



Department of Water  
Government of Western Australia

# Collie River Salinity Recovery improving water resource outcomes in a competing environment





# Water Recovery Key Messages

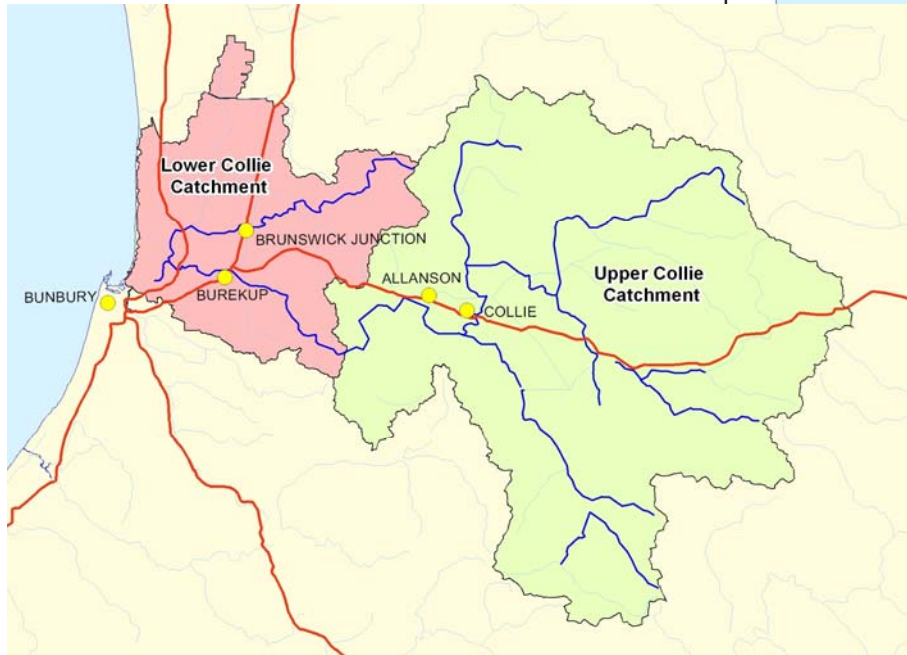
- strong science base
- complex problem
- extensive consultation
- integrated solutions
- partnerships



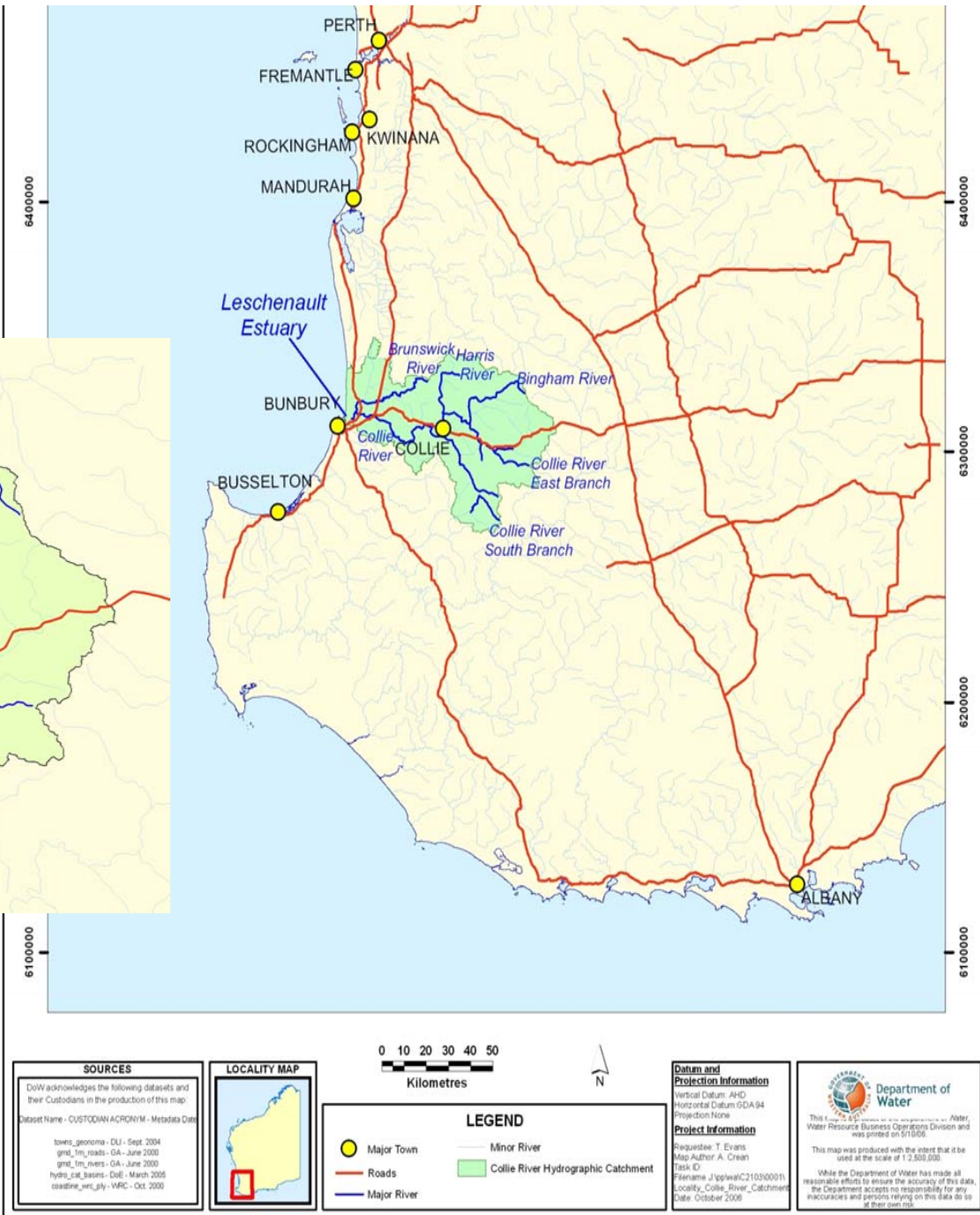




# Introduction



Collie River catchment



SOURCES
DfW acknowledges the following datasets and their Custodians in the production of this map: Dataset Name - CUSTODIAN ACRONYM - Metadata Date
towns_geomco - DL - Sept. 2004
gnd_fm_roads - GA - June 2000
gnd_fm_rivers - GA - June 2000
hydro_cat_basins - Coll - March 2005
coastline_wrc_gly - WRC - Oct. 2000



LEGEND	
	Major Town
	Roads
	Major River
	Minor River
	Collie River Hydrographic Catchment

Datum and Projection Information
Vertical Datum: AHD
Horizontal Datum: GDA94
Projection: None
Project Information
Requestee: T. Evans
Map Author: A. Cream
Task ID:
Filename: J:\pplw\C2103\0001\
Locality_Collie_River_Catchment
Date: October 2006

This map was produced with the intent that it be used at the scale of 1:2,500,000.

While the Department of Water has made all reasonable efforts to ensure the accuracy of this data, the Department accepts no responsibility for any inaccuracies and persons relying on this data do so at their own risk.



## Multi-criteria analysis / benefit cost analysis

<b>Option 600 mg/L target</b>	<b>Cost \$m</b>	<b>Cost \$/GL</b>	<b>Social impact</b>	<b>Envir. impact</b>	<b>Implem- entation</b>	<b>Water avail. GL/yr</b>
Pumping	107	5.8	Minor	Low	Complex	18.5
Upl. trees	23	1.4	Signif.	Low	Staged	16.5
Lwl. trees	32	1.8	Mod.	Low	Staged	17.5
Full divert	162	9.2	Low	Low	Non-sta.	17.6
P.div+pump	128	7.0	Low	Low	Non-sta.	18.3
Pump+trees	45	2.5	Low	Low	Staged	17.7
P.div to void	17	1.0	Low	Poss.	Non-sta.	17.8



- Power generation
- New private coal-fired power stations
- Collie town
- State Forest and private plantation.
- 2 Dams - Wellington and Harris
- Water to IWSS from Harris Dam
- Dryland salinity in eastern farming areas
- Irrigation from Wellington
  - ranges from 3340–5200 ha
  - water sales 30–33 GL
  - water allocation 68 GL
  - avge salinity ~900 mg/L





## Catchment management

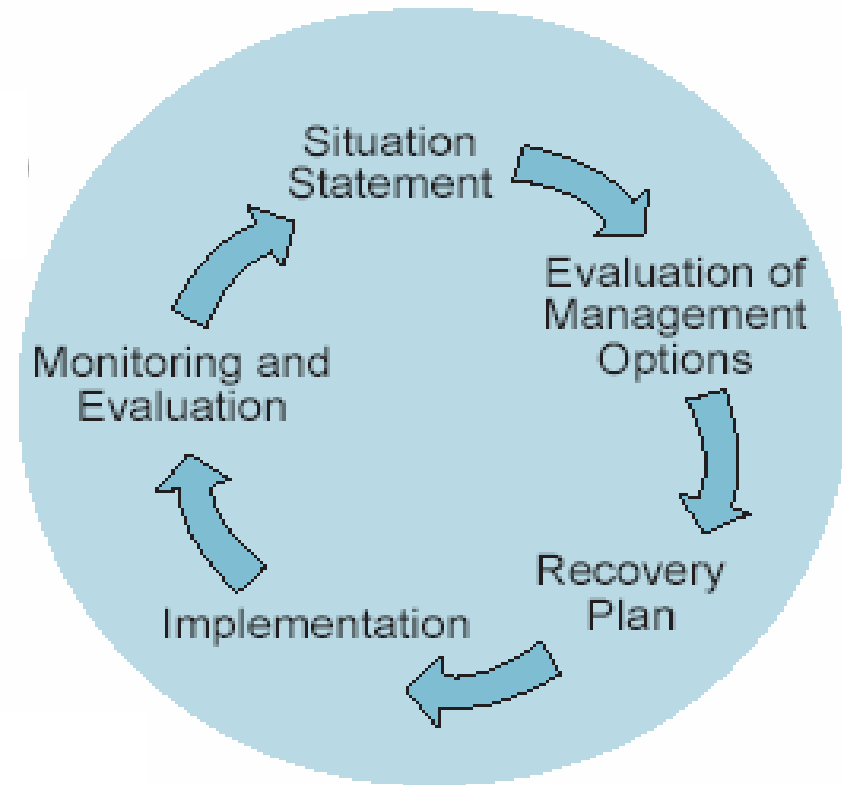
- Clearing bans
- Afforestation and purchase properties (with Commonwealth)
- Scour and trial saline water diversion

## Clear goals

- From Salinity Recovery to Water Recovery
- Target for 2015 to return to potable water quality in Wellington Dam

## Partnership with community

- Recovery Teams include landowners, government agencies, local government, industry and other organisations
- Strong private sector interest





## **Recommended option:**

**50% diversion at Buckingham (via void to sea) with  
4200 ha of upland trees and 3000 ha of lowland  
trees**

## **Recovery strategy:**

- engineering option for short term**
- higher water use farming systems for long term**



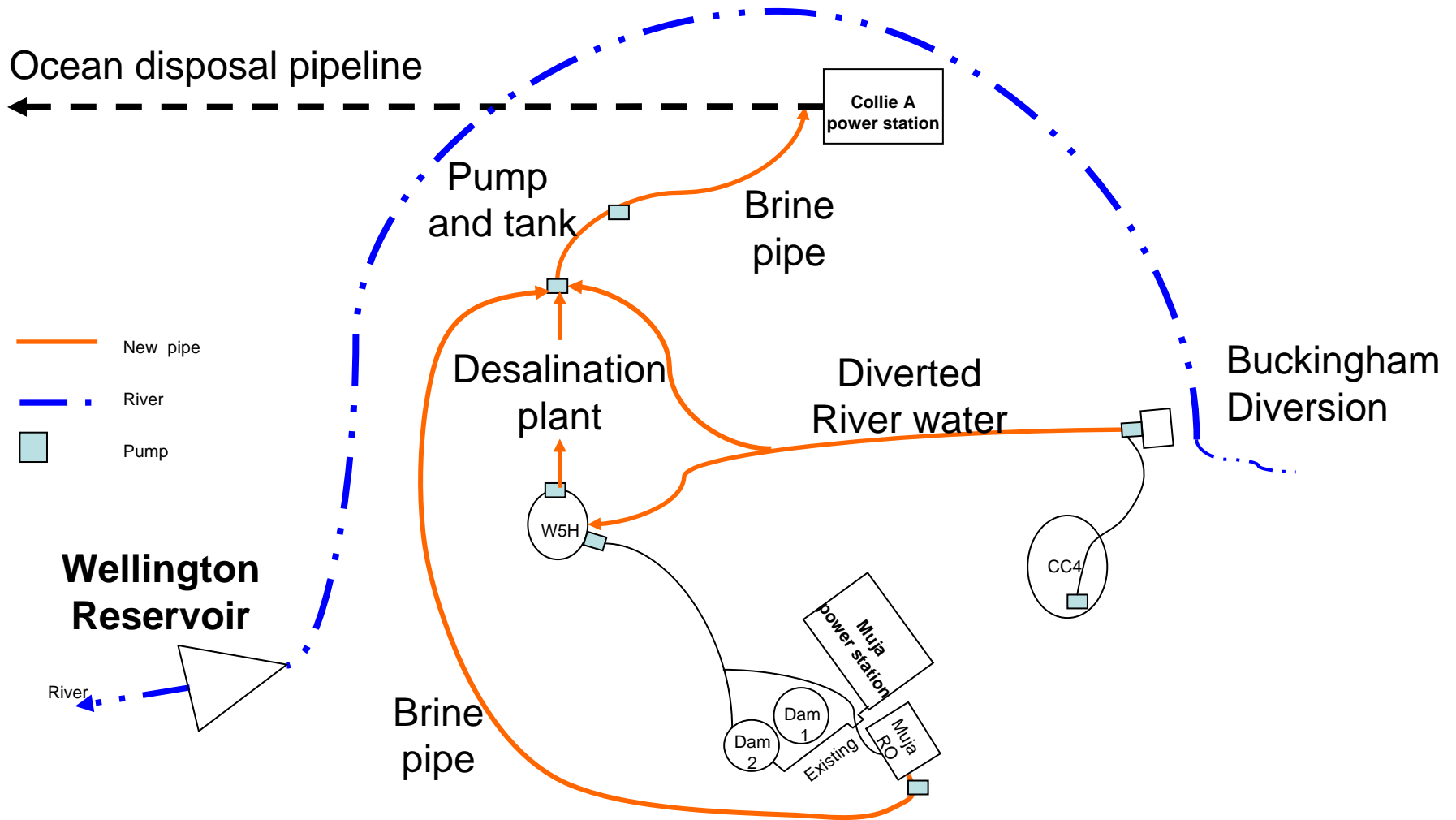


## Recovery Plan: predicted salinity reductions of inflows to Wellington Dam

Component	Improvement (mg/L)	Cumulative improvement	Resultant Salinity (avge)
1996 land use	0	0	900
2007 land use	115	115	785
4.5 GL/yr diversion at CE	130	245	655
0.8 GL/yr diversion at CS	10	255	645
Farming systems	30	285	615



# Schematic of river diversion





## Trial diversion results

- partners: NAPSWQ, Harvey Water, Griffin Coal

Year	Diversion season	Volume diverted (GL)	Salt diverted (kt)	Reduced salinity at Mungalup Gauging Station (mg/L)
2005	August - October	1	3	30
2006	May - October	2.1	13.4	418
2007	May - October	3	14.5	151



## Trial diversion







## Future Options – from salinity recovery to water resource recovery

- Salinity recovery potentially yields more water than it treats.
- *Water Source Options* report to Minister 2007 builds on salinity recovery strategies; identifies basis to:
  - make improvements to irrigation,
  - provide water to industry up to 30 GL/a, and
  - develop a drinking water source of 5 -10 GL/a.



## Results – of the DoW water resource recovery approach:

- A salinity recovery project which has attracted \$30m NAP funds.
- Trial diversions have confirmed the scale is such that it can make a difference.
- Key stakeholders are attempting to work together for the benefit of the whole.
- Signs of behaviour change among some landholders – willingness to trial perennial pastures.
- Salinity recovery has led to water resource recovery with potentially a significant quantity of water made available.



## Conclusions



- For capital cost of \$30m, salinity in Wellington Dam will be lowered to less than 650 mg/L.
- Recovery plan forms a building block for a potential major new water supply.
- Science has been applied to a complex problem, underpinned by extensive consultation, to plan the recovery of a major water resource important to the region and the state.





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**Thank you**