

## Wellington Dam and Collie Coal Basin Groundwater

### Background

#### *Wellington Dam*

Wellington Dam is the largest surface water catchment in the south west of Western Australia. It is used for irrigation in the Collie Irrigation District which is managed by Harvey Water.

Salinity and poor water quality in the dam due to the various land uses within the catchment including agriculture, the towns of Collie and Allanson, and coal mining activities, make it unsuitable for drinking. The areas around the dam and reservoir are popular for recreation.

The State Government is committed to reducing the salinity levels. The Department of Water is leading a salinity recovery plan to deliver improvements backed with \$30 million of State and Federal funding. The Water Corporation is providing technical and project management support.

The Federal Labour Government has promised \$10 million towards a \$20 million desalination plant in the Wellington catchment. It is proposed to have a small desalination plant upstream on the river to treat the very salty waters, thereby accelerating the rate of salinity reduction in the dam.

#### *Collie Coal Basin Groundwater*

Water in the Wellington surface water catchment is connected to groundwater from the Collie Coal Basin. Although the water is generally of good quality (low in pollutants and salt), the major use of this groundwater is for the Muja and Collie power stations and mine dewatering.

#### *Harris Dam*

The Harris Dam in the upper reaches of the Wellington catchment supplies the Great Southern Towns Water Supply Scheme. In addition, water from Harris Dam can be pumped back into Stirling Dam for the Integrated Water Supply Scheme (IWSS).

### Present Situation

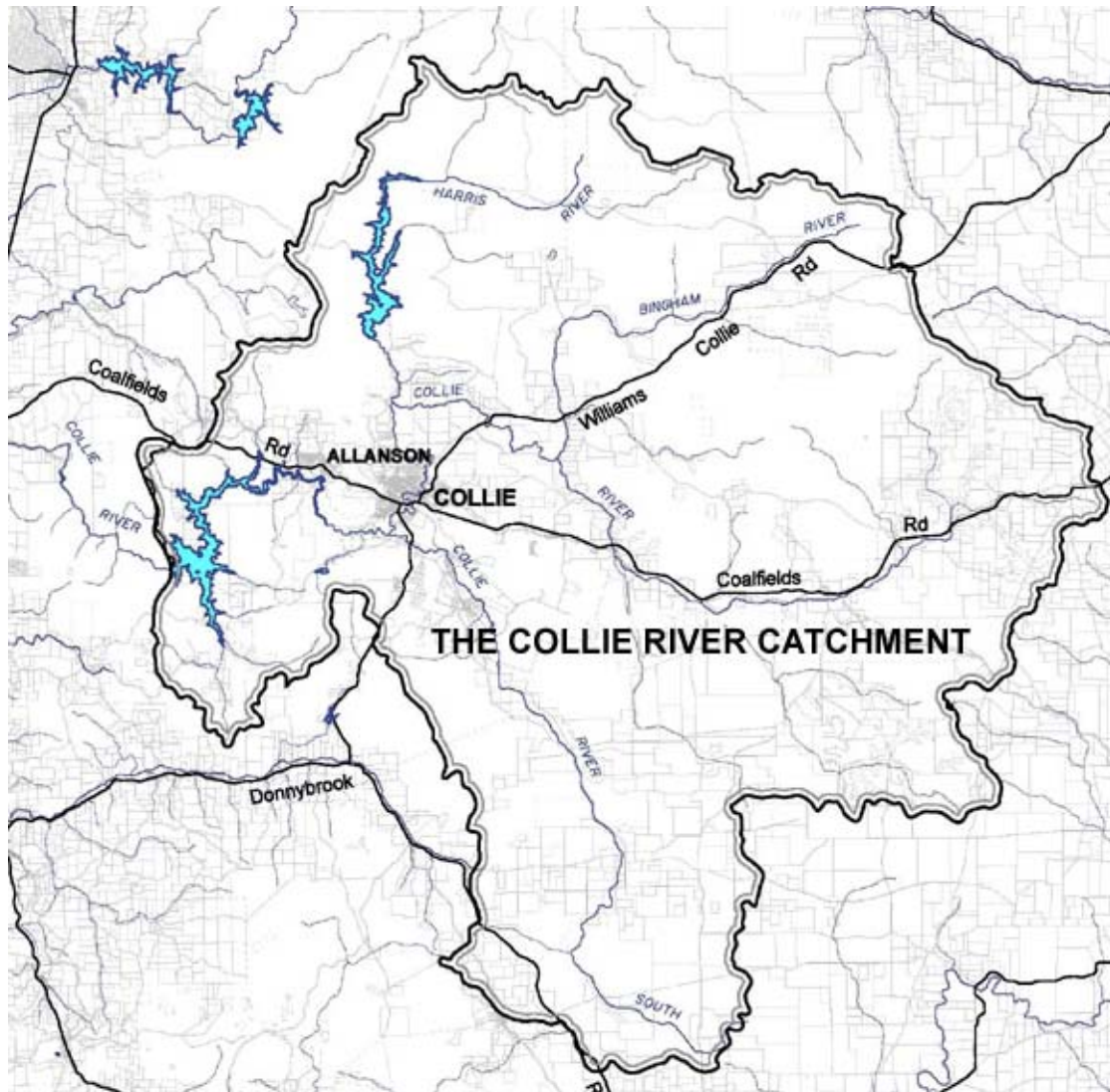
#### *Wellington Dam*

Over the past decade, the dam has been impacted by reducing rainfall. As a consequence, the historical yield of 100 gegalitres has now been de-rated to 75-85 gegalitres.

The current water allocation of Wellington Dam is 68 gegalitres to irrigation use with the balance being allocated to the environment or to assist with salinity management.



The Water Corporation supports the current use of Wellington Dam and associated water resources for use in local irrigation and industry, including power generation.



### *Collie Coal Basin Groundwater*

Current groundwater dewatering and extraction is in the order of 17 to 22 gigalitres per year. It is used by the two power stations situated within the catchment and this is expected to continue in the short term future.

However, groundwater dewatering may increase to 22 to 37 gigalitres by 2010 due to growing demand. A proportion of this could be available for other uses, including public water supply.

### *Harris Dam*

The current water allocation is 10 gigalitres for the Great Southern Towns Water Supply Scheme which allows for future growth. A further 5 gigalitres is licensed for use for the IWSS, and the balance of water is available for the environment.

However, this dam has also been affected by reduced rainfall. As a result there is no water available for transfer to the IWSS. This is not considered a reliable long term water supply option for the metropolitan area.

#### *Government Report on Collie-Wellington, 2007*

Further development of Wellington Dam and Collie groundwater resources was considered in 2007 by the State Government. Public submissions were invited and considered by an independent panel led by Mr Ross Kelly. The report *Water Source Options in the Collie-Wellington Basin (May 2007)* is publicly available.

The report noted that Wellington Dam and Collie Basin groundwater are potential sources for the public water supply. The study examined a range of options but recommended more detailed work before definitive water source development decisions could be made. In particular, issues associated with environmental management, water quality and ongoing downstream irrigation uses are significant and require resolution before any use for public water supply could be optimised.

The Department of Water is the lead agency progressing the recommendations of the report.

### The Future

The Water Corporation is considering three options to develop these water resources for public water supply.

#### *1. Short-term groundwater*

The Corporation is currently investigating options for accessing groundwater used for mine dewatering as a drinking water supply. The option is based on pumping this water into Stirling Dam then on to the IWSS. Initially it may be possible to pump 6 gigalitres a year for a period of about 5 years. This is subject to power station requirements which have priority for this water.

#### *2. Long-term groundwater*

If water could be supplied to the power stations from Wellington Dam in lieu of groundwater, the groundwater may become available for public water supply.

In this case, a 10 gigalitre per year scheme could be developed via Stirling Dam. This would require substantial infrastructure upgrades downstream of Stirling Dam to connect to the IWSS. This option is limited due to the relatively small size of Stirling Dam. Transfers above 10 gigalitres would risk substantial loss through overflows.

#### *3. Development of Wellington Dam for public water supply*

It is possible that Wellington Dam could provide a 30 gigalitres a year for public drinking water supply. This would likely require a desalination plant downstream of the dam and a new trunk main to connect to the IWSS (unless it was retained for regional use).

This option is very complex and would require irrigators to trade their current allocation to public water supply. This may impact on local industries and communities.

There are also significant catchment management issues that may present unacceptable risks from a public water supply perspective.



*Sustainability considerations - (long-term 10 gigalitre groundwater option)*

Economic	Social and cultural	Environmental
Significant cost to connect to the IWSS (downstream of Stirling Dam).	Better 'fit for purpose' of good quality groundwater from the Collie Coal Basin.	Minimal impacts other than piping.
May require infrastructure for power stations to access Wellington dam surface water in lieu of groundwater.	Does not impact current recreational use of Wellington Dam.	Requires ongoing catchment improvements to Wellington reservoir to improve water quality.

*Potential source yield*



The three options are estimated to yield between 5 and 30 gigalitres per year.

*Potential Cost*



The cost of the 6 gigalitre option is estimated to be between \$1 and \$2 a kilolitre.



The other options are estimated to cost more than \$2 a kilolitre.

**More Information**

- Water source options in the Collie-Wellington Basin  
Final report to the Minister for Water Resources  
Water Source Options Steering Committee  
May 2007 [http://www.watercorporation.com.au/W/wellington\\_dam.cfm](http://www.watercorporation.com.au/W/wellington_dam.cfm)

**Key**



*Potential source yield (in 50 year planning horizon)*



*Potential cost (2007 \$)*