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Critical Horizons: Water – Defining the Limits of our Future

Planning our water future – Getting it right

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Director General
Department of Water**

24 July 2008

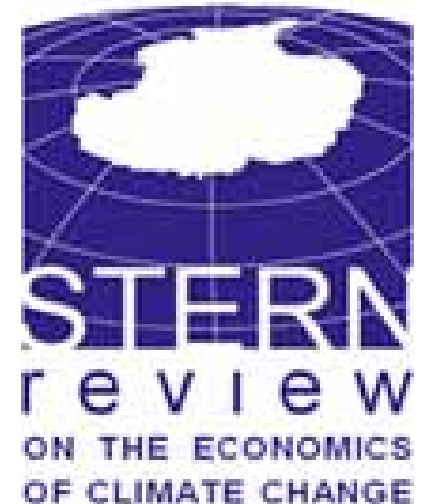


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“Water is not a renewable resource. People have been mining it without restraints because it has not been priced properly.”

Lord Stern of Brentford





China

- growth rates of around ten per cent per annum
- 21% of world's population, controls only 7% cent of planet's water supply



India

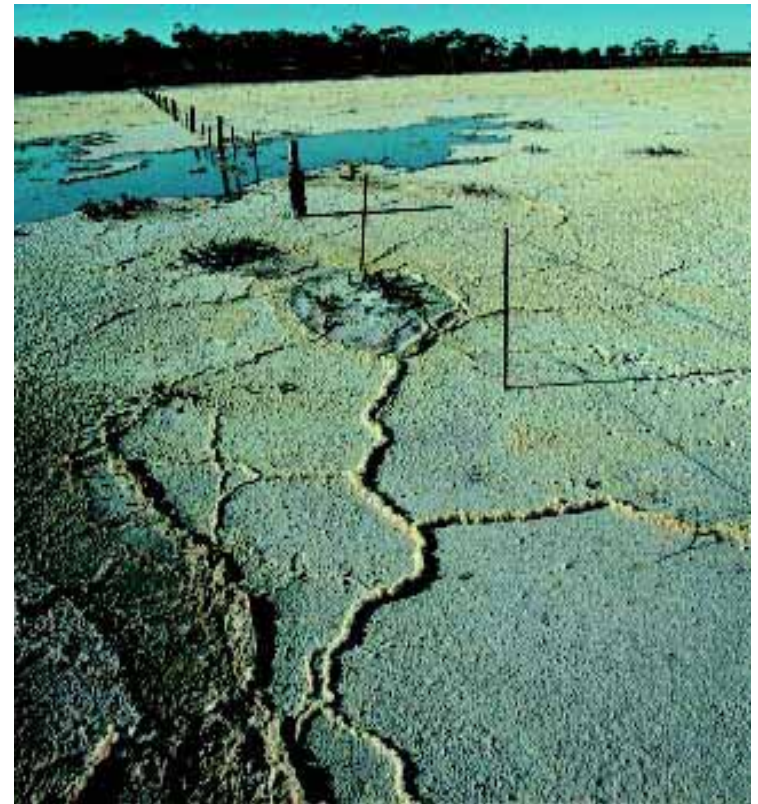
- 21 per cent of communicable diseases related to unsafe water
- diarrhoea 1600 deaths a day.
- forecasted economic growth: 8–9%





Climate change impacts for Australia

- **Australia damaged more than any other developed country**
- **environment already dry and variable – climate change will exacerbate this, especially in south**
- **projections show warming of two degrees Celsius by 2070 for most of Australia**





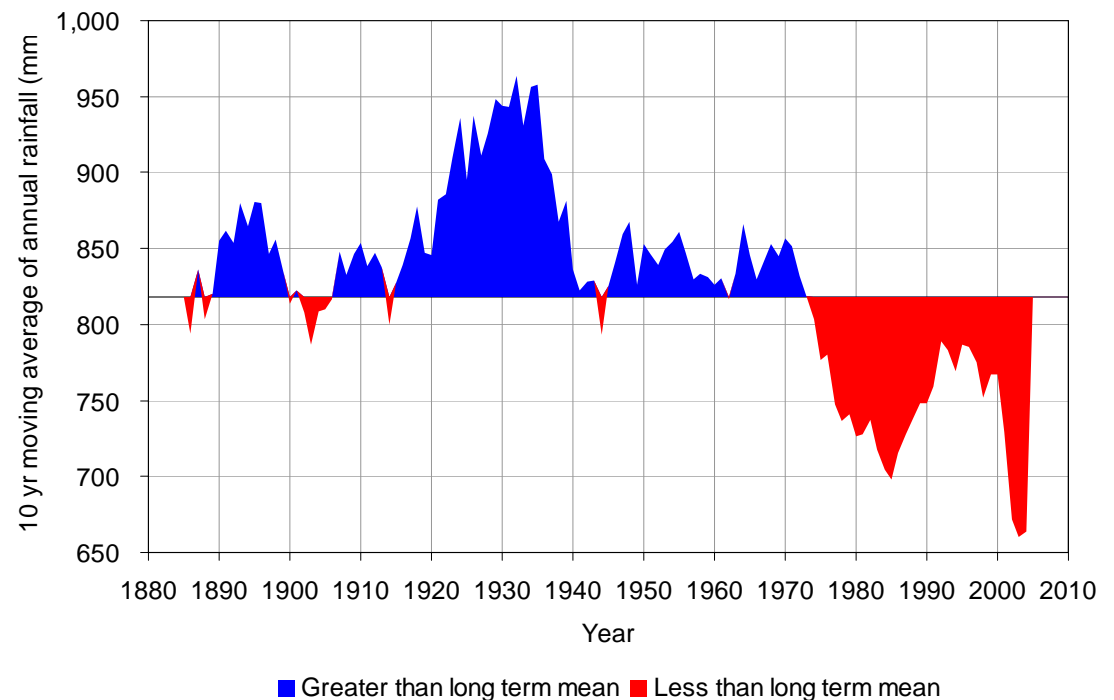
Climate change – south-west Australia

- **average temperatures increased by 0.8 degrees Celsius since 1910 – mostly in last 50 years**
 - **rainfall decreased by 10% (past 35 years)**
 - **will continue to decline: 20 per cent (by 2030)**
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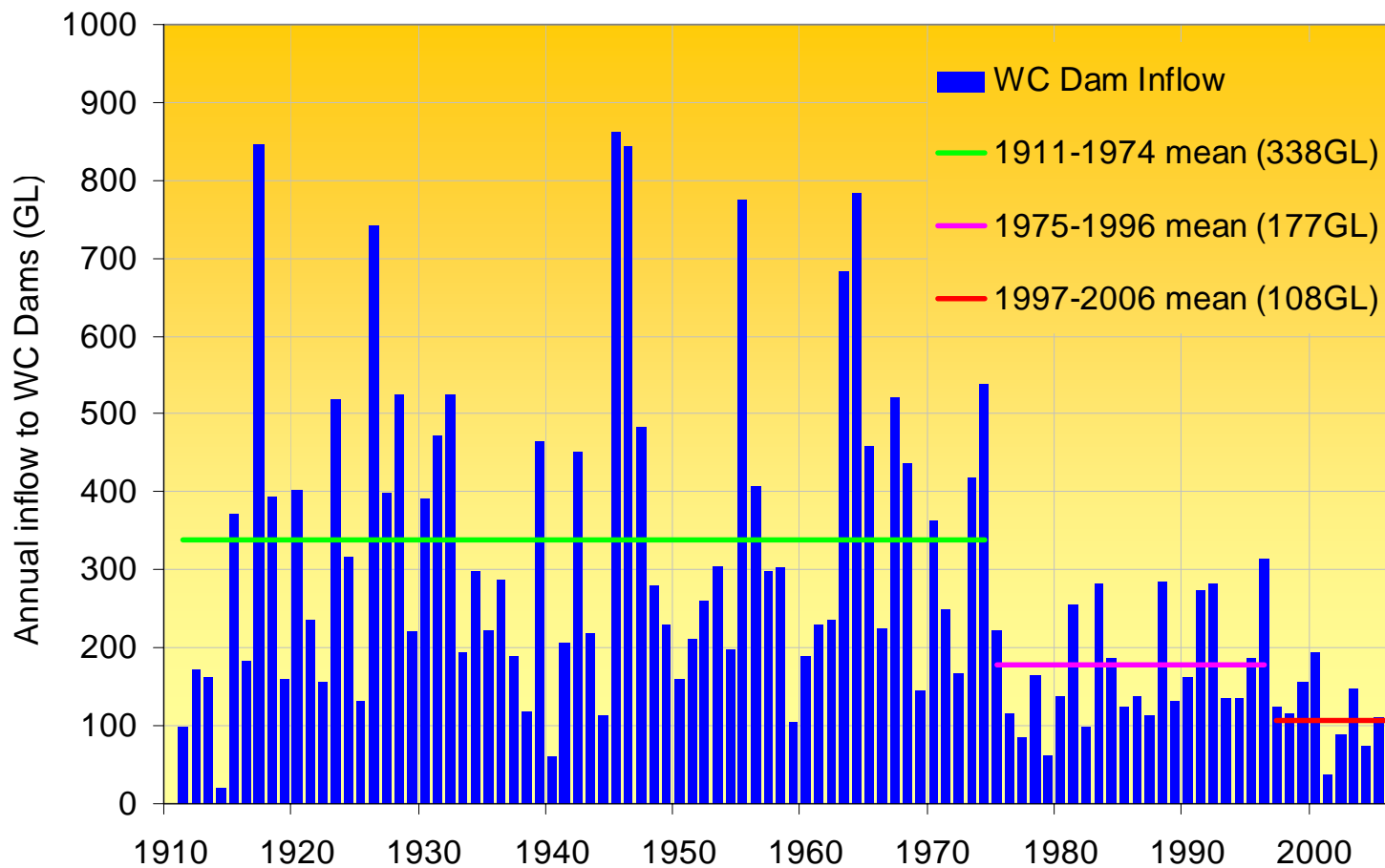
Perth rainfall trends – deviation from the mean

- two-thirds reduction in stream flows metropolitan area)
- 50% fall in flows to dams
- less recharge to aquifers
- water use tripled over past 35 years
- doubling every 12–15 years





Yearly streamflows into Water Corporation dams 1911-2006





Planning for a water future

- Water symposium (2002)
- State water strategy (2003)
- *State water plan (2007)*
- Regional water plans (first in 2008)

Security through diversity



State water plan priorities

- **use and recycle water wisely**
- **plan and manage water resources sustainably**
- **protect ecosystem, water quality and resources**
- **enhance the security of water for the environment and use**
- **develop water resources for a vibrant economy**
- **deliver services for strong and healthy communities**
- **invest in science, innovation and education**





State Water Science and Innovation Plan

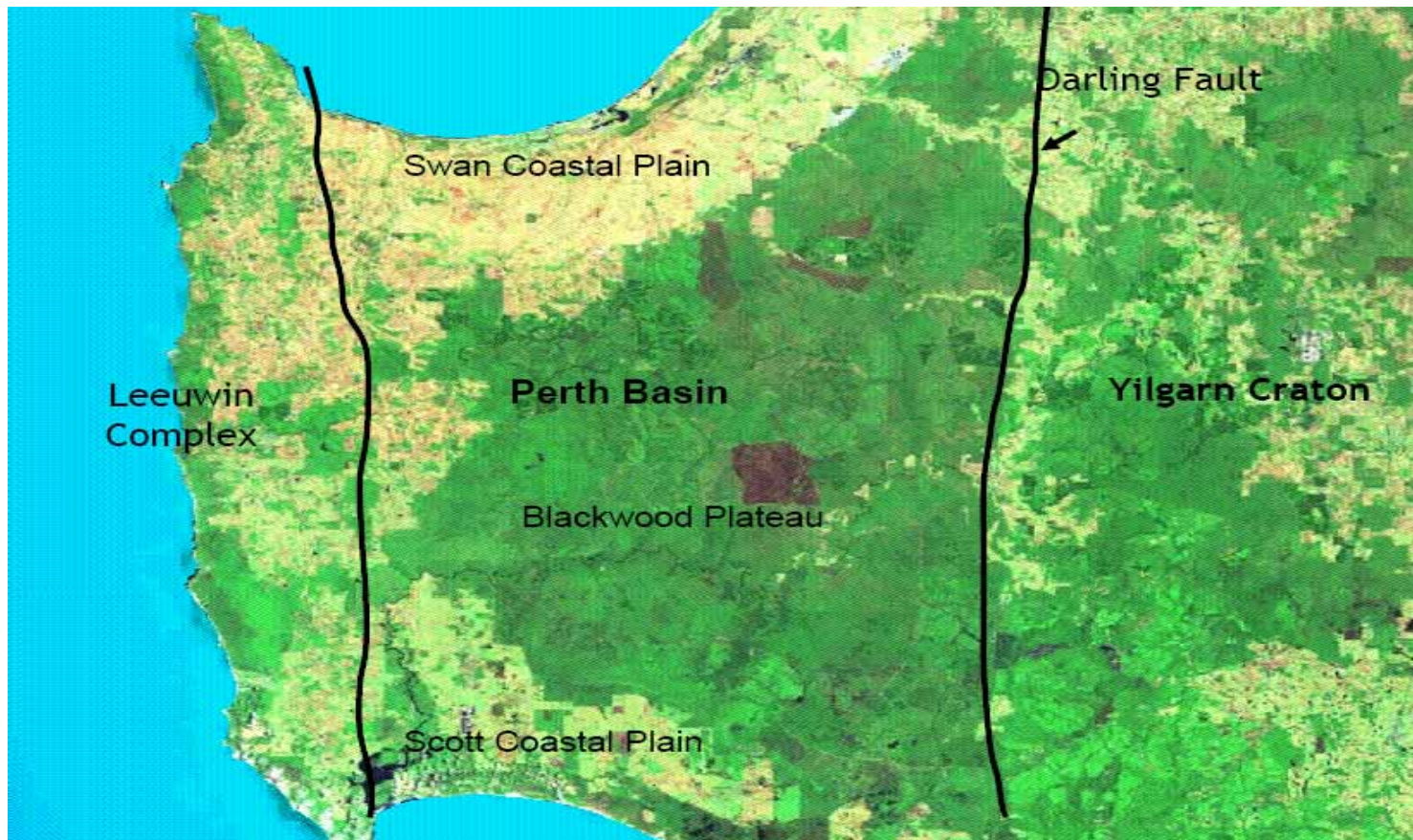
- increasing understanding of groundwater as critical resource
 - understanding and adapting to impacts of climate change on water systems
 - encouraging innovation in desalination and other water technology
 - managing water in urban environment
 - managing tropical water
 - managing rural and regional water – with focus on south-west agricultural zone
- * ‘water and society’





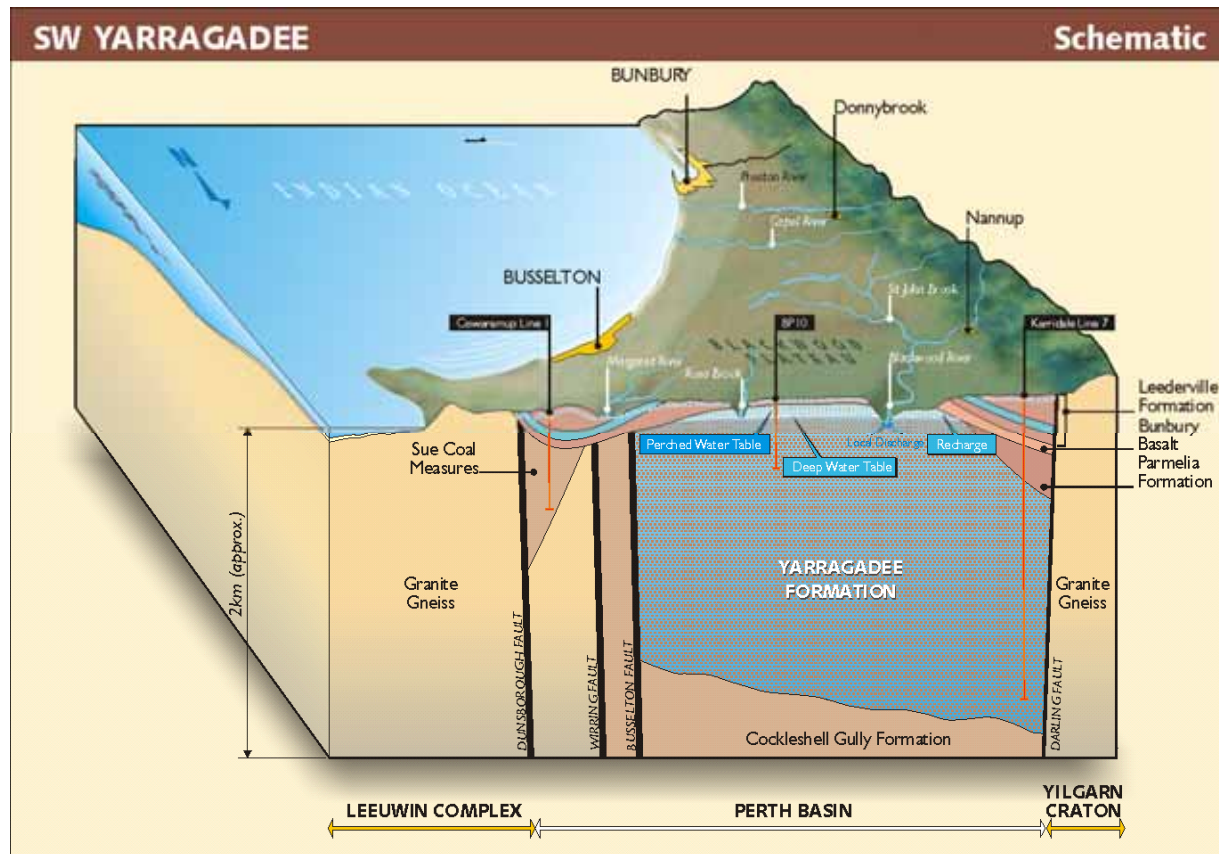
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South West Yarragadee aquifer





South West Yarragadee aquifer





South West Groundwater Areas

Groundwater area	Aquifer	Allocation limit (kL/yr)	Water available
South West Coastal	Superficial	41 590 000	Water available
	Leederville	4 000 000	90% allocated
	Cattamarra	6 000 000	Water available
Bunbury	Superficial	3 890 000	Water available
	Leederville	10 500 000	90% allocated
	Yarragadee	26 500 000	Fully allocated
	Cattamarra	4 000 000	Water available
Busselton–Capel	Superficial	14 300 000	90% allocated
	Leederville	20 100 000	90% allocated
	Yarragadee	45 500 000	Fully allocated
	Sue Coal	4 000 000	Water available
	Fractured Rock	50 000	Fully allocated
Blackwood	Superficial	5 900 000	Water available
	Leederville	5 550 000	Water available
	Yarragadee	15 500 000	90% allocated
	Lesueur Sandstone	4 000 000	Fully allocated
	Fractured Rock	50 000	Fully allocated



SW Groundwater Areas:

High, medium and low use areas

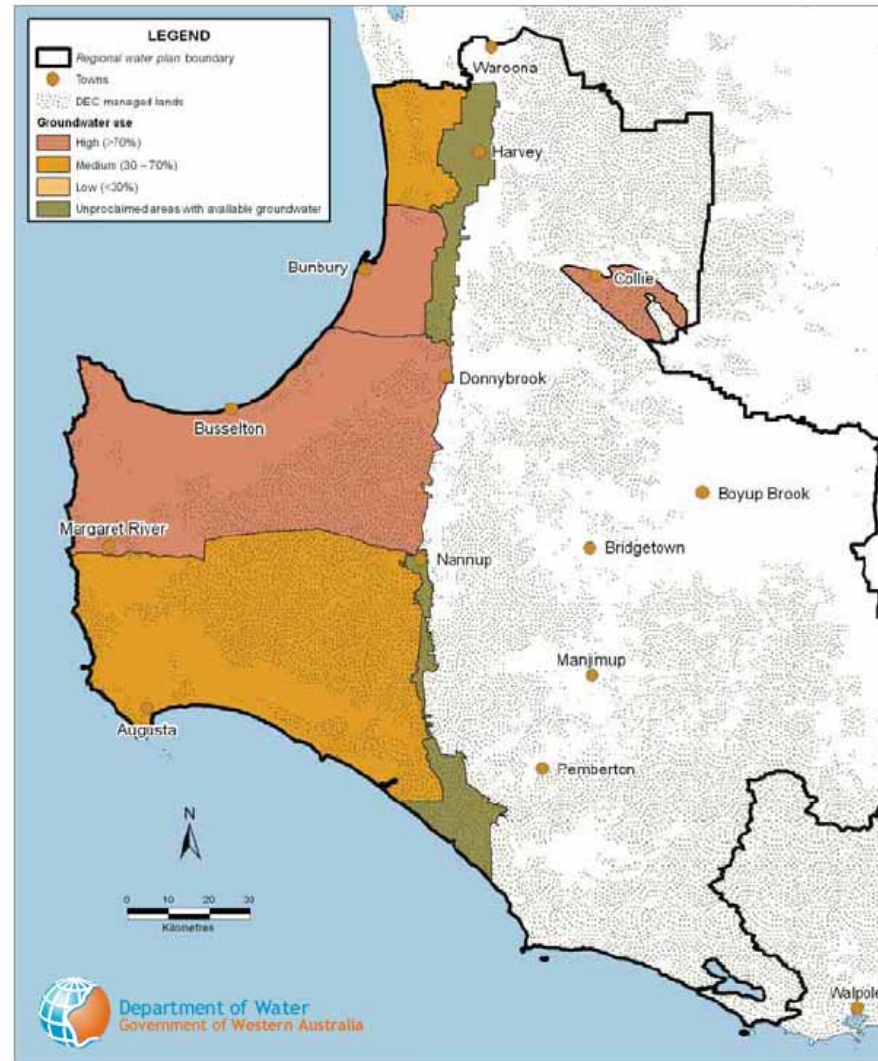


Figure 11 Level of use of available groundwater resources (average across all aquifers). Please note that the areas indicated in white on this map have little or no groundwater.



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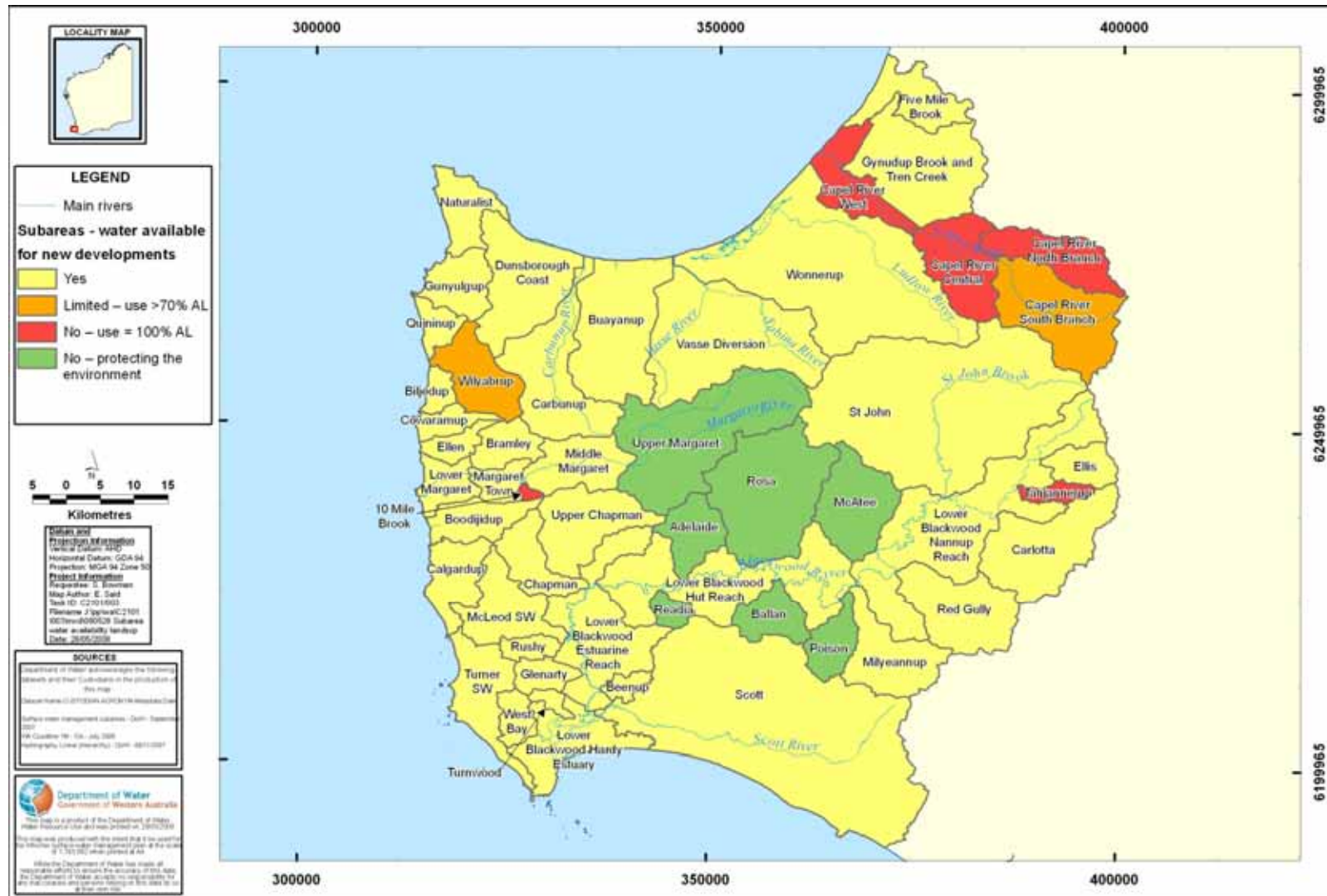


SWAMS_Aquifers_fade_45sec



What does the Whicher plan do?

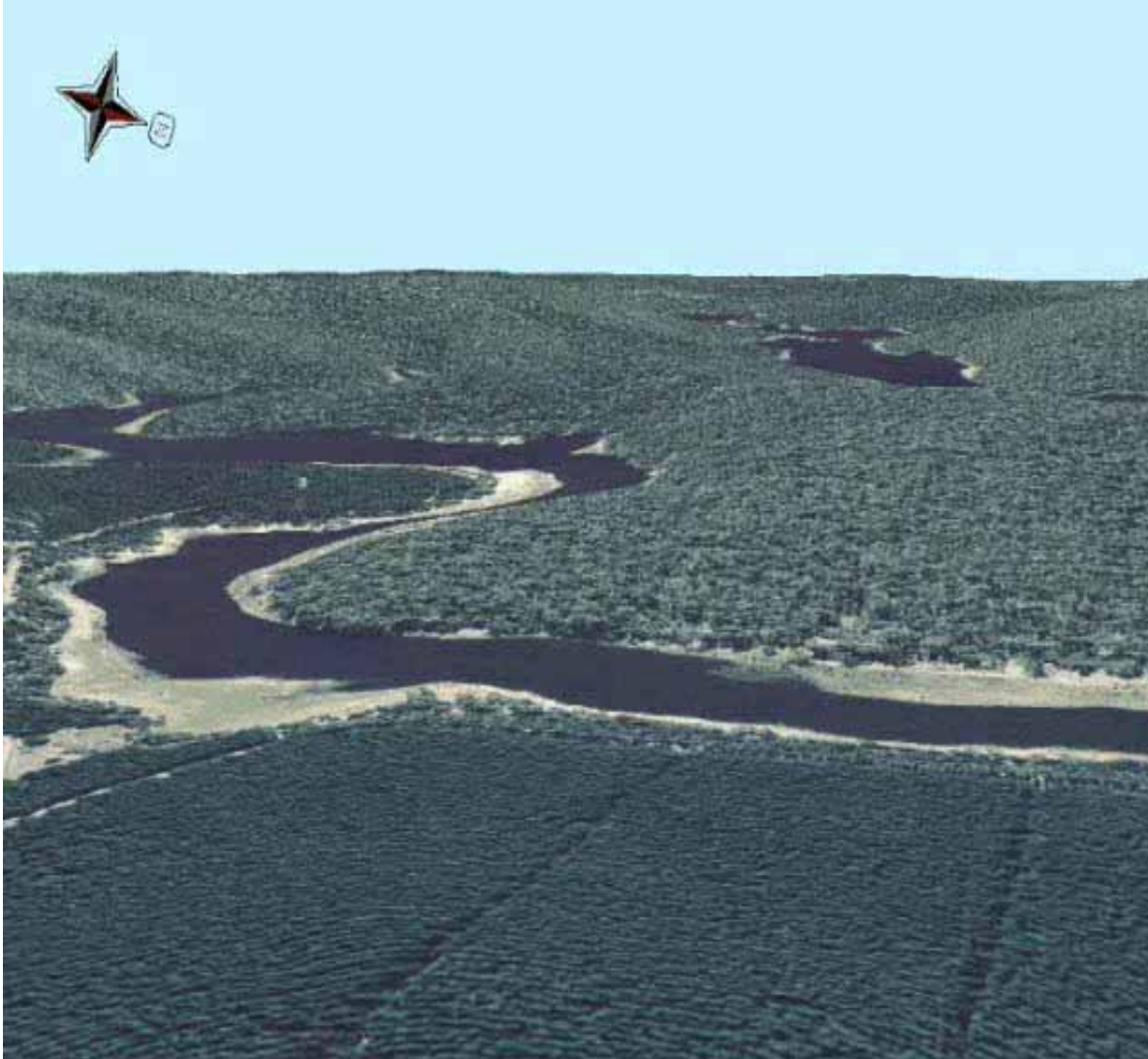
- **sets policies for licensing and managing surface water**
 - **sets up regulatory water management arrangements where none existed previously**
 - **for the first time, sets allocation limits for Whicher surface waters**
 - **current surface water use (pre-proclamation) will all be licensed within allocation limits.**
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Collie River

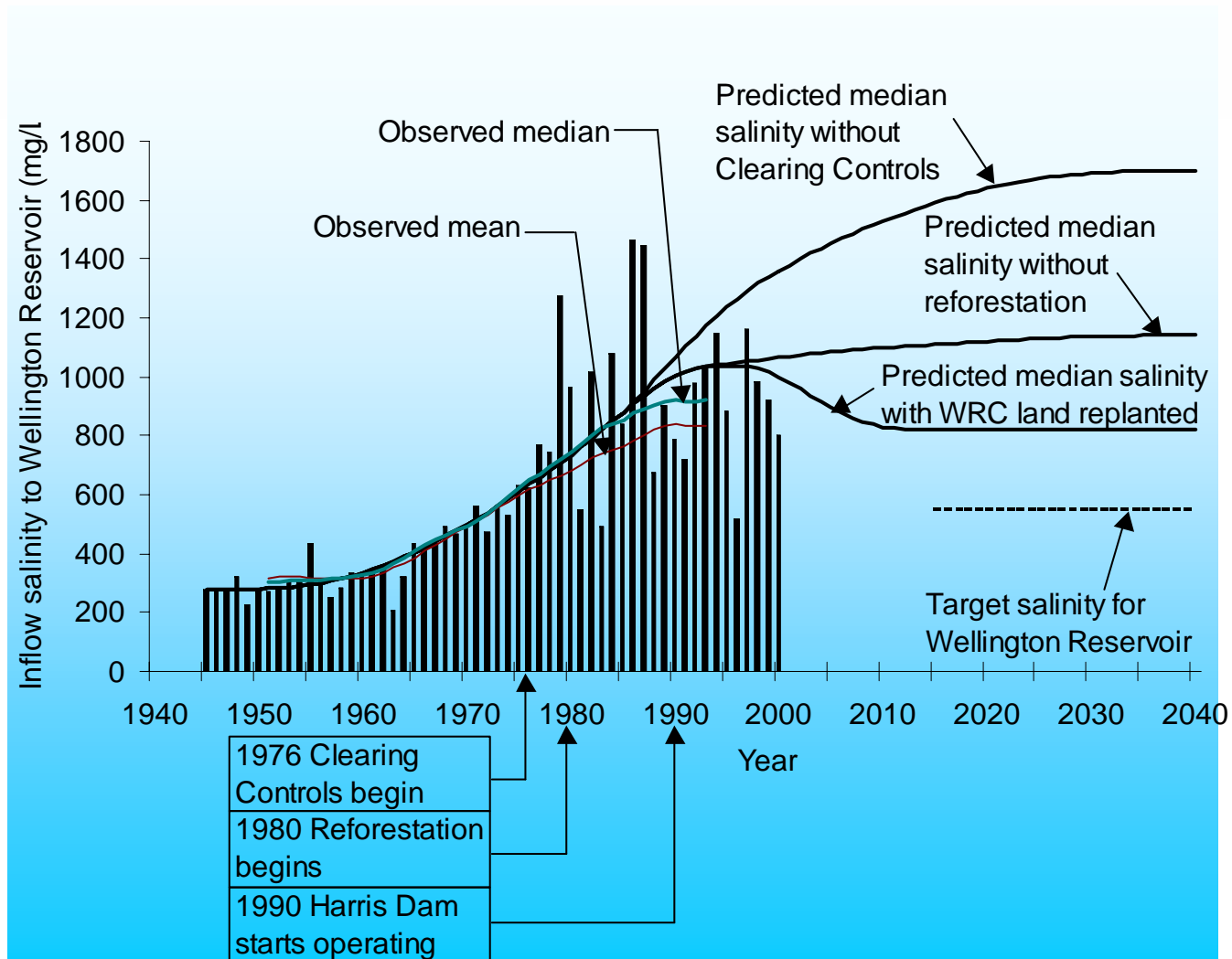


Wellington Dam





Collie River – trends





Collie River Basin – Wellington Reservoir

Wellington Reservoir – 186 GL Storage; currently too salty for water supply and irrigation.

- In \$30 million project, department has diverted 6 GL of saline river water containing 30,000 tonnes of salt into former mining void
- Freshening of reservoir will allow estimated 17 GL for industry
- 10+ GL to IWSS
- Will provide over 30 GL of 'fit for purpose' water for industry and public water supply.





South West regional water plan

**South West Water Forum: convened to
advise and assist with the plan**

Membership:

- **environmental**
 - **industrial**
 - **agricultural**
 - **indigenous**
 - **public water supply**
 - **local government**
 - **recreational**
 - **other water management interest groups.**
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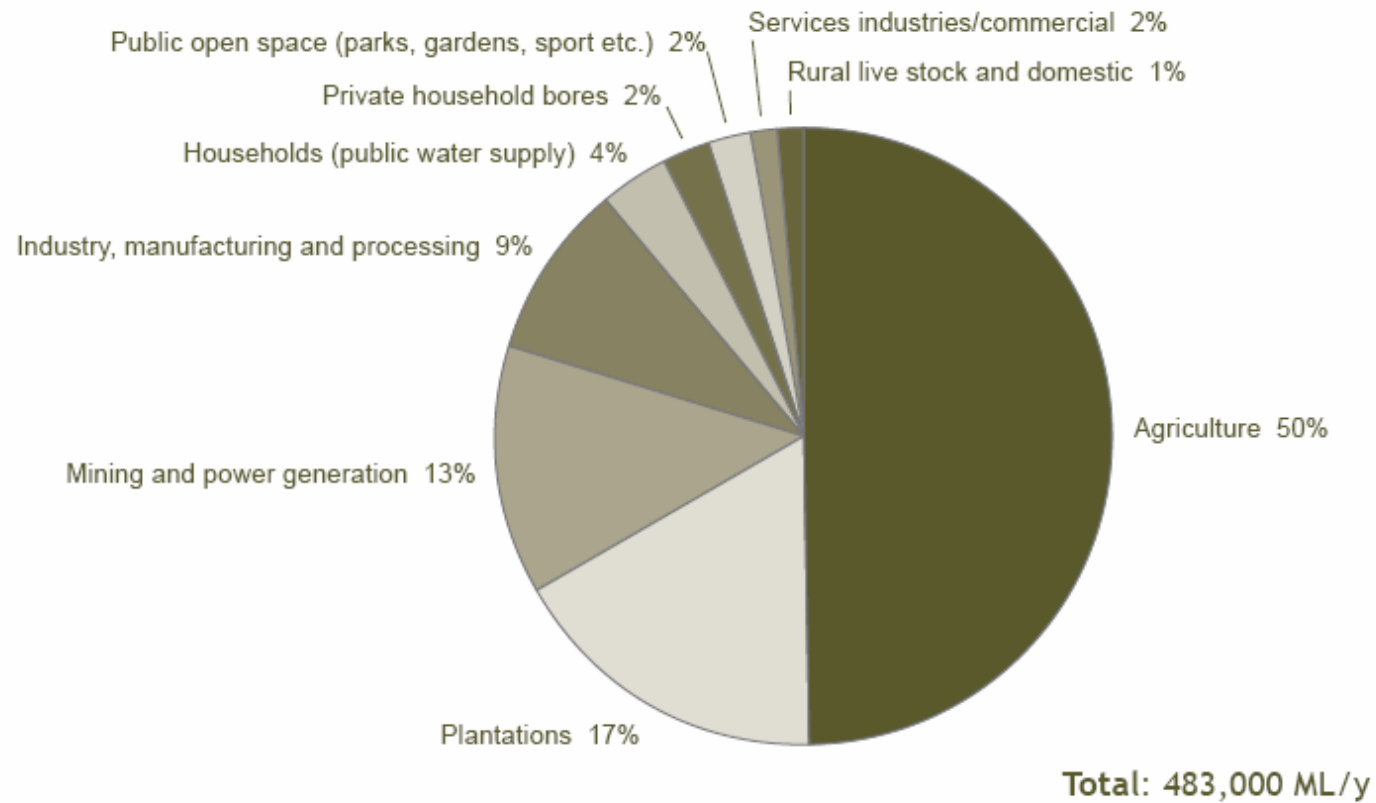
A sustainable water-management regime

Designed to:

- **accommodate constraints of variable and drying climate**
 - **promote wise and careful use of existing resources**
 - **equitably manage increasing competition for available water resources**
 - **support reasonable and efficient regional growth**
 - **effectively consult and communicate with interested parties**
 - **maintain the quality of region's natural heritage.**
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Existing water use by sector





Degraded waterways and estuaries

Nutrients create algal blooms; kill fish.

Plus:

- salinisation
- sedimentation
- acidification





Projected water demand and availability to 2030



By 2030, we can expect:

- growth in agricultural demand for water (more than 50%)
- increased mining and industry demands (up one-third)
- expansion of town water supplies (up about 50%)

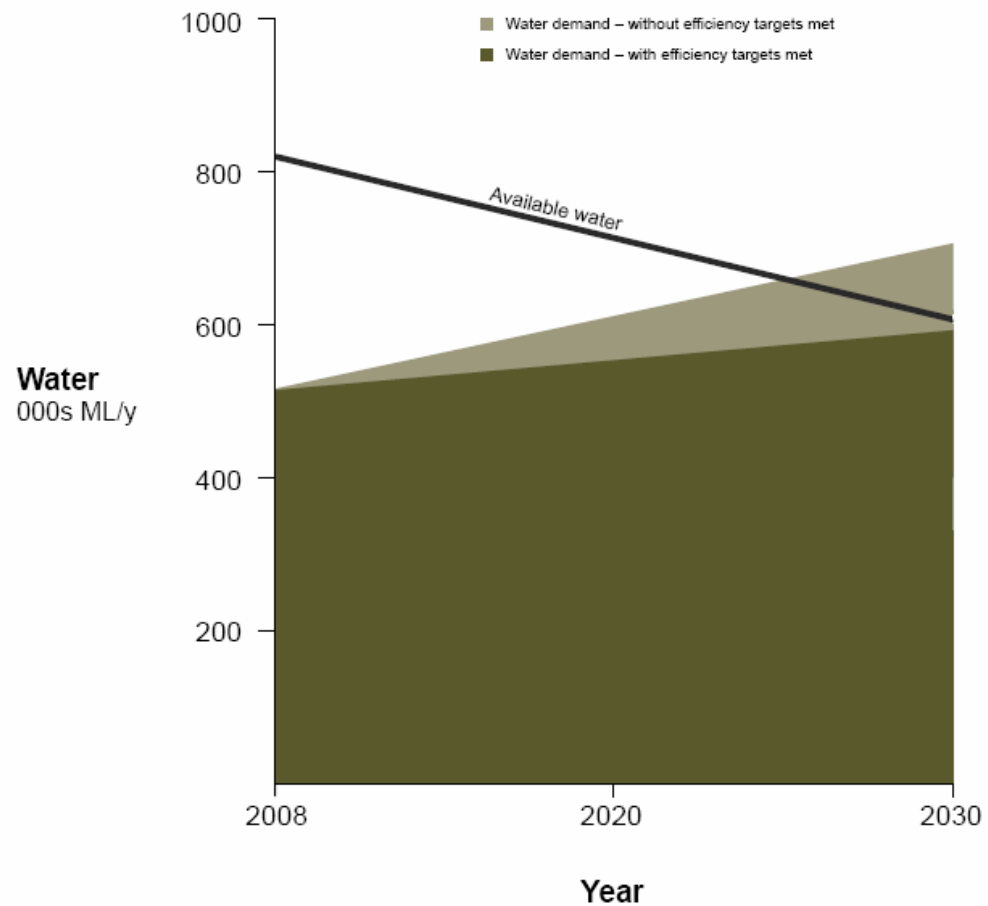


increase in plantation water use (about 15%).





Will we run out of water?





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Farm dams and plantations





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Theme 1: Use and recycle water wisely

Objective:

Natural water extraction is minimised through efficient water use by all sectors and widespread adoption of fit-for-purpose use, including recycled water.





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Theme 2: Plan and manage water resources sustainably

Objective :

All water resources are managed sustainably, accounting for climate change, linked with land planning and with full engagement of stakeholders in open, accountable processes.





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Theme 3: Invest in science, innovation, and education

Objective:

Appropriate water-resource knowledge and monitoring data are acquired for sound adaptive management decision-making and made readily available to the community.





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Theme 4: Protect ecosystems, water quality and resources

Objective:

The region's water resources are healthy and support a broad diversity of environmental, social and economic values.





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Theme 5: Enhance the security of water for the environment and use

Objective:

Water users, including environmental managers, enjoy certainty and clarity about their water entitlements and responsibilities.





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Theme 6: Develop water resources for a vibrant economy

Objective:

Development of the region's water resources reflects established values, recognises water availability limitations and effectively uses water trading markets where feasible.





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Theme 7: Deliver services for strong and healthy communities

Objective:

Protection of all drinking water sources is ensured, along with timely provision of water-supply and sewerage services in the region.





Water vision for South West

By 2030:

The South West Region's water resources and services are sustainably managed under the stewardship of all communities and organisations to protect and enhance the unique ecological, cultural, economic and social values they support.



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