

Inquiry into the 2022 Flood Event in Victoria

8 May 2023

Legislative Council Environment and Planning Committee
Parliament House
Spring Street
EAST MELBOURNE VIC 3002

Stormwater Victoria

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Dear Legislative Council Environment and Planning Committee,

Stormwater Victoria are pleased to submit the following letter for consideration in the inquiry to the 2022 Flood Event in Victoria. Stormwater Victoria held a member only meeting on the 20th of April 2023 to discuss the key themes related to the inquiry:

1. The flood event as a whole and the areas affected;
2. What caused or contributed to the event;
3. The role of emergency services; government agencies and flood mitigation strategies;
4. The Victoria Planning Framework and incorporation of climate change in the Planning Scheme Amendment;
5. 2016 Victorian Floodplain Management Strategy;
6. Stormwater Victoria's Role and Key Advocacy Avenues; and
7. Advocacy for State-Government Lead Approaches to Stormwater and Floodplain Management.

Stormwater Victoria is the pre-eminent body in Victoria representing organisations and individuals involved in stormwater flow, environmental quality, and use in rural and urban settings. Stormwater Victoria adopts an integrated approach to stormwater management by encouraging interaction between the many disciplines and parties engaged in our industry. Our membership represents a field of diverse, knowledgeable, and committed professionals: architects and designers, construction specialists, engineers, planners, policy makers, product manufacturers, researchers, and educators. Stormwater Victoria is a non-profit, incorporated association working directly with Stormwater Australia.

As a peak body, we represent the interests of our members in advocating for improved management of stormwater, promoting and recognising industry best practice, building industry capacity to deliver sustainable water management solutions, and raising the awareness of stormwater management within the wider community.

Stormwater Victoria would welcome the opportunity to work more closely with the State Government to advocate for and embed the changes recommended in this submission. Stormwater Victoria are interested in pursuing the possibility of offering pro-bono support to Local Government to assist State Government in implementing the proposed **State-wide decision framework for prioritisation of flood warning, mitigation, and resilience programs.**

The following letter supports Stormwater Victoria's position in several key areas:

1. Flood Event Causes, Consequences and Current Response Review
 - a. Combination of complex natural and human-based causes and effects
 - b. Detrimental messaging in media and misguided optimism bias
 - c. Review of Early Warning Systems and recommendations for improved user-focused information systems
 - d. Effectiveness of flood mitigation strategies
2. State-based Accountability and Review of Flood Mitigation Prioritisation Framework
 - a. **State Government to support regional and local floodplain and stormwater managers through transparent funding and legislative means;**
 - b. The tendency to criticise local agencies without state commitment in historic flood inquiries is considered counterproductive;
 - c. Recommend a review of stormwater institutional arrangements, and Councils as sole responsibility for stormwater management issues;
 - d. The need to address the direct conflict in seeking dual outcomes for development outcomes whilst achieving planning commitments, and the challenges this creates for approval agencies; and
 - e. Recommend establishing a flooding and stormwater State Authority and empowering the existing DEECA body to support CMAs and Councils more intentionally.
3. Funding Mechanism Review and Resilience Prioritisation
 - a. Funding distribution should recognise the importance of proactive flood preparedness and resilience programs, where flood recovery funding is currently reactive and disproportionate to community benefit; and
 - b. State Government to investigate and implement an appropriate cost-recovery mechanism/s for all aspects of stormwater
4. Education and Community Exercise
 - a. Increased effort to develop flood resilient communities, through incorporating flood resilience, preparedness, integrated water principles and climate change as part of education curriculums and
 - b. State-wide emergency preparedness exercises are encouraged to be held to empower communities in a crisis and address key human behaviour factors;
5. Proposed Review of the Victorian Planning Framework
 - a. Development controls in the Victorian Planning Framework should see a major revision to incorporate consideration of climate change in flood overlays and impact assessments, acknowledging the complexity in equitable treatment of legacy applications and scientific uncertainty, (considered concurrently with 3.b. above)
 - b. Incorporate consideration for access to properties and safe egress to neighbourhood emergency meeting points in addition to current hazard (VxD) controls and raising of floor levels;
 - c. Greater flexibility in achievement of requirements while simultaneously empowering approval bodies with greater technical and funding capacity
 - d. Review flood impact assessment approaches such as:
 - i. When is a flood impact assessment actually required; and
 - ii. Does cut and fill balance to calculate floodplain storage loss adequately demonstrate no adverse flooding impacts;
6. Proposed Review of the 2016 Victorian Floodplain Management Strategy
 - a. The Strategy should be updated to a more holistic strategy that incorporate stormwater flooding and integrated water management principles; and
 - b. The Strategy should be reviewed in light of the above, with particular consideration to 2.d, 3.a, and 3.b.

1. Flood Event Causes, Consequences and Current Response Review

Likely Event Causes

It is Stormwater Victoria's understanding that the key cause of the 2022 flood events was extreme climate variability and disrupted natural flowpaths. The October rainfall exceeded averages across most of Victoria, including large areas of highest on record, due in part to record daily rainfall on the 12th and 13th of the month. It was the highest rainfall for any month since records began in 1900 for Victoria overall.

On the 14th of October, major flood warnings were issued for the Maribyrnong, Ovens, King, Broken, Goulburn, Campaspe, Loddon, Avoca, Murray and Wimmera Rivers, as well as the Mt Emu, Castle, and Seven Creeks. Numerous Minor to Moderate warnings for catchments across Victoria were also issued. The confluence of many river and creek systems resulted in multiple waves of flooding and backwater within township stormwater drains contributing to multiple sources of flooding.

Severe thunderstorms developed on the 21st of October, over parts of the State's west resulting in flash flooding in Geelong and Hamilton, while north-east of Melbourne experienced heavy rainfall and flash flooding on the 25th of the month.

Event Consequences, Human Behaviour and Media Messaging

A key consequence of the event was the adverse impact to private properties, industry and retail, education, freight and supply-chains, travel and access to health care and supplies largely due to historic development in floodplains and impeded stormwater conveyance in high intensity events.

Human behaviour is a leading contributor to the burden on emergency services. Misguided optimism bias that means regardless of adequate warning systems in ideal scenarios, many residents do not evacuate when encouraged and flood recovery rarely considers future resilience measures. Despite this, community spirit and willingness of volunteers during an event is commendable and shows that with increased awareness and planning, communities can be more self-reliant and resilient.

Many media outlets are renowned for sensationalist narratives, however, the detrimental impact to the community during the event must be noted. Misinformation and subliminal messaging such as broadcasting cars driving through floodwaters must be curbed. It is recommended that reliable spokespeople from community groups be nominated for engagement with media during such events to communicate specific messaging about evacuation and the dangers of driving through flood waters.

Early Flood Warning Systems and Need for User-Focused Information

Reflecting on the outcomes of the Comrie Review (2010-2011) Flood Warning and Response for Riverine Flooding, recommendation 5 to determine which agency is responsible for flash flood warnings requires serious further effort.

Large portions of the community were actively seeking information throughout the event and did not feel as though they had been adequately informed with many properties not being door knocked or messages being issued overnight whilst residents were asleep.

It is important to recognise that the risk posed by flooding is inherent and does not change based on whether flood mapping results are made available or not. There are concerns that the latest flood mapping results are often not endorsed due to fear of public backlash, leading to inadequate availability of information. The State government is therefore urged to develop a less politicised means of adopting current best available information for the ultimate benefit of communities, that is less beholden to politicisation but is within the best interests of communities.

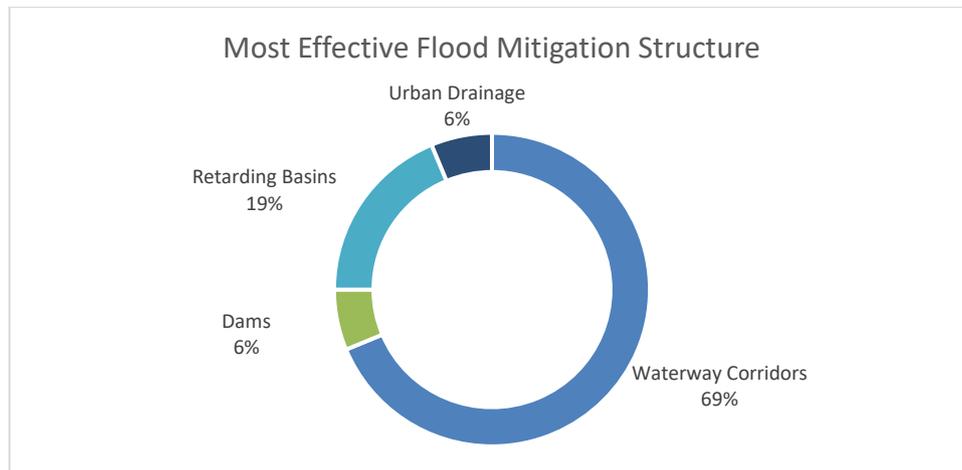
Possible opportunities that may be identified in trying to maximise community uptake of information and the seriousness of risks include:

1. A more collaborative approach working with insurance companies that hold extensive flood information;
2. Incorporate flooding information in the deed and leasing agreements for all flood affected properties;
3. Consider the use of live flood forecasting portals for readily available information to the community that is integrated with VicRoad closures; and
4. Remunerating local community groups to participate in SES-led responses.

Effectiveness of Flood Mitigation Strategies

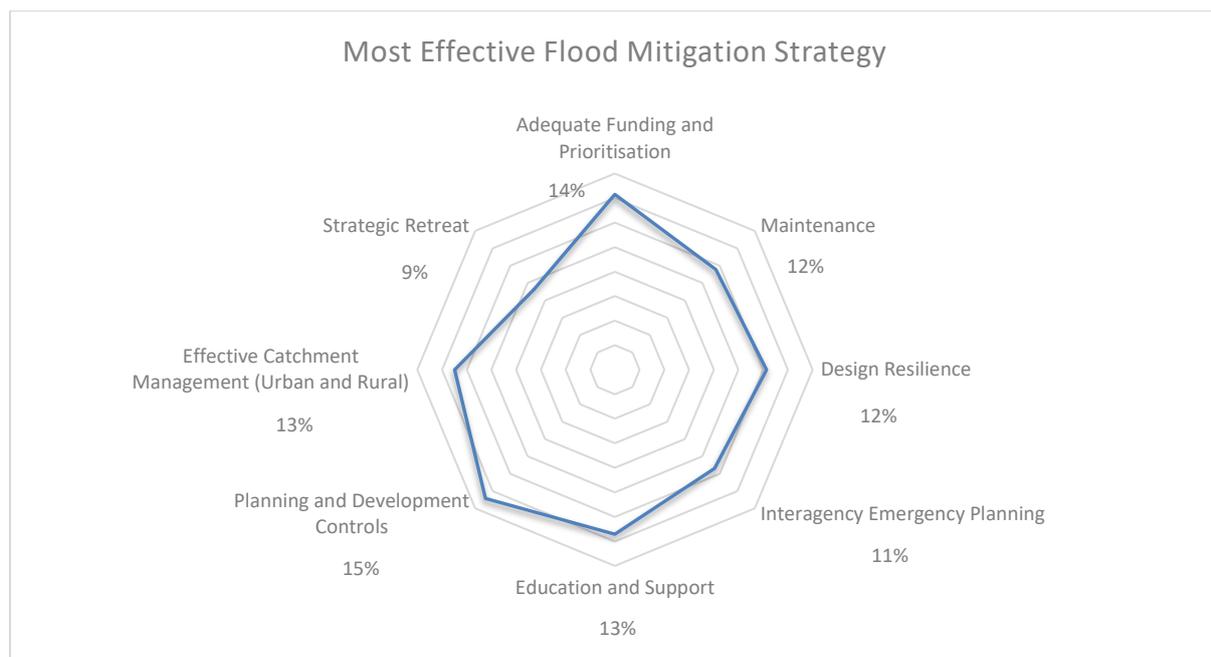
It is Stormwater Victoria’s position that flood mitigation strategies involving structural assets alone are highly unlikely to adequately address increasing flood risk, and therefore unrealistic community expectations regarding “building our way out ” must be addressed.

The outcomes from the members session ranked the following strategies as the most effective structural options, with waterway corridors being highly preferred as illustrated below.



Flood levees, culverts and raising of structures received zero votes. Urban drainage is not considered by Stormwater Victoria to be an adequate means of flood mitigation in events less frequent than 50% to 20% Annual Exceedance Probability. Community education, acceptance and expectations around flood mitigation measures needs to be addressed.

The outcomes from the members session ranked the following strategies as the most effective approach to Flood Mitigation overall, showed Planning and Development Controls and Adequate Funding and Prioritisation being ranked the highest and second highest as illustrated below.



These results support the recommendations in the following sections.

5. *State-based Accountability and Review of Flood Mitigation Prioritisation Framework*

Stormwater Victoria have observed that the outcomes of some past flood inquiries have sought to establish fault with a local agency in the aftermath of flood events. Stormwater Victoria believes this approach is counterproductive and does not recognise the inherent complexities or inconsistencies in roles and responsibilities for flood management across agencies. Instead, we encourage the State government (as a whole) to adopt this responsibility in order to prevent future inconsistencies and ad hoc flood management in Victoria.

There is a need to address the power struggle between development pressures and planning commitments as many authorities are criticised for over-conservatism in the approvals phase and pressured through VCAT channels to approve development, whilst simultaneously being criticised through platforms such as the flood inquiry process for allowing development to take place. Stormwater Victoria therefore encourage State-based empowerment in maintaining risk-based decision-making.

It is recommended that a **State-level decision framework for prioritisation of flood warning, mitigation and resilience programs be developed** with improved and intentional collaboration between regional Catchment Management Authorities (CMA), Melbourne Water, local Councils, State Government, and communities.

The stormwater industry in Victoria has long had a growing interest in seeing the implementation of a Stormwater Authority that could drive change and elevate the expectation of stormwater management. Such an authority could fund stormwater projects while providing consistent stormwater and flood management industry guidance. Presently, this role is largely shared by Melbourne Water and the many Victorian Councils, as well as a number of CMAs throughout the regions.

Many Councils are generally solely responsible for the management of stormwater issues and engagement with the community with limited resources, funding, and support which is inadequate in the face of climate change and growing population. This prioritisation framework could alleviate the pressure on Council's to allocate funding to mitigation works with particularly vocal residents as opposed to works with the greatest community benefit.

It is believed that a separate, stormwater authority for Victoria, could provide a strong foundation to the stormwater industry, giving clarity on development requirements, maintenance standards and asset ownership while establishing catchment-based assets that extend beyond the boundary of a municipality, CMA or Melbourne Water.

6. *Funding Mechanism Review and Resilience Prioritisation*

Many within the flood and stormwater management industry recognise that funding distribution needs to better represent the importance of proactive flood preparedness and resilience programs, where flood recovery funding is currently reactive and disproportionate to community benefit. It is known that current State funding for flood recovery far exceeds flood resilience, and this distribution is recommended for review.

It is recommended that the State Government investigate and implement a cost-recovery mechanism for the proposed State-based flood mitigation prioritisation framework. An example of this could be introducing a specific benefit or impervious area contribution stormwater services rate such as those implemented overseas. The *cost allocation framework for IWM projects* developed by DEECA (previously DELWP) should be expanded and reviewed for flood mitigation purposes.

Flood-resilient design principles are recommended to be more widely applied in building codes and regulations as well as the potential for the government to provide a specific rebate through the flood recovery scheme for rebuilding efforts that demonstrate flood resilience. Brisbane presents a plethora of examples of how this could be more effectively applied.

The industry is also seeking a clear and consolidated approach to strategic retreat such as in situations where strategic retreat such as sea level rise will be the only long-term solution and how this is proposed to be funded.

7. Education and Community Exercise

Stormwater Victoria strongly reinforce the importance of community engagement, education and exercises to influence human behaviour and common knowledge especially into the future. It is commonly accepted that education programs need to be targeted from primary school age for optimum benefits.

It is therefore recommended that State Government introduce a primary school education unit addressing flood resilience, preparedness, integrated water principles and climate change. The role of children in emergency response has recently been highlighted in a number of studies, including criticism of emergency housing in school buildings that disrupt education continuance.

The psychological impact of emergency events need to be more seriously considered and actively addressed through initiatives such as community exercises. State-wide emergency preparedness exercises could be held on a biannual basis to empower communities in a crisis and address key human behaviour factors. SES leadership have long been encouraging State Government to adopt such exercises and recognise the benefits of continual reinforcement between flood events and other emergency scenarios. The Arts House REFUGE project provides an example of a successful model that could be referenced.

8. Proposed Review of the Victorian Planning Framework

Development controls in the Victorian Planning Framework should see a major revision to incorporate consideration of climate change in flood overlays and impact assessments. There are examples of where the climate change scenario is being considered for planning scheme amendments but there is lack of consistent approach that will be required in the future.

This recommendation acknowledges the complexity in equitable treatment of legacy applications and scientific uncertainty related to the appropriate climate change projections to adopt and therefore a thorough review is advised. Despite this, Stormwater Victoria encourage the proposal to not be placed in the “too hard basket” and for this to be prioritised in order to implement the changes needed to protect the next generations.

In combination with the proposed community exercise, incorporating considerations for access to properties and safe egress to neighbourhood emergency meeting points is recommended, in addition to current hazard (VxD) controls and raising of floor levels in the planning scheme.

There are several technical means of establishing flood requirement compliance and greater flexibility in the achievement of requirements is recommended. Some approving bodies have been known to request specific approaches, to conform with capacity or knowledge constraints within

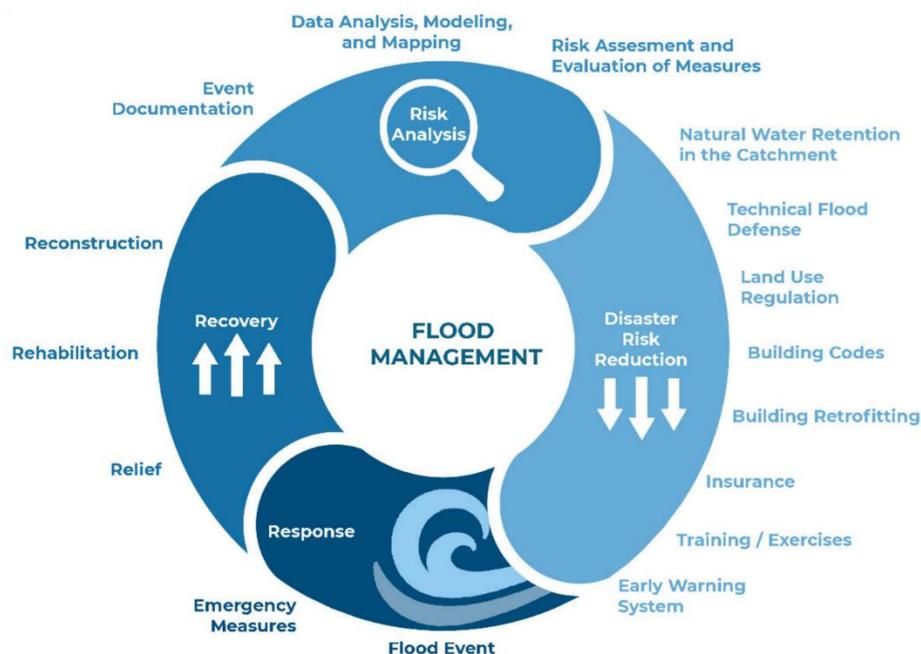
their organisation, but which may not be the most robust approach. As such, approval bodies must be empowered through greater technical and funding capacity to assess flood impact and mitigation studies; this will also support innovation and uptake of new approaches within the industry.

In parallel to improved capacity, it is also recommended that a wholesale review of flood impact assessment approaches across a range of approving bodies be undertaken to determine:

1. When is a flood impact assessment actually required; and
2. Does cut and fill balance to calculate floodplain storage loss adequately demonstrate no adverse flooding impacts.

9. Proposed Review of the 2016 Victorian Floodplain Management Strategy

It is Stormwater Victoria’s position that the Strategy is currently underutilised and therefore a reflection of its’ inadequacy to address the implementation of many of the objectives which are considered valuable. The Strategy should be updated to a more holistic strategy that incorporate stormwater flooding and integrated water management principles. The graphic below demonstrates an approach from lessons learnt in Germany that encompasses many of the recommendations outlined in this submission. Of particular note is the recognition of Disaster Risk Reduction (in other terms resilience and preparedness) as being the most prominent and underutilised component of the management cycle to address flooding.



Source: Thieken, A. *Flood Risk Reduction in Germany: Lessons Learned from the 2002 Disaster in the Elbe Region*.

The 2016 Victorian Floodplain Management Strategy further neglects to address stormwater flash flooding. The historical tendency to separate riverine and stormwater flooding should be revised, particularly emphasised through the proliferation of the general community’s lack of awareness regarding flooding mechanisms, and the overlap between local and regional drainage authorities.

Whilst the Strategy highlights key actions such as undertaking flood modelling and mapping, the application, consistency, and accessibility of these studies remains unaddressed and ties back to the requirement for a State-led approach.

Conclusion

Should the Legislative Council Environment and Planning Committee wish to discuss the recommendations outlined in this submission, Stormwater Victoria would be pleased to provide further information and discussion.

Regards,

Sarah Watkins

President, Stormwater Victoria on behalf of the Stormwater Victoria membership