

Fact Sheet 2: Estimated Average Annual Damages

Maribyrnong River catchment flood mitigation study – Phase 3



This document provides additional information about the economic methodology used across the Maribyrnong River Catchment Flood Mitigation Study and is intended for key stakeholders, industry partners, community groups and technical specialists.

Flood mitigation economics is the structured evaluation of economic, social and environmental impacts of floods translated into dollar terms. This forms the technical basis to help inform decisions makers to select mitigation options that will reduce flood risk in a way that maximises community safety, financial efficacy and long-term resilience. The concepts discussed in this document are technical in nature and have been designed for readers seeking a deeper and more comprehensive understanding of flood mitigation economics.

For community friendly summaries and simpler explanations of the study approach, please visit our project page at: www.letstalk.melbournewater.com.au/maribyrnong-mitigation

What are Average Annual Damages?

Average Annual Damages (AAD) represent the expected annual cost of flood damages, expressed as a dollar value, for a given year, within a set of conditions in a specified area. It allows us to understand and compare what continued flooding would cost society without intervention and with an assumed intervention.

How we estimate Average Annual Damages

For this study, we are applying Melbourne Water's Flood Risk Reduction (FRR) Tool, which uses established AAD methodology to:

- estimate flood damages
- analyse risks
- evaluate the benefits of mitigation interventions.

To calculate AAD, several key inputs are combined:

- **Flood behaviour** – spatial extent and depth across a range of Annual Exceedance Probabilities (AEPs)
- **Identification of at-risk assets** – residential, commercial, industrial, infrastructure

- **Damage estimates** – direct, indirect and intangible damages.

The Project team recognises that standard methodologies can be conservative. For that reason, we are incorporating additional localised data such as:

- clean-up and recovery costs sourced from local councils
- social value impacts (e.g. wellbeing impacts from improved natural landscape).

Direct Tangible Damages

These are the immediate physical losses caused by floodwater, including:

- residential buildings and contents – using depth-damage curves tailored to dwelling types
- commercial/industrial buildings and operations
- roads – repair or reconstruction costs based on classification
- public infrastructure –community facilities, utilities, schools
- motor vehicles – damages to private vehicles associated with flooded residential dwellings.

Indirect Tangible Damages

These capture broader economic disruption, such as:

- business interruption and supply chain delays
- transport and access disruption (time delays, detours, increased costs)
- temporary displacement of residents
- Interruption of public services (schools, hospitals, emergency services).

Guidelines suggest indirect damages are roughly 30% of direct damages. Although for this Study, we are undertaking a bespoke transport analysis to refine this statistic based on the local context.

Intangible Damages

These are the non-market impacts that are real but difficult to monetise. They include:

- mental health impacts and trauma
- loss of irreplaceable personal or cultural items
- reduced community cohesion or sense of place
- ecological damages
- cultural and heritage damage.

Evidence suggests intangible damages can equate to 100% of direct damages, with sensitivity ranges applied.

Additional considerations: social values

We are working to capture impacts on social values, including:

- personal wellbeing improvements from interventions that provide space for communities to use
- disruption to community networks and local services.

This will help broaden the assessment beyond physical, measurable losses.

Insurance and premiums are not included in AAD

Insurance pricing is outside the scope of the Study and Melbourne Water does not have the authority to influence premiums.

What's new and being considered this time

The economic assessment has been completed for future years of 2030 and 2100 to account for the expected impact of climate change. These climate change impacts are in line with the recent updates to the Australian Rainfall and Runoff 2019 (v4.2) guidelines.

It was important for the Study to consider the future, as flooding is likely to get worse and our built assets including buildings and also flood mitigation structures will last 50-100 years into the future.

We are also considering the impact of flooding on transport and using local data from Council to verify our flood damages.

Speak to the team

If you have any questions, please call **131 722** or enquiry@melbournewater.com.au

Visit the Let's Talk website to learn more about the project, view upcoming engagement opportunities and sign up to receive project updates.



References

- **Melbourne Water 2023**, *Flood Risk Reduction Guidelines*, Maribyrnong River Flood Mitigation Study, Melbourne Water Corporation, Melbourne.
- **Melbourne Water 2023**, *Monetising Intangible Flood Damages*, Melbourne Water Corporation, Melbourne.
- **Melbourne Water 2023**, *Flood Risk Reduction Economics Tool Guide (Version 2)*, Melbourne Water Corporation, Melbourne.

Contact us

We're measuring our engagement. To help us track our communications, please contact our team by phone **131 722** or email enquiry@melbournewater.com.au

