

An integrated approach for infrastructure asset management of urban water systems

Helena Alegre*, Dídia Covas**, Sérgio T. Coelho*, Maria do Céu Almeida*, Maria Adriana Cardoso*

* LNEC – National Civil Engineering Laboratory, Av. Brasil, 101, 1700-066 Lisboa, Portugal

** Instituto Superior Técnico (IST), Av. Rovisco Pais, 1, 1049-001 Lisboa, Portugal Abstract

This paper presents the integrated methodology for infrastructure asset management (IAM) developed in AWARE-P, an R&D project aimed at producing adequate and effective support tools for assisting urban water utilities in decision making and rehabilitation planning (www.aware-p.org). The proposed methodology is organized into three planning and decisional levels (strategic, tactical and operational); at each level, a cycle based on PDCA (plan-do-check-act) principles runs through (i) definition of objectives and targets; (ii) diagnosis; (iii) plan development; (iv) plan implementation; and (v) plan monitoring and review. The methodology assesses the system and any planning solutions under consideration along three dimensions – cost, risk and performance – with a variety of standardised assessment methods and models proposed for each. Despite being based on IAM principles generally recommended and adopted by leading-edge research, consultant and utility organizations, the proposed methodology differs from existing approaches in the incorporation, in a single organised framework, of the entire IAM process with an integrated vision of the water networks – i.e., looking at the infrastructure as a system, and not as a mere sum of individual assets – in the long-term. Specific methods and software tools have been developed to assist water utilities in implementing the AWARE-P approach in the industry environment, and several business cases are available.

Keywords: infrastructure asset management, water supply, planning, rehabilitation