



# CATCHMENT MODELLING

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Our catchment modelling work underpins much of our planning and focuses on the investigation of the water resources of urban and rural catchments, under the effects of land use, land management, water diversion, climate variability, and climate change.

Our aim is to combine high level modelling at a variety of scales with knowledge of physical, hydrological, and ecological processes to generate meaningful answers for our clients. We are highly skilled at modelling the loads and concentrations of sediment and nutrients generated as runoff from catchments, and the delivery of flows through river systems. We are a national leader in the integrated modelling of catchment hydrology with ecological response and management models.

We see modelling not an end in itself, but a process of developing a system understanding of information to make predictions and decisions. Sometimes, that process is even more important than the model that is ultimately developed.

## Why Alluvium

### **Multidisciplinary approach**

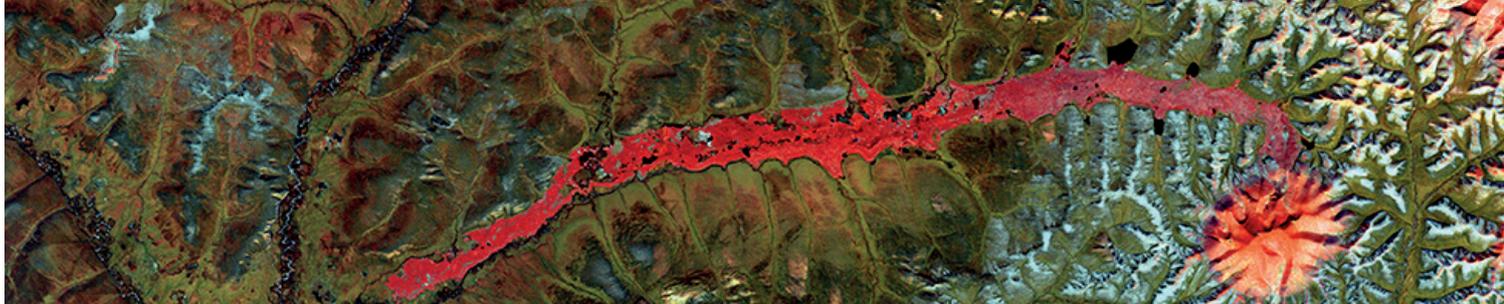
Our modellers work side by side with our geomorphologists, economists and hydrologists to ensure we produce an integrated product and that the recommendations we give clients are based on the best available knowledge.

### **Modelling strength**

At a catchment scale we pride ourselves in being able to bring together the river operations modelling with other hydrological approaches such as Source catchments. We are intimately involved with the further development of these models and have active links with research organisations such as CSIRO.

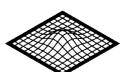
### **Use of best practice software**

Our people work across a range of modelling platforms. We are highly skilled in Source, MUSIC, SedNET, CatchmentSIM, Rainfall Runoff Library, Water Quality Analyser, Python, R, and a multitude of data and GIS processing tools. We were also directly involved in the development and testing of most of the eWater software through our involvement in the CRC for Catchment Hydrology and the eWater CRC and have provided training in various modelling approaches and software packages across Australia and internationally.



### **Catchment hydrology**

Our staff have been integral in the development and implementation of most of the commonly used tools for assessing urban water futures (such as Source Urban Developer and MUSIC) and have applied them nationally and internationally.



### **Modelling tools**

We are very experienced across the suite of eWater modelling tools, including, AUSRIVAS, Eco-Modeller, MUSIC, Source, RRL, SCL, RAP, WQA, TIME and Urban-Developer.



### **Ecological response modelling**

Alluvium is highly experienced in ecological response modelling blending expert opinion with quantitative models of ecological responses to physical and biological factors.



### **Assessment of uncertainty**

We have developed and used a range of techniques for assessing model uncertainty, including the direct coupling of parameter estimation with models to allow detailed uncertainty analysis.



### **Understanding of scale**

We are able to rapidly tailor the right type of model to the scale of the question being asked – we don't believe in the one size fits all approach.



### **River operations**

Alluvium's understanding of the requirements of river regulation operations provides the basis for modelling a range of complexity in regulated river systems.