

# Urban Developer

## Next generation software tool for urban water management



Urban Developer can model and assess systems based on multiple and alternative service delivery strategies, for successful Integrated Urban Water Management (IUWM).

This next generation software tool from eWater challenges the conventional silo approach to modeling the different streams of the urban water cycle of stormwater, waste water, water supply and re-use options.

As these streams are intrinsically related, Urban Developer lets users explore the interaction between these design elements over a range of spatial and temporal scales, and lets users explore questions such as what is the best balance between reticulated water and alternative supplies—such as rainwater tanks—to give the best outcome in terms of water security, hydrological impacts and understand the impacts of these on ecological sustainability.

Urban Developer can model scenarios ranging spatially from the individual block, through to cluster level, over temporal scales from a five minute storm burst to continuous modeling over months or years. In this respect, Urban Developer has the versatility to answer a wide range of technical questions with regard to the urban water cycle, and how allotment level decisions can impact on mains supply, stormwater and wastewater at a larger scale.

Urban Developer lets users examine, design and assess how a system based on water-sensitive urban design principles will operate. The modelling framework is equally applicable to brown and greenfield sites, and can also be used to explore issues such as urban renewal by enabling exploration of innovative service delivery strategies.

With a focus on water quantity and the total water cycle, Urban Developer complements eWater's popular product MUSIC, which is designed for stormwater quality management.

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### KEY FEATURES:

- Conceptual and preliminary design tool that replaces current manual processes;
  - Clearly represent all three urban water cycle services and the interaction inherent between them – potable, waste and stormwater;
  - Deal with probabilistic demand and end-use simulation;
  - Analyse models using either continuous rainfall and climate data over long periods or using design storm events;
  - Integrate systems at a range of spatial scales;
  - Explore the effects of rainwater harvesting; and
  - Powerful capacity for upscaling and downscaling.
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## The need for Urban Developer

Australia's urban centres need security of water supplies to meet the challenges raised by growing populations, economic growth and changing climatic conditions. Systems that are put in place in the next few years must also be able to respond to future needs, as well as maintaining environmental quality in the waters that receive urban drainage.

Integrated or total water cycle management strategies are being explored for their ability to provide long term security and service integrity to urban water cycle services. Integrated strategies are seen as being able to allow identification of opportunities not otherwise apparent when separate strategies are developed for each service in isolation.

Around Australia and internationally, integrated service delivery strategies have been shown to offer outcomes including greater resource efficiency, reduced environmental impacts, extended asset life and – importantly – increased water supply security.

Urban Developer lets water managers conceive and plan IUWM strategies. No other existing software for urban water management provides such consistent, and detailed, evaluation of integrated options.



## How it works

Urban Developer has in-built network hierarchies that make it possible to consider system links directly, from one scale to another, or between standard water supply options and alternatives. The program makes it relatively simple to integrate the scales and systems that make up urban water and to explore relationships across their boundaries. Users can then examine the available range of sources and sinks critically, and evaluate all possible internal loops and interactions.

Demand predictions are provided by an innovative new approach to urban water use modeling that stochastically simulates individual end-uses (outdoor, shower, washing machine, toilet, tap etc) at the household scale at sub-daily time steps, for multiple households (100-1000s).

For the indoor end-uses, differences in household size, uptake rates of water efficient appliances and diurnal variation in end-uses can be simulated. This provides ability to incorporate various demand management scenarios.

For outdoor water use, variations in outdoor water use with prevailing weather conditions (e.g. rainfall and temperature) can be simulated. This provides reliable predictions of reductions in mains water demand when evaluating source substitution and/or re-use options.

The system dynamics of sub-allotment elements also requires the use of short time-steps to adequately represent their rapid responses to system fluxes, particularly those associated with stormwater. Urban Developer can employ time-steps of seconds, where necessary, to capture these dynamics.

## Integrated urban water cycle model

Urban Developer has been designed to evaluate system performance at a range of scales and within their corresponding response timeframes – from the single house block through to a redevelopment or cluster level.



Allotment



Cluster

## Want to know more?

Go to our website at [www.ewater.org.au](http://www.ewater.org.au)  
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