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Debris flow hazards in plantation forests in New Zealand: what we know and need to know

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In recent years, extensive storm-induced landsliding has mobilised woody residue during or after plantation forest harvesting and caused debris flows that have affected houses, roads and bridges downstream of forests in several parts of New Zealand. In part, this relates to increasing levels of harvesting activity as many plantations originally planted for soil conservation purposes have reached merchantable size but could also be in response to an increasing incidence of high intensity storms affecting parts of New Zealand.

In several cases these incidents have featured on national television and in newspaper headlines with members of the public complaining about the consequences of forestry operations on steep erodible hill country. Forestry companies have responded by developing more detailed environmental impact assessment and erosion and sediment control planning approaches, and by assisting with clean-up operations.
Similarly regional councils (the regulatory bodies) have looked more closely at the environmental impacts of forest harvesting and some have modified erosion and sediment control guidelines, previously largely applied to urban earthworks, for forestry application.

As part of a wider research programme that aims to raise the profitability and improve the sustainability of New Zealand's forestry sector, we collected information from both forestry companies and regional and unitary councils via survey and interviews to determine the size and scope of the issue, how individual forest companies were identifying and managing the risk, and to determine if national threshold conditions or standards could be established. Even with risk management and good management practices in place, it will not be possible to entirely avoid slope failures and debris flows following harvesting in the future. Thus the need to determine a national level of understanding of what can and can't be managed for is important to allow the development of risk management approaches that all parties can agree with.

This paper reports preliminary survey results and discusses company-, regional-, and national-level approaches to begin to address how this issue might be approached in the future on steep eroding hill country in New Zealand.