting undertaken by above was safe for the sub structure under the area I live in.

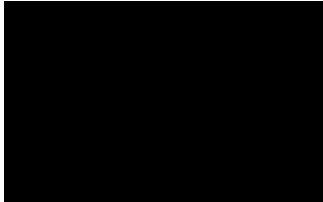
Despite many emails my question has not actually been answered , the quarry did come and put a measuring device on my section for the last blast which incidentally was the quietest I have ever heard.

The blast the preceding day also was much quieter and in fact first time for ages my house did not shake.

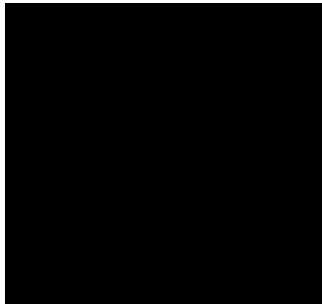
I have been told the blasts are within the allowable range, but what is the range and is that based on science ?

My house is sinking and piles were re done approximately 30 years ago.

I do not want to believe in conspiracy ! A straight intelligent answer to is it safe and if so how was that decision made?



15 December 2021



Request for Information – Local Government Official Information and Meetings Act 198

We refer to your official information request dated 28 October 2021 for information concerning the science used by the Council, allowable ranges for vibrations from blasts originating from Belmont Quarry and how the decision that the vibrations were at a safe and allowable range, was made.

The information you have requested is below.

You have asked, “what science has been used by the Council to ensure the blasting is safe to the rock substructure”, and “what is the allowable range and is that range based on science?”

You have also asked, “is it safe and if so, how was that decision made?”

Blasting is, by far, the most studied source of ground vibration, as the potential for vibrations from blasting to damage structures was recognized far earlier than that of construction heavy equipment. There is a large amount of scientific and technical literature regarding blasting vibration effects on homes and other structures, worldwide.

When explosives are detonated at the quarry the chemical reaction produces heat and a shock wave. The shock wave is transmitted to the mine rock, breaking the rock as it passes. It is this shock wave, which further away, is detected as a vibration.

A vibration in the scientific sense is a passage of motional energy in a material that causes oscillations (movements) about the average position of particles or molecules which make up a material, item or structure. A vibration must travel in some physical material. Sufficiently low intensity vibration passages produce no permanent change in the relative position of particles in an item or structure.

Ground vibration can be either natural (from earthquakes) or man-made (from blasting, construction, equipment and traffic etc), in source. In both cases, seismographs are used to record the ground vibration.

The blasting seismograph vibration monitor is the most commonly used tool for measuring vibration and determining compliance with ground vibration standards. It is used in both blasting and construction settings. The monitor translates its raw observations into several different

measures of ground vibration. The one most accepted in the field as an indicator of damage potential is the **peak particle velocity (PPV)**

PPV is a measurement of maximum ground particle movement speed, specified in the U.S in inches per second (in/sec) and in New Zealand (and most of the rest of the world) in millimetres per second (mm/sec)

Vibration Standards

Vibration standards are set forth by governmental agencies or professional groups to provide guidance to those who might be expected to cause vibration in their work, in order to avoid causing damage. There are different ground vibration standards, which set different vibration velocity limits for varying vibration environments and diverse building types. Thus, a judicious and reasoned choice of which standard to apply in each situation is critical to proper use of, and benefit from, that standard.

Because not all vibrations felt by people are damaging structures, vibration standards attempt to separate those vibration intensities and frequencies which are potentially damaging to structures from those which may be concerning to people but pose relatively little damage probability.

Vibration standards are closely linked to what are safe distances from the source of the vibration and set allowable ground vibration velocities for various activities and structure types. Safe distances are usually arrived at by considering the likely velocities of vibrations of a given type.

It is important to understand that ground vibration standards are used to judge the probability of a single ground vibration of a given size (Peak Particle Velocity, PPV), duration and frequency composition, causing damage to a collection of houses or buildings of similar construction, rather than the probability of multiple or long-lasting vibrations causing damage to one house or building.

There is no precise level at which damage begins to occur. The damage level depends on the type, condition and age of the structure, the type of ground on which the structure is built and the frequency of the vibration in hertz. If a house has been damaged, houses of approximately the same age, structure, type and upon the same local soil or geology conditions, within the same distance from the blast, should in theory, also experience damage.

Acceptable vibration levels set in vibration standards are based on statistical analyses of damage probabilities.

The New Zealand Vibration Standard

Because blasting vibrations have been so extensively studied, something is known about the probabilities of damage to a structure as the vibration velocity increases. Damage probabilities increase very rapidly once one exceeds a threshold level, typically at or near the standard limit. Therefore, any vibration which is over blasting standard limits should be seen as unacceptably likely to cause damage to structures.

When it comes to measuring the PPV of quarry blasts, New Zealand uses the Australian Standard in regard to blast vibrations which is AS 2187.2—1993 which has a limit of 4 mm/s PPV.

When one exceeds the standard PPV limit, the probability of damage rises. The values are different depending on the vibration source and separated, based on short-term and long-term vibration. In general, the short-term vibration definition would be applied to activities which follow the form of a single shock followed by a period of rest, such as quarry blasting.

The Vibrations generated from blasts at Belmont Quarry were measured between April 2017 and September 2021 by a vibration engineer (please see a summarised table below):

	Reference	PPV	Acoustics db
Limits		10	126
3/04/2017	68	1.65	106
4/04/2017	34	1.40	112
6/07/2017	7241	4.70	114
16/04/2019	GWB002	2.43	116.6
25/05/2021	GWB009	1.039	113.6
25/05/2021	GWB010	2.023	111.6
27/09/2021	GWB011	1.20	113.3
28/09/2021	GWB012	0.914	117.1
28/09/2021	GWB012	0.820	110.7

The above table shows the assessed results regarding the noise and vibration from blasting at Belmont Quarry. The highlighted dates 3 April 2017 and 28 September 2021 show the measured vibration levels at 115 Molesworth Street. It is noted that between 3 April 2007 and 28 September 2021, only one blasting operation produced a vibration level exceeding 4 mm/s PPV under the Australian Standard. The vibrations from this blast are still very low and would not have caused damage to any of the surrounding houses.

As you will see above, the two readings for [REDACTED] are well below the Australian standard, which had a PPV limit of 4 mm/s PPV.

The vibrations from blasts at the quarry were of very short duration. The level of vibrations produced by blasts need to be very high, at least more than 10 mm/s PPV which might have the potential to cause any structural damage, e.g causing piles to sink.

Please note that this letter (with your personal details removed) may be published on the Council's website.

Nāku noa, nā



Dean Bentley

Environmental Health Manager