Management of Melbourne's water supply catchments

Program for Asian Development Bank Water Professionals on Water Utility Operation and Management

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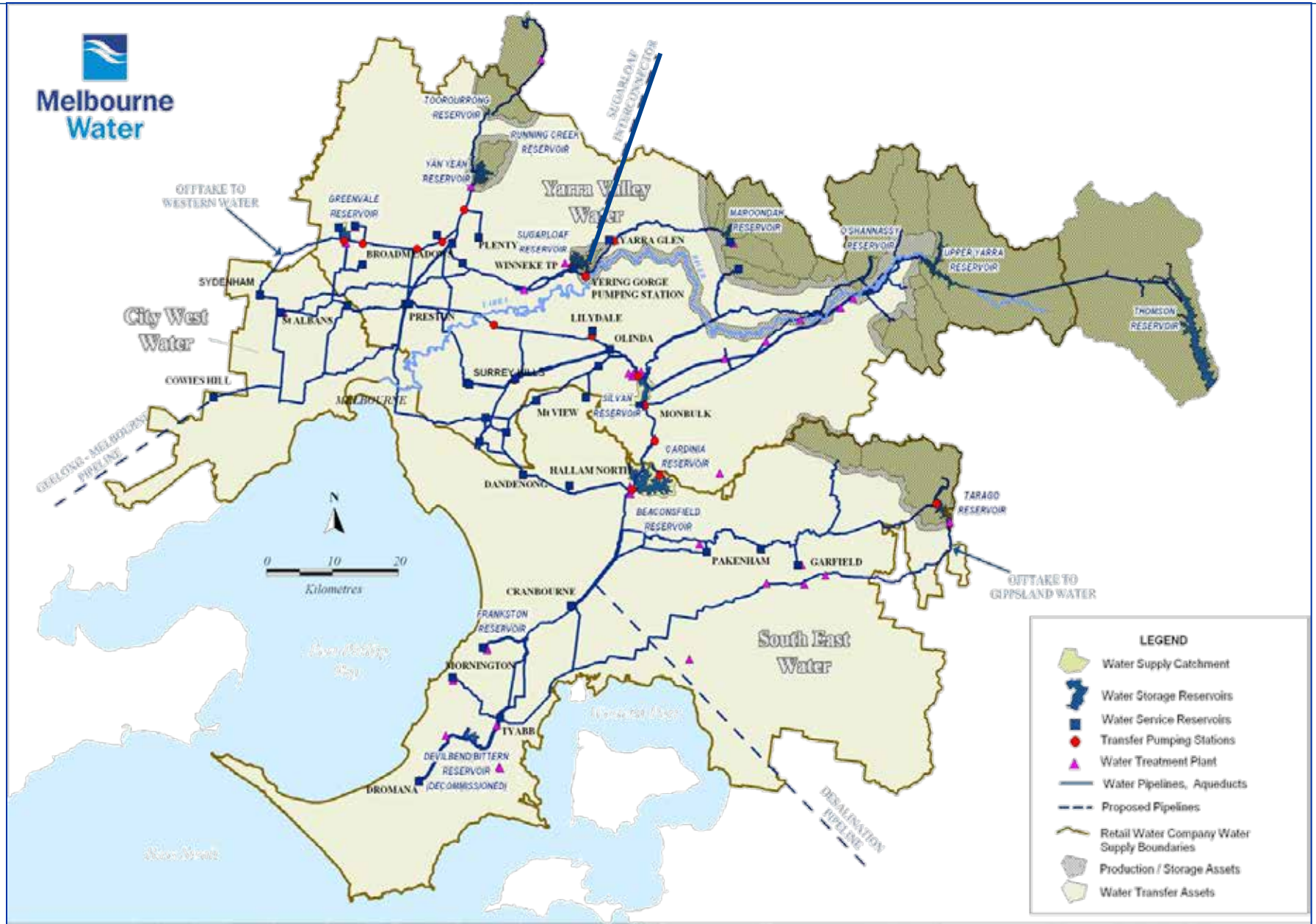
Victoria
The Place To Be

Melbourne Water

What is a catchment?

- A water supply catchment is an area of land where rainfall collects in rivers and streams that flow into reservoirs
- Melbourne is one of only about five cities in the world that has protected wilderness catchments that are uninhabited
- 80% of Melbourne's drinking water comes from closed water catchments
- These forested areas have been closed to the public for over 100 years

Melbourne's drinking water supply system



Catchment management objectives

Primary Objective:

To safeguard the quality and quantity of the water supply for the greater Melbourne area.

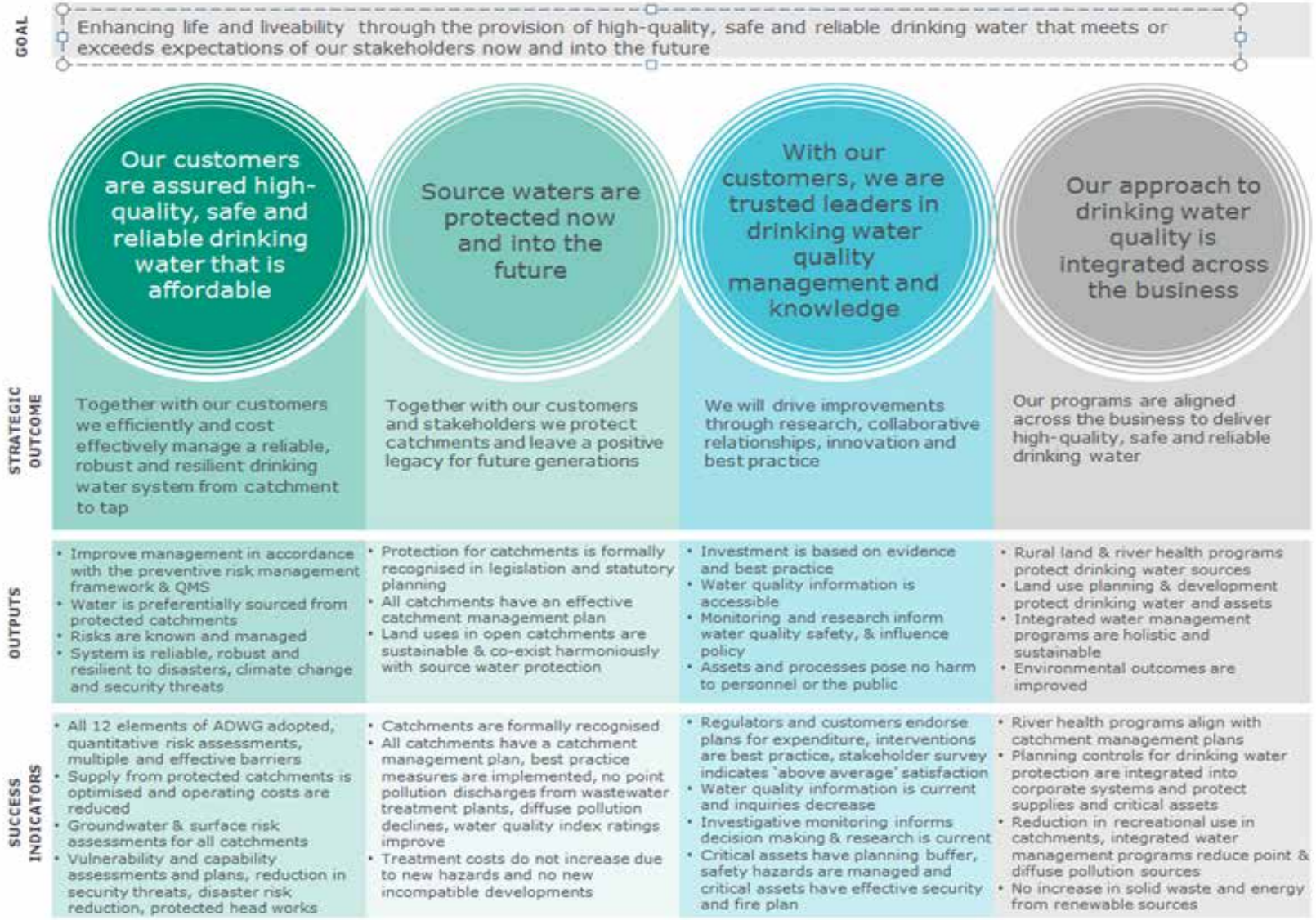
- Restrict human access into the catchment areas;
- Minimise the risk of contamination of the water supply by pests;
- Protect catchment values from fire; and
- Control soil erosion (incl. road maintenance).

Secondary Objectives:

Preservation and protection of the natural environment.

- Allow natural environmental processes to continue with minimal disturbance;
- Protect landscape values;
- Protect archaeological and historic sites and features; and
- Assist with and undertake scientific research and monitoring;

High-quality, safe and reliable drinking water



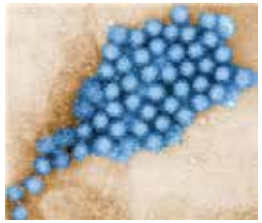
Guiding principles: multiple barriers; do not degrade; prevention; precaution and due diligence; evidence; proportionality; collaboration through understanding, transparency & involvement; sustainability and safety

Safe Drinking Water Act 2003

- Places obligations on Melbourne Water to provide safe, good quality drinking water.
- The Safe Drinking Water Act provides a regulatory framework for drinking water quality that includes:
  - a risk management framework from “catchment to tap”
  - a set of standards for key water quality criteria
  - auditing and information disclosure requirements
  - systemic community consultation processes.

Australian Drinking Water Guidelines

Pathogens are the top priority.



Multiple barriers are required.

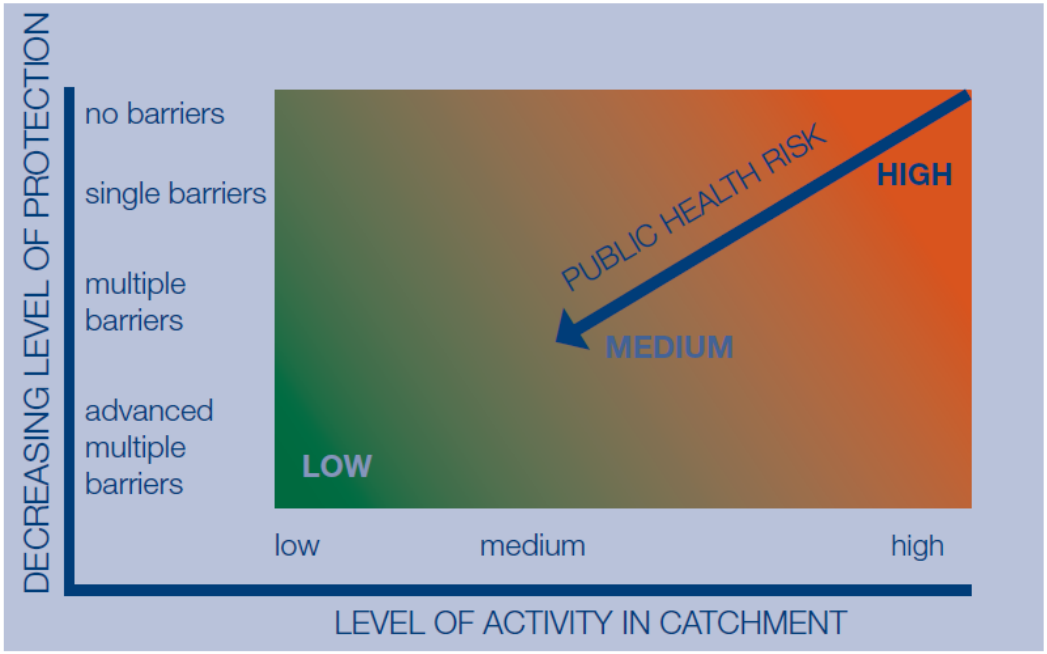


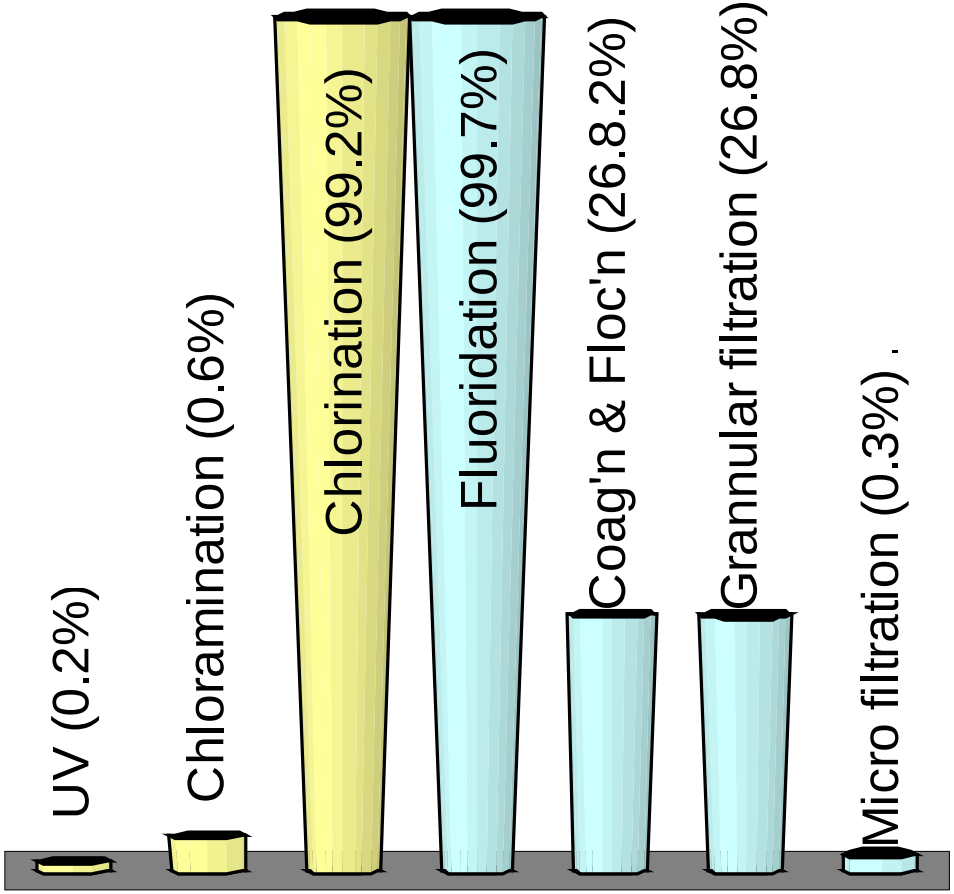
Figure 2: Effect of increasing the number of barriers for protection of drinking water.

Source protection is the most effective barrier.

Melbourne's water supply

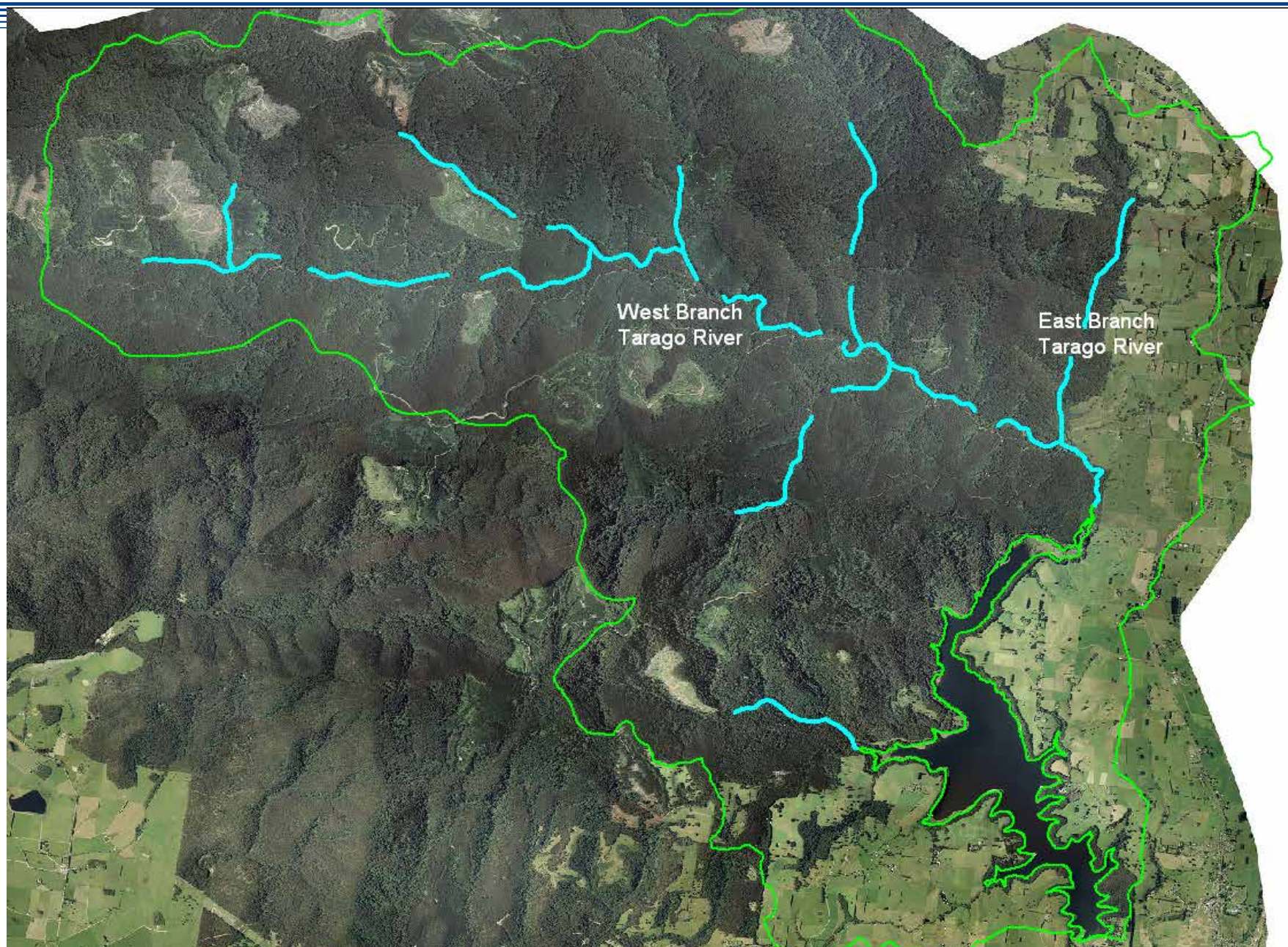
Melbourne's water supply

Melbourne's drinking water disinfection & treatment

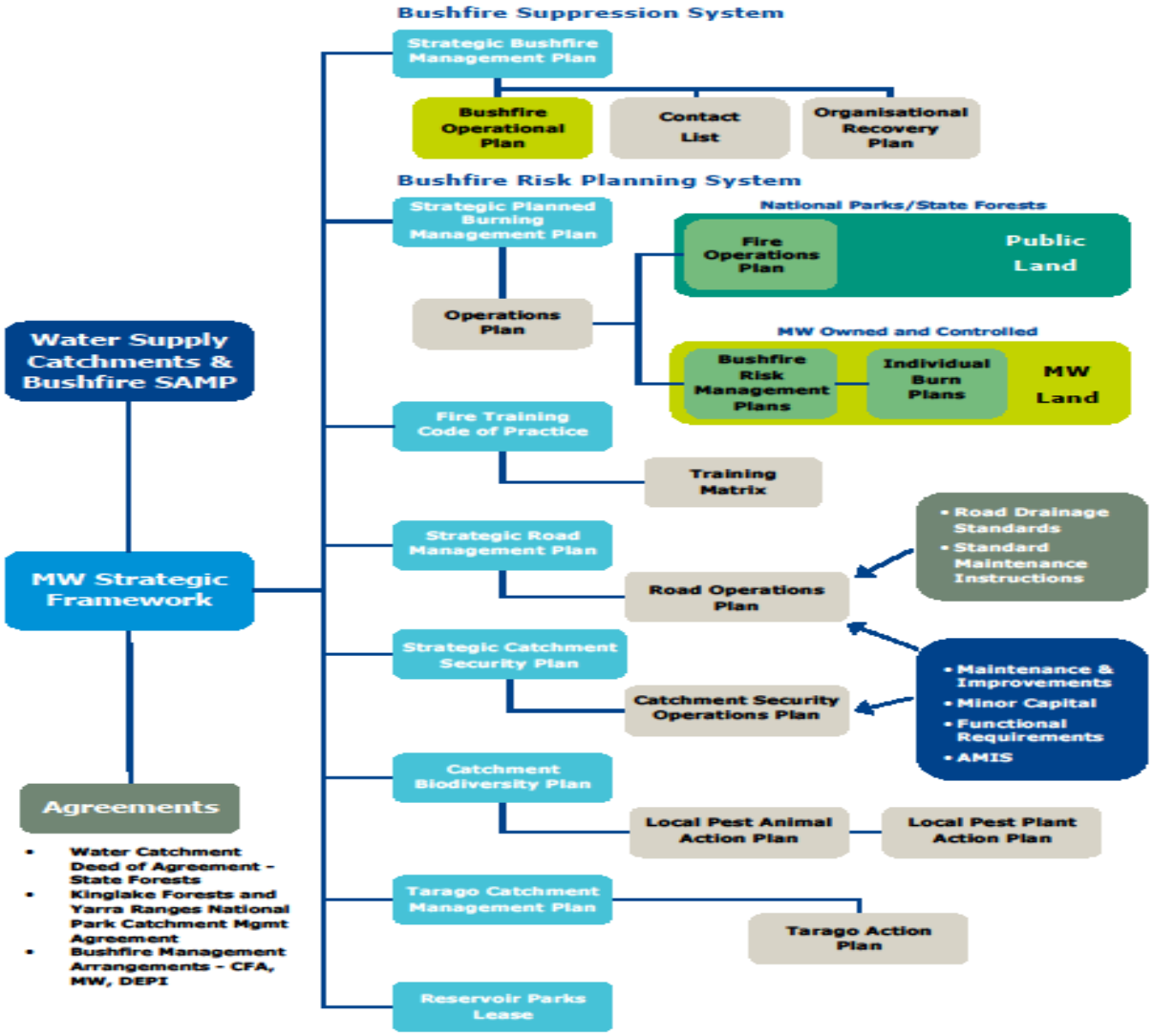


% is the relative proportion of the drinking water supplied annualy

Managing open catchments



Managing catchments as an asset



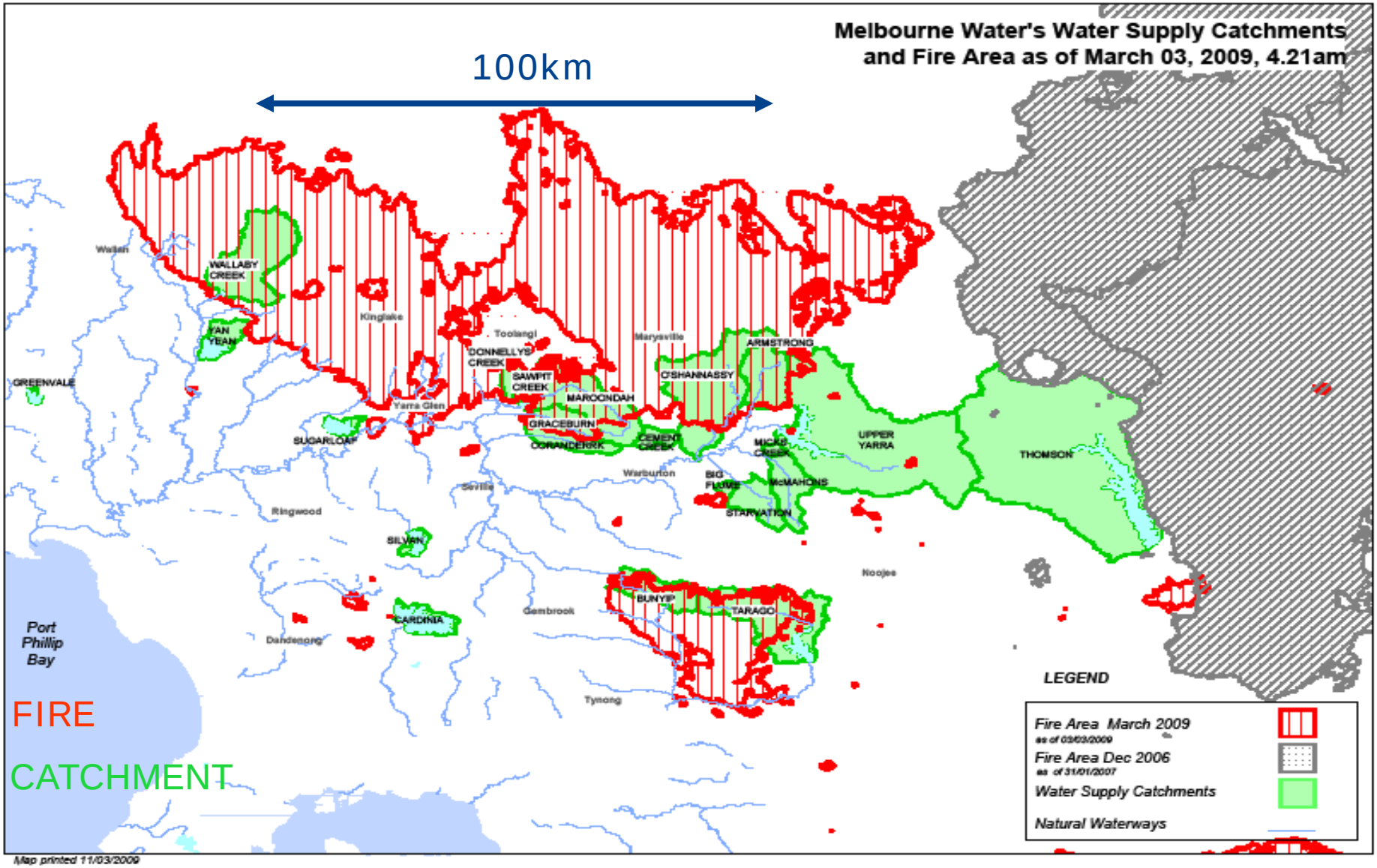
Catchment Management - Levels of Service

Priorities	Asset (not in priority order)	Activity (not in priority order)
1. Fire Management	Road Access	Road Slashing
		Slope Mowing
		Road Opening
	Fuelbreak	Slashing
	Infrastructure	Water Point Maintenance
		Vantage points
		Helipads
2. Security	Fence	Fence Maintenance
	Signage	Sign Maintenance
	Gates	Gate Maintenance
		Road Opening and Closing
	Catchment	Patrols
3. Pest Animals		Pest Animal Management
4. Road Drainage	Road Surface	Road Grading
		Road Dozer Maintenance
	Culverts	Culvert and Crossing Maintenance
5. Land Management	Biodiversity	Weed Management

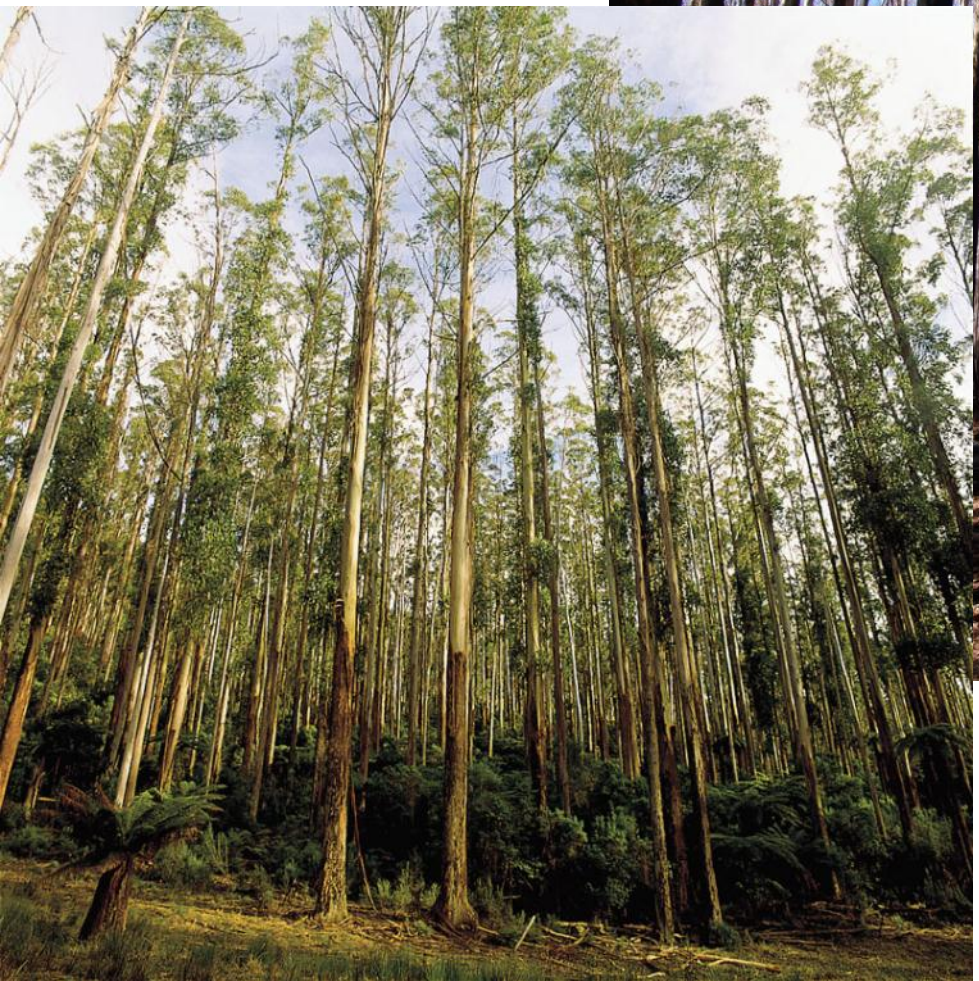
Why Fire Protection is Important

- Water quality
- Water yield
- Property owner responsibilities
- Protection of environmental values

2009 - Impact on Water Supply Catchments



Impact on Water Supply Catchments – O'Shannassy



Impact on Water Supply Catchments – Wallaby Creek

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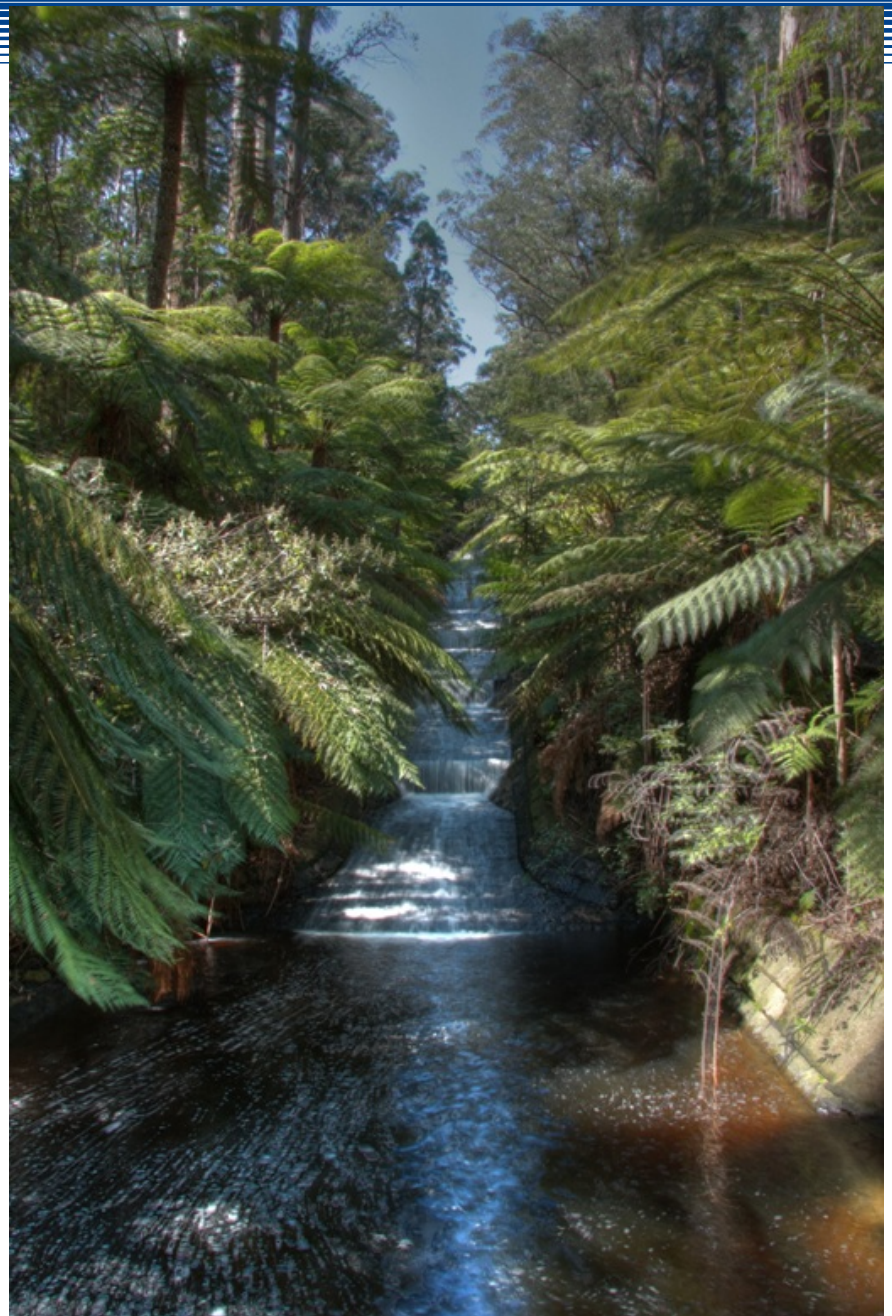


Bushfire Impacts – Water Quality

Short term issue: 0-5 years

Potentially:

- massive increases in Turbidity, colour, Fe, Mn
- Reductions in DO
- Unable to disinfect
- Landslips/Debris flows
- Storage outages of 3 – 12+ months
- Remediation efforts often ineffective

Highly variable response to fire

Water Quality - rain

- Steels Creek - waterways
- Not drinking water!
- *E.coli* 200,000/100mL

Bushfire Impacts on Catchments

Rainfall and Soil Erosion

- Variables: soil type, soil damage, extent of vegetation removal, time elapsed before rainfall, rainfall intensity, topography, mitigation measures

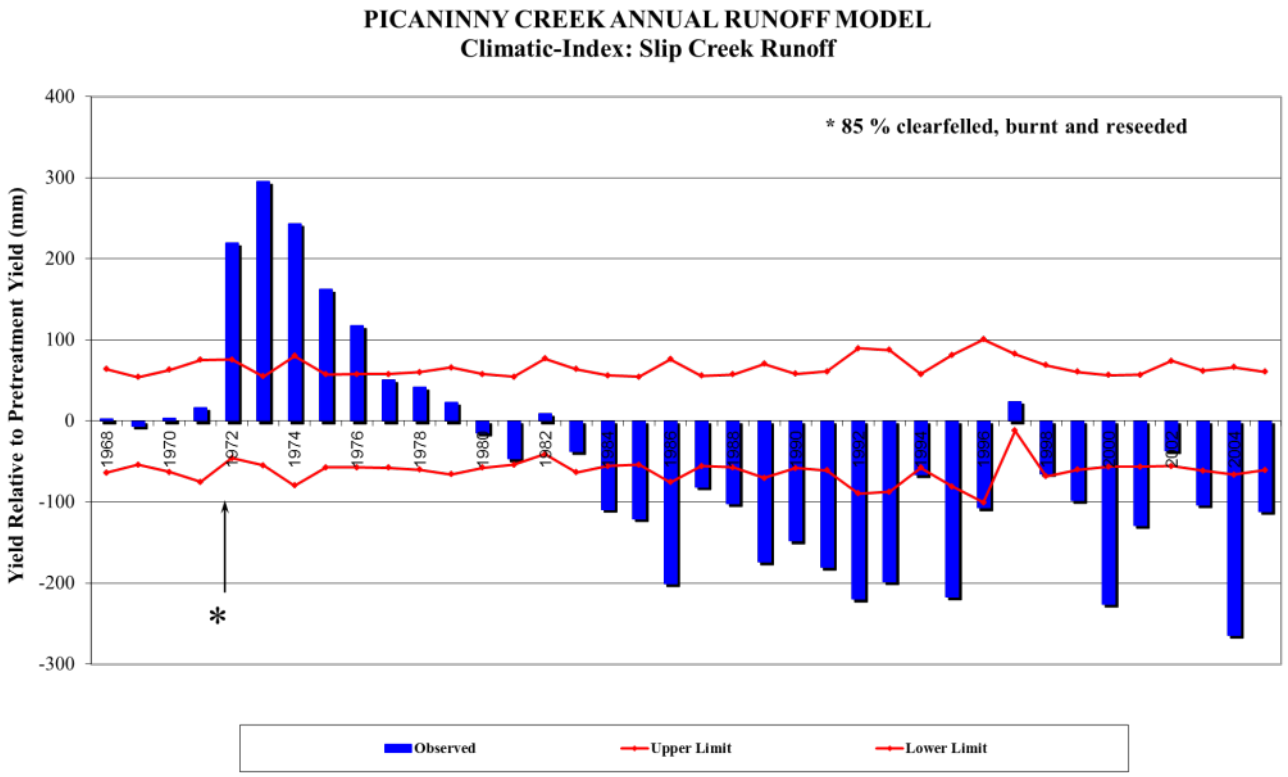
Erosion in Wallaby Creek Catchment (January, 2010)

Water Quality - interventions

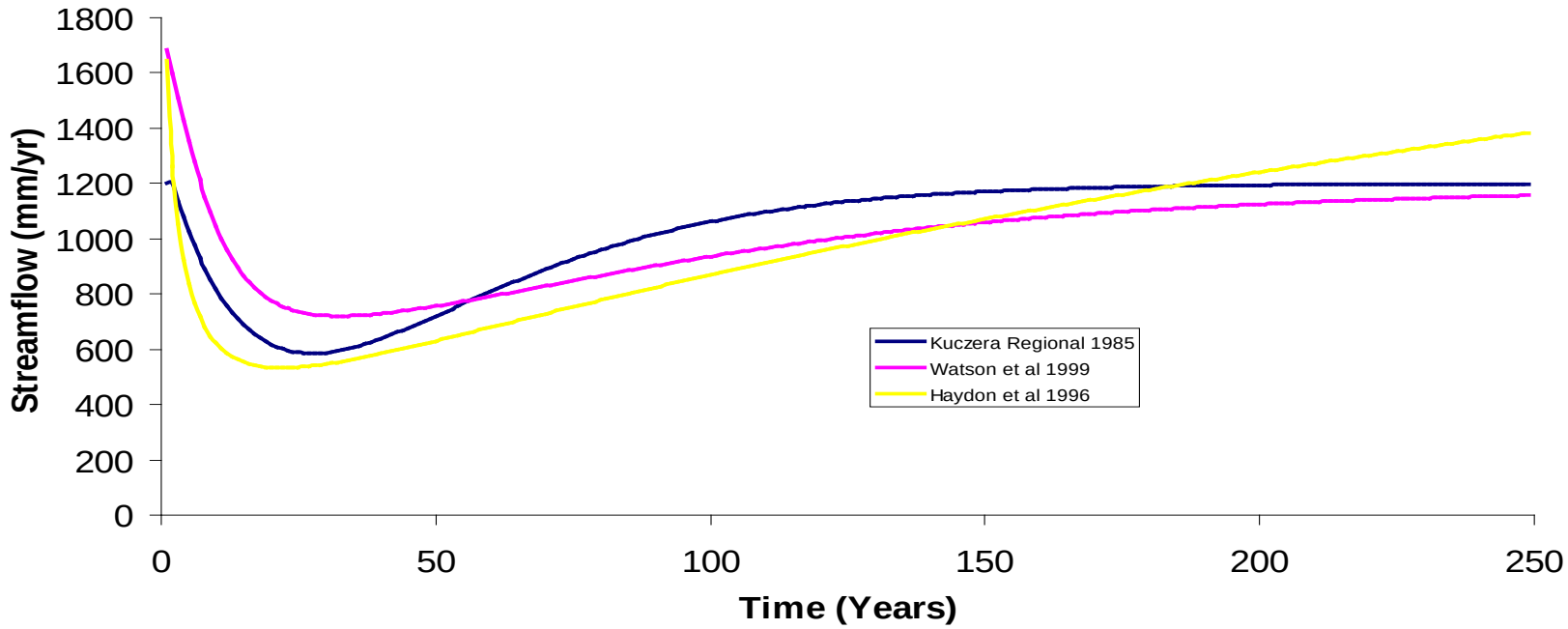
- Physical barriers
- Silt curtains
- Rehabilitation of fire breaks

Bushfire Impacts - Quantity

- Maximum 50% yield reduction
- Based on observation, experimental results & modelling



Bushfire Impact - Quantity



Mitigation – Prevention, preparedness, response and recovery


Questions?