

OVERVIEW FROM THE NATIONAL WATER AND SOIL
CONSERVATION AUTHORITY

D.G. Knowles
Manager Planning
Water and Soil Directorate
M.W.D.

INTRODUCTION

The National Water and Soil Conservation Authority (NWASCA) interest in logging evolves from its statutory responsibilities in the administration of the Soil Conservation and Rivers Control Act 1941 and the Water and Soil Conservation Act 1967.

Its concern is for conservation of the soil and management of the water resources. The broad overall objective is to ensure that production from the land is maintained at the maximum sustainable level.

This objective is achieved through prevention of flooding and erosion, promotion of land use and management practices and protection and allocation of water resources.

Statutory provisions enable NWASCA to provide financial incentives in order to promote the general adoption of its objectives and, where desirable, allow the imposition of controls on land use and/or land management practices.

Although NWASCA has no especial interest in either the forestry or logging industries, it does have a statutory responsibility to ensure that land use and land management practices, including forestry, do not aggravate soil erosion, deposition, flooding, or adversely affect water quality or water quantity.

HISTORY

The reasons why New Zealand has the most far sighted statutes in the world for the control of, use and the protection of the two primary resources of soil and water can only be understood by the fundamental notion that New Zealanders care for the things which their future welfare depends.

Unfortunately our forebears did not appear to understand the fragile nature of the new land on which they were busily pioneering a new life. They wished to convert our largely forested young land to a pastoral landscape similar to that found in the United Kingdom and Europe. Fortunately they started on the easier country and for the first several decades generally did not move into the steeper less hospitable and less stable hill country. It was only about 60 years ago that the land began

to show that it was not all suited for conversion to pastoral use. Surface wasting and soil erosion became evident.

Some 40 years ago far sighted people recognised the need to introduce legislation to enable a "putting right" programme to commence. Predecessors to the present NWASCA were established to administer this legislation. First priority was given to the protection of the floodplains where the majority of the population had become established. Second priority was given to the stabilisation of hill country on which widespread soil erosion was evident. In this latter case, it was apparent that substantial land areas required the continuous stabilising support provided by trees.

Consequently, NWASCA has since 1941 promoted the retention of existing vegetation and the planting of protective cover over thousands of hectares of erosion-prone land. Many of these plantings are in small lots on difficult sites within pastoral areas. More recently larger scale plantings have been undertaken on lands where pastoral occupation has proved to be unsuccessful. The vast majority of these plantings has involved the almost exclusive use of Pinus radiata which, as a relatively short rotation tree, provides short term protection. Early protection plantings have now started to reach maturity, their protective value is diminishing and the potential wood resource can be realised when more appropriate longer rotation replacement varieties are planted.

EXTENT OF SENSITIVE LANDS

Although no detailed studies have been completed, NWASCA currently consider that there are some 250,000 ha of exotic forest established on steep erosion prone land. There is also a substantial area of afforested land of easier contour where management may influence water resources.

When considering only the steepland (slopes over 25°) situation it becomes more apparent that the extent of land management problems are more real than imagined.

The NWASCA New Zealand Land Resource Inventory provides the information for the following tables.

TABLE 1 : STEEPLAND LAND USE CAPABILITY
HILL AND HIGH COUNTRY* (000 ha)

<u>Class</u>	<u>North Is</u>	<u>South Is</u>	<u>N.Z.</u>
6	314	716	1030
7	2201	1647	3848
8	782	3069	3851
	-----	-----	-----
	3297	5432	8729

* Excludes National Parks. Total area of N.Z. is approximately 27 million ha

These lands are subject to varying degrees of erosion regardless of vegetation cover and the present erosion situation is shown in Table 2.

TABLE 2 : STEEPLAND - PRESENT EROSION ON LUC
CLASSES 6-7-8 (000 ha)

<u>Severity</u>	<u>Rating</u>	<u>North</u>	<u>South</u>	<u>Total</u>
0	Nil	392	37	429
1	Slight	1814	1848	3662
2	Moderate	860	1794	2654
3	Severe	176	981	1157
4	Very Severe	45	503	548
5	Extreme	10	269	279
		-----	-----	-----
		3297	5432	8729

The above table clearly indicates that a high proportion of land is suffering from serious erosion. However, when the potential for erosion is examined the need to apply prudent land use and management practices becomes ever more evident.

TABLE 3 : STEEPLAND - EROSION POTENTIAL ON LUC
CLASSES 6-7-8 (000 ha)

<u>Severity</u>	<u>Rating</u>	<u>North</u>	<u>South</u>	<u>Total</u>
1	Slight	35	220	255
2	Moderate	358	693	1051
3	Severe	1720	1331	3051
4	Very Severe	507	693	1200
5	Extreme	677	2495	3172
		-----	-----	-----
		3297	5432	8729

The key to maintaining slope stability of erosion prone land is to ensure that an adequate protective cover is maintained. The present vegetation cover for the same land illustrated in the above tables is shown in Table 4.

TABLE 4 : STEEPLAND - VEGETATION TYPES OF LUC
CLASSES 6-7-8 (000 ha)

<u>Type</u>	<u>North</u>	<u>South</u>
Scrub	766	555
Native Forest	1679	2611
Exotic Forest	167	82
"Pastoral"	685	2184
	-----	-----
	3297	5432

It can be reasonably assumed that a fairly high percentage of the scrub covered land will be cleared in the future, either for pastoral purposes or during the land preparation phase for forest establishment. It is unlikely that significant changes will occur in the native forest category. The exotic forest cover will increase by gains made from other categories.

Obviously the management of exotic forest on this land must take into account site limitations in terms of the inherent erosion risks. This applies equally for both protection and production plantings - and particularly in the establishment and harvesting phases.

PROGRESS

NWASCA and its principal agents, the catchment authorities, have devoted considerable effort in getting erosion prone lands stabilised by tree planting. It is only within the last 15 years that the removal of forest cover has received closer attention from these bodies. (The subject of statutory authority for intervention in land use and management practices is addressed in a following section.) There were a number of reasons for the development of this interest and these included :

- commencement of large scale exotic logging on hill country;
- excessive application of ground skidding and roading on sensitive hill country;
- lack of appreciation of the need to have proper regard for the protection of water and soil resources;
- public awareness and environmental interests.

This phase of N.Z. logging history is well known to those associated with the industry during the 1970's. Suffice to say that there has been a substantial change in attitudes and methods adopted for forest harvesting. This responsible reaction is a credit to the industry and is appreciated by NWASCA. Vigilance and the imposition of controls will ensure that all land users and managers continue to apply prudent practices when dealing with sensitive land and operating near our water resources.

THE CHALLENGE

Exotic plantings on steepland or undertaken for protection must be removed without inducing erosion.

In many circumstances existing forest engineering systems are capable of achieving the objective if correctly applied. This may involve higher costs and therefore require adoption of more understanding and informed attitudes. However, there is every likelihood of success where these areas are extensive and are being worked by responsible forest managers who appreciate the limitations and requirements of such sites and the implications of their actions.

The likelihood of a similar level of success in the smaller lots established especially for protection is far less promising.

For a number of years NWASCA has attempted to generate interest within the forest industry by addressing the problems associated with logging especially sensitive areas. Unfortunately little progress has been made. There is an urgent need for action as some 200,000 ha are rapidly approaching harvesting and there is little evidence of the industry moving to respond to the challenge. Therefore NWASCA decided to act independently by providing funds to enable the Marlborough Catchment Board and the Marlborough Forestry Corporation to undertake a trial with total suspension logging equipment. Subsequently further funds were provided to enable the acquisition and establishment of a demonstration unit.

NWASCA is satisfied that total suspension logging will provide an invaluable tool in overcoming surface disturbance in very sensitive areas. The system has proved to be successful in two trial areas. It is intended to continue with further demonstrations and trials.

A similar course of action has been taken in the past when other special-purpose equipment or practices have been introduced to meet special needs. Invariably the concepts promoted have eventually been adopted.

For its part, NWASCA will encourage catchment authorities to identify and quantify all protection plantings where the removal or replacement of exotic species is essential or desirable. From this base information NWASCA will consider future strategies. Consideration will also have to be given as to what policies should be adopted to ensure the application of appropriate management techniques on other sensitive steepland areas. There is a potential for some 2 million ha of steepland to be afforested in New Zealand and it is therefore essential that a land resource of this magnitude is properly managed.

STATUTORY PROVISIONS

NWASCA has statutory responsibility for the conservation and management of the soil and water resources.

The NWASCA, its predecessor the SC and RCC, and catchment authorities have chosen to promote wise use of these resources by education and incentives.

The wide application of the provisions of Public Notices issued under Sec. 34 of the SC and RC Amendment Act 1959 in recent years has been seen as draconian by a wide cross section of the community. (This is not the case as the mechanism provides for "compulsory conferences" between land occupiers and soil and water managers where proposed land management practices can be discussed.) Such dialogue provides a mechanism for the dissemination of information and leads to better understanding of the problems to the advantage of the land occupier and other off site interests. (The use of by-laws has similar educative

objectives.

SUMMARY

The NWASCA interests, functions and responsibilities relate to the care, protection and control of use of the nation's soil and water resources. History has shown that the fragile nature of New Zealand's landscape is such that there are clear limits to which these resources can be used. There is no room for abuse of these resources and NWASCA will endeavour to ensure that this does not happen by continuing to promote wise management practices.