

# 1. INTRODUCTION

In Victoria, a high proportion of the population obtains its water from forested catchments. For example, the Melbourne and Metropolitan Board of Works (MMBW) manages 86,600 ha of forested catchment solely for water supply purposes (Langford and O'Shaughnessy 1977). Recognising that water is usually a scarce resource, and that changes in forest cover can significantly alter the hydrologic balance, it is not surprising that numerous controlled catchment experiments have been undertaken throughout the world to examine the likely effects of various forest practices on water yield and quality. Since extrapolation of results from such experiments is often difficult due to variations in climate, soils and vegetation, several catchment studies have been initiated in Australia. In particular, the MMBW has thoroughly researched the implications of logging *Eucalyptus regnans* (Mountain ash) forest in the Central Highlands of Victoria on water yield and quality (MMBW 1980), and work has commenced by the Forests Commission Victoria (FCV) on the hydrologic effects of converting native forest to plantations of *Pinus radiata* (*radiata* pine) (Bren et al. 1979).

In the mid 1950's, joint agreement was reached between the Soil Conservation Authority (SCA), State Rivers and Water Supply Commission (SRWSC) and FCV that experiments were needed to obtain information on runoff in relation to rainfall for mountain forest catchments subjected to varying forms of land use and management. To this end, the Experimental Catchments Consultative Committee was constituted under the control of the SCA. The Committee initially comprised representatives of the SCA, SRWSC and FCV, and was given the role of initiating and conducting appropriate controlled catchments studies. Subsequently, experimental catchments were located at Long Corner Creek near Myrtleford, Stewarts Creek near Daylesford, Parwan near Bacchus Marsh and Reefton near Warburton (Wu 1981). This report is concerned only with the Reefton catchments which, at the time of selection, were considered representative of forested municipal water supply catchments of high rainfall areas. The Reefton study commenced in 1963. As the vegetation in the Experimental Area is predominately mixed species eucalypt forest, it is now recognised that results from the study could complement those obtained from MMBW research in neighbouring ash-type forest. It is noteworthy that mixed species eucalypt forest comprises 38% of the forest catchment area managed by the MMBW (Langford and O'Shaughnessy 1977).

The initial aims of the Reefton Study were broad, and these have subsequently been redefined within the vegetation and topographic constraints of the Experimental Area. The study now aims to assess the effects on both water yield and water quality of some forest practices commonly used in the management of mixed species eucalypt forests in Victoria. These practices include fuel reduction burning, roading and harvesting. This report deals only with the pre-treatment phase of the study. The Experimental Area and instrumentation are described in detail, and calibration relationships for water yield and quality are presented. Proposed treatments, scheduled to commence in December 1983, are outlined.