

**Progress Report SP 2000-003**

**Hydrological response to timber harvesting and  
associated silviculture in the intermediate rainfall  
zone of the northern jarrah forest**

**Ecosystem Science**

**Project Core Team**

**Supervising Scientist**

Joe Kinal

**Data Custodian**

**Site Custodian**

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**Project Team**

granted

**Program Leader**

granted

**Directorate**

granted

# Hydrological response to timber harvesting and associated silviculture in the intermediate rainfall zone of the northern jarrah forest

J Kinal

## Context

This is a long-term experiment established in 1999 to address part of Ministerial Condition 12-3 attached to the *Forest Management Plan 1994-2003*. Ministerial Condition 12-3 states that the Department shall monitor and report on the status and effectiveness of silvicultural measures in the intermediate rainfall zone (900-1100 mm/yr) of the jarrah forest to protect water quality.

## Aims

Investigate the hydrologic impacts of timber harvesting and associated silvicultural treatments in the intermediate rainfall zone of the jarrah forest.

## Progress

- Monitoring of groundwater levels, streamflow, stream salinity and stream turbidity continued in Yarragil 6C (treated) and Wuraming (control) catchments.
- The corroded mild-steel V-notch weir plate in Yarragil 4X (treated catchment) was replaced by a stainless steel weir plate.
- Monitoring of groundwater levels, streamflow, and stream salinity continued in Yarragil 4L, which was thinned in the mid 1980s, to examine the effect of thinning on stream water quality and quantity.
- A paper reviewing the long-term hydrological response to thinning in Yarragil 4L has been prepared.
- Groundwater bores were relocated in experimental catchments at Iffley and Sutton forest blocks in the Warren Region. Water levels have been measured in some bores, but further maintenance and repair is required before all bores will be measurable.

## Management implications

- These catchments provide a unique long-term record of the hydrological response of the jarrah forest to climate change and forest management practices.
- Monitoring in these catchments contributes to reporting to KPI 10 for the *Forest Management Plan 2014-23* which relates to stream condition and groundwater level within fully forested catchments.
- Monitoring in these catchments helps inform the understanding of silviculture practices on water production.

## Future directions

- Continue monitoring of groundwater levels, streamflow, stream salinity and turbidity and rainfall.
- Re-measure forest density along fixed transects in Yarragil 4X and 6C to determine the forest regeneration response to the timber harvest and silvicultural treatments.
- The mild-steel V-notch weir plate in Yarragil 4L is corroded and should be replaced by a stainless steel plate to extend the operational life of the weir for ongoing stream monitoring.
- Remeasure tree growth in Yarragil 4L to determine the long-term hydrological response to thinning, and prepare a manuscript for publication.
- Examine the feasibility of a second thinning in Yarragil 4L, 35 years after the previous thinning, with a view to informing the impacts of silviculture practices on water production.
- Review the network of existing groundwater bores to identify those bores which should be monitored to inform KPI 10 of the *Forest Management Plan 2014-23*.