

Improving Urban Liveability through WSUD Case studies across Victoria

Healthy Cities Conference
Geelong - 8 June 2012

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Policy Advisor

Overview

- Who is Clearwater?
- Regional Stormwater Policy Advisor Role
- What is a liveability?
- Water's role in liveability
- What is WSUD?
- WSUD toolbox
- Four Victorian case studies
- Questions



Langtree Mall Tree Pits and permeable paving, Mildura

Clearwater – Capacity Building Program



Integrated Water Management and Water Sensitive Urban Design

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You are here: [home](#) > [training and events](#) > Darling Street Site Tour: Completed Stormwater Harvesting Project

training and events

- past events
- events main

Darling Street Completed Harvesting

Tuesday 5th June 2012
Darling Street, East Maitland

Clearwater in partnership with the City of Maitland invite you to this unique Darling Street project no longer in progress. This tour is the final one to see the project at different stages. Ralf Pfeleiderer from the City of Maitland will allow participants to...

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Clearwater Enabling the transition to Water Sensitive Cities

upcoming event
Stormwater Harvesting: Concept & Design
05/07/12
This one day training course, developed in partnership with Monash's Centre for Water Sensitive...

featured resource
Glenferrie Road Climber Pits
24/05/12
The City of Boroondara has undertaken an innovative project to treat stormwater and improve the...

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resource library

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- papers and reports**
- case studies**
- fact sheets**
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- policy and guidelines**
- tools**

submit a case study
Submit a case study and share the information with your peers.

submit a resource
Submit a resource and share the information with your peers.

Regional Stormwater Policy Advisor



Outline of role:

- Funded by DSE and MAV
- Meet rural and regional councils
- Listen to Council's experiences with implementing WSUD
- Facilitate discussion around opportunities and challenges
- Provide support - WSUD and IWM
 - delivering tailored training
 - tools and guidance notes
- Feedback - recommendations



Wynyard Quarter Raingarden, Auckland N.Z.

What is liveability and a liveable city?



- In a 2008 Inquiry into enhancing Victoria's liveability, the Victorian Competition and Efficiency Commission came up with this definition:

“Reflecting the wellbeing of a community and comprising the many characteristics that make a location a place where people want to live now and in the future.”

- It is likely that if you ask any person what makes a liveable city they will give a different response depending on their values
- Encompasses - values, perceptions, what we 'want', and the future

What I think makes a liveable city?



I can ride to work



Innovative buildings and green spaces



My local park

Eating in the laneways



Walking to my local market

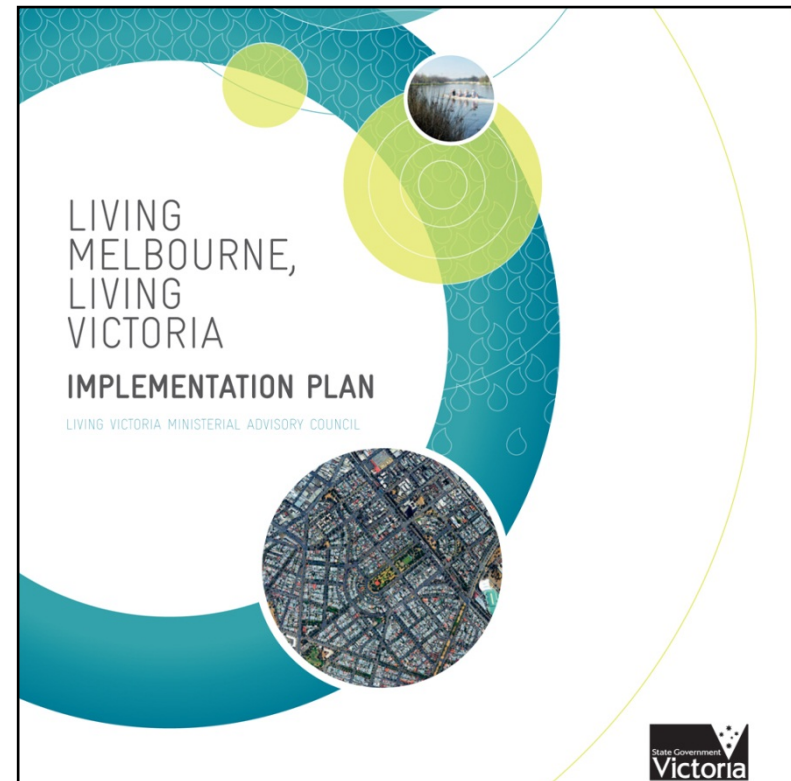


Catching public transport

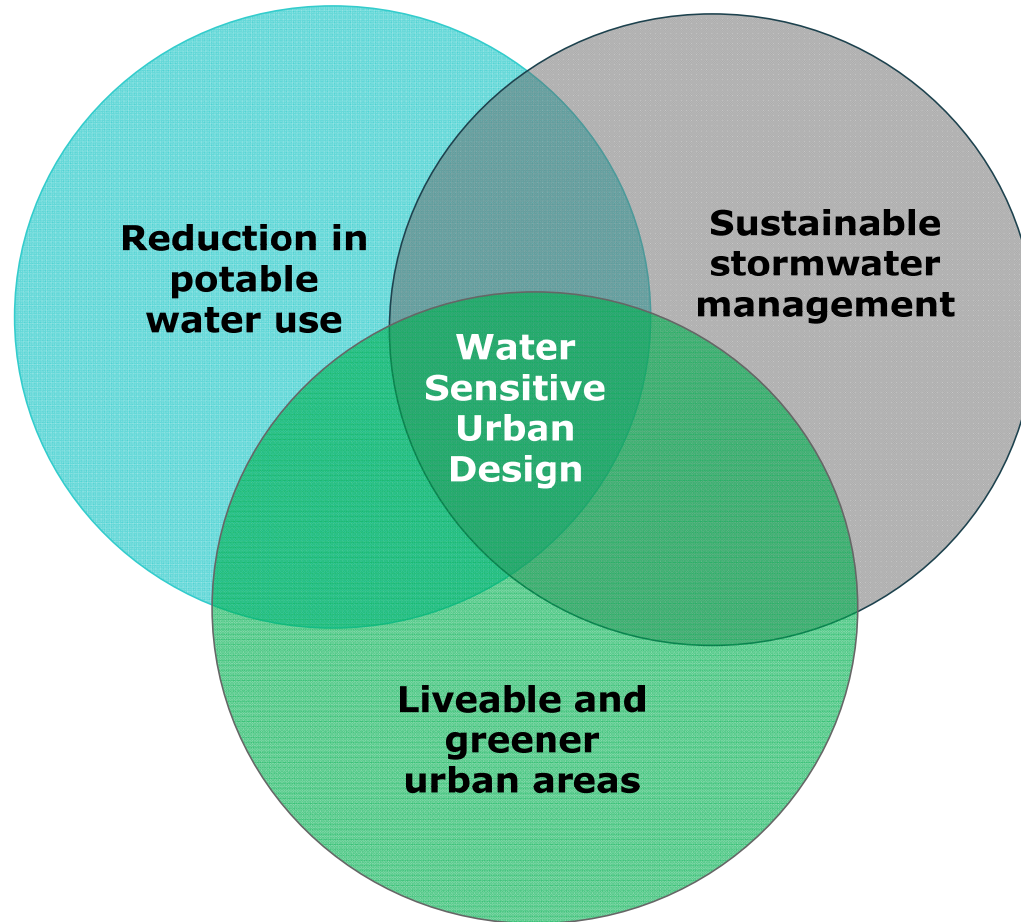
The role of water in liveability

A period of change is upon us...

- Changing space and direction in the way we manage water
- Living Melbourne, Living Victoria Implementation Plan
- Three main areas of reform
- Government's response
- Changes to planning provisions
- Office of Living Victoria
- 'Leading the Way' fund
- Focus on delivering liveable cities



Water Sensitive Urban Design (WSUD)



Tree pits – Geelong Railway Station

Its about seeing stormwater as a resource not a nuisance

WSUD toolbox



Raingardens

Buffer strips

Rainwater tanks

Swales

Pond

Tree pits

Permeable Paving

Wetlands

Infiltration pits

Tanderrum Way, Broadmeadows

Victorian Case Studies



Residential Subdivision Shepparton



Town Centre Revitalisation Broadmeadows Town Centre



Stormwater Harvesting Geelong



Climbing pits Boorondara



Full versions of these case studies are available on Clearwater's website – www.clearwater.asn.au



Boulevard Estate, Shepparton



Designing a green community

- New residential development in Shepparton
- Located adjacent to the Goulburn River
- Flood risk and stormwater challenges
- Very dry climate and soil
- Sustainability objectives drove design



Bio-filtration swales integrated into the streetscape
All case study images courtesy of CPG Australia

Improved water quality



Benefits of the integration of a wetland

- Water treatment and ecological benefits
- Created a linear park system
- Aesthetic outlook for residents
- Public open space area
- Opportunities for exercising
- Selling point for development



WSUD used to improve liveability





Broadmeadows Town Centre



Tanderrum Way Upgrade

- Town Centre Revitalisation Project
- Multiple stakeholders involved
- High pedestrian traffic
- Aim to generate a sense of place and community pride
- Develop an innovative public space
- Apply best practice stormwater management

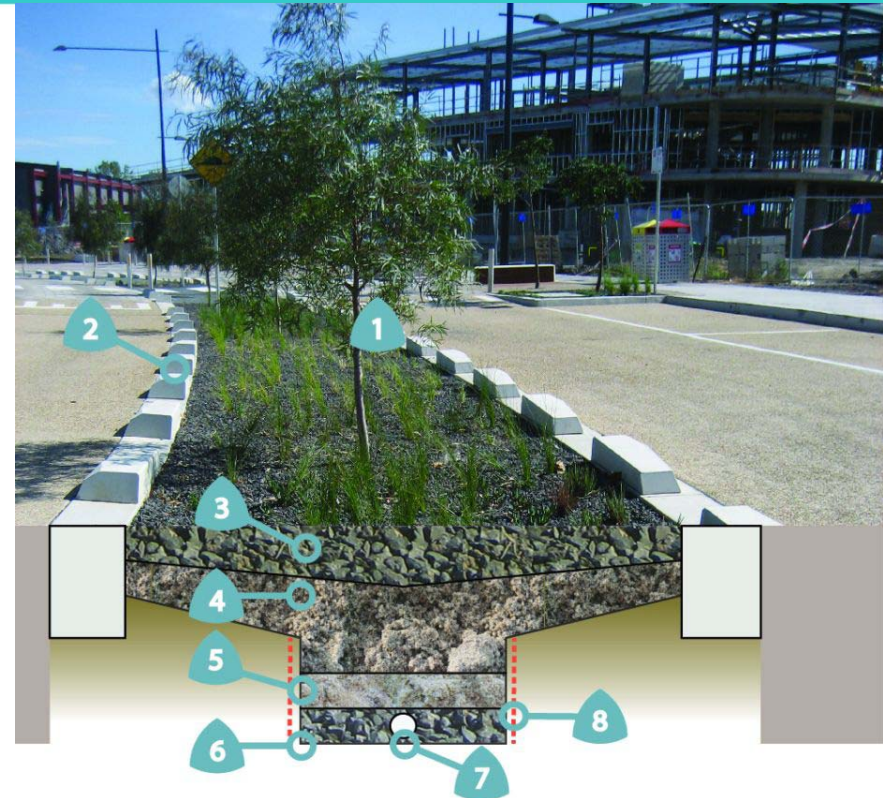


Bio-filtration swales integrated into the streetscape

Construction and design



Construction Phase and Design
Image courtesy of Hume City Council



1. Vegetation
2. Concrete edge strip
3. Mulch layer
4. Sandy filter layer
5. Transition Layer
6. Drainage layer
7. Slotted PVC pipe
8. Geotextile wrap

An innovative solution



Creating liveable communities

- Collaborative working – key to project success
- ‘Name Main Street’ Competition
- Community festival held to celebrate opening



Community Festival
Image courtesy of Hume City Council



Grinter Reserve, Geelong



Harvesting stormwater for community open space

- Product of the City's Sustainable Water Use Plan
- Site was identified as one of the largest users of potable water
- Wanted to drought proof the ovals and save on potable water use



Grinter Reserve - Construction of wetland February 2011
Image courtesy of the City of Greater Geelong

Multiple benefit outcomes

- Diversion of stormwater from adjacent 200 hectare suburb into new wetland
- Wetland treats stormwater
- Wider transformation into an attractive, social and educational precinct
- Eliminated all potable water usage on sports fields
- Additional watering available for irrigation and future needs



Grinter Reserve – Establishment Phase May 2011
Image courtesy of the City of Greater Geelong

Public Engagement



Grinter Wetland & Storm Water Harvesting

PROJECT COST
\$810,000

The rainfall that falls in Whittington was flowing out to Corio Bay, it is now diverted by gravity to this stormwater harvesting and treatment system. This water is then used to irrigate the sporting fields of Grinter Reserve, the BMX Track and other uses by City of Greater Geelong.



Storm water harvesting is the process of capturing, treating and re-using stormwater. Not only does this save valuable drinking water supplies, it also means that less polluted water is being carried into our local waterways.

This system saves **20 MILLION LITRES PER YEAR** of drinking water

Storage volume will irrigate the demands of **3 SPORTING OVALS**

Why Treat Stormwater

Stormwater runoff contains pollutants like sediment, nutrients and heavy metals. These pollutants are removed to enable reuse of the water and protect the waterways and ecosystems.

Major Pollutants

Suspended solids
Urban stormwater often contains high levels of suspended solids (fine particles such as silt that are easily carried in fast flowing water). Suspended solids can block the workings of sprinklers and give water a cloudy or dirty appearance. The individual particles attract pollutants such as phosphorus, heavy metals and even harmful bacteria.

Heavy metals
Heavy Metals such as lead, iron and zinc are washed into the stormwater systems from highways and roads. Heavy metals are dangerous to native fauna especially 'bottom feeders' which accumulate the metal in their system by eating or sifting through polluted sediments.

Nutrients
Nitrogen and phosphorus are found in high concentrations in stormwater. In small concentrations these nutrients are essential for sports turf and plants. When high levels of nutrients are found in natural waterways, explosions of biological growth, known as algal blooms, can occur.

Water captured in this wetland comes from:

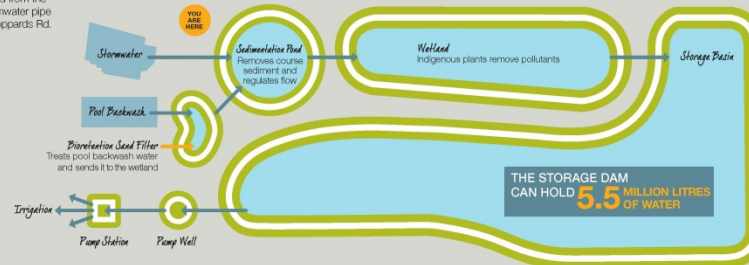
- Stormwater from the whole suburb of Whittington and part of St. Albans Park
- Stormwater from Splashdowns roof, carpark and Grinter Reserve
- Pool Backwash from Splashdown Aquatic Centre

Average annual rainfall falling in Whittington results in 624 million litres of runoff, of which this system will use 20 million litres.

217ha WHITTINGTON & ST. ALBANS PARK CATCHMENT



Stormwater is diverted to the wetland from the existing stormwater pipe system at Coppards Rd.



THE STORAGE DAM CAN HOLD **5.5 MILLION LITRES OF WATER**

How the System Works

Wetlands treat stormwater using two major processes:

'Physical' processes

'Biological' processes

Slow moving water inside means suspended solids can sink to the bottom of the marsh bed.

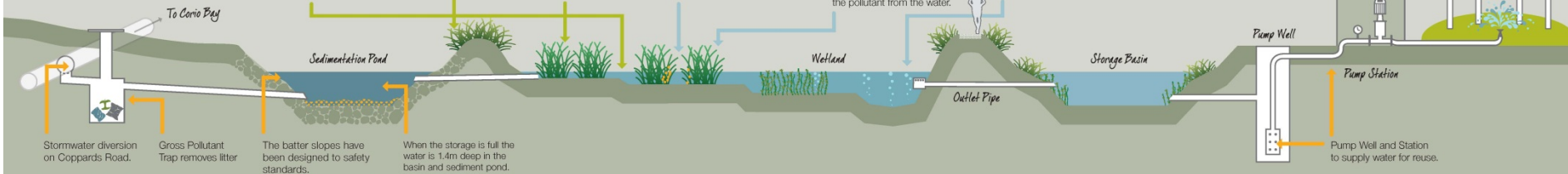
Plants trap and filter out suspended solids.

Plants also prevent polluted sediment from being washed away during floods.

Plants develop fine films of bacteria on them which attract and absorb pollutants that are dissolved in the water.

Plants use the pollutants in the stormwater, like Nitrogen and Phosphorus, to grow and therefore permanently remove the pollutant from the water.

Bacteria, such as *denitrifiers* help convert pollutants into inert gases, which are safely released back into the atmosphere.



This Storm Water Harvesting and Re-Use Project is funded through the Australian Government's Water for the Future initiative, the Victorian Government and the City of Greater Geelong, 2010.



Source: Courtesy of City of Greater Geelong



Boroondara Climbing Pits

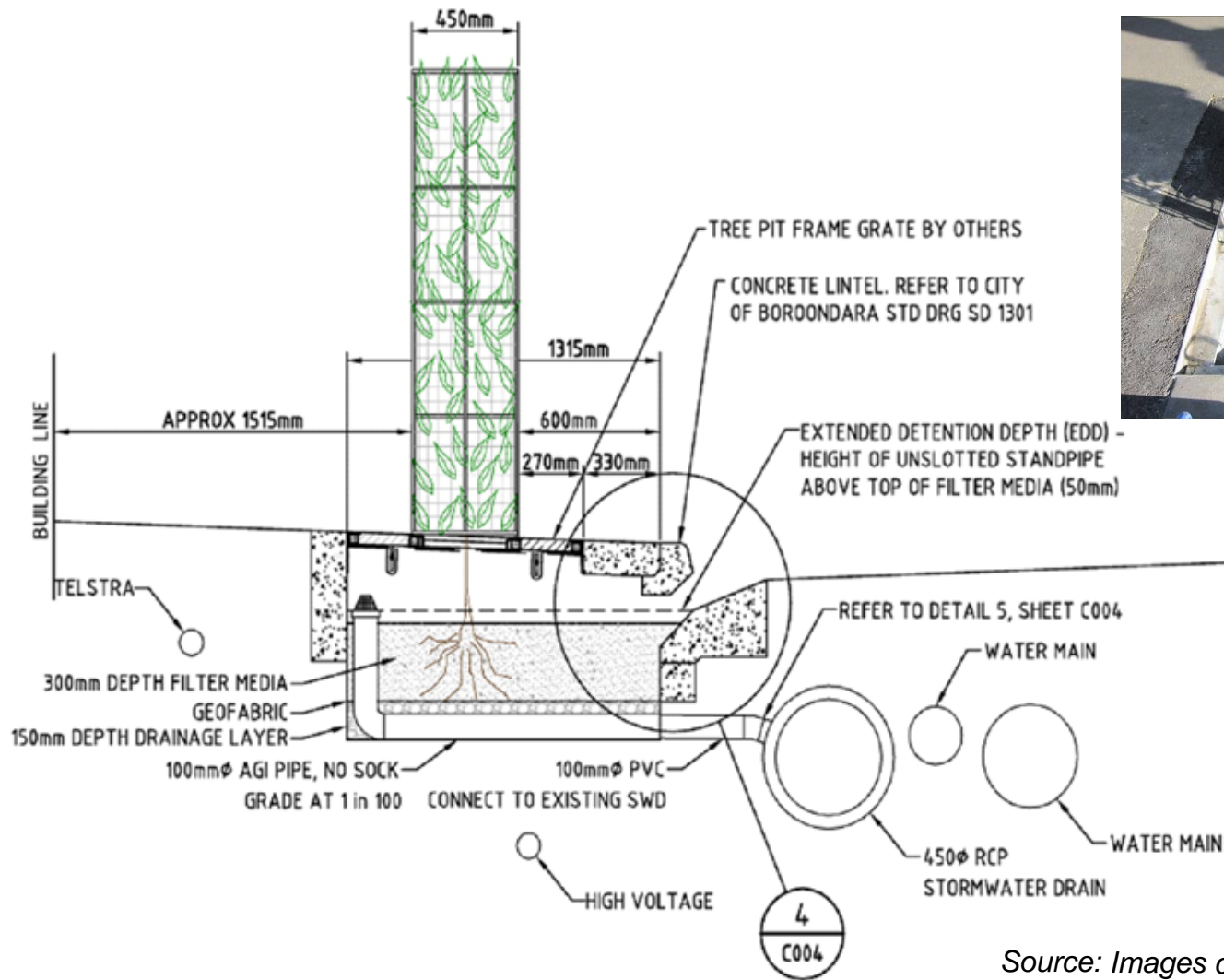
Greening urban streetscapes

- Driven by a desire to green Glenferrie Road
- Limited room to plant traditional street trees
- Dual opportunity identified to treat stormwater



Glenferrie Road Climbing Pit – establishment phase
Image courtesy of the City of Boroondara

Custom designing a green solution



Source: Images courtesy of the City of Boroondara

Multiple benefit outcomes

A green solution

- Created an innovative and custom design that can be replicated elsewhere
- Brought a green element into the streetscape
- Captures, filters and treats urban stormwater
- Flow on benefits for the catchment



Established climbing plant on Glenferrie Road
Source: Images courtesy of the City of Boroondara

GLENFERRIE ROAD WATER SENSITIVE URBAN DESIGN CLIMBER FRAMES

The City of Boroondara is trialling six Water Sensitive Urban Design climber frames along Glenferrie Road. The climber frames have been planted with Chinese Star Jasmine to 'green up' the Glenferrie Road Shopping Centre, and are designed to improve the quality of stormwater entering the Yarra. If these climber frames prove successful Council will consider installing more along Glenferrie Road.

Why climber frames? Shop awnings overhang many of the footpaths along Glenferrie Road. As a result tall street trees would not have enough room to grow. Climber frames were chosen to provide a unique 'green' feature for Glenferrie Road, that can be located under awnings.

Water Sensitive Urban Design

These climber frame units are designed with a stormwater inlet in the kerb. This allows stormwater to enter a chamber below the climber frame which is filled with sandy soil. This design feature provides water for the climber, filters out litter and pollutants from the stormwater and returns water of a higher quality to the Yarra River and the Bay.

This project has been assisted by generous funding from Melbourne Water.



Source: Images courtesy of the City of Boroondara

WSUD can deliver liveability outcomes



Integration of urban planning, design and sustainable water management

Protecting the environment for future generations

Reducing the urban heat island effect

Successful WSUD projects are about vision, commitment collaboration, and willingness to learn

Engaging with communities and raising awareness of WSUD

Greening our urban areas using innovative designs

Watering with fit for purpose water

Improving the quality of our urban waterways

Questions