Mega Volume,Water Transfer Project.

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. There is a mean annual runoff from N/E Qld rivers and the Gulf of 170,000GL, approx 100 times more than S/Eastern cities require. With these cities looking at new dams, desalination plant, and regional areas suffering with drought we should be putting more effort into solutions to recover a small percentage of this volume for transfer to areas of need. We looked at concrete lined canals which over the last 70 years have been instrumental in the growth of the Californian economy. With certain provisos such as the availability of gas to provide energy for pumping they are the most economic solution for long distance water transit. We estimated moving a comparable volume with pipe(s), costs go up by 450%. Canals such as the Central Arizona Project in USA (see attachment) run thru 550Km of arid desert with only 2% pa losses of water from seepage and evaporation. The USA feds funded that project on the basis that capital and operating costs be built into user pay water charges to ensure pay back over 50 yrs. With the assistance of USA canal engineers we have carried out a study on a similar basis to collect 4000 GL pa of N/Qld monsoonal river water. Our plan is to move it via canal and pipe from coastal water storage(s) to a permeable aquifer for longer term storage and then convey it thru W/Qld via canal to Bourke NSW. Preliminary cost estimates indicate outlet water can be supplied from the main canal at about $170-$190/ML. This price includes a margin on capital expenditure for investors. Potential clients for water on line or diversions from the main canal are-

- Agriculturists supplying China and India with $4-11 Bn pa of new mechanized crop outputs that will be competitive in Asia within the next 10-20 years. Market research indicates agriculture will be the next big GDP earner if water is available
- 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. This water will improve Adelaide's supply and some could be diverted into N/W Vic.
- Potential supply of Brisbane and Sydney dams by diverting subsidiary flows ex the main canal. There are several options on how to do this economically but it must be realized additional transit costs will be involved in supply to coast.
- 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

While above cost estimates are not final they are indicative having been calculated from estimates of material, labor, energy and equipment charges involved in construction of similar canals in USA. We have requested funding from NWC for a more detailed on site evaluation. Environment issues still to be resolved are native title and wild-river planning which may lock up water from some Qld rivers. We also need a more detailed evaluation of excavation potential over the distance involved, plus double checks on availability of on line rock and sand for mobile concrete plant. We believe this canal can provide multi state long term needs for water at costs less than with each state going it alone. Available water could also generate one third of our liquid fuel needs via production of bio-fuels. We need to ask how can the private sector and state governments work together to fund a project that provides multi state benefits but should have some level of federal control.

T Bowring
Mob 0402 089 943

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.