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	

Project status as of Dec. 19, 2018, 9:58 a.m.

Approved and active

Document endorsements and approvals as of Dec. 19, 2018, 9:58 a.m.

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, G Liddelow

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 (900-1,100 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 in a changing hydroclimate.

Progress

- Monitoring of groundwater levels, streamflow, stream salinity and stream turbidity continued in Yarragil 4L, 4X, 6C, and Wuraming catchments in Swan Region.
- Preparations are underway for a second thinning in Yarragil 4L catchment, 35 years after the previous thinning, to inform silviculture for water production and ecosystem health. This included installation of a new stainless steel V-notch plate to replace the existing corroded plate.
- Tree growth and stand density were measured to determine long-term growth response to thinning at Yarragil 4L.
- A paper reviewing the long-term hydrological response to thinning in Yarragil 4L is being revised following peer review.
- Groundwater bores were re-measured in spring 2017 and autumn 2018 at experimental catchments in the Warren Region including Crowea, Iffley, Poole, March Rd and April Rd. More than 80 bores were measured, with 45 still being in contact with groundwater.

Management implications

- Experimental 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 on KPI 10 for the *Forest Management Plan 2014-23* that relates to stream condition and groundwater level within fully forested catchments.
- Monitoring of experimental catchments helps inform the effects of silviculture treatments on water balance.

Future directions

- Continue monitoring of groundwater levels, streamflow and water quality in the Yarragil catchment.