Introduction

• Murray-Darling Basin Environmental Water Knowledge and Research Project (MDB EWKR)
• $10m over 5 years
• The Project involves:
  – collaboration between research institutions, government agencies and catchment management authorities for scoping, planning and delivery
Objectives

The project will:

• Assist in explaining Basin Plan outcomes
• Support environmental watering and NRM decision making

By improving the understanding of:

• The links between ecological responses to flow and medium and long-term changes in condition
• The impacts of threats that affect the outcomes of flow delivery
Introduction

• Presentation concerns relationship between MDB EWKR and its external environment
• Management Context
• Information and Knowledge Context
• Path to Impact
Environmental water management in MDB

Diagram courtesy of the MDBA
Management Context - Commonwealth

• Commonwealth
  – MDBA – Plan and Prioritise
  – Commonwealth Environmental Waterholder – Manage water: contribute to Basin Plan objectives
  – Department – Water policy and Treaty obligations (e.g. Ramsar)
Management Context - States

• States
  – Plan: Water Sharing Plans
  – Environmental Water: Manage environmental water holdings
  – Delivery: Manage rivers and storages
Management Context - Regional

• Regional NRM
  – Collaborators in water management
  – Interface with community
  – Complementary management
    • Restoration including revegetation
    • Weed and Pest control
10yr Basin Plan
- BWS
- Priorities

5yr Portfolio Management Strategy

Annual Water Use Options Documents

Watering actions developed in partnership

Decisions on use made by the Commonwealth Environmental Water Holder (water use minute)

Water delivered and operational monitoring

Monitoring for local and Basin evaluation

Basin evaluation

Local evaluation

Acquittal Report (every action)

Annual Watering Action Review (every catchment)

Key:
MDBA
CEWO
Delivery partner
M&E provider
M&E Adviser
Environmental water management in MDB

Diagram courtesy of the MDBA
Basin Plan Adaptive Management

- The Commonwealth Environmental Waterholders Long-Term Intervention Monitoring Program
- The Basin Plan Monitoring and Evaluation Program
- The Monitoring of Regional Water-sharing Plans
Basin Plan Monitoring and Evaluation

Monitoring and evaluating the effectiveness of the Basin Plan
—Based around expected outcomes at Basin scale

• Hydrology and Hydrological connectivity
• Native vegetation
• Waterbirds
• Native fish
CEWO Long-Term Intervention Monitoring

Evaluate the contribution of Commonwealth environmental watering to the objectives of the Murray-Darling Basin Authority’s Environmental Watering Plan

• Basin-scale evaluation of outcomes of environmental flows
  – Hydrology and hydrological connectivity
  – Ecosystem diversity
  – River metabolism
  – Vegetation
  – Native Fish
States’ Monitoring and Evaluation Programs

For each area, States need to develop:

– Water Sharing Plans
– Long-Term Environmental Water Plan Monitoring

• Condition of key environmental assets against Plan targets
Monitoring

What is the contribution of CEW to achievement of BP objectives?

What is the condition of area’s assets in comparison to the LT EWP Targets?

What is the condition of the Basin in comparison to the Basin Watering Strategy Targets?
Scaling Adaptive Management

- **Flow Event**
- **Outcome**
- **Long-Term Intervention Monitoring**
- **Long-Term Outcome**
- **Water Plan Monitoring**
- **Basin-scale Outcomes**

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<th>Site</th>
<th>Area</th>
<th>Catchment</th>
<th>Basin</th>
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- **<1 year**
- **1-5 years**
- **>10 years**
Outcomes framework - Fish

- Fish Recruitment
  - Habitat
  - Dispersal
  - Food

<1 year

Site
MDB EWKR

Improving the understanding of:

• Long-term ecological responses to flow
• The impacts of threats that affect flow responses
• Undertaking research at 4 sites across the Basin on;
  – Vegetation diversity
  – Fish recruitment
  – Waterbird recruitment
  – Food webs
Summary

Complex Institutional Environment

• Diverse audiences with different needs
  – Different decisions to support
  – Operating at different scales

• Lots of opportunities to link with other programs
Challenges

• Significant costs
  – Cost of collaboration – relationships and communication
  – Challenges associated with data integration

• Ensuring value returned to all parties

• Cultural change
  – Data sharing
  – Thinking outside one’s silo
Project Response

View project as a collaboration, in which case success factors include:

• Good governance
• Project Management
• Client awareness
  – Outputs to inform specific decisions
  – Information communicated according to managers’ preferences
Path to Impact

• Engagement with stakeholders over life of project
• Build relationships
• Customise outputs;
  – Appropriate to decisions
  – Appropriate to managers knowledge seeking preferences
  – See to generate value for collaborators
Research sites:

- Lower Murray
- Upper Murray
- Macquarie Marshes
- Lower Balonne
Research themes and priorities

- Vegetation
- Fish
- Waterbirds
- Foodwebs
- Decision Support
Vegetation

What flow regimes best support the diversity of understorey and wetland plant communities?

- Integration and analysis of existing data sets
- Field sampling
  - Assess existing diversity at multiple scales
  - Gradients of flow and key stressors
Fish

What flow regimes best support the recruitment of native fish populations?

- Conceptualisation
- Analysis of existing data
- Field sampling
  - Dispersal, retention and connectivity
  - Food-web interactions
What flow regimes best support the recruitment of waterbird populations?

- Conceptualisation
- Analysis of existing data
- Field sampling
  - Dispersal, retention and connectivity
  - Food-web interactions
Food Webs

What flow regimes best support food-webs that contribute to positive outcomes for native fish and waterbirds?

– Conceptualisation
– Modelling
– Data generation
  • Field observations
  • Experimentation