

# CCWI2005 Presentation Schedule

Day 1: Monday 5<sup>th</sup> September 2005

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| 08:00 - 09:30 | Registration and Coffee  |
| 09:30 - 10:00 | Welcome and Formal Opening of the Conference: (Newman Hall A)<br>Vice Chancellor of Exeter University, Prof S Smith<br>Mr R J Baty, OBE, Chief Executive of South West Water   |
| 10:00 - 10:40 | Plenary Invited Lecture - Newman Hall A (Chair: Godfrey Walters)<br>'The Changing Role of Computer Systems in Water Management - a Supplier's Perspective'<br>Mr D. Fortune, Director of Product Management, Wallingford Software Ltd, UK  |
| 10.40 - 11.10 | Coffee   |
| 11.10 - 12.50 | <p><i>Parallel Session 1: Asset Management (Peter Chalk Hall A) (Chair: Yehuda Kleiner)</i></p> <p>11.10 - Managing sewer assets through integrated data acquisition<br/>N Scarlett, J Grandison &amp; N Rothwell</p> <p>11.30 - Analysis of water industry assets using advanced spreadsheeting<br/>A Selby</p> <p>11.50 - Estimating time to failure of ageing cast iron water mains under uncertainties<br/>B Rajani &amp; S Tesfamariam</p> <p>12.10 - A case based reasoning approach for underground water asset management<br/>K Vairavamoorthy, J Yan &amp; N Trifunovic</p> <p>12.30 - A decision support framework for short-time rehabilitation planning in water distribution systems<br/>O Giustolisi, D Laucelli and D A Savic</p> <p><i>Parallel Session 2: Operations Management (Peter Chalk Hall B) (Chair: Petr Ingeduld)</i></p> <p>11.10 - Efficient energy management of large-scale water supply system<br/>P Bounds, J Kahler &amp; B Ulanicki</p> <p>11.30 - Saving energy while managing demand in water delivery systems<br/>C A Diaz, B W Karney &amp; A F Colombo</p> <p>11.50 - Encoms- An energy cost minimisation system for real-time, operational control of water distribution networks<br/>Z Rao, J Wicks &amp; S West</p> <p>12.10 - Hydraulic reliability of pressurized water distribution networks for on-demand irrigation<br/>L Cozzolino, C Covelli, C Mucherino &amp; D Pianese</p> <p>12.30 - Robust optimization for feedback control design of booster disinfection systems<br/>M Propato, JG Uber &amp; O Piller</p> <p><i>Parallel Session 3: Data Management, Calibration &amp; Monitoring of WDS (Newman Hall C) (Chair: Giovanni de Marinis)</i></p> <p>11.10 - Diagnosing error prone application of optimal model calibration<br/>Z Y Wu &amp; T M Walski</p> <p>11.30 - Genetic Algorithms for water distribution network calibration: a real application<br/>A Borzi, E Gerbino, S Bovis &amp; M Corradini</p> <p>11.50 - Calibration of the model of an operational water distribution system<br/>A Vassiljev, T Koppel &amp; R Puust</p> <p>12.10 - Effect of uncertainty on water distribution system model decisions<br/>D Sumer &amp; K Lansey</p> <p><i>Parallel Session 4: Steady-state and Transient Analysis, Modelling and Simulation (Newman Hall B) (Chair: Avi Ostfeld)</i></p> <p>11.10 - Synthesising real water distribution network performance under pressure deficiency<br/>M Hayuti &amp; R M Burrows</p> <p>11.30 - UDF Analysis using hydraulic modeling<br/>W de Schaetzen, B Beach &amp; T Mizuik</p> <p>11.50 - Dynamic behaviour of water networks controlled by pressure reducing valves<br/>S Prescott, B Ulanicki &amp; J Renshaw</p> <p>12.10 - Comparison of hydraulic methods for network analysis considering head driven demand<br/>K Formiga, F Chaudry &amp; L Reis</p> <p>12.30 - ANN architectures for simulating water distribution networks<br/>F Martínez, V Bou, V Hernández, F Alvarruiz &amp; J M Alonso</p> |
| 12:50 - 14:30 | Lunch  |
| 14:30 - 15:30 | <p><i>Parallel Session 1: Asset Management (Peter Chalk Hall A) (Chair: Mark Engelhardt)</i></p> <p>14.30 - Pipe level estimation of burst rates in water distribution mains<br/>J B Boxall, A O'Hagan, S Pooladsaz, A J Saul &amp; D M Unwin</p> <p>14.50 - A strategy for optimal replacement of water pipes integrating structural and hydraulic indicators based on a statistical water pipe break model<br/>L Dridi, A Mailhot, M Parizeau &amp; JP Villeneuve</p> <p>15.10 - Application of a fuzzy Markov model to plan the renewal of large diameter buried pipes: a case study<br/>Y Kleiner, B Rajani &amp; R Sadiq</p>  |

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|               | <p><i>Parallel Session 2: Operations Management (Peter Chalk Hall B) (Chair: Kalanithy Vairavamoorthy)</i></p> <p>14.30 - Optimal pump scheduling for East Bay Municipal Utility District, Oakland CA, using the Derceto package<br/>S Bunn</p> <p>14.50 - Extraction of optimal operation rules for water distribution systems using multi-objective genetic algorithms and machine learning<br/>I B Carrijo &amp; L Reis</p> <p>15.10 - Optimal pump scheduling: Representation and multiple objectives<br/>M López-Ibáñez, T D Prasad &amp; B Paechter</p> <p><i>Parallel Session 3: Data Management, Calibration &amp; Monitoring of WDS (Newman Hall C) (Chair: Steven Buchberger)</i></p> <p>14.30 - Sampling design for calibration of water distribution system models by genetic algorithms<br/>D Kozelj, S Šantl, F Steinman &amp; P Banovec</p> <p>14.50 - A simple sampling design strategy for water distribution systems<br/>O Giustolisi &amp; M Mastroianni</p> <p>15.10 - Topological GIS-based analysis of a water distribution network model. Applications of the minimum spanning tree<br/>H Bartolín, F Martínez &amp; J Cortés</p> <p><i>Parallel Session 4: Steady-state and Transient Analysis, Modelling and Simulation (Newman Hall B) (Chair: Bruno Brunone)</i></p> <p>14.30 - Field verification of a continuous transient monitoring system for burst detection in water distribution systems<br/>M Stephens, D Misiunas, M Lambert, A Simpson, J Vítkovský &amp; J Nixon</p> <p>14.50 - Slow transient pressure regulation in water distribution systems<br/>O Piller, G Gancel &amp; M Propato</p> <p>15.10 - Condition assessment of water transmission pipelines using hydraulic transients<br/>D Misiunas, M Lambert, A Simpson &amp; G Olsson</p>   |
| 15:30 - 16:10 | Tea   |
| 16:10 - 17:10 | <p><i>Parallel Session 1: Asset Management (Peter Chalk Hall A) (Chair: Alain Mailhot)</i></p> <p>16.10 - Water distribution system failure analysis<br/>O Giustolisi &amp; A Doglioni</p> <p>16.30 - Wilco State of the art decision support<br/>M O Engelhardt &amp; P J Skipworth</p> <p>16.50 - Strategic infrastructure asset management within NWL<br/>E Jennings</p> <p><i>Parallel Session 2: Operations Management (Peter Chalk Hall B) (Chair: Kobus van Zyl)</i></p> <p>16.10 - Hydraulic water quality and realtime control model of South West Moravian regional water supply system<br/>R Farmani, P Ingeduld, D A Savic, G A Walters, Z Svitak &amp; Jan Berka</p> <p>16.30 - Combined genetic algorithm-linear programming (GA-LP) procedure applied to the operation of the Fortaleza water supply reservoir system (Brazil)<br/>L Reis &amp; T Pinheiro</p> <p>16.50 - Reducing groundwater management costs by parallel simulation-based optimization<br/>F Thilo, U Junghans, M Grauer, S Kaden &amp; J Hillebrandt</p> <p><i>Parallel Session 3: Data Management, Calibration &amp; Monitoring of WDS (Newman Hall C) (Chair: Fernando Martinez)</i></p> <p>16.10 - Analysis of Parameter Uncertainty on Water quality in Distribution Systems: Unsteady conditions<br/>M F K Pasha &amp; K Lansey</p> <p>16.30 - Yatesmeter to Optimal Real-time Control<br/>L Reynolds</p> <p>16.50 - Advanced calibration of water distribution models using the Bayesian type procedure<br/>Z Kapelan, D A Savic &amp; G A Walters</p> <p><i>Parallel Session 4: Steady-state and Transient Analysis, Modelling and Simulation (Newman Hall B) (Chair: Marko Ivetić)</i></p> <p>16.10 - Unsteady friction models for conservative solution schemes in transient pipe flows<br/>Y Kim, A R Simpson &amp; M Lambert</p> <p>16.30 - Coupled numerical simulation and sensitivity assessment under slow transient conditions<br/>G Gancel &amp; O Piller</p> <p>16.50 - A 2-D approach for energy dissipation evaluation in pressurised transient flow<br/>A Berni, B Brunone &amp; M Ferrante</p> |
| 18:30 - 19:30 | <p>Software Presentation (Peter Chalk Hall A)**</p> <p>Stuart Dodd, Wallingford Software Ltd</p>  |
| 19.30         | <p>Conference Barbeque,<br/>Reed Hall, Streatham Campus, University of Exeter</p>   |

# CCWI2005 Presentation Schedule

Day 2: Tuesday 6<sup>th</sup> September 2005

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| 09:00 - 09:40 | Plenary Invited Lecture - Newman Hall A (Chair: Soon-Thiam Khu)<br>'Practical Approaches to Modelling Leakage and Pressure Management in Distribution Systems' by Mr A Lambert, International Leakage Consultant  |
| 09:50 - 10:50 | <p><i>Parallel Session 1: Planning, Optimisation and Decision Support Methodologies (Peter Chalk Hall A)</i><br/>(Chair: Orazio Giustolisi)</p> <p>9.50 - Sustainable modelling: The road from single use throw away models to ongoing operation support tools<br/>S Tomić</p> <p>10.10 - Water distribution systems optimisation and technical performance assessment<br/>P Duarte, R Farmani, H Alegre, D Savic, G Walters &amp; J Monteiro</p> <p>10.30 - Optimizing water system improvement for a growing community<br/>Z Wu, T Walski, G Naumick, J Dugandzic &amp; R Nasuti</p> <p><i>Parallel Session 2: Data Management, Calibration &amp; Monitoring of WDS (Newman Hall C) (Chair: Jim Uber)</i></p> <p>9.50 - Calnet project: Building and updating water distribution models from GIS + CIS + O&amp;M + SCADA<br/>F Martínez, V Hernández, H Bartolín, V Bou, F Alvarruiz &amp; J M Alonso</p> <p>10.10 - Pattern matching of live data to implement proactive network management<br/>S Mustard &amp; M Thornton</p> <p>10.30 - Optimal location of water quality sensors in supply systems by multiobjective genetic algorithms<br/>P B Cheung, O Piller &amp; M Propato</p> <p><i>Parallel Session 3: Steady-state and Transient Analysis, Modelling and Simulation (Newman Hall B)</i><br/>(Chair: Tiit Koppel)</p> <p>9.50 - Hydraulic transients for diagnosis of inline valves in water transmission pipelines<br/>D Misiunas, A Simpson, M Lambert &amp; G Olsson</p> <p>10.10 - Systematic protection for worst case transient loadings in pipeline systems<br/>B Jung, B Karney &amp; A Colombo</p> <p>10.30 - Hydraulic transients generated by bursts in a great length pipeline and study of its protection system using air valves and automatic valves<br/>V Espert, J García-Serra, J B Torregrosa &amp; F A Zapata</p> |
| 10:50 - 11:30 | Coffee  |
| 11:30 - 12:50 | <p><i>Parallel Session 1: Planning, Optimisation and Decision Support Methodologies (Peter Chalk Hall A)</i><br/>(Chair: Lydia Vamvakieridou-Lyroudia)</p> <p>11.30 - An EXCEL-MATLAB based decision making framework and its application in urban water management<br/>S Liu, D Butler, C Makropoulos &amp; F Memon</p> <p>11.50 - A semi-analytical approach to least-cost design of branched water distribution networks<br/>A Babayan, D A Savic &amp; G A Walters</p> <p>12.10 - Object-oriented risk analysis of urban water infrastructure<br/>H Li, J Yan &amp; K Vairavamoorthy</p> <p>12.30 - LEMMO: Hybridising rule indication and NSGA II for multi-objective water systems design<br/>L Jourdan, D W Corne, D Savic, G Walters</p> <p><i>Parallel Session 2: Demand, Resource &amp; Loss Management &amp; Forecasting (Newman Hall C)</i><br/>(Chair: Olivier Piller)</p> <p>11.30 - A new look at peaking factors<br/>X Zhang &amp; S G Buchberger</p> <p>11.50 - Peak water demand for small towns<br/>C Tricarico, G de Marinis, R Gargano, A Leopardi</p> <p>12.10 - Preliminary results of water losses research in sections of Belgrade Water Supply System and developing of technical guidelines and procedures<br/>B Babić, D Prodanović &amp; M Ivetić</p> <p><i>Parallel Session 3: Steady-state and Transient Analysis, Modelling and Simulation (Newman Hall B)</i><br/>(Chair: Angus Simpson)</p> <p>11.30 - Extension of EPANET for pressure driven demand modeling in water distribution system<br/>P Cheung, J E Van Zyl &amp; L Reis</p> <p>11.50 - Hydraulic power analysis of flows in water distribution network<br/>T Koppel, L Ainola &amp; A Vassiljev</p> <p>12.10 - Modelling the Cambridge water supply system<br/>J Brock</p>   |
| 12:50 - 14:30 | Lunch   |

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| 14:30 - 15:30 | <p><i>Parallel Session 1: Planning, Optimisation and Decision Support Methodologies (Peter Chalk Hall A)</i><br/> <b>(Chair: Slobodan Simonovic)</b></p> <p>14.30 - Optimal valve location in rehabilitation and design of pipe networks using a scatter search metaheuristic procedure<br/> S Liberatore &amp; G Sechi</p> <p>14.50 - Rehabilitation scheduling of water distribution systems based on multi-objective genetic algorithms<br/> S Alvisi &amp; M Franchini</p> <p>15.10 - A multiobjective optimisation approach for the rehabilitation of hydraulic networks under uncertain demands<br/> C Tricarico, Z Kapelan, D Savic &amp; G de Marinis</p>  |
|               | <p><i>Parallel Session 2: Demand, Resource &amp; Loss Management &amp; Forecasting (Newman Hall C) (Chair: Allan Lambert)</i></p> <p>14.30 - Evaluation of unaccounted for water and real losses in water distribution networks by hydraulic analysis of the system considering pressure dependency of leakage<br/> M Tabesh, A H Asadiani Yekta &amp; R Burrows</p> <p>14.50 - The effect of pressure on leakage in water distribution systems<br/> J E van Zyl &amp; C R I Clayton</p> <p>15.10 - Leakage reduction and customer level of service improvement by pressure management<br/> N Dias, D Covas &amp; H Ramos</p>  |
|               | <p><i>Parallel Session 3: Water quality modelling, Performance, Security &amp; Reliability (Newman Hall B)</i><br/> <b>(Chair: Massimo Greco)</b></p> <p>14.30 - Structural integrity and water quality in water distribution networks<br/> D M Cook, J B Boxall, S J Hall &amp; E Styan</p> <p>14.50 - Water quality modelling by numerical solution of ADE using an integrated model<br/> S M Kashefipour, A A Tavakoli &amp; R A Falconer</p> <p>15.10 - A methodology for pollution source location in water distribution system<br/> C Di Cristo, A E De Sanctis &amp; A Leopardi</p>   |
| 15:30 - 16:10 | Tea  |
| 16:10 - 17:10 | <p><i>Parallel Session 1: Planning, Optimisation and Decision Support Methodologies (Peter Chalk Hall A)</i><br/> <b>(Chair: Maria da Conceição Cunha)</b></p> <p>16.10 - Fuzzy approach to the uncertainty analysis of the water distribution network of Becej<br/> N Branislavljevic &amp; M Ivetic</p> <p>16.30 - Fuzzy DSS model for water network design optimisation<br/> L S Vamvakieridou-Lyroudia, G Walters and D Savic</p> <p>16.50 - A mixed optimization-simulation technique for complex water resource systems analysis<br/> G M Sechi &amp; A Sulis</p> <p><i>Parallel Session 2: Demand, Resource &amp; Loss Management &amp; Forecasting (Newman Hall C)</i><br/> <b>(Chair: Luisa Fernanda R. Reis)</b></p> <p>16.10 - Uncertainties of leak detection by means of hydraulic transients from the lab to the field<br/> D Covas, H Ramos, A Young, N Graham &amp; C Maksimovic</p> <p>16.30 - Frequency-domain hypothesis testing approach to leak detection in a single fluid line<br/> A C Zecchin, L B White, M F Lambert &amp; A R Simpson</p> <p>16.50 - A numerical investigation into the behavior of leak openings in UPVC pipes under pressure<br/> A M Cassa, J E van Zyl, &amp; R F Laubscher</p> <p><i>Parallel Session 3: Water quality modelling, Performance, Security &amp; Reliability (Newman Hall B)</i><br/> <b>(Chair: Richard Burrows)</b></p> <p>16.10 - Discolouration Risk Modelling<br/> N Dewis &amp; M Randall-Smith</p> <p>16.30 - An evidential reasoning approach to evaluate intrusion vulnerability in distribution networks<br/> R Sadiq, Y Kleiner &amp; B Rajani</p> <p>16.50 - Quality optimisation models in water networks<br/> R Pérez, J Quevedo, A Gil, G. Cembrano, V Puig &amp; J Figueras</p> |
| 19.30         | <p>Gala Dinner<br/> Devonshire House, Streatham Campus, University of Exeter</p>   |

## CCWI2005 Presentation Schedule

Day 3: Wednesday 7<sup>th</sup> September 2005

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| 09:00 - 10:00 | Plenary Invited Lecture - Newman Hall A (Chair: Dragan Savic)<br>‘Water for the World - Why is it so Difficult?’<br>Mr J K Banyard, OBE, formerly Director of Asset Management, Severn Trent Water Ltd., UK   |
| 10:10 - 11:10 | <i>Parallel Session 1: Planning, Optimisation and Decision Support Methodologies (Peter Chalk Hall A)</i><br>(Chair: Manuel Malafaya-Baptista)<br>10.10 - An ant colony non-dimensional algorithm for water distribution systems optimal design and operation<br>A Ostfeld & A Tubaltzev<br>10.30 - Simulated annealing reaches "Anytown"<br>J Sousa, M Cunha & J Almeida Sá Marques<br>10.50 - Optimal design of water distribution systems using cross entropy<br>L Perelman &, A Ostfeld |
|               | <i>Parallel Session 2: Urban Drainage &amp; Data Management, Calibration &amp; Monitoring of WDS (Peter Chalk Hall B)</i><br>(Chair: Ole Mark)<br>10.10 - Modelling floodwater in urban drainage<br>E J Gill & R D Aradas<br>10.30 - FastNett optimised flooding solutions<br>R Long & S Hogg<br>10.50 - Transition rule configuration for cellular automata based optimal sewerage design<br>G Yufeng, G Walters, S-T Khu & E Keedwell   |
|               | <i>Parallel Session 3: Demand, Resource &amp; Loss Management &amp; Forecasting (Newman Hall C) (Chair: Bogumil Ulanicki)</i><br>10.10 - Adaptive feedback regulation of water pressure<br>G E Chamilothis & F Repoulias<br>10.30 - A web-based water resources simulation and optimization system<br>K Fedra & N Harmancioglu<br>10.50 - Operative control of outflows from system of reservoirs during the flood passage<br>M Stary, P Dolezal & H Kralova                                |
|               | <i>Parallel Session 4: Water quality modelling, Performance, Security &amp; Reliability (Newman Hall B)</i><br>(Chair: Roberto Guercio)<br>10.10 - Automated critical asset analysis (CAA)<br>T Merrifield<br>10.30 - Improving the electronic security of water control systems<br>P Davis<br>10.50 - Optimal allocation of monitoring stations aiming at an early detection of intentional contamination of water supply systems<br>L Cozzolino, C Mucherino, D Pianese & F Pirozzi       |
| 11:10 - 11:30 | Coffee  |

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| 11:30 - 12:50 | <p><i>Parallel Session 1: Urban Drainage &amp; Data Management, Calibration &amp; Monitoring of WDS (Peter Chalk Hall B)</i><br/> <b>(Chair: Murray Dale)</b></p> <p>11.30 - Realtime control of sewer systems developing solutions for the water industry<br/> D M Unwin, A J Saul</p> <p>11.50 - Aspects and effectiveness of real-time control in urban drainage systems combining radar rainfall forecasts, linear optimization and hydrodynamic modelling<br/> H Verworn &amp; S Krämer</p> <p>12.10 - Sewer flooding register development: Building on the present to fulfil the future<br/> J Perriam, M Roden &amp; N Muggeridge</p>  |
|               | <p><i>Parallel Session 2: Demand, Resource &amp; Loss Management &amp; Forecasting (Newman Hall C)</i> <b>(Chair: Rudi Gargano)</b></p> <p>11.30 - A methodology to assess current and past municipal surface water supply vulnerabilities: An application to Quebec municipalities<br/> È Nantel, A Mailhot, A N Rousseau &amp; J P Villeneuve</p> <p>11.50 - Water resources allocation management as an alternative solution of the water shortage problem in Libya<br/> E Wheida &amp; R Verhoeven</p> <p>12.10 - Assessing the risk of water supply in drought prone areas<br/> M Genco, C Arena &amp; M R Mazzola</p>   |
|               | <p><i>Parallel Session 3: Water quality modelling, Performance, Security &amp; Reliability (Newman Hall B)</i><br/> <b>(Chair: Sergio Coelho)</b></p> <p>11.30 - Assessing the spatial distribution of pressure head in municipal water networks<br/> I Pallavicini, R Magini, R Guercio</p> <p>11.50 - Water supply looped systems design. Pipe failure and pressure distributions. Pressure restrictions and design procedures.<br/> M Malafaya-Baptista</p> <p>12.10 - Quantifying the performance of water distribution system as a result of failure<br/> M A M Mansoor, S D Gorantiwar &amp; K Vairavamoorthy</p> <p>12.30 - Investigation of burst-prediction formulas for water distribution systems by evolutionary computing<br/> L Berardi, D Savic &amp; O Giustolisi</p> |
| 12:50 - 13.10 | <p>Plenary Session - Newman Hall A<br/> Conference Review and Formal Closure</p>  |
| 13.10 - 14:30 | <p>Lunch</p>  |