

7. LAND SYSTEMS

Concept

The definition of mapping units is based on the ecosystem concept, in which several land features are integrated. Climate, geological material, land form, soil and native vegetation are each considered because they affect the inherent properties and processes of the land and its response to management. The mapping units and their interrelations are recognised by examining and matching classes of these features in local and regional sequences. Local sequences are repetitive – usually slope sequences of particular soils and vegetation within particular land form associations. Superimposed at the regional scale are the effects of climatic trends.

The land is described in terms of its condition before intensive modification, which began in the mid 19th century and has subsequently extended to a large proportion of the State. Observations on relatively undisturbed sites are required, and this leads to a shortage of data in some intensively used districts. Knowledge of inherent condition provides a standard against which the effects of land use can be compared.

In general the mapping unit can be considered as an area of land with specific variation in the five features listed above and therefore having a specific inherent range of properties and processes significant for a variety of uses in terms of production, land deterioration hazard and management.

Mapping is required at various scales to meet planning needs ranging from a few hectares to the whole State. Three categories of mapping unit are used within the Campaspe catchment study – land component, land system and land zone.

Definitions

A land component is an area of land, distinct from the surrounding terrain, having a particular combination of landform, classes of geological material, soil and vegetation. Land components are commonly mapped at scales of 1:25 000 or 1:10 000.

A land system is an area of land, distinct from surrounding terrain, within which particular classes of land features are consistently associated and are expressed as a recurring sequence of particular land components. These land components generally occur in similar proportions and have similar interrelations in each occurrence of a particular land system. Land systems are usually mapped at 1:100 000 or 1:50 000.

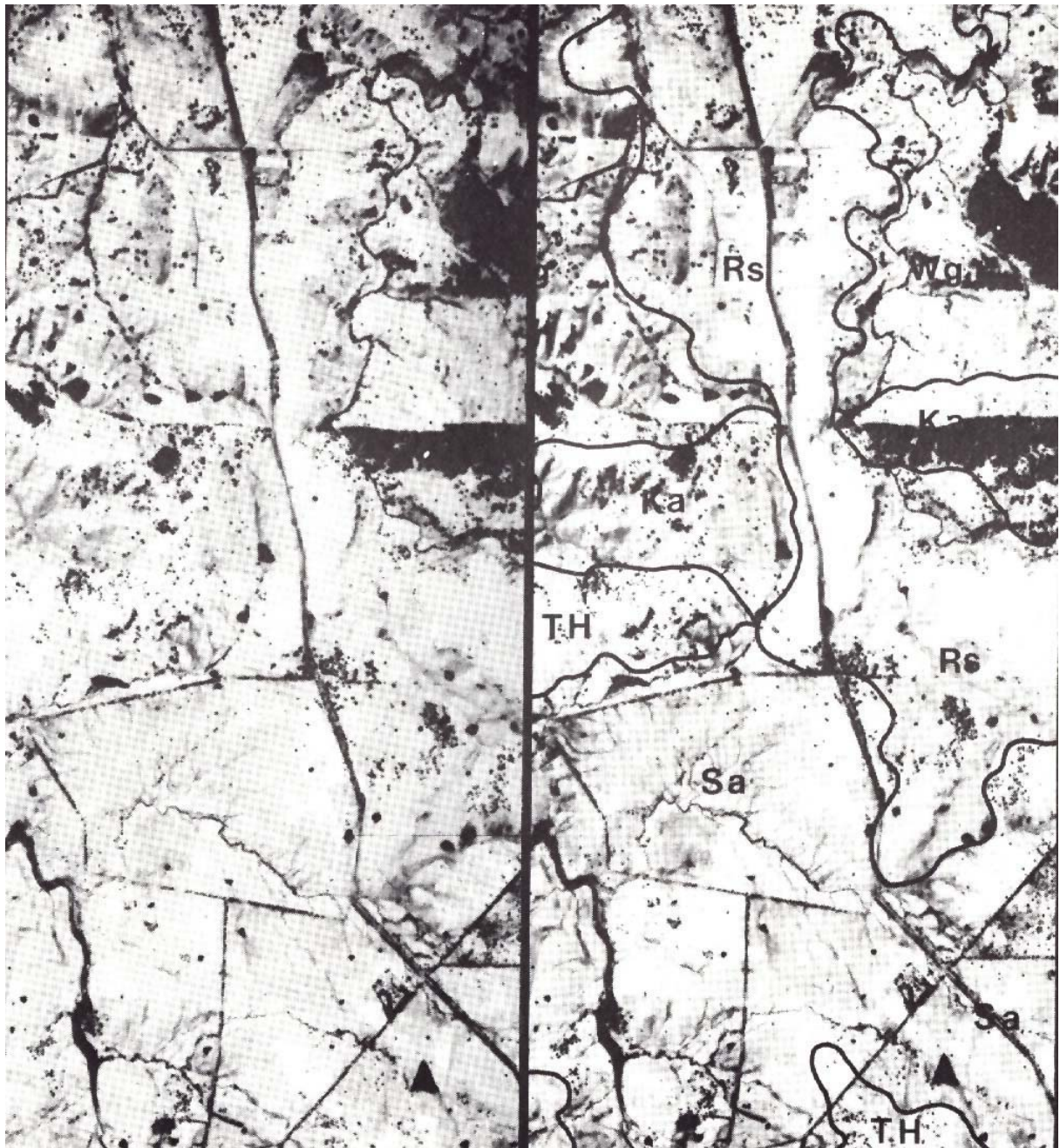
A land zone is a broad area of land consisting of land systems that are related in terms of one or more of the independent land characteristics – land form, geological material and climate. Soils and native vegetation are listed in broad terms, but they are not used as differentiating criteria. Land zones are best mapped at 1:50 000 or 1:250 000.

Presentation of data

The 35 land systems identified in this study area have been grouped into 11 land zones according to geomorphic differences. The preliminary mapping units were based on differences in terrain patterns – as determined by stereo-interpretation of aerial photographs, rock type, and to a lesser extent, climate. Land systems and components were then recognised within these geomorphic units through field traverses and studies of the relations between soils, vegetation and the independent variables of climate, geological material and landform.

For each land system, the description includes a brief summary highlighting the unique features of the area, a location diagram, a block diagram and cross-section of the landscape, photographs of the landscape, vegetation or the more common forms of land deterioration, a comprehensive table of land features and a table with the susceptibility ratings and off-site effects for the more common land deterioration processes.

The methodology is given in Appendix II.



These stereo-pair photographs depict a section of the Bayton area in the southern part of the catchment. Five land systems can be recognised from the topography and a knowledge of the geology: Koala (Ka), Redesdale (Rs), Sidonia (Sa), Theaden Hill (TH) and Wolfscrag (Wg). The photographs are Crown Copyright and have been reproduced by courtesy of the Director, Division of National Mapping, Department of National Development and Energy, Canberra.