

# Shaping a Caldera - the forces of rain, rivers & time

The Tweed shield volcano was almost 2km high when molten magma outpourings ceased. Its height and onshore winds combined to attract significant quantities of moisture laden air from the ocean. The resultant high rainfall caused considerable runoff which created a myriad of streams and rivers.

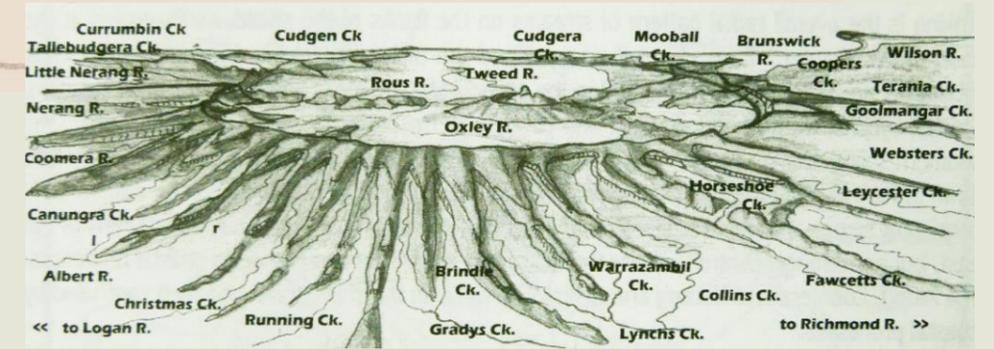
Over time, a basin shaped landform known as a caldera (from the Latin *caldaria*, meaning 'cooking pot') was carved from the relatively soft basalt rock types. Erosion was most rapid on the eastern, higher rainfall side, where the Tweed River and its tributaries flow to the coast.

To date, over one kilometre of rock has been stripped away by erosion above where the Wollumbin Mount Warning summit now stands. This is the remnant central volcanic plug made of more erosion resistant rocks. Although only half its former size, it still dominates the landscape.

Geologically, this erosion type caldera is far less common than the explosive caldera which is formed relatively quickly as a result of a magma chamber collapse.



'Tweed shield volcano and remnant erosion caldera' Original painting displayed in the Caldera Art Gallery, Murwillumbah Visitors Information Centre. Artists: Andy Reimanis and Mark Comport.



Right: Simplified graphic of the river systems of the Green Cauldron region - easterly view. Tweed Volcanic Region Bruce Graham

Lower right: Present day Tweed erosion caldera - westerly view Digital painting series by Andy Reimanis

Left: Artist's impression of the original Tweed shield volcano, some 2km above sea level at its highest point, superimposed over the present Tweed valley landscape (with the village of Uki in the foreground).



The Tweed erosion caldera is one of the largest, and best preserved, in the world. It is internationally significant not only for its size, but also because it still exhibits all stages of the erosion process continuing today, including the exposure of underlying pre-volcanic rocks.

Below: Now remaining are the harder, less easily eroded rock types forming the familiar landmarks such as Wollumbin Mount Warning and the surrounding mountain ranges. Graphic enhanced from NSW NP&WS 1993 publication *Mt Warning National Park*

