

## **SUPPORTING WATER DEMAND MANAGEMENT WITH GEOGRAPHICAL INFORMATION SYSTEMS AND FUZZY LOGIC**

**C. K. MAKROPOULOS and D. BUTLER**

*Department of Civil and Environmental Engineering*  
Imperial College of Science, Technology and Medicine, University of London

### **ABSTRACT**

Predominant approaches to water resources management focus on developing new supplies and structures to manipulate available supplies. Water demand management on the other hand, focuses at the other end of the pipe by perceiving water needs as *demands* that are changeable rather than *requirements* to be met. While not dismissing traditional approaches it relies on water conservation techniques, reduction of unaccounted for water and water reuse. This paper reports on the development of a decision support system (DSS) facilitating the site-specific application of three water demand management strategies, namely leakage reduction, grey water recycling and compulsory metering. The system is based on the loose coupling of a user friendly, commercial GIS (ArcView) and a powerful mathematical environment (Matlab). The GIS approach endorsed in this research is justified by the strong spatial character of the strategies' application problem.

*Keywords: water demand management, GIS, fuzzy logic, spatial decision support*