Submission
No 92

INQUIRY INTO ADEQUACY OF WATER STORAGES IN NSW

Organisation: Psi Delta

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Level 4, 50 Queen St

Melbourne, Vic, 3000

Tel: (03) 9093 0000, Fax: (03) 9093 0011

SUBMISSION TO THE LEGISLATIVE COUNCIL STANDING COMMITTEE ON STATE DEVELOPMENT: INQUIRY INTO THE ADEQUACY OF WATER STORAGES IN NSW

Psi Delta Pty Ltd

Psi Delta welcomes this opportunity to submit to The Standing Committee on State Development Inquiry into the Adequacy of Water Storages in NSW. We specialise in the commercial aspects of water and environment and in this work have assisted in the development and conducted feasibility studies into a number of large publicly and privately owned water developments.

In a country with a dry and highly variable climate the concept of building dams has intuitive appeal. This submission focuses on financial and economic considerations affecting decisions to build or augment storage but there are obviously other considerations such as hydrology, environmental and social factors.

The dams that now supply most of Australia's irrigation water were built using public funds but irrigators now pay for their share of the upkeep and operating costs of these dams. Were these same dams to be built today the apportionment of capital costs to irrigators would be significant and possibly unaffordable to many of the irrigators in the cotton, rice, fruit and dairy industries.

Sustained increased demand and higher returns from the production of irrigated commodities would make any new dams more affordable. Potential world population increase from 7 to 9 billion, reduced production from unsustainable farming practices, shifts in demand to more expensive and more water-intensive food eg beef, plus potential adverse impacts of climate change will increase demand for irrigated commodities. On the other hand improvements in water use efficiency, agronomy and storage and distribution systems for food will offset these effects. With the planning cycle for a dam at say 5-10 years it is difficult in this short span to predict the net effect of the factors listed above.

While non-urban use of water is mostly for agriculture, water is a critical supply to regional industries such as food processing (e.g. abattoirs) and mining.

In this submission five points are made in respect of new or augmented dams for non-urban use of water:

1) **Development of new projects and expansion of existing projects usually needs to be accompanied by other work in expanding markets and improving local production technology.**

For large dams built before say 1980, uptake of water occurred over a period of some years. This period is much longer than is affordable now when the value of money tied up in dams under construction and built now needs to be taken into account. Typically dams and their necessary associated assets are marginal investments even with a rapid uptake of water following dam completion. Without direct government contribution or significant interest free or low interest debt, projects that do not have a significant and early uptake of water may be unable to pay current expenses and interest and therefore be accumulating rather than reducing debt.

An offset, but unlikely to be sufficient to counter the effect described above, is to develop demand for water through developing markets for those who will use the water and help improve their competiveness through improvements in technology. For instance the $70m Virginia irrigation project in South Australia included parallel work with the major supermarkets to secure improved contracts for produce. Returns on production and hence capacity to pay for water will be improved by more efficient industry.

2) **For funding a rule of thumb is that water users can usually afford to cover around one third of costs with the other two thirds contributed by each of state/local government and federal government through grants or through low interest loans.**

Applying the COAG principle that the user pays is difficult when it comes to new water projects. The affordability of water is ultimately determined by commodity prices and these are subject for the most part to international markets. Expressed as an annualised sum, taking into account amortised capital costs and operating costs for supply of water, industries vary in their capacity to pay for water delivered to their properties. Irrigated broadacre cropping may only be able to afford water at $100/ML/a, dairy a little more, irrigated tree crops say $200/ML/a and intensive vegetable production as much as $400/ML/a. Unfortunately the big users of water tend to be those who can pay least.

Mines and some food processing can pay a lot more and they earn a lot more per megalitre produced. Some larger Australian mines are presently paying more than $1000/ML/a on long term contracts.

A rule of thumb used by developers of water projects for agriculture is that any larger project can only expect to have one third of its overall capital and operating costs met by agricultural customers. In some areas large new mines can effectively cross-subsidise agricultural use. More typically state and federal governments, on the basis of economic and social impacts, can provide the other two thirds funding.

3) **Distribution systems and on-farm development required to accept water from new developments can be each of a similar cost to the major new water source asset development itself.**

While a substantial volume of releases from dams is transported using natural systems such as rivers, by far the majority of water used for Australia's irrigation scheme is diverted from rivers or dams into public or private distribution systems. The costs of these distribution systems on an annualised ML/a basis can exceed a similarly calculated cost for new or augmented dams. New distribution systems in recent years have mostly been private diversions for large properties. New distributions systems can cost in the range of $1,000 to at least $10,000 ML/a. Further, on-farm development costs using modern irrigation technology such as low pressure sprinklers or drippers can cost $200 to $1,000ML/a.

New dam project therefore need to take into account how these costs will be met and how any lack of development and funding might delay uptake of demand from new storage assets.

4) **Economic studies such as input-output analysis and gross margin studies on commodity production rarely provide a true indication of project viability as they both rely on assumptions that may only be fulfilled over a short period or not at all.**

The first assessment of the viability of any new storage assets should be a basic financial viability assessment. That is, can it pay for its operating costs and interest and make some contribution to repaying capital. (Volume, price and time of uptake of demand all need to be known – private builders of assets might only proceed is these are contracted.) Surprisingly few projects pass this viability test but at least this should be identified rather than claiming a project that receives support of substantial grant funding is viable.

For those projects that are not viable in their own right the second test is that do they provide quantifiable economic and social benefits that justify government contributions. Social impact of new water infrastructure can be important in say a peri-urban area of high unemployment but is typically small. Economic benefits calculated as net additional income and investment can support the development of new storage assets, particularly if high value crops are produced and those assets precipitate the further investment in distribution and on-farm systems. At present export earning agricultural projects providing local employment are evaluated on the same terms as other projects – this may change as the proportion of export income earned from mining drops and Australia needs to increase its export incomes from other sources.

5) **As with other business decisions, strong market research and financial feasibility assessment is what is really needed.**

Economic analysis and modelling is no substitute for rigorous market research and identification of who will take up water from a project. Market research for water demand is a field-based and not a desk-based exercise. If the market is insufficient at the end of this work it is unlikely to emerge after the project is developed. In any case after a project is developed the builder of the storage asset may become hostage to customers who can see that the asset is built and expect that the builder of the asset will prefer some income and take-up rather than none at all.

Gross margin analysis for agricultural commodity productions is also used to justify projects. This analysis can work well in its original setting, such as with farmers making decisions on annual crops. It works less well for long term decisions such as large water infrastructure given the likelihood that both input costs and revenues from production can vary so much, even in the short term.

The key is to only proceed with major water projects when sufficient demand has been contracted. This occurred with both the Eastern and Virginia irrigation schemes. However both these schemes still required substantial government funding based on economic benefits.

The decision to build Paradise Dam in Queensland was supported by a strong economic report but this was not reflected in the take-up which is occurring over a protracted period.

New and augmented water storage projects should proceed but do need to meet the financial, economic and environmental tests that might be applied to other large capital projects. Meeting the major commercial challenges presented by water storage projects requires attention to an integrated approach to water markets and their markets and production systems, engineering, financial viability and flexibility such as is provided through staging of elements of projects.

Authorised by:

G Croke

Psi Delta Principal