



RESILIENCE  
TO NATURE'S  
CHALLENGES

Kia manawaroa  
– Ngā Akina o  
Te Ao Tūroa



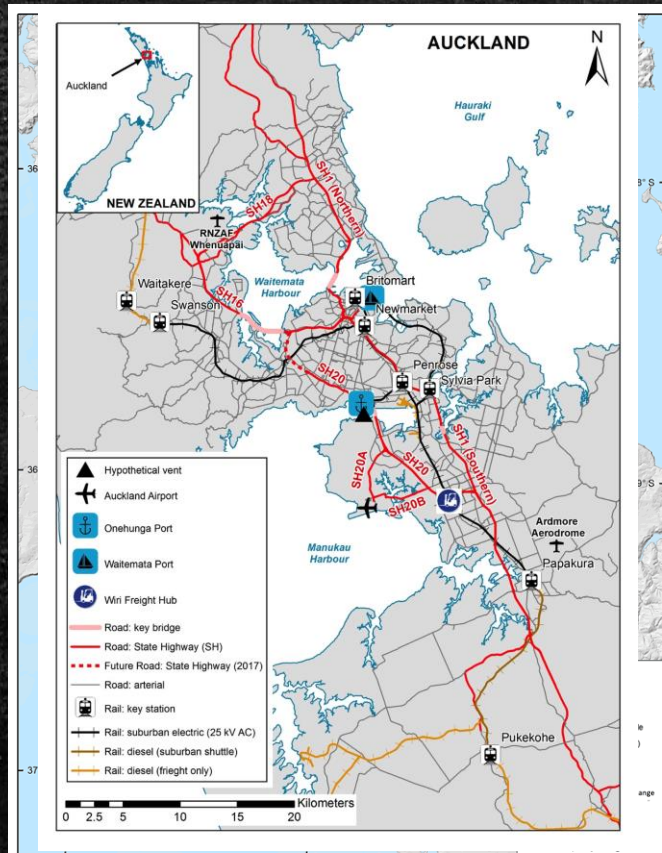
# DEVORA & volcanic impacts research

Daniel Blake

Postdoctoral Fellow, Resilience to Nature's Challenges, University of Canterbury

[daniel.blake@canterbury.ac.nz](mailto:daniel.blake@canterbury.ac.nz)

# AVF & DEVORA research themes

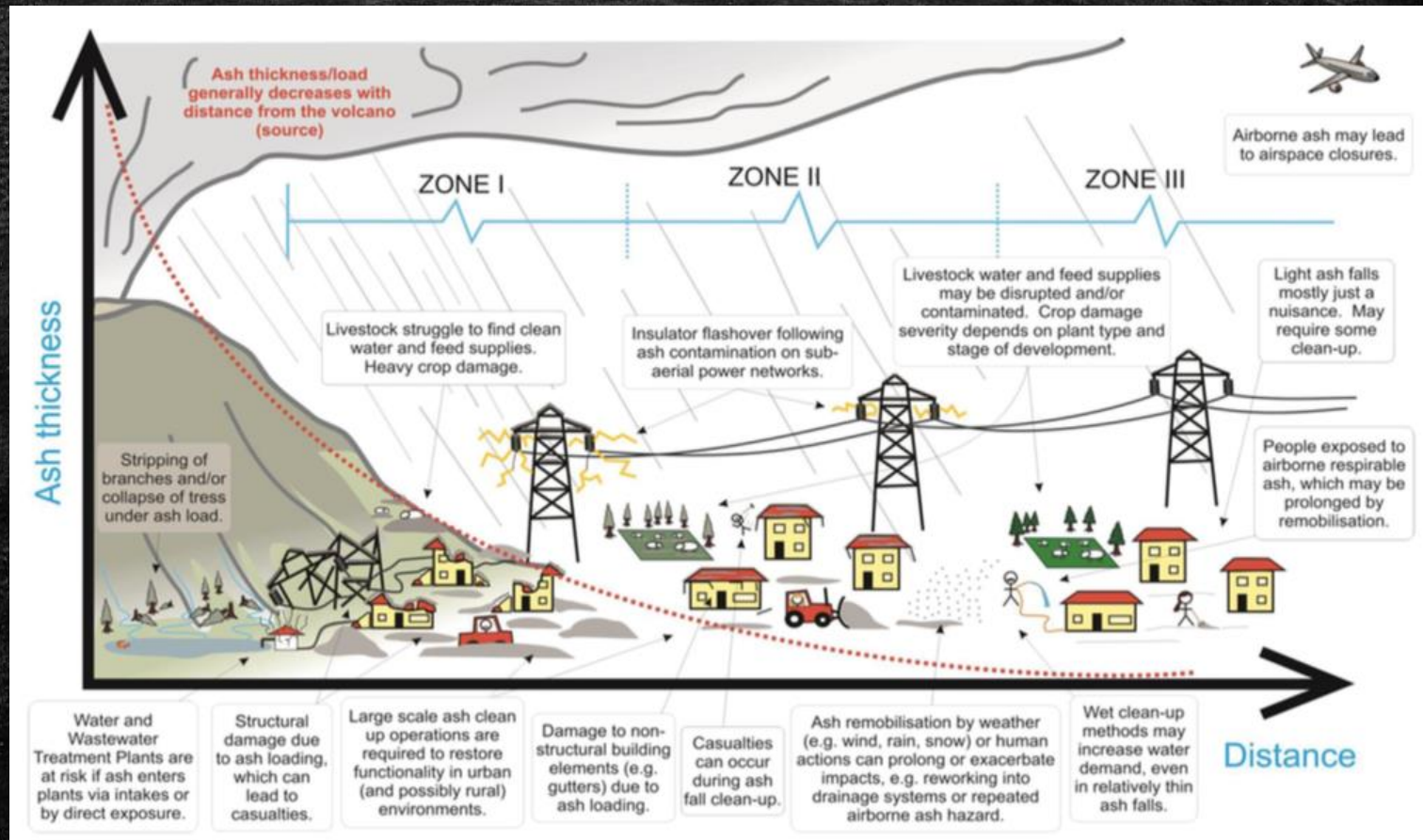


Auckland Volcanic Field:  
360 km<sup>2</sup> - covering Auckland City

1. **Geological** – why is the AVF where it is?
2. **Hazard** – what happens when the volcanoes erupt?
3. **Risk and social** – what are the potential impacts?

*(Leonard et al. 2017)*

# Volcanic impacts research



(Jenkins et al. 2014)

# Volcanic impacts research

---

- Quantitative empirical evidence can inform infrastructure, emergency management, resilience strategies.
- Various characteristics can be isolated and their effects investigated.



*Structures Testing Lab - Auckland*



*Volcanic flow generator - Massey*

# Volcanic impacts research



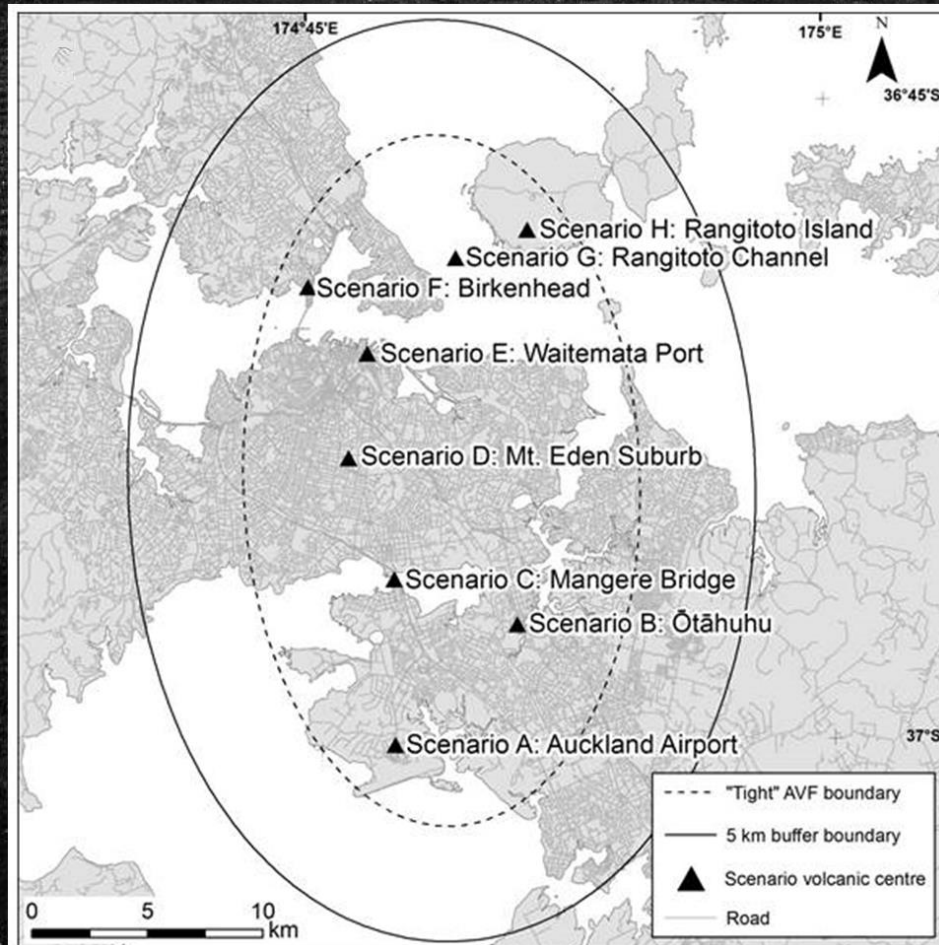
*Volcanic Ash Testing Lab & ballistic cannon in Canterbury (Photos: Nicole Allen)*



- A need for national level funding.

VISG – excellent liaison between Lifelines and volcanology ([n.deligne@gns.cri.nz](mailto:n.deligne@gns.cri.nz))

# Output example – DEVORA scenarios

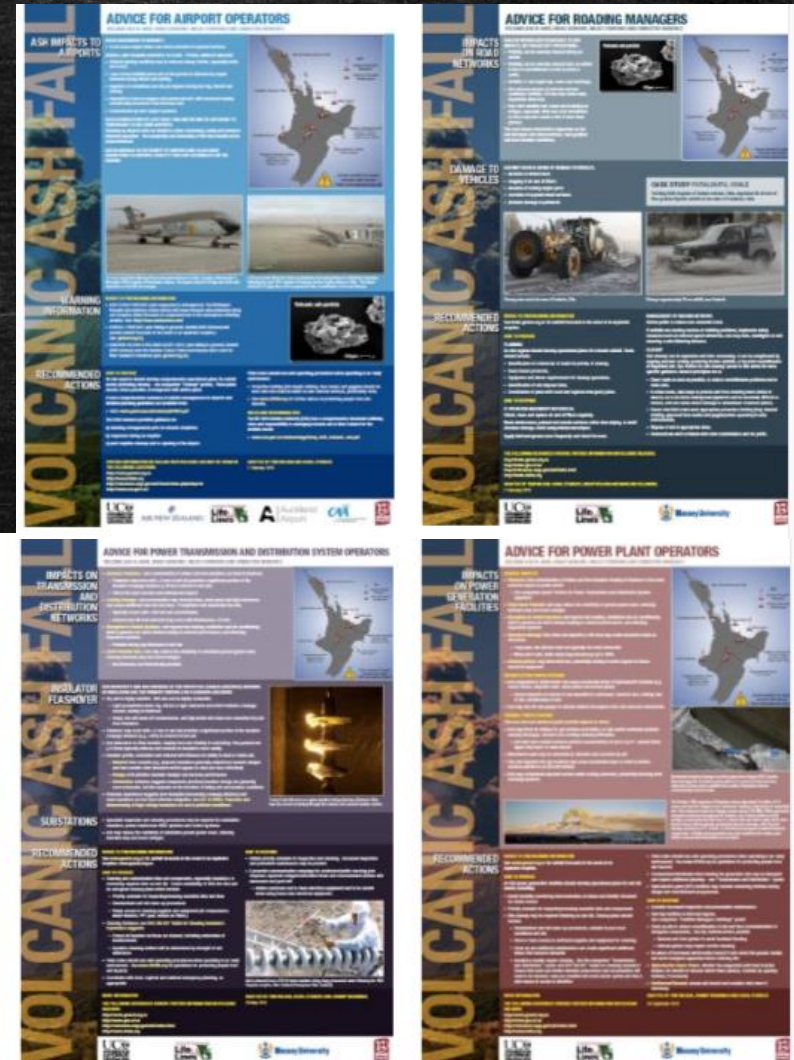


Integrating findings from geological, volcanic hazard, engineering, and societal risk disciplines to benefit stakeholders

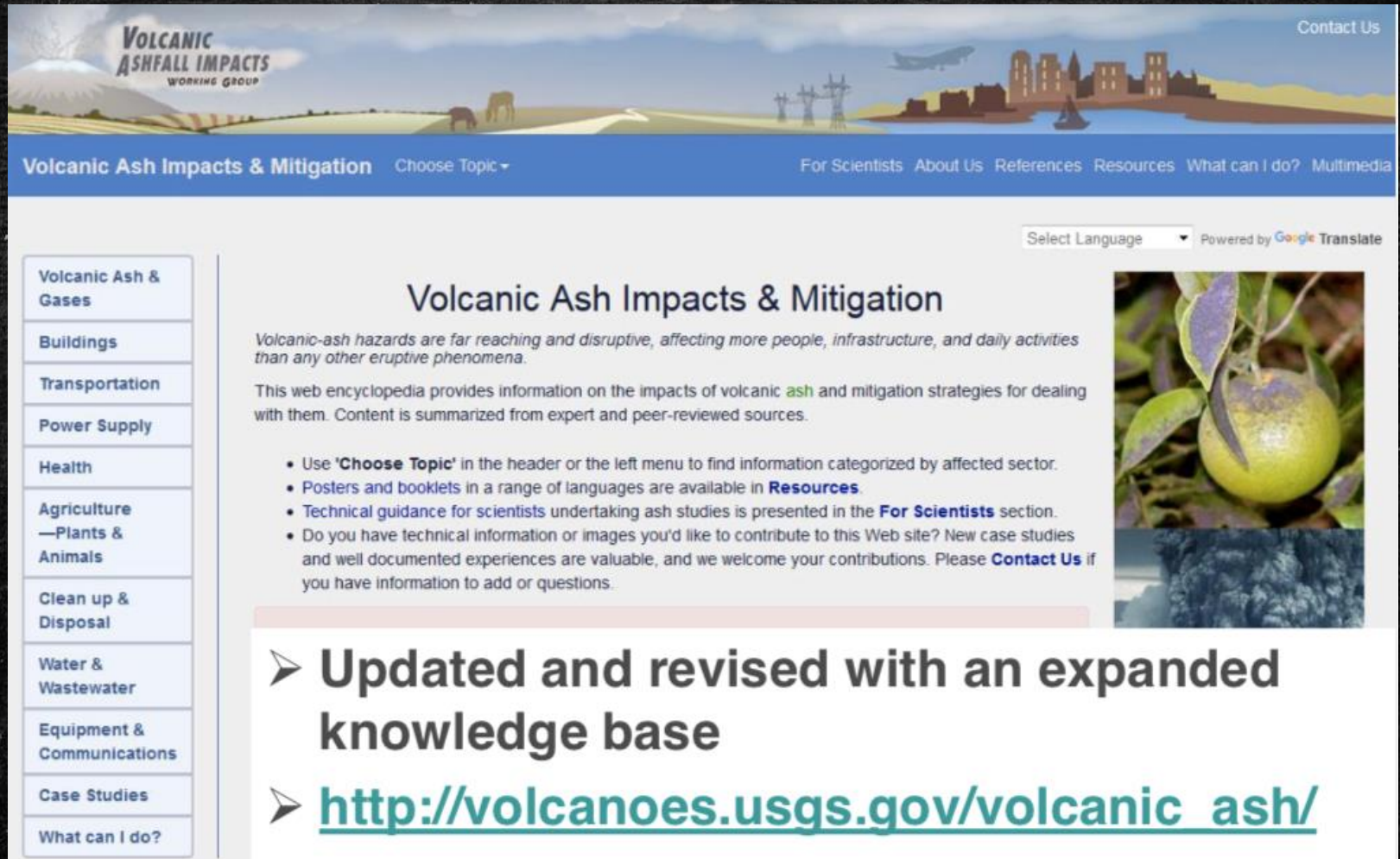
*(Hayes et al. 2018)*

# Output example – Ash Posters

- Sector specific & cross-cutting
- Developed for lifeline utilities
- Available from AELG website



# Output example – USGS/GNS/NZ Volcanic Impacts Website



**Volcanic Ashfall Impacts Working Group**

Contact Us

Volcanic Ash Impacts & Mitigation Choose Topic ▾ For Scientists About Us References Resources What can I do? Multimedia

Select Language ▾ Powered by Google Translate

## Volcanic Ash Impacts & Mitigation

*Volcanic-ash hazards are far reaching and disruptive, affecting more people, infrastructure, and daily activities than any other eruptive phenomena.*

This web encyclopedia provides information on the impacts of volcanic ash and mitigation strategies for dealing with them. Content is summarized from expert and peer-reviewed sources.

- Use **'Choose Topic'** in the header or the left menu to find information categorized by affected sector.
- Posters and booklets in a range of languages are available in **Resources**.
- Technical guidance for scientists undertaking ash studies is presented in the **For Scientists** section.
- Do you have technical information or images you'd like to contribute to this Web site? New case studies and well documented experiences are valuable, and we welcome your contributions. Please **Contact Us** if you have information to add or questions.

➤ **Updated and revised with an expanded knowledge base**

➤ [http://volcanoes.usgs.gov/volcanic\\_ash/](http://volcanoes.usgs.gov/volcanic_ash/)

**Volcanic Ash & Gases**

**Buildings**

**Transportation**

**Power Supply**

**Health**

**Agriculture**  
—Plants & Animals


**Clean up & Disposal**

**Water & Wastewater**

**Equipment & Communications**

**Case Studies**

**What can I do?**





# Future volcanic research

---

1. **DEVORA** – Continued Volcanic Field focus
  2. **RNC<sub>2</sub>** – Cone Volcanoes focus (Taranaki & Tongariro Volcanic Centre)
  3. **ECLIPSE Endeavour Programme** (calderas in the central North Island)
- Address remaining gaps in understanding
  - Develop knowledge, methods and tools for New Zealand to survive and thrive in volcanic environments
  - Continued collaboration with stakeholders.