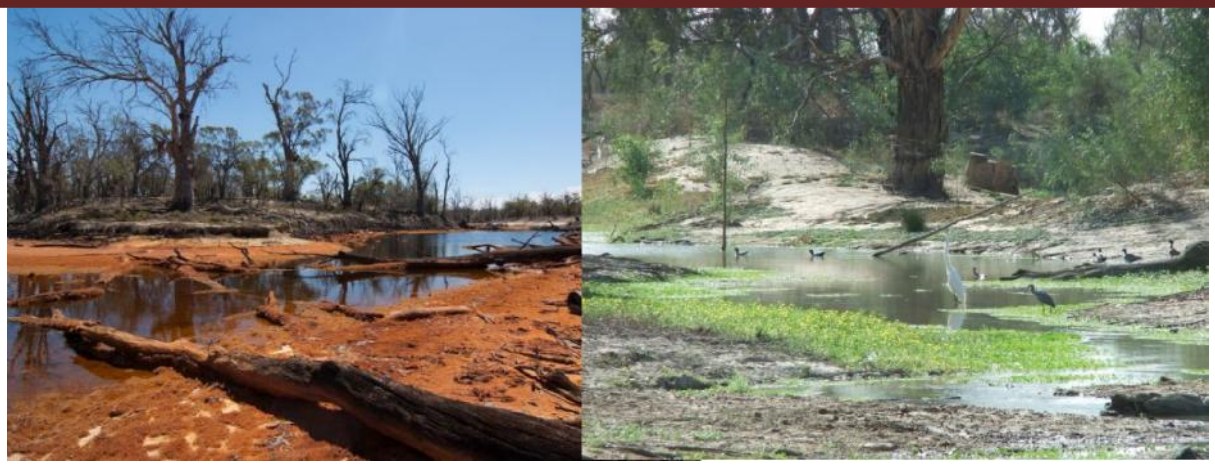
Evaluation and Sustainability Services

Review of Existing Decision Making Processes and Decision Support Tools in Environmental Watering



Report for the Murray-Darling Basin Environmental Water Knowledge and Research Project

February 2015

Summary

Acknowledgements

Evaluation and Sustainability Services would like to thank the people who gave their time and thoughtful comments during the interview process. This includes Dr Ben Gawne and Ian Burns from MDFRC and participants in the on-line survey and interviews from CEWO, MDFRC, DNRM, NoW, OEH, DEPI, VEWH, DEWNR, Regional NRM organisations, State owned corporations (water and forestry).
In addition we would like to thank, Ruth O'Connor, PhD candidate with University of Queensland, who discussed her experience with research knowledge transfer and Sam Hue of Hue Graphics, Albury.

Evaluation and Sustainability Services undertook this project in collaboration with Dr Rhonda Butcher of Water's Edge Consulting. The appropriate citation is:

Watts H. and Butcher R. 2015. Review of Existing Decision Making Processes and Decision Support Tools in Environmental Watering. Summary of Review Findings for the MDB EWKR Project.

All photographs used in the document are courtesy of Murray Darling Freshwater Research Centre.

Summary

CONTEXT

This Review was undertaken to inform the planning phase of the Murray-Darling Basin Environmental Watering Knowledge and Research (MDB EWKR) project.

The purpose of the MDB EWKR project is to provide the best science information available to support the evolving needs of environmental water managers within the framework of adaptive water management use in the Murray-Darling Basin.

MDB EWKR is a collaborative $10million Australian Government funded project to be delivered over five years and led by the Murray Darling Freshwater Research Centre (MDFRC).

The Review was undertaken by analysing the results of an on-line survey and interviews with environmental water managers across State and Commonwealth jurisdictions.

The roles of the participants varied from being involved in strategy and policy to planning to water delivery to performance monitoring within the environmental watering sector.

The information was analysed against three key areas of interest for MDB EWKR:

1. The current decision making processes and how knowledge and information is used within that process.

2. How decision support tools (DSTs) are used within the decision making process and what influences the use of DSTs?

3. What environmental water managers would recommend for the MDB EWKR project in order to improve the knowledge base and DSTs.

How the findings will be used:

1. To inform the development of an engagement strategy, by better understanding how science informs current decision making processes and where the opportunities lie to improve the knowledge base.

2. To inform the development of a DST strategy based on the demand and requirements for DSTs.

3. To provide information that will assist in the implementation of the MDB EWKR project based on additional feedback, insights and issues sourced from participants.

KEY FINDINGS

The key findings for each of the areas of interest can be summarise as follows:

The decision making process

Decision making

- Jurisdictions undertake similar decision making processes when planning for environmental water, with the dominant planning phase at present being annual water plans. All are comfortable with the annual planning process and do not believe it will change greatly into the future.
- The roles and responsibilities for annual planning vary from state jurisdiction to jurisdiction, with the range of variation including the process being relatively contained within a single central agency to regional NRM organisations taking responsibility for annual planning.
- There is a positive outlook for the introduction of longer term watering plans as it is thought that these will provide a more strategic and outcome focus for achieving environmental watering outcomes.
- Information for all types of planning is accessed from multiple sources and incorporate a combination of technical, corporate and local knowledge, with a strong reliance on corporate knowledge across all jurisdictions.
- There was concern expressed about the potential to lose corporate knowledge that comes with organisational change and limited succession planning. This knowledge is relied upon in the planning stage and particular during watering events.

Knowledge use

- Hydrographic information is at the centre of the decision making process and from this point the access to and use of scientific information becomes quite variable across assets and jurisdictions.
- The timing for decision making and access to information as well as the type of information sourced varies with planning stages such as annual planning versus an actual watering event.
- A paradox exists between the comfort in the annual planning process and the identified knowledge gaps and assumptions made when planning.
- There was a sense that the best decisions are being made with the existing knowledge and information but general concern on the budget pressures for monitoring programs.

Opportunities to improve the knowledge base

- Application of a systems approach to improve the understanding of the impacts of environmental watering decisions to downstream, next valley or other ecological responses that aren't monitored for.
- Better informed determination of trade-offs when making environmental watering decisions and the likely impact of the trade-off.
- Improve the understanding of cumulative impacts of environmental watering decisions.

- Better integrate the knowledge regarding the impact of the broader NRM issues on environmental watering outcomes.
- The tools and information to inform longer term environmental water planning decisions.

The use of DSTs

The definition of DST was quite variable across the water managers. For example water managers identified the DSTs used as varying from spreadsheets, to decision trees, to hydrological models to ecological response models. Regardless of the definition, DSTs in the context of flow response models are rarely used and the reasons for this primarily included difficulties of the complexity of the issues being addressed and the application of the same model to various sites.

The factors that were identified as being crucial to whether a DST would be used or not included:

- The DST needed to be applicable to the users assets and conditions.
- Development needed to include the end users / intended audience.
- The DST needed to be transparent, logical and add value to the decision making process.
- The DST needed to be easy to use and not be reliant on large sources of data.

It was stated that the MDB EWKR project would do better to focus on addressing the research questions rather than development of DSTs given the budget and timeframes. Also the research questions need to be addressed first as they would frame whatever tool may be generated. It was expressed that alternative DSTs to quantitative models could be developed that would have broader application across various assets.

Water Manager's recommendations for MDB EWKR

From the feedback on how the MDB EWKR project could improve the decision making process, two significant factors stand out:

- MDB EWKR must maintain the collaborative process it started with and maintain engagement throughout. This was particularly expressed by the State jurisdictions.
- MDB EWKR must facilitate knowledge transfer in terms of knowing what information exists, how to access it and how to apply the knowledge within the decision making process.

In addition it was thought that the MDB EWKR project should:

- Assist managers to demonstrate the benefits of environmental watering and help quantify outcomes.
- Contribute to a process of transparency in decision making.
- Compliment existing programs of jurisdictions and other researchers.
- Focus on addressing the research gaps rather than investing in computer based models.

IMPLICATIONS FOR MDB EWKR PROJECT

The implications of the Review findings on the MDB EWKR project have been summarised under several themes as outlined below, noting that each theme is closely related to one another and therefore should not be considered in isolation.

More detail on findings and implications can be found within the main report.

Engagement and collaboration:

- There is a strong desire that the jurisdictional collaboration that the MDB EWKR project commenced with is maintained throughout. Given the diffuse sources of knowledge to inform decision making, and the strong reliance on personal relationships and corporate knowledge, effective collaboration will be essential in supporting uptake of research outcomes.
- Engagement is two way and therefore the roles of jurisdictions within the project implementation will need to be agreed and communicated.
- The MDB EWKR will need to utilise a variety of techniques to maintain engagement and collaboration over the longer term. These should be developed further within the engagement strategy and the engagement strategy should be developed in partnership with the primary stakeholders.

Knowledge transfer:

- There is not a single audience typology for the project, even amongst water managers, therefore the MDB EWKR project needs to understand who their primary and secondary stakeholders are and how they access and utilise new knowledge.
- The research is being undertaken in the form of themes at various sites within the Basin (cases). This raises challenges for the MDB EWKR project of sharing knowledge and experiences across cases and how best to share this to a broader audience.

Aligning research to changing scales:

- There is a shifting focus from annual to longer term planning. This requires knowledge of watering or non-watering impacts over longer planning horizons as well as the ability to identify and prioritise assets and a means of defining appropriate objectives and strategies.
- It was commonly acknowledged that MDB EWKR had to be relevant to the broader Basin but questions were still raised about the ability to apply information and tools to a broader Basin scale while they maintain relevance at an asset scale.

The use of DSTs:

- It was recommended that the development of quantitative computer based models was not the best use of MDB EWKR's time and budget. It was expressed that the relevant research needed to be undertaken first.
- DSTs of various styles exist and the MDB EWKR project may need to reconsider the format of a decision tool that is more easily applicable across various scales.
- The factors that influence the uptake of a DST are universal regardless of the format of the DST and therefore these should be embedded as principals within the DST strategy to be developed by MDB EWKR