

Planned development of a modelling information system for Melbourne's water supply system

M.D.U.P. Kularathna, S.C. Ashbolt, H. Jahanbani and K. Vu

*Melbourne Water, Melbourne, Australia
Email: kien.vu@melbournewater.com.au*

Abstract: Accessibility to stakeholders of information generated by modelling tools is important in water resources planning and management. This is particularly the case in settings where multiple stakeholders are involved in decision making processes, as in the case of Melbourne's system. The growing need for information has been matched with advances in the development of modelling tools and approaches including the key modelling tool based on eWater Source which will be used to inform decisions on centralised bulk water supplies, de-centralised water resources, environmental water management, water resource outlooks and water allocation estimates.

Despite the advancements in modelling, there are significant opportunities to improve the accessibility and effective use of modelling information generated by various models, as identified through a series of stakeholder workshops. They are outlined below.

- (1) **Accessing and querying the large amount of modelling outputs that continue to accumulate:** The daily-growing collection of modelled outputs form a comprehensive 'big dataset' that provides opportunities to identify valuable insights through non-traditional analysis methods, particularly if the ability to query the dataset is provided to internal and external stakeholders through an online information system portal.
- (2) **Providing an easy-to-use representation of the model for stakeholders:** The complexity of modelling systems of Melbourne Water has been a challenge that limits the potential use of such tools by external stakeholders as well as non-modellers within the organisation for standard modelling queries and straightforward modelling assessments. An overarching modelling information system portal, which would in turn interact with the complex models, could provide a simplified representation of the system with which stakeholders could easily interact with. It could also assist participatory assessments of water resource options by multiple stakeholders.
- (3) **Providing an easy-to-use interface for ongoing model calibration and verification:** Regular calibration and verification of water resource is essential in modelling. The time and effort in completing a calibration and verification can be significantly reduced and the process streamlined, by developing an interface within the modelling information system which enables comparing modelled and recorded information drawn from model outputs and water resources databases.
- (4) **Communicating spatial information generated/used in integrated water resource assessments:** Melbourne Water's directions in further developing the modelling capabilities for integrated water resources assessments would result in modelling systems that generate spatial information across the modelled supply area. A modelling information system portal provides an opportunity to provide easy access to the spatial information used/generated in modelling.
- (5) **Providing linkages between models of water systems in the Victorian water grid:** An online modelling information system portal provides an opportunity to develop linkages to the models of connected water resource systems in the Victorian water grid to facilitate assessments involving multiple water resource systems within the water grid, without the need to acquire and understand another water company's model.

The development of the modelling information system is planned to be undertaken in stages, working with internal and external stakeholders to further refine the scope and design of the system as it gets developed. The presentation will cover the system's intended capabilities in more detail, the development process, as well as the challenges that needs to be addressed.

Keywords: *Water resource modelling, integrated water resource assessment, eWater Source*