



eWater

Source Urban

For Urban Water Managers

Tony McAlister
Managing Director, BMT WBM

National modelling and urban water

Urban centres are inextricable links to our river basins and coastal waters through direct and indirect importation and export of water.

A fully integrated national modelling platform therefore must include a suitable suite of urban water simulation tools.

'Sustainable' urban water management

Key challenges facing Australian cities

- Highly variable climate (spatial & temporal)
 - High per capita water use
 - Widely distributed population
 - Ageing infrastructure
 - Degraded and over exploited catchments
 - Resource security issues (quantity & quality)
 - Water trading – Water grids
- **All within a somewhat uncertain climate change paradigm**

Integrated Urban Water Management (IUWM)

An integrated approach to urban water planning which can identify opportunities that are not apparent when separate strategies are developed

The results of better integration are more sustainable solutions and substantial cost savings for communities

The challenges of IUWM

- How to examine, test and predict how the whole-of-system will work?
- How to examine environmental responses?
- What about sustainability?
- How to understand urban water processes:
 - Varying timescales
 - Varying spatial scales
 - Processes that feedback between each other
 - Water quantity and quality processes

IUWM - existing tools

Existing tools are deficient

- Spatial and temporal scale coverage of existing urban water cycle models
- Inability to informatively link system operations across scales
- Limitations in process representation
- Limited flexibility with respect to network configuration and definition
- No continuous simulation framework

Integrated water system models



music – new version due for release

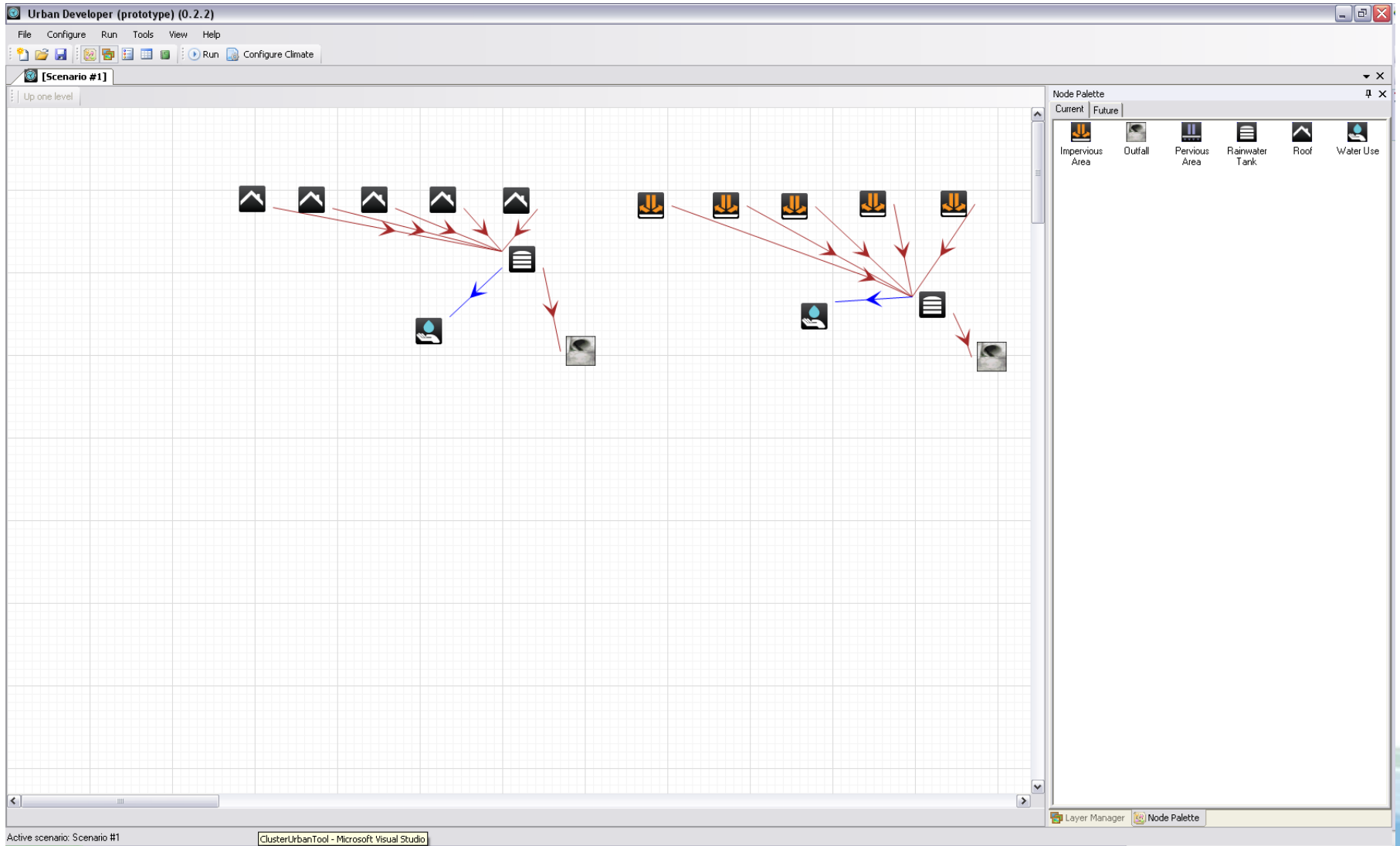
Version 4 offers:

- Greater flexibility, better performance
- Expanded options in modelling WQ and bioretention
- Expanded stormwater re-use functionality
- Improved life-cycle costing
- Improved simulation of large catchments
- Better reporting
- Easier calibration
- Better training, support and documentation

Urban Developer

The screenshot displays the 'Urban Developer (prototype) (0.2.2)' software interface. The main workspace is a grid where a scenario diagram is being built. The diagram consists of three main components, each starting with a black upward-pointing arrow icon. The top-left component is a yellow box labeled 'Rainwater Tank 2', which has a blue arrow pointing to a water tap icon and a red arrow pointing to a grey circular icon. The top-right component is a grey circular icon with a red arrow pointing to a document icon, which then has red arrows pointing to a water tap icon and a downward-pointing arrow icon. The bottom component is a grey circular icon with a red arrow pointing to a document icon, which then has red arrows pointing to a water tap icon and a downward-pointing arrow icon. A 'Node Palette' on the right side of the interface shows icons for 'Impervious Area', 'Outfall', 'Pervious Area', 'Rainwater Tank', 'Roof', and 'Water Use'. The 'Current' and 'Future' tabs are visible at the top of the palette. The bottom status bar indicates 'Active scenario: Scenario #1'.

Urban Developer



Urban Modelling – Conclusions

Future in urban water management field looks bright

- New and improved models in the pipeline
- Supported by DSS, associated web based infrastructure and ongoing research
- Likely to be embraced by regulatory and consulting community (like music in the past)
- Should enable us to improve sustainability within our urban developments, within a local and whole of catchment context