



**RESEARCH INVESTMENT  
PRIORITIES STATEMENT  
2020 -2021**

**The Earthquake Commission (EQC)  
has a role in research and education  
as a part of one of its functions under  
the Earthquake Commission  
Act 1993:**

**“To facilitate research and education  
about matters relevant to natural  
disaster damage, methods of  
reducing or preventing natural  
disaster damage, and insurance  
provided under this Act”.**



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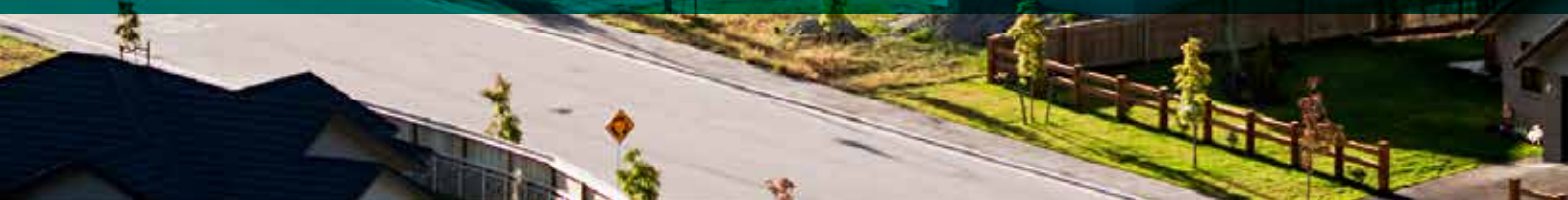
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## **RESILIENCE GOAL**

**Our resilience goal is to inform, enable and influence the choices and decisions that reduce vulnerability and the exposure of New Zealand's built environment to natural hazard events. In simple terms the result will be stronger homes, built on better land, served by resilient infrastructure, supported by affordable risk capital.**



# EQC'S RESILIENCE STRATEGY

EQC's Resilience Strategy for natural hazard risk reduction describes our strategic intention to play a key role in addressing New Zealand's disaster resilience challenges through a focus on risk reduction actions, driven by our research and education mandate.

Our research and project investment is focused on increasing the resilience of people, property and infrastructure. We believe that having stronger homes, built on better land, served by resilient infrastructure, supported by affordable risk capital is the foundation of a safer and more resilient society.

# STATEMENT INTENTIONS

This research priorities statement outlines the research opportunities and gaps we see in the New Zealand disaster research landscape.

The statement is organised around EQC's strategic goals and describes in more detail the areas we want to target with our research investment in order to progress those goals.

# FUTURE RESEARCH INVESTMENT

This statement will serve as a guide for applicants to align their proposals with our strategic areas of interest.

The areas that will guide our investment are targeted at improving the understanding of:

- NZ's natural hazard risk profile
- Building and infrastructure performance
- Land performance and use
- The governance and economics of disaster risk and disaster risk management
- How people perceive and manage risk.



# CURRENT FUNDING

Our annual research investment is \$17.2 million, of which \$12.9 million is allocated to our principal science investment GeoNet. \$4.3 million is invested in resilience and hazard science through university-based research and teaching programmes, regional consortia (DEVORA and It's our Fault) and funding of individual science projects (e.g. Biennial grants and science to practice grants).

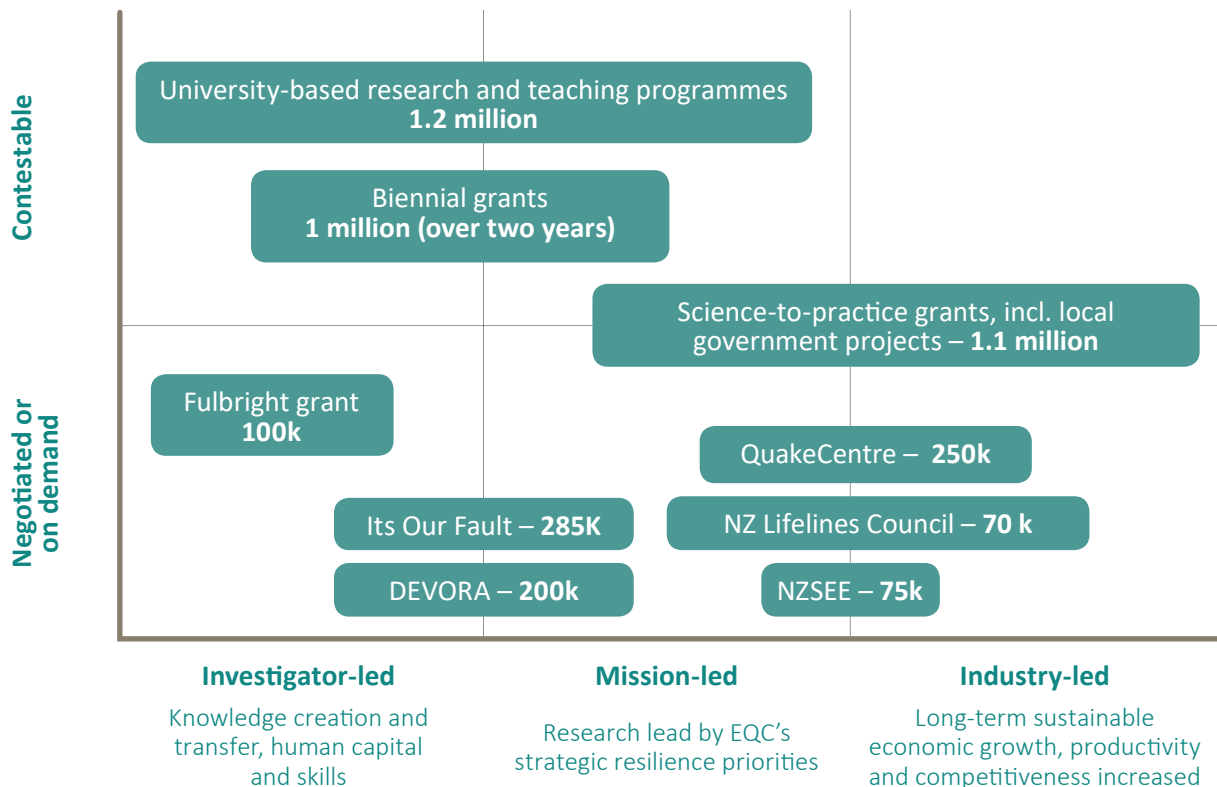
## EQC's flagship research investment

GeoNet provides a national network of 600 sensors to monitor geological hazards, real-time hazard information and reliable information to assist damage assessment.



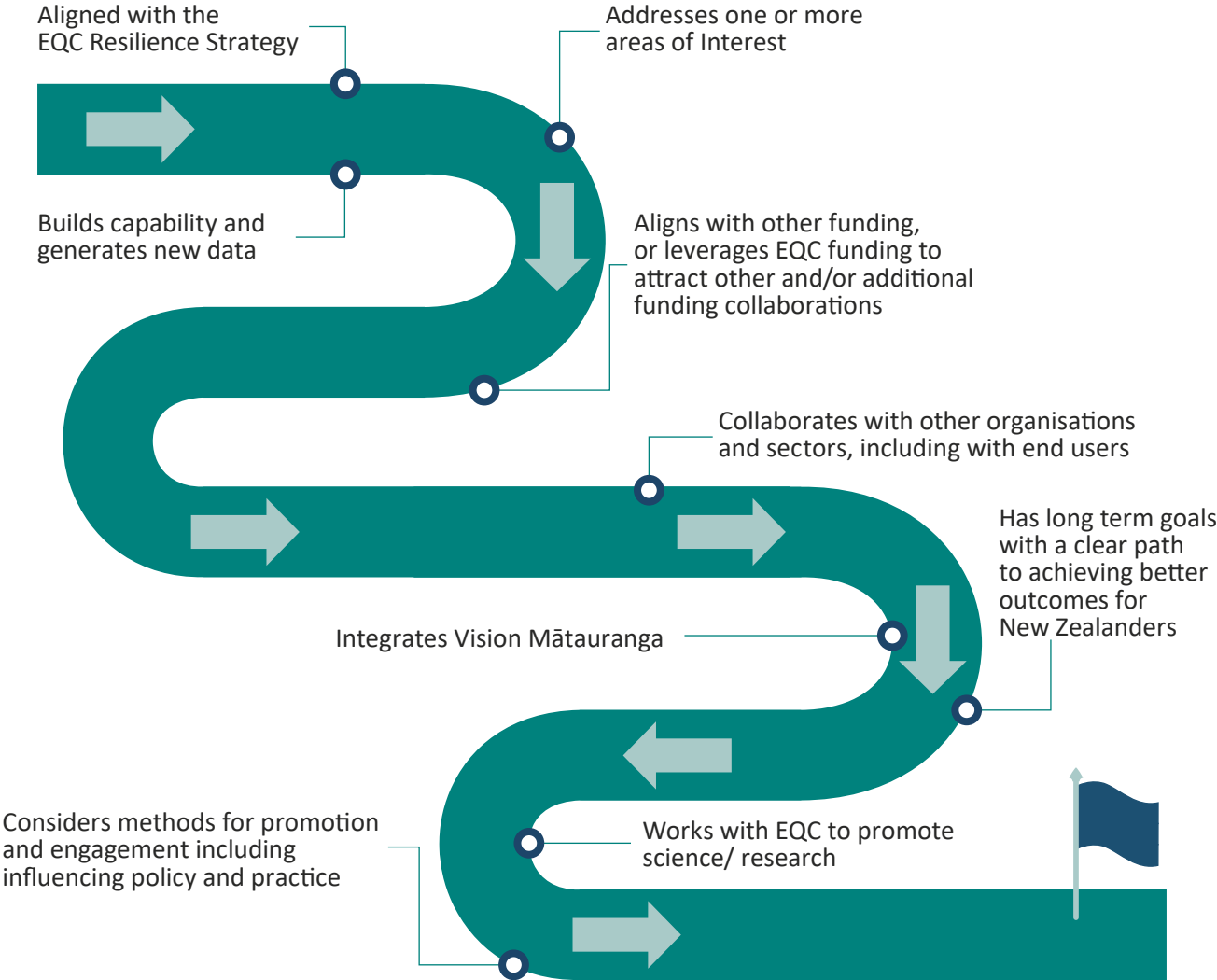
## How our funding is allocated

GeoNet and NZ Geotechnical Database not included



Adapted from MBIE, National Statement of Science Intent, 2018.

# What does a successful project proposal look like?



# AREAS OF INTEREST

## 1. Understanding our natural hazard risk profile and likely impacts of hazards:

- Improved **hazard models**, especially for ‘underdeveloped’ hazards (such as slope stability, flooding, storm surge, tsunami, fire following earthquake), which contribute to improved risk modelling.
- Facilitate the input of high quality data to the **New Zealand Geotechnical Database and National Seismic Hazard Model**.
- Develop **innovative technology and capabilities** for natural hazard research and natural hazard risk management.
- Develop or contribute to **data and informatics platforms** that support natural hazard research and its application.
- Better understanding **hazard interdependencies and their cascading effects**, especially as pertains to **insurance cover**.
- Better understanding the systems and processes for **collecting data in emergencies** with a particular view to improving the quality of data for loss modelling.
- Understanding or developing **Mātauranga Māori** approaches to the assessment of risk, and hazard risk management.
- Understanding mechanisms and success factors for the **translation and communication of complex science** to decision-makers, policy-makers, practitioners, and the public.



## AREAS OF INTEREST

### 2. Understanding and improving building and infrastructure performance

- Explore **retrofit** and **resilient design** approaches that **can reduce damage** and improve building reparability after natural hazards events.
- Investigating **cost-effective risk reduction for residential and multi-use buildings**, and other methods of **improving the resilience of those buildings** and their immediate surrounds.
- Better understanding building and infrastructure response to **low frequency and high magnitude events**.
- Understanding and implementing **‘functional recovery’** in New Zealand.
- Supporting the effectiveness, implementation, understanding, and uptake of **low damage design**.
- Understanding the characteristics of **New Zealand’s building stock**.
- Model how **hazards of different intensities** affect and/or damage our built environment.
- Analyse the **costs and benefits of achieving resilient buildings** to better understand where and how investment should be focused.
- Improving the **end-to-end building design process**.
- Understanding how **architectural design** can improve resilience.
- Investigate the efficacy and success factors of **building rating systems**.



## AREAS OF INTEREST

### 3. Understanding, improving and managing land performance and use:

- Further understanding how **development control mechanisms** (such as national policy statements and district and regional planning policies and rules) could better control the location, density and design of development to reduce vulnerability and exposure to natural hazards.
- Understanding and breaking down the **barriers and constraints for local and central government to increased use of land-use planning** to better avoid or reduce exposure to natural hazards.
- Supporting local authorities' **understanding and use of the Resource Management Act** and related instruments.
- Supporting and increasing engagement of the **planning profession** in better managing natural hazards.
- Developing **dynamic adaptive planning approaches and processes** that allow a variety of future land-use options, depending on how hazards and risks might change.
- Supporting the integration and effectiveness of **iwi management plans** in the resource management and natural hazard management systems.
- Better understanding the implications of removing the **“good ground”** definition from Building Code documents.
- Better understanding the **geotechnical characteristics** of land in high risk communities.



## AREAS OF INTEREST

### 4. Understanding the governance and economics of disasters and disaster risk management

- Model the **direct and indirect costs** of the consequences of disasters.
- In particular, measure and model the **economic cost of social impact**, including to establish a 'standardised' methodology for doing so.
- Investigate trends in **insurance markets and insurance uptake**, nationally and internationally.
- Increase understanding of the consequences and cascading effects of **risk-based pricing**.
- Understanding **EQC's exposure** to a range of hazard scenarios, under a range of market conditions.
- Investigate how government (central, regional and local) **policy affects the country's risk profile**.
- Better understand **barriers to implementing policy** that reduces risk and builds resilience.
- Improve the **measurement and assessment of resilience**.
- Develop **multi-capital decision-making tools**.
- Investigate **financial mechanisms and incentives** to building resilience.



## AREAS OF INTEREST

### 5. Understanding how people perceive and manage risk

- Understanding **what drives people** to accept or take action to avoid or control risk exposure.
- Understanding our **customer communities**, including:
  - the demographic profile of our customers, using statistical data and geospatial mapping tools
  - their social vulnerability, including where our customers are relative to hazard exposure
  - culturally appropriate ways of working with Māori and other groups in post-disaster situations.
- Contributing to disaster risk reduction and resilience through **distinctive indigenous research** and development, including on:
  - Taiao/environment – achieving disaster resilience through iwi and hapū relationships with land and sea.
  - Hauora/health – improving health and social wellbeing aspects of disaster resilience.
  - Mātauranga/knowledge – exploring indigenous knowledge and science and innovation, regarding hazard risk management.
- Increasing **Māori and Pasifika participation** in disaster risk reduction.
- Exploring how **New Zealand’s response to disaster events** compares with other countries’ responses – particularly in terms of settling claims and recovery strategies (timing, cost and social impacts to inform future approaches).
- Exploring factors determining **EQC’s operational effectiveness**.
- Better understanding drivers of and offering solutions to **under-insurance**.
- Improving **socio-cultural inputs to risk modelling** generally.

