Submission No 40

INQUIRY INTO ADEQUACY OF WATER STORAGES IN NSW

Name: Mr Robert French

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30 July 2012

The Chair
NSW Parliament's Standing Committee on State Development

Dear Mr Colless,

CAPACITIES OF WATER STORAGES

For over 15 years I was an officer in the NSW Public Works Department responsible for sizing town water supply storages and in the Department of Water Resources with a design interest in irrigation storages. I was experienced in assessing the water supply reliability and dam failure safety issues of medium to large storage dams across the State.

While the increased storage size and speed of computers and the availability of data in computer compatible form has allowed calculations of these reliability issues to be calculated in finer detail, and perhaps more precision, than 25 years ago, a fundamental problem still exists in the profession. The problem is that the focus on getting good results by using the best methods to handle the most data can lead to counterproductive findings. This might be best illustrated by Hunter Water's 2009 paper on augmenting its supply by erecting Tillegra Dam. My 2012 discussion paper raised many issues questioning the validity of Hunter Water's findings, but only one was addressed. It appears, therefore, that Hunter Water's analysis of Tillegra's usefulness has not been tested for faults.

To paraphrase the scientific philosopher, Sir Karl Popper, a good idea should not be measured by the totality of its good points, but by its worst single fault. A new car, for example, with leather upholstery, walnut dashboard, mag wheels, etc etc is still OK if the ashtray is full, but valueless if its computer is missing a vital semi-conductor. In other words, while it is important that we use the best technology and data to evaluate dam performance, it is more

important that the technology and data be checked for flaws. In Popper's view, each study should be "falsified"; the internationally recognised hydrologist, Vit Klemeš called it "crash testing".

My own opinion is that much of the blame for Hunter Water going down the out-dated supply management path rather than the current demand management path is due to IPART's requirement that water prices be equitable at all times. While a noble ideal, if water prices were allowed to rise in drought times to reduce demand, the short-term water price increases may well be cheaper in the longer term than paying off the capital expense of a large item of new infrastructure.

In the particular case of Tillegra Dam, I have written via the Minister for the Environment to the Minister for Primary Industries suggesting the dam should not be approved until Hunter Water's study has been "crash tested". *My general recommendation is that assessments of all water storages be "crash tested' by a suitable hydrologist who is not in the employ of, or under contract or obligation to, the (proposed) dam owner/operator.*

I enclose herewith two papers and a letter dealing with the Tillegra Dam example, Andréassian's 2009 paper on Klemeš "crash testing", and suggest David Miller's 1985 'Popper Selections' published by Princeton University Press (ISBN 0-691-02031-0) for the philosophy of ensuring goodness by testing for badness.

Yours faithfully,

Robert Fŕench BE, MEngSc, FIEAust