



# Integrating aquatic ecosystem and water resources modelling

enterprise environment education

# Environmental Water in Australia

Moving from:

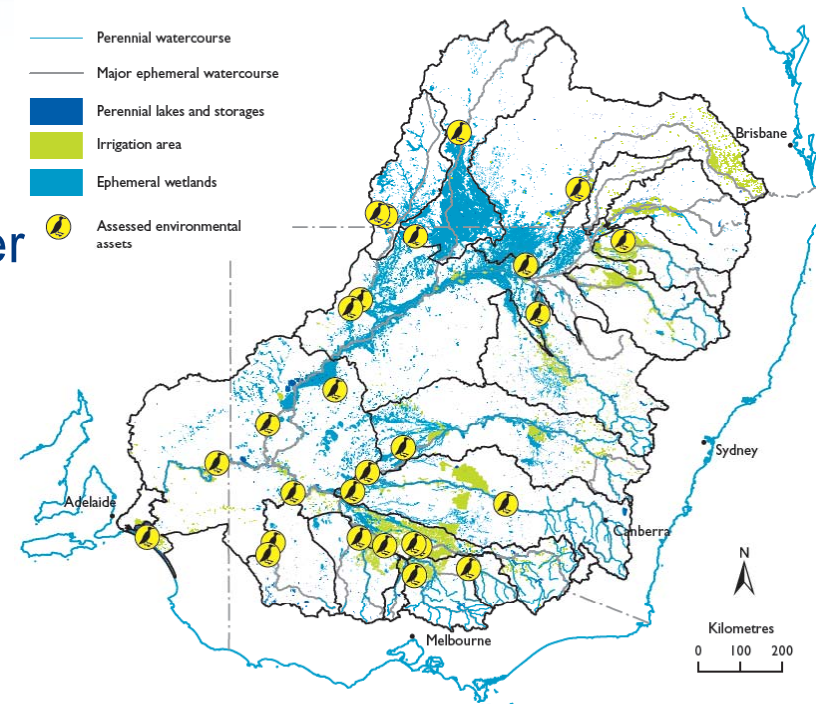
Planning to minimize environmental harm

Towards:

Direct intervention to buy back water for the environment

Example investments:

- Federal - AU\$3.1b directly for water purchase in Murray Darling Basin “Water for the Future”
- State based investment – e.g. NSW RiverBank (AU\$105M)



- To save one of these:



- It cost one or more of these:



We need water allocation and planning methods that are:

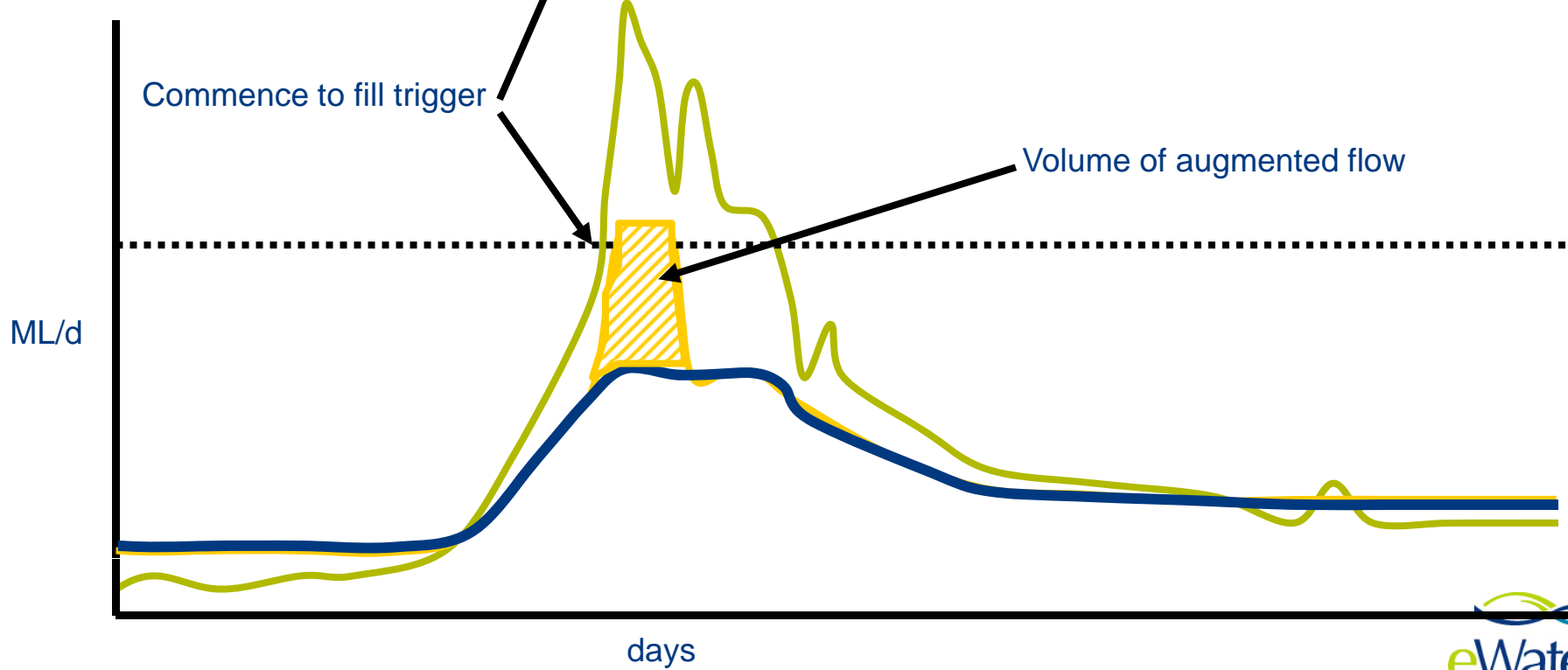
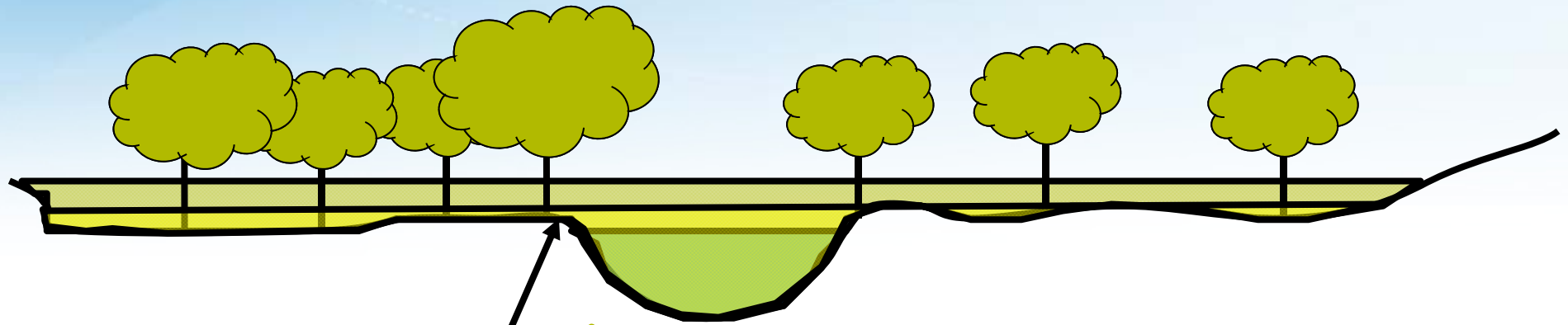
- Rapid
- Robust
- Repeatable
- Defensible
- Expandable

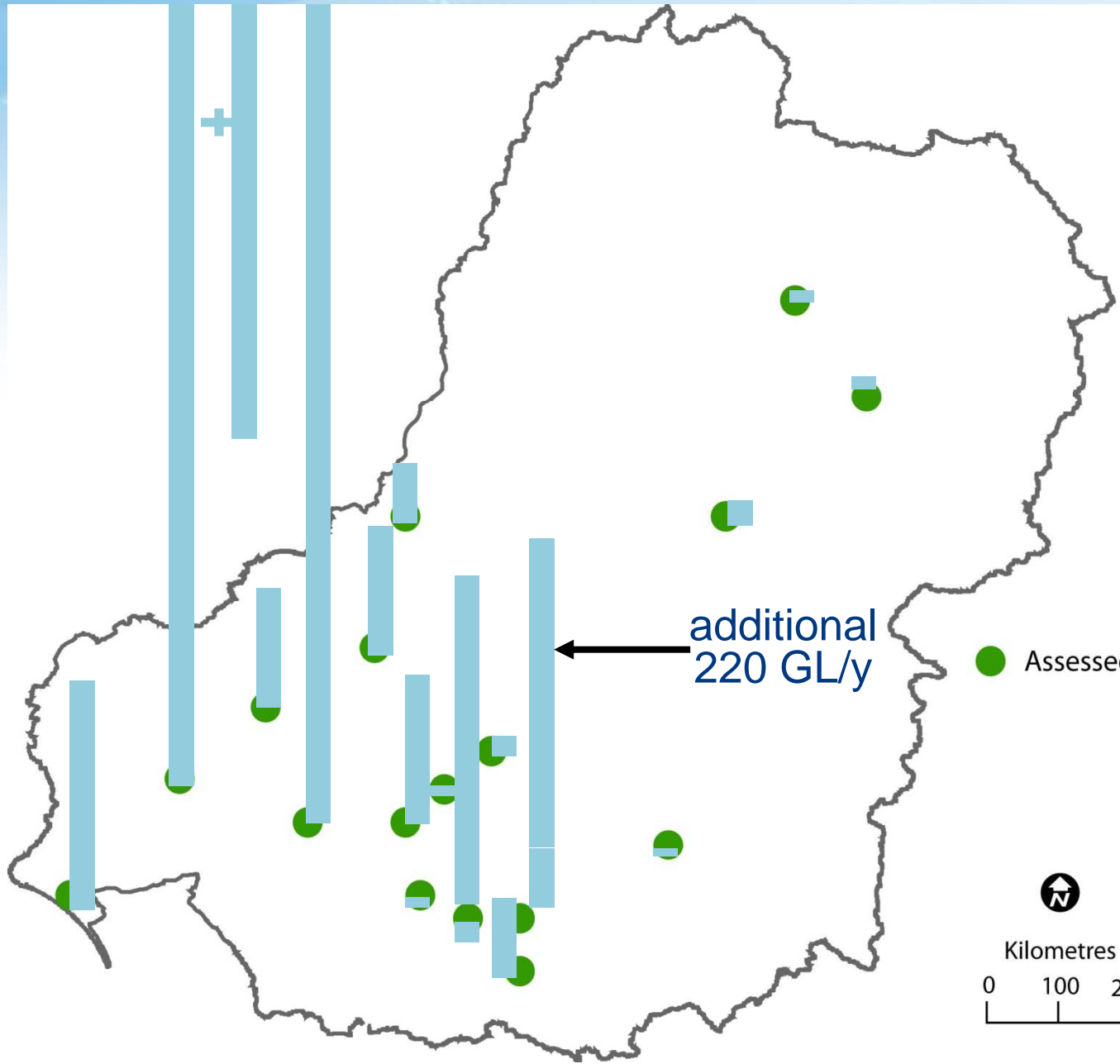
# Two modelling tools to support environmental water planning

(components of eWater Source – integrated modelling package)

1. **Eflow Predictor** – for predicting how much water is required to achieve environmental water demands
2. **Eco modeller** – for comparing the environmental consequences (habitat availability) under different water use scenarios

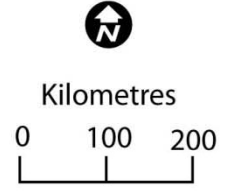
# Eflow Predictor





additional  
220 GL/y

● Assessed sites



# Eco Modeller

## What does it do?

- Quantifies the ecological consequences of different water use scenarios

## How does it do it?

- Quantitative ecological response models are stored in a library of models.
- Eco Modeller can be rerun each time a new flow scenario is considered or ecological models are revised.

The image displays four screenshots of the Eco Modeller software interface:

- Summary View:** Shows the 'Summary' page for the 'Dugong habitat (Direct)' model. It includes a description of the dugong, a photograph, and metadata such as 'Authors: Sylvain' and 'Publication Date: 12/06/2009'.
- Model Library:** A table listing various models in the library, such as 'Blackfish Fry passage', 'Edithra (RC)', and 'Emergent macrophyte desiccation', with columns for 'Model', 'Status', and 'Action'.
- Model Selection:** A dialog box showing a list of selected models with columns for 'Model', 'Conf.', 'Specificity', 'Conf. Source', and 'Conf. Data'.
- Website Interface:** A screenshot of the 'Ecological Modeller Toolkit' website, featuring a search bar and navigation links like 'Home', 'Tools', 'Support', and 'Search'.

# Murray Icon Sites application

- Compare water use scenarios for five key wetlands of the Murray River
- Wetlands range in size from 37,000ha – 66,000 ha



Hattah Lakes (Andy Wise)

Eco Modeller v1.1.0β

Eco Modeller > Builder > Hattah Lakes flathead Gudgeons

Runner **Builder** Manage Library

New Save Copy Delete

Navigation

- Summary
- Function
- Reporting
- Confidence

Summary

Model name: Hattah Lakes Freshwater Catfish \*


Description: freshwater catfish text

Interpretation: the model out put is the proportion of the maximum possible habitat suitability ( 0=bad, 1=excellent)

Limitations: This model is based on the MFAT model for Reg D.

Authors: Marsh, N., Villizi, L.

Location: Hattah Lakes - general principles apply elsewhere, however the commence to fill threshold will



Documentation: MFAT Reg zone D which includes Hattah lakes [View](#) x

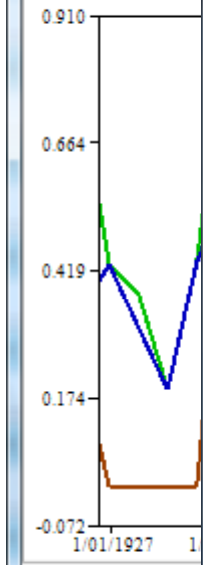
[Add](#) | [Clear All](#)

Name: Hattah Lakes Freshwater Catfish      Confidence: Low/Low/Low      Publication Date:

Description: freshwater catfish text      Authors: Marsh, N., Villizi, L.      Version:

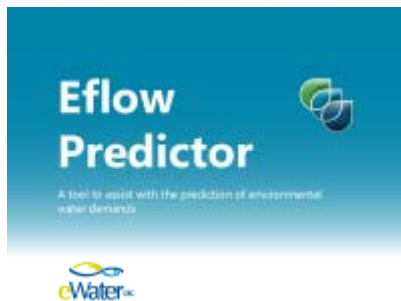
Interpretation: the model out put is the proport      Status: Unpublished

cancel



# Conclusion

To support environmental water planning and allocation eWater has produced two tools;



**Eflow Predictor** – predicts how much water is required to achieve environmental water demands



**Eco modeller** – compares environmental consequences (habitat availability) under different water use scenarios