

SECTION D: LAND INVENTORY AND ASSESSMENT

13. Land Units And Soils Descriptions

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This chapter presents an inventory and description of the physical land resource of the study area. The chapter has been subdivided as follows:

- Section (i) introduction and method which details the approach and system of information presentation;
- Section (ii) descriptions of the soil associations which have been grouped according to geology;
- Section (iii) description of each map unit;
- Section (iv) the presentation of the landscape surface into map units;

Introduction

Land inventory and assessment is an essential pre-requisite for sound land use planning. Up to now, systematic soil and land data across the study area has not been available. This study represents an attempt to improve the availability of essential base data for planning the use and conservation of the community's land resource while at the same time minimising land degradation and enhancing productivity capability.

The study has been undertaken at a scale of 1:100,000 and it should be stressed that at this scale only a broad overview is provided.

Land units have been selected to convey information in mapped form. Land units are areas of land which have a recurring pattern of landform within a particular geological formation, as detected on aerial photographs and generally contain close correlations with soil types, native vegetation and risks of specific forms of land degradation. Land units define areas which respond similarly to particular forms of land management.

Information is presented in two forms. Firstly, descriptions of the geology, topography and the commonly associated soils of each land unit, and secondly, 10 maps showing the location and extent of the land units.

Method

The landscape assessment was undertaken in stages and follows the method used in other Northern Slopes studies (White *et al.* 1985, Schoknecht 1988) sponsored jointly by the National Soil Conservation Program and the Department of Conservation, Forests and Lands.

The approach involved:

- (1) Reconnaissance: An overview of the study area to enable team members to become familiar with the range of topographic features, the extent of surface geology and the ease of access.
- (2) Aerial photograph interpretation (API) to delineate preliminary land units. API assessment was made according to topographic and tonal differences, which often indicate variations in vegetation and drainage in response to soil moisture and/or climatic factors. To assist in the API, considerable weighting was given to topography and to the geological survey maps of the area.
- (3) Field investigations to check the API and to identify soil types within the land units.

The soil descriptions were taken from roadside cuttings, gullies and other exposures. Where these were unavailable or considered inadequate, soil identification relied on a 10 cm diameter hand augered core, taken to a depth of 150 cm where possible.

Limited access, both in forested mountainous areas and privately owned properties reduced site density. However, given the broad approach of the survey, it was assumed that where geologies were consistent, good correlation with soils occurred.

Identification and description of landscape features and soils follow methods suggested by McDonald *et al.* (1984) and Northcote (1979). This incorporated a physical description of the landform, its slope and relief together with surface and runoff features. Soil profile characteristics were described with respect to depth, texture (grade and form), structure (type, grade and fabric), consistence, colour, permeability, field pH, slaking and description estimates.

- (4) After completion of field work and unit descriptions and following clarification of unit boundaries, the information was transferred onto the relevant 1:100,000 topographic maps.

Land inventory is made at two distinct levels.

Firstly, a broad land classification is made. Colour on the maps distinguishes eight landform patterns, which are:

1. Plateaux
2. Escarpments
3. Mountainous terrain
4. Hilly terrain
5. Low hills
6. Rises and gentle slopes
7. Plains
8. Drainage courses and flood plains

The groupings of terrain follow criteria described by McDonald *et al.* (1984).

Secondly, land units are identified. For mapping purposes the land units are designated by an alpha-numeric coding where a letter identifies the landform and the number indicates the geology-soil relationship. Nine geology-soil associations are identified. Although the soil associations described are not exhaustive they are a consequence of scale restraints, and in most land units a range of soil variation can occur.

Delineation of map units highlighted in the accompanying maps reflects a map horizontal resolution accuracy of +/-3 mm which corresponds to +/- 300 m on the ground.

Soil Geological Association

There is generally a strong link between geology and soil type within a particular climatic influence. In this section, soils found on a particular geological type are more fully described than in the map unit descriptions. Descriptions are by no means exhaustive and highlight information relevant to the 1:100,000 scaled land unit maps.

The descriptions present the variability encountered and detail the colouring, structure, texture, fabric, permeability and inclusions of the individual horizons in each profile.

At the end of each soil association the principle soil features are summarised.

Land Unit Descriptions

The following section details the topographic features of the land units. For simplicity, all units within the plateau pattern are discussed followed by escarpment, mountainous and the other land zones. In some cases particular units may occur within a varied number of patterns eg. Sg units. In this case the features of the unit have been discussed under "rises and gentle slopes". It is considered that given the scale and scope of the inventory an "Sg" unit within Mountainous, Hilly or Low Hill terrain (of similar soil association) would essentially have the same landscape features.

Land units are discussed within the subheadings of location, topographic description, drainage, soils, observed land deterioration and land use.

Land Unit Maps

This section comprises the maps which delineate the position and extent of the map units occurring within the study area.