Technical note

Evaluation of an integrated asset life-cycle management (ALCM) model and assessment of practices in the water utility sector

Mehmood Haffejee[1] and Alan C Brent[1, 2]*

[1] *Graduate School of Technology Management, University of Pretoria, South Africa*

[2] *Natural Resources and the Environment, Council for Scientific and Industrial Research (CSIR), South Africa*

Abstract

The water utility sector in South Africa is presently facing numerous challenges. Amongst the most urgent and important priorities is ageing infrastructure, which has the potential to end in failures with detrimental impacts on local communities and the natural environment. Furthermore, to manage the majority of strategic assets in terms of total performance, i.e. environmental, financial, social and technical, is often difficult as a large portion of assets, such as buried pipelines, cannot be easily accessed. These issues highlight the need for a generic asset life-cycle management model for the water utility sector. Such an integrated model is introduced; it was evaluated in the largest water utility in South Africa. Although it was found to have relevance, practicability, applicability, and usability, the model still needs rigorous testing amongst other water utilities in South Africa, and in other countries. The perceptions of the water utility sector were also assessed in terms of the practices of the principles of integrated life-cycle asset management. The results indicate a fairly good understanding of the concept of asset life-cycle management, but allude to challenges with fully implementing all the principles when it comes to asset performance measurements; particular attention must be given to develop mechanisms to measure environmental and social aspects. Nevertheless, it is highlighted that for strategic assets, the practices and principles of ALCM have many benefits, including better maintenance management, infrastructural planning, risk management, and sustainable development.

Keywords: life-cycle management, asset management, sustainable development, South Africa