Water Study
Productivity Commission
LB2 Collins St East
Melbourne, Vic, 8003.

Re: **Rural water use and the environment**

I read the latest discussion draft and found its commentary informative while being a tad too heavily oriented to regulation to protect available water and reduce effects of salinity. We have worked in the National and International agri/food industry for many years and admit we are not expert in the complexities of regulating water usage and trading We do however attach some solutions on improving water availability and usage that we think should be also looked into alongside the regulatory oriented approach needed for trading. Some of these solutions have been presented to the National Water Commission.

Irrigation Pipe.

On a micro level we have part developed a low cost irrigation pipe option that can be continuously installed to replace earthen irrigation channels which lose excess water through seepage and evaporation. The savings from reducing seepage on various soil types are not huge but in our estimate the system under consideration will provide a commercial ROI in most irrigation areas. Funding is needed to complete trials

Irrigation Systems.

We realize there are many common irrigation systems in use that have a marked effect on raising water tables Their usage continues because of convenience and the cost of setting up alternate systems such as under soil drippers , pivot irrigators etc that can often halve water usage per unit of crop produced. All these systems have the capability of being auto monitored to deliver just enough water for crop needs We recommend irrigators be given significant technical and financial support by government to adapt to new water saving irrigation technologies over a time scale. How this support is structured to gain outcomes needed is open for discussion, but in our estimates the economic returns to the community are there and all we need to do is to find some economic drivers that will ensure implementation

Soil Management.

80% of soils in irrigation areas tend to be clay based which are not ideal for cropping. Cost effective techniques have been developed in some areas of horticulture to improve the water penetration and holding capacity of clay based soils so that they can increase crop yields while halving water usage. The techniques involve cultivation without compaction, soil aggregation with gypsum/nutrients and initial cropping with rye grass to provide root structure and organic matter to hold the soft & porous soil structure together. In dairy areas using pasture feed this technique could grow potentially crops such as corn to approx triple dry feed weight /Ha while halving water usage. As dairy farming accounts for approx 60% of GV water usage in Victoria a gradual introduction of this technology into intensive dairy farming systems could probably save as much as 300 GL pa. A look at this technology for a range of irrigated cropping should produce major benefits for growers while reducing our rural water usage.

Mega Volume,Water Transfer Projects.

Over many years various groups in Australia have looked at the huge volumes of low salinity monsoonal water going to sea in the north of Australia. In North Qld and the Gulf of Carpenteria basin, there is a mean annual runoff of 170,000GL, 43% of the Australian total. With major cities looking at new dams, desalination plant, recycling and regional areas suffering with drought we should be putting some effort behind looking at solutions to economically recover a small percentage of this water and transfer it to areas of need. We have thus been looking at USA concrete lined canals for many years and believe provided canal volume is large enough , it is routed in areas where gas for energy is available and not many water crossings involved they are an economic solution for long distance water transfer. Large canals such as the Central Arizona Project in USA (see attachment) run through 550Km of arid desert with only 2% pa losses of water from seepage & evaporation. The USA feds funded that project on the basis that capital and operating costs be built into user pay water charges to ensure canal pay back over 50 years. On a similar basis we have carried out a desk top study to collect and transfer 4000 GL pa of N/Qld monsoonal water and move it south first into permeable aquifer storage and then conveyed by concrete lined canal to Bourke NSW. Potential clients for water we estimate can be supplied to Bourke at about $170-$190/ML are-

- Agriculturists supplying China and India with $4-11 Bn pa of new mechanized crops that will be needed and competitive in Asia within the next 10-20 years
- Bourke being near the headwaters of the Darling is a possible point to supply the Murray Darling rivers needs for 1000- 1500 GL pa of environmental flows
- Potential supply of SEQ, Sydney and Adelaide dams with water at a lower cost and more reliably than if they followed desalination and or new dam approaches.
- Back up water for the Murray Darling Basin which potentially is looking at a 20 to 45% reduction in rainfall over 20-50 years as a result of global warming trends

We are confident the water delivery numbers are reasonably possible because they have been calculated from back up estimates of material, labour, energy & equipment charges involved in construction of similar canals in USA. We are thus confident they justify further evaluation by independent canal engineering consultants with experience in major water projects. There are still a range of issues to be resolved in more detail eg native title, which other groups have found to be very time consuming in the planning of a gas pipeline to deliver PNG gas approximately parallel to our proposed W/Qld canal route. While the route we have selected is reasonably final in our calculations there are a range of other options that could provide economic drivers for this big picture multi- state approach. We know of International Banking groups who are prepared to back privately run B.O.O.T schemes in Australia for water & biofuels provided they can obtain 8% returns from project operations . The questions we need to ask are, how can the private sector and state governments work together to partially fund a project that should have some federal control & do we have the will to proactively look for mega water solutions.

T Bowring
13/7/06

The Physical System

The conveyance system incorporates the interconnected Hayden-Rhodes, Fannin-McFarland and Tucson aqueducts. These aqueducts consist of concrete-lined canals, inverted siphons, tunnels, pumping plants, and pipelines that extend the physical system through 336 miles of arid Sonoran desert.

There is little difference in these aqueducts except the number of features and their sizes. The aqueduct becomes smaller as water is delivered to users along the way. System capacity at the Colorado River is 3,000 cubic feet, or 22,500 gallons of water, per second. At its other end, the narrower Tucson Aqueduct has a capacity of only 200 cubic feet, or 1,500 gallons, per second.

Besides its major components, CAP has many other associated features. These include road bridges, wildlife crossings and overchutes and culverts that carry local storm runoff water over or under the canal.

Transmission lines and switchyards carry electric power to system features and earthen dikes paralleling the canal protect it and downstream areas from floods. The entire canal is fenced to protect the safety of people and wildlife.

Specific features such as fences, bridges, watering sites and road underpasses were built into the project to lessen its impact on wildlife. Revegetation around flood detention dikes also provide wildlife habitats.

Near Tucson, short sections of canal were placed below ground so animals could use existing washes as natural paths across the canal. In addition, a 4.25 square mile area surrounding the canal was purchased for a wildlife corridor and protected home for several rare or endangered plant and animal species.