CRC for
Water Sensitive Cities

The multi-functional corridors included throughout the development drove a policy change to mandate 100m waterway corridors in growth areas in Melbourne.

# A new community at Officer

## Reconnecting people and nature on the urban fringe

Trial of new bio-sponge stormwater managment systems demonstrated how flow can be managed to enhance urban waterways.

# Case Study

Prepared by Cooperative Research Centre for Water Sensitive Cities, March 2017.

Australian Government
Department of Industry, Innovation and Science
Business Cooperative Research Centres Programme

# The context

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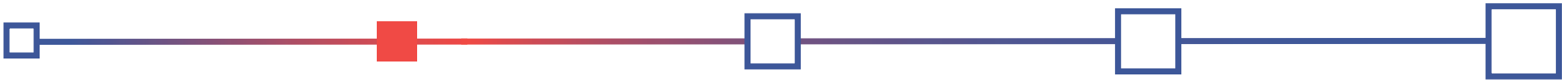
## Project location

Officer is an area on the south-eastern outskirts of Melbourne, Victoria, which had been earmarked as a ‘greenfield’ site for mixed-use development.


## Project scale

The Officer development has been masterplanned as a new urban precinct. By 2030, the area will house 15,000 people and provide employment opportunities for 5,000 people. Unlike in many other developments, the town’s infrastructure – schools, shops, roads, pathways, and waterways – is being built before the release of new residential blocks. Planning and design of the site was led by the state government development agency, Places Victoria.



# Project site

The 340 ha urban development area was previously a semi-rural landscape used for pastoral farming. Originally, the site was once part of The Great Swamp, an area of rich biodiversity inhabited for thousands of years by the Kulin Nation. In the late 19th century, the land was cleared and modified for farming, and a primary agricultural drain was introduced through the site, known as Gum Scrub Creek.

Original site with an agricultural drain running across the land

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Aerial view showing the Officer development site, taken May 2015 (Source: Places Victoria)

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# Collaborators and their roles

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| **Development Agency** | Places Victoria (formerly VicUrban) is the Victorian Government's property development agency. It led the Officer development, aspiring to create a new model for delivering outer urban living. |
| **Waterway manager** | Melbourne Water supported innovation in stormwater management at Officer and was the primary approval authority for the waterway. It manages and maintains Gum Scrub Creek within the 1-in-100-year average recurrence interval flood inundation area. |
| **Water utility provider** | South East Water (SEW) manages and maintains the water and sewerage networks to provide water and wastewater services to business and residential customers in Melbourne's south-east. It helped explore innovative supply and servicing options for the Officer development, including consideration of the role of stormwater. |
| **State regulator** | Department of Environment, Land, Water and Planning (DELWP) is the Victorian Government department that sets the legislative and regulatory framework within which water authorities and property developers must operate. DELWP, SEW, and the Department of Health and Human Services were consulted regarding the business case for a pilot project investigating the feasibility of treating stormwater to potable quality. |
| **Local government** | Cardinia Shire Council manages and maintains the Officer public realm, including minor drainage infrastructure (but not the area of Gum Scrub Creek under Melbourne Water's jurisdiction). |

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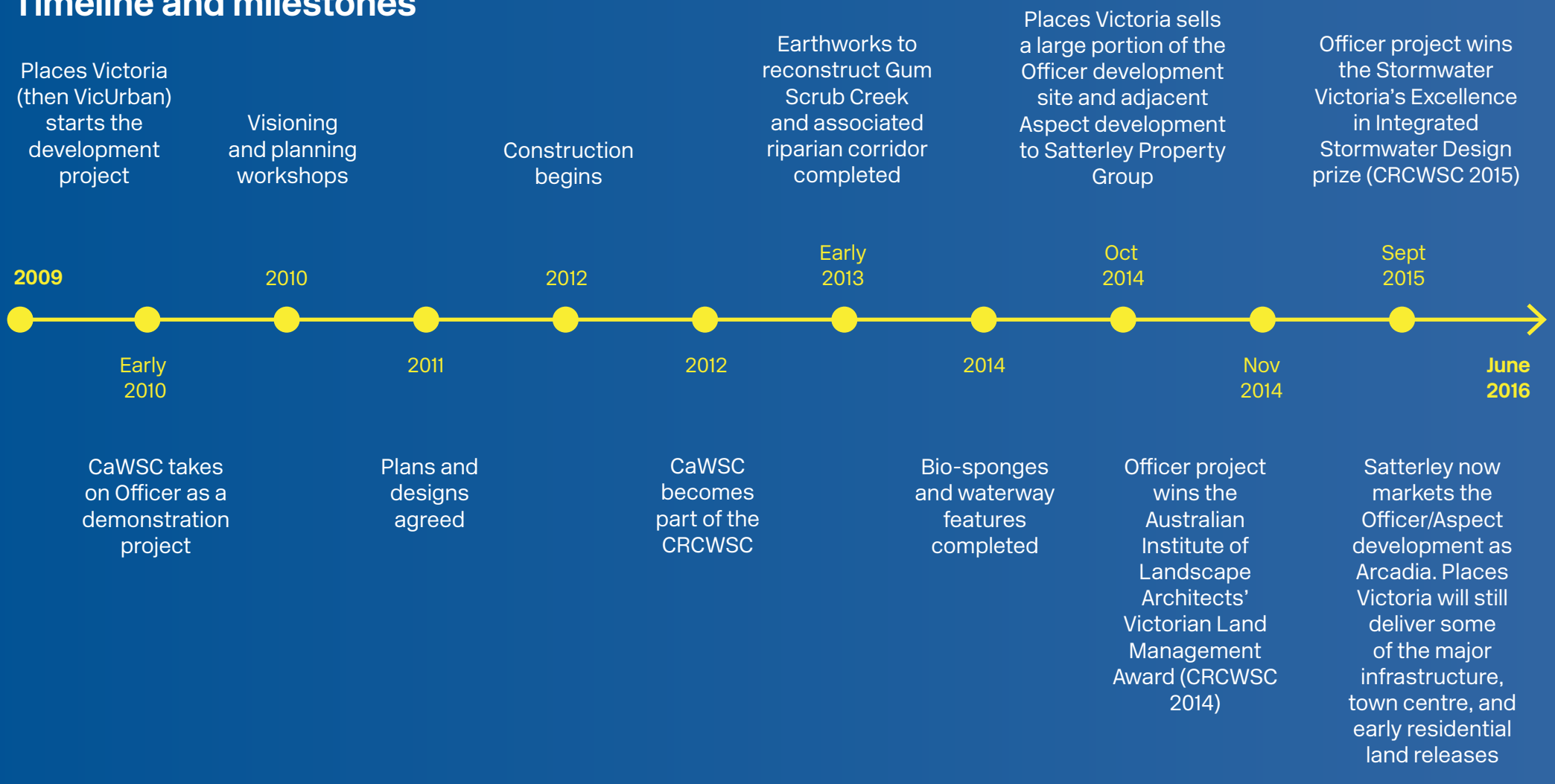
| **Researchers** | Cooperative Research Centre for Water Sensitive Cities (CRCWSC) provided research through the research project *Integration and Demonstration through Urban Design* (Project D1.1). Between 2010 and 2012, researchers worked through the CRCWSC predecessor program, Cities as Water Supply Catchments (CaWSC). |
| **Lead design consultant** | Outlines Landscape Architecture led and coordinated the planning, design, and delivery of the biosponge and reconstruction of Gum Scrub Creek. They were instrumental in fostering collaboration, building consensus between project stakeholders, and incorporating this collective knowledge into the built outcome. |
| **Other consultants** | Australian Ecosystems undertook seed collection, plant propagation and coordination, site preparation, and planting of almost 400,000 plants within the Gum Scrub Creek corridor. Calibre Consulting (previously Brown Consulting) delivered civil consulting services for Officer, including ground engineering, transport, and water infrastructure. Calibre Consulting's planning and design of stormwater infrastructure within Officer development's urban area directly interacted with water management initiatives within Gum Scrub Creek corridor. Neil Cragie, an experienced waterway design consultant, developed and delivered the design for Gum Scrub Creek corridor. Biosis provided environmental management advice for the site. |

# Timeline and milestones



# The drivers

## 1. Ecological conditions required a bespoke design response

Officer is home to the vulnerable Growling Grass Frog, meaning it is subject to the Commonwealth EPBC Act Policy Statement 3.14. This led to the designation of a 100m wide riparian corridor adjacent to Gum Scrub Creek within the development site. The creation of a land reserve was seen as an opportunity rather than a constraint – with a revitalised waterway corridor providing potential for amenity, recreation, stormwater management and improved ecological health.

Gum Scrub Creek and this riparian corridor focused the attention of collaborators around the range of ecological values that could be delivered, including water quality, biodiversity in and beside waterways, and the creation of water flows similar to pre-development levels.

## 2. Stakeholder ambition drove a new vision

The Victorian Government development agency, Places Victoria, saw an opportunity in the Officer site to create a new benchmark in outer-urban sustainability: "We had a very strong mandate around demonstrating innovation, and particularly around demonstrating different ways of delivering affordable and sustainable housing."

Together with other stakeholders, a vision was created for Officer that saw the development as an exemplar for amenity and water efficiency, taking opportunities to reimagine outer urban development in a way that accommodated both nature and people. The three core objectives supporting this vision were to:

- provide high quality open spaces to support higher density outer urban development;
- reduce potable water demand by 70 per cent; and
- reduce carbon pollution by 50 per cent.

This vision was sufficient to attract funding to support a new approach at the site. The Clinton Climate Initiative (2015) was so interested in this possibility that in 2009 they selected Officer as one of 16 international projects to invest in as part of their Climate Positive Development Program.

## 3. A collaborative environment was created that sparked new ideas

The development, regulatory, and research collaborators on the Officer project first got together in early 2010 at a visioning workshop organised by Places Victoria.

Importantly, at this early stage of the project, each stakeholder was invited to bring their own knowledge, experience and ideas to the table. This enabled collaboration between disciplines and provided a forum to explore new design ideas and possibilities. Four areas where workshop participants wanted to collaborate and explore water sensitive opportunities for Officer were:

- developing an overall water sensitive vision;
- analysing ecological options for Gum Scrub Creek;
- producing a strategy for stormwater management; and
- developing a business case for stormwater to be treated to drinking (potable) standards.

**The creation of a common vision between all key stakeholders at the start of a project creates a sense of ownership, drives commitment and facilitates sharing of resources and responsibilities.**

**"Trust is an important currency for innovative projects. To accept new risks and drive new solutions, trust must underpin the relationship between stakeholders. By building and maintaining strong relationships within a local network, an environment is created where innovation and more likely - and more successful."**

## 4. Stakeholder commitment and the presence of trust underpinned success

When the Officer project was launched in February 2010, it had high level political and government agency support garnered through connections between research and government leaders and their history of working together.

For example, people from Places Victoria, Melbourne Water and Cities as Water Supply Catchments (CaWSC) had previously collaborated in the late 1990s on the very successful Lynbrook water sensitive urban development. Some people involved in this earlier collaboration had maintained their professional relationships, which helped get the Officer project started.

“Ultimately, it is the shared vision, common objectives and willingness of all stakeholders to collaborate that enables challenges to be overcome and aspirations for the implementation of innovative urban stormwater management outcomes to be realised.”

**— Tony Wong, CRC for Water Sensitive Cities**

# 5. An opportunity arose to apply new research in advanced stormwater management

Reseachers in water sensitive urban design (firstly CaWSC then CRCWSC) became involved in the project in 2010 and saw Officer as an opportunity to test and demonstrate the latest science and knowledge, which could:

- improve the ecological health of Gum Scrub Creek by managing the quantity, frequency, and quality of urban stormwater runoff; and
- identify appropriate end uses for harvested stormwater.

Initial ecological assessments by researchers demonstrated that the development of the area would create a volume of stormwater well in excess of natural conditions. This revealed an opportunity for extensive stormwater harvesting and infiltration to reduce and slow stormwater runoff to Gum Scrub Creek, therefore preventing deterioration of water quality, avoiding erosion and protecting biodiversity in and around Gum Scrub Creek.

Under a business-as-usual scenario, piped stormwater drainage infrastructure would be constructed with the development, capturing runoff from impervious areas and discharging stormwater to the Creek quickly, creating higher peaks and higher volumes of water than would naturally occur. Water quality planning requirements in Victoria meant that the water quality of stormwater runoff was managed to meet Best Practice Guidelines, and wetlands and detention basins were planned accordingly. However there was no legal requirement to apply stormwater management techniques that seek to improve the volume and timing of stormwater flows to mimic natural conditions – this aspect became the focus for demonstration on the Officer site.

Research showed that all in-stream ecological values were very likely to be severely degraded or lost under a conventionally-designed drainage scheme, while most could be protected (and some currently lost values restored) if stormwater harvesting and dispersed bioretention systems were included in the design. It was demonstrated that the inclusion of stormwater harvesting was important to remove stormwater flow from the creek, but that if 9ha of Melaleuca Swamp was included as an enhanced infiltration and evapotranspiration area (or bio-sponge), this would be sufficient to create natural flow patterns that would prevent ecological degradation of the creek. If however stormwater harvesting for local uses was not included in the scheme, around 15ha of bio-sponge would be required to deliver ecological outcomes.

It was also shown that a whole-of-catchment approach was needed to protect Gum Scrub Creek. If advanced stormwater management techniques were applied on the case study site but not in surrounding developments in the catchment, then the creek would be degraded and key ecological values would be lost.

As it was not possible to influence the whole catchment, the Places Vic site was used as a pilot site for bio-sponge technology, to demonstrate what could be delivered in other developments in the future.

Creek channel with riparian trees

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# The innovations

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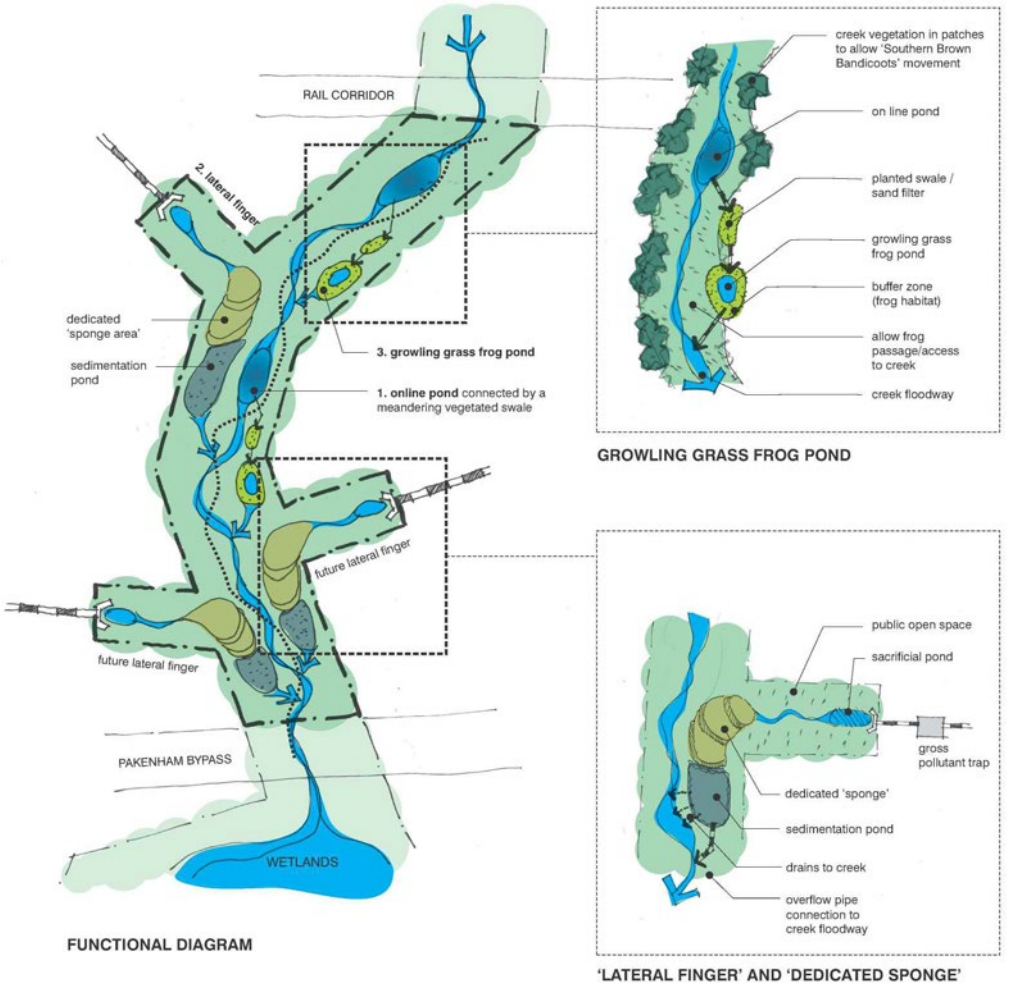
# 1. Creation of lateral green corridors to drain a flat site

On a flat site like Officer, installation of traditional piped drainage means that pipes end up becoming very deep in order to achieve required cover depths and drain by gravity. This then restricts opportunities to daylight channels or incorporate treatment features. Instead, urban design can include overland drainage corridors which act to keep stormwater on the surface.

This theory was applied in the Officer development by creating a green drainage corridor known as the lateral finger. A 50m lateral “finger”, running north-west, acts as a tributary to the main creek and crosses an open space reserve between future residential developments. A rock-lined depression (or swale) carries stormwater runoff from the developed urban area along the lateral corridor and down to a “bio-sponge” before joining the main creek. This corridor was constructed in developable land, but provided a mutli-functional solution for drainage, amenity and recreation which meant its business case was clear.

**“We needed to balance the land take, as they like to call it in development speak [for the lateral finger], with the amenity of the people living on the site.”**

The early concept plan for Gum Scrub Creek, showing a Growling Grass Frog pond, bio-sponges, and lateral fingers



# 2. Piloting of bio-sponge technology for stormwater management

Plants becoming established as part of the bio-sponge by March 2014 (Source: Outlines Landscape Architecture)

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Officer represents a successful demonstration of the bio-sponge technology. Stormwater from the site is directed to a “bio-sponge”: a vegetated area that filters and reduces the amount or volume of runoff into the creek. Researchers determined that conditions approaching the pre-development water flows could be achieved by using bio-sponges next to the creek in the 100m riparian corridor mandated by the federal government to protect the Growling Grass Frog.

Fortunately, as this riparian corridor was protected, the bio-sponges were not in competing with other potential development and did not represent a land ‘cost’.

700,000 plants were put into the bio-sponge from seedlings grown by five local small-scale nurseries and one larger one, Australian Ecosystems. The nurseries grew plants from native seeds collected on the site and from stores at La Trobe University.

# **Technology focus:** Bio-sponges

## What is it?

The hard surfaces of urban landscapes create a large and unnatural volume of stormwater compared with natural landscapes. This excess stormwater often pollutes and damages waterways and wetlands.

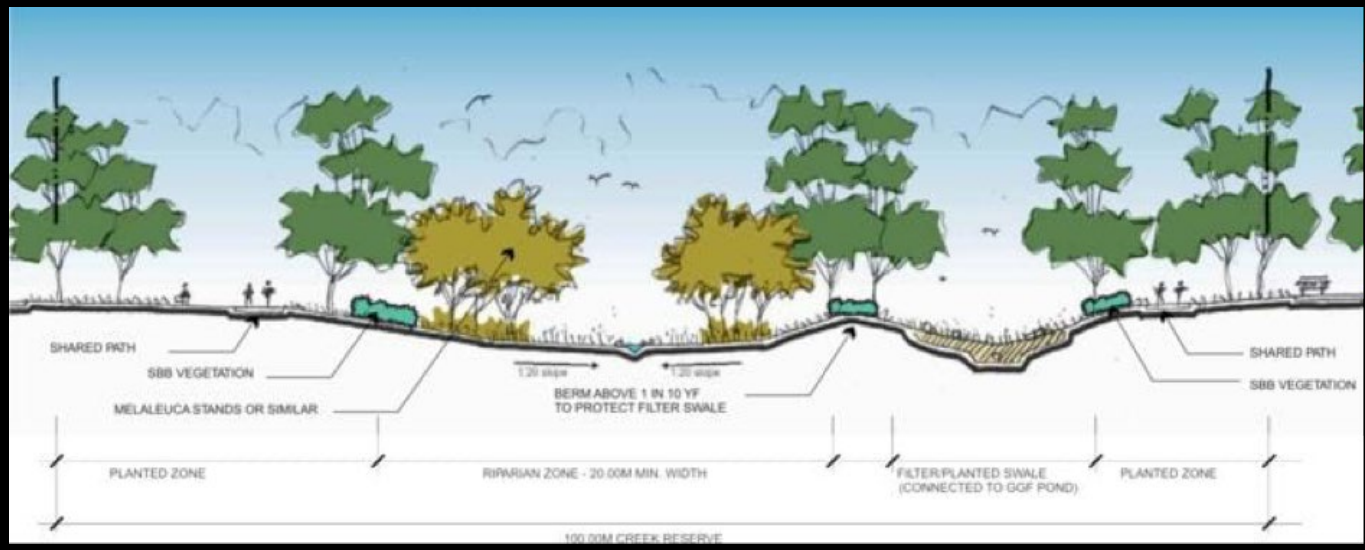
Bio-sponges include dense planting of native sedges and shrubs into a soil that water can readily pass through. They are surrounded by a low wall or “bund” that encourages temporary water storage, infiltration into the soil, and evaporation. Water then slowly trickles below the surface into the nearby creek.

## What are the benefits?

Bio-sponges slow and significantly reduce the flow of stormwater into local waterways. They naturally filter the water. In contrast to biofilters (which primarily function to improve stormwater quality), bio-sponges are designed to reduce the volume or quantity of stormwater leaving the site.

Bio-sponges work to restore the ecosystem health of urban waterways by mimicking the natural flows into waterways and natural filtration processes of vegetated landscapes.

They require a relatively large area to reduce stormwater flow and are less efficient in less porous soils, such as clay. They are not suitable in all contexts. However, Officer’s 100m wide corridor along Gum Scrub Creek provided an ideal setting to investigate the ability of bio-sponges to improve the ecosystem health of urban waterways.




Outlines Landscape Architecture https://watersensitivecities.org.au/content/gum-scrub-creek-wins-2014-australian-institute-landscape-architects-award/

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“Without the support of a visionary developer, state government authorities, a committed consultant team and expert contractors, the extent of works delivered on site would not have been realised”

**— Ross Allen, CRC for Water Sensitive Cities**

# 3. Construction of an ecologically rich creek system

Visualisation of the improved Gum Scrub Creek, including adjacent bio-sponge areas

The Officer site now boasts a constructed creek system that is based on Gum Scrub Creek and transforms the old agricultural drain.

The creek system now incorporates a meandering low-flow system connected by sedimentation ponds, bio-sponge systems, lateral fingers and habitat ponds that will be surrounded by public open space and connect the new suburbs via shared paths and bridges.

Its construction included the relocation of 600,000 cubic metres of silty soil for re-use within the housing areas, the propagation of 5kg of site-collected indigenous seed by 6 locally based nurseries, the installation 60,000 square metres of biodegradable jutemat and the planting and maintenance of 400,000 plants over the hottest, driest, wettest, windiest, muddiest and coldest months by a committed team.

Gum Scrub Creek supports the regeneration of a range of endangered and threatened flora and fauna. Two dedicated Growling Grass Frog ponds were constructed with innovative passive systems for their maintenance.

Habitat corridors were designed through plant species selection and planting profiles. Open, Closed and Permeable planting profiles, responded to movement patterns of the Southern Brown Bandicoot, as well as providing opportunities for public open space connections along the length of the creek.

# The outcomes

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## 1. Demonstration of bio-sponge construction

The project successfully demonstrated the delivery of various techniques that can be used to slow and treat stormwater while promoting infiltration and evapotranspiration to help to replicate natural flow patterns. Delivered techniques included lateral drainage corridors, bio-sponges and constructed creek systems.

The benefits of the integrated bio-sponge system used at Officer are that it:

- reduces the speed at which water enters the creek during high rainfall;
- increases groundwater recharge;
- reduces the volume of stormwater entering the creek; and
- treats water flowing towards Gum Scrub Creek to improve quality of the water flowing downstream.

Looking north in the Officer development towards local office blocks, February 2015 (Source: Outlines Landscape Architecture)

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## 2. Policy change for waterway corridors

Based on the demonstration at Officer, real value was recognised in establishing protected riparian corridors around waterways for both amenity and habitat benefits. As a result, Melbourne Water have now mandated 100m riparian corridors for waterways in all future greenfield developments.

**"We produced an outcome that goes beyond its initial function of providing infrastructure to neighbouring residential developments and enters into the realm of a built habitat and recreational spaces within a new community."**

## 3. Notable increases in biodiversity and public amenity

There is anecdotal evidence that:

- Biodiversity has increased: 6 months after bio-sponge construction it was reported that, “The native plants have gone berserk. We already have birds coming back, and we’ve got kangaroos coming back. All these things are happening now.”
- Public amenity has improved: There is now a meandering creek that passes through a 100m wide strip of natural vegetation that the public can access.

## 4. New relationships and working methods established

The collaboration within the Officer project was valuable from a number of perspectives. The input of research drove new and innovative outcomes, while working alongside industry practitioners allowed researchers to explore how they can how to adjust their solutions to a real life project.

Development partners visit the Officer site during the reconstruction of Gum Scrub Creek, September 2013 (Source: Outlines Landscape Architecture

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**“There was a whole bunch of relationships that were formed that are quite intangible but very important. If we accept that interdisciplinary research is the best chance we have in gaining impact in society, then creating the right environment, language, and relationships amongst our researchers to deliver interdisciplinary research is the building block to that.”**

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# Summary of the outcomes

### Cities as water supply catchments

- Increased groundwater recharge by holding water in the landscape in bio-sponges
- Stormwater quality improved through use of bio-sponges and detention basins
- Improved flow regime by slowing stormwater and promoting evaporation and infiltration

### Cities providing ecosystem services

- 10 hectares of new constructed creek systems created, replacing an old agricultural drain
- Ecologically rich waterway corridors included. Led to mandatory 100m waterway corridors in growth areas in Melbourne.
- Landscape design to support increased amenity and recreation value

### Cities comprising water sensitive communities

- A new model for outer-urban development focussed on increased exposure to nature
- Underpinned by long-term collaboration and shared commitment by stakeholders
- Water is a key element in planning and urban design, by creating lateral green corridors to keep water on the surface

# The challenges

# 1. A whole-of-catchment approach to development was needed to deliver much greater outcomes

The scope of the Gum Scrub Creek development was limited from the outset to the Officer site and its 300m creek corridor. Officer is located mid-catchment, and developers upstream and downstream were not involved in the consultation process. This meant it was difficult to take a whole-of-catchment approach to urban stormwater management. For example, in a whole-of-catchment approach, the stormwater runoff from developments upstream could be investigated to ensure minimal negative ecological impacts along the length of Gum Scrub Creek.

**"There was an upstream development above Officer. Without the commitment from those developers and without the regulatory framework it was difficult to make the case to take action across the board [and get involved in water sensitive innovation]."**

The Officer development site is part of a larger catchment with other developments happening up and downstream (Source: Places Victoria)

## 2. Innovation needed to be embedded from the beginning

In pilot demonstrations, such as Officer, experts and thought leaders need to be brought into the process as early as possible, preferably from the start of the development. This will maximise the value of the latest research and ideas and ensure everyone understands the goals.

There had already been significant work over several years at Officer before the researchers were involved with the pilot demonstration. "There was history already ... the consultant was already engaged to do the waterway and drainage strategy. Some of the opportunities we identified challenged some work that was already well progressed; this was a challenge."

This meant that the collaborators in the project did not start on an equal footing with each other, which often resulted in collaboration between participants being limited to top-down approaches from one set of stakeholders to another. For example, the researchers would provide the developer and consultants with their technical input and advice, and the developer or consultants would tell the researchers what was practical or not rather than discussing possible solutions together.

**"If I had my time again, I would have liked to have a very clear conversation at the start of the project around how much design the research team can do, and then have our engineer check it out. If we'd had the relationships clarified up front, I think it would have worked better."**

## 3. When different disciplines work together there can be mis-understandings

With multidisciplinary projects come challenges for the various stakeholders such as researchers and private industry working together.

For example, the research team working at Officer came up with a list of plants for the bio-sponge that the landscape architect identified as being not amenable to the public: "We need clean-trunked trees for surveillance and safety issues and to give people a feeling of openness."

Facilitators can help collaborators reach a shared understanding so that the value of the different sets of knowledge and ideas that collaborators bring can be fully harnessed.

**"Stakeholders always have different drivers, different understandings and different timeframes for delivery; so there are challenges in accepting risk to do things differently from the norm."**

## 4. Recycled water and stormwater were seen to be in competition

The Officer development is located in a mandated dual supply zone, meaning the development receives both potable water (drinking-standard water) and recycled water from South East Water.

This meant that there was no clear driver to increase the security of water supply or to diversify water supplies to include alternative water sources. As recycled water provision was mandated, it was felt that there were limited opportunities for the use of stormwater for non-potable uses across the site. Ultimately, a pre-determined decision at a wider catchment scale constrained the possibilities for stormwater management.

However, research for the site showed that stormwater harvesting still had potential to:

- offer an alternative water source to further improve water security, especially if it could be treated so it could be used for drinking water; and
- irrigate open space adjacent to waterways to avoid potential leaching of recycled water into the creek (increasing nitrogen concentrations and potentially adversely effecting water quality).

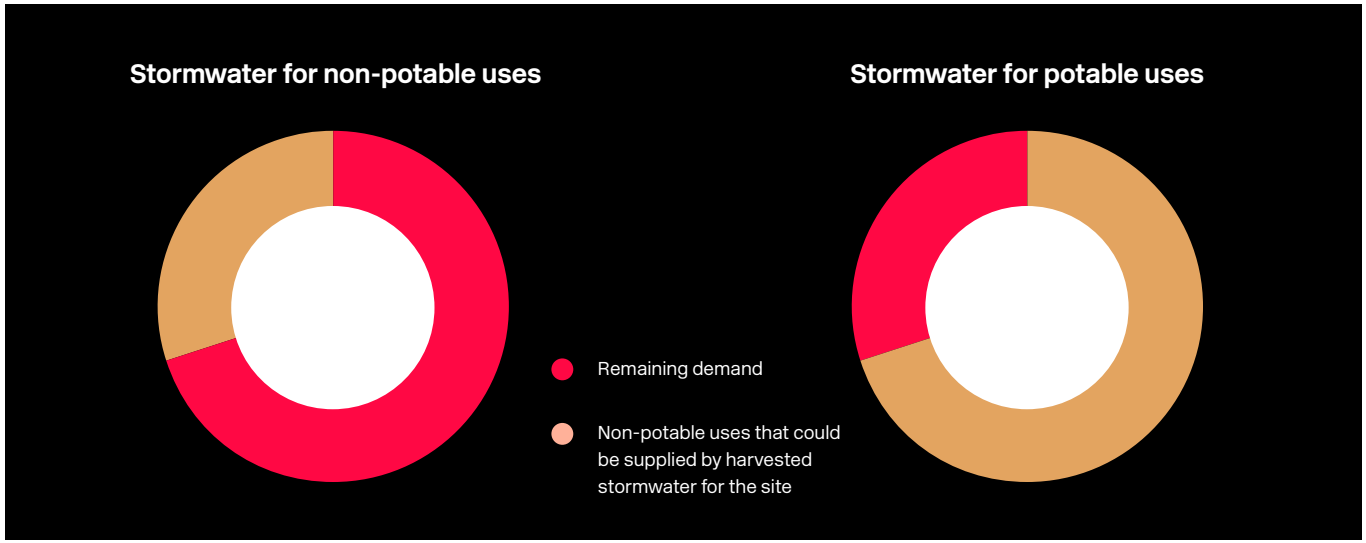
A review of all integrated water management options against key objectives is needed for a site to ensure the most beneficial options are selected at the planning stage.

## 5. The concept of harvesting stormwater to supplement potable water supply was challenging for stakeholders

Research was conducted to explore how mains, recycled and stormwater supplies could be allocated to specific uses in combination. It was found that up to 30 per cent of Officer's yearly total water demands (1,100 ML) could be met by harvesting stormwater for non-potable demands. If stormwater were treated for potable use, it could provide a total of 70 per cent of the development's water demands.

The researchers' suggestion to explore an option to harvest stormwater for potable supply challenged the others involved in the demonstration.

Innovative solutions often carry increased risk due to inherent unknowns and uncertainty. In the case of Officer, the development of a business case was considered necessary to determine if the benefits of stormwater harvesting warranted the cost. To support this, Officer collaborators engaged a facilitator from the Department of Treasury and Finance to help develop a business case to take stormwater and treat it to potable standards. The study recommended that the volume of stormwater that was to be treated was considered relatively small compared with the potential cost to implement and maintain the technology, making it economically unattractive. However, the assessment was based predominantly on cost and did not include evaluation of potential non-market benefits of stormwater harvesting, including ecosystem health and public amenity.



## 5. Changes in organisational aims and personnel are a challenge for long-term projects

While there was initial alignment of vision for Officer between the stakeholders, this diminished over time, reflecting a shift in the political landscape, change in individual champions involved, and changing organisational priorities.

The change of state government at the end of 2010 meant Places Victoria had a new board appointed in 2011 and a new mandate that focused on urban renewal, particularly on government land, rather than on sustainable greenfield development.

Having a strong leader or champion capable of motivating and engaging all project partners and stakeholders throughout the life of the project is important for continuity and commitment.

**"They had so much change of staff, loss of staff, change of organisational focus, change of political environment, and change of economics during the project. The reality of a long-term project is that things are not static. We did not have a strategy about how we will adapt to changes in focus and aspirations as they occur over time."**

**"The biosponges have not been exploited as much as they could have been. I think we could have learned from them at all stages – design, implement, manage – and we could be tracking their performance."**

## 6. Monitoring and evaluation wasn't prioritised in the programme or budget

Monitoring and evaluation was considered by all parties to be important for understanding how well the bio-sponges and other water sensitive innovations were working. However, the time lag to fully establish the bio-sponges and their vegetation meant that researcher involvement in the project had finished before any significant monitoring or evaluation could be initiated.

The fact that the bio-sponges were additional to the regulated water quality performance of the overall development also meant that in a tight economic environment, monitoring and evaluation took a lower priority.

As a result, there was no monitoring program for the Officer project, and there is no objective means of measuring the social or ecosystem benefits of the project. There is only anecdotal evidence of the benefits of the bio-sponges to the site's ecology and residential amenity.

# The lessons

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# This project demonstrates...

- **Your vision is my vision:** The creation of a common vision between all key stakeholders at the start of a project creates a sense of ownership, drives commitment and facilitates sharing of resources and responsibilities.
- **Trust is an important currency for innovative projects:** To accept new risks and drive new solutions, trust must underpin the relationship between stakeholders. By building and maintaining strong relationships within a local network, an environment is created where innovation and more likely - and more successful.
- **New stormwater management techniques can be used to better replicate natural conditions:** The project successfully demonstrated the delivery of various techniques that can be used to slow and treat stormwater while promoting infiltration and evapotranspiration to help to replicate natural flow patterns. Delivered techniques included lateral drainage corridors, bio-sponges and constructed creek systems.
- **Evidence can drive policy changes:** The creation of an ecologically rich riparian corridor at Officer site provided valuable evidence to support a change in policy – requiring a 100m riparian around waterways within new greenfield development areas.
- **Benefits of integrated masterplanning outweighed the costs:** The multi-functional corridors throughout the development provided ecological and social values, bringing communities closer to nature.
- **Local use of stormwater for potable supply needs further research:** The use of treated stormwater to supplement potable supply was not found to be viable at this scale on a cost basis, however further research is required to understand feasibility thresholds and to better evaluate ecological and social benefits of stormwater harvesting.

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# Reflections and what to work on next time...

- **Catchment scale planning:** Comprehensive ecological outcomes require a catchment-scale approach to planning, which may require consultation with upstream or downstream stakeholders and the appropriate land and catchment planning authorities.
- **Plan for innovation:** Innovation requires a change in thinking from the very beginning of a planning and design process. Take time to develop a vision from the start, then make the roles and responsibilities of stakeholders clear throughout the process.
- **Join the dots:** Make use of intermediaries with skills to connect all stakeholders and translate the different languages used by each.
- **Strategic IWM Planning:** A review of all integrated water management options against key objectives is needed for a site to ensure the most beneficial options are selected at the planning stage.
- **Drive like a champion:** Having a strong leader or champion capable of motivating and engaging all project partners and stakeholders throughout the life of the project is important for continuity and commitment.
- **Don't just do it, prove it:** Building in time and budget for monitoring and evaluation is crucial to recording and learning from innovations.

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# Further information

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# About us

The Cooperative Research Centre for Water Sensitive Cities (CRCWSC) was established in July 2012 to help change the way we design, build, and manage our cities and towns by valuing the contribution water makes to economic development and growth, quality of life, and the ecosystems of which cities are a part.

The CRCWSC is an Australian research centre that brings together many disciplines, world renowned subject matter experts, and industry thought leaders who want to revolutionise urban water management in Australia and overseas.

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