

# 380

AMQ  
International's

# STRATEGIC ASSET MANAGEMENT

VALUATION  
AND  
DEPRECIATION



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## **Valuation and Depreciation. How much do you need to know?**

Valuation and depreciation seems to cause more angst for asset managers than any other topic. It has always been so. If we want a valuation simply to provide a figure to place in the balance sheet, then it would seem that any valuation method will do.

However, whilst your accountant or finance manager only needs the end result of the valuation, you - as an asset manager - are deeply interested in the process by which the valuation was achieved, because it is the data that is produced by that process which is of most value for management. That is the focus of this issue, in which we look at some of the many articles that we have produced on valuation in the past 20 years. If you are new to asset management these may prove a useful introduction to the field. For experienced asset managers, think of it as a refresher course.

In this issue we summarise the value of the different valuation processes, consider the question of whether you need to depreciate at all if you are regularly valuing 'at market', and look at how you can use your valuations to make or save money, and more.



These articles will be placed in the SPECIAL SELECTIONS collection on the website, but SAM readers can get a headstart. Don't forget that the Deadline for the December Prize is December 5. You can contribute your experience in this field - or simply tell me which articles you found particularly useful, and why.

As always, enjoy!  
Penny

Dr Penny Burns, Editor, AMQ International  
08 8359 0559 [www.amqi.com](http://www.amqi.com)



## Valuation method and AM uses. 1997

### How you value determines how you can use your valuations.

It is not often appreciated that the way in which we carry out our current cost valuations will affect the uses that can be made of them and will also affect the choice of depreciation method. Here are six common valuation methods, their uses and their limitations.



#### DESK TOP CALCULATION 1. Using a \$ per square metre calculation applied to different functions.

E.G. \$X per M2 for ward space; \$Y per M2 for theatre space, etc. WA Health uses this procedure, having established the relevant dollar figures with the help of a team of building specialists. It requires floor plans and develops a total replacement cost figure.

**Uses:** This produces a total replacement cost figure (before depreciation). It is useful for the allocation of capital costs to individual services and for activity based costings. Useful for planning for increases or decreases in services. Data is quick to collect and there is minimum inconveniences for staff. Updating the data is a matter of adjusting the dollar per M2 calculations.

**Limitations:** Not useful for renewal planning since the values are based on total floor space rather than renewable components.

**Best Depreciation Method:** Condition based depreciation from an asset management plan that looks forward at least ten years.



#### DESK TOP CALCULATION 2: Using a \$ per component calculation.

This is in common use for large engineering installations and by quantity surveyors for establishing building replacement costs.

**Uses:** Yields a total replacement cost. Very good for renewal planning because the figures are collected by renewable components. Most advantageous where

construction is unique (e.g. a dam) and there is no, or a very limited, market to use as a reference asset.

**Limitations:** Not suitable for cost allocation to services and cumbersome to use for planning for increases or decreases of services.

**Best Depreciation Method:** Standard depreciation formulas based on component life.



### VALUER'S ON SITE VALUATION 1. Replacement cost by building

**Uses:** Yields a total replacement cost figure. Can be used for service allocation costs where the building is used for one purpose only.

**Limitations:** Not useful for service allocation costs where building is used for many services. Not useful for renewal planning because it provides no idea of the timing of elements of renewal.

**Best Depreciation Method:** Valuer's estimation of depreciated replacement cost, where assets are regularly revalued.



### VALUER'S ON SITE VALUATION 2. Market value by building

Here there are two major types

- (1) Value in use and
- (2) Highest and best use

**Uses:** Yields a market valuation. Best for estimating potential from disposal. "Value in use" would be the appropriate valuation where the disposal was restricted to the new owner continuing the same type of business, e.g. sale of a school for

school purposes only. Otherwise "highest and best use" would be appropriate. Both values, depending on restrictions, would be appropriate for the calculation of opportunity cost.

**Limitations:** Not suitable for allocation of capital costs to services where the building is used for many services, so not useful as a measure of a 'cost driver'. Not suitable for renewal planning since renewal needs to take account of the full replacement cost and not just the depreciated value which is the basis of market valuations.

**Best Depreciation Method:** Market values automatically take depreciation into account and yield a depreciated value.



### **ENGINEERING VALUATION 1: Optimised replacement value (system optimisation)**

This valuation considers the optimum way to replace the entire system but only to the extent of meeting current and foreseen service needs.

**Uses:** Good for calculation of opportunity cost since it avoids building in surpluses resulting from past 'mistakes'. Good base for catastrophe

insurance, since a major catastrophe is often the one occasion in which reconfiguration of the entire system is possible.

**Limitations:** Limited use for renewal planning where complete reconfiguration is not the economic option (which is most of the time).

**Best Depreciation Method:** Condition based depreciation based on required interventions according to a justified asset management plan. Use of standard formula approaches applied to the optimum configuration will understate actual depreciation where excess capacity needs to be retained.



### **ENGINEERING VALUATION 2: Optimised replacement value (component optimisation).**

Often referred to as modern equivalent asset valuation. This method uses a component basis for calculating value. It builds in the optimum component replacement costs but accepts the fact that the system configuration will not be altered.

**Uses:** The use of component values makes this method useful for renewal planning. Good for standard insurance but not for catastrophe insurance.

**Limitations:** Because it retains past system mistakes, it will overstate the opportunity cost.

**Best Depreciation Method:** Condition based depreciation based on justified interventions documented in a sound asset management plan looking forward at least ten years.

*Originally published August 15 1997*



## NO ONE TRUE VALUATION

Because there is only one slot in the balance sheet in which to place the valuation, it is perhaps easy to think of there being only one really 'true' valuation. But there is really no such thing as the 'one true valuation' - only valuations which are more or less useful for the purpose you wish to put them to.

Years ago my friends at the Australian Valuation Office produced the following hypothetical valuation of the Montague Island Lighthouse

Reproduction	11,500,000
Indemnity	3,000,000
Depreciated replacement	2,750,000
Market - alternative use	2,500,000
Restricted Use	1,500,000
Existing use	1,000,000
Mortgage	750,000
Forced sale	400,000
Replacement (modern equiv)	55,000
Deprivation	17,500
Net Present Value	NIL

Historical Cost - Eleven Hundred Guineas





## **‘REPLACEMENT VALUE’ is not the same as ‘REPLACEMENT COST’**

When it comes to renewal planning, the asset values recorded in our books of accounts, need some modification.

### **There are two types of renewal:**

**Incremental renewal**, where elements of a building or asset are renewed piecemeal (which is, in practice, the most common method) and

**Complete replacement**, where the entire building or asset is replaced as a whole, either by being demolished and rebuilt on the same site, or rebuilt on a separate site.

**Both** will cost more than the figures recorded in your accounts!

This is clearly the case if your accounts are still recorded in historic cost terms but it is also true if they are stated in current replacement cost terms. The reason for this is that, by convention, current replacement values are based on the costs of building a new asset on a greenfield site. (*The term ‘greenfield’ comes from the undeveloped land at a city’s fringe.*)

### **If you are replacing the entire asset**

When you are planning for a complete replacement of an asset, you must allow for the costs of demolition of the original (if you are re-building on the old site) or the costs of disposal of the original asset. These disposal or demolition costs are additional to the asset value.

### **Incremental renewal**

In the normal course of events, most infrastructure is renewed rather than replaced. That is, some elements are replaced but not the entire asset. The elemental costs in the accounts are derived from the costs of that element in constructing a new asset on a greenfield site.

However, when renewing, extra costs are involved:

To maintain the asset function whilst renewal is going on (e.g. road detours, sewer bypasses);

Because of more difficult site access (e.g. within a functioning hospital); and

Because of constraints on the techniques that can be employed (e.g. not being able to use blasting because of the close location of other utilities - that were not there when the original asset was constructed.)

Because the costs of removing the existing component is not included in the asset value.

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## Three Observations on Value, Valuation and Performance

by Penny Burns, AMQ International, and Gordon Sparks,  
Professor of Civil Engineering, University of Saskatchewan and  
Partner, VEMAX Management Inc.

### 1. Any valuation method can provide ‘a value’.

But it is not the valuation itself which is so valuable to the asset manager, but rather the information that is gathered along the way .

When calculating value, using a replacement cost approach, we need to collect information on condition, remaining life, functionality, age, etc. Extend that to a ‘modern engineering equivalent’ replacement cost, and we need to collect information on the appropriateness of that asset for the task required and to consider what other options could do the same or a better job.

The final valuation figure is the one that is of use to your Accountant, but it is the intermediary data that is of use to the Asset Manager, whose task it is to decide when, where and how to intervene; when to abandon; when to modify; when to expand capacity. None of these decisions require or use asset valuations directly.

It follows that the valuation method that provides the most useful data in the process of calculating the asset value is the one that is of most use to Asset Managers. This is why historic cost valuations are not ‘good’ valuations for asset managers. But it is also why Market Values may also be less than adequate for asset management purposes. They can be one of the inputs into an asset management decision, but it are not sufficient for the task of determining intervention points and appropriate action.)

### 2. Should we strive to maximise value?

Of course! Value means benefits received relative to cost incurred in achieving them. So yes, we should always aim for higher ‘value’. This does not, however, mean maximising ‘valuation’. If we could value our assets according to the benefits received minus costs, it would be fine, but in practice, the best we are able to do in valuing our assets according to their current worth is to *estimate*:

- how much someone else would be prepared to pay for it in an arms length transaction (i.e. ‘market value’)
- the net contribution of the asset to the stream of future services to be derived from the asset (i.e. ‘net present value of future services’)
- the opportunity cost of the asset - or what it would cost to replace the asset if we were to be deprived of it (i.e. ‘replacement cost’)

In practice, as infrastructure assets rarely have a second hand market and future services are either not priced or are priced by reference to cost (where valuations using future services would be circular) there really is only one option and that is to value at replacement cost.

So while we may wish to maximise VALUE, we do not want to maximise COST. What can we do? There is a way, read on....

### 3. Valuations as a measure of Performance

In the past many organisations have used condition (good, fair, poor) as determined by the severity and extent of distresses that drive treatments to measure overall performance. While condition is a legitimate and useful measure of overall performance, it is not the only measure nor is it necessarily the best measure.

In discussing alternative measures of performance it quickly becomes apparent that which measure of performance is best is a function of the circumstances. In particular, selecting the most appropriate measure (or measures) of performance is clearly a function of the objectives to be accomplished and the scope and emphasis of stakeholder interests. One of the primary objectives of asset management is to determine the maintenance, repair, rehabilitation and replacement strategy that will provide a defined level of service for existing infrastructure while minimizing whole of life cycle costs.

Put another way, the objective of asset management is to achieve the condition - and therefore the valuation - of the asset that best serves the desired service level. By estimating the replacement valuation of the asset in that desired condition and then comparing actual valuation with desired valuation, we can use our valuation to (a) determine our infrastructure gap and (b) over time to measure the rate at which we are closing the gap.

#### Valuation can then become a performance measure!

But note, for this to be effective we need to do it on an asset by asset basis. Assets which are maintained at over their appropriate condition (valuations too high) are just as badly managed as those that are under their appropriate condition (valuations too low). Overs and Unders do not cancel out. Market Valuation and the need for Depreciation. 1997

*Originally published February 11 2008*



#### Do you need to depreciate if you revalue each year at market value?

**The answer depends on what you want to use depreciation for.**

Depreciation is not need FOR VALUATION if market values are used but you may still need it for charging purposes or for measuring (*even if not charging*) the full economic cost.

If your assets are being valued annually 'at market', and if that market valuation takes into account the state of wear and tear and obsolescence of the asset, then it is not necessary to calculate depreciation in order to arrive at the appropriate written down valuation figure for the balance sheet, since the market values automatically 'write down'.

But depreciation may still be needed for charging purposes. COAG [the Commonwealth Heads of Government] is now moving towards requiring agencies to measure, even if they do not charge, the full economic cost. This requires charging operations and maintenance costs, opportunity costs and depreciation.

### **Calculating depreciation when all you have is market valuations is rather tricky.**

The difference between annual valuations is not depreciation. After allowing for adjustments to the portfolio market value for disposals and new acquisitions, this measures a combination of general inflation, specific demand changes for the assets in question, technical obsolescence, and wear and tear. Only the last three of these are elements of depreciation so, in principal, we could derive a depreciation figure for charging purposes by deducting an element of the valuation (before disposals and acquisitions for the year) for general inflationary appreciation. However, this does not seem to be a common practice - probably because the need to measure full economic cost has not been recognised until now.

What is **not** appropriate is to divide the market value by the economic life. If an asset lasts for 50 years, the appropriate annual depreciation is 1/50th of the full replacement cost, not 1/50th of the depreciated replacement cost, a practice which progressively understates. *The ACT Auditor General qualified the books of the housing management authority for using this practice.*

### **Calculating Depreciation with Market Values - Option 1:**

The older the asset or portfolio (and thus the more 'written down') the greater the level of understatement. To correct for this we need to know the average age and adjust the market value upwards to proxy the replacement cost. Alternatively we can require the valuer to also value the asset at replacement as new and use this figure for depreciation purposes.

### **Calculating Depreciation with Market Values - Option 2:**

Alternatively, and more easily, it may be appropriate to use condition based depreciation which uses an estimate of depreciation based on the forward renewal requirements of the asset base.

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## Finally, VALUATION FOR FUN (and profit)

This is our take for a “Yes Minister” episode. The scene opens on Sir Humphrey and the Minister.

*Sir Humphrey:* Minister, last year our assets were worth \$52m but we revalued this year and they are now worth \$53m!

*Minister:* How much did this revaluation cost?

*Sir Humphrey:* Only \$250,000

*Minister:* **So you have just eaten up a quarter of my gains!**

Angrily, Sir Humphrey turns on his Asset Management Advisor:

*Sir Humphrey :* This revaluation of yours, did it actually do some good?

### **And here we have 4 possible answers.**

1. *AM Advisor:* Well, we used **a market valuation approach**. The valuers were instructed to value at both current use and ‘highest and best’ use. As a result we have discovered \$8m worth of assets that are being inappropriately used - for example, street front properties in prime retail areas were being used as storehouses - and we are putting in place a recovery program that will yield us recurrent savings with a net value of many times the valuation cost.

*Sir Humphrey:* That’s good.

2. *AM Advisor:* Well, we used **an engineering approach** to the valuation and as a result we have been able to determine a number of areas that are technologically obsolete. We have examined the costs of these areas and consider that future savings from replacing with more up to date equipment will not only cover the costs of the capital and the valuation costs but leave us a sizeable margin for other things.

*Sir Humphrey:* That’s good.

3. *AM Advisor:* Well, we used **a desk top valuation approach linked to activity based costing**. As a result we have determined a number of areas that are not pulling their weight and we have instituted a program for disposals and modification where appropriate. We expect the revenue from the sale of the surplus assets and the net value of the recurrent maintenance savings to greatly exceed the valuation cost.

*Sir Humphrey:* That’s good.

4. *AM Advisor:* Well, Sir Humphrey, the Accounting Standards say we have to revalue every 3-5 years, so we just have to do it.

*Sir Humphrey:* **You’re sacked! Find me someone who can think! We may have to comply with regulations - but a valuation should still pay its way!**

(Actually, Sir Humphrey used a great deal more phrases to express this idea - we have taken the liberty here of simplifying)