THE QUEENSLAND COMPETITION AUTHORITY INQUIRY

BURDEKIN HAUGHTON WATER SUPPLY SCHEME

ASSESSMENT OF PRICING MATTERS

FIRST SUBMISSION BY

THE BURDEKIN RIVER IRRIGATION AREA COMMITTEE

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Executive summary

The pricing of water storage and distribution services supplied by SunWater to Burdekin River Irrigators involves serious questions of rational and efficient pricing principles.

Prices levied by a natural monopoly above efficient levels represent monopoly rents and operate as disguised quasi-taxes on an important export industry. Like other embedded indirect taxes, such monopoly rents not only adversely affect the producers immediately concerned but also affect incomes and employment in related industries. The damage that can be done by inefficient taxes disguised as "user charges" can far exceed the revenue raised. There are substantial deadweight efficiency losses to the economy if monopoly rents are allowed to emerge or continue through lax regulatory practices for strategic infrastructure sectors and thus raise the cost levels of industries competing on international markets.

This submission, from the Burdekin River Irrigation Area Committee, (BRIAC) is divided into 4 parts:-

Part I provides background material on the Burdekin River Irrigation Area (BRIA) Scheme.

Part II addresses issues of underlying economic theory relating to efficient pricing and the need to recover efficient costs. It serves as a background to the parts which follow, especially Part III.

Part III addresses the 4th term of reference for the inquiry relating to circumstances where it may not be appropriate to charge a positive rate of return on invested capital.

Part IV addresses the 1st term of reference for the inquiry relating to capital contributions made to the scheme.

BRIAC will be providing a separate submission covering the 2nd and 3rd terms of reference for the inquiry.

Part I provides material on the economic, regional and social policy objectives for establishing the BRIA Scheme and denies that an on-going rate of return on capital was ever envisaged or contracted by irrigation farmers when purchasing land at auction.

Part II observes that *first best* pricing of irrigation infrastructure would dictate pricing at short run marginal cost (SRMC). Where capital costs have already been written off, or recouped, or where there are external beneficiaries from infrastructure who can contribute towards the cost, short run marginal cost pricing is the correct pricing mechanism.

Where, by contrast, capital costs are unrecovered and capital costs must be solely recovered from users, it is essential that users are only charged their **actual efficient** costs (as with operational expenses) and, in particular, are not charged on the basis of **inflated** or **notional replacement** costs. As a proxy for what a competitive market might charge, these capital charges should have reference to *the lesser of* unrecouped depreciated actual cost (DAC) or depreciated optimised replacement cost (DORC) as a *second best* pricing principle to SRMC (if a capital return is to be sought from user charges). This is particularly so if a water storage and haulage business is allowed a risk-weighted rate of return, since market risk embraces the risk of competition from suppliers with lower replacement or historical costs.

So-called capital charges which have no regard to capital recoupments or which are inflated up by asset revaluations merely entrench monopoly rents and either double-charge users or charge them for costs never incurred.

Part II also explains that scarcity rents for a resource such as water should accrue to the resource owner, not an owner of a business which stores or hauls water. In the current inquiry, this is a **remoter** issue since not all the water in the Burdekin has been allocated.

Part III examines in detail circumstances where it is not appropriate to charge a positive rate of return on scheme assets. The arguments are sometimes presented in the alternative, some represent complementary ways of looking at issues while others embrace relevant social or legal arguments as well as purely economic arguments. The arguments are as follows:-

1. *Where it would be unethical and inequitable retrospectively*

2. *Where it is not implemented consistently*

3. *Where a private owner would be precluded by law from so charging*

4. *Where there are offsetting external benefits*

5. *Where market disciplines are not at work*

6. *Where seeking a return would render scheme assets useless*

7. *Where it would cost the treasury and the state more as a result of customers incapacity to pay*

8. *Where it is really a monopoly rent*

9. *Where the charge would be a tax*

10. *Where past operational expenditure (opex) charges have been excessive*

11. *Where the capital costs have already been recouped*

12. *Where the asset has no opportunity cost*

13. *Where the asset was paid for out of consolidated revenue*

14. *Where the cost of the scheme assets is an inflated notional rather than an actual cost.*

15. *Where the capital cost was inflated by inefficiency*

16. *Where it is not necessary to induce investment in the infrastructure*

17. *Where the asset cost nothing*

18. *Where the asset has been taken over*

19. *Where the those assets were created under a legislative policy*

20. *Where the state has been compensated for costs of policy change*

21. *Where social equity considerations dictate otherwise*

Taken together, these arguments demonstrate powerfully that governments in building public works do not act as mere commercial enterprises. Rather governments must take a broader economic and social view than a rent-seeking monopolist and consider all the negative social and economic repercussions of a public works pricing policy which charges above efficient short-run marginal cost in order to achieve a mandated rate of return on sunk or fictitious capital costs.

Part IV indicates the results of a first attempt to reconcile the broad finances of the Burdekin scheme with irrigators' and others' capital contributions. The conclusion is that all capital costs which may be seen as properly chargeable to BRIA irrigators has already been more than recouped from them.

Material has been extracted from Department of Natural Resources and Mines files under the *Freedom of Information Act* which relates to irrigation pricing policy. That material demonstrates that many of the key arguments presented below on behalf of the BRIA irrigators have already been accepted within Government. In particular,

- it has been accepted that land and water allocation sales should be taken into account in examining the net capital costs of irrigation schemes;

- it has been accepted that beneficial, as well as negative, externalities of irrigation schemes need to be taken into account;

- it has also been accepted that the COAG/NCP water reform process does not require a return on capital from existing irrigation schemes; and

- repeated public statements have been made by officials that “not one cent” was being sought by Government as a return on capital invested in Queensland irrigation schemes.

Appendix I explains why DORC cannot be used in isolation to determine a capital base for charging a rate of return.

Part I: Why And On What Basis Was The BRIA Scheme Established?

The Burdekin River Irrigation Area (BRIA) Scheme was established in the 1980's as a national development project, worthy of national support. The principal objectives of the Scheme was to provide water supplies for the irrigation of sugar cane and rice crops to promote economic growth and regional development in North Queensland. Other objectives assigned for the Scheme were to provide water supplies for:-

- the irrigation of existing cane assignments along the Haughton River to stabilise and increase production;
- further agricultural development;
- urban and industrial development in the major centres of the region, particularly Townsville/Thuringowa; and
- the future installation of a 500MW hydro-electric power station at the Burdekin Falls.

The Scheme, when completed, would provide 1.75 million megalitres of water to irrigate 45,125 hectares of crop (served by about 660 new farms) and for urban use in, and adjacent to, the Burdekin basin.

It is clear that before funds were advanced for the Scheme, there was a considerable degree of analysis of its prospective costs and benefits. As is normal with public investment projects, economic analysis of costs and benefits of the Scheme looked beyond immediate costs and benefits and sought to take into account spillover benefits to the region and the nation as a whole, including the additional taxation returns available to the Commonwealth Government for the theoretical infinite life of the dam. Thus, the 1980 Report to Parliament[1] recognised that Irrigators were not the sole beneficiaries of the Scheme and included the increased gross annual value of production and secondary benefits, as well as direct revenue from irrigation charges when assessing the economic benefit to the State. Box 1 clearly identifies the economic, regional and social policy objectives of the BRIA Scheme.

[1] Queensland Water Resources Commission, Report on Establishment of Burdekin River Project Undertaking. March 1980, pages 142-179

Box 1: Economic, Regional, And Social Policy Objectives For Development Of The BRIA Scheme
An approach has been made to the Commonwealth Government for financial assistance to implement the overall scheme. It has been pointed out to the Commonwealth Government that while the scheme clearly qualifies for consideration under the present National Water Resources Programme, the national significance of the scheme in terms of northern development, decentralisation, employment, rate of return, etc., would warrant special consideration for financial assistance outside the National Water Resource Programme Source: Queensland Water Resource Commission Report On Establishment Of Burdekin River Project Undertaking. March 1980.

The Burdekin Dam was financed by a Commonwealth Government grant under section 96 of the Constitution. The Queensland State Government elected to develop a section of the serviced area by, in the main, resuming land at dry land valuation principles and reselling developed land at irrigated land values. The land sold by the State Government at auctions was initially on the basis of 100 hectare lots, with each allocated 8 ML of water entitlements per hectare i.e. the land was sold at an enhanced price reflecting the availability of irrigation water. Private landowners who wished to retain areas in excess of the designated "living area" were charged a capital charge reflecting the difference between the "dry land value" and the "irrigated land value".[2]

It has been said, that "The Burdekin Scheme was established in the late 1980s on the basis that irrigators would be required to pay a small contribution". Irrigators have not been provided with any evidence to support this statement and there is nothing in that statement to indicate that Irrigators were made aware that they would be required to pay an additional capital contribution ***as a component of their annual water charges*** based on the State Government's assessment of costs and expenditure.

There is no such implication (nor an intent established) in the 1980 Report to Parliament. There is no evidence that such advice was provided to Irrigators as to this requirement, and there was no undertaking provided by Irrigators to this effect.

The 1980 Report to Parliament states on page 3 that, based on water charges from the channel system of $13/ML, a river charge of $4/ML and a drainage charge of $5/hectare, there would be $3.8 million in excess of estimated annual operation maintenance costs and this would provide a 2.05 per cent return on the capital cost of the project. The Report also states that in the event Townsville obtains part of its supply from the Burdekin River, a charge for water allocated to the city would be made, which would further increase the net revenue and level of capital cost

[2] Queensland Government, Supplementary Submission to the Industry Commission Inquiry into Water Resources and Waste Water Disposal. January 1992.

serviced. However, in May 1987, the then Deputy Premier of Queensland, Mr. Gunn, said that the State Government fully accepted that the dam had been paid for by the Commonwealth Government and further stated that "there was no way the residents of Townsville and Thuringowa would be asked to pay for the federally-funded Burdekin Dam wall".[3]

There is nothing in the history of the BRIA Scheme to establish the proposition that Irrigators contracted to provide an additional return on gross capital invested in the Scheme by both the Commonwealth and State Governments through annual water charges paid to the State Government. Any statement of expectations about the financial returns from the Scheme is merely that.

It is instructive that the Department of Natural Resources[4] in stating its policy on water pricing for State-owned scheme stated:-

> "(b) Existing schemes
>
> - Water prices for all schemes will continue to be adjusted annually in line with any cost changes for providing the services.
> - The medium-term objective is to ensure water revenue for each sector (i.e. urban, agricultural and industrial) covers the operating and refurbishment costs of providing supply by 2001. The aim is to achieve this outcome by:-
>   - reducing costs;
>   - increasing revenue (where practical); and
>   - increasing water prices over and above general cost changes as a last resort"
>
> and
>
> - where the medium-term objective is already being achieved, this situation will, as a minimum, be maintained.

There was no mention of any requirements or intention to cover a rate of return on capital except for;

> (c) New water supply schemes -

The Burdekin Dam was completed a decade prior to this policy and the majority of delivery infrastructure in place. Investors had been purchasing land and water allocations since 1988 and there were very few farms still to be sold. Therefore the Burdekin/Haughton Scheme could only be considered as an existing Scheme.

[3] Townsville Daily Bulletin, Water Price Debate Rages, 30 May 1987.
[4] Rural Water Pricing and Management, 1996

The Burdekin River Irrigation Area Committee (BRIAC) considers that the BRIA Scheme has performed in accordance with the cost-benefit analysis used in the 1980 Report to Parliament to justify the public investment. BRIAC will show in this submission, even on the basis of partial data, that the BRIA Scheme has generated receipts and benefits sufficient to have already recovered the efficient or competitive outlays expanded by the State Government.

It is a great pity that a major national development scheme created for the benefit of Northern Australia and Australia generally, has been priced on the basis of a mistakenly narrow or incomplete accounting, so as to negate the benefits for the region intended to be developed.

What is even of greater economic significance is that the Scheme remains under-utilised (there is considerable excess capacity and only around 50% of farm land which was to be developed under the 1980 report to parliament, having been developed and sold) failing to capture the cost benefits of fully utilising existing sunk Commonwealth expenditure and State Government funded infrastructure.

Part II: Pricing Principles And Costs

Significance of Inquiry

The correct pricing principles for irrigation infrastructure are a central concern of this inquiry and are relevant both to the adequacy and maintenance of water infrastructure and non-exploitative pricing of water storage and transport services.

Given that the sugar industry faces internationally competitive export markets and the Burdekin's output is exported, it should be totally unacceptable that the costs of the Burdekin River Irrigation Area (BRIA) cane farmers are inflated by monopoly rents embedded in SunWater's water storage and haulage charges levied against them.

Monopoly policy

Economic theory urges that if a monopoly is a natural monopoly arising out of circumstances such as decreasing costs, prices should be set at a marginal cost and any access deficit met out of public funds. As a *second-best*, if there are higher deadweight losses associated with raising public funds, user charges may be imposed to cover the access deficit but not so as to yield a monopoly rent to the owner of the monopoly facility, be it government or private sector.

Scarcity rents for the use of existing resources or facilities are acceptable and efficient as a means of rationing demand and calling forth further supply of a resource or substitutes but must be distinguished from monopoly rents demanded where there is no scarcity of capacity and no incentive for augmentation of supply. Note though that scarcity rents in the case of water should go to the water resource owner (the licensee) and not to the storage or haulage business: this will happen naturally with trading of water entitlements. To allow SunWater's storage and haulage business to charge more than its real costs because water is scarce is akin to saying that truck haulage charges should be based on the value of the cargo rather than volume or weight. In the real world, competition prevents truckers from charging above efficient cost merely because a consignment of vegetables is more valuable today than yesterday. Only if there is actually a scarcity of haulage capacity at a given time will trucking charges increase.

Deadweight loss (excess burden)

A key economic issue concerns the implicit model of economic efficiency used to assess pricing principles. Deadweight loss (excess burden) is a crucial economic concept which applies to excessive infrastructure charges just as much as it applies to taxes.

The categorisation of monopoly rents as a form of distorting indirect taxation flows naturally from the classical work of Dupuit, Hotelling, Vickrey and others who have demonstrated the optimum qualities of short run marginal cost pricing (SRMC). As

Laffont and Tirole (2000, p 86) remarked “taxpayers in a procurement context and consumers in a regulatory context are hurt when the firm enjoys a rent, since they then have to pay higher taxes and prices for the services, respectively.” For example, inflated irrigation charges feed into the costs of sugar producers and dampen demand for other inputs. This categorisation of monopoly rents is not disturbed by the modern work of those such as Baumol and Bradford who have argued for Ramsey pricing as a second-best alternate to short run marginal cost pricing where there are access deficits to be made up. Both classical and modern schools of thought would combine in categorising as a monopoly rent - and a tax - any charge which resulted in supernormal returns to capital investment, that is, any form of pricing above average cost. The difference between the two schools of thought simply relates to the best method of funding the access deficit rather than any difference over the undesirability of monopoly rents being allowed by regulators.

It is also erroneous to suggest that two-part tariffs *per se* eliminate the economic inefficiencies created by the extraction of monopoly rents by, for example, irrigation infrastructure owners.

This is because fixed access or connection charges are *not* “lump sum taxes” and do not share their optimality properties because, unlike lump sum taxes, they *can* be avoided by changes in producer or consumer behaviour. What is required for optimality is that no tax or charge alter choices at any margin, that no action *of the user* can alter the charges he faces and high interconnection charges fail this test of optimality. For example, irrigation system users may not connect to the system, may be forced to invest in wasteful by-pass with on-farm dams or bores or potential producers may simply decline to locate in irrigation areas. Such responses deprive Queensland of income, employment and export opportunities. Indeed, high fixed access charges for irrigation infrastructure may sufficiently deter demand that the facility is never built or, if built, remains chronically under-utilized or, at the extreme, has to be abandoned.

Optimal pricing principles: first best short run marginal cost (SRMC) pricing

It is generally conceded that a *first best* optimum for pricing infrastructure is to set price at short run marginal cost (SRMC). As Quiggin (1996, p 57) notes “In the absence of other considerations, efficiency is maximized when prices are set equal to marginal cost.” This was the strong theme of Hotelling (1938) who argued that marginal cost pricing should be pursued and that infra-marginal losses be made up by taxes levied on income, estates or land. Marginal cost pricing is generally accepted as the norm for economic efficiency and can be traced back to Marshall’s (1920, Vol I, p 469, 472-473, 475) suggestions for subsidising increasing returns industries to maximise consumer surplus.

The fundamental problem faced by regulators of utility infrastructure providers is that because of economies of scale the marginal cost of additional network usage is generally much lower than the average cost. Pricing at short run marginal cost for capital-intensive infrastructure generally leads to losses because fixed costs are so large relative to marginal costs. This financing problem is the central “other consideration” often used to rule out SRMC pricing as a practical real-world

proposition since, as Quiggin notes (1996, p 58), financing losses through distorting taxes is also inefficient. In this context, the ACCC (1998, p xxiii) rightly sums up the central problem of utility regulation of privately owned infrastructure as "devising systems based on marginal cost principles, whilst ensuring a fair rate of return to capital". It is thus usually quickly assumed that any losses must be met by distorting taxes or charges on either non-users or users in the form of prices above marginal cost. In other words, we have to settle for a *second best* optimum. Once infrastructure exists, it is optimal that it be priced at short run marginal cost (SRMC) in the absence of congestion but if regulators were to insist upon SRMC pricing, the utility (especially if it were capital intensive) would operate at a loss and no one would be found willing to invest in providing the infrastructure at a loss.

There is a paradox: the social returns from infrastructure investment may be very great, yet the private rewards from providing it at an optimal price are likely to be negative. So no one would build it.

Some economists have accordingly argued for variations of marginal cost pricing so that a mark-up is applied to recover the fixed costs of infrastructure. Sometimes it has been suggested that long run marginal cost (LRMC), rather than short run marginal cost (SRMC) is the appropriate test for economically efficient pricing. But economists such as Vickrey (1987, p 198) have pointed out that, if the size of investment is **optimal**, long run marginal cost will be the same as short run marginal cost.

SRMC pricing remains the economic criterion for efficient pricing. A price above marginal cost is a disguised de facto tax and will impose efficiency costs (deadweight losses) just like any other tax.

Fortunately, Nature abhors a vacuum: the economic benefits of a worthwhile irrigation project (as with all spatial network infrastructure) are captured by land values so the access deficit (i.e. capital costs) can often be recovered by land sales, rents or rates.

Advocacy of "user pays" financing of infrastructure rests in large part on the (often incorrect) implicit assumption that no non-distorting taxes or other charges are available, and that it is equitable to make users pay for the total costs of infrastructure - and through user charges only. The Industry Commission agreed (1993, p 180) with the standard academic argument that prices in excess of SRMC are taxes but justified prices above SRMC on the basis that funding access deficits has to be made up by one tax or another so the users may as well be taxed. It argued that "imposition of a financial target offers an alternative to sustained losses by requiring the enterprise to price above long-run marginal cost and recover full costs including a return on capital. A financial target in this sense is simply another form of indirect taxation. The choice is essentially between taxation methods. The inefficiency involved in raising a toll above marginal cost to reduce enterprise losses must be weighed against the inefficiencies incurred elsewhere in the economy by distortionary taxes levied to finance the losses of [government business enterprises.]"

But where there are external benefits created by infrastructure, it is not efficient to ignore external benefits and require that all infrastructure capital costs be financed solely by user charges in excess of marginal cost. No one seriously doubts that infrastructure such as irrigation schemes contributes to land values, both of the farms served and also of the neighbouring communities serving those farms.

Pricing principles: objections to marginal cost pricing

Although the problem of public utility pricing and provision is one of the oldest in economics and notwithstanding an impressive list of economists from Dupuit, through Marshall and Hotelling, to Vickrey, among many others, who have advocated short run marginal cost (SRMC) pricing, the modern trend (or reversion to an older pattern) in public utility finance is towards full cost recovery from users, and users alone, of all capital and current costs involved in maintaining infrastructure networks. In this paradigm, SRMC pricing is no longer respected as an efficiency rule. If there is a concept of marginal cost pricing, it is a concept of long run marginal cost (LRMC) pricing which is seen as requiring full cost recovery plus a return on capital invested.

Vickrey (1948, p 236), however, warns that once short run marginal cost pricing is abandoned, the allocation of overhead costs or access deficits becomes a battle between contending interests, just as the allocation of tax burdens reflects the outcome of political contests. "Whether the operation is in private or in public hands, if rates [tariffs] are set above marginal cost in an attempt to cover the entire costs of the operation, the solution of the problem of how to fix rates [tariffs] so as to achieve this end with the least possible misallocation of resources calls, at best, for the exercise of very refined judgment, even in a milieu free from contending interests. In practice, moreover, contention by interested parties makes the achievement of a close approach to the best solution even more difficult. For example, where there are different classes of consumers, decisions as to which classes shall bear charges to cover the intra-marginal residue of costs (often loosely called 'overhead costs') will often provoke heated argument."

It is true that some economists have attacked short run marginal cost (SRMC) pricing. It is argued in favour of "full cost recovery" and "user pays" that, even if there are non-distorting taxes available, efficiency requires that users alone pay for the fixed costs of infrastructure: otherwise, they will ask for more than they are willing to pay for. Thus, following Coase (1946), it is argued that cost recovery from users is efficient because it prevents money being poured into infrastructure, the cost of which exceeds its total value to users. (This might be termed the "fear of white elephants" argument - though curiously it is rarely applied to public sector establishment levels.)

For example, the Productivity Commission (1997 p 44-45) states that "A second criticism of Hotelling came from Coase (1946), who suggested that the external funding of the deficit could result in the maintenance of an activity for which the total value to users was less than its total cost to society to produce. Consider a situation where average cost is greater than willingness to pay (demand price) at all levels of output, so that there is no guarantee that the total value to users is at least equal to

the total cost to society of providing that output. This service would not exist if cost recovery had to be achieved by a system of user charges, and in some circumstances this would be the efficient outcome. However, Hotelling's solution would allow the maintenance of such activities worth less to society than their cost."

Coase (1946, p 174) objected to Hotelling's prescription of marginal cost pricing financed by a government subsidy and urged that marginal cost pricing be financed through a two-part system of pricing imposed on users. He argued that the Hotelling solution "leads to a maldistribution of the factors of production between different uses; second, that it leads to a redistribution of income; and third, that the additional taxation imposed will tend to produce other harmful effects."

The first objection is that unless the total amounts paid by users exceed the costs of the factors of production used in a facility, one cannot be sure the facility is socially worthwhile. However, this conclusion, as formulated, ignores the possibility of external benefits which are almost invariably associated with infrastructure provision. If the objection is reformulated so that the total costs must be recovered from users *and other beneficiaries* to ensure that an infrastructure project does not draw factors into less valued uses then the objection is unobjectionable. Thus if an irrigation infrastructure project costs $100 million and its net profits at marginal cost pricing are zero it must increase the value of the land it services and generate other external benefits by more than $100 million before it can be considered worthwhile. The willingness of users to pay for the project will be reflected in their increased demand to locate themselves on the land which gives them access to infrastructure: the access charge Coase advocates to test willingness to pay then amounts to the same thing as the land rate system Hotelling argued for as a means of financing inframarginal losses. (The relevance of this observation to the Burdekin irrigation scheme should be obvious).

Coase's arguments against marginal cost pricing were subjected to critical examination by Vickrey (1948, pp 224, 230) who commented that "It does not therefore appear that multi-part pricing succeeds in exorcising the dilemma. Either we accept marginal cost pricing ... or we accept a more or less substantial misallocation of resources ... Requiring each project to pay its own way may be the only way of making absolutely sure that the community does not persist in investing in uneconomical projects; but to adopt a policy that results in a substantial bias against undertaking increasing-return projects seems a rather costly method of insuring that errors in the other direction are avoided." To put this observation in the contemporary Australian context, the enthusiasm for "user pays full cost recovery" financing of infrastructure may well save Australia from "white elephant" investments but it may be even more effective in ensuring that downstream investment and income generation is prevented (or in the case of the Burdekin prevent the full use of the scheme and its benefits from ever being attained).

It may be noted that Coase himself (1946, p 181) had to concede that user pays through "average cost pricing may prevent some things from being done which perhaps ought to be done". Vickrey (1948, p 217) in turn stressed that "existence of a profit (or 'breaking even') may indeed show that the project has been worth while; but a level of output at which all costs are covered is normally not the best output,

nor is the absence of any possibility of profit (or even of covering costs), any indication that a project would not be well worth while."

The question of how to finance public utilities operating at allocatively efficient marginal cost pricing remains, however, and here Vickrey (1987, pp 210-211) pointed to site rents and congestion charges. He noted the George-Hotelling-Vickrey (1977) "theorem of spatial economics which states that in a system of perfect competition among cities, the availability in the city of services and products subject to economies of scale, priced at their respective marginal social costs, will generate land rents just sufficient to supply the subsidies required to permit prices to be lowered to marginal cost. ... It is a corollary of this theorem that it would be to the advantage of the landlords in the area, *faute de mieux*, to agree collectively to pay a tax based on their land values, in order to subsidise the various utility services to enable the prices to be set closer to marginal social cost. They could expect in the long run that this action would increase their rents by as much or more than the taxes."

The relevance of this observation is that the financing of the Burdekin scheme appears to have been contemplated, both by Government as a land developer and by irrigators, on this optimal basis. The Water Resources Commission report (1980, p 4) which was presented to Parliament in seeking appropriations for the project explicitly stated land rentals would be a source of direct revenue. By selling land and water allocations, the Government secured these land rentals as lump sum contributions in advance. Irrigators "taxed themselves" by paying one-off capital contributions for land and water allocations in order to enjoy water supply to their farms at no more than operational cost.

It was therefore astonishing to read that the State Water Reform Unit had asserted there was "No possibility of Government giving a consideration for capital gained through sales of allocation*" [Doc. Ref. No.A/16 - see page 66]. The QCA inqui*ry's terms of reference (rightly) presume the opposite approach should be taken. The State Government itself in the 1992 Industry Commission inquiry said the Burdekin scheme was a land development project and the Queensland Treasury itself later treated land sales as capital recoupments in its debate with the National Competition Council over the economic and financial viability of new irrigation schemes (see later).

Pricing principles: two-part tariffs

In addition to Ramsey pricing as a "second best", economists have often argued in favour of two-part or multi-part tariffs as another "second best" means of ensuring that capital cost servicing requirements are met by total regulated revenue while marginal cost of usage remains low. At its simplest, a customer pays a flat fee for connection to the network and a separate fee every time he uses the network. Ideally, the access charges cover the fixed costs of the network while the usage charges only reflect the marginal costs of usage. It is commonly argued that in order to avoid discouraging use of a network once the required capacity is in place, users should be charged a flat connection fee which covers the fixed costs of the network and then be charged marginal cost only on the volume of water supplied over the

network.

But it seems to be unrecognized or forgotten that in the case of a land development scheme such as the Burdekin irrigation scheme land rents and land sales *are* the first part of a multi-part tariff. Just as a private sector land developer recovers his fixed capital costs in the sale price of lots, so an irrigation scheme can (and should, if worthwhile) cover its capital costs or interest charges through land sales or land rents respectively.

Pricing principles: Scarcity/congestion pricing

Where there is scarcity of supply or congestion in the use of infrastructure, economic efficiency in static allocative efficiency terms demands that prices should be allowed to rise in order to balance supply and demand and allocate the resource to its highest valued uses. The cost that becomes relevant is the opportunity cost set between the demands of alternative users of the facility rather than its original cost of construction. To the extent that peak load or congestion pricing results in a regulated revenue stream which does not generate supernormal profits for the infrastructure provider it may be regarded as unexceptionable.

Yet this is not the whole story. Scarcity or congestion may also be a sign that new investment is warranted on cost benefit grounds. For example, Vickrey (1987) has argued that congestion prices or scarcity rents might be required to be paid into escrow funds which could be used to expand infrastructure capacity for users. Scarcity rents are not necessary today to call into existence the already-built infrastructure and the prospect of reaping scarcity rents in the future may act as a perverse incentive for infrastructure owners *not* to invest in additional capacity. The ACCC (1998, p xxii) notes that an infrastructure providing firm "has no incentive to reduce congestion, as the benefits are largely appropriated by the users, whilst it bears the cost of investment." Persistent congestion is a sign that the benefit cost ratio is likely to be favourable to new investment, which *should* be undertaken but will be deferred till congestion is so chronic that user charges will bear on an expanded customer base.

There is a competitive markets analogy to this in the cycle of mine investment. Often large capital investments in mines do not cover their full costs: whatever the hopes and expectations, mine owners will produce so long as net returns cover marginal costs. Over the life of the mine, however, it is hoped that periods of scarcity and high prices will generate quasi-rents sufficient to cover the fixed capital costs. (Unlike natural monopoly owners, however, mine owners cannot prevent new investment coming on line to compete away persistent quasi-rents on investment.)

Pricing in competitive markets thus takes account of demand conditions. Where there is surplus capacity over existing demand, competition reduces price to SRMC. Where capacity is inadequate and demand justifies augmentation of capacity, price will rise to higher LRMC (incorporating a return on capital) to call forth new capital investment to expand supply. Once that supply is in place, capacity may again exceed demand and price will again be driven *ex post* towards SRMC. But, in the meantime, where price is driven by increased demand towards LRMC, scarcity rents

will accrue to existing resource owners. But as in David Ricardo's model of wheat being cultivated on more fertile land, resource rents accrue as surpluses to owners of infra-marginal natural resources, the landholders. Rents do not accrue to capital owners. In the case of an irrigation scheme, the economic logic is that if *new* water supplies are more costly, *existing* water licence holders, as water owners, should be able to secure a rent for their (originally lower cost) water entitlements but such rents do not accrue to capital owners. In other words, if ever the water in the Burdekin were to become fully allocated and there were increased water demand, existing holders of water rights (including SunWater as owner of residual water) would be able to gain rents, but this is no economic reason why SunWater, as a capital owner in respect of its water storage and haulage business, should be able to seize such resource rents. All that its capital investment requires is a normal return on unrecouped capital.

In fact, at the present time, the Burdekin scheme has excess capacity so price should equal SRMC and LRMC is currently irrelevant. Further, LRMC pricing (incorporating a return on capital) would only need to come into play to the extent that capital costs of expansion could not be recouped through land rents or land sales or sales of water allocation.

The point is that, if ever it becomes a relevant issue, scarcity rents should go to the water resource owner rather than a water haulage business. Given that storage rights in the dam have already been paid for, only if there is congestion of channel usage can a water haulage business argue that its services should charge scarcity premiums over SRMC (as in peak demand price rationing).

Replicating a competitive market outcome and monopoly rents

The object of natural monopoly regulation is to replicate a competitive market outcome, one in which the incumbent monopolist cannot abuse his monopoly position so as to extract super normal profits (monopoly rents).

In the context of preventing monopoly rents, the valuation of assets and examination of whether their costs have been recouped become of fundamental importance.

Leaving aside for the moment the question of capital recoupments, there is a real problem in valuing the infrastructure assets of an irrigation scheme If SunWater is allowed to put inflated values on assets the scope for massive distortionary pricing above actual average - let alone marginal - cost is very large indeed.

One approach is to use historical cost of scheme assets, depreciate those assets and allow prices which give a return on the capital base so established. This is the depreciated actual cost (DAC) approach to determining regulatory capital bases.

The merits of DAC are that:

- it is a factual, not a notional, figure; and
- it ensures that the infrastructure owner does not get a windfall from

inflation by writing up assets - he is limited to his actual incurred capital costs

The disadvantages of DAC are that:

- it does nothing to reduce the capital cost base for initial “goldplating” or cost overruns; and

- it does not pass on to users the benefits of improved technology and lower replacement costs (at least until the old system is replaced).

Another approach is to use depreciated optimized replacement cost (DORC). DORC looks at what the infrastructure assets would cost to create now.

The advantages of DORC are that:

- it forces the utility to pass on to users reductions in replacement costs due to improvements in technology; and

- it can optimize out any cost padding through initial system “goldplating”.

The disadvantages of DORC are that:

- it gives a windfall to infrastructure owners by writing their assets up by inflation so they are awarded a return on funds never expended; and

- it is inherently subjective because there are many possible ways of replicating an existing scheme and many possible alternatives.

Regulators in Australia have tended to favour the use of DORC because they take the view that in competitive markets improvements in technology are passed on to users through reduced replacement costs. However, DORC has problems (see Appendix I) and there is a very strong argument that users should be charged on the basis of *the lesser of* a DORC or DAC valuation where the infrastructure owner is being awarded a risk-adjusted rate of return. If he is being paid to absorb risk, he should carry the risk that a DORC valuation based on improved technology may reduce his regulatory capital base in the future. (On the other hand, if the utility is being allowed a lower riskless bond-based return, then it is reasonable for it to be awarded a DAC-based regulatory base.)

The reason for stating that *the lesser of* unrecouped DAC or DORC be used is that is how competitive markets really work. New entrants charging on an optimized replacement cost (ORC) basis are in competition with suppliers charging on a DAC basis. If there is excess capacity, incumbent suppliers with pre-inflation, DAC, cost bases can undercut new entrants. Further, incumbents with DAC-based pricing cannot write up their charging bases with inflation because they are faced by other incumbents with equally low pre-inflation DAC cost bases. Conversely, if there is technological improvement, new entrants with a lower ORC cost base can undercut

DAC-based incumbents. The relentless march of competition forces suppliers to yield up to users *both* the gains from inflation *and* from technological improvements.

In any case, whatever method is used to determine the capital cost base for scheme assets, it is absolutely essential that the cost of scheme assets be discounted for depreciation or other forms of capital recoupment (such as capital contributions). Not to do so is to allow a "double charging" which competitive markets would not permit.

Reality checks

Because the acid test of a competitive market is that no player is able to earn persistent super-normal profits on invested capital (monopoly rents), the QCA needs to test for monopoly rents in SunWater's Burdekin scheme revenues and explicitly address three questions.

- What has been the rate of return on capital (net of recoupments and grants)?

- What has been the internal rate of return on all cash flows in and out since the scheme's commencement?

- What has been the payback period? How long has it taken for grants, land and water sales plus net operating revenue to recover the capital base?

We understand that historical figures to answer these questions may not be available. If SunWater is not able to provide figures to answer these questions then we would respectfully suggest the greatest caution needs to be taken in accepting capital cost claims. At the end of the day, a monopoly seeking to impose charges has to prove its case and put its figures on the table for examination - it has to "hand over the cheque butts" for examination.

Part III: When Should A Return Be Charged On Scheme Assets?

No 4 term of reference

The fourth term of reference requires the Queensland Competition Authority to "advise under what circumstances it would be appropriate for an entity to charge a positive rate of return on scheme assets."

Two possible short, blunt, answers to this question (which is more than apposite in the case of the Burdekin Irrigators) is "when the entity has not already been paid for them and when the entity is a legislated monopoly provider and has failed to advise customers of its intention to so charge before they committed to their investment". However, it is necessary to explore these subjects in detail because "full cost recovery" is treated as an almost axiomatic theorem of public sector economics these days when it is, in reality, a reversion to economic heresy.

It should be noted that the concept of a "*return*" implies an *outlay* by either the owner of the assets or his predecessor in title. There may be assets vested in the operator of an irrigation scheme which involved in no outlay at all. For example, a statute could vest the Crown's rights over a river channel in the operator of the scheme. In the sense that the river was useful, it might be described as a scheme asset. Yet such an asset, being freely given by Nature, would not be the sort of asset in respect of which one could sensibly talk of a "return". Nature given assets earn rents where there is competitive bidding for their superior productivity. Ricardian rents of this kind are not comprehended in the concept of a rate of return on capital. In classical economic theory, rents accrue to land (natural resources) while reproducible capital earns a competitive rate of return.

The concept of a rate of *return* on scheme assets is really apposite to consideration of whether there should be a rate of return on constructed physical assets of the scheme, that is, its physical capital.

Second, the concept of a "*charge*" implies that we are looking at whether the return on constructed scheme assets should come *solely* from charges for water storage and transport, that is from irrigators using SunWater services. This cannot be answered without looking at external benefits of an irrigation scheme, how they are capitalized and by whom they are captured. A shopping centre owner does not seek to charge a rate of return on shopping mall assets such as benches or restrooms used by weary shoppers because he knows these amenities draw custom to the mall and are reflected and captured in the rents he charges his shop tenants. So a government in setting up an irrigation scheme may well not seek to recover a return on capital from future water charges if it has already recouped - or will recoup - such capital costs through land values or water allocation rights or other collateral benefits, just as a land developer recovers his lot servicing costs. Indeed, the Queensland Government said it was operating as a land developer in its 1992 comments to the Industry Commission water inquiry (IC, 1992, p 217).

The logic of an approach which takes capital contributions into account for water

pricing is accepted in a paper on Water Pricing from Euan Morton to David Green in the Water Reform Unit (WRU). The paper points out that pricing arrangements for infrastructure need to include "capital contributions – past and future" and "indeed, the funding of capacity augmentation is likely to emerge as a major issue. This raises the issue of capital contributions- there needs to be some consideration given to the treatment of past capital contributions as well as the arrangements to be made for the funding of future capital works. ... In a sense, the user pays for the asset in a lump sum because it will not be paying recurrent charges." *[Doc. Ref. No. B/22 - see pages 67-68]* Yet there is no evidence that capital contributions from irrigators in land and water sales for the Burdekin scheme were taken into account in setting maximum gazetted prices for SunWater's storage and distribution charges.

Third, the question of "under what circumstances it would be appropriate for an entity to charge a *positive* rate of return on scheme assets" necessarily by implication raises the question of when it would be appropriate to accept a *negative* return on scheme assets. *A fortiori*, if economic or legal principle dictates that a negative return on scheme assets should be accepted, seeking a positive rate of return is precluded. A negative return on scheme assets occurs when revenue does not cover operating expenses (broadly speaking, the lower bound). This is by no means a fanciful situation in public finance. The Navy and the Army do not seek a rate of return on "the capital tied up" (so the phrase is commonly - but incorrectly put) in ships and guns. More immediately in point, urban rail services such as Sydney's receive large operational subsidies (partly, at least, because of the public interest in minimizing external costs to society from greater urban congestion on the roads). Nor does the Queensland Government value Brisbane roads and charge motorists a rate of return on those assets (which have already been paid for).

There is nothing surprising about governments accepting negative returns on public works where external benefits accrue to them elsewhere. We can do little better than quote a Queensland Government Departmental briefing note on this matter in relation to irrigation schemes, *[Doc. Ref. No. C/22 - see pages 69-70]* "COAG requires new investments to be 'economically viable'. This does not mean that CSOs or subsidies should not exist. There is no specific ruling that subsidies should not exist in new schemes. The determination of a pricing policy and CSOs is unrelated to the economic assessment of a scheme's viability.

The pricing decision and the provision of subsidies may reflect:

- take-up rates - allowing some years before scheme total cost recovery is realised.

- transitional assistance for establishment of new strategic industries,

- contributions to other beneficiaries e.g. flood mitigation, recreational benefits, etc (CSOs).

There is a fundamental difference between economic and financial/commercial viability. For a public sector project to be *economically viable*, the present value of

benefits must exceed the present value of costs at a social discount rate, say 5 or 6%. Transfer payments such as taxes and subsidies are not included and the cost of risk is borne by the Government. *Financial viability* is based on a commercial hurdle rate (say 12 to 20%) which provides for a commercial risk premium, an additional premium to ensure cash flow is available for bankability, and possibly a higher opportunity cost of capital. The cost and benefit elements also would include income tax, other taxes and subsidies.

Queensland's investment in new irrigation schemes has traditionally been assessed on economic viability criteria. All new schemes have produced a positive net present value or a benefit cost ratio greater than 1. *Capital grants have never been included in economic viability assessments as income to the scheme.*

For other water supplies, economic criteria are supplemented with social criteria. This explains assistance for urban supplies provided by the 40% capital subsidy, and assistance for ATSI communities. *Many such investments would not be economically or financially viable but are socially essential*.

The NCC's position appears to be based on the premise that new water supply schemes are no longer a public sector investment, but should be assessed as private sector investments. This would mean that a financial viability analysis would be performed.

If this is NCC's position, it should be made clearer. However there are problems with using financial viability criteria:

- it is simply not a COAG requirement,

- it ignores social criteria, eg ATSI communities."

We note that this passage completely demolishes any argument that the COAG agreements require the Queensland Government to achieve full cost recovery on a narrow commercial accounting basis from irrigation schemes. The passage is also perfectly in accordance with orthodox economic theory. As Quiggin (1996, p 169) notes "the self-financing rationale is applicable only if the project is undertaken without subsidies or other government assistance, and is not characterised by significant externalities. If these conditions are not met, the capacity to generate profits is neither a necessary nor a sufficient condition for a project to be socially desirable. Rather it is necessary to assess social costs and benefits."

In assessing the viability of existing irrigation schemes, irrigators are entitled to ask for a comprehensive cost benefit audit which includes external benefits as well as costs and are entitled to point out that even a negative rate of return may be acceptable where an irrigation scheme produces external benefits.

Further, it may be noted that pricing according to SRMC is not necessarily rejected within government itself. A paper from the Euan Morton to Steve Edwell in the WRU and a Treasury paper raise the question of payment for storage of unallocated water vested in the Crown. The issue is, in Treasury's words "should the State pay for the

storage of unallocated water vested in the Crown?" One possible response suggests the State should only be charged on an SRMC basis - "If the dam owner argued that if it is not being paid a storage price it has no reason not to let the vested water out of the storage then could the treatment of the vested water be based on whether the State wanted it to be available for sale at a particular time? Then could the State build a strong case that it should pay a rent reflecting operating costs (but, depending on history of the financing of the dam or the original allocation to the dam owner, not capital costs) only at times when it wanted to ensure that the water was available for sale for development?" *[Doc. Ref. No. D/24 - see page 71]* We note that these arguments are equally valid for other irrigators as holders of entitlement to stored water. They have an equal right to point to how Burdekin scheme capital costs were originally met and to insist on SRMC pricing.

In considering the question of when it is appropriate to seek a rate of return on capital, it thus is necessary to go back to first principles, as there are several cases to consider. In setting out these case it will be observed that some are based on economic arguments, others on legal arguments and some on social equity arguments.

Economic arguments

1. *Where it would be unethical and inequitable retrospectively*

   From an ethical and equity perspective, it should not be seen as appropriate for an entity that has a monopoly on an essential service to charge a rate of return for scheme assets where investors in a scheme were not advised of a requirement for a rate of return to be incorporated in water charges prior to their investment. Even a requirement for a modest rate of return on a significant capital investment would influence investor's ability and willingness to invest. Pricing policy in the past was set on a different basis and that policy was capitalized in higher land values, which reflected the value of that policy or "subsidy. To do so is often not to charge the immediate beneficiary who may have long since sold his farm and departed but to seek to recoup from an innocent bona fide purchaser for value who purchased before there was talk of a change in policy and has paid his predecessor in title for the expected "right" to enjoy continuation of the policy or "subsidy". This has been recognized within government. The Watson-Hall report on the Department's files observes "Although initial irrigators may have experienced windfall gains associated with subsidies, subsequent investors in irrigation fixed capital have most likely paid for most of the subsidy that would have been capitalised into the fixed factors of the production. Consequently, equity considerations associated with water charge reform should at least allow time for adjustment."*[Doc. Ref. No. E/24 - see page 72]*.

   The case is much stronger where the government itself profited from by getting a capital gain on land and water sale values at the time *and was paid for the "subsidy"*.

   The point which needs to be recognised is that a subsidy is a negative tax.

Just as the effective incidence of a tax is not the same as its legal incidence, so the effective incidence of a subsidy may not be the same as its nominal incidence. To take an example, suppose that a government were to provide roads and railways and water free of any charge to users in a given city. On the face of it, the subsidy would be given to actual users. But because new businesses or users are free to migrate to the city to take advantage of the subsidy, existing capital and labour in the city cannot permanently appropriate the benefit of the subsidy to secure permanent returns to themselves in the form of higher wages or profits than available to capital or labour elsewhere. Competition to locate in the city will mean that rents are driven up and the benefit of the subsidy will be reflected in, and captured by, land rents. Hence the analysis of an alleged subsidy needs to identify the incidence assumptions behind its calculation.

Relevance to BRIA

The Department of Natural Resources (DNR) were not simply selling water allocations in the BRIA. They were in effect property developers and as such had an obligation to advise purchasers of any requirements for a return on capital to be included in annual water charges. Press statements, correspondence and policy documents from Government and DNR indicated that purchasers were required to make a one off capital contribution and there was nothing to indicate that a contribution to capital costs would also be included in annual water charges *[Doc. Ref. No. F/25 - see pages 73-78]* Despite letter from Minister Robertson of 22nd August 2001 in which he states,"Queensland Government has consistently had a policy for the Burdekin scheme that water prices would cover the operating, maintenance and administration costs plus make some contribution to capital. These intentions were clearly articulated by the Government when the Burdekin Scheme was developed." There is simply no evidence to support this statement. To the contrary, statements by the Water Reform Unit that "Individual schemes will not be making any more than is required to run them, and they are not required to show a return of capital {emphasis added}.." *[Doc. Ref. No. G/25 - see page 79]*, and as recently as October 2000, a brochure from the Queensland Governments Department of Natural Resources sent to every Irrigator in the Burdekin/Haughton water supply scheme, introducing SunWater as the new water service provider states, "The new prices follow extensive cost evaluation and consultation with irrigators to ensure that you will pay only for the efficient running of the scheme." *[Doc. Ref. No. H/25 - see pages 80-81]***.** This brochure referred specifically to the Burdekin/Haughton water supply scheme and if a requirement to provide a rate of return as a component of their water charges had been "clearly articulated when the scheme was developed". Why was their no mention of this requirement? A Departmental paper states "In many of the newer schemes, new water allocations have been auctioned to irrigators. The prices paid for these entitlements may have included a capitalised component for the water price subsidy. In other words, the Government has received a return on market for the subsidy provided, and a water price rise would mean a capital loss for these irrigators."*[Doc. Ref. No. I/25 - see page 82]* In other

words, it is admitted that price increases based on notional capital values for assets where the cost of those assets has already been financed by capital contributions is a form of retrospective double charging - and expropriation. This observation is especially pertinent to the Burdekin Scheme where irrigators paid large sums of cold, hard, cash to government for land and water allocations to benefit from what they believed, or were led to believe, was a pricing policy based on recovery of operational expenses only. It is quite obvious from what was shown to purchasers at auctions in the BRIA that prices were bid for farms on the basis that costs for irrigation water would only be based on actual operational costs of distribution. Hence, the Crown may be seen as having "sold" the "subsidy" of a zero return on capital. It has already been compensated for such a pricing policy. To change it now without refunding the excess of prices paid over $500 per hectare is a form of unjust enrichment through a unilateral change to a quasi-contract.

2. *Where it is not implemented consistently*

It is not appropriate to charge a rate of return selectively on irrigation schemes existing prior to COAG or inconsistently and selectively within an existing irrigation scheme.

Relevance to BRIA

The BRIA was well established prior to COAG and should not be treated any differently to other schemes existing prior to water reform required by COAG. To do so places BRIA Irrigators at a competitive disadvantage both within Australia, and on International Markets. A requirement to pay above the efficient cost of operating, maintaining and renewing the scheme (lower bound) was not implemented consistently within the Burdekin/Haughton water supply scheme. Despite assertions from the Director-General, Mr T Fenwick to Local Government Association of Queensland dated 28 February 1997 that "Proper and due consideration will be given to historic arrangements such as supplies which predated the building of a dam or past financial contributions." *[Doc. Ref. No. J/25 - see pages 83-84].* Irrigators in the "old" areas of the BRIA namely, Clare, Millaroo and Dalbeg, who had existing water allocations prior to the establishment of the Burdekin Dam Scheme are required to provide a rate of return as a component of their annual water charges. This is in stark contrast to the recognition given to the North Burdekin and South Burdekin Water Boards in relation to their pre-existing entitlements. As a result, the Board's are quite correctly not charged a rate of return on water allocations held prior to the construction of the Burdekin Dam. This inconsistency is a clear indication that a requirement for a rate of return as a component of annual water charges was not Queensland Government policy but that a policy of charging what the market could bear, "based on a perceived ability to pay" was adopted as indicated in a letter to the Australian Taxation Office from the Commissioner of Water Resources dated 3rd November 1992. *[Doc. Ref. No. K/26 - see pages 85-86]*

Any assertion that the policy put forward by the Queensland Government under “Rural Water Pricing and Management” is evidence that BRIA Irrigators had been clearly advised of a requirement for a rate of return when the Burdekin scheme was developed is clearly incorrect. At the time this document was first printed in 1996, BRIA land sales were almost completed. Therefore implementation of this policy in the BRIA was retrospective. In addition, statements made in “Rural Water Pricing and Management” do not clearly indicate a requirement for BRIA Irrigators to provide a rate of return as a component of their water charges. It simply states, “For more recent schemes such as the Burdekin River Project, irrigators have met a component of the capital costs as well as other costs.” BRIA Irrigators have indeed met a very significant component of the capital costs through their purchases of land and water allocation.

3. *Where a private owner would be precluded by law from so charging*

It is not appropriate for an entity to charge a rate of return on scheme assets where such conduct would be precluded as unlawful under the general law - in particular, where such conduct would either amount to a breach of contractual undertakings or be seen as unconscionable or as misleading or deceptive conduct. Even if a private sector supplier enters into a disadvantageous contract, he will still be held to it and estopped from denying the contract was made on any basis other than what he has represented to the other party. A private sector corporation will not be allowed to represent to customers that prices will be computed in one way and then later seek to charge in another way. It is part of a dynamic economic system that not all costs will always be covered by every producer. On some contracts there will be profits and on others there will be losses. The enforcement of representations under the rules of equity applying to contracts and of fair dealing practices are part of the market discipline within which competition works. Public sector enterprises (if now being operated for profit rather than public service) should not be exempt from such disciplines. Unrestrained cost plus charging to guarantee a rate of return is not a free market phenomenon. In the past government authorities enjoyed the “shield of the Crown” and were often exempt from suit for such things as negligence or trade practices violations in recognition of their public utility status in the supply of essential services. In particular, in relation to past conduct and investment decisions, government authorities or Crown corporations cannot now seek to charge commercial returns on “legacy” assets without accepting liability under general and statute law for any economic losses suffered by people who relied on statements or representations made by or on behalf of the Crown (eg at land auctions) at the time those “legacy” assets were created. If history is to be re-written, so should legal liability rules - with equal retrospective effect.

Relevance to BRIA

Documentation given to bidders at the land and water sale auctions suggests

that purchasers would only be charged for actual operating costs of the scheme, not for notional costs or for a rate of return. In addition, WRU comments that "Individual schemes will not be making any more than is required to run them, and they are not required to show a return of capital [emphasis added].." *[Doc. Ref. No. G/25 - see page 79.]*, and the brochure from the Queensland Governments Department of Natural Resources sent to every Irrigator in the Burdekin /Haughton water supply scheme, introducing SunWater as the new water service provider stating "The new prices follow extensive cost evaluation and consultation with irrigators to ensure that you will pay only for the efficient running of the scheme." *[Doc. Ref. No. H/25 - see pages 80-81]* Confirm BRIA Irrigators understanding of requirements relating to water charges at time of purchase. The scheme was presented as a land development project where, just like a suburban developer, the costs of amenities such as water mains and roads is recouped in the sale price of the lots. The Queensland Government expressly stated to the Industry Commission (IC, 1992, p 217) that it was acting as a land developer and was placing "a product on the open market with more associated information about the product than had ever been presented before." Far from trumpeting a need for irrigators to pay for capital cost recovery or towards a rate of return, the Queensland Government declared that "having decided to so invest, the Government had to determine how it would apportion the benefits which would accrue to individuals from the project.", (IC, 1992, p 217). The Burdekin scheme was presented as one of benefit allocation to the fortunate bidders, not cost recovery! This understanding is re-inforced by admissions such as those made in the 1992 Queensland Government submission to the Industry Commission water inquiry that riparian irrigators were being made to make a "once off capital contribution". *[Doc. Ref. No. L/28 - see pages 87-88]* Just as a private land developer who "gets it wrong" cannot go back and charge his lot purchasers more than their auction bids to cover any unwarranted goldplating so the same should be true for the Queensland Government. It is certainly arguable that there are sufficient representations and statements on the financing of the scheme would support remedies at law against a private owner making the same statements. The remedies would be sought in contract law (estoppel) and in equity (unconscionability) as well as under statute (unconscionability, misleading or deceptive conduct and abuse of market power under the Commonwealth *Trade Practices Act* and the Queensland *Fair Trading Act*). For example, the only reference to water charging policy in a typical auction brochure (Auction 17) states "To meet the Department's fixed costs of supplying water, a minimum payment will be required every year for 75% of the total nominal allocation, whether this volume is used or not." A reasonable person would take such a statement to mean that pricing policy would reflect real actual costs, not notional rates of return on notional asset bases.

4. Where there are offsetting external benefits

Historically, governments provided network infrastructure because it had spillover benefits for the whole economy over and above any return to private

investors and these benefits justified such investments even when they would not have been commercially viable.

Economists would argue that if the total benefits from an infrastructure project exceed its total costs, then the infrastructure should be provided - whether or not user charges will meet its cost. The problem is that in many cases the infrastructure provider is unable to recoup most or all the benefits. This is by no means always true and it is not true where the use of land resumption powers (as in the Burdekin, rightly or wrongly) has allowed government to reap substantial capital contributions to the scheme through land and water allocation sales. Also, government captures other external benefits through enhanced tax collections (eg land tax, rates, payroll taxes, GST) in the regional economy growth generated by the Burdekin irrigation scheme.

However, some modern views suggest that infrastructure should not be provided where it cannot pay its way through user charges alone. Joy (1998, p 133) argues that efficient railway infrastructure pricing is complicated in practice by "failure to price excess capacity optimally in the short run ... and *to eliminate the capacity in the long run* ... Where excess capacity exists, it is best to use it until the underlying assets expire, provided that all other costs are recovered.". These comments are predicated on the idea of cost recovery through user charges only, with no regard to external benefits. Capacity is assumed to be excess if short run marginal cost is less than long run marginal cost.

In the case of the Burdekin where there is unallocated water in the dam, this sort of policy prescription would amount to saying that farmers should be charged on an SRMC basis but the scheme should be allowed to fall into ruin in due course (that is no renewals annuity charges should be levied) - even if allowing it to fall into ruin means a collapse of land values far in excess of the costs of maintaining the scheme.

It is not only immediate users who benefit from the creation or continued existence of infrastructure. A new highway raises the value of adjacent land, sewered blocks sell for more than unsewered, town water is a plus for land values and proximity to mobile phones is a plus for business. These benefits of infrastructure are often reflected or captured in the form of location rents of land, as recognized by the Burdekin scheme land resumption and resale financing process.

The requirement that all new infrastructure not be "subsidised" by government is inconsistent with orthodox economic theory which requires that projects be undertaken if all benefits exceed all costs, including both private and social costs and benefits. Governments *should* "subsidise" infrastructure if there are compensating external benefits which the private sector cannot capture, including external benefits to government as a tax collector. Governments can internalize benefits through taxation in a way which private providers of infrastructure cannot.

In particular, the issue of fiscal externalities needs to be raised. By increasing the productivity of other industries, network infrastructure investment often generates revenues for treasuries from the increased output of downstream industries. It is not correct to implicitly assume that, without cost/benefit justified infrastructure investment, there would either be full employment or full employment of factors of production at equally high levels of return. The question of whether governments or other beneficiaries should contribute to infrastructure investment in order to reduce access costs and maximise economic growth and revenue to treasuries needs to be examined.

Externalities are accepted as part of the COAG water pricing process. As noted by the Department of Natural Resources: "ARMCANZ has agreed that for water pricing purposes, full cost be defined as being within:

- upper bound: operating, maintenance, administration, asset consumption, *externalities*, tax and a return on assets (WACC).

- lower bound: operating, maintenance, administration, asset consumption, *externalities*, tax and a dividend (if any)." *[Doc. Ref. No. M/30 - see page 89]* [emphasis added]

Hence it follows that external benefits can - and should - also be brought to account in computing recovery of capital or revenues for irrigation schemes.

To the extent that external beneficiaries (including treasuries) contribute to the capital costs of infrastructure the cost base for setting access charges can be reduced. If user charges are reduced closer to SRMC, there are efficiency gains as more use is made of the facility.

Relevance to BRIA

The Burdekin scheme was constructed on the basis of conventional cost benefit analysis in which external benefits are taken into account. The Burdekin scheme clearly result in benefits not only to the land values of farms in the designated irrigation area but also to farms, towns and people in the surrounding areas, including Townsville. These benefits extend to the State and the Commonwealth. This was recognized by the Prime Minister, Mr Hawke when he declared (Hansard 25 May 1988 p 2971) "I know it will be a matter of undiluted joy to every honourable member that I am now able to inform the House that the dam is not only completed but, following the recent cyclone, also full. I can say that the construction of this great Burdekin Dam has been fully funded by the Commonwealth to the tune of $129m. In the spirit of conservative cooperation which is now emerging between me, and the current Premier of Queensland, Mr Ahern, I am pleased to say that I recently received an invitation from him to participate in a joint ceremony to officially dedicate the dam.

The Burdekin Dam - and this is a matter of fundamental importance - will benefit the north by stabilising agricultural development in the fertile Burdekin delta, and it will contribute to the security of water supply for Townsville, Thuringowa and the surrounding areas. In all, I am pleased to say that perhaps 250,000 people will directly benefit from the dam's construction, and many hundreds of thousands more people will indirectly benefit from it. "

The relevance of external benefits was given by the State Water Reform Unit as a reason for government not seeking "one cent" by way of a return on capital invested in irrigation schemes. When asked "What about the multiplier effect which results in taxes to the taxman/employment at meatworks/tourism etc., why should the water user be required to pay wholly for a resource which generates revenue outside irrigation?", WRU replied "*The government has recognised this, and to this end, is not requiring irrigators to pay one cent of an estimated $220M capital contribution which it makes on behalf of the irrigation sector annually in Queensland* [emphasis added] ...." *[Doc. Ref. No. N/31 - see page 90]*. When asked "Why is it that prices are going up, when the schemes were not put in in the first place to make money?" WRU replied "Individual schemes will not be making any more than is required to run them, *and they are not required to show a return of capital* [emphasis added] .." *[Doc. Ref. No. G/25 - see page 79]*

5. Where market disciplines are not at work

It is not appropriate to charge a market based rate of return for capital expended in a situation where the normal disciplines of the market do not work. Market transactions are voluntary transactions where purchasers reveal their willingness to pay a return on capital by volunteering to pay for the products or services produced by that capital. If the aim of a competition authority is to prevent abuse of monopoly power, users of monopoly water distribution services should only be charged for the value they would put on the services supplied in a market transaction (in this case, reflected in the land and water auction bids). Presumably they would not pay for excess capital expenditure or "gold-plated" works. Where there has been wasteful capital expenditure that will be reflected in the sale proceeds of serviced farms sold at auction not covering the total costs of the downstream works. A profligate private land developer may go bankrupt if he cannot recover the cost of road, water and other utilities in lot prices. The same discipline is not exerted where the Crown resumes land and undertakes an irrigation scheme and a proxy is therefore required to replicate a competitive market outcome. That proxy is furnished by land and water allocation sales (which were so recognized at the time).

Relevance to BRIA

In the case of the BRIA while the Burdekin Dam was widely supported and paid for by a Commonwealth grant (since recouped by the Commonwealth via Federal taxes), the same is not true of the downstream irrigation works. Some farmers would have preferred to construct their own channels, others

would have preferred a co-operative, user-financed and controlled water board to avoid "gold-plating". SunWater should not be allowed to seek capital contributions beyond that raised by the land and water sales which were the equivalent of the private sector's capital recoupment. The then Queensland Government said it "looked very carefully at the balance between public and private costs" and rejected the view that riparian irrigators willing to develop their own irrigation schemes should not be charged for an unwanted service (IC, 1992, p 217). But having done so, having undertaken the role of a land developer, and having sold the land and water allocations, the Queensland Government through its Crown corporation, SunWater, cannot now seek further capital contributions to the scheme beyond what it expected and planned for in its land and water sales.

6. Where seeking a return would render scheme assets useless

It is not appropriate to seek a return on scheme assets where to do so would render the project useless. As Harold Hotelling (1938) recognized, attempts to recover the overhead capital costs of, or a rate of return on, a project are pointless if they ruin the community which the project was created to serve. Just as short run marginal cost pricing is optimal to maximize social benefits from the use of a scheme's assets, so the converse is also true - seeking a rate of return on public works may destroy the very utility of those public works. If the community to be served by public works is ruined by excessive prices, the project itself becomes a stranded and wasted asset.

Just as, in the private sector, the owners of mines continue to operate those mines even where sunk costs are not being covered because abandonment would be even more costly and would mean forgoing some contribution to profit, so public sector infrastructure should be content with not receiving a positive rate of return if to seek to do so would undermine the very usefulness of the project. For example, landlords choose to carry tenants or provide lease incentives in an economic downturn, so as not to prejudice the longer term viability of an office block or shopping centre. To seek to recover a rate of return from a half used asset is like the owner of a half-tenanted office block doubling his rents to meet his target rate of return on capital. But a rent is a demand-determined price and by so charging all such an owner will achieve is total emptying of his office block as tenants move out. A sensible owner of a land asset realizes that rents and quasi-rents are demand determined prices and does not sterilize his asset by over-charging - he realizes "half a loaf is better than none". It is therefore perfectly rational to take into account a lack of ability to pay on the part of your existing and prospective tenants and grant a rent holiday if you face the prospect of formerly tenanted lands being abandoned and left to go to rack and ruin.

Relevance to BRIA

BRIA is a half-built scheme - only 28,000 or 56,000 planned hectares are under cultivation. The dam has unused water - 200,000 megalitres is unallocated. Given the price of sugar and the costs of irrigation there is no

pent up demand for farms. Many producers may be under financial pressure to quit the industry. SunWater's pricing policy is not conducive to further development of the Burdekin Dam Scheme and is restricting existing Irrigators ability to remain competitive on both Australian and International Markets. The costs of a futile policy of seeking a rate of return where there is none to be had should be costed against the development which is not occurring. What benefit would the State and people of Queensland gain by seeking a capital return on Burdekin scheme assets which meant the BRIA was abandoned? It should be realised that BRIA Irrigators had an expectation that they too would achieve a rate of return from their investment, but have now had to accept that their investment is not able to meet that expectation. SunWater may have to also accept that the Government's investment in the Burdekin Dam Scheme is not able to generate enough revenue to provide a return on capital and to simply set water charges so that this is achieved will inevitably lead to the demise of the scheme.

7. Where it would cost the Treasury and the State more as a result of customers incapacity to pay

It is not appropriate for a statutory body or Crown corporation to seek a rate of return on capital where it would cost the Treasury more in the long run. This is the flip side of looking to external benefits in charging for a scheme - one has to look at external downsides for Treasury and the State if that corporation over-charges, say, to meet a dividend requirement. A private monopolist need not care if his pricing policies inflict economic losses elsewhere in the economy - private, not public, interest is his guide. But a Treasury and Government should - and must - care. For example, if high water charges lead to farm insolvencies and abandonment, farmers, their employees and those servicing them may end up drawing public subsidies anyway - for producing less. It is better for society to partly subsidise a productive activity than to wholly subsidise wholly unproductive activity. For example, productivity gains were recorded as State electricity authorities were commercialised and labour forces reduced. Unfortunately, in some area as such as Victoria's Latrobe Valley, many of those retrenched workers did not find alternative employment and became dependent upon State and Federal welfare assistance. Accordingly, as one cynic put it, whereas before the taxpayers were getting some work from these individuals, now they were getting nothing. In a second-best world, where labour and resources are not perfectly mobile it is conceivable that it is better not to seek a return on capital if the result is to generate outlays for the public sector elsewhere.

Relevance to BRIA

What would it cost the State of Queensland if SunWater pricing policy led to the collapse of the BRIA with consequent loss of employment and output in Ayr, Home Hill and Townsville? As noted above, the financial position of many BRIA farmers is becoming difficult. The flow on effects in Ayr, Home Hill and Townsville will ripple through as lost taxes and output if BRIA farms

are abandoned or farmers cut back towards subsistence spending. Whilst BRIA Irrigators have accepted their obligation to pay the efficient cost of operating, maintaining and renewing the scheme (lower bound), regardless of capacity to pay, they do not accept that capacity to pay should not be a consideration when it comes to providing a return on capital to SunWater. A typical unencumbered hundred hectare irrigation block in the BRIA has only been capable of generating a $30,000 - $35,000 net income in recent years. This position is unlikely to change in the foreseeable future. The $30,000 - $35,000 net income is required to provide the owner with a basic standard of living. The great majority of BRIA Irrigators who purchased auction blocks have large land payments to DNR, water allocation payments to SunWater and development loans to commercial lenders to service each year, which results in a negative income. It is incomprehensible that individuals with such a basic income or a negative income should be required to provide SunWater with a return on investment. There is evidence to show that many BRIA Irrigators will not be able to meet land and water allocation payments to DNR and SunWater this financial year. The QCA should access Queensland Rural Adjustment Authority records in relation to BRIA farms as well as approach local financial institutions to verify BRIA Irrigators' capacity to pay

8. Where it is really a monopoly rent

It is possible for a user charge levied by a natural monopoly to be a monopoly rent rather than a genuine user charge. If a so-called rate of return is being levied on assets whose costs have been recouped, the monopoly rent will be evidenced by an examination of the internal rate of return generated on cashflow, just as a resource rent tax examines super-normal returns on resource projects to isolate the resource rent component. Monopoly rents are really disguised taxes on production and are fundamentally objectionable not only because they are unwarranted income transfers but because they damage the international competitiveness of Australian industries. One of the major arguments used to justify introducing a goods and services tax was that hidden indirect taxes on exports would be removed by the GST's input tax refund feature. A monopoly rent is not so relieved and has all the evils formerly attributed to embedded sales taxes on inputs to export production.

Relevance to BRIA

85% of BRIA's raw sugar output is exported and the balance (domestic sales) are export parity priced. A selective tax on part of the sugar industry is neither neutral nor equitable and will cause economic distortions and disruptions. The fact that a rate of return is being selectively implemented on BRIA Irrigators not only within the State but also within the Burdekin Scheme places Irrigators in the BRIA at a distinct disadvantage in the market place.

9. Where the charge would be a tax

Not every "user charge" is genuinely a fee for service. It is not appropriate to seek a return on scheme assets where the charge would amount to a tax.

Taxes require clear Parliamentary intention on the part of the Parliament of Queensland. Such an intention is unlikely to be found in legislation governing the affairs of a commercial company (unlike the East India Company, government owned companies are incorporated under a general corporations law and have not been granted sovereign powers). It is a reasonable inference that a public utility's charges must be limited to reasonable recovery of actual costs and should not incorporate a tax. Absent a clear Parliamentary intention to allow a tax by Ministerial delegation, a user charge found to be a tax could be illegal. This is a fundamental principle of English constitutional law, going back to the Bill of Rights of 1688 which declared "the law that no money shall be levied for or to the use of the Crown except by grant of Parliament" and this is true even if "the obligation to pay the money is expressed in the form of an agreement", *Attorney-General v Wilts United Dairies* (1921) 37 TLR 884. In the most recent Australian case on user charges contrasted to taxes, *Airservices Australia v Canadian Airlines International Ltd* (1999) 167 ALR 392 the High Court, while allowing some flexibility to a *de facto* monopoly authority in distributing cost recoupment over users as a whole, did not relax the requirement that charges should not exceed costs in aggregate, as noted by the Australian Government Solicitor, see PC (2001, Appendix I, p 13). It is worth observing that in that case the High Court was not dealing with a case such as the Burdekin Scheme where there are user-funded assets and a situation where some users are not charged at all. One suspects the Court might not be overly impressed with the argument there is a "fee for service" rather than a tax in a situation where user charges are imposed on some users but not others and where user charges and financial contributions have already recouped the capital costs of the service provider.

Even if the Queensland Parliament did intend to allow a Crown-owned corporation to levy a tax on user-producers, it would still face challenge as an *ultra vires* excise tax under section 90 of the Commonwealth Constitution which excludes State taxes upon production, see *Ha and anor v State of New South Wales & ors; Walter Hammond & Associates v State of New South Wales & ors* (1997) 189 CLR 465. If water storage and haulage charges are substantially in excess of any reasonable cost figure and are hence a tax on production, it appears that such water charges could be challenged as being wholly invalid State excise taxes prohibited under s 90 of the Constitution.

Relevance to BRIA

It is notable that the sugar mill levies for irrigation supply were abolished after legal advice from the Crown Solicitor that they were prohibited excise under section 90 of the Commonwealth Constitution. A paper on file states "DNR has sought advice from the Solicitor-General, who has advised that the levy [sugar mill levy] is likely to be found to be an excise under section 90 of the Australian Constitution, and hence invalid if it were to be legally challenged. Millers are aware of this and have strongly indicated that they will not pay the levy for 1998- 99." *[Doc. Ref. No. O/35 - see page 91]*. Yet no consideration appears to have been given to the question of whether a water storage and

haulage charge not based on actual unrecouped cost is in reality a tax - and a Constitutionally-prohibited excise tax at that. Given that SunWater is charging sugar producers there seems good reason to view any unjustified charge as an excise (a tax upon production) and therefore potentially wholly invalid..

10. Where past operational expenditure (opex) charges have been excessive

As noted above, it is not appropriate to charge a rate of return on scheme assets to the extent that the capital cost of those assets has been recouped by *past* opex charges in excess of efficient opex. Such lower bound over-charges should be credited towards reduction of the capital base. It is important to note that excessive opex over time hurts users of a scheme doubly. Not only are they charged a hidden excessive rate of return on capital in today's charges but the capital base on which they are being charged has not been reduced to recognize past recoupment of capital through excessive opex.

The possibility that annual charges may include capital contributions has been expressly recognized by the NCC. It stated in its draft second tranche assessment of the Dumbleton Weir stage III *[Doc. Ref. No. P/36 - see pages 92-93]*-

"**T2 assessment**: It was unclear whether the Impact Assessment Statement (IAS) completed in July 1996, included as a cost the recovery of capital costs. The apparent failure to figure in cost recovery was a fundamental flaw in the assessment of economic viability.... However, the additional information that PVWB will allocate water on the basis *that irrigators will pay the capital costs in the annual charge* should ensure that, despite the apparent failure to include cost recovery in the price paid for water in economic analysis, the scheme will be economically viable. The Council will need to review this project prior to the third tranche assessment to assess the economic viability of the scheme as demonstrated by monies received from sale of water and ongoing water prices." [emphasis added]

Once it is accepted that capital recoupment can also be achieved through high initial or high ongoing charges for water, an annual water charge in excess of efficient opex should be treated as having a component which should be credited towards recoupment of capital costs.

Relevance to BRIA

The Water Reform Unit conceded there had been operational over-charging in the BRIA scheme. Water Reform Unit figures show that Burdekin channel cost recovery percentage will rise from 112 percent in 1999/00 to 123 percent by 2004/05 and that Burdekin River cost recovery percentage will rise from 157 percent to 177 percent over the same period *[Doc. Ref. No.Q/36 - see page 94]*. Another note shows cost recovery for the Burdekin channel rising from 112 percent to 138 percent between 1999/2000 to 2004/05. Cost

recovery for the River rises from 157 percent in 1999/2000 to 200% in 2004/05 *[Doc. Ref. No. R/37 - see page 95]*. The Watson Hall report shows the Burdekin channel at 127% of cost recovery in 1998-99 and the Burdekin River at 162% for the same period, *[Doc. Ref. No. S/37 - see page 96].* Another table shows Burdekin River cost recovery at 141% in 1996-97 and Burdekin Channel cost recovery at 139% in that year *[Doc. Ref. No. T/37 - see page 97]*. The Water Reform Unit tried to argue that the figures show that in the year 2000 the excess revenue over100% cost recovery for the Burdekin channel amounted to a 0.67% return on capital, and the excess revenue over100% cost recovery for the Burdekin River amounted to a 1.99% return on capital *[Doc. Ref. No. U/37 - see page 98, see also Doc. Ref. No. V/37 - see page 99]*. But the valuation of capital in these figures was gross written down replacement cost and no allowance was made for grants, other users or for irrigator capital contributions through land and water sales. If such adjustments give a zero net unrecouped capital base, the rate of return is actually infinite - and rather than being treated as a return *on* capital, these past over-charges should be added up and credited as further (unjustified) recoupments *of* capital against the capital base of the scheme.

11. Where the capital costs have already been recouped

It is not appropriate to charge a rate of return on a scheme asset where the capital cost of constructing that physical asset has already been recouped. Such recoupment may occur in several ways-

- through sales of land and water rights in irrigation area benefited by the project. (The values of such rights will reflect the extra productivity of capital equipment applied to irrigated farms);

- through external benefits to the scheme builder. Just as a suburban private land developer recovers the cost of parks, streets, water and sewer pipes in lot sales, so publicly funded land infrastructure generates increases in land values and tax bases in the general region as it unlocks the latent productivity of the land. Whereas a private land developer is limited in the extent to which he can capture external benefits in his land sales alone, the Crown is not so limited. These fiscal external benefits to the Crown need to be brought to account. For example, urban land values, rate and land tax bases, payroll tax and stamp duty will also be increased. All such external benefits should be taken into account in computing how much of the capital cost of a project has been recouped by the Crown.

- through depreciation charges. For example, an asset which has been depreciated to zero from its historic cost should not have its cost recouped further.

- in addition, past water charges in excess of efficient operating expenditure should be treated as a form of capital recoupment and credited as such.

It may be noted that the legitimacy of this argument has been accepted within government. In a letter from Mr T. Fenwick to Local Government Association of Queensland dated 28 February 1997 it is stated that "*Proper and due consideration will be given to historic arrangements such as supplies which predated the building of a dam or past financial contributions...*. Your letter raised the issue of whether it would be possible to have a 'once only' capital charge instead of incorporating such a charge in annual payments for water supplies. The 'once only' option could be negotiated on a case-by-case basis. A price structure which incorporated elements of both charging structures could also be considered."*[Doc. Ref. No. W/38 - see pages 100-101]*. This reply not only concedes the significance of past financial contributions and also concedes that capital may be recouped through prices in excess of operating costs as well as upfront water/land sales.

It has also been accepted by the National Competition Council (after urging by the Queensland Treasury) that land and water allocation sales should be counted towards capital cost recovery of irrigation schemes. The NCC draft confidential assessment for consultation on second tranche assessment, Dec 1999 regarding water in Queensland stated *[Doc. Ref. No. X/38 - see pages 102-103]*

"**Bedford Weir stage II**

T2 assessment

The apparent failure to figure cost recovery in to the economic assessment of Bedford Weir stage II is, in the Council's view, a fundamental flaw in the analysis of the economic viability of this scheme. Such a project could not be said to be recovering costs consistent with reform commitments to achieve full cost recovery....

Additional information provided:

Additional information provided by Queensland *[letter 14 September 1999]* noted the following relevant matters.

- The economic analysis indicated that the project was economically viable;

- *The capital cost of the project was $4.73 million. The Commonwealth contributed $2 million. An auction of water*

resource allocation is realised $11.1 million. On this basis cost recovery was clearly evident.

The additional information that $11 million was recovered from water sales means that despite the apparent shortcomings in economic analysis, the scheme has proved to be economically viable." [emphasis added]

A more than two to one financial rate of return is somewhat more than cost recovery! Some might dryly observe that a thoroughgoing and vigorous competition authority would have been suggesting a refund! However the important point is that the NCC admits that land and water auctions should be brought to account in computing cost recovery (see also *Doc. Ref. No. X/38 - see pages 102-103*).

Relevance to BRIA

Payments for land and water allocations by irrigators were in the order of $150 million. The economy of North Queensland benefited as was intended. And it has been admitted by the Water Reform Unit that past operational charges to Burdekin irrigators were in excess of efficient levels.

12. Where the asset has no opportunity cost

It is not appropriate to charge a rate of return on a scheme asset where that capital asset represents sunk capital which has no opportunity cost. The optimal rule for public utility pricing is that price should equal short run marginal cost (SRMC). Although sometimes attacked, this principle has been vigorously defended by Harold Hotelling, William Vickrey and others. The basis of this argument has been set out in Part I and is a central economic argument for the QCA in this inquiry. Attempts to charge above short run marginal cost (SRMC) in order to extract a contribution towards fixed or sunk costs have the same distorting effects as selective excise taxes on inputs to production (as conceded by the Industry Commission, *supra*). Essentially all attempts to attack the rule that price should equal short run marginal cost still acknowledge that it represents a first best optimum and are put forward merely as *second-best* solutions where the fixed costs of a project *must* be financed through user charges.

A major issue in pricing infrastructure access is whether users should be charged for the sunk costs of bringing it into existence. A further issue is whether users should be charged for the capital "tied up" in stranded infrastructure assets which are obsolete. The idea that capital is "tied up" in infrastructure rests on the mystical John Bates Clark idea that invested capital is a fund which can be called back and released for other uses. But this is not so. Money spent on a dam is spent - what you have is a dam. Its value depends on what demand there is for it (and what you may be allowed to charge others for using it). But its value no longer depends on what you paid to construct it - it owes you nothing, no more than the money sunk into any number of failed enterprises can be said to owe their unfortunate

shareholders a “return”. Why should capital spent to buy infrastructure be so uniquely privileged against loss?

Often it is argued that regulators should have regard to the opportunity costs of keeping the utility’s capital stock in the industry. It may for example be argued that the capital invested in the industry should receive a rate of return commensurate with its value in an alternative use (even if that use is based on retrospective or hypothetical circumstances). It may be argued that the opportunity cost of the capital sunk in infrastructure is its replacement value, and that its historic cost is not relevant to determining a regulated revenue stream or rate of return. A compelling riposte is that sunk capital is sunk capital and that once capital assumes a fixed form as water channels or dams, it has lost the opportunity to turn itself into capital elsewhere and its value in alternative use is simply its scrap value.

Any attempt by an infrastructure owner to appeal to notions of opportunity cost as a basis for awarding regulated or government-gazetted returns carries some dangers for the owner. For example, depreciated optimised replacement cost (DORC) is a notional concept of cost: what it *would* cost a new entrant or the incumbent owner to replace the existing infrastructure. The inference is that the existing infrastructure owner should be able to secure a return on what the infrastructure *would* cost to replace, not what it actually *has* cost.

But that is not the real choice facing an infrastructure owner. Once his capital has been spent and turned into pumping stations and channels, his true opportunity cost is their scrap value. His fund of liquid capital has gone and he has physical capital assets. If those physical assets were to be valued on the basis of opportunity cost, that is, their value in another use, then the value would be minimal or zero. A ruthless application of economic logic might suggest that as the assets are sunk assets with no alternative use except as scrap, the initial capital base should be close to zero. There is no opportunity cost where capital has been sunk. No regulated revenue stream has to be awarded to induce investment to create what already exists or to keep in place what has no alternative use.

Sunk capital is not jelly capital. In the case of a dam or water channels, once built, they have no other use: they cannot be pulled out and moved to another use, unlike a ship. It is a fallacy to assert that sunk costs “owe” a rate of return to their government or other owners or that sunk assets should be valued at replacement cost to determine a return that is “owed” to the owner. This is precisely the fallacy Hotelling (1938, p 307) warned about in his example of the Union Pacific railroad. In the real world, economic efficiency does *not* require that the owners of Roman aqueducts still in use should be charging for the replacement costs of what has long since become indistinguishable from a natural river.

Relevance to BRIA

The scheme is only half built with only 28,000 hectares of a projected 56,000 hectares under cultivation. There are 200,000 megalitres of unallocated water in the Burdekin Falls Dam. Hence there is no need for scarcity rationing of water or for scarcity rents to be charged and the capital "tied up" in the dam and distribution channels cannot be liquefied and released. What is done is done and bygones are bygones. History is history and it is better to operate sunk investments on SRMC pricing principles for the benefit of living human beings "while letting dead men and dead investments rest quietly in their graves", as Hotelling (1938, p 308) put it.

The New South Wales Independent Pricing and Review Tribunal (IPART) has recognized the force of this argument - and other legal and equity arguments - with its "line in the sand" approach of putting a nil value on previously constructed irrigation assets. IPART (2001, p 23) observes in relation to a capital charge for the existing rural irrigation asset base that "the Tribunal expressed its view in 1996 that it believed that many of the rural water infrastructure assets were put in place in the late nineteenth and early twentieth century because it was a government priority at the time to expand agriculture and rural development. Water prices had until recently contained substantial subsidies and *there was never any stated intention by governments across Australia to fully recover these charges. This changed in 1994* when governments determined to implement plans to eventually recover the full economic costs of bulk water service. The Tribunal does not believe that irrigators, originally attracted into agriculture by the provision of heavily subsidised infrastructure, should now be expected to pay commercial returns on assets that would not have been put in place if subject to commercial scrutiny. The Tribunal decided to draw a 'line-in-the-sand' and determine that all water assets put in place prior to 1 July 1997 should not be included in the asset base for pricing purposes. This means that users will not be charged depreciation or a rate of return on pre 1997 expenditure." (emphasis added)

13. Where the asset was paid for out of consolidated revenue

It is a basic legal principle that there is no tracing through a Consolidated Revenue Fund. "No statute provides for the tracing of individual amounts that are paid into the Consolidated Revenue Fund, for they are by their very nature consolidated upon payment in." (*Superannuation Fund Investment Trust v Commissioner of Stamps (SA*) 10 ATR 97 at 116 per Aickin J). It is not appropriate to charge a rate of return on scheme assets where that capital expenditure by the Crown was financed through general revenue (taxes or revenue deficit financing) financing and not debt financed through a specific earmarked loan. Where assets are created from appropriations of current tax revenue, taxpayers have already suffered the excess and actual burden represented by the taxes. If there is a revenue deficit, that deficit cannot be charged to *any particular* section of the public. There is no more reason to charge irrigators for dam construction financed out of consolidated revenue than there is to charge parents for schools constructed out of general revenue. To charge taxpayers again for what they have built by demanding a rate of return on what they have already paid for is to impose a form of double

taxation. If it is argued that it is appropriate to impose a selective tax on those resident in an irrigation area in order to reduce the burden of general taxation in the future, then it is really being argued that a selective excise tax is economically more efficient than a general factor tax, for example, a payroll tax or land tax. Such a proposition is quite inconsistent with the general presumption of economic theory in favour of general rather than selective taxes.

It is notable that this argument was urged in a letter of 22 January 1997 from the Local Government Association of Queensland to Mr T. Fenwick, Director General, Department of Natural Resources regarding water agreements. The association resolved "that any proposed policy change in regard to the pricing of water from rural schemes should ensure that prices only cover ongoing operating and refurbishment costs and not include a component to cover a rate of return on assets and investment required to make up any backlog. ... 'User pays' for government services and 'rates of return' for assets have become the conventional wisdom in the State bureaucracy. However, for public assets funded from taxation, for the general benefit of the State and the Nation, particularly dams and essential water shortages, it seems difficult to justify the 'double taxation' imposed on the user." *[Doc. Ref. No. Y/42 - see pages 104-105]*

Relevance to BRIA

To the best of our knowledge, the scheme was financed out of general revenue and the only loan specifically raised for the scheme was $33.5 million which has since been amortized and more than recouped in land and water sales. Details of scheme financing and documents should be verified by the QCA.

14. *Where the cost of scheme assets is an inflated notional rather than an actual cost*

Values are not measures of real or actual cost but mere proxies for costs. When a regulatory regime is introduced, records of actual costs may not exist and the regulatory regime may have to establish an initial capital base upon which to award a regulated revenue stream by way of return for the capital tied up in that initial infrastructure (this seems to be a serious problem with the Burdekin scheme which lies at the heart of the current dispute).

In looking at the concept of cost, Courts have tended to adopt the commonsense notion that cost is what is paid for something, not what *might* have been paid for it. Thus notional costs, or the costs of alternative actions, tend to be ignored. In some cases, what is paid to an affiliate might also be ignored as not representing a real or true cost, as in transfer pricing or anti tax avoidance legislation. The regulatory codes dealing with infrastructure and open access regimes are not the only regulatory frameworks which deal with costs incurred by an infrastructure owner. The income tax law also deals with the determination of costs and revenues. It is instructive to note that where a

taxpayer is allowed a deduction for a cost or a repair, the Courts have insisted that the cost be *actually* incurred and that the cost must not be notional only. For example, in *FCT v Western Suburbs Cinemas Ltd* (1952) 86 CLR 102, the High Court declined to allow a deduction for notional repairs. This parallels the economic concept of a *real* or actual cost as opposed to *notional* cost.

It might also be noted that the concept of coupon depreciation is also encountered in tax law where depreciation is based, not on the purchase price paid for an asset by its current owner, but on the construction cost incurred by the original owner who created the asset. For example in the case of buildings, depreciation is based on original construction cost not on the current market value which might have been paid recently for the building.

Similarly, in traditional historic cost accounting, only actual incurred costs are brought into account as ordinary profit or loss. Losses from revaluation of assets are not treated as actual, incurred, costs: instead depreciation is based on spreading the actual historic cost of an asset over time.

Since the 1970s and, especially during periods of higher inflation, there has been greater interest in alternative accounting treatments based on current replacement cost accounting. Under current cost accounting, assets are revalued in accordance with their replacement cost and depreciation is charged as a cost on the revalued asset amount. The merit of current cost accounting is that it ensures management charges itself of the true cost of using up capital assets. But it should also be noted that current cost accounting should also bring into account as income or gain any revaluation gains on assets. While these are not treated as part of operating profit, as Edwards and Bell recognise, they should be treated as part of the overall profits of the firm.

National accounting adopts a similar approach to measuring costs of capital usage. Depreciation charges are meant to represent the current cost of using up the nation's capital stock rather than a notion of spreading the historic cost of acquiring the capital stock. Similarly national accounting does not treat capital gains as part of operating income.

It is thus not appropriate to charge a rate of return on scheme assets where the capital cost attributed to those assets is an inflated notional rather than an actual cost. Replacement cost valuations which incorporate an upwards inflation adjustment for capital bases are fundamentally unsound as a proxy for competitive market outcomes.

Relevance to BRIA

The BRIA scheme assets (both dam and distribution assets) have been revalued on the basis of replacement cost and presented as the capital cost of the scheme on which a return should be sought. Indexation appears to have been achieved by using CPI plus the construction index. Whereas as

optimization is a useful check on whether incurred capital costs were efficient, the marking up of costs on the basis of indexes is simply an attempt at gaining a “free lunch” for SunWater.

15. Where the capital cost was inflated by inefficiency

Just as it is not appropriate to charge a rate of return for scheme assets where the cost of those assets is notional and inflated, so also it is not appropriate to charge a rate of return on scheme assets where the capital cost of those assets was inflated by original inefficiency. In competitive markets such over-charging practices and “gold plating” are eliminated by competition and the discipline of the market. This will not always be the case where there is natural monopoly and no user oversight of construction costs or methods. Given that an irrigation scheme is a natural monopoly, as well as (usually) a statutory monopoly, there is a great deal of scope for featherbedding and padding of capital and current costs. If the purpose of a competition policy is to expose the public sector and infrastructure monopolies to a regime which will imitate the pressures of a competitive market, it would be self-contradictory to allow an infrastructure owner to charge on the basis of inflated and uncompetitive original capital costs. To allow an infrastructure owner to charge a rate of return on inflated capital costs is to grant him a right to tax the users of the scheme in perpetuity for his original wastefulness. “To them that hath it shall be given” is not a prescription for competition or economic efficiency. What is required is an examination of optimized actual capital costs.

Relevance to BRIA

Despite an estimated cost of $155,000,000 in 1980, a cost of approximately $430,000,000 is now being claimed, extravagances and excess during construction are undoubtedly a major contributing factor to this cost escalation. Potential investors and existing Irrigators in the BRIA would not have supported the Scheme’s establishment had they been made aware that there was a requirement to provide a significant initial contribution to the capital cost of the Scheme, pay the full operation, maintenance and renewal costs, and also provide a rate of return on the inflated final cost as an ongoing component of their annual water charges.

Engineering design has created unnecessary flooding in some sections of the Scheme and engineering mistakes resulted in Irrigators having to contribute financially to additional capacity in the Scheme subsequent to purchasing irrigation farms. High maintenance and ineffective control structures in channels results in increased operating costs and high losses from channel overflows.

In addition, a contemporary costing of construction costs will be offered which suggests considerable padding was involved in those costs. It is noted that there was never any independent audit of construction costs of the scheme and contracts have not been opened for examination.

16. Where it is not necessary to induce investment in the infrastructure

Ex ante, private capital will not be invested without the expectation of a profit commensurate with the rate of interest prevailing at the time of investment but, *ex post*, no one has to be charged to validate that decision - only monopolies can do that. A house owner cannot demand that his rents be set by a rent tribunal on the basis that he should earn a normal return on replacement cost. Nor can the world's shipping and mine owners overcome a shipping depression or minerals glut by demanding some international tribunal award them prices to cover replacement costs.

The only argument ever really advanced with any force against SRMC pricing is that its imposition *ex post* creates losses for an infrastructure investor who has incurred capital costs. For example, the Commonwealth Treasury (1999, p 69) argues "Utility industries are capital intensive and their assets are durable, long-lived and immovable. Demands for access and 'fair' or 'non-exploitative' prices mean that investors might expect that after they have sunk their capital they would be limited in the prices they can charge and be subjected to possibly onerous obligations to supply. Therefore, the incentive to invest depends critically on expectations of the future pricing policy and must be considered by the regulator." Hence, the concerns expressed by infrastructure owners over the threat of "regulatory taking" (expropriation).

However, the incentive to invest depends on *ex ante* returns. SunWater does not need a rate of return on a DORC valuation on *taxpayer funded and previously constructed* assets to maintain the incentive to invest. Opportunistic "regulatory taking" can be prevented by a consistent application of DAC over time in relation to *future* investment in assets: DAC would even protect SunWater against the obsolescence or losses of capital value faced by investors in other industries exposed to competition.

There is certainly no need to pay a return to, or index the capital returns to, sunk capital as though it were free to get out of the ground and go elsewhere. That is not to say that a regulator should opportunistically strip investors of any returns on sunk capital, since future investment would be prejudiced if the expected *ex ante* returns were seen to be retrospectively expropriated *ex post*.

But, whatever valuation is used, incentives to invest for SunWater are not affected if:

- the QCA awards no return on capital where that capital has been recouped by land and water sales;
- the QCA awards no return on capital where that capital was a gift from the Commonwealth;

- the QCA awards no return on capital where the assets constructed with the capital have a perpetual life and their renewals are already being charged for; and

- the QCA takes into account as income investment returns by way of realised or unrealised asset appreciation as well as depreciation.

Any argument that SunWater should be able to charge prices above SRMC in order to induce investment amounts to saying that existing BRIA users should allow themselves to be charged above efficient SRMC pricing or even above average cost pricing in order that they can be assured that infrastructure will continue to be provided. Such a view appears to assume that future investment *will* be undertaken by SunWater. But it does not follow that super-normal monopoly rents should be granted *today* so that a utility *might* invest tomorrow: that seems to amount to an argument that users are not entitled to fair and efficient pricing of existing infrastructure for fear that no infrastructure will exist later. In relation to arguments of this kind, it may be seen as an unpalatable choice to be told that infrastructure investment will only be forthcoming on the basis that users agree to a form of economic coercion – the sort of monopoly pricing which regulation or good public policy is imagined to prevent. One needs to consider *ex ante* versus *ex post* decision-making, together with the related concepts of "regulatory taking" and capital cost recovery but that is a far cry from allowing monopoly rents to be captured in SunWater prices for water storage and transport services.

Nor are incentives to invest prejudiced if the QCA declines to allow multiple recovery of costs through asset revaluations. No capital return should ever be allowed to be charged on an upwards revaluation of an asset base without equally bringing to account, as a cost offset or gain, the corresponding holding gains on existing assets

Relevance to BRIA

The nub of the "investment incentive" issue is that so long as SunWater is allowed a hurdle rate of return on its *future*, efficient, *unrecouped* capital costs (as opposed to notional, revalued or inflated costs), there should be no deterring of investment.

Finally, we should note that any concerns about "regulatory takings" or expropriation in the case of the Burdekin would be more properly addressed to the plight of cane farmers who have ploughed in excess of $300 million into the purchase and development of their farms, only to see the capital values of their investments savaged by changes in water pricing polices which amount to retrospective double charging. It should be acknowledged that Irrigators who invested in the Burdekin Dam Scheme had an expectation that they would achieve a rate of return from their investment but have had to accept that their investment is not able to generate a satisfactory standard of living

let alone a return on their investment.

17. *Where the asset cost nothing*

It is not appropriate to charge a rate of return on an asset which cost nothing to the operator of the scheme. For example, a naturally occurring river serves the same purpose of transporting water as a man-made aqueduct but one suspects no rational person would argue that a water authority should be able to adopt a DORC valuation of a river channel based on its (aqueduct) replacement cost and charge that "cost" to water users. Equally one would reject the proposition that an incumbent owner needs to be allocated additional revenue (through revaluation of river channels so that its "costs" (of existing assets) should be comparable to those faced by a (potential) new entrant. To provide the "owners" of river channels (which have been acquired at generally very low or zero costs) with a DORC valuation is equivalent to providing a monopoly rent in perpetuity.

Not only is this true in the case of Nature-given assets such as a river channel, but it is also true where the construction of a physical capital asset was financed by a gift. It would for example be absurd if a private donor gave money for the construction of the public hospital and fees were then charged by the government department running that hospital to earn a rate of return on its construction costs. To do so would be contrary to the very purpose of the gift.

Relevance to BRIA

In the case of the Burdekin, the Commonwealth gave "non-repayable, non-interest bearing grants" (Senate, 1984, clause 8(2) of the Agreement of 28 September 1984) to the State of Queensland towards the construction costs of the scheme. Clause 22 of the Agreement required that the Commonwealth financial assistance be "not appropriated for any purpose except meeting or reimbursing to the State expenditure by the State on the construction of the dam." The Prime Minister, Mr Hawke (Hansard 6 September 1983 p 372) made it clear that the dam was a national development project to "provide an assured water supply for well over 100,000 Australians plagued by years of neglect". It is therefore inappropriate for any charge to be levied by the State for a cost already recouped and to claw back that Commonwealth grant from the area of North Queensland intended to be benefited. That the Commonwealth intended to benefit North Queensland rather than the State Treasury can hardly be doubted when reading comments such as those made by Mr Gayler, the Government member for Leichhardt in the Hansard of 23 September 1987, page 612 where he referred to the sugar industry being affected by flagging international prices and stated "The 1987-88 Federal Budget demonstrates, I believe, the Government's commitment to non-metropolitan Australians and the development of their industries, such as the sugar industry. In particular, the Government's economic strategy, directed at improving industry competitiveness and so laying the basis for a return to growth in living standards, will be welcomed by all of those

associated with the primary production sector". The Burdekin Dam grant was then specifically referred to in this context. It is thus more than tolerably clear that the purpose of the grant was to promote regional development and assist the sugar industry which in turn presumes that the cost of the dam constructed with Commonwealth funds would not be charged against sugar producers by the State of Queensland. Regional development is naturally served by making the dam available for use to irrigators and other beneficiaries of the Burdekin scheme at its zero net cost to the State. It cannot rationally be contended that the Commonwealth intended a charge be placed on its contribution any more than Commonwealth road grants require tolls be placed on State highways.

The State Water Reform Unit (WRU) in its paper "Treatment of Contributed Assets for Pricing Principles" declared that "The requirement to recover a return on capital is not an issue for all water customers *due to policy measures exempting them from such (such as rural water customers)* [emphasis added]. However, the recovery of a return of contributed (or user-funded) capital by the state through periodic charges will have universal relevance to customers of the water industry as Competition Principles require a return to capital on all assets, whether contributed or not."*[Doc. Ref. No. Z/48 - see page 106].* The reasoning behind this statement is confused, to say the least. It is said that rural water users will **not** pay a return on capital. Then it is said that other users should be charged a return on contributed assets. Further the WRU forgets that a risk premium for managing contributed assets is not equal to WACC, is charged for in renewals annuities in any case, and normal commercial companies do not get the benefit of contributed assets. Nor does the WRU's discussion of contributed assets acknowledge capital cost recoupment through sales at land and water allocation auctions.

18. Where the asset has been taken over

It is not appropriate to charge a rate of return on a scheme asset if that asset was "stolen" or transferred for no consideration. For example, suppose farmers in a region contribute to a fund to create a weir vested in a cooperative. Suppose that cooperative is later nationalised and subsumed into a statutory water board which in turn is later abolished and its assets vested in a commercial statutory authority. It would be absurd in such a case for that statutory authority to levy a rate of return on physical capital assets which were appropriated from their original owners. The fact that the legal title to an asset may be vested by statute in an authority does not of itself imply that such an asset should be generating a rate of return.

Relevance to BRIA

The State's contribution to the Burdekin was financed by land and water sales and by general taxation. The assets were created for and vested in the Crown. SunWater paid nothing for these assets which were vested in it for no consideration by Act of Parliament. SunWater did not raise equity in private

capital markets to build these assets - they were largely paid for by taxpayers and irrigators and gifted to SunWater. Why should SunWater be allowed to charge for them?

Social and equity arguments

19. Where those assets were created under a legislative policy

It is not appropriate to charge a rate of return on scheme assets where those assets were created as a result of past government and Parliamentary social policies rather being created simply to serve those who are sought to be charged. History is history - and as IPART has recognized (supra) a line in the sand must be drawn. It is not appropriate for the mistakes of a past generation of decision makers be paid for by selective taxes imposed with retrospective effect.

This force of this argument has been recognized by government. In a letter dated 16 January 1997 to Mr Howard Hobbs Minister for Natural Resources the Queensland Farmers Federation urged "We believe the recommendations of the Fitzgerald audit of Queensland finances were economically flawed and inequitable in seeking to recover a rate of return on existing water assets. The existing water infrastructure of this state was built for a range of economic, social and regional development reasons. Any attempt now to seek a return on past investment is not appropriate." The handwritten Ministerial annotation reads "So do I!!" and a handwritten instruction to the Department says "Please draft reply stating Minister's agreement with highlighted part."*[Doc. Ref. No. AA/49 - see page 107]*.

That reply of 5 March 1997 from the Minister for Natural Resources to the Queensland Farmers Federation stated "I am in agreement with your assertion that water prices should not be set to recover a rate of return on existing irrigation water supply assets. The Government's *Rural Water: Pricing and Management* document supports this direction. The pricing objective for existing irrigation schemes is for coverage of operating, maintenance and renewals costs only to ensure self-sufficiency in the longer term. Where this target cannot be reached without adverse regional impacts, the government will continue to provide a contribution to costs. Some more recent schemes already contribute a return on capital which was the objective at the time they were built." *[Doc. Ref. No. BB/49 - see pages 108-109]*. The reply deviated from the Minister's agreement with the principle of no return on existing assets by inserting a qualification relating to more recent schemes which were expected to contribute a return on capital. This deviation did not go unnoticed and a further letter of 28 October 1997 from Queensland Farmers Federation to Mr Howard Hobbs Minister for Natural Resources observed that the "[Water Policy document reads] *For existing water supply schemes, the objective is for revenues to cover operating, maintenance and refurbishment costs only, not a return on capital. However where there is a rate of return for a scheme, this will be retained by the Government.* At a recent meeting of the QFF Water Task Force, the implications of this statement were considered with some concern. It was resolved that QFF

write to advise that the proposal to retain revenue by the government was not the policy that had been set out in the government's own Rural Water Pricing document, had not been discussed with QFF, was not supported by QFF and that it was not easy to see how such an event could arise for existing infrastructure. I should also note our understanding that this matter was not put before the Water Policy Council for debate, rather it was put forward for information as *fait accompli*. QFF is strongly opposed to attempts to generate a financial return on water infrastructure built well prior to the COAG policies on cost recovery, and which were built for a range of social, regional and economic development reasons."*[Doc. Ref. No. CC/50 - see page 110]*

Relevance to BRIA

While the Burdekin Dam was widely supported, the forced resumption of privately-owned land and the construction by State Water Resources Commission of channel and distribution works to serve 70-100 hectare sugar cane farms reflected a government closer settlement agenda rather than simply an efficient economic decision as to optimal irrigation (see Queensland Government in IC, 1992 p 217). Having made the decision to construct capital works to further a process of rural subdivision and closer settlement, it is appropriate that government accept the costs of such a policy.

20. Where the State has been compensated for costs of policy change

It is not appropriate to seek a rate of return on assets where that State has been compensated by $2.4 billion in Federal payments for a *prospective* policy change in water pricing. Nothing in the COAG agreements *requires* the State to seek a return on *past* capital expenditure in water schemes. IPART in NSW felt entirely comfortable in "drawing a line in the sand" and putting a zero value on past capital expenditure (IPART, 2001, p 23). If the compensation payments are meant to compensate the *people* of the State for a change in water pricing policy (removal of alleged subsidies of $10-$30 million per annum, then the least the State Government can do is credit some of the payments towards unrecouped capital costs of water schemes (if any). The capitalized value of a $30 million "subsidy" is, say, $450 million and that should be credited towards the reduction of capital base of irrigation schemes, if irrigators, like the State, are to be compensated for an acknowledged change in standing government pricing policies. If A receives a payment of $X for causing B to suffer some detriment it is equitable that B share the benefit of the $X with A - he who gets the benefit should bear the burden and conversely he who bears the burden should get the benefit. As a matter of principle, this does not seem unreasonable and may be seen as analogous to the equitable doctrine in law which precludes "unjust enrichment". Why should a person or body in authority gain a profit from a policy change which damages those under its care or authority without being required to share that profit with those under its care or authority?

Relevance to BRIA

BRIA predates COAG and NCP policy changes. It should therefore be dealt with on its own merits. A “line in the sand“ approach is both permitted under COAG/NCP and is desirable. There is no reason why, having taken the compensation payments from the Commonwealth, the State Government cannot in turn “compensate” the losers from policy change by drawing a “line in the sand”.

21. Where social equity considerations dictate otherwise

It is not appropriate to charge a rate of return on scheme assets where there are social considerations, such as equity, which dictate otherwise. For example, water supply systems for Aboriginal and Torres Strait Islander communities are not expected to provide a return on capital. The community may take the view that there are equity grounds for subsidising capital works in other communities as well. No economic system is rigid. Competition policy was part of a general programme of micro-economic reform to lift Australia’s living standards by making Australia more internationally competitive and thus arrest Australia’s decline in the world table of living standards since 1901. It was recognized there would be losers as well as winners from reform. That is why competition policy compensation payments were made. That is why there is a safety net to re-train unemployed workers from redundant industries. Where there is an irrigation scheme which *can* underpin a potentially internationally competitive industry (by not ruining it with input charges), it is both common sense and equity to waive such charges rather than have to make direct payments to unemployed farmers. In terms of equity it might also added that the tax and social security system is meant to be a social insurance net which smooth out the social impact of market fluctuations - high income earners pay tax today and expect not to starve should they become unemployed or quadriplegic. It may therefore be seen as equitable to waive charges to keep an industry afloat and people employed if that industry has paid taxes in the past and may yet do so again with moderation in input charges. There is a huge cost in wasted human and physical capital in seeing an industry, company or project collapse altogether (a consideration which appears to have motivated government support for Ansett and the Queensland Magnesium float). No one should expect taxpayers to “throw good money after bad” but if governments are going to require taxpayers are to throw money at less deserving or less promising cases, then BRIA farmers are entitled to ask for some consideration on equity grounds (even if their case on legal and economic grounds were not as well founded as it is)..

Relevance to BRIA

Farmers in the BRIA are “doing it tough”. There is heavy reliance on bank credit after a run of low prices and an upturn may not come quickly. They have more than paid their fair share of taxes and charges, as well as contributions to the scheme. [Many have disposed of off-farm assets to stay solvent. All this has been done without social assistance. But their backs are now against the wall.] The great majority of BRIA Irrigators have doubled,

trebled or even quadrupled their productivity over the last decade in their search for efficiency and ability to remain competitive, only to see these gains negated by ever increasing charges by essential service providers who make little attempt to implement productivity and efficiency gains. Equity demands that they receive consideration for their past contributions to the State and that even if there were a case for SunWater to seek a return on assets (which there is demonstrably not) it would still be valid social and economic policy to waive a return on capital.

Part IV: Capital Contributions To The Burdekin Scheme

No 1 Term of reference

The first term of reference requires the QCA to examine the capital contributions made by irrigators, the Commonwealth, State governments or other parties. It is obviously equally important to ascertain what terms and conditions were attached to such capital contributions or for whom the capital contributions were made.

The original cost of the Burdekin scheme was estimated to be $155 million (in 1977 dollars) which would allow irrigation of an additional 45,000 hectares with about 660 new farms see IC (1992, p 211-212).

(a) development costs associated with the Scheme

Essentially, the overall scheme cost some $430 million.

- $130 m for the dam
- $300 m for distribution channels

Commonwealth capital contribution

Of this, $130 million was contributed as a Commonwealth grant for the dam and has been written off by the Commonwealth (though the Queensland Government rightly pointed out “it will be recovered by the Commonwealth through many benefits of the development”), see IC (1992, p 222).

State capital contribution

The remaining $300 million relates to State expenditure on the distribution works.

It is understood that of this $300 million, some $200 million came from consolidated revenue and some $100 million in earmarked loan funds.

As noted above, the consolidated revenue funding should be ignored (on the basis that it is arbitrary to seek to recover money spent from consolidated revenue on irrigation schemes while declining to seek recovery of moneys spent on school or hospital buildings or on current welfare handouts).

This leaves a recoverable State capital contribution of some $100 million.

However, it should be noted that BRIA Irrigators are not the only beneficiaries of the Burdekin scheme. Of the 850,000 megalitres in the dam, some 300,000 megalitres is used by current irrigators cultivating half the original acreage plan for the scheme (28,000 hectares as opposed to 56,000 hectares). The remaining water in held for the North and South Burdekin water boards and for Townsville-Thuringowa. Some 200,000 megalitres remains unallocated and has been vested in SunWater by the

State.

Prorating the $100 million according to water allocations results in a capital cost attributable to irrigators of some $35.3 million.

(b) payments made for land, sugar cane assignments and water allocations (including consideration of the entitlements received for such payments)

Figures from land and water auction sales (pro-rated from a near census) show irrigators paid in the order of some $150 million for their land and water allocations.

Nothing was paid as such for sugar cane assignments as these were freely available at the time, by applying to the Queensland Sugar Corporation who granted assignments on the recommendation of the CANEGROWERS representative bodies.

The auction brochures make it reasonable clear that it was represented to purchasers that irrigators were paying for farms with irrigation rights and there was given as consideration to the auction purchasers an express or implied undertaking that the farms would be serviced with water on the basis of actual bona fide operating costs of the scheme only. Other documents refer to "once only capital contributions" to the scheme. *[Doc. Ref. No. F/25 - see pages 73-78 and also Doc. Ref. No. L/28 - see pages 87-88]* Such representations and further statements operate as an estoppel as to pricing policy for water delivery charges. In addition SunWater as a successor in title to the scheme with notice of the contractual rights of irrigators is also bound by such representations.

(c) contributions by sugar mills

Sugar mills over some 10 years have paid the sum of approximately $410,000 thousand annually as levies which should also be brought to account against capital.

This comes to a total capital contribution of $4.1 million approximately.

(d) any other relevant factors identified by the Authority, including any capital not accounted for by capital contributions

Further capital contributions arise from –

- additional water allocations and land sales outside of the auction system.
- contribution towards additional capacity in the Barratta main channel system
- past excess charges over efficient opex (that is, over-charges due to inefficiency);
- over-charges for a rate of return on previously recouped capital; and
- fiscal revenues generated by the Scheme from increased or sustained

State and local government tax bases (land tax, rates, payroll tax, stamp duties, GST)

In recent years, Irrigators have been paying some $3 million annually approximately, in excess of efficient operational expenditure, which should be credited towards capital.

Also, a return on capital of $2 m per annum has been charged for some 10 years on previously recouped capital.

This amounts to a further capital contribution by Irrigators of some $20 million.

In addition, the QCA needs to examine other contributions to government receipts from the scheme.

These include fiscal externalities such as revenue from rates, land taxes, payroll taxes and stand duties not only in the immediate BRIA area but in the surrounding region including the towns of Ayr and Home Hill.

Our best estimate based on figures available to us and given the lack of transparency of scheme costs and revenue is;

	$ million
Recoverable State capital contribution	35.30
Less	
Land and water sales proceeds	140.00
Sugar mill levies	4.10
Cumulative excessive operational charges	20.00
Cumulative excess return on recouped capital	20.00
Fiscal external benefits to State	62.50
Gives Excess capital value recouped by State from Burdekin scheme	211.30

Conclusion to term of reference 1

BRIA irrigators have more than paid for their reasonably allocated share of the capital costs of the Burdekin scheme, viz, $35.3 million. When account is taken of previous over-charging and failure to account for external benefits, irrigators and sugar millers could reasonably claim they are owed a refund which would still leave the State enjoying the fiscal external benefits generated by the Burdekin scheme.

These figures should be profoundly disturbing to anyone concerned about “lead in the saddlebags” of Australian export industries.

Behind the rhetoric of “user pays” and “full cost recovery” lies a hidden and secret tax system operating to transfer income from a few hundred productive exporters towards the chosen objects of public sector largesse.

The elected Government, in commissioning this QCA inquiry, was obviously moved by a sense that “something was wrong” with what it had been told by its public service: its apprehensions are now being shown to be well founded. “Transparency” and “accountability” are the mantras of the contemporary theory of public administration but secrecy, obscurity, invention, muddle and confusion can be the perennial realities which afflict real world public sector decision making. Sadly, in the fixing of Burdekin water storage and haulage charges, *ad hoc* and *ex post facto* rationalization designed to maximize or retain revenue seem to have prevailed over rational and considered economic and other arguments.

Behind the figures gradually starting to reveal themselves in their stark cold nakedness, is seen to emerge a story of the bleeding of North Queensland families and communities, of jobs lost or never created, of children leaving for work elsewhere, of businesses in stagnation or decline. This should be seen as truly tragic - a result of avoidable human folly. The Burdekin scheme was conceived as part of the nation building process. It was meant to promote the prosperity of North Queensland. To see it reduced to a shabby and intellectually inept exercise in revenue seizure is a distressing sight for all who have any feeling or respect for the

tremendous historical achievement which the development of the Burdekin Dam Scheme represents.

APPENDIX I:

THE USE OF DORC VALUATIONS

The purpose of valuation is to ascertain the cost that would have been incurred in a competitive market by another provider. Actual costs incurred by the incumbent are the only real factual evidence of "costs". It is, however, understandable that a new regulatory regime might wish to use valuations to check cost, for example, because records of actual costs might not be available past the legal limitation period or because non-arm's length or inflated transfers of assets might prejudice user. From this perspective, DORC valuations can be a useful check against "goldplating" or cost padding.

However, it may be argued that depreciated actual cost (DAC) is the *prima facie* real cost on which any initial capital base (ICB) should be erected (provided the infrastructure was built without "goldplating"). Depreciated actual cost is a factual measure of cost for which there is objective evidence: all other measures of "costs" or "value" are matters of opinion. To say this is not to say there is no place for DORC as a check on cost padding or wasteful construction but to point out that DORC can be a fertile area of dispute.

King and Maddock (1996, pp 168-169) note that "If access pricing is determined so as to maximise economic efficiency, for example through short-run marginal cost pricing, then a state treasury may lose significant amounts of revenue. It will be more expedient for a state to value its assets at a high but defensible level, and gain additional revenue via the access regime under the guise, however spurious, of promoting economic efficiency. Access prices can be set by establishing a rate-of-return on the value of existing infrastructure capital. At one extreme, assets can be valued at replacement cost. However, the assets involved are usually irrecoverable and in many cases will never be replaced. For example, existing gas transmission pipelines may be renewed or upgraded but it is unlikely that they will ever be scrapped and rebuilt. The same may be true of water facilities. As a consequence, replacement valuation will simply create an artificially high rate base which can be used to justify high (and inefficient) access prices and large state revenues. At the other extreme, assets may be valued at depreciated historic cost. This leads to a lower rate-base and can only be used to justify lower access prices and state revenues. But even this valuation technique has no foundation in economic efficiency. If the assets already exist, then economic efficiency involves selling access at prices which cover variable costs, not sunk capital costs."

This passage is particularly pertinent to the problem facing the QCA in looking at the question of a rate of return on Burdekin scheme irrigation assets. SRMC pricing is ideal so why is there any discussion at all about a return on capital costs? Why is *any* valuation - whether DAC or DORC - relevant? The *only* rational economic argument against economically optimal SRMC pricing is essentially a *financing* argument (costs should be recovered) but, if as we shall contend, the capital costs of the Burdekin scheme assets have already been recouped, then the idea that capital charges are

required to meet a financing requirement falls to the ground and we can indeed return to the first-best world of SRMC pricing for this great public work.

Replacement Cost Valuations and DORC

DORC is not "economically efficient" where it results in inflationary indexation of capital costs and thus embeds monopoly rents. Because DORC can result in a measurement of "costs" well in excess of what was actually ever spent, its use needs to be constrained by DAC. In real world markets there are no guarantees that an investor will earn a rate of return on a higher replacement cost of his assets, since he is exposed to competition from other producers. In the real world once you have sunk your cash into a steel mill or a mine, you have to take prices as you find them and you will continue to produce so long as prices cover marginal costs. You hope that over the long run, between swings in prices, you will earn a return of capital and a return on capital but there are no guarantees. So long as you get a hurdle rate of return on your cash outflows you are content.

There thus needs to be critical examination of the limitations of replacement cost valuations such as DORC and whether any value should be attributed to sunk capital (cf Wells and King on scrap value). Arguments used by Professors King, Johnstone, Wells, Bonbright, Whittington and others demonstrate that using DORC can provide a "free lunch" in economic terms.

Johnstone (1999) comments that the "view [that economic theory requires sunk assets to be valued at DORC] has been promulgated and recited by asset owners and the regulators themselves to the point that it is widely taken for granted, albeit without demonstration or authority. And yet the two theorists who have had most of substance to say about the regulatory asset valuation debate in Australia, Melbourne University economist Stephen King and Cambridge economist and accountant Geoffrey Whittington, have both concluded in their published works, and reports to regulators, that DORC should not be adopted, not simply because of its established impracticalities and administrative infirmities but because it is theoretically not acceptable ... The other, more astounding precedent ignored by regulators who assume the relevance of DORC is that in the USA where asset valuation for the purposes of tariff setting has a 100 year history and a massive literature, replacement cost based asset valuation has been either not taken seriously or considered and rejected. The authoritative American text on asset valuation for regulation purposes, Bonbright et al (1988, pp 296-8) rejects replacement cost valuation as neither living up to its supposed economic justification nor being practically administrable."

A trouble with DORC is that it rests on the hypothesis of a rebuilding of a system, whether by the incumbent or by a new entrant (which in itself can produce different outcomes). But in reality, with a natural monopoly, entry is only possible on the ground floor, that is entry is timeless, and timeless DORC is really efficient DAC. To charge today's users on the basis of a higher replacement cost of assets which historically cost much less pre-inflation is to transfer an inflation gain from users to owners, where in the past the users could have had that gain by using a bond issue floated by a semi-government infrastructure provider such as the Sydney Water Board. There is both inter-temporal inequity and inefficiency in forcing today's users to

pay costs of infrastructure for tomorrow's users (which could be financed by a bond issue at the relevant time), especially when there is no guarantee such infrastructure will ever be needed or built. In the case of irrigation schemes such as the Burdekin this problem is sought to be met by not charging depreciation to users on higher replacement costs but rather by charging a renewals annuity which is only supposed to smooth out ongoing maintenance costs in perpetuity.

One (incorrect) argument for replacement cost rests on the idea that DORC signals to users the marginal cost of their current use of resources and is therefore economically efficient. An appeal might be made to Vickrey who states "Since changes in present usage cannot affect costs incurred or irrevocably committed to in the past, it is only present and future costs that are of concern in the determination of marginal cost. Past recorded costs are relevant only as predictors of what current and future costs will turn out to be. The marginal cost of ten gallons of gasoline pumped into a car is not determined by what the service station paid for the gasoline, but by the cost expected to be incurred to replace the gasoline at the next delivery." (William Vickrey *Marginal- and Average Cost Pricing* in Eatwell et al editors, The New Palgrave Vol 3, Macmillan,1987 p 314).

But, as Vickrey (himself an ardent advocate of SRMC pricing) would be the first to recognize, to use this kind of argument to support prices based upon DORC for *sunk* capital is incorrect. You either sell gasoline now or later (one use precludes the other) but a water channel is available for use both now and later and a failure to use it now does not prolong its life later. There is no economic reason to stint usage of a water channel now through higher charges simply because in 50 years time it will cost more to replace it. If the water channel has no alternative use and there is no capacity constraint, there is no economic efficiency reason for not pricing at (minimal) SRMC (and if there is a capacity constraint that will be reflected in water trading resale prices).

The crucial point to note is that replacement cost has been used by economists as a proxy for opportunity cost. However, in the case of sunk capital, we do not need its replacement cost as a proxy to tell us what its opportunity cost is. An irrigation scheme like the Burdekin is not like a vendible commodity such as a can of petrol. Absent any capacity constraints, its opportunity cost is nil - there is nothing else we can do with the dams and channels except let the water flow. And given that there are some 200,000 megalitres of unallocated water in the Burdekin dam it is hard to argue that there are any serious capacity constraints.

At the end of day, sunk capital earns a quasi-rent, a demand determined price. In a competitive market, if there is excess capacity that quasi-rent will be reduced to zero and SRMC pricing will result. If there is a shortage of capacity, then positive rents will emerge. The next question is whether those rents in a competitive market go to the resource owner (in the case of the Burdekin, the water licence holders) or to SunWater (the water storage and transport business). If one is concerned to replicate competitive market outcomes we would argue that any rents should accrue to the resource owners (which may include SunWater in respect of its water allocation) not to a mere water storage and transport business which is meant to be competitive. This parallels the allocation of rents in the classical Ricardian model where capital owners

in the long run only earn a competitive return on their investment and where super-returns are competed away in favour of landholders as resource owners.

What is DORC anyway?

The real argument in favour of DORC is as an attempt to replicate how competitive markets force productivity gains to be passed on to consumers, just as a lower cost of new cars depreciates the value of used cars.

But DORC concept suffers from a lack of conceptual clarity. One can distinguish between the concepts of incumbent DORC and new entrant DORC. The concept of replacement cost depends on who is doing the replacing.

There is a further conceptual problem with DORC. If one is trying to replicate the outcome of a competitive market, there is always free entry. A new entrant can acquire the resources necessary to enter the industry on the same terms and conditions as incumbents. If DORC is based on the replacement costs a new entrant would face *now* then it is *not* replicating a competitive market outcome. To replicate a competitive market outcome, it is necessary to assume that the hypothetical new entrant can acquire resources on the same terms and conditions as the incumbent. In other words, the incumbent should not be allowed a competitive advantage through the mere facts of time and history. One should assume that the hypothetical new entrant had the same market opportunities as the incumbent.

In the case of a competitor to a long established utility, one should assume the new entrant entered the market at the same time and had the same opportunities. Only by abstracting from time and assuming simultaneous entry on the same terms and conditions, can one replicate competition. Under this entry hypothesis, it is reasonable to assume that a new competitor would have behaved just as the utility has behaved: that is to say DORC reduces towards DAC, once one removes the anti-competitive bias of time and history. In other words in the timeless economic world of perfect competition, DAC (less any technological obsolescence) is the measure of competitive cost. Thus “timeless” DORC is DAC adjusted downwards for any actual costs which could be saved by using newer techniques of production. Such a concept of DORC may seem somewhat metaphysical but it highlights the abstractions that DORC involves.

Is DORC necessary for capital maintenance?

One argument for DORC is that, when it is higher than DAC, depreciation based on DORC ensures that charges are sufficient to pay for system replacement. However, this argument is confused. There is no legal obligation for any infrastructure owner charging depreciation on any DORC basis to set aside those depreciation allowances in an escrow or trust fund earmarked for system replacement. There is nothing to stop depreciation allowance cash flow being paid out to shareholders as dividends or invested elsewhere.

There is a further problem with charging the current generation of infrastructure users for the costs of infrastructure which will be used by future users. There is no reason

why the next generation of infrastructure users cannot be expected to pay for their own costs through a future infrastructure bond issue.

To look at it another way, why should the windfall gains from inflation be appropriated by asset owners through indexed depreciation allowances rather than flow through to users?

It may also be noted that DORC depreciation in a period of inflation is likely to lead to a situation where the original cost of an asset is depreciated not once but many times over.

In the case of the Burdekin, depreciation is irrelevant as an argument for a replacement cost valuation since it is assumed that the scheme has a perpetual life and maintenance is to be charged as one goes along, whether as an immediate expense or through a smoothing renewals annuity.

Asset valuation: DORC inconsistencies

DORC not used to measure income for tax

Indexation of the tax system to allow for current cost accounting is not used in the tax system. Notwithstanding the advocacy of the Matthews Committee in the 1970s, it was felt that it was not appropriate to measure business income by adjusting for the impact of inflation on operating costs without taking into account its effect on asset revaluation gains.

It might also be noted that the concept of coupon depreciation is encountered in tax law for building structures where depreciation is based, not on the purchase price paid for an asset by its current owner, but on the construction cost incurred by the original owner who created the asset. If depreciation were allowed on the market value (as in the USA) buildings could be depreciated several times over. DORC is not tolerated in the tax law: wherever depreciation is allowed on a revalued asset, the revaluation surplus has to be counted as income or capital gain.

It may be noted that the Ralph Review of Business Taxation has proposed a model of company income which takes into account all forms of realised gain and leaves open the possibility of bringing unrealised gains to account as income.

DORC not used to measure resource rents

Depreciated actual cost (DAC) is used for resource rent tax (RRT) because the tax is based on actual cashflows: they are not allowed to be written up retrospectively. Allowing utilities to revalue their capital investments upwards understates the monopoly rent component of their cashflows. Esso/BHP are not allowed to do a DORC revaluation on their cashflows invested in Bass Strait before taxable resource rents are computed - why should infrastructure owners be treated differently?

DORC not used to measure land value

In the case of estimating site value for rates, the relevant concept is the salvage value

of land - sunk capital improvements such as drains or pipes are ignored and treated as having been recouped after, say, 15 years, see Scott (1986): this is the opposite of DORC, it is a statutory recognition of the scrap valuation principle for sunk capital.

In valuing land and improvements it is often the case that improvements have no value and that all the value is attributable to the salvage value (site value) of land. Take for example the NSW State Office Block. At the time of demolition, it would have been quite wrong to attribute *any* value - let alone a DORC value - to an office block which was not wanted. What was wanted was the site and that was what had value. In the same way, it is wrong to use DORC to give a value to a utility owner's investment (which may have been long since recouped) when in fact the value of the enterprise may really lie in its monopoly land rights such as exclusive easements (which may have been obtained by statute at no cost).

DORC is subjective

In *Utility Asset Valuation and the Problems with DORC* by Professors D J Johnstone and M C Wells (July 1998), replacement cost based valuations were described as "multiple, subjective and at worst completely arbitrary choices, and hence cannot be reproduced by an independent valuer." DORC is in practice impossible to replicate and depends on arbitrary assumptions - is it greenfields DORC, incumbent DORC or timeless DORC? What is the DORC valuation of easements or other land rights grated gratis by statute?

DORC is asymmetric

Assets are revalued to count depreciation costs but revaluation gains are not counted as income. This need not be the case, but as DORC has been used in practice, windfall revaluation gains have been incorporated in initial capital bases.

DORC not adopted by accounting profession

In traditional historic cost accounting, only actual incurred costs are brought into account as ordinary profit or loss. Losses from revaluation of assets are not treated as actual, incurred, costs: instead depreciation is based on spreading the actual historic cost of an asset over time.

Since the 1970s and, especially during periods of higher inflation, there has been greater interest in alternative accounting treatments based on current replacement cost accounting. Under current cost accounting, assets are revalued in accordance with their replacement cost and depreciation is charged as a cost on the revalued asset amount. The merit of current cost accounting is that it ensures management charges itself of the true cost of using up capital assets. But it should also be noted that current cost accounting also brings into account as income or gain any revaluation gains on assets. While these are not treated as part of operating profit, as Edwards and Bell (1961) recognise, they should be treated as part of the overall profits of the firm.

DORC not used by investment analysts

DORC is not used for analyzing financial returns by stock market analysts. At the end of the day what counts is the after-tax rate of return, normally computed in nominal terms. What counts for investment analysis is the internal rate of return on actual cashflows or whether the NPV of cashflows satisfies a hurdle rate of return

DORC not used in asset owners' financial accounts

In measuring distributable profit, DORC is ignored, as new investments can be financed in the future. Asset owners are not constrained in dividend policy by the "capital maintenance" requirements of DORC.

DORC and income measurement

The WACCs used by regulators appear to use a return to equity securities which includes capital gains - that is to say, a return which includes the stock market's capitalization of realized *and unrealized* undistributed capital gains liable to be earned by the companies. If one is awarding a rate of return which is supposed to take these gains into account then their existence should be recognized also in the regulator's computation of the revenue stream being earned by the utilities.

The indexation of the capital base allows a return on capital expenditure which has already been recouped. (Nor for that matter should capital expenditure which has been reimbursed by users be counted as part of the capital base.) The use of replacement cost-based depreciation takes into account a notional and unrealised cost to investors, without equally bringing to account, as a cost offset or gain, the corresponding holding gains on existing assets. As Edwards and Bell recognised in their *Theory and Measurement of Business Income*, the total returns to investors include realised and unrealised holding gains as well as operating profit computed on a current cost basis. In examining incentives to invest, the Tribunal cannot rationally count indexed depreciation of appreciated assets as a *cost* to infrastructure investors without counting realised and unrealised asset appreciation as a *gain*.

Lest it be argued that no account should be taken of unrealized gains because they cannot be distributed to shareholders, it is pertinent to note that company law does allow dividends to shareholders to be paid out of realised and unrealised capital gains, see Ford's *Corporations Law.* For example, in the case of insurance companies, distributable profits are *required* by the relevant accounting standard to take into account both realised and unrealised gains.

Otherwise, if the asset holding gains are not to be recognized as revenue by the utilities, it is invalid to allow return on, or return of, capital based on an inflated capital base. That is to say, if capital bases are written up through DORC valuations, those revaluation gains should be counted as part of any regulated revenue stream.

DORC and the inflation gain

The traditional method of financing public works was for governments to borrow, build the infrastructure, and pay it off through a sinking fund accumulated from taxes or user

charges. One effect of this procedure was that infrastructure users were not charged more merely because the cost of replacing the asset may have risen – that was an issue for a later generation of users and another sinking fund. A result of insisting on replacement cost pricing is that users are now deprived of this inflation saving and may be seen as being exposed to retrospective price increases based on notional rather than actual, historic, costs: the inflation gain goes to asset owners rather than users.

But why should the gain from inflation accrue to the asset owner rather than users? If the infrastructure were publicly provided and funded by loan finance to be redeemed out of a sinking fund, the inflation gain would accrue to the users. Why should inflation be treated as a real cost to the infrastructure owner for regulatory purposes, when that cost will only be incurred in the future and can be charged then to tomorrow's users?

Conclusion re DAC versus DORC

The debate over whether DAC or DORC is the proper basis for computing capital bases is a little like the old debate over whether competitive prices were determined by supply or demand. DORC, as a replacement cost methodology, has been urged as proxy for LRMC, the opportunity cost of drawing capital into an infrastructure expansion. But just as Alfred Marshall likened the role of supply and demand in determining prices to the two blades of a pair of scissors, perhaps we may say that prices in competitive markets may be set by the lesser of DAC or DORC. If an incumbent supplier can service the market, all he requires is a return on his DAC but if that results in a price above DORC he faces the prospect of new entrants attacking his incumbent position.

Our conclusion is therefore that the correct basis of computing capital costs to establish a reasonable return on capital should be ***the lesser of*** DAC (depreciated actual cost) or incumbent DORC (depreciated optimized replacement cost).

All of this, however, is subject to the golden rule of SRMC pricing. In economics "bygones are bygones" and single purpose sunk capital has no opportunity cost. Where there is excess capacity in a competitive market, prices will be driven down to the lowest SRMC whether or not any producer is earning a return on his DAC or DORC capital base. And where capital has been recouped anyway, there is not even a financing reason for deviating from SRMC pricing.

APPENDIX 2

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