

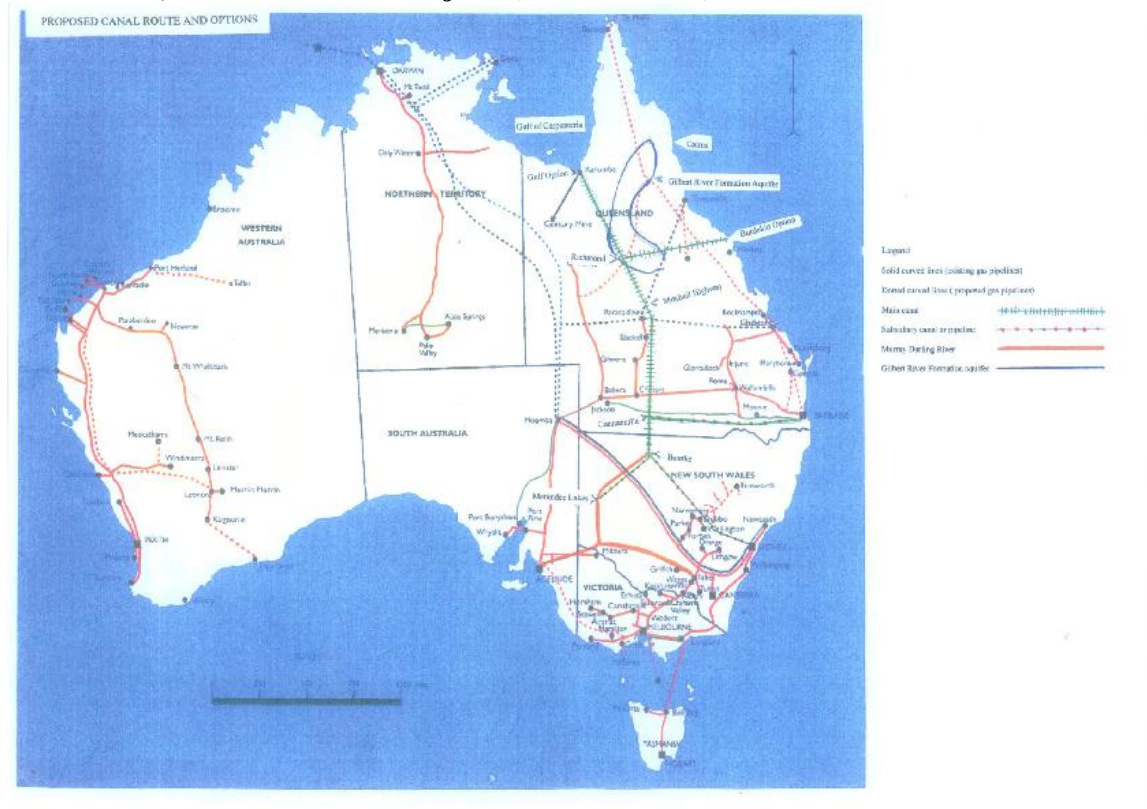
Future Australian Food Markets and Water

Global farming output needs to double in the next 50 years to feed growing populations. The world bank predicts by 2030 demand for meat will expand by 80% and grain by 30% Hundreds of million people in N/W China and N/W India struggle with growing crops to feed their populations on diminishing ground water resources. With China agreeing that agriculture could be a part of future free trade agreements and India urbanizing rapidly Asia looks to be a future market for mechanized agri/food producers in Australia.

What is holding us back, is reliable water. Climate change induced drought in SA and VIC in the last 10 yrs have reduced rainfall to 40% below average and high summer heat is lowering crop yields . Similar reductions have occurred in WA over the last 20 yrs and recent CSIRO rainfall modeling indicates further similar reductions could be expected in the next 50 yrs. It is interesting as resource revenue fell in 07/08 our reliable unsubsidized agriculture sector kept our balance of payments just in the black. How long will this last?

What's been done in Australia to improve food and water security to meet global food shortages as climate change gathers pace? Unfortunately little of substance. Agricultural research funding has recently been cut back and rural water buy-backs are the plans of our urban conservation movement. In the absence of available water, buy-backs are one way to meet environmental flow needs, but they destroy grower confidence in the future of an irrigated region. Also if rainfall eventually falls down to levels suggested by climate predictions we could be ending up buying "paper water" We ask, "is there another way"?

Multi State,Water Transfer Project. (S/E Australia)



On average, 173,000GL of surface river water in NE/Qld & Gulf of Carpentaria regions goes to sea annually. This is ~100 times what all S/E Australia cities consume each year. Rainfall volume in upper N/Qld is slightly on the increase and is expected to be stable for up to 90 years. About one quarter of this water is available from accessible rivers and it is possible to capture 10-20 % of it just before it goes to sea. With assistance from US canal specialists an initial study was carried out to collect 4000 GL pa of N/Qld monsoonal river water from water storages, such as an enlarged Burdekin dam. From there, a lined canal route was designed to move water within the region or further south over mostly flat, fertile terrain in W/Qld, flowing into the Darling river in NSW. The preferred canal route, is situated close to gas pipe line (for power) and roads (logistics). The route also runs close by permeable fractured rock aquifers to be used to store water thus providing a low evaporation means of coping with seasonal reductions in water supply. The canal runs over the great artesian basin (GAB) and we see future opportunity to sustainably treat multiple bores of quality water without affecting regional output pressures (NB the GAB with 65million GL of water, is one of the worlds largest known storages of water)

It would take approx 6 years to construct a main canal to deliver water into the Darling at Bourke, or further down past the Menindee lakes. An early start could be possible in 3-4 yrs by moving water into the headwaters of the Warrego which flows into the Darling. While canal water cannot supply all needs, in the long term subsidiary canal and pipe off the main canal and rivers could strategically meet the needs of Qld, NSW, Vic & SA communities, environmental flows, major irrigation regions and even coastal city dams.

Proven Canal Technology

Aqueducts such as these have been built in the USA for over 100 years. To this day the US Bureau of Reclamation have been funding the capture and distribution of seasonal river water in the western states of USA to reclaim arid land for agriculture. The growth of California as the food bowl of USA is directly related to early canal construction. Of interest to local food organizations when the \$US and \$A are near parity, imported frozen vegetables ex USA are competitive with local production. USA canals are funded by the Feds on a national interest basis, at finance rates as low as 2.5%. Regional operators are set up, to administer delivery on the basis that capital and operating costs are to be built into “user pay” water charges, to ensure payback over 50 yrs. Canal water losses are checked annually and when running through arid, hot deserts, seepage and evaporation losses amount to 4%/1000 km. of transit. Comparable losses can be expected in Australia

What are Opportunities for this Water

Preliminary estimate are that the cost of water delivered to the Darling at \$129/ML In the long term water from a government controlled canal could be more cost effectively used to meet needs for 1500 GL river environment flows, than the current water buyout option.

The GRDC Single Vision study indicated 2020 grain demand could double to 150 million TPA. If 4000 GL of water were put into new irrigated wheat varieties, revenue of \$8.7 Bn pa would be possible from sales of wheat & ethanol from straw (via syngas fermentation)

If irrigated wheat crops grown in southern half of Australia, 100 million TPA soil & fuel carbon offsets could protect outputs of high emission, resource and livestock industries.

Preliminary estimates are that water can be delivered by subsidiary canal and pipe to coastal city dams at approx one third the cost of desalination (estimated at \$1.80/KL)

Meat, dairy, wine and fruit /vegetable industries can expand future export opportunities.

Low carbon bio-fuels ex crop wastes, could 30% substitute mid east oil imports which are currently a significant burden to the Australian economy's balance of payments.

Key regions of the MDB can get a boost to combat 20-30% reductions in irrigation water

Irrigated plantations such as mallee eucalypts can reduce salinity and generate C offsets

Assist new mine development in **W/Qld**- uranium, shale oil, copper, zinc **SA**-uranium, copper, gold **NSW**-coal **N/T**- uranium, phosphates. All require water and carbon offsets

Telco's and communication specialists see opportunities to expand canal powered fibre optic control systems to build a backbone FTTH network for NBN within inland regions. Broadband will open up inland communications while controlling gas, power & water. It will also vastly improve inland educational and medical services which will encourage groups to expand agri/food and renewable energy opportunities important to our future

Bush fires need to be put out while still small. Early UAV warning of fires can direct aerial water bombers to lined road dams, topped up from canal before a fire season starts.

Summary

Australia has to think about, debate, and make decisions about its long term future. The way we value, allocate and manage water will have impact on the quality of this future. The experience of the largest food processors in the world are that predictability of basic raw material costs is important when typically ingredients make up well over half of direct costs. We have the land and people to become a major food supplier to the world. Lack of reliable water supply results in up and down supply factors that do not encourage investment in productivity and R&D measures to improve industry efficiencies. The volume of water discussed above, is only tapping a fraction of potential grain, food and other products that can be grown and exported, but it is a start. Larger or new canals in the Gulf, NT or WA can bring on full potential to grow our economy and population

For more back up data on preliminary capex & returns, route options, environment plans contact Terry Bowring at T Bowring & Associates Pty Ltd, email: t.b.a@bigpond.com