



# Design, construction and maintenance of stormwater biofilters in south-west Western Australia workshop





## Vegetation guidelines for stormwater biofilters in the south-west of Western Australia



November 2014

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### Practice note

This practice note provides information on how to select the most appropriate plant species for biofilters within the south-west of Western Australia and how to establish and maintain the vegetation. This document is a summary of the *Vegetation guidelines for biofilters in the south-west of Western Australia* (Monash University 2014), which includes a review of the research that provides the basis for this practice note.

Biofilters (also known as biofiltration systems, bioretention systems and rain gardens) are excavated basins or trenches filled with porous material that acts as filter media and growing media for the planted vegetation. Biofilters are a proven method of treating stormwater from urban areas. To function well, biofilters rely on both the filtering properties of the soil media and the pollutant uptake and/or transformation capacity of their plants and the associated microbial community.

This document is not intended to be a complete design guide for biofilters. The *Adoption Guidelines for Stormwater Biofiltration Systems* (FAWB 2009) describes the biofilter design process. Please note that the FAWB Adoption Guidelines are currently being revised, and the revision is due to be completed at the end of 2014.

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# Acknowledgements-

## A big thank you!

**Brendan Oversby**  
TME Town Planning  
Management  
Engineering Pty Ltd



**Emily Payne**  
Monash University



**Glen Byleveld**  
SERCUL Inc



**Tim Fletcher**  
Melbourne  
University



**Belinda Hatt**  
Monash  
University





# Acknowledgements-

## A big thank you!

- Kathy Meney, Syrinx Environmental Pty Ltd
- Janine McDonald, Antonietta Torre, Krish Seewraj and Belinda Quinton, Department of Water WA
- Kate Bushby and Peter Adkins, Swan River Trust
- Toby Rees, City of Gosnells
- Grant Mackinnon, City of Swan
- Brett Kuhlmann, South East Regional Centre for Urban Landcare
- Craig Wansbrough and Anna von Puttkammer, Shire of Serpentine-Jarrahdale
- Tom Atkinson
- Brad Thompson, Shire of Mundaring
- Bruce Thomas, City of Busselton
- Daniel Connellan, Graphic designer- Monash University
- Western Australian Government's State Natural Resource Management Program

Day 1 Agenda: Design of biofilters		
Time	Topic	Presenter
8:30	<b>Registration</b> - Tea and coffee available on arrival	
9:00	<b>Welcome and introduction</b>	Shelley Shepherd
9:05	<b>Launch</b> of the <i>Vegetation guidelines for stormwater biofilters in the south-west of Western Australia</i> (Monash Water for Liveability Centre, 2014)	Don Crawford, Director - Water and Land Use Division, Department of Water
9:10	<b>Presentation</b> of the <i>Vegetation guidelines for biofilters in south west Western Australia</i>	Brendan Oversby, Glen Byleveld Emily Payne, Tim Fletcher, Belinda Hatt
10:15	<b>Questions &amp; Feedback</b>	
10.30	<b>Morning tea</b>	
10:50	<b>How to design biofilters</b> <ul style="list-style-type: none"> <li>• Sizing biofilters- worked examples</li> <li>• Locating and integration with drainage systems</li> <li>• Addressing local issues &amp; Integration with landscape</li> <li>• Implementation, construction and maintenance issues</li> <li>• <b>Questions</b></li> </ul>	Wayne Edgeloe
11:35	<b>Biofilter design:</b> The elements of successful biofilters Case studies from around Australia and internationally <ul style="list-style-type: none"> <li>• Sizing saturated zones for different climates &amp; dry period durations</li> <li>• Biofilter media specifications</li> </ul> <b>Questions</b>	Tim Fletcher & Belinda Hatt
12:20	<b>Lunch</b>	
12.50	<b>Introduction to design activity-</b> overview of case studies <b>Group work</b> – Development of designs for local proposed biofilter sites	Wayne Edgeloe, Tim Fletcher Belinda Hatt, Emily Payne, Andrew O'Neill
15:00	<b>Afternoon tea</b>	
15:15	<b>Reporting back</b> – Groups present their designs	All
16:00	<b>Future research directions</b> <ul style="list-style-type: none"> <li>• Update on CRC for Water Sensitive Cities biofilter research</li> <li>• Update of the <i>Adoption Guidelines for Stormwater Biofiltration Systems</i> (Facility for Advancing Water Biofiltration, Monash University, 2009)</li> </ul> <b>Questions</b>	Belinda Hatt & Emily Payne -Monash University
16:15	<b>Workshop wrap up</b>	Shelley Shepherd

Day 2 Agenda: Construction and maintenance of biofilters		
Time	Topic	Presenter
8:30	<b>Registration</b> - Tea and coffee available on arrival	
9:00	<b>Welcome and introduction</b> & Recap of Day 1	Shelley Shepherd
9:10	<b>Biofilter construction and maintenance</b> <ul style="list-style-type: none"> <li>• Potential local sources of biofilter media</li> <li>• Construction supervision</li> <li>• Protecting biofilters during land development and housing construction</li> <li>• Irrigation requirements</li> </ul>	Brendan Oversby
9:40	<b>Questions</b>	
9:45	<b>Monitoring and evaluation</b> <ul style="list-style-type: none"> <li>• Design biofilter systems to enable monitoring</li> <li>• Monitoring and evaluation to inform maintenance, assess biofilter performance</li> </ul> <b>Questions</b>	Tim Fletcher & Belinda Hatt
10:15	<b>Morning tea</b>	
10:45	<b>Developing a maintenance plan</b>	Andrew O'Neill
11:00	<b>Overcoming the barriers to biofilter adoption</b> <ul style="list-style-type: none"> <li>• Overcoming challenges &amp; Achievements and learnings</li> <li>• Maintenance requirements &amp; Lifecycle costs</li> </ul>	Andrew O'Neill
12:00	<b>Lunch</b>	
12:30	<b>Case Study-</b> Parkfield Lake retrofit and bioretention area (2013 AWA and SIA award winning project)	Wayne Edgeloe, TME Town Planning Management Engineering Pty Ltd
12:55	<b>Case studies – Biofilters in the Shire of Serpentine-Jarrahdale</b> <ul style="list-style-type: none"> <li>• Challenges experienced with implementation, what has and hasn't worked</li> <li>• Design elements, including the new standard specifications for Shire biofilters</li> <li>• Bioretention tree pits and potential issues</li> <li>• Maintenance</li> <li>• Case studies of different biofilter types (basins, road median swales &amp; biopockets)</li> </ul>	Craig Wansbrough, Project Manager, Water Sensitive Urban Design, Shire of Serpentine-Jarrahdale
1:30	<b>Bus tour of biofilter sites</b> - Onsite discussion of implementation and maintenance	Meet project managers / asset managers on site
16:30	<b>Workshop wrap up</b>	Shelley Shepherd
16:45	<b>Close</b>	