

Issue 50, December 1st, 2000

**Infrastructure Valuation**  
**NZ, USA**

***Infrastructure Valuation is in the news overseas.***

And the focus is very much on the requirements of asset management, accountability and fair charging.

1. **In New Zealand, ODV** (Optimised Deprival Value) has recently come under scrutiny as a result of the Ministerial Inquiry into the Electricity Industry. A paper by Simon Terry and Associates (academics and experienced utility consultants) deals with the problems that arise for fair pricing where ODV is used as the basis for pricing—in all industries, not just electricity.

**Replacement v Historic Cost—Is the wheel turning? p. 186**

**Consequences of ODV for pricing line charges. p. 187**

2. **Also in New Zealand**, recent changes in accounting requirements for depreciation have caused an upheaval in that country and caused a re-look at infrastructure valuation issues. Meritek, who were involved in drawing up the new valuation guidelines, look at some of the issues involved.

**Infrastructure Valuation, NZ p. 188**

**Infrastructure Valuation Issues, p.189**

3. **While over in the USA**, the introduction of a new accounting standard for government entities is requiring all governments to report on an accrual accounting basis and to provide more performance accountability for infrastructure assets. For the first time, infrastructure assets are now to be reported in the financial statements and depreciated. In recognition of the special nature of infrastructure assets, the USA is introducing an alternative to depreciation called “The Modified Approach” – in concept this is similar to the use of Condition Based Depreciation (based on renewal annuities derived from an asset management plan) being developed in Australia.

**Shake-Up in USA Infrastructure Reporting Requirements pp 190-192**

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## Replacement versus Historic Cost – Is the wheel turning?

Simon Terry and Associates, of Wellington, New Zealand, re-open the debate on the appropriateness of ODV for determination of line charges, given the exceedingly high levels of profit that this has given rise to.

The debate between current replacement value and historic cost valuations in Australia was largely over by the late 1980s, early 1990s. For the past ten years, replacement value within the umbrella framework of ODV (Optimised Deprival Value), which allows for use of the NPV of future net incomes to be used wherever the asset would be uneconomical to replace, has won out in the contest between Historic Cost and Replacement Value.

Yet, as we can see in the article beginning on page 190 the new financial reporting requirements in the USA are mandating the recording of infrastructure at (depreciated) historic cost levels, and in New Zealand, which led the charge to corporatise and value at replacement cost or ODV, there is now a counter-movement.

Are we about to see the return of Historic Cost Valuation for government and other monopolised industries?

When a recent inquiry was held into the Electricity Industry in New Zealand, it was generally thought that the question that motivated the inquiry – are electricity line charges fair? – would be answered. But the issue was not addressed. New Zealand follows a pretty laissez-faire arrangement when it comes to regulation of industry. Companies have only to report their Return on Investment and, presumably if the Government considers that these returns are getting out of hand, it has the option to introduce some form of price capping to contain profit taking. However, as the following cartoon in "The Evening Post" (13/7/00) indicates, there is now the feeling in some quarters that prices are too high and the government isn't doing enough about it.



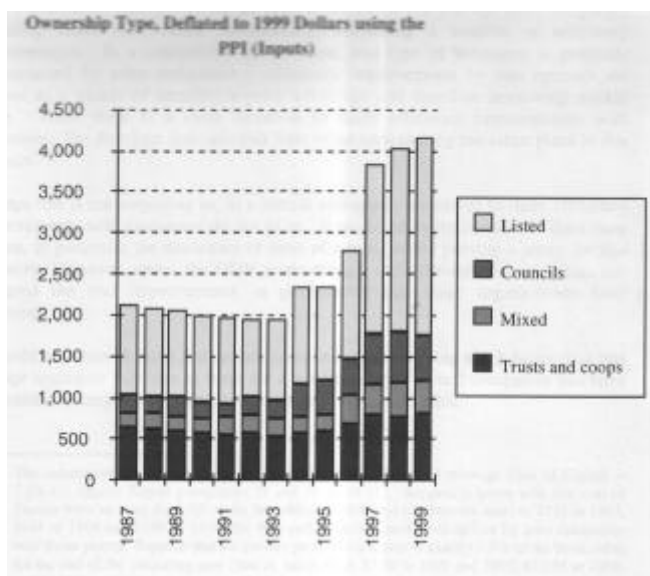
One of the organisations that took the situation seriously enough to research the costs and profits of the electricity line agencies and to put in a submission to the inquiry was Simon Terry and Associates. This eminent consulting firm in Wellington combines the rigour of academics (which the partners are) with the practicality of practising utility consultants. They have now prepared a 44p discussion paper to get the issues aired and dealt with. Here is a brief glimpse at what may turn out to be the first salvo in a re-examination of the way we value assets in government and regulated utilities.

## Consequences of ODV for Pricing Line Charges.

Line charges are based on valuations. It therefore follows that

**if the valuations are wrong, the charges are wrong.**

Lines Companies Book Values (\$m - 1999 dollars) have doubled over the last six years (1993, the time that ODV was introduced, to 1999) as can be seen in the diagram below. It is argued that this does not represent new investment but is confined to routine maintenance and replacement. What happened was that existing asset values were written up following introduction of ODV valuation methodology. The result was huge windfall gains to network owners.



These gains can be measured in dollar terms by examining the rise in lines companies operating surpluses. While the average line charge has remained just over 3 cents per kWh for the past decade, lines company operating costs have fallen considerably. As there is little incentive for a monopoly supplier to share those savings, gross operating surpluses have grown substantially. These have doubled over the past decade from 0.76c per kWh to 1.47c per kWh –

an increase of about \$200m a year compared to the level pre-corporatisation.

The Ministry of Economic Development considered that a nominal post-tax WACC (Weighted Average Cost of Capital) for distribution companies of between 7.5 and 10 percent was appropriate, but WACC is based on the book values, so the higher the book value the higher the level of profits can be and yet come within the acceptable range.

If capital gains are included along with operating surpluses, the actual return on investment for the line companies was between 24% and 35% pre-tax, or approximately 16% to 24% post-tax, which is considerably higher than the return made by the top 40 New Zealand private companies over the same period.

At issue is the treatment of the windfall gains from revaluation.

But the key point that the authors make is that **Deprival Value is not ODRC**. "A long series of publications and official statements in New Zealand and overseas have explained that ODV is the lower of ODRC or Economic Value, with Economic Value in turn reflecting the Net Present Value of future earnings or the Net Realisable Value of the assets when sold off, depending on circumstances."

Unless future earnings are determined independently from valuations, this is circular. Valuations depend on earnings and earnings depend on valuations. This circularity has been long known but has generally been ignored.

Given the outcomes for electricity consumers in New Zealand (and potentially for the users of any other service using the same valuation methodology) the paper is asking for a re-examination.

It stops short of recommending a return to historic cost, but what other alternatives are there?

## Infrastructure Valuation, NZ

How New Zealand is Tackling the Problem of Consistency

*In this article, Tony Urquhart of Meritec outlines a number of the N.Z. issues, and proposed solutions, to Infrastructure Valuation problems, eg "brownfield" v. "Greenfield" optimizations, the level of detail required for the asset register, what are the factors determining depreciation and how to deal with the vexed problem of estimating useful lives.*

### The Crux of the N.Z. Problem

#### Industry Concern

Local government officers and auditors have expressed concern over the inconsistent valuation methodologies being used by local authorities and queried the robustness of the valuations in the light of a new Exposure Draft No. 82 "Accounting for Property, Plant and Equipment" which redefines depreciation and other valuation requirements.

#### No Accepted Industry Standard

Current industry guidelines contained in the NZ Infrastructure Asset Management Manual lack widespread industry support.

#### Valuation Significant in light of Mandatory Funding of Depreciation

The issue of valuation has been made all the more significant because councils in New Zealand are now required to fund the decline in service potential (assumed to be synonymous with depreciation)

### The N. Z. Solution?

#### Need for New Agreed Valuations

Meritec has been the lead consultant in developing an agreed set of valuations. While they have been finalised, they are still waiting on final approval for release as Reporting Standard No 3 so some changes may still occur to the principles given here.

#### Valuation Principles (in ED-82)

Most infrastructure assets owned by local government commentary are specialised, operational assets which fall under the following clause in ED-82:

"When there is no market-based evidence of fair value because of the specialised nature of the item, depreciated replacement cost is considered to be the most appropriate basis for determination of fair value".

The term 'Depreciated Replacement Cost' in ED-82 is synonymous with 'Optimised Depreciated Replacement Cost' (ODRC) because its definition requires physical deterioration and all relevant forms of obsolescence and optimisation to be taken into account.

Other important requirements of ED-82 with a major effect on the valuation methodology are:

- Depreciation is "the measure of the consumption of the economic benefits embodied in an asset whether arising from use, the passing of time or obsolescence".
- "When the components of an item of property, plant and equipment have different useful lives or provide benefits to the entity in different patterns, thus requiring different depreciation rates and methods, the cost of the item must be allocated to its components and each component must be accounted for separately".

## Infrastructure Valuation Issues

### Depreciation – How does the asset get ‘used up’?

The ED-82 definition of depreciation means that an asset's depreciation pattern is proportional to the predominant factor that impacts on how the asset gets ‘used up’. For example, for pumps this factor is the volume of flow and if the annual flow doubles over the asset's life then so does the annual depreciation.

This requirement is likely to be most significant in areas of high growth (where the usage pattern increases significantly over the asset's life) or where there are specific usage patterns such as on forestry roads. An entity will be able to use straight-line depreciation if it demonstrates that the pattern of economic consumption does not materially differ from straight line, or that the pattern cannot be reasonably determined.

### Asset Register detail

An area of continual debate is the reasonable level of detail to record asset data for valuation purposes (top-down versus bottom-up approaches, use of ‘averaged’ or assumed parameters over areas of a network, etc).

ED-82 is clear in its requirement for assets with different useful lives and different consumption patterns to be valued and depreciated separately. But issues of materiality remain and the guidelines provide worked examples showing appropriate asset register details for each asset type.

### Extent of Optimisation

In the approach recommended in the guidelines (referred to as ‘Brownfields’ optimisation) the existing network is examined and changes made to the rating, configuration, design or materials to optimise particular components or sub-components. Under-utilised assets are “replaced” in the valuation by assets of lower capacity, and redundant assets are “removed”, *but the historical configuration of the network of assets is preserved.*

‘Greenfields’ optimisation approach assumes that the network of assets can be designed and constructed all at the same time using modern engineering equivalents.

*The existing configuration layout is totally ignored. The zero-based approach usually results in more efficient optimisation as it is not constrained by existing layout, configuration requirements, and so forth.*

There was some Working Party support for the use of greenfields in appropriate situations, such as a rural water supply, which is intended to be replaced in its entirety by a reconfigured system. However (depending on the final wording of ED-82) this approach is likely to be precluded by the new standard.

### Determining Useful Lives of Asset Components

Asset lives are the most difficult valuation parameter to establish and yet are the most important in their impact on local authority funding.

The guidelines take the approach that it is not appropriate for local authorities to use standard industry lives without reference to the specific environment in which the assets operate. Factors such as construction techniques, maintenance regimes and early asset replacement due to insufficient capacity have a significant impact and need to be factored into the assessment of useful lives. Data is not always reasonably or readily available for sophisticated predictive modelling to be applied; the guidelines outline other simple approaches to calculate lives based on the entity's knowledge of their assets.

*Tony Urquhart of Meritek is a member of the SAM Advisory Panel. Meritek was closely involved with the development of asset management and strategic asset management planning in New Zealand through the development of the NZ Infrastructure Asset Management Manual and its joint Australian-New Zealand sequel, the International Infrastructure Management Manual, as well as pioneering, with GHD, the introduction of asset management plans in councils throughout New Zealand. Visit their website at [www.meritec.org](http://www.meritec.org) or contact them directly at Meritek Pty Ltd, Level 7, 140 Queen Street, Melbourne, Vic, 3000; Tel: 61 3 8600 0700.*

The most significant change in the history of financial reporting requirements for 84,000 state and local governments in the United States was issued in June 1999 with the introduction of Governmental Accounting Standards Board (GASB) Statement 34.

## Shake Up in USA Infrastructure Reporting Requirements

driven by the need for better asset management  
and more performance accountability

### A pattern familiar to Australia and New Zealand

For many years, public works engineers in the USA have argued the cost effectiveness of long-term preservation versus replacement. Typical performance curves show slow declines followed by rapid declines. But the period of rapid decline can be postponed by rehabilitation at an earlier stage. Successive cost effective rehabilitations can greatly extend the life of infrastructure assets. However, the focus has not been on rehabilitation but on the acquisition of new assets. Since the late 1950s federal funding of highways and bridges focussed on new construction. State and local funding was primarily used to match available federal capital funds and to maintain and repair the resulting roadways. Large-scale studies over the last 15 years have catalogued the performance deficiencies that this focus has given rise to.

It took a change in the financial reporting arrangements, with the introduction of accrual accounting in Australia and New Zealand starting in the late 1980s to change this focus. This is now happening in the USA.

### GASB Statement No. 34

The GASB is responsible for setting generally accepted accounting principles (GAAP) for both state and local governments. Governments must follow GASB standards to obtain clean opinions from their auditors.

Accountability is declared to be the principle objective of governmental financial accounting – and key amongst this is accountability for the performance of government infrastructure.

**“Infrastructure” is defined** as long lived capital assets associated with governmental activities that normally are stationary in nature and can be preserved for a significantly greater number of years than most capital assets. Examples are roads, bridges, tunnels, drainage systems, water and sewer systems, dams, lighting systems. Buildings are excluded unless they are an ancillary part of a network of infrastructure.

### Accrual Accounting

GASB 34 requires new government-wide financial statements to use accrual accounting for all government activities. Hence, all revenue earned and costs incurred in providing government services in a year will be reported – not just those received and paid out. In addition, all current and long-term assets and liabilities such as infrastructure and general obligation debt will be reported within the balance sheet of the statements.

### Key Infrastructure Reporting Requirements of GASB Statement 34

#### Two stage implementation

**Stage 1 – Prospective.** All infrastructure assets acquired (purchased, constructed, or donated), renovated, restored, or improved, after the date of implementing Statement 34 must be recorded..

**Stage 2 – Retroactive.** Four years after the date of implementation the asset base must include the value of all existing major general infrastructure assets that were acquired (purchased, constructed, or donated) in fiscal years ending after June 1980.

**Implementation is to be phased in**, large governments (income >\$100m) fiscal year 2001-2002; medium sized (income >\$10m but <\$100m) by 2002-2003 and small governments (income >\$10m) by 2003-2004.

**Infrastructure is to be valued at historic cost.** If these figures are not available, current replacement cost is to be discounted back.

### Depreciation.

There are two options,

- standard depreciation based on valuation (eg straight line or 'sum of digits'), or
- the 'modified approach'. (see box)

### What has been the User Reaction to GASB 34?

Even before the release of the Exposure Draft of Statement No 34, certain respondents expressed concern about the following:

- The value of reporting public infrastructure assets
- The value of developing historical costs for infrastructure assets already constructed or improved
- The relevance of depreciating infrastructure assets already reported as an expenditure

Some thought that the costs of reporting on general infrastructure assets might be prohibitive and might not be justified by the expected benefits. Others expressed the concern that GASB 34 might encroach on public policy rights of governmental entities (e.g. the right to make spending allocation decisions) and suggested other ways of encouraging infrastructure preservation.

### GASB Response

In deciding to proceed with the infrastructure reporting requirements contained in Statement No. 34, GASB concluded that infrastructure asset reporting was "essential to provide information for assessing financial position and changes in financial position, and for reporting the cost of programs and functions." In addressing some of these concerns GASB limited the retroactive provisions to those assets acquired or improved since June 30, 1980, extended the transition

### The Modified Approach

*The Modified Approach allows governments to record the current costs of preserving eligible infrastructure in lieu of depreciation. To use this alternative approach, the government must do the following:*

To manage eligible infrastructure assets, use an asset management system or process that has the following components:

- Maintains an up-to-date inventory of eligible infrastructure assets
- Performs condition assessment of eligible infrastructure assets at least every 3 years, using a replicable basis of measurement and measurement scale
- Summarises the results, noting any factors that may influence trends in the information reported
- Estimates each year the annual amount to maintain and preserve the eligible infrastructure assets at or above the prescribed level

Document that the government is providing sufficient maintenance efforts to preserve the assets through the following efforts:

- Ensure that the results of the three most recent condition assessments meet or exceed the established condition level
- Compare the estimated amount required to maintain and preserve eligible infrastructure assets at or above the established level with the amounts actually expended for each of the past five reporting periods.

*(readers familiar with the Condition Based Depreciation Approach based on Renewal Annuities derived from Asset Management Plans will notice a similarity of thinking here.)*

period for retroactive reporting, removed the retroactive reporting requirement entirely for governments with less than \$10 m in total annual revenues and allowed the Modified Approach as an alternative to the reporting of annual depreciation costs.

It was considered that the depreciation approach may be less costly and easier to use than the Modified Approach, depending on the availability of documentation required by the Modified Approach. However, depreciation expense by itself may not recognise the fiscal benefits of ongoing preservation efforts. In addition, depreciation expense might be interpreted as an indication that the asset is being allowed to gradually deteriorate. For many agencies responsible for infrastructure, this may not be an acceptable asset management strategy.

The Modified Approach may provide a more meaningful gauge of the government's ongoing stewardship of its infrastructure assets. It requires documentation that will enable state and local governments to more cost-effectively manage their infrastructure assets and to take credit for the results.

In the Nov 15 1998 issue of our newsletter we reported the American Public Works Association (APWA) Task Force Report into Asset Management where they recognised that they faced considerable difficulties in adopting an asset management approach in the absence of accrual accounting, depreciation and asset valuation. In this sense, the way is now clear to develop effective asset management in the USA. Over the next 6 years, we should see a considerable rise in both interest and application of asset management principles in the USA.

There are, however, a number of hurdles yet to be jumped. GASB has developed the principles to be applied but has stopped short of being prescriptive. So Governments will have to find their own answers to the following questions:

- How infrastructure assets are to be identified and valued, particularly those built or improved since 1980.
- Whether to include infrastructure assets built or improved before 1980.
- The level of detail for identifying and valuing assets.
- Resources required, skill level of those doing the valuations, reporting requirements for infrastructure shared between governments, and integration of reporting requirements between different units of government

Using the Modified Approach will require governments to collect much more specific asset management information

Much of this information has been drawn from a paper "Understanding GASB 34's Infrastructure Reporting Requirements" prepared by PriceWaterhouseCoopers.

The full paper is available on the web. To access this and other web-based information on valuation, see [www.amqi.com/glossary.htm](http://www.amqi.com/glossary.htm)

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