In assessing viability, the value of any project has two components – capex and opex. An operating expense or opex is an ongoing cost for running a project, a capital expenditure (capex), is the cost of developing the project.

CAPEX can be compared with similar project to determine if it provides value for money. For comparison, the Paradise Dam across the Burnett River with a 300,000-megalitre or 300GigaL capacity cost $240 million to build. A cost of $1000 per GL of water storage which is typical of large scale water storages.

The large Bradfield Scheme proposed by Leon Ashby would store 60,000 GigaL and is estimated to cost $52 billion including upgrades of existing dams, new dams, pipelines, tunnels and aqueducts. This $820 per GL of storage capacity – comparable to similar large storages.

The scheme put forward by Sir Leo Hielscher for an enhanced Hell's Gate Dam with 120m headwall, augmented by tapping waters from the Tully, South Johnstone and Herbert rivers and a tunnel to the west is $15 billion. Hell's Gate Dam alone could hold 40,000GL for a capex of $375 per GL. While this capex is considerably lower than Ashby's scheme, the Ashby scheme includes infrastructure to Richmond and down into Muttaburra and many storages en route such as Lake Buchanan.

Thus other measures such as potential area under irrigation, and value of production also need to be compared. For the opex or operating expenditure, the most most vital being the annual offtake of water, and its cost to irrigators.

For comparison the MDB produces $22 billion of produce each year from around 10,000 GL of irrigation water. Leon estimates the annual potential is for a total of 21,000 GL of irrigation to be possible from the Eastern and Western Systems (8,000 GL each) and another 5,000 GL from the Burdekin Dam. Once developed, these three systems could increase National GDP by another 20 – 40 Billion dollars per year.

I don't yet have the estimates for the Sir Leo Hielscher plan.

Leon estimates the cost of water for the Burdekin Dam enhancement with some delivery charges & pump costs of $12 per megalitre, the cost would be around $39.50 per ML. This compares to $50 per megalitre for water in the MDB system.

I expect the cost of water for the entirely gravity fed portions of the scheme would be considerably less – of the order of $10 per ML. The delivery of 20,000 GL at a cost of $200

million to produce (conservatively) $20 billion of produce.

Add in the cost of financing the capital works as 5% of $50 billion or $2,600 million per annum we are looking at around $3 billion in annual costs. If interest costs were borne entirely by the irrigator, the finance costs would boost water costs to $130 per ML. At a rate to support rapid development of end uses – the farmers would pay say $25 per ML – the annual return on the infrastructure expenditure would be $500 million or 0.5 billion. However, the figures for this project are similar to other large scale water infrastructure project. Clearly, suitable financing arrangements are crucial to their success.

Various plans have been put forward, such as development bonds, development banks, superannuation funds and so on, and clearly a lot of work would need to be done in this area in order for the project to be self-financing.

These rough figures of $3 billion annual expenditure for $20 billion are at peak development which may take 20 years. Increasing the costs of finance to 10% to cover the dip would be $5 billion which gives an opex over capex of 10. From a public project point of view, these figures need to be compared with alternatives such as road, rail and port construction.

It’s hard to imagine an alternative infrastructure with a more favourable opex/capex at the present time.