Healthy Waterways Strategy

Stormwater Victoria

May 2020

VICTORIA State Government

Melbourne Water
Enhancing Life and Liveability

Healthy Waterways Strategy

What's new…..

HWS – what's new?

- First unified strategy (inclusive of wetlands, estuaries and stormwater) and **fully co-designed**
- increased **Traditional Owners and Aboriginal Victorians**

- **Urbanisation**: Harvest around 80 GL stormwater and infiltrate 20 GL (at full development)
- **Climate change**: Investigate options to increase **environmental water reserve** by 23 GL over next 10 years

- Targets for **wetlands and estuaries**
- Increased focus on **social values**

Increase **access** along waterways by 34 km.

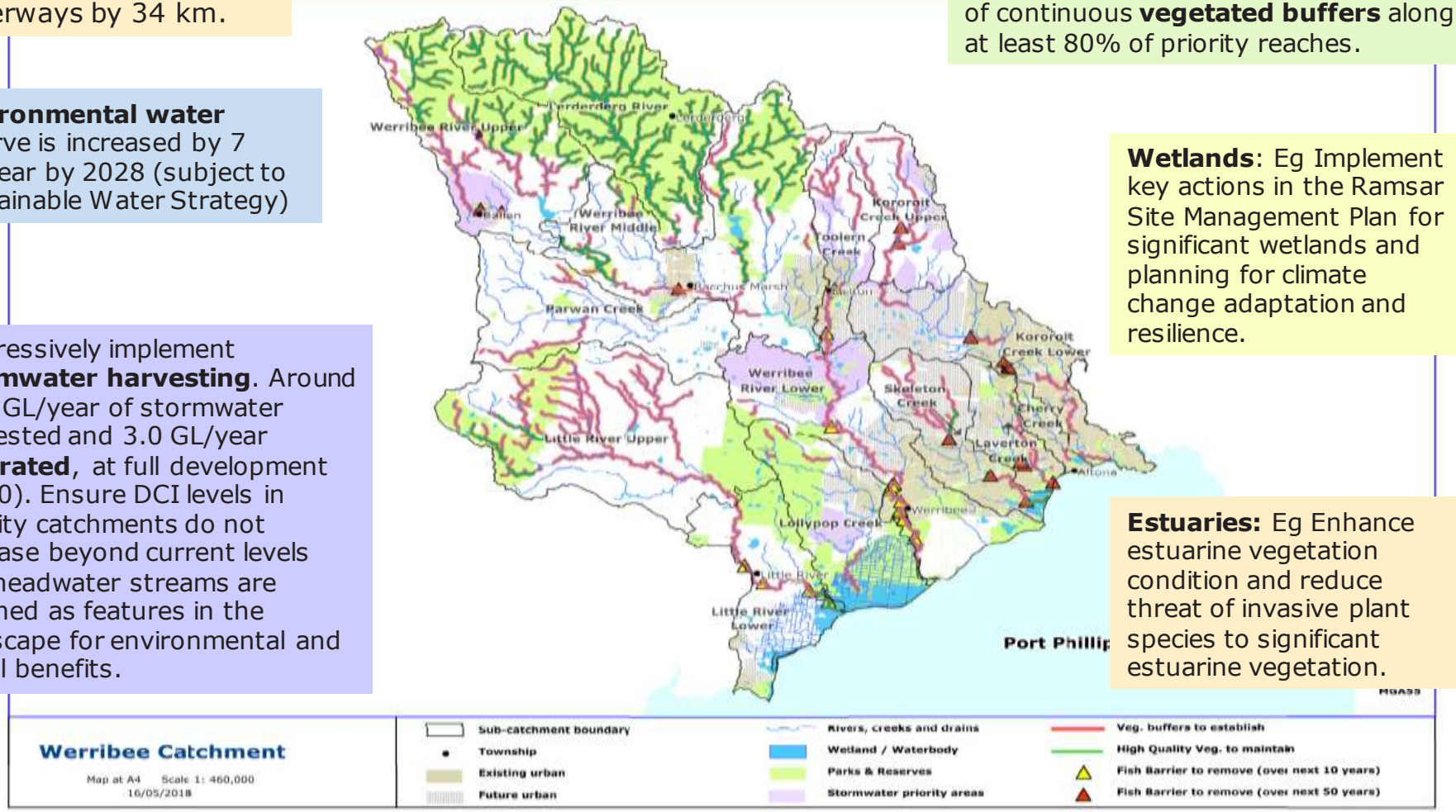
Environmental water reserve is increased by 7 GL/year by 2028 (subject to Sustainable Water Strategy)

Progressively implement **stormwater harvesting**. Around 16.9 GL/year of stormwater harvested and 3.0 GL/year **infiltrated**, at full development (2050). Ensure DCI levels in priority catchments do not increase beyond current levels and headwater streams are retained as features in the landscape for environmental and social benefits.

Establish 435 km and maintain 648 km of continuous **vegetated buffers** along at least 80% of priority reaches.

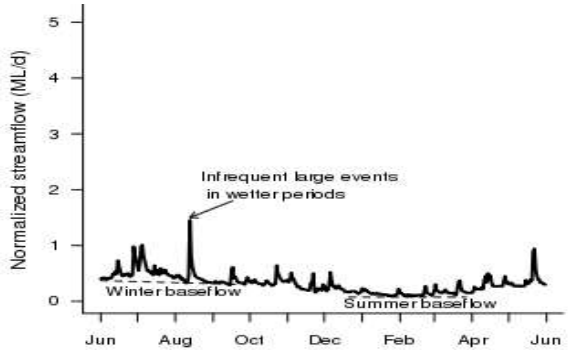
Wetlands: Eg Implement key actions in the Ramsar Site Management Plan for significant wetlands and planning for climate change adaptation and resilience.

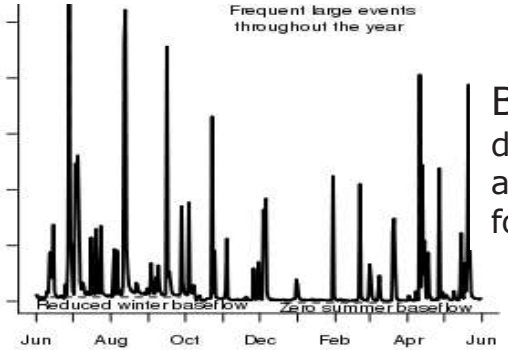
Estuaries: Eg Enhance estuarine vegetation condition and reduce threat of invasive plant species to significant estuarine vegetation.



The stormwater problem

Olinda Creek –
undeveloped catchment about 3% roads, footpaths and roofs





Brushy Creek–
developed catchment about 20% roads, footpaths and roofs

Management of the ecological impacts of urban land and activities on waterways

Issues Paper: understanding the science

2016

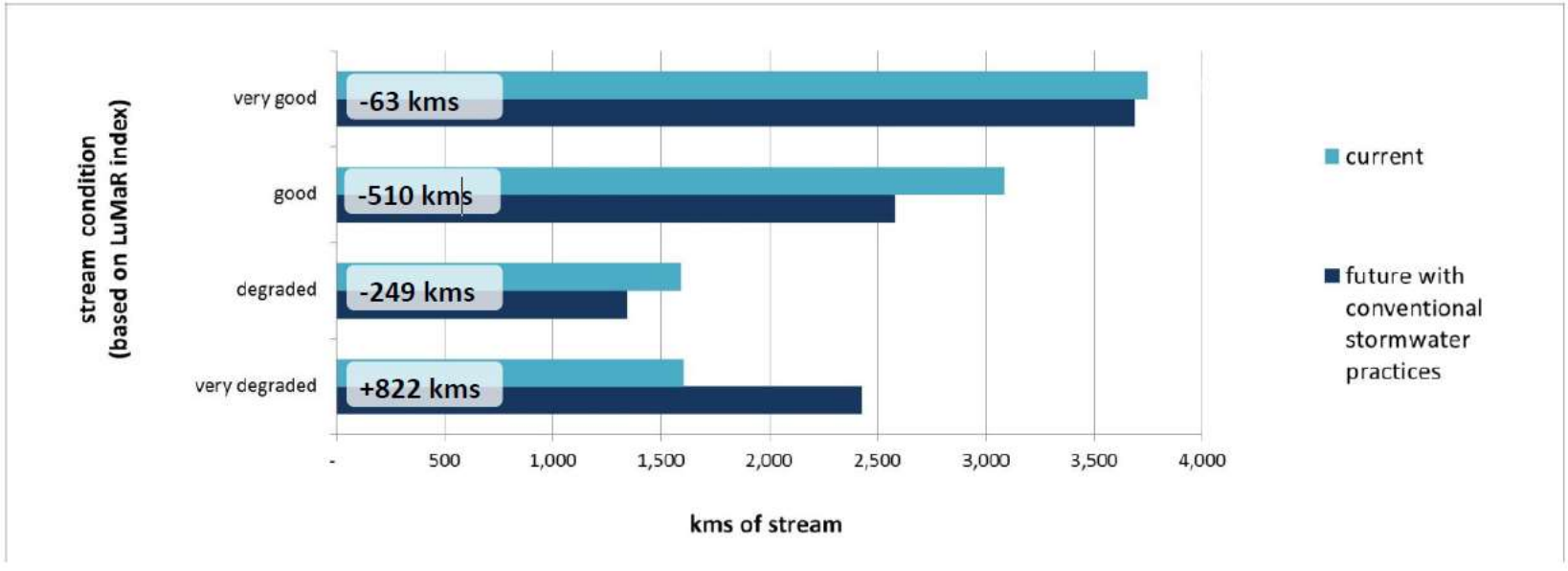
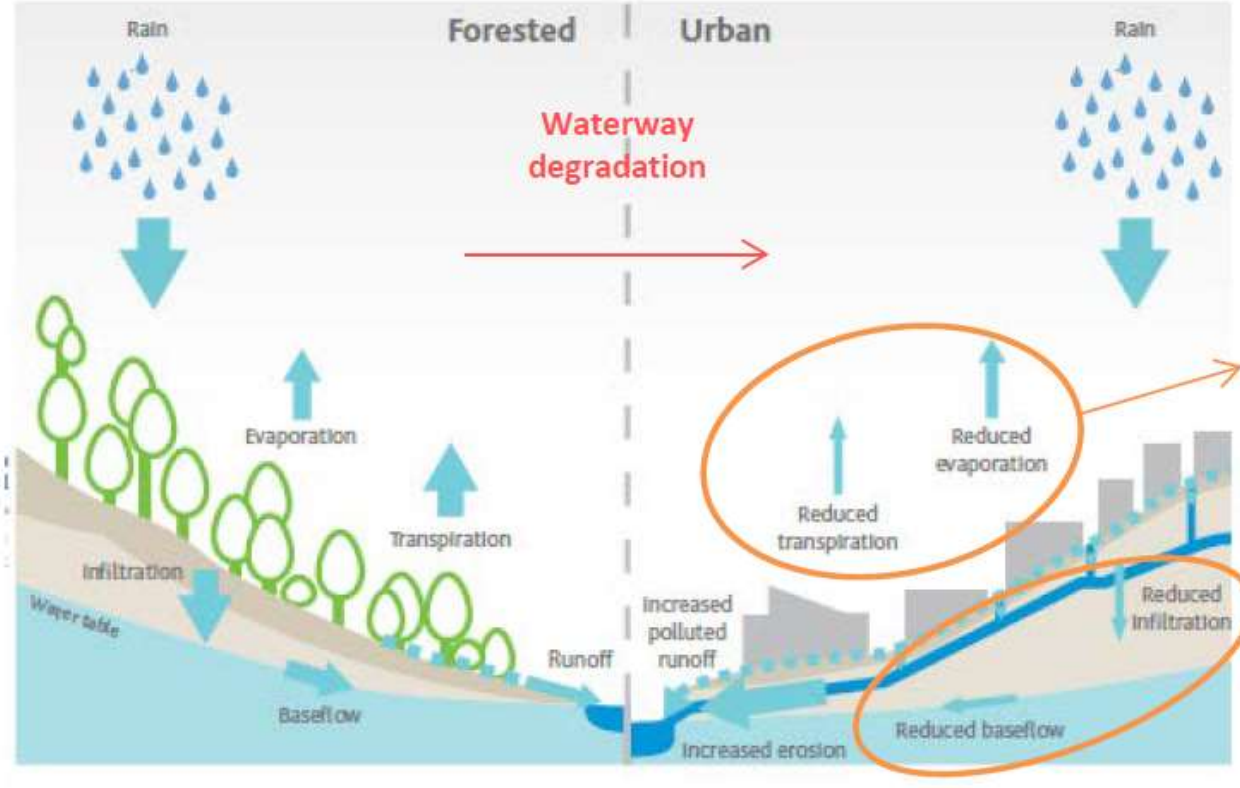


Figure 1. Evolution of stream condition estimated to 2030, shown as length of streams in each condition category (based on LUMAR macroinvertebrates assemblage index)



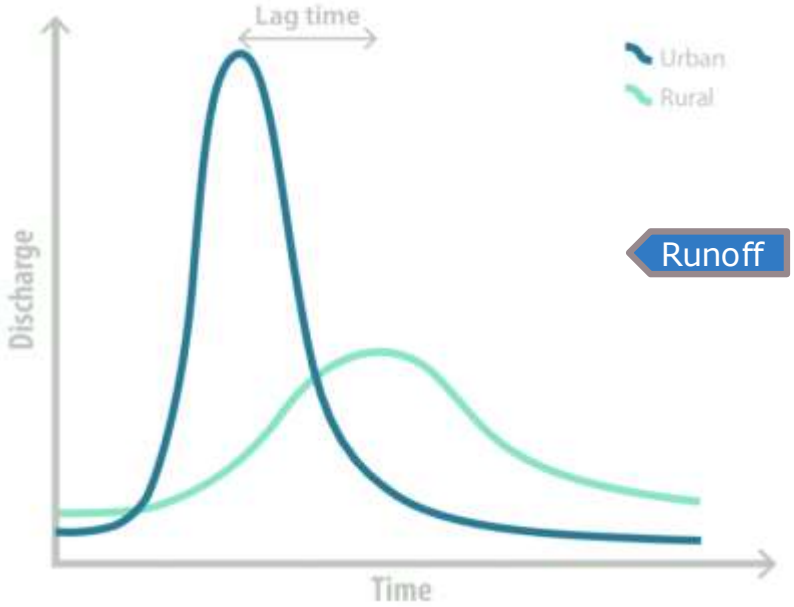
Strategies to mimic natural water regime

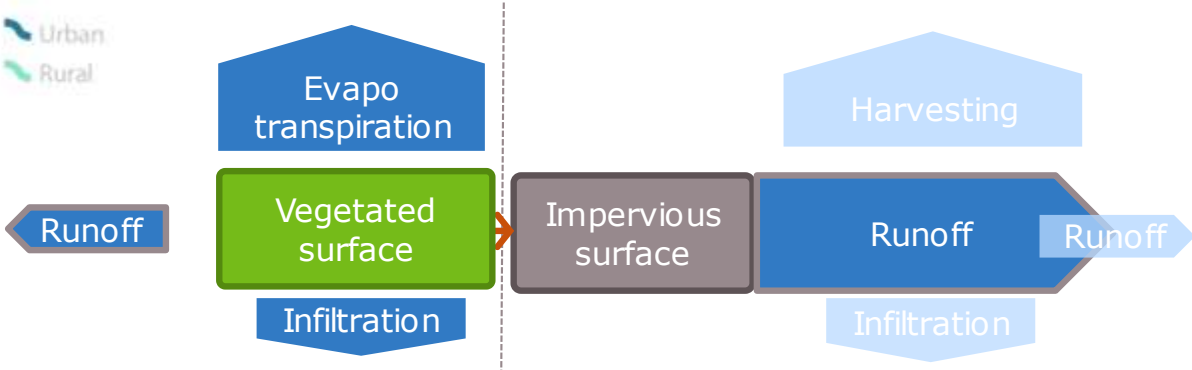
Use stormwater as alternative water supply, maximise vegetated areas

Infiltration through vegetated or non-vegetated systems

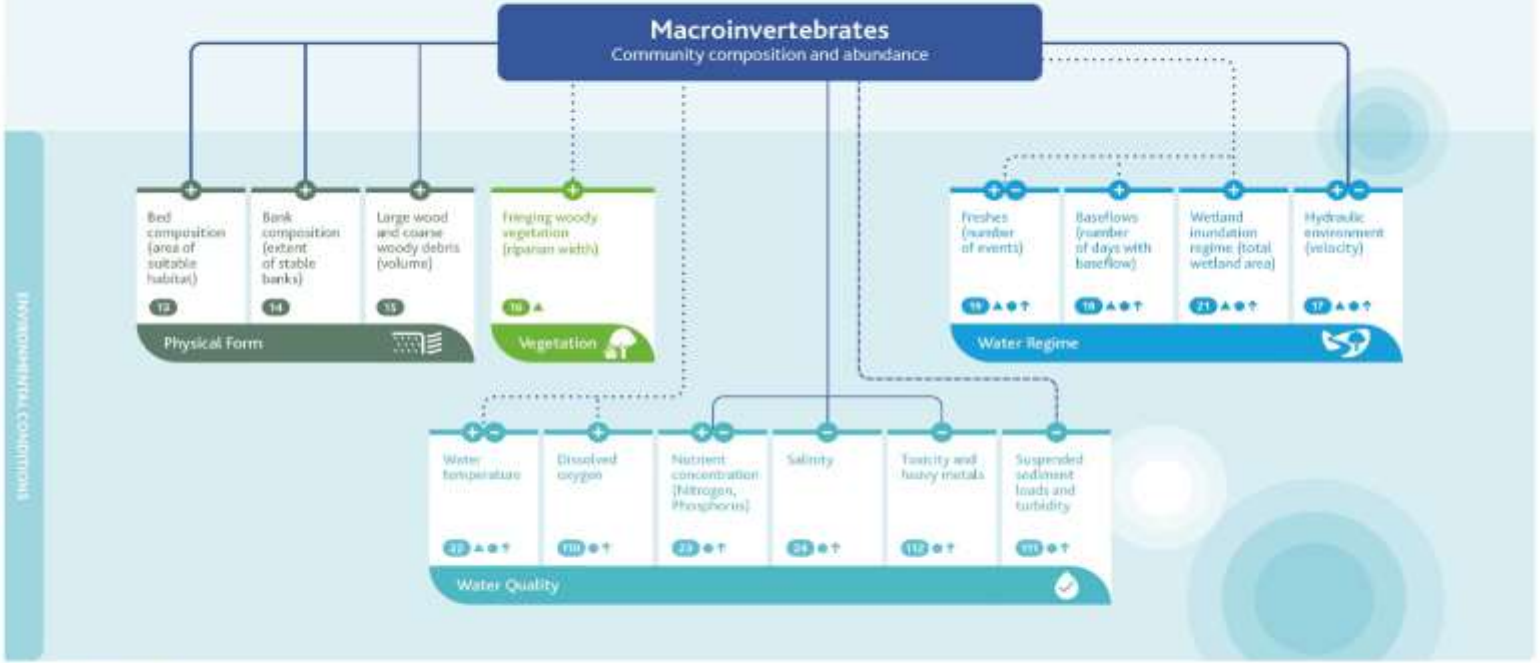
Figure 15. Comparison of the water balances of a forested catchment and an urban catchment (reproduced and adapted from (Melbourne Water, 2013) based on (Walsh, et al., 2004)

Flow regime impacts





Environmental Value – MACROINVERTEBRATES



MANAGEMENT LEVERS

Foundational activities

Waterway management structures & operation

Vegetation management

Water licence and entitlement management

Agricultural and forestry runoff management

Urban stormwater and pollution management

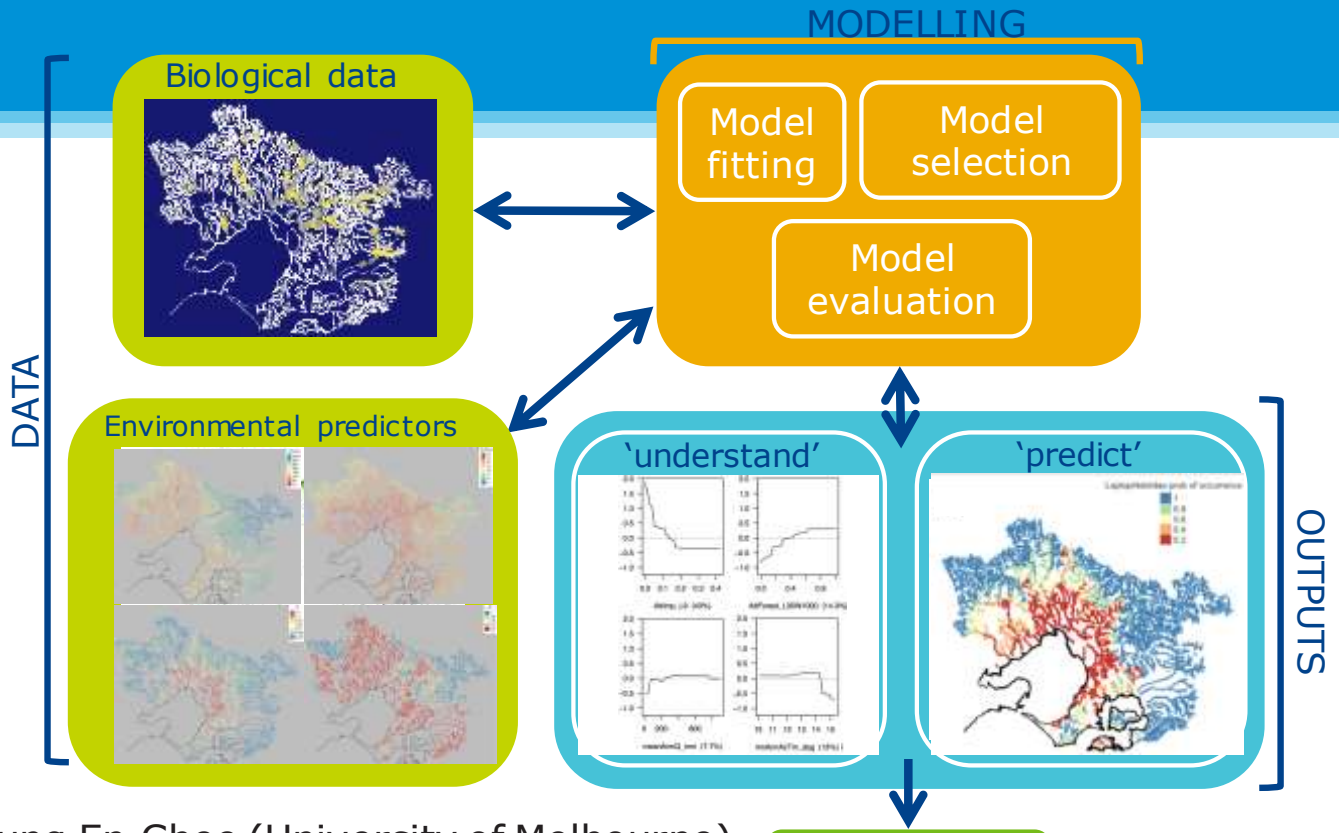
Relationship strength (Strong or Moderate)
Confidence (High or Medium)
Strong, High — Moderate, High
Strong, Medium - - - - Moderate, Medium · · · · ·

Indicative relationship direction*
Positive (increase in condition will lead to increase in value)
Negative (increase in condition will lead to decrease in value)
* These general relationships typically apply within the bounds of thresholds

Relationship ID
Themes: ✦ Sensitive to upstream catchment
▲ Climate change
● Urbanisation

Influence of management levers on environmental conditions

Overview of the Habitat Suitability Modelling Process



Chris Walsh, Yung En Chee (University of Melbourne),
Rhys Coleman (Melbourne Water),
Nick Bond (Latrobe University)

HSM scenario design

baseline

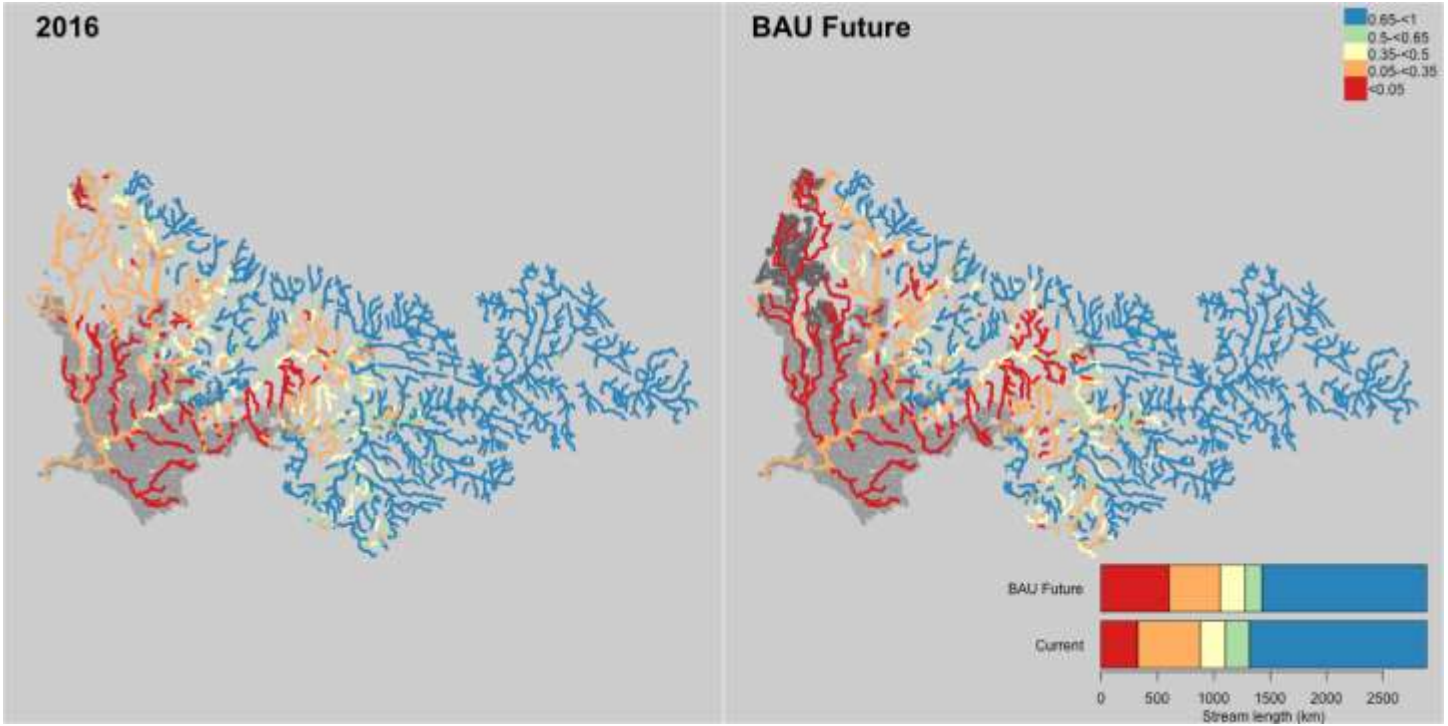
business as usual

scenarios

Baseline	2016 data
Business as usual Future • Climate change • Future urbanisation • No additional revegetation	1.5 degrees warmer 25% reduction in flows at mouth of Yarra Current UGB fully developed under current BPEM No changes to vegetation No changes to barriers or fishways

Stormwater 1	All future and existing stormwater impacts removed (ie DCI reduced to 0)
Stormwater 2	All future stormwater impacts removed (future DCI remains 0)
Stormwater 3 – long term	All greenfield + redevelopment treated – ie DCI reduced by 25%
Revegetation 20m	Assumes a continuous riparian buffer to 20m either side of waterway
Revegetation 10m	Used within the UGB due to limitations of getting 20m
Fishway 1	removal of mainstem barriers, excluding major dams

Macroinvertebrates (Bugs)
assessed using **LUMaR – an integrated index**

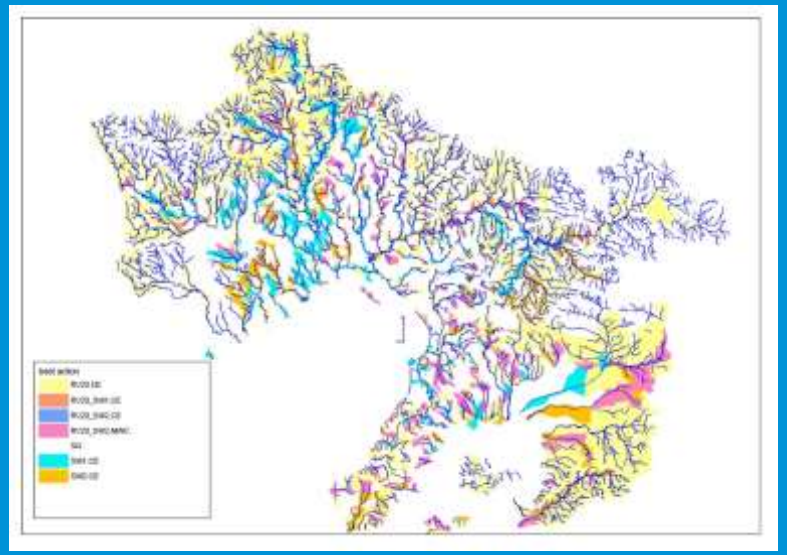


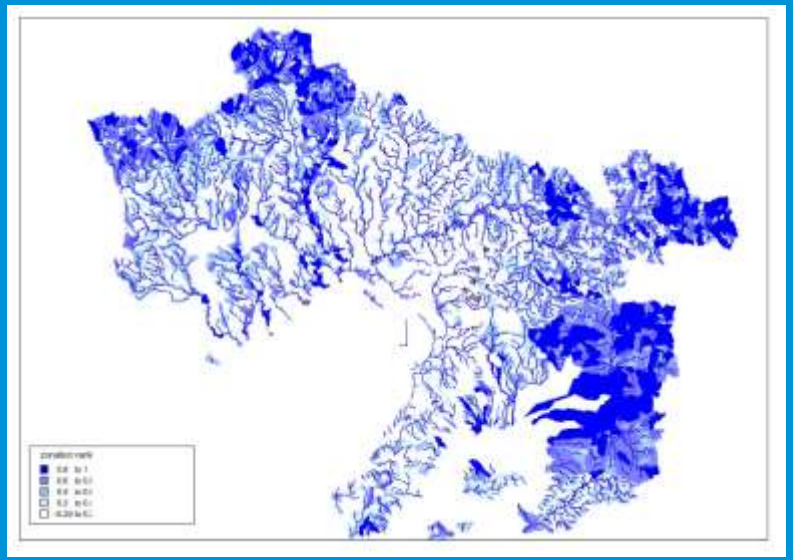
Spatial prioritisation - zonation

- *Representativeness*
- *irreplaceability*
- *complementarity*

costs

Reveg only, reveg + SW, SW only

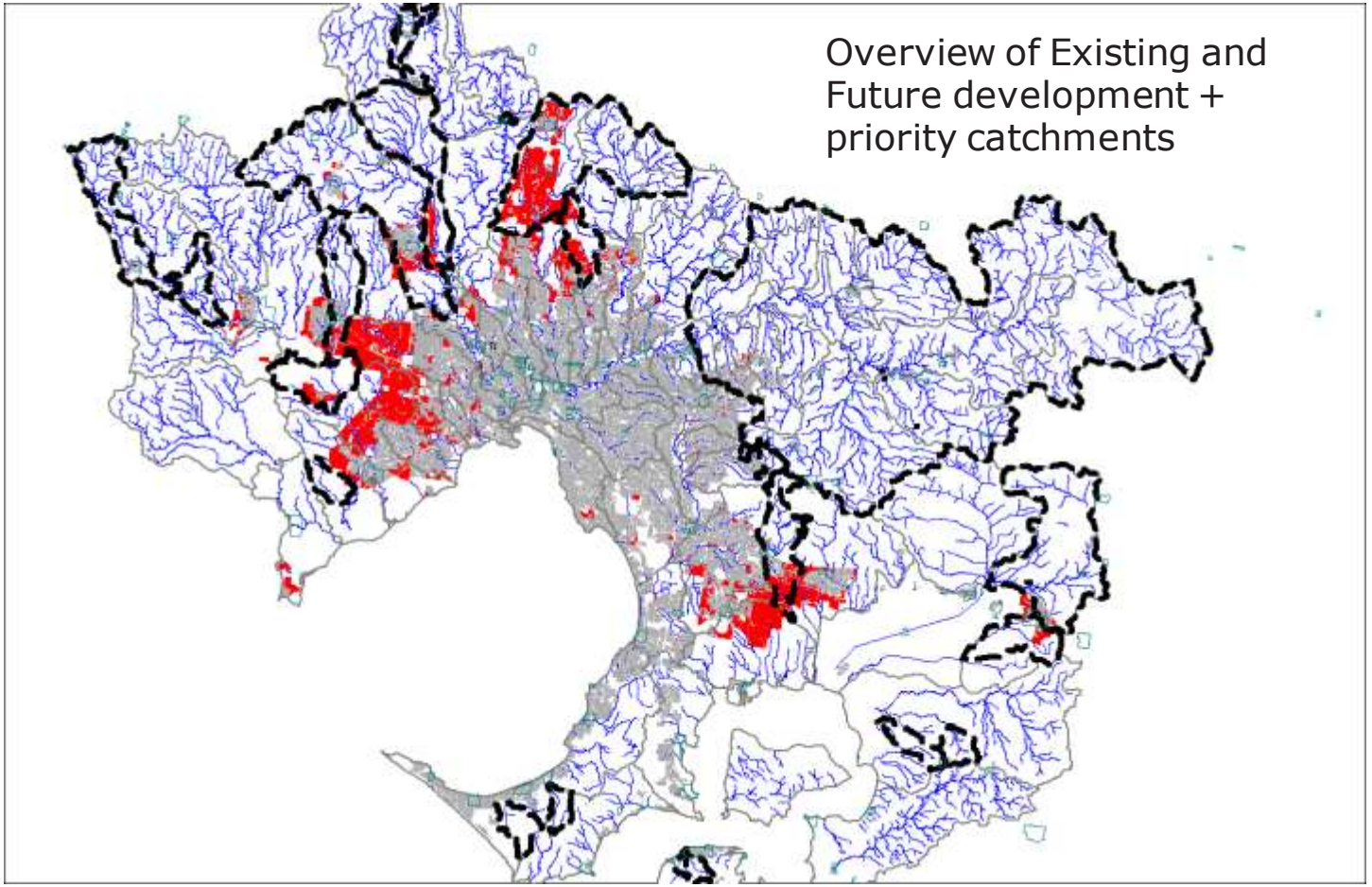




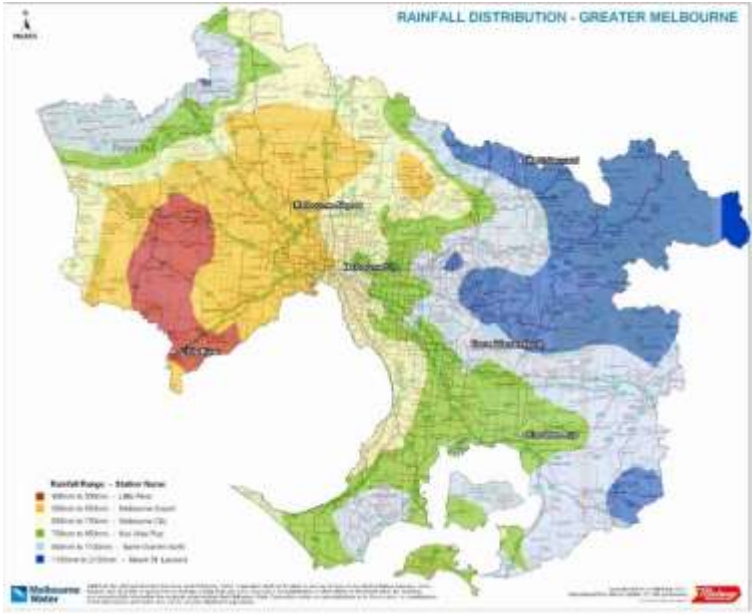
What action/s → Where to start first

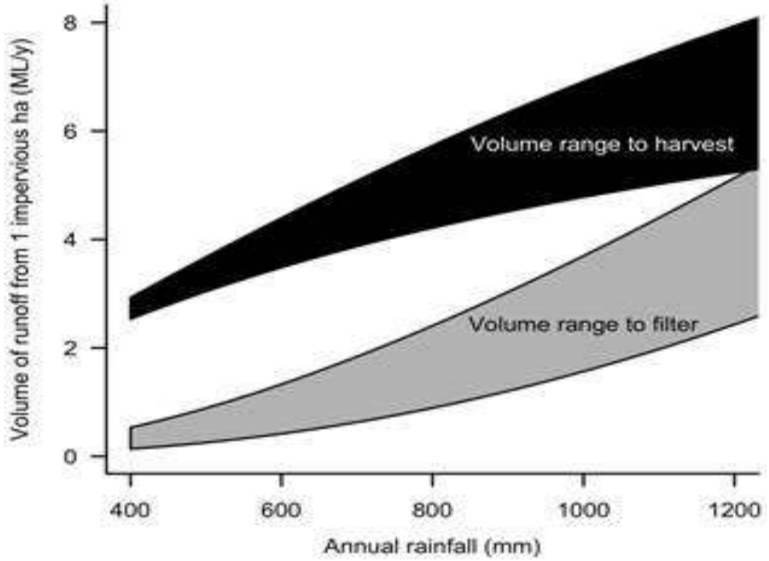
Making sense of model outputs

Factors
Multiple high ranking reaches
Low levels of imperviousness
Prioritised small to medium sized catchments
Known good quality instream physical habitat
Rural townships - surrounding rural land / space
Existing commitments
Equity – having priorities in each of the 5 catchment
Protection of Platypus, listed species
Length of stream benefited
Supported by co-design


Overview of Existing and
Future development +
priority catchments

Targets factor in rainfall

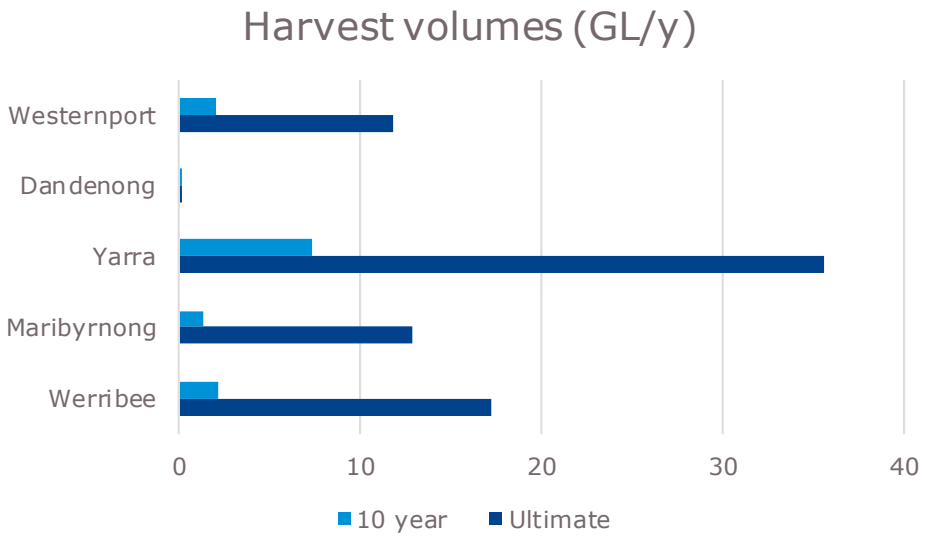


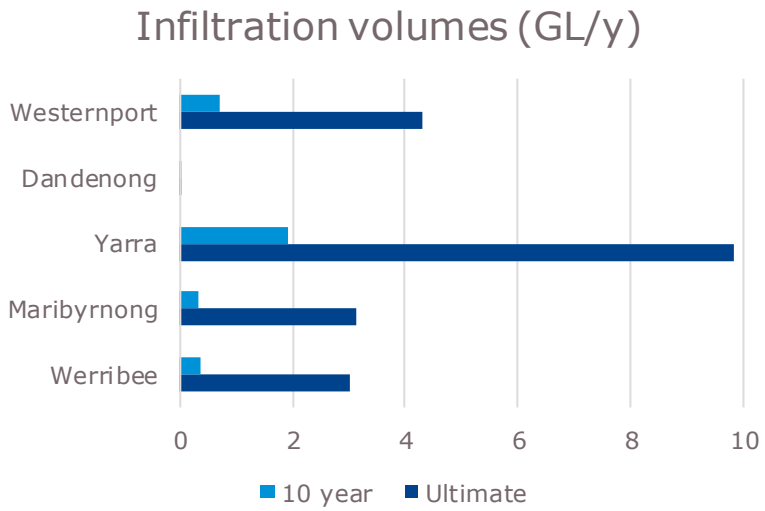


Urban Stormwater Runoff: A New Class of Environmental Flow Problem (2012)
Christopher J. Walsh, [1,*] Tim D. Fletcher, [1,2] and Matthew J. Burns [2]

Targets

For every hectare of impervious area harvest around X GL/y and infiltrate X GL/y





Draft MERI rubric

Performance	Criteria
On-track	At least 90% of the annualised cumulative 10 year target is or will be treated to offset flows generated from new development Treatments need to be either constructed or have approved budget and concept or functional designs
Slightly off-track	Between 70 and 90% of the annualised cumulative 10 year target is or will be treated to offset flows generated from new development Treatments need to be either constructed or have approved budget and concept or functional designs
Majorly off-track	< 70% of the annualised cumulative 10 year target is or will be treated to offset flows generated from new development Treatments need to be either constructed or have approved budget and concept or functional designs

Summary

- Developed stormwater targets from best available data, likely future scenarios etc.
- Combined modelled benefits and costings - balanced with pragmatism and good sense
- Used rainfall data rather than a single standard to determine volumes to harvest and infiltrate in a spatial way

Place based targets that have sound rationale

Tanks for helping your creek

Recent work that will help implementation

DELWP led

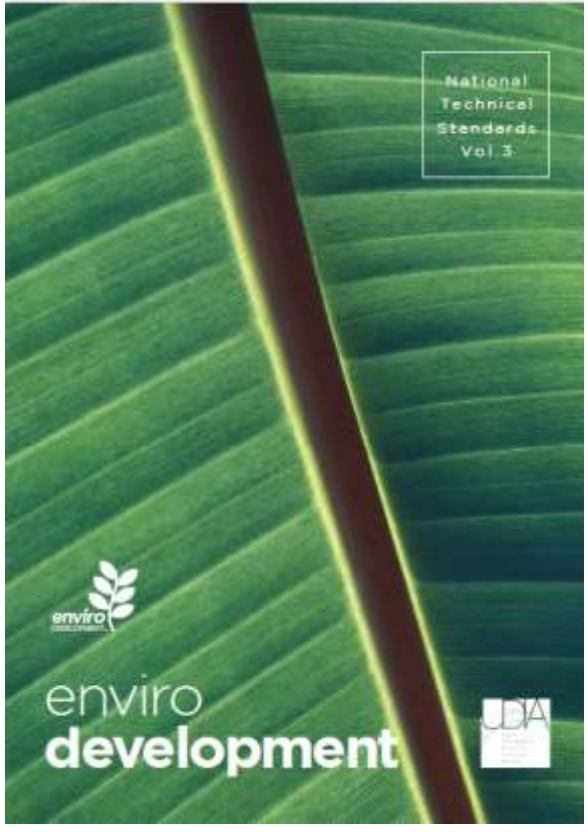
IWM forums – KPI's linked to many HWS targets inc stormwater volumes
MUSICX review - E Water
STORM tool update to better model flows
MUSIA– Melb Urban Stormwater Institutional Arrangements
work has begun
Source model updates – E Water

MW led

Prioritisation for MW investment – TAPS internal tool being developed to assess
MW funding bid developed with customers – stormwater

EPA led – developing new stormwater guidelines under the GED

EnviroDevelopment Accreditation Scheme



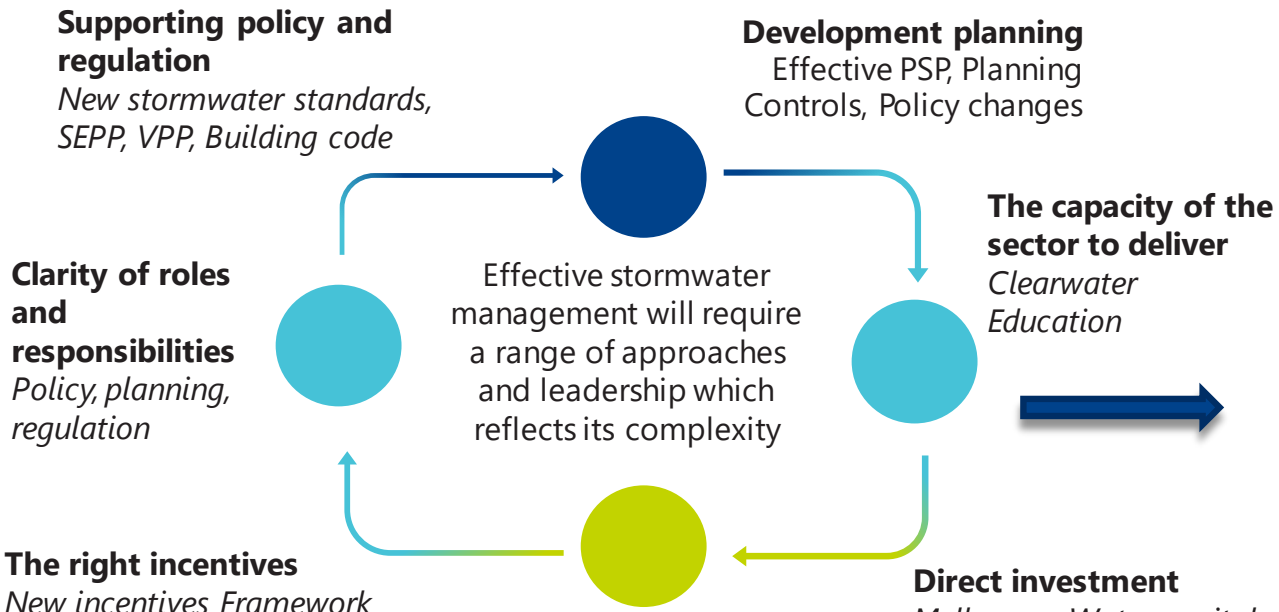
1.1 – Performance table for water harvesting in Victoria:

Average Annual Rainfall (mm)	Volume to harvest as % of total impervious runoff volume
200	93%
300	88%
400	85%
500	77%
600	72%
700	68%
800	64%
900	60%
1000	56%
1100	53%
1200	50%
1300	48%
1400	46%
1500	44%
1600	42%
1700	40%
1800	38%
1900	37%
2000-2500	32%
2500-3000	28%
3000-3500	25%
3500-4000	22%

Some of the recent projects that have been funded

- **Casey** - new dev street scape, stormwater harvesting
- **Yarra Ranges** - trialling new porous paving, small scale stormwater disconnection
- **Macedon Ranges** – Romsey WSUD investigation and concept plan
- Developing up a **new integrated incentives program** – aimed more at achieving Strategy outcomes than it has in the past

It's a complex space



Done well, sustainable management can result in multiple benefits (IWM Approach)

Urban stormwater conventionally drained to waterways is the most limiting factor to good ecological condition. Measured, cooperative and targeted investment is needed to prevent the widespread decline in waterway health.