InSite Water Tool
Compliance with the Planning and Design Code

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TOPICS

SECTION 01

Stormwater and related greening policies within the Planning and Design Code

SECTION 02

Introduction to InSite Water – stormwater assessment tool for small-scale development

SECTION 03

Case studies for common development types and worked examples using InSite Water

SECTION 04

Self-certification with InSite Water Tool

Images: A.King

Policy objectives

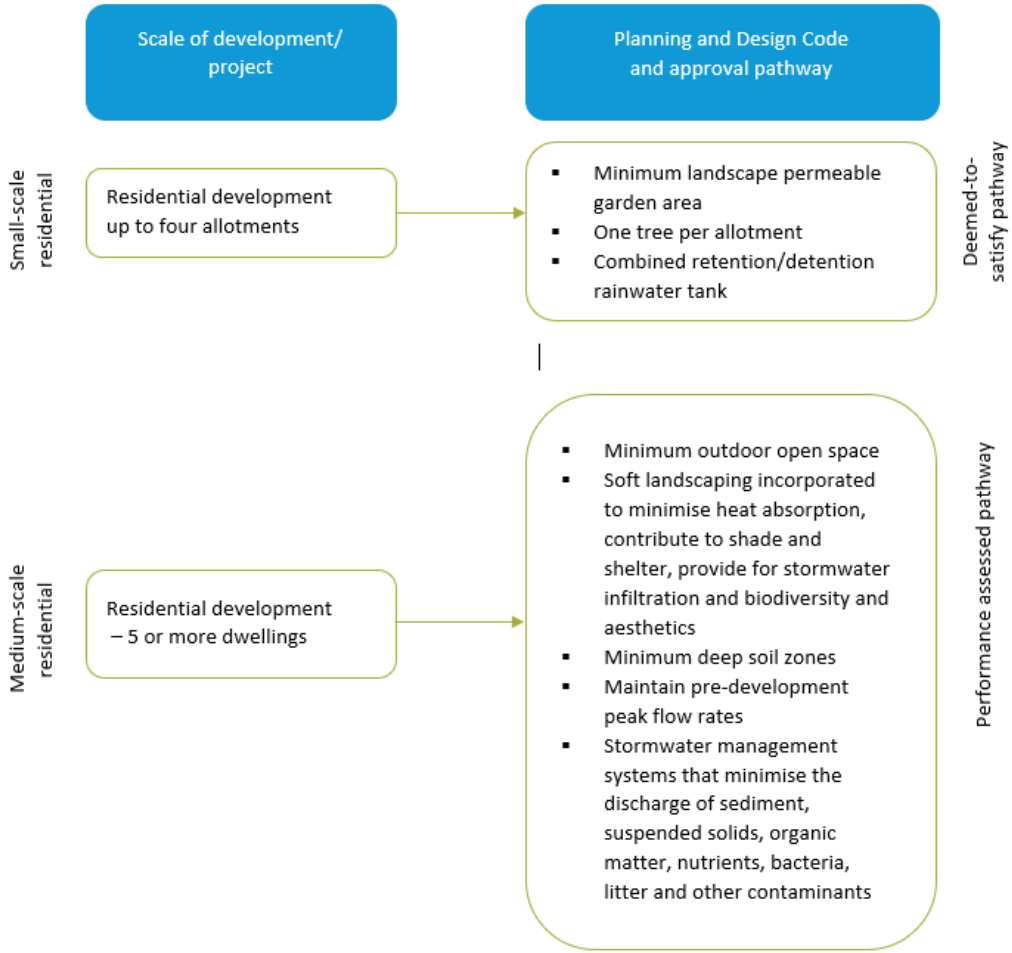
- reduced local flooding risk
- protection of integrity of urban streams
- protect health of waterways and coastal environments
- provide amenity through greening
- sustain green spaces through alternative water and passive irrigation
- reduce urban heat island effect

Section 1

Stormwater and related greening policies within the Planning and Design Code

01 – Performance-based stormwater polices within the Planning and Design Code

Residential development approval pathways



Part 3 of Code

- Stormwater Management Overlay
- Urban Tree Canopy Overlay

Part 4 of the Code

- Design
- Design in Urban Areas

- Stormwater management/WSUD
- Green infrastructure (green cover/canopy cover) as it related to stormwater management

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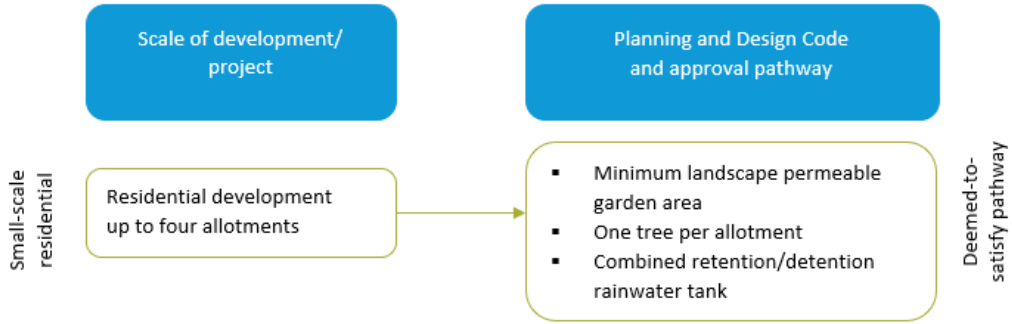

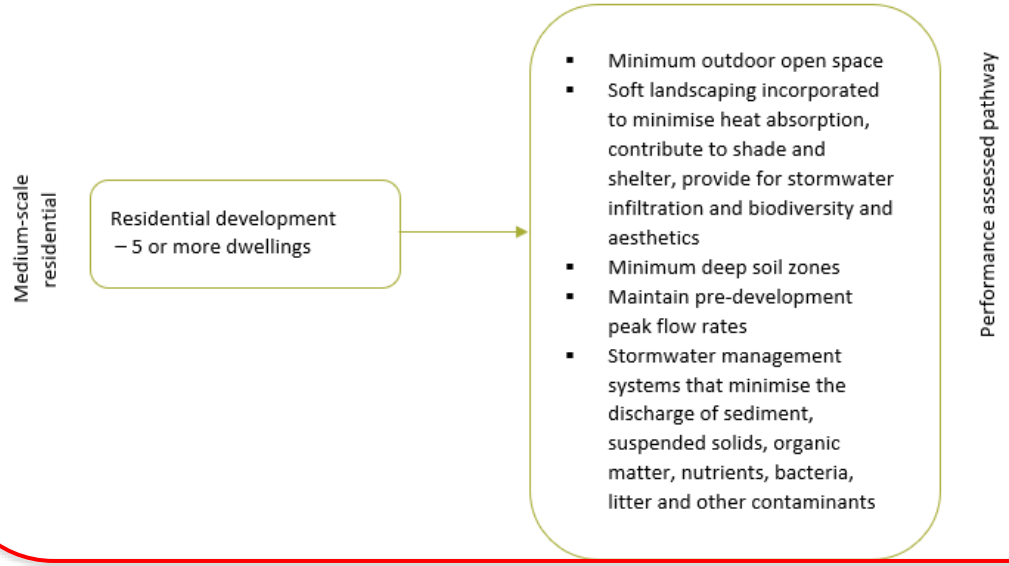

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Small-scale residential

Option 2 – Performance assessed (merit assessment) compliance pathway

Stormwater and greening polices Planning and Design Code

WATER SENSITIVE SA

Water sensitive urban design

- stormwater runoff quality
- stormwater runoff peak flow management
- stormwater runoff volume management
- water use efficiency use of alternative water
- stormwater integrated with landscape, e.g infiltration and permeable/porous paving

Green infrastructure

- minimum landscaped areas as a proportion of site
- deep soil zones
- minimum tree plantings – residential and commercial
- maximum driveway cross overs widths (protect trees/space for trees on verge)

Soft landscaped areas & stormwater

Part 4 – General Development Policies | Design | Landscaping PO 3.1
Part 4 – General Development Policies | Design in urban areas | Landscaping PO 3.1, PO22.1

Performance Outcome (PO 3.1)

Soft landscaping and tree planting is incorporated to:

(a) minimise heat absorption and reflection;

(b) contribute shade and shelter;

(c) provide for stormwater infiltration;

(d) enhance the appearance of land and streetscapes and

(e) contribute to biodiversity

DTS/DPF 22.1

None provided in Code

Solutions include:

- Permeable paving
- Infiltration systems – for size charts refer to - Ministerial Building Standard MBS009 – On-site retention of stormwater

Permeable paving - Small-scale, residential application
Source: Adbri Masonry

Driveways & stormwater

Part 4 – General Development Policies | Design in urban areas | Soft landscaping PO 34.1, PO 34.2

Performance Outcome (PO 34.2)

Battle-axe or common driveways incorporate landscaping and permeability to improve appearance and assist in stormwater management.

Permeable paving - Small-scale, residential application
Source: Adbri Masonry

DTS/DPF 34.2

Battle-axe or common driveways satisfy (a) and (b):

a) are **constructed of a minimum of 50% permeable or porous material**

b) where the driveway is located directly adjacent the side or rear boundary of the site, **soft landscaping with a minimum dimension of 1m** is provided **between the driveway and site boundary** (excluding along the perimeter of a passing point)

Benefits of permeable paving

- ✓ Do away with underground detention storages and pumps (in combination with roof rainwater harvesting and reuse via retention/detention tanks)
- ✓ Reduce requirements for pipes and pits
- ✓ Passive irrigation and root aeration of adjacent trees for healthy root stock and quick canopy establishment

Car parking appearance

Part 4 – General Development Policies | Design | Car parking appearance
Part 4 – General Development Policies | Design in urban areas | Car parking appearance

Performance Outcome (PO 7.4 – 7.6)

Various – provision of trees and soft landscaping.

Performance Outcome (PO 7.7)

Vehicle parking areas and access ways incorporate integrated stormwater management techniques such as permeable or porous surfaces, infiltration systems, drainage swales or rain gardens that integrate with soft landscaping.

DTS/DPF

None provided in Code

Alternative guidance

Infiltration - Ministerial Building Standard MBS009 – On-site retention of stormwater, to the Compliance pathway (Planning approval)

Image: Medium density development. Photo: A.King

Car parking appearance

Performance Outcome (PO7.4)

Street level vehicle parking areas that are open to the sky are landscaped to provide shade and reduce solar heat absorption and reflection.

DTS / DPF 7.4

Vehicle parking areas that are open to the sky and comprise 10 or more car parking spaces include a shade tree with a mature canopy of 4m diameter spaced for each 10 car parking spaces provided and a landscaped strip on any road frontage of a minimum dimension of 1m.

Image: melton.vic.gov.au

Car parking appearance

Car parks offer easy wins

- ✓ Minimal underground services - less conflict than other locations
- ✓ Opportunities for integrated solutions:
  - permeable paving
  - infiltration systems &
  - garden beds

Images: Fig Plaza, oxygen; St Mary's carpark, Water Sensitive SA

Environmental Performance

Part 4 – General Development Policies | Design in urban areas | Environmental performance PO 4.3
Part 4 – General Development Policies | Design in urban areas | Environmental PO 14.2

Performance Outcome (PO 4.3)

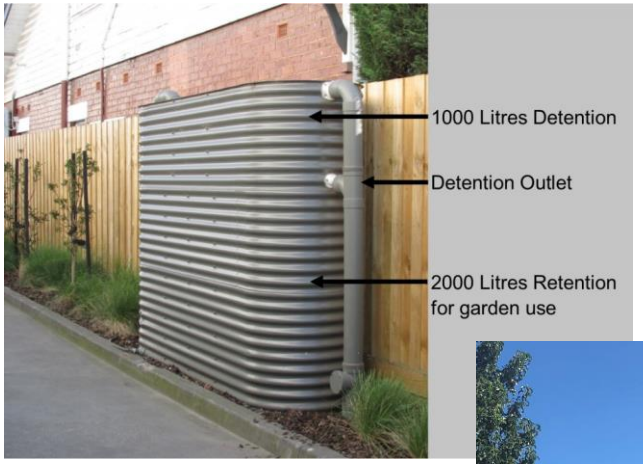
Buildings incorporate climate responsive techniques and features such as building and window orientation, use of eaves, verandahs and shading structures, water harvesting, at ground landscaping, green walls, green roofs and photovoltaic cells

Performance Outcome (PO 14.2)

Development incorporates sustainable design techniques and features such as window orientation, eaves and shading structures, water harvesting and use, green walls and roof designs that enable the provision of rainwater tanks (where they are not provided elsewhere on site), green roofs and photovoltaic cells.

DTS/DPF

None provided in Code



Stormwater management – runoff quality Non-residential

Part 4 – General Development Policies | Design | Water sensitive design PO31.1
Part 4 – General Development Policies | Design in urban areas | Water sensitive design PO42.1

Performance Outcome (PO 31.1)

Development likely to result in significant risk of export of litter, oil or grease includes stormwater management systems designed to minimise pollutants entering stormwater.

Performance Outcome (PO 31.2)

Water discharged from a development site is of a physical, chemical and biological condition equivalent to or better than its pre-developed state

Council engineering requirements

Will vary from Council to Council

Development includes stormwater management systems designed to achieve the following gross pollutant outcomes:

(a) 90 per cent reduction of litter/gross pollutants compared to untreated stormwater runoff; and

(b) no visible oils/grease for flows up to the 1-in-3 month average return interval flood peak flow.

DTS/DPF 31.1 and 31.2)

None are applicable.

Service Station, Marion Road, Image:B.Myers

Water sensitive design

Part 4 – General Development Policies | Design in urban areas | Water sensitive design

Performance Outcome (PO 5.1)

Development is sited and designed to maintain natural hydrological systems without negatively impacting:

a) the quantity and quality of surface water and groundwater

b) the depth and directional flow of surface water and groundwater

c) the quality and function of natural springs

DTS/DPF

None provided in Code

Image: Concrete Masonry Association of Australia

TIP - To avoid clogging or permeable pavers

Ratio of contributing impervious areas : permeable paving area | No greater than 4: 1

Stormwater Management – Runoff quality

Part 4 – General Development Policies | Design | Water sensitive design PO 18.1
Part 4 – General Development Policies | Design in urban areas | Water sensitive design PO 36.1

Performance Outcome (PO 18.1)

Residential development creating a common driveway / access includes stormwater management systems that minimise the discharge of sediment, suspended solids, organic matter, nutrients, bacteria, litter and other contaminants to the stormwater system, watercourses or other water bodies.

Image: A.King

DTS/DPT 18.1 / Council Engineering requirements

Residential development creating a common driveway / access services 5 or more dwellings achieves the following stormwater runoff outcomes:

a) 80 percent reduction in average annual total suspended solids;

b) 60 percent reduction in average annual total phosphorus;

c) 45 percent reduction in average annual total nitrogen.

Compliance pathway (Planning approval)

i. **Model for urban stormwater improvement conceptualisation (MUSIC)**

OR

ii. **Self certification with InSite Water tool** if <5,000m^2 with no public road created

Stormwater Management – Flow & volume

Part 4 – General Development Policies | Design | Water sensitive design PO 18.2
Part 4 – General Development Policies | Design in urban areas | Water sensitive design PO 36.2

Performance Outcome (PO 18.2)

Residential development creating a common driveway / access includes a stormwater management system designed to mitigate peak flows and manage the rate and duration of stormwater discharges from the site to ensure that the development does not increase the peak flows in downstream systems.

Compliance pathway (Planning approval)

i. **Site stormwater management plan applying preferred model**

OR

ii. **Self certification with InSite Water tool**

DTS/DPF 18.2 (ONLY – non metro)

Development creating a common driveway / access that services 5 or more dwellings

(a) maintains a pre-development peak flow rate from the site based upon a 0.35 runoff coefficient for the 18.1% AEP 30-minute storm and the stormwater runoff time to peak is not increased;

OR

captures and retains the difference in pre-development runoff volume (based upon a 0.35 runoff coefficient) vs post development runoff volume from the site for an 18.1% AEP 30-minutes storm;

AND

(b) manages site generated stormwater runoff up to and including the 1% AEP flood event to avoid flooding of buildings

NOTE: Performance assessed pathway. Design storm will vary from Council to Council

Hazards (Bushfire- Regional) Overlay

Phase 2

Performance Outcome

Development has a dedicated water supply available at all times for fire-fighting purposes:

(a) comprising a minimum of 5000 litres; and

(b) positioned in an accessible location and accompanied with necessary equipment to allow occupants to minimise the spread of bushfire to the accommodation.

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Image: Kingspan

PLUS

Minister's Specification SA 78 Additional requirements in designated bushfire prone areas

Table 2.2 Capacity and fittings required for a bushfire protection water storage facility

AVAILABILITY OF WATER SUPPLY	Minimum water storage capacity (litres)/fittings required	
	LEVEL OF BUSHFIRE RISK	
	General and Medium Excluded (if within 500m of High)	High
Connected to mains water	2000/domestic*	22000/fire+
Not connected to mains water	5000/domestic*	22000/fire+

Minimum landscape requirement

Part 4 – General Development Policies | Design | Soft landscaping PO 25.1, PO 25.2

Performance Outcome (PO 25.1)

Soft landscaping is provided between dwellings and common driveways to improve the outlook for occupants and appearance of common areas

Performance Outcome (PO 25.2)

Soft landscaping is provided that improves the appearance of common driveways.

DTS / DPF 25.2

Other than where located directly in front of a garage or a building entry, soft landscaping with a minimum dimension of 1m is provided between a dwelling and common driveway.

DTS/DPF 25.2

Where a common driveway is located directly adjacent the side or rear boundary of the site, soft landscaping with a minimum dimension of 1m is provided between the driveway and site boundary (excluding along the perimeter of a passing point).

Example: Orphanage Park, Goodwood carpark

BEFORE

AFTER

Images: City of Unley

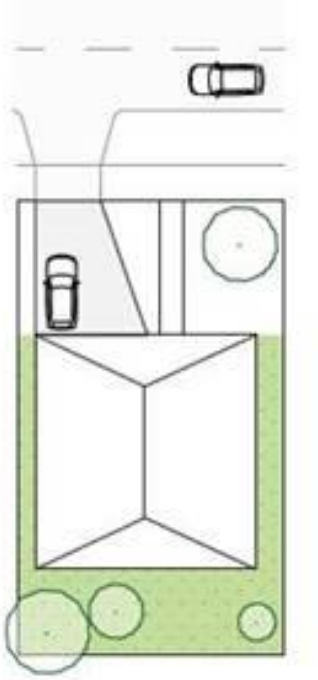
Maximum driveway cross overs widths
(protect trees/space for trees on verge)

Part 4 – General Development Policies | Design in urban areas | Carparking appearances PO 23.3

Canopy/ urban green cover

Performance Outcome 23.3

Driveways and access points located and designed to facilitate safe access and egress while maximising land available for street tree planting, landscaped street frontages and on-street parking.



DTS / DPF 23.3

Driveways and access points satisfy (a) and (b):

(a) sites with a frontage to a public road of 10m or less, have a width between 3.0 and 3.2 metres measured at the property boundary and are the only access point provided on the site

(b) sites with a frontage to a public road greater than 10m:

i. have a maximum width of 5m measured at the property and are the only access point provided on the site; or

ii. have a width between 3.0 metres and 3.2 metres measured at the property boundary and no more than two access points are provided on site, separated by no less than 1m.

Deep Soil Zones

Part 4 – General Development Policies | Design in urban areas | Landscaping PO 13.1

Canopy/ urban green cover

Performance Outcome (PO13.1)

Development facing a street provides a well landscaped area that contains a deep soil space to accommodate a tree of a species and size adequate to provide shade, contribute to tree canopy targets and soften the appearance of buildings.

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DTS / DPF 13.1

Buildings provide a 4m by 4m deep soil space in front of the building to accommodate a medium to large tree, except where no building setback from front property boundaries is desired.

Deep Soil Zones

Part 4 – General Development Policies | Design in urban areas | Landscaping PO 13.2, PO 13.3, PO 13.4

Canopy/ urban green cover

Performance Outcome (PO 13.2)

Deep soil zones provided to retain existing vegetation or provide areas that can accommodate new deep root vegetation, including tall trees with large canopies to provide shade and soften the appearance of multi storey buildings.

DTS / DPF 13.2

Multi-storey development provides deep soil zones and incorporate trees at not less than the following rates, except in a location or zone where full site coverage is desired:

Site area	Minimum deep soil area	Minimum dimension	Tree/ deep soil zones
<300m²	10m²	1.5m	1 small tree / 10m² deep soil
300-1500m²	7% site area	3m	1 medium tree / 30m² deep soil
>1500m²	7% site area	6m	1 large or medium tree / 60m² deep soil

Tree size and site area definitions	
Small tree	4-6m mature height and <4m canopy spread
Medium tree	6-12m mature height and 4-8m canopy spread
Large tree	12m mature height and >8m canopy spread
Site area	The total area for development site, not average area per dwelling

Group discussion

Q – What challenges are you currently experiencing implementing WSUD techniques in residential and commercial developments?