WATER SENSITIVE SA

Ah-ha moments from first 12 months

Mellissa Bradley, Program Manager

Stormwater SA AGM
25 November 2015

Water Sensitive SA - established to build the capacity of all organisations with a role in the planning, design, approval, construction or maintenance of new developments and infrastructure to implement best practice water sensitive urban design (WSUD)

Water Sensitive SA Program Partners

Natural Resources
Adelaide and Mt Lofty Ranges

LOCAL GOVERNMENT RESEARCH & DEVELOPMENT SCHEME

Government of South Australia

SA Water

City of Burnside

Port Adelaide Enfield

ONKAPARINGA

Salisbury

STORMWATER SOUTH AUSTRALIA

Local Government Association of South Australia

TEA TREE GULLY

City of Charles Sturt

City of Playford

Australian Government

National Landcare Programme

EPA South Australia

CITY OF MARION

What we provide:

- WSUD policy development and implementation pathways
- specialist training
- networking opportunities and peer-to-peer
- more accessible WSUD research for practitioners
- guidelines and tools
- information sharing through our website, e-newsletter, blog articles and forums.

Angas Street, Adelaide adjacent SAPOL
Photo: Water Sensitive SA

Ah ha moments…….

www.ew.com

Training

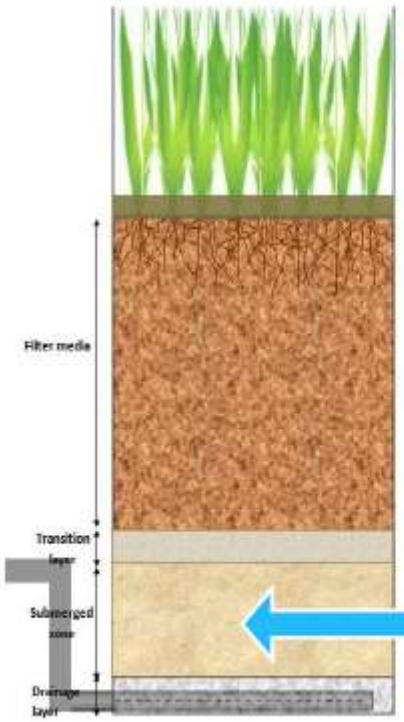
Adoption Guidelines for Stormwater Biofiltration Systems

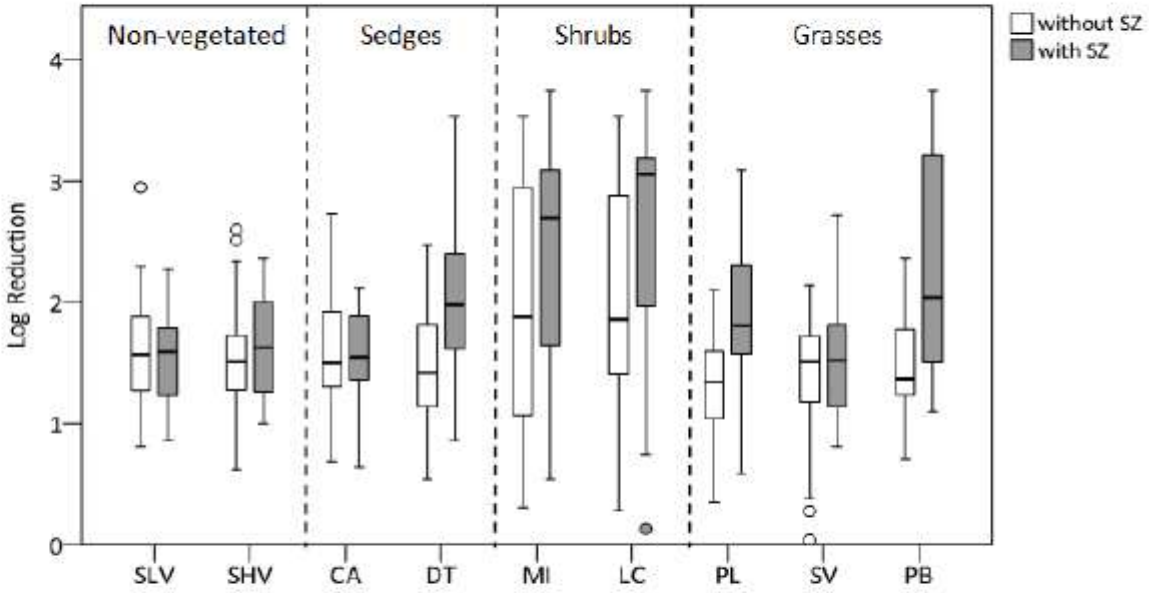
Submerged Zone

IDEAL DEPTH
450-500mm

- The presence of a "permanently" submerged zone **>300 mm** made from **sand or gravel with a carbon source** (around 5% by volume) will:
  - Improve Cu and Zn removal (to meet ANZECC concentration targets)
  - Support plant survival during dry periods and therefore
  - Ensure TN removal after dry spells
- **Strongly recommended for all biofilters**, but especially where
  - Low rainfall and/or extended dry periods are common
  - Systems are unavoidably shallow or over-sized

(3) Submerged Zone

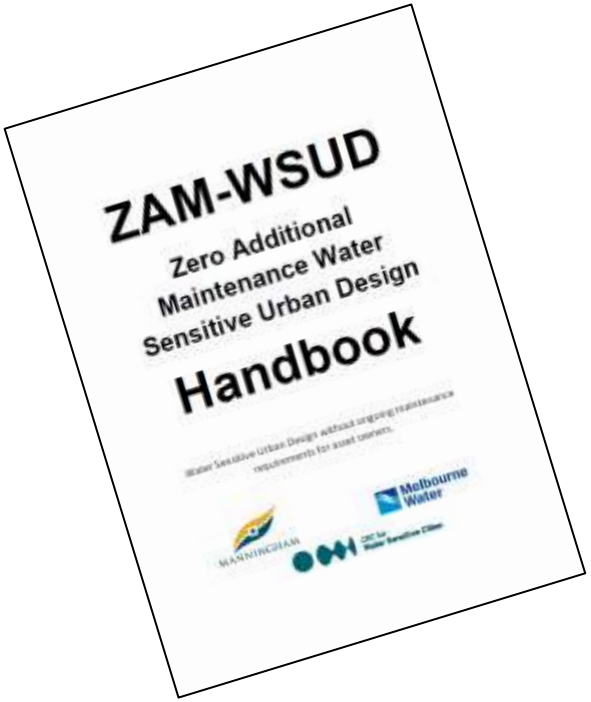




Submerged Zone is important for passive watering of plants and removal of pollutants

Source: CRC for Water Sensitive Cities

Zero Additional Maintenance WSUD Handbook



Park Avenue, Doncaster, single barrier kerb installation Source: CRC for Water Sensitive Cities

Preliminary field trials undertaken at the Manningham depot in 2014/15 confirmed the suitability of the **Soft leaf buffalo grass** (Palmetto SS100 cultivar)

www.watersensitivecities.org.au

Trees

- Anecdotal evidence suggests the most successful, least "needy" systems are those that contain trees
- Pro: can shade and protect understorey species during extended dry periods
- Con: can shade out or outcompete understorey species
- Con: can have large and/or invasive root systems
- Avoid dropping fruit, limbs, leaves
- Not always appropriate
  - e.g. where it is necessary to maintain clear lines of sight

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29 OCTOBER - 10:00am to 4:00pm

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Tour of Oaklands Park wetland and ASR scheme

Training

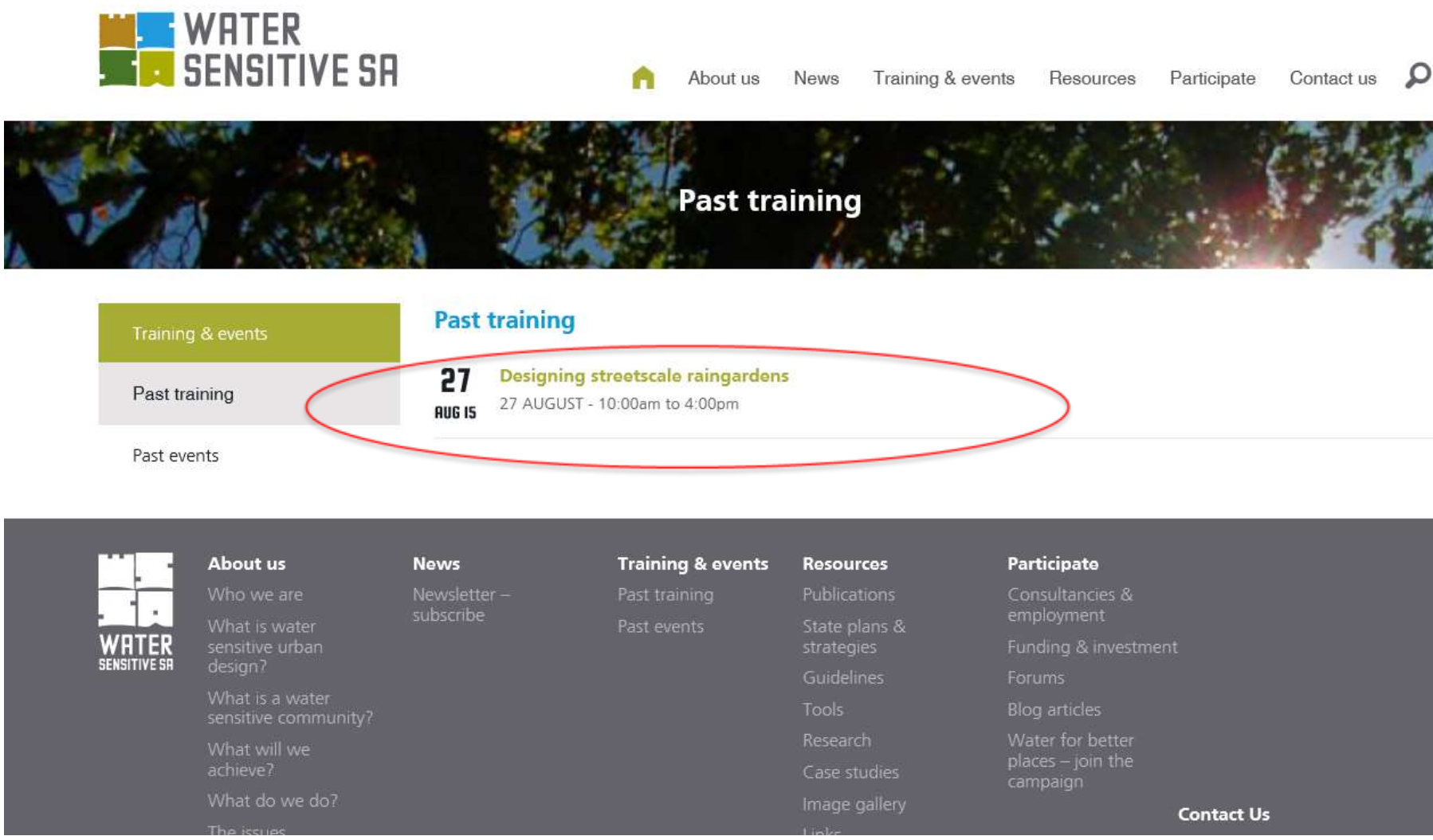
Designing Streetscale Raingardens

Source: DesignFlow


Source: DesignFlow

Source: DesignFlow

Traffic calming raingardens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AUG 15
Designing streetscale raingardens
27 AUGUST - 10:00am to 4:00pm
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Seminar Series

Plant species selection for amenity and resilience in stormwater biofilters & wetlands

Shaun Kennedy, SA Water

Mulch

- Organic mulch not recommended
- Gravel mulch restricts
  - plant spread,
  - heat stress,
  - impedes removal of accumulated sediments

- Answer: Use high planting density

>> But what should we plant?

Adelaide MLR Region – applicable species

Preferred Position:

I = Requires seasonal inundation to survive
T = Terrestrial plant that can tolerate inundation

Current availability:

Ra = Rare
Av = Available from indigenous plant growers

Plant forms:

- ***Clumping Sedges***
- ***Spreading Sedges***
- ***Mat-forming***
- ***Herbs***
- ***Seasonal colour***
- ***Trees & Shrubs***

Adelaide MLR Region – Mat-forming

Mimulus repens T / I Av

Adelaide MLR Region – **Seasonal Colour**

Calocephalus citreus *T* *Av*

Wahlenbergia luteola T Av

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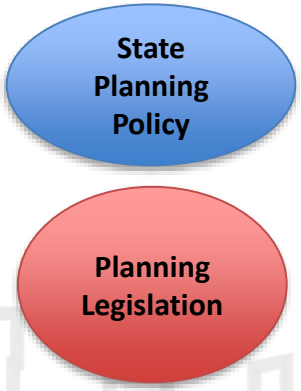
Pathways to water sensitive communities through planning

Policy framework for WSUD in five Australian cities

Linda Choi
Monash University, CRC for Water Sensitive Cities

Overarching WSUD Policy



BPEM = *Best Practice Environmental Management*

IWCM = Integrated Water Cycle Management

SPPF = *State Planning Policy Framework*

***** *WSUD Creating more liveable and water sensitive cities in South Australia*

State	Overarching Policy for WSUD	Policy focus	Binding on decision makers?	Approach to mainstream adoption of WSUD
Qld	• ***State Planning Policy: State Interest 3 – Water Quality*** • ***SEQ Regional Plan***	Urban stormwater management with focus on Flood management	√	Planning schemes **must be consistent** with the SPP and the regional plan (SP Act s 55) **or** interim development assessment requirements apply under the SPP
NSW	**No overarching State policy for WSUD but covered under some Environmental Planning Instruments (EPIs)**	Focus on water conservation	N/A	Unless land is within the Growth Centres, adoption of WSUD policy varies from council to council
Vic	• ***SEPP – Waters of Victoria*** • ***BPEM Guidelines*** • ***SPPF*** • ***VPP Clause 56.07***	Urban stormwater management with focus on waterway health	√	**Incorporated into all local planning schemes for residential subdivision and PSPs** but otherwise it varies from council to council
SA	• ***30-Year Plan*** • ***Water Sensitive Cities in SA**** • ***SA Planning Policy Library***	Water security with focus on stormwater harvesting	X	Planning schemes **'should seek to promote the provisions of the Planning Strategy'** (Development Act s 22)
WA	• ***State Planning Policy 2.9 – Water Resources*** • ***Liveable Neighbourhoods*** • ***Better Urban Water Management***	Urban stormwater management with focus on protection of groundwater in aquifers	?	Planning schemes are to have **'due regard'** to any SPP relevant to the district (Planning and Development Act s 77)

WSUD at Different Scales

Precinct Structure Planning

Residential subdivision

Urban Infill Development

Lot Scale

State	State-wide policy for Precinct structure Planning	State-wide policy for Residential Subdivision	State-wide policy for Infill	State-wide policy for Lot Scale Development
Qld	**Broad policy framework** under the SPP and the SEQ Regional Plan	Broad policy framework under the SPP and the SEQ Regional Plan	**X**	**Building regulation: QDC Part 4.0, *Building Sustainability*- MP 4.1 *Sustainable Buildings*** - water efficient taps and toilet
NSW	*Growth Centre Development Code & SEPPs for Growth Centres. No WSUD policy for other areas.*	None unless in Growth Centres	**X**	***SEPP (Building Sustainability Index: BASIX) 2004*** All new developments and renovations > $50,000 - up to 40% reduction in potable water consumption and 40% in greenhouse gas emissions targets.
Vic	**Binding*** **PSP Guidelines** IWCM	**binding** **VPP – Clause 56.07** Integrated Water Management	**X**	**Building regulation: BCA – sustainability measures** single detached dwellings to install rainwater tank or solar panels.
SA	**Broad policy framework** under the 30-Year Plan and the SAPP Library	Broad policy framework under the 30-Year Plan and the SAPP Library	**X**	**Building regulation: BCA – SA2 Water Efficiency** – new houses/house extensions > 50 m2 to have additional water supply to supplement mains water or on site stormwater retention for certain soil types. **SA 78AA Onsite Retention of Stormwater** – for certain soil types
WA	Liveable Neighbourhoods BUWM	Liveable Neighbourhoods BUWM	**?**	**R-Code cl 5.3.9 or cl 6.3.8** demonstrate compliance with the stormwater management design principles

Example of local WSUD policy in Victoria
Port Phillip Planning Scheme

Applies to:
- **New buildings**
- **Extension to existing buildings which are 50 m2 in floor area or greater**
- **A subdivision in a commercial zone**

Similar Local Planning Policy has been adopted by four other metropolitan councils:
- **Melbourne**
- **Mooney Valley**
- **Port Phillip**
- **Yarra**

22.12 STORMWATER MANAGEMENT (WATER SENSITIVE URBAN DESIGN)

22.12-2 Objectives

13/03/2014
C78

- To achieve the best practice water quality performance objectives set out in the *Urban Stormwater Best Practice Environmental Management Guidelines, CSIRO 1999 (or as amended). Currently, these water quality performance objectives are:*
  - Suspended Solids - 80% retention of typical urban annual load
  - Total Nitrogen - 45% retention of typical urban annual load
  - Total Phosphorus - 45% retention of typical urban annual load
  - Litter - 70% reduction of typical urban annual load.
- To promote the use of water sensitive urban design, including stormwater re-use.
- To mitigate the detrimental effect of development on downstream waterways, by the application of best practice stormwater management through water sensitive urban design for new development.
- To minimise peak stormwater flows and stormwater pollutants to improve the health of water bodies, including creeks, rivers and bays.
- To reintegrate urban water into the landscape to facilitate a range of benefits including microclimate cooling, local habitat and provision of attractive spaces for community use and well being.

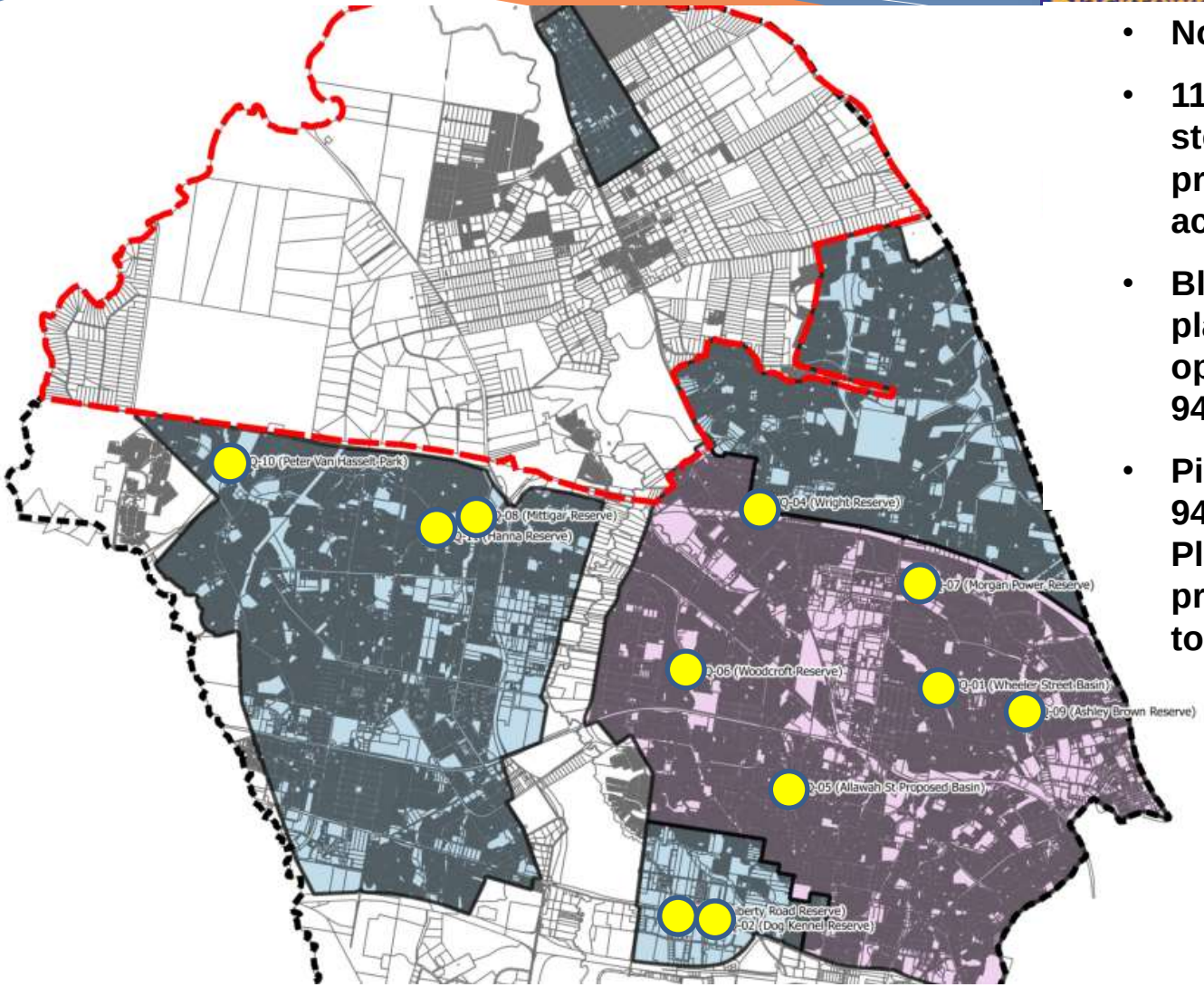
Australian Government Department of Industry and Science
Business Cooperative Research Centres Programme

The Business Case
On-site versus off-site stormwater treatment

Mark Liebman, Senior Engineer,
Blacktown City Council

Issues

- Council received complaints - complex & **lengthy DA assessment**
- On-site approach can be **costly**
- On-site systems "**shoe horned**" into developments
- Not the holistic result Council originally wanted
- **High risk of On-site systems not being maintained**
- Council resolved to comprehensively review its DCP



- **Not in NWGC**
- **11 precinct scale stormwater treatment projects proposed across the LGA**
- **Blue area – voluntary planning area to operate until Section 94 plan adopted**
- **Pink area – Section 94 Contribution Planning (CP19) proposed – reported to Council in June.**

Off-site Treatment

- 11 projects – all located on Council owned land next to creeks
- All take dirty water from the creeks & direct to treatment systems
- Return clean stormwater to the creeks
- Sometimes co-locating treatment systems on sports fields
- Convert the fields into large grassy well drained bioretention systems
- Store water on their surface in wet weather only
- Most existing fields are based on clay – closed for days after rain
- Improve the drainage on the fields so that playability is actually improved

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2016 Training and Events

February	Training	Detailed design of wetlands
March	Seminar	WSUD and micro climate benefits – theory and practice
March 21 & 22	Training	Leadership to advance water sensitive urban design
April	Seminar	Managed aquifer recharge schemes – the challenges and remedies
April	Training	Introduction to WSUD for policy planners and development assessment planners and engineers
May	Training	Construction and maintenance of WSUD assets
June	Seminar	Infill development – the opportunities for WSUD to enhance liveability, sustainability and resilience

Franklin Street Photo: City of Adelaide

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