

Planning for the design of green and cool cities

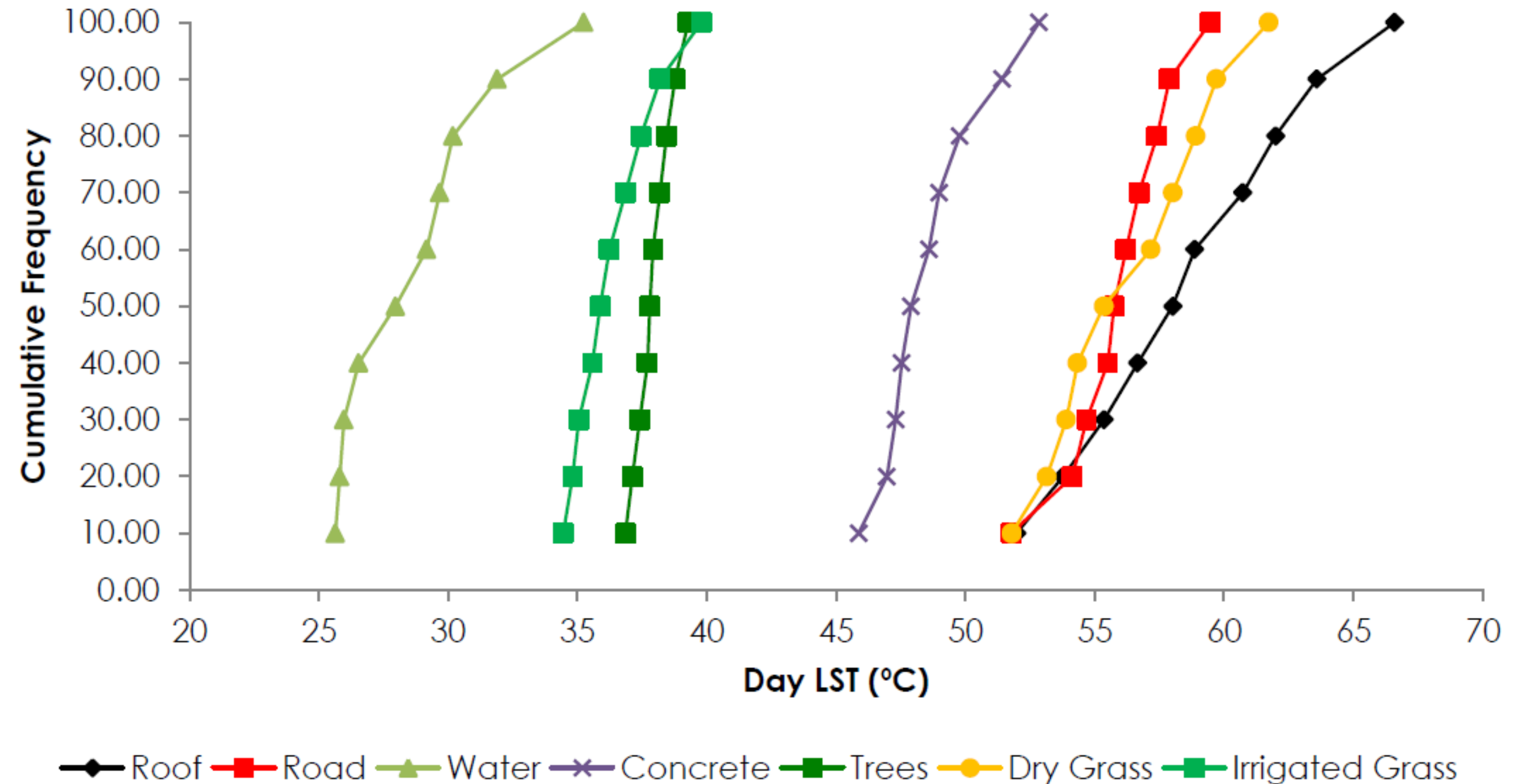
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26 March 2019



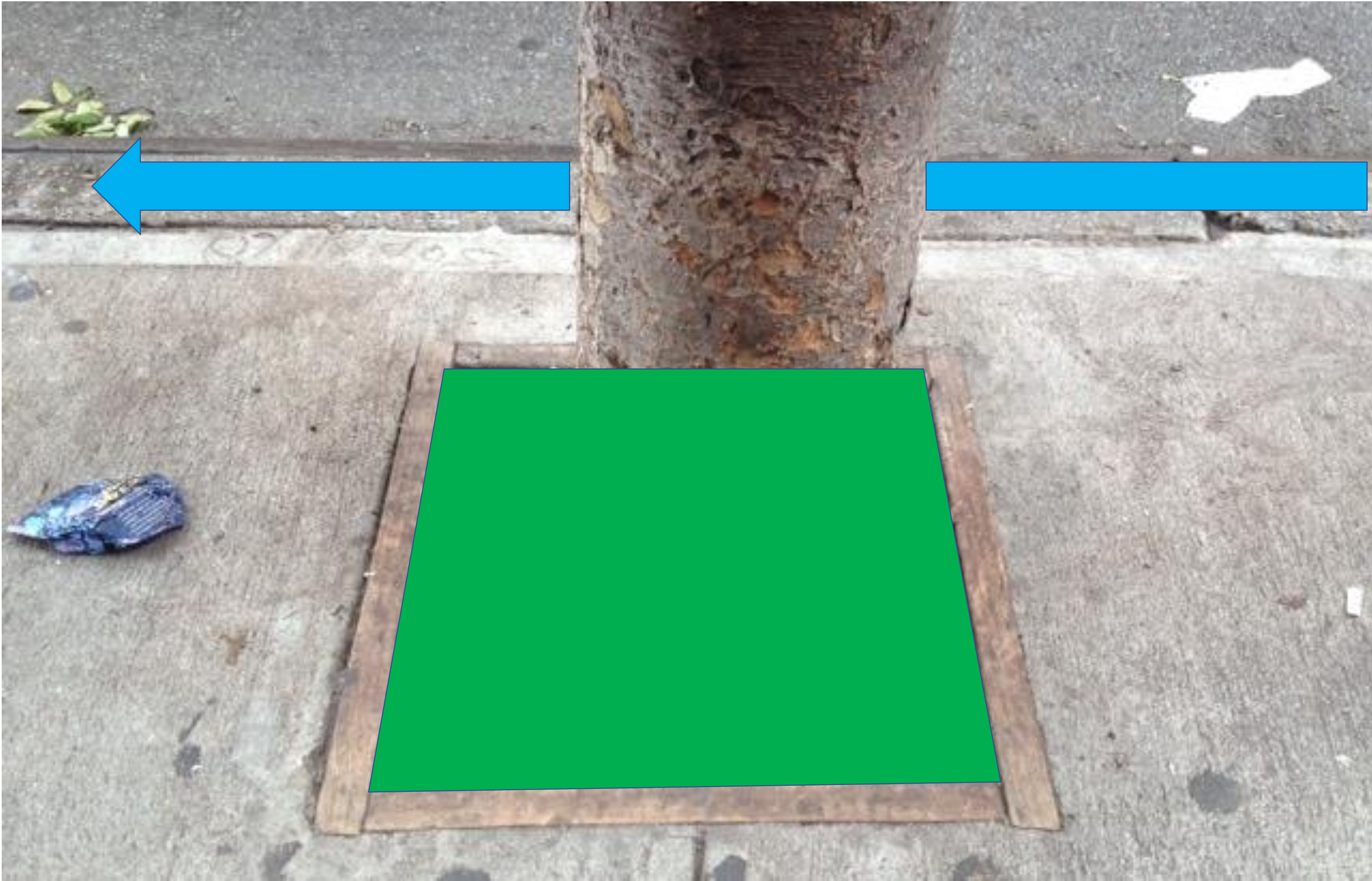
Quick stats on the power of green + blue

- **Microclimate –**
Irrigated grass can be up to **15°C** cooler than unwatered grass during the day.
- **Tree health and lifespan -**
Access to good soil and water can increase the life expectancy of an urban tree from **13 to 50 years**.
- **Great landscapes -**
Increases in property prices ranging from **1-15%** have been observed in areas with tree lined streets or views of green space or water.



What's wrong with this picture?

Conventional drainage =
missed opportunity for
passive irrigation and
stormwater treatment



**Constrained tree pit
and sealed surface =**
unhealthy tree and limited
canopy



Our existing urban planning and design paradigm isn't working

Bringing together urban forest (**green**) and stormwater management (**blue**) thinking could help to solve the problems of both

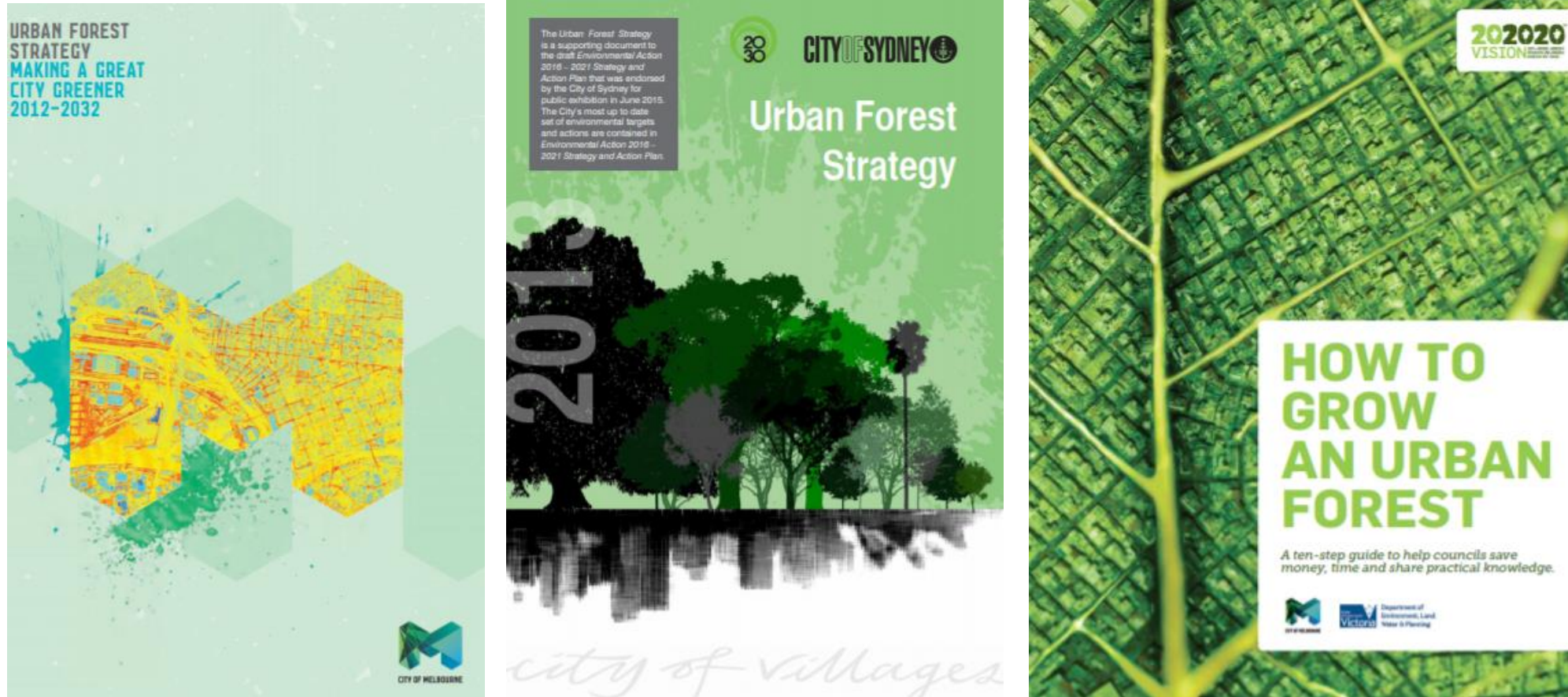


Mind the gap.....



The journey so far

2012 – 2015 – Urban Forests



2016-2017 – Blue-Green Cities



2015 – Green Infrastructure



Green-Blue Action Plan

City of Ballarat was the first council to explicitly develop a strategy to implement green-blue solutions:

- A plan to reduce, slow down and treat stormwater runoff as part of an urban water catchment approach

and

- support the implementation of an urban forestry and living corridors approach in Ballarat.

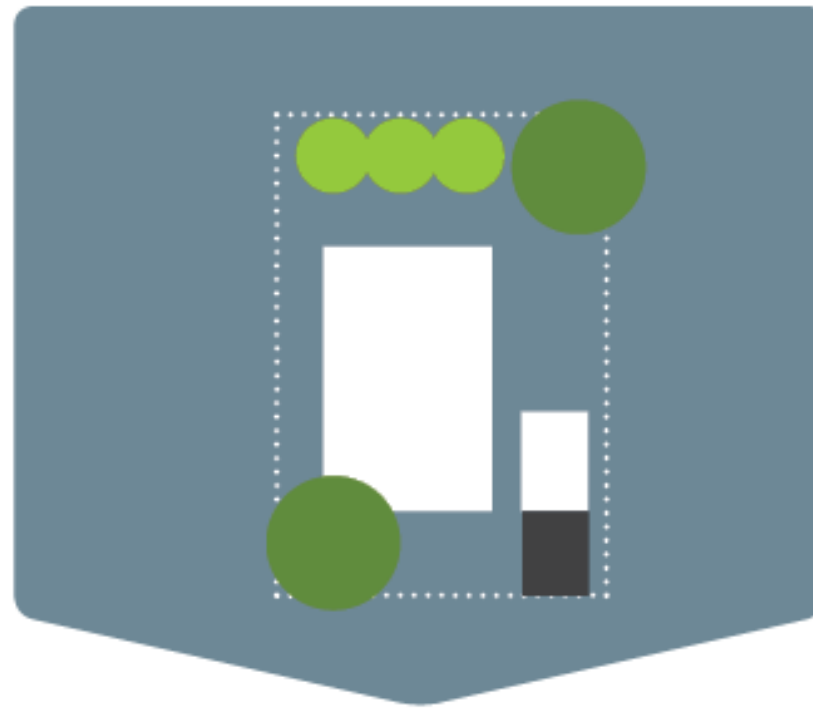


Our Vision

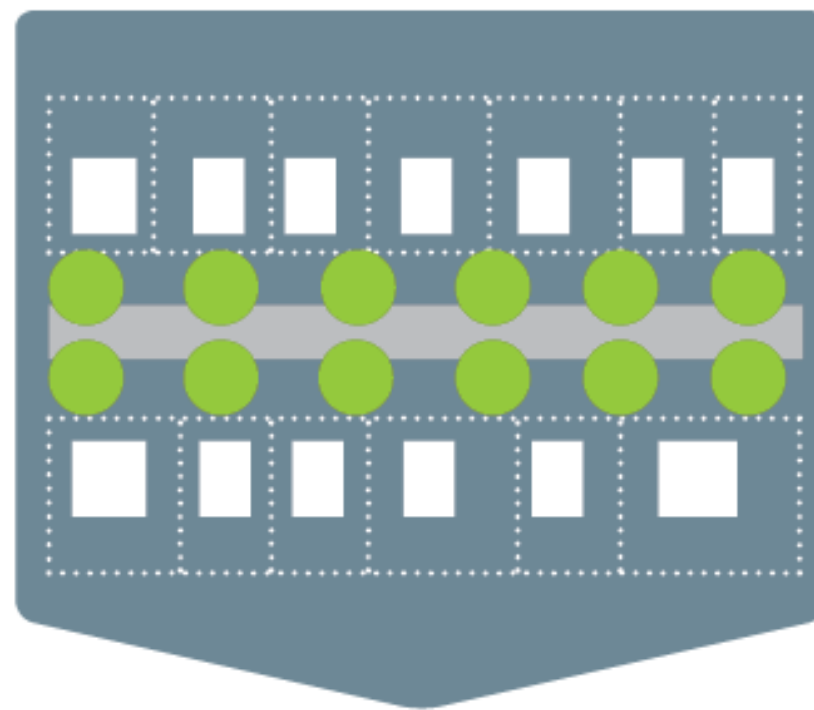
A green-blue city of Ballarat has healthy trees, parks and gardens supported by sustainable water supplies and the city utilises natural assets to slow, treat and store stormwater runoff.

Scales and applications

Private Realm



Street and public space



Precinct / Suburb



3.3.2 Streets, Squares and Carparks

		Passive irrigation of trees and gardens	Raingardens	Raingarden tree pits	Tree-lined roadside swales	Permeable paving supporting trees
Streets, squares and carparks						
Stormwater treatment						
Alternative water supply						
Runoff retention						
Runoff reduction						
Biodiversity						
Quality trees and vegetation						
Quality recreation spaces						
Increased soil moisture						
Amenity and character						
Air quality improvement						
Shade and cooling						
Education						
Relative Cost		\$	\$\$	\$\$	\$\$	\$\$\$
KEY		HIGH	MEDIUM	VARIABLE	N/A	

Case study – urban streets



Limited soil volume restricting tree growth



Clash of tree canopy with powerlines resulting in substantial cut back of canopy and an unbalanced tree



'Island' around tree prevents entry of water from the adjoining road, restricting passive irrigation and limiting soil moisture



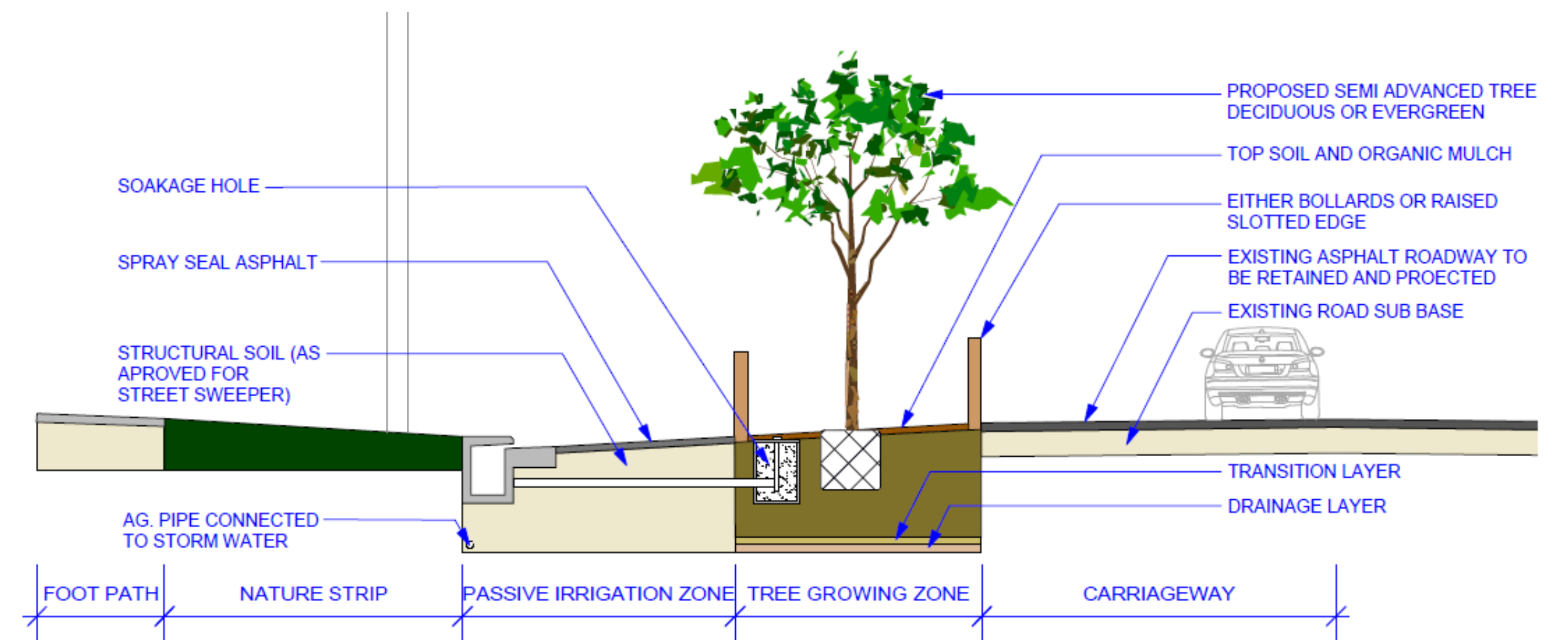
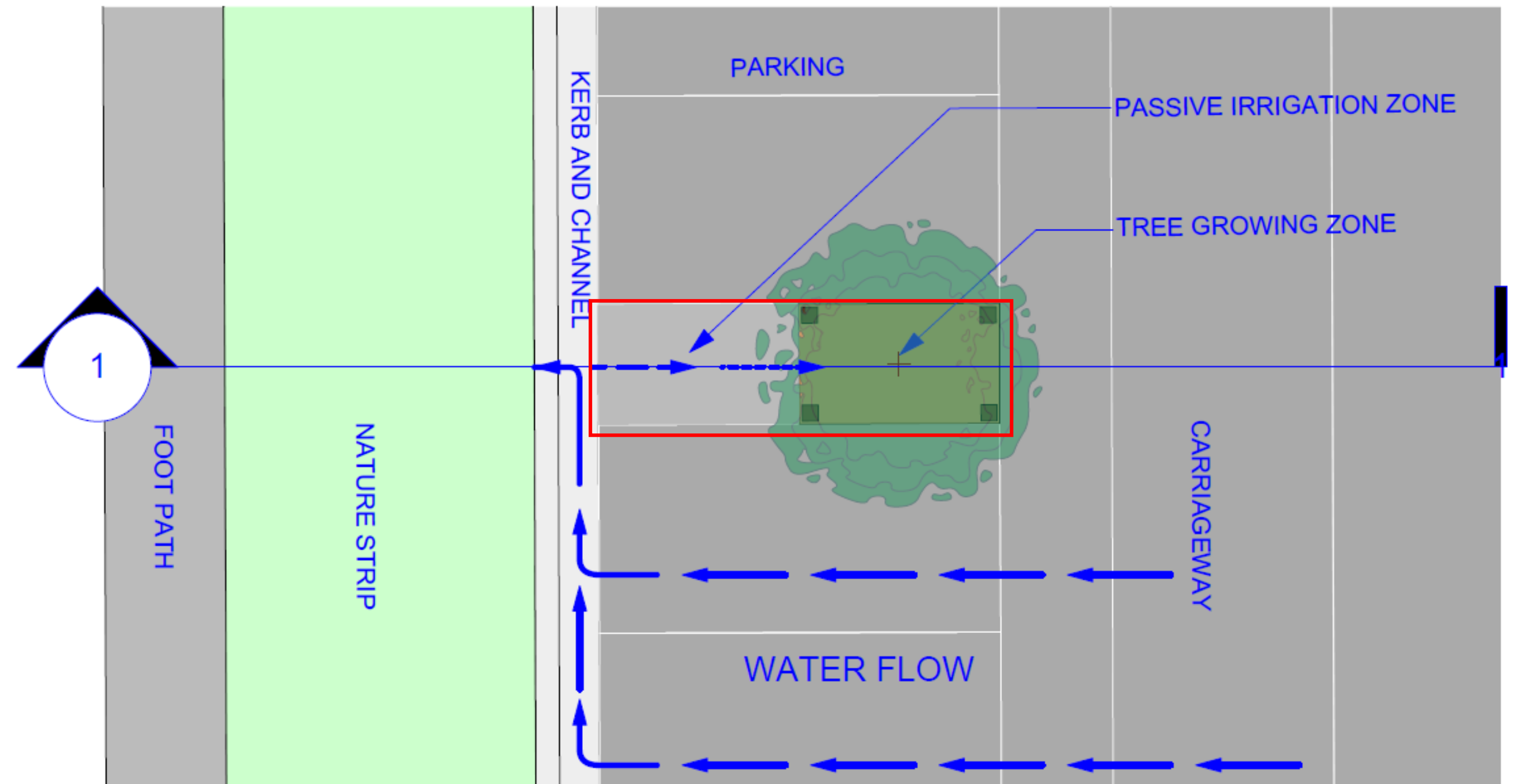
Difficulties in managing leaf litter as street sweepers cannot access gap between tree 'island' and kerb



Blue-green proposal

Stormwater channelled from kerb into infiltration well within expanded soil area

- ✓ Creates a larger soil area for the tree, preventing pavement uplift
- ✓ Could create additional parking
- ✓ Provides irrigation water to support the new tree
- ✓ Intercepts stormwater runoff and meets best practice stormwater treatment standards
- ✓ Moves tree away from kerb to aid street sweeping
- ✓ Reduces clash of tree canopy with power lines

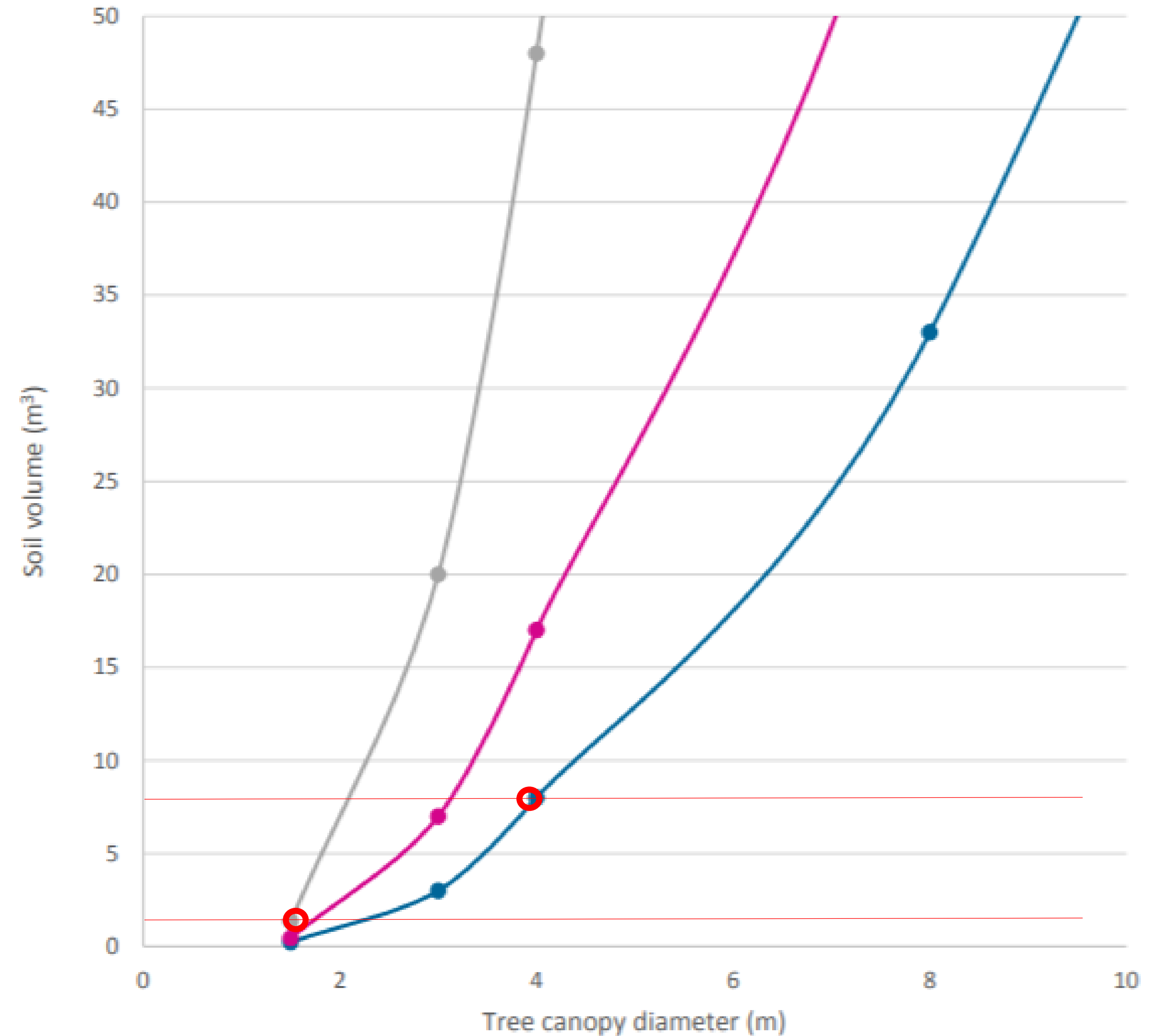


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Comparison of soil volume, canopy and diameter



● soil volume for frequent irrigation (weekly) ● soil volume for occasional irrigation (monthly)
● soil volume for no irrigation



Top 5 Actions

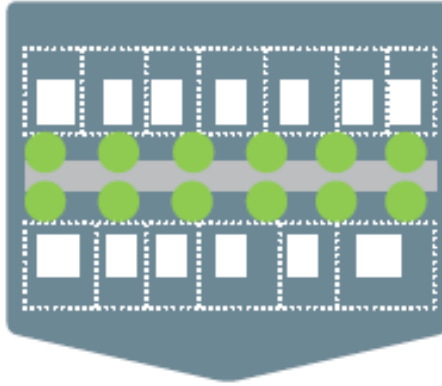
























Commit 5-year capital investment plan (\$1 million+) in key public areas, including roads, open space and carparks

Commitment to 50% of new trees provided with passive irrigation

Amendment of planning scheme to broaden water management requirements for new development

Connect Instalment of a new council staff member to drive new approach

Create Develop practice notes for new standard designs for public and approved works.

Scale		Recommendation total 5-year additional allocation						
Streets, squares and carparks		\$750,000						
		KEY:						
		New capital allocation required						
		Top-up may be required to existing allocation						
		Investment can likely be made through existing allocation						
Recommended annual capital works allocation (\$000)								
Project Type	Project	Year 1	Year 2	Year 3	Year 4	Year 5	Total	Performance
Passive irrigation of trees and gardens	Creswick Rd (with Vic Roads)		120	120			240	 450kgTSS  1600kL  2500m ²
	Howitt St (with Vic Roads)				120	120	240	 450kgTSS  1600kL  2500m ²
	Armstrong St		30				30	 30kgTSS  80kL  130m ²
	Dawson St				30		30	 30kgTSS  80kL  130m ²
Raingarden tree-pits	Wendouree sport prec. carpark	n/a	n/a				70	 1000kgTSS  400kL  400m ²
	Lucas Hub carpark		n/a	n/a			15	 200kgTSS  80kL  80m ²
	Bonshaw Creek Hub carpark				n/a	n/a	15	 200kgTSS  80kL  80m ²
	30 CBD Nibs	70	70	70			210	 4000kgTSS  1600kL  1050m ²

Planning Blue Green Infrastructure

Planning a Green-Blue City
*Department of Environment, Land,
Water and Planning*

- How-to guide to planning green-blue cities for regional cities in Victoria
- Equally applicable to metro areas
- Includes case studies from Ballarat and elsewhere



1. Set the scene

Context review
Identify your local drivers
Set a vision

2. Scope the possibilities

Map the data
Explore the options
Identify a selection of typologies
Test the selected typologies

3. Plan delivery

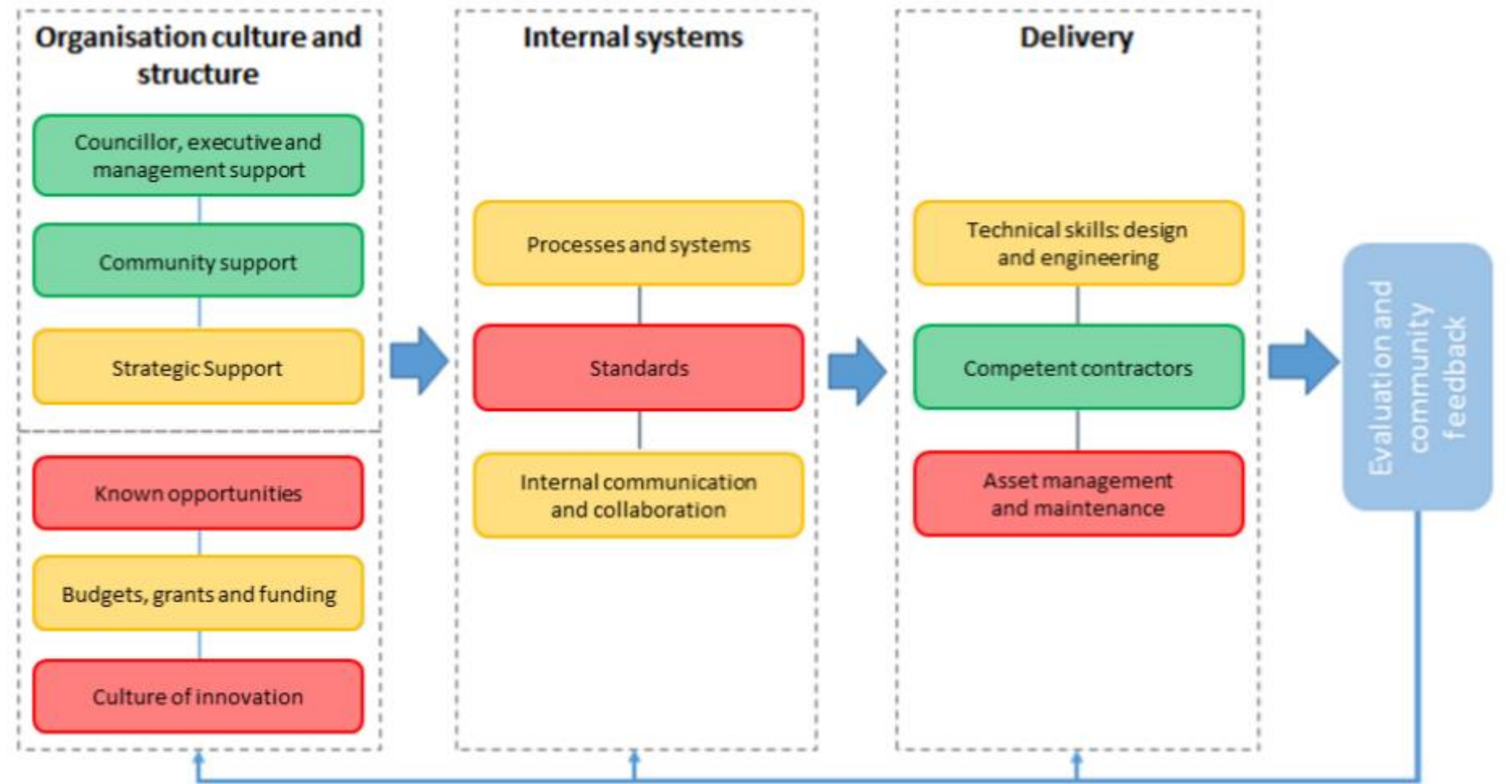
Prioritise green-blue infrastructure projects
Review delivery factors
Set actions
Monitor success

Embedding Blue-Green Infrastructure

Embedding Green Infrastructure Toolkit for Local Government

City of Yarra

- Guidance for Councils to integrate blue-green infrastructure into day to day practices
- Self assessment tool – is council well placed to deliver blue-green infrastructure?
- Economic framework – can we justify the project?
- Design guidelines – planning, design and construction advice including worked examples and technical drawings



Legend



All Aspects of the description is firmly in place

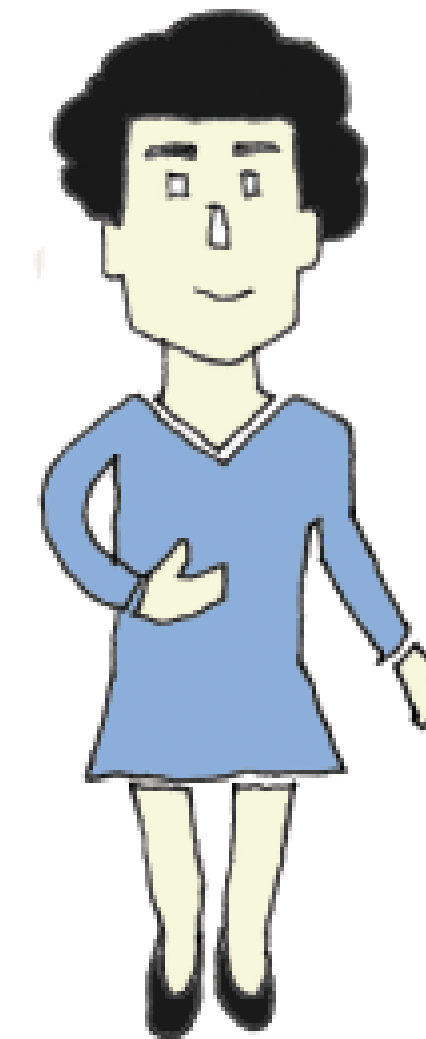
Some Aspects of the description are present or some Aspects that are in place and maybe at risk of going backwards

No Aspects of the description are evident



Concluding thoughts

- ✓ **The key to ‘selling’ water management may be greening:** Greening and urban canopy targets provides clear and tangible outcomes that communities respond to.
- ✓ **Integration pays:** Often green-blue solutions can not only unlock enhanced benefits but make a lot of economic sense too.
- ✓ **Council leadership:** The key champions for green-blue thinking are within and between local government



Thanks for listening

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CRC for
Water Sensitive Cities



4th water sensitive cities conference

watersensitivecities.org.au