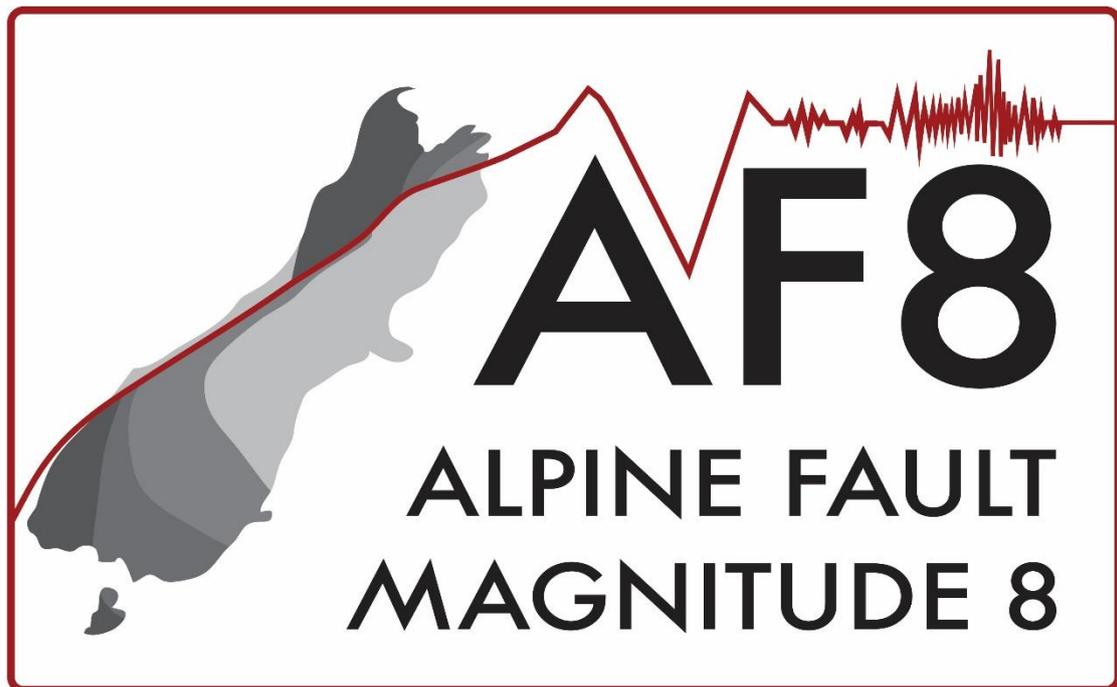


# PROJECT AF8

## YEAR 1 PROJECT REPORT

‘Developing a coordinated response to an Alpine Fault rupture to assist and enhance community resilience across the South Island’



# **Project AF8 Year 1 Project Report**

## **Executive Summary**

### **Year 1:**

Year 1 of Project AF8 has proven to be both effective and popular. All Year 1 project milestones (Appendix 1.) have been achieved, although some will be completed in detail in Year-2; funding for Year 2 was secured in early 2017; momentum for further and wider planning, capability building and risk reduction motivated by Project AF8 is appreciable; wider earthquake hazard-related planning, knowledge-sharing, and capability and resilience-building are moving ahead with renewed vigour.

Year 1 commenced with the Science Workshop in October 2016, which provided the persuasive and pragmatic impact scenario basis for the 6 CDEM Group area planning workshops that followed in 2016 to mid-2017. The workshops brought together a wide range of between 30 and 130 emergency response stakeholders in each South Island CDEM Group area, to explore the impact, consequences, needs, and necessary response actions and resources for the first week of response to a major Alpine Fault earthquake and associated aftershocks.

Each of the South Island workshops was preceded by a meeting of an expert panel of quake scientists, to refine the impact scenario to fit the context for the landscapes, communities, economies, and infrastructure within the respective Group areas. The workshops identified common themes across the South Island and in relation to national support to South Island responses that will be followed up in detail in Year 2 development of the SAFER Plan; community resilience-building guidance; improved risk communication resources; response enhancement recommendations to South Island and national stakeholders, and; preparation for a national exercise of the SAFER Plan.

The responses to and consequences of the Hurunui-Kaikoura earthquake sequence in November 2016 have required a flexible approach to Year 1 project activities, but have also added considerable focus and impetus to the project. The expedited review of the Wellington Earthquake National Initial Response Plan (WENIRP), because of the Hurunui-Kaikoura quakes, has necessitated closer collaboration between WENIRP and Project AF8.

A joint Project AF8-WENIRP planning workshop, bringing together over 100 Wellington-based agencies with nationwide mandates, quake hazard and impact scientists, and South Island CDEM Group representatives is planned for 15 June 2017. It is worth keeping in mind that any significant Alpine Fault earthquake will have direct and indirect impacts in the Wellington area and further North, and that a damaging Wellington earthquake will have impacts on the North of the South Island and beyond.

### **Year 2:**

Year 2 of Project AF8 will focus on developing the SAFER Plan in detail, through functional workshops with key stakeholders and a collaborative writing process.

Online resources will be developed in Year 2 to support the public to understand the Alpine Fault hazard and likely impacts, and to inform readiness and resilience-building.

Preparation for a national exercise to test the SAFER Plan will occur in Year 2, so that the first opportunity to exercise the plan and test capabilities will be able to be exploited, whether that is in Year 2 or later.

The success of Project AF8 and the SAFER Plan into the future will depend on an effective implementation strategy that will be developed in the second half of Year 2.

An outline project plan for Year 2 is attached as Appendix 2.

## **Project AF8 Year 1 Project Report**

### **Report Contents:**

The following sections of this report outline all milestones and outputs of Year 1:

- Project Management + Governance
- Finance
- Risk Science Component
- Application for Year-2 Funding
- Response Planning Component
  - Existing Plan Analysis
  - Response Planning Workshops
  - Initial Workshop Findings
- Project Communication and Public Information Management
- South Island CDEM Group Response Resource Coordination
- WENIRP Linking
- Year-2 Planning

### **Project Governance + Management**

Governance for the project is provided throughout by a steering group made up of representatives of all 6 South Island CDEM Group offices, South Island Regional Emergency Management Advisers (REMAs) and national office Policy and Planning personnel from the Ministry of CDEM, and an observer from the Wellington Regional Emergency Management Office (WREMO). The steering group meets either face to face or virtually approximately every 2 months, approving all project variations and ensuring a coordinated approach between project partners. The governance group is chaired by the Manager of Emergency Management Southland, Angus McKay, who also acts as the project executive.

Emergency Management Southland is the administering authority for Project AF8.

Overall project management is provided by the Project AF8 Programme Manager, Jon Mitchell. Mr Mitchell is based in Wellington, enhancing connection between the project, MCDEM, and other national-level stakeholders, and travels to South Island locations as and when required. The Risk Science component of the project is led by Dr Caroline Orchiston, University of Otago.

### **Finance**

Project AF8 commenced on 1 July 2016 with a budget of \$245,000. Emergency Management Southland has provided management and administration support for the project and has also employed the Programme Manager. The scenario workshop with leading scientists from around New Zealand has been a catalyst for greater collaboration, which has received support and advice well in excess of our monetary contribution. Regional workshops in the six South Island CDEM Groups have been completed, along with a national workshop in Wellington. A community engagement workshop was also held in Invercargill.

Work on producing some high-quality material for public education and community engagement is under way, with a rigorous selection process having been undergone to select a company to produce short videos, suitable for social media platforms. This work has \$20,000 allocated to it, but which may be carried over to year 2.

Our main expense has been on staff costs and due to the late approval of funding we had a \$25,000 reduction on spend in this area for the year.

In total, we have used approximately \$210k of the initial funding, leaving a surplus of \$35k.

An outline report on financial performance for the project in Year 1 is attached Appendix 3.

## Project AF8 Year 1 Project Report

### Risk Science Component

Scenario development – a science workshop designed to develop a credible, science-informed Alpine Fault scenario, building on previous efforts (Te Ripahapa 2013, ERI 2015), was hosted in Christchurch in August 2016. Thirty earthquake, hazard and social scientists participated. The scenario was completed in October 2016, prior to the first regional workshop in Invercargill (Emergency Management Southland, December 2016).

Expert Impacts panel approach – prior to each of the seven regional Project AF8 CDEM workshops, an expert panel approach was used to identify credible and realistic Alpine Fault impacts that could affect each region, including geomorphic consequences (landslides, rockfall tsunami), and lifelines and infrastructure damage. The team comprised:

- Jon Mitchell
- Dr. Caroline Orchiston
- Assoc. Prof. Tom Wilson
- Prof. Tim Davies
- Dr. Matthew Hughes
- Dr. Charlotte Brown
- Ali Davies (PhD student, University of Canterbury)
- Tyler Barton (PhD student, University of Canterbury)
- The Wellington expert panel included Dr. Rob Langridge, and Dr. Russ van Dissen.

Dr. Caroline Orchiston (Southland, Otago, Canterbury, Nelson-Tasman and Wellington) and Dr. Rob Langridge (West Coast and Marlborough) presented an overview of Alpine Fault science at each Project AF8 regional CDEM exercise workshop.

The Wellington National Agency exercise (June 15<sup>th</sup> 2017) included strong representation from the science community. This was to facilitate a detailed, yet high level, discussion about the coordination of science effort in the first seven days following an Alpine Fault earthquake.

A co-authored publication is due to be submitted to the New Zealand Journal of Geology and Geophysics in early August, for a special issue edition of the journal focussing on the Alpine Fault Tricentenary: 300 years since the 1717AD event.

Broader research activities – over the past six months there has been significant research development focussed on Alpine Fault science, largely due to Project AF8. These efforts have focussed on addressing gaps in knowledge, particularly around the impacts and consequences of an Alpine Fault rupture on critical infrastructure and wider societal implications.

- Resilience to Nature's Challenges (RNC) has contributed ~\$100k of in kind funding (directly) through researcher time (including PhD students) and costs. The major foci of work has been:
  - Co-production of Alpine fault impact scenario development (hazard x exposure x vulnerability = impact) through a structured approach with scientists and practitioners (mostly emergency managers and critical infrastructure managers)
  - Development of impact assessment models from critical infrastructure, casualty assessment and building damage.
  - Most work has been focused on vulnerability model development, which is a critical gap.

## **Project AF8 Year 1 Project Report**

- Analysis of which impact/risk outputs are most useful for CDEM Groups for planning purposes, particularly for disaster risk reduction, readiness and response planning. Co-funding from QuakeCoRE is supporting this work, led by Tyler Barton (PhD student from UC/RNC-Rural)
- Capturing and applying lessons from the 2016 Hurunui-Kaikoura earthquake sequence
- Using this highly applied work to inform broader, longer term research programmes
- The QuakeCoRE research programme has invested \$200,000 on targeted Alpine Fault research effort in 2017, and this has been closely aligned with various activities in the Resilience to Nature's Challenges. Of particular interest is a work stream on *Hazard-to-Impact assessments of Alpine Fault earthquakes and use in preparedness and mitigation*. This work is being led by Tom Wilson, together with Brendon Bradley and Caroline Orchiston.

GNS Science and University of Canterbury Project AF8 collaborative agreement and funding support (\$20K) – We have engaged with GNS Science to develop a collaborative arrangement to fund the use of Riskscape specifically for modelling Project AF8 science outputs. This will involve RNC-Rural PhD students from the University of Canterbury (UC) (Ali Davies and Tyler Barton) using the Riskscape platform, with senior scientists from GNS Science providing the necessary support. These modelled outputs will feed directly into the Project AF8 hazard and impact scenario, including building and casualty modelling.

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Impact scenario collation and publication – Ali Davies (PhD student, UC) is currently working to bring together all the expert impact assessments from the regional CDEM workshops, and the Hazard scenario document (completed in October 2016) into one overarching Alpine Fault scenario report. Once completed, it will be published as a GNS Science Report (scheduled for late July).

There have been a significant number of outreach opportunities, including conference presentations and public lectures across a range of organisations, including lifelines, NGOs, academic institutions and CDEM groups. These are listed in Appendix 4.

### **Application for Year 2 Funding**

A detailed application for the second year of the project was made to the National Resilience Fund in October 2016. Approval for Phase 2 was announced by the Minister of Civil Defence in April 2017.

### **Response Planning Component**

The South Island Alpine Fault Response (SAFER) Plan is the primary output of Project AF8. The process of developing the SAFER Plan is informed in Year 1 of the project by analysis of existing response plans, risk-based planning workshops in each South Island CDDM Group area and in Wellington, and subsequent analysis of the outputs of the planning workshops. The detailed SAFER Plan itself will be developed in Year 2 of the project, in close collaboration with CDEM Group offices, group member authorities, and regional and national partner organisations.

## **Project AF8 Year 1 Project Report**

### **Existing Plan Analysis**

An initial qualitative content analysis was conducted of existing emergency management plans of CDEM Groups and partner agencies, either provided to the project directly, by way of an online survey, or accessed independently by the Programme Manager. More detailed analysis will occur in year 2, to support development of the SAFER Plan and recommendations for capability enhancements.

The analysis confirmed the project's hypothesis that most existing plans do not include specific earthquake-related content, and do not include details of impacts, risks, and resultant needs to inform response planning in any meaningful way. The exception being West Coast Lifeline Utilities Group plans that include a framework for risk-based actions in the event of a significant earthquake effecting the region.

All response plans assessed were found to be generically constructed on a functional basis, using a CIMS-based structure but with little in the way of hazard-risk behaviour, systematic management processes, or multi-agency coordination. The SAFER Plan is intended to be appreciably more risk-based than existing plans, building on current CIMS-based approaches with more detailed priorities, tasks, and processes required to more effectively meet the needs generated by a major earthquake.

The proposed two-part framework for the SAFER Plan, attached as Appendices 3 and 4, is intended to provide a considerably more deliberative risk and needs-based approach to response planning than employed in New Zealand in the past. The SAFER Plan will be prefaced with an introduction and user guidance, and will include operational appendices as needs for these are identified.

The focus of the SAFER Plan will be across CDEM Group boundaries and South Island-wide issues, response processes, and critical needs and resources. The SAFER Plan is intended to be used by all partner CDEM Groups, partner agencies and the Ministry of CDEM to inform their own national, Group, local and agency plans and responses to future significant earthquake responses, beyond the scale of impact of the earthquakes experienced in the South Island since 2010.

Ownership of the SAFER Plan will rest with the 6 South Island CDEM Groups and the Ministry of CDEM. Plan reviews will occur every 5 years to retain currency and connection to improved quake science, changes to the risk environment, revisions to related plans, and any changes to response roles and responsibilities.

### **Response Planning Workshops**

The focus of response planning activities in Year 1 has been the scenario-based response planning workshops conducted in each of the South Island CDEM Group areas and in Wellington for Wellington-based national organisations. The workshops have provided a sound basis on which to base capability analysis and future planning.

Each workshop was well attended, with participation of between 30 and 130 individuals depending on the size and geo-political complexity of the respective groups. Agencies involved included: CDEM professionals; university and crown research institute scientists; appointed Group and local CDEM Controllers; local authority RMA planners, hazard analysts, asset managers, communications staff, and elected members; community groups; iwi; social service organisations; critical infrastructure lifeline utilities – roads, rail, ports, electricity, telecommunications, fuel; supermarkets; hospital and health services; NZ Defence Force; Police; Fire agencies, and; hazard and engineering consultants.

In all cases the workshops provided an opportunity for participants to work together in one place for the better part of a day, to become better informed about the Alpine Fault, its risks, impacts and consequences, and to collaboratively consider and plan in a coordinated way for local, regional, and wider responses to the unfolding impacts and subsequent needs of a major earthquake scenario.

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The workshops included an overview of the latest science on the behaviour and geomorphic impacts of Alpine Fault earthquakes, most of which were presented by the Project AF8 Science Team Leader, Dr Caroline Orchiston. On the few occasions that Dr Orchiston was not available the presentations were ably delivered by Dr Rob Langridge of GNS Science.

Presenting the scientific information, in an engaging and not overly complex manner, in the context of response-focused workshops, enabled participants to more effectively assimilate the information than would otherwise have been the case. The persuasive and compelling nature of the high-quality science and its communication added substantial value and focus to the workshops.

The practical aspect of each workshop involved participants being separated into functional groups or syndicates. These syndicates were allocated depending to the organisational context of the respective CDEM Groups, but tended to include: "Control", located closely to "Emergency Services" to simulate the crucial multi-agency coordination aspect of response management; "Emergency Welfare"; "Health Services"; "Lifeline Utilities", sometimes

All workshops involved a varying degree of professional tension between representatives of some contributing organisations, an expected factor of the nature of the topic of the workshops and the realities of inter-agency working in high-pressure situations. Somewhat more resistance to collaborative and systematic planning was encountered between some participants in the Canterbury workshop. It is likely that the existing inter-organisational relationships, repeated historic and very recent demanding responses in the Canterbury region, and the strong independent tendencies of some individuals and organisations involved contributed to this – as did the sheer number of organisations represented.

### **Initial Workshop Findings**

Following completion of the South Island planning workshops a set of initial findings was developed by the Programme Manager (Table 1.). The findings were shared with the Project Governance Group in May 2017. These findings will be added to after the Wellington planning workshop on June 15th, and developed more fully early in Year 2 of the project.

#### Table 1. Initial Workshop Findings

Significant findings from the six South Island workshops include:

- Response coordination with severely compromised telecommunications
- Coordinated reconnaissance:
  - Local, regional, South Island, national
  - Community, lifeline utilities, hazards
- Priority telecoms restoration / replacement
- Coordination, access + support of immediate medical response
  - Efficient use of air transport resources - particularly helicopters
- Shelter, movement, reception & care of displace people, including tourists (10s of Ks)
- Coordination of science support to regional responses
- Shared situational awareness – across all regions
- Resilient info/intel acquisition, management, analysis, sharing
- Consistent messaging across the South Island
- Resupply of isolated communities: land, air, water
- Role of national agencies in South Island coordination + support:
  - Including NZDF resources + facilities

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- Coordination of inbound national + international resources
- Integration of iwi into overall response(s)
- National coordination + control - with Wellington compromised

### **Project Communications and Public Information Management**

A communications plan was developed for the project, under the guidance of Michele Poole, then Queenstown Lakes District Council Communications Manager and now Otago Regional Council Strategic Communications Director.

Publicity for the project has been by way of media releases prior and/or after key project activities and milestones, with due regard being taken to sensitivities following the November 2016 Hurunui-Kaikoura earthquake sequence. These releases and local discussion of project activity, particularly the planning workshops, sparked media interest and then wider community interest in the project.

A Facebook page (projectaf8) and website ([www.projectaf8.co.nz](http://www.projectaf8.co.nz)) were set up for the project in late 2016. These have proven very useful tools in communicating the work of the project.

Social media coverage of the project activities by mainstream media, particularly by the Press, has provided an opportunity to engage directly with online readers. The programme manager engaged in direct conversation with reader's questions or concerns, further expanding the social media reach and credibility of the project.

Work is now underway to select an online video production provider to develop public education videos to be used online and in contact sessions to raise awareness of and resilience to earthquake risk. This sub-project is being led by Glyn Walters, Marlborough District Council Communications Manager.

### **South Island CDEM Group Response Resource Coordination**

Work on this outcome has commenced and will be completed in Year 2 of the project, as more detailed planning is undertaken, due to most CDEM Groups not possessing extensive resource lists. The location, capability, ownership, cost of, and access to South Island-wide critical resources is intended to be documented in sufficient detail by contributing organisations to inform initial planning, considering the reality that any such list will rapidly go out of date.

South Island-wide critical resources identified during the planning workshops and initial existing plan analysis include:

1. Urgent medical services + supplies
2. Rescue personnel + equipment
3. Water
4. Food
5. Emergency Shelter
6. Alternative voice + data telecommunication options
7. Fuel – predominantly for generators + helicopters
8. Helicopter + short take off + landing
9. Heavy earth-moving equipment
10. Air + sea (port) access – evacuation + resource re-supply
11. Suitably trained + experienced response personnel:
  - a. Group + Local Controllers
  - b. EOC + ECC functional managers + staff

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- c. Emergency Welfare personnel
  - d. Building inspectors
  - e. Engineers
    - i. Structural
    - ii. Infrastructure
    - iii. Water, sanitation + hygiene
  - f. Debris management experts
  - g. Hazard analysts and science advice
12. New Zealand Defence Force personnel, capabilities, resources, and facilities
13. Post-quake operational facilities

Several attempts have been made in the recent past to establish large-scale emergency management critical resource databases without success. However, simply constructed, easily developed and maintained, user-friendly resource coordination systems are attainable with existing technology. The latter approach will be provided for in the SAFER Plan. Responsibility for establishing and maintaining resource databases will sit with CDEM Groups and partner agencies in the best position to do so, whilst the plan will provide processes to coordinate prioritisation and use of critical resources during responses.

### **Wellington Earthquake National Initial Response Plan (WENIRP) Linkages**

The earthquake sequence that commenced with the Hurunui-Kaikoura quake on 14 November caused considerable damage in the Wellington area, as well as the North-East of the South Island. Although no-one was seriously injured in the Wellington area hundreds of buildings were damaged, requiring short and long-term evacuation of tenants, several multi-storied buildings were demolished as a result, and the Wellington port facilities and adjacent buildings were seriously damaged.

This Hurunui-Kaikoura quake prompted the review of the 2010 WENIRP to be expedited. This has provided an opportunity to align the SAFER Plan with the revised WENIRP and the Wellington Regional Earthquake Response Plan being developed in parallel by WREMO.

The Project AF8 Impacts Expert Panel met in late-March to revise the scenario for use in the workshop to be held for Wellington agencies in late-April – later postponed to mid-June. The Wellington workshop scenario included not only the damage, needs, and response activities used in the South Island workshops, but also direct and indirect impact on Wellington and the rest of the North Island. This workshop provided an opportunity to explore some of the key across-South Island and national issues raised in workshops so far in considerably more depth than the earlier South Island-focused workshops. The outcomes of the Wellington workshop had not been analysed prior to the completion of this report.

## **Project AF8 Year 1 Project Report**

### **Year 2 Planning**

Planning for Year 2 activities is well underway, as outlined in the application for continued funding from the National Resilience Fund (See Appendix 2). The bulk of the work in Year-2 will be on development of the SAFER Plan in detail, in close consultation with all key stake holder CDEM Group emergency management offices and partner agencies.

Year-2 will also see the completion of the video resources and the provision of these as online products to be used by project stakeholders and partner organisations to raise awareness of the Alpine Fault hazard and associated risks, and resources to build resilience to those risks.

Capability development opportunities will be produced in Year 2, for promulgation with CDEM Groups and partner organisations. A thorough and well-supported implementation plan will be crucial to the lasting success of Project AF8 and the SAFER Plan.

A South Island or nation-wide SAFER Plan exercise will also be developed, to validate the SAFER Plan, assess concurrent capability development initiatives, and identify further opportunities to improve response capabilities and capacities. Efforts are currently underway to include the Alpine Fault response exercise in the National Exercise Programme, as a Tier 4 exercise in 2018.

Suggested frameworks for Safer Plan for day 1 to day 3, and day 4 to day 7, are attached appendices 5 and 6.

<b>Description</b>	<b>Notes</b>	<b>Budget</b>	<b>Milestone</b>	<b>Date</b>	<b>Cost</b>
Programme Manager Salary, support costs, travel etc	Full-time, fixed term programme manager	\$150,000	Ongoing cost through the year, based on salary, support costs and travel etc. Progress will be monitored on following milestones:		
			<ul style="list-style-type: none"> <li>Satisfactory completion of 6 CDEM workshops</li> </ul>	Bi-monthly	5,000 per workshop, 30,000 total
			<ul style="list-style-type: none"> <li>Completion of year 2 application (if required)</li> </ul>	Oct 2016	-
			<ul style="list-style-type: none"> <li>Completion of reporting to SG meetings</li> </ul>	Bi-monthly	10,000
			<ul style="list-style-type: none"> <li>Completion of comms plan for Project AF8</li> </ul>	Oct 2016	10,000
			<ul style="list-style-type: none"> <li>Collating information used for scenario development and producing a guide to earthquake research for CDEM Groups</li> </ul>	Dec 2016	20,000
			<ul style="list-style-type: none"> <li>Building on existing Group work on local impacts and initial response plans, collating these and reporting</li> </ul>	Dec 2016	40,000
			<ul style="list-style-type: none"> <li>Building on existing Group resources lists, collating these, identifying inter-dependencies and producing a standard format for resource registers. Report on same.</li> </ul>	April 2017	40,000
			<ul style="list-style-type: none"> <li>First Year report</li> </ul>	June 2017	10,000
Admin support, printing etc	5 hours per week, plus incurred costs	\$25,000	Ongoing cost through the year		6,250 per month
Scenario definition, workshop attendance and accommodation		\$20,000	Likely Scenarios, impacts and subsequent events	Oct 2016	20,000
Travel and accommodation for Steering Group meetings /workshops held around 6 CDEM Groups	Approx 10 people: Flights \$500 Accom \$300 6 meetings	\$50,000	6 meetings across year, combined Steering Group and workshops in each CDEM Group area	Bi-monthly	8,333 per meeting
<b>Total</b>		<b>\$245,000</b>			<b>\$245,000</b>

<b>Deliverables</b>		
<b>Milestone</b>	<b>Date for completion</b>	<b>Cost</b>
<b>2017/18 – Risk Workstream</b>		
<ul style="list-style-type: none"> <li>Continue likely scenario impact modelling. (annual contribution from Resilience Fund, total cost \$150k per year co-funded from other organisations)</li> </ul>	Jul 2018, on-going	<b>\$20,000</b>
<b>2017/18 – Response Planning</b>		
<ul style="list-style-type: none"> <li>Identify future work programme and on-going governance arrangements for Project AF8</li> </ul>	Jul 2017	\$12,500
<ul style="list-style-type: none"> <li>Identification and collation of all stakeholder plans for Alpine Fault responses</li> </ul>	Sep 2017	\$12,500
<ul style="list-style-type: none"> <li>6 x functional workshops with stakeholders – developing SAFER Plan components</li> </ul>	Jul to Oct 2017	\$37,500
<ul style="list-style-type: none"> <li>Establish MoU's between stakeholders for 'cross border' support</li> </ul>	Nov 2017	\$12,500
<ul style="list-style-type: none"> <li>Confirm roles and expectations of MCDEM, CDEM Groups and partner organisations in responding to a significant Alpine Fault earthquake</li> </ul>	Dec 2017	\$12,500
<ul style="list-style-type: none"> <li>Draft SAFER Plan write up + review</li> </ul>	Feb 2018	\$12,500
<ul style="list-style-type: none"> <li>Draft SAFER Plan workshop + socialisation</li> </ul>	Mar 2017	\$12,500
<ul style="list-style-type: none"> <li>SAFER Plan finalisation + publication</li> </ul>	Apr 2017	\$12,500
<ul style="list-style-type: none"> <li>Design + conduct SAFER Plan Exercise</li> </ul>	May 2018	\$19,000
<ul style="list-style-type: none"> <li>Final Project Report</li> </ul>	Jun 2018	\$6,000
	<b>Reported Monthly</b>	<b>\$150,000</b>
<b>Community Resilience – Public Education</b>		
<ul style="list-style-type: none"> <li>Produce common Public Education community resilience messaging and means of delivery.</li> <li>Engage additional resource of required.</li> </ul>	Dec 2017	<b>\$30,000</b>
<b>Project Administration + Travel</b>		
<ul style="list-style-type: none"> <li>Project admin, consumables, printing, etc.</li> </ul>	Reported Monthly	<b>\$25,000</b>
<ul style="list-style-type: none"> <li>Travel and associated costs</li> </ul>	Reported Monthly	<b>\$20,000</b>
	<b>TOTAL</b>	<b>\$245,000</b>

<b>Item</b>	<b>Detail</b>	<b>Amount</b>	<b>Notes</b>
<b>Workshop + Catering costs</b>	Workshops: Scenario, 6 Regional, Wellington and Community	\$34,733.90	
<b>Travel and accommodation</b>	Workshops, Programme Manager, SG travel	\$34,970.12	
<b>Advertising / promotion</b>	website and promotional material	\$2,353.83	
<b>Conference Fees</b>	Risk lead and PM attendance at selected conferences	\$1,055.65	
<b>Manager equipment</b>	laptop and software	\$2,349.00	
	phone and data - monthly allowance	\$770.00	
<b>Staff Costs</b>			
	Programme Manager	\$101,250.00	
	Admin support	\$11,935.00	
	EMS Governance	\$0.00	
<b>Total</b>		<b>\$189,417.50</b>	
<b>Communication Video Project</b>		<b>\$20,000.00</b>	Potential carry forward to 2017/18 - year 2
<b>Total Project Cost</b>		<b>\$209,417.50</b>	
<b>Original Budget</b>		<b>\$245,000.00</b>	
<b>Difference</b>		<b>-\$35,582.50</b>	<b>late start of programme manager reduced staff cost by approx \$25k for year</b>

**Invited presentations for conferences, organisations and communities**  
**June 2016-June 2017**

Cradock-Henry, N., Wilson, T.M., Langer, L., 2016. Resilience Solutions for Rural New Zealand. Ministry of Primary Industries, Wellington. 9 November 2016

Davies, A. 2017. "Our" Alpine Fault. University of the Third Age (U3A), Rangiora, 27 June 2017.

Davies, A. 2017. Assessing disaster impacts to critical infrastructure services to increase resilience for rural isolated communities. QuakeCoRE Emerging Researcher Chapter, 9 June 2017.

Davies, A. 2017. Project AF8 and National Science Challenge updates. West Coast Lifelines Group, Hokitika, 16 May 2017.

Davies, A.; Sadashiva, V.; Aghababaei, M.; Barnhill, D.; Costello, S.; Fanslow, B.; Headifen, D.; Hughes, M.; Kotze, R.; Mackie, J.; Ranjitkar, P.; Thompson, J.; Troitino, D.; Wilson, T.; Woods, S.; Wotherspoon, L. 2017. Transport infrastructure performance and management during the first 100 days following the "Kaikōura" earthquake. QuakeCoRE Distributed Infrastructure Monthly Meeting, 10 April 2017.

Davies, A., Wilson, T.M., Davies, T.R., Wotherspoon, L., Gallaird, J.C., Hughes, M., 2017. Assessing disaster impacts to critical infrastructure services to increase resilience for rural isolated communities. Resilience to Natures Challenges Annual Symposium, Te Papa, Wellington. 31 March 2017

Davies, A. 2017. Assessment of post-disaster distributed infrastructure level-of-service expectations by stakeholders and isolated settlement communities. Disastrous Doctorates, Christchurch, 21 March 2017

Davies, A. 2017. Project AF8 and National Science Challenge updates. West Coast Lifelines Group, Greymouth, 21 February 2017.

Davies, A. 2016. Project AF8 and National Science Challenge updates. West Coast Lifelines Group, Greymouth, 22 November 2016.

Davies, A. 2016. Project AF8 and National Science Challenge updates. West Coast Readiness & Response Committee, Greymouth, 17 November 2016

Davies, A. 2016. Assessment of multi-hazard impacts on regional infrastructure and consequent implications for isolated settlements and their communities. Canterbury Lifelines Group, Christchurch, 26 September 2016.

Hughes, M.; Davies, A. 2016. Pathways to Resilient Infrastructure Lifelines. Electronet, Greymouth, 19 September 2016.

Hughes, M.; Davies, A. 2017. Pathways to Resilient Infrastructure Lifelines. NZTA West Coast, Greymouth, 25 January 2017.

Mackie, L., Wilson, T., Thompson, J. 2017. Developing the South Island Alpine Fault Earthquake Response Plan (SAFER). Christchurch CDEM Volunteers, Christchurch, 10 April 2017 (>120 CDEM volunteers present).

Mitchell, J., Orchiston, C., & Wilson, T. 2016. Project AF8. National Lifelines Forum, Wellington. November 3rd 2016.

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**Proposed Framework – SAFER Plan Immediate Action Plan: Days 1 to 3**

**Ground (and background)**

Brief outline of the terrain, infrastructure and communities of the South Island, and its Alpine Fault earthquake and associated risks.

**Situation (and likely situation development)**

An outline of the likely immediate impacts of a major Alpine Fault earthquake, followed by likely development of the situation over the first 48 hours of response.

Implications of different scenarios, considering climatic, seasonal and day/night distinctions, will be included.

**Coordination / Command + Control**

A key aspect of effective South Island-wide earthquake responses will be coordination between CDEM Groups, partner agencies, and public and commercial organisations working within and across the South Island.

Lead Controllers for specific South Island-wide response tasks may be appointed as required.

A broader approach to coordination than the traditional shared situational awareness and National-Group-Local Controller teleconference model will be required to support responses.

Timely and reliable acquisition, analysis and sharing of intelligence, and collaborative response planning, at and between all levels of response will be essential to effective leadership and outcomes.

**Mission and Objectives**

Mission focus will be on supporting the rescue of trapped, injured and vulnerable individuals and groups, and gaining a rapid appreciation of ongoing and potential future needs – predominantly inter-Group cooperation.

Immediate common response objectives will be those necessary across all South Island CDEM Groups and agencies responding in and to the South Island.

Objectives will be those that need to be and can be achieved within the first 48 hours of response, as well as preparation for subsequent operational periods.

**Execution / Tasks**

Tasks will focus on rescue; treatment of injured; reconnaissance; shared situational awareness; emergency shelter; evacuation of displaced people, provision of essential supplies, and; rapid damage assessment.

Tasks will be allocated to specific organisations, CDEM Groups, and the NCMC, as appropriate, based on National CDEM Plan functions and sub-functions, mandate, and capability.

**Administration and Logistics**

Logistics will focus on getting response resources into impacted areas, vulnerable people out, and preparation for subsequent larger scale logistics later in the response and transition to recovery.

Fuel will be a crucial resource in all areas, as local supplies will be largely inaccessible and resupply and distribution will be severely constrained.

Temporary shelter will be an urgent need in some impacted communities, depending on impacts and weather. Coordinating shelter and evacuation of vulnerable/displaced across CDEM Group boundaries will be early priorities.

Food and water supplies will be an issue for many communities and regions, as local supplies will be damaged or inaccessible. Communities should be able to meet their immediate needs for at least the first 3 days while alternative arrangements are put in place across the South Island.

Establishing and maintaining alternative means of telecommunications, for responders and communities, while standard telecommunications systems are re-established, will be crucial to effective responses.

Re-distribution of EOC/ECC and field response personnel between CDEM Groups may be required early in the response, as impacts and needs vary in magnitude and complexity across the South Island.

**Communication**

Communicating with the public across the South Island will be difficult in the early stages of response, due to telecommunications being compromised. Direct communication with communities using non-electronic means will be crucial. A consistent and mutually supportive approach across the South Island will be required.

Rapid activation and disciplined use of alternative voice and data telecommunications plans will be essential.

**Safety**

Consideration of community and responder safety will be pivotal in all aspects of response. Many involved will be unfamiliar with post-quake emergency environments, so collaborative all-agency attention to risk management in unstable physical environments in the presence of aftershocks will be essential. This will include identifying potentially cascading hazards to at-risk communities, in partnership with science response teams, e.g. landslide dam-break floods.

### **Ground (and background)**

Brief outline of the post-quake terrain, infrastructure and communities of the South Island, and its Alpine Fault earthquake and associated risks.

### **Situation (and likely situation development)**

An outline of the likely on-going primary and secondary impacts of a major Alpine Fault earthquake and **significant aftershocks**, followed by likely development of the situation over days 3 to 7 of the response.

Various scenarios, considering climatic, seasonal and diurnal distinctions, will be included.

### **Coordination / Command + Control**

Command and control will be based on sustained, consistent coordination between CDEM Groups, agencies and organisations working within and across the South Island, within national coordination and support.

Broad, multi-agency coordination, command and control, and action planning will be required to support effective responses.

Timely and reliable acquisition, analysis and sharing of intelligence at and between all levels will be essential.

It is anticipated that significant national coordination of South Island responses will commence later in the first week of response, depending on the extent of damage and secondary impacts in the North Island.

### **Mission and Objectives**

Strategic common objectives across South Island CDEM Groups and responding agencies responding will focus be on supporting vulnerable individuals and groups through the remainder of the first week, sustaining and re-establishing functioning communities, and gaining an appreciation of ongoing and potential future needs.

Staged objectives will be those that need to be and can be achieved within days 3 to 7 of the response.

### **Execution / Tasks**

These will focus on any outstanding rescue, re-establishment of health services; wider and more detailed reconnaissance; further developing and maintaining shared situational awareness across all responding organisations; shelter and, where necessary, evacuation of displaced people.

Tasks will be allocated to specific organisations, CDEM Groups, and the NCMC, as appropriate, based on National CDEM Plan functions and sub-functions.

### **Administration and Logistics**

Logistics will focus on getting response resources into impacted areas, vulnerable people out, preparation for larger scale logistics later in the first week of responses, and commencement of restoration of road, telecommunications and electricity networks.

Prioritising and re-establishing telecommunications, road, air, and water-based access will be significant response issues – informed by pre-event prioritisation.

Temporary shelter and other welfare services will be urgent in some impacted communities, depending on impacts and weather. Coordinating the supply of shelter, support and evacuation of vulnerable and displaced people across CDEM Group boundaries will be operational and logistics priorities.

Fuel will be an increasingly crucial resource in all areas, as local supplies will be largely inaccessible and resupply and distribution will be severely constrained.

Food and water supplies will be an issue for many communities and regions, as local supplies will be damaged or inaccessible. Communities should be able to meet their immediate needs for at least the first 3 days while alternative arrangements are put in place across the South Island.

A better feel for response personnel needs across the South Island will be achieved by now, enabling a more strategic approach to requests for, and assignment, rostering and relief of EOC/ECC and field personnel between CDEM Groups.

### **Communication**

Communicating with the public across the South Island will remain both crucial and difficult in this stage of response due to telecommunications and access still being compromised in many areas. Direct communication with communities using non-electronic means will be crucial. A consistent and mutually supportive approach across the South Island will be required.

### **Safety**

Constant and coordinated risk management for community and responder safety in damaged and active aftershock environments will be essential for continued success of the response.