



Australian Government



**MURRAY-
DARLING**
BASIN AUTHORITY



Social and economic research to inform Murray-Darling Basin planning

Jim Donaldson, 19 April 2010

Basin Plan

- A plan for the use and management of water resources in the Basin
- Set environmentally sustainable limits on the extraction of water
 - “sustainable diversion limits” (SDLs)

Why are we doing research?

- Understand and take account of likely impacts on communities of setting sustainable diversion limits (SDLs) and developing the Basin Plan
- Inform options for mitigating or adapting to effects of the Basin Plan
- Set a baseline for future reviews of impact

Context: conference

- Sustaining rural communities
 - Sustainability ...
 - Sustain what, exactly?
 - For whom?
 - Over what timeframe?
- Where does environmental sustainability fit?
 - ‘optimising economic, social and environmental outcomes’

Projects

- Baseline – socio-economic circumstances
- Review – previous studies
- Review – structural adjustment pressures
- Economic modelling and analysis*
- Local profiles and assessments*
- Indicators of community vulnerability and adaptive capacity
- Indigenous interests
- Assessment of benefits

Economic Modelling & Analysis

- Modelling and analysis of economic impacts of potential reductions in water availability
- Focus of project:
 - Basin-wide, inter-regional, economic modelling
 - Consider several scenarios of reductions
 - Agricultural sector and flow-on economic effects
- Report on changes in value of irrigated agricultural production, land use and water use
 - Report on impacts at national, basin, regional levels
 - Magnitude and distribution of impacts
 - Accounting for trade

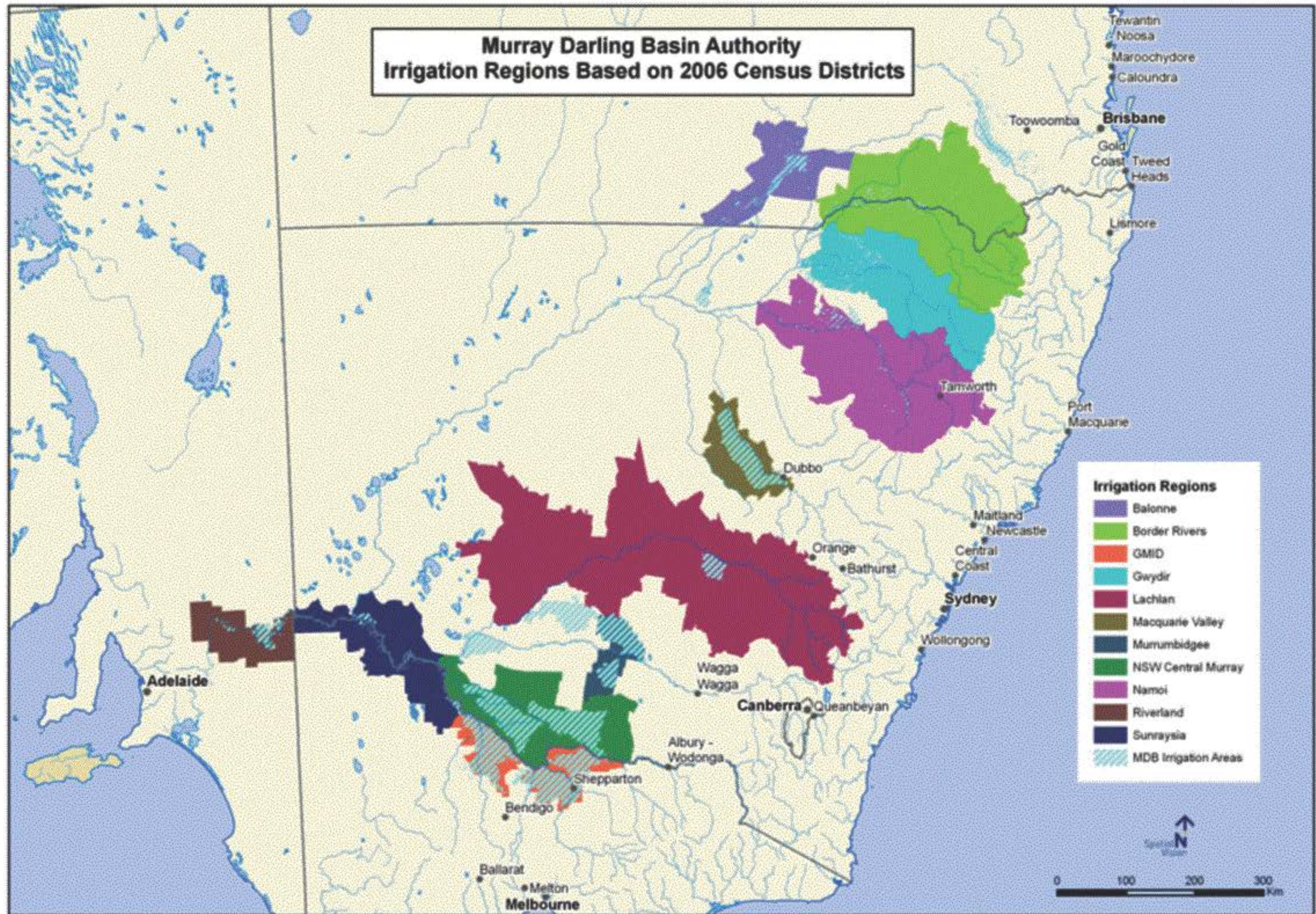
Local profiles & assessments

- Socio-economic assessments of likely local implications of reductions in SDLs
- Focus of project:
 - Community profiles for regional / local communities
 - Identify industry impacts and flow-on effects
 - Assess vulnerability and adaptive capacity at local scale in 14 targeted irrigation districts
 - Interviews with regional stakeholders and business and community phone surveys
 - Consider a range of water use reduction scenarios

Regional profiles



Irrigation districts (14)



Local scale interviews & surveys

- Goulburn-Murray (4)
- NSW Central Murray
- Sunraysia
- Murrumbidgee
- Riverland
- Lachlan
- Macquarie
- Namoi
- Gwydir
- Border Rivers
- Lower Balonne

Conceptual Framework

Regional context

Regional overview

Rainfall
Temperature
Soil type
Water balance

The region's community

Summary profile of population, employment, income, household structure, socioeconomic advantage, wellbeing, essential services, etcetera.
Employment Diversity Index and Income Diversity Index
Analysis by remoteness
Evaluation of community environmental values

The regional economy

Industry segmentation, by employees, income, and revenue

Agriculture and its value chain

Agricultural sectors and value chain

Rural water supply

Rural water suppliers, their attributes, and conveyance efficiency

The farm

Farm sector profiles, analysis by size, and other significant drivers of viability

On farm irrigation management

Attributes of on farm irrigation technology and management practices

Adaptation to drought

Summary of sectoral adaptation to drought

Exposure and hazard profiles

Subjective (individual) exposure and hazard

Key risks their likelihood
Key opportunities and their likelihood
Constraints on realisation of opportunities
Future viability

Objective (regional) exposure and hazard

Pervasiveness of water in the regional economy
Index of social resilience to change in water allocation

Adaptation pathways

SDL scenarios

SDL adaptations

Short, medium, long run autonomous adaptation to SDL scenarios
Community adaptations to SDL scenarios

Indicators of vulnerability

- Indicators of community vulnerability and adaptive capacity
 - provide a basis (metric) to compare communities across the Basin
- Measure sensitivity to changes in water availability and agricultural dependence
- Measure adaptive capacity: human capital, social capital, economic diversity

Indigenous interests

- Review and synthesis of current knowledge of Aboriginal interests
- Case studies – Barmah-Millewa, Brewarrina, Hay
 - Mixture of interests – consumption, environmental, relationship with country
 - Paucity of information
 - Desire for greater role in determining allocations to meet their water interests

Benefits

- Diffuse and difficult to measure in consistent units, including monetary terms
 - Biophysical and ecological
 - Non-market valuation studies done
- Avoided costs, e.g. salinity & water quality
- Tourism and recreation
- Non-use values
 - e.g. improve quality of Coorong: \$975m /yr

Issues and challenges

- Best available science
 - Data availability (currency, scale, consistency, drought)
- Timeframe to which research applies
- Integration of various social and economic analyses
- Consultation with community

Issues and challenges

- Scope of research
 - Costs and benefits to other industries, urban and manufacturing uses
 - Land use changes / interception activities
 - Infrastructure and water delivery efficiency
- Scale of analysis and interpretation is important
- Assessment needs to be whole of basin yet relate to local level
- It is difficult to predict the future!
- What next?