WATER SENSITIVE SA

World Environmental Fair

3 and 4 June 2017

Water sensitive communities

Liveable

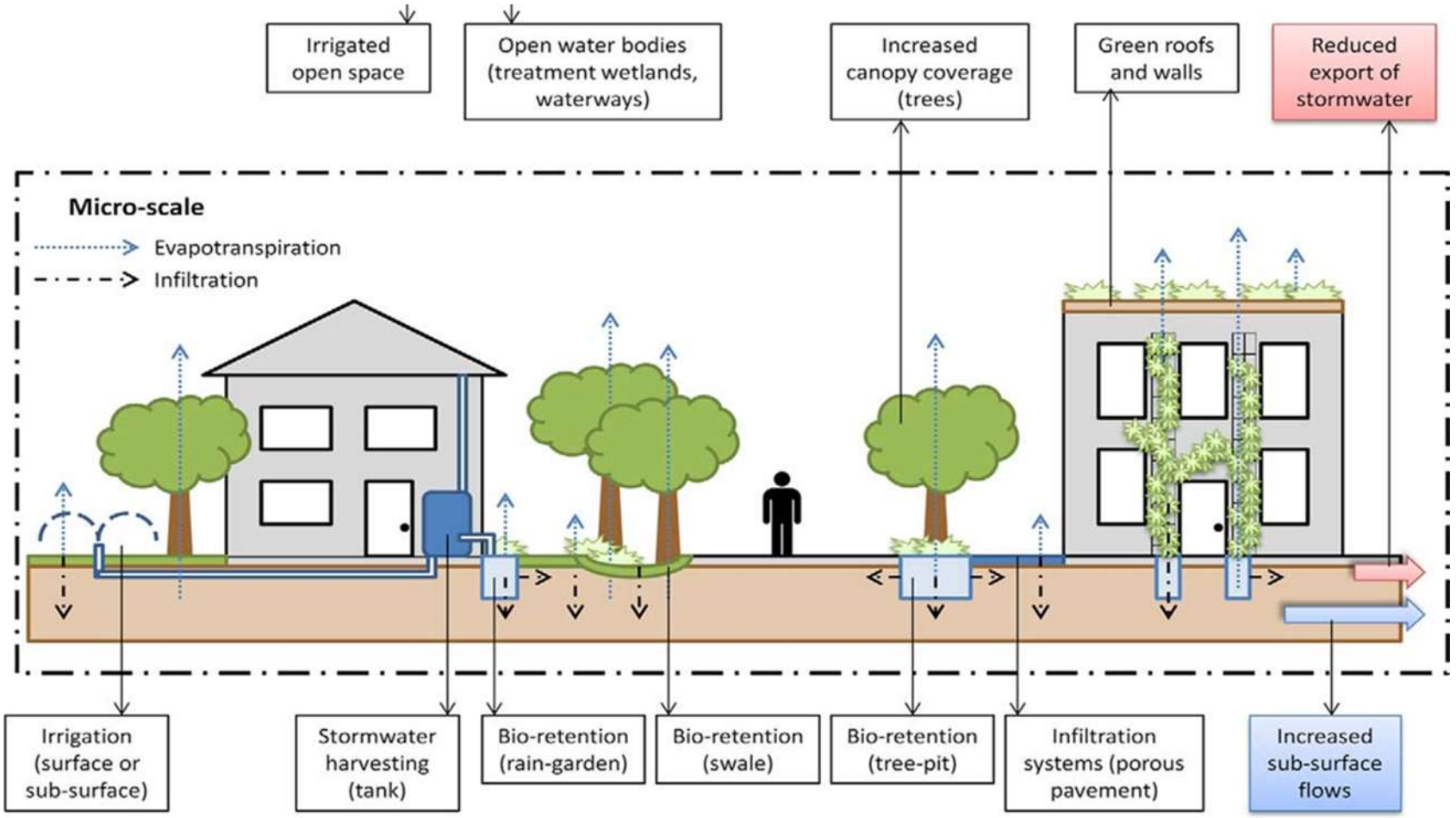
Sustainable

Source: P.Coombes

Productive

Resilient

Harvest and re-use rainwater benefits water cycle & urban cooling



Source: Coutts et al. (2012)

Get more value from your rainwater tank

Percentage of time rainwater tank will meet full domestic internal daily demand

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KENT TOWN

(Average Annual Rainfall 583 mm)

Rainwater Use Option		High internal use			Medium internal use 1			Medium internal use 2			Low grade uses			
Description		11L single flush toilet, 100% laundry (front load WM) & HWS			(6/3L) Dual flush toilet, AAA-rated shower head, 100% laundry (top load WM) & HWS			(6/3L) Dual flush toilet, AAA-rated shower head, 100% laundry (front load WM) & HWS			(6/3L) Dual flush toilet and 100% laundry (front load WM) only			
Tank Capacity (L)		1,000	2,000	5,000	1,000	2,000	5,000	1,000	2,000	5,000	1,000	2,000	5,000	9,000
Roof area to be connected to rainwater tank (m²)	50	9%	11%	11%	17%	19%	19%	23%	27%	28%	51%	59%	65%	68%
	100	19%	26%	30%	30%	40%	47%	39%	50%	60%	65%	77%	87%	97%
	150	25%	36%	46%	37%	50%	63%	47%	60%	72%	71%	83%	95%	100%
	200	29%	42%	56%	41%	55%	70%	51%	65%	79%	74%	87%	98%	100%

Assumptions: The internal water use estimates are based upon a 3 person household.

Supersize your rainwater tank

Size (L)	Material	Min	Max
1,000 L	poly	$385	$425
2,000 L	poly	$485	$1,750
5,000 L	poly	$730	$1,450
10,000L	poly	$1,280	$1,900

Size (L)	Material	Typical	
1,000 L	Galv. steel	$860	
2,000 L	Galv. steel	$1,025	
5,000 L	Galv. steel	$1,450	
10,000L	Galv. steel	$1,850	

Note: Prices are indicative only

2,000L underdeck

3,000L modular

2,000L slimline

Onsite retention of Stormwater via infiltration

Infiltration trenches

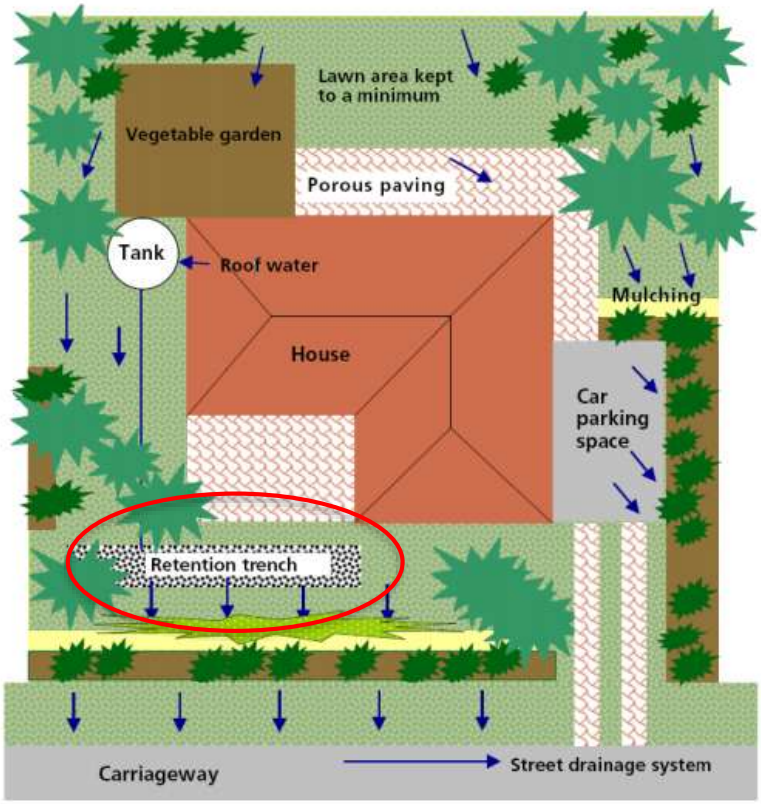
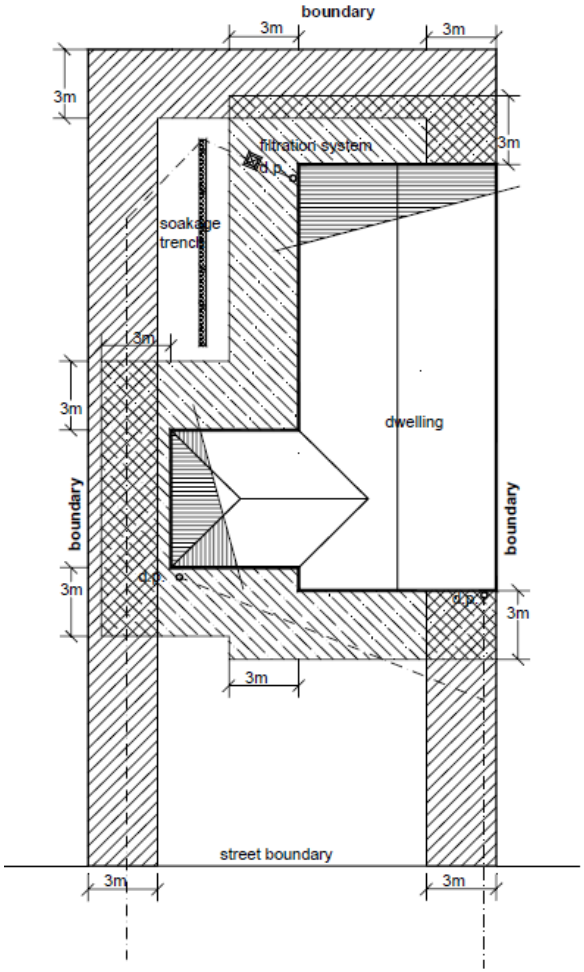
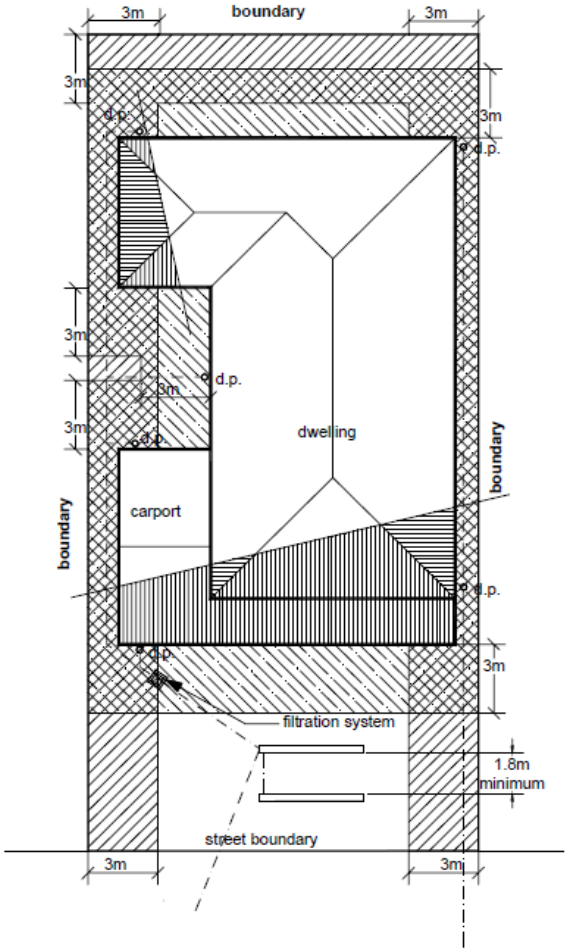


Figure 2.1 **Example of an Overall WSUD Strategy for a Typical Suburban Dwelling**

Source: LHC CREMS (2002)

Trench sizing & location





Must be 3 metres from any boundary or building footing

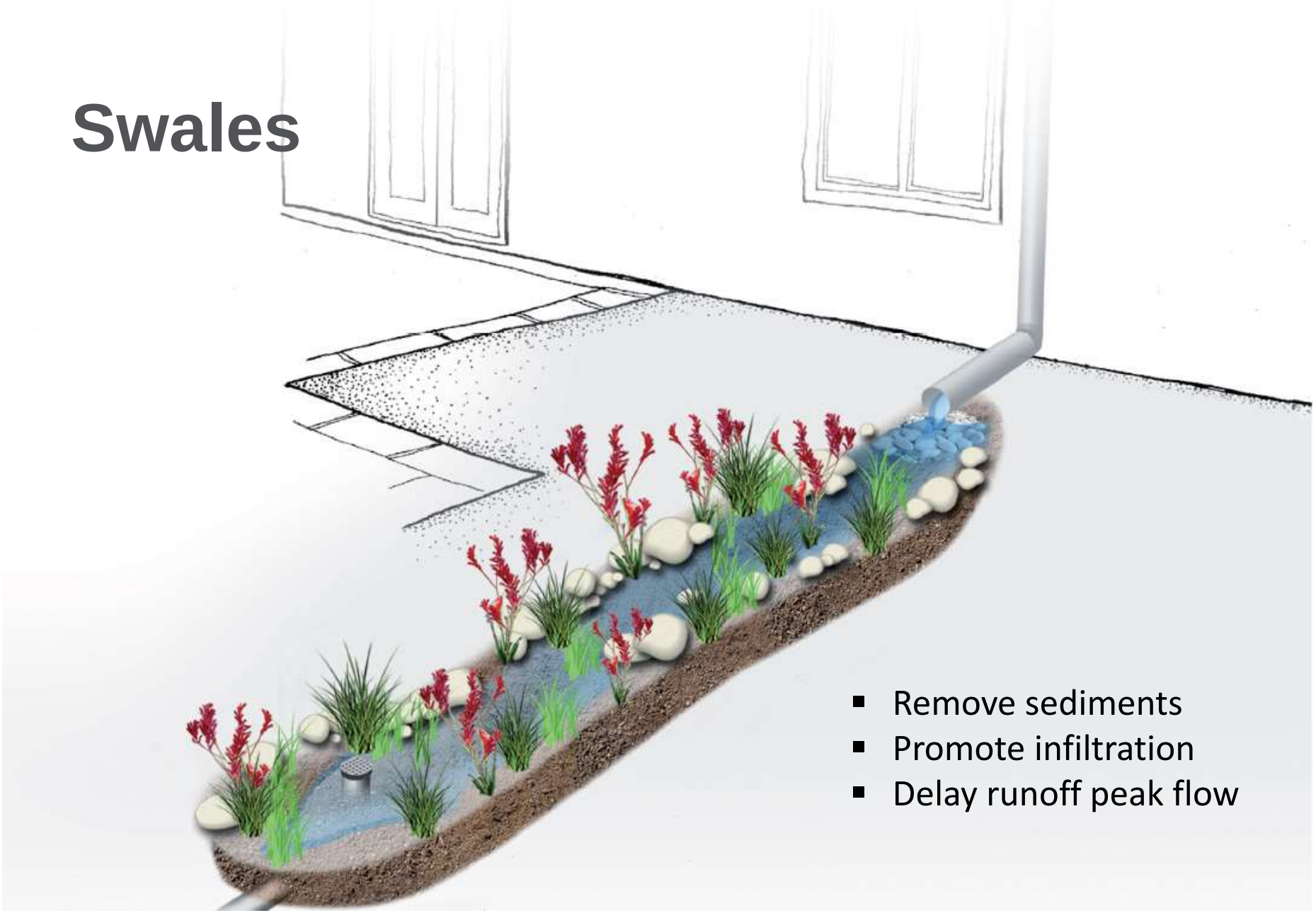
Development Act 1993
Minister's Specification
SA 78AA
September 2003
On-Site Retention of Stormwater

Passive irrigation via infiltration

Source: City of Mitcham

Vegetated Swales and buffer strips

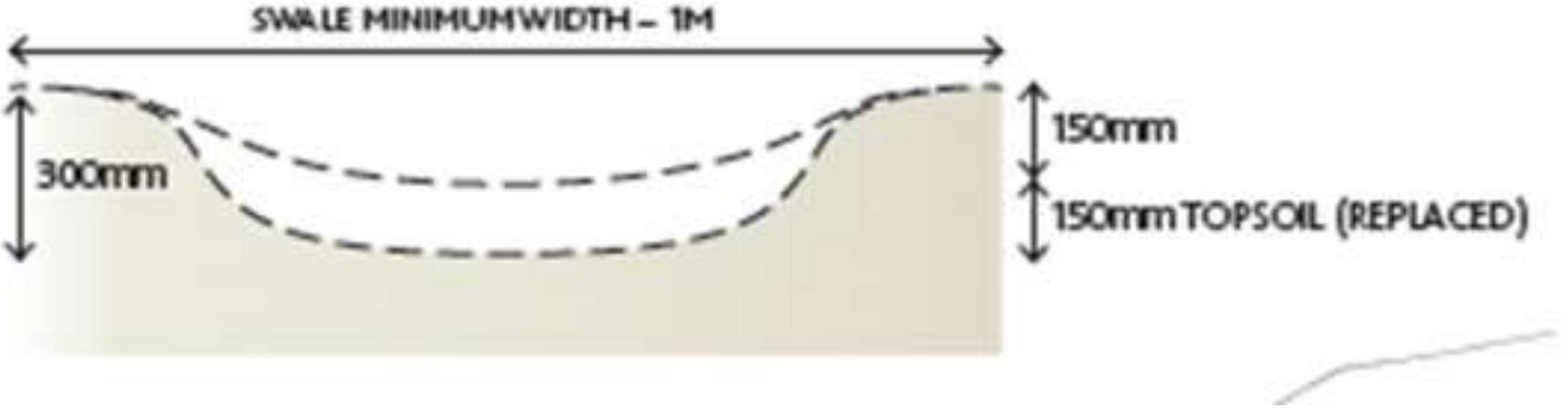
Swales



- Remove sediments
- Promote infiltration
- Delay runoff peak flow

Source: Melbourne Water

Swale



Unless the swale is discharging to an existing stormwater surface pit, an inground raingarden or infiltration raingarden, it will need to be fitted with an overflow pipe connected back into the stormwater system.

Source: Melbourne Water

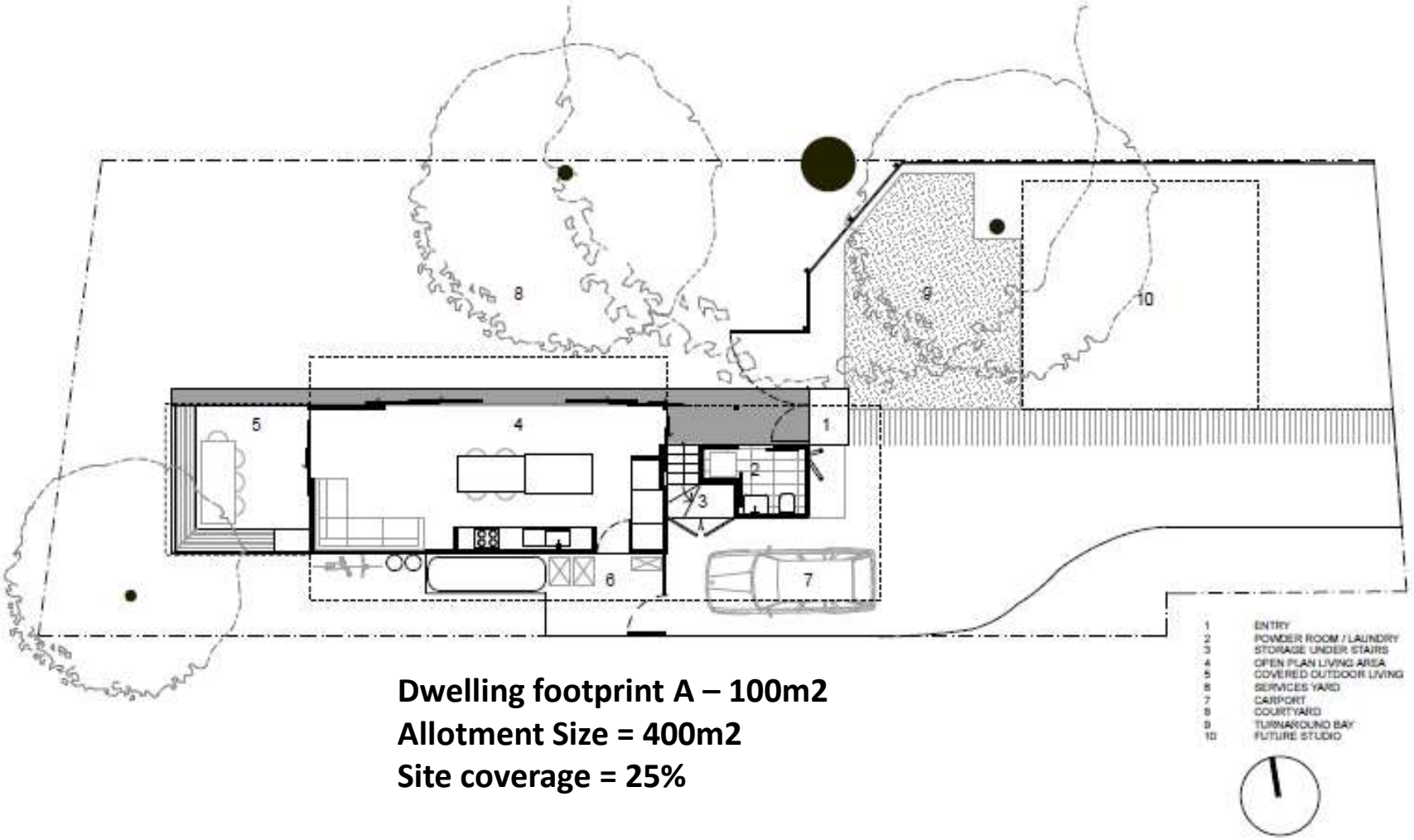
Maintenance

Source: www.ldsearthstewardship.org

Building a new house?

Consider going up rather than out.

The 100m2 house



Dwelling footprint A – 100m2
Allotment Size = 400m2
Site coverage = 25%

Source: Levesque & Derrick Architects, lada.com.au

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5,000L rainwater tank for:

- Toilet flushing
- Laundry
- garden

Source: Levesque & Derrick Architects, lada.com.au

Source: Levesque & Derrick Architects, lada.com.au

Consider alternative pavement options

Only pave trafficable width

Source: www.hdsustainablelandscapes.com

Only pave trafficable width

Source: www.houzz.com

Green roofs

Source: www.shedforce.com

Source: www.staceroofing.co.uk

Permeable pavements

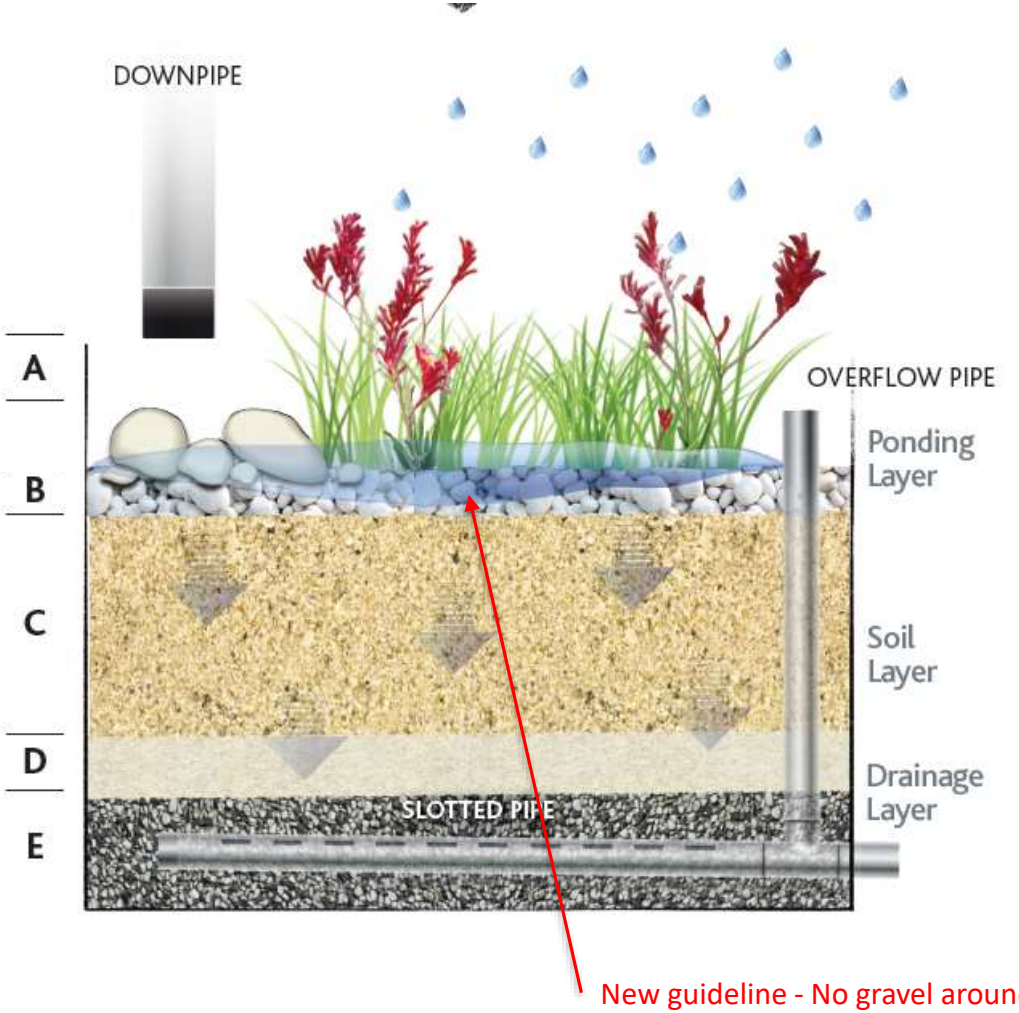
Source: www.marshalls.co.uk

Permeable pavements

Source: Modi Building Technology

Source: Baden Myers

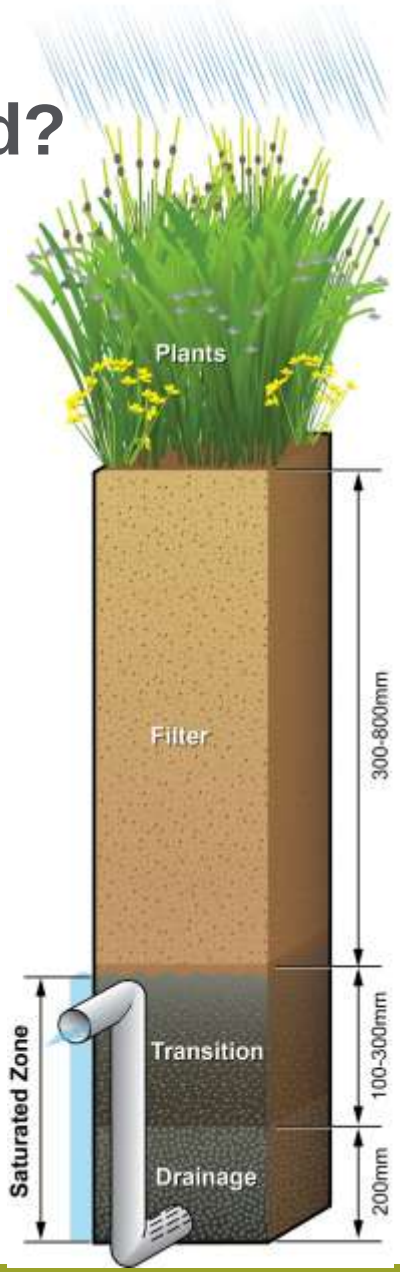
Build a raingarden



A	100 mm to top of planter box
B	100 mm (min) to top of overflow pipe
C	400 mm (min) sandy loam
D	100 mm white washed sand
E	200mm (min) of 20 mm gravel + 50 mm of 7 mm screenings

Source: Adapted from Melbourne Water

What do I need?



Saturated zone = transition + drainage layers must be lined with HDPE liner

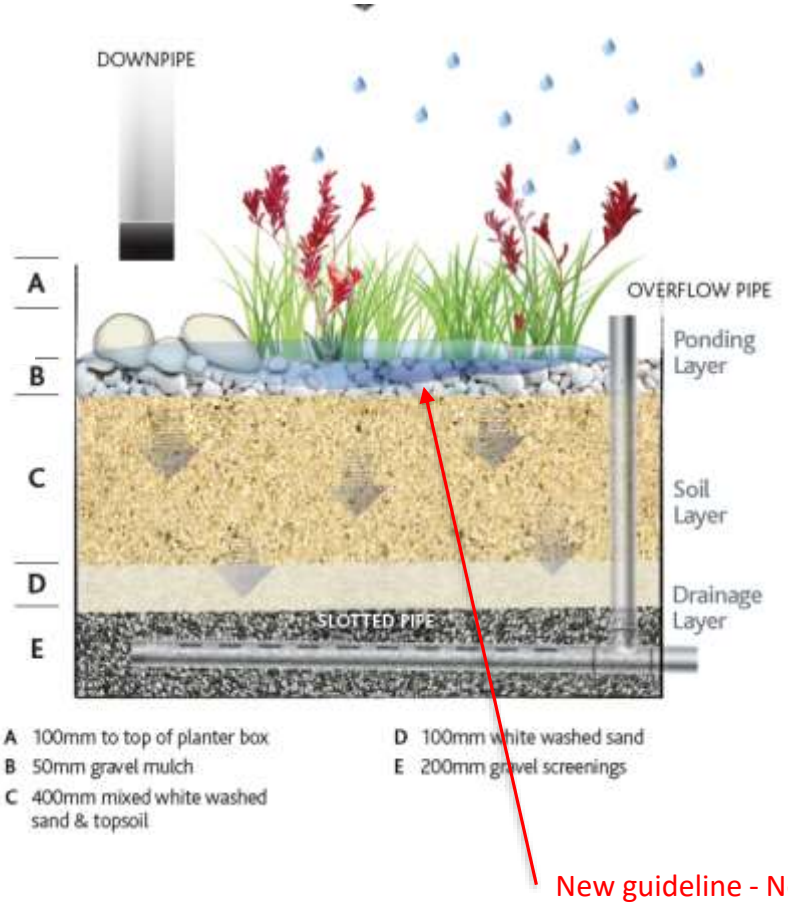
Plants – See Water Sensitive SA *Guide to Raingarden plant selection and placement*

Filter media – Sandy loam - some clay (up to 3%) and organic matter (up to 5%) to retain moisture between rainfall events

Transition layer – washed sand

Drainage layer – 7 – 9mm aggregate

Above ground design



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Source: Adapted from Melbourne Water

Shopping List

How to construct a raingarden

Tips

1. If your raingarden is greater than 4m wide install two slotted drainage pipes (evenly spaced) and two overflow pipes

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How to size your raingarden

Area of run-off (m^2)	Area of raingarden (approx.) (m^2)
50	1
100	2
150	3
200	4
250	5
300	6
350	7
400	8
450	9