Water Resources Management, the Ecological Health of the Murray-Darling Basin River System & the Public Interest:
Fish Kills in the Lower Darling River and Conflict Management

Dr Ted Christie, *18 January 2019*

Disclosure Statement

Ted Christie does not work for, consult to, own shares in or receive funding from any company or organisation that would benefit from this article, and has no relevant affiliations

TAGS: **Murray-Darling Basin; fish kills; reliable and relevant scientific evidence; information conflicts; conflict management; scientific round-table; conflict resolution**

The Murray-Darling Basin river system is Australia's longest river system. It contains Australia's three longest rivers: The Darling River (*2,740 km in length*), the Murray River (*2,530 km*) and the Murrumbidgee River (*1,690 km*). The Basin occupies about 14% of the land area of 4 Australian mainland States.

The Murray–Darling Basin Plan was developed to manage the Basin as a whole connected system. The Basin Plan sets the amount of water that can be taken from the Basin each year, while leaving enough for the Basin's rivers, lakes and wetlands and the plants and animals that depend on them.

Achieving sustainable outcomes for competing environmental interests – *ecological, economic, social and cultural* - is at the heart of the Basin Plan.

But the future management
of water flows down the river system,
under the Basin Plan,
has been the source of controversy over time
e.g. environmental impacts.

In this regard, a new controversy - ***ecological health*** *of part of the river system* - has now arisen. It commenced in December 2018, but reached a "crescendo" in January 2019, that led to the situation being described by politicians as a "*devastating ecological event*" and "*an ecological disaster*".

The reason? A fish kill of around one million dead fish covering a 40km stretch of the Darling River, downstream of the Menindee Lake System. The mass of dead fish featured prominently in ***media reports***.

Significant concern exists that there may be a high likelihood of further fish kills if very high temperatures prevail.

The fish kills have been associated with large-scale outbreaks of blue green algae. Depending on the extent of their spread, blue green algal blooms represent significant ***environmental hazards*** in water courses.

For example, the physical mass of blue green algae on a body of water can limit the penetration of sunlight and dissolved oxygen. And a decline in oxygen levels in the water can also occur following the death of blue green algae: Because the process of bacteria breaking down decaying algae requires oxygen.

Given the complexity of the problem, it is not surprising that divergent scientific and political opinion exists as to the cause of these fish kills in the Darling River, such as: -

- *Mismanagement of water flows under the Basin Water Plan*
- *Drought*
- *High temperatures*
- *Climate change*
- *Water use and management by irrigators.*

The ***Murray-Darling Basin Authority*** has outlined an objective framework - one being considered by Basin Governments to find solutions for the "fish kill problem" to achieve the following outcomes: -

- *The immediate risk of further fish kills and how to mitigate the risk;*
- *Whether there is water for the environment that can be released to improve water quality;*
- *Reviewing federal and state environmental watering priorities, to assess whether adaptation is needed; and*
- *Long-term strategies to mitigate fish kills of this extent.*

Clearly, information conflicts are the primary source of the divergent scientific opinion that has led to this public interest environmental conflict

Information conflicts arises because of a lack of information, misinformation, different interpretations of the same information or different opinions as to what information is both relevant and reliable.

The choice of process to manage the scientific uncertainty created by the information conflicts – and then to move forward to resolve conflict by finding solutions that address the Basin Government's needs and concerns - is crucial.

At the very least, the process should involve:

- *Commonwealth and Basin State Governments;*
- *Parties holding competing "environment ~v~ development" interests;*
- *And their scientific experts.*

Suggestions by politicians for reviews into how and why the fish kill occurred – as well as management and mitigation measures - include:

- A special commission of inquiry into water management with royal commission-like powers;
- An independent, emergency task force run by scientists; and
- For the Murray-Darling Basin Authority to convene a meeting of State and Federal water managers and environmental water holders.

While there may be some merit
in adopting these suggestions,
their limitation is that
they do not resonate with contemporary problem-solving pathways
to resolve public interest environmental conflicts:

Specifically, for the problem-solving pathway to proceed along sequential stages of conflict management, then conflict resolution.

One such model, that adopts these sequential stages as two cornerstones to resolve public interest environmental conflicts, has been developed and used by the author: This model is the ***Scientific Round-Table***.

The Scientific Round-Table
is a structured and systematic process
for evaluating and resolving divergent opinions
on scientific evidence
in environmental conflicts.

Principles and concepts from conflict management and Alternative Dispute Resolution ("ADR") are applied to provide the foundation for the Scientific Round-Table.

The ADR process used for achieving both conflict management and resolution is ***independent expert appraisal***. An *independent dispute resolver* convenes the scientific round-table. The dispute resolver must have ADR process skills as well as expertise in the scientific subject matter of the conflict.

The scientific round table adopts *shared responsibility* and a *joint fact-finding* approach for evaluating scientific issues in dispute. It is based on a *full and fair disclosure of all relevant and reliable information*. Joint fact-finding at the round-table overcomes the obstacle of *polarised scientific opinion*.

The round-table only addresses factual issues in which divergent opinion exists. The parties at the scientific round-table are scientific experts, nominated by each specific interest group, to act for and to represent them.

There are two objectives for conflict management
at the scientific round-table

The ***first objective of the scientific round-table*** is to ensure all ***relevant and reliable***[1] scientific data known to be published and relevant to the issues in dispute, is disclosed and made available through information exchange to the parties. The role of the dispute resolver and the scientific experts is to identify all the information that is to become the common scientific database.

The ***second objective*** is for the scientific experts to reach *consensus on each disputed scientific issue*. The round-table gives effect to one of the key elements of *principled negotiation* by insisting that the evaluation of, and agreement on, disputed issues "must be based on objective criteria".

Finding solutions to resolve the conflict
does not commence
until the conflict management stage has been completed.

[1] **The origin of "*reliable and relevant evidence*" is the US Supreme Court (Daubert v Merrell Dow Pharm. 1993) which prescribed objective criteria to enable Federal Courts to be effective gatekeepers for the admissibility of scientific evidence. It is a superior test than the subjective "*best available science*" that prevails in Australia.**

The dispute resolver is required
to prepare a summary of outcomes
from the scientific round-table
for the parties who will be involved in resolving the conflict.

The summary of outcomes would include:

(i) Conclusions on disputed issues where agreement is consistent with all relevant and reliable scientific data and/or scientific opinion;

(ii) Where agreement cannot be reached by the experts on a disputed issue the non-binding opinion of the dispute resolver would be provided.

Conclusion: ***Environmental Decision-making & the Public Interest***

In deciding the process to adopt to address the "fish kill problem" in the Menindee Lakes, Commonwealth and Basin State Government politicians should consider the following incisive observations. They should be seen as a benchmark to achieve meaningful public involvement in this public interest environmental conflict to ensure history does not repeat!

> ***"How can we best resolve issues of major controversy between groups holding opposing, yet sincerely held, opinions in ways that most nearly satisfy the principles of the democratic ordeal … solutions from which all parties can emerge with some sense of gain and certainly with the knowledge that their views have properly been taken into account by the ultimate decision-maker, … where responsibilities are to the general public interest and not merely to a sectional group."***
>
> ***William Hayden (1991), Former Governor-General of Australia***

To read more on the scientific round-table process
and the concepts for its framework,
click on the following **LINK** to download the Author's article:
"Environmental Conflicts and Divergent Scientific Opinion: The Scientific Round-Table & Conflict Management".

Related Publications by Dr Ted Christie:

1.0 "***Finding a Sustainable Outcome for the Murray-Darling Basin Plan: An Alternative Pathway for Resolving State Water Rights and Extraction of Water***".

(2011) 31 **Queensland Lawyer** ***82-99 © 2011 Thomson Reuters (Professional) Australia Limited.***

Click on the following **LINK** for the publisher's site and the article.

2.0 ***Finding Solutions for Environmental Conflicts: Power and Negotiation (2008) Edward Elgar Publ. Cheltenham, UK.***

Chapter 10 at pp. 263-94. "Managing and Resolving Environmental Conflicts By Negotiation: NIMBY ('Not In My Back Yard') or NIMBI ('Now I Must Be Involved')

Click on the following **LINK** for the author's book.