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**The Geotechnics of the Zungwini Tunnel, Northern Kwa Zulu-Natal Republic of South Africa And Regional Significance: Why did the tunnel collapse?**

**Barker, Oliver B,**

Banzi Geotechnics cc, 23 Doveton Rd., 2198, Parktown, Johannesburg, South Africa

[obb@banzi.co.za](mailto:obb@banzi.co.za)

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In March 1987, a twenty meter section of the crown and upper western sidewall of the Zungwini Twin Rail Tunnel in Northern KwaZulu-Natal, collapsed catastrophically. The collapse was transmitted to surface, producing two elliptical sinkholes along the tunnel's center line, the damage extending over a distance along the tunnel Centre line of more than 80m at surface.

A remarkable coincidence of events occurred at Zungwini which led to the failure of the tunnel's support. Collapse occurred within a weathered rock mass which, when combined with a long sequence of sedimentary and geomorphological events, resulted in stresses on the tunnel support which eventually exceeded its capacity to withstand the loads. The regional implications of this event are important.

The large remedial costs that were incurred and the miraculous absence of loss of life were remarkable in their own right. The original tender was set at about R19M. The final cost was in excess of R30M, with remedial claims of R30M lodged at one stage.

This paper analyses the geotechnical setting, the geology and its relationship to the tunnel and attempts to provide an explanation of the mechanism in the geology and rock mass and soils that overlain the Zungwini Tunnel in the vicinity of the Southern Portal of this very large rail tunnel.

