

Shortlisting mitigation options

Transcript

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Hi there,

In this video, I'll explain how we moved from a long-list of flood mitigations to a shortlist – and how both technical analysis and community input shaped this process.

In Phase 1 and Phase 2, we gathered ideas from the community, technical specialists and past studies.

This resulted in a long-list of around 200 potential flood mitigation options, which were then screened to 50 or so options to collect feedback on these options.

These included both:

- Structural options like levees and retarding basins
- Non-structural options like improving flood warning and awareness raising.

To do this we first removed options that:

- didn't reduce flood risk in the lower catchment
- were duplicates
- were not viable or were outside the scope of the study

Since Phase 2, our team of experienced flood mitigation specialists have been working to refine and develop a shortlist of mitigation options. To do this we used three main inputs:

- The extent of which the option could reduce flooding in the lower catchment using computer modeling
- community feedback from Phases 1 & 2 informed decision making by identifying community-supported options, concerns and priorities, and
- Early feasibility checks on how feasible and practical each option is, like the ability to construct, cost and time it would to implement

We also removed some mitigation options from the shortlist because they:

- Provided very limited benefit in terms of reducing flood levels
- Or were not cost-effective compared to the benefits

Part of this assessment includes using the Decision Framework – a structured assessment process - to identify the flood mitigation options that work effectively together.

Using a mix of digital tools and technical assessments, the Decision Framework assessed all options with:

- Flood modelling outputs
- Cost-benefit analysis
- Flood vulnerability assessment
- Evaluation criteria

The Decision Framework was able to test approximately 1,000 different combinations of options to see what works best together. For just the retarding basin options alone, we ran over 8,000 scenarios to see which combinations could work the best.

It's helpful to think of the Decision Framework like coaching and picking a football team. Instead of relying on just one star player to win the match, we know the best results come from the right combination of players working together. In the same way, reducing flood risk works best through a mix of different options, not just one option.

In the end, the Decision Framework helps us choose the best possible team and game plan. One where all parts work together effectively to reduce flood risk.

As part of the Decision Framework, all options were assessed in detail against the evaluation criteria, which was updated to reflect feedback we heard from community in phase 2.

The Evaluation Criteria considered:

- Safety, and risk reduction
- Property and infrastructure impacts
- Environmental and social outcomes
- Cost and value for money
- Resilience

Another key part of this assessment process is understanding value for money.

We used a cost-benefit analysis, which compares:

- The cost of building and maintaining a combination of options
- Against the benefits these provide over time

Benefits are mainly measured as a change in flood damage known as average annual flood damage, including:

- Reduced damage to homes and buildings
- Less disruption to businesses
- Reduced recovery costs and health impacts such as stress.

Preliminary costs include the full lifecycle of an option:

- Construction or implementation
- Ongoing maintenance.

Because these projects last decades, we assess costs and benefits over time and convert those into today's dollars.

We use two main indicators for this:

- Benefit-Cost Ratio: How much benefit is delivered for each dollar spent
- Net Present Value: Whether the total benefits outweigh the total costs

This ensures that:

- Public investment is used responsibly
- Options deliver long-term value
- And decisions are transparent and evidence-based.

Not all mitigation options perform equally.

Some options:

- Reduce flood risk significantly but are expensive or difficult to construct.
- Others are more affordable but have smaller flood risk reduction impacts.
- Some may have different environmental or community impacts

This means trade-offs are sometimes necessary, and there is no single perfect solution.

Flooding is a catchment-wide issue and realistically there is no 1-single option that will help to reduce flood risk for the lower Maribyrnong.

Flood mitigation usually works best when options are combined.

This is why we used the Decision framework to test different combinations of options. As I noted earlier the Decision Framework included:

- Using various economic evaluation methodologies, such as cost-benefit analysis and estimating annual average damages.
- Running various flood modelling scenarios (some of these models were run thousands of times) ; and
- As well as, looking at various social and environmental considerations.

Through this process, we identified a wide range of potential combinations of flood mitigation options. For discussion purposes, a selection of these combinations has been presented as part of the Phase 3 engagement.

In the next video, I'll walk you through these shortlisted options in more detail and how they work.