



Mr Brian Edmonds
Flood Review Team
Tasmanian SES
Email brian.edmonds@ses.tas.gov.au

25th November 2016

Dear Mr Edmonds,

The Bushfire and Natural Hazards CRC is pleased to make a submission into the review of the June 2016 Tasmanian floods on behalf of The Launceston Flood Risk Mitigation Assessment Project.

The *Launceston Flood Risk Mitigation Assessment Project* was established in July 2016, in response to the Tasmanian Launceston flood event of June 2016. Project stakeholders include the Bushfire and Natural Hazards CRC, Tasmanian Department of Premier and Cabinet, Tasmanian State Emergency Service, Launceston City Council, Launceston Flood Authority, Northern Midlands Council and Geoscience Australia.

While this project will reach completion in early 2017, information fundamental to the importance of building an evidence base for future mitigation activities through detailed cost benefit analysis, as well as the necessary information, skills and collaboration to make this happen, are directly relevant to future events and the review terms of reference.

Please find attached a submission to the review of the June 2016 Tasmanian floods on behalf of the stakeholders of the Launceston Flood Risk Mitigation Assessment Project.

Yours sincerely,

Dr Richard Thornton
CEO
Bushfire and Natural Hazards CRC

Submission to the Independent Review of the June 2016 Tasmanian Floods

Introduction

The stakeholders of the Launceston Flood Risk Mitigation Assessment Project welcome the opportunity to provide a submission into the Independent Review of the June 2016 Tasmanian Floods. Project stakeholders include the Bushfire and Natural Hazards CRC, Tasmanian Department of Premier and Cabinet, Tasmanian State Emergency Service, Launceston City Council (LCC), Launceston Flood Authority, Northern Midlands Council and Geoscience Australia (GA). The stakeholder group was engaged at the scoping stage of the project and features representation from all levels of government in addition to authorities involved in managing flood risk and response activities in Launceston.

The planned project outcomes broadly align with the following items from the Review Terms of reference:

- The effectiveness of the strategies, preparedness and plans related to managing flood risk in Tasmania that were in place prior to the June 2016 floods occurring; including existing and potential levee systems.
- Consideration of the detrimental environmental effects of the flooding upon the landscape, and what effective mitigation measures may be necessary to avoid similar events.

The Project

The Launceston flood event of June 2016 provides a valuable opportunity to review the actual cost versus benefit from the significant mitigation works recently contracted to protect the city. The investment in flood mitigation works for flood prone communities is expensive and the benefits may take many years to be realised. These strategies largely focus on reducing the flood hazard of communities through the construction of flood levees, but increasingly other strategies are being included that are directed at the exposed community buildings.

To manage flood risk, Launceston City Council has built a series of flood levees which are designed for floods with a 1 in 200 year average recurrence interval (ARI) plus half a metre of freeboard. The recorded flood peaks during the June 2016 event indicated that the ARI of this event was between 200 and 500 years (City of Launceston, 2016). The levees helped to prevent a major disaster in Launceston and were successful in limiting the damage to a total of 28 commercial and 14 residential properties, based on the rapid impact assessment information collected by Tasmanian emergency services (City of Launceston, 2016).

The project, which is co-funded by the Bushfire and Natural Hazards CRC and the Tasmanian Government, is undertaking an assessment of the flood risk mitigation measures (flood levees) in Launceston. As flood mitigation entails an investment, cost-benefit analysis (CBA) plays an important role in decision making and is a technique used to compare the total costs of a project with its benefits and also to evaluate the risks and rewards of the investment. Furthermore, CBA helps to decide the optimal option by analysing a range of options and allowing the decision maker to see which one would work best. The key to a successful CBA is to make sure that all the costs and all the benefits of the investment has been included in the analysis and have been properly quantified in monetary terms.

CBA has traditionally been used in projects that involve policy development and capital expenditure. Within this project CBA will be used to evaluate the overall impact and effectiveness of the investment

made by the Council by taking into account the direct and indirect costs of floods. Benefits of the mitigation investment will also be costed in terms of avoided damage and disruption to the community and finally in terms of reduction in average annual damage costs.

The study includes the assessment of:

- Avoided residential, commercial and light industrial building damage in Launceston.
- The number of people displaced due to inundation of homes and the expected time to return based on GA's survey data.
- The long term cost of Launceston flood hazard exposure prior to mitigation works.
- The long term cost of Launceston flood hazard exposure following mitigation works.
- A cost-benefit analysis of the flood mitigation investment.
- The avoided damage cost to Launceston in the June floods as a result of the mitigation works.
- Exploration of further mitigation options to reduce building vulnerability in flood-prone areas of Launceston.

The project commenced in July 2016 and is expected to finish by the end of February 2017. The key activity to date has been the development of an exposure database of all affected buildings within the 500 year ARI flood footprint. GA has used its National Exposure Information System (www.ga.gov.au/scientific-topics/hazards/risk-impact/nexis) to assign building attributes to each structure. The key building attributes are building usage, type of foundation, ground floor height, ground storey height, wall material, roof material, number of storeys and building floor area. A desktop study augmented the database with additional features required to map the suite of vulnerability curves. Importantly, Launceston City Council was able to provide GA with building floor heights, an attribute required for any flood risk or impact assessment.

The use of an extended suite of 29 flood vulnerability models developed by GA for residential, commercial, industrial and community buildings will allow a well-defined representation of the building stock while conducting flood impact assessments in Launceston. GA will augment the assessment of direct damage costs of building repair by including costs of temporary accommodation and business interruption. Furthermore, GA will utilise outcomes of the flood mitigation project within the Bushfire and Natural Hazards CRC to explore building level mitigation options such as house raising, flood barriers and wet floodproofing to minimise future flood risk. Lastly, the cost benefit analysis will cover a range of severities of flood hazard (20-500 year ARI) in Launceston and efforts are being made to include rarer events by sourcing flood height and contour maps for 1,000 year ARI and probable maximum flood (PMF) events.

While project outcomes including the economic evaluation of the effectiveness of mitigation investment in Launceston will not be finalised until the end of February 2017 the project team and stakeholders would welcome the opportunity to submit them to the review at that time.

References

- City of Launceston (2016) Flood Investigation Report. Event: June 2016. Launceston, Tasmania.