

THE REQUIREMENTS OF SOIL CONSERVATION RETIREMENTS IN
THE WAIRARAPA

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The Wairarapa Catchment Board's region extends eastwards from the Rimutaka and Tararua Ranges to the coast and encompasses an area of 446,000 ha. Over two thirds of this area lies to the east of the Wairarapa Valley and comprises hill country with a high erosion potential.

Since 1950 the Board has developed a substantial erosion control programme on a co-operative basis with individual farmers. The Board currently has a Soil Conservation staff of 13 and an annual expenditure of \$1m for erosion control undertaken through its 415 Soil and Water Conservation Plans and 7 Catchment Schemes.

Right from the outset, retirement of severely eroded land from grazing and its afforestation with predominantly *Pinus radiata* has been a major soil conservation technique. Such sites are a nightmare from a production foresters point of view. The constant land movement gives high losses of trees at establishment, subsequent malformation and toppling, and ultimately a 'real can of worms' when the time for logging arrives. I would stress however that the overriding function of such plantings is erosion control, and in every case retirement planting has proven to be a most cost effective erosion control method.

Since 1950 in excess of 11 million pines have been planted in retirement plantings on farms and in the Board's two Soil Conservation Reserves. This represents a collective area of some 5-6000 hectares that has been established in a continuing programme to the present day. Taking the Whareama Catchment as a specific example; - 284 retirements have been planted in the past 35 years covering 1908 hectares - an average size per retirement of 6.72 ha.

Gully sites provide generally good site indexes for the growth of *Pinus radiata* once stability is achieved. They are sheltered and have better soil moisture status than the surrounding drier slopes and ridges.

Until the last few years, erosion control plantings were viewed solely as a 'firebrigade exercise'. Little thought or provision was made for improving the longevity and stability of the trees through silviculture, or for their logging requirements. It is

now apparent that the secondary benefit of timber production can be achieved on most sites and that their erosion control value can also be enhanced by stand management. Better attention to establishment and silviculture is being applied to the majority of current plantings. Sites are being regarded as perpetual conservation areas with safe logging, replanting and silviculture now a part of their management requirements.

With the earliest retirement plantings now reaching 30-35 years of age and instability and toppling problems apparent in the unthinned stands, the Board took its first step into limited scale logging earlier this year at Blairlogie Station, one of its earliest Soil and Water Conservation Plans (see figure 1).

The site chosen is typical of the regions severe gully erosion problems. Down-cutting by the stream had led to earthflow erosion to the top of the ridge - a distance of 400 metres. Erosion debris was regularly closing the County Road denying access to Masterton. Thirty years later with the erosion completely controlled, the Board unwillingly became involved in logging when contractors moved into the area. With logging to be undertaken by bulldozer down unstable slopes and then down the stream-course, the Board moved quickly to halt this operation and it was abandoned by the purchaser. This year acting on the owners behalf the Board engaged consultants to establish the volumes and classes of timber in the block, to formulate a logging plan and to provide a budget for the full logging operation. Roding was the major problem with three alternatives considered.

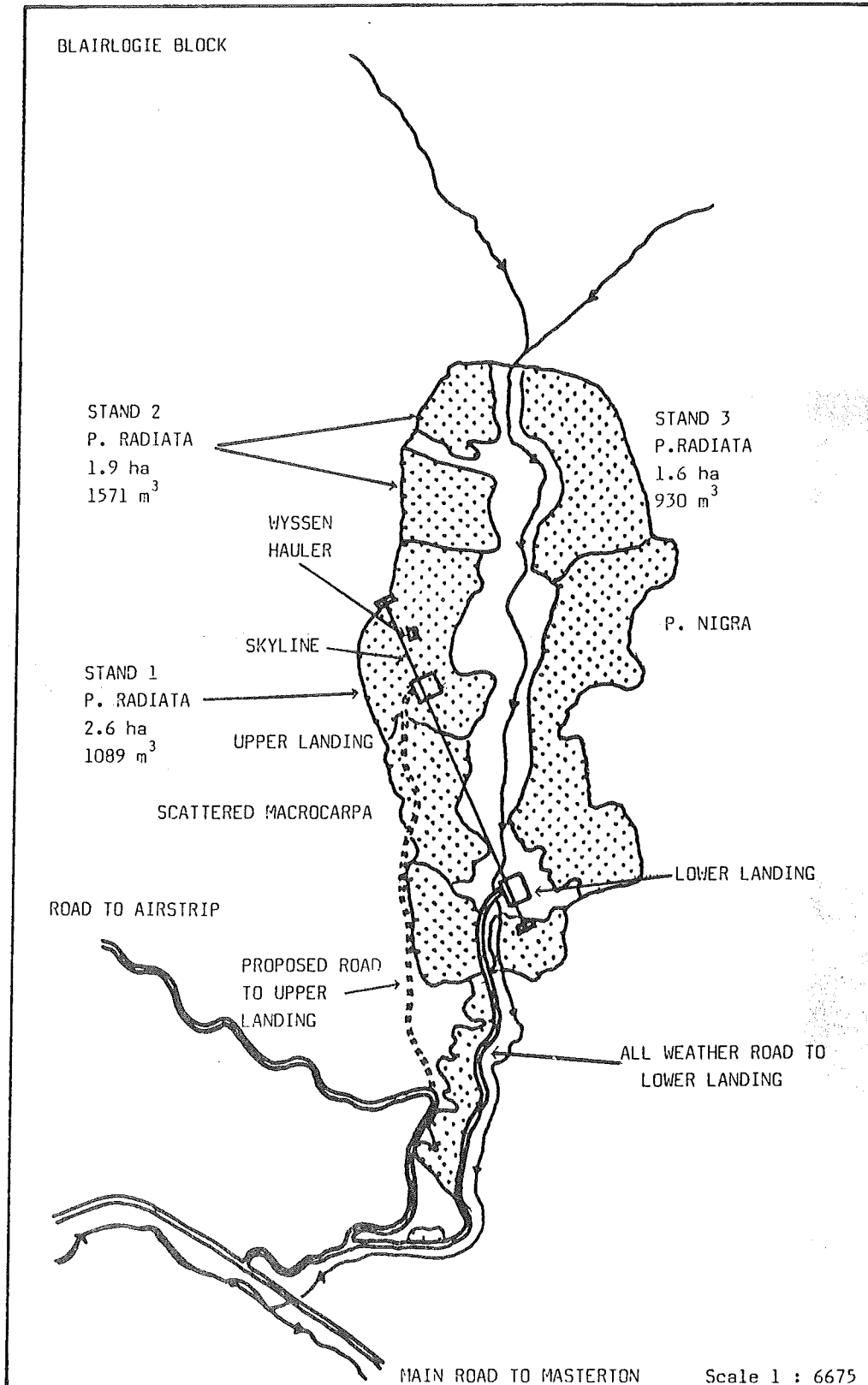
Alternative one which involved establishing a logging road from the earlier logging track to an upper landing was ruled out due to impossible gradients and severe soil instability.

Alternative two required the formation of 650 m of new road at an estimated cost of \$22,455. This route crossed a number of earthflows and would have resulted in heavy sidecasting into the stream just a short distance upstream of the County Road culvert. Additional roding to a lower Wyssen landing would also be required for Block III to be successfully extracted. This represented a further estimated cost of \$4,240, making the total roding cost for this alternative some \$27,000. Costs of upgrading the existing valley track and bridging were estimated at \$6,000.

The logging plan finally adopted was to upgrade the valley track - and use the Wyssen Skyline system. For Blocks I & II the Wyssen would be used as an 'aerial roadway' with logs brought by D4 and logging arch to an upper landing under the skyline. Block III would be mostly directly logged by the Wyssen with some outer trees brought by tractor to under the skyline.

From the alternative costings, use of the Wyssen as an 'aerial roadway' for Blocks I and II could incur additional logging costs up to \$21,000 before the net returns from the blocks would be reduced.

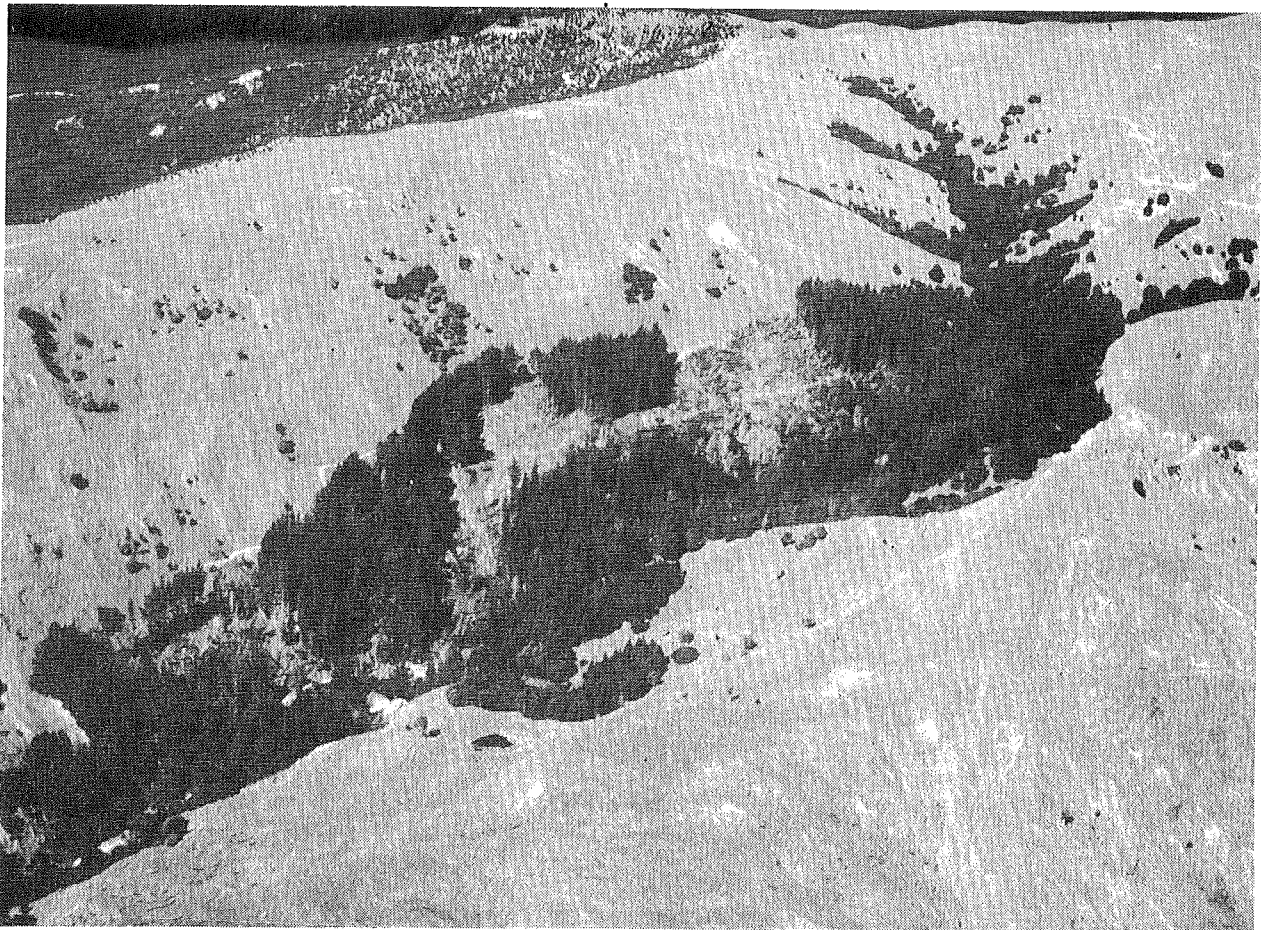
FIGURE 1



For the 2071 tonnes extracted this represents an additional cost of up to \$10.00 per tonne. Importantly, by using the Wyssen in this way, erosion risks, further track maintenance costs and other problems would be eliminated.

For Block III the Wyssen was seen as the only practical logging method. A combination of small block size, poor roading grades and economics ruled out roading in this case. Here the Wyssen would be used as the full logging and transport method apart from a limited number of outside trees that would require hauling to the skyline by crawler tractor.

Although it was planned to have logged the entire area before the winter the operation has taken longer due largely to the slow rate of log supply to the skyline.



Logging in progress at Blairlogie. The contour skidding track through the middle of the stand was used by the D4. A steep 4WD access track appears at left beyond the forest. In the background is part of Ngaumu Forest.

(PHOTO : H. Hiemecke-Hemming, F.R.I.)

Blocks I and II were completed in the first week of May with logging of Block III now held over until the spring.

Our experience to date at Blairlogie has covered most of the subjects contained in this Seminar and can be summarised as follows :

1. The Wyssen has provided an efficient alternative to roading that was not affected by weather or soil conditions and had minimal downtime.
2. When the Wyssen is used in a transport mode, the flow of wood to the upper landing must exceed daily requirements to allow for maximum efficiency and any downtime of the forwarding system due to weather, breakdowns and other factors.
3. A combination of sufficient storage area on the lower landing and steady uplift by trucks is essential if an efficient flow of wood is to be maintained.
4. Roading establishment and maintenance costs can be excessive in this class of country with logging truck access prevented after only limited amounts of rain.
5. Log handling on the lower landing would be best served by use of an excavator type loader. This would allow greater storage due to the lower working area required and operations would not be affected by wet ground conditions.
6. Correct cutting and grading of logs is essential to maximise financial returns from such small blocks.
7. Even limited tending will greatly assist the economics of small scale logging by reducing the number of pieces and increasing piece sizes and their value.

As far as requirements for the future are concerned the Wairarapa Catchment Board has a direct interest in ensuring suitable equipment and manpower is available for the safe and effective logging of these difficult sites. Cable logging and transport are at the forefront of our attention with the requirement that such systems can be used uphill, downhill and in non-gravity situations. The use of self loading forwarders is also seen as having direct application to the Wairarapa situation and we intend to pursue these matters with LIRA over the next few years.

We have learnt a lot over the past six months, sufficient not to be deterred from small scale logging in difficult sites. We look forward to working with LIRA and other agencies in ensuring the techniques and equipment is available for safe and efficient logging to take place in harmony with the overriding soil and water functions of these areas.

In presenting this paper I wish to acknowledge the considerable assistance of the National Water and Soil Conservation Authority and the staff and logging crew of the Marlborough Catchment Board.

