

# Wungong

## Whispers



Volume 8 – April 2009

### Four years down the track

*The 2008 year ended a busy twelve months for the Wungong working group and saw the Trial's first Four-yearly review lodged with the Conservation Commission.*

"We are currently working through the first part of the comprehensive review with the Commission," said Project Director Mr Chris Botica. Chris explained that the review process is undertaken in two Parts.

"Part A involves management and documentation of the project and Part B considers the on-ground operational work.

"When the audit process is complete the Four-yearly review will be published on the Wungong website," Chris added.

Other tasks on the agenda this year include launching the public consultation process for the Interim Silviculture Guidelines, working more closely with stakeholder groups and commencing work in Treatment Area 4.

In addition several tours of the demonstration sites have been booked during March and April when it is expected to be cooler in

the forest. The article on page 4 outlines the numerous activities and includes the calendar.

The stakeholder forum will be held later in the year to allow time for the formation of smaller research-aligned groups as recommended by Dr Don MacFarlane in his report on the research program.

This initiative has been endorsed by the project's Technical Reference Group and is expected to deliver a more adaptive and rigorous research program.

Wungong Whispers will publish articles throughout 2009 from these groups and we invite you to email your comments to [wungong@watercorporation.com.au](mailto:wungong@watercorporation.com.au)

The feature article in this issue discusses current observations in stream and forest health. It contains compelling up-to-date information on the state of the catchment.



### Wungong Dam 30-year anniversary

*The 60-GL Wungong dam was commissioned in 1979 after the original dam was decommissioned in 1975.*

The dam is a strategic source of public drinking water contributing to the Integrated Water Supply System (IWSS). The IWSS provides water to the Perth and greater metropolitan area including Mandurah, Pinjarra, Harvey, the Goldfields and agricultural regions.

Today the storage level at the dam is about 38% with the highest storage reaching almost 98% of full capacity in October 1992. In comparison the lowest reading was only about 25% in June 1995 .

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# Water balance within forested catchments

## Historical records

From the late 1960s the then Public Works Department established a high quality streamflow and catchment rainfall recording network over South West Western Australia. At that time a lot of cooperative multi-agency catchment hydrologic research was being done.

However, in 1998 due to funding constraints, the operation of many stream gauging stations and pluviometers in the northern jarrah forest ceased.

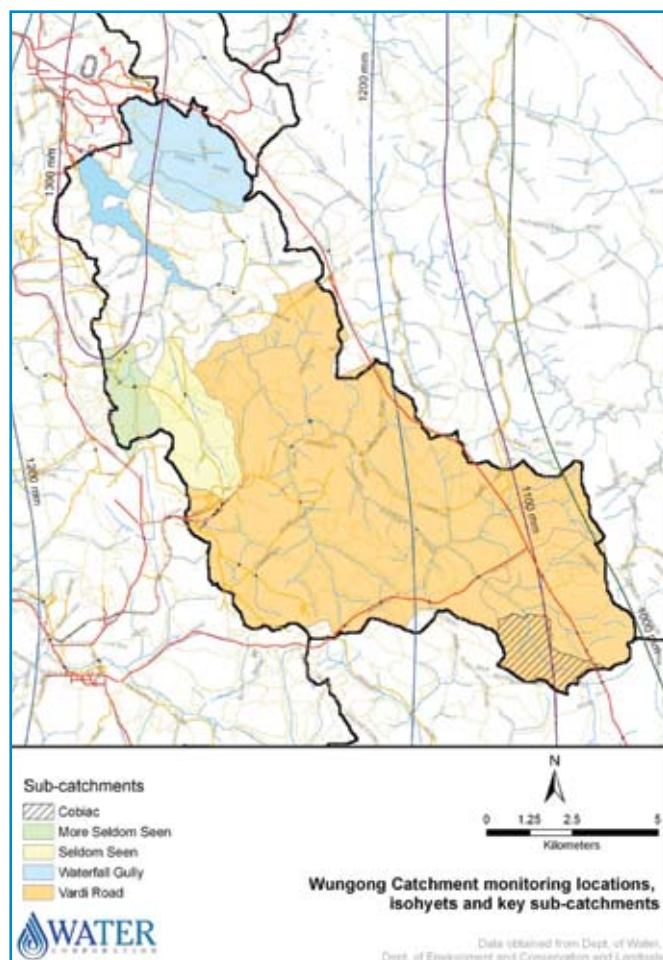
## Current data

The monitoring required for the Wungong Catchment Trial has initiated the reopening of 10 key stream gauging stations and 13 pluviometers.

In addition comprehensive water quality data is being collected for the Wungong Brook at Vardi Road, Chandler Road and Cobiac gauging stations, Little Darkin adjacent to Mundaring Weir (monitoring the 2005 wildfire impact) and 31 Mile Brook (CSIRO research project).

As a result, reliable information on what is currently happening to the streams of the northern jarrah forest is being captured.

The table below shows catchment runoff measured at the stations associated with the Wungong Trial. The figures provide mostly a qualitative picture and give the averages from 1983-98 and those available for 2005 to Oct 2008.



The figure above shows the key sub-catchments now being monitored in the Wungong catchment.

However, it is considered that another one or two years of recorded rainfall runoff needs to be analysed to build up a reliable quantitative understanding of the change in flow regime.

## Then and now Cobiac gauged catchment

The Cobiac catchment is a small 3.6 km<sup>2</sup> sub-catchment that forms part of the larger Vardi Road catchment. Comprehensive monitoring recommenced in May 2005.

Between 1992 and 1998 it was monitored on a research-scale basis as part of Alcoa's hydrological research programme.

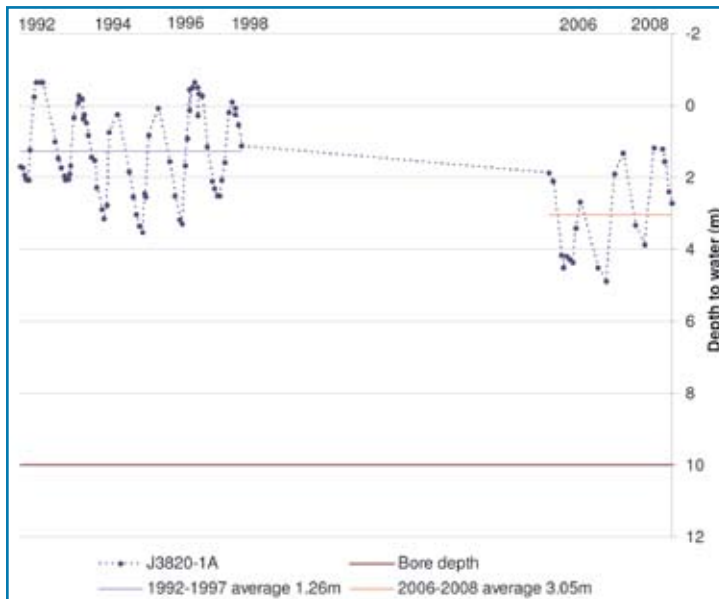


Water Corporation Consultant Hydrologist Keith Barrett provides valuable insight into the history of the gauged catchment.

GAUGED CATCHMENTS	STREAMFLOW EXPRESSED AS RUNOFF (mm)					
	Catchment area	Average	2005	2006	2007	2008
Stream gauging stations	Km <sup>2</sup>	1983-98	2005	2006	2007	2008
<b>Water Years</b>						
		mm	mm	mm	mm	to Oct 12
						mm
<b>Wungong Brook Catchment</b>						
Wungong Brook, Vardi Road	80.8	156	85	23	81	45
Wungong Brook, Cobiac	3.6		48	6	54	31
Wungong Chandler Road	17.0		131	43	131	68
Seldom Seen Creek	7.2	250	121	27	104	
More Seldom Seen Creek	3.4	234	75	16	51	
Waterfall Gully, Mount Curtis	8.6	276	201	92	167	
<b>Correlation and Regional Context</b>						
31 Mile Brook, 31 Mile Road	11.0	151		23	85	54
39 Mile Brook Jack Rocks	55.4	101		9	54	26
North Dandalup North Rd	79.7	96		27	68	29
Canning River Glen Eagle	520	25				9
Canning River, Millars Road	141	12				3
Big Brook O'Neil Rd	149	34	23	8		
Serpentine River, River Road	243	30				12
Harvey River, Dingo Road	147	243	195	83	198	
Little Dandalup Trib, Bates,	2.2		106	47	103	
<b>Wildfire Impact (Jan 2005 wildfire)</b>						
Little Darkin, Hairpin Bend	37.8	23	27	0.8	15	10
Pickering Brook, Slavery Lane	29.4	63	34	0.8	33	25

*Note: 2008 record for Little Darkin and Pickering Brook is to Oct 1st. Water Year starts on April 1st.*

Notably although the 2007-08 Water Year had slightly above average rainfall, the runoff for stations listed was only about 55% of the 1983-98 average.



Vardi Road taken in April 2007

## Water quality monitoring

Intensive water quality sampling at all of these gauging stations has shown turbidity to be low (< than 5 NTU at 98 percentile). The exception is Little Darkin where turbidity has been very high due to it being severely burnt during the 2005 wildfire (98 percentile or approximately 40 NTU).

The average salinity level at Wungong is about 160 mg/L (TFS). It is the same at Cobiac, and Chandler results are even a little fresher at 140 mg/L.

This is considered very good quality as the standard for high quality drinking water is 500 mg/L or less.

Papers by Keith Barrett and Amanda Reed detailing the hydrology and groundwater modelling being done in the Wungong have been published in the Trial's Research and Monitoring Update November 2008. The Update is available from the website in the box title More Information under Research & Monitoring.

The continued monitoring work and modelling results will be regularly reported through the Wungong Catchment Trial's Research Program. If you would like further information or have any queries please email [wungong@watercorporation.com.au](mailto:wungong@watercorporation.com.au)

*With streamflow halved, wetlands are reducing or being lost and previously perennial streams are ceasing to flow in summer.*

Then the swampy ground around the stream zone was waterlogged each winter with runoff quickly forming streamflow.

Now you can easily walk across this stream zone area in winter as the groundwater levels are two metres lower.

Even worse, in the mid- and upper slopes water levels have fallen about 4 to 6 metres over the past 10 years.

Runoff is now halved when compared with the same amount of rain once recorded, and it takes nearly 100 mm more rainfall before it starts to flow!

## Wungong Brook (Vardi road gauging station)

Records dating back to 1911 reveal that the then perennial Wungong Brook always maintained a flow of water.

However in February 2005 it ceased to flow altogether and was dry for about 14 days.

In summer 2006 only a trickle could be seen. But in 2007 it was bone dry for 99 days (21 Jan – 30 Apr).

Even following the wet winter of 2007 it was again dry for 83 days in 2008.

This transition – from perennial to seasonal flow - was reflected in the annual September aquatic fauna biodiversity assessment. This work is being done by Drs Andrew Storey and Susan Creagh from the University of Western Australia and is one of the projects supporting the Wungong Trial's research program. The latest UWA Aquatic report is available at [www.watercorporation.com.au/wungong](http://www.watercorporation.com.au/wungong)



# Out and about in the Catchment

Members of the Technical Reference Group toured the catchment before its final meeting of the year which was held in December at the Department of Environment and Conservation's Jarrahdale office.

Since then a steady stream of interest in catchment tours and enquiries regarding the Trial has continued.

Other communication activities being done by members of the Wungong Working Group include Michael Loh the Project Manager presenting a paper at the upcoming Melbourne OzWater conference and Amanda Reed covering the latest hydrology data related to the Trial at Burswood's 2009 Greenhouse conference. Both forums will be held during March and will reach hundreds of interested stakeholders.

The Wungong Working Group recently attended a demonstration of a mechanical means of follow-up treatment that is being trialled in Scabby Gully Manjimup. Forest consultant



Members of the Technical Reference Group out in the Catchment during December.

Jack Bradshaw said that part of the catchment was non-commercially thinned in 2003 and commercially in 2006. The trial to control the unwanted regrowth and coppice is expected to increase water yield for the town over a longer period.

Other stakeholder opportunities to discuss the Wungong Trial are scheduled in the calendar update.



DEC Wungong Catchment Coordinator Richard Boykett explains forest operations being trialled in the Catchment.

## Calendar update

- December 08** TRG meeting and tour  
4-yearly report lodged with Conservation Commission
- February** Wungong Working Group x 2 project meetings  
Department of Water – Catchment tour
- March** Wungong Working Group x 3 project meetings  
Manjimup Scabby Gully Trial demonstration  
Murdoch University Soil & Plant student tour  
University of Western Australia – soil nutrition students  
Melbourne OzWater Wungong Project presentation  
Burswood 2009 Greenhouse Sustainability presentation
- April** Wungong Working Group x 2 meetings  
Curtin Students working field tour  
Customer Advisory Council – WWG presentation  
Munda Biddi Foundation – WWG presentation
- May** Wungong Working Group x 2 meetings  
Employee Fact Finding tour  
LandGate International Vietnam Fellows tour

## Contact details

This newsletter is produced by the Water Corporation and is also available electronically at [www.watercorporation.com.au/wungong](http://www.watercorporation.com.au/wungong). To subscribe or unsubscribe to this newsletter, please contact Margaret Wilke, Communications Officer on **9420 3662** or email [margaret.wilke@watercorporation.com.au](mailto:margaret.wilke@watercorporation.com.au). For all other enquiries please email [wungong@watercorporation.com.au](mailto:wungong@watercorporation.com.au).



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