

Concept Plan 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

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Project status as of July 4, 2019, 2:49 p.m.

Update requested

Document endorsements and approvals as of July 4, 2019, 2:49 p.m.

Project Team	granted
Program Leader	granted
Directorate	granted

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Biodiversity and Conservation Science Program

Ecosystem Science

Departmental Service

Service 8: Implementation of the Forest Management Plan

Aims

There has been a large number of studies of catchment hydrology in the forests of south-west Western Australia and these studies have provided an adequate understanding of hydrologic processes and the impact of forest management on catchment hydrology. A review of these studies was undertaken as a part of developing the current Forest Management Plan and changes in practice were adopted as a result. The current practices represent a conservative, precautionary approach to the management of forests to ensure the protection of potable water supplies. Nevertheless, there have been no catchment studies on the hydrologic impacts of the current silvicultural practices in jarrah forest.

Three research catchments in the Yarragil Brook catchment area in the IRZ in the northern jarrah forest are available in which monitoring of groundwater level, stream flow, stream salinity, and salt load is ongoing and for which records good exist for at least the previous ten years. More limited records exist going back to the mid 1970's. Unfortunately, the Water and Rivers Commission who were monitoring these catchment, have recently ceased this monitoring. CALM now undertakes monitoring of hydrologic variables in these catchments.

Two of the catchments, 4X and 6C, occur in areas subject to logging in the near future. This project aims to impose logging treatments in 4X and 6C, to use the third catchment, Wuraming, as a control, and to continue the hydrological monitoring.

The logging prescription proposed for 4X is the standard prescription for the IRZ. This is a more conservative prescription than that applied to the high rainfall zone, and includes the retention of at least 30% of the catchment at a basal area of at least 15m²ha⁻¹ for a period of at least 15 years after harvesting the remainder of the catchment.

The experimental prescription proposed for 6C is less conservative than the standard, i.e. omit the requirement for the retention of 30% of the catchment with a basal area of 15m²ha⁻¹ but still retain the standard stream reserves.

It is anticipated that the hydrologic response to the standard prescription (in 4X) will be minimal. The purpose of testing the less conservative treatment proposed for 6C is to promote a greater hydrologic response and therefore to provide more information on which to model forest hydrology and develop improved future practices.

Expected outcome

The study will provide records of stream flow, salinity, and salt load, and vegetation density, before- and after-treatment which will enable an estimation of changes to the hydrology in relation to changes in vegetation density.

Strategic context

Expected collaborations

Proposed period of the project

None – None

Staff time allocation

Role	Year 1	Year 2	Year 3
Scientist			
Technical			
Volunteer			
Collaborator			

Indicative operating budget

Source	Year 1	Year 2	Year 3
Consolidated Funds (DPaW)			
External Funding			