



BUSINESS CASE: EXECUTIVE SUMMARY

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Alternative processes for flood response and recovery: a case study

Report prepared for the Shire of Cardinia as part of the Financial Risk Adaptation Planning project

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Executive summary

Introduction

Financial Risk Adaptation Planning (FRAP) is a series of case studies funded by the Victorian government. It aims to assist member councils of South East Councils Climate Change Alliance to assess the short, medium and longer terms costs and benefits of alternative adaptation options in the context of a changing but uncertain future climate.

This case study examines alternative processes of natural disaster response and recovery using floods experienced by the Shire of Cardinia in 2011 as a reference case. The case study assesses different processes and funding models - both internal and external – to determine whether an alternative model will reduce the financial risk of floods to Cardinia Shire Council.

Issue definition

Extreme rainfall events and associated flooding presents a major challenge for the Shire of Cardinia, with 480 square kilometres or 38% of the Shire being located in flood hazard areas. Climate change is projected to alter the frequency and/or intensity of extreme rainfall events in Victoria, including in The Shire of Cardinia. Projections generated for SECCCA in 2008 indicate return intervals for extreme rainfall events or varying durations (1 to 96 hours) will change significantly in the decades ahead.

In February 2011 the Shire of Cardinia was impacted by major flooding linked to an extreme rainfall event on February 5-6. The costs of the floods to Council alone were millions of dollars – principally damage to roads, bridges and drainage infrastructure.

Although Council received Natural Disaster Financial Assistance through the Victorian Government, delays in reimbursements and restrictions on expenses that could be claimed left Council financially exposed. Two key issues emerge from Cardinia Shire Council's response and recovery to the 2011 flood (and further flooding in 2012):

1. Impacts of floods on staff time. Staff response to the floods involved a very substantial amount of time, estimated at almost 5,650 hours. That time represented a cost to Council that effectively could not be claimed.
2. Costs of delays in Natural Disaster Financial Assistance. A claim for Natural Disaster Financial Assistance covering the cost of works was submitted to government within approximately 3 months of the floods. Delays in receiving funding for much of the claim meant that Council was required to shift internal funds from other works to cover the cost of the recovery works. This led to delays in the maintenance of the other works, which in turn cost Council substantially in terms of increased rehabilitation costs in later months and years.

Options assessment

Approach

A Business-as-Usual option and three alternative options were assessed:

- Option 1. Business as usual (BaU). The process for assessing, claiming and administering Natural Disaster Financial Assistance as applied to the 2011 flood continues to be applied in the future.
- Option 2a. Engage a specialist contractor to assist with the assessment and claims process. This will reduce staff workload and lead to a reduction of time taken for the claims submission and payments process of approximately 3 months.
- Option 2b. Engage a full time staff member to undertake this role. This will have similar outcomes as Option 2a except that a substantial proportion of the staff member's time will also be spent refining application of the Council's Emergency Management Plan and to business continuity planning.
- Option 3. Option 2a (or Option 2b), plus lobby State Government to change funding arrangements for Natural Disaster Financial Assistance.

Cost effectiveness assessment (CEA) was used to assess these options. CEA is a form of economic analysis that compares the present value of the costs of different courses of action.

Three extreme rainfall scenarios were constructed and modelled for the analysis:

- a reference scenario, based on historic rainfall data;
- a 'low' climate change scenario; and
- a 'high' climate change scenario.

The financial impacts of extreme rainfall events for each of the scenarios were quantified using annual average damage estimates (AADs). Damage cost curves were derived from the AAD estimates which, in turn, were used to derive cost indices for different frequencies of extreme rainfall, with costs associated with the 2011 flood having an index value of 1. The indices and probabilities were then applied to all cost categories to assess expected annual costs for each of the scenarios and options.

Four main categories of costs were assessed for each option and rainfall scenario:

- Response and recovery works costs including plant, materials, equipment and contractors (claimable through Natural Disaster Funding Assistance and therefore ultimately borne by State government).
- Council staff time spent on flood response and recovery (not claimable).
- Costs associated with a specialist contractor or staff member engaged to coordinate the assessment and claims process (claimable of contractor but not claimable if staff member).
- Cost to Council associated with delays in the provision of financial assistance through the Natural Disaster Funding Assistance program (not claimable).

Results

Reduced deferred maintenance costs is the key driver of positive NPVs for each of the options. The results reveal that if engaging a specialist claims contractor (Option 2a) or staff member (Option 2b) leads to a reduction in delays to Natural Disaster Financial Assistance, this will save Council substantial costs over time. Option 3 has a higher NPV than either Options 2a or 2b because State government is assumed to pay all Natural Disaster Financial Assistance upfront, with Council therefore incurring no delay costs.

Another important outcome of the analysis is that costs of response and recovery works to address flood damages differ significantly depending on the extreme rainfall scenario. This outcome reflects different probabilities of extreme rainfall events under the different scenarios.

Conclusions

Results of the analysis suggest that there is a strong case for Cardinia Shire Council to pursue implementation of Option 2b or Option 2a in preference to Business-as-Usual (Option 1). Further work is needed on detailed design however, before this option can be implemented.

Please note this is a summary of the full case study. For more information on this case study please contact Cardinia Shire Council's Environment Officer on 1300 787 624 or email mail@cardinia.vic.gov.au