

Stakeholder Forum highlights collaborative efforts

Water, forests and biodiversity were the topics of the day as more than 100 interested stakeholders came together to hear about and provide feedback on the progress of the Wungong Catchment Environment and Water Management project (Wungong Catchment Trial).

Participants heard from more than 20 presenters and researchers about the various projects being undertaken to measure changes in streamflow and biodiversity as a result of forest thinning practices in the Wungong catchment.

Project Manager, Chris Botica acknowledged that while it was still early in the 12 year catchment thinning trial, it was important to maintain a high level of stakeholder involvement throughout.

"The trial is essentially a collaborative project that relies on a wide range of people from a number of different organisations in order to be successful," he said.

"Our partnerships with the Department of Environment and Conservation and the Department of Water are crucial, as they are respectively the forest and catchment managers."

Keynote speakers included Tim Sparks, Manager Salinity and Water Resource Recovery at the Department of Water and Dr Geoff Stoneman, Manager Forest Policy and Practices at the Department of Environment and Conservation (DEC).

Tim Sparks provided the context for the forum, highlighting the current state of water resources in the drying climate and the role of the Wungong Catchment Trial in contributing to adaptive catchment management.

Dr Stoneman outlined current strategies for sustainable forest management and the DEC's contribution to the comprehensive research program for the Trial. He also discussed some of the challenges for the Trial in balancing sustainable timber production with water and biodiversity management in the catchment.

Research and monitoring projects presented at the Forum addressed the following aspects:

- the effects of thinning on flora, fauna and fungi;



A successful research forum was held on 29 May 2007

- measuring changes in aquatic and terrestrial biodiversity;
- monitoring dieback;
- measuring evapotranspiration through sap flow;
- monitoring stream flow, water quality;
- hydrological analysis and modeling;
- identifying relationships between vegetation cover and water yield;
- perceptions of recreational values and ecological health; and
- monitoring cockatoos, birds and ground vertebrates.

The response from the forum was extremely positive with stakeholders impressed at the calibre of the presenters and research projects.

"Now that we have a comprehensive set of research projects in place, the challenge for the project team is to ensure that the projects are closely linked with the trial objectives," said Chris Botica.

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Fire and Water – a beneficial relationship?

Prescribed burning is the deliberate application of low intensity fire under carefully selected conditions. The aim is to replace high intensity fires with controlled mild fires. Prescribed burning can be a contentious issue, however it plays an important role, not only in reducing the intensity of summer wildfires and allowing for safer suppression, but also to increase stream flows, encourage plant growth, improve forest health and maintain water quality in catchment areas.

Research has demonstrated that without prescribed burning in forested catchment areas, the severity of summer wildfires is significantly increased. Large, intense wildfires have massive negative impacts on flora and fauna as well as reducing the quality of water that runs off into streams and dams. This ultimately affects aquatic biodiversity and drinking water supplies. The relationships between fire, forest health and water quantity and quality is continuing to be explored as part of the Wungong Catchment Trial.

Stream flow and water quality monitoring is currently being undertaken in the Mundaring (Helena) catchment to determine the long-term impacts from severe wildfires that burnt out approximately 27 700 hectares in January 2005.



A gauging station measures the impact of the wildfire on stream flow

In the Mundaring Weir catchment, areas on steep slopes adjacent to the dam and a large area of steep land in the Little Darkin River sub-catchment were burnt by very high intensity wildfire. From a water source perspective, as Mundaring is the main water source for the Goldfields and Agricultural Region, the resultant impacts were of critical concern.

The major concern related to fine silt, ash and plant debris from the fire that would inevitably flush into Mundaring Weir during winter when the soil was



Autumn rains in the Little Darkin catchment (near Mundaring) following the wildfire lead to a significant reduction in water quality. Photos courtesy of Colin Terry

unprotected by vegetation. If this sediment had reached the reservoir take-off point, critical remedial actions may have been required to ensure continued supply.

A Post Wildfire Action Plan was developed by the Water Corporation in response to this bushfire. As a result of measures prescribed in the Action Plan there were no significant impacts to water quality at the reservoir wall, despite substantial erosion on the catchment.

Monitoring in Mundaring catchment is expected to continue for 5 to 8 years. The long-term monitoring will assist the Corporation and DEC to develop effective fire management strategies for catchment areas (including Wungong). These strategies will aim to achieve the best possible balance between forest health, responsible bushfire management practices and water quality.

A wildfire rages at Pickering Brook in January 2005



What happens if it doesn't rain?

Recent reports in the *The West Australian* and *Sydney Morning Herald* newspapers (17 July 2007) brought attention to a dire situation in Kings Park where it has been estimated that between 10-12% percent of native sheoaks, banksias and eucalypts have died as a result of the lack of rain.

Kings Park is not the only place where native forests are under stress from the drying climate. As a result of the 2006 dry winter, the inflow into dams was less than 10% of the long-term average from 1911 to 1975. Runoff in several monitored streams in the Wungong catchment was only about one-quarter of the average stream flows recorded between 2000 and 2005.

The best yield, in Waterfall Gully, was only about 50% of recent flows. Some of the streams considered perennial (flowing year round) ceased to flow at all and several of the large pools dried out. It has also been observed water tables have fallen several metres in the last 10 years and that soils are drier. All these suggest that the forest ecosystem is under severe stress due to a reduction in water availability.

While the need for climate independent sources of water such as desalination or wastewater recycling is essential, optimising water supplies from existing sources such as dams is also important. Approximately 40% of the Goldfields and metropolitan water supply still comes from surface water sources.

Surface water catchments in Western Australia have yielded an average of about 6% of rainfall (ranging from 1-25 % depending on the catchment) While the Wungong Catchment Trial has been developed in response to declining rainfall, a relevant question is "will catchment management work as effectively if rainfall continues to decline?"

The short answer is "probably not", and forest management by thinning and prescribed burning will certainly not be as efficient at producing water. Any catchment management project is highly dependent on the annual rainfall inputs. Also the relationship between rainfall and runoff is not linear; since a moderate decrease in rainfall leads to a drastic fall in runoff.

Nevertheless, irrespective of the annual



Mature eucalypts showing signs of stress from lowering water tables in the Wungong catchment.

rainfall, areas where competition between trees is reduced by thinning, that are maintained free from excessive regrowth and are regularly burnt (under prescription) will have access to a considerably greater amount of water, possibly as much as 325 mm, that is, 325 litres per square metre or 3.25 million litres per hectare (Marshall and Chester, 1992).

Some of this additional water will be used by the remaining trees and understorey, some will be evaporated from the soil but some will infiltrate into the soil and improve soil-moisture storage. This additional water should cause groundwater levels to stabilise or rise, resulting in some water flowing out as additional stream-flow. This should then benefit the stream-zone vegetation, the aquatic species and the dam supplies. For this reason, the Corporation has established monitoring of forest health, of terrestrial and aquatic flora and fauna both in treated (thinned) areas as well as in untreated (unthinned) areas.

Interim silvicultural guidelines due for release

To remain consistent with the Conservation Commission Forest Management Plan 2004-2013, the Water Corporation, in consultation with the Department of Environment and Conservation, is developing three new interim silvicultural guidelines to be applied as part of the Wungong Catchment Trial.

The guidelines address silvicultural thinning for three different vegetation "types" in the catchment which are:

- jarrah forest;
- areas previously mined for bauxite and rehabilitated prior to 1988; and
- areas previously mined for bauxite and rehabilitated after 1988.

Interim guidelines for jarrah forest and areas rehabilitated after 1988 have been finalised and will be made publicly available in the next month. It is currently anticipated the interim guideline for areas rehabilitated prior to 1988 will be finalised by late 2007.

The documents are issued as an interim guideline based on the consultation that the Water Corporation has undertaken on the Wungong proposal to date. In this form the interim guideline is publicly available and will be used to guide operational practice on an initial trial basis lasting approximately 12 to 18 months.

Following the trial period (likely to be sometime in late 2008), the interim guidelines will be reviewed based on experience from the trial and this will include further opportunity for stakeholders and interested community members to provide feedback.

After this review, the interim guidelines may be amended, submitted to the Conservation Commission for advice and then to the Minister for Environment for approval.

The interim guidelines will be available on the Water Corporation web site and hard copies will be available on request.



What's on in Wungong



Photo courtesy of Colin Terry

Implementation Update

During summer 2007, the Forest Products Commission (FPC) commercially logged about half of an area in Cobiac which is located the south western area of the Wungong catchment, in Treatment Area 2. The logging was undertaken as part of FPC's annual logging plan approved by the Department of Environment and Conservation. A spring burn is planned over part of the logged-over area. There may be some follow up non-commercial thinning in the area to comply with the interim silvicultural guidelines developed for the Wungong Catchment Trial. Flora and fauna monitoring plots were established prior to logging to monitor any changes.

What's in a name?

You might have noticed reading through this latest newsletter that a shortened name has been used to refer to the Wungong Catchment Environment and Water Management Project- the Wungong Catchment Trial.

This has been a conscious decision on behalf of the project to simplify the project title, so in future the project will be referred to by this shorter name.

Want to be more involved?

The Water Corporation, in partnership with the Department of Environment and Conservation (DEC) is developing new opportunities for you to learn more about, and have input into the Wungong Catchment Trial over the next 12 months.

Demonstration sites

Work has commenced in the Wungong catchment on a series of demonstration sites which will display a range of forest management techniques and how they might influence forest health, biodiversity and stream flows. The sites will have visitor parking, walking tracks and interpretive displays. It is currently anticipated these sites will be open in late 2007 or early 2008 and the project team will offer guided tours of these areas once they are completed.

Fungi focus

The Trial project team have invited the Perth Urban Bushland Fungi (PUBF)

program to undertake investigations into the impact of thinning on fungi in the Wungong catchment. Although it will take some time to develop the project scope, there is the potential for interested people to participate in the project. More information will be available over the next few months. For general information visit the PUBF web site at www.fungiperth.org.au

Community conversations

Water Corporation and DEC staff are available to provide project briefings and site visits to interested parties throughout the year. If your organisation is interested in hearing more about the project or would like an update face to face, contact Louisa Kinnear on 9420 3139 or louisa.kinnear@watercorporation.com.au.

Please note site visits will be limited to small groups and usually require the best part of a day.

Contact Details

This newsletter is produced by the Water Corporation and is also available electronically at www.watercorporation.com.au/wungong. To subscribe or unsubscribe to this newsletter, please contact Louisa Kinnear, Communications Officer on 9420 3139 or email louisa.kinnear@watercorporation.com.au. For technical enquiries, please contact Bishnu Devkota on 9420 2042 or email bishnu.devkota@watercorporation.com.au.



August 2007