

## Clear as mud

Kit Richards

### Erosion and sedimentation problems

Many of our readers would have noticed a recent article in the *New Zealand Herald* titled 'Scorched Earth' in which the author, Sam Judd, sought to attribute many of the problems of erosion and sedimentation of New Zealand waterways to the practices of the forest industry and particularly clear cutting of Radiata pine. See link: [www.nzherald.co.nz/opinion/news/article.cfm?c\\_id=466&objectid=11190177](http://www.nzherald.co.nz/opinion/news/article.cfm?c_id=466&objectid=11190177)

The author also drew some erroneous conclusions when comparing water flows after rain in harvested plantation forests with those in native forests. While correctly noting that sedimentation is a leading cause of water pollution, the use of examples that bear no relationship to forestry or forestry practice undoubtedly had some heads scratching amongst land managers and forestry practitioners alike!

The author highlighted the poor state of the Waihou river draining the Hauraki plains and the 2004 and 2005 floods in Manawatu-Wanganui and the Bay of Plenty that were 'caused by erosion resulting in \$198 million of taxpayer funds being provided to fix roads, bridges and for relief payments.' However these issues have very little to do with forestry and much to do with a lack of forest cover, whether native or plantation, on the land. The article also called for the industry to adopt the international eco-certification system, Programme for Endorsement of Forest Certification (PEFC), and to implement riparian setbacks to protect streams. More on that below.

### Storm events

So as an industry how do we stand in relation to such claims? In the first instance there is no doubt that

the industry has faced problems from time to time as a result of debris flows in storm events. Some of these could have been avoided by greater attention to planning and execution of harvesting operations and forestry companies have been investing time, resources and research effort to reduce the probabilities of such events. The industry's Forest Owners Association (FOA) has also overseen a complete rewrite and update of industry engineering standards in its Forest Engineering Manual – supported by all the major companies and a number of regional councils.

But many of these land sliding and debris flow events are a simple and direct function of the steep and erodible nature of the New Zealand countryside combined with high intensity storm events. Such events are a reality for this country and affect both native and plantation steep land forests alike when the storms are big enough – and they are devastating in terms of erosion on steep non-forested land. It is also a reality that significant areas of New Zealand's plantations were consciously directed onto steep erodible land after serious and widespread erosion made continued farming untenable. Such afforestation has clearly reduced the frequency and extent of erosion on these lands, but it cannot completely prevent it as the foresters in European steep lands are also well aware.

What science has established, especially from the 12-year Pakuratahi paired catchment study – see [www.hbrc.govt.nz/services/environment/land/resources%20and%20publications/pages/pakuratahi-land-use-study.aspx](http://www.hbrc.govt.nz/services/environment/land/resources%20and%20publications/pages/pakuratahi-land-use-study.aspx) – is that while there is a spike in sediment yield from forestry during harvesting, this soon returns to low levels. Over the full tree-crop rotation, sediment yield is substantially less than from pastoral agriculture on similar landforms.

### The long-run average

Water quality is going to be one of the key issues of the decade. Forestry should have little to fear but will need to 'walk its talk'. Long-run data extracted from the national water quality monitoring datasets have generally indicated that plantation forestry is a high performer when it comes to water quality.

Recent material published from an extensive programme of water quality monitoring in the Auckland region showed a trend in quality indicators ordered from native forests (excellent) > plantation forests (good) > agriculture (fair) > urban (fair). These studies also incorporated measures of the macro invertebrates index (MCI) as a gauge of stream health and showed similar patterns with the plantation forest streams having good health, agriculture fair and urban poor.



Forest and pasture



Left: Log debris from native forests in Bruce Bay, South Westland. Right: Landslide – Abel Tasman National Park after the December 2011 storms. Mass land movement and debris flows occur in native forests as well as plantation forests

Similarly, a recent set of measures taken from three sites in a forest managed by PF Olsen revealed MCI's of 104-119 (good) and good water quality, despite large proportions of the forest having been harvested over the last five years. Another suite of sample points on the West Coast of the South Island also indicate that water quality and in-stream ecology is being maintained to high standards with MCIs reflecting good to excellent results. These more detailed results continue to support the data from much wider basic, and sometimes intensive, sampling done by many agencies that water quality under plantation forestry is more aligned with native forests than with pasturelands and also provides important habitat refuges for native fish.

## FSC certification

In advocating that the forestry industry should be required to obtain PEFC certification and create riparian zones to raise its performance, Mr Judd was clearly unaware that around 50 per cent of the New Zealand forest growing industry and all large forest owners are already certified under the Forest Stewardship Council (FSC). This is a system that has generally received the most support from New Zealand environmental organisations.

## Riparian margins

In order to encourage the development of natural riparian margins, the forest industry has already committed to setting back at least five metres from small streams and often substantially more from streams greater than three metres wide when replanting. Our problem today, and clearly Mr Judd's misunderstanding, is that the trees harvested today were planted 28 years ago or more, at which time such setbacks were uncommon. Nevertheless, it is today's harvesting that affects today's water quality and the current data is showing good water quality is often being achieved despite few setbacks. This will only get better with the increased riparian setbacks now being implemented.

Completely stopping storm-driven geologic processes on highly erodible steep country, however, is a much harder nut to crack! Very simply we can't, but being under forest cover undoubtedly goes a long way to reducing the frequency and extent of impact.

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Back cover photos. Top: 2004 Manawatu Storms – a graphic aftermath showing dramatically reduced erosion in land covered with plantation forests. Bottom: Damage from a major 2011 storm event south of Gisborne



