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**Laboratory scale testing of the passive systems to treat AMD from abandoned coal mines, Witbank, Mpumalanga province**

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Passive treatment technologies for remediating AMD have been investigated, demonstrated and implemented in different parts of the world. These treatments can function in remote areas with low costs of operation, monitoring and maintenance. Even though passive treatment systems such as anoxic limestone drain (ALD), aerobic/anaerobic wetlands, open limestone channels, sulphate reducing bioreactors, successive alkalinity producing system (SAPS), etc. can treat acid mine water efficiently, they are also prone to coating and clogging as a result of  $Al^{3+}$  and  $Fe^{3+}$  precipitates resulting in the passivation of the alkaline substrate leading to failure of the system. Recently, dispersed alkaline substrate (DAS) was introduced in Spain with the intention of solving the clogging problems associated with most of the passive treatments. DAS is a system composed of coarse matrix (e.g. wood shavings) mixed with a fine grained alkaline material (e.g. limestone). The woodchips/wood shavings are supposed to provide high permeability while the limestone provides a bulk reactive surface area, where it will dissolve and react with AMD before it is coated. The overall aim of the study is to investigate the effectiveness of the new DAS system in treating AMD from an abandoned coal mine in Witbank, Mpumalanga Province and compare it with the traditional reducing and alkalinity producing system (RAPS) which have been investigated and implemented in many parts of the world.

