

Paper 1.

Experience in Wastewater Projects in Australia. Dr Robert Carr, Managing Director DHI Water and Environment Australia

This presentation will briefly describe three wastewater investigation project undertaken by DHI in Australia and New Zealand, highlighting the important issues of each study and how modeling approaches were used to meet the study objectives.

Project 1. - Upgrade Strategies for the Windale / Gateshead Catchment

DHI undertook wastewater modelling for the Upgrade Management Plan of the Windale / Gateshead Catchment. Existing MOUSE models of the Windale / Gateshead, Jewells and Redhead catchments were reviewed and updated as necessary. They were then used to perform an operational risk assessment of six pumping stations, to determine the storage requirements for four hours dry weather flow. A lumped catchment model representing the storm water runoff was coupled to the sewer model to determine the proportional impacts of wastewater discharges on Jewells Wetlands. The model was upgraded to 2022 conditions and a range of upgrade strategies were developed for the wastewater system for the 3 month, 1 year and 5 year storm events.

Project 2. Gold Coast Water Futures Priority Infrastructure Planning

DHI have undertaken MOUSE wastewater modelling services to Gold Coast Water since 2000. The modelling team builds, validates and maintains the models for Gold Coast Water. The models are used to analyse wastewater network capacity in terms of desired standards of service for both existing case and projected populations. DHI developed extensive model validation techniques to check asset data and identify critical flaws in asset data prior to incorporation into the model. DHI analysed results to determine any augmentations required and verified these by including them in models and analysing augmented results. A web-based model management system has also been developed to ensure only the latest models are used. The client and their consultants are able to “check-in” and “check-out” models in a systematic way, and all changed/amendments to the models are logged in a central database.

DHI have also produced documentation of MOUSE Modelling techniques, including “Best Practice” modelling techniques, calibration procedures and specifications, quality assurance procedures, data error catching techniques and model maintenance.

Project 3. Time Series Modelling for ICS

As part of the Auckland Metrowater ICS project, DHI were engaged to undertake long term (12 month) simulations of each of the models produced for the study. The dual objective of the modelling was to quantify pollutant loads into the receiving coastal waters, and to provide data for system performance thematic mapping. As part of this process DHI were involved in identifying, correcting and reporting model stability and integrity issues. Each 12 month simulation was post-processed using software utilities developed by DHI NZ to generate the required data for the two outputs. The generation of the thematic maps was also undertaken by DHI, with more than 300 maps being created and delivered for the project final reports.

Paper 2.

Experience in Water Distribution modeling in Australia and New Zealand . Dr Robert Carr, Managaing Director DHI Water and Environment Australia

This presentation will briefly describe three water distribution modeling projects undertaken by DHI in Australia and New Zealand, highlighting the important issues of each study and how modeling approaches were used to meet the study objectives.

Project 1. - Hamilton MIKENET On-Line .

DHI has implemented a MIKE NET On-line system for Hamilton Council in New Zealand which implements automated control systems to optimise the water distribution network operation.

Project 2. MIKE URBAN WD and CS integration – Hastings City Council.

DHI has developed an integrated water supply and wastewater network model under ArcGIS for the city of Port MacQuaries in New South Wales. This modelling work has involved calibrating water distribution and wastewater models of the entire city. The water distribution modelling includes seven pressure zones.

Project 3. Brisbane Water Distribution model development and calibration .

DHI has assisted in the development and calibration of several water distribution models in the city of Brisbane including the Sparkes Hill Water Supply Zone and the Milne Hill Water Supply Zone. The project also included on-going technical advice in the distribution and analyses of future demand distribution and modelling as part of Brisbane Waters ICP Master Planning Studies.