Draft Position Paper No. 3

Asset Valuation Approaches

1. Background

Submissions have been received from some stakeholders on the appropriate approach to the valuation of assets relevant to BRIA irrigators in the Burdekin Scheme. In addressing this issue the Authority has considered:

- conceptual issues relating to the use of DAC (Depreciated Actual Cost[1]) and DORC (Depreciated Optimised Replacement Cost[2]) asset valuation approaches;
- asset valuations for other purposes;
- assets valuations in other jurisdictions;
- sunk assets;
- subjectivity in DORC valuations;
- consistency in rate of return and asset valuation approaches;
- the optimisation of the Scheme;
- the date of the Authority's valuation and inflationary issues;
- the appropriate approach to revaluation gains; and
- the revenue implications of DORC and DAC.

2. Conceptual Issues relating to DAC and DORC

Stakeholder Comments

BRIAC has advocated the use of the lower of DAC or DORC, on the basis that, if an incumbent supplier can service the market, all that person requires is a return on DAC but, if that results in a price which provides a return on a value greater than DORC, the supplier faces the prospect of new entrants attacking their incumbent position.

SunWater advocated the use of DORC on the basis that it reduces the scope for regulatory risk, provides incentives for optimal future investment, supports operating capability maintenance and avoids inefficient bypass.

The Queensland Farmers Federation did not advocate a particular method but stated that if a cost based approach was used, it should include a rigorous optimisation of the asset base.

[1] DAC is the actual nominal dollar cost of acquiring an asset, depreciated over time to reflect the service potential of the asset which has expired.

[2] DORC is an estimate of the current cost of replacing an asset with one which can provide the required service potential in the most efficient way possible. Under this approach, an asset's value is decreased if it exhibits excess capacity, is over-engineered, is sub-optimally designed (having regard to technological advancements) or is poorly located. Depreciation is applied over time to reflect the service potential of the asset which has expired.

QCA Analysis

DAC can at times have advantages in terms of the availability of data. However, historic cost approaches:

- do not have any relation to market values or replacement costs and therefore do not provide any relevant signals about the opportunity cost of the progressive consumption of the asset through provision of services to users or the opportunity cost of replacing the existing investment;
- may lead to price shocks when assets are replaced; and
- fail to reflect the impacts on total costs of over-engineering and/or technological change.

DORC represents the value of assets consistent with the maximum price achievable in a competitive market, the benchmark for efficient pricing and service delivery. Optimisation of the asset base provides that only assets relevant to future demand and which are optimally configured and constructed are included in the DORC.

For reasons similar to those stated by SunWater, the Authority considers that DORC is the appropriate asset valuation methodology when determining the maximum allowable revenue for a monopoly services provider.

3. Asset Valuations for Other Purposes

Stakeholder Comment

BRIAC commented that DORC should not be used for pricing purposes because it is not used for a number of other purposes:

- DAC is used for valuing assets for income tax purposes;
- DAC is used for valuing assets for resource rent tax purposes;
- land values used for rating purposes are based on the "salvage value" (site value) of land, excluding improvements; and
- DORC is not used by the accounting profession (refer pp.62-65 BRIAC submission).

QCA Analysis

A variety of asset valuation approaches are adopted, for different reasons and in differing circumstances, by both the private and public sectors. As a variety of approaches are possible, it is critical to ensure that the approach that is adopted is consistent with the purpose of the asset valuation. As noted by Professor Walker in an article attached to the BRIA submission:

> …while CCA [current cost accounting] might be relevant to judgements about appropriate level of pricing (at least, in a private sector context) it does not follow that CCA data are relevant for the purposes of evaluating financial performance…

In this context, the Authority notes that asset values for taxation and accounting purposes are not relevant for pricing purposes. Historical asset valuations are used for taxation and accounting purposes because of a number of reasons including the availability of documentary evidence.

Moreover, the Authority notes that the relevant accounting standard for the valuation of non-current assets outlines a choice of valuation approaches - the cost basis or the fair value basis. Fair value is a forward looking approach. It is defined as the amount for which an asset could be exchanged between knowledgeable, willing parties in an arm's length transaction. The majority of the top 150 Australian companies use the forward looking approach to value their land and buildings (Petske and Fowler 1999).

Regardless, prices in competitive markets are determined irrespective of the asset values noted in the accounts or taxation records of any particular private sector entity.

In summary, the Authority must choose an asset valuation methodology which best suits its purpose – and that is to determine the appropriate asset base for monopoly pricing purposes. The Authority considers that the use of DORC is appropriate for this purpose.

4. Other Jurisdictions

Stakeholder Comment

BRIAC argued that the New South Wales economic regulator, the Independent Pricing and Regulatory Tribunal (IPART), had accepted the investment in existing irrigations schemes was sunk capital by adopting its "line in the sand" approach (page 4 of the BRIAC's submission in response to the Authority's Draft Report).

The Mareeba-Dimbulah Customer Council stated that the asset valuation approach taken in Victoria, Western Australia and South Australia roughly aligns with that adopted in NSW by IPART (page 6).

QCA Analysis

The asset valuation approach adopted by IPART requires an initial regulatory asset value to be established based on deprival value. In simple terms, that is the lower of DORC and economic value:

- the DORC valuation excludes contributed assets; and
- the economic value is calculated as the net present value of future cash flows at existing price levels. It is referred to as 'line in the sand' in IPART determination reports. The discount rate used is equivalent to the WACC value relevant to the water entity.

The regulatory asset base is then adjusted by IPART through time to take account of prudent and efficient future capital expenditure, depreciation, asset disposal and indexation.

The IPART 'line in the sand' asset valuation approach does not automatically value all past assets as zero. Using this approach, IPART has incorporated the value of past assets in determining bulk water prices for Hunter Water and allowed Hunter Water to continue to earn an ongoing rate of return on those assets.

The Authority is aware, however, that in setting prices for rural water assets IPART has not incorporated a rate of return on past assets. A negative rate of return had previously been achieved on those assets and thus its economic value was negative. However, to carry this forward was considered to distort new investment decisions, and thus IPART valued the existing assets at zero. The Authority has confirmed the above summary with IPART.

The Authority notes that the application of the IPART 'line in the sand' approach in the Burdekin assessment would require an acceptance of the existing price path for BRIA irrigators which includes a rate of return on assets, and does not address issues such as capacity to pay. Such an approach would not be appropriate for this particular assessment.

The asset valuation approaches of other jurisdictions vary. Few, if any, States have achieved a rate of return on their past investments in rural schemes at this time. However, the Authority has been advised that the stances taken by Victoria, Western Australia and South Australia do not preclude achieving a rate of return on past investments in the future.

5. Sunk Assets

Stakeholder Comment

In their responses to the Authority's Draft Report, BRIAC (p. 3), CANEGROWERS (p. 6) and the Mareeba-Dimbulah Customer Council (p. 4) have submitted that past assets have no opportunity cost and should be excluded from the asset base. BRIAC have also noted that future expenditure can be funded by debt finance.

QCA Analysis

Exclusion of assets on the grounds that they are sunk fails to provide management with the incentive to enhance shareholder value, and does not provide incentives for the better management of assets or for future investment. As noted by BRIAC in its original submission (p. 38), future investment in regulatory assets will be influenced by past regulatory behaviour, in the absence of enforceable future pricing arrangements.

Furthermore, to automatically value past assets at zero would not be consistent with efficient outcomes that would prevail in a competitive market. For example, it is clearly not the case that a commercial investor who has paid off a rental property using past rental proceeds should recover only operating and maintenance costs in the future.

Moreover, to automatically value assets with no alternative use at zero is inconsistent with normal commercial practice. For example, neither mines nor major plant used for specific processing activities are valued at zero simply because the resources employed can no longer be used for another purpose and the investment was undertaken in the past.

6. Subjectivity in DORC Valuations

Stakeholder Comment

BRIAC has questioned the use of DORC, stating that it is not a true cost but a notional cost, and its assumptions are subjective.

QCA Analysis

The Authority acknowledges that its DORC valuations for SunWater's assets are 'notional' in that they depart from the actual cost incurred in developing the Scheme. However, this is desirable as it allows the Authority to use a value that is more relevant to establishing efficient prices.

The Authority recognises that DORC values are dependent on certain assumptions, and may be subject to alternative views. For this reason it has sought independent expert engineering advice in order to minimise any subjectivity.

However, the Authority considers that this DORC approach to asset valuation is preferable to the use of 'actual' costs. For monopoly service providers, the use of actual costs in determining maximum allowable revenues does not result in appropriate incentives for investment in assets or the management of assets in the most efficient manner.

In addition, the use of actual costs aggregates together expenditures undertaken in different time periods – while the figures are actuals, the results are meaningless. As an example, a block of land purchased for $100 fifty years ago would still be valued, under DAC, at $100. If an identical block next door (which was also worth $100 fifty years ago) is purchased for $10,000 today by the same owner, using historic cost valuation the two blocks would now be "valued" at $10,100 in his books under DAC. While these are the actual purchase prices, in reality the aggregate value is a nonsense. At a minimum, historic costs need to be inflated to today's values, which may well result in values similar to DORC (depending on the level of optimisation).

7. Consistency in Rate of Return and Asset Valuation Approaches

Stakeholder Comment

BRIAC has argued that if the Authority is to use a private sector approach like the capital asset pricing model (CAPM) and the weighted average cost of capital (WACC) to calculate the rate of return, DAC should be used to calculate the asset value. BRIAC state that CAPM/WACC and DAC are used by the private sector and if the Authority is to be consistent it should adopt all of these approaches.

QCA Analysis

As noted above, private sector entities have the choice of valuing non-current assets at cost or fair value. Thus, not all private sector firms use DAC for accounting purposes.

In any case, competitive markets set prices irrespective of the asset values noted in the accounts of the entity. Asset values measured through DAC may be completely unrelated to prices. Moreover, the return on equity calculated through CAPM is determined by reference to movements in share market parameters (share values and dividend payouts), not DAC.

The Authority notes that DORC and CAPM/WACC are both forward looking approaches. It is consistent to use both of these forward looking approaches in determining maximum allowable revenues for regulatory purposes.

8. Optimisation of the Scheme

Stakeholder Comment

BRIAC has claimed that the Authority has not acknowledged the implications of the Burdekin scheme now servicing a fewer number of farmers (and a smaller irrigated area) than was originally anticipated (page 4 of their submission in response to the Authority's Draft Report).

QCA Analysis

The Authority's optimisation approach under DORC provides that only assets appropriate to anticipated demand are included in the asset base of the Scheme. Assets constructed to service demand that has not eventuated are not included in the asset base.

The implications of this optimisation approach is that the asset base of the Scheme is reduced for pricing purposes where existing assets are not required to service future demand. This is consistent with the outcome of competitive markets, the benchmark for efficient service delivery.

9. October 2000 Values and Inflation

Stakeholder Comment

BRIAC has stated that by revaluing both assets and capital contributions to October 2000 the Authority has exaggerated the difference between irrigators' capital contributions and the cost of the scheme.

QCA Analysis

Due to inflation and the time-value of money, dollars expended in different years are not directly comparable. As the date the current price paths were set was in October 2000, the Authority has brought all values to this date for comparison purposes.

The Authority determined the total value of assets and capital contributions as at October 2000 in a consistent manner. Under the DORC methodology, the total value of Scheme assets was indexed to October 2000, optimisation adjustments were applied to those values, and depreciation was deducted. In a similar manner, capital contributions were indexed to October 2000 and depreciated in line with the assets to which they were attributed.

Whilst this will result in an increase in the absolute value of 'unaccounted for capital' than if the date of evaluation was March 1980, any inflationary increase in the asset base is taken into account in the calculation of maximum allowable revenues. This is discussed further below.

10. Revaluation Gains

Shareholder Comment

BRIAC submitted the use of DORC is not economically efficient where it results in inflationary indexation of capital costs and thus embeds monopoly rents. Further, BRIAC has stated the Authority 'writes up the value of Burdekin infrastructure yet does not include such nominal revaluation gains as income and count them as returns to investment' (pages 2-3 of the BRIAC submission in response to the Authority's Draft Report).

QCA Analysis

The Authority's calculation of the required return on capital does take account of capital gains due to inflation. These capital gains are offset against the overall required return on an annual basis, resulting in a lower maximum allowable revenue requirement for pricing purposes. The Authority's methodology is outlined in more detail in section 11 below.

11. Revenue Implications of DORC and DAC

A Simplified Example

A simplified example demonstrates the implications of using DAC and DORC for generating a maximum revenue requirement.

Assume the following:

- initial capital cost of asset $100,000 (which proxies both DORC and DAC in year 1)
- expected productive life 10 years
- inflation rate 2.5 per cent
- optimisation nil
- WACC 8.5 per cent

In calculating the maximum allowable revenues on an annual basis, the following components are added:

- the net return on capital - that is, the gross return on capital (DORC x WACC) less any capital gain during that year;
- the return of capital; and
- operating and maintenance costs.

A comparison of revenues using the simplified example and DAC and DORC asset valuation methods is shown in Table 1. The simplified example is focussed on the capital components of revenue and straight line depreciation. Operating and maintenance costs are not included as they would be the same in both examples.

Table 1: Comparison of the values used for pricing under DAC and DORC

	Year 1	*Year 2*	*Year 3*	*Year 5*	*Year 10*
DAC					
Asset base	$100,000	$90,000	$80,000	$60,000	10,000
Return on capital (WACC)	$8,500	$7,650	$6,800	$5,100	$850
Return of capital (deprec.)	$10,000	$10,000	$10,000	$10,000	$10,000
Maximum allowable revenue[1]	**$18,500**	**$17,650**	**$16,800**	**$15.100**	**$10,850**
NPV of cashflows	**$100,000**				
DORC					
Asset base	$100,000	$92,250	$84,050	$66,229	$12,489
Gross return on capital	*$8,500*	*$7,841*	*$7,144*	*$5,629*	*$1,062*
Less capital gain	*$2,500*	*$2,306*	*$2,101*	*$1,656*	*$312*
Net return on capital[2]	$6,000	$5,535	$5,043	$3,973	$750
Return of capital	$10,250	$10,506	$10,769	$11,314	$12,801
Maximum allowable revenue[1]	**$16,250**	**$16,041**	**$15,812**	**$15,288**	**$13,550**
NPV of cashflows	**$100,000**				

[1] Maximum allowable revenue in this simplified example is the addition of the net return on capital and return of capital components only. Operating and maintenance costs were not included as these have an equal effect on the revenues required.
[2] Net return on capital is gross return on capital less any nominal capital gain through inflation.

As indicated by the example above, if there is no optimisation, the net present value of cash flows would be identical over the life of the asset.

REFERENCES

Petske S. and Fowler C. 1999. Accounting for the Revaluation of Non-Current Assets. in Heazlewood C.T. and Ryan J.B. (eds) ***Australian Company Financial Reporting 1999***, Australian Accounting Review.

Queensland Competition Authority. 2002. ***Burdekin Haughton Water Supply Scheme: Assessment of Certain Pricing Matters Relating to the Burdekin Irrigation Area, Draft Report***, Brisbane.