



Secretariat Office
PO Box 1221
Burwood, NSW 2046
Email: president@stormwatervictoria.com.au
Web: www.stormwatervictoria.com.au

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Committee Secretary
Senate Standing Committees on Environment and Communications
PO Box 6100
Parliament House
Canberra ACT 2600

To whom it may concern

Stormwater Victoria offers the following information as input to the inquiry into stormwater by the Senate Standing Committees on Environment and Communications.

Stormwater Victoria is the state peak body representing the interests of our members and industry practitioners in advocating for improved management of stormwater, promoting and recognising industry best practice, building industry capacity to deliver sustainable urban water management solutions and raising the awareness of stormwater management within the wider community.

Our vision is to make the Yarra River swimmable. The Yarra River is Victoria's iconic waterway and together with its tributaries the catchment covers half of metropolitan Melbourne. If the Yarra River can be made swimmable along its entire length, sustainable stormwater management will have been achieved and be transferrable to other river in the state and nationally.

Stormwater Victoria adopts an integrated approach to stormwater management by encouraging interaction between the many disciplines and parties engaged in our industry. We believe that integrated management of stormwater offers solutions that provide the greatest benefit to the community and environment for all Victorians. Over the last five years Councils and water authorities have invested \$100's millions in stormwater harvesting and water quality improvement projects and strategies. These have all helped to improve our community's resilience to water supply and flood protection issues and have assisted in improving the water quality and ecological health of our waterways.

Over the following pages we provide information relevant to the terms of reference. A summary of the key points in our submission is listed below:

- More stormwater falls on the city of Melbourne than is used by its population. A significant opportunity exists to harvest this water as part of a more sophisticated water servicing strategy to reduce supply risk and improve the city spaces.
- Scientific research has done a great deal to inform approaches to stormwater management in Victoria and remains an important part of our ongoing management framework. Key areas for further research include the water/energy/food nexus and better use of current infrastructure.

- Stormwater is integral to resilient and liveable communities into the future. Reductions in the urban heat island effect, flood hazards, and increased urban amenity all contribute to these outcomes.
- A combination of policy requirements and incentives have contributed to the current rate of uptake of stormwater management practices, however many gaps exist in this framework that leave opportunities for improvement. The government has conducted research into addressing these however this has yet to be made public.
- Planning and building controls need to be considered jointly as a solution to stormwater regulation as they offer different but complementary pros and cons. To use either one in isolation would create an undesirable policy gap and is not encouraged.
- The majority of stormwater planning and construction works are co-funded through State and local government mechanisms. Some have received funding through the Federal government's Water for the Future stormwater fund.
- A more sustainable funding model will need to be developed for the future costs of renewing and replacing local government's current \$11B asset base in drainage infrastructure.
- Given the changing nature and demands of our industry, innovation is paramount to achieving desirable stormwater management outcomes. Capacity building and training is required that facilitate learning and transitioning of current practise to what is required to manage our future challenges.

For further information about any of these projects or information provided here, please contact me on 0488 659 446 or via president@stormwatervictoria.com.au .

Yours sincerely,

President
Stormwater Victoria

DETAILED RESPONSES TO THE TERMS OF REFERENCE:

THE QUANTUM OF STORMWATER RESOURCE IN AUSTRALIA AND IMPACT AND POTENTIAL OF OPTIMAL MANAGEMENT PRACTICES IN AREAS OF FLOODING, ENVIRONMENTAL IMPACTS, WATERWAY MANAGEMENT AND WATER RESOURCE PLANNING.

Modelling undertaken by the Victorian government indicated that metropolitan Melbourne generates 440 gigalitres (GL) of stormwater. This rainwater falling on the city currently drains directly into the bays, carrying the very nutrients that the CSIRO identified as a risk to Melbourne's most important asset, Port Phillip Bay. The government also stated that 374GL of drinking water is used and 443 GL of wastewater is disposed of annually. Given these numbers, it is clear that more stormwater falls on the city than is used by its population and that a significant opportunity exists to harvest this water as part of a more sophisticated water servicing strategy.

In Victoria the millennium drought has had a significant affect to our approach to managing stormwater. In 1996 the CSIRO completed a significant study, reporting that if the annual Nitrogen input into the Port Phillip Bay was not significantly reduced from business as usual we would risk significant degradation and ecological impacts such as large scale blue green algal blooms in the Bay. Melbourne Water adopted a reduction target of 1000 tonnes and this has driven investment in wastewater treatment plant upgrades and stormwater quality improvement initiatives for the last 18 years. However, stormwater harvesting had not been considered seriously until 2008 when water restrictions started to affect sporting fields and other public parks and gardens. The Victorian State Government response to the millennium drought was to invest in a number of strategies including the largest desalination plant in the southern hemisphere. Although this will give Victorians water security for the next 10 – 50 years (depending on which climate and population scenario you use) it has not been popular with the community, who are paying for it through their water rates. When asked, most community members prefer the idea of utilising our local stormwater resources rather than desalinating water.

Harvesting stormwater also provides the water quality improvement we still need to achieve and, more importantly, it will provide flow regime benefits. Urban streams receive far too much water when it rains as up to 90% of the rainfall runs off into the drainage system and then to the creek, stream or river. In a natural system (forest or grassland catchment) runoff only occurs on a handful of days per year with 80-90% of the rainfall being absorbed by the catchment, used by vegetation or infiltrating to groundwater. The groundwater in turn seeps to deeper aquifers or into waterways contributing to a base flow outside of the rain events. Conversely, urban streams undergo the boom and bust cycle between each rain events.

A more sophisticated water servicing strategy can also reduce our reliance on existing dams and reservoirs, which predominantly extract water from the head waters of our major rivers. By minimising this extraction we can allow greater environmental flows in the stretches of the river where it's most needed, at the top, through reduced extraction.

Finally, and of most relevance to public risk, larger than average rain events and significant flooding have occurred increasingly over in the last few years. Multifunctional stormwater management systems can assist in reducing the impacts associated with this flooding and thus, help to protect the community and important assets. Infrastructure such as stormwater harvesting systems and rainwater tanks are currently being trialled in Melbourne for their flood protection function. An empty tank before a rain event maximises the capture/retention potential and therefore prevents water from entering the downstream drainage system. Strategies such as these can be particularly useful in inner city areas where the drains are 50-100 years old and unable to cope with current run-off volumes. Often such drainage systems have financial or engineering constraints which preclude traditional drainage upgrades. Harvesting systems could help to extend the lifecycle of existing infrastructure, potentially saving millions in asset management and replacement costs.

THE ROLE OF SCIENTIFIC ADVANCES IN IMPROVING STORMWATER MANAGEMENT OUTCOMES AND INTEGRATING THESE INTO POLICY AT ALL LEVELS OF GOVERNMENT TO UNLOCK THE FULL SUITE OF ECONOMIC BENEFITS.

Melbourne is seen internationally as a world leader in sustainable stormwater management or Water Sensitive Urban Design (WSUD). This would not have been possible without the great work undertaken by our major universities supported by Melbourne Water and some key local councils. Research and the seed funding provided by Melbourne Water led to novel systems being installed, piloted and researched. Lessons were learnt, new knowledge gained and shared through the industry by agencies such as Clearwater and Stormwater Victoria resulting in modifications, better approaches and further understanding of the total system. This ongoing innovation is critical to the industry. Water sensitive urban design is less than 20 years old and has yet to reach full maturity as a discipline. The industry has noted a decline in recent years for the support of research as industry and government budgets tighten. Stormwater Victoria sees this as a potential issue as without innovation and scientific research further progress will be hampered.

Capacity building has been strong over the last decade but has reduced over the last few years as budgets have been reduced. Clearwater (Melbourne Water's capacity building and educational arm) has had a funding reduction and has therefore reduced its activities. As an industry in transition with many new and evolving technologies, ongoing capacity building initiatives need to be supported over coming years, if we are to ensure that new entrants into the industry are supported, as well as the ongoing development of existing practitioners.

As mentioned previously, Melbourne and Australia are viewed internationally as leaders in sustainable water practises. Melbourne has hosted a number of international delegations including most recently a high level Californian group including politicians, advisors and public servants. Melbourne's learnings are being adopted in California at present as they experience exceptional drought conditions over a majority of their state. A similar group from São Paulo is also looking to come to Melbourne to see what learnings they can adopt to their current crisis. These examples show that Australia's leadership status in this field is well developed, and could be a potential economic driver in particular for education and innovative product design. This current advantage in this area can only be maintained by ongoing research and information dissemination.

Key areas of research for the future will be the water/energy/food nexus as our resources become increasingly scarce. We have had a high investment in drains, roads and utilities. Using resources and our current infrastructure more efficiently rather than building new will also be a focus. Space in and under our roads is constrained by services making it increasingly difficult to fit in additional infrastructure. We will have to be smarter in how we use what we currently have to service the needs of future generations.

THE ROLE OF STORMWATER AS A POSITIVE CONTRIBUTOR TO RESILIENT AND DESIRABLE COMMUNITIES INTO THE FUTURE, INCLUDING 'PUBLIC GOOD' AND PRODUCTIVITY OUTCOMES.

Australia has an international reputation for having wide open spaces, but also for green and liveable cities. Greener, leafy cities and suburbs are more desirable places to be than hot dry ones. This Australian style of live is a point of difference that needs to be maintained and enhanced. Managing stormwater locally for improved soil moisture, and reduced nutrient transport will provide this.

With heat, particularly in urban areas, becoming a focus for many communities and council's, there has been an increased focus on mitigating this affect. Current research thinking is to maximise vegetation evapotranspiration. To achieve this, good soil moisture is needed through the summer months. Passive and active irrigation with stormwater is currently the preferred method by many local councils due to its multi-benefits. By providing this increased soil moisture we are achieving healthier vegetation with a proven link to healthier populations as they are encouraged outdoor, in shade, with cleaner air, to exercise.

With climate predictions indicating an increase in annual mean temperatures, an increase in heat wave conditions, a reduction in annual rainfall, particularly in winter and spring and conversely, an increase in the intensity of rain events, the management of stormwater will become increasingly complex. The current challenge is to design systems to play a dual role, in harvesting for provision of alternative water supply in normal conditions and for providing flood water retention in heavy rain events. To be successful these systems will likely require active management with input from intelligent rainfall prediction advice.

Stormwater quality (nutrient and other pollutant control) improvement will also add to the amenity and attraction of our waterways, especially the major rivers such as the Yarra River flowing through Melbourne and on to Port Phillip Bay. This will translate to a greater tourist attraction and a higher sense of well-being for the locals. This improvement will extend to the greater regions, providing healthier streams throughout both the suburbs and regional towns.

Stormwater is an integral facilitator of resilient and liveable communities into the future. It is important for irrigation of our parks, gardens and street trees to counter the effects of climate change. A number of example parks and now suburbs have been created within Victoria that exemplify this fact. This includes areas such as Royal Park in Melbourne, providing significant stormwater harvesting for irrigation, as well as water quality. Stringybark Creek in Melbourne's outer suburbs has become another site synonymous with best practice outcomes. A series of Leaky Tanks (providing flooding benefits), local street scale WSUD devices, and on site treatments have been used to reduce the impact of a typical, developed suburb on the surrounding creeks and ecosystems.

MODEL FRAMEWORKS TO DEVELOP ECONOMIC AND POLICY INCENTIVES FOR STORMWATER MANAGEMENT

The currently most successful management model in the State is Melbourne Waters stormwater offset scheme (discussed further under funding models) A base rate is formed to meet the management requirements, and divided on a per hectare rate for the catchment. Individual developments can choose to meet their own water quality requirements, or pay towards the greater scheme cost. This model, along with the sub-division planning scheme amendment mandating of meeting the best practise standard, have been the biggest drivers in stormwater quality improvement works within Victoria.

Water and Planning authorities are currently grappling with how to modify this model to meet the challenges of integrated water management, including the above described harvesting benefits.

However, as mentioned above, stormwater harvesting schemes are increasingly being built and they are generally providing water comparable to potable water cost (and far cheaper than desalinated water).

Some Local Governments have also adopted local planning scheme policies appropriate to their municipalities above and beyond the state planning rules.

Stormwater Victoria is aware that a huge collection of work has been conducted by the State government departments over the years but much of this has not been made public. There is also a number of research projects underway by the CRC WSC and others as well as consultancies working for local councils and the water authorities.

MODEL LAND USE PLANNING AND BUILDING CONTROLS TO MAXIMISE BENEFITS AND MINIMISE IMPACTS IN BOTH NEW AND LEGACY SITUATIONS.

The principle planning control relevant to stormwater quality in Victoria is Clause 56.07-4 of the Victoria Planning Provisions. It applies to the subdivision of residential land on greenfield and brownfield development sites. The provision requires pollutant removal (as discussed above) and flow control for stormwater. But it does not clearly link this requirement with using stormwater as an alternative water supply. A key point is that the clause does not apply to subdivision of commercial or industrial land and to site developments that are developed prior to being subdivided. It therefore has limited applicability in established suburbs and hence, some progressive local governments have introduced WSUD local planning scheme amendments in order to bridge this gap.

A review of Clause 56.07-4 was conducted in 2013 by Melbourne Water and the former Office of Living Victoria (now part of the Department of Environment, Land, Water and Planning (DELWP)). This provided a comprehensively researched report that provided a number of insightful recommendations. The report is not public but could be provided to the panel upon request.

There are therefore gaps in the approach to planning and building controls which should be addressed in Victoria. Chief among these are a broader application of the objectives within Clause 56.07-4 and the inclusion of state-wide provisions mandating best practice stormwater management for all development. Building regulations should also be developed to compliment planning controls in order to achieve appropriate outcomes from planning and early concept design phases of projects through to implementation.

FUNDING MODELS AND INCENTIVES TO SUPPORT STRATEGIC PLANNING AND INVESTMENT IN DESIRABLE STORMWATER MANAGEMENT, INCLUDING LOCAL PRIORITISATION.

At present, a majority of stormwater planning and construction works are co-funded through State and local government mechanisms. The Federal government's Water for the Future stormwater fund was also applied to some award winning stormwater harvesting projects as implemented by local governments and water authorities.

Melbourne Water through their Living Rivers program provides funding for stormwater quality improvement work that has helped them to achieve their 1000 tonne nitrogen reduction target. This competitive fund has been accessed by local councils to help them develop strategies, build pilot projects as well conduct community awareness, maintenance training and documentation and research.

State Government has also provided funding over the years principally for innovation in urban water management. However, state government funds are not consistent and tend to change with each change of government.

Melbourne Water manages a Stormwater offset scheme base on modelled total nitrogen loading. The stormwater offset contributions are paid by developers to mitigate the impacts of stormwater pollution from urban developments. Full details of the stormwater offset scheme are provided at <http://www.melbournewater.com.au/Planning-and-building/schemes/about/Pages/What-are-stormwater-quality-offsets.aspx>.

While Melbourne Water can levy a drainage charge, local councils cannot. Local councils control a significant proportion of the drainage network and funding must be sourced from general rate revenue in competition with other services delivered by councils. Mechanisms for local government to secure dedicated revenue for stormwater management would be beneficial.

ASSET MANAGEMENT AND OPERATIONS TO ENCOURAGE EFFICIENT INVESTMENTS AND LONGEVITY OF BENEFIT

The estimated asset value of local government stormwater infrastructure is greater than \$11 billion. There is a general trend for state and local government to seek savings in operational cost through competitive contracting of maintenance services. This puts service contractors under pressure and/or provides only the absolute minimum of service as required by the contacts. This is not sustainable, particularly for infrastructure that is aging and will likely require more attention, especially with more intense rainfall events and urban consolidation.

A more sustainable funding model will need to be developed for the future so that the costs of renewing and replacing drainage infrastructure are not unsustainably transferred to future generations.

THE ROLE OF INNOVATION IN SUPPORTING DESIRABLE OUTCOMES AND TRANSPARENT DECISION-MAKING, INCLUDING ACCESS TO INFORMATION AND NOVEL TECHNOLOGIES FOR PLANNING, DESIGN AND IMPLEMENTATION.

Given the changing nature and demands of our industry, innovation is paramount to achieving desirable stormwater management outcomes. The industry is learning at a rapid rate as it trials new approaches for managing stormwater.

An example of this are Smart water tanks. These release water prior to rain events to maximise retention of rain event flows. This will minimise run-off from lots and catchments. Innovation has been required to develop a control system that allows a control valve to open under predetermined conditions or from a remote location manually. The predetermined conditions are usually linked to weather prediction services. The governance and operating arrangements of such system is in its infancy and is yet to be tested at full scale.

Rainfall predictability has not improved over the last 2 decade whereas temperature predictions 4 days out are very accurate today. Being able to predict rainfall more accurately will greatly enhance the ability to manage floods and provide warning to communities that will be affected, thus reducing loss of life and damage costs.

Such innovations are particularly challenging for asset operators, as a section of the industry that is traditionally poor at adapting to rapid change. Capacity building and training is required to facilitate learning and transition from current practise to what is required to manage our future challenges.

It is also important to support peer to peer learning through seminars and conference both at a local, state and national level. Stormwater Victoria is active in this space running an annual state conference and bi-monthly technical seminars. We also run annual Awards for excellence in stormwater management. It's important to celebrate the good projects and this is another way of providing, knowledge as well as recognition for the leaders in our industry. This is all run by volunteers and funded through the industry.

RELATED MATTERS

Stormwater Victoria is committed to the achievement of sustainable stormwater management in policy and practice.

Our members work together to provide progressive stormwater services showing leadership internationally in integrated water management.

Following is our *Position Paper* that sets out our goals and principles for continued improvements in the stormwater industry. These are the principles that we want to see government adopt and apply in regulation, policy, funding and training. We also want to see the development sector adopt and apply these principles in their design and construction.

While we advocate for these advancements in stormwater management, Stormwater Victoria will continue to progress new designs, technologies, services, education, partnerships and demonstration projects to help the community better support sustainable water management.

Future advocacy, education, projects and partnerships for Stormwater Victoria will pursue the goals set out in the Position Paper.

1. Position Statement: Flooding Management

Goal: Stormwater infrastructure is consistently designed, constructed and maintained to protect both communities and ecosystems from damage.

Guiding Principles:

Stormwater Victoria applies the following principles for flooding management:

1. Protecting our assets means managing our physical infrastructure alongside our natural resources, our economic resources in commerce and tourism, and our social resources including our heritage and community values.
2. Our built assets are most vulnerable to very large flood events whereas our natural resources such as urban streams are mostly affected adversely by the smaller more frequent flooding.
3. Climate change will result in different infrastructure needs. This is likely to reflect more extreme storm events and less annual rainfall, with attention needed to keep up to date with climate modelling for different regions.
4. The community has increasing expectations on nuisance flood management that defines the target performance of our stormwater drainage network. The industry must keep up with these expectations and educate the community on related nuisance flooding issues.
5. The amount of flooding is directly related to the catchment characteristics. Smaller flooding particularly relates to the amount of impervious hard surfaces that prevents stormwater slowing and entering the ground. Water sensitive urban design and stormwater harvesting can help reduce catchment imperviousness, which in turn helps flood management.
6. The need to accommodate an expanding population through creation of new developments and increasing the density of existing places considerable pressure on downstream infrastructure and natural waterways. Proper planning, investigations and assessment are critical to ensure that communities and ecosystems are appropriately protected.
7. Stormwater systems operate most effectively and when maintenance and monitoring are adequately funded. The true value of flood management needs to be better 'quantified' to help build a stronger business case for its ongoing provision.

Changing the way we manage flooding

Flood management is arguably the genesis of the stormwater industry. Rain caused flooding, from nuisance flooding on a frequent basis getting our feet wet and causing an inconvenience through to major flooding where property is threatened and safety of our communities are compromised.

In recognising the growing importance of water quality management it is important to embrace new ways of managing the flooding issues inspired by understanding the holistic potential impacts on the ecosystems as well as the community. Flood management does not need a single management response but can adopt related strategies that serve other purposes yet have a benefit to managing flooding.

Augmenting and upgrading drainage assets can benefit from more holistic solutions, improved modelling tools and introduction of new technologies for construction.

2. Position Statement: Integrated Sustainable Water Management

Goal: All stormwater flows in Victoria are managed holistically to consider flooding, ecosystem protection and community needs particularly in relation to harvesting and reuse in light of other water sources.

Guiding Principles:

Stormwater Victoria applies the following principles to integrated stormwater management:

1. Prevention of flooding is of the most vital importance, and can be managed whilst preventing pollution.
2. Stormwater management is most effective when supporting the total water cycle including surface water, groundwater, atmospheric water, wastewater, and potable water.
3. A 'city as a catchment' approach of stormwater supports different local water solutions that are linked as needed across catchments and sub-catchments. This reduces reliance on centralised water supplies, particularly those supported by external water catchments.
4. Urban centres to source, treat and wisely use their stormwater from within their own metropolitan catchments to minimise the need to draw from water sources in rural catchments.
5. The design, infrastructure and management of stormwater adapts to changing climate including global warming, and more extreme weather events.
6. Victoria has a dry seasonal climate with water conservation and reuse vital in a time of climate change. Water can be managed and shared efficiently with low risk once good systems are in place.
7. Improving water quality and water saving are not mutually exclusive, instead they are shared goals that all water projects can be designed to deliver. Water sensitive urban design principles and practices are effective in delivering integrated sustainable water management at all scales.
8. All water streams in the urban and rural water cycles are a resource, not just mains water. Water is to be conserved, and where needed sourced from a variety of locations: roofs, open space, roads, footpaths, and dams. Environmental implications help determine the most appropriate 'fit-for-purpose' water source.
9. Continued research, modelling and monitoring stormwater is vital for improved water quality and conservation. Active participation of stormwater practitioners in research and innovation is important to the growth of the industry.
10. Capacity-building programs target professionals, organisations and industry continue to effectively translate the best available research of independent institutions.

Why just stormwater?

The importance of integrated water management is well recognised by the industry and increasingly by the community. It makes sense to use stormwater infrastructure wherever possible to supply water at the same time as preventing flooding, improving waterway and groundwater health.

So is Stormwater Victoria promoting a single discipline, in a time of multi-disciplinary needs?

Actually we are playing an important transitional role by helping the water and development industry expand its expertise. Stormwater management is often considered the most complex area of water management to provide infrastructure solutions, so we are helping to promote, design and implement more integrated solutions.

We see our role to provide this specialist advice and advocacy until such time that more integrated water solutions are 'automatically' applied by the development industry, government and community.

3. Position Statement: Ecosystem Protection

Goal: Through effective stormwater solutions with minimal resource use and emissions we will maintain, and where possible restore healthy waterways and ecosystems

Guiding Principles:

Stormwater Victoria applies the following principles for environmental stormwater management:

1. Stormwater quality improvements will help protect our water bodies through reduced contamination, turbidity, algal growth, flora and fauna damage. This will aid in biodiversity protection along with economic and aesthetic benefits from healthier waterways.
2. Water related ecosystems are typically the richest in species diversity and abundance.
3. These ecosystems are typically degraded due to unmitigated stormwater flows from developed catchments. This is due to:
 - a. poor quality of untreated stormwater that may be toxic to some fauna, smother vegetation or promote algal blooms and weed proliferation.
 - b. increased flow volumes during runoff events which may cause erosion in stream and changes hydrological response particularly in littoral zones which promotes weed growth.
 - c. more frequent minor flooding commonly expressed as 'bank forming flows' leading to bed and bank erosion
 - d. impervious surfaces limiting groundwater recharge that would otherwise report as baseflows in streams
4. The health of global environments is protected by reducing greenhouse and air pollution, and preventing excessive resource use and waste creation. Stormwater management can be delivered with a reduced environmental footprint by minimising greenhouse emissions, pollution, resource use and waste creation.
5. Environmental targets provide effective, quantifiable goals that government and organisations can work towards. All efforts should be made to have consistent methodology for stormwater related targets.

Setting environmental targets

Much more is understood about our environment than ever before. As knowledge and experience grows, there is a greater understanding of our impact today and what our impact needs to be tomorrow to provide sustainable resource use for future generations. Environmental targets provide a measurable way to work towards long-term goals.

Stormwater Victoria will progressively consult, research and develop environmental targets that it can then advocate to achieve. Examples of targets that can be developed and advocated for Melbourne and Victoria include:

1. water quality treatment targets
2. potable water use reduction targets
3. alternative water use targets
4. environmental flow rates for waterways
5. stormwater infrastructure upgrade targets
6. groundwater use and quality standard targets

4. Position Statement: Community and Stormwater

Goal: The Victorian community is involved and engaged in stormwater management in an integrated and holistic manner within a progressive governance system.

Guiding Principles:

Stormwater Victoria applies the following principles for community and governance of stormwater:

1. Water is vital for life, and is currently priced at a low rate and has opportunities to be adjusted to better reflect its true value. This relates to the ability to harvest stormwater for use, including the ability to improve the landscaping and aesthetics of open spaces, shopping centres and buildings. Any changes to water pricing need to provide access to water for low-income people.
2. Governance is equitable for both current and future generations and across the state of Victoria in both rural and urban areas and addresses the interaction between private and public organisations and individuals.
3. Improved connections across the industry will help improve stormwater management. Regulation and policies from different government agencies should be integrated to achieve the best outcomes on the ground. Stormwater related businesses should find ways to connect where it helps both their business and the industry. Not-for-profits should align advocacy, engagement and projects where it helps promote better stormwater understanding.
4. The role of community is important for stormwater projects across Victoria. Deliberate efforts are made to engage and involve community to transition stormwater management toward ecologically, socially, and economically sustainable practice.
5. Enforcement of stormwater management is essential for the effectiveness and longevity of stormwater infrastructure. Well-communicated enforcement programs to prevent littering and pollution provide better financial and environmental solutions as supported by the community.
6. Stormwater management increasingly involves decentralised, at-source technologies that fundamentally rely on community commitment for wider distribution and effective operation.
7. Innovative stormwater management projects have evolved within local communities, triggered by community groups and their associated municipal organisations, or within new urban development projects designed for environmentally-conscious communities.
8. Integrated water management relies on good communication with the community – residents, businesses, not-for-profit groups and local/State/Federal Government.

Working with community priorities

The historical view of stormwater has been to see it as a problem, potentially causing floods that pose safety and nuisance threats. In response to this, infrastructure was developed to dispose of the rainwater as soon as possible reducing the risk of flooding and associated damage.

This traditional approach causes problems as the rapid flow of stormwater damages the health of waterways and bays due to erosion, channelling, litter and pollutants. The approach also limited the community awareness and involvement in water flow management. Water flows are removed quickly from view, taking litter and contaminants with them, leaving residents with little understanding of the movement, volume and value of water.

Recent changes in the climate has placed stormwater on the community's agenda which has led to a paradigm shift with stormwater now being considered as an asset when managed appropriately.

The stormwater industry has responded by increasingly developing, implementing and involving people in integrated stormwater management that supports the total water cycle through water sensitive urban design that supports community values.