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Flood Management and Drainage Strategy
Melbourne Water
PO Box 4342
Melbourne VIC 3001

Dear Sir/Madam,

**Port Phillip and Westernport Region Flood Drainage and Management Strategy
Discussion Paper: *SIA Victoria* Response**

Thank you for the opportunity to contribute to the development of the Port Phillip and Westernport Region Flood Drainage and Management Strategy. We commend Melbourne Water for tackling flooding on a regional basis.

Flood risk is already providing challenges in urban areas. 100,000 properties in the Strategy area are estimated to be at risk of flooding during the 1:100 ARI flood, with 40,000 of these at risk of flooding above floor level. Flash floods in Melbourne over recent years have highlighted the social and economic consequences of flooding. Annual average damages in the region are estimated in the order of \$245 million. Yet despite ongoing, major expenditure on flood management, the extent of the problem remains significant, requiring longer term solutions and a more integrated approach.

Flood risk is expected to increase as urban areas redevelop with increased densities and due to the predicted effects of climate change. The Strategy is therefore timely in quantifying the problem and identifying the best program for reducing flood risk in the future.

The ***Stormwater Industry Association (SIA) Victoria*** has reviewed the Discussion Paper and provides the following submission. We would, however, first like to provide you with background on the ***SIA Victoria*** to explain the context in which our submission has been developed.

SIA Victoria is the peak body for stormwater practitioners, representing organisations and individuals involved in stormwater flow, environmental quality and use. We represent a diverse field of professionals, including designers, construction specialists, engineers, planners, policy makers, product manufacturers, and researchers and educators. The Committee members are drawn from private practice, local government and peak stormwater management organisations.

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Our aim is to support the stormwater industry in the achievement of sustainable stormwater management in policy and practice.

SIA Victoria offers Victorian stakeholders an opportunity to share in activities that support industry goals, such as:

- Providing leadership on stormwater matters and influencing stormwater management policy and practice, within the industry and at all levels of government.
- Supporting and providing opportunities for knowledge and professional development, including communication, learning, research and networking.
- Placing stormwater squarely within a framework of integrated water management, and more broadly, inter-generational environmental sustainability.

SIA Victoria provides industry support and direction, and continues to be active in providing technical input and feedback into industry reviews and Victorian Government policy. The organisation provides the opportunity for industry stakeholders to network within and across disciplines. All interested practitioners and organisations are provided with opportunities to learn about the latest research, policy and technologies. ***SIA Victoria*** was a founding partner of Clearwater, a joint initiative with the Municipal Association of Victoria (MAV) to build knowledge within the water industry, and is currently working with Melbourne Water, EPA Victoria and the MAV to continue this important initiative.

Further information about the ***SIA Victoria*** can be obtained from our web site at www.stormwater.asn.au/vic.

Summary of key points

- Instead of describing flood risk in terms of ‘intolerable’ and ‘tolerable’ risks, Melbourne Water should develop a flood risk management framework that supports a rigorous and transparent method of ranking risks. Flood risk assessments based on this risk management framework should be undertaken on a catchment or sub-regional basis with local government participation. Consistent responses to similar levels of risk can then be developed and coordinated across relevant organisations.
- Research into the social effects of flooding would be valuable and should be used to inform a flood risk management framework.
- Further flood mapping is needed, especially for local government drains. The Victoria Planning Provisions (flood overlays) should be used to regulate development in newly identified flood prone areas and as a means for community education. The notion of the flood overlays should be expanded to include development upstream of flood prone areas.
- Further research into the effects of redevelopment of existing urban areas on the regional drainage system is essential given the policy objectives of Melbourne 2030. Risks and potential mitigation should inform local planning for Melbourne 2030 implementation, to avoid creating even greater local flood risk in the future.

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- Climate change is predicted to increase the frequency of major flooding. It is important to conduct further research into regional/local effects on the drainage system and possible adaptation strategies, and to take the results of this research into account for both existing and developing urban areas.
- A more comprehensive and integrated approach to flood management and flood response is needed, including community education, flood awareness and preparedness. The statewide bush fire program provides an excellent model for a comparable flood management program.
- Expenditure is supported in the next Water Plan period to implement the directions indicated in the Discussion Paper. The amounts referred to are based on **SIA Victoria's** understanding of Melbourne Water funding proposals and should be varied if further funds are needed.
- While research and information gathering is important, the actions that will make a more immediate difference are enhanced community education, flood awareness and preparation, and a more integrated working relationship between the agencies involved.
- As Melbourne Water moves into Strategy preparation, the Strategy would benefit from being placed in a national context of risk management. Flood management and drainage should be integrated with water quality and stormwater use in line with an integrated approach to water resource management.

We would welcome the opportunity to continue discussion of the matters raised in this submission through our representation on the Steering Committee or directly with **SIA Victoria**. For further information, please contact me on (03) 5427 1770 or 0417 532 197.

Yours sincerely,



Esther Kay
President
Stormwater Industry Association of Victoria

SIA Victoria discussion of key points:

Issue 1: An agreed approach to managing existing regional flooding problems

With more than 40,000 buildings in the region at risk of flooding above floor level, flood risk is a problem that continues to need a concentrated effort. As pointed out in the Discussion Paper, the cost of physical mitigation, where it can be provided, would be in the order of billions of dollars. A benefit-cost analysis may not support expenditure to construct all possible physical mitigation measures. **SIA Victoria** agrees that a rigorous and transparent method is needed to set priorities for available expenditure along with greater emphasis on flood preparedness by those living or working in flood prone properties.

The Discussion Paper describes flood risk in terms of 'intolerable' and 'tolerable' risk. We believe that these terms are too imprecise and can be interpreted in different ways by different people and organisations. In setting priorities for targeted action (whether structural or non-structural), an appropriate risk assessment method based on the Australian standard is needed. We suggest that the criteria for assessing risk should be developed in consultation with agencies responsible for flood management and through community research. The discussion about 'Flood mapping to identify risks' on page 32 of the Discussion Paper begins to identify the broad categories of criteria needed. These criteria should then be used to develop a flood risk management framework that supports a rigorous and transparent method of ranking risks. An analogy can be made with the risk rankings for municipal stormwater management plans. Consistent responses to similar levels of flood risk can then be developed and coordinated across relevant organisations.

It may be that similar exercises have been undertaken in other jurisdictions that can be adapted for this purpose. We encourage Melbourne Water to investigate this possibility to reduce the time and expenditure needed to develop such a flood risk management framework for the Melbourne and Westernport region.

We suggest that flood risk assessments (based on a flood risk management framework) should be undertaken on a catchment or sub-regional basis with local government participation rather than for each municipality. This would encourage a strategic, catchment-based approach to mitigating flood risk rather than one based on municipal boundaries. It should also more easily allow a regional picture to emerge of the geographic locations of different flood risks and identification of synergies that can be created by risk management responses. The flood risk management framework should be developed in such a way that it does not disadvantage individual municipalities if a catchment or sub-regional approach to risk identification and response is adopted.

Although we encourage Melbourne Water to adopt our suggested approach, **SIA Victoria** supports inclusion of an additional \$60 million of capital expenditure in Melbourne Water's next Water Plan. It is critical to ensure this money is available over the next five-year Water Plan period. Melbourne Water has earmarked these funds for flood mitigation capital works to reduce the incidence of 'intolerable' flood risk by 10%, and this should be able to be more clearly defined once flood risk assessments are completed. We note that flood risk assessments are proposed for funding in the Water Plan (linked to Issue 4).

Issue 2: Completing the knowledge base

Social impacts

SIA Victoria supports a shift from a culture dependent on engineering works to mitigate flooding to one which embraces community involvement. We therefore support further research into the causes of flooding, community attitudes to flooding, individual abilities to be involved with managing risk, and post-event evaluation of the effectiveness of emergency response and the economic and social costs.

If a systematic research program can be put in place, then over time valuable information can be developed that will help fine tune flood risk programs. A comparison can be made with Victoria's approach to managing fire risk, which over the past 20 years has seen the emergence of a strong program of pre- and post-fire response (through coordinated statewide mapping, policy, regulation, community education and emergency service, and research into and evaluation of causes, damage and response to major fires).

We support Melbourne Water expenditure over the next Water Plan period of some \$350,000 for social research and to use the results of this research to set priorities for the Water Plan beginning in 2003/14. We support a higher level of expenditure if this is needed to obtain useful results. We would hope that the social research results would be used to inform the flood risk management framework we propose under Issue 1.

Flood mapping

SIA Victoria supports continued flood mapping, particularly to fill information gaps for drainage systems managed by local government. Given the competing program and budget priorities of local Councils, we believe it is unlikely that this mapping will occur if it must be funded solely by local government. We therefore support expenditure during the next Water Plan period for local and other flood mapping in the order of \$4.2 million. We would expect that Melbourne Water involvement will ensure that mapping is undertaken using a consistent method that is of a high standard.

The Victoria Planning Provisions provide for application of flood overlays once mapping is completed. This triggers disclosure when a property is sold. We suggest that Melbourne Water should explore whether other methods of disclosure would also be effective and whether property sale transactions could provide an opportunity for community education.

The flood overlay provisions set out requirements for new development. We suggest that Melbourne Water review these requirements to determine if they still provide a satisfactory response to flood risk, and that referral requirements allow Melbourne Water to adequately respond to development applications in flood prone areas.

We also support expanding the notion of the flood overlays to include non-flood prone areas where incremental development has capacity to exacerbate flooding downstream of that development. As this is another aspect of planning for the regional drainage system, we are confident Melbourne Water can take an effective leading role on this issue.

Issue 3: Potential long-term future pressures on existing drainage systems

Development in established areas

Melbourne 2030 supports construction of 60% new dwellings in existing urban areas and rejuvenation of local shopping centres. However, the exact location and timing of this development is dependent on local strategic planning and housing/commercial market cycles. **SIA Victoria** supports a proactive approach by Melbourne Water to identify areas where local drainage cannot be improved and therefore where increased densities may not be feasible. Local flooding may also be exacerbated by upstream development.

In preparing more detailed plans under the Melbourne 2030 policy umbrella, the State government and local Councils must take into account a range of physical, environmental, social and economic factors. **SIA Victoria** agrees that the degree of flood risk and potential for mitigation should be one of these factors. We support Melbourne Water's expenditure of almost \$500,000 during the next Water Plan to improve its redevelopment planning model, to better understand redevelopment impacts and the non-structural solutions that may be implemented, and to conduct pilot studies. We also encourage Melbourne Water to work closely with Melbourne 2030 strategy teams at the Department of Sustainability and Environment and implementation authorities on this issue.

Climate change

The probable effects of climate change have recently become a topic of discussion in the wider community. This should help raise awareness about the need for further local research and adaptation strategies. The Discussion Paper uses CSIRO estimates to indicate that the accepted 1:100 ARI will occur at increased frequencies, resulting in increased incidents of major flooding. **SIA Victoria** assumes this magnitude of change is being factored by Melbourne Water into flood risk assessments for existing urban areas and informing drainage schemes in developing urban areas so that flood risk can be well-managed from the outset. Research into climate change, the resilience of current systems to respond to predicted changes and adaptation strategies will continue to be needed into the future.

SIA Victoria agrees that Melbourne Water will need to play an active role in climate change research for the Melbourne and Westernport region. We recognise that the effects of climate change will also be felt outside of Melbourne Water's jurisdictional boundaries and that they will affect many aspects of water (and other resource) planning for urban and regional areas in Victoria and Australia. We support Melbourne Water taking a lead research role in terms of the region's drainage infrastructure. We support Melbourne Water expenditure of \$400,000 over the next Water Plan period to study the effects of climate change on the region's urban drainage system and encourage inclusion in this investigation of the effects on local government drains. We also support a contribution of \$225,000 to update Australian Rainfall and Runoff figures, which is essential for users of this publication.

Issue 4: Enhanced community education, flood awareness and preparation

SIA Victoria supports a more comprehensive and coordinated approach to flood risk. As mentioned in the Discussion Paper and also as a topic of discussion at Steering Committee meetings, management of bush fire risk provides an excellent model for developing a program of coordinated research, risk assessment, emergency response and community education. While it may be difficult to give advance warning of flash flooding, preventative action can be ‘sold’ to the community, would empower individuals and should improve knowledge of how to prevent personal losses from potentially damaging floods. Ideally a statewide approach should be developed including State, regional, local and potentially Commonwealth authorities as well as research and emergency service organisations. In terms of this Strategy for the Melbourne and Westernport region, we support Melbourne Water expenditure during the next Water Plan of around \$1.2 million to begin building capacity (in conjunction with other stakeholders) to develop such a program, and for education and awareness campaigns.

SIA Victoria supports the continued use of planning controls and has already discussed this matter under Issue 2. We support commitment of financial assistance to local government to implement local flood mapping through planning scheme amendments. We suggest that Melbourne Water review with the Department of Sustainability and Environment and local government the most cost effective mechanism for doing this.

Issue 5: Agreed responsibilities and improved collaboration between flood management agencies

The Discussion Paper highlights the number of agencies involved in flood management for the Melbourne and Westernport region. **SIA Victoria** supports a more integrated working relationship between the agencies and hopes that the draft Strategy will provide a possible working model. We agree that local government Municipal Emergency Management Plans should be expanded to include flooding and, as with other natural disasters, this should allow for a multi-agency response. We therefore endorse development of local flood risk management plans and supporting expenditure of \$2.5 million during the next Water Plan period.

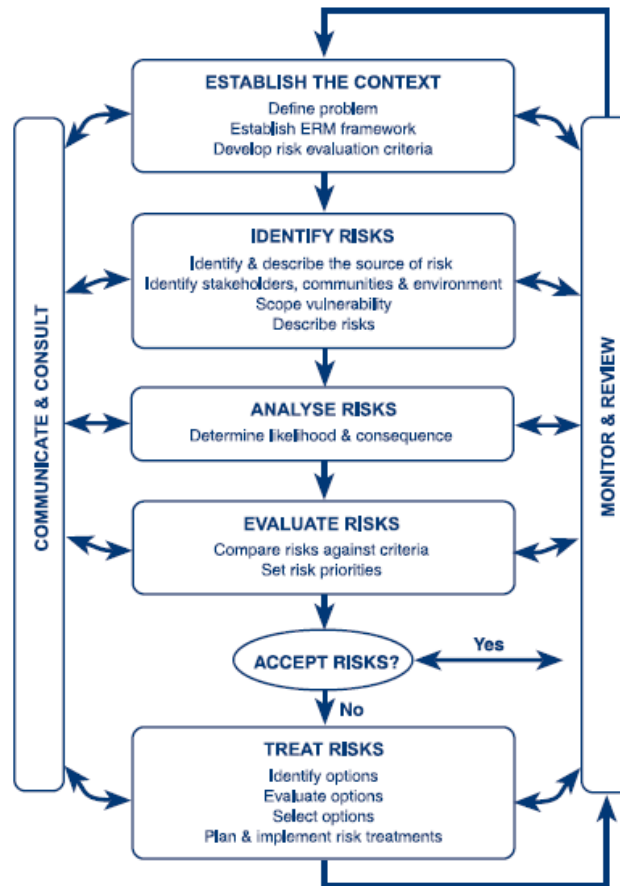
While research and information gathering is important, the actions that will make a more immediate difference are enhanced community education, flood awareness and preparation, and a more integrated working relationship between the agencies involved. We believe the final expenditure allocations should reflect this.

Preparing the Flood Management and Drainage Strategy

Strategy framework

The Melbourne Water strategy would benefit from being placed in an established national context for managing risk. **SIA Victoria** calls your attention to the emergency risk management (ERM) framework used by Emergency Management Australia (EMA), available from the EMA website at www.ema.gov.au and in several EMA publications (the following was sourced from

[http://www.ema.gov.au/agd/EMA/rwpattach.nsf/viewasattachmentpersonal/\(C86520E41F5EA5C8AAB6E66B851038D8\)~ERMMManual.pdf/\\$file/ERMMManual.pdf](http://www.ema.gov.au/agd/EMA/rwpattach.nsf/viewasattachmentpersonal/(C86520E41F5EA5C8AAB6E66B851038D8)~ERMMManual.pdf/$file/ERMMManual.pdf))



We also note that the EMA web pages discuss a National Framework for Mitigation and describe the following mitigation for flood risk, which can be adapted to riverine, overland and tidal surge flood events. This appears to be consistent with the approach adopted in the Discussion Paper and could be referred to when preparing the Strategy.

FLOOD

- Flood mapping.
- Landuse management to limit the use of floodplains for the site of vulnerable elements (including infrastructure, residences, buildings etc).
- Engineering of structures in the floodplain to withstand flood forces (levee banks, berms, flood walls with opening barriers, dams).
- Relocation of structures out of the floodplain.
- Flood resistant building materials (water resistant materials, waterproof seals, strong foundations).
- Building design to elevate floor levels.
- Storage and sleeping areas high off the ground.
- Flood warnings.

- Community awareness of the floodplain.
- Awareness of potential impact of deforestation on flood risk.
- Flood evacuation preparedness including boats and rescue equipment.

(sourced from

<http://www.ema.gov.au/agd/ema/emaInternet.nsf/Page/RWP0ACB42930E19FCEFC-A256C4800062B66?OpenDocument>)

Integration with other aspects of stormwater management

Thus far the Discussion Paper has not taken up the opportunity to place the Flood Management and Drainage Strategy in the context of an integrated approach to water resource management, and therefore to also address improved stormwater quality and stormwater as an alternative source of water supply. Two examples of how the Strategy could link to water quality and reuse include:

- Melbourne Water has already retrofitted retarding basins to improve the water quality of captured stormwater.
- A Victorian framework is being prepared for managed aquifer recharge to store stormwater during periods of runoff for later use during dry conditions.

As Melbourne Water moves into the Strategy stage, **SIA Victoria** would like to see an integrated approach taken to managing flooding and the drainage system. Otherwise, an important opportunity will be lost to maximise the synergies of flood management, water quality and water resource use.