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## Fish Passage Studies IV: Are Fishways Cost Beneficial?

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# Are fishways cost beneficial?

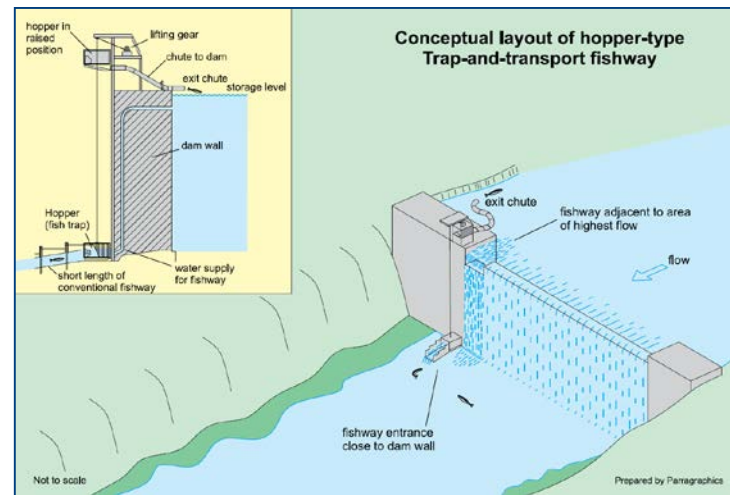
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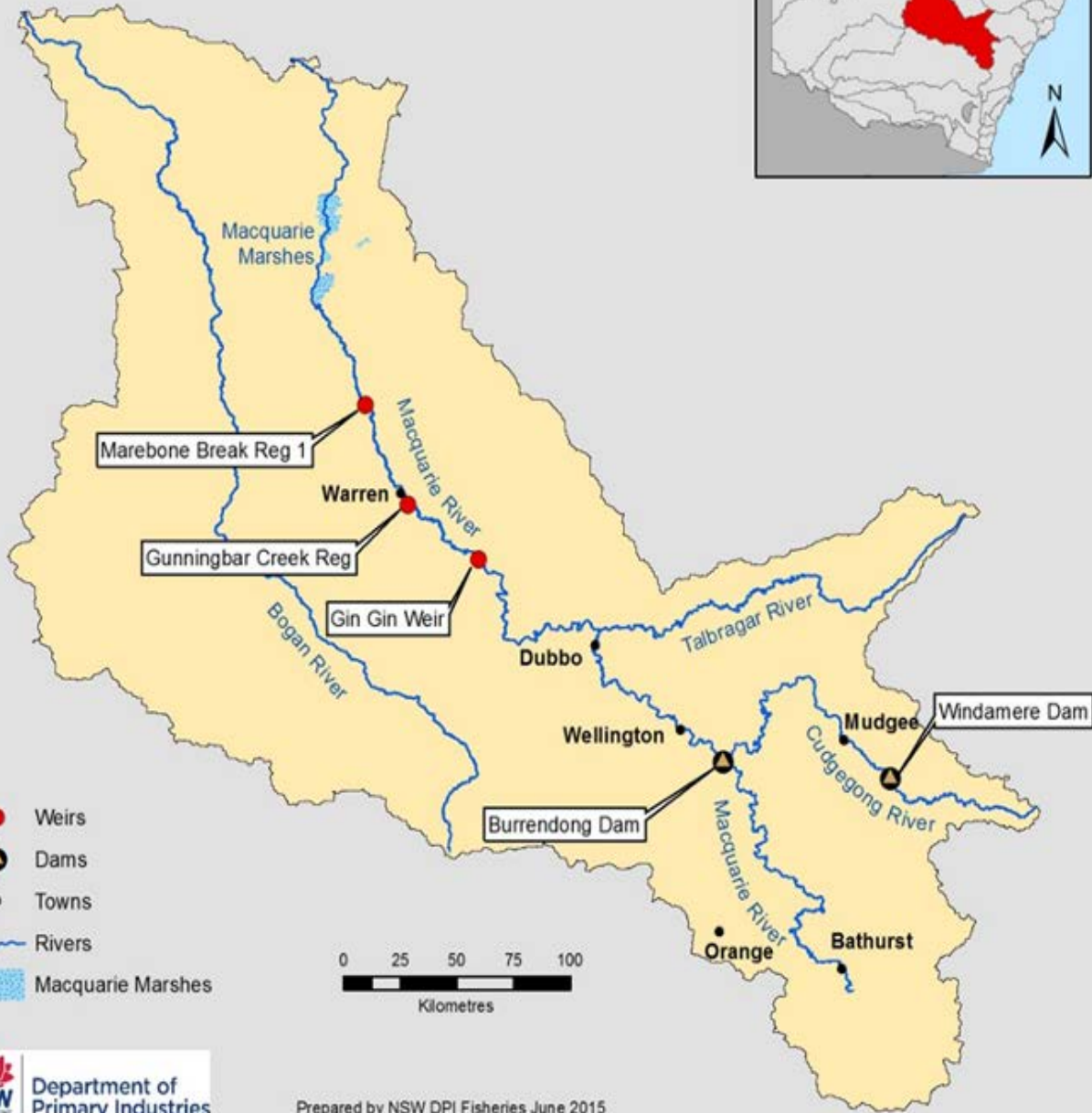
# Burrendong Dam Upgrade

Macquarie River Catchment





# Macquarie River Catchment



# Burrendong Dam Upgrade Fishways

- High Level Fishway - \$75.3 M
- Fishway Offsets (3) - \$18.1 M
- Savings - \$57.2 M
- Cost concerns
- Cost beneficial???

# Cost-Benefit Analysis

- Process of quantifying costs and benefits of a project over a specified period (e.g. 30 years), and those of its alternatives, in order to have a single scale of comparison for unbiased evaluation.
- Employed mainly in financial analyses, it includes those **environmental** and **social** costs and benefits that can be reasonably quantified.
- Strict NSW Treasury Guidelines

# Cost-Benefit Analysis

- **Costs over asset life**
  - **Capital**
  - **Maintenance**
  - **Social**
  - **Environmental**



# Fishway Costs

Cost Component	Burrendong Dam Fishway	Fishways Offsets Program
Capital Expenditure	73,738,000	17,697,000
Maintenance Costs	2,269,000	613,000
Terminal Value	(739,000)	(177,000)
<b>Total Project Costs</b>	<b>75,268,000</b>	<b>18,132,000</b>



# Cost-Benefit Analysis

- **Financial**

- **Social**

- **Environmental**

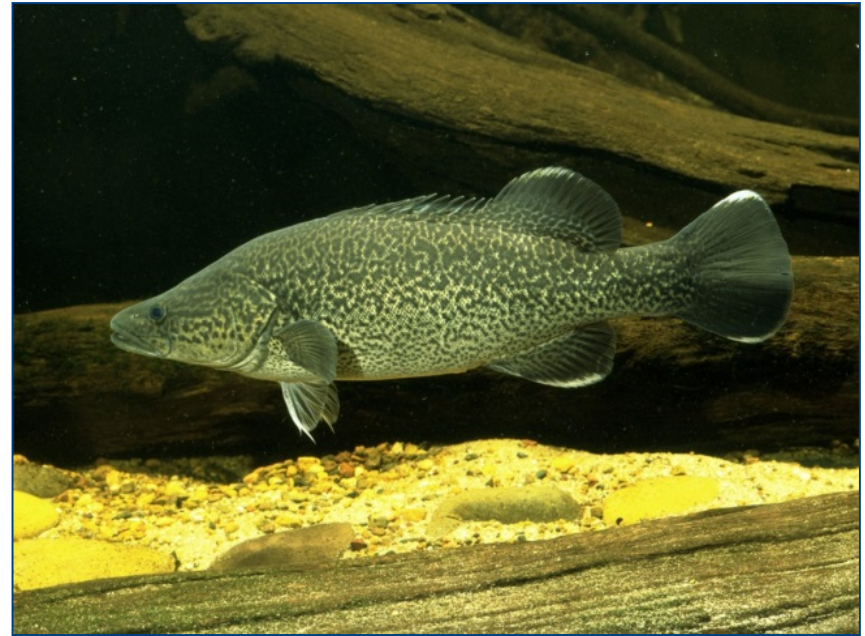
- **'Use Value'**

- **'Non-use Value'**

  - **'Willingness-to-pay'**

# Willingness-to-Pay Survey

- **NSW Residents – 3000+**
- **Demographic info**
- **Site info**
- **Project info**
- **Willingness-to-pay**
  - **Perceived value**



# Willingness-to-Pay Survey

- **Average Household**

- **Burrendong Fishway**      **\$44.39**

- **Fishway Offsets**      **\$31.50**

- **NSW Households**

- **Burrendong Fishway**      **\$114 M**

- **Fishway Offsets**      **\$ 81 M**

# Cost-Benefit Analysis

Project Scenario	Burrendong Dam Fishway	Fishway Offset Program
Total Project Costs	\$75.3 million	\$18.1 million
Total Project Benefits	\$114.2 million	\$81.1 million
Net Project Benefit (NPV)	\$39.0 million	\$63.0 million
<b>Benefit/Cost Ratio</b>	<b>1.52</b>	<b>4.48</b>

# Cost-Benefit **Analysis**

- **Sensitivity Analysis (+/- 20 %)**
- **Burrendong Fishway**
  - **Break-even WTP = \$29.25 (34 % reduction)**
- **Fishway Offsets**
  - **Break-even WTP = \$7.00 (78 % reduction)**



# Burrendong Dam Fishways

- **Cost-beneficial**
  - **Fishway Offsets**
- **Societal values**
- **Report**
- **Poor public knowledge**

