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Kafue Town Substation Insulation Enhancement Project

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Kafue Town substation (has 330, 220, 88 & 33 kV voltage levels) is located on the Western side of a fertilizer chemical plant, Nitrogen Chemicals of Zambia, in Kafue Town. The substation was constructed adjacent to a chemical plant and hence was exposed to fertilizer and chemical pollution from the factory. Over the years, the substation had been experiencing insulation failures, especially on transformer bushings, which adversely affected power reliability and the capacity of the substation.

Following a technical audit carried out on the substation insulation it was established that the creepage distances for bushing/insulators were too low for the prevailing levels of pollution. Several options were considered to remedy the situation after which the solution of using silicon coating and application of silicon shed extenders to the bushings/insulators was chosen. This solution was also supported by the successful implementation of the substation insulation enhancement project at Chilanga cement factory substation in Ndola in 2002 (which also had pollution related flashover problems), with excellent results regarding reliability of supply.