

Rehabilitation in Oeiras & Amadora: a practical approach

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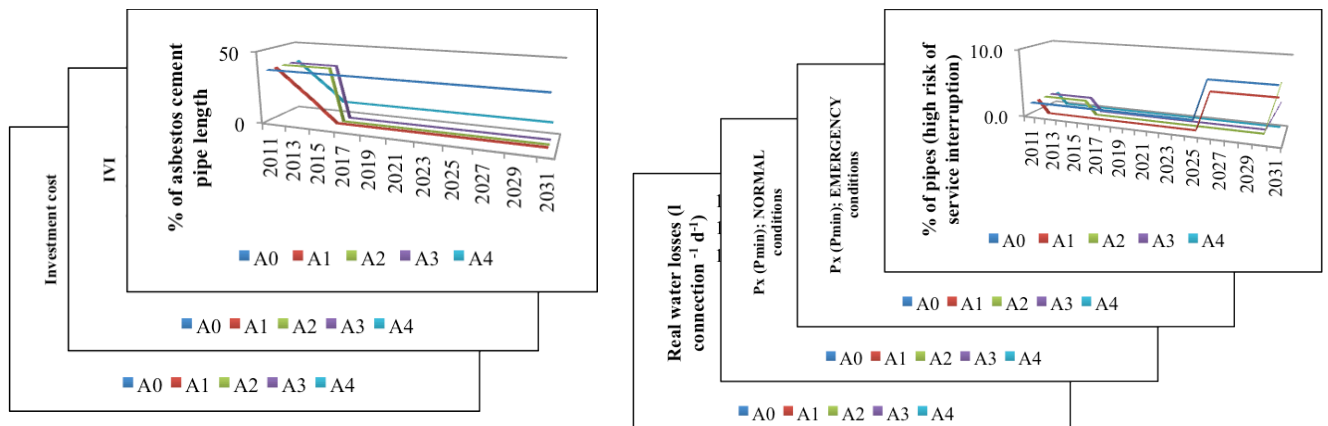
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ABSTRACT

Urban water systems are essential to modern societies; managing them strategically is a challenge, as they require continuous and costly capital maintenance to ensure service sustainability. Wise rehabilitation and maintenance planning are therefore essential. This paper presents an application of an innovative urban water infrastructure asset management (IAM) methodology, developed by project AWARE-P, to the case of the Oeiras & Amadora water utility (SMAS O&A). This IAM approach considers three levels of planning: strategic, tactical and operational, corresponding to long-, medium- and short-term horizons. One of the main advances of the approach is efficiently integrating assessment dimensions other than cost, namely performance and risk. The entire utility was considered at the strategic level and at the first stage of the tactical level. A district metering area of the water supply system was used as a pilot for testing the procedure at the more detailed level of tactical planning. Five IAM alternatives were devised, including a conventional like-for-like pipe replacement alternative and a number of optimal design alternatives that take into account energy efficiency and system resilience. After assessment and comparison, the alternative that represented the best trade-off was selected using a simple multi-criteria decision method. The application of the AWARE-P approach by SMAS O&A contributed to a shift of paradigm within the organisation with regard to rehabilitation and maintenance planning.

Keywords: Planning, Rehabilitation, Strategies, Urban water infrastructure



(a) P3: percentage of asbestos cement pipe length

(b) R1: risk of service (water supply) interruption

Assessment of planning alternatives over the analysis period