

CEDRR: A Guide to Household Flood Mitigation Actions

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Thanks for your interest and participation in the CEDRR project. We have compiled a short document to help guide you through reducing flood risk at the household scale.

Why is flooding important?

Flood risk is an increasingly important hazard. Factors such as climate change, land-use change, social-change, and the continued encroachment of development into floodplains are resulting in the spatial expansion of flood risk for Australians. Alterations to catchments can affect recently built homes (i.e., those in floodplains) as well as older homes as flood risk expands and is displaced.

Together, these factors will expose growing numbers of Australian households to flood risk and to flooding. Those with pre-existing flood risk are likely to experience more frequent and severe flooding; while many others will experience flooding for the first time as flood risk shifts geographically.

- In Victoria “there are more than **200,000 properties** across the [greater Melbourne] region with at least a 1% chance of flooding in any given year” (Melbourne Water, 2020, p. 8).

Floods are the most costly environmental disaster in Australia: affecting material, financial, and psychological lasting harm to those who experience disaster events.

- “The total cost of flooding is estimated at **\$735 million a year** for the greater Melbourne region. The costs include damage to property, infrastructure such as roads, disruption of services such as public transport and social impacts” (Melbourne Water, 2020, p. 8).
- The **social costs** of flooding are much more difficult to calculate, but the working assumption is that they are at least equal to the physical costs, suggesting that floods cost Victoria approximately \$1.5 billion dollars annually.

Who is responsible for flood response?

The Victoria State Emergency Service (SES) is the ‘control agency’ for flooding in Victoria, meaning:

- “*The Victoria State Emergency Service (VICSES) are responsible for planning for floods, supporting community preparedness and managing flood response if they do occur*” (VicSES, 2022).

Despite this broad range of responsibilities, **emphasis is almost exclusively on response** to flood disasters, **rather than preparations** or wider risk management.

With flood risk growing, **taking actions to prepare for flood at the household scale** can help avoid or reduce the severity of flooding experiences. Such actions can limit the severity of impacts, subsequently lowering the costs of damages, insurance premium increases, psychological distress associated with home damages, and more general disruption of lives and livelihoods. **For the average home owner, the most common experience of flooding is through flash flooding and the failure of drainage (e.g., gutters, drains).** With increased climate variability and intensity, this experience is very likely to become more common, offering individuals opportunities for mitigation actions that can be taken with relatively little cost.

How can I mitigate flood in my household?

Please note, the CEDRR research team are not experts in flood risk and in no way can provide guidance on what individuals should do to address their household flood risk. Using the materials available from the SES, from Catchment Management Authorities, and from Melbourne Water, we are able to direct you to useful resources, offer you a typology of potential actions, and discuss your thoughts and conclusions. **If you require specific advice, the research team can arrange a professional consultation with VicSES or a flood engineer.** Please let our team know if you require this support.

Flood resilient design

Melbourne Water has several publications and workshops oriented towards household-scale flood mitigation. In particular, Melbourne Water has produced the 2020 *Flood resilient guide to retrofitting your home*, which provides homeowners advice on household modification actions that can be taken and actions that are suited to smaller scale and flash flood events. Resilient design is divided into four flood risk mitigation ‘strategies’: **wetproofing** (accepting water entry and using materials that are resilient or that will minimise damages); **dryproofing** (sealing a structure so that water cannot enter); **elevating** (raising the home above predicted flood levels); **absorption** (using landscape features and permeability to encourage infiltration of floodwaters).



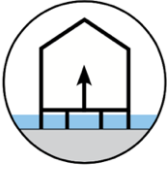
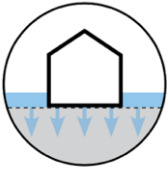
Strategy	Description
Wetproofing	 <p>Wet proofing involves using flood resilient materials and construction methods to allow flood waters to enter the house with a minimised chance of damage and moisture problems afterwards. By accepting a level of risk through wetproofing, and creating space for water to flow, you can be better prepared for any future flooding that may occur. This means going with the flow and working with water rather than against it.</p>
Dryproofing	 <p>Dry proofing involves sealing the exterior of your house to prevent water from entering. Flood doors are one of the options to do this. For low-level floods this is effective, however, greater depths can result in an increase in force on the building and result in cracking or movement of foundations. It's worth noting that this method can also displace more water onto neighbouring properties.</p>
Elevation	 <p>Raising the level of the house or its services above the projected flood level can be effective. Footings, posts, slabs and other structures all need to withstand an overland flow of water across the site. Services such as air conditioners, hot water units and electrical meter boards can be easily raised above the flood level to minimise the chance of important utilities failing.</p>
Absorption	 <p>It's also important to think about your property as a 'sponge' that can receive and slowly absorb water into ground surfaces. By increasing permeable surfaces on your property, you can decrease the amount of water flowing into your home, onto other properties and streets.</p>

Figure 1: Four types of flood resilient design for households (from Melbourne Water 2020)

See the [Resources](#) section at the end of this document for further information and a link to this guide.

Actions that every household can consider:

- **Clear gutters and drains**
 - Please be aware: falling from ladders is extremely dangerous and requires a second person to hold the ladder. Make sure you are aware of the need to clean gutters safely or to have this done professionally.
- **Wetproof ground-levels**
 - Having an electrician raise electrical outlets and appliances, (e.g., hot water, aircon) above 1% of the annual exceedance probability, is an achievable and relatively low-cost action that can limit damages significantly.
- **Know where the water ‘shut off’ is located, and how it works**
 - A common type of flooding involves pipes, drains, and appliances, which would require the household to shut off water to the home to stop the flooding. Knowing where the valve is and how it operates is an easy and cost-free action that can help to mitigate flood damages.
- **Improve permeability of surrounding property**
 - Your property can act as a 'sponge' that can receive and absorb water into ground surfaces. By increasing permeable surfaces on your property, you can decrease the amount of water flowing into your home, onto other properties, and streets. Consider increasing garden surfaces and installing permeable fencing solutions.
- **Talk to your neighbours!**
 - A key aspect of disaster resilience is the role of neighbours. Researchers have demonstrated that it is neighbours who provide most of the support during disasters. Neighbours are also a source of information for newly arrived individuals, who can uncover whether local households have been flooded in the past.
 - *“Talking to your neighbours is an important part of developing flood resilience. You can talk about each other’s experiences with flooding, approaches to reduce flooding, and ways you might work together in a flood event.” (Melbourne Water, 2020, p. 16).*
- **Follow up with a professional**
 - If your home is at risk of flooding, or has a history flooding, please ask us to arrange a follow up with a flood professional.

Wet proofing		
1 Raise electrical switchboard to above flood level to minimise damage.	5 Replace flooring with flood resilient flooring to minimise damage.	10 Replace hollow core doors with solid core doors to minimise damage.
2 Raise gas hot water unit to above flood level onto a concrete plinth, steel brackets or stainless steel framed bench to minimise damage.	6 Seal existing tiled areas to minimise the chance of mould.	Dry proofing
3 Replace existing stairs with open stairs made from flood resilient materials to minimise damage.	7 Replace cabinetry with flood resilient materials to minimise damage.	11 Replace external doors with flood doors to minimise the chance of water entry.
4 Replace internal wall linings with flood resilient wall linings to minimise damage.	8 Replace built-in bathtubs with freestanding bathtubs or showers	12 Ensure window sills are above flood level to minimise the chance of water entry.
	9 Raise washing machine and dryer above flood level onto a flood resilient cabinetry or a stainless steel framed bench to minimise damage.	13 Seal external wall under existing cladding to minimise the chance of water entry.

Figure 2: possible actions at household scale (Melbourne Water 2020)

Resources

- Prepare for flood with **Melbourne Water’s** (2020) *‘Flood resilient guide to retrofitting your home’*: <https://www.melbournewater.com.au/water-data-and-education/get-involved/events/retrofitting-your-home-flood-resilience>
- Learn if your house is at risk on the **CMA Flood Reports**: <http://floodreports.nccma.vic.gov.au/>
- ‘Be flood ready’ with **VicSES** (2022) **Flood Plan**: <https://www.ses.vic.gov.au/plan-and-stay-safe/emergencies/flood>
- Take the survey with others, or explore further resources on the **CEDRR website**: <https://communityriskreduction.org.au/>