Improvements in River Operations Forecasting using Source

Goulburn River Case Study

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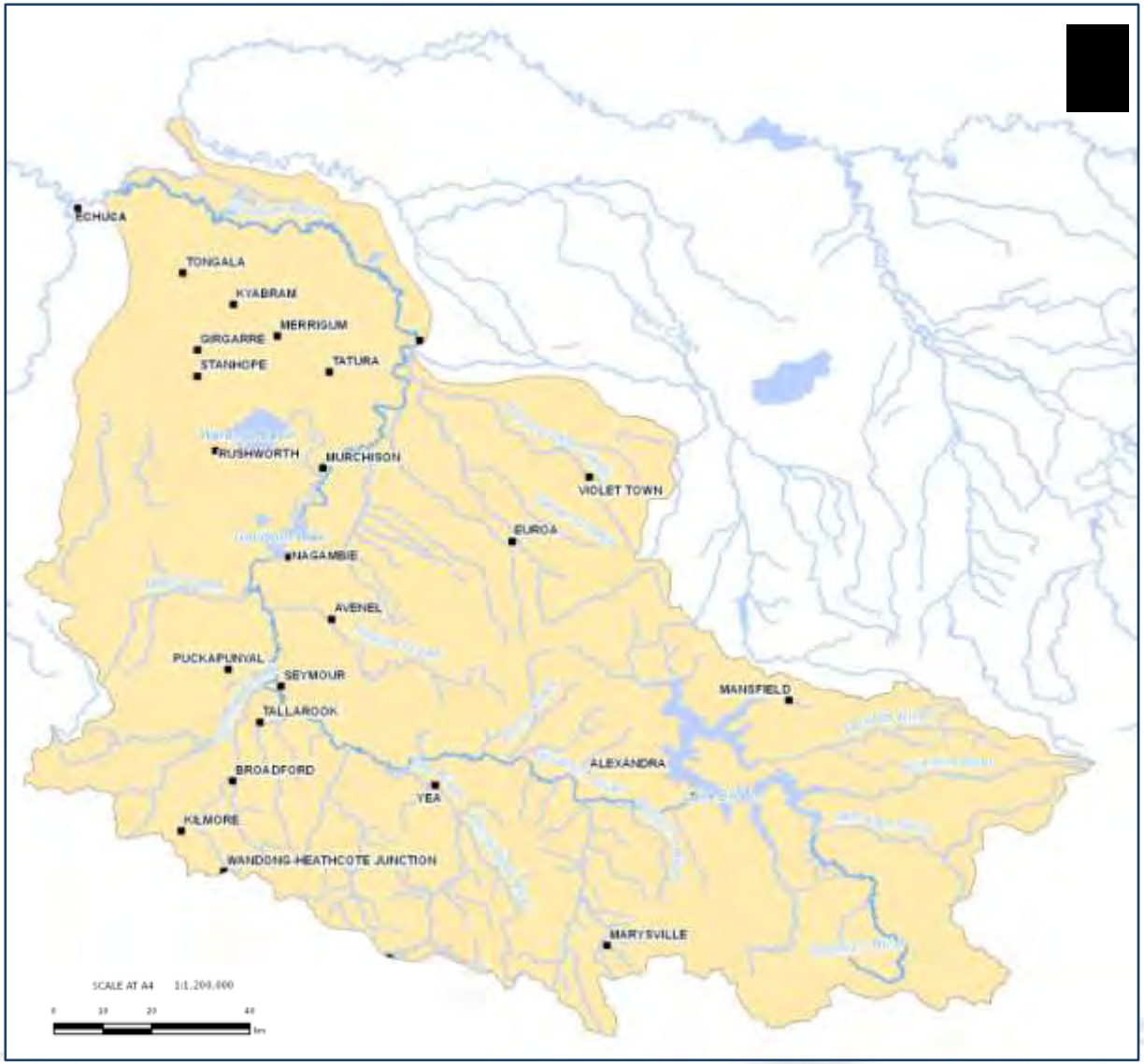
Goulburn-Murray Water

Source 2012
29-30 MAY • CANBERRA

Outline

- Background on Goulburn River system
- Overview of River Operations
- Use of Source for river operations
- Advantages of Source
- Forecasting using Source

Goulburn River System



What do River Operations involve?

Goulburn Weir & Stuart Murray Canal Offtake (TPP, 2010)

Stuart Murray and Cattanach Canals with Waranga Basin in the distance (TPP, 2010)

- Management of water stored in and released from dams
- Regulation of water through the river system
- Management of bulk diversions from the river for consumptive use
- Forecasting and planning

Source MODELLING COMMUNITY eWater

eWater Source (River Operator)

Used in Goulburn River system for

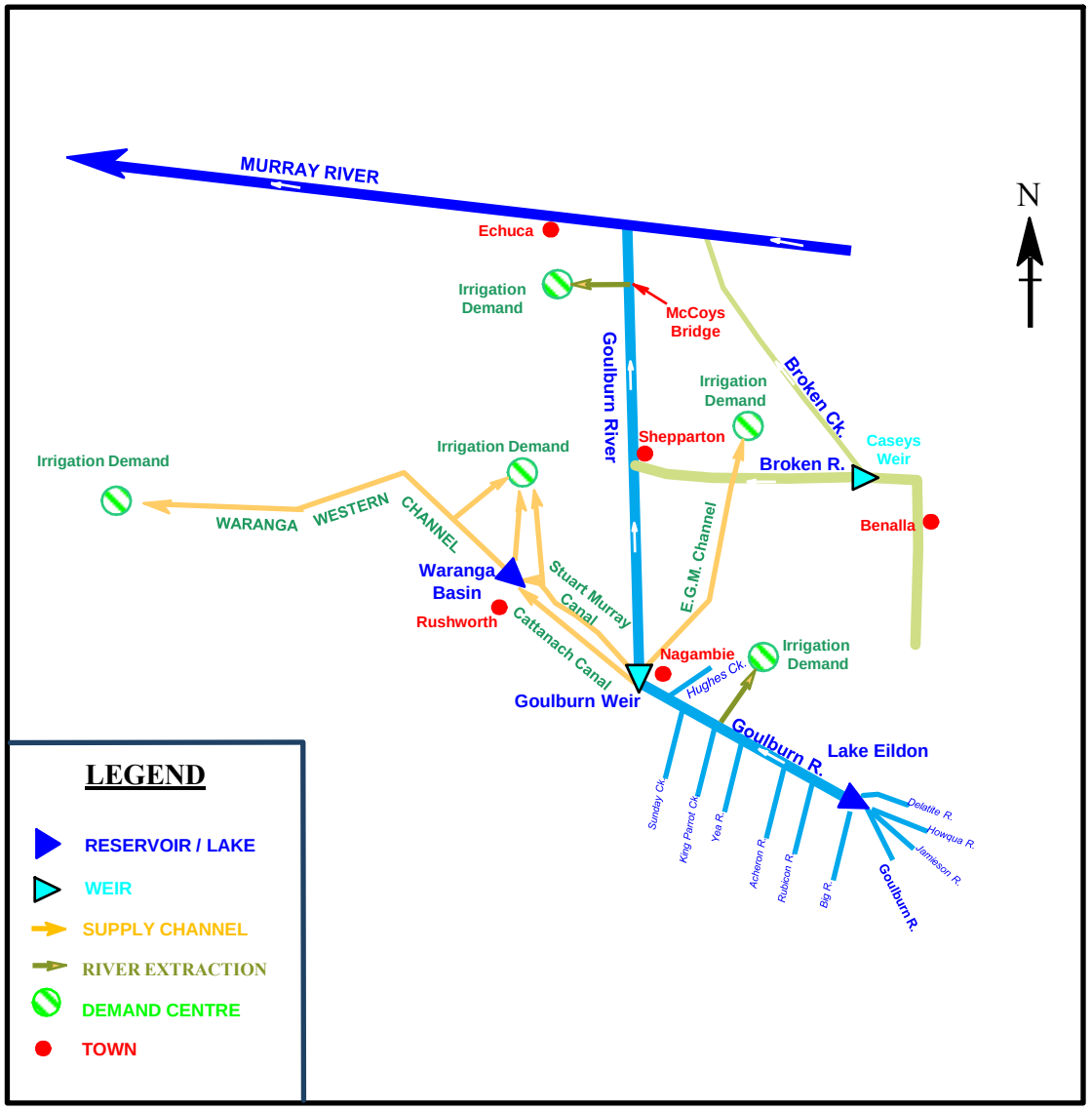
- Planning and forecasting of regulated river operations, including:
  - River flows
  - Tributary inflows
  - Storage levels
  - Environmental flows

Lake Eildon – Goulburn River's main storage (G-MW, 2004)

Goulburn River Schematic

Goulburn Weir (G-MW, 2005)

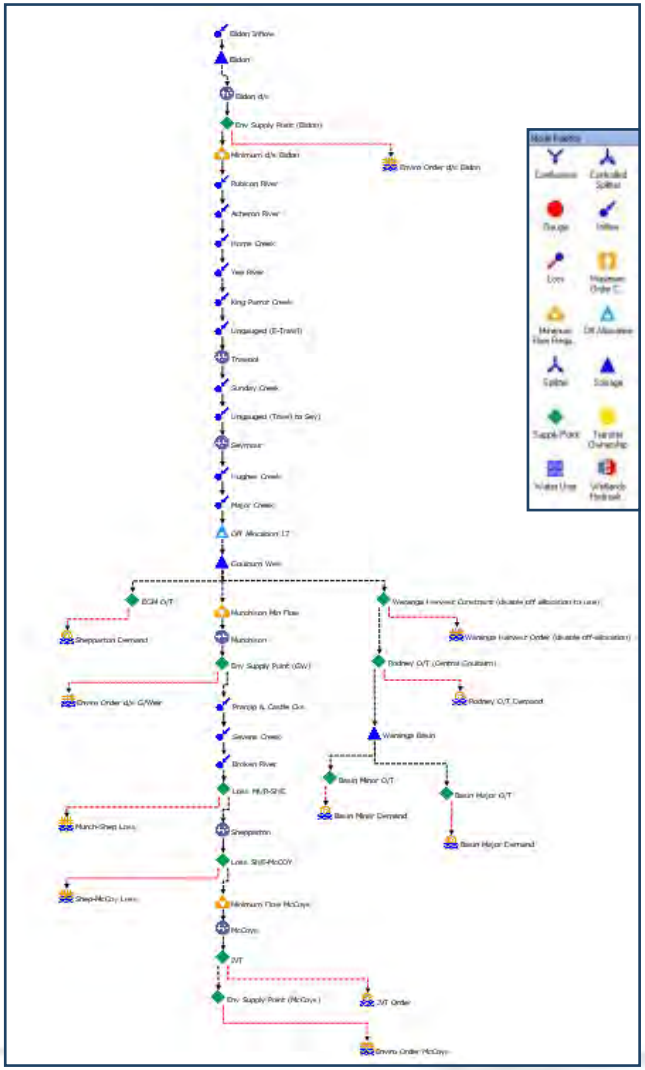
Waranga Basin Drought Pumping (G-MW, 2005)



Advantages of Source: Interface

- Schematic overview
- Tabular Editor to view model output data

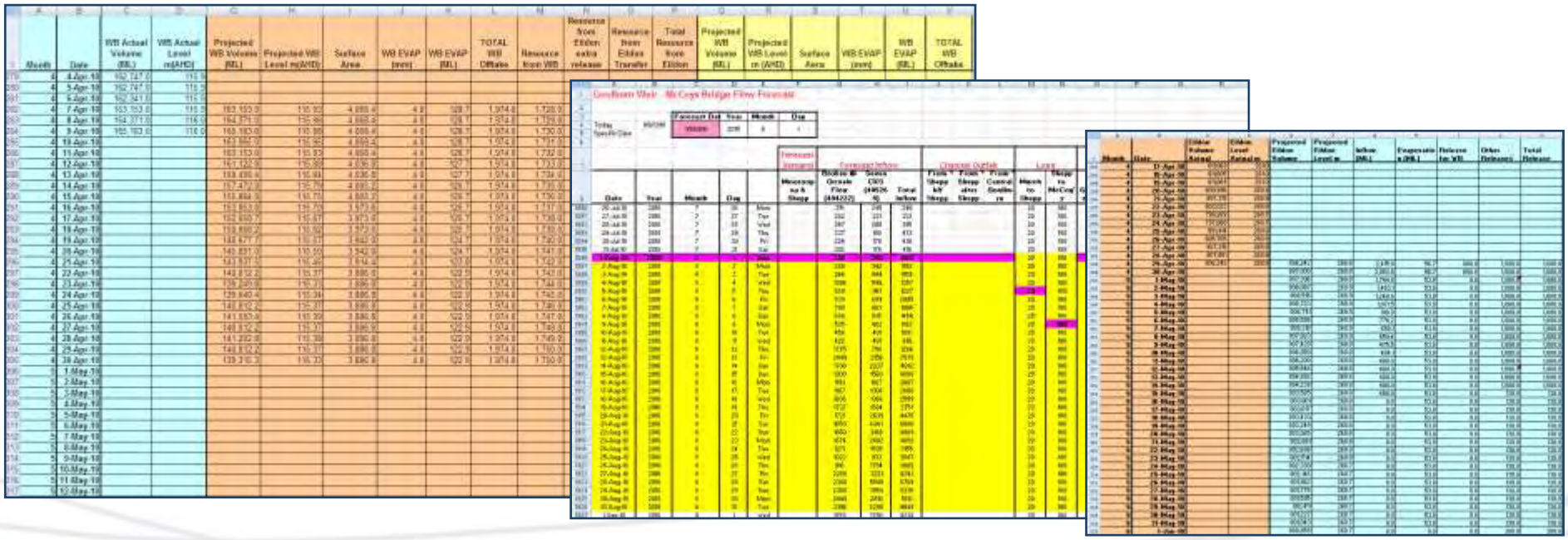
Tabular view of Goulburn River Model outputs



Schematic view of Goulburn River Model

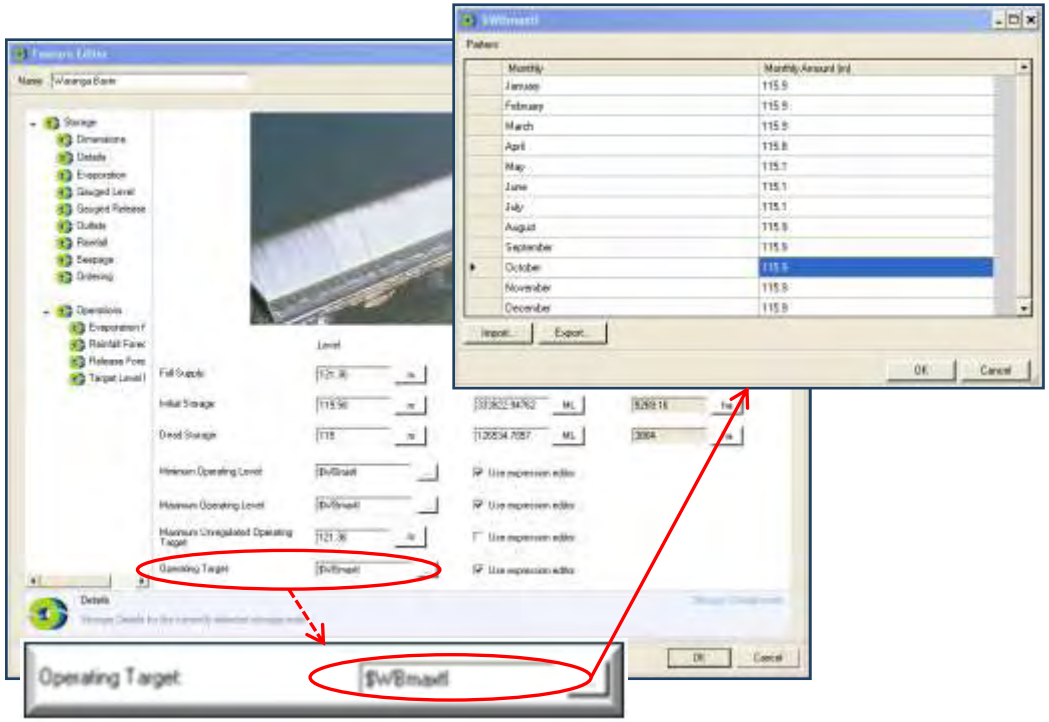
Advantages of Source: Planning Functionality

- Ability to incorporate all planning and forecasting requirements into a single model



Advantages of Source: Use of Logic

- Source provides improved ease of incorporating logic into a model



Target Level configuration in Source IMS

Month as Number	Month	Operating Target (mAHD)
1	January	115.9
2	February	115.9
3	March	115.9
4	April	115.8
5	May	115.1
6	June	115.1
7	July	115.1
8	August	115.9
9	September	115.9
10	October	115.9
11	November	115.9

plus

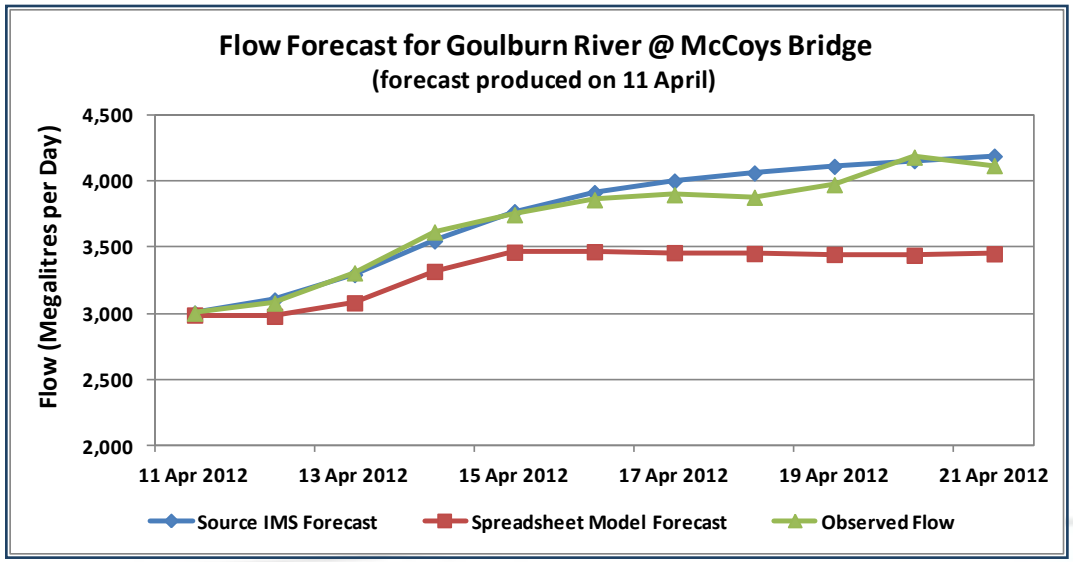
```
=IF(D237<=VLOOKUP(A237,$AK$225:$AM$236,3,FALSE),K238+L238-
(G237-(MAX(0,lininterp(VLOOKUP(A237,$AK$225:$AM$236,3,FALSE),
Rating!$K$13:$L$146,2)))),0)
```

…and some other data

Target Level Configuration in Spreadsheet Model

Forecasting River Flow

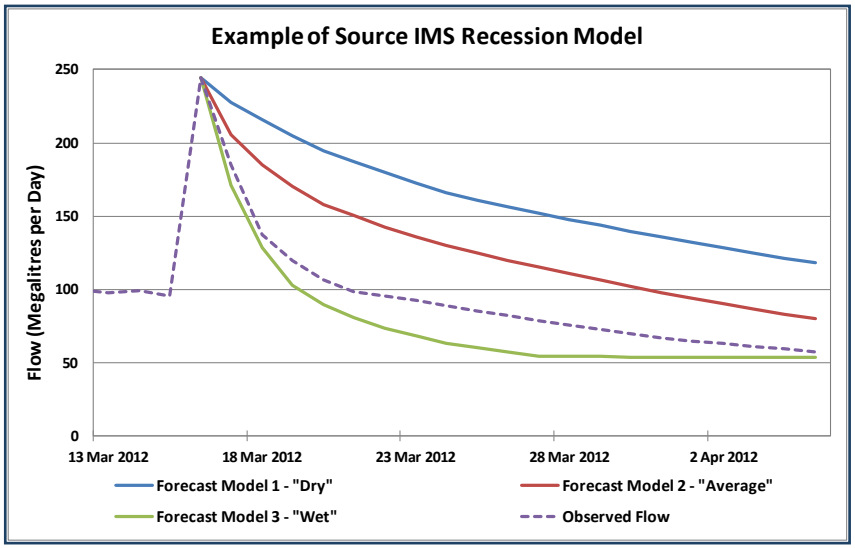
- Produces more accurate river flow forecasts with less user input
- Reduces reliance on user to directly control variables such as travel time and attenuation

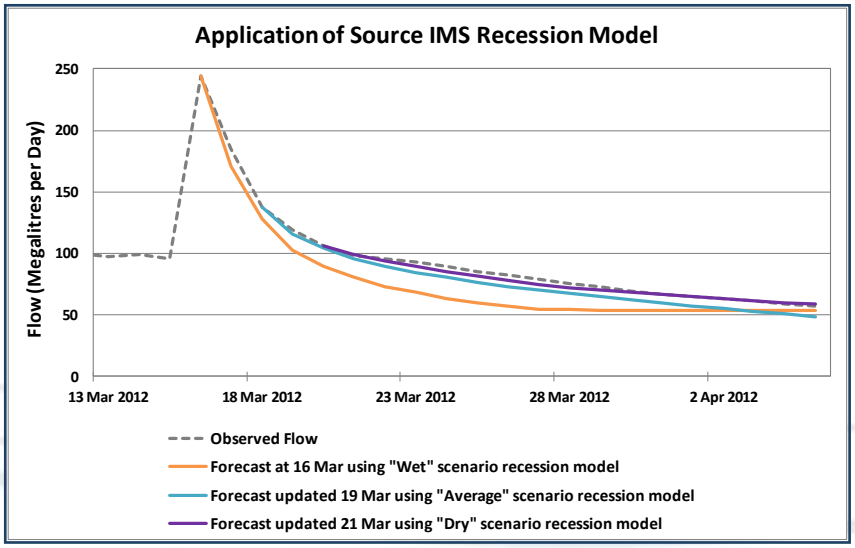


Forecasting Releases from Storage

- Source uses information on system travel times, river losses, tributary inflows and demand inputs to determine the volume of water to be released from storages.
- Forecasting incorporating all of the above was not achievable with a spreadsheet model

Forecasting with Recession Models





- Recession models configured for all tributaries in the Goulburn River model
- These represent 3 parts of recession curve
- Can improve efficiency of river operations and increase water harvesting ability

Source MODELLING COMMUNITY eWater

Summary

Source for River Operations

- Improved interface
- Better planning functionality than existing models
- Easier to incorporate logic into model
- Improved river flow forecasts
- New ability to forecast storage release requirements

Thank you

Contact Details

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Lake Eildon at 9% of capacity
(G-MW, 2003)

Lake Eildon at 99% of capacity
(G-MW, 2011)

Source 2012

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