

**A STUDY OF THE LAND  
IN THE CATCHMENT  
OF THE  
BROKEN RIVER**

BY

ALLEN S. RUNDLE

and

R. K. ROWE

**SOIL CONSERVATION AUTHORITY  
VICTORIA  
1974**

**SOIL CONSERVATION  
AUTHORITY**

*Chairman :*

A. MITCHELL, M.Agr.Sc., D.D.A., M.A.I.A.S.

*Deputy Chairman :*

V. W. OFFICER, O.B.E.

*Member:*

G. 1. SWARTZ, M.Agr.Sc., M.A.I.A.S.

*Secretary :*

R. A. FITT, D.P.A.

# TABLE OF CONTENTS

SUMMARY ..... 5

## INDEX TO PLATES

PLATE 1. LANDSCAPE IN THE BROKEN RIVER CATCHMENT. THE IMMEDIATE FOREGROUND IS PART OF THE WARBY LAND SYSTEM AND THE MIDDLE-DISTANCE CONSISTS OF HILLS AND VALLEYS OF THE LURG LAND SYSTEM. THE PLAINS OF THE BENALLA LAND SYSTEM ARE TO THE FAR RIGHT AND THE BACKGROUND OF FORESTED UPLANDS IS THE LOOMBAH LAND SYSTEM, WITH THE BLUE RANGE AND MT. SAMARIA ON THE SKYLINE RIGHT OF CENTRE. .... 4



*Plate 1. Landscape in the Broken River catchment. The immediate foreground is part of the Warby land system and the middle-distance consists of hills and valleys of the Lurg land system. The plains of the Benalla land system are to the far right and the background of forested uplands is the Loombah land system, with the Blue Range and Mt. Samaria on the skyline right of centre.*

## SUMMARY

The Broken River is one of the tributaries of the Goulburn River in north-eastern Victoria. This report covers its catchment down to Casey's Weir at Gooramab, a little over 2000 square kilometres.

The lower part of the catchment around Benalla is predominantly riverine plain with scattered low hills of Ordovician or Silurian sedimentary rock, and bordered to the north-east by the granitic hills of the Warby Range. To the south the valley of the river narrows as it passes through mountainous country in acid igneous rocks which dominate the central and much of the southern parts of the catchment. In this area there are a number of plateaux at about 700 m to 1000 m elevation. Near the southern end of the catchment the valley widens again to form the northern edge of the Mansfield plain, and the river turns abruptly to the east to head into a mountainous area of Carboniferous sedimentary rocks in the south-eastern corner of the catchment. There are some small residuals of basalt on the plateau in the Tolmie-Archerton area.

The climate ranges from hot summers/cool winters with annual precipitation about 650 mm in the north, to mild summers/cold winters with annual precipitation about 1300 mm in the high mountainous areas in the south-east.

The characteristic soils of the lowland areas are yellowish and reddish duplex soils with areas of pale gradational soils. The typical soils of the mountains are friable brownish and friable reddish gradational soils, but on the plateaux reddish duplex soils and some yellowish duplex soils also occur.

The native vegetation of the riverine plain in the north, and the Mansfield plain in the south, was a woodland in which red gum and grey box were the dominant tree species. On the dry hills in the north woodland to low open-forest dominated by grey box is the natural vegetation. There is also some long-leaf box, red box and red ironbark. The Warby Range has woodland to low open-forest with red box and red gum as the dominant tree species. On the upland areas in the central and southern parts of the catchment the vegetation ranges from the species listed above on the hills of the drier areas, through open-forests of red stringybark, broad-leaf peppermint, candlebark gum, narrow-leaf peppermint, to messmate in the areas with highest rainfall.

Some low open forest of snow gum occurs on the highest ridges in the south-east.

The study area has been divided into nineteen mapping units comprising, sixteen land systems, one of which has been subdivided into four sub-systems. The unit boundaries are mostly based on changes in physiography, but some are based on differences in geology and climate.

Most of the less steep land in the valleys has been cleared and is used for a variety of agricultural enterprises including cereal cropping in the north, grazing of sheep and cattle, dairying, small areas of vineyards, orchards and hop gardens and potato growing. The forested areas are not generally intensively managed for timber production except for limited areas in the higher rainfall areas. A large plantation of radiata pine is being established on the Warrenbayne plateau and a smaller plantation is being established in the valley of Blue Range Creek in the south.

The catchment has an annual average water yield of  $257 \times 10^6$ , M<sup>3</sup> but the annual flow varies considerably. Both floods and prolonged periods of no flow have been common. The storages of Lake Nillahcootie and Lake Mokoan have been constructed to help overcome the problems of variable flow from the catchment.

Although gully erosion and stream erosion are fairly common in the cleared areas, and particularly in the southern part of the catchment, there are no large or concentrated areas of serious erosion.

The major land-use problems appear to be those associated with development and maintenance of ground cover, particularly in the agricultural areas. The future use of currently uncommitted Public Land is under review by the Land Conservation Council.