

**Evolution of Geological Landscape at World Heritage Sites of Anuradhapura,
Polonnaruwa and Sigiriya**

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ABSTRACT

Landscapes evolve slowly over long time-scales due to weathering, erosion and re-deposition in the natural environment but short term rapid changes occur due to diverse human interaction with the environment at all scales. Utilization of stones for construction is one such activity evident in many historical cultures of the world.

A study was carried out to understand the human impact on the evolution of landscapes at Wessagiriya, Deegapasanaya, Polongala, Galviharaya, Pothgulviharaya and Rock Gardens of Sigiriya in the historic cities of Anuradhapura, Polonnaruwa and Sigiriya. Stone monuments, stone quarries and bed rock geology of these UNESCO World Heritage Sites are made-up of Proterozoic high-grade gneisses, and the geomorphology of these sites is characterized by small ridges with exposed rocky areas, runnels and broad valleys on generally flat ground. Most of the constructions at the historical sites are based on quarried stones, natural rock caves and stone quarry sites. Geological landscape of the sites had been altered by three historical anthropogenic processes which can be categorized as constructive, destructive and combination of both. The constructive process is characterized by raising the buildings and monuments by quarried stone blocks on earthy basements. Guard chambers are a special construction that had been established on rock boulders at Sigiriya premises. Natural rock shelters had been converted into meditation monasteries or residential places for monks and increasing extra living spaces had been added by attaching additional constructions. As per the destructive process, rocky hills, exposed bed rocks and boulders had been quarried altering the volume and shape of the landscape that existed. Main purpose of such alteration was only to quarry the rocks and not for creating space for any construction. According to the third process, some rocky hill sites have been flattened by quarrying the exposed rocks, and buildings were erected on that flat ground. Pothgulviharaya and Galviharaya are two good examples from Polonnaruwa World Heritage Site. Finally, it can be inferred that geological landscape had been altered by anthropogenic processes to establish the historic built environment.
