

December 2023

**Welcome to our Natural Hazards Inc. newsletter – December 2023 Issue.**

Climate Change has been an international focus this month with COP28 being held in Dubai.



COP28 logo on the opening day of the United Nations Climate Change Conference COP28 in Dubai, United Arab Emirates. Photo: Jakub Porzycki/NurPhoto/AFP RadioNZ

Progress made includes a substantial increase in the funding being made available for mitigation and adaptation initiatives, including for the Asia Pacific region. We have seen a major shift by the ADB and World Bank to putting climate change front and centre of future funding of projects, including for flood risk management projects.

**And there is a growing involvement of collaborative initiatives with private sector businesses with specialist expertise and technologies as well as with science and finance organisations in the provision of a range of solution and resilience focused projects. This includes with NZ based businesses and research organisations for various off shore projects.**

As well as continuing efforts to improve resilience preparedness and recovery initiatives with other

natural hazards including earthquakes, volcanoes and tsunami.

**Robinson Seismic provides base isolation for new hospitals in India**

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Installation of first Robinson Seismic base isolation bearings at Mahua Vaishali Hospital, Bihar, India, during November 2023. (Ref: Robinson Seismic Ltd Facebook)



For further information:

Alan Park, CEO [alanp@lowdamagedesign.co](mailto:alanp@lowdamagedesign.co)

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[www.robinsonseismic.com](http://www.robinsonseismic.com)

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**Architectural visual for Mahua Vaishali Hospital, Bihar, India**

**COP28 - the first where New Zealand has sent a business delegation.**

This was convened by the New Zealand Ministry of Foreign Affairs (MFAT) and New Zealand Trade & Enterprise (NZTE). **It included Beca CEO Amelia Linzey and Industrial Group Director Jimmy Walsh.**

"COP28 presents a unique opportunity for Beca - as an Asia Pacific business proudly founded in Aotearoa - to support the New Zealand delegation and our shared commitment to achieving meaningful environmental and social outcomes for Asia Pacific. Many countries in our region, and globally, face existential threats from

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sea-level rise and forecast climate change-driven weather events, impacting our communities," says Amelia Linzey, Beca CEO.

"Additionally, the conference's key themes closely reflect areas where we believe our delivery focus and creative expertise can have the most positive impact, to support our clients and partners in decarbonisation, strengthening adaptation and resilience to climate change, and promoting good resource stewardship."

<https://www.beca.com/about-us/news-and-awards/november/beca-to-attend-global-climate-summit>

### Training Bangladesh Emergency Managers

Tonkin + Taylor's emergency management team have spent the last 12 months supporting the UNDP to build emergency management capability in Bangladesh.



Working in partnership with international experts from the USA and the UK, the team of five spent 6 months in Bangladesh, joining local disaster

specialists whilst being supported by skilled project management team in New Zealand.



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The team of five had varied tasks to complete, including:

- Development of Emergency Operations Plans (EOPs) for each of the six key agencies:
  - MoDMR - Ministry of Disaster Management and Relief
  - DDM - Department of Disaster Management
  - Fire and Bangladesh Fire Service & Civil Defence (FSCD)
  - Three City Corporations (Dhaka North, Dhaka South, Sylhet)
- Delivering Emergency Operations Center (EOC) training for over 90 staff
- Supporting 25 emergency management leaders on their journey toward International Association of Emergency Managers (IAEM) certification, delivering 100 hrs of training, along with supporting with coaching for assessments

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- Six individual agency exercises
- One 2-day multiagency exercise.

The relevance of this work was front of mind, with on average one national emergency every week that the team was in-country. This included building explosions, earthquakes, and cyclones affecting differing parts of Bangladesh.

When [Cyclone Sitrang hit Cox's Bazar in October 2022](#) during a week long IAEM training, participants were provided a real life situation to manage.



Photo Credit: People wade through a flooded street in continuous rain before Cyclone Sitrang hits in Dhaka, Bangladesh, on October 24, 2022 [Mohammad Ponir Hossain/Reuters]

Using the hotel as a base, the team practiced hazard management, resource assessment, and contingency planning. Operating off back up generators, prioritisation of resources became a focused effort.

*This was a reminder to all emergency managers to keep a torch in the daypack, always.*

Having led IAEM training in November 2022, T+T's Alex Cartwright returned to Bangladesh in March 2023 to support with individual agency exercises and then direct the 2-day multiagency exercise, focused on a large earthquake in Dhaka. With the third explosion within a week occurring on the day of arrival, the [Gulistan explosion in the market building of Siddiq Bazaar \(Old Dhaka\)](#) refocused the need for evacuation planning, debris management, and international aid coordination.



Photo: Alex Cartwright is in the centre.

While in Bangladesh, the team visited the various offices of each agency, providing advice and guidance on structure and layout of their Emergency Operation Centers (EOCs). Welcomed by the UNDP and agency staff, the team were humbled by the care and generosity with each of their visits. The team continue to support the Bangladesh Emergency Managers on their journey to IAEM accreditation.

For further information, contact:

**Alex Cartwright**  
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## Natural Hazards Inc - Collaborating to Create a More Resilient Tomorrow

For those reading our newsletter for the first time, our New Zealand based Natural Hazards Inc. Business Cluster arose from what started in November 1998 as the Earthquake Engineering NZ Business Cluster, as an initiative by Wellington City Council and its economic development agency, then known as the Capital Development Agency (CDA) (now the Wellington Regional Economic Development Agency WREDA), and Trade New Zealand (now New Zealand Trade & Enterprise).

With a number of joint marketing and project initiatives following major earthquakes in Turkey, Gujarat India and the Indonesian Boxing Day earthquake tsunami and Padang earthquake, flooding in Vietnam and cyclones in the Pacific.

**The purpose of the Cluster** retains relevance for today, with a recent refresh of our branding straplines reflecting this.

**Level 1: New Zealand expertise advancing global climate and disaster resilience.**

**Level 2: Collaborating with communities to enhance their resilience to earthquakes, floods, landslides, eruptions, tsunami, climate change and other hazards.**

- Bringing together and promote New Zealand expertise in reducing the impacts

of earthquake and natural hazards events on communities throughout the world;

- Bringing NZ's skills resources and reputation as a valued international supplier of professional services and products;
- Helping members secure worthwhile projects which would not otherwise be available to them.

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## Natural Hazards Inc Business Cluster Meeting Presentations during 2023



October meeting hosted by **WREMO** (Wellington Regional Emergency Management Office) with a presentation on the **Wellington Lifelines Business Case** by Project Manager/Co-ordinator Richard Mowll.

The October meeting included a sample demonstration by Ben File of **Disaster Prepare Ltd** of their new **"Seismic Rail System"** restraint product, with this ideal for use in **labs**.

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### GSD Installs Seismic Structural Health Monitoring of Buildings in Silicon Valley and Mexico City

Steven McLauchlan of Global Seismic Data gave a presentation at the October meeting on his recent visit to Silicon Valley in California and to Mexico City to install **Global Seismic Data** seismic sensor monitoring systems into a major new data centre in **Silicon Valley** and into a 23 level office building in **Mexico City** housing their Foreign Affairs Ministry.

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For further information:

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**Ben File, Operations Manager**

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This is a significant milestone for Wellington based Global Seismic Data that has developed this system that is also being used in a number of New Zealand buildings.

### Joint Initiatives with Pacific Exporters Network – Vanuatu Trade Mission



During June there was a successful joint trade mission to Vanuatu with members of Wellington based Pacific Exporters Network (PEN). This was organised with the High Commission for Vanuatu. More of these initiatives are planned for 2024. Fraser Carson of PEN gave an update at the October Natural Hazards Inc meeting.

[www.pen.org.nz](http://www.pen.org.nz)



For further information:

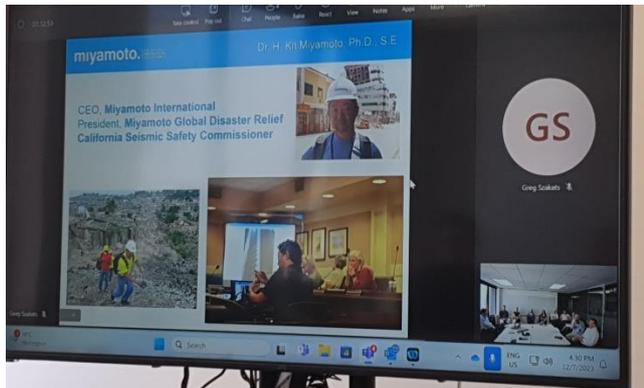
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**Greg Szakats** of **Miyamoto New Zealand** hosted the December meeting where he gave a presentation including a summary of work by Miyamoto International in Afghanistan following recent earthquakes there.

### **Rethinking Shelter to Respect Local Building Cultures and Keep Women Safe.**

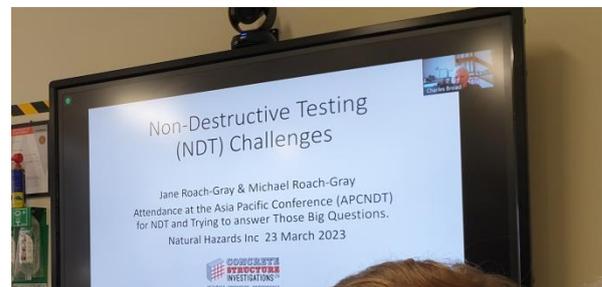
Miyamoto noticed that shelters constructed by some humanitarian agencies created additional problems as they were designed around the idea of a nuclear family and were not appropriate for extended family living. After listening to and collaborating with the locals Miyamoto designed *shelter compounds* with individual dwellings around a central open space where women and children gather. The villagers much preferred these shelter compounds as they did not disrupt their way of life.

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The March meeting was hosted by **Concrete Structure Investigations Ltd** co-directors **Michael & Jane Roach-Gray** who gave a presentation on **Non-Destructive Testing (NDT) Challenges**.

They will be presenting their Wellington based findings at the 18<sup>th</sup> World Conference on Earthquake Engineering in Milan in mid 2024.



For further information:  
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GNS Science hosted August AGM Meeting included a tour of the 24/7 National GeoHazards Monitoring Centre



With a Presentation from GNS Science Hazards & Risk Theme Lead Graeme Leonard.



And from Tony Harker of Damwatch on the GNS Science/Damwatch highly regarded Vietnam Dam Safety Project supported with funding from MFAT.



Complemented by an update on the GNS Science/NIWA Riskscape developments and partnerships by Sheena Thomas, GNS Science Manager Commercial and Business Partnerships

For further information:

**Helen Barnes, Business Development Manager**

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## Massey Joint Centre for Disaster Research (JCDR) - Emergency Management Institute

Hosted at Massey University Wellington Campus on 4<sup>th</sup>-8th March 2024, there is a short course programme developed by Joint Centre for Disaster Research to provide a theoretical and practical introduction to selected topics relating to emergency management.



Designed for those involved in all aspects of emergency management: planners, educators, engineers, local and central government policymakers, insurance managers, researchers, emergency managers and utility and property owners.

Check the link for details and registration:  
[Emergency Management Institute \(massey.ac.nz\)](https://www.massey.ac.nz/emergency-management-institute)

For more information:  
[@JCDR Enquiries \(jcdr.enquiry@massey.ac.nz\)](mailto:jcdr.enquiry@massey.ac.nz)

## Lessons from Climate Resilience Change in the Pacific - June Meeting

A Beca hosted presentation by Dr Mike Allis, Senior Associate Coastal Engineering, Beca

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<https://www.beca.com/about-us/news-and-awards/october-2023/an-incredible-week-for-beca-at-blue-pacific-conference>

From 25 to 27 September, Beca attended the inaugural 'Developing Sustainable Resilient Infrastructure in the Blue Pacific Conference' in Brisbane - the largest ever gathering of Pacific government and business representatives held in Australia.

As silver sponsors of this [three-day event](#) at Brisbane Convention & Exhibition Centre, Beca was represented by eight team members alongside Terence Erasito, Beca local Fiji consultancy partner from [Erasito Consultants Ltd.](#)

Together, the team joined over 500 delegates from across the region including foreign ministers, senior government officials and business leaders; all who attended with the common goal of building the connections and partnerships crucial to advancing the pipeline of infrastructure projects underway across the [Pacific](#). Highlights included Beca sharing the big stage on day three of the conference.

This began with Annika Lane, Principal – Spatial & Policy Planning presenting our work on the [Niue Waste Management and Resource Recovery Project](#) – a project in partnership with [Secretariat of the Pacific Regional Environment Programme \(SPREP\)](#) and [PacWastePlus](#) that aims to make everyday better for Niue locals by

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developing a national framework for cost-effectively managing waste and pollution.

Annika's presentation was followed by Annette Jones, Senior Principal – Urban Design who shared the story of Beca work helping deliver the Marshall Islands [Mid Corridor Housing Project](#) in partnership with [Kwajalein Atoll Development Authority \(KADA\)](#). Taking place on the island of Ebeye, this project involves developing cost-effective, sustainable, high quality, low maintenance housing for Ebeye residents appropriate for local conditions.

### Yogesh Kumar from Beca new Co-Chair for Natural Hazards Inc Business Cluster

#### Yogesh Kumar

BE(Civil)Hons,  
CMEngNZ, CPEng,  
IntPE(NZ)

As a dedicated Principal and Technical Director of Structural Engineering at Beca's Wellington



office, Yogesh has made significant contributions to the assessment and retrofit of buildings in Christchurch and Wellington following the devastating Canterbury and Kaikoura Earthquakes.

Boasting over 30 years of experience, Yogesh excels in managing structural engineering projects with expertise in planning, design, construction monitoring, and team leadership. His extensive work centres on designing and analysing industrial and commercial buildings and structures. Further enriching his career, Yogesh

has gained invaluable international experience throughout Indonesia, Papua New Guinea, Fiji, Australia, and American Samoa.

Fuelled by a passion for structural engineering, Yogesh is committed to elevating the professional standing of engineers while upholding the highest standards in the field. Between 2011 and 2019, he served on the SESOC Management Committee and contributed to numerous conference organising committees, occupying the role of Membership Secretary for the SESOC Executive Committee during 2016 to 2019.

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Yogesh's dedication to the engineering community also saw him as IPENZ Wellington Branch Chairman from 2007 to 2009 and currently serving on the Engineering New Zealand Wellington branch committee as Treasurer.

As a CPEng Structural Practice Area Assessor, his valuable expertise plays a vital role in developing future engineers. Since 2017, Yogesh has been an integral part of the Engineering Stakeholder Advisory Group for the Open Polytechnic of NZ, continuing to raise the bar for engineering excellence.

#### Yogesh Kumar

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### Natural Hazards Inc other Co-Chair

#### Greg Szakats

BE(Civil), CPEng, CMEngNZ,  
IntPE(NZ), CEng(UK), MISTructE



Greg has been co-chair of natural Hazards Inc since 2012. He has been deeply involved in two major reviews of the purpose and aims of the cluster.

Greg is a structural engineer with over 40 years' experience in the engineering and construction sector. His projects span New Zealand, Australia, the UK, the Pacific and Indonesia. Greg's professional capabilities range from the design of residential, commercial and industrial buildings to earthquake and cyclone-resistant structures, as well as the assessment of damaged and deteriorated structures. His decades of practice and understanding of building legislation, contracts, safety and sustainability mean he is an asset to any project and can coordinate projects with minimal conflict.

Greg has significant earthquake assessment capability, having completed rapid post-earthquake evaluations in Banda Aceh and Samoa, as well as Christchurch and Wellington. He is the author of "Improving the Earthquake Resistance of Small Buildings, Houses and Community Infrastructure", prepared for NZAID/World Bank for Banda Aceh, Indonesia, October 2006.

Greg likes to communicate engineering ideas to non-experts and takes pride in preparing concise, readable reports.

Greg is a passionate mentor of junior staff. He tutors at the Victoria University School of Architecture and takes great satisfaction in teaching young engineers the real-world aspects of engineering design.

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#### Greg Szakats

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#### Miyamoto New Zealand Ltd

[miyamoto.nz](http://miyamoto.nz)

[LinkedIn](#) | [Instagram](#) | [Youtube](#)



Photo: The RV Tangaroa [NIWA / Rebekah Parsons-King]

### NIWA - Tonga Eruption caused fastest ever underwater flow

NIWA and the UK's National Oceanography Centre (NOC) say that the flows travelled at speeds of up to 122km/hour – up to 50% faster than any other recorded.

This [new analysis](#), made possible by the NIWA-Nippon Foundation Tonga Eruption Seabed Mapping Project (TESMaP), comes after earlier results showed the eruption of Hunga Tonga–

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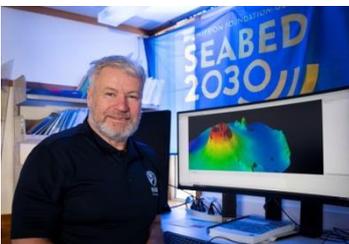
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Hunga Ha’apai remobilised a staggering 10km<sup>3</sup> of material from the seafloor.

As material from the volcanic eruption collapsed into the ocean, this triggered a huge surge of rock, ash, and gas that caused extensive damage to Tonga’s underwater telecommunication cables some 80km away. Dr Emily Lane, who is NIWA’s Principal Scientist for Natural Hazards and is a co-author on a recently published paper on this. She said the timings and locations of the damage to two subsea cables allowed them to determine the speeds of flows.

“Just a few months after the eruption, our team set sail to find out what caused it and what the impacts were. Surveys showed that Tonga’s domestic cable was buried under 30m of material, which we sampled and confirmed as containing deposits formed by a powerful seafloor flow triggered by the eruption.

“What’s impressive is that Tonga’s international cable lies in a seafloor valley south of the volcano, meaning the flow had enough power to go uphill over huge ridges, and then back down again.”



Kevin Mackay is a NIWA marine geologist and voyage leader of TESMaP.

<https://niwa.co.nz/news/tonga-eruption-caused-fastest-ever-underwater-flow>

## eCoast Marine Consulting and Research helping Small Island Nations

The coastal and environmental scientists and engineers working at [eCoast Marine Consulting and Research](#) based in Raglan, on the west coast of New Zealand’s North Island, specialise in understanding, assessing and mitigating a wide range of coastal and marine natural hazards. This includes **climate change (CC) and sea level rise (SLR) adaptation strategies, tsunami hazard assessments and evacuation mapping, cyclone and storm surge assessment and associated flood risk modelling.**

Besides undertaking [coastal hazard assessments in New Zealand](#), for the past 2 decades, eCoast has been developing a better understanding of coastal processes and the impacts of CC and SLR on [tropical island locations](#). Since many of the principles of coastal management have been developed in temperate regions, simply applying these standard approaches to the different physical environments found in the tropics often leads to failure.

Many small island nations are extremely vulnerable to the impacts of CC and SLR, and so [developing methods that increase resilience](#) while adaption strategies are implemented has become increasingly important.

eCoast has invested considerable time and resources into collating existing science in this area and augmenting it with their own research

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and experience to provide strategies for improved outcomes in this region.

**eCoast also has a wealth of experience in the area of tsunami hazard mitigation.** eCoast has produced hundreds of tsunami hazard assessment studies for a range of clients including regional and national government agencies, port companies and large consultancies working on major infrastructure projects.

**eCoast scientists have been involved in the [scientific response](#) to every [major tsunami event](#) of the past three decades,** thereby gaining invaluable insights and knowledge that can be applied to future scenarios. Most recently **eCoast has developed unique tools and strategies specifically focussed on [ports and maritime facilities](#).**

[Recent projects](#) conducted for international aid and development organizations (i.e., **ADB, UNDP and World Bank**) have significantly bolstered eCoast's experience in the area of coastal flooding related to the effects of tropical cyclones and other extreme events.



Photo: As part of an effort toward coastal protection and climate change resilience, Tonga's Ministry of Lands, Environment, Climate Change and Natural

Resources (MLECCNR) commissioned eCoast Marine Consulting and Research to provide engineering design for coastal protection work in western Tongatapu.



Photo: eCoast Managing Director Dr Shaw Mead has presented at stakeholder consultation on wastewater master plans for Fiji's Western Division. This project is set to upgrade wastewater infrastructure over the next 29 years.

**The eCoast team has developed [in-house tools](#) for applying Monte Carlo methods to the determination of storm surge and coastal flooding extents.**

This includes developing thousands of years of synthetic wave, wind and water level records in a statistically robust manner in order to produce meaningful results that can be directly applied to a coastal setting. This experience, along with eCoast acumen for conducting [field data collection campaigns](#), has been used for both the aid and development projects mentioned above as well as a range of commercial clients in the resort and leisure space with **projects throughout the South Pacific (Fiji, New Caledonia, Tonga, Vanuatu, Cook Islands), Indian Ocean (Maldives,**

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Seychelles, Mauritius) and the Atlantic/Caribbean.

For further information:  
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[www.surfbreakresearch.org](http://www.surfbreakresearch.org)



### Seismic Shift flying the flag for Kiwi seismic technologies in Japan



**Seismic Shift** is enabling communities around the Pacific Rim to become resilient to future earthquake shaking through the implementation of low-cost technologies. Seismic Shift is headquartered in Ōtautahi Christchurch and

operates around the Pacific Rim through strategic partnerships.

The Seismic Shift primary product, **FrontFoot**, is a cost effective multi-directional base dissipation system for lightweight structures and isolated equipment/infrastructure.

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 | [seismicshift.nz](http://seismicshift.nz) | [LinkedIn](#)

### Natural Hazards Inc. Members' Expertise

- Strategies for disaster risk reduction, readiness, response and recovery.
- Development of organisational frameworks for emergency management.
- Emergency management education.
- Community preparedness for natural disasters.
- Multi-hazard land use planning.
- Improvement of building controls, standards and codes.
- Seismic retrofit strengthening of buildings, including simple houses.
- Seismic isolation of important buildings such as hospitals, schools, emergency management centres, government buildings, apartment buildings and heritage buildings.
- Tsunami and flood risk assessment, modelling and mitigation strategies.
- Disaster risk insurance strategies and systems.

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## Next Natural Hazards Inc Business Cluster Meetings

**Thursday 22 February 4.00pm-6.00pm**  
Joint Centre for Disaster Research,  
Massey University Wellington Campus

**Thursday 28 March 4.00pm-6.00pm**



*Level 13, Kordia House, 109-125 Willis Street,*

*Wellington 6011, New Zealand*

**Thursday 18 April 4.00pm-6.00pm**  
NIWA, Greta Point, Wellington

**Thursday 23 May 4.00pm-6.00pm**

**Thursday 20 June 4.00pm-6.00pm**

**Thursday 29 August AGM 3pm-6pm**  
Beca Wellington

**Thursday 17 October 4.00pm-6.00pm**

**Thursday 28 November or 5 December**  
**4.00pm-6.00pm**

**New Members Always Welcome!**

[www.naturalhazards.co.nz](http://www.naturalhazards.co.nz)

## Natural Hazards Inc. Key Contacts

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## Committee Members:

**Neville Ching, NIWA (Treasurer);**  
**Helen Barnes, GNS Science;**  
**David Johnston & Alicia Cui,**  
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