Bite-size geomorphology.

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# ABSTRACT

Detailed geomorphology studies are not always feasible or palatable in a consulting environment. However, a brief but targeted review of natural and anthropogenic processes can still add meaningful value when attempting to unravel a site-specific environmental issue. The history of the site in question, and the associated processes that have driven change over the recent past, can be key when considering the current and future hazardscape. This has been exemplified through three recent case studies relating to flood hazards.

Over recent years the lower reach of the Cardrona River (Otago) has undergone significant change. The channel width has reduced, the bed has increased, and extensive vegetation has developed along the river margins which has reduced the flood capacity of the reach. This form is a stark contrast to upstream, where the riverbed is unvegetated and has multiple braided channels. The Kowhai River (Canterbury) has a complex setting, falling over 2,200 m from the actively uplifting and eroding Seaward Kaikōura Range, across the alluvial plains to the coast. There is a considerable volume of source material available in the headwaters, and coupled with a steep gradient and high flows, the river is highly dynamic and carries significant sediment loads. Following Cyclone Gabrielle, the Waipawa River (Hawke’s Bay) diverted itself along the ‘old bed of Waipawa River’ leading to widespread flooding in Ōtāne and Pukehou.

These rivers present a diverse cross section of the landscapes across New Zealand, indicating there is much to be gained in understanding catchment-specific processes, including anthropogenic activities such as gravel extraction. Understanding the context of a specific site within the larger catchment provides a much clearer picture of the flood risk and the feasibility and long-term viability of management options.