National conference update: Get set for SET2024!

Stormwater Insights

Edition 1
June 2024

STORMWATER AUSTRALIA

Innovative airport stormwater project

New drainage modelling **code of practice** for WA

Stormwater Australia **regional news**

What's new with **SQIDEP**

Inside: **addressing road runoff**

Atlan
STORMWATER

Joy in water

We believe clean waterways
are a right not a privilege.

TREATMENT

SQIDEP RANGE

DETENTION

CONVEYANCE

RETENTION

MAINTENANCE

STORMWATER SOLUTION SPECIALISTS

SPECIFY WITH CONFIDENCE

Questions? More information?
We are here to help.

1300 773 500
atlan.com.au

Contents

President's Report	3
Executive Officer's Report	4
Stormwater Australia News	5
New code of practice for urban drainage modelling for WA	8
SQIDEP News	10
We need to talk about highway runoff	11
Regional News	13
Gross pollutant traps give valuable insights into sources of plastic pollution	19
Industry Insights	22
Conference update: SET2024	24
All in a Day's Work	27
New WSUD Guidelines	28
Case study: Large on-site detention system for premium residential development	30

Stormwater Insights is the official publication of Stormwater Australia

Stormwater Industry Association Ltd
ABN 59 093 578 164

We acknowledge the Traditional Custodians of the land on which we live and work. We pay respect to their Elders past, present and emerging whose knowledge and wisdom have been protecting and sustaining our water and lands for tens of thousands of years.

On the cover:

Spiire's Melbourne airport stormwater harvesting scheme pushes the boundaries of how treated stormwater can be reused.

Read about it on page 22.

President's Report

Welcome to our new ***Stormwater Insights*** publication!

We as a board are excited to share stormwater insights, good news stories and industry lessons with readers around Australia and beyond through this new publication.

Managing water on the driest inhabited continent on earth is never going to be easy. Sharing experience and knowledge will be vital to effectively address our current and future challenges.

Climate challenges

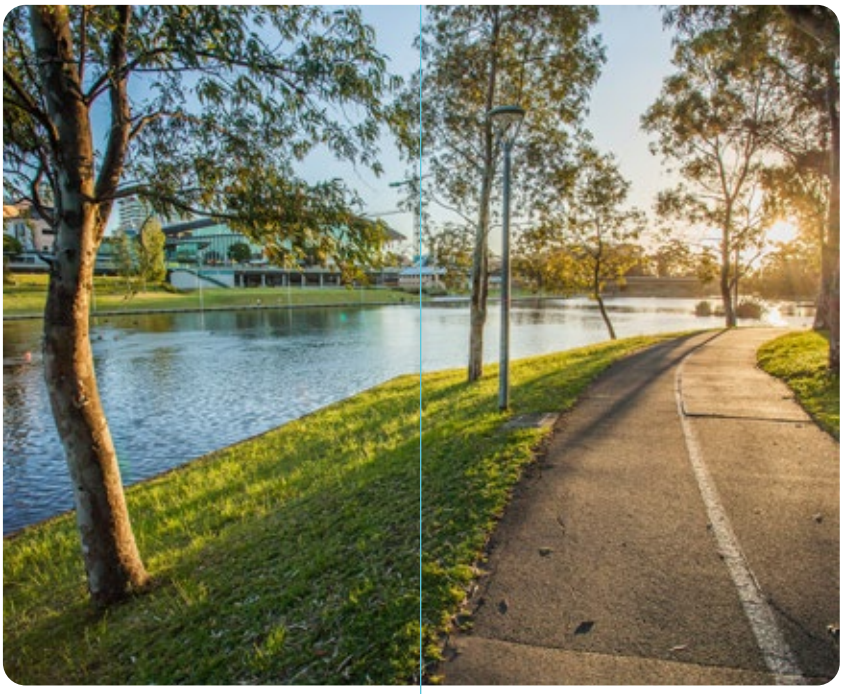
Stormwater professionals face many challenges in the future. One of these is climate change, which is leading us on a journey of extreme weather events, associated natural disasters and rising sea levels.

Many of our stormwater systems were never designed to deal with some of the extremes we're seeing across the country. The relatively recent term 'rain bomb', coined by Brisbane Lord Mayor Adrian Schrinner, aptly describes the extreme weather events experienced by our communities over the last few years. In a world where 'business as usual' can be baked into our stormwater management structures, the kind of transformational change needed to create agility in a rapidly evolving future will demand collective thinking and innovation.

Ageing infrastructure

In addition to designing for a relatively uncertain climatic future, there are also challenges with managing ageing stormwater assets already in the ground. Due to the age of our cities in Australia, many local governments are faced with thousands of kilometres of stormwater infrastructure that is nearing its end-of-life.

Many local governments cannot afford to pay for the expensive combination of new infrastructure and asset renewal of existing stormwater pipe infrastructure. Funding the future transition is front of mind for many leaders, in Australia and globally.



Strategy, innovation and collaboration

At the beginning of 2023, Stormwater Australia published its ***Draft Strategic Plan*** for comment. We are strongly focused on the future and building on the great work already done by the CRC for Water Sensitive Cities and many other contributors around the country over the last 10 years.

We want to focus on what needs to be done to design, build and maintain sustainable, resilient cities and towns of the future. Globally, much work is being done on how to plan, design and construct climate-resilient infrastructure. It is vital that in undertaking this work we take a long-term view; no city, town or region can transition to sustainability and resilience overnight.

Innovation in all areas is also critical. This includes innovation in technology to improve stormwater maintenance, evolving our design standards, and engaging with our communities in new ways. Stormwater Australia wants to support the industry by sharing new tools, training and approaches with members around the country. Our ultimate goal is to better engage with our members and their communities, so that we can all learn faster and more effectively.

The water industry is already collaborative, but the complex nature of the challenges we face needs even more cooperation around the globe. We need the smartest people worldwide to work together to co-design and adapt for the future. Sharing things that have or have not worked is fundamental to the growth and evolution of the industry.

All these issues will be discussed at our National Conference in Brisbane (SET2024, 8 to 11 October, Brisbane Convention Centre), so we will see you there!

As a board, we look forward working more closely with our members and their communities to face our future challenges together.

With thanks, Cath

Cath Thrupp
President and Chair

Executive Officer's Report

I'm thrilled to introduce the inaugural edition of ***Stormwater Insights***. We have created this publication to meet the critical need within the stormwater industry to improve communication and share knowledge both within Australia and internationally.

As with any industry publication, ***Stormwater Insights*** relies heavily on regular contributions from members and stakeholders. I encourage you to share your expertise and submit stories for upcoming editions. Additionally, suppliers of goods and services are invited to advertise. ***Stormwater Insights*** will provide an avenue to showcase offerings to the broader stormwater network.

Upon joining Stormwater Australia in November 2023, I quickly learned that industry professionals are affectionately referred to as stormies. I've been deeply impressed by the unwavering passion and commitment that stormies exhibit towards preserving our waterways and oceans. Our members are continually investing significant resources into developing novel technologies and methods to improve stormwater management and quality.

SQIDEP – an industry-driven initiative

This commitment is strongly backed by Stormwater Australia through our Stormwater Quality Improvement Device Evaluation Program, known as SQIDEP. This program's purpose is to validate the performance of stormwater quality devices and technologies. SQIDEP emerged as an industry-driven initiative, providing a robust method for independently assessing devices and scrutinising manufacturers' claims.

Stormwater Australia has brought together a group of independent experts to rigorously evaluate these claims. Devices that pass the assessment are eligible to receive the prestigious Stormwater Australia stamp of verification.

Increasingly, local councils and industry stakeholders are mandating SQIDEP verification as a prerequisite for approving stormwater device installation. We strongly advocate for all local authorities to consider incorporating the SQIDEP pathway into their evaluation of stormwater devices. This ensures that installed devices are reliable and effective, and contributes more broadly to improved stormwater management practices.

Stormwater Australia membership

Stormwater Australia operates as a member-based organisation, collaborating closely with our state counterparts in Western Australia, South Australia, Victoria, New South Wales, and Queensland. We aim to improve systems and processes to ensure that we provide a relevant and important service to our valued members and the broader industry.

We extend a warm invitation to new members to join our community. If you would like to find out more about membership benefits and how to join, visit our website at www.stormwateraustralia.com.au.

We look forward to welcoming you aboard and working together to advance the goals of our vital industry.

Industry knowledge sharing

The frequent headlines around extreme weather events are a clear testament to the need for a stormwater association that is unified and efficient. Flooding rains are happening more often and exerting immense strain on our infrastructure, exacerbating the challenges posed by ageing systems. The devastation from these events ripples through governments and households nationwide and is increasing our insurance premiums.

We, as an industry, we are committed to exploring innovative approaches to mitigate the effects of stormwater events. Sharing information and working together is key to this. With our combined knowledge and diverse expertise, we can help create a sustainable future.

National conference

Our upcoming national conference, scheduled from October 8 to 11, 2024, at the Brisbane Convention and Exhibition Centre, presents an exceptional opportunity to engage with industry experts from Australia and beyond. Attendees can meet manufacturers and suppliers of goods and services at the exhibition, fostering valuable connections.

The conference program includes varied topics and speakers, making for a stimulating educational experience. We're also organising workshops and field trips, which promise valuable learning and networking opportunities.

The conference social program also includes many events for networking and socialising. From the Welcome Reception to the Conference Dinner and optional tour to Tangalooma Island, attendees can reconnect with old friends and forge new relationships.

Another highlight that we're looking forward to is the National Awards, which celebrate excellence among state finalists.

This promises to be an eventful and memorable conference, and we look forward to welcoming you there.

I hope you enjoy this first edition of ***Stormwater Insights***.

Bryan Ward
Executive officer

Stormwater Australia News

What's happening at Stormwater Australia

Meet Sophia Adameitis, Stormwater Australia's new SQIDEP administrator

Sophia Adameitis joins Stormwater Australia as SQIDEP administrator.

Stormwater Australia is delighted to welcome Sophia Adameitis to the team as SQIDEP administrator, based in Goulburn.

Sophia has a professional background in administration and has completed qualifications and training in a diverse range of areas. She holds bachelor's degrees in both commerce (majoring in supply chain management) and psychological science, and a Certificate III in Business Administration. She has also completed other courses in a range of areas, including strategic human resources, payroll, meta-analysis for data science, conflict resolution and business analytics.

Sophia will be responsible for managing SQIDEP applications – from allocating evaluators, through to coordinating workshops involving evaluators and Stormwater Australia, preparing final reports and all the admin tasks in between.

Sophia's diverse skillset gives her a solid base for her role.

"I'm really enjoying learning about the stormwater industry," Sophia said.

"My unique background in admin coupled with my studies in human relations will definitely be a benefit when it comes to allocating assessors, working with people and determining conflicts of interest. Aspects of my commerce degree will be useful in my role too".

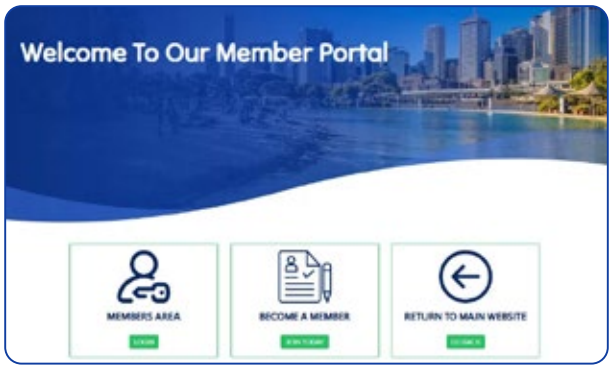
When not at work, Sophia enjoys travelling, working out and reading. She'd love to find more time to dedicate to sport but has recently been prioritising study. Sophia is proud of her Ukrainian heritage and spends a lot of time with her family with whom she speaks fluent Russian.

Sophia takes over this role from Antoinette Hewitt who resigned in March 2024. We thank Antoinette for her contribution to our SQIDEP program.

Welcome, Sophia!

Changes in the pipeline

Corporate (sustaining members operating in multiple states) members can now join or renew memberships through our new membership portal at https://siaau.memberjungle.club/. Read on to find out about this and a few other administrative changes that are happening at Stormwater Australia.



New membership system

Stormwater Australia has introduced a new online membership system, powered by Member Jungle. Corporate Members can join or renew their membership through our website and the system also has a mobile phone app. Members can easily update their records, view their digital membership card and contact us.

Corporate memberships

Sustaining members are now referred to as 'corporate members' as they are members that operate in multiple states. Another important change is that corporate members can have up to 99 employees on their membership at no additional cost. The primary member is the main point of contact for membership renewals and is the only person in the membership who can vote at a Stormwater Australia AGM or special meeting.

System and process improvements

Together with the state stormwater organisations, we are also discussing system and process improvements to make our associations more efficient and user friendly. Depending on the outcome of these discussions, we may propose some constitutional changes for Stormwater Australia. We'll provide more information soon.

Two new directors for Stormwater Australia

Following the recent call for new directors, Stormwater Australia is delighted to introduce two new directors to the board: Rob Graham and Sue Grau.

Rob Graham says the human side of water management is a focus for him, and he is looking forward to hearing the views of different stakeholders.

Rob Graham, a water resources engineer based in Sydney, said he nominated for the board because he wanted to give back to the industry he has been part of for decades.

For 25 years, Rob worked for 12d Solutions as a water modeller specialising in urban drainage, software development and training. He brings this solid technical background to his role as director and is looking forward to putting his excellent listening skills to use.

"I'm looking forward to hearing from the range of stakeholders. There are so many great ideas and solutions out there," he said.

Like many in the industry, Rob has a genuine passion for water.

"I'm a sailor and my ancestors were fishermen. I've always felt an affinity with the water; it feels like part of me.

> "I'm looking forward to hearing from stakeholders. There are so many great ideas and solutions out there."

"Stormwater Australia is really concerned about sustainability in the water sector. We need to take care of water from the moment it falls from the sky, and this is where I want to put my energy".

"Stormwater Australia has really got people talking about sustainable water management in a way that it wasn't talked about 30 years ago. An important part of our job now is to keep this awareness going – to make sure it continues in the coming generations, to make it a part of our culture and our lives.

"Good water management is not just about funding and projects – it's about people being involved. The human aspect will be a top focus for me as a director."

Rob sees one of the major challenges facing the stormwater industry will be increased flooding in the future – not only for the devastation it causes but the attention it requires might overshadow other pressing water issues.

"In water quality and sustainability, we're looking at daily flows, but this rarely makes headlines. We need to make sure that people are aware of the importance of water quality," Rob said.

In his spare time, Rob likes to sail with friends and enjoy the quiet of the wilderness.

Sue Grau brings to the board a wealth of experience with peak bodies, all levels of government and private industry.

Sue Grau brings to the board a varied professional background and a wealth of experience with peak bodies, all levels of government and private industry. Sue comes from the role CEO of a number of peak bodies including Oysters Tasmania, Salmon Tasmania and the NSW Forest Products Association.

> "One of the greatest challenges is transforming the way stormwater is perceived and managed. But this is also an opportunity – particularly in the face of climate change."

"What I enjoyed about these roles was the element of transformation and change. I think there is value in bringing a fresh perspective and fresh eyes to an industry," Sue said.

Sue originally studied applied science, majoring in ecology and natural resources. She started her working life in environmental management, working in catchment management and water quality with the NSW Government before working for the Murray Darling Basin Authority.

Continued next page.

"This gave me a view into catchment management at a large scale, and the interactions between science, politics, social impact and industry," Sue said.

Sue says she now finds herself drawn back to environmental management – an area that aligns with her values.

"Stormwater is not just an isolated resource, but part of a bigger picture in urban planning and catchment management, and the communities it flows through. I think one of the greatest challenges for the industry is transforming the way it is perceived and managed. But this is also an opportunity – particularly in the face of climate change," Sue said.

With Sue's skills and experience in advocacy and representing industry, she is well positioned to help guide the strategic direction of the stormwater industry. She also brings exceptional skills in governance and collaboration to her role as director.

"A priority for me is to deliver pragmatic and effective governance," she said.

"I look forward to collaborating with other associations both nationally and globally."

Sue loves living in Tasmania and enjoying bushwalking and bike riding sometimes with her two sons.

Stormwater Australia would like to thank Sudesh Mudaliar who retired from the board at the March meeting. We appreciate Sudesh's contribution to our association and wish him all the best for the future.

New code of practice for urban drainage modelling in Western Australia

Eve White, Stormwater Australia

The release of a tailored code of practice (CoP) has marked the dawn of a new era in urban drainage modelling in Western Australia (WA). This CoP is designed to meet the state's unique conditions, bridging gaps in existing resources and empowering modellers and reviewers to select the most appropriate drainage modelling methods for stormwater management.

The new code of practice is designed to fill in the gaps in existing sources to meet Western Australia's unique conditions. Photo: Pok Leh / Shutterstock.

The new *Code of practice: urban and peri-urban drainage modelling Western Australia* (CoP) began as an idea discussed among workshop attendees at the University of Western Australia in 2020. The workshop members were professionals from state and local governments and industry associations who were part of the 'Land Development in Groundwater-Constrained Landscapes Steering Group.

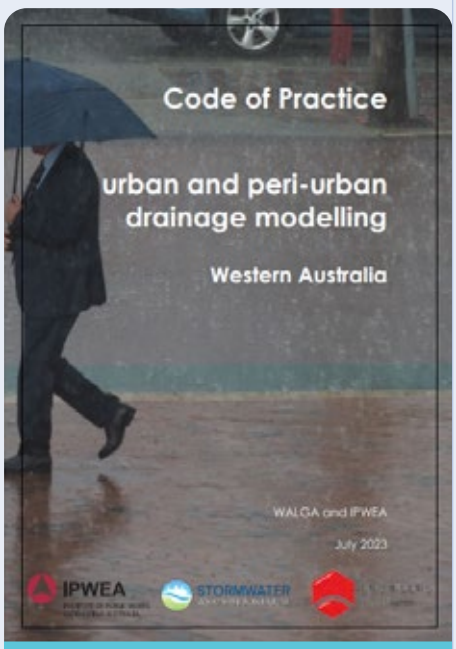
Following the workshop, a technical working group led by Stormwater Western Australia, Institute of Public Works Engineering Australia (IPWEA) and Engineers Australia, and involving many others, spent three years developing the CoP.

The document's purpose is to provide information specific to the conditions in WA, particularly for new practitioners, modellers who are new to the state, and others such as council employees who review models but are not expert modellers.

Behind the scenes – developing the code of practice

The group went through a systematic development process that spanned several key stages to identify essential areas for inclusion in the CoP and to define its scope.

The first step involved industry consultation and a review of relevant existing documents from local, national, and international sources. This review informed the format and structure of the CoP and provided valuable insights into the necessary content.



The code of practice's areas of application

- Modelling of urban and peri-urban drainage systems
- Predicting flood behaviour in developed and developing areas
- Planning new drainage systems
- Designing new drainage systems
- Designing upgrades or modifications to existing drainage systems

The next stage, the drafting process, involved collaboration among stakeholders, with input from diverse sources. This ensured the CoP covered a wide range of considerations, from site investigations to reporting requirements. Throughout the drafting phase, the emphasis was on clarity and accessibility, aiming to demystify complex modelling concepts.

An important final step in the process was the review and endorsement of the document by SWA, Engineers Australia Hydrology and Water Resource Panel.

What's different about this document

By reviewing existing sources of information and industry engagement, the team identified the key gaps in current guidance for WA.

Australian rainfall and runoff (ARR) is Australia's key guidance document for drainage modelling, urban hydrology and flood hydrology, but it has some gaps, particularly for the local context of WA. Another key document, *Stormwater management manual for Western Australia* (SMM), provides more context-specific guidance for the application of ARR principles and processes in WA, but not specifically around modelling.

The group also conducted industry surveys and workshops to ask practitioners what they considered to be the main gaps in existing sources. The responses included WA's shallow groundwater, regional hydrology, and parameter selection.

Helen Brookes, director of Urbaqua Ltd, who played a lead role in developing the CoP, said, "One of the issues that was raised again and again in our workshops and though interaction with local government engineers was parameter selection, justification of parameters and explaining where they have come from and what they are used for in different modelling approaches.

"We wanted to provide a framework around how to select parameters and how to talk about why you have chosen them, and some common language for modellers and for people who don't necessarily do modelling as their day-to-day job."

Other identified gaps included: the definition of site investigations relevant to modelling, interpretation of site conditions, guidance on model validation and quality assurance, the nuances of modelling methods for greenfield versus infill sites, software-specific parameters, and design methods specific to WA policy.

Complementing other resources

The CoP does not aim to set policy or prescribe fixed numerical values for modelling parameters; nor is it a substitute for professional experience and local knowledge.

There are many points in an urban or peri-urban drainage modelling process where a practitioner must use their experience to determine the most appropriate methods, assumptions and parameters for the specific site and context of the project. This CoP cannot replace this accumulated experience and knowledge. It aims instead to provide supporting guidance for these deliberations, particularly for people who are new to modelling, new to WA or who lack expertise in modelling but need some understanding of it.

"We wanted to provide a framework around how to select parameters and how to talk about why you have chosen them, and some common language for modellers and for people who don't necessarily do modelling as their day-to-day job."

It is intended to be used alongside existing guidance documents such as the ARR and the SMM, complementing these high-level resources with practical insights and considerations.

Find out more

Code of practice: urban and peri-urban drainage modelling Western Australia can be downloaded from the Engineers Australia website.

SQIDEP News

Updates on the Stormwater Quality Improvement Device Evaluation Protocol (SQIDEP), our national independent evaluation process for stormwater devices and technologies.

Release of draft lab pathway for applicants

Stormwater Australia is pleased to announce the release of our new hybrid lab pathway for SQIDEP applicants.

If you would like to use laboratory testing as part of your SQIDEP verification, you can submit a QAPP application via our website. This will enable you to submit your proposed monitoring plan to our independent evaluator panel, so that you can receive feedback on your proposed approach prior to starting your assessment.

Stormwater Australia would like to thank the SQIDEP Technical Reference Panel for the countless hours that were spent developing this document, along with the valuable feedback that was received from the industry when the draft pathway was released for comment at the end of 2023. All the comments received were tabulated in an industry report along with the responses on how each item was addressed. Please contact us if you would like a copy.

If you have any questions, please don't hesitate to contact us on the following email sqidepadmin@stormwater.org.au

External program review 2024

As many of our members would be aware, there is a built-in review period for the SQIDEP Program every three years. This program review is due to be undertaken and a 'terms of reference' is currently being developed. This will help an external review panel to look at the current governance, operations, documentation, lessons learnt and emerging needs of the program. Historic concerns that have not yet been addressed will be specifically targeted by the working group, with time allocated to discussions with these stakeholders.

To ensure a good balance of independence, state representation, operational understanding and thought leadership, a mix of representation will be sought including similar international program representation.

Outcomes from this program review will be shared with the industry for comment and will be available on our website.

Would you like to be featured in *Stormwater Insights*?

Do you want your stormwater project on the cover of a future *Stormwater Insights*? If you are a member of Stormwater Australia, forward your images to the editor along with some text detail and we will give this consideration.

We also welcome editorial contributions and advertising enquiries at any time.

To discuss editorial, contact Eve White: evewhiteediting@gmail.com.

For advertising enquiries, contact Bryan Ward: insights@stormwater.org.au.

What is Stormwater Quality Improvement Device Evaluation - SQIDEP?

The challenge

With the fast rate of development and the need for extensive stormwater pipe networks, we have seen a proliferation of stormwater treatment devices. However, until SQIDEP was established, there was no verification process to ensure that the devices met the water quality objectives at the site. This has led to challenges, such as a backlog of approvals sitting with local councils that had no way of ensuring that devices would achieve the desired outcome; many underground devices being installed with only a few performing as required; and a large maintenance burden for councils that manage the installed devices.

The solution: SQIDEP

Stormwater Australia together with industry stakeholders developed a protocol that requires each device to be assessed by a team of qualified independent parties, including universities and specialist scientists within the stormwater consulting field. Each device is then recommended to be verified by independent evaluators who check the claims made by the device manufacturer. Stormwater Australia then verifies the SQIDEP device for it to be recognised as an effective device for stormwater management.

Many councils now require SQIDEP verification before treatment devices can be installed.

Find out more here:
(SQIDEP) Stormwater Quality Improvement Device Evaluation Protocol | Stormwater Australia

We need to talk about highway runoff

By Katie Fletcher, Arup

There is a perception in the industry that highways get a 'free pass' but awareness about the problem of road runoff is growing. Photo: z1bjkeee / Deposit Photos.

We are becoming increasingly aware of the importance of road runoff as a source of water pollution. However, major road infrastructure is not subject to the same water quality design requirements as apply to private developments. In this article, Katie Fletcher discusses why this issue matters, what progress is being made, and what the stormwater industry can do to help improve practices in Australia.

Perception that highway projects get a 'free pass'

A perception exists within the stormwater industry that major road projects such as highway upgrades are exempt from the water quality design standards so rigorously enforced upon our urban development industry. There is some truth to this. Highway projects are typically not legally bound to state planning policies, and subsequently to local council standards. This means road authorities can authorise non-compliances internally. Road authorities may recommend compliance with industry-standard urban water quality objectives; however, historical practices often show instances of non-compliance without penalty.

There are exceptions to this, such as the state of Victoria, which stands out as an industry leader. Victoria's proactive approach is presumably due to pressure applied by Melbourne Water, the receiving water authority. However, a clear double standard remains between private developments and major road infrastructure, and this has created tension within the industry.

The most common causes of non-compliance on major road projects include:

- concerns over provision of safe maintenance access in a high-speed vehicle environment
- limited maintenance budgets and pressure for designers to include only low or no maintenance assets. Rightly, maintenance budgets are prioritised to respond to road safety hazards first
- insufficient space within brownfield corridors filled with existing services and adjacent urban development
- insufficient space within greenfield or brownfield corridors where clearing of existing high-value vegetation would be required. We simply can't clear koala habitat to construct a bioretention system.

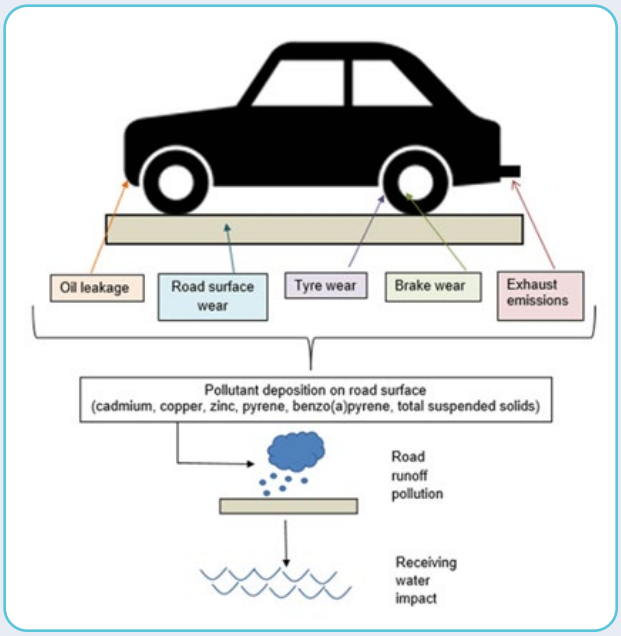
A discharge from a busy motorway in England to a small river. Photo: Jo Bradley.

Why should we care about highway runoff?

Just like in other urban catchments, highways are sources of water pollution. The composition of pollutants may vary, but key pollutants of concern are predominantly heavy metals and solids coming from pavement wear, tyre wear, and brake wear. Hydrocarbons from oil leakages are also a concern, along with

deposited organics, hydrocarbons, and VOCs from exhaust emissions.

Awareness of road quality runoff is growing globally. In both Australia and abroad, social media discussions about this issue are on the rise. In the UK, Jo Bradley from Stormwater Shepherds has been presenting webinars for industry association CIWEM, emphasising that road runoff should be managed in a similar way to point-source discharges such as wastewater. In Australia, our own Brad Dalrymple of Ocean Protect has been sharing some horrifying visuals of pollutants captured in proprietary devices from road catchments and pondering why road catchments don't appear to be treated with as much rigour as other urban development. Ocean Protect Podcast episodes from May 2021 and May 2022 have shone a light on specific impacts on tyre related chemicals and microplastics.



A range of pollutants come from vehicles and the road surface itself.

Graphic from Revitt et al (2022) 'Development and application of an innovative approach to predicting pollutant concentrations in highway runoff', Science and the Total Environment 825, licensed under CC BY 4.0.

Is there improvement on the horizon?

Thankfully, governments and other authorities are starting to recognise the importance of stormwater quality treatment for major road projects. As a consequence, we are moving towards designs that are both compliant or better yet, lead to improved environmental outcomes.

This is evident through changes in select project functional specifications around the country, notably:

- Transport for NSW (TfNSW), specifically requiring a 'NorBE' approach, using the Water NSW Neutral or Beneficial Effect on Water Quality Assessment Guideline for select projects. In this approach, the design team must compare pollutant concentrations for total suspended solids, total phosphorous and total nitrogen with existing waterway monitoring data and receiving water quality objectives. The design must target the receiving water objective, and where this is not achieved, should aim to better the existing condition.
- Queensland's Department of Transport and Main Roads (TMR) has written minimum sustainability standards into select design contracts using the IS Rating Scheme, including those for water quality outcomes. These standards are more meaningful than standard reduction targets applied to developments and are likely to result in better environmental outcomes. In many cases, they require the design team to demonstrate the impact on existing waterways rather than aiming for standard load-based reduction targets.

In the UK, the adoption of water quality management of major roads seems to be lagging behind Australia. However, it is positive to see the publication of the National Highways 2030 Water Quality Plan, which sets out a plan to mitigate high-risk road outfalls. While this plan has been criticised by some for the limited impact of the plan, it is positive to see action being taken, whatever the speed.

How can we improve practice in Australia?

To see better outcomes in Australia, we must first recognise that water quality management in a highway corridor is undertaken in a different context from our urban development projects. We cannot use the same 'levers', such as community recreation, improved aesthetics, or property values, to justify the inclusion of stormwater treatment assets. The levers available in a major road context must instead look to sustainability drivers such as the IS rating scheme.

Practitioners working in highway stormwater quality management must also look to other disciplines for support. By linking design or performance requirements from multiple disciplines, we can maximise the perceived value of our stormwater quality treatment systems as well as justifying their continued maintenance budget.

Useful companions on this journey include sustainability practitioners, first and foremost. Water quality is covered by several individual criteria within the IS Rating Scheme and respect for good sustainability outcomes has never been higher. Additionally, landscape architects, ecologists, and groundwater specialists may all be able to contribute arguments for inclusion of water quality elements which increase biodiversity, create habitat, and replenish groundwater storages.

Finally, our existing stormwater quality practitioners must create a welcoming space for drainage engineers to join the conversation. Without including the people at the coalface of design on highway projects, we are likely missing opportunities to improve project outcomes.

STORMWATER AUSTRALIA

Follow Stormwater Australia on social media

Interested in the stormwater industry? Follow us on social media to get all our latest news and information.

Click the logos below to see our pages.

Quilty

ENGINEERING HUB

CIVIL ENGINEERING ONLINE COURSES, EXPERT COACHING, AND COLLABORATIVE WORKSHOPS FOR INDIVIDUALS, CONSULTANCIES, AND AUTHORITIES.

Half Day Workshop: Stormwater Fundamentals
"Great presentation, QEH clearly and concisely presented engineering fundamentals in a way that can be understood by a broad range of listeners, regardless of experience or knowledge on the given topics."
City of Gold Coast Council

Online Course: The Rational Method
"The presentation was clear, simple and easy to understand, and I could finally understand clearly the rational method and how I can use and read the historical data."
Angelica, Undergraduate Civil Engineering Associate

In today's fast-paced industry, individuals and companies struggle to access essential skills due to limited resources, expertise and time. Recognising this, our tailored training efficiently bridges the gap. With focussed programs, we empower individuals to fast-track their careers and upskill staff to meet the demands of modern workplaces.

ONLINE COURSES | WORKSHOPS | FREE RESOURCES

INTRODUCTORY OFFER
Stormwater Online Courses
Use code word: **SWAust**
Normally $49
Valid until 1 July 2024

$30

info@quiltyenghub.com | quiltyenghub.com | 0424 063 873

Regional News

What's happening in the state organisations

South Australia

Annual general meeting (AGM) and Breakout Creek site tour

Stormwater SA held its AGM combined with a visit to the Breakout Creek redevelopment, along the River Torrens, in February.

Breakout Creek has been steadily transformed from an artificial channel into a more natural and healthy river system. The Stage 3 redevelopment area stretches from Tapleys Hill Road to the sea, a total of 1.5 km of river and banks.

Stage 3 has seen the creation of wetlands to capture and clean stormwater from adjacent residential catchments prior to discharge to the river, removal of weeds, planting of more than 215,000 new native plants and creation of habitat for a range of aquatic and terrestrial fauna. The redevelopment has also re-opened areas once fenced off, with new opportunities for people to enjoy trails, picnic areas, viewing decks and art.

The project involved a partnership between Green Adelaide, the City of Charles Sturt, the City of West Torrens, the South Australian Department for Trade and Investment through the Planning and Development Fund, the Australian Government through the Environment Restoration Fund, and SA Water.

The AGM followed at the Beachside Restaurant (5 West Beach Road, West Beach), with drinks and nibbles and drinks. The event was well attended, and Stormwater SA thanked retiring committee members and welcomed the new 2024 committee for what is a big year with the Stormwater SA Excellence Awards as well as other key events.

At Stormwater SA's AGM in February, members also enjoyed a tour of the Breakout Creek site redevelopment on the River Torrens.

Inaugural student prizes

On Tuesday 7 May 2024, the University of Adelaide's School of Architecture and Civil Engineering held its 2023 Student Prize and Awards Ceremony at the National Wine Centre, Gallery Room in Adelaide. Among the awards, was the Stormwater SA Water Resource Systems for Changing Climate Group Prize. Treasurer Michael Di Matteo presented the award to winners Patrick Hugh Doddridge and Mitchell Odegaard, and Somil Boora (absent), who were commended for their exemplary effort on the course's group project.

Stormwater SA Excellence Awards

The Stormwater SA Excellence Awards 2024 continue the tradition of recognising outstanding achievements in stormwater management and innovation. These awards celebrate projects that demonstrate excellence in planning, infrastructure, research, education, and integrated stormwater design. This year, the awards will be presented during a special event, bringing together industry leaders to highlight advancements and share knowledge. Winners will be announced at the Stormwater, Environment & Technology National Conference 2024 in October 2024.

Get in touch with Stormwater SA at:
info@stormwatersa.asn.au

In May, The University of Adelaide's School of Architecture and Civil Engineering held its 2023 Student Prize and Awards Ceremony at the National Wine Centre, Gallery Room in Adelaide.

Queensland

Bolder goals for Stormwater

In May, Stormwater Queensland held its 'Bolder Goals for Stormwater' event, an upgrade from the 'Bold Goals for Stormwater' event held the year before. This was an opportunity for professionals from a range of sectors to socialise, network and share knowledge around the huge challenges that we face in this era of climate change, urbanisation and pollution.

The event was a great success with excellent food and inspiring speakers. Approximately 80 stormwater professionals attended.

The event Gold Sponsor was Everhard Industries, an Australian family-owned manufacturer of drainage, wastewater and environmental solutions for residential and commercial applications.

Next year we will wait to see whether it will be 'Boldest Goals' or 'Even Bolder Goals' for Stormwater!

Stormwater Queensland 2024 Awards for Excellence

Stormwater Queensland will be holding the Stormwater Queensland 2024 Awards for Excellence on Thursday 25 July. The awards evening will celebrate outstanding achievement in our industry, with plenty of opportunity to network with a wide range of stormwater professionals.

This year's awards will be presented at Victoria Park Herston. You can buy tickets for the event here: Stormwater Queensland 2024 Awards for Excellence | Humanitix

Advocacy and engagement

Behind the lights, cameras, glitz and glam of the Stormwater Queensland events brought to you by our wonderful events team, the advocacy and engagement (A&E) team are quietly advancing the organisation's mission statement. "Stormwater Queensland has a mission statement?", I hear you ask. We surely do:

Engaging the community, industry and government to promote and advocate for Queensland's evolving stormwater challenges.

The A&E team works towards this goal by engaging with industry and government partners, at all levels. Month on month, we provide industry feedback on the release of major guidelines and other industry publications. We also seek out industry partners to improve the stormwater management framework, from on-ground practice through to regulation, enforcement, adaptive management and maintenance.

We'd love to hear from our members about what matters to you, and what you feel you need from Stormwater Queensland. Feel free to get in touch with any of our committee members or contact our long-standing secretary David Simpson at Secretary@stormwaterqueensland.asn.au.

Read the full article from the Advocacy & Engagement team here.

National conference: SET2024

Stormwater Queensland members are currently busy getting ready for our national conference, SET2024, which will be held at the Brisbane Convention and Exhibition Centre from 8 to10 October 2024.

There is still time to register but be quick - registrations close 4 July.
Find out more and register here.

Read more about SET2024 on page 24 of this issue.

Get in touch with Stormwater Queensland at:
admin@stormwaterqueensland.asn.au

Regional News

What's happening in the state organisations

Victoria

Advocacy and engagement

Stormwater Victoria (SV) is committed to important ongoing advocacy work behind the scenes.

In March, the SV executive engaged in an interview with the Department of Energy, Environment and Climate Action (DEECA) in their Investigation into On-Lot WSUD and Erosion and Sediment Control Compliance.

SV presented on the perceived prevalence of non-compliance, particularly in infill and major project construction sites, as well as the need for better linkage between planning, enforced site management measures throughout all stages of the project and improved certification procedures. This is an important step forward in addressing the concerns highlighted during the 2023 Conference Ministerial Advisory Committee (MAC) Stormwater Recommendations Panel.

The advocacy committee is progressing on the writing of the MAC white paper and are seeking member inputs to the perceived achievement of the 18 recommendations, as well as references and evidence of progress or deficiencies to date. A survey will be circulated to members to establish a baseline and build upon the investigation previously completed for the panel.

An additional opportunity for SV and its members to contribute to the ongoing work of the Victorian overnment is the Victorian Parliament's Inquiry into Climate Resilience, 2024. This inquiry is focused on the main risks facing Victoria's built environment and infrastructure from climate change, and the impact these will have on the people of Victoria, including how the government is preparing for these impacts, the barriers in upgrading infrastructure to become more resilient to the impacts, and the preparedness for future climate disaster events.

A focus will be the review of the 'Built Environment Adaptation Action Plan'. Submissions are due 28 June and SV invite members to email any thoughts to president@stormwatervictoria.com.au for consideration in SV's submission by 21 June 2024.

Keeley Park Site Tour

In April, more than 50 stormwater professionals visited Keeley Park, Clayton South, Victoria. The tour was hosted by Alan West, Principal Environment Officer from the City of Kingston, and Ocean Protect team members. A very big thank you to Alan West for sharing his insights and expertise and help organise the tour.

This unique project involved the installation of a high-flow (Filterra®) bioretention system during 2022 and was landscaped in 2023. This system treats stormwater runoff from a 28 ha catchment and is understood to be the first of its kind in Australia to use a high-flow system for stormwater harvesting and reuse to irrigate sports fields.

New draft of the Victorian Waterway Management Strategy

The Victorian Waterway Management Strategy Team are providing an update on the recent public consultation and next steps in the development of the draft new Victorian Waterways Strategy.

The key themes identified across the consultation were:

- water quality
- riparian and wetland protection
- minimising impacts of extreme weather events
- community engagement, and
- partnership with Traditional Owners in waterway management.

A summary of 'what we heard' from this consultation has now been released and you can read it on the Victorian Waterway Management Strategy website.

The outcomes of this consultation will inform the development of the new draft Strategy over the next 12 months. There will be further consultation on the draft Strategy throughout 2024.

Updated MUSIC guidelines

Melbourne Water has released an updated version of the MUSIC (Model for Urban Stormwater Improvement Conceptualisation) Modelling Guideline.

The document provides guidance on modelling approaches and input parameters for MUSIC models that are submitted to Melbourne Water.

The update addresses industry feedback received since the last revision, information gaps, and incorporates recent advancements in both science and industry. Notable changes include revised rainfall data and improved guidance on sediment ponds to minimise the risk of inappropriate treatment systems.

Click here to access the new guideline, rainfall templates and associated maps.

Melbourne Water have advised they will be phasing out the use of previous guidance and not accept models developed using the 2018 templates or guidance from June 30 2024.

You can email Stormwater Victoria at: office@stormwatervictoria.com.au

New South Wales

FRANC 2024 a success

We want to express our sincere gratitude to those who participated in franc.sydney 2024. Your presence and engagement made the event truly special. Your insights and contributions enriched our discussions and added immense value to the conference experience. We're grateful for your commitment to learning and collaboration. Thank you for being a part of our community. We look forward to staying connected and continuing the conversation in the future.

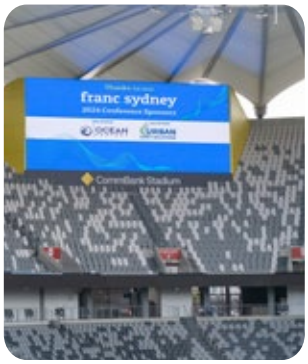
Significant changes to NSW state legislation.

Stormwater professionals in NSW should be aware of some major changes that were recently made to legislation administered by the NSW EPA.

The *Environment Protection Legislation Amendment (Stronger Regulation and Penalties) Act 2024* (EPLA Act) was passed by Parliament on 21 March. All but one provision of the EPLA Act commenced on assent, on 3 April 2024. The EPLA Act increases certain penalties and strengthens protections for the environment. It is over 80 pages long and amends eight Acts and three regulations. You can find out more on the NSW EPA website.

Upcoming events

Stormwater NSW hosts a number of events each year to spread knowledge, celebrate great work and support networking and ideas sharing across our industry. Some upcoming events include:



You can email Stormwater NSW at:
admin@stormwaternsw.asn.au

When	What	Where	More info
19 June 12 pm – 1 pm	State versus state – the origin of stormwater funding models	Microsoft Teams	State Versus State – The Origin of Stormwater Funding Models – Stormwater NSW
24 July 12 pm – 1 pm	WSUD and water management costs	Zoom	WSUD and Water Management Costs Webinar – Stormwater NSW
19 – 21 August	ALDE Conference	Mantra Lorne	2024 ALDE Conference (eventsair.com)
23 October 12 pm – 1 pm	Natural asset accounting	Zoom	Natural Asset Accounting Webinar – Stormwater NSW

Regional News

What's happening in the state organisations

Western Australia

Hydropolis 2024

In May, the Stormwater Industry Association of Western Australia (SIAWA) welcomed 170 attendees to our two-day conference Hydropolis 2024. The event focussed on developing a shared understanding of what a green-blue Perth and Peel looks like and exploring issues associated with its delivery.

We were delighted to have such an enthusiastic and diverse group of presenters and attendees to share knowledge and lend a voice to this very important conversation.

The conference included presentations on topics such as WSUD, water management, collaboration and co-design, urban greening, rewilding, economics, and the importance of water in achieving our visions. We also held a special session focussing on the latest research in urban greening and workshops focussing on what a shared vision for a blue-green Perth and Peel might look like and how we can get there.

One of the highlights of the event was the presentation of the Stormwater WA Awards for Excellence. Congratulations to the winners, who are listed below.

Award	Recipient	Project
Excellence in Strategic or Master Planning	Stantec	The 1909 Subi East Precinct
Excellence in Infrastructure	City of Joondalup	Stanford Park Sump Beautification
Excellence in Asset Management - winner	City of Gosnells	Smart Drainage Initiative
Excellence in Asset Management - commendation	City of Perth	Adelaide Terrace Subsoil Drainage
Excellence in Research and Innovation	Perth South West Metropolitan Alliance	Sediment Snapshot Pilot Trial
Excellence in Integrated Stormwater Design - winner	Town of Cambridge	Lake Monger (Galup) Swale Refurbishment
Excellence in Integrated Stormwater Design - commendation	City of Canning	Lake Street Urban Stream

One of the conference highlights was the presentation of the 2024 Awards for Excellence.

Code of Practice for urban and peri-urban drainage modelling in Western Australia.

SIAWA, the Institute of Public Works Engineering Australia (WA) and Engineers Australia, Hydrology and Water Resources Panel have launched the Code of Practice for urban and peri-urban drainage modelling in Western Australia.

You can download it here and read more about it on page 8 of this issue.

Contact SIWA at: info@stormwaterwa.asn.au

Where does plastic pollution come from? Gross pollutant traps give valuable insights

By Eve White, Stormwater Australia

Volunteer groups conducted audits of the litter in a unique collaboration between industry, NFPs, community and state and local governments.

Much of the plastic pollution in the ocean gets there via stormwater. Litter baskets, which catch debris before it enters stormwater infrastructure, could provide valuable data about where pollutants are coming from. A unique project brought together industry, not-for-profits, community and councils to monitor plastic debris in litter baskets in areas with different land uses over a 12-month period. The data is valuable both for communities and for all levels of government. The success of scheme, which began in 2019, has seen it continue and expand to other areas.

Much of the plastic pollution in the ocean arrives there through stormwater drains. The most effective way to change this is to prevent the pollution at its source. But to develop targeted reduction and management strategies, we must know where the pollutants are coming from.

Gross pollutant traps offer valuable data

Gross pollutant traps (GPTs) hold untapped potential to provide valuable information about where pollution is coming from and what kinds of pollutants are entering stormwater in different areas of the stormwater infrastructure. At-source GPTs, commonly known as litter baskets, could offer invaluable insights into the pollution sources within the immediate area.

Heidi Tait, CEO of Tangaroa Blue Foundation, a not-for-profit organisation that tackles marine debris, has been focussing on finding ways to collect and use this information.

Heidi said, "GPTs are hugely valuable assets, but nobody really knows what's actually being collected in them. Often councils don't even know where they all are and have limited understanding of how often they should be maintained".

A collaborative effort is needed to use these traps as data sources.

"Councils lack the resources to monitor these assets and analyse the data. But NGOs that might have the capacity to collect the data can't access these council assets," Heidi said.

A unique collaboration

In 2019, Heidi brought together councils, NGOs and other groups in a first-of-its-kind citizen science project to look at sources of plastic pollution in the Port Phillip Bay area in Victoria.

Doug Yardley, business development manager – stormwater solutions, of Pipe Management Australia (PMA), was involved in the project from the start.

> "We installed litter baskets in different land use types to find out what kinds of plastic pollution were coming from which areas. This was a truly unique approach. It had never been done before".

"We were down helping the Yarra Riverkeeper Association looking at how to stop pollution. It was shocking to see the amount of rubbish ending up in the river," Doug said.

"One of the first things we did was use a vacuum system to pull rubbish out of the river. This caught the public's attention, including coverage on the ABC's ***War on Waste***. Next, we talked about installing litter traps, which we could monitor to develop maps of where the pollution is coming from."

From here, the 'Let's Strain the Drains' project was born. Tangaroa Blue Foundation and PMA applied for funding from the Victorian Government, which allowed them to install 'Drain Buddies', a modular type of litter basket, throughout the Port Phillip Bay area.

The initiative was an unusual feat of collaboration, involving community volunteers, not-for-profit organisations, local governments, state government, industry and university researchers.

The project was also unique in terms of the kind of data it collected and the range of ways this data could be used.

"We installed litter baskets in different land use types to find out what kinds of plastic pollution were coming from which areas," said Heidi. "This was a truly unique approach. It had never been done before".

How data was collected

PMA worked with six councils in the Port Phillip Bay area to install litter baskets in the stormwater infrastructure. These assets were serviced over 12 months between October 2019 and October 2020.

Five litter baskets were placed in each of four different land-use types that typically generate the highest concentrations of litter:

- central business districts (CBDs)
- industrial precincts
- shopping centres
- public transport terminals.

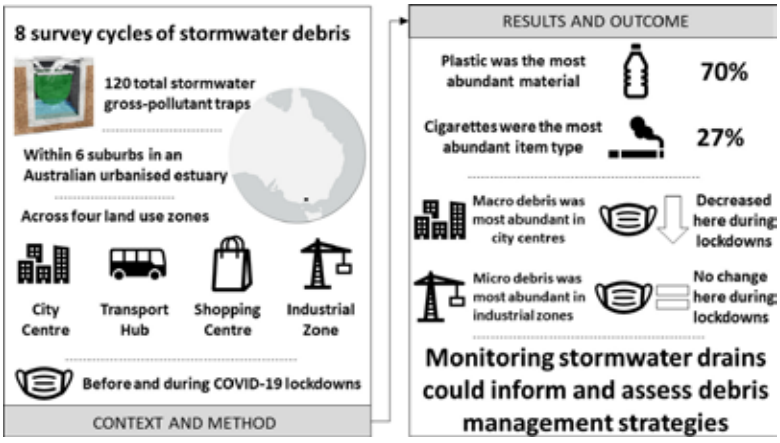
Each council had 20 litter baskets within their local government area, making a total of 120 distributed around Port Phillip Bay.

Every six weeks, PMA serviced the traps and delivered bags of debris to central venues. Here, groups of volunteers, coordinated by Tangaroa Blue staff, PMA and Sustainability Victoria, sorted and counted the litter and separated out the organic matter. The resulting data was submitted into the Australian Marine Debris Initiative (AMDI) Database. Council staff supported by organising venues, participating in the audits and disposing of the litter afterwards.

The project included eight cycles of asset servicing, data collection, and community engagement. The last four cycles occurred during lockdown due to the COVID-19 pandemic.

PMA serviced the litter baskets every six weeks (left); rubbish caught in a drain buddy (right).

Project overview



Graphic from: Brie Sherow et al. (2023) Land use and COVID-19 lockdowns influence debris composition and abundance in stormwater drains. Science of the Total Environment, 871. Reproduced under a CC 4.0 licence.

Insights to help prevent pollution

A total of 87,406 macro-litter items and 737,651 micro-litter items were captured during the study.

Different kinds of pollutants dominated different land-use types (see Figure). Overall, around 70% of macro-debris items were hard and soft plastics, and these were noticeably highest in the CBD. Industrial land use areas had the lowest macro debris counts but contained more than 90% of the micro debris (1–5 mm).

Doug noted that this was an interesting time to be doing the study, "It gave us this unexpected opportunity to look at how plastic pollution patterns changed when the lockdown started," Doug said.

"Not surprisingly, disposable gloves and masks suddenly started turning up in all the traps while other kinds of rubbish dropped off".

However, while the amount of total macro debris decreased during lockdowns, the most abundant and problematic debris items such as cigarettes and single-use plastics did not decrease as much as might be expected from the reduced human activity.

How can this data be used?

Tangaroa Blue and collaborators put considerable planning into the design of this project to ensure that the data could be used for multiple purposes.

Heidi said, "We worked with researchers at the University of NSW, and one of our early projects confirmed that the methodologies could be used for government decision-making processes. It showed how valuable citizen science could be."

The insights from this granular-level data can be used by local, state and federal governments.

Heidi said, "We now have a really important tool for local councils. Knowing that certain items are entering drains consistently in certain areas can help councils create strategies to stop pollution at the source. Ongoing data collection is also vital to measure the impact of the strategies.

This knowledge is also valuable at a community level. Upon noticing huge amounts of litter from bubble tea stores in a certain area, one volunteer was inspired to undertake a source reduction plan for this litter type.

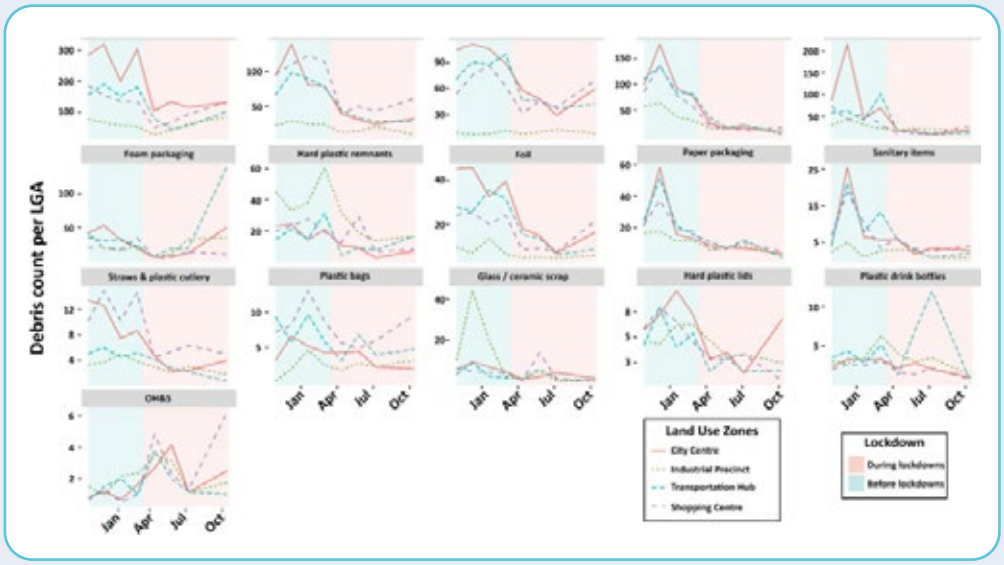
Project expansion

"What's really exciting is that this original project has expanded and is still in progress. We've had two more rounds of funding from state government, and more councils investing in program. Everyone sees how valuable it is," Heidi said.

"From the original concept we've had similar projects running the length of the Great Barrier Reef, the City of Warrnambool, as well as ongoing data collection in Port Phillip Bay with other councils now on board.

"This is a replicable model that can be used anywhere. We have developed a national database, the Australian Marine Debris Initiative app, and we can collaborate with groups around Australia to ensure the data has local value as well as contributing to national level data."

The project was funded by the Victorian State Government and was delivered by Tangaroa Blue Foundation, Cleanwater Group (now Pipe Management Australia) and Sustainability Victoria with support from the Cities of Wyndham, Hobsons Bay, Moreland, Maribyrnong, Kingston and Greater Dandenong, and data analysis support from the University of NSW. The 94 community volunteers who supported this project were integral to its success.



This figure shows raw data counts of a selection of different debris item types per local government area (LGA) at each of eight survey cycles. Plots are arranged from most abundant total items (top left) to least abundant total items (bottom right).

Figure from: Brie Sherow et al. (2023) Land use and COVID-19 lockdowns influence debris composition and abundance in stormwater drains. Science of the Total Environment, 871. Reproduced under a CC 4.0 licence.

Find out more

You can visit the Tangaroa Blue Foundation website here and Pipe Management Australia here.

See a video about the project here.

A peer-reviewed paper on the study, published in 2023, is available to download here.

Industry Insights

Brief news updates from the stormwater industry

Passive irrigation and integrated stormwater harvesting in Port Pirie Regional Council, South Australia

Space Down Under has recently completed the first stage of its innovative stormwater management project in collaboration with the Port Pirie Regional Council.

Space Down Under, in collaboration with Port Pirie Regional Council, as recently installed 130 Kerb Space Inlet Systems for passive irrigation of street trees.

This phase involved installing 130 Kerb Space Inlet Systems, a cutting-edge solution for passive irrigation and integrated stormwater harvesting.

These systems are designed to capture and use stormwater effectively, promoting urban greening and sustainability. By redirecting stormwater to irrigate urban vegetation, we are not only keeping our urban environment cool but also contributing to carbon sequestration. This approach reduces the need for potable water for irrigation, enhancing water conservation efforts.

The benefits of these installations extend beyond environmental impact. The passive irrigation system supports the health and growth of urban trees and plants, creating greener, more attractive urban spaces for the community.

Stay tuned for more updates as this project progresses.

Find out more.
Find out more about this project here.

Melbourne Airport stormwater harvesting scheme

In 2012, Spiire was approached by Melbourne Airport to create an integrated water management (IWM) plan to cater for the future growth of Melbourne's international airport. The system, which was completed in 2015, remains unique within Australia, pushing the boundaries of how treated stormwater can be reused.

The airport facilities and surrounding precinct were being expanded as part of an $100 million improvement to the area. Spiire was appointed as the lead consultant to design the necessary infrastructure, and was further engaged to manage future stormwater runoff.

Spiire consulted extensively with the key stakeholders at the airport precinct, water authorities and state government. This process enabled Spiire to develop a viable business case and a plan that would meet key design requirements.

The resulting plan ended up testing conventional drainage and water management principles. It focussed on key aspects of the whole of water cycle, including: major drainage and flood management, stormwater quality and waterway health management and alternative drinking water supplies.

Do you have a short news item to share with the industry – a project, an award, or important changes happening within your company? Contact the editor: evewhiteediting@gmail.com

The outcome was the construction of a wide-ranging scheme that had three main components:

1. The construction of a 100,000 m^3 flood detention basin to protect the residents living downstream from flooding.
2. The development of a 7000 m^2 sedimentation basin with a rain garden to allow the runoff from the airport area to be treated using best practice standards. This is one of the largest of its kind in Australia.
3. The team also devised a way for the catchment's stormwater to be harvested and mechanically treated via the raingarden, with the quality of the recycled water exceeded stakeholder expectations.

The system allows more than 130 ML of treated stormwater to be reused each year. The treated stormwater is used for terminal building toilet flushing, irrigating Essendon Football Club and surrounding areas, and a myriad of other purposes within the business park.

Following completion in 2015, the scheme received awards from both Stormwater Victoria and Stormwater Australia for excellence in infrastructure.

Find out more.
Visit the Spiire website.

The Melbourne Airport project remains unique in Australia, pushing the boundaries of how stormwater can be reused.

SET 2024
Stormwater, Environment & Technology
National Conference
8 - 11 October 2024 | Brisbane Convention & Exhibition Centre
STORMWATER AUSTRALIA

SET 2024: Uniting minds to preserve our environment

The conference will be held in beautiful Brisbane. Photo: mvaligursky / Deposit Photos.

After a hiatus due to the global pandemic, the Stormwater Australia National Conference is back with a splash. The eagerly anticipated Stormwater, Environment & Technology (SET) National Conference 2024 will be held from 8 to 10 October at the Brisbane Convention & Exhibition Centre.

Diverse skillsets to meet complex challenges

The SET 2024 conference is a platform for experts and enthusiasts to exchange knowledge on the nexus of stormwater, the environment, technology and policy. The event aims to bridge gaps in understanding, foster innovation, and chart a sustainable course forward.

We are expecting a diverse group of attendees including researchers, designers, scientists, engineers, ecologists, academics, legal professionals, modellers, and technology providers.

SET 2024 is more than just a conference - it's a catalyst for change. By convening stakeholders from across the spectrum, this event empowers attendees to confront the complex challenges posed by stormwater management and environmental degradation head-on. Through shared knowledge, collaborative partnerships, and innovative solutions, we can pave the way for a more resilient and sustainable future.

Innovation and collaboration

Central to SET 2024 is the theme of innovation. From cutting-edge technologies to novel research methodologies, attendees will have the opportunity to explore the latest advances in stormwater management and environmental stewardship. Through innovation, we can unlock new possibilities and overcome longstanding challenges in our quest for a more sustainable world.

In addition to fostering intellectual exchange, SET 2024 serves as a celebration of community and collaboration. Through networking events, workshops, and interactive sessions, attendees will have ample opportunities to connect with peers and forge new partnerships.

We are expecting a diverse group of attendees, and the event serves as a celebration of community and collaboration. Photo: Kasto / Deposit Photos.

Opportunities for sponsors

If you are interested in sponsoring the conference, you can find out more on the official website. Without the support of all our generous sponsors, the event would not be possible.

Workshops

- **What is SQIDEP & navigating the verification process.** Darren Drapper & Andrew Allan outline the SQIDEP protocol and process and submission requirements for evaluation.
- **Developing a new process to streamline stormwater quality reporting & compliance across all stages of development.** This workshop, presented by Mircea Stancu, focusses on the WSUD assessment and reporting process.
- **NSW guidelines for the maintenance of stormwater treatment measures.** This workshop, presented by Murray Powell, covers all aspects of operations and maintenance for all types of stormwater treatment measures.

All are full day workshops held on Tuesday 8 October. Find out more here.

Social events

Last but not least, you can look forward to some great opportunities to relax, socialise and network with colleagues.

Welcome reception. Kick off the conference at our Welcome Reception at the Queensland Art Gallery/ Gallery of Modern Art (QAGOMA).

When? 5:30 to 7 pm, Tuesday 8 October.
Cost: included with your registration.

Conference dinner. Enjoy great food with great company at the conference dinner, which will take place onsite at Brisbane Convention and Exhibition Centre. This will be a great opportunity to create memories and reconnect with fellow delegates.

When? 7 to 11 pm, Wednesday 9 October
Cost: $125.00 for full delegates registrations. Additional guests, $165.00.

Tangalooma Island day cruise. Join a day cruise to spectacular Tangalooma Island Resort, where you can enjoy full guest access to all facilities.

When? 7:30 am to 4 pm, Friday 11 October
Cost: $176.

Read more about the social events here.

Inspiring keynote speakers

Karen Johnston
Karen is a highly experienced hydrogeologist, specialising in managed aquifer recharge.

David Topp
David is a barrister at the Private Bar in Brisbane and published author with an interest in water management.

Dr Matthew Verbyla
Matthew is an Associate Professor of Environmental Engineering at San Diego State University whose research focuses on pathogens and faecal indicators in engineered systems and the environment.

Ryan Winston
Ryan is a researcher form Ohio State University with expertise in various aspects of stormwater management and an interest in economic solutions to environmental problems.

Read more about Karen, David, Matthew, Ryan and other keynote speakers here.

The Stormwater, Environment & Technology National Conference will be held on 8-10 October 2024 at the Brisbane Convention & Exhibition Centre. Registration is now open.

Find out more here.

SET 2024

Stormwater, Environment & Technology

National Conference

8–11 October 2024
Brisbane Convention & Exhibition Centre

SET 2024 provides an opportunity for knowledge sharing in the overlapping areas where stormwater influences the environment, where technology improves our understanding of stormwater and environment, and where gaps in environment knowledge could be measured and filled by technology. The National Conference is a collaboration of researchers, designers, scientists, engineers, legal professionals, ecologists, community, modellers, government and technology providers. It gives space for new research findings, and innovation in practice.

SET 2024, as the National Conference, is deliberately different. Delegates don't have to be a traditional "stormie". Conference themes include environmental law, policy, community resilience, IoT, and ecosystem processes, as well as erosion control, urban drainage, water sensitive urban design, nature-based solutions, modelling, water quantity and quality.

KEY DATES Registrations: **OPEN NOW**

Early Bird Close: Thursday 4 July 2024 | **Conference Dates:** 8-10 October 2024

Keynote Speakers


Dr Matthew Verbyla
San Diego State University


David Topp
Barristers in Law


Bernie Cockayne
Reef Catchments


A/Prof Ryan Winston
Ohio State University


David McCarthy
Queensland University of Technology


Karen Johnston
ManagedRecharged

• Pre-Conference Workshops

- What is SQIDEP & navigating the Verification Process?
- NSW Guidelines for the Maintenance of Stormwater Treatment Measures
- Developing a New Process to Streamline Stormwater Quality Reporting & Compliance across all stages of Development

• Technical Tours

• Social Events

- Conference Dinner
- National Excellence Awards
- Tangalooma Island Beach Day Cruise

STORMWATER AUSTRALIA

Register Now

www.set2024.com.au

All in a day's work

In our 'All in a day's work' column, we'll be chatting with stormies about their work, their career pathway and their thoughts about the industry. Aaron Beale, operations manager for Urban Asset Solutions, is first cab off the rank for this inaugural issue of *Stormwater Insights*.

Editor. Can you describe a typical day in your role as NSW operations manager at Urban Asset Solutions?

Aaron. My role is multifaceted. I oversee the day-to-day operations of our stormwater management projects, ensuring everything runs smoothly from planning to execution. This involves coordinating with various teams, managing resources and liaising with clients to ensure their needs are met. A typical day involves a mix of project planning, meetings, site visits and managing my team of skilled operators. I'm often problem-solving, making decisions on the fly and ensuring that our projects adhere to WHS & environmental regulations and exceed our ISO 9001, 140001 and 45001 standards.

Editor. Can you tell us a bit about your career path?

Aaron. My career path has been diverse. I've worked in various roles within the customer service and environmental sectors, including bush regeneration and sustainability. Being Indigenous I have always held environmental issues close to my heart, which led me to look for an employer that 'made a difference' on the impact of human activities on our environment. This eventually led me to stormwater maintenance and then management with Urban Asset Solutions, a company passionate about the protection of our precious oceans and waterways.

Editor. How do you stay abreast of the latest trends, technologies, and regulations in the industry?

Aaron. I attend industry conferences, such as recently held FRANC, and workshops and seminars to network with peers and learn about emerging practices. The most recent of these was Stormwater NSW Operations & Maintenance with Optimal Stormwater. I engage with online forums and subscribe to industry publications to stay informed about advances in stormwater management techniques, new regulations and innovative technologies. Urban Asset Solutions also provides regular internal industry information memorandums keeping us informed of industry trends, innovations and project outcomes.

Editor. What tools, software, or resources do you find indispensable in your work?

Aaron. Our project management tool SALUS helps streamline WHS & onsite reporting. Additionally, access to databases and online resources such as EPA, Australian Water Association & Stormwater NSW is crucial for ensuring compliance with regulations and standards. I rely on MUSIC for modelling treatment train effectiveness.

Editor. What are the most rewarding aspects and challenges of your work?

Aaron. The most rewarding aspect is knowing that our work is making a positive impact on the environment and the community. Implementing effective stormwater management practices helps mitigate the harmful effects of urban runoff, improves water quality, protects our ocean and ecosystems. Seeing tangible results from our projects, such as reduced flooding, cleaner waterways and restored habitats is incredibly fulfilling. However, challenges such as managing tight budgets and overcoming technical and regulatory obstacles are also part of the job.

Editor. Do you find that there any common misconceptions about the stormwater industry?

Aaron. One common misconception about stormwater management is that it's solely about drainage infrastructure. While infrastructure plays a crucial role, effective and regular stormwater management requires a holistic approach that considers the entire water cycle. It involves integrating green infrastructure, such as rain gardens, bio basins and permeable pavements with traditional grey infrastructure, all the varying types of GPT's to reduce the impact of urbanisation on our water resources and even more importantly, regular planned maintenance.

Editor. Can you share any memorable projects you've been involved in?

Aaron. One memorable project was the revitalisation of a degraded urban stream corridor in Nurragingy Reserve in Doonside, Sydney's west. It involved restoring a stormwater channel, regenerating native plants, and implementing green infrastructure practices to manage stormwater runoff. Seeing this once degraded dilapidated stream transform into a vibrant, ecologically functional corridor was incredibly rewarding. It not only improved water quality but also provided valuable habitat for wildlife in the reserve.

Helping councils better manage their assets: WSUD Maintenance Compliance Framework

Daniel Rider, Ocean Protect

Hundreds of thousands of water sensitive urban design (WSUD) assets have been installed in stormwater infrastructure across Australia. These assets are often poorly maintained. Enormous scope exists for councils to improve the health of waterways and water resources by improving maintenance practices for both publicly and privately owned assets.

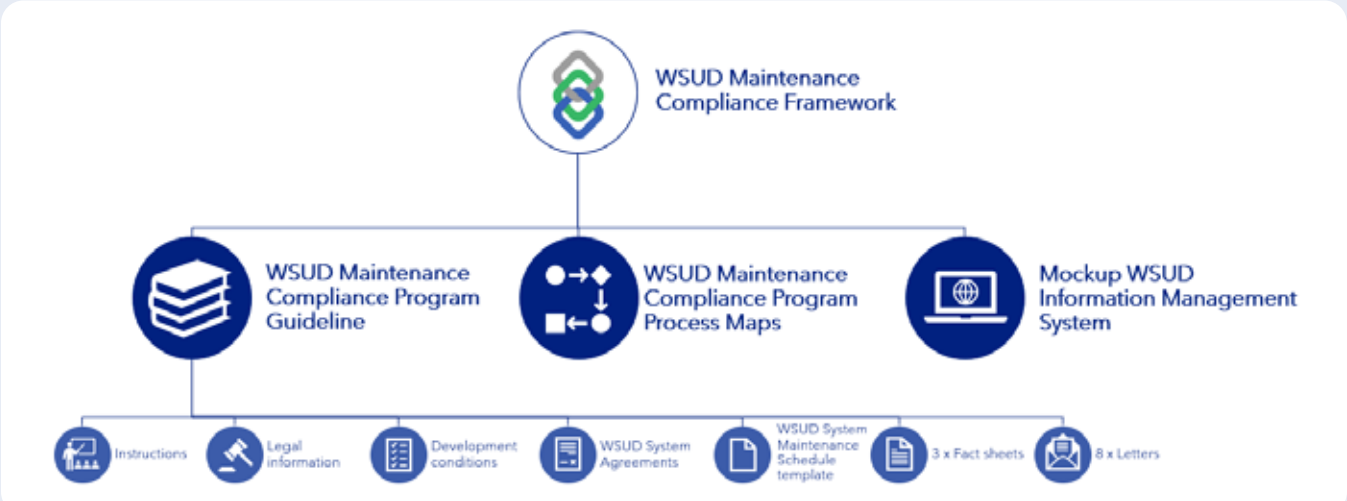
A group of stormwater professionals is developing the WSUD Maintenance Compliance Framework to help councils improve their processes. This article by Ocean Protect's WSUD Specialist Daniel Rider outlines the project and how you can get involved.

One way councils can improve maintenance of these assets is to use the WSUD Maintenance Compliance Framework. This framework is a package of information, resources and tools that councils can use to improve their implementation and management of WSUD assets within their jurisdiction. The project has received in-principle support from Cooks River Alliance, Stormwater NSW, Stormwater Queensland and Optimal Stormwater.

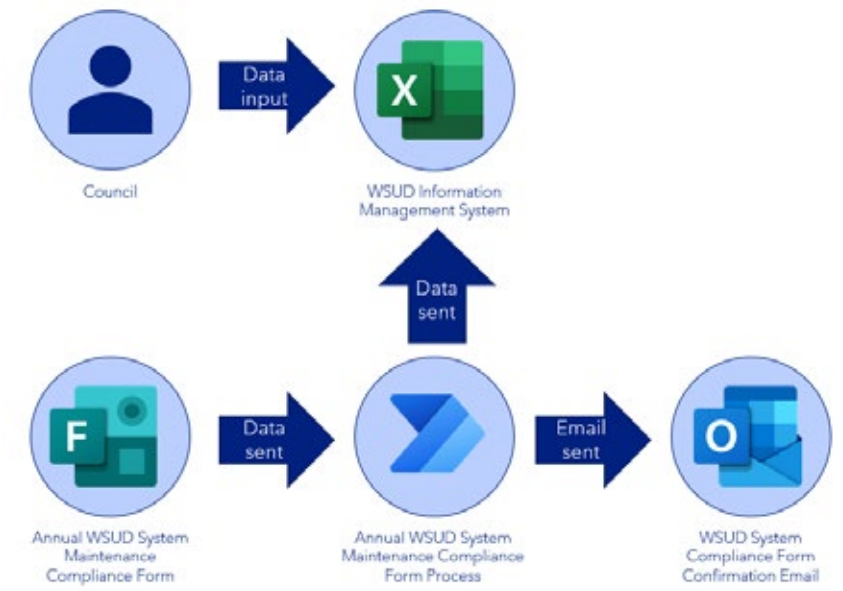
Components of the framework

This framework will evolve with time as organisations use it and provide feedback, but so far it has three main items, which are:

- **WSUD Maintenance Compliance Program Guideline:** This document outlines how to operate such a program, with the first chapter introducing the topic, the Framework, the Guideline, and the relevant law. The legal information was based upon a legislation review conducted by Clayton Utz as part of the project. The other chapters provide suggested activities and decisions within the proposed processes. The appendices provide content for councils to use within such a program, including development conditions, fact sheets, and letters.
- **WSUD Maintenance Compliance Program Process Maps:** This document provides high-level and visual information on how the different processes operate. Each of the five main processes have an accompanying chapter within the Guideline, which means these two documents need to be read together. The symbology and colours in these process maps are consistent throughout both documents to enhance reading and understanding.
- **WSUD Information Management System:** Good information management is important. The Framework has created a Microsoft-based mock-up system to demonstrate how the data and information can be managed. Users can modify and play around with this mock-up system and work with their internal IT teams or engage external consultants to improve or replicate such a system within existing systems and processes. The mock-up system is made up of a Microsoft Excel spreadsheet that stores the data and information. This is connected to a Microsoft Form, which acts as an annual compliance form.



The WSUD Maintenance Compliance Framework has three components as illustrated here. The Framework will evolve over time as users provide feedback.



The mock-up system is made up of a Microsoft Excel spreadsheet that stores the data and information. This is connected to a Microsoft Form, which acts as an annual compliance form.

Consultation is key

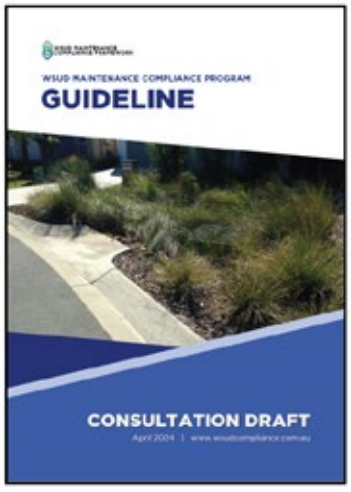
The project aims to help councils across Australia better manage public and private WSUD assets. For it to succeed, consultation is critical, as every team, council, city, and state will do things differently. The project is being led and financed by Ocean Protect, but many individuals and organisations from across Australia are also involved. These include Clayton Utz, Benny Penhallurick, and the National WSUD Compliance Network.

The National WSUD Compliance Network is a group of stakeholders that regularly discusses WSUD compliance in Australia and helping hold the Framework accountable and make it transparent, but also providing feedback on the Framework. This network to date has brought together over 130 individuals from more than 80 organisations across Australia.

Feedback invited

The Framework was released as a consultation draft on April 18 2024 and is open for consultation until 19 August 2024. We would like a range of stakeholders to provide feedback to ensure that it meets the needs of councils across Australia. You can access it at wsudcompliance.com.au/resources and provide feedback in one of three ways:

- by attending a National WSUD Compliance Network meeting
- by emailing enquiries@wsudcompliance.com.au
- through a meeting with Project Lead Daniel Rider (Ocean Protect's WSUD Specialist).



A consultation draft is available for comment until 19 August 2024.

What can you do?

There are a range of ways people and organisations within the Australian stormwater industry can support this project.

1. **Understand the project:** Watch the "*Beneath the Surface of the WSUD Maintenance Compliance Framework*" webinar, attend a National WSUD Compliance Network meeting, or get in touch with the Project Lead Daniel Rider.
2. **Review and provide feedback:** Consider reviewing and providing feedback on the Framework. By giving your thoughts on the project, we can help it meet your and other's needs.
3. **Provide in-principle support:** Your organisation can provide in-principle support, as have organisations like Stormwater NSW and Optimal Stormwater. We will display your organisation on wsudcompliance.com.au and in presentations as an in-principle supporter. For more information, please contact enquiries@wsudcompliance.com.au
4. **Attend Network meetings:** Get involved in the National WSUD Compliance Network meetings and help shape the future of WSUD compliance in Australia, and hold the development of the Framework accountable and transparent.
5. **Spread the word:** More than 300 people registered for a recent webinar about the Framework, but many stormwater professionals are unaware of the project and how it can benefit them. You can help spread the word by bringing up the project in conversation and sharing news – such as about upcoming events.

Find out more. Contact the Project Lead Daniel Rider at enquiries@wsudcompliance.com.au or on 1300 354 722.

Case Study

Large onsite detention system for premium residential development

By Atlan Stormwater

Watch this video to see one of the precast concrete detention systems being installed.

Atlan Stormwater is delivering the stormwater infrastructure for a sustainable residential development in the City of Penrith, NSW. Four large precast concrete onsite detention systems will be situated beneath bioretention systems, an approach that reduces both the horizontal footprint and the project timeline.

Westwood Estate, an 11.5 ha site in Caddens, City of Penrith, is a master-planned residential development with views of the scenic Blue Mountains. The site will include 119 premium lots that together form a sustainable community centre.

Stormwater management is a critical requirement for developments within the City of Penrith LGA. The council Stormwater Drainage Guidelines require OSD systems to ensure no increase in runoff from the site as a result of the development under all durations for all the storms up to and including the 1% AEP event.

Modelling

To determine the storage capacity of the OSD tanks, an analysis of both the pre-development and post-development flows of the site was undertaken. The catchment areas for both the pre- and post-development scenarios were calculated, and the site's hydrology was analysed using DRAINS modelling to determine the stormwater flow rates for both scenarios. The OSD tanks were sized and modelled in DRAINS to meet the council's post-development flow requirements.

An aerial view of the site.

The design storm event was consistent with the requirements of Penrith City Council's *Design Guidelines for Engineering Works for Subdivisions and Developments*. The conventional pit and pipe stormwater drainage system (minor drainage) was designed to convey the 20% AEP storm event flows, with the road carriageway (major drainage) designed to convey flows exceeding the minor drainage event. The carriageway is designed with consideration for safe flow widths, ponding depths, and appropriate overflow locations.

Four MegaVault tanks were installed at the site.

Large on-site detention system needed

A precast OSD solution was the best option for this site due to the size of the required tanks. The eventual size of the OSD structures meant that a cast-in-situ solution would have been more difficult and time consuming to construct. A pre-cast OSD like the MegaVault tank is *safer* - less trades and less time with an open excavation, *faster* - days versus weeks, and *cost effective* - saving on capital costs and opportunity costs due to efficiency.

For large projects like this, cathedral-style detention systems are preferable to a combination of smaller tanks, as the absence of internal walls saves concrete and space. The horizontal footprint is also minimised by the system's high-volume vertical profile enabled by the three-metre internal height of each tank.

Four MegaVault tanks were installed within the site. Their locations were selected based on the existing catchment outflow locations for the site. The design aimed to align the OSD tanks and the discharge points for the tanks as close as possible to the existing discharge locations for the site, while not disrupting the current water flow for the area or creating nuisance flows for the adjoining properties.

The four tanks have a combined volume of 3.2 ML. Their individual volumes and installation times are as follows:

Volume	Number of modules	Installation time (days)
1.8 ML	73	6
711,000 L	43	3
215,000 L	13	1
508,000 L	41	3

Integrating bioretention and onsite detention

Bioretention systems will be constructed on top of the OSD tanks. This solution provides the required bioretention area and OSD volume while minimising the horizontal footprint. It also minimises the bioretention area depth, making maintenance easier.

Sub-soil drainage in the drainage layer will collect the water, which is then directed to stormwater pits in the bioretention area. These pits also collect water exceeding the extended detention depth of the bioretention basin. The stormwater pits connect to the pit riser at the top of the OSD tank, where water is stored and then discharged through an orifice outlet in the discharge control pit inside the OSD tank.

Looking to the future

The precast concrete systems, which are designed to last for 50 years, will future proof the estate, protecting the community by preventing localised flooding in storm events and severe downpours.

STORMWATER
AUSTRALIA

Editorial contributions

Dr Eve White
White Editing
evewhiteediting@gmail.com
0410 147 331

Advertising

Bryan Ward
Stormwater Australia
insights@stormwater.org.au
0475 636 800

Design

Pablo Francis
Pabs & Co
pablo@pabsandco.com