

20 February 2021

Infrastructure Victoria
Level 33/140 William St
Melbourne VIC 3000

Dear Sir/Madam,

RE: Victoria's Draft 30-year Infrastructure Strategy, Volume 1-1.

Thank you for the opportunity to provide feedback on the Victoria's Draft 30-year Infrastructure Strategy (referred to in this paper as "The Strategy"), released December 2020.

As the key body representing organisations and individuals involved in stormwater management, Stormwater Victoria was invited to participate in a stakeholder consultation session on the 11th of February 2021. Through this invitation we were able to provide feedback on the objectives and strategies set out by The Strategy from a stormwater and environmental perspective.

This paper details Stormwater Victoria's position with regards to The Strategy, including some recommendations. Below is a summary of the key points outlined in more detail in the paper.

1. Integrated water cycle management:

Stormwater harvesting provides the opportunity to reduce excess outflow to receiving waterways while reducing demand on the potable water system. It provides the ability to manage stormwater within the catchment while aiming to retain or restore natural waterway conditions.

Much of the document focuses on the opportunity to make stormwater harvesting safe for drinking. While Stormwater Victoria encourages this next step, it's important to consider a "fit for purpose" use for stormwater that reduces the embodied energy of treatment and may even utilize the asset at the source. A simple approach to stormwater harvesting may see it more readily integrated more quickly given appropriate levels of funding and overall value to the infrastructure projects.

Stormwater Victoria champions the incorporation of stormwater as a resource in the integrated water cycle component of The Strategy.

2. Do no harm:

Compliance with the General Environmental Duty (GED) is critical for all development projects, ensuring no adverse environmental impacts are created or made worse. To achieve this, stormwater treatment and flood management must be considered up front and as part of the initial stages. This will enable the project to manage any additional afflux, flows and flood risk as well as minimising or removing any additional pollutant loads from impervious surfaces. The quantity or volume of runoff must also be considered to ensure peak flow rates are not lengthened through historical approaches like retardation and on-site detention. This will ensure the project complies with Best Practice Environmental Management Guidelines (BPEMG) and new GED.

Stormwater Victoria encourages incorporating these objectives into The Strategy as a "must" instruction.

3. Stormwater and flooding in a changing climate:

Climate change threatens our potable water supply security. Stormwater Victoria believes that stormwater harvesting is a key component to planning for this future risk. Alternative water supply solutions like Stormwater will be required to maintain aspects of our current way of life, while still ensuring a safe and consistent potable water supply for drinking. If Stormwater were to be represented by a Stormwater Authority, it would have a stronger voice and basis to self-fund key projects and protect the receiving environment.

Climate change is likely to increase peak flow flooding so flood frequencies should be considered in managing risks to existing development as well as planning for future development. In addition to retreating from coastal waters, Stormwater Victoria believes The Strategy should incorporate objectives for managing development around inland waterways and flood reserves. Integrated designs that better utilise our sports fields and drainage infrastructure will provide more collaborative allowances for future flooding conditions and the community.

4. Setting standards and providing leadership in development:

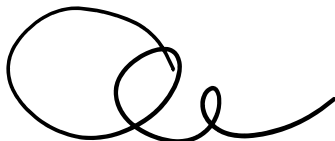
Infrastructure Victoria, in conjunction with other government bodies and private industry have an opportunity when undertaking major infrastructure work to lead by example. Stormwater Victoria believes its important for all government bodies to work together and utilize the existing guidance documents and expectations generated by each other. In particular the Department of Environment, Land, Water and Planning (DELWP) as well as the Environmental Protection Agency (EPA) should share in the development of The Strategy to ensure it provides a combined approach rather than one more siloed. There is little point constructing new infrastructure without ensuring it will protect and enhance our current natural environment. The strategy must reference adherence to the new Urban Stormwater Management Guidance (Publication 1739) and the inherent GED associated to reinforce the collaborative approach by government. With well-developed funding arrangements in place and the potential for Victorian Stormwater Authority, the approach to stormwater and flood management in Victoria could be brought to a higher standard.

5. Capitalise on opportunities for multi-purpose land allocation:

Stormwater Victoria appreciates the objective for providing greenspace connectivity. Furthermore, it is believed that such land allocations could also be utilised to incorporate stormwater and flood management infrastructure. Stormwater Victoria encourages the targets for tree canopy cover set out in The Strategy and further suggest that they could also provide opportunities for passive irrigation, while improving the local microclimate.

Further details on the above items are provided below. We are happy to engage any further discussion or provide additional clarity on these items, as needed.

Kind regards,



Jamie Tainton

President, Stormwater Victoria

Stormwater Victoria

Stormwater Victoria is the pre-eminent body in Victoria representing organisations and individuals involved in stormwater flow, environmental quality and use, adopting an integrated approach to stormwater management by encouraging interaction between the many disciplines and parties engaged in our industry.

Stormwater Victoria provides leadership, professional support, and technical guidance on niche issues specific to stormwater management, and advocate to ensure sustainable stormwater management is fully integrated into broader discussions around water management and urban development at a state and national level through our links to Stormwater Australia and the network of state-based stormwater associations.

Stormwater Victoria represents 279 members, who are diverse, knowledgeable and committed professionals working across government, industry and academia from a range of technical and professional backgrounds, including engineering, landscape architecture, urban planning, education, environmental management, policy, sustainability and community engagement. Collectively, they bring a desire to support positive change for improved stormwater management and supports Stormwater Victoria's shared vision:

Stormwater is an invaluable resource, and it is our vision that stormwater is integrated into holistic water management creating sustainable communities, connecting built and natural environments.

As an active leader in the water and urban development industries, Stormwater Victoria plays a central role in bringing together government, industry, and practitioners to affect sustainable and holistic management of stormwater by:

- giving an independent and authoritative voice on stormwater issues which represent the views, interests, and concerns of its members;
- building a cross-disciplinary, cross-sectoral community of shared interest, collaboration, and responsibility in stormwater management;
- driving positive change, encourage innovative practices in stormwater service delivery to achieve improved environmental and sustainability outcomes;
- facilitating professional development, fulfilment, and growth for its members;
- communication and advocacy for better regulations, policy, and guidelines; and
- identifying and actively working towards new and innovative approaches in engaging and empowering the community in stormwater water management.

Finally, as the peak body for the stormwater industry, this submission represents the interests of our members for improved management of stormwater. In doing so, it advocates for robust regulatory frameworks that promote industry best practice, reflect well-established science, and are supported by the necessary compliance and implementation mechanisms to ensure the required paradigm shift towards achieving flow standards within urban development.

1. Integrated water cycle management

Stormwater management should be included within the larger integrated water management framework.

Stormwater Victoria welcomes the objective to accelerate the progress of integrated water cycle management and believes stormwater is a vital resource that should play a key role in this strategy. Capitalising on stormwater as a resource provides multiple advantages for the community and the environment, including the following:

A. Non-potable reuse:

Harvesting and re-use of stormwater is already common practice for the irrigation of green spaces and other non-potable applications. This has shown to reduce the pressure on potable water demand for these purposes. Further application of this established and proven practice by Infrastructure Victoria will reinforce the benefit and need more widely.

B. Potable reuse:

Consideration for higher quality treatment of stormwater runoff should be considered for drinking water as well as other household applications including showers and laundry and other potable water requirements in the community. Pursuit of stormwater policy changes to allow the investigation of reuse for a broader range of applications is welcomed by Stormwater Victoria, in line with prioritisation of public health protections.

C. Reducing outlet flows:

Stormwater reuse reduces the volume of stormwater flows reaching our receiving waterways. This lowers the pollutant load in our rivers and streams and reduces the stress on our receiving water environments. The removal of significant flows from the catchment can slow flow rates below scouring velocities and maintain our established waterway flow regimes, reducing the need for hard engineering responses like rock revetment and concrete lining of channels. This will reduce the long-term investment needed to stabilise our urban waterways.

2. Do no harm

All infrastructure work needs to retain or improve on existing conditions.

It is understood that there is a strong need within Victoria to improve amenities, increase regional development and provide improvements in connectivity through road, rail and other infrastructure. These advancements, while welcome, will often pose risks to catchment conditions and receiving water bodies.

With the introduction of the General Environmental Duty (GED) a legislative requirement set out by the EPA taking effect as of the 1st of July 2021, businesses will be legally obligated to take responsibility for impacts on the environment and prevent all harm caused by their activities.

Stormwater management is integral to protecting the catchment and receiving waterways. In establishing road, rail and land development infrastructure, Stormwater Victoria believes it is crucial to plan for infrastructure to protect our water ways with no net change in flow volumes, peak flows, and water quality. The GED enforces the duty of care Infrastructure Victoria has to do no harm with each of these projects. The key risks to address include but are not limited to the following.

A. Flood obstruction:

Building large infrastructure works that intercept the existing water course and redirecting flows has significant risks to the surrounding catchment. It could create afflux upstream and flood risk downstream that may modify existing flood extents. This poses an increase in risk to people's safety and potential property damage. The wider impact includes the insurance and property value sector of the community. This has a strong financial impact on the general public and should be avoided.

Providing solutions such as adequate transverse drainage through areas of flooding, alternative flood conveyance, flood detention or a combination of these is often required. The use of smart tanks and integrated re-use options should be considered on all projects where existing flows are to be detained or retarded. Lengthening the peak flow of a catchment is no longer an acceptable outcome to waterway health. The Healthy Water Ways Strategy provides clear guidance on how to protect and maintain priority catchments, concepts for which could be more widely adopted.

B. Flood storage reduction/removal:

Development work in areas of flood risk has an increased chance of creating fill in areas that previously provided incidental flood storage. These works will likely generate an increase in flood levels and flows.

Catchment flooding investigation provides valuable information of flood risks due to loss in storage and allow mitigation strategies to be developed. Offset works such as retarding basins or other forms of flood mitigation should be designed where infrastructure works threatens to impact catchment storage. This needs to be accomplished to a standard that suits the receiving waterway (predevelopment or better) for all flood events where alternative options like stormwater reuse or infiltration are not suitable.

C. Increased flows, pollutant load, erosion and general damage to creek ecology

Altered stormwater and flooding conditions due to development works results in an increase in flows, velocities and pollutant load at the catchment outlet if not mitigated appropriately. As per the GED, the risk of degradation within our waterway is the responsibility of the organisation or business undertaking the work and should be considered a key project goal. Flow increases due to a greater cover of impervious surfaces need to be detained back to predevelopment conditions (or better) within the site, prior to discharge into surrounding properties within the catchment. Increases in pollutant loads also need to be reduced on site prior to reaching surrounding properties, in accordance with Best Practice Environmental Management Guidelines (BPEMG), outlined by the EPA or better.

Infrastructure to manage increased stormwater flows and pollution such as swales, retarding basins, wetlands and biofilters should be incorporated into the project planning for any development works. This includes strategies for asset ownership, maintenance and handover, to ensure the long-term efficacy of these systems. Additionally, Melbourne Water and a number of councils have established contribution schemes to offset adverse impacts on stormwater due to development works and may be a viable alternative where onsite stormwater management and treatment is not feasible or possible.

It is imperative that a stormwater management strategy be considered at project inception to ensure the work allows for adequate protection through the life cycle of the infrastructure.

3. Stormwater and flooding in a changing climate

Stormwater and flood management to form part of Climate Change planning strategy

It is understood that The Strategy incorporates objectives to adapt to and address environmental changes resulting from the effects of climate change. Stormwater Victoria welcomes the focus placed on addressing , particularly regarding the alternative and integrated water supply systems.

As discussed above, it is believed that the value that stormwater has within the integrated water cycle strategy is crucial and can provide numerous benefits to the environment, including improving water supply security, microclimate impacts, greening of community like sports fields and overall waterway health.

Climate change is also considered a key driver of changes to flood frequency and intensity. It is noted that this has been identified in The Strategy.

Extensive industry research has predicted significant increases in catchment runoff in future climate change conditions. The Australian Rainfall and Runoff, 2019 guidelines recommend adoption of up to 19% increase in stormwater runoff when undertaking flood modelling for design storms extrapolated to the year 2100. It is vital that organisations planning long term infrastructure projects understand, not only the present-day impacts on stormwater and flooding, but also future risks to the catchment.

Stormwater Victoria welcomes the notation regarding flood risk due to climate change and recommends that these considerations be identified in the recommendations. Some of the key actions in addressing the added flood risk from climate change include:

A. Plan for increased flood frequency and intensities:

As previously discussed, flood mitigation strategies are needed as part of infrastructure planning. This should also include an investigation of how future climate scenarios would respond to the flood mitigation works proposed. Where adverse impacts to people, properties or receiving waterbodies are anticipated, expansion of these works should be incorporated to accommodate future climate needs.

B. Retreat from flood zones:

It is noted that retreating from coastlines has been identified as a part of the broader strategy in responding to climate change. This will help to ensure safety and protection from property damage due to encroachment of coastal waters into developed areas. In line with this approach, Stormwater Victoria believes that there is a need to extend this objective to development near waterways and flood reserves. This will ensure adequate land for conveyance of future flood. It will also ensure that people and properties near the waterways and flood plains remain protected.

C. Plan for conveyance corridors and detention zones:

As noted above, protecting properties from future flooding conditions is critical. The allowance for adequate land reserves should also be provided for all urban expansion programs to prevent the need to retreat in the future and provide long term protection to the community. The use of these spaces for a mixed use outcome for passive play, structure sports and walking tracks should be considered. Drainage assets need to be mixed use, multifaceted and collaboratively created to ensure they are valued and utilised across the community.

4. Setting standards and providing leadership in development

Major government Infrastructure work should set an example in response to the General Environmental Duty (GED)

As outlined above, Stormwater Victoria understands the need to expand urban development to accommodate Victoria's growing population and the needs of the community. In pursuing these projects, Infrastructure Victoria and the government bodies undertaking these projects have a unique opportunity to provide leadership for the industry, setting an example for how to deliver infrastructure projects with key consideration for environmental conditions.

It is essential that these projects be delivered in a manner that complies with or exceeds the expectations set out by the GED, while providing innovative stormwater and environment solutions.

Stormwater Victoria believes that to achieve the maximum potential for these projects, funding arrangement options should be explored by Infrastructure Victoria, partnering with other government bodies including DELWP and EPA. Partnership with these entities should unlock funding opportunities that meet the objections of both government bodies and ultimately service our community and environment better. This will encourage state-of-the-art, innovative surface water management projects that will set the standard for future projects and educate the wider industry on best practice environmental management.

In view of this, the stormwater industry in Victoria has 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 Catchment Management Authorities (CMAs) throughout the regions. It is important to consider this as a statewide initiative that values stormwater in the regions (where our waterways are often in better condition) as much as our urban catchments.

It is believed that a separate, stormwater water 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. A stormwater authority could be stand alone and compliment the work and responsibilities endowed by a state water authority.

5. Opportunities for multi-purpose land allocation

Incorporate stormwater and flood management solutions in conjunction with proposed greenspace and tree canopies.

It is noted that the objective for greenspace connectivity and tree canopy targets have been identified as recommendations in The Strategy. Stormwater Victoria welcomes these objectives and believes that greenspace and tree canopy cover are key components of urban development, providing not only much needed pervious surface that supports stormwater management, but also community space for recreation, sporting, leisure and enhanced liveability generally.

Stormwater Victoria believes that many of these spaces could stand to provide additional benefits to stormwater and flood management through the incorporation of blue-green infrastructure such as:

- Wetlands and biofiltration for stormwater treatment; and
- Swales and retarding basins for conveyance and detention.

These assets have broader environmental, flora and fauna-based outcomes that extend beyond the use of the local human community and safety of such. Additionally, the targets set out for increasing tree canopy cover would positively impact microclimate due to the gas exchanges and evapotranspiration of the trees.

Stormwater Victoria would welcome objectives to this effect. We want to see opportunities to continually incorporate stormwater and flood management infrastructure into residential greenspace and connected open space networks, as well as opportunities for stormwater reuse through passive irrigation.

Stormwater Victoria is grateful for the opportunity to provide input to Infrastructure Victoria into The Strategy and would be happy for any opportunity for further consultation.