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Spatial Vision

Asset Vulnerability Assessment Project

Part 2 – Case Studies Overview

Prepared for: South East Councils Climate Change Alliance (SECCCA)

SECCCA
South East Councils
Climate Change Alliance

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1. This Document

This report presents contextual overviews of the three primary case studies that were undertaken as part of the Asset Vulnerability Assessment (AVA) project for the South East Councils Climate Change Alliance (SECCCA). These case studies have been identified as part two of a two-part vulnerability assessment, and include a review of anticipated costs in relation to specific climate related impacts and an evaluation of adaptation and replacement options to reduce projected climate change costs.

Part one of the SECCCA AVA project encompassed a high-level vulnerability assessment applied to agreed council assets across the nine member Councils, while the case studies were focused on specific climate change scenarios for smaller-scaled locations within three LGAs.

The three case studies selected from the 19 candidate case studies nominated by Councils for consideration were:

- *Port Phillip - Inundation at Elwood Foreshore*
- *Cardinia - Natural disaster relief and recovery provided by community assets in Cockatoo and Gembrook*
- *Mornington Peninsula - Inundation at Rosebud*

Overviews of these case studies are presented in this document. For further information on them or to get access to the case study reports, please contact the individual Councils or SECCCA.

2. Introduction

SECCCA member Councils aim to better understand how their buildings, roads, drainage, and other assets will be impacted by climate change and associated extreme weather events. The *Climate Change Asset Vulnerability Assessment* project seeks to provide Councils with this information. The project also aimed to help Councils understand the potential risks to the community of anticipated climate change and how climate change is likely to impact the delivery of community services.

The case study phase of the project focussed on the financial and economic[1] implications of climate change impacts on council assets and planning for those impacts. The purpose of the case studies was to:

- provide a focus for efforts to achieve a more detailed vulnerability assessment, analysis of adaptation options and hence the provision of a more in-depth set of outcomes;
- provide the basis of mentoring sessions that aim to develop council capability in planning for anticipated climate change and assessing adaptation options; and
- provide practical exemplars for future reference by councils when undertaking assessments of adaptation options.

To these ends, the case studies:

- stepped through the process with practical and relevant examples, and
- packaged up the process so that it could be reapplied and translatable.

It is emphasized that the case studies present a preliminary assessment of short-term adaptation options and, as such, provides guidance on the potential direction of future adaptation. Decisions on short and longer-term adaptation options may need to be accompanied by more detailed analysis at different stages of the decision-making process.

[1] Financial analysis is focused on the direct financial implications of climate change and adaptation options for Council. Economic analysis considers the financial implications plus the direct and indirect implications for the broader community.

3. Background

3.1. SECCCA Asset Vulnerability Assessment Project

The SECCCA Asset Vulnerability Assessment project was aimed at assisting SECCCA member Councils to better understand how their buildings, roads, drainage and open space will be impacted by climate change and associated extreme weather events.

More specifically, SECCCA notes that the project was aimed at assisting councils to understand:

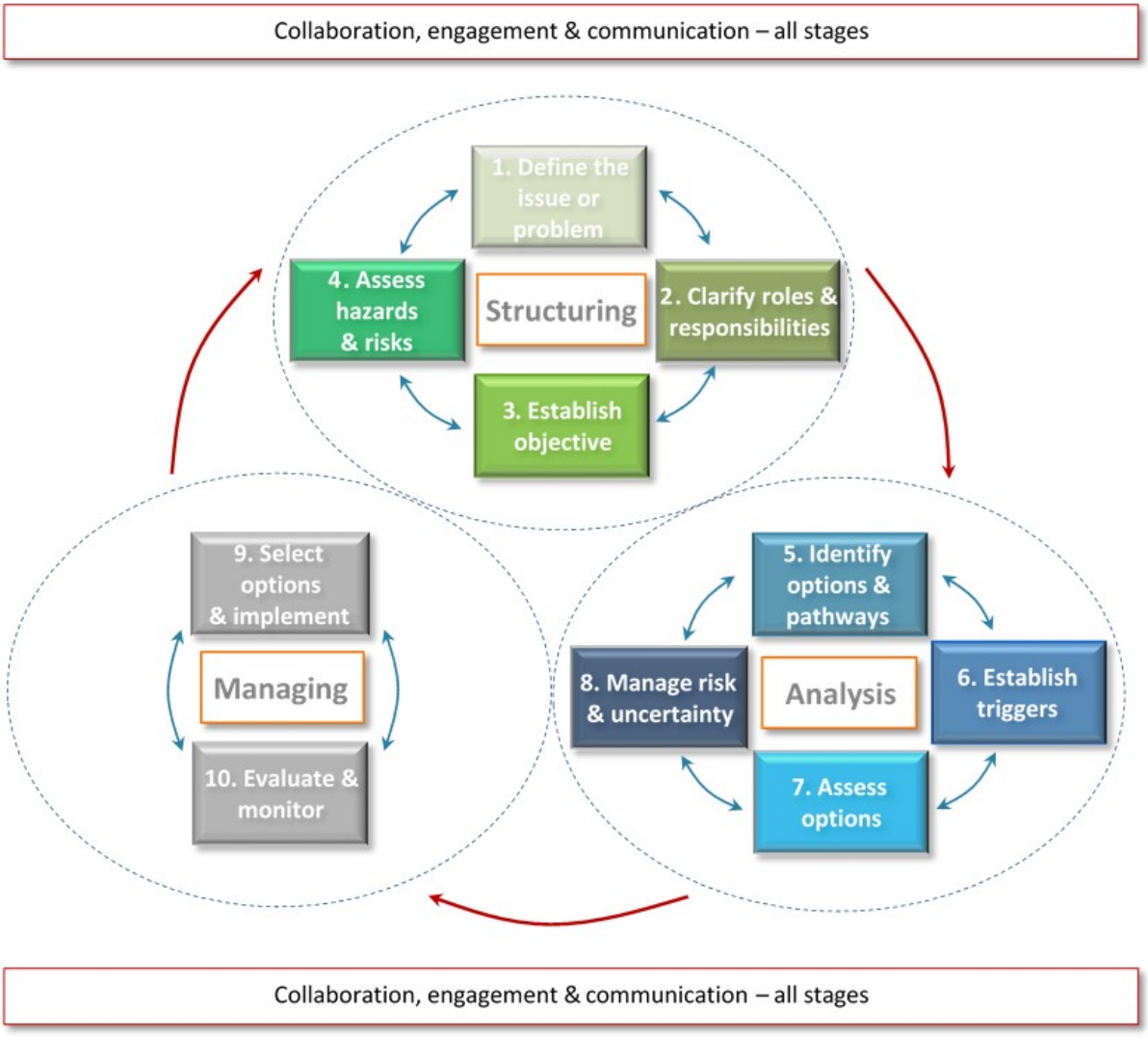
- how will climate change impact a particular asset
- how might service delivery be impacted by climate change
- how much extra will an asset or service cost to maintain or deliver assuming no adaptation action
- how much extra can councils expect to pay to respond to damages or pay in insurance
- how much would be the expected cost of making assets resilient; and
- how might council income streams be impacted by climate change.

Part two of the two-staged project encompassed undertaking three finer-detailed financial case studies. Through the case studies, the project identified how related council income and expenditure will be impacted, and provide guidance on how Councils can appropriately plan – financially and strategically - for the anticipated changes. By having a greater understanding of asset vulnerability and the potential financial impacts of climate change, Councils can appropriately plan and cost work plans in order to make assets more resilient. In turn, this will assist to improve understanding of how climate change is likely to impact the delivery of community services.

3.2. Climate change adaptation decision-making process

A sound decision-making process provides the foundation for effective climate change adaptation. Figure 1 identifies the key stages and steps comprising 'good practice' adaptation decision making. Working with the Councils in a series of workshops, some preliminary analysis has been conducted relating to Steps 1 through 8 in that process.

Figure 1. Stages in the decision-making process



Source: Marsden Jacob Associates

4. Case Studies on how we plan for climate change and its impacts

Detailed vulnerability assessments were undertaken in the form of case studies, which have been termed a 'second pass assessment process' in this project.

These case studies use a scenario (or set of) to describe how a particular extreme weather event that is exacerbated by climate change, impacts a particular location and how the impacts can be reduced through adaptation measures. The adaptation responses presented range from broad strategic evaluations through to local planning related responses. The results were aimed at assisting higher level decision making by Council officers and managers rather than finer level planning decisions.

The three case studies selected from the 19 candidate case studies nominated by Councils for consideration, and for which separate and more detailed analysis was undertaken, were:

- *Port Phillip - Inundation at Elwood Foreshore*
- *Cardinia - Natural disaster relief and recovery provided by community assets in Cockatoo and Gembrook*
- *Mornington Peninsula - Inundation at Rosebud*

Overviews of these case studies are presented below. For further information on them or to get access to the case study reports, please contact the individual Councils or SECCCA.

4.1. Inundation at Elwood Foreshore (City of Port Phillip)

Port Phillip Council is currently undertaking Master Planning for the Elwood Foreshore Precinct.

As well as providing significant recreational and open space values, the precinct has a number of council buildings and other infrastructure that support recreational and sporting activities and other services. These include 12 sport and recreational clubs (e.g. lifesaving, sailing and angling), a restaurant, a wellness centre, a cafe and a kindergarten.

Many of the Council buildings are reaching their end of life and are subject to high maintenance costs due to their age, poor condition, compliance and accessibility issues. Some of the buildings are also heritage listed. The Life Saving Club and the restaurant, in particular, are vulnerable to the risks of inundation from storm surges (exacerbated by sea level rise) and inland flooding. This is affecting insurance costs. The likely extent of coastal inundation in the area is shown in Figure 2.

As climate change impacts become more marked over time, sequencing of options (adaptation pathways) is likely to be necessary to address changed conditions or circumstances over time and/or because options differ in flexibility and/or life span. This case study focused on the Elwood Foreshore precinct and proposed upgrades to buildings, facilities, and the broader landscape to protect it from coastal inundation and inland flooding. The case study examined the upgrades in the context of a Master Plan, which is seeking to take a holistic approach to the precinct by protecting key built and non-built assets while enhancing visitor experience.

Figure 2. Coastal inundation caused by sea level rise and storm surge at the Elwood Foreshore.

4.2. Natural disaster relief and recovery provided by community assets in Cockatoo and Gembrook (Cardinia Shire)

Cockatoo is highly vulnerable to and has a history of bushfires. Gembrook township is less vulnerable to bushfires, but the surrounding area has a history of bushfires (Figure 3).

The two community assets that are the focus of this case study are used extensively by the local community on an ongoing basis. However, they are likely also to be needed for community relief and recovery in the event of major shocks such as bushfires and storms. The two Centres were used for this purpose as recently as June 2021, when a severe storm hit the region. Experience from the storm however, indicates that the assets need significant improvements to ensure that they are fit for purpose for relief, recovery and co-ordination in the event of major future shocks.

This case study focussed on upgrades needed to two key council owned, multiple-use community assets - the Gembrook Community Centre and the Cockatoo Community Complex - to ensure that they are fit for purpose for relief, recovery and co-ordination during and following major natural disasters such as bushfires and storms.

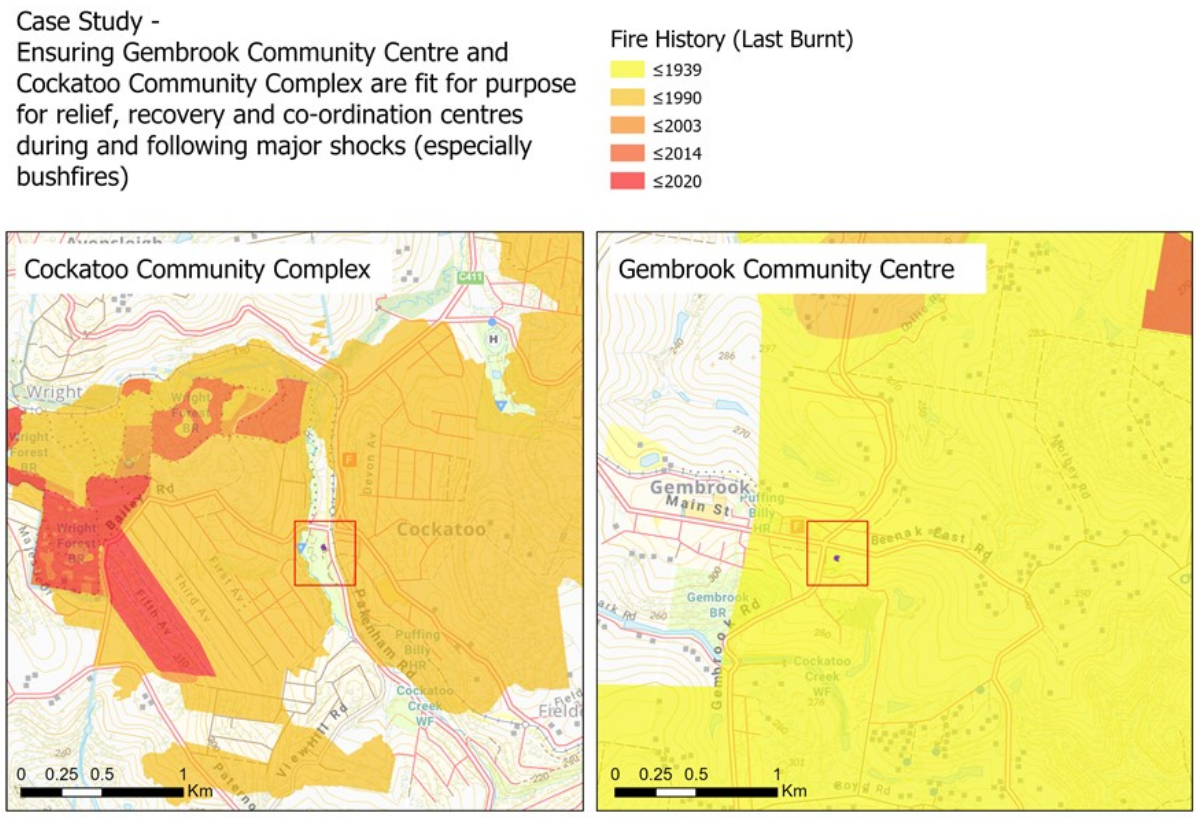


Figure 3. Fire history extent at Cockatoo Community Complex (left) and Gembrook Community Centre (right).

4.3. Inundation at Rosebud (Mornington Peninsula Shire)

Residential and commercial areas of Rosebud can be subject to flooding due to back-up of water at the Sixth Avenue stormwater outfall and connected drains and pits.

These flood events are often linked to a combination of extreme rainfall as well as high tides and storm surges. Flooding occurs during extreme rainfall events when there is a backup of stormwater in the Sixth Avenue outfall and connected drains and pits. Backup occurs when the outfall is under water during high tides and/or there are pipe blockages due to sand movement.

Flooding is likely to be exacerbated by climate change and a potential increase in the frequency of extreme rainfall events and/or maximum rainfall intensity. In addition, sea level rise and associated higher tides and storm surges may intensify the issue as the outfall will be under water for longer.

This case study is focused on options to mitigate the impacts of inundation, linked to extreme rainfall and inland flooding on residential and commercial properties as well as road infrastructure located in a sub-catchment of Rosebud.

This case study assessed options for mitigating or reducing flood damages in residential and commercial areas of Rosebud due to back-up of water at the stormwater outfall and connected drains and pits.

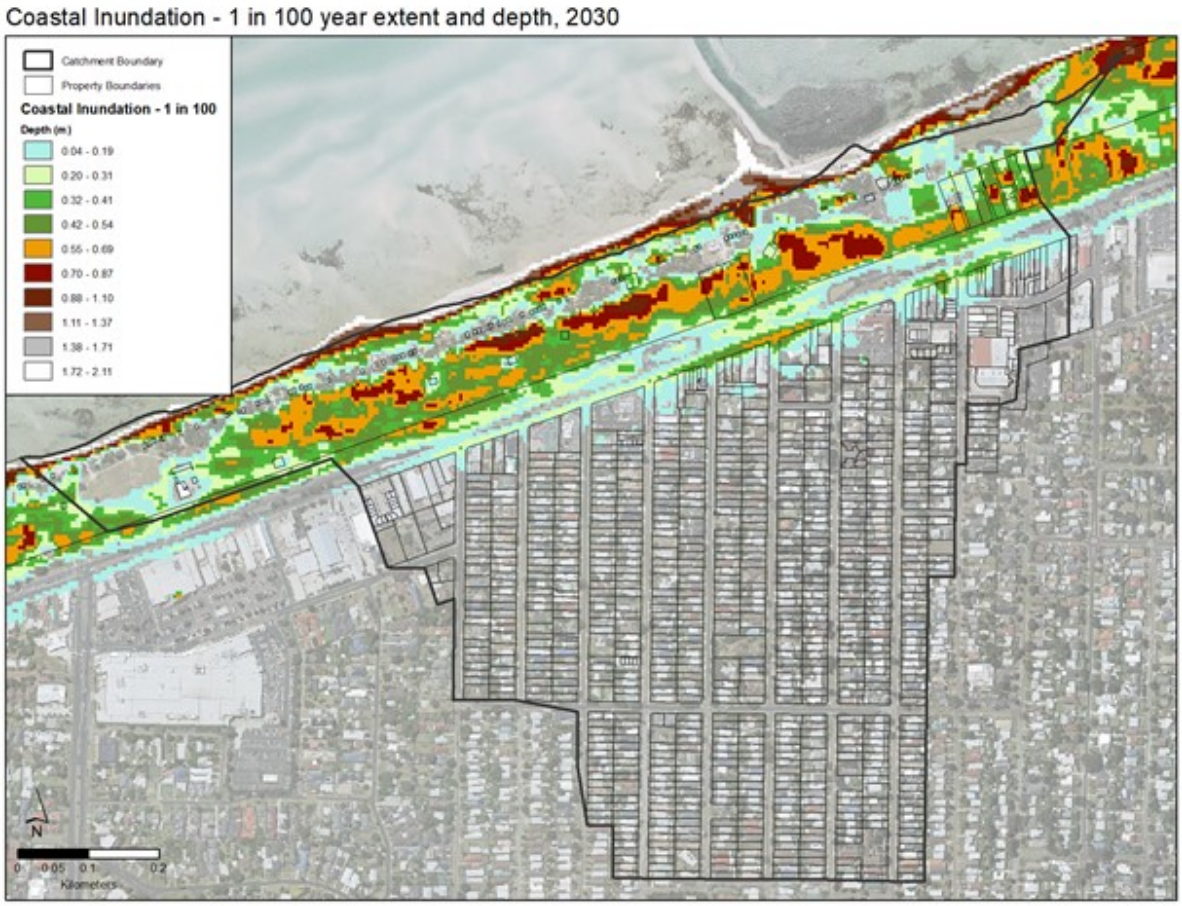


Figure 4. 1 in 100 year coastal inundation at Rosebud

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